

FINEST QUALITY

Union Special[®]
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INDUSTRIAL
SEWING
MACHINES

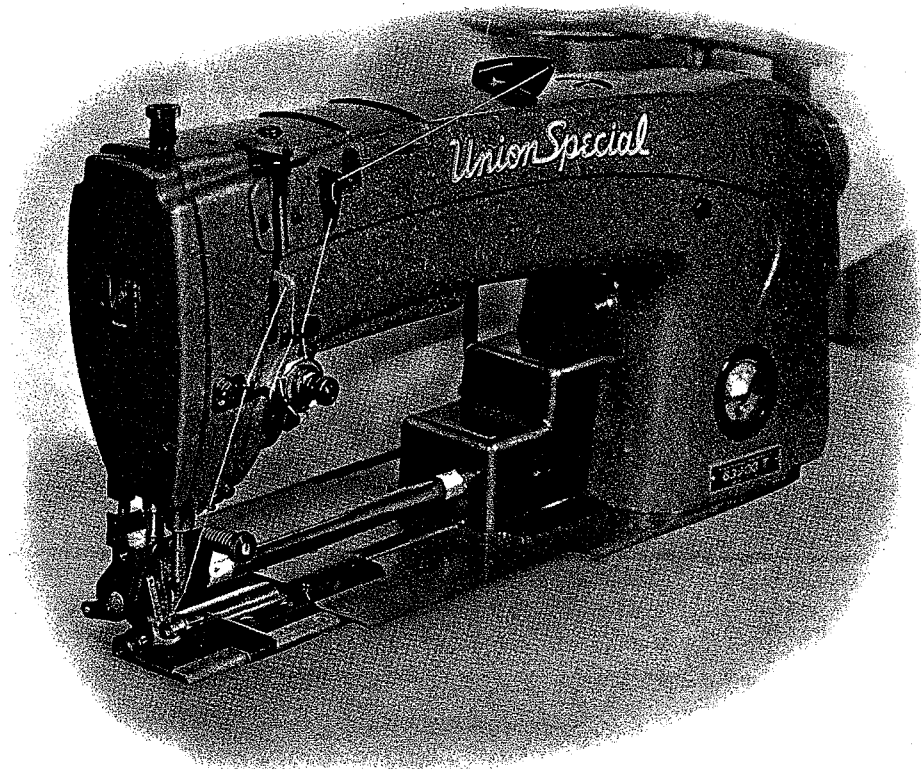
STYLES

63900M

63900T

63900W

63900AE



CLASS 63900

STREAMLINED

HIGH SPEED NEEDLE FEED

TOP AND BOTTOM ROLLER FEED

LOCKSTITCH MACHINES

CATALOG

No.

126R

UNION SPECIAL CORPORATION

CHICAGO

Catalog No. 126 R

INSTRUCTIONS

FOR

ADJUSTING AND OPERATING

LIST OF PARTS

CLASS 63900

Needle Feed Lockstitch
Top and Bottom Roller Feed

Styles

63900 M	63900 T
63900 W	63900 AE

First Edition

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UNION SPECIAL CORPORATION

INDUSTRIAL SEWING MACHINES

CHICAGO

Printed in U.S.A.

February, 1982

FOREWORD

The predominant idea behind *Union Special*® is to build the best industrial sewing machines in the world. The new high speed, streamlined Class 63900 lockstitch machines are a decided achievement along these lines. Parts are made to precision gauges insuring complete interchangeability.

A few of the outstanding features are:

1. QUICK INSTALLATION

The average installation time required will be about 10 minutes from packing box to production sewing, if installation instructions are followed.

2. STREAMLINED DESIGN

Pleasing in appearance, this functional design provides greater stability, ruggedness and freedom from difficult-to-clean recesses. New neutral taupe finish is more restful to the operator's eye.

3. SIMPLIFIED OILING

Lubrication of these machines is automatic. Oil is supplied to all moving parts for trouble free operation. A completely adjustable, double filtered hook oiling system provides long hook life. A single, large capacity, accurately gauged reservoir, sealed against lint and dust, reduces to a minimum oiling maintenance.

4. RAPID ACCELERATION

Precision methods in the manufacture of all parts, coupled with an advanced oiling system, makes possible top operating speed almost instantaneous for higher productive rates and lower costs.

5. FEED REGULATING GEARS

Machines are fitted with feed regulating gears for quick and easy adjustment of the stitch length, plus a readily accessible means for adjusting the needle feed.

It is the constant aim of Union Special to furnish concisely prepared information which enables customers to procure all possible advantages from the use of UNION SPECIAL machines. The following pages discuss valuable Adjusting and Operating data.

Adjusting Instructions for Mechanics, covering Styles 63900 M, T, W and AE, call attention to many parts which must meet exacting conditional adjustments. Illustrations are used to pinpoint areas under discussion.

Exploded views, together with explanations as to quantity, part number and name, follow the Instructions.

Union Special representatives, to be found in all leading manufacturing centers, are anxious to cooperate in planning and making estimates tailored to meet your requirements.

UNION SPECIAL CORPORATION

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 63900 M". 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 63900 MZ".

Styles of machines similar in construction are grouped under a class number which differs from the style number, in that it contains no letter. Example: "63900".

APPLICATION OF CATALOG

This catalog applies specifically to the Standard Styles of machines as listed herein. It can also be applied with discretion to some Special 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 handwheel is toward the operator.

STYLES OF MACHINES

High Speed Streamlined Long Arm Needle Feed Lockstitch Machines. One Needle, Light, Medium and Heavy Duty, Continuous Running Roller Feed, Rotary Hook, Horizontal Hook Shaft, Gears for Changing Stitch Length, Slotted Segment for Adjusting Needle Feed, 1 1/4 Inch Needle Bar Travel, One Reservoir Enclosed Automatic Lubricating System, Head Oil Siphon, Adjustable Hook Oil Control, Needle Bearings for Take-up Lever and Needle Bar Driving Link, Needle Feed Timing on Upper Shaft, Maximum Work Space to Right of Needle Bar 8 Inches.

63900 M For making 3/8 to 1/2 inch turned down hem on legs of overalls, coveralls and dungarees. Seam Specification 301-EFb-1 inverted. Specify size of hem. Maximum recommended speed 5200 R.P.M.

63900 T For making a 1/2 to 2 1/2 inch hem turned by hand on children's wear, men's dress pants, semi-dress pants and work pants. Sewn when garment reaches machine inside out. Seam Specification 301-EFb-1 or EFa-1. Maximum recommended speed 5200 R.P.M.

63900 W For topstitching waistbands on twill and woolen pants. Machine equipped to sew over belt loops. Fitted with cloth plate extension. Seam Specification 301-SSa-1. Maximum recommended speed 5200 R.P.M.

63900 AE Same as Style 63900 W, except fitted with spring guide keel on presser foot in line with centerline of needle hole.

NEEDLES

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

Needle Type 180 GVS is recommended for Style 63900 M and Type 180 GWS is recommended for Styles 63900 T, W and AE. The descriptions and sizes available are listed below and on the next page.

<u>Type No.</u>	<u>Description</u>
180 GVS	Round shank, round point, lockstitch, short length, long blade, 1/16 inch longer than standard, oversized ball eye, single groove, struck groove, deep spot, chromium plated - sizes 100/040, 110/044, 125/049, 140/054, 150/060.

NEEDLES (Continued)

<u>Type No.</u>	<u>Description</u>
180 GWS	Round shank, round point, lockstitch, short length, oversize ball eye, single groove, struck groove, deep spot, chromium plated - sizes 090/036, 100/040, 110/044, 125/049, 140/054.

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 GVS, Size 125/049".

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.

SELECTION OF PROPER NEEDLE SIZE

The strength requirement of the seam produced is largely dependent upon the size of the thread used. 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 63900 replacement parts.

Eight 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:

18	29126 EL	Needle Feed Driving Eccentric and Connecting Rod Assembly-----	1
19	22894 J	Set Screw-----	2

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 REPAIR PARTS

Success in the operation of these machines can be secured only with genuine UNION SPECIAL 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.

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

UNPACKING

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 the 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:

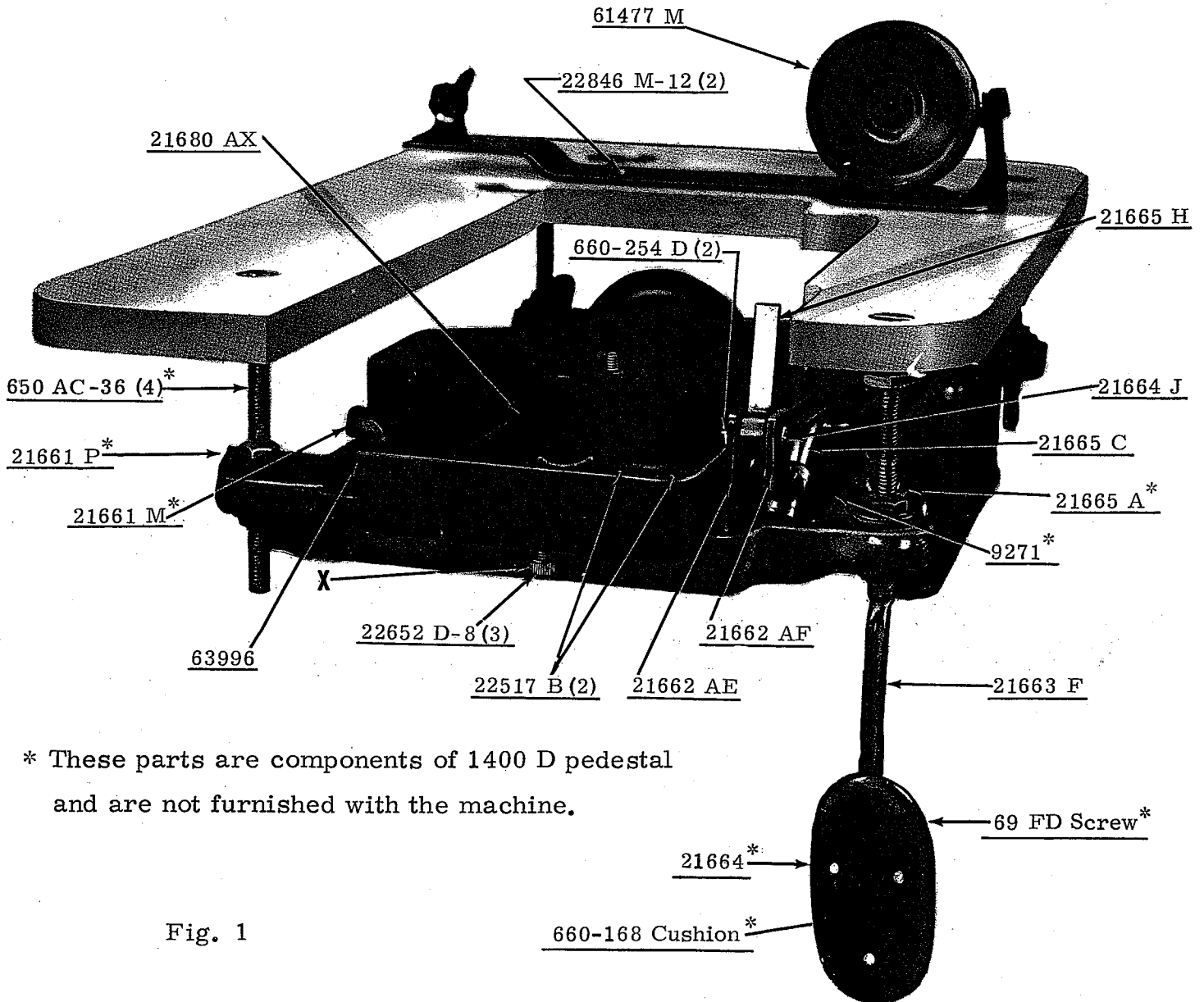
STANDARD ACCESSORIES

Included with each machine is a box of standard accessories -- containing (1) upper frame eyelet, (1) screw for upper frame eyelet, (1) base plate, (1) hook oil return channel, (3) screws for base plate, (1) knee press rod, (1) bobbin winder assembly, (2) screws for bobbin winder assembly, (1) can of oil and (1) extra bobbin.

Included also with Style 63900 T is (1) bell crank actuator rod.

Included also with Styles 63900 W and 63900 AE is (1) bell crank actuator rod, (1) cloth plate extension and (3) screws for cloth plate extension.

Included also with Style 63900 M is (1) front pivot bracket, (1) rear pivot bracket, (2) screws for pivot brackets, (1) folder actuator finger, (1) pivot pin for folder actuator finger, (2) retaining rings for pivot pin and (1) rock shaft connecting arm.



* These parts are components of 1400 D pedestal and are not furnished with the machine.

Fig. 1

INSTALLING (Continued)

PREPARATION OF MACHINE FOR INSTALLATION

Before machine can be placed onto the pedestal, the pedestal has to be prepared to receive the machine. The machine also has to be prepared, prior to being placed on the pedestal.

Style 63900 M (Fig. 1) is prepared by mounting the front and rear pivot brackets (21662 AF and 21662 AE) on top of the base plate (21680 AX), using two screws (22517 B) coming up from the bottom. Now assemble folder actuator finger (21665 H) between the two brackets, using pivot pin (21664 J). Snap retaining rings (660-254 D) onto the pivot pin and locate in grooves. The base plate now can be assembled to the machine, using three screws (22652 D-8), being sure the hook oil return channel (63996) is under the base plate and is attached, using the left screw used to hold the base plate to the machine.

Styles 63900 T, 63900 W and 63900 AE (Fig. 2) are prepared by merely mounting the base plate (21680 AX) to the bottom of machine, using three screws (22652 D-8). The hook oil return channel (63996) is mounted under the base plate and is held in position by the left hand screw marked "X" used to hold the base plate. Attach upper frame eyelet (A, Fig. 3) using screw (22570 A).

NOTE: Cloth plate extension (63982 E) can be mounted on Style 63900 W and 63900 AE after the machine is set on the pedestal, using three screws (22517 B).

