SERVICE MANUAL

Sewing Machine Models

6233

6234

6235

by **SINGER***

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This manual is designed for use by trained and qualified service persons.

The Singer Company will not be responsible for any parts requiring replacement owing to natura
or to abuse or negligence of the user or in the event the machine is serviced by other than a trai
and qualified service person, or if parts are substituted which do not meet applicable specificatio

TABLE OF CONTENTS

GENERAL INFORMATION

SCOPE

This service manual describes all of the servicing procedure, including all adjustments and parts removal and replacement for the Models 6233, 6234, and 6235 machines. Supplementary information covering any production changes, improvements or changes to parts will be made by issuing Singer Serivce/Parts Bulletins.

MACHINE DESCRIPTION

Center tube tubular bed
Slant needle
Lightweight "Duratec" casting
Apollo sewing system (6233)
Wind in place bobbin Centaur sewing system (6234,6235)
Horizontal spool pin
Touch and wind declutching hand wheel (6233)
Bobbin capacity 41 meters (45 yds)
Universal presser bar pressure control
Instant and sustained reverse
Maximum stitch length 4.5 mm (5 SPI)
Maximum stitch width 6 mm
Self evident lay-in threading
Positive tension threading
Detent (at auto) thread tension
Self threading take-up
One-way needle insertion
Direct pattern selection
Bed length 15.1 inches without clothplate
Bed width 7 inches
Bed height 3.3 inches
Clearance under free arm 0.7 inches
Free arm circumference 10.12 inches
Overall height 11.8 inches

"DURATEC" CASTING

With the introduction of "Duratec", self-threading screws have been used to mount many of the parts and assemblies to the structure. It is important that when replacing these screws, they be threaded into the original screw threads. The proper procedure for doing this is to insert the screw into the hole and turn the screw counterclockwise until the screw can be felt to "drop" in place. An audible "click" may also be heard. Once the screw is properly in place, it may then be tightened.

SELF ALIGNING BEARINGS

There are three rotating shafts in the models 6233, 6234 and 6235 which are mounted in self aligning bearings; the arm shaft, the hook drive shaft and the feed regulator shaft. If it is necessary to remove any of these shafts, they must rotate freely and smoothly upon replacement.

To aid in achieving a free and smooth rotation of the shafts, tighten the bearing clamp screws in increments moving from one bearing to the other. Check for free and smooth rotation as the clamp screws are tightened. If an increase in the torque required to rotate the shaft is noted while tightening the clamp screws, lightly tap the shaft with the handle of a screwdriver adjacent to the bearings. It may be necessary to slightly loosen the clamp screw and then retighten.

Shafts which do not rotate freely and smoothly will cause damage to the self aligning bearings.

TOOL REQUIREMENTS

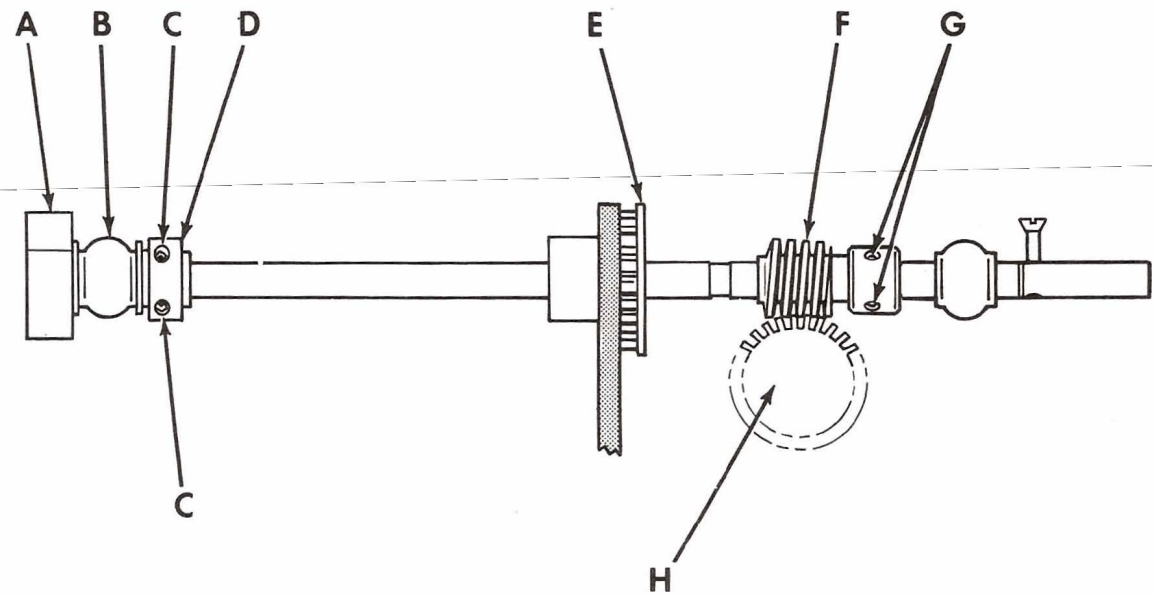
In addition to the normal compliment of service tools, the following are required to service the models 6233, 6234, 6235.

Hex wrenches:	3/32", 2 mm, 2.5 mm, 3 mm
Socket wrenches:	5.5 mm, 6 mm, 7 mm, 8mm
Open end or box wrenches :	5/16", 5.5 mm, 7 mm
Phillips screwdrivers:	#1, #2

Set of leaf feeler gauges
Wire feeler gauge .008"-.012" Singer Part Number 62-173715-000
Size 18 needle or plug
Volt-ohm Meter (VOM)
Tachometer
Loctite 222
Loctite 495
CCF Connecting Rod Adjusting Nut Special Lock Tool.

SECTION 1

SEQUENTIAL ORDER OF ADJUSTMENT PROCEDURES


A
B
C
D
E
F
G
C
H

ARM SHAFT END PLAY

Models 6233, 6234, 6235

Preparation:

1. Remove face plate and arm top cover.

Check:

1. Rotate the arm shaft through several revolutions. It must rotate freely with no binds.

2. Push in and out on the arm shaft by means of the timing belt pulley (E). Repeat this procedure at three radial positions of the arm shaft, each position equidistance from the other. End play must not exceed 0.025 mm - 0.050 mm (.001″ - .002″).

Adjustment:

1. Loosen two arm shaft collar hex head set screws (C).

2. While holding arm shaft crank (A) against front bushing (B) slide arm shaft collar (D) lightly against front bushing (B).

3. Tighten screws (C) securely.

4. Recheck for binds or end play.

ARM SHAFT WORM GEAR MESH

Models 6233, 6234, 6235

Preparation:

1. Remove face plate and arm top cover.

Check:

1. Check for arm shaft end play and adjust if necessary.

2. Select zig-zag.

3. Rotate arm shaft toward the front of the machine 18 times. Check for backlash between arm shaft worm gear (F) and camstack gear (H) at turn 3, 9, and 15. If there is one point without backlash, no adjustment is needed even though backlash may exist in other positions.

4. Run the machine at full speed in straight stitch. There should be a consistent operating tone without any pulsation.

Adjustment:

1. Loosen two worm gear hex head set screw (G).

2. Turn worm gear (F) slightly toward the front of the machine to eliminate backlash or toward the rear of the machine to eliminate binding.

3. Tighten screws (G) and recheck gear mesh.

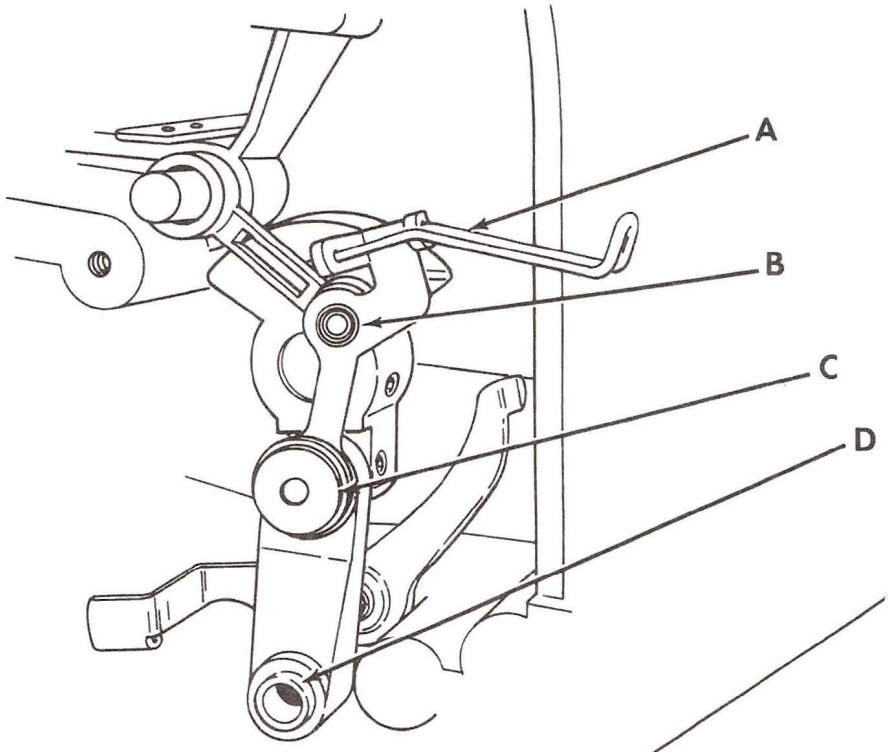
NOTE: Although there are three screw holes in worm gear (F), only two are used. The third hole is for manufacturing use.

4. Check pendulum timing and adjust if necessary.

THREAD TAKE-UP LEVER AND NEEDLE BAR CONNECTING LINK LOST MOTION

Models 6233, 6234, 6235

Machine Setting:	1.	Stitch Selection: Straight Stitch
Check:	1.	Run machine at high speed. Check for rapping noise in head-end area.
Preparation:	1.	Remove face plate and arm top cover.
	2.	Check for wear (out of round) in holes of needle bar connecting link (D), with needle bar in down position, by grasping needle bar and working it up and down. Check for lost motion in thread take-up lever (A); check rivet (B) for tightness. Check that thread take-up stud (C) is firmly seated in connecting link (D), and that set screw (E) is firmly tightened.
Adjustment:	1.	Remove head-end assembly.
	2.	Replace a loose thread take-up lever assembly with a new one.
	3.	If take-up stud (C) is loose in connecting link (D) loosen take-up stud set screw (E).
Models 6234, 6235	4.	Loosen hex head axial screw (F).
	5.	Locate stud set screw (E) on the flat of stud (C).
	6.	Press in on stud (C) with finger pressure and tighten screw (E). There must be no end play or binding of connecting link (D).
Models 6234, 6235	7.	Place one drop of Loctite 222 on the head of screws (E).
Models 6234, 6235	8.	Tighten axial screw (F) snug tight.
Models 6234, 6235	9.	Place one drop of Loctite 222 on the head of axial screw (F).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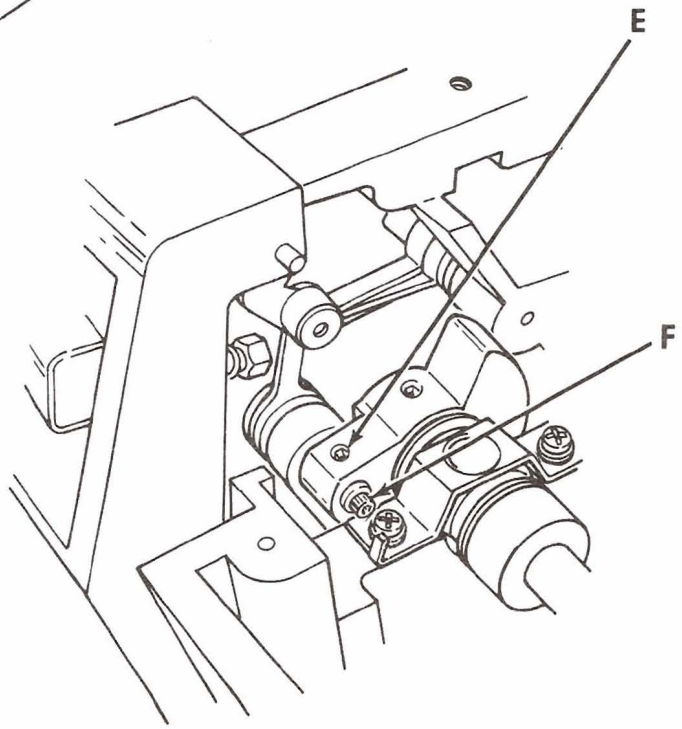
B
C
D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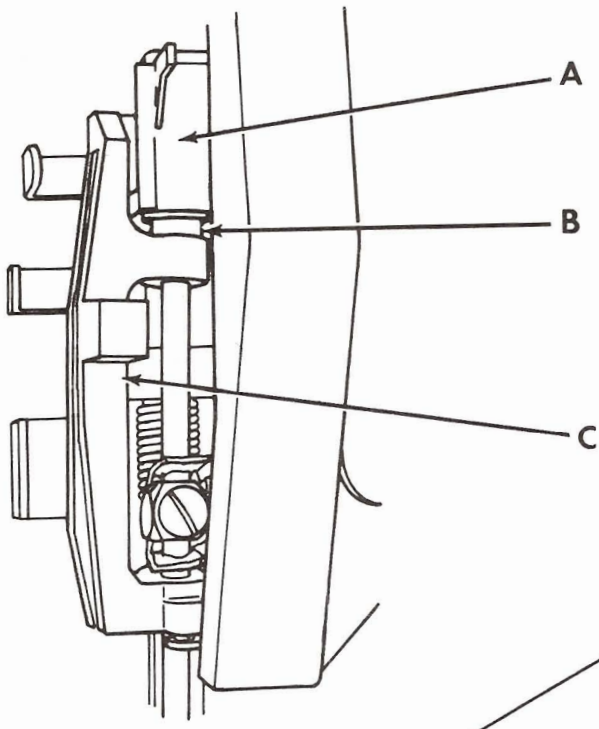
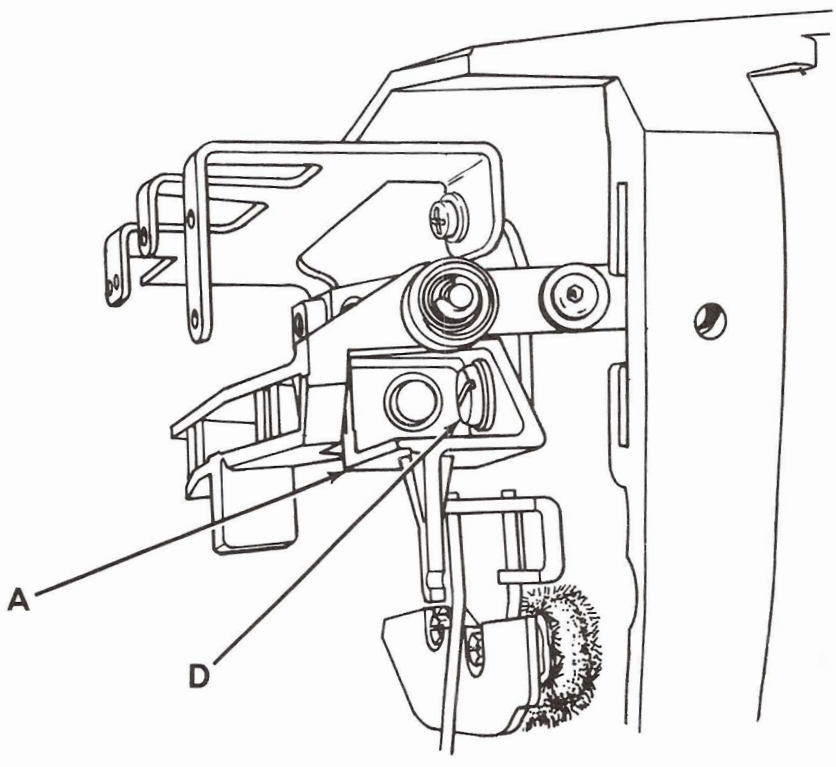

A
B
C


A
D

NEEDLE BAR VIBRATING BRACKET BALL JOINT

Models 6233, 6234, 6235

The needle bar vibrating bracket has one adjustable bearing (ball) joint (B) located at the top of the needle bar vibrating bracket. The ball joint is held in position by a needle bar bushing bracket (A). There should be no vertical looseness, yet needle vibrating bracket (C) must swing freely.

Machine Settings:
1. Stitch Selection: Straight Stitch

Preparation:
1. Remove face plate and arm top cover.

Check:
1. Check needle bar vibrating bracket (C) for vertical looseness or binding.

Adjustment:
1. Place an adhesive tape over the throat plate and turn hand wheel until the needle penetrates the adhesive. This will aid in holding the needle in the front to back position while the adjustment is being performed.
2. Loosen needle bar bushing bracket screw (D).
3. Use just sufficient pressure on bracket (A) to eliminate vertical looseness of needle bar vibrating bracket (C) without creating a bind.
4. Tighten screw (D) and recheck.
5. Check parallelism of presser bar and needle bar. Adjust if necessary.

PARALLELISM OF PRESSER BAR AND NEEDLE BAR

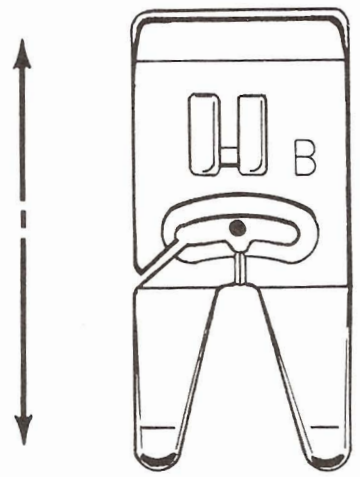
Models 6233, 6234, 6235

Check:

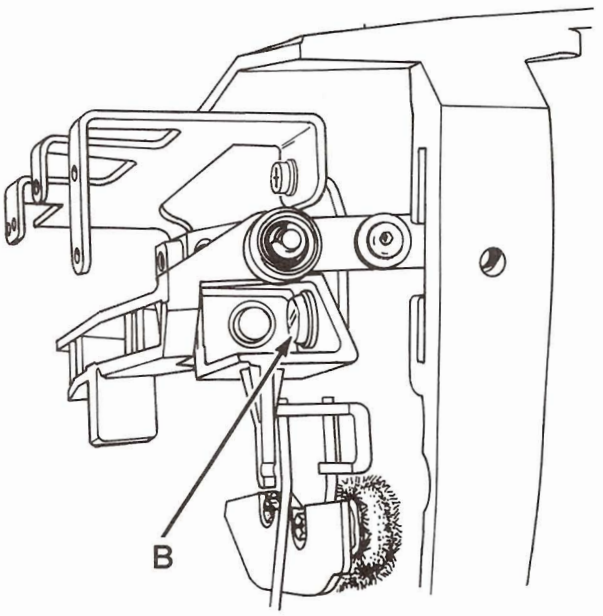
1. Install a size 18 needle or plug in the machine.
2. Install general purpose presser foot on the machine.
3. Select straight stitch.
4. Lower presser foot on throat plate.
5. Turn hand wheel toward the front of the machine to bring needle into the needle hole in the throat plate.
6. The needle should be equidistant from the front and rear edge of the presser foot hole. Illustration (A).

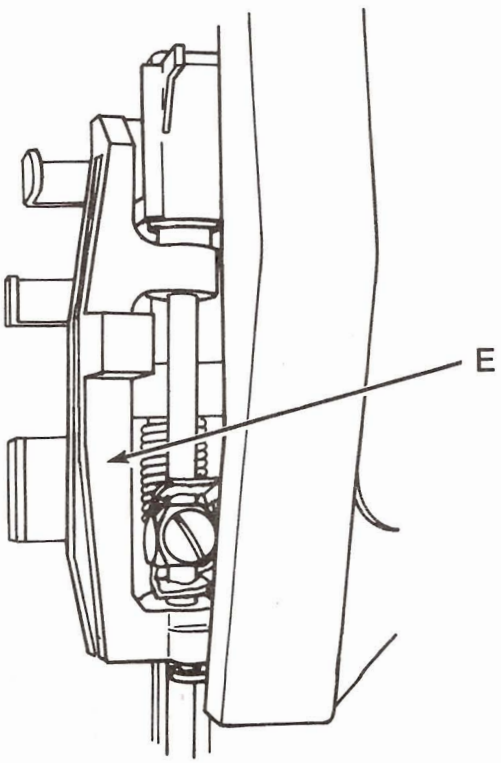
Adjustment:

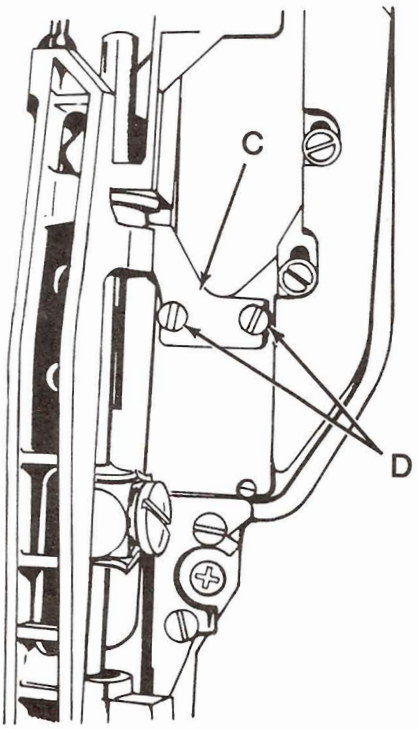
1. Remove face plate and arm top cover.
2. Loosen needle bar bushing bracket screw (B).
3. Loosen two needle bar vibrating bracket adjustment plate screws (D).
4. Move adjustment plate (C) front to back as necessary to locate the needle equidistant from the front and rear edge of the presser foot hole.
5. While maintaining the position of the adjustment plate, tighten screws. (D)
6. Adjust vertical end play of vibrating bracket (E)

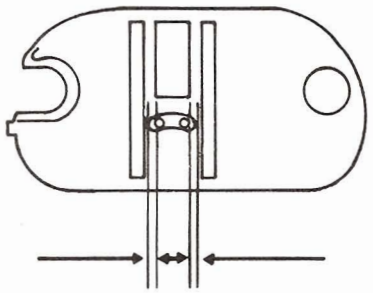


A









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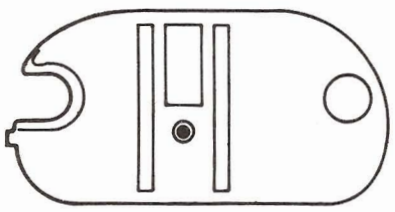
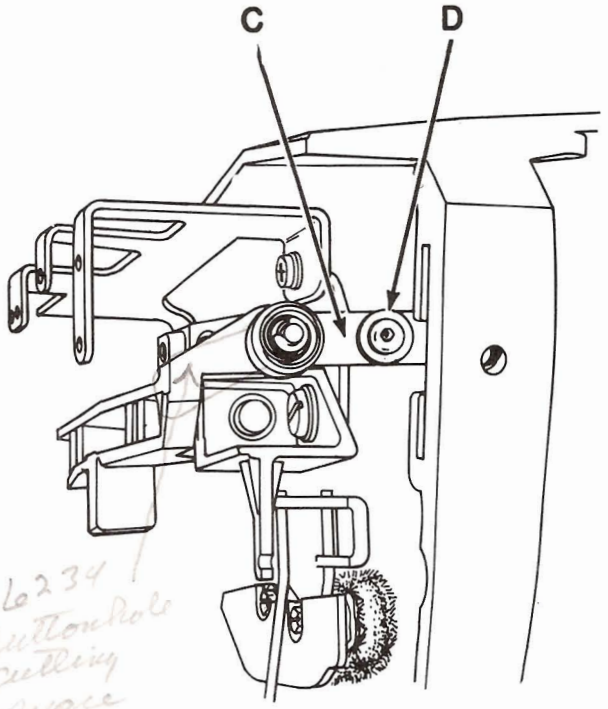
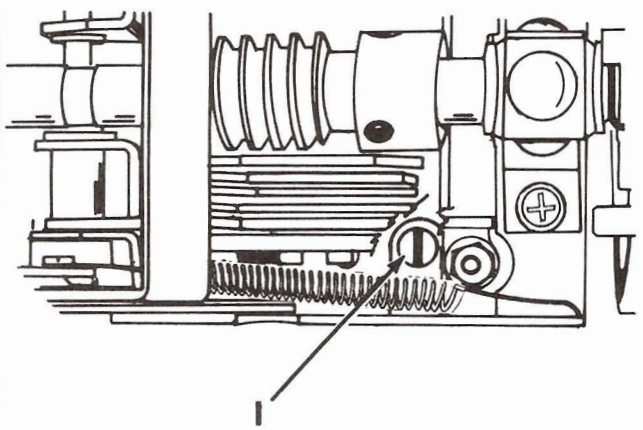
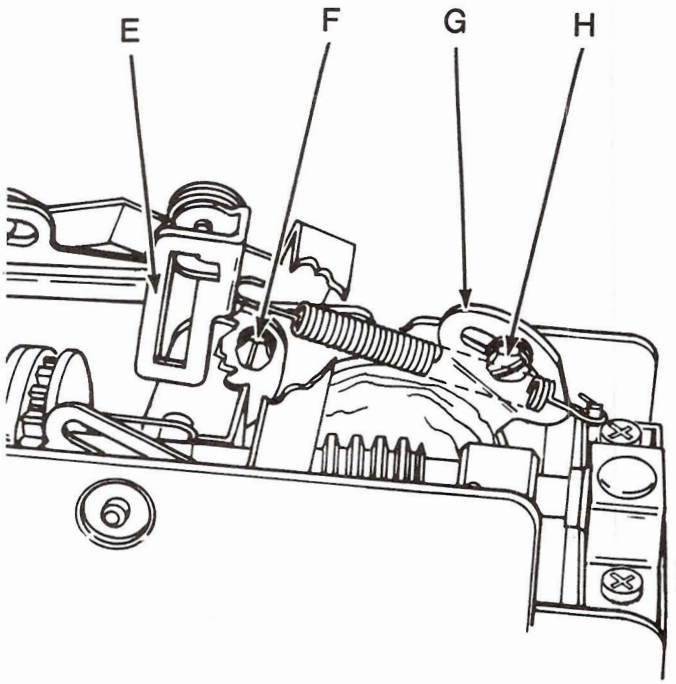


B







SETTING NEEDLE LOCATION

Models 6233, 6234, 6235

Check:

1. Install size 18 needle or plug.
2. Set machine for zig-zag, maximum width.
3. Turn machine by hand and observe needle as it enters the throat plate. Left and right entry should be equal distance from the edge of the throat plate hole. Illustration (A).
4. Install straight stitch throat plate.
5. Move stitch width control to straight stitch.
6. Turn machine by hand to bring the needle into the throat plate needle hole. The needle should be centrally located in the hole. Illustration (B).
7. Select straight stitch. Move stitch width control to maximum width. The needle should remain centrally located in the needle hole.
8. Move the stitch width lever back and forth. There should be no movement of the needle. E F

SETTING LEFT - TO - RIGHT NEEDLE LOCATION

Preparation:

1. Remove face plate and arm top cover.
2. Select zig zag, maximum width.

Models 6233, 6234, 6235

Adjustment:

1. Loosen screw (D) connecting needle bar ball joint (C) to needle bar driving arm. Maintain a pinch on screw (D) to control fine setting.
2. Move ball joint (C) left or right as required to centralize the zig zag swing of the needle in the zig zag throat plate.
3. Tighten screw (D).
4. Move stitch width control to straight stitch.
5. Install straight stitch throat plate.
6. Turn hand wheel to bring the needle into the throat plate hole.

SETTING LEFT - TO - RIGHT NEEDLE LOCATION (CONTINUED)

Models 6233 and 6234 only

7. Loosen screw (F).

8. Move Bracket (E) left or right as required to centralize the needle in the needle hole.

9. Tighten screw (F).

Model 6235 only

10. Center needle by turning screw (I) clockwise to move the needle to the left and counterclockwise to move it to the right.

Models 6234 and 6235

11. Select straight stitch. Move stitch width control to maximum width.

12. Loosen screw (H).

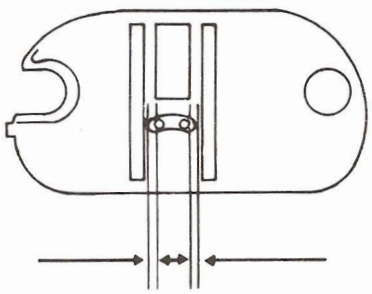
13. Move bracket (G) left or right as required to centralize the needle in the middle of the hole.

14. Tighten screw (H).

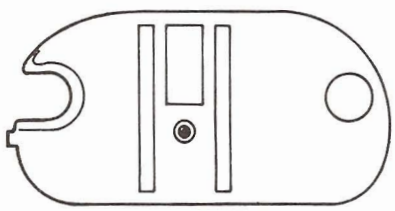
15. Move stitch width lever back and forth. There should be no movement of the needle.

16. Recheck zig zag needle location and readjust if necessary.

17. Check hook and feed timing.



A



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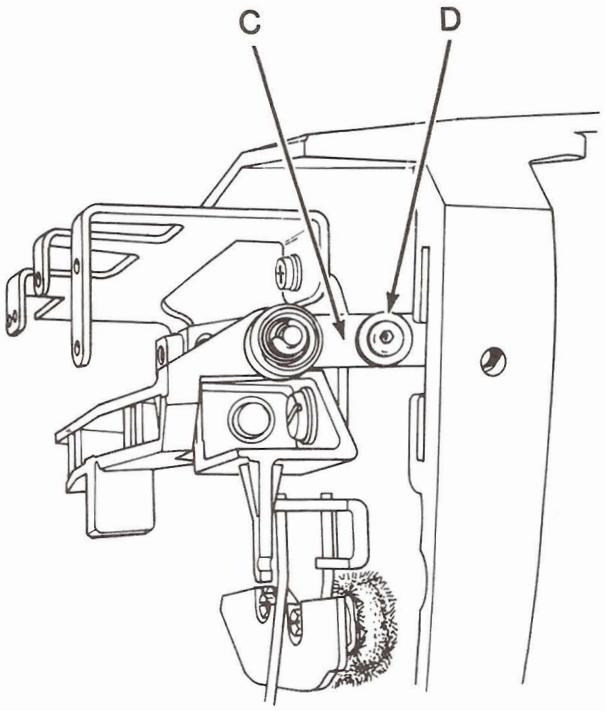
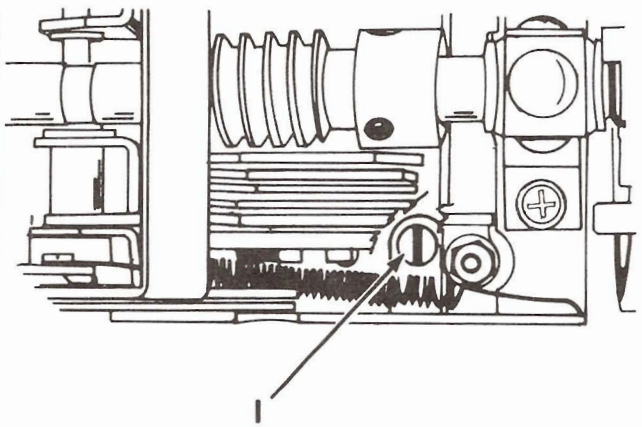
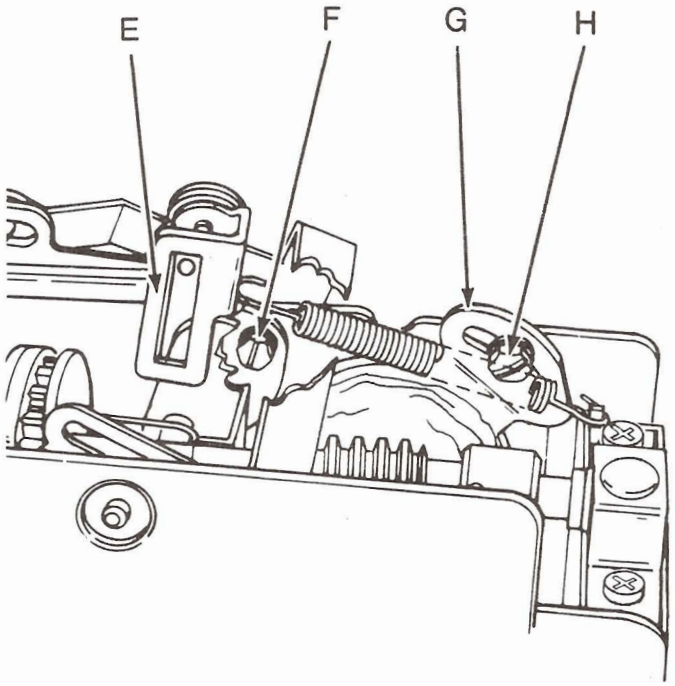
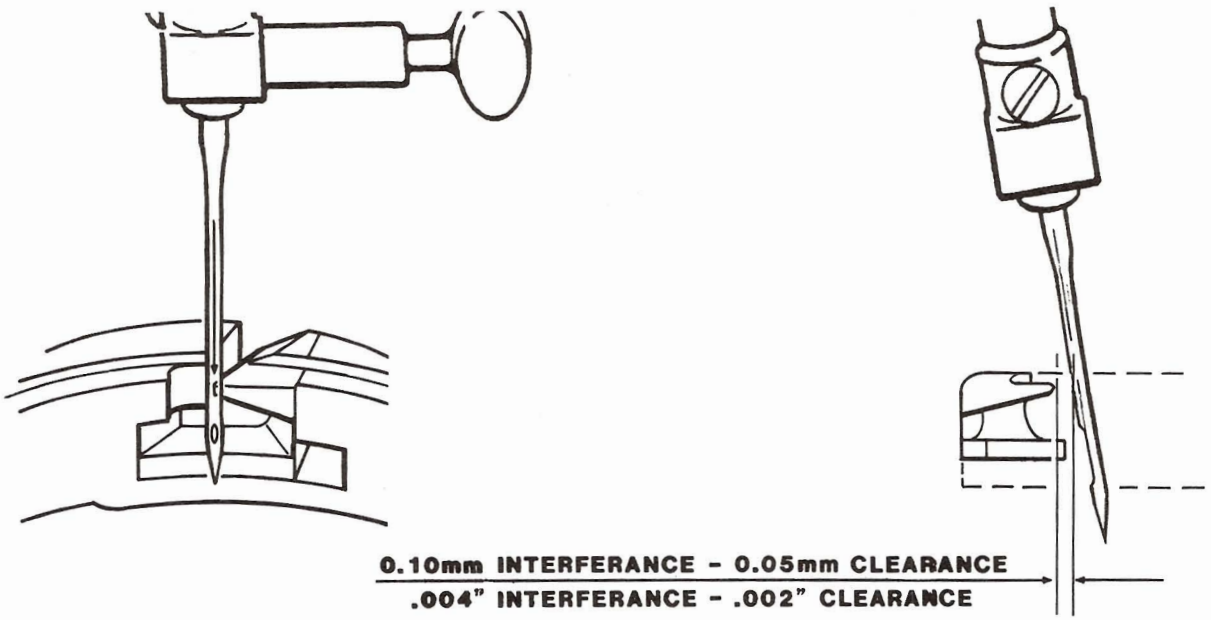
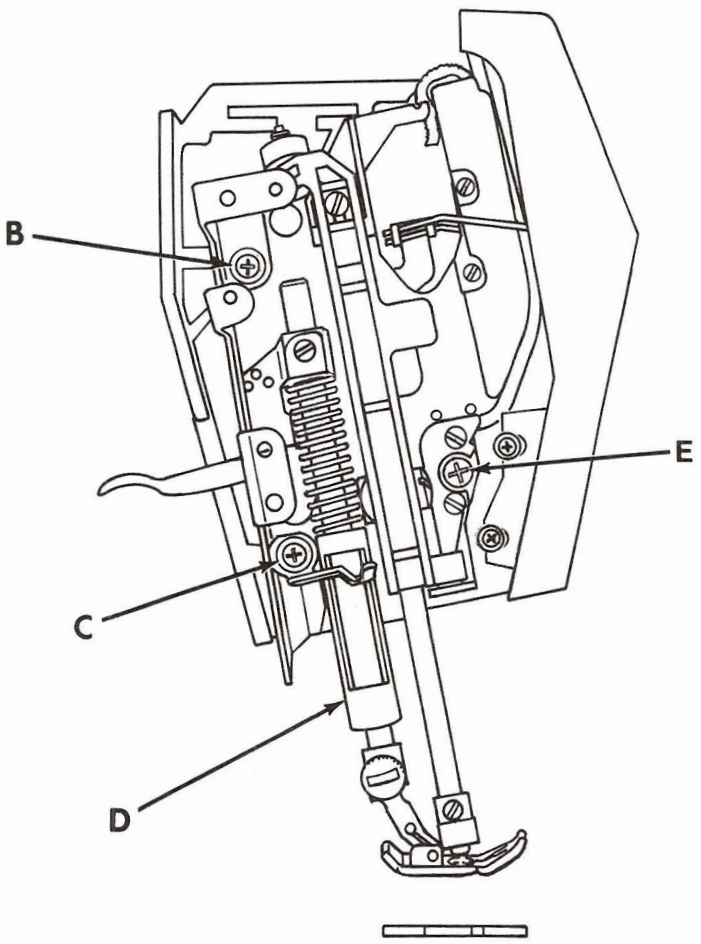







0.10mm INTERFERANCE - 0.05mm CLEARANCE
.004" INTERFERANCE - .002" CLEARANCE

A


B
C
D
E

SETTING FRONT - TO - BACK NEEDLE LOCATION

Models 6233, 6234, 6235

Machine Setting:

1. Stitch selection: Straight stitch.
2. Needle or plug: size 18.

Check:

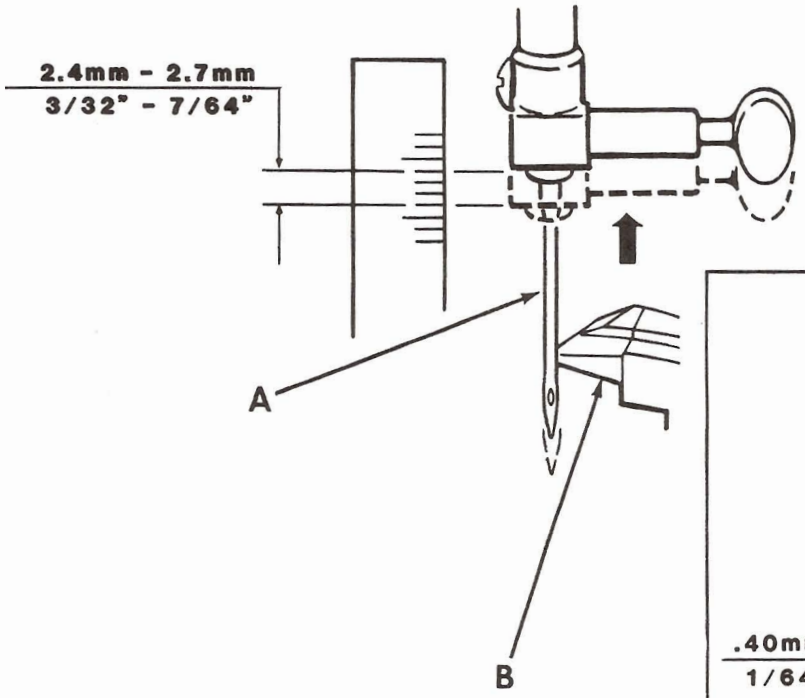
1. Remove throat plate and bobbin case.
2. Turn the hand wheel toward the front of the machine until the point of the hook is directly behind the needle. There should be a 0.10 mm interference to 0.05 mm clearance (.004″ interference to .002″ clearance) between the hook point and the needle. Illustration (A).

