

SINGER
147-117,-118

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, STAIN-
LESS, 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 lubri-
cant 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.

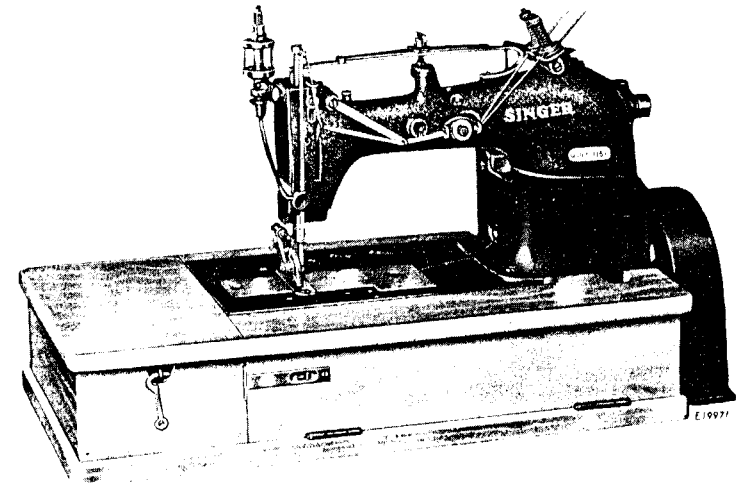
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20231

INSTRUCTIONS FOR USING AND ADJUSTING **SINGER*** SEWING MACHINES 147-114 and 147-116

TWO NEEDLES AND ONE LOOPER

AUTOMATIC OILING SYSTEM



MACHINE 147-116

Special attention is called to the lubricating instructions on pages 4, 5 and 6.

*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 147-114 has two needles and one looper and simultaneously makes two parallel lines of chain stitching on the upper surface of the work. The looper thread is interwoven between the two needle threads on the under surface of the work, producing a neat, durable and elastic seam.

This machine is designed for cording, imitation or air cording and air tucking garments of woven and knitted materials, gloves, millinery, mattresses and similar materials.

This machine has a drop feed and is equipped with intermediate and rear ball bearings for the balanced arm rotary shaft.

The oiling system automatically oils all principal bearings.

It is regularly equipped with a foot lifter. A knee lifter will be furnished, instead of a foot lifter, when specified, on order.

Needle gauges are from $3/64$ to $1/8$ inch, in steps of $1/64$ inch. Orders must specify the gauge required.

Needle bar stroke is $1-7/32$ inches.

The machine is adjustable to produce from 6 to 25 stitches to the inch.

The machine base is $16-1/2$ inches long.

The space at right of needles is $8-1/4$ inches.

Machine 147-116 is designed for vamping and foxing shoes, and is similar to Machine 147-114 with the following exceptions:

It is equipped with a roller presser, and has a thread lubricator with gravity (sight feed) oil cup which is adjustable to control oil flow.

It is equipped with an upper thread nipper.

The needle gauges are $1/32$ inch, $3/64$ inch or $1/16$ inch. Orders must specify the gauge required.

Needle bar stroke is $1-1/8$ inches.

The machine is adjustable to produce from 10 to 25 stitches to the inch.

TO SET UP THE MACHINES

Before placing the machine on the iron base, see that the rubber bushings are 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, with the four studs through the rubber bushings.

CAUTION—After setting up, do not start the machines until they have been thoroughly oiled as instructed on **pages 4, 5 and 6.**

SPEED

Maximum speeds are:

For Machine 147-114—4000 stitches per minute.

For Machine 147-116—3800 stitches per minute.

The machines should be operated at less than maximum speeds until moving parts have become glazed by their action upon each other.

The balance wheel should always turn over from the operator.

TO OIL THE MACHINES

These machines are each equipped with an oiling system which automatically delivers the required quantity of oil to all principal bearings. An agitator on the lower end of the connecting rod contacts the oil in the reservoir at each revolution of the main shaft and lubricates, by splash, various bearings inside the machine arm. Some of this oil 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 the machines.

CAUTION—Use "TYPE B" or "TYPE D" OIL sold only by Singer Sewing Machine Company. For description of these oils, see inside front cover.

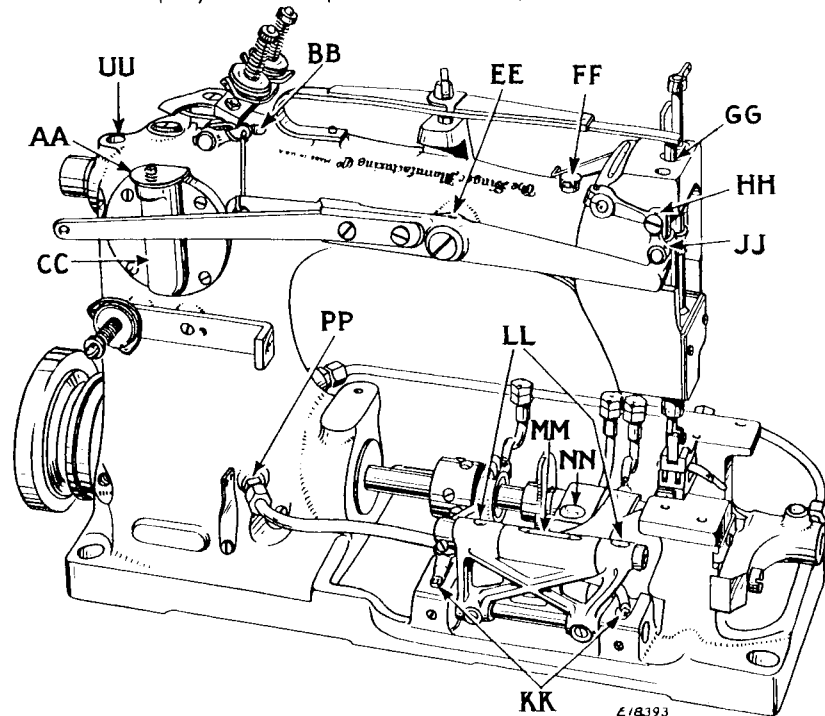


Fig. 2. Priming and Oiling Points—Rear View

A machine new from the factory, or one which has been idle for one or more days, must be oiled as instructed on pages 5 and 6.

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 the throat plate are removed in Figs. 2 and 3 for clearer illustration only.

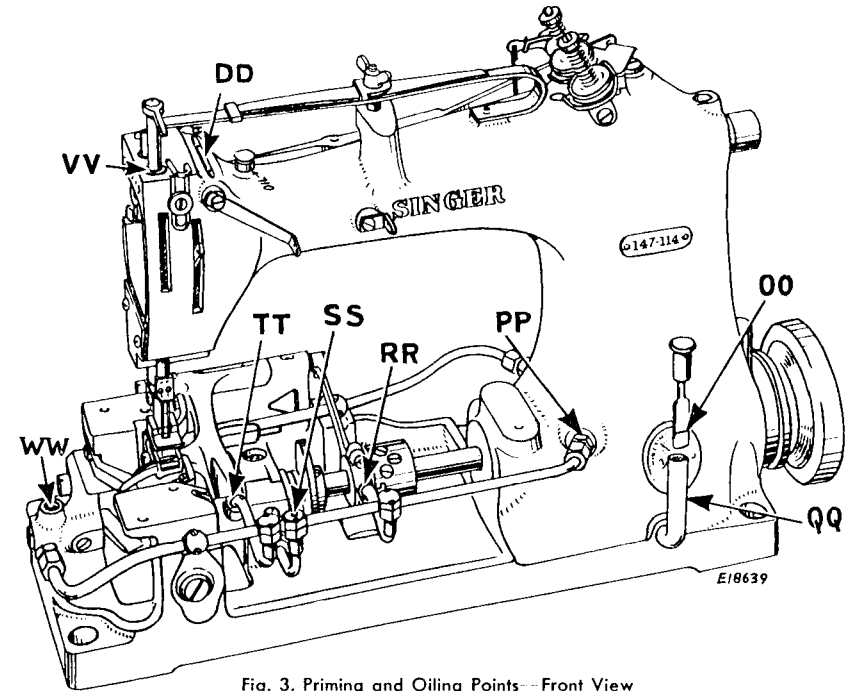


Fig. 3. Priming and Oiling Points—Front View

1st. Lift up and turn aside the cover AA, Fig. 2, and apply oil to the filler CC, Fig. 2, until the oil stands at the mark OO, Fig. 3, on the oil gauge. The oil supply must be maintained at this level. After applying oil to the filler, turn the cover AA to closed position.

