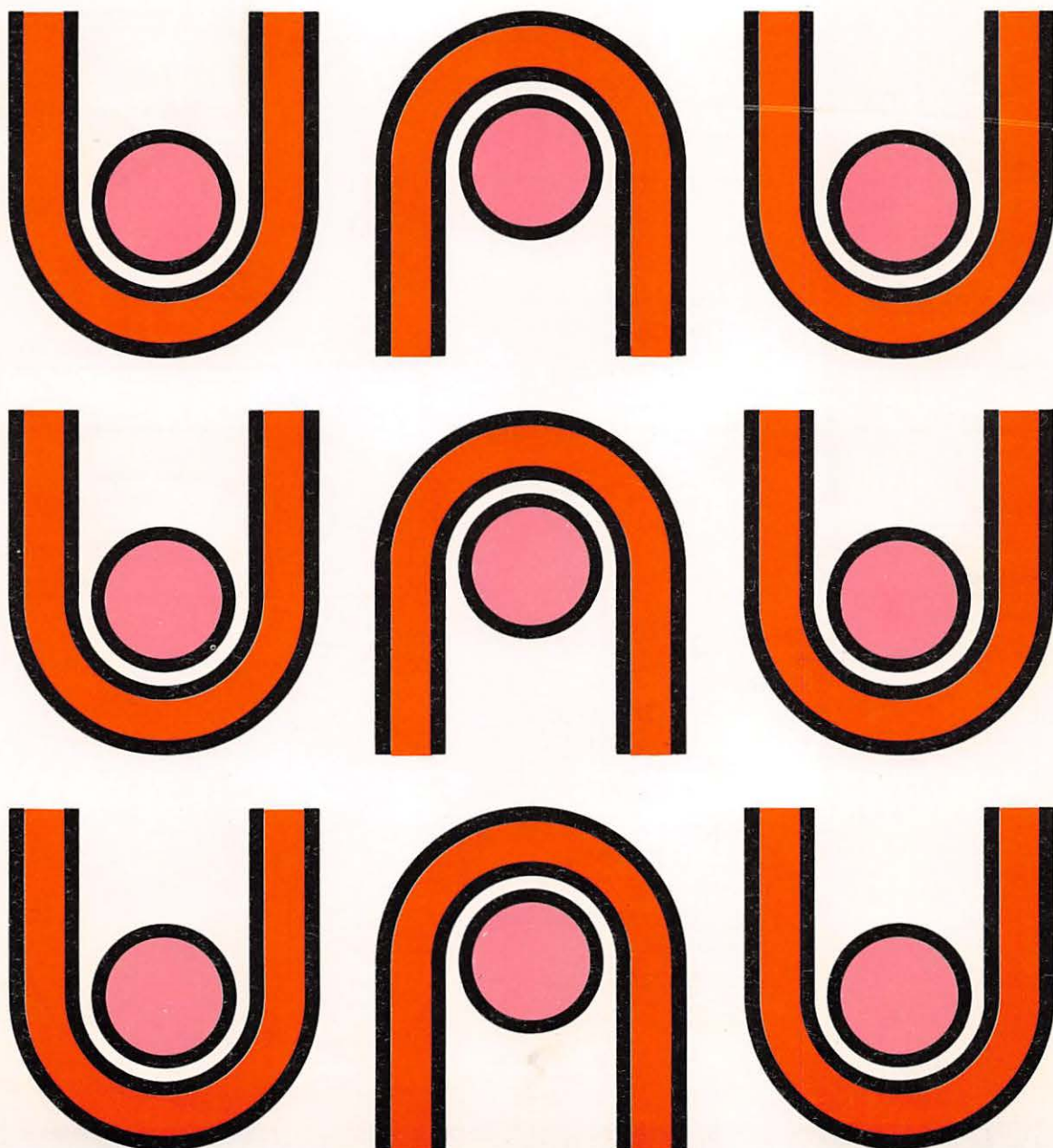
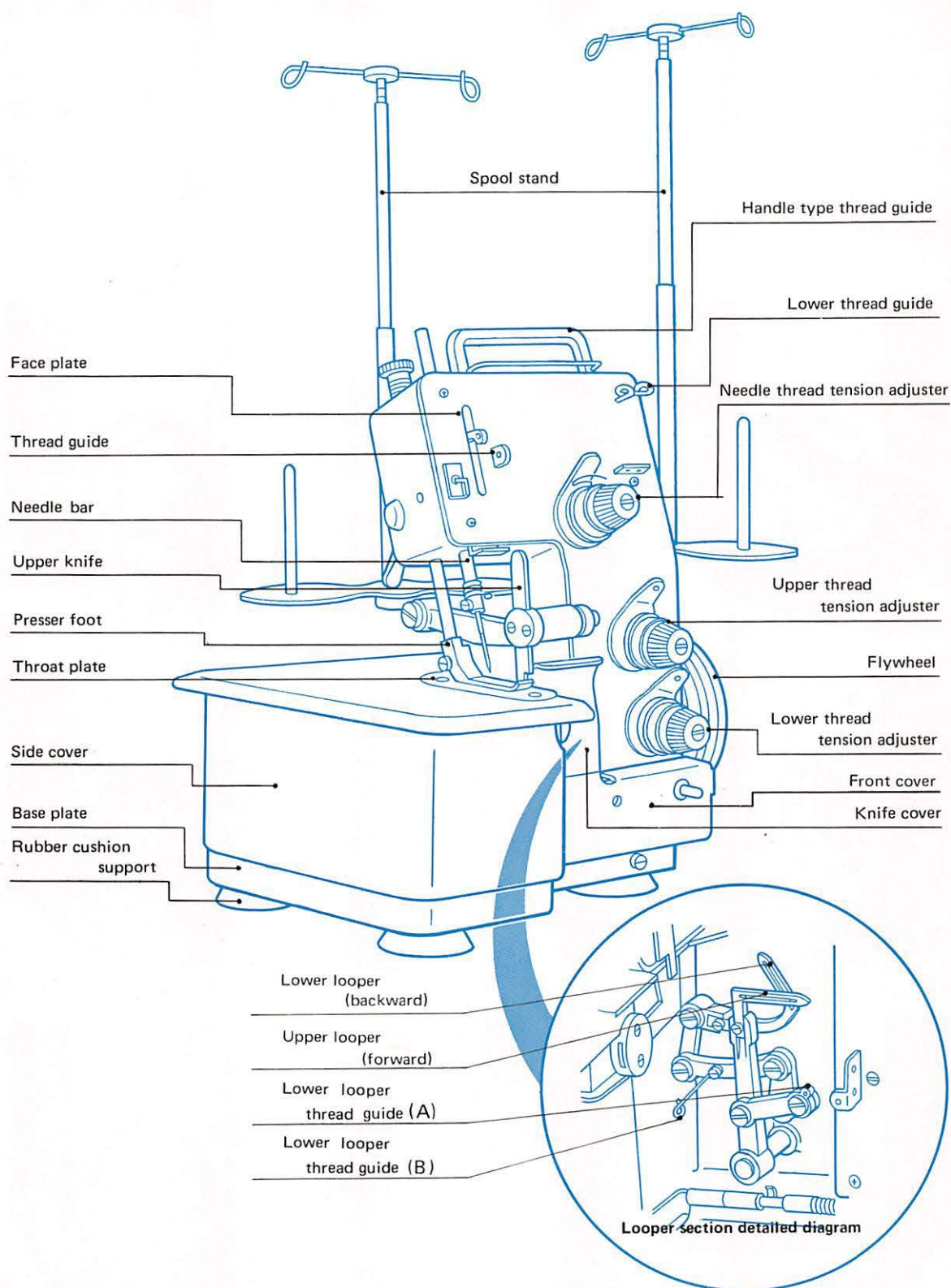


