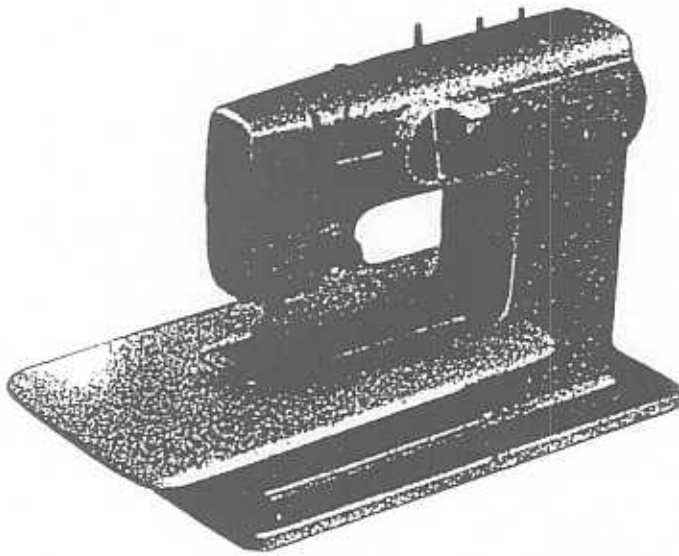


RICCAR



model 888

INSTRUCTION MANUAL
FREE ARM ZIG ZAG

Super

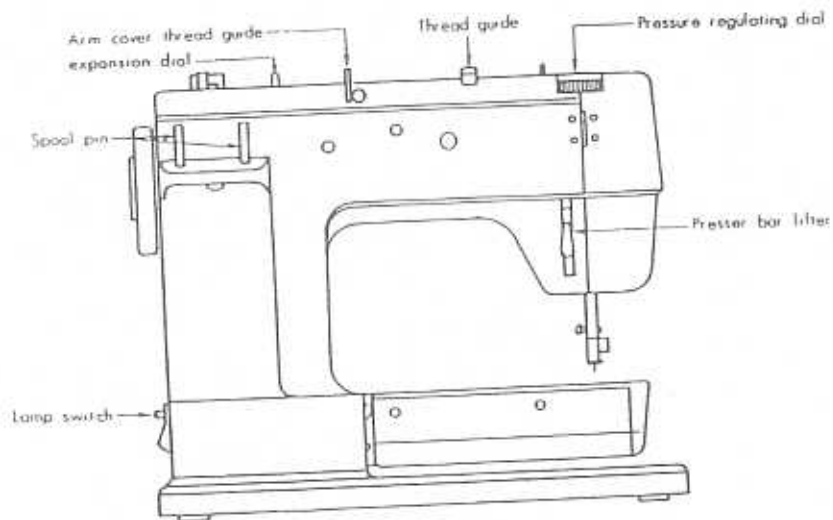
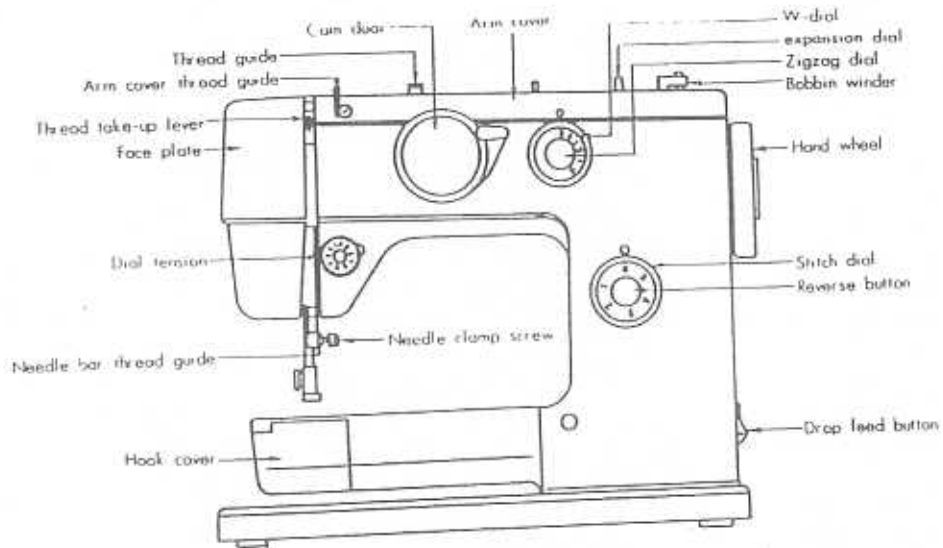

Stretch

IBR 888

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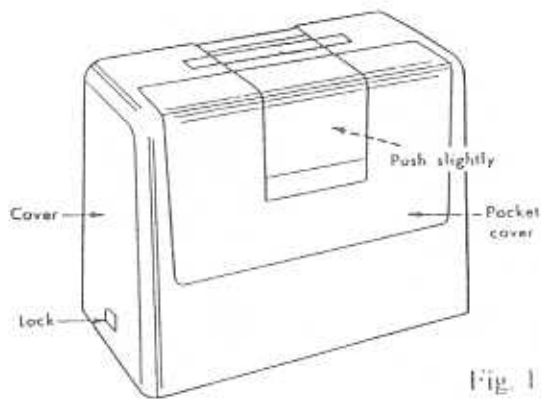
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1. PRINCIPAL PARTS OF MODEL 888



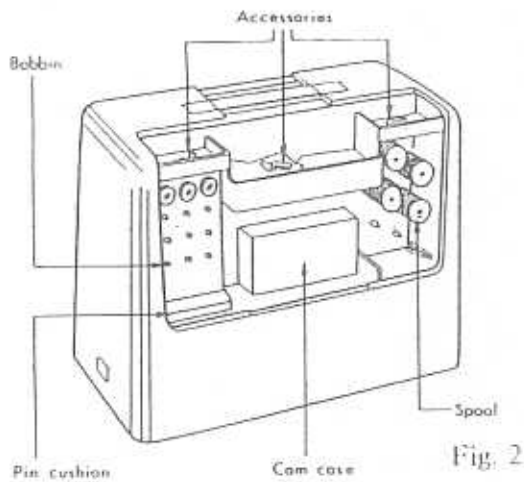
2. CARRYING CASE AND WORK TABLE

(1) OPENING AND CLOSING THE COVER



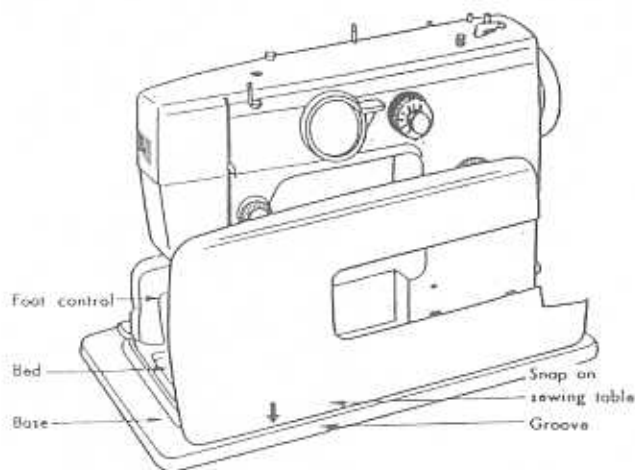
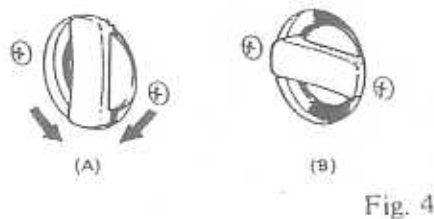
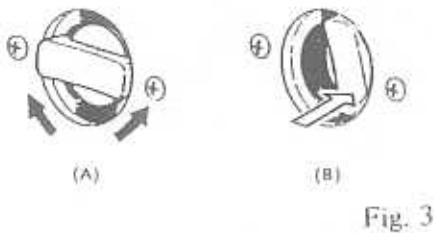
This carrying case is designed for housing various accessories needed for your daily sewing works as well as sewing machine. (Fig. 1)

To open the cover, turn the locks of both side either way and push the locks all the way in, then lift the cover.



