

Fig. 1

THREADING AND OILING DIAGRAM FOR CLASS 57900 MACHINES

Thread machine as indicated above. The looper threading has been enlarged for clarity.

The oil has been drained from the machine before shipping and so the reservoir must be filled before starting to operate. To fill machine with oil, remove plug screw in top cover and add oil until needle of oil gauge (A, Fig. 1) is on the black line, located to the right of "OPERATE" zone, marked "FULL". Use a straight mineral oil of a Saybolt viscosity of 90 to 125 seconds at 100° Fahrenheit. Maintain oil level in "OPERATE" position and add oil when needle is to the black line, located to the left of "OPERATE" zone, marked "LOW". The machine is automatically lubricated and no oiling other than keeping the main reservoir filled is necessary.

Excessive oil in the main reservoir may be drained at the plug screw (B, Fig. 1).

SETTING FRONT NEEDLE GUARD

Set the front needle guard so that it pushes the left 602 stitch needle back toward the path of the front looper as it moves behind the needle. The looper may brush but not pick at this needle. It should be set as low as possible, yet have its vertical face push the needle until the point of the looper is just past the left side of the needle. The front needle guard should not contact the rear needle guard or right needle at any time. To move needle guard forward or rearward, loosen screws (A, Fig. 9), rotate needle guard holder as required and retighten screws. To raise, lower or rotate needle guard, loosen screws (B), reposition as necessary and retighten screws after guard is properly set.

NOTE: A change in stitch length WILL NOT require a change in front needle guard setting.

THREAD TENSION RELEASE

The thread tension release is set correctly when it begins to function as the presser foot is raised to within 1/8 inch (3.18 mm) of the end of its travel and is entirely released when the presser foot has reached its highest position.

If adjustment is needed, loosen tension release lever screw (A, Fig. 10), located at the back of the machine and move tension disc separator as required. Retighten screw. After adjustment there should be no binding at any point.

SETTING HEIGHT OF PRESSER BAR

The height of the presser bar (C, Fig. 4) is set correctly if it is possible to remove the presser foot when the foot lifter lever (B, Fig. 10) is fully depressed. Also there should be approximately 1/16 inch (1.59 mm) clearance between lower surface of the presser bar connection and guide (D, Fig. 4) and the bottom surface of head opening in the bed when the foot lifter lever is released and the presser foot resting on the throat plate, with the feed dog down below the throat plate.

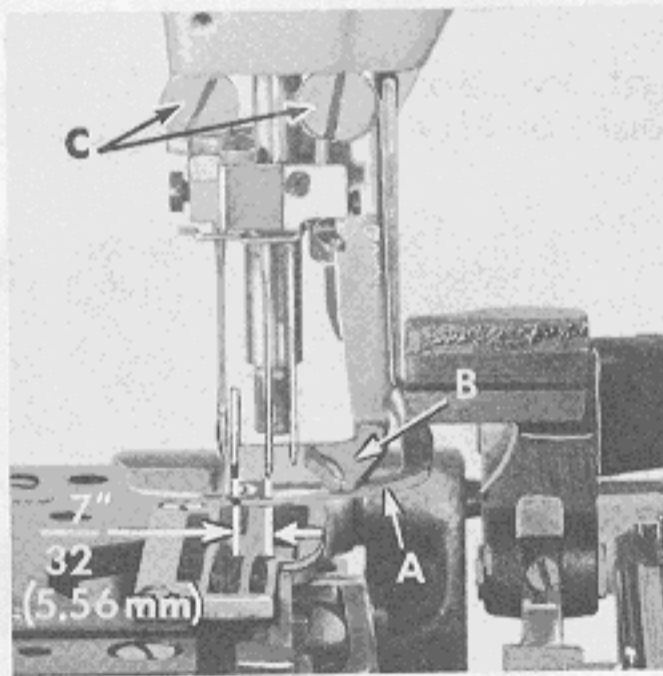


Fig. 11

presser foot can be removed as mentioned in previous paragraph.

Set the presser bar stop collar (F, Fig. 4) so that the presser foot does not contact the spreader when raised.

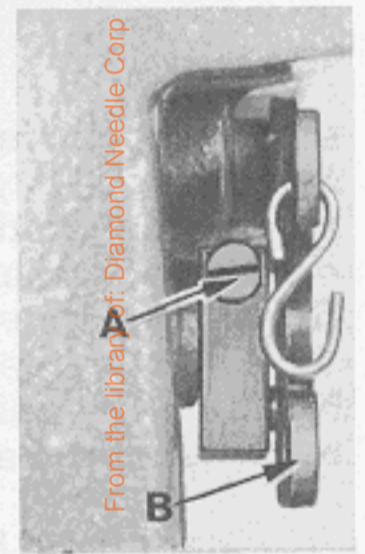


Fig. 10

If adjustment is needed, turn handwheel in operating direction until the needle bar is in the low position. Loosen screw (E, Fig. 4), then, while holding presser foot down on the throat plate surface, pry up presser bar connection and guide with a screwdriver to obtain the 1/16 inch (1.59 mm) setting and retighten screw. Check setting by turning handwheel so that needle bar is in its high position and see if

SETTING THE SPREADER

The arc travel of the spreader should be set at 9/16 inch (14.29 mm) for gauge Nos. 5-8 and 16-8 on Styles 57900 H and N. This setting should be 5/8 inch (15.88 mm) for gauge No. 12-12 on Styles 57900 H and N. Measurement is made by placing a scale between the two extreme spreader arc travel points. Adjustment can be made by loosening nut (G, Fig. 4) and moving the connecting link (H) up or down as required to obtain the desired amount of arc travel. Set the connecting link so that its arc travel is equal distance to the center of its arc. This is accomplished by loosening nut (J) and moving the spreader rocker shaft arm (K) to position the connecting link properly.

With the needle bar in its up position, and the spreader (A, Fig. 11) at the left end of its stroke, the upper spreader point should extend 7/32 inch (5.56 mm) to the left of the centerline of the center needle. This is accomplished by loosening screws (A, Fig. 12) and rotating spreader holder (B) to position the upper spreader point. Retighten screws.

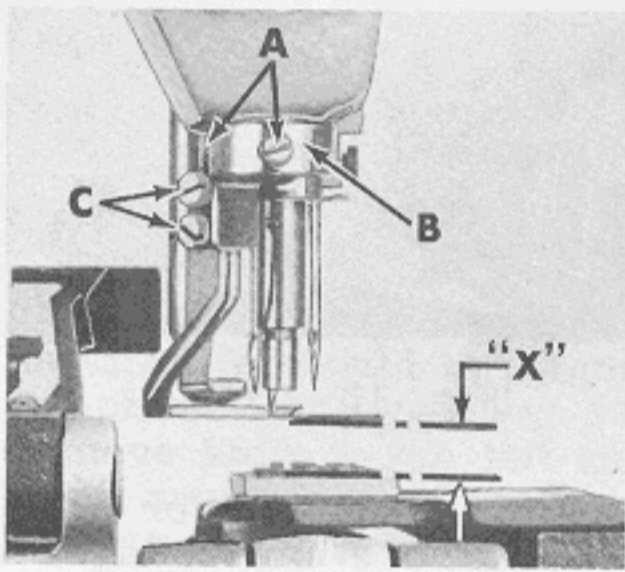


Fig. 12

CAUTION: The spreader holder is also the lower thrust collar for the spreader shaft, so when tightening screws (A, Fig. 12) be sure to push down on the spreader shaft and up on the spreader holder.

The spreader should clear the left needle shank by 1/64 to 1/32 inch (.40 to .79 mm) on all machine Styles. The bottom of the spreader should be 21/64 inch (8.33 mm) above the throat plate on machine Style 57900 H and 27/64 inch (10.72 mm) above the throat plate on machine Style 57900 N ("X" Fig. 12). Adjustment can be made by loosening screws (C, Fig. 12) and position spreader as required.

The left edge of the spreader thread guide (B, Fig. 11) should clear the right needle by approximately 3/32 inch (2.38 mm) and be kept close to the top of the spreader. This can be accomplished by loosening screws (C) and moving the guide as necessary.

THREAD TENSIONS

For best results the following conditions are desirable:

The 602 stitch must be pulled up unpuckered.

Needle loops may hang down as much as 1/3 of one stitch and within this range the loops do not have to be alike.

The left needle loop may pull in slightly.

The 401 stitch must be a medium tight stitch.

Needle loops may be pulled up between 1/64 to 1/32 inch (.40 to .79 mm).

The seam may grin or open up to 1/64 inch (.40 mm).

Pull threads through the proper eyelets, per Fig. 1 and adjust the applicable tension nuts to obtain the following tensions:

Needle threads for Styles 57900 H-5-8 and H-16-8 -----	4 oz. (113.40 gr).
Needle threads for Styles 57900 H-12-12 and 57900 N, all gauges -----	5 oz. (141.74 gr).
Looper and spreader threads-----	2 oz. (56.70 gr).

SETTING NEEDLE AND SPREADER THREAD FRAME EYELETS

Set the 401 stitch needle thread frame eyelet (A, Fig. 13) 1 inch (25.4 mm) above the center of its mounting screw on Styles 57900 H-12-12 and 57900 N-12-12; 3/4 inch (19.05 mm) on all other machine Styles. Set the spreader thread frame eyelet (B), 1/2 inch (12.70 mm) below the center of the mounting screw. Set the 602 stitch needle thread frame eyelet (C) as high as possible without drawing thread on the downstroke.

SETTING NEEDLE THREAD TAKE-UP WIRE

Set the needle thread take-up wire (D, Fig. 13) located adjacent to the needle bar thread eyelet (E) so that its upper surface is even with the top of the holes in the needle bar thread eyelet, when the needle bar has completed its downward stroke. Lower this setting for a smaller needle thread loop, or raise it for a larger loop.

SETTING LOOPER THREAD TAKE-UP

The looper thread take-up (A, Fig. 14) is not spotted on the mainshaft and consequently, can be set to compensate for varying conditions. It is set correctly when the looper thread is just cast off the highest lobe of the take-up when the point of the left needle is clearly visible below the underside of the looper. The cast-off plate support (B) is adjustable and its setting determines the amount of thread pulled off by the take-up. Moving support (B) up towards the bottom of its mounting screw slots (C) causes more thread to be pulled from the cones, moving same; down towards the top of its screw slots causes less thread to be pulled. The looper threads should just become taut as the loopers reach their extreme position to the left. Check out right to left positioning before securing support (B) as described in paragraph "SETTING THE TAKE-UP", for final setting.

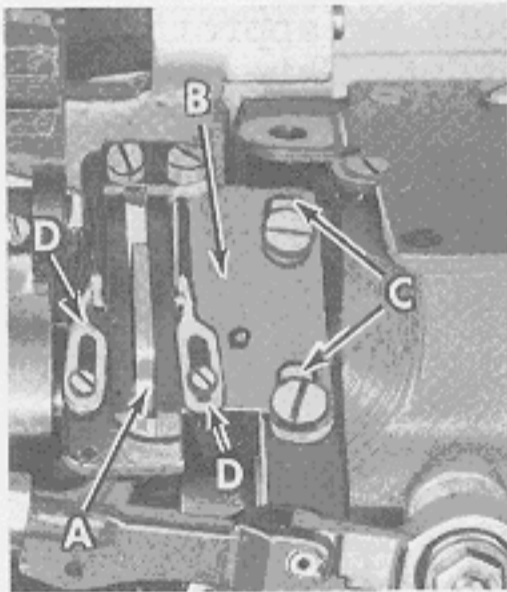


Fig. 14

PRESSER FOOT PRESSURE

Regulate the presser spring regulating screw (F, Fig. 13) so that it exerts only enough pressure on the presser foot to feed the work uniformly when a slight tension is placed on the fabric. This is the knurled screw, located directly behind the needle bar in the head of the machine. Turning it clockwise increases the pressure, counter-clockwise acts the reverse. The 401 stitch chaining section of the presser foot has an independent pressure adjusting screw (L, Fig. 4) for best control on feeding out the chain and stopping chain cutting.



Fig. 13

ADJUSTING TRIMMER MECHANISM

The cutting edge of the lower knife (A, Fig. 15) should be set level with the top of the throat plate (B). This can be accomplished by loosening screw (C), move

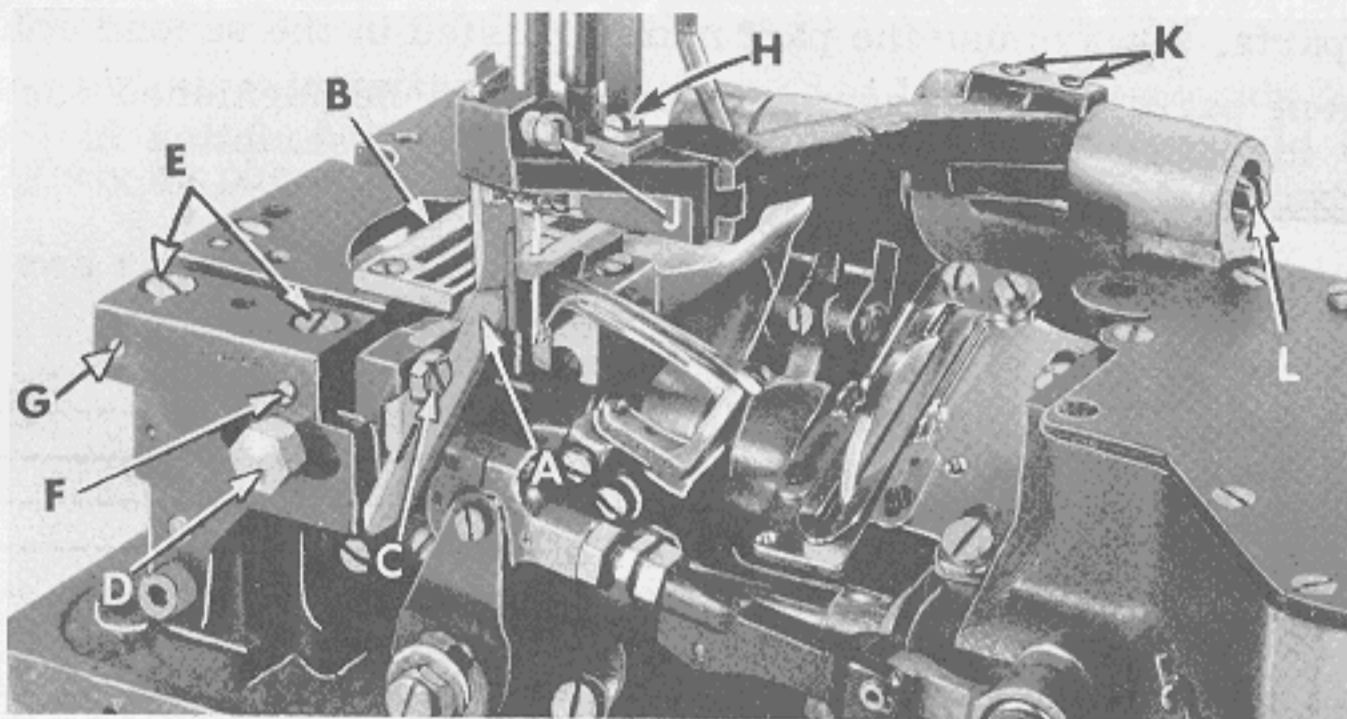


Fig. 15

lower knife up or down as required and retighten screw. The trimming edge of lower knife should be aligned with the center of the right needle. This can be accomplished by loosening screw (D), turn screw (A, Fig. 16) toward the operator to move knife to the left and turning it away from the operator acts the reverse. When desired position of knife has been obtained, retighten screw (D, Fig. 15). The shear angle of the lower knife should be set at about 1 degree, yielding to the rear. This adjustment can be made by loosening screws (E) and turning screw (F) counterclockwise and screw (G) clockwise until the 1 degree is obtained, turning screws (F) & (G) in the opposite direction will decrease the shear angle. Retighten screws (E).

The upper knife should be set to trim the full length of its blade. Positioning of knife to the left or right can be accomplished by loosening screw (H, Fig. 15). Positioning of knife upward or downward can be accomplished by loosening screw (J). When desired position of knife has been obtained, retighten screw. Should forward or rearward repositioning of upper knife become necessary, loosen Allen head screws (K), then turn eccentric pin (L) as required. Retighten Allen head screws.