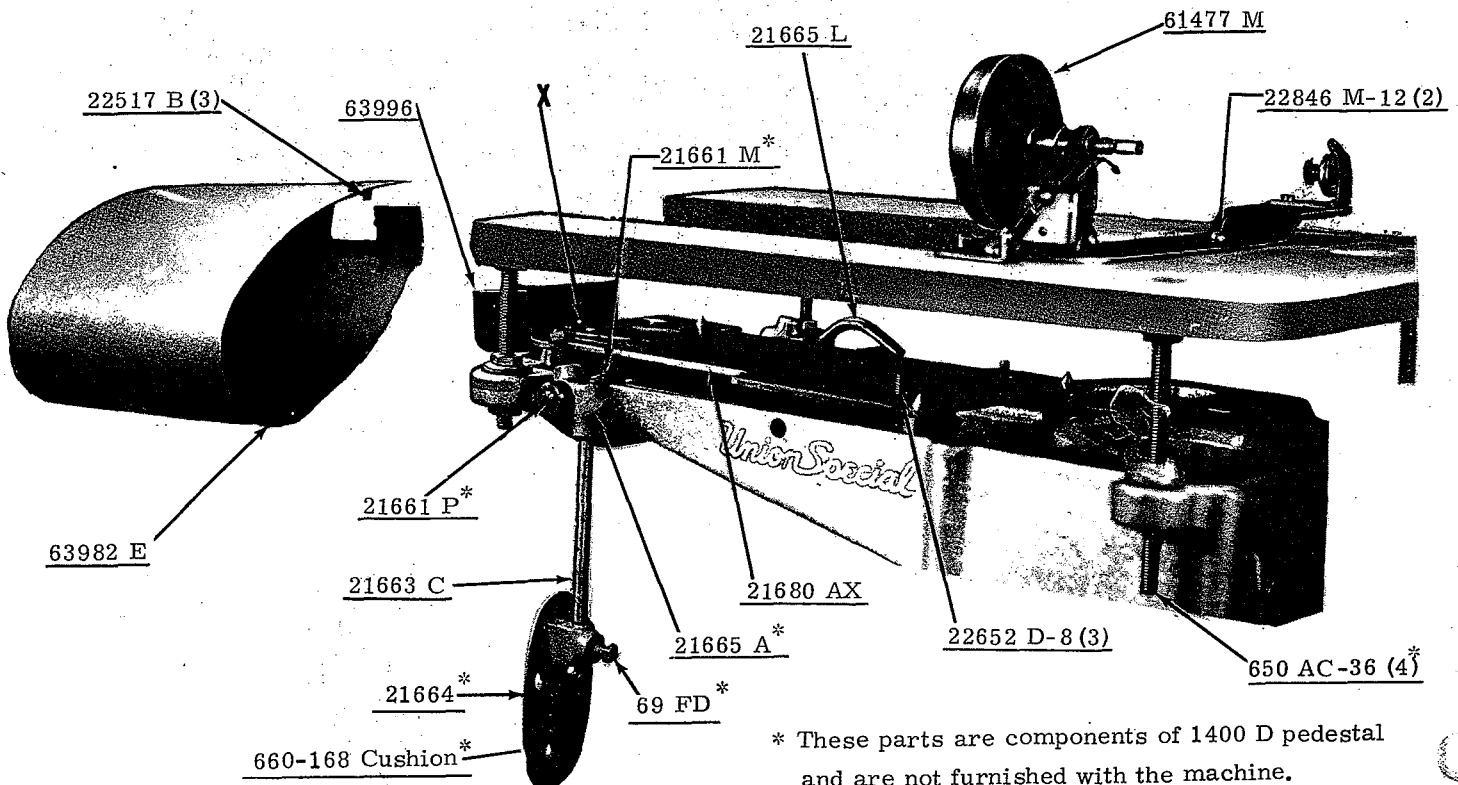
PREPARATION OF PEDESTAL FOR INSTALLATION

The pedestal for Style 63900 M (Fig. 1) is prepared by mounting the knee press for collapsing the hemmer, in the left hole of the pedestal. Final adjustment of the knee press assembly will be accomplished after the machine has been placed on the pedestal.

The pedestal for Styles 63900 T, 63900 W and 63900 AE (Fig. 2) is prepared by mounting the knee press assembly for lifting the presser foot, in the left hole of the pedestal. Once again, the final adjustment of the knee press assembly will be after the machine has been placed on the pedestal.

Place the four isolators (51295 B) in the recesses of the pedestal. Now place the machine on the pedestal so the four holes in base plate align with the pins in the isolators. The final adjustment of the knee press assemblies can now be made.

On Style 63900 M, a treadle and chain is required to lift the presser foot and roller. Attach the "S" hook to the chain hook on the underside of bed plate at the back. The treadle mechanism for lifting the presser foot can also be used for Styles 63900 T, 63900 W and 63900 AE, if desired.



* These parts are components of 1400 D pedestal and are not furnished with the machine.

INSTALLING (Continued)

TABLEBOARD

The tableboard can now be mounted on the pedestal using four screws (650 AC-36), adjusting the nuts so the top of the tableboard is flush with the top of the machine bed plate.

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 the 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 "Instructions For Operators".

BELTS

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

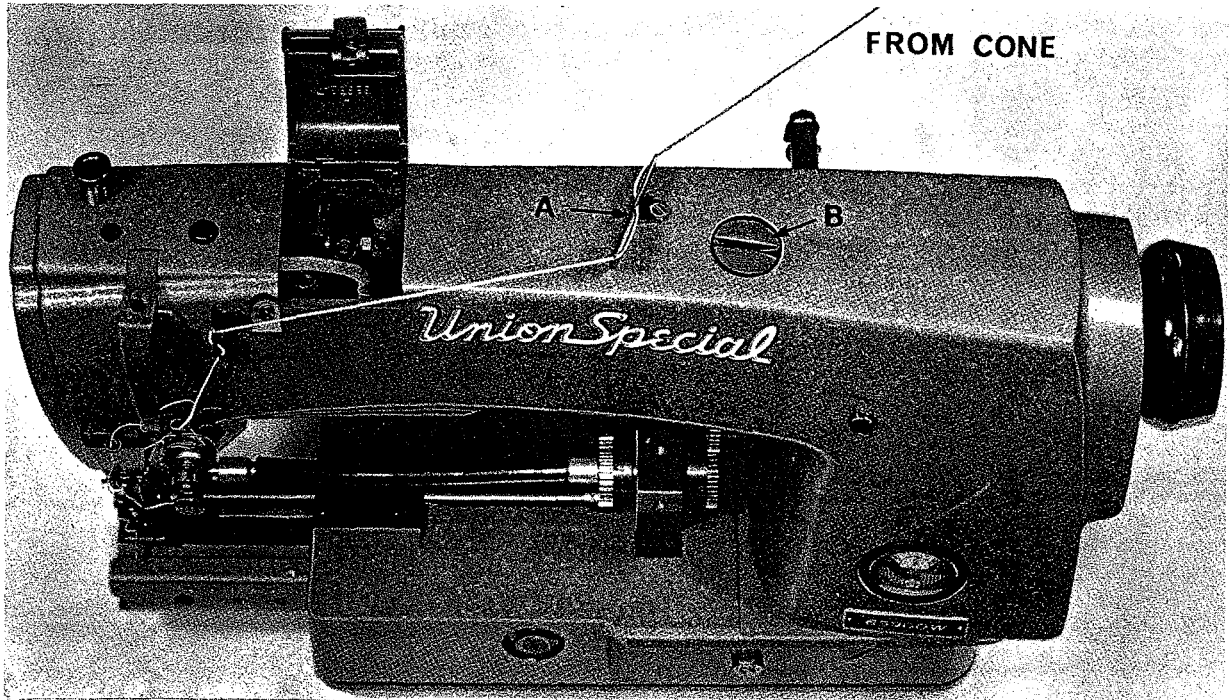
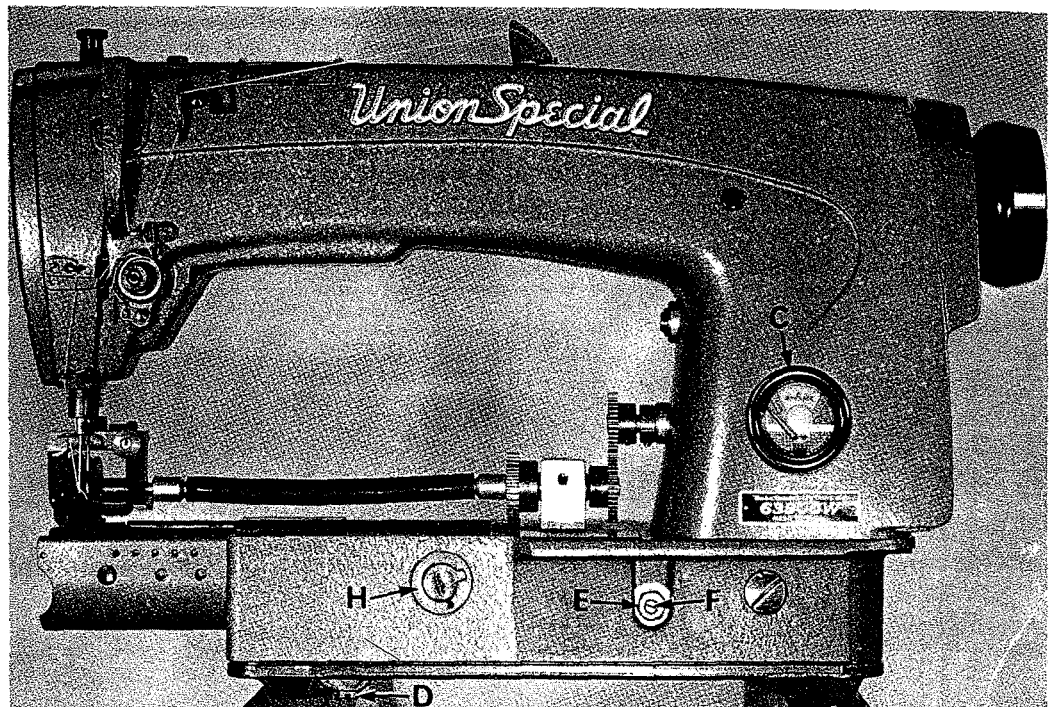
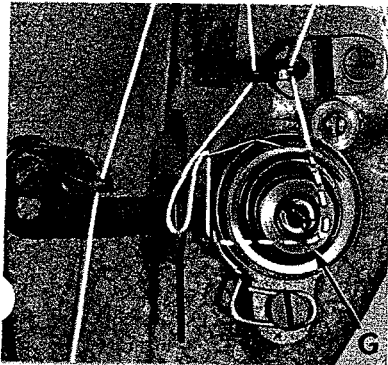


Fig. 3



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 is equivalent to Union Special specification No. 175. Fill main reservoir at plug screw (B, Fig. 3) and check oil level at gauge (C): oil is at 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 head cover and directly oil the bearings of the needle bar link, the 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. 3).

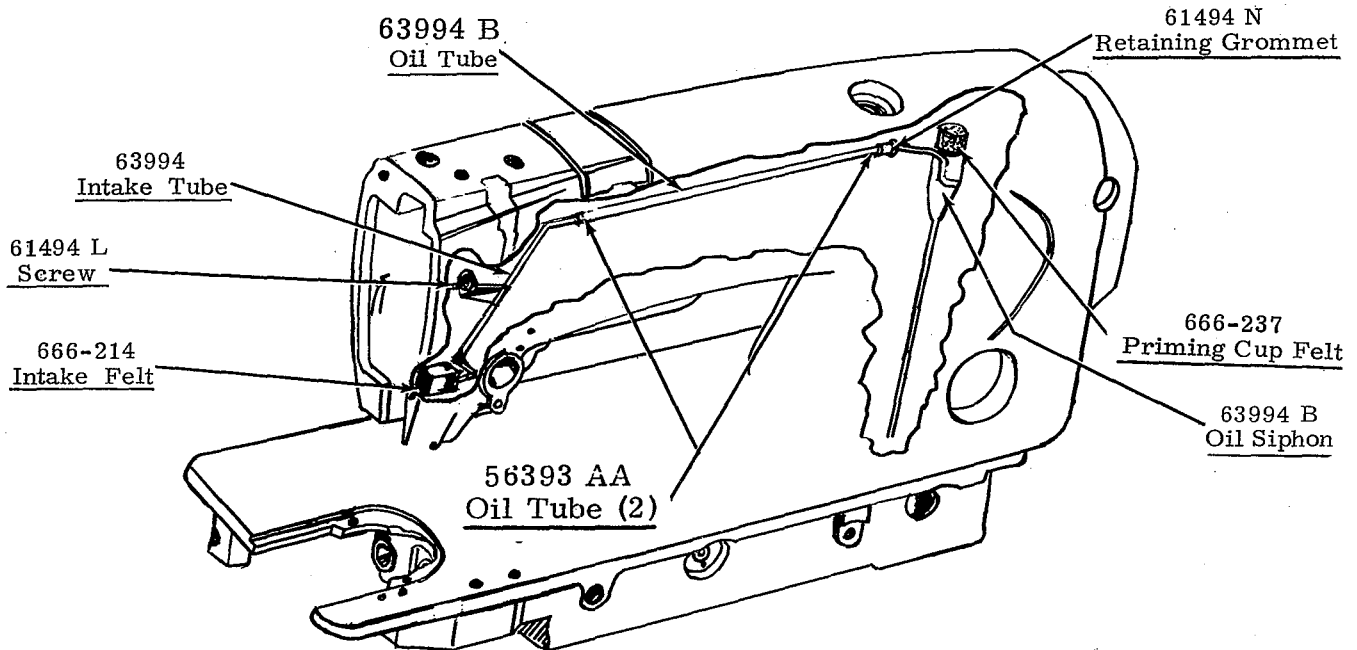
OIL GAUGE

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 lock nut (E, Fig. 3) on the calibrating screw (F), and turn screw left or right so the gauge needle rests on the yellow band marked "FULL", on gauge (C).
5. Tighten lock nut and replace plug screw.

SELF-PRIMING HEAD OIL SIPHON

Class 63900 machines are equipped with a self-priming head oil siphon. When the machine is started, oil splashes on the priming cup felt, filters through the felt and trickles down the vertical oil tube, thus priming the siphon. Once the prime is established, it is maintained, unless the felt is removed. The siphon operates twenty-four hours a day, removing oil at the rate of six to twelve drops per minute, which, of course, far exceeds the rate at which oil collects in the head.



INSTALLING AND MAINTENANCE OF OIL SIPHON

A newly installed siphon starts its action within three to five minutes after the machine is operating. However, it may be twenty minutes or so before all the air is removed from the line and the siphon is in full operation. Within an hour, there should be a distinct reduction of the oil in the head sump. If the siphon does not function, determine if the siphon intake tube, located in the head, is inserted in the felt block and that the plastic tube is connected at both ends. If the above two items do not correct the siphon, replace the siphon felts as described below.

The felt in the priming cup is designed for a specific purpose. This felt, No. 666-237, is to meter the flow of priming oil and to prevent the entrance of air. The felt also acts as a filter and keeps the siphon clear of lint.

