



**MODEL S-101**

**EYELET BUTTONHOLE MACHINE**

**PARTS AND SERVICE MANUAL**

**PART NUMBER 97. 1000.0.003**





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**AMF® FREECE**  
*Better Ideas, Better Made*

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# Warranty Registration Card

*(Please Fax or Mail immediately after installation)*

**Note: All Warranty Claims Void, unless Registration Card on file at AMF Reece HQ**

Machine model number:

*(S101, S100, S104, S105, S211, Decostitch, S4000 BH, EBS Mark II, etc)*

Manufacturer's serial or production number:

## **Installation Site Information:**

Customer's Name:

Customer's Mailing Address:

Customer's Telephone Number:

Supervising Mechanic's or Technician's Name:

Signature of Supervising Technician:

AMF Reece Technician's Name:

AMF Reece Technician's Signature:

Type of garment produced at this location?

Average Daily Production Expected from this machine?

*(number of buttonholes, jackets sewn, pants produced, buttons sewn, etc)*

Any special requirements required at this location?

What other AMF Reece Machines are at this location?

How can we serve you better?

**Tovární 837, 796 25 Prostějov, Czech Republic**

**Fax: +420 582 360 606, e-mail: [service@amfreece.cz](mailto:service@amfreece.cz), website: [www.amfreece.com](http://www.amfreece.com)**







## LIMITED WARRANTY ON NEW AMF REECE EQUIPMENT

### Warranty provisions:

A ninety (90) day limited service labor warranty to correct defects in installation, workmanship, or material without charge for labor. This portion of the warranty applies to machines sold as "installed" only.

A one (1) year limited material warranty on major component parts to replace materials with defects. Any new part believed defective must be returned freight prepaid to AMF Reece, Inc. for inspection. If, upon inspection, the part or material is determined to be defective, AMF Reece, Inc. will replace it without charge to the customer for parts or material.

Service labor warranty period shall begin on the completed installation date. Material warranty shall begin on the date the equipment is shipped from AMF Reece, Inc.

### Exclusions:

Excluded from both service labor warranty and material warranty are: (1) Consumable parts which would be normally considered replaceable in day-to-day operations. These include parts such as needles, knives, loopers and spreaders. (2) Normal adjustment and routine maintenance. This is the sole responsibility of the customer. (3) Cleaning and lubrication of equipment. (4) Parts found to be altered, broken or damaged due to neglect or improper installation or application. (5) Damage caused by the use of non-Genuine AMF Reece parts. (6) Shipping or delivery charges.

There is no service labor warranty for machines sold as "uninstalled".

Equipment installed without the assistance of a certified technician (either an AMF Reece Employee, a Certified Contractor, or that of an Authorized Distributor) will have the limited material warranty only. Only the defective material will be covered. Any charges associated with the use of an AMF Reece Technician or that of a Distributor to replace the defective part will be the customer's responsibility.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, and FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER IS GIVEN BY SELLER OR SELLER'S AGENT IN CONNECTION HEREWITH. UNDER NO CIRCUMSTANCES SHALL SELLER OR SELLER'S AGENT BE LIABLE FOR LOSS OF PROFITS OR ANY OTHER DIRECT OR INDIRECT COSTS, EXPENSES, LOSSES OR DAMAGES ARISING OUT OF DEFECTS IN OR FAILURE OF THE EQUIPMENT OR ANY PART THEREOF.

### WHAT TO DO IF THERE IS A QUESTION REGARDING WARRANTY

If a machine is purchased through an authorized AMF Reece, Inc. distributor, warranty questions should be first directed to that distributor. However, the satisfaction and goodwill of our customers are of primary concern to AMF Reece, Inc. In the event that a warranty matter is not handled to your satisfaction, please contact the appropriate AMF Reece office:

#### Europe

Prostejov, Czech Republic

Phone: (+420) 582-309-286

Fax: (+420) 582-360-608

e-mail: [service@amfreece.cz](mailto:service@amfreece.cz)



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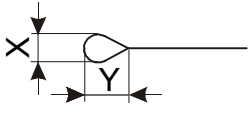
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**EQUIPMENT FAMILIARIZATION**

| Description                      | Eyelet Buttonhole Sewing Machine  |
|----------------------------------|---|
| <b>Sewing Speed</b>              | Up to 1,600 spm   |
| <b>Stitch Type</b>               | 401 two thread chainstitch  |
| <b>Stitch Density</b>            | 3 to 16 s/cm (7 to 40 spi)  |
| <b>Buttonhole Length</b>         | 13 to 32 mm ( 1/2" to 1 1/4")   |
| <b>Automatic Cutting Length</b>  | N/A   |
| <b>Eze Shape (X; Y) mm</b>       | No Eye; 2,7 x 4,3   |
|                                  |  |
| <b>End Shape</b>                 | flibar, open end  |
| <b>Stitch Bite</b>               | 2 to 4 mm   |
| <b>Automatic Thread Trimming</b> | AF - top thread only  |
| <b>Lubrication</b>               | Semi - automatic wicking system   |
| <b>Electrical Supply</b>         | 230V, 50/60Hz, 3 Ph<br>400V, 50/60Hz, 3Ph<br>230V, 50/60Hz, 1Ph<br>110V 60Hz 1Ph  |
| <b>Dimensions (crated)</b>       |   |
| <b>Sewing Head</b>               |   |
| <b>Length</b>                    | 70 cm (27" 1/2")  |
| <b>Width</b>                     | 55 cm (21" 1/2")  |
| <b>Height</b>                    | 75 cm (29 1/2")   |
| <b>Weight</b>                    | 74 kg (163 lbs)   |
| <b>Table</b>                     |   |
| <b>Length</b>                    | 114 cm (45")  |
| <b>Width</b>                     | 68 cm (27")   |
| <b>Height</b>                    | 40 cm (16")   |
| <b>Weight</b>                    | 80 kg (176 lbs)   |
| <b>Overall Dimensions</b>        |   |
| <b>Floor Plan</b>                | 110 x 60 cm (43" x 24")   |
| <b>Table Height</b>              | 70 cm (27 1/2") adjustable to 90 cm (35")   |

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## INSTRUCTIONS FOR INSTALLATION ON REECE INDIVIDUAL TABLES

Parts and Belting for this installation are contained in the accessory box which accompanies each machine.

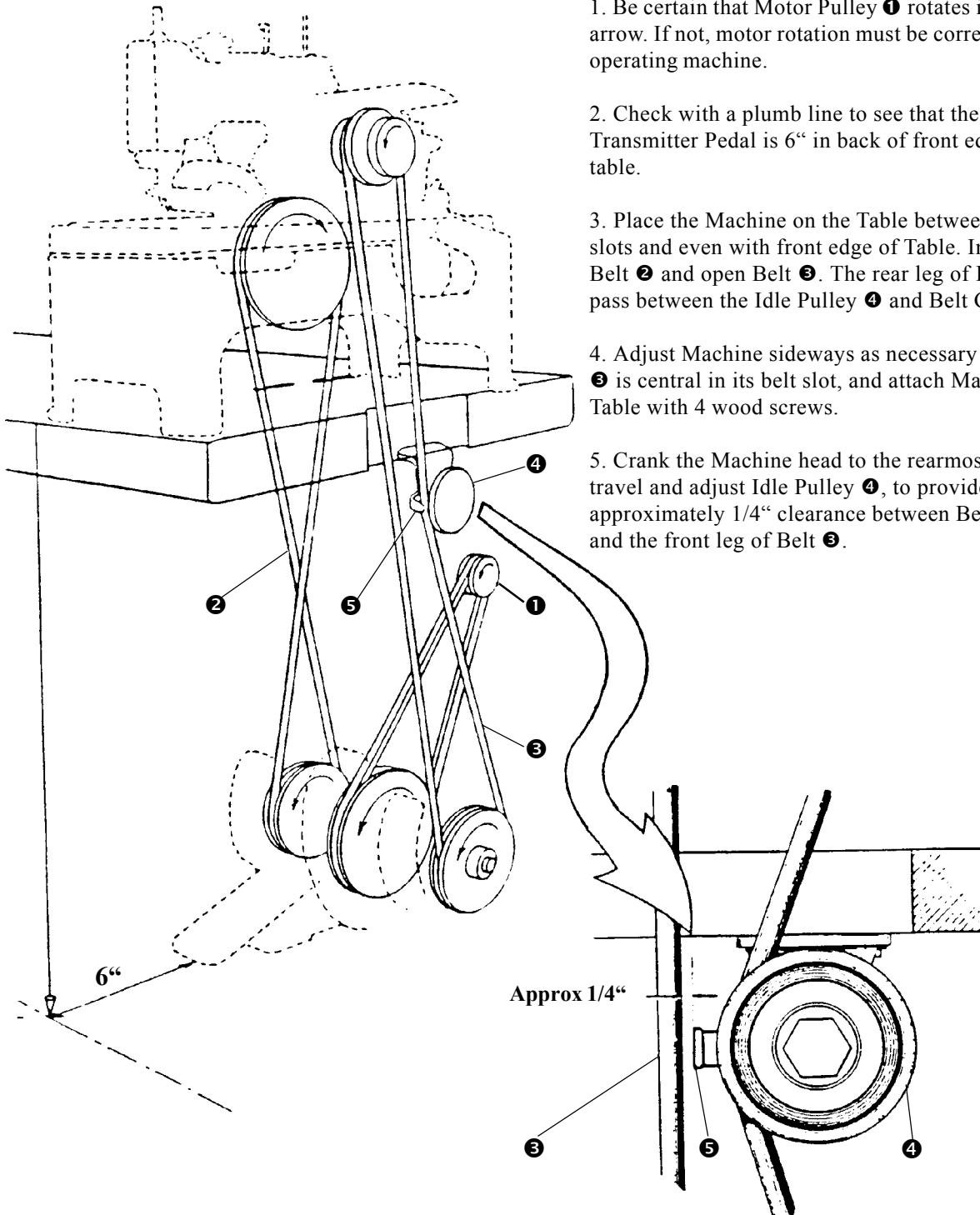
1. Be certain that Motor Pulley ❶ rotates in direction of arrow. If not, motor rotation must be corrected before operating machine.

2. Check with a plumb line to see that the heel of Transmitter Pedal is 6" in back of front edge of the table.

3. Place the Machine on the Table between the belt slots and even with front edge of Table. Install crossed Belt ❷ and open Belt ❸. The rear leg of Belt ❸ must pass between the Idle Pulley ❹ and Belt Guard ❺.

4. Adjust Machine sideways as necessary so that Belt ❸ is central in its belt slot, and attach Machine to Table with 4 wood screws.

5. Crank the Machine head to the rearmost point of its travel and adjust Idle Pulley ❹, to provide approximately 1/4" clearance between Belt Guard ❺ and the front leg of Belt ❸.



## STOP MOTION ADJUSTMENTS

101 Stop Position - all 101 models except the Eyelet and Cross Oval - when the head of the machine is all the way forward.

1) Page 16, Figure 5 and 6 - Machine in stop position and the stitch wheel locked up. Check Roll 10.1122.0.000 ' on the 10.1120.0.000 Link. It should rest lightly on the 10.2018.1.000 ' Length Gauge. Adjust by turning Adjustment Screw 10.2066.0.000 ⑤ on Bracket 10.1127.3.000.

2) Page 17, Figure 1A - Machine in stop position - locked up. Roll 01.7002 ⑥ should lightly contact the low point of the cam on the inside of the Hand Wheel 10.1088.0.050. Adjust by loosening screw 10.1114.0.000 ⑤ on Three Forked Lever 10.1113.0.000 ⑥. Recheck adjustment number 1.

3) Page 18, Figures 4 and 5 - While holding turning pressure on the Hand Wheel, 10.1088.0.050, crank the machine back by using the Cutting Wheel 10.3039.0.000 instead of the Crank 10.3037.1. (On Cut Before machines, use the crank until after cutting or remove cutting steel.) The 10.1089.0.000 Dog ⑨ on the 10.1088.0.000 Hand Wheel should disengage the 10.1099.0.000 Bolt ⑫ on the Rocking Lever as the 10.3038.1 Striker ⑬ on the crank disengages the 10.3042.2 Dog ⑭ on the cutting wheel. Adjust by loosening Clamp Screw 01.2035.0.000 ⑮ on Shifter Spool 10.3045.0.000 and moving in or out to suit.

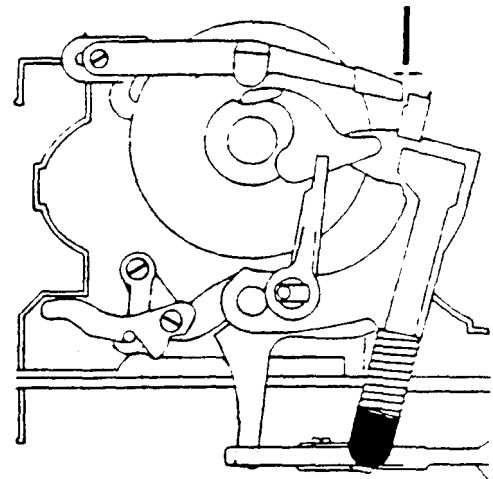
4) Page 17, Figure 3-A - Crank the machine back until the 10.1122.0.000 Roll ⑦ is on the high point of the 10.2018 Length Gauge ③. In this position, the 10.1085.0.000 Lever should be approximately 1/16" from the 10.1102.0.000 Dog (not shown). Adjust by loosening nut 10.3005 and positioning. Set the rise and fall of the 10.1085 Lever so that its lowest point is approximately 1/16" below the top of the 10.1102.0.000 Dog. Adjust by positioning 10.1087.0.000 Bracket.

Check 10.1124.0.000 Lever ⑩ for correct clearance of Dog on the Three Forked Lever (10.1113.0.000) - ⑥ by lifting 10.1118.0.000 Lever, which releases the 10.1120.0.000 Roll ⑦ and lets the 10.1124.0.000 ⑩ take over. The 10.1102.1.000 should not move more than 2/3 of the distance to 10.1085.0.000. Adjust 10.1124.0.000 to suit.

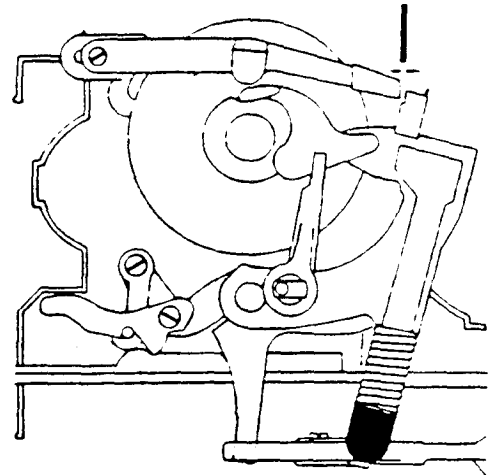
5 & 6) Page 19, Figure 1.

5) Stop position 1/64" between points (⑤ and ⑥).

6) Crank machine through cycle until 10.3039.0.000 Cutting Wheel (Fig.1) shifts part way out as Lever ⑩ (10.1124.0.000, Fig. 3-A, Page 17) is released. When one stitch more is taken by turning the hand wheel, the cutting wheel shifts all the way out and the hand wheel is locked up. Contact points at (⑤ and ⑥) should just clear when the cutting wheel moves out. If hitting, adjust wheel inward by loosening screw ⑭. Figure 5, Page 18 and tapping wheel. Recheck adjustment 3. If compensation between these two adjustments is not possible, the lower prong of the Three Forked Lever has to be bent (removed from machine).

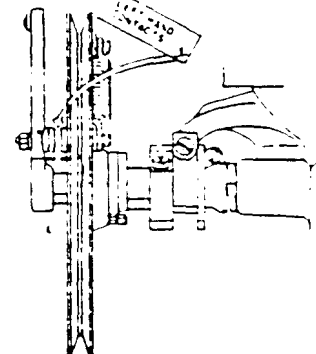


The full thickness .060" (1/16") is used to measure the clearance between the end of the Flyover Lever and the Rocking Lever Dog when the roll reaches the highest point on the Length Gage.



0.20" Step at one end measures space between end of Flyover Lever and Rocking Lever Dog when Three Forked Lever is held by Trip Lever and Flyover Lever is at its lowest point.

The Depth of the Step, .062" measures the distance that the lower tip of the Flyover Lever should be below the top of the Rocking Lever Dog under the same circumstances.



Corner Step, 1/32" measures distance between Dogs on Cutting Wheel and Crank when machine is in home locked position.

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## MODEL 101 - SETTING UP INSTRUCTIONS

Before operating the machine by hand or power, remove the two shipping pins ❶ shown Fig.1, which are easily identified by a red tag tied to each - these pins ❶ are installed at the factory to lock the Head ❷ and Bed Plate ❸ together as a protection against shipping damages.

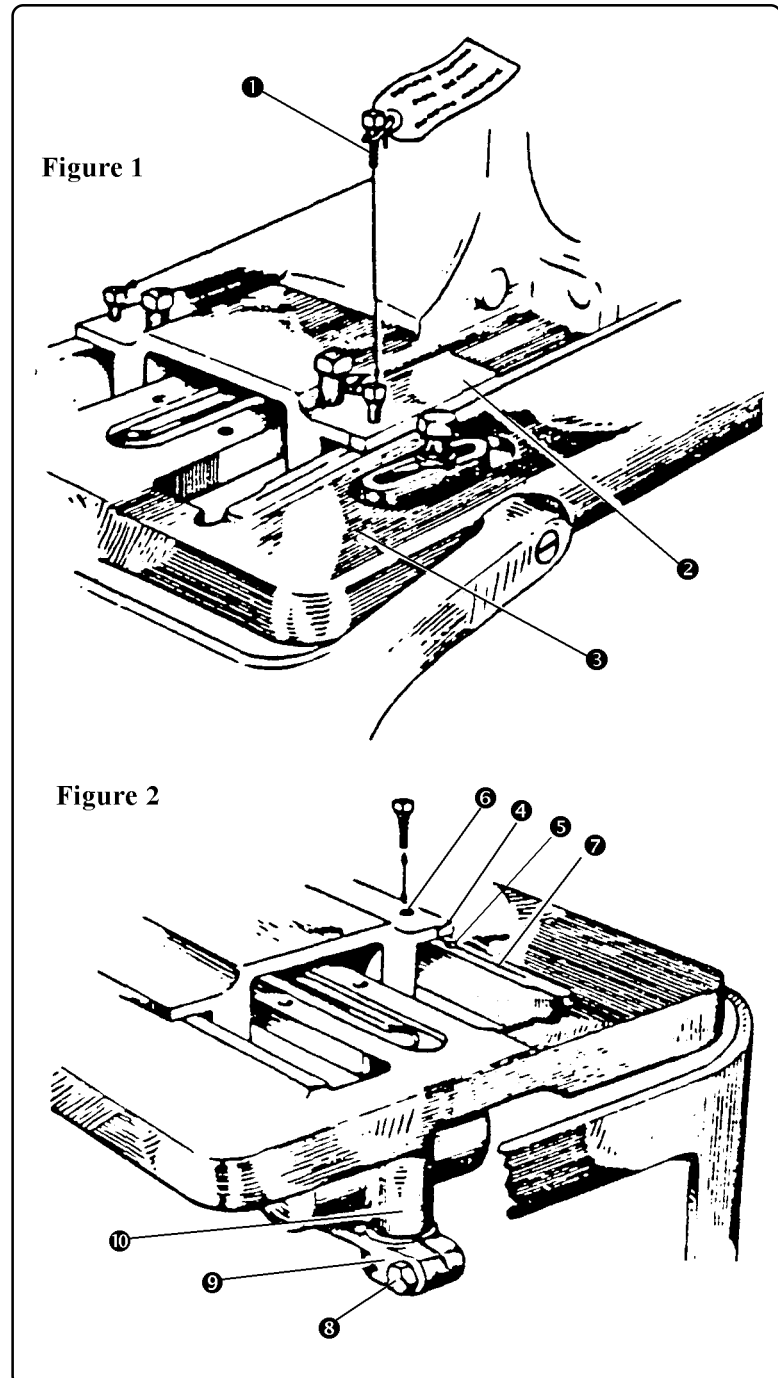
Set up machine in accordance with the instructions on the installation template that is sent with each new machine. This template shows two different installations depending on direction of rotation of the power shaft. The one marked „Preferred Installation“ on which the left hand machine belt is crossed and the right hand one open, should always be employed when the machine is installed on a Reece Individual Motorized Table. The „Preferred Installation“ should also be used whenever possible in cases where the machine is installed on a line shaft table.

In the event that the machine should be disassembled at any time, the correct line-up of the Head ❷ on the Bed Plate ❸ can be re-established by using one of the shipping pins ❶ in the following manner:

Turn the left hand crank handle until shipping pin hole ❹ Fig. 2 in the Head ❷ corresponds with shipping pin hole ❺ in Bed Plate ❸. If holes ❹ and ❺ do not line up exactly, loosen clamp screw ❸ Fig. 2 and move the Head ❷ of machine to left or right until holes ❹ and ❺ line up when tested with the shipping pin. If no shipping pin is available, proceed as outlined above, but match line ❻ on Head ❷ with line ❼ on Bed Plate ❸ as illustrated Fig. 2.

**Important** - Before tightening clamp screw ❸, press lever 1-C19 ❾ upward on the stud to lightly contact the shoulder of the Cam Case ❿.

