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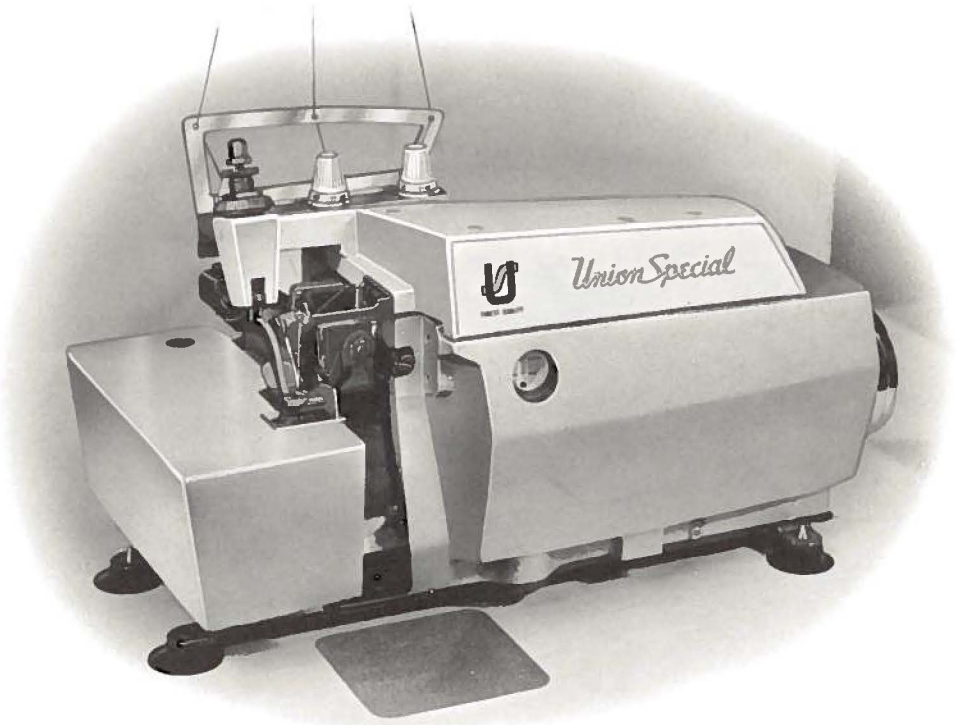
Union Special®
LEWIS • COLUMBIA

INDUSTRIAL
SEWING
MACHINES

STYLE
39500 GR



CLASS 39500

HI-STYLED
HIGH SPEED OVERSEAMERS
WITH DIFFERENTIAL FEED
FOR FOUNDATION GARMENTS

CATALOG
No.
103 GR

Union Special MACHINE COMPANY
CHICAGO

Catalog No. 103 GR
(Supplement to Catalog No. 103 FA)

INSTRUCTIONS

FOR

ADJUSTING AND OPERATING

LIST OF PARTS

CLASS 39500

Style

39500 GR

First Edition

Union Special
MACHINE COMPANY
INDUSTRIAL SEWING MACHINES
CHICAGO

December, 1967

Printed in U.S.A.

IDENTIFICATION OF MACHINES

Each Union Special machine is identified by a Style number on a name plate on the machine. Style numbers are classified as standard and special. Standard Style numbers have one or more letters suffixed, but never contain the letter "Z". Example: "Style 39500 GR". Special Style numbers contain the letter "Z". When only minor changes are made in a standard machine, a "Z" is suffixed to the standard Style number. Example: "Style 39500 GRZ".

Styles of machines similar in construction are grouped under a Class number which differs from the Style number in that it contains no letters. Example: "Class 39500".

APPLICATION OF CATALOG

This catalog is a supplement to Catalog No. 103 FA and should be used in conjunction therewith. Only those parts used on Style 39500 GR, but not on Style 39500 FP are illustrated and listed at the back of this catalog. On the page opposite the illustration will be found a listing of the parts with their part numbers, description and the number of pieces required. Numbers in the first column are reference numbers only, and merely indicate the position of that part in the illustration. Reference numbers should never be used in ordering parts. Always use the part number listed in the second column.

This catalog applies specifically to the standard Style of machine as listed herein. It can also be applied with discretion to some Special Styles of machines in Class 39500. References to directions, such as right, left, front, back, etc., are given from the operator's position while seated at the machine. Operating direction of handwheel is away from operator.

STYLE OF MACHINE

Hi-Styled High Speed Single Curved Blade Needle, Two Looper-Three Thread or One Looper-One Spreader-Two Thread Machine. Differential Feed, Trimming Mechanism with Spring Pressed Lower Knife, Automatic Lubricating System.

39500 GR Medium to heavy duty machine for break open seaming and attaching of elastic to girdles and foundation garments with either a two or three thread stitch. Machine can be used with or without the standard trimming knives. For those who do not wish to trim the material, a front fabric guide is included. Seam specification 503 or 505-SSa-1, hinged open to make LSa-1; standard seam width 1/4 inch; stitch range 8-30 per inch; cam adjusted main and differential feeds. Maximum recommended speed 6500 R. P. M.

OILING

CAUTION! Oil was drained from machine when shipped, so reservoir must be filled before beginning to operate. Oil capacity of Class 39500 is six ounces. A straight mineral oil of a Saybolt viscosity of 200 to 250 seconds at 100° Fahrenheit should be used.

Machine is filled with oil at spring cap in top cover. Oil level is checked at sight gauge on front of machine. Red bulb on oil level indicator should show between gauge lines when machine is stationary.