If the priming cup felt and the intake felt (666-214) becomes contaminated with an excessive amount of lint, it may be necessary to replace the felts. The priming cup felt is replaced by removing access plug at back of machine and replacing felt 666-237. For the best initial self-priming condition, the felt of the siphon should be installed dry. The intake felt is replaced by removing the end cover.

However, if for some reason the priming cup felt has been oiled before installing, the siphon may fail because air is trapped in the felt. As a precaution, remove felt from cup. Then, while squeezing the felt between the fingers, saturate it well with oil. In other words, squeeze out the air and replace it with oil. This prevents the trapping of air, and no trouble should be experienced when starting the siphon.

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.

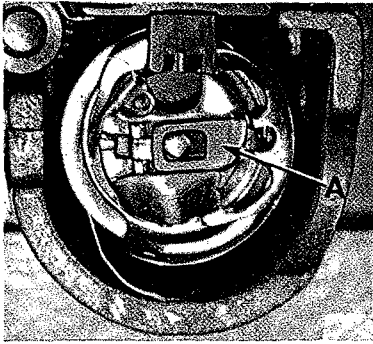


Fig. 5

REMOVING THE BOBBIN CASE

To remove the bobbin case, turn handwheel in operating direction until needle reaches its highest position. Using the left hand, reach in under the throat plate at left end of machine, open the bobbin case latch (A, Fig. 5), 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. 6), 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 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).

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.

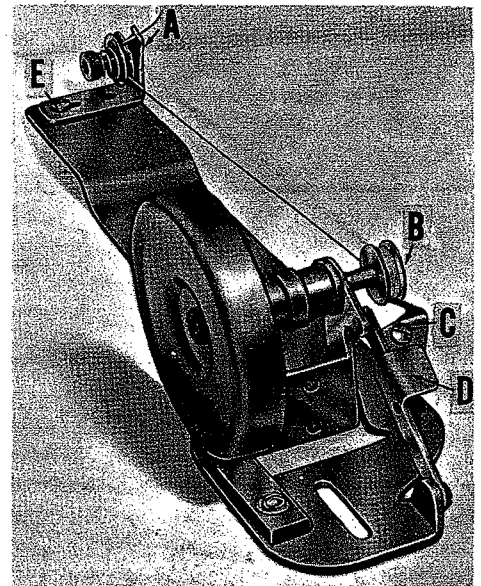


Fig. 6

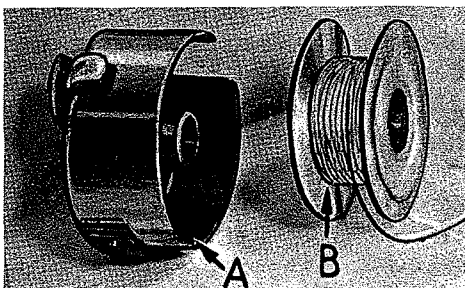


Fig. 7

THREADING THE BOBBIN CASE

The bobbin case (A, Fig. 7) should be held between the thumb, forefinger and second finger of the LEFT hand.

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

INSTRUCTIONS FOR OPERATORS (Continued)

THREADING THE BOBBIN CASE (Continued)

Place the bobbin in bobbin case. In one continuous motion, with thumb and forefinger of right hand, draw the bobbin thread through diagonal slot in bobbin case (A, Fig. 8) under the tension spring (B) and into self threading slot (C) on case. Note 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.

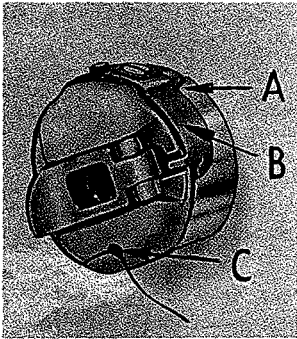


Fig. 8

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 throat plate and through the bed plate extension, 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. 9), is to show the operator when needle has been inserted as far as it will go, and to provide a means for cleaning the accumulated lint from needle hole so the needle will seat properly.

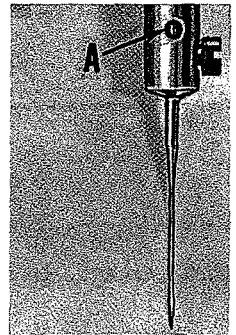


Fig. 9

THREADING THE NEEDLE

Threading diagram (Fig. 3) 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.

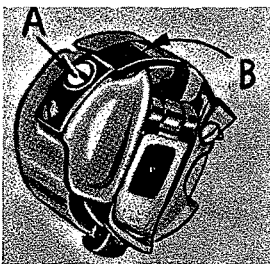


Fig. 10

TENSIONS

A perfect stitch is one in which the needle thread and bobbin thread are locked together in the center of the material being sewn. 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. 10) which regulates the 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.

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. 3). 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.

CHANGING THE STITCH LENGTH

Unless otherwise specified machine Styles 63900 M and 63900 T will be equipped with upper feed regulator gear No. 63949-39 and lower feed regulator gear No. 63949-41 to produce 9 stitches per inch (S.P.I.), while Styles 63900.W and 63900AE will be equipped with upper feed regulator gear No. 63949-37 and lower feed regulator gear No. 63949-43 to produce 10 S.P.I. Other gears are available and may be ordered separately. Refer to "Gear Chart" below for the gears necessary to produce S.P.I. other than previously described.

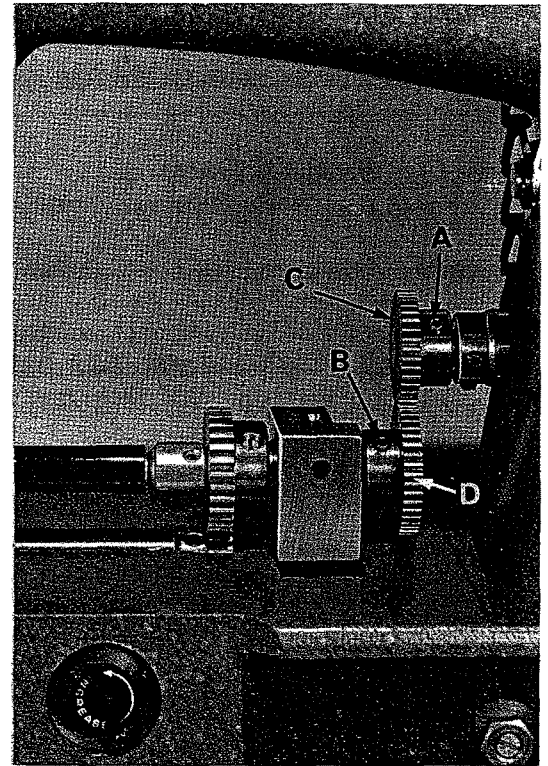


Fig. 11

GEAR CHART

<u>S.P.I.</u>	<u>Upper Gear</u>	<u>Lower Gear</u>
7	63949-44	63949-36
8	63949-41	63949-39
9	63949-39	63949-41
10	63949-37	63949-43
11	63949-36	63949-44
12	63949-33	63949-47

To remove feed regulator gears, first remove feed drive gear cover located under arm of machine. Now loosen screws (A and B, Fig. 11) and slide gears (C and D) off their respective shafts. Replace with gears for desired stitch length. After new gears have been installed be sure to reset needle feed stitch length to agree with the continuous turning roller feed.

INSTRUCTIONS FOR MECHANICS

TIMING THE NEEDLE FEED WITH THE CONTINUOUS TURNING ROLLER FEED

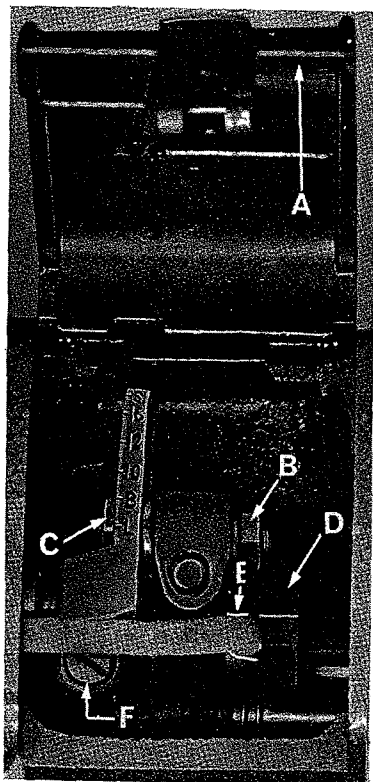


Fig. 12

Open top cover (A, Fig. 12) in the head of the machine and loosen needle frame drive segment locking nut (B). Set connection stud (C) to point of maximum number of stitches per inch of needle feed. This would locate the connecting arm at letter "S".

Loosen two set screws on the needle frame drive eccentric (D). Rotate the handwheel until the needle bar is at the bottom of its stroke. Rotate the eccentric only, until the timing line (E) on the connecting arm and the eccentric hub coincide. Tighten all screws.

Rotate handwheel until the needle bar is at bottom of its stroke. The needle bar should be vertical. If it is not, loosen clamp screw (F) and move needle bar frame forward or backward until bar is vertical. Tighten screw, making sure all side play is removed from between the needle bar frame and the segment.

To set needle feed with roller feed loosen needle frame drive segment locking nut. Set connection toward higher designated letter on segment for approximate setting. Vary the needle travel so as to obtain the least amount of needle deflection when the needle enters or leaves the thickest section to be sewn.

PRESSURE ON MATERIAL

The presser spring (A, Fig. 17) should exert only enough pressure on the feed rollers to make the work feed uniformly. To increase the pressure on the presser foot, turn presser spring regulator (B, Fig. 17) in a clockwise direction. Turning the regulator counterclockwise decreases the pressure.

SETTING THE NEEDLE BAR TO HEIGHT

The lower end of the needle bar frame, the one to which the needle bar is timed, is faced to height at the factory. The distance from the bottom of the frame (A, Fig. 13) to the bottom of the throat plate is 2 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 Type 180, which is recommended for Styles 63900 M, 63900 T, 63900 W and 63900 AE.

When the needle bar is at its lowest position, the upper timing line (B, Fig. 13) should be EVEN with the lower edge of the lower needle bar frame (A).

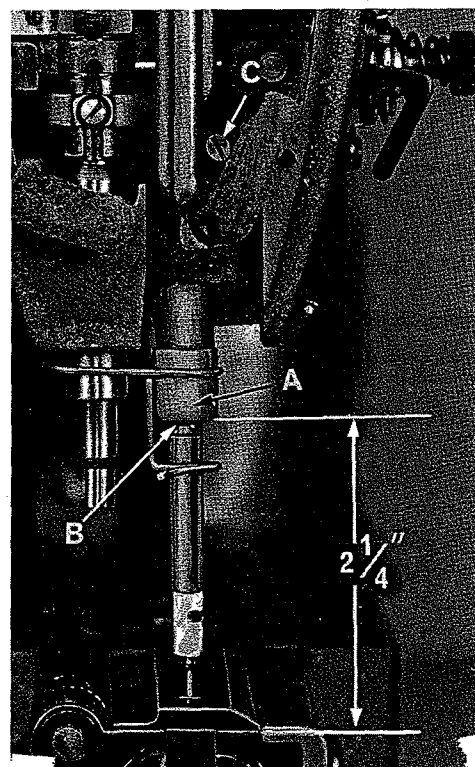


Fig. 13

INSTRUCTIONS FOR MECHANICS (Continued)

SETTING THE NEEDLE BAR TO HEIGHT (Continued)

To change the position of the needle bar, turn handwheel 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 line at its lowest position, tighten the screw securely.

The illustration (Fig. 13) shows the proper setting of the needle bar.

TIMING THE HOOK

Remove throat plate. Loosen the three set screws (A) in the hook, and hold the hook and the bobbin case holder in such a position as to prevent interference with the needle. Turn 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 (Fig. 13) used in setting the needle bar is even with the lower edge of the needle bar frame (A).

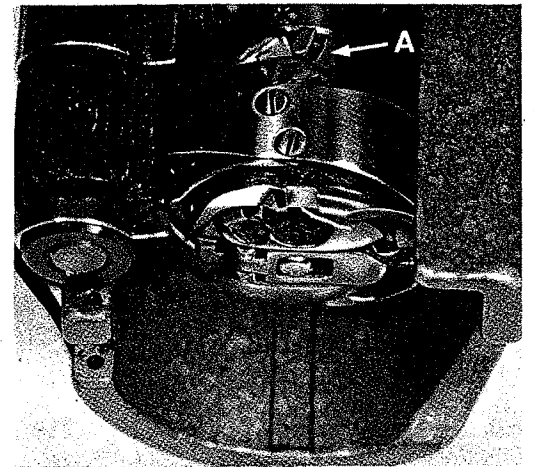


Fig. 14

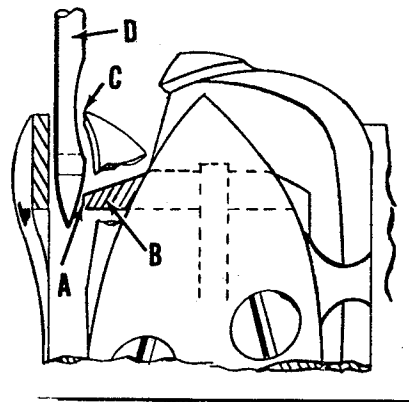


Fig. 15

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 the hook timing position the top of the eye of the needle should be about 1/64 inch below the bottom of the hook point.

Replace throat plate, allowing 1/32 inch clearance between the outside edge of projection and the inside edge of bobbin case recess.

NEEDLE GUARD INSTRUCTIONS FOR No. 29474 S

In the hook, at the right side of the needle hole in bobbin case holder (B, Fig. 15) is found a needle guarding surface (A, Fig. 15).

The purpose of this guarding surface is to prevent the hook point (C) from coming in contact with 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.