NOTE: Upper knife lever thrust bracket (G, Fig. 13) should bear against upper knife lever.

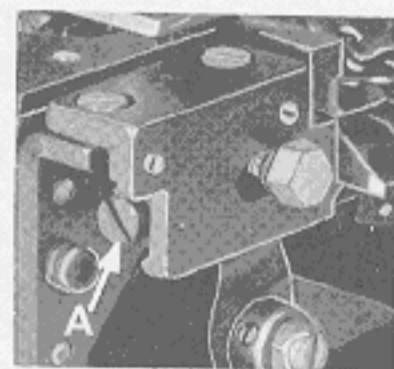


Fig. 16

ORDERING REPAIR PARTS

ILLUSTRATIONS

This catalog has been arranged to simplify ordering repair parts. Exploded views of various sections of the mechanism are shown so that the parts may be seen in their actual position in the machine. On the page opposite the illustration will be found a listing of the parts with their part number, description, and the number of pieces required in the particular view being shown.

ORDERING REPAIR PARTS

ILLUSTRATIONS (Continued)

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.

Component parts of sub-assemblies which can be furnished for repairs are indicated by indenting their descriptions under the description of the main sub-assembly. Example:

Ref. No.	Part No.	<u>Description</u>	Amt. Req.
62	29105 AJ	Looper Driving Lever Crank Assembly -----	1
63	22559 A	Bearing Cap Screw, lower -----	2
64	56343 E	Oil Splasher -----	1
65	56343 C	Ball Joint Guide Fork -----	1
66	22587 K	Bearing Cap Screw, upper -----	2

It will be noted in the example shown above that the eccentric and bearing are not listed. The reason is that replacement of these parts individually is not recommended, so the complete sub-assembly should be ordered.

At the back of the book will be found a numerical index of all the parts shown in this book. This will facilitate locating the illustration and description when only the part number is known.

IDENTIFYING PARTS

Where the construction permits, each part is stamped with its part number. On some of the smaller parts, and on those where the construction does not permit, an identification letter is stamped in to distinguish the part from similar ones.

Part numbers represent the same part, regardless of the catalog in which they appear.

IMPORTANT! ON ALL ORDERS, PLEASE INCLUDE PART NAME AND STYLE OF MACHINE FOR WHICH PART IS ORDERED.

USE GENUINE NEEDLES AND REPAIR PARTS

Success in the operation of these machines can be secured only with genuine UNION SPECIAL Needles and Repair Parts as furnished by the Union Special Corporation, its subsidiaries and authorized distributors. They are designed according to the most approved scientific principles, and are made with utmost precision. Maximum efficiency and durability are assured.

Genuine needles are packaged with labels marked *Union Special*®. Genuine repair parts are stamped with the Union Special trademark, U S Emblem. Each trademark is your guarantee of the highest quality in materials and workmanship.

TERMS

Prices are net cash and are subject to change without notice. All shipments are forwarded f.o.b. shipping point. Parcel Post shipments are insured unless otherwise directed. A charge is made to cover postage and insurance.

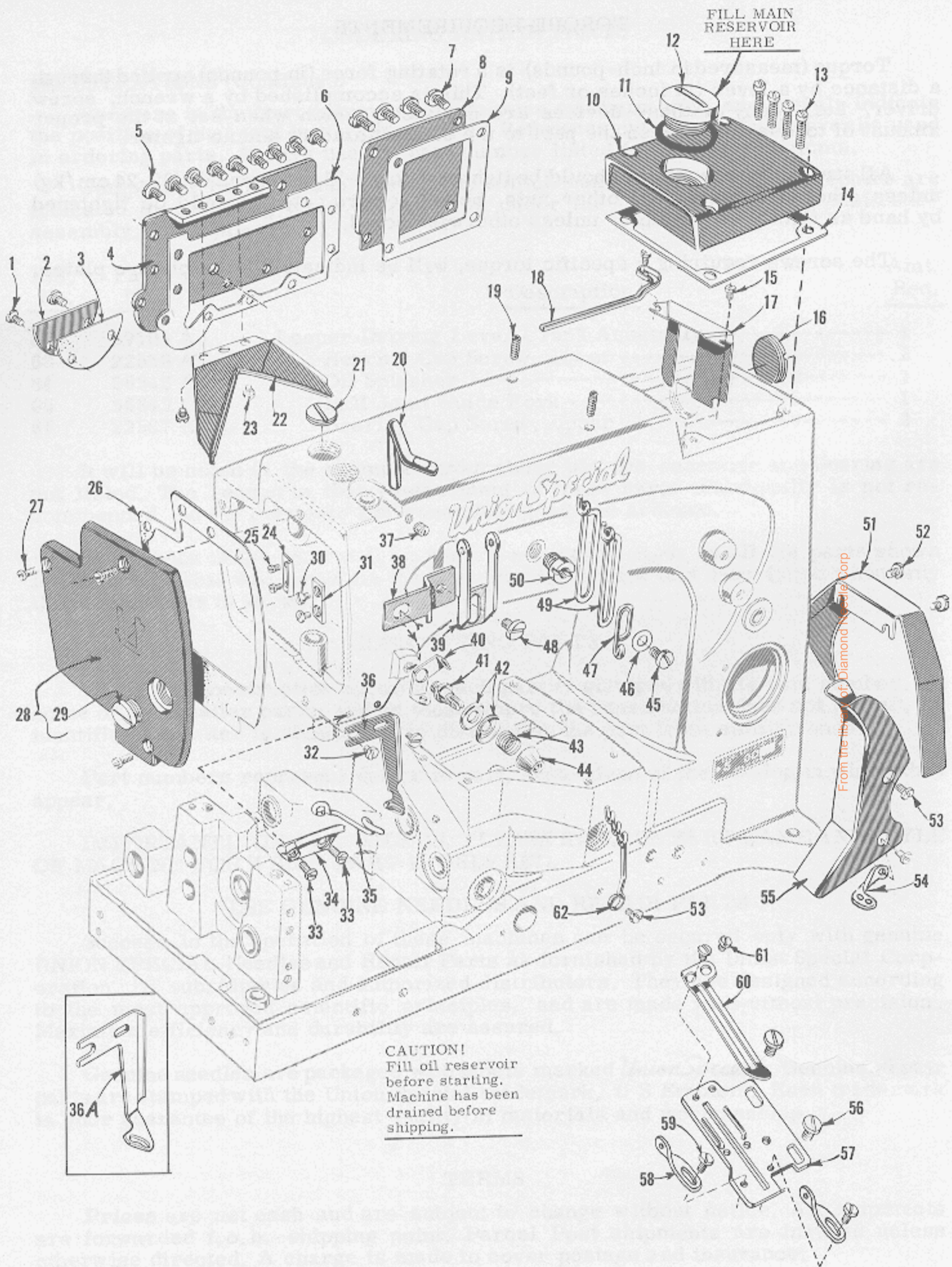
TORQUE REQUIREMENTS

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, screw driver, 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 (22-24 cm/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.

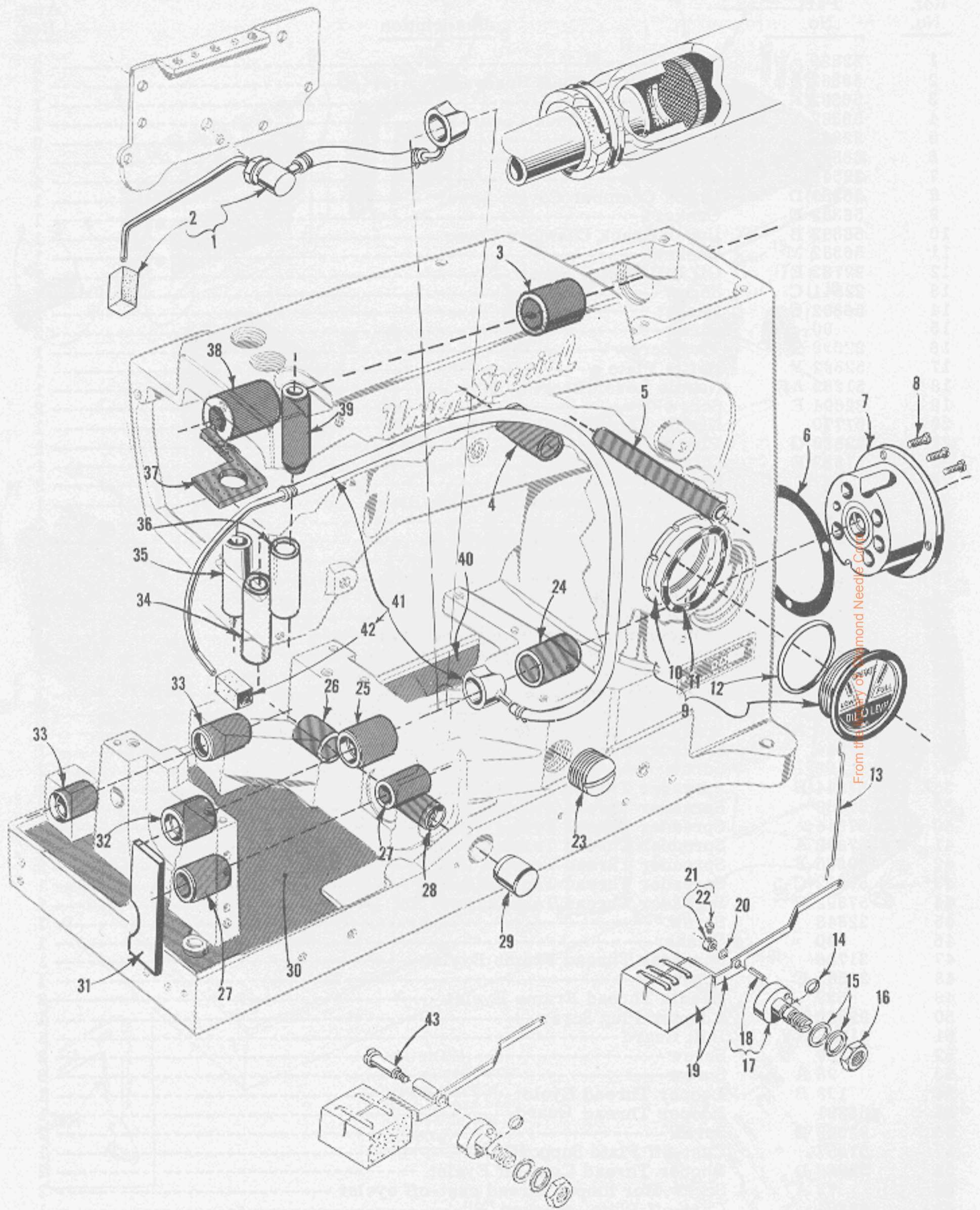
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MAIN FRAME, CAST-OFF PLATE AND MISCELLANEOUS COVERS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	22829	Screw-----	2
2	56382 J	Looper Drive Shaft Reservoir Cover-----	1
3	56382 K	Gasket-----	1
4	56382 F	Oil Reservoir Back Cover-----	1
5	22848	Screw-----	9
6	56382 L	Gasket-----	1
7	22548	Screw-----	4
8	56382 D	Crank Chamber Cover, lower-----	1
9	56382 E	Gasket-----	1
10	56382 B	Upper Crank Chamber Cover-----	1
11	56382 M	Gasket-----	1
12	22733 E	Oil Filler Plug Screw-----	1
13	22541 C	Screw-----	4
14	56382 C	Gasket-----	1
15	90	Screw-----	2
16	22539 S	Plug Screw-----	1
17	52882 Y	Baffle Plate-----	1
18	51282 AE	Needle Lever Bearing Oiler-----	1
19	22894 E	Screw-----	2
20	57770	Needle Thread Pull-off Wire-----	1
21	22539 G	Plug Screw-----	1
22	57882 E	Oil Drip Plate-----	1
23	357	Screw-----	2
24	57831	Presser Bar Connection Guide Plate, rear-----	1
25	22564 B	Screw-----	2
26	57882 B	Gasket-----	1
27	22569 C	Screw-----	3
28	57882	Head Cover-----	1
29	22733 C	Plug Screw-----	1
30	22513	Screw-----	2
31	35731 A	Presser Bar Connection Guide Plate, front-----	1
32	22542	Screw-----	2
33	605 A	Screw-----	2
34	57944 B	Needle Thread Guide-----	1
35	57944 A	Thread Eyelet-----	1
36	57844 A	Spreader Thread Guide, for Style 57900 H, all gauges-----	1
36A	57944	Spreader Thread Guide, for Style 57900 N, all gauges-----	1
37	95	Screw-----	1
38	57844 B	Spreader Thread Eyelet Mounting Plate-----	1
39	57858	Spreader Thread Pull-off Eyelet-----	1
40	57844	Spreader Thread Eyelet-----	1
41	57892 A	Spreader Thread Tension Post-----	1
42	80665 F	Spreader Thread Tension Disc-----	2
43	57892 C-5	Spreader Thread Tension Spring-----	1
44	57892 B	Spreader Thread Tension Post Nut-----	1
45	22848	Screw-----	1
46	20	Washer-----	1
47	51758	Spreader Thread Frame Eyelet-----	1
48	22585 C	Screw-----	1
49	539	Needle Thread Frame Eyelet-----	2
50	22889 A	Adaptor Plug Screw-----	1
51	21375 AV	Belt Guard-----	1
52	22829	Screw-----	2
53	98 A	Screw-----	3
54	158 B	Looper Thread Eyelet-----	1
55	56391	Looper Thread Guard-----	1
56	22569 D	Screw-----	2
57	57857	Cast-off Plate Support-----	1
58	52958 D	Looper Thread Cast-off Eyelet-----	2
59	73 A	Screw, for looper thread cast-off eyelet-----	2
60	57804	Cast-off Plate, marked 'B'-----	1
61	28	Screw-----	2
62	52958 G	Looper Frame Thread Eyelet-----	1

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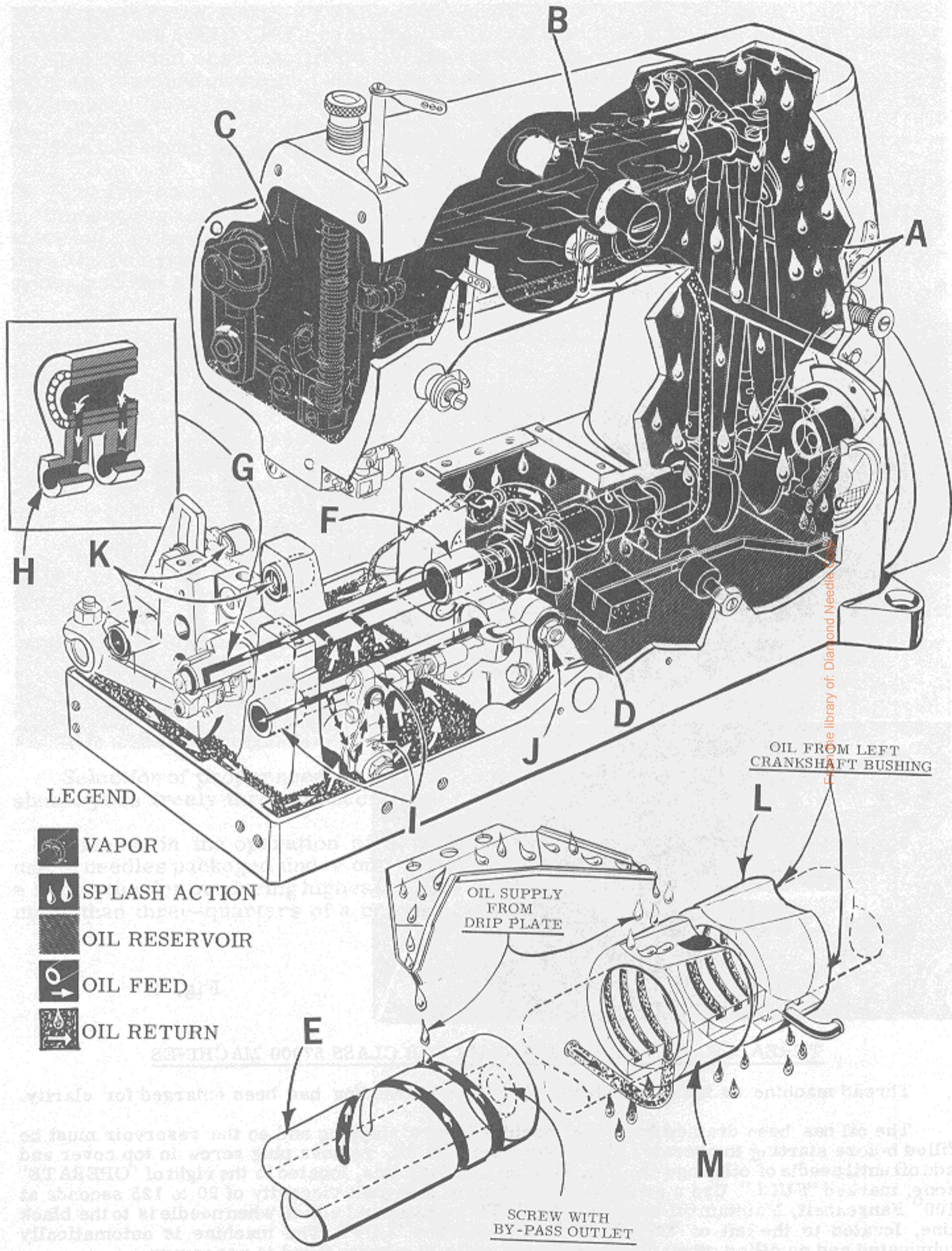


