

CATALOG NO.

194-18

First Edition

STYLES

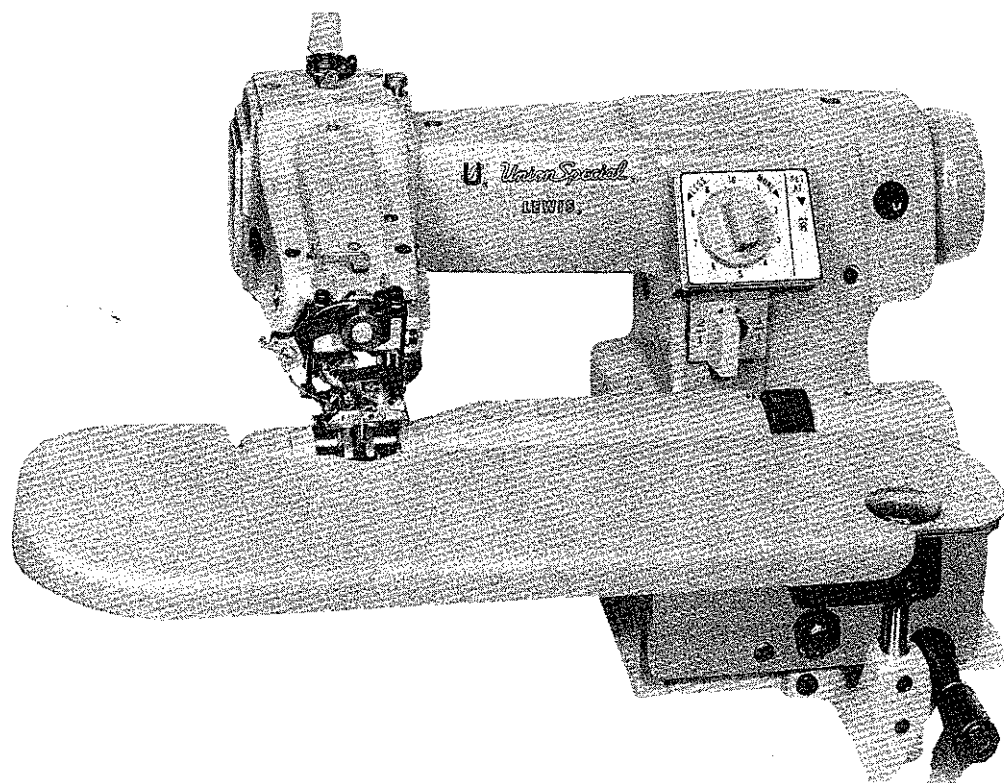
37500-2

37500-3

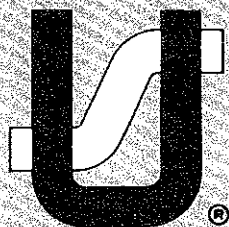
37500-32

37500-33

Adjusting instructions and illustrated parts list



**Class 37500-Single thread chain stitch
blind stitch machines**



Finest Quality

Union Special®
Industrial Sewing Equipment

Catalog No. 194-18

INSTRUCTIONS

FOR

ADJUSTING AND OPERATING

AND

LIST OF PARTS

FOR

CLASS 37500

STYLES

37500-2	37500-3
37500-32	37500-33

First Edition

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July, 1981

IDENTIFICATION OF MACHINES

Each UNION SPECIAL LEWIS machine carries a style number which is stamped into the style plate located on the right end of the machine base. The serial number of each machine is stamped in the base at the back.

APPLICATION OF CATALOG

This catalog applies specifically to the standard Styles of machines as listed herein. It can also be applied with discretion to some special machines in Class 37500. All references to direction, such as right and left, front and back, etc., are taken from the operator's position while seated at the machine, unless otherwise noted.

DESCRIPTION OF MACHINES

Single Thread, Single Curved Needle, Chain Stitch, Blind Stitch Machine, 1 to 1 Non-Skip and 2 to 1 Single Skip or 1 to 1 Non-skip and 3 to 1 Double-Skip Stitch, with Quick Change Lever Adjustment, Needle Travels from Left to Right and Penetrates at a Angle 90° to Line-of-Feed. Calibrated Penetration Adjustment, Push Button, for Quick Easy Adjustment of the Stitch Length and a Large, Easy-to-Read Indicator Dial is Marked with Stitch Lengths. Knee Lifter for Inserting and Removing Work, Oscillating Ridge Former with Quick Change from Soft to Hard Finish Materials. Maximum Work Space to Right of Needle 7 1/2 Inches.

37500-2 For hemming medium weight dresses, skirts, blouses, curtains and similar garments with a 1 to 1 non-skip and a 2 to 1 single skip stitch. Seam Specification 103-EF1-1 or 103-EFm-1 (Mod.)

*37500-3 Same as Style 37500-2 except it sews 1 to 1 non-skip and 3 to 1 double skip stitch.

37500-32 Same as Style 37500-2 except adapted to sew medium weight fiber glass and/or drapery material.

*37500-33 Same as Style 37500-3 except adapted to sew medium weight fiber glass and/or drapery material.

*DISCONTINUED - In most instances, component parts can be ordered for customer repair.

OILING

The machine should be oiled twice daily, before the morning and afternoon starts. Use a good grade of straight mineral oil with a Saybolt viscosity of 90 to 125 seconds at 100° Fahrenheit. Oiling points on the machine are marked in red. However, reference to the oiling diagram (Fig. 1) will be beneficial.

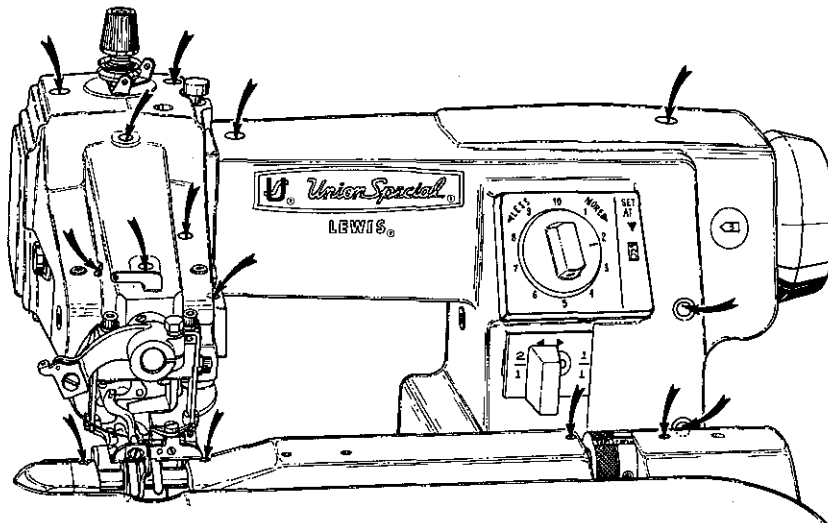


Fig. 1

SPEED

Maximum recommended speed for these machines is 3500 R.P.M. The operating direction of the handwheel is away from the operator.

NEEDLES

The recommended needle for these machines is Type 29 BL-090/036. It has a blade diameter of .036 inch (0.90 mm). It is also available in the following sizes:

<u>Needle Type</u>	<u>Inches</u>	<u>Size</u>	<u>Millimeters</u>
29 BL-065/025	.025		.65
29 BL-075/029	.029		.75
29 BL-100/040	.040		1.00
29 BL-110/044	.044		1.10
29 BM-075/029	.029 (ball point)		.75
29 BM-090/036	.036 (ball point)		.90

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

To have needle orders promptly and accurately filled, an empty package, a sample needle, or the Type number should be forwarded. Use the description on the label. A complete order would read: "100 Needles, Type 29 BL-090/036".

CHANGING NEEDLES

When changing the needle, make sure that it is inserted in the needle carrier as far as it will go and tighten clamp screw securely.

Immediately discard any needle which may have a hooked or blunt point, as improper needle penetration will result.

THREADING

To thread the machine, turn handwheel in operating direction until the needle carrier is in its highest position.

Refer to the threading diagram (Fig. 2).

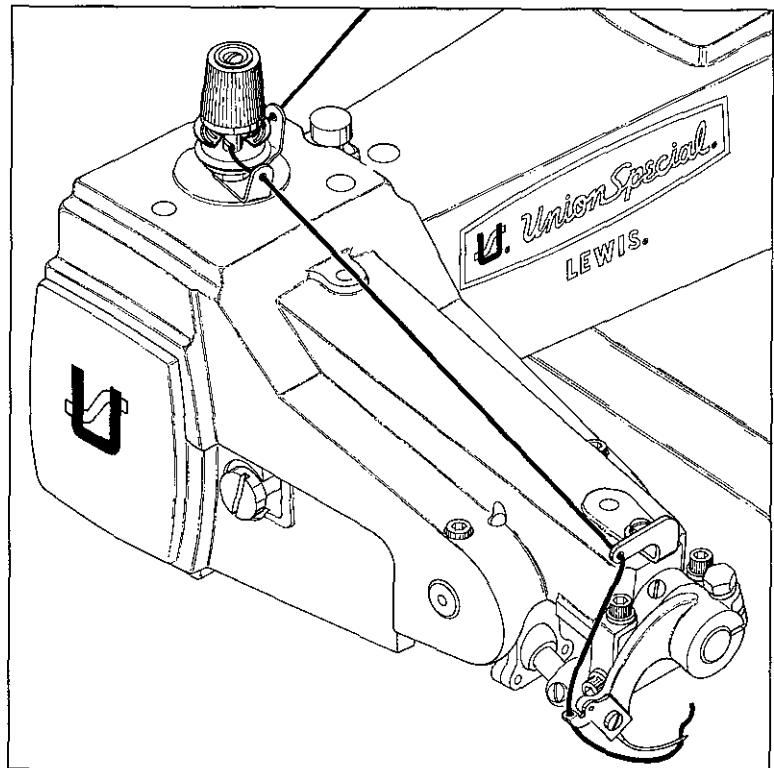


Fig. 2

ADJUSTING

ADJUSTING PRESSER FOOT TO NEEDLE

A view of the presser foot (Fig. 3) is shown to illustrate the various parts of the foot which are referred to in this and subsequent adjustments.

