

**SINGER**  
**147-88, 147-110, AND 147-111**

# USE ONLY SINGER OILS and LUBRICANTS

*They insure freedom from lubricating trouble and  
give longer life to sewing equipment*

---

## **“Singer Oil for High Speed Sewing Machines”**

(Cloth and Leather)

For all manufacturing sewing machines except where a stainless oil is desired.

## **“Singer Stainless Oil for High Speed Sewing Machines”**

For all manufacturing sewing machines where a stainless oil is desired.

## **“Singer Motor Oil”**

For oil-lubricated motors, power tables, transmitters and machinery in general.

## **“Singer Stainless Thread Lubricant”**

For lubricating the needle thread of sewing machines for stitching fabrics or leather where a stainless thread lubricant is required.

*NOTE: All of the above oils are available in 1 quart, 2 quart, 1 gallon and 5 gallon cans or in 55 gallon drums, and can also be supplied in customer's containers.*

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## **“Singer Gear Lubricant”**

This specially prepared grease is recommended for gear lubrication on manufacturing sewing machines.

## **“Singer Ball Bearing Lubricant”**

This pure grease is specially designed for the lubrication of ball bearings and ball thrust bearings of motors and electric transmitters, ball bearing hangers of power tables, etc.

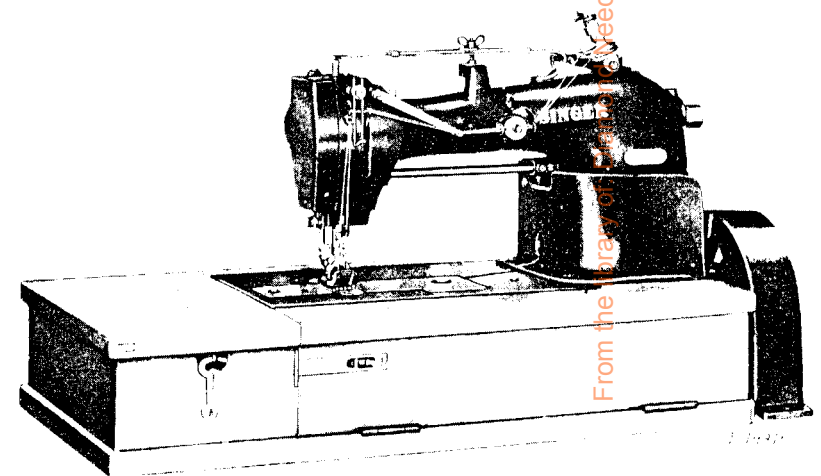
*NOTE: The above greases are furnished in ¼ lb. tubes and 1 lb. and ¼ lb. tins.*

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19407

# INSTRUCTIONS FOR USING AND ADJUSTING SINGER SEWING MACHINES 147-88, 147-110 and 147-111



MACHINE 147-110

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THE SINGER MANUFACTURING CO.

To all whom it may concern:

The placing or renewal of the name "Singer" (Reg. U. S. Pat. Off.) or any of the trade marks of The Singer Manufacturing Company on any machine that has been repaired, rebuilt, reconditioned, or altered in any way whatsoever outside a Singer factory or an authorized Singer agency is forbidden.

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THE IMPORTANCE OF USING  
GENUINE SINGER PARTS AND NEEDLES  
IN SINGER MACHINES

The successful operation of Singer machines can only be assured if genuine Singer parts and needles are used. Supplies are available at all Singer Shops for the Manufacturing Trade and mail orders will receive prompt attention.

Genuine Singer Needles should be used  
in Singer Machines.  
These Needles and their Containers  
are marked with the  
Company's Trade Mark "SIMANCO." 1

Needles in Containers marked  
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are not Singer made needles. 2

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From the library of Diamond Needle Corp

(OVER)

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## DESCRIPTIONS

MACHINE 147-88 has one needle and one looper, and is designed for stitching Cloth or Leather, Work Gloves, Trousers, Mattresses, and for Binding, Welting, etc.

It has a plain vibrating presser foot and drop feed, with independent upper feed to work in unison with the lower feed.

MACHINE 147-110 has two needles and two loopers, and is designed for stitching Automobile Seat Covers and Weather Stripping, for Yoking Work Shirts, for seaming Overalls and Work Pants, binding Blankets, attaching Zippers, etc.

It is furnished in gauges from 3/32 to 3/8 inch.

It has a plain vibrating presser foot and drop feed, with independent upper feed to work in unison with the lower feed.

MACHINE 147-111 is the same as Machine 147-110 except that it has the needles in reverse position, this arrangement being preferable for certain operations such as attaching Leather Palms to Cotton Work Gloves, etc.

## SPEED

The Speed is 3800 R.P.M. For the first few days the machines should be driven at less than the maximum speed, after which they can be driven up to the maximum speed of 3800 R.P.M.

## To Set Up the Machines

Before placing the machine on the iron base, see that the rubber insulating bushings are in place in the four holes in the machine bed, and that the four felt pads are over the studs in the corners of the base. Place the machine on these pads, and with the four studs through the rubber bushings.

CAUTION - After setting up the machine, do not start it until it has been oiled as instructed on pages 6, 7 and 8.

## To Oil the Machines

Machines 147-88, 147-110 and 147-111 are each equipped with an oiling system which automatically delivers the required quantity of oil to all principal bearings. See large diagrams on pages 18 and 19. A scoop in the connecting rod takes oil from the reservoir and lubricates, by splash, the various bearings inside the machine arm. Some of this oil is caught by a cup (within the arm) from which it is distributed, through pipes and wicks, to the principal bearings outside the machine arm.

TO INSURE OPERATION OF THIS OILING SYSTEM, IT IS ESSENTIAL THAT THE FOLLOWING INSTRUCTIONS BE OBSERVED TO THE LETTER. Failure to do this will result in SERIOUS DAMAGE TO THESE MACHINES.

CAUTION - Use only Singer "Stainless Oil for High Speed Sewing Machines".

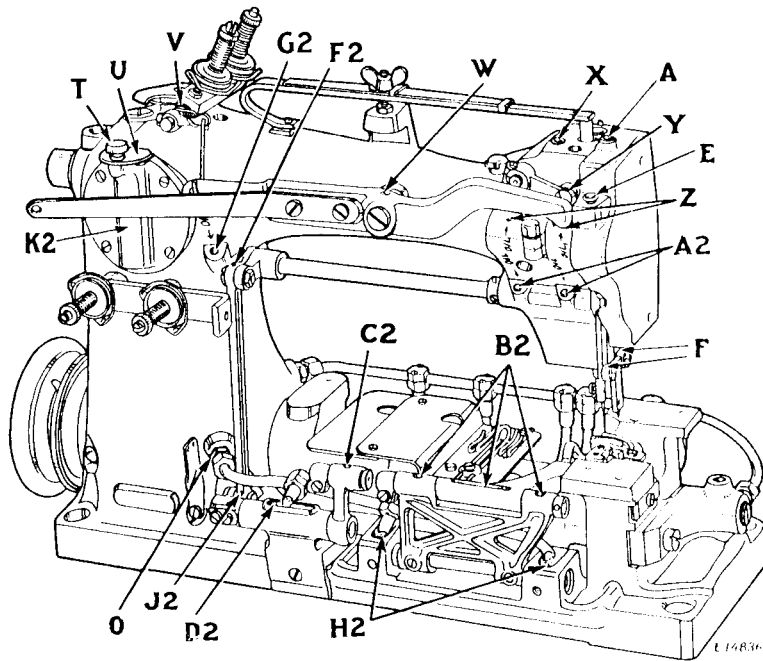


Fig. 2. Priming and Oiling Points at Rear Side of Machines

A machine new from the factory, or one which has been idle for some time, must be oiled as instructed on pages 7 and 8.

NOTE - It is not necessary to remove the work plate for the first servicing or subsequent oiling of the machines. For this purpose, merely remove the right hand slide plate.

The work plate and throat plate are removed in Figs. 2 and 3 only for the purpose of illustration.

