

SEWING MACHINE

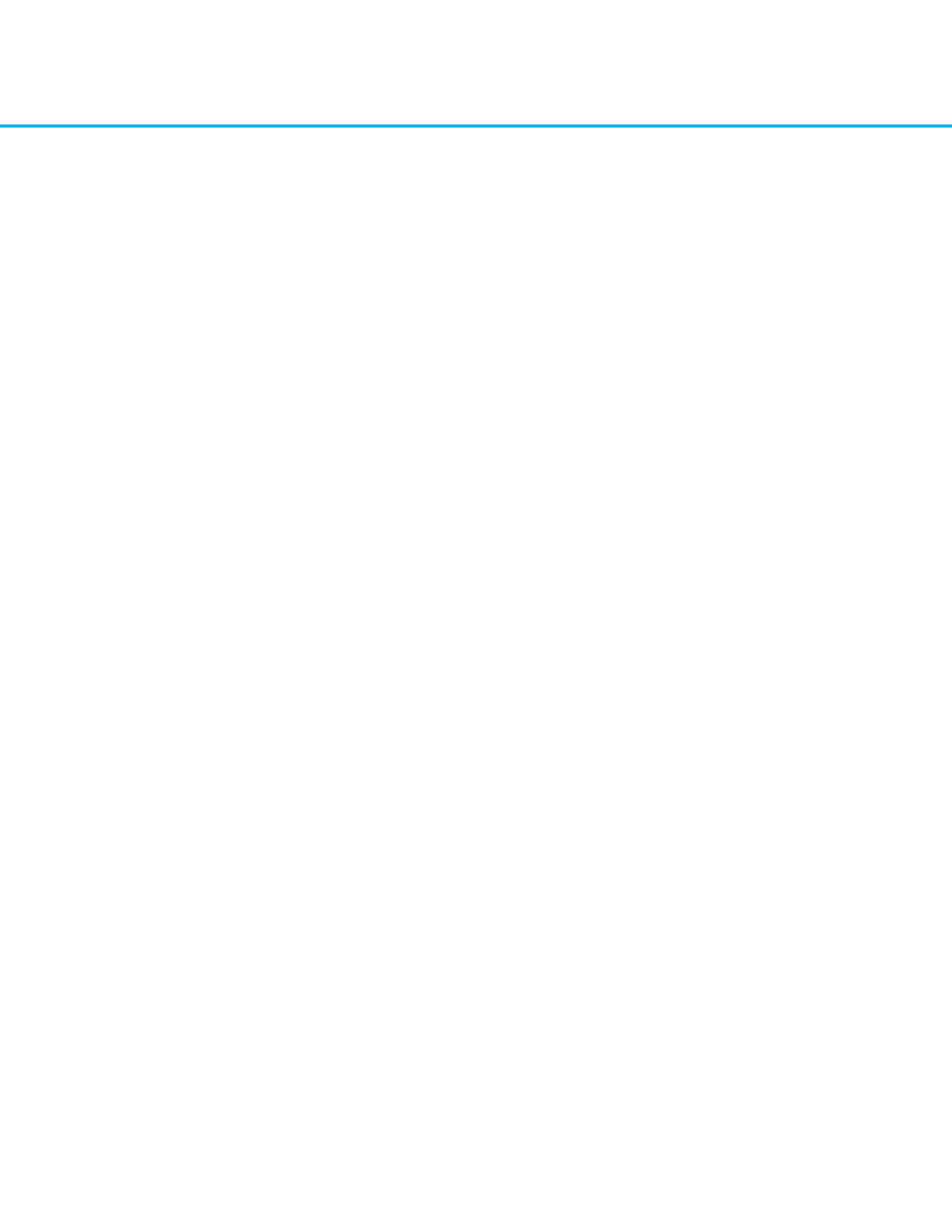
For use with the SINGER® HEAVY DUTY 4423 Sewing Machine



YALE CENTER FOR ENGINEERING
INNOVATION & DESIGN

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Cautions

To reduce the risk of burns, fire, electric, shock, or injury:

- Never operate this appliance if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water.
- Never operate the appliance with any air openings blocked. Keep ventilation openings of the sewing machine and foot controller free from accumulation of lint, dust, and loose cloth.
- Keep fingers away from all moving parts. Special care is required around the sewing machine needle.
- Always use the proper needle plate. The wrong plate can cause the needle to break.
- Do not use bent needles.
- Do not pull or push fabric while stitching. It may deflect the needle causing it to break.
- Switch the sewing machine off when making any adjustments in the needle area, such as threading needle, changing needle, threading bobbin, or changing presser foot, and the like.
- To disconnect, turn all controls to the off position, then remove plug from outlet.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Never place anything on the foot controller.

Overview

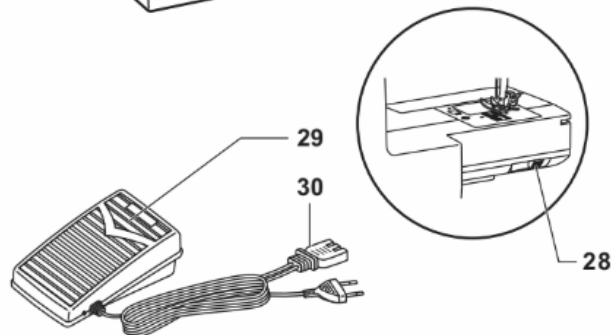
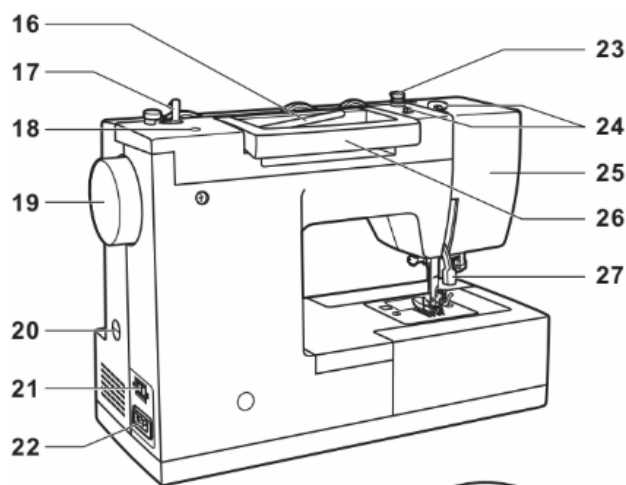
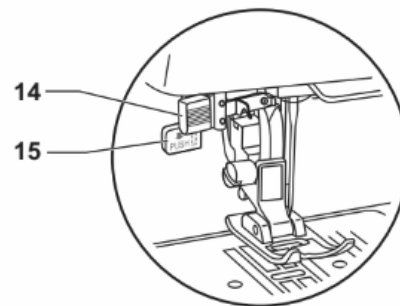
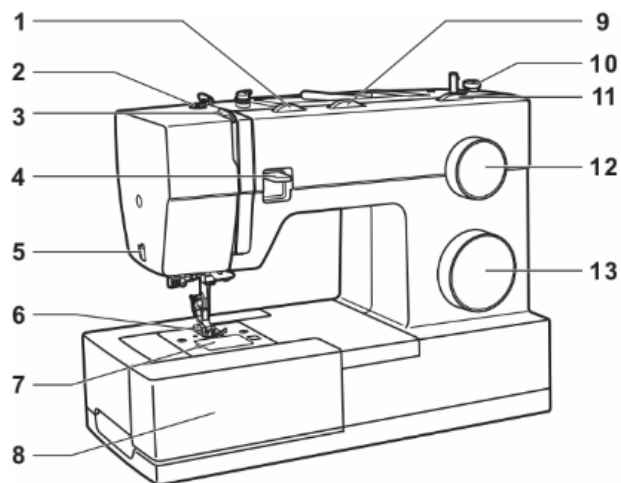
The Singer Heavy Duty 4423 is a mechanical sewing machine with a powerful motor and high sewing position, which along with its high speed sewing capability makes it perfect for heavy-duty sewing tasks. With adjustable presser foot pressure, you can sew heavy fabrics such as canvas or denim as well as very lightweight sheers, and the stainless steel bedplate allows fabrics to glide over the machine with ease. The 23 stitches include six basic stitches, four stretch stitches, 12 decorative stitches, and one style of buttonhole.

You can also download the SINGER Sewing Assistant App on your phone for additional instruction and tutorials.

While in operation, always keep your eyes on the sewing area. Do not touch any moving parts, such as the thread take-up lever, handwheel or needle.

