



Union Special[®]
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INDUSTRIAL
SEWING
MACHINES



UNITY SEWING SUPPLY CO.
824 E. 8th St.

CLASS 63400 Los Angeles, CA 90021

STREAMLINED
HIGH SPEED LOCKSTITCH MACHINE
WITH
INTERMITTENT DIFFERENTIAL FEED

UNION SPECIAL CORPORATION
CHICAGO

From the library of: Superior Sewing Machine & Supply LLC

STYLES
63400 E
63400 L

CATALOG
No.
121 E
Second
Edition

Catalog No. 121 E

INSTRUCTIONS
FOR
ADJUSTING AND OPERATING
LIST OF PARTS

CLASS 63400
Streamlined Lockstitch

Styles

63400 E

63400 L

First Edition

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UNION SPECIAL CORPORATION
INDUSTRIAL SEWING MACHINES
CHICAGO

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IDENTIFICATION OF MACHINES

Each UNION SPECIAL machine is identified by a Style number which is stamped into the name plate on the machine. Style numbers are classified as standard and special. Standard Style numbers have one or more letters suffixed; but never contain the letter "Z". Example: "Style 63400 E". Special Style numbers contain the letter "Z". When only minor changes are made in a standard machine, a "Z" is suffixed to the Standard Style number. Example: "Style 63400 EZ".

Styles of machines similar in construction and grouped under a class number which differs from the style number, in that it contains no letters. Example: "63400".

APPLICATION OF CATALOG

This catalog applied specifically to the Standard Styles of machines as listed herein. It can also be applied with discretion to some Special Styles of machines in this class. Reference to direction, such as right, left, front, back, etc., are given from the operator's position while seated at the machine. Operating direction of the handwheel is toward the operator.

STYLES OF MACHINES

High Speed Streamlined Long Arm Lockstitch Machines, with Adjustable Intermittent Differential Feed for Reverse and Plain Differential, One Needle, Light, Medium and Heavy Duty, Drop Feed, Rotary Hook, Horizontal Hook Shaft, Push Button Stitch Regulator, Stitch Length Indicator, One Reservoir Enclosed Automatic Lubricating System, Head Oil Siphon, Adjustable Hook Oil Control, Needle Bearing Adjustable Feed Eccentric, Needle Bearings for Take-up Lever and Needle Bar Driving Link, Feed Timing on Lower Main Shaft, Maximum Work Space to Right of Needle Bar 11 1/8 Inches.

63400 E For simultaneously seaming and intermittently gathering woven cotton and knit dress material requiring up to a 5 to 1 gathering ratio depending on stitch length. 1 13/64 inch needle bar travel. Maximum recommended speed 5500 R. P. M.

63400 L Same as Style 63400 E, except equipped to give more reverse feed for stretching material and with only a 3 to 1 gathering ratio depending on stitch length. Maximum recommended speed 5500 R. P. M.

NEEDLES

Each UNION SPECIAL needle has both a type number and a size number. The type number denotes the kind of shank, point, length, groove, finish and other details. The size number, stamped on the needle shank, denotes largest diameter of the blade measured in thousandths of an inch across the eye. Collectively, the type number and the size number represent the complete symbol.

Needle Type 180 GXS or 180 GYS is recommended for Styles 63400 E and L. Their description and the sizes available are listed below.

<u>Type No.</u>	<u>Description and Sizes</u>
180 GXS	Round shank, round point, lockstitch, short length, ball eye, single groove, wide angle groove, struck groove, deep spot, ball point, chromium plated - sizes 075/029, 080/032, 090/036, 100/040, 110/044, 125/049, 140/054, 150/060.
180 GYS	Round shank, round point, lockstitch, short length, ball eye, single groove, wide angle groove, struck groove, deep spot, chromium plated - sizes 075/029, 080/032, 090/036, 100/040, 110/044, 125/049, 140/054, 150/060.

NEEDLES (Continued)

To have needle orders promptly and accurately filled, an empty package, a sample needle, or the type and size number should be forwarded. Use description on label. A complete order would read: "1000 Needles, Type 180 GXS, Size 080/032".

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

SELECTING THE SIZE OF THE NEEDLE

The strength requirement of the seam produced is largely dependent upon the size of the thread employed. The quality of the work desired is largely dependent upon the size of the needle employed.

The following table shows the preferred size of needle for a given size and kind of thread. The choice, however, should give consideration to factors referred to above, which may dictate the selection of a needle size slightly larger or smaller than the size specified.

<u>Cotton Thread Size</u>	<u>Mercerized Thread Size</u>	<u>Needle Size</u>
0	-	150/060
30	B	140/054 to 150/060
36	A	125/049 to 140/054
40	A	110/044 to 125/049
50	0	110/044 to 125/049
60	00	100/040 to 110/044
70	000	090/036 to 100/040
80	0000	080/032 to 090/036
90	0000	080/032 to 090/036
100	-	075/029 to 080/032

IDENTIFYING PARTS

Where the construction permits, each part is stamped with its part number. Parts too small for a complete catalog stamping are identified by letter symbols which distinguish one part from another that is similar in appearance.

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.

ORDERING OF REPAIR PARTS

ILLUSTRATIONS

The arrangement of this catalog is to facilitate easy and accurate ordering of Class 63400 replacement parts.

Six exploded view plates cover the Standard Styles listed in this catalog. Each plate presents a sector of the machine, parts being aligned as in their assembled position. Small keyline views show by a blackened area exactly where the parts being discussed fit in the assembled machine. On the page opposite the illustration will be found a listing of the parts with their part numbers, descriptions and the number of pieces required in the particular view being shown.

Numbers in the first column are reference numbers only, and merely indicate the position of the part in the illustration. Reference numbers should never be used in ordering parts. Always use the part number listed in the second column. Each exploded view plate carries a reference number for each part for sale.

Sub-assemblies, which are sold complete, or by separate part, are in a bracket or a solid line box on the picture plate. 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:

30	29126 DD	Feed Driving Eccentric and Connecting Rod Assembly-----	1
31	61437 K	Feed Drive Eccentric -----	1
32	61438 B	Feed Drive Eccentric Connecting Rod -----	1
33	660-225	Needle Bearing -----	1
34	88	Set Screw -----	1

In those cases where a part is common to all of the machines covered by this catalog, no specific usage will be mentioned in the description. However, when the parts for the various machines are not the same, the specific usage will be mentioned in the description, and, if necessary, the difference will be shown in the illustration.

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.

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 strictly net cash and 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 the postage and insurance.

INSTALLING

CAUTION! When unpacking, **DO NOT** lift machine out of box by placing one hand on handwheel. Using both hands on bed casting, lift gently.

Before leaving factory, each Union Special machine is sewed off, inspected and carefully packed. After the machine and accessories have been removed from the packing box, the following steps should be followed:

PREPARATION OF MACHINE FOR INSTALLATION

A bag of assembly parts, consisting of one frame thread eyelet, one eyelet attaching screw, one extra bobbin, two hinge studs, and two screws for holding miscellaneous attachments to the bed plate, is packed with each machine.

Insert hinge studs in holes provided for them in rear of cloth plate. Assemble the upper frame eyelet (A, Fig. 2).

STANDARD ACCESSORIES

Included also with each machine is a box of **STANDARD ACCESSORIES**-- containing one bobbin winder assembly, the machine mounting frame, one oil drain jar and its clamp spring, one knee lifter assembly and its rubber pad, bed positioning spring and screw, four isolator pads and clips, and one machine rest pin. These parts are essential when setting up the machine.

TABLE TOPS

Lockstitch machines are installed in table tops, prepared with cut-out, so that the bed plate is **FLUSH** with the top of the machine mounting frame.

MACHINE MOUNTING FRAME INSTALLATION

On a suitable tableboard, place machine mounting frame (21393 N) in the machine cut-out with the hinge lugs to the rear (Fig. 1). Insert the countersunk wood screw through left hinge pad and tighten securely. Assemble bed positioning spring (63474A) over right hinge pad; insert round head wood screw and tighten securely. Assemble the retaining plate (21293 R) to outside front of pan section, as shown, and snug up nuts lightly.

Place sewing head in the frame mounting, and after being sure there is about 1/16 inch clearance between the cloth plate edge and the frame sides, rap the retaining plate smartly upward with a hammer to insure a good grip on the underside of the board and tighten locking nuts securely.

Tip machine back against rest pin, and assemble the knee press assembly as shown. All end play of the cross shaft should be taken up by the cone bearings, but must not bind.

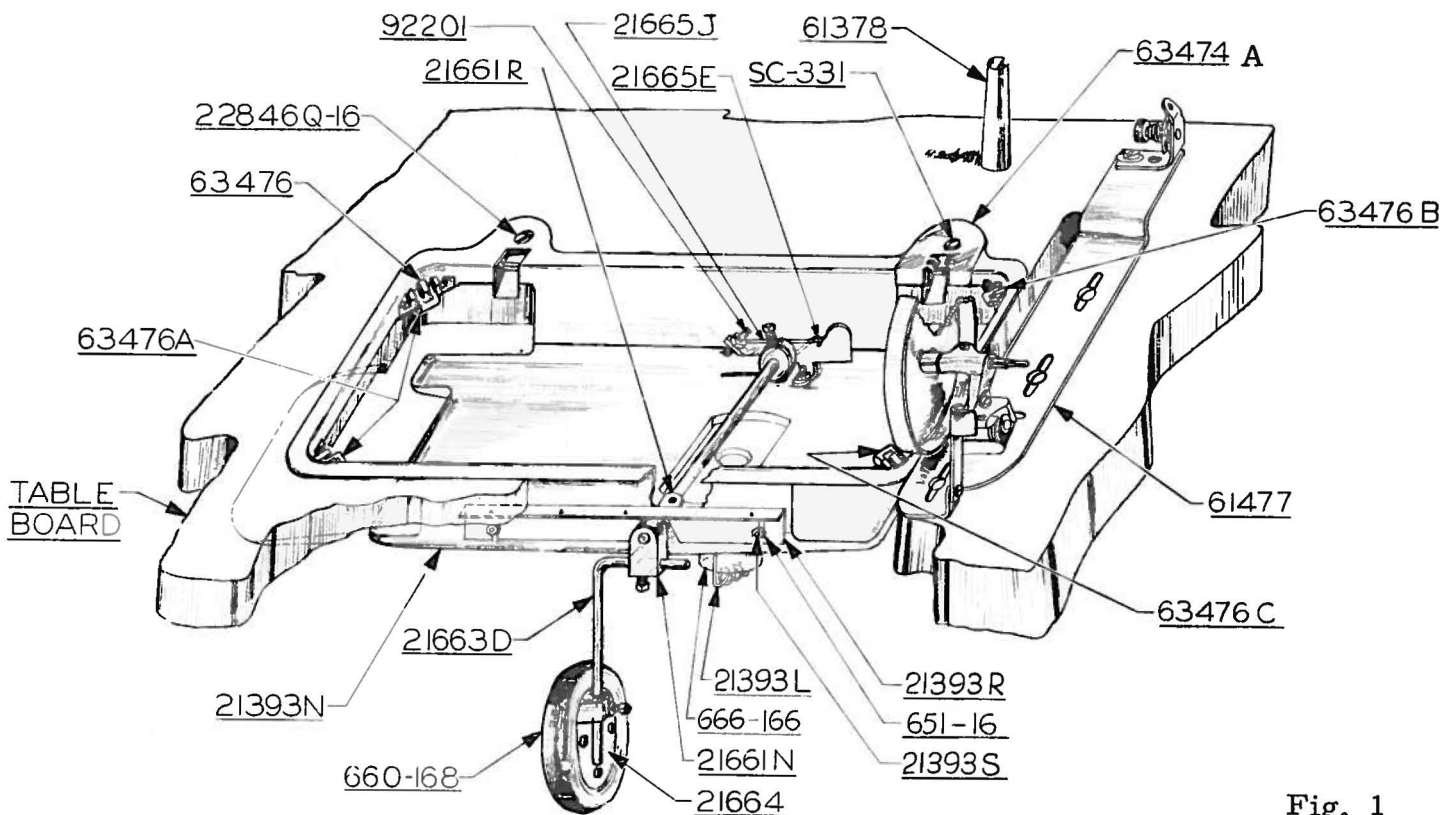


Fig. 1

INSTALLING (Continued)

MACHINE MOUNTING FRAME INSTALLATION (Continued)

Before the machine is put into production, the bell crank (21665 J) of the knee lifter rod should be adjusted. The left stop screw 22597 F should be set so that the maximum lift of the presser bar and its parts do not interfere with moving parts within the head. This may be done by setting the stop screw so that the presser bar raises approximately 5/16 inch.

BOBBIN WINDER

The bobbin winder should be secured to the table top so that its pulley will be located directly in front of the sewing machine belt and will bear against the belt when in operation. The base of the winder has two elongated attaching holes, which allow the mechanism to be moved closer to or farther away from belt as needed. The pulley of the winder, when in operation, should exert only enough pressure against the belt to wind the bobbin. Regulation and operation of the bobbin winder is described under "Winding the Bobbin", under OPERATOR'S INSTRUCTIONS.

BELTS

These machines are equipped to use either #1 "Vee" or round belts.

