



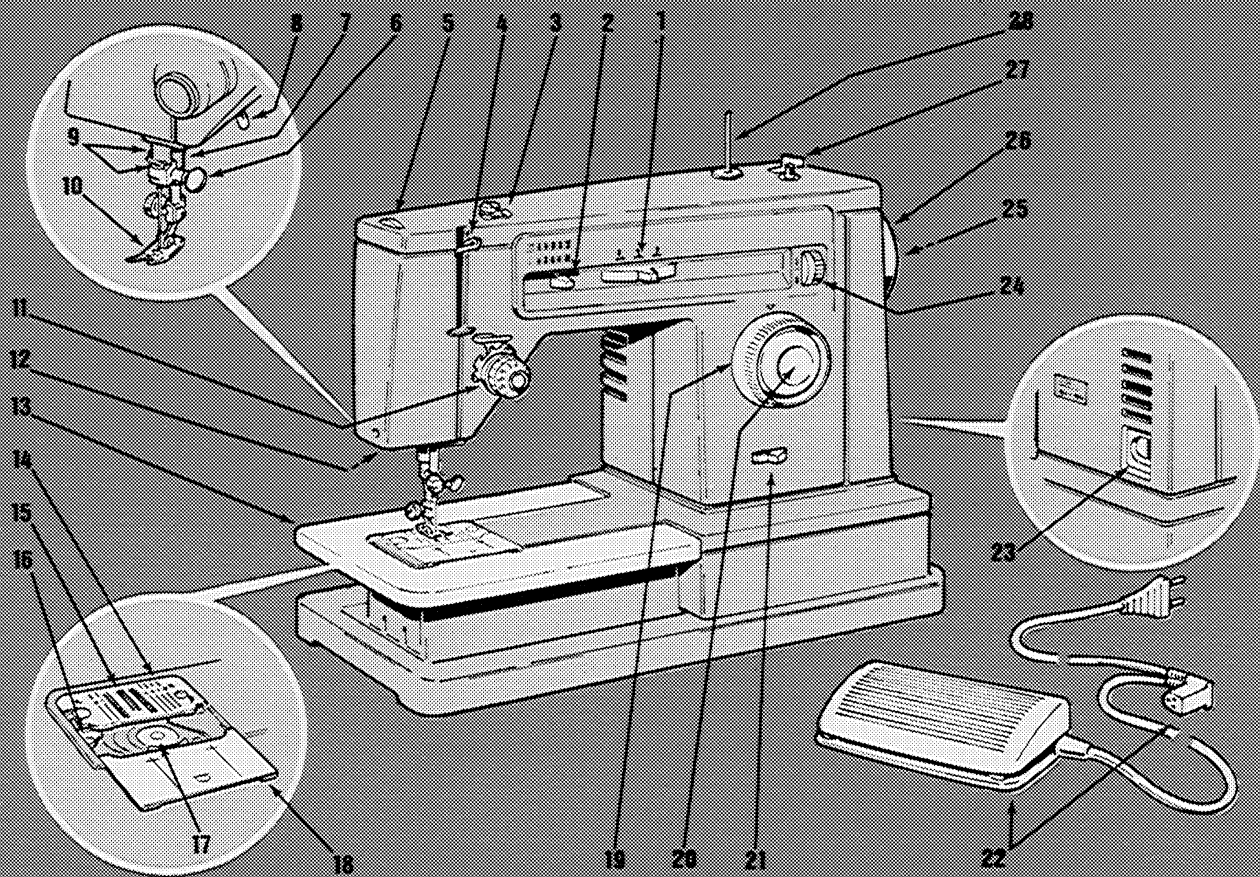
**Zig-Zag Sewing Machine,
Free-Arm Model 5104**

SINGER*

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Chapter 1. Getting to Know Your Machine



principal parts

- | | | |
|----------------------------------|--|---|
| 1. Needle Position Selector | 11. Tension Dial | 20. Reverse Stitch Push Button |
| 2. Stitch Width Selector | 12. Sewing Light | 21. Power and Light Switch |
| 3. Bobbin Winder Tension | 13. Extension Bed | 22. Electrical Connections and Speed Controller |
| 4. Take-up Lever | 14. General Purpose Needle Plate | 23. Machine Plug Receptacle |
| 5. Pressure Dial | 15. Feed | 24. Stitch Balance Control Dial |
| 6. Needle Clamp | 16. Bobbin Case Holder | 25. Hand Wheel Knob |
| 7. Thread Cutter | 17. Transparent Bobbin | 26. Hand Wheel |
| 8. Presser Foot Lifter | 18. Slide Plate | 27. Bobbin Winder Spindle |
| 9. Thread Guides | 19. Stitch Length Selector and Buttonhole Dial | 28. Spool Pin and Felt |
| 10. General Purpose Presser Foot | | |

accessories

The accessories that come with your sewing machine are designed to help you do many kinds of sewing easily.

1. Transparent Bobbins (No. 172336).

2. Needles

- Style 2020 in your machine when delivered is for general sewing.
- Style 2045 is used for sewing knits, stretch fabrics and elastic.

3. Buttonhole Foot is used to make bar tack buttonholes of any length in four steps.

4. Special Purpose Foot. Used for all kinds of decorative zig-zag stitching.

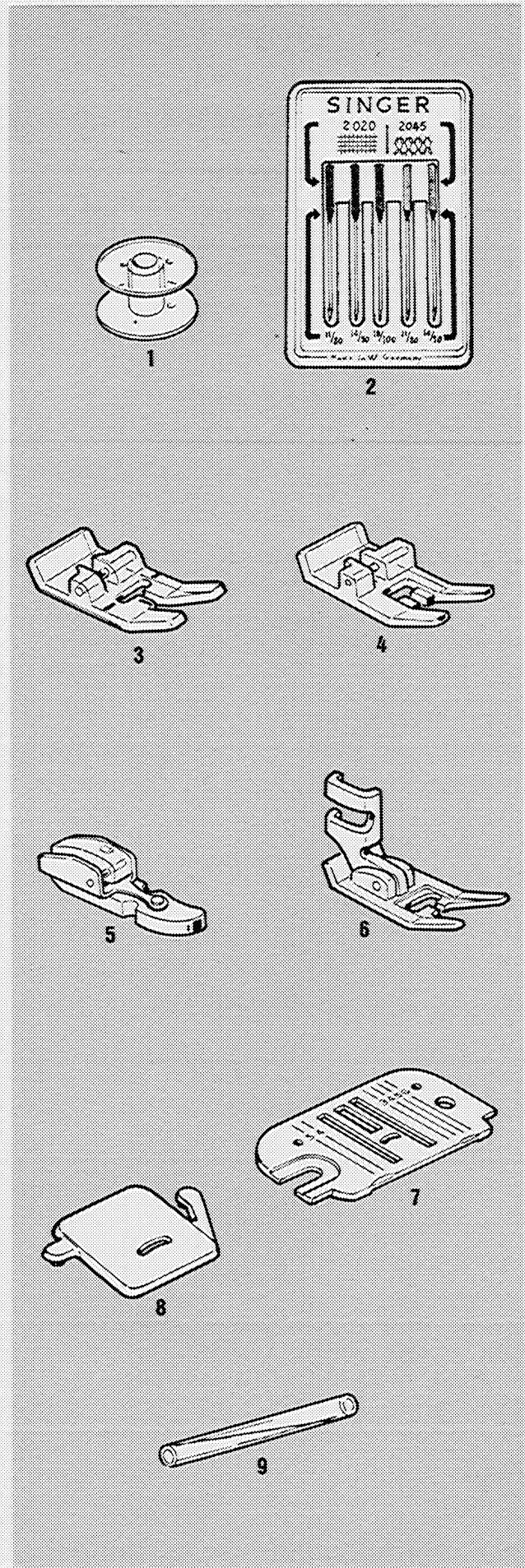
5. Zipper Foot for inserting zippers and stitching corded seams.

6. General Purpose Foot on your machine when delivered, is used for all utility sewing, with either straight or zig-zag stitching.

7. General Purpose Needle Plate on your machine when delivered is used with all presser feet.

8. Snap-in Feed Cover for button sewing and free-motion work.

9. Spool Pin Extension used for tubes of thread.

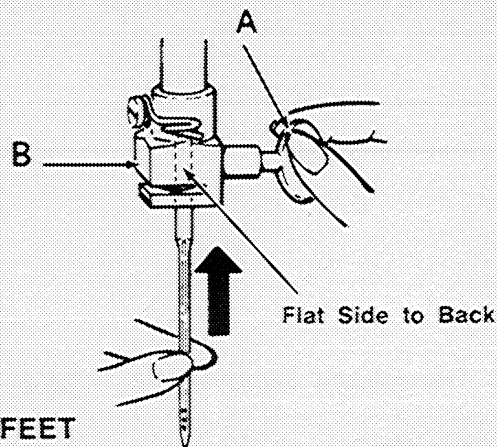


Chapter 2. Getting Ready to Sew

choosing and changing accessories

CHANGING THE NEEDLE

- Raise needle to its highest point by turning the hand wheel *toward you*. Loosen needle clamp screw **A** and remove the needle.
- Insert new needle up into clamp **B** as far as it will go, with the flat side of the needle to the back.
- Tighten needle clamp screw.



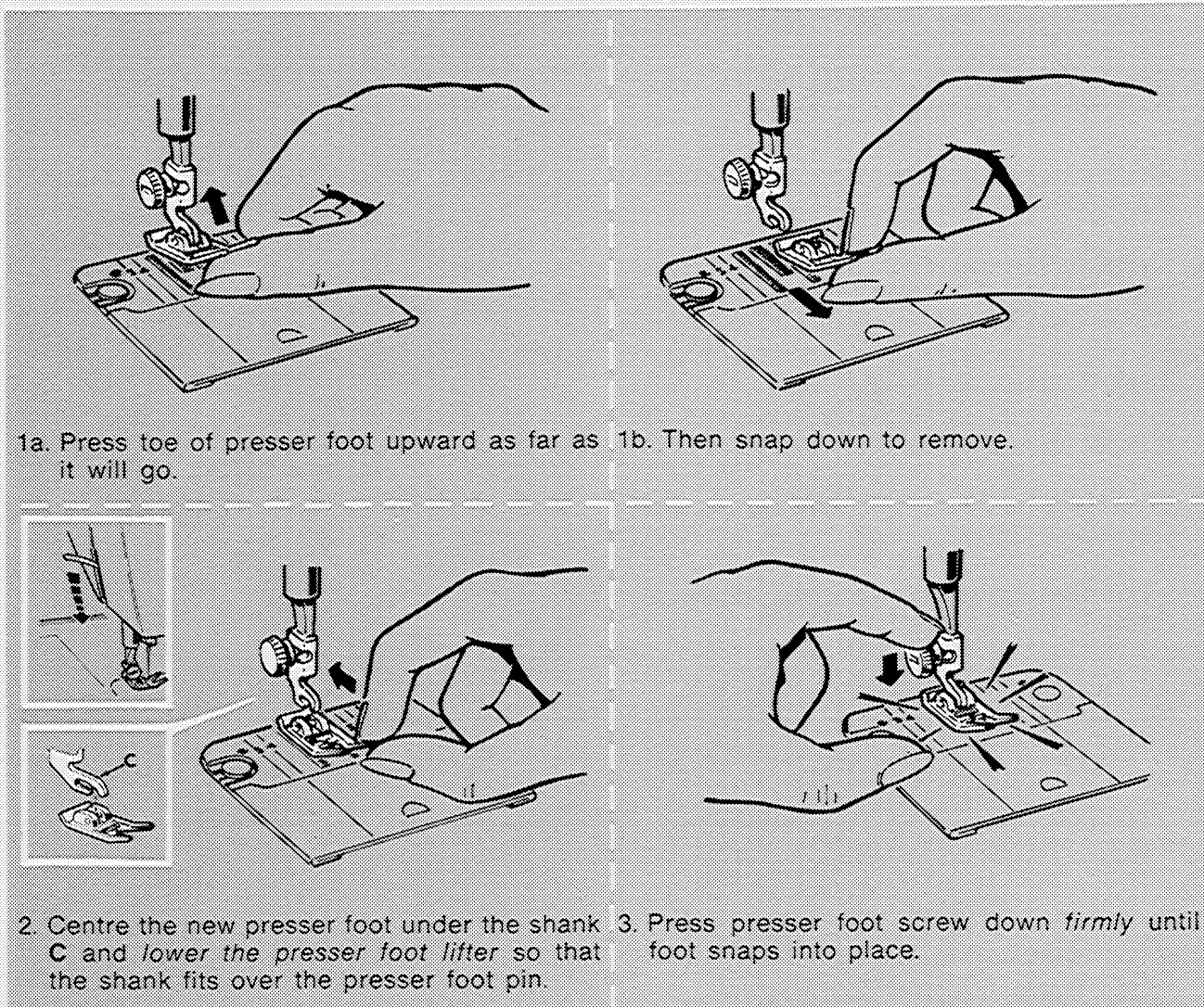
CHANGING PRESSER FEET

Snap-on Presser Foot

The presser feet furnished with your machine snap on and off a common shank.

Raise needle to highest position by turning the hand wheel *toward you*. Raise presser foot.

To Remove and Replace Foot



1a. Press toe of presser foot upward as far as it will go.

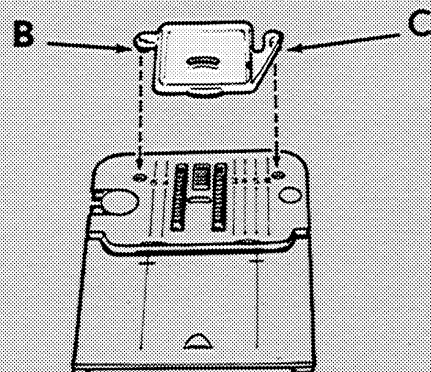
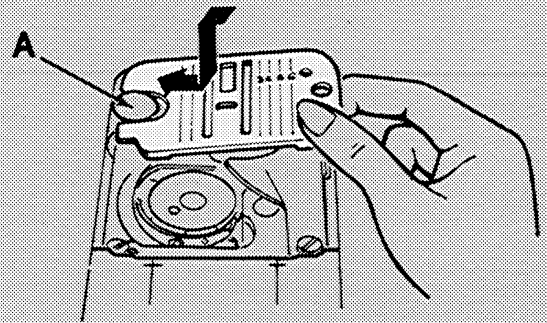
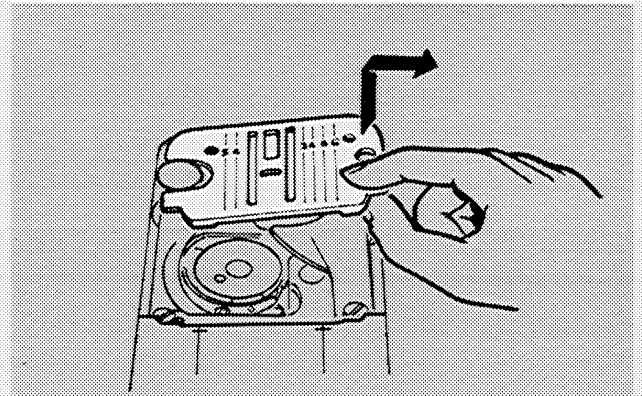
1b. Then snap down to remove.

2. Centre the new presser foot under the shank **C** and lower the presser foot lifter so that the shank fits over the presser foot pin.

3. Press presser foot screw down *firmly* until foot snaps into place.

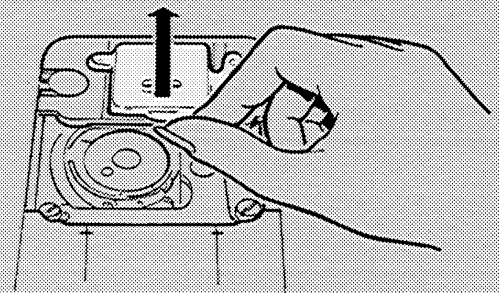
REMOVING AND REPLACING NEEDLE PLATE

- Raise presser foot.
- Raise needle to highest position.
- Open slide plate. Place thumb under right side of needle plate, lift it up and withdraw it to right.
- Replace needle plate under clamping pin **A**, push it gently to the left and press down until it snaps into place.



ATTACHING SNAP-IN FEED COVER

- Raise presser foot.
- Raise needle to highest position by turning hand wheel *toward you*. Open slide plate.
- Slide snap-in feed cover away from you over needle plate until points **B** and **C** are positioned directly over holes in needle plate as illustrated. Snap in point **B**. Then push point **C** in toward point **B** until it snaps into place. Close slide plate. To remove, open slide plate then simply lift up front edge of feed cover.



FABRIC WEIGHT TABLE

There are many types of fabrics around the world, each manufactured with a specific fibre and weight. The fabric below have been classified according to weight to give a small sample of what is available for purchase.