Machine is automatically lubricated. No oiling is necessary, other than keeping main reservoir filled. Check oil daily before the morning start; add oil as required.

OILING (Continued)

The oil drain plug screw is located at back of machine near bottom edge of base. It is a magnetic screw designed to accumulate possible foreign materials that have entered the crank case. It should be removed and cleaned periodically.

NEEDLES

Each Union Special needle has both type and size number. The type number denotes the kind of shank, point, length, groove, finish and other details. The size number, stamped on the needle shank, denotes largest diameter of blade, measured in thousandths of an inch, midway between shank and eye. Collectively, type and size number represent the complete symbol which is given on the label of all needles packaged and sold by Union Special.

Class 39500 machines use a curved blade needle. The standard recommended needle for Style 39500 GR is Type 154 GHS. Below is the description and sizes available of the recommended needle.

Type No.	Description and Sizes
154 GHS	Round shank, round point, curved blade, standard length, single groove, struck groove, ball point, spotted, chromium plated and is available in sizes 025, 027, 029, 032, 036, 040.

To have needle orders promptly and accurately filled, an empty package, a sample needle, or the type and size number should be forwarded. Use description on label. A complete order would read: "1000 Needles, Type 154 GHS, Size 032".

Selection of proper needle size is determined by size of thread used. Thread should pass freely through needle eye in order to produce a good stitch formation.

Success in the operation of Union Special machines can be secured only by use of needles packaged under our brand name, *Union Special*, which is backed by a reputation for producing highest quality needles in materials and workmanship for more than three-quarters of a century.

CHANGING NEEDLES

Release pressure on presser foot by turning presser foot release bushing (AG, Fig. 1 and 1A) and swing presser arm (U) out of position. Turn handwheel in operating direction until needle is at its lowest point of travel. Using hexagonal socket wrench No. 21388 AU, furnished with machine, loosen needle clamp nut about 1/4 turn. Again turn handwheel until needle is at high position; withdraw needle.

To replace needle, leave needle holder at high position and, with the flat to the left, insert needle in holder until it rests against stop pin. Keeping needle in this position, turn handwheel until holder is again at its low point of travel; then tighten nut. Return presser arm (U) to position; re-lock presser foot release bushing (AG).

THREAD STAND (503 STITCH)

After thread comes from cone on cone support (A, Fig. 1) it is brought up through the back hole of thread eyelet (B), then down through the front hole of thread eyelet. The needle thread is then threaded through the upper hole of tension thread guide (C) from front to back, and then through the lower hole from back to front. The lower looper thread is threaded through the upper hole back to front, through the middle hole from front to back, and finally through the lower hole from back to front. Both threads then continue between the tension discs (J), through tension post slot (K) in tension post (G) and on through front thread guide (M).

THREAD STAND (505 STITCH)

After thread comes from cone on cone support (A, Fig. 1A) it is brought up through the back hole of thread eyelet (B), then down through the front hole of thread eyelet. The needle and upper looper threads are then threaded through the upper hole of tension thread guide (C) from front to back, and then through the lower hole from back to front. The lower looper thread is threaded through the upper hole back to front, through the middle hole from front to back, and finally through the lower hole from back to front. All three threads then continue between the tension discs (J), through tension post slot (K) in tension post (G) and on through front thread guide (M).

NOTE: Refer to Fig. 1 for the 503 stitch threading or refer to Fig. 1A for the 505 stitch threading.

THREADING

Only parts involved in threading are shown in threading diagrams Fig. 1 and 1A. Parts are placed in their relative positions for clarity.

It will simplify the threading of these machines to follow the recommended sequence of threading the lower looper first and the needle second, when using the 503 stitch (Fig. 1). The recommended sequence when using the 505 stitch (Fig. 1A) would be to thread the lower looper first, the upper looper second and the needle third.

Before beginning to thread, swing cloth plate open, turn handwheel in operating direction until needle (X) is at high position, release pressure on presser foot by turning presser foot release bushing (AG) and swing presser arm (U) out of position.

Be sure the threads, as they come from the tension thread guide (C), are between tension discs (J) and in tension post slots (K) in tension post (G). The tension posts should be positioned so the tension post slot will be at the approximate angle for the different threads as indicated in Fig. 1 and 1A.

TO THREAD THE LOWER LOOPER

Double end of thread and lead it through the right eyelet of front thread guide (M, Fig. 1 or 1A). Then lead thread through both eyes of lower looper thread eyelet (R, Fig. 1 or 1A) from right to left. NOTE: Thread must pass in front of looper thread pull-off (AF). Lead thread behind fabric guard (S) and through frame looper thread guide (T). Turn handwheel in operating direction until heel of lower looper (V) is all the way to the left, then thread through both eyes from left to right. Left eye of lower looper can be threaded easily if tweezers are in left hand.

NOTE: In Fig. 1A for the 505 stitch, the lower looper thread eyelet is placed in the upper position.

TO THREAD THE UPPER LOOPER (505 STITCH ONLY)

Double end of thread and lead it through the left eyelet of front thread guide (M, Fig. 1A). Turn handwheel until point of upper looper (W, Fig. 1A) is all the way to the left. Lead thread through auxiliary looper thread eyelet (P) from back to front, then through both eyes of upper looper thread eyelet (N) from left to right.

NOTE: Thread must pass in front of looper thread pull-off (AF).