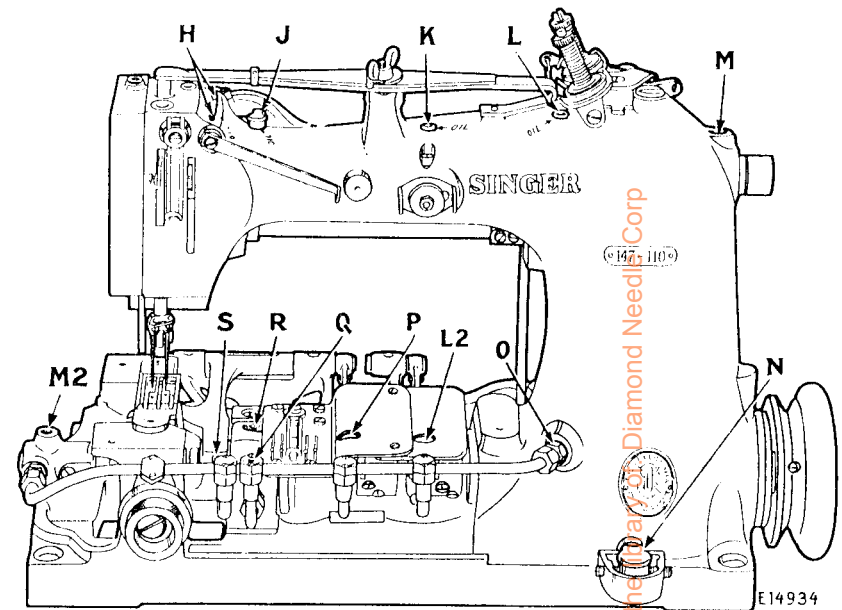


Fig. 3. Priming and Oiling Points at Front Side of Machine

1st. Loosen thumb screw (T, Fig. 2), turn aside cover (U, Fig. 2) and apply oil to the filler (K2, Fig. 2) until the oil stands about 1/16 inch from the top of the oil level cup (N, Fig. 3). THE OIL SUPPLY MUST BE MAINTAINED AT THIS LEVEL. Turn the cover (U) to closed position and tighten thumb screw (T).

2nd. Fill oil holes (X, A, E, B2 and C2, Fig. 2) and (M2, H, J, K, L and M, Fig. 3).

3rd. Fill the main oil pipe to OVERFLOWING, through oil hole (Q, Fig. 3). This is important as it primes the various oil wicks.

4th. Apply oil at oil holes (W, Y, Z, A2, F, F2 and G2, Fig. 2).

5th. Fill the troughs on connecting rods at (P and L2, Fig. 3).

6th. Fill the oil hole for the rotary shaft at (R, Fig. 3).

7th. Fill the trough on feed lifting eccentric at (S, Fig. 3).

8th. Fill the trough at (D2, Fig. 2).

9th. Apply oil at (H2, Fig. 2) for the under feed rocking frame hinge pin.

10th. Apply oil at (J2, Fig. 2) for the lower end of the upper feed vertical connecting rod.

11th. Apply an occasional drop of oil at (V, Fig. 2) for the tension releasing shaft.

A machine in daily use must be oiled as follows:

1st. Apply oil to the oil filler (K2, Fig. 2) until the oil stands about 1/16 inch from the top of the oil level cup (N, Fig. 3) as instructed on page 7.

NEVER PERMIT THE LEVEL OF THE OIL TO BECOME LOWER THAN 1/4 INCH FROM THE TOP OF CUP (N, Fig. 3) WHEN THE MACHINE IS AT REST.

2nd. Fill oil cup (J, Fig. 3) LEVEL FULL twice daily or as required.

3rd. Apply oil twice daily to all oil holes marked "oil", or as required.

### SPECIAL NOTICE

The letter "O", marked on each oil pipe coupling (O, Figs. 2 and 3) must always be at the top. This is to insure that the oil spoon, attached to the inner end of each coupling, is open side up.

### Needles

Needles for these machines are of Class and Variety 62 X 43 and are made in sizes 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23 and 24.

The size of the needle to be used is determined by the size of the thread which must pass freely through the needle eye. Rough or uneven thread, or thread which passes with difficulty through the needle eye, will interfere with the proper operation of the machine.

Orders for needles must specify the QUANTITY required, the SIZE number, also the CLASS and VARIETY numbers separated by the letter X.

The following is an example of an intelligible order:

"100 No. 16, 62 X 43 Needles"

The best stitching results will be obtained with needles furnished by the Singer Sewing Machine Company.

### Thread

Use either left twist or right twist thread in the needles and in the loopers.

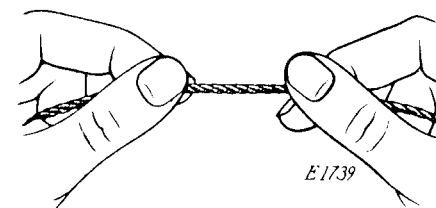


Fig. 4. How to Determine the Twist

Hold the thread as shown above. Turn the thread over toward you between the thumb and forefinger of the right hand; if left twist, the strands will wind tighter; if right twist, the strands will unwind.

### To Set the Needles

Insert the needle as far as it will go up into the needle bar of Machine 147-88, or, in the case of Machine 147-110 or Machine 147-111, insert the needles as far as they will go up into the needle clamp - in every case with the single continuous groove of each needle toward the operator, then securely tighten the needle set screw or screws.

## Upper Threading on Machine 147-88

(See Fig. 5)

Pass the thread from the unwinder through eyelet (1) in the tension thread guide; to the left at the front side of and between the tension discs (2) at the top of the machine, to the left through eyelet (3) in the tension thread guide, down and to

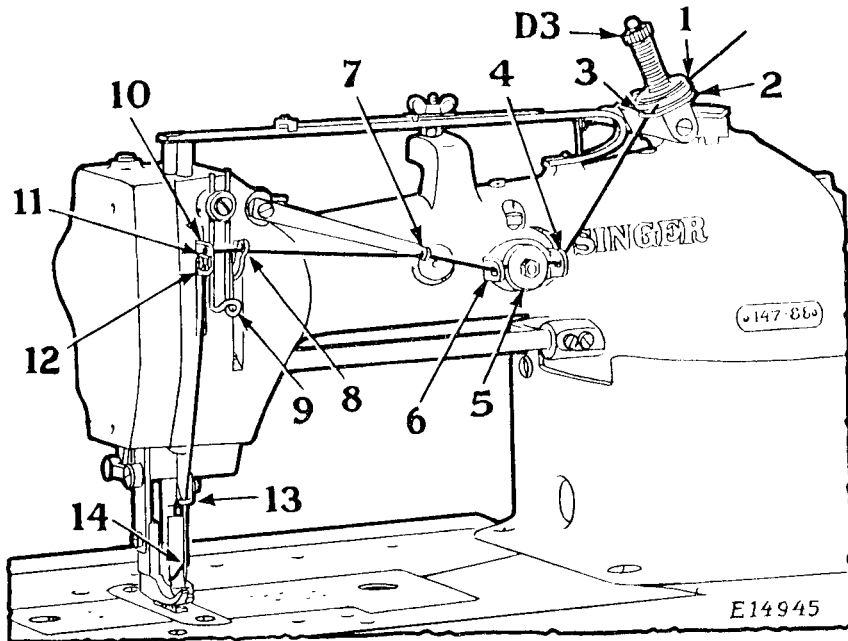


Fig. 5. Threading the Needle, Machine 147-88

the left through the eyelet (4) in the thread nipper bracket, to the left at the top of, and between, the thread nipper (5), to the left through eyelet (6) in the thread nipper bracket, to the left through eyelet (7) in the slack thread regulator, to the left through the eyelet (8) in the thread controller, to the left in front of the auxiliary take-up wire (9), to the left through the eyelet (10) in the thread take-up, down and under the thread take-up plate (11), down and through the hole (12) of the thread take-up, down through the guide (13) at the lower end of the needle bar, and down and from front to back (away from the operator) through the eye (14) of the needle.

Draw about two inches of thread through the eye of the needle with which to commence sewing.