CAUTION—This cover must be kept closed at all times except when opened for oiling.

2nd. Saturate the wicks at UU, BB, and NN, Fig. 2 and at RR, TT and WW, Fig. 3.

3rd. Apply oil to the oil holes or troughs at HH, JJ, KK, LL and MM, Fig. 2 and at DD, Fig. 3.

4th. Fill the main oil pipe to overflowing through the oil hole SS, Fig. 3. This is important as it primes various oil wicks.

5th. Apply an occasional drop of oil to **EE, Fig. 2** for foot-lifting lever, and at **GG, Fig. 2** where the presser bar passes through its bushing, also at **VV, Fig. 3** where the needle bar passes through its bushing.

NOTE—After a machine has run at a moderate speed for about five minutes, stop it and let it stand idle for a few minutes. Then check the oil in the reservoir and, if necessary, add sufficient oil to bring it to the oil-level mark **OO, Fig. 3**, on the gauge.

A machine in daily use must be oiled as follows:

1st. Apply oil to the oil filler **CC, Fig. 2**, as instructed on **page 5**.

NEVER PERMIT THE LEVEL OF THE OIL TO BECOME LOWER THAN ¼ INCH BELOW THE OIL-LEVEL **OO** WHEN THE MACHINE IS AT REST.

2nd. Fill the oil cup **FF, Fig. 2**, twice daily.

3rd. Apply oil twice daily to all oil holes marked "oil".

SPECIAL NOTICE

The letter "o", marked on oil couplings **PP, 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 to receive the oil.

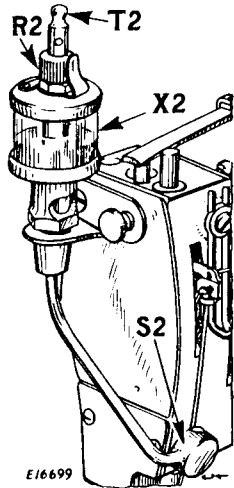


Fig. 3A.

THREAD LUBRICATOR

Fill the thread lubricator sight feed oil cup **X2, Fig. 3A**. Turn the thumb nut **R2** downward to decrease the oil feed to the thread lubricating pad **S2**, or turn the nut **R2** upward to increase the oil feed.

To completely shut off the oil flow, set the lever **T2** horizontally.

NEEDLES

Needles for these Machines are as follows:

Machine	Gauge of Machine	Class and Variety of Needles	Sizes
147-114	3/64" }	62 x 27	7, 9, 10, 11, 13, 14, 16 and 18
		62 x 29	7, 9, 10, 11, 13, 14, 16, 18 and 19
	1/16" }	62 x 31	7, 9, 10, 11, 12, 13, 14, 16, 18 and 21
		62 x 33	7, 8, 9, 10, 11, 12, 13, 14, 16, 18 and 19
147-116	5/64" } to 1/8" }	62 x 43	9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23 and 24
			1/32" }
		62 x 24	7, 8, 9, 10, 11, 13, 14 and 16
147-116	3/64" }	62 x 26	9, 10, 11, 12, 13, 14, 16, 17 and 18
		62 x 28	9, 10, 11, 13, 14, 16, 17 and 18
	1/16" }	62 x 30	9, 11, 12, 13, 14, 16, 17, 18, 19, 20 and 21
	62 x 32	9, 10, 11, 12, 13, 14, 16, 17, 18, 20 and 21	

The size of the needle to be used is determined by the size of the thread, which must pass freely through the eyes of the needles.

The use of rough or uneven thread, or thread which passes with difficulty through the eyes of the needles, will interfere with the successful use of the machines.

Orders for needles must specify the **Quantity** required, the **Size** numbers, also the **Class** and **Variety** numbers, separated by the letter "x".

Following are examples of intelligible orders:

"100 No. 16, 62 x 27 Needles"

"100 No. 18, 62 x 30 Needles"

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

TO SET THE NEEDLES

Turn the balance wheel over from you until the needle bar reaches its highest position, then loosen the two set screws in the needle clamp. Insert the needles up into the needle clamp as far as they will go, with the single continuous groove of each needle toward you, then tighten the two set screws in the needle clamp.

THREADING THE NEEDLES MACHINE 147-114

(See Fig. 4)

To Thread the Left-Hand Needle, lead the thread from the unwinder through the hole 1 in the rear tension discs bracket, then around the front of, and between, the rear tension discs 2, then to the left through the hole 3 in the rear tension discs bracket, then to the left through the rear hole 4 in the thread guide on the front side of the machine arm, to the left through the rear

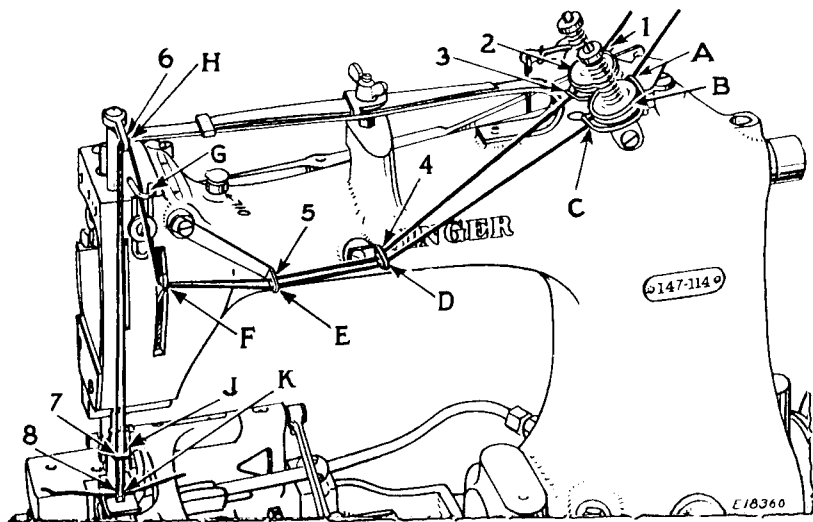


Fig. 4. Threading the Needles—Machine 147-114

hole 5 in the slack thread regulator, to the left through the hole F in the thread nipper bracket, to the left through the hole H in the thread take-up, up and through the auxiliary take-up G, up and to the left through the rear hole 6 in the needle bar thread take-up, down through the left-hand hole 7 in the needle clamp, then down and from front to back (away from the operator) through the eye 8 of the left-hand needle. Draw about two inches of thread through the needle eye with which to commence sewing.

To Thread the Right-Hand Needle, lead the thread from the unwinder through the hole A in the front tension discs bracket, then around the front of, and between, the front tension discs B, then to the left through the hole C in the front tension discs bracket, then to the left through the hole D in the thread nipper bracket, then to the left through the front hole D in the thread guide on the front side of the machine arm, to the left through the front hole E in the slack thread regulator, to the left through the hole F in the thread take-up, up and through the auxiliary take-up G, up and to the left through the front hole H of the needle bar thread take-up, down through the right-hand hole J in the needle clamp, then down and from front to back (away from the operator) through the eye K of the right-hand needle. Draw about two inches of thread through the needle eye with which to commence sewing.