To close the cover, place the foot control behind the free arm and the snap-on sewing table into the groove of the bottom located in front as shown in. (Fig. 5)

Place the cover with the pocket cover away from you over the machine carefully. Then the cover locks automatically. Make certain always to turn the knob either way for double locking for your safety. (Fig. 4)



(2). FITTING THE SNAP-ON SEWING TABLE

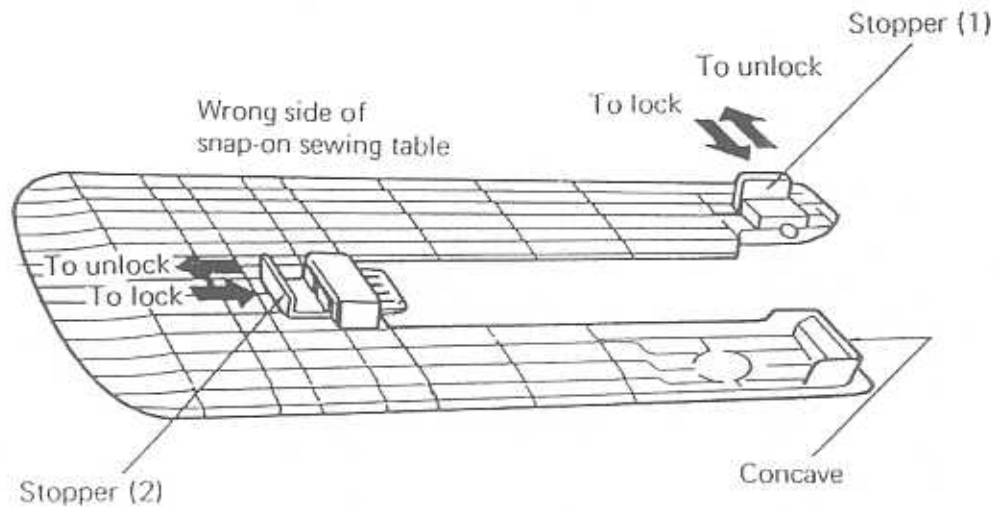


Fig. 6

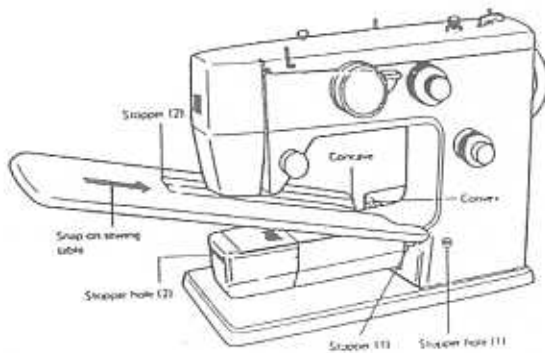


Fig. 7

Hold the snap-on sewing table on the slant as shown and set the concave to the convex of machine pulling the stopper (1).
(Figs. 6 & 7)

Set the stopper (1) to the stopper hole (1) and let your finger go off for locking.

Lower the snap-on sewing table down to horizontal position pulling the stopper (2) toward left. Set the stopper (2) to the stopper hole (2) and let your finger go off.
(Figs. 6 & 8)

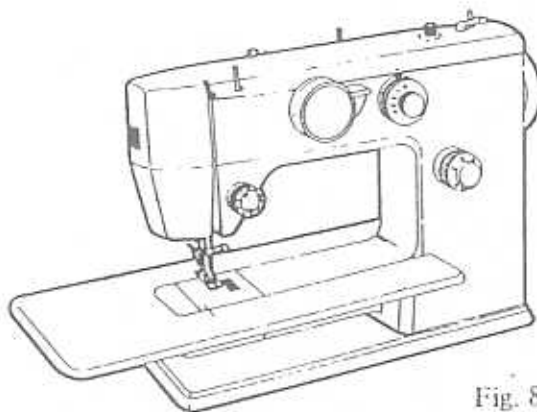


Fig. 8

When you change the bobbin, pull the stopper (2) only toward left and push the left side of snap-on sewing table upward. You do not have to remove it completely.

3. SEWING PREPARATION

(1) SELECTION AND INSERTION OF NEEDLE

It is very important to select a correct needle and thread in order to get a fine stitch. Select them referring to the chart below.

A bent needle will not produce fine work. Check a correct one by placing its flat side against a flat plate.

If a needle is bent or a sharp point has been damaged, a faulty needle can cause - (a) thread breakage (b) excessive noise while the machine is in motion (c) damage to a needle plate (d) slipped stitching or so.

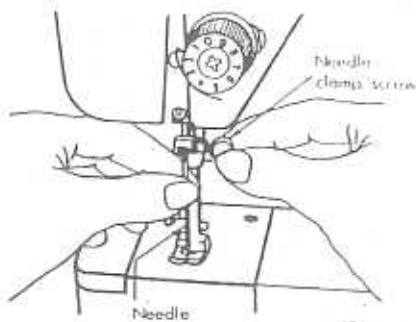


Fig. 9

Needle insertion

- 1) Raise needle bar to its highest position by turning hand wheel over toward you.
- 2) Loosen needle clamp screw and insert a new needle into the clamp as far as it will go, facing a flat side of needle to the back.
- 3) Tighten needle clamp screw with a screwdriver. (Fig. 9)

NEEDLE, FABRIC AND THREAD CHART

Size of Needles	Cloth	Size of Thread
No. 9	Thin calico, silk, serge and muslin	No. 30-100 cotton thread or fine silk thread
No. 11	Thin calico, cotton cloth, crepe de Chine, hosiery and silk	No. 60-100 cotton thread or ordinary silk thread
No. 14	Ordinary cotton cloth, thick silk, thin woolen goods, towels and shirting	No. 40-50 cotton thread or ordinary silk thread
No. 16	Thick cotton cloth, serge and thin woolen goods	No. 30-60 cotton thread or ordinary silk thread
No. 18	Ordinary woolen goods, trousers, overcoats, thick calico and children's clothes	No. 30-60 cotton thread or ordinary silk thread

Note: Use a good quality mercerized cotton thread, if available, avoid shrinking when laundered.

(2) WINDING THE BOBBIN

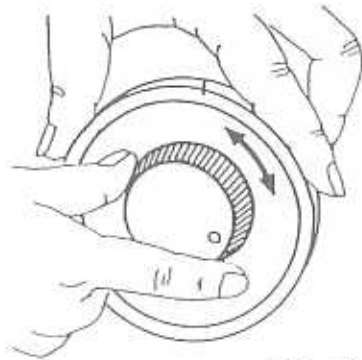


Fig. 10

To wind the bobbin, first turn the stop motion large screw counterclockwise to disconnect a sewing mechanic. (Fig. 10)

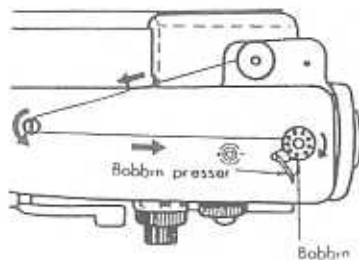


Fig. 11

Place a spool on the spool pin and lead thread through each threading point as illustrated in the sketch. (Fig. 11)

