

**SINGER**  
**400W9**

# USE ONLY SINGER OILS and LUBRICANTS

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

## FOR CLASS 400w MACHINES

### SINGER LIGHT GRADE MANUFACTURING SEWING MACHINE OIL

Made especially for Class 241 and 400w Machines, and meets all requirements except where a stainless oil is desired.

### SINGER LIGHT GRADE STAINLESS OIL

Made especially for Class 241 and 400w 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.*

### 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. *Furnished in 1/4 lb. tubes and 1 lb. and 4 lb. tins.*

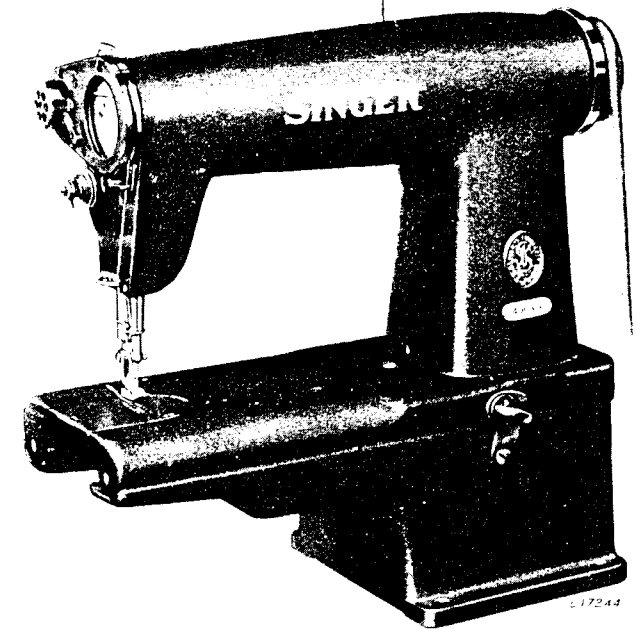
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# INSTRUCTIONS

FOR USING AND ADJUSTING

# SINGER

# HIGH SPEED MACHINE 400w9



SINGLE NEEDLE

LOCK STITCH

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.

### 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  
"FOR SINGER MACHINES"  
are NOT Singer made needles. 2

## DESCRIPTION

MACHINE 400w9 is a high speed, single needle, lock stitch machine mounted on an iron base which raises the top surface of the bed 6 inches above the table, affording the advantages of a cylinder bed. It is especially adapted for stitching tubular articles made of light and medium weight fabrics. The width of the bed is  $6\frac{3}{16}$  inches.

The machine has a double rotary thread take-up and a belt driven, automatically lubricated rotary sewing hook.

The drop feed is adjustable for stitches from  $5\frac{1}{2}$  to 30 per inch.

The needle bar stroke is  $1\frac{9}{16}$  inches and the presser bar lift is  $\frac{3}{16}$  inch.

## SPEED

The maximum speed recommended for the machine is 5000 R. P. M. It is advisable to run a new machine slower than the maximum speed for the first few minutes to allow time for the oil to reach the moving parts. The top of the balance wheel turns over from the operator.

## SETTING UP

Fig. 2 shows the correct location of the knee lifter. The knee lifter bracket should be assembled so that the lifter rod (A) clears the table. The screw slots in the bracket provide the necessary adjustment. The stop stud (B, Fig. 2) should be set to stop the action of the knee lifter as soon as the presser foot is raised enough to trip the hand lifter.

**CAUTION:** Do not start the machine, not even to test the speed, until it has been thoroughly oiled as instructed on page 4.

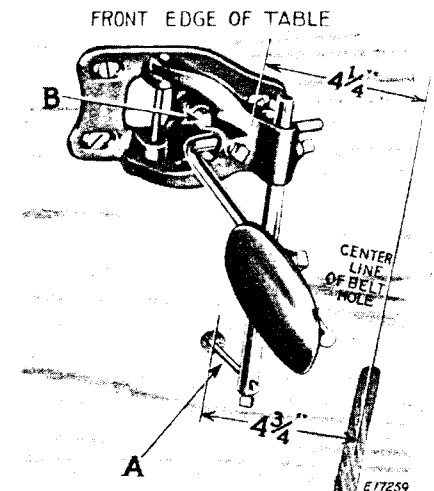


Fig. 2. Position of Knee Lifter Under Table

## OILING THE MACHINE

Use only SINGER LIGHT GRADE MANUFACTURING MACHINE OIL or SINGER LIGHT GRADE STAINLESS OIL, made especially for 241 and 400w Machines.

A reservoir in the bed of the machine supplies oil to the sewing hook race and to the bearings and eccentrics on the hook driving shaft (except the rear ball bearing). The other lubrication points are reached by seven oil holes, marked with red. See "X-Ray" view of machine on pages 16 and 17.

Before starting the machine, fill the oil reservoir (through the oil gauge hole) to the top mark on the oil gauge (E, Fig. 3).