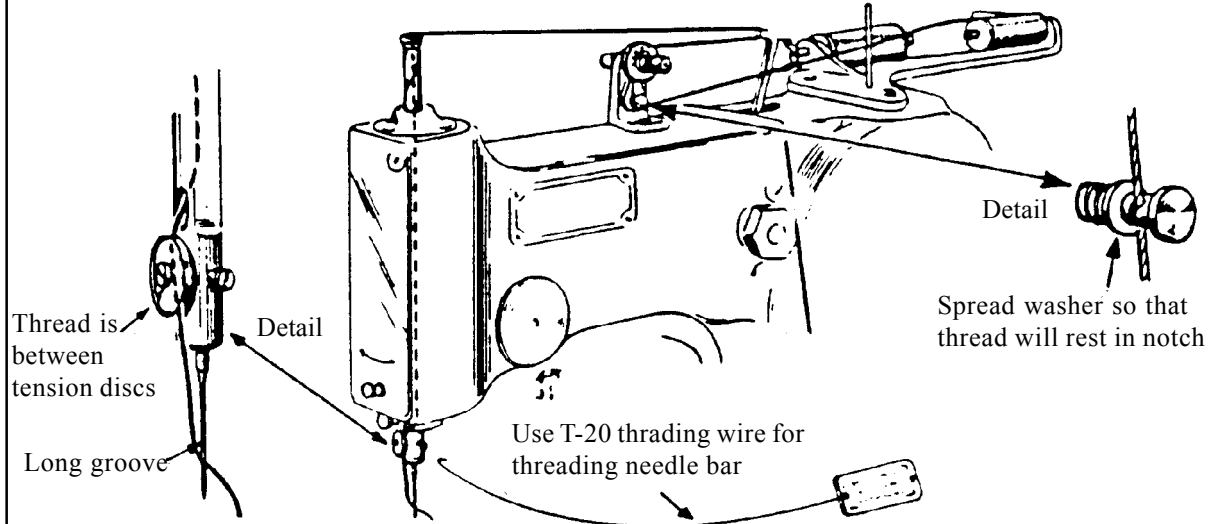
**Note** - Do not follow these line-up instructions on Adjustable Fly Bar machines. Use the instructions on Sheet 28.





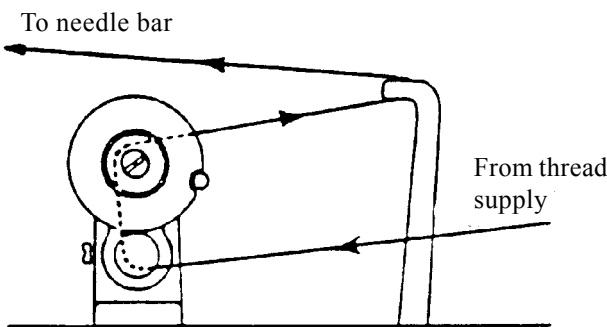
**THREADING DIAGRAMS**

**UPPER SYSTEM**

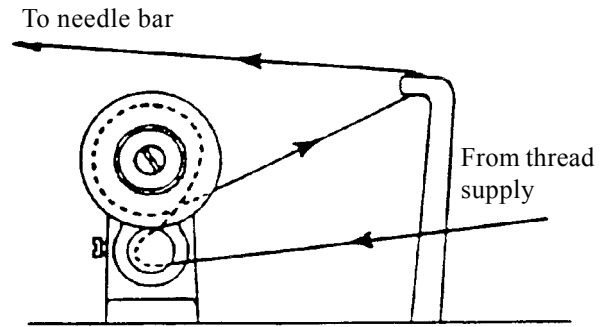


**THREADING OF FIXED TYPE TENSIONS**

**Split disc type**



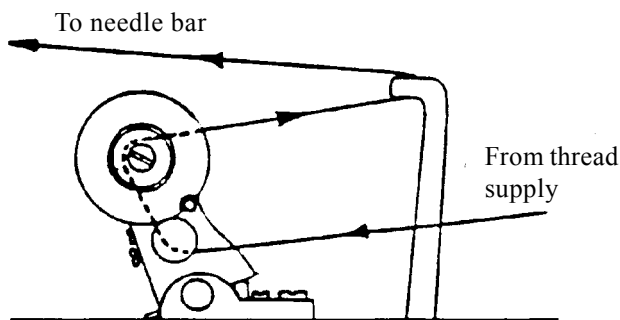
**Solid roller type**



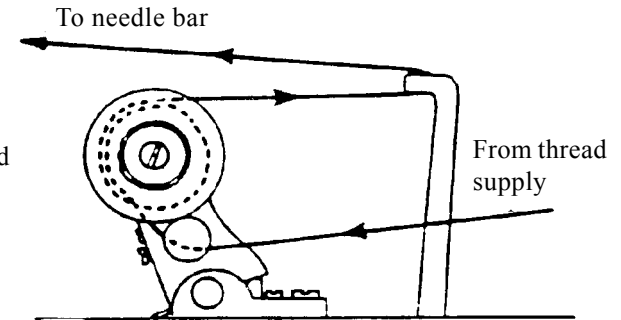
*Note:* Thread makes approximately one full turn around the roller on this tension.

**THREADING OF ROCKING TYPE TENSIONS**

**Split disc type**



**Solid roller type**



*Note:* Thread makes approximately 1 1/2 turns around the roller on this tension.

*Note:* Refer to sheet 23 for additional information on threading Cord Trim Machines.

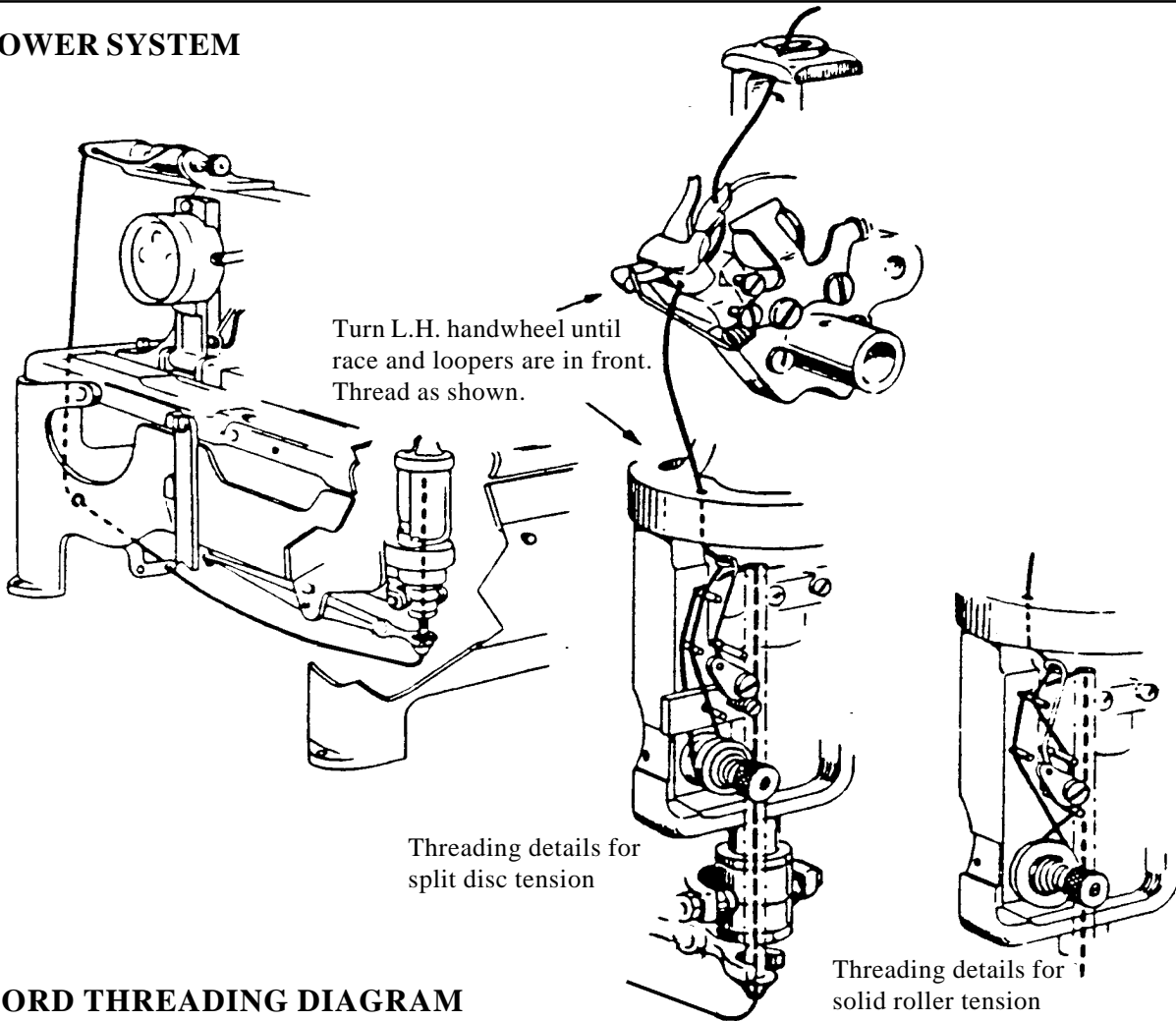
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THREADING DIAGRAMS

LOWER SYSTEM

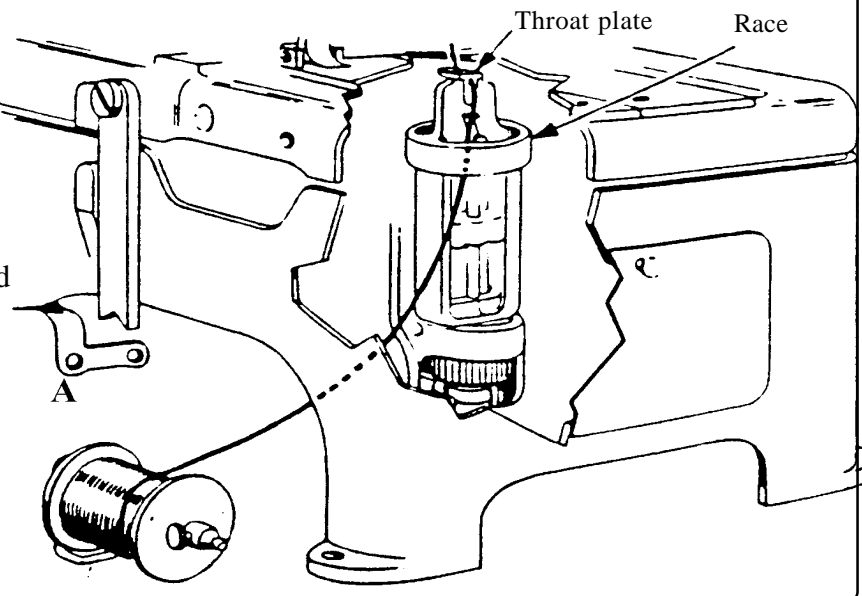


CORD THREADING DIAGRAM

Crank machine until race faces as shown.

Note:

Cord may also be led from rear of machine through guide A, and up through the race and throat plate as shown.

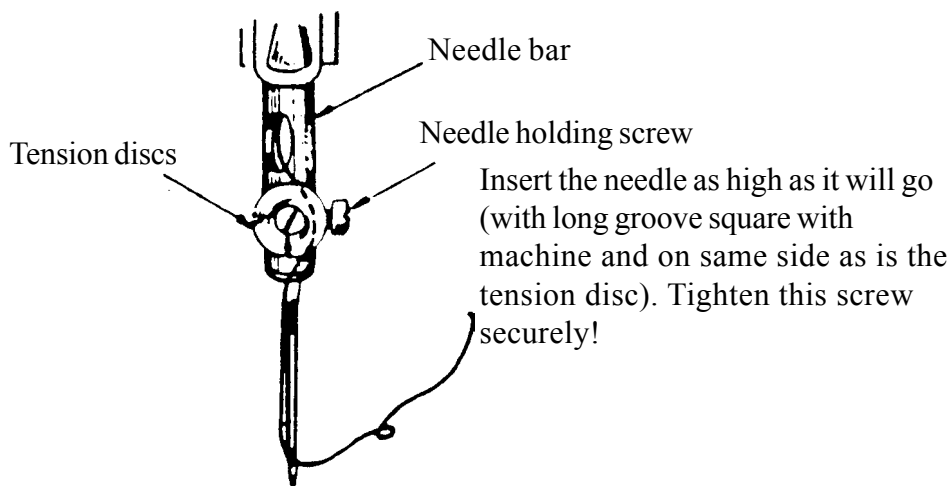


Note: Refer to Sheet 23 for threading diagrams on Cord Trim Machines.

## MODEL 101 - OPERATING INSTRUCTIONS

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1. Remove the needle and test it for straightness, insert as below.

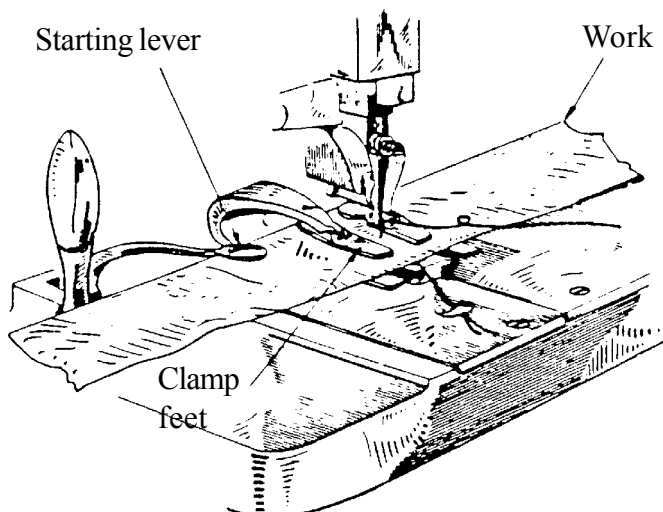


2. Put on the belts

**Caution!**

Before power is applied with foot treadle - see that needle bar is at its highest point - locked, and machine at its most forward position

3. Depress the treadle on transmitter to start belts.
4. Insert work under the clamp arm and feet.



5. Depression of the starting lever will complete one buttonhole and automatically release work and stop.

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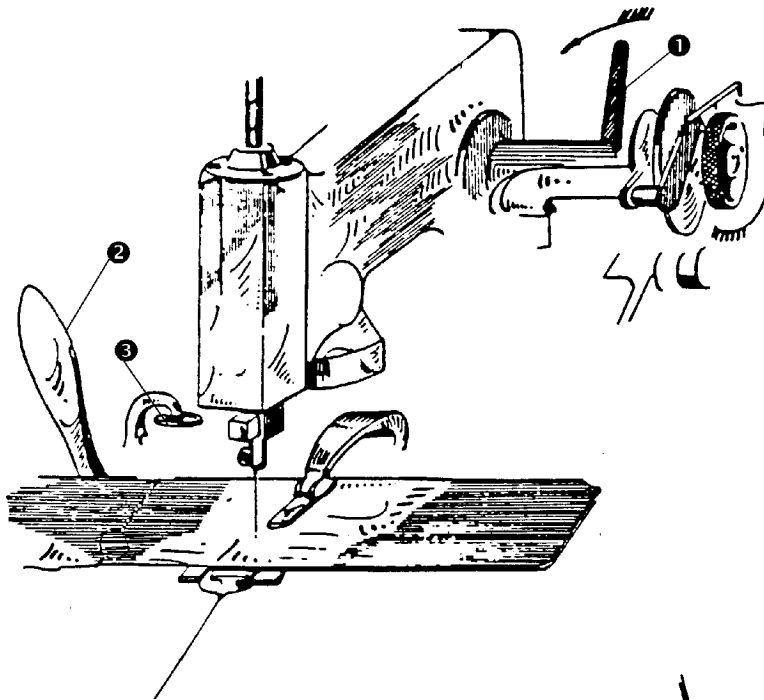
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## MODEL 101 - OPERATING INSTRUCTIONS

Provision is made on this machine to meet any emergency arising during the making of the buttonhole.

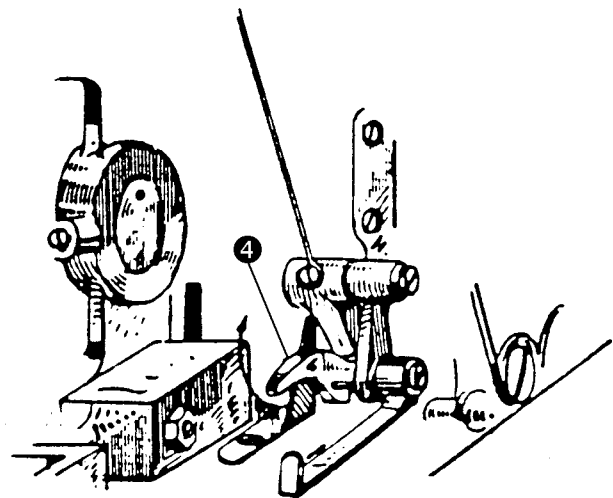
To extract work in case of unthreading or mislocation:

- Proceed as follows:
1. Press pedal on transmitter to stop belts.
  2. Pull lever **1** in direction of arrow toward operator.
  3. Turn R. H. handwheel (knurled rim) in direction of arrow until locked.
  4. Move clamp lever **2** away from operator to release work - and withdraw it.
  5. Pull clamp lever **2** down again in direction of operator.
  6. Press pedal - the machine will now complete its cycle and return to its starting position without sewing.



A complete cycle under power, including the cutting operation - may be made without sewing.

Lift up the lever **4** and hold - depress the starting lever **3** and let go of lever **4** after the machine has travelled a short distance - the machine will thereafter complete its cycle and cut fabric without stitching. It can be stopped in any desired position with the transmitter pedal.



**ADJUSTMENTS THAT DETERMINE THE CHARACTER OF THE BUTTONHOLE**

**NEEDLE INFORMATION**

Needles for the series 101 machine are available in a wide range of sizes and types as listed on sheet 30.

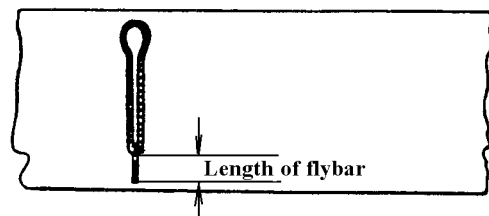
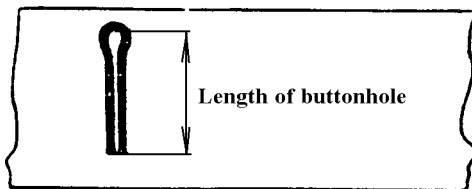
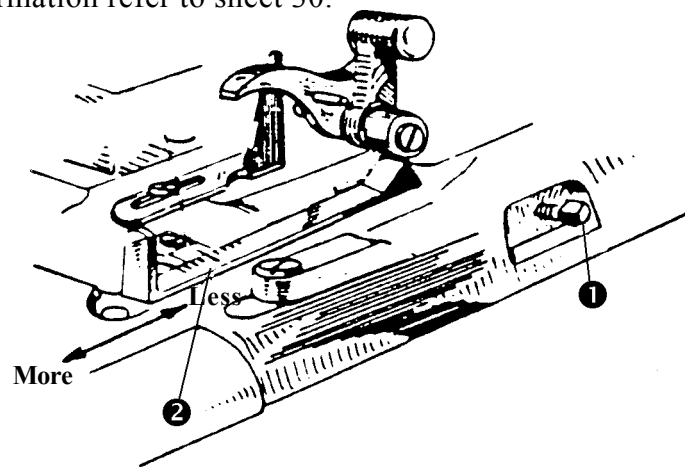
As a general rule it is desirable to use needles with the finest blade that the thread and material will allow.

On cut before machines it is particularly important to use fine, round pointed needles in the plain or spotted types.

On cut after machines for all average grades of fabrics, standard round point spotted or ball eye needles are recommended.

**Note:**

For detailed needle information refer to sheet 30.



To adjust the length of buttonhole:

Loosen the set screw **1** and pull gauge **2** forward for longer buttonhole. Push lever to the rear for shorter buttonhole.

**Note:**

On Flybar Machines the same adjustment will lengthen or shorten the flybar or do away with the bar entirely.

## ADJUSTMENTS THAT DETERMINE THE CHARACTER OF THE BUTTONHOLE

### ADJUSTING THE BITE AND CUTTING SPACE

**Bite** - is the distance between the two points of entry of the needle into the fabric as it descends to make the stitch  
 - character of material determines the width of bite

**Cutting space** - it is space between the left and right bank of stitches into which the cutting knife descends to cut the material

The ideal width of this space depends upon neatness required and character of material

Thin fabrics require but little - thick goods more - the range is from 0" to 3/64".

Figure 1

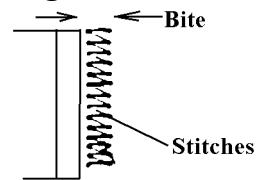


Figure 2

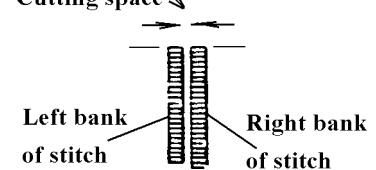
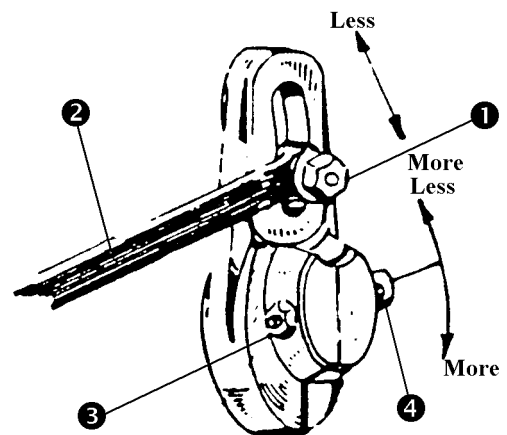


Figure 3



To adjust the width of bite - loosen nut ① and move the link ② up or down in direction of arrow to suit.

