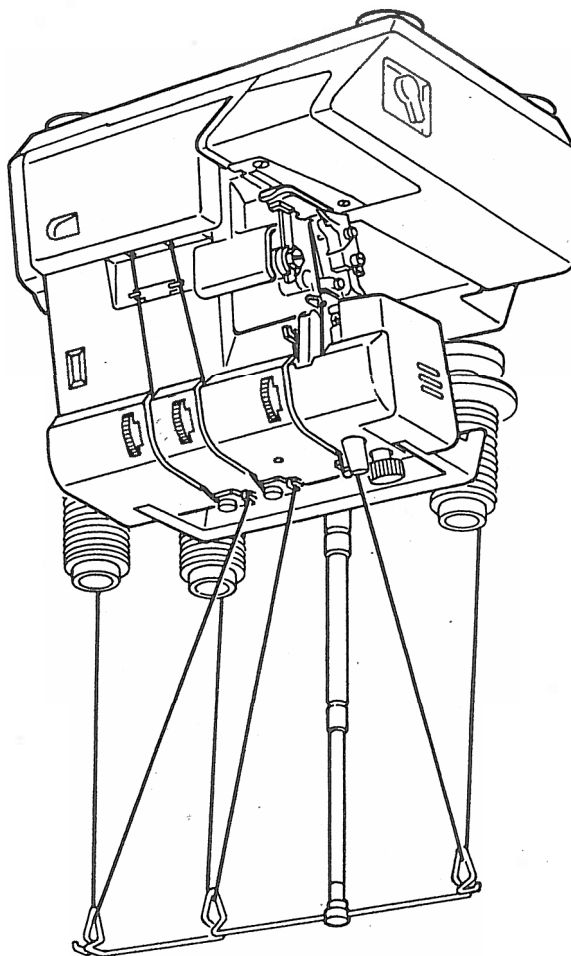


**Empire**  
COMPANION  
OWNER'S MANUAL

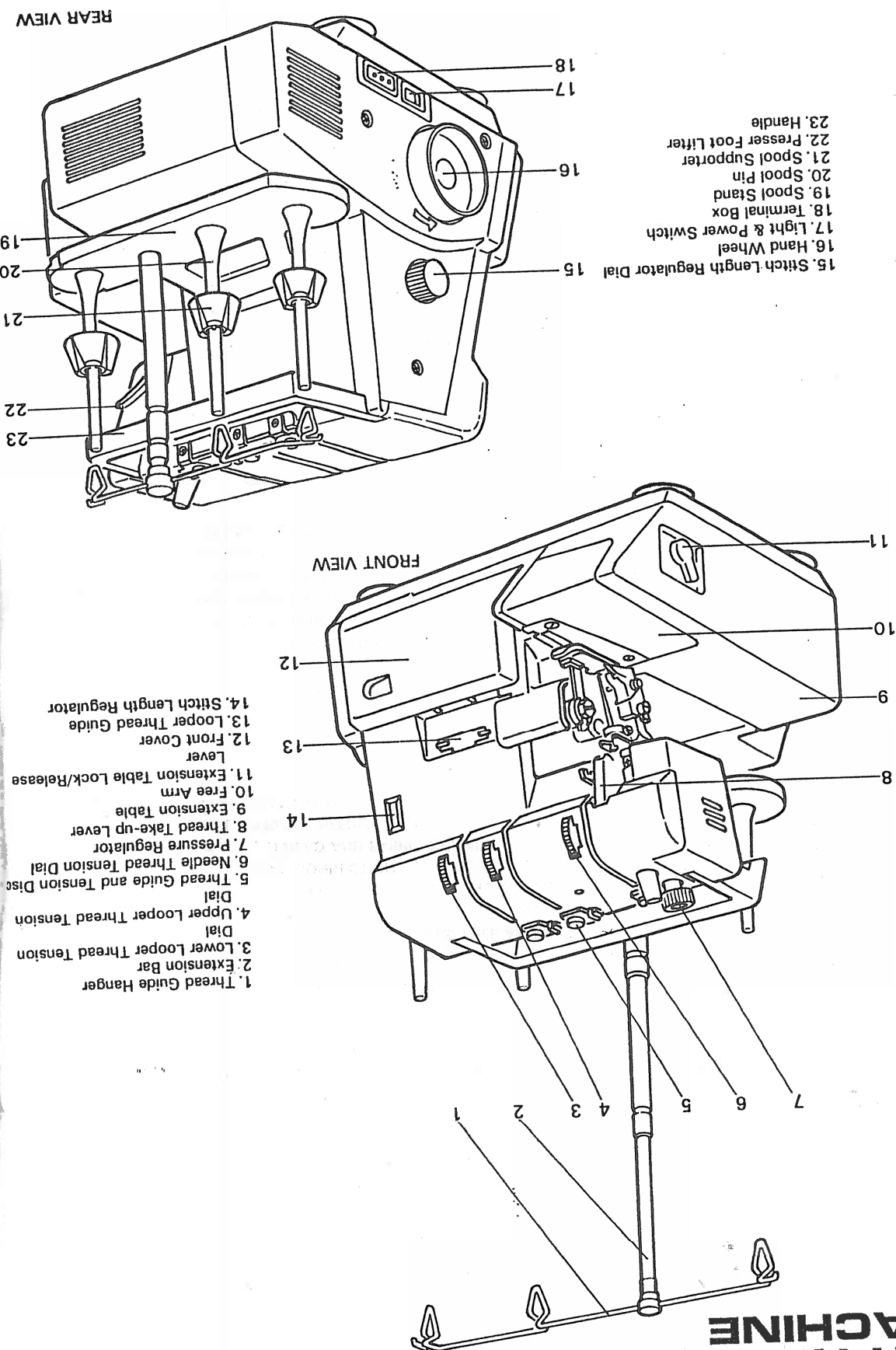


Model 303E

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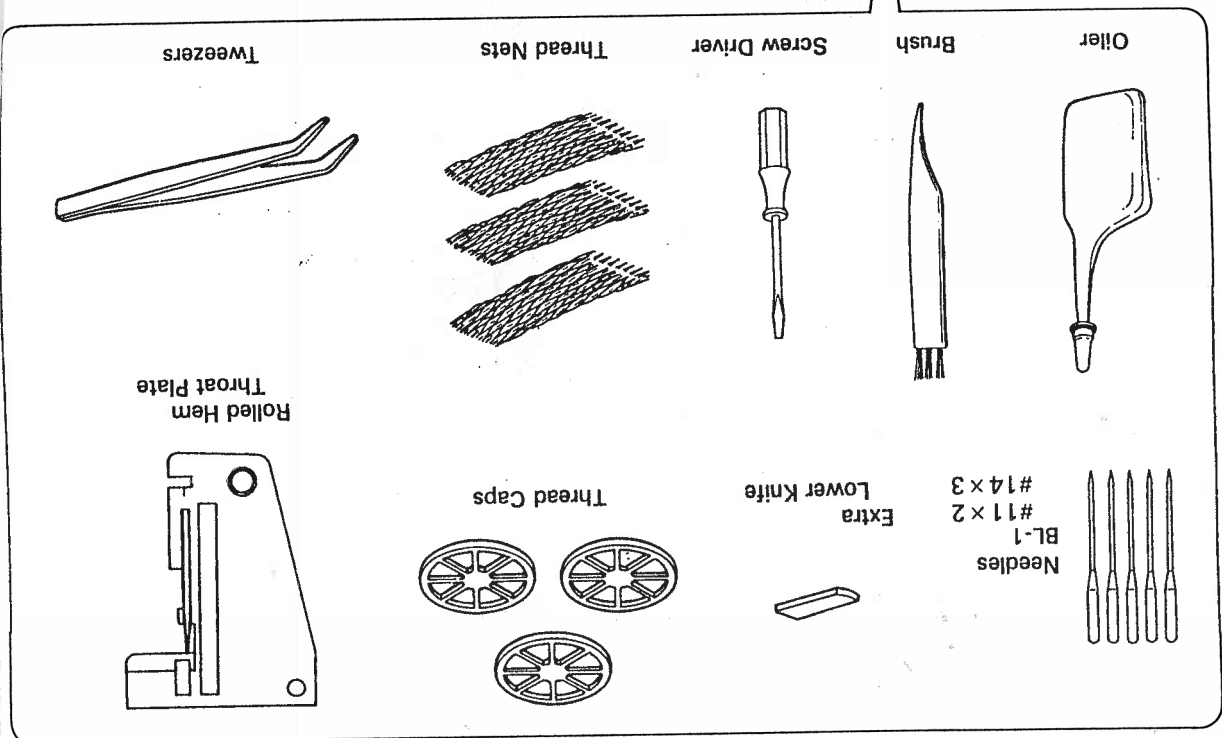
# GETTING TO KNOW YOUR SEWING MACHINE