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MAIN FRAME, BUSHINGS, OIL GAUGE AND MISCELLANEOUS OILING PARTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	56393 AC	Base Oil Pump Assembly -----	1
2	666-214	Intake Felt -----	1
3	57849	Spreader Rocker Shaft Bushing -----	1
4	52883 R	Presser Foot Lifter Lever Bushing -----	1
5	21657 X	Release Lever Bushing -----	1
6	56390 E	Bushing Housing Gasket -----	1
7	57890	Crankshaft Bushing Housing -----	1
8	22569 B	Screw -----	3
9	63494 K	Oil Gauge Assembly -----	1
10	63494 F	Nut -----	1
11	63494 G	Spring Washer -----	1
12	660-455	"O" Ring -----	1
13	56394 B	Oil Gauge Connecting Rod -----	1
14	660-221	Oil Retaining Ring -----	1
15	61256 G	Washer -----	2
16	11635 B	Nut -----	1
17	56394 A	Oil Gauge Adjusting Shaft -----	1
*18	426 B	Pin -----	1
19	56394 C	Oil Gauge Float Lever Assembly -----	1
*20	27-527 Blk.	Washer -----	1
*21	61494 G	Collar -----	1
*22	604	Screw -----	1
23	22539 R	Plug Screw -----	1
24	56390 A	Main Shaft Bushing, right -----	1
25	56190	Main Shaft Bushing, middle -----	1
26	57842 B	Looper Drive Lever Shaft Bushing, rear -----	1
27	50-895 Blk.	Looper Rocker Shaft Bushing -----	2
28	52942 W	Looper Drive Lever Shaft Bushing, front -----	1
29	52942 Y	Synchronizing Stud -----	1
30	56393 P	Base Felt, front -----	1
31	666-259	Felt -----	1
32	56390	Main Shaft Bushing, left -----	1
33	57836 B	Feed Rocker Shaft Bushing -----	2
34	51257 AA	Presser Bar Bushing, lower -----	1
35	57846	Spreader Holder Carrier Bushing -----	1
36	57954	Needle Bar Bushing, lower -----	1
37	56393 W	Oil Attraction Felt -----	1
38	57849	Spreader Rocker Shaft Bushing -----	1
39	51154 E	Needle Bar Bushing, upper -----	1
40	56393 Q	Base Felt, rear -----	1
41	57893	Head Oil Pump Assembly -----	1
42	666-214	Intake Felt -----	1
43	22793	Screw, for oil gauge float lever assembly -----	1

* Replaced by Ref. No. 43 on late model machines



LEGEND

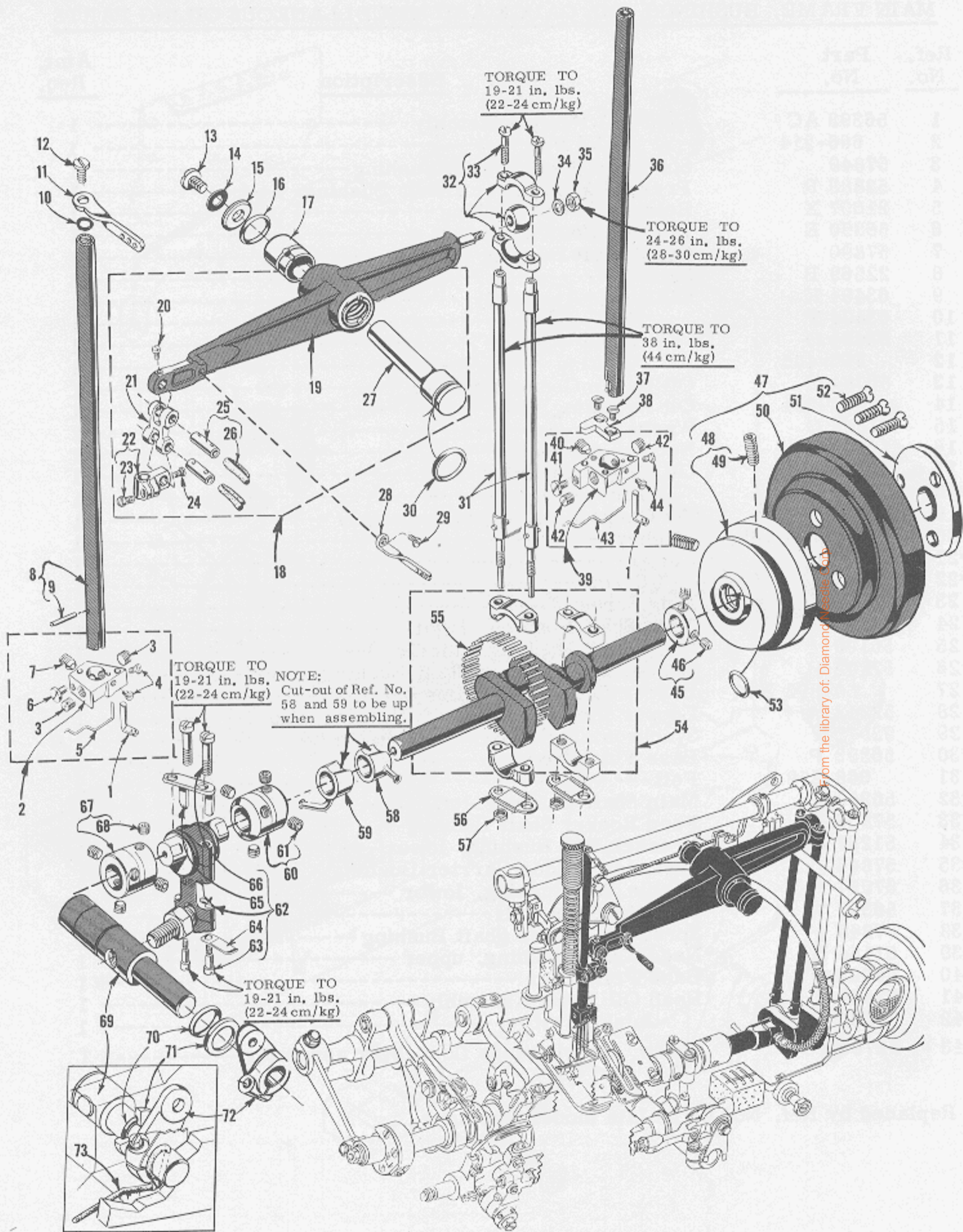
-  VAPOR
-  SPLASH ACTION
-  OIL RESERVOIR
-  OIL FEED
-  OIL RETURN

OIL FROM LEFT
CRANKSHAF BUSHING

OIL SUPPLY
FROM
DRIP PLATE

SCREW WITH
BY-PASS OUTLET

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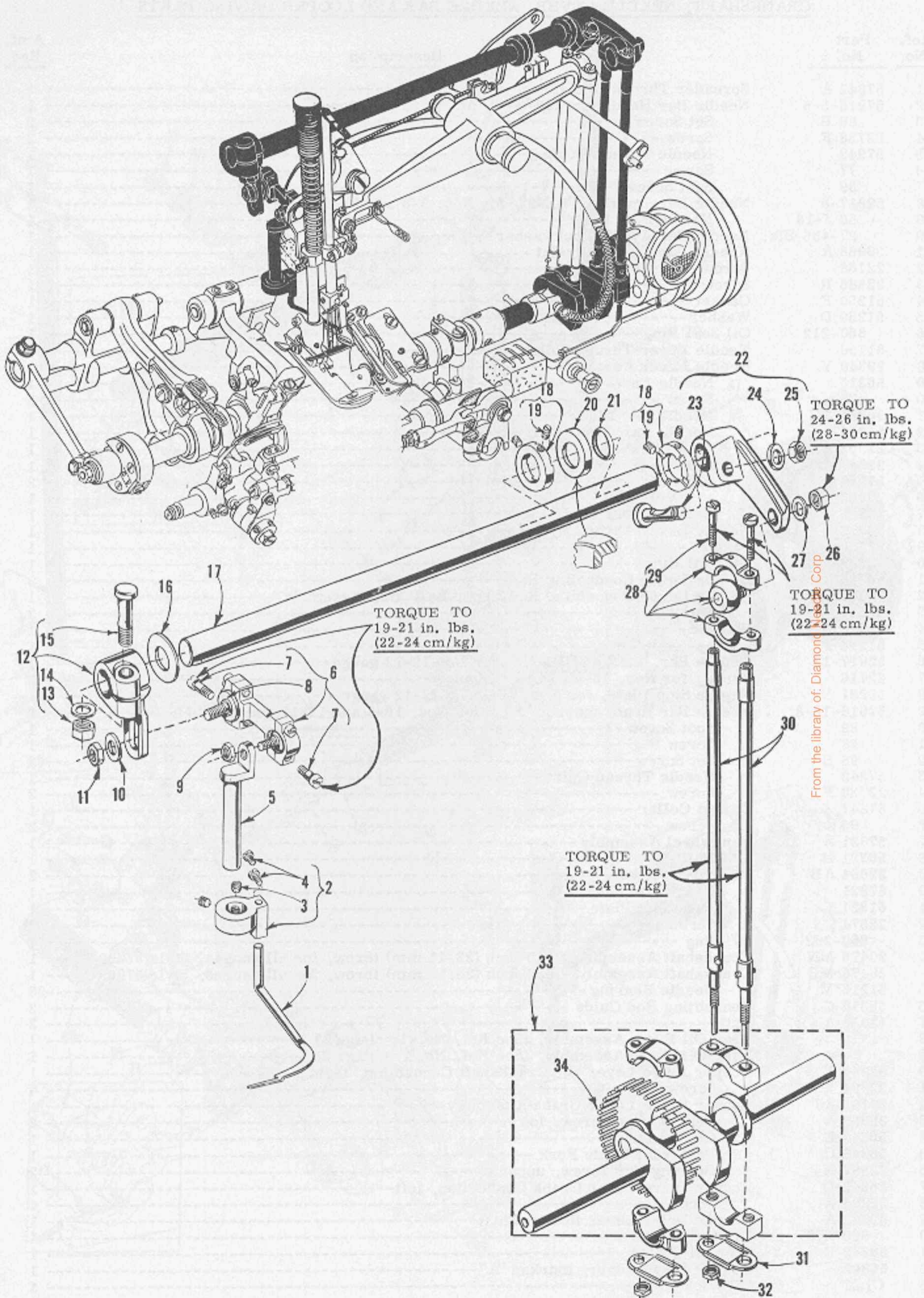


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CRANKSHAFT, NEEDLE LEVER, NEEDLE BAR AND LOOPER DRIVING PARTS

Ref. No.	Part No.	Description	Amt. Req.
1	57842 A	Spreader Thread Eyelet -----	1
2	57918-5-8	Needle Bar Head, marked "AU", for No. 5-8 gauge -----	1
3	88 B	Set Screw -----	2
4	22738 F	Screw -----	2
5	57942	Needle Thread Guide -----	1
6	77	Screw -----	1
7	89	Spot Screw -----	1
8	52917-8	Needle Bar, marked "BE-8", for Nos. 5-8 and 16-8 gauge -----	1
9	50 J-16	Needle Stop Pin -----	1
10	27-435 Blk.	Needle Bar Eyelet Lockwasher -----	1
11	56958 A	Needle Bar Thread Eyelet -----	1
12	22768	Screw -----	1
13	22586 R	Screw -----	1
14	51250 F	Gasket -----	1
15	51250 D	Washer -----	1
16	660-212	Oil Seal Ring -----	1
17	51150	Needle Lever Thrust Collar -----	1
18	29348 Y	Needle Lever Assembly -----	1
19	56315	Needle Lever -----	1
20	77	Screw -----	1
21	56354 A	Needle Bar Link -----	1
22	51254 J	Needle Bar Connection -----	1
23	22562 A	Screw -----	1
24	22564	Screw -----	1
25	51054	Link Pin -----	2
26	666-149	Felt Wick -----	1
27	56350 A	Needle Lever Stud -----	1
28	56958	Needle Lever Thread Eyelet -----	1
29	22768	Screw -----	1
30	660-212	Oil Seal Ring -----	1
31	56316	Needle Lever Connecting Rod -----	2
32	29066 R	Needle Lever Connecting Rod Upper Ball Joint Assembly -----	1
33	22559 G	Screw -----	2
34	51216 N	Washer -----	1
35	51216 P	Nut -----	1
36	52917-12	Needle Bar, marked "BE-12", for No. 12-12 gauge -----	1
37	22716	Screw, for Nos. 16-8 and 12-12 gauge -----	2
38	52931	Needle Stop Plate, for Nos. 16-8 and 12-12 gauge -----	1
39	57918-16-8	Needle Bar Head, marked "AT", for Nos. 16-8 and 12-12 gauge -----	1
40	89	Spot Screw -----	1
41	28	Screw -----	1
42	88 B	Set Screw -----	2
43	57942	Needle Thread Guide -----	1
44	22738 F	Screw -----	2
45	57847	Thrust Collar -----	1
46	95	Screw -----	2
47	57821 A	Handwheel Assembly -----	1
48	56321 H	Pulley -----	1
49	22894 AB	Screw -----	2
50	57821	Handwheel -----	1
51	61321 L	Retaining Plate -----	1
52	22574	Screw -----	3
53	660-202	"O" Ring -----	1
54	29476 MN	Crankshaft Assembly, .910 inch (23.11 mm) throw, for all gauges, Style 57900 H ---	1
-	29476 MR	Crankshaft Assembly, .990 inch (25.15 mm) throw, for all gauges, Style 57900 N ---	1
55	51216 M	Needle Bearing -----	28
56	56316 C	Connecting Rod Guide -----	2
57	12934 A	Nut -----	2
58		Head Oil Pump Assembly, (See Ref. No. 41 - Page 23) -----	1
59		Base Oil Pump Assembly, (See Ref. No. 1 - Page 23) -----	1
60	52943 L	Looper Drive Lever and Crankshaft Connection, right -----	1
61	22894 X	Screw -----	4
62	29105 AJ	Looper Drive Lever Crank Assembly -----	1
63	22559 A	Bearing Cap Screw, lower -----	2
64	56343 E	Oil Splasher -----	1
65	56343 C	Ball Joint Guide Fork -----	1
66	22587 K	Bearing Cap Screw, upper -----	2
67	56343 D	Looper Drive Lever Crank Connection, left -----	1
68	22894 X	Screw -----	4
69	52942 A	Looper Drive Lever Rocker Shaft -----	1
70	660-202	Oil Seal Ring -----	1
71	56342 B	Oil Seal Collar -----	1
72	56342	Looper Drive Lever, marked "A" -----	1
73	CL21	Oil Wick -----	1