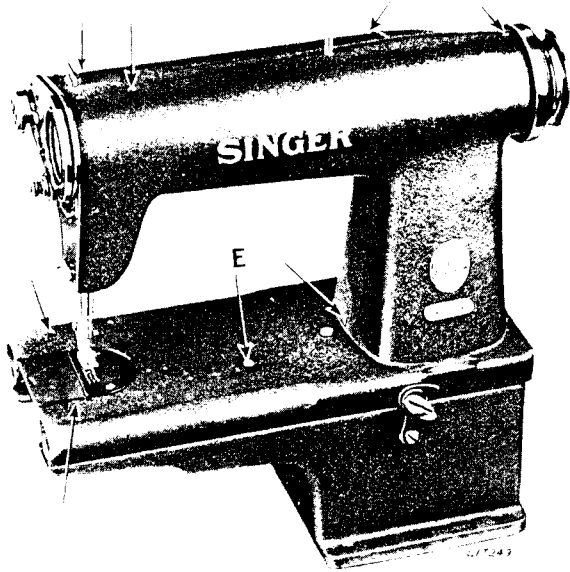


Fig. 3. Showing Oiling Points on the Machine

While it may not be necessary to add oil to the reservoir every day, the oil level must be checked daily. FOR SHORT RUNS, the oil level should be maintained slightly above the LOWER mark on the oil gauge (E). FOR LONG OR CONTINUOUS RUNS, the oil level should be maintained at the HIGH mark on the oil gauge. Never allow the oil level to drop below the lower mark on the oil gauge.

ONCE A DAY, turn the balance wheel until the needle is all the way up, and place A FEW DROPS of oil in each of the seven oil holes indicated by arrows in Fig. 3.

## NEEDLES

Needles for Machine 400w9 are of Class and Variety 88x1, made in sizes 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21 and 22.

The above needles regularly have nickel finish but can be supplied with chromium finish if ordered.

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

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

The following is an example of an intelligible order:

"50 No. 16, 88x1 Needles."

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

## THREAD

Left twist thread should be used in the needle. Either right or left twist thread can be used in the bobbin.

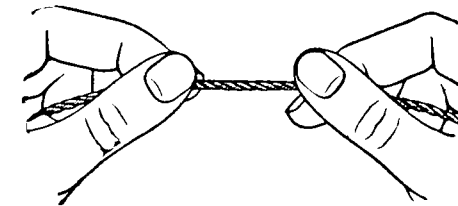


Fig. 4. How to Determine the Twist

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 REMOVE THE BOBBIN

Turn the balance wheel over from you until the needle moves up to its highest position. Draw back the slide in the bed of the machine. Reach

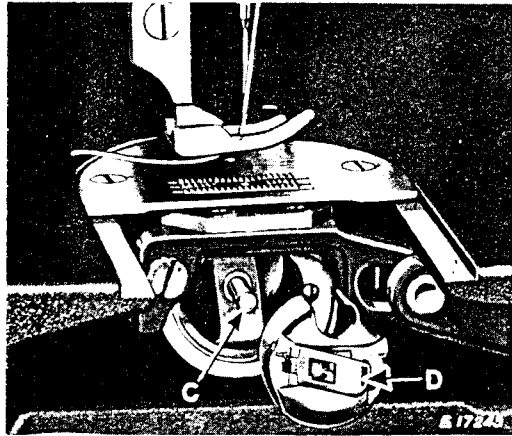


Fig. 5. Removing the Bobbin

under the bed and open the bobbin case latch (D, Fig. 5) and, by means of this latch, remove the bobbin case from the sewing hook.

While the latch remains open, the bobbin will be retained in the bobbin case. Release the latch, turn the open end of the bobbin case downward and the bobbin will drop out.

## TO WIND THE BOBBIN

(See Fig. 6)

Fasten the bobbin winder to the table with its driving pulley in front of the machine belt, so that the pulley will drop away from the belt when sufficient thread has been wound upon the bobbin.

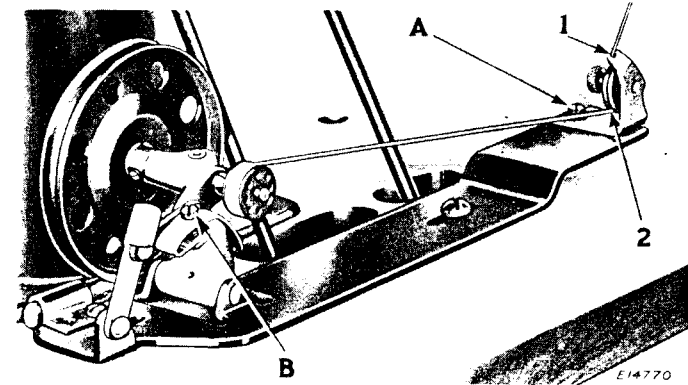


Fig. 6. Winding the Bobbin

Place the bobbin on the bobbin winder spindle and push it on as far as it will go.

Pass the thread down through the thread guide (1) in the tension bracket, around the back of, and between, the tension discs (2). Then wind the end of the thread around the bobbin a few times in the direction shown in Fig. 6, push the bobbin winder pulley over against the machine belt and start the machine.

When sufficient thread has been wound upon the bobbin, the bobbin winder will stop automatically.

If the thread does not wind evenly on the bobbin, loosen the screw (A) in the tension bracket and move the bracket to the right or left as may be required, then tighten the screw.

The amount of thread wound on the bobbin is regulated by the screw (B). To wind more thread on the bobbin, turn the screw (B) inwardly. To wind less thread on the bobbin, turn this screw outwardly.

Bobbins can be wound while the machine is stitching.

When winding a bobbin with fine thread, a light tension should be used.