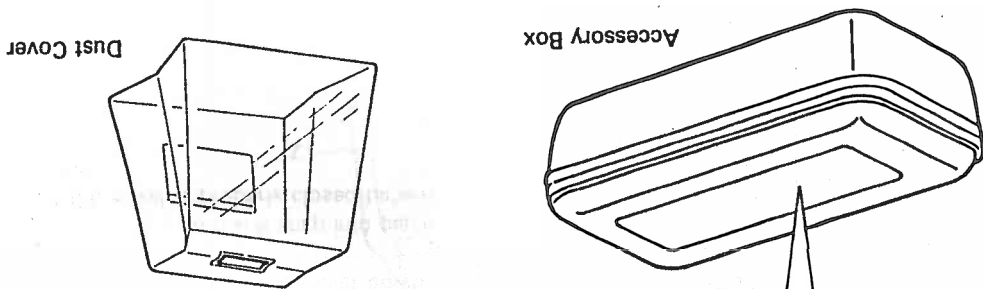


## ACCESSORIES

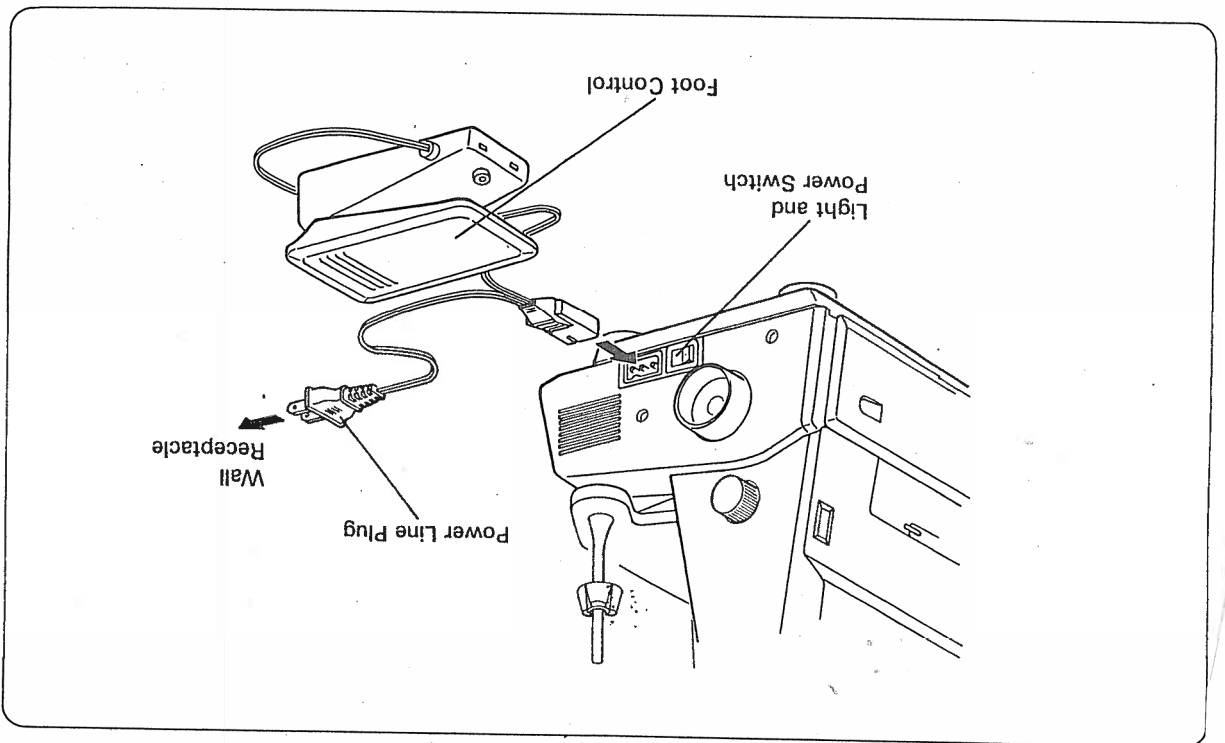


## SPECIFICATIONS

Stitch length	1-5 mm
Seam width	3.5-5 mm
Needle bar stroke	25 mm
Presser foot	Hinged
Presser foot lift	5 mm
Needle	BL-1, #11, #14
Number of threads	3
Dimensions	Width: 11 3/8" x Depth: 10 1/32" x Height: 12 13/16"
Net weight	18 pounds 8 ounces
Sewing Speed	1200 s.p.m. maximum



# ELECTRICAL CONNECTION



Connect the electrical cord to the machine by inserting the three-hole plug into the terminal box located on the right side of the machine. Connect the cord plug into an electrical outlet. The light and power switch is located alongside the terminal box. To turn power on, push on left side of switch. Turning on the power lights up the stitching area. The machine will not operate unless the switch is on. Place Foot Control on floor where it is easy to reach with your foot. To make machine go faster, press down on Foot Control; to slow down let up slightly.

- CAUTION**
1. Disconnect the electrical cord from the wall outlet when machine is not in use or when it is being cleaned.
  2. Turn the power switch to the "OFF" position before changing needles or throat plates, and before connecting the cord. This will help prevent accidents.

# NEEDLE, THREAD AND FABRIC CHART

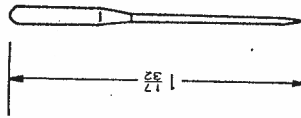
The chart shows size and type of thread, and needle size for various weights and types of fabrics. Size means the fineness of both needle and thread.  
Use BL-1 type needle for this machine.

FABRICS	THREADS	NEEDLE SIZES
LIGHTWEIGHT: organdy, voile, taffeta, lawn, crepe	Cotton #100 Silk #100 Spun #80-100 Tetron #90	#11
MEDIUM WEIGHT: gingham, satin, seersucker, linen, velveteen, gabardine, brodcloth	Cotton #60-80 Silk #50 Spun #60-90 Tetron #60-80	#11, #14
HEAVY WEIGHT: denim, tweed, corduroy, pile fabrics	Cotton #40-60 Silk #40-50 Spun #60-90 Tetron #50-60	#14
KNIT	tricot	Spun #60-80 Tetron #60-80
	jersey	Spun #60-80 Tetron #60
	wool	Spun #60-80 Tetron #50-60 Woolley nylon Woolley tetron
		#14

# INSERTING THE NEEDLE

Select the proper type and size needle for fabric used.  
(See page 6 "NEEDLE, THREAD AND FABRIC CHART")

**CAUTION:**  
Use "BL-1" needles for this machine.  
Household type needles can not be used, the needle  
may break from the high speed of sewing.



Correct needle length is  $1-17/32"$ .  
The needle size is located on the shank of the needle.

<p>1. Turn electrical power off.</p> <p>2. Turn hand wheel toward you until the needle comes to its highest point.</p>	
<p>3. Use the screw driver provided in the accessory box to loosen the needle clamp screw, and remove the needle.</p> <p>4. Insert the needle as far as it will go with the long groove facing front.</p> <p>5. Retighten the screw.</p>	

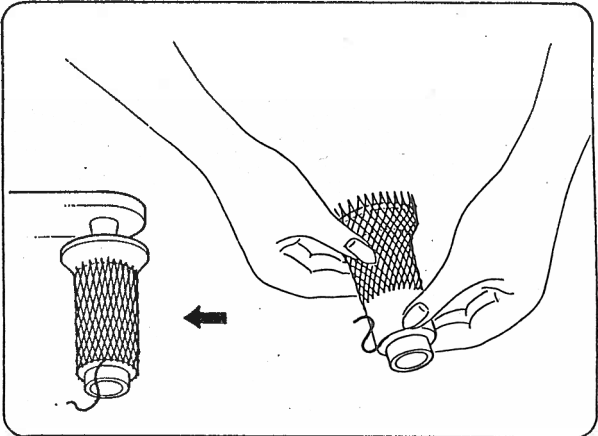
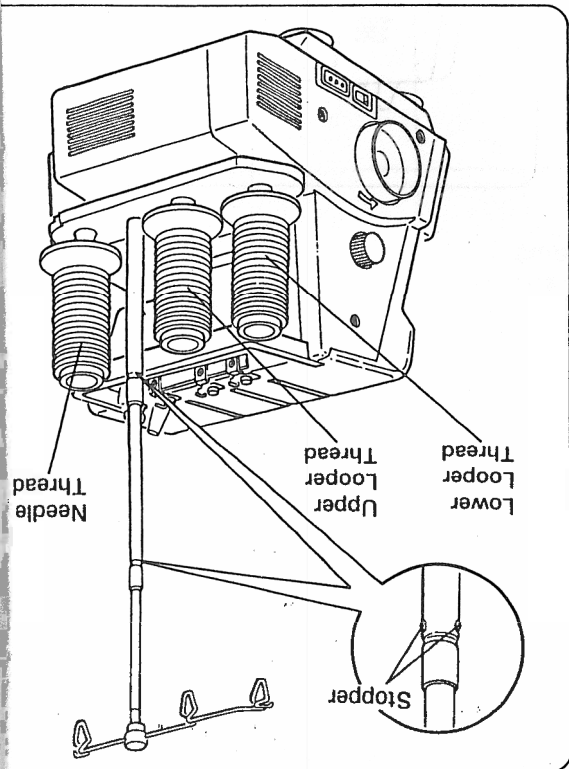
# THREADING THE MACHINE

The machine comes threaded from the factory and must be rethreaded for use.

