
Frister + Rossmann

503

FREEARM

LIGHTWEIGHT

SUPER-AUTOMATIC

WITH BUILT-IN

PRACTICAL STITCHES

AND STRETCH STITCHES

**INSTRUCTION
MANUAL**

This booklet has been written for you, to help you use and enjoy fully your F + R zigzag sewing machine.

Before you start to use this machine, please take a few minutes to study this booklet. You will find it will be time well spent in understanding your machine.

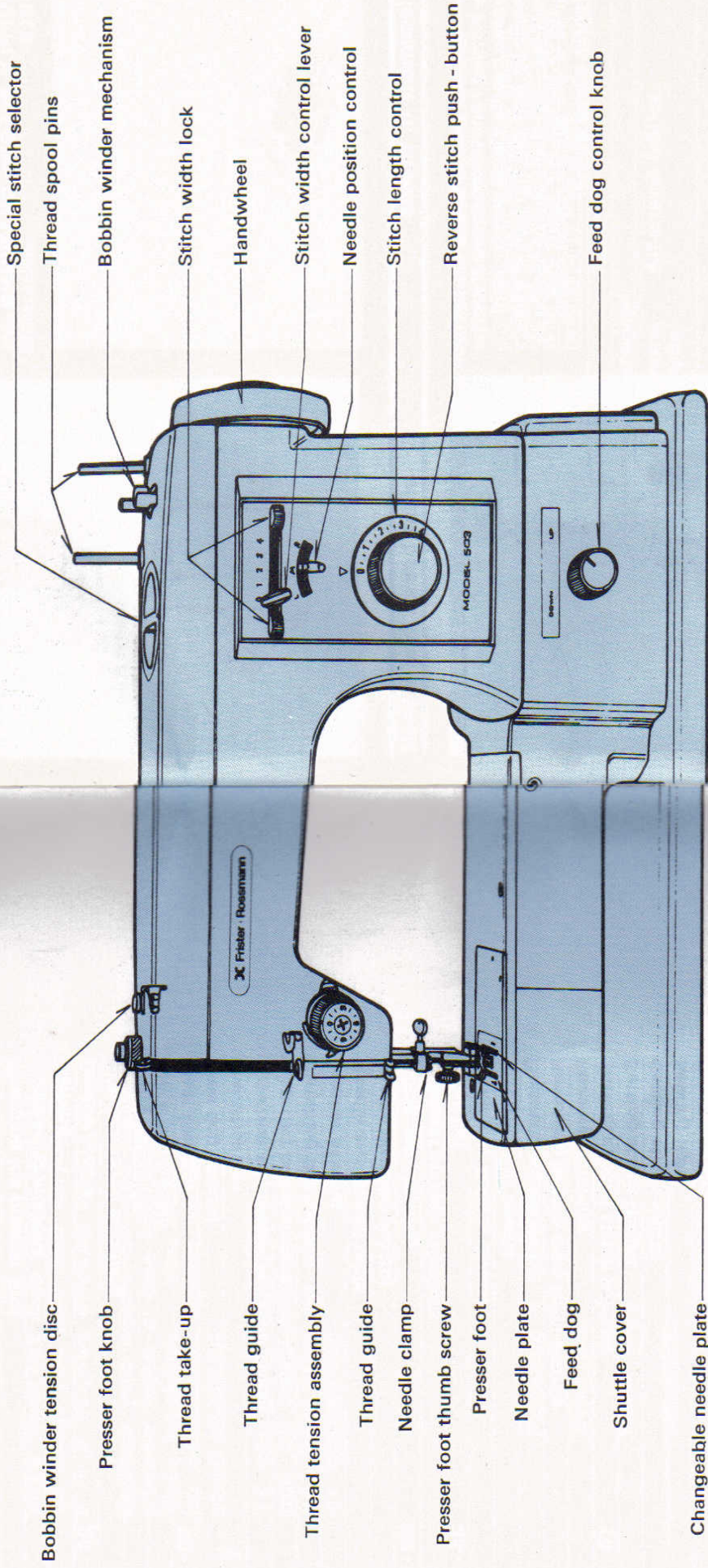
If you have any questions regarding the use of your sewing machine please do not hesitate to contact your supplier or ourselves.

Frister + Rossmann Sewing Machines,
 Limited.
 Mark Way,
 SWANLEY.
 Kent.
 BR8 8NQ

Table of contents

Adjusting machine for good stitches	32
Adjusting tensions	10
Applique	27
Attachments supplied with your machine	30-32
Blind stitching	21
Buttons	30
Buttonhole making	22-23
Changing the presser foot	12
Connecting machine	5
Darning	20
Double needle	28-29
Elastic stretch stitching	25
Fancy hemming	19
Fastening a seam	15
Fault findings	36-37
Feed dog control	11
Identification	2-3
Inserting and removing the material	13
Inserting bobbin into bobbin case	7
Installing flat table	12
Leather sewing	32
Needle and thread table	5
Needle position control	15
Oiling and cleaning	33-35
Overcast stretch stitching	26
Parts list	38-39
Picking up bobbin thread	9
Placement of needle	4
Pressure adjustment	9
Removing bobbin case from shuttle	7
Reverse stitching	14
Setting special stitch selector	16-18
Setting stitch length	14
Setting stitch width	16
Sewing light	4
Smocking stretch stitching	25
Straight or three cornered tear	20
Stretch stitching	24
Threading upper machine	8
Winding the bobbin	6
Writing and monogramming	27
Zigzag and straight stitching plate	11
Zipper sewing	31

Identification

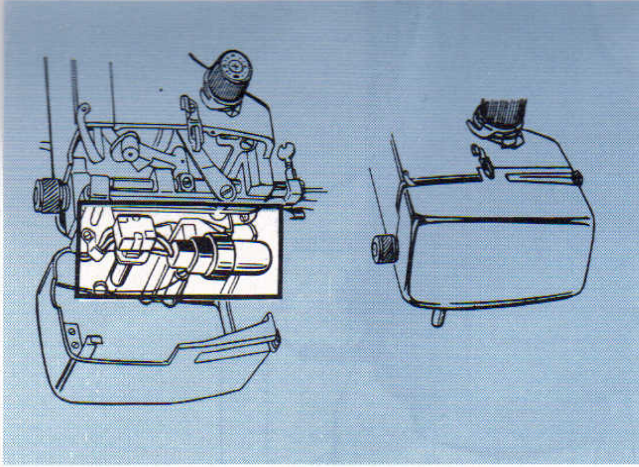


Sewing light

The sewing light is placed inside the face cover plate as shown, and illuminates the sewing area only. It may be turned on or off by pushing light switch, which is located on the back of face cover.

"DISCONNECT FROM MAINS SUPPLY BEFORE CHANGING BULB".

To change bulb, open the face cover plate by swinging it towards left, twist old bulb away from you and remove. Then insert new bulb.



Connecting machine

WARNING - THIS APPLIANCE MUST BE EARTHED. IMPORTANT.

The wires in this mains lead are coloured in accordance with the following code:

Green - and - yellow : Earth.
Blue : Neutral.
Brown : Live.

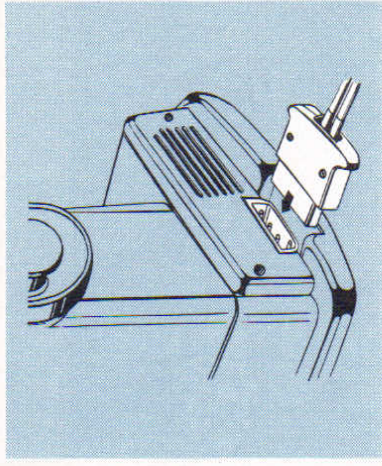
As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured green - and - yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol \equiv or coloured green or green - and - yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

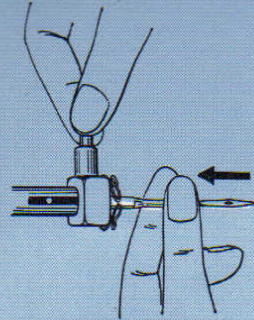
Fit a 3 amp fuse when using a 13 amp (BS 1363) fused plug. If any other type of plug is used protect with a 5 amp fuse either in the plug or adaptor or at the distribution board. If in doubt consult a competent electrician before use.

Push foot control plug into the connector socket at the right hand side of machine column. See illustration.



Placement of needle

Raise needle bar to its highest position by turning handwheel toward you. Loosen needle clamp screw. Hold needle so that the flat side is away from you, slip blunt end of needle as far as it will go into needle clamp. Tighten clamp screw.



Flat side away from you

Needle and thread table

Use System 705 needles. The size of the needle should conform to the size of the thread and both should be suitable to the material. The same size thread should be used in the bobbin as on the upper part of the machine for ordinary sewing.

Never use a bent needle nor one with a blunt point.

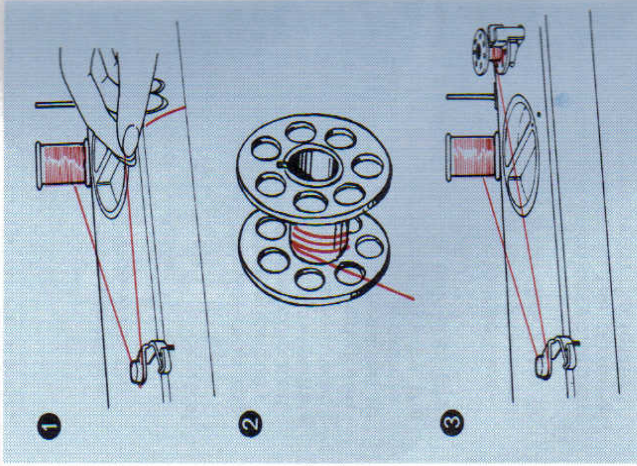
For successful sewing of stretch fabrics use the stretch stitch foot with gold shank and stretch stitch needles with blue shank.

Thread Size	Needle Size		Fabric
	Continental	American	
Cotton 60 - 100 Synthetic Machine embroidery	Frister + Rossmann Blue shank needle	All stretch fabrics.	
Cotton Synthetic Silk A Machine embroidery	70 (7) or 80 (8)	11 or 12	Sheer cottons, silk synthetics, fine laces, batiste, dimity.
Cotton 60 - 80 Mercerized 50 - 60 Synthetic	80 (8) or 90 (9)	12 or 14	Medium weight cottons, medium weight synthetics, poplin, seersucker, gingham, velvet, light weight woollens, linen.
Cotton 30 - 60 Mercerized heavy duty	100 (10)	16	Heavy weight cottons, medium to heavy weight woollens, denim.