## TO THREAD THE BOBBIN CASE

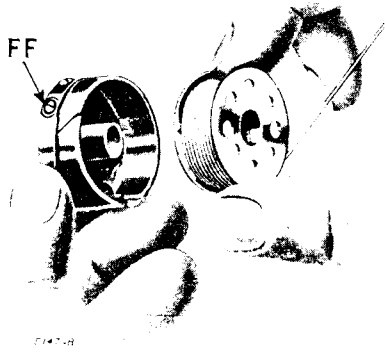


Fig. 7

With the left hand hold the bobbin case as shown in Fig. 7, the slot in the edge being near the top, and place the bobbin into it.

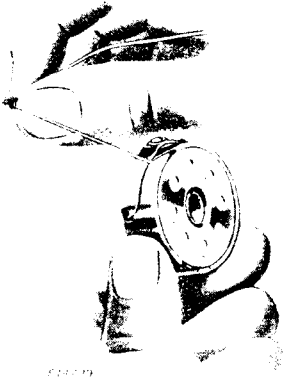


Fig. 8

Then pull the thread into the slot in the edge of the bobbin case as shown in Fig. 8; draw the thread under the tension spring and into the delivery eye at the end of the tension spring (see Fig. 9).

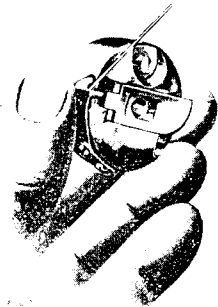


Fig. 9

## TO REPLACE THE BOBBIN CASE

After threading, take the bobbin case by the latch and place the bobbin case on the center stud (C, Fig. 5) of the bobbin case holder; release the

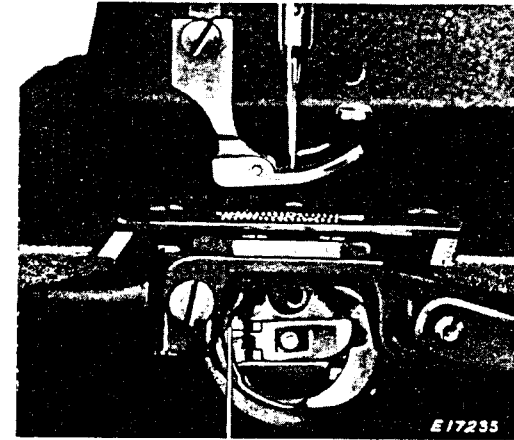


Fig. 10. Bobbin Case Threaded and Replaced

latch and press the bobbin case back until the latch catches the groove near the end of the stud (See Fig. 10). Allow about two inches of thread to hang free, and replace the slide in the bed of the machine.

## TO SET THE NEEDLE

Turn the balance wheel over from you until the needle bar moves up to its highest point; loosen the screw in the lower end of the needle bar and put the needle up into the bar as far as it will go, with the long groove of the needle toward the left and the eye of the needle directly in line with the arm of the machine, then tighten the screw.

## UPPER THREADING

(See Fig. 11)

As soon as an operator has become accustomed to threading this machine, the thread can be passed from the thread retainer at the top, down to the needle with a single continuous motion.

Turn the balance wheel over from you until the two pins (P) in the rotary take-up are directly toward the front, as shown in Fig. 11 inset.

Pass the thread from the unwinder through the top hole (1) in the pin on top of the machine, then around and through the lower hole (2) in the pin, thence through the three holes (3, 4 and 5) in the thread retainer. Hold the thread with the right hand near the thread retainer while passing the thread, with the left hand, downward into the inner slot (6) (guiding it into the hole 7) and on down in front of the tension discs (8), around between the tension discs into the take-up spring (9) and under the thread pull-off (10) then over through the slot (11), allowing the thread to fall in place over the take-up discs. Now release the thread with the right hand, and pass it down through the guides (12, 13 and 14\*), then from left to right through the eye of the needle (15). Leave about three inches of thread with which to commence sewing.

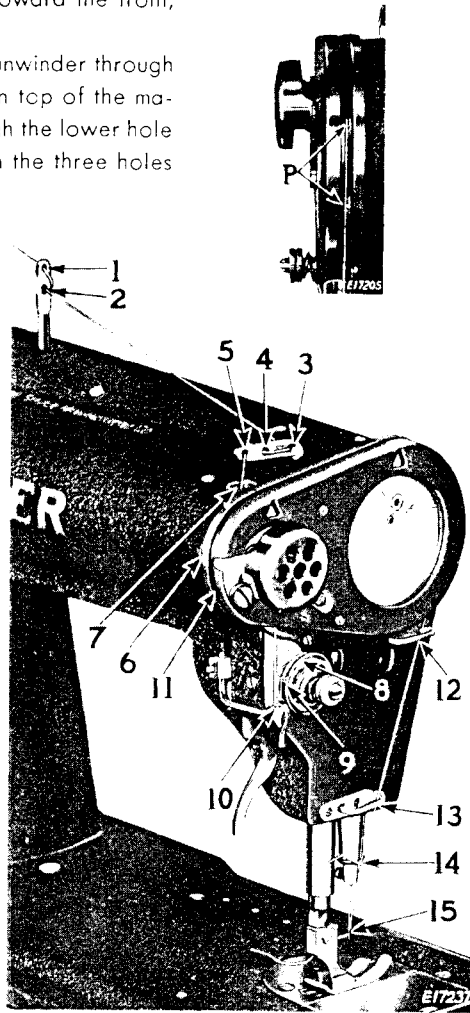


Fig. 11. Threading the Needle

\*NOTE: The thread guide (14) should be turned on the needle bar bushing so that the thread leads in a straight line from the guide (13) to the needle eye. The thread retainer (5) should be turned so that the thread leads through the center of hole (7).