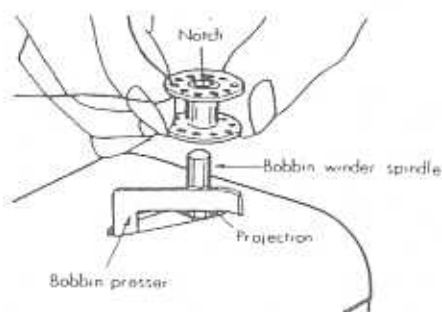


Fig. 12

To position a bobbin on the bobbin winder spindle, fit it engaging the notch of a bobbin with the projection on the spindle. (Fig. 12)

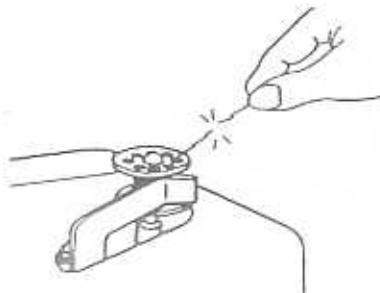


Fig. 13

Push the bobbin presser toward the bobbin and thread through a hole of upper flange of a bobbin from inside. Holding thread end, activate machine. When a bobbin is full, the bobbin will be disengaged automatically. Then turn the stop motion large screw clockwise to tighten it. (Fig. 13)

(3) THREADING THE BOBBIN CASE

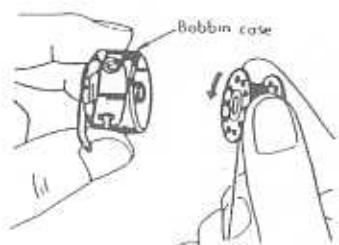


Fig. 14

Loosen out a few inches of thread from the bobbin. (Fig. 14)

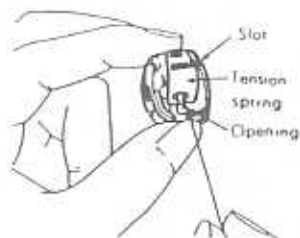


Fig. 15

Put it into the bobbin case and hook thread in the slot. Then lead thread through under the tension spring plate and make it slide into the opening at the end of the spring plate as illustrated in the sketch. (Fig. 15)

(4) INSERTING THE BOBBIN CASE INTO THE HOOK

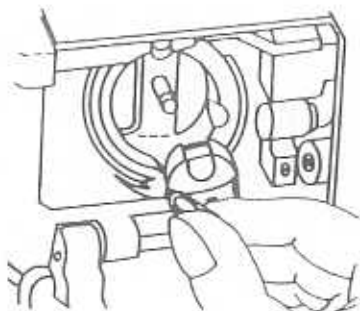


Fig. 16

To place the bobbin case on the spindle, raise the needle bar to its highest point by turning hand wheel over toward you.

Pull thread from the bobbin case for a few inches.

Holding the bobbin case latch, place the bobbin case on the spindle. (Fig. 16)

(5) UPPER THREADING

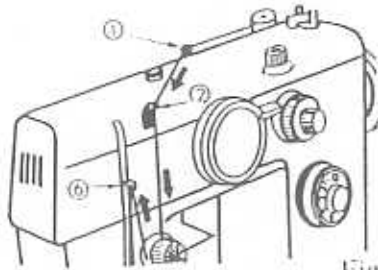


Fig. 17

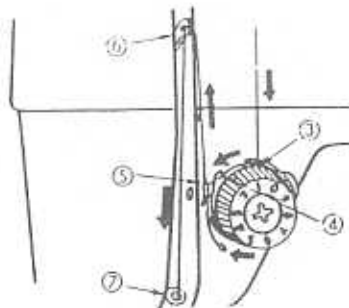


Fig. 18

Raise needle bar to its highest position by turning hand wheel over toward you. Place a spool and lead thread from point (1) through (9) as indicated below.

- (1) Arm thread guide A
- (2) Arm thread guide B
- (3) Dial tension
- (4) Dial tension thread guide
- (5) Thread take-up spring
- (6) Thread take-up lever
- (7) Arm thread guide
- (8) Needle bar thread guide
- (9) Needle

(Fig. 17, 18)

After threading the needle eye, draw sufficient thread from eye to prevent it from slipping out of the eye when starting the machine.

Place both needle and bobbin threads diagonally under presser foot.

(6) PRESSURE ADJUSTMENT

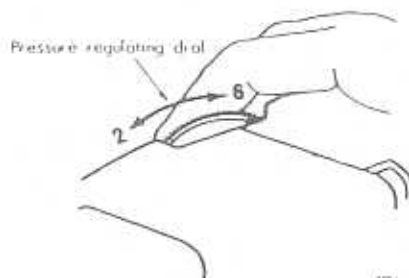


Fig. 19

Pressure should be adjusted considering the thickness of material to be sewn in order to make fine and even seams and to execute a regular feeding of materials.

Generally, a heavy pressure is required for thick materials and light pressure for fine materials.

For sewing thick materials, set the dial on or about 6 and for sewing fine ones set the dial on or about 2. (Fig. 19)

In sewing average materials, sew under moderate pressure by setting the dial on or about 4. (Fig. 20)

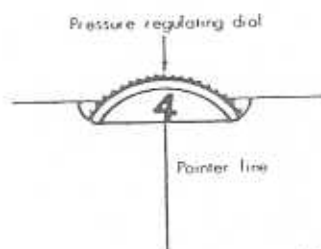


Fig. 20

7) ADJUSTMENT OF DROP FEED

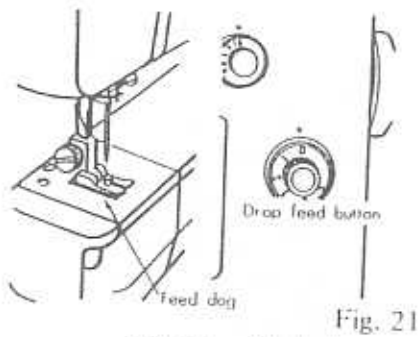


Fig. 21

The height of feed dog is adjusted by switching the drop feed button located on the right side of the vertical arm.

(Fig. 21)

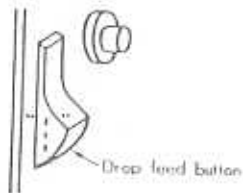
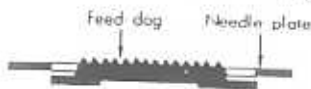


Fig. 22

When the mark "1" appears, the feed dog rises to higher position and the mark "5" appears, it descends to lower position.

When the feed dog is in higher position, it functions to feed materials and when in lower position, it doesn't feed materials at all.

For general sewing, set the drop feed button at "1".

Set it at "5" for embroidery sewing, darning, button sewing or the like which needs no feeding motion.

(Fig. 22, 23)



Fig. 23

(8) ADJUSTMENT OF STITCH LENGTH AND REVERSE SEWING

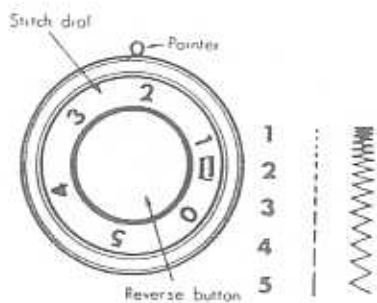


Fig. 24

Stitch length can be adjusted by means of stitch dial. The numerals on the dial represent the stitch length. The lower the numeral, the shorter the stitch length.

For reverse sewing push the reverse button. Reverse sewing will continue as long as the button is pushed. When the button is released, the machine will return to forward sewing.