FIBRE AND CONSTRUCTION	FILMY	SHEER	LIGHT
SILK (Woven) (Knit)	Chiffon, Organza, Tulle	Net, Lace, Ninon	Velvet, Crepe de Chine, Shantung, Faille Jersey
RAYON (Woven) (Knit)	Tulle	Net, Lace	Velvet, Taffeta, Satin Ciré
COTTON (Woven) (Knit)	Voile, Tulle	Net, Lace	Challis, Organdy, Muslin, Batiste, Dimity, Lawn, Percale, Eyelet, Gingham, Piqué, Poplin Jersey
WOOL (Woven) (Knit)			Cashmere, Flannel, Mohair, Felt, Crepe Jersey
SYNTHETIC (Woven) (Knit)	Chiffon, Organza, Tulle	Net, Lace, Ninon, Crepe de Chine	Crepe, Velvet, Taffeta, Satin Raschel, Single Knit, Sweater Knit, Bonded Knit, Tricot, Ciré
SYNTHETIC BLENDS (Woven) (Knit)		Voile	Broadcloth, Batiste, Eyelet, Gingham, Poplin Single Knit
LEATHER			Kidskin, Patent, Chamois, Imitation- Leathers & Suedes, Leather, Suede
PLASTIC		Plastic Film	Plastic Film
VINYLS			

Refer to this table to determine the weight and type of fabric you will be using in order to select the correct needle and thread combination.

For correct needle and thread combination for your fabric, refer to the Fabric, Thread and Needle Table on the following page.

MEDIUM	HEAVY	VERY HEAVY
Velvet, Crepe de Chine, Shantung, Suiting, Brocade		
Velvet, Taffeta, Satin, Crepe	Brocade, Taffeta, Satin, Crepe	
Velveteen, Corduroy, Velvet, Fleece, Velour, Terry, Chintz Stretch Velours ^Δ , Stretch Terry ^Δ ^Δ Usually contain some synthetic fibres also.	Corduroy, Denim, Ticking, Canvas, Linen, Drapery Fabric, Burlap	Denim, Duck, Canvas, Sailcloth, Upholstery Fabric
Suiting, Flannel, Gabardine, Felt, Serge, Mohair Jersey	Suiting, Tweed, Duffle	Coating, Blanketing
Velvet, Crepe, Taffeta, Satin, Gabardine Jacquard, Double Knit, Sweater Knit, Bonded Knit, Tricot, Spandex, Stretch Terry, Stretch Velour, Deep Pile, Fake Furs	Double Knit, Helanca, Fake Furs	
Linen Type, Poplin, Corduroy, Gabardine Terry Knit	Denim, Gabardine, Drapery Fabric Double Knit	
Patent, Imitation-Leathers & Suedes, Leather, Suede, Reptile	Buckskin, Calfskin, Suede, Reptile	Upholstery Leather
Bonded Vinyl (Knit Back), Patent, Embossed, Printed	Upholstery Vinyl	Upholstery Vinyl

FABRIC, THREAD AND NEEDLE TABLE

Choosing the correct needle and thread for your fabric is of utmost importance. Correct choice will make the difference in the wear and appearance of your new garment. The Fabric Weight Table on the previous page, and the Fabric, Thread and Needle Table below are practical guides to needle and thread selection. Refer to them before starting a sewing project. Be sure to use the same size and type of thread in both needle and bobbin.

To select the correct needle and thread for your fabric, first refer to the Fabric Weight Table to determine the weight and type of the material you are using.

Next, refer to the Fabric Thread and Needle Table.

TYPE OF FABRIC	FILMY		SHEER		LIGHT	
	THREADS	NEEDLES	THREADS	NEEDLES	THREADS	NEEDLES
SILK	Fine Silk Fine Mercerized	2020-9	Fine Silk Fine Mercerized	2020-9	Fine Silk Fine Mercerized	2020-11
RAYON	Fine Silk Fine Mercerized	2020-9	Fine Silk Fine Mercerized	2020-9	Fine Silk Fine Mercerized	2020-11
COTTON	Fine Cotton Fine Mercerized	2020-9	Fine Cotton Fine Mercerized	2020-9	Medium Cotton Med. Mercerized	2020-11
WOOL			Fine Silk Fine Mercerized	2020-11	Fine Silk Fine Mercerized	2020-11
SYNTHETIC	Fine Synthetic	2020-9	Fine Synthetic	2020-9	Fine Synthetic	2045-11
SYNTHETIC BLENDS	Fine Synthetic	2020-9	Fine Synthetic	2020-9	Fine Synthetic	2045-11
LEATHER					Med. Mercerized Med. Synthetic	2032-11
PLASTIC					Fine Mercerized Fine Synthetic	2020-11
VINYLS					Fine Mercerized Fine Synthetic	2020-11

Find the fabric you are using in Type of Fabric column at left (silk, rayon, etc.). Then locate the fabric weight column (filmy, sheer, etc.) for your fabric at top of table. Read across from Type of Fabric column to correct weight of fabric column. There, the correct thread and needle choice for your fabric will be found.

Example: If you are sewing a medium weight wool, find wool in Type of Fabric column. Read across to Medium (weight) column and you will see that a medium silk or mercerized thread and a size 2020-14 needle are to be used.

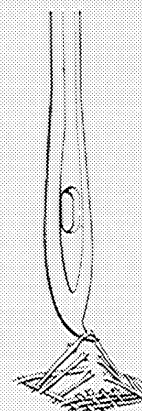
You should follow the recommendations in this instruction book and on the needle package for correct style and size of needle for different types and weights of fabric.

MEDIUM		HEAVY		VERY HEAVY	
THREADS	NEEDLES	THREADS	NEEDLES	THREADS	NEEDLES
Medium Silk Medium Mercerized	2020-11	Heavy Silk Heavy Mercerized	2020-14	Heavy Silk	2020-14
Medium Synthetic Medium Mercerized	2020-11	Heavy Synthetic Heavy Mercerized	2020-14	Heavy Synthetic Heavy Mercerized	2020-14
Medium Cotton Medium Mercerized	2020-14	Heavy Cotton Heavy Mercerized	2020-16	Heavy Cotton Heavy Mercerized	2020-18
Medium Silk Medium Mercerized	2020-14	Heavy Mercerized	2020-16	Heavy Mercerized	2020-16
Medium Synthetic	2045-14	Heavy Synthetic	2045-16	Heavy Synthetic	2020-16 or 18
Medium Synthetic	2045-14	Heavy Synthetic	2045-16	Heavy Synthetic	2020-16 or 18
Medium Mercerized Medium Synthetic	2032-14	Heavy Mercerized Heavy Synthetic	2032-16	Heavy Mercerized Heavy Synthetic	2032-18
Medium Mercerized Medium Synthetic	2020-11	Medium Mercerized Medium Synthetic	2020-14	Heavy Mercerized Heavy Synthetic	2020-16
Medium Mercerized Medium Synthetic	2020-11	Medium Mercerized Medium Synthetic	2020-14	Heavy Mercerized Heavy Synthetic	2020-16

needle-fabric combinations

Correct needle selection is closely related to stitch quality and appearance. Damaged fabric is almost always caused by a needle that is bent, burred or that is an inappropriate style for the fabric and thread you are using.

The three types of needles most commonly used are the regular, ball point, and wedge. To obtain good results, the correct size and type of needle for the fabric and thread you are using must be chosen. Refer to the Fabric, Thread and Needle Table, page 8.



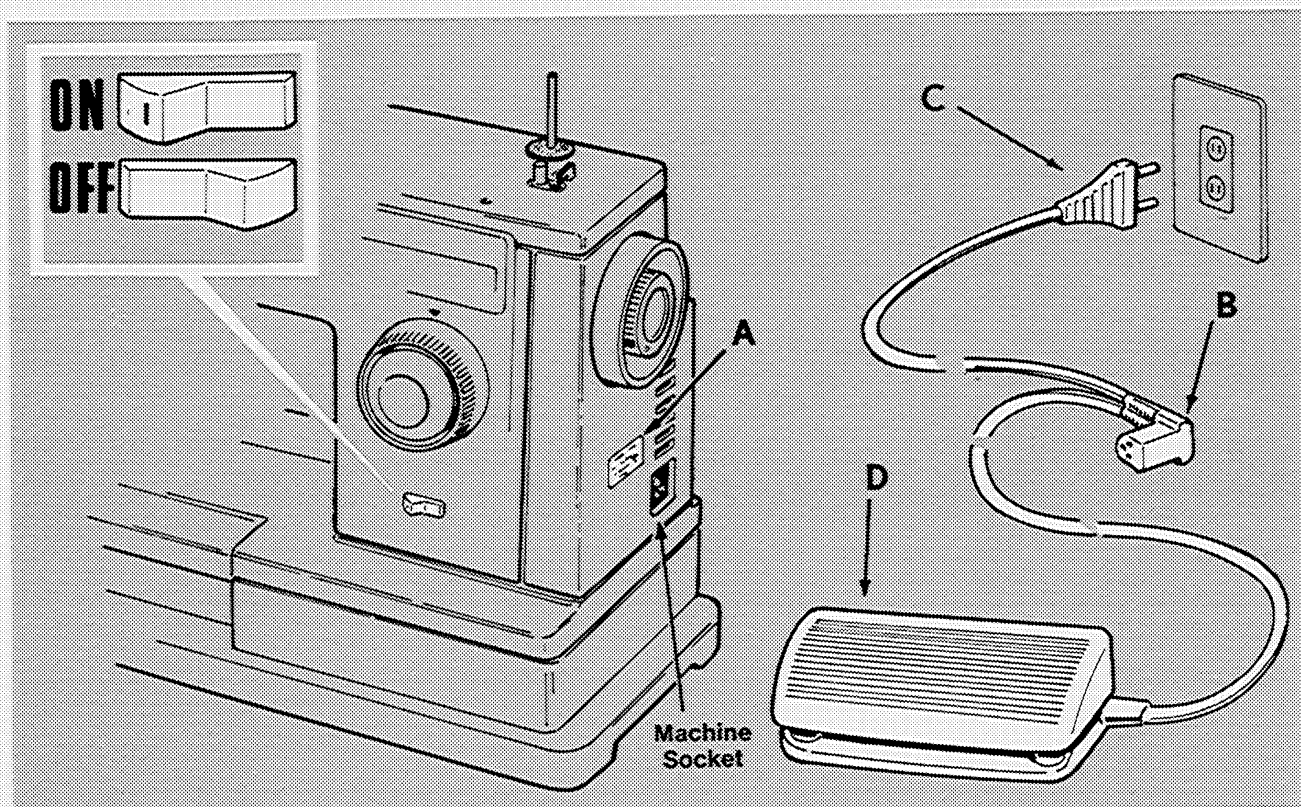
Result of Using a Bent Needle

operating the machine

CONNECTING MACHINE

- Before plugging in your machine, be sure the electrical information on the side of the machine **A**, below the hand wheel agrees with the range marked on your electrical meter.
- Connect plug **B** to machine and plug **C** to your socket outlet.
- To turn the machine and light on or off, press switch as shown.
- To run the machine and control speed, press the speed controller **D** with your foot. The harder you press, the faster the machine will sew.

CAUTION: Disconnect the power line plug from the socket outlet when changing needles, feet or needle plates or when leaving the machine unattended. This eliminates the possibility of starting the machine by accidentally pressing the speed controller.



the bobbin thread

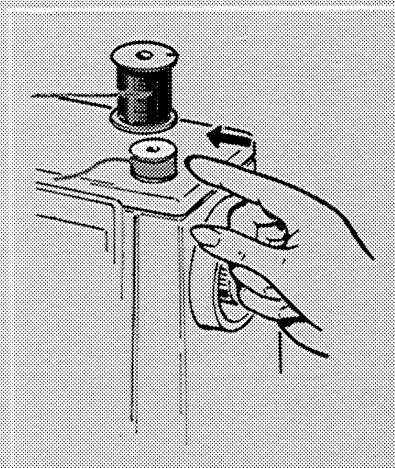
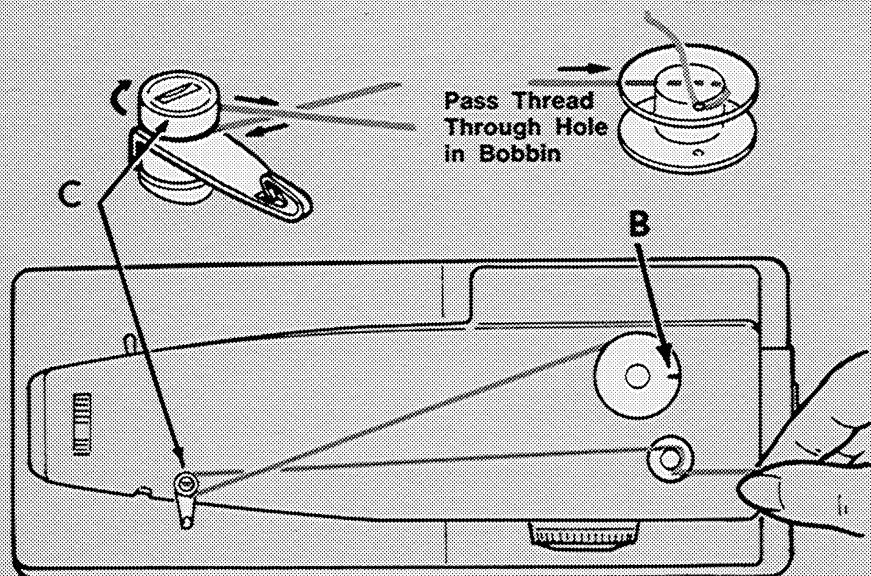
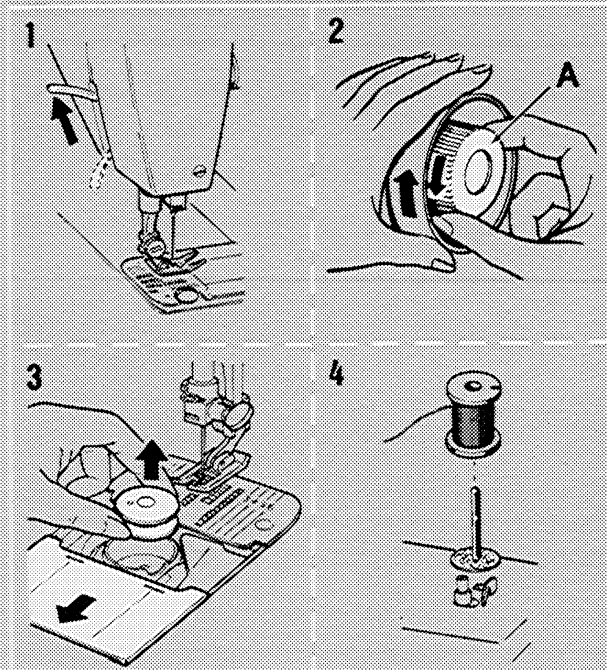
Your sewing machine uses two threads to form a stitch. The upper thread comes from the spool and is threaded through the eye of the needle. The lower thread comes from the bobbin. Wind the bobbin before threading the machine.

WINDING THE BOBBIN

Preparation Steps

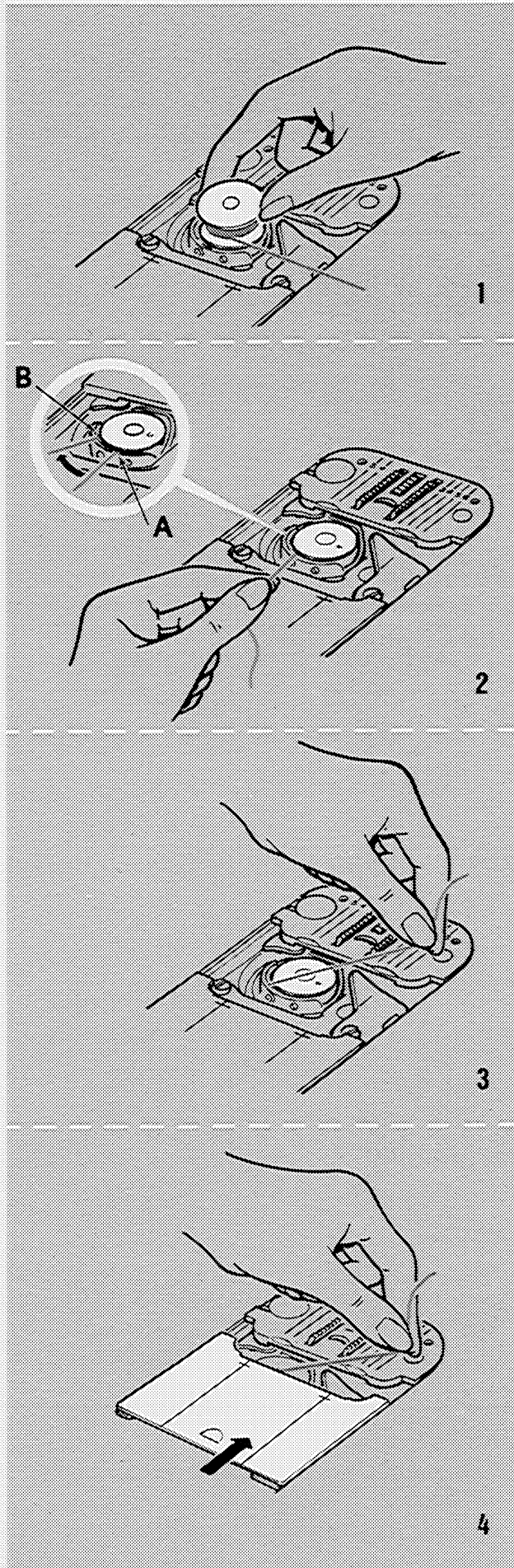
1. Raise the presser foot and turn hand wheel toward you until needle is in highest position.
2. Loosen hand wheel knob **A** by turning it toward you with the right hand while holding hand wheel with the left hand.
3. Open slide plate and lift out bobbin.
4. Place spool pin felt on pin.

