

SINGER

152-11

USE **SINGER*** OILS and LUBRICANTS

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

*The following is the correct lubricant
for the 134w, 152 and 231 Machines:*

TYPE D — MANUFACTURING MACHINE OIL, HEAVY GRADE

OTHER **SINGER*** LUBRICANTS

TYPE E — THREAD LUBRICANT

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

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.

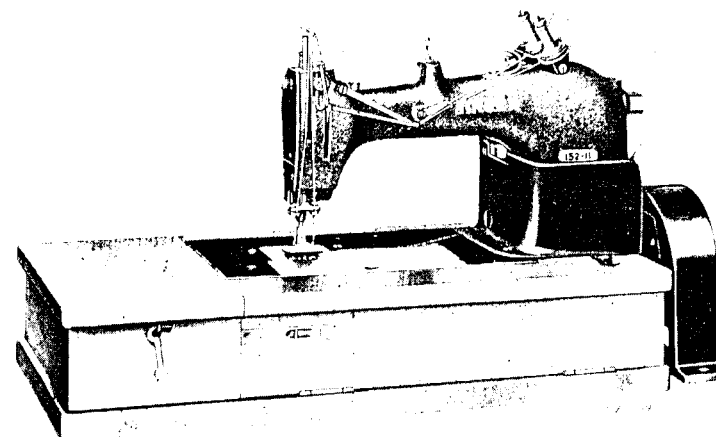
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INSTRUCTIONS

FOR USING AND ADJUSTING

SINGER* SEWING MACHINE 152-II

TWO NEEDLES AND TWO LOOPERS
TWO-THREAD CHAIN STITCH



MACHINE 152-II

THE SINGER MANUFACTURING COMPANY

*A Trademark of THE SINGER MANUFACTURING COMPANY

DESCRIPTION

MACHINE 152-11 has two needles and two loopers and is designed for stitching facings and button stays on men's shirts, and for plain two-line, two-thread chain stitching in light and medium weight fabrics.

The distance between the two needles may be from 9/16 to 1-1/2 inches, as ordered.

The machine has an automatic system of lubrication which supplies oil to all the principal bearings from a reservoir located in the base of the arm.

The arm rotary shaft is counterbalanced and is equipped with ball bearings for the intermediate and rear bearings which are adjacent to the balance wheel.

To Set Up the Machine

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

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Caution

AFTER SETTING UP, DO NOT START THE MACHINE UNTIL IT HAS BEEN THOROUGHLY OILED AS INSTRUCTED ON PAGES 4, 5 AND 6.

Speed

Machine 152-11 should be driven at a speed not exceeding 3600 revolutions per minute for the first two or three days, after which it can be driven up to its maximum speed of 4000 R.P. M. depending upon the nature of the work and the ability of the operator. When the machine is in operation, the machine pulley must turn over away from the operator.

To Oil the Machine

Use "TYPE D" OIL, sold by Singer Sewing Machine Company, For description of this oil, see inside front cover of this book.

SINGER Class 152 Machines are equipped with an oiling system which automatically delivers the proper amount of oil to the principal bearings of the machine. SEE LARGE DIAGRAMS, PAGES 12 AND 13.

A scoop in the connecting rod picks up the oil in a reservoir in the machine arm and lubricates the various bearings inside the arm by splash. A cup within the arm catches some of this oil, and connecting pipes and wicks distribute it to the principal bearings outside the machine arm.

IN ORDER THAT THIS SYSTEM MAY OPERATE, IT IS ABSOLUTELY NECESSARY THAT THE FOLLOWING INSTRUCTIONS BE OBSERVED TO THE LETTER. Failure to do this may result in SERIOUS DAMAGE TO THE MECHANISM OF THESE MACHINES.

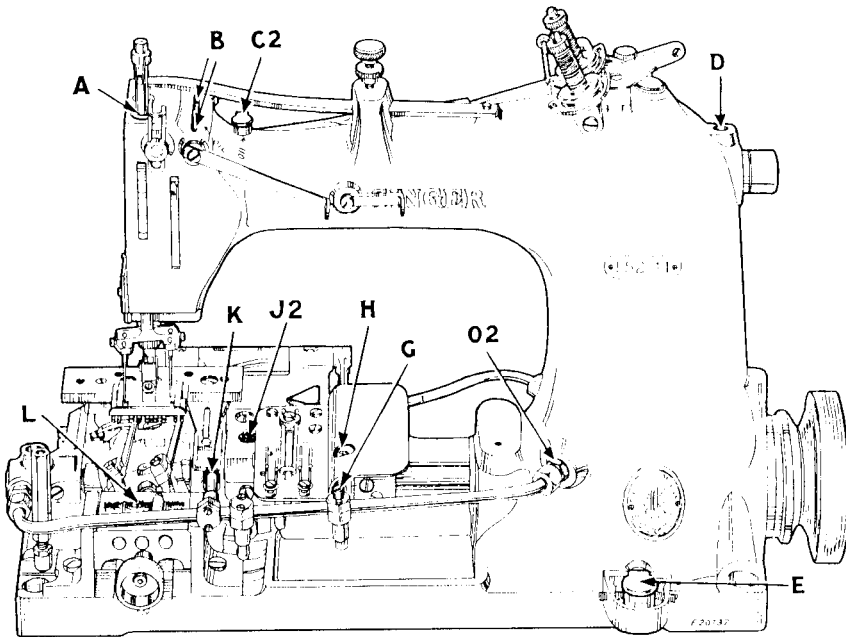


Fig. 2. Priming and Oiling Points at Front of Machine

A machine new from the factory, or a machine that has not been operated for some time, must be serviced as instructed on the following page.

NOTE: It is not necessary to remove the work plate for the first servicing or subsequent oiling of the machine. For this purpose merely remove the slide plate.

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

1st. Loosen thumb screw (M2, Fig. 3). Turn aside cover (N2, Fig. 3) and apply oil to the oil filler (A2, Fig. 3) until the oil stands about 1/16 inch from the top of oil level cup (E, Fig. 2). This supply must be maintained. Then turn the cover (N2) back to close the oil hole in filler (A2), and tighten thumb screw (M2).

2nd. Fill the oil holes (B, C2, D, Fig. 2) and (P2, Y2, Z2, Fig. 3) level full of oil.

3rd. Fill the main oil pipe to OVERFLOWING, through the oil hole (G, Fig. 2). This is very important as it primes the various oil wicks.

4th. Apply oil at holes (Q2, T2, V2, Fig. 3).

5th. Fill the trough on the connecting rod at (H, Fig. 2).

6th. Fill the oil hole for the rotary shaft at (J2, Fig. 2).

7th. Fill the trough on feed lifting eccentric at (K, Fig. 2).

8th. Fill the trough in looper throw-out block at (L, Fig. 2).

9th. Apply oil at (A5, Fig. 3) for feed rocking frame hinge pin.