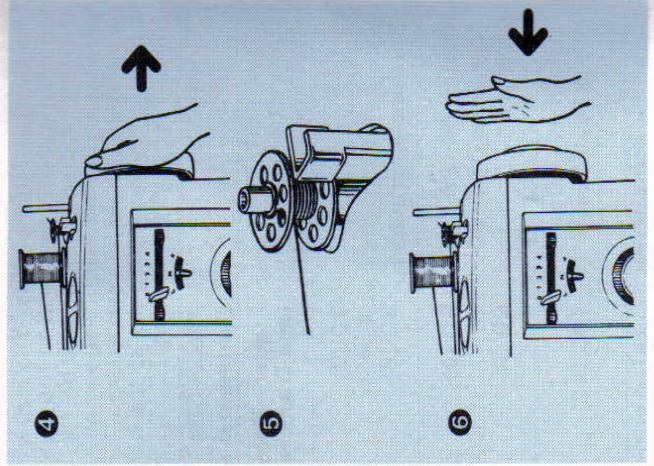
(Note: New machines are fitted with American needle sizes.)

Winding the bobbin

1. Place thread on spool post. Draw thread as shown.
2. Wind thread around bobbin a few times.
3. Place bobbin onto bobbin winder shaft. Push bobbin winder latch until it clicks.

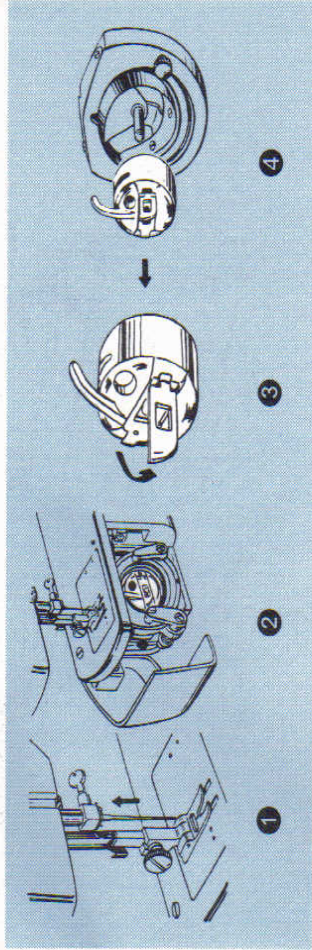


4. Release clutch by pulling hand wheel as shown in Fig. 4. Start machine, holding onto end of thread. When bobbin is slightly filled, release end of thread.
5. When bobbin is full, winding mechanism stops.
6. Push in hand wheel to return to stitching position. Remove bobbin.



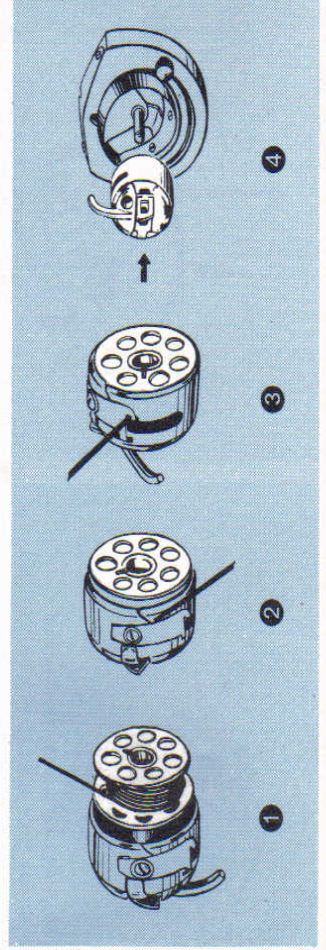
Removing bobbin case from shuttle

1. Raise needle to its highest position.
2. Open shuttle cover.
3. Pull out latch of bobbin case.
4. Pull bobbin case straight out.

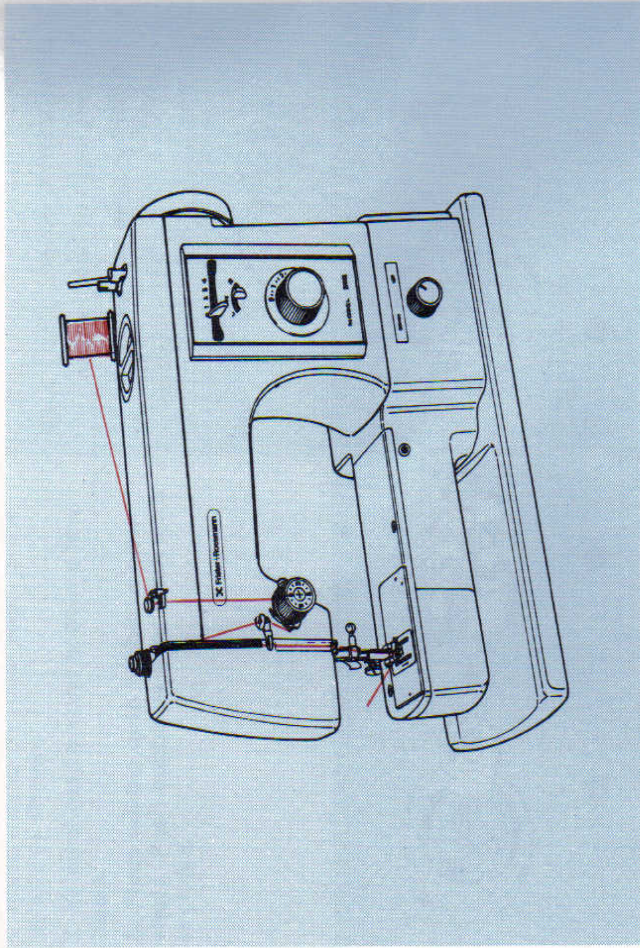


Inserting bobbin into bobbin case - case into shuttle

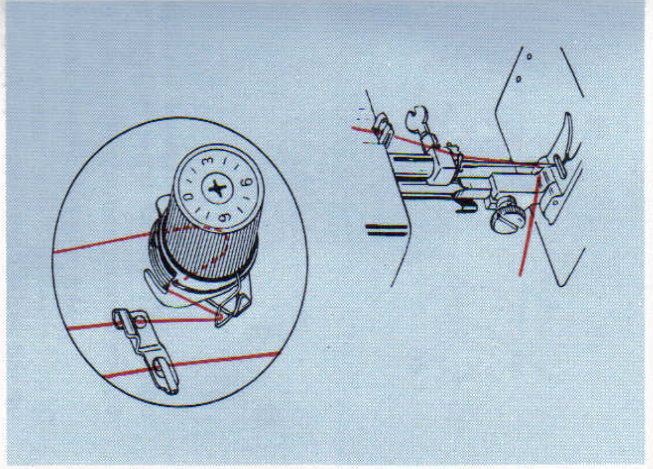
1. Guide bobbin onto center pin of bobbin case.
2. Pull thread through slot.
3. Pull thread under tension spring.
4. Holding latch, position case into shuttle, release latch.



Threading upper machine

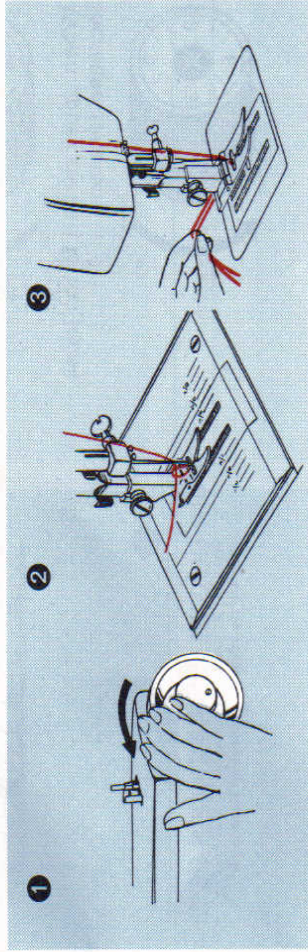


Raise take-up lever to its highest position by turning handwheel.
Guide thread through threading points as illustrated.
Draw sufficient thread through eye of needle.



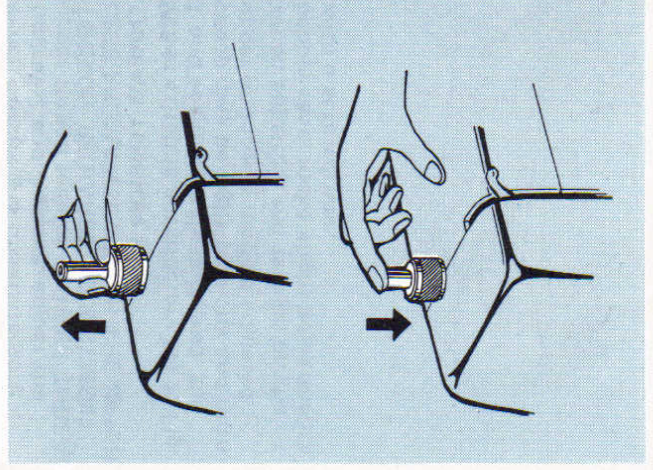
Picking up bobbin thread

1. Raise presser foot lever. Hold needle thread loosely in left hand and rotate handwheel toward you one complete turn.
2. Bring bobbin thread up by pulling upper thread.
3. Place threads back under presser foot.



Pressure adjustment

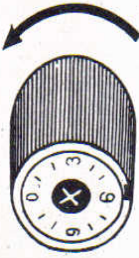
Push down outer ring of presser foot knob (See illustration). This will release pressure of presser foot. To increase pressure, push down inner pin until suitable pressure is obtained. For ordinary sewing, the inner pin should be about half way down. When sewing multiple thickness or heavy material, reduce the pressure. Increase it when sewing sheer fabrics. Insufficient pressure may cause skipped stitches or difficulty in guiding the fabric. If feed dog or presser foot marks appear on the fabrics, reduce the pressure.



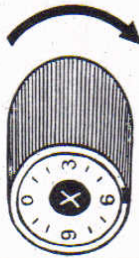
Adjusting top tensions

A perfect stitch will have threads locked between the two layers of fabric with no loops on top or bottom.

When upper thread is too tight, decrease tension.



When upper thread is too loose, increase tension.

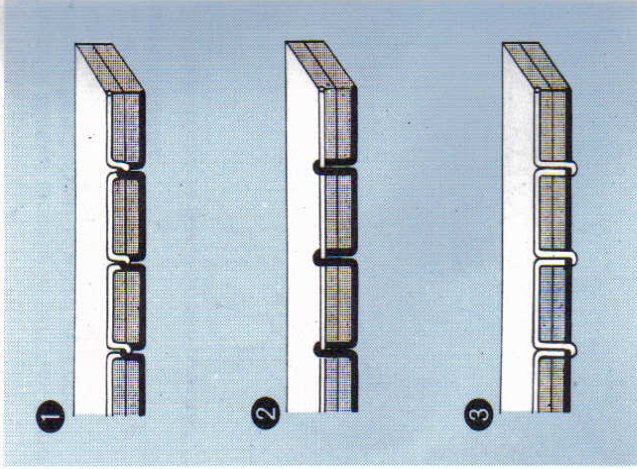


Adjusting bobbin tensions

When stitching is unsatisfactory in figures 2 and 3 above, adjust the upper thread tension. LOWER THREAD TENSION REQUIRES ADJUSTMENT LESS FREQUENTLY THAN THE UPPER THREAD TENSION.