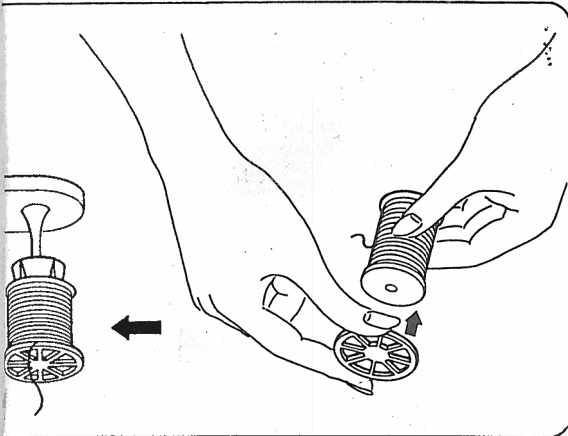
When rethreading, be sure to follow the directions given below. The machine will not sew properly if threaded incorrectly. An illustration for correct threading is given inside the front cover of the machine. The thread guides are identified with color markings corresponding to the thread to which they belong. Thread the machine in the following sequence: Upper Loop (threading points marked in green), Lower Loop (threading points marked in blue), needle (threading points marked in orange).

## extension bar

1. Pull the Extension Bar up as far as it will go.
2. Rotate the Thread Guide Hanger so that the Thread Guides are right above the spool pins.
3. Place the spools or thread cones on spool pins.



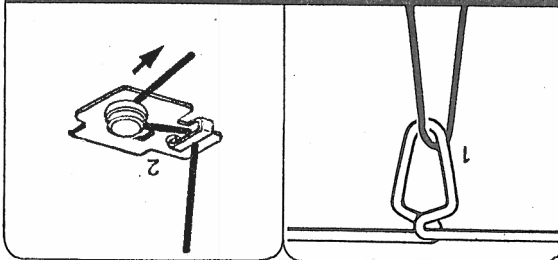
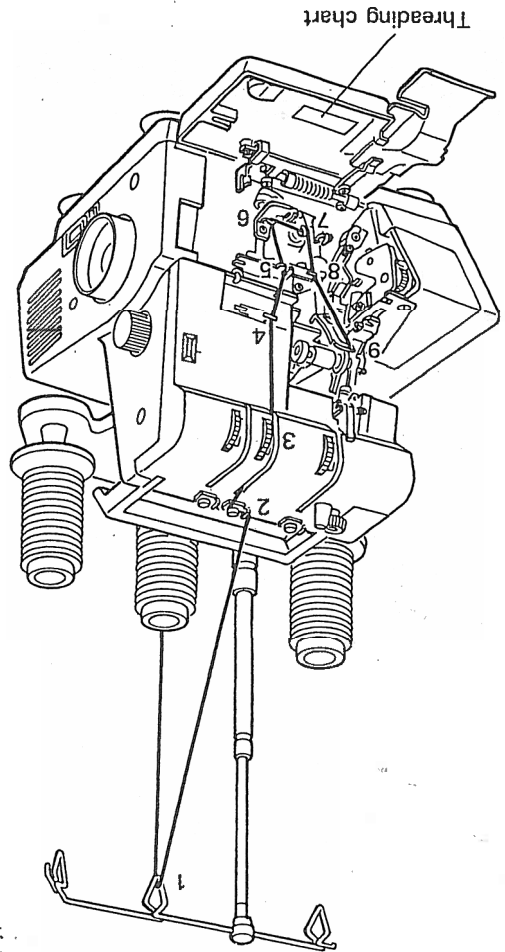
Cover the thread cones with the thread nets provided in the accessory box. Bring thread end to the top of the cone.



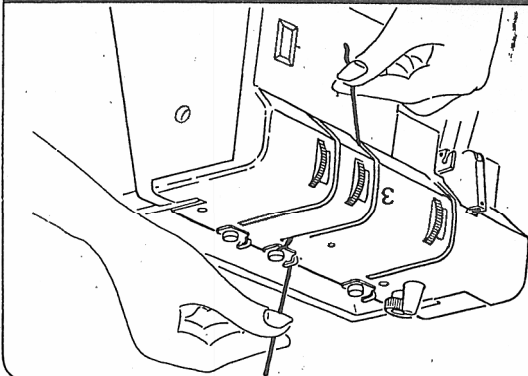
Thread caps are also provided with the accessories. They are used when sewing with regular spools. Insert the stem of cap into the spool hole.

# threading the upper looper

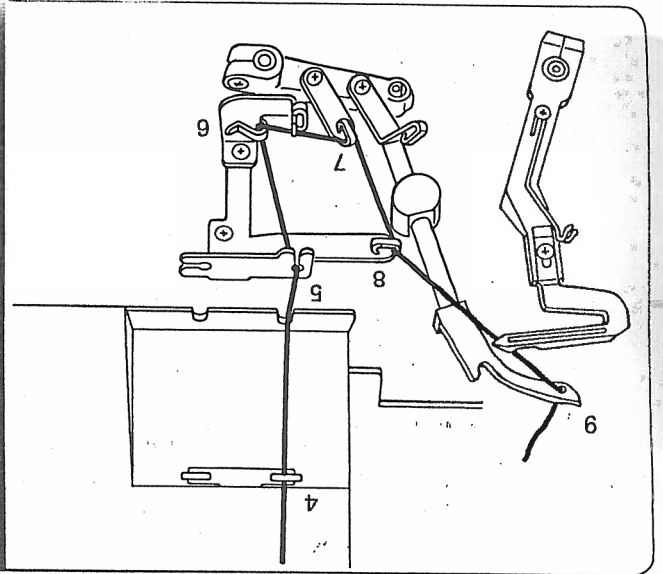
Open the front cover and thread upper looper thread as illustrated below.  
Follow thread guides with green color markings on machine.



1. Pass thread through top guide from back to front.
2. Bring thread down and pass through thread guide and under tension disc.



3. Bring thread straight down through the slot so that it passes between the tension discs.



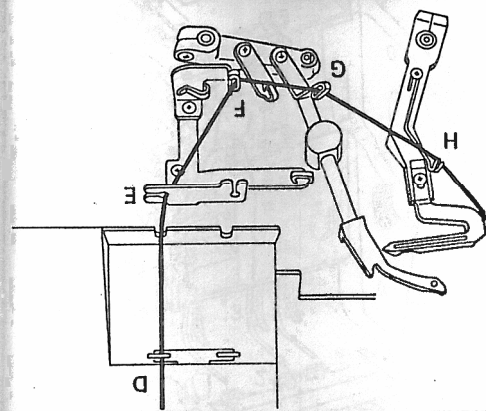
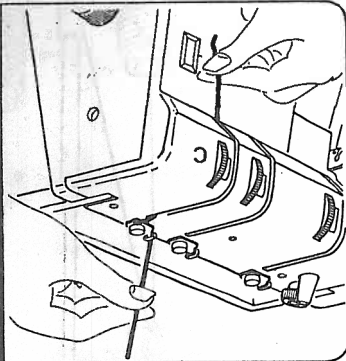
4. Hook thread through guide.
5. Pass thread through the opening of the guide.
6. Hook into guide back to front and pull thread toward left.
7. Hook thread into guide from the bottom side and pull thread up.
8. Hook thread into guide from right side opening.
9. Use the tweezers provided in the Accessory Box to pass thread through the upper looper hole front to back. Pull at least 3 inches of thread through the upper looper.

