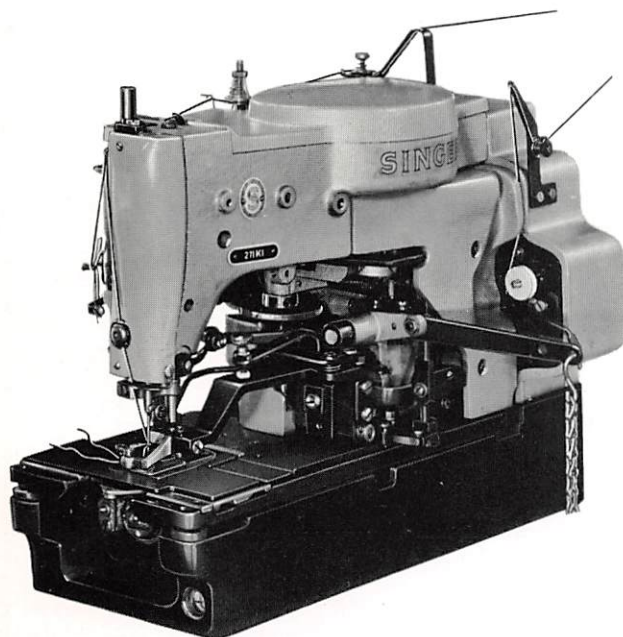


SINGER^{*}

Service Manual

Class 271k



**AUTOMATICALLY LUBRICATED ROTARY SEWING HOOK
FOR MAKING PURLSTITCH OR WHIPSTITCH BUTTONHOLES**

THE SINGER COMPANY

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INDEX

- Actuator Setting (Belt Shifter).....22
- Adjustable Catch Function.....15
- Automatic Knife Bar
 - Disengaging Lever.....10, 32
- Automatic Sequential Buttonhole
 - Device4
- Automatic Sewing Cycle.....3
- Barring.....24, 34
- Barring Head.....25
- Barring Stitch.....34
- Bed Dimension.....3
- Belt.....5
- Belt Shifter, Actuator Setting.....22
 - Automatic.....4
 - Engaging Face Clearance.....23
 - Moment of Trip.....23
 - Operating-block Setting.....23
 - Shaft Setting.....22
 - Timing.....23
 - Two Speeds.....9
- Bight Adjustment.....10, 33, 34
- Bight Stitch.....34
- Binding, Remedies.....11
- Bobbin Case Cap, Threading.....8
- Bobbin Case Opener Bracket.....6, 28
- Bobbin Case Stop Position.....28
- Bobbin Removal.....8
- Bobbin Thread Tension.....9
- Bobbin Winding.....3, 8
- Breaking of Thread, Remedies.....11
- Buttonhole, Completing.....9
 - Length.....10
 - Number of Stitches.....12, 13
 - Purlstitch.....3, 4, 7, 9
 - Stitching over Twice.....10
 - Whipstitch.....3, 4, 7
- Cam Follower Position for Upper Thread
 - Cutting and Clamping Blades.....30, 35, 36
- Centralizing, Barring Stitches.....24
 - Clamp Check.....26
 - Needle Plate.....26
 - Tie Stitches.....33
- Changing the Gears.....12
- Chart, Gear Selection.....13
 - Knives Furnished.....18
- Clamp, Placing Fabric beneath.....9
- Clamp Carrier Slide Lever.....16
- Clamp Check, Centered.....26
 - Clearance with Needle.....27
 - Raising.....10
 - Swing and Tilt.....27
- Clamp Lift, Clearance.....3
- Cleaning.....6
- Clearance, Clamp Check.....27
 - Clamp Lift.....3
 - Feed Wheel Tripping Lever.....21
 - Interlocking Rod.....20
 - Starting Lever Rod.....21
- Cloth Plate, Front.....4
- Completing on Unfinished
 - Buttonhole.....9
- Cord, Threading.....7
- Cord Finger, Adjustable Catch.....5
 - Height.....14
 - Rotating Sector.....15
 - Timing.....15
 - Tripping Latch.....15
- Cording.....4, 5, 7, 14, 15
- Critical Areas that May Cause
 - Thread Damage.....11
- Cutting and Clamping Blades, (Upper Thread),
 - Pressure Adjustment.....29
 - Removal and Replacement.....28, 29
 - Re-trim Action (Timing).....30
 - Setting.....29, 30, 35, 36
- Cutting Blade, Under Thread.....28
- Cutting Space, Adjustment.....16
- Driven and Driving Gears, Chart.....13
- Driving Arm Safety.....36
- Driving Lever Spring Tension.....17
- Feed, Description.....3, 11-13
- Feed Gears.....11-13
- Feed Wheel Tripping Lever,
 - Clearance.....21
- Feed Wheel Tripping Points.....22
- Front Hook Shaft Bushing.....28
- Full Speed, Operation (Belt Shifter).....9
- Gears.....3, 4, 11-13, 20, 21
- Gear Changing.....3, 12
- Gear Selection.....13
- Half Speed, Adjustment (Stop Motion).....19
 - Function.....3, 9
- Hand Ratcheting.....3, 9
- High Point of Stop Cam.....19
- Hook.....3, 6, 28, 31
- Interlocking Rod, Clearance.....20
 - Tension.....19
- Knife, Alignment with Needle.....16
 - Replacement and Setting.....16
- Knife Bar Disengaging Lever.....10, 32
- Knife Bar Height.....3, 17
- Knife Bar Spring Tension.....17
- Knife Grinder, Oiling and
 - Operation.....18
- Knife Slit in Needle Plate.....22
- Knives Available.....3, 4, 18
- Latch Tripping Plate.....31
- Length of Buttonhole.....10
- Lubrication.....5, 6, 8, 18, 28
- Machine Pulleys, Description.....3
 - Rotation.....5
- Needle, Catalogue 1526(71x1Y).....3, 6
- Needle and Knife Alignment.....16
- Needle, Faults and Remedies.....6, 11
 - Setting.....6
 - Threading.....7
- Needle Bar Frame.....33
- Needle Bar Frame Pitman.....16, 33
- Needle Bar Height.....26
- Needle Bar Stroke.....3
- Needle Guard (Hook).....31
- Needle Plate.....26
- Needle Thread Handling Parts
 - (Critical Areas that May Cause
 - Thread Damage).....11
 - Needle Thread Pull-off.....36
 - Needle Thread Tension.....9, 14, 36
 - Normal Speed (Belt Shifter).....9
 - Number of Stitches in Buttonhole.....12, 13
 - Oil Flow to Hook, Regulation.....6
 - Oiling, Bobbin Winder.....8
 - Knife Grinder.....18
 - Machine.....5
 - Parts, Illustrations and List.....37
 - Placing Fabric under Clamp.....9
 - Pressure on Upper Thread Cutting and Clamping Blades.....29
 - Pre-tension Control.....14
 - Pulleys.....3, 5
 - Ratcheting, Hand.....3, 9
- Safety Devices.....3, 30, 31, 35, 36
- Sewing Hook, Assembly.....31
 - Description.....3
 - Needle Guard.....31
 - Regulating Oil Flow.....6
 - Setting and Timing.....31
- Sewing Safety Lever.....35
- Sewing Safety Lock.....3, 30
- Speed, Adjustment (Stop Motion).....19
 - Changing (Belt Shifter).....9
 - Maximum Recommended.....3, 4, 5
- Starting Lever Engaging Handle.....4
- Starting Lever Rod, Clearance.....21
- Stitch Gears.....3, 4, 11-13
- Stitching over Twice on
 - Same Buttonhole.....4, 10
- Stitch Width.....10, 24, 34
- Stop Cam.....3, 19-21
- Stop Cam Gear Spring.....20, 21
- Stop Motion.....19-21
- Stop Motion,
 - Clearance between Interlocking Rod Guide and Lock Pin.....20
 - Clearance between Cam Face and Interlocking Rod.....20
 - Excess Play between Cam and Pinion.....19
 - Half Speed Position.....19
 - High Point of Cam.....19
 - Removing the Pulleys.....21
 - Replacing the Stop Cam Gear Spring.....20, 21
 - Stop-position Notch.....19
 - Tension on Interlocking Rod.....19
- Take-up Spring.....14
- Tension, Driving Lever Spring.....17
 - Knife Bar Spring.....17
 - Interlocking Rod.....19
 - Threads.....9, 11, 14
- Tension Releaser.....32, 36
- Thread.....7, 11
- Thread Breaking or
 - Fraying, Remedies.....11
- Thread Cutting.....28-30
- Threading.....7, 8, 11
- Tie Stitch.....33
- Tipping the Machine
 - for Adjustments.....3
- Top Cording.....4, 5, 7, 14, 15
- Trip Lever (Barring).....25
- Tripping Latch Function.....15
- Tripping Lever Clearance
 - (Feed Wheel).....21
- Tripping Plate.....31
- Tripping Point (Barring).....25
- Tripping Points (Feed Wheel).....22
- Tripping Safety Lock.....30
- Two-speed Belt Shifter.....3, 9
- Under Thread Cutting Blade.....28
- Unfinished Buttonhole, completing.....9
- Upper Thread Cutting and
 - Clamping Blades.....28-30, 35, 36
- Upper Thread Cutting Cam.....35, 36
- Wheel Gears (Feed).....11-13
- Whipstitch Buttonhole.....3, 4, 7, 9
- Width of Barring Stitches.....24, 34
- Width of Bight.....10, 33, 34
- Winding the Bobbin.....8

DESCRIPTION

Machines of Class 271K stitch quality buttonholes in light and medium weight materials at speeds up to 3000 stitches per minute.

GENERAL CHARACTERISTICS

Single needle, Catalogue 1526 (71x1Y).

Lockstitch.

Flat bed. Dimensions; length 15-11/32 inches, width 7 inches.

Automatically lubricated rotary sewing hook with mechanical opener.

Automatic sewing cycle. Machine automatically cuts and holds needle thread and cuts bobbin thread and the buttonhole after stitching. Cycle completed with take-up lever always at highest point.

Tying stitches, made at beginning and at end of each buttonhole, provide perfect starting stitches and a securely fastened bar at finish.

Needle thread re-trimming device results in closer, uniformly trimmed thread ends.

Positive, gear-driven, continuous feed spaces stitches evenly around buttonhole under all conditions.

Stitch gear changes made without use of special tools.

Unique two-speed drive automatically slows arm shaft to 1/2 speed before entering stop position.

Shock-reducing knife bar stop provides cushion of air so that knife bar returns quietly and safely after cutting buttonholes.

Stop cam driven at 1/4 of operating speed, before entering stop (1/2 speed of arm shaft), to ensure positive stop with minimum strain on stop motion.

Safety clamp lock prevents operator from raising work clamp until buttonhole is completed - - - preventing breakage of needle and of trimmer parts.

Hand ratchet device enables operator to easily restart stitching at any part of the buttonhole.

Link take-up.

Bobbin winder attached to belt guard. (EXCEPTION: Furnished on Machine 271K201 only on request.)

Machine pulley (loose, double-shielded bearing) with belt groove diameter 2-3/4 for 5/16 inch round rubber (endless) belt.

Machine pulley (tight) 271617 drives machine at 1/2 operating speed.

Machine pulley (positive drive) drives machine, through gear train, at operating speed.

Needle bar stroke, 1-23/64 (1.359) inches.

Clearance under Clamp, 3/8 inch.

Machine can be tipped either toward left or rear for easier servicing. (EXCEPTION: Machine 271K201 is resiliently mounted and can be tilted toward rear only.)

SPECIAL FEATURES OF MACHINE VARIETIES

Machine 271K1 makes purlstitch or whipstitch buttonholes with square barred ends in dress and sport shirts, dresses, pajamas, underwear, surgical uniforms, children's play clothing, bathing suits, blouses, skirts, housecoats and similar articles of wear.

Regularly furnished to make square-barred or wide-barred end buttonholes 3/8 to 3/4 inch long. Upon specific request, machine can be fitted to make buttonholes 3/8 to 1 inch long.

Stitch gears for 120 stitches (needle dips) are furnished unless otherwise ordered. Stitch gears for 60 to 360 stitches are supplied if specified on order.

Knives furnished in sizes 3/8, 1/2, 5/8 and 3/4 inch.

Maximum speed, 3000 stitches per minute.

SPECIAL FEATURES OF MACHINE VARIETIES (continued)

Machine 271K2 makes purlstitch or whipstitch buttonholes with elongated barred ends in dress and sport shirts, dresses, pajamas, etc.

Machine is regularly furnished to make elongated barred-end buttonholes from 3/8 to 11/16 inch long.

Stitch gears for 144 stitches are furnished unless otherwise ordered. Stitch gears for 60 to 360 stitches are supplied if specified on order.

Knives furnished in sizes 3/8, 1/2, 5/8 and 11/16 inch.

Maximum speed 2700 stitches per minute.

Special instructions for Machine 271K2 begin on page 33.

Machine 271K3 makes extra-long, purlstitch or whipstitch buttonholes with square barred ends in dress and sport shirts; dresses, pajamas, etc.

Machine is regularly furnished to make square-barred or wide-barred end buttonholes 1 to 1-1/2 inches long. Upon specific request, machine can be fitted to make buttonholes 3/4 to 1-1/2 inches long.

Stitch gears for 216 stitches are furnished unless otherwise ordered. Stitch gears for 60 to 360 stitches are supplied if specified on order.

Knives furnished in sizes 1, 1-1/8, 1-1/4, 1-1/2 inches.

Maximum speed, 3000 stitches per minute.

Machines 271K4 makes extra-strong, whipstitch, top corded buttonholes with square bar at first end and taper bar at finishing end in linen and cotton fabrics, knit goods, etc.

Cord is laid on top side of fabric under the overseaming stitches. Machine automatically cuts and holds needle thread and top cord and cuts the buttonhole and bobbin thread after stitching.

Buttonhole may be stitched over twice for super-strength, by simply depressing starting treadle again.

Machine is regularly furnished to make buttonholes 3/8 to 3/4 inch long.

Upon specific request, machine can be fitted to make buttonholes up to 1-1/4 inches long, with square bar or NO bar at first end and taper bar at finishing end.

Stitch gears for 100 stitches are furnished unless otherwise ordered. Stitch gears for 60 to 360 stitches are supplied if specified on order.

Knives furnished in sizes 3/8, 1/2, 5/8 and 3/4 inch.

Maximum speed, 3000 stitches per minute.

Machine 271K201 especially designed for installation on Automatic Sequential Buttonhole Electro Mechanical Device 257464, is similar to Machine 271K1 with the following exceptions: —

Fitted with starting lever engaging handle to manually start the machine, a front cloth plate for controlling the cloth and an automatic belt shifter.

Four knives, 9/16 inch, supplied with each machine.

Bobbin winder **NOT** furnished with machine unless specifically requested.

When assembled to Automatic Sequential Unit, complete assembly is known as Machine 256-5.

BELT

Use Machine Driving Belt (endless) 271797, furnished with machine.

Overtightening of belt may cause binding of machine, due to the extended length of arm shaft beyond casting at pulley end. Adjust height of driving motor to tighten belt only sufficiently to obtain recommended machine driving speed.

DO NOT USE A LEATHER BELT. A leather belt can become too tight, damaging arm shaft; or too loose, causing non-uniform rotation. Metal clip on leather belt may set up a vibration that interferes with belt shifter.

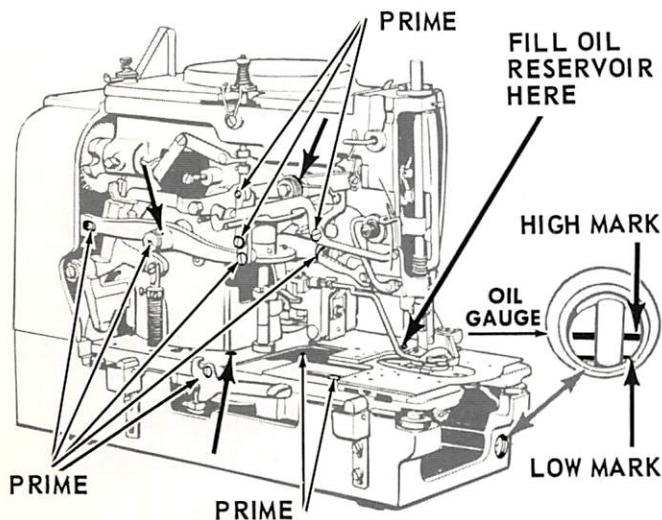


Fig. 2. Oiling Requirements of Reservoir and Left Side of Machine

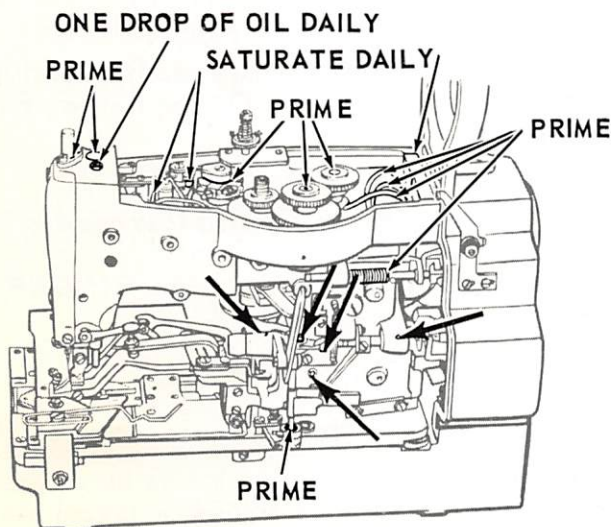


Fig. 3. Oiling Requirements of Top and Right Side of Machine

SPEED

Maximum speed of 3000 stitches per minute is recommended for all machines of this Class, except Machine 271K2 with a top speed of 2700 stitches per minute.

It is advisable to run a new machine at a speed 500 stitches per minute **LESS** than maximum for the first 100 hours of operation.

The maximum efficient speed for any individual machine is determined by the material being sewn, the thread in use and the particular style of buttonhole being made.

ROTATION OF MACHINE PULLEYS

When the machine is operating, the machine pulleys turn over to the left (as the operator faces the machine).

LUBRICATION

Use **SINGER***OIL, "TYPE A" or "TYPE C". Use "TYPE C" OIL when an oil is desired which will produce minimum stain on fabrics.

Do not use additives in sewing machine oil, as they may cause a reduction in normal oil flow that can result in damage to machine.

Before starting machine, the oil reservoir beneath the sewing hook must be filled to the high mark on oil gauge, through oil filler hole in machine bed, as instructed in Fig. 2. **NEVER ALLOW OIL LEVEL TO FALL BELOW LOW MARK ON GAUGE.**

When the machine is new or has been idle for some time, apply oil to places labeled "PRIME" in Figs. 2 and 3.

Apply oil daily to all other oiling points as indicated in Figs. 2 and 3. Do not apply more than **ONE DROP OF OIL** to small hole indicated above needle bar in Fig. 3. **SATURATE** felt in oil wells and apply oil freely to oil holes marked with red dot on machine.

REGULATING OIL FLOW TO HOOK

Sewing hook is automatically lubricated. Flow of oil to hook is regulated by screw in bobbin case opener bracket, as shown in Fig. 4.

IMPORTANT: Screw in center of back of hook base is an oil metering screw, with a set aperture. It should be tight. **DO NOT DISTURB THIS SCREW.**

To determine whether oil is flowing correctly to hook, run machine approximately one minute to establish a uniform rate of flow. Stop machine. Hold a piece of white paper underneath hook and run machine for five buttonhole cycles. A correct pattern will show five distinct oil stains for five buttonholes.

If oil pattern is incorrect, turn the regulating screw as required to cause it to protrude $\frac{1}{8}$ inch beyond face of bracket as a starting point. Test for oil pattern again and regulate when necessary as instructed in Fig. 4. After each separate adjustment run at least 15 buttonhole cycles before rechecking oil pattern.

CLEANING

Using a short bristled brush (not point of scissors or other sharp instrument), remove lint or other waste from around sewing hook, knife and work clamp and between moving parts on underside of needle plate.

Wipe all excess oil from exterior surfaces of machine, especially from areas that may come in contact with fabric.

NEEDLE

Use **SINGER*** Needle, Catalogue 1526 (71x1Y).

Selection of needle can make a great difference in the ease and quality of the work. It is important that needle be just right for specific machine, thread and material in use and for work being performed. The correct size will permit thread to pass freely through needle eye, avoiding strain, fraying and breakage of thread. Use the smallest possible needle for thread in use.