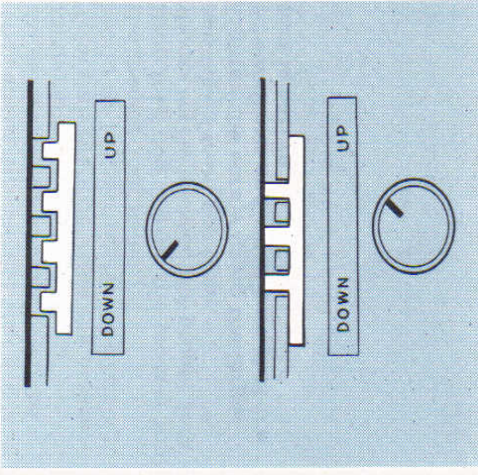
When stitch is satisfactory, as in Fig. 1 and seam is badly puckered, the cause may be tight tensions and both upper and lower may be adjusted.

When adjusting the tension on the bobbin case, make slight adjustments with a screwdriver.



Feed dog control

The feed dog control knob is situated on the bottom of machine column. When knob is turned to the left, feed dog drops and does not pull material. This allows the operator freedom of movement of material, as for darning. For regular sewing, turn knob to the right.



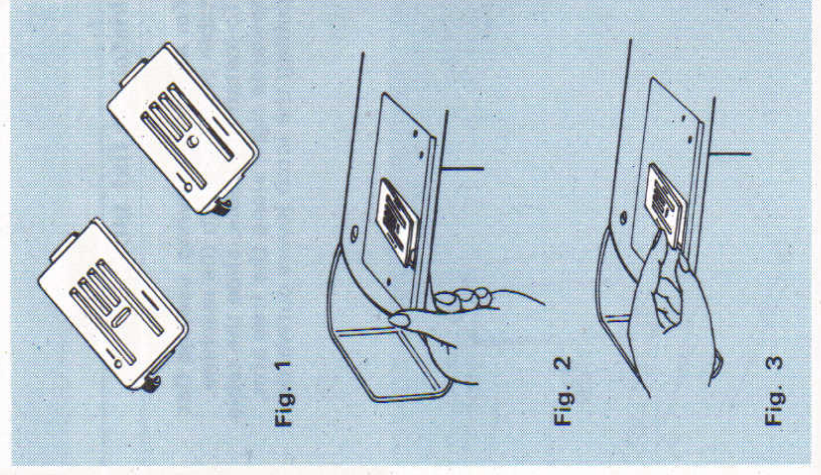
Zigzag and straight stitching plate

Needle plate insert

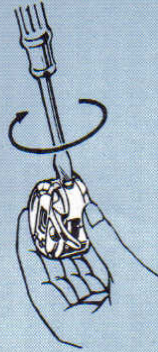
You are provided with two needle plate inserts. The one with the wide oval hole is to be used for all zigzag stitching. The one with the small round hole is for regular straight stitching or straight stretch stitch sewing.

Changing needle plate inserts

1. Raise needle to its highest position and raise presser foot.
2. Swing shuttle cover open.
3. Push a spring under the plate as shown to release the needle plate insert.
4. Remove needle plate insert by placing thumb under edge of plate.
5. Replace the needle plate insert positioning as shown in Fig. 3.
6. Push needle plate insert down to lock into place. Reposition the shuttle cover.

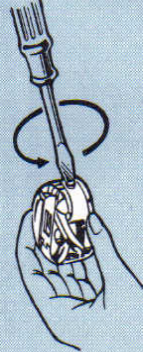


INCREASE TENSION



Turn clockwise.

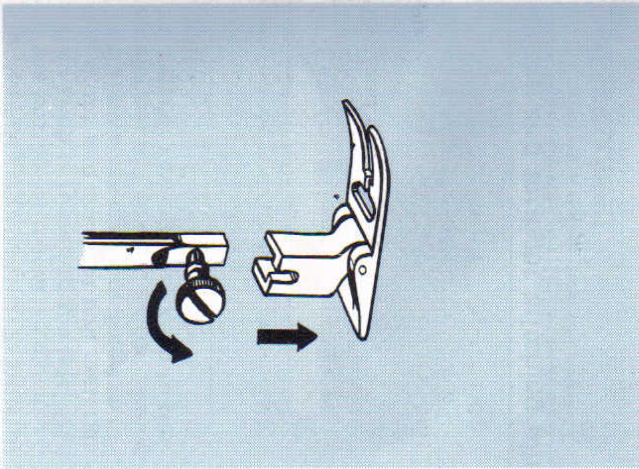
DECREASE TENSION



Turn counter clockwise.

Changing the presser foot

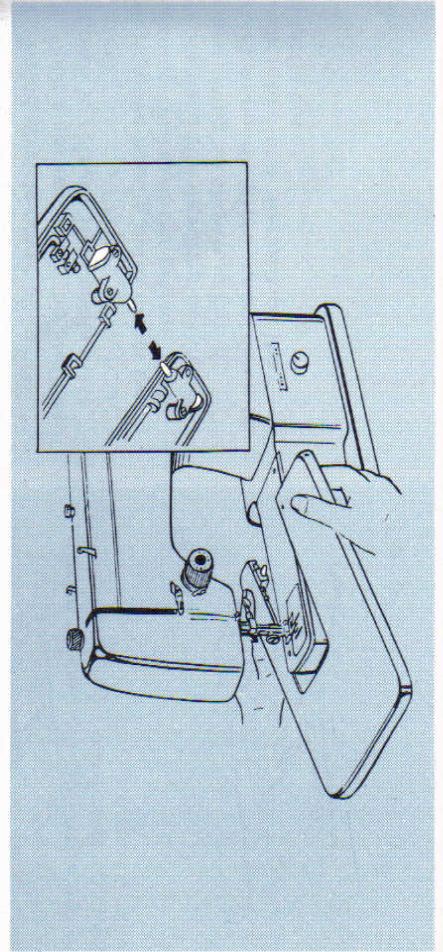
The various attachment feet available for certain kinds of work are to be fastened to the presser bar. To attach the foot, raise the presser bar to its highest position by raising the presser foot lever. Drop feed dog, loosen the presser foot thumb screw, choose the proper foot and insert from the front. Tighten the screw using the large screw driver and make sure that the foot is secure.



Installing flat table

For all normal sewing, use the flat table provided with the machine. To install flat table, slide the table towards right along the free arm, pulling the latch levers outwards.

You can set the table on the machine easily by aligning the red dot on the table with that on the free arm.



Inserting and removing the material

For all kinds of sewing, consult chart page 5.

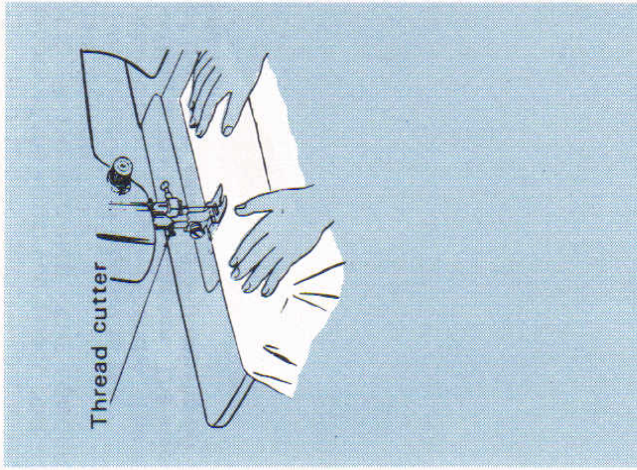
Before placing the material on the machine see that:

- The presser foot and needle clamp screws are both tight.
- The sizes of the needle and thread suit the kind of work to be done.
- The needle is at its highest position.
- The ends of threads have been drawn about 4 inches to the rear of the machine.
- The feed dogs are up.

Place material under the presser foot, insert the needle into the material by turning the handwheel toward you, lower presser foot and start sewing. Experiment by sewing of the fabric to be used to determine tension adjustment and correct stitch settings.

To remove the work, first turn the handwheel toward you until the needle is at its highest position, then raise the presser foot, draw materials to the rear and cut off excess thread with the thread cutter located on the presser bar. To avoid sewing off the end of the material, back tack each seam. See page 15.

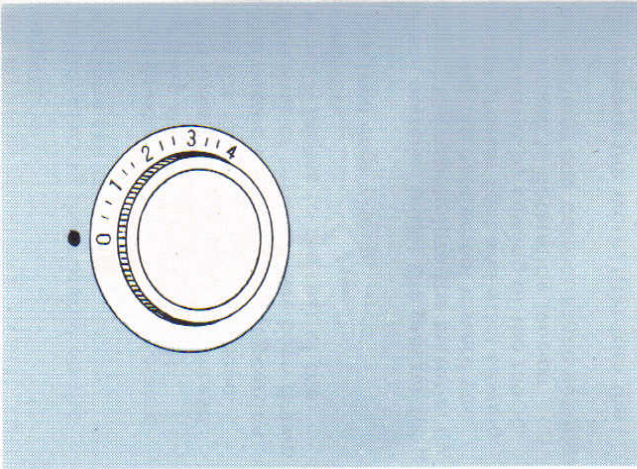
IMPORTANT: Always turn the handwheel toward you! When the machine is not being used, place a piece of material over the feed dog and lower the presser foot. Always have fabric under the presser foot when operating the machine. Operating threaded machine without fabric will cause it to jam by forcing lint into the shuttle. See page 33.



Setting stitch length

The stitch length control regulates the length of the stitch you select. **THE HIGHER THE NUMBER - THE LONGER THE STITCH.**

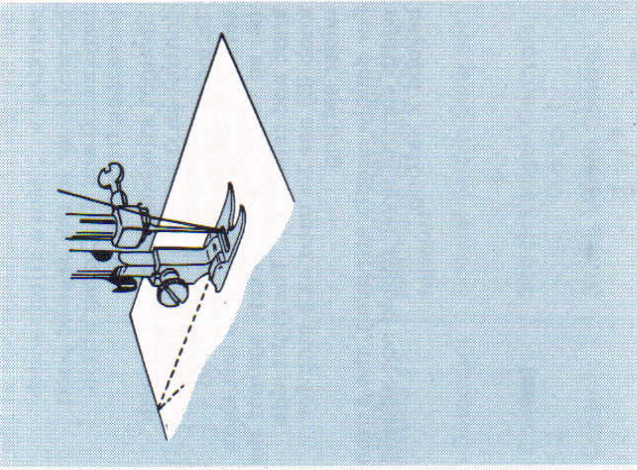
Turn stitch length control to the desired point between 0 and 4. The 4 setting is the longest stitch. The size of the stitch selected will depend on the fabric sewn.



Fastening a seam

Be sure both threads are drawn back under the presser foot. Lower needle into fabric about $\frac{1}{2}$ inch from beginning of seam.

