

SINGER

31-20

USE ONLY **SINGER*** OILS and LUBRICANTS

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

The following are the correct lubricants for this machine:

TYPE B — MANUFACTURING MACHINE OIL, HEAVY GRADE

When a stainless oil is desired, use:

TYPE D — MANUFACTURING MACHINE OIL, STAINLESS, HEAVY GRADE

OTHER **SINGER** LUBRICANTS

TYPE E — STAINLESS THREAD LUBRICANT

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

TYPE F — MOTOR OIL

For oil lubricated motors and plain bearings in power tables and transmitters.

NOTE: All of the above oils are available in 1 quart, 1 gallon and 5 gallon cans or in 55 gallon drums.

GEAR LUBRICANT

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

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 lb. and 4 lb. tins.

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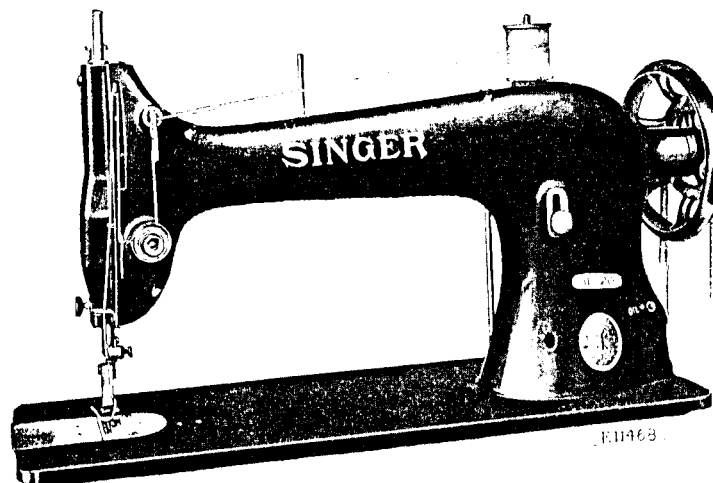
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INSTRUCTIONS

FOR USING AND ADJUSTING

SINGER*

SEWING MACHINE



31-20

*A TRADE MARK OF

THE SINGER MANUFACTURING COMPANY

TO ALL WHOM IT MAY CONCERN:

The improper placing or renewal of the Trade Mark "SINGER" or any other of the Trade Marks of The Singer Manufacturing Company (all of which are duly Registered Trade Marks) 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 **SINGER*** PARTS AND NEEDLES IN **SINGER** MACHINES

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

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 31-20 has one needle and an oscillating shuttle on a horizontal axis and makes the lock stitch. It is designed for general stitching in cloth such as suits, cloaks, overalls, bathing suits, uniforms, blankets, lap robes, hunting goods, canvas goods, etc. There is a clear working space of $10\frac{1}{4}$ inches at the right of the needle.

Speed

The maximum speed recommended for Machine 31-20 is 2200 stitches per minute, depending upon the nature of the material being sewn. The machines should be run slower than the maximum speed until the parts which are in movable contact have become glazed by their action upon each other. When the machines are in operation, the balance wheel must always turn over toward the operator.

Needles

Needles for Machine 31-20 are of Class and Variety 16 x 87 when used on power table and 16 x 73 when used on treadle stand, and are made in sizes 9, 11, 13, 14, 16, 17, 18, 19, 21, 22 and 23.

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*, and the *class* and *variety* numbers separated by the letter x.

The following is an example of an intelligible order:

"100 No. 19, 16 x 87 Needles."

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

To Oil the Machine

Use "TYPE B" or "TYPE D" OIL, sold only by Singer Sewing Machine Company. See inside front cover for description of oils.

To ensure easy running and prevent unnecessary wear of the parts which are in movable contact, the machine requires oiling

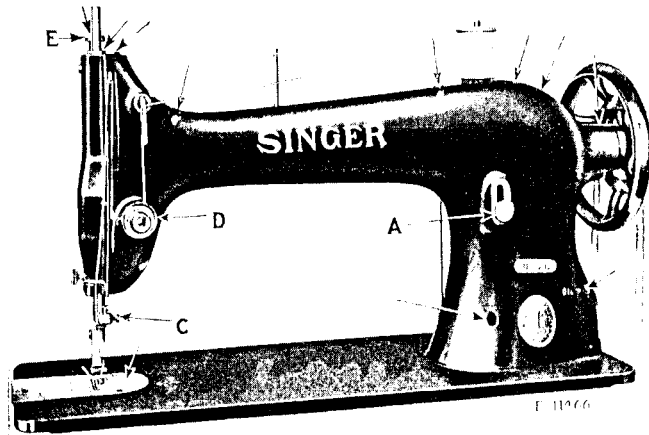


FIG. 2. OILING POINTS AT THE FRONT OF THE MACHINE
ALSO ADJUSTMENTS ON THE MACHINE

and when in continuous use, it should be oiled at least twice each day.