(Fig. 24)

4. STRAIGHT STITCH SEWING

(1) PREPARATION FOR STRAIGHT SEWING

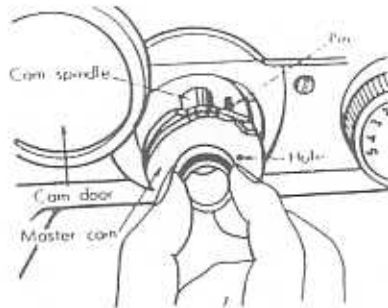


Fig. 25

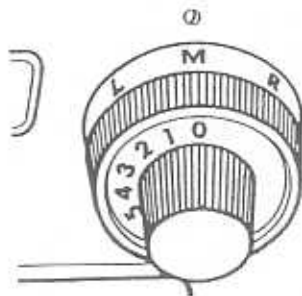


Fig. 26

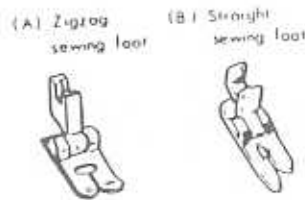


Fig. 27

For straight sewing, set the machine as indicated below.

1) Dial settings

Master Cam... Take out
(Cam No. 1)

W-Dial M

Zigzag Dial ... 0 (Zero)

Stitch Dial ... Desired position

Drop Feed "1" (Fig. 25, 26)

Note: For short hour's use, it doesn't need everytime to take out Master Cam (Cam No. 1).

2) Presser foot

Even in straight sewing, it does not matter at all to use zigzag sewing foot, but in case a fine and perfect stitching is required, it is favorable to replace it to straight sewing foot. (Fig. 27)

Note: Be sure that cam door has been closed before you will start to sew.

(2) START SEWING

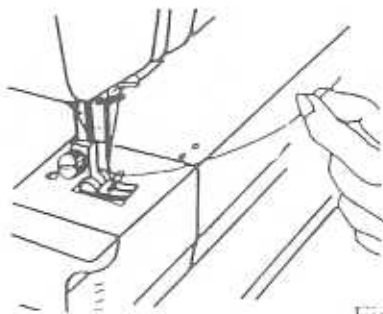


Fig. 28

- 1) Hold upper thread lightly with left hand.
- 2) Turn hand wheel over toward you with right hand until needle enters into needle hole to catch lower thread and comes up again bringing it up through needle hole.

(Fig. 28)

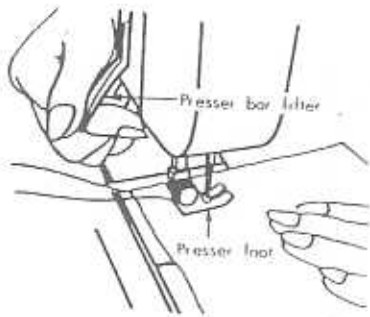


Fig. 29

- 3) Pick up ends of both threads together and draw them through under presser foot to the back of machine.
- 4) Place material under presser foot and position needle in the material.
- 5) Lower presser foot and start to sew.

Note: Never push or pull the material by hand. Lead it carefully in the desired direction.

(Fig. 29)

ADJUSTMENT OF THREAD TENSION

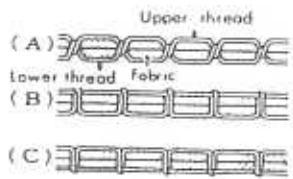


Fig. 30

A correctly locked stitch results when the upper and lower tensions are balanced so that the needle and bobbin threads are drawn equally into the fabric.

Stitch (A) shows correct locking.

Stitch (B) shows that the needle thread tension is too strong.

Stitch (C) shows that the bobbin thread tension is too strong.

(Fig. 30)

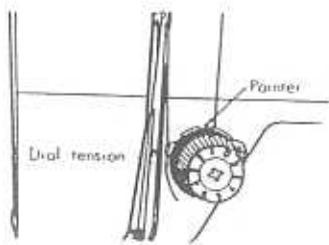


Fig. 31

Stitch (B) can be corrected by turning the dial tension to a lower number;

Stitch (C) can be corrected by turning it to a higher number.

The higher the numeral, the stronger the needle thread tension. (Fig. 31)

For usual sewing, it is sufficient to adjust only the dial tension as explained above. (Fig. 31)

Sometimes, however, it comes to be necessary to adjust the bobbin thread tension by turning the bobbin case screw. (Fig. 32)

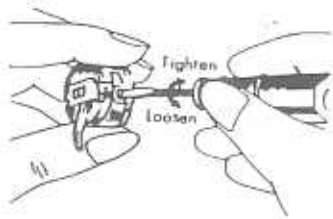


Fig. 32

5. MANUAL ZIGZAG SEWING

(1) PREPARATION FOR MANUAL ZIGZAG PATTERN SEWING

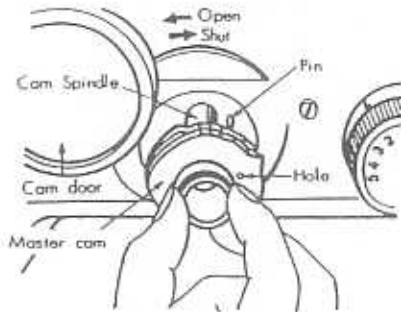


Fig. 33

(A) To sew zigzag patterns manually, set the machine as follows.

Pattern Cam ... Master Cam (No. 1)
 W-Dial Desired position
 Zigzag Dial 1 - 5
 Stitch Dial 0, 5 - 5
 Drop Feed
 Presser foot ... Zigzag sewing foot

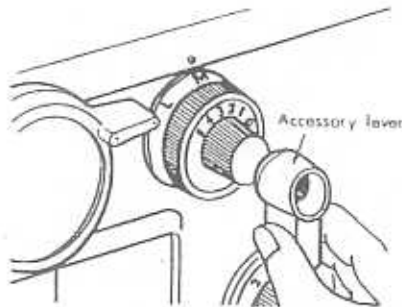


Fig. 34

(B) Always be sure to open the cam door toward left as far as it will go so that the cams may easily be put in or taken out.

(C) When inserting a cam on the cam spindle, engage a small hole of the cam with the pin on the cam spindle disk.

(D) Attach the accessory lever to zigzag dial to make the operation easy.

(Fig. 33, 34)

(2) ADJUSTMENT OF ZIGZAG

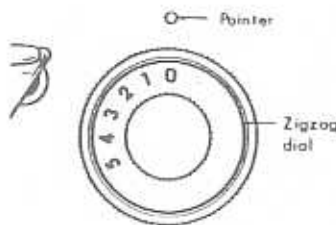


Fig. 35

The width of zigzag stitch can be adjusted by means of the zigzag dial.

Numbers from 0 to 5 on the zigzag dial indicate the width of zigzag sewing.

The lower the numeral, the narrower the stitch width.

(Fig. 35)

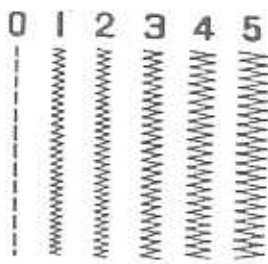


Fig. 36

The zigzag pattern sketch illustrated here shows the width obtained with each zigzag dial setting from 0 to 5.

(Fig. 36)

(3) ADJUSTMENT OF NEEDLE POSITION

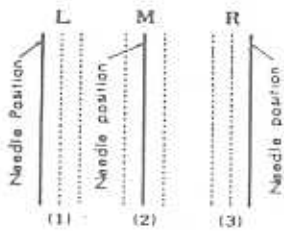


Fig. 37

"Needle position" shows the starting position or line where the needle starts to sew.

(Fig. 37)

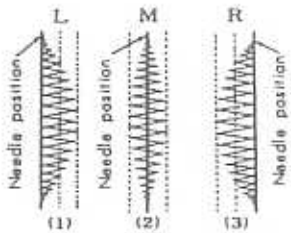


Fig. 38

L - In sketch (1), the needle zigzags toward the right only starting from the left position.

M - In sketch (2), the needle zigzags toward both right and left starting from the central position.