10th. Apply two drops of oil to the upper needle bar bushing at (A, Fig. 2) and to lower needle bar bushing at (W2, Fig. 3).

11th. Apply a drop of oil to the upper presser bar bushing at (U2, Fig. 3) and to lower presser bar bushing at (X2, Fig. 3).

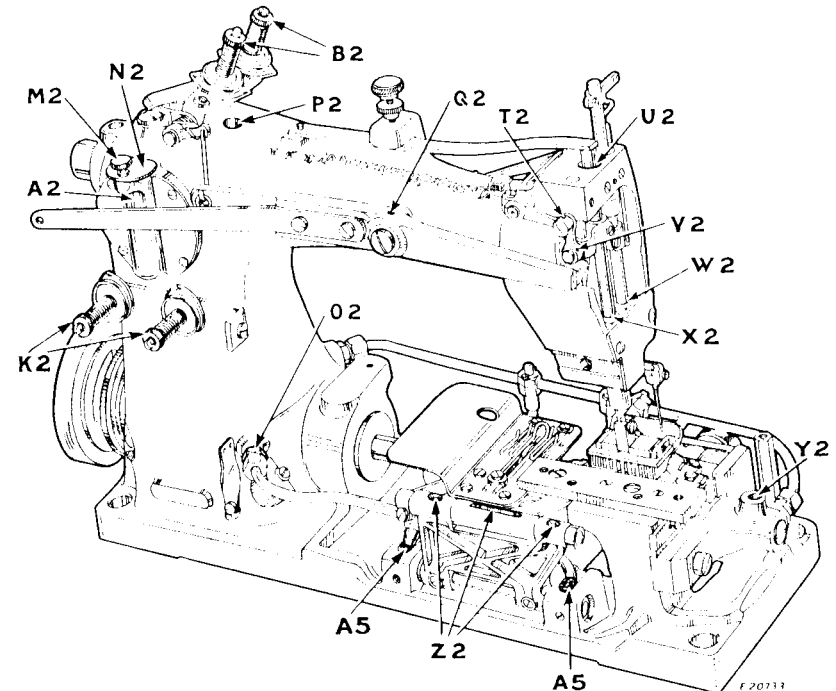


Fig. 3. Priming and Oiling Points at Rear of Machine

A machine in DAILY USE must be oiled as follows:

1st. Apply oil to the oil filler (A2, Fig. 3) until the oil stands about 1/16 inch from the top of the oil level cup (E, Fig. 2) as instructed on page 5.

NEVER PERMIT THE LEVEL OF THE OIL TO BECOME LOWER THAN 1/4 INCH FROM THE TOP OF THE CUP (E, Fig. 2) WHEN THE MACHINE IS AT REST.

2nd. Fill the oil cup (C2, Fig. 2) LEVEL FULL twice daily or as required.

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

SPECIAL NOTICE

The letter "O" which is marked on each of the oil pipe couplings (O2, Figs. 2 and 3) must always be at the top.

Needles

Needles for Machine 152-11 are of Class and Variety 62 x 47 and are made in sizes 13, 14, 16, 17, 18 and 19.

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

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

The following is an example of an intelligible order:

"100 No. 16, 62 x 47 Needles"

The best stitching results will be obtained when using needles sold by Singer Sewing Machine Company.

To Set the Needles

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

To Thread the Needles

(See Fig. 4)

TO THREAD THE LEFT HAND NEEDLE, pass the thread from the unwinder through the rear tension eyelet (1), around the back of, and between, the rear tension discs (2), down through the rear

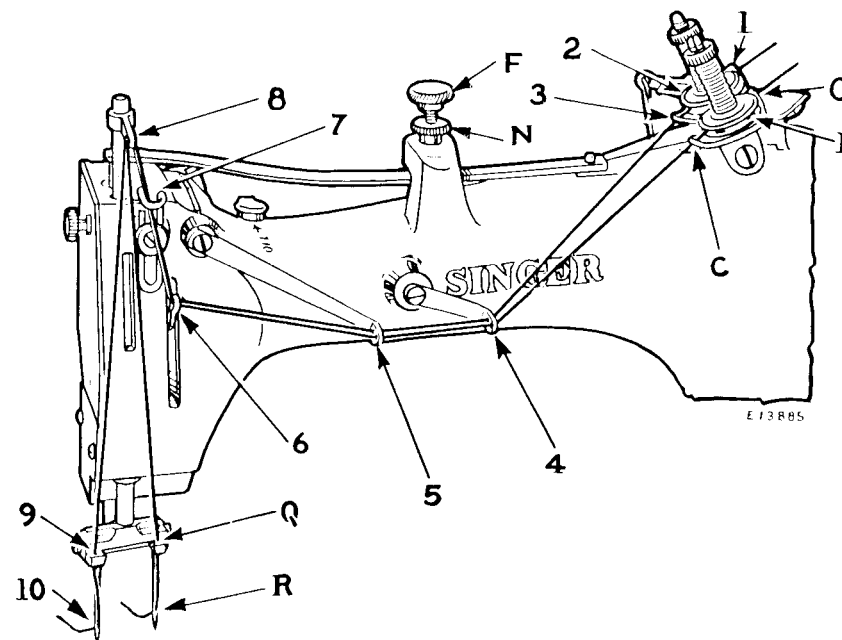


Fig. 4. Threading the Needles

tension eyelet (3), through the rear eyelet of the guide (4), through the rear eyelet of the slack thread regulator (5), through the eyelet of the thread controller (6), up and through the auxiliary thread take-up wire (7), through the rear hole in the thread take-up (8), down through the hole (9) in the needle clamp and from front to back through the eye of the left hand needle (10).

TO THREAD THE RIGHT HAND NEEDLE, pass the thread from the unwinder through the front tension eyelet (O), around the back of, and between, the front tension discs (P), down through the front tension eyelet (C), through the front eyelet of the guide (4), through the front eyelet of the slack thread regulator (5), through the eyelet of the thread controller (6), up and through the auxiliary thread take-up wire (7), through the front hole in the thread take-up (8), down through the hole (Q) in the needle clamp and from front to back through the eye of the right hand needle (R).

A machine in DAILY USE must be oiled as follows:

1st. Apply oil to the oil filler (A2, Fig. 3) until the oil stands about 1/16 inch from the top of the oil level cup (E, Fig. 2) as instructed on page 5.

NEVER PERMIT THE LEVEL OF THE OIL TO BECOME LOWER THAN 1/4 INCH FROM THE TOP OF THE CUP (E, Fig. 2) WHEN THE MACHINE IS AT REST.

2nd. Fill the oil cup (C2, Fig. 2) LEVEL FULL twice daily or as required.

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

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

The following is an example of an intelligible order:

"100 No. 16, 62 x 47 Needles"

The best stitching results will be obtained when using needles sold by Singer Sewing Machine Company.