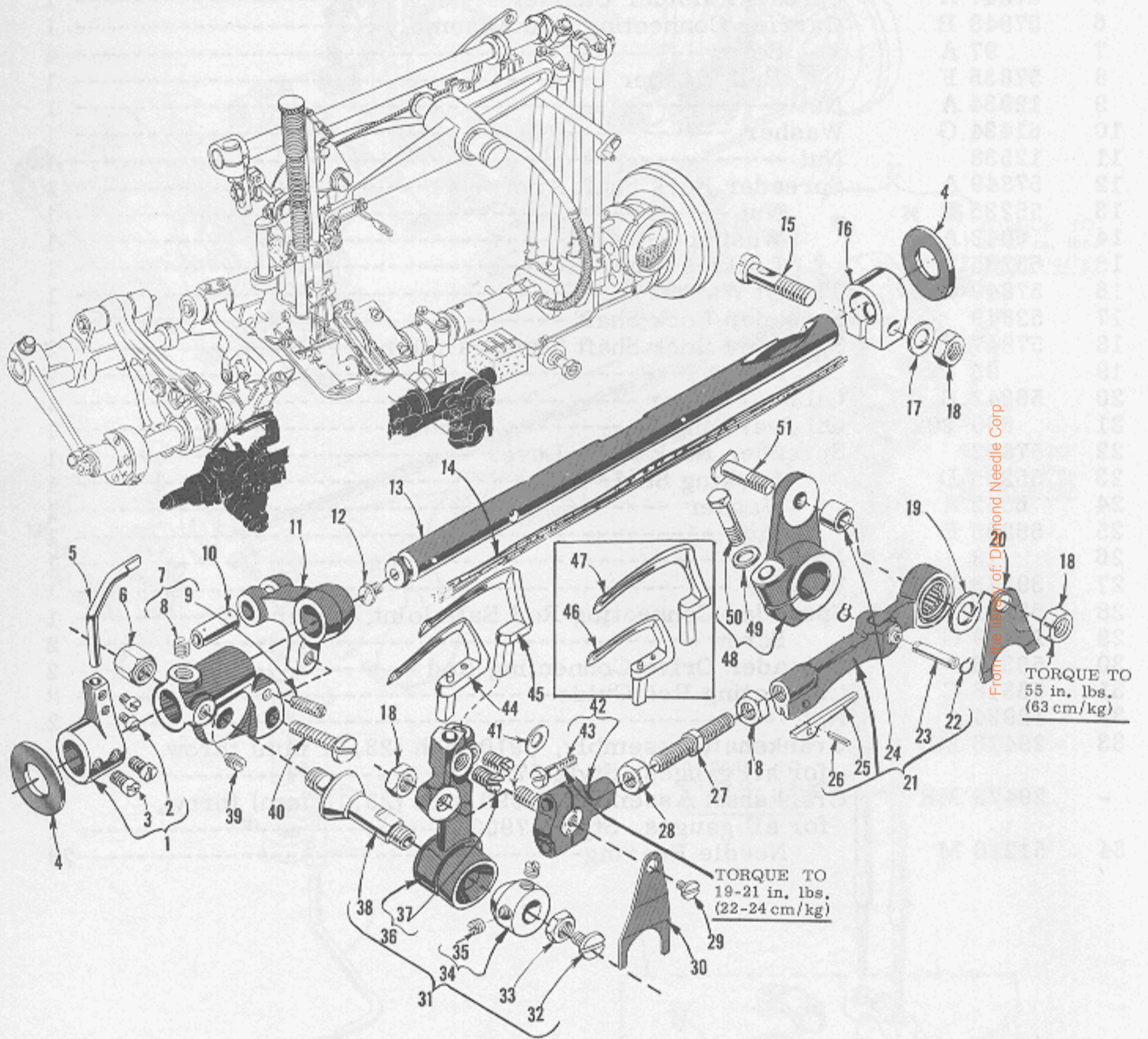
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SPREADER AND SPREADER DRIVING MECHANISM

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	57845 A	Spreader, marked "J"-----	1
2	57846 A	Spreader Holder -----	1
3	22547 D	Screw -----	2
4	77 A	Screw -----	2
5	57847 A	Spreader Holder Carrier -----	1
6	57848 B	Carrier Connecting Rod Assembly-----	1
7	97 A	Screw -----	4
8	57835 F	Ball Washer -----	1
9	12934 A	Nut -----	1
10	61434 G	Washer -----	1
11	12538	Nut -----	1
12	57849 A	Spreader Rock Shaft Arm -----	1
13	55235 E	Nut -----	1
14	6042 A	Washer -----	1
15	55235 D	Locking Stud -----	1
16	57849 C	Thrust Washer -----	1
17	52849	Spreader Rock Shaft -----	1
18	57847	Spreader Rock Shaft Thrust Collar -----	2
19	95	Screw -----	2
20	56342 B	Oil Seal Collar -----	1
21	660-202	Oil Seal Ring -----	1
22	57852	Spreader Rock Shaft Lever -----	1
23	55235 D	Locking Stud -----	1
24	6042 A	Washer -----	1
25	55235 E	Nut -----	1
26	18	Nut -----	1
27	39543 P	Washer -----	1
28	52952 B	Spreader Connecting Rod Ball Joint, upper -----	1
29	22559 G	Screw -----	2
30	56316	Spreader Drive Connecting Rod -----	2
31	56316 C	Connecting Rod Guide -----	2
32	12934 A	Nut -----	2
33	29476 MN	Crankshaft Assembly, .910 inch (23.11 mm) throw, for all gauges, Style 57900 H -----	1
-	29476 MR	Crankshaft Assembly, .990 inch (25.15 mm) throw, for all gauges, Style 57900 N -----	1
34	51216 M	Needle Bearing-----	28

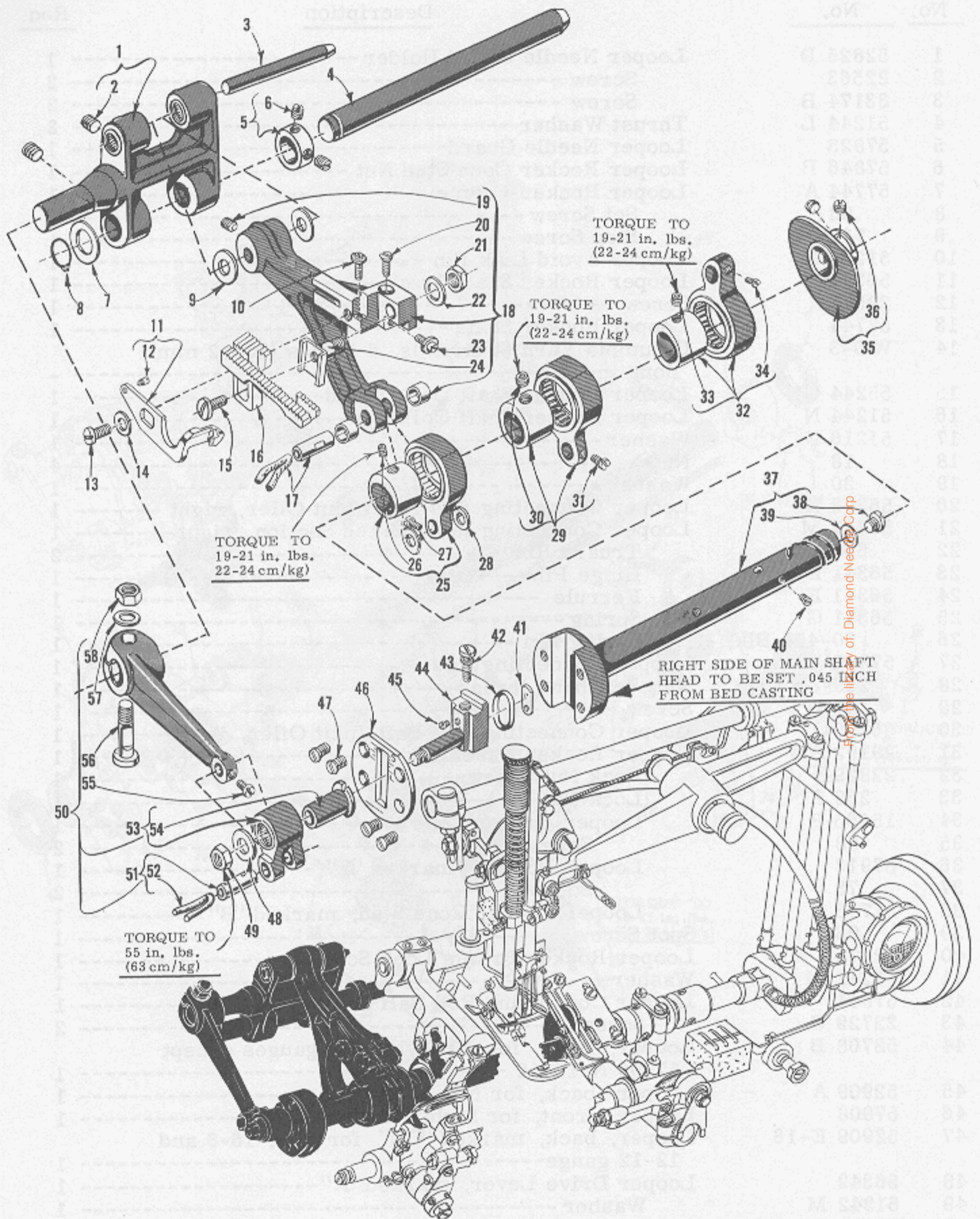
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LOOPERS, LOOPER ROCKER AND CONNECTING ROD PARTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	52825 D	Looper Needle Guard Holder -----	1
2	22563	Screw -----	2
3	33174 B	Screw -----	2
4	51244 L	Thrust Washer -----	2
5	57925	Looper Needle Guard-----	1
6	57846 B	Looper Rocker Cone Stud Nut -----	1
7	57744 A	Looper Rocker Frame-----	1
8	98	Set Screw -----	1
9	719	Stop Screw -----	1
10	51236 A	Looper Avoid Link Pin -----	1
11	56344 B	Looper Rocker Shaft Arm-----	1
12	22513	Screw -----	1
13	57744	Looper Rocker Shaft -----	1
14	WO-3	Columbia Yarn (4 strands, 8 inches (203.2 mm) long -----	-
15	55244 G	Looper Rocker Shaft Collar Stud-----	1
16	51244 N	Looper Rocker Shaft Collar -----	1
17	51216 N	Washer -----	1
18	18	Nut-----	4
19	20	Washer -----	1
20	56393 K	Looper Connecting Rod Ball Joint Oiler, right -----	1
21	56341 M	Looper Connecting Rod Jointed Section, right -----	1
22	660-310	Truarc Ring-----	2
23	56341 E	Hinge Pin -----	1
24	56341 F	Ferrule -----	1
25	56341 G	Spring -----	1
26	50-458 Blk.	Spring Pin -----	1
27	57840	Looper Connecting Rod -----	1
28	269	Nut, left hand thread -----	1
29	87 U	Screw -----	1
30	56393 J	Looper Connecting Rod Ball Joint Oiler, left-----	1
31	29192 AB	Looper Rocker Assembly -----	1
32	22829	Lock Nut Screw-----	1
33	258 A	Lock Nut-----	1
34	15465 F	Looper Rocker Cone -----	1
35	88	Screw -----	2
36	57913	Looper Rocker, marked "Y" -----	1
37	73	Screw -----	2
38	51745	Looper Rocker Cone Stud, marked "B" -----	1
39	96	Spot Screw -----	1
40	22874	Looper Rocker Frame Lock Screw-----	1
41	51242 M	Washer -----	1
42	57841	Looper Connecting Rod Ball Joint, left -----	1
43	22729 C	Screw -----	2
44	52708 B	Looper, front, for all Styles and gauges except 57900 N-12-12 -----	1
45	52909 A	Looper, back, for No. 5-8 gauge -----	1
46	57908	Looper, front, for Style 57900 N-12-12 -----	1
47	52909 E-16	Looper, back, marked "CE", for Nos. 16-8 and 12-12 gauge-----	1
48	56342	Looper Drive Lever, marked "A"-----	1
49	51242 M	Washer -----	1
50	22882 C	Screw -----	1
51	52942 R	Looper Lever Stud -----	1

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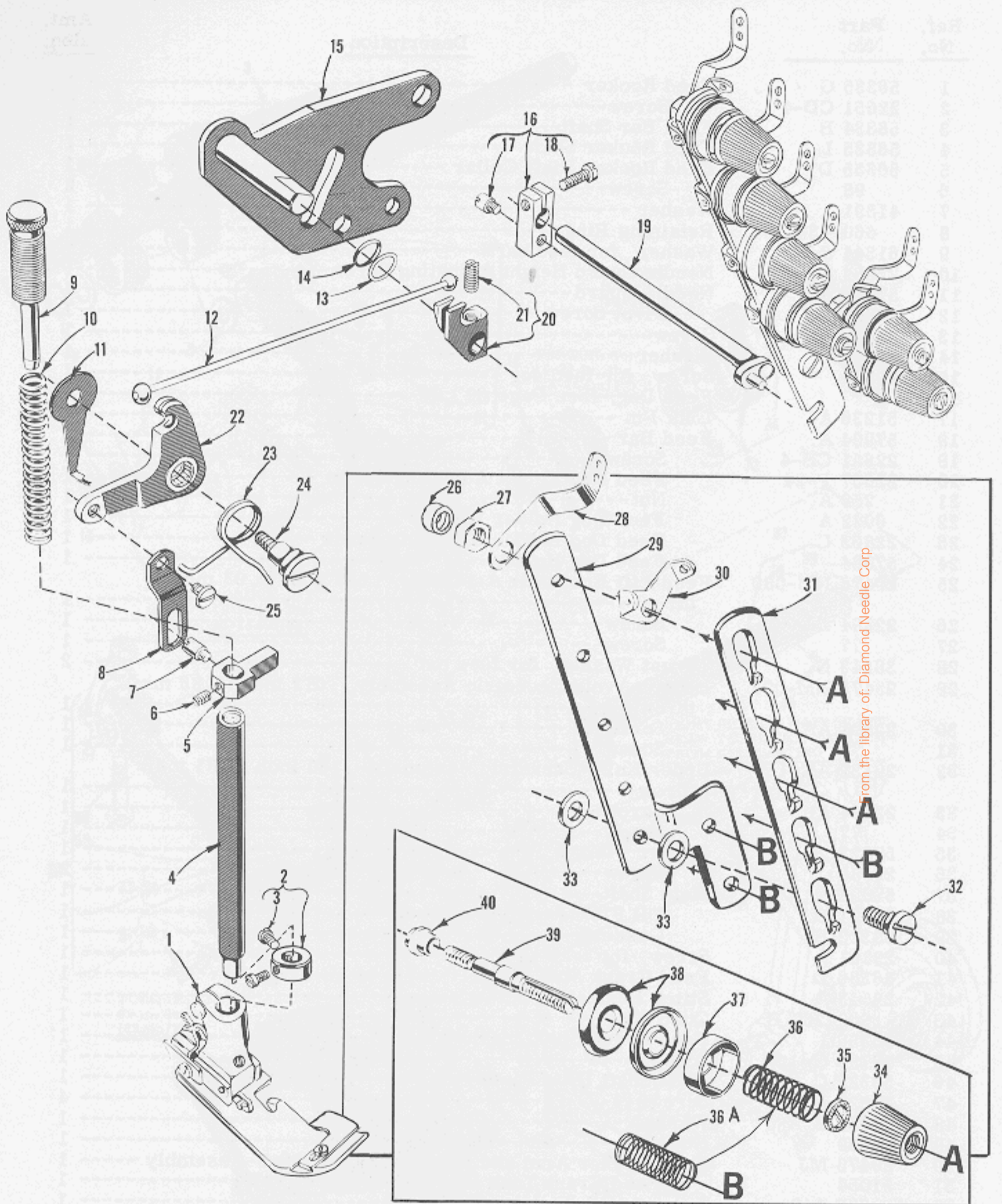