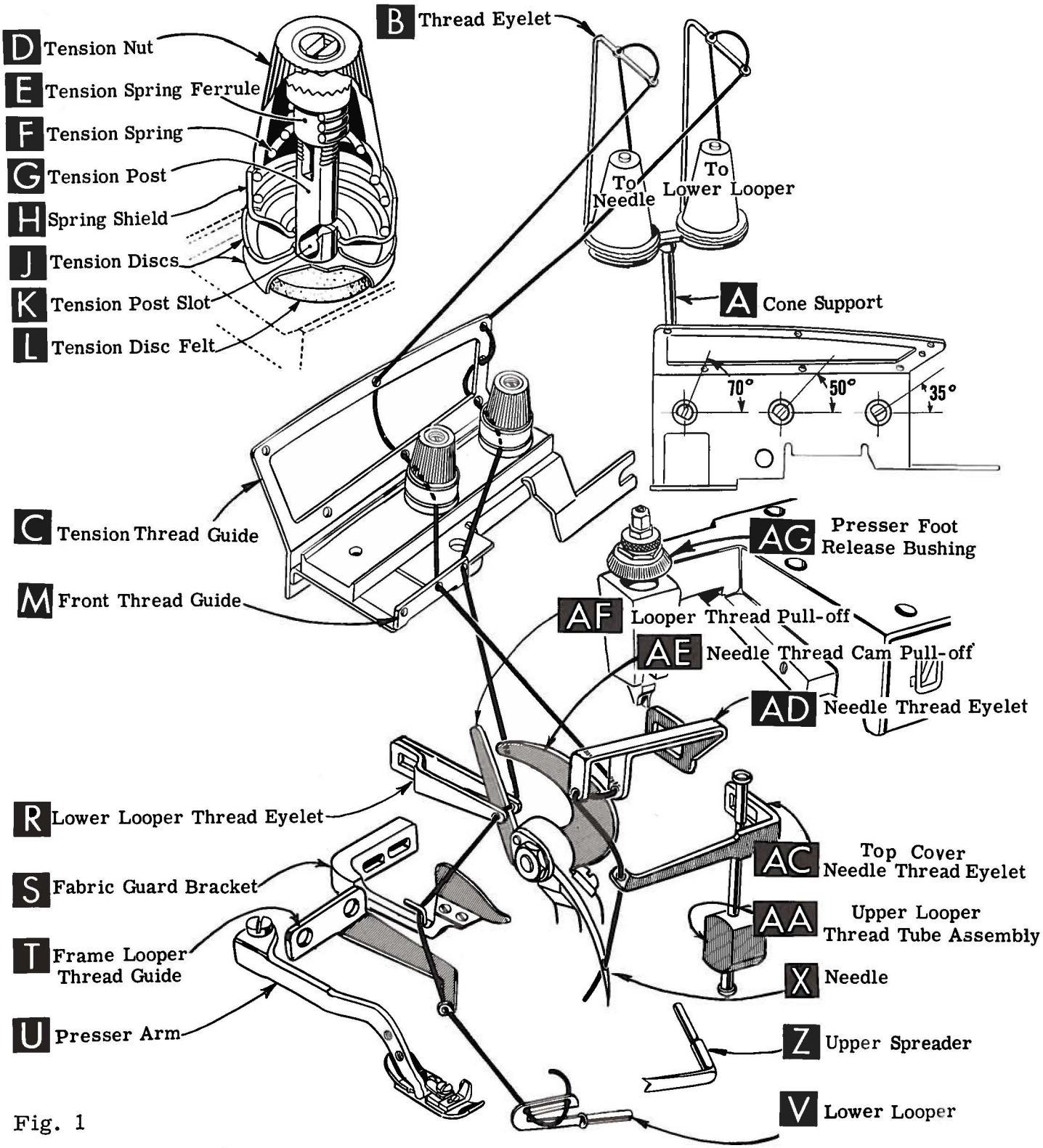


Fig. 1

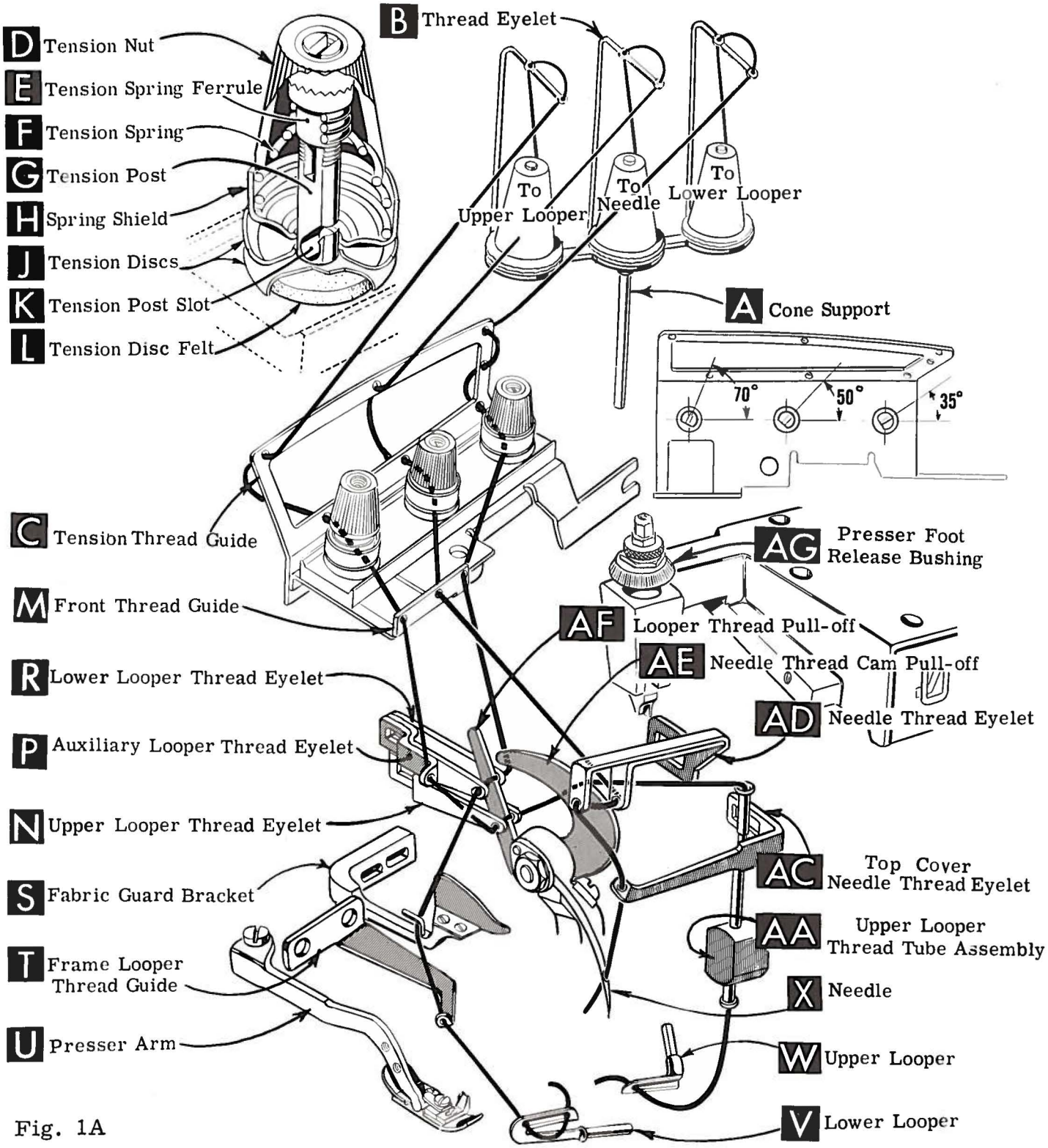


Fig. 1A

TO THREAD THE UPPER LOOPER (505 STITCH ONLY) (Continued)

After pulling up upper looper thread tube assembly (AA), lead thread under neck of top cover casting and down through thread tube assembly (AA). Pull thread out bottom of tube; push tube down and then insert thread through the eye of upper looper from front to back.

TO THREAD THE NEEDLE

Turn handwheel in operating direction until needle (X, Fig. 1 or 1A) is at its highest position. Insert needle thread from right to left, through both eyes of needle thread eyelet (AD), under neck of top cover casting; then down through hole in top cover needle thread eyelet (AC). Thread needle from front.

THREAD TENSION

The amount of tension on the needle and looper threads is regulated by knurled tension nuts (D, Fig. 1 or 1A). Tension on threads should be only enough to secure proper stitch formation.

PRESSER FOOT PRESSURE

Sufficient presser foot pressure to feed work uniformly should be maintained. Should it be necessary to increase or decrease amount of pressure on presser foot, loosen lock nut (A, Fig. 2) and turn adjusting screw (B). Adjusting screw has a right hand thread so tightening increases pressure, loosening decreases pressure. When pressure adjusting screw (B) has been properly set, tighten lock nut (A). With presser foot resting on throat plate, position locking nut (C) so that its under surface is approximately 1/32 inch to 1/16 inch from the top surface of adjusting screw (B). Set cap (D) against locking nut (C).

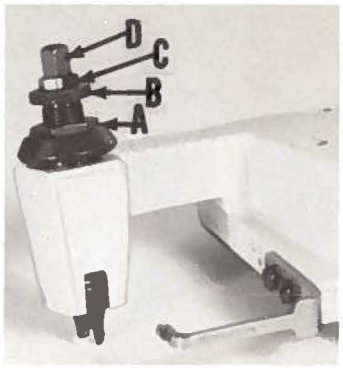


Fig. 2