To Set the Needles

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

To Thread the Needles

(See Fig. 4)

TO THREAD THE LEFT HAND NEEDLE, pass the thread from the unwinder through the rear tension eyelet (1), around the back of, and between, the rear tension discs (2), down through the rear

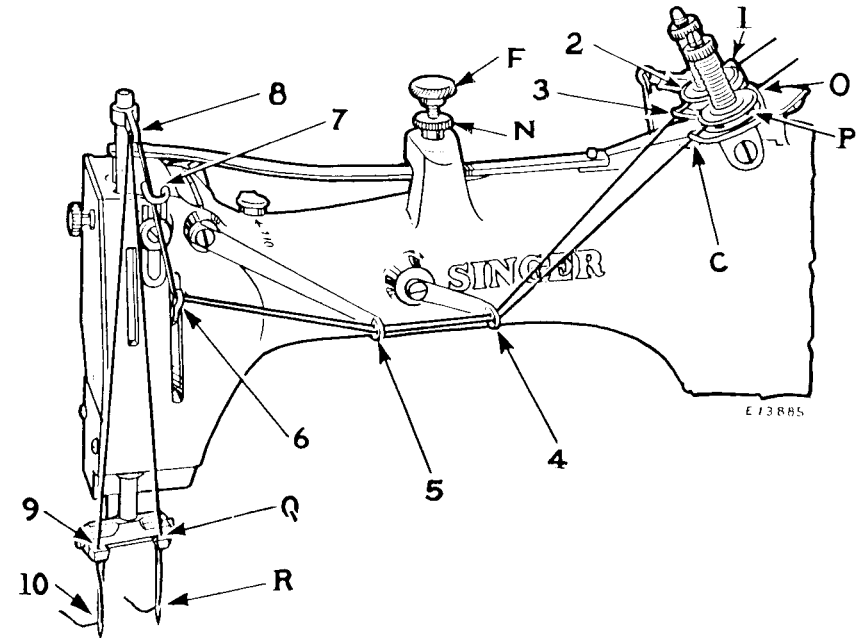


Fig. 4. Threading the Needles

tension eyelet (3), through the rear eyelet of the guide (4), through the rear eyelet of the slack thread regulator (5), through the eyelet of the thread controller (6), up and through the auxiliary thread take-up wire (7), through the rear hole in the thread take-up (8), down through the hole (9) in the needle clamp and from front to back through the eye of the left hand needle (10).

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Threading the Loopers

Operator Standing at the Front of the Machine

(See Figs. 5 and 6)

Turn the balance wheel over from you until the needle bar moves up to its highest position, then turn knob (L2, Fig. 6) to the left as far as it will go, and move it downward, thus putting the loopers in "throw-out" position for convenient threading.

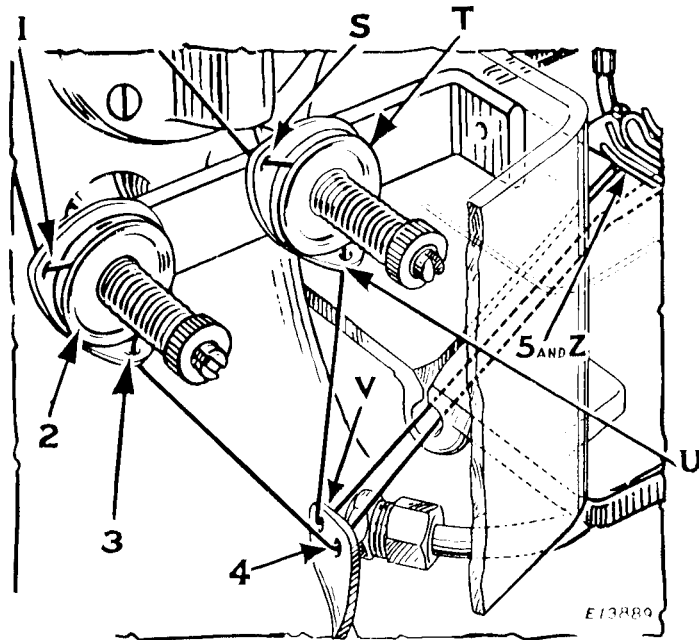


Fig. 5. Threading the Loopers

TO THREAD THE RIGHT HAND LOOPER, pass the thread from the un-winder through the hole (1, Fig. 5) in the right hand tension bracket and over between the tension discs (2) at the back of the machine, through the hole (3) and down through the rearmost eyelet (4) in the upright thread guide which is fastened to the base of the machine. Pass the thread through the hole in the cloth plate guard and through the slot in the cloth plate, then pass the thread over the first guide and into the second guide of eyelet (5, Fig. 6), under the stripper (6, Fig. 6), into the first guide and over the second guide of eyelet (7, Fig. 6), through the hole (8, Fig. 6) in the heel of the looper and from you and toward the rear side of the machine through the eye (9, Fig. 6) of the looper.

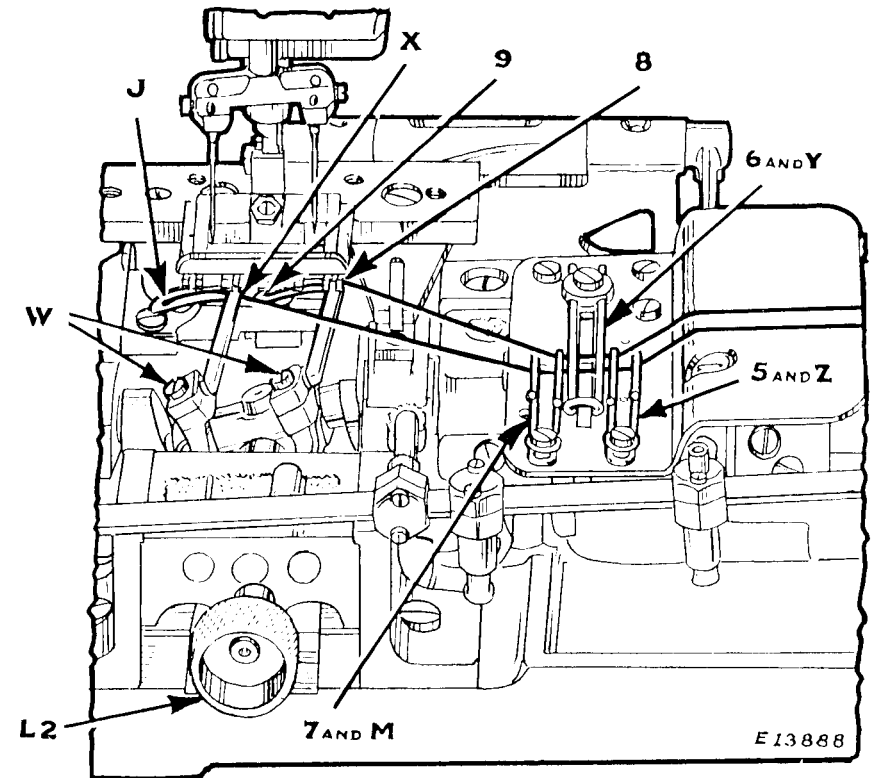


Fig. 6. Threading the Loopers

TO THREAD THE LEFT HAND LOOPER, pass the thread from the un-winder through the hole (S, Fig. 5) in the left hand tension bracket, over between the tension discs (T, Fig. 5) at the back of the machine, through the hole (U, Fig. 5) and down through the front eyelet (V, Fig. 5) in the upright thread guide which is fastened to the base of the machine. Pass the thread through the hole in cloth plate guard and through the slot in the cloth plate. Then pass the thread through both guides of the eyelet (Z, Fig. 6), under the stripper (Y, Fig. 6), through both guides of the eyelet (M, Fig. 6), through the hole (X, Fig. 6) in the heel of the looper and from you and toward the rear side of the machine through the eye (J, Fig. 6) of the looper.