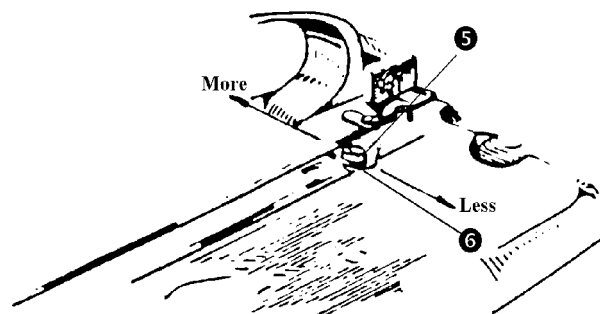
Moving this link ② upward will narrow the width of bite - downward will widen it.

To adjust the width of cutting space - loosen the screw ④ and with pin wrench bodily move to screw head ④ to suit.

**Note:**

On cut before machines this adjustment should be made so that the inside stroke of the needle will be in center of the buttonhole slit.

Figure 4



### TO ADJUST THE CLAMP SPREAD

Various kinds of material require more or less spreading of goods between the clamps. To vary this spread or to equalize it - use adjustment shown in Figure 4 and below.

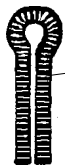
Loosen screw ⑥ on each side of the machine and move adjusting slides inward for more spread - and outward for less.

**Note:**

Be sure that one side is not spreading more than the other.

**ADJUSTMENTS THAT DETERMINE THE CHARACTER OF THE BUTTONHOLE**

**ADJUSTING THE NUMBER OF STITCHES PER INCH IN A BUTTONHOLE**

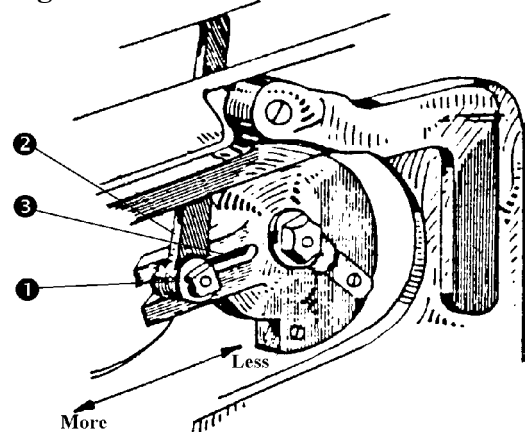


Density of stitches or number of stitches per inch

Loosen nut ① and move lever assembly ② in slot ③, in either direction to suit.

Movement in direction of rear of machine will decrease the number of stitches. Movement toward the front will increase the number.

Figure 1



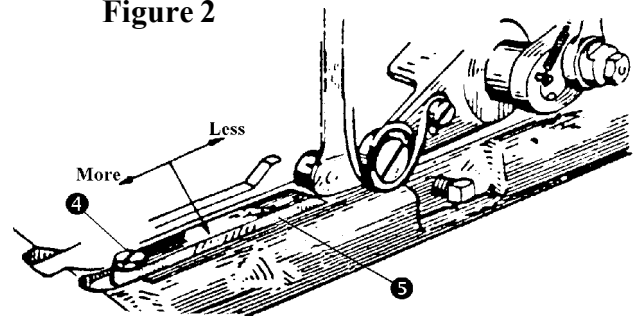
**INCREASING OR DECREASING THE NUMBER OF STITCHES IN THE EYE INDEPENDENTLY OF THE SIDES**

Loosen screw ④ and adjust the wedge ⑤ to suit movement to the rear of machine will decrease the number of stitches in eye. Movement to the front will increase them

Density of stitches or number of stitches sewed in while needle bar is circling the eye

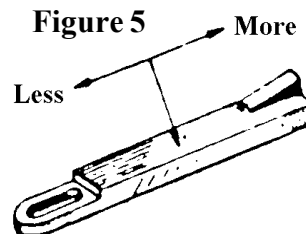


Figure 2



If this type of wedge is used adjust in opposite direction to that shown in Figure 2.

Figure 5



**TENSION**

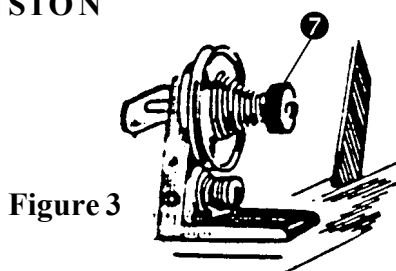


Figure 3

Tension for upper system on head

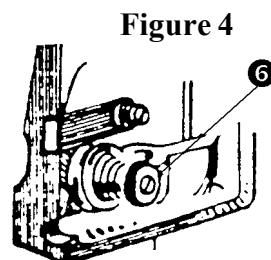


Figure 4

Tension for lower system on race

With either split or solid tension disc - adjustment is made with nut ⑦ Figure 3 - screwing it inward will tighten the tension - outward will loosen it.

To tighten the under tension use nut ⑥ - inward to tighten - outward to loosen

**Note:** To obtain a desired result it may be necessary to adjust each tension separately or jointly - as a rule the upper tension is much tighter than the lower

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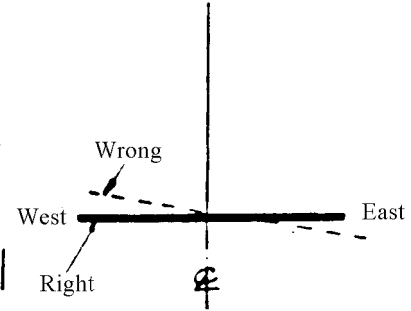
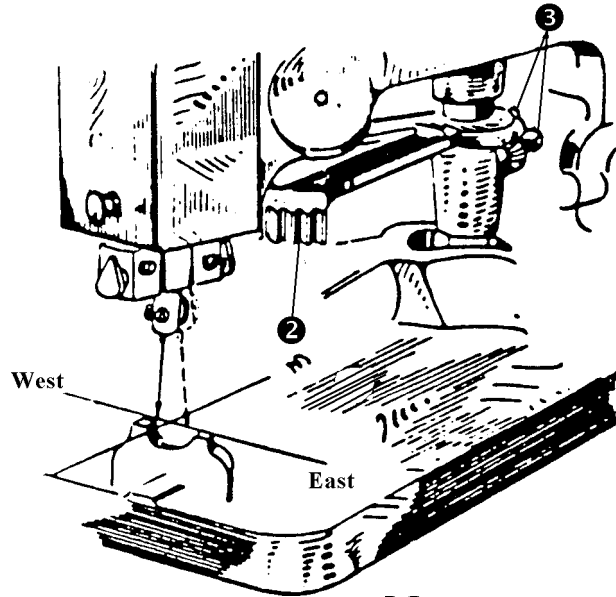
e-mail: [service@amfreece.cz](mailto:service@amfreece.cz); [parts@amfreece.cz](mailto:parts@amfreece.cz) ; website: [www.amfreece.com](http://www.amfreece.com)

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**MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE**

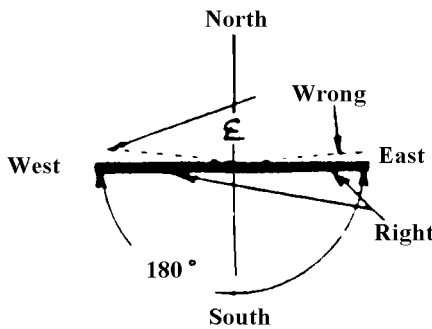
**NEEDLE BAR AND RACE LINE UP ADJUSTMENTS**

**Adjustment # 3**  
 Vibration in line with race adjustments.

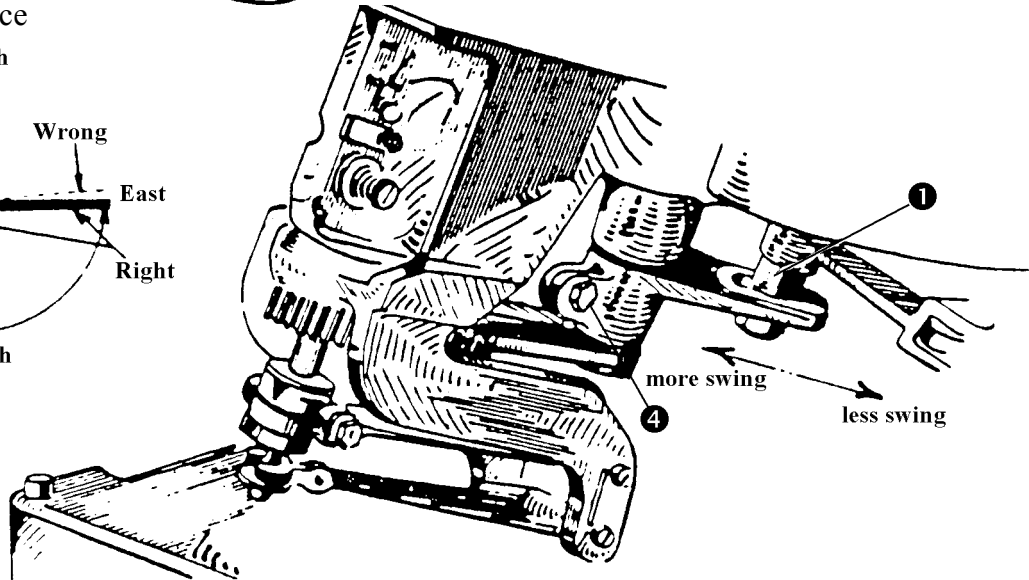
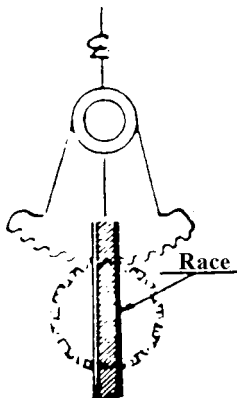


**Adjustment # 2**  
 For squareness of race east and west across bed plate.

**Adjustment # 1**  
 For 180° turn of race



**Adjustment # 4**



It is imperative that the race swing east - west is only 180° (# 3). It is imperative that this 180° be square with the center line of the bed plate (# 2). Also the needle bar assembly must vibrate squarely "east and west" in harmony with the race (# 3).

To proceed with these adjustments, follow this sequence:

1. Adjust stud ① to obtain adjustment # 1.
2. Loosen clamp screw ④ to obtain adjustment # 2.
3. Recheck adjustment # 1 - if wrong repeat adjustment # 2 and # 1 until they are reconciled.
4. When these adjustments are correctly, adjust the needle bar assembly "east - west" in harmony with the race by loosening screws ③ in sector B (# 3).

When assembling sector mesh the teeth on sector with race „north - south“ as in Fig. # 1 and # 4 so that sector teeth will not disengage gear teeth at either end of sewing



**MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE**

**EQUALIZING THE LOOPERS**

The loopers ❶ and ❷ when properly adjusted will assume the positions in Fig. 1 - with their points on center line of needle on alternate strokes after the needle bar has risen 3/32" from its lowest position.

To make this adjustment - remove the clamp plates - remove the throat plate from the race - turn the machine with the L.H. handwheel (with handle) until the loopers are in front.

Turn the R.H. handwheel (knurled rim) until the needle is at its lowest point.

Raise the needle slowly with this same handwheel until the L.H. looper point ❸ is in position shown (Figure 2).

While in this position measure the distance that the needle bar protrudes above the cap ❹ with a scale and make a note of this dimension.

Turn the R.H. handwheel again until the right hand looper ❺ is in position shown (Figure 4) - and while in this position measure again as above.

**Important:**

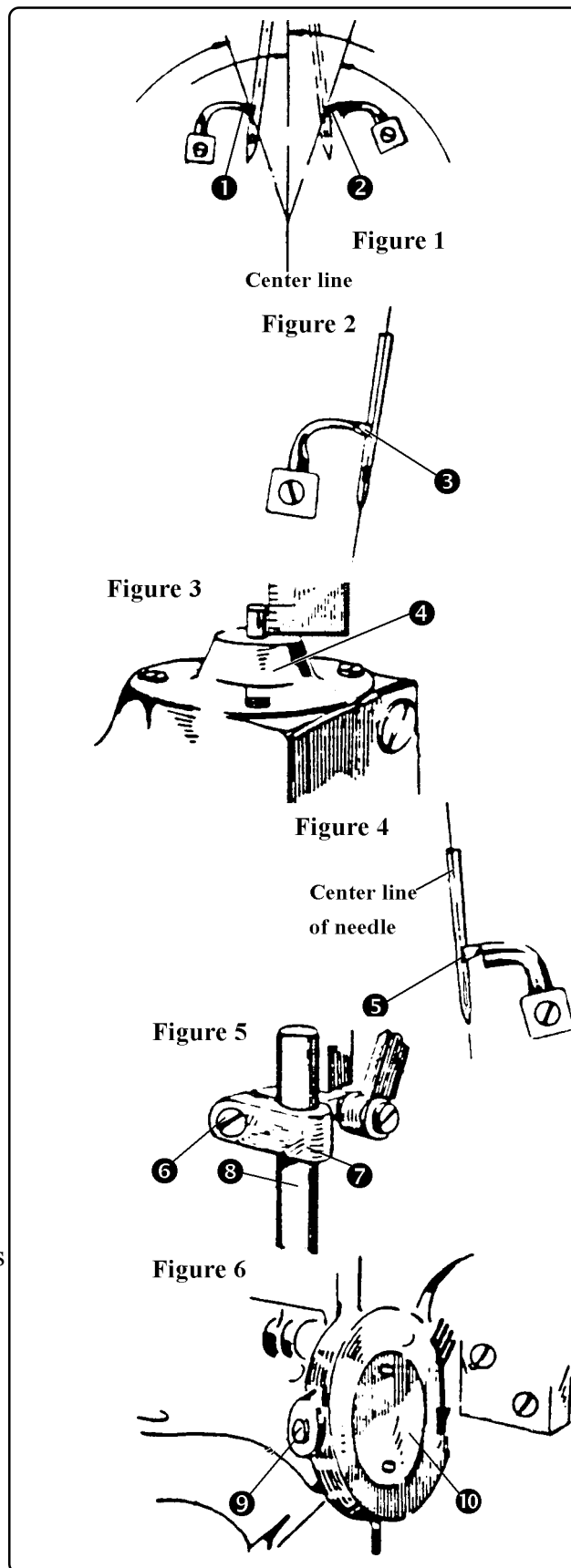
These two measurements must be the same for the proper working of this mechanism.

To equalize this dimension, loosen screw ❸ in race and move crosshead ❷ up or down upon spindle ❹ as required.

After this has been done - turn the R.H. handwheel (knurled rim) until needle is in its lowest position. Measure again at the cap as above and raise the needle bar 3/32 of an inch - with the needle bar in this position - looper points should be as shown in Fig. 2 and Fig. 4.

If they are not- loosen screw ❹ and turn the core ❺ slightly in either direction with the special wrench, until the loopers are in these positions.

Adjustment in direction of arrow advances the loopers across the needle.



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**MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE**

**LOOPER AND SPREADER ADJUSTMENT**

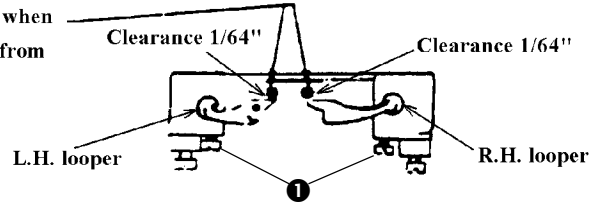
**Important:** Before making these adjustments, check adjustments of race Sheet 11 and for equalizing - Sheet 12

The loopers are held in place with the set screw ❶ - if necessary loosen these screws and adjust the loopers so that there is a slight clearance (1/64" of an inch) between them and the needle when in positions shown in Fig. 1.

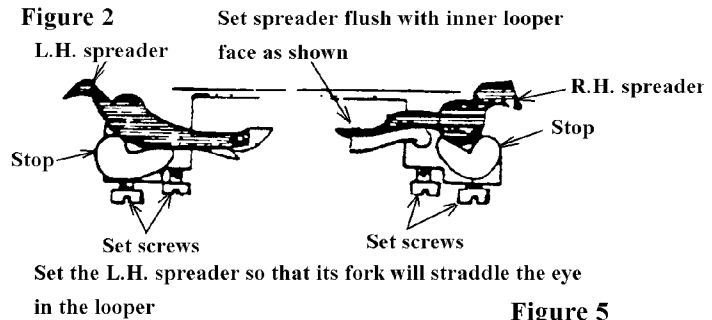
The spreader location is controlled by spreader stops. These are set with set screws as are the loopers. When the needle is at its lowest position, adjust these stops so that the spreaders are in locations shown in Fig. 2.

**Figure 1**

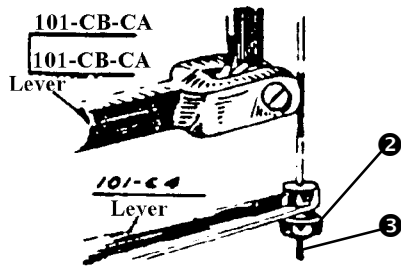
Position of needle when it has risen 3/32" from its lowest point on alternate strokes



**Figure 2**

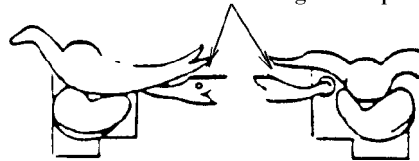


**Figure 4**

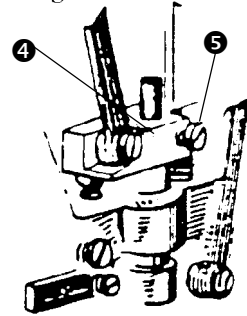


**Figure 3**

Needle positions in alternate downward strokes. Just before reaching lowest point



**Figure 5**



The position of the needle as the loopers and spreaders are backing away is as shown in Fig. 3. It is important that the space between the needle and spreaders is equal for each spreader. This adjustment can be made with nut ❷ on connection ❸ Figure 4.

Note: When the limit of the thread ❹ is reached, an additional adjustment is provided as shown in Figure 5 - loosen screw ❺ and raise or lower crosshead ❹ adjust again as in Fig. 4.

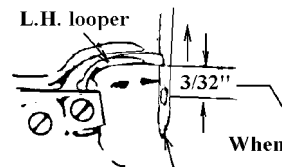
**NEEDLE BAR ADJUSTMENT**

Turn the R.H. handwheel (knurled rim) until the needle bar has risen 3/32" from its lowest point and is in position shown. In this position the eye of the needle should be about 3/32" below the looper as shown in Fig. 6

To adjust to this dimension loosen the screws ❻ in Fig. 7 and raise or lower the needle bar ❼ to suit.

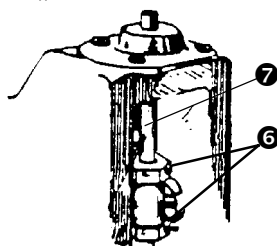
**Figure 6**

L.H. looper



When in this position needle has started up and risen 3/32" of an inch from its lowest point

**Figure 7**

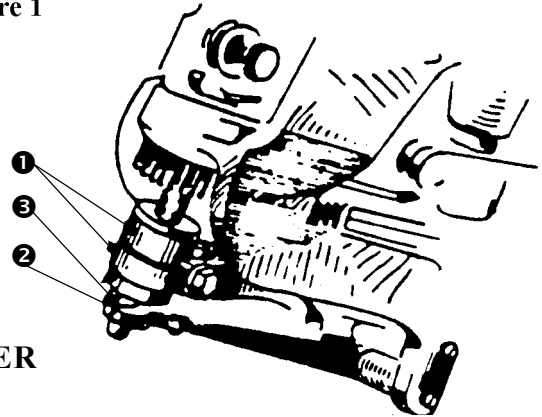


**MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE**

**TO ADJUST PLAY IN SPLIT COLLAR YOKE**

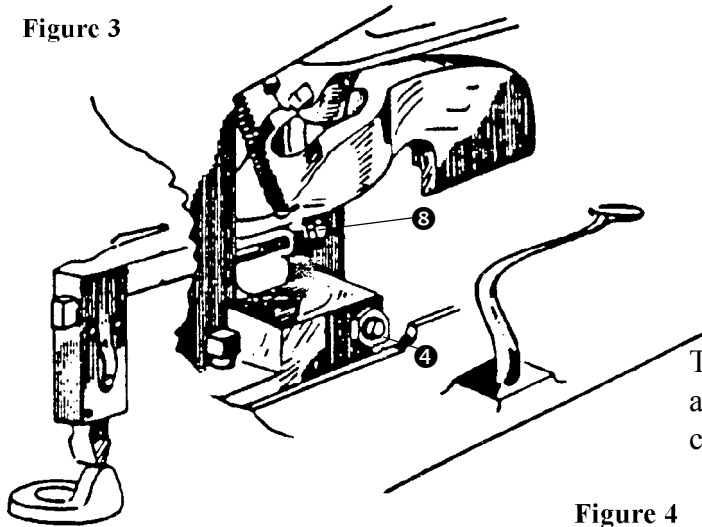
This yoke ① must be adjusted to work smoothly but without excessive play. Part ② is a nut - loosen screw ③ and screw up nut ② to suit.

Figure 1



**TO LINE UP AND ADJUST THE CUTTING LEVER**

Figure 3

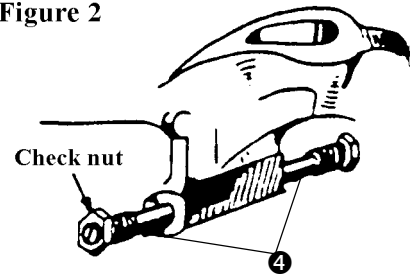


To adjust cutting measure, turn nuts ⑧ inward for more pressure or outward for less.

**Important!**

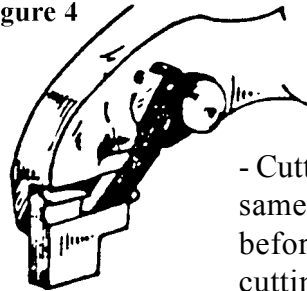
Release cutting pressure completely before installing a new cutting steel.