baby lock

MODEL EF-405

INSTRUCTION BOOKLET





PREFACE

Thank you for your purchase of Baby Lock Model EF-405.

Please refer to this booklet for optimum use of this machine and for long service in the future.

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1

SETTING UP THE MACHINE

Figure 1

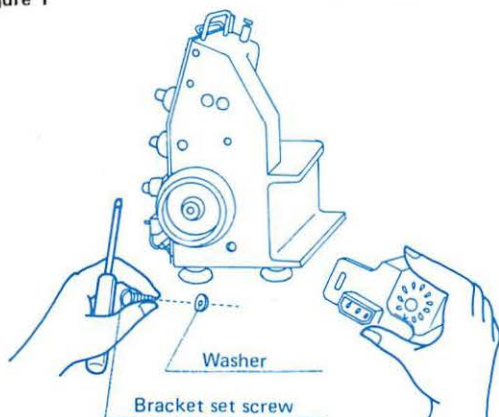


Figure 2

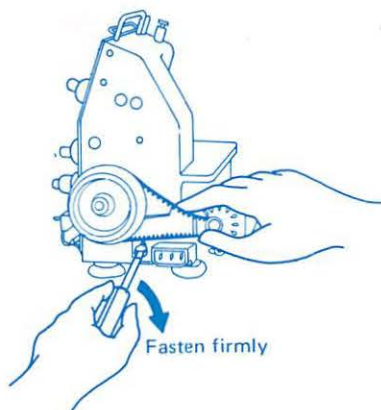
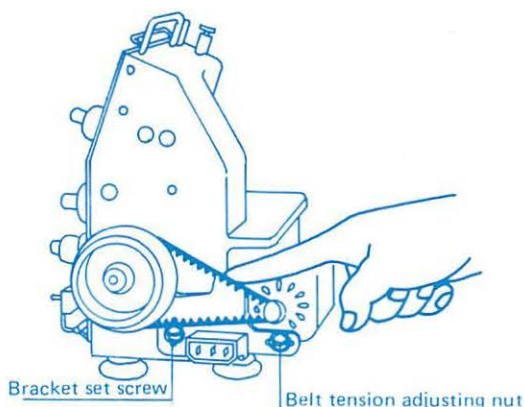


Figure 3



It is important that this sewing machine be set up in the correct manner before use.

1-1 Correct installation of the motor

The bracket set screw (Figure 1), bracket set washer (Figure 1) and the belt are packed in this set and attached to the machine body by fastening the set screw while setting the belt as shown in Figure 2.

Belt tension is considered adequate, if it bends slightly when pressed by finger as shown in Figure 3. When the belt tension is not adequate, further adjust the tension by moving the belt tension adjusting nut (Figure 3) to the right or left.

1-2 How to assemble the spool stand

Remove the spool stand packed in the styrene foam cover.

- Firmly tighten the installation screw of the spool stand (Figure 4-a).
- In the same way, Firmly tighten the installation screws (2 screws) (Figure 4-b) of the extensible bar (spool stand bar).
- Then, tighten the installation screws of the spool support plate (gourd-shaped plate) (Figure 4-c), arranging them in almost the same line as the extensible bar installation screws shown in b).

* The spool support place must be tightened and set at a right angle to the spool stand arm base (Figure 4b) & c).

Figure 4 a)

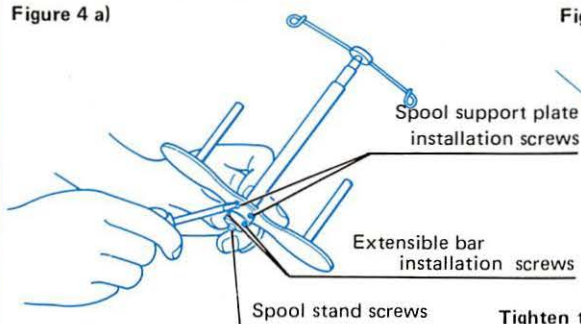


Figure 4 b)

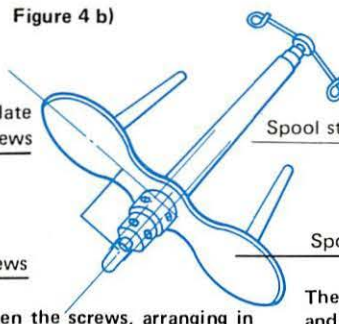
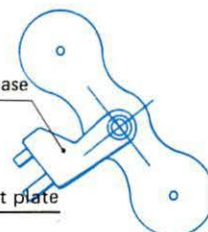


Figure 4 c)



Tighten the screws, arranging in almost the same line.

The spool support plate must be set and tightened at right angles to the spool stand arm base.

1-3 How to set up the spool stand

First, one of the spool stands is inserted into the machine body and attached with the installation screw installed in the rear as shown in Figure 5.

Next, the other spool stand is inserted and attached with the installation screw installed in the side as shown in Figure 6.