## Threading the Loper on Machine 147-88

(See Figs. 6 and 7)

Remove the right hand slide plate; turn the balance wheel over from you until the needle bar is at its lowest position, then turn the knob (LL, Fig. 7, page 12) to the left as far as it will go, thus placing the looper in "throw-out" position for convenient threading.

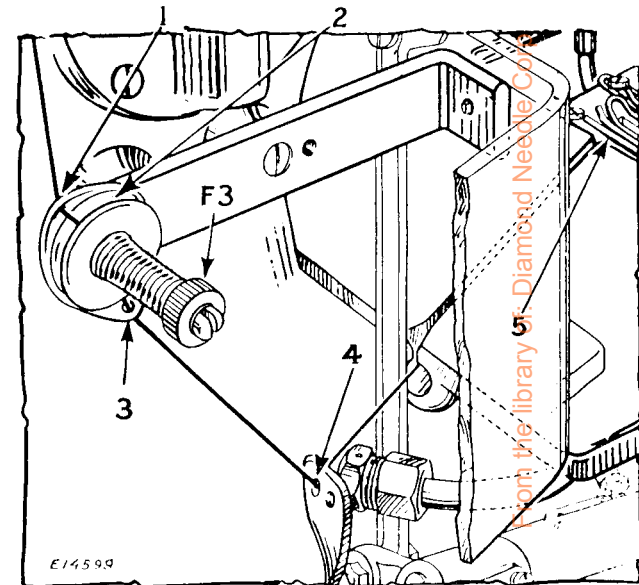


Fig. 6. Threading the Loper on Machine 147-88

Pass the thread from the unwinder through the eyelet (1, Fig. 6) in the thread tension guide at the rear side of the machine, over between tension discs (2), through the eyelet (3) in the tension thread guide, and down through eyelet (4) in the thread guide at the rear side of the machine. Pass the thread through the hole in the cloth plate guard and through the slot in the cloth plate. Then pass the thread through eyelet (5, Fig. 7, page 12), under the stripper (6), through the eyelet (7), through the

hole (8) in the heel of the looper, and from front to back (away from the operator) through the eye (9) of the looper.

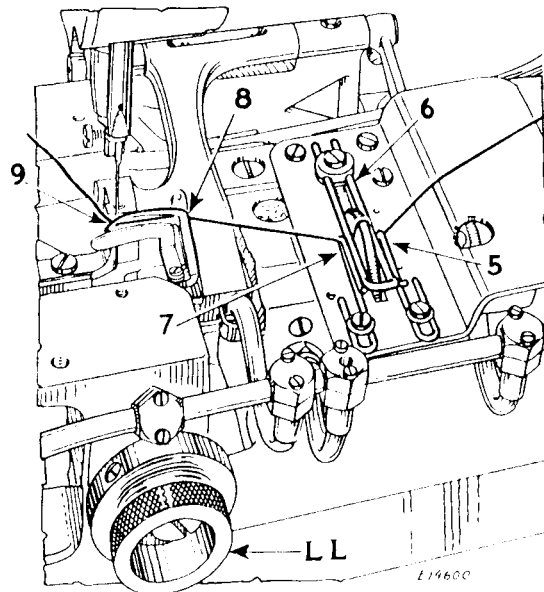


Fig. 7. Threading the Looper on Machine 147-83

Allow about two inches of thread to hang from the eye of the looper with which to commence sewing, and turn the knob (LL, Fig. 7) back into sewing position.

#### Upper Threading on Machines 147-110 and 147-111

(See Fig. 8, Page 13)

TO THREAD THE RIGHT HAND NEEDLE, pass the thread from the unwinder through the rear tension eyelet (1), around the front of, and between, the rear tension discs (2), forward through the rear tension eyelet (3), down and forward through eyelet (4) of the thread nipper bracket, forward at the upper side of, and through, the thread nipper (5), forward through eyelet (6) of the thread nipper bracket, forward through the rear eyelet (7) of the slack thread regulator, forward through the eyelet (8) of the thread controller, forward in front of auxiliary take-up wire (9), forward through the rear eyelet (10) in the thread take-up, down and under the thread take-up plate (11), down through the rear hole (12) of the thread guide immediately below the thread take-up plate, down through the right hand guide (13) at the lower end of the needle bar, and back (away from the operator) through the eye

(14) of the right hand needle. Draw about two inches of thread through the needle eye with which to commence sewing.

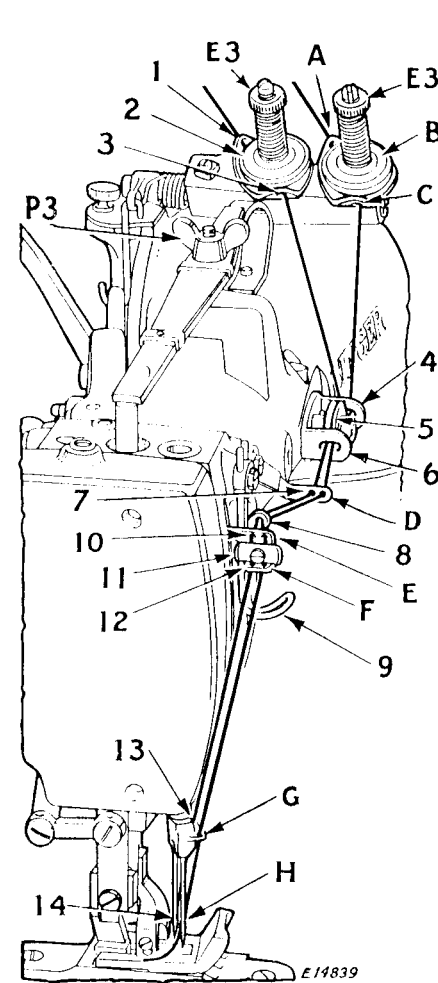


Fig. 8. Threading the Needles  
Machines 147-110 and 147-111

TO THREAD THE LEFT HAND NEEDLE, pass the thread from the unwinder through front tension eyelet (A), around the back of and between the front tension discs (B), forward through front tension eyelet (C), down and forward through eyelet (4) of the thread nipper bracket, forward at the under side of, and through, thread nipper (5), forward through eyelet (6) of the thread nipper bracket, forward through the front eyelet (D) of the slack thread regulator, forward through eyelet (8) of the thread controller, forward in front of auxiliary take-up wire (9) forward through front eyelet (E) in the thread take-up, down and through the thread take-up plate (11), down through the front hole (F) of the thread guide immediately below the thread take-up plate, down through the left hand guide (G) at the lower end of the needle bar, and back (away from the operator) through the eye (H) of the left hand needle.

Draw about two inches of thread through the needle eye with which to commence sewing.



## Threading the Loopers on Machines 147-110 and 147-111

(See Figs. 9 and 10)

Remove the right hand slide plate; turn the balance wheel over from you until the needle bar is at its lowest position, then turn the knob (C3, Fig. 10) to the left as far as it will go, thus placing the loopers in "throw-out" position for convenient threading.

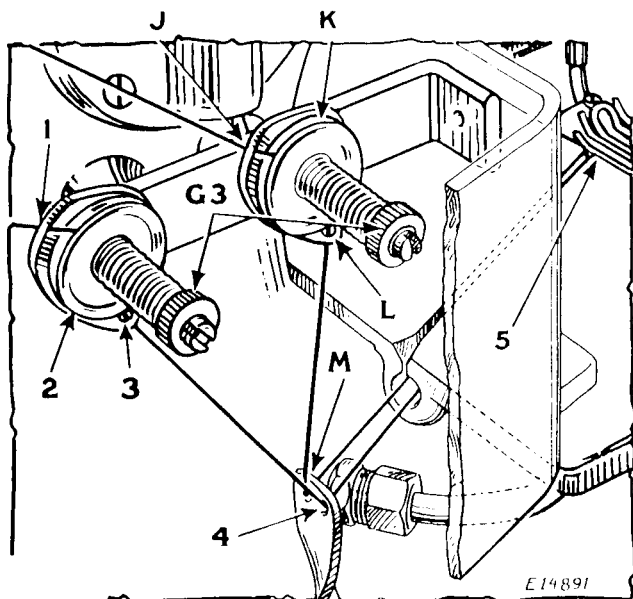


Fig. 9. Threading the Loopers on Machines 147-110 and 147-111

TO THREAD THE BACK LOOPER (The Looper farthest from the Operator), pass the thread from the unwinder through the eyelet (1) in the rear thread tension guide (the tension nearest the balance wheel), over and between the tension discs (2), through the eyelet (3) in the rear thread tension guide, down and then forward through the eyelet (4) in the upright guide at the rear of the machine. Pass the thread through the hole in the cloth plate guard and through the slot in the cloth plate. Then pass the thread over the first guide and into the second guide of eyelet (5), under the stripper (6), into the first guide and over the second guide of eyelet (7), through the hole (8) in the heel of the back looper, and then back (away from the operator) through the eye (9) of this looper. Draw about two inches of thread through the looper eye with which to commence sewing.