Parts List

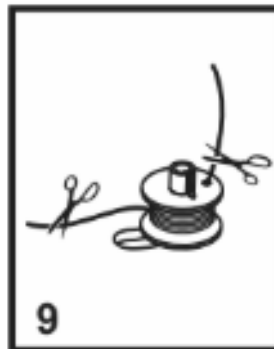
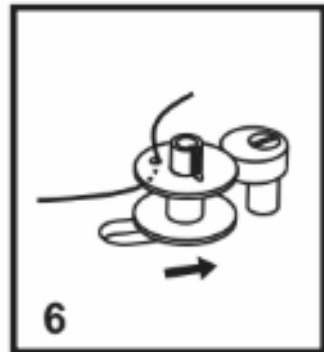
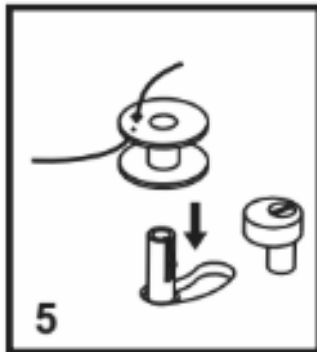
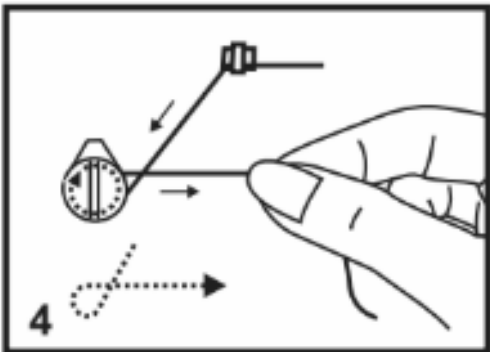
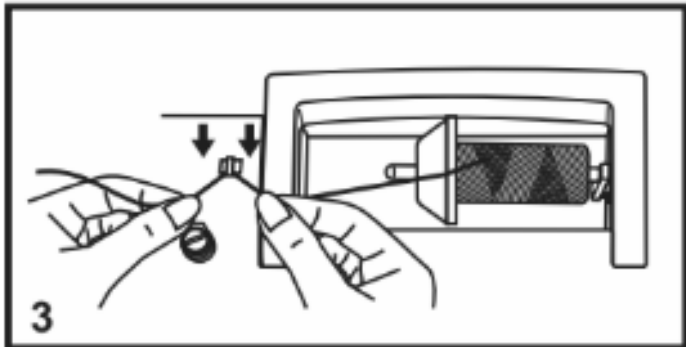
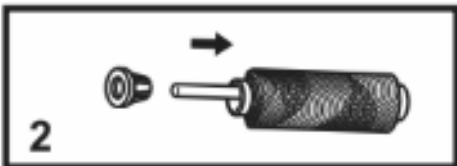
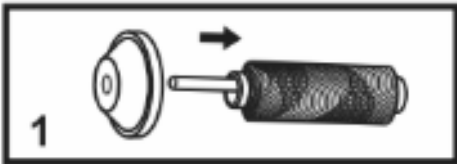
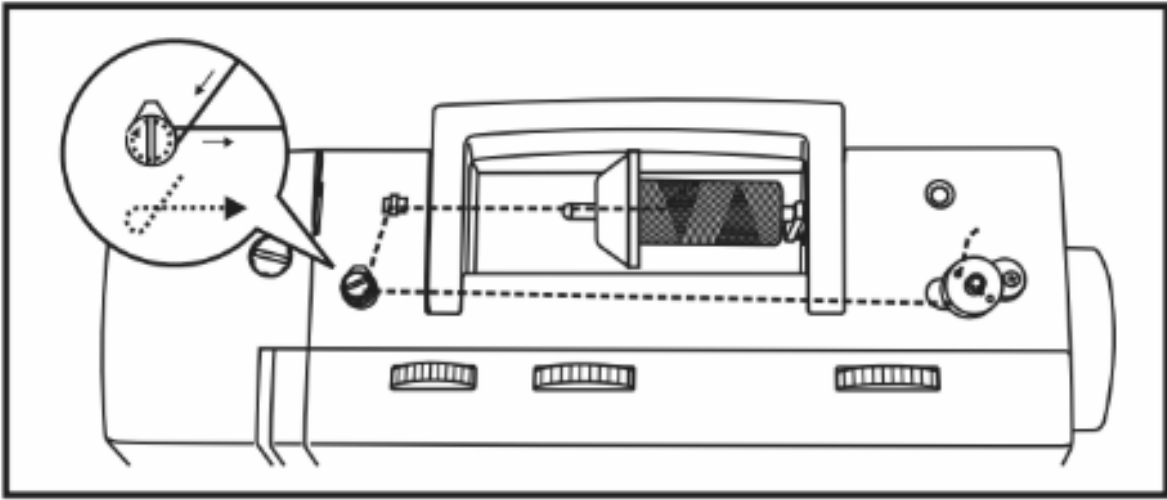
1. Thread tension dial
2. Presser foot pressure adjustment
3. Thread take-up lever
4. Reverse sewing lever
5. Thread cutter
6. Presser foot
7. Needle plate cover
8. Removable extension table/
accessory storage
9. Three needle position dial
10. Bobbin stopper
11. Stitch width dial
12. Stitch length dial
13. Pattern selector dial
14. Automatic threader
15. One step buttonhole lever
16. Horizontal spool pin
17. Bobbin winding spindle
18. Hole for second spool pin
19. Handwheel
20. Buttonhole stitch balance
adjustment slot
21. Power and light switch
22. Main plug socket
23. Bobbin thread guide
24. Upper thread guide
25. Face plate
26. Handle
27. Presser foot lifter
28. Drop feed control
29. Foot speed control
30. Power cord



Winding the Bobbin

- Place thread and corresponding spool holder on to spool pin. (1/2)
- Snap thread into thread guide. (3)
- Wind thread clockwise around bobbin winder tension discs. (4)
- Thread bobbin as illustrated and place on spindle. (5)
- Push bobbin spindle to right. (6)
- Hold thread end securely. (7)
- Step on foot control pedal. (8)
- Trim thread close to the bobbin & then continue winding until bobbin is full. (9)
- Cut thread, push bobbin spindle to left (10) and remove.

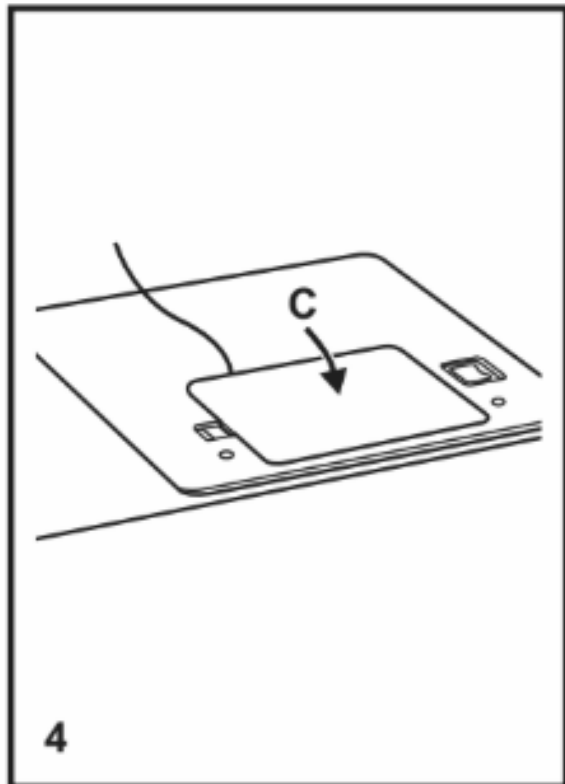
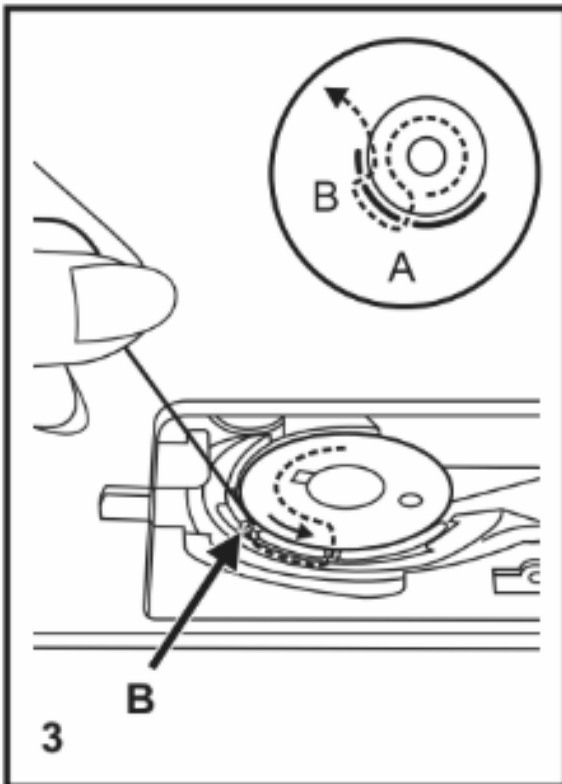
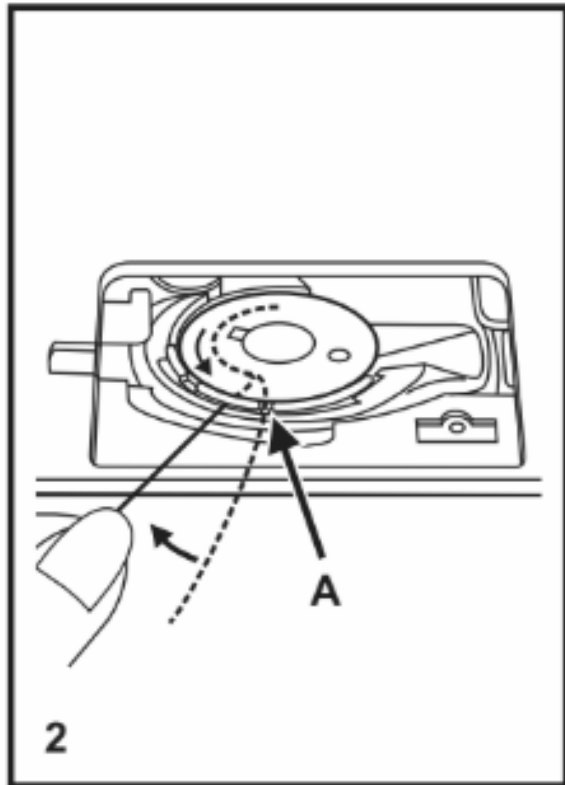
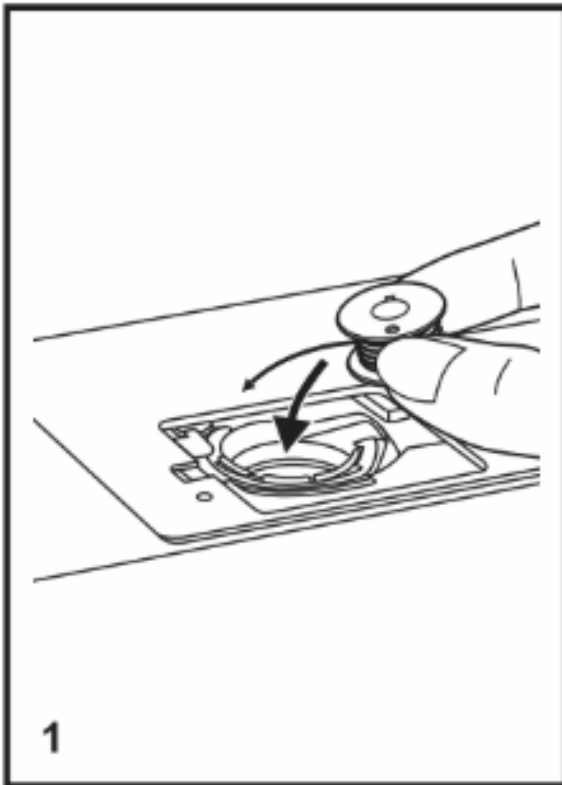
Note: When the bobbin winder spindle is in “bobbin winding” position, the machine will not sew and the hand wheel turn. To start sewing, push the bobbin winder spindle to the left (sewing position).