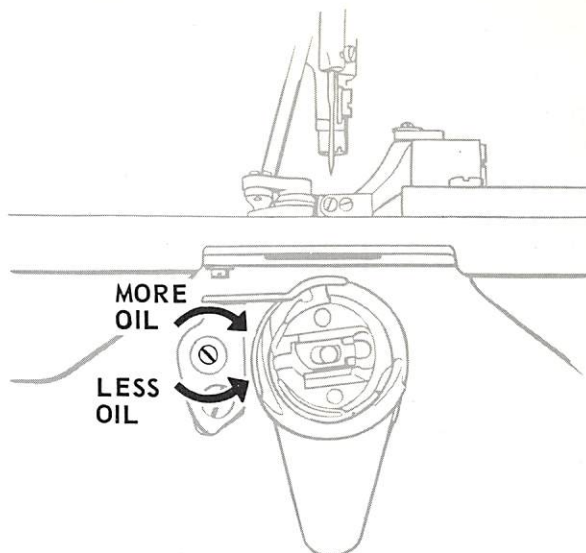


Fig. 4. Regulating Oil Flow

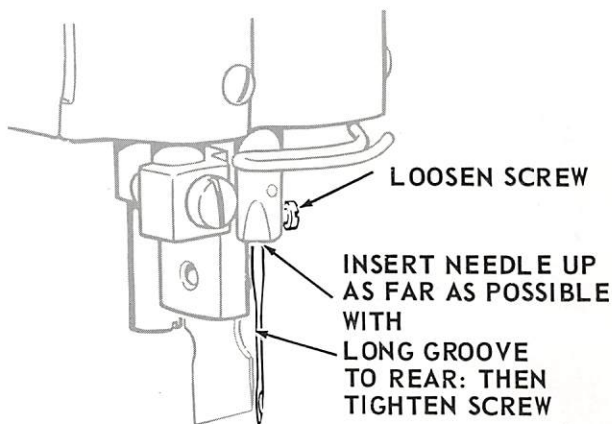


Fig. 5. Setting the Needle

Needles of Catalogue 1526 are available in Sizes 9 to 14, 16 to 19, 21, 22 and 23.

Orders for needles must specify Quantity required, Size number and Catalog number. For example - - -

"100 Size 13, Catalog 1526 needles"

For best results always use **SINGER** needles.

NEEDLE SETTING

Loosen screw in lower end of needle bar. Insert needle up into needle bar as far as possible with long groove of needle toward rear (facing knife) and needle eye directly in line with arm of machine. Then tighten screw.

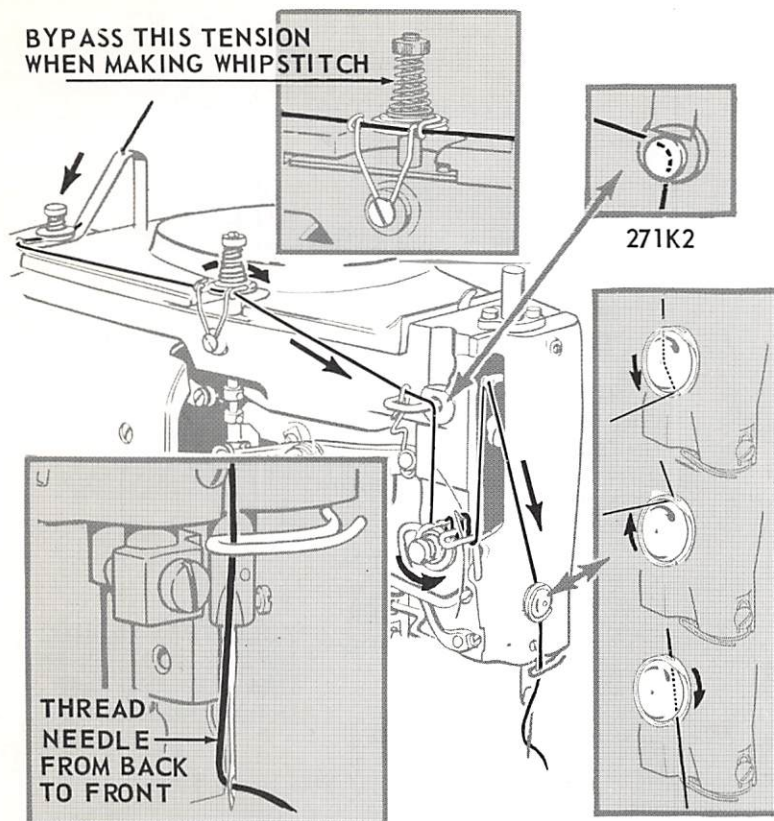


Fig. 6. Threading the Needle Thread

THREAD

Thread recommended: 40-6 cord right twist for needle. Either left or right twist for bobbin.

THREADING

THE NEEDLE THREAD: Pass thread from unwinder down through thread tension guide on top of arm and through threading points as shown in Fig. 6.

Pass thread from rear to front through needle eye as shown in Fig. 6. Draw about two inches of thread through needle eye to start the stitching.

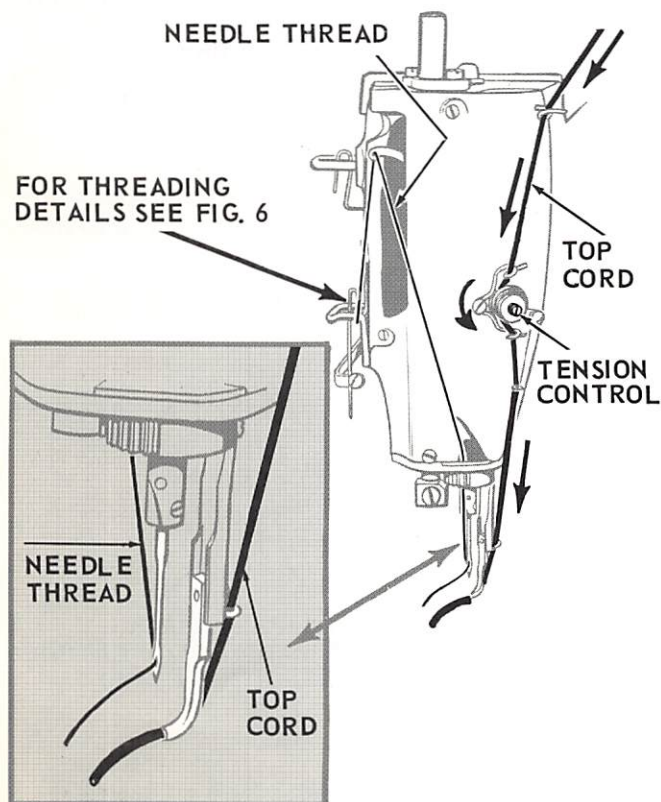


Fig. 7. Threading the Top Cord on Machine 271K4

Whipstitch Buttonhole: By-pass middle tension device on machine arm, as instructed in Fig. 6.

On machine designed primarily for whipstitch buttonholes, such as Machine 271K4, this middle tension device has been removed.

TOP CORD ON MACHINE 271K4: Pass cord from unwinder into wire guide on right side of machine head and down through threading points shown in Fig. 7.

Draw about one inch of cord down through hole in end of cord finger to start the stitching.

BOBBIN REMOVAL

Reach beneath machine bed with thumb and forefinger of left hand and remove bobbin case cap and bobbin, as instructed in Figs. 8 and 9.

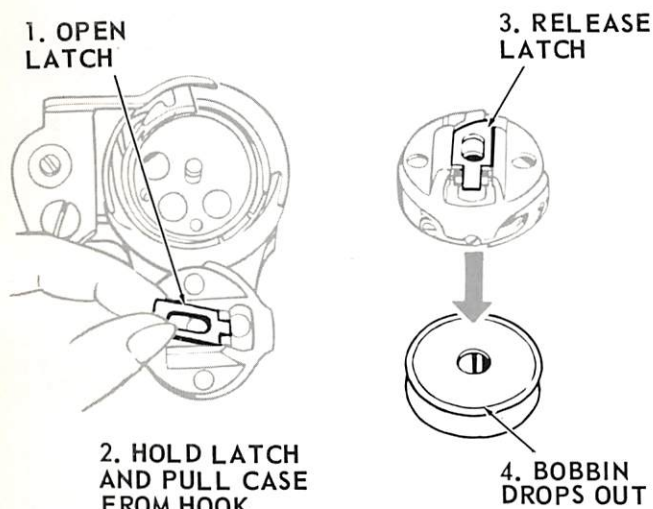


Fig. 8. Removing Bobbin Case Cap from Sewing Hook

Fig. 9. Removing Bobbin from Bobbin Case Cap

When latch is held open, bobbin is retained in bobbin case cap.

BOBBIN WINDING

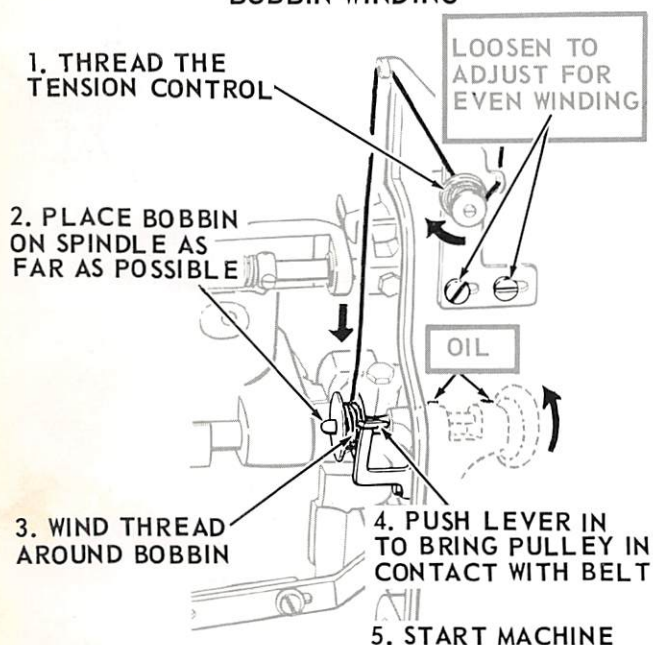


Fig. 10. Bobbin Winding

When sufficient thread is wound upon bobbin, bobbin winder will stop automatically.

Bobbins can be wound while machine is stitching.

THREADING AND REPLACING BOBBIN CASE CAP

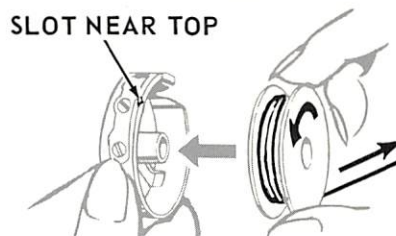


Fig. 11. Replacing Bobbin in Bobbin Case Cap

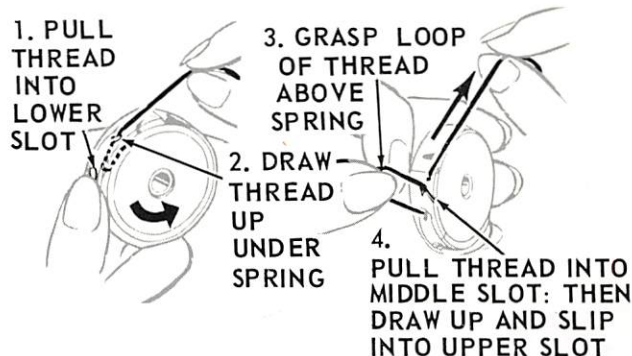


Fig. 12

Threading Middle and Upper Slots

Fig. 13

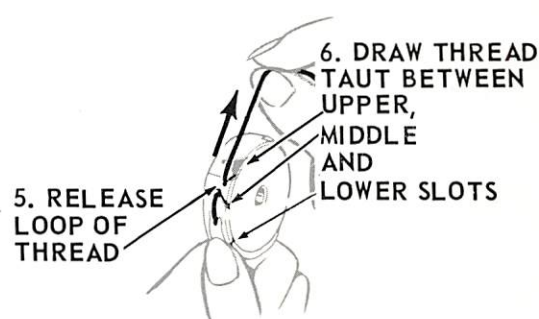


Fig. 14. Complete the Threading of Bobbin Case Cap

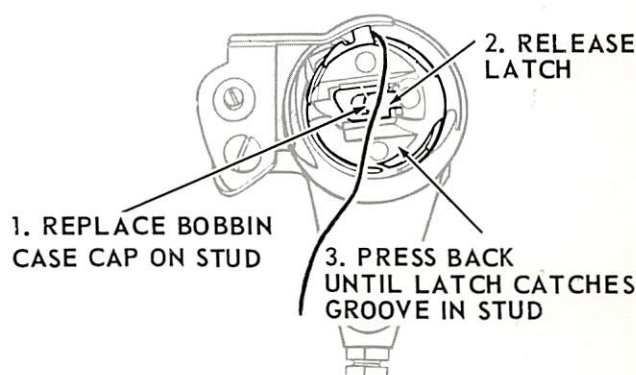


Fig. 15. Replacing Threaded Bobbin Case Cap

Draw about two inches of thread from bobbin to start the stitching.

BOBBIN THREAD



Fig. 16. Regulating Bobbin Thread Tension

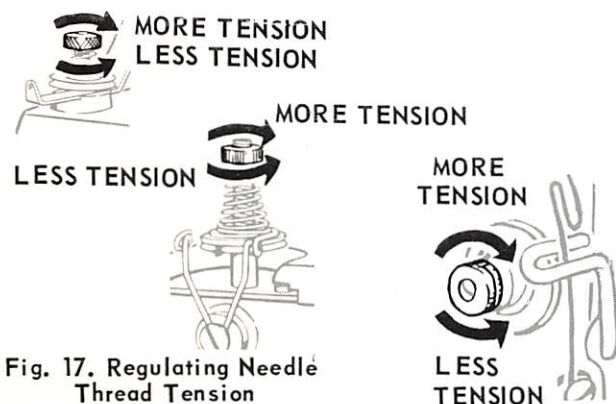
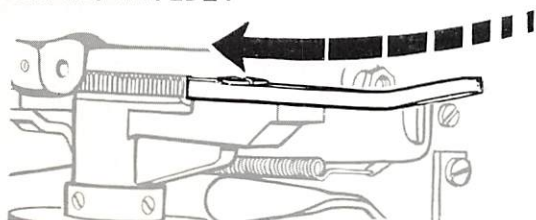


Fig. 17. Regulating Needle Thread Tension

1. PULL FORWARD ON HAND RATCHET LEVER REPEATEDLY



2. OPERATE MACHINE AT HALF SPEED

Fig. 18. Operating Hand-Ratchet

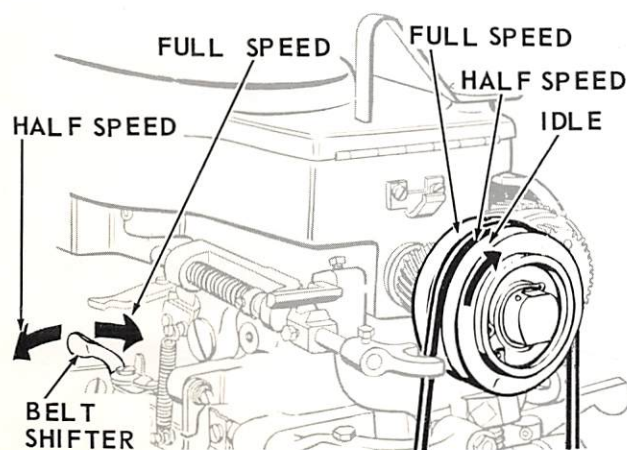


Fig. 19. Two-Speed Belt Shifter

THREAD TENSIONS

Tension on threads should be **AS LIGHT AS POSSIBLE**, while still sufficient to set stitches correctly in buttonhole.

Regulate the tensions, as instructed in Figs. 16 and 17.

Tension on needle thread, at all three points shown in Fig. 17, should be **uniform and equal** to tension on bobbin thread.

PURLSTITCH: Needle thread tension should be strong enough to draw purl evenly to top side of buttonhole.

WHIPSTITCH: Do not pass thread through middle tension device.

PLACING FABRIC UNDER CLAMP

Depress clamp lifting treadle to raise clamp. Position fabric under clamp so that desired location of end of buttonhole nearest you is directly beneath needle. Release clamp. Start machine.

COMPLETING AN UNFINISHED BUTTONHOLE AFTER RE-THREADING

If thread breaks or bobbin becomes empty before completing a buttonhole, re-thread machine as required and pull hand ratchet lever forward repeatedly, as shown in Fig. 18, until unfinished buttonhole is at desired position to resume sewing.

Operate machine at half speed, as instructed in Fig. 19, until this buttonhole is finished.

THE TWO-SPEED BELT SHIFTER

The two-speed belt shifter regulator permits operation of machine at half speed when ever desired. Half speed is especially recommended when repairing unfinished buttonholes.

To operate at half speed, pull lever, shown in Fig. 19, outward as far as possible and start the machine.

To return to normal speed, push lever in as far as possible, as instructed in Fig. 19.

STITCHING OVER TWICE ON THE SAME BUTTONHOLE

When it is desired to stitch over a buttonhole twice for added strength (Machine 271K4), or for any other reason, pull forward on knife bar disengaging lever screw stud, Fig. 20, during first buttonhole cycle and hold this position until cycle is completed. Release knife bar disengaging lever screw stud and start machine for second cycle.

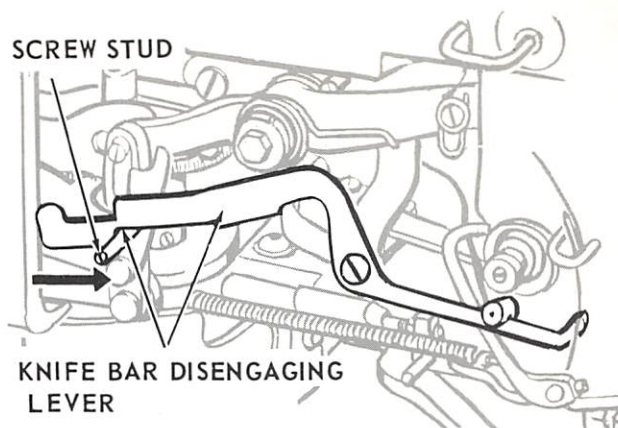


Fig. 20. Knife Bar Disengaging Lever Screw Stud

LENGTH OF BUTTONHOLE

The gauge, shown in Fig. 21, is marked with numbers corresponding to different lengths of buttonholes that can be made on these machines.

To regulate length of buttonhole, remove oil guard and loosen nut on regulator lever as instructed in Fig. 21. Place gauge in slideway so that number on gauge corresponding to desired length of buttonhole is opposite the line cut in the slideway, as shown. Move lever until sleeve under nut rests against downward projection of gauge. Tighten nut. Replace oil guard.

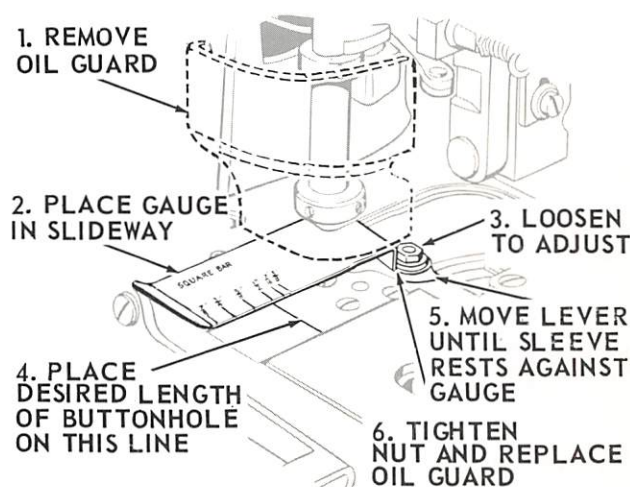


Fig. 21. Regulating Length of Buttonhole

WIDTH OF BIGHT

The width of bight is determined by position of the stud in the slotted link, shown in Fig. 22.

To change the width of bight, open the arm top cover and loosen the nut, shown in Fig. 22. Move stud toward left to increase bight or toward right to decrease bight. When desired width of bight is obtained, tighten nut and close arm top cover.