FEED ECCENTRICS

Feed eccentrics used in Style 39500 GR machines have been selected to produce approximately 20 stitches per inch. It will be noted that the part number of main feed eccentric is No. 39540 B-20, while that of differential feed eccentric is No. 39540 B-18. Minor numbers of the part symbol indicate approximately the number of stitches obtainable when using that eccentric. Unless otherwise specified, machine will be shipped with above combination of eccentrics.

Generally speaking, differential (right hand) feed eccentric determines number of stitches produced; main (left hand) feed eccentric is selected in relation to degree and direction of stretch of material being sewn, or type of operation.

Following stitch number feed eccentrics are available under No. 39540 B-4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15, -16, -18, -20, -22, -24, -26, -28, -30, -32, -34, -36, -40. Only two eccentrics are supplied with each machine. Additional eccentrics may be ordered separately. To order an eccentric, use No. 39540 B with a minor number suffixed to indicate number of stitches desired. Example: "39540 B-20".

ASSEMBLING AND ADJUSTING SEWING PARTS

Before assembling and adjusting sewing parts, remove cloth plate, fabric guard, chip guard, upper knife assembly, lower knife holder assembly, then follow this suggested sequence:

NOTE: The adjusting instructions that follow will pertain to both the 503 and the 505 stitch, the only difference is an upper spreader is used for the 503 stitch, while an upper looper is used for the 505 stitch. All of the instructions are applicable for both types of stitches, unless otherwise specified.

