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TECHNICAL MANUAL

OPERATION AND MAINTENANCE INSTRUCTIONS WITH PARTS LIST

VOLUME 2

TELETYPEWRITER SET AUTOMATIC SEND-RECEIVE

MODEL 28

Manufactured by
Teletype Corporation

Manual Prepared by
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LIST OF TABLES

CHAPTEP 6
CORRECTIVE MAINTENANCE

6-1. INTRODUCTION. This chapter provides information regarding adjustments and repair of Automatic Send-Receive (ASR) Model 28 Teletypewriter Sets. The Chapter is divided into five sections as follows:

a. Section I - provides adjustment procedures for basic units.

b. Section II - provides additional adjustment procedures required for variable features of basic units.

c. Section III - provides adjustment procedures for basic units (earlier designs) that differ from those in Section I.

d. Section IV - provides additional adjustment procedures required for variable features of basic units (earlier designs) that differ from those in Section II.

e. Section V - provides repair information in the form of disassembly and reassembly procedures.

6-2. GENERAL. Adjustment procedures provided in this chapter are those required to be performed as a result of an abnormal indication in a periodic mechanical check (Chapter 4), to correct a fault discovered during troubleshooting (Chapter 5), or to be performed after reassembly (Section II of this chapter).

SECTION I. ADJUSTMENTS, BASIC UNITS

6-3. TYPING UNIT ADJUSTMENTS. The following paragraphs describe typing unit adjustment procedures for high-level (6-3.1) and low-level (6-3.2) operation. When making a complete adjustment of the typing unit, the following conditioning operation should be performed to prevent damage:

a. Loosen clamp screw on code bar shift lever drive arm.

b. Move right and left vertical positioning lever eccentric studs in rocker shaft brackets to their lowest position.

c. Loosen two bearing stud mounting screws and two connecting strip clamp screws in horizontal positioning drive linkage.

d. Loosen clamp screws and move reversing slide brackets to their uppermost position.

e. Loosen function reset bail blade mounting screws.

f. For units equipped with two-stop function clutches, loosen shoulder bushings on each function stripper blade arm, and move stripper blade and arms to their lowest positions.

g. Loosen carriage return lever clamp screw.

h. Loosen clamp screws in the oscillating rail slide.

i. Loosen reversing slide adjusting stud.

j. Loosen clamp nuts on shift code bar guideplates.

6-3.1 TYPING UNIT ADJUSTMENTS (HIGH-LEVEL). Perform the following typing unit high-level adjustments.

a. Selector Mechanism Adjustment. Perform the following selector mechanism adjustments.

(1) Selector Armature. Adjust as follows:

NOTE

The following selector armature adjustment may be omitted if paragraphs on Selector Magnet Bracket, 6-3.1a(5) and Receiving Margin, 6-3.1a(17) adjustments have been completed.

(a) Refer to Figure 6-1.

(b) Measure clearance between armature clamp strip and magnet bracket casting. Clearance should be 0.010 inch minimum.

(c) Outer edge of armature should be flush with outer edge of pole pieces within 0.015 inch.

(d) Start lever should drop freely into armature extension slot.

(e) If any of the requirements of (b), (c), and (d) are not met, loosen mounting screws and position armature spring adjusting nut to hold armature firmly against pivot edge of casting.

(f) Tighten mounting screws.

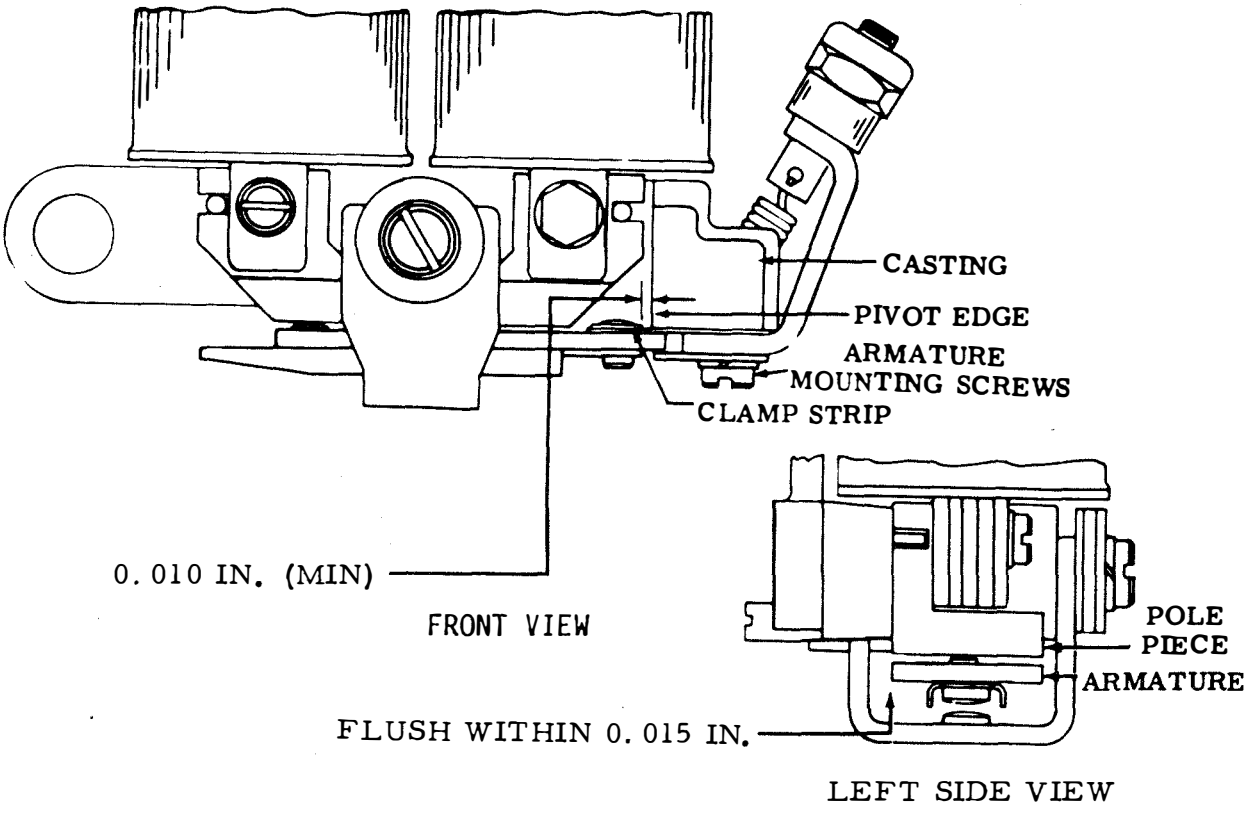


Figure 6-1. Selector Armature

(2) Selector Armature Downstop (Preliminary). Adjust as follows:

(a) Refer to Figure 6-2.

(b) De-energize magnet.

(c) Position locklevers on high part of their cams.

(d) Position armature so it rests against its downstop.

(e) Measure clearance between end of armature and left edge of left pole piece. Clearance should be between 0.030 and 0.035 inch maximum.

(f) If clearance exceeds specified limits, loosen mounting screw and position downstop to obtain specified clearance.

(g) Tighten mounting screw.

(3) Selector Armature Spring (Single-Button). Adjust as follows:

(a) Refer to Figure 6-3.

CAUTION

Before proceeding with the adjustment of the selector armature spring, the type of armature (one antifreeze button or two antifreeze buttons) must be known. Excessive tension on or mishandling of a two-button armature can damage the thin leaf attached to the pivot end.

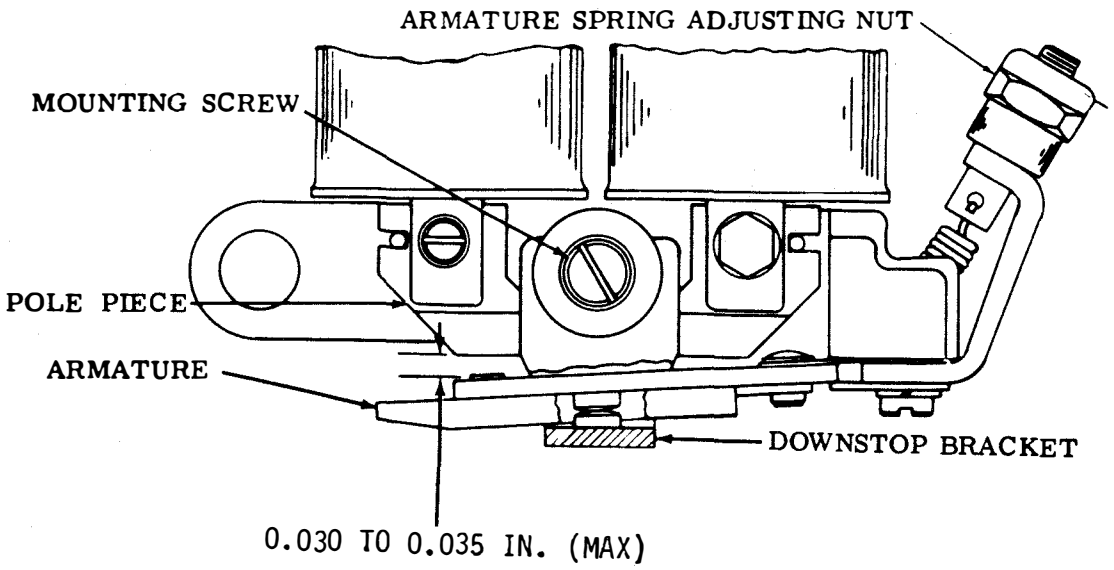


Figure 6-2. Selector Armature Downstop (Preliminary), Right Side View

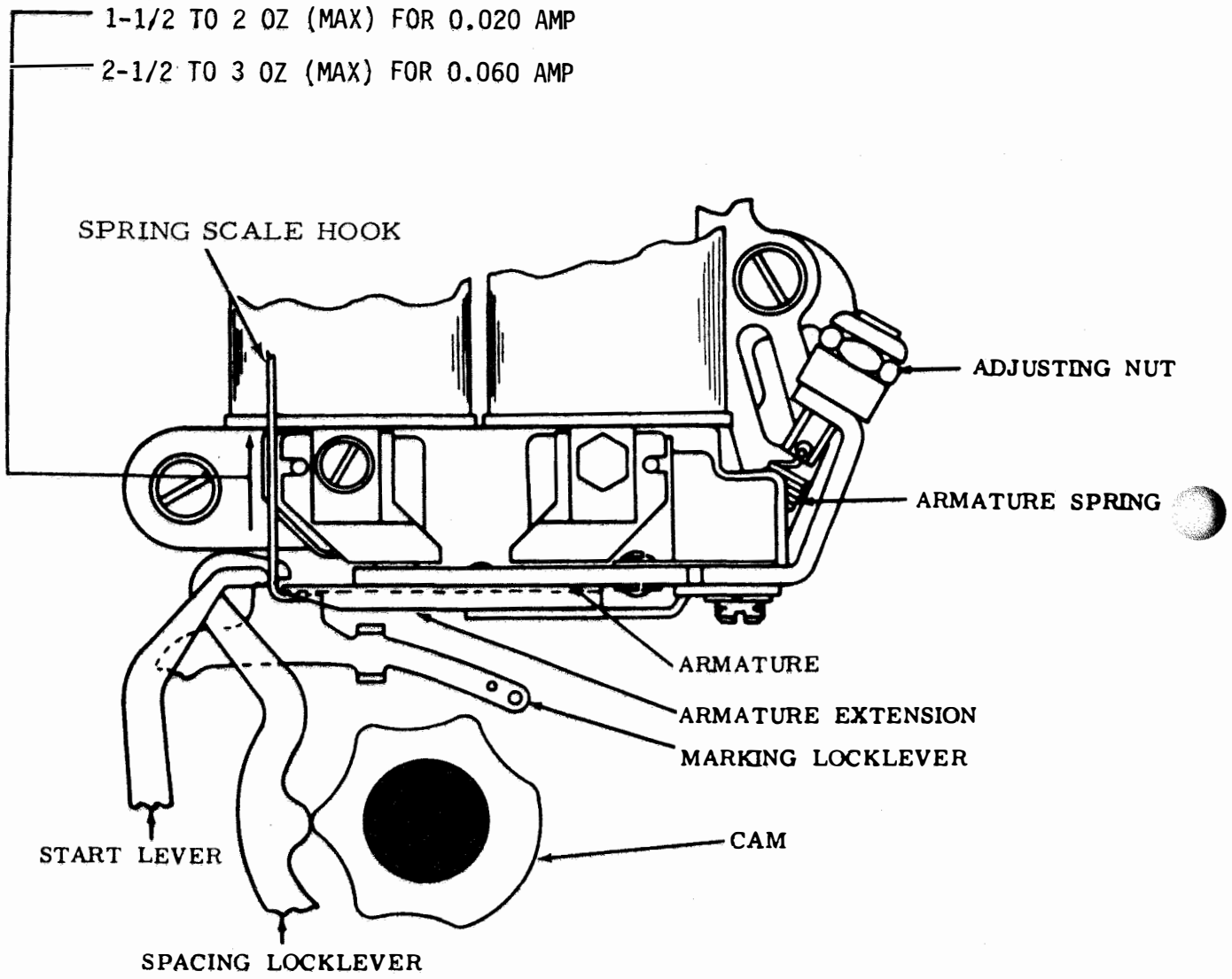


Figure 6-3. Selector Armature Spring (Single-Button), Right Side View

(b) If removal for examination is necessary, disassemble as follows:

1. Disconnect armature spring.

2. Remove armature mounting screws.

3. Withdraw armature from selector.

(c) Reassemble and recheck the following adjustments:

1. Selector Armature, paragraph 6-3.1a(1).

2. Selector Armature Downstop paragraph 6-3.1a(6).

3. Selector Magnet Bracket, paragraph 6-3.1a(5).

(d) Position start lever, marking locklever, and spacing locklever on high part of their cams.

(e) Attach spring scale hook to armature by hooking it under end of armature extension.

(f) Holding spring scale as nearly vertical as possible, measure force required to pull armature to marking position.

(g) Force required to pull armature to marking position should be between 1-1/2 and 2 ounces maximum for 0.020-ampere series-connected selector magnets or between 2-1/2 and 3 ounces maximum for 0.060-ampere parallel-connected selector magnets.

(h) If required force is not as specified in step (g), adjust armature spring tension by positioning adjusting nut.

NOTE

Spring tensions shown in this paragraph permit operation of printer prior to measurement of receiving margins. Refine spring tensions for maximum selector performance with unit connected to specific circuit in which it is to function (operating at desired speed and line current). See paragraph 6-3.1a(17).

(4) Selector Armature Spring (Double-Button). Adjust as follows:

(a) Refer to Figure 6-4.

(b) Position start lever, marking locklever, and spacing locklever on high part of their cams.

(c) Attach spring scale hook to armature by hooking it under end of armature extension.

(d) Holding spring scale as nearly vertical as possible, measure force required to pull rear button of armature against its pole piece.

(e) Force required to pull rear button against its pole piece should be 14 grams for 0.020-ampere series-connected selector magnets or 21 grams for 0.060-ampere parallel-connected selector magnets.

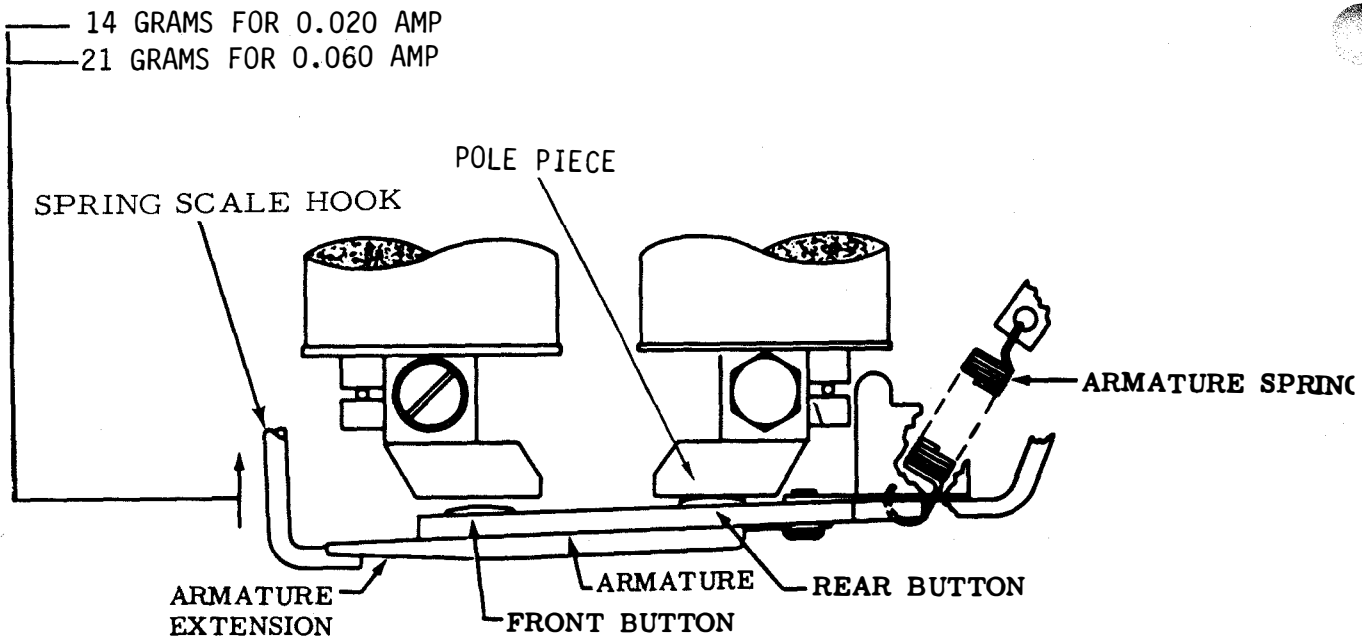


Figure 6-4. Selector Armature Spring (Double-Button), Right Side View

(f) If required force is not as specified in step (e), adjust armature spring tension by positioning adjusting nut.

NOTE

This spring tension can be adjusted for maximum selector performance only when the printer is connected to the specific circuit over which it is to operate under service conditions. Since there are several operating speeds and since circuits vary widely, it is impossible to adjust the spring for maximum performance at the factory. The foregoing spring tension requirement is given to permit operation prior to measurement of receiving margins. Readjustment made to obtain satisfactory receiving margin should not be disturbed in order to meet the requirements of this adjustment. The final spring tension should be held as close as possible to the values given above consistent with good receiving margins. With selector magnets energized, front antifreeze button must be in contact with its magnet core.

(g) If a distortion test set is available, refine selector armature spring adjustment to meet Selector Receiving Margin as described in paragraph 6-3.1a(17).

(5) Selector Magnet Bracket. Adjust as follows:

NOTE

The appropriate Selector Armature Spring Tension preliminary adjustment, paragraph 6-3.1a(3) or 6-3.1a(4), must be made prior to the selector magnet bracket adjustment.

(a) Refer to Figure 6-5.

(b) Position cam so that spacing locklever rests on one of the high spots of the cam.

(c) Energize magnets to position armature in contact with pole piece.

(d) Measure clearance between end of armature extension and shoulder on spacing locklever.

(e) Repeat steps (b), (c), and (d) for each remaining high spot of cam. Clearance at each high spot should be between 0.020 and 0.035 inch maximum.

(f) If clearance at any high spot exceeds specified limits, loosen two magnet bracket mounting screws and adjusting link clamp screw.

(g) Position magnet bracket to obtain specified clearance at each high spot.

(h) Tighten adjusting link clamp screw only.

(i) Repeat steps (b) and (c).

(j) Measure clearance between upper surface of armature extension and lower surface of spacing locklever when locklever is held downward.

(k) Repeat steps (i) and (j) for each remaining high spot of cam. Clearance at each high spot should be 0.003 inch maximum.

(l) If clearance at any high spot exceeds specified limit, position upper end of magnet bracket to obtain specified clearance at each high spot.

(m) Tighten two magnet bracket mounting screws.

(n) Repeat steps (b) through (g).

(o) If further clearance adjustment was required in step (f), tighten adjusting link clamp screw and two magnet bracket mounting screws.

(6) Selector Armature Downstop (Final). Adjust as follows:

(a) Refer to Figure 6-6.

(b) De-energize magnet.

(c) Position locklevers on low part of their cams.

(d) Measure clearance between top of armature extension and bottom of spacing locklever. Clearance should be between 0.005 and 0.015 inch maximum.

(e) If clearance exceeds specified limits, loosen mounting screw and position downstop to obtain specified clearance.

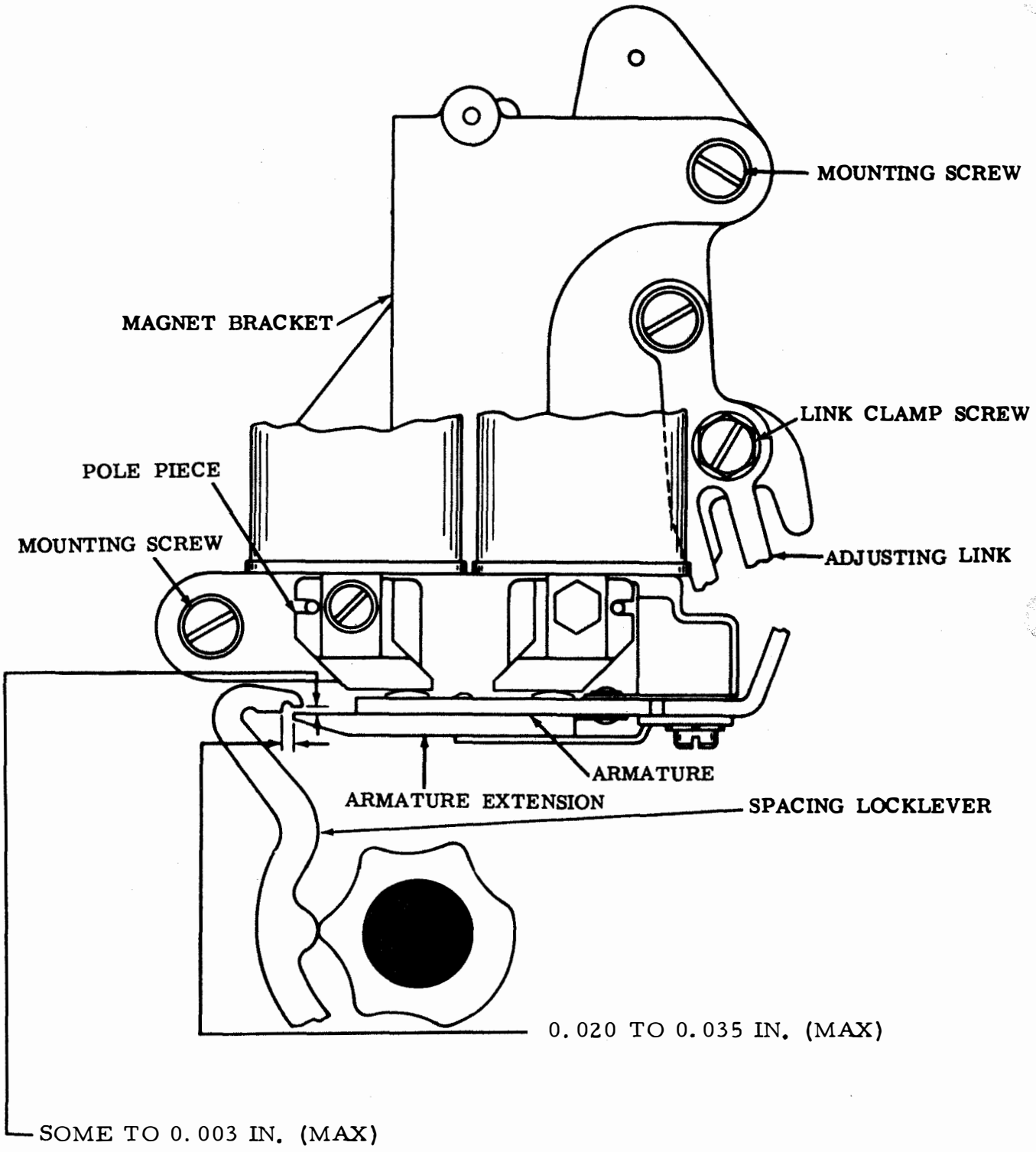


Figure 6-5. Selector Magnet Bracket, Right Side View

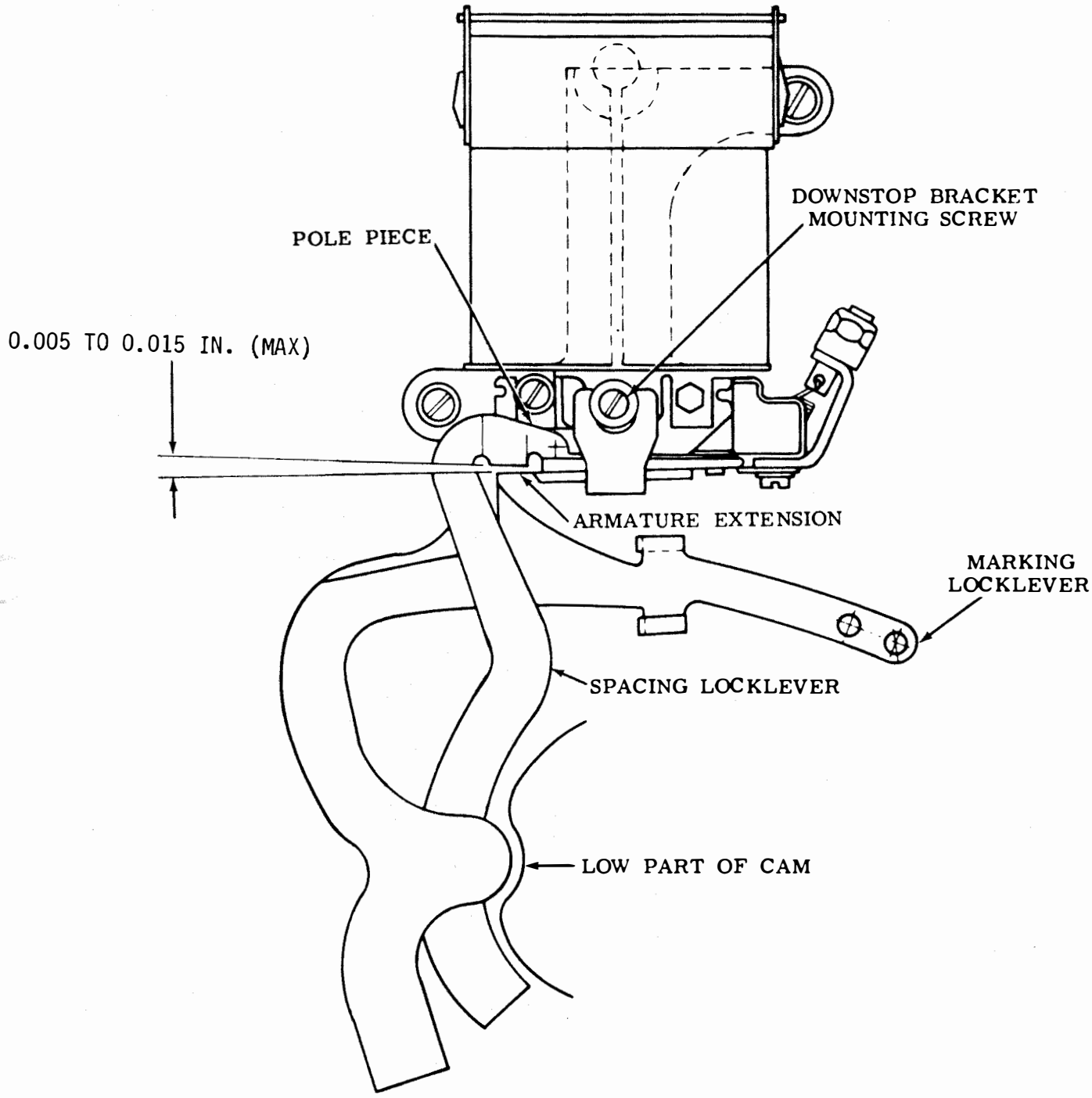


Figure 6-6. Selector Armature Downstop (Final), Right Side View

(f) Tighten mounting screw.

(7) Marking Locklever Spring. Adjust as follows:

(a) Refer to Figure 6-7.

(b) Select LETTERS combination (12345).

(c) Rotate main shaft until selector clutch is disengaged.

(d) Apply spring scale pushrod to lower extension of marking locklever.

(e) Force required to start locklever moving should be between 1-1/2 and 3 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(8) Start Lever Spring. Adjust as follows:

(a) Refer to Figure 6-8.

(b) Unhook latchlever spring.

(c) Position stop arm bail in indent of its cam.

(d) Set range scale at 60.

(e) Apply spring scale pushrod to clutch stop arm.

(f) Force required to start stop arm moving should be between 2-1/2 and 4-1/2 ounces maximum.

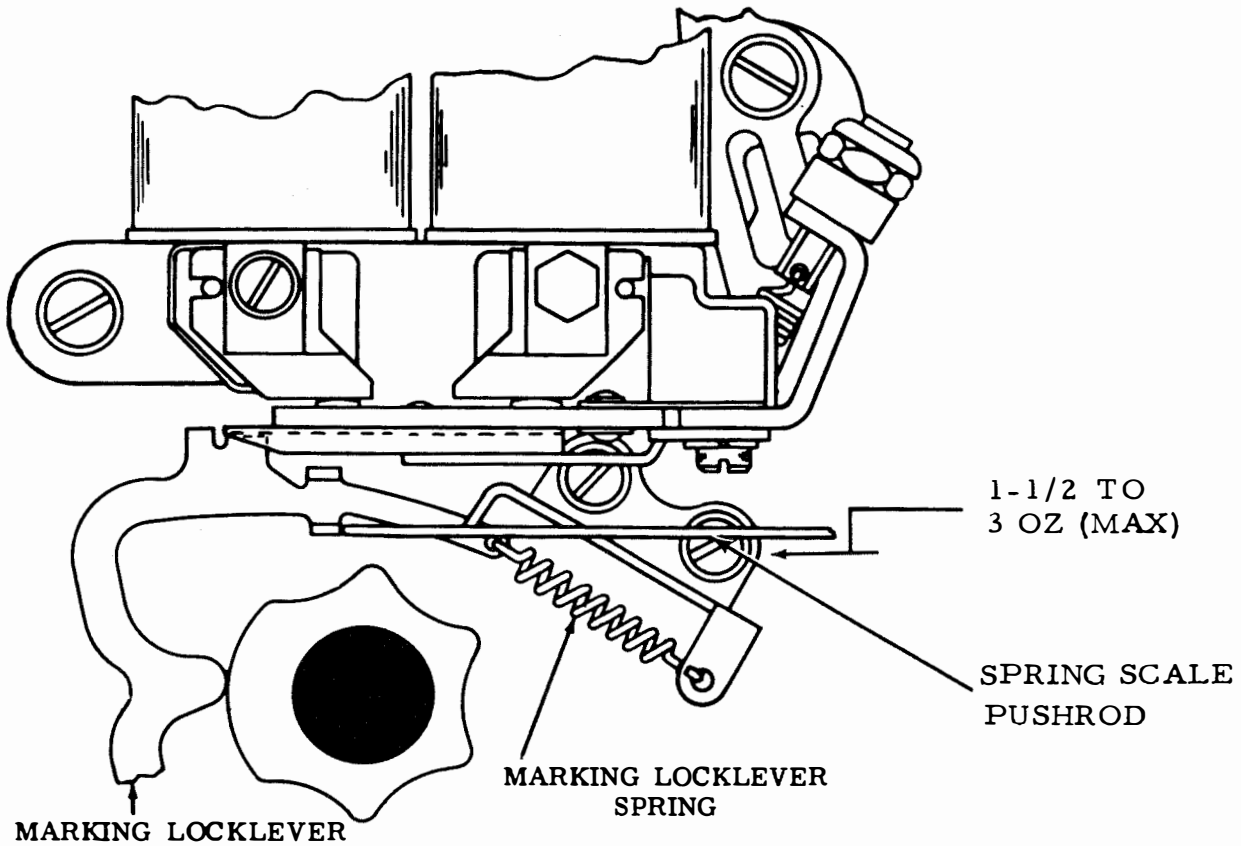


Figure 6-7. Marking Locklever Spring, Right Side View

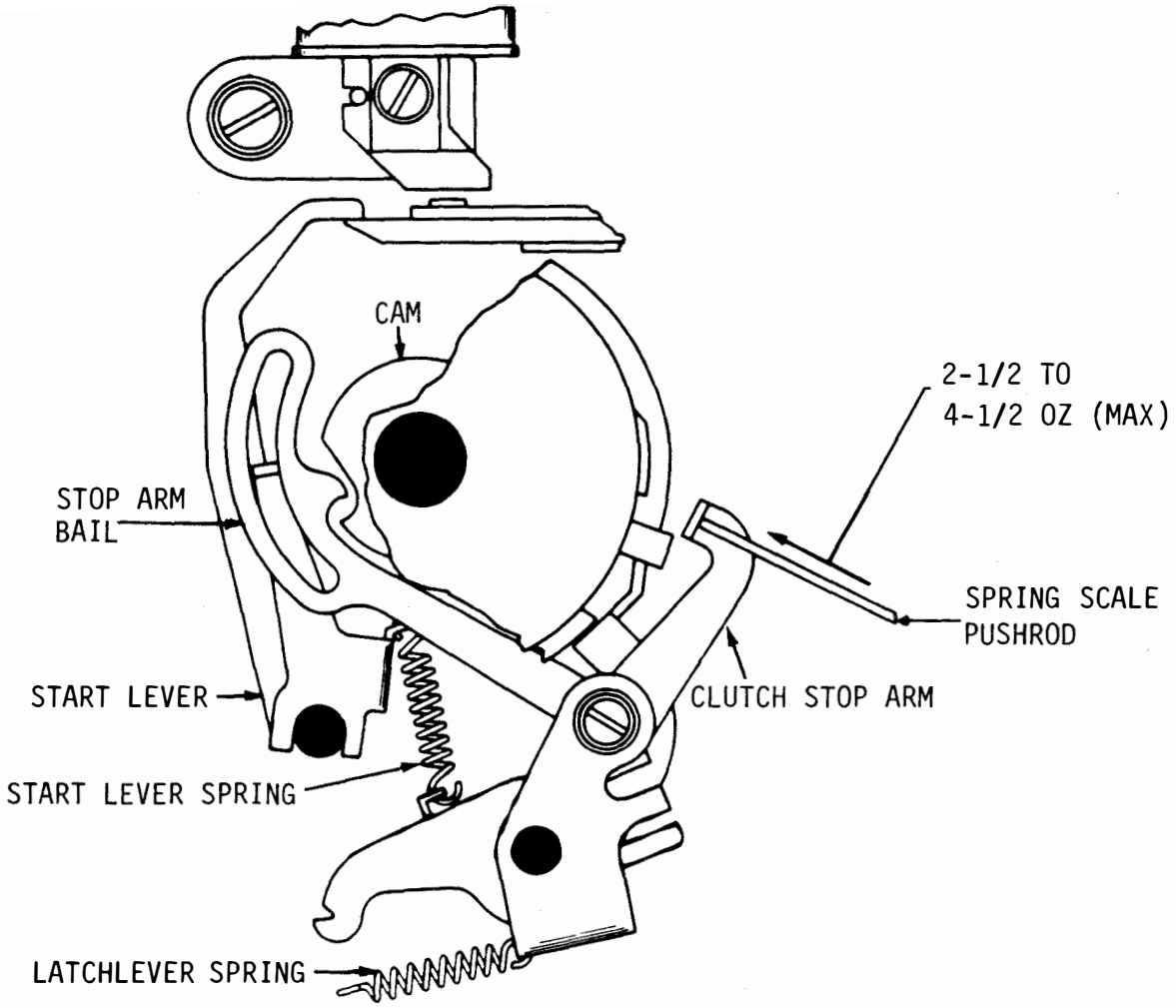


Figure 6-8. Start Lever Spring, Right Side View

(g) If scale reading exceeds specified limits, install new spring.

(h) Reinstall latchlever spring unhooked in step (b).

(9) Selector Pushlever Spring. Adjust as follows:

(a) Refer to Figure 6-9.

(b) Place pushlever in spacing position.

(c) Apply spring scale pushlevers.

(d) Force required to move each pushlever from corresponding selector lever should be between 3/4 and 1-1/2 ounces maximum.

(e) If scale reading for any spring exceeds specified limits, install a new spring.

(10) Selector Lever Spring. Adjust as follows:

(a) Refer to Figure 6-10.

(b) Place unit upside down on bench.

(c) Position reset bail on peak of its cam.

(d) Apply spring scale hook to each of five selector levers.

(e) Force required to start each lever should be between 1-1/4 and 2-1/2 ounces maximum.

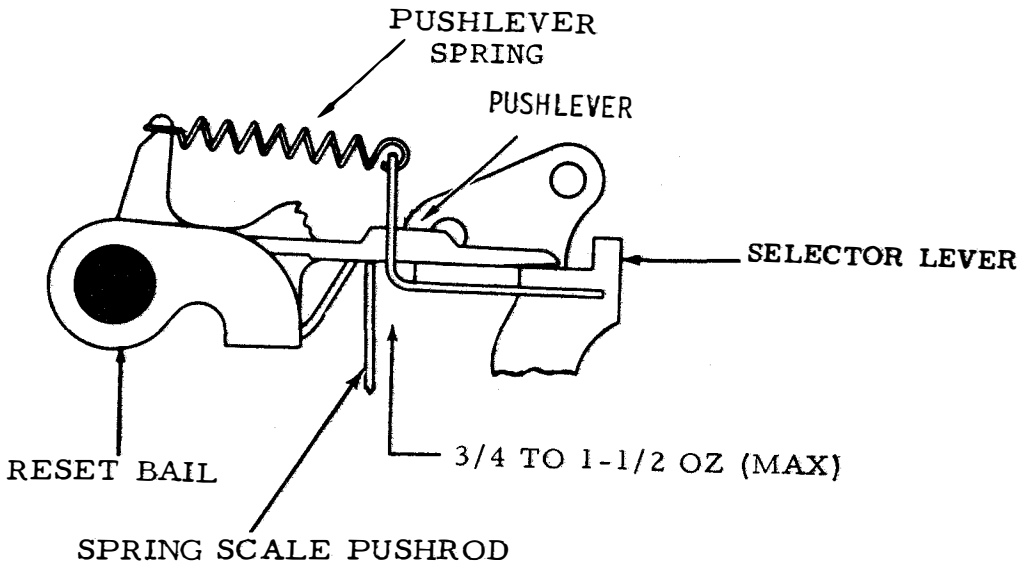


Figure 6-9. Selector Pushlever Spring, Front View

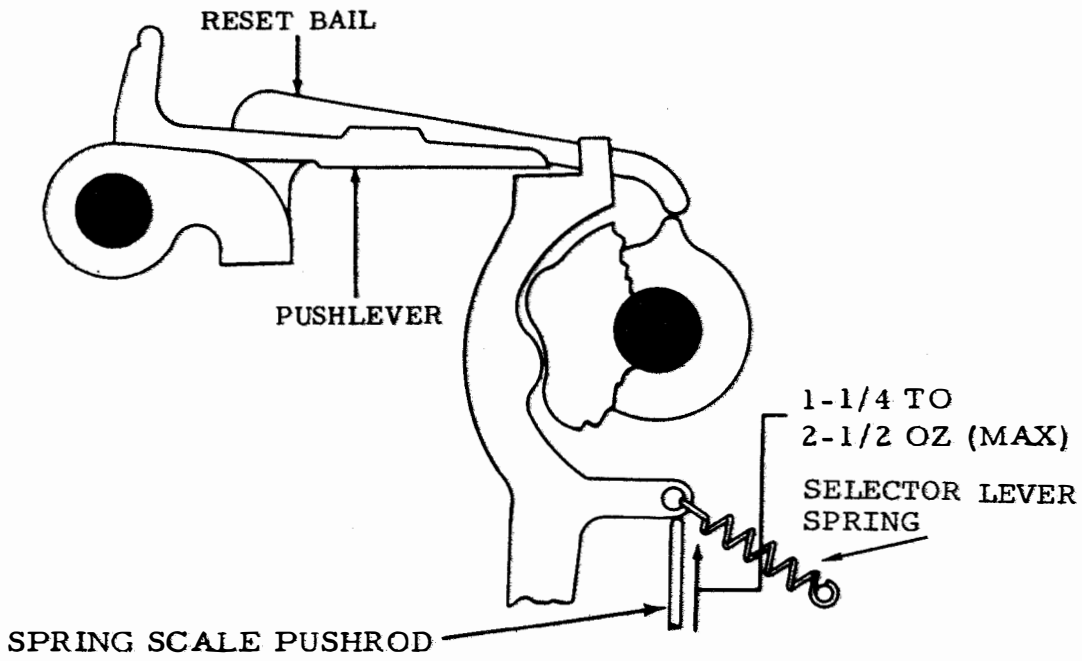


Figure 6-10. Selector Lever Spring, Front View

NOTE

When checking No. 4 selector lever spring, unhook start lever spring, if necessary, and reconnect spring when check is completed.

(f) If scale reading for any spring exceeds specified limits, install a new spring.

(11) Selector Clutch Drum. Adjust as follows:

(a) Refer to Figure 6-11.

(b) Latch selector clutch in STOP position.

(c) Measure cam-clutch assembly end play. There should be some end play not exceeding 0.010 inch.

(d) If end play exceeds specified limits, loosen clutch drum mounting screw and position drum to obtain specified clearance.

(e) Tighten mounting screws.

(12) Pushlever Reset Bail Spring. Adjust as follows:

(a) Refer to Figure 6-12.

(b) Position pushlever reset bail on low part of cam.

(c) Apply spring scale pushrod to reset bail.

(d) Force required to move bail from cam should be between 4 and 8 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(13) Selector Clutch Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-13.

(b) Position latch so it rests on low part of its cam disk.

(c) Attach spring scale hook to latchlever.

(d) Force required to start latchlever moving should be between 2 and 3-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(14) Spacing Lock-lever Spring. Adjust as follows:

(a) Refer to Figure 6-13.

(b) Release selector armature.

(c) Position spacing locklever on low part of its cam.

(d) Apply spring scale pushrod to lower end of locklever.

(e) Force required to move spacing lock-lever from its pivot shaft should be between 3 and 6 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

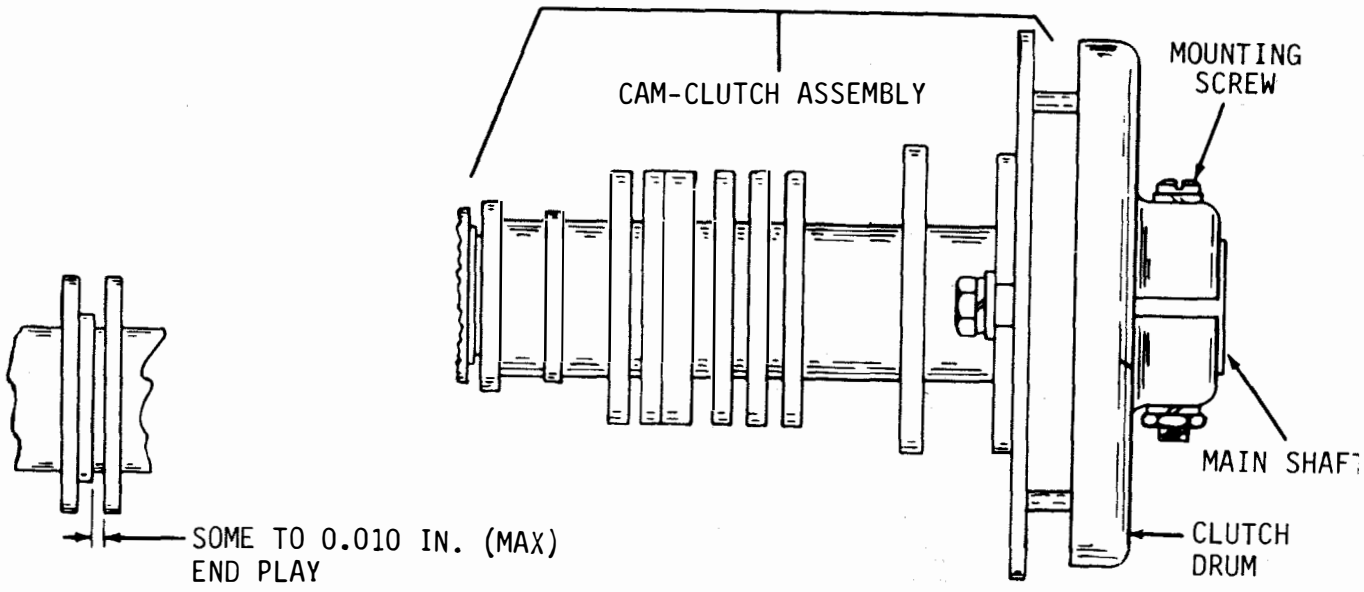


Figure 6-11. Selector Clutch Drum, Front View

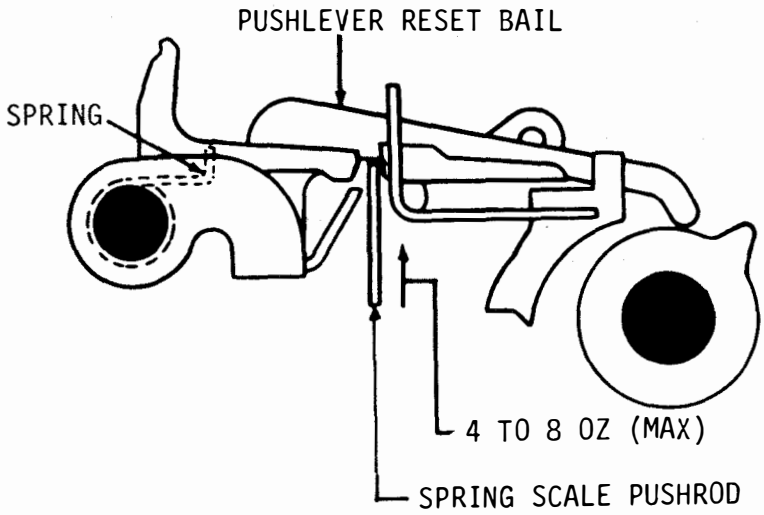


Figure 6-12. Pushlever Reset Bail Spring, Right Side View

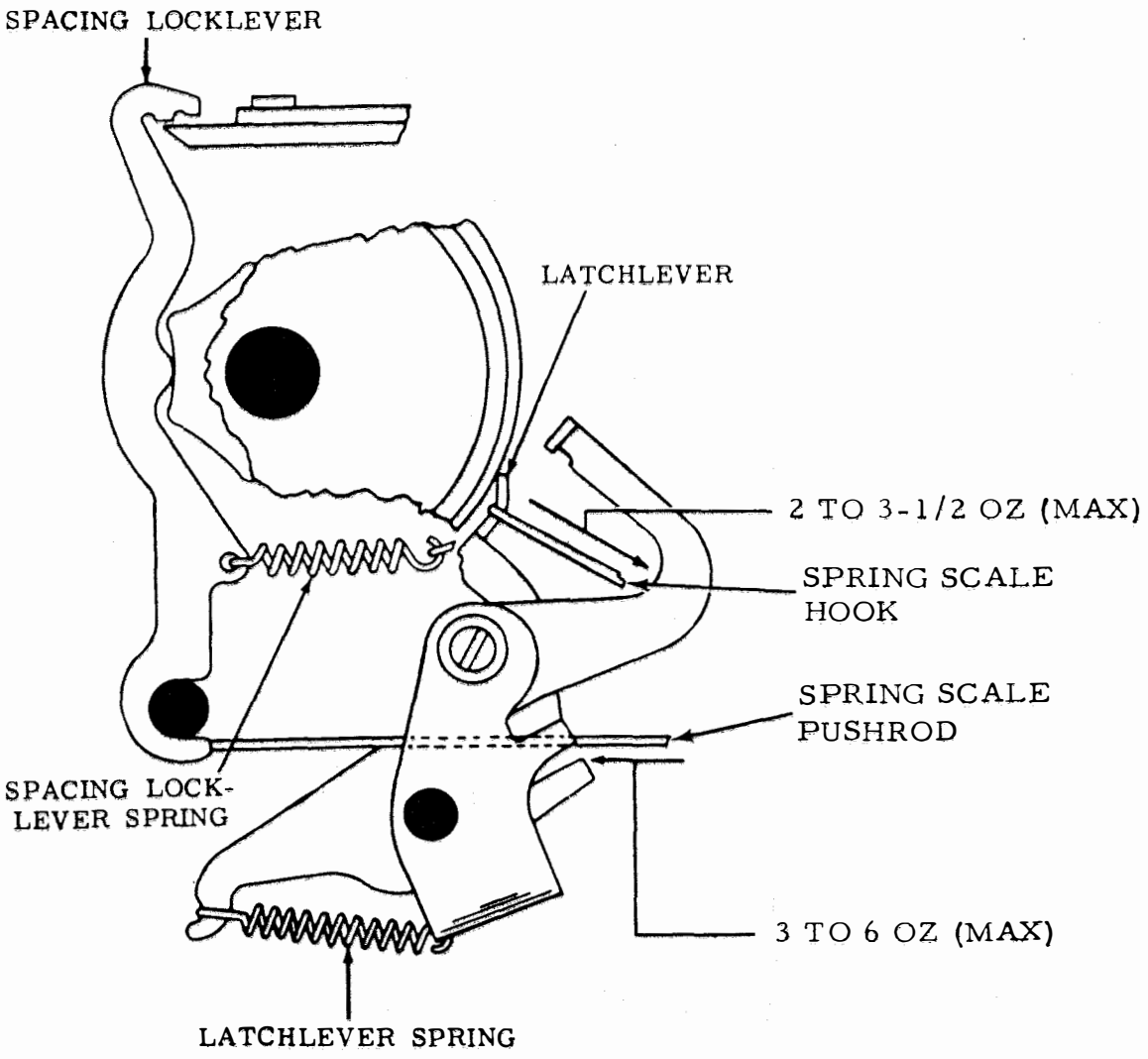


Figure 6-13. Selector Clutch Latchlever Spring and Spacing Locklever Spring, Right Side View

(15) Range Finder Knob Phasing. Adjust as follows:

(a) Refer to Figure 6-14.