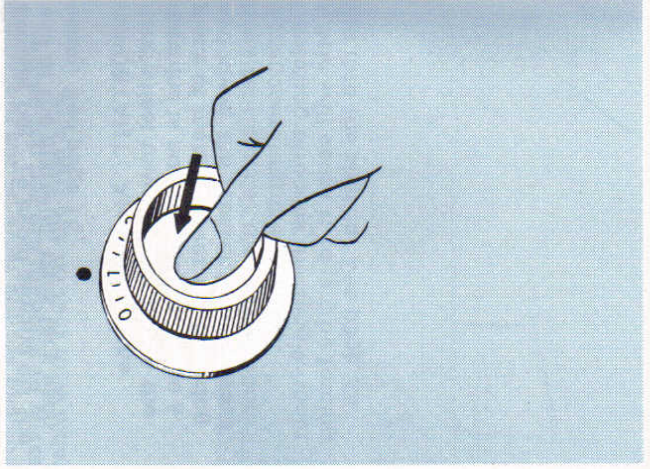
Push reverse push button for reverse stitching. Stitch in reverse until needle reaches beginning of seam. Release button for forward stitching and complete seam. When you reach the end push reverse button and sew back over $\frac{1}{2}$ inch of completed seam.



Reverse stitch control

It is best to begin and end seams with a few stitches taken in reverse. This is called back tacking. Back tacking fastens the ends of the seams firmly and prevents ravelling.

When reverse stitching is needed, simply push and hold in the center of the stitch length control. The fabric will immediately start feeding backwards and seam will be fastened.

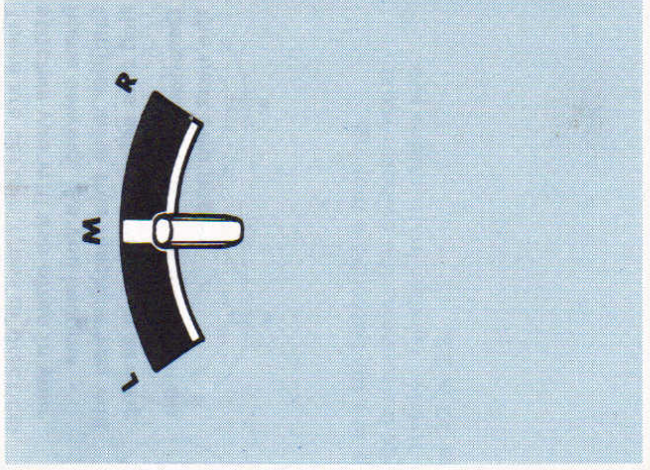


Needle position control

Move needle position control lever to right (R), centre (M) or left (L) for corresponding needle position. The needle should be at its highest point when adjusting needle position or stitch width while the machine is stopped.

For certain kind of work such as sewing zippers, bindings, etc. (straight stitch), and buttons, buttonholes, etc. (zigzag stitch), a straight or zigzag stitch can be displaced from left to right.

For ordinary sewing the control should be set at "M" position.



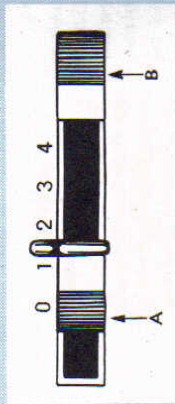
Setting stitch width

Set the special stitch selector at the marking ●. Move stitch width control lever to the desired point between 0 and 4. Zigzag stitch increases from 0 to 4.

Straight stitching is possible with control on 0 setting.

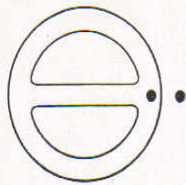
To lock the lever at the desired setting, push and move the left knob (A) so that the lever rests against the knob and release it. The right side knob (B) can be used as a stop for wider setting.

For double needle stitching, the stitch width control lever should not advance beyond 2 setting.



Special stitch selector

Straight and zigzag stitch



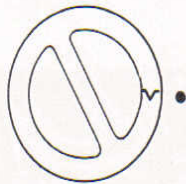
You can straight stitch and zigzag stitch by setting as follows:

Special Stitch Selector: ●

Stitch Length Control: any number 0.5 to 4

Stitch Width Control: any number 0 to 4

Blind Hem



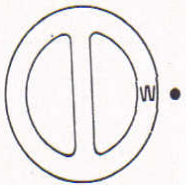
You can make blind hemming by setting as follows:

Special Stitch Selector: √

Stitch Length Control: 1.5 to 2

Stitch Width Control: 1.5 to 2

Fancy Hem



You can make fancy hemming by setting as follows:

Special Stitch Selector: ∑

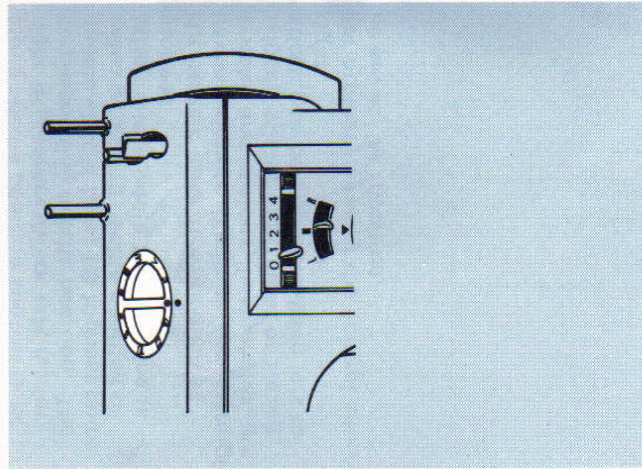
Stitch Length Control: 0.5 to 1

Stitch Width Control: 2 to 4

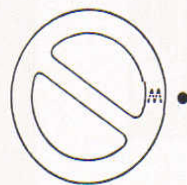
Special stitch selector

There are certain types of practical stitches you will use often in your home sewing. As you become familiar with this machine you will find this selector useful in sewing.

Detailed instructions are given on the next two pages.



Mending Stitch



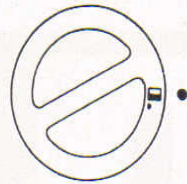
You can achieve fine mending stitches by setting as follows:

Special Stitch Selector: ∑

Stitch Length Control: near 0.5

Stitch Width Control: 4

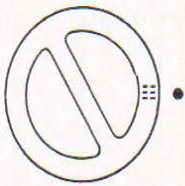
Buttonhole Making



These settings are for buttonhole making. When you make buttonhole, the selector must be set to '1' firstly. Further instructions are given on pages 22 & 23.

Special stitch selector

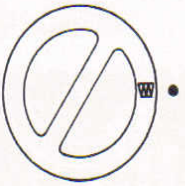
Stretch Stitch



You can stretch stitch by setting as follows:

Special Stitch Selector: III
 Stitch Length Control: 4
 Stitch Width Control: 0 to 4

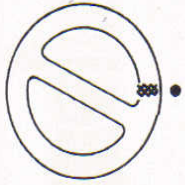
Elastic Stretch



You can make elastic stretch stitching by setting as follows:

Special Stitch Selector: II
 Stitch Length Control: near 3
 Stitch Width Control: 4

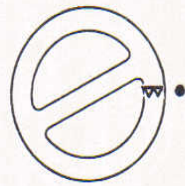
Smocking Stretch



You can make smocking stretch stitching by setting as follows:

Special Stitch Selector: I
 Stitch Length Control: near 3
 Stitch Width Control: 4

Overcast Stretch



You can make overcast stretch stitching by setting as follows:

Special Stitch Selector: I
 Stitch Length Control: near 3
 Stitch Width Control: 4

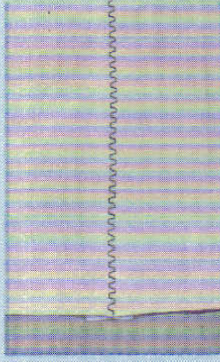
Fancy hemming

This attractive stitch is used for attaching lace, combining two pieces of fabric, decorating pocket cover and so on as shown. As you become familiar with your machine, you will be able to find out new uses of this stitch.

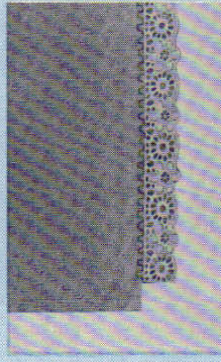
Setting:

Special Stitch Selector: Σ
 Stitch Length Control: 0.5 to 1
 Stitch Width Control: 2 to 4
 Needle Position Control: M

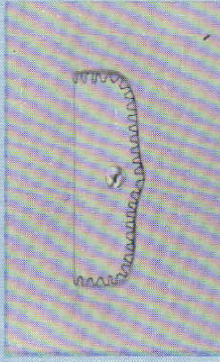
Combining fabrics



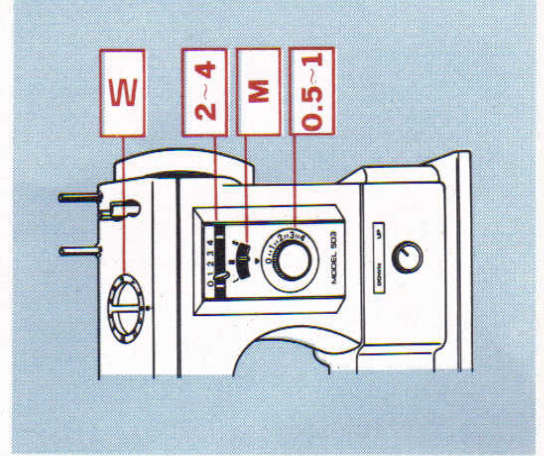
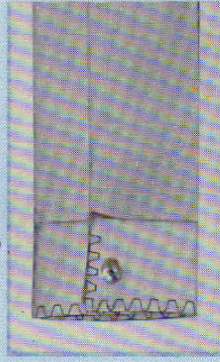
Attaching lace



Design on pocket



Design on cuff



Darning

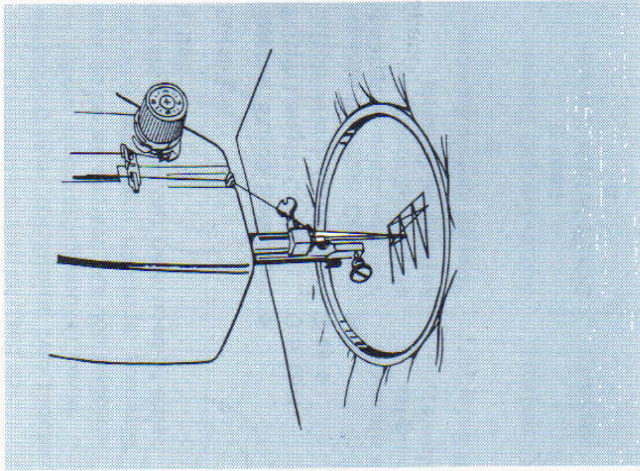
Special stitch selector: ●

Drop feed dog.

Remove presser foot. Stretch fabric between embroidery hoops and place under needle. Draw the bobbin thread up through fabric by holding the upper thread and taking one stitch at the spot where you wish to begin darning. Lower presser bar. Start sewing at a medium machine speed. Move the fabric back and forth with a steady rhythm to cover the darning area.

Then turn the fabric and sew another layer of stitching at right angles to the first. Move the fabric fast for long stitches, slowly for short stitches.