Allow about two inches of thread to hang free from the eye of each looper with which to commence sewing, and move the knob (L2, Fig. 6) upward, turning it back into sewing position.

To Regulate the Tensions

The tension on the needle threads is regulated by the thumb nuts (B2, Fig. 3, page 5) above the tension discs at the top of the machine. Tension should be just sufficient to set the stitch properly in the material being stitched.

The tension on the looper threads is regulated by the thumb nuts (K2, Fig. 3, page 5) at the rear side of the machine. The tension on the looper threads should be light but sufficient to control the threads.

To Regulate the Pressure on the Material

The pressure of the presser foot on the material is regulated by means of the thumb screw (F, Fig. 4, page 7) at the top of the machine. Loosen the lock nut (N, Fig. 4) and, to increase the pressure, turn the thumb nut (F) downward. To decrease the pressure, turn the thumb nut (F) upward. When the required pressure is obtained, firmly tighten the lock nut (N).

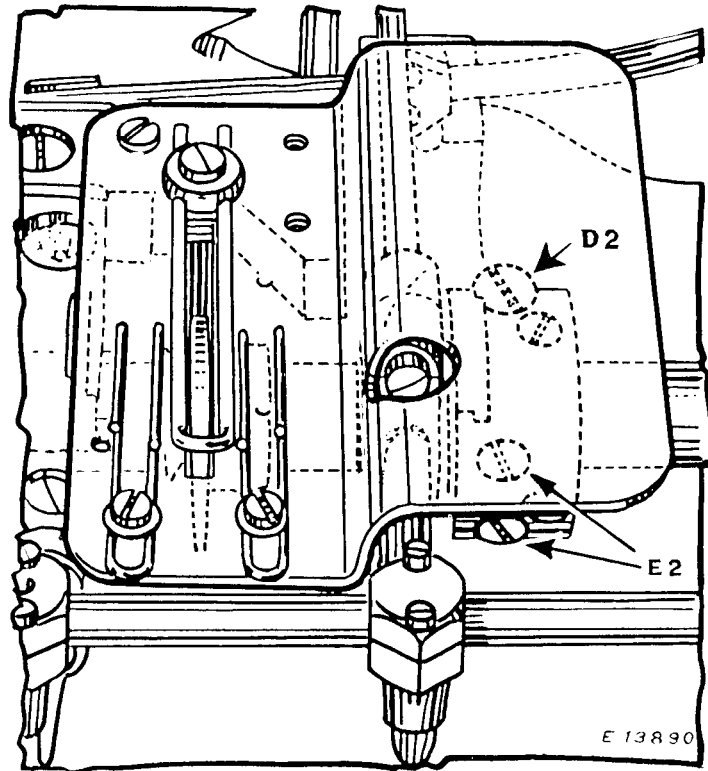


Fig. 7. Feed Regulator

To Regulate the Length of Stitch

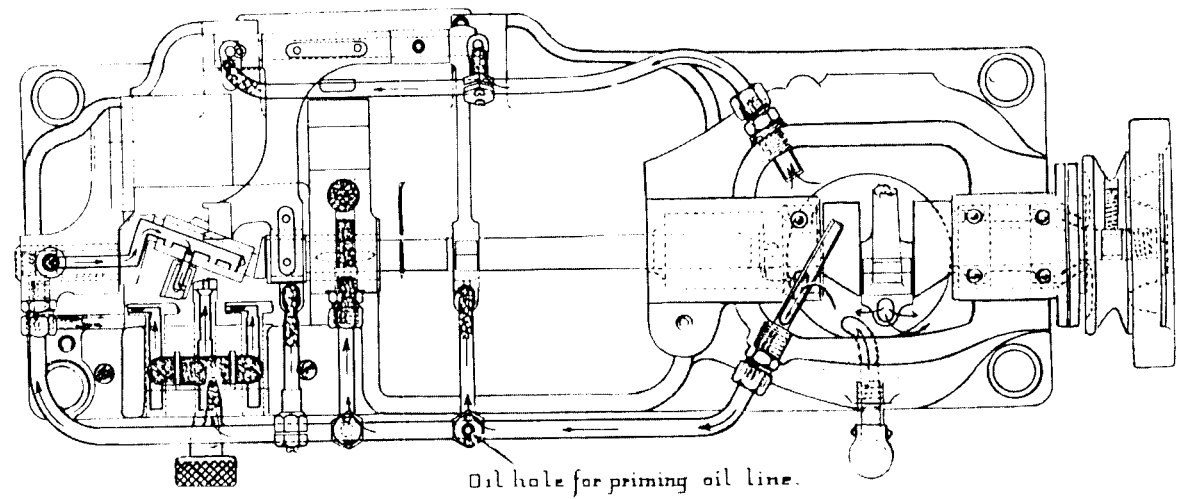
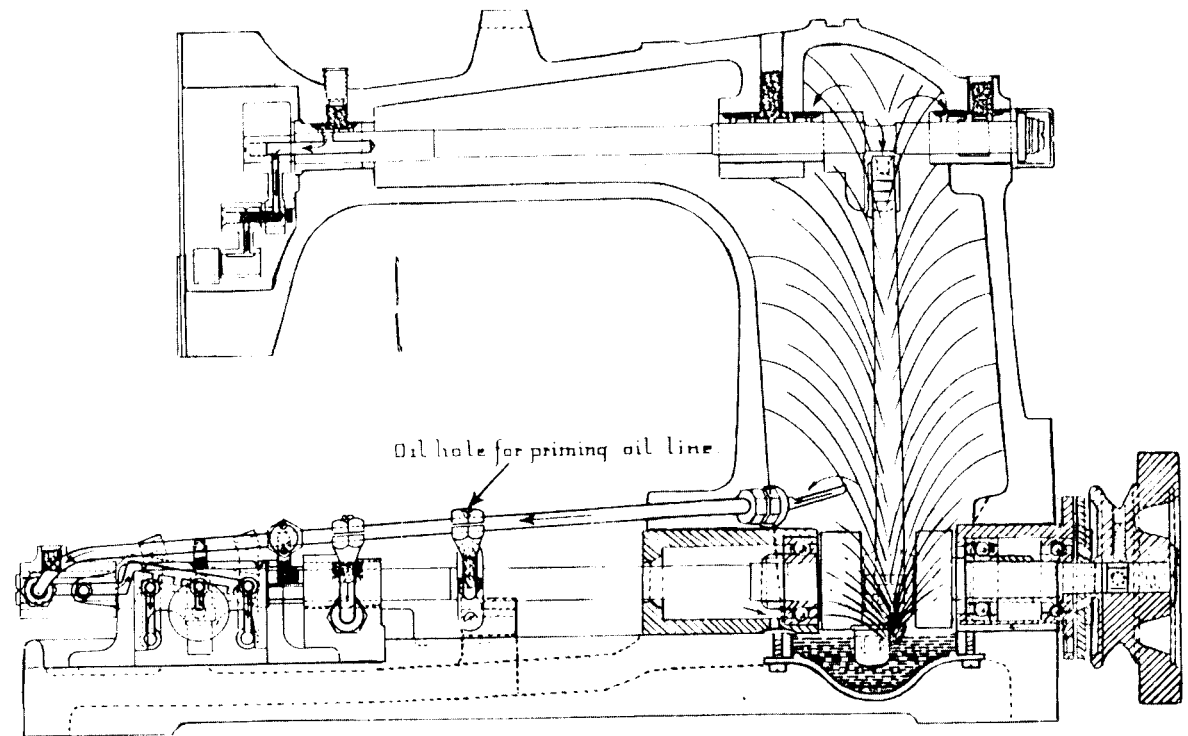
The length of the stitch is regulated by the large screw (D2, Fig. 7) which projects beyond the body of the feed eccentric on the rotary shaft. Loosen the two clamping screws (E2, Fig. 7) and, to lengthen the stitch, turn the large screw (D2, Fig. 7) over to the left, or outward. To shorten the stitch, turn the large screw (D2) over to the right, or inward.