THREADING THE NEEDLES MACHINE 147-116

(See Fig. 5)

To Thread the Left-Hand Needle, lead the thread from the unwinder through hole 1 in the rear tension discs bracket, then around the front of, and between, the rear tension discs 2, then to the left through the hole 3 in the rear tension discs bracket, then to the left through the hole D in the thread nipper bracket; to the left over and between the thread nipper discs E, to

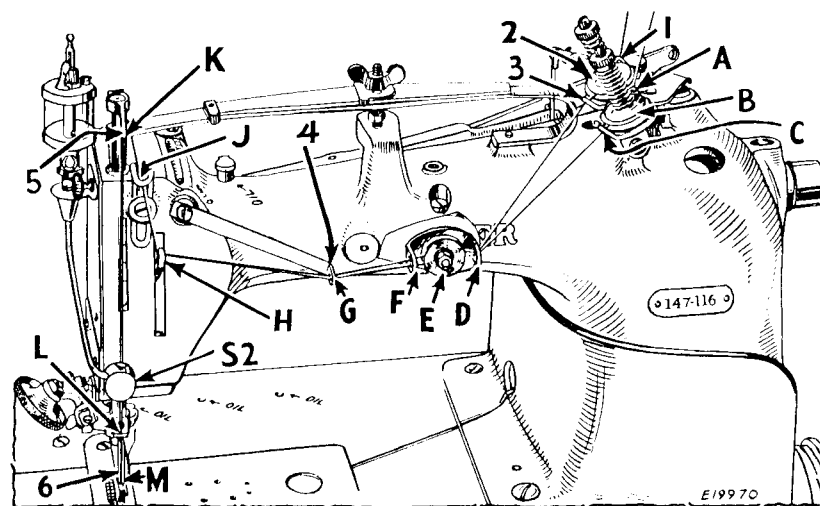


Fig. 5. Threading the Needles—Machine 147-116

the left through the hole F in the thread nipper bracket, to the left through the rear hole 4 in the slack thread regulator, to the left through the hole H in the thread take-up, up and through the auxiliary take-up J, up and to the left through the rear hole 5, of the needle thread take-up, down and under the thread lubricator pad S2, down through the slotted guide L, in the needle bar clamp, then down and from front to back (away from the operator) through the eye 6 of the left hand needle. Draw about two inches of thread through the needle eye with which to commence sewing.

To Thread the Right-Hand Needle, lead the thread from the unwinder through the hole A in the front tension discs bracket, then around the front of, and between, the front tension discs B, then to the left through the hole C in the front tension discs bracket, then to the left through the hole D in the thread nipper bracket, to the left under and between the thread nipper discs E, to the left through the hole F in the thread nipper bracket, to the left through the front hole G in the slack thread regulator, to the left through the hole H in the thread take-up, up and through the auxiliary take-up J, up and to the left through the front hole K of the needle thread take-up, down and under the thread lubricator pad S2, down through the slotted guide L of the needle clamp, then down and from front to back (away from the operator) through the eye M of the right-hand needle. Draw about two inches of thread through the needle eye with which to commence sewing.

TO THREAD THE LOOPER

(See Figs. 6 and 7)

Remove the right-hand slide plate. Lead the thread from the unwinder through the hole **N**, in the looper thread tension discs bracket at the rear side of the machine arm, then over and between the looper thread tension

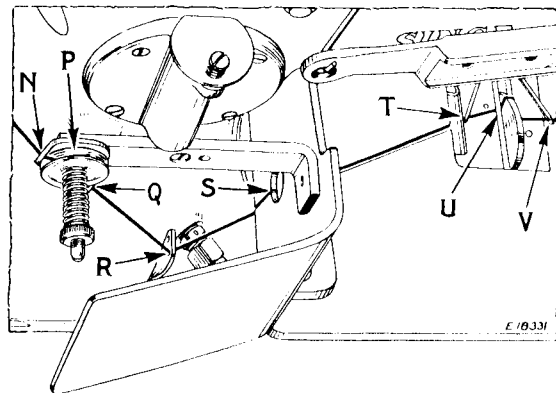


Fig. 6. Threading the looper—Rear View

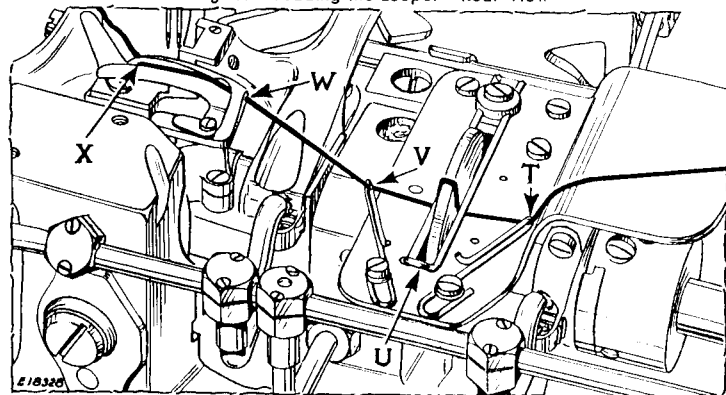


Fig. 7. Threading the looper—Front View

discs **P**, down through the hole **Q** in the tension bracket, down and forward through one of the two holes in the upright guide **R** at the rear of the machine arm, then forward through the hole **S** in the cloth plate guard and through the slot in the cloth plate, then pass the thread through the guide **T** on the stripper plate, forward under the stripper **U**, forward through the guide **V**, forward through the hole **W** in the heel of the looper, and from front to back (away from the operator) through the eye **X** of the looper. Allow about two inches of thread to hang from the looper eye with which to commence sewing. Replace the right-hand slide plate.

NOTE—It is not necessary to remove the throat plate for looper threading. It is removed in **Fig. 7** for purposes of illustration only.

TO REGULATE THE TENSIONS

To increase the tension on the needle threads, turn the two thumb nuts **Z**, **Fig. 8** downward, or turn them upward for less tension. Tension on the needle threads should be just sufficient to set the stitch properly in the material.

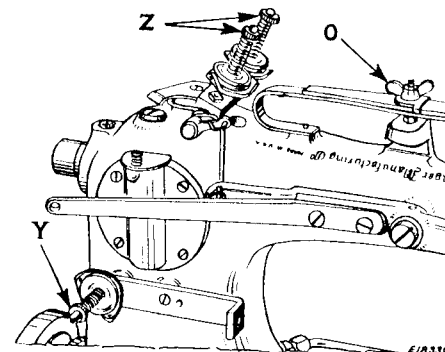


Fig. 8. Regulating the Tensions and Pressure on the Material

To increase the tension on the looper thread, turn thumb nut **Y**, **Fig. 8** inward, or turn it outward for less tension. Tension on the looper thread should be light, but sufficient to control the thread.

TO REGULATE THE PRESSURE ON THE MATERIAL. To increase the pressure of the presser foot or the roller presser on the material, turn wing nut **O**, **Fig. 8** downward, or turn it upward for less pressure.

TO REGULATE STITCH LENGTH

Stitch length is regulated by means of the large screw **D3**, **Fig. 9** which projects beyond the body of the feed eccentric on the rotary shaft.

To increase the length of stitch, loosen clamping screws **C3**, **Fig. 9** and turn the large screw **D3** over to the left and outward. To shorten the stitch, turn the large screw **D3** over to the right and inward. When the desired length of stitch is obtained, securely tighten clamping screws **C3**.