Inserting the Bobbin

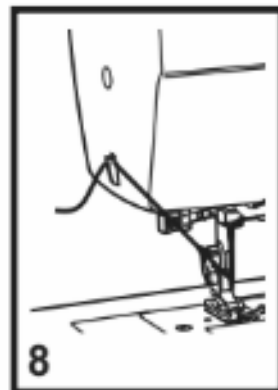
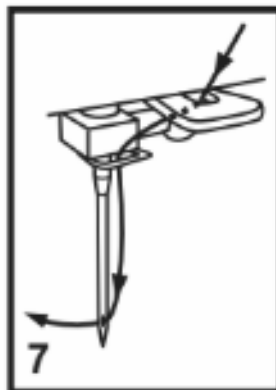
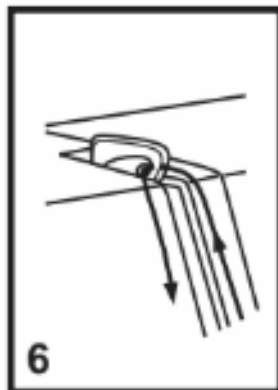
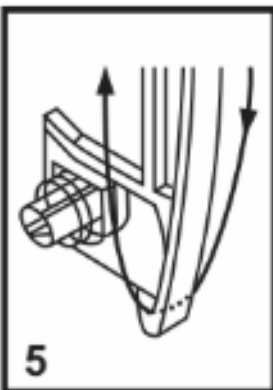
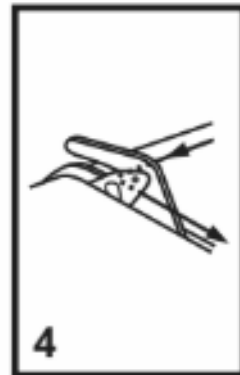
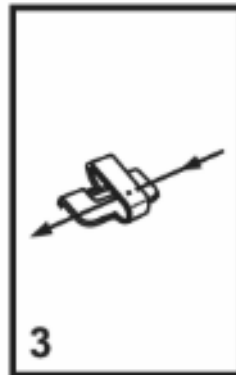
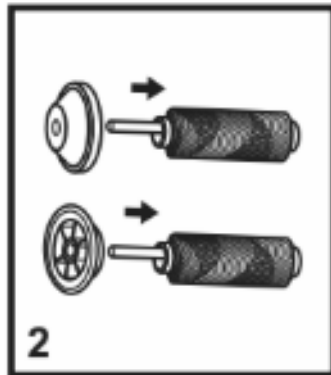
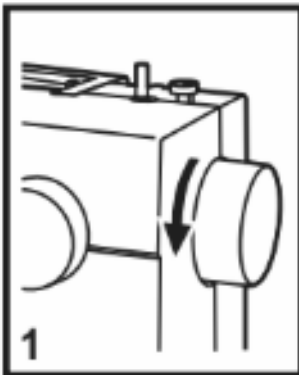
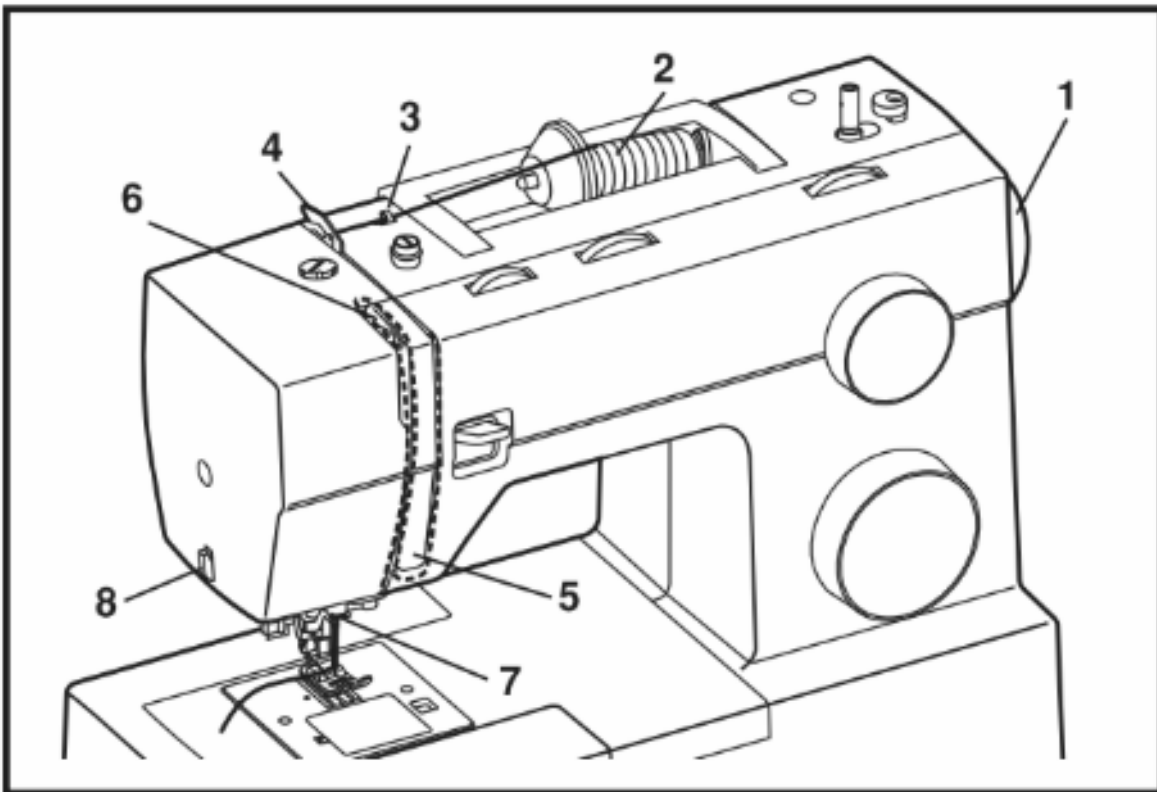
Turn power switch to off before inserting or removing the bobbin.