Winding Steps



- Place thread spool on spool pin with thread retaining slit **B** on top. (Break paper at the end of spool if necessary). If you are using a tube of thread affix spool pin extension to spool pin to ensure even flow of thread.
- Lead thread around bobbin winder tension disc **C** and through small hole in bobbin from inside out.
- Place bobbin on spindle and push bobbin to right to engage bobbin winder.
- Hold thread end as shown and start the machine. Cut off thread end after a few coils have been wound.
- When required amount of thread has been wound (winding will stop when bobbin is full), stop the machine and cut connecting thread.
- Push bobbin to left and remove bobbin from spindle.
- Hold hand wheel and tighten hand wheel knob.

THREADING THE BOBBIN CASE



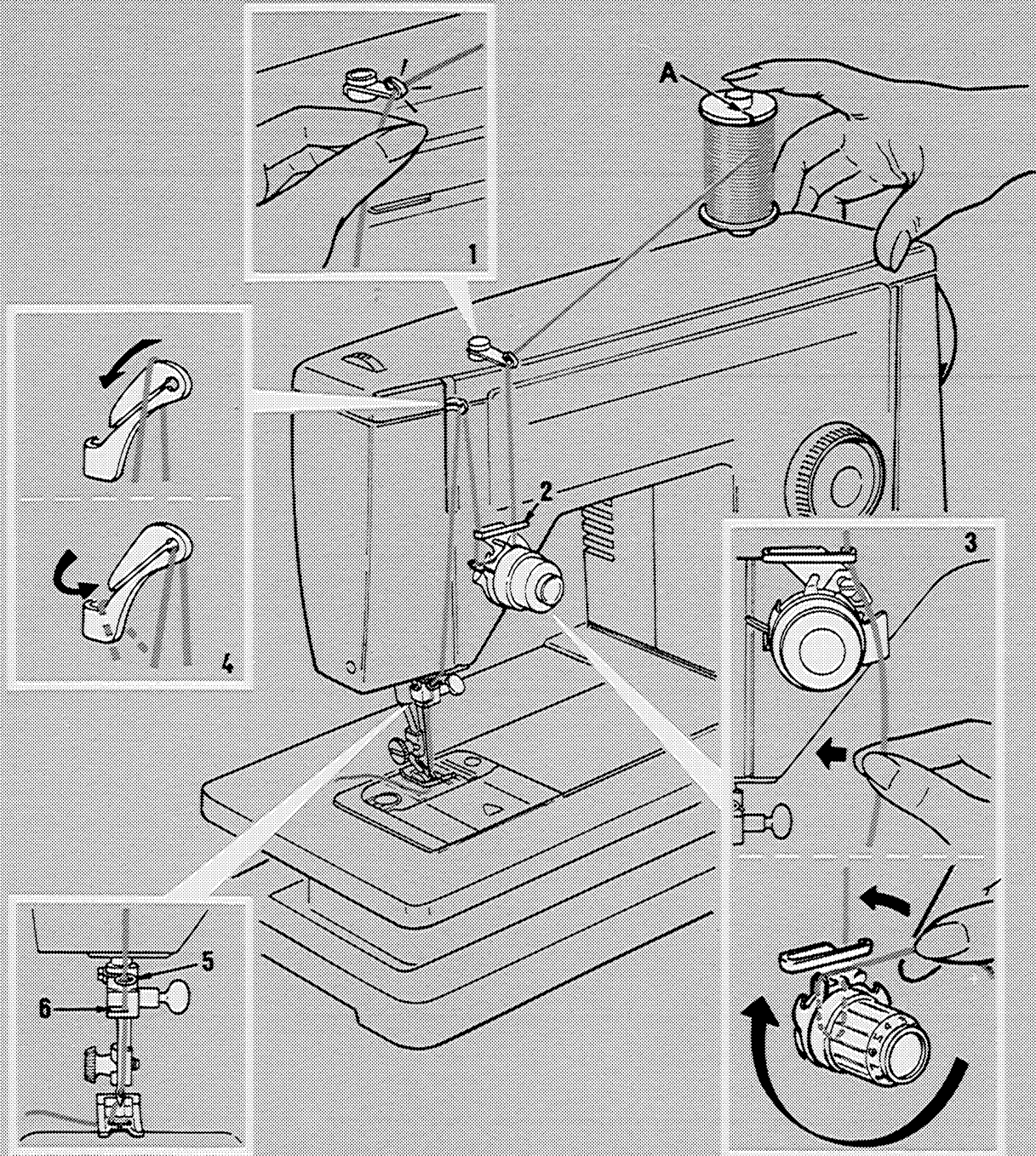
1. Hold bobbin so that thread unwinds in the direction shown, and put bobbin into bobbin case.

2. Pull thread into notch **A**, draw it back under the tension spring and back into slot **B**.

3. Draw approximately 10 cm (4 inches) of thread across the bobbin.

4. Close slide plate allowing thread to enter slot between the needle plate and slide plate.

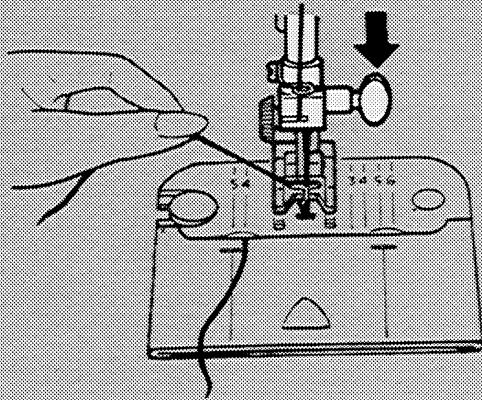
threading the machine



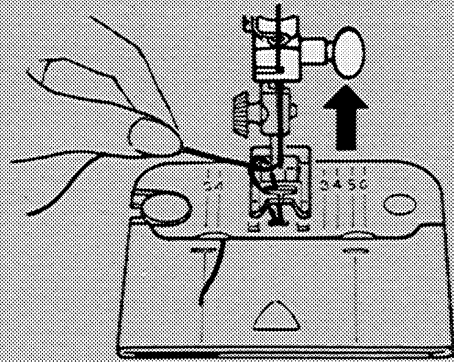
- Raise the presser foot to release tension discs and make sure needle and take-up lever are in highest position.
- Place spool pin felt from accessories over spool pin, and place spool of thread on spool pin over felt, with spool thread retaining slit **A** on top.
- Keep right hand on spool of thread to hold firmly in place while threading machine.
- Snap thread into upper thread guide **1**.
- Pass thread through point **2**.
- Thread the needle thread tension **3**. Slide thread over metal plate into tension discs. Lead thread under needle thread tension and through tension wire by firmly pulling thread straight up.
- Pull thread to right behind point **2** guiding thread up toward take-up lever.
- Pass thread through points **4** to **6** as shown.
- Thread needle from front to back and draw about 10 cm (4 inches) of thread through eye of needle.

RAISING THE BOBBIN THREAD

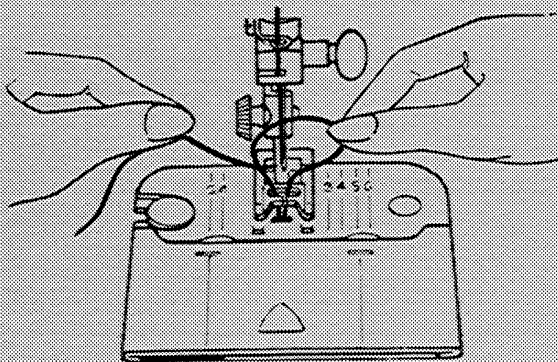
Now that you have wound the bobbin and threaded the needle, raise the bobbin thread through the hole in the needle plate.



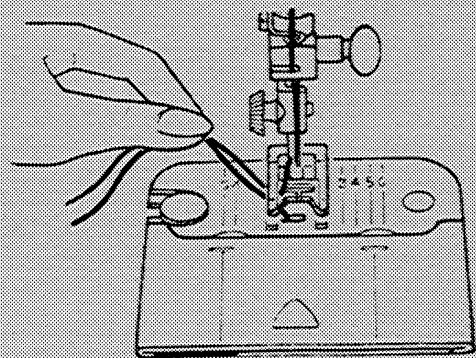
1. Hold needle thread lightly with left hand and turn hand wheel slowly *toward you* so that needle enters needle plate.



2. Continue turning hand wheel and holding needle thread until needle rises and brings up bobbin thread in a loop.



3. Undo the loop with your fingers.





4. Place both needle and bobbin threads under the foot and draw them to back of machine.

Chapter 3. Straight Stitching

adjusting machine stitch to suit your fabric

Before you move the selectors to set your machine for straight stitching, turn the hand wheel *toward you* until the needle is above the needle plate.

SETTING SELECTORS



- Set needle position selector at 
- Set stitch width selector at 
- Set stitch length: .5 - 4 to suit fabric

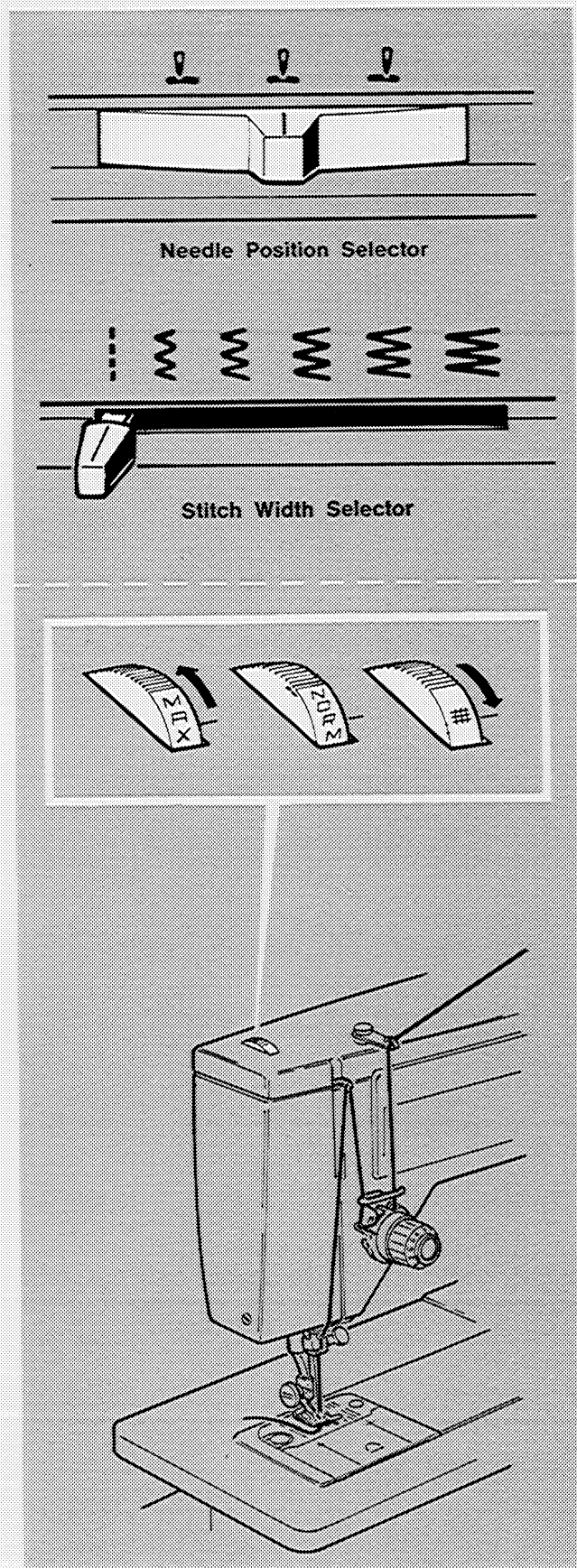
REGULATING PRESSER FOOT PRESSURE

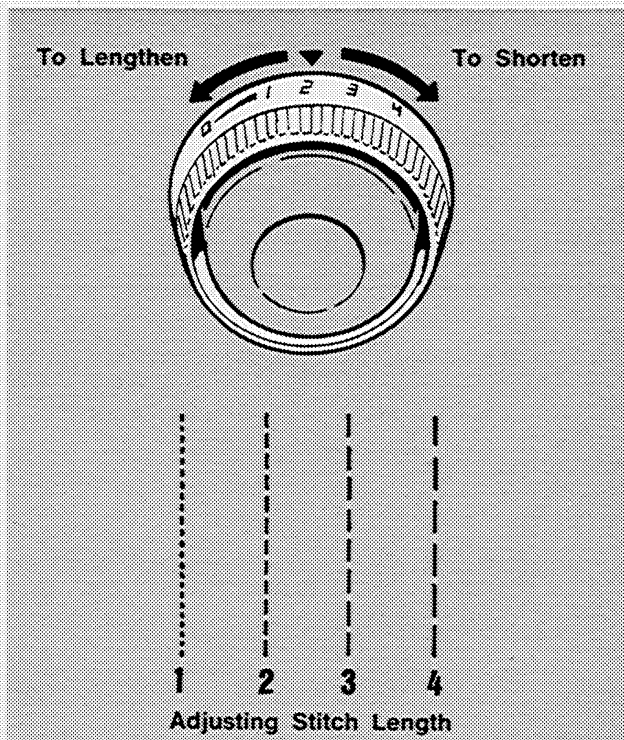
The pressure dial regulates the pressure that the presser foot exerts on the fabric. Correct pressure is important because it enables the fabric to feed smoothly and evenly, without being marked.

The **NORM** (normal) setting is an all purpose setting that can be used for sewing a wide variety of fabrics of different weights and textures. Intermediate notched settings above and below **NORM** (normal) are also provided. When you need extra control to sew, regulate the setting to heavier or lighter pressure to suit the fabric being used.

Lower the foot before setting pressure.

- To increase pressure, turn dial from **NORM** toward **MAX**.
- To decrease pressure, turn dial from **NORM** toward .
- For darning, set dial on .





ADJUSTING STITCH LENGTH

The stitch length dial controls the length of stitches. The numbers around the edge of the dial express stitch length in mm; *the lower the number, the shorter the stitch*. Generally, shorter stitches are best for lightweight fabric; longer stitches for heavy fabric. The area from 0 to 1 is used for the adjustment of zig-zag satin stitching (see page 23).

Setting the Dial

- Turn dial so that stitch length desired is positioned under ▼ symbol.
- **To shorten stitch length**, turn dial clockwise to a lower number.
- **To lengthen stitch length**, turn dial counter-clockwise to a higher number.

STITCH LENGTH GUIDANCE TABLE

Choosing the correct stitch length is of utmost importance. The correct choice will make the difference in the wear and appearance of your new garment. The table below is a practical guide to stitch length selection. Refer to it before starting a sewing project. *Remember to make a test sample on a scrap piece of the fabric you will be using.*

PART OF ARTICLE OR GARMENT	WEIGHT OF FABRICS					
	FILMY	SHEER	LIGHT	MEDIUM	HEAVY	VERY HEAVY
STRAIGHT MAIN SEAMS	1.5 - 2	1.5 - 2	2 - 2.5	2 - 2.5	2.5	2.5 - 3
CURVED MAIN SEAMS	1.5 - 2	1.5 - 2	1.5 - 2	2 - 2.5	2 - 2.5	2.5
NECKLINE ^Δ AND ARMHOLES	1.5 - 2	1.5 - 2	1.5 - 2	2 - 2.5	2 - 2.5	2 - 2.5
STAY STITCHING ^Δ	1.5 - 2	1.5 - 2	1.5 - 2	1.5 - 2	2 - 2.5	2 - 2.5
GATHERING	3 - 4	3 - 4	3 - 4	4	4	4
ZIPPER ^Δ	1.5 - 2	1.5 - 2	2 - 2.5	2 - 2.5	2.5	2.5
TOPSTITCHING ^Δ	3	3	3 - 4	3 - 4	4	4
STRESS AREAS OR SEAMS	1.5 - 2	1.5 - 2	1.5 - 2	1.5 - 2	1.5 - 2	1.5 - 2

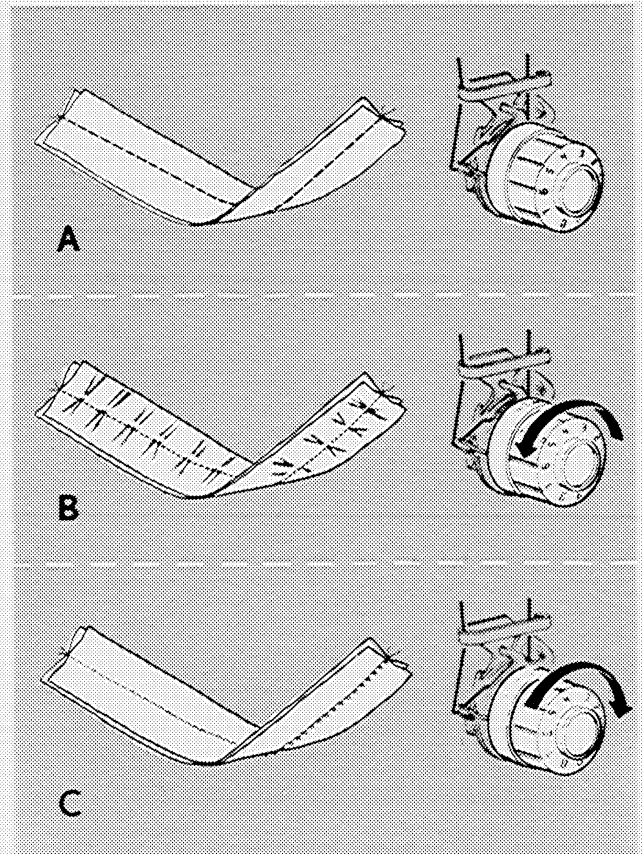
^ΔSlow to moderate speed.