## TO PREPARE FOR SEWING

With the left hand hold the end of the needle thread, leaving it slack from the hand to the needle, turn the balance wheel over from you until

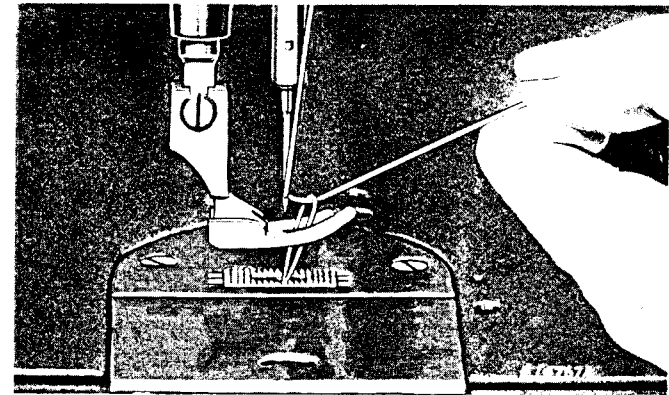


Fig. 12. Drawing Up the Bobbin Thread

the needle moves down and up again to its highest point, thus catching the bobbin thread; draw up the needle thread and the bobbin thread will come up with it through the hole in the throat plate (see Fig. 12). Lay both threads back under the presser foot.

## TO COMMENCE SEWING

Place the material beneath the presser foot, lower the presser foot and commence to sew, turning the balance wheel over from you.

## TO REMOVE THE WORK

Stop the machine with the two pins (P, Fig. 11) in the rotary take-up directly toward the front, as in this position the take-up will not unthread the needle when the machine is started. Raise the presser foot, draw the work back and cut the threads close to the work.

## INSTRUCTIONS FOR USE OF THREAD SEVERING DEVICE

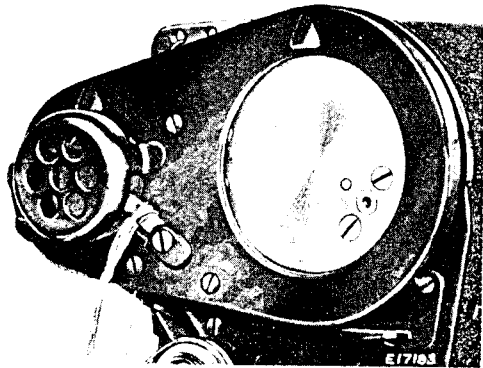


Fig. 13

Grasp the loops of thread and sever them across sharpened edge of Thread Severing Finger, as shown in Figure 14.

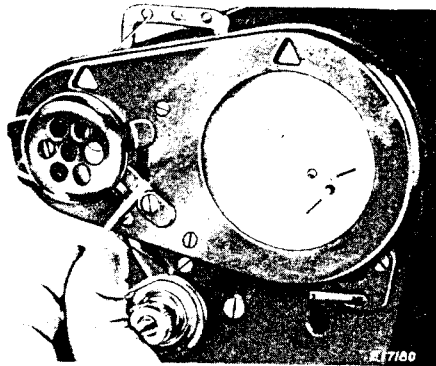


Fig. 14

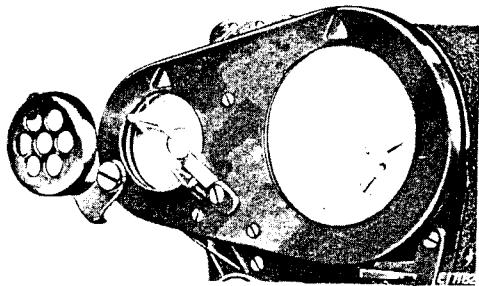


Fig. 15

At low speed, loops of thread may remain over the tapered pin of the small take-up disc. When this occurs, open the guard, as shown in Figure 15, remove the loops from the tapered pin and sever them, as described above.

## TENSIONS

For ordinary stitching, the needle and bobbin threads should be locked in the center of the thickness of the material, thus:



Fig. 16. Perfect Stitch

If the tension on the needle thread is too tight, or if that on the bobbin thread is too loose, the needle thread will lie straight along the upper surface of the material, thus:



Fig. 17. Tight Needle Thread Tension

If the tension on the bobbin thread is too tight, or if that on the needle thread is too loose, the bobbin thread will lie straight along the under side of the material, thus:

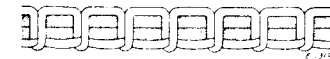


Fig. 18. Loose Needle Thread Tension

## TO REGULATE THE TENSIONS

THE TENSION ON THE NEEDLE THREAD SHOULD BE REGULATED ONLY WHEN THE PRESSER FOOT IS DOWN. Having lowered the presser foot, turn the small thumb nut at the front of the tension discs over to the right to increase the tension. To decrease the tension, turn this thumb nut over to the left.