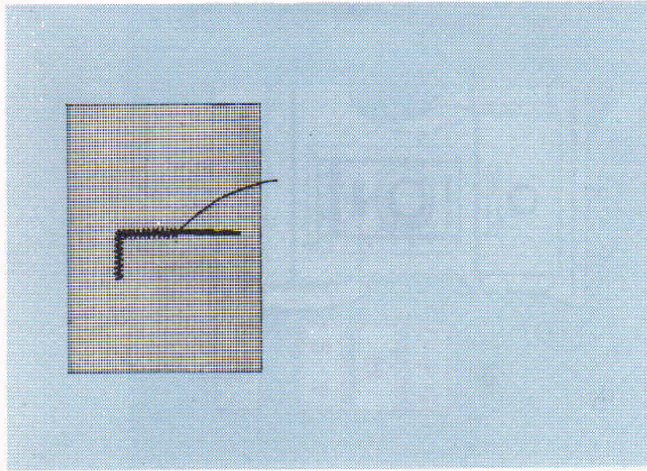
If you wish to darn without using embroidery hoop, leave the presser foot attached, move feed dog control to the left, and push down outer ring of presser foot knob, thereby the pressure on the presser foot is released. Then proceed as above, stretching fabric tightly between hands.



Straight or three-cornered tear

Special stitch selector: ❄

Set stitch width to 4. Set stitch length to 1/2. Position tear under needle and stitch along the straight tear catching sides of material. When mending a three cornered tear, stitch from each end to center.



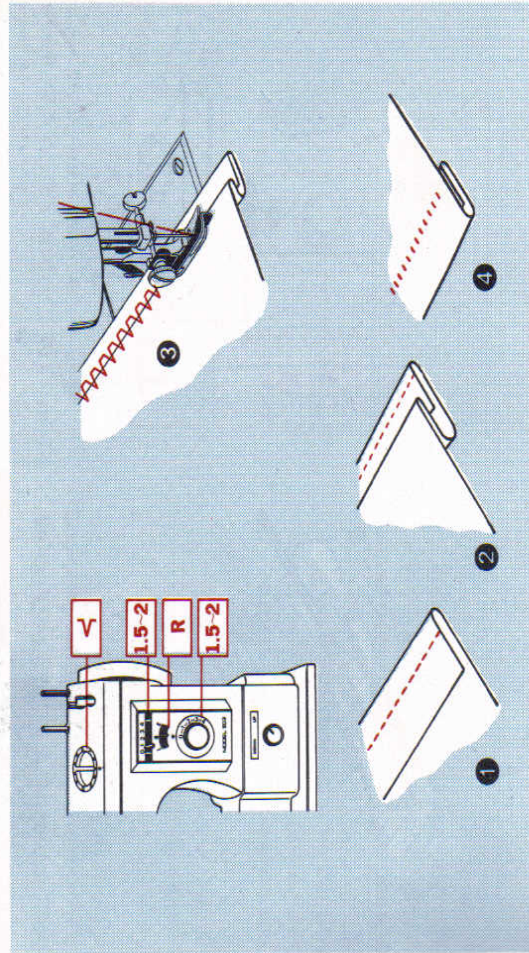
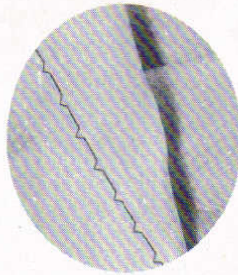
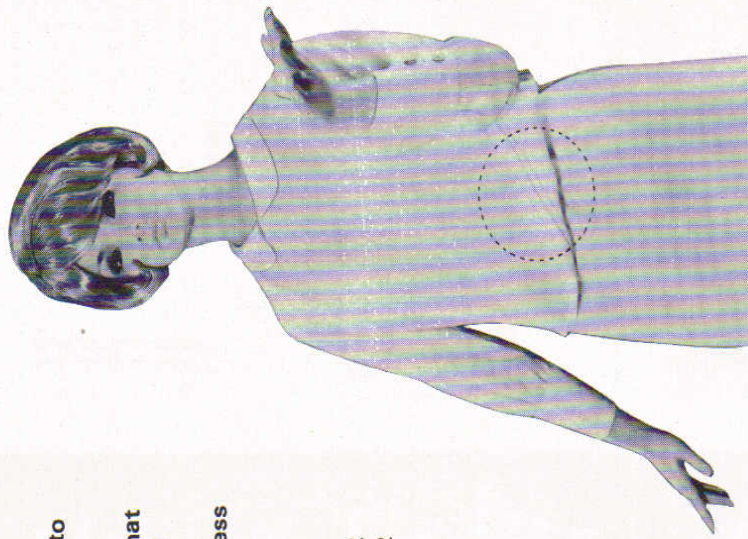
Blind stitching

Follow the instructions below.

1. Fold material and baste.
2. Make second fold overlapping basting.
3. Insert the blind stitch guide into the right side of the presser foot thumb screw as shown, so that one zigzag stitch catches second fold.
4. Unfold, remove basting and press hem.

Setting:

Special Stitch Selector: <
 Stitch Length Control: 1.5 to 2
 Stitch Width Control: 1.5 to 2



Buttonhole making

Carefully mark the buttonhole length on your garment. Mount one of the buttonhole guides onto the presser foot so that rear edge of presser foot is at the rear end of the guide as shown below. Place the fabric with the buttonhole marked under the buttonhole guide. Slide the guide foot forward so that the needle pierces the fabric at the beginning of the buttonhole.

One of the buttonhole guides must be fixed to obtain perfect buttonholes.

Setting:

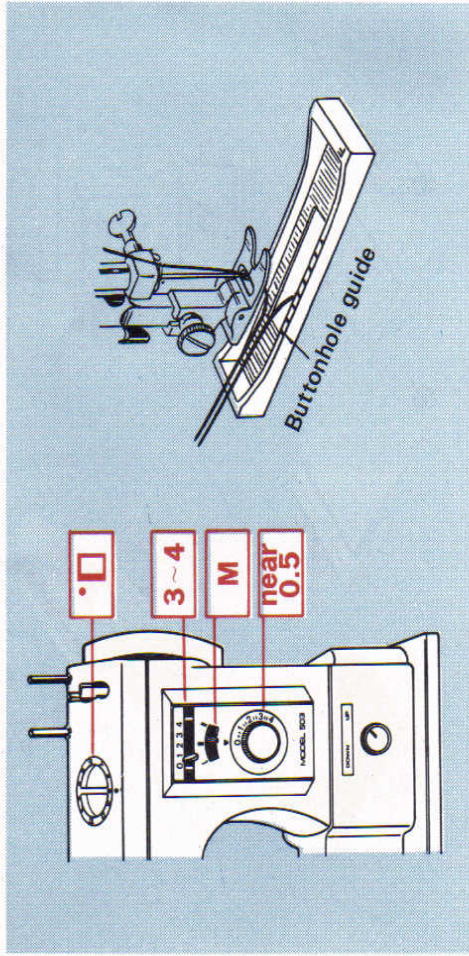
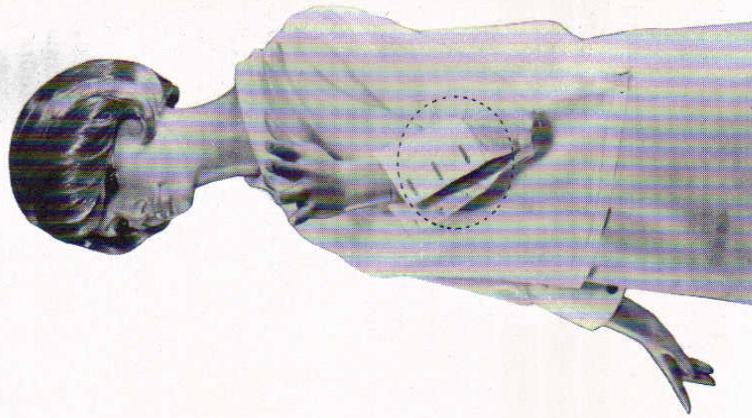
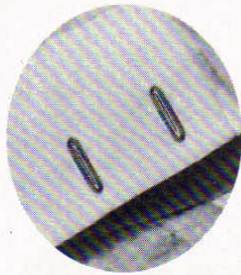
Set your machine as follows.

Special Stitch Selector: See page 23

Stitch Length Control: near 0.5

Stitch Width Control: 3 to 4

Needle Position Control: M



Buttonhole making

Always make a practice buttonhole on a piece of the fabric to be used in the garment. Try the buttonhole with the button you will use.

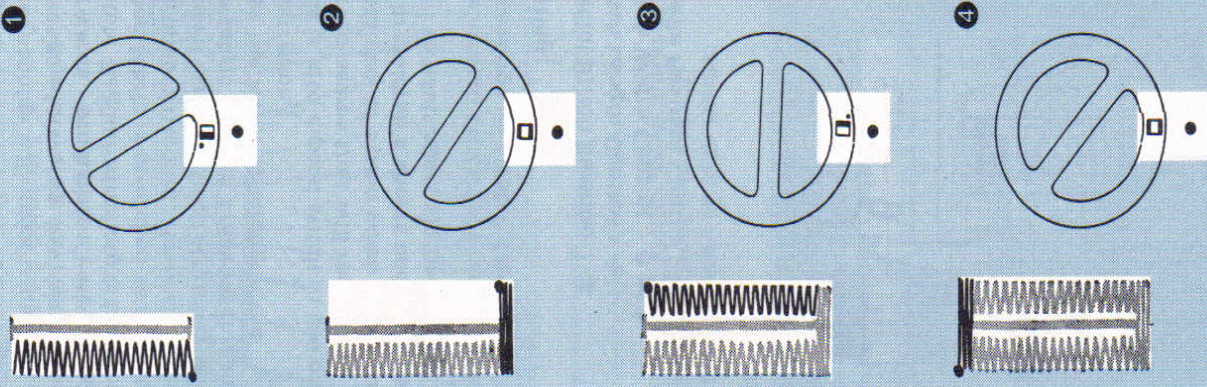
1. Set special stitch selector to . Stitch forward until you reach the front marking of your buttonhole. Stop sewing at the left stitch and then raise needle at its highest position by turning hand/wheel toward you manually.
2. Set special stitch selector to and bartack several times. Stop sewing at the right stitch. Raise needle at its highest position as in step 1.
3. Set special stitch selector at and continue sewing until needle reaches beginning of your buttonhole. Stop sewing at the right stitch and then raise needle as in steps 1 & 2.
4. Set special stitch selector to again and bartack to complete buttonhole.

If the forward stitching does not exactly match the reverse stitching, slightly adjust the stitch length control during forward sewing.

Also, if making a smaller buttonhole than maximum length, drop feed dog to bartack in steps 2 and 4.

To make firm well stitched buttonholes in heavier fabrics, repeat only steps 1 and 3.

You have been provided with an assortment of buttonhole guides in making buttonholes. They are $\frac{3}{8}$ " , $\frac{1}{2}$ " , $\frac{5}{8}$ " , $\frac{3}{4}$ " and $1\frac{1}{8}$ " and are marked accordingly. By using these identical bar tacked buttonholes every time.



Stretch stitching

This special stretch stitch is ideally suitable for knitted fabrics and other stretch materials. Sew as you do a regular straight stitch seam.

