

SINGER

211U157A,165,166,566

Service Manual

SINGER★
INDUSTRIAL PRODUCTS

211

U157A
U165A
U166A
U566A

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DESCRIPTION OF MACHINES

High speed single needle, compound feed, alternating pressers (excluding 211U157), lock stitch, long arm, vertical axis hook, flat bed machines, designed for top performance on a variety of medium to heavy weight fabrics.

GENERAL FEATURES

The compound feeding mechanism which consists of a needle feed and drop feed prevents slipping of the upper and lower plies of material when being stitched, and assists in two or more plies being fed evenly to the end of seam.

Vertical axis hook, with a rigid needle guard, which makes two revolutions each stitch.

Safety clutch, adjustable to suit sewing conditions, and protect the hook from damage in case of accidental strain.

Adjustable feed driving eccentric located on hook driving shaft, produces a uniform stitch length at all speeds.

Arm shaft, hook shaft, and belt driven bed shaft are mounted in ball bearings at rear and in automatically lubricated plain bearings at front.

Plunger for changing length of stitch is on top surface of bed.

Sleeve type take-up.

Belt drive.

SPECIAL FEATURES

Vertical axis hook with metered lubrication. Hook can be removed without disturbing hook shaft. (211U157 and 211U566).

Fully automatic lubrication to all moving parts from two reservoirs enclosed in the machine. (211U157)

Thread lubricator reservoir, inside face plate, filled through oil hole without disturbing face plate. (211U157)

Needle bar and needle bar driving mechanism are lubricated automatically from oil reservoir in machine arm. (211U157)

Feed reversing mechanism controlled by hand or foot. Direction of feed can be reversed at any time, and at any speed. Spring biased reverse lever resumes forward stitching position immediately, when hand or foot pressure is released. (211U157, 211U166 and 211U566)

Alternating presser system with the needle bar frame mounted on its upper end. (211U165, 211U166 and 211U566)

Push button adjustable lifting eccentric which, via a linkage, enables the step of the alternating pressers to be set to 9/32" (7.1 mm). To suit particular sewing operations the step of the alternating pressers can also be set to a minimum height. (211U165, 211U166 and 211U566)

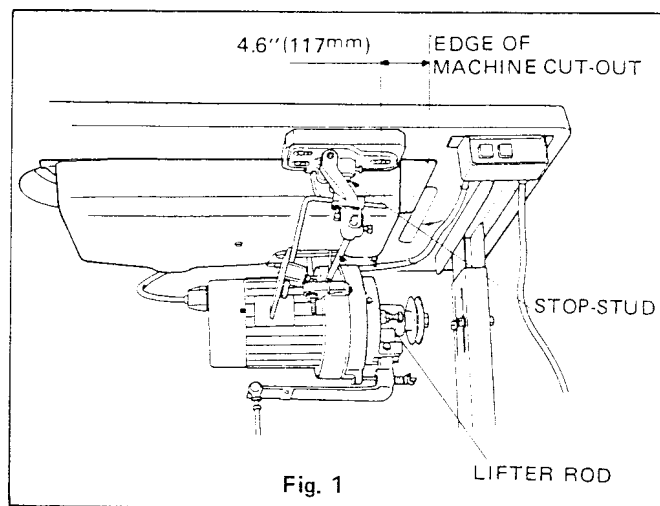
Controllable thread lubricator which is located in the machine head. (211U165, 211U166 and 211U566)