- Remove the bobbin cover plate by pushing the small tab to the right of the cover towards the right.
- Insert the bobbin in the bobbin case with the thread running counterclockwise direction (arrow).
- Pull the thread through the slit (A).
- Draw the thread clockwise until it slips into the notch (B), while holding the bobbin down with the tip of your finger.
- Pull out about 15 cm (6 inches) of thread towards the back of the plate and attach the bobbin cover plate. (C)



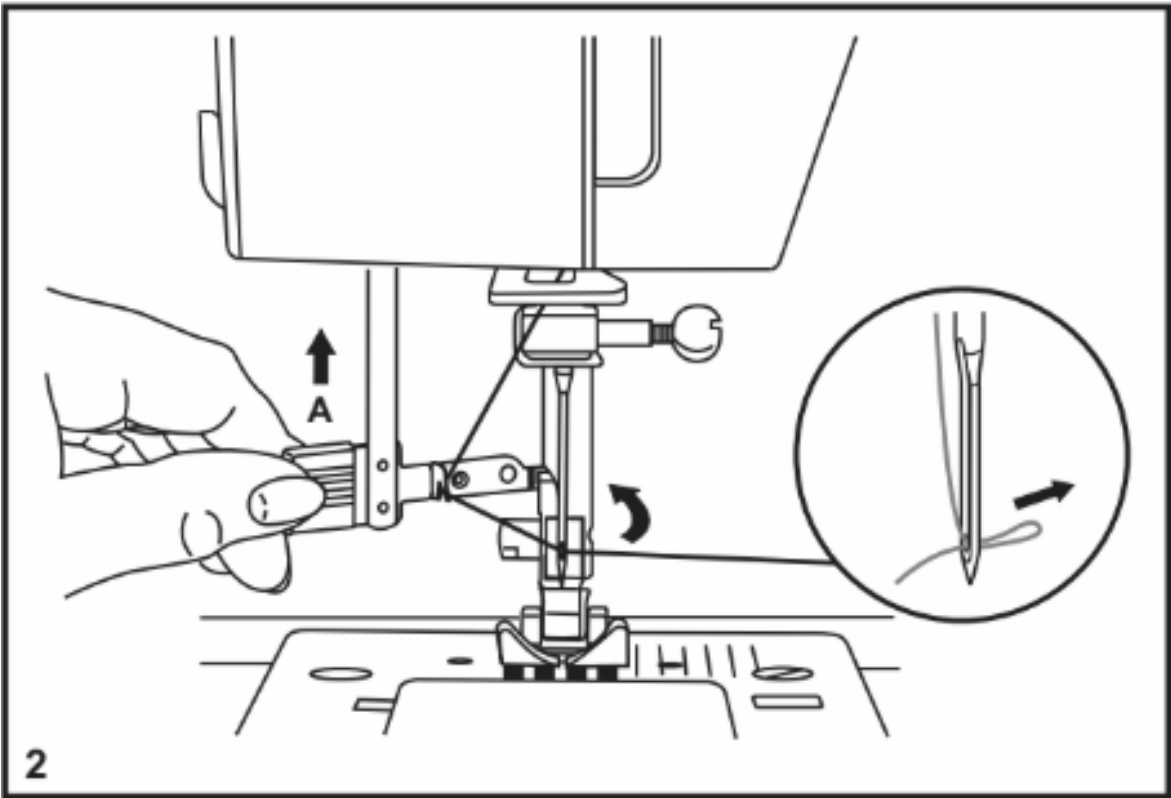
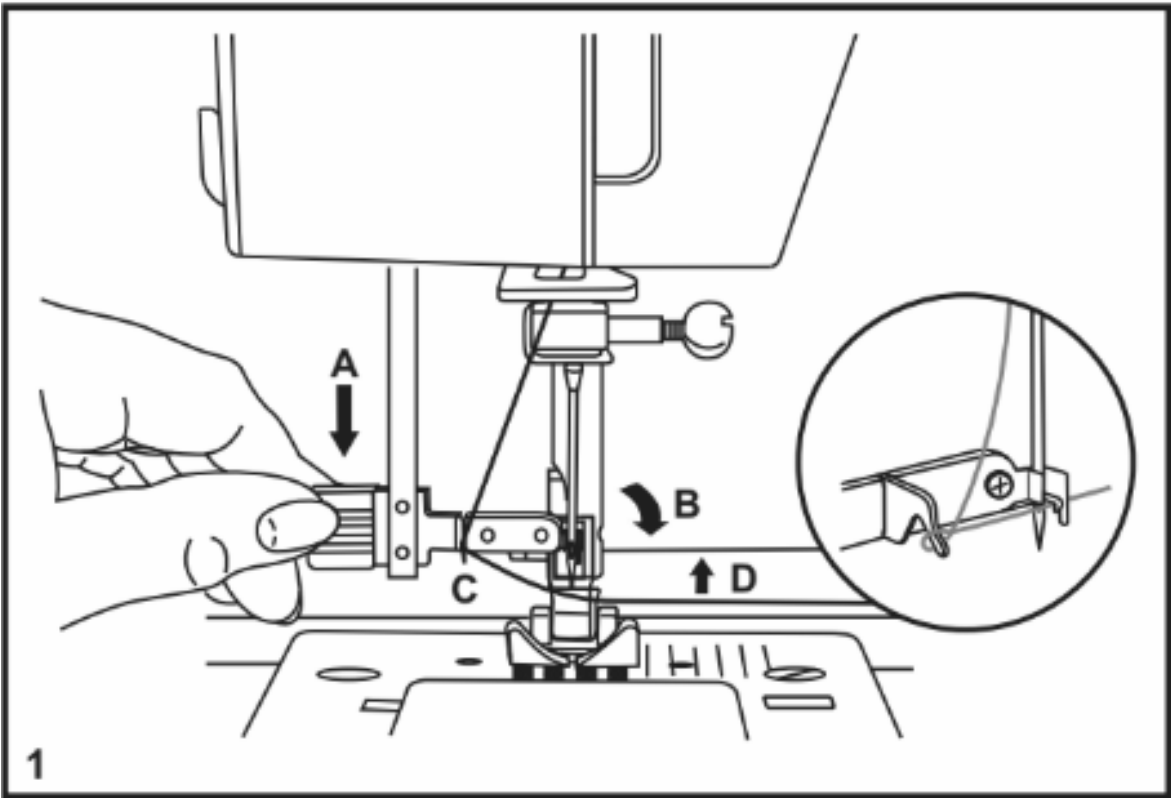
Threading the Upper Thread

- Start by raising the needle to its highest point (1), and continue turning the handwheel* counterclockwise until the needle just slightly begins to descend. Never turn the handwheel away from you as this may cause the timing to be disrupted. Always turn the handwheel counterclockwise (towards you). You must raise the presser foot to release the tension discs.
- For safety, it is strongly suggested you turn off the power before threading.
- Lift up the spool pin. Place the spool of thread on the holder with the thread coming off the spool from the back as shown and place appropriate spool holder next to the spool. For small thread spools, place small side of spool holder next to spool. (2)
- Draw thread from spool through the upper thread guide (3) and pulling thread through pre-tension spring as illustrated. (4)
- Thread tension module by leading thread down right channel. (5)
- During this process it is helpful to hold the thread between the spool and thread guide, as this will help to seat the thread between the tension discs.
- At the top of this movement pass thread from right to left through the slotted eye of the take-up lever and then downwards again. (6)
- Now pass the thread behind the horizontal thread guide, and then behind the thin wire needle clamp guide (7) and then down to the needle which should be threaded from front to back.
- Pull about 6 - 8 inches of thread under the presser foot to the rear beyond the needle eye. Trim thread to length with built-in thread cutter. (8)



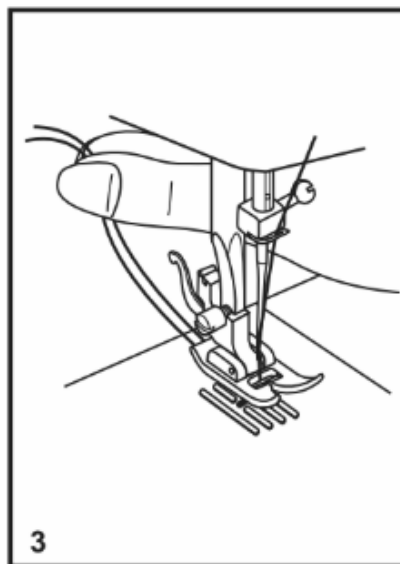
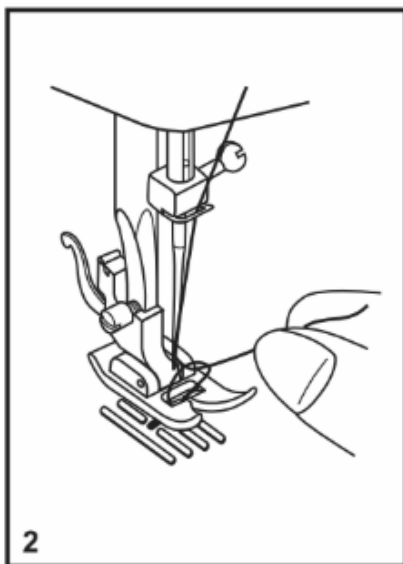
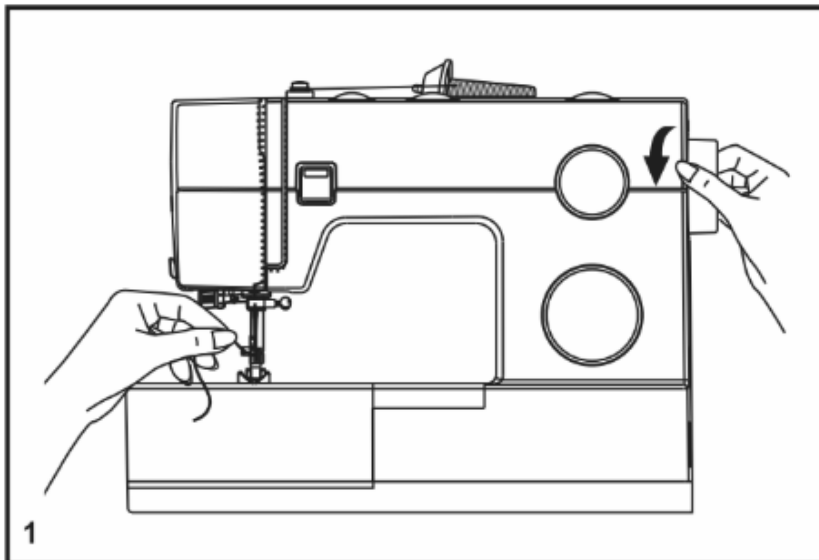
Automatic Needle Threader