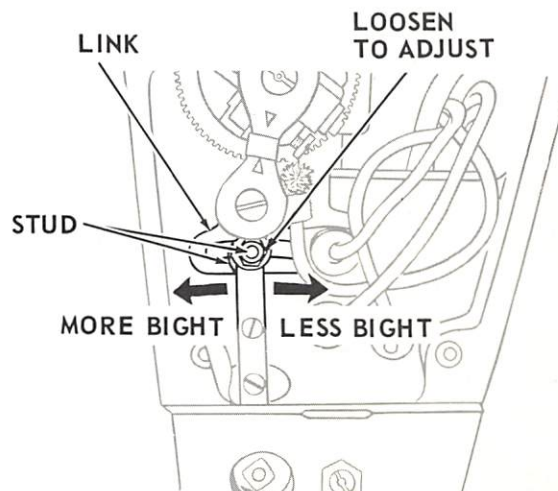


Fig. 22. Regulating Width of Bight

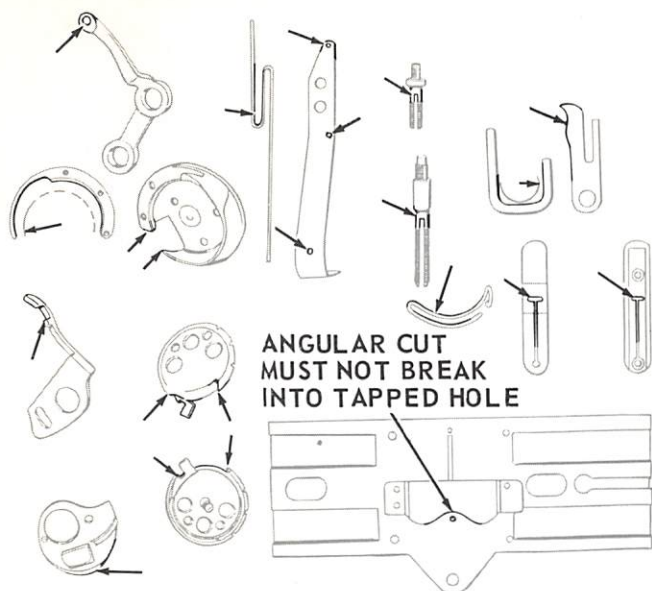


Fig. 23. Needle Thread Handling Parts

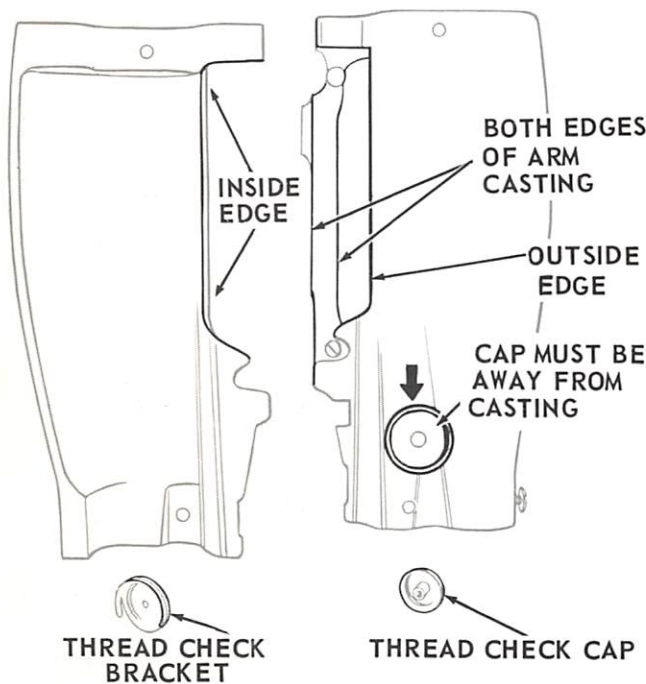


Fig. 24. Critical Areas on Face Plate

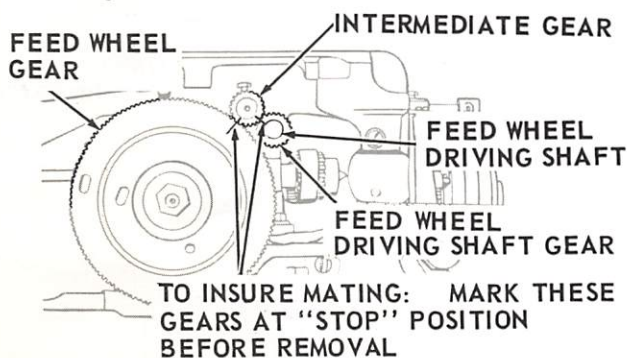


Fig. 25. Feed Wheel Gears beneath Machine Bed

THREAD BREAKING OR FRAYING

Check first for these common causes - - -

- * Tensions too tight
- * Improper threading
- * Needle bent or damaged (blunt point or burrs)
- * Clogged needle eye or groove
- * Thread too coarse for size of needle
- * Needle incorrectly set in needle bar

Carefully examine all needle thread handling parts. Areas where thread comes in contact with machine are shown in Figs. 23 and 24. These areas must be smooth and free from burrs or sharp edges. This is extremely critical when forming a purl stitch.

The amount of needle thread required to pull up bobbin thread in forming a good purl, places an abnormal strain on needle thread. Because of the small amount of needle thread used in forming each stitch a certain portion of needle thread passes back and forth through several thread handling parts more often than on other lockstitch machines. This greatly increases the possibility of breakage, unless all parts in contact with thread are given more than normal care.

When checking the areas shown in Figs. 23 and 24, replace all parts beyond repair with new **SINGER*** parts. Clean hook oil reservoir, removing all lint and foreign matter that has accumulated.

Binding within the gear train (see Figs. 25 and 26) is another possible cause of thread breakage. Movement of all parts must be absolutely free - - - without hesitation or binds of any kind.

If a bind is not easily discovered, remove one of the stitch regulating gears, after marking its location in "stop" position, as shown in Fig. 26, page 12. Rotate arm shaft to check freeness of upper part of mechanism. Turn feed wheel driving shaft to check lower part of machine. After bind is discovered and corrected, replace stitch regulating gear, matching the previously made location marks.

To reduce uneven or hesitant rotation, it may be necessary to wire-brush and buff one or more of the following gears - - -

Feed wheel gear	located below machine bed. (See Fig. 25)
Feed wheel driving shaft gear	
Feed wheel driving shaft gear (intermediate)	
Feed-ratchet gear (upper)	located beneath arm top cover (See Fig. 26, page 12)
Feed-ratchet gear (lower)	
Feed driving gear	

NUMBER OF STITCHES IN BUTTONHOLE

(See Fig. 26)

The number of stitches in a buttonhole is controlled by the set of stitch regulating gears selected for use.

IMPORTANT: To avoid disturbing the timing of the machine, do not permit any of the gear shafts to turn, while changing stitch regulating gears.

To change the stitch regulating gears, move retainer, shown in Fig. 27, out of way and remove each stitch regulating gear by lifting it off its shaft. Select the desired set of gears from chart on page 13, noting, that for a finer range of stitching, upper feed-ratchet gear and feed driving gear may also require changing.

To change upper feed-ratchet gear, remove cap screw, retainer, spring and washer, shown in Fig. 27 and lift out gear. Select correct upper feed-ratchet gear, as listed in chart on page 13. Place this gear upon its shaft and replace washer, spring, retainer and cap screw in that order.

To change feed driving gear, loosen its eccentric stud socket screw, shown in Fig. 27. Remove eccentric stud. Gear will slide side-wise and out. Replace with selected gear. Replace eccentric stud and tighten socket screw.

Replace the selected stitch regulating gears on their correct shafts, as listed in chart on page 13. Make certain that slot on bottom hub of each gear engages its corresponding lug on gear seat.

The eccentric studs, serving as gear shafts for feed-ratchet gears and feed driving gear, permit the resetting of the spacing between the gear teeth, whenever gears are changed. These studs, shown in Fig. 26, are identified by the screwdriver slot on top end. To adjust, loosen the eccentric stud socket screws, shown in Fig. 27. Turn eccentric studs as required to avoid possible binding or unnecessary play. Securely tighten socket screws.

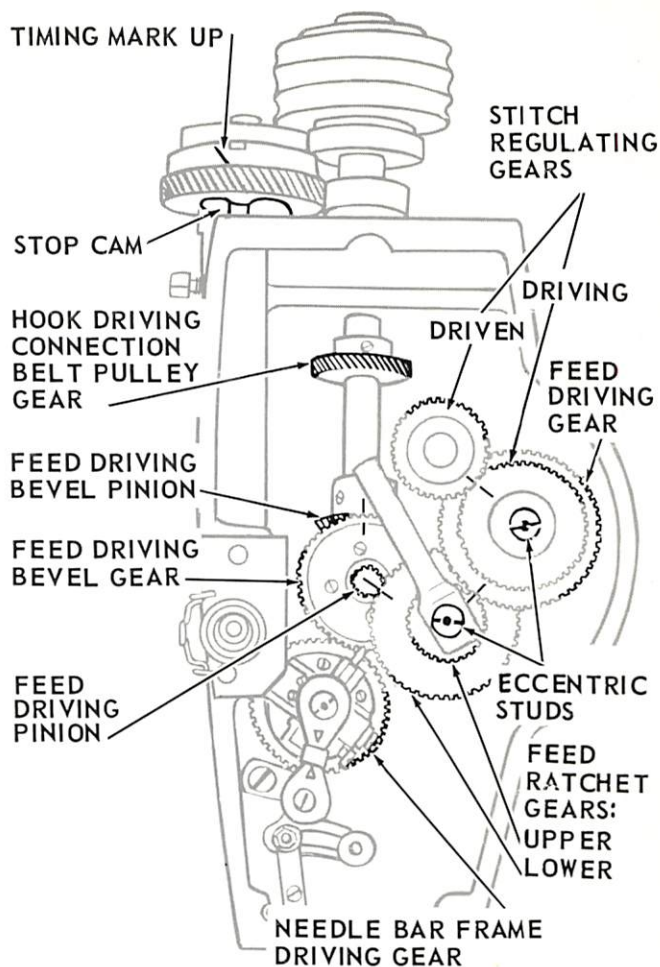


Fig. 26. Gear Train at 'Stop' Position

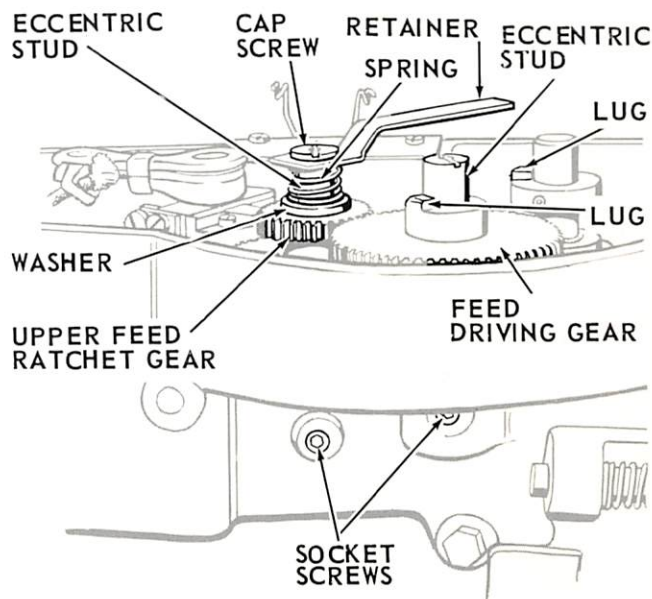


Fig. 27. Changing Feed Driving Gears

GEAR SELECTION CHART

STITCH REGULATING GEARS				NUMBER OF STITCHES (Needle Dips) OBTAINED IN BUTTONHOLE FOR EACH REVOLUTION OF FEED WHEEL	
USED AS DRIVEN GEAR		USED AS DRIVING GEAR		USING FEED-DRIVING GEAR 271550 (64 teeth) WITH UPPER FEED- RATCHET GEAR 271559 (32 teeth)	USING FEED-DRIVING GEAR 271854 (72 teeth) WITH UPPER FEED- RATCHET GEAR 271855 (24 teeth)
PART NUMBER	Number of Teeth	PART NUMBER	Number of Teeth	MEDIUM RANGE (Regularly Supplied in Machines 271K1, 271K4 and 271K201)	FINE RANGE (Regularly Supplied in Machines 271K2 and 271K3)
271646	60	271634	30	240	360
271648	60	271637	36	200	300
271645	54	271636	36	180	270
271642	48	271638	36	160	240
271644●	50	271639●	40	150	—
271643③	48	271640③	40	144	216③
271459④	44	271458④	40	132	198
271641①	45	271641①	45	120①	180
271640④	40	271643④	48	100④	150
271639②	40	271644②	50	96	144②
271638●	36	271642●	48	90	—
271636	36	271645	54	80	120
271637	36	271648	60	72	108
271635④	32	271647④	60	64	96
271634	30	271646	60	60	90

⊙ **NOT REVERSIBLE:** Reversing this set of gears may cause needle to stop on wrong side alternately or at odd intervals.

● These gears can be used in locations listed, only when machine is fitted with medium range feed driving gear 271550 and feed-ratchet gear 271559.

- ① Regular for Machines 271K1 and 271K201
- ② Regular for Machine 271K2 (NOT REVERSIBLE)
- ③ Regular for Machine 271K3
- ④ Regular for Machine 271K4.

See instructions on page 12 for method of changing these gears.

PRE-TENSION CONTROL

Since the tension on the needle thread actuated by the middle tension device, shown in Fig. 28, is released during bar stitching, the pre-tension control is of primary importance during this portion of the sewing cycle.

Tension on needle thread due to pre-tension control should be just enough to prevent sewing hook from stealing thread, at this time. Adjust this tension by turning knurled nut on pre-tension control, as shown in Fig. 28, so that even the first three or four stitches immediately following the bar stitching pull up into an attractive purlstitch. Too light tension causes these stitches to be loose or to look similar to whipstitches. Too heavy tension may break thread.

See "SPECIAL INSTRUCTIONS FOR MACHINE 271K2", starting on page 33.

NEEDLE THREAD TAKE-UP SPRING

The tension on take-up spring, shown in Fig. 29, during downward stroke of needle, should be sufficient to take up slack of thread until eye of needle reaches the material.

To adjust, loosen take-up spring set screw and turn **ONLY** the tension stud, as instructed in Fig. 29. Then securely tighten set screw.

TOP CORD FINGER ON MACHINE 271K4

HEIGHT SETTING: Cord finger, shown in Fig. 30, should just clear top surface of clamp check, during movement of finger from right side to front of needle and return.

To adjust, loosen screw, shown in Fig. 30. Raise or lower finger, as required. **SECURELY** tighten screw.

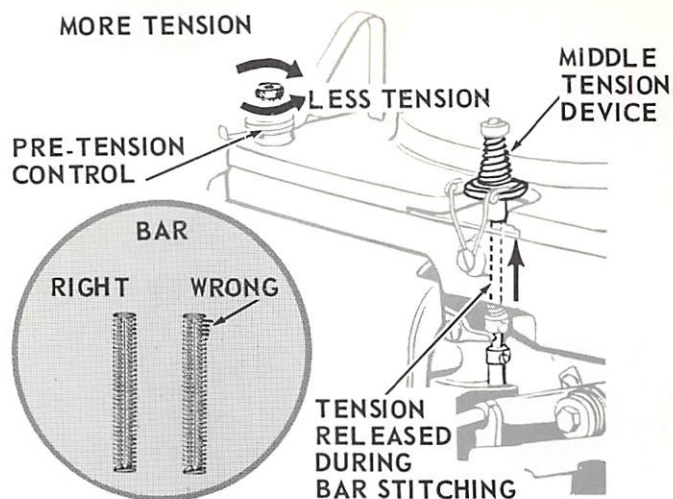


Fig. 28. Regulating Pre-Tension

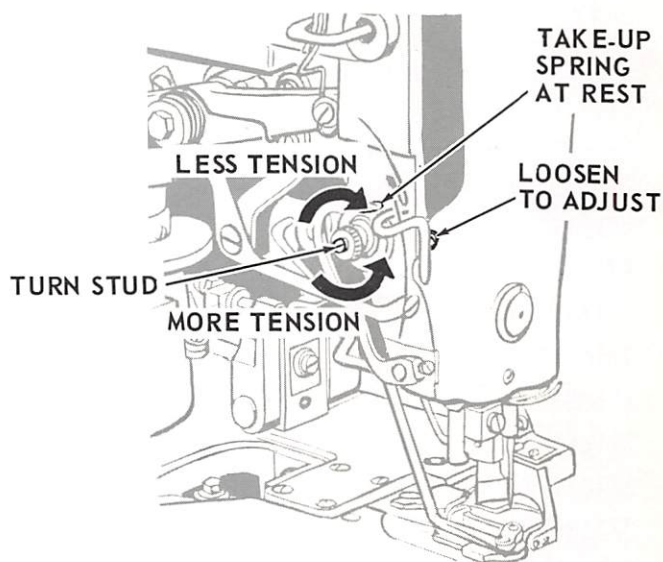


Fig. 29. Adjusting the Take-up Spring

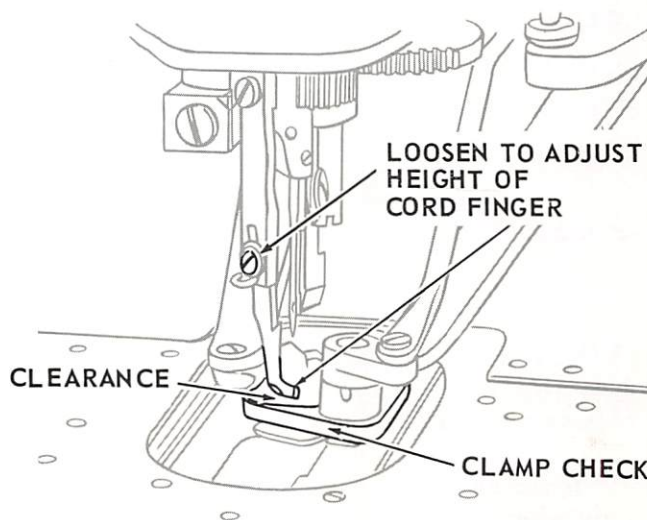


Fig. 30. Cord Finger at Correct Height on Machine 271K4

TOP CORD FINGER ON MACHINE 271K4

(continued)

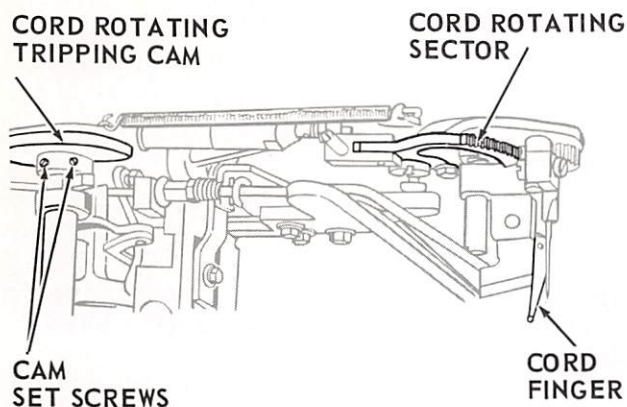


Fig. 31. Timing the Cord Finger

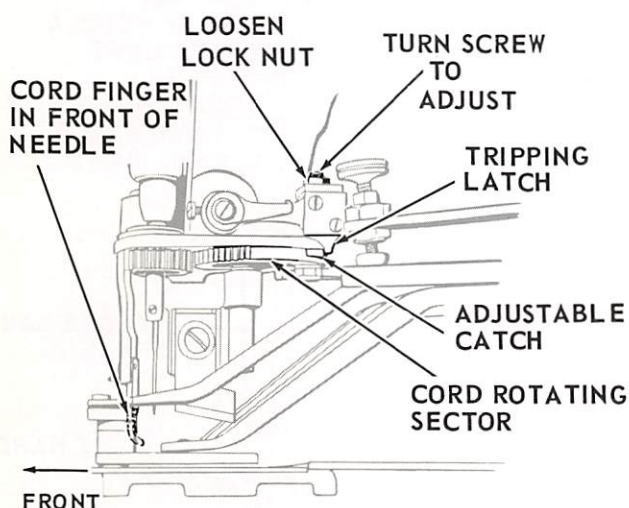


Fig. 32. Adjusting the Tripping Latch

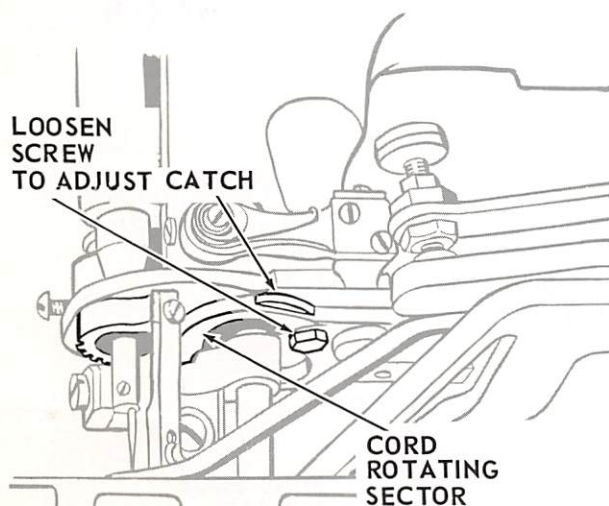


Fig. 33. Setting the Adjustable Catch

TIMING: The cord rotating tripping cam, shown in Fig. 31, should actuate the cord finger at next to the last stitch in the first bar and again at the end of the sewing cycle. When the barring at the far end of the buttonhole is nearly finished, finger should swing to position in front of needle as shown in Fig. 32, and remain there until buttonhole is finished. Finger should then return to its starting position at right of needle, shown in Fig. 33.