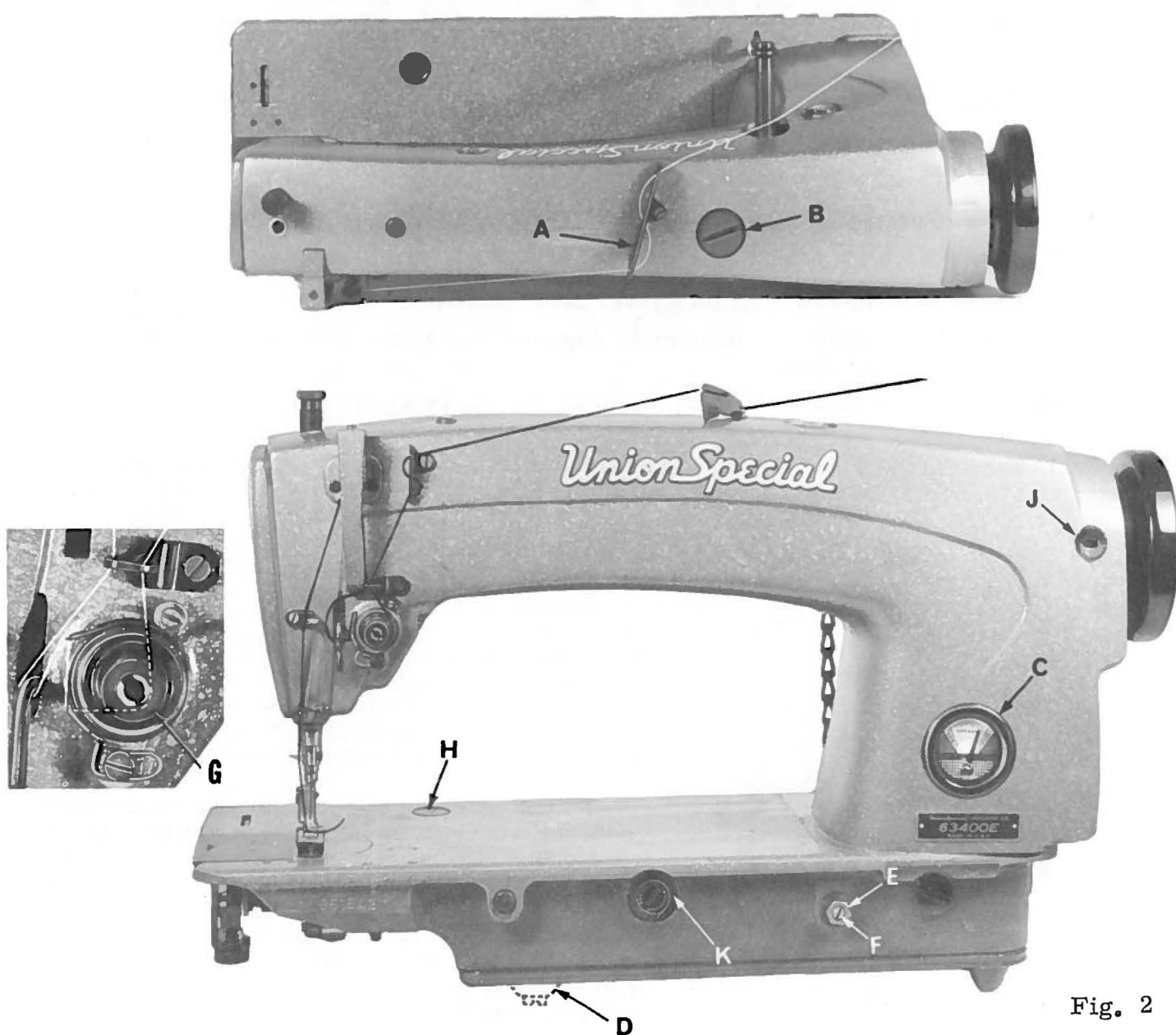


Fig. 2

LUBRICATION

CAUTION! Oil has been drained from the main reservoir before shipment and the reservoir must be filled before starting to operate.

Lubricate machine thoroughly, in accordance with instructions which follow, and run 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 stainless water-white straight mineral oil of a Saybolt viscosity of 90 to 125 seconds at 100° Fahrenheit in the main reservoir. This equivalent to Union Special specification No. 175. Fill main reservoir at plug screw (B, Fig. 2) and check oil level at gauge (C); oil is at a maximum level when needle is in yellow band marked "full". Oil should be added when needle is in yellow band marked "low".

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 end cover and directly oil the bearings of the needle bar link, take-up and its lever and needle bar. Replace end cover as no further hand oiling will be required.

Oil may be drained from main reservoir by removing plug screw (D, Fig. 2).

OIL GAUGE

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

1. Place the machine upright on a level table or bench.
2. Remove the reservoir plug screw (located below the handwheel and near the bottom of the machine).
3. Oil should be added or removed so that the oil level is approximately 1/8 inch below the bottom edge of the hole.
4. Loosen the lock nut (E, Fig. 2) on the calibrating screw (F), and turn the screw left or right so that the gauge needle rests on the yellow band marked "FULL" on gauge (C, Fig. 2).
5. Tighten lock nut and replace plug screw.

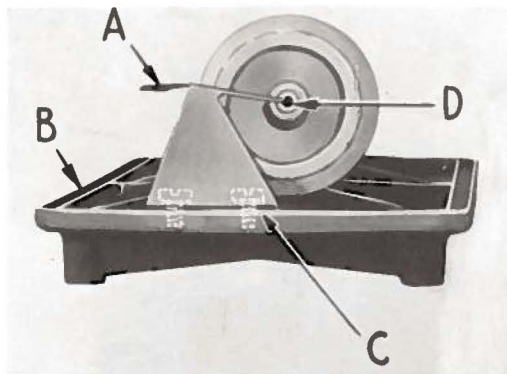


Fig. 3

Lubrication of the mechanism below the cloth plate is automatically accomplished through the feed driving shaft (D, Fig. 3), which is tubular. Oil is introduced into the shaft at the sprocket end by means of an oil distributing plate (A, Fig. 3) which is secured to the bottom cover (B) by means of two screws (C).

Should it become necessary to remove the reservoir cover, it is imperative that the adjustment of the oil distributing plate (A) be checked very carefully. This can be done by removing the large plug screw at the right end of the reservoir and looking through the hole. The low point of the oil distributing plate must be even with or slightly below the center of shaft (D) and just touching it.

INSTRUCTIONS FOR OPERATORS

THREAD

While the direction of the twist in the bobbin thread is immaterial, the direction of the hook rotation favors the use of a left twist thread in the needle. To determine the direction of twist, grasp a short length of thread between thumb and forefinger of each hand. Turn the thread away from you with your right hand. If the strands unwind, it is a left twist, if not, it is a right twist.

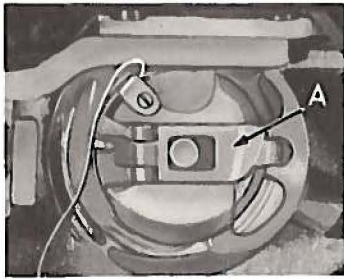


Fig. 4

REMOVING THE BOBBIN CASE

To remove the bobbin case, turn handwheel in operating direction until the needle reaches its highest position. Using the left hand, reach under the table, open the bobbin case latch (A, Fig. 4), and pull the bobbin case out of the sewing hook.

Opening the latch retains the bobbin in the case. When the latch is closed, the bobbin is released and can readily be removed.

WINDING THE BOBBIN

Thread the bobbin winder by leading the thread from the supply down through the eyelet (A, Fig. 5), down between the tension discs, and under the tension post. Press an empty bobbin on the winder shaft (B) up to the stop, wind the end of thread around the bobbin a few turns in a clockwise direction, and press downwardly on hand lever (D) until pulley is moved into contact with machine belt, and is locked in that position. When the machine is operated, the bobbin will be rotated and filled until the thread engages the automatic throw-out member, which disengages the pulley. The extent to which the bobbin is filled can be varied by regulating the screw (C).

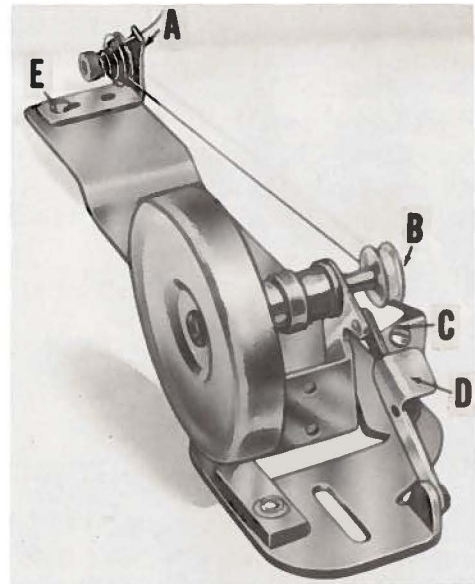


Fig. 5

The tension post bracket is mounted on the winder base, and can be shifted from left to right by loosening screw (E) so that any tendency of the bobbin to wind unevenly may be readily corrected.

The purpose of the bobbin winder is to assure an operator of a full bobbin at all times. When the bobbin in the machine is used up, replace it with the full one, and begin to wind the empty one immediately. Bobbins can be rewound while the machine is sewing.

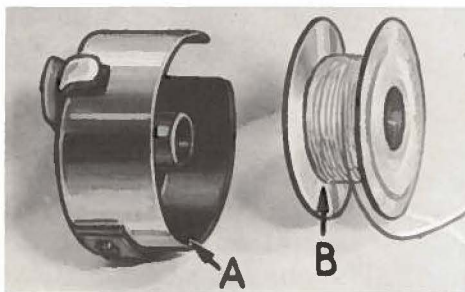


Fig. 6

THREADING THE BOBBIN CASE

The bobbin case should be held between the thumb, forefinger and second finger of the LEFT hand (A, Fig. 6).

The bobbin itself should be held between the thumb and forefinger of the right hand (B, Fig. 6) with thread coming off the bottom of the bobbin.

INSTRUCTIONS FOR OPERATORS (Continued)

THREADING THE BOBBIN CASE (Continued)

Place the bobbin in the bobbin case. In one continuous motion, with the thumb and forefinger of the right hand, draw the bobbin thread through the diagonal slot in bobbin case (A, Fig. 7) under the tension spring (B) and into self threading eyelet (C) on case. Note the direction of the rotation of the bobbin as the end of the thread is pulled when looking at the bobbin case from the back. The bobbin should rotate counterclockwise.

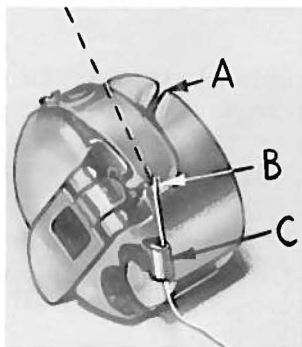


Fig. 7

REPLACING THE BOBBIN CASE

Have the needle bar at its highest position, allow about two and one half inches of thread to hang free. The bobbin case latch should be opened with the left hand, and by reaching under the table and through the opening in the table, it should be placed part way into the sewing hook. The latch should then be released and bobbin case snapped into position.

INSERTING THE NEEDLE

Insert the needle into the needle bar as far as it will go with the spot (sometimes called scarf) toward the right, facing the handwheel. Tighten set screw securely.

The cross hole in the needle bar, about 1/4 inch from the end (A, Fig. 8), is to show the operator when the needle has been inserted as far up as it will go, and to provide a means for cleaning the accumulated lint from needle hole so the needle will seat properly.

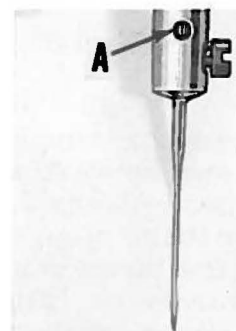


Fig. 8

THREADING THE NEEDLE

Threading diagram (Fig. 2) shows the places where the needle thread passes. Please note that the needle thread passes through the needle eye from left to right.

PREPARATION FOR SEWING

With your left hand, hold the end of the needle thread, leaving it slack, and turn the handwheel in operating direction until the needle moves down and up again to its highest position. Pull up the needle thread and the bobbin thread will come up with it through the needle hole in the throat plate. Draw both threads under the presser foot.

TENSIONS

A perfect stitch is one in which the needle thread and bobbin thread are locked together in the center of the material being sewed. A stitch of this kind is secured by regulating the tensions on both threads.

BOBBIN THREAD TENSION

The tension on the bobbin case is applied by means of a set screw (A, Fig. 9) which regulates tension spring (B). The tension on the spring is correct when it is just sufficient to hold the bobbin case and bobbin suspended by the bobbin thread. The thread should not be in the eyelet for this adjustment check.

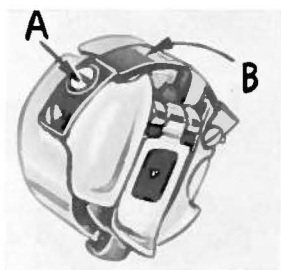


Fig. 9

INSTRUCTIONS FOR OPERATORS (Continued)

BOBBIN THREAD TENSION (Continued)

Remove the bobbin case from its holder and turn set screw in spring in a clockwise direction to apply more tension or counterclockwise to release tension.

When the bobbin thread tension is correct, it rarely becomes necessary to make any changes as varying the needle thread tension will usually attain a good stitch.

NEEDLE THREAD TENSION

The needle thread tension is varied by turning the tension regulating nut (G, Fig. 2). Turning the nut in a clockwise direction increases the tension, while counterclockwise decreases it. This should not be done when the presser foot is in its raised position, but is generally done while the machine is sewing on a piece of scrap material.

TO CHANGE THE STITCH LENGTH

Press plunger (H, Fig. 2) in firmly. While holding plunger in, turn handwheel in operating direction until stitch regulating finger is felt to drop into the slot of feed eccentric. 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 in the belt guard (J, Fig. 2).

PRESSURE ON MATERIAL

The presser spring should exert only enough pressure to make the work feed uniformly. To increase the pressure on the presser foot, turn presser spring regulator (A, Fig. 10) in clockwise direction. Turning the regulator counterclockwise decreases the pressure.

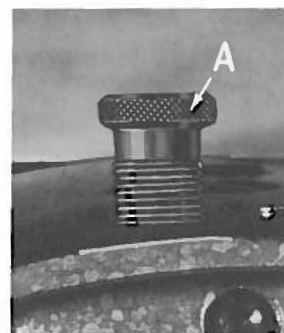


Fig. 10

INSTRUCTIONS FOR MECHANICS

SETTING THE NEEDLE BAR TO HEIGHT

The lower needle bar bushing, the one to which the needle bar is timed, is set at the factory. The distance from the bottom of bushing (A, Fig. 11) to the throat plate seat (not to the top of the throat plate) is $2\frac{1}{4}$ inches.