- Turn the power switch to OFF
- Thread upper tension of machine up to the thin wire in front of the needle clamp.
- Raise the needle to its highest position.
- Set machine to straight stitch.
- Press lever (A) down as far as it will go, and gently insert the hook of the threader into the eye of the needle by swinging the lever towards you when it is fully lowered.
- The threader automatically swings to the threading position (B).
- Pass thread under thread guide (C), from left to right.
- Pass the thread in front of the needle around the hook (D) from bottom to top.
- Release lever (A), by swinging it away from you & then pushing it back up to the resting position.
- Pull the thread through the needle eye.



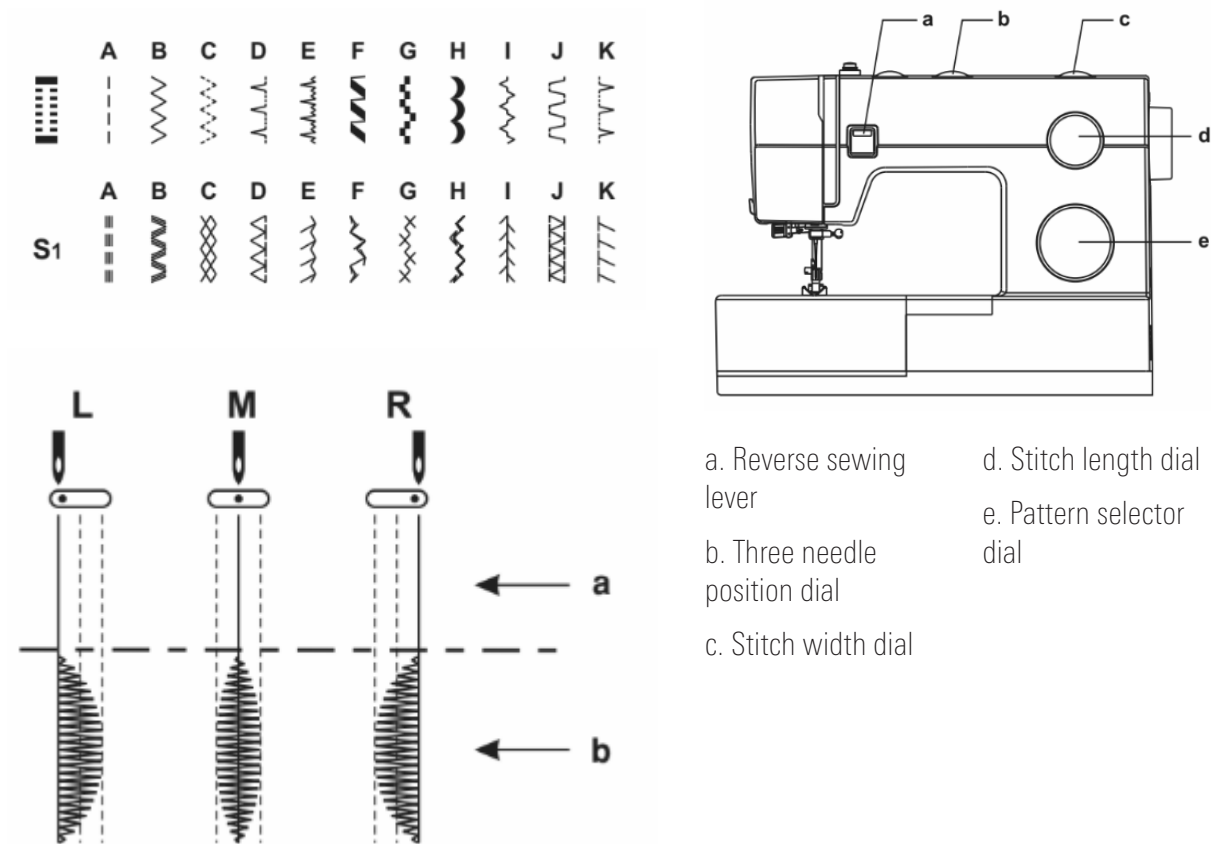
Raising the Bobbin Thread

- Hold the upper thread with the left hand. Turn the handwheel (1) towards you (counterclockwise) lowering, then raising needle.
- Gently pull on the upper thread to bring the bobbin thread up through the needle plate hole. (2)
- Lay both threads to the back under the presser foot. (3)
- If it is difficult to raise the bobbin thread, check to make sure the thread is not trapped by the hinged cover or the Removable Extension Table.



How to Choose Your Pattern

The diagram below displays the stitch patterns available on the machine. Stitches in the top of the diagram are indicated on the pattern selector dial in gray. To select the patterns indicated with the gray color, turn the pattern selector dial. (e) Use the stitch length dial (d) to adjust the stitch length as desired for the project. Use the stitch width dial (c) to adjust the width of the stitch as desired. Stitches in the bottom row of the diagram are indicated on the pattern selector dial in blue. The blue indicates that the stitch is a stretch stitch pattern. The pattern selector dial may be turned in either direction.



The needle position can be altered with the “Three needle position dial”, shown on the bottom left. For normal work, the needle position is middle. For edge stitching or sewing parallel lines of top stitch, select needle position left or right. For twin needle stitching, needle position is middle.

Thread Tension

Upper thread tension

Basic thread tension setting: "4". (1)