NEEDLE THREAD TENSION

Correct tension is important because too much or too little will weaken your seams or cause your fabric to pucker. Make a test sample with the fabric and the thread you plan to use and examine it. A well balanced stitch, as shown in illustration **A**, will have the needle and bobbin threads locked between the two layers of fabric with no loops on top or bottom and no puckers. The tension dial regulates the degree of tension on your needle thread. Set it according to the type of thread and fabric you use. The numbers on the dial eliminate guesswork.

If the fabric puckers **B**, decrease tension. If the stitches in your test sample look loose **C**, increase needle thread tension.

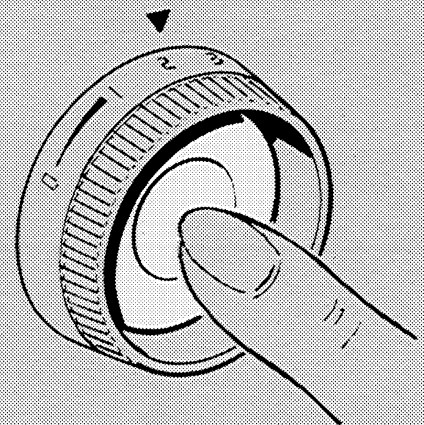
- **To decrease** tension, turn dial to lower number.
- **To increase** tension, turn dial to higher number.



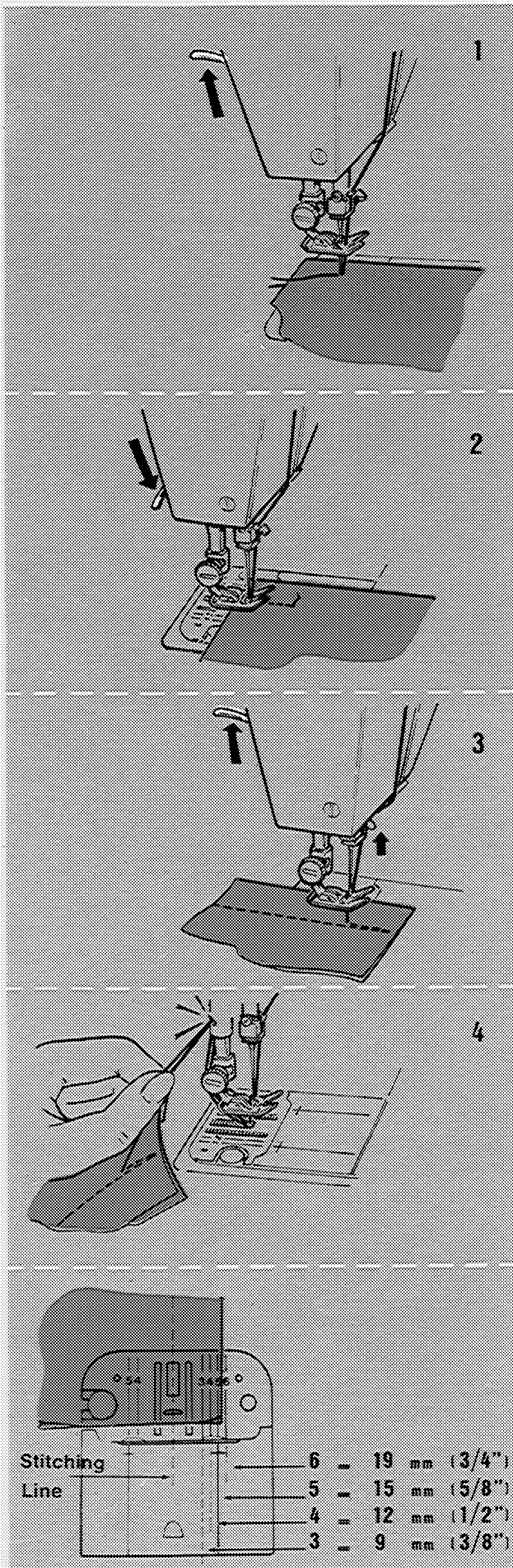
REVERSE STITCHING

For reverse stitching, depress push button located in centre of dial, hold in until reverse stitching is completed, then release push button. Push button can be depressed while machine is sewing.



Note: Reverse stitching cannot be done when using a stretch stitch pattern.



Reverse Stitch Push Button



sewing a seam

- Needle Position: 
- Stitch Width: 
- Stitch Length: To suit fabric
- General Purpose Needle Plate
- General Purpose Foot

1. Raise presser foot. Pull thread back under presser foot leaving at least 10 cm (4 inches) of thread.
2. Position needle approximately 1.2 cm (1/2 inch) from fabric edge. Then lower presser foot and backstitch almost to the edge of the fabric for reinforcement by stitching in reverse direction. For additional information on reverse stitching refer to page 17. Stitch forward to end of seam and stop machine before the end of stitching line. (Do not sew beyond edge of fabric).
3. Raise needle by turning hand wheel *toward you*. Press reverse stitch push button and back stitch 1.2 cm (1/2 inch) to reinforce end of stitching.
4. Raise needle by turning hand wheel *toward you*. Raise foot and remove fabric by drawing it to the back and to the left. Cut threads on thread cutter at rear of presser bar.

KEEPING THE SEAM STRAIGHT



To keep the seam straight, use one of the numbered guidelines on the needle plate. The dimensions they represent are shown in the illustration.

CAUTION: Because of the up and down movement of the needle, you must work carefully and watch the sewing area when operating the machine.

applications

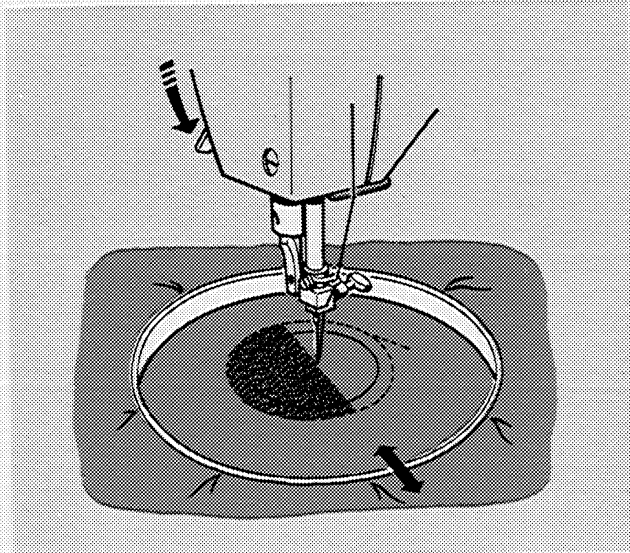
DARNING

With Embroidery Hoop

- Needle Position: 
- Stitch Width: 
- Stitch Length: 0
- Snap-in Feed Cover
- No Presser Foot or Presser Foot Shank
- Presser Bar: Lowered

- Insert snap-in feed cover plate as instructed on page 5.
- Trim ragged edges from area to be darned and centre worn section in embroidery hoop designed for machine use.
- Position hoop under the needle and lower presser bar to engage tension. Hold needle thread loosely with left hand, turn hand wheel over and draw bobbin thread up through fabric. Hold both thread ends and lower needle into fabric. Take a few stitches to secure. Snip off thread ends close to fabric.
- Outline area to be darned with straight stitches for reinforcement.
- Stitch across opening, moving hoop under needle at a slight angle from lower left to upper right. Keep lines of stitching closely spaced and even in length. When opening is filled, cover area with crosswise lines of stitching.



This method of controlling fabric movement with an embroidery hoop should be done with the extension bed on the machine and may be used to do embroidering or monogramming.



ZIPPER INSERTION

How the zipper is inserted will depend on the type of the garment and the location of the zipper. With the adjustable zipper foot, you will find it easy to sew an even line of stitching close to the zipper.

The zipper foot can be used either to the left or right of the needle, depending on where the bulk of the garment is placed.

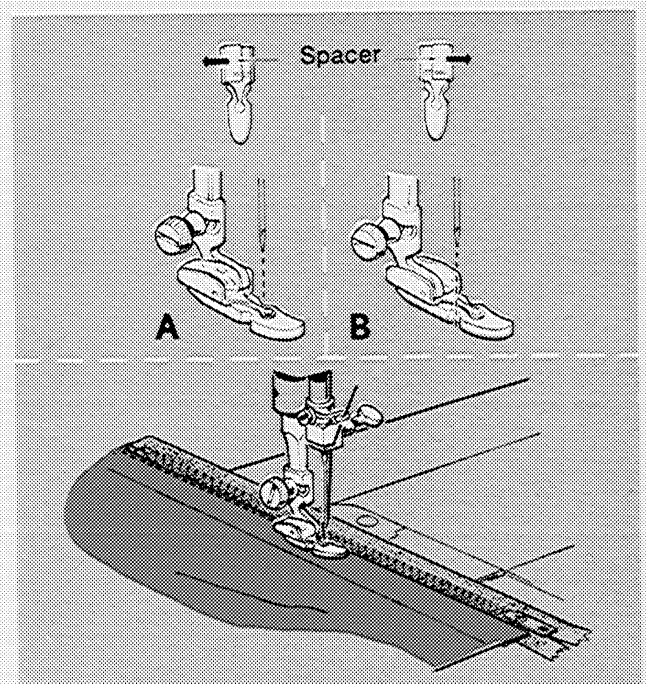
- Needle Position: 
- Stitch Width: 
- Stitch Length: To suit fabric
- General Purpose Needle Plate
- Zipper Foot

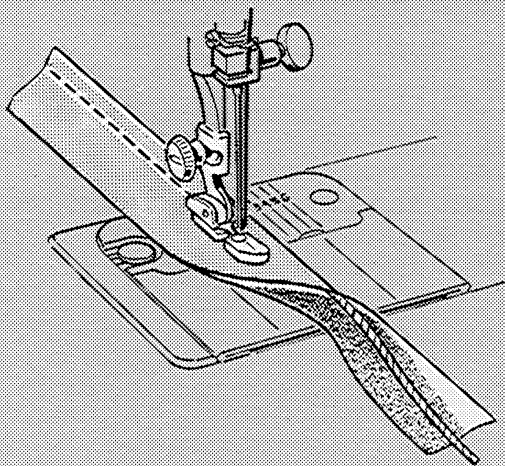
Adjusting the Zipper Foot

When the zipper is to the **right** of the needle.

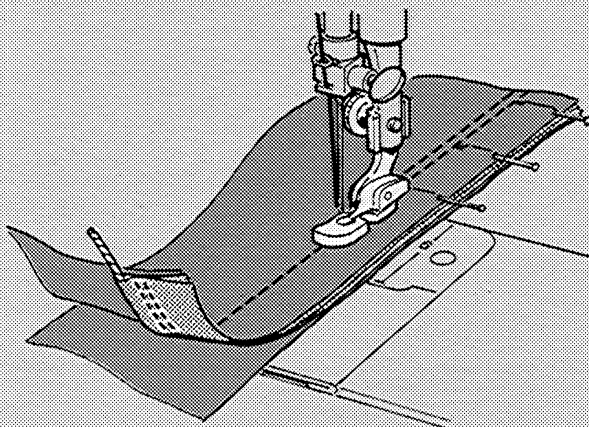
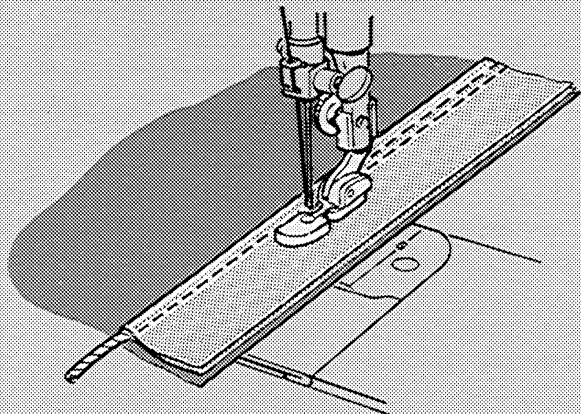
- Before attaching the zipper foot slide the adjusting spacer to the left (illustration A).
- Snap on the zipper foot as instructed on page 4.
- Check the position of the foot by lowering the needle into the side notch of the foot, making sure it clears the foot.

When zipper is to the **left** of the needle, adjust the foot to the **right** of the needle in the same way (illustration B).







Making the Welting



Making a Corded Seam

CORDED SEAMS

The zipper foot is also particularly suitable for the construction and insertion of corded seams.

- Needle Position: 
- Stitch Width: 
- Stitch Length: To suit fabric
- General Purpose Needle Plate
- Zipper Foot

Making the Welting

- Adjust zipper foot to the left of the needle as described on page 19.
- Fold a strip of fabric cut on the true bias over a cord of the desired length, with raw edges even. Lower zipper foot. Stitch close to the cord, pulling *gently* on the strip, both in front and in back of the zipper foot.

Stitching Welting into Seam


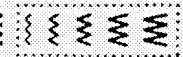
- Adjust zipper foot to the right of the needle so that the bulk of the fabric will fall to the left. Stitch welting to the right side of a single seam edge: guide the edge of the foot next to the cord but not too close.
- Place the attached, welting over the second seam edge, and pin or baste together. Place the work under the foot, with the first stitching on top so that you can use it a guide. Stitch, this time, with the foot as close as possible to the cord.

Chapter 4. Basic Zig-Zag Stitching

adjusting machine stitch to suit your fabric


You can do functional as well as decorative zig-zag stitching with your sewing machine.



How to set selectors

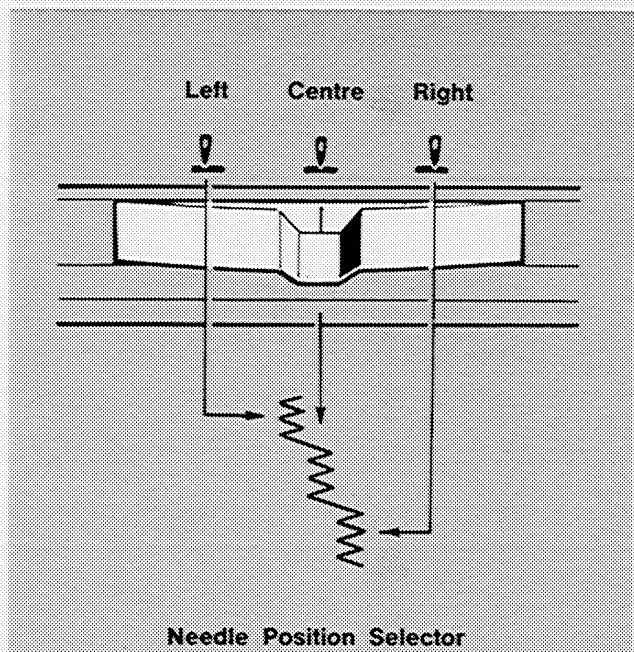
-
- Needle Position: 
 - Stitch Width: 
 - Stitch Length: 5 - 4 to suit fabric
 - General Purpose Needle Plate
 - General Purpose Foot
-

NEEDLE POSITION SELECTOR

Before moving selector, make sure needle is out of the fabric.


Most of your zig-zag stitching will be done in centre  needle position.

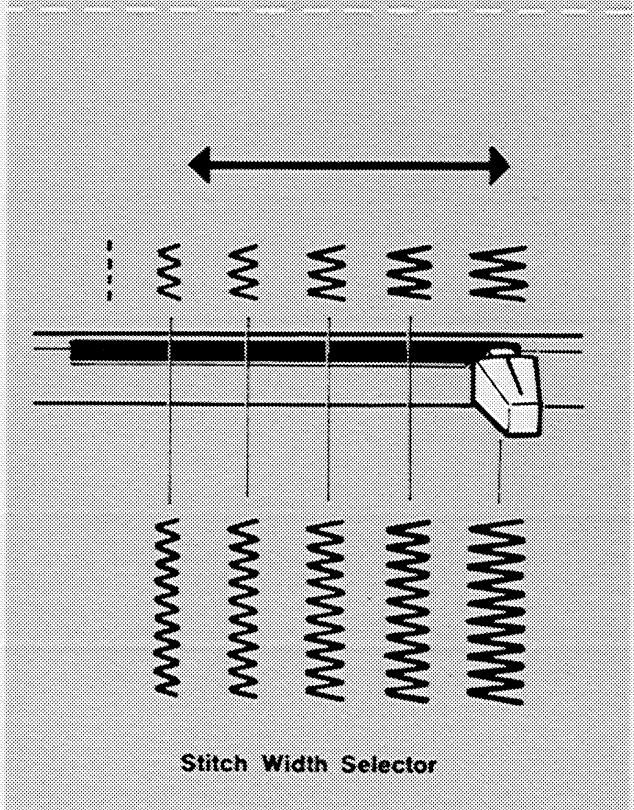
Left  and right  settings are used for special stitch placement, as in button sewing.

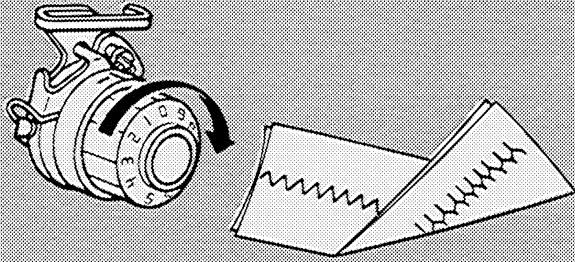


STITCH WIDTH SELECTOR

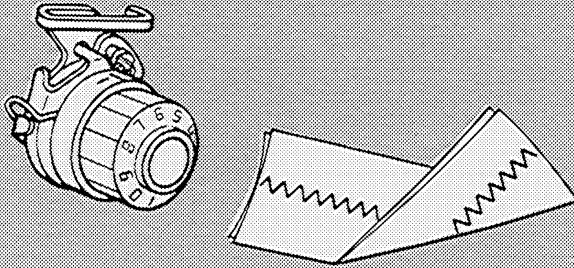
Before moving selector, make sure needle is out of the fabric.