TO THREAD THE FRONT LOOPER (The Looper nearest the Operator), pass the thread from the unwinder through the eyelet (J) in the front thread tension guide (the tension farthest from the balance wheel) over and between the tension discs (K), through the eyelet

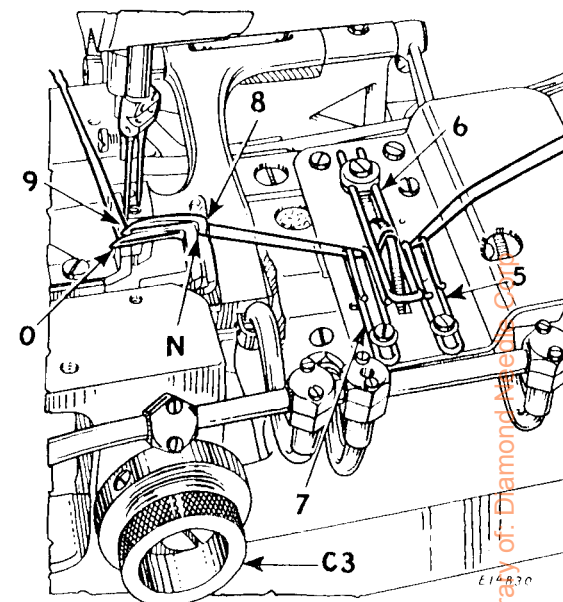


Fig. 10. Threading the Loopers on Machines 147-110 and 147-111

(L) in the front thread tension guide, down and forward through the eyelet (M) in the upright guide at the rear of the machine. Pass the thread through the hole in the cloth plate guard and then through the slot in the cloth plate. Then pass the thread into both guides of eyelet (5), under the stripper (6), into both guides of eyelet (7), through the hole (N) in the heel of the front looper, and then back (away from the operator) through the eye (0) of this looper. Draw about two inches of thread through the looper eye with which to commence sewing.

## To Regulate the Tensions

The tension on the needle thread, on Machine 147-88, is regulated by means of the thumb nut (D3, Fig. 5, page 10), and on Machines 147-110 and 147-111 by means of the thumb nuts (E3, Fig. 8, page 13). To increase needle thread tension, turn these thumb nuts to the right, or inward, or turn these thumb nuts to the left, or outward, for less tension. Tension should be just enough to set the stitch properly in the goods.

Looper thread tension on Machine 147-88 is regulated by means

of the thumb nut (F3, Fig. 6, page 11), and on Machines 147-110 and 147-111 by means of the two thumb nuts (G3, Fig. 9, page 14). For more tension turn these thumb nuts inward, toward the machine, or turn these thumb nuts outward, away from the machine, for less looper thread tension. The tension on the looper threads should be very light.

#### To Regulate the Pressure on the Material

The pressure of the presser foot on the material is regulated by means of the wing nut (P3, Fig. 8, page 13) at the top of the machine. Turn the wing nut (P3) downward to increase the pressure, or turn it upward to decrease the pressure.

#### To Regulate the Length of the Stitch

While the upper and under feeds should, in general, be set to act synchronously, this setting is subject to some slight

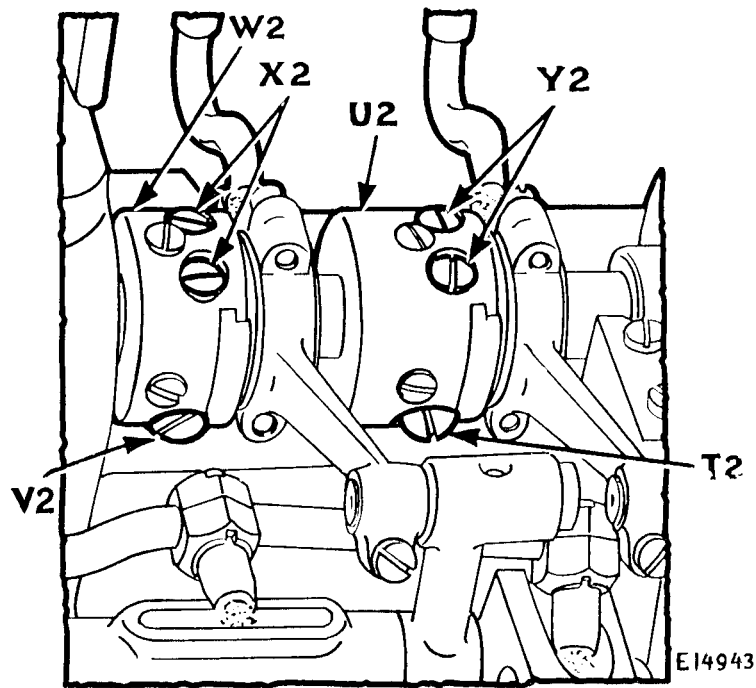


Fig. 11. Showing Upper and Under Feed Regulating Eccentrics (Rear Side of Machine)

variation depending upon the nature of the work being sewn.

Loosen the two clamping screws (Y2, Fig. 11) in the under feed

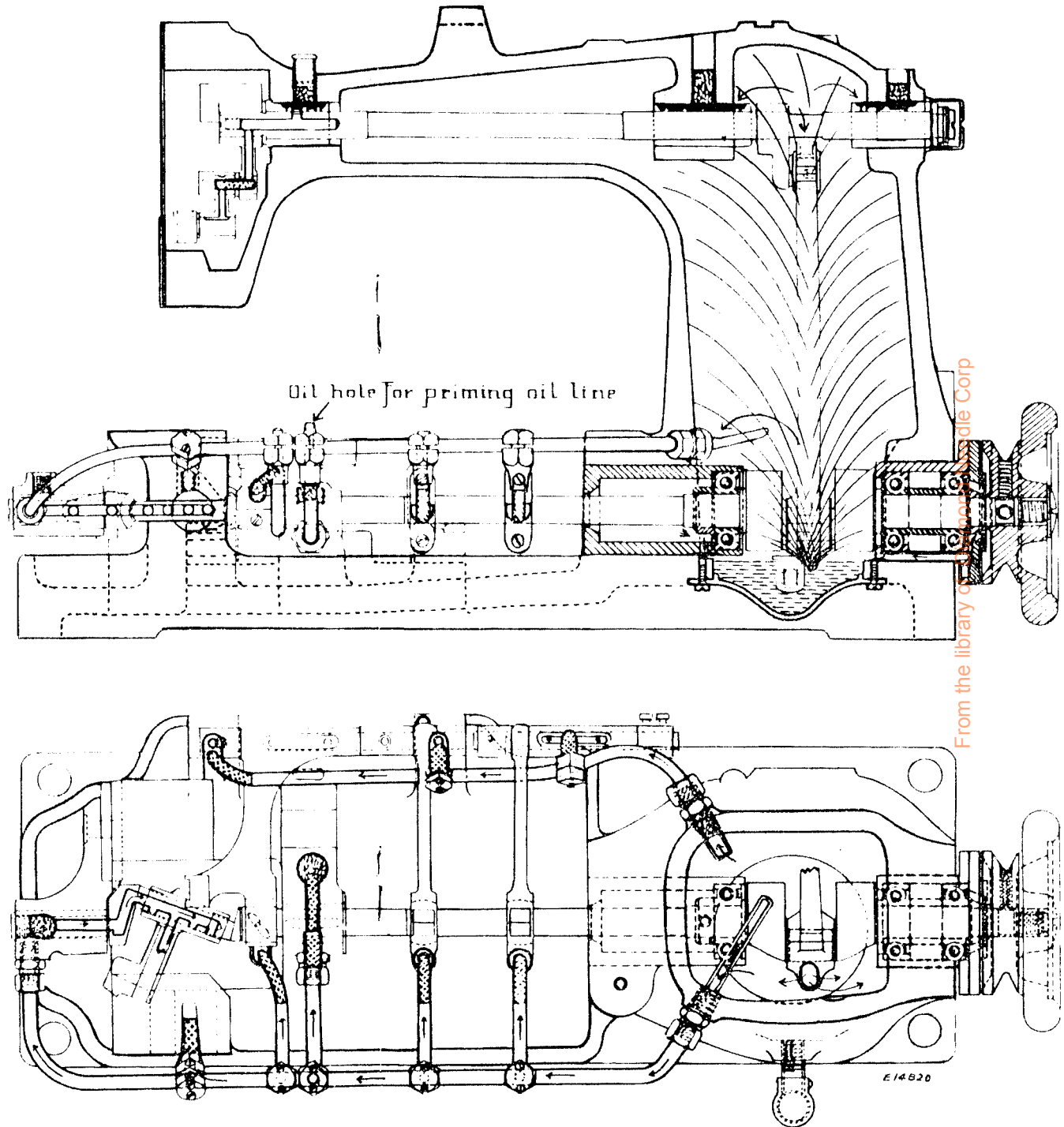
eccentric (U2, Fig. 11) and, to increase the length of stitch, turn the regulating screw (T2, Fig. 11) over to the left, or outward; or turn the screw (T2) to the right, or inward, to shorten the stitch. Then securely tighten the two clamping screws (Y2).