(b) Rotate range finder knob either clockwise or counterclockwise to the stop.

(c) Zero on range scale should be within 3 points of index mark.

(d) If zero is more than 3 points away from index, remove mounting nut and disengage knob from rack.

(e) Position knob so that 0 on range scale is at index.

(f) Engage knob with rack and replace mounting nut.

(g) Rotate knob to set 60 on range scale at index.

(16) Selector Clutch Stop Arm. Adjust as follows:

(a) Refer to Figure 6-14.

(b) Set range scale at 60.

(c) Disengage selector clutch.

(d) Position armature in marking position.

(e) Clutch stop arm should engage clutch shoe lever by approximately full thickness of shoe lever. If not, loosen clamp screw and position stop arm on stop arm bail.

(f) Tighten clamp screw.

(17) Selector Receiving Margin. Adjust as follows:

(a) Refer to Figure 6-15.

(b) When adjusting units employing armature with one antifreeze button and a signal distortion test is used for determining receiving margins of selector and where condition of components is equivalent to that of new equipment, range and distortion tolerance specified in Table should be met.

(c) When checking units with a single-button armature (for bell service only), shunt signal line by a switchboard simulator.

(d) To adjust, refine Selector Armature Spring tension, paragraph 6-3.1a(4).

(e) When adjusting units employing armature with two antifreeze buttons, refine Selector Armature Spring tension, paragraph 6-3.1a(4), when a distortion test set is available. Do not use simulator with units employing two-button armature.

(f) Front antifreeze button must contact magnet core when magnet coils are energized.

NOTE

Separate 50 or 75 baud tests are not required. Units geared for 75 baud are tested with the usual 74.2 baud 600 opm, 7.42 unit signals.

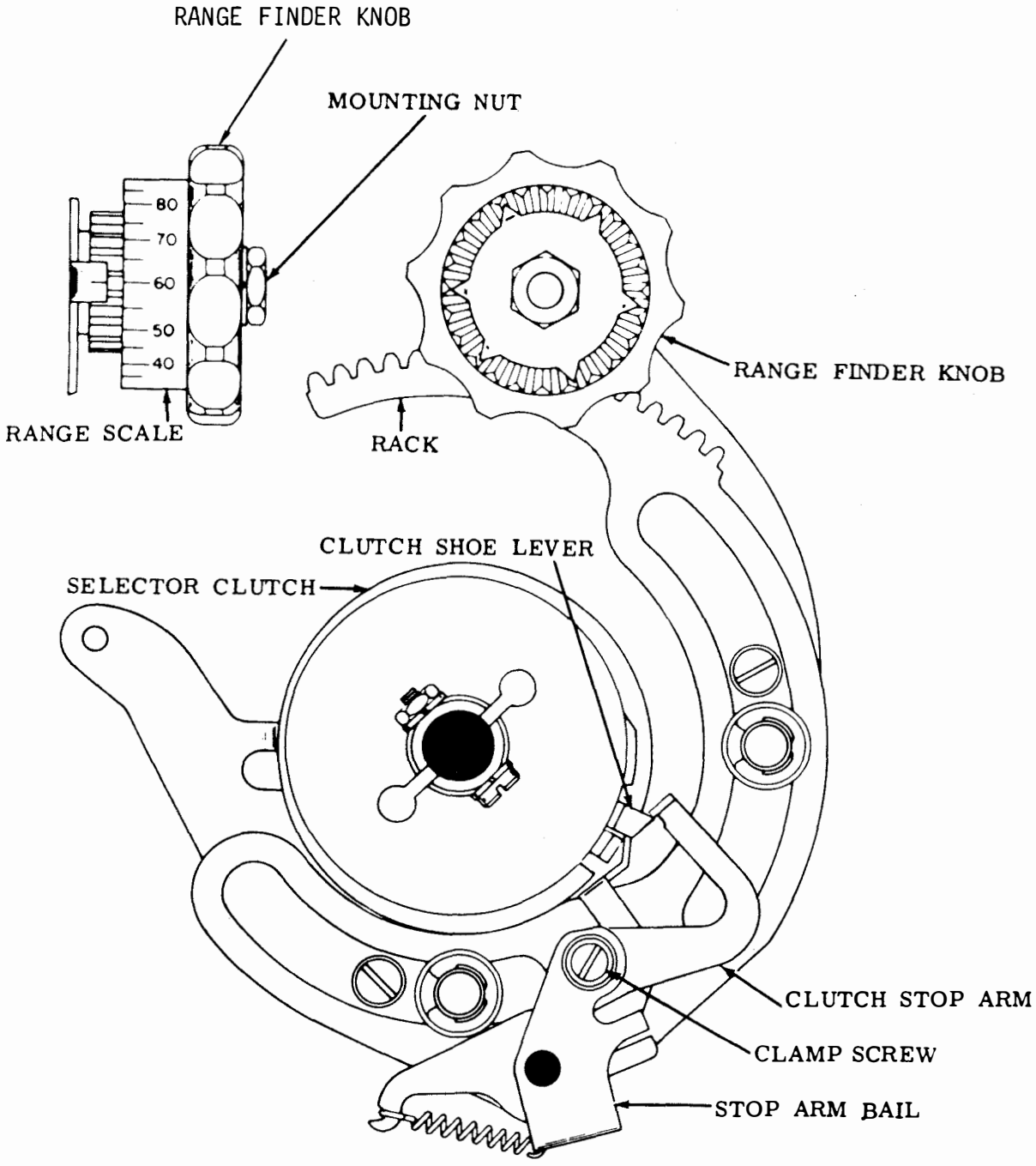
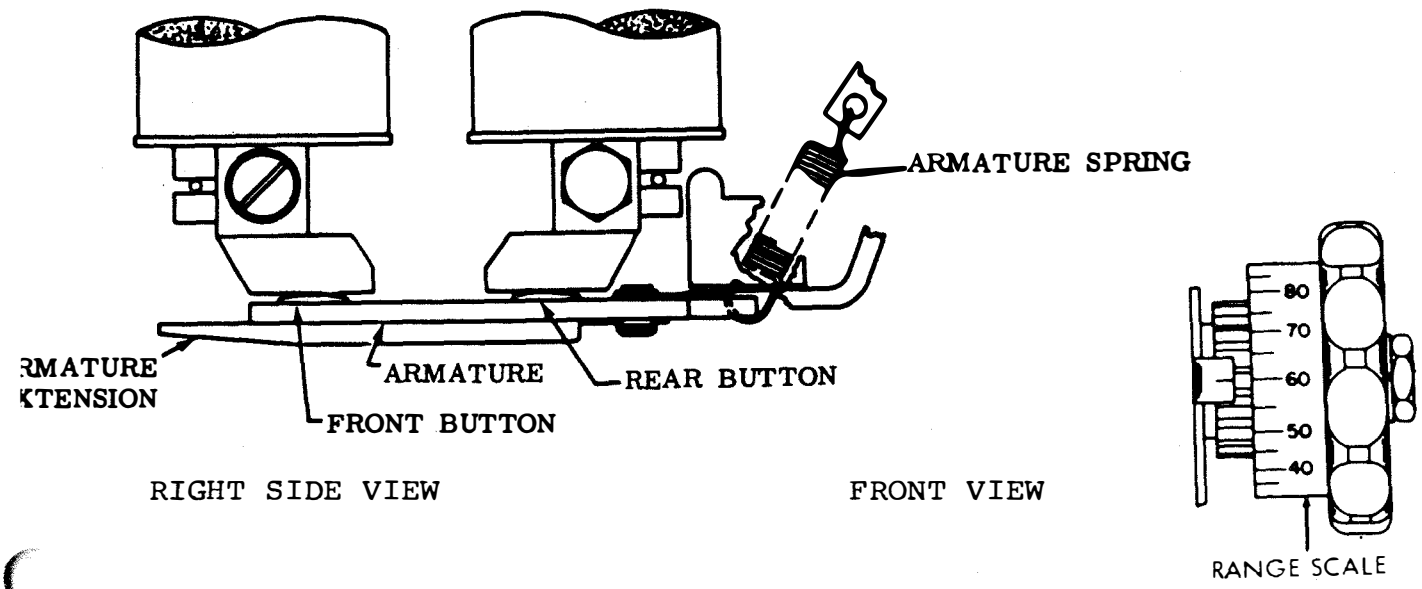


Figure 6-14. Range Finder Knob Phasing and Selector Clutch Stop Arm



SELECTOR MARGIN MINIMUM REQUIREMENTS

CURRENT	SPEED WPM	POINTS RANGE (ZERO DISTORTION)	PERCENT MARKING AND SPACING BIAS TOLERATED	END DISTORTION TOLERATED (SCALE SET AT BIAS OPTIMUM)
0.060 amp (windings parallel)	60 75 100 50 + 75 baud	72	40	35
0.020 amp (windings series)	60 75	72	40	35

Figure 6-15. Selector Receiving Margin

(18) Receiving Margin for Dual Speed Operation (60 to 100 WPM). Adjust as follows:

(a) Refer to Figure 6-15.

(b) Set range scale at common optimum setting for dual speed operation.

(c) Page printer should accept signals with 35 percent bias and end distortion when operating at 60 or 100 words per minute (wpm).

(d) Set bias selector between limits of 0 and -7 percent internal bias at 100 wpm. (Do not readjust for 60 wpm.)

(e) Calculate common optimum bias as follows:

$$Oc = \frac{UMB100 + LSB60}{2}$$

where
Oc = common optimum bias setting
UMB100 = upper orient limit marking bias at 100 wpm
LSB60 = lower orient limit spacing bias at 60 wpm

(19) Selector Cam Lubricator. Adjust as follows:

(a) Refer to Figure 6-16.

(b) Measure clearance between lubricator tube and high part of locklever cam. Clearance should be 0.020 inch minimum.

(c) High part of selector lever cam should touch lubricator wick, but should not raise it more than 1/32 inch.

NOTE

There should be some clearance between marking locklever spring and reservoir.

(d) If clearance in (b) or (c) exceeds specified tolerances, loosen lubricator bracket mounting screws, and position bracket to obtain specified clearance.

(e) Tighten screws.

b. Code Bar Mechanism Adjustments. Perform the following code bar mechanism component adjustments.

(1) Common Transfer Lever Spring. Adjust as follows:

(a) Refer to Figure 6-17.

(b) Place transfer lever in spacing position.

(c) Apply spring scale pushrod near upper end of common transfer lever. The force required to start lever moving should be between 1/2 and 1-1/4 ounce maximum.

(d) If scale reading exceeds specified limits, install a new spring.

(2) Transfer Lever Spring. Adjust as follows:

(a) Refer to Figure 6-17.

(b) Hold transfer lever in spacing position.

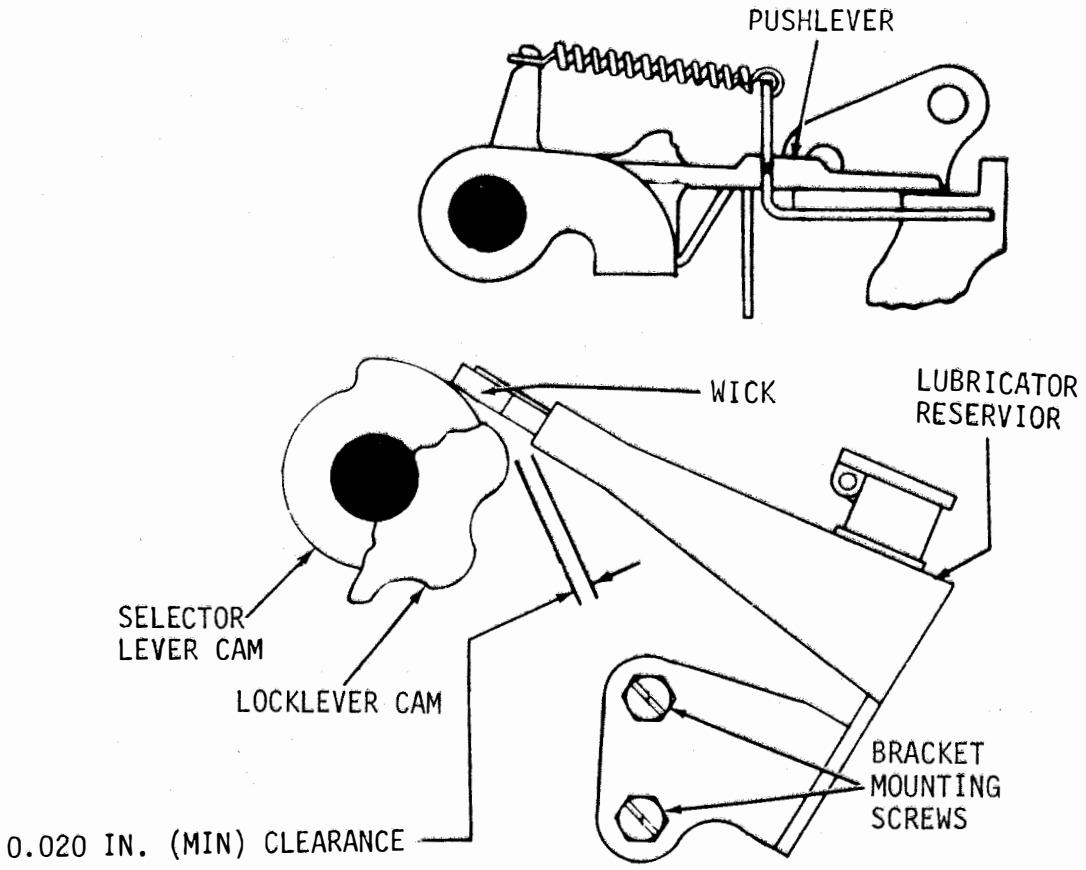


Figure 6-16. Selector Cam Lubricator, Right Side View

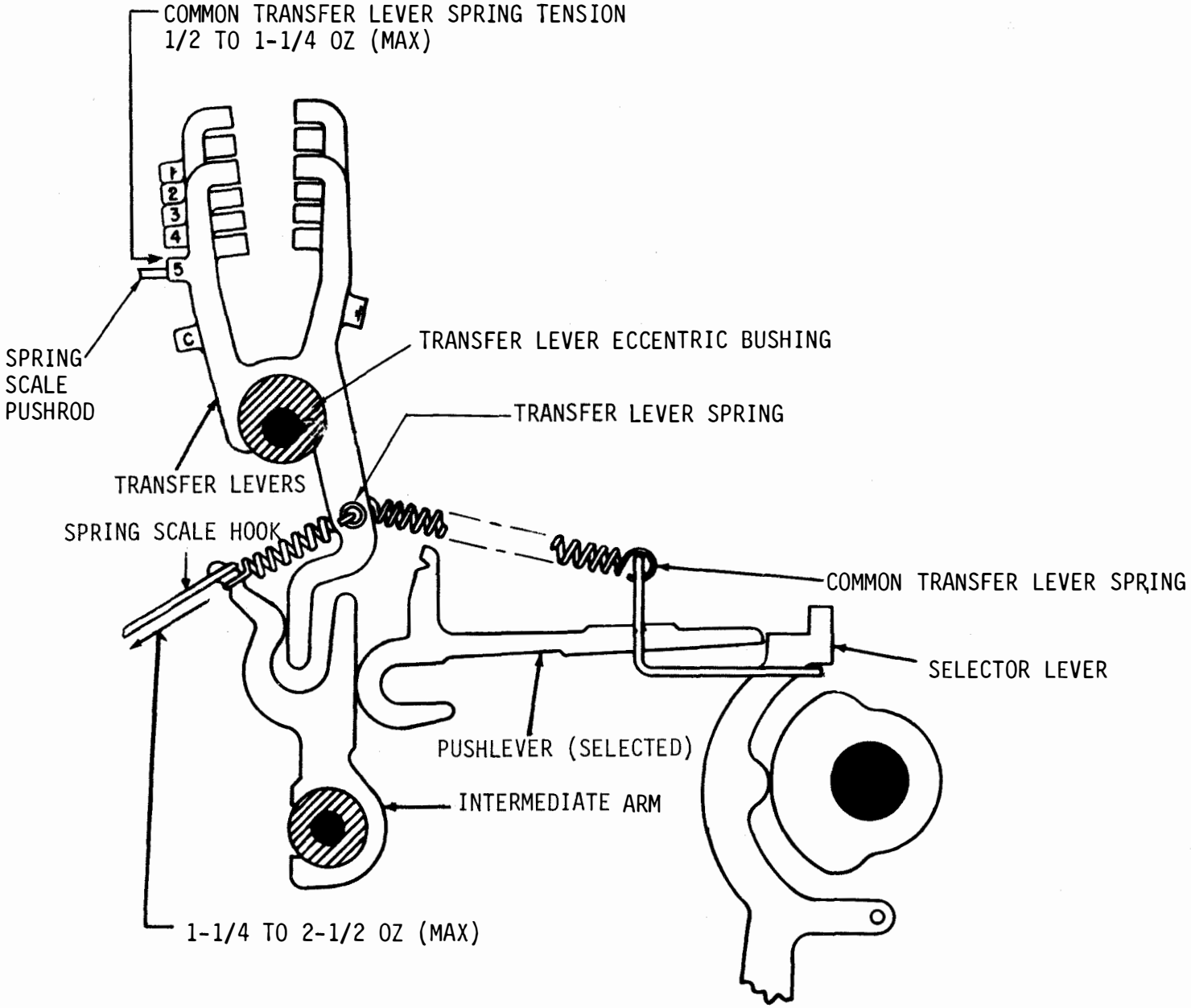


Figure 6-17. Common Transfer Lever Spring, and Transfer Lever Spring, Right Side View

(c) Attach spring scale to intermediate arm. Force required to start intermediate arm moving should be between 1-1/2 and 2-1/2 ounces maximum.

(d) If scale reading exceeds limits, install a new spring.

(3) Transfer Lever Eccentric. Adjust as follows:

(a) Refer to Figure 6-18.

(b) Position pushlevers for "E" or "LF", or LETTERS.

(c) Disengage selector clutch.

(d) Place code bar shift lever link in uppermost position.

NOTE

One or more code bar shiftbars may touch code bar shift levers.

(e) Measure clearance between rear code bar shift lever and code bar shiftbar farthest from rear code bar shift lever. Clearance should be between 0.010 and 0.025 inch, maximum when play of shiftbar is taken up for maximum clearance.

(f) To adjust clearance, loosen clamp screw.

(g) Rotate eccentric bushing to obtain clearance specified in step (e). High part of eccentric should be above horizontal centerline.

(h) Tighten clamp screw.

NOTE

If the above adjustment has been necessary, check the Intermediate Arm Backstop Bracket adjustment, paragraph 6-3.1b(4).

(4) Intermediate Arm Backstop Bracket. Adjust as follows:

(a) Refer to Figure 6-19.

(b) Place pushlevers in non-selected position.

(c) Move all code bar shiftbars to the right.

(d) Disengage selector clutch.

(e) Place code bar shift lever link in lowermost position

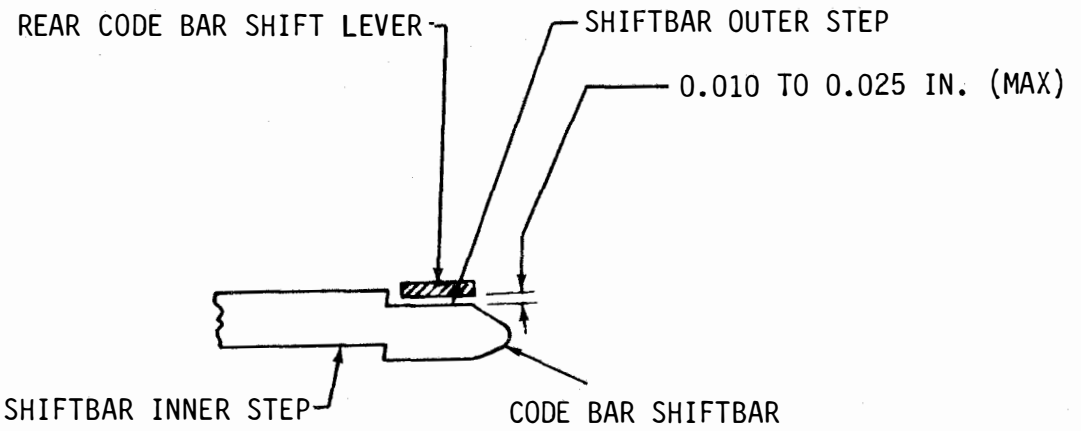
(f) Measure clearance between front code bar shift lever and inner step of code bar shiftbar farthest from front code bar shift lever. Clearance should be between 0.010 and 0.025 inch, maximum when play in parts is taken up for maximum clearance.

(g) To adjust clearance, loosen two clamp screws and position backstop bracket to obtain clearance specified in step (f).

(h) Tighten two clamp screws.

NOTE

If the above adjustment has been made, it is also necessary to check the Transfer Lever Eccentric adjustment, paragraph 6-3.1b(3).



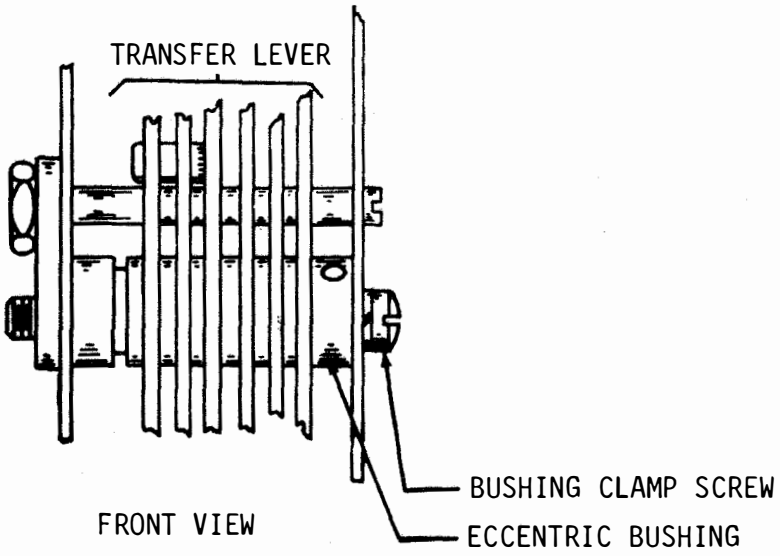


Figure 6-18. Transfer Lever Eccentric

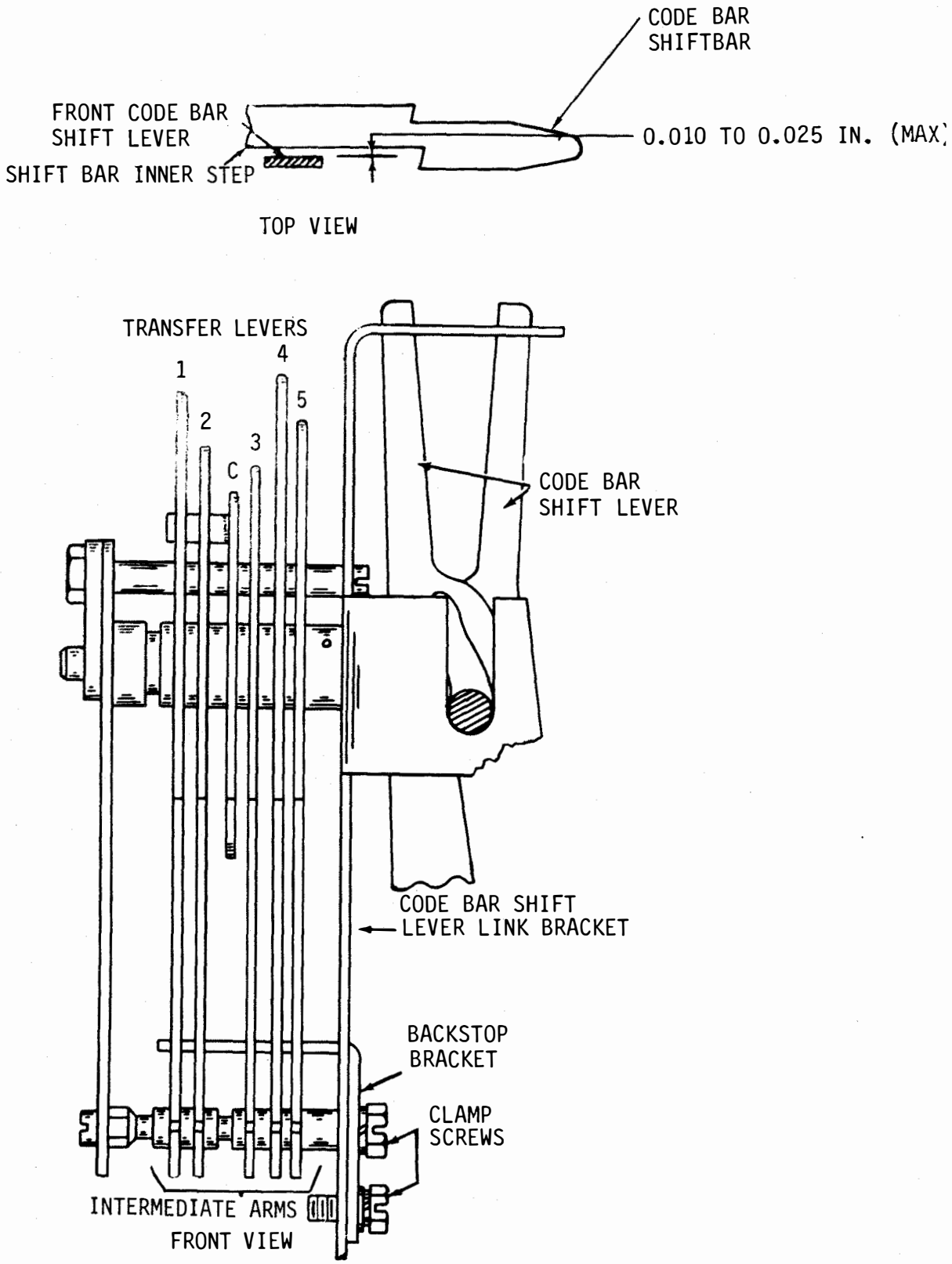


Figure 6-19. Intermediate Arm Backstop Bracket

(5) Code Bar Shift Lever Drive Arm. Adjust as follows:

(a) Refer to Figure 6-20.

(b) Place the code bar shift lever link in uppermost position.

(c) Measure clearance between top of rollers and top of cam slots in code bar shift levers. The clearance on closest lever should be some to 0.025 inch maximum.

(d) If clearance between top of rollers and top of cam slots in closest code bar shift lever exceeds specified limit, loosen clamp screw.

(e) Position code bar shift lever drive arm on its shaft to obtain clearance specified in step (c) and to provide some to 0.006 inch maximum end play.

(f) Tighten clamp screw.

NOTE

If the above adjustment has been necessary, check the following adjustments: Transfer Lever Eccentric, paragraph 6-3.1b(3); Intermediate Arm Backstop Bracket, paragraph 6-4.1b(3); and Code Bar Shift Lever Link Bracket, paragraph 6-3.1b(4).

(6) Code Bar Shift Lever Link Bracket. Adjust as follows:

NOTE

Motion of front and rear code bar levers should be equalized with respect to code bar travel.

(a) Refer to Figure 6-21.

(b) To check front code bar shift lever, select BLANK combination (-----).

(c) Rotate main shaft until code bar shift lever link reaches highest travel.

(d) Take up play for maximum clearance between front code bar shift lever and shoulder on nearest code bar shiftbar.

(e) Clearance should be between 0.002 and 0.025 inch maximum.

(f) If clearance exceeds specified limits, loosen clamp screw and position front adjusting plates to obtain specified clearance.

(g) Tighten clamp screws.

(h) To check rear code bar shift lever, select LETTERS combination (12345).

(i) Repeat steps (c) through (g) for rear code bar shift lever.

(7) Code Bar Detent. Adjust as follows:

(a) Refer to Figure 6-22.

(b) Remove front plate.

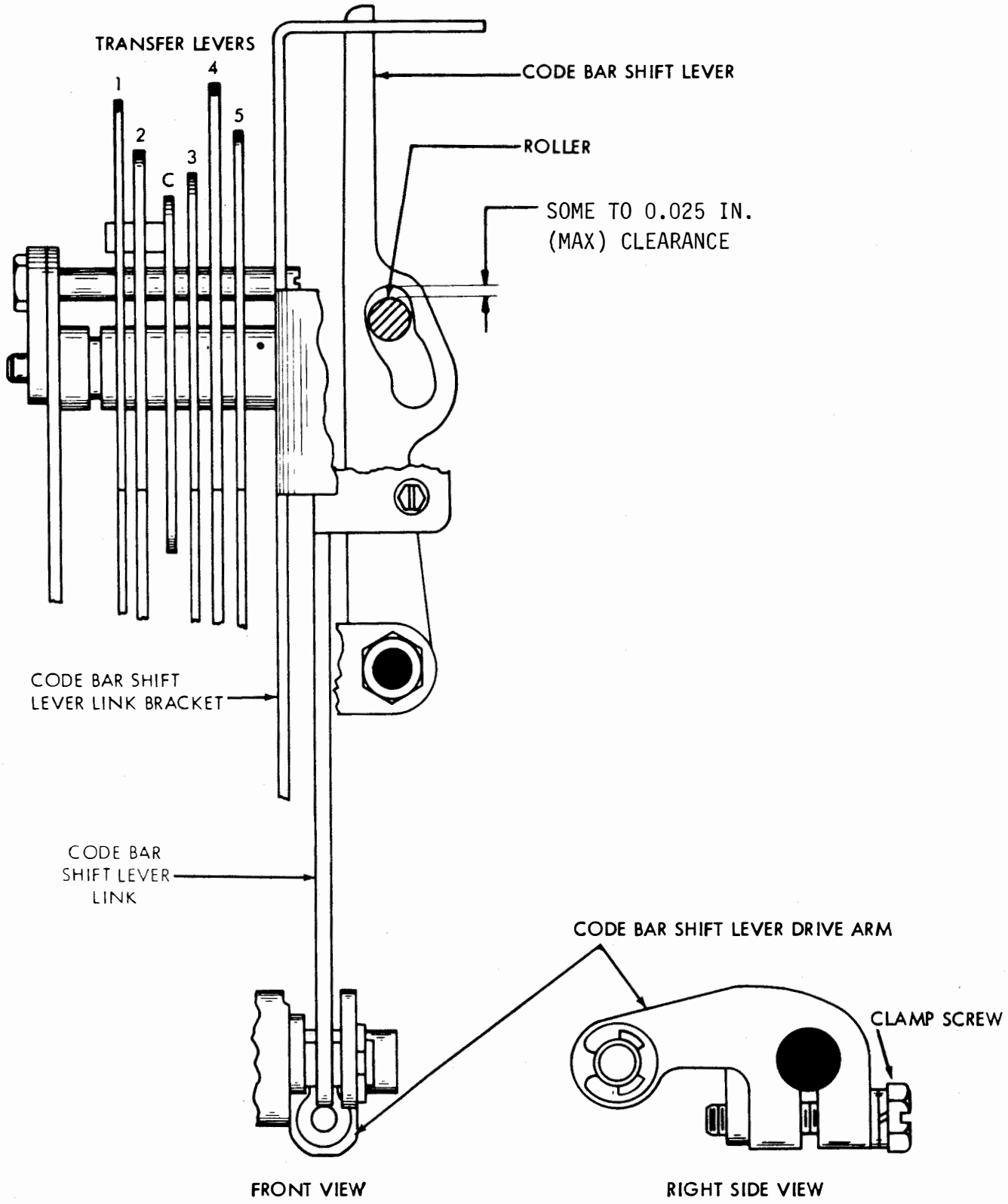
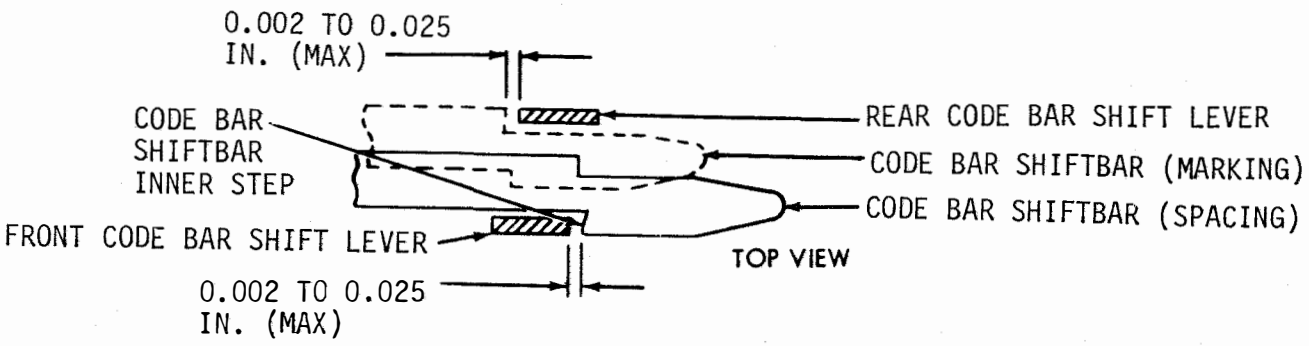


Figure 6-20. Code Bar Shift Lever Drive Arm



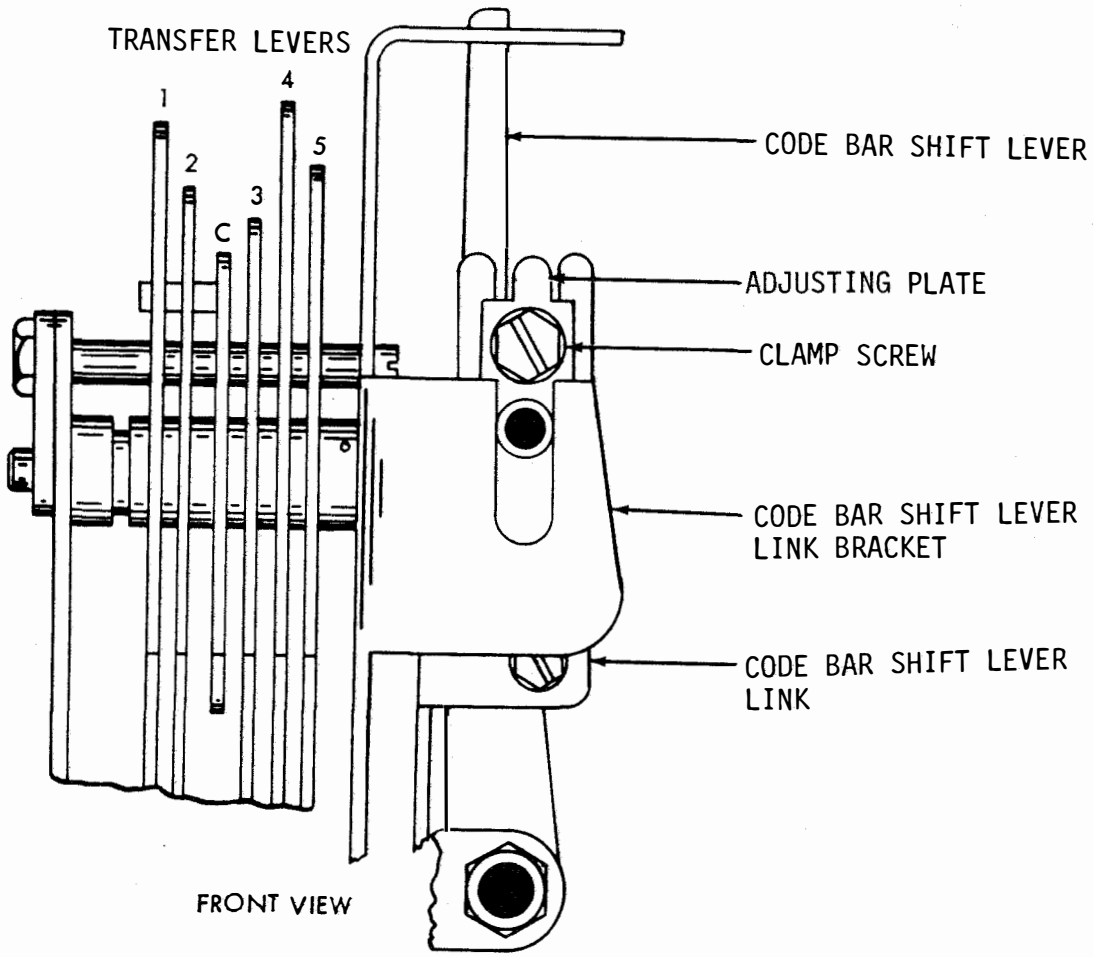


Figure 6-21. Code Bar Shift Lever Link Bracket

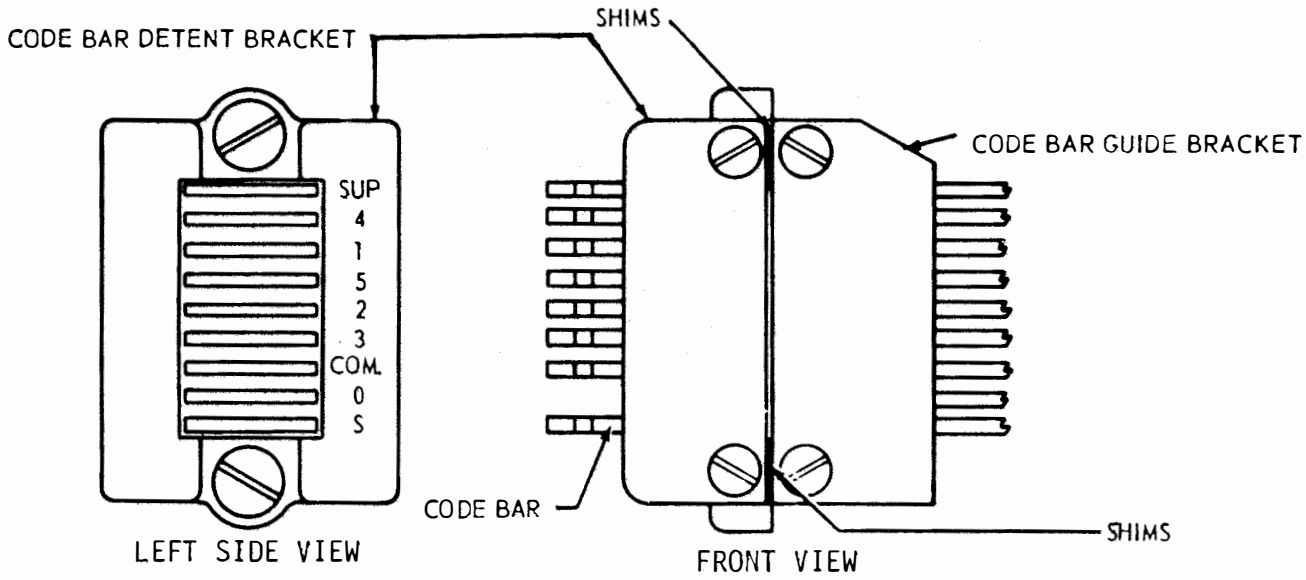


Figure 6-22. Code Bar Detent

CAUTION

Remove plate carefully. Detent balls are spring loaded, and loss of parts is possible unless precautions are taken.

NOTE

Unless there is reason to believe these springs are causing a malfunction, do not attempt this adjustment.

(a) Refer to Figure 6-23.

(b) Carefully remove code bars from code bar detent bracket and remove code bars detent bracket.

(c) Apply spring scale hook to each detent ball in sequence and pull in direction of ball travel. The force required to start ball moving against compression of spring should be between 1-1/2 and 3-1/2 ounces maximum.

(d) If scale reading for any spring exceeds

(c) Disengage all clutches.

(d) All suppression and shift code bars should detent equally as gauged by eye.

(e) To adjust detenting of suppression and shift code bars, loosen screws and remove or add shims between casting and code bar bracket. Then tighten screws.

(8) Code Bar Detent Spring. Adjust as follows:

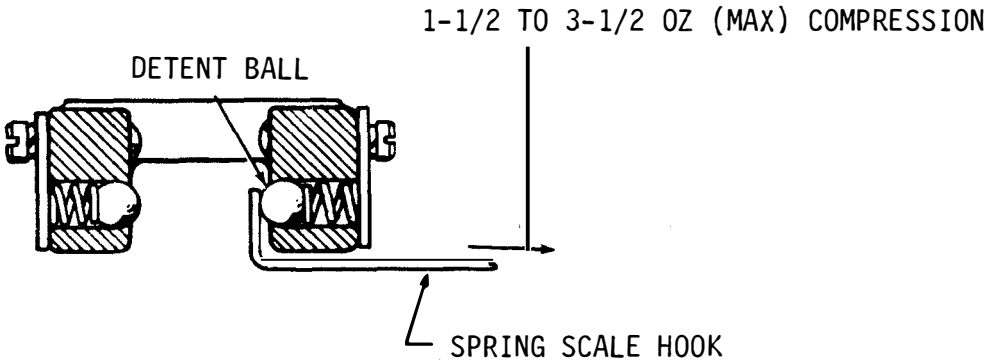


Figure 6-23. Code Bar Detent Spring, Top Cross Section

the limits, install a new spring.

(e) Replace code bars and code bar detent bracket.

(9) Code Bar Yield Spring. Adjust as follows:

(a) Refer to Figure 6-24.

(b) Disengage selector clutch, code bar clutch, and type box clutch.

(c) Place number 1 code bar in spacing position.

(d) Attach spring scale hook to number 1 code bar and pull against spring. Force required to start code bar shiftbar pivot moving away from code bar should be between 14 and 23 ounces maximum.

(e) Repeat steps (c) and (d) for number 2 code bar shiftbar and common code bar shiftbar.

(f) If scale reading for any spring exceeds limits, install a new spring.

c. Main Shaft and Trip Shaft Mechanisms Adjustments. Perform the following main shaft and trip shaft mechanism adjustments.

(1) Clutch Latchlever Spring (Except Selector). Adjust as follows:

NOTE

This adjustment applies to code bar clutch, function clutch, spacing clutch, line-

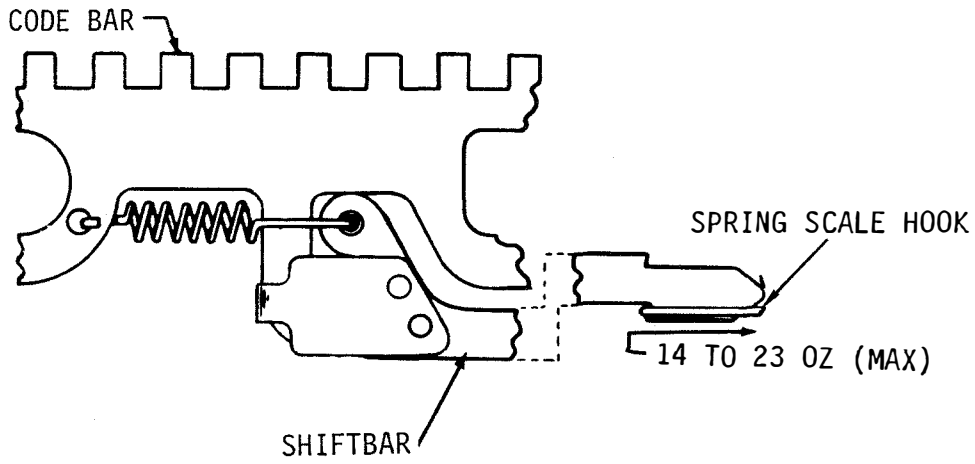


Figure 6-24. Code Bar Yield Spring, Front View

feed clutch, and type box clutch.

(a) Refer to Figure 6-25.

(b) Turn clutch to STOP position, but with latchlever not latched.

(c) Attach spring scale hook to latchlever.

(d) Force required to move latchlever from lug should be between 5 and 7-1/4 ounces maximum.

(e) If scale reading exceeds specified limits, install a new spring.

(2) Code Bar Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-25.

(b) Disengage selector clutch and code bar clutch.

(c) Code bar clutch trip lever should engage clutch shoe lever by full thickness of shoe lever and have some end play, but not to exceed 0.006 inch maximum.

(d) If engagement is not as specified, loosen clamp screw and position trip lever on its shaft.

(e) Tighten clamp screw.

(3) Trip Shaft Lever Spring. Adjust as follows:

(a) Refer to Figure 6-25.

(b) Position trip shaft lever on low part of cam.

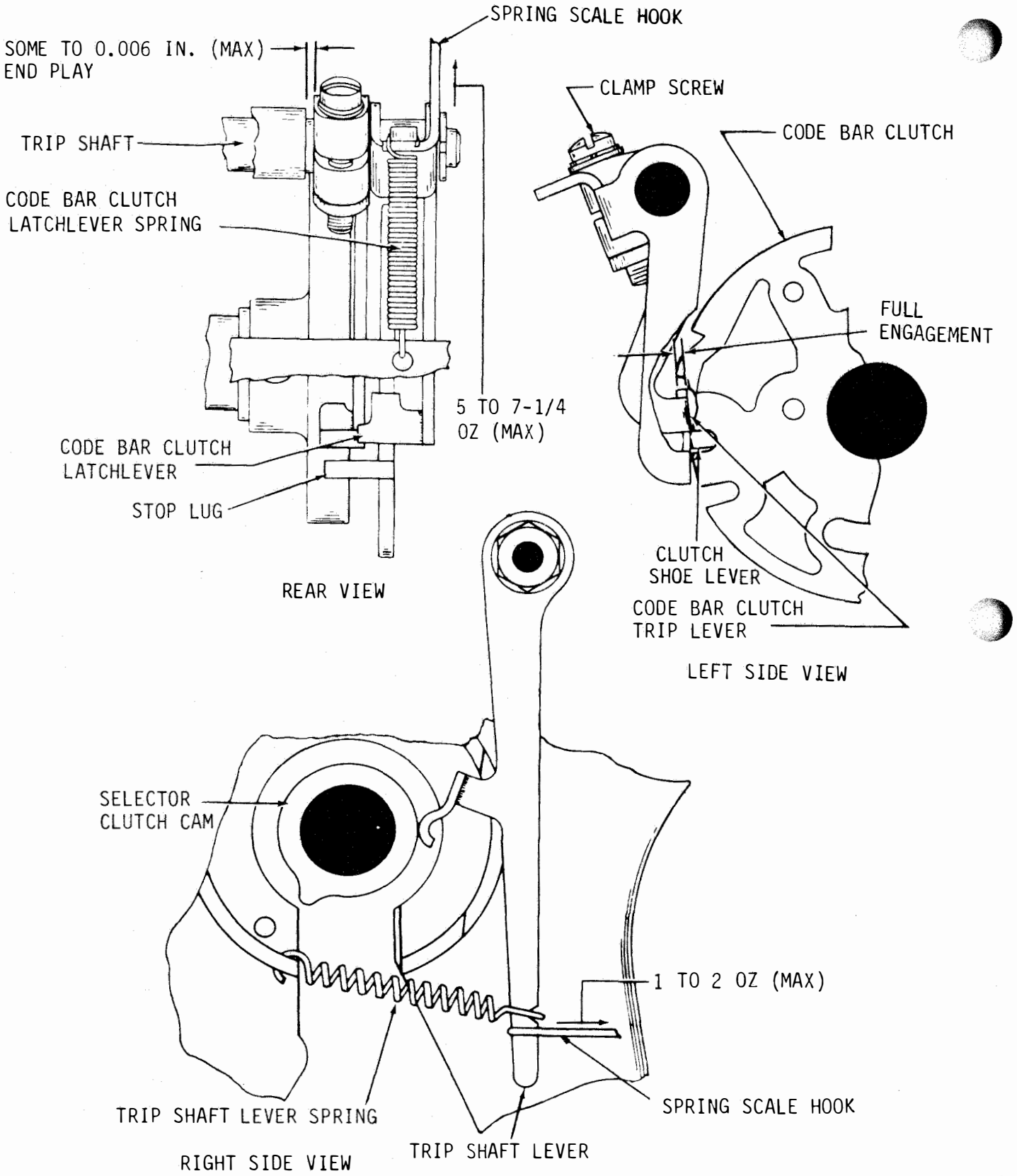


Figure 6-25. Clutch Latchlever Spring (Except Selector), Code Bar Clutch Trip Lever, and Trip Shaft Lever Spring

(c) Engage code bar clutch and rotate one quarter turn.

(d) Attach spring scale hook to trip shaft lever.

(e) Force required to start lever moving should be between 1 and 2 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(4) Function Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-26.

(b) Disengage code bar clutch and function clutch trip lever.

(c) Function clutch trip lever should engage clutch shoe lever by full thickness of shoe lever. On two-stop clutches, make this check at lug having least bite.

(d) There should be some end play on trip shaft lever, but not in excess of 0.006 inch maximum.

(e) If either engagement in step (c) or end play in step (d) is not as specified, loosen clamp screw and position trip lever on its shaft.

(f) Tighten clamp screw.

(5) Code Bar Clutch Cam Follower Spring. Adjust as follows:

(a) Refer to Figure 6-27.

(b) Position cam so that cam follower roller rests on low part of cam.

(c) Unhook code bar clutch cam follower spring from spring bracket.

(d) Attach spring scale hook to loose end of spring.

(e) Force required to pull spring to installed length should be between 20 and 24 ounces maximum. Hook spring on spring hook.

(f) If scale reading exceeds specified limits, install new spring.

(6) Clutch Trip Shaft Set Collars. Adjust as follows:

(a) Refer to Figure 6-28.

(b) Measure spacing cutout lever side play.