SETTING THE NEEDLE

With throat plate assembled in position, needle should center in the front end of needle slot. When needle is at high position, needle point should be set 15/32 inch above the throat plate (A, Fig. 3). To align needle or set the height above the throat plate, move needle driving arm (B, Fig. 3) by loosening clamp screw (C). After needle has been properly set, tighten clamp screw and remove throat plate.

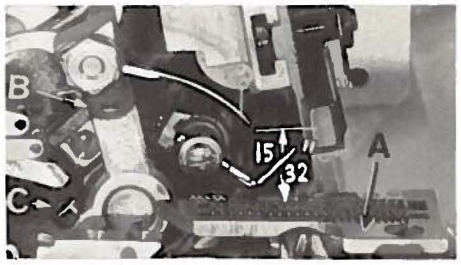


Fig. 3

If needle thread cam pull-off (A, Fig. 4) overlaps looper thread pull-off (B), separate by moving looper thread pull-off back. When retightening looper pull-off screw, be sure to take up end play in needle driving arm.

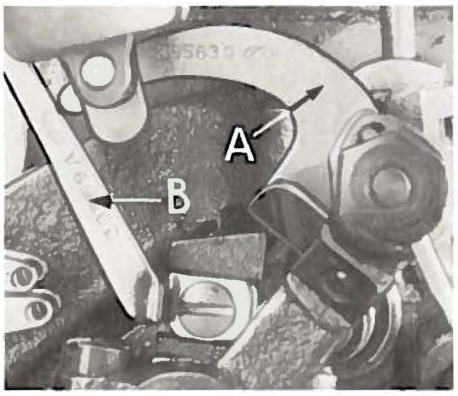


Fig. 4

At this point, insert lower looper (A, Fig. 5) into bar (B). With lower looper at the left end of its stroke, set looper point 1/8 inch from center of needle (Fig. 5), using looper gauge No. 21225 -1/8. Do not have lower looper deflecting needle. Tighten nut (C). Now assemble differential (front) feed dog.

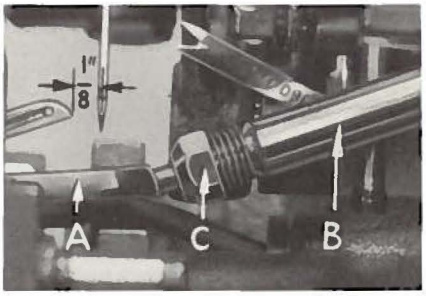


Fig. 5

SETTING THE REAR NEEDLE GUARD

Set rear needle guard (A, Fig. 6) as high as possible, without interferring with either lower looper or movement of lower knife holder, but still in position to deflect needle forward .002-.004 inch. Screw (B) is used to set rear needle guard. Make sure there is no interference between rear needle guard and lower looper.

SETTING THE LOWER LOOPER

Now finish lower looper adjustment. As lower looper moves to the right, its point should be set into the needle scarf (A, Fig. 7) until the needle springs forward from rear needle guard surface another .002-.004 inch. Tighten nut (C, Fig. 5) securely.

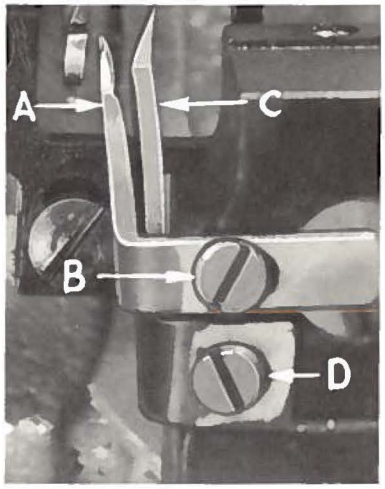


Fig. 6

SETTING THE FRONT NEEDLE GUARD

Assemble front needle guard (C, Fig. 6). When lower looper is springing needle off back guard, set front needle guard as close as possible to needle without touching. Screw (D) is used to adjust and set front needle guard. After this setting make sure there is no interference between needle guards and differential feed dog.

SETTING THE UPPER LOOPER OR SPREADER

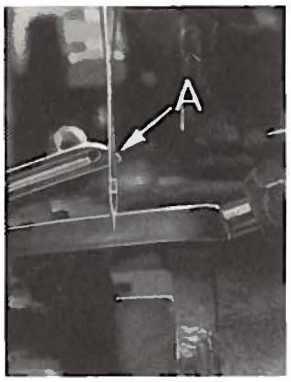


Fig. 7

Insert upper spreader (A, Fig. 8) in its holder. Screw (B) holds upper spreader in its holder, and permits it to be pushed in or out, or turned around its shank. Insert spreader holder into spreader shaft, if it is not already in place. Screw (C, Fig. 8) on clamp collar holds spreader holder in the shaft, and allows holder to be rotated or adjusted laterally.

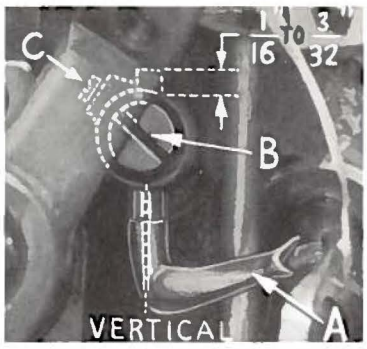


Fig. 8

Preliminary Setting: When upper spreader is at the right end of its stroke, spreader holder should be set to position spreader shank approximately vertical (Fig. 8). Top end of spreader shank should extend 1/16 to 3/32 inch above the spreader holder (Fig. 8).