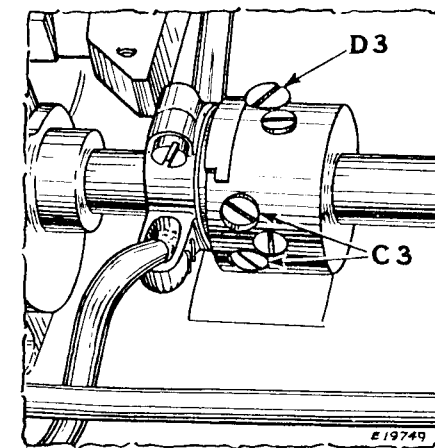


Fig. 9. Regulating Stitch Length

TO SET THE LOOPER THE CORRECT DISTANCE FROM THE NEEDLES

When the needle bar is at its lowest position, the distance from the center of the right-hand needle to the point of the looper should be $\frac{9}{64}$ inch.

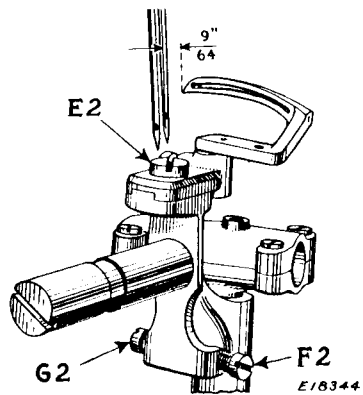


Fig. 10. Setting the Looper

If the distance is less than $\frac{9}{64}$ inch, loosen the right-hand screw **F2**, **Fig. 10** in the looper holder bracket, and tighten the left-hand screw **G2**, **Fig. 10**. If the distance is more than $\frac{9}{64}$ inch, loosen the left-hand screw **G2** and tighten the right-hand screw **F2**. When the correct distance from the center of the right-hand needle to the point of the looper is obtained, see that the two screws **G2** and **F2** are securely tightened.

TO CHANGE THE SIDEWISE POSITION OF THE LOOPER WITH RELATION TO THE NEEDLES

The looper should be set to pass equally close to the needles on its forward and backward strokes. To change the sidewise position of the looper with relation to the needles, loosen screw **E2**, **Fig. 10** and move the looper holder as required, then securely tighten the screw **E2**.

TO SET THE NEEDLE BAR IN CORRECT POSITION

Turn the balance wheel over from you until the point of the looper, on its forward stroke, reaches the center of the right needle.

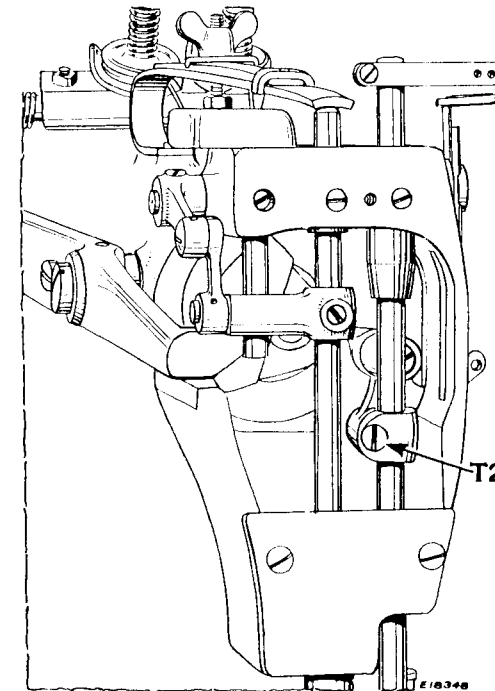


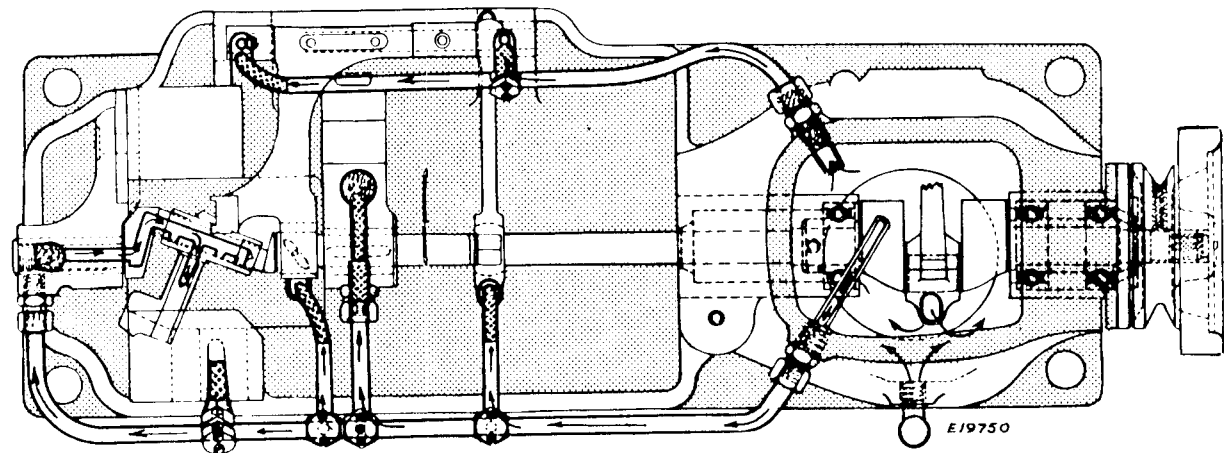
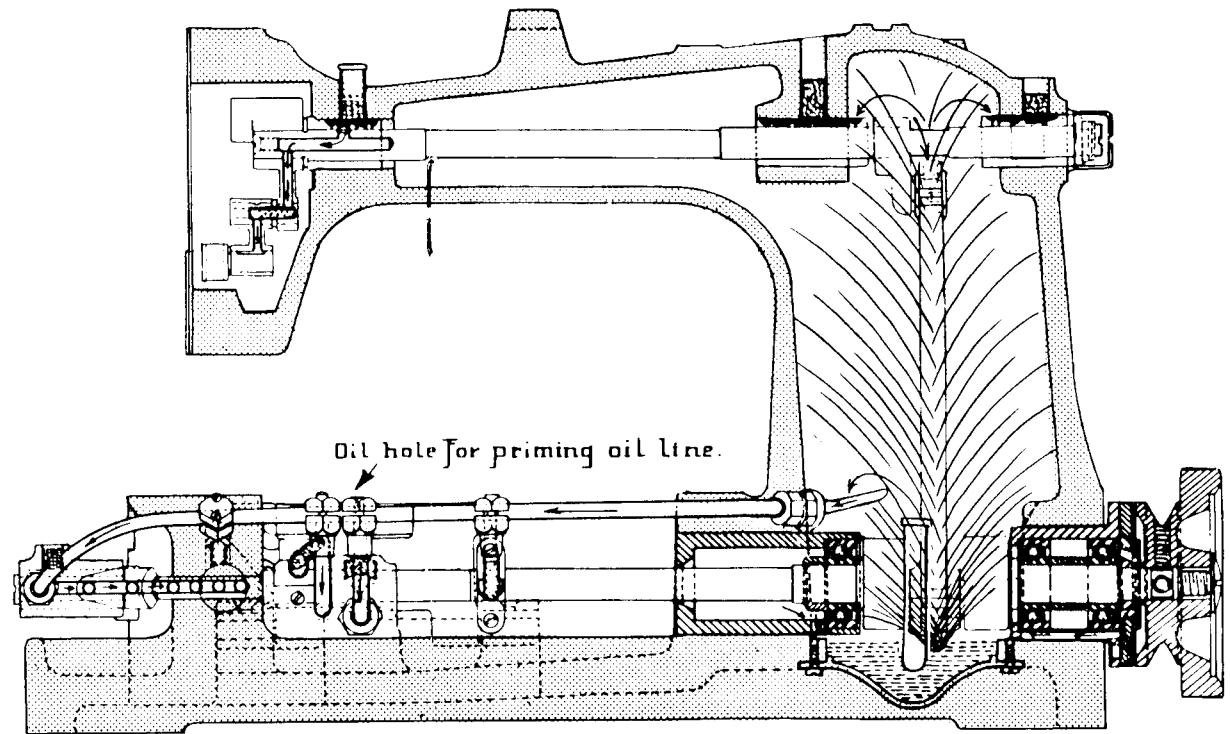
Fig. 11. Setting Needle Bar

In this position, the eye of the right needle should be about $\frac{3}{16}$ inch below the point of the looper, to insure that the eyes of both needles and the eye of the looper will be in perfect alignment when they pass each other during the loop taking stroke.