The tension on the bobbin thread is regulated by the large screw (FF, Fig. 7) in the tension spring on the outside of the bobbin case. To increase the tension, turn this screw over to the right. To decrease the tension, turn this screw over to the left.

When the tension on the bobbin thread has been once properly adjusted, it is seldom necessary to change it, as a correct stitch can usually be obtained by varying the tension on the needle thread.



## TO REGULATE THE PRESSURE ON THE MATERIAL

The pressure of the presser foot on the material is regulated by the screw (F, Fig. 19) in the top of the arm. Turn this screw to the right to increase the pressure or to the left to decrease the pressure.

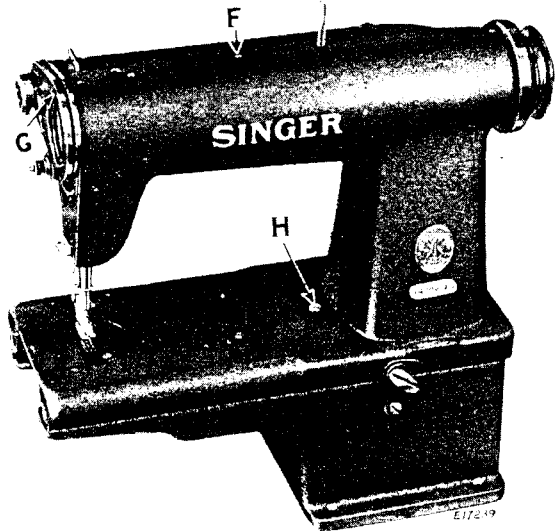


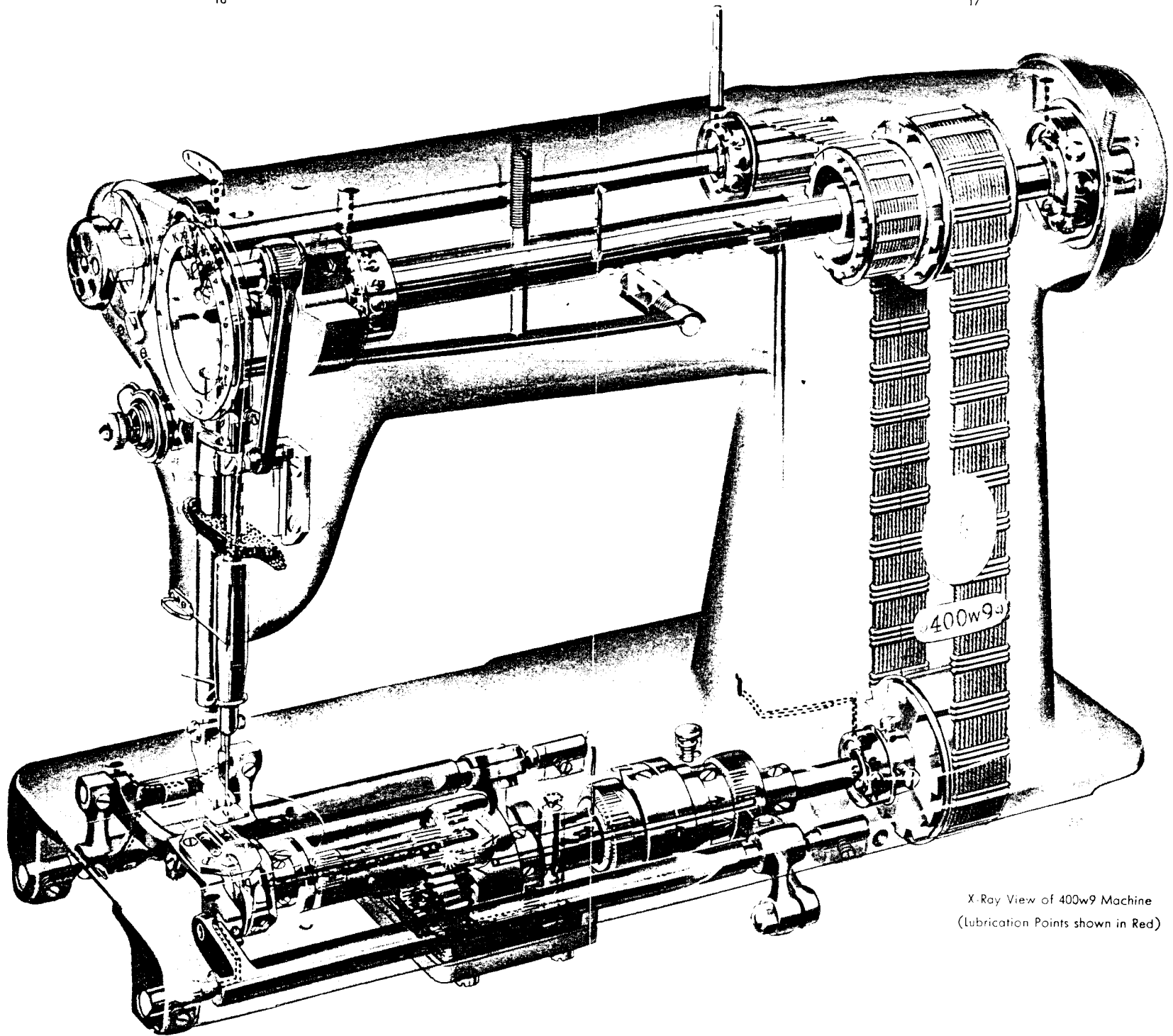
Fig. 19. Stitch Regulator and Indicator

## TO REGULATE THE LENGTH OF STITCH

To change the length of stitch, press down the stud (H, Fig. 19) in the bed of the machine and at the same time turn the balance wheel slowly until the stud enters a notch in the adjustable feed eccentric cam. Still holding the stud, turn the balance wheel a part of a revolution until the desired letter appears in the hole (G) over the large take-up disc, then release the stud. **DO NOT TOUCH THE STUD (H) WHILE THE MACHINE IS RUNNING.**