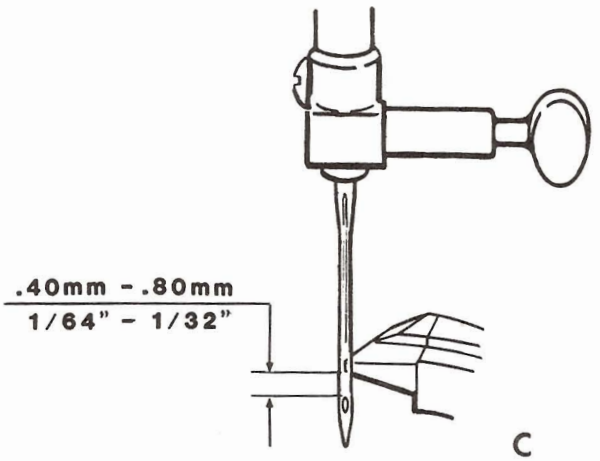
Preparation:

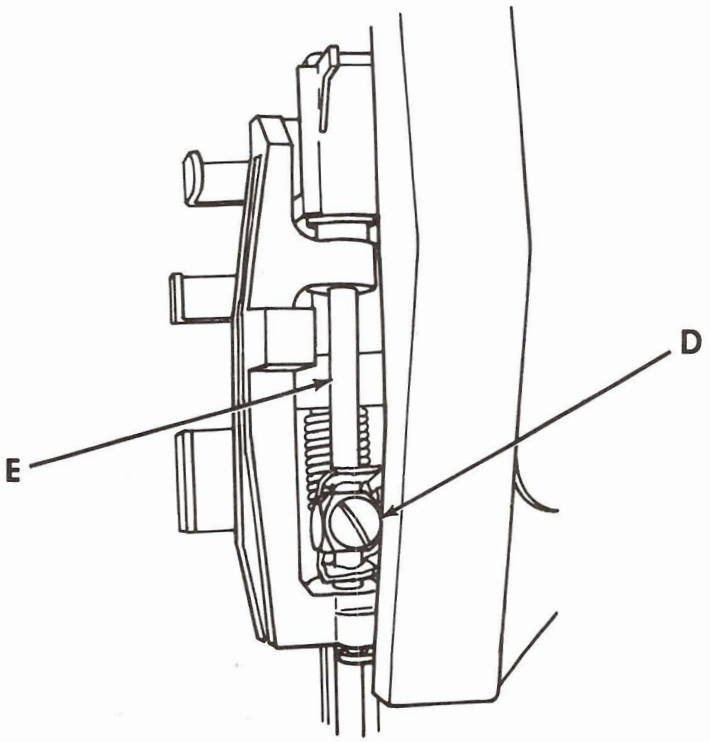
1. Remove face plate, arm top cover and light heat shield assembly.

Adjustment:

1. Remove throat plate and bobbin case.
2. Turn hand wheel to bring the point of the hook directly behind the needle. Illustration (A).
3. Loosen head end mounting screws (B), (C) and (E) so they are just pinch tight. Pinch tightness must be maintained on screws (B), (C), and (E) to prevent head end assembly from moving away from the casting or vibrating bracket from shifting position.
4. Move head end assembly front-to-back by means of presser bar bushing (D) to bring the needle to its specified location.
5. Tighten mounting screws (B), (C) and (E).
6. Check needle bar safety stop clearance and adjust if necessary.


2.4mm - 2.7mm
3/32" - 7/64"
A
B


.40mm - .80mm
1/64" - 1/32"
C


D
E

NEEDLE BAR HEIGHT

Models 6233, 6234, 6235

Machine Setting:

1. Stitch Selection: Straight Stitch.

Preparation:

1. Insert a size 18 needle or plug in the machine.
2. Remove throat plate and bobbin case.

Check:

1. Turn the hand wheel toward the front of the machine until the needle bar is at its lowest point.
2. Place a small scale (rule) vertically adjacent to the needle clamp.
3. Observe the top or bottom of the needle clamp with relation to the markings on the scale.
4. Slowly turn the hand wheel toward the front of the machine to raise the needle bar 2.4 mm - 2.7 mm (3/32" - 7/64"). The point of the hook (B) should be within the thickness of the blade of the number 18 needle (A). Adjust hook timing if necessary.
5. Select zig-zag. Turn the hand wheel to move the hook point to the rear of the needle, when the needle is in left zig-zag position. The top of the needle eye should be .40 mm- .80 mm (1/64" - 1/32") below the underside of the hook point. (Illustration C).

Adjustment:

1. Remove face plate.
2. Loosen needle bar clamping screw (D) and raise or lower needle bar (E) to suit the left needle position requirement. Tighten screw (D). Check radial position of needle bar. Needle clamp hub should be parallel to the front edge of the machine. Readjust if necessary.

PENDULUM TIMING (TIMING THE CAMSTACK)

Models 6233, 6234, 6235

Machine Setting:

1. Stitch Selection: Zig-zag.
2. Stitch Width: Maximum
3. Presser Foot: Removed

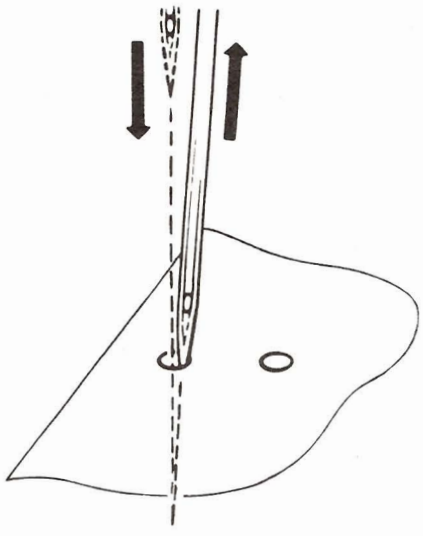
Check:

1. Hold a piece of paper over the throat plate. Turn the hand wheel toward the front of the machine until the needle penetrates the paper on the left side. Turn the hand wheel slowly on the upward stroke. The point of the needle should lightly touch the right edge of the paper as it leaves the hole without enlarging the hole. Illustration (A).

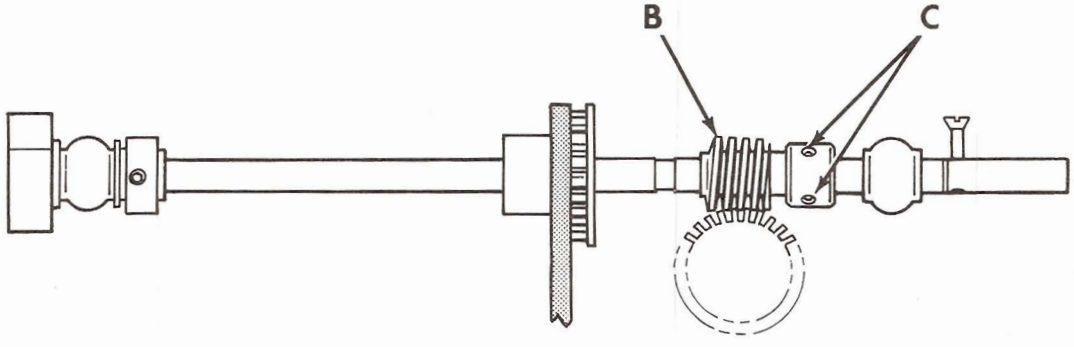
Adjustment:

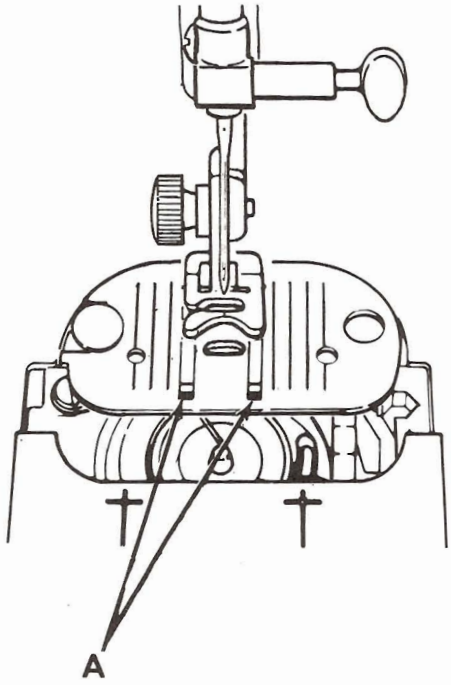
1. Remove face plate and arm top cover.
2. Loosen one worm gear hex head set screw (C).
3. Loosen the second set screw (C) and maintain the position of worm gear (B) by means of the wrench.
4. Turn the hand wheel slightly toward the rear of the machine to advance the timing. (Cause the needle to begin its sideways movement sooner). To retard the timing, turn the hand wheel slightly towards the front of the machine. (Cause the needle to begin its sideways movement later).
5. Tighten one screw (C).
6. Recheck pendulum timing by means of the paper performation test and readjust if necessary.
7. Securely tighten both screws (C).

NOTE: Although there are three screw holes in worm gear (B), only two are used. The third hole is for manufacturing use.



A

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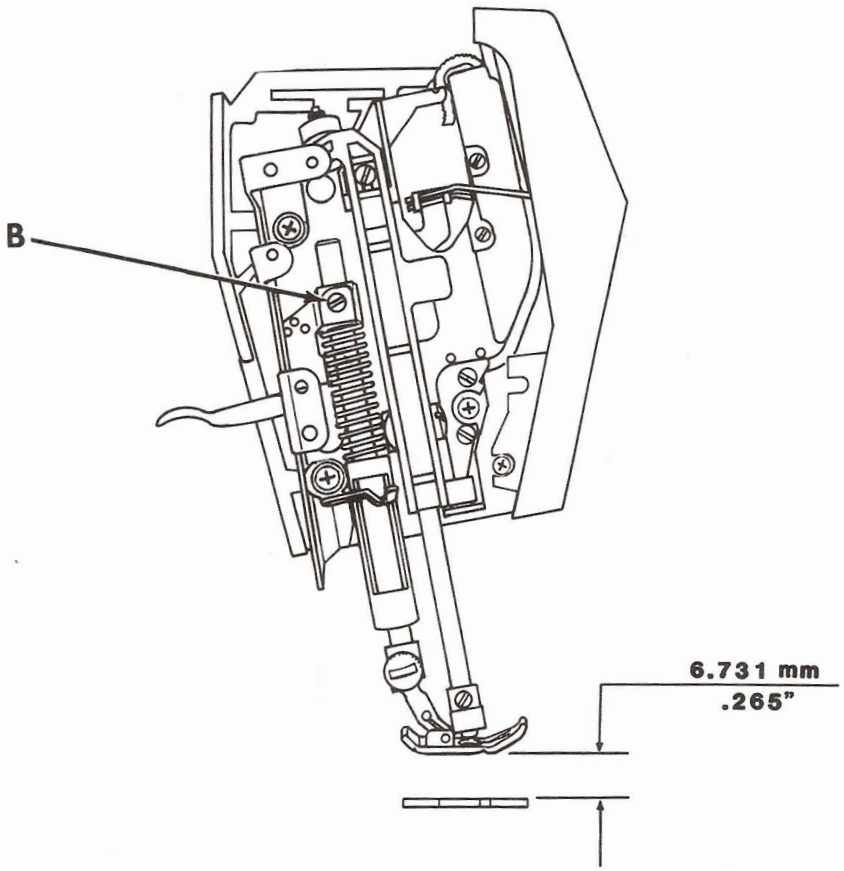

B
6.731 mm
.265"

PRESSER BAR HEIGHT AND ALIGNMENT

Models 6233, 6234, 6235

Check:

1. Remove needle.
2. Turn hand wheel toward the front of the machine to bring the needle bar to its lowest point.
3. Raise the presser foot to its detent position.
4. The presser bar height is correct when the distance between the underside of the presser foot and top of the throat plate is 6.731 mm (.265″). The back edge of the needle clamp must not touch the presser foot shank.
5. Lower the presser foot.
6. The presser bar alignment is correct when the sides of the presser foot are aligned with the slots (A) in the throat plate.

Preparation:

1. Remove face plate and light heat shield assembly.

Adjustment:

1. Raise the presser foot to its detent position
2. Loosen screw (B) and raise or lower presser bar as required to obtain the correct height.
3. Tighten screw (B) to pinch tightness.
4. Lower presser foot.
5. Turn presser bar as necessary to align the sides of the presser foot with the slots (A) in the throat plate.
6. Securely tighten screw (B).

NEEDLE THREAD TENSION

Models 6233, 6234, 6235

The tension module supplies two separate tension values:

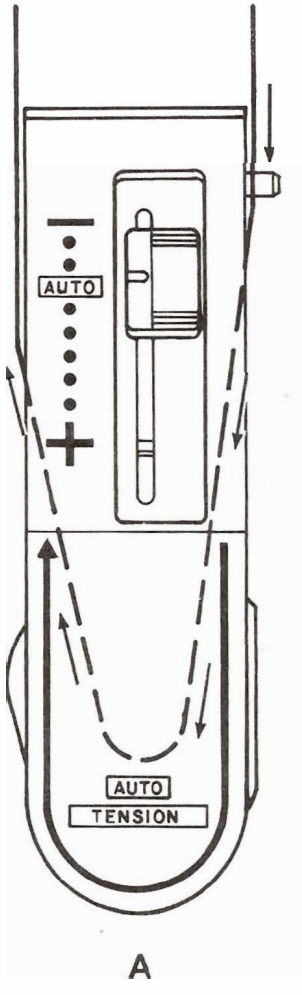
1. Pre-tension of 15-20 grams required for winding of bobbins in Models 6234 and 6235.
2. Sewing tension of 70-80 grams at center of "Auto".

Before attempting any corrective changes, be sure the tension release pin is functioning when the presser foot is raised.

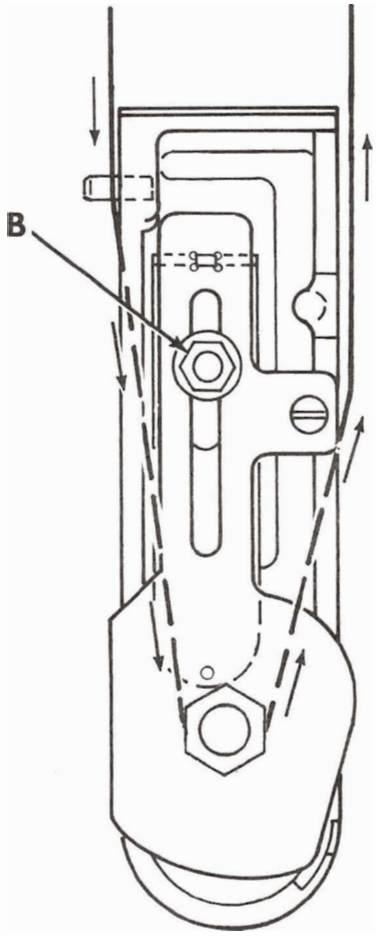
There is no adjustment of the pre-tension.

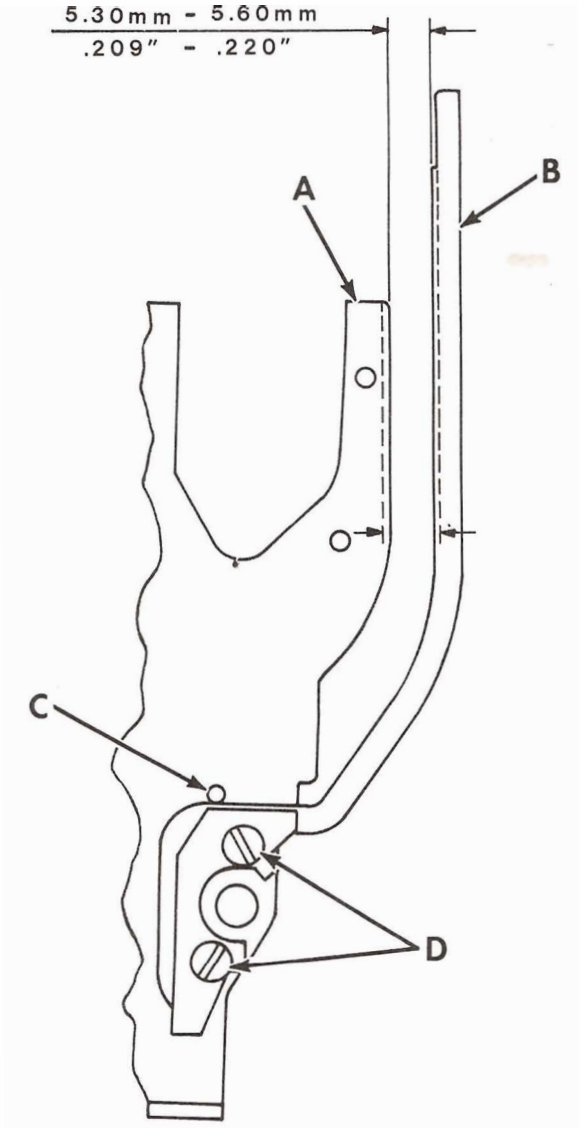
Adjustment:

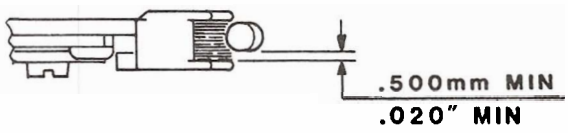
1. Remove face plate and arm top cover.
2. Using "A" or "OO" white silk thread, draw thread through the tension assembly as indicated in Illustration (A) to test tension.
3. Facing the tension assembly from the rear of the machine, turn tension adjusting nut (B) clockwise to increase tension and counterclockwise to decrease tension.
4. After setting tension, apply nail polish to the screw threads to lock the nut.



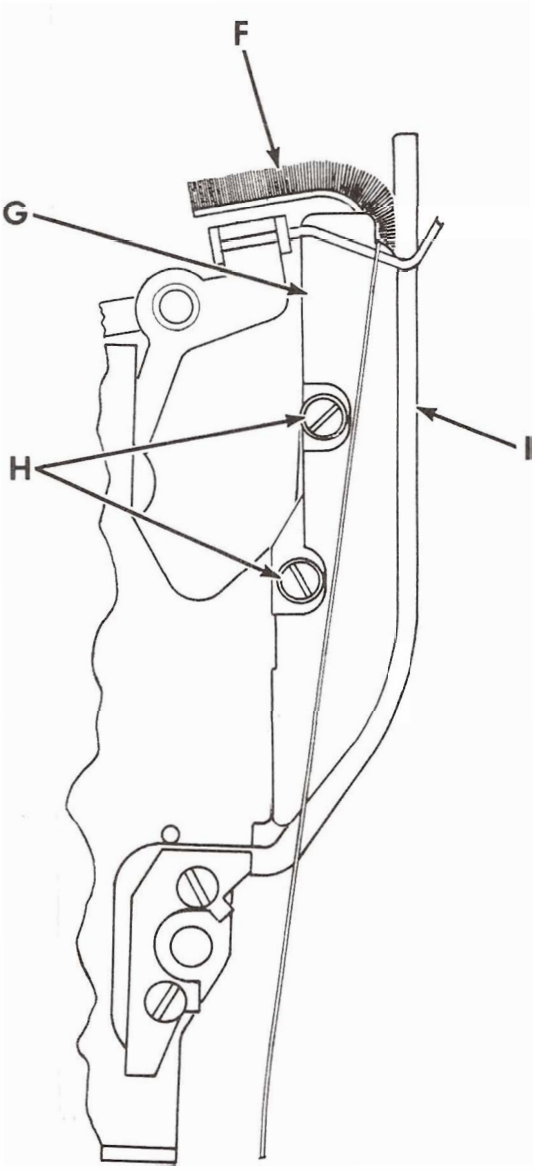
A







E



TAKE-UP LEVER THREAD GUIDE AND THREAD RETAINER

Models 6233, 6234, 6235

Take-Up Lever Thread Guide

The needle thread must pass between the take-up thread guide (I) and the thread retainer (F) without dragging or hesitating but must not fall uncontrolled as the take-up lever travels on its downward stroke.

Preparation:

1. Remove face plate and arm top cover.

Check:

1. There must be a clearance of .500 mm (.020″) MINIMUM between the take-up lever thread guide and the sides of the thread retainer. Illustration (E). If clearance is incorrect, replace the take-up lever thread guide assembly (B).
2. Remove thread retainer assembly screws (H) and thread retainer assembly (G).
3. The distance between the take-up thread guide (B) and the edge of the head end plate (A) must be 5.30 mm - 5.60 mm (.209″ - .220″)

Adjustment:

1. Loosen the two thread guide screws (D). Maintain pinch tightness for control.
2. Move take-up thread guide (B) as required to provide a distance of 5.30 mm - 5.60 mm (.209″ - .220″) between the take-up thread guide (B) and the edge of the head end plate (A). Thread take-up guide (B) must be against the set out (C) on the head end plate.
3. Tighten screws (D).
4. Replace thread retainer (G) adjust height.

Thread Retainer

Machine Setting:

1. Straight Stitch

Check:

1. Thread machine for sewing, place a piece of 2 ply muslin under presser foot and lower presser foot.

2. Turn machine slowly by hand and observe the needle thread as it passes between the take-up thread guide (F) and the thread retainer (C). The thread should come to rest on the shelf (D) of the thread retainer block just as the take-up lever (E) reaches its highest point.

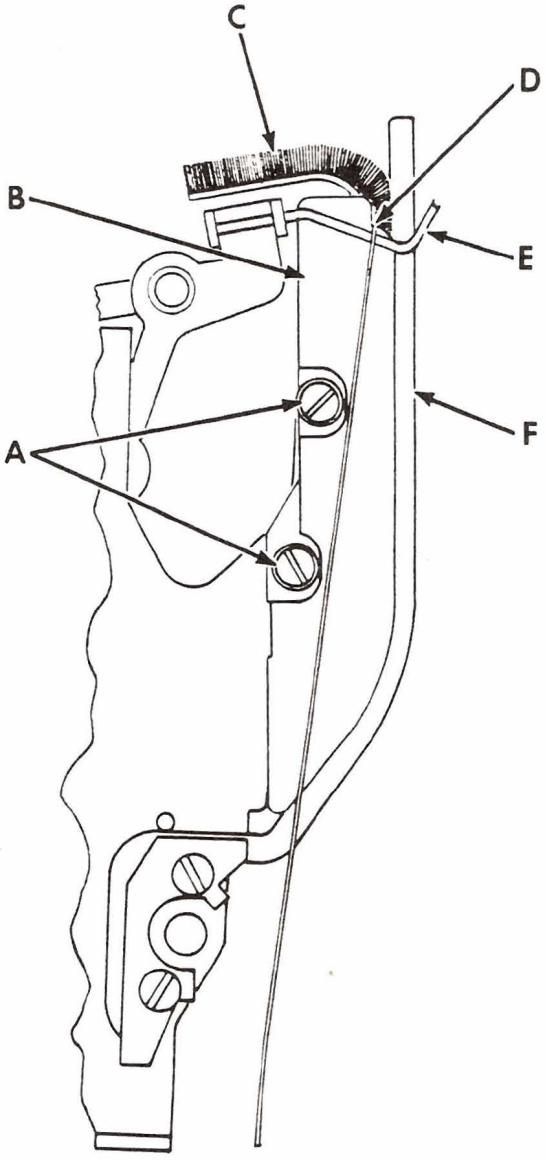
3. Continue to slowly turn the machine by hand and observe the thread as it falls off the shelf. The height of the retainer is correct if the thread falls off the shelf when the eye of the needleis 1 mm (.040") above the fabric to a point half the height of the needle eye. Illustration (G).

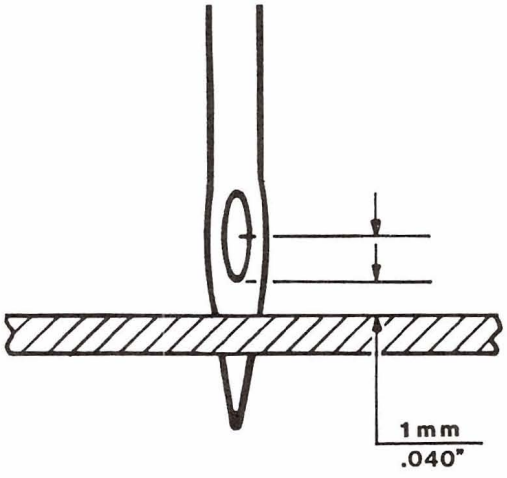
Adjustment:

1. Loosen thread retainer assembly screws (A). Maintain pinch tightness for control.

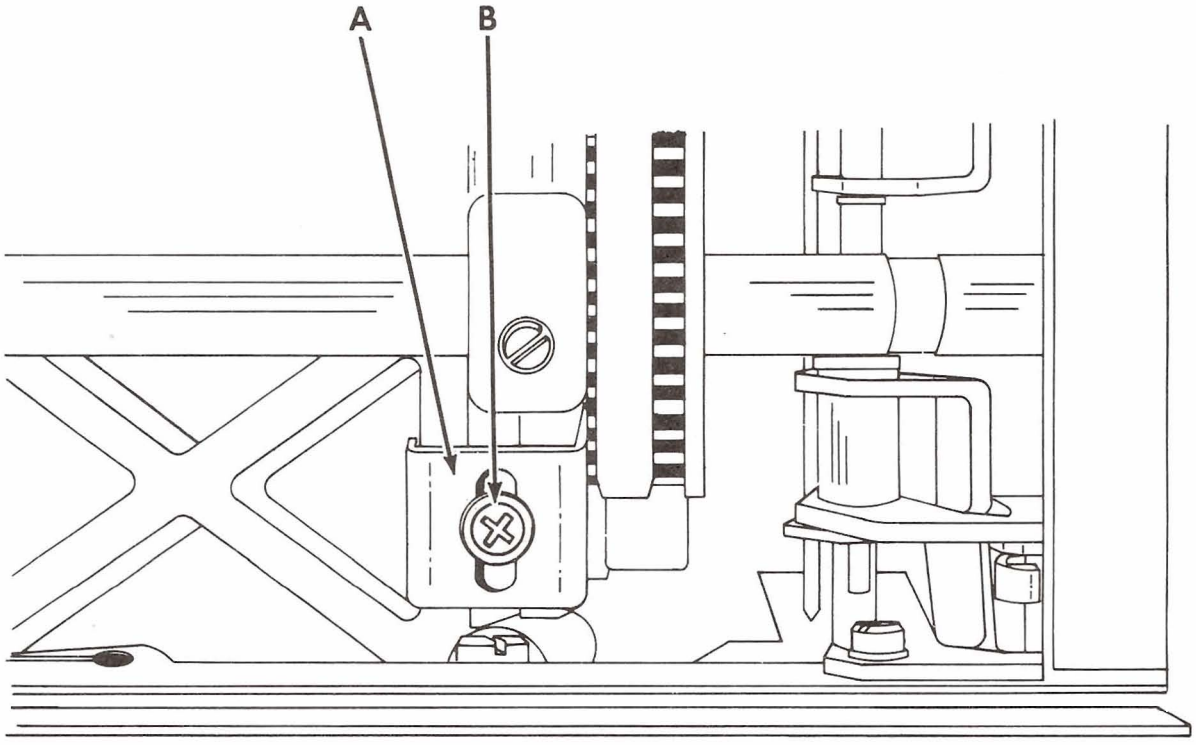
2. Move thread retainer assembly (B) up or down to satisfy the requirements under "check".

3. Tighten screws (A).





G


A
B

TIMING BELT TENSION

Models 6233, 6234, 6235

Machine Setting:

1. Stitch Selection: Straight Stitch

Preparation:

1. Remove needle, face plate and arm top cover.
2. Raise presser foot.

Adjustment:

1. Loosen nut (B) that holds idler pulley bracket (A).
2. While running machine at high speed, push idler bracket (A) towards the rear of the machine until the machine slows down slightly.
3. Move idler pulley bracket (A) toward the front of the machine until the machine reaches its highest speed.

NOTE: When tightening nut (B) be sure to keep bracket (A) parallel to the casting wall. If the bracket is not parallel, the flange on the idler pulley will rub against the belt causing interference and excessive wear.

4. Check hook timing and adjust if necessary.

MOTOR BELT TENSION

Models 6233, 6234, 6235

Machine Setting:
1. Stitch Selection: Straight Stitch

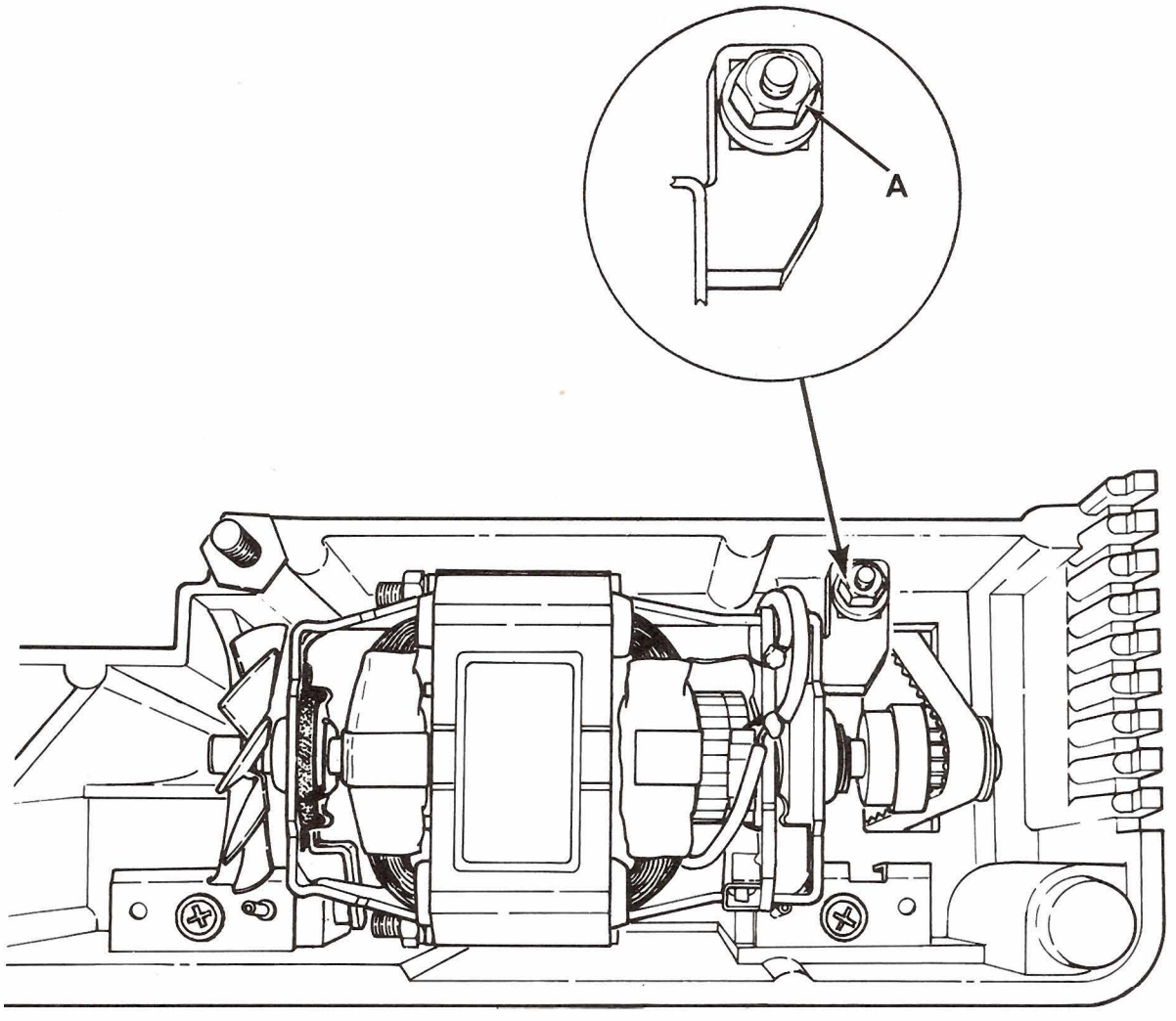
Preparation:
1. Remove needle.
2. Presser foot raised.

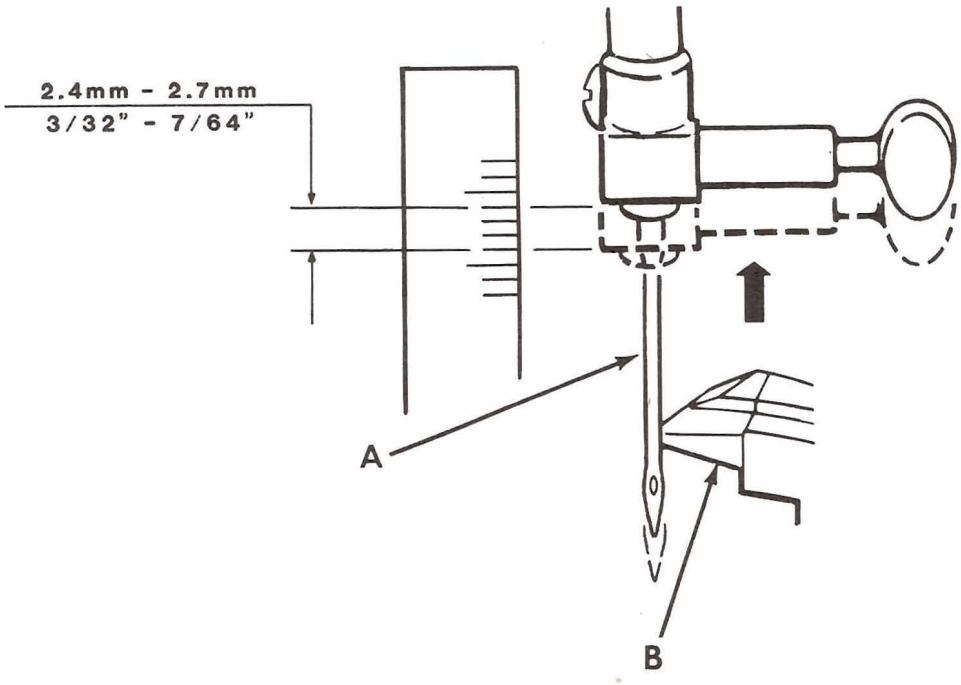
Check:
1. Hold hand wheel firmly.
2. Fully depress the controller. The motor belt must not jump teeth.