When the needle bar is not set at the correct height, loosen the needle bar clamping screw **T2**, **Fig. 11** and move the needle bar up or down, as required. Then securely tighten clamping screw **T2**, making sure that the needles center in their respective notches in the needle hole in the throat plate.

NOTE—For some threads it may be necessary to vary the height of the needle bar, owing to the differences in finish, twist, elasticity, etc. This applies also where different materials are sewn.

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



TO SET THE FEED DOG AT CORRECT HEIGHT

When the feed dog is at its highest position, approximately the full depth of the teeth should project through the slots in the throat plate.

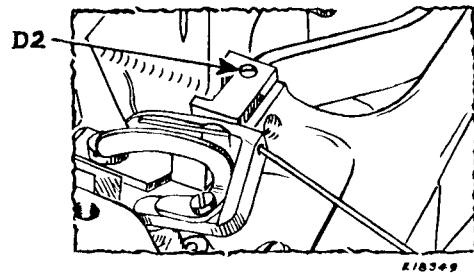


Fig. 12. Setting the Feed Dog

The height of the feed dog is determined by the stop screw D2, Fig. 12 which may be turned downward, or upward, as required, after removing the feed dog. Note that the feed dog should always rest upon the stop screw D2.

TO LEVEL OR TILT THE FEED DOG

The feed dog may be leveled, or tilted, to any desired position after loosening feed dog screw J2, Fig. 13 and screw C2, Fig. 13.

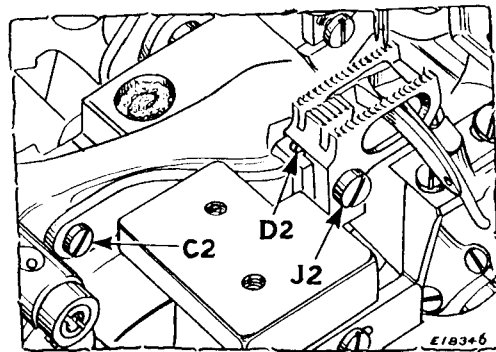


Fig. 13. Feed Dog Adjustment

When the feed dog is in the desired position, press it down firmly to insure that it rests upon the stop screw D2, then securely tighten the screws J2 and C2.

TO ADJUST THE ROLLER PRESSER

Machine 147-116

The roller presser K2 should be set with the inside edge of its rim close to, but not touching, the needles, as shown in Fig. 14.

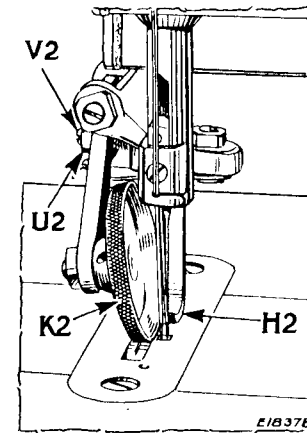


Fig. 14. Roller Presser Adjustment

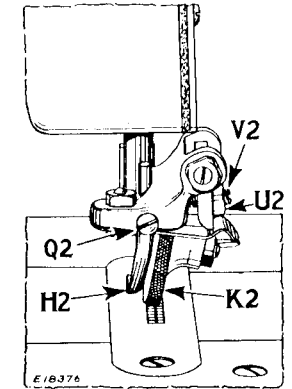


Fig. 15. Roller Needle Guard Adjustment

To adjust, loosen locknut U2 and turn adjusting screw V2 inward or outward until proper setting is obtained, then securely tighten locknut U2.

TO ADJUST ROLLER NEEDLE GUARD

Machine 147-116

The roller needle guard H2, Figs. 14 and 15 should be set close to the right-hand needle, as shown in Fig. 14, but not so close as to deflect the needle.

To adjust, loosen screw Q2 and set the guard, as instructed above, then securely tighten screw Q2.

TO ADJUST THE SLACK THREAD REGULATOR

The slack thread regulator **A2**, Fig. 16 should be set so that when the looper is shedding the needle loops, on its backward stroke, the threads will not snap from the point of the looper nor be drawn through the tension

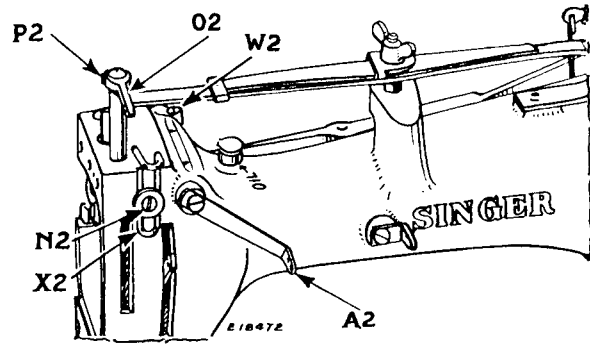


Fig. 16. Needle Thread Adjustments

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 looper backs out of the needle loops with a little tension on the threads. To adjust, loosen clamping screw **W2**, Fig. 16 and raise or lower the slack thread regulator, as may be required, then securely tighten clamping screw **W2**.

TO ADJUST THE AUXILIARY THREAD TAKE-UP

The auxiliary thread take-up **X2**, Fig. 16 should be set to take up the slack of the needle threads after the looper has shed the needle loops and as the needle bar finishes its downward stroke and as the stitch is set. To adjust, loosen screw **N2**, Fig. 16 and raise or lower the take-up **X2** as required, then tighten screw **N2**.

NOTE—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 difference in finish, twist, elasticity, etc.

TO SET THE NEEDLE THREAD TAKE-UP

With the needle bar at its lowest position, the needle thread take-up **O2**, Fig. 16 should have about $\frac{1}{4}$ inch clearance above the top of the needle bar upper bushing. To adjust, loosen clamping screw **P2**, Fig. 16 and set this take-up as instructed, having it parallel with the face plate of the machine, then tighten screw **P2**.

TO ADJUST THE AUTOMATIC THREAD NIPPER (Machine 147-116)

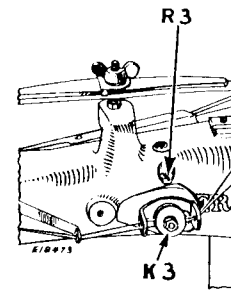


Fig. 17. Automatic Thread Nipper

The automatic thread nipper **K3**, Fig. 17 makes it possible to set the stitch tightly, without using a heavy tension on the needle threads. The nipper discs should open wide enough to permit free passage of the threads, and should close and nip the threads immediately after the looper has cast off the needle loops on the downward stroke of the needle bar.

To adjust, loosen set screw **R3**, Fig. 17 and move the nipper body inward, away from the operator, for a wider opening of the discs, or outward for less opening, then tighten set screw **R3**.

TO ADJUST THE NEEDLE THREAD TENSION RELEASER

The function of the needle thread tension releaser is to release the tension on the needle threads when the presser bar is raised.