The installation screws are placed in the machine body in the factory. To complete the set up, the plastic spool wedges are set on the spool stand pins as shown in Figure 7, and then extend fully the extensible and contractible stand bar.

Figure 5

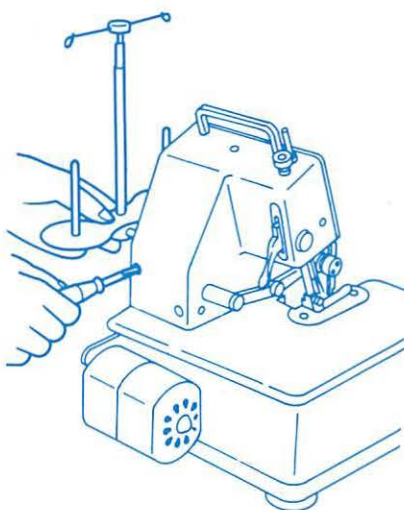


Figure 6

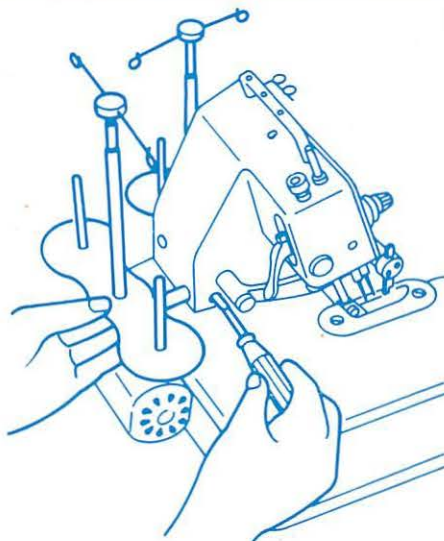
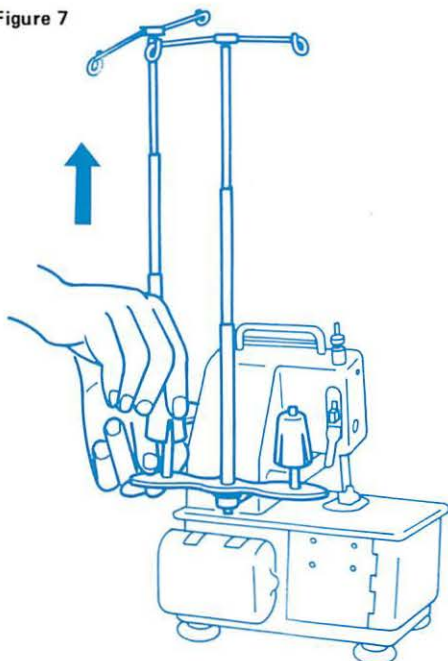


Figure 7



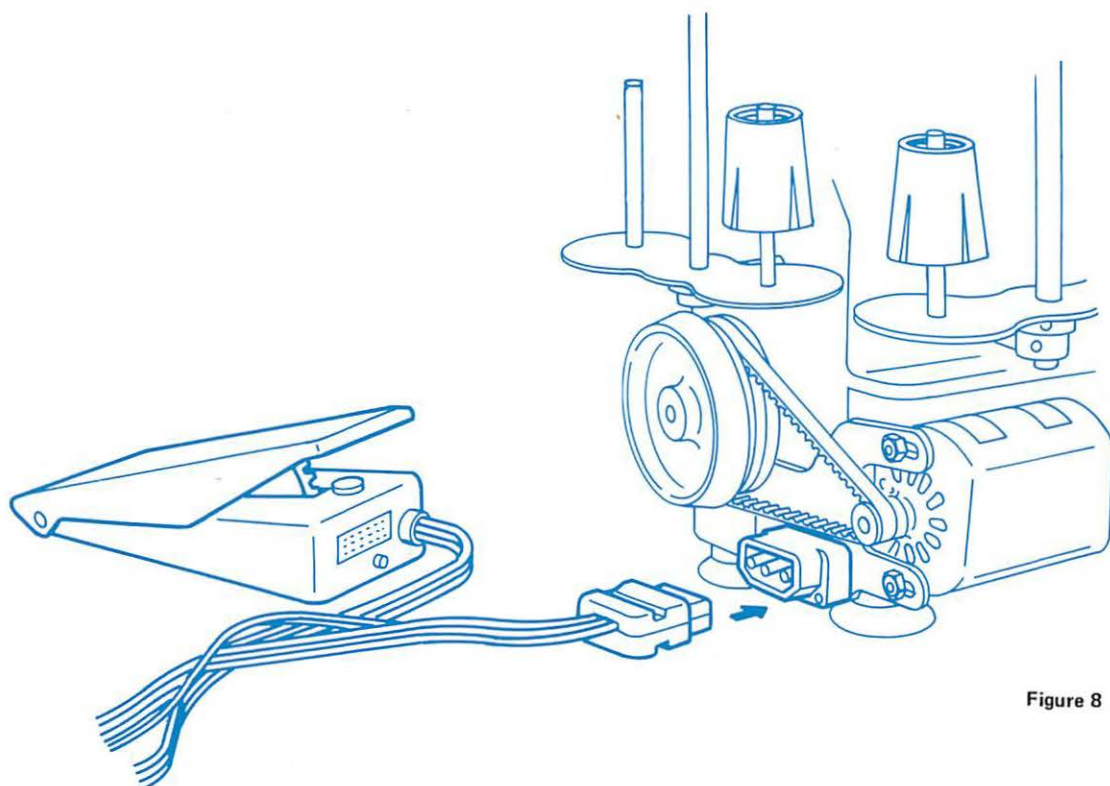


Figure 8

1-4 Connecting the controller to the motor

Connect the controller socket as shown in Figure 8.

Next, insert the plug into the power source. This machine runs faster when the controller pedal is depressed with strong force, and the speed decreases when the controller pedal is lightly depressed.

2

HOW TO THREAD CORRECTLY

2-1 How to thread correctly

(1) Spool setting

Cheese spool thread (Figure 9) is generally used for this machine, however, it is possible to use bobbin spool thread (Figure 9) as well. In this case, it is required that the bobbin spool be set in such a way that the winding stop groove is on the bottom.

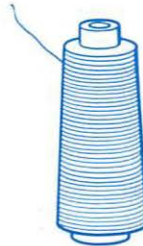
(2) How to thread needle thread correctly

The thread should be inserted in the order shown in Figure 11.