(c) There should be some side play not exceeding 0.008 inch maximum.

(d) If side play exceeds specified limits, loosen spacing cutout lever set collar setscrew and position set collar to obtain specified side play. Tighten screw.

(e) Visually gauge right end of stop extensions on trip lever and shoe lever for approximate alignment.

(f) If stop extensions are misaligned, loosen line-feed clutch trip lever set collar setscrew and position set collar to obtain

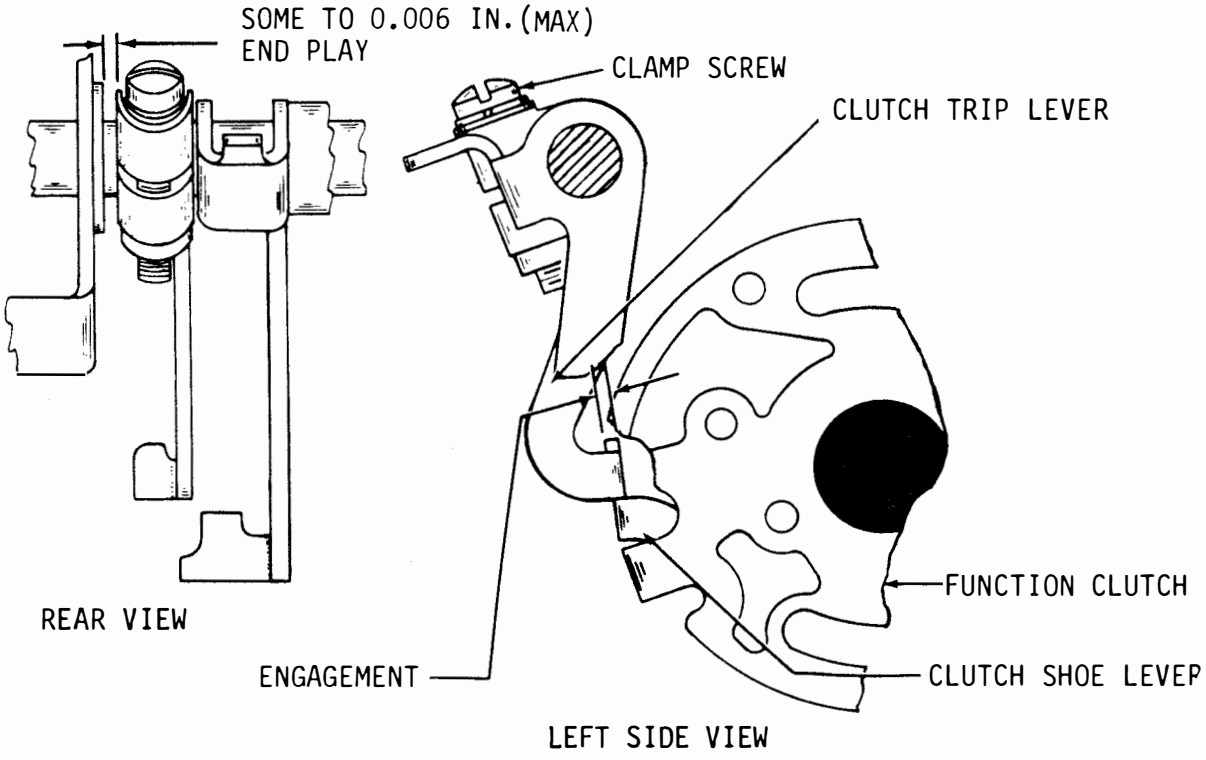


Figure 6-26. Function Clutch Trip Lever

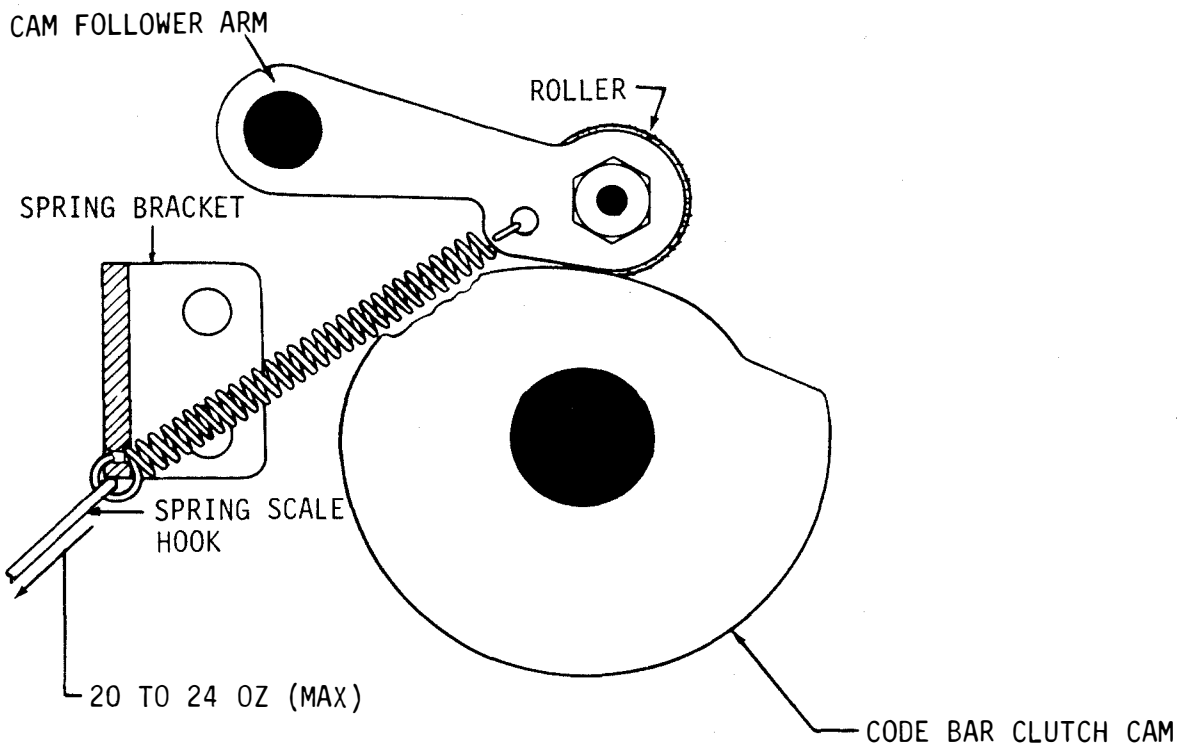


Figure 6-27. Code Bar Clutch Cam Follower Spring, Right Side View

approximate alignment of stop extensions.

(g) Measure line-feed clutch latchlever side play.

(h) There should be some side play not exceeding 0.008 inch maximum.

(i) If side play exceeds specified limits, loosen latchlever set collar setscrew and position set collar to obtain specified side play. Tighten screw.

(7) Spacing Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-29.

(b) Disengage clutch.

(c) Trip clutch trip lever and rotate main shaft until trip lever is over shoe lever.

(d) Take up shoe lever play inward by snapping trip lever over shoe lever.

(e) Measure and note clearance between shoe lever and drum at each stop position to find stop position which yields greatest clearance. As gauged by eye, there should be some overbite on all stop-lugs.

(f) Position trip lever at stop which yields greatest clearance and rotate main shaft slowly until trip lever just falls off stop-lug.

(g) Measure and note clearance between trip lever and clutch drum.

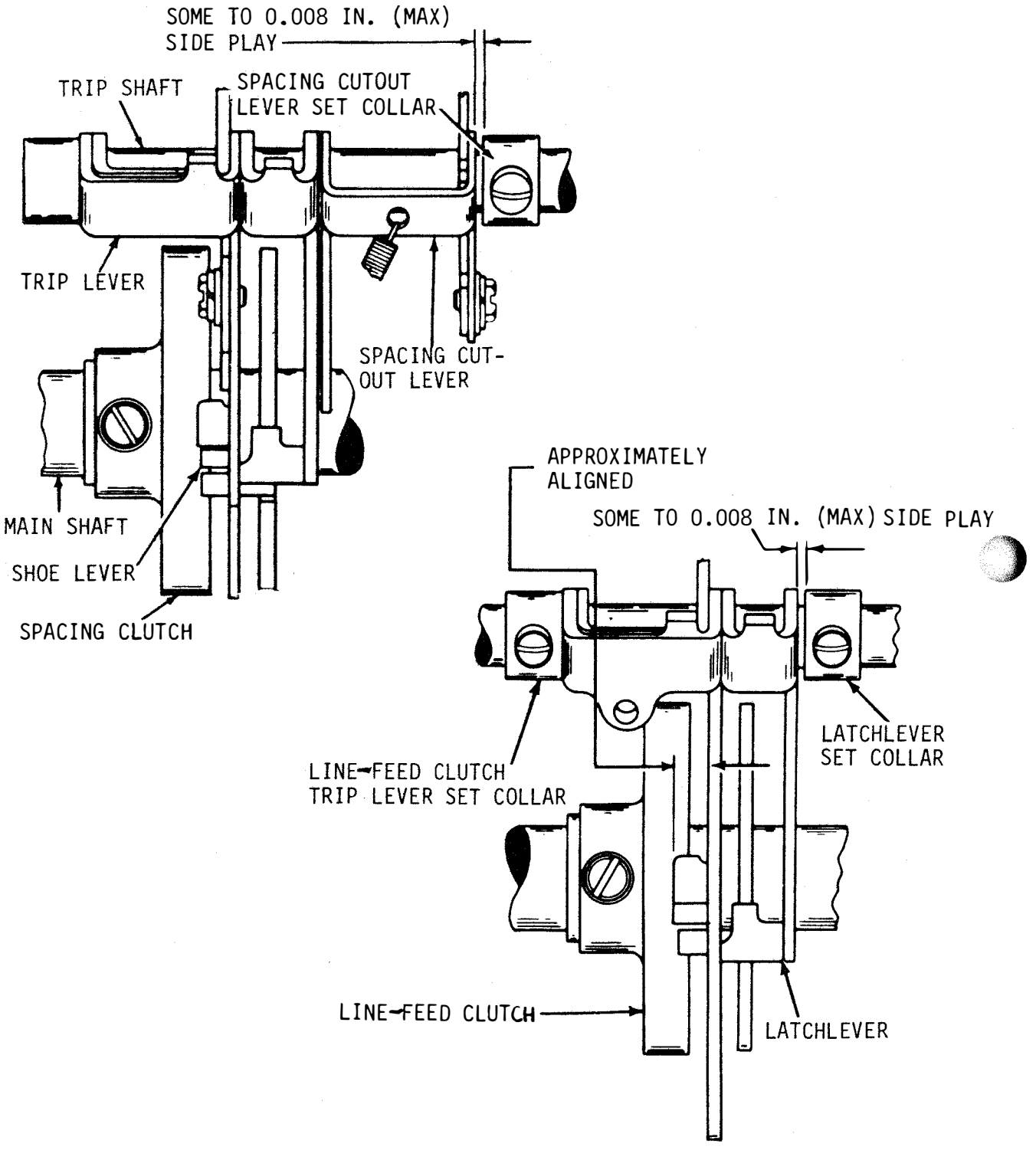


Figure 6-28. Clutch Trip Shaft Set Collars, Rear View

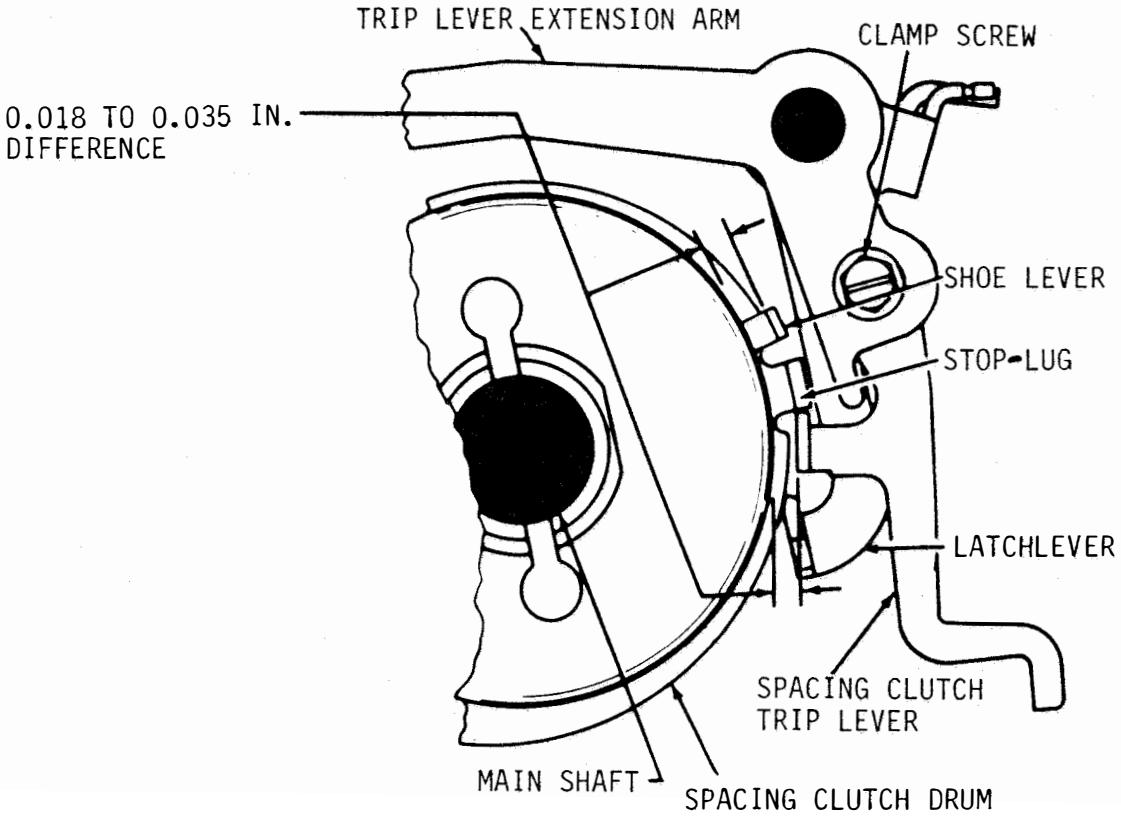


Figure 6-29. Spacing Clutch Trip Lever, Right Side View

(h) Find difference between greatest clearance measured in step (e) and clutch drum measured in step (g) by subtracting.

(i) The greatest clearance in step (e) should be between 0.018 and 0.035 inch greater than clearance between trip lever and clutch drum obtained in step (g).

(j) If difference in clearances exceeds specified limits, loosen clamp screw and position trip lever to adjust clearance between trip lever and clutch drum.

(k) Tighten clamp screw.

(8) Clutch Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-30.

(b) Engage and rotate clutch until trip lever rests on stop-lug.

(c) Apply spring scale hook to trip lever.

(d) Force required to move lever away from stop-lug should be as follows:

1. For spacing clutch, between 11 and 16 ounces maximum.

2. For line-feed clutch, between 9 and 12 ounces maximum.

3. For type box clutch, between 5 and 7-1/4 ounces maximum.

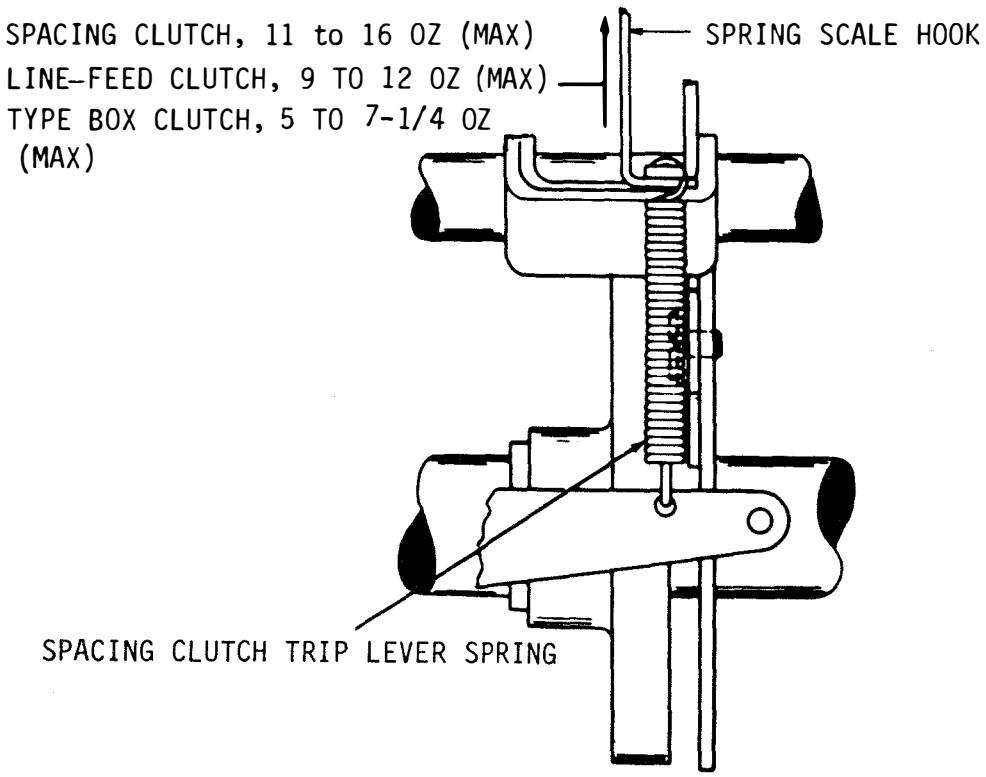


Figure 6-30. Clutch Trip Lever Spring, Rear View

(e) If scale reading exceeds specified limits, install new spring.

(9) Type Box Clutch Trip Lever Eccentric Post. Adjust as follows:

(a) Refer to Figure 6-31.

(b) Disengage type box clutch.

(c) Trip lever should engage clutch shoe lever by full thickness of shoe lever.

(d) If engagement of trip lever and clutch shoe lever is not as specified, loosen trip lever eccentric post clamping nut and position eccentric post to obtain specified engagement.

(e) Tighten clamping nut.

(10) Line-Feed Clutch Trip Lever Eccentric Post. Adjust as follows:

(a) Refer to Figure 6-32.

(b) Disengage clutch.

(c) Trip clutch trip lever and rotate main shaft until trip lever is over shoe lever.

(d) Take up play of shoe lever inward by snapping trip lever over shoe lever.

(e) Measure and note clearance between shoe lever and drum at each stop position to find stop position which yields greatest clearance. As gauged by eye, there should be some overbite on all stop-lugs.

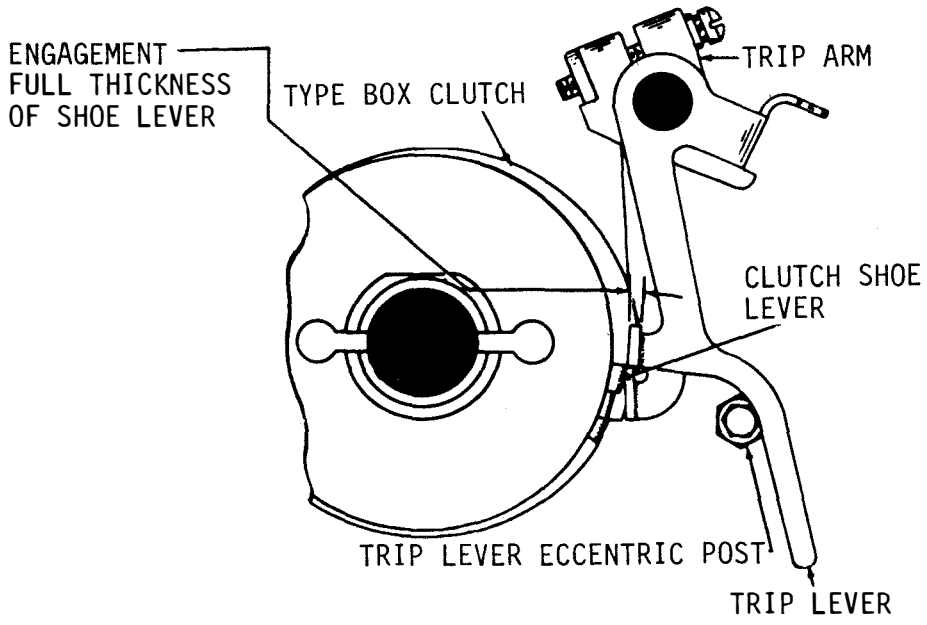


Figure 6-31. Type Box Clutch Trip Lever Eccentric Post, Right Side View

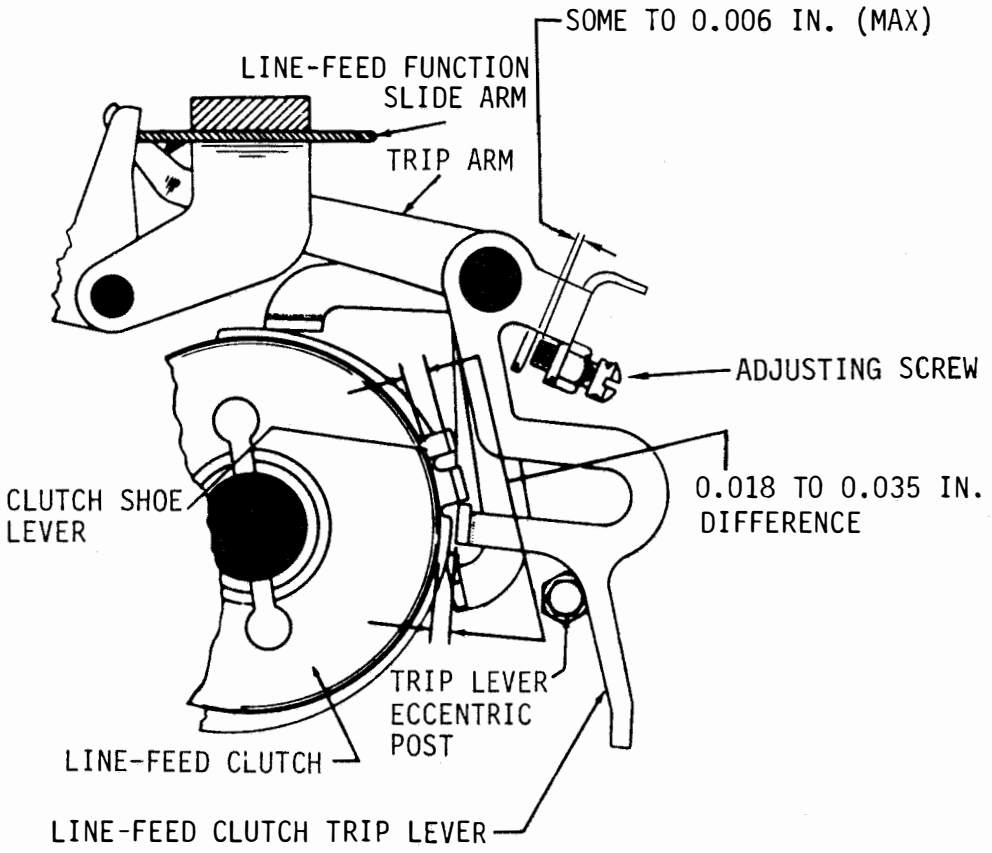


Figure 6-32. Line-Feed Clutch Trip Lever Eccentric Post and Adjusting Screw, Right Side View

(f) Position trip lever at stop which yields greatest clearance and rotate main shaft slowly until trip lever just falls off stop-lug.

(g) Measure and note clearance between trip lever and clutch drum.

(h) Find difference between greatest clearance measured in step (e) and clearance between trip lever and clutch drum measured in step (g) by subtracting.

(i) The greatest clearance in step (e) should be between 0.018 and 0.035 inch greater than clearance between trip lever and clutch drum obtained in step (g).

(j) If difference in clearance exceeds specified limits, loosen clamp nut, back off trip lever adjusting screw, and position trip lever eccentric stop post.

(k) Tighten clamp nut.

(11) Line-Feed Clutch Trip Lever Adjusting Screw. Adjust as follows:

(a) Refer to Figure 6-32.

(b) Place line-feed function slide arm in rear position.

(c) Place clutch trip lever against its eccentric post.

(d) Hold trip arm against its function slide arm.

(e) There should be some clearance not exceeding 0.006 inch maximum.

(f) If clearance exceeds specified limits, loosen adjusting screw clamp nut and adjust screw to obtain specified clearance.

(g) Tighten adjusting screw clamp nut.

(12) Type Box Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-33.

(b) Position trip shaft cam follower roller on lowest surface of cam (located on code bar clutch).

(c) Measure latchlever side play; this should be some to 0.008 inch maximum.

(d) Measure clearance between inner face of type box clutch trip lever and clutch disk stop-lug. Clearance should be between 0.025 and 0.045 inch maximum.

(e) If clearance exceeds specified limits, loosen clamp screw and position stop to obtain specified clearance.

(13) Clutch Shoe Lever. Adjust as follows:

(a) Refer to Figure 6-34.

(b) Disengage clutch and measure gap between clutch shoe lever and its stop-lug. Make note of gap measurement.

(c) Engage clutch by tripping clutch and

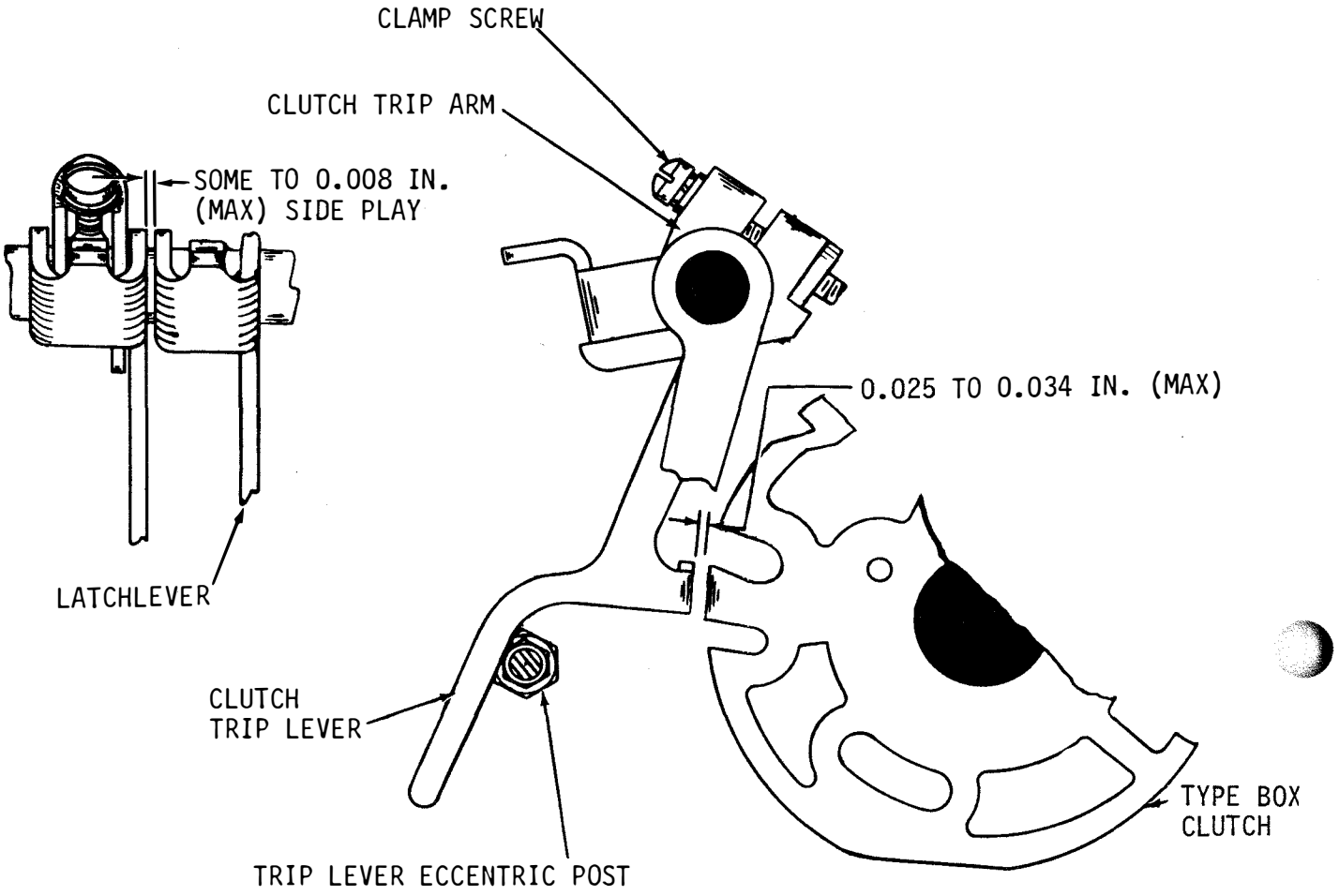


Figure 6-33. Type Box Clutch Trip Lever, Left Side View

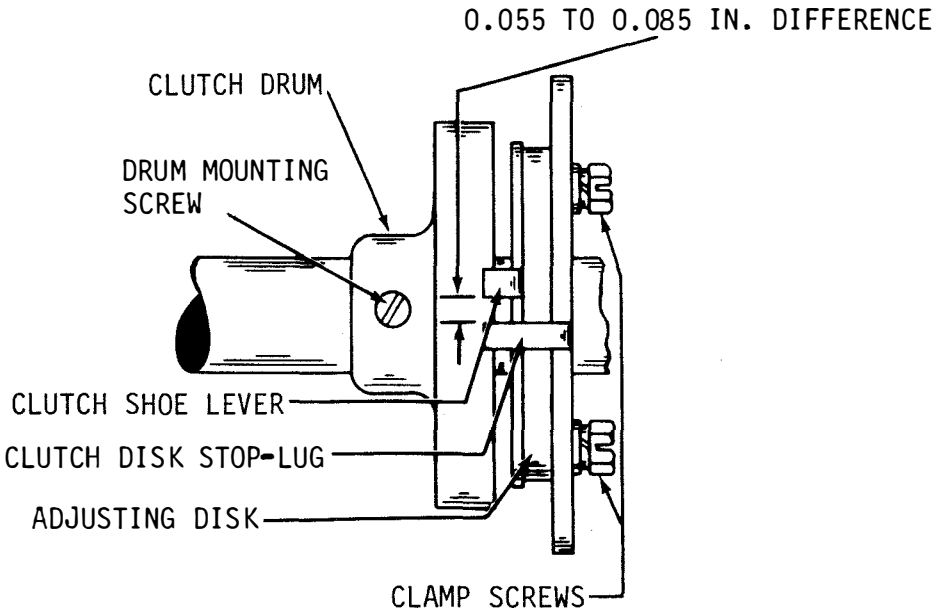


Figure 6-34. Clutch Shoe Lever, Rear View

rotating it until clutch shoe lever is toward bottom of unit and again measure gap between clutch shoe lever and its stop-lug. Make note of gap measurement.

(d) Find difference between the two gap measurements, by subtracting measurement with clutch disengaged from measurement with clutch engaged. Difference should be beween 0.055 and 0.085 inch.

(e) If difference exceeds specified value, loosen two clamp screws on clutch disk.

(f) Engage wrench or screwdriver with adjusting disk lug and rotate disk.

(g) Tighten clamp screws.

(14) Clutch Shoe Lever Spring. Adjust as follows:

(a) Refer to Figure 6-35.

(b) Engage clutch.

(c) Hold cam disk to prevent turning.

(d) Attach spring scale hook to clutch shoe lever and pull at tangent to clutch.

(e) Force required to move shoe lever in contact with stop-lug should be as follows:

1. For one-stop clutches, 15 to 20 ounces maximum.

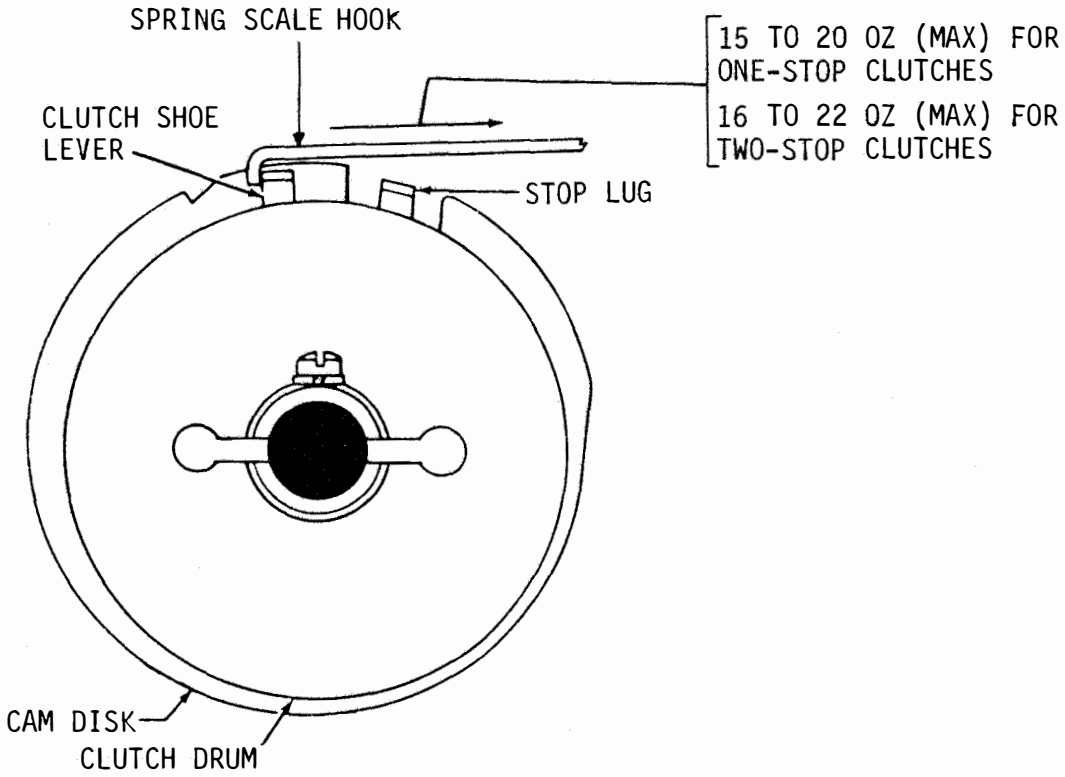


Figure 6-35. Clutch Shoe Lever Spring and Clutch Drum Position (Except Selector), Right Side View

2. For two-stop clutches, 16 to 22 ounces maximum.

(f) If scale reading exceeds specified limits, install a new spring.

(15) Clutch Drum Position (Except Selector). Adjust as follows:

(a) Refer to Figure 6-35.

(b) Hold clutch shoe lever disengaged and measure clutch end play.

(c) There should be some end play but not exceeding 0.015 inch.

(d) If end play exceeds specified limit, loosen mounting screws and postion each drum and spacing clutch set collar.

(e) Tighten mounting screws.

(16) Clutch Shoe Spring. Adjust clutch shoe spring as follows:

NOTE

In order to check this spring tension it is necessary to remove clutch from main shaft. Therefore, it should not be checked unless there is reason to believe that it does not meet its requirement.

(a) Refer to Figure 6-36.

(b) Remove clutch drum.

(c) Attach spring scale hook to primary shoe at a tangent to friction surface.

(d) Force required to start primary shoe moving away from secondary shoe at point of contact should be between 3 and 5 ounces maximum.

(e) If scale reading exceeds specified limits, install a new spring.

d. Spacing Mechanism Adjustment. Perform the following spacing mechanism adjustments.

(1) Spacing Gear Phasing. Adjust as follows:

(a) Refer to Figure 6-37.

(b) Disengage spacing clutch.

(c) Ensure index line on spacing pawl is centered between the two lines on pawl retaining washer.

(d) If index line is not centered, remove mounting screw from spacing shaft gear.

(e) Hold pawls in alignment and engage spacing shaft gear with clutch gear at a point where spacing shaft gear mounting screw hole is in line with tapped hole in spacing shaft.

(f) Insert mounting screw in spacing shaft gear and tighten.

(2) Spacing Gear Clearance. Adjust as follows:

(a) Refer to Figure 6-37.

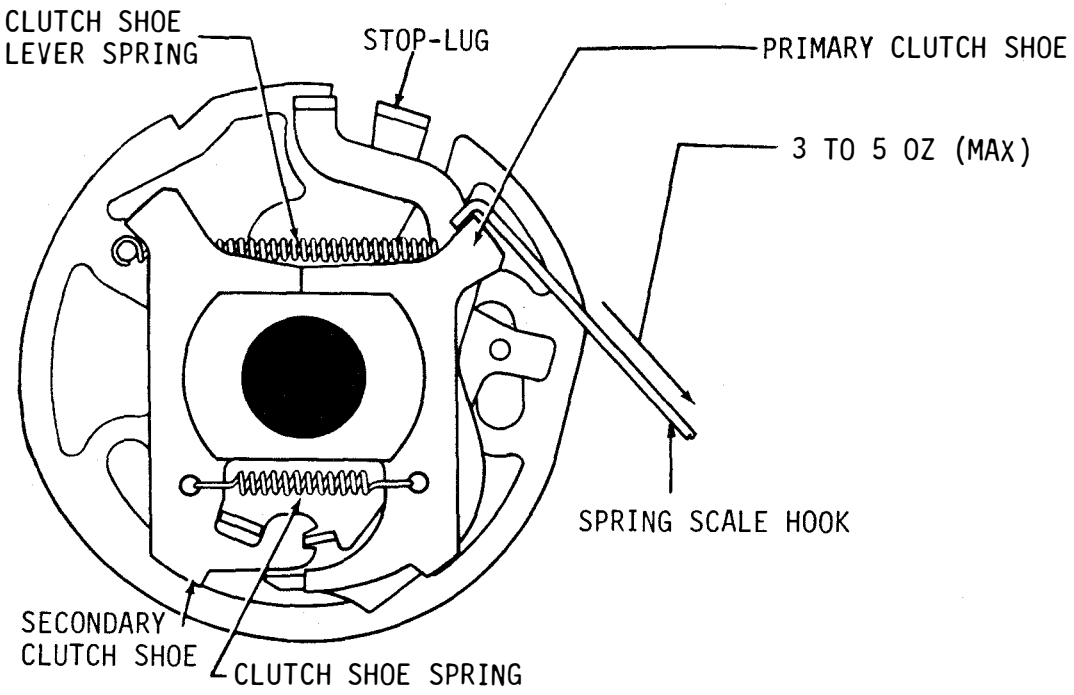


Figure 6-36. Clutch Shoe Spring, Right Side View

(b) Place carriage in fully returned position.

(c) There should be a minimum of backlash without binding.

(d) To increase clearance, loosen upper mounting screw and insert shims between spacing shaft bearing and front plate. Tighten upper mounting screw.

(e) To decrease backlash, loosen lower mounting screw and insert shims between spacing shaft bearing and front plate. Tighten lower mounting screw.

(3) Oscillating Rail Slide Position. Adjust as follows:

(a) Refer to Figure 6-38.

(b) Place carriage return ring and automatic carriage return-line feed ring free in maximum counterclockwise position on spacing drum.

(c) Disengage spacing clutch.

(d) Engage farthest advanced feed pawl with tooth immediately above cutaway section of ratchet.

(e) Measure clearance between rail slide and pulley. Clearance should be between 0.025 and 0.050 inch maximum.

(f) If clearance exceeds specified limits, loosen two clamp screws and position slide on wire rope to obtain specified clearance.

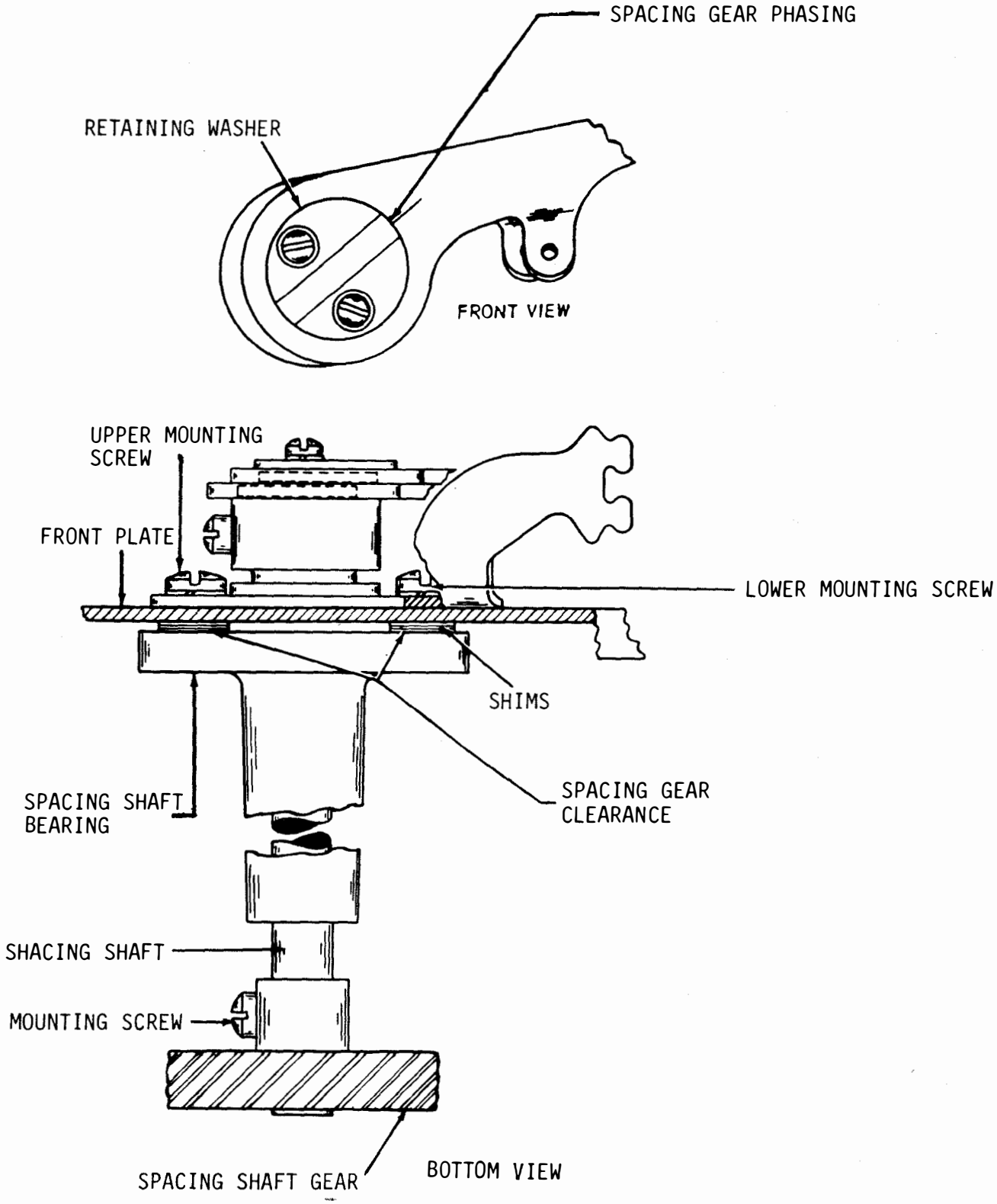


Figure 6-37. Spacing Gear Phasing and Clearance

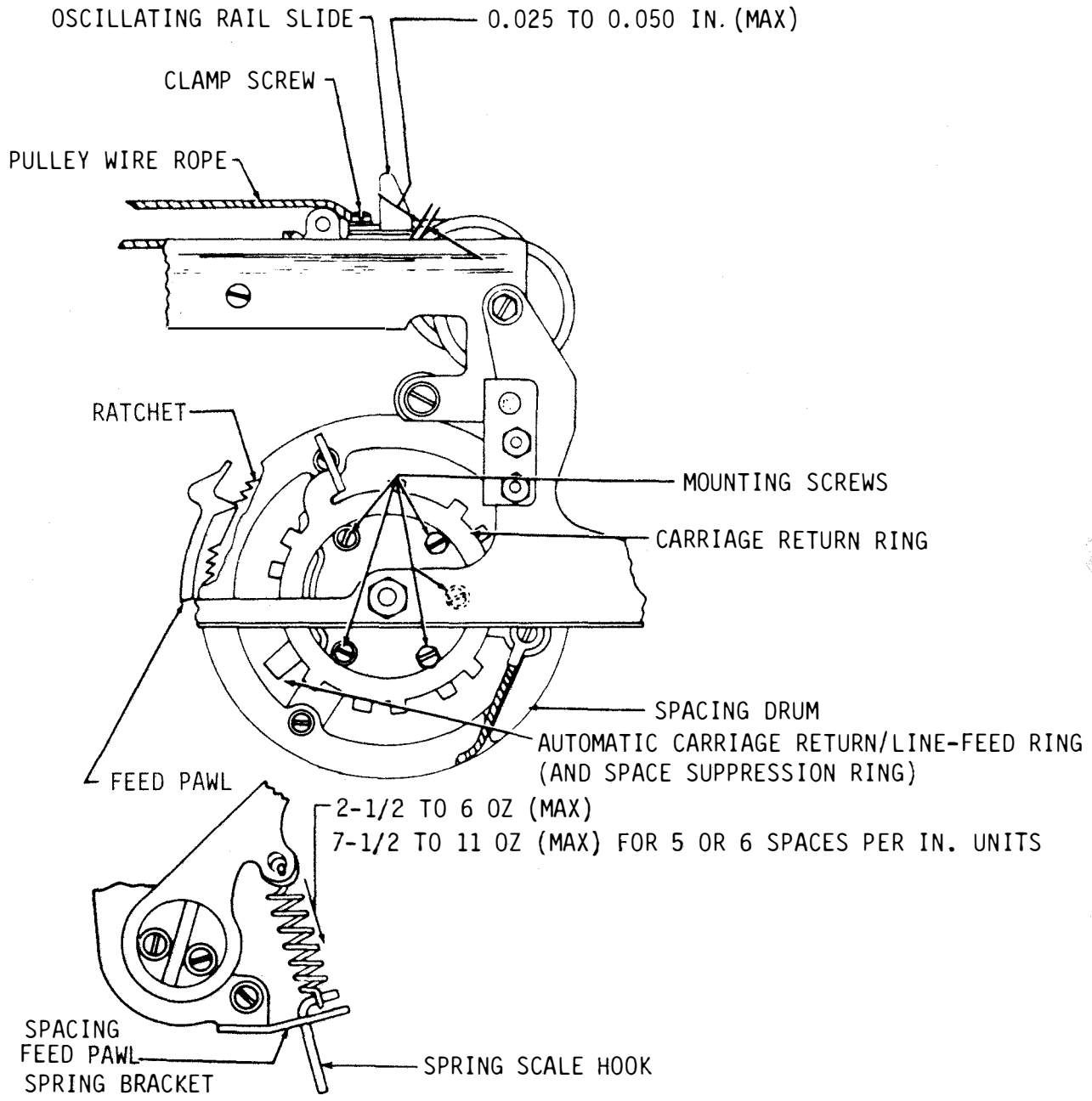


Figure 6-38. Oscillating Rail Slide Position and Spacing Feed Pawl Spring, Front View

(g) Tighten clamp screws.

NOTE

If this adjustment is made check Left Margin, paragraph 6-3.1d(17); Right Margin, paragraph 6-3.1d(19); and Printing Carriage Position, paragraph 6-3.1g(3).

(4) Spacing Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-38.

(b) Place each spacing pawl in least advanced position resting against ratchet wheel.

(c) Unhook each spring from bracket.

(d) Attach spring hook to each spring in succession.

(e) Force required to extend each spring to its installed length should be between 2-1/2 and 6 ounces maximum.

(f) On units equipped for 5 to 6 spaces per inch, force required should be between 7-1/2 and 11 ounces maximum.

(g) If scale reading for any spring exceeds specified limits, install a new spring.

(5) Spacing Trip Lever Bail Cam Plate. Adjust as follows:

(a) Refer to Figure 6-39.

(b) Place spacing trip lever arm in upward position.

(c) Rotate type box clutch through approximately one-half of its cycle.

(d) Disengage all function pawls from function bar.

(e) Measure clearance between top surface of trip lever arm extension and spacing trip lever shoulder. Clearance should be between 0.010 and 0.040 inch maximum.

(f) Loosen mounting screws and position cam plate on rocker shaft to obtain specified clearance, keeping forward edge of cam plate parallel to shaft.

(g) Tighten mounting screws.

(6) Spacing Trip Lever Bail Spring. Adjust as follows:

(a) Refer to Figure 6-39.

(b) Position spacing trip lever bail against stop.

(c) Unhook spacing trip lever bail spring.

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to its installed length should be between 8 and 12 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring. Reconnect free end of spring.