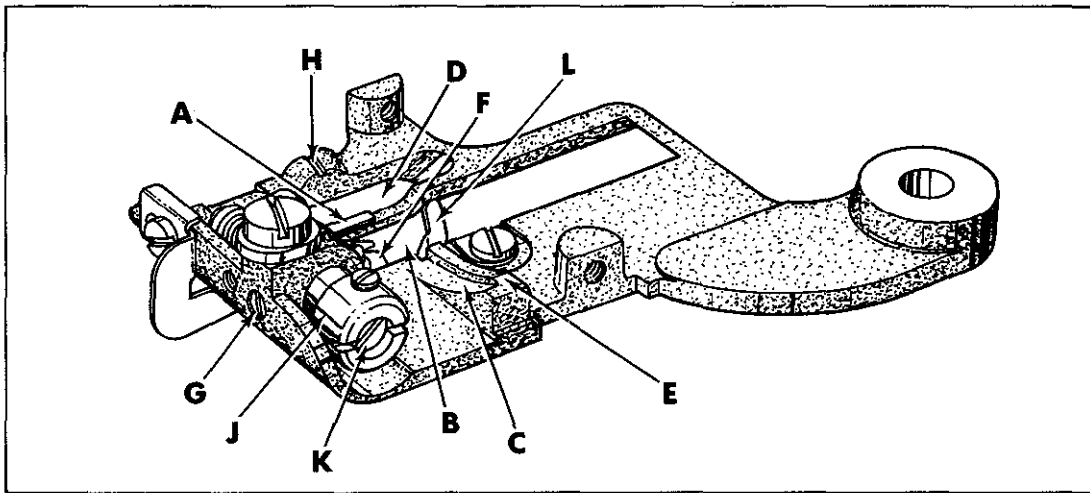


Fig. 3

Below is the key to the labeling as shown in Fig. 3.

- A - Needle guide
- B - Cloth opening
- C - Needle track
- D - Looper opening
- E - Radius run-out edge
- F - Cloth retainer
- G - Set screw
- H - Needle groove
- J - Cloth retainer bushing
- K - Eccentric retainer stud
- L - Chaining finger

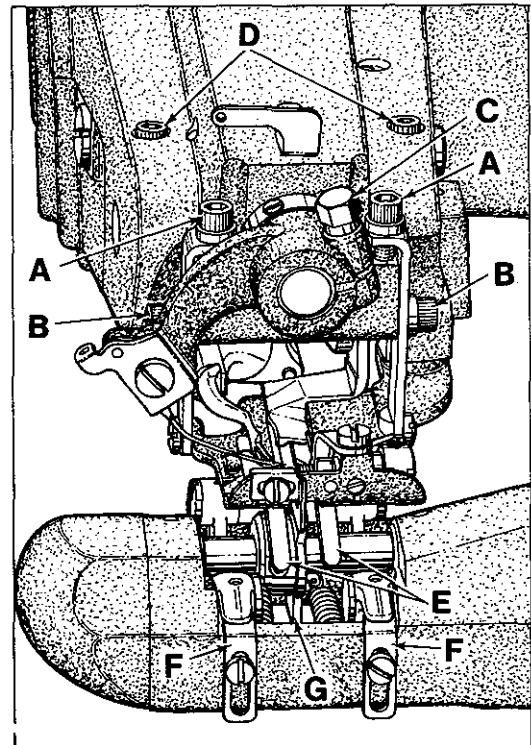


Fig. 4

Insert a new needle of proper type and size as far as it will go into the needle carrier and securely tighten the clamp screw. Set the presser foot to the needle so the needle point contacts the needle guide (A, Fig. 3) when traveling from left to right and so that the needle remains in contact with the needle guide until the point of the needle lies in the span between the center of the cloth opening (B) and the right side of the cloth opening. As the needle continues to move to the right, play should develop between the needle and the needle guide until the needle reaches the needle track (C).

ADJUSTING PRESSER FOOT TO NEEDLE (Continued)

To accomplish these adjustments, loosen screws (A, Fig. 4) on top of the presser foot brackets, so that the heads do not contact the washers. Loosen the upper screws (B) on the side of each bracket, move presser foot up, retighten these screws (B) just enough to hold the presser foot up. Adjust the top screws (A) equally, a little at a time, to obtain the above settings. After screws (B) on the sides have been tightened, no further adjustment of the top screws (A) should be attempted.

SETTING NEEDLE STROKE

Turn the handwheel in operating direction until the needle point is at the left of stroke. It should be flush with the left side of looper opening (D, Fig. 3). The needle point, at right of stroke, should be to the top of radius run-out edge (E). If this is not the case, the travel of the needle will have to be adjusted in the following manner.

Turn the handwheel in operating direction until the needle eye is flush with the right side of the cloth opening (B, Fig. 3) in the presser foot. Loosen the clamp screw in the needle crank (accessible through the hole located at point (A, Fig. 5)

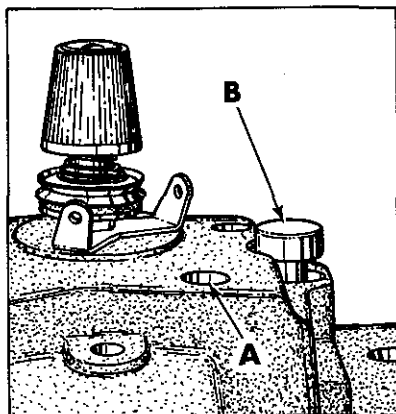


Fig. 5

in top of the head). Turn the handwheel in operating direction until the needle carrier is at its extreme right end of travel. Remove head cover and turn the needle eccentric ball stud (A, Fig. 6) so that its slot is vertical and the punch marks in the ball stud are down, as viewed in Fig. 6. The needle eccentric ball stud is located in the head, at the back near the top. Retighten the clamp screw and recheck the position of the needle point in relation to the left side of looper opening. Loosen needle carrier clamp screw (C, Fig. 4) and rotate carrier as required for above setting. Also, the needle carrier should be set front to back so the side of the needle is flush to .003 inch away from vertical

wall at the right side of presser foot. It may be necessary to slightly retard or advance the above adjustments to obtain desired results. CAUTION: When adjusting the needle eccentric ball stud, make sure that it is seated against the needle shaft crank.

LOOPER TIMING AND ADJUSTMENT

Insert the looper in its holder so that the flat on its shank corresponds with flat on holder and is seated in the holder. In the left end of the mainshaft (A, Fig. 7) is a "V" groove and on the looper crank (B), there is a trade mark.

Turn the handwheel in operating direction until the "V" groove in the mainshaft is at bottom. Loosen two screws (A, Fig. 7A) in the looper crank and position the crank so that the center of the trade mark lines up with the right edge of the "V" groove in the mainshaft (See Fig. 7).

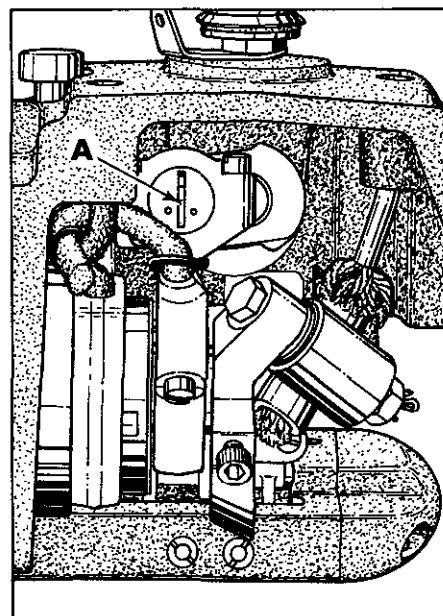


Fig. 6

LOOPER TIMING AND ADJUSTMENT (Continued)

This is merely an approximate setting. Again turn the handwheel in operating direction until the point of the long prong of the looper is over the spot in the needle. At this time, the long prong of the looper should be from $\frac{3}{64}$ to $\frac{5}{64}$ inch away from the left end of the needle eye. The short prong of the looper should cross the needle slightly higher than the long prong. The long prong looper point should be close to the needle spot, but should not come in contact with it. On continuing the rotation of the handwheel, the short prong of the looper should clear the right side of the looper opening in the presser foot and the needle on its return stroke should enter the crotch of the looper, midway between the prongs. The adjustment of the

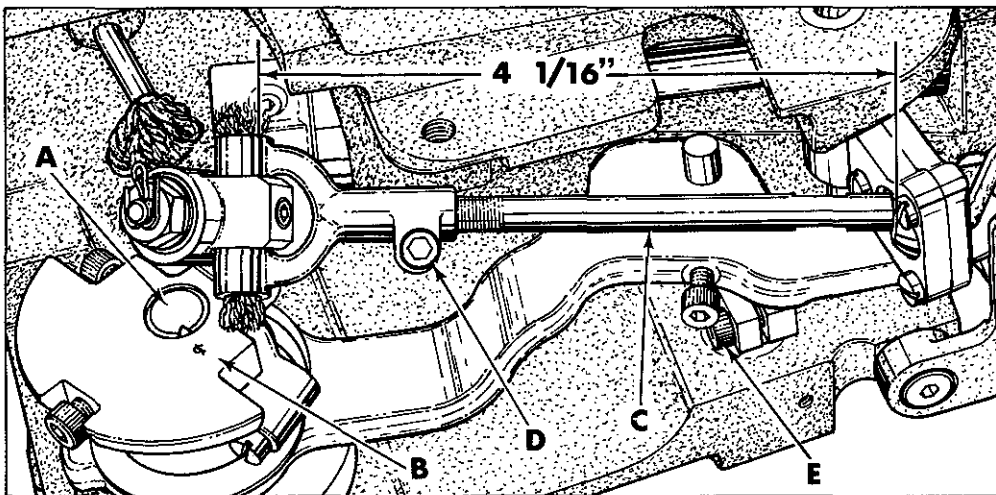


Fig. 7

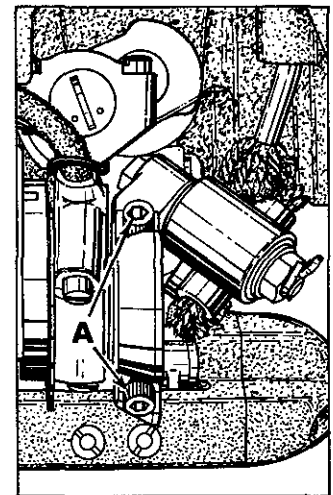


Fig. 7A

looper is secured by manipulation of looper ball adjusting shaft (A, Fig. 8) and the looper holder connecting rod (C, Fig. 7). The looper ball adjusting shaft positions the looper laterally and also provides a limited amount of vertical or height adjustment. Lateral adjustment is secured by loosening screws (D, Fig. 4) and moving shaft (A, Fig. 8) right or left. Vertical or height adjustment can be secured by turning the shaft (as viewed in Fig. 8) counterclockwise to lower the looper, turning the shaft clockwise acts the reverse. When desired position has been acquired, hold in on both ends of shaft while retightening screws (D, Fig. 4). The looper holder connecting rod (C, Fig. 7) also adjusts the looper vertically, but to a greater extent than the adjusting shaft. If the looper is radically out of adjustment, to the spot of the

needle, adjustment can be made by loosening the clamp screw (D) and by turning the connecting rod, rolling the looper to the desired height. The approximate distance from the back side of the front ball to the near edge of the inside of the link pin should be $4 \frac{1}{16}$ inches (See Fig. 7). Retighten clamp screw on connecting rod yoke to maintain the desired height. If only a slight amount of height adjustment is required, it can be secured by turning the looper ball adjusting shaft (A, Fig. 8) as described earlier. Final setting involves coordinated adjustment of both the connecting rod and the adjusting shaft.

