AMF

DECORATIVE STITCHING MACHINE 59-83/7052

TYPE 2, 3 & 4

INSTRUCTIONS

AMF

APPAREL EQUIPMENT DIVISION
2115 West Laburnum Avenue. PO Box 9168. Richmond. VA 23227 · 804/355-7961
AMF INCORPORATED

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ADJUSTMENTS

The following standard is established for the timing and setting of mechanisms in their relation to each other at the final assembly of the 59-83 Ornamental Slip Stitching Machine.

The following is a list of diagrams arranged to explain the instruction test.

For Timing and Adjustment of the Angle Stitch Attachment see Page 13.

1 - ADJUSTMENT OF NEEDLE BARS

a - Using Gage #59-83-1031E set Upper Needle Bar 15/16" apart from Lower Needle Bar. Set the nose of Upper Needle Bar 7/16" from the top surface of the Standard Throat Plate.

b - Check for proper clamping and releasing of the needle.

c - Check alignment of Needle Bars.

d - Needle must not have more than 1/64" up and down play when clamped in Needle Bar.

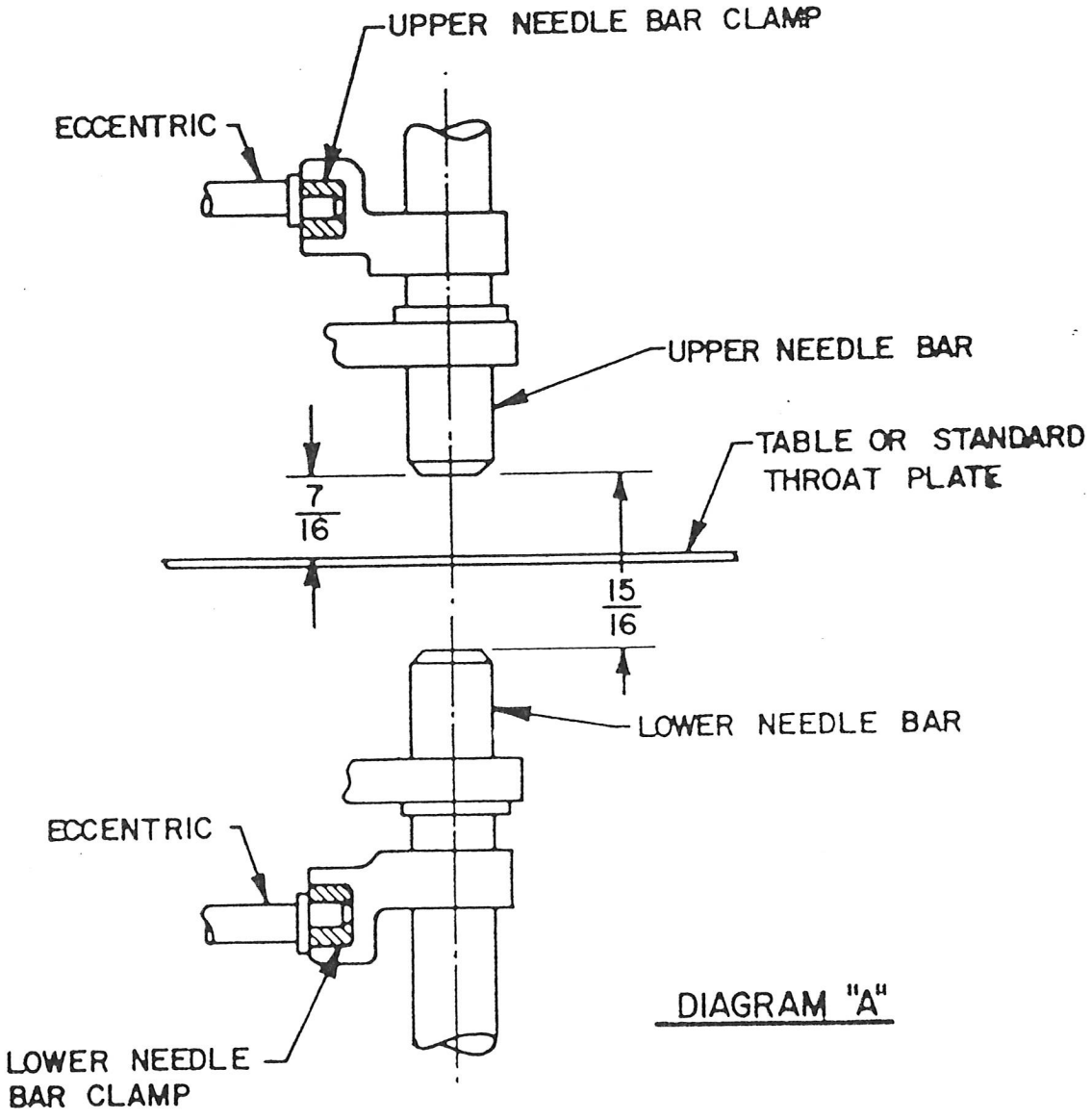


DIAGRAM "A"

2. TIMING AND ADJUSTMENT OF MATERIAL FEED

a. Adjust Feed Dog to move parallel to the table.

b. Set Feed Dog to project about 1/16" above the top surface of the Throat Plate as shown in Diagram B, page 5.

c. Set Feed Dog so that it is in its maximum upward feeding position and ready to feed when lower needle bar has formed the thread loop and has started in its dwell position.

3. TIMING FOLLOWER FOOT

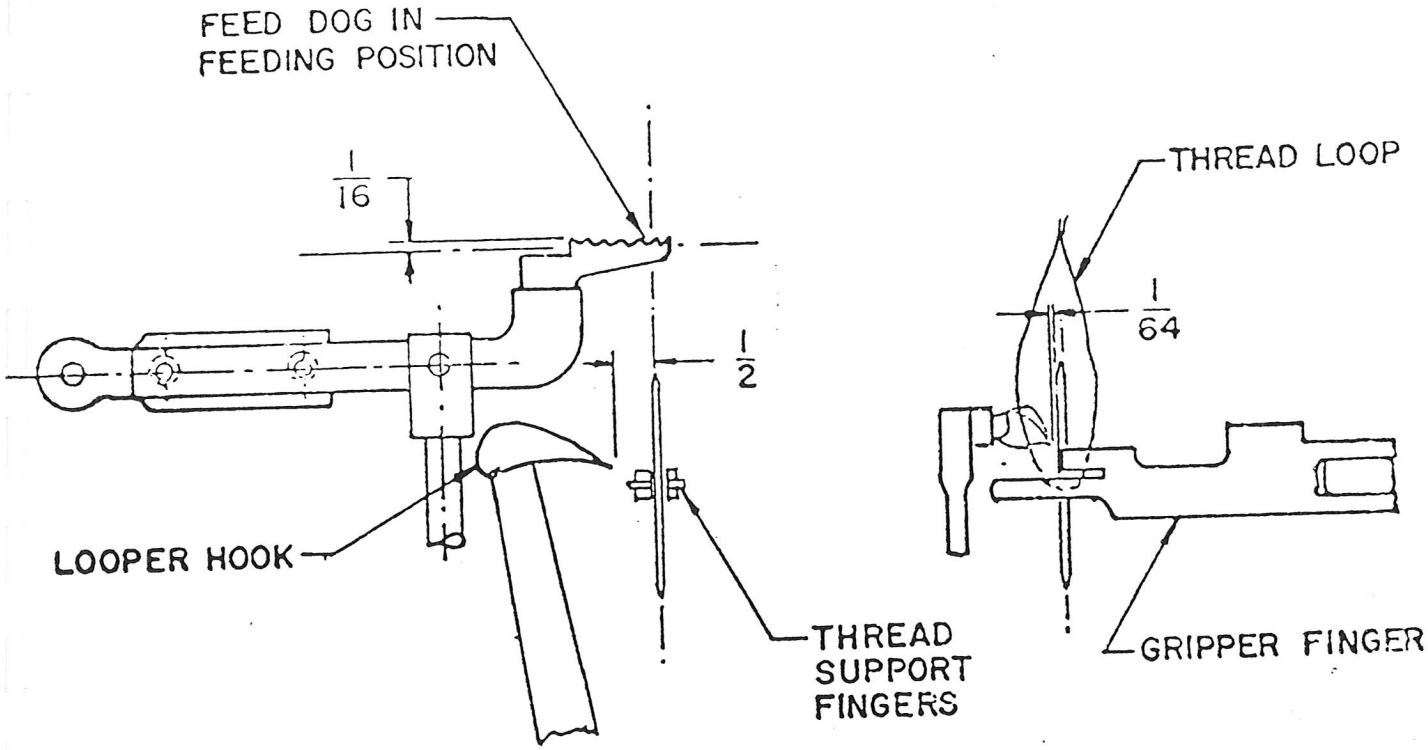
A. Time the Follower Foot to separate simultaneously with the Feed Dog when the feed stroke of the latter is completed.

4. TIMING AND ADJUSTMENT OF GRIPPER FINGERS

a. Set Gripper Fingers to envelope the body of the needle.

b. Time Gripper Fingers to clamp loop thread approximately 1/32" before Needle Bar reaches its dwell position.