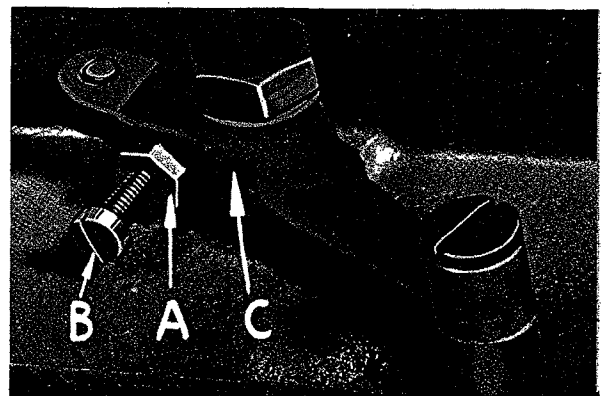


Fig. 16

INSTRUCTIONS FOR MECHANICS (Continued)

NEEDLE GUARD INSTRUCTIONS FOR No. 29474 S (Continued)

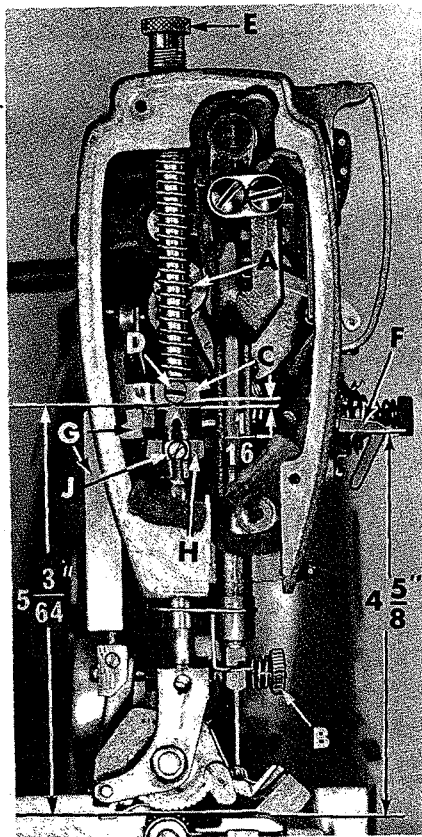


Fig. 17

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 the handwheel in operating direction by hand. Check for excessive needle deflection beyond what is cited on preceding page as a desirable condition.
4. If needle deflection is excessive, follow steps (a) and (b) below.

(a) Remove bobbin case holder from hook.

(b) Remove excess metal from the 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 reinserted frequently and tested until proper needle guarding is obtained.

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

The bobbin case holder should be thoroughly cleaned before reassembly into the hook base.

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

The bobbin case holder only may be removed by removing gib screws and gib and pulling on bobbin case stem as the handwheel is rocked backward and forward 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 hook, run 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.

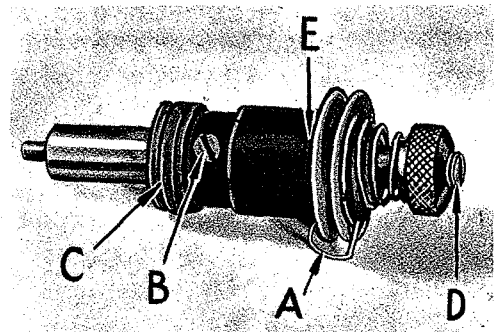


Fig. 18

Should more or less oil be required, turn oil control adjusting shaft (H, Fig. 3), located on the front of the machine just below the cloth plate surface, in 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.

INSTRUCTIONS FOR MECHANICS (Continued)

PRESSER BAR GUIDE

When locating presser bar guide (C, Fig. 17) presser foot must rest directly against throat plate. Proper setting of guide is $5 \frac{3}{64}$ inches between underside of presser bar guide and the top of throat plate (Fig. 17). To obtain this setting, remove pressure from presser spring (A) and loosen set screw (D). Tap on presser foot to insure it is down against throat plate. Set guide to the $5 \frac{3}{64}$ inch dimension, center foot by turning it so needle enters the middle of its slot and retighten screw (D). Apply pressure to top feed roller by turning regulator (E) clockwise.

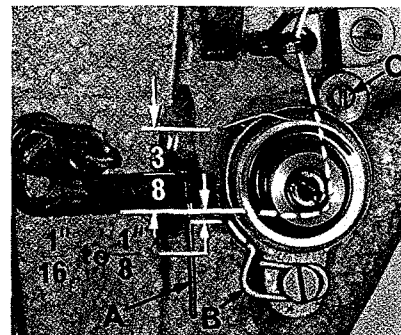


Fig. 19

Set needle thread pull-up bracket (F) so that underside of wire is $4 \frac{5}{8}$ inches above throat plate (Fig. 17).

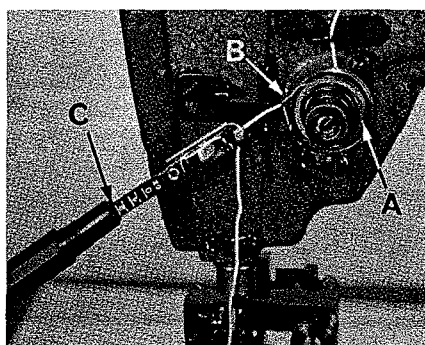


Fig. 20

PRESSER BAR CONNECTION

Presser bar connection (G, Fig. 17) should be set about $1/16$ inch below presser bar guide (C). Accomplish this by loosening lock nut (A, Fig. 16), and relocating stop screw (B) on lifter lever bell crank (C), located at the back of machine, under bed plate. Turning stop screw to right or left, properly sets presser bar connection. Tighten lock nut (A) to lock stop screw.

TENSION ASSEMBLY ADJUSTMENT

Test check spring tension (A, Fig. 18). There should be enough tension to assure a good returning snap when the spring is depressed and released. Should it require adjusting, loosen set screw in 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 tension post (D) counterclockwise until check spring moves away from upper stop (E) and has no tension on it. Turn tension post (D) in a clockwise direction until spring again touches upper stop (E). Proceed further in same direction until desired tension is obtained. When correctly set tension post set screw (B) should be drawn up snugly, yet not forcefully. Further adjustment of check spring tension can be made by inserting a screwdriver into slotted end of tension post (D) and turning in required direction.

Replace tension assembly with check spring about $3/8$ inch above thread take-up bracket (A, Fig. 19). Replace tension post assembly while presser foot is resting on throat plate.

TENSION RELEASE

Tension release should be set so as not to release when sewing over seams or when presser foot is raised. Adjustment of tension release cam (H, Fig. 17) and in and out position of tension assembly are required for proper operation.

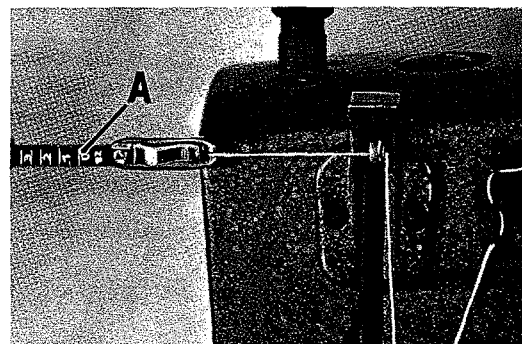


Fig. 21

INSTRUCTIONS FOR MECHANICS (Continued)

TENSION RELEASE (Continued)

The in and out position of the tension assembly is correct when the tension discs are in line with the check spring eyelet (B, Fig. 19). Set the stop screw (C, 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 (H, Fig. 17) should now be positioned by loosening set screw (J) and then raising or lowering cam (H) to suit the sewing conditions. The average release point is between 1/4 and 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 1/4 ounces when measured with a postal scale, No. 21227 CW, (C, Fig. 20). This is measured when the check spring is 1/32 to 1/16 inch from the 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 (B, 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 take-up bracket (A, Fig. 19) in a straight line, the check spring eyelet should be set 1/16 to 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. 3).

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 bracket (D, Fig. 21) 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 Class 63900, and as a result, the disc tension can be reduced.

BOTTOM COVER

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

BOTTOM COVER (Continued)

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 the cover is being installed and 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 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 $\frac{9}{16}$ inch on a scale.

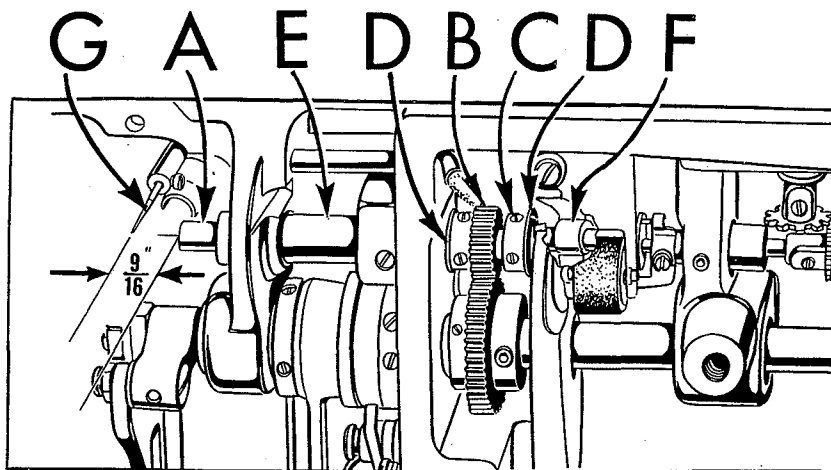


Fig. 22

To reposition the hook shaft, loosen the set screws of the pinion and collar and establish the $\frac{9}{16}$ inch dimension. Move the pinion and thrust washer against the left bushing, and after making certain one of the set screws in 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.

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.

INSTRUCTIONS FOR MECHANICS (Continued)

REMOVAL OF OILING DEVICE (Continued)

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.

REASSEMBLY OF OILING DEVICE

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

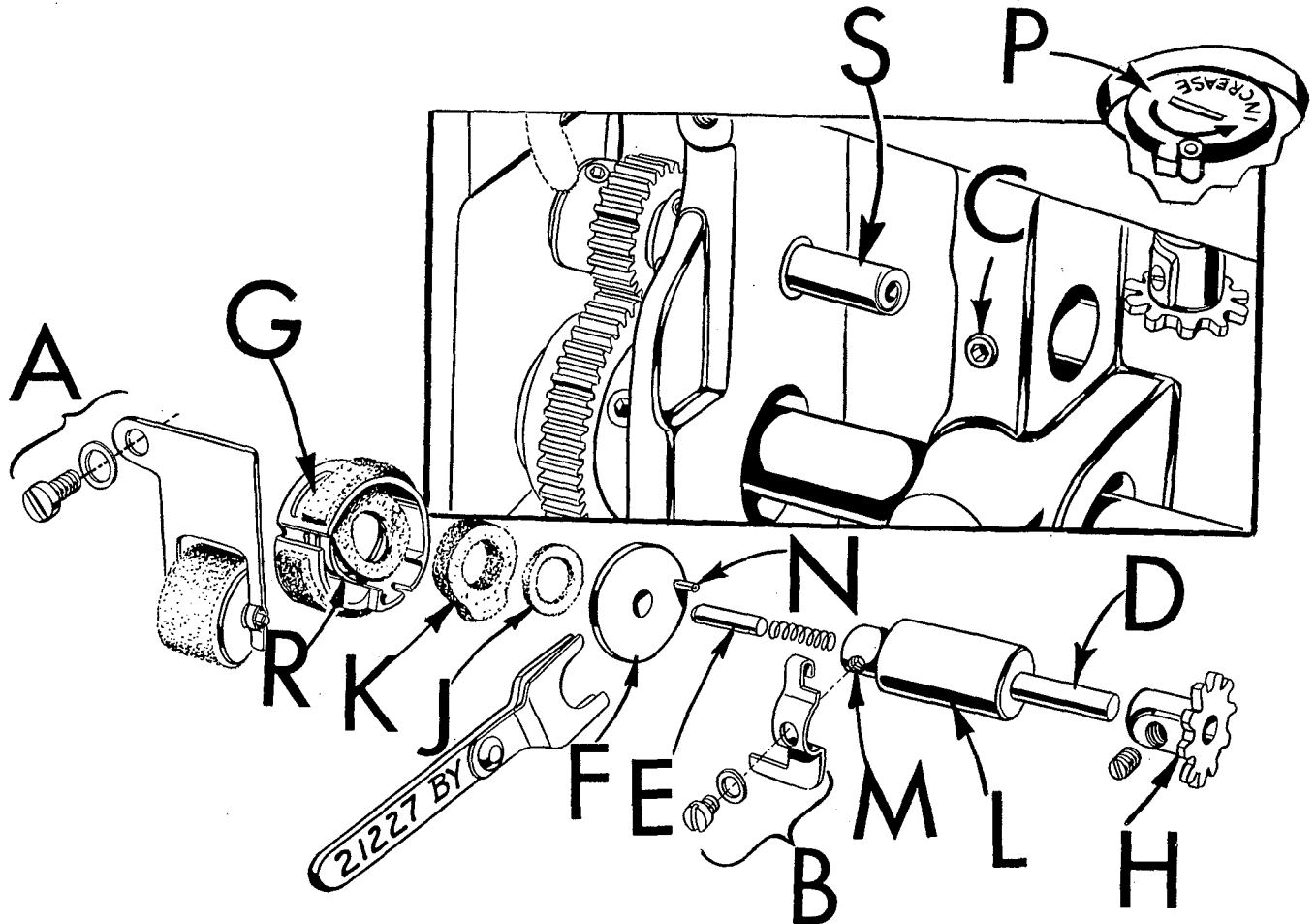


Fig. 23

The following steps are necessary to reassemble 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 the metering cup (G) and air seal spring on the hook shaft (S) with open end toward handwheel end of the machine (Fig. 23).
NOTE: The hook shaft should pass through hole of felt attached to metering cup.
3. Position oil supply felt (K, Fig. 23) on the hook shaft, making certain the felt's projection extends into dovetail of metering cup.
4. Position air seal felt (J) on hook shaft.

INSTRUCTIONS FOR MECHANICS (Continued)

REASSEMBLY OF OILING DEVICE (Continued)

5. Insert pump disc (F) into assembly tool No. 21227 BY, with the stop pin on the spring side of tool, 180° from handle. Insert disc approximately half way into the spring and center in tool (Fig. 25).

6. Insert hook oil control shaft (D, Fig. 23) 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).

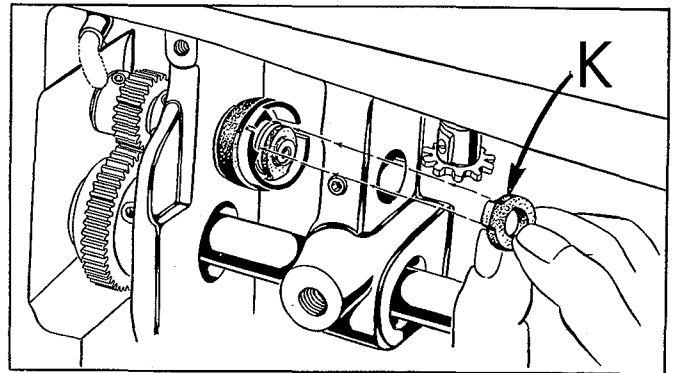


Fig. 24

8. With the fork of the tool in line with the metering cup clearance cut and centered about the hook shaft end, press felts to the left with tool until the pump disc is in contact with end of the hook shaft.

9. Press hook oil control shaft bushing (L) to the 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 the 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 stop pin (N). Now, install hook oil control finger (B) by first hanging the hooked portion of finger over the stop pin and lowering to insert the projection at bottom left into the short slot of the metering cup. Tighten the finger in place by means of screw and washer, making sure the hook oil control finger does not bind or distort metering cup.