Figure 2



The cutting lever is suspended upon two adjustable studs ④. Adjust these studs for centralization of cutting lever.

Figure 4



- Cutting after - same instructions apply to cut before machines using this cutting arrangement.

When indentation of knife in cutting steel has become too deep, the face should be filed until the impressions barely seen. Follow up by adjusting the cutting pressure to cut.

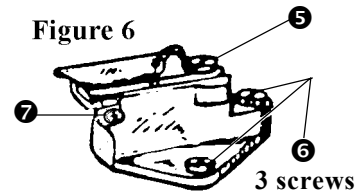
When replacing with new block. Level the cutting surface with a file until impression of cutter is distinct throughout its length. (on both cut after and cut before machines).

Cutter may be aligned as to center and position of eye.

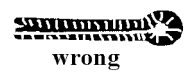
Loosen screw ⑤ and adjust knife forward or backward for correct eye position

For centering adjust cutter in either direction with screws ⑦, Figure 8 for additional adjustment loosen three screws ⑥ and move block in the direction desired.

Figure 6



right



wrong

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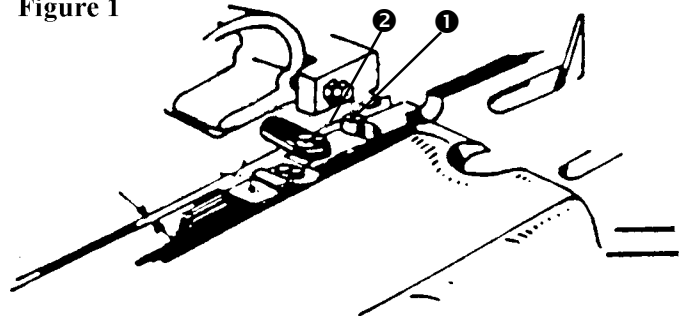
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## MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE

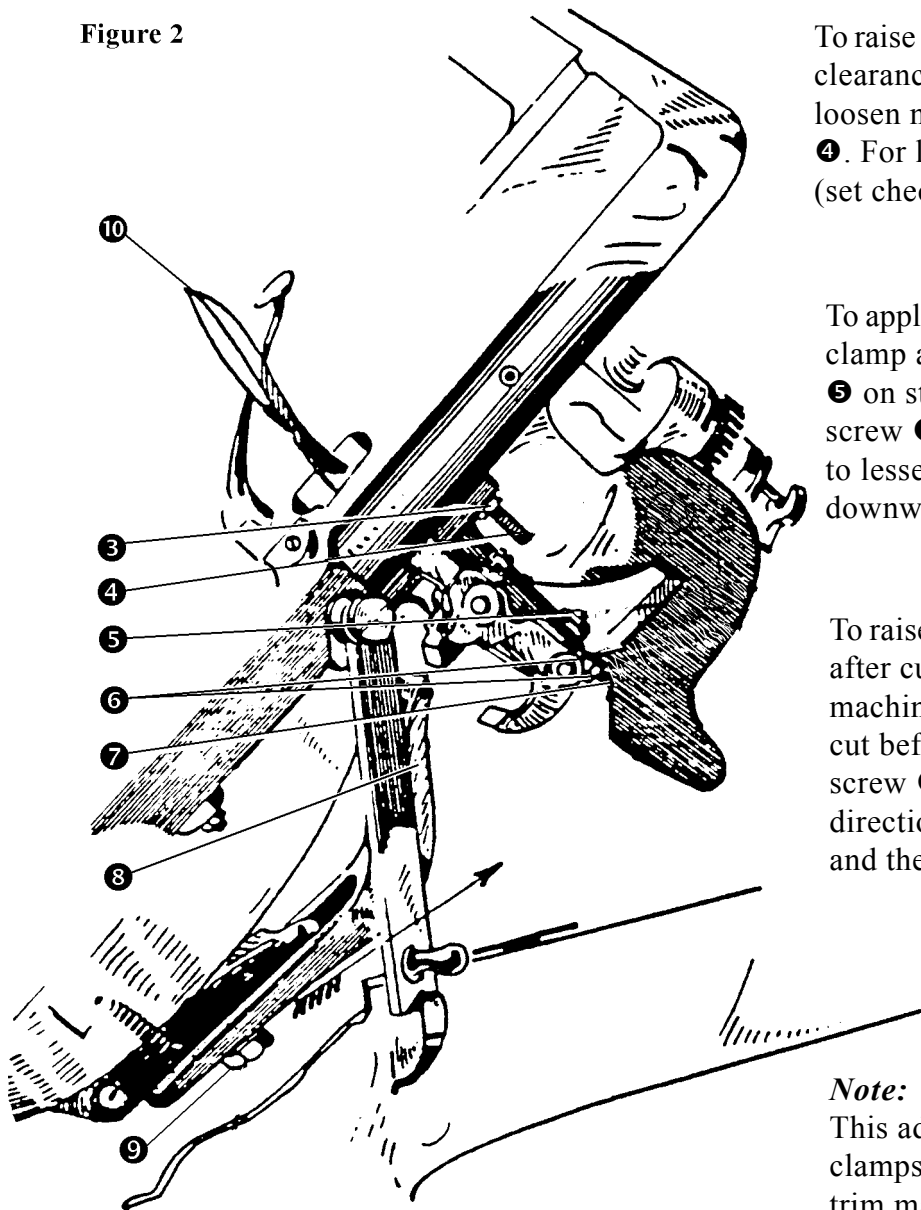
To adjust the clamp plates parallel with ledge press the clamp plate firmly against the ledge of the bed plate with the hand - depress the clamp lever (101 - B 19) ⑩. This will hold the clamp plate in position. Adjust the screw ① firmly against edge ②. Release the clamp lever - and screw ① will be in adjustment.

Figure 1



### ADJUSTING THE CLAMP OPERATING MECHANISM

Figure 2



To raise clamp arms for more clearance between mats and feet - loosen nut ⑤ and screw out screw ④. For less clearance screw inward. (set check nut after adjustment)

To apply more pressure between clamp arms and mats - loosen nut ⑤ on stud and move it upward with screw ⑦ set with nuts ⑥ and ⑤ - to lessen pressure move stud downward

To raise clamps sooner or later - after cutting - on a cut after machine - or after stitching on a cut before machine - loosen clamp screw ⑨ and move arm ③ in direction of arrow for earlier rise and the reverse for later rise.

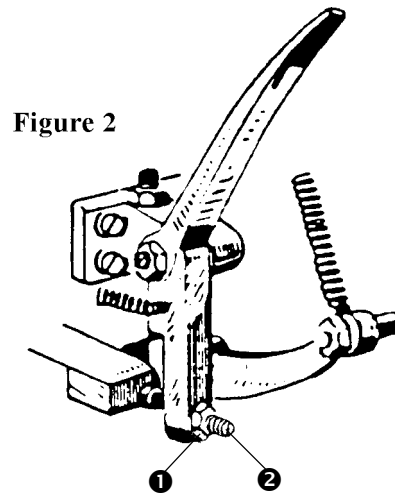
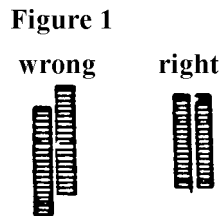
**Note:**

This adjustment will not raise clamps sooner or later on cord trim machine.

**MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE**

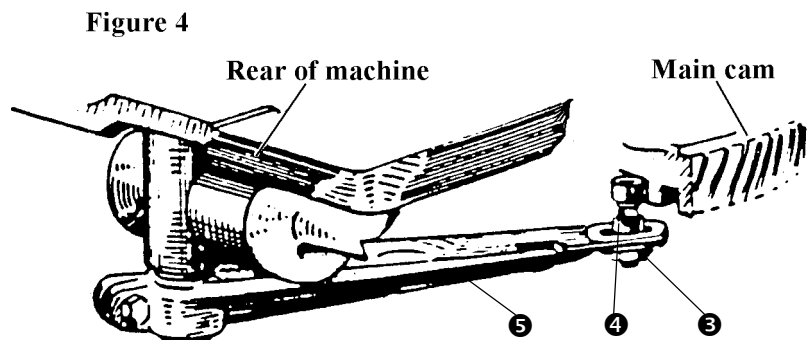
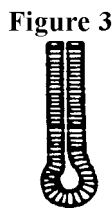
**TO ADJUST THE TRIP LEVER**

To equalize the ends of the stitching loosen nut ❶ on stop screw ❷ and screw in or out as required.



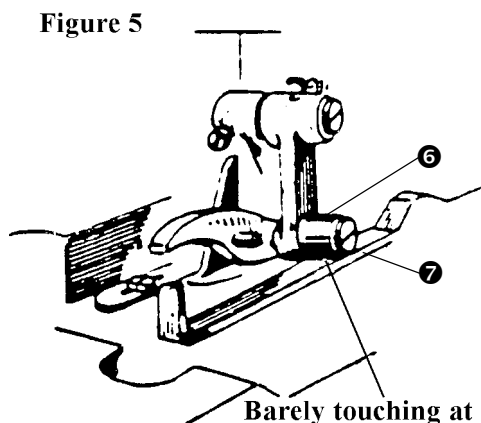
**TO CORRECT DISTORTION OF EYE**

Loosen nut ❸ and move stud in slot of lever ❹ until shape of eye is correct.

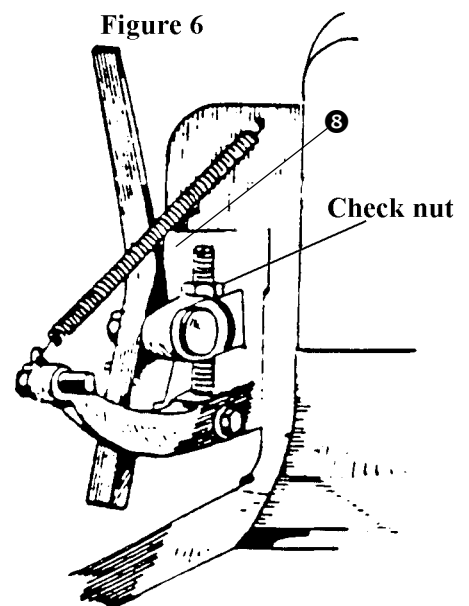


**TO ADJUST THE ROLL PRESSURE ON LENGTH GAUGE**

Crank the machine until it is in the stopping position, turn the R.H. knurled stitch wheel until it is locked and wheel will not turn further. When in this position roll ❹ should just barely rest on gauge ❺ but be free to revolve.



Adjustment may be made with screw ❸ - depressing the screw will lift the roll - raising the screw ❸ will lower the roll

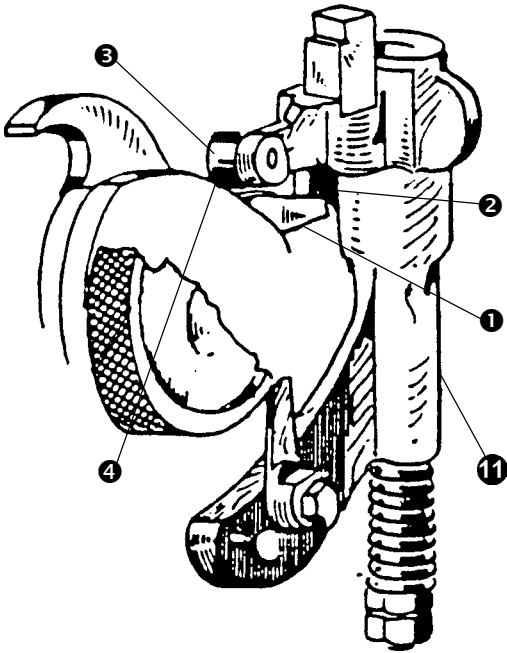


## MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE

### TO ADJUST THE ROCKER ARM AND STOP MOTION

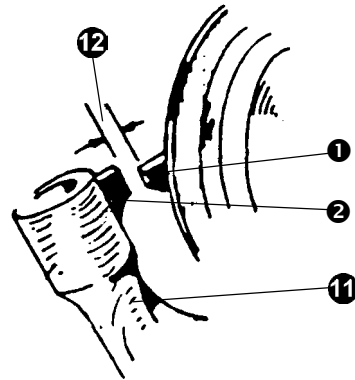
Crank the machine with L.H. handwheel, to its stopping position. With the R.H. handwheel (knurled rim) turn until dog **1** is in contact with the stop bolt **2** - when in this position roller **3** should have a very light contact on low point of cam **4** on handwheel. Make adjustment by loosening screw **5** (Figure 3a) and swing rocking lever **11** to suit. See note at bottom left of sheet.

Figure 1a



With the L.H. handwheel, crank the machine until the rocking lever **11** is as far back as it will go. (at this point the dog **1** and the stop bolt **2** are about 1/8" apart at **12** (Figure 2a).

Figure 2a

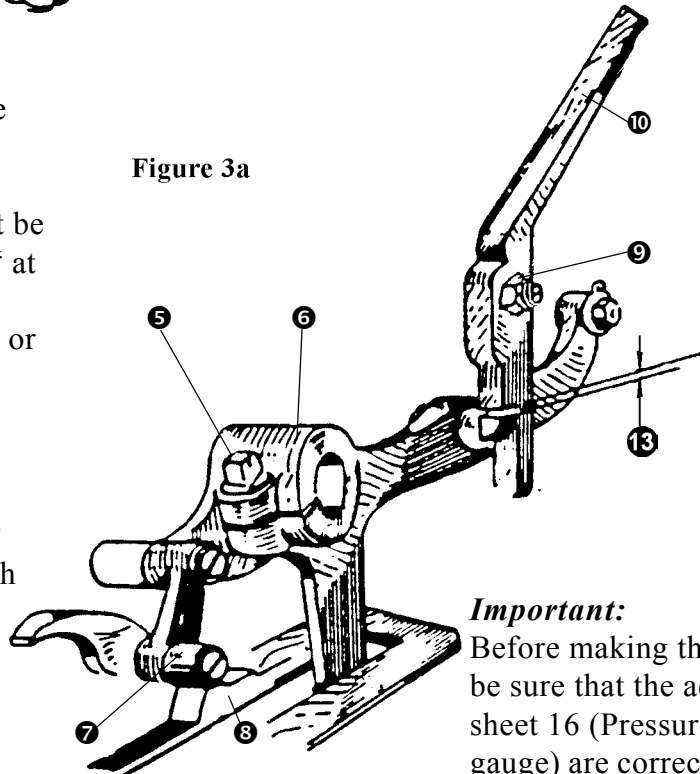


**Note:**

Also that roller **7** is at the peak of gauge **8**.

When the parts are in the position shown there must be a clearance of about 1/32" at **13** - if not - adjust by loosening nut **9** and raise or lower lever **10** to suit.

Figure 3a



**Note:**

Before tightening screw **5** be sure parts **6** and **11** both bear against sides of the boss on head casting.

**Important:**

Before making these adjustments be sure that the adjustments on sheet 16 (Pressure on length gauge) are correct.

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**MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE**

**ADJUSTING THE STOP LATCH ON STITCHING WHEEL**

**Note:**

Factory adjustment of this eccentric is made so that thick side of eccentric ① is toward rear. This position must be maintained to prevent screw ② from backing out.

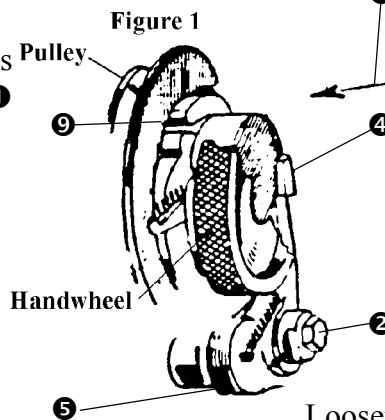
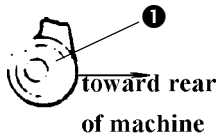
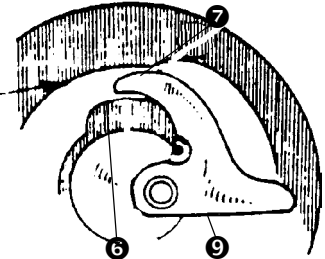
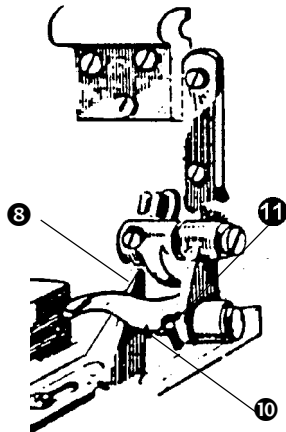


Figure 2



**ADJUSTING THE TRIGGER SETTING MECHANISM**

Figure 3



Loosen screw ②. Turn eccentric ⑤ which will adjust latch ④ against ledge ③ - adjust to raise or lower until there is a clearance of dog ⑨ as in Figure 2 between cam and wheel at ⑥ and cam in pulley at ⑦. Adjustment should be made when R.H. stitch wheel is locked.

When the machine is at the stopping position bumper ⑧ should be adjusted against pin ⑪ so that the pin ⑪ will fall freely into notch and engage part ⑩ - this sets the machine for stitching.

**TO ADJUST THE TIMING OF THE L.H. HANDWHEEL IN RELATION TO ROCKER SHAFT AND LEVER**

Crank the machine back until stop bolt contact points ⑫ barely disengages ⑨ - as in Figure 4 - contact points ⑭ and ⑬ on L.H. handwheel should just clear as shown in detail (Figure 5) If not - loosen screw ⑭ in spool and move wheel ⑮ in or out to obtain this clearance. Reset the set screw ⑭ securely.

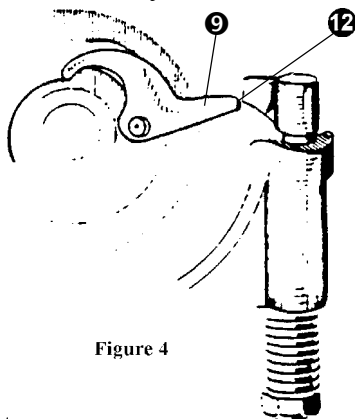
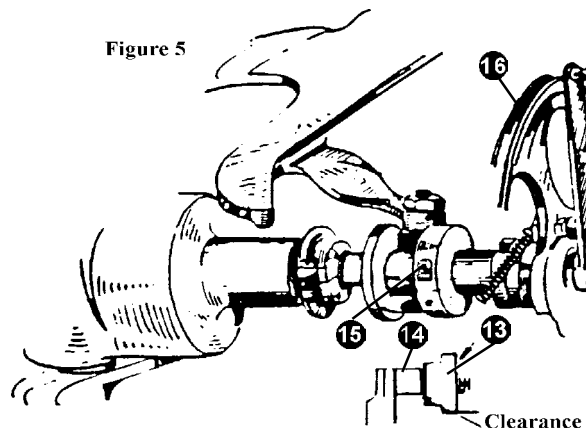


Figure 4

Figure 5



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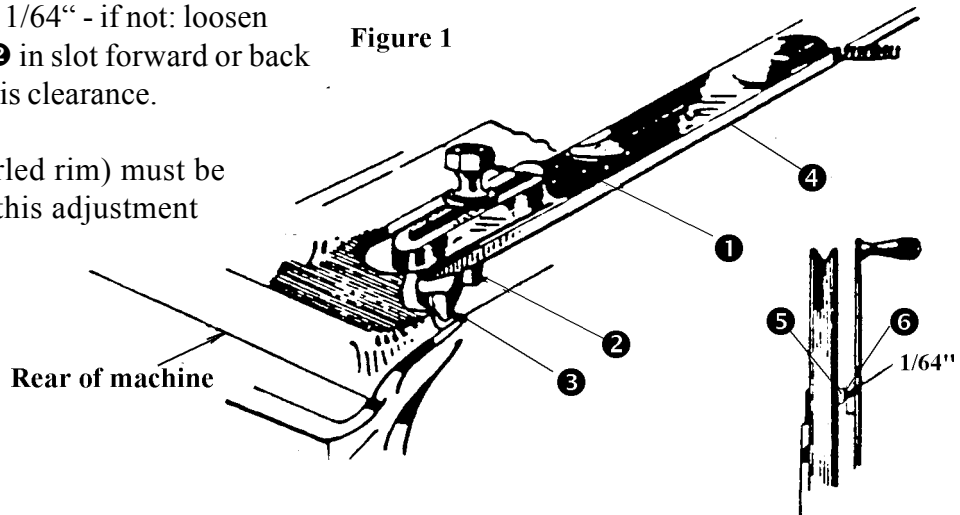
## MACHINE ADJUSTMENTS - CORRECTIVE AND MAINTENANCE

### TO ADJUST L.H. HANDWHEEL TO DISENGAGE AT THE STOPPING POSITION OF THE MACHINE

In this position contact points ⑥ and ⑤ should have a clearance about 1/64" - if not: loosen nut ① and move stud ② in slot forward or back as required to obtain this clearance.

**Important:**

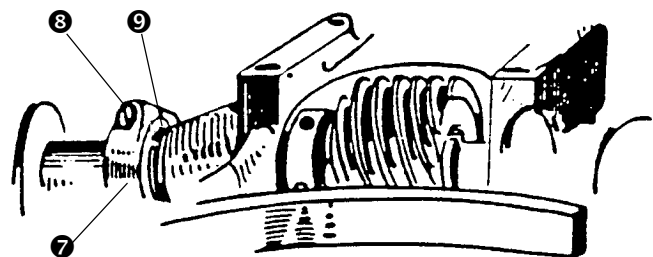
R.H. stop wheel (knurled rim) must be locked when making this adjustment



### TO ADJUST FOR FRICTION ON WORM SHAFT

Loosen screw ③ on collar ⑦. Set collar so that there is a compression of the spring washer - amount of compression determines the amount of friction. Do not set this collar too tightly.