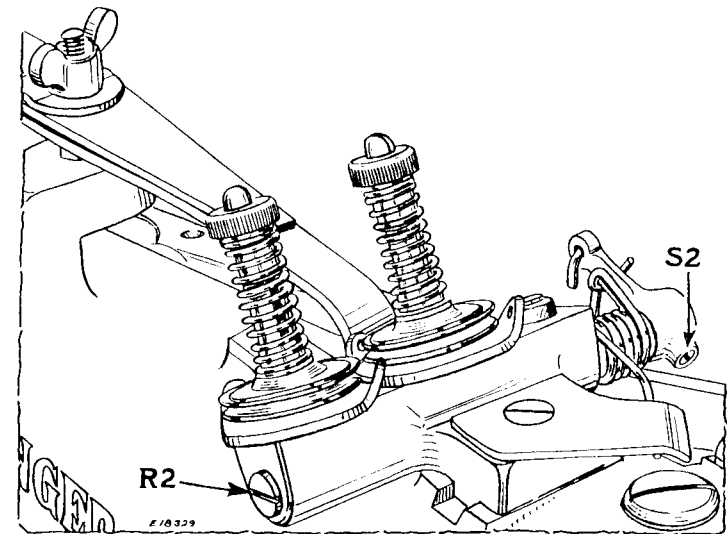


Fig. 18. Adjustment of Needle Thread Tension Releaser

If the tension releaser does not release the threads when the presser bar is raised, or if the tension is partially released when the presser foot or roller presser is down, loosen set screw **S2**, Fig. 18 and turn the shaft **R2** to right or left until correct adjustment is obtained, then tighten set screw **S2**.

TO CHANGE THE EXTENT OF THE NEEDLE-AVOIDING MOTION OF THE LOOPER

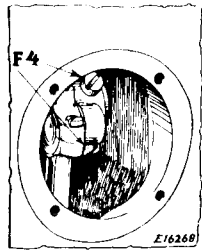


Fig. 19. Rock Shaft Crank

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

The looper, on its forward and backward strokes, should pass as close as possible to the needles, but not touch them.

To adjust, loosen the two screws **F4**, Fig. 19 in the rock shaft crank; also loosen the set screw in the hub of the under thread rotary take-up **T3**, Fig. 20 and loosen the three screws **L2**, Fig. 20 in the feed eccentric **M2**, Fig. 20.

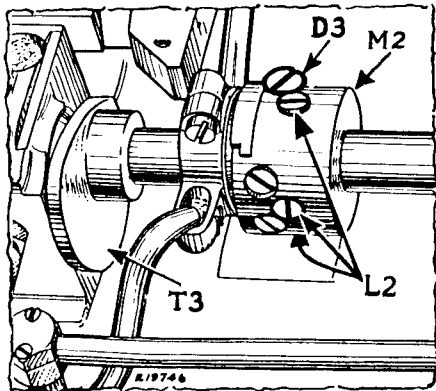


Fig. 20. Feed Eccentric

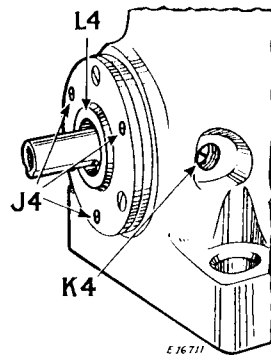


Fig. 21. Rotary Shaft

Remove the balance wheel cap screw and loosen the two screws in the belt groove of the balance wheel, then take off the balance wheel.

Loosen ball bearing case screw **K4**, Fig. 21. To move the rotary shaft toward the needles, turn the three position screws **J4**, Fig. 21 uniformly inward, and tap the ball bearing case **L4**, Fig. 21 until the required extent of sidewise movement is obtained, then tighten screw **K4**. To move the rotary shaft away from the needles, turn the three screws **J4** uniformly outward, then tighten 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 then tighten the two screws in the belt groove of the balance wheel. Turn the balance wheel a few times by hand to permit the rock shaft and feed eccentric to align themselves. Then securely tighten screws **F4**, Fig. 19, against their flats, and time the feed as instructed on **page 24**. Then time the under thread take-up, as instructed on **page 24**.

UNDER THREAD ROTARY TAKE-UP GUARD

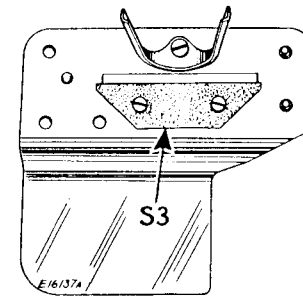


Fig. 22. Fibre Guard

The underview, Fig. 22, shows the fibre guard **S3** attached.

The looper thread take-up **T3**, Fig. 23 should be set in close contact with this guard to prevent the end of the thread, in case of breakage, from being carried around the take-up.

TO ADJUST THE LOOPER THREAD TAKE-UP GUIDES

The function of the looper thread take-up guides **E3**, Fig. 23 is to position the looper thread on the looper thread take-up **T3**, Fig. 23.

The guides should be set with their front ends about flush with the front edge **B3** of the stripper plate as shown in Fig. 23. To adjust, loosen the two screws **F3** and set the guides correctly, then tighten the two screws **F3**.

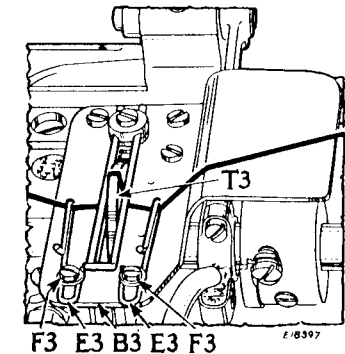


Fig. 23. Looper Take-up Guides

TO SET THE NEEDLE GUARD

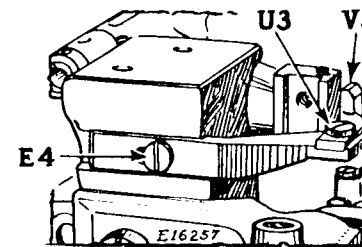


Fig. 24. Needle Guard

The function of the needle guard **V3**, Fig. 24 is to prevent the needles from springing into the path of the looper when the looper is on its forward stroke.

The needle guard should be set as close as possible to the needles, but not touch them.

To set the needle guard in correct position, loosen set screw **E4**, Fig. 24 and move the guard toward or away from the needles, as may be required, then securely tighten set screw **E4**. The needle guard can also be adjusted to right or left to clear the feed dog, after loosening screw **U3**, Fig. 24.

TO TIME THE FEED

The feed should be timed so that it starts its feeding movement immediately after the needles leave the goods, and finishes before the needles reach the goods on their downward stroke.

To time the feed, loosen the three set screws, **L2**, Fig. 20, Page 22 in the feed eccentric **M2**, Fig. 20, and turn this eccentric on the shaft until correct timing is obtained, then tighten the first two of the three set screws **L2** against their flats on the rotary shaft. The first of these three screws is the one nearest the stitch regulator screw **D3**, Fig. 20, the second being the one which follows the first when the balance wheel is turned over from the operator.

After tightening these two screws against their flats, tighten the third screw against the shaft. Then time the looper thread take-up, as instructed below and on page 25.

TO TIME THE LOOPER THREAD TAKE-UP

The looper thread take-up **T3**, Fig. 25 must contact the threads just as the looper is commencing its backward stroke, or loop-shedding action,

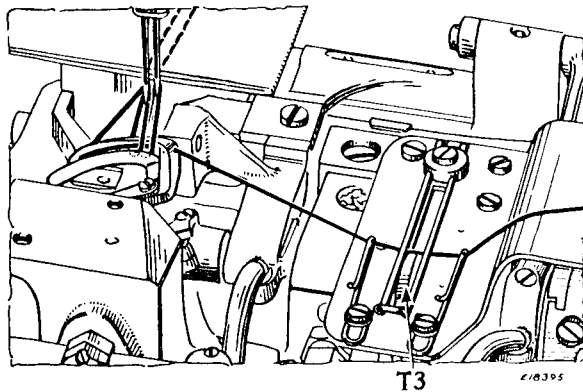


Fig. 25. Showing Position of Looper
at Commencement of Loop Shedding Action

as shown in Fig. 25, and keep the threads taut until the points of the needles, on their downward stroke, have entered the triangles formed by the looper blade, the looper thread and the needle loops, as shown in Fig. 26.