SPECIFICATIONS

| | 211U157 | 211U165 | 211U166 | 211U566 |
|-------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Needle bar stroke | 1-5/16" (33.34 mm) | 1-5/16" (33.34 mm) | 1-5/16" (33.34 mm) | 1.386" (35.20 mm) |
| Take-up stroke | 2.197" (55.8 mm) | 2.433" (61.8 mm) | 2.433" (61.8 mm) | 2-27/32" (72.2 mm) |
| Clearance under presser foot | 1/4" (6.35 mm) | 0.315" (8.0 mm) | 0.315" (8.0 mm) | 0.315" (8.0 mm) |
| Sewing capacity | 15/64" (6.0 mm) | 5/16" (8.0 mm) | 5/16" (8.0 mm) | 5/16" (8.0 mm) |
| Maximum stitch length | 6 SPI (4.2 mm) | 3-1/2 SPI (7.3 mm) | 5 SPI (5.1 mm) | 3 SPI (8.4 mm) |
| Maximum speed | 4,000 SPM | *3,500 SPM | *2,900 SPM | *2,700 SPM |
| Bed length | 18-3/4" (476.5 mm) | | | |
| Bed width | 7" (177.8 mm) | | | |
| Space at right of needle | 9-5/8" (244.5 mm) | | | |
| Needle | Cat. No. 1901 | Cat. No. 3355 | Cat. No. 3355 | Cat. No |

INSTALLATION

Fasten drip pan to table with its right edge in line with machine belt slot in table. Fasten knee lifter bracket in location shown in Fig. 1. Assemble it so that lifter rod does not strike drip pan. Screw slots in bracket provide necessary adjustment. Set stop-stud to stop the action of knee lifter as soon as presser foot is raised enough to trip hand lever.



LUBRICATION

For the lubrication of the machine, only SINGER OIL "TYPE A or C", supplied by THE SINGER COMPANY, should be used. In order to insure proper function of the machine and to prevent any excess wear of the moving parts and bearings, the machine should be oiled regularly. In case of continuous use, it should be oiled even more often if it used to produce long seams and run steadily.

Fig. 2 shows the oil filler hole for oil reservoir on top of arm on 211U157 machine.

Fill machine arm reservoir to high mark on oil sight gauge as indicated in Fig. 2.

The machine arm reservoir contains an oil vibrating pump which releases oil only when the machine is operating.