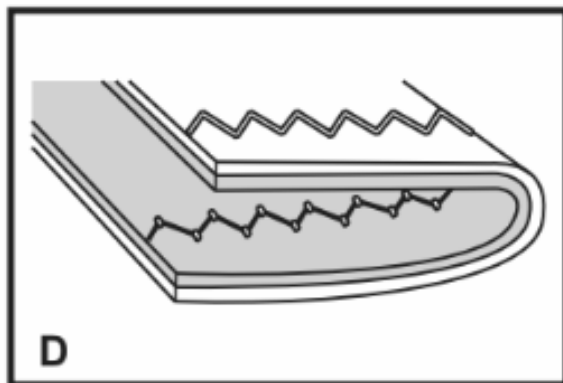
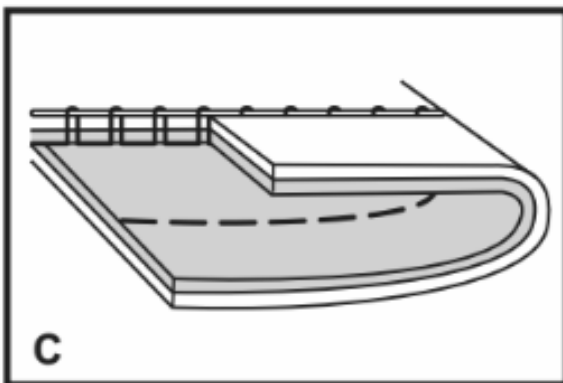
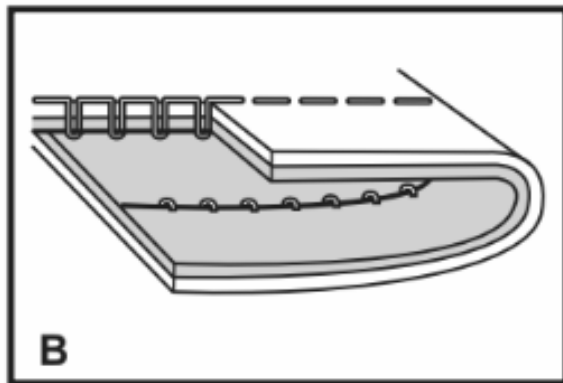
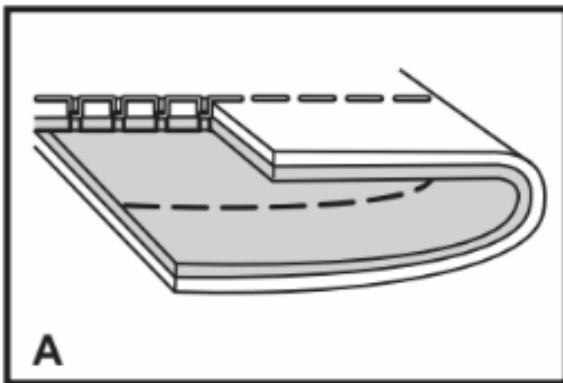
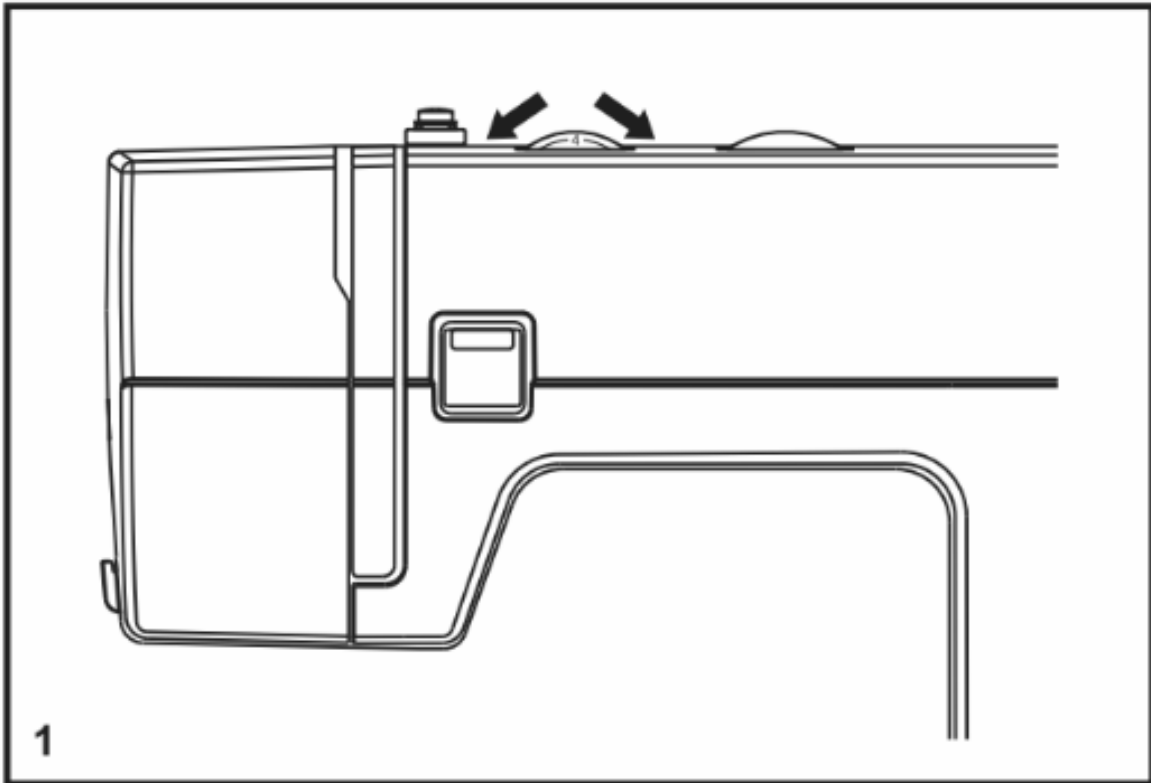
To increase the tension, turn the dial to the next number up. To reduce the tension, turn the dial to the next number down.

- A. Normal thread tension for straight stitch sewing.
- B. Thread tension too loose for straight stitch sewing. Turn dial to higher number.
- C. Thread tension too tight for straight stitch sewing. Turn dial to lower number.
- D. Normal thread tension for zig zag and decorative sewing. Correct thread tension is when a small amount of the upper thread appears on the bottom side of fabric.

If the thread is looping or birdnesting on the underside of the fabric, this is an indication that the upper machine tension is not threaded correctly.

The bobbin tension has been set correctly at the factory, so you do not need to adjust it.

- Proper tension setting is important for strong seams.
- There is no single tension setting appropriate for all stitch functions, thread or fabric.
- A balanced tension (identical stitches both top and bottom) is usually only desirable for straight stitch construction sewing.
- 90% of all sewing will be between "3" and "5".
- For zig zag and decorative sewing stitch functions, thread tension should generally be less than for straight stitch sewing.
- For all decorative sewing you will always obtain a nicer stitch and less fabric puckering when the upper thread appears on the bottom side of your fabric.
- If the thread is looping or birdnesting on the top of the fabric, this is an indication that the bobbin thread has not been threaded correctly.



Stitch Width Dial & Stitch Length Dial

Function of stitch width dial

When doing a zig zag or a decorative pattern you can alter the width from 1mm to 6mm. To obtain a very narrow stitch, set the dial to 1, to obtain the maximum 6mm width, set the dial to 6. When the dial is set to 0, you will obtain a straight stitch. (1)

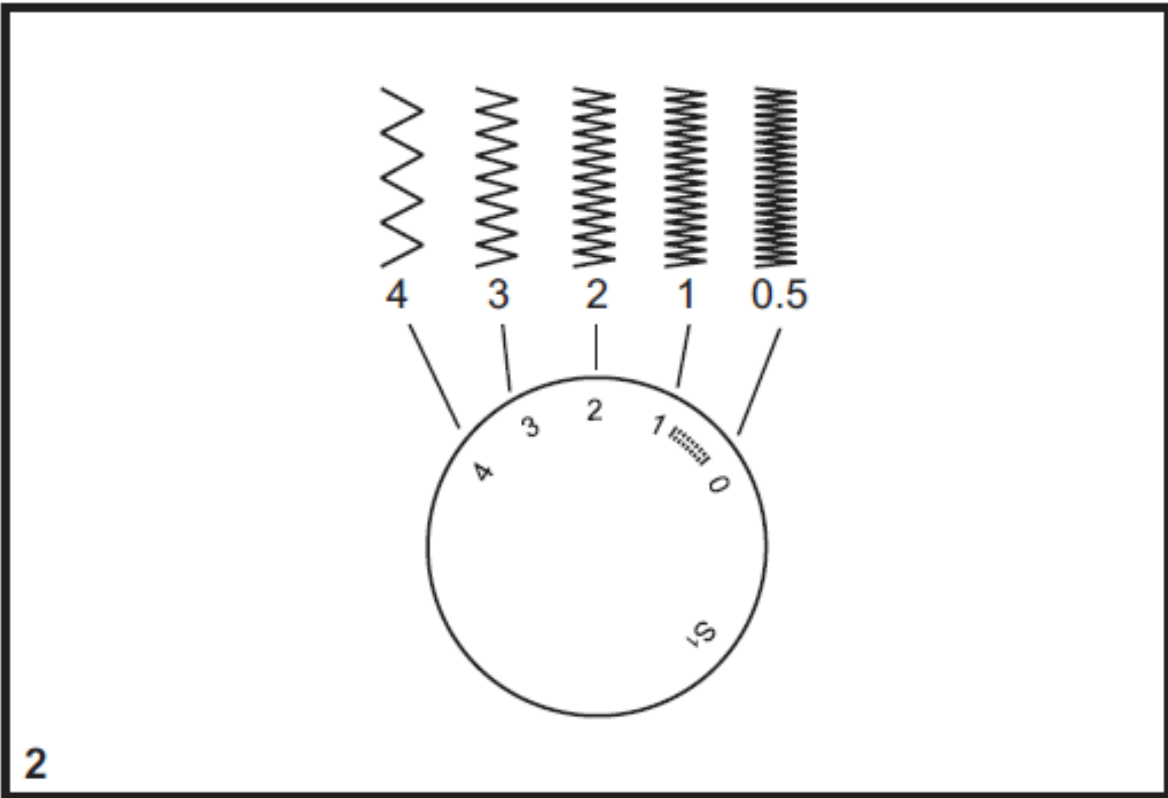
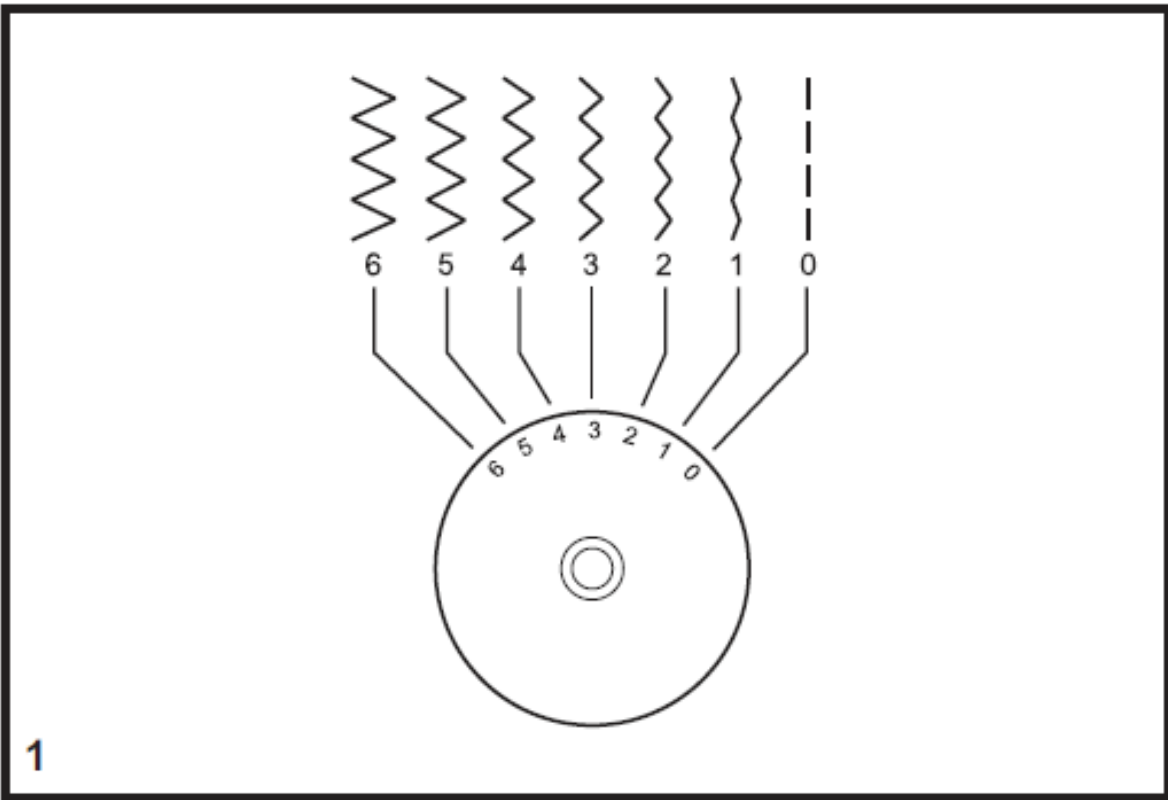
Function of stitch length dial while zig-zag stitching