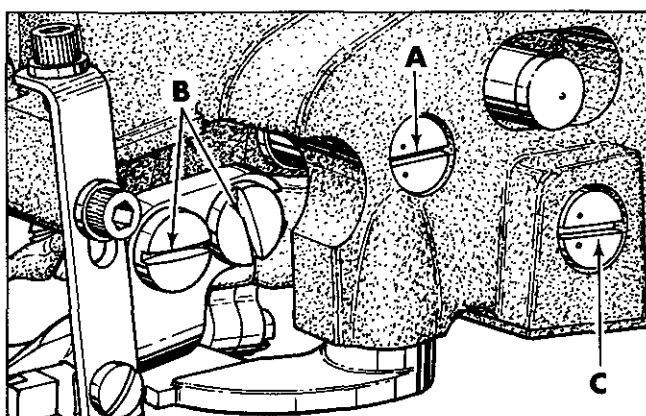


Fig. 8

SETTING FEED DOG

As the needle travels from right to left, the feed dog should contact feed plates when point of needle is flush with right side of cloth opening behind needle. Feed dog should depress feed plates approximately the depth of one full tooth. The feed dog is adjusted by means of two screws (B, Fig. 8) on the right side of the head. The slot in eccentric stud (C) should be horizontal when the feed bar is all the way towards the operator and the punch marks at the end of the slot in the stud should be towards the operator. To position stud, loosen clamp screw (E, Fig. 7) and position stud as required, retighten clamp screw. It may be necessary to rotate the punch marks down in stud to obtain a full tooth depth for shorter number of stitches. CAUTION: Feed dog must not graze looper or the back of the feed dog slot in the presser foot.

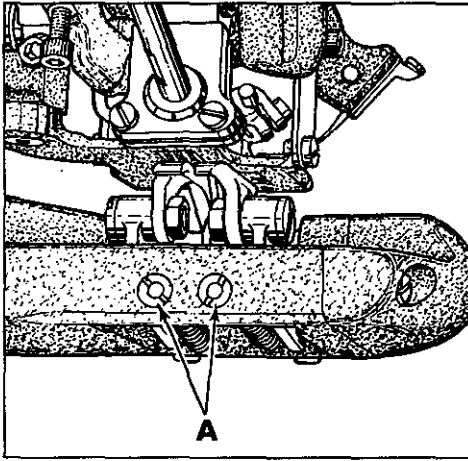


Fig. 9

SETTING FEED PLATES

Pressure on the feed plates is controlled by two nuts (A, Fig. 9) located in the back of the cylinder. Turning them counterclockwise increases the tension and turning the nuts clockwise acts the reverse. Set feed plate pressure to obtain a uniform stitch length and not to mark material. Set spring pressure so screw is approximately 1/16 inch from edge of nut. The feed plates should drop uniformly when the cylinder is depressed. To adjust feed plates (E, Fig. 4) to drop uniformly, set stop plates (F) at front of cylinder. The usual setting is to have a 1/32 inch gap between feed plate stops and feed plate holders, with feed dog off of feed plates. Feed plates should be centered around presser foot cloth opening. To make this setting, loosen the two allen set screws (A, Fig. 10) and move cylinder to the right or left as required. Retighten set screws.

TIMING CYLINDER WITH NEEDLE

When machine is set 3 to 1 or 2 to 1 skip stitch and the point of needle moving to the right is over center of ridge former width, with back cover open, timing line on cam (A, Fig. 11) should line up with pointer (B) in arm. If adjustment is necessary, turn handwheel in operating direction until the timing mark on cam (A) is in view in the rear opening as close to the pointer (B) as possible, ASSURING that the needle point is located over the center of the ridge former width. Loosen screws in sprocket (C) and position cam as required. Tighten screws in sprocket and close back cover.

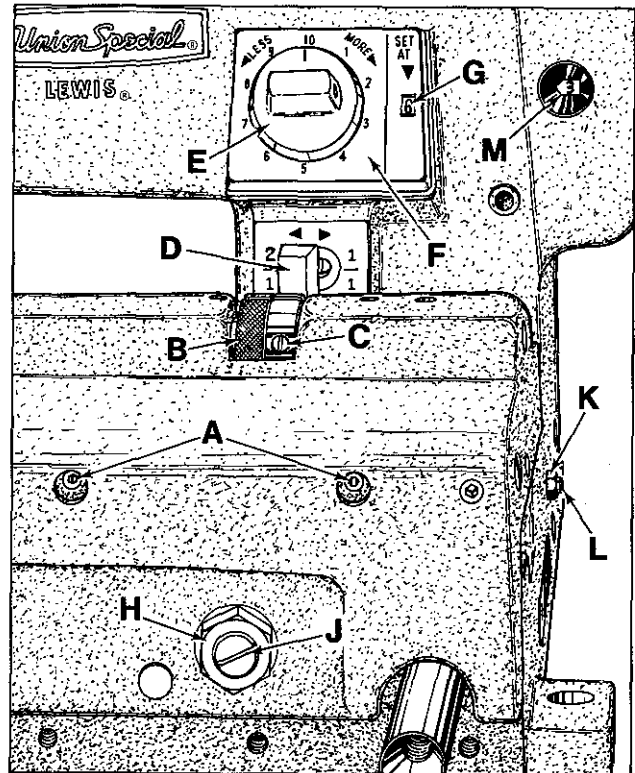


Fig. 10

TIMING CYLINDER WITH NEEDLE (Continued)

NOTE: In the 2 to 1 machine, for every (1) revolution of the handwheel, the cam (A, Fig. 11) rotates (1/2) revolution.

In the 3 to 1 machine, for every (1) revolution of the handwheel, the cam (A, Fig. 11) rotates (1/3) revolution.

SETTING RIDGE FORMER

The ridge former must be set so that it is in the center of the cloth opening in presser foot, left to right. To make this adjustment, loosen the two set screws in the hub of ridge former (G, Fig. 4), center ridge former in cloth opening and retighten set screws, tightening the set screw on the flat, first.

The needle moving from left to right should be timed with the ridge former so that when the ridge former has reached its farthest travel to the rear, the point of the needle is over the center of the width of the ridge former. To make this adjustment, swing open arm back cover and loosen screws in sprocket (D, Fig. 11). Turn handwheel until the point of the needle is over the center of the width of ridge former. Now, while holding handwheel to keep the point of the needle over the ridge former, rotate sprocket (D) forward or backward slightly, until the ridge former has reached its farthest travel to the rear.

NOTE: Remove all end play between handwheel and sprocket (D), retighten screws.

The ridge former should be set for hard finish materials. For hard finish material, the stepped side of the ridge former should be up and the word "HARD" showing on disc (B, Fig. 10). For soft materials, the wedge side of the ridge former should be up and the word "SOFT" showing on disc (B). If this is not the case and resetting becomes necessary, loosen screws in disc (C), tip cylinder down and rotate disc (B) 180° to position the stepped side of the ridge former up. Retighten screws in disc (C). If the word "HARD" does not show on disc (B), loosen screw in same and rotate as necessary to align the word "HARD" with the word "FINISH". Retighten screw while thrusting disc (B) against disc (C).

At this point the needle should also center (front to back) in the step of the ridge former. To make this adjustment, loosen screws in discs (B and C), locate ridge former step with respect to the needle and retighten screws, thrusting disc (B) to right against disc (C).

When sewing soft finish material use the wedge side of the ridge former. To change from "HARD" to "SOFT", merely loosen set screw in disc (C, Fig. 10), tip cylinder down, rotate disc (B) 180° and retighten set screw.

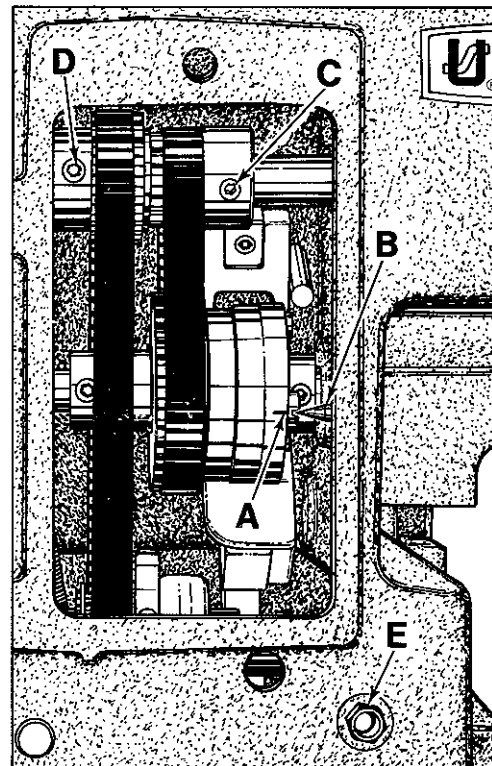


Fig. 11

SETTING RIDGE FORMER (Continued)

For average sewing, the cylinder main spring pressure is set correctly when the end of spring adjusting screw is inside end of hexagonal head nut (E, Fig. 11) 5/16 inch (as viewed from rear of machine). More cylinder pressure is obtained by adjusting the nut clockwise and less pressure is obtained by turning the nut counterclockwise.

SETTING NEEDLE GRAZE

Set stitch selector knob (D, Fig. 10) on 1 to 1, then set ridge former regulator knob (B) to "Soft Finish". Also set penetration dial knob (E) to "10" on dial plate (F) with the number "6" showing in window (G).

Loosen nut (H), then turn screw (J) only enough so needle grazes the ridge former and is lifted off the needle guide approximately .002 inch; retighten nut (H). At this time, screw (J) should be almost flush with front surface of nut (H). Be sure to remove all free play in knee press by loosening nut (K) and turning stop screw (L) as required, then back off screw (L) one half turn and retighten nut (K).

Set stitch selector knob on 2 to 1. During the skip-stitch cycle, the cylinder drop will now be approximately .009 inch (minimum drop) - with the above settings. On heavier materials when the penetration is decreased, the cylinder drop is automatically increased. Under certain conditions, primarily on medium to heavy weight materials, it may be necessary to have more than .009 inch cylinder drop.