# threading the lower looper

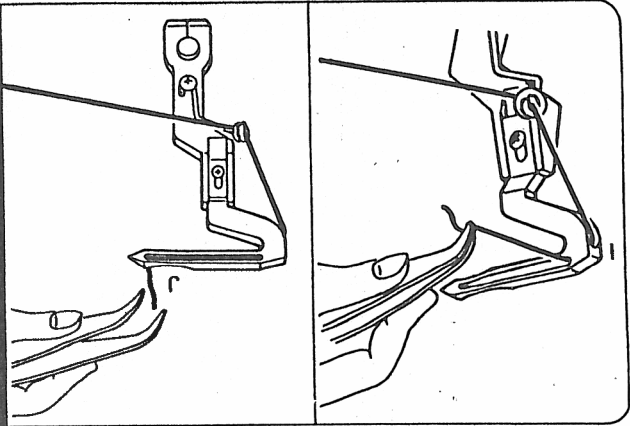
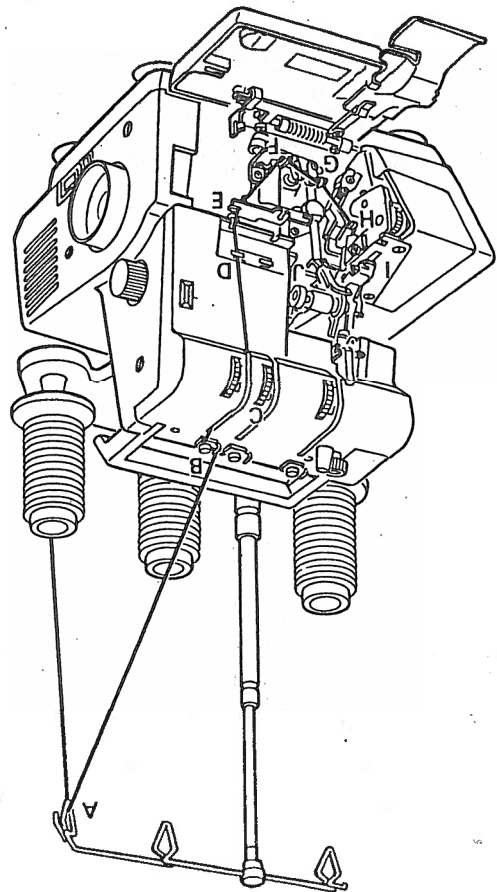
Thread lower looper thread as illustrated below A to J (Thread guides with blue color marking on machine).

- A. Pass thread through guide from back to front.
- B. Bring thread down and pass through thread guide and under tension disc.

C. Bring thread straight down along the slot so that the thread passes between the tension discs.



- D. Hook thread into guide.
- E. Bring thread down passing it through the right side opening of guide.
- F. Hook thread into guide from opening on backside and pull thread toward left.
- G. Hook thread into guide from opening on backside.
- H. Pass thread through hole right to left.

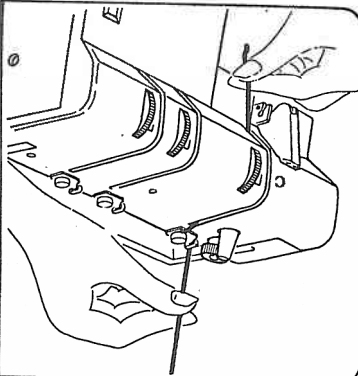


- I. Turn Hand Wheel toward you until the lower looper is in extreme left side position. Pass thread through hole using the tweezers.
- J. Turn Hand Wheel until the lower looper is in extreme right position. Use the tweezers to pass thread through hole front to back. Pull at least 3 inches of thread through lower looper.

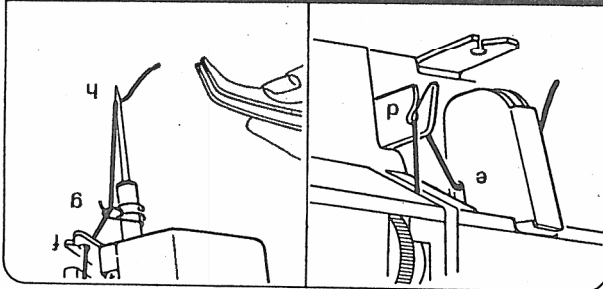
## threading the needle

Thread needle thread as illustrated below a to h (Thread guides with orange color marking on machine).

- Pass thread through guide from back to front.
- Bring thread down and pass through thread guide and under Tension Disc.



c. Bring thread straight down along the slot so that the thread passes between the Tension Discs

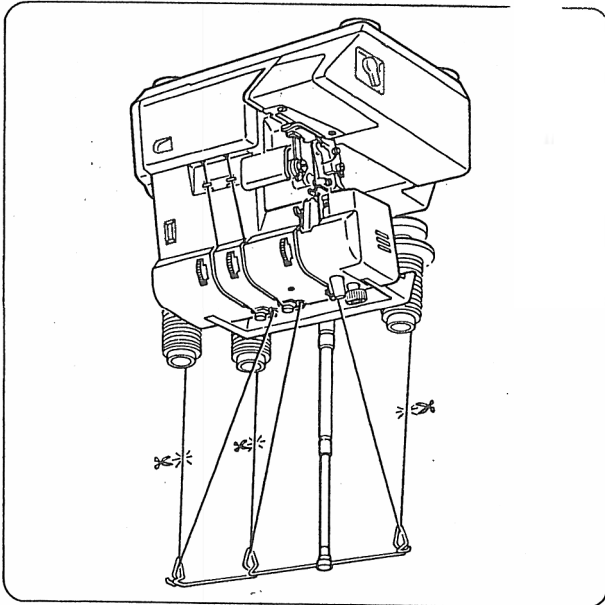
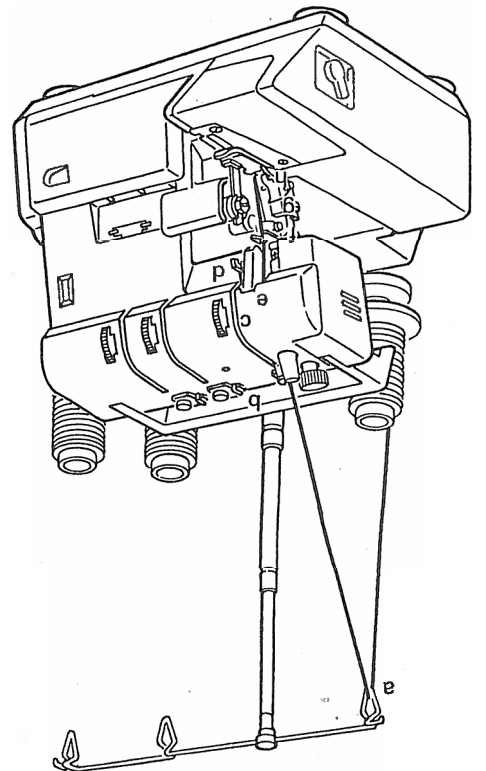


- Hook thread into guide from right to left and pull thread up.
- Hook into guide by sliding thread across top and down into hole.
- Hook thread on guide from the opening on right side of guide.
- Pass thread through guide.
- Use the tweezers to pass thread through the needle eye front to back.

## easy thread changing

Instructions for changing threads are given below.

- Cut the thread near the spools.
- Exchange the spool with a new one and tie the end to remaining thread making knot as small as possible.
- Turn Thread Tension Dials to the smallest number.
- Press Foot Control and run machine until upper and lower thread knot comes through looper hole.
- Stop needle thread knot before passing through eye of needle. Cut thread and pass through needle eye manually.





# BEFORE STARTING TO SEW

When the machine is plugged in properly and threaded correctly it is ready for sewing. To insure good stitches, make several sewing tests using the same fabric and thread on which you will sew. Make the proper adjustments while test sewing.

## starting to sew

1. Pull needle thread, upper and lower looper threads under the presser foot and toward the back.
2. Turn hand wheel toward you 2 or 3 times and check the thread chain.
3. Raise the Presser Foot Lifter.
4. Place cutting line of fabric in line with right side edge of the Lower Knife and bring it under the presser foot until it touches the Upper Knife.
5. Lower the Presser Foot Lifter.
6. Hold end of thread with your left hand and pull gently when starting to sew.
7. When you have started sewing, place hand lightly on fabric. Start machine slowly and gradually increase the sewing speed.

## end of seam

1. When the needle reaches the end of the seam, chain off by running the machine until the thread chain is 2-3 inches long.
2. Stop the machine and cut the thread chain. Tie small knots in thread ends and treat with dot of seam sealant. Let dry and trim close to knot.
3. For neater finish, pull thread ends back through seam using hook or yarn needle.