When the desired length of stitch is obtained, securely and evenly tighten the two clamping screws (E2).

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

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



INSTRUCTIONS

FOR

ADJUSTERS and MECHANICS

NOTE. When it becomes necessary to remove the cloth plate, first remove the slide plate, then the cloth plate thread guard at the upright part of the machine arm, then the throat plate and, last, the cloth plate.

To Set the Loopers the Correct Distance from Centers of Needles

When the needle bar is at its lowest position, the point of each looper should be approximately $9/64$ inch from the center of its needle. When setting is required, remove the presser foot, slide plate and throat plate. Then loosen the clamp screws (W, Fig.6, page 9) and set the loopers as instructed. Also make sure that the loopers clear the needles on both the forward and backward strokes before tightening the clamp screws (W, Fig.6).

To Set the Needle Bar in the Correct Position

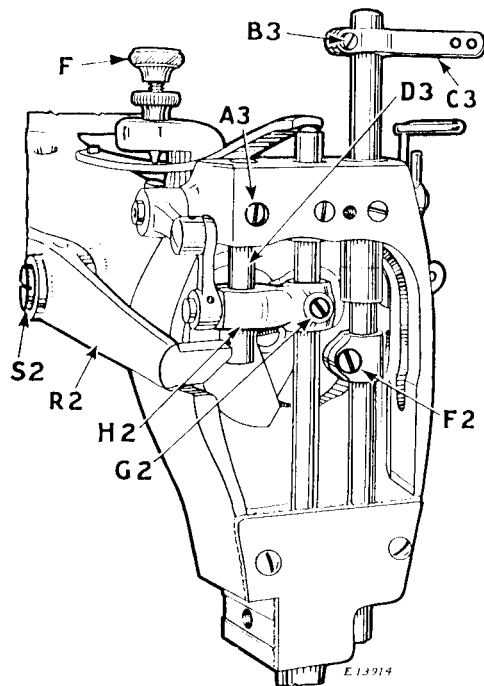


Fig.8.

Turn the machine pulley over from you until the points of the loopers, on their forward stroke, reach the centers of the needles. With the loopers in this position, the eyes of the needles should be about $1/8$ inch below the points of the loopers so that the eyes of the needles and the eyes of the loopers will be in alignment when they pass each other on the loop-taking stroke.

In case the needle bar is not set at the correct height, loosen the clamping screw (F2, Fig.8) in the needle bar connecting stud and move the needle bar up or down, as required, then tighten the screw (F2, Fig.8).

To Set the Needle Thread Take-up

When the needle bar is in its lowest position, the bottom of the needle thread take-up (C3, Fig.8) should be approximately $1/16$ inch from the top of the upper needle bar bushing.

To Adjust the Slack Thread Regulator

The slack thread regulator (F3, Fig.9), on the front of the machine, should be set so that when the loopers are shedding the needle loops on their backward stroke, the thread will not snap from the points of the loopers nor be drawn through the tension discs.

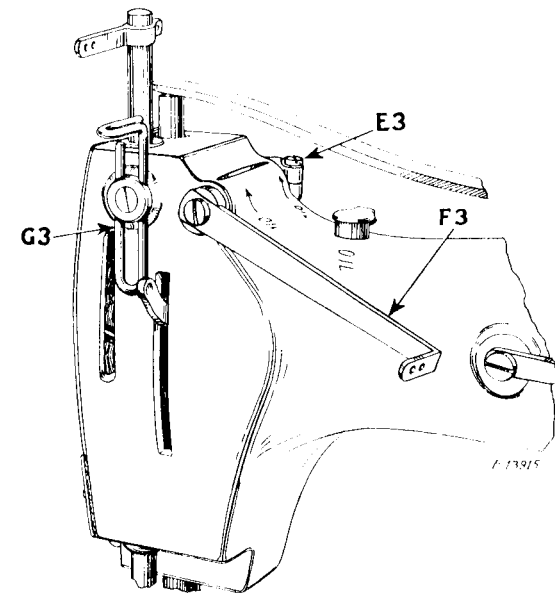


Fig.9.

To set the slack thread regulator, it is best to start with the regulator in a low position and then continue raising the regulator until the loopers back out of the needle loops with a little tension on the thread.

To make this adjustment, loosen the clamping screw (E3, Fig.9) and raise or lower the slack thread regulator as may be required, then securely tighten the clamping screw (E3).