NOTE: The above settings also apply when setting the upper looper used for the 505 stitch.

Fig. 9

As spreader moves from right to left, the Vee notch of the spreader should pass just behind the eye of the lower looper, with .002 to .004 inch clearance between spreader and lower looper (Fig. 9).

Turn the handwheel until spreader is at the left end of its travel. At this position, the lower point of the spreader should extend about 9/64 inch to the left of the centerline of the needle and should be 15/32 inch above the top of the throat plate (Fig. 10). If resetting is necessary, do so by moving the spreader holder (A, Fig. 10).

Now check setting between upper spreader and needle. If needle rubs the back of spreader, pull spreader out of its holder slightly and rotate spreader holder forward a short distance. These same adjustments, in opposite movement, will reduce the clearance between spreader and needle. Reset to lower looper (Fig. 9).

NOTE: The above dimensional settings and adjustments also apply when setting the upper looper used for the 505 stitch.

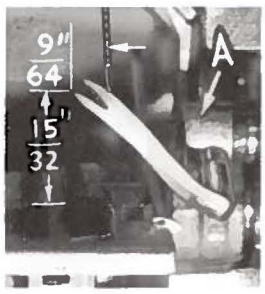


Fig. 10

SETTING FEED DOGS

Now assemble main (back) feed dog (B, Fig. 11) and chaining feed (C). Set all feed dogs (A, B, C, Fig. 11) so the top surfaces of the teeth all lie in the same plane. This can be checked by sighting across the teeth with a straight edge. Now assemble throat plate. Feed dogs should now be leveled with throat plate surface by rotating feed tilting adjusting pin (D). This pin raises or lowers the back end of both feed bars at the same time.

The feed dogs should be set level at the time the teeth first appear above throat plate. Screw (E) locks feed tilting adjusting pin in place. Now set the feed dogs so that the teeth rise about 3/64 inch above the throat plate.

SETTING THE LOWER KNIFE

Replace lower knife holder assembly. Lower knife (A, Fig. 12) should be set with cutting edge flush with throat plate surface. Adjustments are made with hexagonal head screw which holds lower knife. Lower knife is spring pressed against upper knife, so no lateral adjustment is necessary when width of trim is changed.

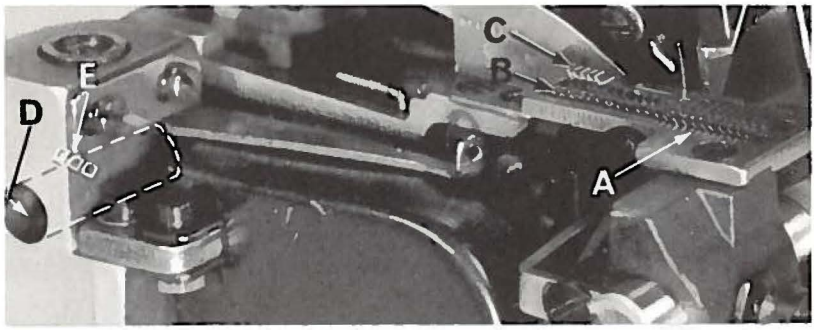


Fig. 11

Lower knife may be secured in any position by tightening screw (B) and locking nut (C) against support bracket. Because screw (B) also serves as latch pin for the cloth plate latch spring, it should always be locked with nut (C) even when screw is not tightened against lower knife holder.

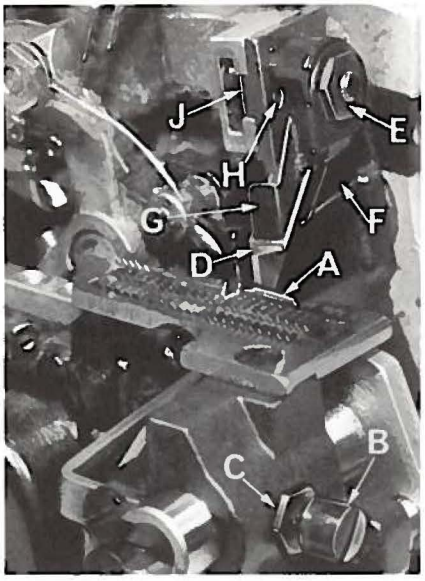


Fig. 12

SETTING THE UPPER KNIFE

Replace upper knife assembly. Clamp upper knife (D, Fig. 12) in position, setting nut (E) to hold clamp (F) in its most clockwise position against upper knife. At bottom of its stroke, front cutting edge of upper knife should extend not less than 1/64 inch below cutting edge of lower knife. The chain guard (G) should be set down against the upper knife and slightly back from the cutting edge.

After upper knife has been set for proper width of trim, screw (H) should be tightened to lock upper knife holding block (J) in place. This will simplify resetting when upper knife is replaced.

SETTING THE STITCH LENGTH

Length of stitch is determined by the combination of feed eccentrics used. Outer (left) eccentric (A, Fig. 13) actuates main (rear) feed dog; while the inner (right) eccentric (B) actuates the differential (front) feed dog.

In assembling feed eccentrics, be sure hubs are facing each other. Be careful not to damage shaft or key. Tighten nut (C) securely.