## when thread breaks

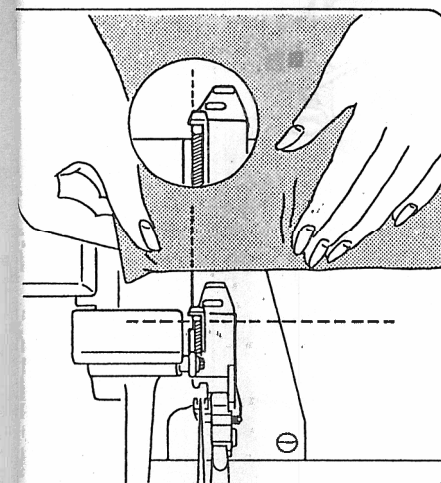
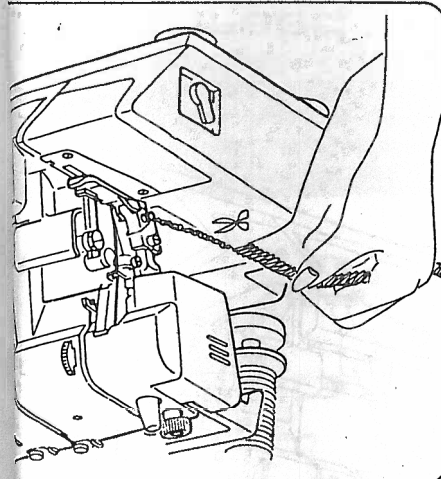
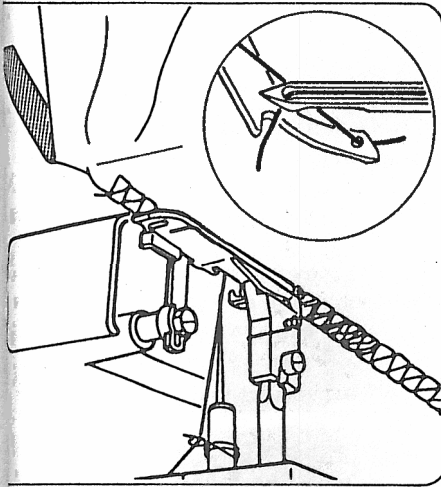
If the thread breaks while sewing, remove fabric from machine and rethread as indicated below.

- Upper looper thread; turn hand wheel toward you until the upper looper is in the lowest position. Pass thread through the looper hole.

- Lower looper thread; cut the needle thread near needle hole and rethread the lower looper thread through its looper hole.

- Needle thread; rethread as indicated on Page 11.

To begin sewing, place material 1-2 inches behind point where thread broke.



# OVERLOCK SEWING

This machine will sew overlock stitches and simultaneously trim the fabric. The machine is delivered from the factory preset. You may wish to make some adjustments to better suit individual fabrics.

## REGULATING THE THREAD TENSION

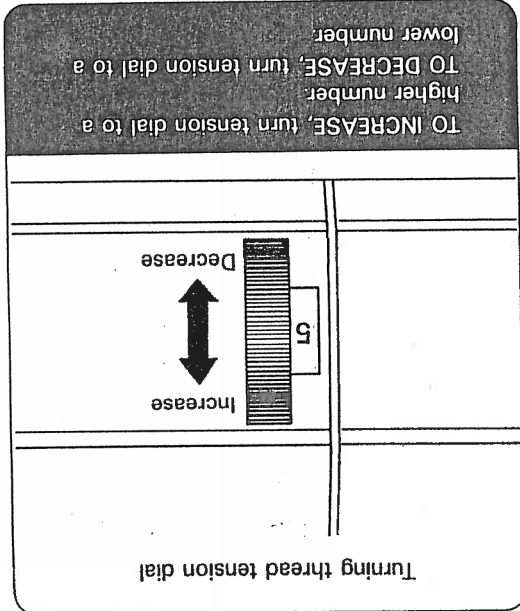
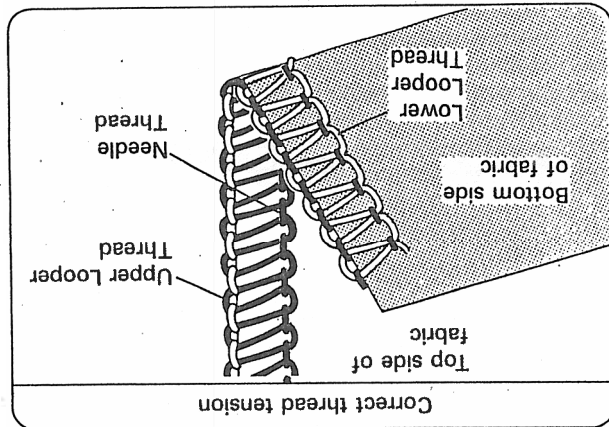
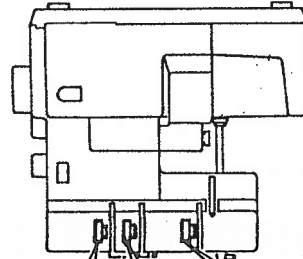
Quality stitches depend on proper balance between the three thread tensions. The tension may need adjusting depending on the type of fabric, heaviness of fabric and size of thread used.

The table below is a guide for adjusting the thread tension.

Note: Be sure that the thread is passing between the tension discs.

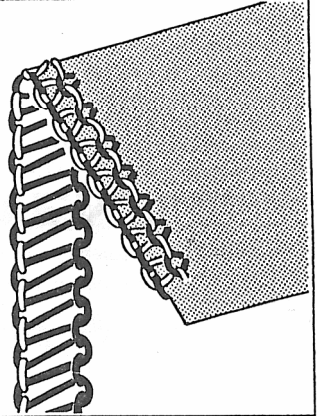
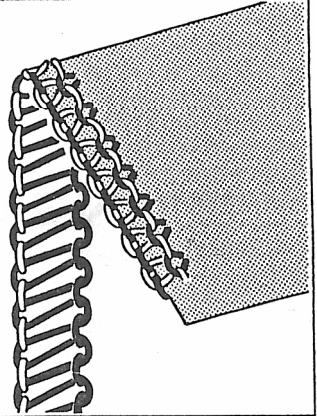
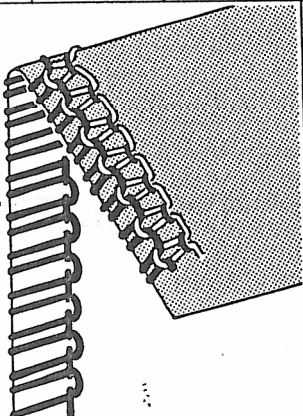
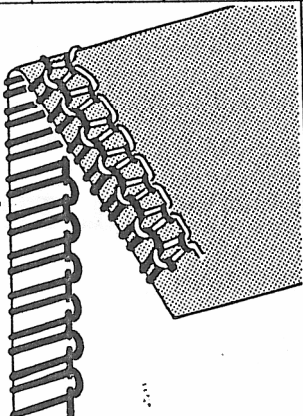
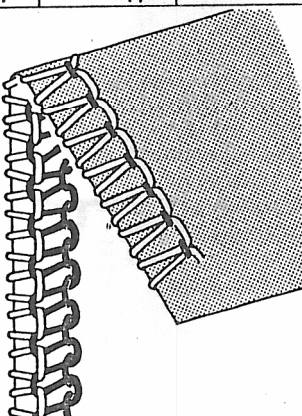
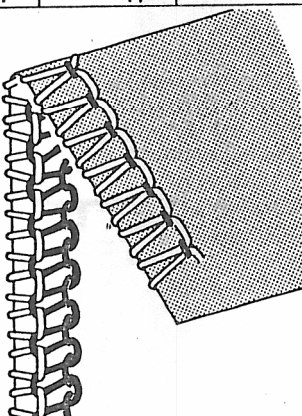
Fabric	Needle Thread	Upper Loop Thread	Lower Loop Thread
Light Weight	2.5-4.5	2.5-4.5	1.5-3.5
Medium Weight	3-5	2.5-4.5	1.5-3.5
Heavy Weight	3.5-6	3.5-5.5	1.5-3.5

NOTE: This table is a guide for thread tensions when sewing with #80 to #90 polyester spun threads.

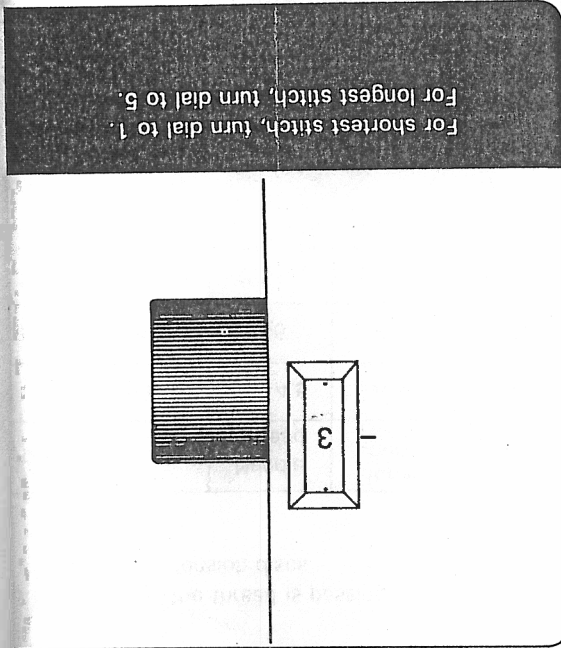


The stitch length can be adjusted between 1 and 5 mm.  
 As a rule, light weight fabrics take a shorter stitches.  
 Heavy weight fabrics need longer stitches.  
 Most normal sewing is done with stitch length dial set at 3. This produces a medium length stitch which makes a strong seam and is suitable for most fabrics.