Also loosen the two clamping screws (X2, Fig. 11) in the upper feed eccentric (W2, Fig. 11) and, to increase the stitch length, turn the regulating screw (V2, Fig. 11) over to the left, or outward; or turn the screw (V2) to the right, or inward, to shorten the length of stitch, keeping in mind that the feeding foot (upper feed) and the feed dog (under feed) should, in general, be given the same amount of feeding action.

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Diagrams  
of Machine showing  
wicks and bearings  
oiled by automatic  
splash, also bearings  
oiled by gravity  
through tubes on  
outside of the  
machine



## INSTRUCTIONS FOR ADJUSTERS AND MACHINISTS

### To Set the Loopers with Relation to the Needles

When the needle bar is at its lowest position, the distance from the point of the looper (Machine 147-88), or from the point of the left hand looper (Machines 147-110 and 147-111), should be  $7/32$  inch from the center of the needle.

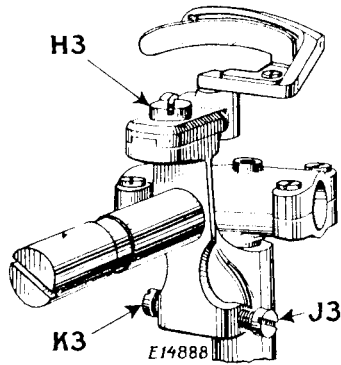


Fig. 12. Setting the Looper  
Machine 147-88

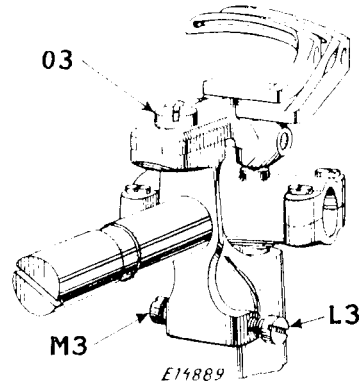


Fig. 13. Setting the Loopers  
Machines 147-110 and 147-111

If the distance is less than  $7/32$  inch, loosen the right hand screw (J3, Fig. 12) or (L3, Fig. 13) and tighten the left hand screw (K3, Fig. 12) or (M3, Fig. 13). If the distance is more than  $7/32$  inch, loosen the left hand screw (K3) or (M3) and tighten the right hand screw (J3) or (L3). When the proper setting is obtained, see that the screws (K3 and J3) or (M3 and L3) are securely tightened.

### To Change the Sidewise Position of the Loopers with Relation to the Needles

The loopers should be set as close as possible to the needles but without actually touching the needles on the forward and backward strokes of the loopers.

To adjust, loosen screw (H3, Fig. 12) on Machine 147-88, or loosen screw (O3, Fig. 13) on Machine 147-110 or Machine 147-111, and move the looper holder as required, then securely tighten the screw (H3) or (O3).

### To Set the Needle Bar at Correct Height

Turn balance wheel over from you until the points of the loopers, on their forward stroke, reach the centers of the needles.

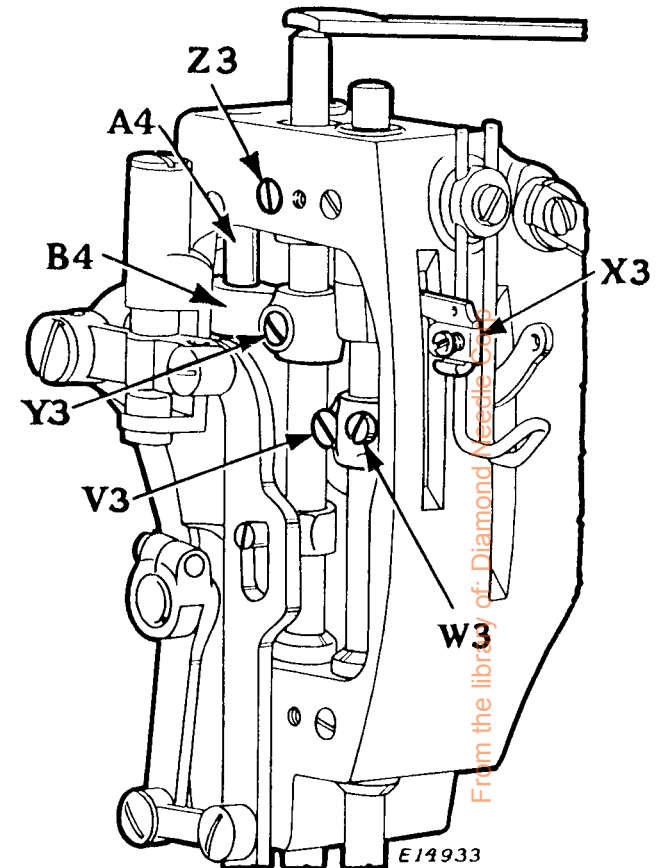


Fig. 14. Setting Needle Bar, and Other Adjustments

When the loopers are in this position, the needle eyes should be about  $1/8$  inch below the points of the loopers, so that the needle eyes and the eyes of the loopers will be in exact alignment when they pass each other on the loop-taking stroke.

Loosen screw (V3, Fig. 14) in the needle bar connecting stud, and move the needle bar up or down to the required position, then securely tighten the screw (V3).

NOTE - It may be necessary to vary the needle bar setting for different threads and materials.

### To Set the Needle Thread Take-up

Needle thread take-up (X3, Fig. 14, page 21) is usually set with the bottom of the take-up flush with the bottom of its holder.