To time cord rotating tripping cam, loosen the two set screws, shown in Fig. 31, in hub of cam and turn cam on its upright shaft, as required. Then securely tighten cam set screws.

TRIPPING LATCH FUNCTION: The cord finger tripping latch, shown in Fig. 32, should hold cord rotating sector in position (keeping finger in front of needle) while machine is stitching entire right side of buttonhole.

To adjust, loosen lock nut, shown in Fig. 32, and turn latch screw as required. Then securely tighten lock nut.

ADJUSTABLE CATCH FUNCTION: The adjustable catch, located on underside of sector, must accept tripping latch as shown in Fig. 32, at next to last stitch in first bar.

To adjust, loosen screw, shown in Fig. 33 immediately behind adjustable catch, and move catch as required. Then securely tighten screw.

THE CUTTING SPACE

The amount of cutting space between the lines of stitching in a buttonhole is determined by the position of the regulator (shown in Fig. 34) on the clamp carrier slide lever.

To adjust, loosen the large screw, visible in the slot in the machine bed (see Fig. 34) and move the regulator toward rear of slot for wider cutting space or toward front of slot for narrower cutting space. Then securely re-tighten screw.

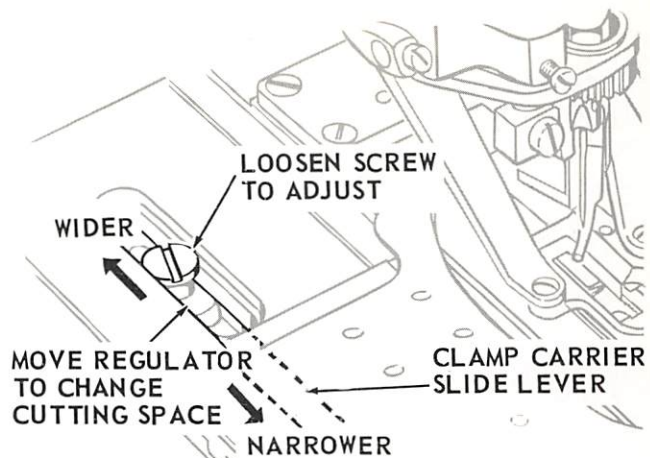


Fig. 34. Regulating Cutting Space

NEEDLE AND KNIFE ALIGNMENT

The left and right sides of a buttonhole should **ALWAYS** be stitched at an equal distance from the knife. Knife will then cut the buttonhole in the exact center, avoiding damage to the stitches on either side.

This is achieved by positioning the needle correctly in relation to the knife. To align the needle with the knife, loosen the two screws, shown in Fig. 35, in the needle bar frame pitman and move the pitman, needle bar frame and needle, as required. When correctly set, needle (on its right-hand throw) will align with center of knife slit in needle plate, as shown in Fig. 35. Securely retighten pitman fastening screws.

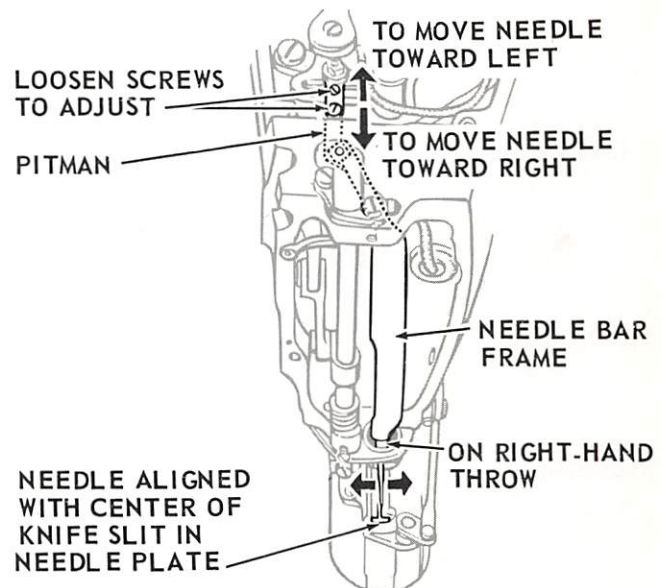


Fig. 35. Aligning Needle with Knife

KNIFE REPLACEMENT

When a new knife is required, remove knife fastening screw and washer, shown in Fig. 36 and remove old knife. Place new knife in holder, pushing it upward in holder recess as far as it will go and fasten it with screw and washer. Before tightening screw securely, make certain that front edge of knife, when cutting, will reach $1/16$ inch below top surface of needle plate. If knife does not make full cut, it should be set slightly lower, but never low enough to strike the hook. Keep knife sharp to ensure clean-cut buttonholes.

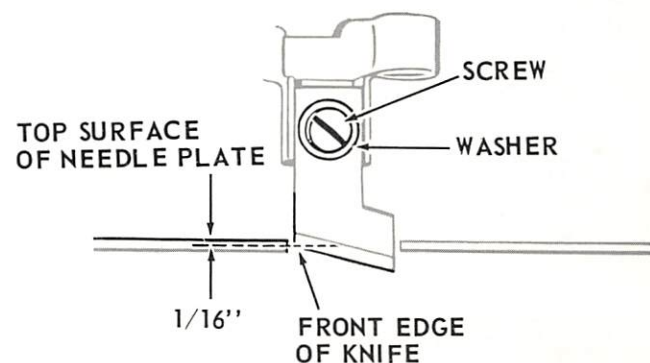


Fig. 36. Setting the Knife

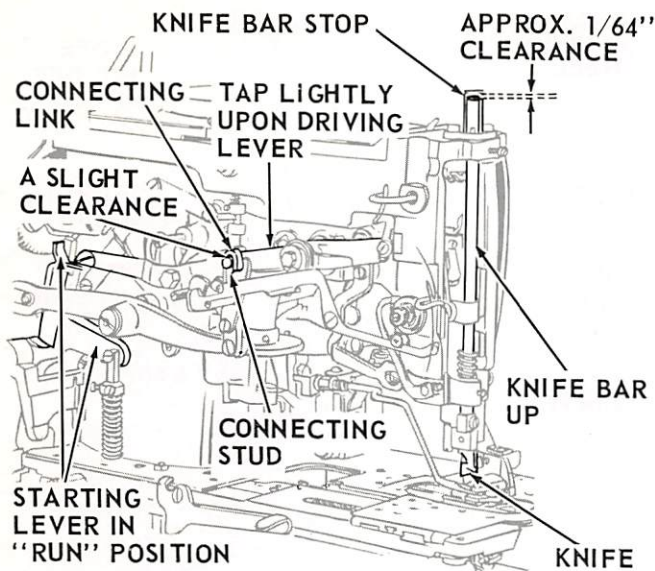


Fig. 37. Knife Bar at Correct Height

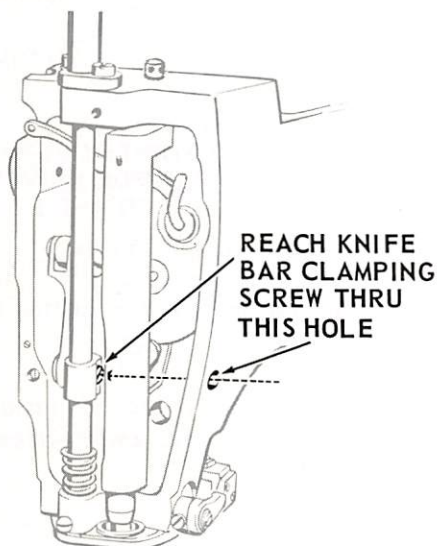


Fig. 38. Adjusting Knife Bar Height

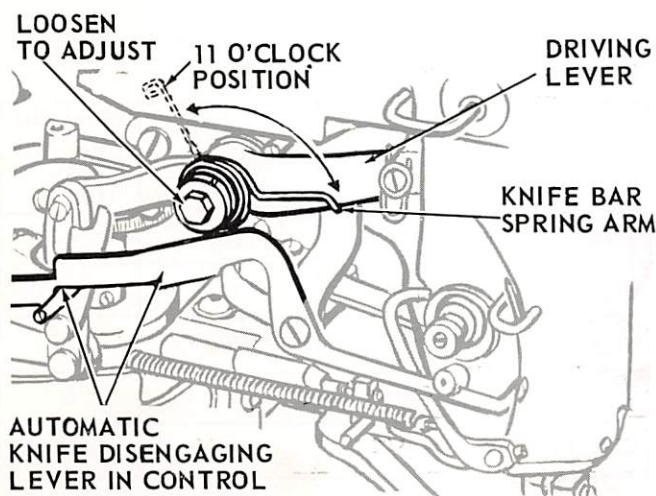


Fig. 39. Adjust Knife Bar Spring Tension

KNIFE BAR HEIGHT

When knife bar is at correct height, as shown in Fig. 37, there will be only a slight clearance (a small amount of play) between knife bar connecting stud and top of slot inside knife bar connecting link. This setting is necessary to insure approximately 1/64 inch clearance (inside knife bar stop) between top of knife bar and inside-top of knife bar stop, so that knife bar will not rap against knife bar stop on its return stroke, after cutting buttonhole. During adjustment, starting lever must be at "run" position (knife bar up), as shown in Fig. 37. Loosen knife bar clamping screw, as instructed in Fig. 38. With knife bar in its highest position, press down on forward end of driving lever, Fig. 37, forcing connecting stud at rear end of driving lever to bear against top end of slot in connecting link. Tighten clamping screw just enough to hold knife bar in position. Tap lightly upon REAR END of driving lever, as instructed in Fig. 37, until there is a slight clearance between stud and link. Then securely tighten knife bar clamping screw.

DRIVING LEVER SPRING TENSION

Tension on the knife bar driving lever spring, shown in Fig. 39, should be just sufficient to hold knife bar at its highest position, whenever thread breakage occurs and automatic knife disengaging lever goes into operation.

Excessive tension on this spring may cause knife bar to break knife bar stop on its return stroke.

To adjust, loosen hex-head screw, shown in Fig. 39. Set spring arm at 11 o'clock position. Tighten hex-head screw. Hook spring arm under driving lever, as shown.

KNIFE GRINDER 701W51

Grinder 701W51 should be set to turn away from knife at a speed of approximately 2500 revolutions per minute.

To sharpen the knife, remove it from machine and clamp it in knife holder as shown in Fig. 40. Firmly tighten clamping screw.

Position of pointer on turret should be determined by length of knife edge - - -

For all knives up to and including $\frac{3}{4}$ inch in length, use position "B" on turret (see Fig. 40).

For all knives $\frac{13}{16}$ inch and longer, use position "A" on turret (see Fig. 40).

To set knife at correct angle to grinder, loosen turret screw and move turret until pointer is at correct position, as instructed above, and tighten turret screw securely.

Start grinder and turn adjusting screw, shown in Fig. 40, to bring knife into position where grinding wheel will barely graze the cutting edge of the knife.

To grind knife, move slide bracket **once to the right and once to the left**. The least possible amount ground off is usually sufficient. If more than a slight amount of the knife edge is ground off at one movement, temper of knife may be damaged permanently.

Having sharpened one side of knife, loosen stop screw, shown in Fig. 40. Set knife stop against lower end of knife in holder and securely tighten stop screw. Loosen clamping screw and remove knife, returning it to knife holder with unsharpened side down. See that knife is held securely against knife stop and securely tighten clamping screw. Loosen turret screw and move turret until pointer is at same letter designation at other end of turret. For example - - - if turret was set with pointer at one "A" position, turret should be moved until pointer is at the other "A" position. When turret is set correctly, tighten turret screw securely. Proceed with grinding this side of knife in same manner as first side was ground.

When knife is held correctly and turret is properly set, the desired bevel is assured and the knife can be sharpened equally on both

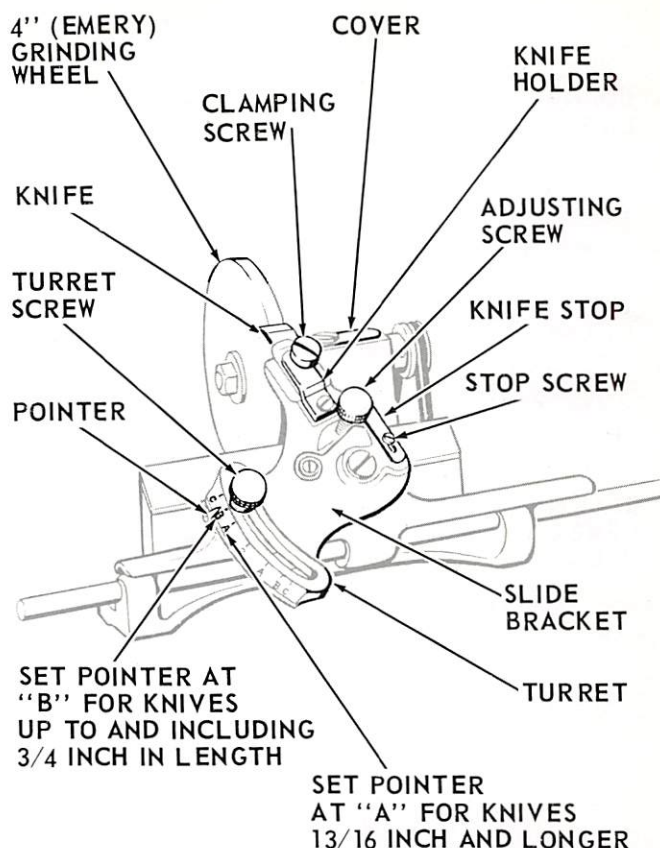


Fig. 40. Sharpening the Knife

sides with its cutting edge in the center of the thickness of its blade.

When knife is correctly ground remove it from grinder and carefully rub knife edges just a little on an oil stone.

OILING: Push aside cover shown in Fig. 40 and apply oil to the two holes thus uncovered.

The following knives are regularly furnished for these machines - - -

MACHINE	KNIFE NUMBER	LENGTH (INCHES)	GRINDING POSITION OF TURRET
271K1	271903	$\frac{5}{8}$	B
271K2	271901	$\frac{1}{2}$	B
271K3	39558	$1\frac{1}{2}$	A
271K4	39829	$\frac{3}{4}$	B
271K201	271902	$\frac{9}{16}$	B

Knives from $\frac{3}{8}$ inch to $1\frac{1}{2}$ inches in length are available upon specific order.

STOP MOTION

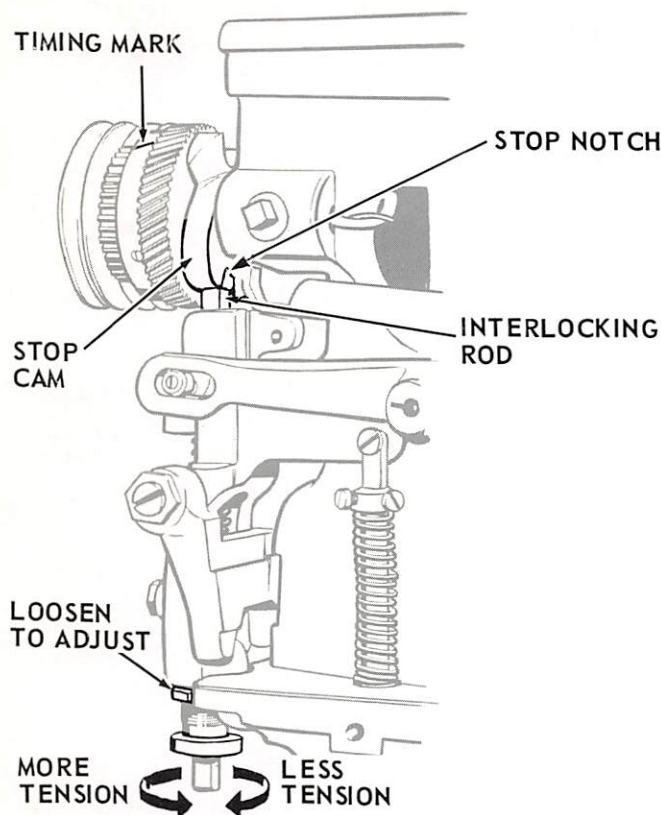


Fig. 41. Interlocking Rod and "Stop" Position Notch

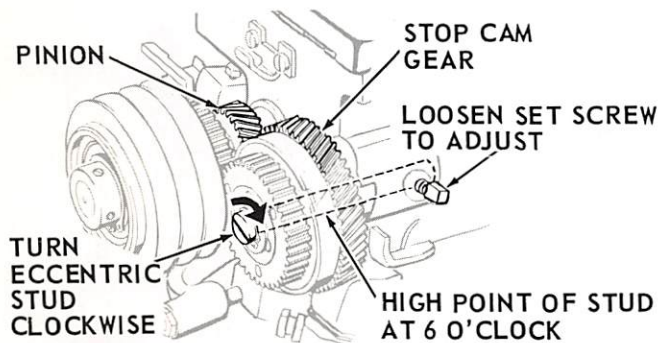


Fig. 42. Stop Cam Gear and Pinion

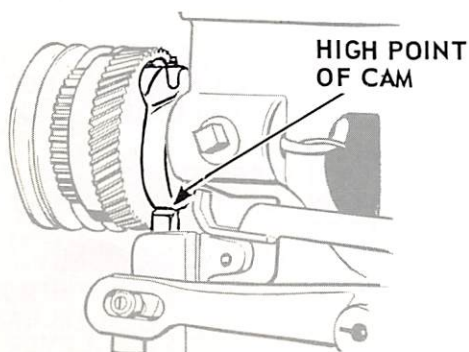


Fig. 43. High Point of Stop Cam

To ensure a positive stop and to minimize the possibility of breakage of parts, a two-speed drive mechanism automatically slows down arm shaft to one-half driving speed as machine approaches "stop" position. A stop cam driven at half speed of arm shaft (now 1/4 of operating speed, to reduce strain as machine goes into "stop") is now engaged by the stop motion interlocking rod.

Stop motion interlocking rod, shown in Fig. 41, is designed to aid in retarding speed of arm shaft before finally stopping machine.

TENSION ON INTERLOCKING ROD should be only sufficient to prevent rod from jumping out of notch, shown in Fig. 41, in stop cam.

When making buttonholes on heavy fabrics it may become necessary to lighten the tension on interlocking rod. Light weight fabrics usually require a heavier tension.

To adjust, loosen lock nut and turn thumb screw at lower end of rod as instructed in Fig. 41. Tighten lock nut.

EXCESSIVE PLAY BETWEEN STOP CAM GEAR AND PINION should be eliminated.

To adjust, loosen set screw shown in Fig. 42 and turn eccentric stud clockwise (facing rear of machine) as shown, until minimum play, without binding between teeth of gears, is obtained. Turning the stud clockwise will draw stop cam closer to interlocking rod (rather than away from it) making certain that rod will ride on high point, of stop cam, as shown in Fig. 43, before dropping into "stop" position notch, as shown in Fig. 41.

When minimum play between gears is achieved, high point of eccentric stud should be at bottom (approximately at 6 o'clock position), as shown in Fig. 42. Never make this setting with high point of stud on top, as this may allow interlocking rod to enter stop cam notch without first riding on high point of stop cam.

STOP MOTION (continued)

CLEARANCE BETWEEN INTERLOCKING ROD GUIDE AND LOCK PIN when rod has tripped and is riding on high point of stop cam, as shown in Fig. 44, should be approximately $\frac{1}{16}$ inch, as shown in Fig. 45.

This clearance will permit rod guide to raise lock pin and correctly activate tension releaser shaft crank, shown in Fig. 46, and safety tripping lever lock, when machine reaches stop position.

To adjust, loosen lock nut, shown in Fig. 47, and turn adjusting-screw in tension releaser lever downward to increase clearance or upward to decrease clearance, as required. Securely retighten lock nut.