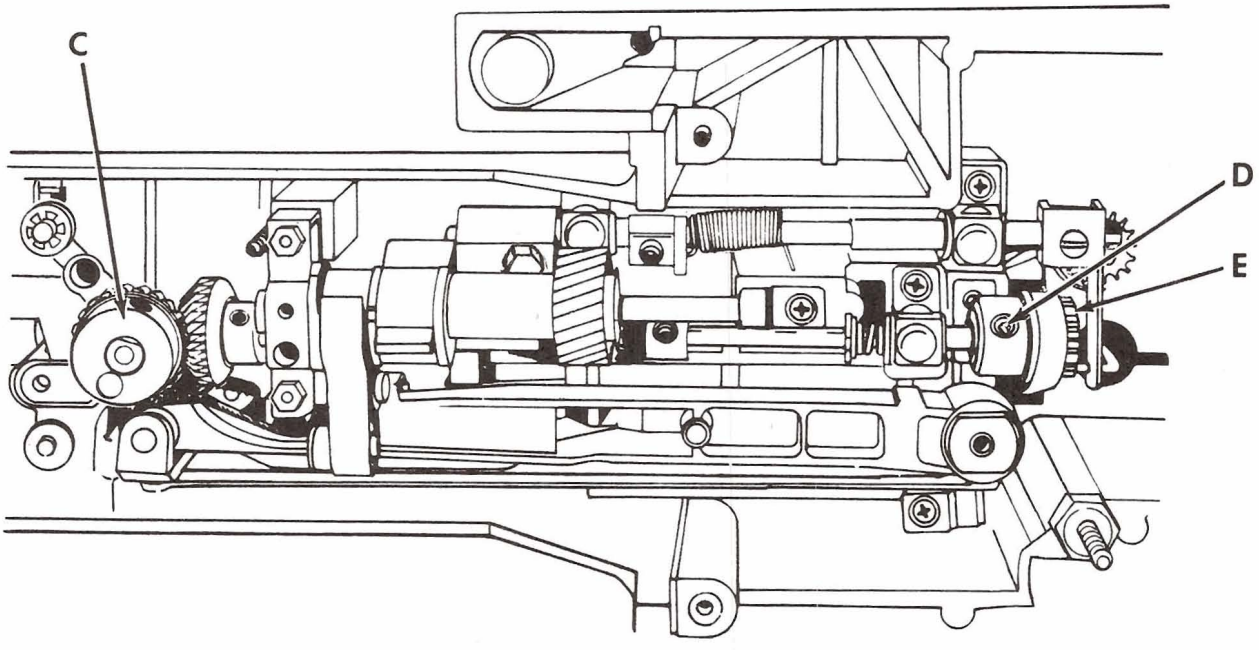
Adjustment:
1. Remove bottom cover.

CAUTION: Because of the open frame design of the motor care must be exercised during the adjustment to prevent contact with the motor fan or the high voltage solder terminals on the motor board. It is recommended that service cover, part number 314081-900 be in place whenever the bottom cover has been removed.

2. Turn nut (A) clockwise until the machine attains its highest speed.
3. Tighten nut (A) in increments and recheck for motor belt tooth jump. Belt tension is correct when belt does not jump teeth.


A


2.4mm - 2.7mm
3/32" - 7/64"
A
B


C
D
E

HOOK TIMING

Models 6233, 6234, 6235

Machine Setting:

1. Stitch Selection: Straight Stitch

Preparation:

1. Insert a size 18 needle or plug in the machine.
2. Remove throat plate and bobbin case.

Check:

1. Check left-to-right needle location. Adjust if necessary.
2. Turn the hand wheel toward the front of the machine until the needle bar is at its lowest point.
3. Place a small scale (rule) vertically adjacent to the needle clamp.
4. Observe the top or bottom of the needle clamp with relation to the markings on the scale.
5. Slowly turn the hand wheel toward the front of the machine to raise the needle bar 2.4 mm - 2.7 mm (3/32″ - 7/64″). The point of the hook (B) should be within the thickness of the blade of the number 18 needle (A).

Adjustment:

1. Remove tubular bed cover and bed cover plate.
2. Loosen two hex head set screws (D) in hook drive shaft belt pulley (E).
3. Turn hand wheel toward the front of the machine until the needle bar is at its lowest point.
4. Place a small scale (rule) vertically adjacent to the needle clamp.
5. Observe the top or bottom of the needle clamp with relation to the markings on the scale.
6. Slowly turn the hand wheel toward the front of the machine to raise the needle bar 2.4 mm - 2.7 mm (3/32″ - 7/64″).
7. While maintaining the position of the needle bar, turn hook gear (C) at hook end of shaft until the point of the hook is within the blade of the needle.
8. Tighten set screws (D). The right end of drive shaft belt pulley (E) should be even with the end of the shaft.
9. Recheck and readjust if necessary.
10. Check feed timing and adjust if necessary.

FEED TIMING

Models 6233, 6234, 6235

Machine Setting:

1. Stitch Selection: Straight Stitch

Preparation:

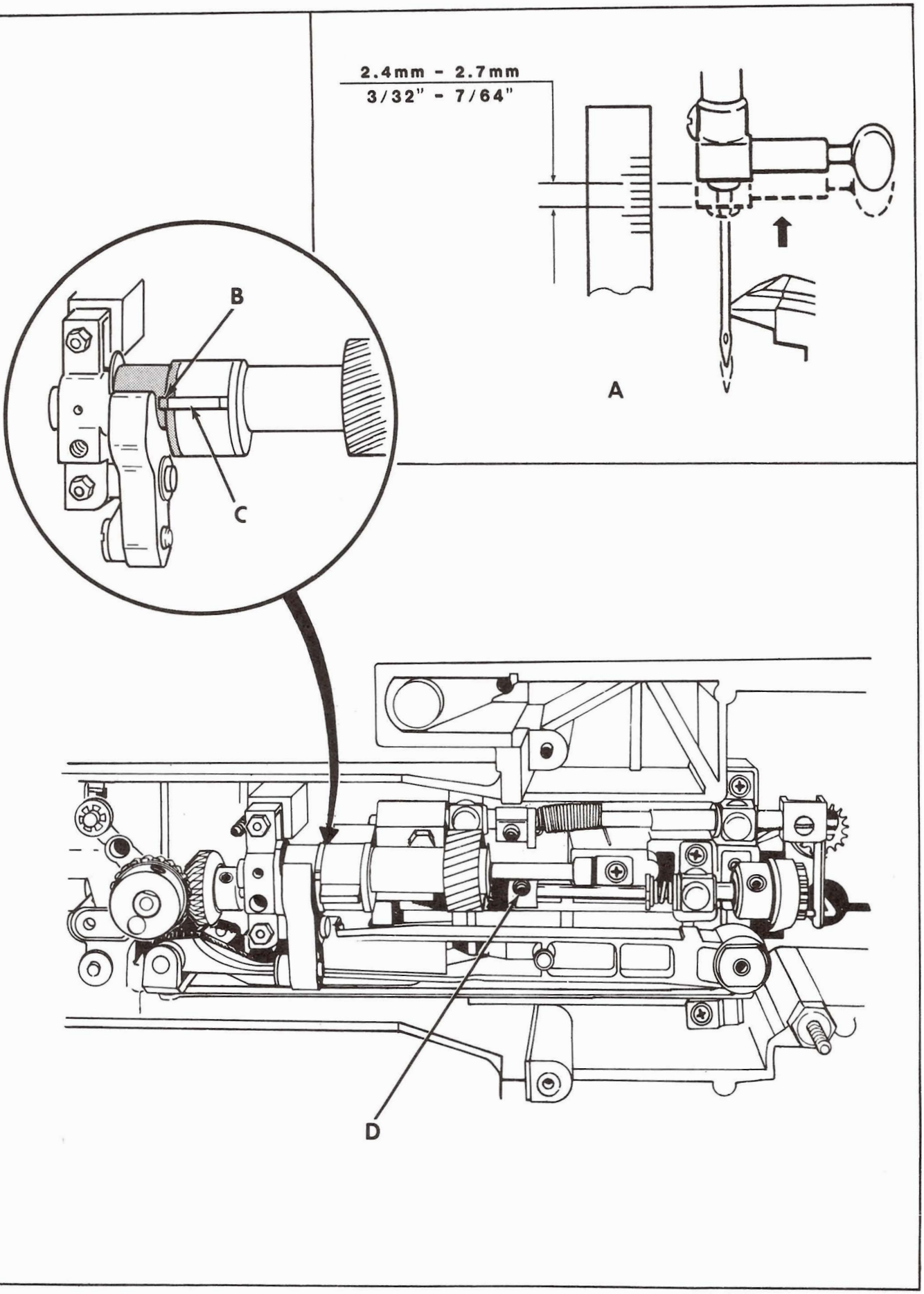
1. Remove tubular bed cover and bed cover plate.

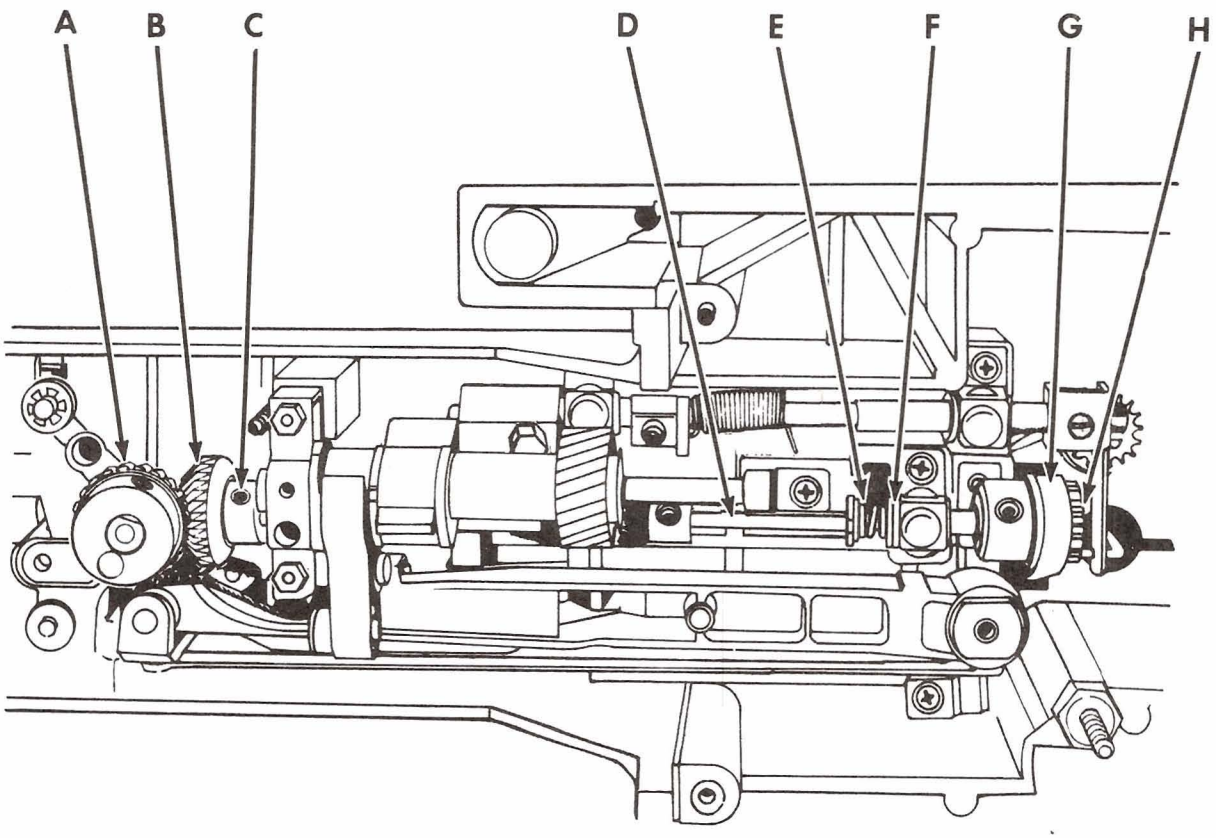
Check:

1. Turn the hand wheel toward the front of the machine until the needle bar is at its lowest point.
2. Place a small scale (rule) vertically adjacent to the needle clamp.
3. Observe the top or bottom of the needle clamp with relation to the markings on the scale.
4. Slowly turn the hand wheel toward the front of the machine to raise the needle bar 2.4 mm - 2.7 mm (3/32″ - 7/64″).
   Illustration (A).
5. The tab on the feed lifting cam (B) should be aligned with the bar on the slide block drive connection (C).

Adjustment:

1. Verify hook timing before attempting any change in feed time.
2. Loosen both set screws in feed drive shaft driving gear (D).
3. Turn the hand wheel toward the front of the machine until the needle bar is at its lowest point.
4. Place a small scale (rule) vertically adjacent to the needle clamp.
5. Observe the top or bottom of the needle clamp with relation to the markings on the scale.
6. Slowly turn the hand wheel toward the front of the machine to raise the needle bar 2.4 mm - 2.7 mm (3/32″ - 7/64″).
   Illustration (A).
7. Rotate feed lifting cam (B) until the tab on the cam is aligned with the bar on the slide black drive connection (C).
8. Tighten set screws in feed drive shaft driving gear (D).


2.4mm - 2.7mm
3/32" - 7/64"
A
B
C
D


A
B
C
D
E
F
G
H

HOOK DRIVE GEAR MESH

Models 6233, 6234, 6235

Important: Proper setting of the hook drive gear mesh is achieved by a very light pressure of coil spring (E) against hook drive shaft bushing (F). The correct amount of pressure is critical to the smooth and quiet operation of the hook and hook drive gear. Too great a pressure of coil spring (E) will cause excessive wear of the hook shaft.

Check:

1. Remove bed cover plate and tubular bed cover.
2. Slip timing belt (G) off drive shaft belt pulley (H).
3. While holding belt pulley (H) check for play between hook gear (A) and hook drive gear (B) at four equidistant points in the full rotation of hook gear (A). Hook drive gear (B) and hook gear (A) should rotate smoothly against each other without binds.

Note: Belt MUST be removed to properly check and set gear mesh.

4. Push belt pulley (H) to the right and release. Hook drive gear (B) should return to rest against hook gear (A) with no or only minimal movement of hook gear (A).

Adjustment:

1. Loosen hook drive gear set screw (C) one turn only. Screw (C) is located on a flat on hook drive shaft (D).
2. Move hook drive shaft (D) left and right to assure shaft moves freely.
3. By means of belt pulley (H) move shaft (D) to the right until coil spring (E) just come to rest against bushing (F) with light finger pressure.
4. While maintaining the position of the shaft, move hook drive gear (B) against hook gear (A) with light finger pressure.
5. Tighten screw (C).
6. Recheck gear mesh and readjust if necessary.
7. Replace timing belt (G).
8. Adjust hook timing and feed timing.

FEED DOG CENTRALIZATION

Models 6233, 6234, 6235

Check:

1. Turn hand wheel toward front of machine until the feed dog (A) is at its highest point.
2. The feed dog must be parallel to and centrally located in the throat plate slots.

Adjustment:

1. Remove throat plate.
2. Loosen the two feed dog screws (B) and move feed dog (A) as required to satisfy proper alignment.
3. Tighten screws (B) and recheck.

FEED DOG HEIGHT

Models 6233, 6234, 6235

Machine Setting:

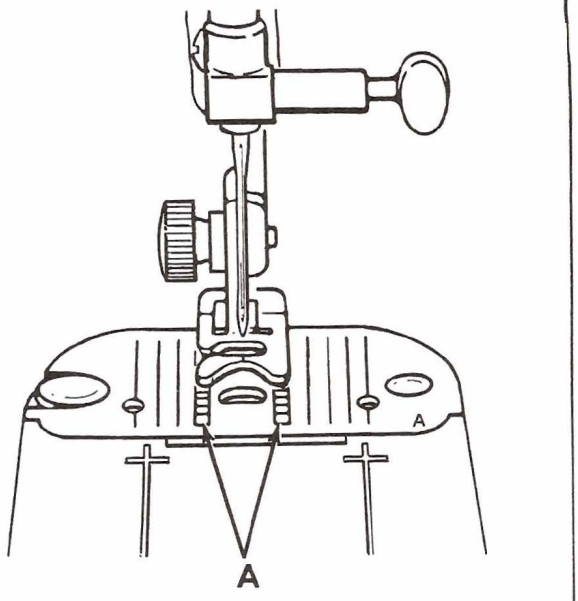
1. Stitch Selection: Straight Stitch
2. Stitch Length: Maximum

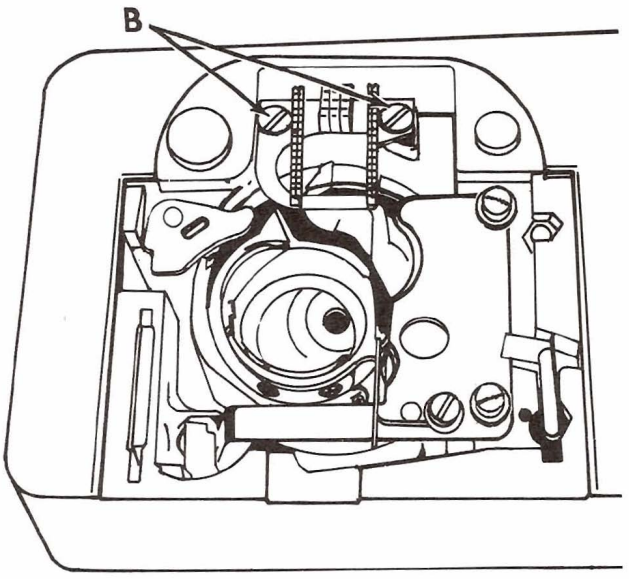
Check:

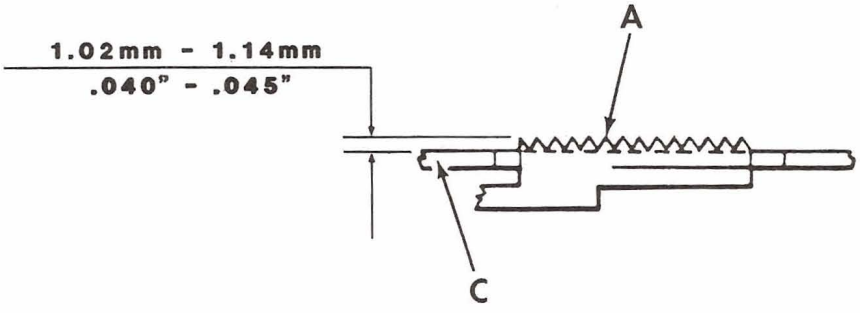
1. Turn hand wheel toward front of machine until feed dog (A) is at its highest point. The top of the feed dog (A) must be 1.02 mm - 1.14 mm (.040″ - .045″) above the top of the throat plate (C).

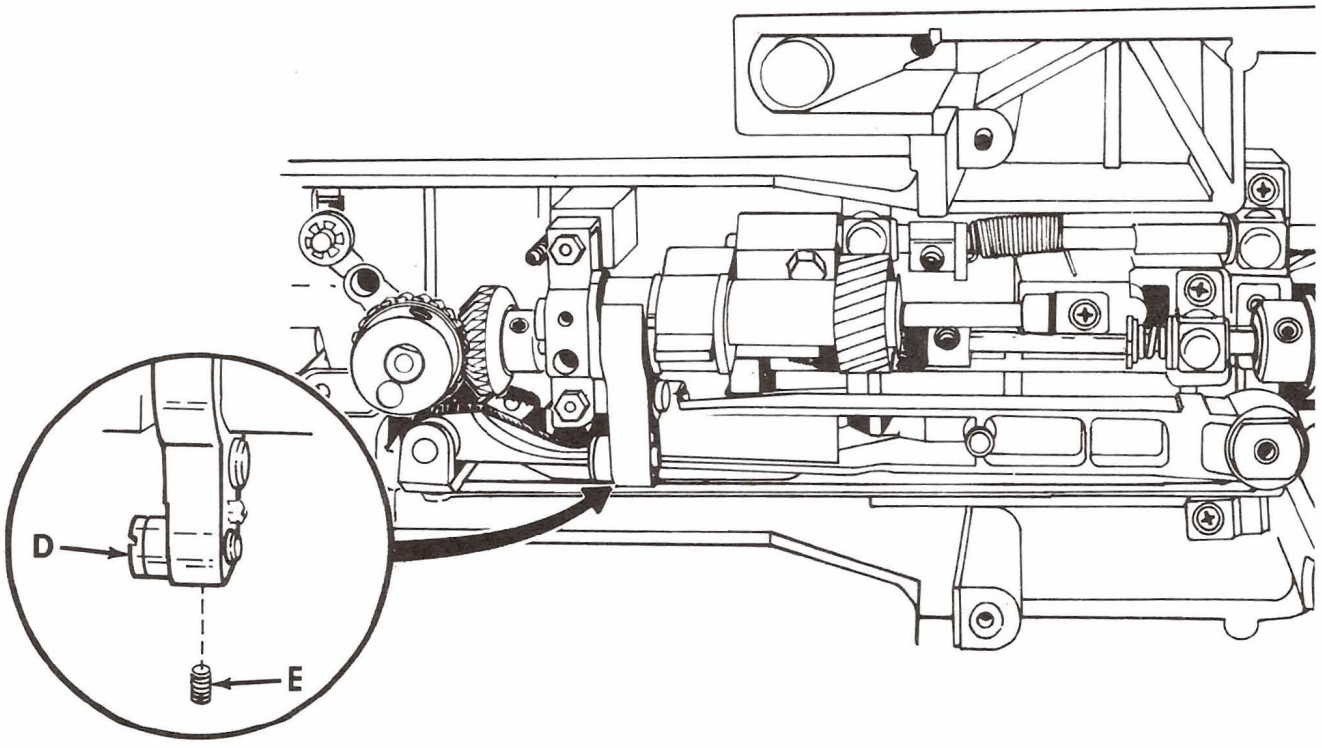
Adjustment:

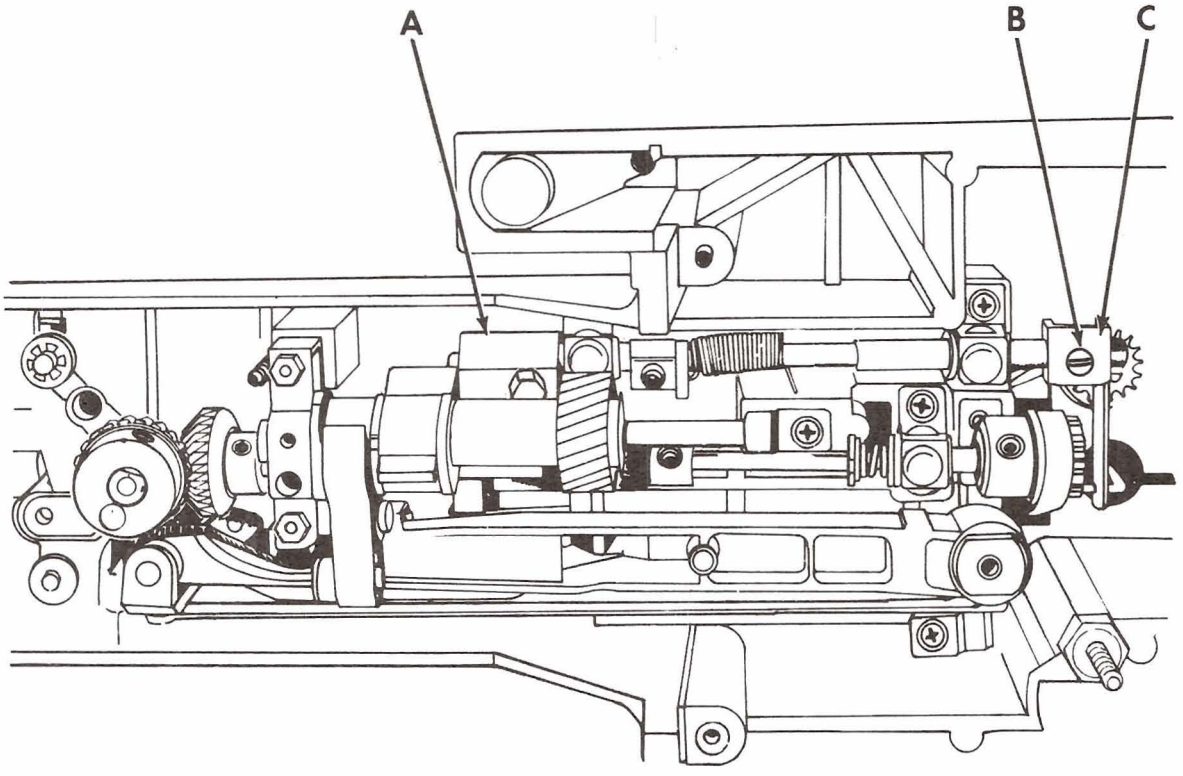
1. Loosen screw (E) holding feed lifting eccentric (D).
2. Turn eccentric (D) until the top of the feed dog is 1.02 mm - 1.14 mm (.040″ - .045″) above the top of the throat plate (C).
3. Tighten screw (E).


A
A


B


1.02mm - 1.14mm
.040" - .045"
A
C


D
E


A
B
C

ALPHA FEED ZEROING

Models 6233, 6234, 6235

Check:

1. Place a piece of muslin on the throat plate and lower the presser foot.
2. Set the stitch length control to zero.
3. Set the pattern selector to straight stitch.
4. Remove the needle.
5. Run the machine at full speed. There should be no forward or reverse feeding of the material.

Adjustment:

1. Remove the bottom bed cover and the tubular bed cover.
2. Set stitch length control to max.
3. Loosen the feed regulator set screw (D).
4. Move feed regulator (A) slightly up to increase forward feed or down to decrease forward feed.
5. Tighten screw (D) set stitch length control lever to zero and recheck zero feed. Readjust if necessary.
6. Be careful not to cause binding of linkage by left to right movement of feed regulator (A) or crank (C) with chaft.
7. Do not loosen screw (B), as it is on a flat cut on shaft.

FLEXI FEED ZEROING

Models 6233, 6234, 6235

Machine Setting:

1. Stitch Selection: Ric-Rac
2. Stitch Width: 0 Bight
3. Stitch Length: Maximum
4. Balance Dial: Neutral

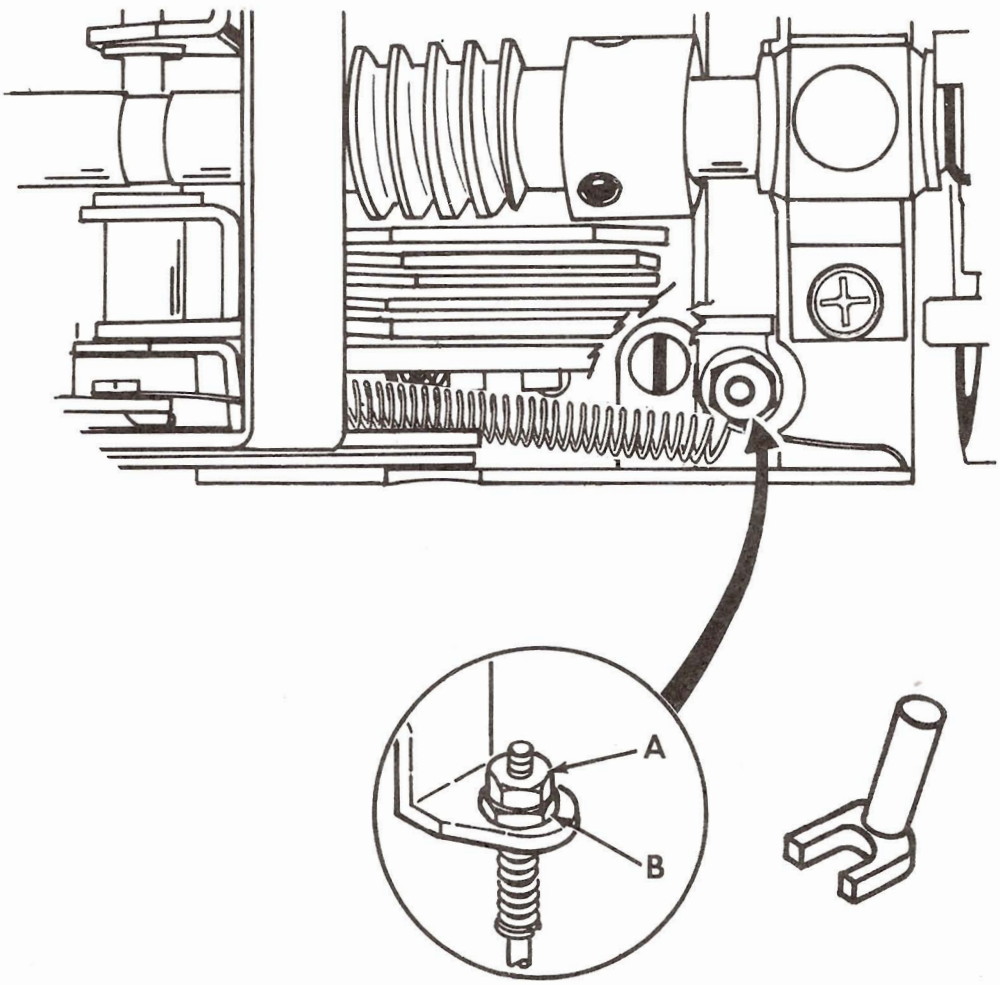
Check:

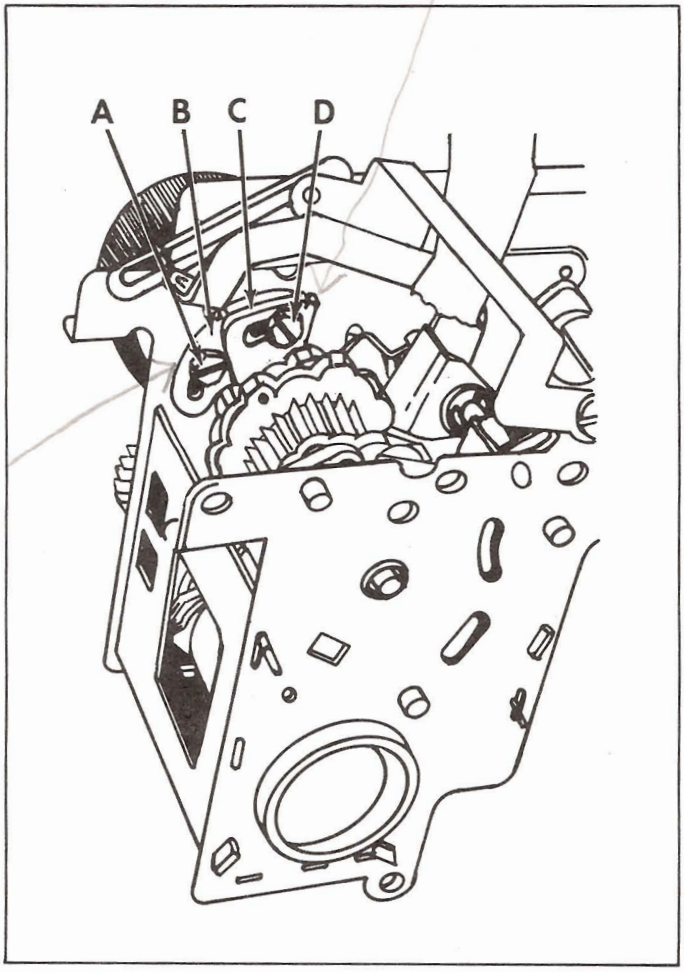
1. Check "Alpha Feed Zeroing" and adjust if necessary.
2. Place a piece of paper on the needle plate and lower the presser foot.
3. Run the machine at slow speed and observe the needle penetrations in the paper.
4. The machine should produce two penetrations forward and one in reverse. The reverse penetration should enter the previous hole cleanly.

Adjustment:

1. Remove the arm top cover.
2. Loose 5.5 mm connecting rod locking nut (A).

   Note: While loosing connecting rod lock nut (A) be sure the 6 mm connecting rod adjusting nut (B) is locked by a special tool.
3. Turn 6 mm connecting rod adjusting nut (b) counterclockwise to decrease reverse stitch length and clockwise to increase reverse stitch length.
4. Recheck paper perforation test.
5. When correct adjustment is obtained, tighten locking nut (A) taking care not to upset the position of adjusting nut (B).


A
B


A
B
C
D
Right side
Left side

BUTTONHOLE BALANCE

Models 6233, 6234

The buttonhole stitch density and balance must be such that, with the balance control set at neutral and the stitch width and length controls set on the buttonhole graphics, there are 0.51 mm - 0.46 mm/stitch (50-75 SPI) in the legs of the buttonhole. There must not be a difference between the legs of more than 15 stitches in 2.54 cm (1″).

Check:

1. Check "Alpha Feed Zeroing" and adjust if necessary.

Adjustment:

1. Install buttonhole presser foot.
2. Remove face plate and arm top cover.
3. Loosen hex head screws (A) and (D) at rear of pattern selector assembly front plate.
4. Select buttonhole step 2.
5. Check that balance control dial is at neutral.
6. Turn adjustment cam (B) clockwise to shorten and counterclockwise to lengthen the stitch length of the left buttonhole leg. Adjust to produce 0.51 mm - 0.46 mm/stitch (50 - 75 SPI) in the left buttonhole leg.
7. Tighten screw (A).
8. Select buttonhole step 4. Be sure balance control dial remains at neutral.
9. Turn adjustment cam (C) clockwise to shorten and counterclockwise to lengthen the stitch length of the right buttonhole leg. Adjust to produce the same number of stitches ±15 SPI in 2.54 cm (1″) as produced in the left buttonhole leg.
10. Tighten screw (D).
11. Recheck and readjust if necessary.

BUTTONHOLE SYSTEM

Model 6235

Buttonhole Kick Out Tripping Lever

When moving the buttonhole tripping lever (A) from the number 1 to the number 2 position, it should move firmly but without hesitation. With the one-step buttonhole foot installed and the machine operating in the buttonhole mode, the one-step buttonhole foot must actuate the tripping lever (A) from the number 2 to the number 1 position without hesitating or stalling.

Preparation:

1. Remove arm top cover.

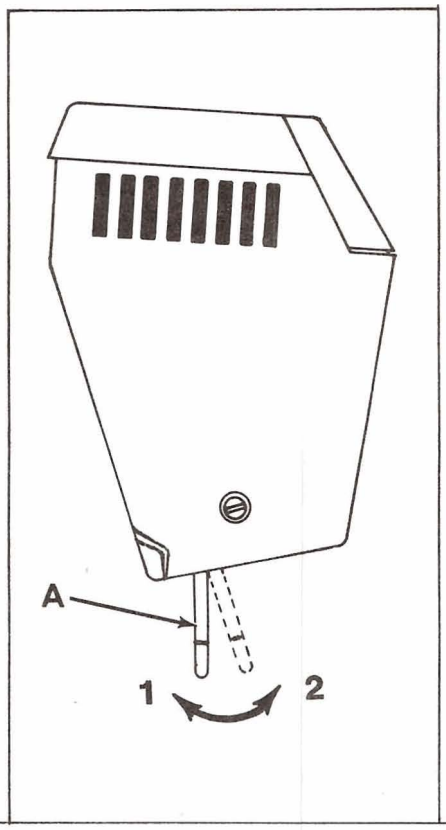
Check:

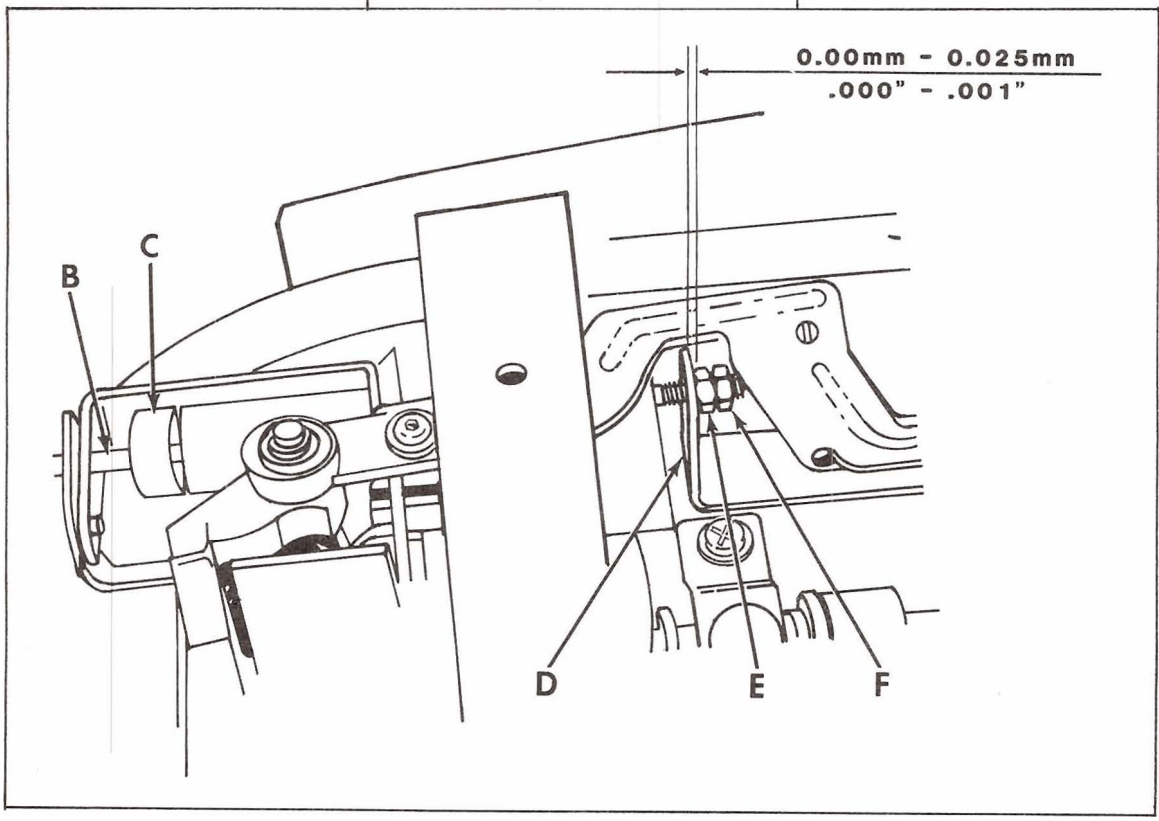
1. Bring the buttonhole tripping lever (A) to the number 2 position.
2. While holding the tripping lever in this position, check for end play of 0.0 mm - 0.025 mm (.000″ - .001″) between adjusting nut (E) and release link (D).