The four lines engraved on the needle bar are used in setting needle bar to height and are referred to as TIMING LINES. The two lower lines are used with the short length needle Types 180 GXS or 180 GYS, which are recommended for Styles 63400 E and L.

When the needle bar is at its lowest position, the upper timing line of the lower pair (B, Fig. 11) should be EVEN with the lower edge of the lower needle bar bushing (A).

To change the position of the needle bar, turn the hand-wheel until the bar is at its lowest position. Then, loosen the clamp screw (C) and move the bar to the proper timing line. Keeping the needle bar link at its lowest position, tighten screw securely.

The illustration (Fig. 11) shows the proper setting of the needle bar on Style 63400 E or L using needle, Type 180 GXS or 180 GYS.

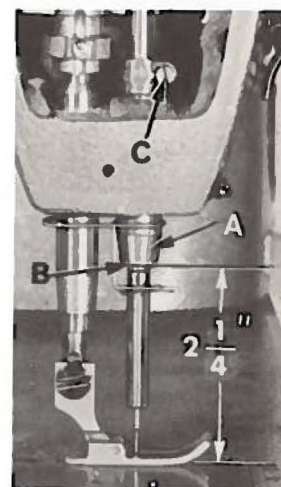


Fig. 11

TIMING THE HOOK

Tip the machine back so that it rests on the rest pin in the table top. Insert a new needle. Loosen the two screws and swing out the bobbin case positioning finger (A, Fig. 12). Loosen the three set screws (B) in the hook and hold the hook and bobbin case holder in such a position as to prevent interference with the needle. Turn the handwheel in operating direction until the needle bar is at its lowest position and continue to turn the handwheel until the needle is ascending and the lower timing mark (of the lower pair) (Fig. 11) used in setting the needle bar is even with the lower edge of the needle bar bushing (A).

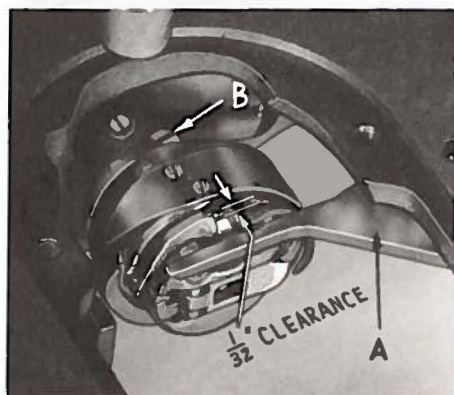


Fig. 12

Turn the hook on the shaft until the point of the hook is even with the center of the needle and as close to the needle as possible without deflecting it. A spacing of .003 to .005 inch between the needle and the point of the hook is satisfactory. With the hook in this position, tighten the set screw opposite the hook point securely. Then, tighten the two remaining screws securely and recheck the timing of the hook with the needle, at which time, the top of the eye of the needle should be about $\frac{1}{64}$ inch below the bottom of the hook point. If this condition does not exist, recheck the setting of the needle bar bushing in relation to the throat plate seat (Fig. 11).

Adjust the bobbin case holder positioning finger by turning the bobbin case holder until the finger recess is at the top. Place the projection on the finger into the bobbin case holder recess and tighten the finger attaching screws securely, allowing $\frac{1}{32}$ inch clearance between the outside edge of projection and the inside edge of bobbin case recess (Fig. 12).

INSTRUCTIONS FOR MECHANICS (Continued)

NEEDLE GUARD INSTRUCTIONS FOR NO. 29474 P

In the hook, at the right side of the needle hole in the bobbin case holder (B, Fig. 13) is found a needle guarding surface (A, Fig. 13).

The purpose of this guarding surface is to prevent the hook point (C) from coming in contact with the needle (D) at loop-taking time, should the needle be deflected toward the hook point. The needle guard will deflect the needle slightly, when needle is at bottom of its vertical travel, if the hook is properly timed. (At loop-taking time, there should be little or no deflection of needle by the needle guard.)

For additional needle clearance, especially with use of size .048 and larger needles, removal of some needle guarding surface may be necessary.

Before metal removal from the guarding surface, all related settings should be checked as follows:

1. See that the needle bar is set to correct height.
2. Check for proper hook timing.
3. Rotate handwheel in operating direction by hand. Check for excessive needle deflection beyond what is cited above as a desirable condition.
4. If needle deflection is excessive, follow steps 1 and 2 below.
 - (1) Remove bobbin case holder from hook.
 - (2) Remove excess metal from needle guarding surface. This may be done by using a 1/8 inch strip of fine emery cloth (#320), with one end secured to the bench and rubbing the guarding surface back and forth until sufficient metal is removed. When metal is being removed from needle guarding surface, the bobbin case holder should be re-inserted frequently and tested until proper needle guarding is obtained.

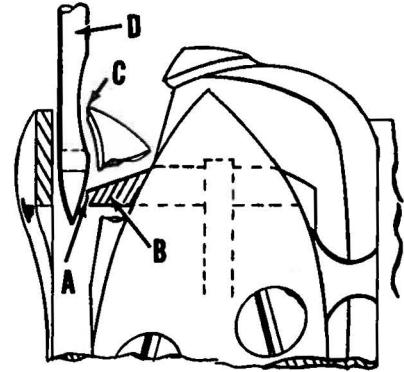


Fig. 13

CAUTION! Damage to hook point may result if too much metal is removed from needle guarding surface.

The bobbin case holder should be thoroughly cleaned before re-assembly into hook base.

When altering needle guarding surface, it is suggested the hook NOT BE REMOVED or disturbed from its timed position.

Bobbin case holder only may be removed by removing gib screws and gib and by pulling on bobbin case stem as the handwheel is rocked backwards and forwards slightly.

HOOK LUBRICATION

CAUTION! Do not run the machine without the bobbin case in the hook as hook damage may result.

With the bobbin case in the hook, run the machine for a full minute. Place a piece of white paper directly under the hook and continue running the machine. After about five seconds, remove the paper and a definite and distinct pattern of oil spots should be observed.

INSTRUCTIONS FOR MECHANICS (Continued)

HOOK LUBRICATION (Continued)

Should more or less oil be required, turn the oil control adjusting shaft (K, Fig. 2), located on the front of the machine just below the cloth plate surface, in the direction of the change required. After a change in the hook oil flow, the machine should be run about one minute before checking for the desired oil flow.

SETTING THE MAIN FEED DOG

The main feed dog (A, Fig. 14) should be set to rise the depth of a full tooth above the throat plate at the highest point of travel and center in the feed slots of the throat plate at maximum feed travel. To raise or lower the main feed dog, loosen screw (B) and set feed dog to specified height. Tighten screw. The feed bar has been set at the factory so the lateral, forward or backward settings of the main feed dog are established.

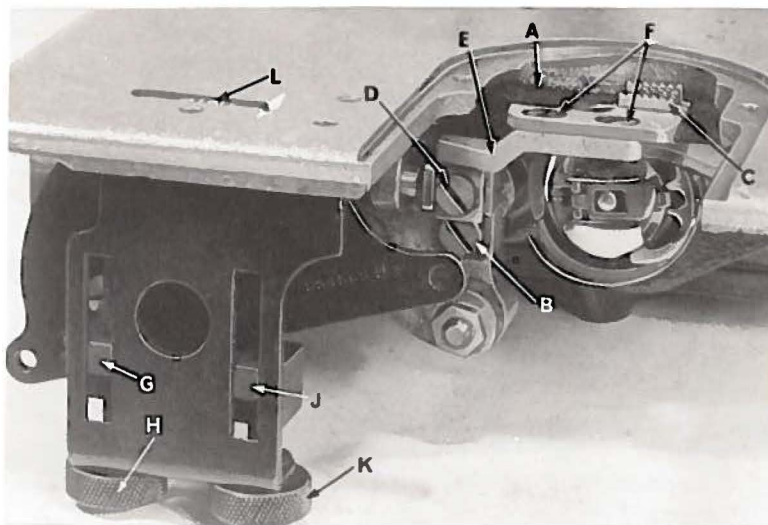


Fig. 14

SETTING THE DIFFERENTIAL FEED DOG

The differential feed dog (C, Fig. 14) should also be set to rise the depth of a full tooth above the throat plate at the highest point of travel and center in the feed slots of the throat plate at maximum feed travel. In addition to this the teeth of the differential feed should be parallel to the top surface of the throat plate across the line of feed.

To raise or lower the differential feed dog loosen screw (D) and adjust feed dog holder (E) to set feed dog at specified height. Tighten screw.

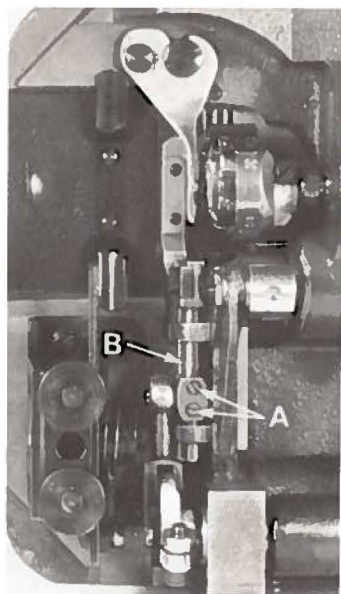


Fig. 15

Loosen feed dog holding screws (F) to space the feed dog forward, backward or sideways in the throat plate. The sides of the differential feed dog should be in line with the main feed dog. If more adjustment of the differential feed dog is required, first loosen holding screws (F) and move feed dog so that screws are centered in elongated slots of feed dog. Tighten screws. Now tip machine back against the rest pin. Loosen the two set screws (A, Fig. 15) and move differential feed bar (B) forward or backward as required to position feed dog properly. The loosening of screws (A) will also allow the differential feed bar to be rotated so the feed dog can be aligned parallel with the top surface of the throat plate across the line of feed. Tighten screws securely.

INSTRUCTIONS FOR MECHANICS (Continued)

DIFFERENTIAL FEED ADJUSTMENT

Set the rear differential feed stop (G, Fig. 14) by turning screw (H) counter-clockwise for more differential or clockwise for less differential. Then set the front intermittent differential feed stop (J) by turning screw (K) clockwise for more gather and counterclockwise for a lesser gathering ratio. The differential gathering ratio can be read on dial (L) located in the bed plate.

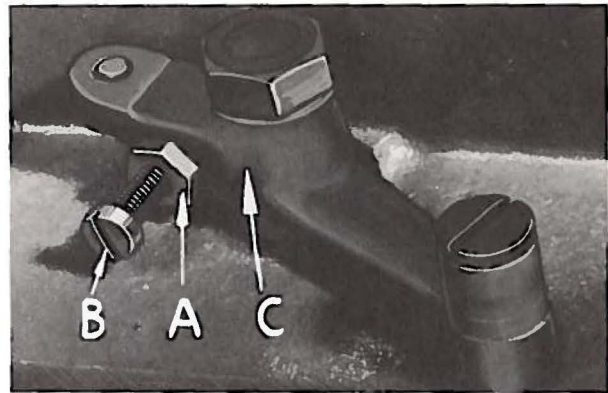


Fig. 16

NOTE: After setting the differential feed stops (G and J) turn machine by hand and engage the differential to be sure the feed dogs have clearance at the front end of feed slot and that the two feeds do not contact each other at the back end of travel. The gathering ratio is 5 to 1 on Style 63400 E and 3 to 1 on Style 63400 L, depending on the length of stitch set at the main feed dog.

PRESSER BAR CONNECTION

The presser bar connection (A, Fig. 17) should be set so that it is about $\frac{1}{16}$ inch below the presser bar guide (B). This is accomplished by tipping the machine back against the rest pin, loosening the lock nut (A, Fig. 16), and relocating the stop screw (B) on the lifter lever bell crank (C). By turning the stop screw to the right or left, the proper setting of the presser bar connection is accomplished. Tighten the lock nut (A) to lock the stop screw in place.

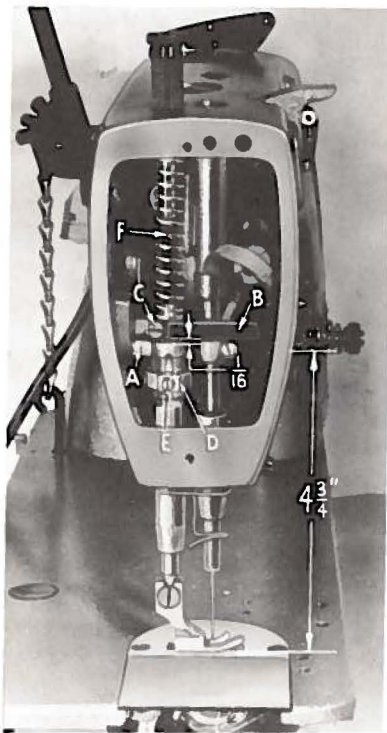


Fig. 17

INSTRUCTIONS FOR MECHANICS (Continued)

PRESSER BAR GUIDE

When locating the presser bar guide (B, Fig. 17), the presser foot must rest directly against the throat plate with the feed dog in its lowest position. The guide is set properly when there is a 4 3/4 inch space between the thread take-up wire and the top of the throat plate (Fig. 17)

To obtain this setting, remove the pressure from the presser spring (F) and loosen set screw (C). Tap on presser foot to insure its being down on the throat plate. Set the guide to the 4 3/4 inch dimension, center the foot by turning it so that the needle enters the middle of its slot and retighten screw (C) in guide. Now, apply pressure to the presser foot by turning the regulator (A, Fig. 10) clockwise.

PRESSER BAR

The presser bar No. 63457 J is designed primarily to receive Union Special presser feet. However, should feet of a different manufacture be required, the presser bar is adaptable.

To adapt the machine to receive presser feet of other manufacture, proceed as follows:

1. Remove presser foot and presser foot screw from presser bar.
2. Insert presser foot screw in the presser bar so it screws in from right to left.
3. Loosen the set screw in the presser bar guide and rotate presser bar 180° using the screw as a handle.
4. Attach presser foot to the bar and align the needle hole or slot of the foot with the needle.
5. Check the presser bar guide for correct height and tighten set screw securely.