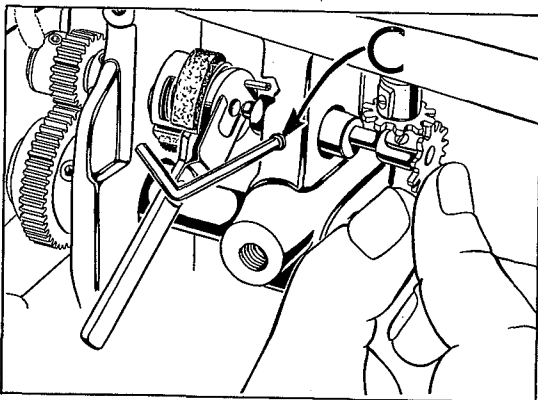


Fig. 25

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 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.

INSTRUCTIONS FOR MECHANICS (Continued)

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.

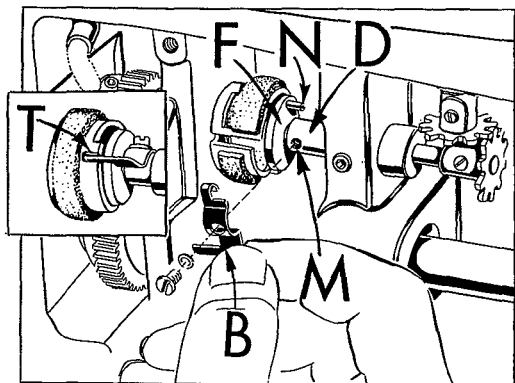


Fig. 26

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 provide 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. Replace the plastic plug.

Replace presser bar guide and presser bar spring washer into position. Place presser bar into presser bar roller bracket with flat on bar to the rear and tighten hex head screw and set screw securely.

Line up needle hole in the presser foot with the needle and tighten presser bar guide screw.

Assemble presser spring, presser spring washer and presser spring regulator screw.

Refer to paragraph on "Presser Bar Guide" for proper setting of the guide.

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. Retighten 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 reassembly.

TO CHECK FOR ALIGNMENT

1. Remove the presser bar spring, washer and regulator screw.
2. Rotate the handwheel so that the needle bar is at the bottom of its stroke. Loosen hexagonal head screw on back of the presser bar roller bracket, and set screw on left side of roller bracket. Then loosen screw on presser bar guide and remove presser bar, presser bar spring washer and presser bar guide.
3. Remove the upper left plastic plug on the back of the machine and loosen screw in plug hole. Remove take-up lever pin. With light inward finger pressure, move the take-up lever to the

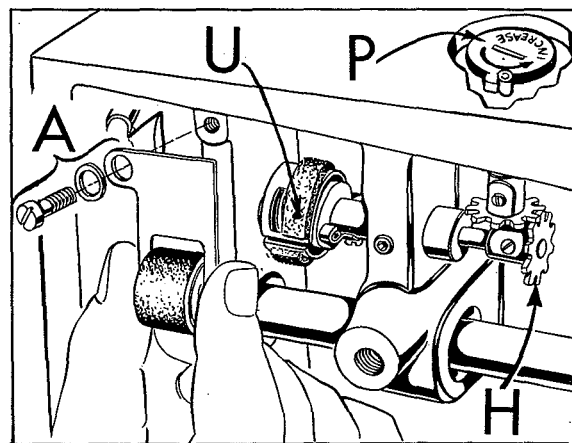


Fig. 27

INSTRUCTIONS FOR MECHANICS (Continued)

HANDWHEEL (Continued)

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 screw.
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.
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 tighten 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.

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.

ATTACHMENTS

Style 63900 M is equipped with a retractable hemmer (A, Fig. 28) which produces 3/8 to 1/2 inch width of hem. To adjust to desired width loosen two screws (B and C) and slide hemmer scroll (D) to the right or left.

To change the sewing margin loosen screws (E and F) and slide the hemmer (A) to the right or left to obtain desired margin.

Style 63900 T is equipped with an adjustable edge guide for producing margins from 1/2 to 2 1/2 inches wide. For margins wider than 1 5/16 inches the base of the edge guide must be reversed.

To change margin relocate edge guide in holes provided until desired margin is obtained.

Style 63900 W is equipped with a cloth plate extension to provide a platform for guiding trousers. It is easily attached to the machine by three No. 22517 B screws.

NEEDLE HOLE INSERT

The throat plate has a replaceable needle hole insert. To remove this insert drive it out from the underside of the throat plate.

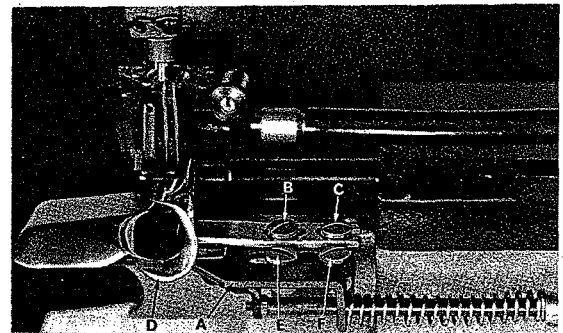
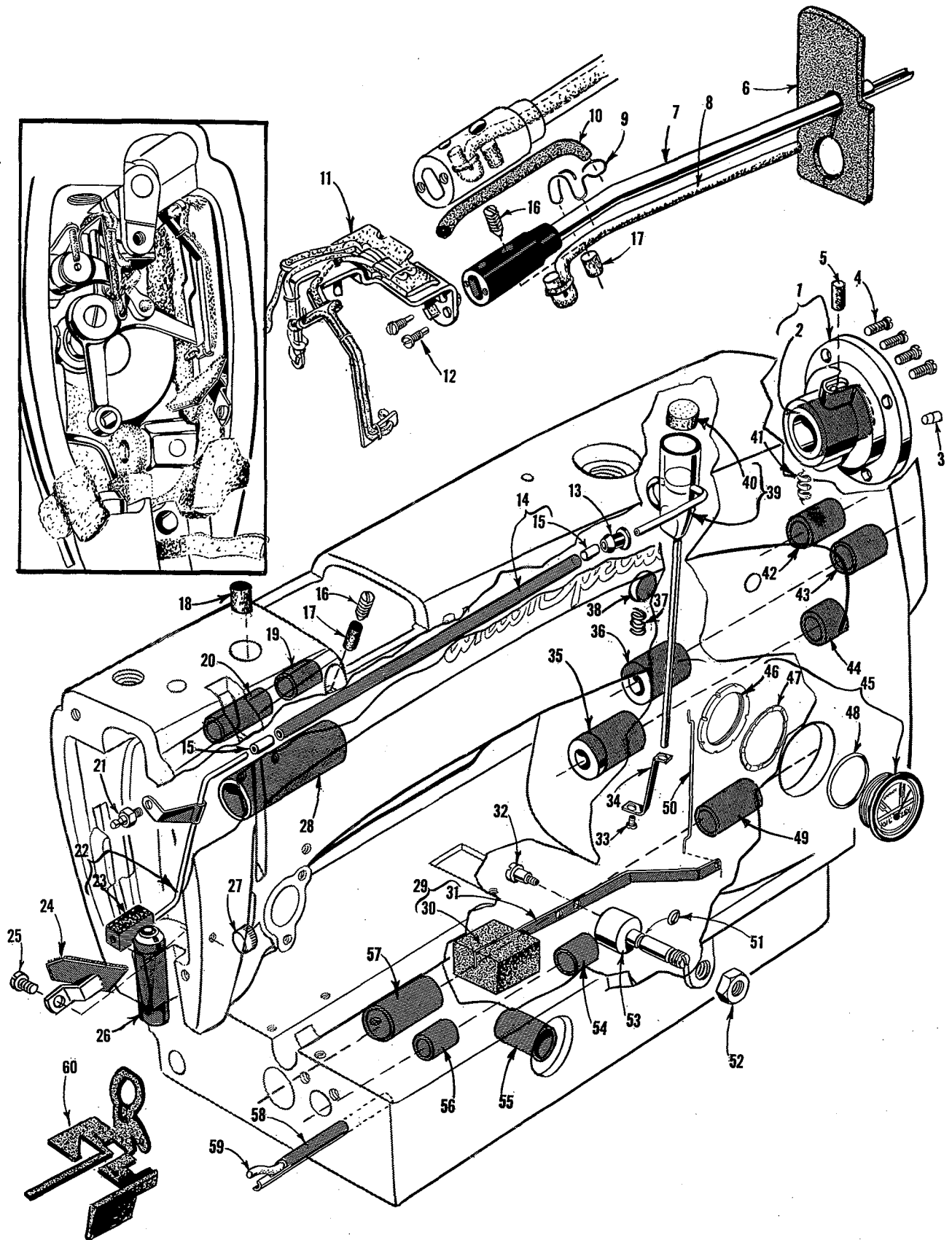