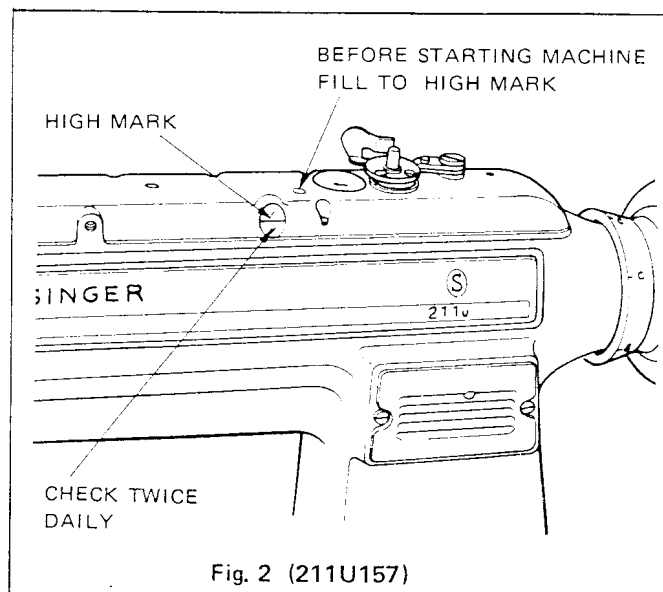
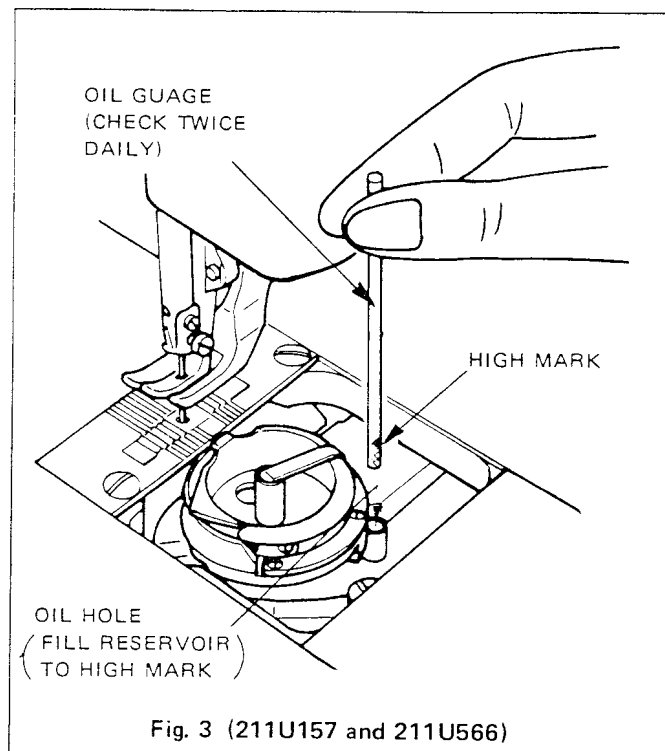
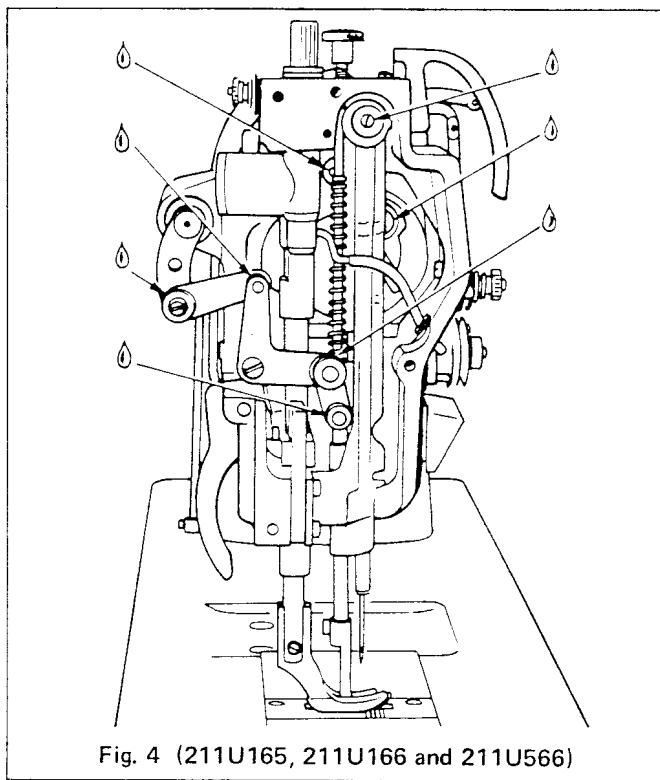


Fig. 3 shows the oil filler hole for hook saddle reservoir on 211U157 and 211U566 machines.

Remove oil gauge as shown in Fig. 3 and fill hook saddle reservoir to full mark on gauge.

Lubricate hook gears and opener gears by applying a generous supply of oil to oil hole indicated in Fig. 3.





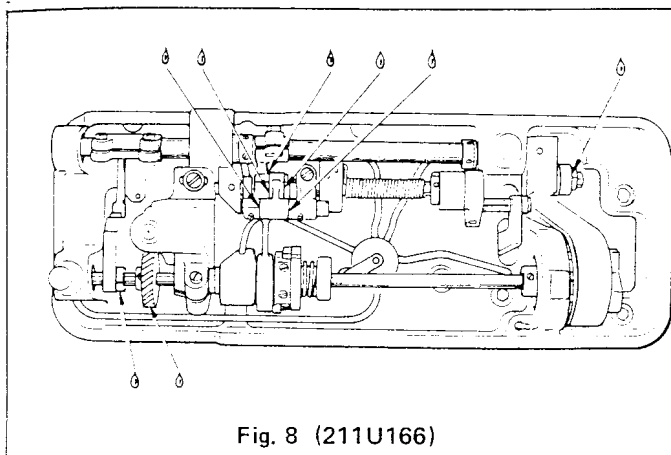


Fig. 8 (211U166)