CAUTION! When presser feet other than of Union Special manufacture are used, the presser guide height must be checked and reset where necessary.

TENSION ASSEMBLY ADJUSTMENT

Test check spring tension (A, Fig. 18). There should be enough tension to assure a good returning snap when spring is depressed and released. Should it require adjusting, loosen set screw in the head located under arm and to the right of tension assembly, and remove tension assembly. Partially loosen tension post set screw (B) in tension post socket (C). Turn the tension post (D) counterclockwise until the check spring moves away from the upper stop (E) and has no tension on it. Turn the tension post (D) in a clockwise direction until the spring again touches the upper stop (E). Then, proceed further in the same direction until the desired tension is obtained. When correctly set,

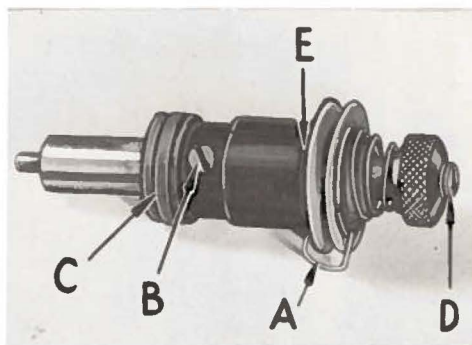


Fig. 18

the tension post set screw (B) should be drawn up snugly, yet not forcefully. Further adjustment of the check spring tension can be made by inserting a screwdriver into the slotted end of the tension post (D) and turning in the required direction.

Replace tension assembly with the check spring about 3/8 inch above the thread take-up wire. While the tension post assembly is being replaced, the presser foot should be resting on the throat plate.

INSTRUCTIONS FOR MECHANICS (Continued)

TENSION RELEASE

The tension release should be set so that it will not release when sewing over seams or when the presser foot is raised for back tacking. The adjustment of the tension release cam (D, Fig. 17) and the in and out position of the tension assembly are required for proper operation.

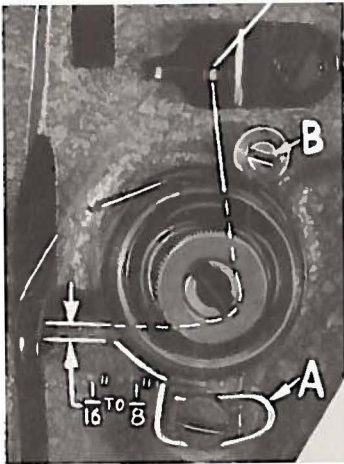


Fig. 19

The in and out position of the tension assembly is correct when the tension discs are in line with the check spring eyelet (A, Fig. 19). Set the stop screw (B, Fig. 19) so that when the flange of the tension assembly rests against it, this position is maintained. Tighten the tension assembly set screw.

The tension release cam (D, Fig. 17) should now be positioned by loosening set screw (E, Fig. 17) and then raising or lowering the cam to suit the sewing conditions, the average release point being between $\frac{1}{4}$ to $\frac{5}{16}$ inch of presser foot lift above the throat plate. Tighten tension release cam set screw securely.

THREAD CONTROL

Check the adjustment of tension assembly (A, Fig. 20). Check spring tension. There should be enough tension to

insure a good returning snap when spring (B, Fig. 20) is depressed and released. The check spring tension is adjusted from about 1 to 1 $\frac{1}{4}$ ounces when measured with a postal scale (C, Fig. 20). This is measured when the check spring is $\frac{1}{32}$ to $\frac{1}{16}$ inch from its stop. The tension post set screw should be drawn up snugly but not forcefully tightened (B, Fig. 18). The tension release pin should move freely in the tension post (D, Fig. 18). The check spring eyelet (A, Fig. 19), located just below the tension discs, should be set for correct height as follows:

With a thread running from the tension post to the thread wire in a straight line, the check spring eyelet should be set $\frac{1}{16}$ to $\frac{1}{8}$ inch below the thread line (Fig. 19). Be sure the eyelet is set close to the tension discs so that the check spring will pass freely over it without obstruction. After making this setting, proceed to thread machine as per threading diagram (Fig. 2).

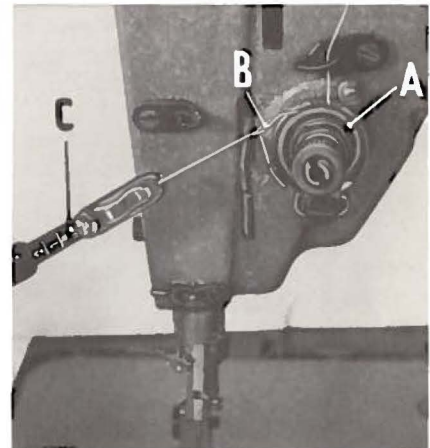


Fig. 20



Fig. 21

Sew slowly on a piece of material and observe the action of the check spring. The thread from the check spring to the take-up wire should be taut when the take-up is at the bottom of its stroke. Slight changes in needle thread tension may be necessary at this point, but a reasonable tension should be used to maintain a uniform and consistent stitch. The machines are sewn off with 3 to 4 ounces needle thread tension on 70-2 cord or similar thread using a postal scale (A, Fig. 21). Depress check spring when checking the tension. The check spring will feel heavy to you when compared to Class 61400 adjustment, but this is a required setting for the

Class 63400, and as a result, the disc tension can be reduced.

BOTTOM COVER

Before removing the bottom cover, place the machine on bench so that the plug screw is accessible from underneath. Remove this plug screw and catch the reservoir oil in some convenient clean container. Tip the machine back, loosen and remove the two cover screws. The cover should be tapped free with a wooden block or mallet. Do not pry cover loose with any sharp instrument as the gasket may become damaged.

CAUTION! When the bottom cover is removed, care should be taken not to mar or scratch the gasket seat area of the machine bottom.

Before replacing the cover, the machine gasket seat should be wiped clean and free of all lint and dirt. The cover gasket should also be inspected for damage and cleaned of dirt. Two additional gaskets are used to seal the bolts and must be cleaned before assembly. Carefully set the cover in place and tighten the two bolts securely.

To replace a damaged cover gasket, proceed as follows:

1. Clean cover gasket recess of any foreign matter.
2. The gasket in cross section is triangular in shape with a groove in the top or widest part. With the cover resting as it does in the machine, oil distributing plate to your right, begin inserting the gasket in the middle of the back recess. The grooved wide edge of the gasket should be up and the long sloped edge inward. Continue pressing the gasket into the cover recess until gasket is in place.

The bolt sealing gaskets may have a tendency to fall out when installing the cover, but may be temporarily cemented in place by applying grease to their recesses.

HOOK SHAFT

The hook shaft (A, Fig. 22) is held in position by the pinion (B) and collar (C) thrusting against hard steel washers (D) between the long left hand bushing (E) and the short right hand bushing (F).

Should the hook shaft setting be disturbed, the left and right position can be determined by measuring from the hook end of the hook shaft to the point of a new needle (G) and reading 35/64 inch on a scale.

To reposition the hook shaft, loosen the set screws of the pinion and collar and establish the 35/64 inch dimension. Move the pinion and thrust washer against the left bushing, and after making certain one of the set screws is on the shaft FLAT, tighten both screws securely. Liberally coat the collar and its washer with oil and press the collar away from the pinion so as to remove all end play and tighten both set screws securely.

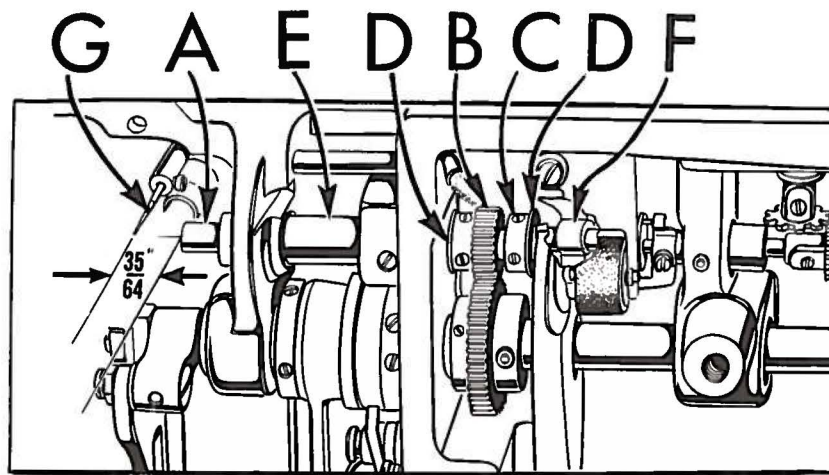


Fig. 22

Hook oiling is accomplished by a high speed rotary pump on the end of the hook shaft. The quantity of oil supplied to the hook is regulated by the longer or shorter path the oil is required to travel through the metering felt of metering cup (G, Fig. 23). (Increase or decrease of oil supply is controlled by a dial (P, Fig. 23) with an arrow marked "INCREASE", found below the cloth plate). The hook oil feed roller (A, Fig. 23) which rests against the metering cup felt serves not only to feed oil to the unit from the oil reservoir, but filters the oil as well.

REMOVAL OF OILING DEVICE

The following steps are necessary to remove hook oiling device:

1. Remove hook oil feed roller (A, Fig. 23).
2. Remove hook oil control finger (B).
3. Apply finger pressure to hook oil control shaft (D) to prevent loss of pump disc pivot pin (E) using Allen wrench, loosen set screw (C). Move assembly slowly to right, being careful not to drop pivot pin located in the end of the hook oil control shaft. When pivot pin is clear of pump disc (F), disc is free to fall.
4. Remove metering cup (G) along with oil supply felt (K) and air seal felt (J).
5. Remove cog (H) from hook oil control shaft.

INSTRUCTIONS FOR MECHANICS (Continued)

RE-ASSEMBLY OF OILING DEVICE

Before re-assembly, the end of the hook shaft, its spiral groove and the pump disc should be thoroughly cleaned. Remove any end play found in hook shaft and determine that the 35/64 inch dimension has been maintained (Fig. 22).

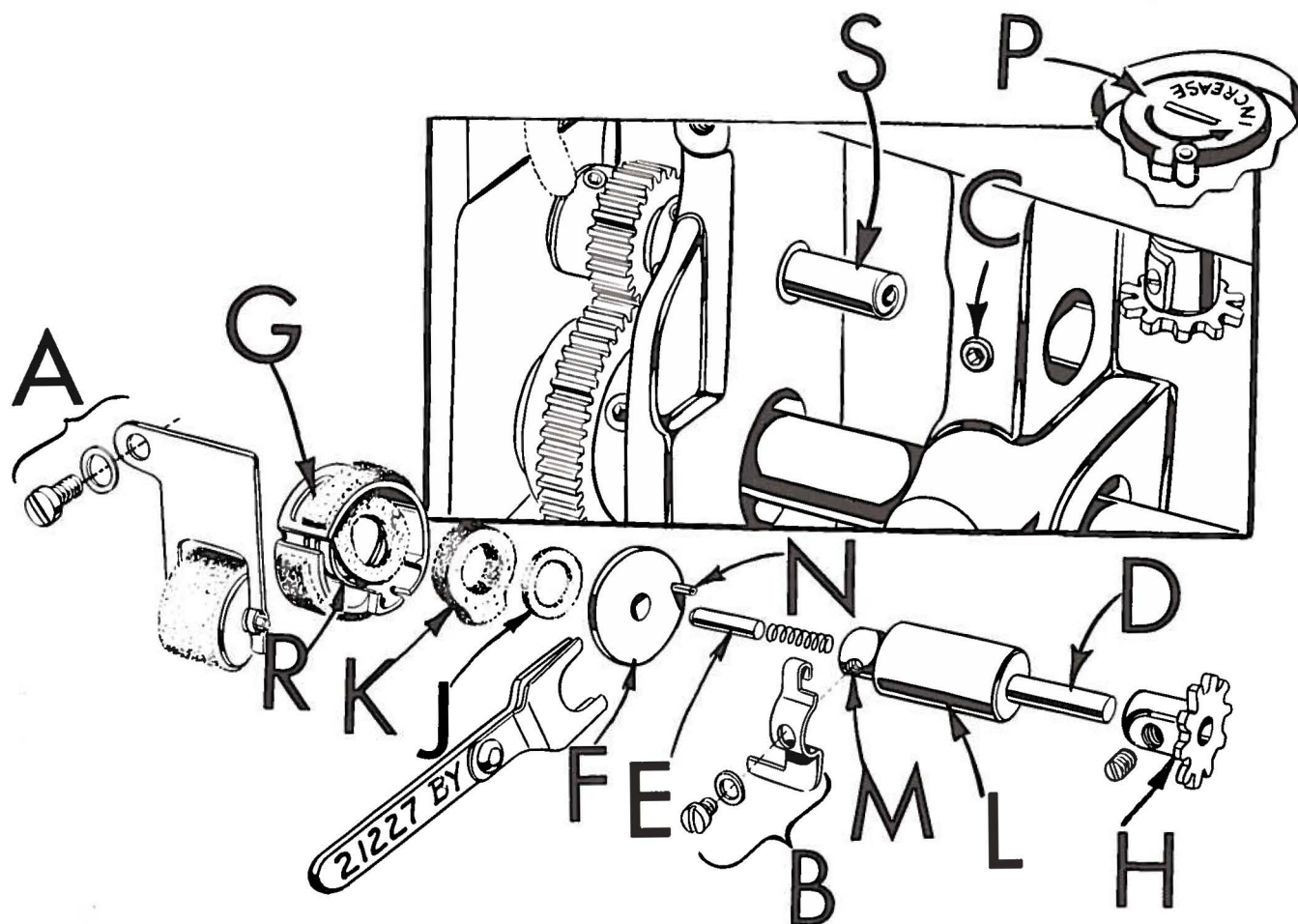


Fig. 23

The following steps are necessary to re-assemble the hook oiling device:

1. Remove and separate the air seal felt (J, Fig. 23) from oil supply felt (K).
 2. Make sure small end of air seal spring (R) is located on boss of metering cup behind felt attached to cup. Position metering cup (G) and air seal spring on hook shaft (S) with open end toward handwheel end of machine (Fig. 23).
- NOTE: The hook shaft should pass through hole of felt attached to metering cup.
3. Position oil supply felt (K, Fig. 24) on hook shaft making certain the felt's projection extends into dovetail of metering cup.
 4. Position air seal felt (J) on hook shaft.
 5. Insert pump disc (F) into assembly tool No. 21227 BY, with stop pin on the spring side of tool, 180° from handle. Insert disc approximately half way into spring and center in tool (Fig. 25).