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NEEDLE GUARD, MAIN SHAFT, TAKE-UP AND FEED DRIVING PARTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	56335 G	Feed Rocker -----	1
2	22651 CD-4	Screw-----	2
3	56334 B	Feed Bar Shaft-----	1
4	56335 L	Feed Rocker Shaft -----	1
5	56335 D	Feed Rocker Shaft Collar -----	1
6	98	Screw-----	2
7	41391	Washer -----	1
8	660-438	Retaining Ring -----	1
9	61341 J	Washer, for feed bar -----	2
10	22834 A	Needle Guard Height Adjusting Screw-----	1
11	57925 A	Needle Guard-----	1
12	22801	Pivot Screw -----	1
13	22875 H	Screw-----	1
14	61434 G	Washer -----	1
15	22528	Screw, for feed dog -----	1
16		Feed Dog, (See Page 39) -----	1
17	51236 A	Link Pin -----	1
18	57934 A	Feed Bar -----	1
19	22651 CB-4	Screw -----	1
20	22637 P-24	Feed Dog Height Adjusting Screw -----	1
21	258 A	Nut -----	1
22	6042 A	Feed Dog Holder Washer -----	1
23	22863 C	Feed Dog Holder Adjusting Screw -----	1
24	57934	Feed Dog Holder -----	1
25	29476 NM-080	Feed Lift Eccentric Assembly, .080 inch (2.03 mm) throw-----	1
26	22894 AA	Screw-----	1
27	77	Screw-----	1
28	39543 N	Thrust Washer, for feed bar -----	2
29	29476 NM-072	Looper Avoid Eccentric Assembly, .072 inch (1.83 mm) throw-----	1
30	22894 AA	Screw-----	1
31	77	Screw-----	1
32	29132 AE-150	Upper Knife Eccentric Assembly, .150 inch (3.81 mm) throw-----	1
33	22894 AA	Screw-----	1
34	77	Screw-----	1
35	57823	Looper Thread Take-up-----	1
36	22580	Screw-----	2
37	57922 A	Main Shaft-----	1
38	22891 B	Oil Flow Regulating Screw -----	1
39	56322 B	Gasket -----	1
40	22801	Screw, for take-up -----	1
41	56336 D	Feed Crank Stud Insert -----	1
42	22543 A	Stitch Regulating Screw -----	1
43	660-269 B	Quad Ring -----	1
44	56336	Feed Crank Stud, marked "A" -----	1
45	22798 C	Screw-----	1
46	56322 C	Main Shaft Head Plate -----	1
47	22525 A	Screw-----	4
48	21657 E	Washer -----	1
49	269	Nut -----	1
50	29476 MJ	Feed Rocker Arm and Feed Crank Link Sub-Assembly -----	1
51	51054	Feed Crank Link Pin -----	1
52	666-149	Oil Wick -----	1
53	56336 B	Feed Crank Link -----	1
54	56336 C	Feed Crank Link Ferrule -----	1
55	77	Screw, for link pin -----	1
56	55235 D	Locking Stud -----	1
57	6042 A	Washer -----	1
58	55235 E	Nut -----	1

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THREAD TENSION AND LIFTER LEVER PARTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1		Presser Foot (See Page 39) -----	1
2	52888 B	Presser Bar Stop Collar -----	1
3	22562	Screw -----	2
4	51257 K	Presser Bar, marked "A" -----	1
5	51257 M	Presser Bar Connection and Guide -----	1
6	531	Screw -----	1
7	22892 E	Screw -----	1
8	56383 A	Lifter Lever Link -----	1
9	56356	Presser Spring Regulator -----	1
10	53787	Presser Spring -----	1
11	57893 B	Head Oil Tube Clamp -----	1
12	56383 W	Lifter Lever Connecting Cable -----	1
13	39552 C	Washer -----	1
14	660-207	Oil Seal Ring -----	1
15	51283 H	Lifter Lever -----	1
16	21657 Y	Tension Release and Lifter Lever Shaft Connection -----	1
17	402	Screw -----	1
18	22596	Screw -----	1
19	21657 W	Tension Release and Lifter Lever Shaft -----	1
20	56383 X	Lifter Lever Connection -----	1
21	74 E	Screw -----	1
22	56383 Y	Lifter Lever Bell Crank -----	1
23	56383 D	Lifter Lever Bell Crank Spring -----	1
24	22557 G	Screw -----	1
25	22758 C	Screw -----	1
26	57892 E	Auxiliary Tension Post Support -----	1
27	43266	Nut, for tension post -----	5
28	51491 C	Thread Lead-in Guide -----	6
29	52492	Tension Post Support -----	1
30	51292 D	Tension Post Eyelet -----	6
31	21657 AM-5	Tension Disc Separator -----	1
32	22598 C	Screw -----	1
33	80557	Spacing Washer -----	2
34	39592 Z	Tension Nut -----	6
35	39592 AK	Tension Spring Ferrule -----	6
36	51292 F-5	Tension Spring, needle -----	3
36A	51292 F-1	Tension Spring, looper and spreader -----	3
37	56392 F	Tension Spring Shield -----	6
38	109	Tension Disc -----	12
39	56392 E	Tension Post -----	6
40	51292 A	Tension Post Ferrule -----	6

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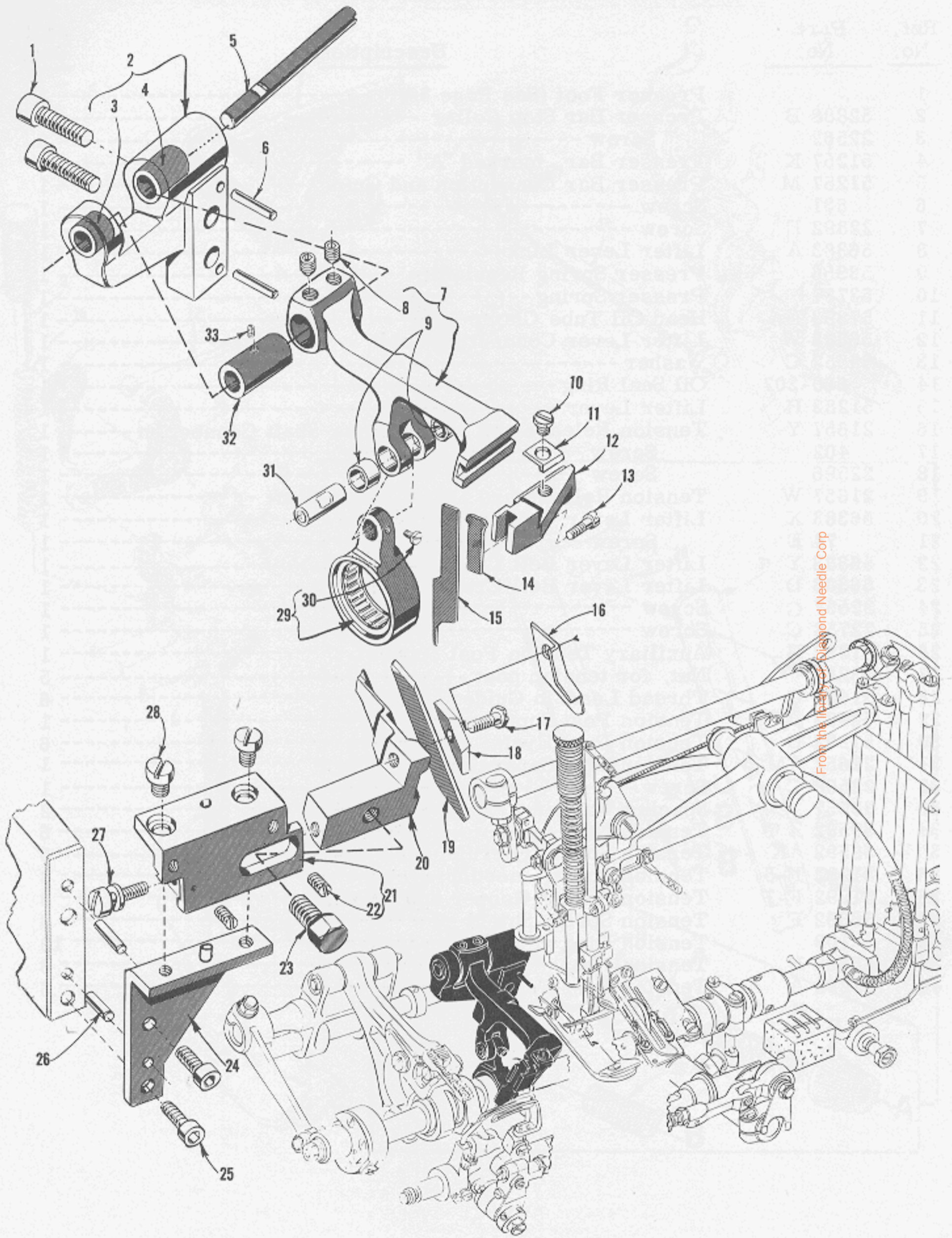
ADVANCED FLATBED LUBRICATION SYSTEM

SUPPLY SYSTEM

<u>Figure Letter</u>	<u>Bearing or Machine Area</u>	<u>Method of Lubrication</u>
A.	Crankshaft drives, upper ball straps and crankshaft bearings.	Oil agitation as a result of extensions on needle lever connecting rods.
B.	Needle lever cross shaft bearing.	Oil trough (51282 AE) which is supplied by splash in column area.
C.	Head area (all mechanisms and bearings).	Mist as a result of splash in column.
D.	Looper drive crank, looper drive lever bearings.	Oil agitation as a result of splasher (56343 E) on bottom of looper drive connecting rod.
E.	Opposing Helical grooves in right end of mainshaft. Short groove prevents oil leakage from right mainshaft bearing.	Oil drip plate which accumulates splash in chamber.
F.	Right mainshaft bearing.	Supply grooves in right end of mainshaft.
G.	Left mainshaft bearing and all eccentric bearings located on mainshaft.	Oil supplied from hollow mainshaft and metered by felt plugs. Oil is introduced into center of shaft in the right mainshaft bearing area. Amount of lubricant in center of shaft controlled with by pass hole in right end of mainshaft.
H.	Lower ends of connecting rods of mainshaft eccentrics.	Oil run-out from eccentric bearing supplies.
I.	Looper cone, right and left looper rocker shaft bearings, and left looper rod ball joint.	Supplied from hollow looper rocker shaft which contains 4 strands of yarn as a metering device.
J.	Right looper rod needle bearing joint.	Oil supplied from front base felt to lubricating plate (56393 K).
K.	Feed rocker shaft and upper feed rocker shaft bearings.	Self-lubricated bearings.

RETURN SYSTEM

<u>Figure Letter</u>	<u>Machine Area</u>	<u>Method of Return</u>
L.	Head	Felt pad in head collects oil. Return pump located on crankshaft and primed by oil from left crankshaft bearing.
M.	Base	Felt pad in base collects oil. Second return pump located on crankshaft and primed by oil drip plate which accumulates splash in looper drive chamber.

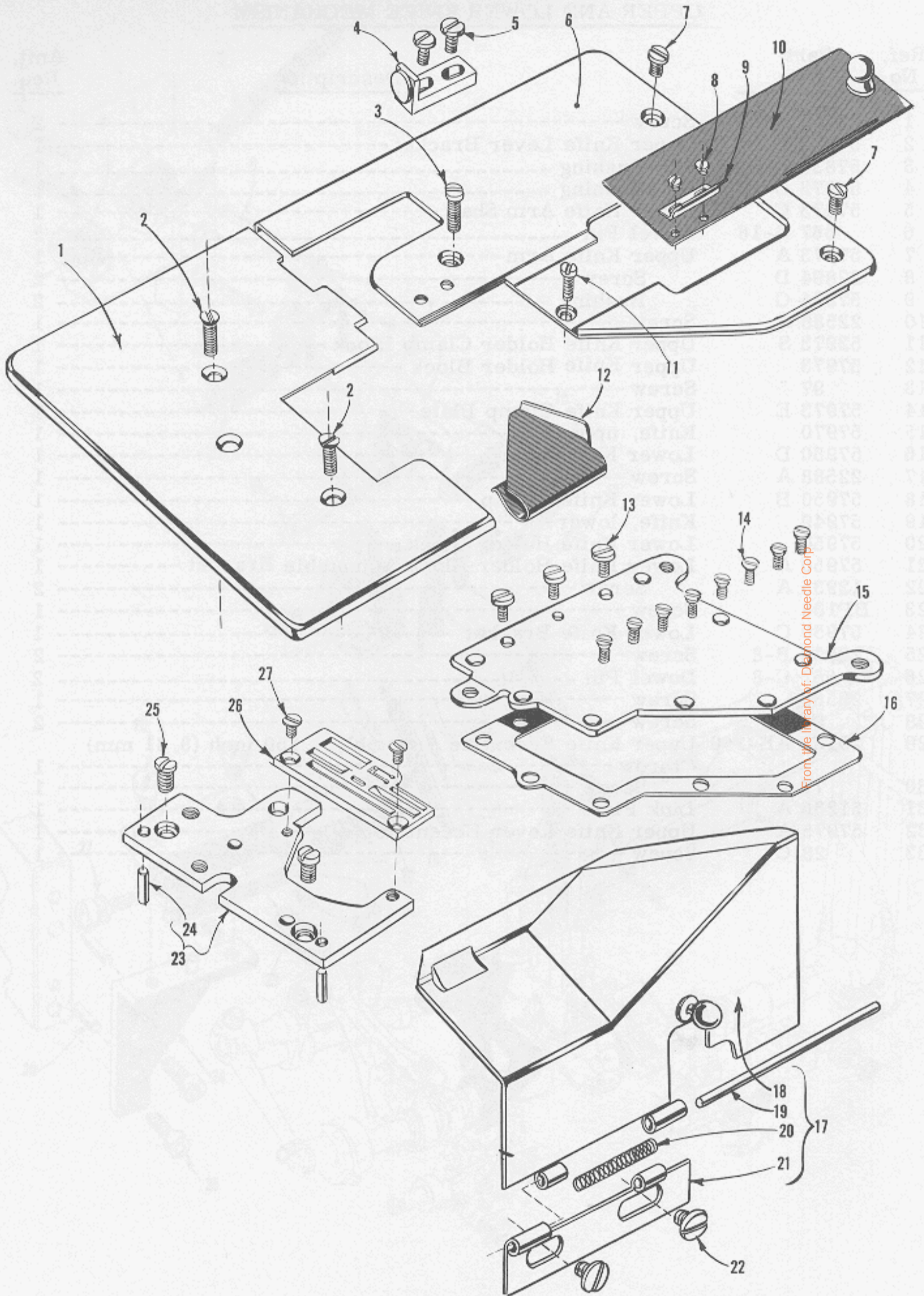


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UPPER AND LOWER KNIFE MECHANISM

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	22652 D-12	Screw -----	2
2	57973 B	Upper Knife Lever Bracket -----	1
3	57836	Bushing -----	1
4	57973 D	Bushing -----	1
5	57973 C	Upper Knife Arm Shaft -----	1
6	667 B-16	Dowel Pin -----	2
7	57973 A	Upper Knife Arm -----	1
8	22894 D	Screw -----	2
9	57834 G	Bushing -----	2
10	22588 A	Screw -----	1
11	52973 S	Upper Knife Holder Clamp Block -----	1
12	57973	Upper Knife Holder Block -----	1
13	97	Screw -----	1
14	57973 E	Upper Knife Clamp Plate -----	1
15	57970	Knife, upper -----	1
16	57950 D	Lower Knife Guard -----	1
17	22588 A	Screw -----	1
18	57950 B	Lower Knife Clamp -----	1
19	57949	Knife, lower -----	1
20	57950	Lower Knife Holder Block -----	1
21	57950 A	Lower Knife Holder Block Adjustable Bracket -----	1
22	12935 A	Screw -----	2
23	BP108	Screw -----	1
24	57950 C	Lower Knife Bracket -----	1
25	22653 B-8	Screw -----	2
26	667 C-8	Dowel Pin -----	2
27	22568	Screw -----	1
28	94	Screw -----	2
29	29132 AE-150	Upper Knife Eccentric Assembly, .150 inch (3.81 mm) throw -----	1
30	77	Screw -----	1
31	51236 A	Link Pin -----	1
32	57975 A	Upper Knife Lever Eccentric -----	1
33	28 C	Screw -----	1