Oil should be applied to all oil holes marked "Oil" and to all oiling places indicated by arrows in Figs. 2, 3 and 4.

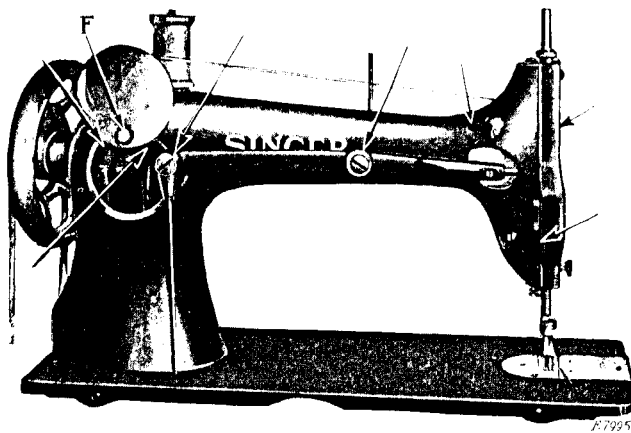


FIG. 3. OILING POINTS AT THE BACK OF THE MACHINE

Loosen the thumb screw (F, Fig. 3) in the round cover plate at the back of the machine, turn the cover plate up and oil the bearings which are thus uncovered, then replace the cover.

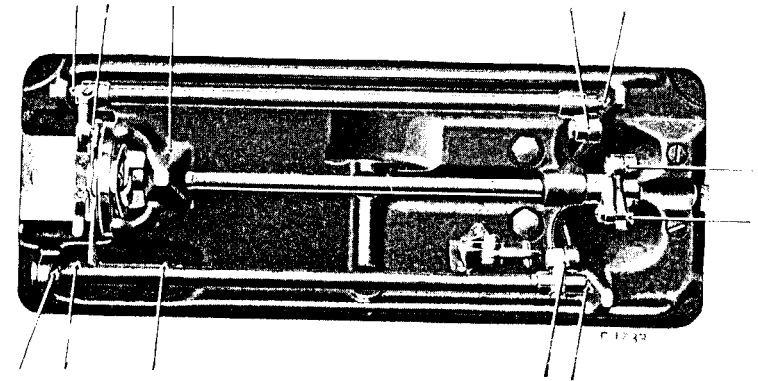


FIG. 4. BASE OF THE MACHINE, SHOWING OILING POINTS

Turn back the machine on its hinges and apply oil at the places shown by arrows in Fig. 4 and all other places where there are parts in movable contact, then bring the machine into place.

Oil should be applied to the shuttle bearing in the shuttle race. Occasionally remove the face plate and apply oil to the bearings and parts which are in movable contact.

To Ensure Perfect Action of the Machine

The balance wheel must always turn over toward the operator.

Do not run the machine with the presser foot resting on the feed without cloth under the presser foot.

Do not run the machine when both bobbin case and needle are threaded unless there is material under the presser foot.

Do not try to help the machine by pulling the fabric lest you bend the needle; the machine feeds the work without assistance.

Keep the slide over the bobbin case closed when the machine is in operation.

Thread

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

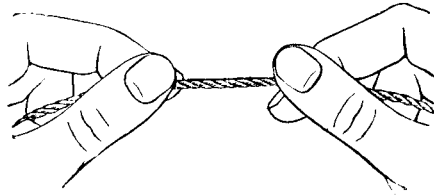


FIG. 5. HOW TO DETERMINE THE TWIST

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 toward you until the needle moves up to its highest point. Draw out the slide in the bed of the machine, reach down with the thumb and forefinger of the left hand,

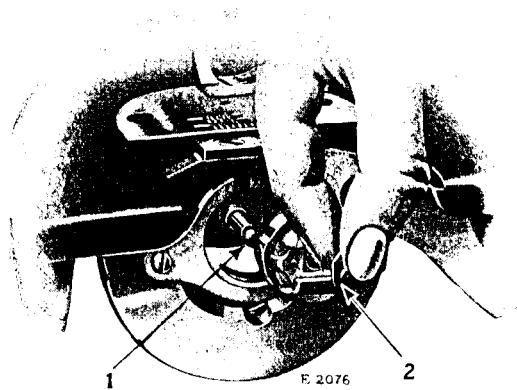


FIG. 6. REMOVING THE BOBBIN

open the bobbin case latch (2, Fig. 6) and lift out the bobbin case. While the latch remains open, the bobbin is retained in the bobbin case. Release the latch, turn the open end of the bobbin case downwardly and the bobbin will drop out.