After inserting the thread from the front to rear through the needle eye while facing the machine, the end of the thread should be pulled out about 10 cm.

* Tweezers are helpful for threading needle eye.

Cheese spool thread.



Bobbin spool thread.



Winding stop groove

Figure 9

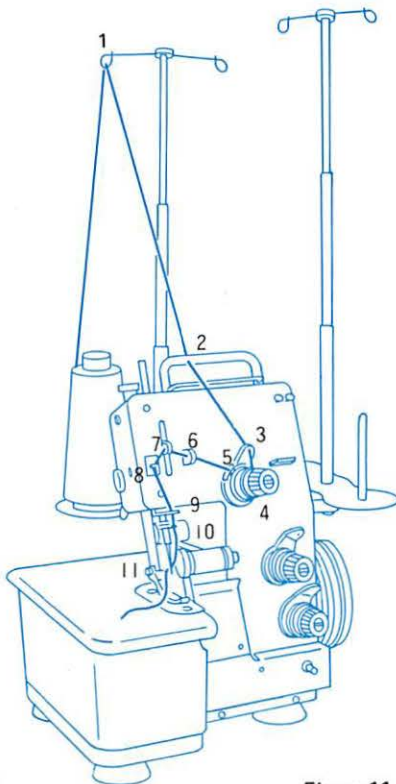
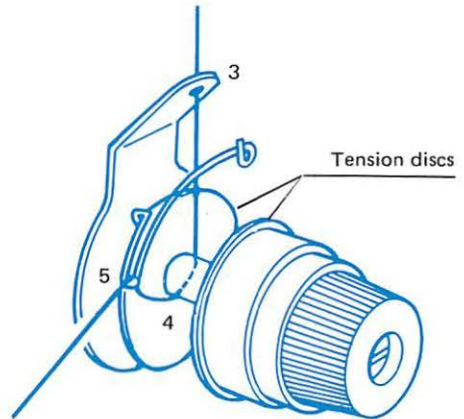


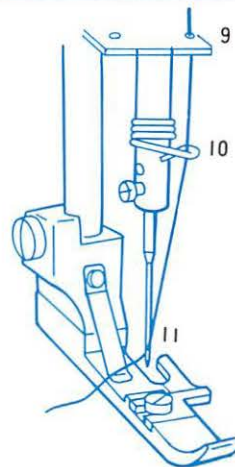
Figure 11

Figure 10



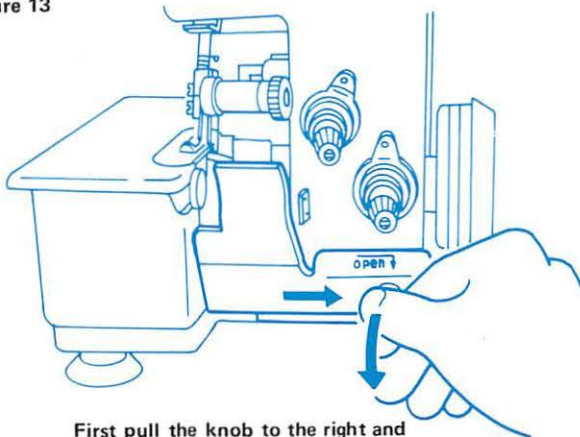
Pass thread between two tension discs.

Figure 12



Correct threading at needle bar section.

Figure 13



First pull the knob to the right and then push downward.

(3) Upper and lower threads insertion

First, open the front cover as shown in Figure 13.

Then, the threads should be inserted in the order as shown in Figure 15 and Figure 16. After inserting the thread, close the front cover.

Figure 14

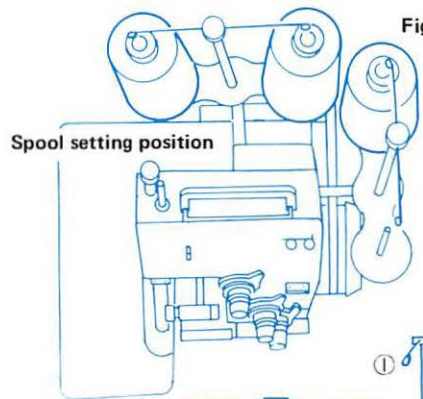


Figure 17

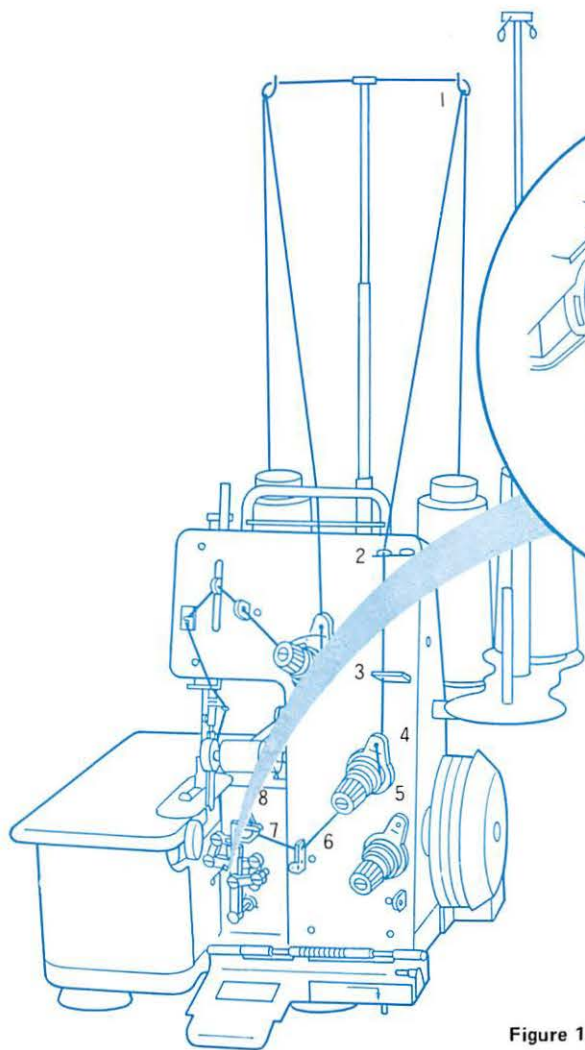
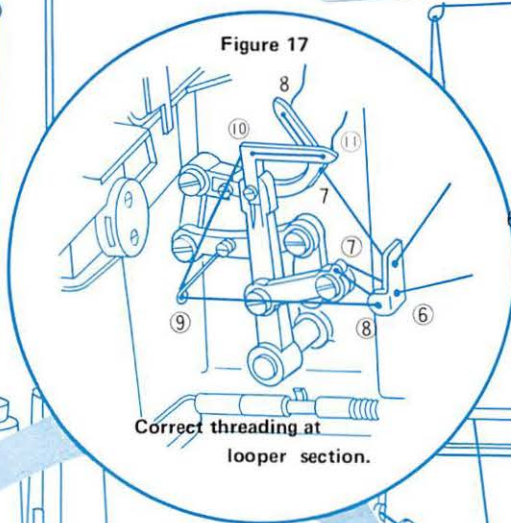