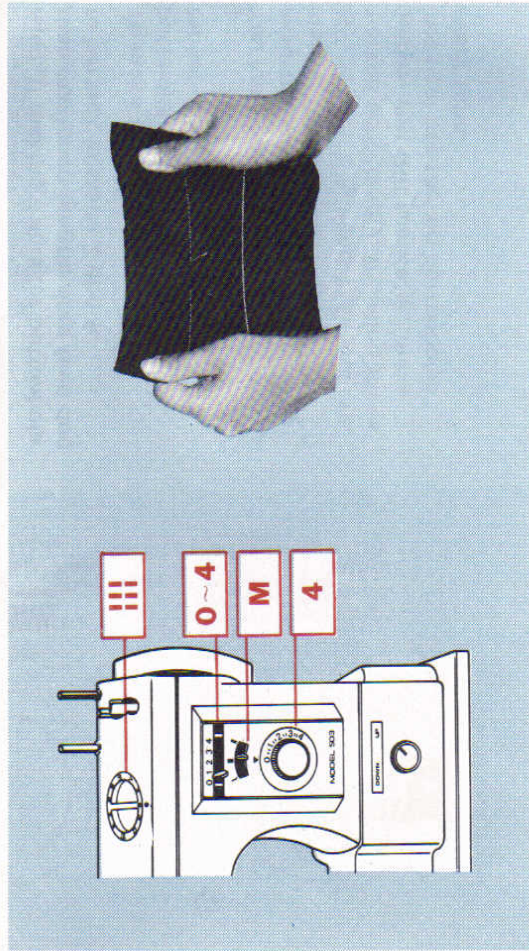
The machine will make triple lock stitches - forwards, backwards and forwards - producing a very strong stitch. Regular stitching is broken when fabric is stretched as shown in the upper stitching. However, this special stretch stitch stretches with the fabric without breaking thread. (See the lower stitching in the illustration.)

This is also a good stitch to use on curved seams that will receive a great deal of strain when worn, such as in children's shorts and slacks as well as adult sport clothes.

Use stretch stitch foot for all kinds of sewings on stretch fabrics.

Setting:

Special Stitch Selector : ■■■
Stitch Length Control : 4
Stitch Width Control : 0 to 4
Needle Position Control : M



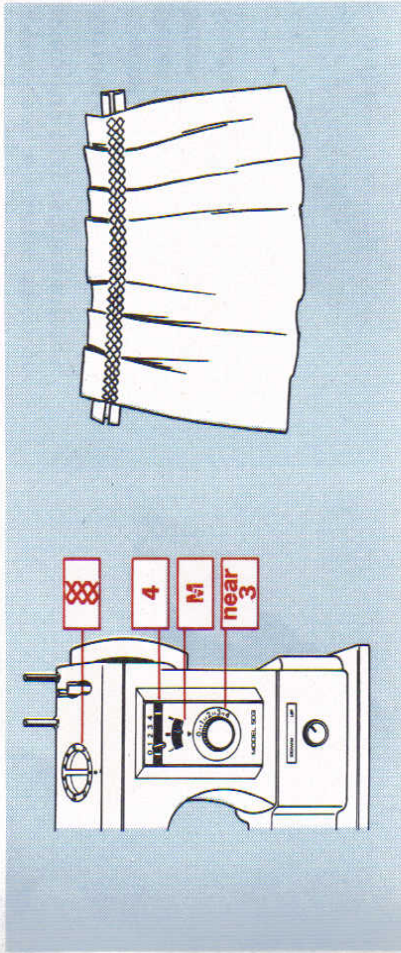
Smocking stretch stitching

With a narrow strip of fabric directly under the line of gathering, stitch over the gathers. The design will be a series of small diamonds. Make the design more interesting by using two different colors of thread.

When smocking a garment, the stitching should be done before the piece is sewn into the garment.

Setting:

Special Stitch Selector : ⌘
Stitch Length Control : near 3
Stitch Width Control : 4
Needle Position Control : M



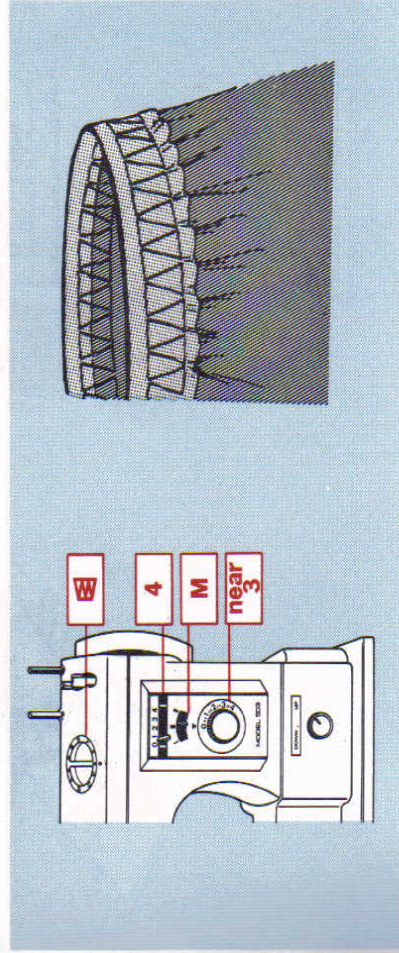
Elastic stretch stitching

This is a good stitch to use in making or repairing lingerie. The stitch is decorative as well as useful. It has a lot of stretch to it and is strong as well. Simply stitch the elastic into place around the waist of the garment, making sure that the elastic is evenly distributed. To do this mark the correct length piece into

quarters and match these marking with center front and back of garment as well as side seams.

Setting:

Special Stitch Selector : ■
Stitch Length Control : near 3
Stitch Width Control : 4
Needle Position Control : M



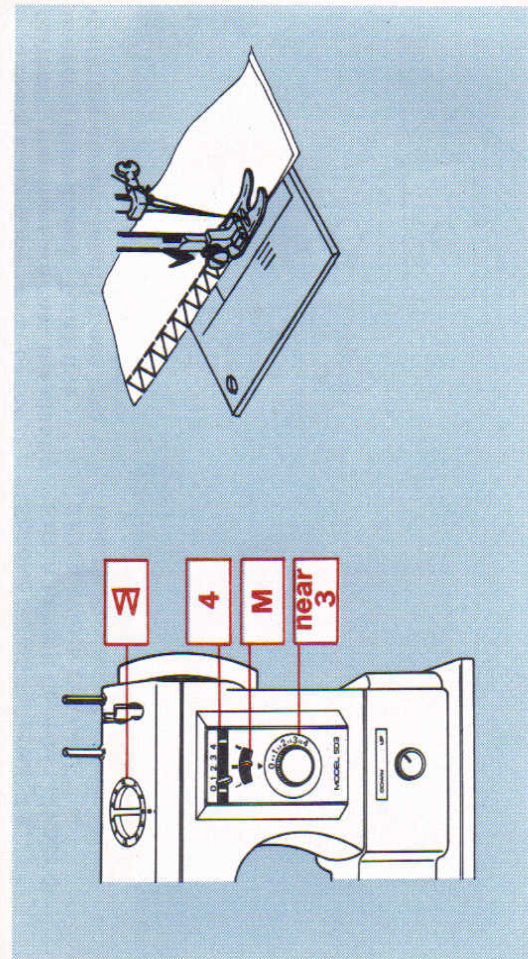
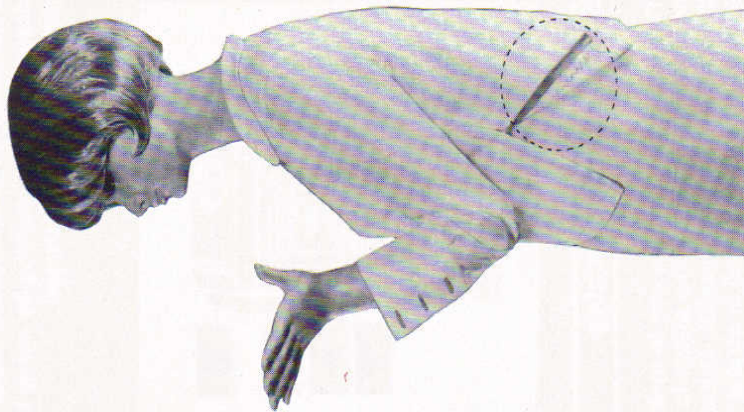
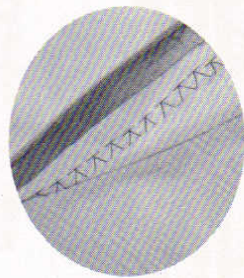
Overcast stretch stitching

The raw edge of each seam allowance can be overcast to prevent further ravelling.

This is the same type of stitch used by the garment industry in making sportswear. The seam is formed and finished in one operation. It must be used when you are making swimwear, ski pants and other garments that require stretch.

Setting:

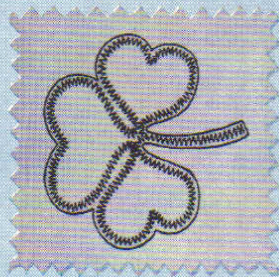
- Special Stitch Selector: 3
- Stitch Length Control: near 3
- Stitch Width Control: 4
- Needle Position Control: M



Applique

Special stitch selector: •

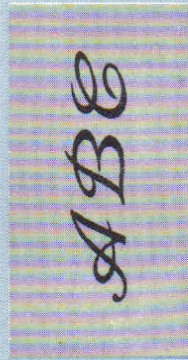
Baste cutout applique to fabric. Set stitch width 2 to 4. Set stitch length at 1/2 to 1. Zigzag stitch around applique completely covering the raw edge.



Writing and monogramming

Special stitch selector: •

Drop feed dogs. Draw initials or words to be sewn on fabric and fit fabric into embroidery hoops. Writing is done with either zigzag or straight stitching. Remove presser foot. Set stitch width for straight or zigzag stitches as desired. Slip hoop and fabric under the needle, lower presser bar and take one stitch to raise bobbin thread through fabric. Using a medium speed, stitch along marked outline, guiding fabric carefully by hands.



Using the double needle

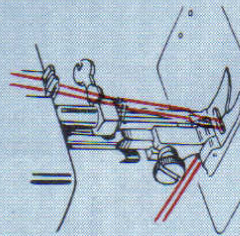
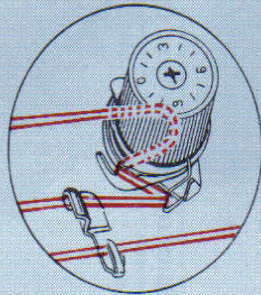
The machine is set exactly the same as when using the single needle with one important exception. The Stitch Width Control must never be set beyond 2. The double needle will be broken if a wider stitch is used.

Placement of needle:

Raise the needle bar to its highest position and loosen the needle screw. Hold the double needle with the flat side away from you. Slip the needle into the needle bar as far as it will go. Tighten the screw.