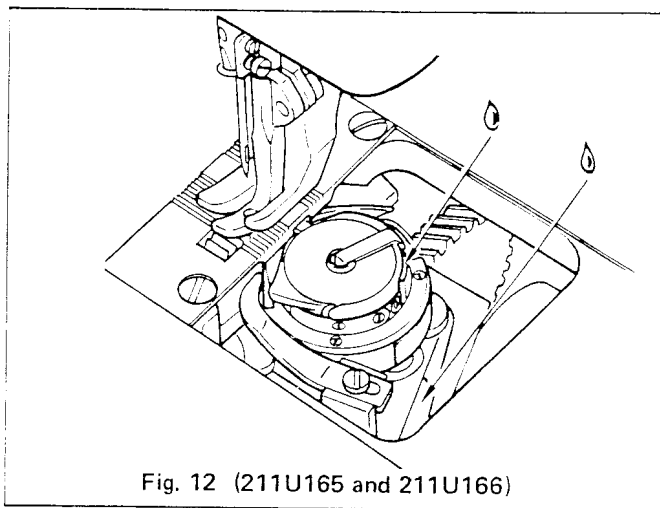


Fig. 12 (211U165 and 211U166)

SPEED

Maximum speed for machine 211U157 is 4000 stitches per minute.

Maximum speed for machine 211U165 is 3500 stitches per minute.*

Maximum speed for machine 211U166 is 2900 stitches per minute.*

Maximum speed for machine 211U566 is 2700 stitches per minute.*

Maximum efficient speed is dependent upon the nature of the operation, the ability of the operator and the type of material being sewn.

Never run a new machine at maximum speed immediately following a new installation. A speed of 500 stitches per minute less than maximum is recommended for the first 100 hours of operation.

NEEDLES

For machine 211U157, use Singer Needles, Catalog 1901.

For machines 211U165, 211U166 and 211U566, use Singer Needles, Catalog 3355.

Size of needle for a particular operation is determined by size of thread and type of material to be sewn.

Orders for needles should state quantity required, size number and catalog number.

For example:

100 Needles, Size 19, Catalog 1901

*Recommended machine speed relative to the operating stroke of the alternating pressers. (211U165, 211U166 and 211U566)

| Presser foot lift | Speed |
|------------------------------|-------------|
| 3/32 inch (2.4 mm) | 3500 s.p.m. |
| 1/8 inch (3.2 mm) | 3300 s.p.m. |
| 5/32 inch (4.0 mm) | 2700 s.p.m. |
| 3/16 inch (4.8 mm) | 2400 s.p.m. |
| 7/32 inch (5.5 mm) | 2300 s.p.m. |
| 1/4 inch (6.3 mm) | 2200 s.p.m. |
| 9/32 inch (7.1 mm) | 2100 s.p.m. |

SETTING THE NEEDLE

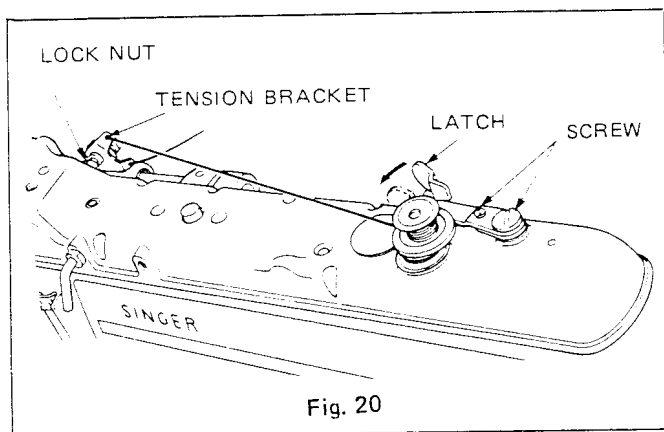
1. Turn machine pulley over toward you until needle bar is at highest position as shown in Fig. 15 and Fig. 16.
2. Loosen needle clamping screw
3. Insert needle into needle bar to highest position, with long groove of needle to left of operator and eye of needle parallel to machine arm.
4. Tighten clamping screw.

UPPER THREADING

Turn machine pulley over toward you until needle bar is at highest position.

Draw about 2 inches of thread through needle eye to start sewing.

Pass thread through



BOBBIN WINDING

THREAD TENSIONS

Tension on thread should be as light as possible yet sufficient to correctly set stitches in material.