Decorative Stitching Machine
E.M.I. 1003
Diagram "B"



MACHINE - ORNAMENTAL SLIP STITCHER

CLASS-59 DIV.-83

REMARKS: USE THIS DIAGRAM FOR TIMING & ADJUSTMENT OF MATERIAL FEED.

5. ADJUSTING OF THREAD SUPPORT FINGERS

a. Adjust Thread Support Fingers to allow 1/32" clearance on either side of needle. Fingers must not touch needle, see Diagram C.

b. Allow 1/16" clearance between Front Thread Support Finger and Thread Channel Support. Diagram C.

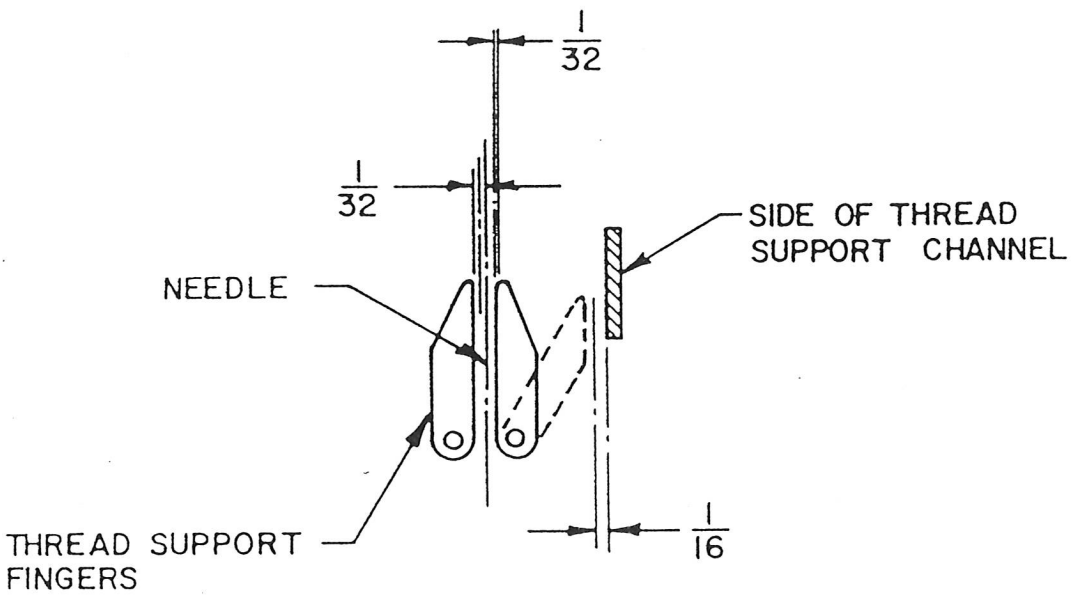


DIAGRAM "C"

6. ADJUSTMENT OF THREAD SUPPORT CHANNEL, THREAD GUIDE AND THREAD TRAP.

a. Set the edge of the Thread Support Channel in line with the nose of the Top Gripper Finger.

b. Distance from tne top of Thread Channel Support to bottom of Thread Guide must not be less than 5/32" See Diagram D.

c. Set Thread Guide Plate 1/32" from Needle Body and its edge in line with center of Feed Dog. See Diagram D.

d. Set Thread Trap in center of Hook Groove and as high into it as possible without touching. Diagram D.

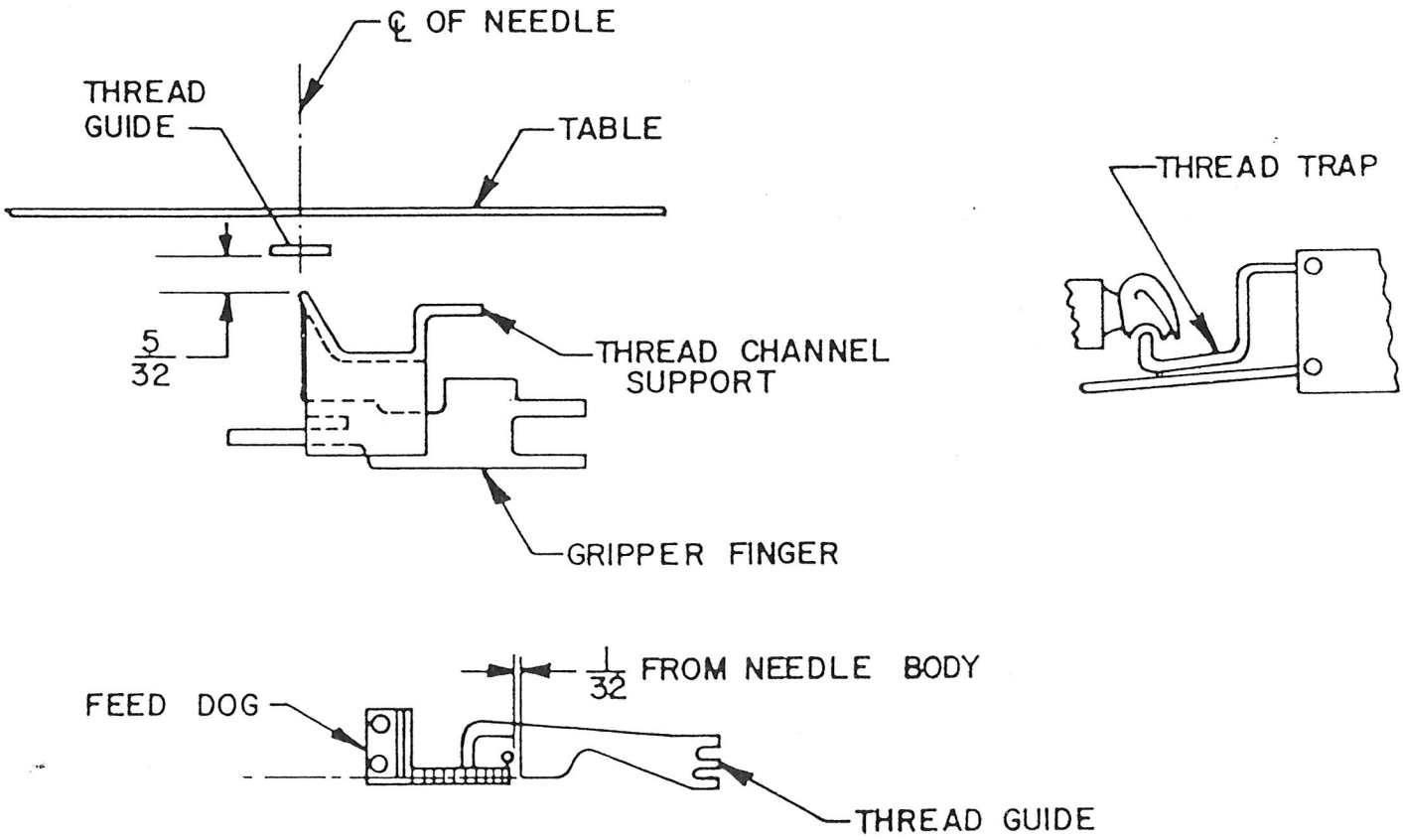


DIAGRAM "D"

7. TIMING AND ADJUSTMENT OF THREAD TENSION HOOK DEVICE.

a. Set Support Block Pivot to position the nose of the Thread Tension Hook 9/32" plus or minus 1/32" from center line of Needle when the Thread Tension Hook is in its forward position. See Diagram E.

b. Time the Thread Tension Hook to be in its rearmost position when Gripper Fingers open.

c. To time Thread Tension Hook set driven spiral gear in proper position.

d. Set Tension Spring without tension when Thread Tension Hook is in its rearmost position. To produce tighter stitches apply more tension on Spring to suit sewing requirements. See Diagram E.

e. The path of Thread Tension Hook must always be directly over Thread Guide as shown in Diagram E.