Figure 2

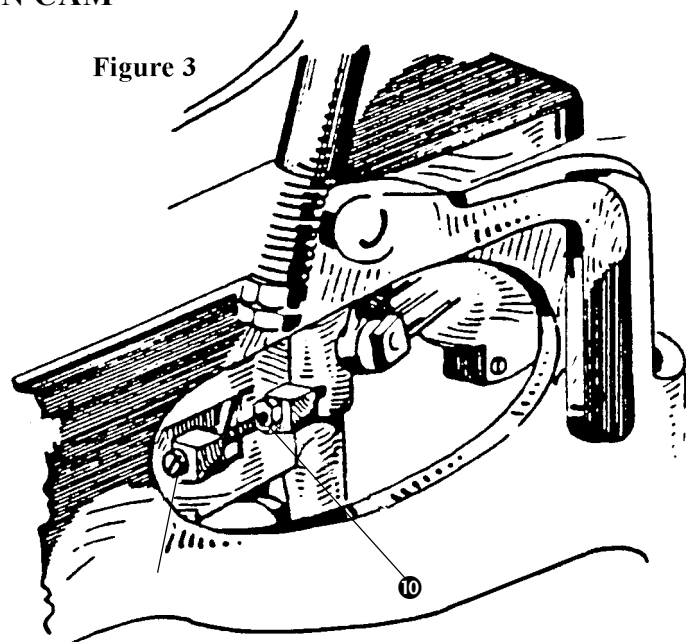


### TO ADJUST FOR FRICTION ON MAIN CAM

Loosen nut ⑩.

Adjust screw ⑪ inward for more friction and outward for less.

Figure 3



Do not place too much friction against the cam.



**CUT BEFORE - MACHINE ADJUSTMENTS**

**Important:**

Before making the adjustments shown on this sheet, be sure the right hand stitch wheel is locked.

**VERTICAL SETTING OF TRIMMING KNIFE**

The trimming knife ① (Figure 1) should be set so it will clear the under side of throat plate ② at ⑤ and top of right hand spreader stop ③ at ⑥ to obtain this setting. Loosen screw ④ (Figure 1) and move trimming knife ① up or down to suit. Tighten screw securely.

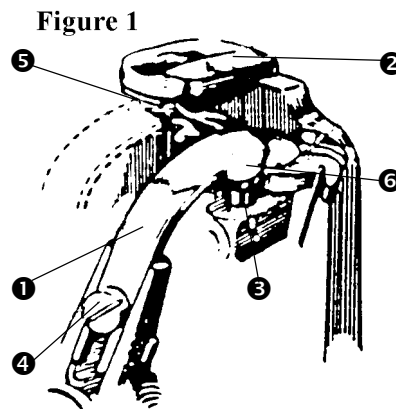
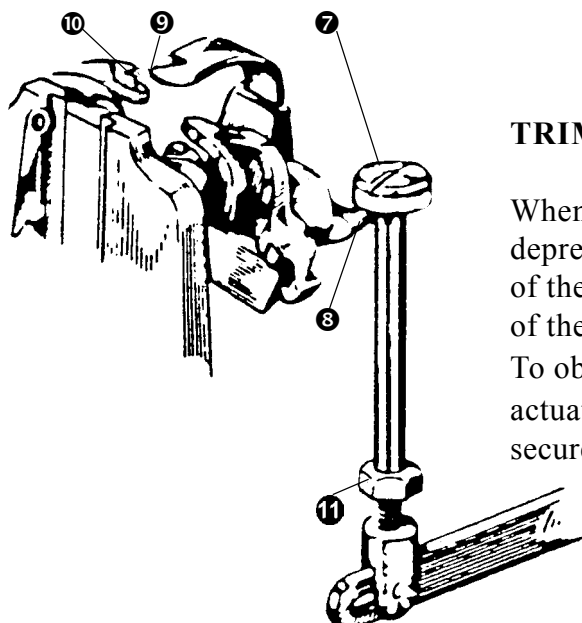


Figure 2



**TRIMMING KNIFE ACTUATOR ADJUSTMENT**

When acutator ⑦ (Figure 2) has of its own action fully depressed the end of trimmer holder ③ the extreme point of the trimming knife ⑨ should be in line with the point of the right hand looper ⑩.

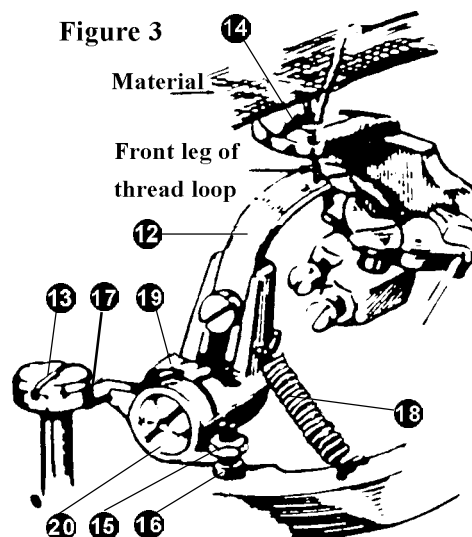
To obtain this setting, loops lock nut ⑪ and adjust actuator ⑦ up or down to suit. Tighten lock nut ⑪ securely.

**TRIMMING KNIFE STOP POSITION**

Extent of movement at the point of trimming - see Figure 3. The cutting edge of the trimming knife ⑫ should be advanced sufficiently beyond the shoulder of the R.H. looper to assure full engagement and constant trimming of the front leg of the thread loop - To check this adjustment proceed as follows:

When actuator ⑬ has risen to its full height the knife should be ar nimum in an advanced position to the right to clear the slot in the throat plate at ⑭ - to advance the knife further to the right, loosen check nut ⑮ and turn adjusting screw ⑯ sufficiently upward to gain the maximum of movement, but being sure that some clearance is always maintained under head of ⑬ at ⑰.

If for any reason it is desired to remove trimming mechanism to facilitate looper adjustment - Remove spring ⑱ and raise slightly spring clip ⑲ (Figure 3) and slide unit off the stud ⑳.

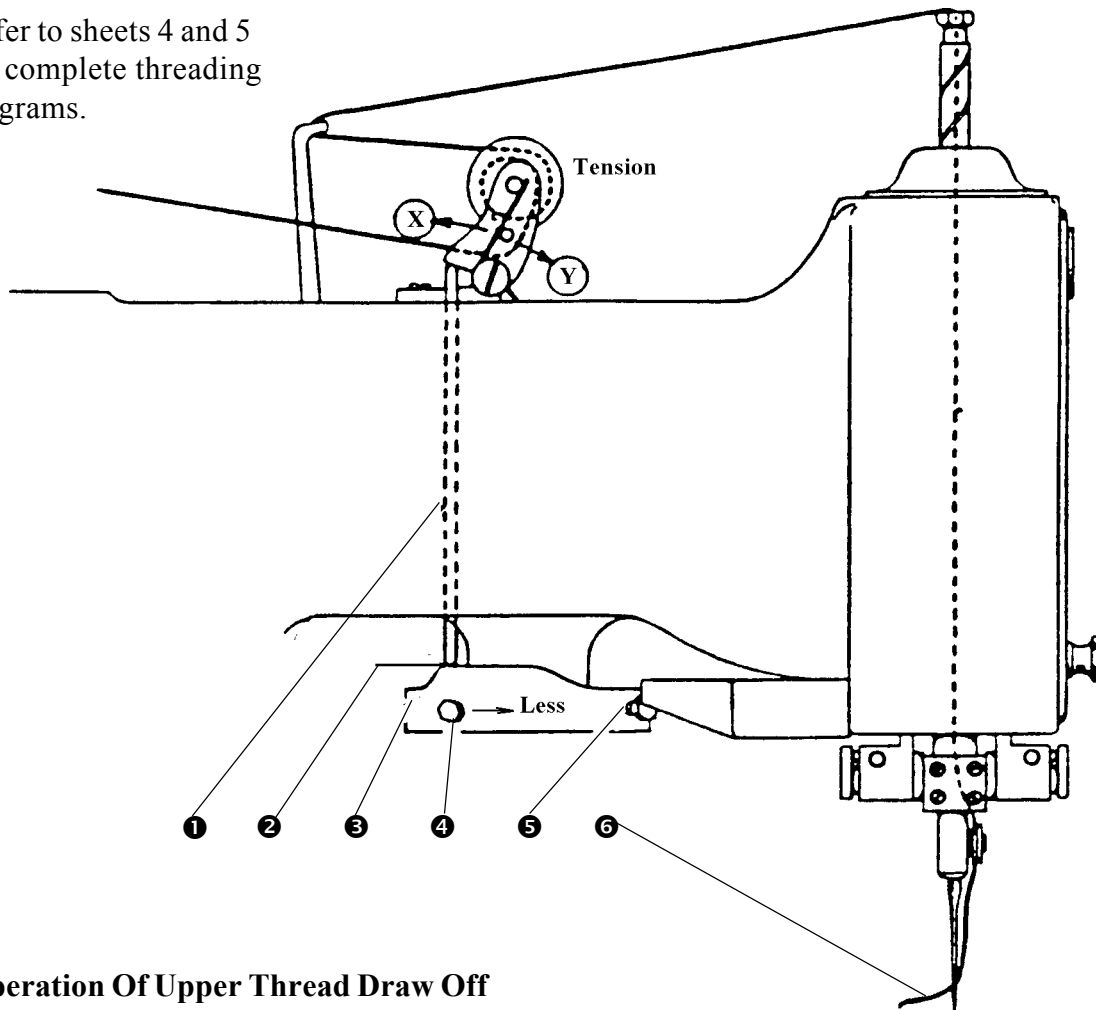


## CUT BEFORE - MACHINE ADJUSTMENTS

### UPPER THREAD DRAW OFF (ROCKING TENSION TYPE)

The amount of thread required to start the next buttonhole varies with the conditions and classes of work. Usually thin work requires more thread for starting purposes than heavy work. If more than one grade of work is passed thru the machine, it is desirable to make the adjustment on the lightest materials.

Refer to sheets 4 and 5 for complete threading diagrams.



#### Operation Of Upper Thread Draw Off

Tension should swing in the direction of arrow (X) immediately after the machine starts, and in the direction of arrow (Y) when the machine is at the far end of its travel.

#### Adjustment Of Upper Thread Draw Off

To obtain maximum length of starting thread at ⑥ - make sure machine is in its normal stopping position. Loosen screws ④ and ⑤ and rotate cam ③ to the point where pin ① is at the very top of the cam rise at ② as shown above. Then tighten screws ④ and ⑤ securely.

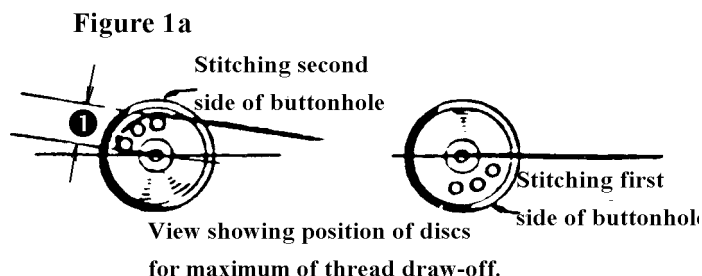
To decrease length of starting thread at ⑥ adjust the position of cam ③ as required in the direction of arrow marked less.

**Note:** If machine is not equipped with this type of upper thread draw off, see Needle bar type draw off on sheet 22.

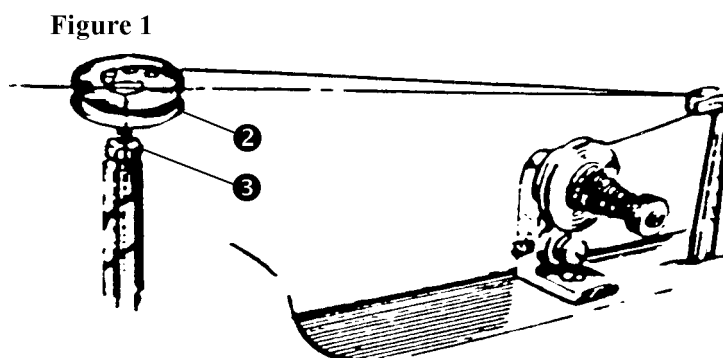
**CUT BEFORE - MACHINE ADJUSTMENTS**

The amount of thread required to start the next buttonhole varies with the conditions and classes of work. Usually thin work requires more thread for starting purposes than heavy work. If more than one grade of work is passed thru the machine, it is desirable to make the adjustment on the lightest materials.

To adjust for more or less thread - loosen nut ③ (Figure 1), and swing disc ② in direction shown for the desired result.



The absolute maximum of thread that can be drawn off is reached when disc ② has engaged the thread as illustrated in Figure 1a - and the thread lines are parallel at ① as the machine is stitching on the second side of the buttonhole. Disc adjustment shown in Figure 1 is the most desirable location for average sewing.



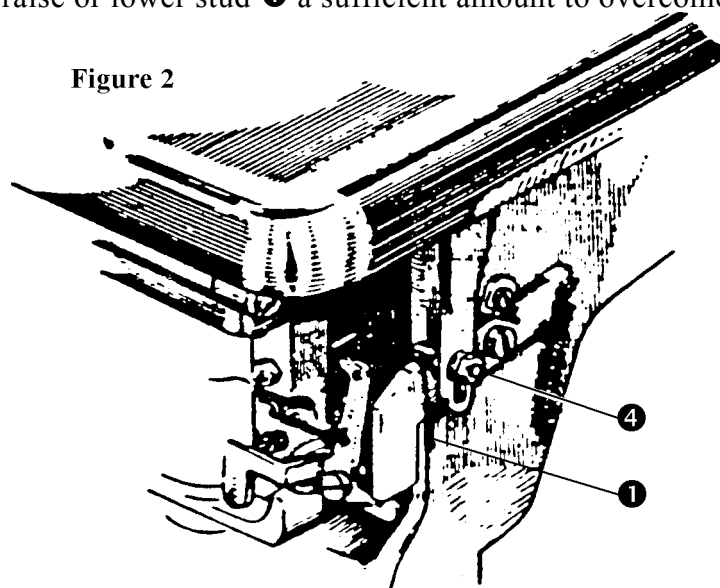
**COMBINED DRAW-OFF AND UNDER THREAD TENSION RELEASE**

**Note:**

The lower thread tension should be fully released when machine has completed the buttonhole.

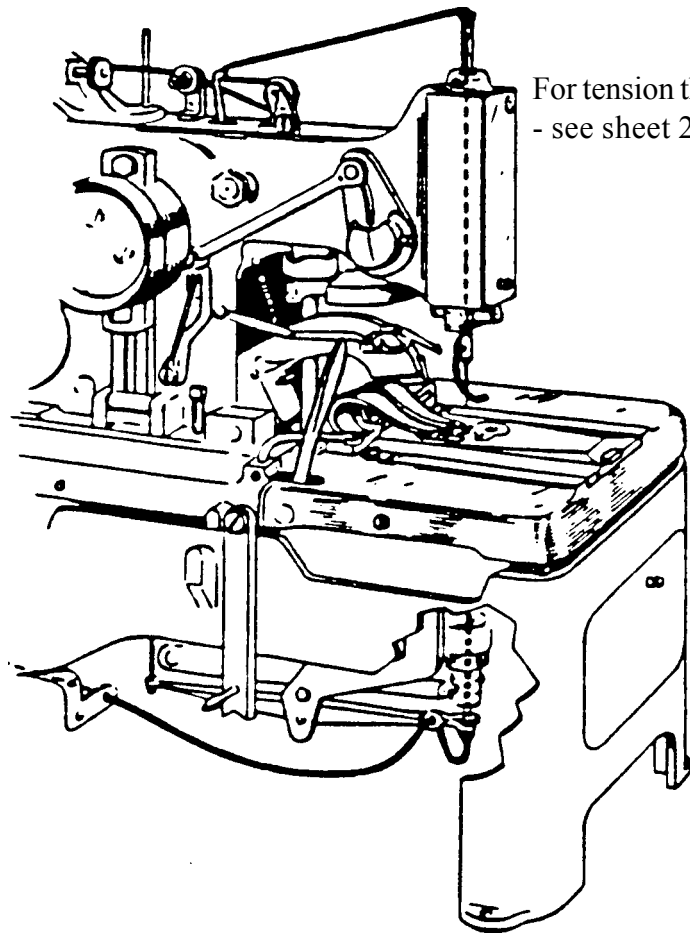
To adjust - loosen nut ④ (Figure 2) and raise or lower stud ① a sufficient amount to overcome the influence of the tension spring.

Tighten nut ④ securely.

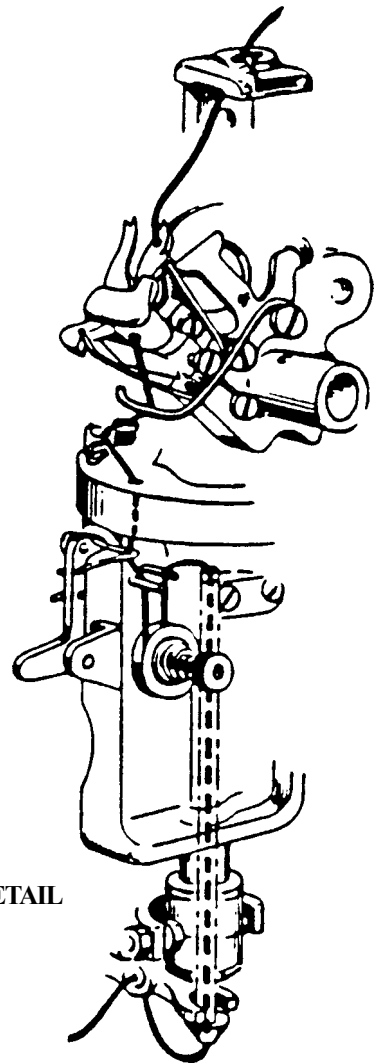


# CORD TRIM

## THREADING DIAGRAMS

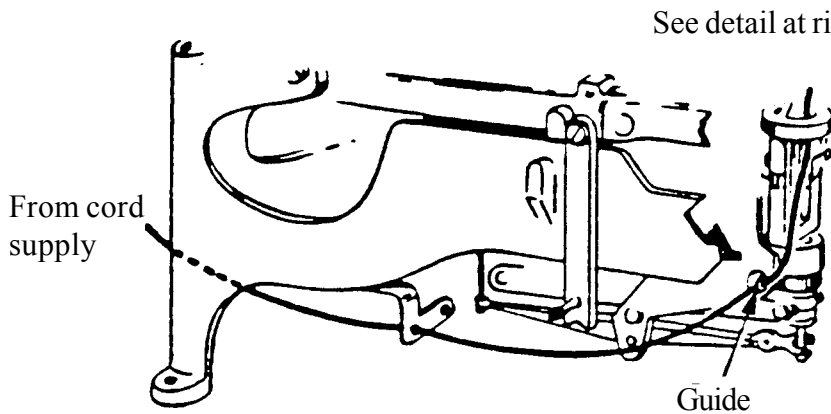


For tension threading details  
- see sheet 2

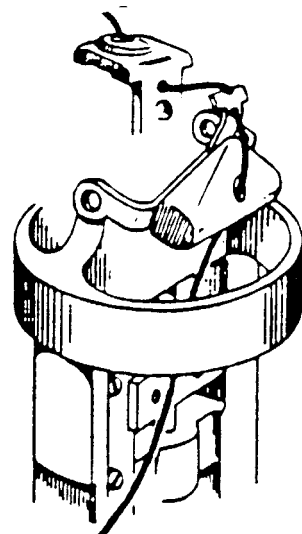


DETAIL

## CORD THREADING DIAGRAM



See detail at right



Crank machine until race  
faces as shown above.

revised 09/2004

**CORD TRIM - MACHINE ADJUSTMENT**

**UPPER THREAD DRAW OFF AND TENSION ADJUSTMENTS**

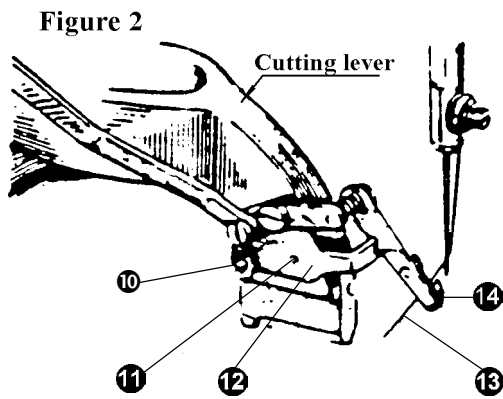
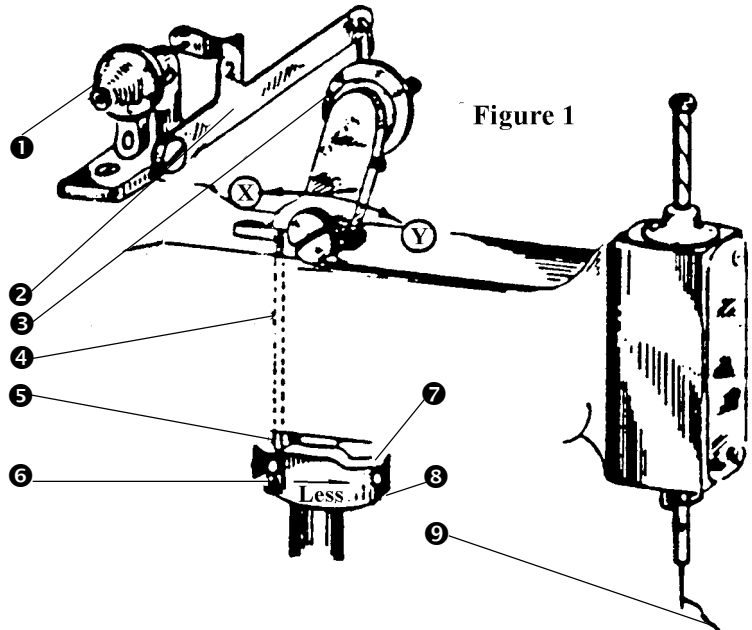
Keep tension ① tight enough to bread the upper thread at the last stitch. Make sure that lever ② releases tension ① when the machine starts sewing, so that only tension ③ will be effective during the sewing cycle. This tension should swing in the direction of arrow (Y) when the machine reaches the far end of its travel and in the direction of arrow (X) just before the machine stops.