NEEDLE THREAD TENSION

Regulate needle thread tension only when presser foot is down. To increase tension, turn thumb nut shown in Fig.

STITCH LENGTH REGULATION

1. With machine OFF, depress button shown in Fig. 27 on bed surface. NEVER DEPRESS BUTTON WHEN MACHINE IS RUNNING.
2. Turn machine pulley over toward you slowly until button drops (snaps) into position.
3. Turn machine pulley in direction (+) when a longer stitch is desired (less SPI) and in direction (—

To reverse the feed with foot treadle, the foot treadle chain should be connected to hole in reverse feed lever shown in Fig. 30.

Release hand lever or foot treadle only when you wish to resume forward stitching.

REVERSE FEED MECHANISM (211U566)

ADJUSTMENTS

SETTING NEEDLE BAR HEIGHT 211U157

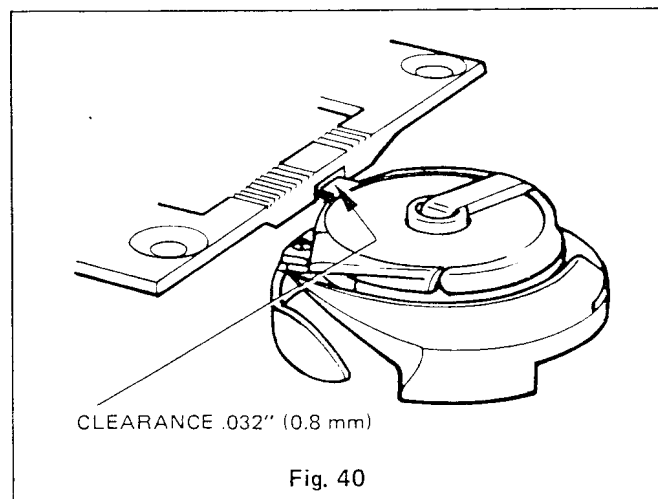
When needle bar is at lowest position of its cycle, the correct gauge distance from throat plate seat to needle stop in needle bar is .991 inch (25.

DISTANCE OF NEEDLE BAR FROM VIBRATING PRESSER BAR 211U165, 211U166 and 211U566

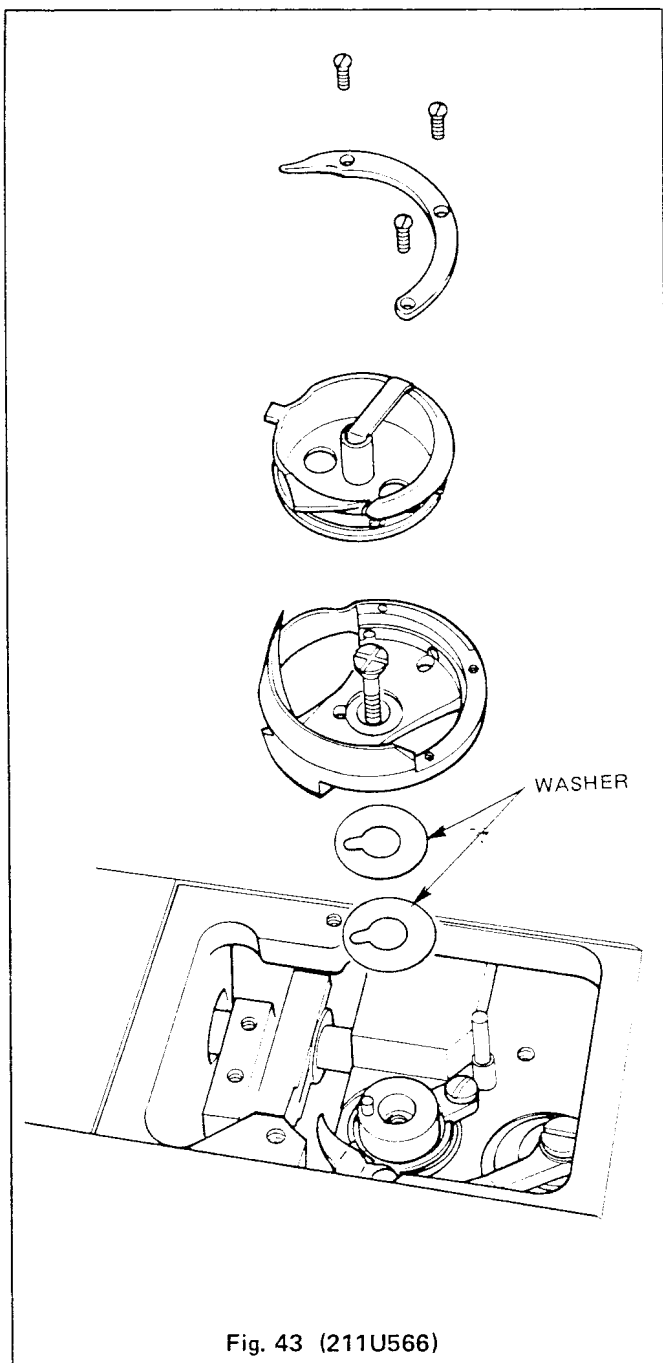
On the 211U165, 211U166 and 211U566 machines the needle bar rock frame is driven by a compound drive mechanism which can be made synchronous or differentiated with the lower feed. It must be adjusted so that,