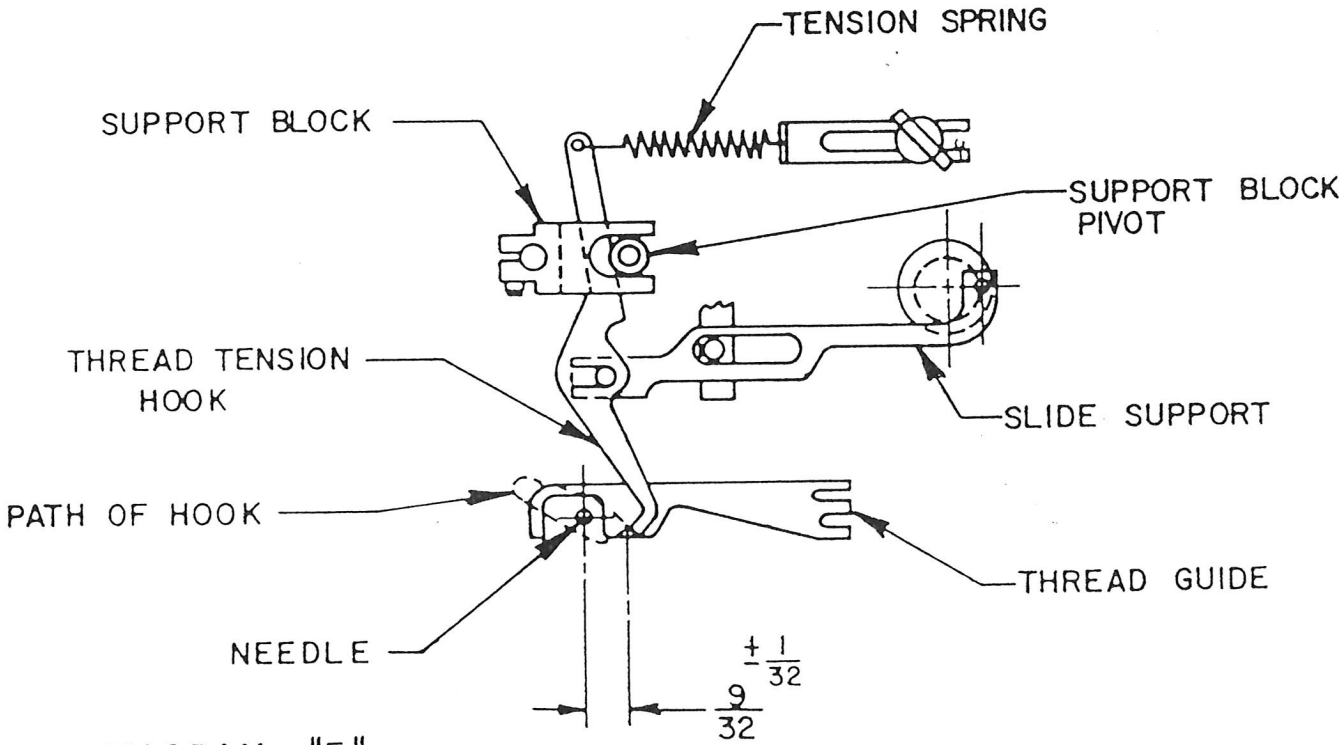


DIAGRAM "E"

8. TIMING THE THREAD CARRIER HOOK

a. Time Thread Carrier Hook so that it will have travelled up 3/16" plus or minus 1/16" when Lower Needle Bar starts to move up from its dwell position.

9. TIMING THE THREAD BRUSH

a. Time the Thread Brush to be completely closed when Upper Needle Bar reaches its topmost position.

10. TIMING AND ADJUSTMENT OF UPPER LEFT AND RIGHT LOOPERS

a. Set Upper Left and Right Loopers 1/64" to 1/32" from the body of Needle and 1/8" to 3/16" from the bottom of Needle Eye. See Diagram F, Page 11.

b. Time both Loopers to pick up thread simultaneously.

c. On angle stitching, needle must be 3/32" from Angle Stitch Throat Plate before Right Looper releases thread.

d. On the Standard Machine needle point must be flush with table when right looper releases thread loop.

e. Adjust Right Looper for 1/16" clearance between thread Finger and Needle Bar side. After the Thread Loop has been released, adjust right looper stop to keep this position. See Diagram F, page 11.

11. SETTING FOR STANDARD STITCH ADJUSTING DEVICE

a. Set stitch Adjusting Slide Block to produce a 1/4" stitch.

b. Clamp Slide Block Arm firmly.

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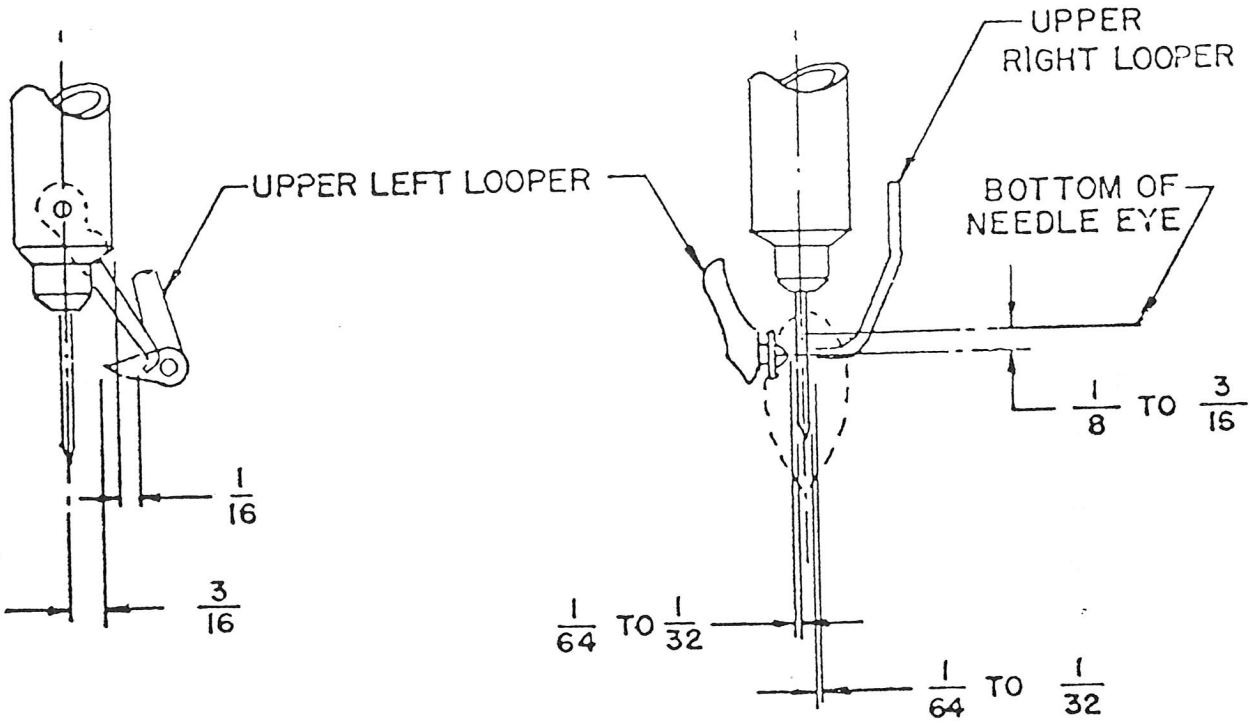
Decorative Stitching Machine
E.M.I. 1003
Diagram "F"



MACHINE - ORNAMENTAL SLIP STITCHER

CLASS - 59 DIV. - 83

REMARKS: TIMING AND ADJUSTMENT OF UPPER LEFT AND RIGHT LOOPERS.

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AMF APPAREL EQUIPMENT DIVISION
GENERAL OPERATING PRECAUTIONS

Equipment described in this manual has been carefully designed and manufactured to our high quality standards. Special attention has been devoted to convenience of operation while simultaneously providing effective hazard protection for operating personnel.

Any piece of machinery can become dangerous to personnel when improperly operated or poorly maintained. Our service personnel are highly skilled and competent in operation and maintenance of our equipment which is installed under their supervision. A major portion of installation supervision time is devoted to instruction and training of your personnel in the operation and maintenance of this equipment. It is incumbent upon you that all personnel who will be expected to operate or maintain this equipment be required to participate in these training and instruction sessions.

Our Service Department is highly skilled in the operation and maintenance of our equipment. It is recommended that you call on their services on a regular and preferably periodic basis to insure proper maintenance of your equipment, and competent training of your personnel.

AMF

AMF Decorative Stitching Machine

APPAREL EQUIPMENT

CLASS 70 DIVISION 52
CLASS 59 DIVISION 83

A M F

WARRANTY POLICY ON NEW AND RECONDITIONED EQUIPMENT

What is covered :

90 day warranty on service. The warranty period shall begin on the completed installation date.

Six months warranty on parts. Any part customer feels is defective, customer must return, freight prepaid, to AMF Clarbro. On receiving the part, AMF will inspect and if the part is found to be defective, it will be replaced at no charge to customer.

What is not covered :

Normal adjustments and routine maintenance will not be covered. This is the sole responsibility of the customer.

Cleaning and lubrication of equipment.

Parts found to be altered, broken or damaged due to neglect or improper installation or application.

Shipping or delivery charges.

WHAT TO DO IF THERE IS A QUESTION REGARDING WARRANTY

The satisfaction and goodwill of owners and lessees of AMF equipment are of primary concern to AMF manufacturers representatives and the AMF Apparel Equipment Division. In the event that a warranty matter is not handled to your satisfaction, the following steps are suggesed :

1. Discuss the problem with the nearest AMF manufacturers representative.
2. Contact the Customer Service Manager at the address below :

AMF CLARBRO
Division of Automated Machinery Systems Inc.
Clayton Wood Close
West Park Ring Road
Leeds LS16 6QQ

Telephone : 0532 759131
Telex : 557588

APPAREL EQUIPMENT

MAINTENANCE CHECKS

CLASS 59 • DIVISION 83

To help insure smooth operation of the AMF Decorative Stitching Machine, the following preventative maintenance should be performed daily, weekly and monthly as indicated:

Daily

1. Clean bottom looper roller, roller must turn freely.
2. Remove any thread and lint from thread drum.

Weekly

1. Clean and oil both needle bars.
2. Check for worn, retaining rings and pins.
3. Make sure needle stops are clean.
4. Make sure needle stop springs are clean and not broken.
5. Reset needle release.
6. Clean top and bottom loopers, check timing.
7. Check belts for proper tension and alignment.
8. Check tension finger timing and clean wax from same. Should be polished or replaced if there is a grove or burs.
9. Oil machine and grease gears.