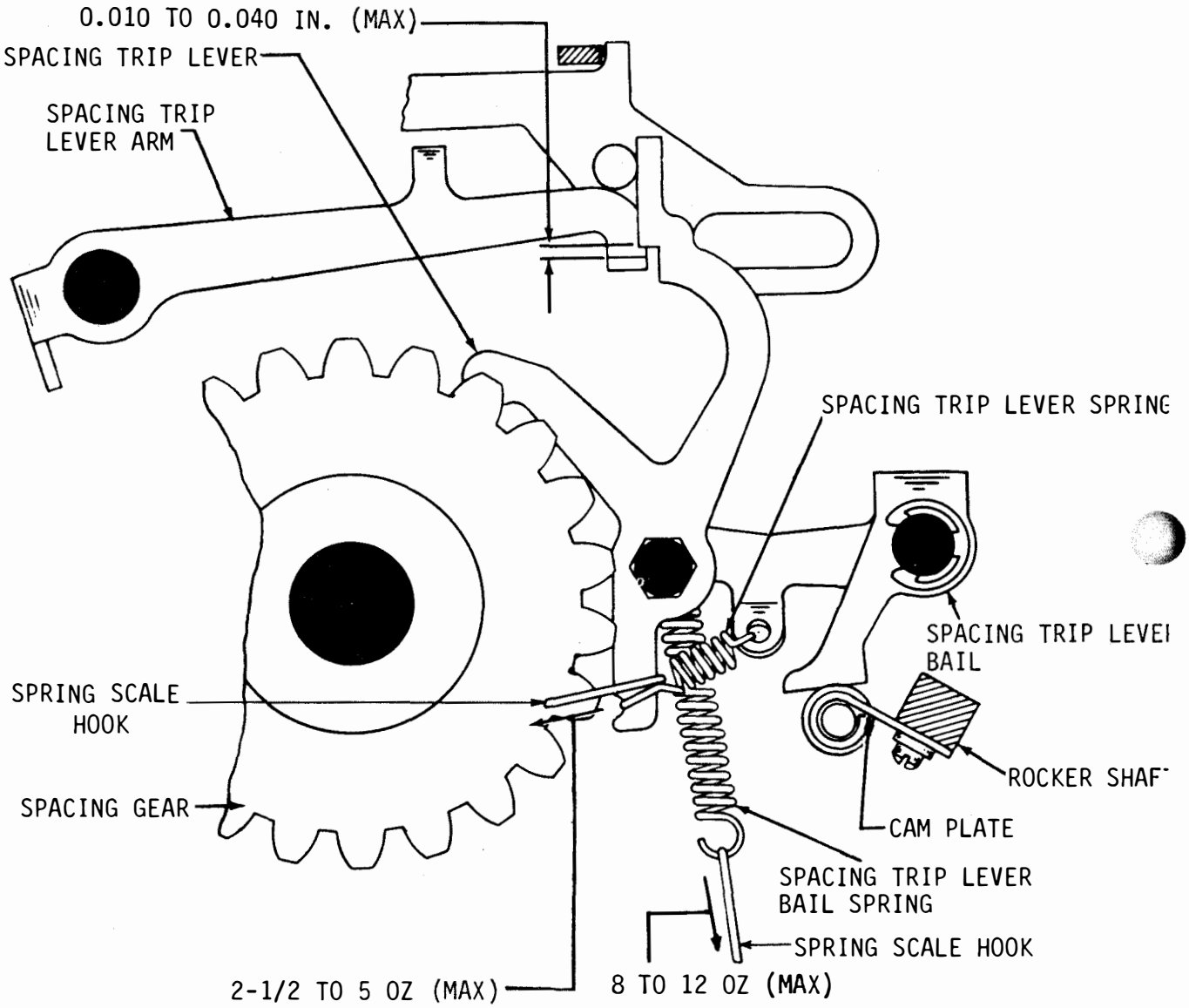


Figure 6-39. Spacing Trip Lever Bail Cam Plate, Trip Lever Bail Spring, and Trip Lever Spring, Left Side View

(7) Spacing Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-39.

(b) Disengage type box clutch.

(c) Attach spring scale hook to spacing trip lever at point of spring attachment.

(d) Force required to start lever moving should be between 2-1/2 and 5 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(8) Lower Draw-Wire-Rope Pulley Bail Spring. Adjust as follows:

(a) Refer to Figure 6-40.

(b) Unhook spring from pulley bail.

(c) Rest bail extension on opening in front plate.

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to position length should be between 18 and 22 ounces.

(f) If scale reading exceeds specified limits, install new spring.

(9) Carriage Draw-Wire-Rope. Adjust as follows:

(a) Refer to Figure 6-40.

(b) Place horizontal positioning mechanism in STOP position.

(c) Measure clearance between lower draw-wire-rope and carriage return latch bail post. Clearance should be a minimum of 0.006 inch.

(d) Measure clearance between lower draw-wire-rope and left horizontal positioning mechanism drive linkage. Clearance should be a minimum of 0.030 inch.

(e) If clearance in either step (c) or (d) exceeds limits, advance printing carriage to extreme right-hand position.

(f) Rotate type box clutch 1/2 revolution.

(g) Loosen rope clamp screw one turn only.

(h) Loosen pulley bearing stud mounting screws, and position pulley bearing studs to obtain clearances as specified in step (c) and (d).

(i) Tighten mounting screws.

(j) Ensure cable has moved around its equalizing clamp so that rear cable has slightly greater tension than front cable as gauged by feel.

NOTE

If this adjustment is made, it will also be necessary to check Oscillating Rail Slide Position, paragraph 6-3.1d(3); Left Margin, paragraph 6-3.1d(17); Right Margin,

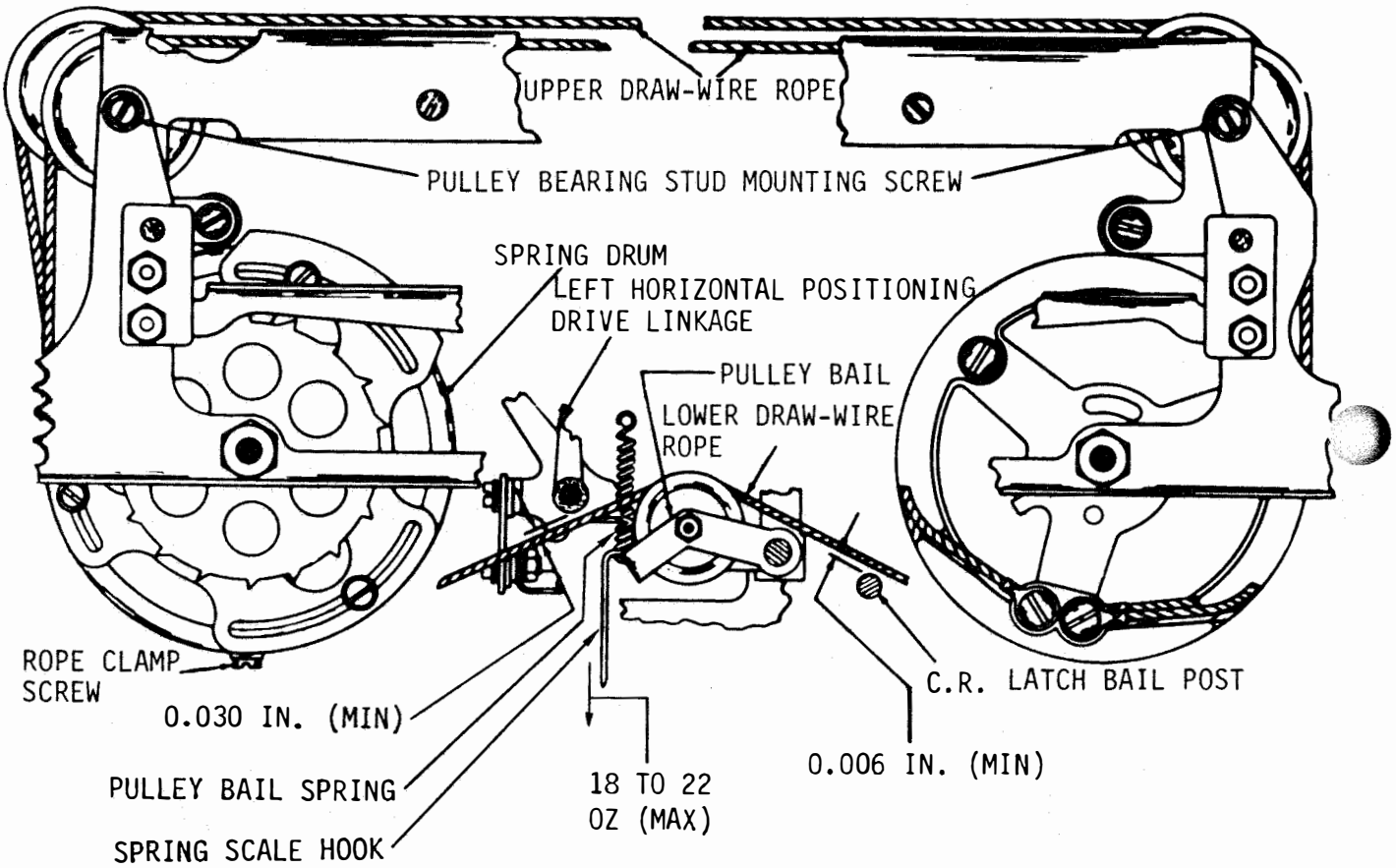


Figure 6-40. Lower Draw-Wire Pulley Bail Spring and Carriage Draw-Wire Rope, Front View

paragraph 6-3.1d(19); and Print Carriage Position, paragraph 6-3.1g(3).

(k) Tighten clamp screw.

(10) Carriage Return Spring. Adjust as follows:

NOTE

If this adjustment is made, check Dashpot Vent Screw adjustment, paragraph 6-3.1d(15).

(a) Refer to Figure 6-41.

(b) Place spacing drum in returned position.

(c) Place printing track in lower position.

(d) Remove lower cable roller spring. Hold spacing pawl, buffer slide, and carriage return latch to prevent interference with spacing drum.

(e) Attach spring scale hook to a tooth on spring drum.

(f) Force required to start spring drum moving should be between 3-1/2 and 4-1/4 pounds maximum.

(g) If spring scale reading exceeds specified limits, loosen spring drum nut and adjust as follows:

1. To increase spring tension, rotate spring drum ratchet wheel.

2. To decrease spring tension, operate escapement lever.

(h) Tighten nut.

NOTE

At altitudes higher than 2000 feet above sea level keep spring tension to the minimum.

(11) Spacing Feed Pawl Release Link Spring. Adjust as follows:

(a) Refer to Figure 6-41.

(b) Attach spring scale hook to feed pawl release link.

(c) Force required to start spring stretching should be between 1/2 and 2-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(12) Carriage Return Latch Bail. Adjust as follows:

(a) Refer to Figure 6-42.

(b) Place carriage in fully returned position.

(c) Hold right side of bail against its retainer to take up play in carriage return bail to right.

(d) Measure clearance between carriage return latch bail and carriage return lever. Clearance should

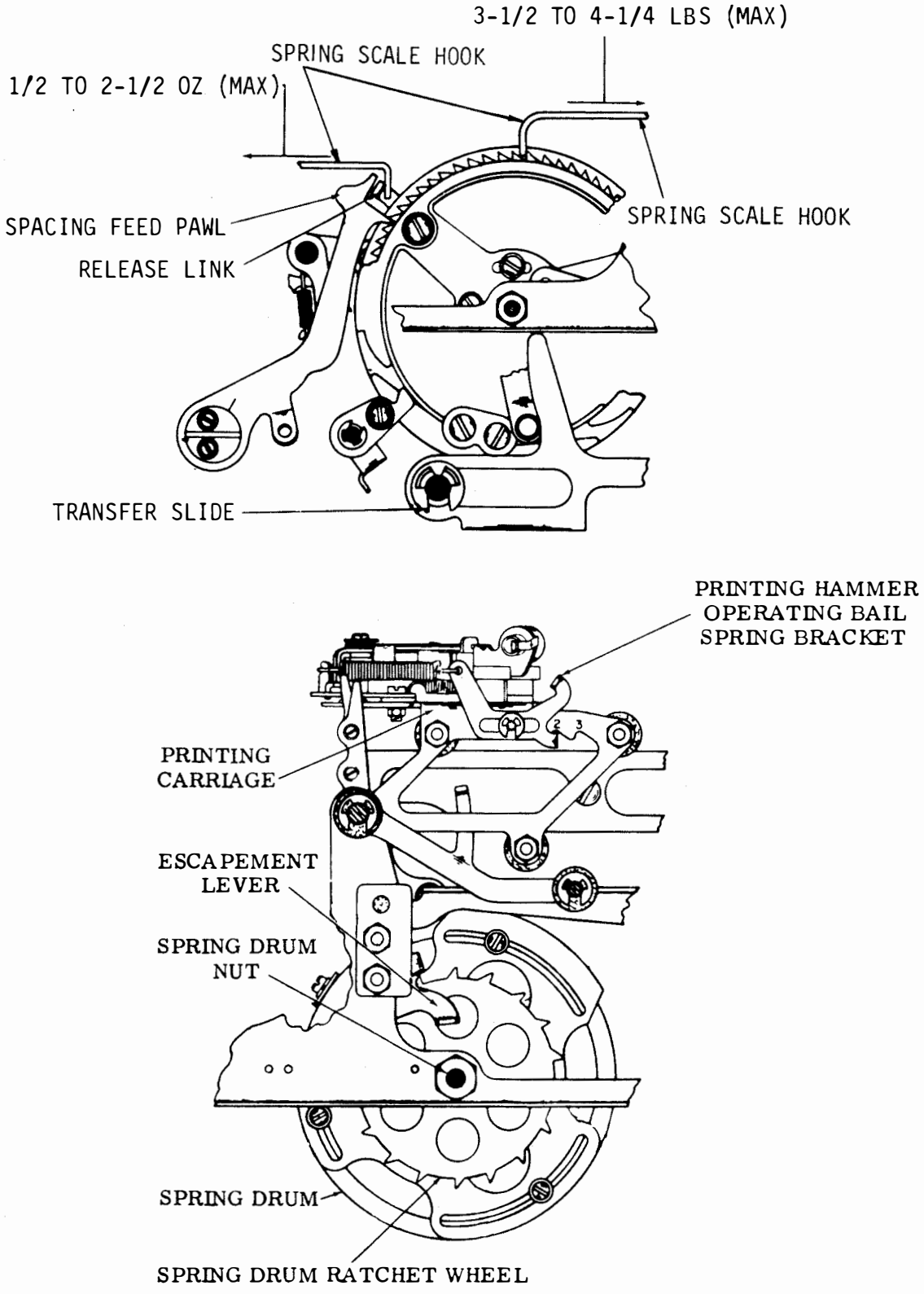


Figure 6-41. Carriage Return Spring and Spacing Feed Pawl Release Link Spring, Front View

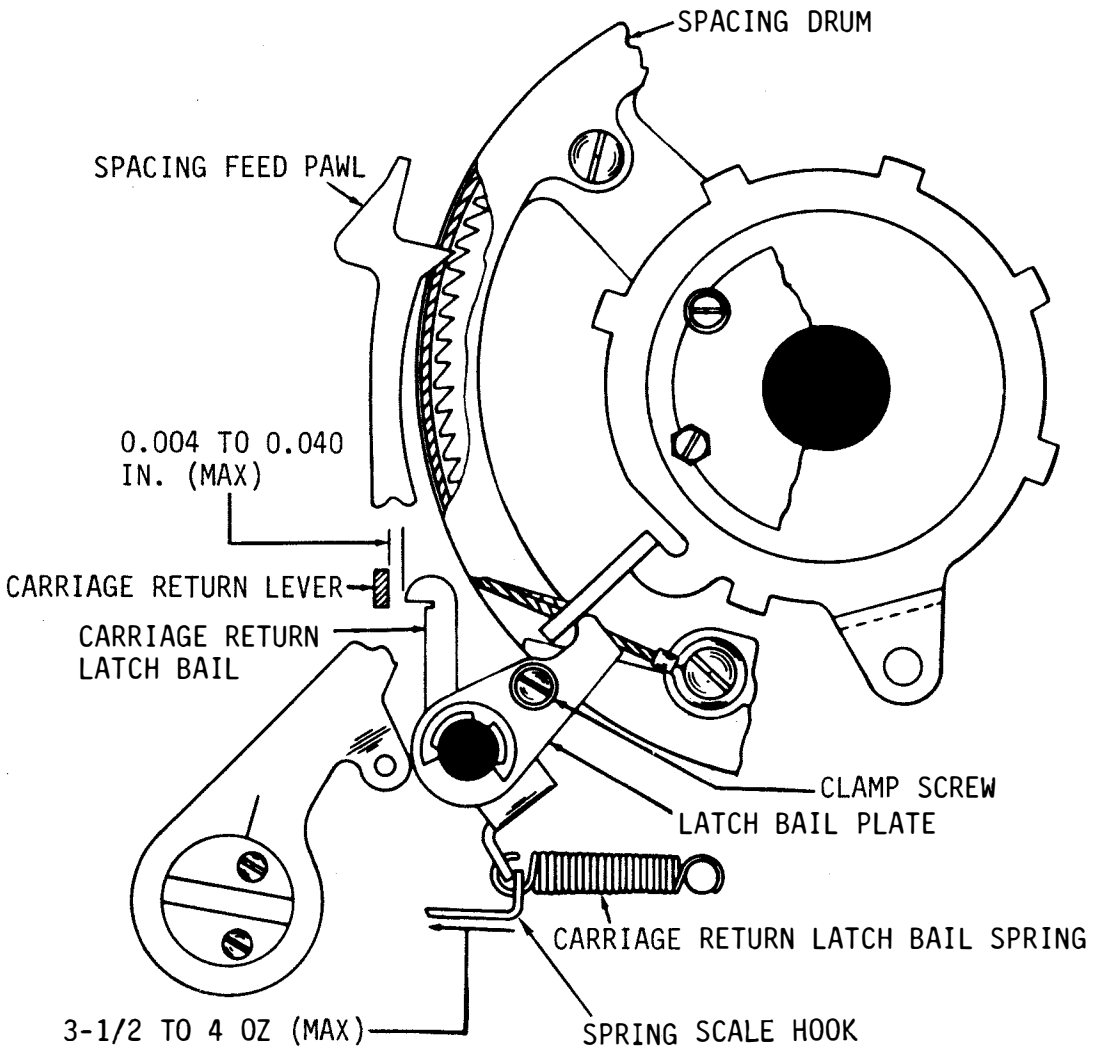


Figure 6-42. Carriage Peturn Latch Bail and Latch Bail Spring, Front View

be between 0.004 and 0.040 inch maximum.

(e) If clearance exceeds specified limits, loosen clamp screw and position latch bail plate to obtain specified clearance.

(f) Tighten clamp screw.

(13) Carriage Return Latch Bail Spring. Adjust as follows:

(a) Refer to Figure 6-42.

(b) Place spacing drum in fully returned position.

(c) Attach spring scale hook to carriage return latch bail.

(d) Force required to start latch bail moving should be between 3 and 4-1/2 ounces.

(e) If scale reading exceeds specified limits, install new spring.

(14) Carriage Return Lever. Adjust as follows:

(a) Refer to Figure 6-43.

(b) Set up CARRIAGE RETURN function code (---4-) on selector.

(c) If unit is equipped with one-stop function clutch, rotate main shaft until function clutch stop-lug is toward bottom of unit. If unit is equipped with two-stop function clutch, rotate main shaft until function clutch is disengaged in STOP position that results in least clearance.

(d) Hook carriage return function pawl over its function bar.

(e) Hold spacing drum so that carriage return latch bail is latched.

(f) Measure clearance between latch bail and carriage return lever. Clearance should be between 0.006 and 0.035 inch maximum.

(g) If clearance exceeds specified limits, loosen clamp screw.

(h) Position carriage return lever on carriage return bail to obtain specified clearance between carriage return lever and latch bail.

(i) Tighten clamp screw.

(15) Dashpot Vent Screw. Adjust as follows:

(a) Refer to Figure 6-44.

(b) Operate printer at any speed from automatic transmission with one carriage return and one line-feed signal between lines. First character of each line should be printed in same location as if unit was manually operated slowly.

(c) Type box carriage should return from any length of line without bouncing.

(d) If bouncing occurs, loosen vent screw locking nut and turn down vent screw until slight pneumatic bounce is perceptible. Then back off screw until effect disappears. Continue backing off screw 1/4 turn if dashpot

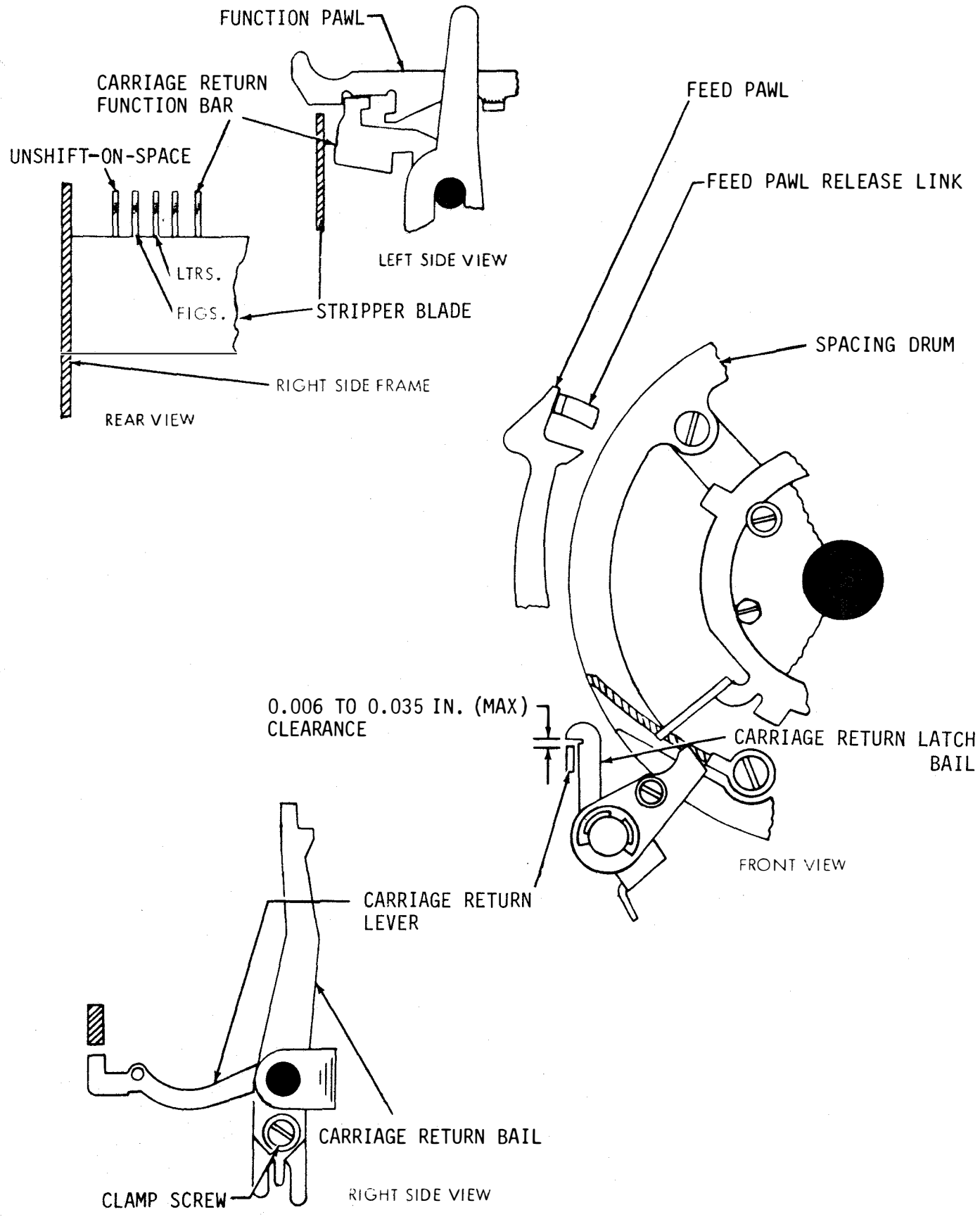


Figure 6-43. Carriage Return Lever

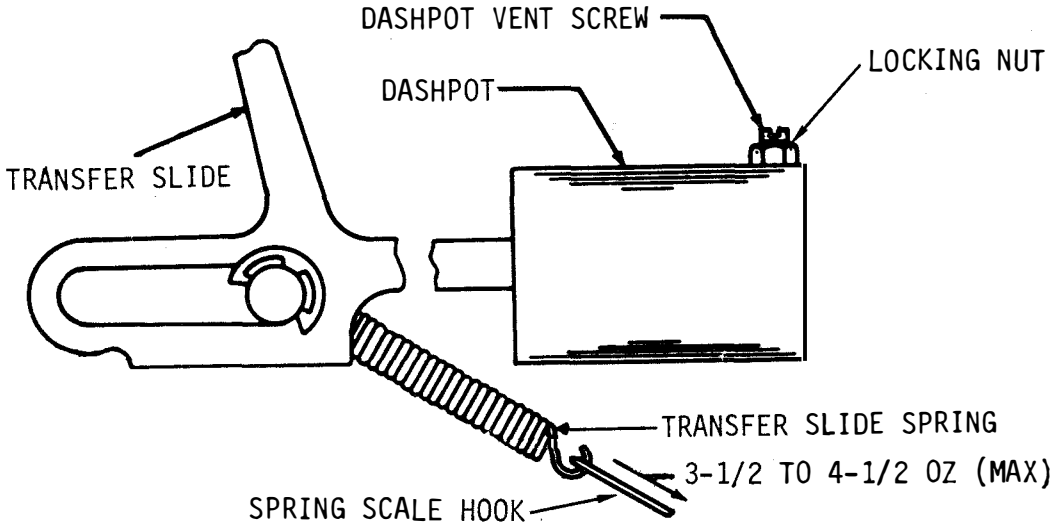


Figure 6-44. Dashpot Vent Screw and Transfer Slide Spring, Front View

has two vent holes, or 1 full turn if dashpot has only one vent hole.

(e) Tighten locking nut.

NOTE

At altitudes higher than 2000 feet above sea level, it may also be necessary to reduce Carriage Return Spring, paragraph 6-3.1d(10), toward minimum.

(16) Transfer Slide Spring. Adjust as follows:

(a) Refer to Figure 6-44.

(b) Place transfer slide in extreme left position.

(c) Unhook transfer slide spring end which is not connected to transfer slide.

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to its installed length should be between 3-1/2 and 4-1/2 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring. Reconnect free spring end.

(17) Left Margin (72 Character Typical Line). Adjust as follows:

(a) Refer to Figure 6-45.

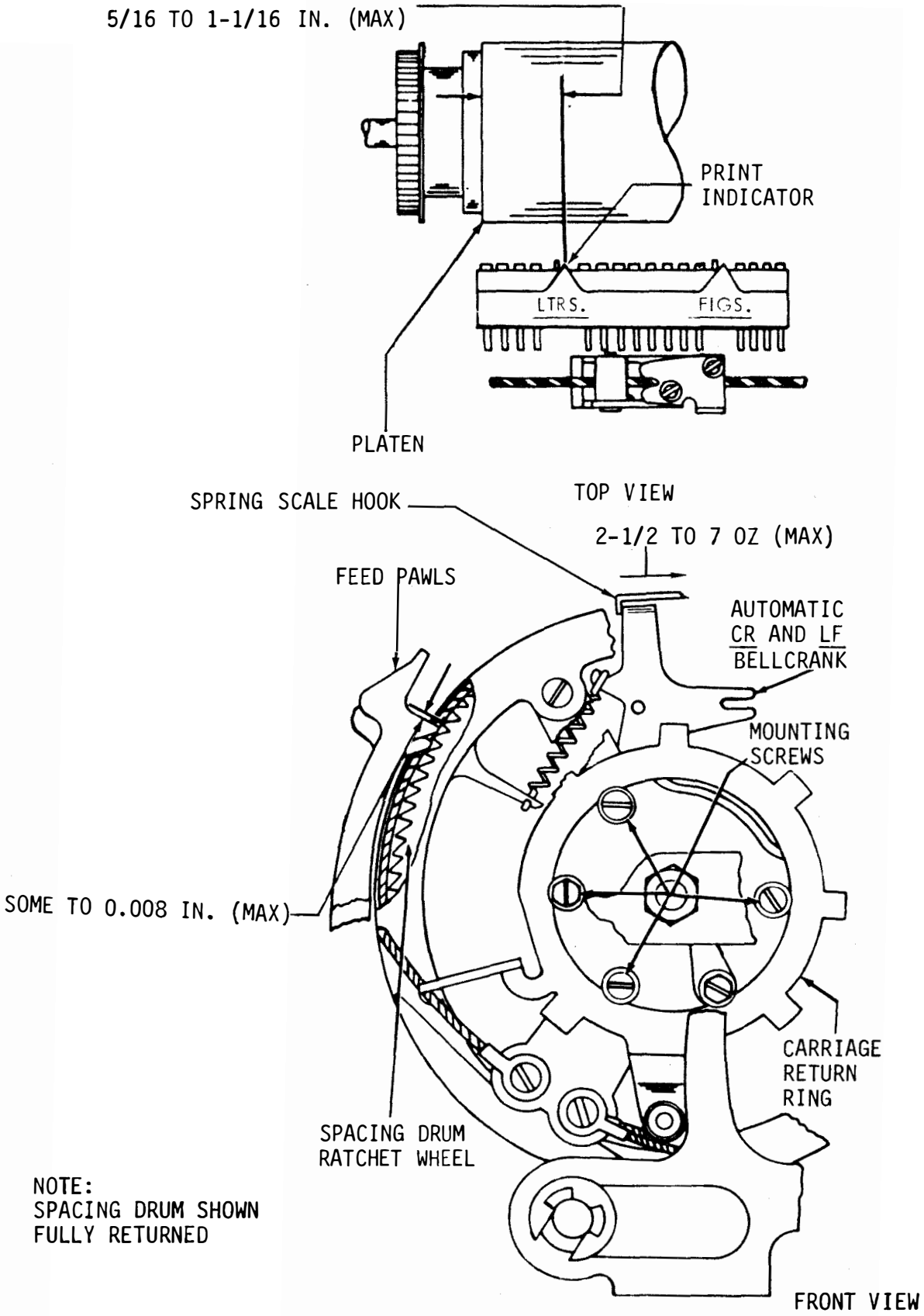


Figure 6-45. Left Margin and Automatic Carriage Return/Line-Feed Bellcrank Spring

(b) Disengage type box clutch.

(c) Place spacing drum in its return position.

(d) Shift type box to LETTERS condition.

(e) Measure clearance between left edge of platen and LTRS print indicator. Clearance between left edge of platen and LTRS print indicator should be between 15/16 and 1-1/16 inch maximum.

NOTE

Left margin may be varied as required from 0 to 1 inch. Maximum range adjustment for mechanisms with standard 10-characters per inch spacing is 85 characters for friction feed platen or 74 characters for sprocket feed platen.

(f) If clearance exceeds specified limits, loosen clamp screws and position spacing drum stop arm to obtain specified clearance.

(g) Return print carriage to its left position and loosen four carriage return ring mounting screws.

(h) Hold carriage return ring in its counterclockwise position and position type box so that LTRS indicator aligns with required margin.

(i) Tighten clamp and mounting screws.

(j) Disengage spacing clutch.

(k) Place front spacing feed pawl in farthest advanced position.

(l) Place spacing drum in fully returned position (dashpot plunger fully depressed).

(m) Take up play in spacing shaft gear in counterclockwise direction, paragraphs 6-3.1d(1) and (2).

(n) Measure clearance between pawl and shoulder of ratchet wheel tooth immediately ahead. There should be some clearance not exceeding 0.008 inch maximum.

(o) Ensure that rear pawl, when farthest advanced, drops into indentation between ratchet wheel teeth and bottoms firmly in notch.

(p) If rear pawl does not seat as specified, refine steps (b) through (i) above.

NOTE

If these adjustments are necessary, recheck the adjustments in paragraphs 6-3.1d(4), 6-3.1d(19), and 6-3.1g(3).

(18) Automatic Carriage Return/Line-Feed Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-45.

(b) Attach spring scale hook to bellcrank.

(c) Force required to move bellcrank

should be between 2-1/2 and 7 ounces maximum.

(d) If spring scale reading exceeds specified limits, install a new spring.

(19) Right Margin. Adjust as follows:

NOTE

This adjustment is not applicable to units equipped with automatic carriage return/line-feed ring. For units so equipped, perform the adjustment procedures of paragraph 6-3.1d(21).

(a) Refer to Figure 6-46.

(b) Disengage type box clutch.

(c) Place carriage in position to print character on which spacing cutout is to occur.

(d) Place front feed pawl in farthest advanced position.

(e) Hold spacing cutout transfer bail in its uppermost position.

(f) If unit has two-piece spacing cutout bail, push cutout bail toward rear of unit through hole in front plate.

(g) Measure clearance between extension on space suppression ring and transfer bail. Clearance should be between 0.006 and 0.025 inch maximum.

(h) If clearance exceeds specified limits, loosen four mounting screws indicated in the Figure and position space suppression ring. Range of adjustment is from 0 to 85 characters.

(i) Tighten four mounting screws.

NOTE

If this adjustment is necessary, recheck the adjustments in paragraphs 6-3.1d(4), 6-3.1d(17), and 6-3.1g(3).

(20) Spacing Cutout Transfer Bail Spring. Adjust as follows:

(a) Refer to Figure 6-46.

(b) Apply spring scale pushrod to spacing cutout transfer bail.

(c) Force required to start bail moving should be between 1 and 3-1/2 ounces maximum.

(d) If spring scale reading exceeds specified limits, install new spring.

NOTE

If it is necessary to install a new spring, recheck adjustments in paragraphs 6-3.1d(4), 6-3.1d(17), and 6-3.1g(3).

(21) Right Margin with Automatic Carriage Return/Line-Feed Ring. Adjust as follows:

(a) Refer to Figure 6-47.

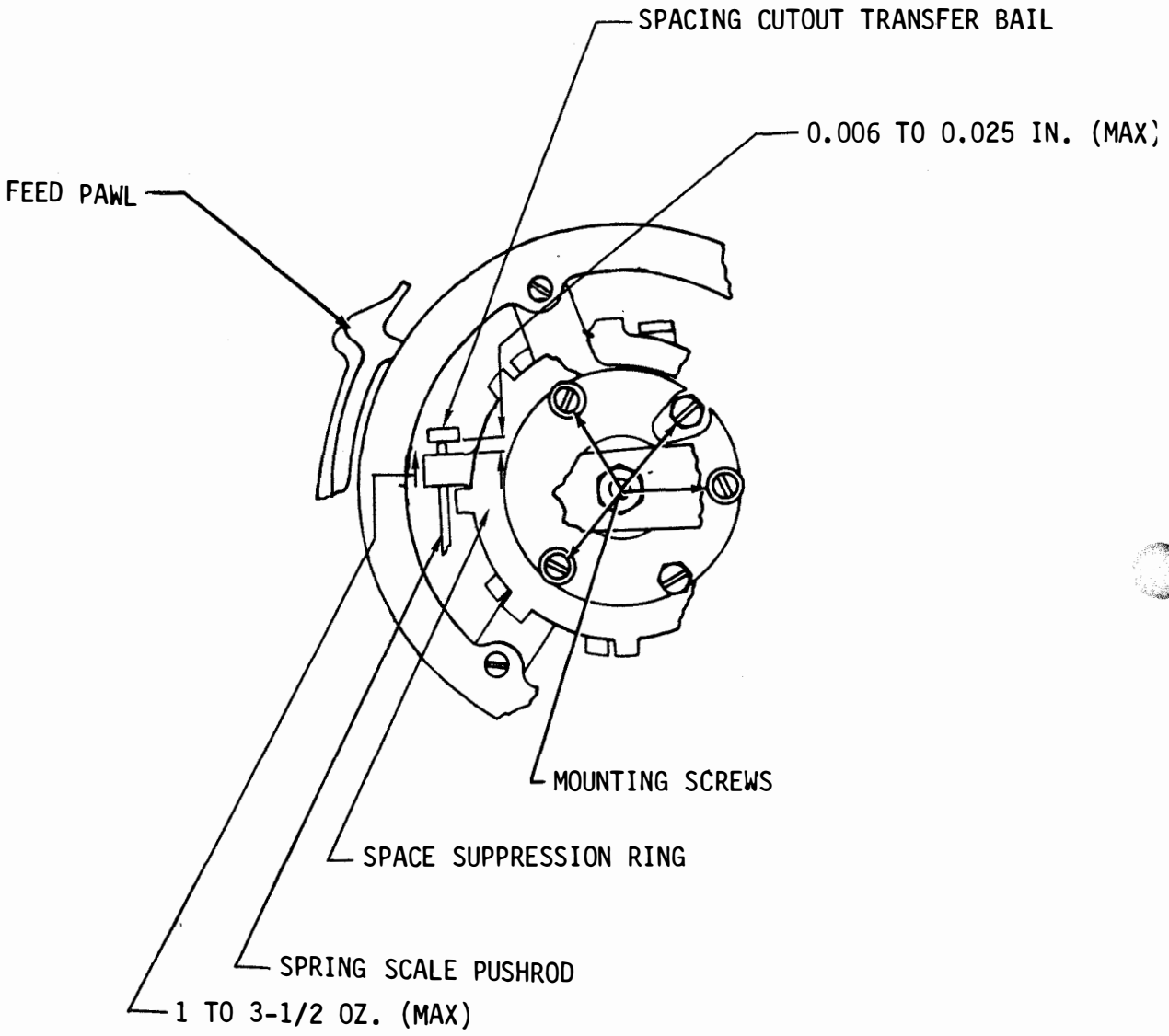


Figure 6-46. Right Margin and Spacing Cutout Transfer Bail Spring, Front View

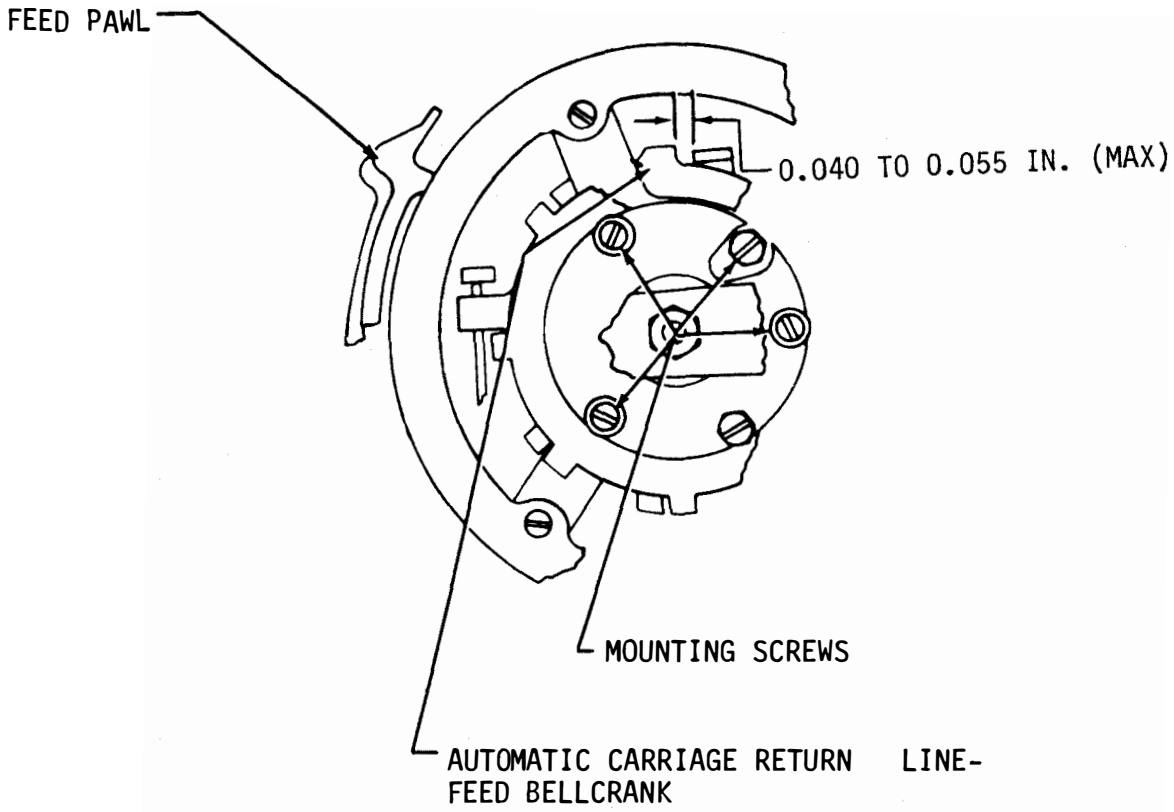


Figure 7-47. Right Margin with Automatic Carriage Return Line-Feed Ring, Front View

(b) Disengage type box clutch.

(c) Position carriage two spaces before character on which automatic carriage return/line-feed is to occur.

(d) Advance front feed pawl to farthest position.

(e) Measure clearance between extension on ring and automatic carriage return/line-feed bellcrank. Clearance should be between 0.040 and 0.055 inch maximum.

(f) If clearance exceeds specified limits, loosen four mounting screws indicated in the figure and position ring. Range of adjustment is from 0 to 85 characters.

(g) Tighten four mounting screws.

(22) Spacing Suppression Bail Spring. Adjust as follows:

(a) Refer to Figure 6-48.

(b) Place suppression bail in rear position.

(c) Apply spring scale pushrod near center of horizontal portion of suppression bail.

(d) Force required to start bail moving should be between 1/2 and 1-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(23) Margin Indicator Lamp. Adjust as follows:

(a) Refer to Figure 6-49.

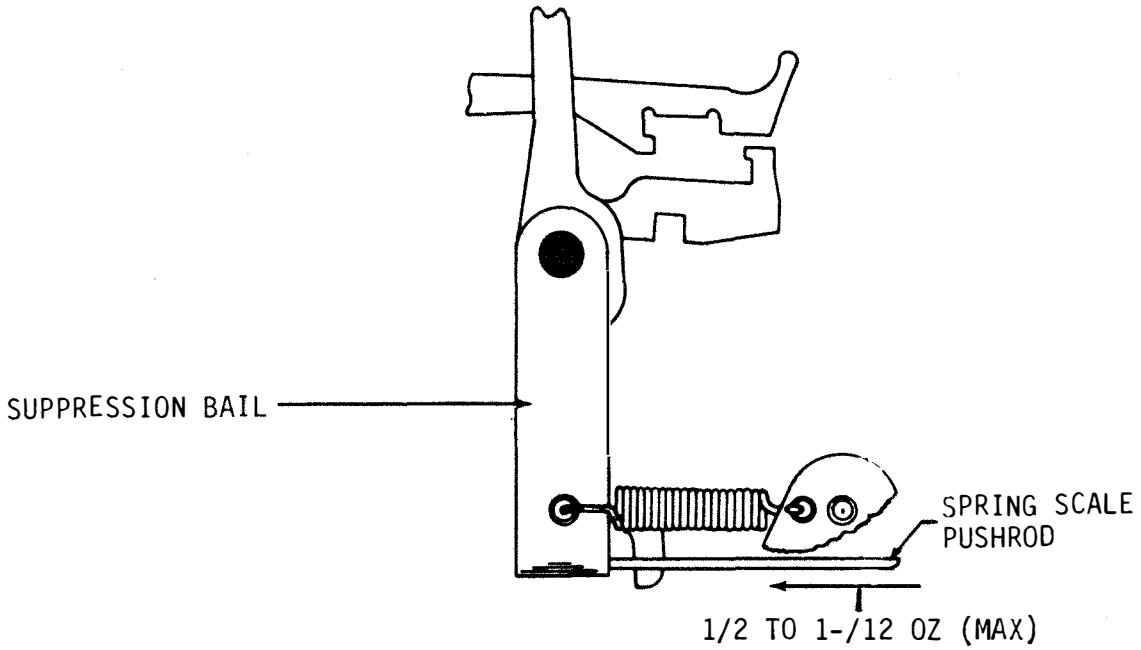


Figure 6-48. Spacing Suppression Bail Spring, Right Side View

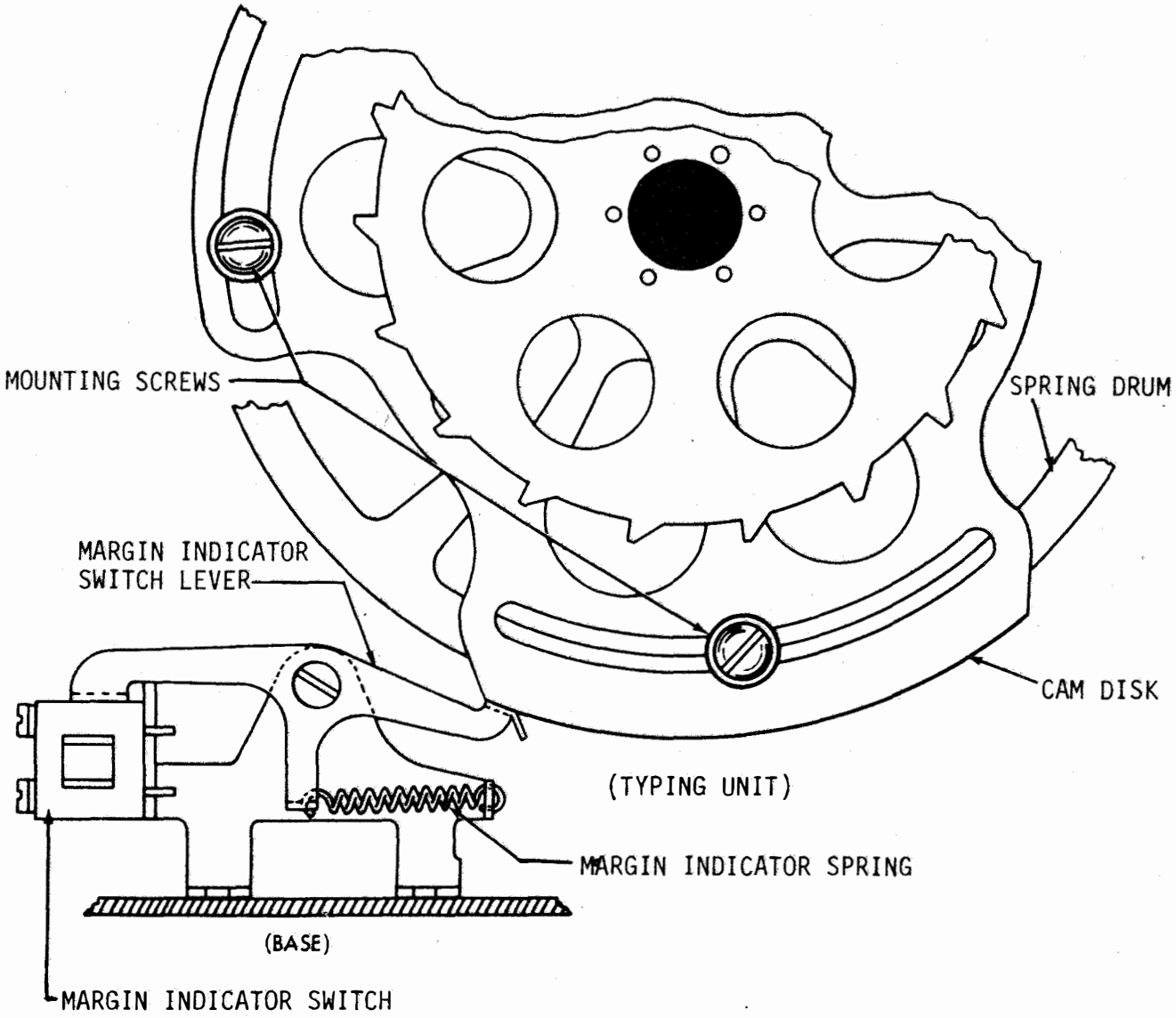


Figure 6-49. Margin Indicator Lamp, Front View

(b) Operate the unit under power. Margin indicator lamp should light on the desired character.

(c) If lamp does not light on desired character, loosen three mounting screws.

(d) Set type box carriage to print desired character and position cam disk counterclockwise on spring drum so that margin indicator switch just opens.

(e) Tighten three mounting screws.

NOTE

In the event a line shorter than 72 characters is required, it may be necessary to remove cam disk screws and insert them in adjacent slots in the disk if the rotation in one slot is not enough.

e. Positioning Mechanism Adjustments. Perform the following positioning mechanism adjustments.

(1) Rocker Shaft Left Bracket. Adjust as follows:

(a) Refer to Figure 6-50.

(b) Rocker shaft left bracket should be firmly seated against inner bearing race.

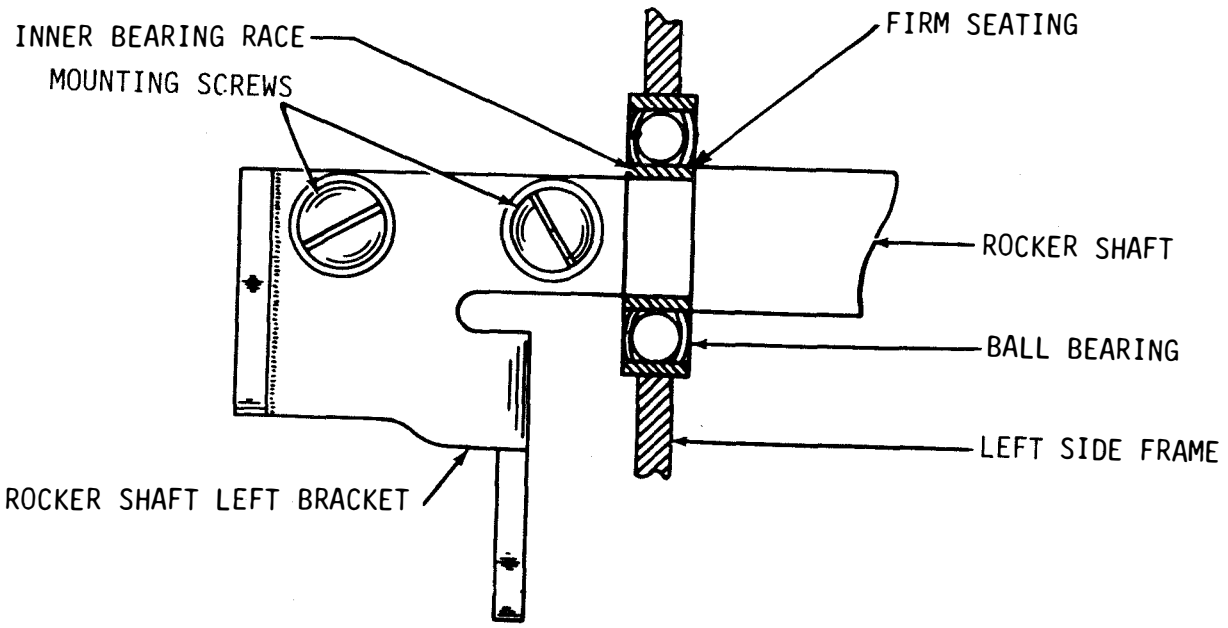


Figure 6-50. Rocker Shaft Left Bracket, Right Side View

(c) If seating is not firm as specified, loosen mounting screws.