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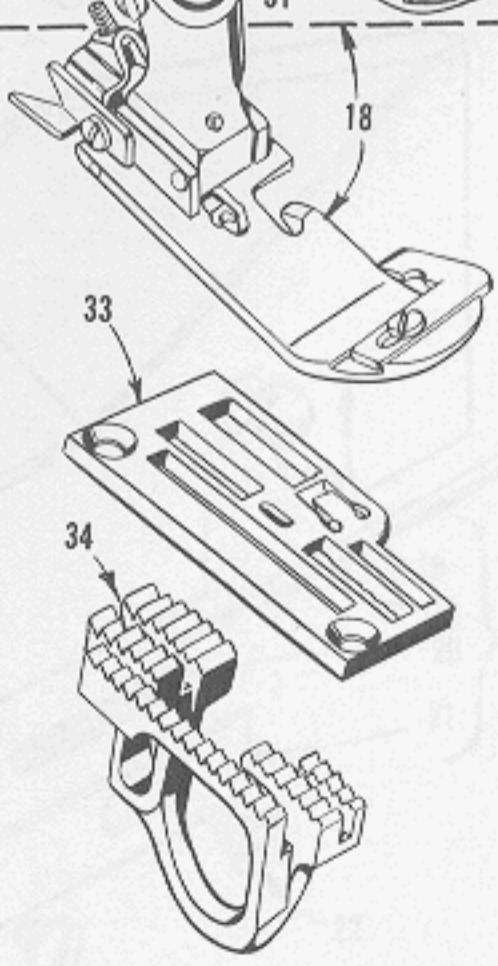
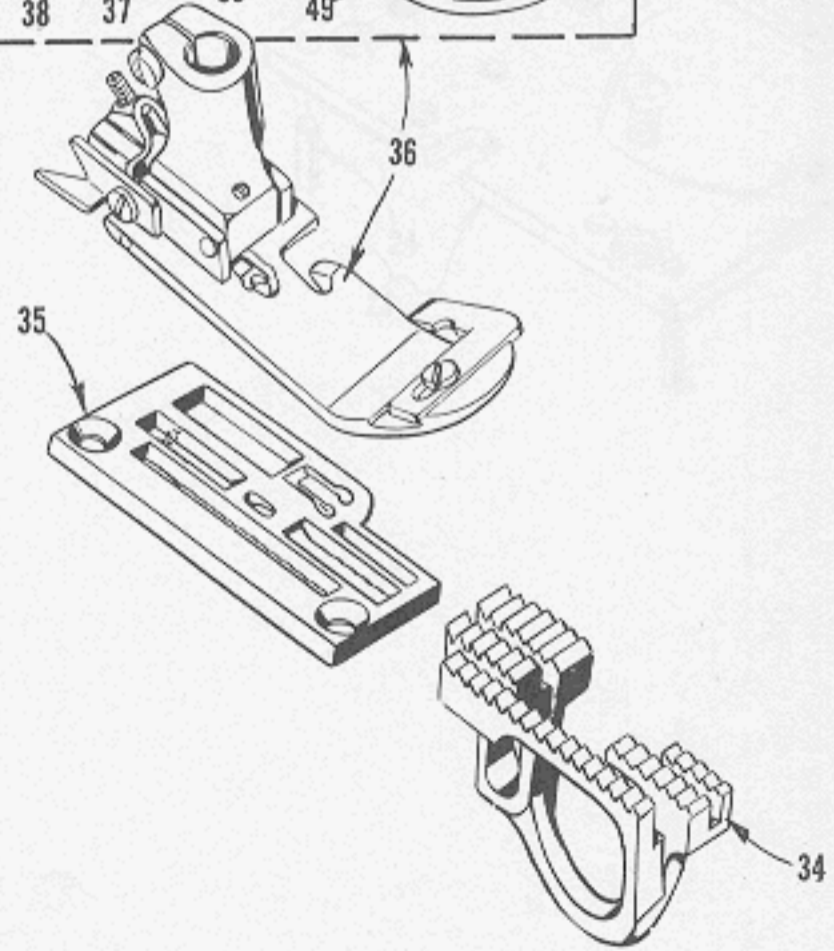
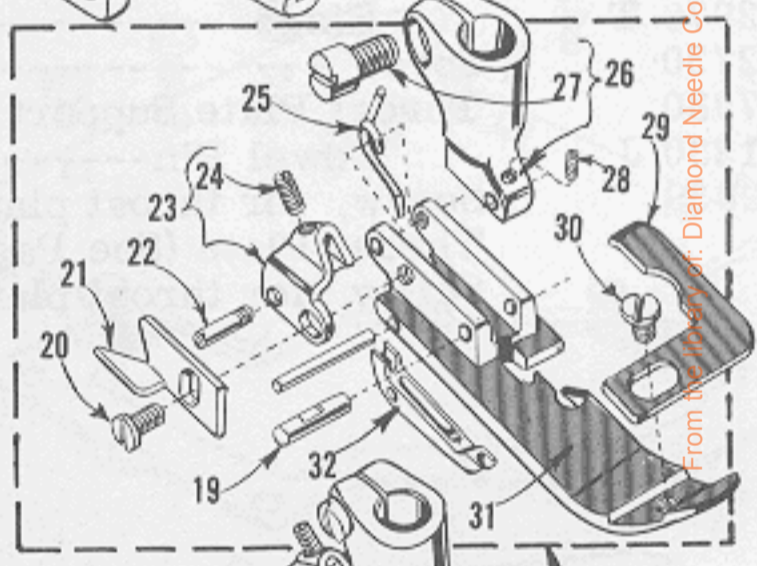
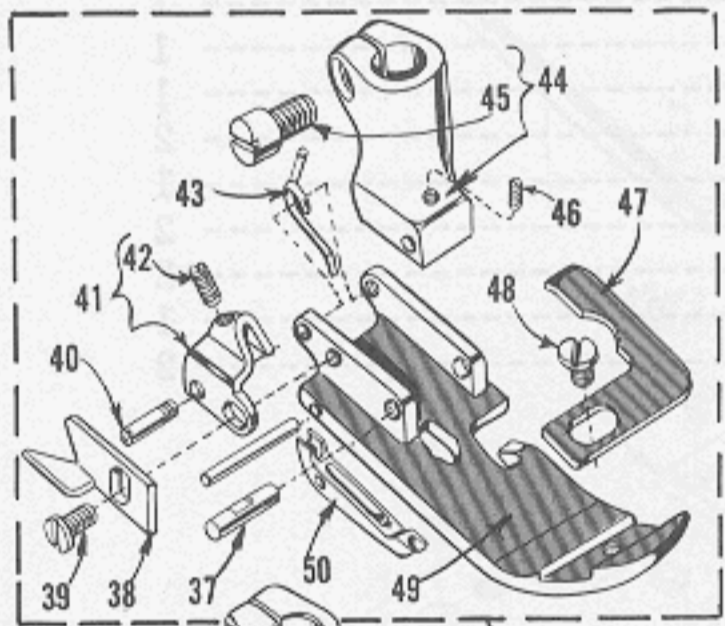
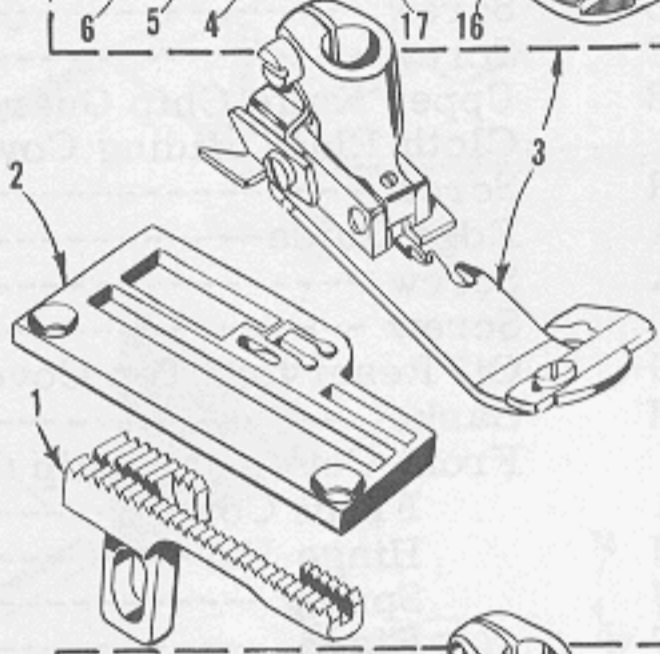
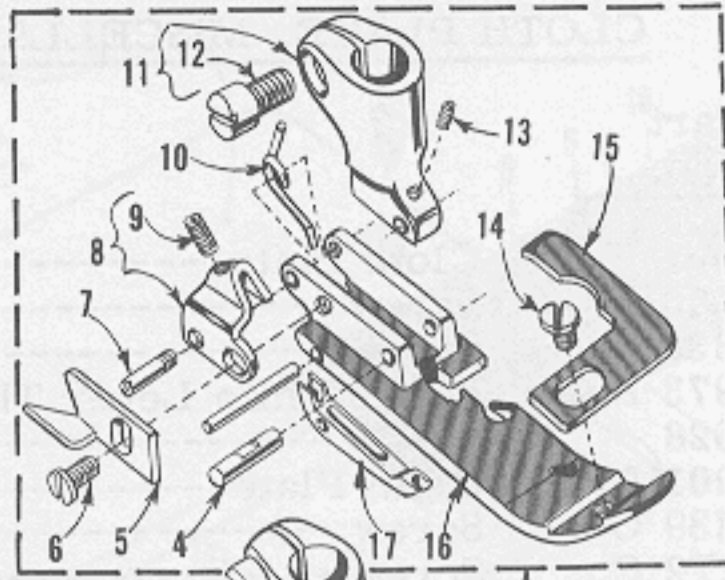


From the library of: Dorman Needle Corp.

CLOTH PLATE, MISCELLANEOUS COVERS AND SUPPORTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	57901 B	Cloth Plate -----	1
2	80	Screw -----	2
3	22839 E	Screw -----	1
4	57973 F	Upper Knife Lever Thrust Bracket -----	1
5	22528	Screw -----	2
6	57901 A	Cloth Plate-----	1
7	22839 C	Screw -----	2
8	HT2 C	Screw -----	2
9	57978 B	Upper Knife Chip Guard -----	1
10	57902	Cloth Plate Sliding Cover -----	1
11	22585 R	Screw -----	1
12	52703 A	Edge Guide-----	1
13	22585 A	Screw -----	3
14	22524	Screw -----	8
15	56382 G	Oil Reservoir Top Cover -----	1
16	56382 H	Gasket -----	1
17	57978	Front Cover and Chip Guard Assembly -----	1
18	57978 A	Front Cover-----	1
19	52978 U	Hinge Pin -----	1
20	39158 U	Spring -----	1
21	52978 T	Hinge-----	1
22	22730	Screw -----	2
23	57980	Throat Plate Support -----	1
24	51280 J	Dowel Pin-----	2
25	22839	Screw, for throat plate support-----	2
26		Throat Plate (See Page 39) -----	1
27	87	Screw, for throat plate -----	2

From the library of: Diamond Needle Corp

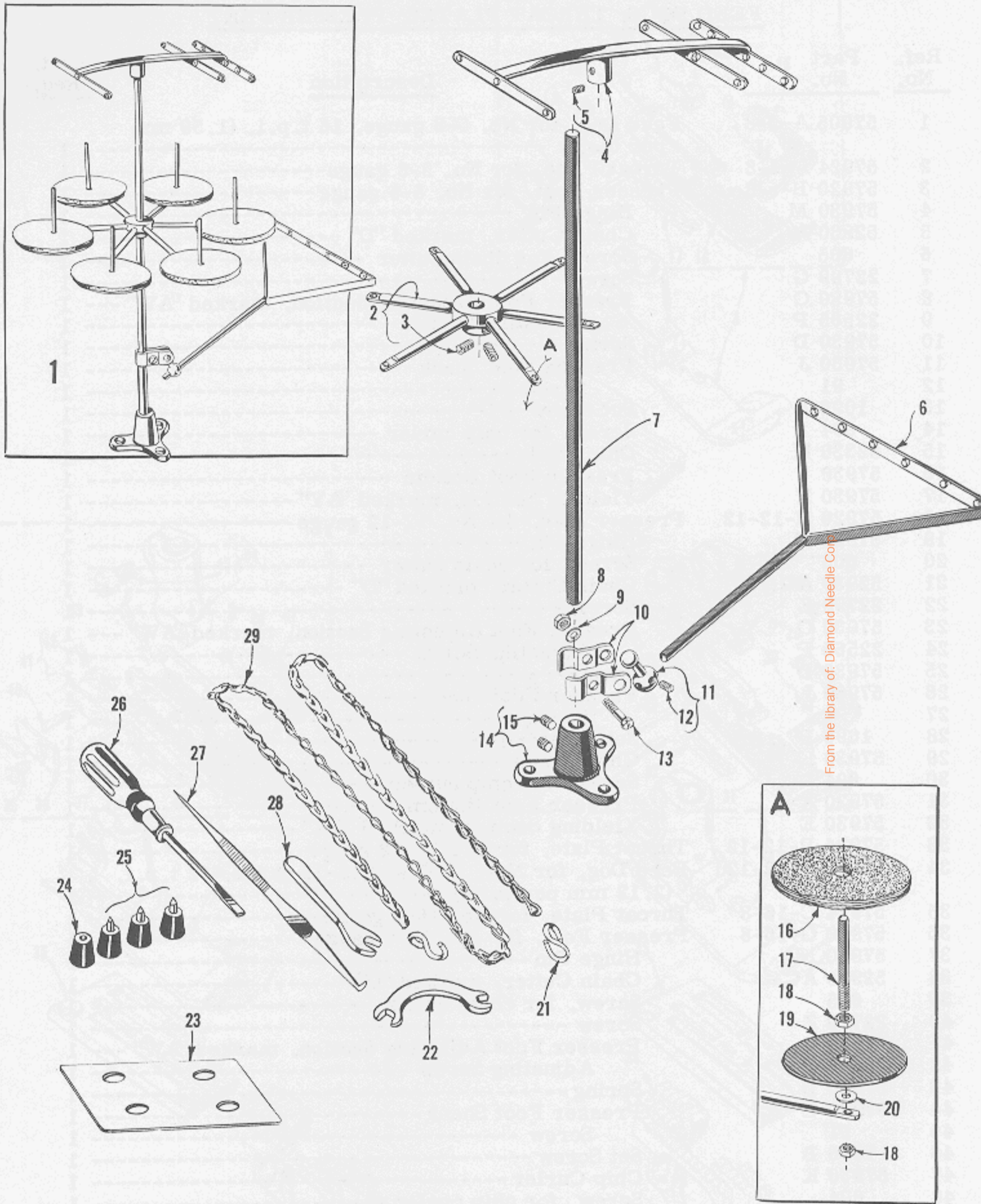


From the inventor: Diamond Needle Corp

FEED DOGS, THROAT PLATES, PRESSER FEET

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	57905 A-5-8	Feed Dog, for No. 5-8 gauge, 16 t.p.i. (1.59 mm per tooth) -----	1
2	57924 A-5-8	Throat Plate, for No. 5-8 gauge-----	1
3	57920 B-5-8	Presser Foot, for No. 5-8 gauge-----	1
4	57930 M	Hinge Pin -----	1
5	52930 AC	Chain Cutter, marked "D" -----	1
6	605	Screw, for chain cutter -----	1
7	22799 G	Screw -----	1
8	57930 G	Presser Foot Adjusting Section, marked "AW" ---	1
9	22565 P	Adjusting Screw -----	1
10	57930 D	Spring-----	1
11	57930 J	Presser Foot Shank-----	1
12	91	Screw -----	1
13	1096 B	Set Screw-----	1
14	604	Screw, for chip curler -----	1
15	52330 K	Chip Curler-----	1
16	57930	Presser Foot Bottom -----	1
17	57930 F	Yielding Section, marked "AY" -----	1
18	57920 H-12-12	Presser Foot, for No. 12-12 gauge-----	1
19	57930 N	Hinge Pin-----	1
20	605	Screw, for chain cutter -----	1
21	52930 AC	Chain Cutter, marked "D" -----	1
22	22799 Z	Screw -----	1
23	57930 G	Presser Foot Adjusting Section, marked "AW" ---	1
24	22565 P	Adjusting Screw -----	1
25	57930 D	Spring-----	1
26	57930 L	Presser Foot Shank-----	1
27	91	Screw -----	1
28	1096 B	Set Screw-----	1
29	57930 K	Chip Curler-----	1
30	604	Screw, for chip curler -----	1
31	57930 A	Presser Foot Bottom -----	1
32	57930 E	Yielding Section, marked "AX" -----	1
33	57924 B-12-12	Throat Plate, for No. 12-12 gauge-----	1
34	57905 B-12-12	Feed Dog, for Nos. 16-8 and 12-12 gauge, 12 t.p.i. (2.12 mm per tooth) -----	1
35	57924 C-16-8	Throat Plate, for No. 16-8 gauge-----	1
36	57920 G-16-8	Presser Foot, for No. 16-8 gauge-----	1
37	57930 N	Hinge Pin-----	1
38	52930 AC	Chain Cutter, marked "D" -----	1
39	605	Screw, for chain cutter -----	1
40	22799 Z	Screw -----	1
41	57930 G	Presser Foot Adjusting Section, marked "AW" ---	1
42	22565 P	Adjusting Screw -----	1
43	57930 D	Spring-----	1
44	57930 L	Presser Foot Shank-----	1
45	91	Screw -----	1
46	1096 B	Set Screw-----	1
47	57930 K	Chip Curler-----	1
48	604	Screw, for chip curler -----	1
49	57930 B	Presser Foot Bottom-----	1
50	57930 E	Yielding Section, marked "AX" -----	1