This catalog is issued for Stitching Machines Type 2, 3, & 4, Serial No. 1409 & up.

To locate parts - refer to "MECHANISM INDEX" on Page 5B, 5C, or 5D which lists the page numbers for various units - such as Handwheel and Cam Shaft, Clutch, etc. - where the individual parts are illustrated and listed.

Parts are shown in exploded views in the general sequence of assembly with references to assist in locating views of mating parts.

Part numbers are called out numerically where practicable and will be found on the listing page immediately following the illustration on which they appear.

AMF standard and semi-standard stitch parts, also commercial parts, are listed and illustrated in this catalog.

All commercial hardware is illustrated on the proper page of its use and is called out by a rectangular shaped balloon. Using this item number the part number can be found in the "Commercial Parts List", beginning on Page 2000C.

If any item in this catalog is wanted, it may be ordered by specifying the quantity wanted, the part number, description of part, and the serial number of the machine.

Example: 2 parts, 59-83-1041D, Spring, for Serial No. 1419

To expedite shipments - Parts should be listed in consecutive order.

Example: 2 parts, 59-83-1041D, Spring, for Serial No. 1419
1 part , 59-83-1406A3, Cam , for Serial No. 1419

Disregard moulded number on castings as patterns may be used for other parts.

-Model*- following number indicates part number is incomplete as the parts model due to length of stitch, needle size, etc. Customer should furnish, if possible, the complete number usually stamped on the part being replaced or the incomplete part number, the serial number of the stitching machine and information as requested in notes on pages illustrating the parts.

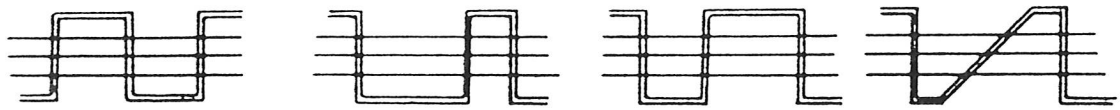
Individual parts are furnished without screws, nuts, taper pins, cotter pins, dowels, keys, spring post, clamp studs, washers, etc., as these can be transferred in most cases from the part being replaced. Certain parts are furnished without holes, as they must be transferred from parts on the machine.

Parts are shipped F.O.B. our factory. Claims for damage to or loss of express or freight shipments must be filed with local agent. Claims on Insured Parcel Post shipments must be filed through us.

Parts should not be returned without our Return Material Tag. When requesting tags give your order or our invoice number against which parts are shipped. Any material returned without tag will be stored at your risk. All shipments of returned material should be sent to:

PARTS DEPARTMENT
APPAREL EQUIPMENT DIVISION
AMF INCORPORATED
2115 WEST LABURNUM AVENUE
RICHMOND, VIRGINIA 23227

Stitches made on the 59-83 STITCHING MACHINE are:



SADDLE STITCH | SHORT - LONG STITCH | ANGLE OR PICK STITCH

Type 2 Machine (identified by serial number with suffix 12, example #1299-12) is used for Saddle Stitch & Short - Long Stitch.

Type 3 Machine (identified by serial number with suffix 11, example #1224-11) is used for Saddle Stitch, Short-Long Stitch & Angle or Pick Stitch.

Type 4 Machine (identified by serial number with suffix 14, example #1684-14) is used for Saddle Stitch with improved features.

3. Bender plate must start angling when Needle is in the Lower Needle Bar and Presser Foot is descending onto Throat Plate and 1/64" away from it.
4. Adjust bender plate to obtain 1/64" clearance from the body of the Needle when the Presser Foot and Swivel Toe are entirely lifted away from the Bender Plate. See Diagram B.
5. When Top Loopers are ready to enter formed Thread Loop and are at center line of needle, bender plate starts going down from its maximum upward position.

PRESSER FOOT LIFTED

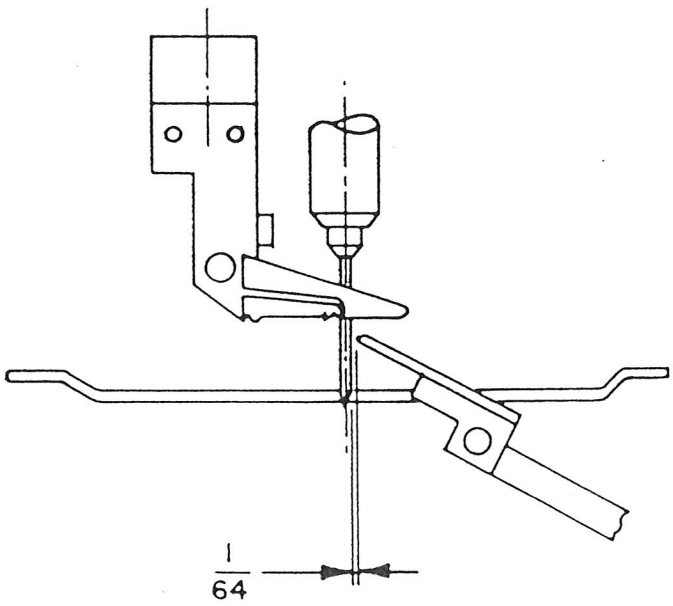
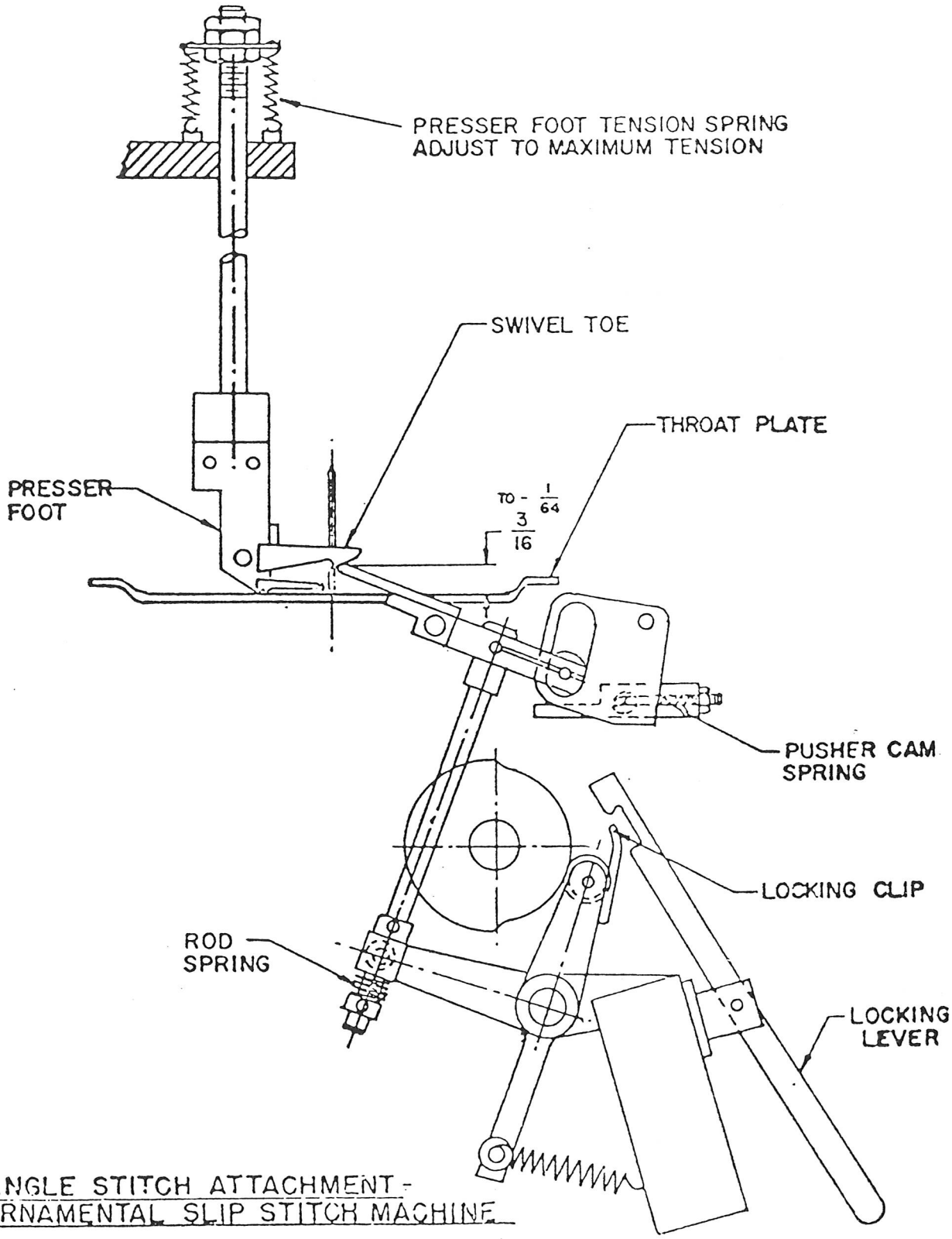


DIAGRAM "B"

6. Adjust Presser Foot Tension Spring to maximum tension.
7. Adjust tension on Rod Spring to about one half that of Presser Foot Tension Spring. The Tension on the Rod Spring should be such that it is capable of being compressed further when Swivel Toe is brought to bear on the fully angled Bender Plate. However, Rod Spring tension must not be so weak as to produce uneven angling of the material. Insufficient tension at this point causes variations in length of stitches. See diagram C, Page 17.
8. Adjust tension of Pusher Cam Spring to obtain uniform stitches and to make angling more positive. A slight give is necessary if heavy cloth is sewn with the same setting.
9. Adjust locking Lever to snap onto locking Clip when Cam Roller is on the high dwell. Diagram C, page 17
10. Adjust Throat Plate to .005 clearance from Needle Body.