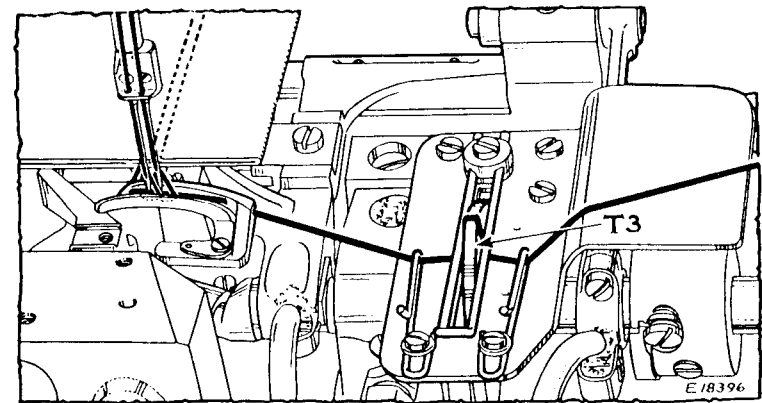


Fig. 26. Looper Take-up

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 looper thread take-up set screw.

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

TO CENTRALIZE THE FEED DOG IN THE THROAT PLATE SLOTS

The feed dog should be centered in the throat plate slots so that it moves equi-distant from both ends of the slots during the feeding movement.

To adjust, loosen clamp screw H3, Fig. 27 and rotate the hinge pin J3, then tighten clamp screw H3.

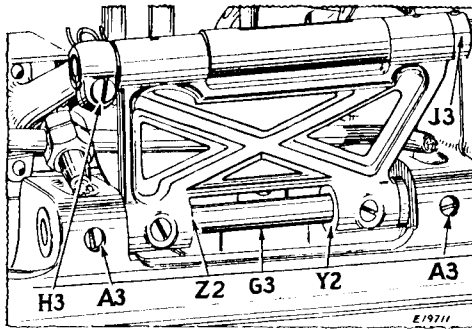


Fig. 27. Centralizing the Feed Dog

TO ALIGN THE FEED DOG IN THE THROAT PLATE SLOTS

Loosen the three screws L2, Fig. 28 in the feed eccentric M2, Fig. 28; also loosen the two screws A3, Fig. 27 in the feed rocking frame bushings. Then tap the inside edge of the feed frame lug at Z2, Fig. 27 to move the feed dog to the left, or tap it at Y2, Fig. 27 to move it to the right.

Take out excessive end play by tapping the opposite bushing toward the feed frame, but use caution when making this adjustment, as there should be some slight end play between the two bushings.

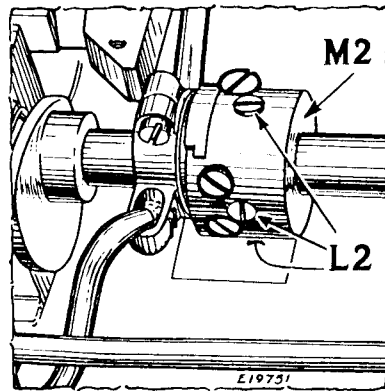


Fig. 28. Aligning the Feed Dog

TO REMOVE THE LOOPER MECHANISM

Remove the presser foot or turn the roller, presser up and out of the way. Remove throat plate, thread guard, cloth plate and feed dog. Take out

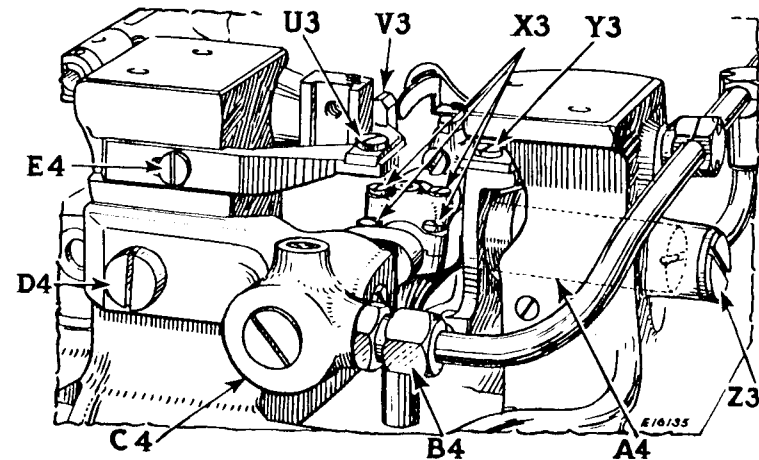


Fig. 29. Removing the Looper Mechanism

screw Y3, Fig. 29 and remove looper holder together with the looper. Take out screw E4, Fig. 29 and remove needle guard holder together with the needle guard.

Take out the four screws X3, Fig. 29 and remove looper shaft connection cap.

Remove cap screw Z3, Fig. 29; insert screwdriver into the hole and unscrew shaft A4, Fig. 29 from the looper carrier, then remove the looper assembly.

TO REMOVE THE LOOPER SHAFT

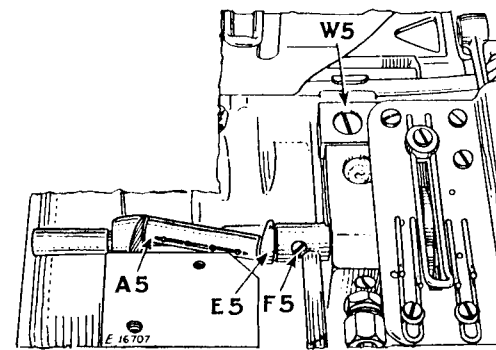


Fig. 30. Removing Looper Shaft

To remove the looper shaft A5, Fig. 30, loosen clamping screw H3, Fig. 31, page 28 and, from the needle bar end of the machine, withdraw feed bar eccentric hinge pin J3, Fig. 31 and remove the feed bar. Unscrew oil coupling nut B4, Fig. 29, take out screw D4, Fig. 29, and remove bracket C4, Fig. 29, then turn the balance wheel until the looper shaft screw F5, Fig. 30 is at the top. Take out this screw and remove the looper shaft from the rotary shaft by tapping against the flange E5, Fig. 30 of the feed eccentric 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 C4, Fig. 29 is replaced.

TO REMOVE AND REPLACE THE FEED MECHANISM

Remove the feed dog. Remove presser foot from **Machine 147-114**, or turn the roller presser on **Machine 147-116** up and out of the way. Remove throat plate, thread guard and cloth plate.

Turn the balance wheel until the looper moves all the way back, then loosen clamp screw **H3**, **Fig. 31** and withdraw the feed bar hinge pin **J3**.

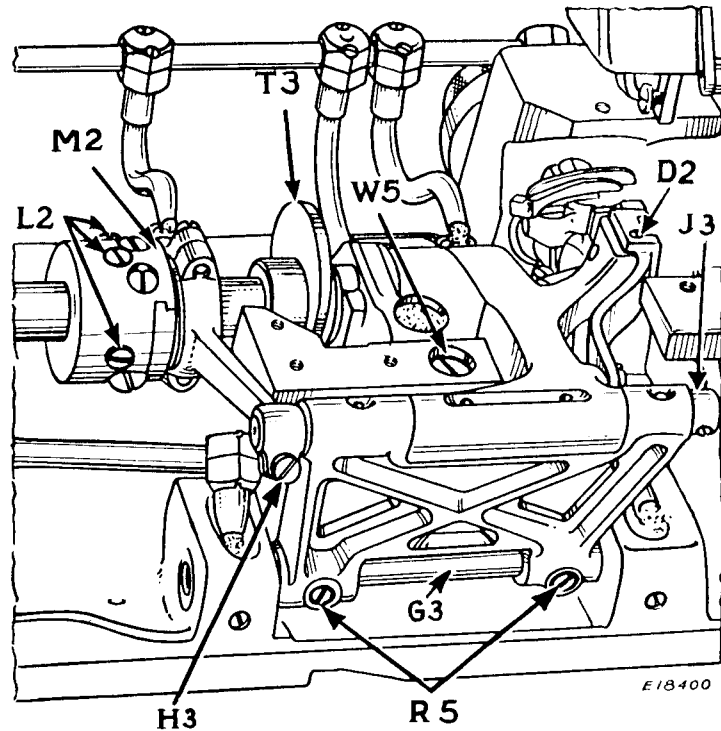


Fig. 31. Removing Feed Mechanism

The feed bar, with feed dog attached, can then be removed from the machine.