ADJUSTING FEED REVERSING MECHANISM 211U157 and 211U166

Adjust stitch length to .5 stitches per inch, on the 211U166 machine, and to 6 stitches per inch on the 211U157 machine. Loosen screw A and adjust crank shown in Fig. 37 so that the above stitch length can be obtained.



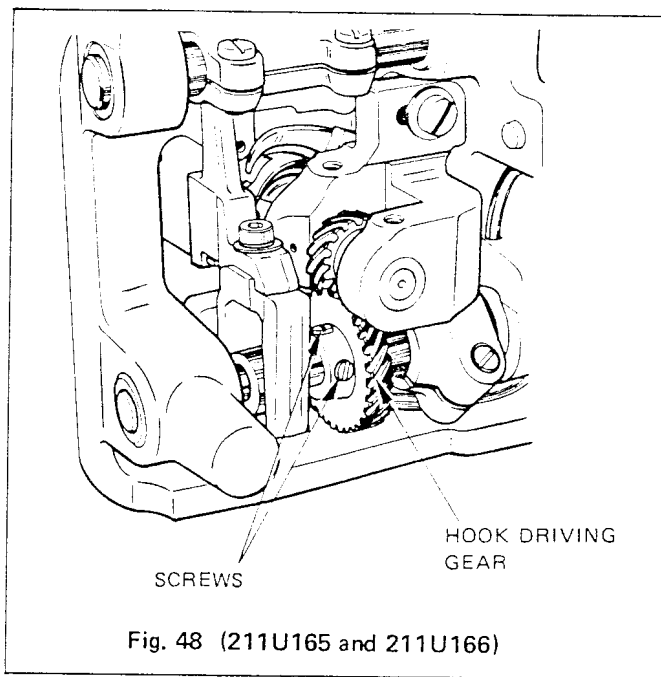
TO ADJUST HEIGHT OF SEWING HOOK 211U157



ADJUSTMENT OF DISTANCE BETWEEN SEWING HOOK AND NEEDLE 211U165 and 211U166

To prevent hook point from dividing strands of thread, it should pass as near to the needle as possible without hitting it.