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

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

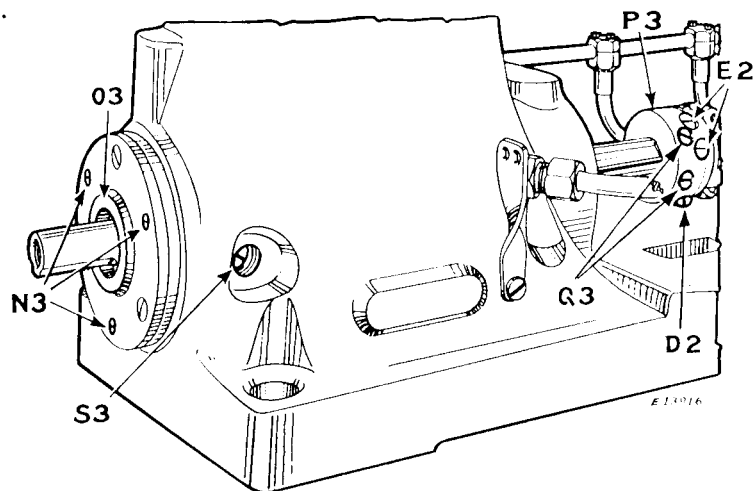


Fig. 10.

The loopers, on their forward and backward strokes, should pass close to the needles but not touch them.

To make this adjustment, loosen the two screws (M3, Fig. 11) in the rock shaft crank; also loosen the two set screws (G3, Fig. 10) in the feed eccentric (P3, Fig. 10), as these two connections must be free. Loosen the two set screws in the belt groove of the balance wheel; remove the cap screw and remove the balance wheel. Loosen the ball bearing case screw (S3, Fig. 10).

To move the rotary shaft toward the needles, turn the three position screws (N3, Fig. 10) inward and tap the ball bearing case (O3, Fig. 10) until the desired amount of sidewise motion of the loopers is obtained, then tighten screw (S3), after which turn the three position screws (N3) outward, as evenly as possible, until the flange, on each of these three screws, stops against the inside of the ball bearing case, thus preventing the shifting of the shaft.

To move the shaft away from the needles, turn the three position screws (N3) outward, as evenly as possible, until the correct amount of sidewise motion is obtained, then tighten ball-bearing case screw (S3).

Replace the machine pulley and lightly turn in the screws in the belt groove. Turn the machine pulley a few turns, by hand, to allow

the rock shaft and feed eccentric to align themselves. Replace and tighten the machine pulley cap screw and then securely tighten the two screws in the groove of the machine pulley. Securely tighten the screws (M3, Fig. 11) against their flats and time the feed eccentric (P3, Fig. 10) as instructed on page 18.

To Remove the Arm Rock Shaft

Remove face plate, presser foot screw and presser foot. Loosen thumb screw (F, Fig. 8) and move aside presser bar spring from the top of the presser bar. Loosen screw (G2, Fig. 8) and remove presser bar from top of machine. Loosen screw (A3, Fig. 8) and remove presser bar guide (D3, Fig. 8) and presser bar lifting bracket (H2, Fig. 8). Remove needles and needle clamp. Loosen clamping screw (F2, Fig. 8) and

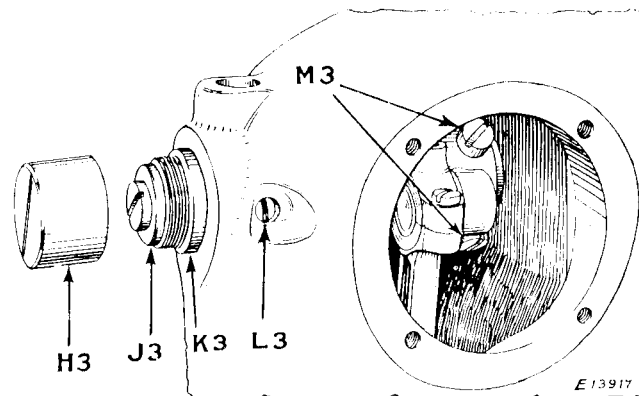


Fig. 11.

remove needle bar from top of machine. Remove needle bar connecting link. Take out screw (S2, Fig. 8) and remove foot lifting lever (R2, Fig. 8). Remove cap (H3, Fig. 11) and screw and washer (J3, Fig. 11) at the end of the rock shaft. Remove round cover plate at back of arm, carefully saving the gasket. Loosen the two screws (M3, Fig. 11) in rock shaft crank and, with the connecting rod at midway position, withdraw the rock shaft from the needle bar end of the machine.

When replacing, have connecting rod at midway position. Replace screw and washer (J3), then turn the machine pulley a few turns, by hand, to allow the rock shaft crank to align itself before tightening the two screws (M3, Fig. 11) on their flats.

The amount of end play in the rock shaft is regulated by loosening set screw (L3, Fig. 11) and moving bushing (K3, Fig. 11) endwise. Be careful, when making this endwise adjustment, to allow for a little end play in the rock shaft, when cold, to provide for expansion which occurs when the machine is warmed up.

To Time the Feed

The correct timing of the drop feed is accomplished by having the set screw (Q3, Fig. 10) which is equidistant from the two lock screws (E2, Fig. 10) in the feed eccentric (P3), bear against its flat on the rotary shaft.

To Time the Loper Thread Take-up

The looper thread take-up (R3, Fig. 12) must be set to contact the thread just as the loopers are commencing their backward

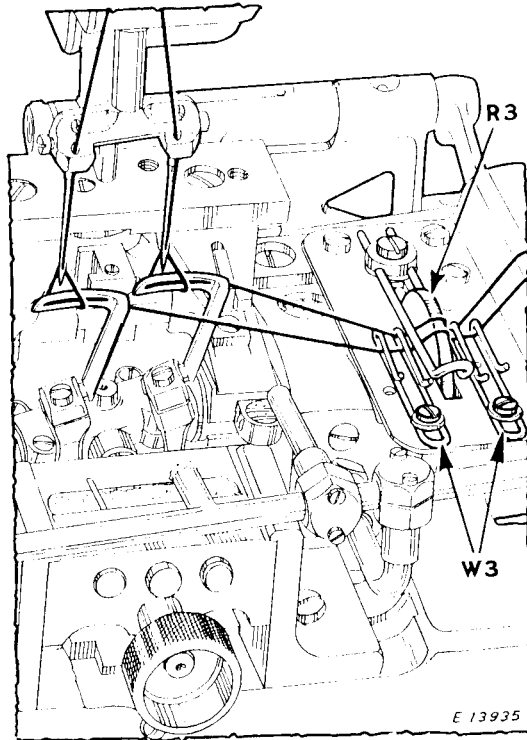


Fig. 12.

stroke or loop-shedding motion, and should keep the threads taut until the points of the needles, on their downward stroke, have entered the triangles formed by the looper blades, the looper threads and the needle loops. See Fig. 12. The looper thread take-up (R3) can be correctly timed after loosening the screw which holds it in position on the rotary shaft.

The guides (W3) are set with their front ends approximately flush with the front edge of the stripper plate as shown in Fig. 12. To adjust, loosen the two screws which fasten the guides to the stripper plate and set the guides as instructed.