CHINE - ANGLE STITCH ATTACHMENT -
ORNAMENTAL SLIP STITCH MACHINE

CLASS-59 DIV.-83

ECHANISM- PRESSER FOOT TENSION SPRING ASSEMBLY ADJUSTMENT

11. Set small pin in the Arm Control Block against side of slot shown in Diagram "D".
Set the angle of the Slide Block to produce 1/32" bottom stitch when Stop Blocks are completely out of contact. This setting is good for thin thicknesses. When serving heavier materials, longer stitches are required. To obtain the longer stitches without sacrificing space between them, loosen clamp on the Adjusting Arm and move pin in Arm Control Block to the left side of the slot. This alters the angle of the Slide Block to a greater degree, producing a longer stitch without altering any other setting. Adjusting Arm on Slide Block Shank must be clamped securely.

12. To vary the size of the stitch after the above setting is made, loosen the Locking Screws on the Setting Plate and move in the direction indicated on the Setting Plate for desired stitch length, top and bottom.

13. Set position of Stop Pin to produce a stitch about 1/16" long when Stop Lever comes down to stop the pin from oscillating. This in turn reduces the amount of oscillation of Slide Block. Diagram "D".

14. Adjust tension on Take-up Springs to insure a positive thrust by Head Pin on Stop Blocks. Connecting Rod must not come out of the hole in the Adjusting Arm Block when Take-up Spring in Block is compressed 1/2".

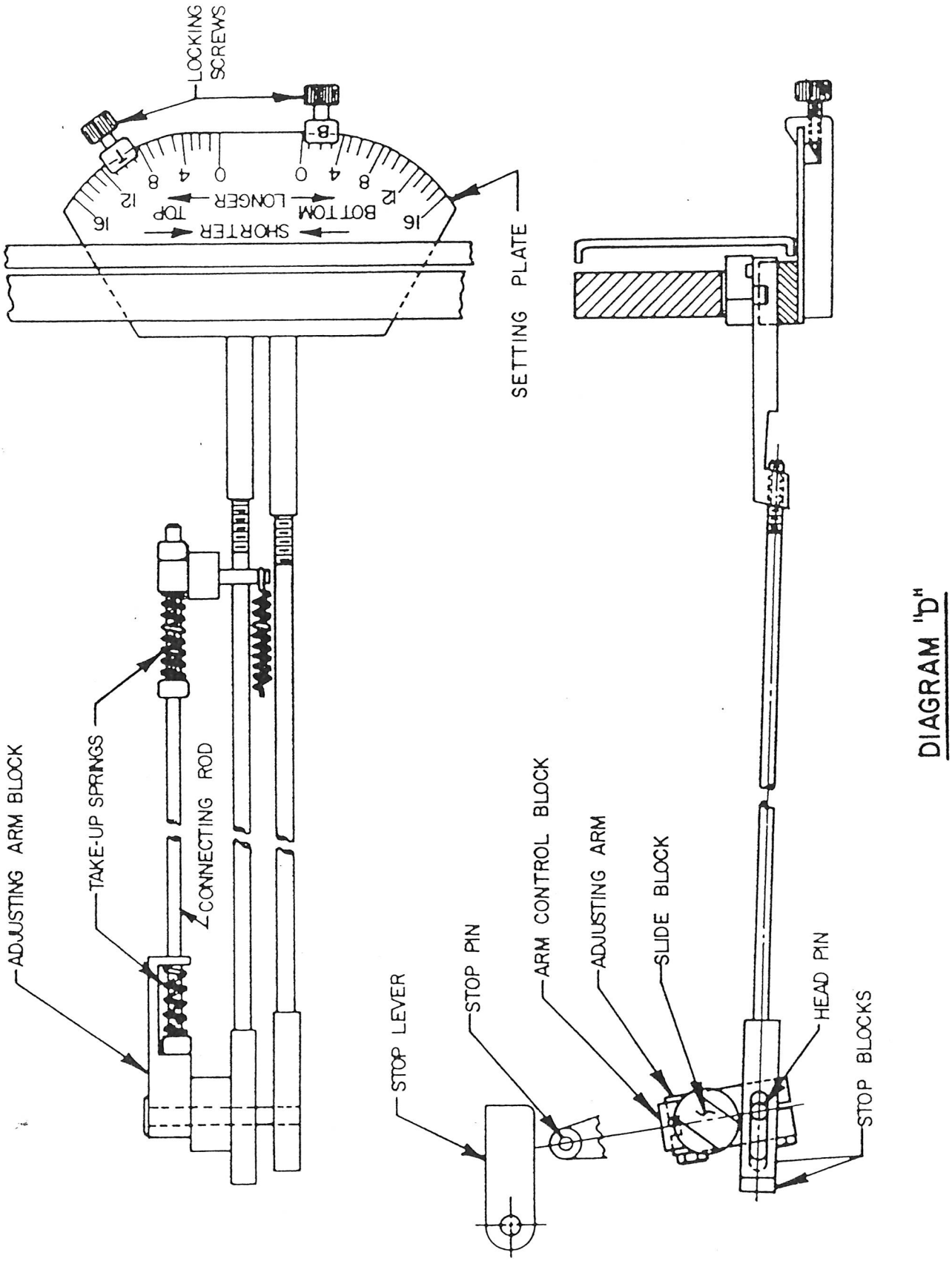
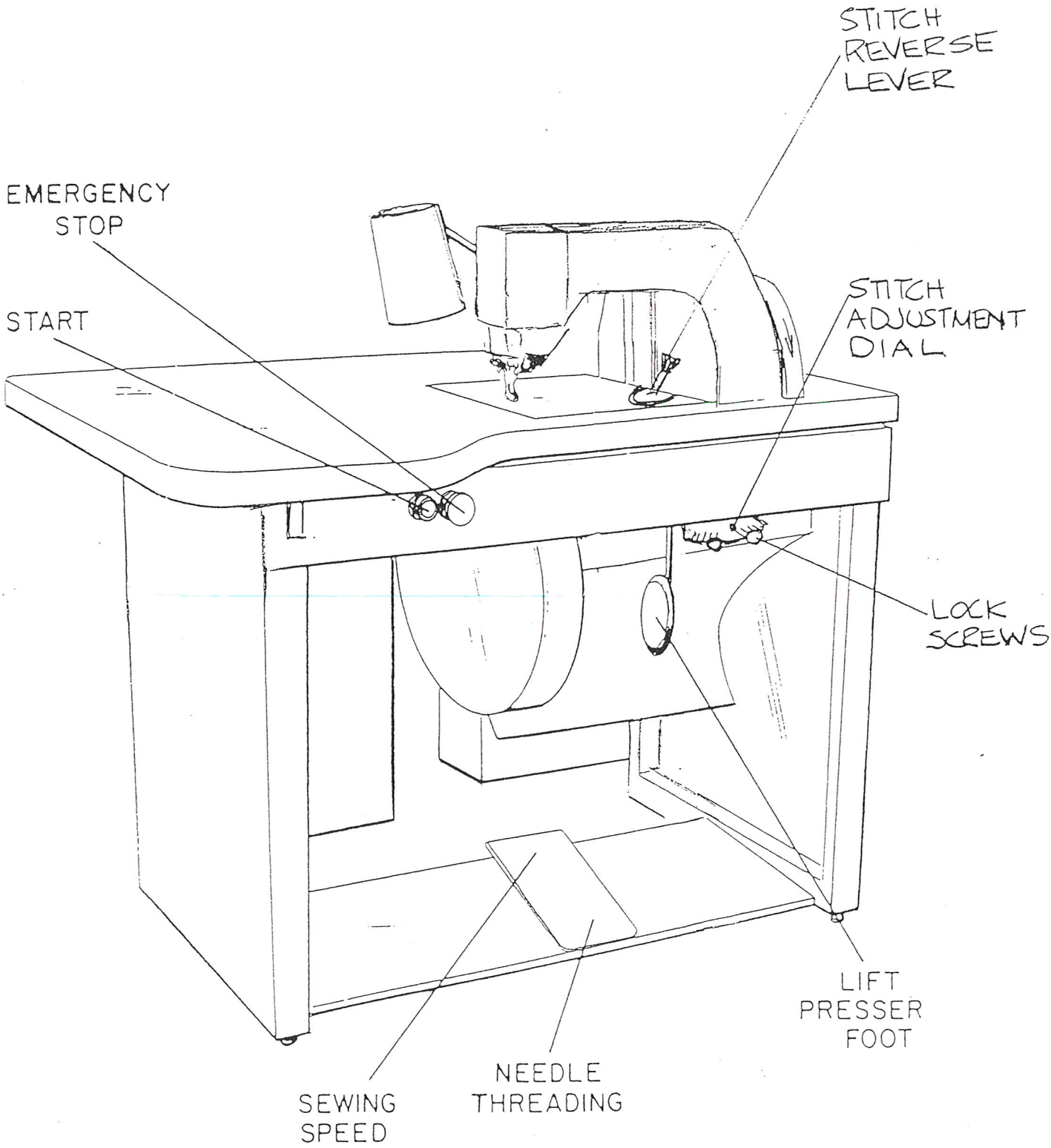