INSTRUCTIONS FOR MECHANICS (Continued)

RE-ASSEMBLY OF OILING DEVICE (Continued)

6. Insert hook oil control shaft (D) and its bushing (L) part way into its boss which is located directly behind the hook shaft, being careful NOT TO DROP the pump disc pivot pin (E).
7. A clearance cut on the edge of the metering cup, located between the dovetail and the long horizontal slot, has been provided for the pump disc tool and should be facing you (Fig. 25).
8. With the fork of the tool in line with the metering cup clearance cut and centered about the hook shaft end, press the felts to the left with the tool until the pump disc is in contact with the end of the hook shaft.

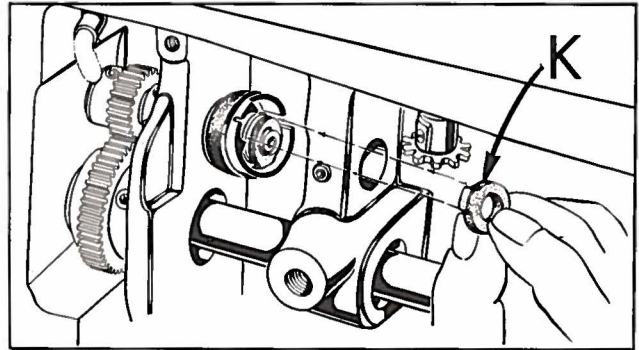


Fig. 24

9. Press hook oil control shaft bushing (L) to left until control shaft (D) is approximately 1/16 inch away from pump disc (F). Make sure the control shaft pivot pin (E) seats in the depression at the center of the pump disc. Tighten set screw (C, Fig. 25) and withdraw assembly tool. Be sure air seal felt (J) has seated against the pump disc.
10. Turn hook oil control shaft (D, Fig. 26) until screw hole (M) is accessible. Manually rotate pump disc (F) so its stop pin (N) is 90° above screw hole.
11. Rotate metering cup so the short slot (T) is 180° from the stop pin (N). Now, install the hook oil control finger (B) by first hanging the hooked portion of the finger over the stop pin (N) and lowering to insert the projection at bottom left into the short slot of the metering cup. Tighten finger (B) in place by means of screw and washer, making sure the hook oil control finger does not bind or distort the metering cup.

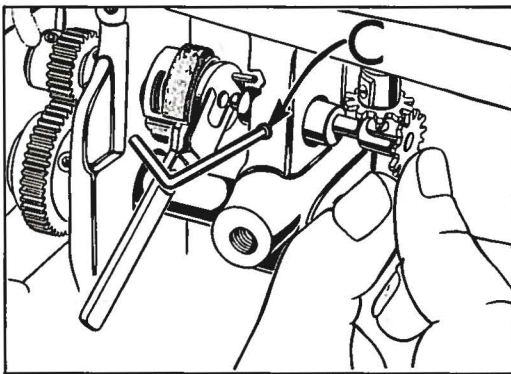


Fig. 25

12. Assemble the hook oil feed roller (A, Fig. 27), and rotate the metering cup so that the roller contacts the metering cup felt at point (U, Fig. 27). Turn the oil control adjusting shaft (P, Fig. 27) in the increase direction until projection stops against the stop pin (this is maximum oil supply) and install the cog (H, Fig. 27) on the hook oil control shaft. After meshing the teeth, tighten the set screw securely.

13. Check for proper contact of the hook oil feed roller and the metering cup by turning the oil control adjusting shaft through its complete travel and observe the feed roller turning as the metering cup turns. With the oil control adjusting shaft set at maximum, the feed roller point of contact with the metering cup felt should be at the mid-point of the slot that permits the metering cup felt to enter the metering cup.

NOTE: The feed roller should be in contact with the metering cup felt through its complete travel.

UPPER MAIN SHAFT

In a high speed machine, the alignment of the take-up mechanism is extremely important and is controlled by the left and right position of the upper main shaft. Should the main shaft position be altered, it is imperative that the take-up alignment be checked before operating.

TO CHECK FOR ALIGNMENT

1. Remove the presser bar spring and regulator screw.
2. Rotate the handwheel so that the needle bar is at the bottom of its stroke.
3. Remove the take-up lever pin.
4. With light inward finger pressure, move the take-up lever to the take-up lever boss. There should be a small amount of interference between the lever and the boss. With light outward finger pressure, move the lever across the boss face. There should be clearance between the boss face and lever. These two tests in effect are checking the lateral play of the take-up lever and provides

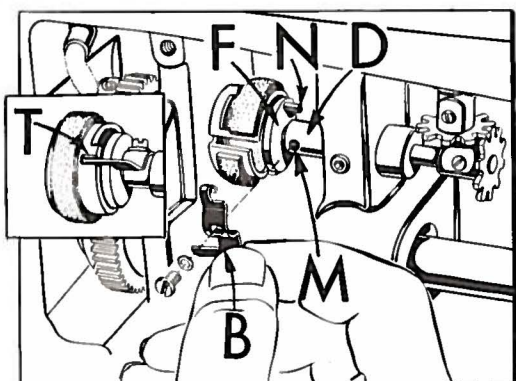


Fig. 26

for operation of the take-up in the center of the lateral play. Now, line up the take-up lever hole with the hole in the lever boss. Insert the oil wick about 1/2 inch in the bore of the take-up lever. With the oil wick groove up, insert the take-up lever pin in the lever, making sure the wick is in the groove and press the pin into its hole in the arm. There should be no end play in the take-up lever after the set screw is securely tightened.

Should the alignment test show the main shaft is out of position, the upper sprocket and handwheel should be loosened and the shaft moved left or right as the conditions indicate. Re-tighten sprocket and handwheel so that there is no end play in the upper main shaft and repeat the alignment check.

HANDWHEEL

The handwheel is constructed so as to minimize noise and is therefore isolated from the pulley by shock mounts. If for any reason the handwheel is disassembled, the following steps should be used for re-assembly.

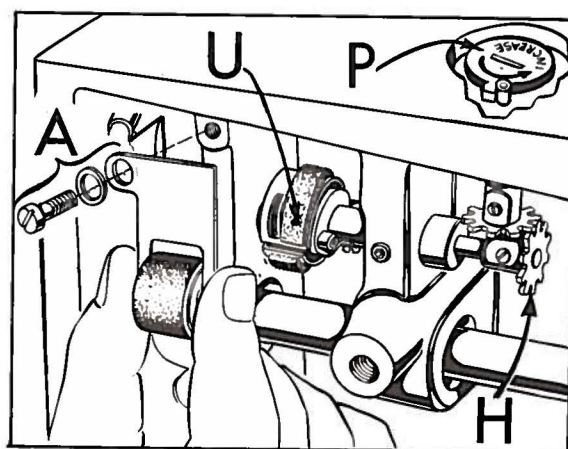


Fig. 27

1. Using the upper main shaft as a mandrel, assemble the pulley thrust face down so that at least 1 1/2 inches of the shaft protrudes above it. Tighten the two set screws.
2. Place the rubber isolator ring on the pulley face and align holes.
3. Carefully slide handwheel down the shaft to contact the isolator and align the three holes.

INSTRUCTIONS FOR MECHANICS (Continued)

HANDWHEEL (Continued)

4. Three plastic "O" rings are now inserted into their respective holes in the handwheel.
5. The outer isolator ring and cap are now assembled.
6. Insert the three screws that are run through the complete assembly and tightened lightly.
7. Loosen the two pulley screws and slowly revolve the whole assembly several times for good alignment. Now, gradually tighten the three screws moving from one to the other until all are snug.
8. The assembly should run true as it revolves freely on the shaft. If any sidewise run-out is noted, it can be corrected by slight changes of screw pressure in the three isolator screws.

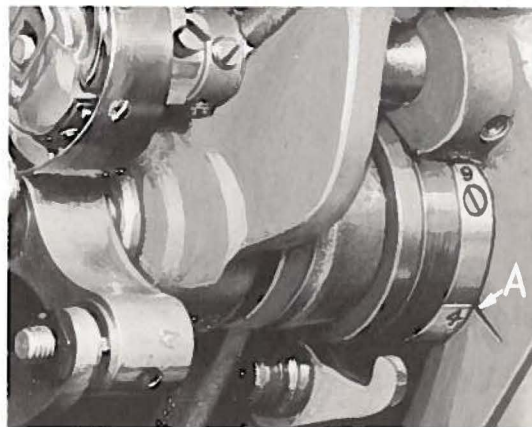


Fig. 28

CAUTION! When replacing the handwheel assembly on the main shaft, care must be taken not to damage the oil seal located near the end of the shaft. The surface of the ring should be lightly oiled and the handwheel worked over the seal gently. Upper main shaft should be held securely to the right when sliding handwheel over seal to prevent damage to the take-up mechanism.

STITCH LENGTH INDICATOR

After a feed timing change, the stitch length indicator will have to be re-adjusted to read accurately:

1. Depress the stitch length change button until it engages in the feed eccentric.
2. Turn the handwheel toward you until the stop is reached, indicating the longest stitch length.
3. Loosen the stitch length indicator set screws.
4. With the change button still engaged, set the indicator dial to read "L" in the window on the belt guard.
5. Tighten indicator dial set screws.

TIMING THE MACHINE

Tip the machine back against the rest pin and turn handwheel until the needle bar is at the top of its stroke. The timing line "4" on the feed drive eccentric should line up with the mark on the wall of the casting (A, Fig. 28).

INSTRUCTIONS FOR MECHANICS (Continued)

TO SET THE FEED TIMING

1. Remove the needle from the needle bar.
2. Remove large plug screws below the oil gauge and below the handwheel.
3. Turn the handwheel until the needle bar is at the top of its stroke.
4. Loosen the lower sprocket screws through the hole below the oil gauge.
5. Hold the handwheel securely and turn the lower main shaft until the timing mark "4" on the adjustable feed driving eccentric and mark on the casting wall line up (A, Fig. 28).
6. Press the lower main shaft firmly toward the handwheel and with a screwdriver, press the lower sprocket toward the head of the machine. Through the access hole, re-tighten the two sprocket screws securely. There should be no end play in the lower main shaft.
7. A small quantity of lead seal should be applied on the threads of both plug screws before they are replaced.

CAUTION! After any feed timing change, the hook must be retimed.

LOWER MAIN SHAFT

Should the lower main shaft position be altered, it is important that the collar (61432 J), located between the hook driving gear and the left lower main shaft bushing, be located .020 inch from the bushing.

The belt should be assembled on the lower sprocket so that the second set screw is accessible through the large plug screw hole.

HEAD MECHANISM LUBRICATION ADJUSTMENT

The needle bar link (A, Figs. 29, 30) is lubricated at two points.

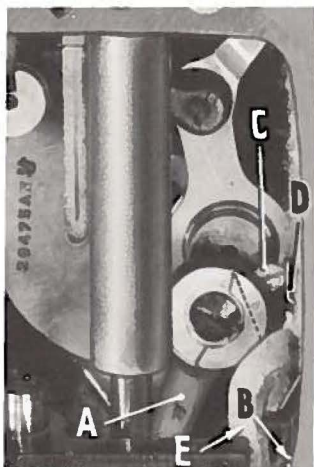


Fig. 30

1. Thrust washer (B, Fig. 29) must be positioned so that oil wick (C) wipes across the thin portion of thrust washer. Washer is positioned by loosening left hand screw (D).
2. Position bracket by means of screw (B, Fig. 30) so that wick (C) passes through the center of the slot in needle bar link (A). Wick (C) must contact the needle bearings. Proper wick contact with the needle bearings can be obtained by bending the wick support bracket (D) closer or further away from the needle bar link as required. Be sure to secure the felt strip (E) to the upper needle bar bushing with spring clip 61454 B.