Under Thread Rotary Take-up Guard (fibre)

The underside view of the stripper plate, Fig. 12A, shows the fibre guard (T3) attached. The take-up should be set in contact

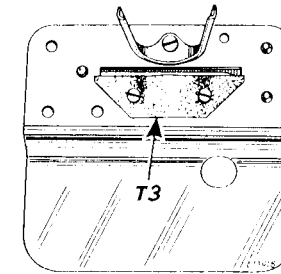


Fig. 12A.

with this guard to prevent the ends of the thread, in case of breakage, from being carried around the take-up.

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 foot is raised.

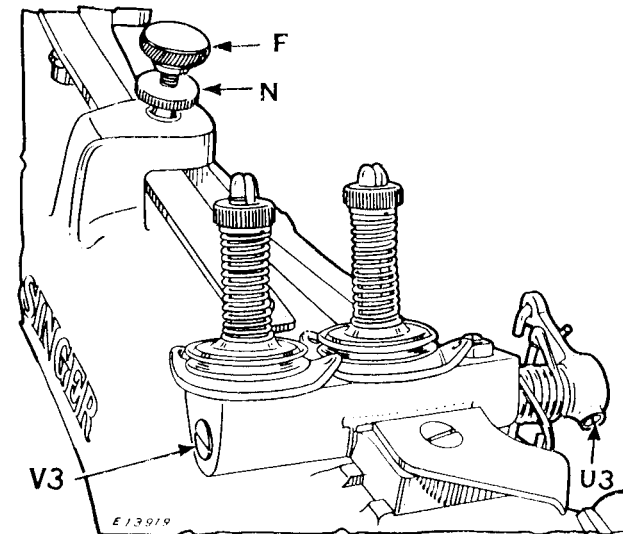


Fig. 13.

If the tension releaser does not release the threads when the presser foot is raised, or if the tension is partially released when the presser foot is down, loosen the set screw (U3, Fig. 13) and turn the shaft (V3, Fig. 13) to the right or left until the correct adjustment is obtained, then tighten the set screw (U3).

To Level the Throat Plate with the Feed Dog

The throat plate holder is provided with adjustment for changing the level of the throat plate with relation to the feed dog to insure that the machine will feed the work evenly and straight.

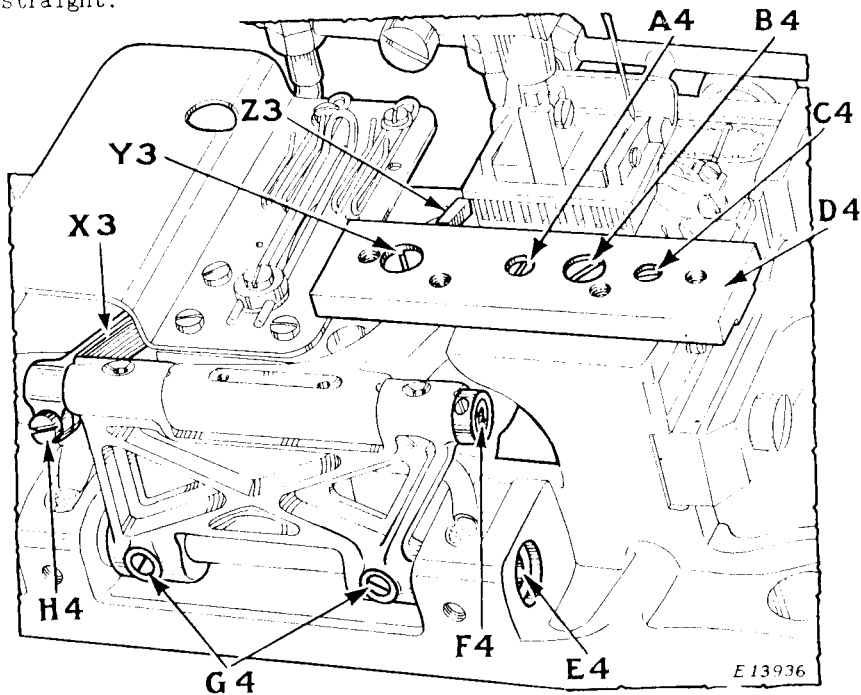


Fig. 14.

To adjust, remove the throat plate and loosen the holder screw (B4, Fig. 14). If the work feeds to the right, raise the left side of the throat plate holder (D4, Fig. 14) by turning down the set screw (C4, Fig. 14). If the work feeds to the left, raise the right side of the holder by turning down the set screw (A4, Fig. 14). Only one of the set screws (A4 and C4) should be used at a time to insure that one side of the throat plate holder will always rest on its seat on the machine. When adjustment is completed, tighten the holder screw (B4).

Note. If, for any reason, it is necessary to move the throat plate holder sidewise to center the needles in the needle holes, the screw (Y3, Fig. 14) should be loosened to allow the feed bar guide (Z3, Fig. 14) to locate itself. This should be done also if the feed rocking frame is moved sidewise to center the feed dog in the throat plate slots.

To Remove the Feed Mechanism

Remove the throat plate holder and the feed dog. Loosen the clamp screw (H4, Fig. 14) in the feed connecting rod (X3, Fig. 14) and slip the feed bar hinge pin (F4, Fig. 14) out far enough to release the connecting rod (X3). Loosen the two set screws (G4, Fig. 14) in the feed rocking frame and remove the hinge pin (E4, Fig. 14). The feed assembly can now be removed from the machine.

After replacing the feed mechanism, the feed dog should be centered in the slots in the throat plate by loosening the clamp screw (H4) and rotating the hinge pin (F4) as required.

To Set the Feed Dog at Correct Height

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

The height of the feed dog is determined by the position of the stop screw (L4, Fig. 15) which, after removing the feed dog, can be turned upward or downward as required. Note that the feed dog should always rest on the screw (L4).

To Set the Needle Guard

The function of the needle guard (K4, Fig. 15) is to prevent the needles from being sprung into the path of the loopers when the loopers are on their forward stroke. The needle guard should be set as close as possible to the needles but without actually touching them.

To set the needle guard in the correct position, loosen the set screw (W4, Fig. 15) and move the guard to or from the needles, as may be required, then securely tighten the set screw (W4, Fig. 15).

The needle guard can also be adjusted to the right or to the left to clear the feed dog, after loosening screw (J4, Fig. 15).

To Remove the Loooper Mechanism

Take out the two screws which hold the cap (N4, Fig. 15), unscrew the coupling nut (S4, Fig. 15) also the coupling nut at the base of the machine arm, and remove the oil pipe.