(d) Hold rocker shaft in extreme left position and position bracket against inner bearing race.

(e) Tighten mounting screws.

(2) Rocker Shaft Bracket Eccentric Stud. Adjust as follows:

(a) Refer to Figure 6-51.

(b) Disengage type box clutch.

(c) Take up play in locking arm toward front.

(d) Measure gap between lower side of locklever roller and top edge of shoulder on horizontal positioning locklever.

(e) Gap should be between 0.055 and 0.090 inch maximum.

(f) If gap exceeds specified limits, loosen nut and position eccentric stud in lower end of rocker shaft left bracket. Tighten nut. Keep high part of eccentric (marked with dot) below centerline of drive link.

(g) Ensure rocker shaft drive link is free in its bearing (not under load) when clutch is in its stop position and when it is rotated 180 degrees from its stop position.

(h) If rocker shaft drive link is not free in its bearing, check manually by moving link toward left side frame and then in reverse direction. Ensure that stud is free in type box clutch bearing when clutch is in its stop position and when it is rotated 180 degrees from stop position.

(i) If any change is made in the above adjustment, recheck following related adjustments:

1. Horizontal Positioning Drive Linkage, paragraph 6-3.1e(12).

2. Right Vertical Positioning Lever Eccentric Stud, paragraph 6-3.1e(5).

3. Left Vertical Positioning Lever Eccentric Stud, paragraph 6-3.1e(7).

4. Vertical Positioning Locklever, paragraph 6-3.1e(14).

5. Ribbon-Feed Lever Bracket, paragraph 6-3.1g(17).

6. Function Stripper Blade Arms, paragraph 6-17e(3).

7. Spacing Trip Lever Bail Cam Plate, paragraph 6-3.1d(5).

8. Reversing Slide Brackets, paragraph 6-3.1e(11).

9. Ribbon Reverse Spur Gear, paragraph 6-3.1g(14).

10. Printing Track, paragraph 6-3.1g(5).

11. Printing Arm, paragraph 6-3.1g(12).

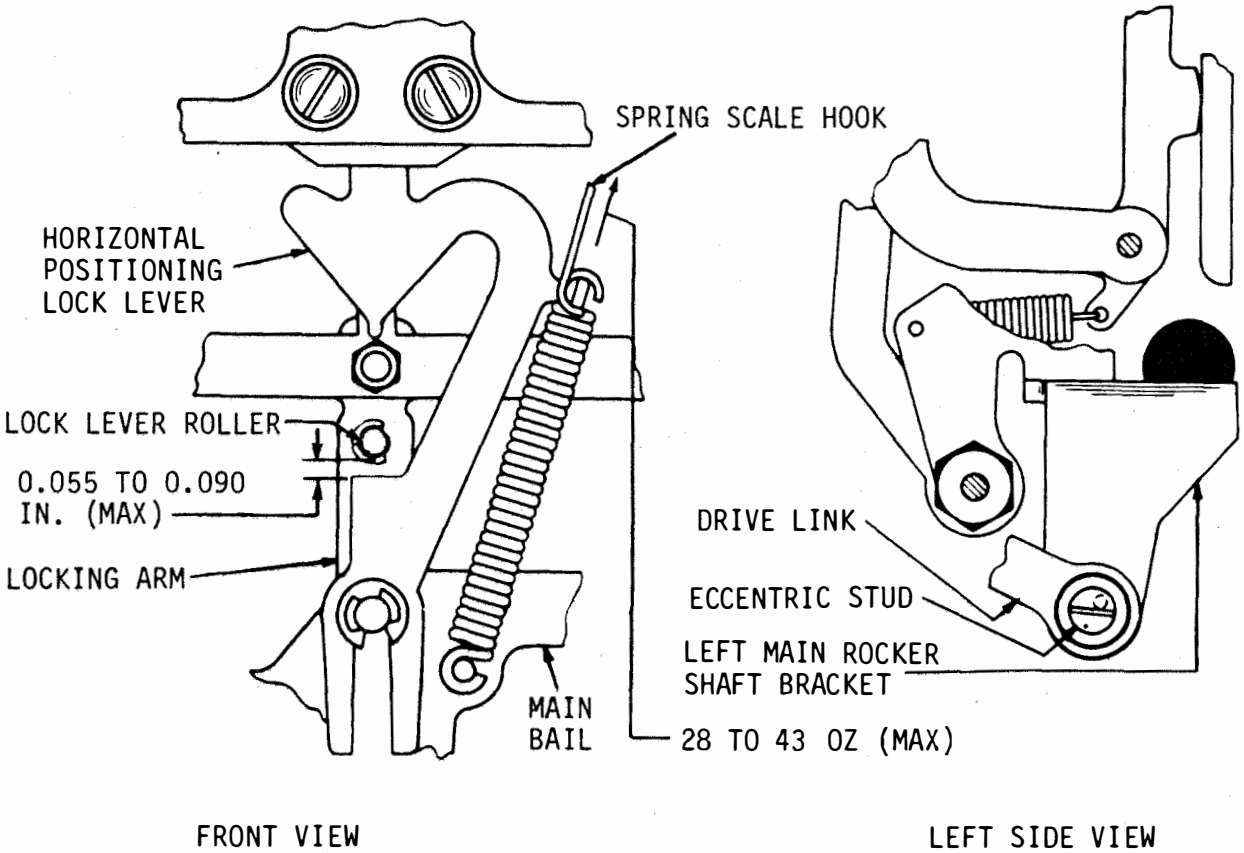


Figure 6-51. Rocker Shaft Bracket Eccentric Stud and Horizontal Positioning Locklever Spring

(3) Horizontal Positioning Locklever Spring. Adjust as follows:

(a) Refer to Figure 6-51.

(b) Place locklever in upper position.

(c) Attach spring scale hook to horizontal positioning locklever.

(d) Force required to start locklever moving upward should be between 28 and 43 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring and felt.

(4) Breaker Slide Bail Spring. Adjust as follows:

(a) Refer to Figure 6-52.

(b) Place break lever bails in lower position.

(c) Attach spring scale hook to breaker slide bail.

(d) Force required to start bail moving should be between 1/2 and 1-3/4 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(5) Right Vertical Positioning Lever Eccentric Stud. Adjust as follows:

NOTE

If this adjustment is made, it will also be necessary to

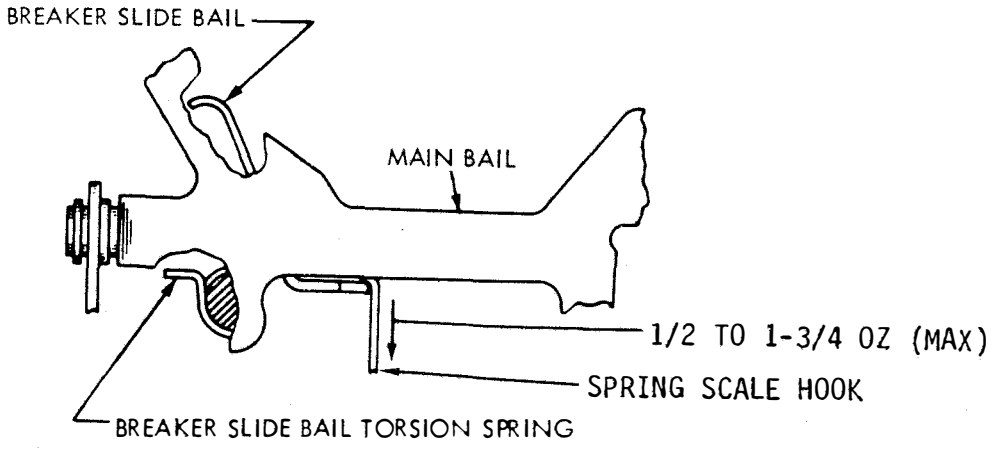


Figure 6-52. Breaker Slide Bail Spring, Front View

check left vertical positioning lever eccentric stud. Both levers should buckle equally to within 0.006 inch.

(a) Refer to Figure 6-53.

(b) Disengage type box clutch.

(c) Place common code bar in spacing position.

(d) Take up play by pressing downward on common code bar at guide block to minimize clearance between toe of vertical positioning lever and bottom of common code bar.

(e) While holding common code bar downward, measure clearance between toe of vertical positioning lever and bottom of common code bar. Clearance should be between 0.030 and 0.050 inch maximum.

(f) If clearance exceeds specified limits, loosen eccentric stud nut.

(g) Position eccentric stud in right rocker shaft bracket so that high part of eccentric (marked with dot) is toward rear. (High part of eccentric can also be identified by exposed portion of flat surface of vertical positioning link.)

(h) Tighten nut.

(6) Vertical Positioning Lever Spring. Adjust as follows:

(a) Refer to Figure 6-53.

(b) Place right and left vertical positioning lever toes in contact with suppression code bar with levers not buckled.

(c) Attach spring scale hook to lower right vertical positioning lever just above link extension.

(d) Force required to move link extension away from vertical positioning lever should be between 4 and 12 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(7) Left Vertical Positioning Lever Eccentric Stud. Adjust as follows:

NOTE

Right and left vertical positioning levers should buckle equally to within 0.006 inch.

(a) Refer to Figure 6-54.

(b) Place common code bar in spacing position.

(c) Trip type box clutch.

(d) Rotate main shaft until right vertical positioning lever toe touches common code bar. Lower link of right vertical positioning lever should buckle 0.008 inch maximum. Left vertical positioning lever toe should touch common code bar, buckling

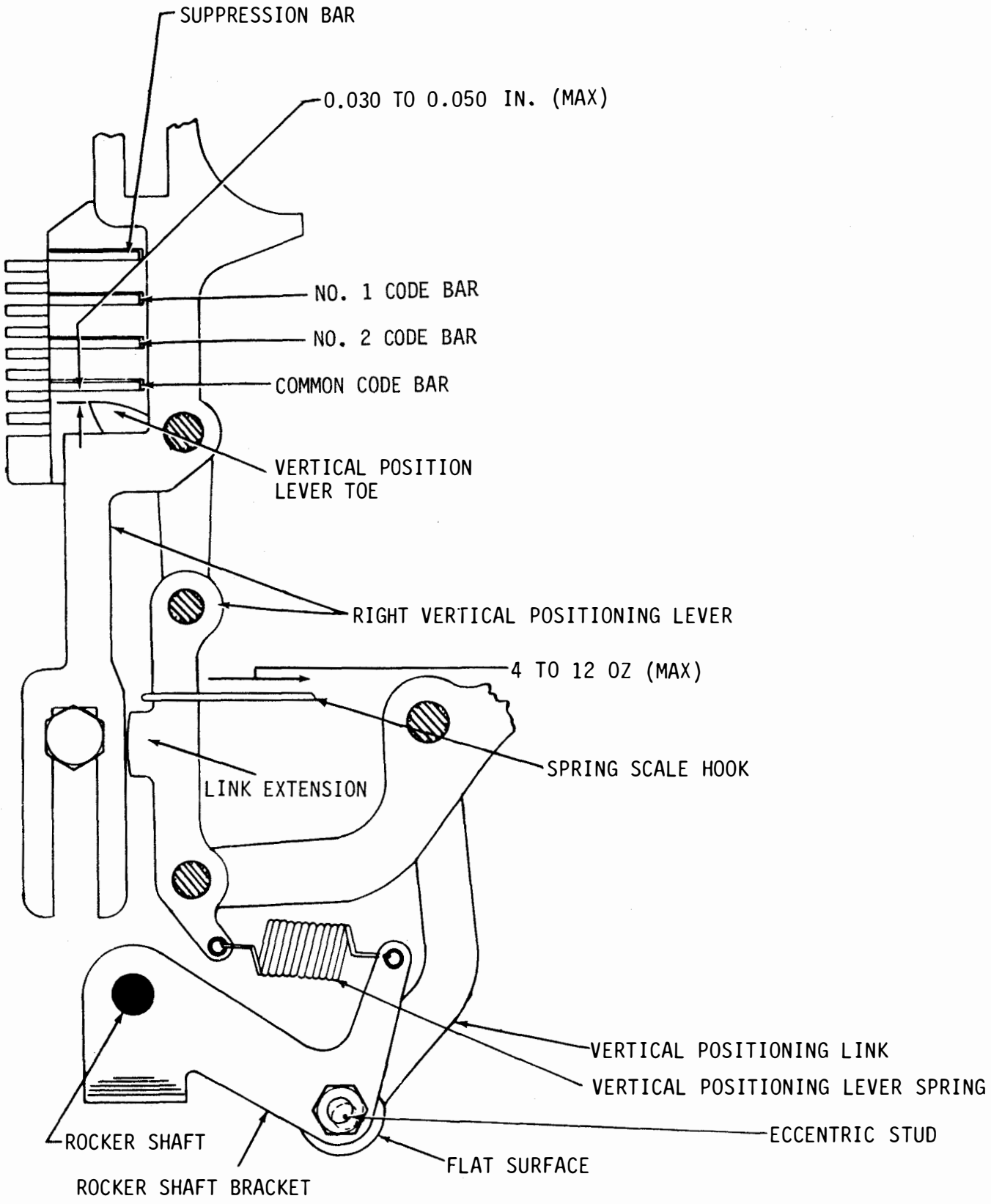


Figure 6-53. Vertical Positioning Lever Spring, Right Side View

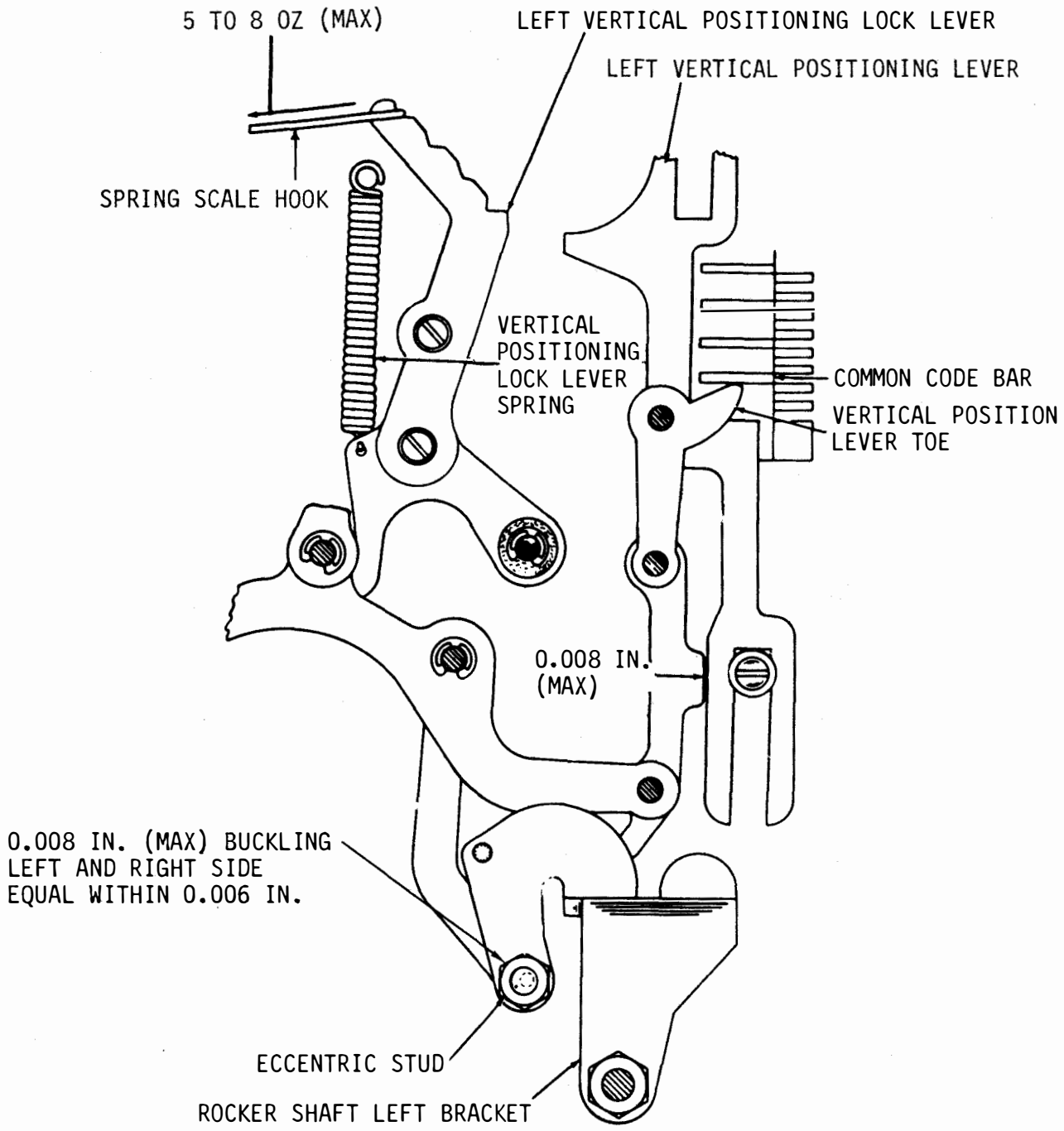


Figure 6-54. Left Vertical Positioning Lever Eccentric Stud and Vertical Positioning Locklever Spring, Left Side View

its lower link equally with lower link of right vertical positioning lever within 0.006 inch. Neither lower link should buckle more than 0.008 inch.

(e) If buckling exceeds specified limits, loosen eccentric stud nut.

(f) Position eccentric stud on rocker shaft left bracket inner arm, and position high part of cam (marked with dot) toward rear.

(g) Tighten eccentric stud nut.

(8) Vertical Positioning Locklever Spring. Adjust as follows:

(a) Refer to Figure 6-54.

(b) Disengage type box clutch.

(c) Attach spring scale hook to upper end of left vertical positioning locklever.

(d) Force required to start locklever moving should be between 5 and 8 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(f) Repeat steps (c), (d), and (e) for right vertical positioning locklever spring.

(9) Reversing Slide Detent Spring. Adjust as follows:

(a) Refer to Figure 6-55.

(b) Place reversing slide in left hand position.

(c) Attach spring scale hook in upper right detent notch.

(d) Force required to start detent moving should be between 2 and 4-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(10) Reversing Slide Adjusting Stud. Adjust as follows:

(a) Refer to Figure 6-55.

(b) Disengage type box clutch.

(c) Place number 3 code bar in spacing position (right). Reversing slide detent should be fully seated in right hand notches of detent lever.

(d) Place number 3 code bar in marking position (left). Reversing slide detent should be fully seated in left hand notches of detent lever.

(e) If reversing slide detent rollers do not seat fully in both right hand and left hand notches of detent lever, loosen reversing slide stud mounting nut.

(f) Position reversing slide stud in its elongated hole and tighten nut.

(11) Reversing Slide Brackets. Adjust as follows:

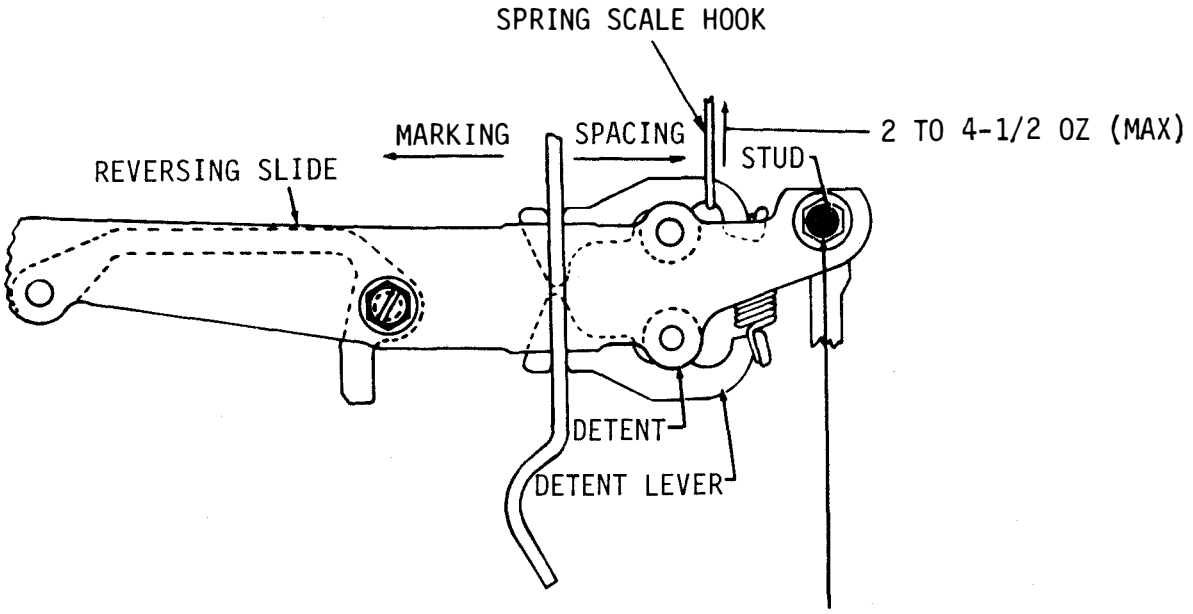


Figure 6-55. Reversing Slide Detent Spring and Adjusing Stud, Front View

(a) Refer to Figure 6-56.

(b) Disengage type box clutch, code bar clutch, and function clutch.

(c) Move reversing slide to its extreme right hand position.

(d) Measure amount of buckling of left horizontal positioning drive linkage. Buckling should be between 0.030 and 0.050 inch maximum.

(e) Move reversing slide to its extreme left hand position.

(f) Measure amount of buckling of right horizontal positioning drive linkage. Buckling should be between 0.030 and 0.050 inch maximum.

(g) If buckling of either left or right horizontal positioning drive linkage exceeds specified limits, loosen corresponding clamp screw and position reversing slide bracket.

(h) Tighten clamp screw.

(12) Horizontal Positioning Drive Linkage. Adjust as follows:

(a) Refer to Figure 6-57.

(b) Disengage type box clutch.

(c) Move code bars 4 and 5 to spacing (right).

(d) Measure clearance between each side of center horizontal stop and decelerating slides on side

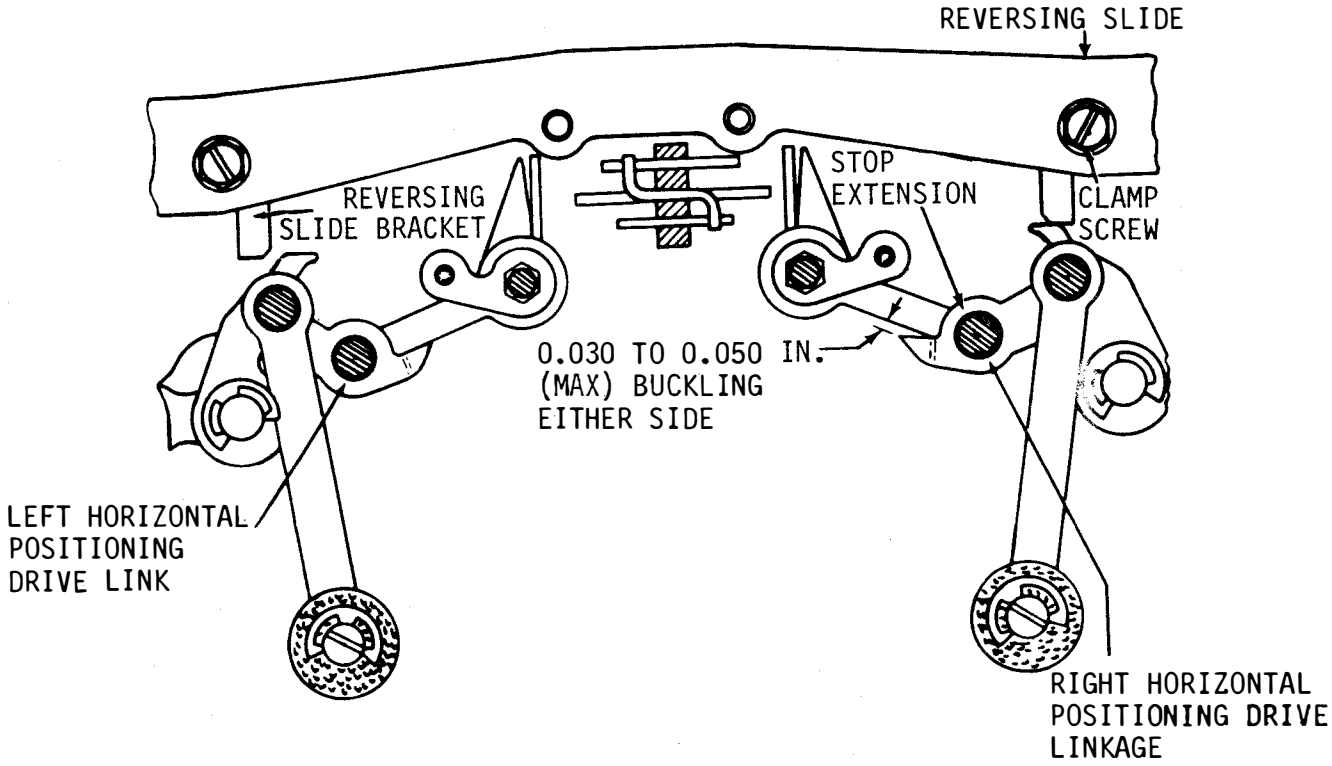


Figure 6-56. Reversing Slide Brackets, Front View

where knee link is straight. Clearances should be between 0.090 and 0.110 inch maximum and be equal within 0.008 inch.

(e) If clearances exceed specified limits, loosen bearing stud mounting screws and connecting strip clamp screws so they are friction tight.

(f) Position one or both bearing studs on connecting strip to provide 0.095 to 0.105 inch between center horizontal slide and decelerating slide on side where linkage is not buckled.

(g) Tighten two inner clamp screws.

(h) Change position of reversing slide and check opposite clearance. Equalize by shifting both studs and connecting strip as a unit.

(i) Set clearance between drive linkage hub and lower vertical link to drive linkage at 0.010 to 0.030 inch. Tighten two inner bearing stud mounting screws.

(j) Check linkage for freeness throughout a complete cycle.

(k) Type box clutch disk should have some movement in normal direction of rotation in stop position.

(13) Horizontal Positioning Drive Linkage Spring. Adjust as follows:

(a) Refer to Figure 6-57.

(b) Place linkage in unbuckled position.

(c) Apply spring scale pushrod near end of

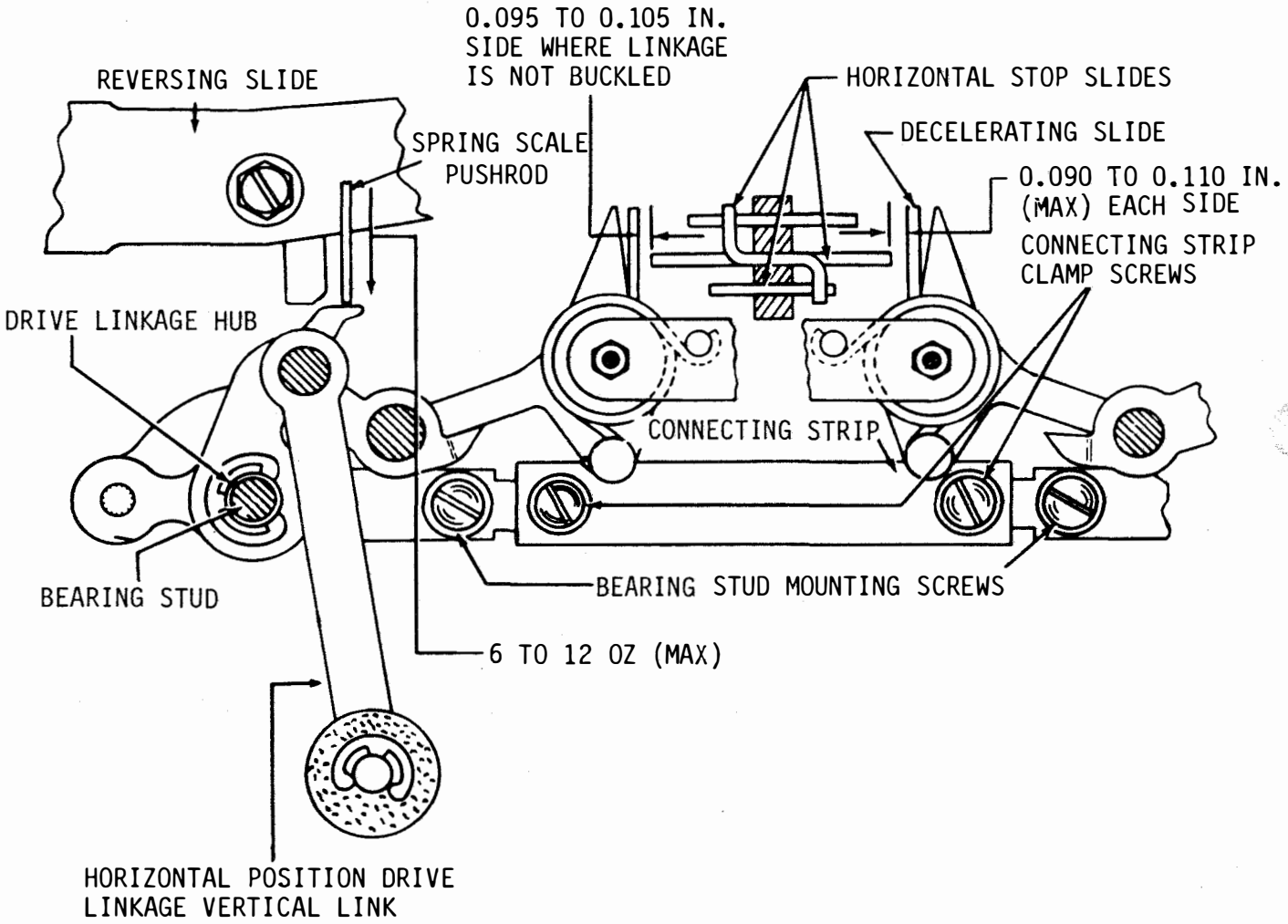


Figure 6-57. Horizontal Positioning Drive Linkage and Drive Linkage Spring, Front View

upper extensions of right hand spring.

(d) Force required to start link buckling should be between 6 and 12 ounces.

(e) If scale reading exceeds specified limits, install new spring.

(f) Repeat steps (b) through (e) for left hand spring.

(14) Vertical Positioning Locklever. Adjust as follows:

(a) Refer to Figure 6-58.

(b) Set up LETTERS combination (12345) on code bars.

(c) Position main side operating levers at upper end of travel.

(d) Fully engage (manually, if necessary) upper notch of vertical positioning locklever with vertical slide projection.

(e) Measure clearance between upper surface of follower arm near extension and inner extension of main side lever. Clearance should be between some to 0.004 inches maximum.

(f) Take up play by pulling upward with 8 ounces tension on type box carriage track and measure clearance between vertical surfaces of left vertical positioning locklever and left vertical slide projection. Clearance should be between some to 0.012 inch maximum.

(g) If either clearance measured in (e) or (f) exceeds specified limits, loosen clamp screws and position right and left vertical positioning locklevers.

(h) Tighten clamp screws.

(15) Decelerating Slide Spring. Adjust as follows:

(a) Refer to Figure 6-59.

(b) Place printing bail in downward position.

(c) Place printing carriage and decelerating slide assembly in right hand position. Selecting "M" or "LTRS" will move slide assembly to the right.

(d) Attach spring scale hook to right hand decelerating slide.

(e) Force required to start slide moving should be between 1/2 and 1-1/2 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(g) Repeat steps (c), (d), (e), and (f) for left hand decelerating slide spring. Selecting "BLANK" will move slide assembly to the left.

(16) Shift Linkage. Adjust as follows:

(a) Refer to Figure 6-60.

(b) Position carriage near midpoint of platen

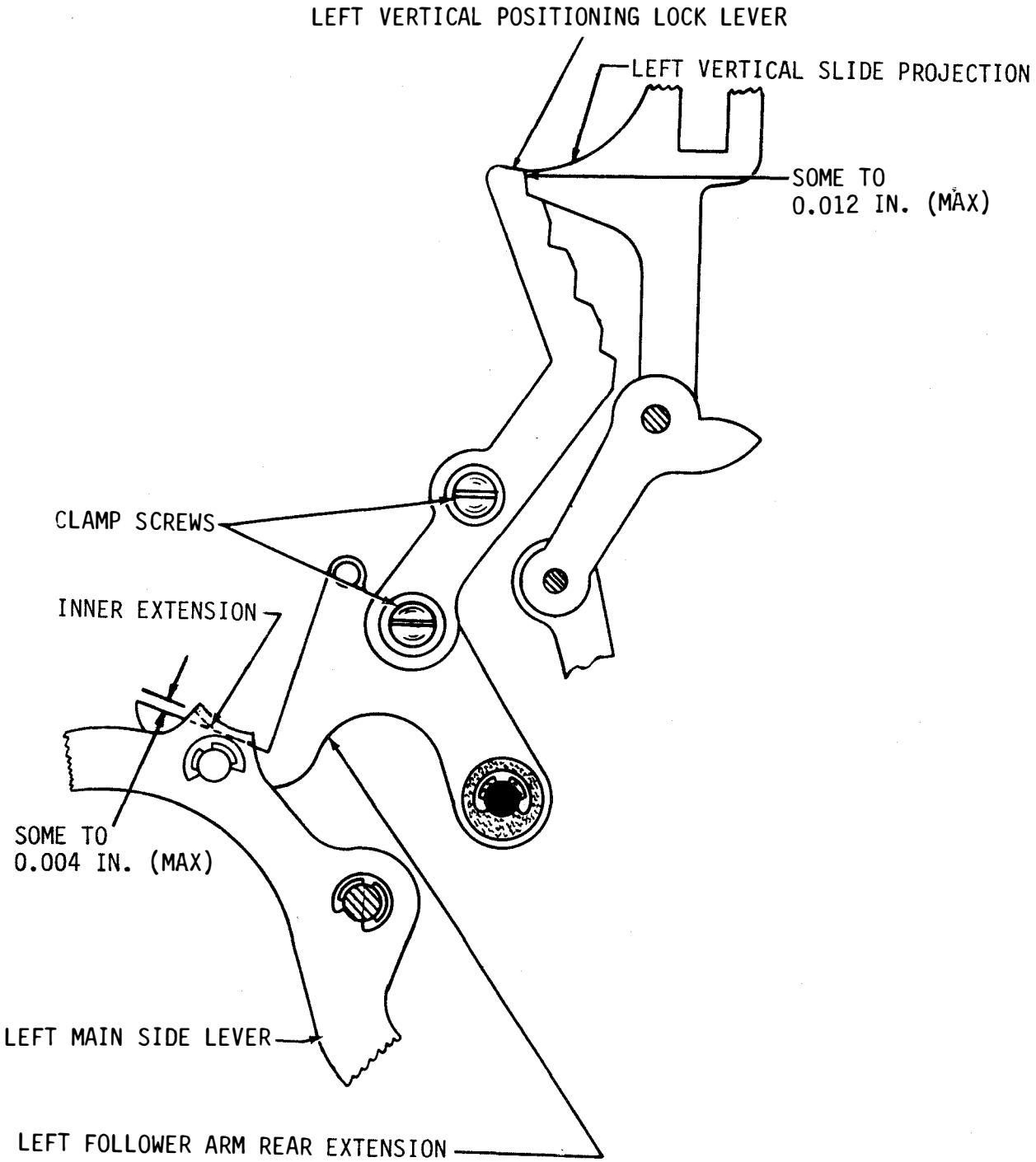


Figure 6-58. Vertical Positioning Locklever, Left Side View

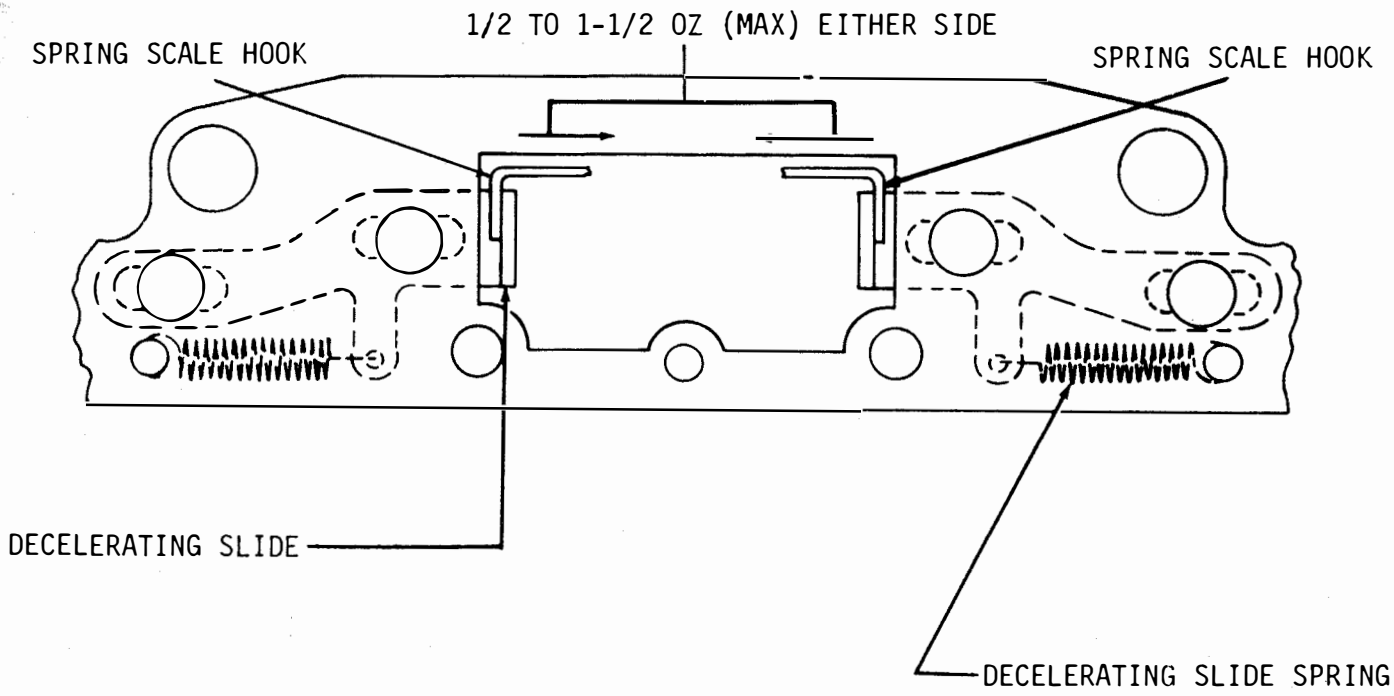


Figure 6-59. Decelerating Slide Spring, Front View

and place type box in position to print letter "O".

(c) Manually buckle right shift linkage and shift type box to left.

(d) Figure "9" type pallet should be approximatley in center of printing hammer when hammer is just touching Figure "9" type pallet.

(e) If Figure "9" type pallet is not centered as specified, loosen two clamp screws and position left shift linkage on oscillator rail.

(f) Tighten two clamp screws.

(g) To recheck, shift alternately from "W" to "2" and take up play in each direction. Refine adjustment, if necessary, by repeating steps (e) and (f).

(17) Shift Linkage Spring. Adjust as follows:

NOTE

For shift mechanisms with torsion springs, see paragraph 6-17f(5).

(a) Refer to Figure 6-60.

(b) Position right shift linkage in straight position.

(c) Attach spring scale hook to right shift linkage.

(d) Force required to start link moving

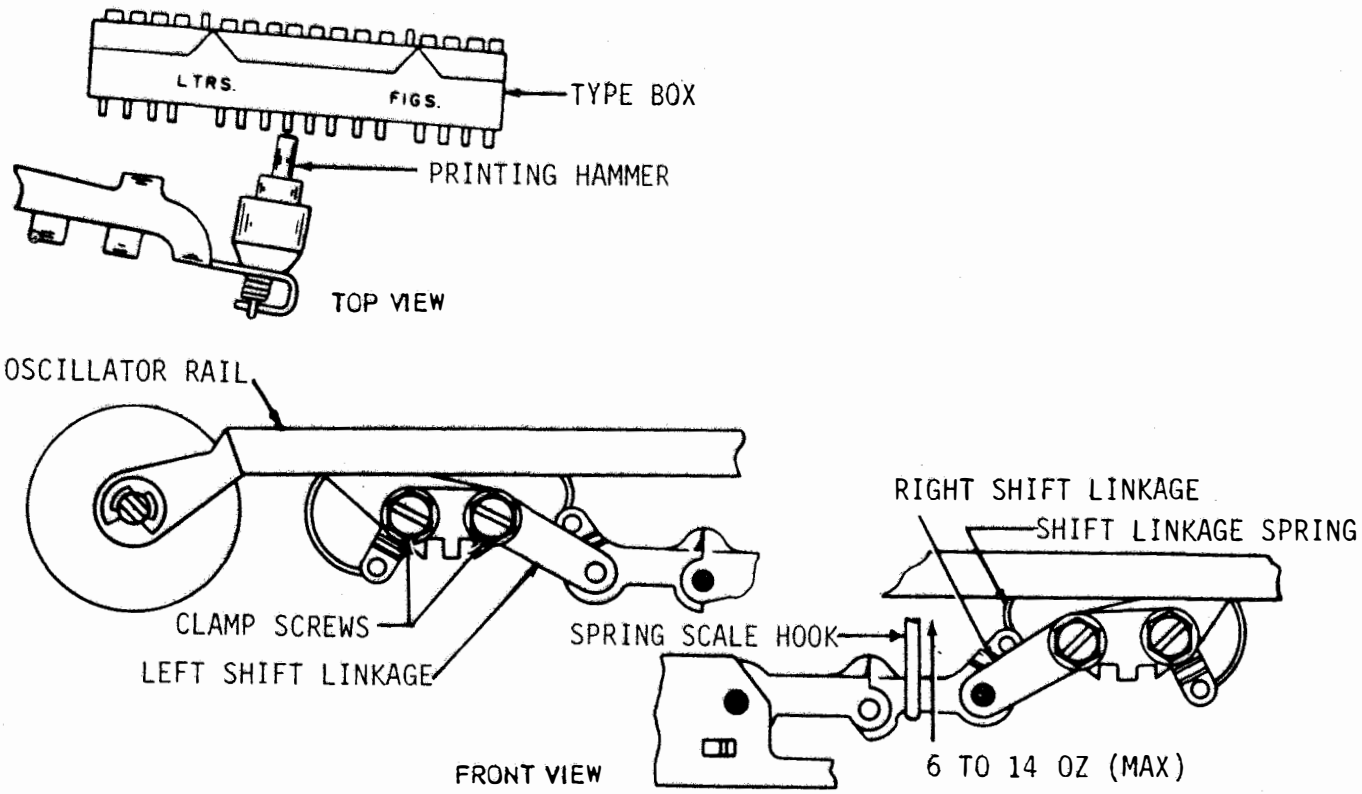


Figure 6-60. Shift Linkage and Shift Linkage Spring

should be between 6 and 14 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(f) Repeat steps (b) through (e) for left shift linkage spring.

(18) Horizontal Stop Slide Spring. Adjust as follows:

(a) Refer to Figure 6-61.

(b) Place code bars in marking position (left).

(c) Rotate type box clutch one quarter turn from its stop position.

(d) Hold horizontal motion decelerating slides away from horizontal stop slides, see paragraph 6-3.1e(12).

(e) Attach spring scale hook to each slide and measure force required to start slide moving.

NOTE

When checking upper and lower slides, hold middle slide 1/32 inch forward.

(f) Force required to start slides moving should be as follows:

1. For upper and lower slides, between 1/2 and 1-1/2 ounces maximum.

2. For middle slide, between 1-3/4 and 3 ounces maximum.

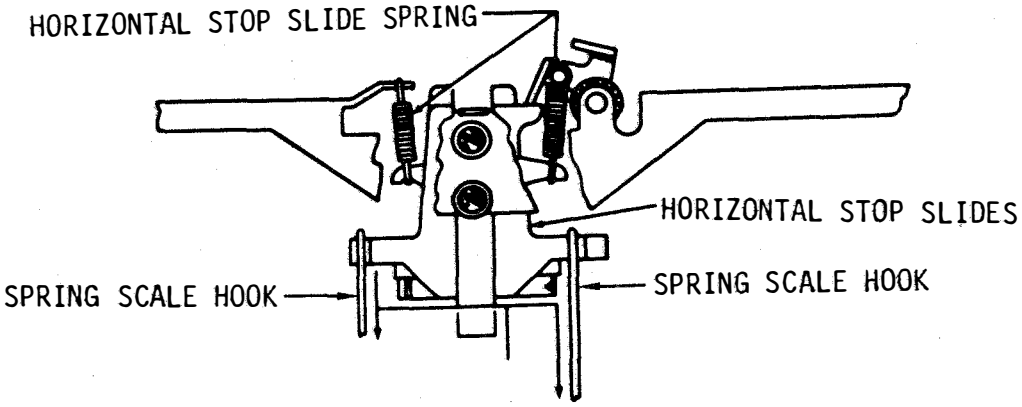


Figure 6-61. Horizontal Stop Slide Spring, Front Top View

(19) Type Box Position (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-62.

(b) Disengage type box and spacing clutches.

(c) Shift type box to LETTERS position.

(d) Loosen four mounting screws so that space suppression ring, or automatic carriage return line-feed ring is free to rotate on drum.

(e) If unit is equipped with limited adjustment spacing drum place spacing cutout and automatic carriage return line-feed arms in maximum counterclockwise position. Engage farthest advanced feed pawl with tooth above drum cutaway section.

(f) Measure clearance between LTRS print indicator and centerline of sprocket pins in right hub. Clearance should be between 5/16 and 7/16 inch maximum.

(g) If clearance exceeds specified limits, loosen two type box clamp screws and two printing carriage clamp screws.

(h) Position type box to obtain clearance specified in step (f).

(i) Tighten type box clamp screws. Tighten printing carriage clamp screws only after Printing Carriage Position adjustment, paragraph 6-3.1g(3), has been completed.

f. Function Mechanism Adjustments. Perform the following function mechanism adjustments.

(1) Function Reset Bail Blade. Adjust as follows:

(a) Refer to Figure 6-63.

(b) Disengage all clutches.

(c) Trip code bar clutch and turn main shaft until code bar clutch trip lever just touches its stop-lug.

(d) Unlatch all function pawls from their function bars.

(e) Hold respective function bar in its extreme rearward position with spring scale hook, using tension of not more than 32 ounces.

(f) Measure clearance between function bar and reset bail blade at bars in stunt box slot numbers 1, 4, 11, 18, 23, 33, 38, and 41 (slots are numbered left to right when viewed from rear). If a designated slot is vacant, use nearest bar or select bar with highest numbered slot when a bar is located on both sides of vacant slot.

(g) Clearance between function bar and reset bail blade should be between 0.018 and 0.035 inch maximum.

(h) If clearance exceeds specified limits, loosen reset bail mounting screws.

(i) Tighten mounting screws friction tight. Position blade on reset bail to obtain clearance specified in step (g) between function bar and reset bail blade.