From the library of: Diamond Needle Corp



THREAD STAND PARTS AND ACCESSORIES

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	21101 H-6	Thread Stand Assembly -----	1
2	21114 D-6	Spool Seat Support -----	1
3	22651 CD-5	Screw -----	2
4	21114 H-6	Eyelet Support -----	1
5	22651 CD-4	Screw -----	1
6	21114 S-6	Lead Eyelet -----	1
7	21104 B-24	Thread Stand Rod -----	1
8	21104 H	Nut -----	1
9	652-16	Washer -----	1
10	21114 U	Lead Eyelet Ball Split Socket -----	2
11	21114 T	Lead Eyelet Socket Ball -----	1
12	22651 CD-4	Screw -----	1
13	22810	Screw -----	1
14	21114 A	Thread Stand Base -----	1
15	22651 CD-4	Screw -----	1
16	21104 V	Spool Support Pad -----	6
17	21114 W	Spool Pin -----	6
18	258 A	Nut -----	12
19	21114	Spool Seat Disc -----	6
20	652-16	Washer -----	6
21	660-264	"S" Hook -----	2
22	21388 W	Wrench, double end, curved, 9/32 inch (7.14 mm) opening -----	1
23	39152 U-4	Shim, .004 inch (.102 mm) thick, for setting the cast-off plate -----	2
24	51295 A	Isolator -----	1
25	51295 B	Isolator -----	3
26	21207 A	Screwdriver, 1/8 inch (3.18 mm) diameter blade, length overall 4 3/32 inches (103.98 mm) -----	1
27	660-240	Thread Tweezers -----	1
28	21388	Wrench, single end, 3/8 inch (9.52 mm) opening -----	1
29	421 D-34	Treadle Chain, 32 3/64 inches (813.99 mm) long -----	1
-	28604 R	Can of Oil, Spec. 175, 1 pint (not shown) -----	1
-	660-457	Dust Cover (not shown) -----	1

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INSTRUCTIONS FOR MECHANICS

LUBRICATION

CAUTION! Oil has been drained from the main reservoir before shipment, so the reservoir must be filled to the proper level as indicated on oil gauge (A, Fig. 1) before beginning to operate. Run machine slowly for several minutes to distribute the oil to the various parts. Full speed operation can then be expected without damage.

RECOMMENDED OIL

Use a straight mineral oil of a Saybolt viscosity of 90 to 125 seconds at 100° Fahrenheit in the main reservoir. This is equivalent to Union Special specification No. 175. Fill main reservoir at plug screw in upper crank chamber cover (A, Fig. 2) and check oil level at gauge (B). Oil is at maximum safe operating level when needle is to the black line, located to the right of "OPERATE" zone, marked "FULL". Oil should be added when needle is to the black line, located to the left of "OPERATE" zone marked "LOW". Recommended grease No. 28604 P (See Page 13).

CAUTION! It is important that these machines not be over filled.

It is recommended that a new machine, or one that has been out of service for an extended period be lubricated as follows: Remove the head cover, clean out lint and directly oil the needle bar link and the needle bar. Replace head cover as no further hand oiling will be required. Run machine slowly for several minutes to distribute oil to the various parts.

For machines in operation check the oil for dirt and lint deposits at reasonable intervals. If dirty, change the oil. An oil change is recommended every 2000 operating hours. Oil may be drained from main reservoir by removing plug screw (C, Fig. 2) located below the cloth plate at front of the machine, or by removing the lower crank chamber cover, located at the back of machine.

NOTE: Looper avoid and feed lift eccentrics receive oil thru the mainshaft, so when assembling be sure oil holes in the eccentric line up with oil holes in mainshaft when spot screw is in time spot.

OIL GAUGE

The oil gauge is set at the factory to show the proper oil level in the reservoir. Should an adjustment become necessary, however, the following steps should be followed:

1. Place the machine upright on a level table or bench.
2. Remove the oil reservoir plug screw (C, Fig. 2) and tip machine forward to drain oil from the reservoir.
3. Make sure all oil is drained from main reservoir.
4. Remove lower crank chamber cover, located at the back of the machine.
5. Fill main reservoir to a level even with the bottom contour of the knee press shaft bushing (D, Fig. 2).

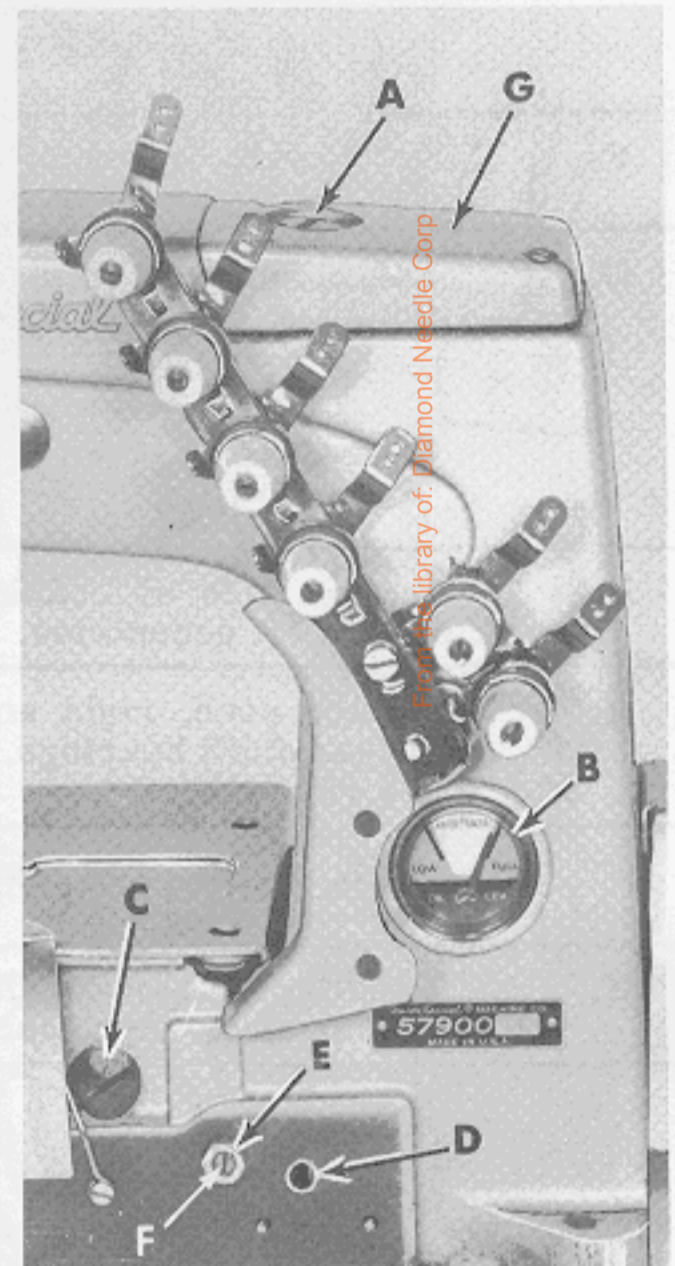


Fig. 2

OIL GAUGE (Continued)

6. Loosen lock nut (E) on calibrating screw (F), and turn the screw to the left or right until the gauge needle rests on the black line, located to the left of "OPERATE" zone, marked "LOW".
7. Tighten lock nut (E), replace plug screw (C) and lower crank chamber cover.
8. Add oil so that gauge needle rests on the black line, located to the right of "OPERATE" zone, marked "FULL".

NEEDLE LEVER BEARING OILER

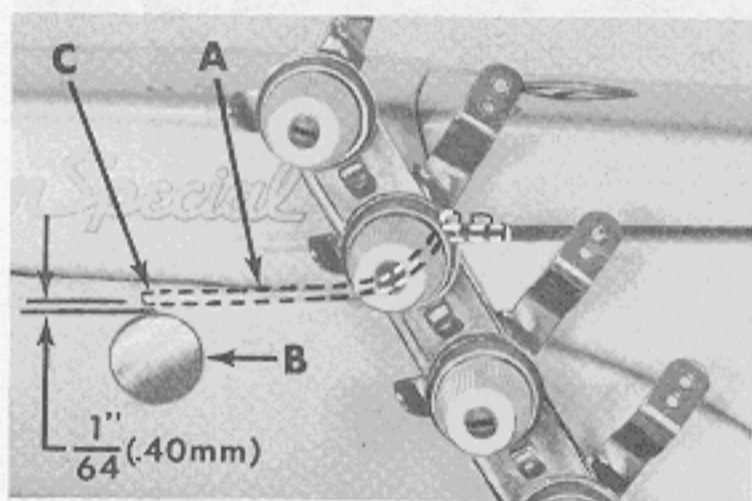


Fig. 3

Remove the head cover and upper crank chamber cover (G, Fig. 2). Check position of needle lever bearings oiler (A, Fig. 3) located inside the arm casting, below the upper crank chamber cover, which lubricates the needle lever stud (B). Make sure it is tilted downwardly and that its delivery end (C) contacts the inside wall of the bed casting at the back, just above the notch of the needle lever shaft stop collar. (Do not allow the oiler to rest on the needle lever). Allow 1/64 inch (.40 mm) clearance as in Fig. 3.

ALIGNING THE NEEDLE BAR

Align the needle bar (A, Fig. 4) and set to height, using the proper test pins and test plate of the right gauge. See chart below.

Machine Style	Test Plate No.	Right Test Pin No.	Left Test Pin No.
57900 H-5-8	698 AX-5-8	PI40 A	PI40 A
57900 H-12-12	698 AX-12-12	PI40 A	PI40 A
57900 H-16-8	698 BH-16-8	PI40 A	PI40 A
57900 N-5-8	698 AX-5-8	PI40 A	PI40 A
57900 N-12-12	698 AX-12-12	PI40 A	PI40 A
57900 N-16-8	698 BH-16-8	PI40 A	PI40 A

Insert test pins No. PI40 A in the left and right seat of the needle holder. Now assemble test plate to machine using the throat plate attaching screws. The needle bar is located properly if the test pins align with the holes in the test plate and the height of the needle bar is correct when the shoulder of the test pins rest on the test plate, when the needle bar is at its lowest position.

If test plate and test pins are not available, insert a new set of needles (Type and Size as required) and align the needle bar so the needles center in the needle holes of throat plate. To align needle bar, loosen needle bar clamp screw (B, Fig. 4) and turn bar as required. Tighten clamp screw.

SYNCHRONIZING LOOPER AND NEEDLE MOTIONS

Check the synchronization of the looper and needle motions, using gauge No. 21227 R as follows:

Insert the pin, which is included with the gauge, in the back hole in the looper rocker. Place the gauge plate on the throat plate seat using the throat plate screws for attaching. Place the shank of the indicator in the take-up wire hole in bed. Turn the handwheel in operating direction until the pin in the looper rocker contacts the edge of the gauge plate and set the indicator so that the left end of the pointer rests against the top of the needle bar and the right end of the pointer rests at "0". Tighten the set screw and note indicator reading. Turn the handwheel in the reverse direction until the pin again contacts the plate. If the motions are in synchronization, the pointer of the indicator will return to the same reading. A variation of one graduation on the scale is allowable. If the reading is higher on the scale when the handwheel is turned in the operating direction, the looper drive lever shaft will have to be moved to the rear. If the reading is lower, this shaft will have to be moved to the front.

NOTE: If gauge No. 21227 R is not available, synchronization may be checked as follows:

Insert the front looper (A, Fig. 5) in the looper rocker and turn handwheel in operating direction until the point of the looper, moving to the left is even with the left side of right needle (B). Note the height of the eye of the needle with respect to the looper point, then turn handwheel in the reverse

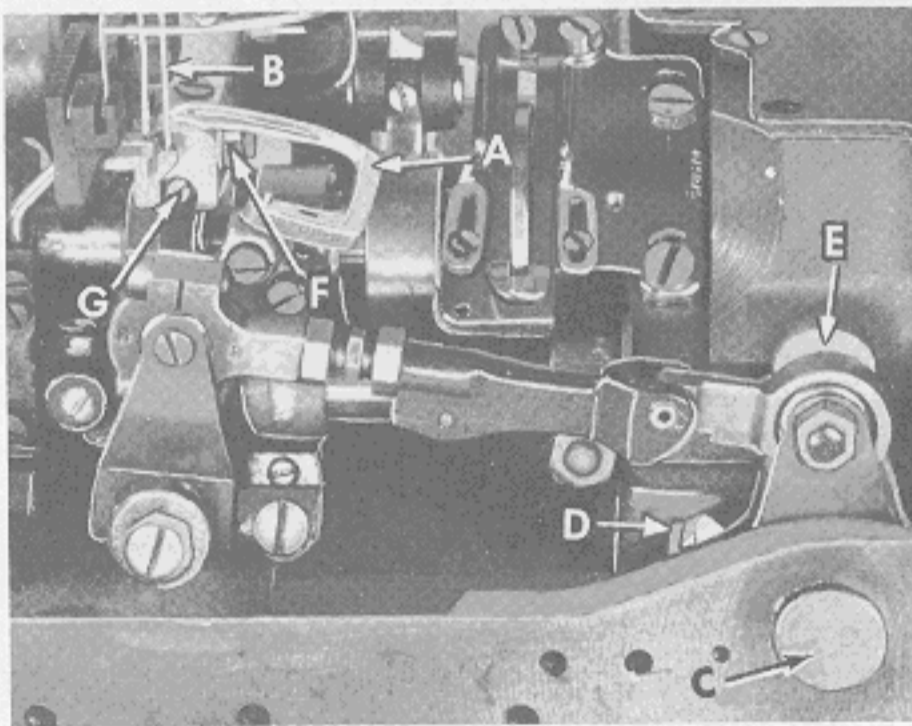


Fig. 5

a light tap with a small hammer, directly on the stud, is all that is required. To move stud forward (toward operator), remove the cloth plate, throat plate support, oil reservoir top cover and oil reservoir back cover, then, a light tap on the looper drive lever rocker shaft, toward the operator, is all that is required.

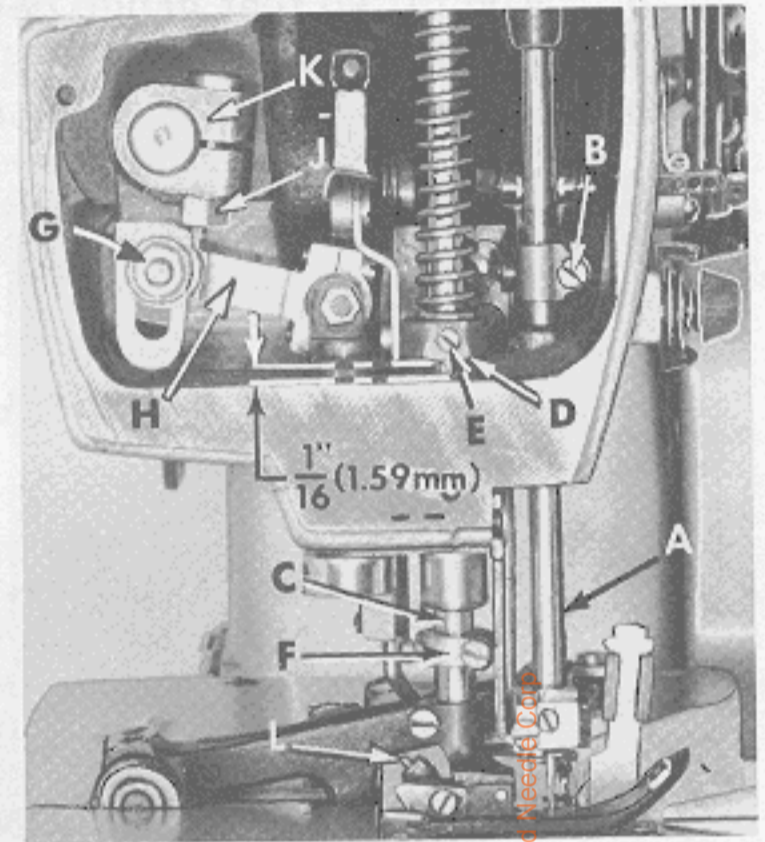


Fig. 4

direction until the looper point again moves to the left and is even with the left side of the right needle. If the motions synchronize, the height of the eye of the needle with respect to the looper point will be the same. A variation of .005 inch (.127 mm) is allowable. If the distance from the eye of the needle to the point of the looper is greatest when the pulley is turned in the operating direction, move the looper drive shaft synchronizing stud (C, Fig. 5) to the rear. Moving it in the opposite direction acts the reverse.