The approximate stitch length equivalents of the letters on the take-up disc are as follows:

Letter	Approximate Number of Stitches per Inch	Letter	Approximate Number of Stitches per Inch
A	5½	G	11½
B	6	H	16
C	6½	I	18
D	7½	J	20
E	9	K	24
F	10	L	30



X-Ray View of 400w9 Machine  
(Lubrication Points shown in Red)

## TIMING THE MACHINE

The parts are in their proper timing on the various shafts when the locating screws are in the shaft splines provided for them. These locating screws are the first screws appearing when the shafts are revolved in their normal direction of rotation.

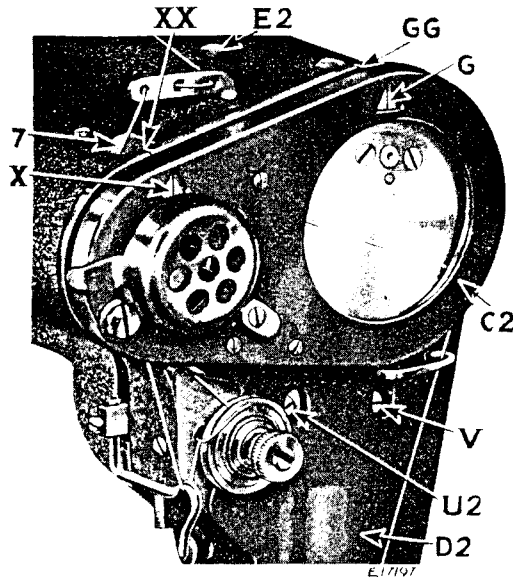


Fig. 21. Showing Timing Marks on Take-up Discs and Face Plate

The arm shaft, auxiliary take-up shaft and hook driving shaft with their component parts are in time with each other when: the arrow (G, Fig. 21) on the large take-up disc is in line with the mark (GG, Fig. 21) on the face plate; the arrow (X, Fig. 21) on the small take-up disc is in line with mark (XX) on the face plate; and the arrow on the collar (V1, Fig. 28) is in line with the timing mark (W1, Fig. 28) on the feed lifting connection. The needle bar and hook are timed as described on page 23.

## TO ADJUST THE THREAD TAKE-UP SPRING

The horizontal portion of the thread pull-off (L, Fig. 22) should be set about  $\frac{1}{32}$  inch below the bottom of the set screw (K, Fig. 22) when the presser foot is raised by the presser bar lifter. The pull-off can be raised or lowered after loosening the set screw (J).

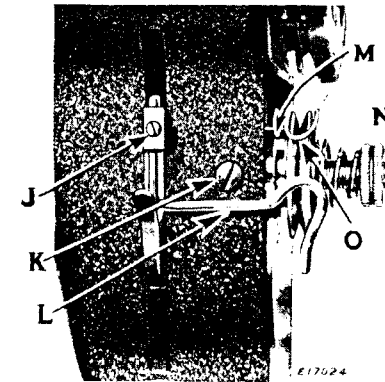


Fig. 22. Take-up Spring Adjustments

The take-up spring should have just enough movement so that it will be through acting and will rest against the upper end of spring regulator (M) when the eye of the needle is about  $\frac{1}{16}$  inch above the goods on the downward stroke of the needle. After loosening the set screw (K), the tension will turn with the stud (N) and the spring regulator may be turned to the required position.

The tension on the thread take-up spring (O) is regulated by turning the tension stud (N) to the right to increase the tension, or to the left to decrease the tension. The tension on the thread take-up spring should be just sufficient to take up the slack of the needle thread until the eye of the needle reaches the goods in its descent.

The above instructions apply to average operation. Adjustments in both setting and tension may have to be made to suit special conditions.

## PRESSER BAR ADJUSTMENTS

The presser bar bushing (T, Fig. 23) should be set so that its top is about  $\frac{1}{32}$  inch below the top of the lifting bracket (S) when the bracket is all the way down.

The presser bar position guide (U) should be set about  $\frac{1}{16}$  inch above the top of the lifting bracket (S) when the presser foot is down on the throat plate. The spring between the guide (U) and bracket (S) cushions the action of the lifting bracket.

To align the presser foot with the needle, loosen screw (U2, Fig. 23) and move presser foot to the desired position.