The feed rocking frame can be removed, if desired, after loosening the two set screws **R5**, **Fig. 31** and withdrawing the feed rocking frame hinge pin **G3**.

After replacing the feed mechanism, the feed dog should be centralized and aligned in the throat plate slots, as instructed on **page 26**.

TO REMOVE THE ARM ROCK SHAFT

Remove the face plate and the needles and remove the needle clamp from the needle bar. Loosen clamping screw **O4**, **Fig. 32** and remove the needle bar from the top of the machine.

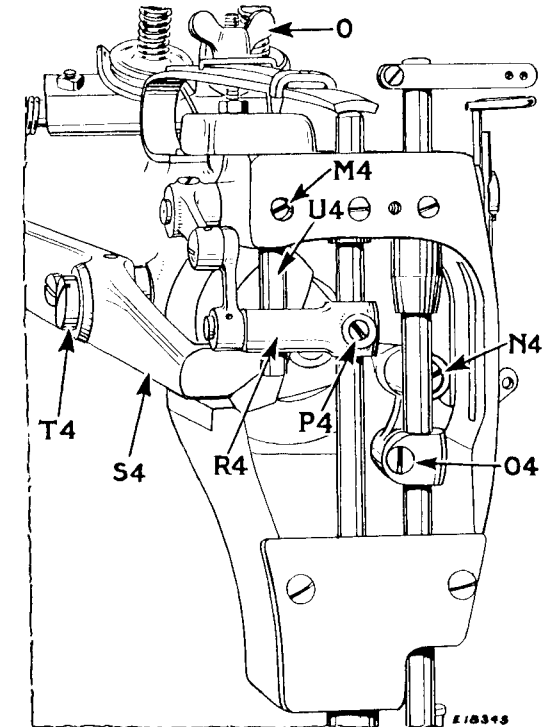


Fig. 32. Removing Arm Rock Shaft

Remove the presser foot from **Machine 147-114**, or remove roller presser complete from **Machine 147-116**. Remove the wing nut **O**, **Fig. 32** from the presser bar spring at the top of the machine, to release the presser bar spring. Loosen set screw **P4**, **Fig. 32** and remove the presser bar from the top of the machine.

Loosen screw **M4**, **Fig. 32** and remove the presser bar guide **U4**, **Fig. 32** and presser bar lifting bracket **R4**, **Fig. 32**. Remove needle bar connecting link hinge screw **N4**, **Fig. 32** to remove needle bar connecting link. Take out lifting lever hinge screw **T4**, **Fig. 32** and remove foot lifting-lever **S4**, **Fig. 32**.

Remove cap **P3**, **Fig. 33**, **page 30** and screw and washer **O3**, **Fig. 33**

at the rear end of the rock shaft. Remove round cover plate at the rear side of the machine arm, carefully saving the gasket.

Loosen the two screws **F4**, Fig. 33 in the rock shaft crank and, with the connecting rod at midway position, withdraw the rock shaft from the needle bar end of the machine.

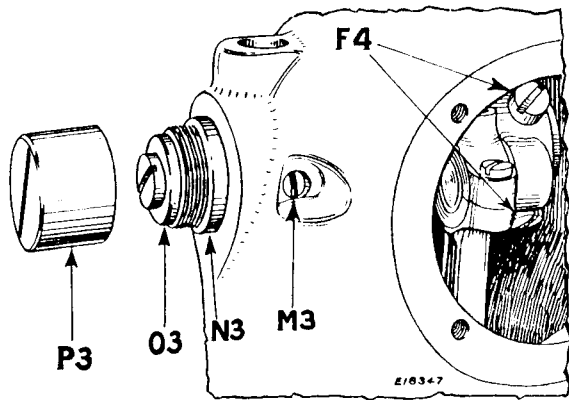


Fig. 33. Removing Arm Rock Shaft

TO REPLACE THE ARM ROCK SHAFT

To replace the parts, reverse the foregoing order of removal.

For the rock shaft replacement, have the connecting rod at midway position.

Replace the screw and washer **O3** in the end of the shaft, then turn the balance wheel a few times by hand to permit alignment of the rock shaft crank before tightening the two screws **F4** on their flats. The end play in the rock shaft is regulated by loosening set screw **M3** and moving the bushing **N3** endwise.

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

TO REMOVE THE ARM ROTARY SHAFT

Remove the presser foot, or turn the roller presser up and out of the way. Remove needles, throat plate, thread guard and cloth plate.

Take out the screw **Y3**, Fig. 29, page 27 and remove the looper holder together with the looper. Take out screw **W5**, Fig. 31, page 28 and remove the stripper plate bracket together with the stripper plate.

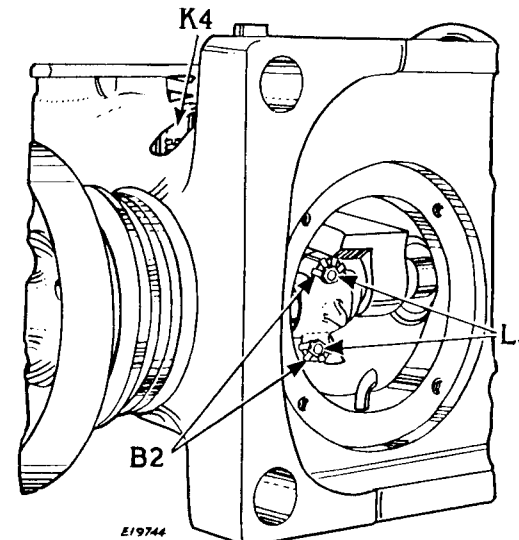


Fig. 34. Removing Arm Shaft

Remove the feed bar as instructed on page 28. Remove screw **F5**, Fig. 30, page 27 which holds the looper shaft to the rotary shaft. Remove the oil sump at the under side of the machine bed, being careful not to injure the gasket. Through the opening thus exposed, see Fig. 34, take out the two hexagon nuts **L3**, Fig. 34 together with the lock washers **B2**, Fig. 34 and remove the connecting rod cap. Loosen the three set screws **L2**, Fig. 31, page 28 in the feed eccentric **M2**; also loosen set screw in hub of looper thread take-up **T3**, Fig. 31.

Loosen ball bearing case screw **K4**, Fig. 34 and remove the arm rotary shaft together with the ball bearing case. Tap against the inside of the balance wheel rim to assist in the removal of the shaft.

TO REPLACE THE ARM ROTARY SHAFT

When making replacement, tighten the three set screws **L2**, Fig. 31 in the feed eccentric **M2**, Fig. 31 in the order mentioned in "To Time the Feed" page 24. Be sure to have the "flat" of the ball bearing case where the ball bearing case screw **K4** will be tightened against it.

To replace the connecting rod cap, first have the two cap screws in place, then apply the lock washers **B2**, Fig. 34, then the hexagon nuts **L3**, Fig. 34. Do not tighten these nuts too much as this would cause binding of the shaft. When the nuts **L3** have been properly tightened, bend up the lugs of the washers **B2**.

When replacing the sump at the under side of the machine bed, see that the gasket is properly in place to prevent leakage of oil, before tightening the four fastening screws.