To increase cylinder drop, set penetration dial knob (E) to "10" on dial plate (F) with any number (5 through 1) showing in window (G). Note: The smaller the number shown in window (G), the more the cylinder will drop in the skip-stitch cycle. For example: At a setting of "10" on dial (E) with the number "1" showing in window (G), the cylinder drop will be approximately .032 inch. Also note; proper cylinder drop settings will depend on thickness of material sewn. Reset needle graze on the non-skip cycle as previously explained.

To coordinate settings of dial plate (F) and counterplate behind window (G), loosen set screw in penetration dial knob (E), then remove knob from machine. Adjust counterplate behind window (G) so the number "6" is showing in window. Replace knob (E), setting it on the number "10", then retighten set screw in dial knob. This will prevent the ridge former from rising too high so the needle will strike it when turning the penetration dial knob.

When resetting machine to sew lightweight material, the needle graze must again be readjusted to prevent needle breakage.

CHANGING THE STITCH LENGTH

Press plunger (B, Fig. 5) in firmly. While holding plunger in, turn handwheel in operating direction until stitch regulating finger is felt to drop into the slot of feed regulator. Continuing to hold the plunger in, turn handwheel in operating direction to increase the stitch length and in opposite direction to decrease the stitch length.

Stitch lengths are indicated by graduations on the indicator dial and are viewed through the window (M, Fig. 10) in the belt guard.

FURTHER ADJUSTMENTS

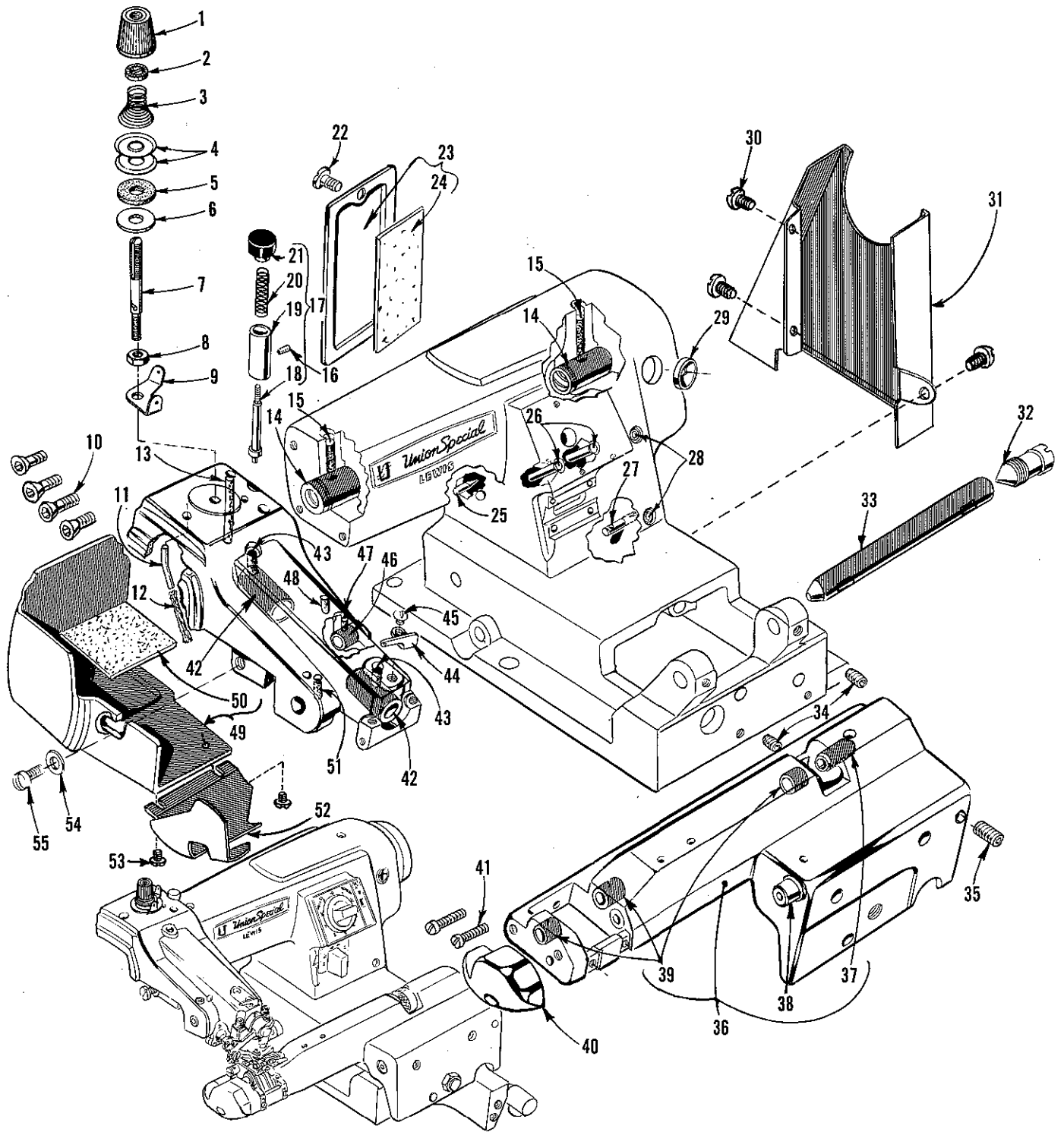
The cloth retainer (F, Fig. 3) should be centered over ridge former and be as close to the needle as possible. To adjust retainer, loosen set screw (G) and set screw in cloth retainer bushing (J). The long prong of the retainer spring is usually aligned with the screw in cloth retainer bushing. Rotate stud (K) in bushing, to adjust retainer close to needle and also center retainer over ridge former. Retighten set screws. The chaining finger (L) should be set as close as possible to the needle.

TORQUE REQUIREMENTS

Torque (measured in inch-pounds) is a rotating force (in pounds) applied through a distance by a lever (in inches or feet). This is accomplished by a wrench, screwdriver, etc. Many of these devices are available, which when set at the proper amount of torque will tighten the part to the correct amount and no tighter.

All straps and eccentrics should be tightened to 19-21 inch-pounds (22-24cm/kg) unless otherwise noted. All other nuts, bolts, screws, etc., should be tightened by hand as tightly as possible, unless otherwise noted.

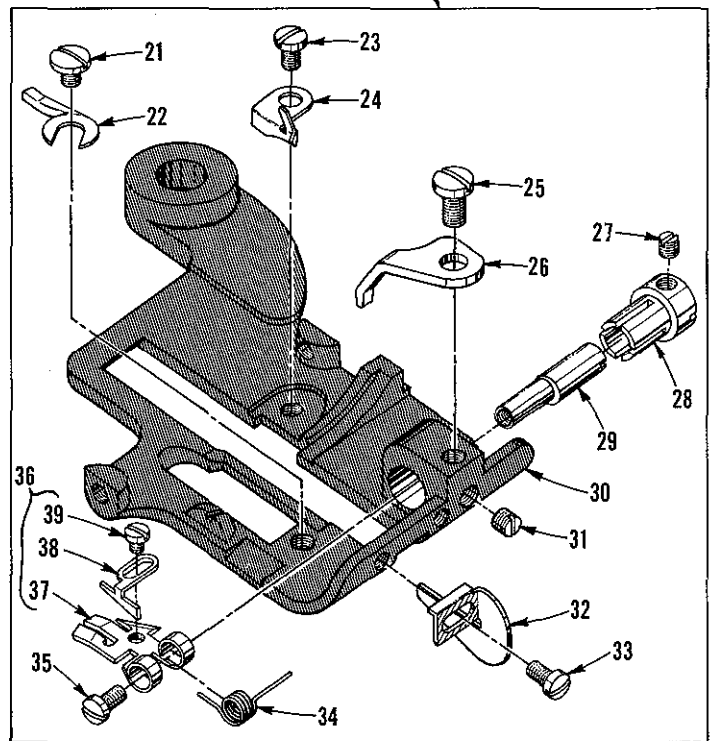
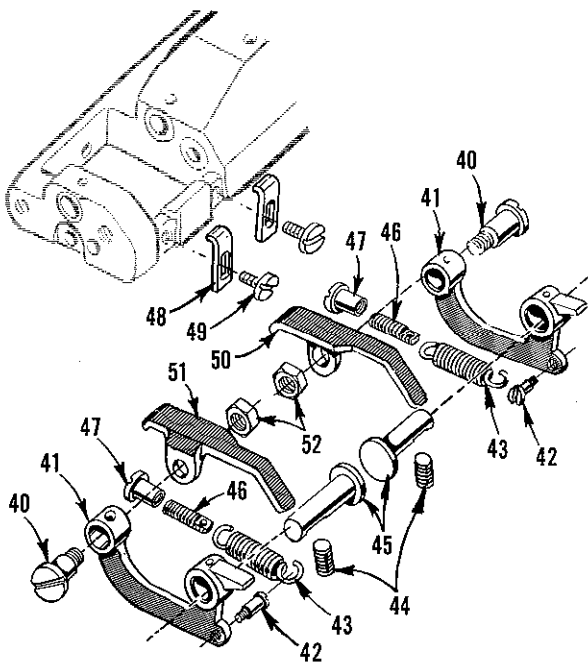
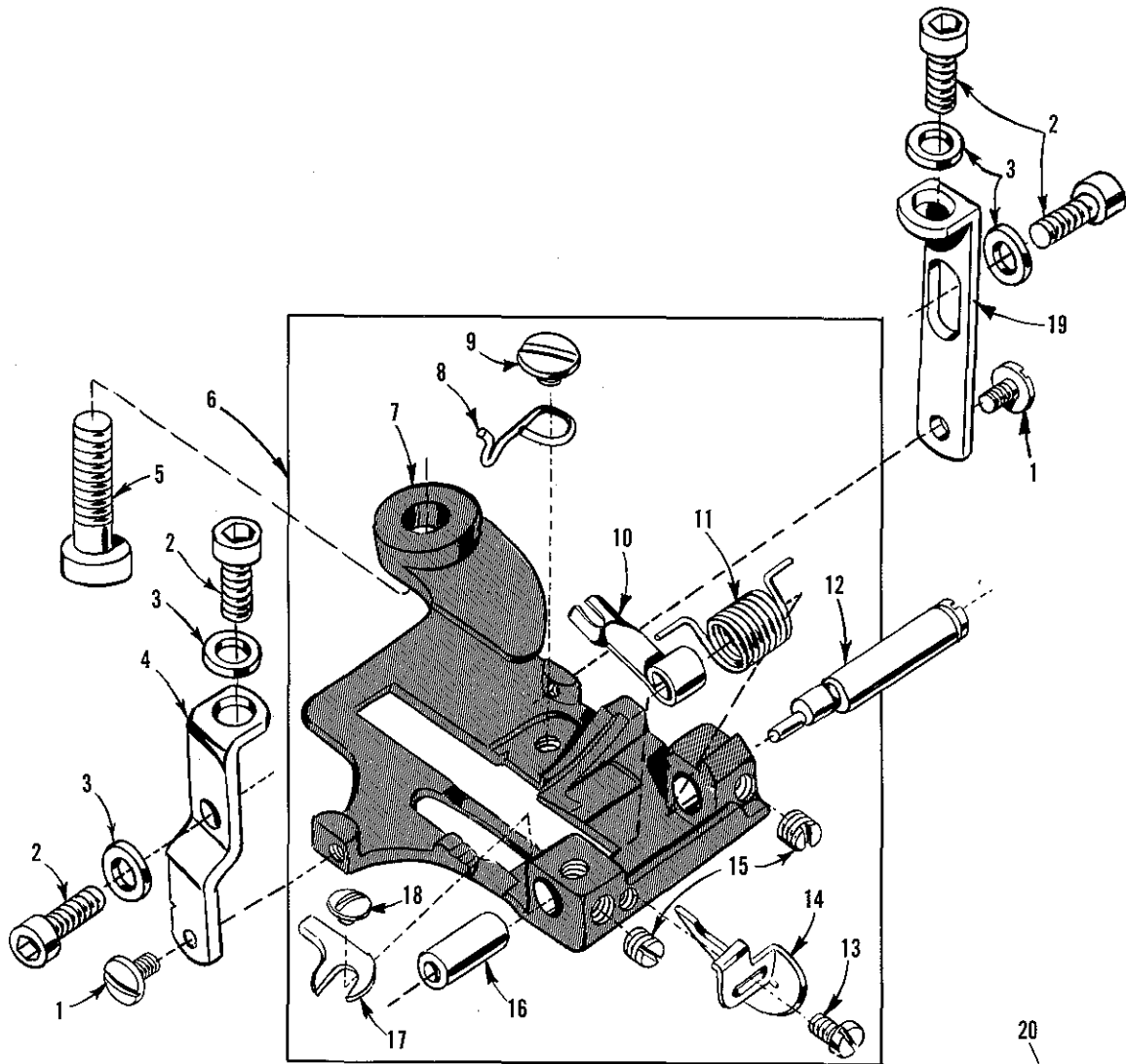
The screws requiring a specific torque, will be indicated on the picture plates.