Turn machine pulley over toward you until sewing hook point is in the



REMOVING SEWING HOOK FROM MACHINE 211U165 and 211U166

Remove presser foot, throat plate, feed dog and bobbin case opener. Loosen screws in the hub of hook driving gear and lift out sewing hook from the hook saddle. (see Fig. 51)

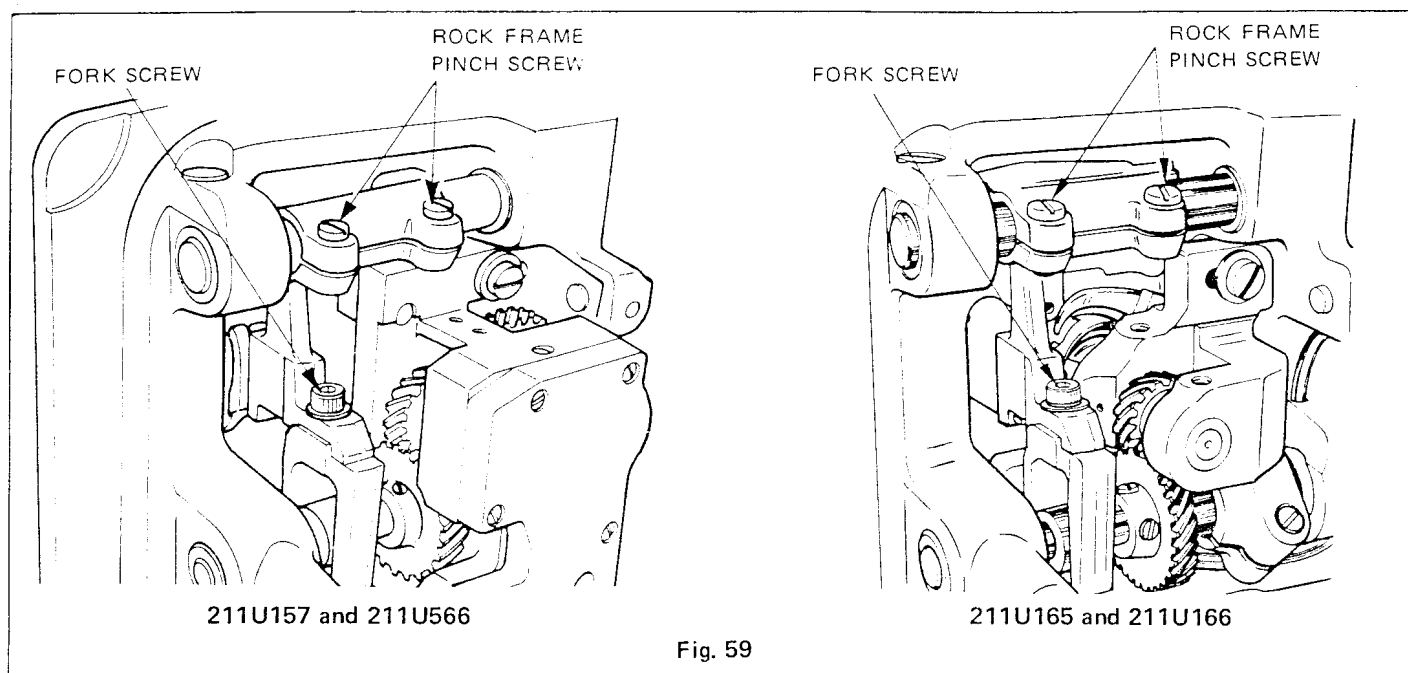
REMOVING HOOK SHAFT 211U157 and 211U566

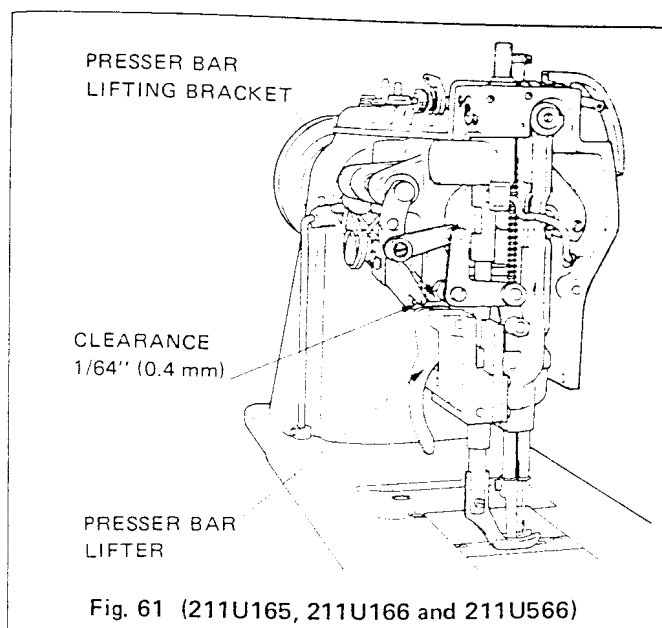
To remove hook shaft, first remove ball bearing retaining cap screws directly under hook shown in Fig. 53. Tip machine back and loosen hook shaft gear hub socket screws shown in Fig. 54. Lift out shaft from top end. If shaft does not lift out easily, loosen screws in