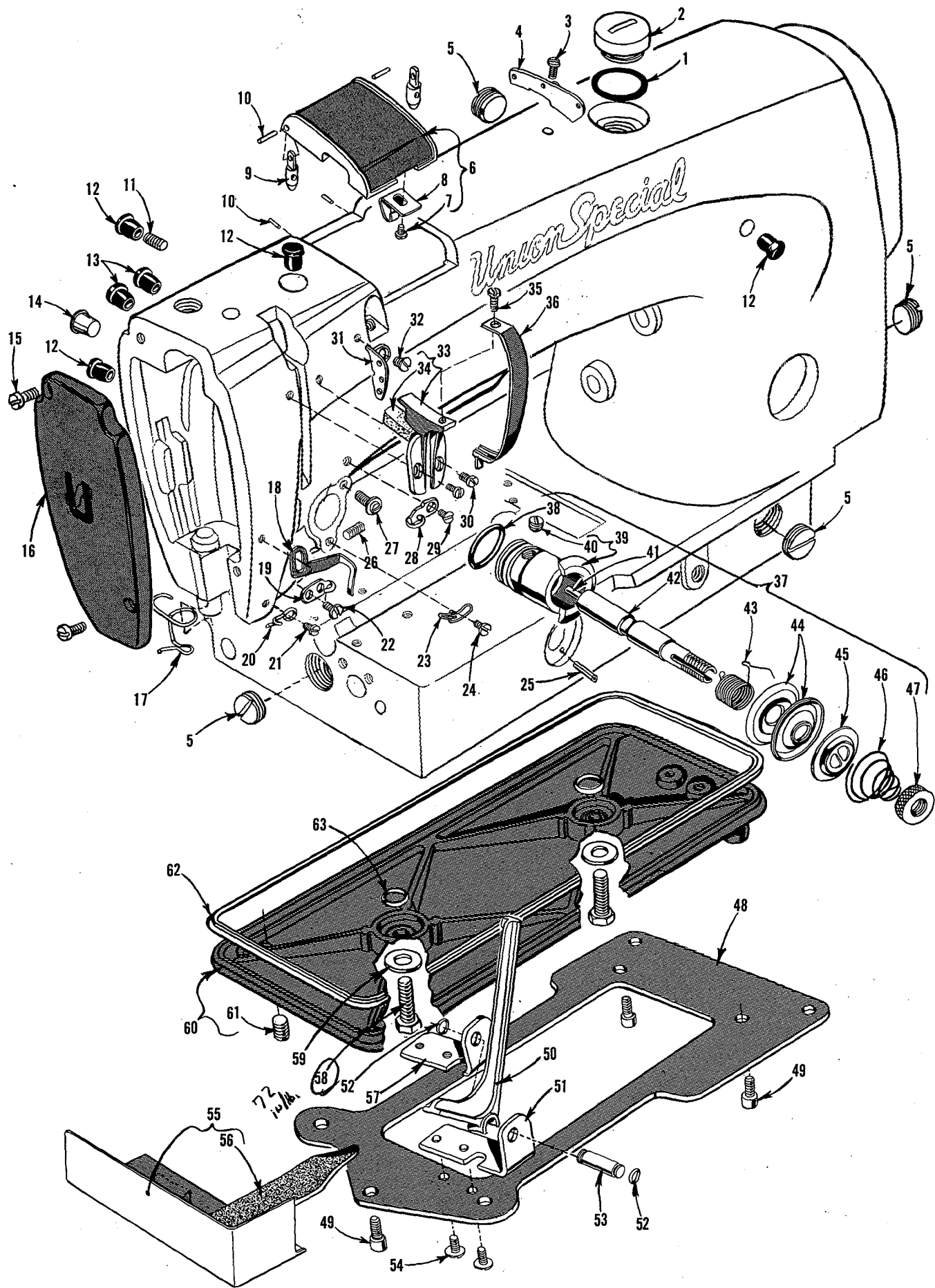
Fig. 28

EXPLODED VIEWS
AND
DESCRIPTION OF PARTS
FOR
63900 ROLLER FEED MACHINES



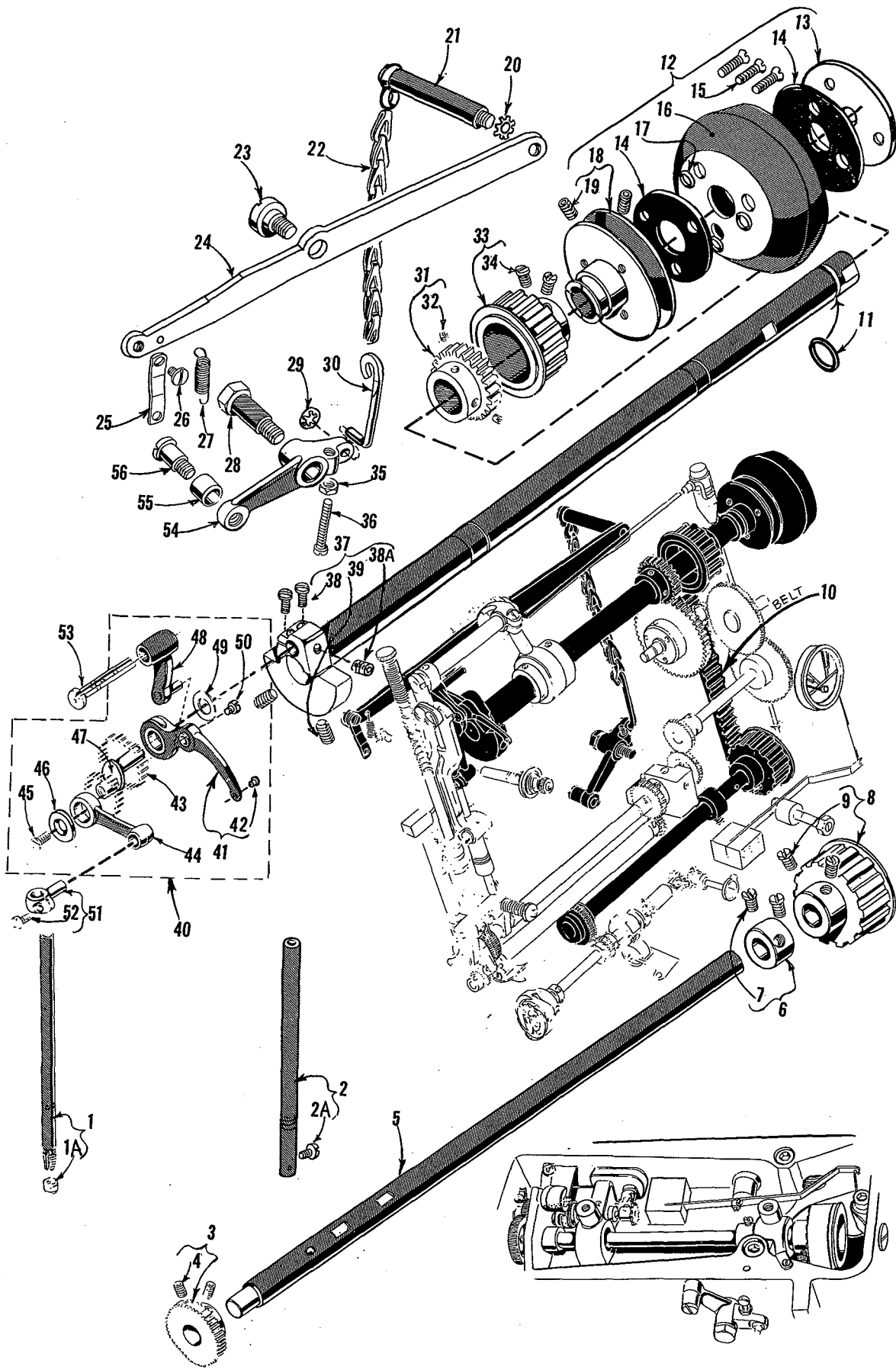
MAIN FRAME, BUSHINGS, OIL GAUGE HEAD OIL SIPHON
AND MISCELLANEOUS OILING PARTS

Ref. No.	Part No.	Description	Amt. Req.
1	61490 B	Main Shaft Bushing Housing, including bushing -----	1
2	61490 C	Bushing -----	1
3	63494 R	Plug, for bed -----	1
4	22569 B	Screw -----	4
5	666-200	Oil Felt -----	1
6	666-254	Felt Baffle -----	1
7	63993	Head Oil Supply Line -----	1
8	666-225	Felt, for No. 63993 -----	1
9	63984 C	Spring Clip, for No. 666-223 -----	1
10	666-223	Roll Felt -----	1
11	63993 C	Head Oiler Assembly -----	1
12	22784 K	Screw -----	2
13	61494 N	Retaining Grommet -----	1
14	63494 M	Oil Siphon Connecting Tube -----	1
15	56393 AA	Oil Tube -----	2
16	22815	Plug Screw -----	1
17	666-224	Roll Felt, for No. 61490 D -----	1
18	666-228	Oil Felt, for No. 61985 B -----	1
19	61985 H	Needle Bar Frame Rocker Shaft Bushing, right -----	1
20	61985 G	Needle Bar Frame Rocker Shaft Bushing, left -----	1
21	61494 L	Stud -----	1
22	63994	Oil Siphon Head Tube -----	1
23	666-214	Oil Felt -----	1
24	63953 A	Oil Shield -----	1
25	22564	Screw -----	1
26	63957 A	Presser Bar Bushing, lower -----	1
27	51-159 Blk.	Plug -----	1
28	61490 D	Upper Main Shaft Bushing, left -----	1
29	63494 C	Oil Gauge Float Assembly -----	1
30	61494 D	Oil Gauge Float -----	1
31	61494 E	Oil Gauge Float Lever -----	1
32	21629 A	Screw -----	1
33	22564	Screw -----	1
34	63494	Oil Siphon Primer Position Bracket -----	1
35	63962 D	Lower Reduction Gear Shaft Bushing, left -----	1
36	63962 G	Upper Reduction Gear Shaft Bushing, left -----	1
37	666-238	Bed Oil Drain Hole Felt -----	1
38	61293 N	Bed Plug -----	1
39	63494 D	Head Oil Siphon Assembly -----	1
40	666-237	Felt Plug -----	1
41	666-221	Oil Wick, for bushing housing -----	1
42	63962 E	Middle Reduction Gear Stud Bushing -----	1
43	63962 F	Upper Reduction Gear Shaft Bushing, right -----	1
44	63962 C	Lower Reduction Gear Shaft Bushing, right -----	1
45	63494 K	Oil Gauge Assembly -----	1
46	63494 F	Nut -----	1
47	63494 G	Spring Washer -----	1
48	660-455	"O" Ring -----	1
49	61432 B	Hook Drive Shaft Bushing, right -----	1
50	61494 H	Oil Gauge Connecting Link -----	1
51	660-221	"O" Ring -----	1
52	11635 B	Nut -----	1
53	61494 F	Float Lever Pivot Stud -----	1
54	61496 P	Hook Oil Control Shaft Bushing -----	1
55	61496 S	Hook Oiling Control Adjusting Bushing -----	1
56	61441 A	Hook Shaft Bushing, right -----	1
57	63432 C	Hook Drive Shaft Bushing, left -----	1
58	63993 B	Hook Shaft Bushing Oil Tube -----	1
59	666-239	Oil Wick, for No. 63993 B -----	1
60	666-234	Head Oil Attraction Felt -----	1
-	63490 B	Gasket, for No. 61490 B (not shown) -----	1



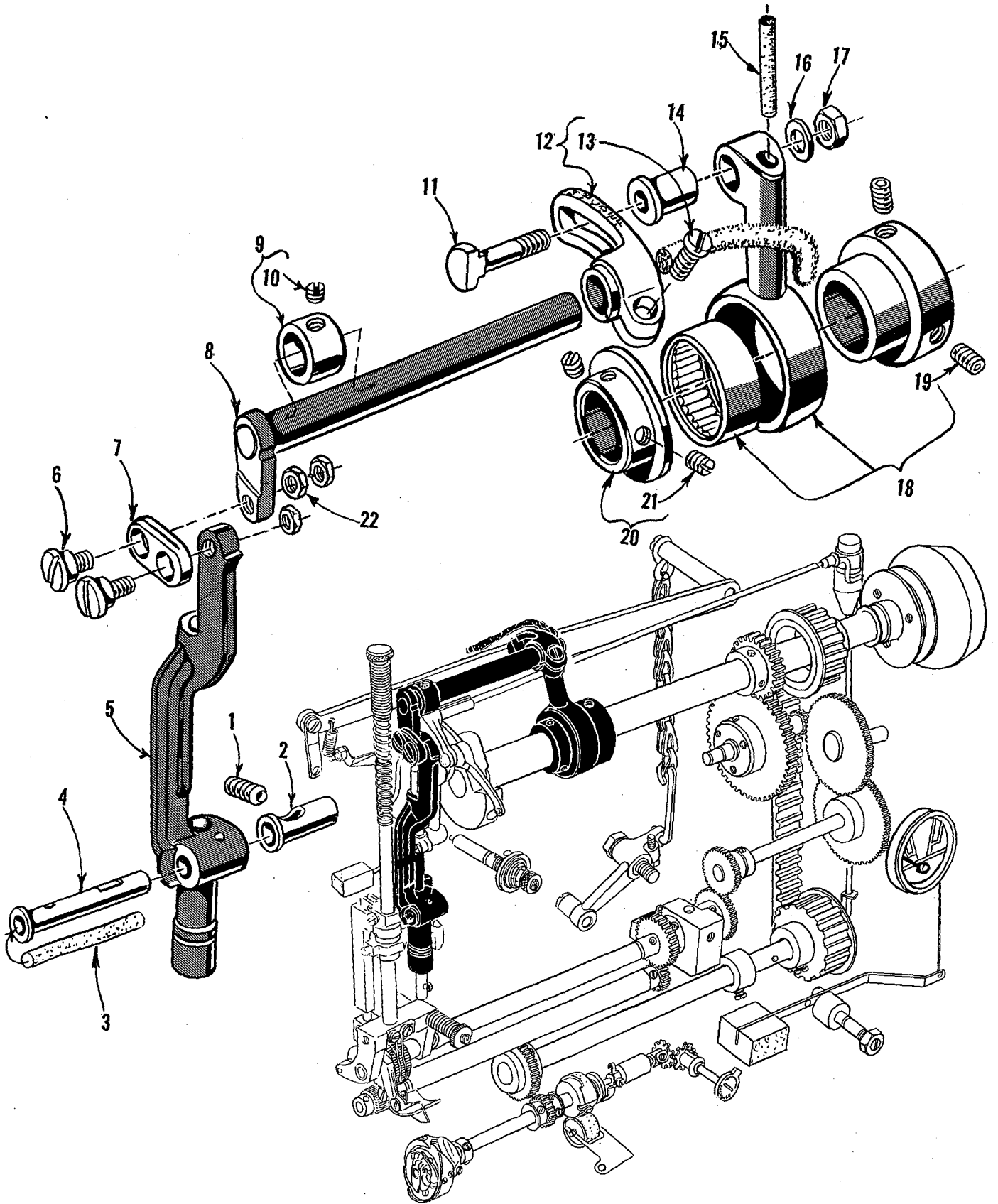
MAIN FRAME MISCELLANEOUS COVERS AND NEEDLE TENSION PARTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	63494 A	Gasket-----	1
2	22733 D	Plug Screw, for oil filler hole-----	1
3	22570 A	Screw-----	1
4	61470 D	Frame Thread Eyelet-----	1
5	22539 P	Plug Screw-----	4
6	63982 A	Top Cover-----	1
7	90	Screw-----	1
8	63982 F	Spring Clip-----	1
9	61982 C	Top Cover Hinge-----	2
10	61982 D	Top Cover Hinge Pin-----	4
11	22894 E	Screw, for No. 61451 B-----	1
12	63494 B	Plug, plastic, overall length 1/2 inch (12.7mm)-----	4
13	63994 C	Plug, plastic, overall length 7/16 inch (11.1mm)-----	2
14	660-409	Tension Release Bushing Plug-----	1
15	22516	Screw-----	2
16	63982	Head Cover-----	1
17	63970 B	Needle Bar Bushing Thread Guide-----	1
18	63970 A	Thread Pull-up Bracket-----	1
19	63470 A	Upper Needle Thread Eyelet-----	1
20	63470	Lower Needle Thread Eyelet-----	1
21	90	Screw-----	1
22	22766	Screw-----	1
23	63492	Tension Post Eyelet-----	1
24	HS24 C	Screw-----	1
25	660-219 A	Roll Pin-----	1
26	22597 E	Set Screw, for tension assembly-----	1
27	22863 B	Stop Screw, for tension assembly-----	1
28	61470 C	Thread Guide-----	1
29	22766	Screw-----	1
30	22562	Screw-----	2
31	61471 A	Frame Thread Eyelet-----	1
32	22805	Screw-----	1
33	63971 A	Take-up Lever Hood-----	1
34	666-222	Felt Pad-----	1
35	22564	Screw-----	1
36	63451	Take-up Shield-----	1
37	29475 AR	Thread Tension Assembly-----	1
38	660-269 A	Quad Ring-----	1
39	61492 E	Tension Post Socket-----	1
40	22560 G	Set Screw-----	1
41	61492 G	Tension Release Pin-----	1
42	61492 F	Tension Post-----	1
43	63453	Take-up Spring-----	1
44	109	Tension Disc-----	2
45	61492 H	Tension Release Washer-----	1
46	61392 F-14	Tension Spring-----	1
47	61292 C	Tension Nut-----	1
48	21680 AX	Base Plate-----	1
49	22652 D-8	Screw, for base plate-----	3
50	21665 H	Folder Actuator Finger, for Style 63900 M-----	1
51	21662 AF	Pivot Pin Bracket, front, for Style 63900 M-----	1
52	660-254 D	Retainer Ring, for Style 63900 M-----	2
53	21664 J	Pivot Pin, for Style 63900 M-----	1
54	22517 B	Screw, for Style 63900 M-----	2
55	63996	Hook Oil Return Channel-----	1
56	666-240	Hook Oil Return Channel Felt-----	1
57	21662 AE	Pivot Pin Bracket, rear, for Style 63900 M-----	1
58	22644 K-48	Screw-----	2
59	652-16	Washer-----	2
60	63982 C	Oil Reservoir Bottom Cover-----	1
61	22571 F	Plug Screw-----	1
62	61482 J	Gasket-----	1
63	660-204	"O" Ring-----	2