To obtain maximum length of starting thread at ⑨ proceed as follows: Make sure machine is in its normal stopping position. Loosen screws ⑥ and ⑦ and rotate cam ⑧ to the point where pin ④ is at the bottom of the cam drop at ⑤ as shown Figure 1. Then tighten screws ⑥ and ⑦ securely.

To decrease the length of starting thread at ⑨, adjust the position of cam ⑧ as required in the direction of arrow marked less, Figure 1.

**Note:**

For machines equipped with needle bar type upper thread draw off, see sheet 22.



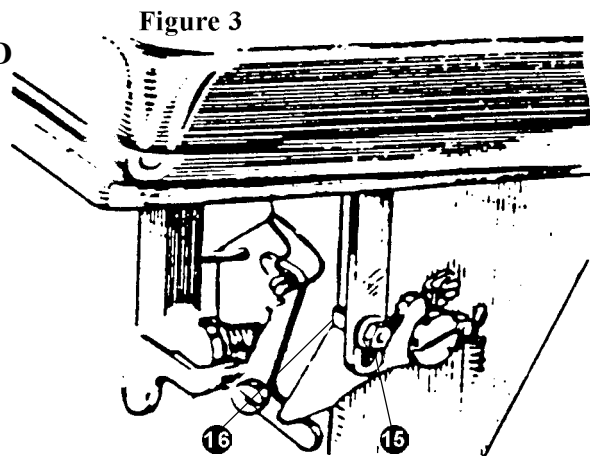
**THREAD PICK-UP ADJUSTMENT**

The pick-up hook ⑭ Figure 2 dips with the cutting lever and grasps the upper thread and holds it out of the way for the next buttonhole. - The extent of the dip downward so that it will not miss the thread ⑬ is adjusted by loosening the screw ⑩ and swinging the plate ⑫ upon its fulcrum pin ⑪ as desired.

**UNDER THREAD DRAW-OFF AND TENSION RELEASE**

To provide more or less thread, loosen nut ⑮ and adjust stud ⑯ up or down to suit.

Tighten nut ⑮ securely.



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## CORD TRIM - MACHINE ADJUSTMENT

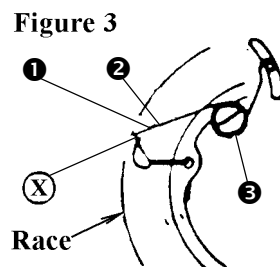
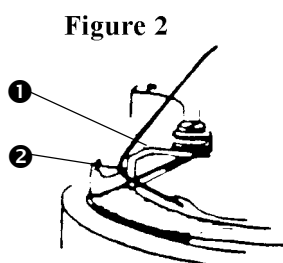
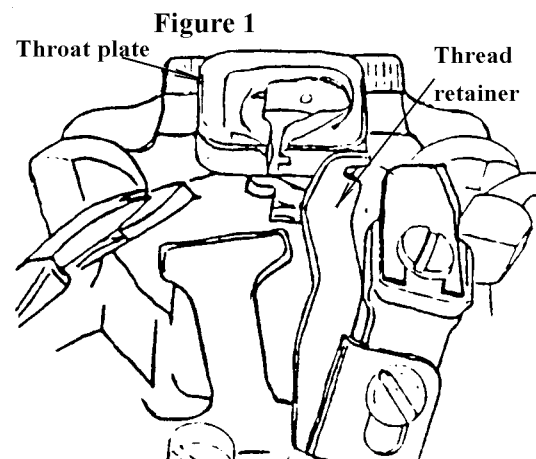
### THREAD TRIMMER AND THREAD RETAINER

Upper thread trimmer is activated by a wedge located on the main cam. Movement of the thread trimmer should be delayed as late as possible to allow thread pick up hook to be in position, to pick up trimmed thread.

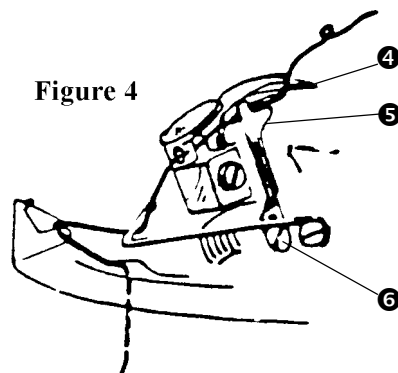
Knife should be set to clear front of needle and bottom of throat plate. Also check that knife clears top of spreader.

Knife should be installed and adjusted so that it trims thread on the return strock.

Thread retainer should be set below the top surface of the throat plate and set lightly against the front of the throat plate. Thread retainer in its home position should be to the right of the thread slot. When the trimmer is activated thread retainer wipes across the thread slot and captures thread for the next cycle.



The check spring **2** on the top of the race is adjustable as to swing out and in, loosen screw **3** and adjust the stop wire **1**. The approx. correct position is as shown in Figure 3 at (X) (at edge of machined portion if cam case)



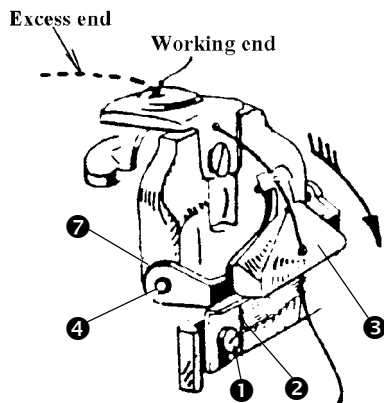
### TO SET THE UNDER THREAD GUIDE

Adjust the under thread guide **5** so that thread lies close to the under side of the looper **4** and thread runs freely without friction - use screw **6** to adjust.

**CORD TRIM - MACHINE ADJUSTMENT**

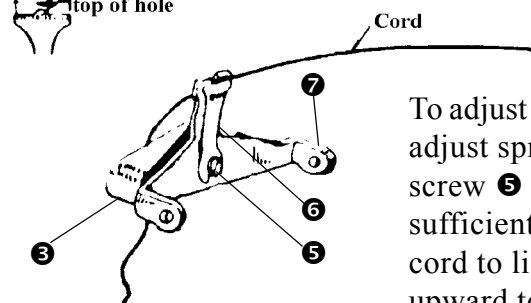
**THEORY AND ADJUSTMENT TO INSURE PROPER FUNCTIONING OF CORD**

Figure 1



Adjust slightly under  
top of hole

Figure 2

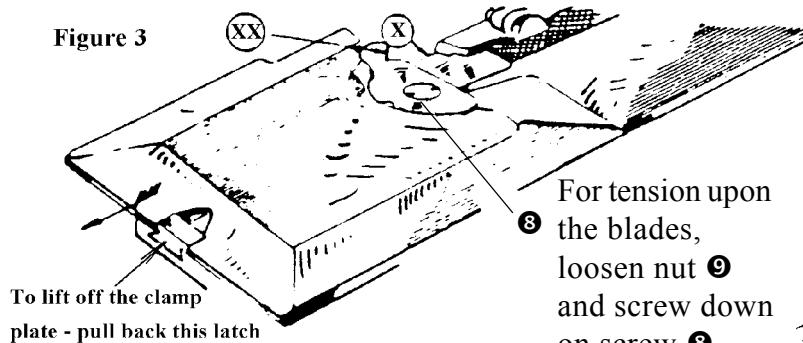


To adjust for tension - adjust spring 6 with screw 5 until there is sufficient friction on cord to lift weight upward to contact throat plate

The excess end of the cord after the trimming must be pulled back with enough cord left in the throat plate to insure the proper start of another buttonhole - weight 3 on cord pull back serves to do this the drop of this cord. Pull back is adjusted by loosening screw 1 and adjusting stop 2 to suit. (Spring 6 in Figure 2, acts 2, 3 has a clamp and a tension on cord). To adjust - the yoke 7 is taken off the race by pressing inward the plunger 4 and adjusting with screw 5. When proper adjustment is made - cord can not be drawn backward.

**SHEAR ADJUSTMENT**

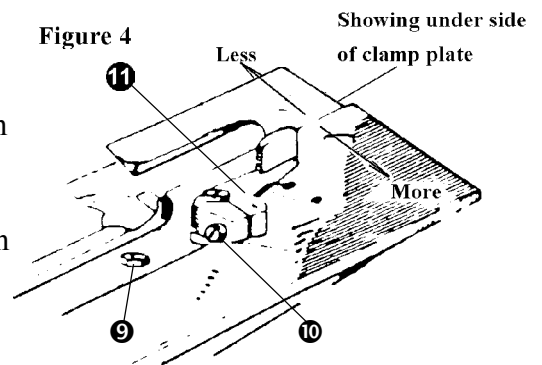
Figure 3



To lift off the clamp plate - pull back this latch

For tension upon the blades, loosen nut 9 and screw down on screw 8.

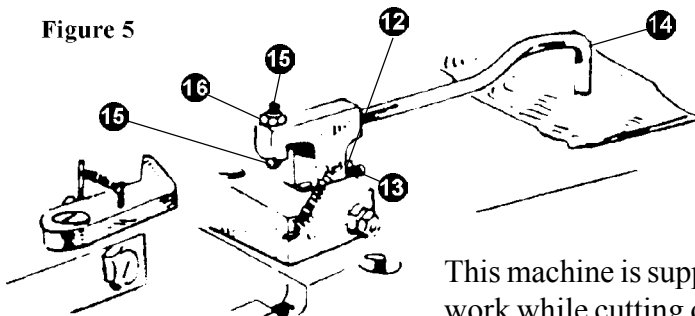
Figure 4



Do not sharpen blades from the top or flats. Stone the edges only at (X) and (XX).

**TO ADJUST THE HOLD DOWN FINGER**

Figure 5



**Note:**

This finger has been supplied with an adjustable screw 15 - to adjust loosen nut 16 turn screw 15 to suit and lock with nut 16 after obtaining desired pressure of finger on work.

This machine is supplied with a hold down finger 14 for holding the work while cutting of thread takes place and regular clamp arms are up. Adjust by loosening nut 12 and adjust screw 13 for proper clearance and easy insertion of work.

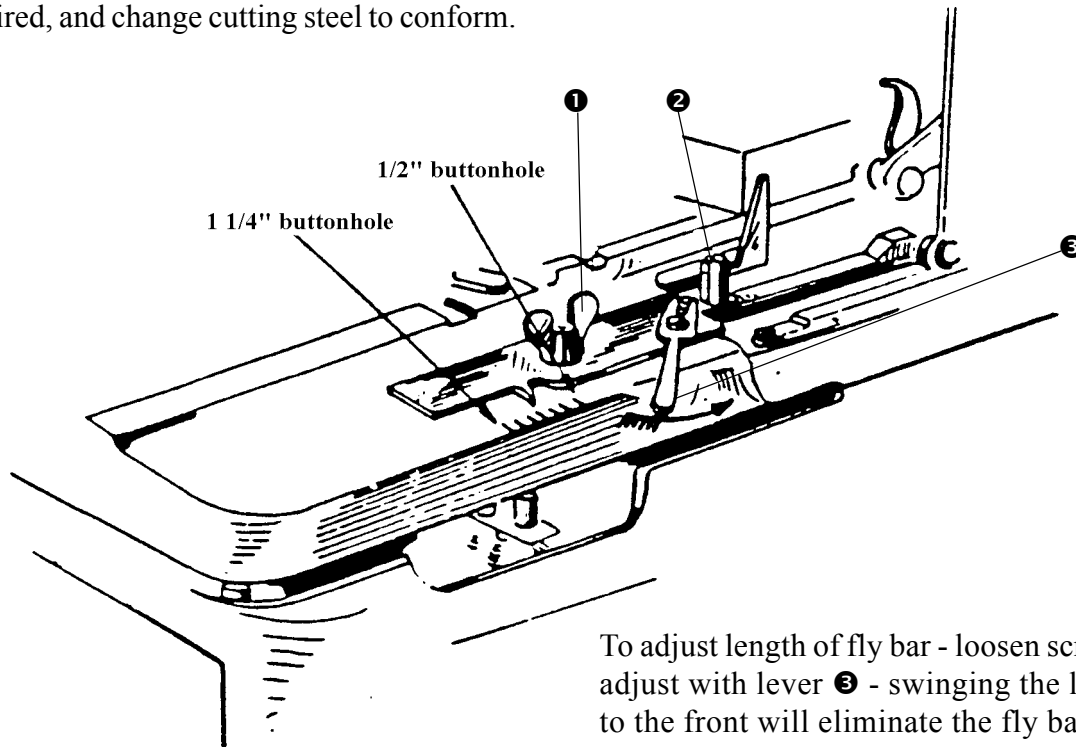
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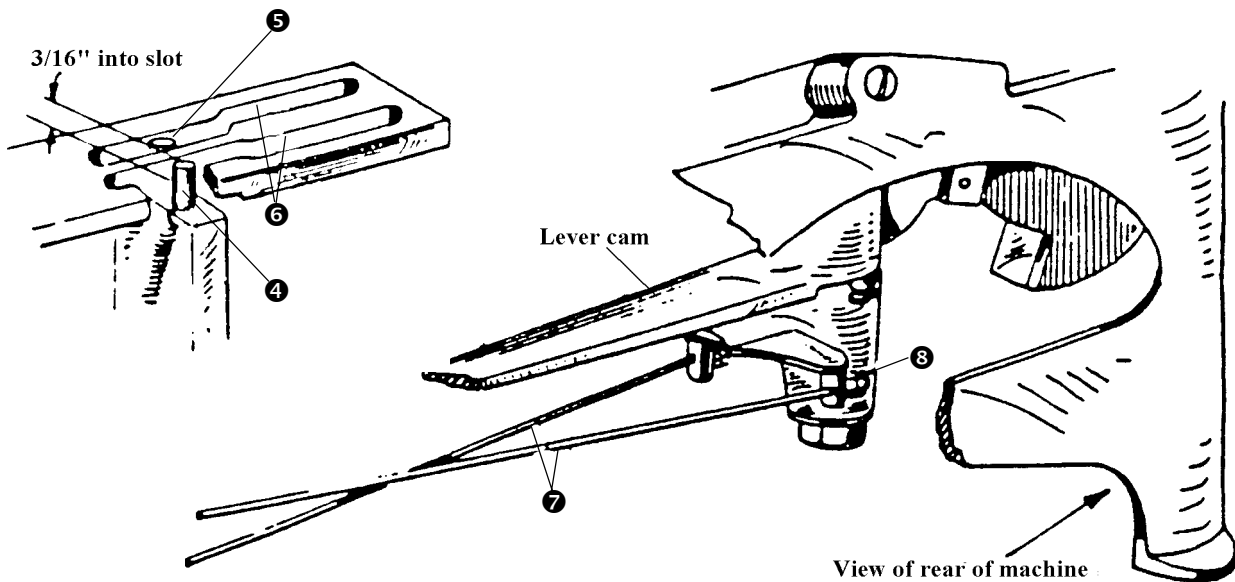
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## ADJUSTMENTS FOR THE ADJUSTABLE FLY BAR MACHINE

To adjust for length of buttonhole - loosen thumbscrew ❶ and set gauge pointer to any graduation desired, and change cutting steel to conform.



To adjust length of fly bar - loosen screw ❷ and adjust with lever ❸ - swinging the lever entirely to the front will eliminate the fly bar. Range of adjustment is 0" to 7/8".



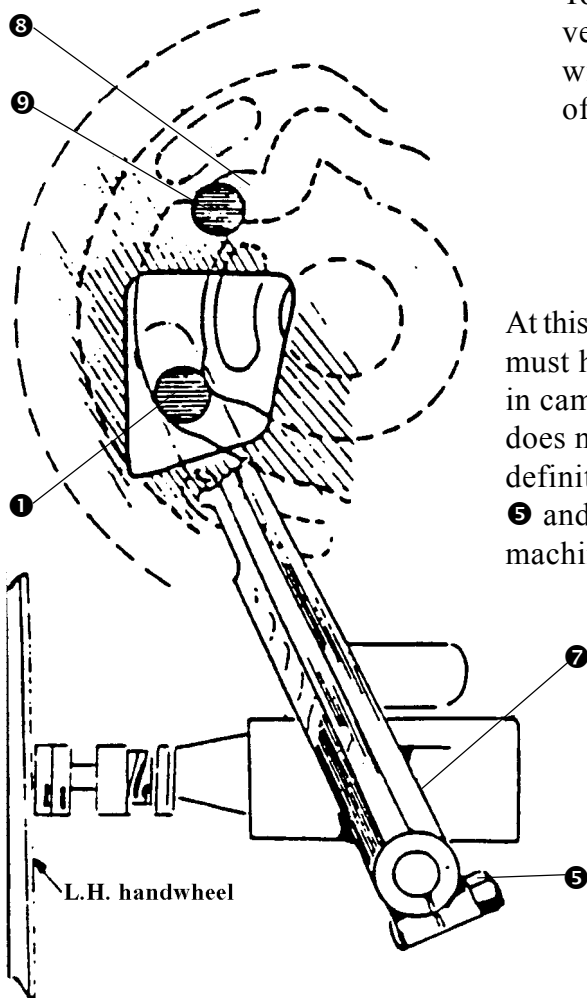
### Note:

The plungers ❹ and ❺ should enter the slots ❻ about 3/16" - to adjust this depth take up or let out with nuts ❷ non rods ❸.



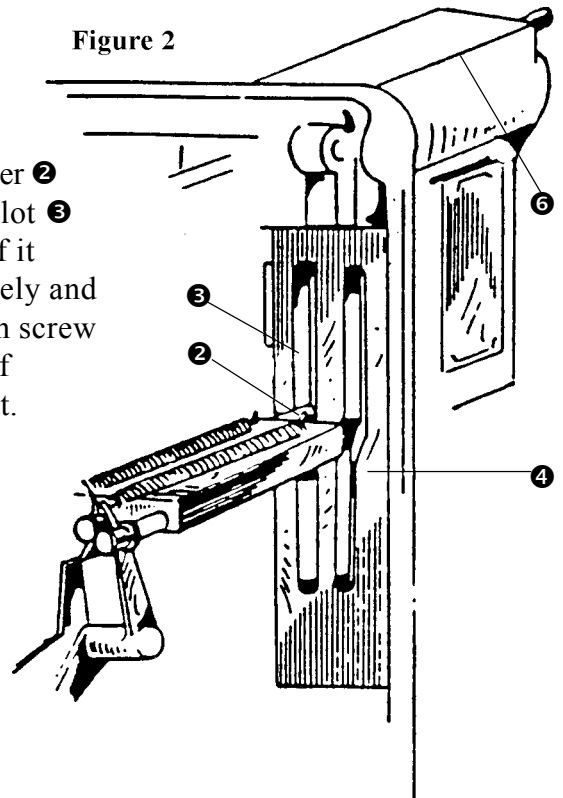
**ADJUSTMENTS FOR THE ADJUSTABLE FLY BAR MACHINE**

Figure 1



To adjust for proper functioning - tip the machine to a vertical position upon its base - crank the machine with the L.H. handwheel until the roll ① is at the peak of the cam as shown.

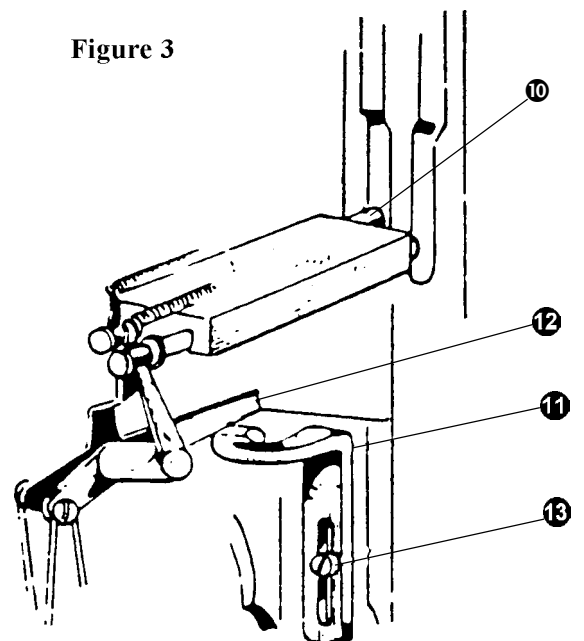
Figure 2



At this point plunger ② must have entered slot ③ in cam plate ④. If it does not enter freely and definitely - loosen screw ⑤ and tap head of machine ⑥ to suit.

The above adjustment constitutes the line up of an adjustable fly bar machine.

Figure 3



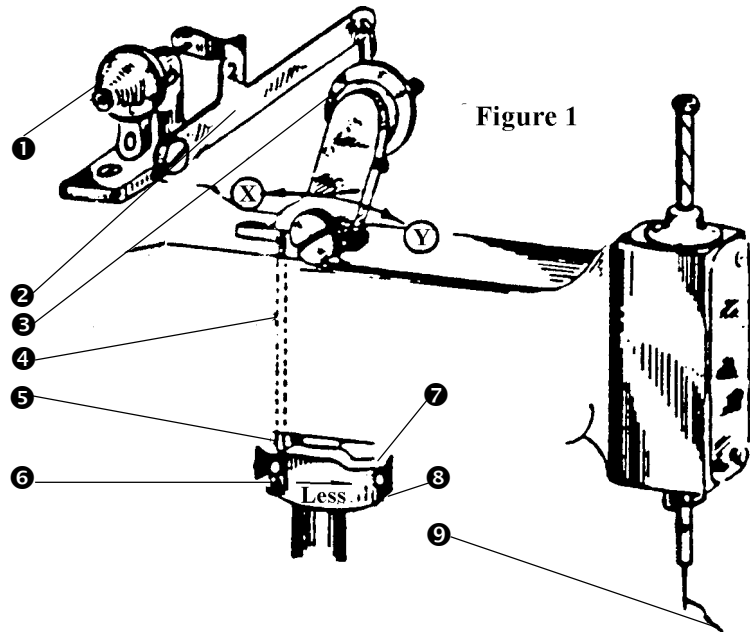
Crank the machine until the roll ① on lever ⑦ is again definitely embraced by cam path ⑧ on the cam at ⑨, Figure 1 - at this point plunger ⑩ should have just withdrawn from slot by action of bracket ⑪ against lever ⑫. If not, adjust bracket ⑪ to suit by loosening screw ⑬.