To produce a plain zig-zag or a decorative stitch, the stitch width selector is moved from its straight stitch position  to any of its other five positions. The further you move the selector lever toward the right, the wider your stitch will be.

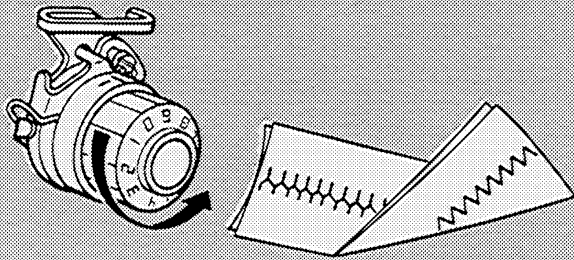




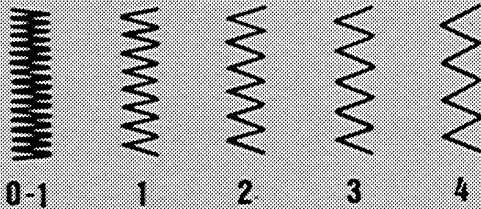
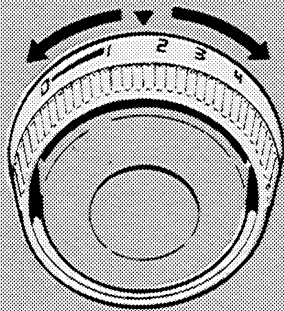
Too Little Tension



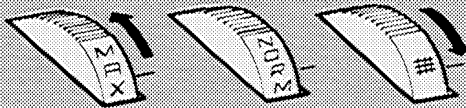
Correct Tension



Too Much Tension



Stitch Length Setting



ADJUSTING NEEDLE THREAD TENSION

Zig-zag stitching requires less needle thread tension than straight stitching.

Make a test sample with the fabric and thread you plan to use so that you can adjust the tension properly. The stitches should lie flat against the fabric without causing the fabric to pucker.

If the stitches are not flat and the fabric is puckered, lower the needle thread tension by turning the dial to a lower number.

ADJUSTING STITCH LENGTH

Any stitch length setting from 1 to 4 will give you an open zig-zag stitch.

The higher the number, the more open, or farther apart your stitches will be.

The area between 0 and 1 on the dial, is used for the adjustment of zig-zag satin stitching, a series of closely spaced plain zig-zag stitches that form a smooth, satin-like surface. (Refer to page 23 for information on satin stitching).



ADJUSTING PRESSER FOOT PRESSURE

See page 15 under « Straight Stitching ».

satin stitching

When you wish to produce a satin stitch make a test sample first so you can adjust stitch length and thread tension properly. Soft fabric may require a backing to ensure a firm stitch. Crisp organdy, lawn or a fusible interfacing are suitable for this purpose.

Accessory and Selector Settings

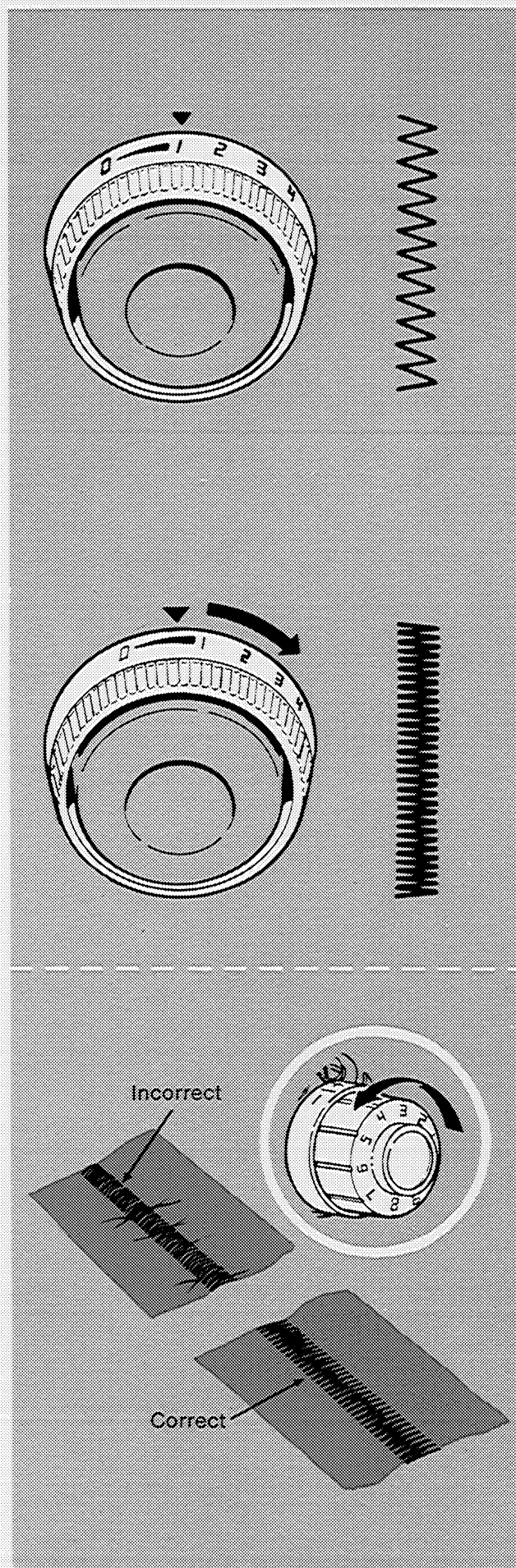
- Needle Position: 
- Stitch Width: 
- Stitch Length: 0 to 1
- General Purpose Needle Plate
- Special Purpose Foot

ADJUSTING STITCH LENGTH

- Turn stitch length selector dial to 1.
- Run the machine at a slow speed and gradually turn stitch length dial clockwise until stitches are closely spaced and form a smooth surface.

ADJUSTING NEEDLE THREAD TENSION

Satin stitching requires less tension than straight stitching or open zig-zag stitching. Furthermore, the wider the stitch, the lighter the tension on the thread must be. Notice the stitching on your sample. If the fabric is puckered, lower the needle thread tension by turning the tension dial to a lower number.

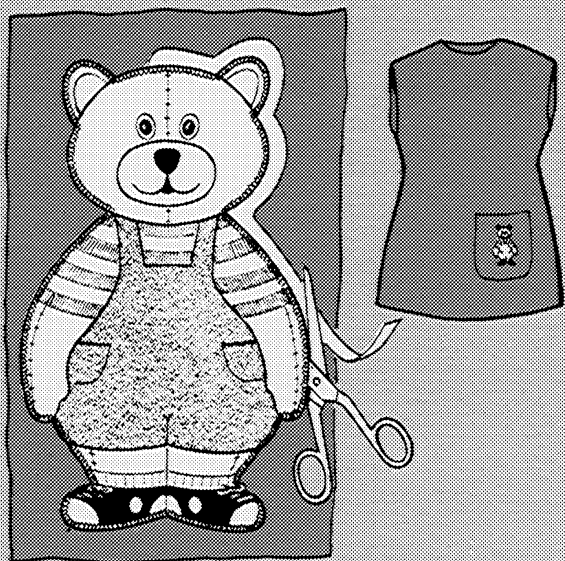


applications

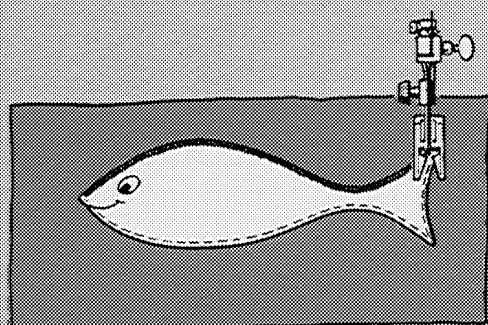
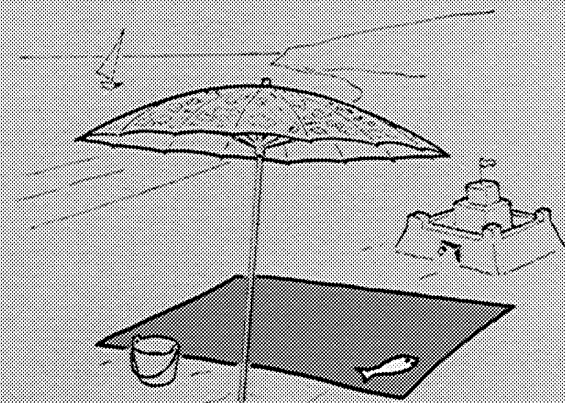
APPLIQUÉ

Appliqué adds beauty and interest to clothing and household linens. You can create your own design, trace a simple outline from a colouring book, or use a motif cut from a printed fabric. Fabrics of similar or different textures combine equally well.


A closely spaced plain zig-zag stitch is used for appliqué work. Although you may vary stitch width to accommodate fabric weave and texture, never allow the stitch to be too wide. Make a test sample to help you decide which of the following methods is best for your fabric and design.



Method 1



Method 2

-
- Needle Position: 
 - Stitch Width: To suit fabric
 - Stitch Length: Between 0 and 1
 - General Purpose Needle Plate
 - Special Purpose Foot
-

Preparation

- Baste appliqué design to fabric and outline the design with a short straight stitch.
- Remove basting and press.

Method 1 - Trimming after Stitching


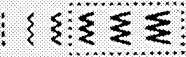
- Set machine as code recommends.
- Outline the entire design with appliqué stitching.
- Cut away the fabric or the outer edges of the stitching with embroidery scissors.

Method 2 - Stitching after Trimming

- Trim outside fabric edges close to straight stitch outline of design.
- Set machine as code recommends.
- Overedge the design with appliqué stitching. This step will produce a smooth, lustrous finish that requires no additional trimming.

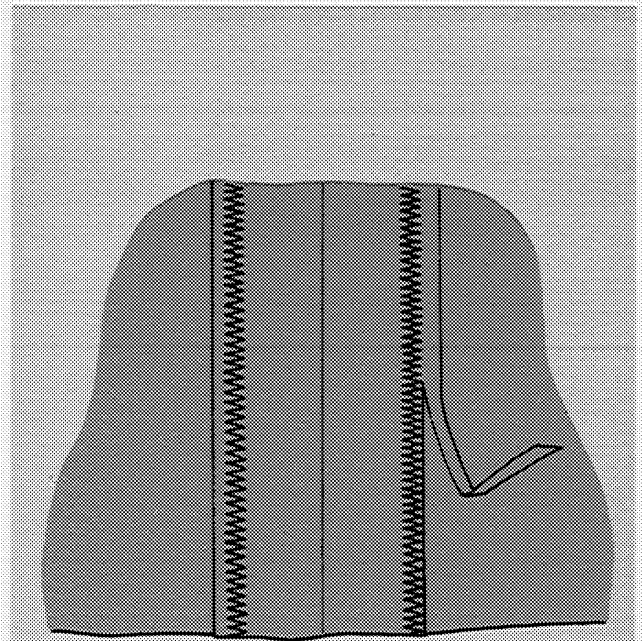
ZIG-ZAG SEAM FINISHES

Seam edges support the garment and should be given a durable finish if the fabric is likely to ravel. There are two methods of finishing seams in such fabrics: trimming seam edge or overedging. Make a test sample to determine which method best suits your fabric.

-
- Needle Position: 
 - Stitch Width: 
 - Stitch Length: 1 to 3 to suit fabric
 - General Purpose Needle Plate
 - General Purpose Foot
-

Method 1 - Trimmed Seam Finish

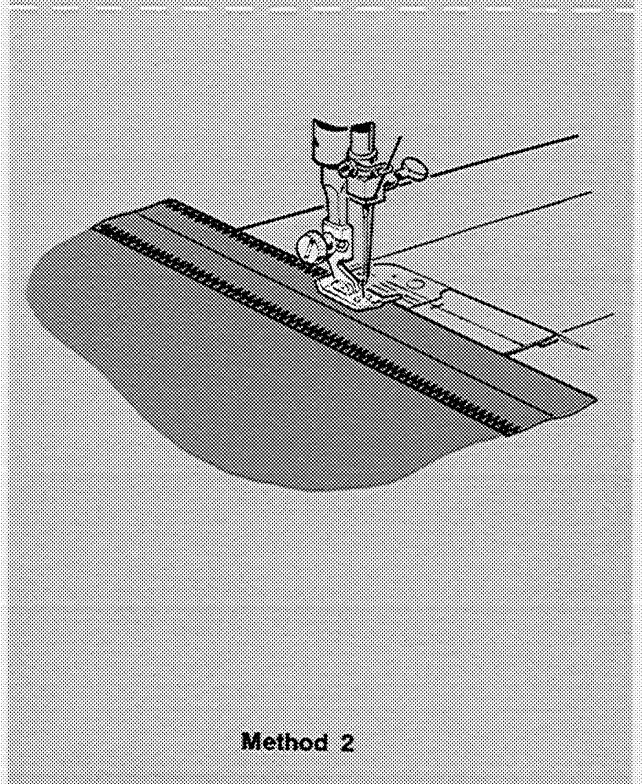
- Adjust stitch width and length to give you the most "open" stitch that will secure the fabric edge, avoid harsh over stitching.
- Stitch near the edge of seam allowance, and trim seam edges evenly after stitching.



Method 1

Method 2 - Overedged Seam Finish

- Adjust needle thread tension, stitch width, and stitch length to suit fabric.
- Trim seam edges evenly.
- Place trimmed seam under the foot and overedge the seam allowance as illustrated.

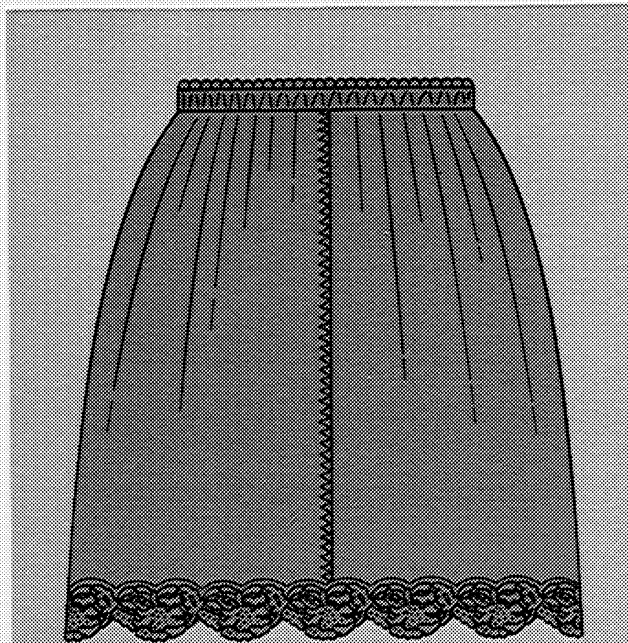


Method 2

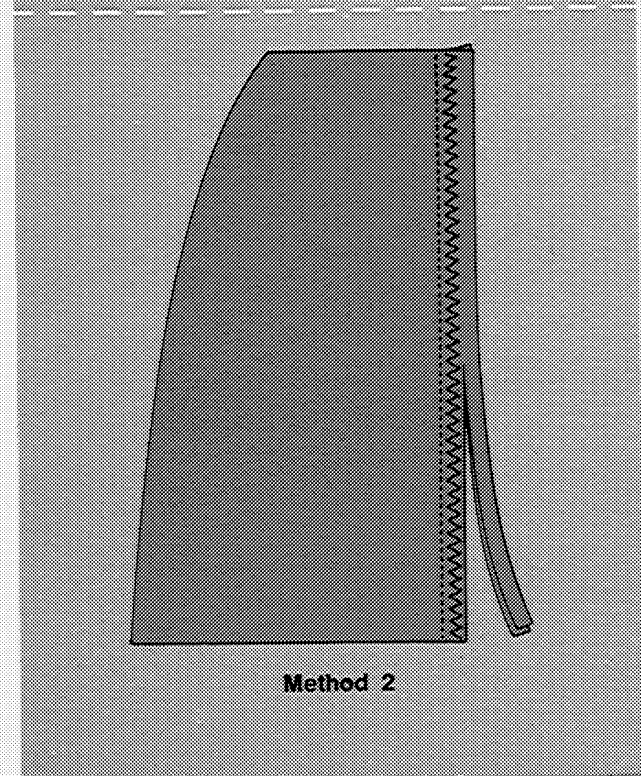
LINGERIE SEAMS

To make seams in lingerie durable and flexible use a combination of straight and plain zig-zag stitching. Make a test sample to help you decide which of the following methods is most appropriate for your fabric and garment.

Method 1 is particularly suitable for 1.5 cm (5/8 inch) bias seams in woven fabric and method 2 is best for seams in fine knits.



Method 1



Method 2

-
- Needle Position:
 - Stitch Width:
 - Stitch Length: 1 to 1.5
 - General Purpose Needle Plate
 - General Purpose Foot
-

Method 1

For 1.5 cm (5/8 inch) Seam

- Straight stitch the seam line on wrong side fabric.
- Press both seam allowances in the same direction.
- From the right side, topstitch with narrow zig-zag stitching, letting the needle alternately enter the seam line and seam thickness.