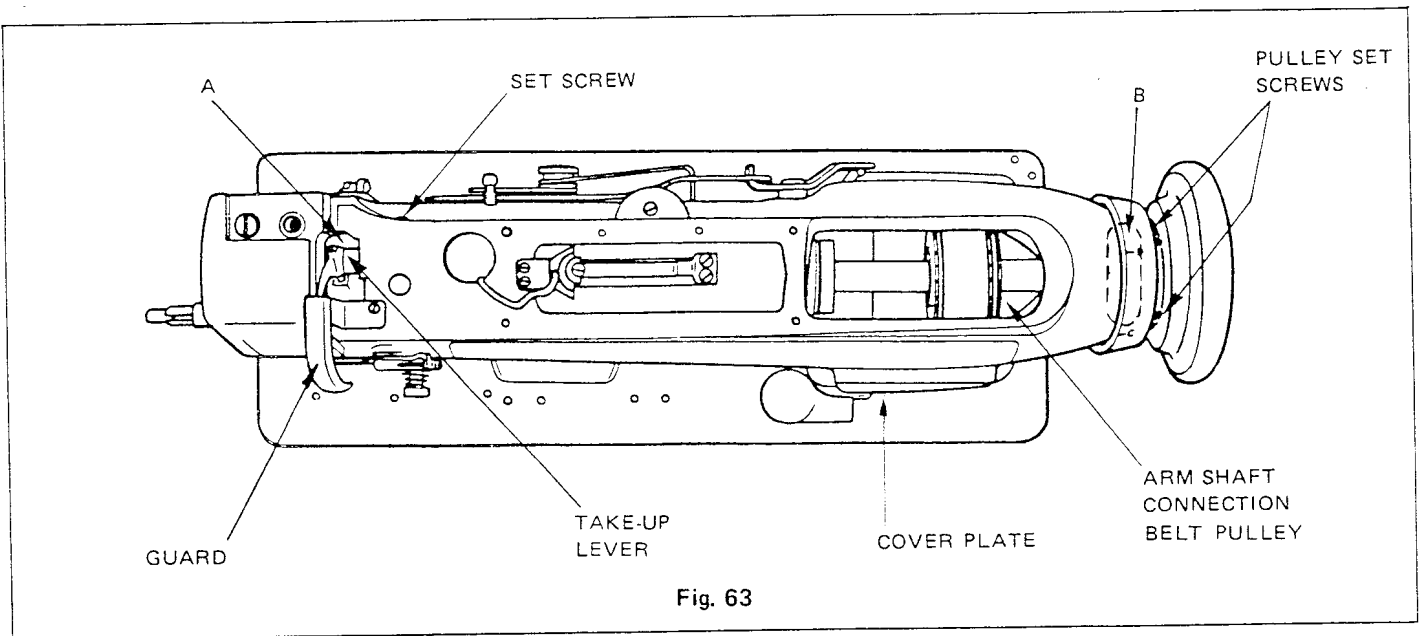
TIMING BOBBIN CASE OPENER

211U157 and 211U566

Turn machine pulley over toward you until lower timing mark on needle bar is even with edge of needle bar frame on upward stroke of needle. When needle bar is in this position, reference mark A should line up with reference mark B on hook saddle, as indicated in Fig







INFORMATION FOR REFERENCE PURPOSE SKETCH OF SEWING MACHINE TABLE

Unit mm