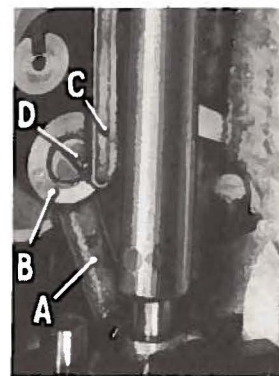


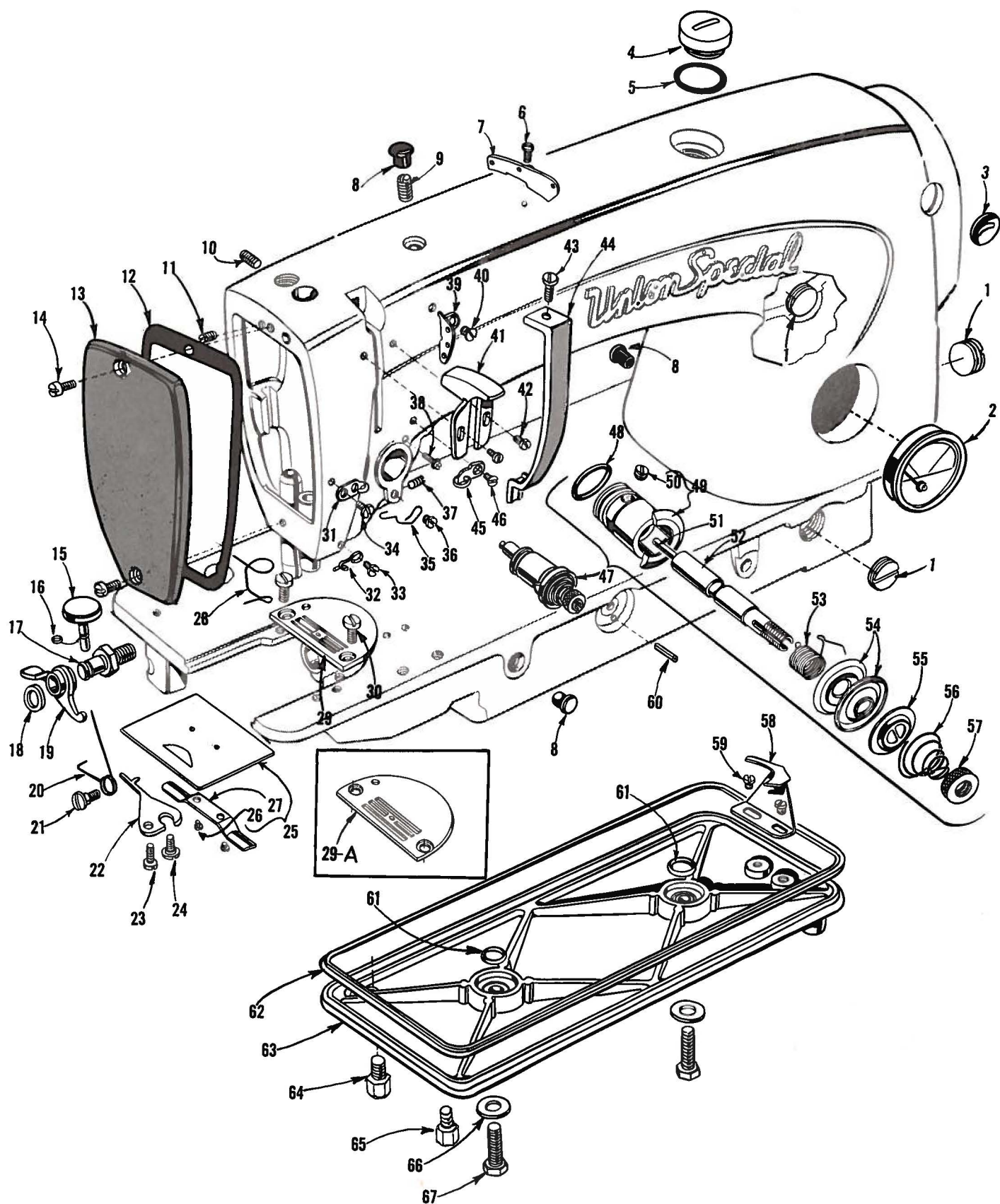
Fig. 29

MAIN FRAME, BUSHINGS, OIL WICKS AND HEAD OIL SIPHON

Ref. No.	Part No.	Description	Amt. Req.
1	CO67 B	Cork Plug-----	1
1A	63494 R	Aluminum Bed Plug-----	1
2	61490 B	Main Shaft Bearing Housing-----	1
3	22569 B	Screw, for main shaft bearing housing-----	4
4	666-200	Oil Felt-----	1
4A	63490 B	Main Shaft Bearing Housing Gasket-----	1
** 5	63494 D	Head Oil Siphon Assembly-----	1
6	666-237	Felt Disc-----	1
** 7	61494 N	Retaining Grommet-----	1
8	63494 N	Oil Siphon Connecting Tube-----	1
9	56393 U	Oil Tube-----	2
10	61471 F	Take-up Lever Hood Oil Diverting Wick and Spring-----	1
11	666-194	Roll Felt-----	1
12	61471 D	Spring-----	1
13	61494 L	Stud, for oil siphon head tube-----	1
14	61494 K	Oil Siphon Head Tube-----	1
15	666-214	Oil Felt-----	1
16	666-231	Oil Felt-----	1
17	63490	Differential Feed Shaft Bushing, left and inner left-----	2
18	18-768	Drive Screw-----	1
19	63432 E	Oil Shield-----	1
20	63432 C	Feed Driving Shaft Bushing, left-----	1
21	61457 K	Presser Bar Bushing-----	1
22	61454 C	Needle Bar Bushing, lower-----	1
23	61432 E	Feed Driving Shaft Bushing, inner left-----	1
24	61441	Hook Shaft Bushing, left-----	1
25	61441 A	Hook Shaft Bushing, right-----	1
26	61432 C	Feed Driving Shaft Bushing, inner right-----	1
27	61496 P	Hook Oil Control Shaft Bushing-----	1
28	63436 G	Differential Feed Shaft Bushing, inner right-----	1
29	63490 A	Differential Feed Shaft Bushing, right-----	1
30	61490 D	Upper Main Shaft Bushing, left-----	1
31	63494 C	Oil Gauge Float Assembly-----	1
32	61494 D	Oil Gauge Float-----	1
33	61494 E	Oil Gauge Float Lever-----	1
34	21629 A	Screw, for oil gauge float assembly-----	1
35	61293 N	Bed Plug-----	1
36	61494 H	Oil Gauge Connecting Link-----	1
37	666-238	Bed Oil Drain Hole Felt-----	1
38	666-221	Housing Oil Drain Wick-----	1
39	63494 E	Oil Gauge-----	1
**40	63494	Siphon Primer Position Bracket-----	1
41	61432 B	Feed Driving Shaft Bushing, right-----	1
42	660-221	"O" Ring-----	1
**43	22564	Screw, for siphon primer position bracket-----	1
44	11635 B	Nut, for float lever pivot stud-----	1
45	61494 F	Float Lever Pivot Stud-----	1
46	61496 S	Hook Oil Control Adjusting Shaft Bushing-----	1
47	666-212	Oil Felt-----	1
48	63493	Hook Shaft Bushing Oil Tube-----	1
49	63493 H	Head Oiler Assembly-----	1
50	666-191	Oil Distributing Felt-----	1
51	22784 K	Screw, for head oiler assembly-----	2
52	666-262	Oil Felt-----	1
53	666-261	Oil Felt-----	3
54	61493 A	Head Oil Supply Line-----	1
55	666-109	Oil Wick-----	1
56	666-263	Roll Felt-----	1
57	660-409	Plug-----	1
*58	63420 B	Presser Foot, for shirring-----	1
59	63430 K	Edge Guide-----	1
60	22798 A	Screw-----	2
61	63430 G	Presser Foot Bottom, front-----	1
62	61130 F	Equalizer-----	1
63	22799 N	Screw-----	1
64	63430 J	Presser Foot Shank-----	1
65	73 A	Screw-----	1
66	63430 H	Spring-----	1
67	63430 F	Presser Foot Bottom, rear-----	1
68	63493 J	Oil Siphon Assembly-----	1
69	666-273	Felt Disc-----	1
70	660-456	Push-on Fastener-----	1

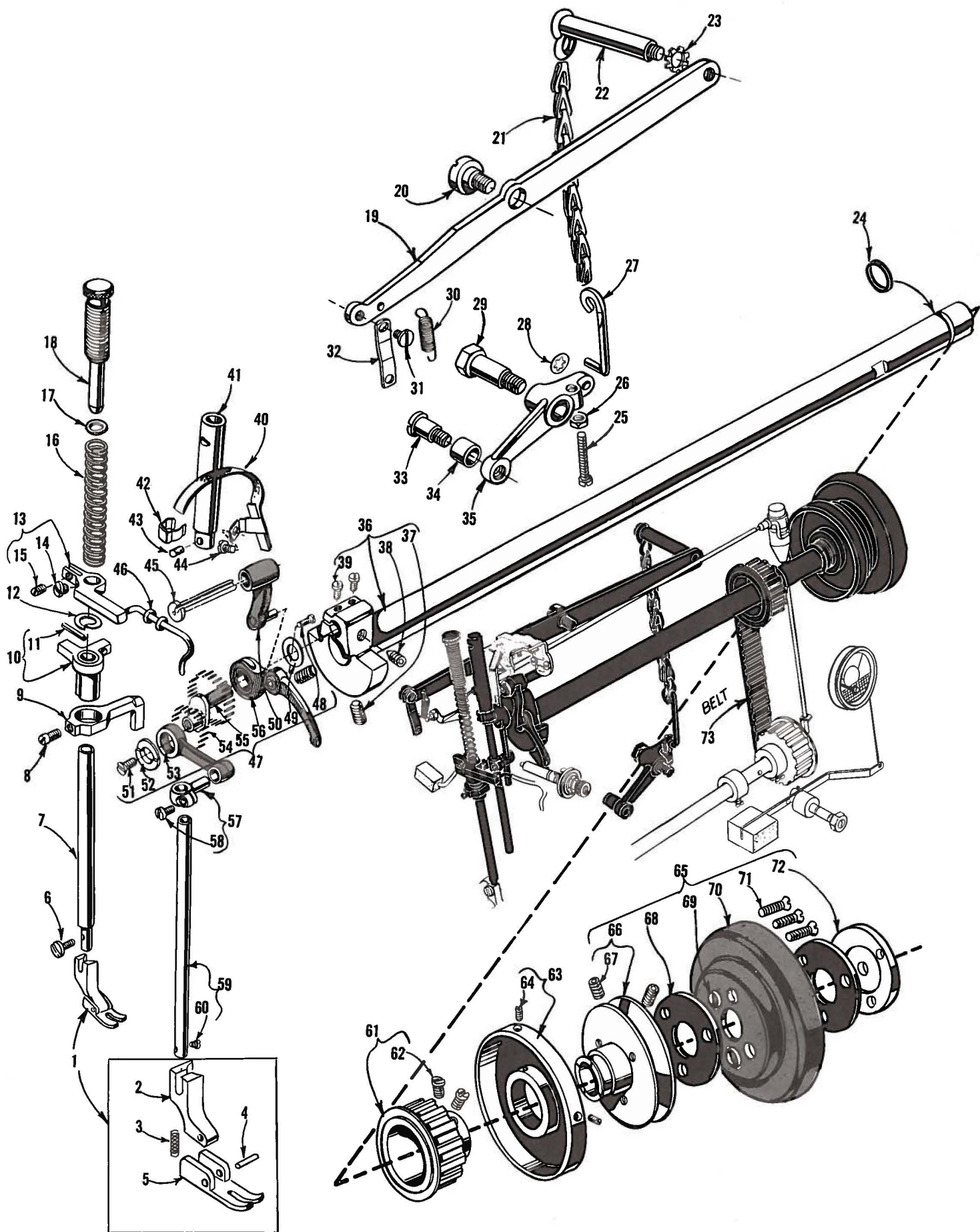
* Available as an extra send and charge item.