Set the pattern selector dial to zig zag or any other decorative pattern. The density of zig zag or decorative stitches increases as the setting of the stitch length dial approaches "0". The smaller the number the closer, or denser the stitches will be. Standard zigzag stitches are usually achieved at "3" or below. Dense zig-zag stitches are called satin stitches. (2)

Function of stitch length dial for when straight stitching

For straight stitch sewing, turn the pattern selector dial to the straight stitch setting. Turn the stitch length dial, and the length of the individual stitches will decrease as the dial approached "0". The length of the individual stitches will increase as the dial approaches "4". Generally speaking, use a longer stitch length when sewing heavier weight fabrics or when using a thicker needle or thread. Use a shorter stitch length when sewing lighter weight fabrics or when using a finer needle or thread.

- The standard setting for sewing a seam is between 2 and 3.
- For basting purposes, set the stitch length all the way to 4 (longest).



Beginning to Sew

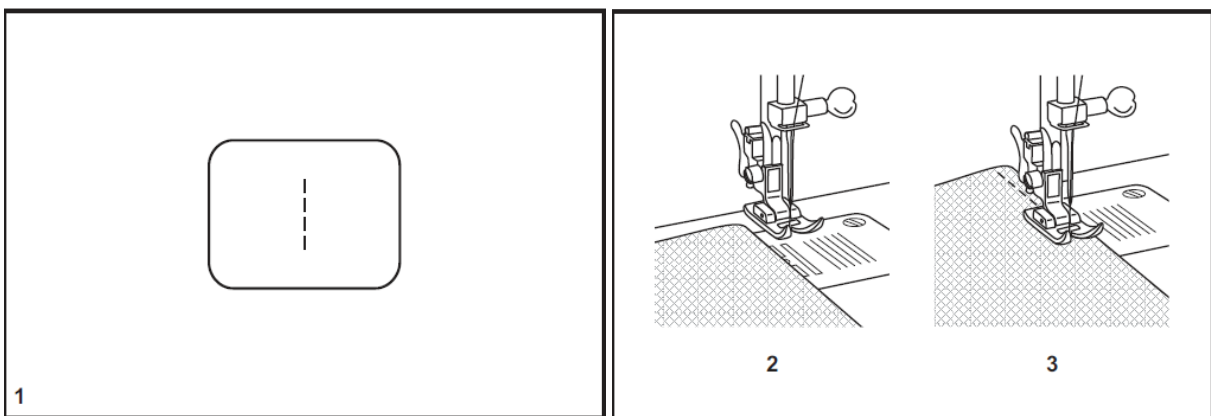
Sewing a Straight Stitch

To begin sewing, set the machine for straight stitch. (1)

Set the stitch length to between 2 and 3.

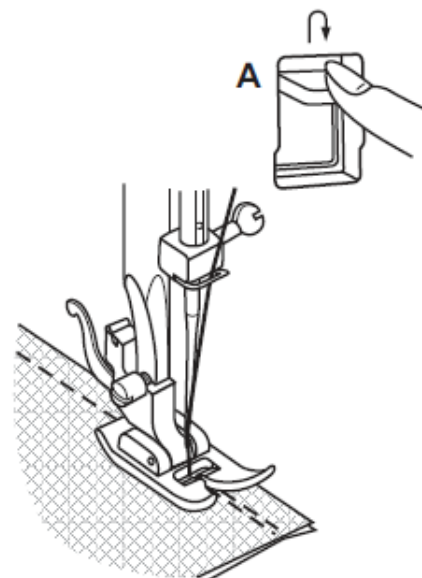
Place the fabric under the presser foot with the fabric edge lined up with the desired seam guide line on the needle plate. (2)

Lower the presser foot lifter, and then press the foot controller to start sewing. (3)



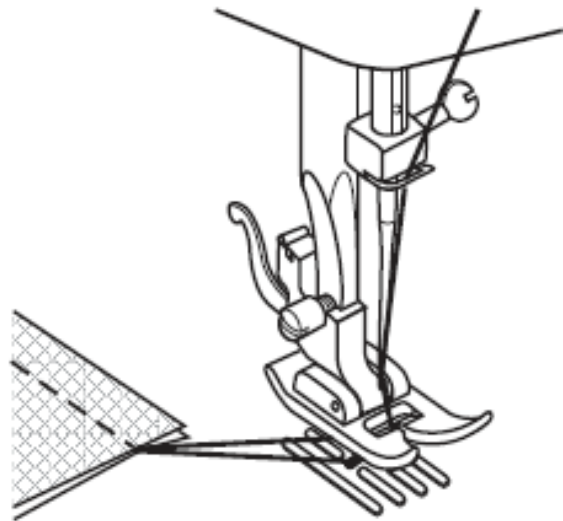
Reverse Sewing

To secure the beginning and the end of a seam, press down the reverse sewing lever (A). Sew a few reverse stitches. Release the lever and the machine will sew forward again.



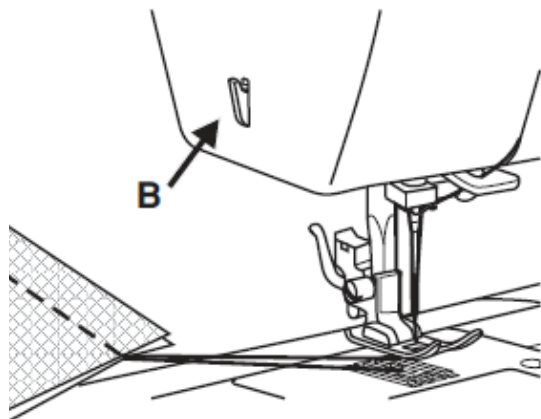
Removing the Work

Turn the handwheel toward you (counterclockwise) to bring the thread take up lever to its highest position, raise the presser foot and remove work behind the needle and presser foot.



Cutting the Thread

Pull the threads under and behind the presser foot. Guide the threads to the side of the face plate and into thread cutter (B). Pull threads down to cut.



Inserting & Changing Needles

Change the needle regularly, especially if it is showing signs of wear and causing problems. Turn the power switch to off before inserting or removing the needle.

Insert the needle as illustrated in Figure 1.

A. Loosen the needle clamp screw and tighten again after inserting the new needle.

B. The flat side of the shaft should be towards the back.

C/D. Insert the needle as far up as it will go.