Method 2

For a Narrow Seam

- Allow for a 1.5 cm (5/8 inch) seam allowance.
- Straight stitch the seam line on wrong side of fabric.
- Place a line of medium-width, open zig-zag stitching close to the straight stitching.
- Trim away excess fabric close to stitching to produce a narrow seam edge.

Chapter 5. Stretch Stitch Patterns





In addition to straight stitch and zig-zag stitch, your machine can produce two types of stitch patterns: Straight Stretch stitch and Ric-Rac stitch.

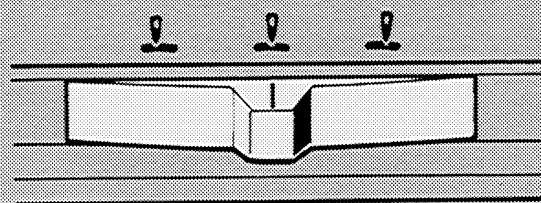
Stretch Stitches	Where to Use
 <p data-bbox="363 595 635 622">Straight Stretch Stitch</p>	<p data-bbox="874 461 1433 618">Plain seams stretch (press-open or closed construction) — Crotch seaming — Sleeve and gusset insertion — Flexible topstitching — Swim and ski suit construction — Attaching patch pockets — Repairing and reinforcing seams.</p>
 <p data-bbox="427 719 603 745">Ric-Rac Stitch</p>	<p data-bbox="874 689 1273 716">Heavy-duty, all purpose sewing.</p>

Setting selectors

SETTING NEEDLE POSITION

Before moving needle position selector, make sure needle is above fabric.




All stitch patterns can be sewn in either left , centre , or right  needle position. Selector setting centre  is used most often.



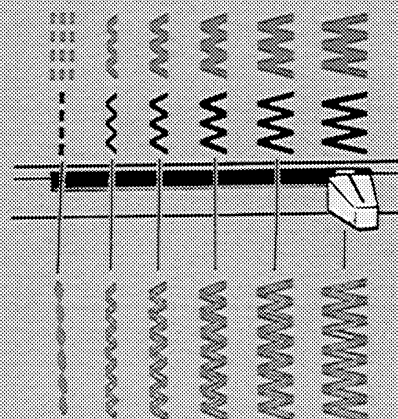
Needle Position Selector

SETTING STITCH WIDTH

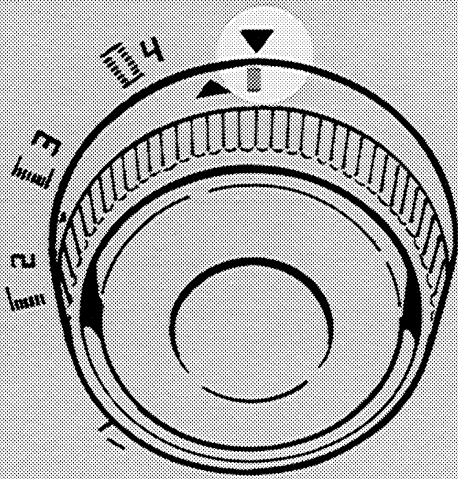
Before moving stitch width selector, always raise needle above fabric.

- To produce the Straight Stretch stitch the stitch width selector must be positioned under the  symbol.
- To produce the Ric-Rac stitch the stitch width selector must be moved from its straight position toward the right to any setting between  and .

The further you move the selector lever to the right, the wider your stitch will be.



Stitch Width Selector

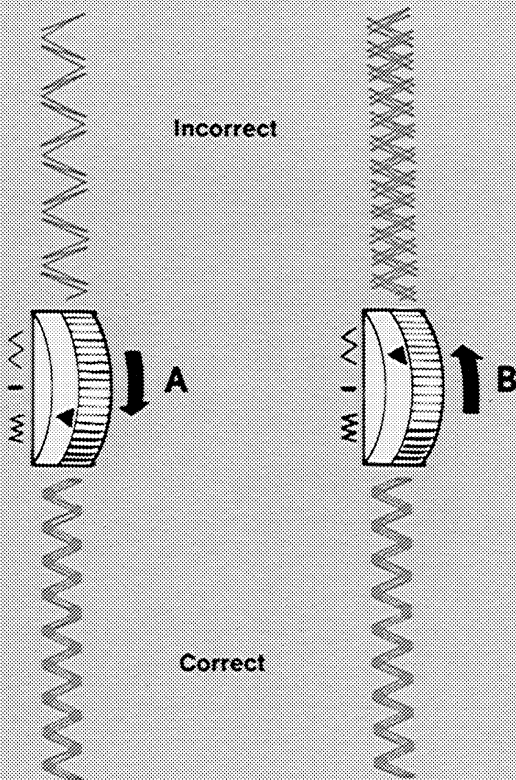


Setting for Stretch Stitch Pattern

ADJUSTING STITCH LENGTH

When you are preparing to do stretch stitching, make a test sample with the fabric and thread you plan to use

For stretch stitch patterns, stitch length is controlled with a single setting of the stitch length selector. Simply rotate it until the coloured bar is under the ▼ symbol above the dial.



ADJUSTING STITCH BALANCE

When you are using stretch stitch patterns, you may need to adjust the stitch balance dial in order to correct the appearance of the stitch.

Before you move the dial from its neutral position (◀ symbol on dial aligned with line — on panel), make a test sample. If adjustment is required stitch slowly and move the dial as illustrated.

- Turn dial **down** to bring stitches of the patterns together (ill. **A**).
- Turn dial **up** to separate stitches of the patterns (ill. **B**).

Always return the dial to its neutral position after sewing stretch stitch patterns.

adjusting stitches to suit stretch fabrics

GUIDING AND SUPPORTING FABRIC

Most fabrics of stretch or knit construction need only to be guided in front of the presser foot when you use one of the stretch stitches. Some fabrics — nylon tricot and elasticized fabrics, for example — do require support while being stitched.

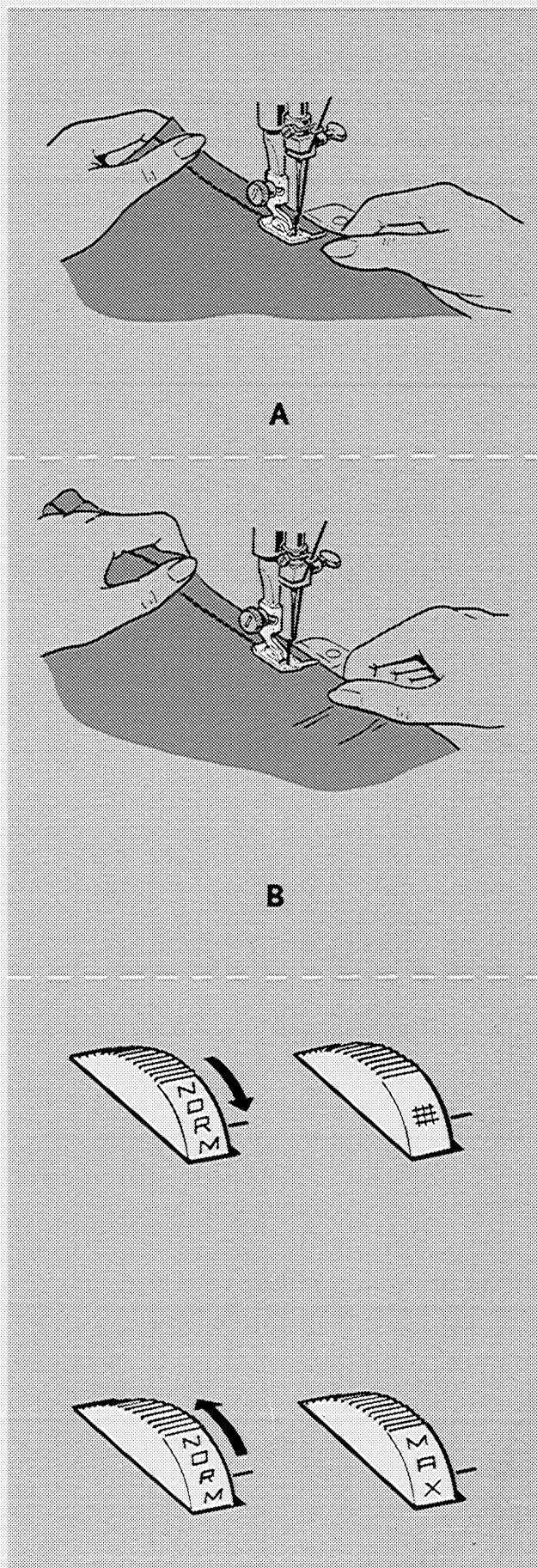
- For nylon tricot and similar synthetic knits, apply **gentle** tension by holding the seam in front and back of the presser foot as you sew (illustration **A**).
- For elasticized fabric, stretch lace, and knits with an unusual amount of elasticity, apply **firm** tension in front and back of the presser foot to stretch the seam as the stitches are being placed (illustration **B**).

CAUTION: Do not pull the fabric while you are stitching as this may deflect the needle, causing it to break.

ADJUSTING PRESSURE WHEN SEWING KNIT AND STRETCH FABRIC

Some knit and stretch fabrics, because of their structure, require either more or less than normal (**NORM**) presser bar pressure to feed smoothly and evenly.

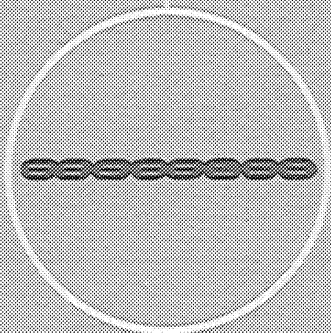
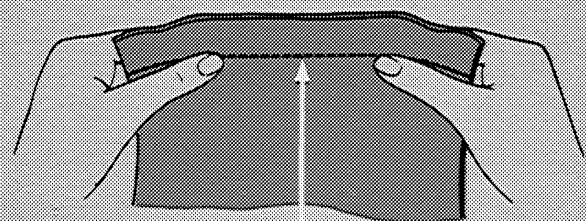
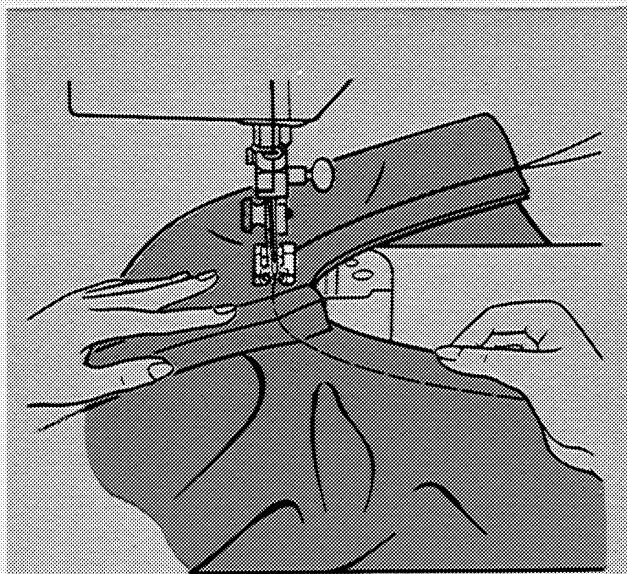
- For thick, soft or very stretchy knits, decrease pressure by turning dial from **NORM** toward **≡**
- For nylon tricot, ciré and similar hard surface synthetic knits, increase pressure by turning dial from **NORM** toward **MAX**.


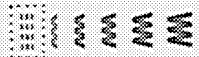



applications

STRAIGHT STRETCH STITCH

The straight stretch stitch is an invaluable stitch most commonly used for sewing seams on fabric with elasticity. The straight stretch stitch is particularly useful for seaming extra-heavy and extra-bulky fabric.



- Needle Position: 
- Stitch Width:  only
- Stitch Length:  (coloured bar)
- Stitch Balance: To suit application or fabric
- General Purpose Needle Plate
- General Purpose Foot

Make a test sample first to determine the best pressure and tension settings for your fabric. To be sure that you are using the correct needle and thread combination for your fabric, see the Fabric, Thread and Needle Table on page 8.

Procedure

- Pin or baste seam.
- Draw needle and bobbin threads under foot to back of machine. Hold thread ends and by turning the hand wheel *toward you*, position needle in fabric a scant 6 mm (1/4-inch) in from starting edge.
- Lower presser foot and start machine, holding thread ends at back of foot as first few stitches are made.
- Guide fabric lightly, letting the machine make the back-and-forth stitches that give stretch to the seam.

When stitching across folds and seam joinings, apply tension by holding seam in front and back of the presser foot, to assist feeding as instructed on page 29.

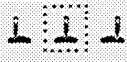


This type of support is essential for thick, soft fabrics.

CAUTION: Do not pull fabric while you apply gentle or firm tension, as this may deflect needle, causing it to break.

RIC-RAC STITCH

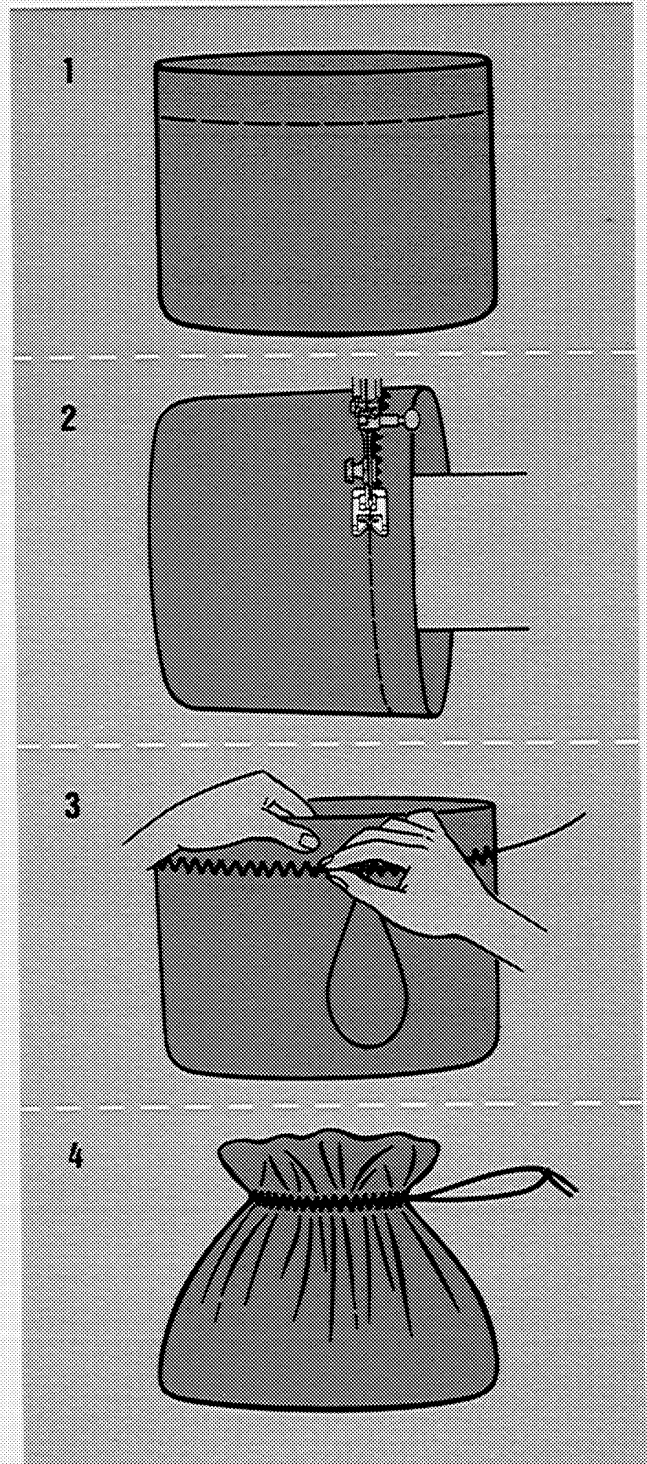
The ric-rac stitch is a versatile stitch. Use it for heavy duty general purpose sewing. With this stitch you may create casing on items such as purses, vegetable bags or on sleeve openings. The ric-rac stitch is particularly suitable for these applications because it combines utility with beauty.

Creating a Decorative Purse Casing

- Needle Position: 
- Stitch Width: 
- Stitch Length:  (coloured bar)
- Stitch Balance: To suit application or fabric
- General Purpose Needle Plate
- General Purpose Foot

Construct a purse in the usual way using pattern instruction, making sure top edge of purse is finished.

1. Use hand basting or tailor's chalk to mark the stitching line approximately 2.5 to 5 cm (1 to 2 inches) in from top edge of fabric.
2. Stitch along marked line using the ric-rac stitch, placing fabric so that edge to be finished is turned to the right.
3. Thread needle with a fine cord or ribbon or several strands of sewing thread. Leaving a 5 to 7.5 cm (2 to 3 inches) tail of thread, guide the needle between the ric-rac stitching and the fabric until you have gone completely around the top edge of the purse.
 - Cut cord or ribbon leaving desired amount needed to create a drawstring effect.
4. Tie cord ends together.