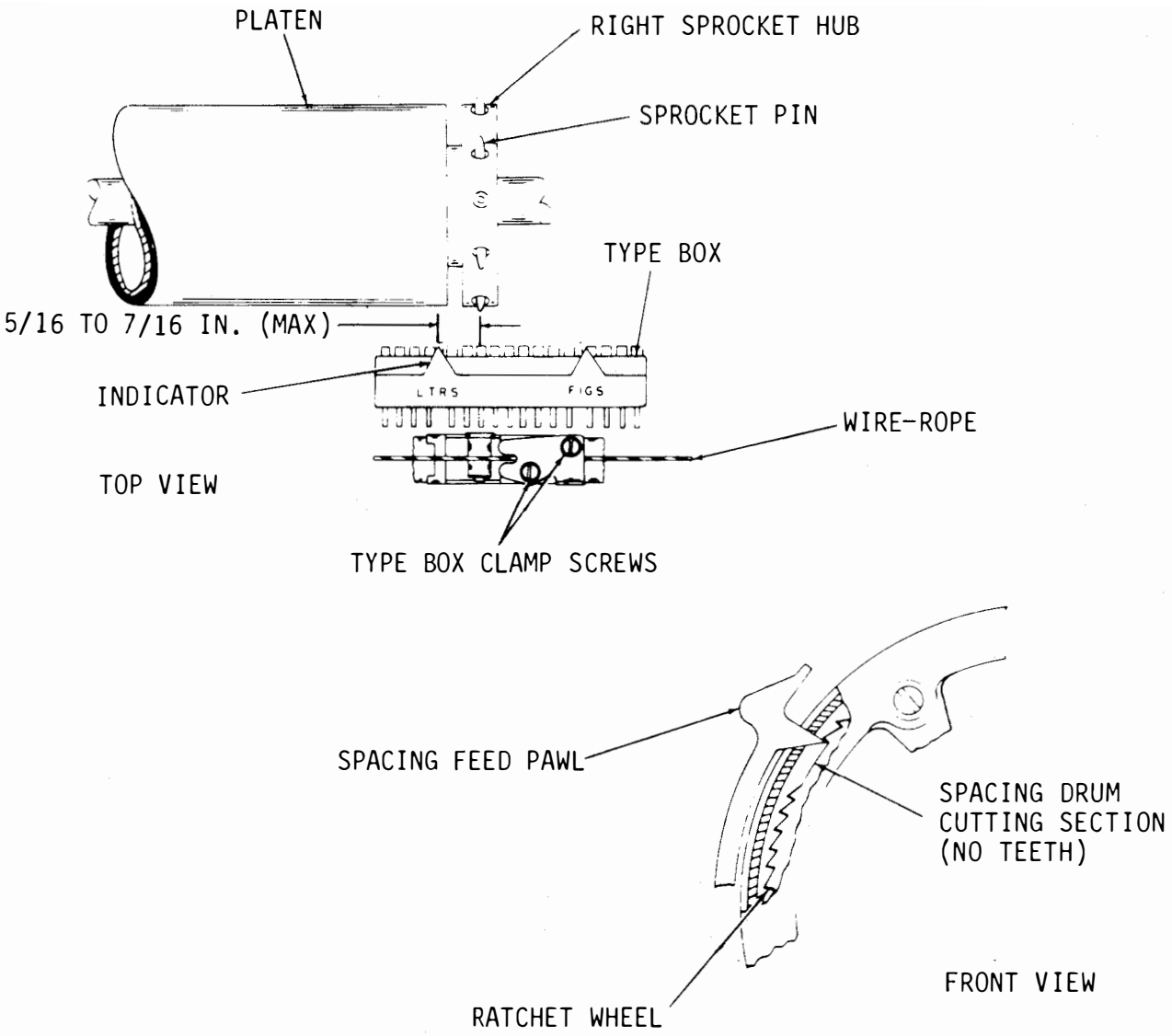


Figure 6-62. Type Box Position (Sprocket Feed)

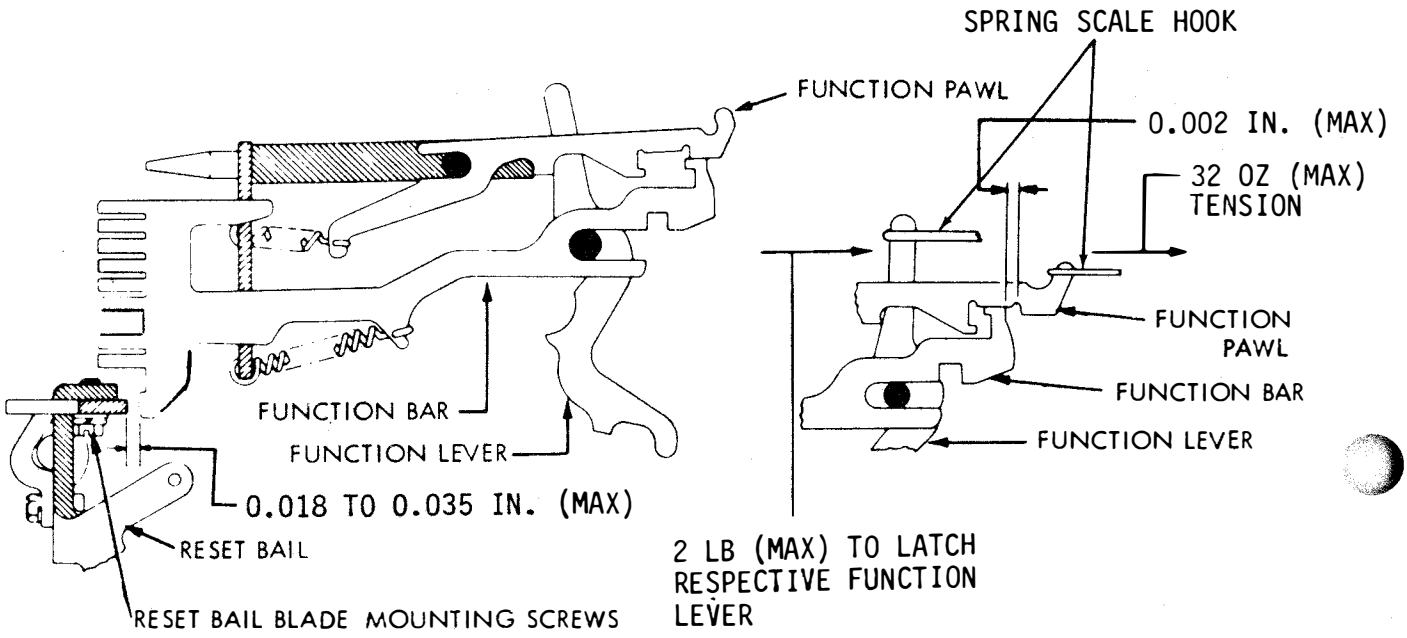


Figure 6-63. Function Reset Bail Blade

(j) Tighten mounting screws.

(k) Loosen carriage return lever clamp screw.

(l) Latch function pawls by lowered stripper blade.

(m) Trip code bar clutch and turn main shaft until code bar clutch trip lever touches its stop-lug.

(n) Strip off any functions which may have been selected.

(o) With tension applied in step (e), each pawl should overtravel its function bar by at least 0.002 inch. Check each pawl separately at slot numbers checked in step (f).

(p) Repeat steps (f), (g), (h), and (i) for any function pawls whose overtravel is greater than 0.002 inch, and tighten.

(q) Tighten mounting screws.

NOTE

If function reset bail blade is repositioned, check adjustment of FIGURES-LETTERS Shift Code Bar Operating Mechanism, paragraph 6-3.1f(3).

(2) Function Reset Bail Spring. Adjust as follows:

(a) Refer to Figure 6-64.

(b) With typing unit inverted, hold number 1

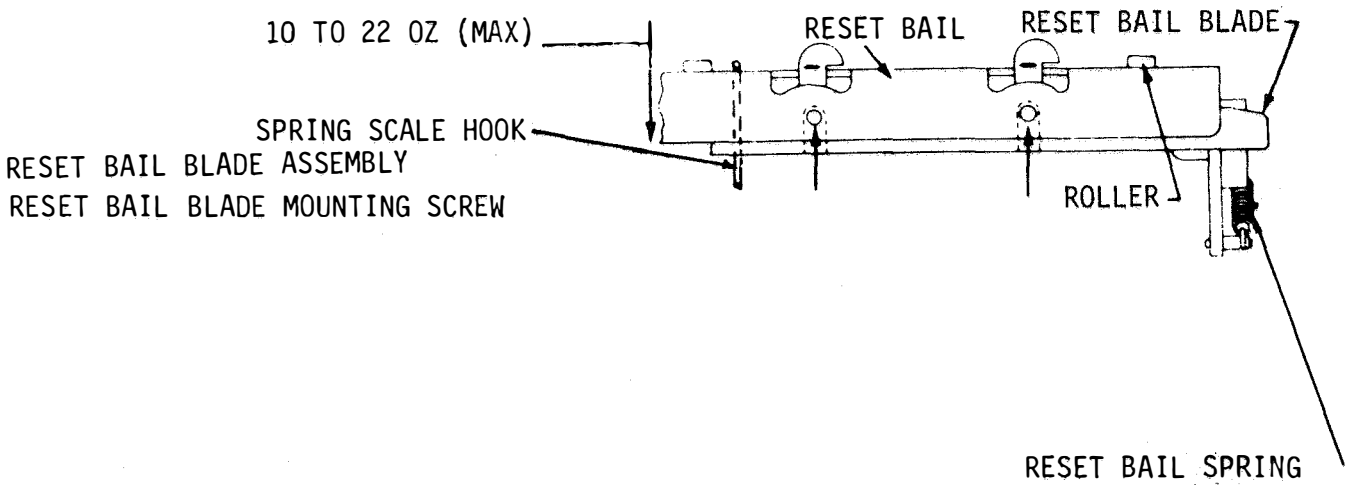


Figure 6-64. Function Reset Bail Spring, Top View

code bar in its marking position so that no function bar is selected.

(c) Rotate main shaft until function reset bail springs are in their minimum length position.

(d) Insert a 32-ounce spring scale between clutch trip shaft and space suppression bail, hook it on front edge of reset bail at middle of bail, and pull rearward. The force required to start bail moving should be between 10 and 22 ounces maximum.

(e) If scale reading exceeds limits, install a new spring.

(3) FIGURES-LETTERS Shift Code Bar Operating Mechanism. Adjust as follows:

(a) Refer to Figure 6-65.

(b) If unit has one-stop clutches, rotate function clutch until clutch disk stop-lug is toward bottom of unit, and hook Figures function pawl over end of function bar. If unit has two-stop function clutches, disengage function clutch at stop giving least clearance.

(c) Clearance between upper guideplate extension and shift slide should be not more than 0.020 when play is taken up for maximum clearance.

(d) With a spring scale, apply 32 ounces pull to FIGURES function pawl and measure clearance between shoulder of FIGURES function pawl and face of function bar. Clearance should be not less than 0.002 inch.

(e) Repeat steps (c) and (d) for LETTERS function pawl.

(f) If clearances exceed specified limits, loosen clamp nuts, and position upper or lower guideplate as necessary by the adjusting slot.

(g) Tighten clamp nuts.

NOTE

There should be some clearance between unoperated shift slide and its guideplate when shift slide has reached its position of maximum travel.

(4) Keyboard Locklever Spring. Adjust as follows:

(a) Refer to Figure 6-66.

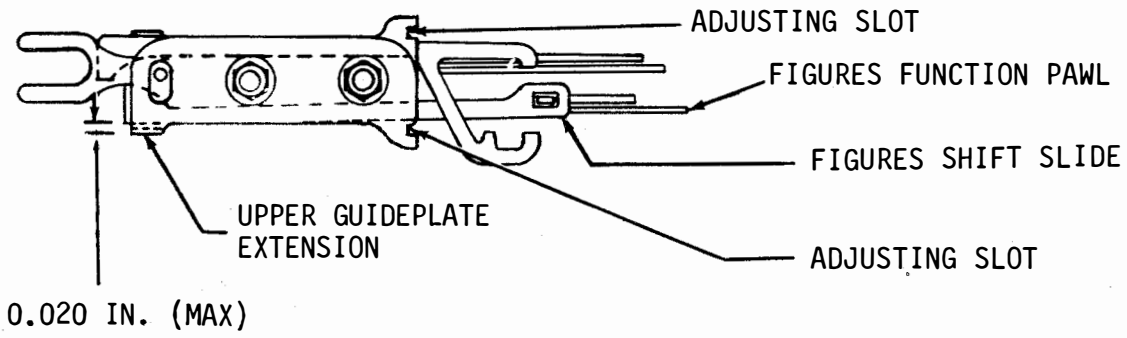
(b) With typing unit inverted, attach spring scale hook to bellcrank. The force required to start keyboard locklever moving should be between 1/2 and 1-1/2 ounces maximum.

(c) If scale reading exceeds specified limits, install a new spring.

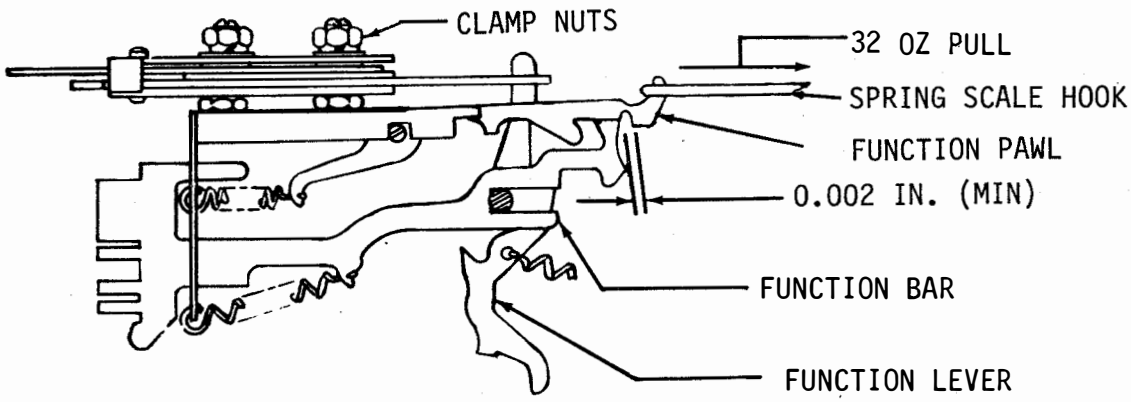
(5) Function Lever Spring. Adjust as follows:

(a) Refer to Figure 6-67.

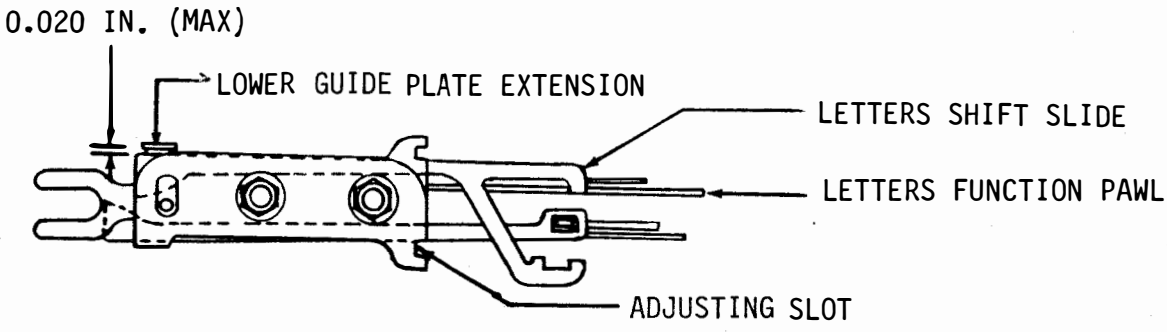
(b) Place function lever in unoperated position.



TOP VIEW



RIGHT SIDE VIEW



TOP VIEW

Figure 6-65. FIGURES-LETTERS Shift Code Bar Operating Mechanism

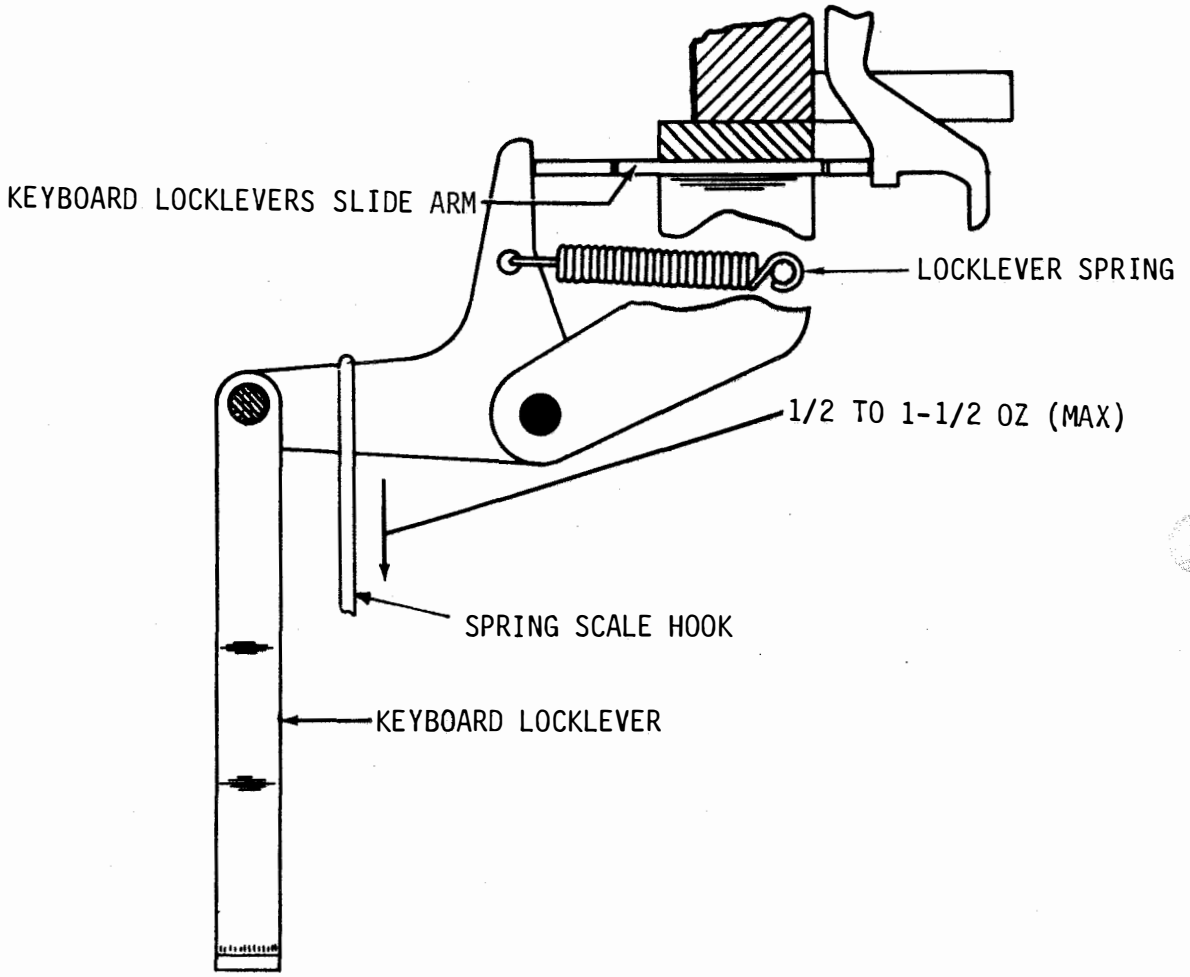


Figure 6-66. Keyboard Locklever Spring, Right Side View

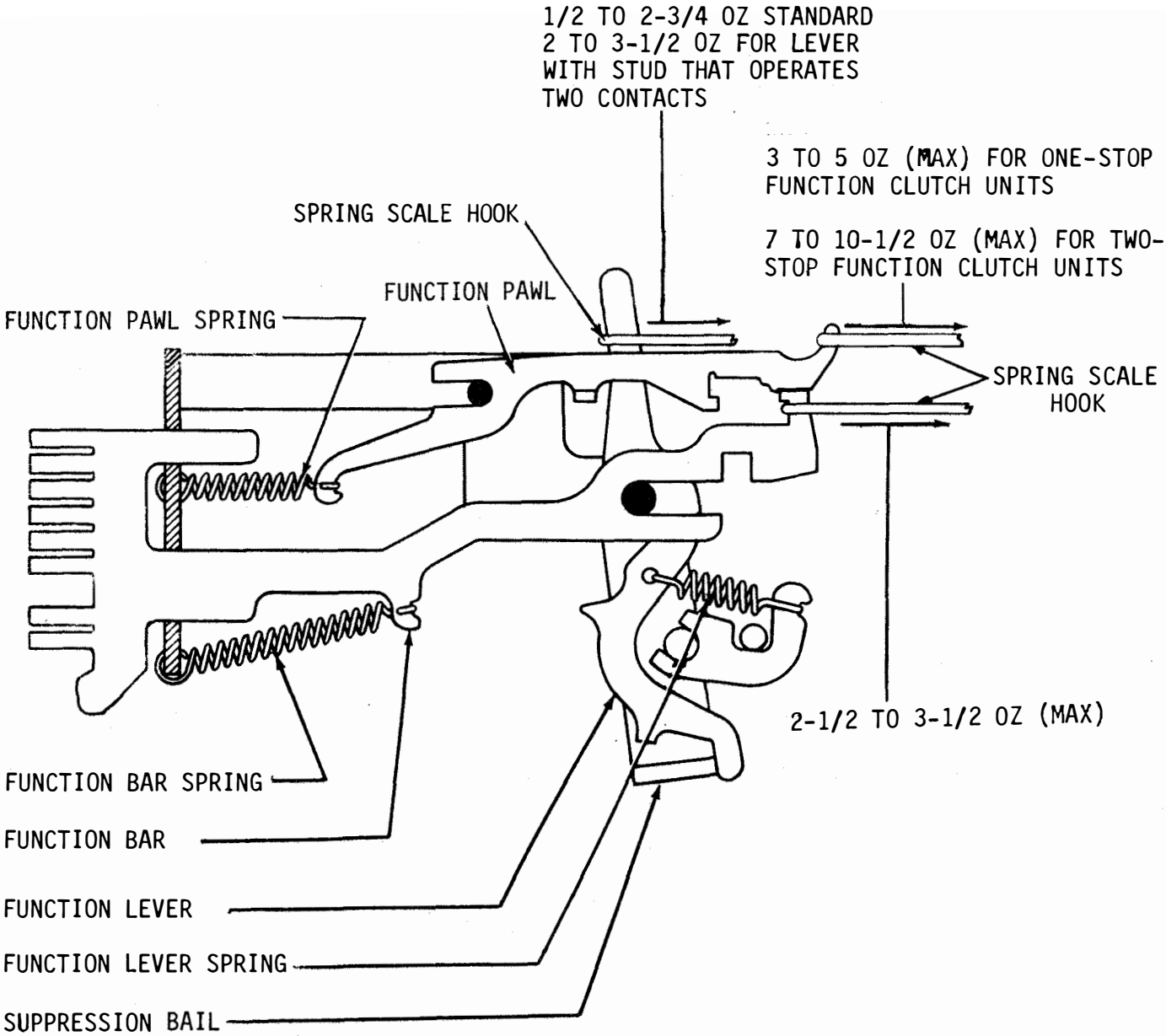


Figure 6-67. Function Lever Spring, Function Pawl Spring, and Function Bar Spring, Right Side View

NOTE

If a function lever operates a contact or a slide, hold off contact or slide when checking spring tension.

(c) Hold suppression bail in forward position.

(d) Attach spring scale hook to function pawl and measure force required to start function lever moving.

1. Standard, force should be between 1-1/2 and 2-3/4 ounces maximum.

2. If function lever has stud that operates two contacts, the required force should be between 2 and 3-1/2 ounces maximum.

(e) Repeat step (d) for each spring.

(f) If scale reading for any spring exceeds specified limits, install a new spring.

(6) Function Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-67.

(b) Position function pawl so that rear end rests on function bar.

(c) Attach spring scale hook to function pawl.

1. If unit has a one-stop function clutch, the force required to start pawl moving should be between 3 and 5 ounces maximum.

2. If unit has a two-stop function clutch, the force should be between 7 and 10-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install a new spring.

(7) Function Bar Spring. Adjust as follows:

CAUTION

Severe wear to the point of operational failure will result if the teletypewriter is operated without each function pawl having either a related function bar or, where a function bar is missing, a related function pawl clip to hold the function pawl away from the stripper blade.

(a) Refer to Figure 6-67.

(b) Disengage function clutch and hold function pawl away.

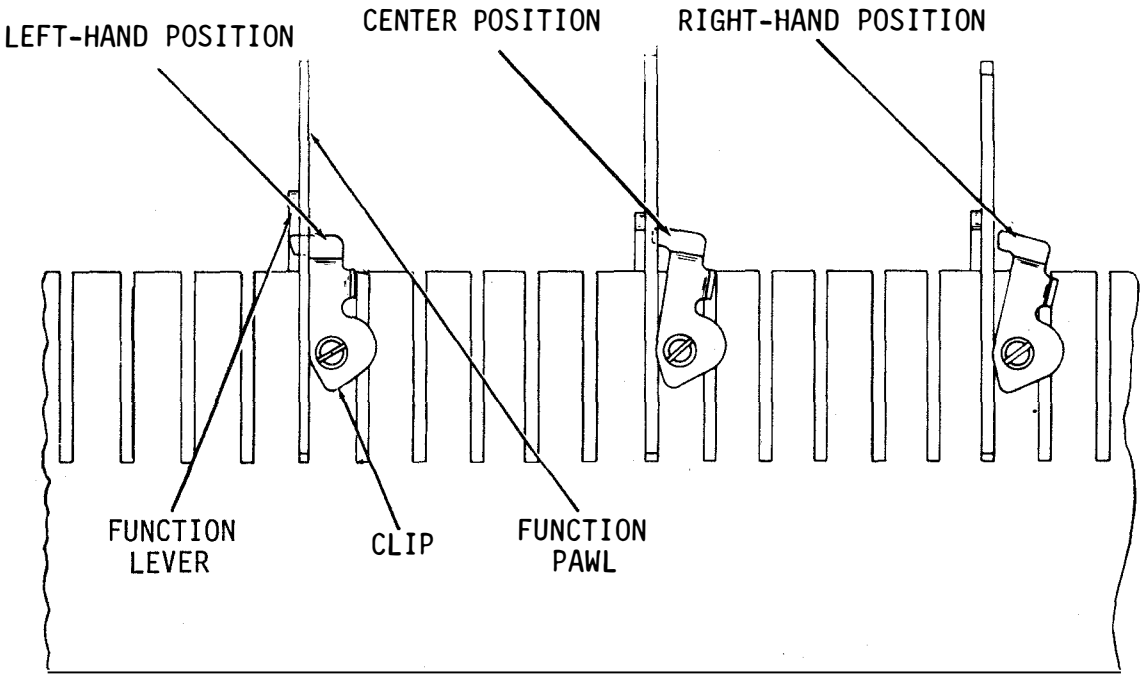
(c) Attach spring scale hook to function bar. The force required to start function bar moving should be between 2-1/2 and 3-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install a new spring.

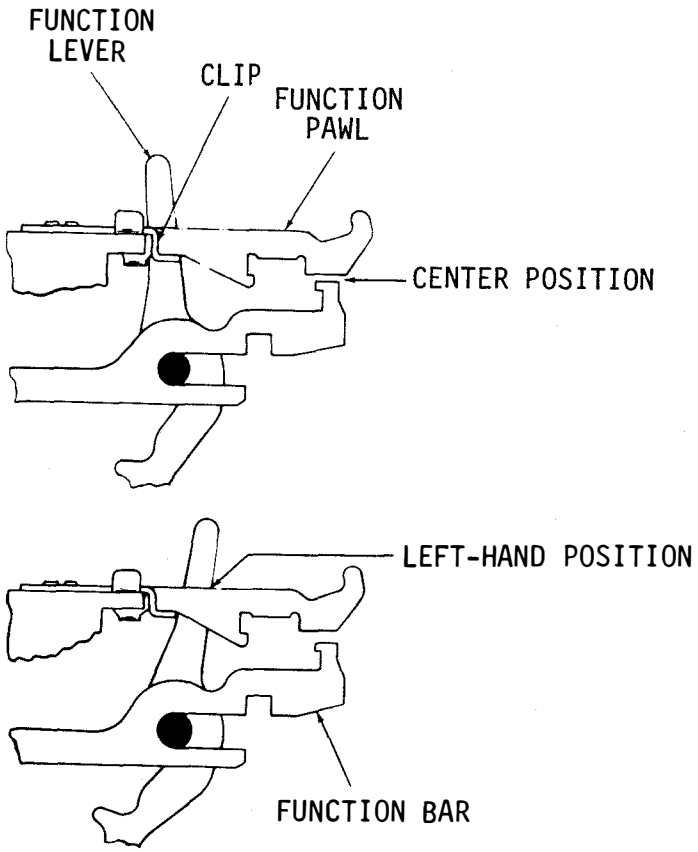
(8) Stunt Box Clip (For Units Equipped with Clips Only). Adjust as follows:

(a) Refer to Figure 6-68.

(b) In right-hand position clip should not



FRONT TOP VIEW



RIGHT SIDE VIEWS

Figure 6-68. Stunt Box Clip

prevent associated function pawl from engaging its function bar.

(c) To adjust clip in right hand position, position clip in its extreme right-hand position with its mounting screw loosened, then tighten mounting screw.

(d) In center position, clip should hold function pawl out of engagement with its function bar, but should not interfere with function lever.

(e) To adjust clip in center position, position clip with its mounting screw loosened so that clip holds function pawl out of engagement with its function bar but does not interfere with function lever. Tighten mounting screw.

(f) In left-hand position, clip should hold function pawl upward out of engagement with its function bar and should hold top end of lever in its rear position.

(g) To adjust clip in left-hand position, position clip in its extreme left-hand position and tighten mounting screw.

(9) Stripper Blade Drive Cam Position. Adjust as follows:

(a) Refer to Figure 6-69.

(b) Disengage function clutch.

(c) Observe engagement of stripper blade drive cam upper peak with stripper blade cam arm. Rotate clutch to turn cam to its extreme downward position and observe engagement of lower cam peak. Stripper blade drive cam should move each stripper blade cam arm an equal distance above and below centerline of its pivot as gauged by eye.

(d) If distances above and below pivot centerline are not equal as gauged by eye, loosen stripper blade drive arm mounting screws and equalize overtravel of each cam peak.

(e) Tighten mounting screws.

(10) Function Contact Spring. Adjust as follows:

(a) Refer to Figure 6-70.

(b) Close switch contacts.

(c) Attach spring scale hook to contact arm. The force required to open switch contact should be between 1 and 2 ounces maximum.

(d) If required force exceeds specified limits, install a new spring.

(e) If switch is removed from stunt box, perform the following adjustments:

1. Measure clearance between contact arm and vertical portion of contact clip. Clearance should be 0.006 inch minimum. If switch has contacts both front and rear, the same limit is applicable. If clearance is less than 0.006 inch, loosen contact plate screws, and position contact plate. Then tighten contact plate screws. Contact must be made before

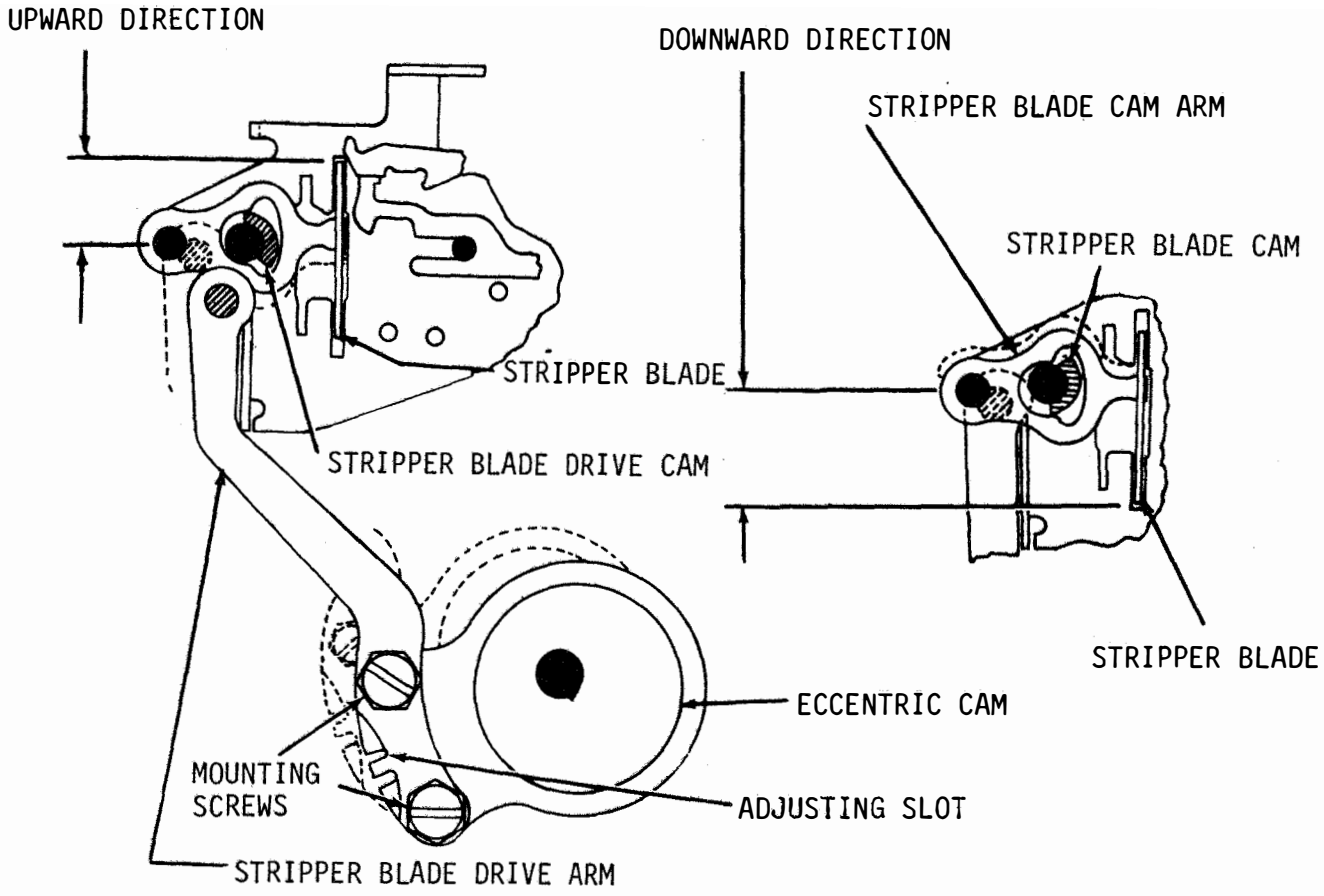


Figure 6-69. Stripper Blade Drive Cam Position, Rear View

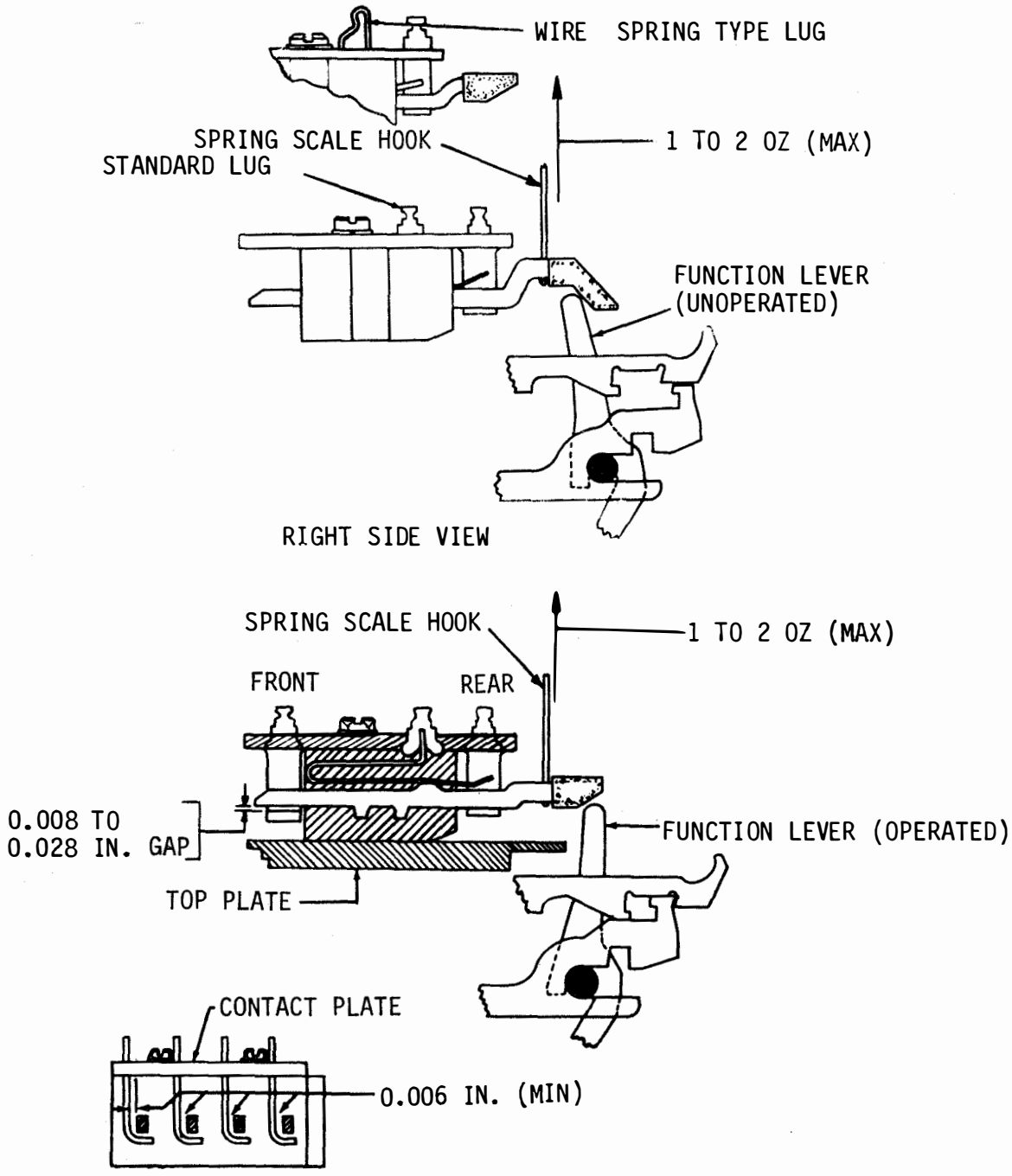


Figure 6-70. Function Contact Spring

function lever touches top plate.

2. On switches with front and rear contacts, check gap between formed-over end of front contact clip and bottom of contact arm when rear contact is closed. Gap should be between 0.008 and 0.028 inch.

(11) Unshift-on-Space Function Pawl. Adjust as follows:

(a) Refer to Figure 6-71.

(b) To prevent unshift-on-space function, clearance between lower edge of unshift-on-space function pawl and its function bar should be between 0.015 and 0.060 inch maximum.

(c) If clearance exceeds the limits, loosen disabling screw locknut and turn disabling screw in, then tighten locknut.

(d) To restore unshift-on-space function, loosen locknut, back off disabling screw so that pawl fully engages function bar. Continue to turn screw out one to three turns. Tighten locknut.

g. Printing Mechanism Adjustments. Perform the following printing mechanism adjustments.

(1) Printing Carriage Lower Roller. Adjust as follows:

(a) Refer to Figure 6-72.

(b) Loosen carriage wire rope clamp screws.

(c) Ensure play of carriage on track is minimum with no binding throughout full length of track.

(d) To adjust eccentric bushings, loosen screw nut and position lower roller keeping high part of eccentric (chamfered corner) toward right. Tighten nut.

(e) To adjust sliding screw, loosen mounting screw and position lower roller. Tighten screw.

NOTE

If this adjustment is made, it will be necessary to check Printing Carriage Position adjustment, paragraph 6-3.1g(3).

(2) Type Box Carriage Roller Arm Spring. Adjust as follows:

(a) Refer to Figure 6-73.

(b) Attach spring scale hook to type box latch.

(c) Force required to start upper roller nearest type box latch moving away from carriage track should be 28 to 36 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(3) Printing Carriage Position. Adjust as follows:

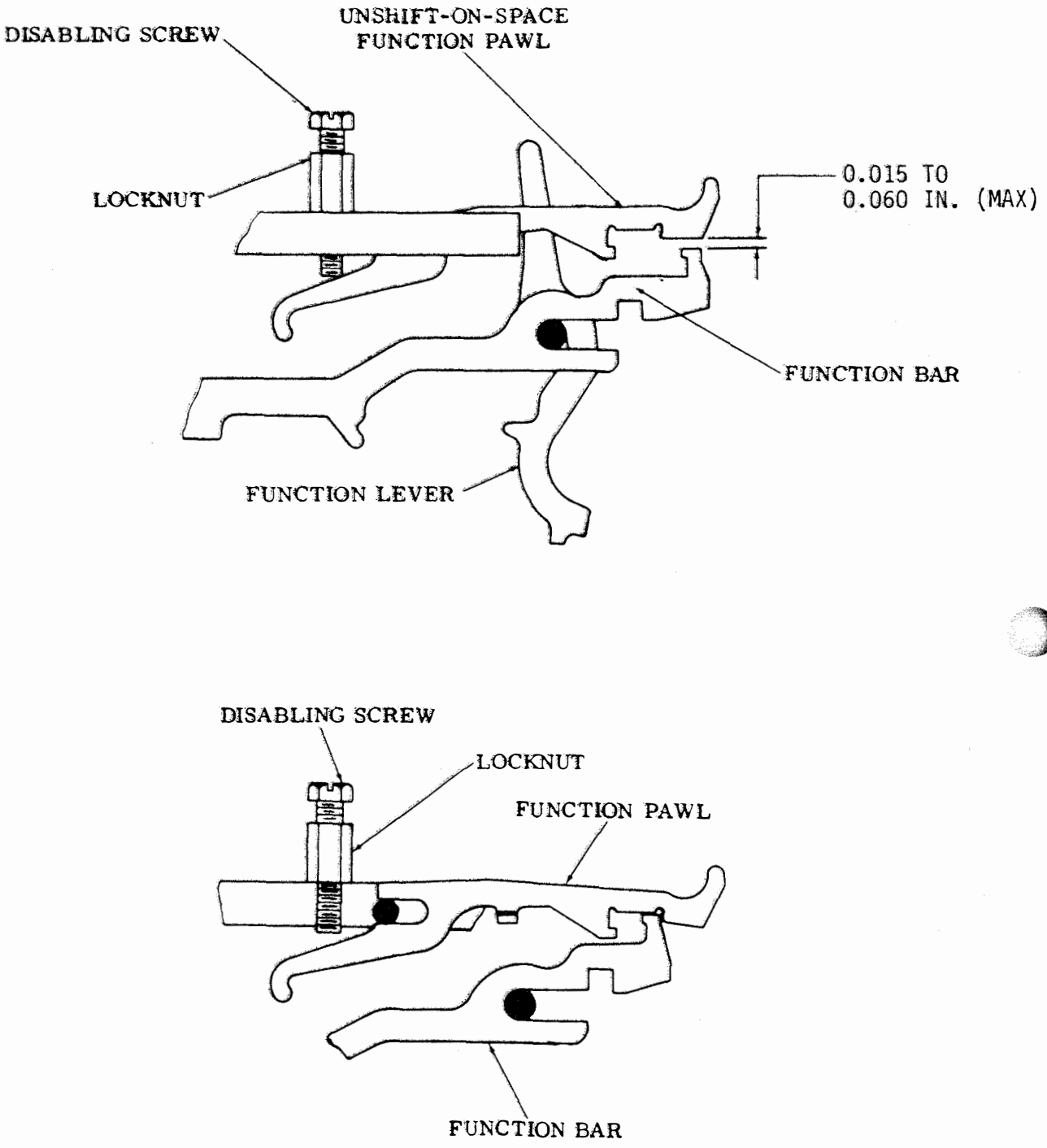


Figure 6-71. Unshift-on-Space Function Pawl, Fight Side View

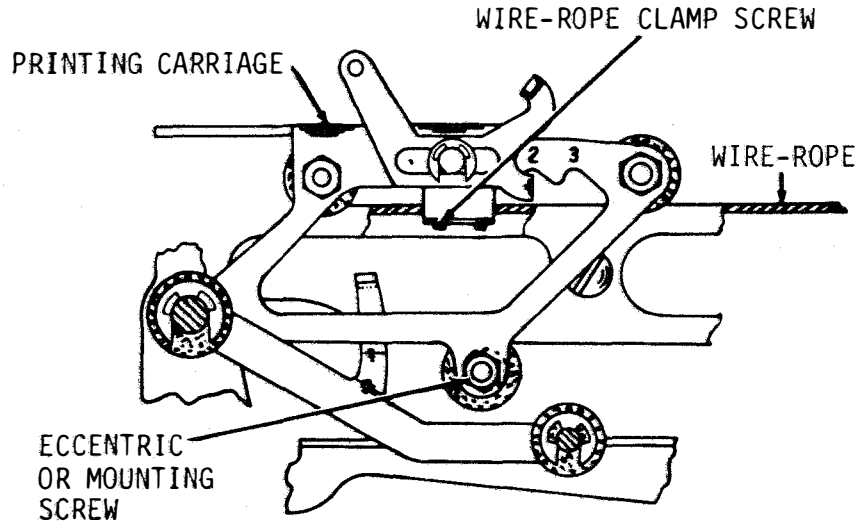


Figure 6-72. Printing Carriage Lower Poller, Front View

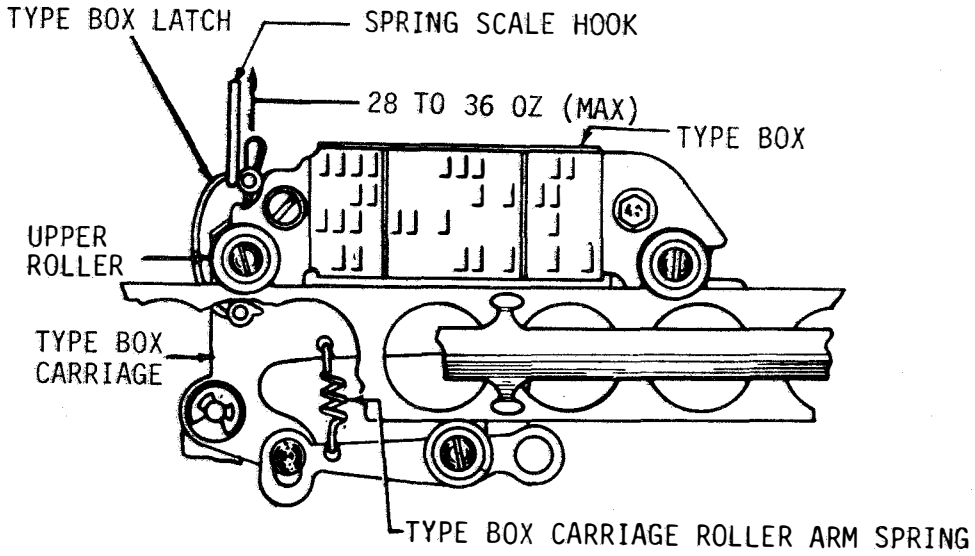


Figure 6-73. Type Box Carriage Roller Arm Spring, Front View

NOTE

If this adjustment is made, check the following related adjustments: Oscillating Rail Slide Position, paragraph 6-3.1d(3); Spacing Feed Pawl Spring, paragraph 6-3.1d(4); Carriage Return Spring, paragraph 6-3.1d(10); Spacing Feed Pawl Release Link Spring, paragraph 6-3.1d(11); Right Margin, paragraph 6-3.1d(19); and Spacing Cutout Transfer Bail Spring, paragraph 6-3.1d(20)

(a) Refer to Figure 6-74.

(b) Place type box in LETTERS code (12345) position.

(c) Select "M" type pallet (--345).

(d) Place carriage at appoximate midpoint of platen.

(e) "M" type pallet should be approximately in center of printing hammer when hammer is just touching "M" type pallet.

(f) Take up play in type box carriage in each direction and set hammer in center of play.

(g) If adjustment is required, loosen clamp screws and position printing carriage on wire rope.

(h) Tighten clamp screws.

(4) Printing Hammer Bearing Stud. Adjust as follows:

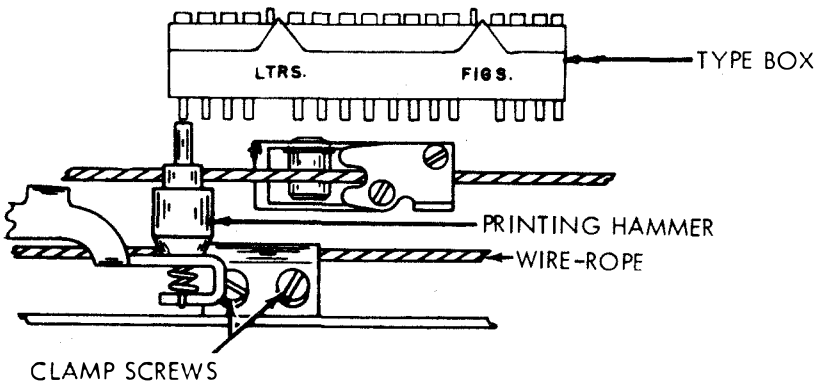


Figure 6-74. Printing Carriage Position, Top View

(a) Refer to Figure 6-75.

(b) Place type box at midpoint of platen and in position to print PERIOD code (--345).

(c) Place printing hammer in contact with type pallet and press it downward at bearing stud.

(d) Hammer should be centrally located (vertically) on end of type pallet.

(e) If face of hammer is not fully on end of type pallet, remove nut and add or remove shims between shoulder on bearing stud and stop bracket.

(5) Printing Track. Adjust as follows:

(a) Refer to Figure 6-76.

(b) BLANK selection in Figures.

(c) Place printing track in its extreme downward position.

(d) Hold printing hammer operating bail latching extension with left face in line with latch shoulder.

(e) Position printing arm slide alternately over each track mounting screw.

(f) Reset printing bail each time.

(g) Measure clearance between latching extension and operating bail. Clearance should be between 0.015 and 0.040 inch maximum.