To Wind the Bobbin

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.

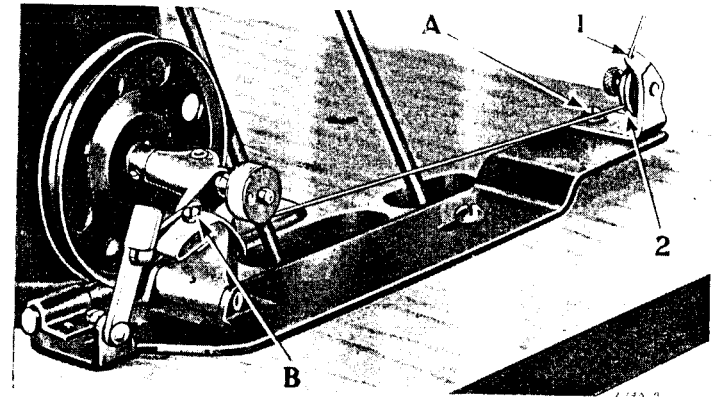


FIG. 7. WINDING THE BOBBIN

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 and between the tension discs (2). Then wind the end of the thread around the bobbin a few times, 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 screw.

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

Bobbins can be wound while the machine is stitching.

To Thread the Bobbin Case

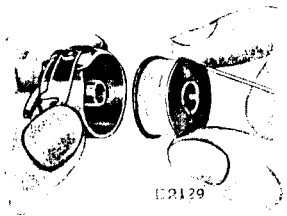


FIG. 8

Hold the bobbin between the thumb and forefinger of the right hand, as shown in Fig. 8, the thread drawing on the top from the left toward the right.

With the left hand hold the bobbin case as shown in Fig. 9, the slot in the edge being near the top, and place the bobbin into it.

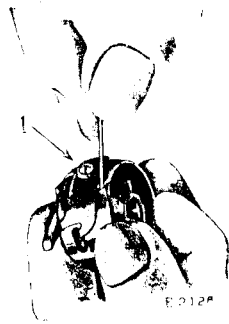


FIG. 9

Then pull the thread into the slot in the edge of the bobbin case as shown in Fig. 9; draw the thread under the tension spring and into the delivery eye at the end of the tension spring. (See Fig. 10.)

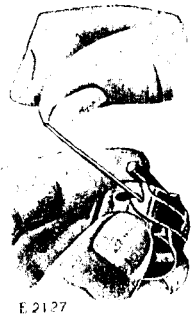


FIG. 10

To Replace the Bobbin Case

After threading take the bobbin case by the latch holding it between the thumb and forefinger of the left hand; place the bobbin case on the centre stud of the shuttle body with the position finger opposite the notch at the top of the shuttle race, release the latch and press the bobbin case back until the latch catches the groove near the end of the stud. Allow about two inches of thread to hang free.

To Set the Needle

Turn the balance wheel over toward you until the needle bar moves up to its highest point; loosen the screw (C, Fig. 2, page 4) in the needle clamp and put the needle up into the clamp 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.

To Thread the Needle

(SEE FIG. 11)

Pass the thread from the unwinder or the spool on the spool pin from right to left through the top hole (1) of the thread

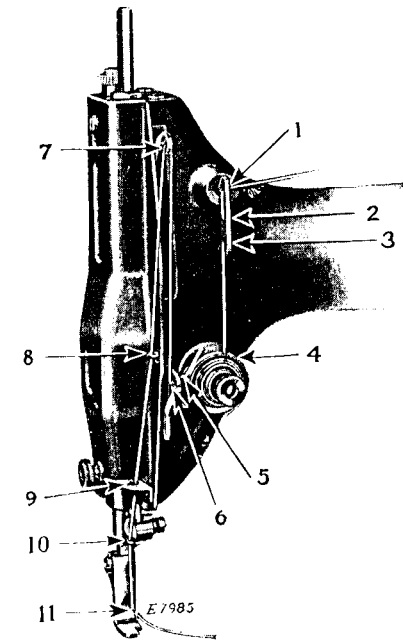


FIG. 11

retainer, left to right through the centre hole (2) of the thread retainer, right to left through the bottom hole (3) of the thread retainer, down under and around between the tension discs (4), into the wire take-up (5), under the thread regulator (6), up and from right to left through the eye (7) near the end of the thread take-up lever, down into the thread guide (8), into the thread guides (9) and (10), then from left to right through the eye (11) of the needle. Draw about two inches of thread through the eye of the needle with which to commence sewing.