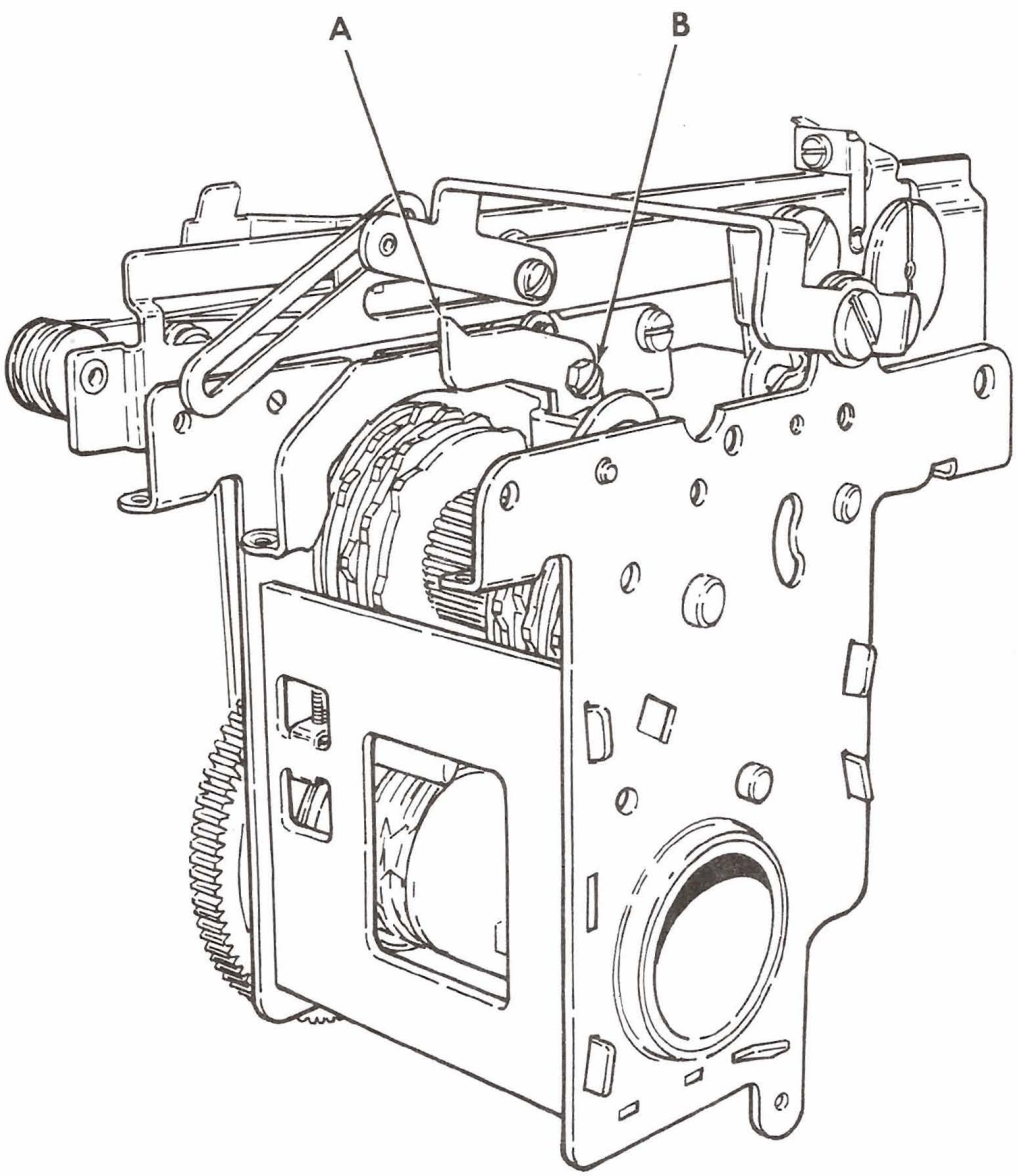
Adjustment:

1. Loosen locking nut (F).
2. Hold buttonhole tripping lever in position 2.
3. Turn adjusting nut (E) in or out as required to provide 0.0 mm - 0.025 mm (.000″ - .001″) clearance between adjusting nut (E) and release link (D).
4. While maintaining the position of nut (C) tighten locking nut (F).

With the buttonhole tripping lever in the number 1 position, move collar (C) left to right to ensure there are no binds in rod (B). Refer to setting ''Buttonhole Cutting Space'' to remove binds if they exist.


A
1
2


0.00mm - 0.025mm
.000" - .001"
B
C
D
E
F


A
B

BUTTONHOLE SYSTEM (Cont.)

Model 6235

Buttonhole Balance

When using the one-step buttonhole foot and with the balance control dial set in the neutral position, the machine must be capable of producing left and right buttonhole legs within 15 stitches of each other.

Adjustment:

1. Remove arm top cover.
2. Loosen buttonhole actuator clamping screw (B). Maintain pinch tightness for control.
3. Move actuator pointer (A) up to decrease density and down to increase density of the forward feed. (Right leg of buttonhole) Moving the pointer (A) up will increase and down will decrease the density of the reverse feed. (Left leg of the buttonhole)
4. Adjust to bring the two legs within 15 stitches of each other.
5. Tighten screw (B).

BUTTONHOLE SYSTEM (Cont.)

Model 6235

Buttonhole Density

When using the one-step buttonhole foot the machine must be capable of producing buttonholes with a stitch length density of 50-80 stitches per inch. (SPI).

Check:

1. Zero feed.
2. Flexi feed zeroing.

NOTE: If zero feed and flexi feed zeroing are incorrect, adjust before attempting buttonhole density adjustment. Recheck buttonhole density. If still incorrect, proceed with the buttonhole density adjustment.

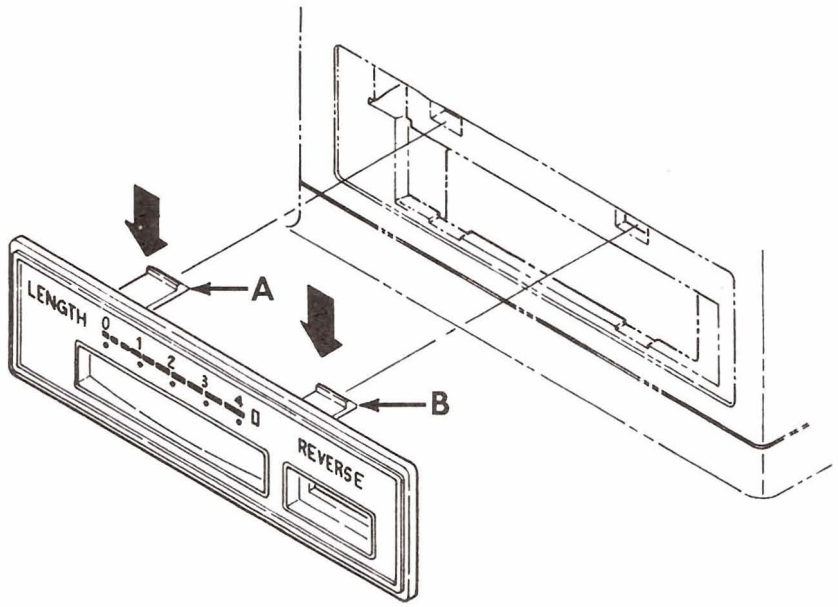
Adjustment:

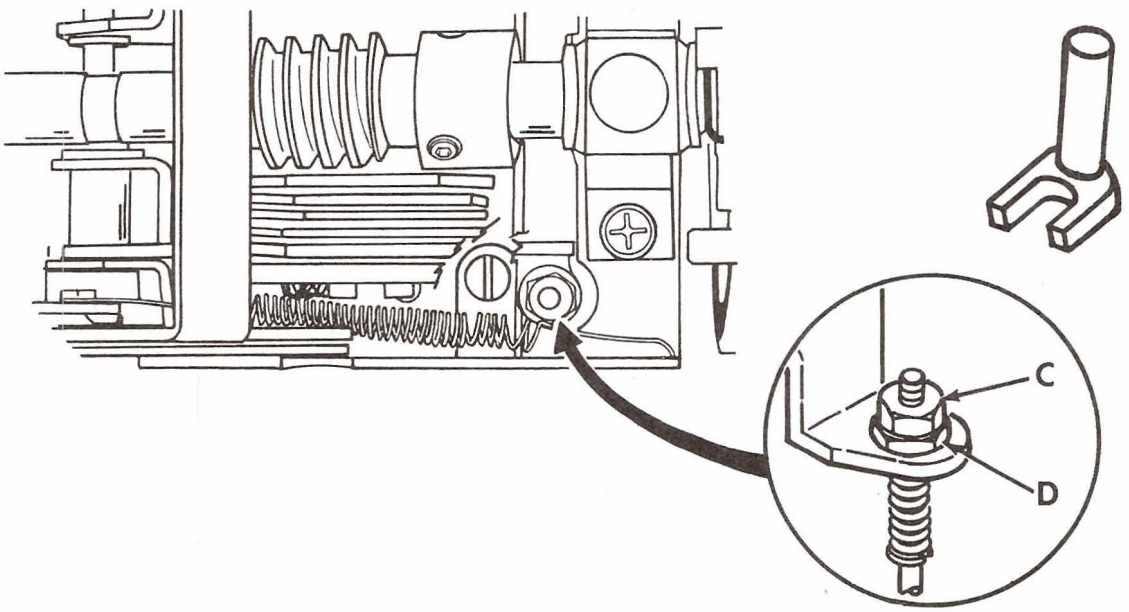
1. Remove arm top cover, control panel and hand wheel.
2. Remove stitch length control panel by pressing down and out by means of a screwdriver on tab (A) first and then on tab (B). Tilt the panel forward from the top and lift out of the machine.
3. Loosen connecting rod locking nut (C) and adjusting nut (D).

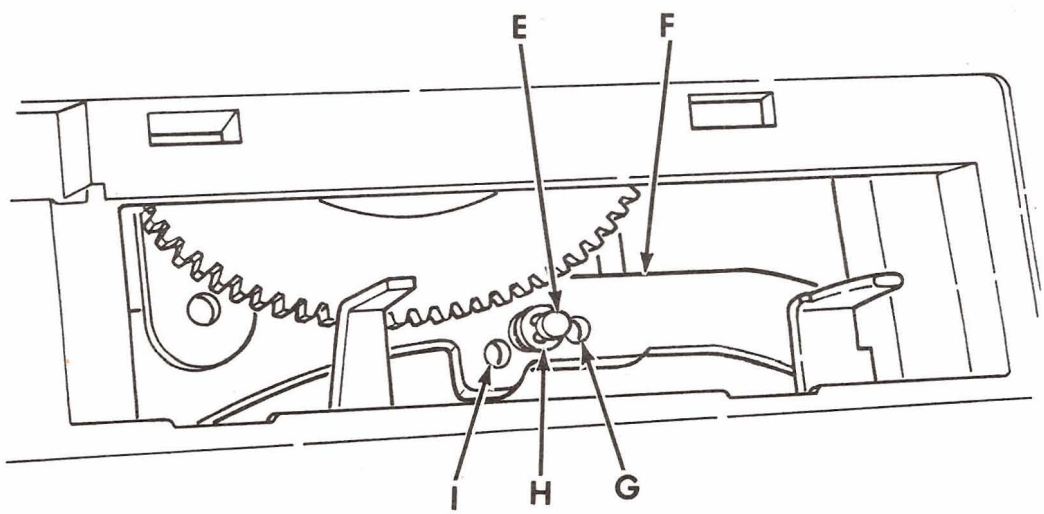
   Note: While loosing connecting rod lock nut (C) be sure the 6 mm connecting rod adjusting nut (D) is locked by A special tool.
4. Remove connecting rod retaining ring (H).
5. To decrease density, move connecting rod (E) to the right hole (G) on the stitch length control arm (F). To increase density move connecting rod (E) to the left hole (I) on the stitch length control arm (F). Access to connecting rod (E) can be achieved through the hand wheel opening.

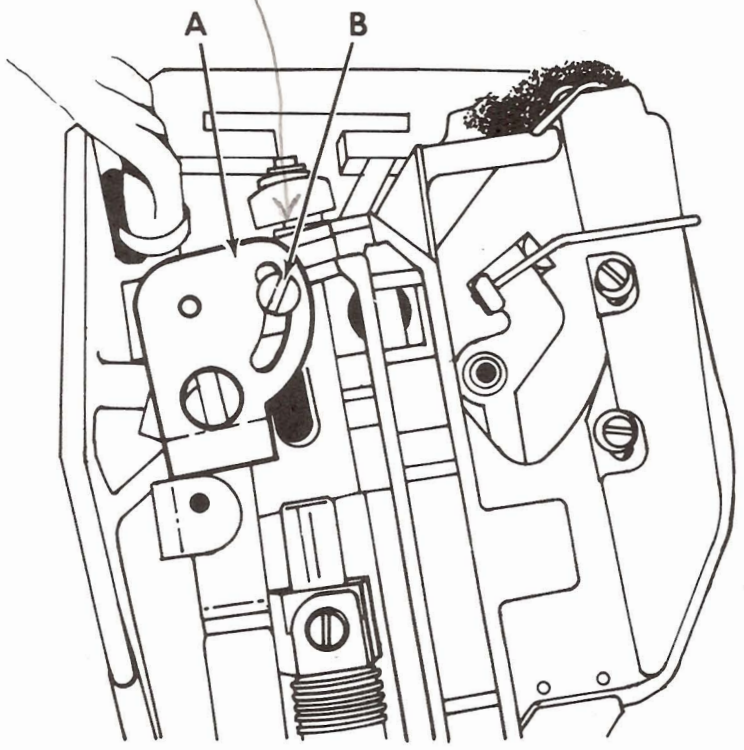
NOTE: Be careful not to lose the plastic spacer washer located on the connecting rod.

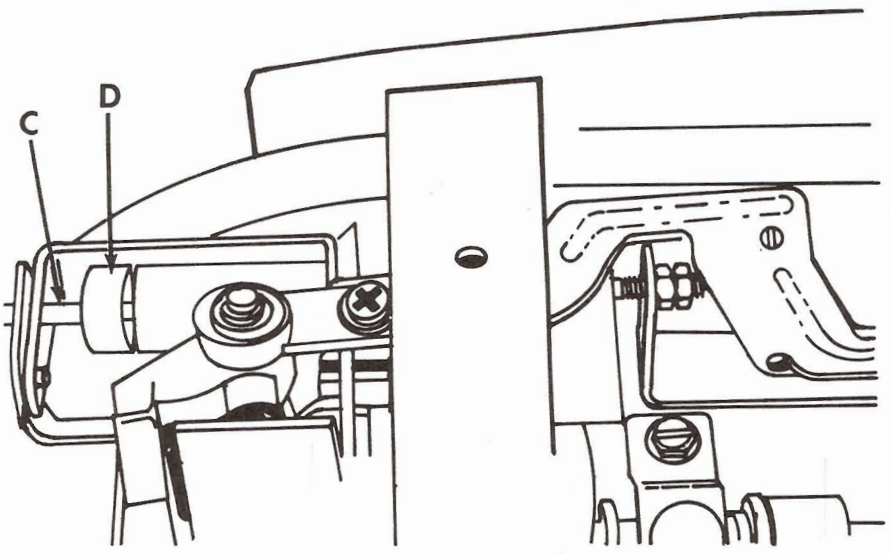
6. Replace retaining ring (H).
7. Adjust flexi feed zeroing.


LENGTH 0 1 2 3 4 0
REVERSE
A
B


C
D


E
F
I
H
G


CUTTING SPACE 6234
TOP OF NEEDLE BAR CARRIAGE
A
B


C
D

BUTTONHOLE SYSTEM (Cont)

Model 6235

Buttonhole Cutting Space Length

When using the one-step buttonhole foot, the machine must be capable of producing a buttonhole with a maximum cutting space of 35 mm ± 1.6 mm (1-3/8″ ± 1/16″).

Adjustment:

1. Remove face plate and arm top cover.
2. Loosen buttonhole actuator cam adjusting bracket screw (B).
3. Move adjusting bracket (A) up to lengthen the cutting space and down to shorten the cutting space.
4. Tighten screw (B) and recheck the buttonhole cutting space.
5. With the buttonhole tripping lever in the number 1 position, move collar (D) left to right to ensure there are no binds in rod (C). If a bind exists, loosen screw (B) to pinch tightness and pivot bracket (A) on screw (B). Tighten screw (B) and recheck.
6. Recheck buttonhole cutting space.

BOBBIN CASE THREAD CLEARANCES

Model 6233

Bobbin Case Position Finger

Check:

1. Position finger (A) must not extend above the left side of the fork of the bobbin case but must be flush or slightly below the surface.

Adjustment:

1. If position finger (A) is above the left fork of the bobbin case, replace bobbin case position bracket (C).

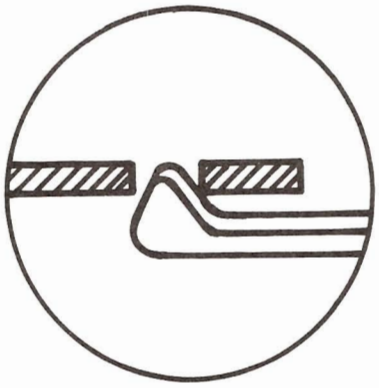
Bobbin Case Position Bracket

Check:

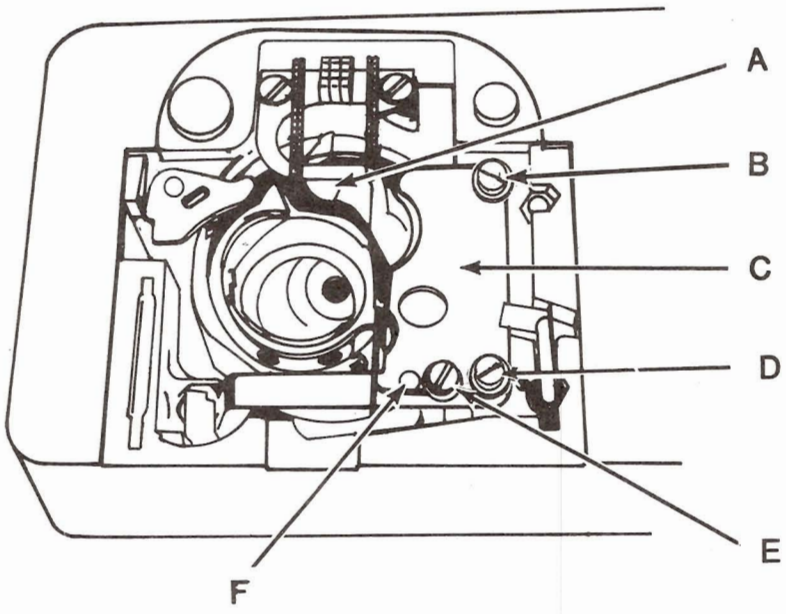
1. Rotate hand wheel toward the rear of the machine to bring the left side of the fork of the bobbin case gently against the position finger (A).
2. There must be 0.15 mm - 0.25 mm (.006″ - .010″) clearance between the edge of position bracket (H) and cushion spring (G).
3. There must be 0.15 mm - 0.25 mm (.006″ - .010″) clearance between the edge of cushion spring (G) and the heel of bobbin case (J).

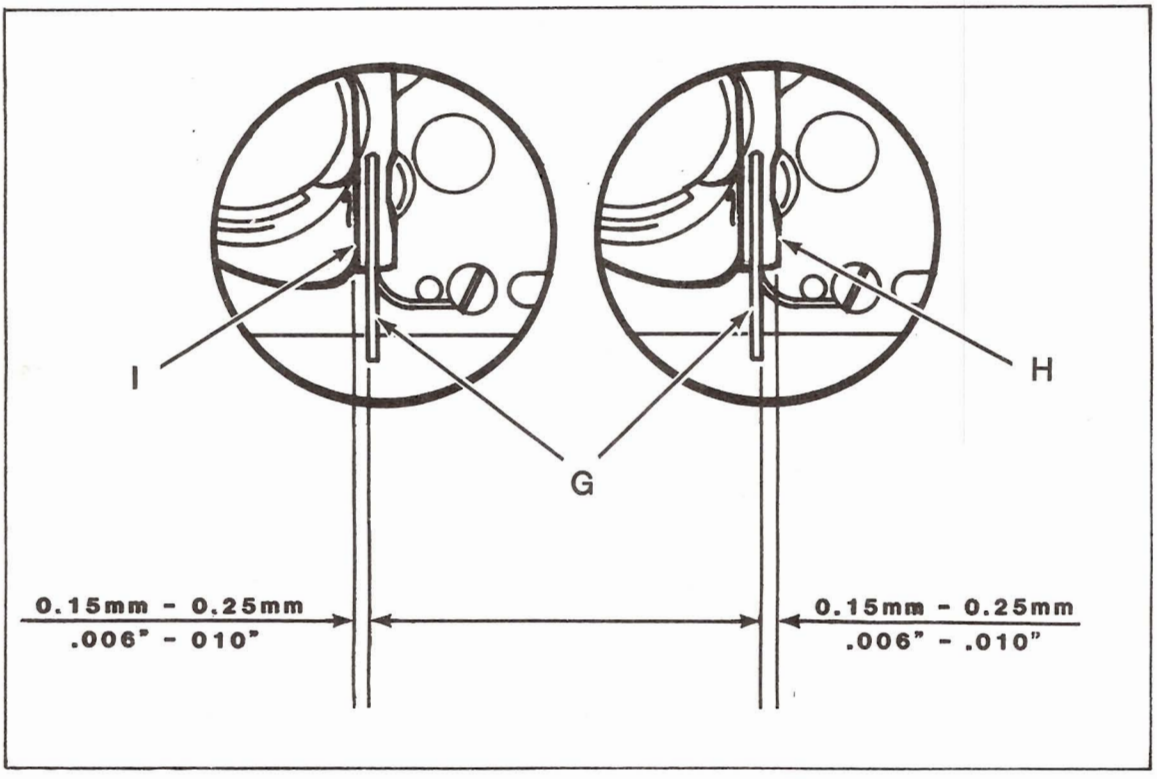
Adjustment:

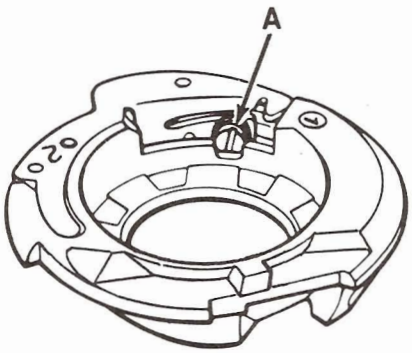
1. Remove the throat plate, bobbin case and slide plate.
2. Loosen cushion spring set screw (E).
3. Move cushion spring (G) left or right to provide 0.15 mm - 0.25 mm (.006″ - .010″) clearance between cushion spring (G) and the edge of position bracket (H).
4. Tighten screw (E). When tightening screw (E), be sure spring (G) is against the set out (F) in the position bracket.
5. Replace the bobbin case.
6. Loosen two screws (B) and (D).
7. While maintaining the position of the bobbin case so the left fork of the case is against the position finger, move position bracket (C) left or right to provide 0.15 mm - 0.25 mm (.006″ - .010″) clearance between cushion spring (G) and the heel of bobbin case (I). The right edge of position plate (C) must be as nearly parallel to the edge of the bed slide seat as possible.
8. Tighten screws (B) and (D).

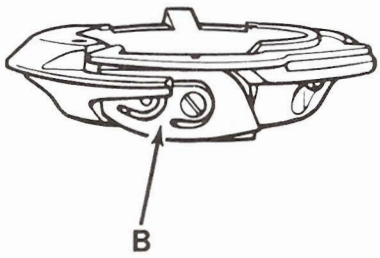


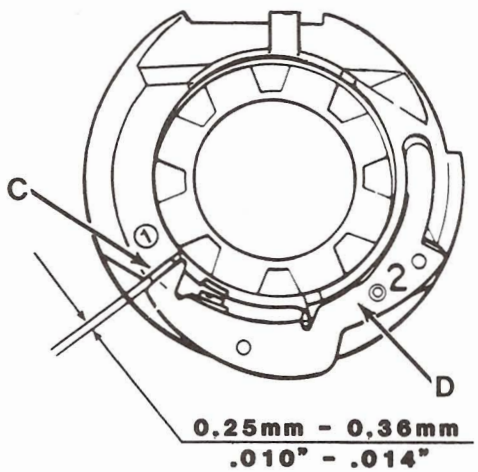
A

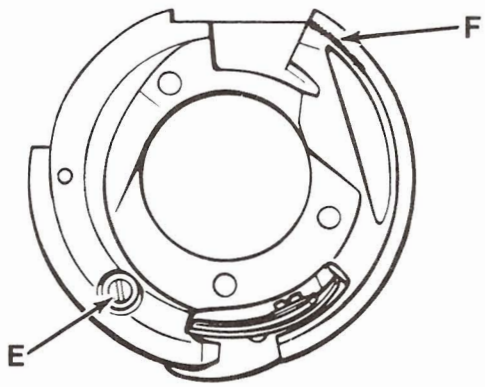





A


B


C
D
0,25mm - 0,36mm
.010" - .014"


F
E

BOBBIN CASE THREAD CLEARANCE

Models 6234, 6235

BOBBIN CASE INSPECTION

Check: Bobbin case inspection. Check bobbin case for —

1. Grooving at hook entry area (loop separator point (F) on underside).
2. Distorted tension spring (B).
3. Insufficient clearance between tension bracket (D) and vertical wall (C).
4. Tightness of tension bracket screw (E).

Operating quality tests —

Thread should enter tension springs smoothly without snagging.

With bobbin case correctly mounted in machine, test for ability to thread bobbin case from "1" to "2" using a loaded bobbin.

Test for uniformity of tension, with bobbin case in machine, be drawing thread slowly through tension. There should be no change in "feel" of pull.

Test for cogging of bobbin, when bobbin case is in machine, by drawing thread through tension from a bobbin loaded with only 2 or 3 yards of thread.

Check all areas of bobbin case, where thread loop passes, to be sure there are no sharp corners to snag the thread loop.

Check to be sure a rubber friction washer is on tension adjustment screw (A).

Check for sufficient clearance, 0.25 mm - 0.36 mm (.010″ - 0.014″) between tension bracket (D) and vertical wall (C) of bobbin case.

Mandatory replacement of damaged parts —

If damage is observed or operating quality is incorrect, it is not only a matter of good service but it is MANDATORY that the bobbin case be replaced.

BOBBIN CASE THREAD CLEARANCES (Cont.)

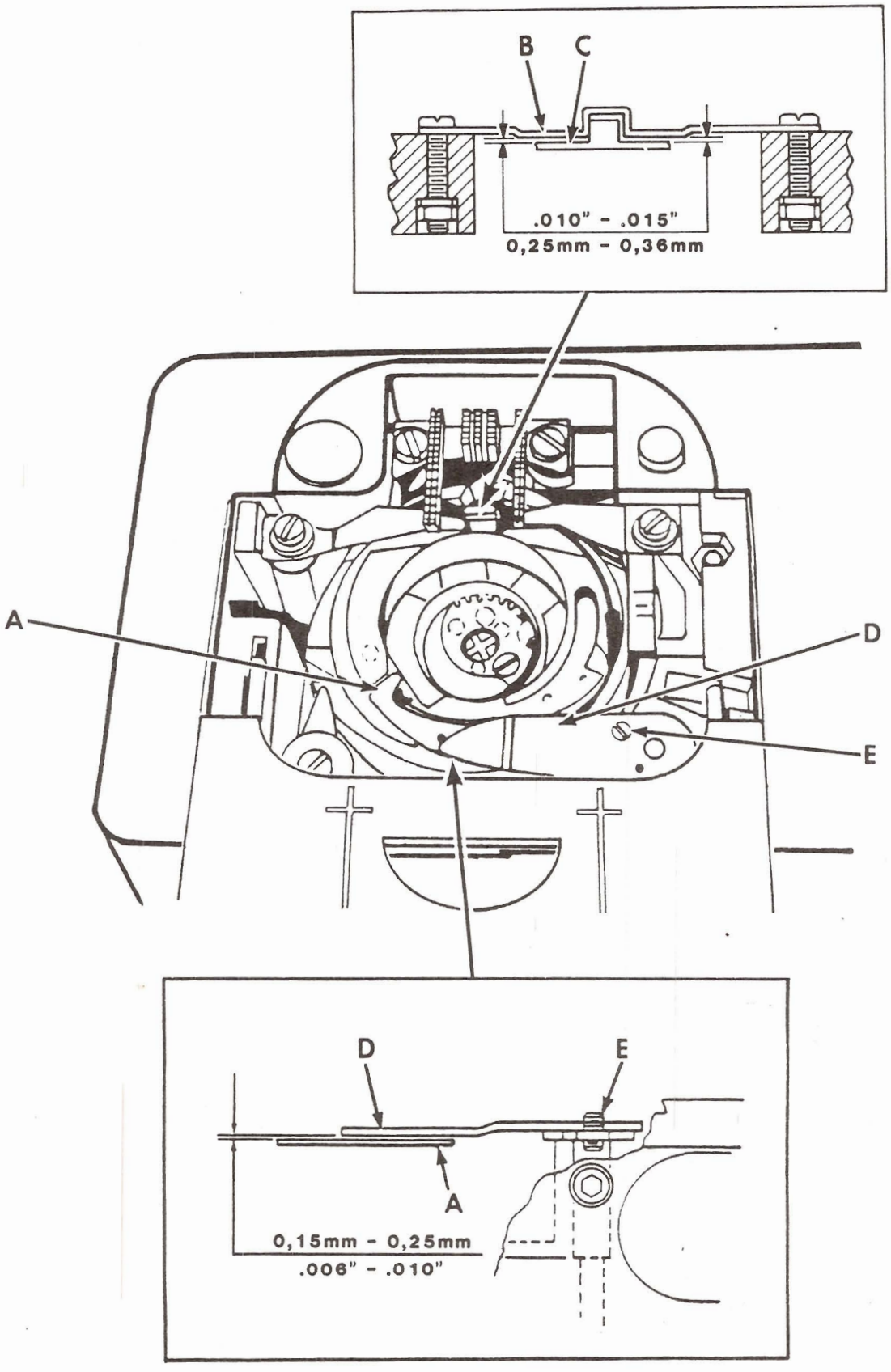
Models 6234, 6235

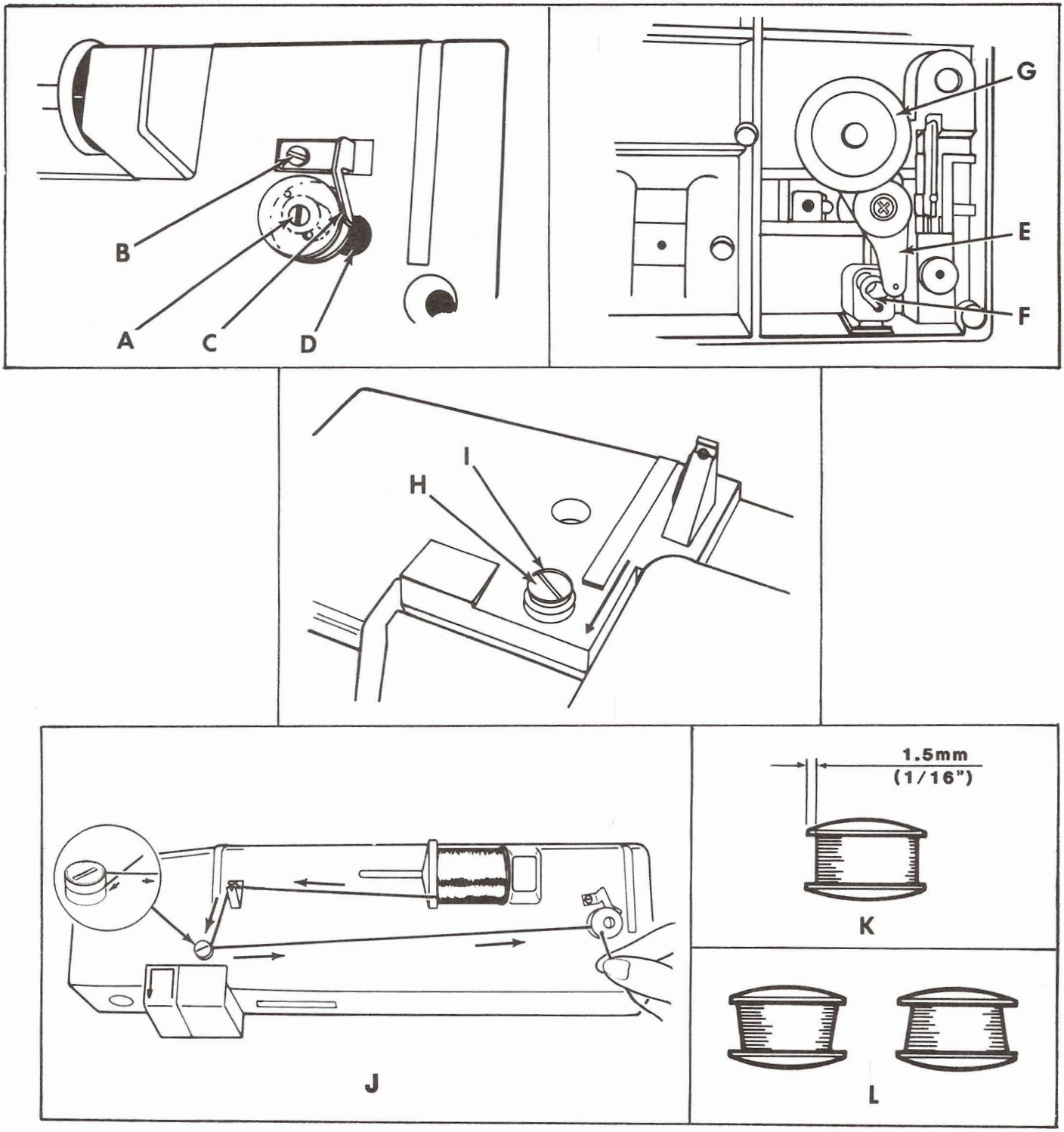
Check:

1. Open slide plate.
2. Turn the hand wheel toward the front of the machine to position the point of the hook between the 11 and 1 o'clock position.
3. Clearance between the bobbin case (C) and position plate (B) should be 0.25 mm - 0.36 mm (.010″ - .015″).
4. Turn hand wheel toward the front of the machine to position the point of the hook at the 3 o'clock position.
5. Clearance between the underside of hold down lever (D) and bobbin case tension bracket (A) should be 0.15 mm - 0.25 mm (.006″ - .010″).

Adjustment:

1. If the clearance between the bobbin case (C) and position plate (B) is incorrect, remove the bobbin case and form position plate (B) as required to obtain correct clearance.
2. Replace the bobbin case and position the point of the hook between the 11 and 1 o'clock position.
3. Check for a clearance of 0.25 mm - 0.36 mm (.010″ - .015″) between the bobbin case (C) and position plate (B).
4. Turn the hand wheel toward the front of the machine to position the point of the hook at the 3 o'clock position.
5. Turn jack screw (E) up or down as required to obtain 0.15 mm - 0.25 mm (.006 - .010″ clearance between the underside of hold down lever (D) and the top of the bobbin case tension bracket (A).
6. When adjustment is completed, place a drop of fingernail polish on the screw to seal its position.


B
C
.010" - .015"
0,25mm - 0,36mm
A
D
E
D
E
A
0,15mm - 0,25mm
.006" - .010"


B
A
C
D
G
E
F
I
H
J
1.5mm
(1/16")
K
L

BOBBIN WINDER

Model 6233

Preparation:

1. Disengage hand wheel by pressing in on indent on hand wheel disc.
2. Place empty bobbin on bobbin winder spindle (A).

Check:

1. Push bobbin winder from side to side in arm top cover opening (D). At no time should any part of the bobbin winder or the bobbin touch either the arm top cover or the bobbin winder stop (C).
2. Place the bobbin winder to the left (off) position and check that the spindle (A) turns freely and that there is no vertical (up and down) play. If either condition exists, the bobbin winder assembly (E) should be replaced with a new assembly.
3. Check that the bobbin winder stays in either the left or right position under spring pressure. If spring pressure is absent, remove arm top cover and check for presence of spring (F). If spring is weak, broken, or missing, replace with a new spring.
4. Lift up on bobbin winder tension disc (I) and feel for presence of slight tension. If tension is absent, replace bobbin winder tension assembly.
5. Place bobbin winder to the right (On) position and run machine, checking for even rotation of bobbin winder. If the bobbin winder hesitates or fails to rotate, remove arm top cover and check for worn or absent bobbin winder ring (G).
6. Thread machine for bobbin winding Illustration (J).
7. Wind a bobbin and check if thread is wound evenly, (Illustration (K), or forms a cone at either end, (Illustration (L). The bobbin winder should stop turning when the thread is wound to 1.5 mm (1/16") from the outer rim of the bobbin.