LOCKING SCREWS
SETTING PLATE
SHORTER
LONGER
TOP
BOTTOM
ADJUSTING ARM BLOCK
TAKE-UP SPRINGS
CONNECTING ROD
STOP LEVER
STOP PIN
ARM CONTROL BLOCK
ADJUSTING ARM
SLIDE BLOCK
HEAD PIN
STOP BLOCKS

DIAGRAM "D"

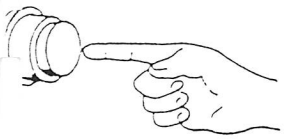
APPAREL EQUIPMENT

CLASS 59 DIVISION 83

OPERATION & CONTROLS



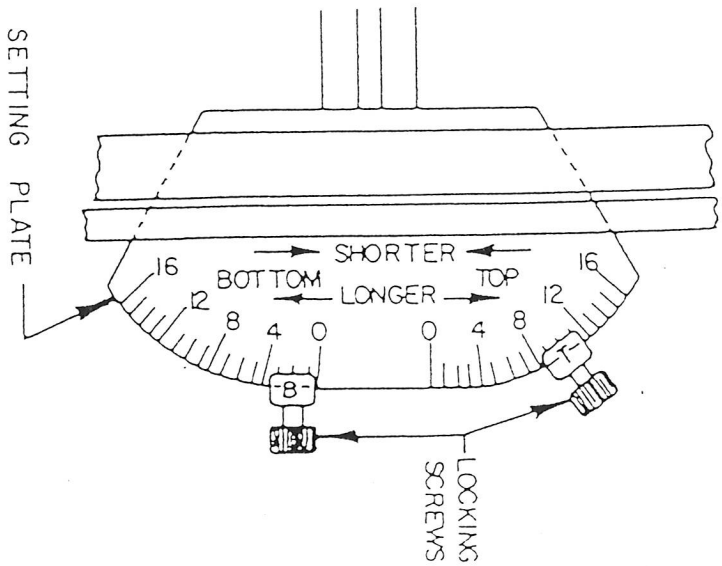
OPERATOR INSTRUCTIONS



MOTOR ON

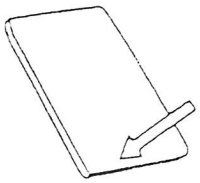
Push the START button to start the Motor.

ADJUSTING TOP AND BOTTOM STITCH LENGTH.



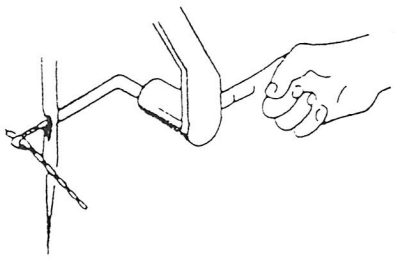
STITCH LENGTH IS ADJUSTED BY MOVING LOCKING SCREWS WIDER FOR LONGER STITCH AND NARROWER FOR SHORTER STITCH. AFTER ADJUSMENT ENSURE LOCKING SCREWS ARE TIGHT

OPERATOR INSTRUCTIONS



TREADLE FOR NEEDLE THREADING

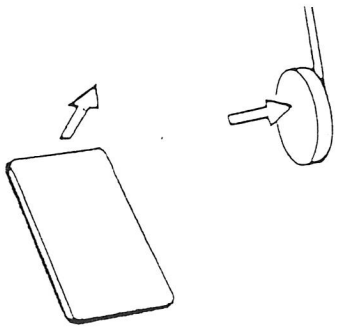
Push on the Treadle with the Toe and then immediately with the Heel to position the Needle for threading.



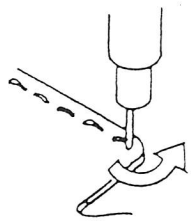
THREAD THE NEEDLE

Push the Needle Threader through the needle eye. Catch the thread and release the Needle Threader. Hold the free end of the thread to the material while making the first stitch.

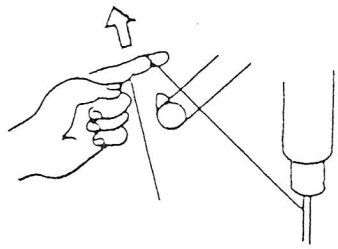
MAKING A TURN



Remove foot pressure on Treadle to place needle in work. Press knee against pad to raise Presser Foot.

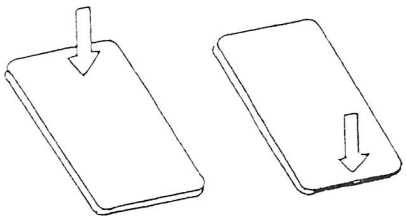


Turn the work around the needle.

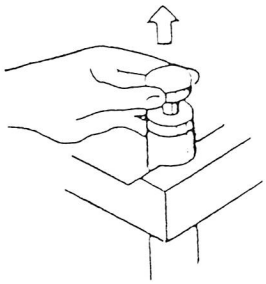


Pull thread off the Left Looper. Pull thread tail free.

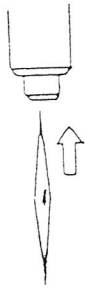
CHANGING THE NEEDLE



Press on Treadle with toe and then immediately with heel to position needle.

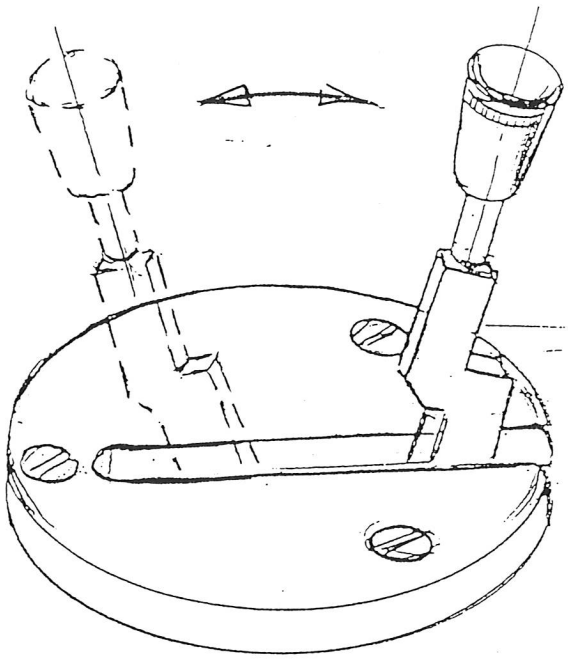


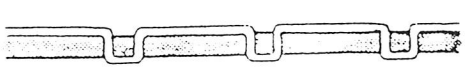
Lift rubber ring cap on top on Upper Needle Bar to raise Needle Sleeve.

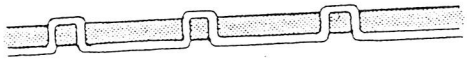


Insert needle in Needle Sleeve and release rubber ring cap.

REVERSE STITCHING







THE STITCH IS REVERSED BY MOVING LEVER TO LEFT OR RIGHT AS SHOW. MACHINE SHOULD BE IN MOTION.

The following Standard is established for the Timing and Setting the Angle Stitch Attachment on the 59-83 Ornamental slip Stitch Machine.