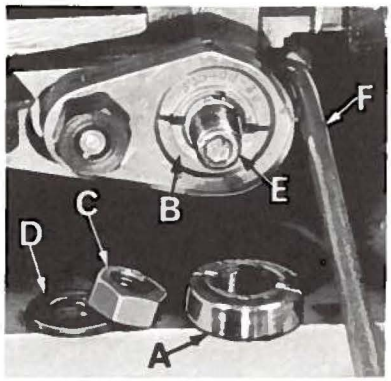


Fig. 13

To change feed eccentrics, remove nut (C) and washer (D) from end of shaft (E). Turn handwheel in operating direction until key slot in eccentric is toward front. Using hooked eccentric extractor (F), supplied with machine, reach behind eccentrics as shown and withdraw eccentrics. It may be necessary to move handwheel back and forth slightly during extraction.

If eccentrics are unusually tight fitting, in addition to removing nut (C) and washer (D) (Fig. 14) from shaft (E), it may be helpful to remove nut (G) and feed driving connection (H). Then continue as originally suggested.

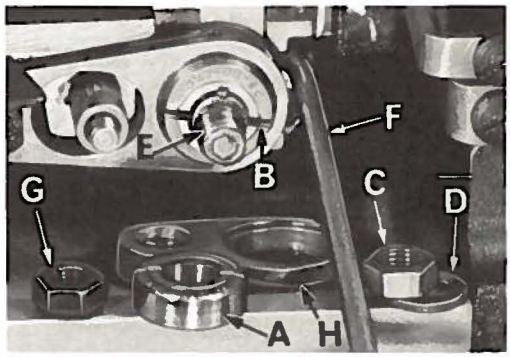


Fig. 14

SETTING THE PRESSER FOOT

Assemble the presser foot to presser arm. With needle in high position, swing presser arm into sewing position and set the presser foot to align needle holes (front and back) and flat on throat plate. The front edge of needle hole in presser foot must be aligned with front edge of needle hole in throat plate. It is also important that the bottom of the presser foot be flat on the throat plate. If necessary, presser foot can be realigned with throat plate slots by shifting the foot lifter lever shaft (H, Fig. 15). To move the shaft, loosen collar screws (B, Fig. 15) and clamp screw (G) and then shift the foot lifter lever shaft to the left or right as required. Retighten collar screws and clamp screw.

The foot lifter lever arm (A, Fig. 15) and the collar (B) secure the shaft. Be sure the presser arm does not bind and rise when presser foot release bushing is unlocked.

Adjust lifter lever stop screw (C) so that presser foot can be raised no higher than upper spreader or looper will permit: then lock the nut (D). There should be from 1/16 to 1/8 inch free motion of foot lifter lever before the presser foot begins to rise. This adjustment should be made with screw (E) and locked with nut (F). Re-assemble the chip guard, fabric guard and cloth plate. To assemble chip guard, turn handwheel until upper knife assembly reaches its highest position.

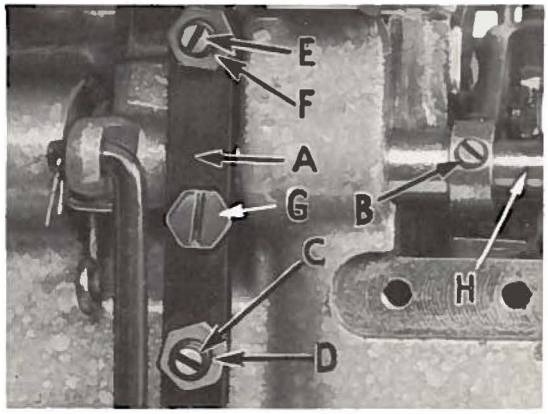


Fig. 15

STARTING TO OPERATE

Be sure machine is threaded according to threading diagram Fig. 1 for the 503 stitch or according to Fig. 1A for the 505 stitch. With thread tensions light, set looper thread eyelet (R, Fig. 1) or looper thread eyelets (N and R, Fig. 1A) approximately horizontal and in the middle of their front to back locations. Operate machine slowly, without presser foot in place, to make sure chain forms and moves off stitch tongue freely. Swing presser foot into position, insert material and sew slowly.

NEEDLE THREAD CONTROL

While sewing on material, check needle thread control as follows: Usually all of the needle thread required for the stitch is drawn on the needle downstroke. With needle at the bottom of its stroke, needle thread cam pull-off (AE, Fig. 1 or 1A) should just touch the needle thread. To increase the amount of needle thread drawn on the downstroke, position needle thread eyelet (AD) farther to the rear.