Adjustment:

1. To correct conical winding of the thread, adjust the height of the tension assembly by turning the adjusting screw (H) clockwise or counterclockwise as necessary.
2. If the bobbin winder stop (C) engages too soon or fails to operate, loosen screw (B) and move stop (C) toward the hand wheel to give more thread on the bobbin or away from the hand wheel for less thread. Tighten screw (B).
3. Recheck operation of bobbin winder and stop.

BOBBIN WINDER

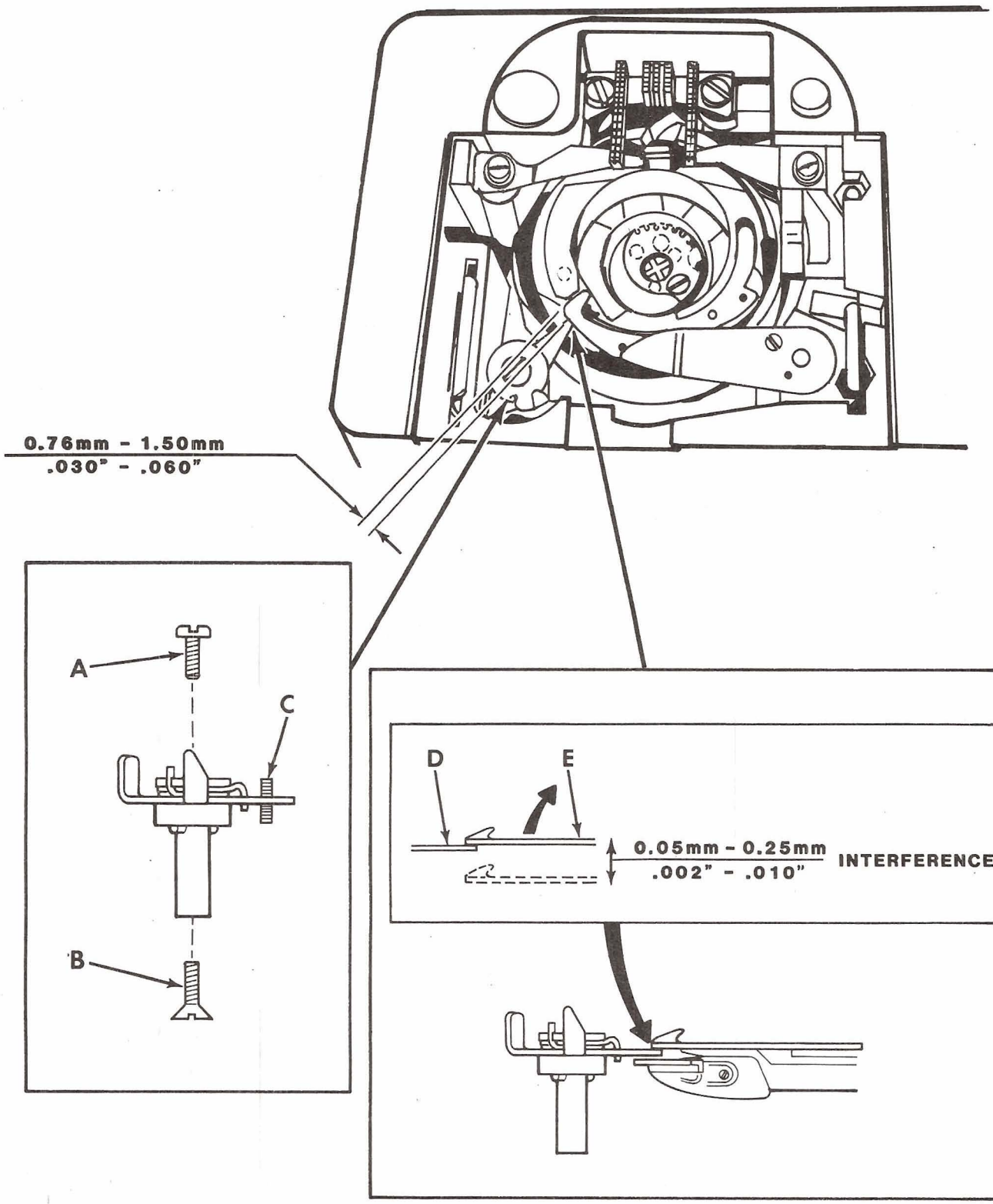
Models 6234, 6235

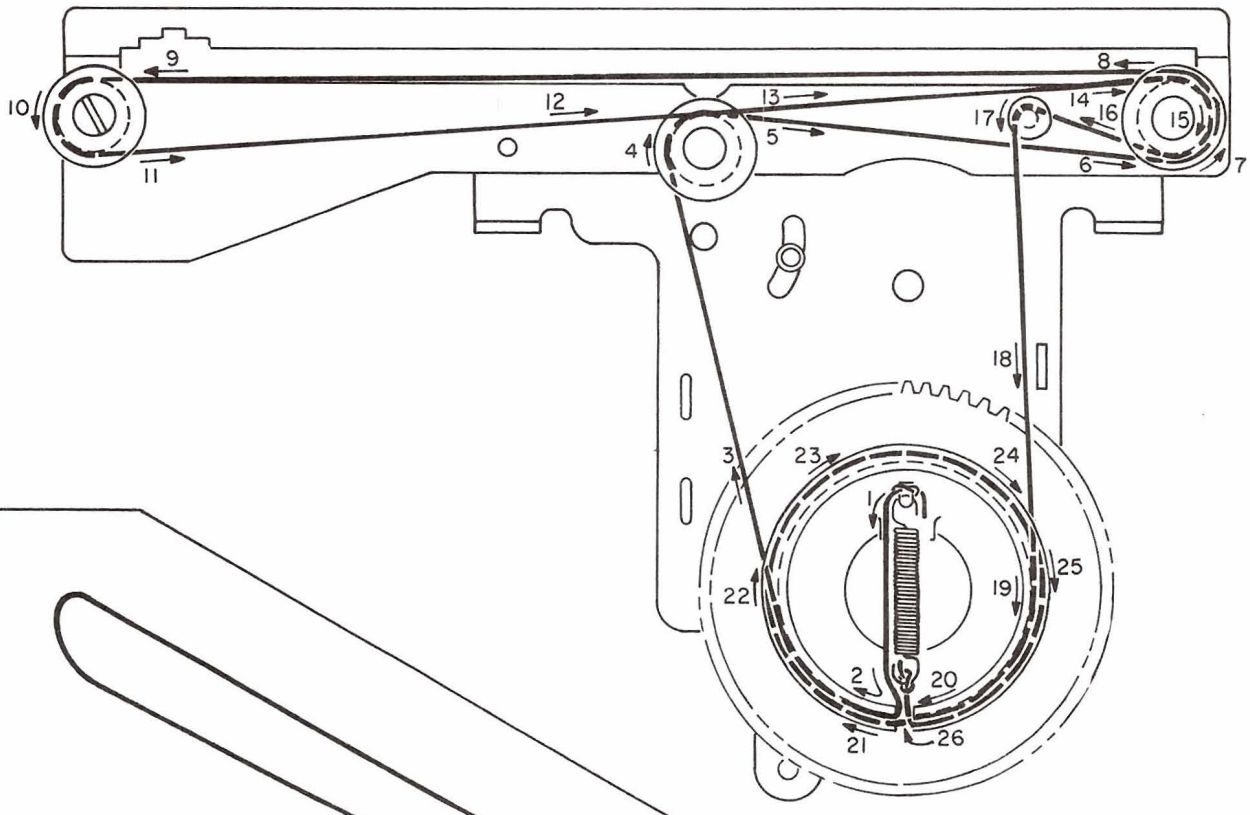
Check:

1. Remove slide plate.
2. There must be a 0.05 mm - 0.25 mm (.002″ - .010″) interference between the top of the winding actuating lever (D) and the bottom of the bobbin case tension bracket (E).
3. The left edge of the winding actuating lever (D) must be 0.76 mm - 1.50 mm (.030″ - .060″) to the right of the winding slot in the bobbin case.

Adjustment:

1. Loosen screw (B).
2. Turn jack screw (C) up or down as required to provide a 0.05 mm - 0.25 mm (.002″ - .010″) interference between the top of the winding actuating lever (D) and the bottom of the bobbin case tension bracket (E).
3. Apply nail polish to screw (C) so it will maintain its position.
4. Tighten screw (B).
5. Loosen screw (A).
6. Rotate actuating lever (D) until the left edge of the actuating lever is 0.76 mm - 1.50 mm (.030″ - .060″) to the right of the winding slot in the bobbin case.
7. While maintaining the position of the actuating lever (D) tighten screw (A).


0.76mm - 1.50mm
.030" - .060"
A
C
B
D
E
0.05mm - 0.25mm
.002" - .010"
INTERFERENCE


9
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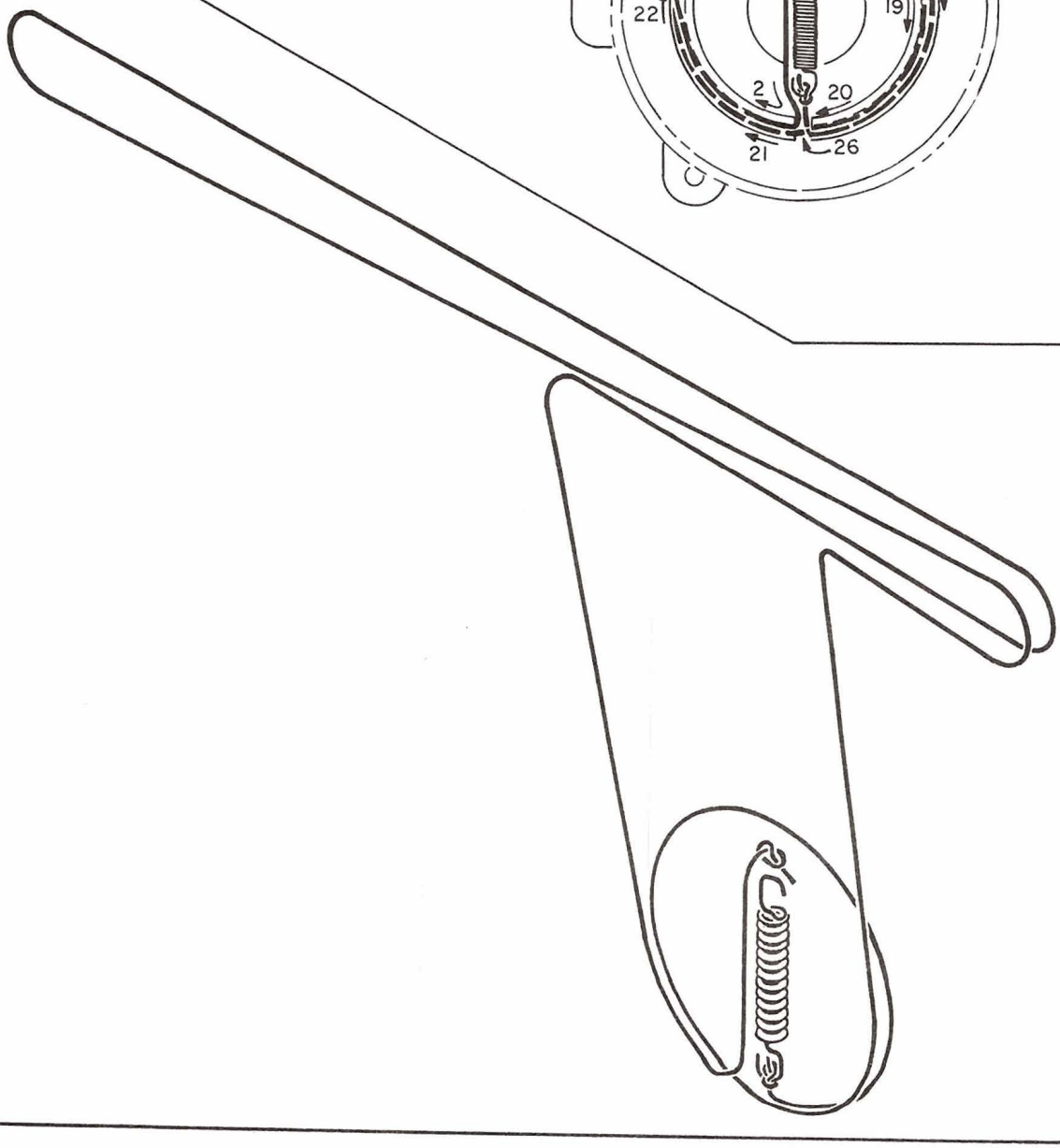
2
20
21
26



PATTERN SELECTOR CORD ASSEMBLY

Model 6235

Refer to Illustration for the stringing diagram of the pattern selector cord assembly.

MOTOR SPEED CONTROL

Models 6233, 6234, 6235

With the machine set at 10 stitches per inch (SPI), straight stitch and presser foot up, the machine's top speed should be 825 ± 50 revolutions per minute (RPM) at nominal line voltage.

Check:

1. Check timing belt and motor belt tension. Adjust if necessary.

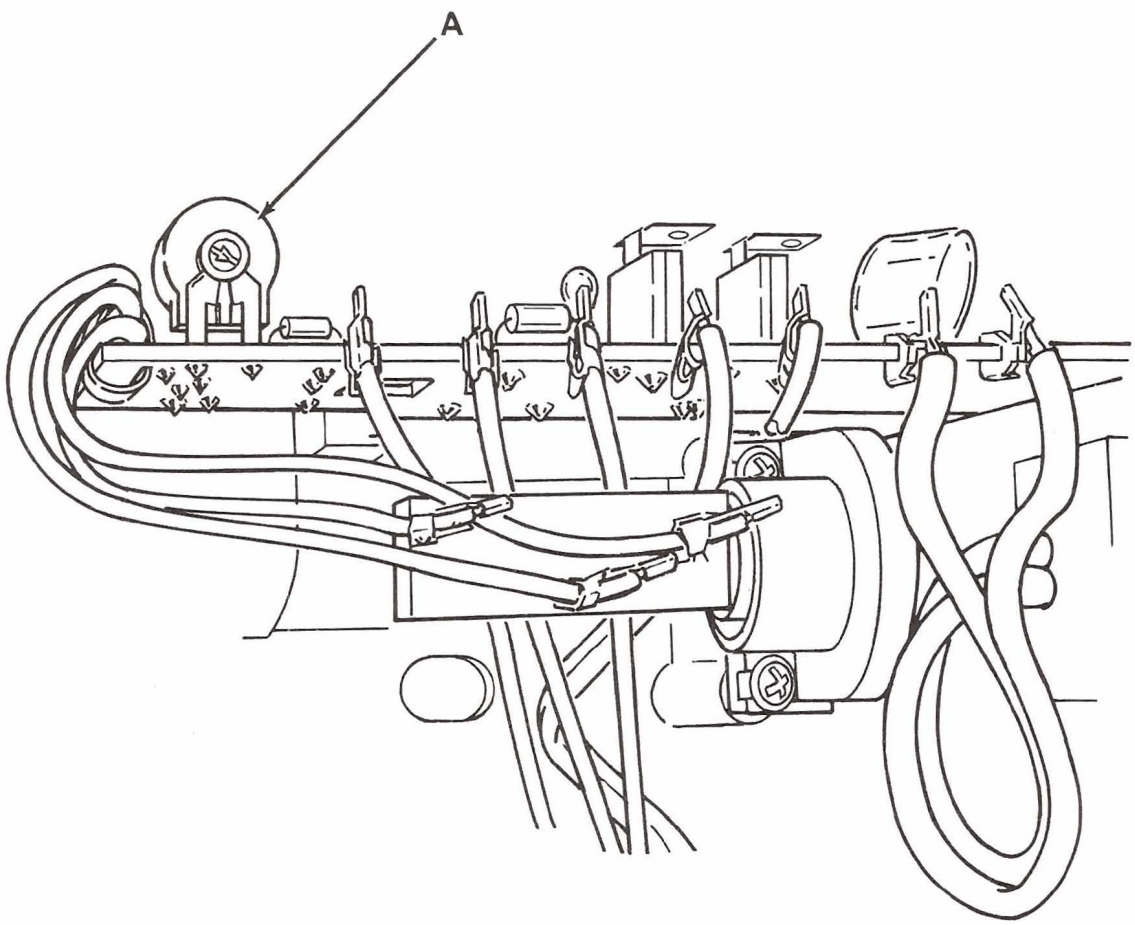
Adjustment:

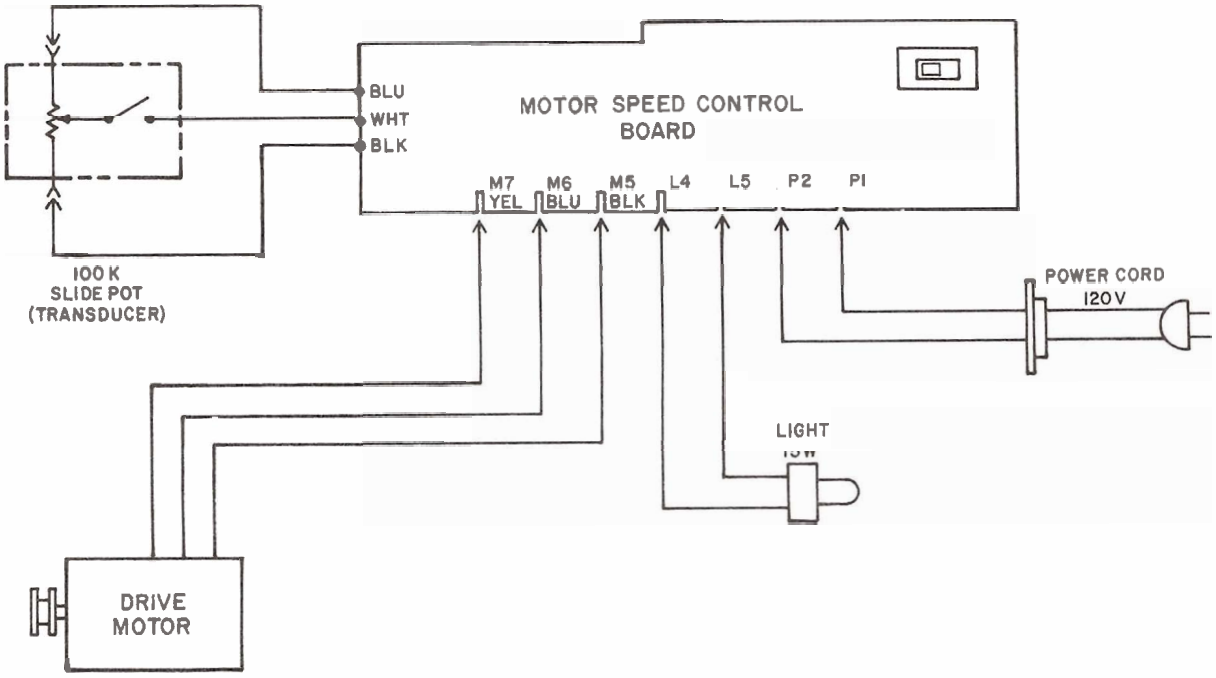
1. Turn trim potentiometer (A) clockwise to increase speed and counterclockwise to decrease speed, using a tachometer to check speed, until machine is running at 825 ± 50 RPM.

NOTE: If a tachometer is note available, the approximate machine speed may be checked in the following manner.

Adjustment:

1. Thread the machine for sewing.
2. Set the machine to sew 12 SPI, straight stitch.
3. When sewing on 2 ply muslin at top speed, the machine should sew not less than 23 cm (9″) or more than 28 cm (11″) in 10 seconds.


A


BLU
WHT
BLK
MOTOR SPEED CONTROL
BOARD
M7
YEL
M6
BLU
M5
BLK
L4
L5
P2
P1
100 K
SLIDE POT
(TRANSDUCER)
POWER CORD
120 V
LIGHT
DRIVE
MOTOR

The motor speed is controlled by a slide potentiometer whose position is controlled by air pressure.

The air pressure is produced by means of an air bulb within the controller. The more the bulb is compressed by means of the controller, the more air pressure is produced which causes the motor to run faster. If the motor fails to operate, it must be determined whether the motor, the speed control board, the transducer (slide potentiometer), the controller, or the connections on the motor control board are at fault.

Following is a troubleshooting procedure for diagnosis of electrical failure.

CAUTION: These tests involve high voltage and can be hazardous if handled carelessly. It is imperature that extreme care be exercised. Be sure power if OFF before handling high voltage components.

Test Procedure	Corrective Action
Turn Machine "ON"	If motor runs continuously, replace speed control board. If motor does not run.
Replace controller with a know good controller.	If motor runs, replace controller. If motor does not run.
Check motor harness connections to the speed control board.	If motor runs, no further tests required. If motor does not run.
Connect a jumper between the blue and white terminals of the transducer.	If motor runs, replace the transducer. If motor does not run.
Connect a known good motor to the speed control board.	If motor runs, replace motor. If motor does not run, replace speed control board.

LUBRICATION

Models 6233, 6234, 6235

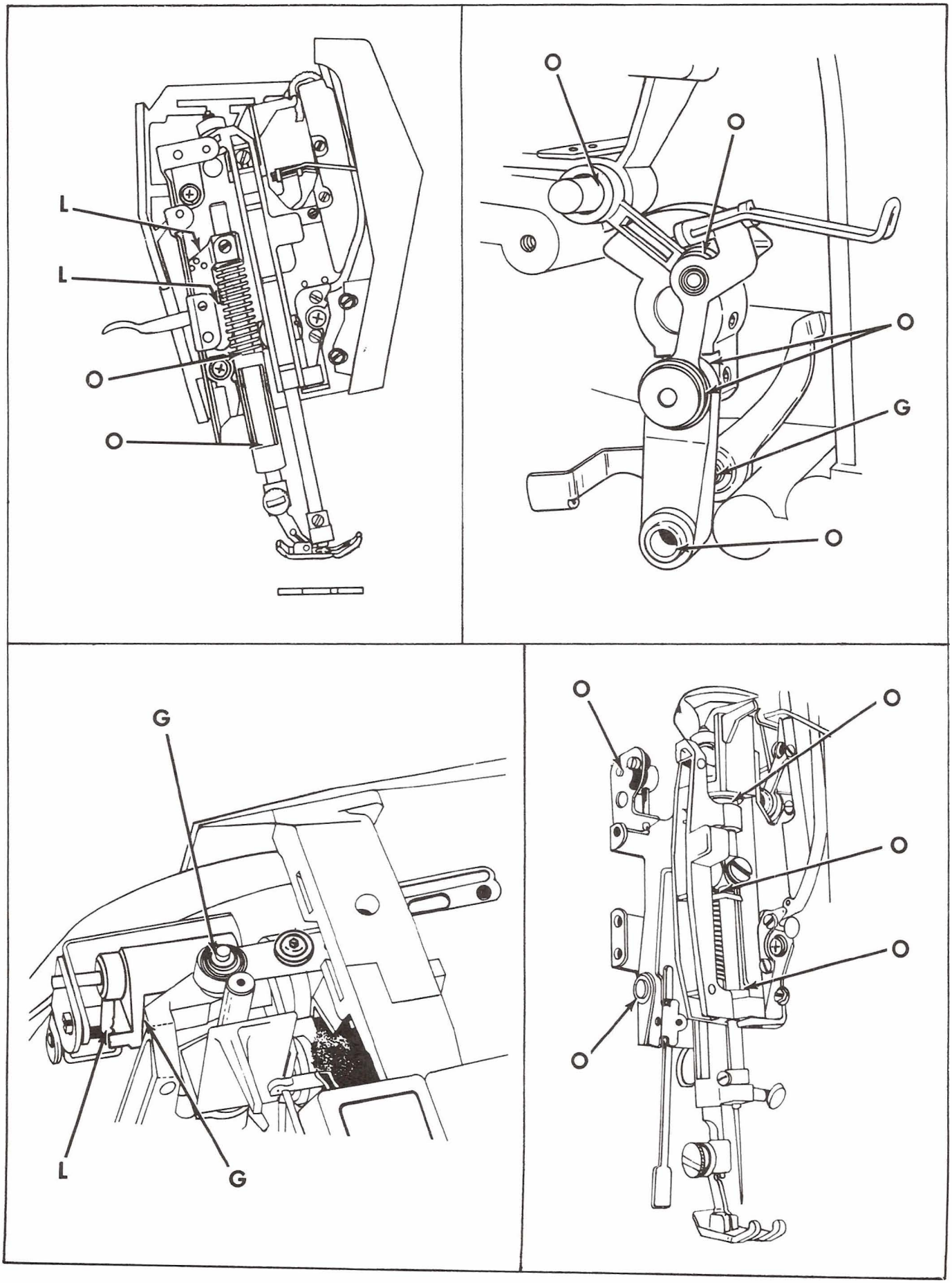
To reliably meet the customer non-lubrication requirements, the machine must be lubricated as indicated in the "Lubrication" illustrations.

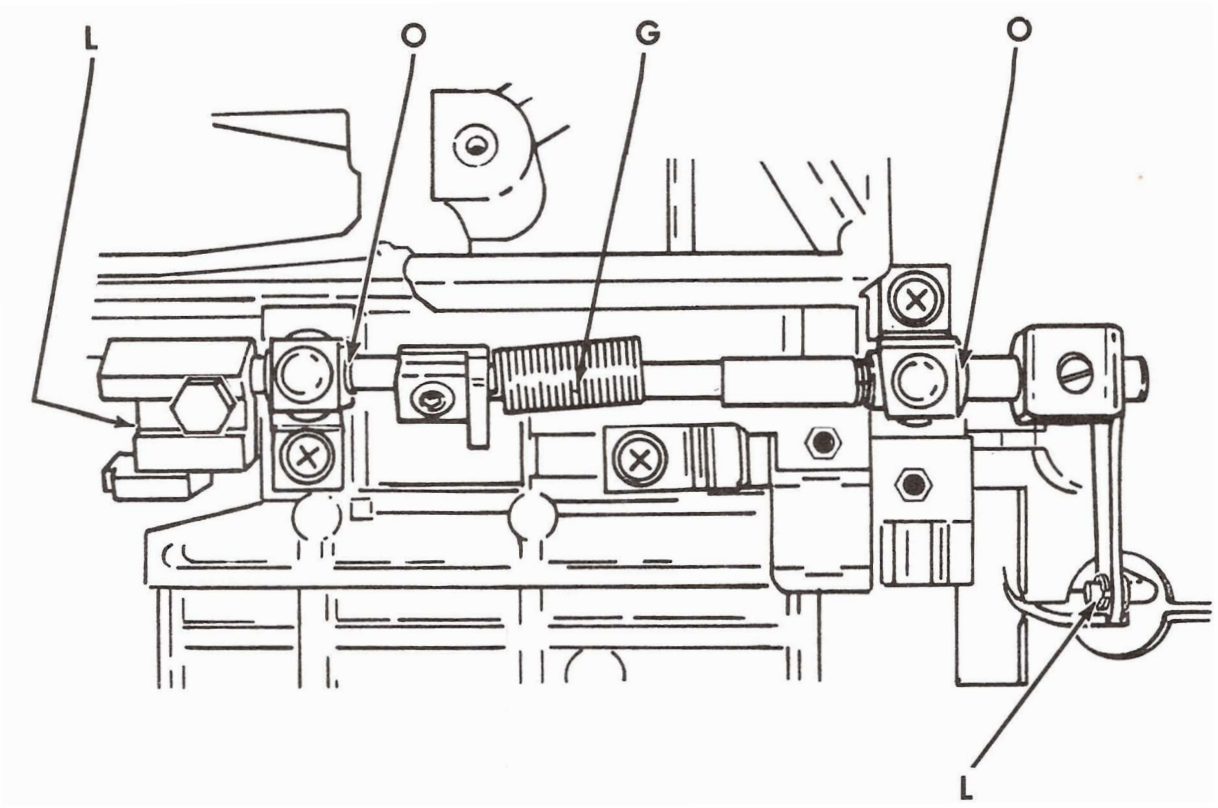
All thread, lint or foreign matter must be removed before lubrication.

O = Oil

G = Grease

L = Lubriplate


L
L
O
O
O
O
G
O
G
L
G
O
O
O
O


L
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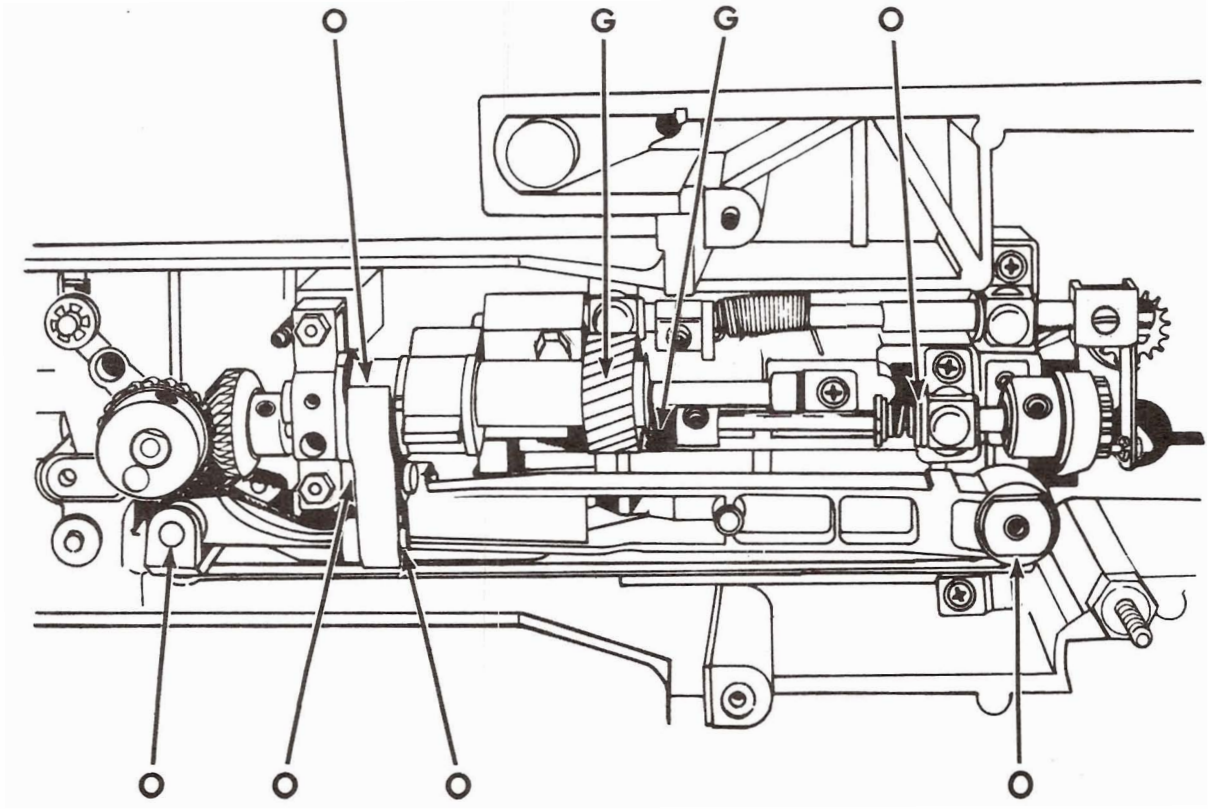
L


O
G
G
O
O
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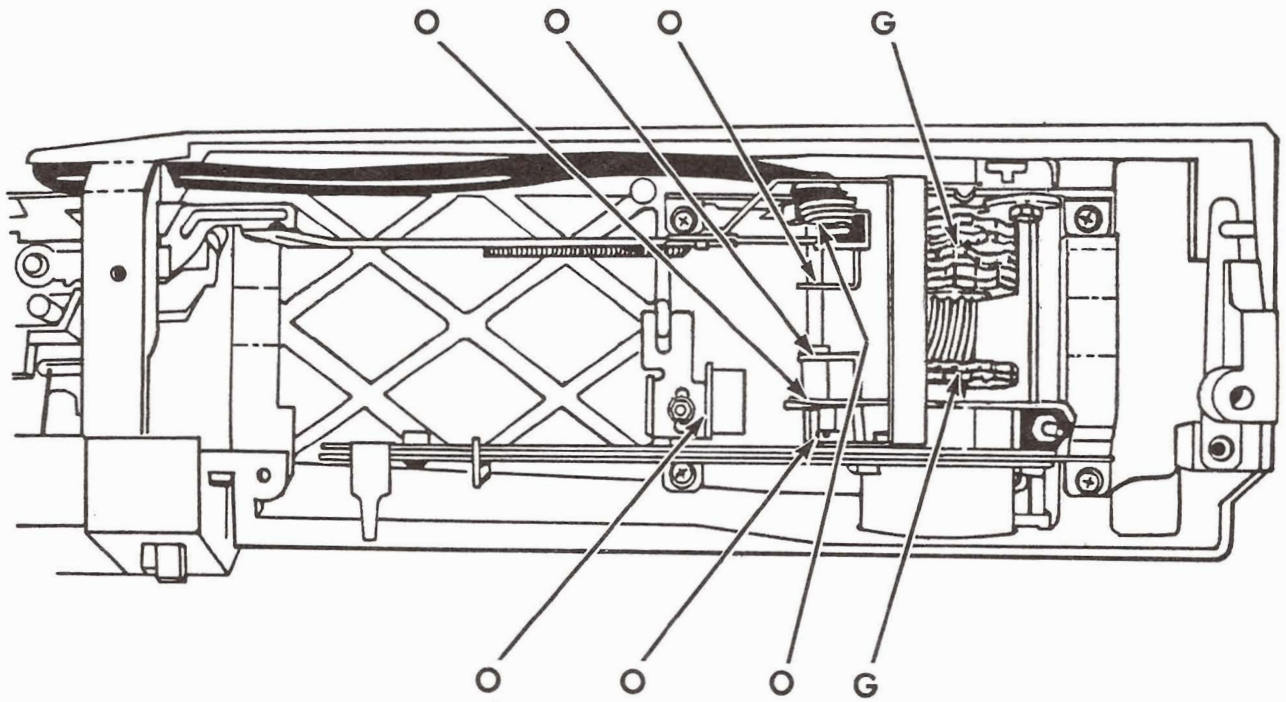
O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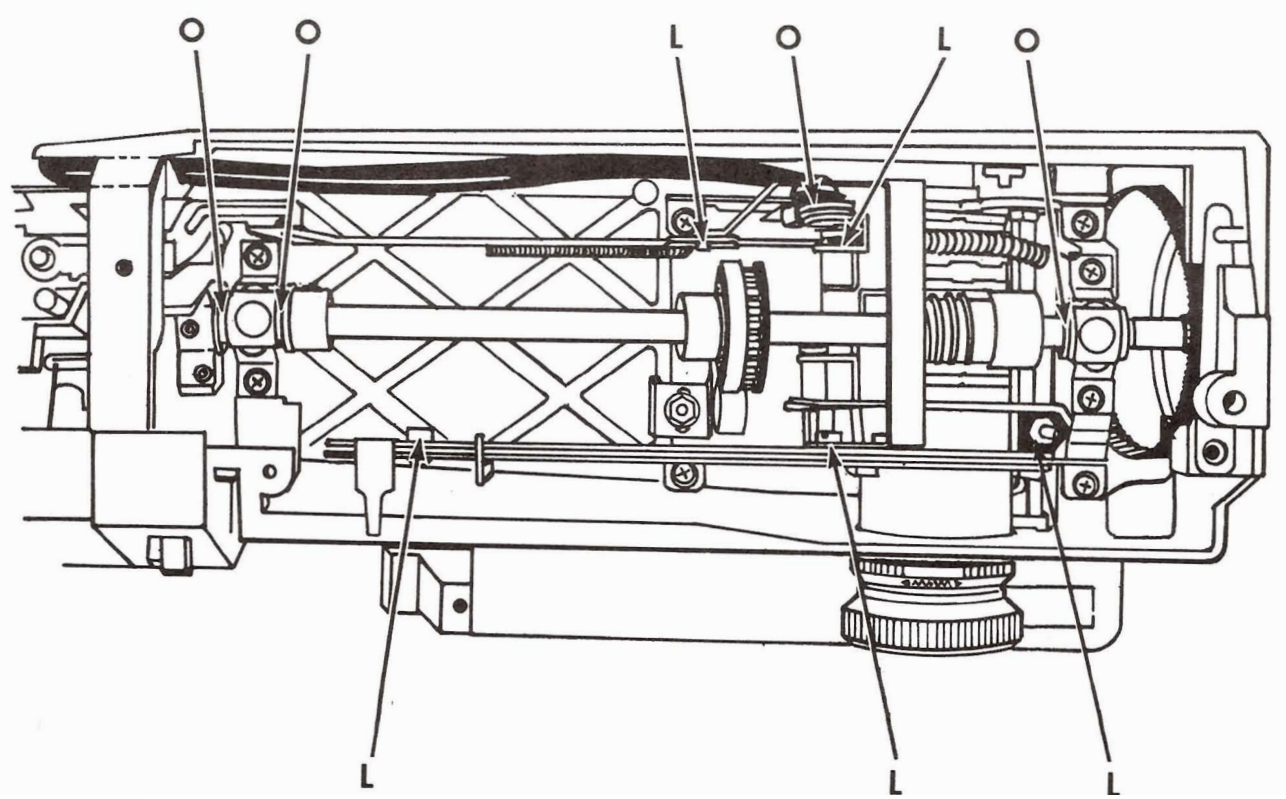
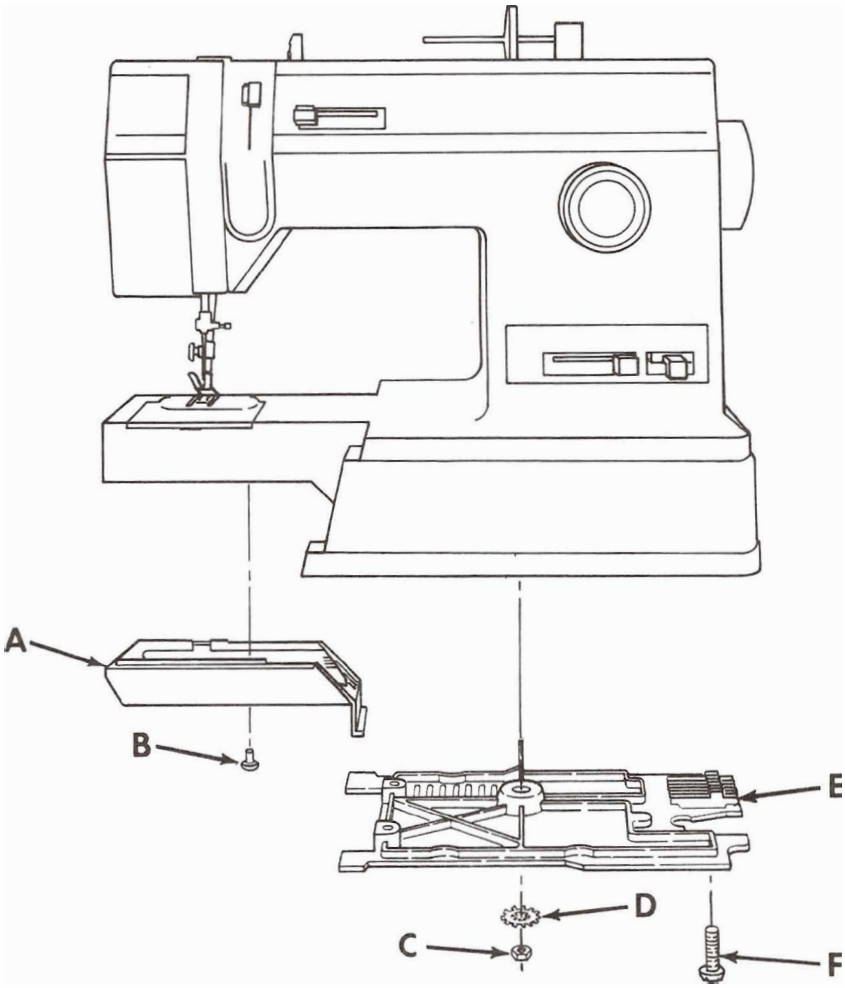
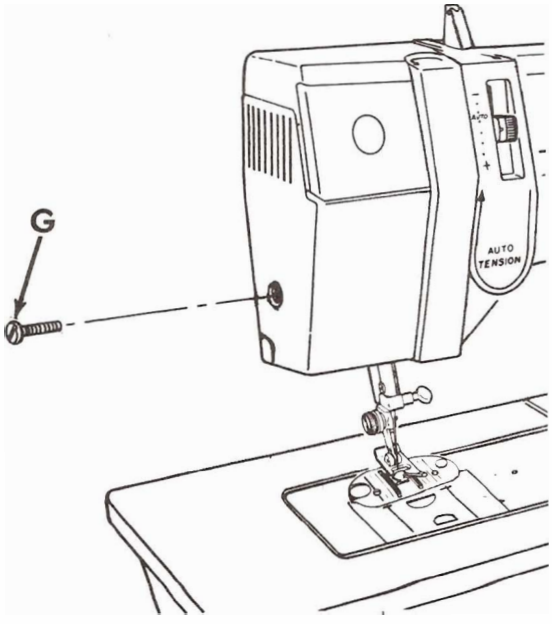
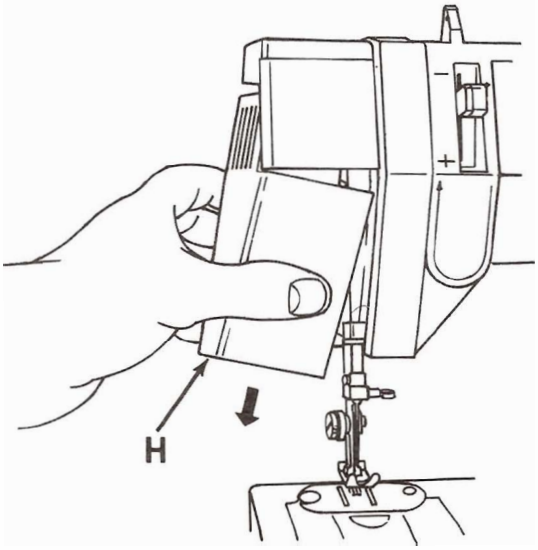

O
O
L
O
L
O
L
L
L

SECTION 2

PARTS REMOVAL & REPLACEMENT


A
B
C
D
E
F


G
AUTO
TENSION


H

TUBULAR BED COVER AND BED COVER PLATE

Models 6233, 6234, 6235

Removal:

1. Remove tubular bed cover screw (B).
2. Remove tubular bed cover (A).
3. Remove bed cover plate nut (C) and washer (D).
4. Remove screw (F).
5. Remove bed cover plate (E).