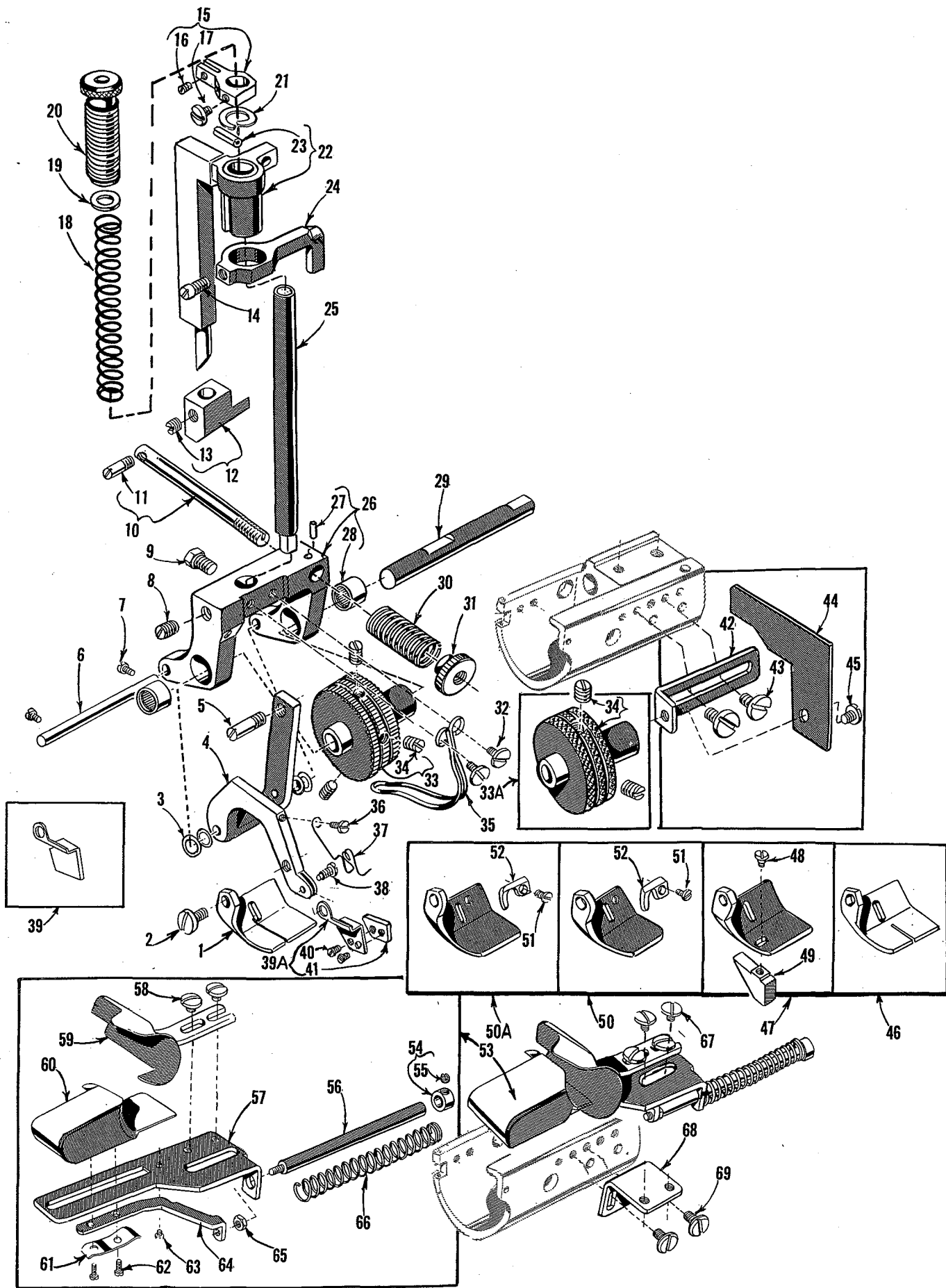
MAIN AND HOOK DRIVE SHAFTS, NEEDLE BAR
AND FOOT LIFTER MECHANISM

Ref. No.	Part No.	Description	Amt. Req.
1	63917 B	Needle Bar, marked "EN", for Styles 63900 M, 63900 T-----	1
1A	39151	Needle Clamp Nut-----	1
2	63917 A	Needle Bar, marked "EM", for Style 63900 W, 63900 AE-----	1
2A	22768 A	Needle Clamp Screw-----	1
3	63443	Hook Shaft Driving Gear-----	1
4	22894 C	Set Screw-----	2
5	63940	Hook Driving Shaft-----	1
6	61360 G	Thrust Collar-----	1
7	22884	Screw-----	2
8	61460 A	Hook Driving Shaft Sprocket-----	1
9	22653 D-6	Screw-----	2
10	61460 B	Feed Driving Belt-----	1
11	660-269	Quad Ring-----	1
12	63921	Handwheel Assembly-----	1
13	61421 G	Hub Washer-----	1
14	61421 E	Handwheel Isolator-----	2
15	22574 C	Screw-----	3
16	63921 BA	Handwheel-----	1
17	660-254 D	Isolator Washer-----	3
18	61421 D	Pulley-----	1
19	22894 V	Set Screw-----	2
20	652 B-20	Lock Washer-----	1
21	61468 B	Lifter Lever Extension Stud and "S" Hook-----	1
22	421 H	Lifter Lever Chain-----	1
23	22890 A	Screw, left thread-----	1
24	63466	Lifter Lever-----	1
25	61467	Lifter Lever Link-----	1
26	22758 B	Screw-----	1
27	15872 F	Lifter Lever Spring-----	1
28	22817 A	Screw-----	1
29	660-283 A	Spring Grip Fastener-----	1
30	61468 D	Chain Hook-----	1
31	63479 E	Main Shaft Reduction Drive Gear-----	1
32	22651 CD-3	Set Screw-----	2
33	61460	Main Shaft Driving Sprocket-----	1
34	22884	Set Screw-----	2
35	9937	Nut-----	1
36	22874 F	Screw-----	1
37	29475 BK	Main Shaft Assembly-----	1
38	22839	Screw-----	2
38A	22894 W	Spot Screw-----	1
39	22894 V	Set Screw-----	2
40	29486 V	Take-up Lever And Needle Bar Link Assembly-----	1
41	61451	Take-up Lever-----	1
42	61451 G	Take-up Lever Eyelet-----	1
43	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
44	61455	Needle Bar Link-----	1
45	22757 D	Screw-----	1
46	63455	Thrust Washer-----	1
47	63952 B	Take-up Lever Crank Pin, marked "L"-----	1
48	61451 A	Takeup Lever Link-----	1
49	61351 C	Thrust Washer-----	1
50	22784 E	Screw-----	1
51	61255	Needle Bar Connection-----	1
52	22562 B	Screw-----	1
53	61451 B	Take-up Lever Pin-----	1
54	61468 F	Lifter Lever Bell Crank-----	1
55	61468 E	Bell Crank Roller-----	1
56	22712 G	Screw-----	1



NEEDLE FEED DRIVING PARTS

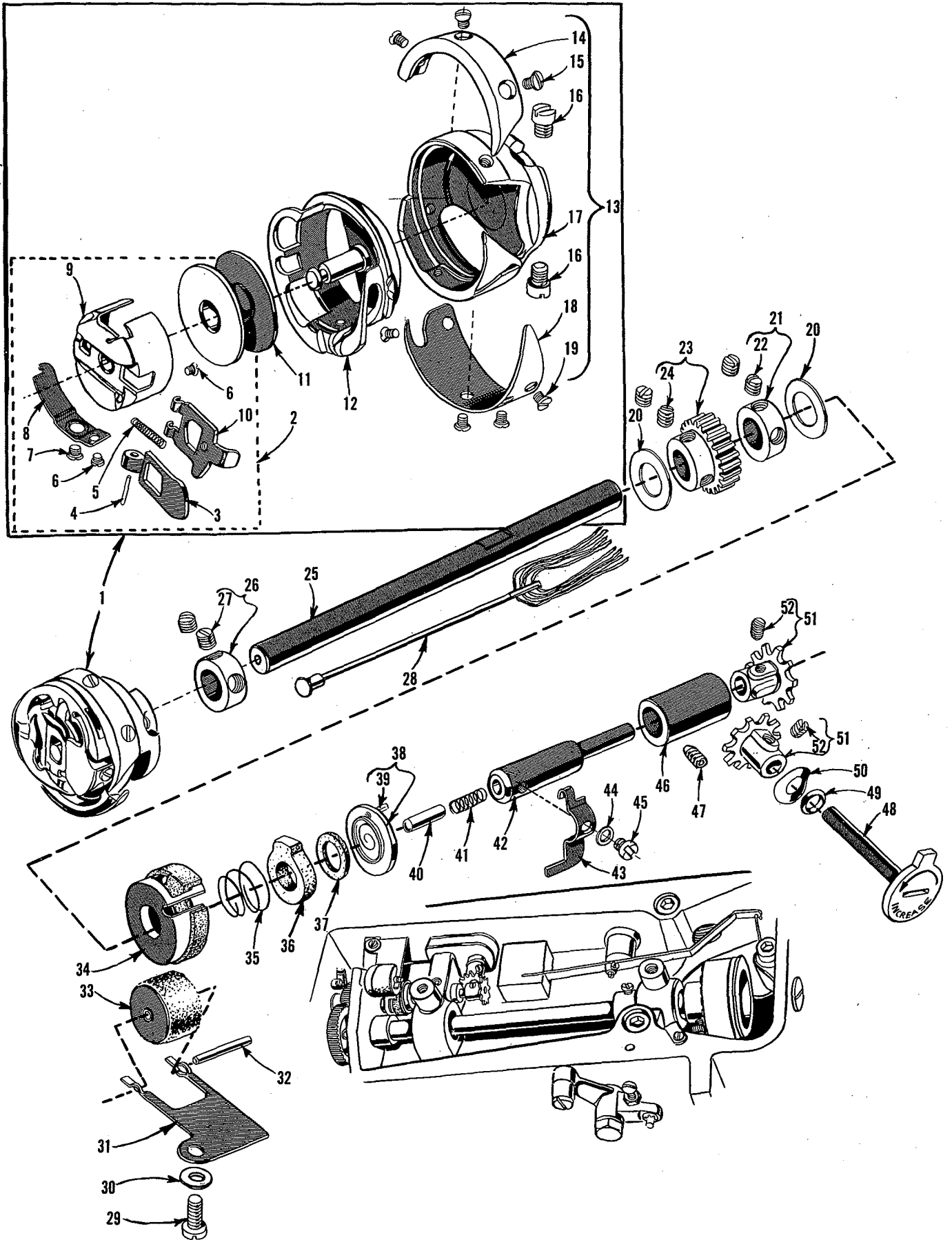
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	22894 E	Screw, for No. 61985 A -----	1
2	61985 J	Needle Bar Frame Pivot Adjustable Bushing -----	1
3	666-139	Oil Wick -----	1
4	61985 A	Needle Bar Frame Pivot Stud-----	1
5	63985	Needle Bar Frame -----	1
6	22504 H	Screw-----	2
7	61985 D	Needle Bar Frame Rock Shaft Connecting Link -----	1
8	61985 B	Needle Bar Frame Rock Shaft -----	1
9	51773	Collar -----	1
10	88 B	Screw-----	1
11	61984 C	Needle Bar Drive Eccentric Connecting Stud -----	1
12	61985 F	Needle Bar Frame Rock Shaft Driving Lever -----	1
13	22839	Clamp Screw -----	1
14	60038 G	Bearing Sleeve-----	1
15	666-173	Oil Wick -----	1
16	20	Washer -----	1
17	18	Nut -----	1
18	29126 EL	Needle Feed Drive Eccentric and Connecting Rod Assembly -----	1
19	22894 J	Set Screw -----	2
20	63984 A	Needle Bearing Retaining Collar -----	1
21	95	Screw-----	2
22	14077	Nut -----	3



PRESSER FEET, PRESSER BAR, TOP FEED ROLLER
MECHANISM AND ATTACHMENTS

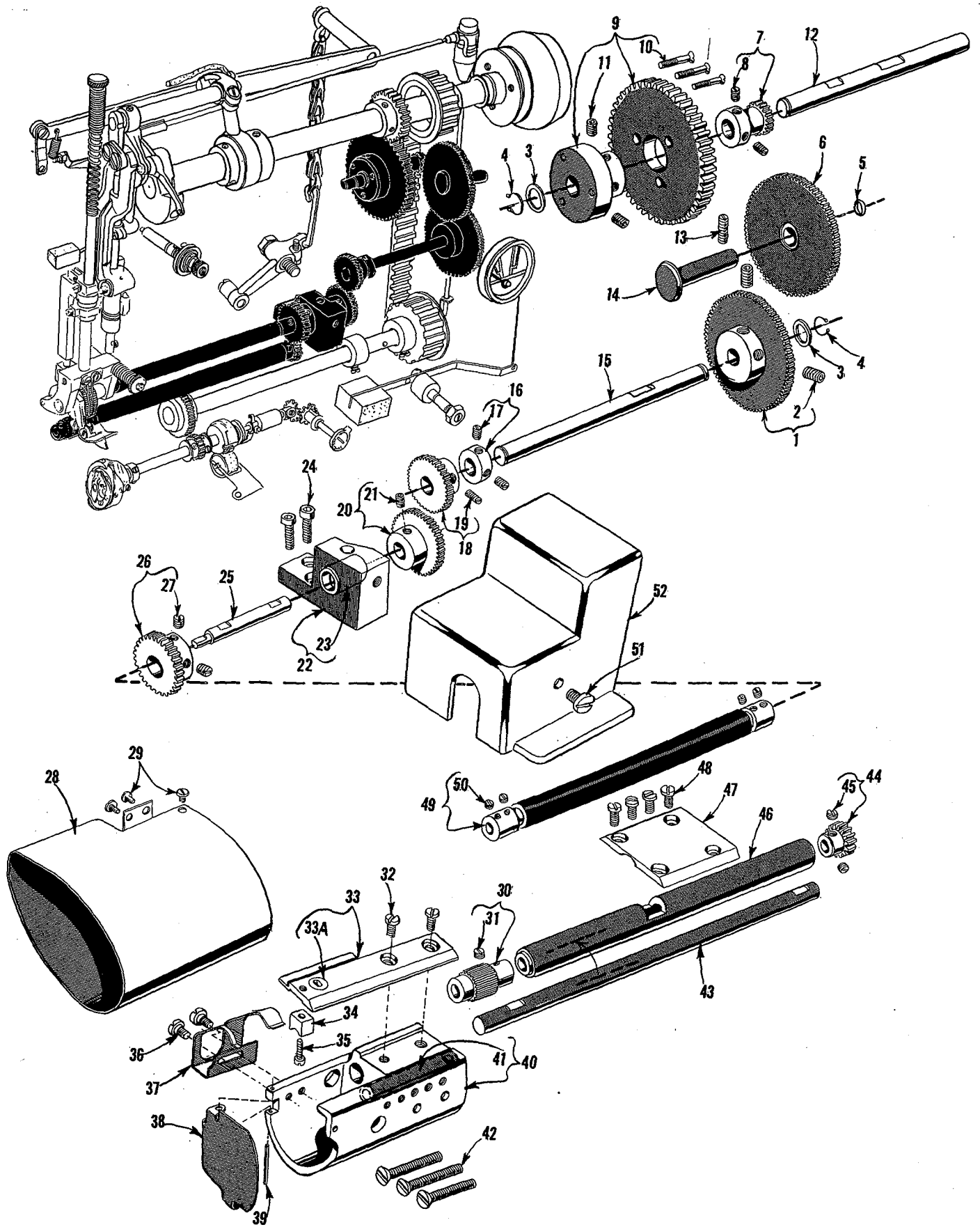
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	63920	Presser Foot, marked "AF", for Style 63900 W	1
2	22585 A	Screw	1
3	27-435 Blk.	Washer	4
4	61458 H	Presser Foot Shank	1
5	21756 G	Screw Pin	1
6	61439 AN	Presser Foot Shank Hinge Pin	1
7	22738 B	Screw	2
8	95	Set Screw, for No. 63957	1
9	22882	Screw, for No. 63957	1
10	61458 D	Presser Foot Tension Bar	1
11	22845	Screw Pin	1
12	61458 C	Presser Foot Lifter Block	1
13	88 B	Screw	1
14	230	Screw	1
15	63959 B	Presser Bar Guide	1
16	73 C	Screw	1
17	22570	Screw	1
18	63956	Roller Presser Spring	1
19	61256 G	Presser Spring Washer	1
20	61257 G	Presser Spring Regulator and Bushing	1
21	63457 R	Presser Bar Spring Washer	1
22	63958	Presser Bar Connection	1
23	660-219 B	Roll Pin	1
24	61458 G	Tension Release Cam	1
25	63957	Presser Bar	1
26	61439 AM	Top Roller Bracket	1
27	54430 E	Pin	1
28	660-249	Needle Bearing	2
29	63939 K	Top Feed Roller Shaft	1
30	110-4	Presser Foot Tension Regulating Spring	1
31	51292 C	Presser Foot Tension Regulating Nut	1
32	138	Screw	2
33	61439 AK	Top Feed Roller, 48 teeth, 1 1/4 inch diameter	1
*33A	61439 AG	Top Feed Roller, coarse knurl, 1 1/4 inch diameter	1
34	95	Set Screw	2
35	61439 AP	Upper Roller Stripper	1
36	22798 A	Screw, for No. 61430 V, on Styles 63900 W, 63900 AE	1
37	61430 V	Spring, for edge guide, on Style 63900 W, 63900 AE	1
38	21629	Screw, for No. 61430 BW, on Style 63900 W and 61430 CL on Style 63900 AE	1
39	61430 CL	Edge Guide, for Style 63900 AE	1
39A	61430 BW	Compensating Edge Guide, for Style 63900 W	1
40	22738 F	Screw, for No. 61430 BX, on Style 63900 W	2
41	61430 BX	Compensating Edge Guide, for Style 63900 W	1
42	63903	Edge Guide Mounting Bracket, for Style 63900 T	1
43	22875	Screw, for No. 63903, on Style 63900 T	2
44	61403	Edge Guide, for Style 63900 T	1
45	22704	Screw, for No. 61403, on Style 63900 T	1
46	63930 E	Presser Foot Bottom, for Style 63900 AE	1
47	63920 A	Presser Foot, for Style 63900 T	1
48	73 A	Screw	1
49	61430 R	Presser Foot Edge Guide	1
50	63920 B-3/8	Presser Foot, for 3/8 inch hem, on Style 63900 M	1
50A	63920 B-1/2	Presser Foot, for 1/2 inch hem, on Style 63900 M	1
51	22738 B	Screw	1
52	61430 X	Presser Foot Needle Guard, marked "A"	1
53	23564	Hemmer, complete, for making 3/8 inch to 1/2 inch turned down hems, on Style 63900 M	1
54	6958	Collar	1
55	88	Set Screw	1
56	23564 E	Hemmer Operating Rod	1
57	23564 D	Hemmer Base	1
58	22711	Screw	2
59	23564 A	Hemmer Scroll, right	1
60	23364 AD	Hemmer Scroll, left	1
61	23364 AG	Hemmer Scroll Slide Spring	1
62	22593	Screw	2
63	91 A	Stop Screw	1
64	23564 C	Hemmer Scroll Slide	1
65	907	Nut	1
66	20110	Hemmer Operating Rod Spring	1
67	22711	Screw, for No. 23564, on Style 63900 M	2
68	23564 G	Hemmer Mounting Bracket	1
69	22517 B	Screw	2