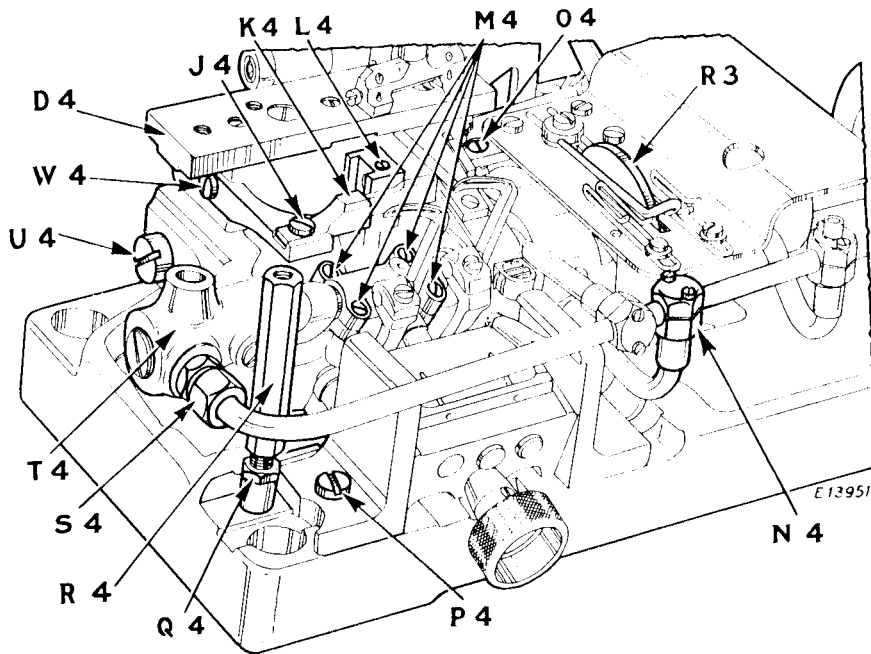


Fig. 15.

Take out the screw (W4, Fig. 15) and remove the needle guard holder. Loosen the lock nut (Q4, Fig. 15) and remove the cloth plate post (R4). Take out the four screws (M4, Fig. 15) in the looper shaft connection and remove the cap. Take out the screw (P4, Fig. 15) which holds the slide block bracket, and the looper assembly can then be removed.

To remove the looper shaft (X4, Fig. 16) from the machine, first remove the feed dog and feed bar, then take out screw (U4, Fig. 15) and remove the bracket (T4, Fig. 15). Take out the screw (Y4, Fig. 16) which locks the looper shaft to the rotary shaft, and remove the looper shaft by tapping against the crank shoulder (C6, Fig. 16).

BE CAREFUL NOT TO SPRING THIS SHAFT WHEN REMOVING OR REPLACING IT, AS THIS WOULD CAUSE IT TO BIND AND HEAT WHEN THE BRACKET (T4, Fig. 15) IS REPLACED.

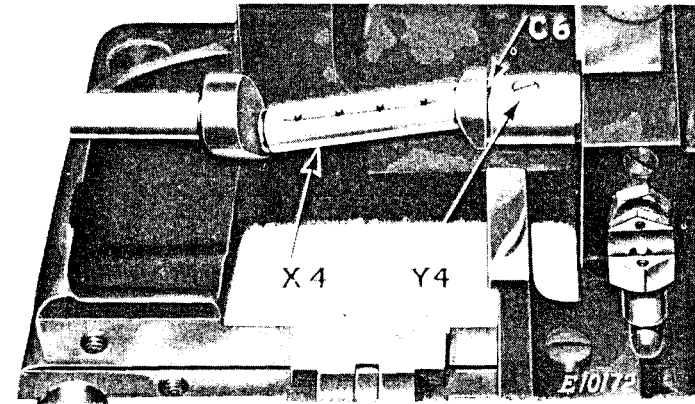


Fig. 16.

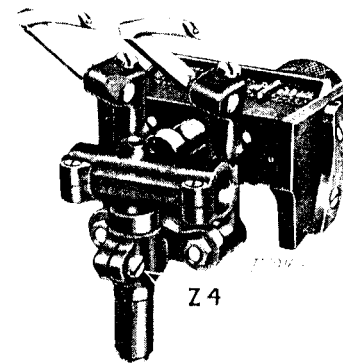


Fig. 17.

Note. If, for any reason, the clamp screw (Z4, Fig. 17) should become loosened when the looper holders are out of the slide block, the three parallel shafts of the looper holders and connection must be replaced in the slide block to properly align the parts before re-tightening the clamp screw (Z4, Fig. 17)

When replacing the looper mechanism, first replace the looper shaft and the bracket (T4, Fig. 15), then place the looper assembly in position and replace the cap with the four screws (M4, Fig. 15). Now bring the left slide block bracket into position so that it fits as closely as possible against the looper throwout slide block without preventing its free movement when "throwing out" the loopers for threading. Then securely tighten the screw (P4, Fig. 15).

The top of the cloth plate post (R4, Fig. 15) should be just level with the throat plate holder (D4, Fig. 15) to insure that the throat plate will be held in a level position. When the post is set at the correct height, tighten lock nut (Q4, Fig. 15).

When replacing the front oil pipe, see that the letter "O", which is marked on the oil pipe coupling (O2, Figs. 2 and 3, pages 4 and 5) is at the top.

To Remove the Arm Rotary Shaft

Remove the needles, presser foot, slide plate, throat plate, work plate and feed dog. Take out the screw (O4, Fig. 15, page 22) and remove the stripper plate bracket and stripper assembly.

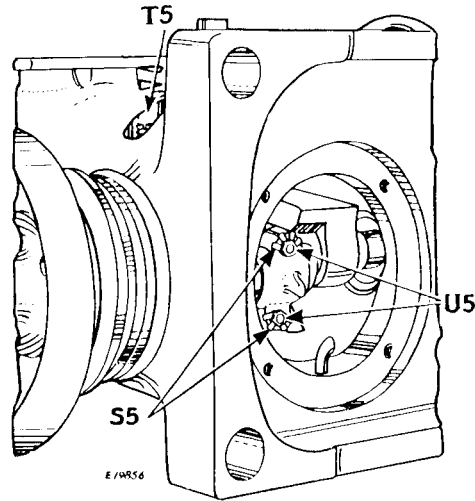


Fig. 18.

Take out screw (B4, Fig. 14, page 20) and remove the throat plate holder (D4, Fig. 14).

Remove the feed mechanism as instructed on page 21. Take out the screw (Y4, Fig. 16) to disconnect the arm rotary shaft from the looper shaft (X4, Fig. 16).

Loosen the two set screws (Q3, Fig. 10, page 16) in the feed eccentric (P3, Fig. 10) and loosen the set screw in the hub of the looper thread take-up (R3, Fig. 15).

Remove the arm bottom cover at the under side of the machine and take out the two hexagon nuts (U5, Fig. 18) and lock washers S5, Fig. 18) and remove the connecting rod cap.

Loosen the ball bearing case screw (T5, Fig. 18) and tap the machine pulley to start the removal of the rotary shaft, after which the rotary shaft, with machine pulley attached, can be withdrawn from the machine.

NOTE - Be sure to replace the bearing cap for the looper shaft at (M4, Fig. 15) and the bearing cap for the connecting rod at (U5, Fig. 18) in the same position, in each case, as before removal, otherwise binding will result at these bearing points.

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