CLEARANCE BETWEEN STOP CAM FACE AND INTERLOCKING ROD, when machine is in stop position, as shown in Fig. 48, should be approximately .015 inch.

This clearance will prevent interlocking rod from striking stop cam.

To adjust, loosen lock nut shown in Fig. 48, on lower end of starting lever, and turn stop screw inward to increase clearance or outward to decrease clearance, as instructed in Fig. 48. Securely re-tighten lock nut.

REPLACEMENT OF STOP CAM GEAR SPRING

If stop cam gear spring (enclosed in stop cam gear) breaks, it can be removed and a new spring inserted, as follows (see Figs. 49 and 50).

1. Remove wick, shown in Fig. 49, from eccentric stud.
2. Observe timing marks on matched tooth and groove on pinion and stop cam gear, as shown in inset in Fig. 50, then loosen eccentric stud set screw.

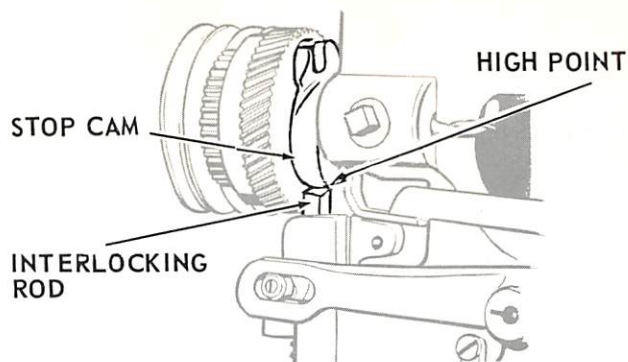


Fig. 44. Interlocking Rod has Tripped and is on High Point of Stop Cam

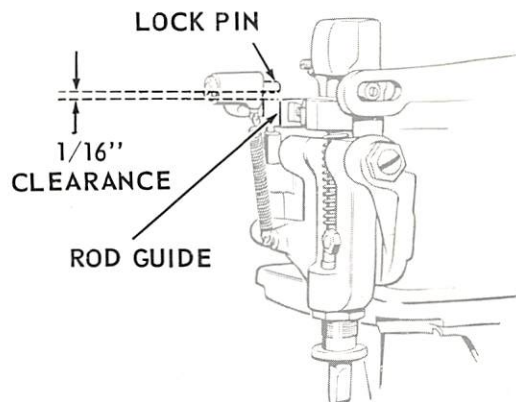


Fig. 45. Clearance of Lock Pin above Rod Guide

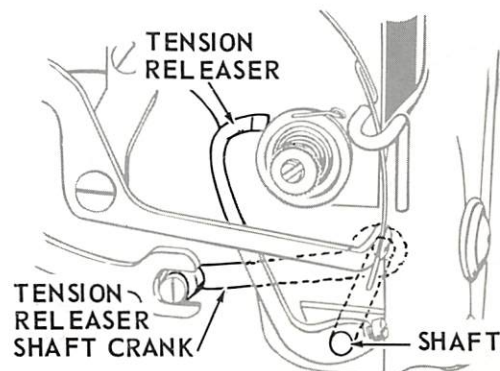


Fig. 46. Tension Releaser Shaft Crank

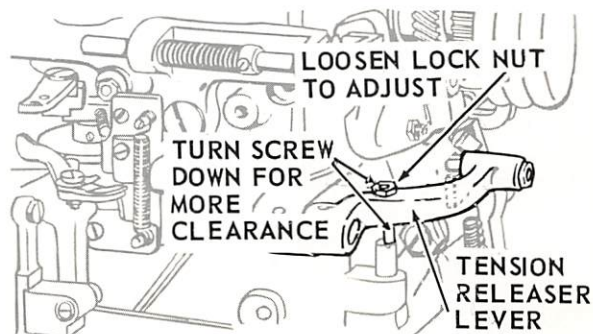


Fig. 47. Adjusting Lock Pin Clearance

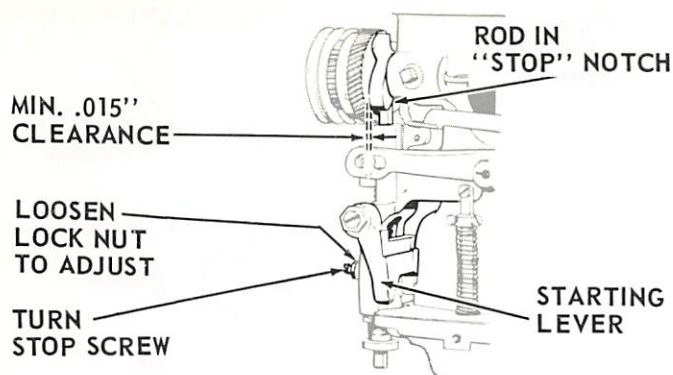


Fig. 48. Clearance between Stop Cam Face and Interlocking Rod

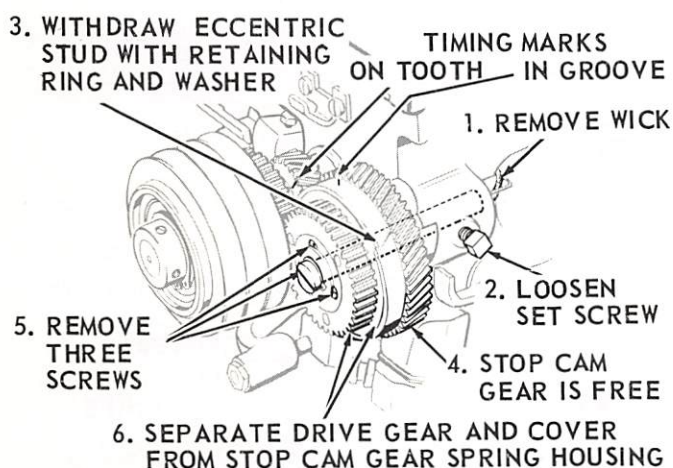


Fig. 49. Removal of Stop Cam Gear Spring

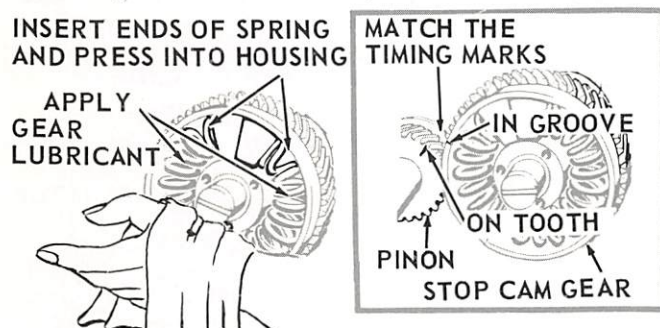


Fig. 50. New Spring Installed

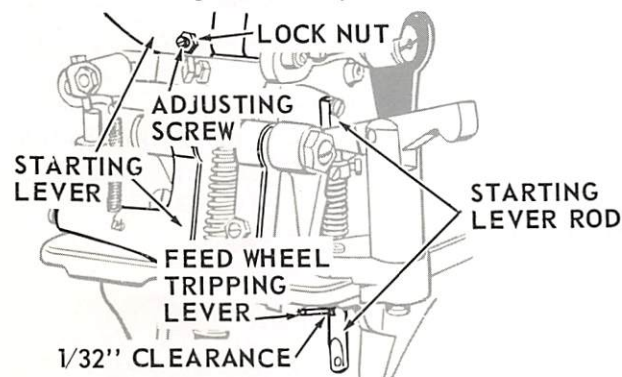


Fig. 51. Clearance between Feed Wheel Tripping Lever and its Engaging Notch in Starting Lever Rod

REPLACEMENT OF STOP CAM GEAR SPRING (continued)

3. Withdraw eccentric stud from gear assembly and casting. Retaining ring and washer should remain with stud.
4. Catch stop cam gear, shown in Fig. 49, as it falls from machine.
5. Remove the three screws shown in Fig. 49 from gear assembly.
6. Separate positive drive gear and cover from stop cam gear spring housing.
- Remove broken stop cam gear spring, from housing.
- Insert ends of new spring in position shown in Fig. 50, first. Cover the spring with a cloth and press entire spring into housing with palm of hand. Fig. 50 shows new spring installed.
- Apply **GEAR LUBRICANT** to spring, filling spring casing.
- Replace positive drive gear and cover on housing and fasten securely with 3 screws, as shown in Fig. 49.
- Replace stop cam gear on machine. Match the groove, bearing a timing mark, on stop cam gear with the gear tooth, bearing a timing mark, on pinon, as shown in inset Fig. 50.
- Replace eccentric stud, washer and retaining ring, as shown in Fig. 49.
- Adjust play between stop cam gear and pinon as instructed on page 19.
- Tighten eccentric stud set screw.
- Replace eccentric stud wick.

STARTING LEVER ROD

When the adjusting screw or starting lever, shown in Fig. 51 is pressed hard against machine casting, there should be a $\frac{1}{32}$ inch clearance between bottom face of feed wheel tripping lever and bottom of its engaging notch in starting lever rod, as shown.

This spacing will insure positive engagement of tripping lever in notch.

To adjust, loosen lock nut and turn adjusting screw shown in Fig. 51, as required. Securely retighten lock nut, when correct clearance is obtained.

FEED WHEEL TRIPPING POINTS

Feed wheel, shown in Fig. 52, is cut to produce an equal amount of tying stitches at start and at end of buttonhole. The tripping lever point should be set so that it is actuated by the feed wheel tripping point at the correct moment to trip one stitch before desired stop, so that lobe of stop cam (not gear housing) will receive impact of interlocking rod. Interlocking rod will then ride into stop notch, stopping the machine as desired, without injury to the gear housing or associated parts.

When correctly timed, the tripping points will butt (point to point), as shown in Fig. 52, just a moment before the last stitch is completed.

To adjust, loosen the two screws, shown in Fig. 52. Move the tripping lever point for earlier or later action, as instructed in Fig. 52. Securely retighten the two screws.

KNIFE SLIT IN NEEDLE PLATE

To align knife slit in needle plate with knife, first time the tripping point as instructed above.

With machine going into "stop", insure that knife bar driving lever is disengaged (see Fig. 39, page 17) and that interlocking rod is riding on high point of cam, as shown in Fig. 44, page 20. Then loosen thumb screw, shown in Fig. 53, on underside of machine.

Lower knife and move clamp carrier slide toward left or right as required to center the knife slit in needle plate with center of knife, as shown in Fig. 54.

Securely retighten thumb screw.

BELT SHIFTER

SHAFT SETTING: When speed adjusting lever is swung over to left, belt shifter shaft should lie in horizontal position, as shown in Fig. 55. This horizontal position of shaft is used as a basis for other settings of belt shifter and should be correctly set first.

To adjust, loosen screw indicated in Fig. 55 and raise or lower stop, as required. Securely retighten screw.

ACTUATOR SETTING: When machine is at "stop" position, clearance between belt shifter actuator and operating-block should be approximately .020 inch, as shown in inset in Fig. 55. Correct setting will insure maximum engagement of actuator with first-engaging face on operating block, as shown in Fig. 55, when machine begins its next sewing cycle.

To adjust, loosen lock nut and set screw, shown in Fig. 56. Turn actuator as required. Securely retighten set screw and lock nut.

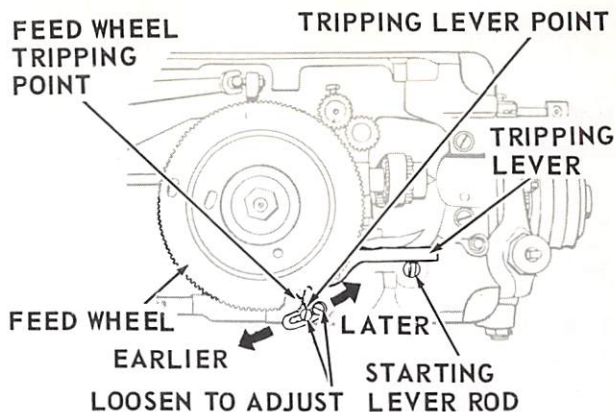


Fig. 52. Tripping Points Actuating the Stop Motion

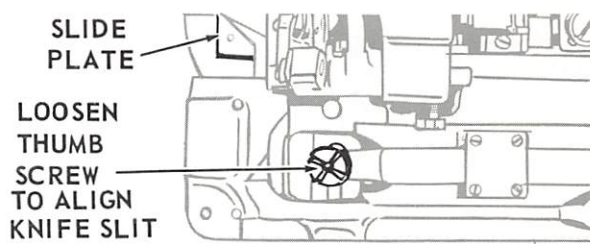


Fig. 53. Clamp Carrier Slide Plate Thumb Screw

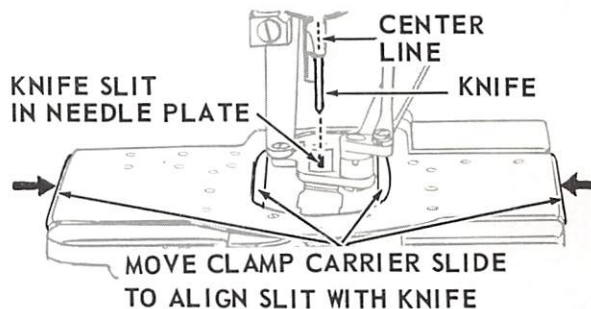


Fig. 54. Aligning Knife Slit with Knife

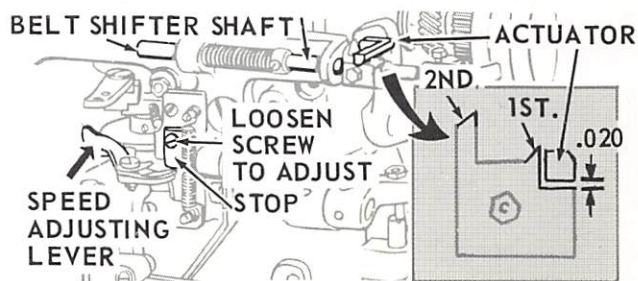


Fig. 55. Belt Shifter Shaft in Horizontal Position

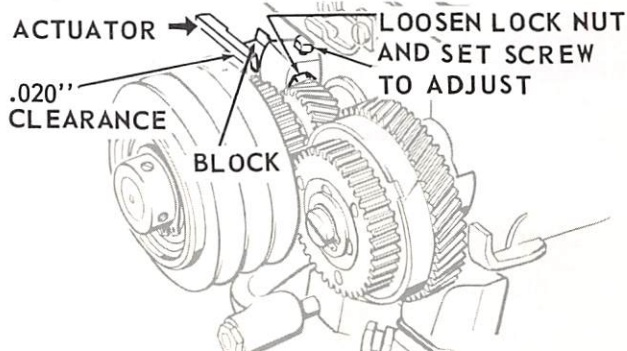


Fig. 56. Clearance between Actuator and Block

BELT SHIFTER (continued)

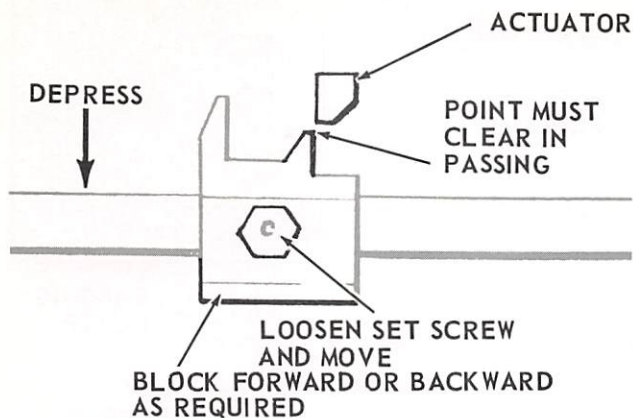


Fig. 57. Clearance of Point of First-Engaging Face at "Stop"

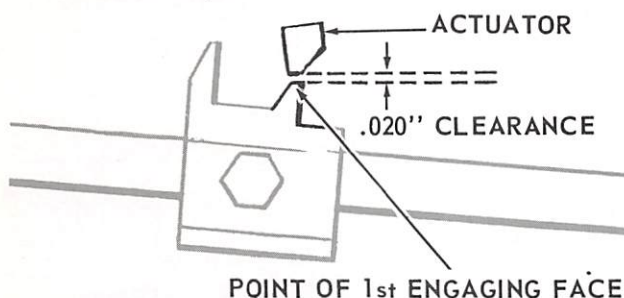


Fig. 58. Clearance of Point of First Engaging Face at Moment of Trip

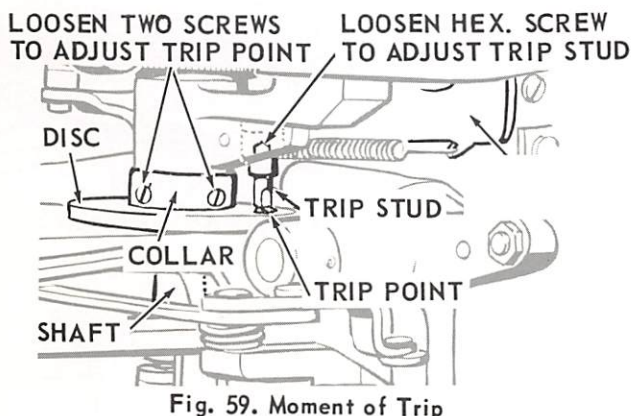


Fig. 59. Moment of Trip

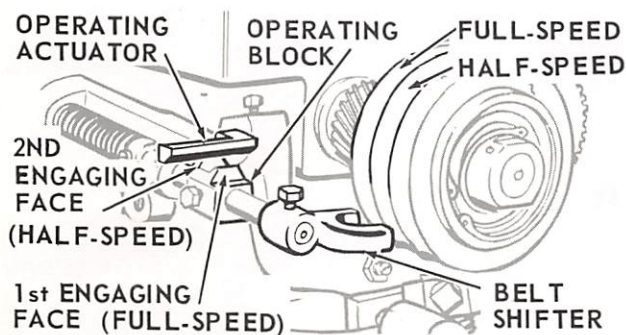


Fig. 60. Timing

OPERATING-BLOCK SETTING: When machine is at "stop" position and shaft is depressed, the point of the first-engaging face on operating block should just clear actuator, as shown in Fig. 57.

This will permit actuator to drop behind first-engaging face on operating block as machine goes into "stop".

To adjust, loosen set screw shown in Fig. 57 and move operating-block forward or backward, as required. Securely re-tighten set screw.

SETTING CLEARANCE OF POINT OF FIRST-ENGAGING FACE AT MOMENT OF TRIP: To permit belt shifter to move to half-speed position before going into stop there should be .020 inch clearance between point of first-engaging face and actuator at moment of trip, as shown in Fig. 58.

Set machine in running position. Ratchet machine to bring trip stud on high point of trip point, as shown in Fig. 59. Push belt shifter shaft forward until point of first-engaging face is directly beneath actuator. Check clearance in this position as shown in Fig. 58.

To adjust, loosen hex-head screw on belt shifter shaft bracket extension and raise or lower trip stud as required. Securely tighten hex-head screw.

TIMING: The belt shifter, shown in Fig. 60, should shift the driving belt from full speed to half speed between the next-to-last and last barring stitch (4 stitches before entering "stop" position). On Machine 271K2 this shift should occur between 5th and 6th barring stitch (6 stitches before entering "stop" position).

This shift is initiated when belt shifter trip stud is raised by trip point as shown in Fig. 59, on disc. Tripping action instantly disengages first engaging face of block from actuator and engages second engaging face with actuator, as shown in Fig. 60, correctly moving belt shifter and belt to half-speed position.

To time the shift, ratchet the machine until the correct interval between stitches is reached. (See note above). Loosen the two set screws in collar, shown in Fig. 59. Rotate disc on shaft until trip point is at tripping position beneath trip stud, as shown. Securely retighten the two collar set screws.

BARRING

ASSEMBLY: To avoid needle crawl while needle is in material, barring shaft assembly must be positioned with its slide in line with needle bar frame connection, as shown in inset in Fig. 61, when needle bar is at its lowest point.

WIDTH OF BARRING STITCHES is controlled by the height of barring point, shown in Figs. 61 and 62. A very slight adjustment of barring point will change width of barring stitches considerably.

To obtain an **approximate setting**, loosen the barring point screw, shown in Fig. 61. Place a .015 inch shim between barring point and top surface of cam and drop the barring point on top of shim as shown in Fig. 61. Tighten barring point screw.