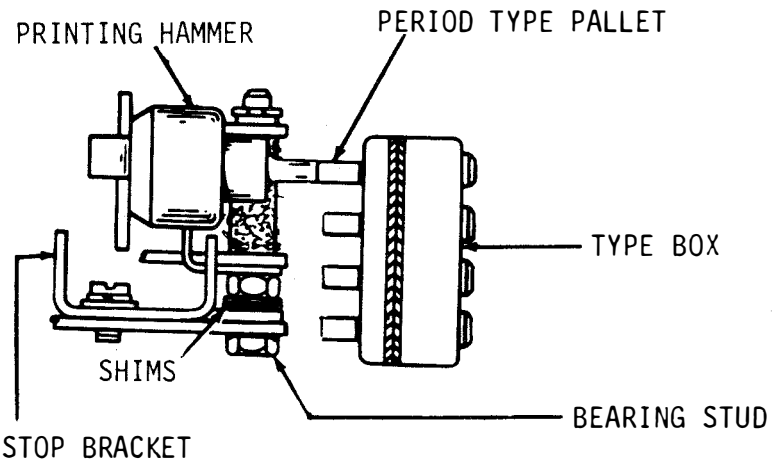


Figure 6-75. Printing Hammer Bearing Stud, Right Side View

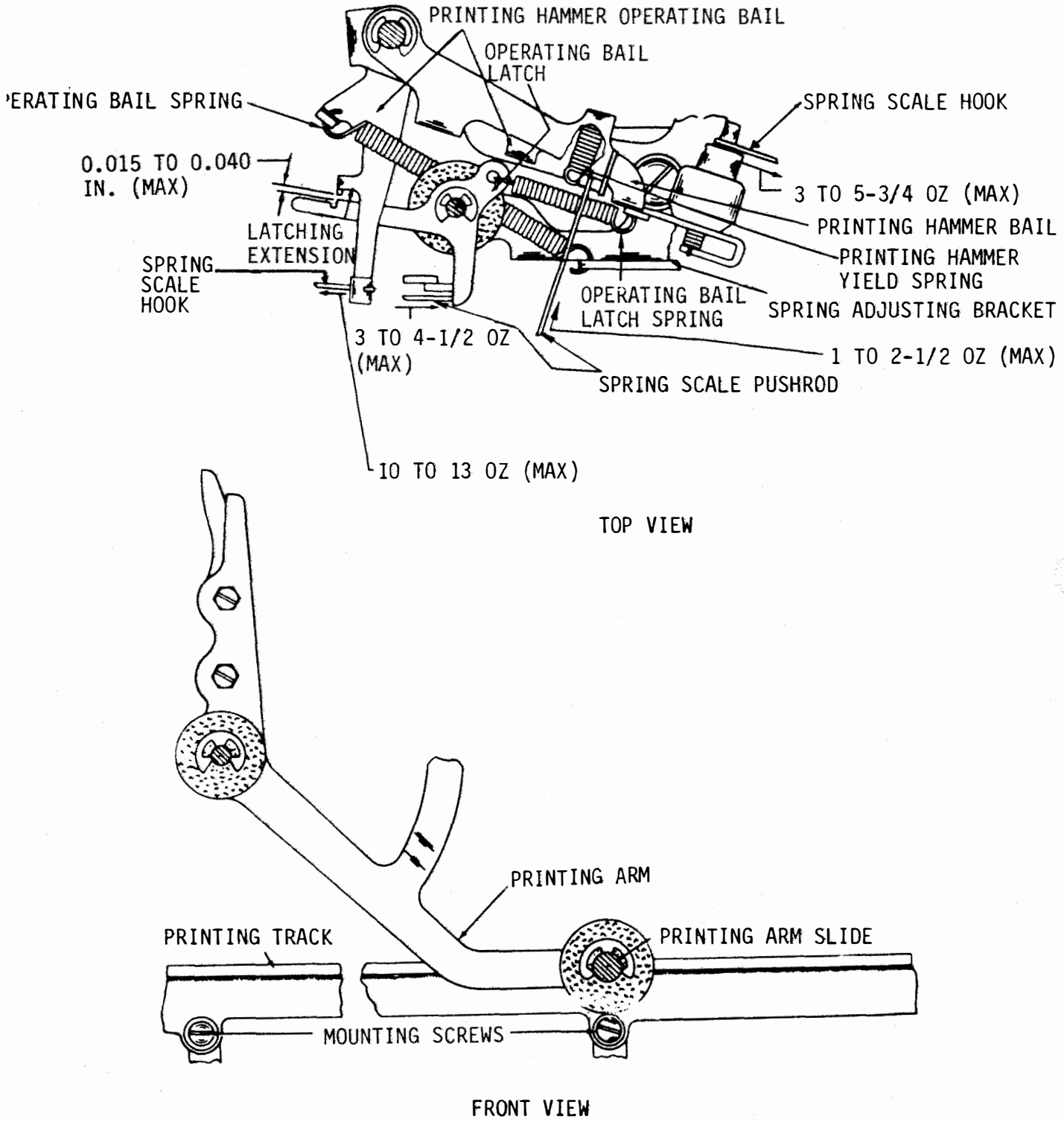


Figure 6-76. Printing Track and Printing Hammer Plunger Spring, Operating Bail Spring, Yield Spring, and Operating Bail Latch Spring

(h) If clearance exceeds specified limits, loosen printing track mounting screws and position printing track up or down to obtain specified clearance. Tighten screws.

NOTE

If this adjustment is made, it will be necessary to check Printing Arm adjustment, paragraph 6-3.1g(12).

(6) Printing Hammer Plunger Spring. Adjust as follows:

(a) Refer to Figure 6-76.

(b) Attach spring scale hook to printing hammer plunger.

(c) Force required to start plunger moving should be between 3 and 5-3/4 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(7) Printing Hammer Operating Bail Spring. Adjust as follows:

(a) Refer to Figure 6-76.

(b) Place operating bail in latched position.

(c) Position spring adjusting bracket in left hand notch.

(d) Unhook hammer yield spring.

(e) Attach spring scale hook to printing hammer operating bail.

(f) Force required to start bail moving should be between 10 and 13 ounces maximum.

(g) If spring scale reading exceeds specified limits, install new spring.

(8) Printing Hammer Yield Spring. Adjust as follows:

(a) Refer to Figure 6-76.

(b) Position printing hammer operating bail against its stop.

(c) Apply spring scale pushrod to hammer bail.

(d) Force required to start hammer bail moving should be between 1 and 2-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(9) Printing Hammer Operating Bail Latch Spring. Adjust as follows:

(a) Refer to Figure 6-76.

(b) Place printing track in its extreme upward position.

(c) Apply spring scale pushrod to printing hammer bail.

(d) Place printing track in its extreme upward position.

(e) Force required to start latch moving should be between 3 and 4-1/2 ounces maximum.

(f) If spring scale reading exceeds specified limits, install new spring.

(10) Printing Hammer Stop Bracket. Adjust as follows:

(a) Refer to Figure 6-77.

(b) Place type box in position to print character "M".

(c) Place printing track in its maximum downward position.

(d) Apply spring scale pushrod to lower edge of printing hammer stop bracket and hold stop bracket toward platen with 8 ounces of pressure.

(e) Measure clearance between printing hammer at any point along entire length of platen. Clearance should be 0.005 to 0.050 inch maximum.

(f) If clearance exceeds specified limits, loosen position mounting bracket by means of its mounting screw.

(g) Tighten screw.

(11) Type Pallet Spring. Adjust as follows:

(a) Refer to Figure 6-77.

(b) Remove type box from unit.

(c) Apply 8-ounce spring scale pushrod vertically to end of pallet shank.

(d) Force required to start pallet moving should be between 1/4 and 3/4 ounce maximum.

(e) If scale reading exceeds limits, install new spring.

(12) Printing Arm. Adjust as follows:

(a) Refer to Figure 6-77.

(b) Place printing track in maximum downward position.

(c) Position printing hammer operating bail against its stop.

(d) Place printing hammer operating bail spring bracket in the number 1 position. (The number 2 and number 3 positions are to be used only for marking multiple copies.)

(e) With printing arm slide held downward over each printing track mounting screw for maximum clearance, measure clearance between secondary printing arm and forward extension of hammer operating bail. There should be some clearance not exceeding 0.015 inch.

(f) Place printing track in uppermost position.

(g) Latching extension of printing hammer operating bail should overtravel latching surface of operating bail latch by not less than

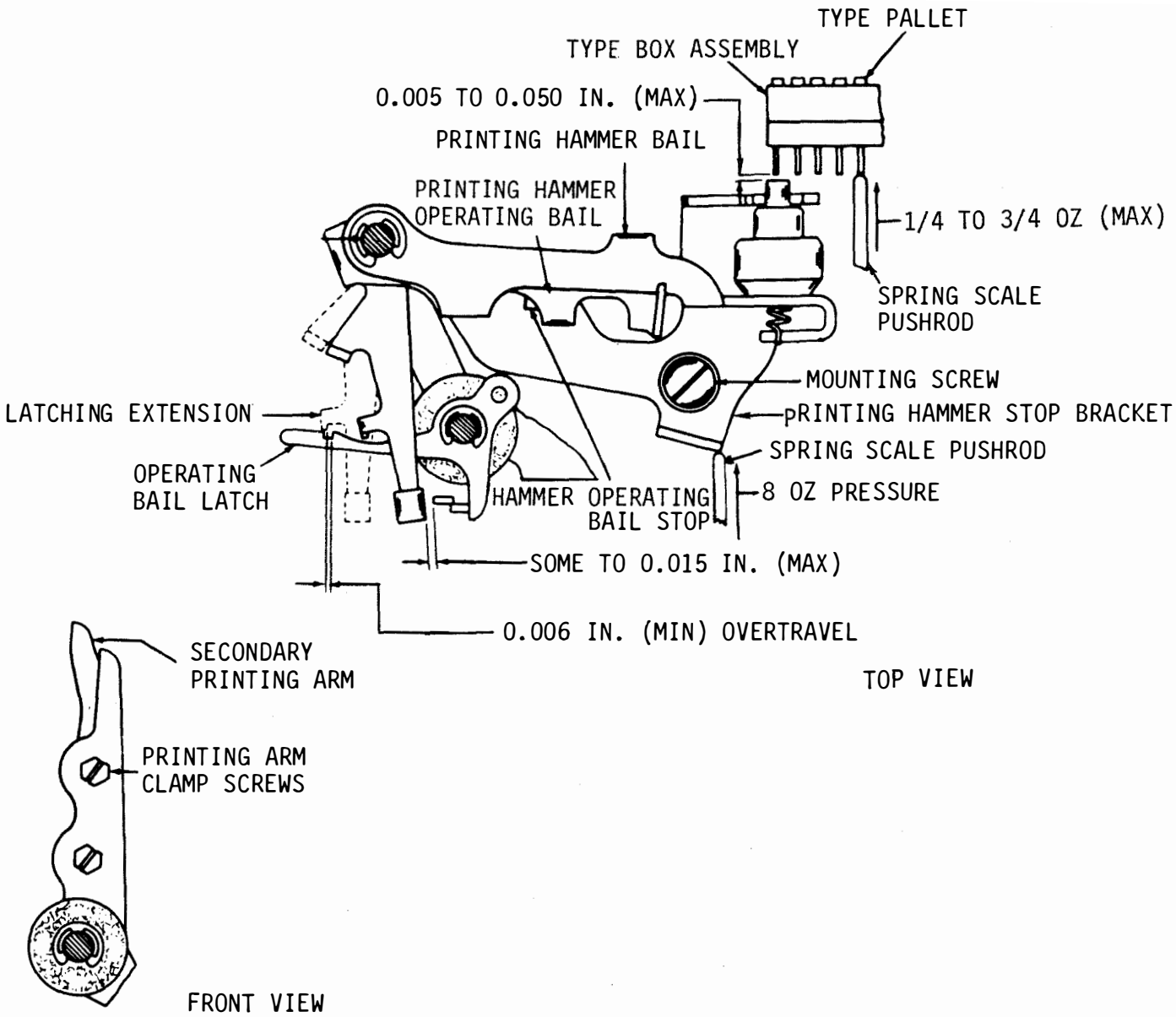


Figure 6-77. Printing Hammer Stop Bracket, Type Pallet Spring, and Printing Arm

0.006 inch. Check right and left positions.

(h) If either measurement obtained in (e) or (g) exceeds specified limits, loosen secondary printing arm clamp screws and position secondary printing arm as necessary.

(i) Tighten secondary printing arm clamp screws.

(13) Type Box Alignment. Adjust as follows:

NOTE

This adjustment applies only to units so equipped and should be made with the type box in its upper position.

(a) Refer to Figure 6-78.

(b) Examine a line of printed characters. As gauged visually, top and bottom of each character should be impressed equally.

(c) If impression of tops and bottoms are not equal, loosen nut.

(d) Operate unit under power. Repeat characters "E" and "Z". Turn adjusting screw in or out in steps of 1/4 turn until tops and bottoms of all characters make equal impression.

NOTE

Some typing units are equipped with a ribbon guide which has a type box retaining clip with a limited yield. In cases where it is necessary to back the adjusting screw out to provide heavier printing at the top of a character, it may be necessary to bend the spring clip on the ribbon guide toward the front so that the tab at the bottom of the type box is held against the adjusting screw.

(e) Tighten adjusting screw clamp nut.

(f) Recheck Printing Hammer Stop Bracket adjustment, paragraph 6-3.1g(10) and readjust if necessary.

NOTE

If units referred to in paragraphs (14) through (19), below, are equipped with two-color ribbons, check requirements in paragraphs 6-12q(1) through (8).

(14) Ribbon Reverse Spur Gear. Adjust as follows:

(a) Refer to Figure 6-79.

(b) When right reversing lever in its maximum downward position left reversing lever should be in its maximum upward position.

(c) To adjust:

1. Loosen detent cam setscrews and left spur gear nut.

2. Securely tighten right spur gear nut.

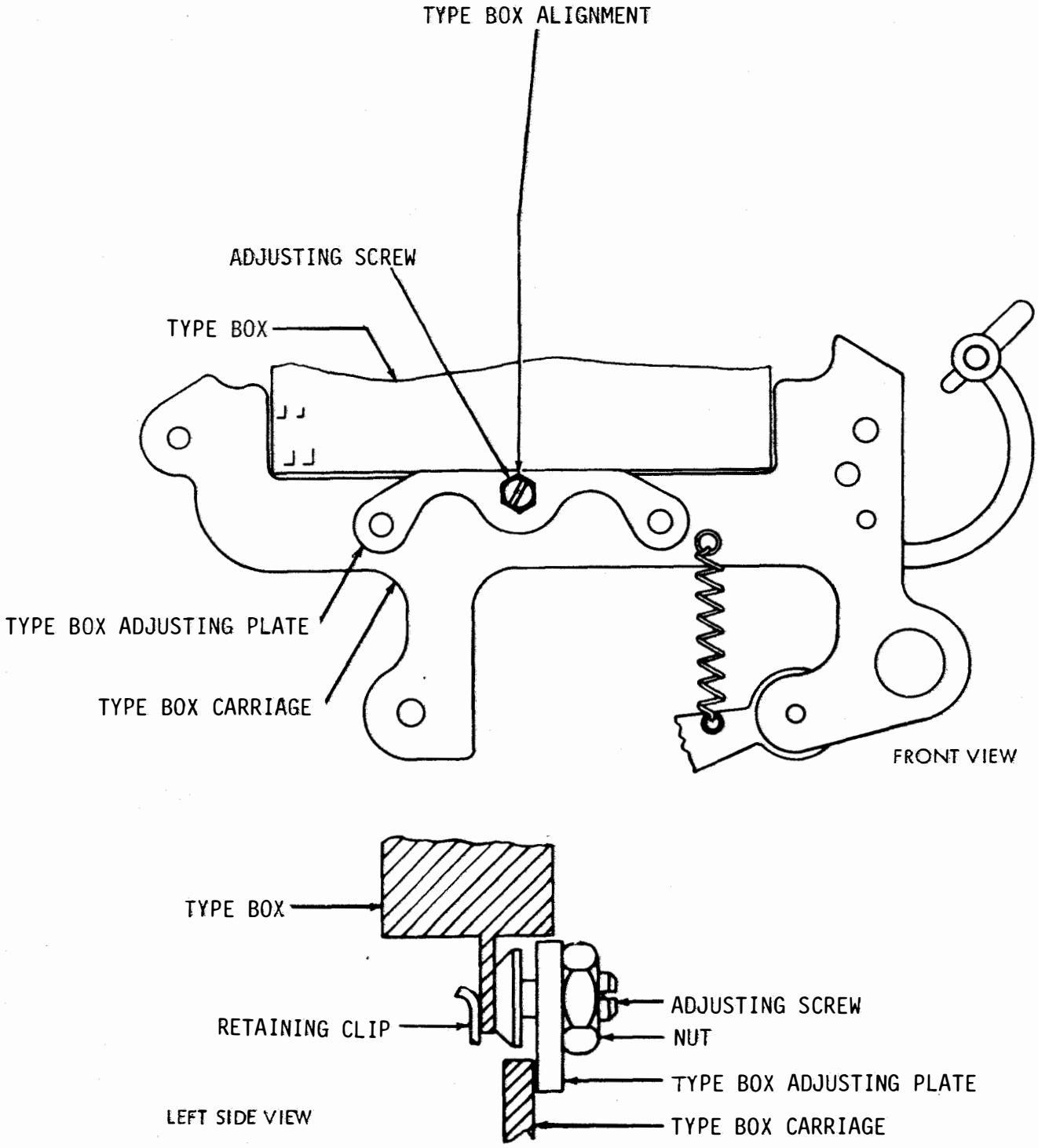


Figure 6-78. Type Box Alignment

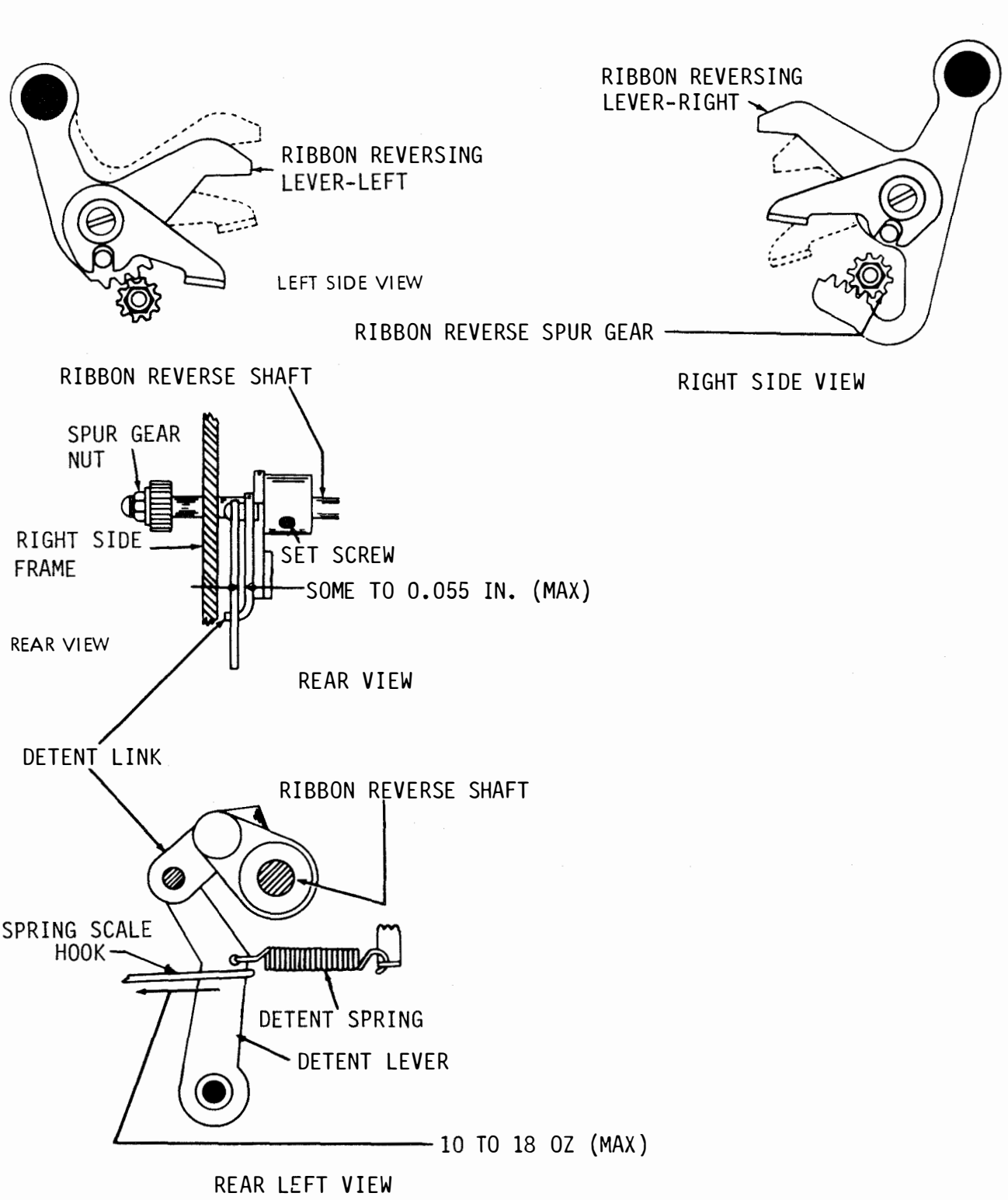


Figure 6-79. Ribbon Reverse Spur Gear, Detent, and Detent Lever Spring

3. Move right reversing lever to its maximum downward position, hold left reversing lever in its maximum upward position, and tighten left spur gear nut.

(d) Rotate type box clutch 1/2 turn and move right reversing lever under segment.

(e) There should be some clearance between segment and lever.

(f) If there is no clearance, refine (c).

(15) Ribbon Reverse Detent. Adjust as follows:

(a) Refer to Figure 6-79.

(b) Buckle ribbon reverse detent link in its downward position.

(c) Take up play in detent lever lightly toward right side of printer.

(d) Measure clearance between detent link and detent lever.

(e) There should be some clearance not exceeding 0.055 inch.

(f) If clearance exceeds specified limits, loosen upper and lower setscrews, hold left ribbon lever in its downward position, and position detent link. Tighten upper setscrew in hub of detent link.

(g) Buckle detent link upward and tighten lower setscrew.

(16) Ribbon Reverse Detent Lever Spring (If Unit is Equipped). Adjust as follows:

(a) Refer to Figure 6-79.

(b) Buckle detent link in upward position.

(c) Attach spring scale hook to detent lever at point where spring is attached.

(d) Force required to start detent lever moving toward rear should be between 10 and 18 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(17) Ribbon-Feed Lever Bracket. Adjust as follows:

(a) Refer to Figure 6-80.

(b) For left-hand mechanism, place left reversing lever in upward position.

(c) Place ribbon mechanism in upper position.

(d) Hold ratchet against detent lever.

(e) Measure clearance between front face of feed lever and shoulder of tooth on ratchet wheel. Clearance should be between 0.015 and 0.035 inch maximum.

(f) If clearance exceeds specified limits, loosen feed lever bracket mounting screws and

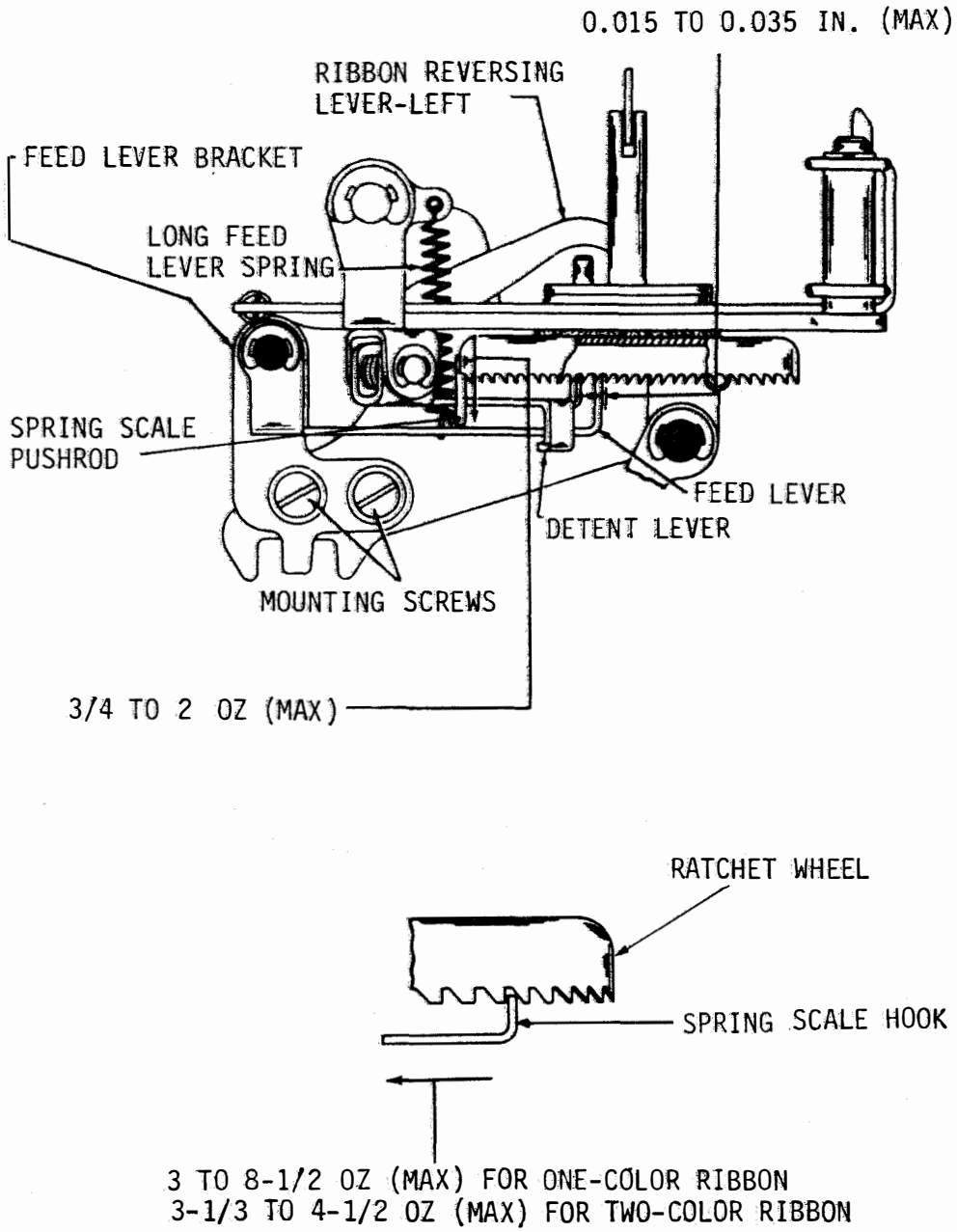


Figure 6-80. Ribbon-Feed Lever Bracket and Lever Spring, and Ribbon Ratchet Wheel Friction Spring, Left Side View

position feed lever bracket to obtain specified clearance.

(g) Tighten screws.

(h) For right-hand mechanism, place right reversing lever in upward position and repeat steps (c) through (g).

NOTE

Rotate main shaft. Ratchet wheel should step one tooth only with each operation. On units with two-color ribbon, position feed lever bracket to upper forward position to meet maximum requirement.

(18) Ribbon-Feed Lever Spring. Adjust as follows:

(a) Refer to Figure 6-80.

(b) Place both long and short ribbon-feed lever in uppermost position.

(c) For long lever, apply spring scale pushrod to long ribbon-feed lever at point near its spring and push downward.

(d) Force required to start lever moving should be between 3/4 and 2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(f) For short lever, apply spring scale pushrod to short ribbon-feed lever at point near long lever spring and push downward.

(g) Force required to start lever moving should be between 3/4 and 2 ounces.

(h) If scale reading is less than 3/4 ounces, pull lower end of torsion spring to rear. If scale reading is greater than 2 ounces, install new spring.

(i) Measure all four pawls in like manner.

(19) Ribbon Ratchet Wheel Friction Spring. Adjust as follows:

(a) Refer to Figure 6-80.

(b) Disengage feed levers.

(c) Apply spring scale hook to ratchet wheel.

(d) Force required to start ratchet wheel moving should be as follows:

1. For one-color ribbon, between 3 and 8-1/2 ounces maximum.

2. For two-color ribbon, between 3-1/3 and 4-1/2 ounces maximum.

(20) Ribbon Lever Spring. Adjust as follows:

(a) Refer to Figure 6-81.

(b) Attach spring scale hook to right ribbon lever.

(c) Force required to start lever moving should be between 1-1/2 and 3 ounces maximum.

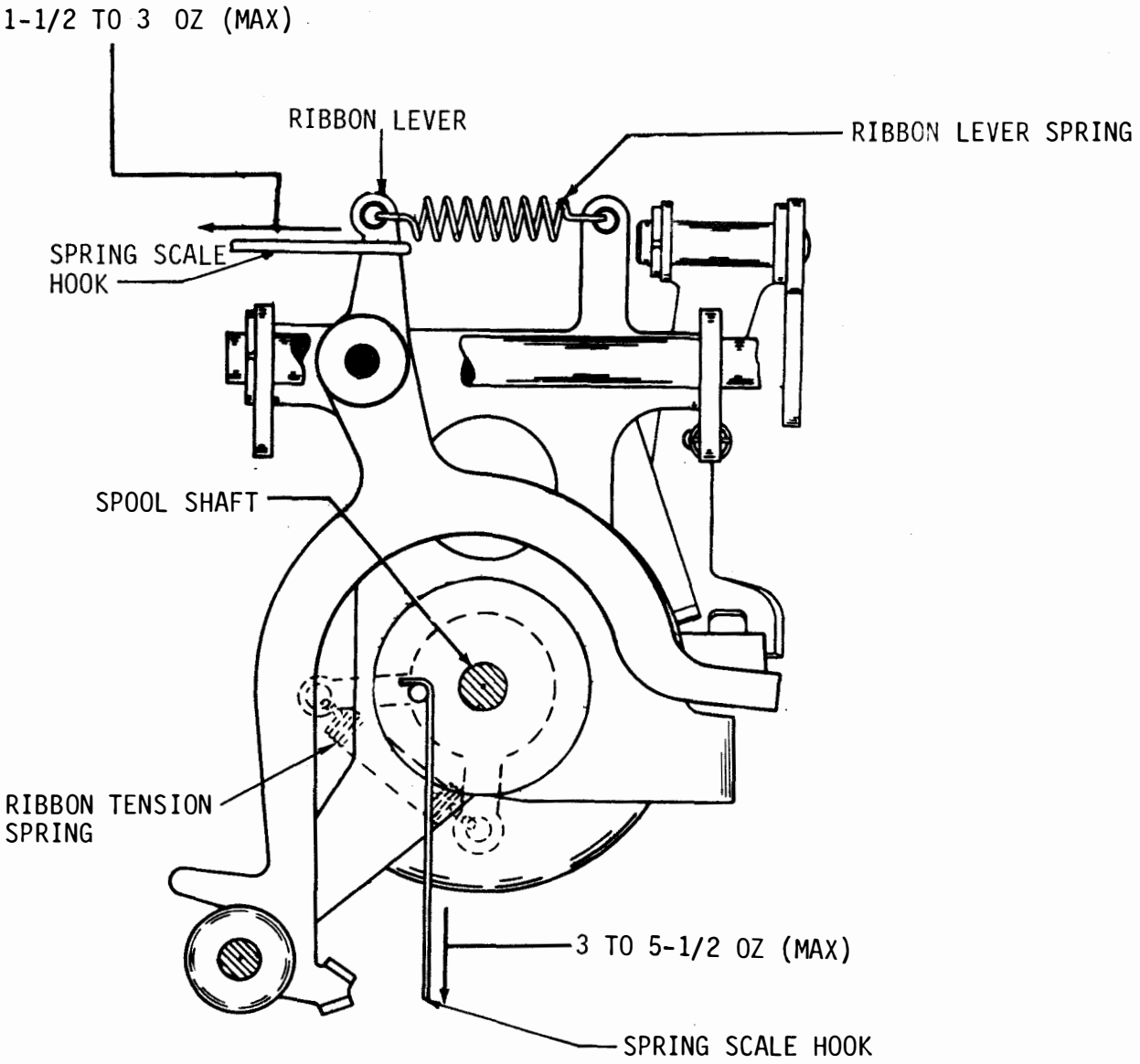


Figure 6-81. Ribbon Lever Spring and Ribbon Tension Spring, Top View

(d) If scale reading exceeds specified limits, install new spring.

(e) Repeat steps (b), (c), and (d) for left spring.

(21) Ribbon Tension Spring. Adjust as follows:

(a) Refer to Figure 6-81.

(b) Position ribbon ratchet wheel so that each driving pin is toward outside of spool shaft.

(c) Attach spring scale hook to spool.

(d) Force required to start spool shaft moving should be between 3 and 5-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install a new spring.

h. Line-Feed and Platen Mechanism Adjustment. Perform the following line-feed and platen mechanism adjustments.

(1) Line-Feed Clutch Phasing. Adjust as follows:

(a) Refer to Figure 6-82.

(b) Disengage line-feed clutch.

(c) Both line-feed bars should engage teeth of line-feed spur gear.

(d) To adjust, loosen assembly bearing post and remesh line-feed eccentric spur gear with clutch gear.

(e) Tighten bearing post.

(2) Line-Feed Spur Gear Detent Eccentric. Adjust as follows:

(a) Refer to Figure 6-83.

(b) Disengage line-feed clutch.

(c) Rotate platen until stud is seated between two teeth on line-feed spur gear.

(d) When handwheel is released, manually set teeth on feed bars into engagement with teeth on line-feed spur gear.

(e) Detent stud should contact one gear tooth and be not more than 0.010 inch from other tooth.

(f) If gap between teeth exceeds specified limit, loosen mounting screw and rotate detent eccentric, keeping high part of eccentric upward, to obtain proper gap dimension.

(g) Tighten mounting screw.

(3) Platen Detent Bail Spring. Adjust as follows:

(a) Refer to Figure 6-83.

(b) Seat detent between two teeth on line-feed spur gear.

(c) Attach spring scale hook to end of detent bail.

(d) Force required to start detent bail moving should be between 16 and 32 ounces maximum.

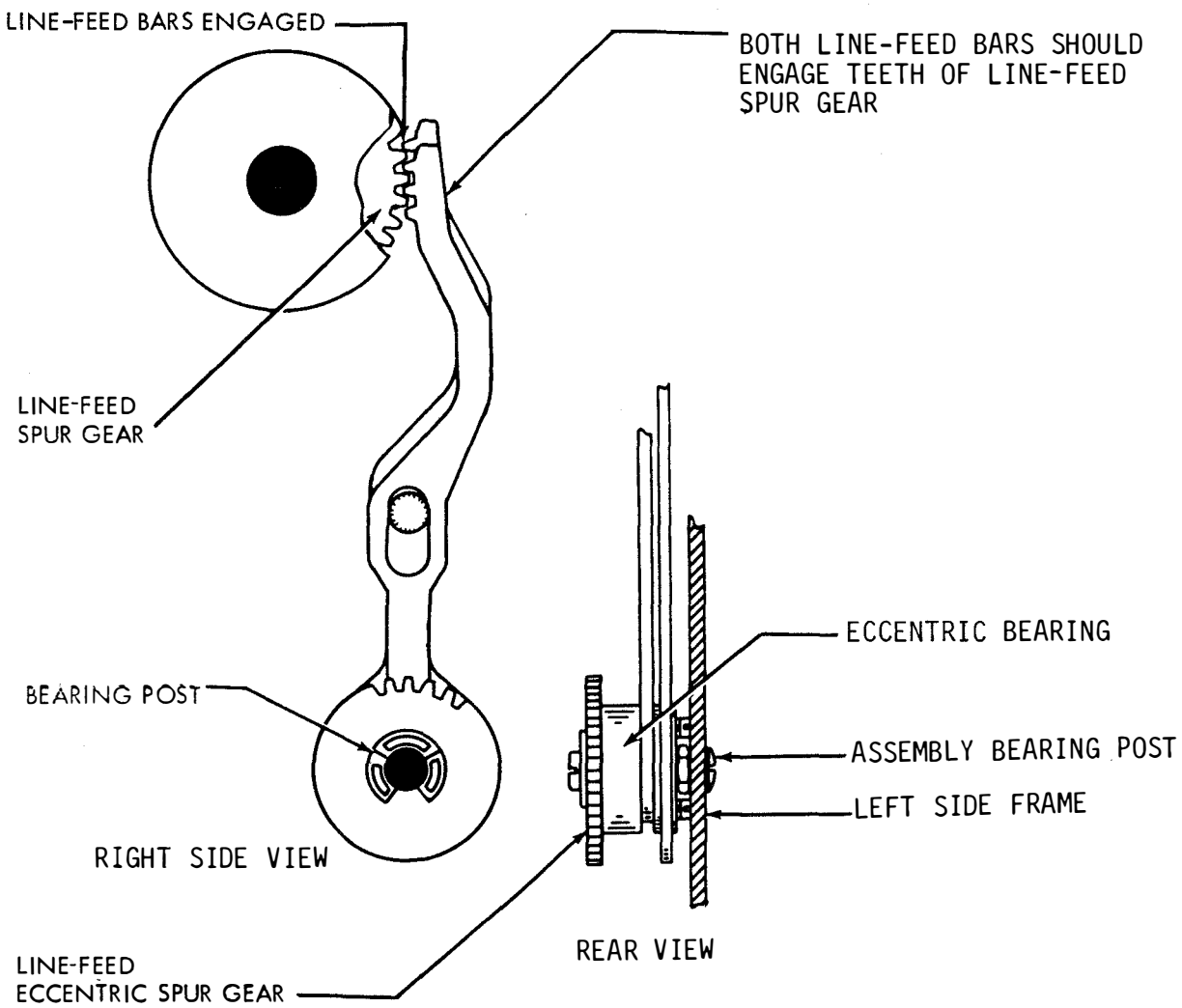


Figure 6-82. Line-Feed Clutch Phasing

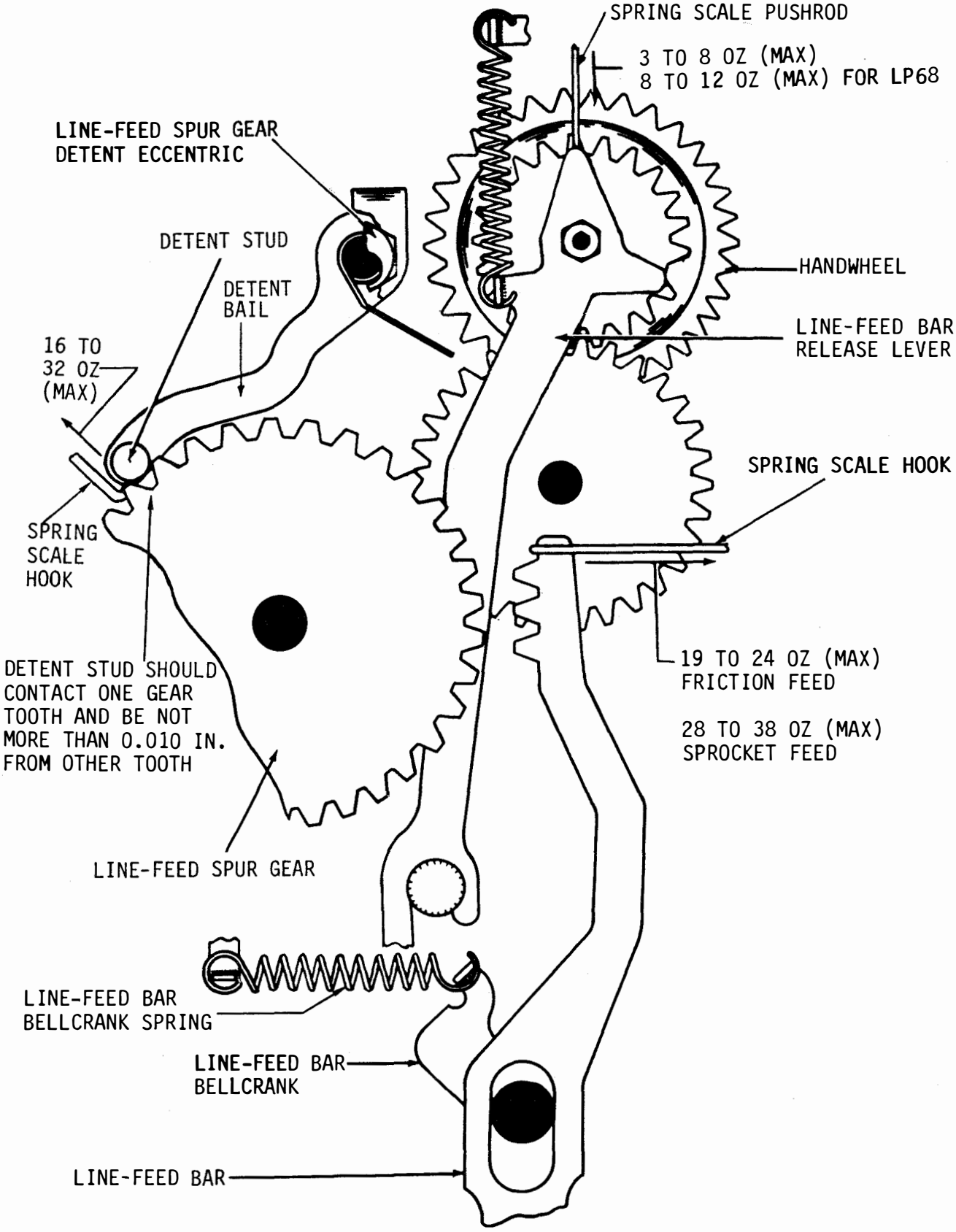


Figure 6-83. Line-Feed Spur Gear Detent Eccentric, Platen Detent Bail Spring, Line-Feed Bar Release Lever Spring, and Line-Feed Bar Bellcrank Spring, Right Rear View

(e) If scale reading exceeds specified limit, install a new spring.

(4) Line-Feed Bar Release Lever Spring. Adjust as follows:

(a) Refer to Figure 6-83.

(b) Apply spring scale pushrod to line-feed bar release lever.

(c) The force required to start lever moving should be between 3 and 8 ounces maximum. For LP68 the required force should be between 8 and 12 ounces maximum.

(d) If scale reading exceeds limits, install a new spring.

(5) Line-Feed Bar Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-83.

(b) Place left hand line-feed bar in rear position.

(c) Attach spring scale hook to line-feed bar at upper end.

(d) The force required to start bar moving should be as follows:

1. For friction feed, between 19 and 24 ounces maximum.

2. For sprocket feed, between 28 and 38 ounces maximum.

(e) If scale reading exceeds limits, install a new spring.

(6) Single-Double Line-Feed Stripper Bail Assembly Springs. Adjust as follows:

(a) Refer to Figure 6-84.

(b) Disengage line-feed clutch.

(c) Set single-double line-feed lever in single line-feed position.

(d) For spring A, attach spring scale hook to stripper bail arm so as to move arm upward. Force required to start stripper bail arm moving upward should be between 1/2 and 2 ounces maximum.

(e) For spring B, attach spring scale hook to stripper bail arm so as to move arm to left. Force required to start stripper bail arm moving should be between 1/2 and 2 ounces maximum.

(f) If scale reading of either spring exceeds specified limits, replace spring.

(7) Paper Straightener Collar (Friction Feed). Adjust as follows:

(a) Refer to Figure 6-85.

(b) Measure distance from paper straightener shaft left shoulder to left collar.

(c) Distance should be 9/32 to 21/64 inch maximum.

(d) If distance exceeds specified limits, loosen left collar setscrew, position collar to obtain specified distance and tighten setscrew.

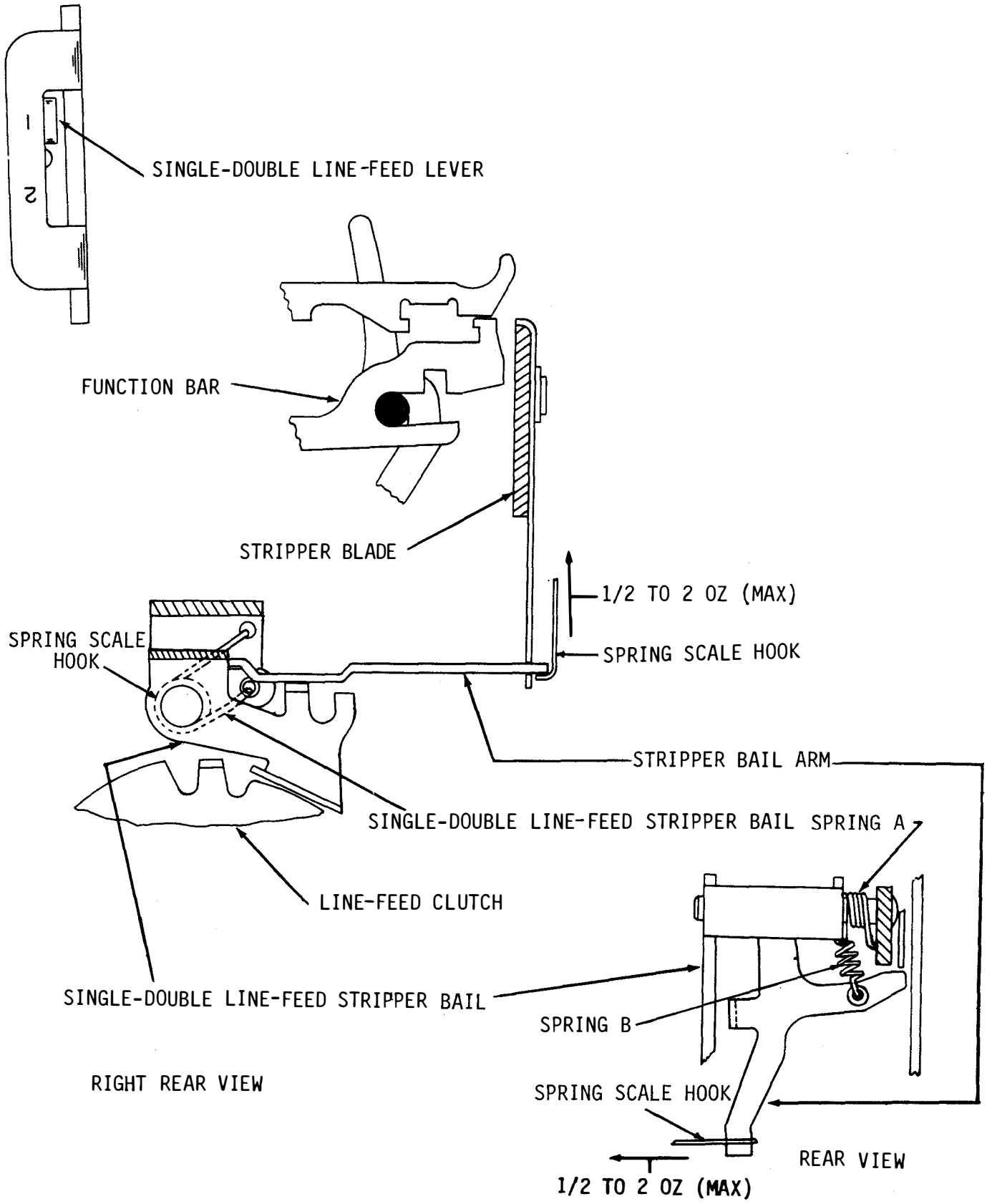


Figure 6-84. Single-Double Line-Feed Stripper Bail Assembly Springs

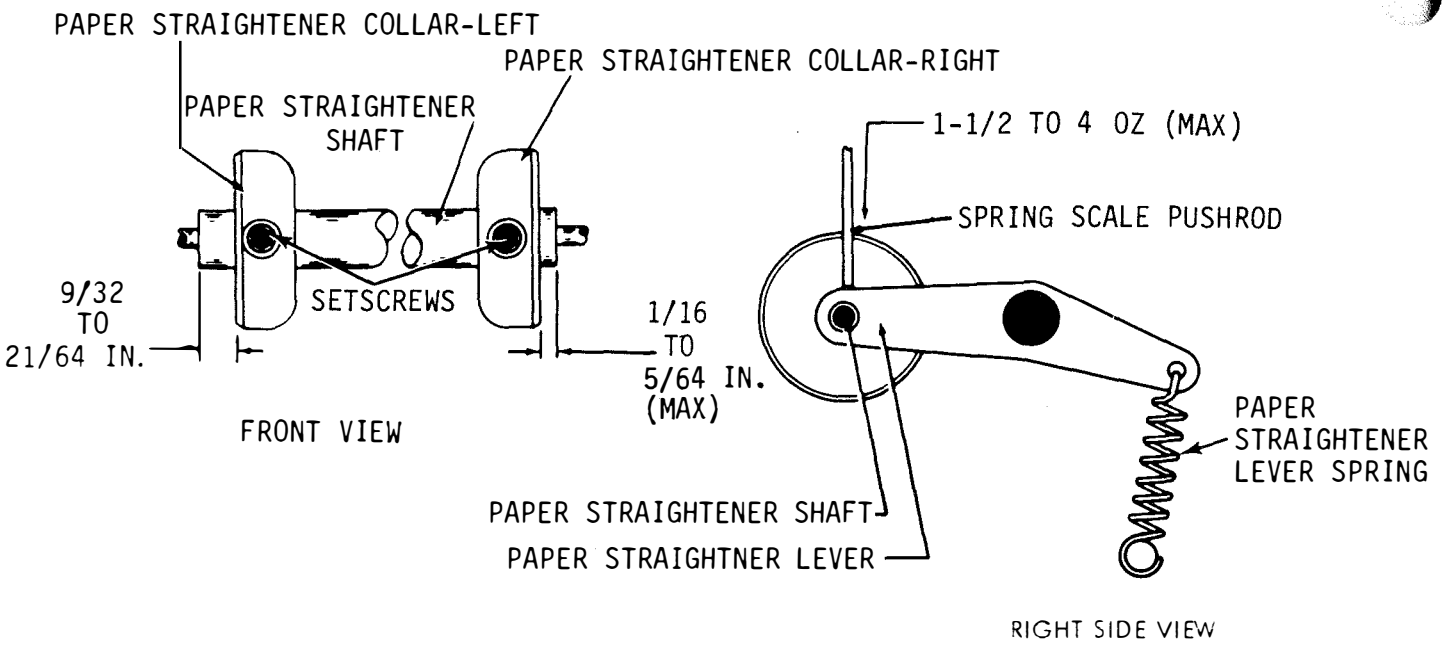


Figure 6-85. Paper Straightener Collar and Paper Straightener Lever Spring (Friction Feed)

(e) Measure distance from paper straightener shaft right shoulder to right collar.

(f) Distance should be 1/16 to 5/64 inch maximum.

(g) If distance exceeds specified limits, loosen right collar setscrew, position collar to obtain specified distance, and tighten setscrew.

(8) Paper Straightener Lever Spring (Friction Feed). Adjust as follows:

(a) Refer to Figure 6-85.

(b) Attach spring scale pushrod to paper straightener lever at point of attachment to paper straightener shaft.

(c) Force required to start lever moving should be between 1-1/2 and 4 ounces maximum.

(d) If scale reading exceeds specified limits, install a new spring.

(9) Paper Finger (Friction Feed). Adjust as follows:

(a) Refer to Figure 6-86.

(b) Pressure end of paper fingers should overlap paper between 3/8 and 1/2 inch.

(c) If overlap is not as specified, position paper fingers by sliding them on their shaft.