### To Adjust the Slack Thread Regulator

The slack thread regulator (D4, Fig. 15), on the front of the machine, should be set so that when the loopers are shedding the

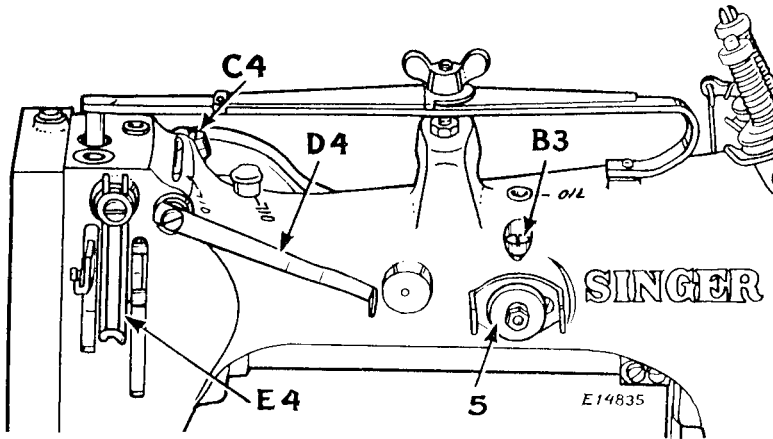


Fig. 15. To Adjust the Slack Thread Regulator and Auxiliary Thread Take-Up

needle loops on their backward stroke, the thread will not snap from the looper points nor be drawn through the tension discs. To set the slack thread regulator, it is best to start with the regulator in a low position and then continue raising it until the loopers back out of the needle loops with a little tension on the thread. To make this adjustment, loosen the clamping screw (C4, Fig. 15) and raise or lower the slack thread regulator as may be required, then securely tighten the clamping screw (C4).

### To Adjust the Auxiliary Thread Take-up

The auxiliary thread take-up (E4, Fig. 15) at the front of the machine, should be set to take up the slack of the needle threads after the loopers have shed the needle loops and as the needle bar finishes its downward stroke and the stitch is set. To change the position of the auxiliary thread take-up, loosen the screw which holds it in position and raise or lower it, as required, then tighten the screw.

For some threads it will be necessary to set the auxiliary thread take-up at a height different from that required by others, owing to the differences in finish, twist, elasticity, etc.

### To Adjust the Automatic Thread Nipper

The automatic thread nipper (5, Fig. 15) at the front of the machine, makes it possible to set the stitch tightly without using a heavy tension on the needle thread.

The nipper discs should open wide enough to permit the thread to pass freely between the discs, and should close and nip the thread immediately after the looper has cast off the needle loop on the downward stroke of the needle bar.

To adjust the nipper, loosen set screw (B3, Fig. 15) and move the nipper body inward, or away from you, for a greater opening of the discs, or outward for a smaller opening. When the desired adjustment is obtained, tighten the set screw (B3).

### To Adjust the Needle Thread Tension Releaser

The needle thread tension releaser must release the tension on the needle thread, or threads, (depending upon whether a single needle or two-needle machine is concerned) when the presser foot is raised.

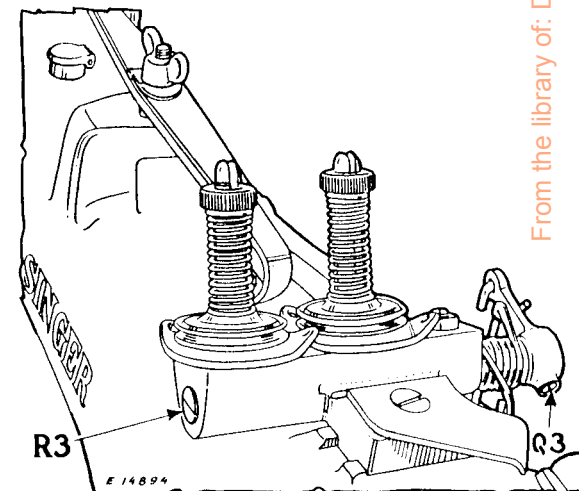


Fig. 16. Adjustment of Thread Tension Releaser

In case the tension releaser does not properly release the thread, loosen set screw (Q3, Fig. 16) and turn the shaft (R3, Fig. 16) over to the left until correct adjustment is obtained, then securely tighten the set screw (Q3).

### To Change the Amount of Needle-Avoiding Motion of the Loopers

The amount of sidewise movement of the loopers is regulated by moving the rotary shaft endwise, toward the needles for less sidewise motion, or away from the needles for more sidewise motion.

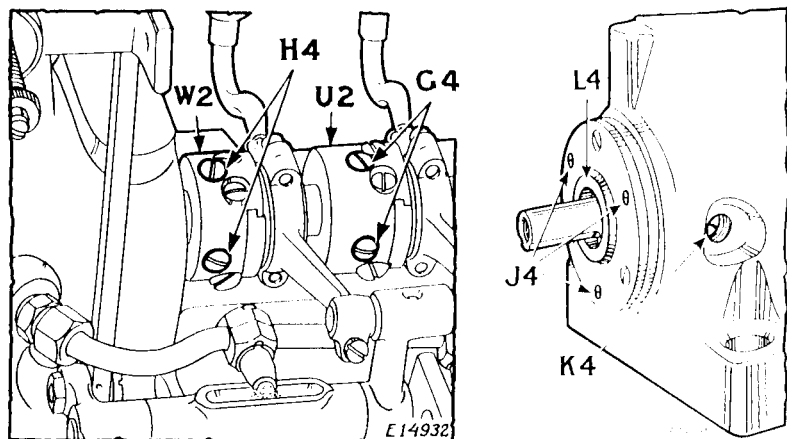


Fig. 17.  
To Regulate Sidewise Movement of the Loopers

The loopers, on their forward and backward strokes, should pass as close as possible to the needles, but without touching them. To adjust, loosen the two screws (F4, Fig. 19) in the rock shaft crank; also loosen the two screws (G4, Fig. 17) and the two screws (H4, Fig. 17) in the under feed eccentric (U2) and in the upper feed eccentric (W2) respectively. Loosen the two set screws in the belt groove of the balance wheel, then remove the cap screw and take off the balance wheel. Loosen ball bearing case screw (K4, Fig. 13). To move the rotary shaft toward the needles, turn the three position screws (J4, Fig. 18) inward, and tap ball bearing case (L4, Fig. 18) until the desired amount of sidewise motion is obtained, then tighten the screw (K4). Replace the balance wheel and turn the screws in the belt groove lightly into the grooves in the shaft. Tighten the cap screw and tighten the two screws in the belt groove. Turn the balance wheel a few times by hand to permit the rock shaft and feed eccentrics to align themselves, then securely tighten screws (G4) against their flats on the shaft, thus fixing the correct timing of the under feed, as covered by the first paragraph of page 25. Also time the upper feed as instructed in the second paragraph of page 25, then securely tighten the two set screws (H4).

### To Time the Under Feed

For correct timing of the under feed, the two set screws (G4, Fig. 17), in the under feed eccentric (U2, Fig. 17), must bear against their flats on the rotary shaft.

### To Time the Upper Feed

Loosen the two set screws (H4, Fig. 17) in the upper feed eccentric (W2, Fig. 17), and turn this eccentric until the feeding foot moves in unison with the under feed, then securely tighten the two set screws (H4).

### To Remove the Arm Rock Shaft

Remove face plate and needles, then unscrew the needle clamp from the needle bar. Loosen set screw (W3, Fig. 14, page 21) and remove thread take-up (X3, Fig. 14). Loosen screw (V3, Fig. 14) and remove needle bar from top of machine.

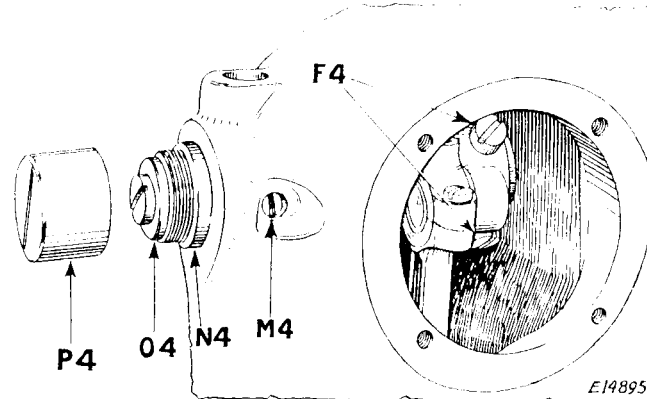


Fig. 19. Removing the Arm Rock Shaft

Remove the presser foot and screw, then loosen screw (Y3, Fig. 14) and remove presser bar from top of machine. Loosen screw (Z3, Fig. 14) and remove presser bar guide (A4, Fig. 14) and presser bar lifting bracket (B4, Fig. 14). Remove needle bar connecting link. Also remove the foot lifting lever. Remove cap (P4, Fig. 19) and screw and washer (O4, Fig. 19) at rear end of the rock shaft. Remove round cover plate at rear side of machine arm, carefully saving the gasket. Loosen the two screws (F4, Fig. 19) in the rock shaft crank and, with the connecting rod at midway position, withdraw rock shaft from the needle bar end of the machine.