# SETTING STITCH LENGTH

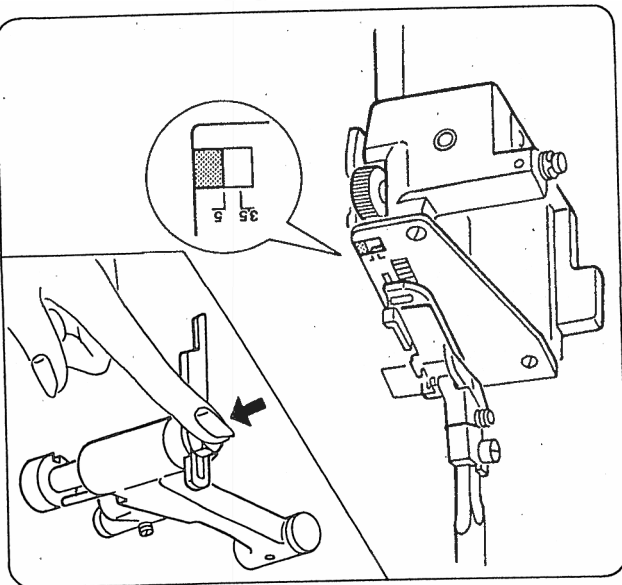
Needle thread is too loose			Needle Thread	Upper Thread	Decrease	—
			Lower Thread	Lower Thread	Decrease	—
Upper loop thread crossed on bottom side of fabric			Needle Thread	Upper Thread	—	—
			Lower Thread	Lower Thread	Decrease	—
Lower loop thread crossed on top side of fabric			Needle Thread	Upper Thread	—	—
			Lower Thread	Lower Thread	Decrease	—

The charts below are illustrations of stitches needing adjustment in the thread tension.



# SETTING SEAM WIDTH

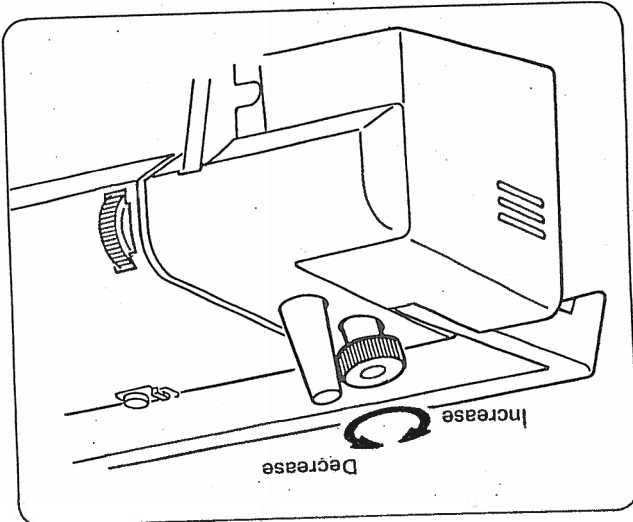
This overedge seam width can be adjusted to sew a 3.5 mm (about 1/8") to 5 mm (about 1/6") stitch. The machine is set at 3.5 mm which is the width used most often for overlock sewing. For heavy weight fabrics, set control knob to wider stitch.



1. Turn power switch off.
  2. Open front cover and Free Arm Cover.
  3. Push the Upper Knife Holder to the right and turn the Seam Width Knob downward to select wider stitch width. For smaller width turn knob in opposite direction.
- When adjusting the width, use graduations on throat plate as guide and line up with left edge of lower knife holder.

# ADJUSTING THE PRESSURE ON FABRIC

The pressure on the foot can be adjusted for different weight fabrics. The fabric should move along smoothly and evenly without slipping. Stitches should be uniform in size. The pressure on this machine is set for sewing medium weight fabrics.



For sewing light weight fabrics, decrease the pressure (turn screw to left).  
For heavy weight fabrics, increase the pressure (turn screw to right).

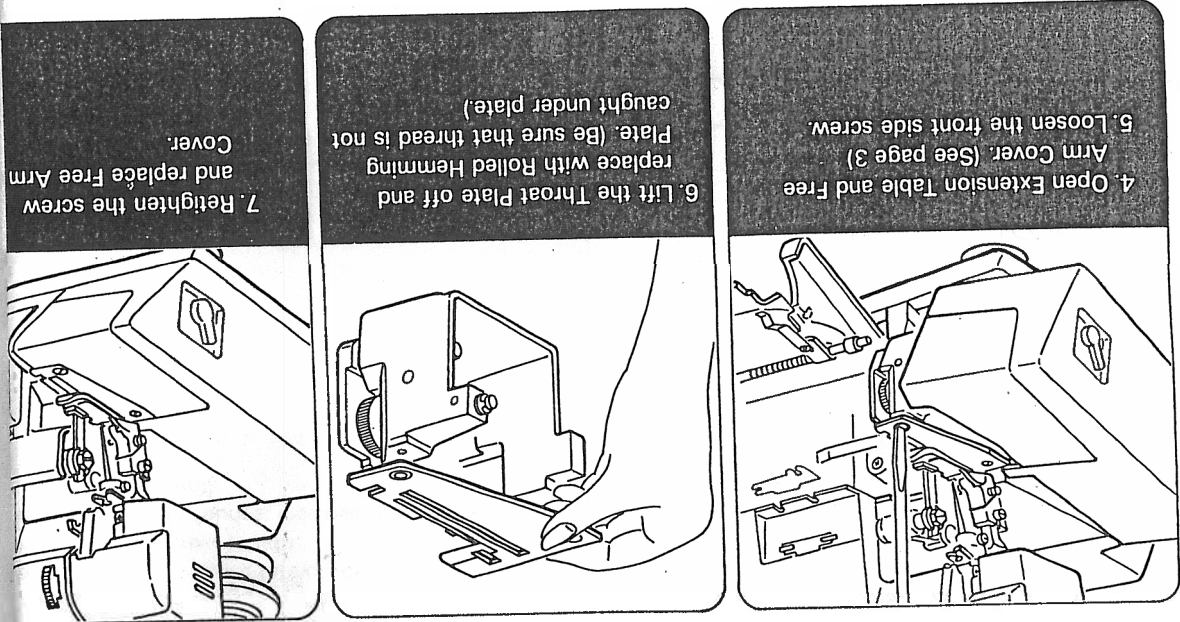
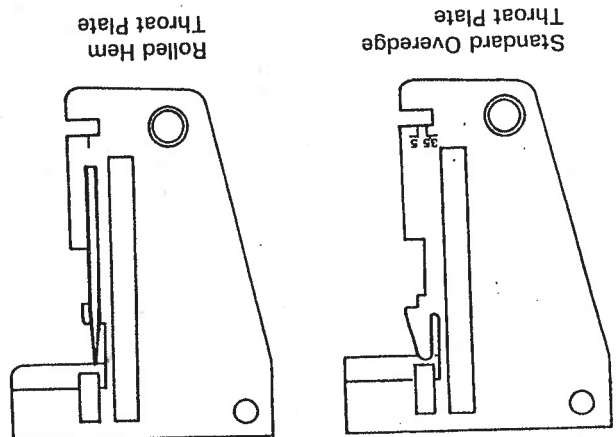
# NARROW AND ROLLED HEMMING

The machine trims fabric, folds back the edge and sews a narrow hem (overedge). The width of the narrow overedge is 1.5 mm (about 1/16") and is used for overedging light and medium weight fabrics.

Two variations of the rolled overedge hem can be sewn with this machine by changing the thread tension. Both methods are used with light and medium weight fabrics. Method B (page 18) gives a softer finish by pulling the interlocking threads to the wrong side.

## changing the throat plate

The machine comes with a standard overedge needle throat plate set to the machine. Change the throat plate when sewing rolled overedges.



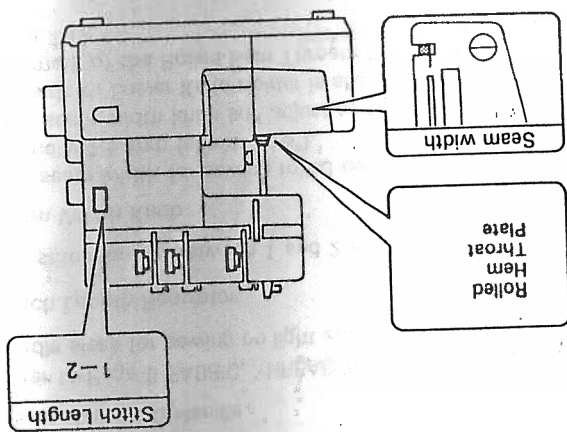
## 17



# ROLLED OVEREDGE

The upper loop thread sews through to the wrong side of fabric in Method B rolled overedge hem creating a softer finish.