R - In sketch (3), the needle zigzags toward the left only starting from the right position.

(Fig. 38)

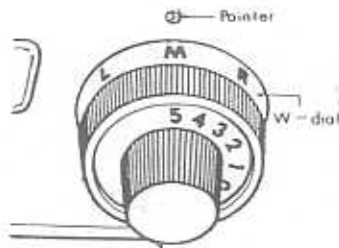









Fig. 39

To change the needle position, turn W-Dial to the desired position. (Fig. 39)

Note: Be sure that cam door has been closed before you will start to sew.

(4) MANUAL ZIGZAG PATTERNS AND DIAL SETTINGS

For zigzag pattern sewing turning the zigzag knob manually, following procedure should be followed.

 <p>CAM No. 1 (Master Cam)</p>			
 <p>W-DIAL</p>	M	REPEAT L.R.L, L.R.L.	REPEAT L→R, R→L
 <p>ZIGZAG DIAL</p>	1 - 5	2 - 3	2 - 3
 <p>STITCH DIAL</p>	0.5 - 5	0.2-1.5	0.2-1.5

) EMBROIDERY STITCH SEWING

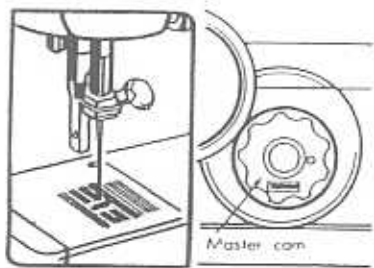


Fig. 40

To make embroidery stitches, set the machine as indicated below.

Pattern Cam Master Cam (No. 1)
W-Dial M
Zigzag Dial Required position
Drop Feed "■"

(1) Presser foot

Any kind of presser foot is not necessary for embroidery sewing. Take it off from the presser bar loosening the presser foot thumb screw.

(Fig. 40)

(2) W-Dial

Be sure to set the zigzag dial on "M".

(Fig. 41)

(3) Accessory lever

Attach the accessory lever to the zigzag dial for ease of operation.

(Fig. 41)

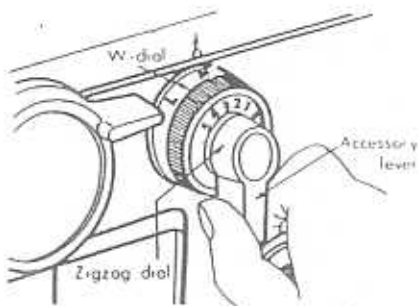


Fig. 41

Note: Be sure that cam door has been closed before you will start to sew.

When all preparations are finished, start sewing.

To make fine embroidery, it is recommended that the fabric be tightly stretched in an embroidery hoop.

(Fig. 42)

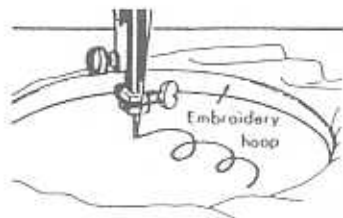


Fig. 42

NOTE: When embroidering using the twin-needle, be sure to use the zigzag dial within the limit of zigzag width from 1 to 3.

6. AUTOMATIC ZIGZAG PATTERN SEWING

(1) PREPARATION FOR ZIGZAG PATTERN SEWING



Fig. 43

To sew zigzag pattern stitches, set the machine as follows.

	No. 1-10	No. 11-24
Pattern Cam	No. 111-116	No. 215-231
W-Dial	M	M
Zigzag Dial	5	5
Stitch Dial	0.2-1.5	5
Drop Feed	⋮	⋮

Note: Always open the cam door toward left as far as it will go and insert the desired cam on the cam spindle.

(Fig. 43)

Stitch Dial

Stitch length for Cams from No. 1 to No. 10 and from No. 11 to No. 24 are quite different.

	No. 1-10	No. 11-24
	No. 111-116	No. 215-231
Stitch Dial	0.2-1.5	5

Pay special attention not to make a wrong setting. (Fig. 44)

Note: When opening the cam door, make it sure that the needle is not sticking in the material.

Note: Be sure that cam door has been closed before you will start to sew.

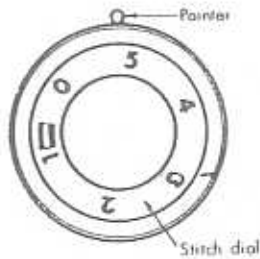


Fig. 44

ZIGZAG PATTERN CHART

With this sewing machine, various wonderful picture patterns shown below can be produced very easily only by changing cams.

No.	Pattern	No.	Pattern
1*		12*	
2*		13*	
3*		14	
4		15	
5*		16*	
6*		17	
7*		18	
8*		19	
9*		20	
10*		21*	
11*		22	

No.	Pattern	No.	Pattern
23		220	
24*		221	
111*		222	
112		223	
113		224	
114		225	
115*		226*	
116*		227	
215*		228*	
216		229*	
217		230*	
218		231	
219*			Cams other than marked * are available at extra cost.

3) PRACTICAL SEWING OF ZIGZAG PATTERNS

Variation of patterns

(1) When you desire to vary the patterns with its width, adjust the dials as follows.

Zigzag Dial Desired position
(From 2 to 5)
Stitch Dial 0.2 - 1.5

(2) When you desire to vary them with its stitch length, adjust the dials as follows.

Zigzag Dial 5
Stitch Dial Desired position
(From 1 to 5)

(Fig. 45)

(3) When you desire to vary the patterns with its width, adjust dials as follows.

Zigzag Dial Desired position
(From 2 to 4)
Stitch Dial 5

(Fig. 46)

(Note)

These variations can only be performed with the single cams which are distinguished by the blue-colored motif on the cam.

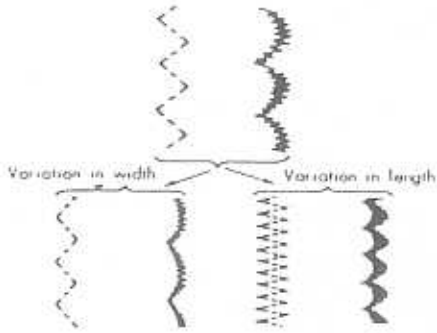


Fig. 45

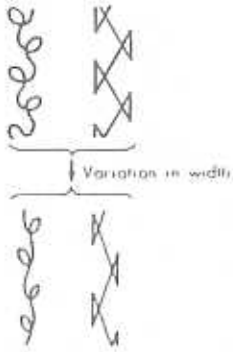


Fig. 46

7. BUTTONHOLE SEWING

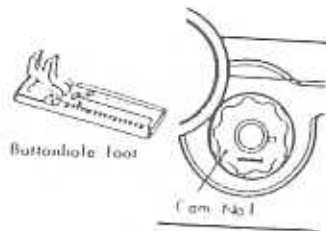


Fig. 47

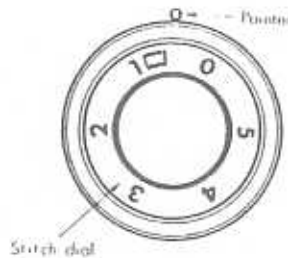


Fig. 48

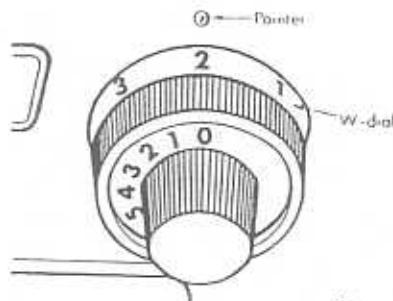


Fig. 49

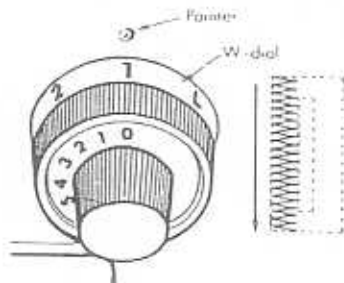


Fig. 50

(1) Dial settings

Pattern Cam Master Cam
 (Cam No. 1)
 Zigzag Dial 0
 Stitch Dial 0.2 - 1.5
 Drop Feed "1"
 W-Dial 1 - 2 - 3 - 2

Note: Change the ordinary presser foot to the buttonhole sewing foot.