To increase the width of barring stitches, ratchet the barring plate cam until barring point rides upon top of first barring plate on the cam, as shown in Fig. 62. Back out the stop screw, shown in Fig. 63. Loosen barring point screw. Lower barring point as required. Tighten barring point screw. Now turn in stop screw, Fig. 63, until there is least possible amount of play in barring slide. Turn in set screw, Fig. 63, against end of stop screw, locking stop screw in place.

To decrease the width of barring stitches, ratchet the barring plate cam until barring point rides upon the top of barring plate. Loosen barring point screw, Fig. 62, and raise the barring point as required. Securely retighten barring point screw.

Back out the set screw, shown in Fig. 63, and turn stop screw inward until there is least possible amount of play in barring slide. Turn set screw in against end of stop screw, locking the stop screw in place.

Check for excessive play or binding while barring point rides upon the other barring plate on cam.

See "SPECIAL INSTRUCTIONS for Machine 271K2", starting on page 33.

CENTRALIZING THE BARRING STITCHES in relation to the side stitches of the button-hole is accomplished by correctly locating the two barring plates on the cam, shown in Fig. 62.

To check, open the cutting space to maximum to exaggerate motion of clamp carrier slide. (See instruction for "Cutting Space" on page 16.) Scribe a pencil mark upon clamp carrier slide, to aid in observing motion. Turn tight machine pulley by hand, observing motion of slide in relation to barring and side stitching. Stop at last stitch of first bar with needle bar on upward right hand stroke.

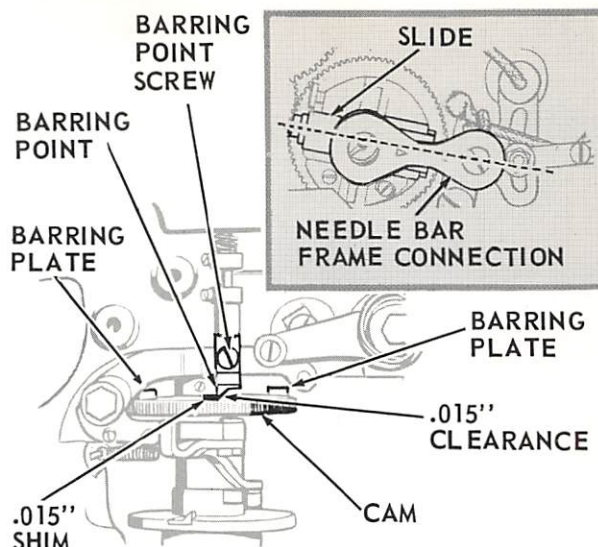


Fig. 61. Approximate Setting

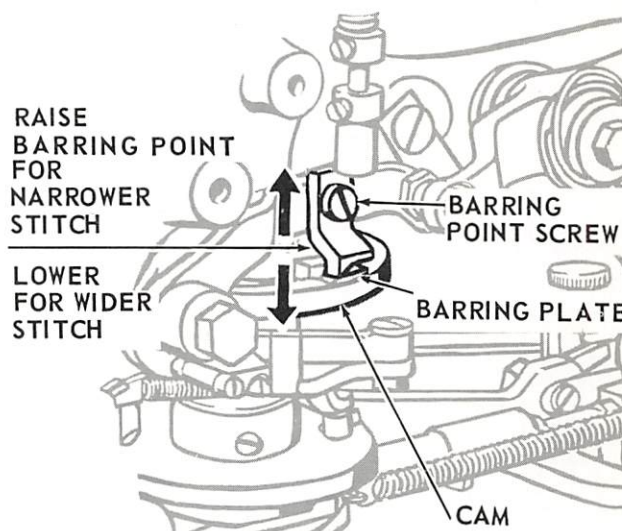


Fig. 62 Setting the Width of Barring Stitch

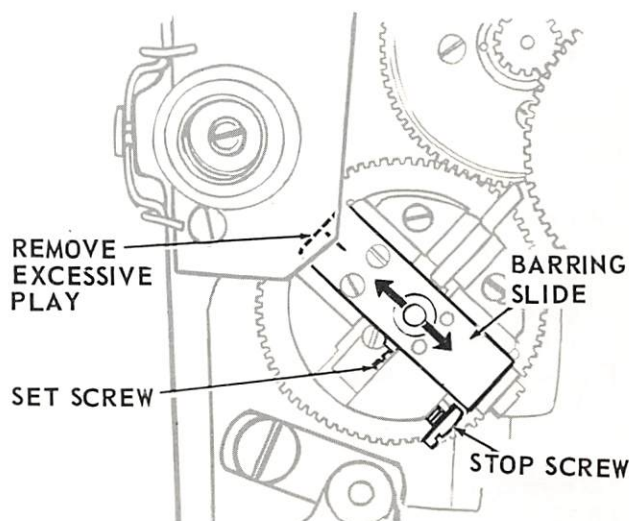


Fig. 63. Adjusting Stop Screw and its Set Screw

BARRING (continued)

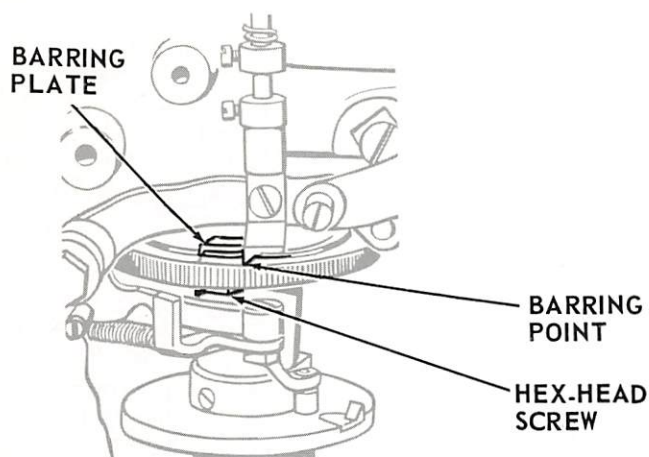


Fig. 64. Centralizing the Barring Stitches

After the last needle dip in the bar, as the needle rises above the clamp check on the right hand stroke and the clamp carrier slide has just started to move, the barring point shall have just slipped off the end of the barring plate, as shown in Fig. 64.

To adjust, loosen hex-head screw beneath barring plate and move plate flush against back of barring point. Securely retighten hex-head screw. Set the other barring plate in same manner, at the last stitch in second barring series. Recheck settings.

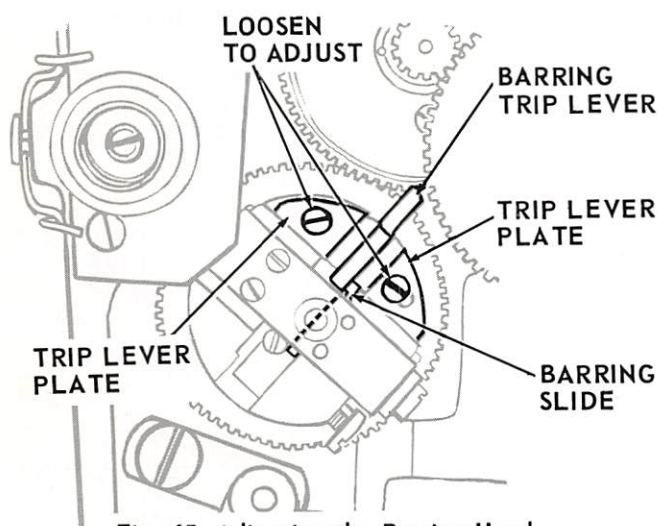


Fig. 65. Adjusting the Barring Head

BARRING TRIP LEVER should retain barring slide in position shown in Fig. 65 until needle, on its upward stroke, has cleared clamp check.

To adjust, ratchet the machine until barring plate is under barring point as shown in Fig. 62. Loosen the two screws, shown in Fig. 65, that hold trip lever plate on either side of trip lever and adjust trip lever to fall into notch in barring slide, as shown. Retighten screws. Check for correct latching action when barring point rides upon the other barring plate.

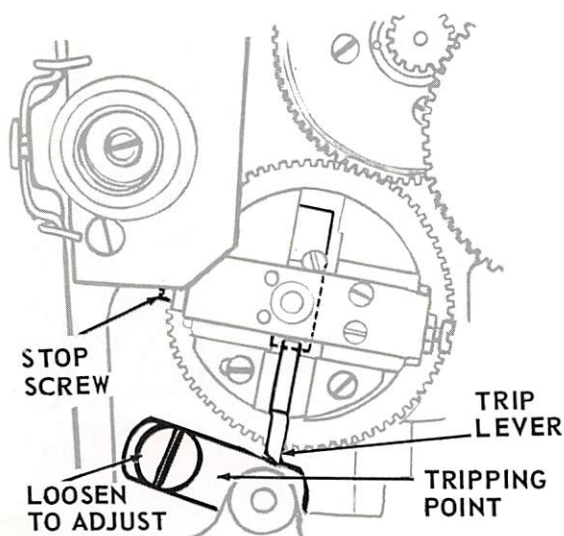


Fig. 66. Trip Lever Actuated by Tripping Point

BARRING TRIPPING POINT should cause trip lever to release barring slide when trip lever strikes the tripping point, as shown in Fig. 66.

To adjust, loosen large screw shown in Fig. 66 and move point as required. Hold point in this position firmly while retightening large screw. Do not cause tripping point to depress trip lever any more than is necessary to release the barring slide, to avoid breakage or excessive wear of lever.

Recheck for excessive play of barring slide and adjust the stop screw when necessary, as instructed on page 24.

NEEDLE BAR HEIGHT

When the needle bar is at its lowest point, the distance between the bottom of the needle bar and the top surface of the needle plate should be - - -

- .437 inch on Machines 271K1, 271K2 and 271K201.
- .477 inch on Machine 271K3
- .497 inch on Machine 271K4

To adjust, insert a 5/32 inch socket wrench through access hole provided for it in machine arm and loosen socket screw on connecting stud, as shown in Fig. 67. Raise or lower needle bar, as required and securely retighten socket screw.

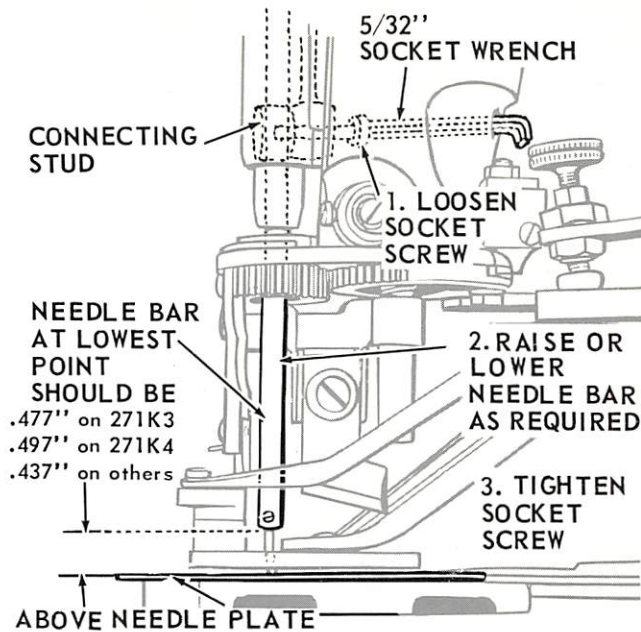


Fig. 67. Needle Bar at Correct Height

NEEDLE PLATE CENTERED (FRONT to REAR)

Needle should rise and fall at an equal distance from front and rear edges of needle slot in needle plate, as shown in Fig. 68.

To adjust, set needle correctly in needle bar and hand ratchet machine until clamp check is out of way of access to needle plate screws, shown in Fig. 68. Loosen screws and move needle plate forward or backward, as required, to center needle (front to rear) in needle slot.

Securely retighten needle plate screws.

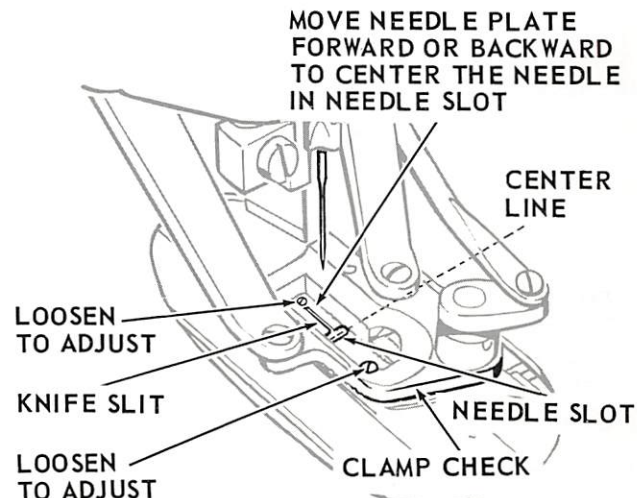


Fig. 68. Centering the Needle Plate (Front to Rear)

CLAMP-CHECK CENTERED (LEFT to RIGHT)

To avoid thread fraying on edges of clamp-check, center the clamp-check in relation to the needle plate as follows - - -

With machine in "stop" position, loosen set screw in center of lower half of clamp plate block, shown in Fig. 69.

Move block and clamp-check to right or left as required.

Raise clamp-check by hand to insure proper seating.

Recheck position and reset when necessary.

Securely retighten set screw.

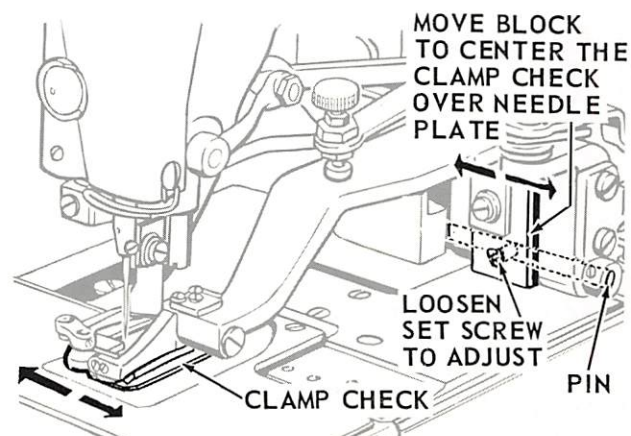


Fig. 69. Centering Clamp-Check (Left to Right)

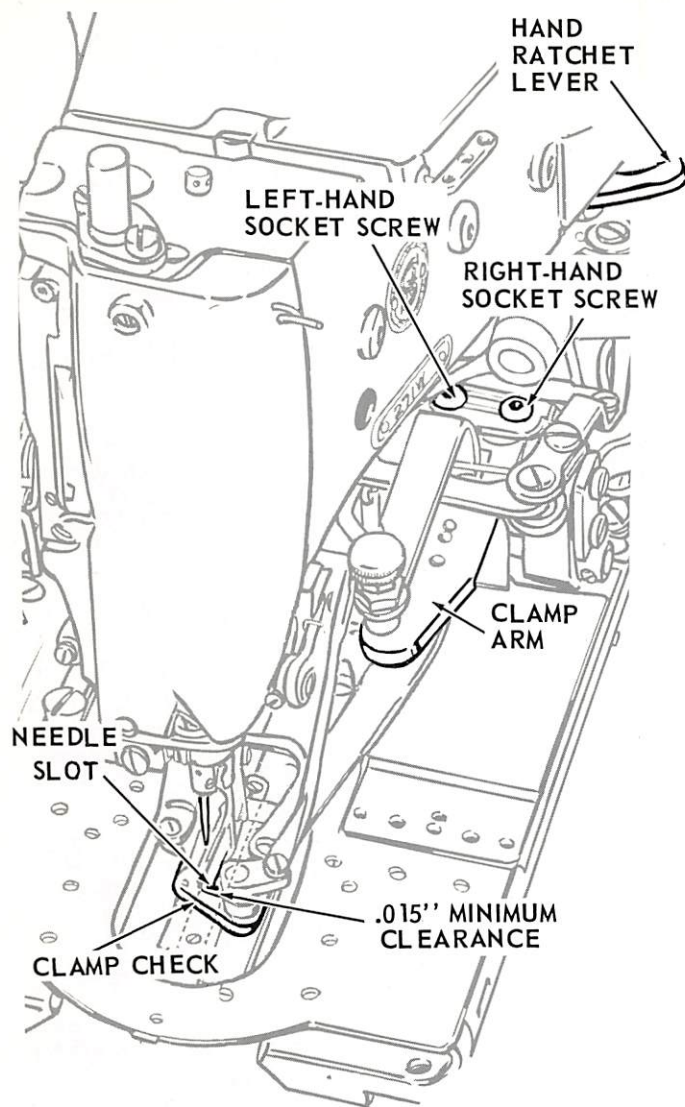


Fig. 70. Clamp Check Clearance

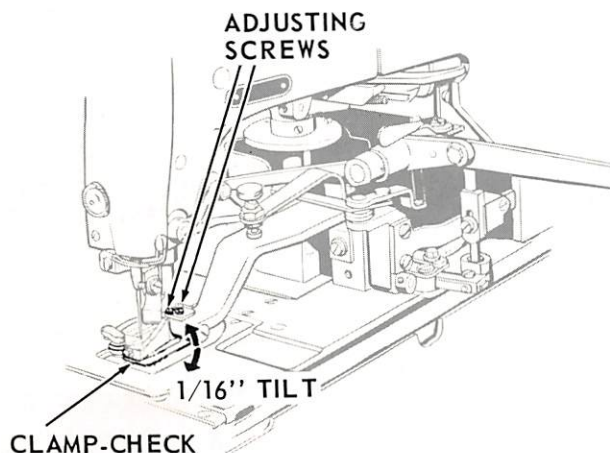


Fig. 71. Clamp Check Tilt Adjustment

CLAMP-CHECK CLEARANCE WITH NEEDLE

To avoid thread fraying, clamp-check should never overlap needle slot in needle plate. At "stop" position, there should be a minimum of .015 inch clearance between front of needle and inside edge of clamp check.

To adjust, first check "Needle and Knife Alignment", as instructed on page 16, and "Needle Plate Centered (Front to Rear)" as instructed on page 26.

Then---

1. Ratchet machine to bring clamp arm forward for access to clamp arm socket screws.
2. Loosen only the right-hand socket screw shown in Fig. 70.
3. Ratchet machine back to "stop" position.
4. Loosen the left-hand socket screw.
5. Bring needle to lowest position and move clamp-check as required to obtain .015 inch minimum clearance in front of needle as shown in Fig. 70. Use more clearance if such is necessary to avoid overlapping needle slot.
6. Tighten left-hand socket screw securely.
7. Ratchet clamp arm forward and tighten right-hand socket screw securely.

SWING OF CLAMP-CHECK

(Machines 271K1 and 271K201 only)

Raise clamp arm very slowly, observing tilting swing at front and rear of clamp-check, shown in Fig. 71.

Clamp-check should tilt at front and rear, approximately 1/16 inch. This tilt may vary for different materials.

To adjust the tilt, loosen or tighten the two screws shown in Fig. 71 on top of the clamp-check holder, as required.

UNDER-THREAD CUTTING BLADE

REMOVAL: Turn machine over on its hinges and remove bobbin case stop screw and bobbin case stop, shown in Fig. 73. Remove the two blade-holding screws and under-thread cutting blade, shown in Fig. 72.

REPLACEMENT: Place new cutting blade in position shown in Fig. 72, with its cutting edge between pull-off finger and needle plate. Fasten blade with two screws, moving blade as far as it will go toward left side of machine bed. Make certain blade edge is parallel with knife slit in needle plate. Then securely tighten blade-holding screws.

Replace bobbin case stop and screw. Adjust as instructed next.

BOBBIN CASE STOP

HORIZONTAL POSITION: Bobbin case stop should be set with its rear edge flush with rear surface of position finger on bobbin case base, as shown at top of Fig. 73.

To adjust, loosen hinge stud set screw, shown in Fig. 72 and move bobbin case stop, opener bracket, bracket collar and hinge stud together, as required. Tighten hinge stud set screw.

VERTICAL POSITION: Turn machine pulley until bobbin case stop is in its lowest position, as shown in Fig. 73. At this position, there should be a clearance of approximately .005 inch between notch in bobbin case base and bottom surface of stop, as shown in Fig. 73.

To adjust, loosen large screw, shown in Fig. 73. Move stop as required to obtain clearance and retighten large screw.

BOBBIN CASE OPENER BRACKET HINGE STUD is a part of oiling system and must be positioned to align internal oil passages. Correct alignment is obtained when stamped mark, shown in Fig. 72, on its face, is in 6 o'clock position.

FRONT HOOK SHAFT BUSHING is also part of oiling system and stamped mark on its face must also be in 6 o'clock position, as shown in Fig. 72.