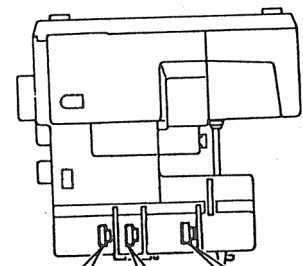
1. Change the Standard Overedge Throat Plate to the Rolled Hem Throat Plate.
2. Settings and sewing of Method B rolled overedge hem are the same as the Method A rolled overedge except for thread tension. (See below)



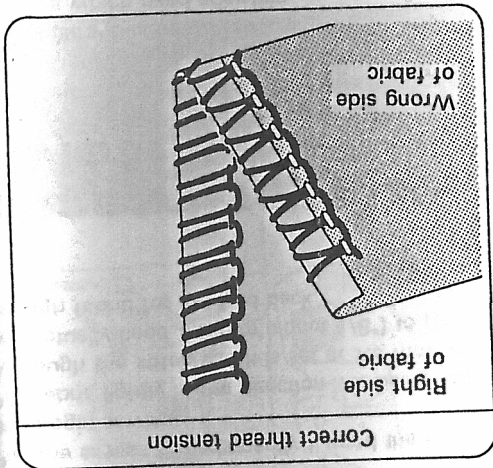
## thread tension-Method B

Regulate the tension dials using guide below.

Fabric	Light and Medium
Needle Thread	2.5-4.5
Upper Loop Thread	2.5-4.5
Lower Loop Thread	5.5-7.5



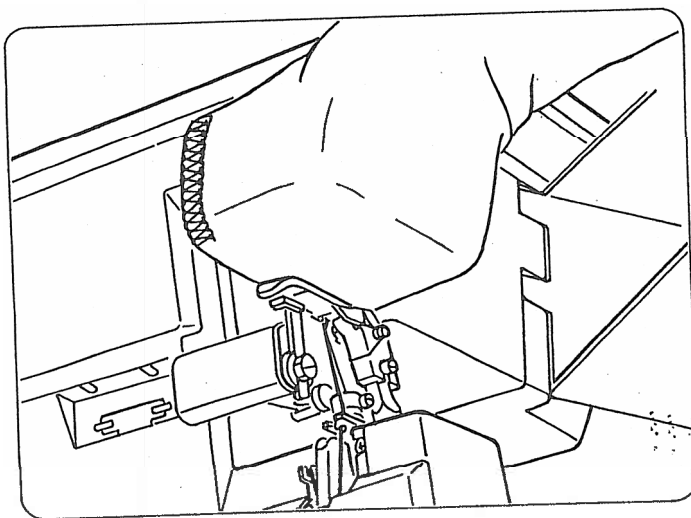
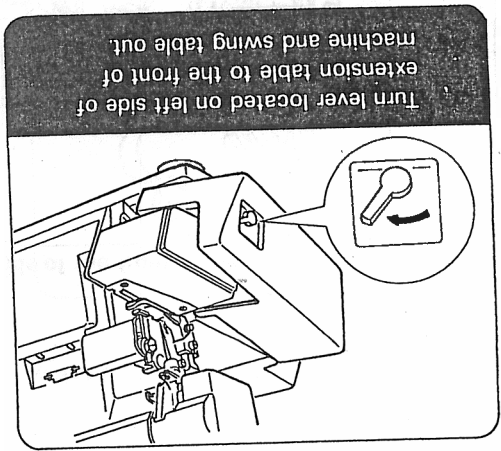
NOTE: This table is a guide for thread tensions when sewing with #80 to #90 polyester spun threads.



Needle thread is too loose	Needle thread is too loose	Needle thread is too loose
Upper loop thread is too loose	Upper loop thread is too loose	Upper loop thread is too loose
Lower loop thread is too loose	Lower loop thread is too loose	Lower loop thread is too loose
Needle Thread	Needle Thread	Needle Thread
Upper Loop Thread	Upper Loop Thread	Upper Loop Thread
Lower Loop Thread	Lower Loop Thread	Lower Loop Thread
Increase	Increase	Increase
Decrease	Decrease	Decrease

# FREE ARM SEWING

This machine will convert to free arm sewing by simply opening the Extension Table. It is used for sewing sleeves, trousers or similar places that are difficult to sew on a flat bed machine.



## TURNING CORNERS

1. Cut the corner about 2 to 3 inches along the cutting line.

2. Sew a few extra stitches past end of fabric and stop machine.

3. Raise needle and presser foot.  
4. Pull fabric slightly toward the back and pull out tangled thread from Throat Plate.

5. Turn fabric and position the cut line and knife.  
6. Resume sewing.

The machine can continue sewing when rounding a curve. There is no need to stop the machine and pivot. Push excess fabric toward the presser foot giving the machine more fabric and continue sewing as if sewing a straight seam.

## outside curves

## inside angle and slits

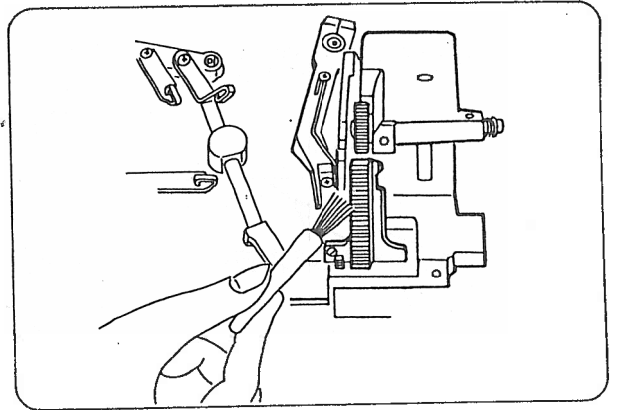
1. Cut fabric edge to desired finished size.
2. Stitch aligning the fabric edge with the edge of the Throat Plate.
3. As you approach the corner, slow down and allow the knife to make one more small notch into the corner.
4. Straighten the fabric out in front of the knife and stitch completing the edge.



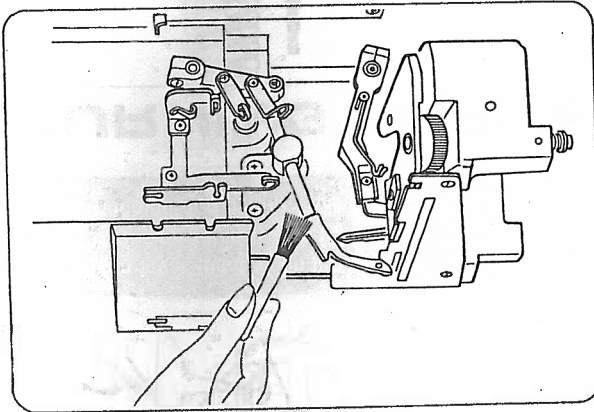
# CLEANING AND MAINTENANCE

## cleaning

Fabric, thread scraps and dust may accumulate around moving parts and effect the functioning of machine. Unplug cord and clean machine with the brush provided in the accessory box.



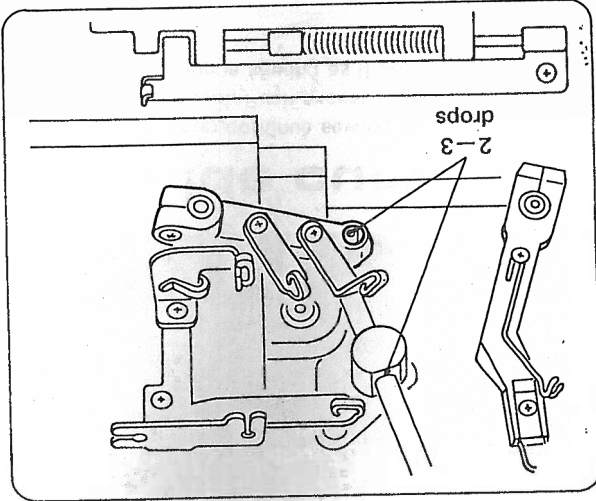
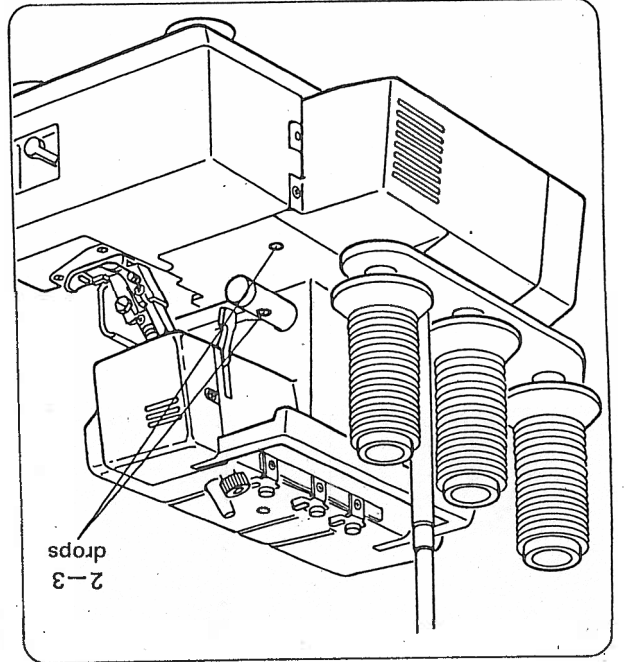
Brush around the fabric feed dog



Brush inside of the front cover

## oiling

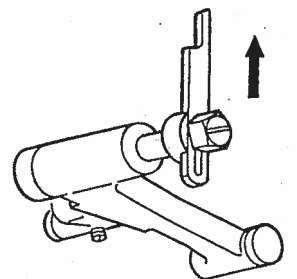
Critical parts used in this machine are made of special material that does not require oiling. Only the parts indicated with arrows shown below need oiling. Depending on use these should be oiled once or twice a month.