**CUT BEFORE EDGING MACHINE**

**UPPER THREAD DRAW-OFF AND TENSION DETAILS**

Keep Tension ❶ tight enough to break the upper thread at the last stitch, and to prevent thread from being drawn from the source of supply through the needle as the garment is removed from the machine. Make sure that Lever ❷ releases Tension ❶ when machine starts sewing, so that only Tension ❸ will be effective during the sewing cycle.

The required length of Starting Thread at ❹ is provided by the movement of Upper Thread draw-off Tension ❸. This Tension should swing in the direction indicated by arrow X immediately after the machine starts, and in the direction of arrow Y when the machine is at the far end of its travel.



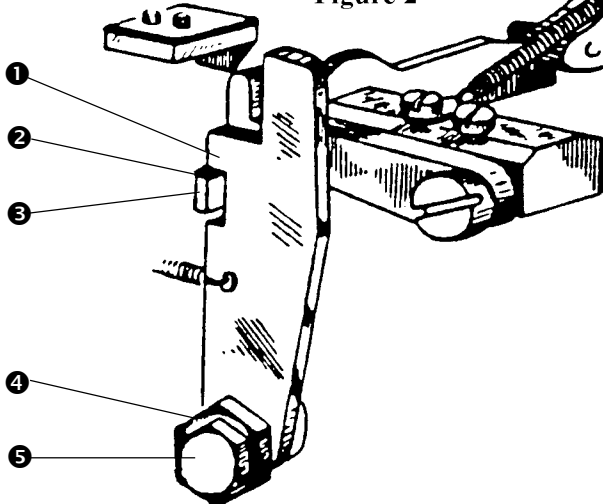
**ADJUSTMENT OF UPPER THREAD DRAW-OFF**

To obtain maximum length of Starting Thread at ❹ proceed as follows:

Make sure machine is in its normal stopping position. Loosen screws ❸ and ❹ rotate Cam ❸ to the point where Pin ❷ is at the very top of the Cam rise at ❸ as shown Fig. 1. Then tighten screws ❸ and ❹ securely.

To decrease the length of Starting Thread at ❹ adjust the position of Cam ❸ as required in the direction of arrow marked Less Fig. 1.

Figure 2



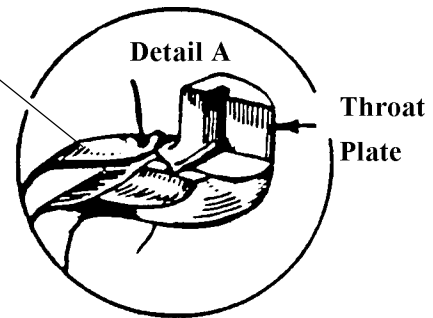
**OPERATION OF UNDER THREAD GRABBER**

Thread Grabber ❸, Fig. 2, should be positioned to catch and lightly hold the Under Thread against the back beveled edge of the Throat Plate as the machine stops.

A slight tug on the garment as it is removed from the machine will cause the thread to break at the knot of the last stitch. A sufficient end of the thread will remain held by the Grabber above the Throat Plate as shown in Detail A to start the next sewing cycle.

**Important:** In order for the thread Grabber to swing through its full arc end hold the thread as shown Detail A, the machine must be adjusted to stop in its extreme forward position. For instructions to obtain this adjustment refer to Sheet 19, Fig. 1.

With the machine in Stop Position as described above, make sure that Lever ❸ is engaged in the notch of Latch ❶ with no more than paper thickness clearance existing at point ❷. To obtain this clearance loosen screw ❹ and turn Eccentric ❷ as required. Then tighten Screw ❹ securely.



**NEEDLES**

Needles for the Reece Series 101 machines are packaged and sold in boxes of 100, in sizes and types listed. They are superior struck groove construction, chrome plated and are spotted and the eye except size 00 and finer. When ordering, specify quantity .. (100, 200 etc.) and give the Needle E.D.P. Number.

| TYPE                            | APPLICATION  | E.D.P. NUMBER | CODE NUMBER | NEEDLE BLADE SIZE |
|---------------------------------|--|---------------|-------------|-------------------|
| ROUND POINT<br>LONG SHANK       | Applicable to the majority of women fabrics, knits and other materials of similar consistency. The Long Shank needles have added stiffness in the blade which permits the use of one size smaller needle than would be normally required. Long Shank needles can not be used on heavy material that would be penetrated by the tapered portion of the needle shank.  | 02-0500-1-000 | 500-LS-000  | Extra Fine        |
|                                 |  | 02-0500-1-100 | 500-LS-00   | Very Fine         |
|                                 |  | 02-0501-1-110 | 501-LS-0    | Fine              |
| ROUND POINT                     | Applicable to closely women fabrics or where sewing is over heavy seams. Particularly in cottons. In sewing, the Ball Eye produces a hole in the fabric slightly in excess of the needle blade diameter, thereby reducing needle heating below that of a needle with uniform blade diameter.   | 02-0501-0-111 | 501-1       | Medium            |
|                                 |  | 02-0501-0-112 | 501-2       | Heavy             |
|                                 |  | 02-0501-0-113 | 501-3       | Very Heavy        |
| ROUND POINT<br>BALL EYE         | The Double Groove needle should be used only when conditions justify it because it casts a smaller loop than standard needles and may introduce skipping. For this reason looper points should be set close to needle blade. This needle is used on materials having a tendency to trap the thread in its descent into the work which affects the thread takeup or causes the thread to break at the needle's eye. | 02-0502-0-111 | 502-1       | Medium            |
|                                 |  | 02-0502-0-112 | 502-2       | Heavy             |
|                                 |  | 02-0502-0-113 | 502-3       | Very Heavy        |
| ROUND POINT<br>DOUBLE<br>GROOVE | Applicable to fabrics which offer high resistance to needle penetration. Also recommended in cases where fast timing of the loopers is necessary. This needle differs from the 501 type needle only in length from the eye to the point.   | 02-0503-0-111 | 503-1-DG    | Medium            |
|                                 |  | 02-0503-0-112 | 503-2-DG    | Heavy             |
|                                 |  | 02-0503-0-113 | M3-3-DG     | Very Heavy        |
| EXTRA LONG<br>POINT BALL<br>EYE | Applicable to synthetic fabrics, particularly of the tightly women or tightly knitted types where the fibers of the material are subject to damage by conventional sharp pointed needles. The Long Shank needles of this type have the advantages stated above for Round Point Long Shank needles.   | 02-0504-0-111 | 504-1       | Medium            |
|                                 |  | 02-0504-0-112 | 504-2       | Heavy             |
|                                 |  | 02-0504-0-113 | 504-3       | Very Heavy        |
| BALL POINT<br>LONG SHANK        | Applicable to leather and similar materials where conventional sharp pointed needles tend to leave excessive punctures. The split made by Rockad Point needles in leather will tend to close up after penetration. This needle permits a higher stitch density than is possible in leather with a Round Point needle.  | 024505-1-100  | 505-LS-00   | Very Fine         |
|                                 |  | 02-0505-1-110 | 505-LS-0    | Fine              |
| BALL POINT                      |  | 02-0505-0-111 | 505-1       | Medium            |
| ROCKED<br>POINT BALL<br>EYE     | Applicable to fabrics containing a high percentage of starch or similar substances which tend to cause needle heating or resistance to proper pulling up of the stitches.  | 02-0506-0-111 | 506-1       | Medium            |
|                                 |  | 02-0506-0-112 | 506-2       | Heavy             |
|                                 |  | 02-0506-0-113 | 506-3       | Very Heavy        |
|                                 |  | 02-0506-0-114 | 506-4       | Extra Heavy       |
| SPEAR POINT                     |  | 02-0508-0-111 | 508-1       | Medium            |
|                                 |  | 02-0508-0-112 | 508-2       | Heavy             |
|                                 |  | 02-0508-0-113 | 508-3       | Very Heavy        |

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**COLOURED MARKING ON THE MACHINE**

---

**COLOURED MARKING**Screw - top links: *Yellow marks*

- 1. Loosing and following disassembly of this link causes distinctive intervention to the mechanism adjustment, that was done when assembled and sewed off at the factory.
  
- 2. After such an intervention to the mechanism, new adjustment of set mechanism needs to be done and complete check of whole machine adjustment as well.

*Blue marks*

- Screws and nuts secured against loosing with glue „LOCTITE”.

Lubrication locations: *Red marks*

- ***Caution:*** *Lubrication regime adherence is necessary for protection of the reliable long-term machine operation.*

## LUBRICATION

---

1. Red marked places, pertinently the places with sticker with OIL description, must be regularly checked and lubricated, after every 30 hours of operating as of minimal. (*More often when necessary.*)
2. Let the machine cycle 20 times or more , so all excess oil can be removed.
3. Recommended lubricating oil TERESSTIC 68



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## TROUBLESHOOTING

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### TROUBLE DIGEST

The object of this Digest is to make available to the users of Reece Series 101 buttonhole machines information that will aid them in locating troubles and the proper procedure to remedy them.

### PRELIMINARY REMARKS

Reece Buttonhole Machines are of the fully automatic, heavy duty type for industrial use. They are built in a complete line of “Cut Before” and “Cut After”, models with operating cycles as described below:

Operating cycle of Cut Before models:

When starting lever is depressed, the machine automatically: 1. Clamps the material and cuts the buttonhole. 2. Moves rapidly to stitching position by drive from the Left Hand Pulley and spreads the material on the way. 3. Transfers the drive to the Right Hand or Stitching Pulley and stitches the buttonhole. 4. Transfers the drive to the Left Hand Pulley and moves rapidly to stop positions unclamping the material.

Operating cycle of Cut After models:

When starting lever is depressed, the machine automatically: 1. Clamps the material. 2. Moves rapidly to stitching position by drive from Left Hand Pulley and spreads the material on the way. 3. Transfers the drive to the Right Hand or Stitching Pulley and stitches the buttonhole. 4. Transfers the drive to the Left Hand Pulley and rapidly moves to cutting position where the buttonhole is cut, and then to stop position where the material is unclamped.

### ***IMPORTANT :***

Do not disturb an adjustment unless you know why the change is made and the result that it will produce. Note how to restore an adjustment to its original setting.

## TROUBLESHOOTING

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The headings indicate the type of trouble. Below them will be found the probable cause for the trouble and its remedy. Machine failure as indicated by the heading can be traced to one or more of the causes beneath it.

### 1. MACHINE FAILS TO START:

- A) See that the Belts are on properly and power is applied.
- B) If Belts and Pulleys leading from Transmitter are not turning over, but the Center Pulley of the Transmitter is, there may be slipping in the Clutch. Adjust two Screws 01.2065 on Clutch Shoe 02.0526.0.050 inward an equal amount.
- C) If the Belts are turning and Left Wheel Dog 10.3042.2 will not engage Striker 10.3038.1 on Crank. Spring on Shifting Lever 10.3029.1 may be weak off or broken. REPLACE.
- D) Lock Nuts 10.3041 on Left Hand Wheel may have loosened. Screw in and adjust so that Dog 10.3038 has no side play and works freely.
- E) Striker 10.3038 may be broken. REPLACE
- F) Clamp Screw 01.2035 on Shifter Spool 10.3045 may be loose. Adjust and tighten according to instructions under machine adjustments, Sheet 18, Figure 4-5.

### 2. MACHINE STARTED, RAN A SHORT DISTANCE AND STOPPED:

- A) It would be advisable to first check all items under No. 1.
- B) Left Hand Wheel Belt too loose. TIGHTEN.
- C) On Cut Before machines, the pressure on the Cutting Lever is too great. Adjust according to instructions on Sheet 14, Figure 3.
- D) The line-up may be out of adjustment. Follow instructions on Sheet 3, Figure 2-3.
- E) Rocker Arm may be out of adjustment. Follow instructions on Sheet 16, Fig. 5-6, Sheet 17, Figure 1a, 2a, 3a and Sheet 18, Figure 4-5.

- F) Spring 01.5450 on Clutch 10.1089 may be broken. REPLACE.
- G) Pin in Drive Cam 10.1095.3 may be broken. REPLACE Drive Cam 10.1095.3
- H) Sector teeth may be clogged with dirt. Take out Stud 10.3026 and test by rotating the whole assembly back and forth.

### 3. MACHINE STUCK TIGHT THROUGH INTERFERENCE

- A) Separate the stitching mechanism from the feeding mechanism by removing Shoulder Screw 01.1132. If the interference is in the stitching mechanism the Stop Wheel 10.1088.0.050 on the right hand side will not turn after it is unlocked. Trace for the cause in the stitching mechanism by taking out Screw 10.3008, which disconnects Looper Drag Link 10.1067 from Looper Rocker 10.3006.0.165 or 10.3006.0.200. This will definitely place where the sticking occurs, either in the race assembly or in the Head.
- B) If the Stop Wheel 10.1088.0.050 does turn after the Shoulder Screw 10.1111 is removed, crank the machine with the Left Hand Handle and, if it still will not move, eliminate the probable possibilities for the sticking by disconnecting the units depending on movement from the Main Cam. If the Main Cam will not move after working the Handle back and forth, it will be necessary to take out the Main Cam to remove the interference: unless, it may be removed through one of the various openings in the Cam Case.

## TROUBLESHOOTING

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### 4. STITCHING OPERATION FAILS TO START OR HAS STARTED AND STOPPED:

- A) Right Hand Belt on wrong.
- B) Spring 01.5450 off or broken. REPLACE.
- C) Pin in Drive Cam 10.1095.3 broken. REPLACE Driver Cam 10.1095.3.
- D) Pivot of clutch 10.1089 not working freely in hole of Stop Wheel 10.1088.0.050. Smooth Pivot and clean hole in Stop Wheel.
- E) Pivot of Clutch 10.1089 broken. REPLACE.
- F) Set Screw in Feed Cam 10.1093 worked out. Screw in tightly.
- G) Spring 01.5088 on Trip Lever 10.1124 broken. REPLACE.
- H) Trip Lever out of adjustment. Adjust according to instructions on Sheet 17, Figure 3a.
- I) Dog 10.1117 slipped. Reset squarely and tighten.
- J) Stitching mechanism stuck through interference. Follow instructions under heading (3) A-B.
- K) Check stop motion adjustments on Sheet 16, Fig. 5-6, Sheet 17, Fig. 1a, 2a, 3 a, and Sheet 18, Fig. 1-2, 3-4, 5.

### 5. FEEDING UNEVEN:

- A) Belts leading from Transmitter to machine either too tight or loose.
- B) Belt from Main Shaft to Transmitter slipping. Shorten Belt.
- C) Clutch on Transmitter slipping. Adjust the two Screws 01.2065 on Clutch Shoe 04.0526.0.050 inward an equal amount.
- D) Left Wheel does not run freely on Worm Shaft. Oil thoroughly through hole in Crank 10.3037.1.
- E) Transmitter may not be set close enough to the main Shaft, causing Belts to tighten unduly when the machine feeds away from operator. This will cause racing of the machine when it feeds towards the operator. Reset Transmitter inward so that belt angle from vertical is not pronounced on the left side.

- F) Friction on Main Cam either too tight or loose. Adjust according to instructions on Sheet 19, Figure 3.
- G) Friction Collar 10.3046 improperly set. See Sheet 19, Fig.2, for adjusting instructions. Compression on this Collar can be fairly complete.
- H) Teeth in Ratchet 10.3048 worn. REPLACE.
- I) pawls 10.3052 worn or sticking. Refit or replace.
- J) Pawls Springs 01.5018 weak or broken. REPLACE.
- K) Left Hand Wheel adjustment in relation to Rocket Shaft assembly improper. Adjust according to instructions on Sheet 16, Fig. 5-6, Sheet 17, Fig. 1a, 2a, 3a and Sheet 18, Fig. 4-5.

### 6. MACHINE TURNING HARD AT EYE:

- A) Dirt lodged between Upper and Lower Sector Teeth. Clean Out.
- B) Adjusting Collar 10.4023 set up too tight. Ease off slightly.

### 7. STOP MOTION OF STITCHING MECHANISM DOES NOT STOP PROPERLY.

- A) Check adjustment in their order on Sheet 16, Fig. 5-6, Sheet 17, Fig. 1a, 2a, 3a, and Sheet 18, Fig. 1, 2, 3, 4, 5.
- B) Spring 01.5013 too weak or broken. REPLACE.
- C) Rocker Shaft 10.1093 binding in Head Casting Free it.
- D) Too much side play in Rocker assembly. Take out according to instructions on Sheet 17, Fig. 3a, (See note at bottom of Sheet 17).

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## TROUBLESHOOTING

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- E) Lever 10.1085 not functioning properly.  
Turn the Left Hand Crank Handle until Rocking Lever 10.1098.1.050 moves as far back as it will go and has slightly advanced. Adjust the Lever 10.1085 so that it will show a clearance between its end and the Dog 10.1102.1. When it is working properly the Lever 10.1085 will move up and down on the Cam of the Stop Wheel 10.1088 during the stitching operation and will prevent the forward motion of the Rocking Lever and Bolt 10.1099 until the contact end of Clutch 10.1089 has passed the contact end of the Bolt.
- F) Cushion Spring 01.5009 in Stitch Pulley 10.1094.3.050 broken. REPLACE.
- G) Roll 01.7002 or Stud 01.6350 loose or broken. REPLACE.

### 8. NOISE IN STOP MOTION:

- A) The Right Hand belt on wrong.
- B) Latch Spring 01.5011 broken. REPLACE.
- C) Latch 10.1100 out of adjustment. Adjust according to instructions on Sheet 18.
- D) Pin in Drive Cam 10.1095.3 broken. Replace Drive Cam 10.1095.3.
- E) Spring 01.5450 off or broken. REPLACE.
- F) Stop motion out of adjustment. Follow instructions on Sheet 16, Fig. 5-6, Sheet 17, Fig. 1a, 2a, 3a and Sheet 18, Fig. 1, 2, 3, 4, 5.

### 9. CUTTING LEVER STICKING:

- A) Left Hand Belt too loose. Transmitter Belt Too loose. Shorten.
- B) Pressure on Cutting Lever too great. Adjust according to instructions on Sheet 14, Fig. 3.

### 10. MACHINE DOES NOT STOP AT ITS MOST FORWARD POSITION OR THERE IS A CLICKING NOISE AT THE FINISH OF CYCLE

- A) Left Hand Belt too tight.
- B) Check stopping adjustment according to instructions on Sheet 19, Fig. 1.
- C) Dog 10.3042 and Striker 10.3038.1 are either loose, worn or broken. REPLACE.
- D) Too much friction on Main Cam. Adjust according to instructions on Sheet 19, Fig. 3.
- E) Transmitter out of alignment. Align.

### 11. MACHINE REPEATS CYCLE:

- A) Check stopping adjustment according to instructions on Sheet 17, Fig. 1.
- B) Screw 01.2071 backed out. Screw in.
- C) Spring 01.5019 weak or broken. REPLACE.
- D) Spring 01.5020 weak or broken. REPLACE.

### 12. MACHINE COMPLETES FULL CYCLE BUT DOES NOT STITCH:

- A) Bumper 10.2016 out of adjustment. See Sheet 16, Fig. 3.
- B) Spring 01.5014 weak or broken. REPLACE.
- C) Lever 10.1118 rubbing against Bumper 10.2016. Provide clearance by adjusting Lever 10.1113 so that there is no side play. See note on Sheet 17, Fig. 3a or replace Bumper 10.2016 if bent.
- D) If clearance is still insufficient, check up on alignment according to instructions on Sheet 3, Fig. 3.
- E) Stop motion out of adjustment. See Sheet 16, Fig. 5, 6, Sheet 17, Fig. 1a, 2a, 3a and Sheet 18 Fig. 1, 2, 3, 4, 5.

## TROUBLESHOOTING

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### 13. MACHINE STITCHES A SHORT DISTANCE AND STOPS. THEN COMPLETES CYCLE:

- A) Trip Lever 10.1124 out of adjustment. Adjust according to instructions on Sheet 17, Fig. 3a.
- B) Trip Lever Spring 01.5088 broken. REPLACE.

### 14. CLAMPING AND UNCLAMPING:

- A) To raise Clamp Arms for more or less clearance.
- B) To raise Clamp Arms sooner or later.
- C) To apply more or less pressure on Clamp Arms. See Sheet 15, Fig. 2, for adjustment instructions.

### 15. CLAMP PRESSURE UNEVEN OR INSUFFICIENT AFTER ADJUSTMENT:

- A) Either Screw 01.2046 holding Bearing 10.2025 is loose. Tighten.
- B) Screws 01.2048 or 01.2539 loose or broken. Tighten or replace.
- C) Pull-Downs 10.2028.1 and 10.2027.1 broken. REPLACE.
- D) Screws 01.2051 holding Block 10.2045 or 10.2049 loose or broken. REPLACE.