MAIN FRAME, BUSHINGS, OIL WICKS,
COVERS AND THREAD TENSION PARTS

Ref. No.	Part No.	Description	Amt. Req.
1	39592 Z	Nut, tension -----	1
2	39592 AK	Ferrule, tension spring -----	1
3	39592 AR-2	Spring, needle tension -----	1
-	39592 AR-4	Spring, needle tension -----	1
4	39592 AD	Disc, thread tension -----	2
5	39592 AF	Felt, tension disc -----	1
6	20 M	Washer -----	1
7	39592 AL	Post, tension -----	1
8	37 R	Nut -----	1
9	51292 D	Eyelet, thread tension -----	1
10	22656 D-12	Screw, head attaching -----	4
11	61-88	Tube, oil -----	1
12	WO-3	Yarn, columbia wool ----- as required	
13	666-279	Wick, oil -----	1
14	16-389	Bushing, main shaft -----	2
15	666-277	Wick, oil -----	2
16	18-634	Screw -----	1
17	426-185	Plunger Assembly, stitch length regulating -----	1
18	26-185	Plunger -----	1
19	16-194	Bushing -----	1
20	LS-75	Spring -----	1
21	191-3	Button, plunger -----	1
22	22847 B	Screw -----	1
23	32-308	Cover, back -----	1
24	63-38	Lining, felt -----	1
25	51-324 Blk.	Pin -----	1
26	22-331	Pin, penetration dial mounting plate -----	2
27	22-256	Pin -----	1
28	WO-3	Yarn, columbia wool ----- as required	
29	61449 T	Window, stitch length indicator -----	1
*30	22649 F-16	Screw -----	3
*31	8-143	Guard, belt -----	1
32	18-1099	Screw, pivot shaft bearing -----	1
33	14-512	Shaft, cylinder pivot -----	1
34	22894 AD	Screw, cylinder shaft and ridge former drive shaft -----	2
35	22650 AE-10	Screw, pivot shaft bearing screw -----	1
36	3-103	Cylinder Assembly -----	1
37	16-403	Bushing, right, ridge former shaft -----	1
38	16-377	Bushing, left, cylinder pivot shaft -----	1
39	16-375	Bushing, ridge former shaft -----	3
40	115-167	Block, cylinder end support -----	1
41	22615 A-48	Screw -----	2
42	16-393	Bushing, needle carrier shaft -----	2
43	666-278	Wick, oil -----	2
44	147-20	Eyelet, thread -----	1
45	22635 CA-12	Screw -----	1
46	16-384	Bushing, eccentric stud -----	1
47	63-41	Wick, oil, feed bar pivot -----	1
48	666-276	Wick, oil -----	1
49	32-307	Cover, head -----	1
50	63-34	Lining, felt -----	1
51	63-43	Wick, oil, looper pivot -----	1
*52	8-144	Guard, looper ball strap -----	1
*53	22635 CA-12	Screw -----	2
54	40-181	Washer -----	1
55	FP-342	Screw -----	1

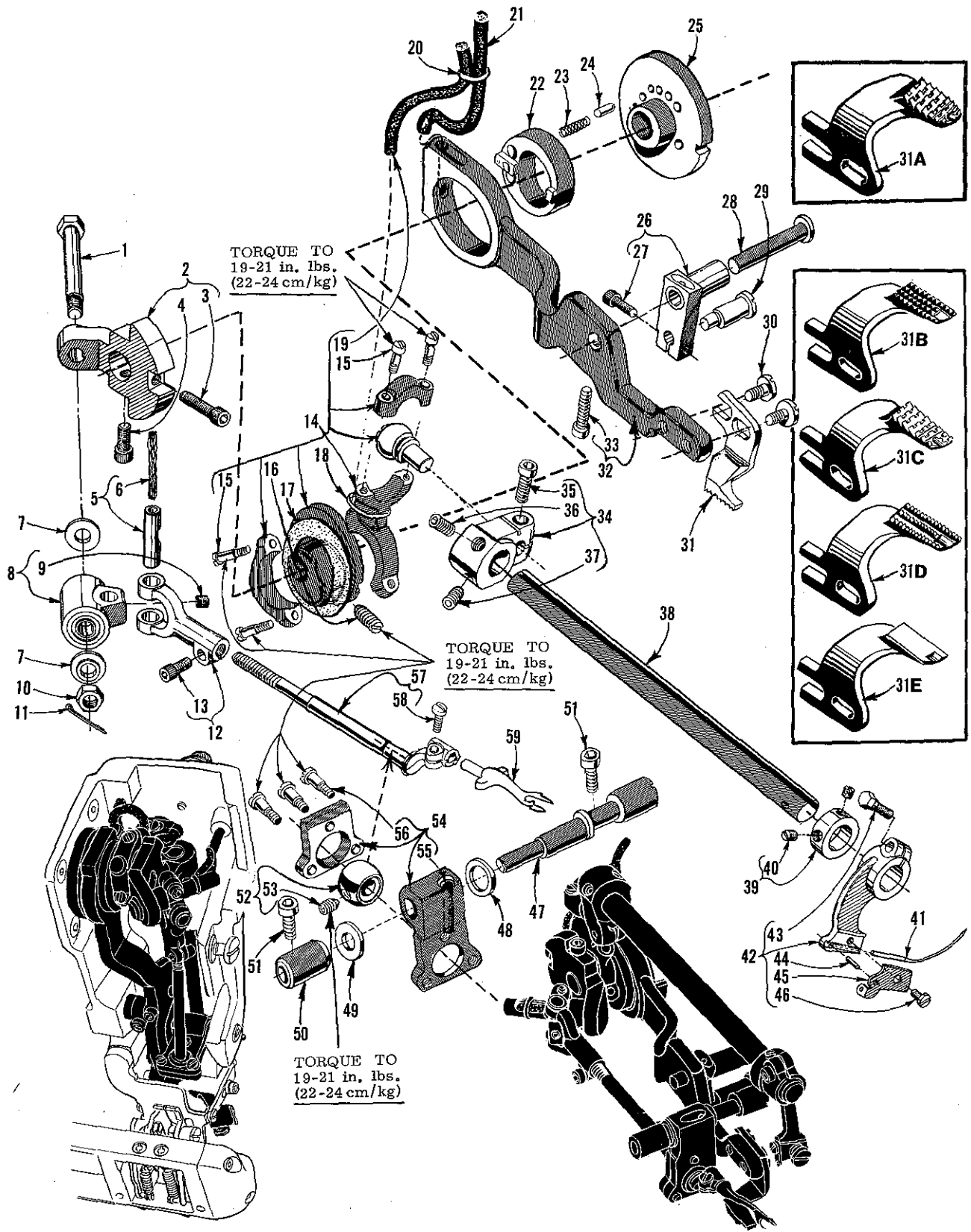
* Available as extra send and charge items.