Replacement:

1. Replacement is the same as removal in reverse order.

FACE PLATE

Model 6234

Removal:

1. Remove face plate screw (G).
2. Draw face plate (H) down while tilting bottom away from the machine.

Replacement:

1. Replacement is the same as removal in reverse order.

ARM TOP COVER

Models 6233, 6234

Removal:

1. Remove face plate.
2. Remove stitch width control lever knob (A) by pulling it straight out from machine.
3. Set stitch width control lever at maximum stitch width.
4. Remove three arm top cover screws (B) (C) and (D).
5. Loosen and disengage ATC support bracket screw (E) from ATC support bracket.
6. Swing the right end of top cover (F) forward until the stitch width control lever (G) is clear of the slot in the front panel.
7. Lift arm top cover (H) straight up and off machine.

Replacement:

1. Replacement is the same as removal in reverse order.

ARM TOP COVER

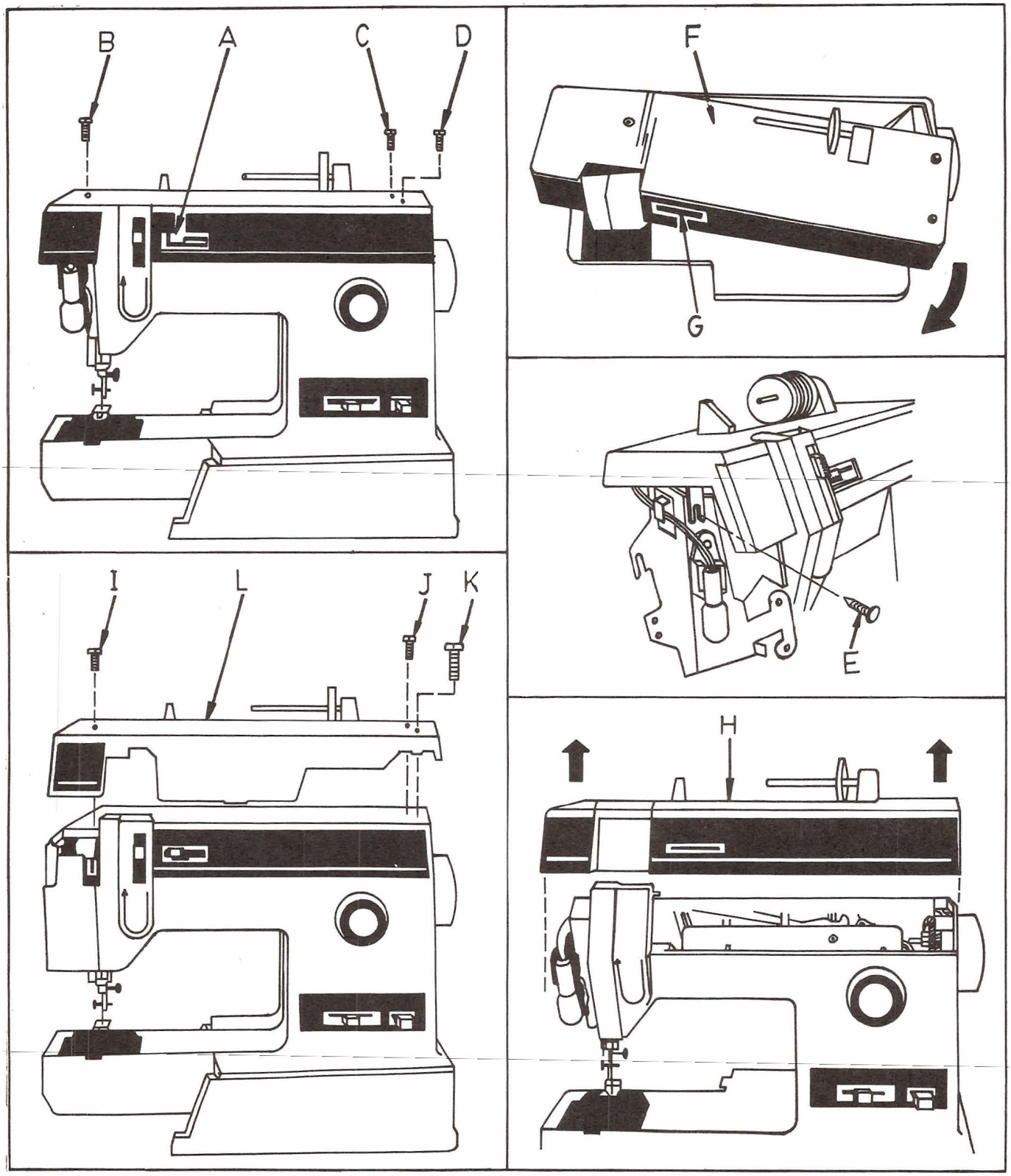
Model 6235

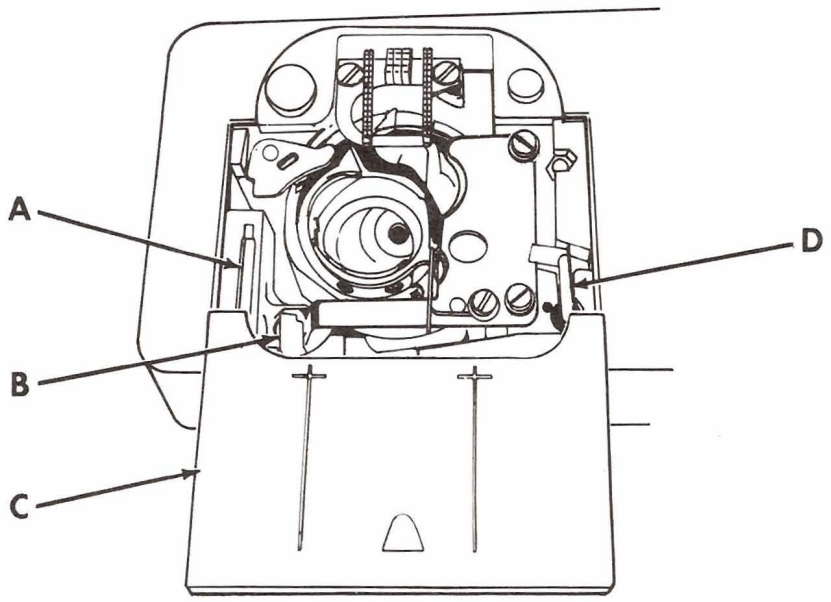
Removal:

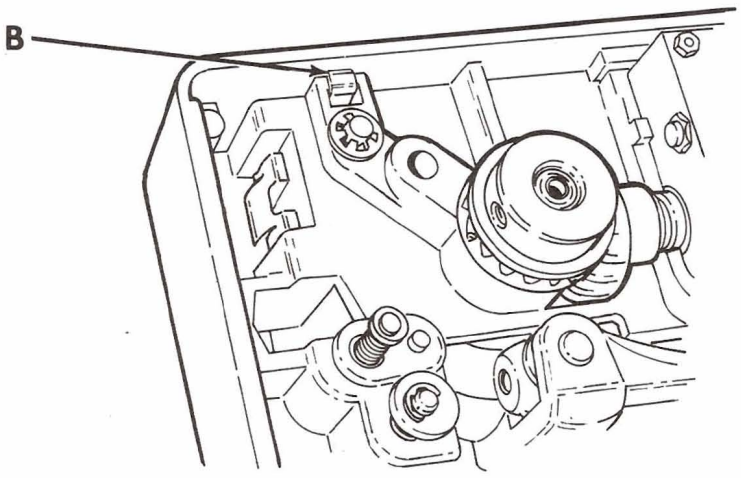
1. Remove three arm top cover screws (I)(J) and (K). Long screw (K) is used on the right front end of the cover.
2. Loosen ATC support bracket screw (E) from ATC support bracket.
3. Lift arm top cover (L) straight up and off machine.

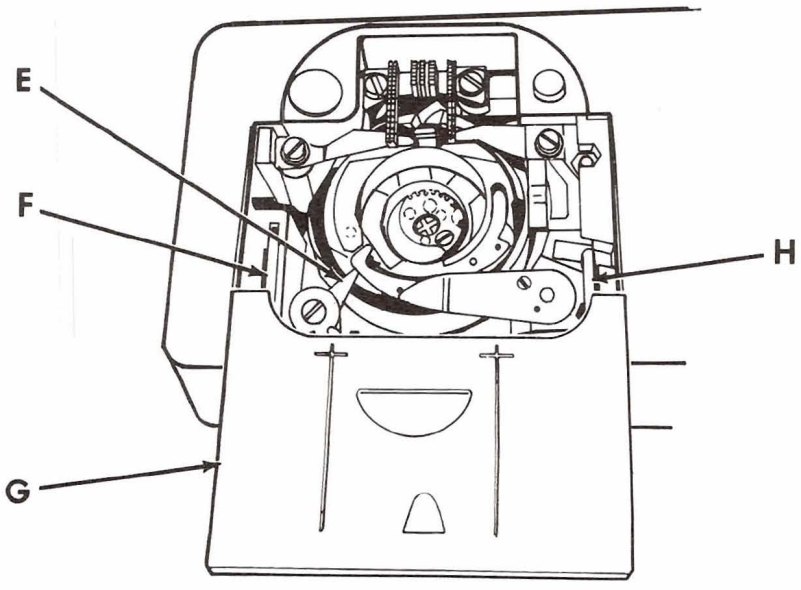
Replacement:

1. Replacement is the same as removal in reverse order.


B
A
C
D
F
G
E
I
L
J
K
H


A
B
C
D


B


E
F
G
H

SLIDE PLATE

Models 6233

Removal:

1. Remove presser foot, throat plate and bobbin case.
2. Place the tip of a screwdriver in front of slide plate stop spring (B) and press down.
3. Draw slide plate (C) off the front of the machine.

Removal: (Alternate)

1. Remove tubular bed cover.
2. With a needle nose pliers, pull slide plate stop spring (B) down approximately 6.35 mm (1/4″).
3. Draw slide plate (C) off the front of the machine.
4. Push slide plate stop spring (E) up until it is fully seated.

Replacement:

1. Align the slide plate with the left and right slide plate springs (A) and (D).
2. Push slide plate straight in.

SLIDE PLATE

Models 6234, 6235

Removal:

1. Draw slide plate (G) forward until it stops.
2. Rotate tab (E) counterclockwise until it stops and hold in this position.
3. Draw slide plate (G) off the front of the machine.

Replacement:

1. Align the slide plate with the left and right slide plate springs (F) and (H).
2. Rotate tab (E) counterclockwise until it stops and hold in this position.
3. Push slide plate (G) straight in.

HEAD END ASSEMBLY

Models 6233, 6234

Removal:

1. Remove face plate, arm top cover and light heat shield assembly.
2. Remove needle bar driving arm ball joint screw (A) and washer (B).
3. Remove head end assembly mounting screw (H).
4. Remove head end assembly mounting screw (F) and face plate mounting bracket (G).
5. Remove head end assembly mounting screw (D).
6. Remove head end assembly (C).

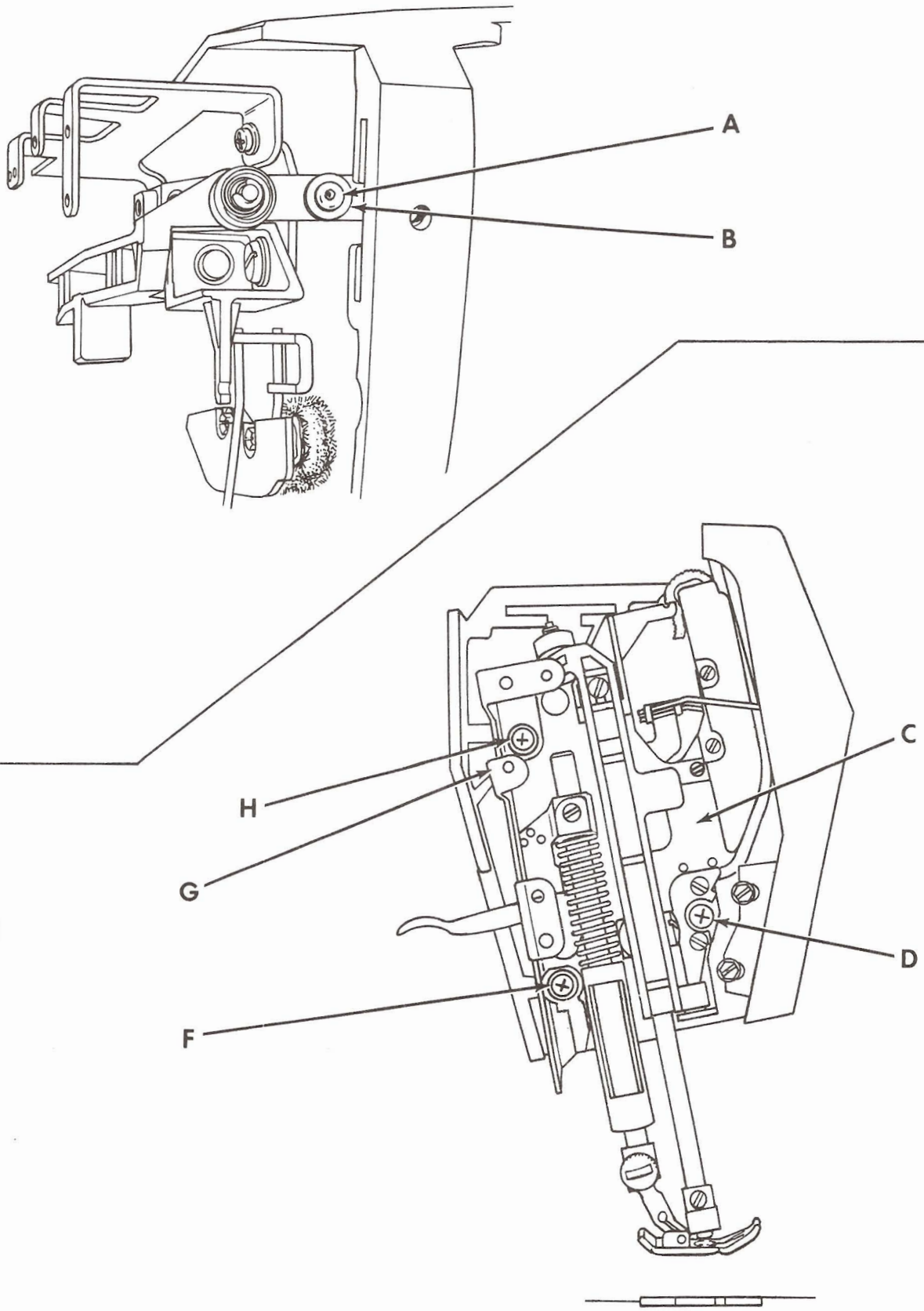
Replacement:

1. Replacement is the same as removal in reverse order.
2. Adjust:

   2.1 Left-to-right needle location.

   2.2 Front-to-back needle location.

3. Check needle bar height and presser bar height and adjust if necessary.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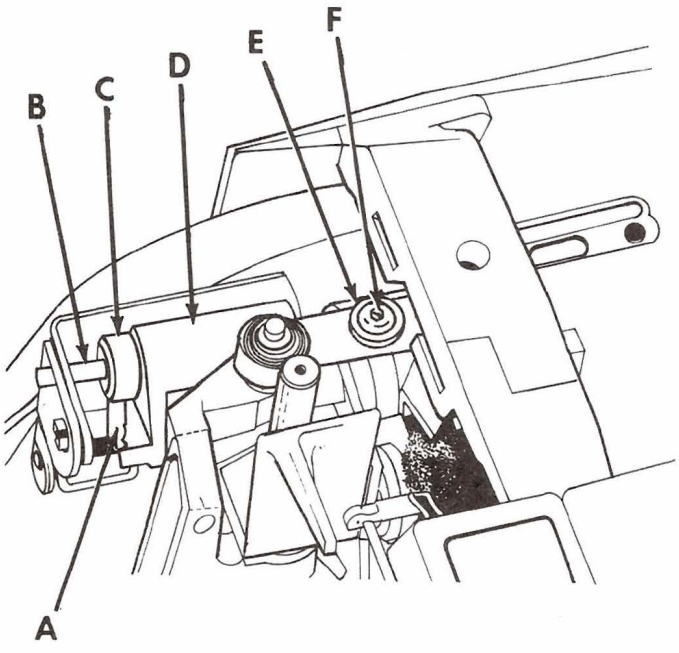
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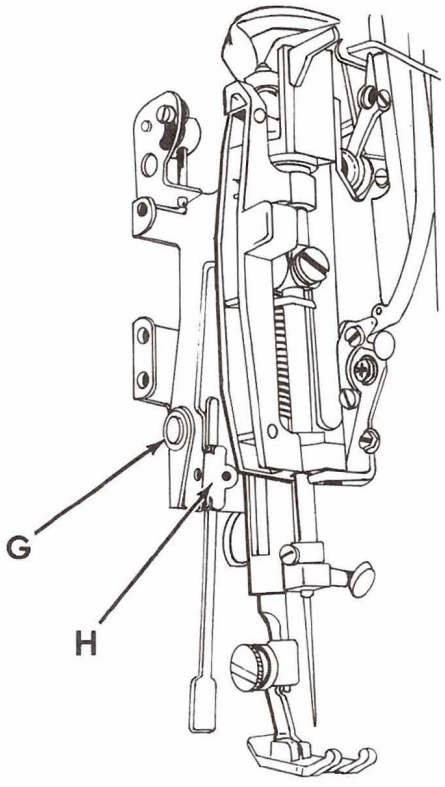
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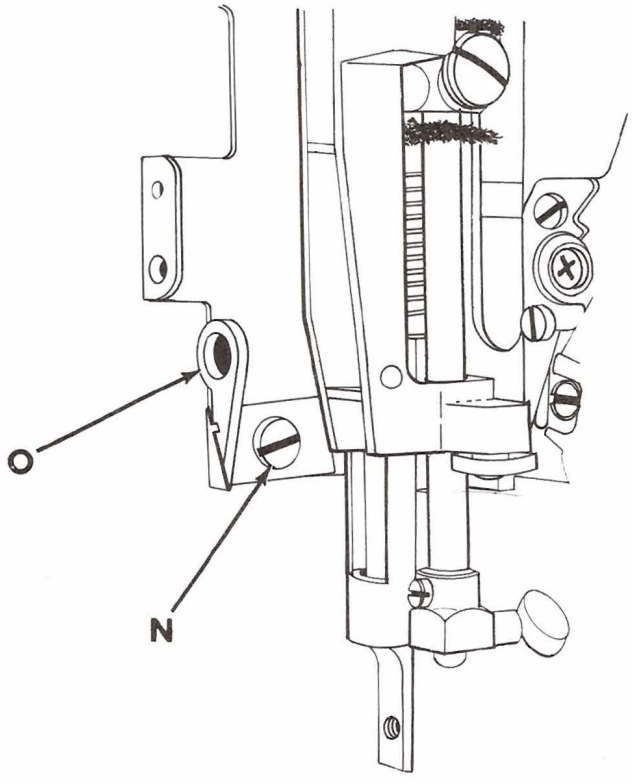
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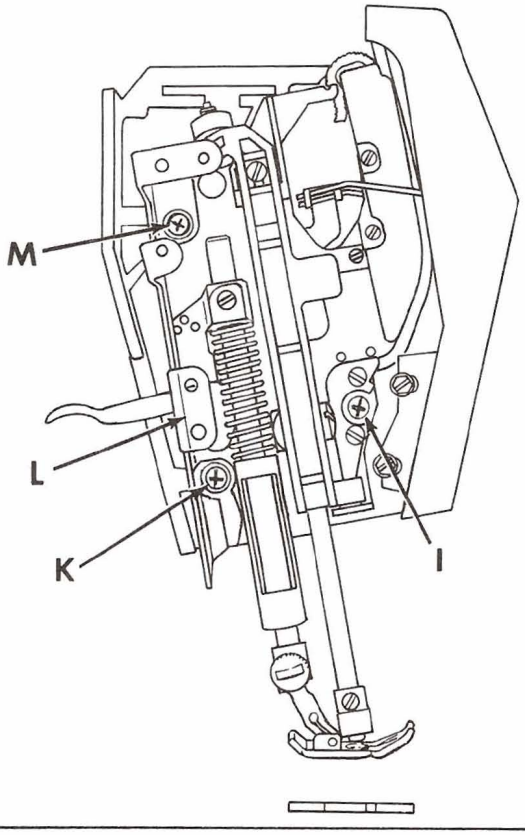
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HEAD END ASSEMBLY

Model 6235

Removal:

1. Remove face plate, arm top cover and light heat shield.
2. Loosen screw (A) until it clears the flat in rod (B).
3. Withdraw rod (B) to the right.
4. Remove cam (D) and collar (C) with screw (A).
5. Remove needle bar driving arm ball joint screw (F) and washer (E).
6. Remove retaining ring (G) and buttonhole tripping lever assembly (H).
7. Remove screw (N) and bracket (O).
8. Remove head end assembly mounting screw (M).
9. Remove head end assembly mounting screw (K) and face plate mounting bracket (L).
10. Remove head end mounting screw (I).
11. Remove head end assembly.

Replacement:

1. Replacement is the same as removal in reverse order.
2. When reassembling rod (B), cam (D) and collar (C), bring rod (B) as far to the left as possible. Locate rod (B) such that the flat on the rod is toward the bottom of the machine. While maintaining the position of rod (B) and with screw (A)located in the forward notch of cam (D) (cam tripped toward the rear of the machine), bring collar (C) to the right with finger pressure.
3. Tighten screw (A) being sure it is located on the flat of rod (B).
4. Adjust:

   4.1 Left-to right needle location.

   4.2 Front-to-back needle location.

5. Check buttonhole kick out tripping lever action and adjust if necessary.

TENSION ASSEMBLY

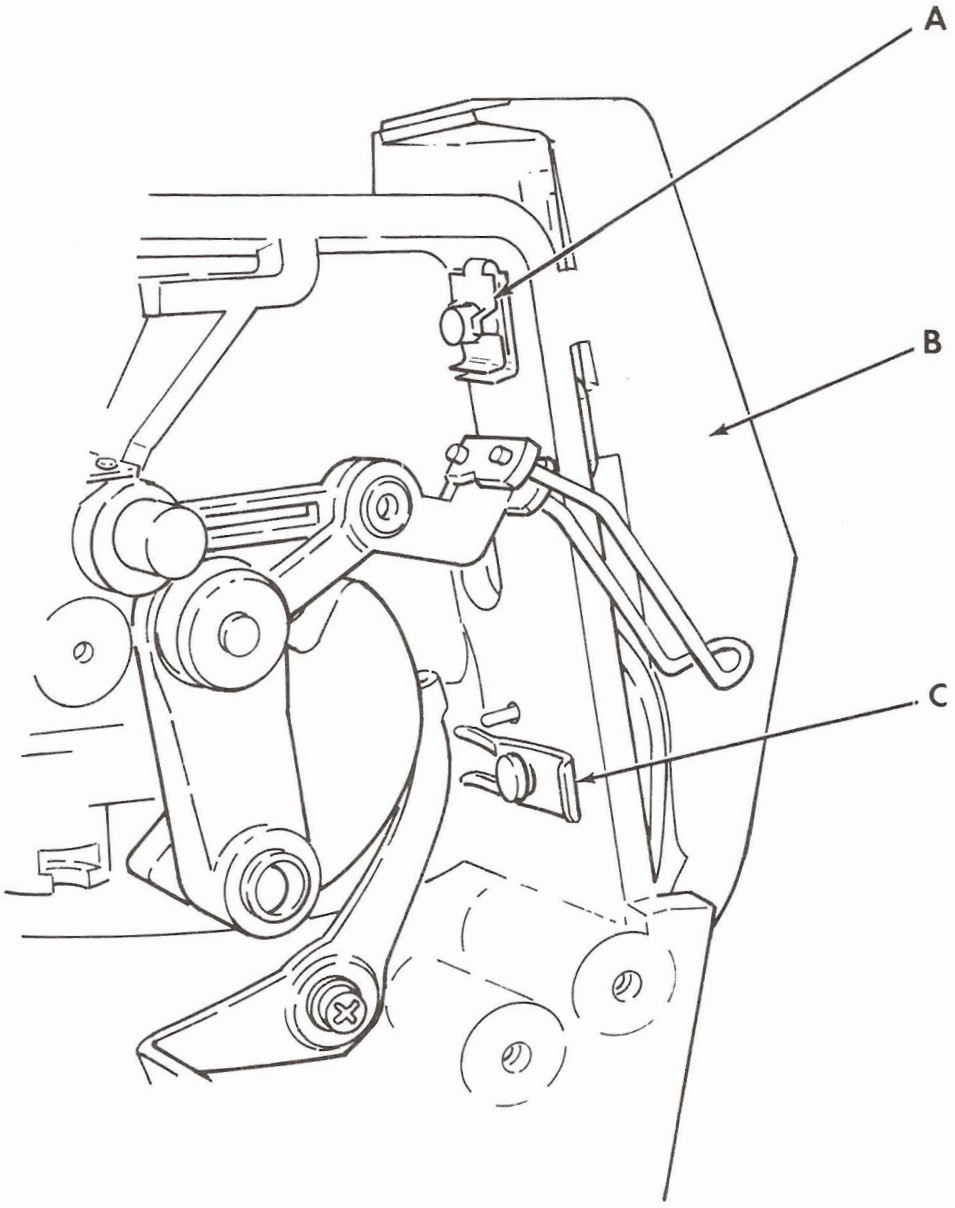
Models 6233, 6234, 6235

Removal:

1. Remove face plate, arm top cover, light shield assembly and head end assembly.
2. Remove retaining clips (A) and (C).
3. Remove tension assembly (B).

Replacement:

1. Replacement is the same as removal in reverse order.
2. Adjust needle location left-to-right and front-to-back.
3. Check hook and feed timing and adjust if necessary.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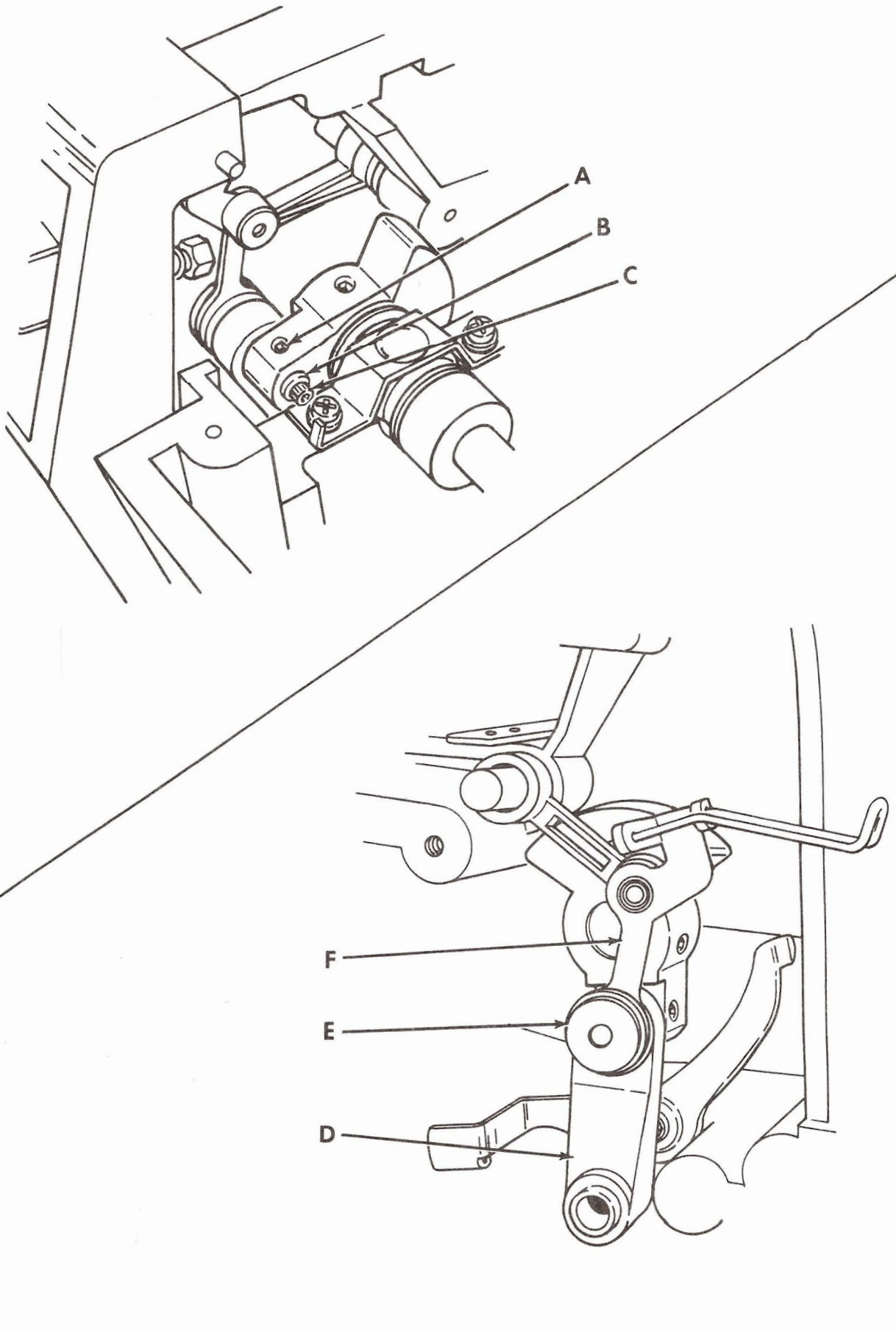
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THREAD TAKE-UP LEVER ASSEMBLY

Models 6233, 6234, 6235

Removal:

1. Remove face plate, arm top cover, light heat shield assembly and head end assembly.
2. Loosen thread take-up stud set screw (A) until it is clear of the recess in thread take-up stud (E).

Models 6234, 6235

3. Remove axial screw (C) and washer (B).
4. Remove take-up lever assembly (F) from the machine.

Replacement:

1. Replacement is the same as removal in reverse order.
2. Locate stud set screw (A) on flat of take-up stud (E).
3. Press in on take-up stud (E) and tighten screw (A).
4. Place one drop of Loctite 222 on the head of screw (A).
5. There must be no end play or binding of connecting link (D).

Models 6234, 6235

6. Tighten axial screw (C) snug tight.
7. Place a drop of Loctite 222 on the head of screw (C).

HAND WHEEL

Model 6233

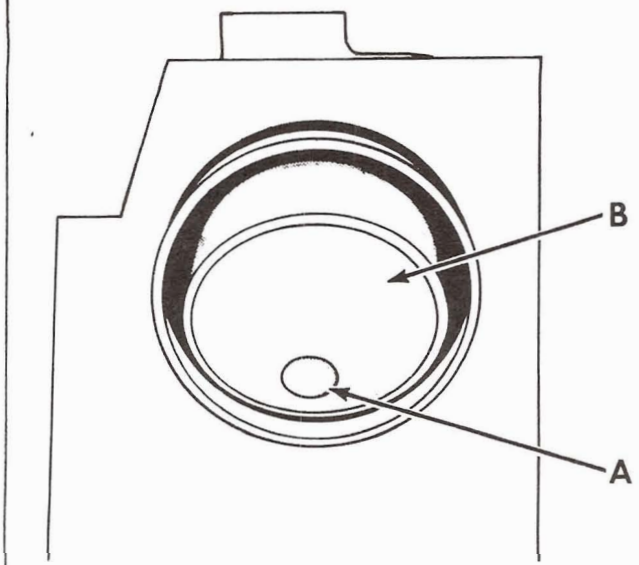
Removal:

1. Remove face plate and arm top cover.
2. Rotate hand wheel to position the depression (A) in the hand wheel insert (B) at the 6 o'clock position.
3. Disengage the hand wheel by pressing in on the depression (A).
4. Rotate the hand wheel to position the hole (C) on the inside of the hand wheel at the 12 o'clock position.
5. Be sure hole (C) is straddling the channel (D) of clutch spring (E).
6. Re-engage the hand wheel by pressing in on the hand wheel insert opposite the depression (A) and rotate the hand wheel.
7. Place a screwdriver (F) in the hole (C) on the inside of the hand wheel and push insert (B) off the hand wheel.
8. Remove retaining ring (G).
9. Remove hand wheel (H) by turning toward the front of the machine and pulling straight out while sliding the motor belt off the cogged portion of the wheel.