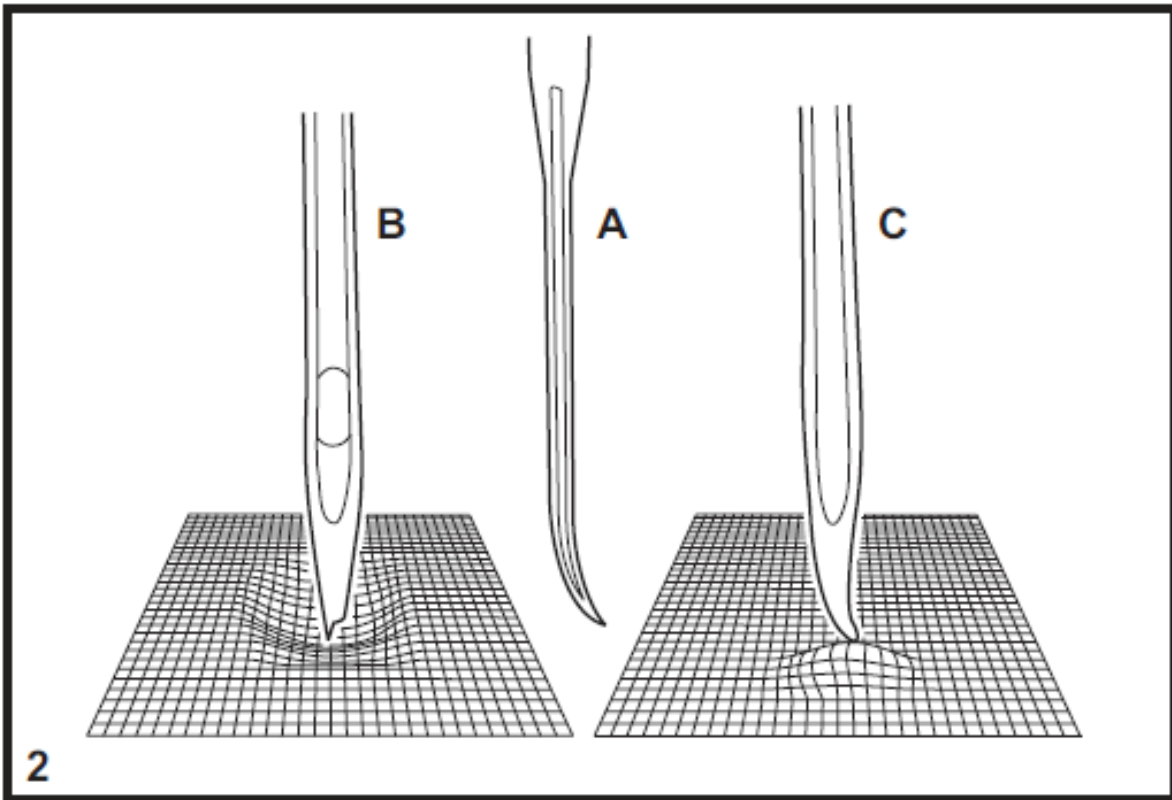
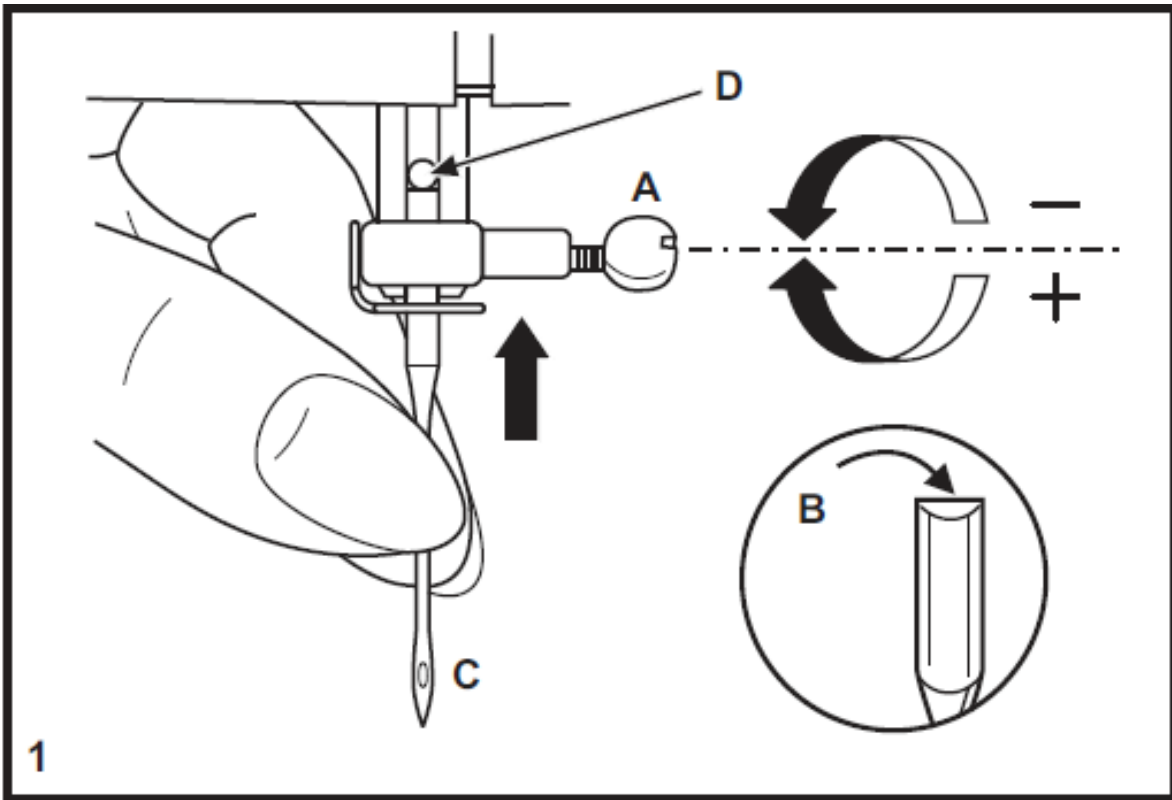
Problems, as shown in Figure 2, can occur with:

A. Bent needles

B. Damaged points

C. Blunt needles

Needle Size	Fabrics	All Purpose Thread
9-11 (70-80)	Lightweight fabrics-thin cottons, voile, silk, muslin, interlocks, cotton knits, tricots, jerseys, crepes, woven polyester, shirt & blouse fabrics.	Thread in cotton, polyester or cotton wrapped polyester.
11-14 (80-90)	Medium weight fabrics-cotton, satin, kettlecloth, sailcloth, double knits, lightweight woolens.	Most threads sold are all purpose and are suitable for these fabrics and needle sizes.
14 (90)	Medium weight fabrics-cotton duck, woolen, heavier knits, terrycloth, denims.	
16 (100)	Heavyweight fabrics-canvas, woolens, outdoor tent and quilted fabrics, denims, upholstery material (light to medium).	Always use the same thread in the upper tension and in the bobbin.
18 (110)	Heavy woolen, overcoat fabrics, upholstery fabrics, some leathers and vinyls.	Heavy duty thread in the upper tension, all purpose thread in the bobbin. Set stitch length to 3 or 4.



Troubleshooting

If you feel uncomfortable or unsure, reach out to a staff member for help!

Problem	Cause	Correction
Upper thread breaks	<ol style="list-style-type: none">1. The machine is not threaded correctly.2. The thread tension is too tight.3. The thread is too thick for the needle.4. The needle is not inserted correctly.5. The thread is wound around the spool holder pin.6. The needle is damaged.	<ol style="list-style-type: none">1. Re-thread the machine.2. Reduce the thread tension. (lower number)3. Select a larger needle.4. Remove and reinsert the needle. (flat side towards the back)5. Remove the reel and wind thread onto reel.6. Replace the needle.
Lower thread breaks	<ol style="list-style-type: none">1. The bobbin case is not inserted correctly.2. The bobbin case is threaded wrong.	<ol style="list-style-type: none">1. Remove and reinsert the bobbin case and pull on the thread. The thread should pull easily.2. Check both bobbin and bobbin case.
Skipped stitches	<ol style="list-style-type: none">1. The needle is not inserted correctly.2. The needle is damaged.3. The wrong size needle has been used.4. The foot is not attached correctly.	<ol style="list-style-type: none">1. Remove and reinsert needle. (flat side towards the back)2. Insert a new needle.3. Choose a needle to suit the thread and fabric.4. Check and attach correctly.
Needle breaks	<ol style="list-style-type: none">1. The needle is damaged.2. The needle is not correctly inserted.3. Wrong needle size for the fabric.4. The wrong foot is attached.	<ol style="list-style-type: none">1. Insert a new needle.2. Insert the needle correctly. (flat side towards the back)3. Choose a needle to suit the thread and fabric.4. Select the correct foot.
Loose stitches	<ol style="list-style-type: none">1. The machine is not correctly threaded.2. The bobbin case is not correctly threaded.3. Needle/ fabric/ thread combination is wrong.4. Thread tension wrong.	<ol style="list-style-type: none">1. Check the threading.2. Thread the bobbin case as illustrated.3. The needle size must suit the fabric and thread.4. Correct the thread tension.

Problem	Cause	Correction
Seams gather or pucker	<ol style="list-style-type: none"> 1. The needle is too thick for the fabric. 2. The stitch length is adjusted wrong. 3. The thread tension is too tight. 	<ol style="list-style-type: none"> 1. Select a finer needle. 2. Readjust the stitch length. 3. Loosen the thread tension.
Uneven stitches, uneven feed	<ol style="list-style-type: none"> 1. Poor quality thread. 2. The bobbin case is threaded wrong. 3. Fabric has been pulled. 	<ol style="list-style-type: none"> 1. Select a better quality thread. 2. Remove bobbin case, thread and insert correctly. 3. Do not pull on the fabric while sewing, let the feed dogs pull the fabric under the foot.
The machine is noisy	<ol style="list-style-type: none"> 1. Lint or oil have collected on the hook or needle bar. 2. The needle is damaged. 	<ol style="list-style-type: none"> 1. Clean the hook and feed dog as described. 2. Replace the needle.
The machine jams	Thread is caught in the hook, because upper tension is not threaded correctly.	Remove the upper thread and bobbin case. Gently rock the handwheel backwards and forwards by hand and remove the thread from the bobbin area.