PRESSER FEET, FEED PLATES
AND FEED PLATE HOLDER PARTS

Ref. No.	Part No.	Description	Amt. Req.
1	18-307	Screw -----	2
2	22652 A-8	Screw -----	4
3	80266	Washer -----	4
4	50-300	Bracket, presser foot, left, Styles -3 and -33 -----	1
5	18-1094	Screw -----	1
6	405-590	Presser Foot Assembly, 1/4 inch (6.4mm) cloth opening, Styles -3 and -33 -----	1
* -	405-589	Presser Foot Assembly, used when sewing medium weight material, 9/32 inch (1.1mm) cloth opening -----	1
* -	405-590-1	Presser Foot Assembly, used when sewing fine weight material, 1/32 inch (.8mm) notched retainer -----	1
* -	405-591	Presser Foot Assembly, used when sewing heavyweight material, 11/32 inch (8.7mm) cloth opening. Requires use of No. 23-346 feed dog -----	1
7	5-590	Presser Foot, for Nos. 405-590 and 405-590-1 -----	1
-	5-589	Presser Foot, for No. 405-589 -----	1
-	5-591	Presser Foot, for No. 405-591 -----	1
8	122-47	Finger, chaining -----	1
9	18-1107	Screw -----	1
10	137-154	Retainer, marked "C" 5/64 inch (2mm) wide notch, for Nos. 405-589 and 405-590 -----	1
-	137-155	Retainer, marked "D", 1/32 inch (.8mm) wide notch, for No. 405-590-1 -----	1
-	137-156	Retainer, marked "E", 5/16 inch (8mm) wide, with 5/64 inch (2mm) wide notch, for No. 405-591 -----	1
11	21-446	Spring -----	1
12	14-532	Stud, eccentric retainer -----	1
13	1351 L	Screw -----	1
14	75-255	Guide, edge -----	1
15	88	Screw, set -----	2
16	16-399	Bushing -----	1
17	6-56	Guide, needle -----	1
18	18-643	Screw -----	1
19	50-160	Bracket, presser foot, right, Styles -3 and -33 -----	1
-	50-160	Bracket, presser foot, left and right, Styles -2 and -32 -----	2
20	405-394-6	Presser Foot Assembly, Styles -2 and -32 -----	1
21	18-643	Screw -----	1
22	6-56	Guide, needle -----	1
23	18-292	Screw -----	1
24	122-35	Finger -----	1
25	18-623	Screw -----	1
26	42-24	Stop, cloth retainer -----	1
27	18-416	Screw -----	1
28	16-214	Bushing, spring tension -----	1
29	17-87	Stud, eccentric -----	1
30	5-394	Presser Foot -----	1
31	1022	Screw -----	1
32	75-210	Guide, edge -----	1
33	1351	Screw -----	1
34	21-193	Spring -----	1
35	18-270	Screw -----	1
36	4137-133	Retainer Assembly, cloth -----	1
37	137-133	Retainer -----	1
38	75-222	Guide, edge -----	1
39	18-609	Screw -----	1
40	18-908	Screw, feed plate -----	2
41	99-346	Holder, feed plate -----	2
42	18-269	Screw -----	2
43	21-75	Spring -----	2
44	22650 A	Screw, feed plate holder hinge -----	2
45	22-324	Pin, feed plate holder hinge -----	2
46	18-628	Screw, feed plate holder spring adjusting -----	2
47	20-129	Nut -----	2
48	42-35	Stop, feed plate holder -----	2
49	18-644	Screw -----	2
50	24-334	Plate, feed, right -----	1
51	24-339	Plate, feed, left -----	1
52	1106 L	Nut -----	2

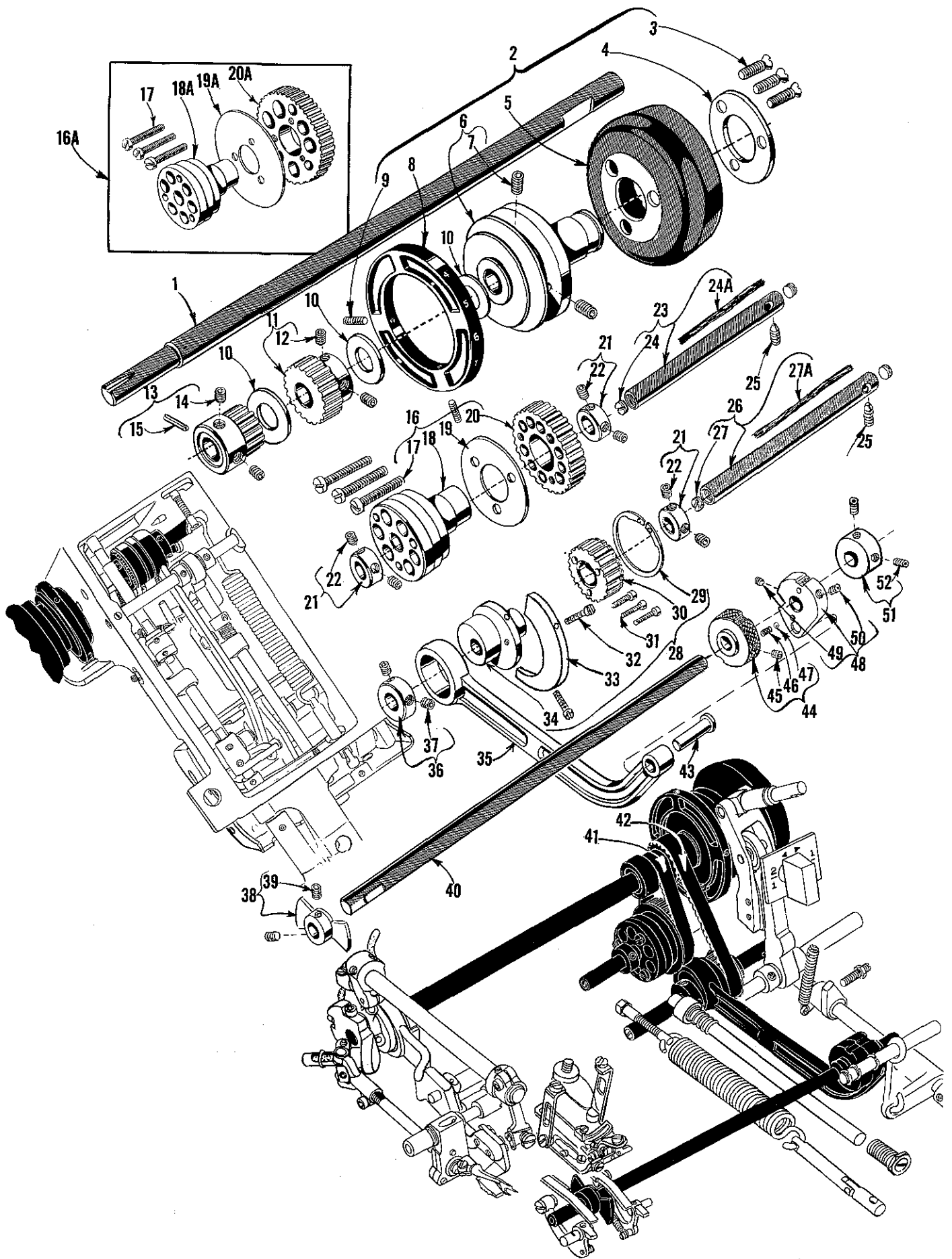
* Available as extra send and charge item for Styles 37500-3, -33 and earlier Styles 37500-2 and -32.



FEED, LOOPER AND NEEDLE DRIVING PARTS

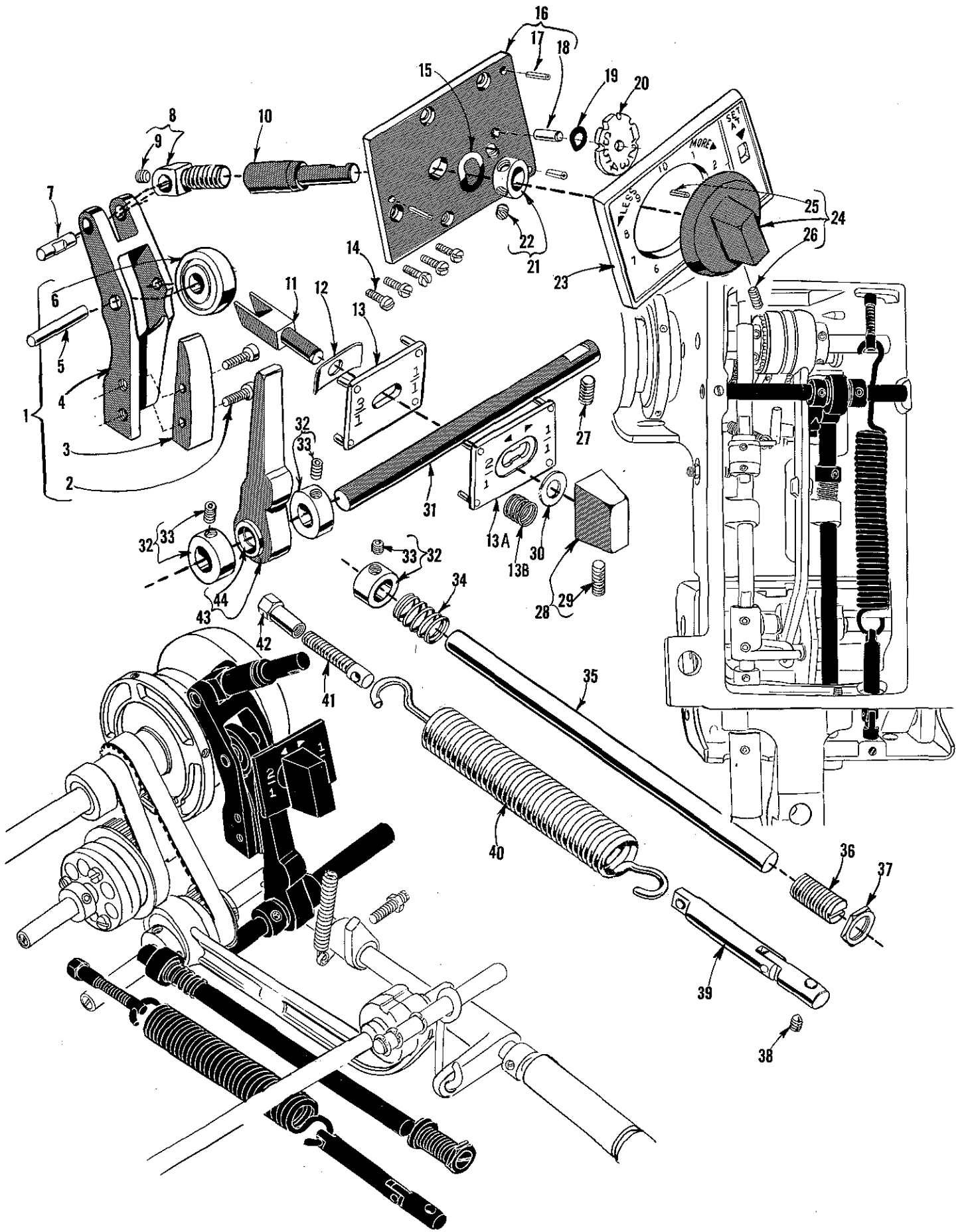
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	17-183	Stud, screw -----	1
2	48-191	Crank, looper drive -----	1
3	22652 A-12	Screw -----	1
4	22652 A-8	Screw -----	1
5	22-353	Pin, connecting -----	1
6	W03	Yarn, columbia wool -----	1
7	40-207	Washer, spacer -----	2
8	453-21	Housing Assembly, bearing -----	1
9	22651 AB-3	Screw -----	1
10	9937	Nut, swinging head link ball stud -----	1
11	660-142	Pin, cotter -----	1
12	49-38	Yoke, looper carrier -----	1
13	22652 A-6	Screw -----	1
14	447-140	Ball Joint Assembly, needle drive eccentric -----	1
15	22559 D	Screw -----	4
16	18-492	Screw, spot -----	1
17	40-199	Washer, fiber -----	1
18	660-204	"O" ring -----	1
19	666-239	Wick, oil -----	1
20	660-220	"O" ring -----	1
21	666-279	Wick, oil -----	1
22	33-149	Eccentric, feed driving lever -----	1
23	21-439	Spring, stitch regulator -----	1
24	22-53	Pin, stitch regulator -----	1
25	149-33	Regulator, stitch -----	1
26	46-206	Link, feed driving lever -----	1
27	22652 A-8	Screw -----	1
28	17-150	Stud, feed driving lever link -----	1
29	17-114	Stud, eccentric -----	1
30	17-732	Screw, feed dog -----	2
31		Feed Dog, refer to Ref. Nos. 31A thru 31E -----	1
*31A	23-346	Feed Dog, coarse tooth, 10 t.p.i., (2.5mm per tooth), used with presser foot No. 405-591 only -----	1
31B	23-335	Feed Dog, knurled tooth, 16 t.p.i., (1.6mm per tooth), Styles -32 and -33-----	1
31C	23-216	Feed Dog, coarse tooth, 10 t.p.i. (2.6mm per tooth), Styles -2 and -3 -----	1
*31D	23-340	Feed Dog, fine tooth, 21 t.p.i., (1.2mm per tooth), all Styles -----	1
*31E	23-341	Feed Dog, rubber padded, all Styles -----	1
32	45-478	Lever, feed driving -----	1
33	22652 A-16	Screw -----	1
34	48-188	Crank, needle lever carrier shaft -----	1
35	22652 A-8	Screw -----	1
36	22894 C	Screw, set -----	1
37	22894 D	Screw, spot -----	1
38	14-524	Shaft, needle carrier -----	1
39	439-7	Collar -----	1
40	SB15	Screw -----	2
41	29 BL-090/036	Needle -----	1
42	4118-24	Carrier, needle -----	1
43	18-70	Screw -----	1
44	22-9	Pin -----	1
45	30-52	Clamp -----	1
46	810 L	Screw -----	1
47	17-179	Shaft, looper ball joint adjusting -----	1
48	41332 J	Washer, right, looper ball joint thrust -----	1
49	61434 G	Washer, left, looper ball joint thrust -----	1
50	16-392	Bushing, thrust -----	1
51	22652 A-8	Screw -----	2
52	79-41	Ball, looper connection -----	1
53	22894 U	Screw -----	1
54	4124-64	Connection, looper ball -----	1
55	63-39	Wick, oil -----	1
56	18-1100	Screw -----	3
57	4118-37	Shaft, looper carrier -----	1
58	1170 L	Screw -----	1
59	36-16	Looper -----	1