Figure 15

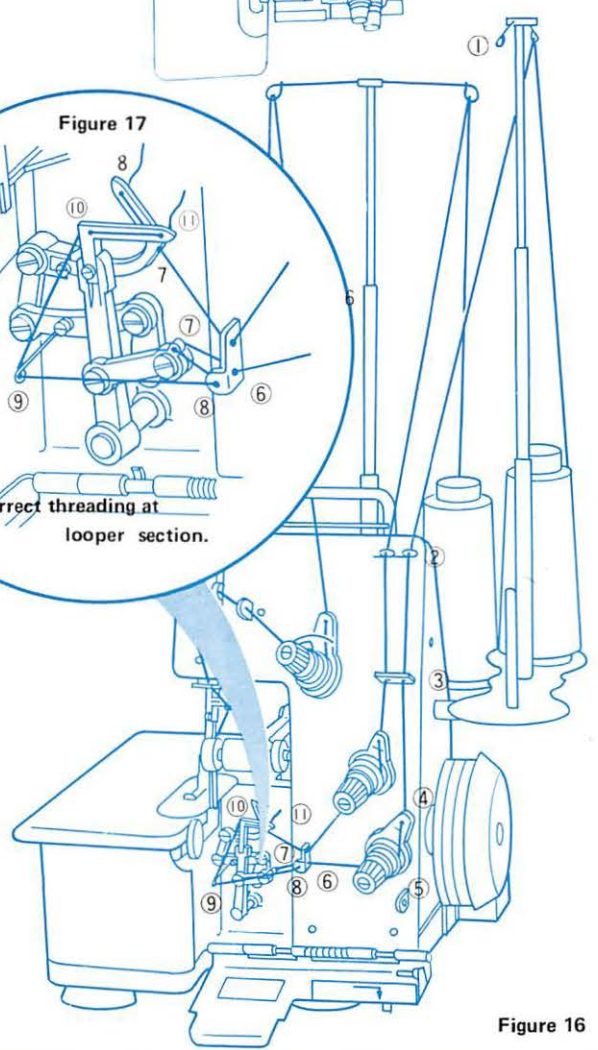


Figure 16

2-2 Sewing

- (1) After the completion of threading, hold the ends of three threads with the fingers of the left hand creating a minor tension as shown in Figure 18 and turn the flywheel with the right hand in the clockwise direction. Confirm that three threads are intertwining. Then, set the cloth, and begin to sew. (Figure 18)

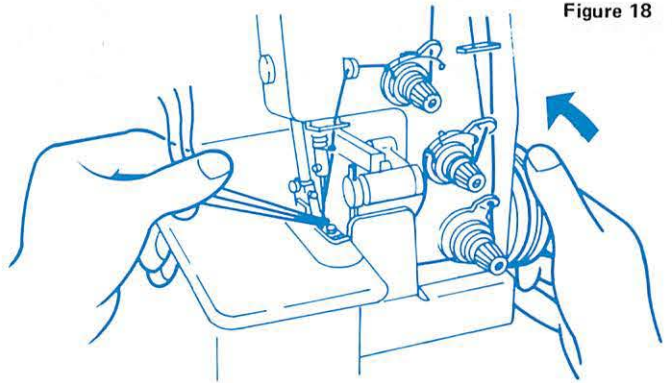


Figure 18

- (2) If the tension balance of the three threads is not satisfactory, it is possible that creases will appear on the cloth or that the seams will become irregular. Refer to the "Thread tension adjustment". (Page 7)

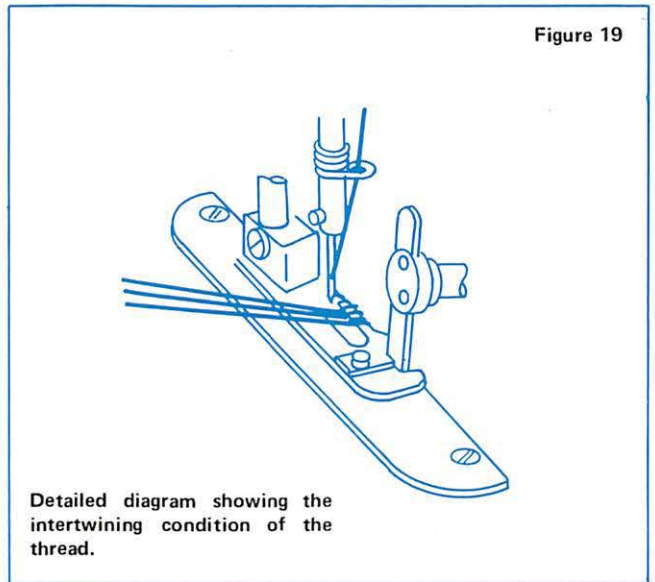


Figure 19

Detailed diagram showing the intertwining condition of the thread.

- (3) After sewing is completed, blank stitch about 2–3 cm at the end of the cloth for retaining and cut there as shown in Figure 20.