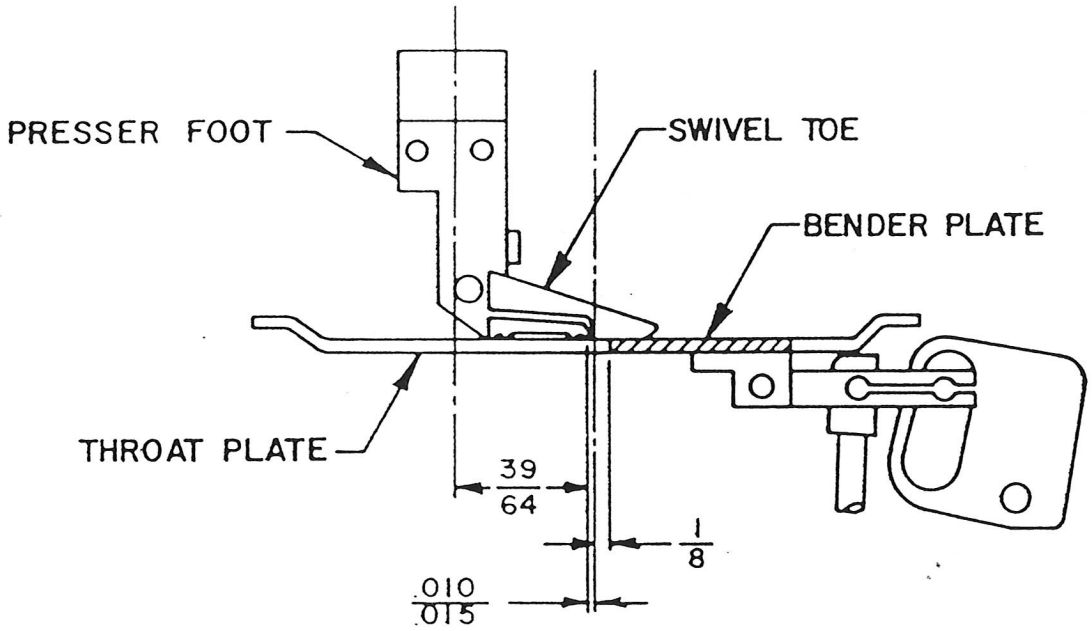
The diagrams, as shown on the attached pages. are to be used in conjunction with this explanatory test.

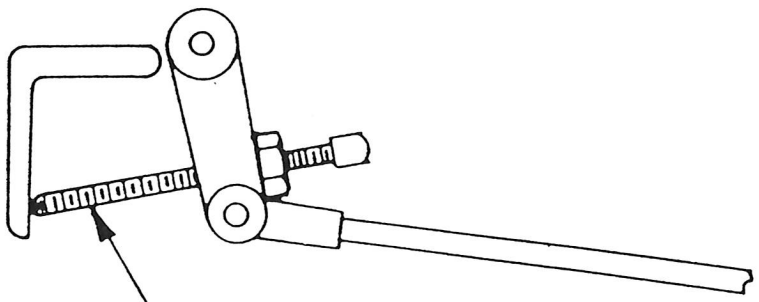
1. Set Bender Plate 1/64" above Throat Plate. Set Screw Stop to correspond to this 1/64" setting when Left Foot Treadle locks Bender Plate in horizontal position.

   Bender Plate must never be below Throat Plate surface.

2. Set horizontal position of Bender Plate 1/8" from center line of needle.

See Diagram A





SCREW STOP POSITIONS
BENDER PLATE 1/64 ABOVE
THROAT PLATE

DIAGRAM "A"

To Reassemble Needle Bar.

Replace pusher spring in pusher sleeve (spring should protrude 1/16")

Replace pusher sleeve assembly into clamp sleeve.

Replace clamp sleeve assembly into inner sleeve.

Replace clamp sleeve spring.

Replace adjusting rod to inner sleeve (grinding marks together)

Replace connecting pin.

Now check the above assembly in the outer sleeve. There should not be binding or tightness.

Replace spring on the adjusting shaft.

Insert assembly to outer sleeve.

Replace ball bearings.

Compress inner sleeve fully.

Check through the pinhole that the pusher spring does not foul the entry of slotted pin.

Replace pin and circlip.

Replace rubber washer, adjust nut and locknut,

Refit to the machine. (slots in inner sleeve should always face left and right).

Tighten clamp screw, turn Machine so that the lower bar comes to its highest position, then adjust the knurled nut to allow 2/3rds of the inner sleeve schamfer to protrude above the outer sleeve. Then tighten locknut.

Top Needle Bar.

Remove, clean and replace top needle bar (as described for lower needle bar).

Setting the Needle Bars after checking and replacement.

First set the lower needle bar in its uppermost position by turning the hand wheel. Then by using the knurled nut adjust sleeve 'B' so that the rim on the nipple is just below the top rim of Sleeve 'A'. To lock in this position it is advisable to remove the whole needle bar assembly and lock with pliers and spanner provided.

Having set the lower needle bar in position, the following instructions will ensure correct positioning of the upper bar.

Set the knurled nut approximately 9/32" from the top of needle bar spindle and replace the fully assembled bar in the Machine, taking care to set in the appropriate bayonet fitting. Turn the hand wheel until the needle is engaged equally in both bars. Move the hand wheel backwards approximately 3" and then forward 3" and continue to rock to and fro while slowly turning the knurled nut anti-clockwise. Continue this until a slight jambing is experienced. The needle bars are now in a position whereby the needle is held firmly by the lower needle bar and is only just being released by the steel balls in the upper bar. A further half turn by the knurled nut in a clockwise direction will allow the steel balls to open sufficiently to clear the needle. The top needle bar can now be locked in this position as described earlier in respect of the bottom needle bar.

NOTE. Before starting the Machine up under power, check once more that the circlips are safely recessed into the grooves provided. Unless the circlips are correctly positioned the Machine may jamb and serious breakages result.

Lower Looper (Drawings B & C).

The object of the lower looper is to catch the left loop formed by the bottom needle bar and pull the thread through the material, laying it in the thread groove in the drum. The setting of the looper is as follows:-

The point of the looper tip should be level with the top of the front grippers and 1/64" from the needle. To time the looper, check the needle in its dwell position, grippers just closed and the looper tip should be $\frac{1}{2}$" (minimum) from the needle. If it is found necessary to adjust the looper timing, an Allen Clamp Screw will be found on the crank of the looper shaft. Slacken screw and advance or retard as necessary.

Grippers and Thread Support Fingers (Drawings B & C).

The object of the gripper fingers is to grip the right thread loop formed by the lower needle bar and hold the thread until the lower looper pulls the thread through the material, and to stop the formation of tight stitches. The grippers are held in position by two pivot pins dowelled into the base of the gripper case and the gripper cover.

The action is provided by a single track cam working a fulcrum lever which pushes a 'V' shaped slide and expands the rollers in the end of each gripper causing the front to close tightly. The connecting joint of the fulcrum lever and gripper slide is spring loaded to eliminate excess pressure if the fulcrum lever is over adjusted or overloaded by fluff which accumulates between the gripper fingers. The fulcrum lever is adjusted at the pivot bracket which is situated on the casting of the lower looper shaft, By slackening the two Hex bolts the bracket can be moved backwards or forwards for necessary adjustment. Care must be taken if tightening the grippers to see that the grippers open fully to allow the needle bar to pass freely. Advance or retard of the grippers is made at the cam by slackening the three bolts on the righthand of the cam and advancing or retarding the cam as necessary.

The thread support fingers are opened by the extended points of the grippers and returned by a small spring which is connected to the left and right support fingers. The object of the support fingers is to support the left loop formed by the lower needle bar. Adjustment is made on the 'D' blocks found on the inside diameter of the thread drum by slackening the Allen screws and turning them on the thread support finger pivot shafts. The fingers should always be 1/32" clear of the needle.

The timing of the gripper fingers is, with needle in lower bar coming to the dwell position, grippers should close tightly and the needle should move 1/32" to zero.

The grippers are totally enclosed in a casing which is in itself adjustable to allow for centralizing after the grippers have been replaced. Movement in all directions can be obtained by slackening the two Allen screws at the rear of the gripper casing.

Position the grippers to envelope the body of the needle. Back, front and righthand side of needle should be clear of gripper fingers.

The Bender (Drawing D).

This bends the material to enable the needle to pass through the centre of cloth at an angle and so making a predetermined and equal space between each stitch. The space is controlled by the height that the swivel toe is allowed to rise. The swivel toe is controlled by a small slide attached to the side of the presser foot. To increase the space between stitches allow the swivel toe to come higher. To reduce space lower the swivel toe.

Thread Brush (Drawing F).

Acts as a brake or arrester on the thread whilst the upper loopers pick up the loop and the top stitch is made. This brush is worked from a cam on the camshaft which releases brush pressure. Whilst the applied pressure is by a coil spring, if the coil spring breaks, or the brush becomes worn, the thread becomes too slack and subsequent thread breakage results. Time the brush to close when the thread lifter hook reaches its highest position.

When half of the brush is no longer in contact with the drum, due to wear, it can be released from its clamp and turned round.

Thread Tension Finger (Drawing E).