* Available as extra send and charge item.



HANDWHEEL, RIDGE FORMER AND
SKIP-STITCH DRIVING PARTS

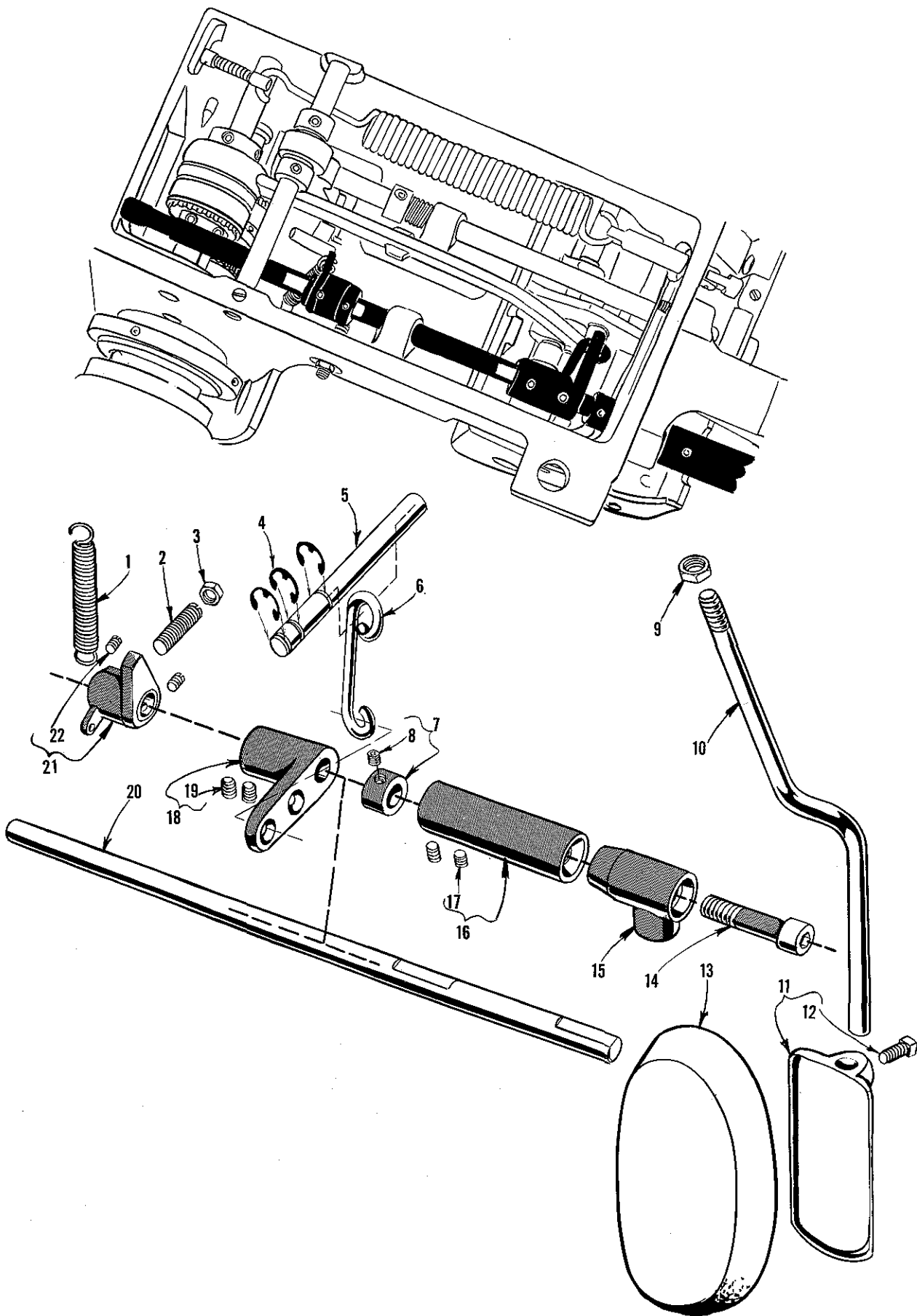
<u>Ref.</u> <u>No.</u>	<u>Part</u> <u>No.</u>	<u>Description</u>	<u>Amt.</u> <u>Req.</u>
1	14-515	Shaft, main -----	1
2	37521 B	Handwheel Assembly -----	1
3	22574 C	Screw -----	3
4	61321 L	Washer -----	1
5	63921 BA	Handwheel -----	1
6	37521 C	Pulley -----	1
7	22894 V	Screw, set -----	2
8	155-21	Indicator, stitch length -----	1
9	22650 AA-7	Screw -----	2
10	40-197	Washer, belt retaining and thrust -----	3
11	161-6	Sprocket, ridge former drive -----	1
12	22894 AD	Screw -----	2
13	161-7	Sprocket, drive, Styles -2 and -32 -----	1
-	161-8	Sprocket, drive, Styles -3 and -33 -----	1
14	22894 AD	Screw, set -----	2
15	660-219 T	Pin, roll -----	1
16	433-169	Eccentric Assembly, cylinder drive, Styles -2 and -32 -----	1
16A	433-161	Eccentric Assembly, cylinder drive, Styles -3 and -33 -----	1
17	22874 F	Screw -----	3
18	33-169	Eccentric, used with 433-169 -----	1
18A	33-162	Eccentric, used with 433-161 -----	1
19	107-59	Flange, used with 433-169 -----	1
19A	107-60	Flange, used with 433-161 -----	1
20	161-9	Sprocket, used with 433-169 -----	1
20A	161-10	Sprocket, used with 433-161 -----	1
21	39-144	Collar, cylinder shaft and ridge former drive shaft -----	3
22	22894 C	Screw -----	2
23	14-527	Shaft, cylinder drive eccentric -----	1
24	18-800	Screw -----	2
24A	666-134	Wick, oil -----	1
25	22894 H	Screw, spot -----	2
26	14-528	Shaft, ridge former drive -----	1
27	18-800	Screw -----	1
27A	666-121	Wick, oil -----	1
28	433-163	Eccentric Assembly, ridge former drive, Styles -2 and -32 -----	1
-	433-165	Eccentric Assembly, ridge former drive, Styles -3 and -33 -----	1
29	660-414	Ring, retaining -----	1
30	161-5	Sprocket -----	1
31	22653 L-8	Screw -----	3
32	22747 B	Screw -----	2
33	139-13	Counterweight, eccentric, Styles -2 and -32 -----	1
-	139-14	Counterweight, eccentric, Styles -3 and -33 -----	1
34	33-163	Eccentric, ridge former -----	1
35	47-138	Connecting Rod, ridge former -----	1
36	39-146	Collar, ridge former drive shaft thrust -----	1
37	22894 C	Screw -----	2
38	44-335	Former, ridge -----	1
39	22894 T	Screw, set -----	2
40	14-533	Shaft, ridge former -----	1
41	171-13	Belt, skip drop drive, Styles -2 and -32 -----	1
-	171-12	Belt, skip drop drive, Styles -3 and -33 -----	1
42	171-11	Belt, ridge former drive -----	1
43	22-333	Pin, ridge former drive -----	1
44	142-12	Knob, ridge former regulating -----	1
45	22651 AB-4	Screw, set -----	1
46	21-269	Spring -----	1
47	79-31	Ball -----	1
48	48-189	Crank, ridge former drive -----	1
49	22597 A	Screw -----	1
50	22894 AD	Screw -----	1
51	39-145	Collar, thrust -----	1
52	22894 T	Screw, set -----	2