* Available if specified on order or as an extra send and charge item.



ROTATING HOOK ASSEMBLY AND HOOK OILING PARTS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	29474 SA	Rotating Hook Assembly-----	1
2	63913 A	Bobbin Case Assembly-----	1
3	61415 A	Bobbin Case Latch Lever-----	1
4	61216	Bobbin Case Latch Hinge Pin-----	1
5	61216 N	Bobbin Case Latch Spring-----	1
6	22564 E	Screw-----	2
7	22716 B	Tension Regulating Screw-----	1
8	61414 C	Bobbin Case Tension Spring-----	1
9	63913	Bobbin Case-----	1
10	61415	Bobbin Case Latch-----	1
11	61212	Bobbin-----	1
12	63914 C	Bobbin Case Holder-----	1
13	63907 A	Hook, Thread Retainer and Thread Deflector Assembly-----	1
14	61411 A	Hook Thread Retainer-----	1
15	22716 H	Screw-----	3
16	22569 H	Set Screw-----	2
17	63908	Hook-----	1
18	61210 B	Hook Thread Deflector-----	1
19	22716 A	Screw-----	4
20	61351 C	Thrust Washer-----	2
21	12865	Thrust Collar-----	1
22	88	Screw-----	2
23	61444	Hook Shaft Pinion-----	1
24	89	Screw-----	2
25	61440	Hook Shaft-----	1
26	63432	Hook Shaft Collar, left-----	1
27	HA73 B	Screw-----	2
28	61496 V	Hook Shaft Wick Insert Assembly-----	1
29	22516 B	Screw-----	1
30	51225 W	Washer-----	1
31	61496 F	Retaining Spring-----	1
32	61496 G	Pivot Pin-----	1
33	61496 E	Hook Oil Feed Roller-----	1
34	63496 B	Metering Cup-----	1
35	61496 J	Air Seal Spring-----	1
36	666-181	Oil Supply Felt-----	1
37	666-182	Air Seal Felt-----	1
38	61496 C	Pump Disc-----	1
39	660-219 D	Roll Pin-----	1
40	61496 D	Pump Disc Pivot Pin-----	1
41	35857 R	Spring-----	1
42	61496 L	Hook Oil Control Shaft-----	1
43	61496 K	Hook Oil Control Finger-----	1
44	27-527 Blk.	Washer-----	1
45	22819	Screw-----	1
46	61496 P	Hook Oil Control Shaft Bushing-----	1
47	22894 R	Spot Screw-----	1
48	61496 N	Oil Control Adjusting Shaft-----	1
49	660-221	Oil Seal Ring-----	1
50	39198 D	Spring Washer-----	1
51	61496 M	Oil Control Cog-----	2
52	22743	Set Screw-----	1

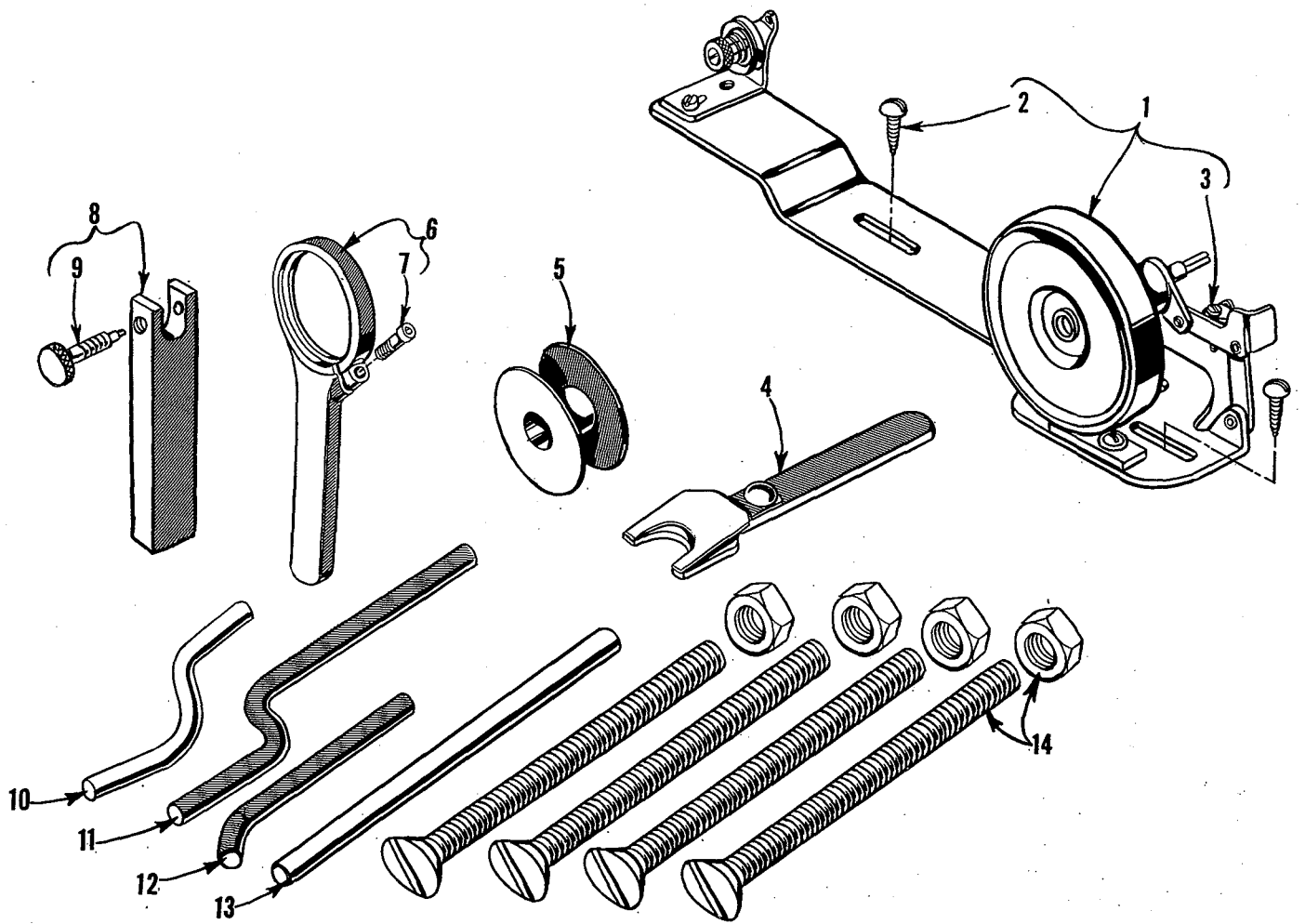


FEED ROLLER DRIVING PARTS

Ref. No.	Part No.	Description	Amt. Req.
1	63962 H	Lower Reduction Gear-----	1
2	22894 V	Set Screw-----	2
3	39552 C	Thrust Washer-----	2
4	660-318	Truarc Ring-----	2
5	660-207	"O" Ring-----	1
6	63962 L	Middle Reduction Gear-----	1
7	63962 K	Upper Reduction Drive Gear-----	1
8	22878	Set Screw-----	2
9	63962 J	Upper Reduction Driven Gear-----	1
10	22525 C	Screw-----	3
11	22894 J	Set Screw-----	2
12	63962 B	Upper Reduction Gear Shaft-----	1
13	22597 A	Set Screw-----	1
14	63962 A	Middle Reduction Gear Stud-----	1
15	63962	Lower Reduction Gear Shaft-----	1
16	61248 H	Thrust Collar-----	1
17	531	Screw-----	2
*18	63949-39	Upper Stitch Regulating Gear, for Styles 63900 M and 63900 T--	1
* -	63949-37	Upper Stitch Regulating Gear, for Style 63900 W and 63900 AE--	1
19	18-500	Set Screw-----	1
*20	63949-41	Lower Stitch Regulating Gear, for Styles 63900 M and 63900 T--	1
* -	63949-43	Lower Stitch Regulating Gear, for Style 63900 W and 63900 AE -	1
21	18-500	Set Screw-----	1
22	63939	Top Feed Roller Drive Shaft Bushing Housing-----	1
23	63939 H	Top Feed Roller Drive Shaft Bushing-----	1
24	22652 B-10	Screw-----	2
25	63939 A	Top Feed Roller Drive Shaft-----	1
26	61339 D	Lower Feed Roller Drive Gear-----	1
27	95	Set Screw-----	2
28	63982 E	Cloth Plate Extension, for Style 63900 W and 63900 AE-----	1
29	22517 B	Screw, for Style 63900 W and 63900 AE-----	3
30	63939 D	Lower Feed Roller, 24 teeth-----	1
† -	63939 E	Lower Feed Roller, medium diamond knurl-----	1
31	22580	Set Screw-----	1
32	22569 C	Screw-----	2
33	63928	Throat Plate-----	1
33A	63928 A	Needle Hole Insert, .080 inch dia. needle hole-----	1
34	61414 B	Bobbin Case Holder Positioning Finger-----	1
35	22653 K-6	Screw-----	1
36	22875	Screw-----	2
37	63939 N	Lower Feed Roller Stripper-----	1
38	63982 B	Hook Housing Cover, for Styles 63900 M and 63900 T-----	1
39	660-219	Roll Pin, for Styles 63900 M and 63900 T-----	1
40	63941	Hook Shaft Bushing Housing-----	1
41	63941 A	Hook Shaft Bushing-----	1
42	22637 R-96	Screw, for No. 63941-----	3
43	63939 B	Lower Feed Roller Drive Shaft-----	1
44	51239 E	Lower Feed Roller Driven Gear-----	1
45	22580	Set Screw-----	2
46	63939 G	Lower Feed Drive Shaft Housing-----	1
47	63939 F	Clamp Plate-----	1
48	22569 C	Screw-----	4
49	63939 J	Top Feed Roller Flexible Drive Shaft-----	1
50		Allen Set Screw, standard No. 8-32 national coarse thread, 1/8 inch long-----	4
51	22517 B	Screw-----	1
52	63982 D	Feed Drive Gear Cover-----	1

* See page 14 "Gear Chart", for the gear combinations to produce stitches per inch, other than the ones indicated.

† Available as extra send and charge item.



BOBBIN WINDER AND MISCELLANEOUS ACCESSORIES

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	61477 M	Bobbin Winder, complete-----	1
2	22846 M-12	Wood Screw-----	2
3	61337 N	Trip Latch-----	1
* 4	21227 BY	Felt Assembly Adaptor-----	1
5	61212	Bobbin-----	1
* 6	21388 AV	Bearing Housing Puller-----	1
7	22653 E-20	Clamp Screw-----	1
* 8	21227 BZ	Take-up Eyelet Replacement Tool-----	1
9	22789 B	Thumb Screw-----	1
10	21665 L	Bell Crank Actuator Rod, for Styles 63900 T, 63900 W and 63900 AE-----	1
11	21663 F	Knee Press Plate Rod, for Style 63900 M-----	1
12	21665 C	Rock Shaft Connecting Arm, for actuating folder actuator finger No. 21665 H, on Style 63900 M-----	1
13	21663 C	Knee Press Plate Rod, for Styles 63900 T, 63900 W and 63900 AE-----	1
#14	650 AC-36	Screw, for table top-----	4
	28604 S	Can of Oil, Spec. No. 175, 1 quart (not shown)-----	1
	660-457	Dust Cover (not shown)-----	1

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

#Not furnished with machine, but is a component of No. 1400 D pedestal.

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660-219	39	22562 B	31	23564	35
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660-219 B	35	22564 E	37	23564 C	35
660-219 D	37	22569 B	27	23564 D	35
660-221	27, 37	22569 C	39	23564 E	35
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660-269 A	29	22571 F	29	29474 SA	37
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660-318	39	22580	39	29475 BK	31
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