When replacing the rock shaft, have connecting rod at midway position. Replace screw and washer (O4) in the end of the shaft, then turn the balance wheel a few turns by hand to allow rock shaft crank to align itself before tightening the two screws (F4) on their flats. The end play in the rock shaft is regulated by loosening set screw (M4) and moving the bushing (N4) endwise.

NOTE - Permit a little end play in the rock shaft, when cold, to allow for expansion which occurs when the machine is warmed up.

To Time the Loper Thread Take-up

The looper thread take-up (T3, Fig. 20) must contact the thread just as the loopers are commencing their backward strokes, or loop-shedding motion, and to keep the thread taut until the points of the needles, on their downward stroke, have entered the triangles formed by the looper blades, the looper thread and the needle loops, as shown in Fig. 20.

To adjust, loosen the set screw in the hub of the looper thread take-up (T3), and set the take-up in correct position on the rotary shaft, then securely tighten the set screw.

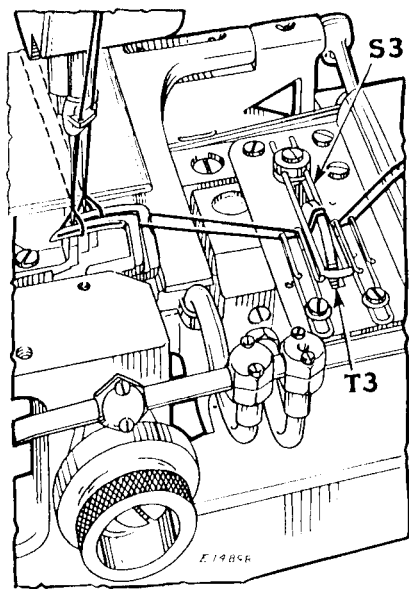


Fig. 20. Timing Loper Thread Take-Up and Loper Thread Take-Up Stripper

To Adjust the Loper Thread Take-up Stripper

The purpose of the looper thread take-up stripper (S3, Fig. 20) is to cast the thread off the take-up (T3, Fig. 20) after the needles have entered the triangles formed by the looper blades, the looper threads and the needle loops, as shown in Fig. 20, and to hold them in position on the take-up until the points of the loopers have entered the needle loops on their loop-taking motion. At this point, the stripper should release the threads and allow them to go freely with the loopers. To adjust the stripper, loosen the screw at the right of the stripper and move the stripper forward or backward, as required, then tighten the screw.

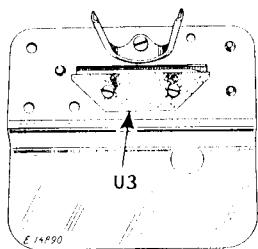


Fig. 20A. Under Thread Rotary Take-Up Guard

The under side view, Fig. 20A, shows the fibre guard (U3) attached. The take-up should be set in close contact to this guard to prevent the ends of the threads, in case of breakage, from being carried around the take-up.

To Remove the Loper Mechanism

Take out screw (X4, Fig. 21) and remove looper holder together with the loopers. Take out screw (Q4, Fig. 21) and remove needle guard holder. Take out the four screws (W4, Fig. 21) in the looper shaft connection and remove the cap. Remove cap screw (Y4, Fig. 21)

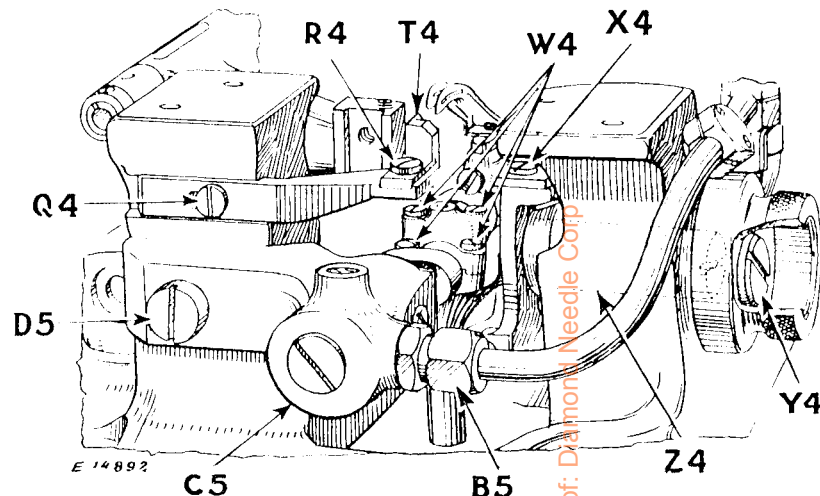


Fig. 21. To Remove the Loper Mechanism

then insert a screwdriver into the hole and unscrew shaft (Z4, Fig. 21) from the looper carrier. Remove the looper assembly. TO REMOVE LOOPER SHAFT (A5, Fig. 22), first remove the under-feed bar.

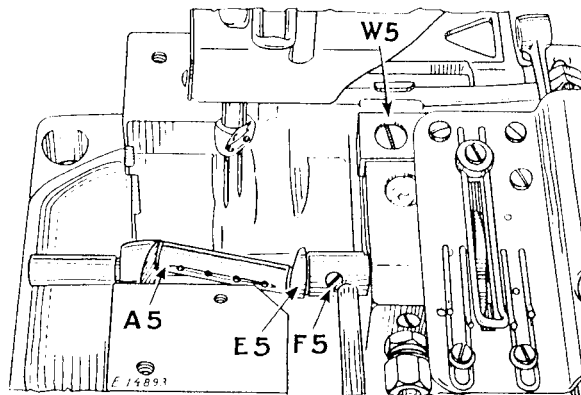


Fig. 22. To Remove the Loper Shaft

Unscrew oil pipe coupling nut (B5, Fig. 21), take out screw (D5, Fig. 21) and remove bracket (C5, Fig. 21), then turn the shaft until looper shaft screw (F5, Fig. 22) is at the top. Take out this screw and remove the looper shaft from the rotary shaft by tapping the flange of feed eccentric (E5,

Fig. 22) with a piece of brass. BE CAREFUL NOT TO SPRING THIS SHAFT WHEN REMOVING OR REPLACING IT, AS THIS WOULD CAUSE IT TO BIND AND HEAT WHEN THE BRACKET (C5) IS REPLACED.

### To Remove the Under-Feed Mechanism

Remove the presser foot, throat plate, feed dog and needle guard. Take out the two screws in the under-feed eccentric connection and remove the cap (N5, Fig. 23). Loosen the two screws

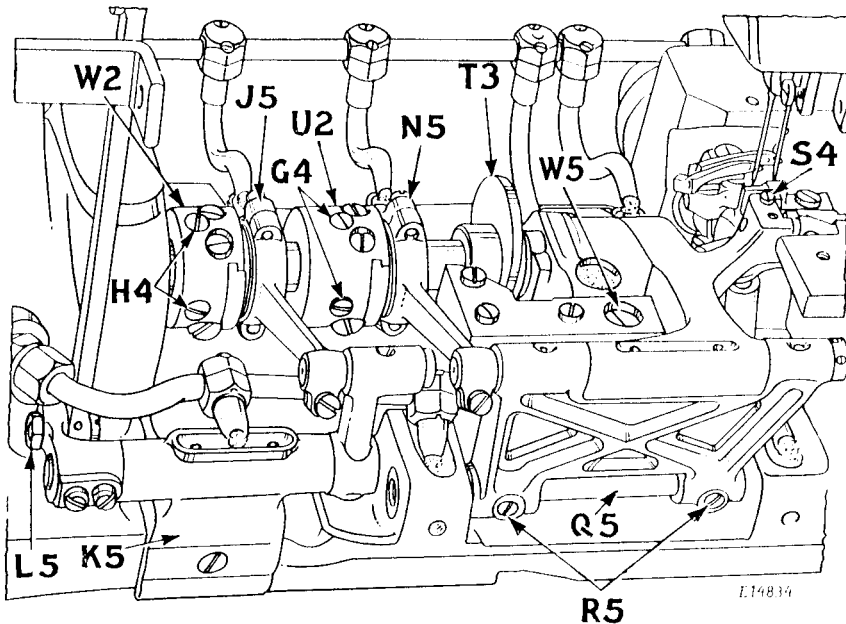


Fig. 23. To Remove Under-Feed Mechanism and Upper-Feed Regulator Assembly

(R5, Fig. 23) in the feed rocking frame, and remove the shaft (Q5, Fig. 23). The under-feed assembly can then be removed from the machine.