Replacement:

Replace hand wheel (H) on arm shaft (J) and push in while threading the motor belt over the cogged portion of the wheel until it is firmly seated.

2. Replace retaining ring (G).
3. Guide the hand wheel clutch spring (I) over the flats on the end of the arm shaft (J) with the top of the insert (K) tipped away from the machine.
4. Press firmly in on the center of the insert (K) until the stud on the end of the armshaft snaps into the hole in the center of the clutch spring.
5. Check for proper function of the hand wheel clutch.
6. Replace motor belt by threading over the cogged portion of the hand wheel while turning the hand wheel toward the front of the machine.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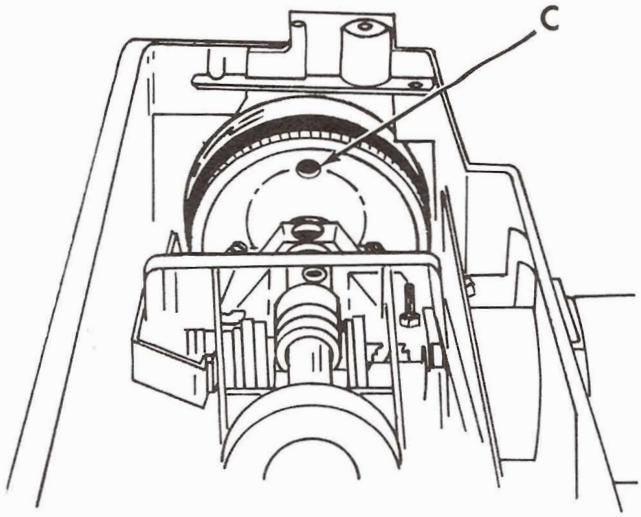
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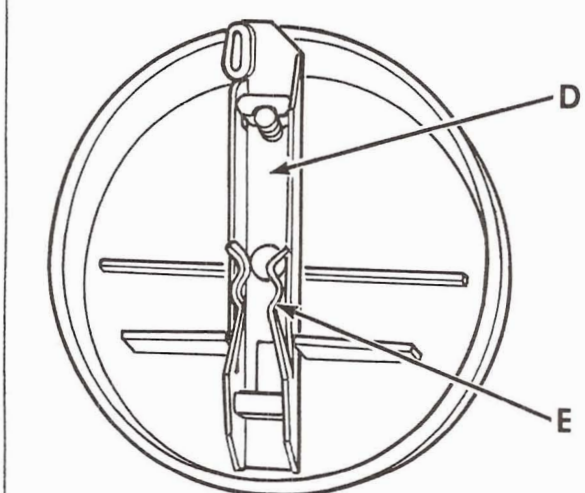
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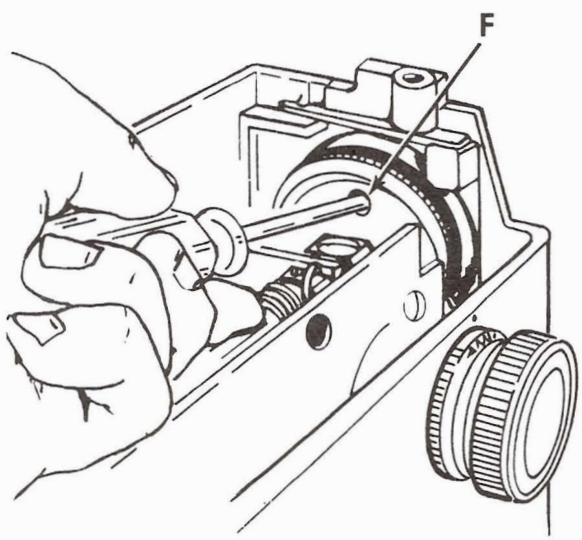
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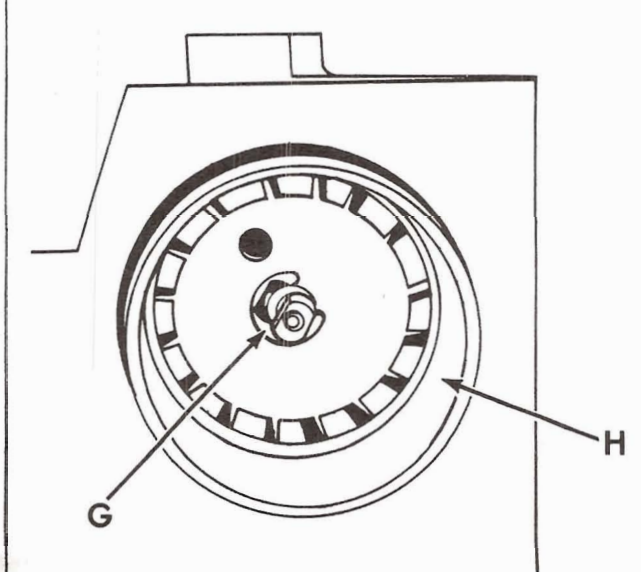
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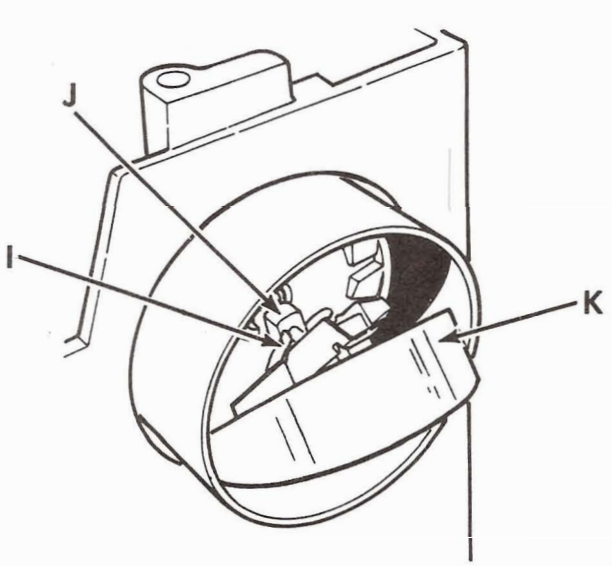
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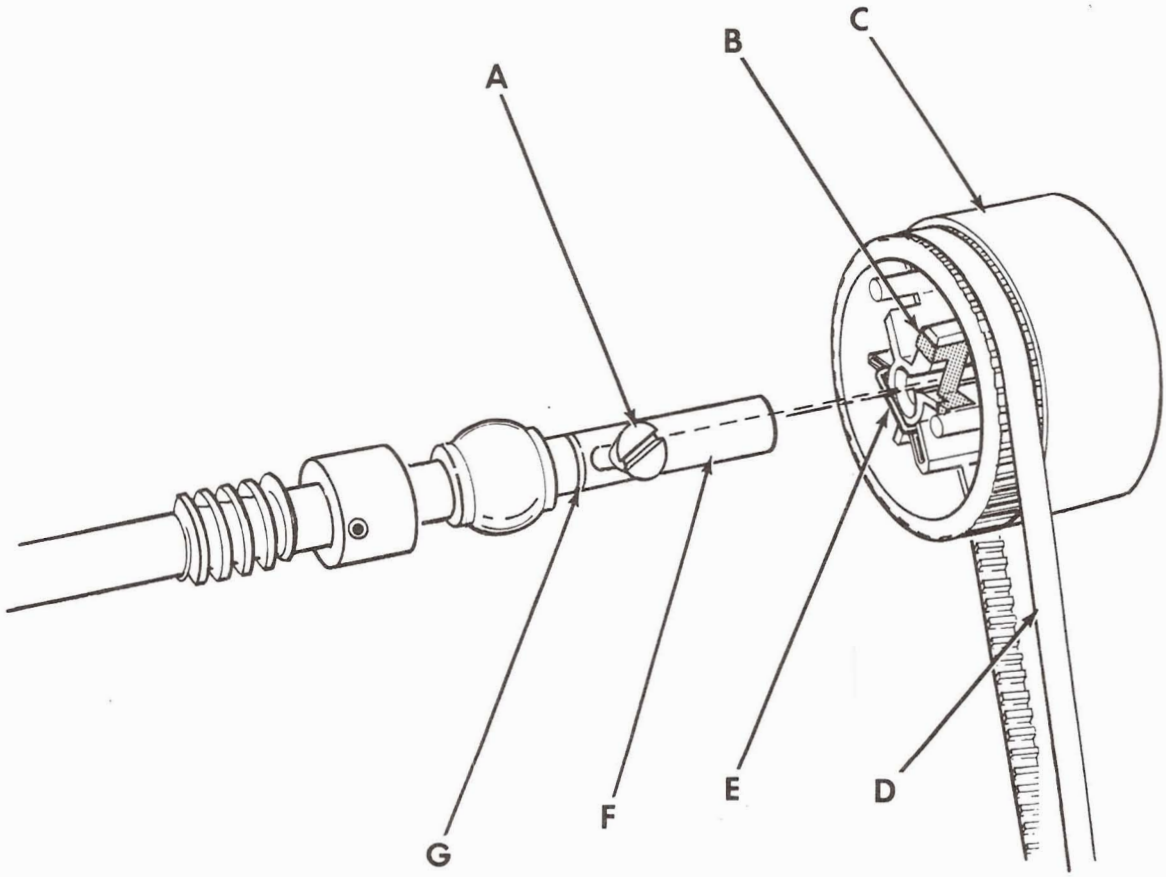
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HAND WHEEL

Model 6234, 6235

Removal:

1. Remove face plate Model 6234 only.
2. Remove arm top cover.
3. Rotate hand wheel until retaining screw (A) is accessible.
4. Loosen screw (A) until it is clear of support clip (B).
5. Push down on retaining clip (E) by means of a screwdriver while pulling out on hand wheel (C) until clip (E) clears groove (G).
6. Continue to pull hand wheel (C) off armshaft (F) while turning toward the front of the machine and sliding motor belt (D) off the cogged portion of the hand wheel.

Replacement:

1. Place hand wheel (C) on the end of arm shaft (F).
2. Align support clip (B) with screw (A).
3. Slide hand wheel (C) on arm shaft (F) until retaining clip (E) engages in slot (G).
4. Tighten screw (A).
5. Rotate hand wheel (C) toward the front of the machine while threading motor belt (D) over the cogged portion of hand wheel (C).

ARM SHAFT

Model 6233, 6234, 6235

Removal:

1. Remove face plate, arm top cover, hand wheel and bottom bed cover.
2. Remove slide positioning spring (H).
3. Loosen thread take-up lever stud set screw (C) sufficiently to clear the recess in the take-up stud.

Models 6234, 6235

4. Remove axial screw (B) with washer.
5. Remove the four bushing clamp screws (A) with washers and two bushing clamps (E).
6. Slide timing belt (G) off the timing belt pulley and hook drive shaft pulley.
7. Position the arm shaft so the arm shaft crank (D) clears the casting and slide arm shaft (F) to the right until the crank is clear of the thread take-up lever stud.
8. Draw arm shaft (F) to the left and out of the machine.

Replacement:

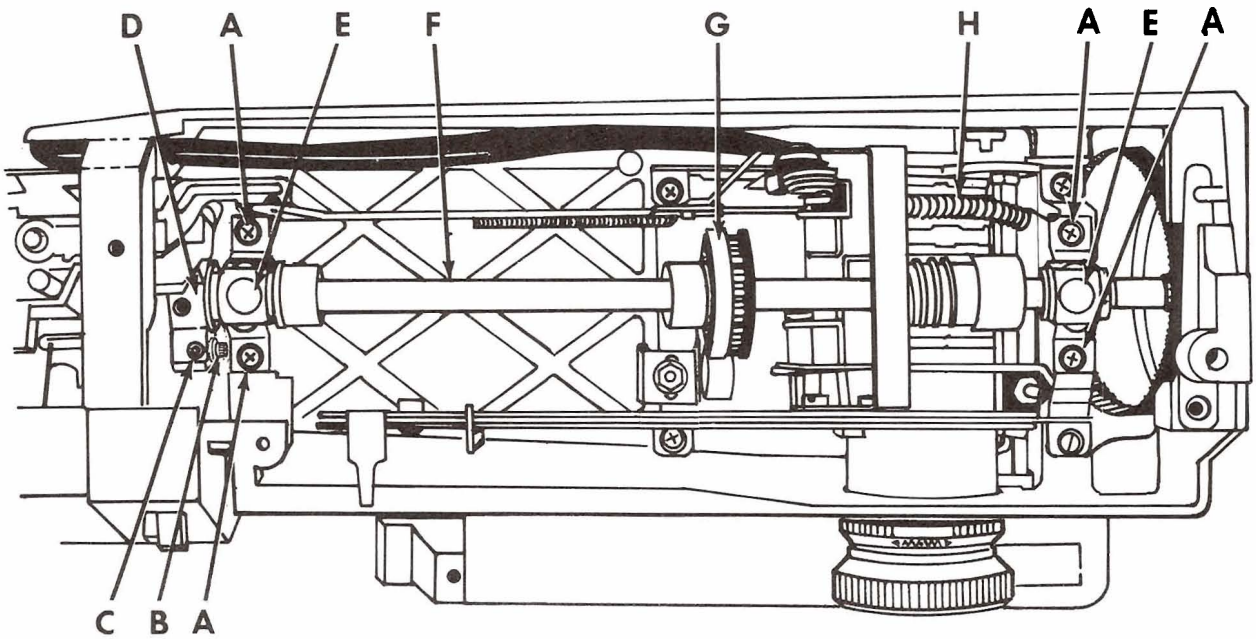
1. Replacement is the same as removal in reverse order. Be sure thread take-up lever set screw (C) is located on the flat of the thread take-up lever stud.
2. Adjust:

   2.1 Thread take-up lever and needle bar connecting link lost motion.

   2.2 Hook timing.

   2.3 Feed timing.

   2.4 Pendulum timing.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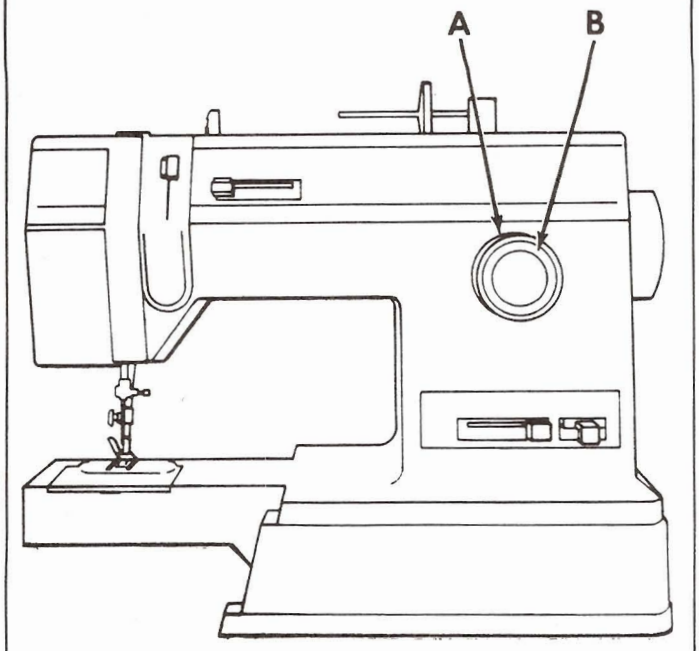
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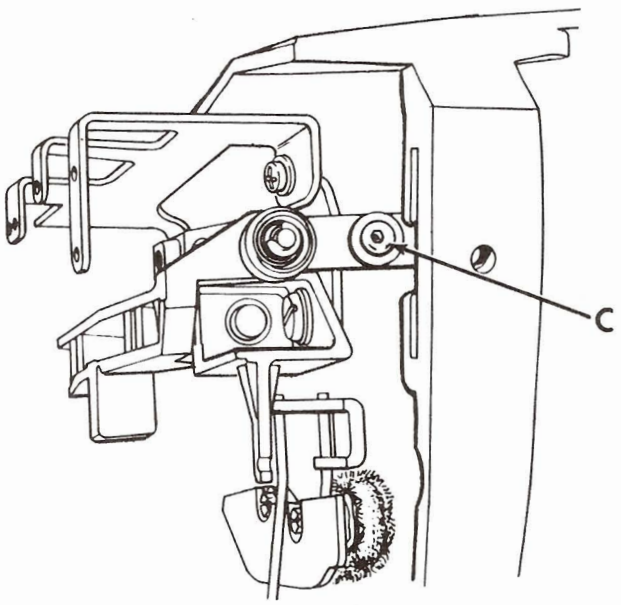
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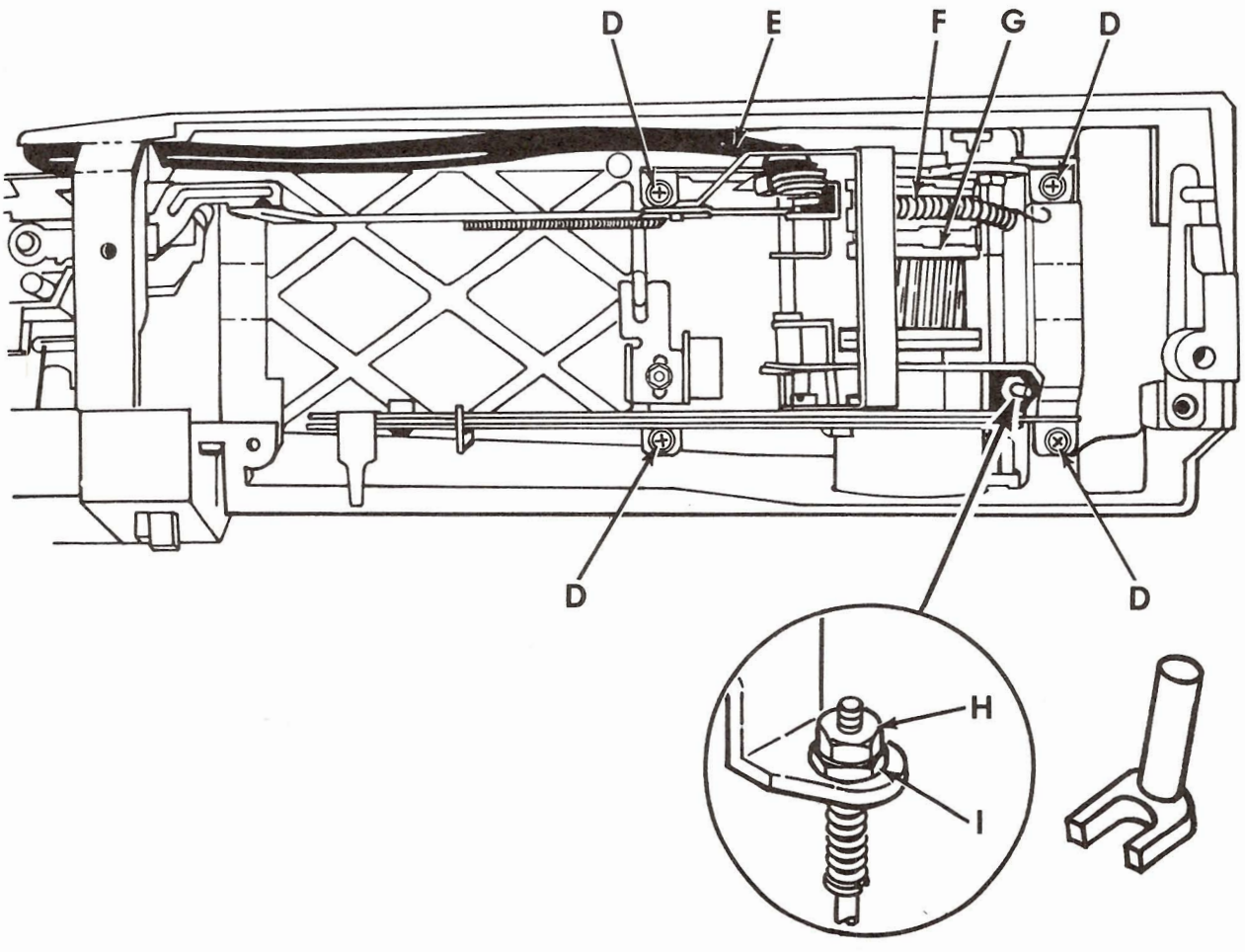
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PATTERN SELECTOR MODULE

Model 6235

Removal:

1. Remove face plate, arm top cover and arm shaft.
2. Remove pattern selector dial (B) and balance control ring (A) by pulling straight out from machine.
3. Remove ball joint screw (C) with washer.
4. Disconnect spring (F).
5. Remove 5.5 mm connecting rod locking nut. (H) and 6 mm connecting rod adjusting nut (I).

   Note: While loosing connecting rod lock nut (H), be sure the 6 mm connecting rod adjusting nut (I) is locked by a special tool.
6. Remove four pattern selector module screws (D) with lockwashers.
7. Slightly lift pattern selector module (G) and push light harness (E) down and under the pattern selector module.
8. Lift pattern selector module (G) up and out of the machine.

Replacement:

1. Replacement is the same as removal in reverse order.
2. After replacement of pattern selector module screws (D), place a drop of Loctite 495 on the edge of the screw being sure it comes in contact with the casting.

NOTE:

Light harness (E) must be located behind the pattern selector module.

When replacing connecting rod adjusting nut (I) be sure the rounded side of the nut is facing down.

Before replacing the balance ring and pattern selector dial, engage the pattern selector dial in the pattern selector module gear and rotate it clockwise as far as it will go. Assemble the pattern selector dial with the number "1" at the top.

3. Adjust:
   - 3.1 Needle location left-to-right and front-to-back.
   - 3.2 Pendulum timing.
   - 3.3 Hook timing.
   - 3.4 Feed timing.
   - 3.5 Flexi feed zero.
   - 3.6 Buttonhole balance.

PATTERN SELECTOR MODULE

Model 6235

Removal:

1. Remove face plate, arm top cover and arm shaft.
2. Remove control panel with graphics.
3. Remove pattern selector dial (B) and balance control ring (A) by pulling straight out from machine.
4. Remove ball joint screw (C) with washer.
5. Disconnect spring (F).
6. Remove 5.5 mm connecting rod locking nut (H) and 6 mm connecting rod adjusting nut (I).
7. Remove spring (J) and disconnect bracket (K) from the pattern selector module.
8. Remove four pattern selector module screws (D) with lockwashers.
9. Slightly lift pattern selector module (G) and push lihgt harness (E) down under the pattern selector module.
10. Lift pattern selector module (G) up and out of the machine.

Replacement:

1. Replacement is the same as removal in reverse order.
2. After replacement of pattern selector module screws (D), place a drop of Loctite 495 on the edge of the screw being sure it comes in contact with the casting.

NOTE:

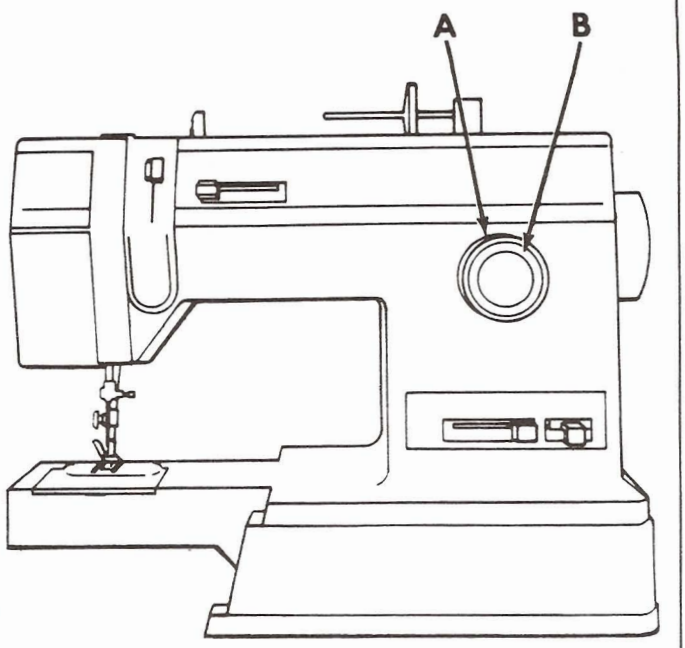
Light harness (E) must be located behind the pattern selector module.

When replacing connecting rod adjusting nut (I) be sure the rounded side of the nut is facing down.

Check the alignment of the pattern indicator dot at the extreme left and right positions. Adjust the location of the pattern indicator if necessary.

3. Adjust:

   3.1 Needle location left-to-right and front-to-back.
   3.2 Pendulum timing.
   3.3 Hook timing.
   3.4 Feed timing.
   3.5 Flexi feed zero.
   3.6 Buttonhole system.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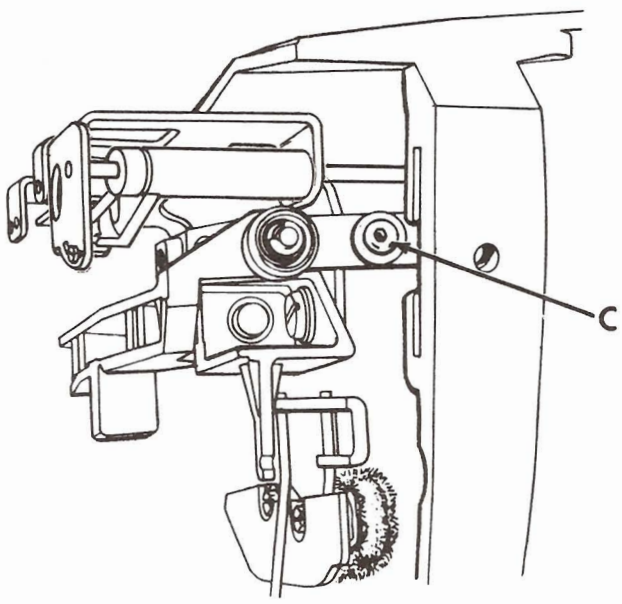
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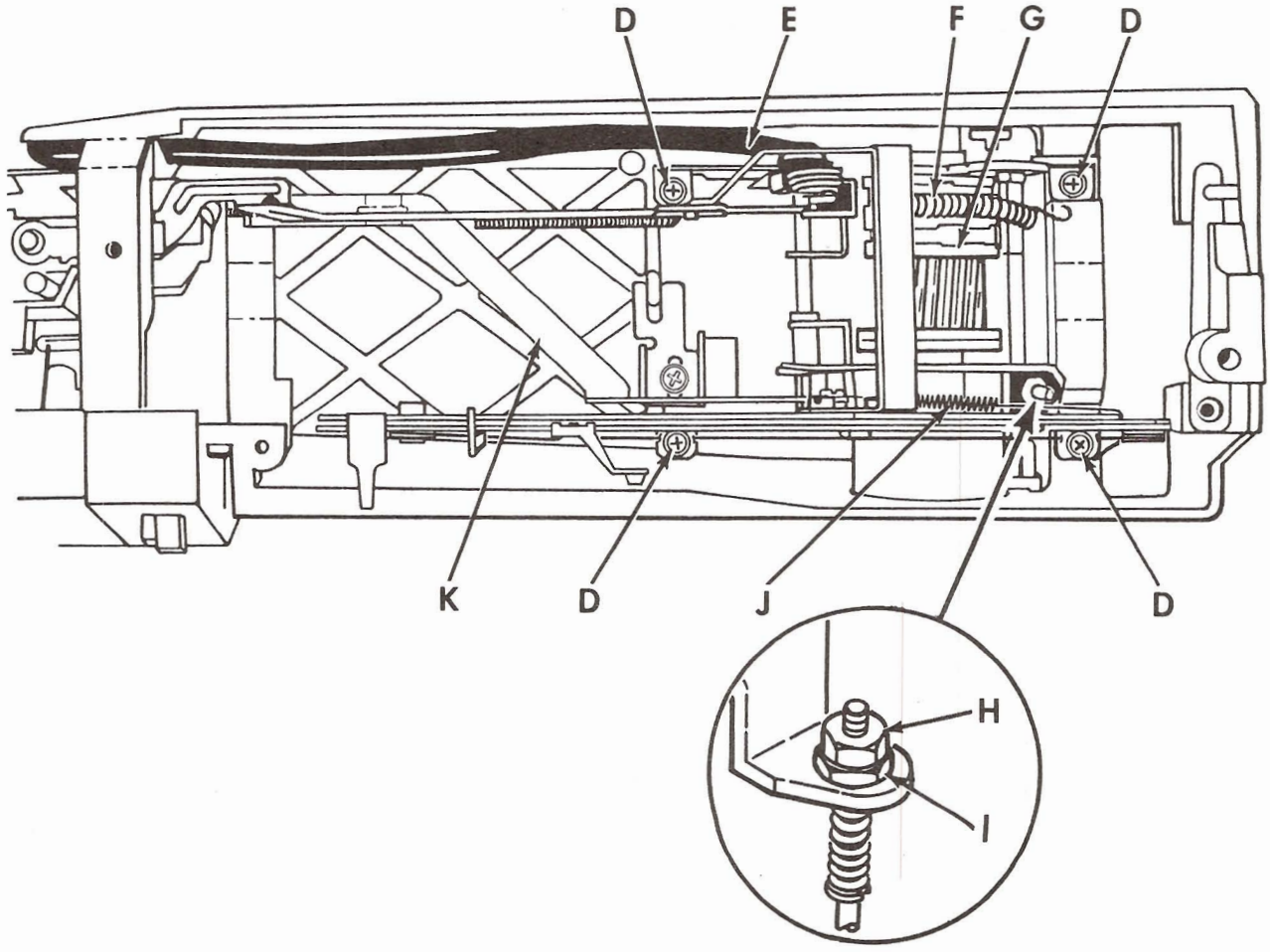
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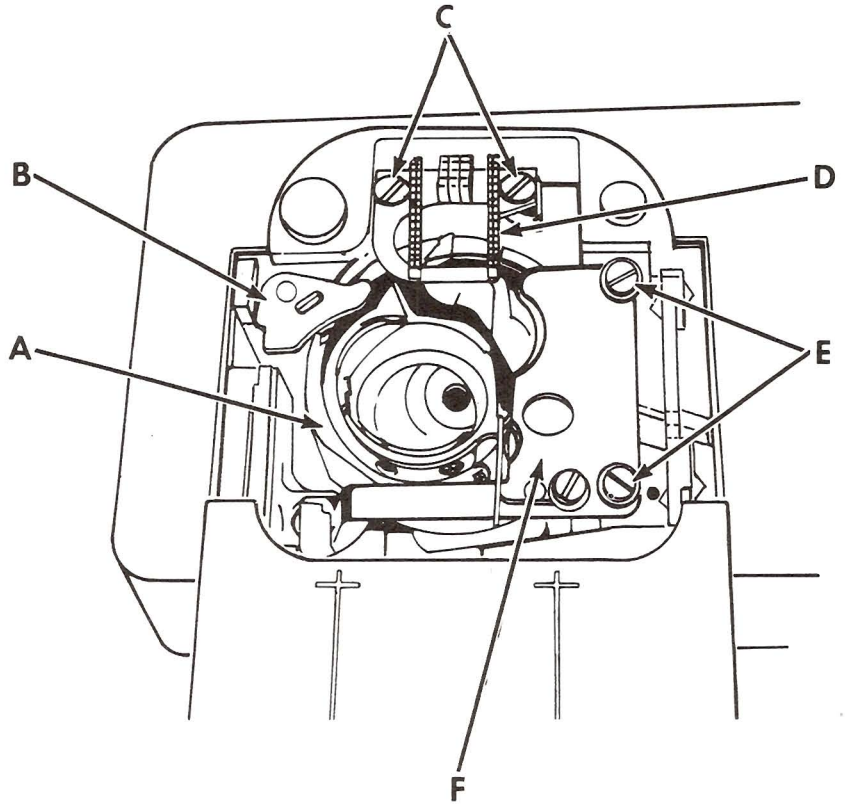
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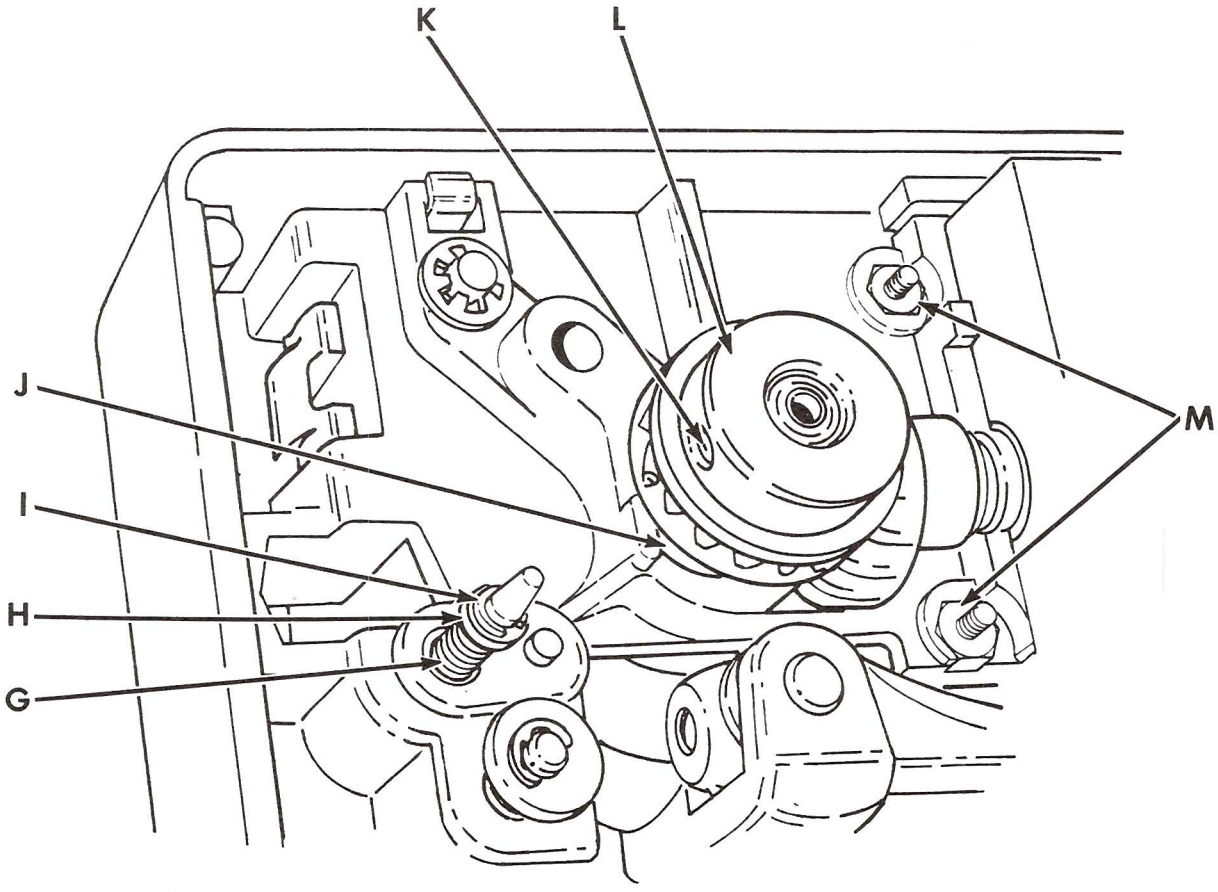
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HOOK

Model 6233

Removal:

1. Remove presser foot, throat plate, bobbin case, slide plate, bottom bed cover and tubular bed cover.

2. Remove:

   2.1 Retaining ring (I), washer (H), spring (G) and retaining plate (B).

   2.2 Hook gear (L) and hook spacer (J).

   2.3 Feed dog screws (C) and feed dog (D).

   2.4 Position plate screws (E) with washers.

   Note: Screws (E) are held by nuts (M) located under the bed.

   2.5 Position plate (F).

3. Remove hook (A).

Note: There is a thrust washer located between the hook and the casting.

Replacement:

1. Replacement is the same as removal in reverse order.

2. When replacing hook gear (L) there must be no binding in the rotation of the hook and a maximum of .025 mm (.001″) end play. Be sure hook gear set screw (K) is located on the flat of the hook shaft.

3. Check hook drive gear mesh and adjust if necessary.

4. Adjust hook timing and feed timing.

5. Check needle to hook relationship and adjust if necessary.

6. Adjust bobbin case thread clearances.

HOOK

Models 6234, 6235

Removal:

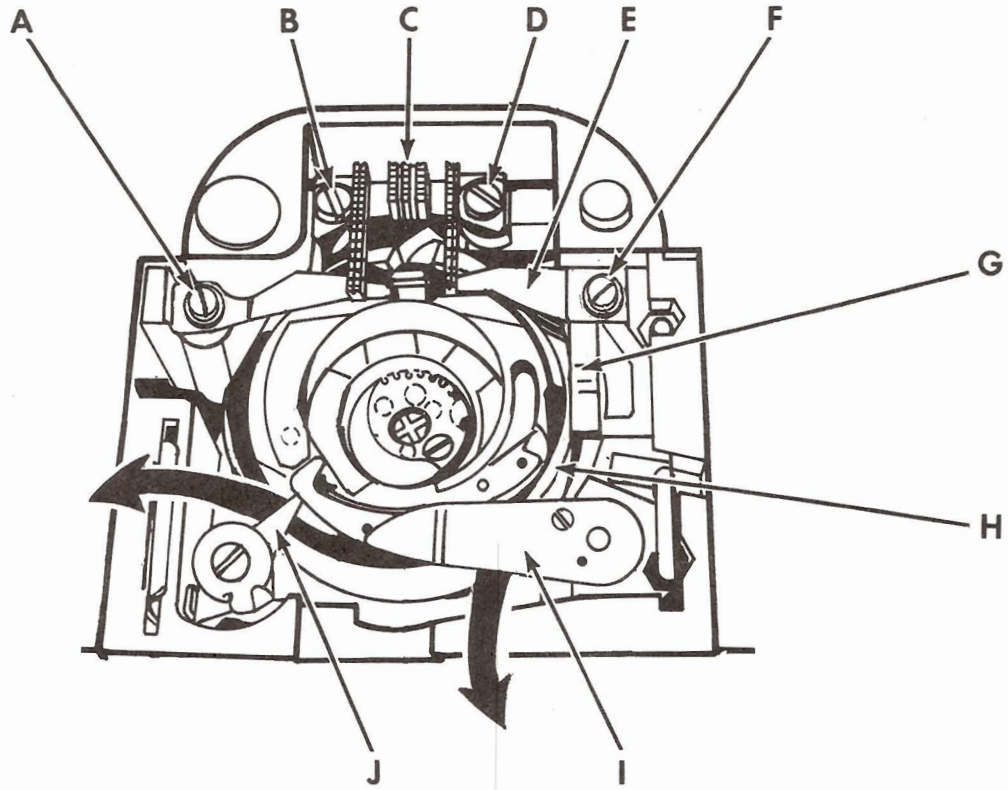
1. Remove presser foot, throat plate, bobbin case, slide plate, bottom bed cover and tubular bed cover.
2. Remove feed dog screws (B) and (D) and feed dog (C).
3. Remove position plate screws (A) and (F), slide plate positioner (G) and position plate (E).