(Fig. 47)

(2) Stitch Dial

Adjust the stitch length according to the size of buttonhole or to your choice.

Dial setting between 0.2 and 0.5 is favorable.

(Fig. 48)

(3) W-Dial

With this sewing machine buttonholes can be easily made by changing simply the dial setting in the order; 1 - 2 - 3 - 2.

(Fig. 49)

Note: Be sure that cam door has been closed before you will start to sew.

(4) Operation

To sew buttonhole, first set W-Dial on 1, then start sewing.

This will sew the left-side stitches as shown in the sketch.

(Fig. 50)

If you interrupt stitching after sewing left-side stitches, make it sure that the needle is not sticking in the fabric before turning the W-Dial.

When finished with the left-side stitching of the desired length, set the dial on 2 for bar tacking and sew six stitches or so as shown in the sketch. (Fig. 51)

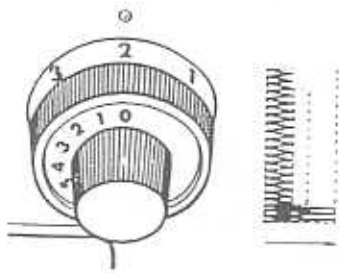


Fig. 51

Then set the dial on 3 and stitch the opposite side as shown in the sketch.

(Fig. 52)

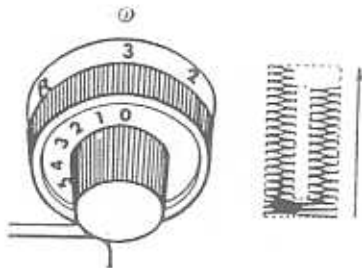


Fig. 52

When this side has been stitched for the same length as the left side, set the dial on 2 and sew approximately six stitches to finish off the top.

End on left side and after turning W-dial to "L" position, take about six stitches to fasten stitching. (Fig. 53)

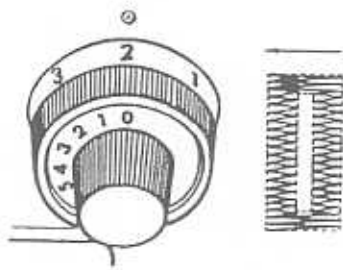


Fig. 53

Cut the opening for the button with seam ripper taking care not to cut the seam.

(Fig. 54)



Fig. 54

Note: Before turning the W-Dial, make it sure that the needle is not sticking in the fabric.

8. TWIN-NEEDLE SEWING

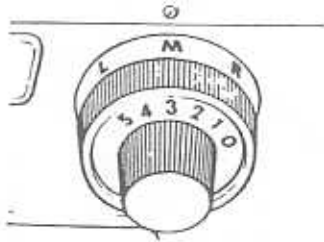


Fig. 55

Twin-needle sewing using pattern cam should be done as follows.

(1) Dial setting

	No. 1-10	No. 11-24
Pattern Cam	No. 111-116	No. 215-231
W-Dial	M	M
Zigzag Dial	2 - 3	2 - 3
Stitch Dial	0.2-1.5	5
Drop Feed	"↓"	"↓"

(Fig. 55)

(2) Needle and Spool pin

Replace single needle to twinneedle.

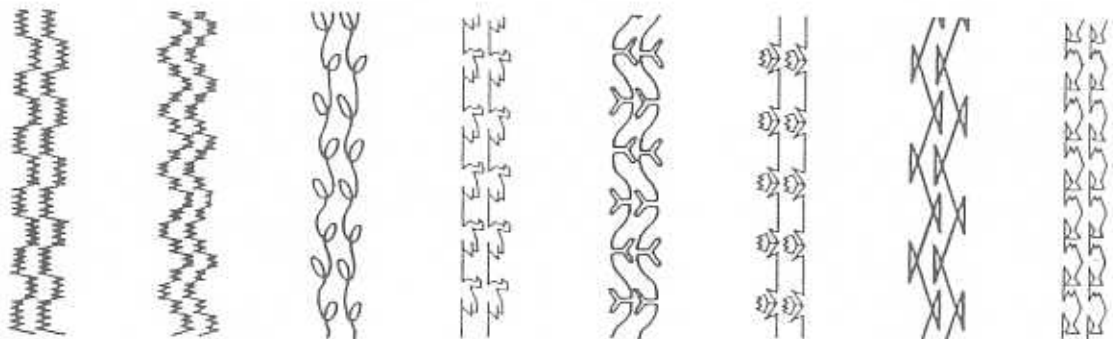
(Fig. 56)

Place two spools on the spool pin.

Note: Be careful not to set the Zigzag Dial at a position higher than 3.

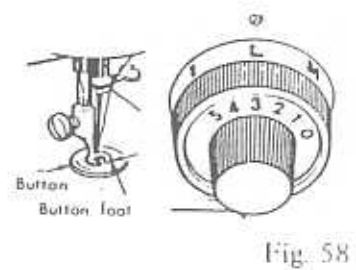
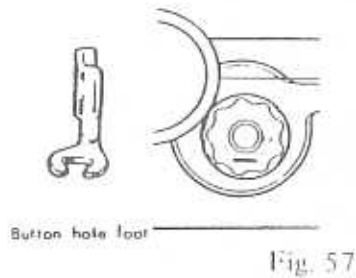
(Fig. 55)

STITCH PATTERNS BY TWIN-NEEDLE SEWING



9. SEWING ON BUTTON

To sew on a button, proceed as follows.

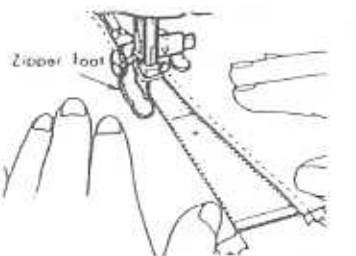
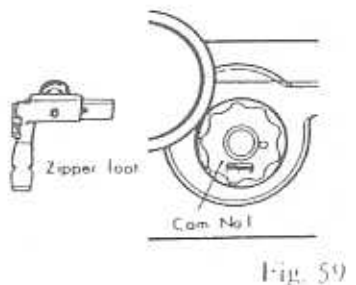


- (1) Use the button sewing foot.
- (2) Set Cam No. 1 on cam spindle.
- (3) Set drop feed button at "||||".
- (4) Position W-Dial at "L".
- (5) Place a button under foot in the position where needle go into left hole of button.
- (6) Lower foot and turn hand wheel toward you until needle comes out of hole.
- (7) While moving zigzag dial slowly, let needle go down to the right hole by turning hand wheel with left hand.
- (8) Stop Zigzag Dial at this position.
- (9) Run machine at medium speed and sew about six to eight stitches.
- (10) End on left side and take about six stitches to fasten stitching.

(Fig. 57, 58)

10. ZIPPER SEWING

For zipper sewing, proceed as follows.



- (1) Use Master Cam (Cam No. 1).
- (2) Set W-Dial on "M". Stitch Dial on 1 - 3 and Drop Feed Button on "||".
- (3) Attach Zipper Foot to the presser bar.
- (4) Loosen zipper foot thumb screw and adjust the position of foot as follows.
 - a) Position foot on the right side of zipper to sew on the right side of it.
 - b) Position it on the left to sew on the left side of zipper.
- (5) Check the position by lowering needle in the side notch, making sure that it clears foot.
- (6) Place folded edge of material along zipper edge and lower foot.
- (7) Start sewing.