** Replaced by Ref. Nos. 68, 69 and 70 on new machines.



MAIN FRAME, THROAT PLATES, MISCELLANEOUS COVERS AND NEEDLE TENSION PARTS

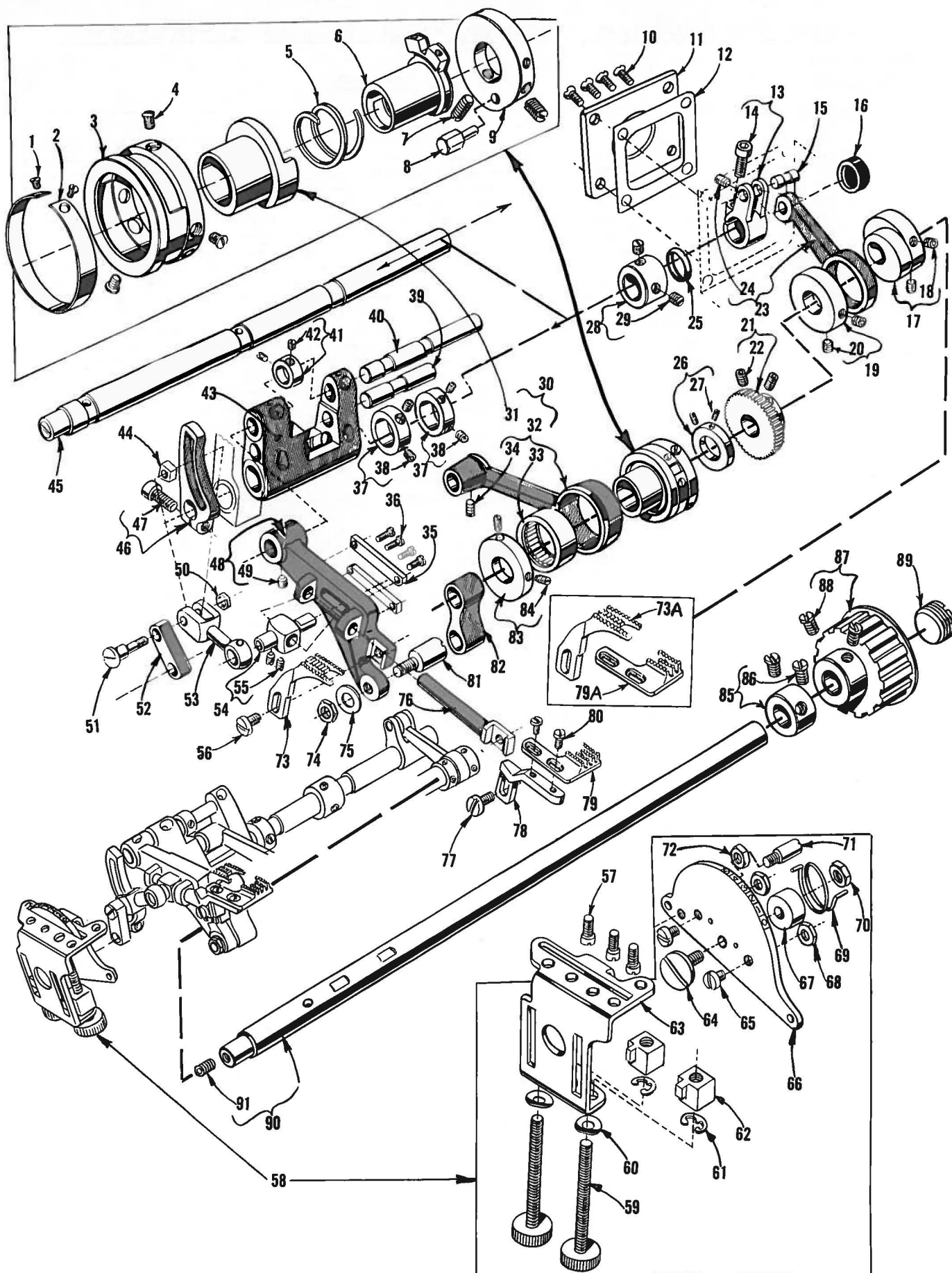
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	22539 P	Plug Screw-----	3
2	63494 E	Oil Gauge-----	1
3	61449 T	Stitch Length Indicator -----	1
4	22733 D	Plug Screw, for oil filler hole -----	1
5	63494 A	Gasket-----	1
6	22570 A	Screw, for frame thread eyelet -----	1
7	61470 D	Frame Thread Eyelet -----	1
8	63494 B	Plug, plastic-----	3
9	22815	Screw, for head oil supply line -----	1
10	22894 E	Screw, for take-up lever pin -----	1
11	96	Screw, for upper needle bar bushing -----	1
12	63482 A	Head Cover Gasket-----	1
13	61482 G	Head Cover -----	1
14	22516	Screw, for head cover -----	2
15	61449 V	Stitch Regulating Plunger -----	1
16	660-254 A	Retainer Ring -----	1
17	61449 Y	Stitch Regulating Pawl Stud -----	1
18	660-254 B	Retainer Ring -----	1
19	61449 U	Stitch Regulating Pawl-----	1
20	61449 X	Pawl Plunger Spring -----	1
21	22504 A	Screw, for pawl plunger spring-----	1
22	61414 A	Bobbin Case Holder Positioning Finger -----	1
23	22528	Screw, for bobbin case holder positioning finger -----	1
24	22742	Screw, for bobbin case holder positioning finger -----	1
25	63402 B	Bed Slide Assembly-----	1
26	91 A	Screw, for bed slide spring -----	2
27	61273	Bed Slide Spring-----	1
28	63470 B	Needle Bar Bushing Thread Guide -----	1
29	63424-043	Throat Plate, .043 inch diameter needle hole for Style 63400 E -----	1
-	63424-063	Throat Plate, .063 inch diameter needle hole for Style 63400 E -----	1
-	63424-073	Throat Plate, .073 inch diameter needle hole for Style 63400 E -----	1
29A	63424 R-053	Throat Plate, .053 inch diameter needle hole for Style 63400 L -----	1
-	63424 R-073	Throat Plate, .073 inch diameter needle hole for Style 63400 L -----	1
30	376	Screw, for throat plate -----	2
31	63470 A	Upper Thread Eyelet -----	1
32	63470	Lower Thread Eyelet-----	1
33	90	Screw, for lower thread eyelet -----	1
34	222 D	Screw, for upper thread eyelet -----	1
35	63492	Tension Post Eyelet-----	1
36	HS24 C	Screw, for tension post eyelet -----	1
37	22597 E	Set Screw, for tension assembly -----	1
38	22863 B	Stop Screw, for tension assembly-----	1
39	61471 A	Frame Thread Eyelet -----	1
40	22805	Screw, for frame thread eyelet-----	1
41	61471 B	Take-up Lever Hood -----	1
42	22562	Screw, for take-up lever hood-----	2
43	22564	Screw, for take-up shield-----	1
44	63451	Take-up Shield -----	1
45	61470 C	Thread Guide -----	1
46	22766	Screw, for thread guide -----	1
47	29475 AR	Thread Tension Assembly -----	1
48	660-269 A	Quad Ring-----	1
49	61492 E	Tension Post Socket-----	1
50	22560 G	Set Screw -----	1
51	61492 G	Tension Release Pin -----	1
52	61492 F	Tension Post -----	1
53	63453	Take-up Spring -----	1
54	109	Tension Disc -----	2
55	61492 H	Tension Release Washer -----	1
56	61392 F-14	Tension Spring -----	1
57	61292 C	Tension Nut -----	1
58	61494 R	Oil Distributing Plate -----	1
59	22570	Screw, for oil distributing plate -----	2
60	660-219 A	Roll Pin -----	1
61	660-204	"O" Ring, for oil reservoir cover -----	2
62	61482 J	Oil Reservoir Cover Gasket -----	1
63	63982 C	Oil Reservoir Cover -----	1
64	22571 G	Plug Screw, for oil reservoir cover -----	1
65	22841 K	Plug Screw, for oil reservoir cover -----	1
66	652-16	Washer, for oil reservoir cover-----	2
67	22644 K-48	Screw, for oil reservoir cover -----	2



PRESSER FOOT, UPPER SHAFT, PRESSER BAR, NEEDLE BAR AND FOOT LIFTER MECHANISM

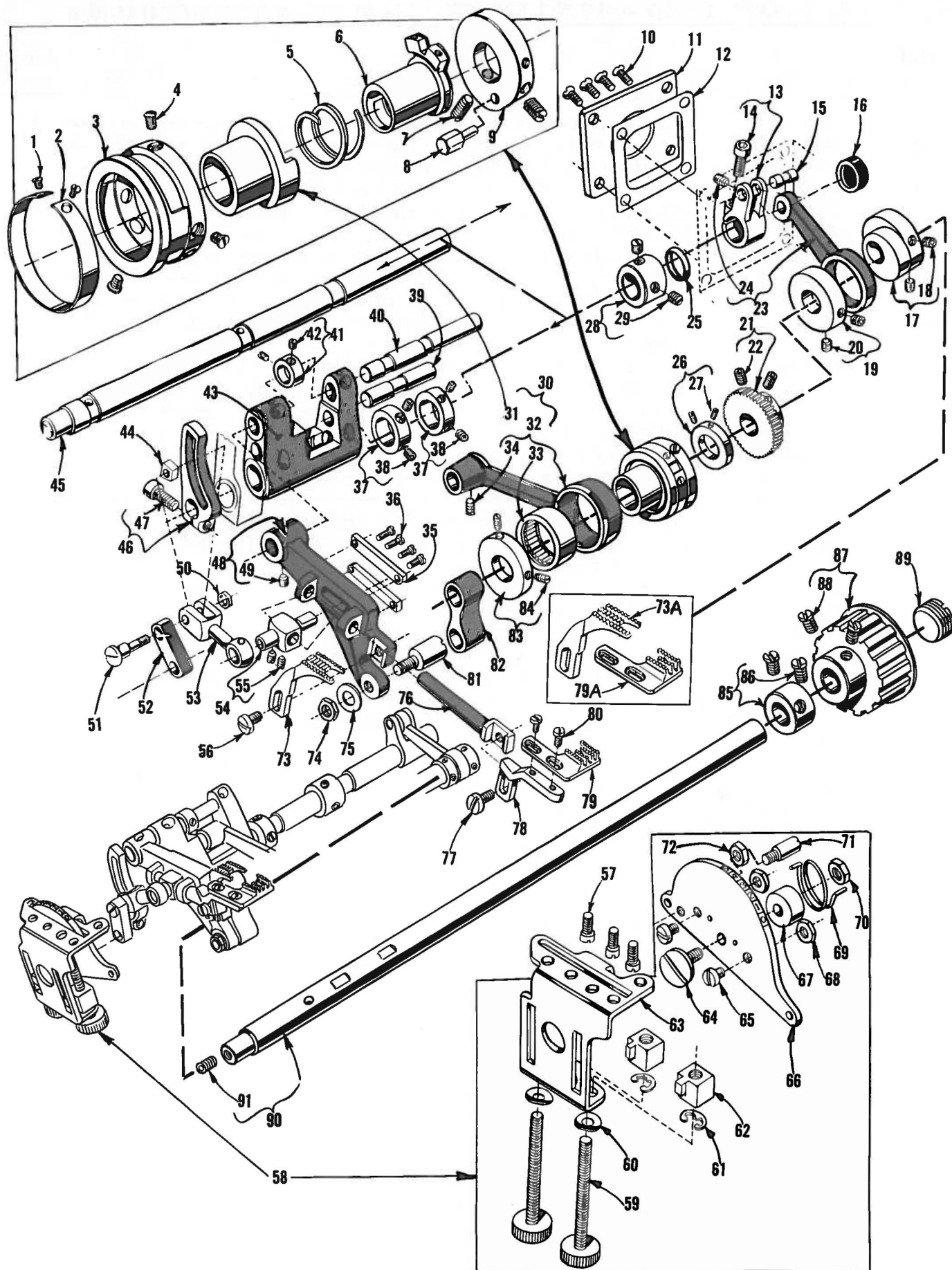
Ref. No.	Part No.	Description	Amt. Req.
*1	63420 C	Presser Foot Assembly-----	1
2	61930 J	Presser Foot Shank-----	1
3	51930	Spring-----	1
4	61330 B-37	Hinge Pin-----	1
5	63430 L	Presser Foot Bottom-----	1
6	22775	Screw, for presser foot assembly-----	1
7	63457 J	Presser Bar-----	1
8	230	Screw, for tension release cam-----	1
9	61458 G	Tension Release Cam-----	1
10	61458 FA	Presser Bar Connection-----	1
11	660-219 B	Roll Pin-----	1
12	63457 R	Presser Bar Spring Washer-----	1
13	61459 C	Presser Bar Guide-----	1
14	22570	Screw-----	1
15	73 C	Screw-----	1
16	63956	Presser Spring-----	1
17	61256 G	Washer-----	1
18	61457 B	Presser Spring Regulator-----	1
19	63466	Lifter Lever-----	1
20	22890 A	Screw, for lifter lever (left thread)-----	1
21	421 H	Lifter Lever Chain-----	1
22	61468 B	Lifter Lever Extension Stud and Hook-----	1
23	652 B-20	Lock Washer-----	1
24	660-269	Quad Ring-----	1
25	22874 F	Screw, for lifter lever bell crank-----	1
26	9937	Nut, for lifter lever bell crank-----	1
27	61468 D	Chain Hook-----	1
28	660-283 A	Fastener-----	1
29	22817 A	Screw, for lifter lever bell crank-----	1
30	15872 F	Lifter Lever Spring-----	1
31	22758 B	Screw, for lifter lever link-----	1
32	61467	Lifter Lever Link-----	1
33	22712 G	Screw, for lifter lever bell crank-----	1
34	61468 E	Bell Crank Roller-----	1
35	61468 F	Lifter Lever Bell Crank-----	1
36	29475 AN	Main Shaft Assembly-----	1
37	22894 V	Set Screw-----	2
38	22894 U	Spot Screw-----	1
39	22839	Set Screw-----	2
40	63453 C	Oil Shield Diverting Felt-----	1
41	61454 A	Upper Needle Bar Bushing-----	1
42	61454 B	Felt Holding Spring Clip-----	1
43	666-186	Oil Felt-----	1
44	22564	Screw, for oil shield diverting felt-----	1
45	61451 B	Take-up Lever Pin-----	1
46	660-254 C	"O" Ring-----	2
47	29486 L	Take-up Lever and Needle Bar Link Assembly-----	1
48	22784 E	Screw-----	1
49	61351 C	Thrust Washer-----	1
50	61451 A	Take-up Lever Link-----	1
51	22757 D	Screw-----	1
52	63455	Thrust Washer-----	1
53	61455	Needle Bar Link-----	1
54	61451 D-625	Needle Bearing, .0625 inch diameter-----	38
	61451 D-626	Needle Bearing, .0626 inch diameter-----	38
	61451 D-627	Needle Bearing, .0627 inch diameter-----	38
55	61452	Take-up Lever Crank Pin-----	1
56	61451	Take-up Lever-----	1
57	61255	Needle Bar Connection-----	1
58	22562 B	Screw-----	1
59	61417 E	Needle Bar-----	1
60	22768 A	Needle Set Screw-----	1
61	61460	Main Shaft Driving Sprocket-----	1
62	22884	Set Screw-----	2
63	61421 F	Stitch Length Indicator-----	1
64	22565 C	Set Screw-----	2
65	61421 B	Handwheel Assembly-----	1
66	61421 D	Pulley-----	1
67	22894 V	Set Screw-----	2
68	61421 E	Handwheel Isolator-----	2
69	660-254 D	Isolator Washer-----	3
70	61421 C	Handwheel-----	1
71	22574 C	Screw-----	3
72	61421 G	Hub Washer-----	1
73	61460 B	Feed Driving Belt-----	1

* NOTE: See Page 25 for No. 63420 B presser foot for shirring.