Threading the double needle:

Place a spool of thread on each spool pin. Draw both threads through the upper thread guides. Pass a thread between each set of tension discs of the top thread tension control. Continue threading as you do for single needle sewing except where double thread guides are provided. Draw one thread through each side of the double thread guides and through each needle from front to back. Turn hand wheel manually once to be sure needle will clear the presser foot. Pick up bobbin thread as for single needle sewing. Pull threads to back of foot and start to sew.



Using the double needle

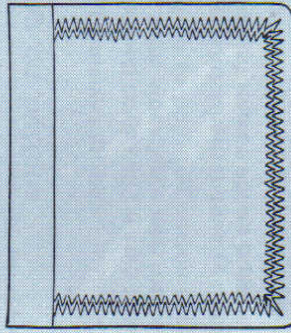
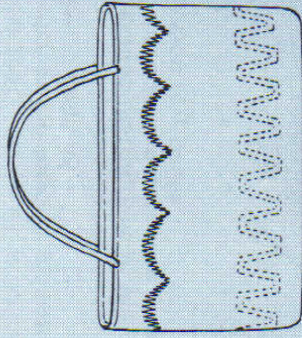
You may find that you would like to use the double needle for designs. Whenever you use the double needle even for straight stitching, remember the following things:

- * Use a zigzag presser foot and needle plate slot.
- * Always make a practice design on a scrap of the fabric you plan to use.
- * Start with a full bobbin and plenty of thread on the spool to avoid running out of thread in the middle of your design.

For your reference of uses of the designs, see the illustration. You will soon be combining designs and creating new uses when you become familiar with your machine.

Turning a corner with double needle:

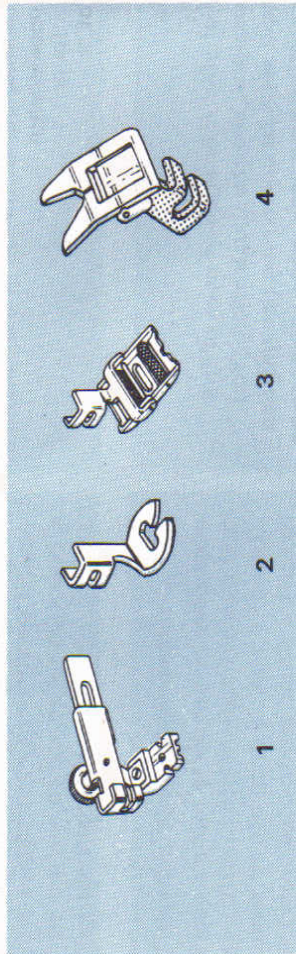
To turn a square corner with a double needle, stop stitching with the longer needle tip just piercing the fabric. Raise the presser foot, shift fabric half the turn, lower presser foot and take one stitch. Raise the presser foot again, complete the turn, and begin stitching in the new direction.



Attachments supplied with your machine

1. Zipper foot (P. # 33818)
2. Button sewing foot (P. # 614)
3. Roller foot (P. # 28203)
4. Stretch stitch foot (P. # 34482)
Refer to page 24.

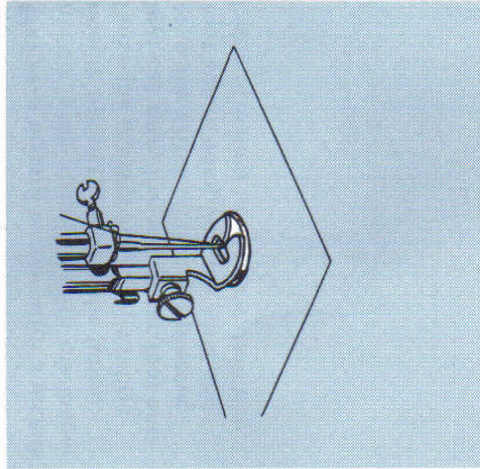
Very detailed instructions in the use of these attachments are given in following few pages.



Sewing on buttons

Use button sewing foot.

1. Drop feed dogs. Align two holes of button with slot of presser foot and lower foot to hold the button securely.
2. Turn hand wheel manually until needle point is just above button.
3. Adjust stitch width control so needle will enter one hole of the button.
4. Turn hand wheel again by hand so needle enters second hole. Readjust stitch width if necessary. Stitch a number of times.
5. Finish sewing with an extra two inches of thread remaining. Draw these threads to reverse side of garment and tie.



Zipper sewing

This foot is used to insert a zipper or to cover cording. Attach the Zipper Foot.

Regular zipper:

This foot is reversible so you can stitch to the right or to the left of a zipper or a cord. To sew on the left place the foot to the left of the needle so that the needle passes through the opening on the right side of the foot. (See Fig. 1).

To sew on the right, adjust the foot so that it is to the right of the needle with the needle passing through the opening on the left side of the foot.

Concealed zipper:

To sew on the left of the zipper, use the right groove on bottom of foot. (See Fig. 2). To sew on the right of the zipper, use the left groove on bottom of foot.

Cording:

To make cording for slipcovers, etc., cover the cord with a strip of bias from the fabric you are using. Enclose the cord in the bias strip. (See Fig. 3).

Setting:

Set your machine as follows:

- Special Stitch Selector : ●
- Stitch Length Control : 1.5 to 2
- Stitch Width Control : 0
- Needle Position Control : M

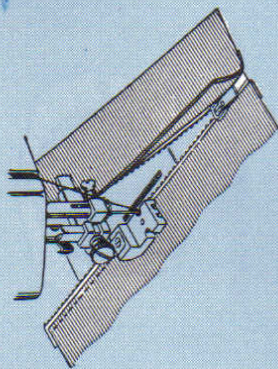
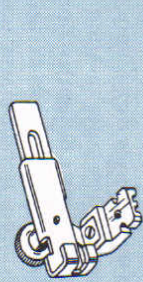
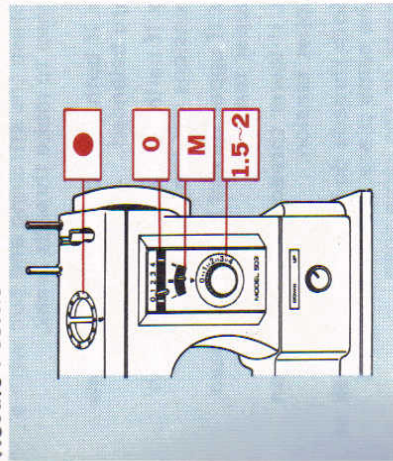


Fig. 1

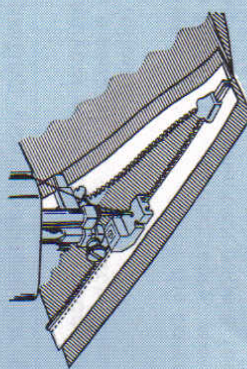


Fig. 2

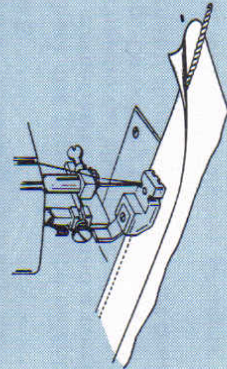
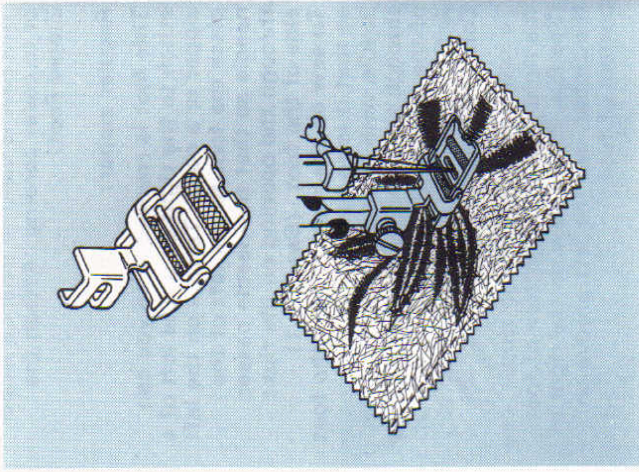


Fig. 3

Leather sewing

Use the roller foot when sewing leather, rubber or plastic materials. When sewing such materials it is better to use straight or simple zigzag stitching rather than any of the built-in automatic practical stitches. You will obtain better results using a longer stitch length.



Adjusting your machine for good stitches

When your sewing machine does not sew a properly locked stitch, check the following:

1. Insert a new needle of the correct size for the thread and fabric you are using. Consult chart on page 5 for needle size.
2. The upper and bobbin thread should be matched in size and type.
3. Check threading carefully. See page 8.
4. Check the thread tension balance. Use mercerized thread, and a correct size needle for the fabric you are using. Do not try this test with synthetic thread as it will not break.

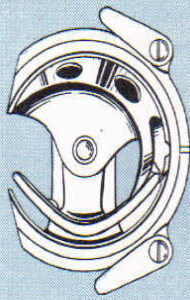
Begin with a full bobbin, properly threaded into the case. Set the stitch length at about 12 stitches per inch. Fold a 6" square of your fabric in half diagonally, forming a triangle. Make a line of stitching $\frac{1}{2}$ " from fold.

Oiling and cleaning

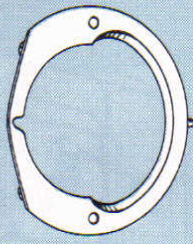
To insure the best possible operation of your machine, it is necessary to keep the essential parts clean at all times. Using a small brush, remove the lint that accumulates in the shuttle area and around the feed dogs.

To Clean the Shuttle Area:

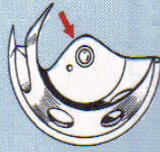
1. This area must be kept free of dust, lint and an occasional tangled thread. Raise the needle bar to its highest point and remove the bobbin case.
2. Push levers of shuttle race aside and lift hook ring and shuttle out.
3. Clean the shuttle race with small brush.
4. Put a drop of oil on the center pin of the shuttle and shuttle race. (see arrows)
5. To reassemble, hold shuttle by center pin and fit carefully into assembly opposite the shuttle driver. Slip shuttle race cover into place. Snap the levers into position.