(Fig. 59, 60)

11. CORDING

For cording, proceed as follows.

Pass a cord or string through the hole of the cording foot. Adjust the zigzag width according to the width of cord and start sewing. (Fig. 61)

Pattern Cam ... Master Cam (Cam No. 1)
W-Dial M
Zigzag Dial ... According to the width
of cord or string

Stitch Dial ... 1 - 3

Drop Feed " " "

(Fig. 62)

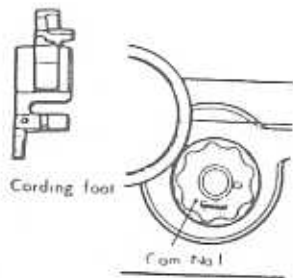


Fig. 61

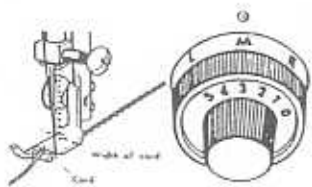


Fig. 62

12. USING THE HEMMER

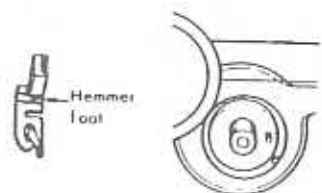


Fig. 63

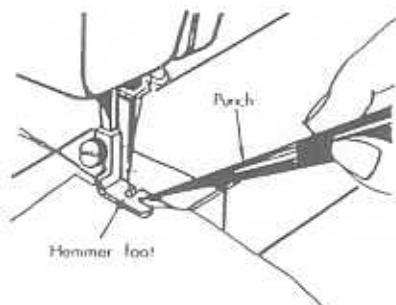


Fig. 64

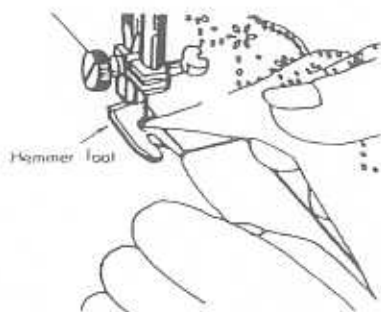


Fig. 65

Edge sewing or lace inserting can be done by using the hemmer.

For this work, set the machine as indicated below.

- (1) Raise the needle bar to its highest position;
- (2) Attach the hemmer in place of the ordinary sewing foot. (Fig. 63)

For hemming, first cut off the front edge of the material so that the edge may easily be rolled into the scroll of the hemmer foot. Use a punch to push the material under the foot. Then lower the presser foot. Take a few stitches slowly, holding the edge of the material with your right hand so that it can be rolled in smoothly, then start to sew fast. (Fig. 64)

When doing hemming and lace inserting at the same time, place the front portion of the lace edge under the hemmer foot, inserting it in the incision. Place the lace on the edge of material in the overlap, this side of the lace edge in the incision, and let the needle pierce it. Then lower the presser foot and start sewing slowly. (Fig. 65)

Summarizing the use of hemmer, set the machine as follows.

Pattern Cam	...	Master Cam (Cam.No. 1)
W-Dial	M
Zigzag Dial	0 (in straight sewing) 1-2 (in zigzag sewing)
Stitch Dial	Desired position
Drop Feed	"1"

13. USING THE BLIND STITCH FOOT

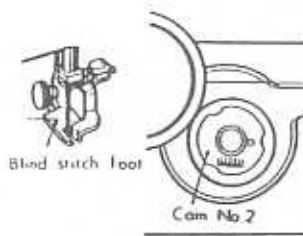


Fig. 66

This machine is provided with a specially designed blind stitch sewing foot. Good use of it can be made when sewing skirts or trousers.

For this work, set the machine as follows:

- (1) Use cam No. 2
- (2) Raise the needle bar to its highest point by turning the hand wheel toward you and attach the blind stitch sewing foot in place of zigzag sewing foot.

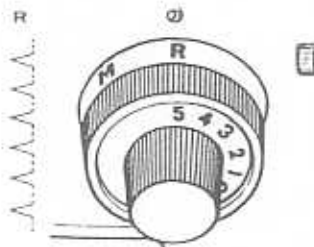


Fig. 67

Set the W-dial on "R". The needle zigzags from the right needle position to the left as is illustrated in the sketch.

Summarizing blind stitch sewing, set the machine as follows:

Pattern Cam	No. 2
W-Dial	R
Zigzag Dial	Free
Drop Feed	" "

For blind stitch sewing:

- (1) Fold the cloth as shown in the sketch.
- (2) Depending on the material to be sewn, adjust stitch length and zigzag width by controlling the feed and zigzag dials.
- (3) Turning the hand wheel toward you, stop the machine when the needle is to the extreme left and is about to pierce the cloth.
- (4) Place the cloth so that the sideward stitches pierce the fold. Then lower the presser foot.
- (5) Adjust the seam guide so that it rests next to the folding line and sew. Setting of the guide is done with the thumb screw.

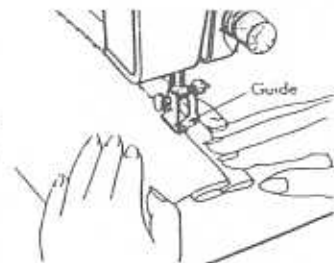


Fig. 68

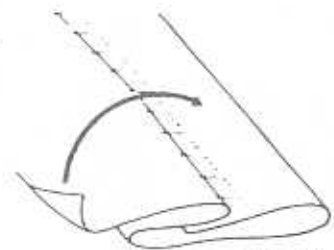


Fig. 69

After finishing sewing, release the fold.



Fig. 70

14. AUTOMATIC VARIATIONS OF EMBROIDERY MOTIFS

Your new sewing machine now gives you automatic variations of your embroidery motifs. It is now possible to sew variations of embroidery motifs produced with double cams (Fig. 71) by contracting or stretching their sizes in length.

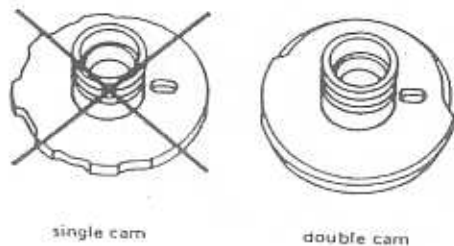


Fig. 71

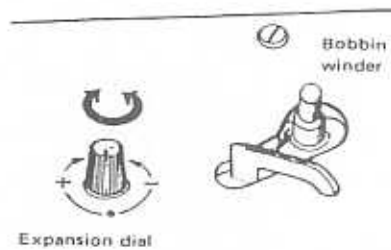


Fig. 72

Instruction

- 1) To contract embroidery motifs in length, turn the expansion dial toward "-". (Fig. 73)
- 2) To sew standard size of embroidery motifs, set the expansion dial at the pointer. (Fig. 73)
- 3) To stretch embroidery motifs in length, turn the expansion dial toward "+". (Fig. 73)

Before sewing, you are suggested to do trial sewing on an other piece of fabric to determine your desired size of motif by turning the expansion dial gradually toward "-" or "+" range.