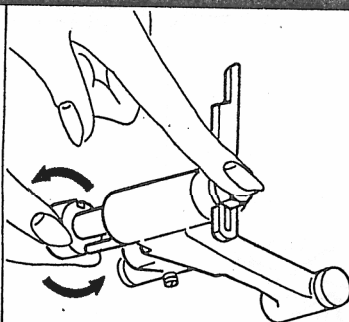
# changing the lower knife

Exchange the Lower Knife as shown below when it becomes dull. An extra knife is provided in the Accessory Box.

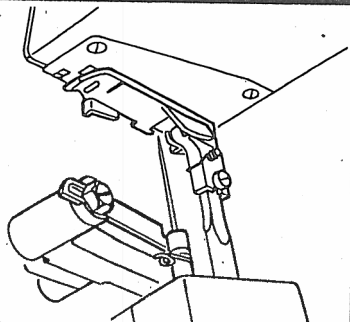
1. Unplug the machine.
2. Open the front cover.
3. Raise the upper knife as illustrated below.



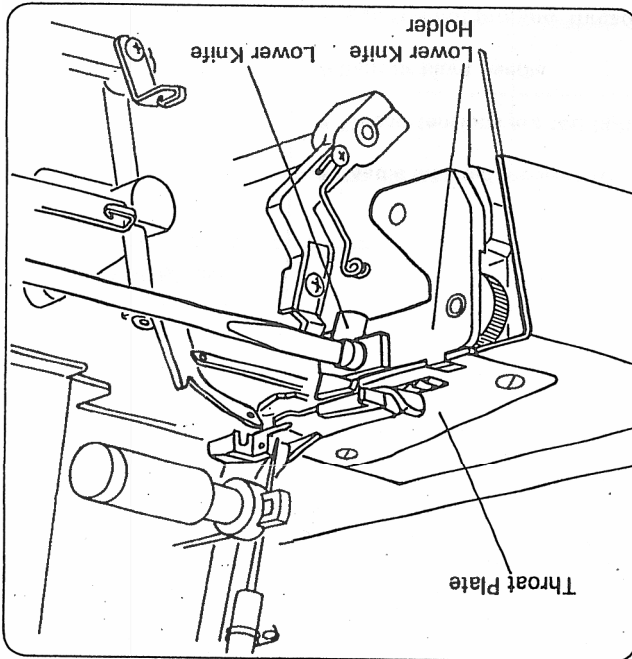
- a. Turn hand wheel toward you until the upper knife is at its lowest point.



- b. Push the upper knife holder to the right as far as it will go and turn knob in opposite direction until it clicks into position.



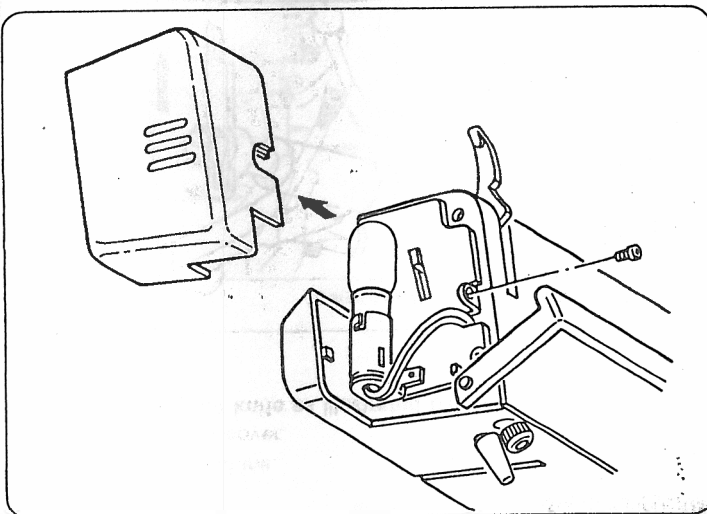
4. Loosen the Lower Knife Screw and take out the knife.
  5. Install new knife by inserting it into the groove of the knife holder. Be sure that the tip of the lower knife is lined up with the surface of Throat Plate, and tighten screw.
  6. Return the Upper Knife to cutting position by pushing knife holder to right and turning knife toward you until it clicks into position. Close the front cover.
- The upper knife is made of special hard material and should not require replacement under normal use. If it should chip or need replacement, call for your dealer.



## changing the sewing light

If the sewing light does not light when power switch is turned on, replace the bulb.

1. Unplug sewing machine from the wall receptacle.
2. Remove the Face Plate by loosening the screw.
3. Remove the bulb.
4. Replace with new bulb of same size wattage and size.
5. Replace the face plate.



## BEFORE YOU CALL FOR SERVICE

Your new Sewing Machine was carefully inspected and tested at the factory and was in perfect working order when shipped.  
Under normal conditions, if you carefully follow instructions for threading, operating and maintenance, your machine will give you years of trouble-free service.  
Occasional difficulties are usually caused by a condition that can be easily remedied with a minor adjustment. Some possible problems, their causes and corrections are given here.

PROBLEM	CAUSE	CORRECTION	REFERENCE PAGE
THREAD BREAKS	● Needle inserted incorrectly	Reset needle	7
	● Thread tensions are too tight	Loosen thread tensions	13, 14
	● Bent or blunt needle	Insert new needle	7
	● Machine not properly threaded	Rethread machine	8-11
	● Threads are caught in incorrect guide	Rethread machine	8-11

PROBLEM	CAUSE	CORRECTION	REFERENCE PAGE
MACHINE SKIPS STITCHES	<ul style="list-style-type: none"> <li>● Bent or blunt needle</li> <li>● Needle inserted incorrectly</li> <li>● Pressure on foot insufficient</li> <li>● Incorrect needle size or type</li> <li>● Machine incorrectly threaded</li> <li>● Tensions set too high</li> </ul>	<ul style="list-style-type: none"> <li>Insert new needle</li> <li>Reset needle</li> <li>Increase pressure</li> <li>Insert correct needle</li> <li>Rethread machine</li> <li>Loosen thread tensions</li> </ul>	7 7 15 6, 7 8-11 13, 14
NEEDLE BREAKS	<ul style="list-style-type: none"> <li>● Pulling fabric while sewing</li> <li>● Incorrect size needle or thread for fabric being sewn</li> <li>● Needle inserted incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>Do not pull fabric</li> <li>Choose correct needle and thread</li> <li>Reset needle</li> </ul>	12 6 7
MACHINE DOES NOT FEED PROPERLY	<ul style="list-style-type: none"> <li>● Pressure on presser foot insufficient</li> </ul>	<ul style="list-style-type: none"> <li>Increase pressure</li> </ul>	15
FABRIC PUCKERS	<ul style="list-style-type: none"> <li>● Lower knife is dull</li> <li>● Stitch length not suitable for fabric</li> <li>● Thread tensions are too tight</li> <li>● Seam width not suitable for fabric</li> </ul>	<ul style="list-style-type: none"> <li>Change lower knife</li> <li>Readjust stitch length</li> <li>Loosen thread tensions</li> <li>Readjust seam width</li> </ul>	21 14 13, 14 17, 18 15
LOOSE STITCHES OR LOOPS FORMED	<ul style="list-style-type: none"> <li>● Tensions not adjusted properly</li> </ul>	<ul style="list-style-type: none"> <li>Check thread tensions</li> </ul>	14, 17 18
MACHINE RUNS HEAVILY	<ul style="list-style-type: none"> <li>● Dirt or lint in stitching mechanism</li> </ul>	<ul style="list-style-type: none"> <li>Clean the machine</li> </ul>	20
MACHINE WILL NOT SEW	<ul style="list-style-type: none"> <li>● Cord not plugged into electrical outlet</li> <li>● Light and power switch not on</li> </ul>	<ul style="list-style-type: none"> <li>Check plug</li> <li>Turn on the switch</li> </ul>	5 5