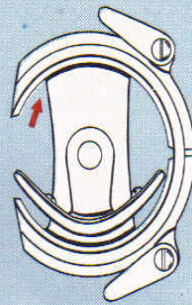
Shuttle Assembly



Shuttle Race Cover



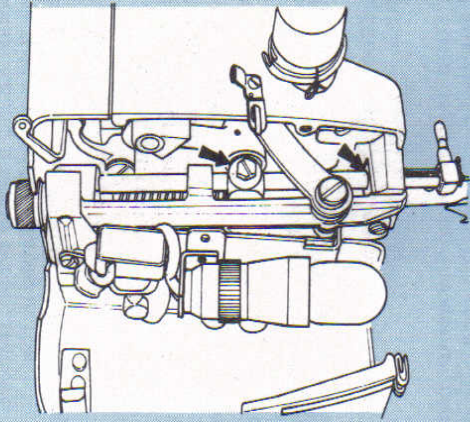
Shuttle



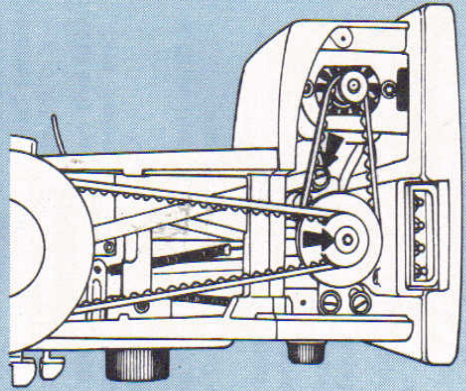
Shuttle Race

Oiling and cleaning

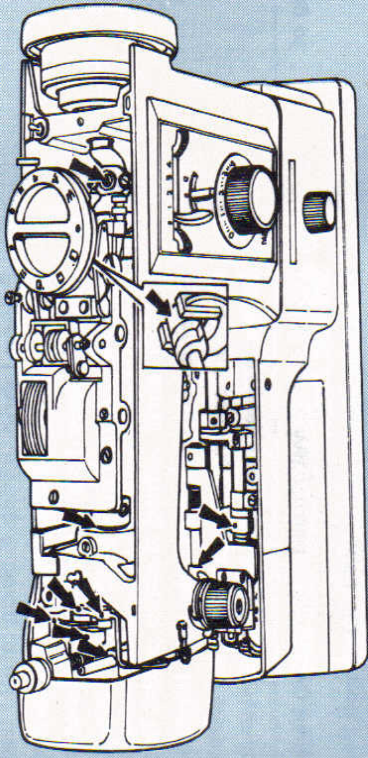
Swing hinged face cover plate open to oil points indicated at the end of machine head.



Remove the cover to oil points indicated at end of machine.



Oiling and cleaning

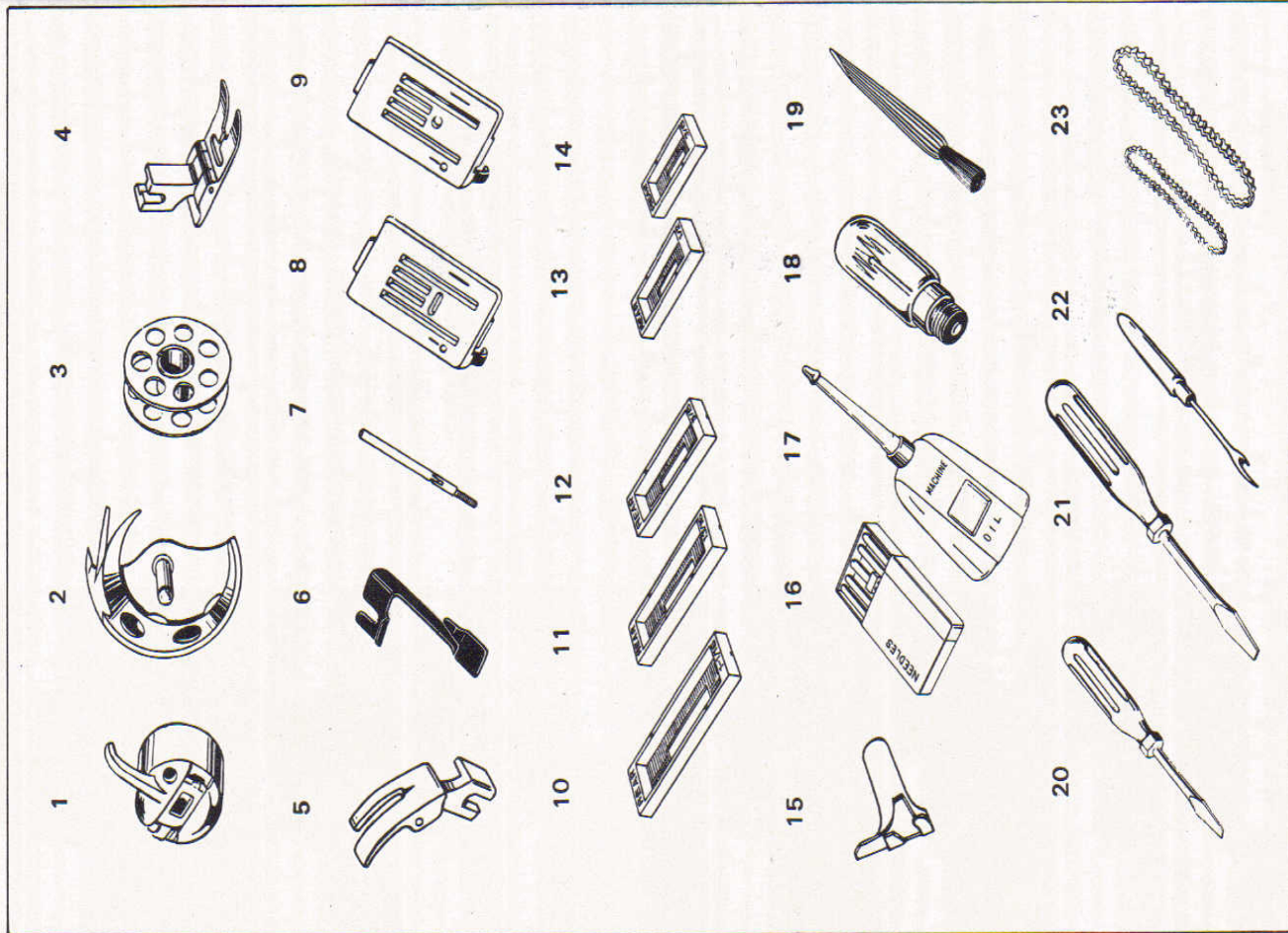


Remove arm cover plate to oil points indicated at top of machine head. To remove cover plate, lift cover.

Remove free arm cover to oil points indicated inside free arm. To remove cover, loosen screws, raise needle bar and presser foot, and lift cover.

Fault findings	PROBLEM	PROBABLE CAUSE	CORRECTION
Irregular Stitches	<p>Incorrect size needle.</p> <p>Improper threading.</p> <p>Loose upper thread tension.</p> <p>Pulling fabric.</p> <p>Light pressure on presser foot.</p> <p>Loose presser foot.</p> <p>Unevenly wound bobbin.</p>	<p>Choose correct size needle for thread and fabric (page 5).</p> <p>Rethread machine (page 8).</p> <p>Tighten upper thread tension (page 10).</p> <p>Do not pull fabric; guide it gently.</p> <p>Increase pressure on presser foot (page 9).</p> <p>Reset presser foot (page 12).</p> <p>Rewind bobbin (page 6).</p>	<p>Do not pull fabric; guide it gently.</p> <p>Choose correct size needle for thread and fabric (page 5).</p> <p>Reset needle (page 4).</p> <p>Reset presser foot (page 12).</p>
Breaking Needles	<p>Pulling fabric.</p> <p>Incorrect size needle.</p> <p>Incorrect setting of needle.</p> <p>Loose presser foot.</p>	<p>Draw both threads back under presser foot (page 9).</p> <p>Raise feed dog (page 11).</p>	<p>Reset thread tension(s) (page 10).</p> <p>Increase pressure on presser foot (page 9).</p> <p>Upper thread and bobbin thread should be same size and kind.</p> <p>Insert new needle (page 4).</p> <p>Reset presser foot (page 12).</p> <p>Use underlay of tissue paper when stitching.</p>
Bunching of Thread	<p>Upper and lower threads not drawn back under presser foot.</p> <p>Feed dog down.</p>	<p>Reset thread tension(s) (page 10).</p> <p>Increase pressure on presser foot (page 9).</p> <p>Upper thread and bobbin thread should be same size and kind.</p> <p>Insert new needle (page 4).</p> <p>Reset presser foot (page 12).</p> <p>Use underlay of tissue paper when stitching.</p>	<p>Choose correct size needle for thread and fabric (page 5).</p> <p>Insert new needle (page 4).</p> <p>Reset needle (page 4).</p> <p>Loosen upper thread tension (page 10).</p> <p>Increase pressure on presser foot (page 9).</p>
Puckering	<p>Incorrect thread tension(s).</p> <p>Light pressure on presser foot.</p> <p>Using two different sizes of or kinds of thread.</p> <p>Bent or blunt needle.</p> <p>Loose presser foot.</p> <p>Fabric too sheer or too soft.</p>	<p>Start to stitch at a medium speed.</p> <p>Rethread machine (page 8).</p> <p>Loosen upper thread tension (page 10).</p> <p>Choose correct size needle for thread and fabric (page 5).</p> <p>Insert new needle (page 4).</p>	<p>Check bobbin case threading (page 7).</p> <p>Loosen bobbin thread tension (page 10).</p> <p>Clean bobbin case and shuttle (page 33).</p>
Skipping Stitches	<p>Incorrect size needle.</p> <p>Bent or blunt needle.</p> <p>Incorrect setting of needle.</p> <p>Tight upper thread tension.</p> <p>Light pressure on presser foot.</p>	<p>Start to stitch at a medium speed.</p> <p>Rethread machine (page 8).</p> <p>Loosen upper thread tension (page 10).</p> <p>Choose correct size needle for thread and fabric (page 5).</p> <p>Insert new needle (page 4).</p>	<p>Raise feed dog (page 11).</p> <p>Increase pressure on presser foot (page 9).</p> <p>Place both threads back under presser foot before beginning to stitch (page 9).</p>
Breaking Upper Thread	<p>Starting to stitch too fast.</p> <p>Improper threading.</p> <p>Tight upper thread tension.</p> <p>Incorrect size needle.</p> <p>Sharp eye in needle.</p>	<p>Disassemble and clean shuttle (page 33).</p>	
Breaking Bobbin Thread	<p>Improper bobbin case threading.</p> <p>Tight bobbin thread tension.</p> <p>Lint in bobbin case or shuttle.</p>		
Fabric not Moving	<p>Feed dog down.</p> <p>Light pressure on presser foot.</p> <p>Threads knotted under fabric.</p>		
Machine Jamming (Knocking Noise)	<p>Thread caught in shuttle.</p>		

Parts list



Parts list

All parts listed here may be ordered through our nearest agent.

When ordering these parts, please be sure to mention the following references:

1. Model & serial numbers of machine shown on the nomenclature plate.

2. Parts number(s) and description(s) shown below.

When ordering by mail, prices will be furnished on request.

Ref. #	Part #	Description
1	13682	Bobbin case
2	47	Shuttle hook
3	183	Bobbin
4	40390	Standard zigzag foot
5	740	Straight stitch foot
6	34476	Blind stitch guide
7	31357	Thread spool pin
8	38295	Needle plate insert (zigzag)
9	38296	Needle plate insert (straight)
10	40234	Buttonhole guide (1 1/16)
11	40233	Buttonhole guide (13/16)
12	40232	Buttonhole guide (5/8)
13	40231	Buttonhole guide (1/2)
14	40230	Buttonhole guide (3/8)
15	17160	Needle threader
16	39775	Needle
17	1822	Oiler
18	17351	Light bulb
19	35848	Brush
20	1824	Driver (small)
21	1823	Driver (large)
22	16500	Buttonhole opener
23	33312	Motor belt (large)
	33313	Motor belt (small)