Moving of the looper drive lever shaft synchronizing stud is accomplished as follows: Loosen the clamp screw (D, Fig. 5) of the looper drive lever (E). To move stud to rear (away from operator),

SYNCHRONIZING LOOPER AND NEEDLE MOTIONS (Continued)

NOTE: Looper drive lever (E, Fig. 5) has an oil seal collar and an 'O' ring between it and the bed casting. All end play must be removed from the looper drive lever rocker shaft by compressing the 'O' ring until lever (E) and oil seal collar make metal to metal contact with the bed casting. Tighten screw (D).

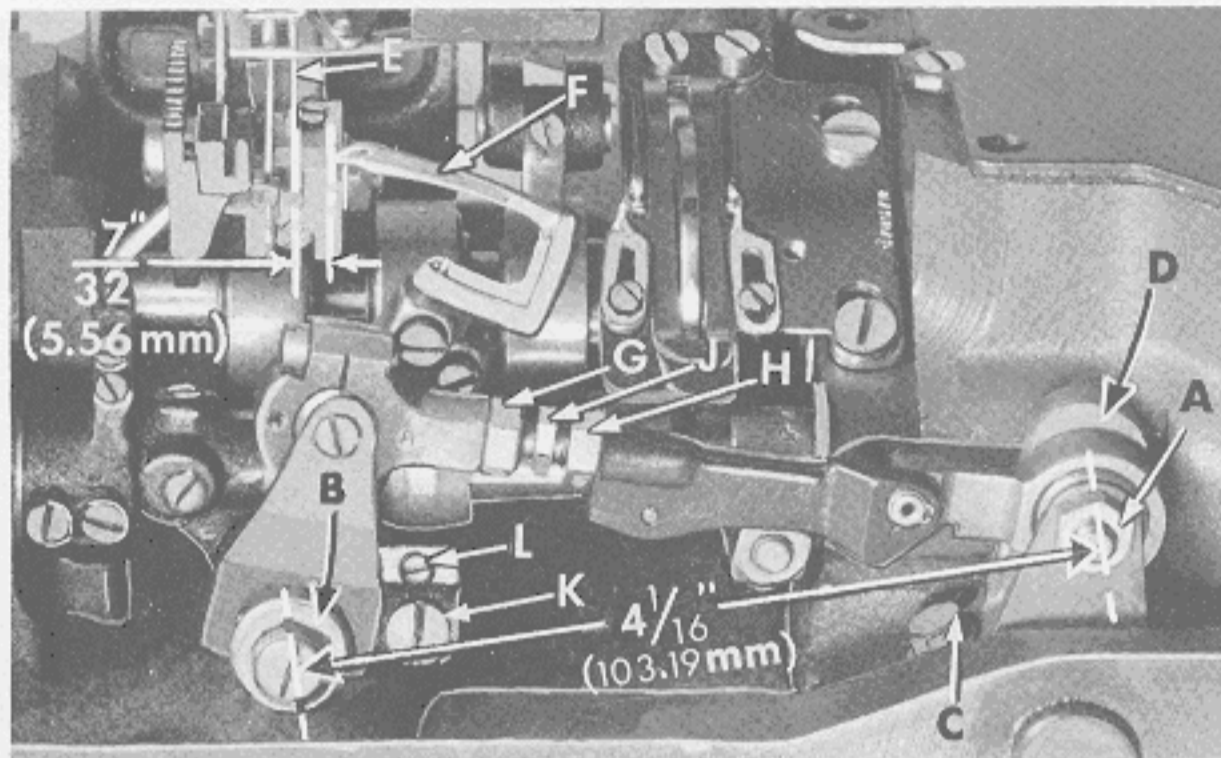


Fig. 6

With the looper at the extreme right end of its travel, check the location of the centerline of the right looper connecting rod bearing, using gauge No. 21227 CX. Remove nut (A, Fig. 6) and place hole in gauge over threaded stud. The left end of the gauge should locate against the right side of the looper rocker cone (B). If adjustment is necessary, loosen the clamp screw (C, Fig. 6) and reposition the looper drive lever (D) as required. Tighten clamp screw. If gauge is not available, setting can be checked with a scale. The distance between the centerline of the looper rocker cone and the centerline of the looper lever stud should be 4 1/16 inches (103.19 mm) (Fig. 6), when looper is at the extreme right end of its travel. Refer to "NOTE" in above paragraph.

SETTING THE TAKE-UP

After the main shaft has been positioned so the .045 inch (1.143 mm) dimension is obtained between the head of the main shaft and the casting you will have an approximate setting of the take-up in relation to the cast-off plate support. For the final setting, loosen the two screws that hold the cast-off plate to the casting. Using shim No. 39152 U-4 bent in half, position it over the take-up allowing each end to be positioned between the take-up and the cast-off plate support. Tighten screws that hold the cast-off plate support and remove shim No. 39152 U-4.

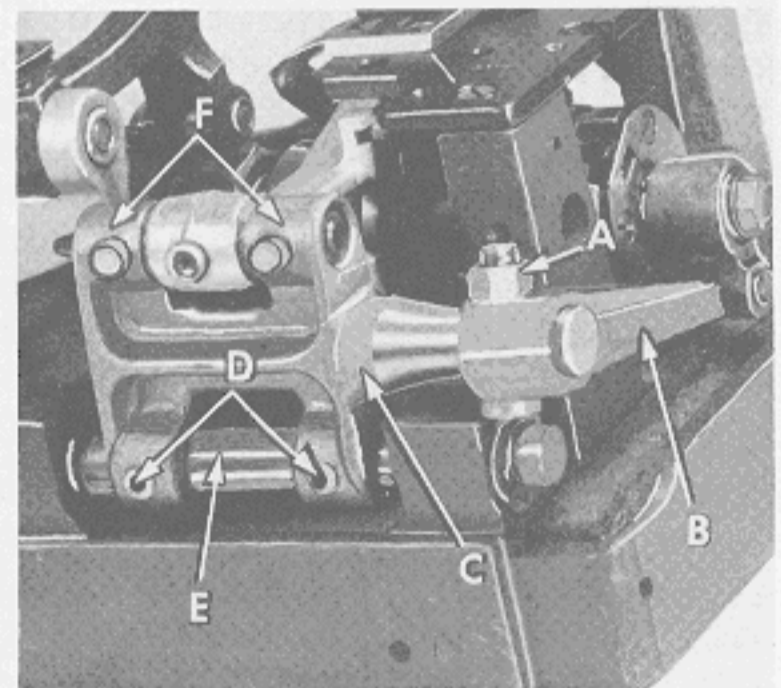


Fig. 7

SETTING THE LOOPER

Insert a new set of needles, type and size as specified. Also insert front looper. The distance from the center of the right needle (E, Fig. 6) to the point of the front looper (F) should be $7/32$ inch (5.56 mm) when the looper is at its farthest position to the right. Looper gauge No. 21225- $7/32$ can be used advantageously to check this setting. If adjustment is required, loosen nut (G, Fig. 6) (it has a left hand thread) and nut (H) on connecting rod (J), turn the connecting rod forward or backward to obtain the $7/32$ inch (5.56 mm) dimension. Retighten both nuts, first nut (H) and then nut (G). Make sure the left ball joint is in vertical position and does not bind after adjustment.

The looper is set correctly in line-of-feed, if, as it moves to the left, behind the needles, its point brushes, but does not pick at the rear of the right and center needles.

If adjustment is necessary, loosen lock screw (K, Fig. 6) and turn stop screw (L) as required. Turning stop screw clockwise sets the loopers to the rear and turning it counterclockwise acts the reverse. Holding the loopers to the front while making this adjustment may prove helpful. Tighten lock screw securely after setting is obtained and recheck the adjustment. Insert back looper and obtain the same needle-looper relationship. A minute adjustment of looper-needle relationship can be accomplished by applying pressure on the loopers at front or back of the blade, while clamping loopers in looper rocker, so as to get the proper in-line-of-feed setting.

SETTING HEIGHT OF NEEDLE BAR

The height of the needle bar (A, Fig. 4) is correct when the top of the left 602 stitch needle's eye is $3/64$ inch (1.19 mm) below the underside of the front looper, when the point of looper, moving to the left, is even with the left side of this needle. If adjustment is necessary, loosen screw (B) and reposition needle bar (A) up or down as required and retighten screw. Care must be taken not to disturb the alignment of the needle bar while making this adjustment, as the needles are to have equal clearance on both the right and left sides of the needle slots in throat plate.

SETTING THE FEED DOG

The feed dog should be set for maximum travel and equal clearance on all sides in the throat plate. NOTE: See 'CHANGING STITCH LENGTH'. With maximum feed travel set, it may be necessary to centralize feed dog motion to obtain equal clearance in the front and rear of throat plate. If required, loosen nut (A, Fig. 7) which clamps the feed rocker arm (B) to the feed rocker (C) and move the feed rocker forward or rearward as needed and retighten nut. Equal side clearance can be obtained by loosening screws (D) which hold the feed rocker (C) onto the feed rocker shaft (E), move the feed rocker to desired position and retighten screws. Make sure the feed rocker arm (B) does not bind after making this adjustment.

The tips of the feed dog teeth should extend $1\ 1/4$ tooth depth or approximately $3/64$ inch (1.19 mm) above the throat plate and parallel with the throat plate at high point of travel. The height can be adjusted by loosening screw (A, Fig. 8) which holds the feed dog in position, turn height adjusting screw (B) as required and retighten screw (A). If feed dog teeth are not parallel with the throat plate, loosen nut (F, Fig. 5) and turn screw (G) clockwise to lower the front teeth, or counterclockwise to raise the front teeth. Retighten nut (F) when feed dog is set properly.

CHANGING STITCH LENGTH

Set the stitch to required length. This is accomplished by loosening the locknut (C, Fig. 8) 1/2 turn (it has a left hand thread) on the end of the stitch regulating stud and turning the stitch adjusting screw (D) located under the left end of the cloth plate, in the head of the main shaft (E), which is marked with 'L' and 'S'. Turning the

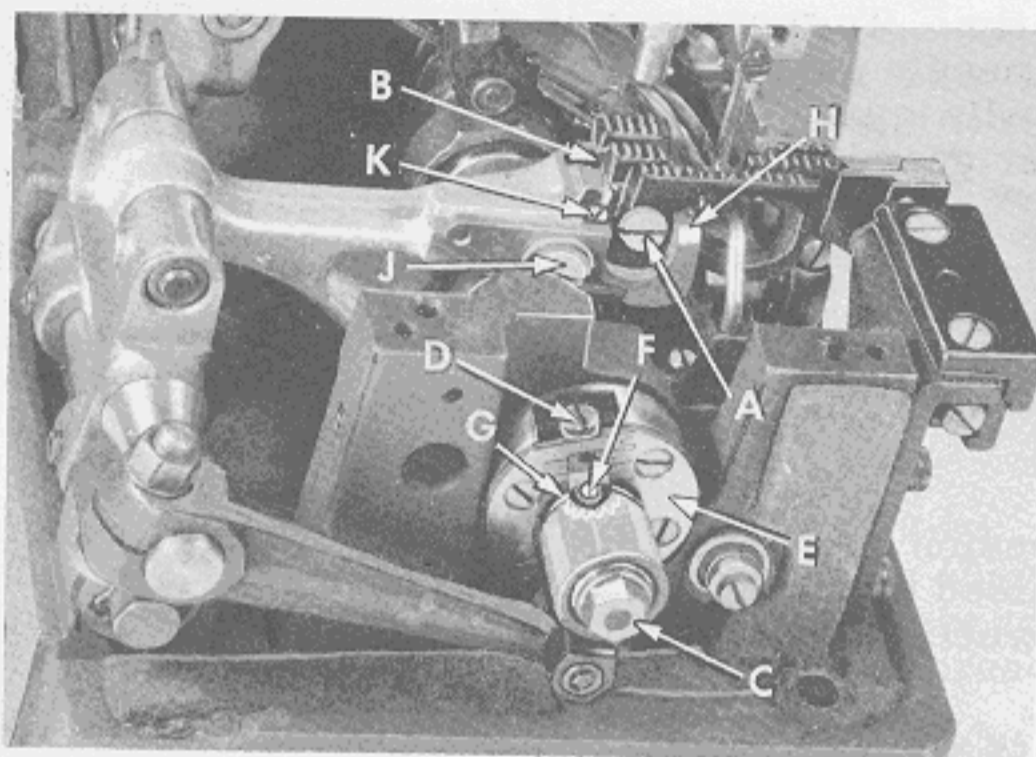


Fig. 8

screw clockwise shortens the stitch (moves stitch regulating stud toward the 'S') and turning it in a counterclockwise direction lengthens the stitch (moves stitch regulating stud toward the 'L'). Retighten the locknut securely. To prevent destructive damage to the feed drive bearing, the Key screw (F) must engage the 'U' shaped key slot in the ferrule (G).

NOTE: Any change in stitch length will necessitate a corresponding change in the rear needle guard setting.

Machines having needle bearings in feed rocker at locations (F, Fig. 7) may require repacking after years of service. Bearings should be cleaned and re-packed with Union Special Corporation grease No. 28604 P.

SETTING THE REAR NEEDLE GUARD

Set the rear needle guard (H, Fig. 8) horizontally so that it does not quite contact the rear of the needles when at its most forward point of travel. A clearance of .005 inch (.127 mm) is permissible. It should be set as low as possible, yet have its vertical face approach within about 3/64 inch (1.19 mm) of the needles, until the points of the loopers moving to the left, are even with the needles. To move the guard forward or rearward, merely loosen screw (J), move needle guard as required, and retighten screw. To raise or lower needle guard, loosen screw (J) and turn screw (K) clockwise to lower needle guard or counterclockwise to raise it. Retighten screw (J) after guard is properly set.

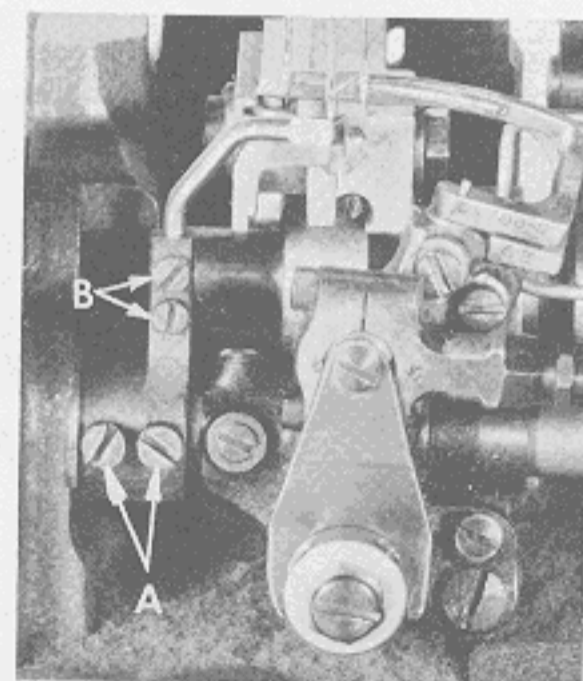


Fig. 9

NOTE: Any change in stitch length will require a change in rear needle guard setting.