Tensions

For ordinary stitching, the needle and bobbin threads should be locked in the centre of the thickness of the material, as shown in Fig. 12.



FIG. 12. 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, as shown in Fig. 13.



FIG. 13. 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 surface of the material, as shown in Fig. 14.



FIG. 14. 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 (D, Fig. 2) at the front of the tension discs over toward the right to increase the tension. To decrease the tension, turn this thumb nut over toward the left.

The tension on the bobbin thread is regulated by the larger screw (1, Fig. 9) 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 the 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 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

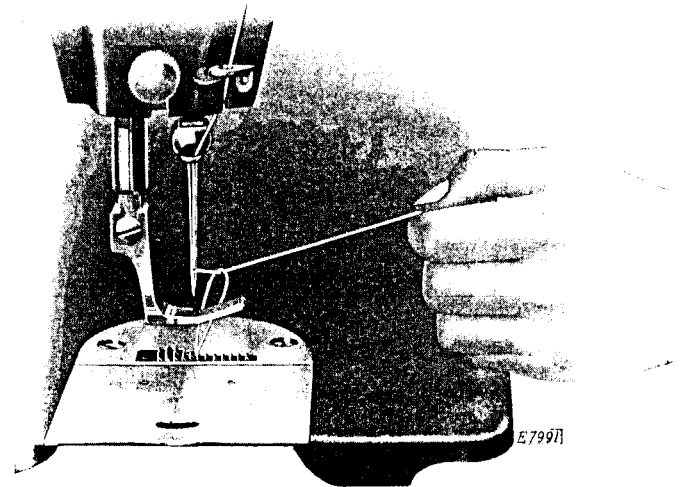


FIG. 15. DRAWING UP THE BOBBIN THREAD

toward you until 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. 15). 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 toward you.

To Remove the Work

Let the thread take-up lever rest at its highest point, raise the presser foot and draw the work back and cut the threads close to the goods.

To Regulate the Length of Stitch

The length of stitch is regulated by the thumb screw (A, Fig. 2, page 4) in the slot on the front of the upright part of the arm. To lengthen the stitch, loosen this thumb screw and move it downwardly. To shorten the stitch, loosen this thumb screw and move it upwardly. When the desired length of stitch has been obtained, tighten the thumb screw (A).

To Regulate the Pressure on the Material

The pressure on the material is regulated by the thumb screw (E, Fig. 2, page 4). To increase the pressure, turn this thumb screw over to the right. To decrease the pressure, turn this thumb screw over to the left.

INSTRUCTIONS

FOR

ADJUSTERS AND MACHINISTS

To Set the Needle Bar at the Correct Height

See that the needle is pushed up into the needle clamp as far as it will go, then remove the face plate.

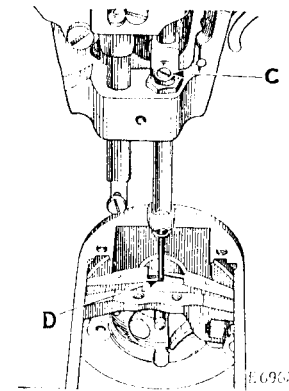


FIG. 16

Turn the balance wheel over toward you until the point of the shuttle is at the centre of the needle as shown at (D) in the illustration above, then the centre of the eye of the needle should be $\frac{3}{32}$ inch below the point of the shuttle.

If the needle bar is not set at the correct height, loosen the needle bar clamping screw (C, Fig. 16) and raise or lower the needle bar as required, then securely tighten the clamping screw (C, Fig. 16).

To Remove and Replace the Shuttle Race

Turn the balance wheel over toward you until the needle bar moves up to its highest point.

Take out the two screws (E, Fig. 17) which hold the shuttle race in position and remove the shuttle race. Then remove the shuttle from the shuttle race.

When replacing the shuttle race, have the needle bar at its highest point and turn the shuttle in the race so that it correctly engages the shuttle driver, then securely fasten the shuttle race in position by means of the two screws (E).