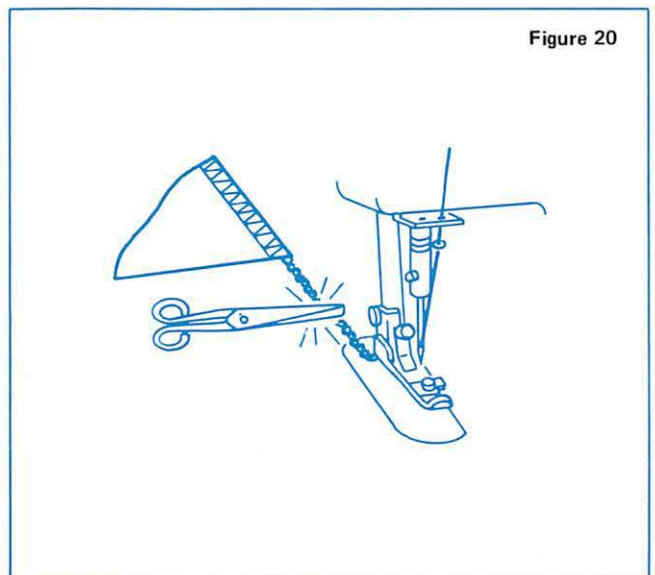
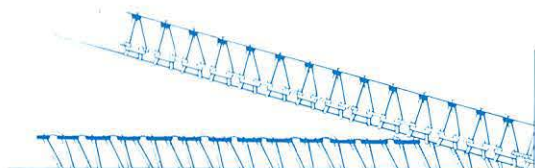


Figure 20

3 THREAD TENSION ADJUSTMENT

(A) When the tension of the upper thread is too strong.

Figure 22



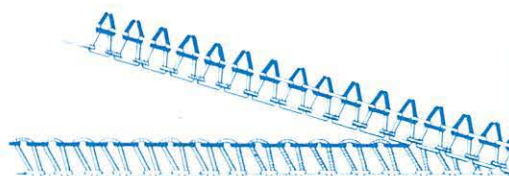
(B) When the tension of the lower thread is too strong.

Figure 23



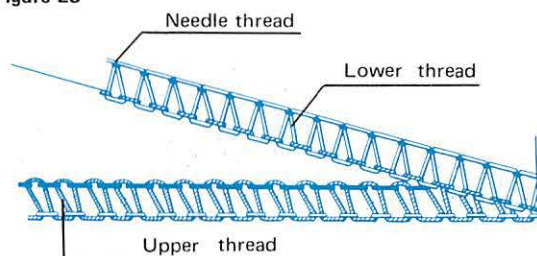
(C) When the tension of the needle thread is loose.

Figure 24



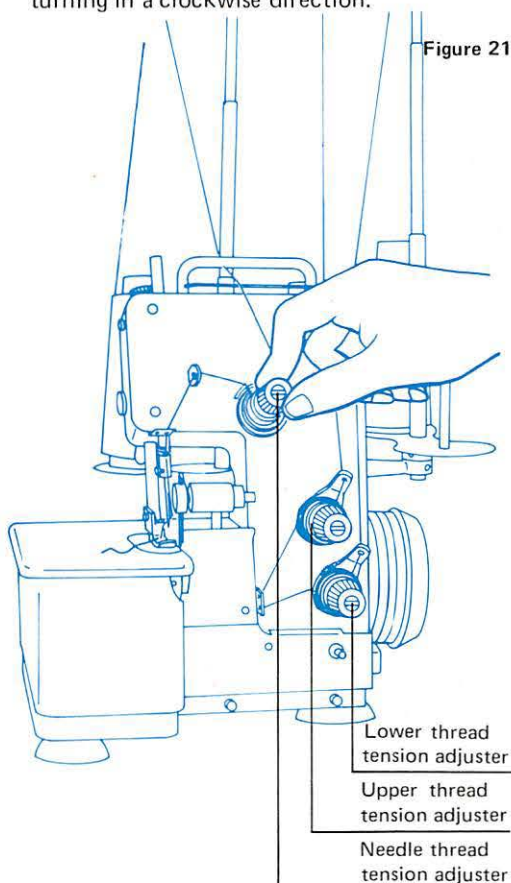
(D) Ideal stitching seam.

Figure 25



3-1 How to adjust the overedging seams

Thread tension adjustment will differ according to the type of cloth, thickness, and thread being used. Adjust the tension using the needle, upper and lower thread tension adjusters while watching the seams. (Figure 21) Thread tension may be strengthened by turning in a clockwise direction.



1. When the tension of the upper thread is too strong (Figure 22), loosen the upper thread tension adjuster.
2. When the tension of the lower thread is too strong (Figure 23), loosen the lower thread tension adjuster.
3. When the tension of the needle thread is loose (Figure 24), tighten the needle thread tension adjuster.
4. When the stitching seams appear as shown in Figure 25, the tensions are satisfactory.

4 PRESSER FOOT ADJUSTMENT

The presser foot adjustment of this machine is adjusted for standard (medium) thickness. Adjust only in the case when very thin or very thick cloth is being sewn.

Sew thin cloth with a weaker pressure, and, thick cloth with a stronger pressure.

- * Tighten presser adjusting screw for thick cloth. Loosen the screw for thin cloth.

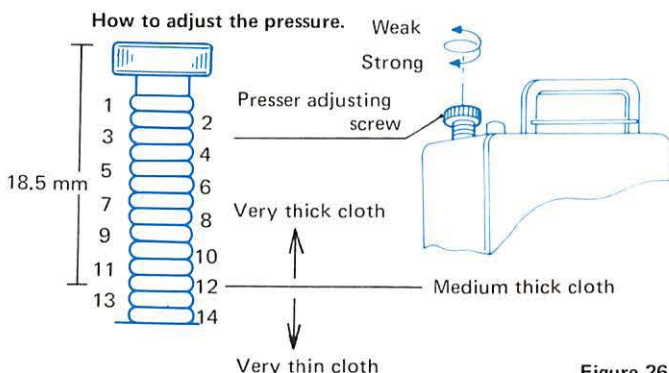


Figure 26

5 HOW TO INSTALL THE NEEDLE

With regard to the needles for this sewing machine, "ORGAN" BLx1(orDBx1) No. 14 and No. 11 can be used for overedging.

- (1) For needle installation, first turn the fly-wheel so as to raise the needle bar up as far as it will go.
 - (2) Next, loosen the needle clamp screw (Figure 27), insert the tip of the needle into the needle drop hole (Figure 27) on the presser first, and secondly insert the needle completely deep into the needle hole of the needle clamp.
 - (3) Firmly tighten the needle clamp screw.
- For the direction of inserting the needle, it is requested that the needle be set in such a way so that the thread guide groove is facing the front when facing the machine as shown in Figure 28.