### To Remove the Upper-Feed Regulator Assembly

Take out the stud (L5, Fig. 23), also remove the two screws in the upper-feed eccentric connection, and remove the cap (J5, Fig. 23). Then remove the three screws which fasten the upper-feed regulator bracket (K5, Fig. 23) to the base of the machine, and remove the bracket together with the upper-feed connecting rod.

### To Set the Feed Dog at Correct Height

When the feed dog is at its highest position, practically the full depth of the teeth should project through the slots in the throat plate. The height of the feed dog is determined by the

stop screw (S4, Fig. 23) which, with the feed dog removed, may be turned up or down as required. Note that the feed dog should always rest upon the stop screw (S4).

### To Set the Needle Guard

The function of the needle guard (T4, Fig. 21, page 27) is to prevent the needles from being sprung into the path of the loopers when the loopers are on their forward stroke. The needle guard should be set as close as possible to the needles but without actually touching them.

To set the needle guard in the correct position, loosen the set screw (Q4, Fig. 21) and move the guard to or from the needles as may be required, then securely tighten the set screw (Q4).

The needle guard can also be adjusted to right or left to clear the feed dog, after loosening the screw (R4, Fig. 21).

### To Remove the Arm Rotary Shaft

Remove the presser foot, needle, throat plate and feed dog. Take out the screw (X4, Fig. 21) and remove the looper-holder with

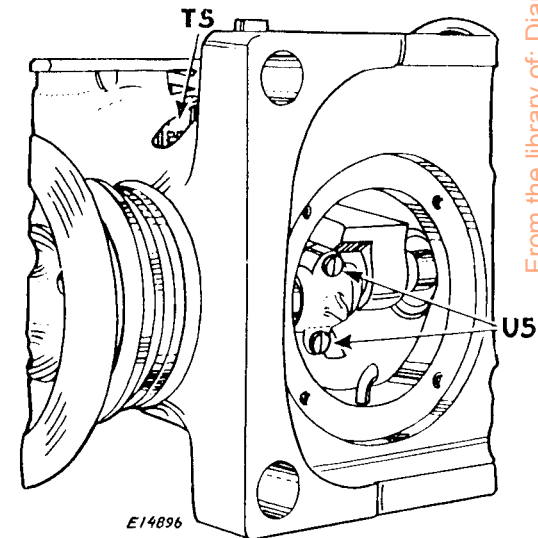


Fig. 24. To Remove Arm Rotary Shaft

the loopers. Take out screw (W5, Fig. 23) and remove the stripper plate bracket together with the stripper plate (for purposes of



illustration the stripper plate is shown already removed in Fig. 23.) Remove the looper shaft as instructed on page 27. Take out the two connecting rod screws (U5, Fig. 24) through the opening at the under side of the machine bed, and remove the connecting rod cap. Loosen the two set screws (H4, Fig. 23) in the upper-feed eccentric (W2), also loosen the two set screws (G4, Fig. 23) in the under-feed eccentric (U2), and loosen the set screw in the hub of the looper thread take-up (T3, Fig. 23).

Take out the balance wheel cap screw, and loosen the two set screws in the belt groove of the balance wheel, and remove the balance wheel. Take out the three screws (J4, Fig. 18, page 24) in the rotary shaft flange bushing and remove this bushing.

NOTE - Some of the connections may bind slightly on the shaft during removal of the shaft. It is therefore considered advisable to replace the balance wheel on the shaft and tighten the two set screws in the belt groove of the balance wheel, to facilitate the removal of the shaft from the machine.

#### To Adjust the Upper Feeding Mechanism and the Amount of Lift of the Feeding Foot

The lift of the feeding foot is controlled by the adjustable slide in the needle bar crank (M2, Fig. 25).

To adjust, turn the balance wheel to bring the two lock screws (L2, Fig. 25), in the face of the needle bar crank (M2), to the positions shown in Fig. 25, and loosen the two lock screws (L2).

In the rear of the needle bar crank (M2) is an eccentric adjusting screw. Turn the balance wheel to bring this adjusting screw to where it will be accessible through the hole (Q2, Fig. 26). Turn this screw to the right for less lift, or to the left for more lift of the feeding foot. The foot should lift just high enough to clear the work, when returning for the next feeding motion. When adjustment has been completed, BE SURE to firmly tighten the two lock screws (L2).

Less feeding foot lift is practicable when sewing light material or materials with no seams to cross. It is desirable to limit the lift to the minimum required for the work being sewn, as this permits of higher speeds without noise.

The length of time that the feeding foot rests upon the work

is controlled by loosening the clamping screw (P2, Fig. 25) and moving the feed bar up or down while the foot is off the work.

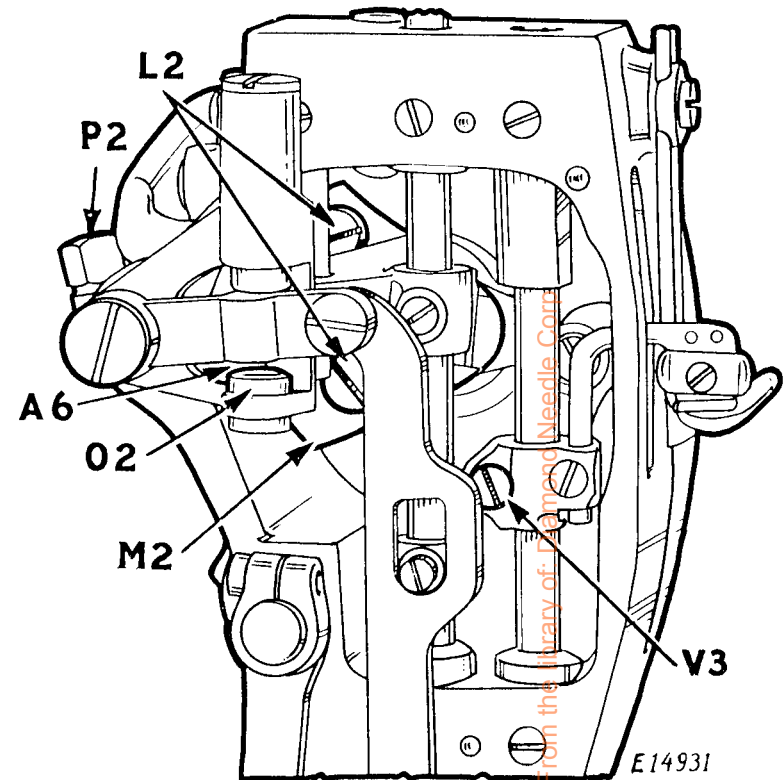


Fig. 25.

The feeding foot must remain in contact with the work throughout the feeding motion, with the result that the upper feed bar connecting link will rise about 3/64 inch above the textolite cushion at (O2) during the feeding movement.

The gap at (A6) may vary according to the length of stitch, etc. The longer the stitch, the greater the gap, while a short stitch requires correspondingly less gap. Undue noise will occur should the gap be greater than actually required.

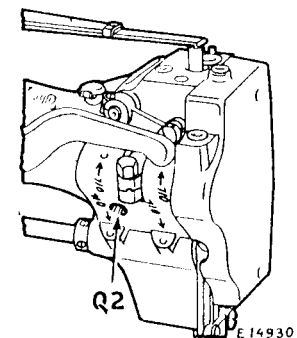


Fig. 26.