To Raise or Lower the Feed Dog

The feed lifting rock shaft crank (F, Fig. 17) should be set so that when it raises the feed bar to its highest point, slightly less

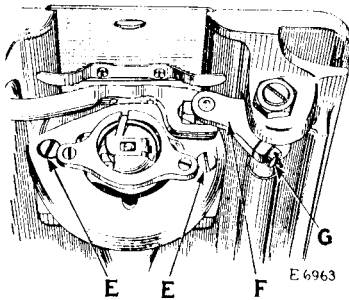


FIG. 17. ADJUSTMENT FOR RAISING AND LOWERING THE FEED DOG

than the full depth of the teeth project through the slots in the throat plate. To raise or lower the feed dog, loosen the clamping screw (G, Fig. 17) and move the feed lifting rock shaft crank (F) until the feed dog is set at the required height, then securely tighten the clamping screw (G).

To Time the Feeding Mechanism

The feeding mechanism should be timed so that the feed dog finishes its feeding movement (away from the operator) when the thread take-up lever (7, Fig. 11, page 9) is at its highest point. The feed should always finish its feeding movement before the needle reaches the goods on its downward stroke.

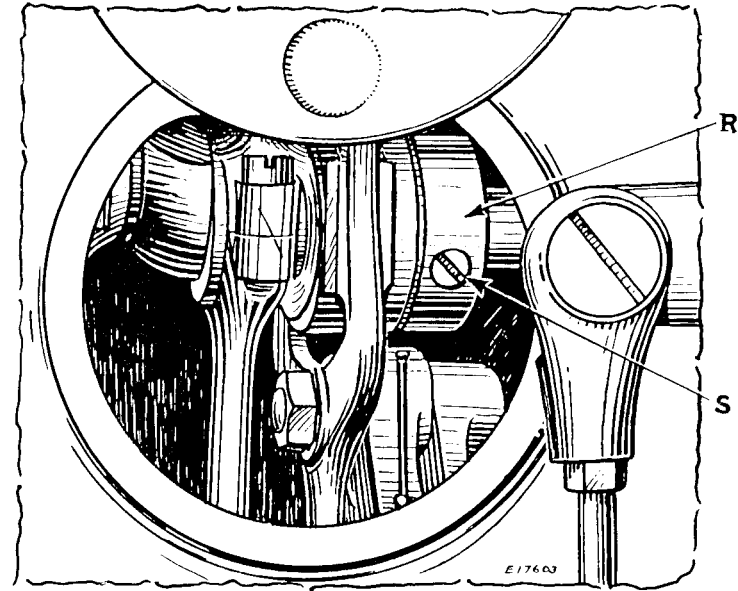


FIG. 18. ADJUSTMENT FOR TIMING FEEDING MECHANISM

When it is necessary to time the feeding mechanism, press the stitch regulator (A, Fig. 2, page 4) down to its lowest point for the longest stitch and turn up the round cover plate at the back of the machine. Loosen the feed eccentric set screw (S, Fig. 18) and turn the feed eccentric (R, Fig. 18) until the feed is correctly timed as instructed above, then securely tighten the set screw (S).

To Time the Thread Take-up Spring

The thread take-up spring (T, Fig. 19) should be set so that when the eye of the needle reaches the material on the downward stroke of the needle bar, the spring will be through acting and will rest against the stop on the thread take-up spring regulator.

If the thread take-up spring is not correctly set, loosen the set screw (U, Fig. 19) in the arm of the machine, and turn the tension screw stud (W, Fig. 19) clockwise to retard the movement of the spring, or counter-clockwise to advance this movement. When the spring is correctly set, securely tighten the set screw (U).

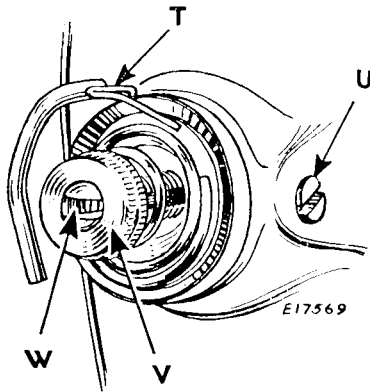


FIG. 19. TIMING AND ADJUSTMENT OF THREAD TAKE-UP SPRING

To Adjust the Tension on the Thread Take-up Spring

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 material on its downward stroke.

To increase the tension on the thread take-up spring (T), loosen the tension screw stud (W) and force the take-up spring from the recess in the regulator, moving it clockwise between the regulator and the tension discs until the required tension is obtained, then securely tighten the tension screw stud (W) and force the spring back into its normal position in the regulator recess. To decrease the tension, force the spring counter-clockwise between the regulator and the tension discs.

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