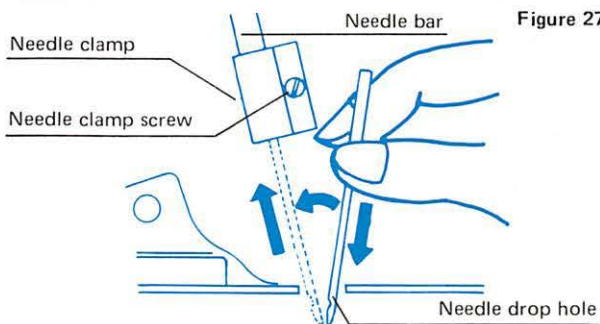


Figure 27

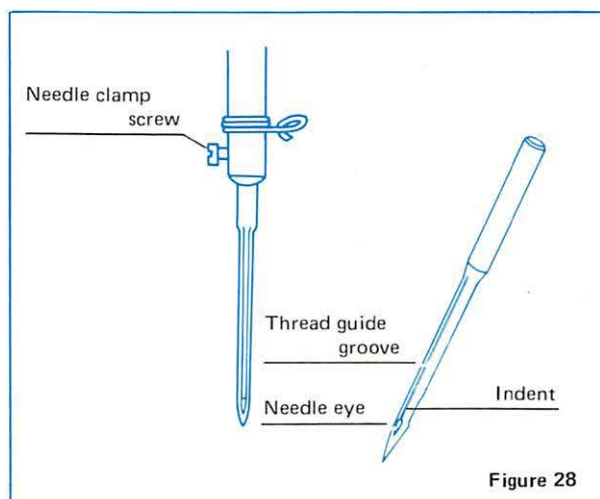


Figure 28

6 ADJUSTING STITCH LENGTH

- (1) Holding the flywheel with the right hand, grasp the heart-shaped driver in the accessories box with the left hand and loosen the feed regulator fixing screw. The feed regulator fixing screw can be loosened by turning the flywheel in a counterclockwise direction while pressing the fixing screw with the heart-shaped driver.
- (2) Set the graduation on the feed regulator knob to the indicator. The larger the number on the feed regulator knob, the larger the seams will be.
- (3) After completing adjustments, firmly tighten the feed regulator fixing screw.

Figure 29

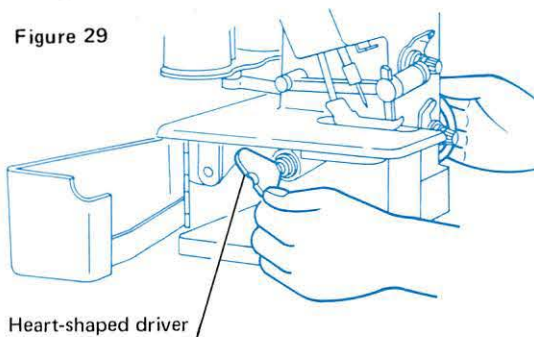
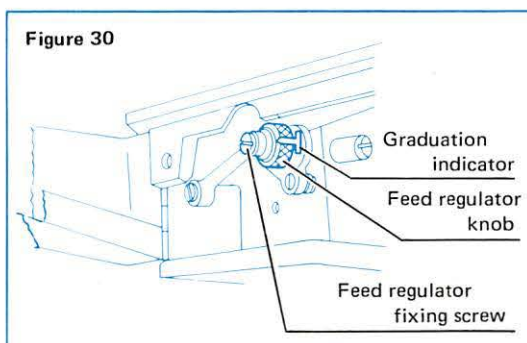


Figure 30

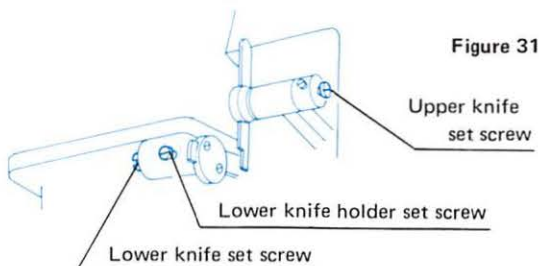


7

REPLACING THE CUTTING KNIVES

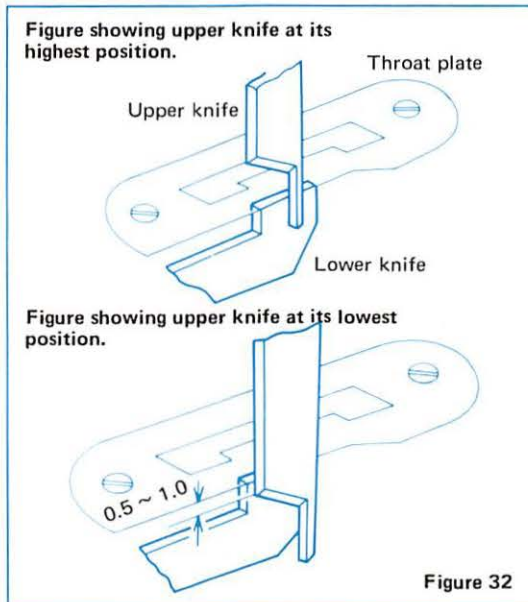
The knife should be changed only after removing the electric power source.

1) The upper knife may be changed after loosening the upper knife set screw and the lower knife may be changed after loosening the lower knife holder set screw and the lower knife set screw as shown in Figure 31.



2) The position of the lower knife must be arranged in such a way so that it can be set in the indentation for the knife in the throat plate as shown in Figure 32

3) The normal position for fixing the upper knife can be determined when the upper knife reaches its lowest point during operation. The front tip of the cutting edge of the upper knife will drop about 0.5~1.0mm against the surface of the tip of the cutting edge on the lower knife. (Figure 32)



8 LUBRICATION

Five/ten drops of oil for one oiling are necessary only in this portion.

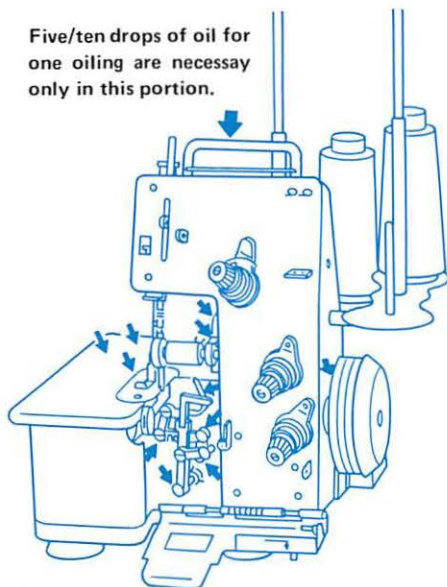


Figure 33

As special materials (oil impregnated metal) are used for parts of this machine actual additional lubrication is negligible. However, since oil wick is provided for the inner sections, oil should be provided no more than once or twice per month to those parts marked in red which can be seen from the outside of the machine, in addition to those parts shown in Figure 33 1-2 drops of oil is sufficient for one oiling.