STITCH SELECTOR AND STITCH
DEPTH REGULATING PARTS

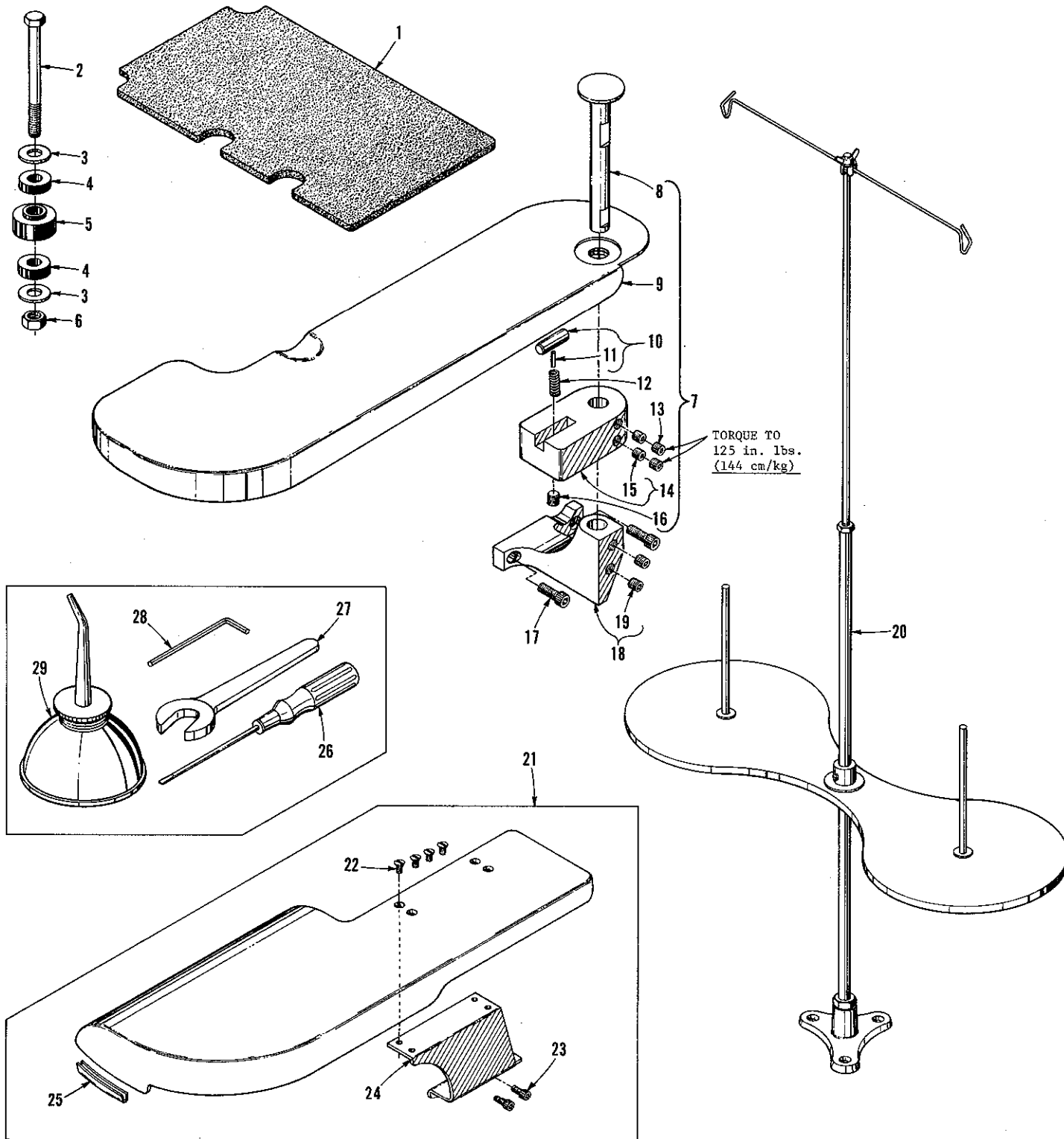
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	435-36	Lever Assembly, cam follower -----	1
2	22652 A-8	Screw -----	2
3	144-32	Pad, follower -----	1
4	45-479	Lever, follower -----	1
5	14-526	Shaft, roller -----	1
6	35-36	Roller -----	1
7	22-332	Pin, cam follower lever -----	1
8	18-1081	Screw, stitch depth regulator adjusting -----	1
9	22894 T	Screw -----	1
10	70-75	Sleeve, stitch depth regulator adjusting -----	1
11	69-24	Block, slide, Styles -3 and -33 -----	1
* -	69-25	Block, slide, Styles -2 and -32 -----	1
12	21-434	Spring, selector slide block, Styles -3 and -33 -----	1
13	98-226	Plate, selector, Styles -3 and -33 -----	1
*13A	110-451	Plate, selector, Styles -2 and -32 -----	1
*13B	21-460	Spring, selector slide block, Styles -2 and -32 -----	1
14	22617 J-24	Spring, penetration dial mounting plate -----	5
15	43232 R	Washer, spring -----	1
16	110-433	Plate, penetration dial mounting -----	1
17	660-219 V	Pin -----	3
18	51241 C	Pin -----	1
19	39668 H	Washer, spring -----	1
20	110-431	Plate, counter -----	1
21	12865	Collar -----	1
22	88	Screw -----	2
23	110-434	Plate, penetration dial -----	1
*24	142-18	Knob, penetration dial -----	1
25	660-219 W	Pin, roll -----	1
26	22651 CB-4	Screw -----	1
27	18-658	Screw -----	1
*28	142-19	Knob, selector -----	1
29	22894 E	Screw -----	1
30	39543 N	Washer, Styles -3 and -33 -----	1
31	14-518	Shaft, cylinder drive lever -----	1
32	39-147	Collar -----	3
33	22894 T	Screw -----	1
34	41375 G	Spring, cylinder push rod -----	1
35	71-118	Rod, cylinder push -----	1
36	18-1098	Screw, cylinder push rod adjusting -----	1
37	12990	Nut, adjusting screw -----	1
38	18-633	Screw, knuckle assembly -----	1
39	471-C544	Knuckle Assembly -----	1
40	21-C54B	Spring, main -----	1
41	18-C884	Screw, main spring -----	1
42	20-C117	Nut, main spring screw -----	1
43	45-480	Lever, cylinder drive -----	1
44	35850 B	Bushing -----	1

* Parts may be ordered as an assembly under Part No. 498-227 for Styles 37500-2 and -32.



KNEE PRESS PARTS

<u>Ref.</u> <u>No.</u>	<u>Part</u> <u>No.</u>	<u>Description</u>	<u>Amt.</u> <u>Req.</u>
1	21-372	Spring, knee press stop -----	1
2	18-564	Screw, knee press stop -----	1
3	20-34	Nut, knee press stop -----	1
4	660-454	Ring, retaining -----	3
5	71-120	Rod, cylinder pull -----	1
6	131-29	Hook, cylinder knee press -----	1
7	39-147	Collar, knee press shaft -----	1
8	22894 T	Screw -----	1
9	814 L	Nut -----	1
10	71-111	Rod, knee press -----	1
11	4129-18	Pad, knee press -----	1
12	22508	Screw -----	1
13	660-168	Cushion, knee press -----	1
14	22652 F-32	Screw, knee press rod sleeve -----	1
15	70-76	Sleeve, front -----	1
16	70-74	Sleeve, rear -----	1
17	22651 CD-4	Screw -----	2
18	45-476	Lever, knee press -----	1
19	22894 J	Screw -----	2
20	14-514	Shaft, knee press -----	1
21	42-28	Stop, knee press -----	1
22	22651 CB-4	Screw -----	2



ACCESSORIES, WORK SUPPORT PLATE,
BRACKET AND MOUNTING PARTS

<u>Ref.</u> <u>No.</u>	<u>Part</u> <u>No.</u>	<u>Description</u>	<u>Amt.</u> <u>Req.</u>
1	144-29	Pad, felt -----	1
2	22640 H-224	Capscrew, hex head -----	4
3	652-16	Washer -----	8
4	40-198	Washer, isolator -----	8
5	144-36	Isolator -----	4
6	660-415	Nut -----	4
7	404-145	Plate, work support, complete -----	1
8	38-16	Post, pivot -----	1
9	4-145	Plate, work support -----	1
10	22-330	Pin, positioning -----	1
11	660-219 A	Pin, roll -----	1
12	21-438	Spring -----	1
13	18-1110	Screw -----	2
14	115-165	Block, work plate support -----	1
15	18-1110	Screw -----	2
16	22760 A	Screw -----	1
17	50-297	Bracket, pivot post -----	1
18	22650 AE-6	Screw -----	2
19	22652 D-12	Screw -----	2
20	29480 DP	Stand, thread, complete -----	1
*21	404-146	Plate, work support, complete -----	1
22	18-1108	Screw -----	4
23	22652 D-8	Screw -----	2
24	50-301	Bracket, mounting -----	1
25	144-28	Isolator -----	1
26	21201	Screwdriver, 9/64 inch round blade, overall length 7 11/16 inches -----	1
27	21388 U	Wrench, 3/4 inch open end -----	1
28	WR-69	Wrench, 9/64 hex. "L" shaped allen -----	1
29	413 D	Can, oil -----	1
-	660-458	Cover, dust, not shown -----	1

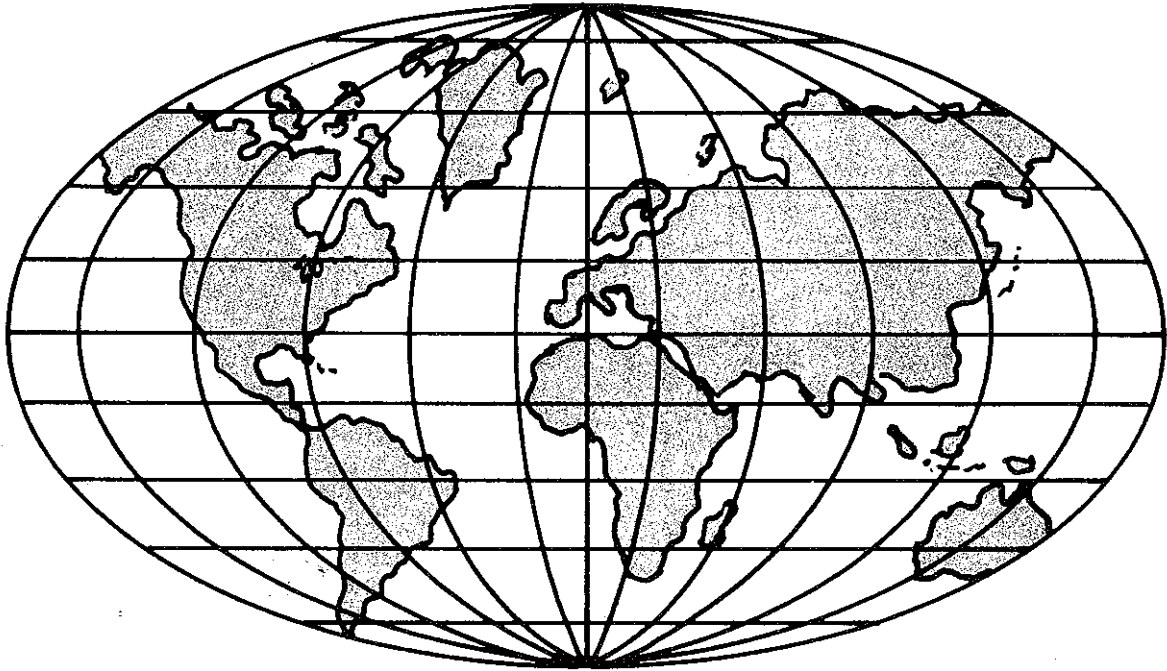
* Available as extra send and charge item.

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