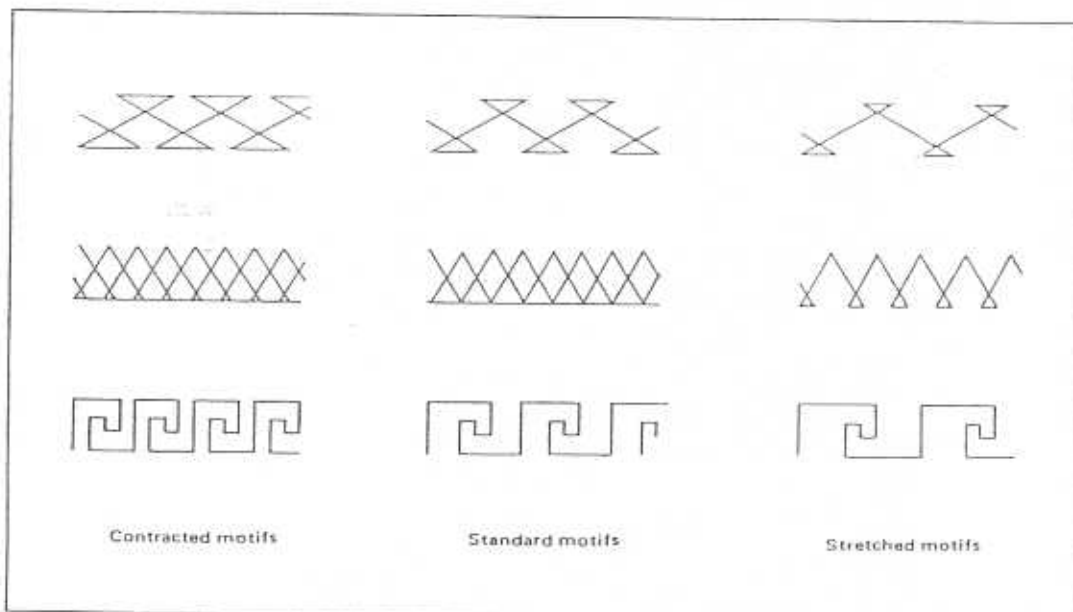


Fig. 73

15. OILING AND CLEANING

Pieces of thread and/or dust accumulating between the needle plate and feed dog will cause trouble. Always keep the machine clean. Remove the needle, zigzag sewing foot and needle plate with a screw driver for cleaning.

After removing the parts, clean all necessary parts with a brush while turning the hand wheel toward you. Be sure that cleaning is thorough. When finished, reassemble the machine, reversing the above procedure.

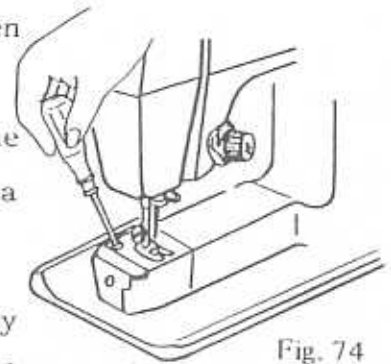


Fig. 74

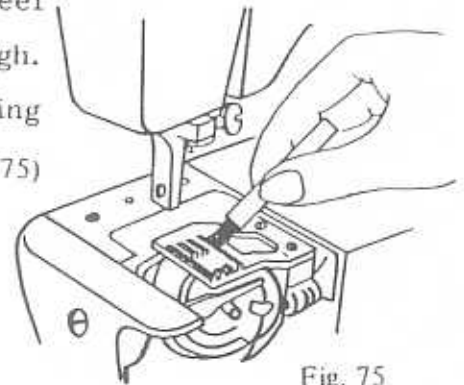


Fig. 75

(Fig. 74, 75)

16. OILING THE ARM

1. About an hour's use per day may require oiling once a week.
2. Oil the machine at least once a month to keep it in good condition, even if it is not used for a long period.
3. Apply a few drops of oil to the needle bar driving parts, at the points indicated by arrows. (Fig. 76)
4. Take off the arm cover by loosening the two screws with a screw driver. (Fig. 77)
5. While oiling, turn the hand wheel slowly toward you so that oil will cover every part.
6. When oiling to the points under the machine, tilt the machine back and apply oil to the principal parts.

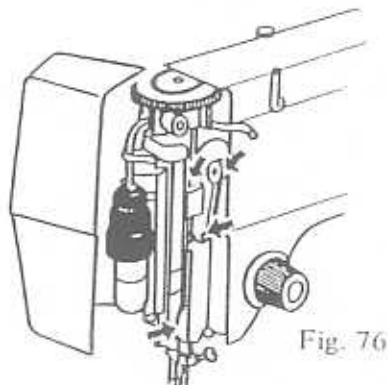


Fig. 76

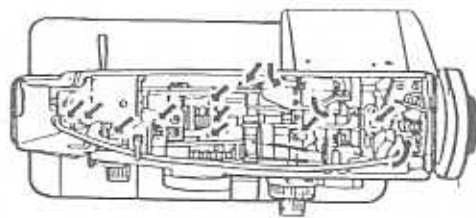


Fig. 77

17. UNSATISFACTORY CONDITIONS: CAUSES AND REMEDIES

Unsatisfactory Condition	Cause	Remedy
The Upper Thread Breaks	<ol style="list-style-type: none"> 1. The needle is not threaded correctly. 2. The tension is too tight. 3. Something is wrong with the needle. 4. The thread used is too heavy for the needle. 5. The thread take-up spring is broken. 6. The needle is not set correctly. 7. The needle plate, the hook, or the pressure foot is damaged. 	<p>Thread the needle correctly. Loosen it. Replace it. Replace it.</p> <p>Replace it. Set it correctly. Replace it.</p>
The Lower Thread Breaks	<ol style="list-style-type: none"> 1. When the lower thread is not wound correctly, it gets entangled. 2. The lower thread is off the tension spring of the bobbin case. 	<p>Wind it properly.</p> <p>Put it in its proper position.</p>
Skipped Stitches	<ol style="list-style-type: none"> 1. The needle is not attached to the needle bar correctly. 2. The needle is either bent or blunt. 3. The pressure of the presser bar is not sufficient. 4. The wrong needle is used. 	<p>Attach it properly.</p> <p>Replace it. Tighten it.</p> <p>Replace it.</p>
The Needle Breaks	<ol style="list-style-type: none"> 1. The needle is bent. 2. The needle is not attached properly. 3. The material is too thick or heavy. 4. The material is being pulled by operator. 5. The needle is of inferior quality. 	<p>Replace it. Attach it correctly. Use proper needle. Don't pull on the cloth.</p> <p>Replace it with proper needle.</p>
Stitching Forms Loops	<ol style="list-style-type: none"> 1. The thread tension is not properly adjusted. 2. The needle is not threaded correctly and/or the bobbin is not wound properly. 3. The weight or thickness of the material and the size of the needle are not in accord. 4. The thread take-up spring does not work well. 	<p>See instructions for adjustment of upper and lower thread tensions. Thread and/or rewind properly.</p> <p>See instructions covering the use of proper needles and threads with varying materials. Replace it.</p>
Seams Shrink or Pucker	<ol style="list-style-type: none"> 1. The thread tension is too tight. 2. The pressure of the presser foot is too strong. 3. The position of the feed dog is too high. 4. Use straight sewing foot. 	<p>See instructions for adjustment of upper and lower thread tensions.</p> <p>See instructions for proper pressure on cloth. See instructions covering adjustment of the feed dog.</p>
Irregular Stitching	<ol style="list-style-type: none"> 1. The upper and lower threads are of inferior quality. 2. The pressure on the presser foot is inadequate. 3. The thread is wound around the bobbin. 4. The position of the feed dog is too low. 	<p>Use thread of good quality.</p> <p>See instructions for proper pressure on cloth.</p> <p>Rewind it. See instructions covering adjustment of the height of the feed dog.</p>
The machine does not work smoothly and is noisy.	<ol style="list-style-type: none"> 1. The machine is in need of oil. 2. Dust and waste thread have collected in the hook mechanism. 3. Oil of inferior quality is used and has coagulated. 4. The tension on the belt is too tight. 	<p>Apply oil as per instructions. See instructions on cleaning of the race and hook. Clean thoroughly and oil again with proper sewing machine oil of best quality. Loosen it.</p>