UPPER-THREAD CUTTING AND CLAMPING BLADES

("SPECIAL INSTRUCTIONS" FOR MACHINE 271K2, start on page 33.)

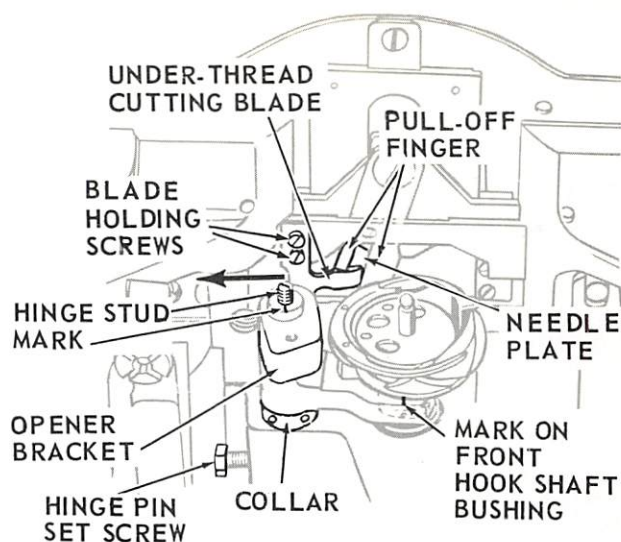


Fig. 72. Under-Thread Cutting Blade

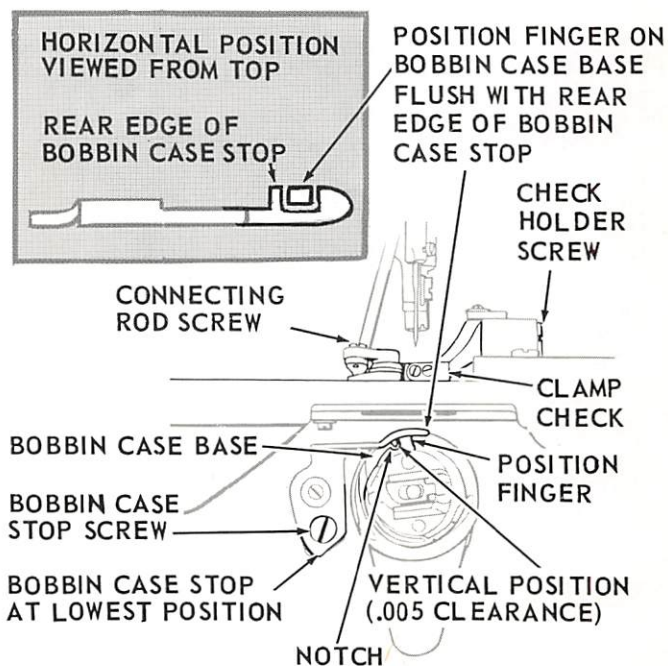


Fig. 73. Bobbin Case Stop

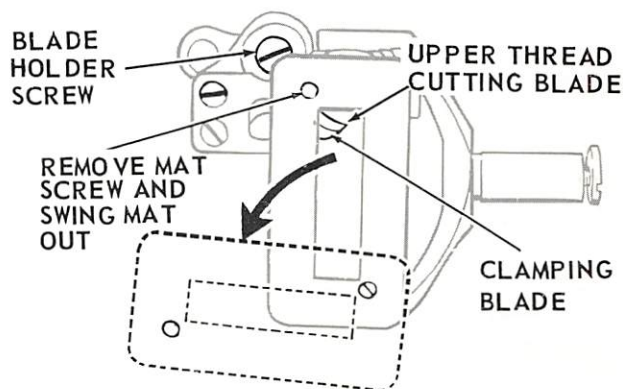


Fig. 74. Upper-Thread Cutting and Clamping Blades

UPPER-THREAD CUTTING AND CLAMPING BLADES (continued)

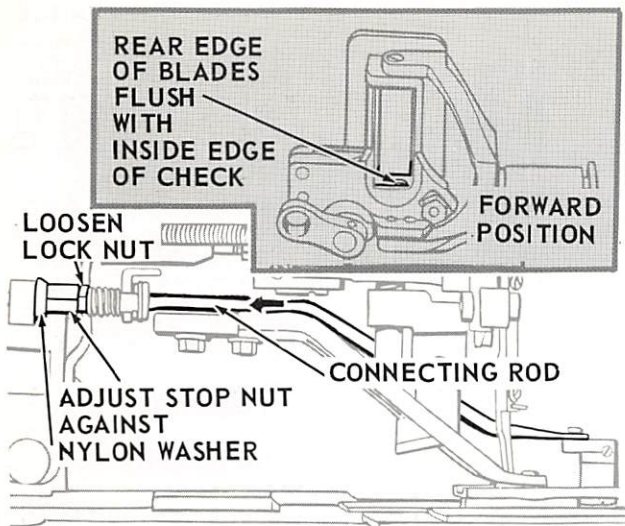


Fig. 75. Forward Position of Blades

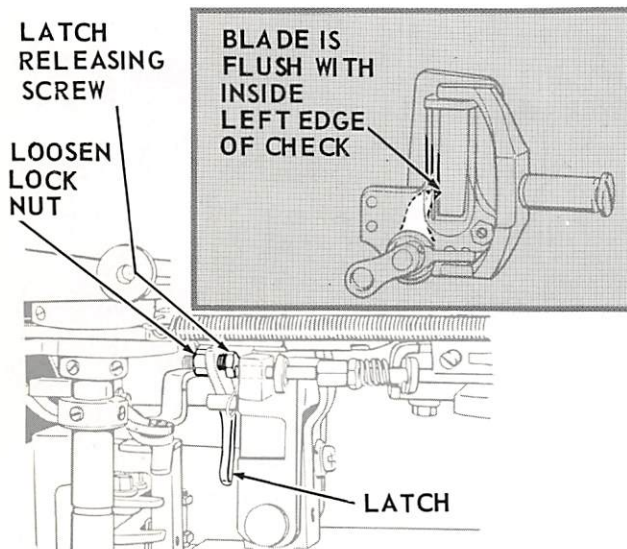


Fig. 76. Cocked Position of Blades

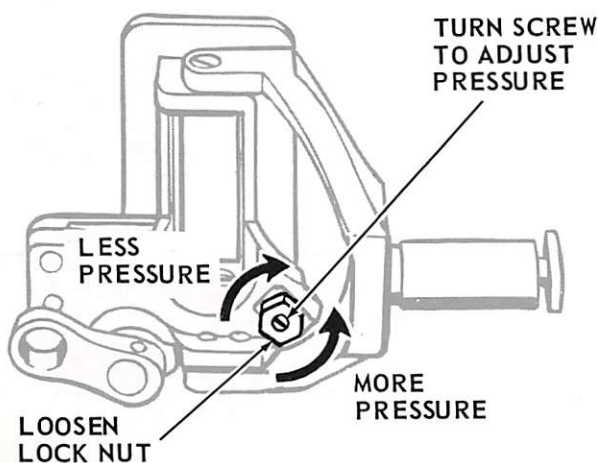


Fig. 77. Regulating Pressure on Blades

REMOVAL: Remove connecting rod screw and check-holder screw, shown in Fig. 73. Remove clamp check from machine and turn it upside down as shown in Fig. 74.

Remove small screw at front end of mat on bottom of check and swing mat out of way, as shown in Fig. 74.

Remove large blade-holder screw. Remove clamping blade and upper-thread cutting blade.

REPLACEMENT: Replace new cutting blade and clamping blade fastening them in place with blade holder screw. Replace mat. Replace clamp check on holder, fastening it to holder with large screw and to connecting rod with small screw, as shown in Fig. 73.

FORWARD POSITION: When cutting blade connection is released to the rear, as shown in Fig. 75, moving the cutting and clamping blades to their forward position, the rear edges of these blades should be flush with the inside edge of the clamp check, as shown in inset in Fig. 75.

To adjust, loosen lock nut, as instructed in Fig. 75, and turn stop nut on connecting rod against nylon washer, as required. Securely retighten lock nut.

COCKED POSITION: Pull connecting rod forward to cocked position shown in Fig. 76. In cocked position, tip of cutting blade should be flush with inside left edge of check, as shown in inset of Fig. 76. **Exception:** (On Machine 271K4 blade will be flush with inside right edge).

To adjust, loosen lock nut, shown in Fig. 76 and turn latch releasing screw, as required. Securely retighten lock nut.

PRESSURE (Machines 271K1 and 271K201, only): The pressure on the cutting and clamping blades should be just sufficient to trim the thread and to hold the starting end.

Too much pressure will prevent blades from entering clamp check, leaving them exposed to be struck by needle.

Loosen lock nut and turn screw at front-right of check clockwise to decrease pressure or anti-clockwise to increase pressure. Securely retighten lock nut.

UPPER THREAD CUTTING AND CLAMPING BLADES

(continued)

CAM FOLLOWER POSITION: Hand-ratchet the machine until the larger one of the two lobes on the cutting cam fully actuates the cam follower, as shown in Fig. 78. (Note: Machine 271K4 has only one lobe.) Loosen adjusting screw on cutting lever connection, shown in Fig. 79.

Using a small screwdriver as shown in Fig. 79, remove all play between cam follower and trimmer connecting rod. Snug the adjusting screw just enough to hold cutting lever in place. Then tap cutting lever lightly until approximately $1/64$ " clearance is obtained between rear end of connecting rod and stop screw, as shown in Fig. 78. Securely tighten adjusting screw.

RE-TRIM ACTION (TIMING): The cutting blades are correctly timed when the timing marks on the cutting cam and the feed wheel shaft, shown in Fig. 78, are aligned.

To time, loosen the two set screws on the cutting cam and rotate cam as required. Securely tighten the two set screws.

SAFETY DEVICES

(See, also "SPECIAL INSTRUCTIONS" FOR MACHINE 271K2, starting on pages 33.)

The lower-thread cutting lever is prevented from operating and the clamp check is prevented from rising during the sewing cycle by two locks - - the Tripping-Safety Lock and the Sewing-Safety Lock, shown in Fig. 78.

Both of these locks should be set to fall behind lifting lever, as shown in Fig. 78, when machine is ready to operate. Thus locked, clamp lifting lever should not be able to move enough to raise work clamp even slightly. Adjustment should be made to cause both locks to hold firmly behind lifting lever in "run" position and to fully release as machine reaches "stop" position.

TRIPPING SAFETY LOCK is adjusted for locking after loosening two hex-head screws in lock plate shown at top left of Fig. 80.

Move lock plate inward or outward as required. Securely tighten both hex-head screws.

Adjustment for release of tripping safety is made after loosening release plate screw shown at top right of Fig. 80. Raise or lower release plate as required. Securely tighten screw.

SEWING SAFETY LOCK is adjusted for locking after loosening screw shown at bottom left of Fig. 80. Move safety lock in hinge bracket, as required. Securely tighten screw.

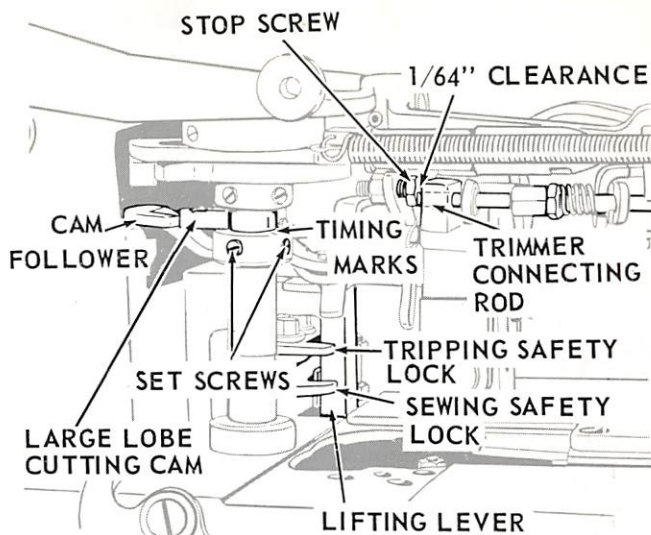


Fig. 78. Cam Follower Actuated Fully by Cutting Cam

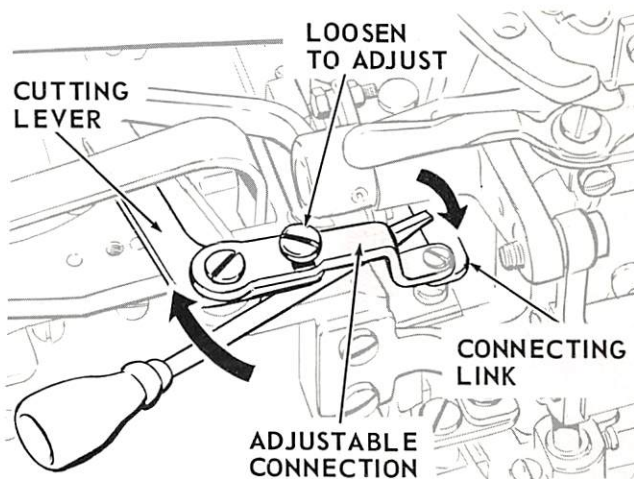


Fig. 79. Adjusting the Cam Follower Position

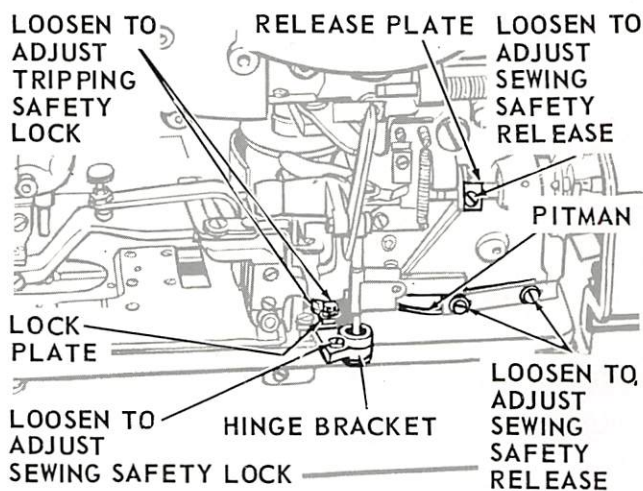


Fig. 80. Adjusting the Safety Devices

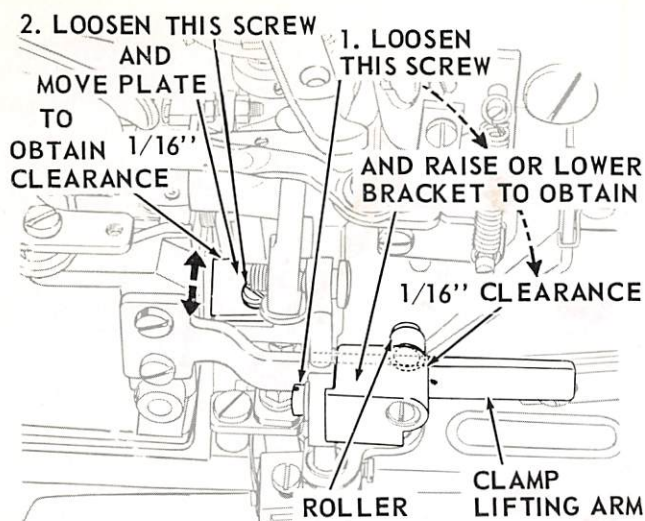


Fig. 81. Latch-Tripping Plate Adjustments

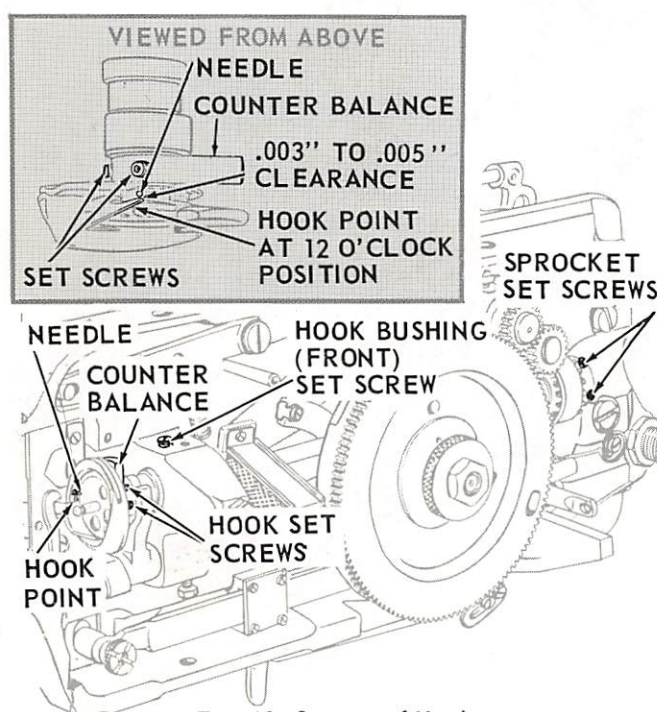


Fig. 82. Setting of Hook.

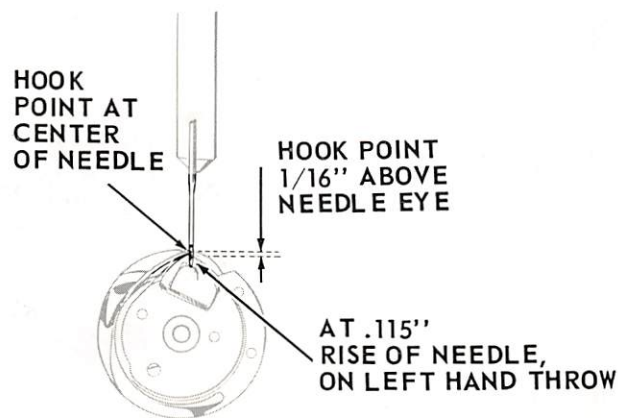


Fig. 83. Timing of Hook

SAFETY DEVICES (continued)

Adjustment for release of sewing safety is made after loosening pitman screws, shown at lower right of Fig. 80, and lengthening or shortening the pitman as required. Securely tighten both pitman screws.

LATCH-TRIPPING PLATE should be set to permit upper cutting blades to operate just before clamp check begins to rise.

1. With machine in "stop" position, loosen clamp roller bracket screw, shown in Fig. 81, and raise or lower bracket as required to obtain approximately 1/16 inch clearance between roller and clamp lifting arm. Securely tighten screw.

2. Loosen latch-tripping plate screw, shown in Fig. 81. Move plate toward right or left as required to obtain 1/16 inch clearance between latch and plate. Tighten screw and check for correct action. Cutting blades should move just before clamp begins to rise. Reset clearance between latch and plate as required, before finally tightening plate screw securely.

SEWING HOOK

ASSEMBLY: When sewing hook point is at 12 o'clock position (facing operator of machine) counterbalance should be 90° to right of hook point, as shown in inset in Fig. 82. Make certain hook body is seated snugly against hook shaft. Hook assembly will snap into place as it passes oil ring inside shaft, indicating that it is correctly seated.

SETTING: Sewing hook should be set with a clearance of approximately .003 to .005 inch between needle and hook. Make certain needle is not deflected by needle guard during this test.

To obtain this setting, loosen two screws in hub of lower sprocket for driving shaft belt and loosen the front hook bushing set screw shown in Fig. 82. Tap bushing as required to obtain correct clearance between hook point and needle. Securely tighten hook bushing set screw. Check timing before tightening sprocket screws.

TIMING: When the needle descends to its lowest position and rises .115 inch on the left hand throw of the needle, the point of the hook should be in the center of the needle, 1/16 inch above eye of needle.

SEWING HOOK (continued)

To time the hook, loosen the two sprocket set screws, shown in Fig. 82, in the lower sprocket for the driving shaft belt. Hold hook so that its point will be in dead center of needle and turn arm shaft until needle eye is 1/16 inch below hook point (needle bar rising on left hand throw). Tighten sprocket set screws lightly. Tap hook shaft lightly to achieve .002 inch to .003 inch end play and securely tighten sprocket set screws. Recheck and, if necessary, re-time.

TENSION RELEASER (TOP OF ARM) (ON ALL MACHINES, EXCEPT 271K2)

With machine in "run" position and barring point on barring plate as shown in Fig. 84, adjust lower collar on tension releaser rod to relieve tension on thread between discs.

With machine in "stop" position, adjust upper collar shown in Fig. 84, on tension releaser rod to relieve tension on thread between discs.

BARRING TENSION PLATE ACTUATOR (ON MACHINE 271K2)

With machine in "stop" position, adjust upper collar on actuating rod, shown in Fig. 85, to relieve tension between plates.