9 SETTING UP THE SEWING MACHINE LAMP

When using a working lamp, it is recommended to use a commercially available lamp set in the position as shown in Figure 34.

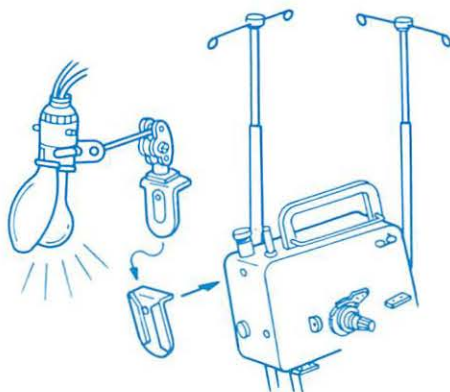


Figure 34

10

CHECKING AND ADJUSTMENT

This machine is so designed that there is absolutely no need for complex professional adjustments.

The following five examples are the only possible instances where difficulties are likely to occur through lack of fundamental adjustments.

These points should be carefully considered when operating this machine.

- A) When the machine does not operate —
 - Is the electric cord properly inserted into the plug receptable?
 - Is there any slipping in the set position of the motor?
 - Is the belt loose?
- B) When the thread breaks —
 - Have the threads been inserted correctly?
 - Is the thread tension too strong?
 - Is the needle bent?
 - Is the presser pressure adequate?
 - Are there any problems with regard to the type of thread being used?
 - Has the needle been inserted correctly?
- C) When the needle breaks —
 - Is the needle touching against the throat plate or presser foot?
 - Has the needle been inserted correctly?
- D) When the seams are irregular —
 - Is the needle bent or the point worn?
 - Has the needle been inserted correctly?
 - Is the presser pressure sufficient?
- E) When the seams are not satisfactory—
 - Is the tension adjustment of the upper, lower and needle threads satisfactory?
 - Have the threads been correctly inserted?

1 1

CHANGING THE CARBON BRUSHES OF THE MOTOR

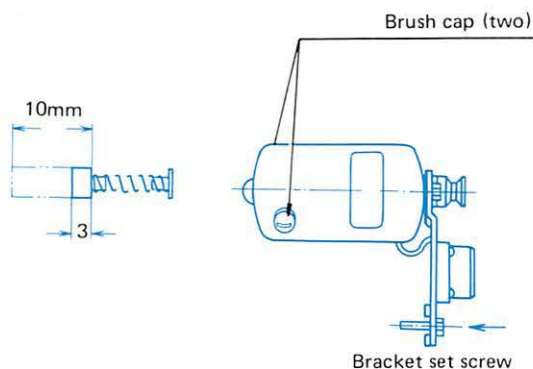
Two carbon brushes (in two positions) are attached to be used for the motor on this sewing machine. The carbon brushes should be changed according to the following method, as they are worn away after long hours of use.

A) Period for changing carbon brushes

The carbon brushes should be changed when they have worn too short for contact (see carbon brush figure).

B) First remove the motor. Remove the brush caps (see figure of motor), and replace the brushes.

Figure of carbon brush



* The carbon brushes should be changed when the brush section has worn down to approximately 3 mm as shown in the figure.

* Carbon brushes may be purchased from any sewing machine shop or electrical appliance shop.

Note: Special care should be taken with regard to the aforementioned points as failure to change the brushes may result in sparks emitting from the motor which will consequently further damage the motor.

Detailed list of contents

1. Machine	
2. Motor	
3. Controller	
4. Spool stand (2 sets)	
5. Vinyl cover	
6. Instruction booklet	
7. Accessory box	
(Contents)	
Screw driver	1
Plus driver (Phillips screw driver)	1
Spanner (for motor bracket)	1
Needles "ORGAN" BLx1(orDBx1)	
No. 14, No.11	10
Upper knife	1
Tweezers	1
Cleaning brush	1
Oil receptacle (capacity : 30cc)	1
Heart-shaped driver	
(for adjusting stitch length)	1

It is recommended that the pocket on the side cover be used for securing the accessories at the time of using the machine as shown in Figure 36.

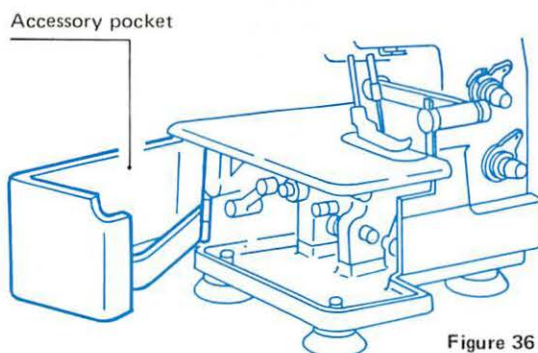


Figure 36

13 SPECIFICATIONS

ITEM	SPECIFICATION
Overedging width	4 m/m
Stitch length (feed)	1–6 m/m
Needle bar stroke	27 m/m
Knife movement	8 m/m
Presser lift (upward volume)	6 m/m
Feed dog height	0.8 m/m (standard)
Needle	“ORGAN” BLx1(orDBx1) No. 14, No. 11
Number of threads	3
Method of lubrication	Semi-automatic oil wick lubrication
Machine dimensions	Length 250 m/m x Breadth 250 m/m x Height 280 m/m
Weight of machine	9.8 kg (with motor)

14

TABLE SHOWING RELATIONSHIP BETWEEN THREAD AND CLOTH

No.	Type of cloth	Use	Type of thread	Length of stitch
1	Ordinary cloth (cotton, tricot, linen, satin, cloth in general)	Overedging	Cotton #60 ~ #100 Silk #50 ~ #100	3.0m/m ~ 4.0m/m
2	Thick cloth (tweed, overcoat cloth, denim, thick suit cloth)	Overedging	Cotton #40 ~ #60 Silk #40 ~ #60 Tetron and woolly nylon threads	3.0m/m ~ 5.0m/m
3	Knitted cloth (knitted goods, knitted cloth)	Overedging	Woolly nylon and tetron threads	3.0m/m ~ 5.0m/m