FEED DOGS, FEED DRIVING AND STITCH REGULATING MECHANISM

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	22716 A	Screw, for retainer housing spring cover-----	2
2	61437 M	Retainer Housing Spring Cover -----	1
3	61437 L	Feed Drive Eccentric Retainer Housing -----	1
4	22564 H	Screw, for feed drive eccentric retainer housing -----	3
5	61449 B	Stitch Regulating Eccentric Thrust Spring -----	1
6	61449 S	Stitch Regulating Eccentric -----	1
7	719	Screw, for feed driving eccentric timing collar -----	2
8	61437 B	Feed Driving Eccentric Pivot Pin-----	1
9	61437 A	Feed Driving Eccentric Timing Collar -----	1
10	SC177	Screw, for differential feed drive shaft housing cover -----	4
11	63482 E	Cover, for differential feed drive shaft housing -----	1
12	63482 G	Gasket, for differential feed drive shaft housing cover -----	1
13	63436 J	Differential Feed Eccentric Link -----	1
14	22653 B-8	Screw -----	1
15	63436 L	Pivot Pin -----	1
16	35761 D	Oil Seal Cap-----	1
17	63437	Differential Feed Eccentric, for Style 63400 E-----	1
	63437 B	Differential Feed Eccentric, for Style 63400 L -----	1
18	22894 F	Set Screw -----	2
19	63437 A	Thrust Collar -----	1
20	22560 A	Set Screw -----	2
21	63443	Hook Shaft Drive Gear-----	1
22	22894 C	Set Screw -----	2
23	63438	Differential Feed Eccentric Connecting Rod-----	1
24	22894 W	Set Screw -----	1
25	660-212	"O" Ring, for differential feed shaft -----	1
26	61432 J	Collar -----	1
27	73 C	Set Screw -----	2
28	63436 K	Differential Feed Shaft Oil Seal Collar -----	1
29	22894 W	Set Screw -----	2
30	29126 DD	Feed Drive Eccentric and Connecting Rod Assembly-----	1
31	61437 K	Feed Drive Eccentric -----	1
32	61438 B	Feed Drive Eccentric Connecting Rod -----	1
33	660-225	Needle Bearing -----	1
34	88	Set Screw -----	1
35	39237 D	Differential Feed Bar Guide Plate -----	2
36	22593	Screw, for differential feed bar guide plate -----	4
37	39573 U	Collar, for differential feed shaft-----	2
38	22894 W	Set Screw -----	2
39	63436 M	Feed Rocker Shaft, for stitch regulator -----	1
40	63436 N	Feed Rocker Shaft -----	1
41	61342	Feed Rocker Thrust Collar -----	1
42	88	Set Screw -----	2
43	63440	Feed Rocker -----	1
44	63436-248	Sliding Block, marked "D", .248 inch wide -----	1
	63436-249	Sliding Block, marked "E", .249 inch wide -----	1
	63436-250	Sliding Block, marked "F", .250 inch wide -----	1
45	63432 B	Differential Feed Shaft -----	1
46 to 92		See following page	

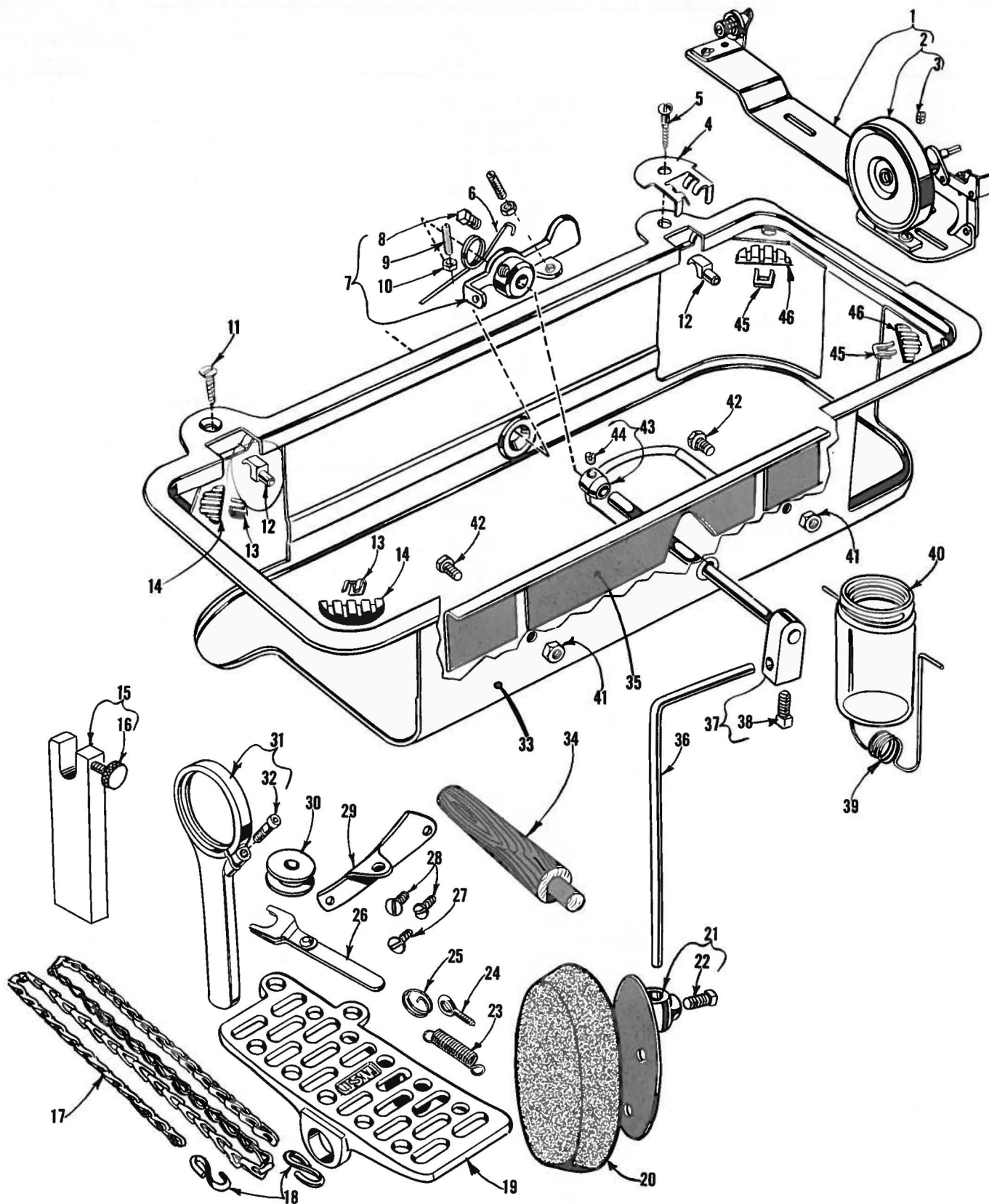


FEED DOGS, FEED DRIVING AND STITCH REGULATING MECHANISM

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1 to 45		See preceding page	
46	63440 A	Differential Segment -----	1
47	22653 B-8	Screw -----	1
48	63434	Feed Bar -----	1
49	89	Screw, for feed bar -----	1
50	907	Nut, for differential feed drive link-----	1
51	22559 M	Screw, for differential feed drive link -----	1
52	63436 F	Differential Feed Drive Stop Link -----	1
53	63436 C	Differential Feed Drive Link-----	1
54	39237	Differential Feed Bar Guide -----	1
55	22565 C	Set Screw-----	2
56	22528	Screw, for main feed dog-----	1
57	J79 J	Screw, for differential feed regulator assembly-----	3
58	29475 BD	Differential Feed Regulator Assembly -----	1
59	63436 D	Adjusting Screw -----	2
60	39198 D	Spring Washer -----	2
61	660-330	Retaining Ring -----	2
62	63436 P	Screw Stop Lug-----	2
63	63436 T	Support Bracket -----	1
64	816	Screw -----	1
65	25 CC	Screw -----	2
66	63436 S	Treadle Chain Disc -----	1
67	63436 B	Spacer Collar -----	1
68	14077	Nut -----	2
69	63436 E	Intermittent Shirring Spring -----	1
70	12982	Nut -----	1
71	42 A	Shoulder Screw -----	1
72	9937	Nut -----	1
73	63405 A	Main Feed Dog, 16 teeth per inch, for Style 63400 E -----	1
-	63405 B	Main Feed Dog, 22 teeth per inch, for Style 63400 E -----	1
73A	63405 R	Main Feed Dog, 22 teeth per inch, for Style 63400 L -----	1
74	15037 A	Nut, for feed lift link stud -----	1
75	61434 G	Washer, for feed lift link stud -----	1
76	63434 A	Differential Feed Bar -----	1
77	93 A	Screw, for differential feed dog holder -----	1
78	63439 AG	Differential Feed Dog Holder -----	1
79	63426 B	Differential Feed Dog, 16 teeth per inch, for Style 63400 E ----	1
-	63426 C	Differential Feed Dog, 22 teeth per inch, for Style 63400 E ----	1
79A	61205 CC	Differential Feed Dog, 22 teeth per inch, for Style 63400 L ----	1
80	22768	Screw, for differential feed dog -----	2
81	22845 K	Stud, for feed lift link-----	1
82	63433	Feed Lift Link -----	1
83	61437 N	Feed Driving Eccentric Thrust Collar -----	1
84	12935 A	Set Screw-----	2
85	61360 G	Thrust Collar -----	1
86	22884	Screw -----	2
87	61460 A	Feed Driving Shaft Sprocket -----	1
88	22653 D-6	Screw -----	2
89	22539 P	Plug Screw -----	1
90	63432 D	Lower Main Shaft-----	1
91	22586	Screw -----	1

ROTATING HOOK ASSEMBLY AND HOOK OILING PARTS

Ref. No.	Part No.	Description	Amt. Req.
1	29474 P	Rotating Hook Assembly -----	1
2	61413 E	Bobbin Case Assembly -----	1
3	61413 G	Eyelet -----	1
4	22564 F	Screw -----	1
5	61413 F	Bobbin Case -----	1
6	61414 C	Bobbin Case Tension Spring -----	1
7	22716 B	Tension Regulating Screw -----	1
8	22564 E	Screw -----	1
9	61216 N	Bobbin Case Latch Spring -----	1
10	61216	Bobbin Case Latch Hinge -----	1
11	61415 A	Bobbin Case Latch Lever -----	1
12	61415	Bobbin Case Latch -----	1
13	22564 E	Stop Screw -----	1
14	61212	Bobbin -----	1
15	63407	Hook, Thread Retainer, Thread Deflector and Bobbin Case Holder Assembly -----	1
16	63414	Bobbin Case Holder -----	1
17	63407 A	Hook, Thread Retainer and Thread Deflector Assembly -----	1
18	61411 A	Hook Thread Retainer -----	1
19	22716 H	Screw -----	3
20	22569 H	Screw -----	2
21	22565 M	Screw -----	1
22	63408	Hook -----	1
23	61210 B	Hook Thread Deflector -----	1
24	22716 A	Screw -----	4
25	61351 C	Thrust Washer -----	2
26	12865	Thrust Collar, left -----	1
27	88	Screw -----	2
28	61444	Hook Shaft Pinion -----	1
29	89	Screw -----	2
30	61440	Hook Shaft -----	1
31	63432	Thrust Collar, right -----	1
32	HA73 B	Set Screw -----	2
33	61496 V	Hook Shaft Wick Insert Assembly -----	1
34	63496 B	Metering Cup -----	1
35	61496 E	Hook Oil Feed Roller -----	1
36	61496 G	Pivot Pin -----	1
37	61496 F	Retaining Spring -----	1
38	53678 N	Washer -----	1
39	22516 B	Screw -----	1
40	61496 J	Air Seal Spring -----	1
41	666-181	Oil Supply Felt -----	1
42	666-182	Air Seal Felt -----	1
43	61496 C	Pump Disc -----	1
44	61496 D	Pump Disc Pivot Pin -----	1
45	35857 R	Spring -----	1
46	61496 L	Hook Oil Control Shaft -----	1
47	61496 K	Hook Oil Control Finger -----	1
48	27-527Blk	Washer -----	1
49	22819	Screw -----	1
50	61496 P	Hook Oil Control Shaft Bushing -----	1
51	22894 R	Screw, for hook oil control shaft bushing -----	1
52	61496 N	Hook Oil Control Adjusting Shaft -----	1
53	660-221	Oil Seal Ring -----	1
54	39198 D	Spring Washer -----	1
55	61496 M	Oil Control Cog -----	2
56	22743	Set Screw -----	1



**BOBBIN WINDER, KNEE PRESS, OIL PAN ASSEMBLY
AND MISCELLANEOUS ACCESSORIES**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	61477 M	Bobbin Winder Assembly-----	1
2	61377 Y	Pulley -----	1
3	22878	Set Screw -----	1
4	63474 A	Bed Positioning Spring-----	1
5	SC331	Wood Screw, round head-----	1
6	21665 E	Knee Press Spring -----	1
7	21665 J	Knee Press Lifter Lever-----	1
8	69 FD	Screw-----	1
9	22597 F	Screw-----	2
10	18	Nut -----	2
11	22846 Q-16	Wood Screw, countersunk head -----	1
12	61375	Hinge Stud-----	2
13	63476 A	Isolator Chip, left-----	2
14	63476	Isolator Pad, left -----	2
*15	21227 BZ	Take-up Eyelet Replacement Tool-----	1
16	22789 B	Screw-----	1
17	421 D-28	Differential Feed Operating Chain, 28 inches long-----	1
18	660-211	"S" Hook, for operating chain -----	2
19	B21290 K	Foot Treadle -----	1
20	660-168	Knee Press Pad, rubber-----	1
21	21664	Knee Press Plate -----	1
22	69 FD	Screw-----	1
23	28504	Return Spring, for foot treadle -----	1
24	660-128	Wood Screw Eye, for return spring -----	1
25	63436 A	Shirring Spring, minimum -----	1
*26	21227 BY	Felt Assembly Adaptor -----	1
27	22570 A	Screw, for frame thread eyelet-----	1
28	22585 A	Screw, for miscellaneous attachments-----	2
29	61470 D	Frame Thread Eyelet-----	1
30	61212	Bobbin-----	1
*31	21388 AV	Bearing Housing Puller -----	1
32	22653 E-20	Screw socket type -----	1
33	21393 N	Oil Drip Pan-----	1
34	61378	Machine Rest Pin -----	1
35	21393 R	Retaining Plate -----	1
36	21663 D	Knee Lifter Plate Rod -----	1
37	21661 N	Knee Press Rod-----	1
38	69 FD	Screw-----	1
39	21393 L	Oil Drain Jar Clamp Spring -----	1
40	666-166	Oil Drain Jar, glass-----	1
41	651-16	Nut-----	2
42	21393 S	Bolt -----	2
43	21661 R	Knee Press Rod Collar -----	1
44	88	Screw-----	1
45	63476 C	Isolator Clip, right-----	2
46	63476 B	Isolator Pad, right-----	2
	28604 S	Can of Oil, one quart, Spec. 175-----	1

*NOTE: Not furnished with machine, but may be ordered as an extra, send and charge item.

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61460	29	63430 H	25	63494 B	27
61460 A	33	63430 J	25	63494 C	25
61460 B	29	63430 K	25	63494 D	25
61467	29	63430 L	29	63494 E	25, 27
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61468 D	29	63432 B	31	63494 R	25
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