With machine in "run" position and barring point on barring plate, adjust lower collar on actuating rod, shown in Fig. 85, to apply tension on thread between plates.

AUTOMATIC KNIFE BAR DISENGAGING LEVER

Counterbalance on automatic knife bar disengaging lever, should be set so that lever rests lightly, on pin shown in Fig. 86.

To adjust, loosen set screw, shown in Fig. 86, and move counterbalance forward or backward as required. Securely tighten set screw.

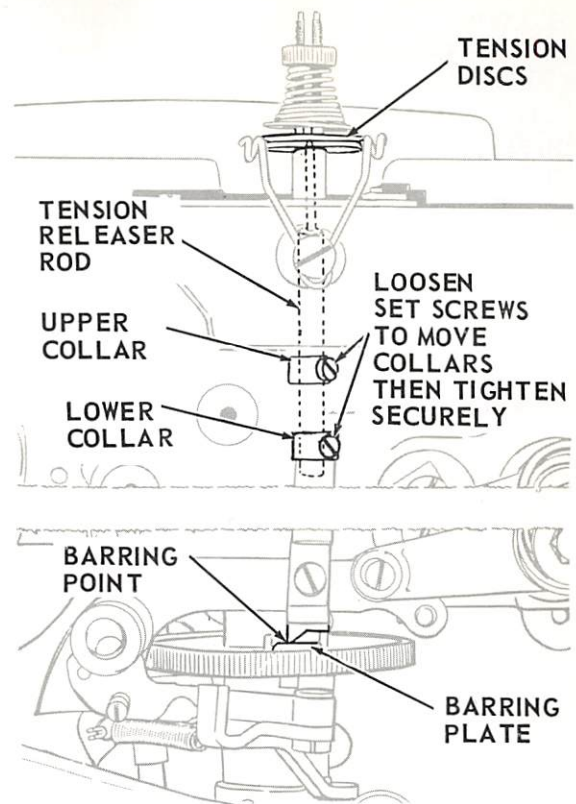


Fig. 84. Tension Releaser Adjustment

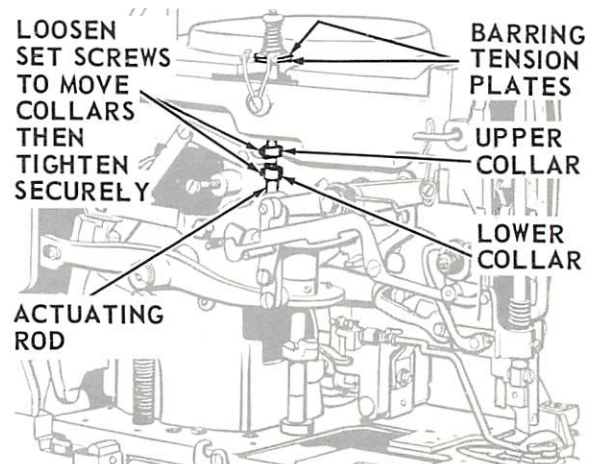


Fig. 85. Actuator

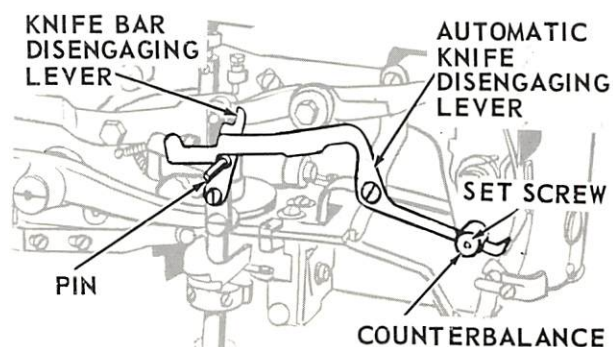


Fig. 86. Disengaging Lever

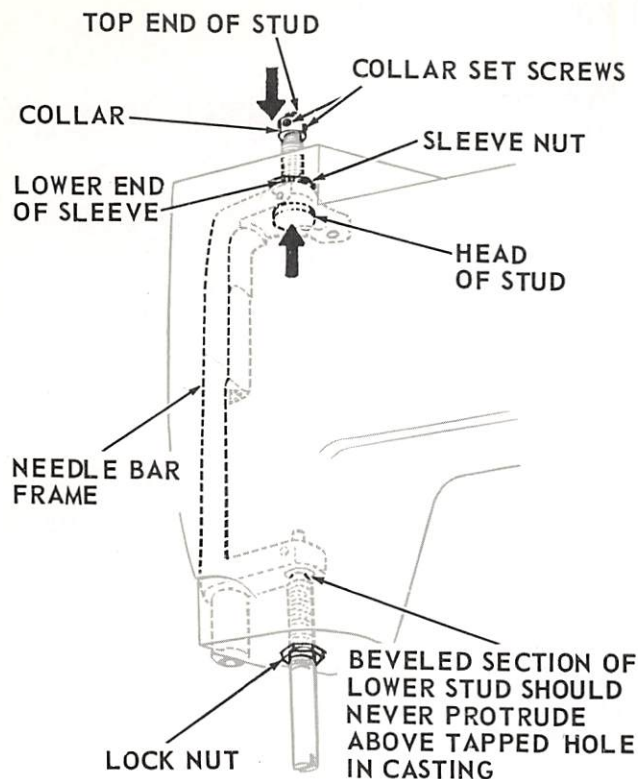


Fig. 87. Needle Bar Frame

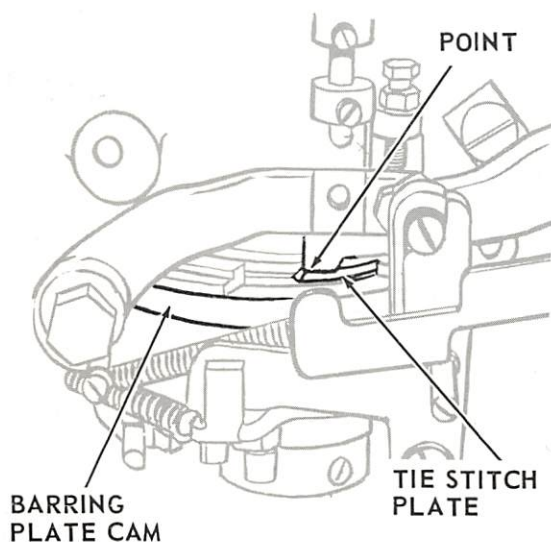


Fig. 88. Centralizing the Tie Stitches

NEEDLE BAR FRAME

TO REMOVE UP-AND-DOWN PLAY of needle bar frame, between lower end of sleeve and head of stud (shown in Fig. 87), first loosen the two collar set screws. Push head of stud upward to hold needle bar frame firmly without binding while pressing collar on top end of stud downward, flush against top of sleeve, and tighten the two collar set screws.

HEIGHT: Needle bar frame may be raised or lowered to conform with motion of pitman above it, after loosening sleeve nut, shown in Fig. 87, and turning sleeve downward or upward, as required. Tighten sleeve nut against top of machine head, while maintaining desired position of sleeve.

LOCATION OF KNIFE HOLDER GUIDE STUD: Beveled section above threaded portion of knife holder guide stud, shown in Fig. 87, should never protrude above tapped hole in machine casting. Needle bar frame should ride freely upon top end of guide stud. Guide stud is locked in place by tightening lock nut against bottom of casting, as shown in Fig. 87.

SPECIAL INSTRUCTIONS FOR MACHINE 271K2

Instructions above and on pages 2 to 32 generally apply to Machine 271K2, unless otherwise noted in text.

The following instructions apply to Machine 271K2, only.

TIE STITCH

CENTRALIZING TIE STITCHES IN RELATION TO STOP POSITION: Tie stitch plate on barring plate cam, shown in Fig. 88, controls position of tie stitches in relation to stop position. Set tie stitch plate so that bight adjusting point just reaches top of incline on plate on last dead stitch just before clamp carrier begins forward movement.

SPECIAL INSTRUCTIONS FOR MACHINE 271K2

TIE STITCH (Continued)

WIDTH OF TIE STITCH is controlled by adjusting the stop screw on barring slide, shown in Fig. 89. Adjust stop screw for approximately 1/32 inch stitch with regulator screw centered in slot of regulator, as shown.

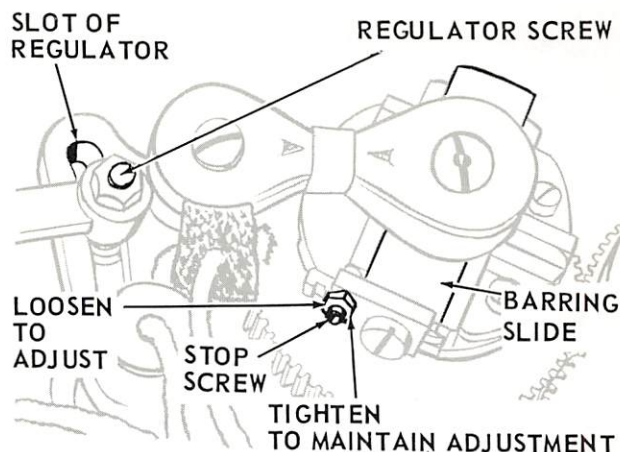


Fig. 89. Width of Tie Stitch

BIGHT STITCH

WIDTH OF BIGHT STITCH is controlled by raising or lowering bight stitch adjusting point shown in Fig. 90, in relation to the tie stitch plate. Set the adjusting point for approximately 1/16 inch stitch. Adjustment should be made with regulator screw centered in slot of regulator, as shown in Fig. 89. To adjust, loosen lock nut and raise stop screw shown in Fig. 90. Loosen holding screw and raise or lower adjusting point, as shown in Fig. 90. Securely tighten adjusting point holding screw.

When correct width of bight is obtained turn stop screw inward until it contacts barring lever, as shown. Tighten lock nut securely.

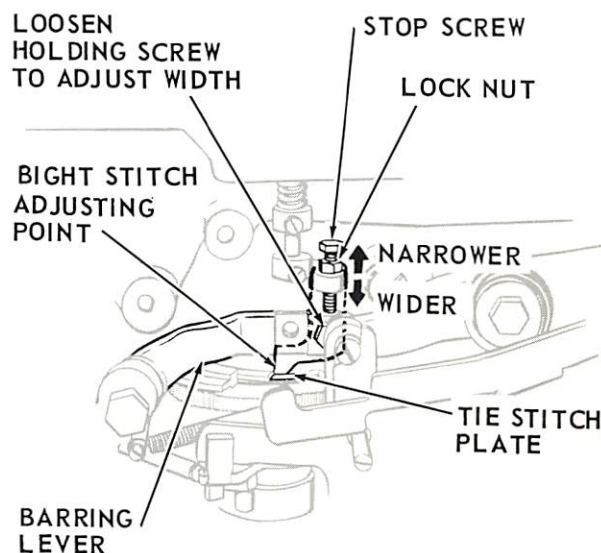


Fig. 90. Width of Bight Stitch

BARRING STITCH

WIDTH OF BARRING STITCH is controlled by raising or lowering the barring point, shown in Fig. 91, in relation to barring plates. Adjust barring point for approximately 1/8 inch stitch, with regulator screw centered in slot of regulator, as shown in Fig. 89.

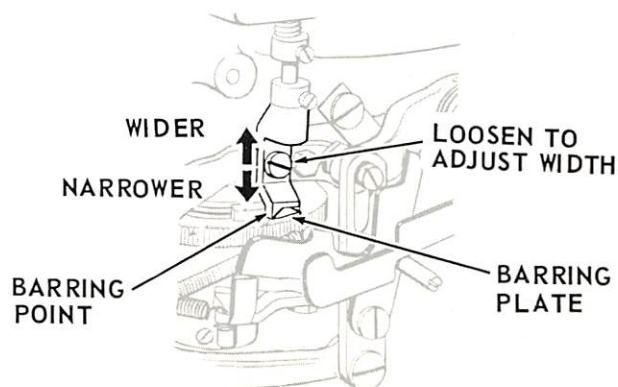


Fig. 91. Width of Barring Stitch

SPECIAL INSTRUCTIONS FOR MACHINE 271K2

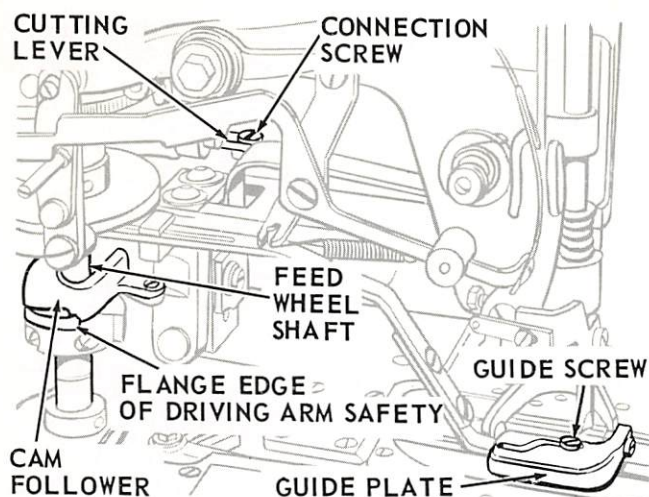


Fig. 92. Setting Upper Thread Cutting Cam Follower

UPPER THREAD CUTTING CAM FOLLOWER

Upper thread cutting cam follower should be set to assure trimming action while preventing guide screw from striking end of slot in guide plate.

SETTING: With machine in "stop" position, loosen screw in slot of upper thread cutting lever connection, shown in Fig. 92. Set body of cam follower flush against feed wheel shaft, to hold guide screw on cutting blades approximately $1/64$ inch from end of slot in upper thread cutting plate guide plate as shown. Securely retighten screw.

SEWING SAFETY LEVER

Sewing safety lever should be set so that trimmed end of thread will be held in position for covering.

SETTING: With machine in "stop" position, loosen clamp screw, shown in Fig. 93 and position the sewing safety lever on stop rod in relation to the upper thread cutting cam follower so that ---

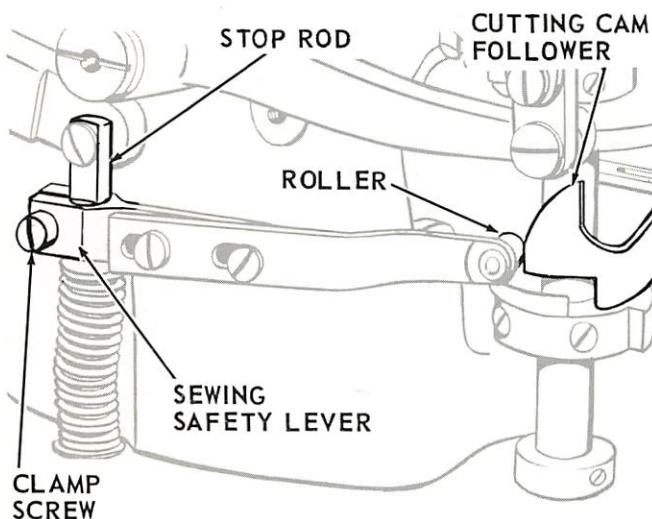


Fig. 93. Setting Sewing Safety Lever

1. Roller on safety lever, as machine is set in "run" position, will engage cam follower, as shown in Fig. 93, withdrawing clamping blades $3/16$ inch behind needle.
2. Clamping blades will avoid losing thread at start of sewing by not withdrawing beyond point of opening position in guide plate.

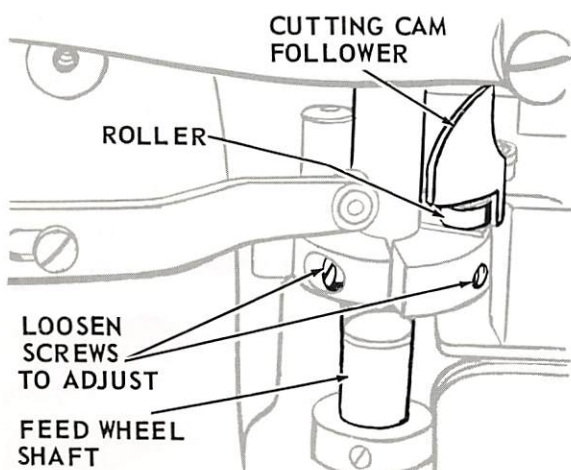


Fig. 94. Timing Upper Thread Cutting Cam

UPPER THREAD CUTTING CAM

Upper thread cutting cam should be timed to assure covering of trimmed end of thread while preventing needle from striking trimmer blades.

TIMING: Set machine for maximum length of buttonhole. Loosen screws, shown in Fig. 94. Turn cutting cam on feed shaft, until roller on cam engages upper thread cutting cam follower. This setting should start clamping blades moving away from needle, when point of needle is approximately $1/32$ inch from clamping blades.

DRIVING ARM SAFETY

Driving arm safety should prevent cutting blades from getting under needle during sewing.

SETTING: Loosen screws shown in Fig. 95. Set upper thread cutting blade driving arm safety on cutting cam, so that flange-edge of safety just clears inside edge of cam follower, during full cycle of feed wheel shaft as shown in Fig. 95, while still permitting cam follower to clear end of flange-edge of safety when machine enters "stop" position, as shown in Fig. 92, page 35. Securely retighten screws.

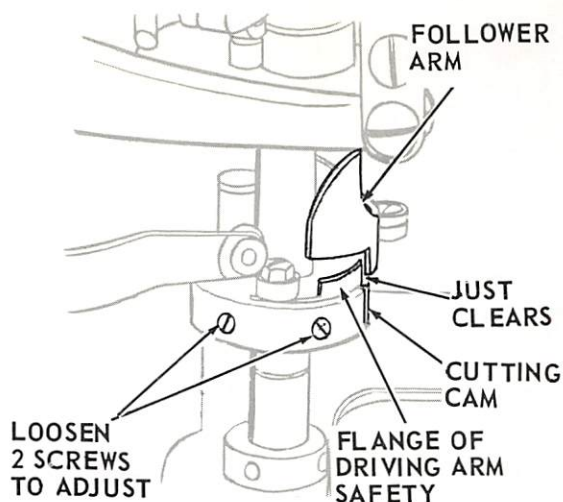


Fig. 95. Setting Driving Arm Safety

NEEDLE THREAD TENSION RELEASE

To allow thread to be pulled off for trimming, adjust sleeve, shown in Fig. 96, to relieve tension on thread between discs when machine is in "stop" position.

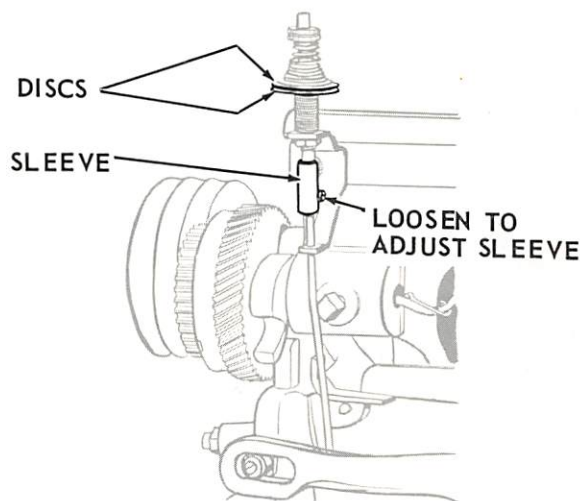


Fig. 96. Needle Thread Tension Release

NEEDLE THREAD PULL-OFF

To ensure sufficient loose thread for trimming and for starting next buttonhole, adjust needle thread pull-off roller arm to activate pull-off for an approximate one inch stroke at pull-off end on return of knife bar.

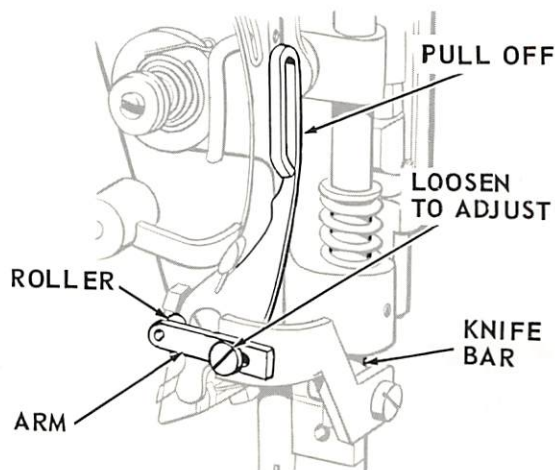


Fig. 97. Needle Thread Pull-off