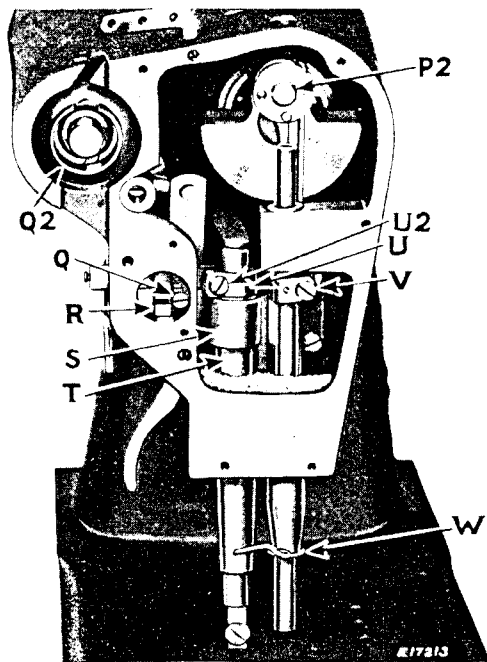


Fig. 23. Face Plate Removed

## ADJUSTMENT OF THE TENSION RELEASER

The tension releaser (R, Fig. 23) automatically releases the spring pressure on the tension discs when the presser bar is raised. The releaser may be moved up or down to release the tension earlier or later, by loosening the screw (Q).

## TO SET THE NEEDLE BAR AT THE CORRECT HEIGHT

When the needle bar is at its highest position, the lower timing mark on the needle bar, which is about  $\frac{1}{2}$  inch from its lower end, should be just visible at the lower end of the needle bar bushing (W, Fig. 23). If the needle bar is not correctly set, loosen the screw (V, Fig. 23) in the needle bar connecting stud and move the needle bar to the correct position.

## TIMING THE SEWING HOOK

First see that the needle bar is set correctly as instructed above. Remove presser foot, slide plate, throat plate, bobbin case and feed dog.

To determine whether the hook is correctly timed, place a new needle in the machine, then turn the top of the balance wheel over from you until the needle bar has started to rise from its lowest position and the upper timing mark is just visible at the lower end of the needle bar bushing (at B1, Fig. 24). With the needle bar in this position, the point of the sewing hook should be at the center of the needle, as shown at C1 in Fig. 24 and in the inset.

If the hook is not correctly timed, loosen the two screws in the hub of the hook (H1, Fig. 25). Turn the hook on its shaft to bring the point of the hook to the center of the needle while the timing mark on the needle bar is centered with the bottom of the bushing, then tighten the two hub screws.

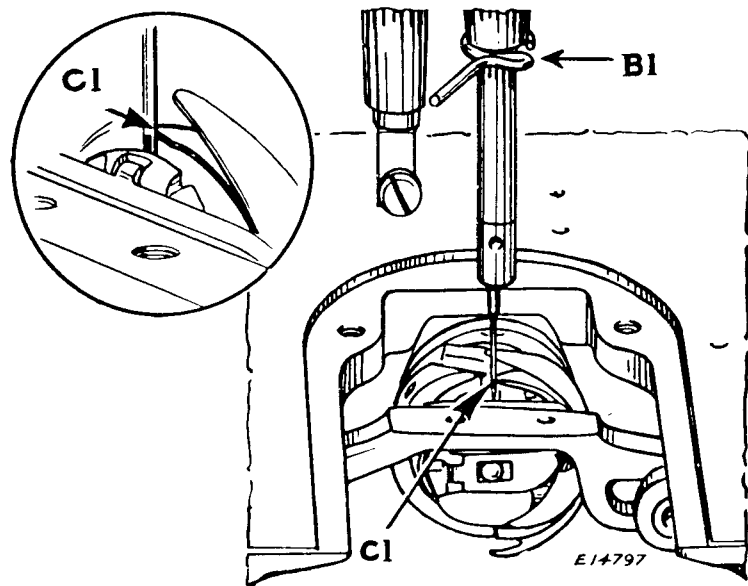


Fig. 24. Timing Sewing Hook

To determine if the sewing hook is in the correct position sidewise in relation to the needle, turn down the bobbin case holder and ascertain if the hook passes the needle as closely as possible without actually touching it. The hook should be placed on the shaft as far as it will go. If it is necessary to move the hook sidewise, loosen the set screw (J1, Fig. 25) and move the bushing (K1, Fig. 25) with the hook assembly as required, tapping it to the right or prying it to the left with a screwdriver against the bed casting, then tighten the set screw (J1) and replace the bobbin case holder.

## TO REMOVE AND REPLACE THE SEWING HOOK

Remove the needle, slide plate and bobbin case. Take out the screw (F1, Fig. 25) and remove the bobbin case holder position bracket (G1). Loosen the two set screws (at H1) in the hub of the hook, then turn the balance wheel over from you until the feed bar (AA, Fig. 26) is raised to its highest point. Turn the sewing hook until the thread guard (DD) is at the bottom, as shown in Fig. 26, and turn the bobbin case holder (BB) until it is in the position shown in Fig. 26. The sewing hook can then be removed from the hook shaft.