LOWER LOOPER THREAD CONTROL

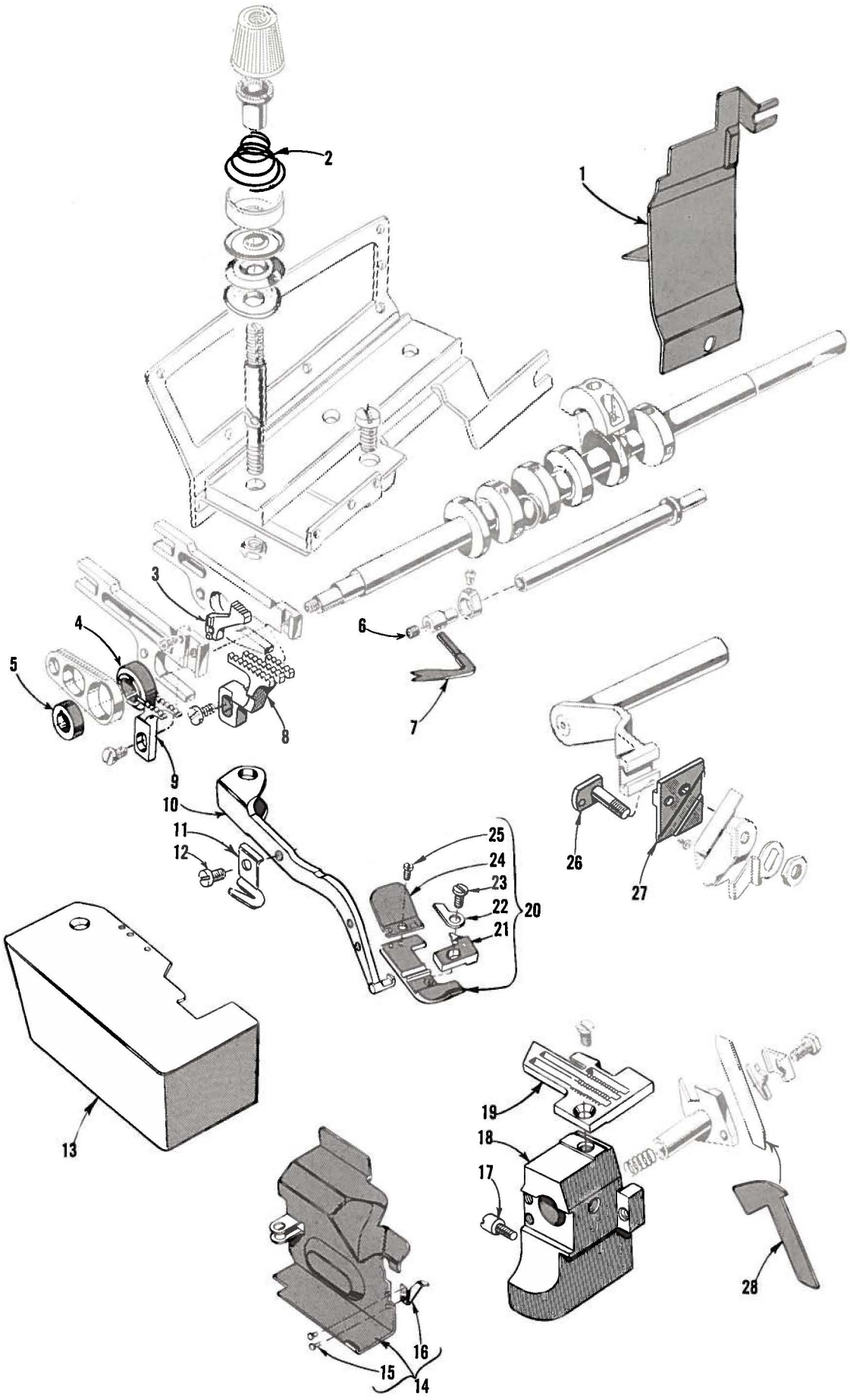
Set lower looper thread eyelet (R, Fig. 1 or 1A) approximately horizontal. Frame looper thread guide (T) should be set with its eyelet approximately 1/8 inch to the right of lower looper (V) heel eyelet, at the time the lower looper is at the extreme left end of its travel.

UPPER LOOPER THREAD CONTROL (505 STITCH ONLY)

With material under presser foot, set upper looper thread eyelet (N, Fig. 1A) so it contacts the lower looper thread eyelet (R) and is back far enough so upper looper thread is a little slack when upper looper reaches the left end of its stroke.

THREAD TENSIONS

Before proceeding, balance thread tensions to give a normal appearing stitch. Keep tensions as light as possible and use eyelets and take-up to get the proper stitch.



The parts illustrated on the preceding page and described below, represent the parts that are used on Style 39500 GR, but are not used on Style 39500 FP.

Those parts shown in phantom views and bearing no reference numbers are common to Styles 39500 GR and FP.

Use Catalog No. 103 FA (Style 39500 FP) for all parts not illustrated or described here.

Reference numbers that are inside a bracket on the picture plate and have indented descriptions, indicate they are components of a complete part or assembly.

Ref. No.	Part No.	Description	Amt. Req.
1	39578 U	Chip Guard	1
2	39592 AE-1	Tension Spring, for needle thread	1
	39592 AE-2	Tension Spring, for upper looper thread	1
	39592 AE-8	Tension Spring, for lower looper thread	1
3	39505	Chaining Feed Dog, 20 teeth per inch	1
4	39540 B-18	Differential Feed Driving Eccentric	1
5	39540 B-20	Main Feed Driving Eccentric	1
6	22894 Y	Screw, for upper looper or upper spreader	1
7	39560 A	Upper Spreader	1
8	39526 AA	Differential Feed Dog, marked "AA", 12 teeth per inch	1
9	39505 P	Main Feed Dog, marked "J" 12 teeth per inch	1
10	39556 E	Presser Arm	1
11	39556 K	Chain Cutting Knife	1
12	90	Screw, for chain cutting knife	1
13	39501 E	Cloth Plate, for non-submerged installation	1
14	39582 GG	Side Cover	1
15	39582 J	Rivet	2
16	39582 H	Spring	1
17	22585 G	Latch Screw, for side cover	1
18	39580 AA	Throat Plate and Lower Knife Support Bracket	1
19	39524 AR-1/4	Throat Plate, marked "BC-1/4"	1
20	39520 AR	Presser Foot	1
21	39597 AR	Presser Foot Stitch Tongue, marked "EN"	1
22	39530	Presser Foot Hinge Spring	1
23	22768 B	Screw, for stitch tongue and hinge spring	1
24	39530 H	Presser Foot Chain Shield	1
25	22738	Screw, for presser foot chain shield	1
26	39571 C	Upper Knife Clamp Stud	1
27	39572 A	Upper Knife Holder Block	1
28	39503 H	Front Fabric Guide	1

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