Catches the righthand loop made by the lower needle bar; pulls the thread from the path of the needle, gives the correct tension for the required impression of each stitch and pulls sufficient thread to enable good loops to be formed by the top needle bar. Care must be taken over the setting and adjustment of this hook. The top of the hook must pass to the left of the needle on its forward movement and pull over to the right as the forward movement is completed. As the lower looper catches the lefthand loop and pulls the thread, the thread tension finger starts its forward movement, just missing the thread being pulled by the looper. It catches the righthand loop and the trailing end of the thread. The forward movement is arrested until the gripper fingers release the righthand loop and the tension finger flies forward pulling the thread clear of the needle path and pulling sufficient thread to form good loops at the top needle bar. As the needle is transferred from lower needle bar to the top bar the tension finger releases the loop. If the timing action is delayed too far, the finger will hold the thread too long and will leave a series of small loops on the underside of the material. If the release timing is too far advanced the thread tension finger leaves the loop too quickly allowing the thread to snarl and an occasional loop will drop over the needle point which consequently ties a knot in the very end of the thread resulting in thread breakage.

Presser Foot and Follower Foot (Drawing G).

Presser Foot - To clamp and hold the material while the needle makes each stitch.

Follower Foot - To clamp the material firmly and give a positive feed.

Both the Presser Foot and the Follower Foot are operated from a top drive shaft. Lift and Clamp action being obtained through an eccentric peg in the end of the shaft, transmitted to links and a bellcrank lever: both Presser Foot and Follower Foot should lift equal distance from the throat plate, but in special circumstances, e.g. when stitching a swollen edge $\frac{1}{4}$" seam the Presser Foot rests on four thicknesses of cloth, whilst the Follower Foot rests on two thicknesses. Consequently, it may be necessary to adjust the Presser Foot to lift a little higher to clear the cloth and not interrupt the feed stroke. Adjustment is made by slackening the Hexagon bolt clamping the presser bar. To lift the Presser Foot higher, turn Machine so that the Follower Foot and Feed have a 1/16" space between them, Slacken Hexagon bolt and presser bar, and push the Follower Foot down, tighten Hexagon bolt. To lift the Follower Foot higher, turn Machine so that the Presser Foot is 1/16" from the throat plate, slacken Hexagon bolt, the Presser Foot will be forced down by the Bar Springs, tighten the Hexagon bolt. It is impossible to adjust either the Presser Foot or the Follower Foot without altering the height of the other. The Presser Foot itself is shaped like a claw and is adjustable backwards or forwards. The correct setting is for the tip of the claw to be in line with the centre of the needle eye, but if sewing thick materials, overcoats etc., it may be necessary to adjust the foot back from the needle to allow the needle to penetrate the centre of the material.

Upper Loopers (Drawing H).

Lefthand and righthand loopers pick up the loops formed by the top needle bar and as the material is fed through the Machine the loopers carry the thread in the same direction and so p ull the thread from the path of the needle. The righthand looper consists of a small hooked finger which is spring loaded. Movement is derived from Cam on the Presser Foot drive shaft through a fulcrum lever clamped to a hollow tube, and then to the looper linkage. Movement for the lefthand looper comes from a Cam in the gear case, driving an adjustable lever which is clamped to a shaft that travels from the gear case to the left looper. The looper consists of a Tip, Roller, Roller Shaft and Arm (adjustable for height).

TROUBLE DIGEST

Machine Breaking Needles.

Check alignment of needle. It should run through the needle plate centrally and vertically. If the needle is off centre remove and check the needle bars commencing with the lower bar. Carefully check the pusher sleeves for blockage, clean hole with broaches (supplied), check pusher spring blocked with fluff or broken.

The smallest of the inner sleeves accepts the needle point without damaging it. If the hole in this part has become worn it will put the needle out of alignment. Replace.

If rubber stop washer has deteriorated it will delay transfer of needle. Replace.

Check the Presser Foot. If the foot has one claw broken, material will not angle correctly and needle will be thrown out of line.

If needles break on thin material (e.g.pocket flaps) when sewing with the Bender clamped down, check Presser Foot for correct clamping at the toes. Place thin piece of paper one under each toe and one under the heel of the Presser Foot. Allow Foot to clamp on paper, and check that clamping is perfect at all points. If not, it means that the needle will push up the material before piercing it and a slight angle will occur which will deflect the needle.

If Presser Foot is located too far to the rear of the needle the same results occur. The Bender should be 1/16" clear of the needle when the Presser Foot is lifted. If too close, the angling will deflect the needle.

THREAD BREAKAGE.

1. Check for simple causes of thread breakages, e.g. needle marks on Throat Plate, Thread Tension Finger, Swivel Toe and Thread Guide.

2. Check that top stitch is not too small. This is best checked on plys of plain material representing the total thickness to be stitched. Using a contrasting colour thread, see that a top stitch of not less than 1/32" is visible. It should be noted that although this measurement is critical if thread breakage is to be avoided, the bottom stitch can be adjusted until it is completely invisible.

3. Needle not functioning perfectly. Check Needle Bars.

4. (a) Thread Tension Hook pivot pin loose or worn.
   (b) Thread Tension Hook missing thread on forward stroke. Open tip of hook slightly.
   (c) Thread tension hook actuator roller and pin, worn or loose.
   (d) Thread tension hook sticking on under guide (guide probably bent)
   (e) Thread tension hook timing incorrect. Reset at spiral gear.

5. (a) Under guide requires re-setting.
   (b) Wax collected on under guide. Clean.
   (c) Polish away any score marks in neck of guide.

6. (a) Grippers blocked. Clean out fluff.
   (b) Gripper timing incorrect.
   (c) Grippers worn. Replace grippers, rollers and pivot pins.

7. (a) Thread support fingers require resetting.
   (b) Thread support fingers Return spring broken.
   (c) Thread support fingers loose on shaft. Re-rivet.

8. (a) Lower Looper roller seized or blocked. Clean and Oil.
   (b) Lower Looper tip moved on its shaft. Re-set tip and shaft in line and re-rivet.
   (c) Lower looper tip too far from needle. Re-set to 1/64".
   (d) Looper timing slipped. Reset to $\frac{1}{2}$"(minimum) $\frac{3}{4}$" (maximum).

9. Thread trap broken or requires re-setting in centre of hook groove and as high as possible without touching.

10. Feed lift timing too late, causing loops underneath to be pulled tight. Adjust timing on cam.

Thread Breaks at Start of New Length.

(a) Lower looper roller blocked or seized, causing excessive pulling on thread. Remove roller, clean, oil and replace.

(b) Lower looper retarded.

Thread Splits or Cotters (i.e. one strand breaks & runs up the other).

1. Top stitch too small (1/32" is minimum)
2. Bender slipper (too high).
3. Throat plate, Under guide. Thread tension hook, require polishing to remove score marks.
4. Bent needle.

Double Loop on Left Upper Looper.

1. Lower Looper missing loop. Re-adjust.
2. Check dimension of looper tip from needle 1/64".
3. Looper timing slipped. Adjust.
4. Looper tip to be $\frac{1}{2}$" (minimum) $\frac{3}{4}$" (maximum) from needle when grippers close.
5. Feed timing too late. Advance on cam.
6. Feeder adjusted too high, pulls loop tight. Adjust to 1/16" above throat plate.
7. Looper tip worn or buffed too blunt. Replace tip.
8. Gripper - Needle timing incorrect.

Thread Loop too slack on Left Upper Looper.

1. Left Upper Looper too far advanced. On return, stroke leaves loop too quickly. Sometimes loop drops off. Reyard setting in gear case.
2. Looper arm adjusted too high. Re-set 1/8" below needle eye.
3. Upper Loopers miss the loops. Bad loop formation usually caused by Tension Hook being too far advanced. Retard Hook to correct timing. Check Tension Hook for sticking or seizure.
4. Upper Loopers maladjusted. Re-set.
5. Replace any worn parts on Right Upper Looper.

Stitch Variation (Top).

1. Bender spring too weak.
2. Bender mechanism seized.
3. Follower Foot not returning fully.
4. Follower Foot and Presser Foot out of balance.
5. Seizure on Follower Foot and Presser Foot linkage.
6. Feed Dog too low.

Stitch Variation (Bottom).

1. Usually, Presser Foot not clamping, allowing Bender to pull material. Re-adjust balance of Presser Foot.
2. Bender too far advanced. Retard on camshaft.
3. Dirty or clogged needle bars. Clean and examine.
4. Seizure on feed mechanism.
5. Feed Dog too low

Tight Stitches.

1. Grippers not clamping thread. Remove fluff or dirt from Grippers.
2. Gripper timing too far advanced.
3. Looper timing too early.
4. Thread Tension Hook too far advanced.

Constant Long Stitches on Top.

1. Bender not working.
2. Bender spring too weak.
3. Presser Foot claw moved to front of needle.
4. Lever operated by long-short cam seized.
5. Stitch Block has moved.

Material Slips from Feed and Edge Guide (i.e.Machine runs off edge).

1. Bender spring too weak.
2. Bender pivot shafts worn.
3. Feed dog loose.
4. Follower Foot teeth worn.

Machine ties a Knot in Thread.

Thread tension finger too far advanced. Leaves thread loop too quickly. Allows loop to drop over needle point.

Machine leaves small loops on underside of material.

1. Tension Hook too far retarded. Holds loop too long.
2. Tension Hook seized or too tight on pivot pin.