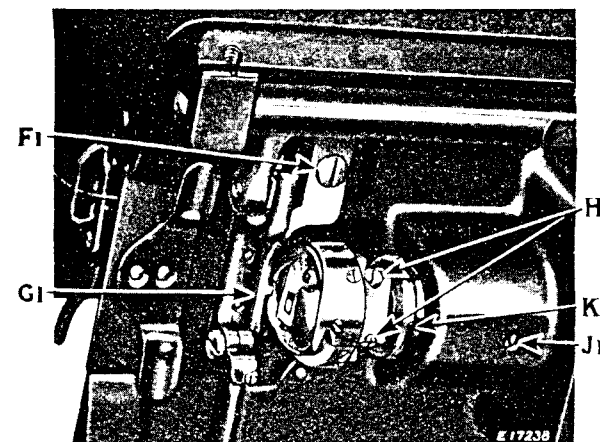


Fig. 25. Removing Sewing Hook

When placing a new sewing hook on the shaft, have the thread guard (DD) of the hook at the bottom and the bobbin case holder (BB) turned to the position shown in Fig. 26, so that the hook will clear the feed bar (AA).

When the hook is in position on the shaft, turn the bobbin case holder (BB) until the notch (CC) is at the top, then replace the bobbin case holder position bracket, being careful to see that the position stud (G1, Fig. 25) enters the notch at the top of the bobbin case holder, as shown in Fig. 25, then securely fasten the position bracket by means of the screw (F1). Replace the needle and time the sewing hook as instructed on page 23. Replace the bobbin case and slide plate.

## TO REMOVE THE SEWING HOOK SHAFT

Remove the sewing hook as instructed on page 25. Loosen the pinch screw in the feed lifting rock shaft crank (N1, Fig. 28) and drop the feed bar (AA),

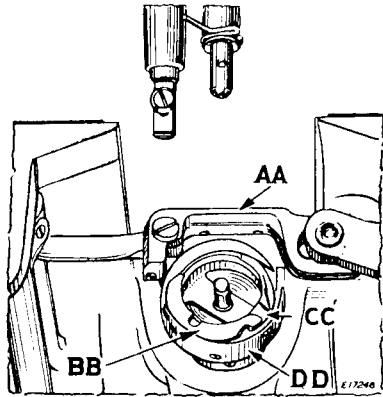


Fig. 26. Showing Correct Position of Thread Guard (DD) and Bobbin Case Holder (BB) for Removal of Sewing Hook

Fig. 26) down out of the way. Loosen the bushing set screw (J1, Fig. 25) and withdraw the bushing and hook shaft assembly as shown in Fig. 27. Take out the two screws (H2) and remove the oil feeder (G2), then withdraw the shaft and gear.

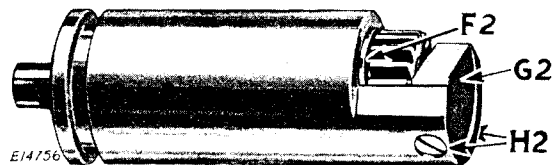


Fig. 27. Hook Shaft and Bushing

When assembling, see that the washer (F2, Fig. 27) has its small end toward the gear. The oil feeder (G2) can be moved endwise enough to control the end play of the hook shaft before tightening the screws (H2). When replacing this unit in the machine be sure that the set screw enters the spline in the bottom of the bushing. See page 28 when resetting the feed lifting rock shaft.

## TO REMOVE AND REPLACE THE HOOK DRIVING SHAFT

Slip the belt off the lower pulley (Y1, Fig. 28), then loosen the two set screws (X1) and remove the pulley from the shaft. Loosen the four set screws (U1 and P1) in the feed and feed lifting eccentrics, and the two set screws (R1) in the internal gear. Do not loosen the screw in the collar (V1). Withdraw the shaft with ball bearing from the pulley end.

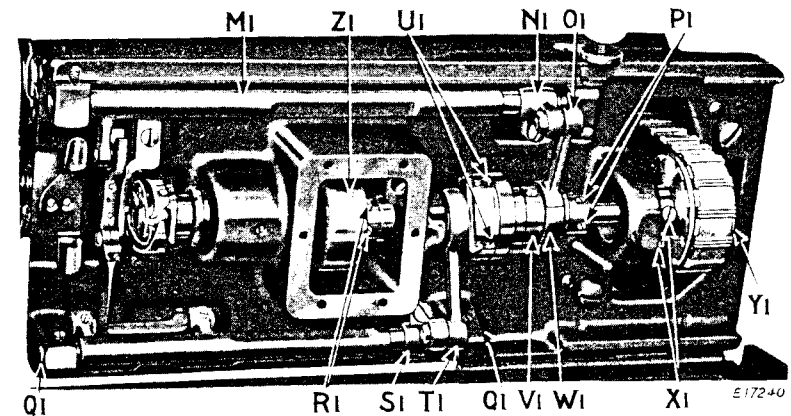


Fig. 28. Underside of Machine

When replacing the shaft, push it in, being sure the feed eccentrics are on the shaft in their proper order, until the snap ring on the ball bearing seats on the casting, then tighten gear screws (R1). Before tightening the screws (U1), the feed eccentric should be pushed to the left. This will leave a slight amount of side play for the connection (T1). Tighten the screws (U1), having the first screw (as the shaft is turned away from you) enter the groove in the shaft. Then move the feed lifting eccentric to the left. This will leave a small amount of side play for the connection (O1). Tighten the screws (P1), with the first or upper set screw in the groove in the shaft. Replace pulley (Y1) and belt.

If it is found necessary to replace the ball bearing on the hook driving shaft, or to reset or replace the hook driving shaft bushing, note that the ball bearing is correctly positioned when the pulley (Y1, Fig. 28) is flush with the ball bearing on one side and its hub is flush with the end