NOTE: Screws (A) and (F) are held by nuts located under the machine bed.

4. Remove hook gear (K) and hook bushing.
5. Lift retaining plate (I) just sufficiently to be able to rotate it clockwise until it is clear of hook (H). Maintain this position.
6. Rotate actuating lever (J) to the left as far as it will go. Maintain this position.
7. Remove hook (H).

Replacement:

1. Replacement is the same as removal in reverse order.
2. Replace hook gear (K) locating the set screw on the flat of the hook shaft.
3. When replacing hook gear (K) there must be no binding in the rotation of the hook and a maximum of .025 mm (.001") end play.
4. Check hook drive gear mesh and adjust if necessary.
5. Adjust hook timing and feed timing.
6. Check needle to hook relationship and adjust if necessary.
7. Check bobbin case thread clearance and adjust if necessary.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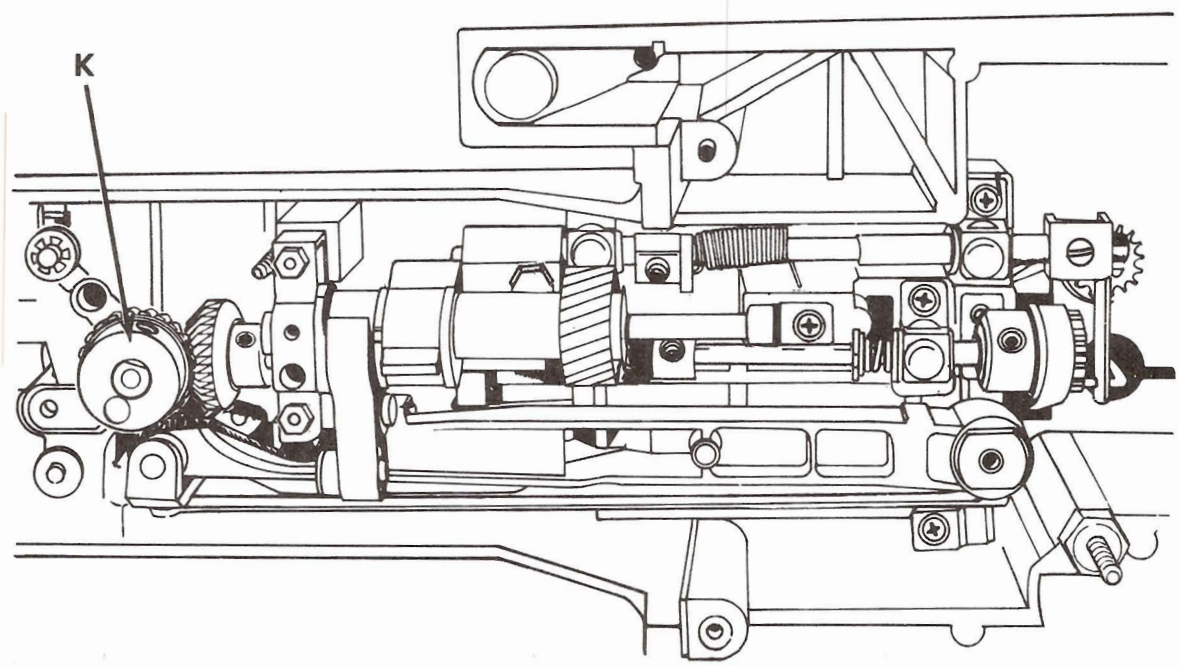
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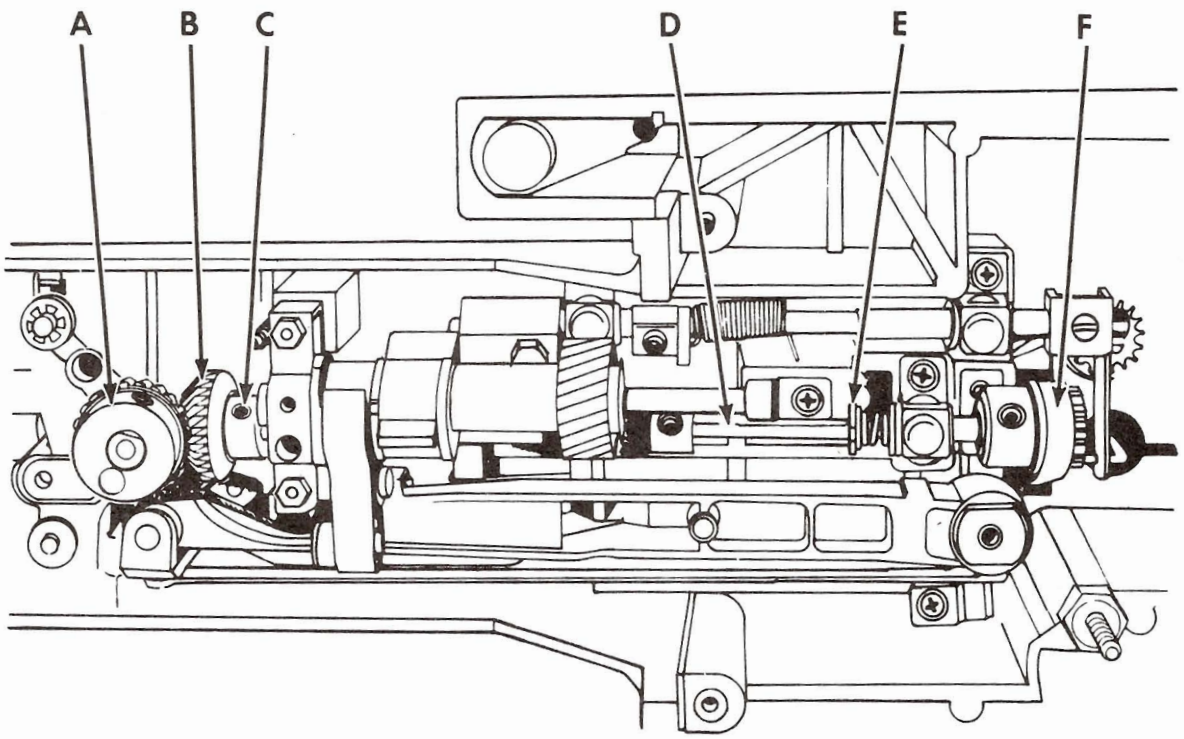
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HOOK DRIVE GEAR

Models 6233, 6234, 6235

Removal:

1. Remove bed cover plate and tubular bed cover.
2. Remove hook gear (A). Be careful not to lose the hook bushing spacer between the hook gear and the casting.
3. Remove retaining ring (E).
4. Slide timing belt (F) off hook drive pulley.
5. Loosen hook drive gear set screw (C).
6. Slide hook drive shaft (D) to the right until it is clear of hook drive gear (B). Be careful not to lose the washer between the gear and the bushing.
7. Remove hook drive gear (B).

Replacement:

1. Replacement is the same as removal in reverse order.
2. Adjust hook end play.
3. Adjust hook drive gear mesh.
4. Adjust hook and feed timing.

HOOK DRIVE SHAFT

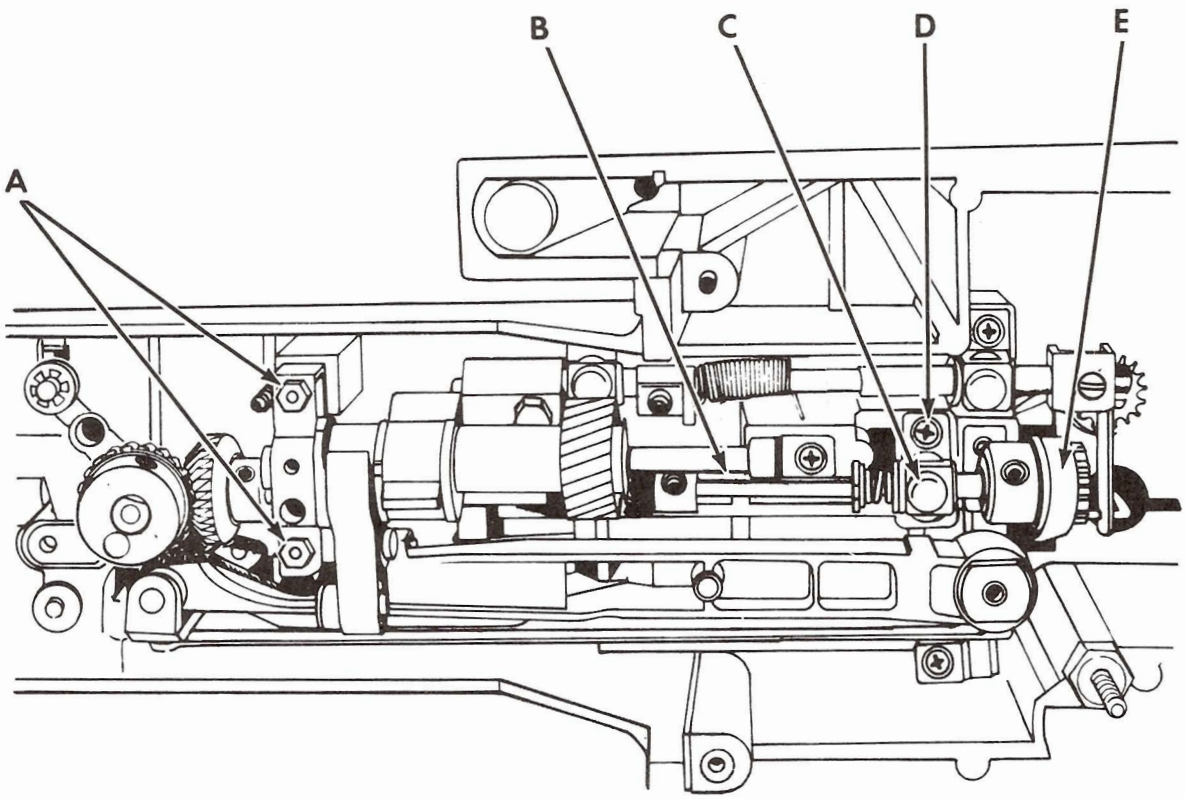
Models 6233, 6234, 6235

Removal:

1. Remove bed cover plate, tubular bed cover and hook drive gear.
2. Loosen the two bearing block mounting nuts (A).
3. Slide timing belt (E) off hook shaft drive pulley.
4. Loosen bushing clamp set screw (D) and swing bushing clamp (C) away from the bushing.
5. Tilt right end of hook drive shaft (B) slightly away from the machine and draw out of the machine to the right. Be careful not to lose the washer between the hook drive gear and the bearing.

Replacement:

1. Replacement is the same as removal in reverse order.
2. Be sure hook drive shaft bearings are fully seated. Alternately tighten bearing block nuts (A) and clamp screw (D). Check that hook drive shaft (B) rotates freely after nuts (A) and screw (D) are fully tightened.
3. Adjust hook drive gear mesh.
4. Adjust hook timing and feed timing.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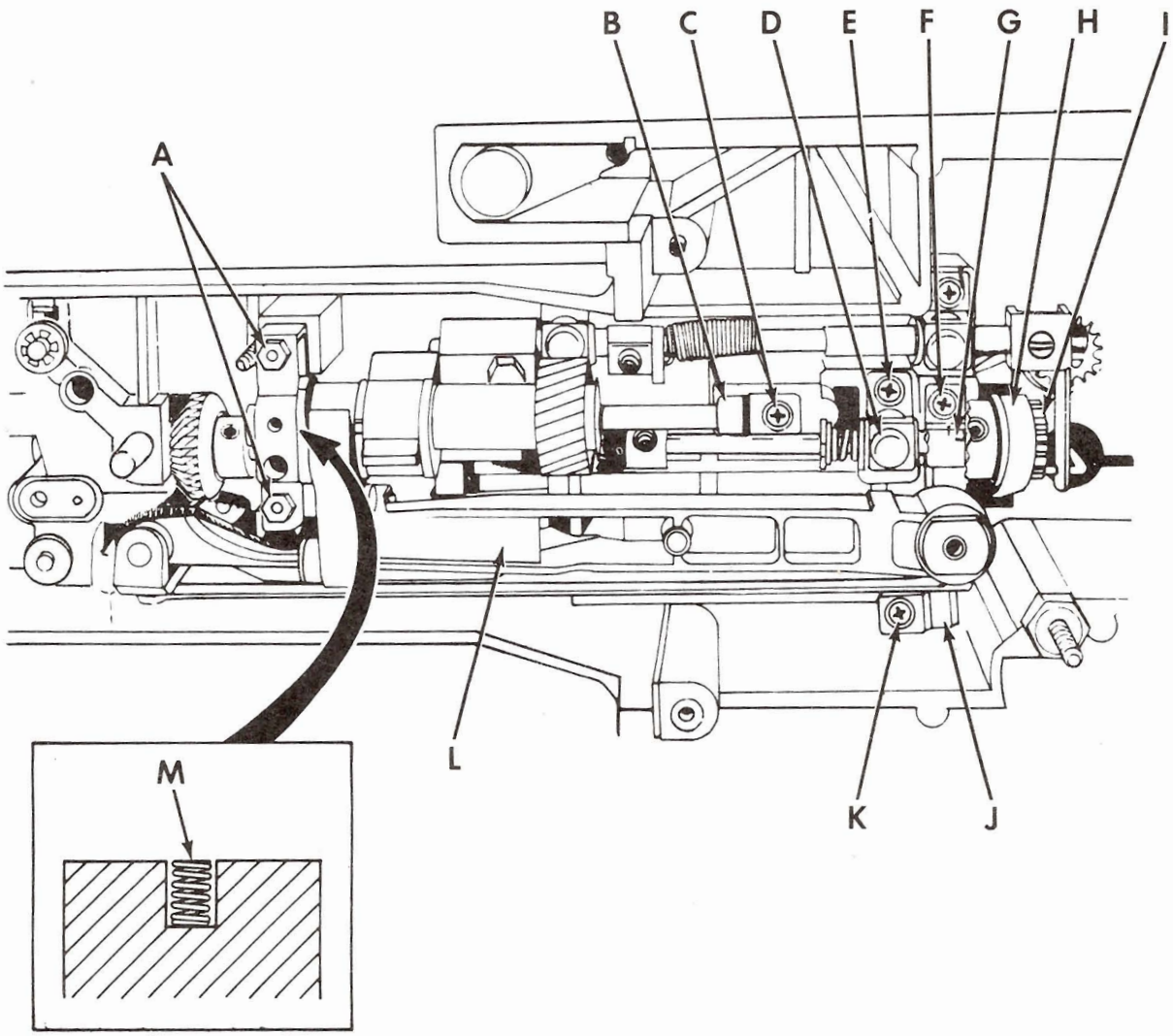
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ALPHA FEED ASSEMBLY

Models 6233, 6234, 6235

Removal:

1. Remove bed cover plate, tubular bed cover, and hook gear.
2. Remove feed dog.
3. Remove nuts (A).
4. Slide timing belt (H) off belt pulley (I).
5. Set stitch length lever at "0" stitch length.
6. Remove feed bar pivot clamp screws (F) and (K) and clamps (G) and (J).
7. Loosen hook drive shaft clamp screw (E) and rotate clamp (D) clear of the hook drive shaft bushing.
8. Loosen feed drive shaft clamp screw (C) and rotate clamp (B) clear of feed drive shaft.
9. Lift Alpha feed assembly (L) up and out of the machine.

NOTE: Be careful not to lose spring (M) located in the center hole of the zinc block.

Replacement:

1. Replacement is the same as removal in reverse order.
2. Be sure feed bar pivot pins are fully seated in bearing blocks.
3. Adjust hook drive gear mesh.
4. Adjust hook and feed timing.
5. Check feed dog centralization and height and adjust if necessary.

FEED REGULATOR SHAFT ASSEMBLY

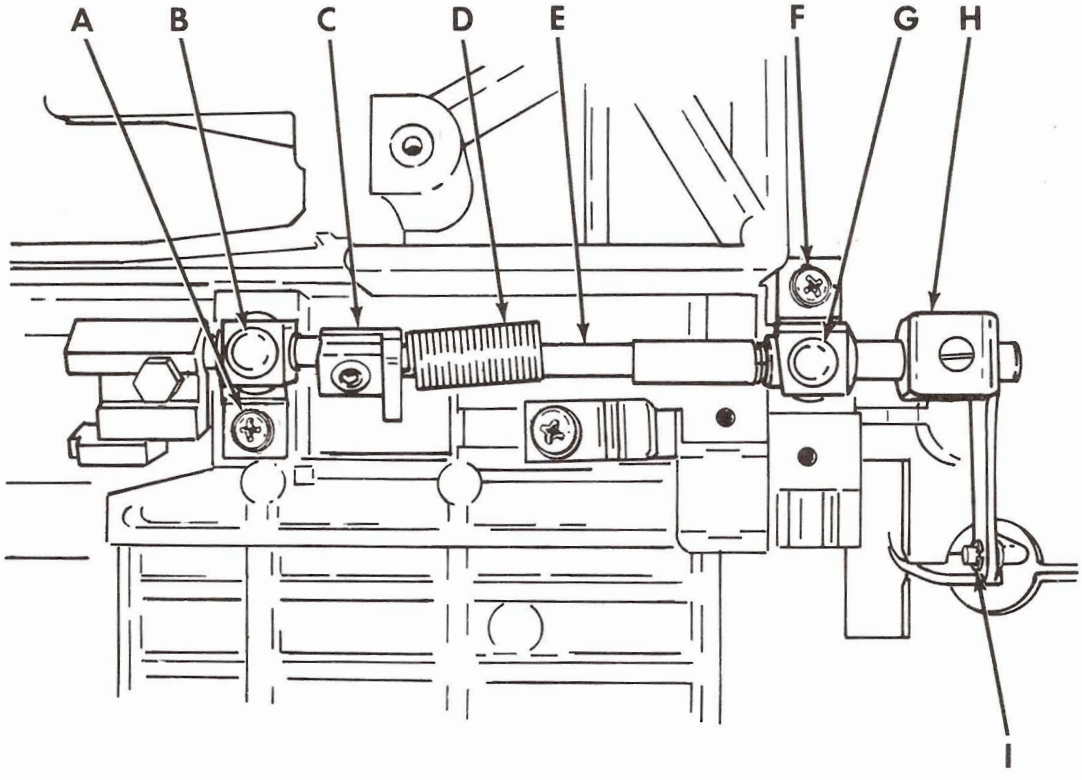
Models 6233, 6234, 6235

Removal:

1. Remove bed cover plate, tubular bed cover, hook drive shaft and Alpha feed assembly.
2. Remove retaining ring (I).
3. Loosen feed regulator shaft clamp set screws (A) and (F).
4. Rotate feed regulator shaft clamps (B) and (G) to clear the feed regulator shaft bearings.
5. Slightly raise feed regulator shaft assembly (E) and draw it to the left out of stitch length control crank (H) and out of the machine.

Replacement:

1. Replacement is the same as removal in reverse order.
2. When replacing the assembly, locate the short tail of tension spring (D) in the center hole of adjusting collar (C) and tighten spring (D) approximately 3/4 of a turn.
3. Be sure feed regulator shaft bushings are fully seated in the bearing blocks.
4. Adjust hook drive gear mesh.
5. Adjust hook and feed timing.
6. Check feed dog centralization and adjust if necessary.
7. Adjust zero feed.


A
B
C
D
E
F
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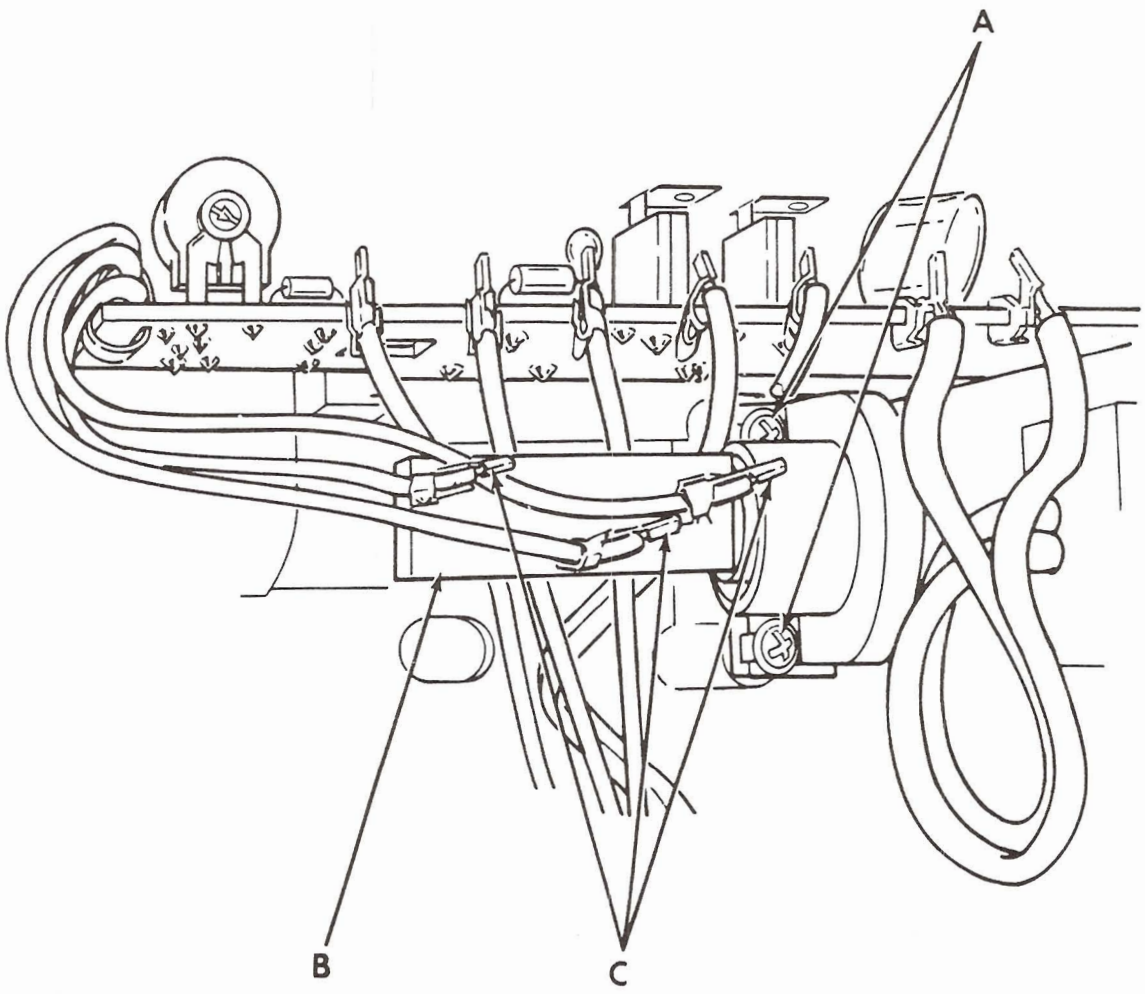

A
B
C

TRANSDUCER

Models 6233, 6234, 6235

Removal:

1. Remove bed cover plate.
2. Remove motor control board lead wire terminals (C) from transducer (B).
3. Remove transducer mounting screws (A).
4. Remove transducer (B) from the machine.

Replacement:

1. Replacement is the same as removal in reverse order.

When replacing the leads (C) follow the color code indications on the transducer. Bl-blue, W-white, BK-black.

MOTOR CONTROL BOARD

Models 6233, 6234, 6235

Removal:

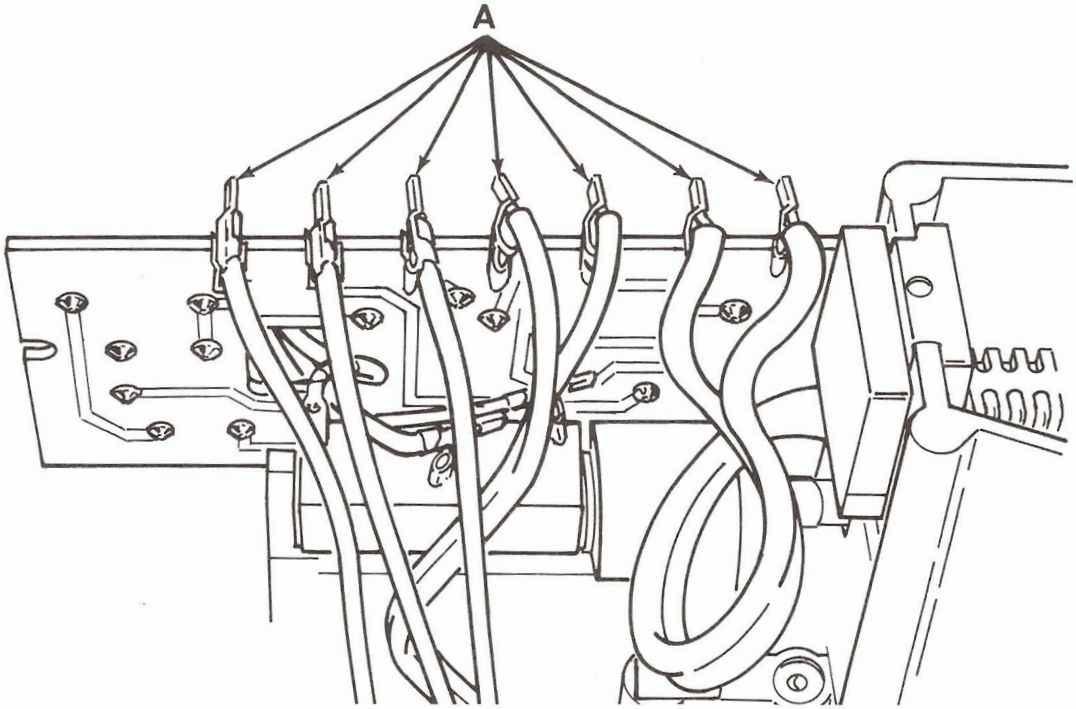
1. Remove bed cover plate.
2. Remove motor, light and power lead wire terminals (A) from the motor control board.
3. Remove motor control board lead wire terminals (F) from the transducer.
4. Loosen mounting screws (B) and (E).
5. Rotate washer (C) so the flat edge faces the motor control board.
6. Remove motor control board (D) from the machine.

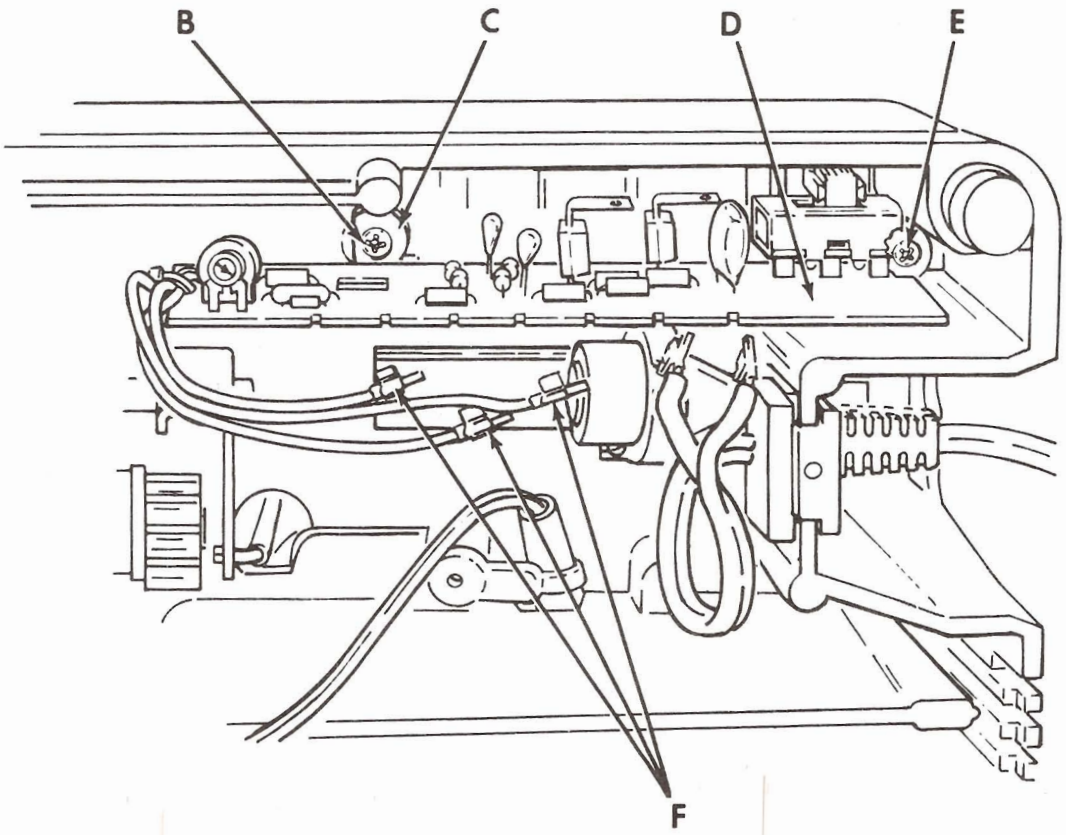
Replacement:

1. Replacement is the same as removal in reverse order.

Washer (C) must be rotated so the round edge of the washer is located in the hole in the motor control board before tightening the mounting screw.

When replacing the leads on the motor control board and the transducer, follow the color code indications on the board and the transducer. Motor control board: YW-yellow, BU-blue, BK-black, L-light, P-power. Transducer: BL-blue, W-white, BK-black.


A


B
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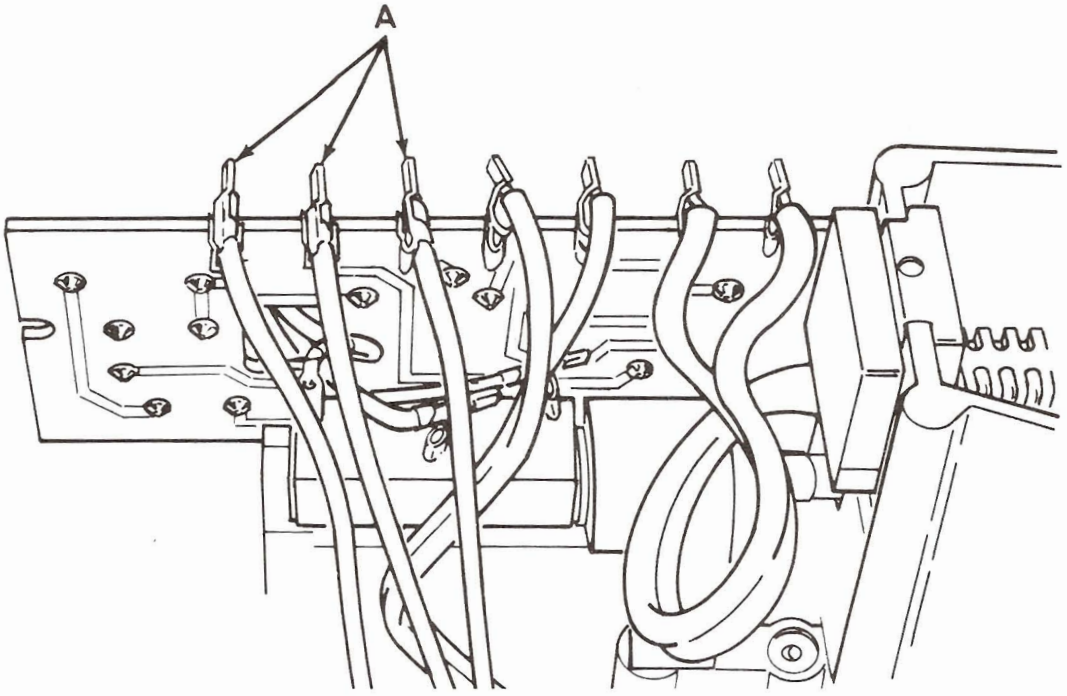
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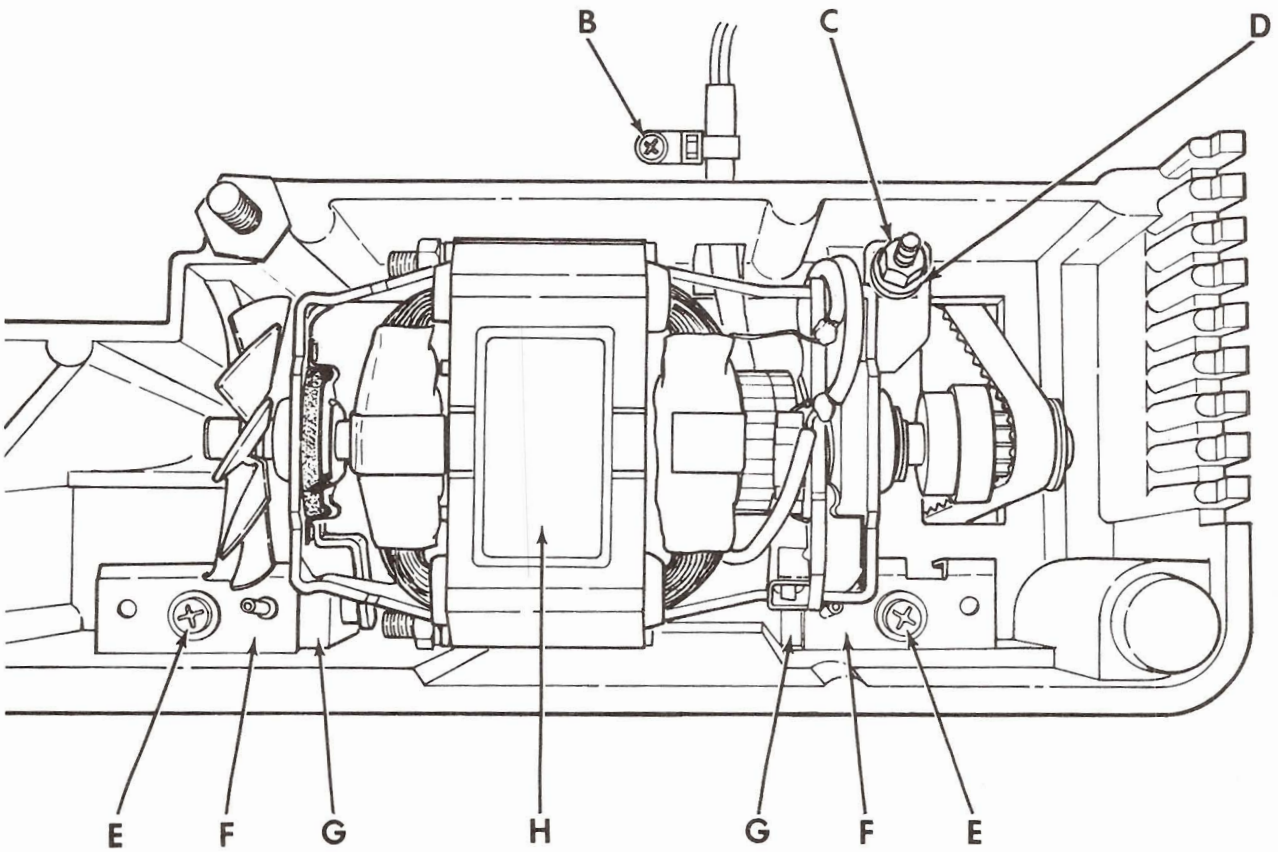
B
C
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E

MOTOR

Models 6233, 6234, 6235

Removal:

1. Remove bed cover plate.
2. Remove motor lead wire terminals (A) from the motor control board.
3. Remove nut (C) and washer (D).
4. Remove the two motor mounting bracket screws (E).
5. Remove screw (B) holding the light harness tie wrap.
6. Remove motor (H) with mounting brackets (F) and resilient mounts (G). Be careful not to lose the washer and spring under the motor mounting bracket.
7. Remove mounting brackets (F) and resilient mounts (G) from the motor.

Replacement:

1. Replacement is the same as removal in reverse order.

Be sure the motor lead wires are located under the light harness.

When replacing the leads on the motor control board, follow the color code indications on the board to attach the appropriate lead on the correct terminal. YW-yellow, BU-blue, BK-black.

2. Adjust motor belt tension.