Chapter 6. Buttonholes and Buttons

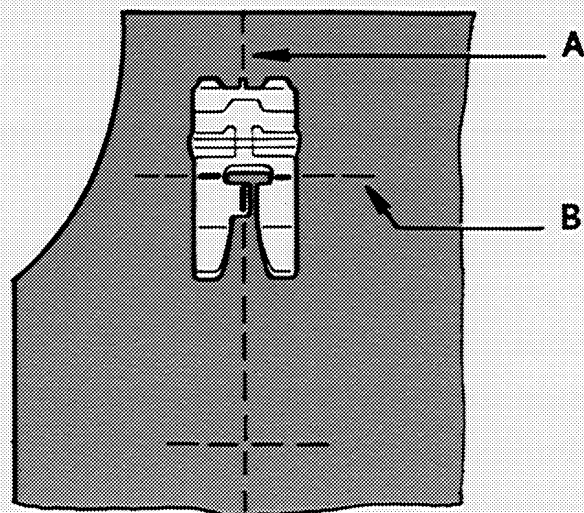
buttonholes

-
- Stitch Balance Dial: Neutral position
 - Buttonhole Foot
-

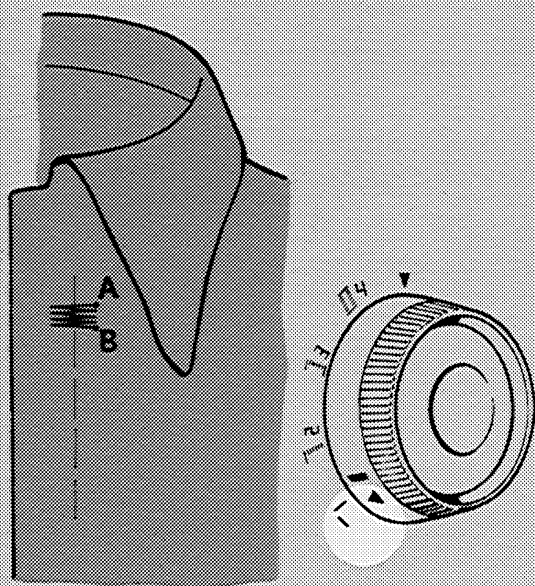
Always make a test buttonhole on a sample in your fabric. Be sure to duplicate thickness of garment and include interfacing.

If the two lines of stitching in your sample are of unequal density refer to the next page.

Place work under buttonhole foot, align centre marking of buttonhole **A** with red line on foot, and align end marking of buttonhole **B** with horizontal line on foot. Do not lower the needle.

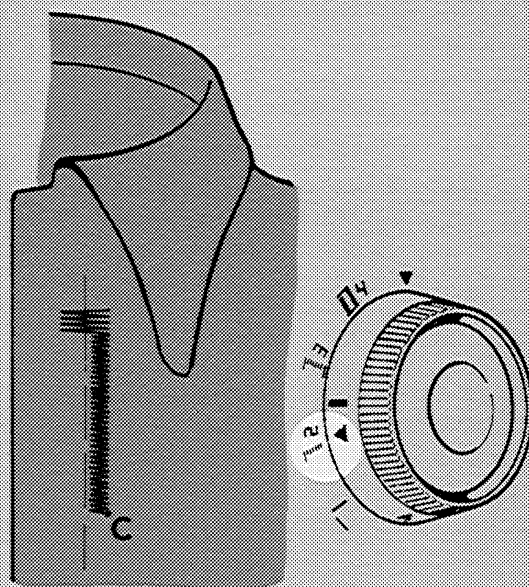


FOUR-STEP BUTTONHOLING



Step 1: Bar Tack

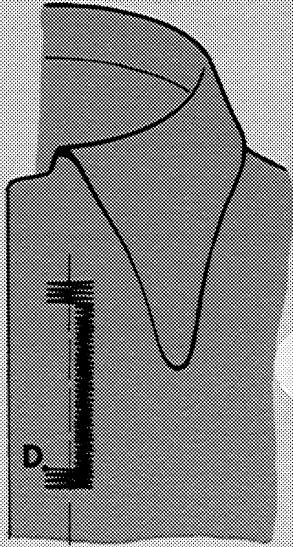
Turn buttonhole dial *clockwise* to step 1. Position needle in fabric at point **A**. Lower the foot and stitch the first bar tack taking at least four stitches ending at point **B**.



Step 2: Side Stitching

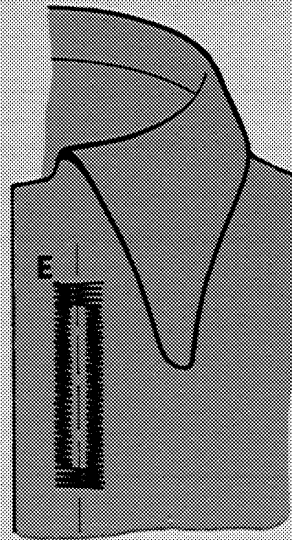
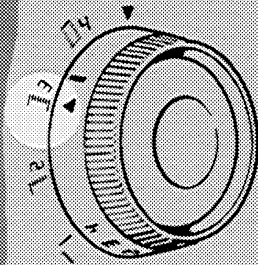
Raise needle above fabric by turning hand wheel *toward you*. Turn buttonhole dial *clockwise* to step 2. Stitch to the end of buttonhole at point **C**.

FOUR-STEP BUTTONHOLING (Cont'd.)



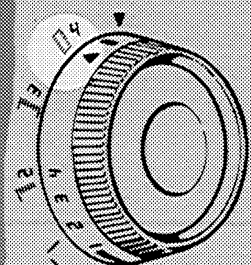
Step 3: Bar Tack

Raise the needle above the fabric.
Turn buttonhole dial *clockwise* to step 3. Take at least four stitches ending at point D.



Step 4: Side Stitching

Raise the needle above the fabric.
Turn buttonhole dial *clockwise* to step 4. Stitch until the side stitching meets the bar tack at point E.



CHANGING STITCH DENSITY

Stitch density on left and right sides of the buttonhole may be balanced by using the stitch balance dial. Use the stitch balance dial to obtain similar stitch appearance on either side of the buttonhole.

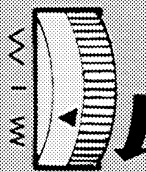
To change the density on either side of the buttonhole follow the procedure below.
Return the balance dial to its neutral position after buttonhole sewing is completed.

IF



Stitches on the *right* side are too far apart

THEN DO THIS



RESULT



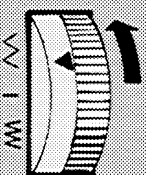
Similar stitch appearance on either side of the buttonhole

IF



Stitches on the *left* side are too far apart

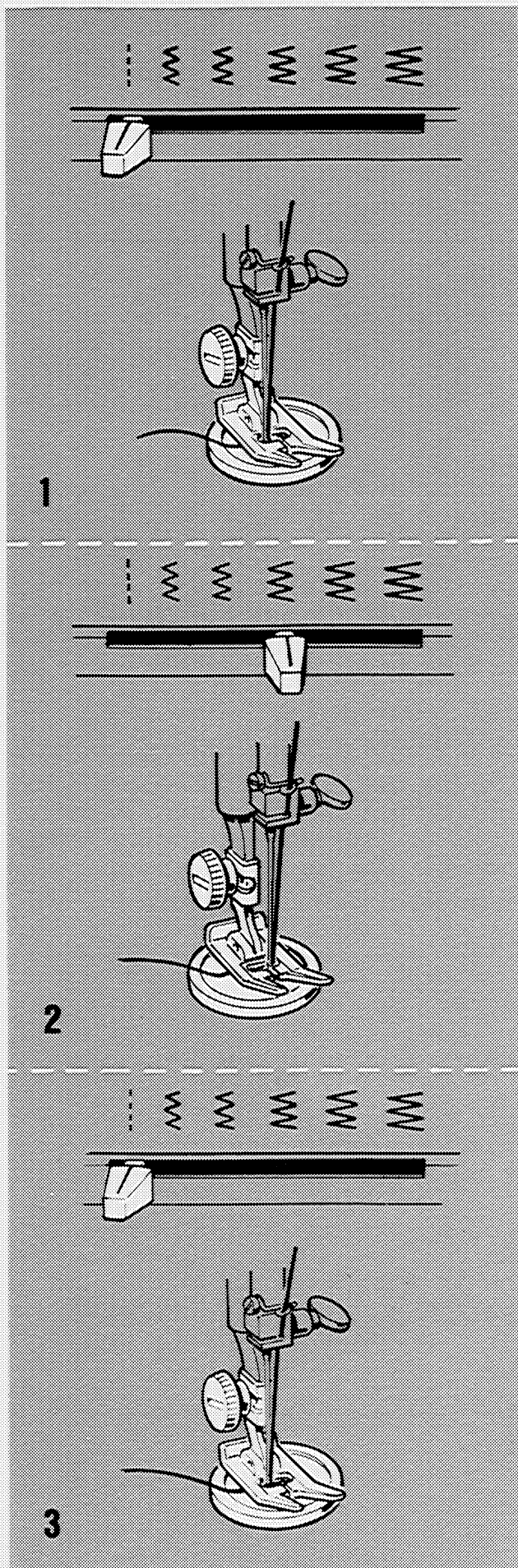
THEN DO THIS




RESULT



Similar stitch appearance on either side of the buttonhole






buttons

- Needle Position: 
- Stitch Width: To suit button
- Stitch Length: 0
- Snap-in Feed Cover
- General Purpose Foot

ATTACHING A BUTTON

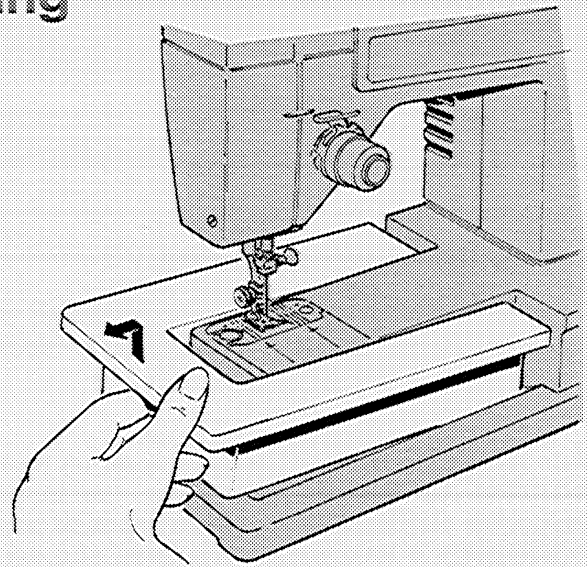
Flat buttons can be sewn on by machine using the zig-zag stitch.

- Attach snap-in feed cover to general purpose needle plate.
1. Set stitch width selector at .
 - Set needle position at left .
 - Place button positioned on fabric under foot and lower needle into centre of left hole.
 - Lower presser foot.
 - Turn hand wheel *toward you* until the needle rises out of button hole and is just above the presser foot.
 2. Set stitch width selector to a medium width zig-zag setting.
 - Continue turning hand wheel until the needle is above right hole, adjust stitch width, as necessary, until needle enters the centre of the right hole.
 - Take six or more zig-zag stitches and finish with the needle on the left.
 3. Move stitch width selector to  and take a few stitches to fasten threads.
 - Pull thread ends through to back of garment knot close to fabric and snip off loose ends of thread.

Chapter 7. Free-Arm Sewing

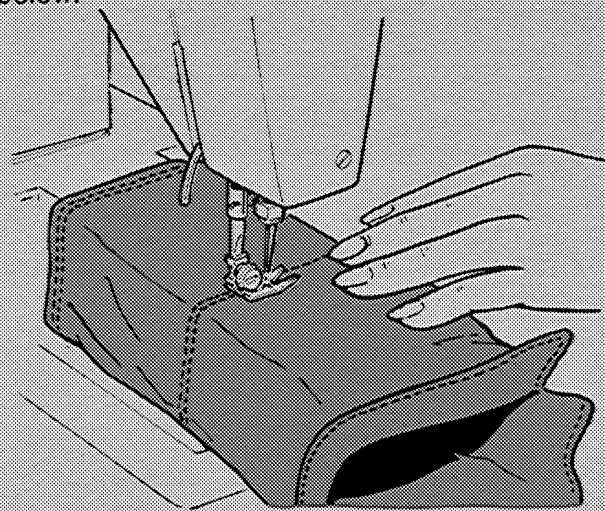
Fabric handling, when sewing tubular and hard to reach garment areas, is simplified when you convert your sewing machine to free-arm sewing.

- To convert machine to free-arm sewing, simply lift the extension bed up and off the machine as illustrated.
- To convert machine back for flat bed sewing, simply slide extension bed onto the base of the machine and snap into place.

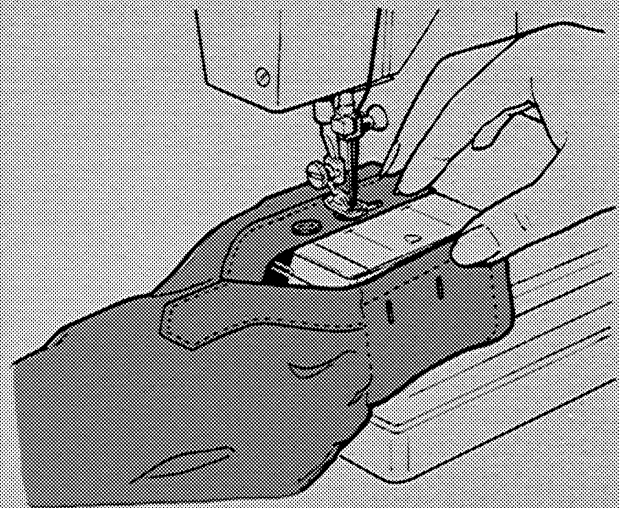


applications

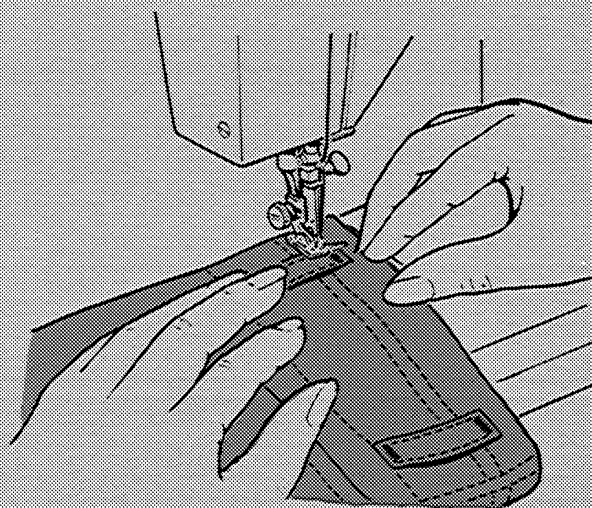
A few of the sewing jobs for which you will find the free-arm particularly useful are shown below.



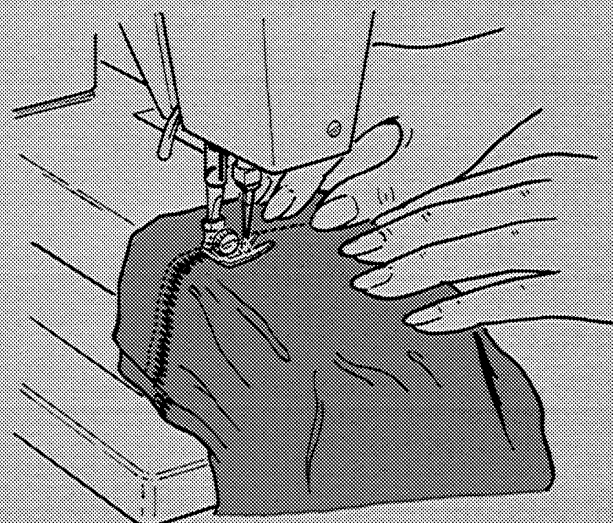
Sleeves



Buttons



Bar Tacks



Edge Finishes

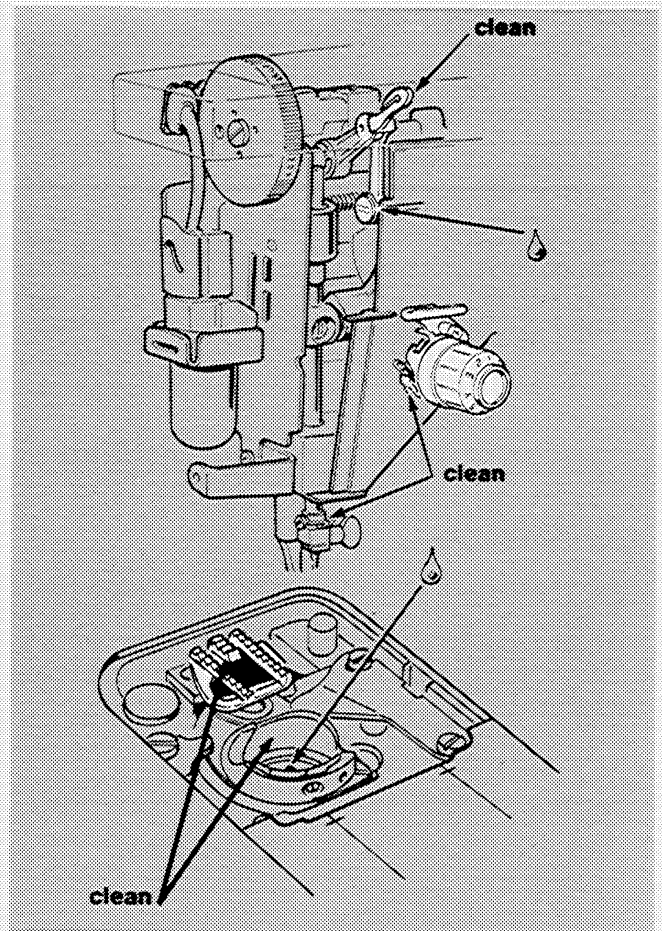
Chapter 8. Caring For Your Machine

CLEANING YOUR MACHINE

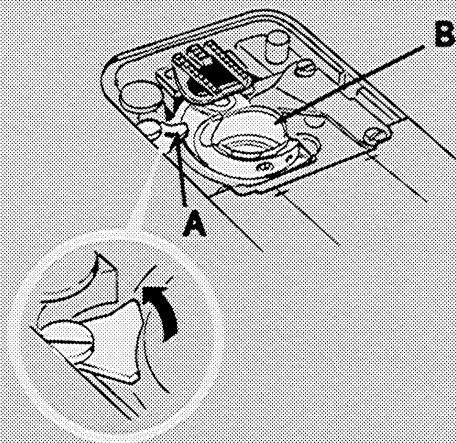
CAUTION: Before cleaning your machine, disconnect power line plug from your socket outlet.