### 16. CLAMP SPREADING UNEVEN:

- A) Knife Holder 10.3058 or Knife Holder 10.3070 (all) out of center. Align according to instructions on Sheet 14, Fig. 6.
- B) Parallel adjustment incorrectly set. Adjust according to instructions on Sheet 15, Fig. 1.
- C) Clamp pressure uneven, check instructions under heading (15) of Digest of Troubles.
- D) Knife too low. Shim up Knife Holder 10.3058 (tall) or 10.3070 so that Knife is not more than 1/32" below level of Clamping Mats.

### 17. MACHINE NOT CUTTING PROPERLY:

- A) Cutting Steel needs filing. Resurgace and adjust Cutting Pressure according to instructions on Sheet 14, Fig. 3, 4.
- B) Cutting Steel 10.1069 (all) too low. Replace - see Sheet 14, Fig. 3, 4.
- C) Knife chipped or broken. REPLACE.
- D) Pressure too high or low. Adjust according to instructions on Sheet 14, Fig. 3.  
*If Cutting Block is new and pressure is insufficient to cut, after a reasonable adjustments:*
- E) Screw 01.2038 holding Anvil Block may be loose or broken. Tighten or replace.
- F) Screw 01.2343 holding Head to Cam Case may be loose or broken. Tighten or replace.
- G) Cutting Cam Follower 10.1071.1 may be worn. REPLACE.
- H) Cutting Lever 10.1154.0.050 C. B. or Cutting Lever 10.1068.1.050 C. A. cracked or broken. REPLACE.

### 18. CUTTING UNEVENLY:

- A) Needle bent. Replace Needle.
- B) Cutter not centralized or out of alignment. Follow instructions on Sheet 14.

### 19. CUTTING STITCHES ON A CUT AFTER MACHINE:

- A) Follow procedure under heading (18) "Cutting Unevenly".
- B) Thread tension too loose. Tighten.
- C) Clamps not holding work properly. See heading "Clamping and Unclamping" (14) and (15).
- D) Cutter too low. Shim up Knife Holder 10.3058.(all) with Shims 10.3075.1.992, 10.3075.1.993 so that Knife is about 1/32" below the top level of Mats 10.2048 (all) and 10.2044 (all).

## TROUBLESHOOTING

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- E) Bevel sides of Cutting Steel 10.1069 (all) close to the cutting impression.
- F) Clamp spreading insufficient. Adjust for more spread - see Sheet 9, Fig. 4
- G) When cutting of stitches takes place on both sides, give more space between right and left banks of stitches, according to instructions on Sheet 7, Fig. 2, 3.

### 20. DISTORTION OF EYE:

- A) Cord not drawing freely. Check source of trouble and eliminate.
- B) Hole in Throat Plate 10.4012 (all) too small. String out hole.
- C) Throat Plate 10.4012 (all) too high. Seat it properly.
- D) Edge of Throat Plate 10.4012 (all) interfering when stitching around eye. Bevel edge slightly on the stem side.
- E) Throat Plate 10.4012 striking Mats 10.2044 (all) or 10.2048 (all) around eye. Make clearance.
- F) Knife blunt or too thick. REPLACE.
- G) Thread tension not balanced. See Sheet 10, Fig. 3, 4.
- H) Spread on Clamps too large or unequal. Reduce or equalize. See Sheet 9, Fig. 4 and Sheet 15, Fig. 1.
- I) Stud 10.3020 out of adjustments. See Sheet 16, Fig. 3, 4.
- J) Cutter too low. Shim up Knife Holder 10.3058 (all) with Shims 10.3075.1.992 or 10.3075.1.993 so that Knife is about 1/32" below the top level of Mats 10.2044 (all) and 10.2048 (all).
- K) Bevel Cutting Steel 10.1069 (all) close to the cutting impression.
- L) Check race swing for 180° turn as well as squareness. See Sheet 11, Fig. 1 - adjustment 1, 2.

### 21. SKIPPING STITCHES:

- A) Needle bent or incorrectly set. Replace or reset according to instructions on Sheet 6, Fig. 1.
  - B) Machine not threaded properly. See Sheet 4, for threading instructions.
  - C) Loopers too close or too far away from Needle. Adjust according to instructions on Sheet 13, Fig. 1.
  - D) Loopers not equalized. Adjust according to instructions on Sheet 12, Fig. 1, 2, 3, 4, 5.
  - E) Loopers dip across Needle too fast or slow. Adjust according to instructions on Sheet 12, Fig. 6.
  - F) Loopers bent, worn or out of shape. REPLACE.
  - G) Needle Bar too high or too low. Adjust according to instructions on Sheet 13, Fig. 6, 7.
  - H) Spreaders out of adjustment. Adjust according to instructions on Sheet 13, Fig. 2, 3, 4, 5.
  - I) Spreaders sticking. Clean shank - if Spreader Spring 01.5024 or 01.5025 are short or sticking, REPLACE.
  - J) Spreaders too high or too low. Spring the Spreader near the shank upward or downward as required. (Spread point or fork should ride freely over the top of Looper).
  - K) Thread Loop not passing over the shoulder of Left Hand Looper. Stone corner slightly and buff or replace with new Looper.
- CAUTION:**  
Do not touch the under surface of Looper with emery cloth or any other abrasive ingredients. Use only the smoothest stone and on the corner only. Polish by buffing.
- L) Work of a flimsy or rubber nature, adjust Looper-dip to 1/8" instead of 3/32".
  - M) Throat Plate 10.4012 (all) bent or hole is too large. REPLACE.
  - N) Observe whether Clamp Feet 10.2046.0.750 (to 755) or 10.2050.0.750 (to 755) are holding work firmly. If not, locate trouble and correct.

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**TROUBLESHOOTING**

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- O) Clamp Foot 10.2050.0.750 (to 755) and 10.2046.0.750 (to 755) too far away from outside needle stroke. Loosen Screws 01.2051 and adjust Clamp Blocks 10.2045 and 10.2049 inward to suit.
- P) Too much play in Looper Carrier 10.4002 (all). Adjusting Collar 10.4023 too loose. Adjust according to instructions on Sheet 14, Fig. 1.
- Q) Too much play in Looper Carrier 10.4002. Check up on worn parts or Rolls and replace.
- R) Clamp spread insufficient to take up slack in cloth. Adjust according to instructions on Sheet 9, Fig. 4.
- S) Springs 01.5026 weak or broken. REPLACE.
- T) Vibrator Block 10.1026.2 sticking due to extreme pressure of Buttons 10.1025.1 on Needle Bar flats. Locate the cause and remove pressure. Buttons should bear very lightly against the flats.

**22. SKIPPING AT THE START  
USUALLY CAUSED BY THE  
FOLLOWING.**

- A) Fork in Left Spread not covering hole in Looper.
- B) Right Hand Looper too fast.
- C) Looper-dip too slow or fast.
- D) Loopers too far away from Needle.
- E) clamp Feet too far away from Needle.
- F) Thread not going over shoulder of the Left Hand Looper. Treatment on any of the previous troubles given under heading "Skipping Stitches".

**23. SKIPPING AT THE JUNCTION  
OF THE Y OF THE TAIL BAR:**

- A) Cord very hard and heavy, causing Needle deflection. In this case it is well to speed up slightly the time of the Right Hand Looper across the Needle.

**24. STITCHES RAVELING BACK AT  
END OF BUTTONHOLE**

- A) Release on tension is too great. Bend back end of Release Lever 10.1012.1 to just release.
- B) Right Hand Looper too slow across Needle. Speed it up. See instructions on Sheet 12, Fig. 5, for adjustment.
- C) Right Hand Looper bent, worn or out of shape. REPLACE.
- D) Right Hand Spreader not opening enough. Follow instructions on Sheet 13, Fig. 4, 5 for adjustment.
- E) Right Hand Spreader too straight. Curve more or replace.
- F) Hole in Throat Plate too large. Replace Throat Plate.
- G) Skipping the last stitches. Clamps not holding work securely. Follow instructions in Trouble Digest under Heading 14, 15, 16.
- H) Needle penetrating in center of Fly Bar. Close up banks of stitches. See Sheet 19, Fig. 2, for adjustment instructions.

**25. BREAKING UPPER THREAD:**

- A) Needle bent or incorrectly set. REPLACE or reset according to instructions on Sheet 6, Figure 1.
- B) Machine not threaded properly. See Sheet 4 for threading instructions.
- C) Follow all instructions for Looper and Spreader adjustments on Sheet 12 and 13.
- D) Tension on upper thread may be right. Loosen for a minimum pull without affecting stitch. See Sheet 10, Fig. 3, 4 for adjustment.
- E) Remove all sharp spots over which the thread leads: The Take-up Lever, the Needle Bar, the Throat Plate, Loopers and Spreaders.
- F) Needle striking edge of Throat Plate. Straighten, clear away interference with emery cloth or replace Throat Plate.

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## TROUBLESHOOTING

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- G) Prong of Left Spreader or end of Right Spreader too high or protruding over edge of Loopers. Spring downward, replace and reposition. See Sheet 13, Fig. 2, 3, 4 for adjustment.
- H) Needle striking Clamp Foot 10.2050.0.750 (to 755) or 10.2046.0.750 (to 755). Adjust by loosening Screw 01.2051 and move Clamp Arm outward to suit.
- I) Needle eye too small. REPLACE with a larger size Needle.
- J) Follow instructions under heading (21) "Skipping Stitches" from A to F.
- 26. THREAD BREAKING AND RUNNING BACK OUT ON NEEDLE BAR.**
- A) Spring 01.5004 against Tension Discs 01.4039 too weak. REPLACE.
- B) Spring 01.5005 on Take-Up Lever 10.1051 broken. REPLACE.
- C) Upper Tension set up too tightly. Loosen. See Sheet 10, Fig. 3, 4.
- 27. BREAKING UNDER THREAD:**
- A) Tension on thread too tight. Loosen. See Sheet 10, Fig. 3, 4.
- B) String out hole in Spreader Stop 10.4007.
- C) String out hole in Left Hand Looper.
- D) String inside of V in Left Hand Spreader prong.
- E) Remove sharp spots in Throat Plate.
- F) Smooth sides of Mats 10.2044 (all) and 10.2048 (all).
- 28. BREAKING, BENDING OR HOOKING NEEDLES:**
- A) Follow instructions in Digest under heading (7) "Stop Motion of Stitching Mechanism Does Not Stop Properly" - A to G.
- B) Left Hand Wheel 10.3039 does not run freely on Worm Shaft 10.3047.1.050. Oil thoroughly through hole in Crank Lever 10.3037.1.
- C) Needle Bar too high or too low. Adjust according to instructions on Sheet 13, Fig. 6, 7.
- D) Needle guard 10.4010.2 too far away from Needle. Spring Guard inward to barely contact Needle when Needle Bar is at its lowest stroke.
- E) Vibrations of Needle Bar not square with Race 10.4001.1 (all). Adjust according to instructions on Sheet 11, Fig. 3.
- F) Loopers too close to Needle. Adjust according to instructions on Sheet 13, Fig. 1.
- G) Needle striking Clamp Feet 10.2050.0.750 (to 755) or 10.2046.0.750 (to 755). Loosen Screw 01.2051 and move Clamp Arm outward to suit.
- H) Needle striking Mat 10.2048 (all) or 10.2044 (all). Follow instructions in Digest under heading (16) "Clamp Spreading Uneven". If any of the above instructions do not provide proper clearance, file the Mat to clear Needle.
- I) Roll 01.7002 loose or off Rocking Lever 10.1098.1.0850. REPLACE.
- J) Spreaders out of adjustment. See Sheet 13, Fig. 2, 3, 4, for adjustment instructions.
- K) Needle striking edge of Throat Plate. String out Throat Plate or replace.
- L) Transmitter Pulley on the left side too large. Reduce to 1/2" D smaller than Right Hand Pulley. The Left Transmitter Pulley should never be larger than the right hand one.
- M) Friction Collar 10.3046 or Brake Band 10.3036 too loose. Adjust according to instructions on Sheet 19, Fig. 2, 3.

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### 29. CHANGING CHARACTER OF BUTTONHOLE:

- A) To make the button hole even at the finish, adjust according to instructions on Sheet 16, Fig. 1, 2.
- B) To adjust length of buttonhole, see Sheet 8, Fig. 1, 2, for adjustment instructions.
- C) To increase or decrease the number of stitches in the entire buttonhole, see Sheet 10, Fig. 1 for instructions.
- D) To increase or decrease the number of stitches in the eye of buttonhole without affecting the sides, see Sheet 10, Fig. 2, for instructions.
- E) To increase or decrease width of the button hole, see Sheet 9, Fig. 3 for instructions.
- F) To increase or decrease the amount of material, "Cutting Space", in the center of the buttonhole on a "Cut After" machine, see Sheet 9, Fig. 1, 2 for instructions.
- G) To spread the work for more opening in center of button hole slit on a "Cut Before" machine, see Sheet 7, Fig. 4, for instructions.
- H) To correct eye distortion, see Trouble Digest under heading (20) "Eye Distortion" from A to L.

### 30. PULLING UP STITCHES:

Results depend very much on the thread used. A coarse and rough thread on certain grades of work produces excessive friction which affects the pulling up of the stitches. Although the purl can be set under these conditions, it is usually accomplished by excessive tension or by the use of needles unnecessarily large. Our experience has taught us that a fairly smooth thread of uniform consistency in either the soft or hard finish will not only give dependable results but will, in the final analysis, prove to be the cheapest.

**Important** - Loopers and Spreaders must be correctly adjusted, check adjustment according to instructions on Sheet 12 and 13.

- A) Check the Needle for straightness.
- B) Lint or dirt lodged between Tension Disks, Clean out.
- C) Balance the tension on threads so that they will give the best results with the lowest tension.
- D) Smooth the top lip surface on Throat Plate 10.4012 (all) at the opposite side of cord hole.
- E) Upper thread must slide over shoulder of Left Looper freely. Follow instructions under heading (21) "Skipping Stitches" at K and note **Caution**.
- F) Either Looper rough or sprung. Polish or replace with new Looper.
- G) Spreaders rough or not working evenly. Smooth and adjust according to instructions on Sheet 13, Fig. 2, 3, 4.

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### CORD TRIMMER

This part of the Digest concerns the cord trimmer units and problems peculiar to the Cord Trimming Machine. Troubles on the basic part of this machine, where there is a similarity of parts and functions, should be looked up in the Digest on previous pages.

#### **Theory and Operation of the Trimming Function**

When the stitching of the buttonhole is completed, the Head and Cam Case move forward to cutting position. This forward movement is ample to cause the upper thread to break at the knot of the last stitch. The severed end is then picked up and held by the thread pick up hook actuated by the cutting lever as shown on Sheet 24, Figure 2. It will be noticed that during the sewing cycle the thread tension assembly rocks to the front of the machine and retracts when the machine comes to a full stop. This action provides the desired quantity of upper thread to start the next buttonhole.

In the meantime, as the upper thread is severed at the knot during the Head and Cam Case forward movement to cutting position, the under thread draw off mechanism goes into action as shown on Sheet 24, Figure 3, to draw off a supply of under thread from the source of supply and through the under thread tension. The free under thread thus provided is then drawn through the slot in the Throat Plate by the action of the thread hook, Sheet 25, Figure 1. This action occurs just before the under thread and cord are severed by the trimming shears. The combined actions on the under thread, as outlined, and the extent of these actions assure that a sufficient length of under thread extends through the slot in the Throat Plate as shown on Sheet 25, Figure 2, for the start of the next buttonhole.

The trimming shears can operate only when the cloth holding members, commonly referred to as clamps have risen to release the work. Therefore in order that the work shall remain firmly held in trimming position, the Hold-Down finger shown Sheet 26, Figure 5 is utilized as an auxiliary work holding member. The Hold-Down member is brought into action as the Head and Cam Case are moving forward to cutting position. The trimming shears are then free to operate and no movement of the work can occur to effect the trimming action or nullify the thread draw-off provisions as outlined above.

The trimming shears which are mounted on the clamps, are actuated by a lever on the race. The trimming occurs as the race rotates just before the machine stops. Only the under thread and cord are trimmed by the shears. The upper thread as had been noted above is not served by the trimming shears. After the cord has been severed, the excess length of cord is drawn back by the weight mechanism shown Sheet 26, Figure 1, so that only a sufficient end is left protruding through the hole in the Throat Plate to start the next operation.

The operation of the various elements may be observed in slow motion by stopping the machine at the completion of the last stitch and then turning the left hand crank slowly until the machine reaches its normal stopping position.

It is advisable to make sure that the machine is stitching and operating properly before making adjustments to the trimming mechanism.

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## TROUBLESHOOTING

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### 1. END OF UPPER THREAD IS INSUFFICIENT FOR A PROPER START:

- A) Pick-up Hook 10.1207 missing the thread. Felt 10.1213 may need replacing.
- B) Burr on hook of Pick-up Hook 10.1207. Remove burr.
- C) Cutting Lever out of center. Centralize, see Sheet 14, Fig. 2 for adjustment instructions.
- D) Adjust Plate 10.1204 for more dip. See Sheet 24, Fig. 2, for adjustment instructions.
- E) Pick-up Hook 10.1207 broken. REPLACE.
- F) Upper Thread Draw-off out of adjustment. See Sheet 24, Fig. 1 for adjustment instructions.
- G) Throat Plate 10.4012.0.013 sharp. Smooth.
- H) Under surface of the right hand portion of the notch in upper Shear Blade 10.2207.0.350 adjacent the cutting edge, is too sharp. Round and smooth this part of Shear Blade edge.

### 2. END OF UPPER THREAD TOO LONG:

- A) Upper Thread Draw-off out of adjustment. See sheet 24, Fig. 1 for adjustment instructions.

### 3. LENGTH OF UNDER THREAD SHORT FOR A PROPER START:

- A) Check adjustment according to instructions on Sheet 24, Fig. 3 and Sheet 25, Fig. 1, 2, 3, 4, 5.
- B) Throat Plate 10.4012.0.013 burred or sharp. Smooth.
- C) Check Spring 01.5043 too lively. Reduce movement by adjusting Stop Wire 10.4211 inward. See Sheet 25, Fig. 3, 4, for adjustment instructions.
- D) Thread Guide 10.4212 not high enough. Adjust according to instructions on Sheet 25, Fig. 5.

- E) Upper Thread Draw-off needs checking. It may not be pulling off enough upper thread, contributing largely to the missing of the under thread. Adjust for more thread according to instructions on Sheet 24, Fig. 1.
- F) Left Loper grooved, bent or too slow. REPLACE Loper, or speed up if slow. See Sheet 12, Fig. 5, for adjustment instructions.

### 4. UNDER THREAD CREEPING UNDER THE FORK IN SPREADER:

- A) Left Spreader too high or low. Follow instructions in Trouble Digest under heading (21) "Skipping Stitches" at J.
- B) Fork in Left Spreader short. REPLACE.
- C) Upper thread not slipping over shoulder on Left Loper fast enough, thus forcing the under thread under the fork of the Left Spreader at the narrow point of Loper. Very important to have the upper thread slide freely on Left Loper. Follow instructions in Trouble Digest under heading (21) "Skipping Stitches" at K, and note *Caution*.

### 5. END OF CORD TOO LONG FOR START

- A) Not enough tension on Clinch Spring 10.4209. Adjust according to instructions on Sheet 26, Fig. 1, 2.
- B) Clinch Spring 10.4209 bent. REPLACE or bend back: inward or outward as required.
- C) Adjust Stop 10.4220 downward according to instructions on Sheet 26, Fig. 1.
- D) Cord catching under the back of Upper Shear Blade 10.2207.0.350. Clear away interfering portion of Shear.
- E) Side of cord hole in Throat Plate 10.42012 sharp or cord hole too small. String out.

## TROUBLESHOOTING

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### 6. END OF CORD TOO SHORT:

- A) Adjust Stop 10.4220 upward according to instructions on Sheet 26, Fig. 1

### 7. HOLD-DOWN FINGER 10.2212 NOT HOLDING WORK PROPERLY:

- A) Too much up and down play in Latch 10.2029. Tighten or REPLACE Screw 10.2030.
- B) Hold-down Finger 10.2212 bent upward. REPLACE or bend back to hold.

### 8. SHEARS NOT CUTTING:

- A) Dull. Stone edges. See Sheet 26, Fig. 3 for instructions.
- B) Not closing properly. Adjust according to instructions on Sheet 26, Fig. 4.
- C) Shear Blade 10.2207.0.350 or 10.2206 sprung, nicked or worn. REPLACE blade.
- D) Tension between blades insufficient. See Sheet 26, Fig. 3 for adjustment instructions.
- E) Spring Washer 01.5062 weak or broken. REPLACE.

### 9. TRIMMING NOT CLOSE ENOUGH

- A) Taper Bar too short. Adjust according to instructions on Sheet 8, Fig. 1.
- B) Follow instructions in Cord Trimmer Trouble Digest under heading (5) "End of Cord Too Long for Start", A to E.
- C) Follow instructions in Cord Trimmer Trouble Digest under heading (8) "Shears Not Cutting" A to E.

- D) Follow instructions in Cord Trimmer Trouble Digest under heading (7) "Hold-down Finger Not Working Properly" A to B.

- E) Pulling off too much under thread for start. Cut down on supply. See Sheet 24, Fig. 3 and Sheet 25, Fig. 1, 2, for adjustment instructions.

### 10. WORK BEING DRAWN INTO SHEARS:

- A) Cord drawing hard or sticking. Trace cause and remedy it.
- B) In order to be doubly sure that the upper thread breaks properly, provision has been made, in case the tension and forward motion of the machine fail, for the upper thread to be placed in the groove of the Throat Plate as well as the under thread, with the result that the Thread Hook 10.4204 when pulling off the slack of the under thread, will put sufficient tension on the upper thread to break it. The Throat Plate slot at entry should be beveled smooth from the bottom side so that the corner of the Throat Plate will not hinder the entrance of the upper thread into the channel. Care should be exercised not to make the channel wider from the top side except slightly rounding the corners, otherwise the cord will interfere.