With a soft cloth or lint brush, clean all points indicated by arrows, especially the bobbin case area and feed. Also, clean exposed parts. If necessary a mild solution of soap and water may be used to remove stubborn stains. No other cleaning liquid or powder should be used.

Periodically apply a drop of oil only to the areas indicated after cleaning.

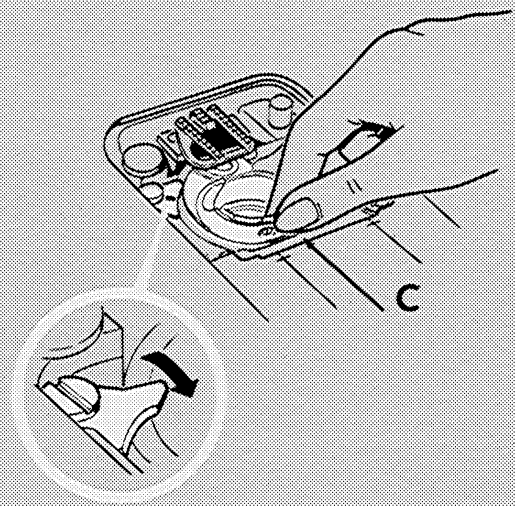


REMOVING BOBBIN CASE



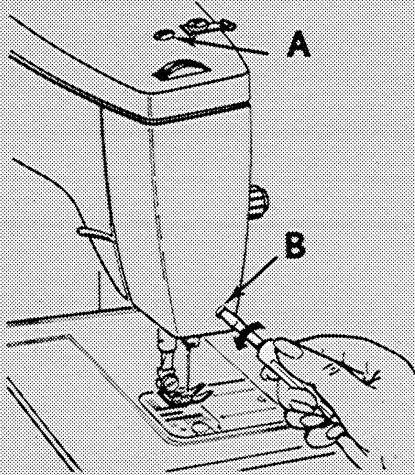
Raise needle, open slide plate, remove needle plate and lift out bobbin. Turn bobbin case holder **A** to back as far as it will go. Lift out bobbin case **B**.

REPLACING BOBBIN CASE



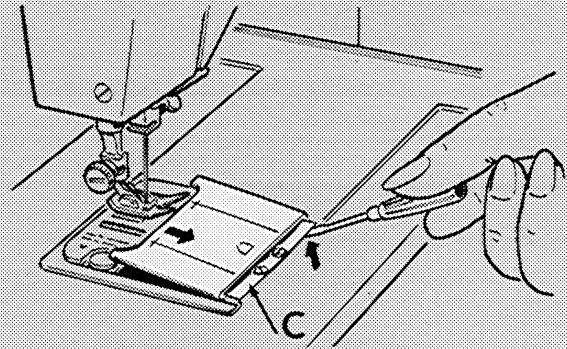
Insert bobbin case with a back and forth motion, so that front of the case is under the position plate **C**. Turn holder all the way forward to lock bobbin case. Replace needle plate and close slide plate.

REMOVING FACE PLATE



Loosen screw **A** (do not remove). Loosen face plate screw **B** then remove face plate by drawing it *toward you*. Replace face plate by sliding top edge of plate under edge of arm top cover. Tighten screws **B** and **A**.

REPLACING SLIDE PLATE



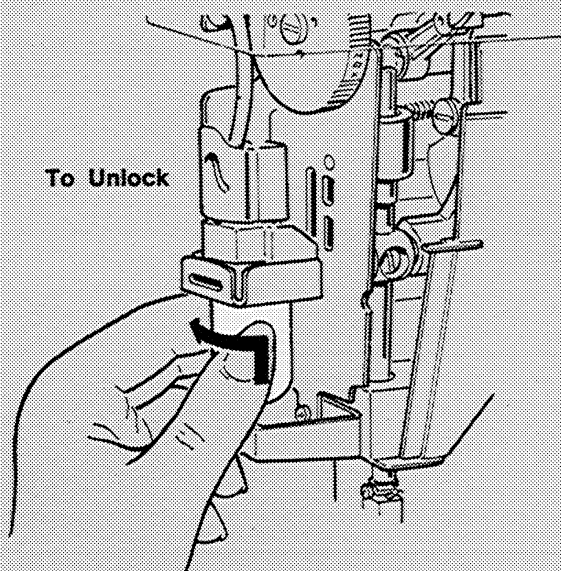
Place slide plate in slide way with the front edge close to, but not covering, the retaining spring **C**. With a small screwdriver, lift each end of the spring into each of the side grooves on the under side of the slide plate. Draw the slide plate gently *toward you* to fully engage the spring. Close slide plate.

CHANGING THE LIGHT BULB

CAUTION: Before changing light bulb make sure you have disconnected power line plug from socket outlet.

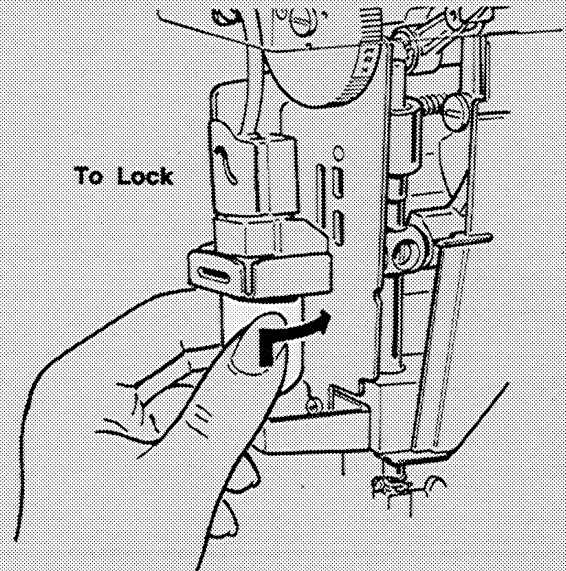
CAUTION: This machine is designed to use a 15 watt maximum bayonet base bulb **only**.

Removing Bulb



- Remove face plate.
- Do not attempt to unscrew the bulb.
- Press it up into the socket and at the same time turn bulb over in direction shown to unlock the bulb pin and guide out of socket.

Replacing Bulb



- Press new bulb into socket, with bulb pins entering slot of socket.
- Turn it over in direction shown to lock bulb in position.
- Replace face plate.

Chapter 9. Performance Checklist

Whenever sewing difficulty is encountered, review the sections of the instruction book that explain the operation you are performing to make sure you are using the machine correctly. If the problem still exists, the following checklist may help you to correct it.

If you still have difficulties, call your nearest authorized Dealer.

What To Do If:

Needle Breaks

Refer to Page:

Make sure...

- Needle is fully inserted into needle clamp 4
- Needle is not being pulled to one side as fabric is removed from the machine 18
- Presser foot or accessory is securely fastened to prasser bar 4
- Fabric is not being pulled while sewing causing needle to hit needle plate 29

Thread Breaks

Make sure...

- Machine is properly threaded 13
- Needle is straight and sharp 10
- Needle thread tension is not too tight 17, 22, 23
- Thread is unwinding freely from spool 11
- Bobbin case area is free of lint and loose thread ends 36

Machine is Noisy or Sluggish

Make sure...

- Bobbin case and feed area are free of lint and loose thread ends 36

Fabric Does Not Move Properly

Make sure...

- Presser foot or accessory is correctly attached to machine 4
- Stitch length dial is correctly set 16, 22, 28
- Lint has not accumulated around feed 36

Skipped Stitches

Make sure...

- Needle is straight and sharp 10
- Needle is correct style for machine and size for thread 8, 9
- Machine is correctly threaded 13
- Needle is securely fastened to needle bar 4

Fabric Puckers

Make sure...

- Needle thread tension is not too tight 17, 22, 23

Needle thread breaks while winding bobbin

Make sure...

- Machine is correctly threaded 13
- Thread is unwinding freely from spool 11

Thread does not wind onto bobbin

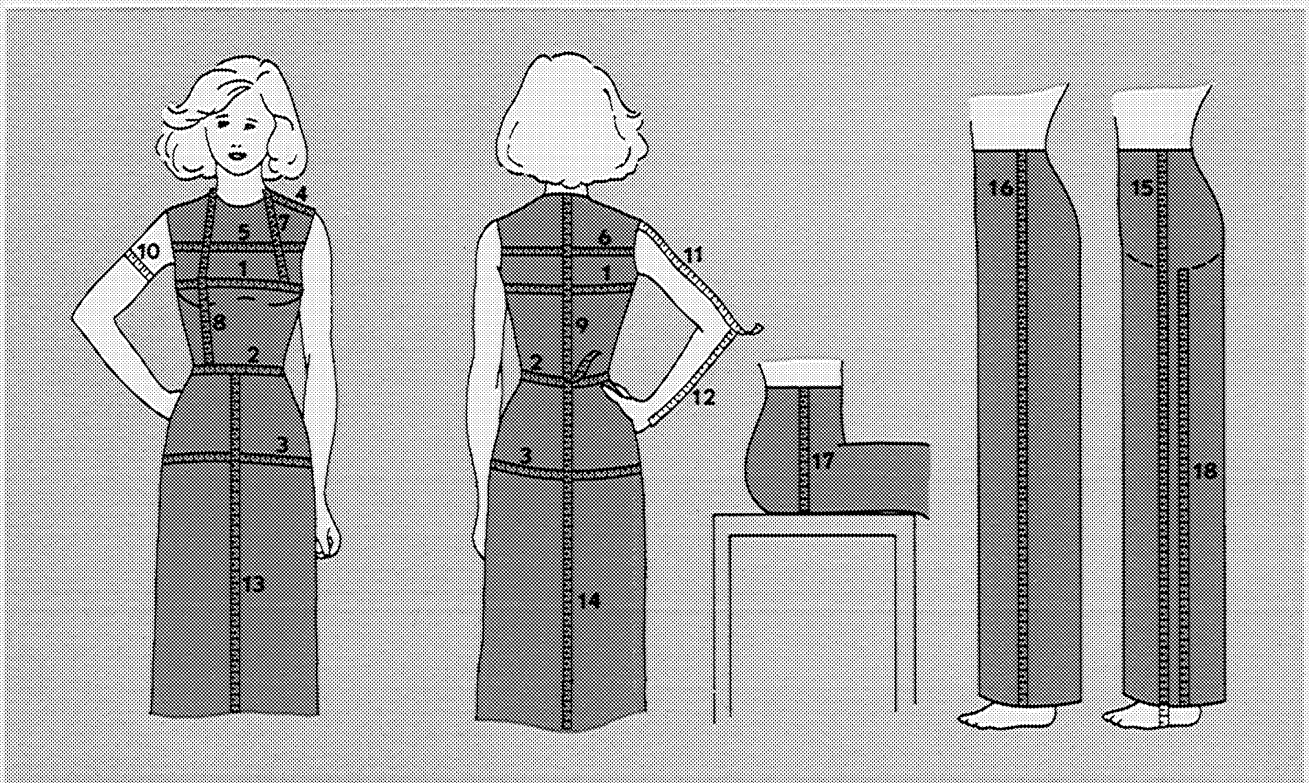
Make sure...

- Bobbin winder spindle is pushed to right 11

your personal measurements

This chart will enable you to keep a record of your measurements. You will need the assistance of someone to help you take the measurements carefully with an accurate tape measure. The figures in these illustrations show where the tape measure should be placed when taking each measurement.

	cm. (inches)
1. Bust — Fullest part — slightly higher in back
2. Waist — Around natural waistline
3. Hip — cm (inches) below natural waistline (fullest part)
4. Shoulder — From base of neck to top of arm
5. Front Bodice Width — From arm hole to arm hole 13 cm (5 inches) down from centre shoulder
6. Back Bodice Width — From arm hole to arm hole 10 cm (4 inches) down from centre shoulder
7. Shoulder to Bust — From neck base at shoulder to point of bust
8. Front Waist Length — From neck at shoulder over fullest part of bust to waistline
9. Back Waist Length — From the prominent bone at base of neck to natural waistline
10. Sleeve Width — Around arm at upper edge of underarm seam
11. Sleeve Length — Shoulder to elbow
12. Sleeve Elbow to Wrist
13. Front Skirt Length — Down centre from waistline to hem
14. Back Skirt Length — Down centre from waistline to hem
Trouser Measurement Chart	
15. Full Length — Waist to floor at side seam
16. Trouser Length — Waist to ankle
17. Crotch Depth (seated) — Waist to chair at side seam
18. Crotch Seam (standing) — Crotch depth 17 to be deducted from pant length 16

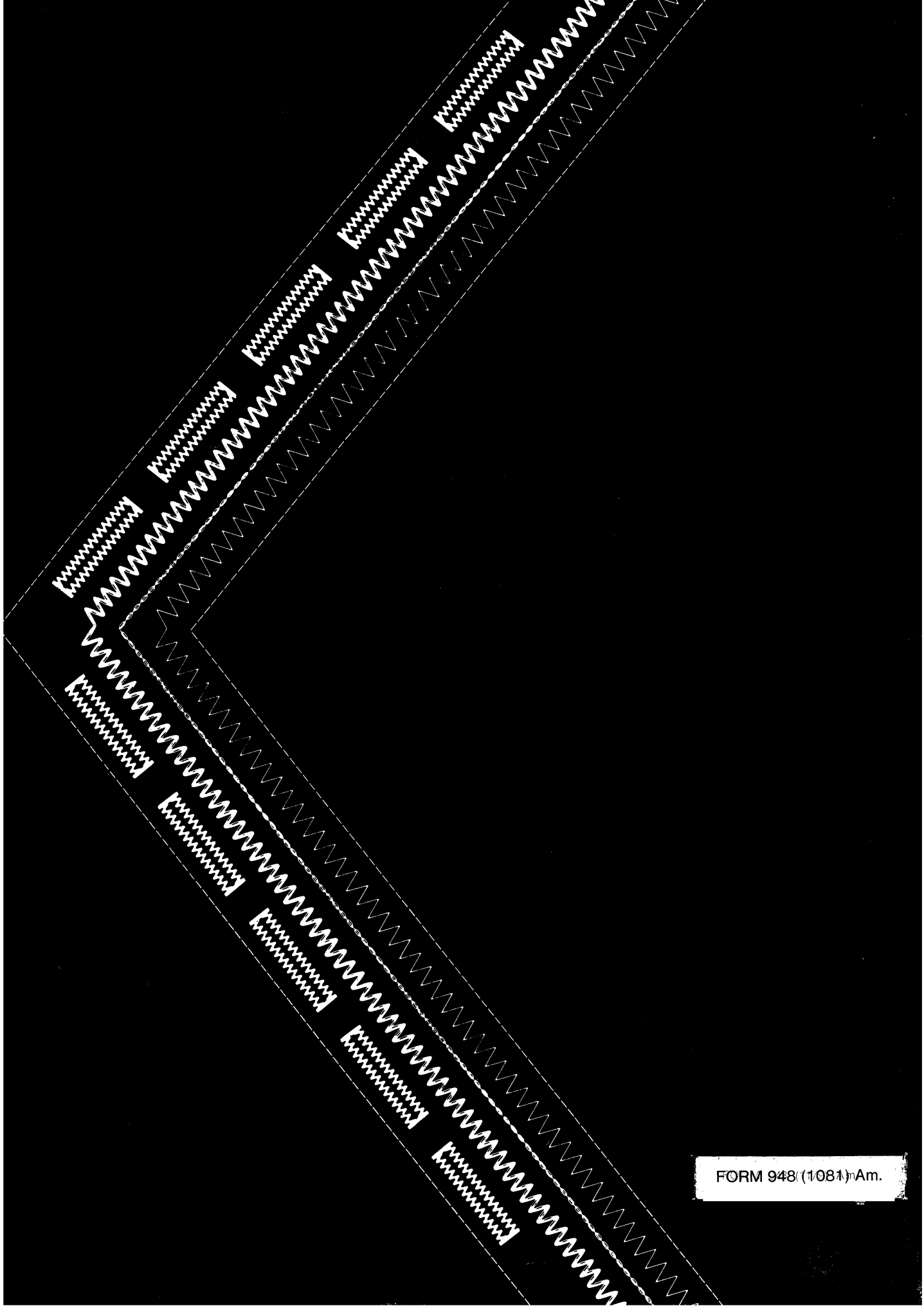


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To ensure that you are always provided with the most modern sewing capabilities, THE SINGER COMPANY reserves the right to change the appearance, design or accessories of this sewing machine when considered necessary.

FORM 948 (1081) Am.



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