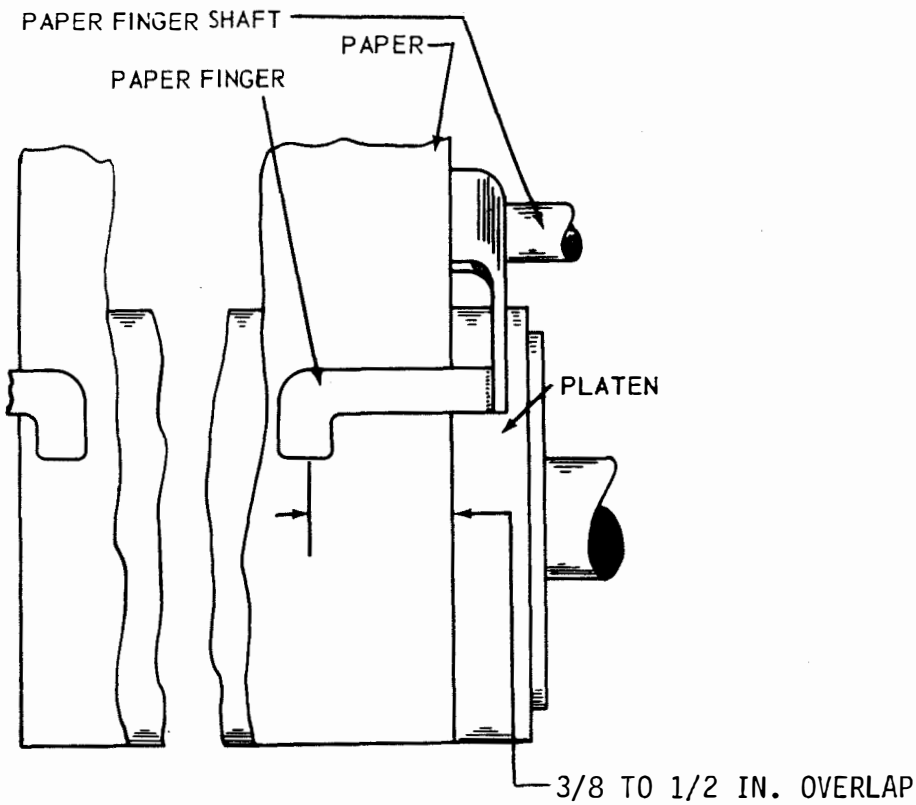


Figure 6-86. Paper Finger (Friction Feed), Front View

(10) Paper Finger Spring (Friction Feed). Adjust as follows:

(a) Refer to Figure 6-87.

(b) Attach spring scale hook under end of right paper finger.

(c) Force required to start left paper spring moving from platen should be between 3 and 6 ounces maximum.

(d) If scale reading exceeds specified limits, install a new spring.

(11) Paper Pressure Bail Spring (Friction Feed). Adjust as follows:

(a) Refer to Figure 6-87.

(b) Hook spring scale over pressure bail at each end of platen.

(c) Force required tc move pressure bail from platen should be between 7 and 20 ounces maximum.

(d) If scale reading exceeds specified limits, replace spring.

(12) Pressure Poller Lever Spring (Friction Feed). Adjust as follows:

(a) Refer to Figure 6-87.

(b) Apply spring scale pushrod to each center lever alternately.

(c) Force required to start each center lever moving should be between 28 and 36 ounces maximum.

(d) If scale reading exceeds specified limits, install a new spring.

(13) Left Margin (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-88.

(b) Disengage type box clutch, fully return spacing drum, and shift type box to LETTERS position.

(c) Measure clearance between center of LTRS print indicator on type box and centerline of sprocket pins at left hub. Clearance should be between 5/16 and 7/16 inch maximum.

(d) If clearance exceeds the limits, loosen mounting screws and position carriage return ring to obtain clearance specified. Then tighten mounting screws.

(e) Disengage spacing clutch, position front spacing feed pawl in its farthest advanced position, fully return spacing drum, and take up play in Spacing Gear, paragraphs 6-3.1d(1) and (2), in clockwise direction.

(f) Measure clearance between pawl and shoulder of ratchet wheel tooth immediately ahead. There should be some clearance not to exceed 0.008 inch.

(g) Rear pawl, when farthest advanced should drop into indentation between ratchet wheel teeth and bottom firmly in notch.

(h) If any adjustment is required, refine adjustment of step (d) above.

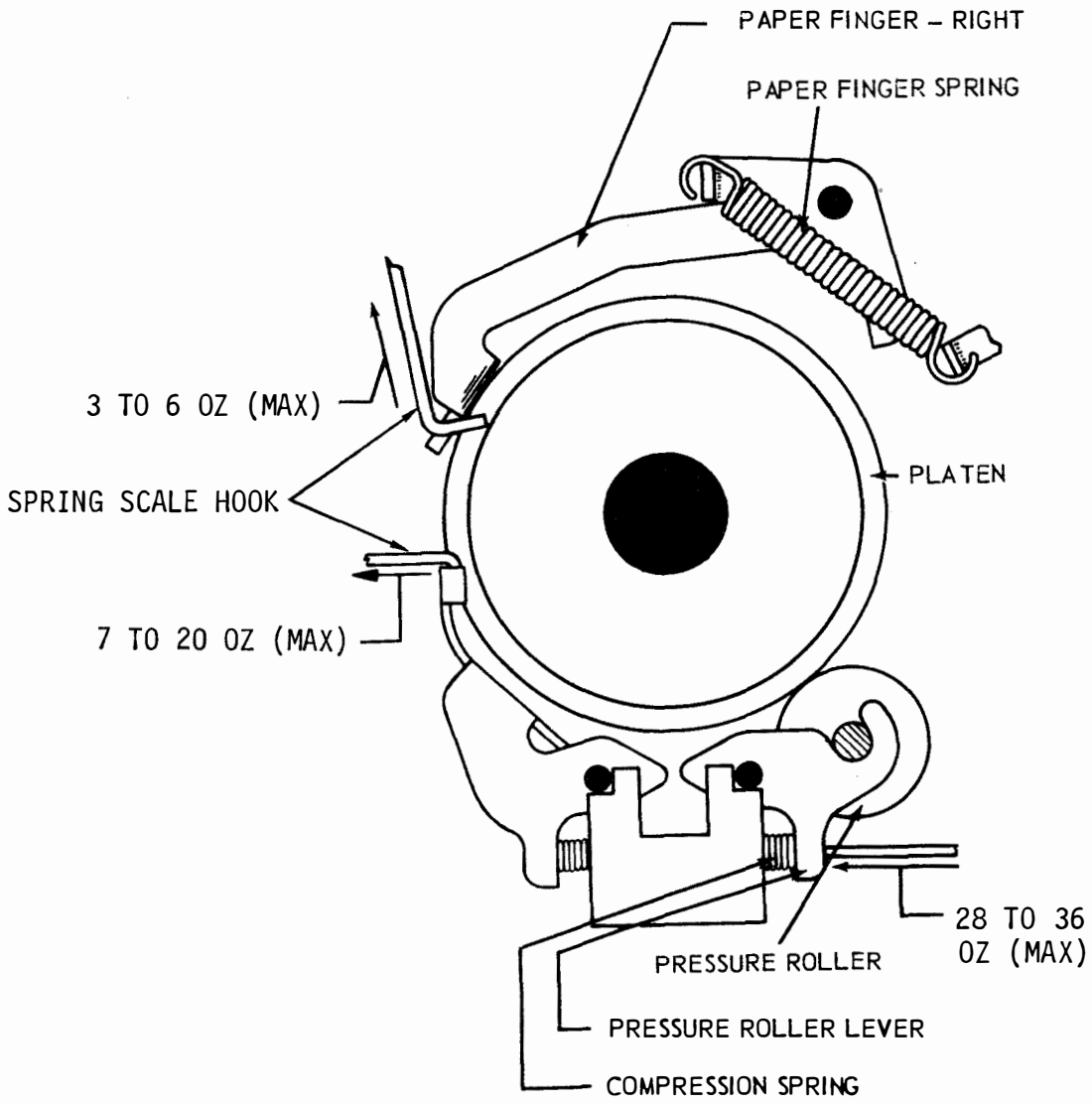
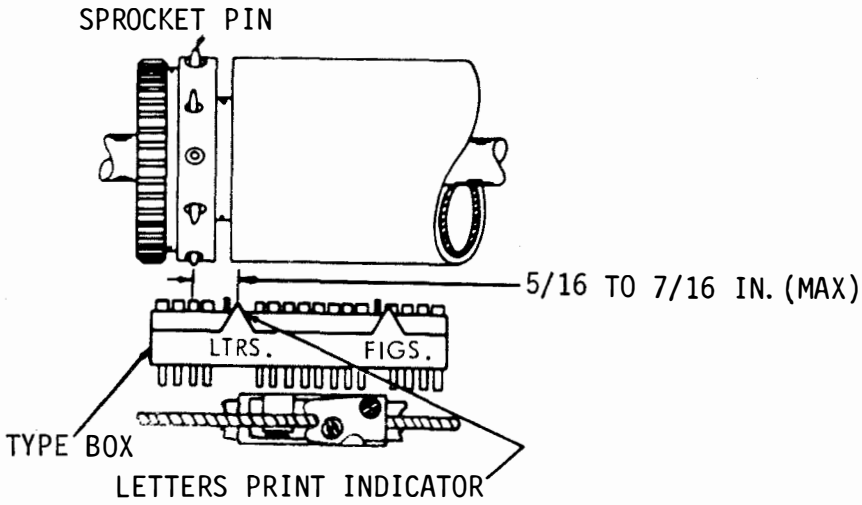
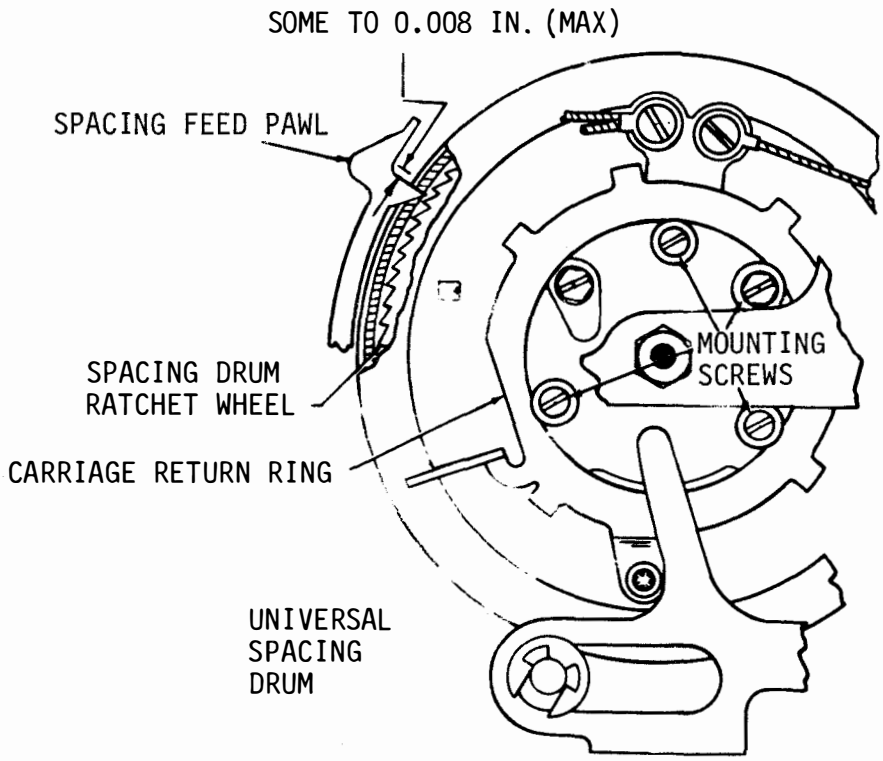


Figure 6-87. Paper Finger Spring, Paper Pressure Bail Spring, and Pressure Roller Lever Spring (Friction Feed), Right Side View



TOP VIEW



FRONT VIEW

Figure 6-88. Left Margin (Sprocket Feed)

(14) Right Margin (Sprocket Feed). Adjust as follows:

(a) Refer to paragraph 6-3.1d(19) and Figure 6-46.

(b) For units with limited adjustment spacing drum, use corresponding standard adjustment.

(c) For units with universal spacing drum, use corresponding standard adjustment.

(15) Printing Hammer Stop Bracket (Sprocket Feed). Adjust as follows:

(a) No reference Figure.

(b) For units with thick type box and dummy type pallets, use corresponding standard adjustment except there should be some clearance between printing hammer and dummy type pallet, but not exceeding 0.020 inch.

(c) For units with thin type box and no dummy type pallets, use corresponding standard adjustment.

(d) Certain multiple form units will require a refinement of standard adjustments for stop bracket to between 0.005 and 0.015 inch maximum.

(16) Printing Carriage Position (Sprocket Feed). Refer to paragraph 6-3.1g(3) and Figure 6-74 for adjustments.

(17) Type Box Alignment (Sprocket Feed). Refer to paragraph 6-3.1g(13) and Figure 6-78 for adjustment.

(18) Printed Line (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-89.

(b) The bottom of the printed line should be 1/32, ±1/64, inch (plus a multiple of 1/6 inch if required) above horizontal line drawn even with the bottom edge of any sprocket hole.

(c) If necessary to adjust, loosen screws and position left sprocket. If other than standard paper is used, it may be necessary to make a variation in this adjustment.

(d) Tighten screws.

(19) Sprocket Pin Separation (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-89.

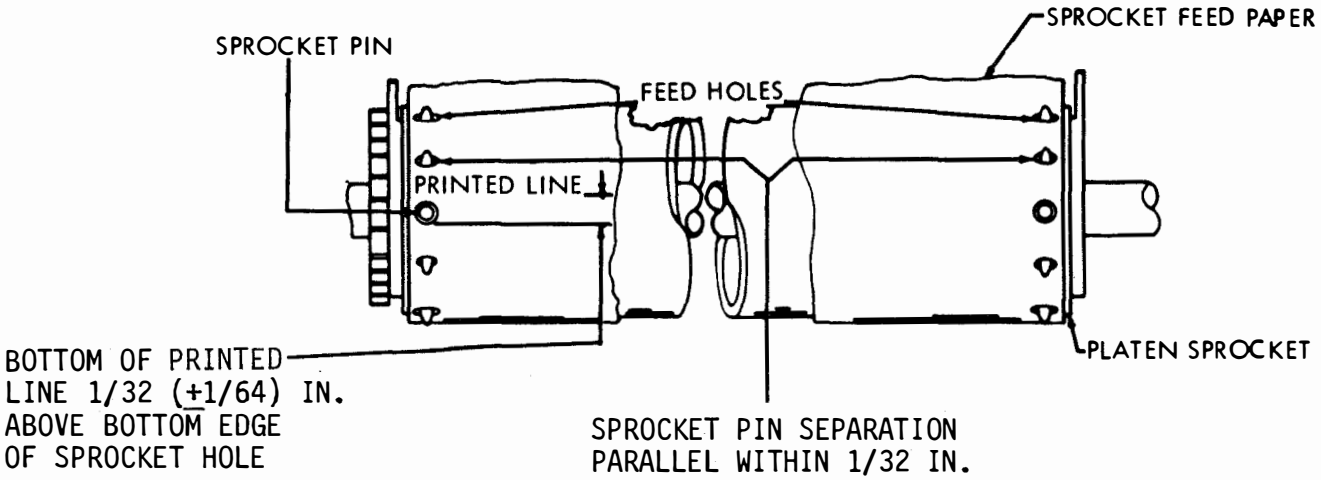
(b) Place a single sheet of sprocket feed paper on platen with paper feed holes centered on sprocket pins.

(c) Printed line should be parallel within ±1/32 inch to a line drawn perpendicular to edge of paper.

(d) If drawn line is not perpendicular to printed line within specified limits, loosen clamp screw and position right sprocket.

(e) Tighten clamp screw.

(20) Platen End Play (Sprocket Feed). Adjust as follows:



FRONT VIEW

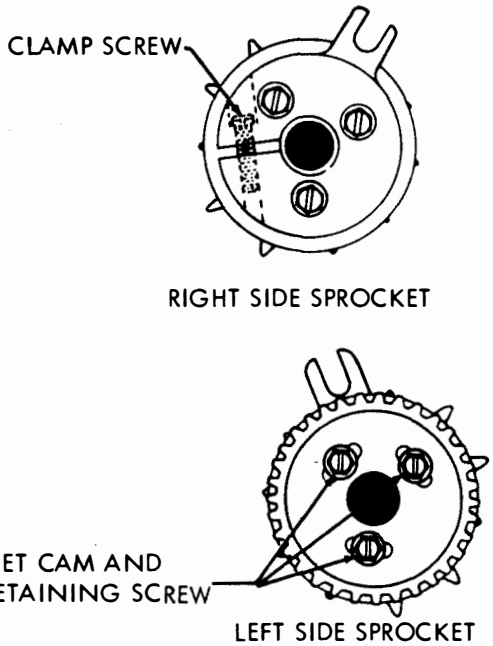


Figure 6-89. Printer Line and Sprocket Pin Separation (Sprocket Feed)

(a) Refer to Figure 6-90.

(b) Disengage line-feed pawls.

(c) Measure platen shaft end play.

(d) There should be some to 0.010 inch maximum end play.

(e) If end play exceeds specified limit, loosen clamp screw and position platen spur gear to obtain specified end play.

(f) Tighten clamp screw.

(21) Paper Finger or Guide Bracket (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-91.

(b) Ensure sprocket pin is centered in paper finger or guide bracket slot.

(c) To adjust, loosen both clamp screws and position assembly horizontally to center sprocket pin in paper finger or guide bracket slot. Tighten clamp screws.

(d) Gap between platen and paper finger or guide bracket should be as follows:

1. For stapled multiple copy, between 0.050 and 0.105 inch maximum.

2. For single copy or unstapled multiple copy, between 0.020 and 0.060 inch maximum.

(e) If gap between platen and paper finger or guide bracket exceeds

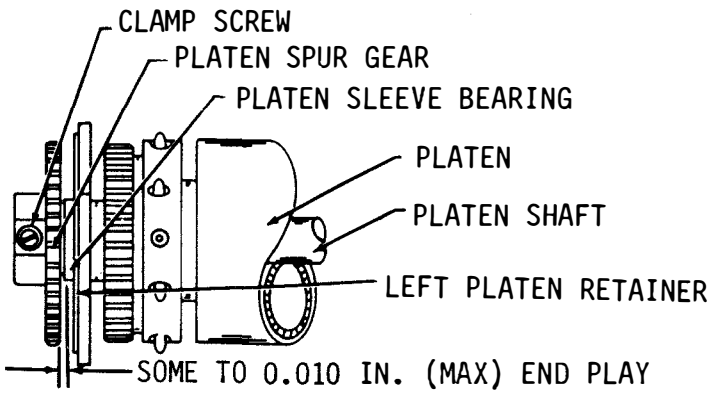
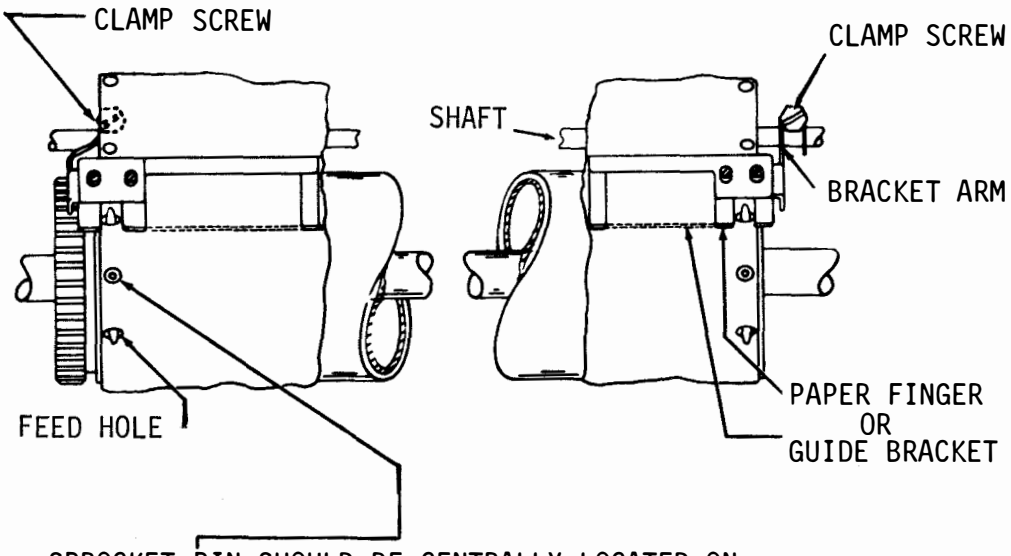
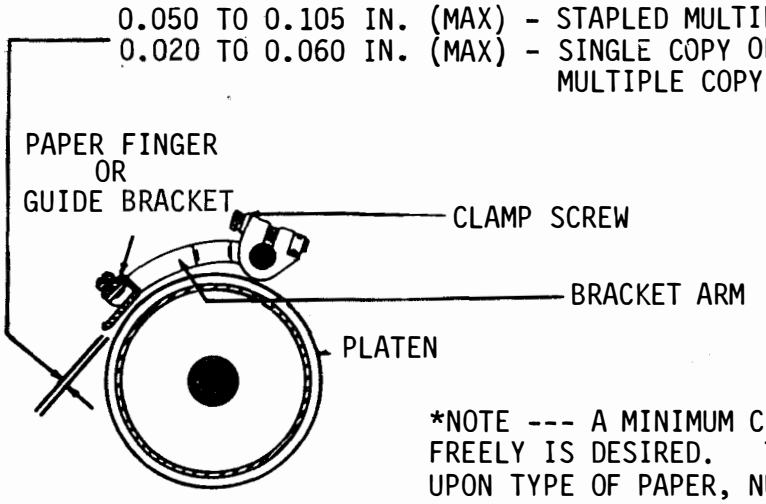


Figure 6-90. Platen End Play (Sprocket Feed), Front View



SPROCKET PIN SHOULD BE CENTRALLY LOCATED ON THE PAPER FINGER OR GUIDE BRACKET SLOT.

FRONT VIEW



*NOTE --- A MINIMUM CLEARANCE THAT WILL PASS STATIONERY FREELY IS DESIRED. THIS MINIMUM VALUE IS DEPENDENT UPON TYPE OF PAPER, NUMBER OF COPIES, STAPLING, ETC.

RIGHT SIDE VIEW

Figure 6-91. Paper Finger or Guide Bracket (Sprocket Feed)

specified limits, loosen both clamp screws and rotate assembly to obtain gap specified in step (d).

(f) Measure clearance between leading edge of paper finger or guide bracket and ribbon guide (not illustrated). The clearance should be a minimum of 0.035 inch, and both right and left paper fingers must be parallel to same printed line as gauged by eye.

(g) If clearance exceeds specified limit or paper fingers are not parallel to same printed line, loosen both clamp screws, select LETTERS combination (12345), and rotate type box clutch 1/2 revolution. Position paper fingers by means of elongated mounting holes.

(h) Tighten clamp screws and repeat steps (e) and (f).

(22) Paper Guide (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-92.

(b) Measure clearance between platen and front edge of paper guide. Clearance should be as follows:

1. For stapled multiple copy, between 0.050 and 0.105 inch maximum.

2. For single copy or unstapled multiple copy, between 0.020 and 0.060 inch maximum.

(c) If clearance exceeds specified limits, loosen mounting screws, position guide to obtain specified clearance, and tighten mounting screws.

(23) Sprocket Pin Spring (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-92.

(b) Apply spring scale pushrod to sprocket pin spring.

(c) Force required to start depressing pin should be between 6 and 8 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(24) Ribbon Reverse Spur Gear (Sprocket Feed). Refer to paragraph 6-3.1g(14) and Figure 6-79 for adjustments.

(25) Ribbon Reverse Detent (Sprocket Feed). Refer to paragraph 6-3.1g(15) and Figure 6-79 for adjustments.

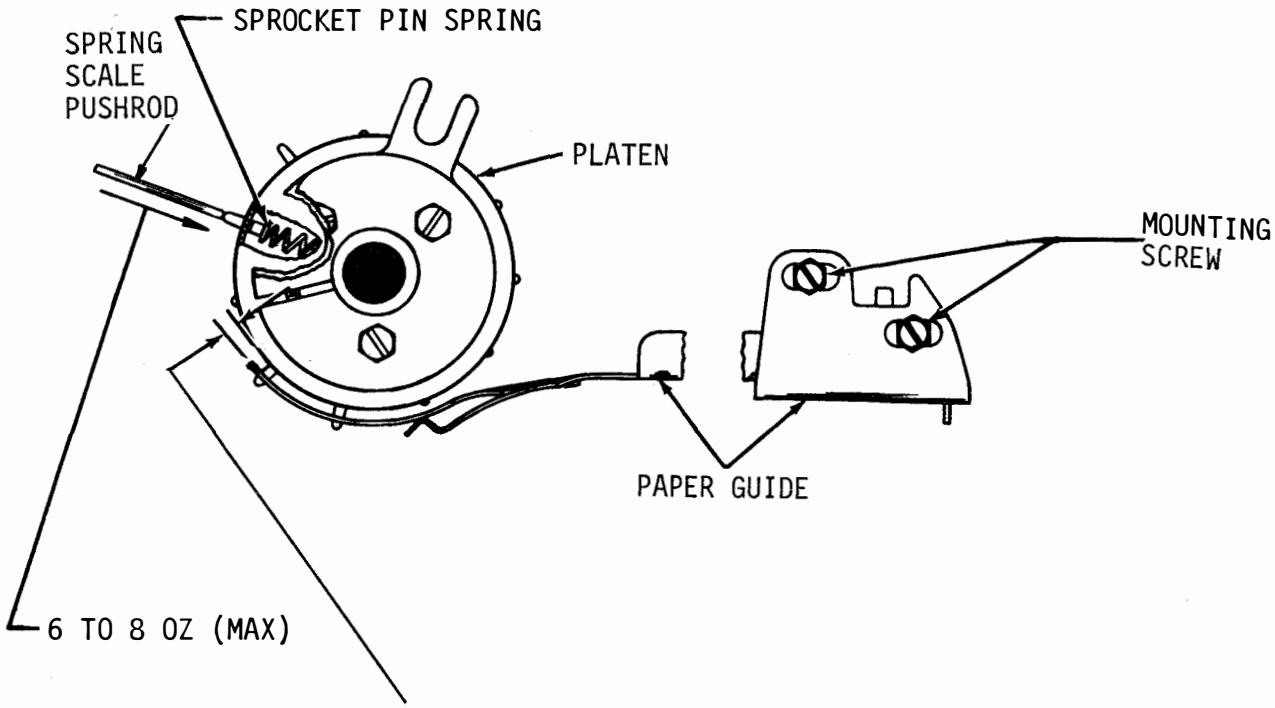
(26) Paper Finger or Guide Bracket Shaft Spring (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-93.

(b) Attach spring scale hook to end of paper finger or guide bracket shaft spring.

(c) Force required to move paper finger or guide bracket against platen should be between 6 and 10 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.



NOTE:
A MINIMUM CLEARANCE THAT WILL PASS STATIONERY FREELY IS DESIRED. THIS MINIMUM VALUE IS DEPENDENT UPON TYPE OF PAPER, NUMBER OF COPIES, STAPLING, ETC.

Figure 6-92. Paper Guide and Sprocket Pin Spring (Sprocket Feed)

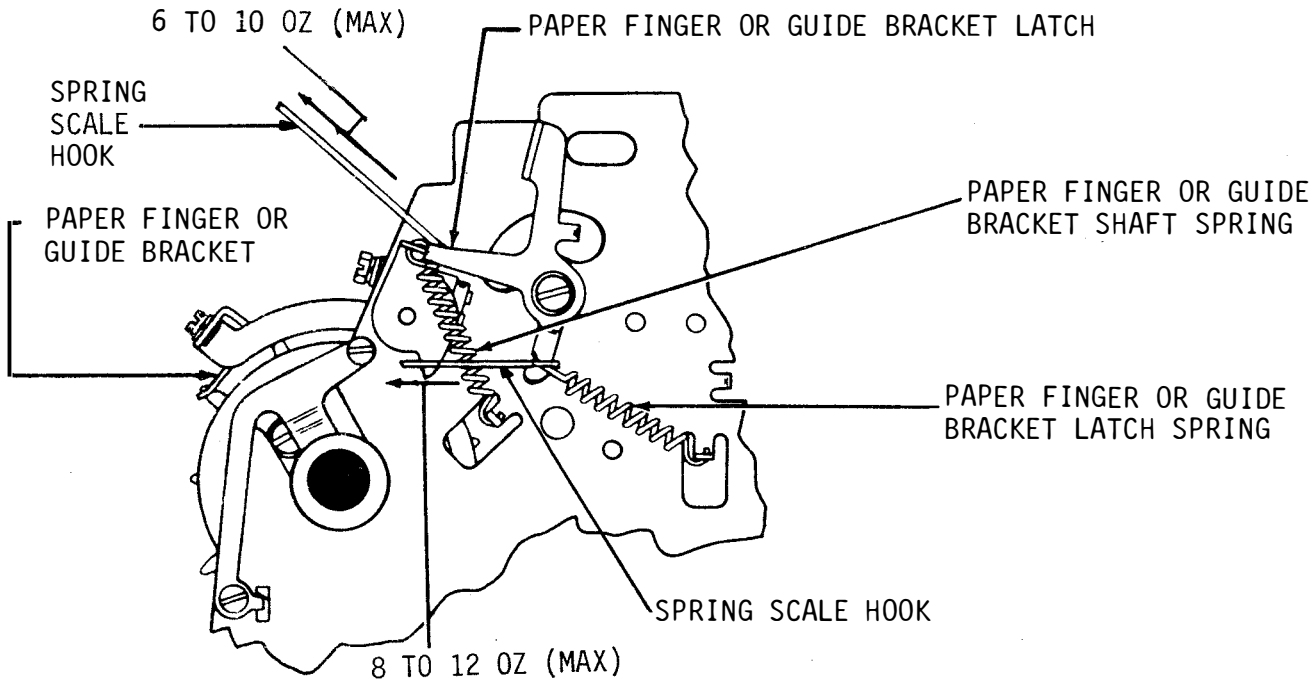


Figure 6-93. Paper Finger or Guide Bracket Shaft Spring and Latch Spring (Sprocket Feed)

(27) Paper Finger or Guide Bracket Latch Spring (Sprocket Feed). Adjust as follows:

(a) Refer to Figure 6-93.

(b) Place paper finger or guide bracket against platen.

(c) Attach spring scale hook to paper finger or guide bracket latch.

(d) Force required to start latch moving should be between 8 and 12 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(28) Paper Finger Locking Arm Spring (Sprocket Feed Mechanism with PetracTable Pins). Adjust as follows:

(a) No reference Figure.

(b) Attach spring scale hook to locking arm.

(c) Force required to move arm away from platen should be between 1 and 1-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

6-3.2 TYPING UNIT ADJUSTMENTS, LOW-LEVEL. Adjustments to the high-level typing unit are applicable to the low-level typing unit, plus the selector mechanism adjustments as

described in the following paragraphs.

NOTE

To facilitate the following adjustments, remove selector cam-clutch and range finder assemblies. Unscrew magnet and base assembly mounting post from nut plate to remove metallic container (base and cover) which houses the selector magnets.

a. Selector Armature. Adjust as follows:

(1) Refer to Figure 6-94.

(2) De-energize magnet assembly and remove from base.

(3) Loosen downstop mounting screw friction tight.

(4) With armature resting against downstop, measure clearance between end of armature and left edge of left pole piece. Clearance should be between 0.025 inch and 0.030 inch maximum.

(5) Position downstop to meet requirement, and tighten mounting screws.

(6) Loosen armature mounting screws, and position armature so that its left edge is flush within 0.010 inch with left edge of left pole piece.

(7) Tighten screw.

b. Selector Armature Alignment. Adjust as follows:

(1) Refer to Figure 6-95.

(2) Ensure rear edge of armature is flush with rear edge of pole piece within 0.010 inch.

(3) Ensure there is some clearance not exceeding 0.020 inch maximum between front edge of armature and pole piece and inside of downstop bracket.

(4) Loosen mounting screws.

(5) Position armature so that armature spring has enough initial tension to hold armature firmly against pivot edge of casting.

(6) Tighten mounting screws.

c. Selector Armature Spring. Adjust as follows:

(1) Refer to Figure 6-96.

(2) Attach spring scale hook as nearly vertical as possible to end of armature extension. Force required to pull armature marking position should be between 1-3/4 and 2-1/4 ounces maximum.

(3) If scale reading exceeds specified limits, turn adjusting screw clockwise to increase spring tension or counterclockwise to decrease spring tension.

NOTE

Spring tensions given will permit operation of printer prior to measurement of receiving margins. Refine spring tension for maximum selector performance with unit connected to specific circuit in which it is to function (operating at

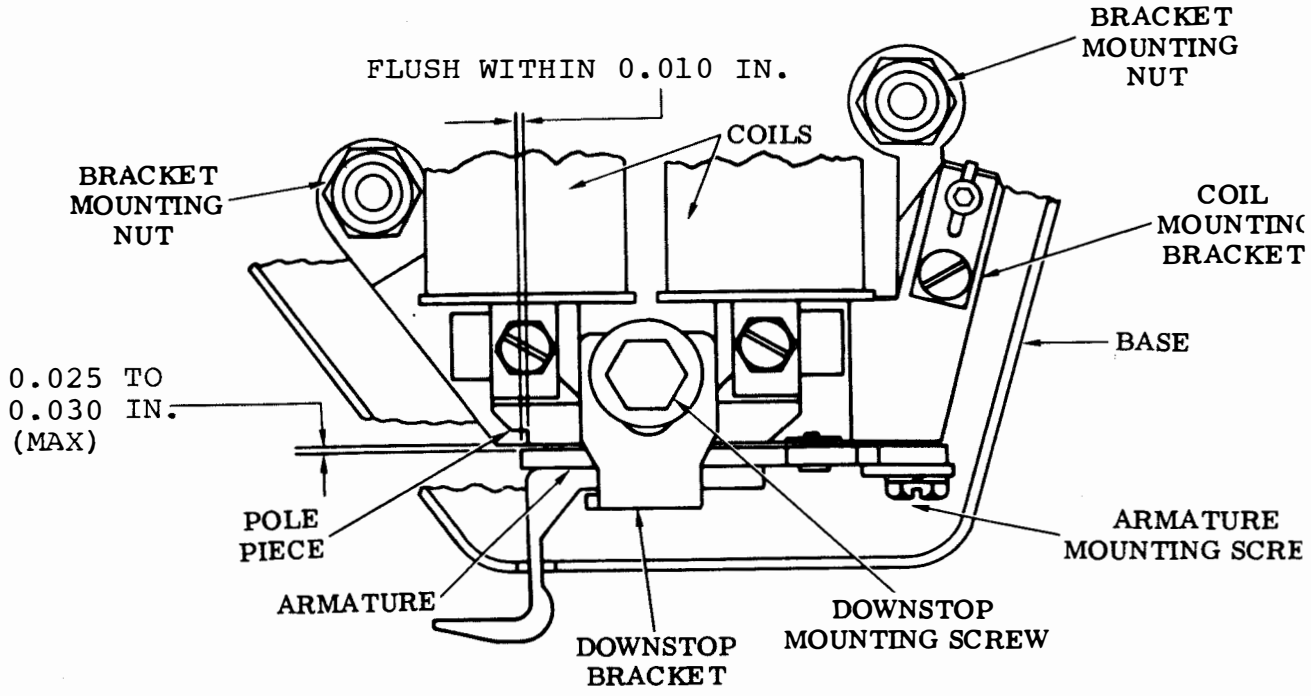


Figure 6-94. Selector Armature (RFI), Front View with Cover Removed

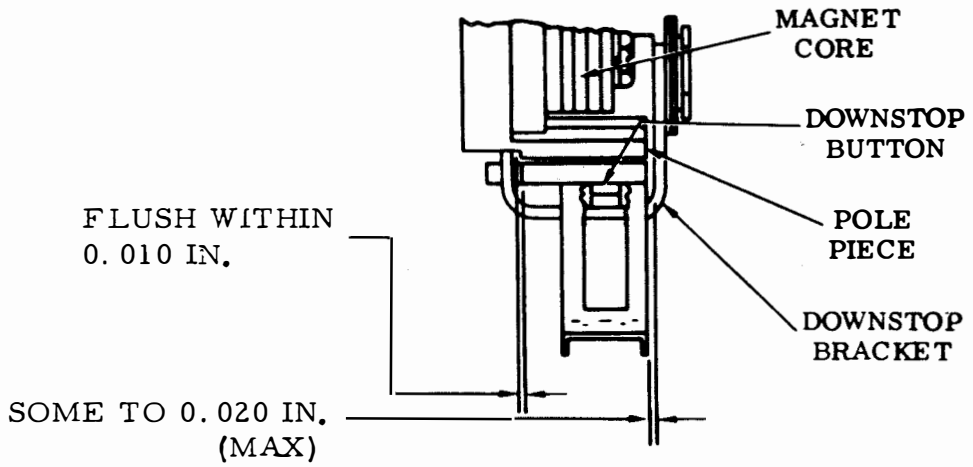


Figure 6-95. Selector Armature Alignment (RFI), Left Side View

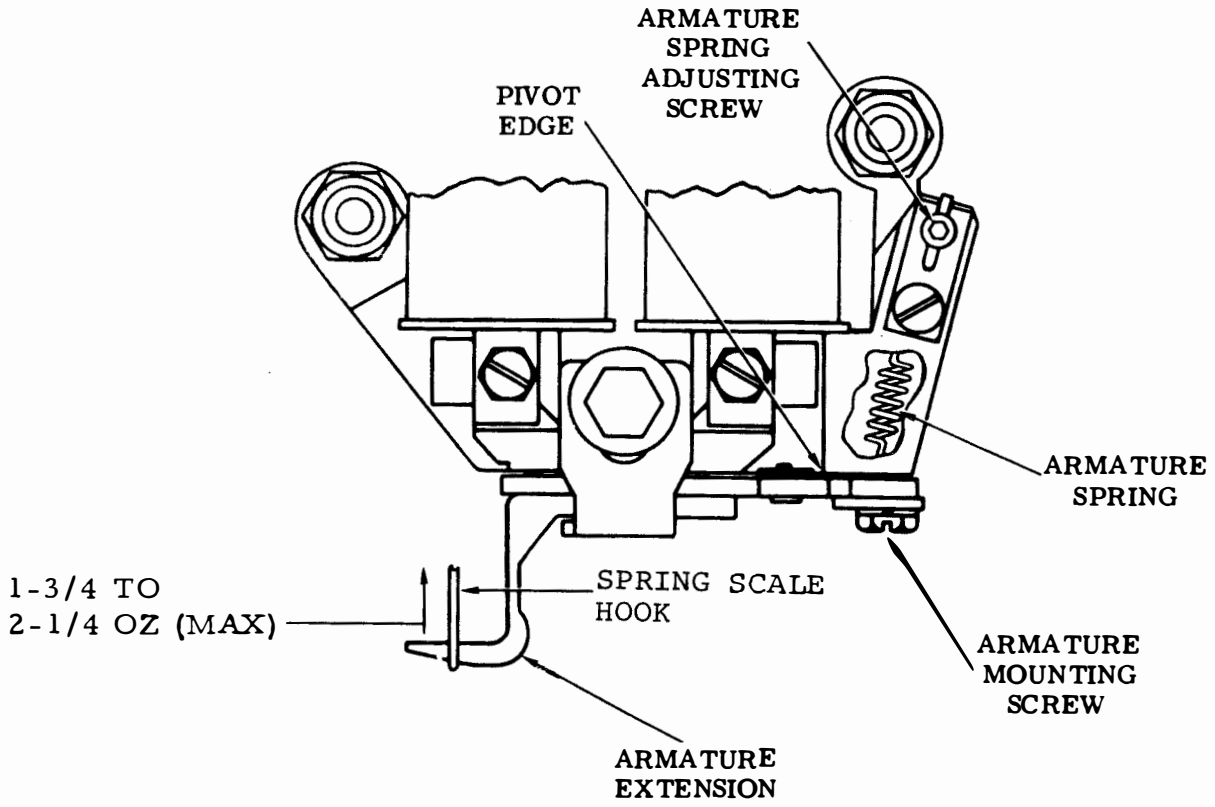


Figure 6-96. Selector Armature Spring (RFI), Front View with Coils and Associated Bracket Removed from Base

desired speed and line current). See Selector Receiving Margin, paragraph 6-3.1a(18).

d. Selector Base (Magnets Energized). Adjust as follows:

NOTE

Before making this adjustment, reassemble the magnet assembly by reversing the disassembly procedure. Reassemble and install the cam-clutch assembly, the metallic container, and the range finder on the typing unit. Then proceed with the following adjustment.

(1) Refer to Figure 6-97.

(2) Position spacing locklever on high part of cam.

(3) Place armature in contact with left pole piece.

(4) Measure clearance between end of armature extension and shoulder of spacing locklever. Clearance should be between 0.020 and 0.035 inch maximum.

(5) Measure clearance between upper surface of armature extension and upper step of spacing locklever with locklever held downward. There should be some clearance not exceeding 0.003 inch maximum.

(6) If either clearance exceeds specified limits, use a 1/16-inch hex wrench to loosen two magnet and base mounting posts to point of friction tightness.

NOTE

Make sure upper left eccentric shoulder post chamfered edge is at approximately 9 o'clock, and lower right eccentric shoulder post chamfered edge is at approximately 6 o'clock.

(7) Adjust lower right eccentric to obtain specified clearance between end of armature extension and shoulder of spacing locklever.

(8) Adjust upper left eccentric to obtain specified clearance between upper surface of armature extension and upper step of spacing locklever.

(9) Using a 1/16-inch hex wrench, tighten two magnet and base mounting posts.

6-4. PERFORATOR TRANSMITTER BASE UNIT ADJUSTMENTS. The following paragraphs describe perforator transmitter base unit adjustment procedures for high-level and low-level operation.

a. Code Bar Assembly Adjustments. Perform the following code bar assembly adjustments.

NOTE

Remove perforator transmitter from cabinet before adjusting code bars.

(1) Code Bar Guide Clearance. Adjust as follows:

(a) Refer to Figure 6-98.

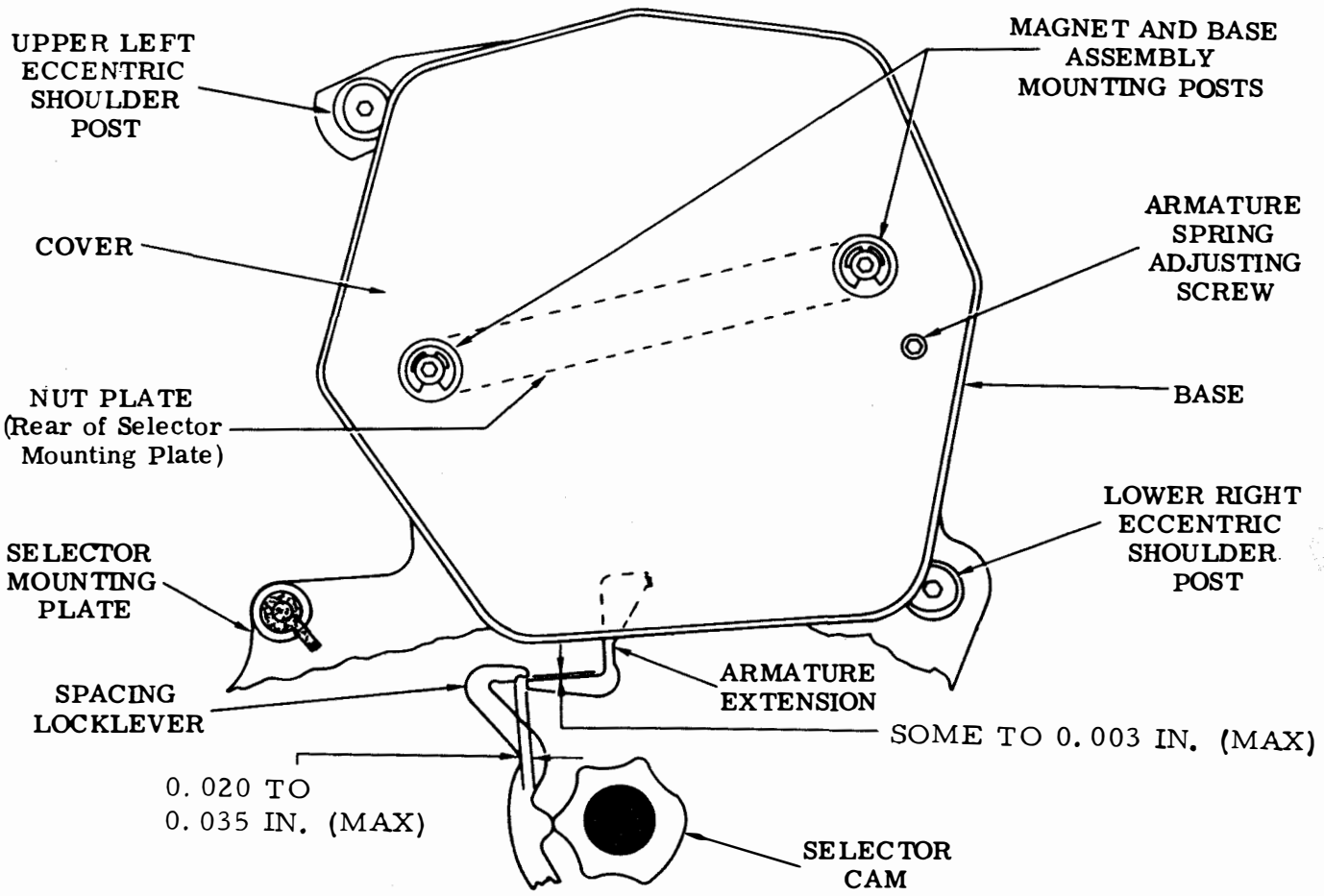


Figure 6-97. Selector Base (Magnets Energized - PFI), Front View

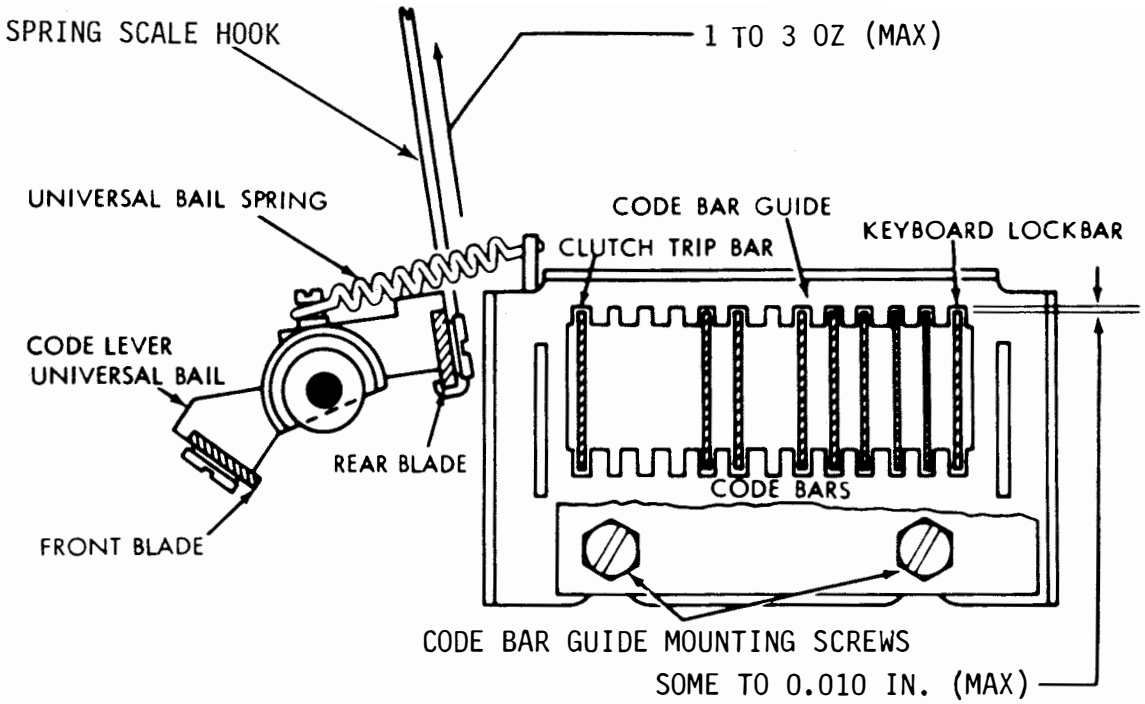


Figure 6-98. Code Bar Guide Clearance and Code Lever Universal Bail Spring, Left View

(b) Loosen mounting screws and position code bar guide.

(c) Adjust so that all code bars, including the clutch trip bar and keyboard lockbar, move freely without binding.

(d) Clearance should be from some to 0.010 inch maximum.

(e) Tighten mounting screws.

(2) Code Lever Universal Bail Spring. Adjust as follows:

(a) Refer to Figure 6-98.

(b) Disengage generator clutch, and hold universal bail latch out of contact with bail.

(c) Apply spring scale hook over front blade and measure force required to start bail moving. This should be between 1 and 2 ounces maximum.

(d) If force does not meet specifications, replace spring.

(3) Spacebar Bail Pivot. Adjust as follows:

NOTE

The bail should be so adjusted that the spacebar can be operated without binding in the holes in the guideplate and frame.

(a) Refer to Figure 6-99.

(b) Remove keylever cover.

(c) Loosen pilot screws.

(d) Position spacebar so that it does not bind, and has some end play not to exceed 0.010 inch maximum.

(e) Tighten pilot screws.

(4) Code Bar and Code Lever Clearance. Adjust as follows:

NOTE

If necessary, remove character counter assembly.

(a) Refer to Figure 6-100.

(b) Depress CAR RET key, but not enough to trip universal bail latch or clutch bar.

(c) Measure clearance at code bar number 3. Clearance should be from 0.006 to 0.017 inch maximum.

(d) To adjust, loosen the four mounting screws and position guide by means of adjusting slot.

(e) Tighten mounting screws.

(5) Clutch Trip Bar Spring. Adjust as follows:

(a) Refer to Figure 6-100.

(b) Depress BLANK key to allow clutch trip bar to fall to right.

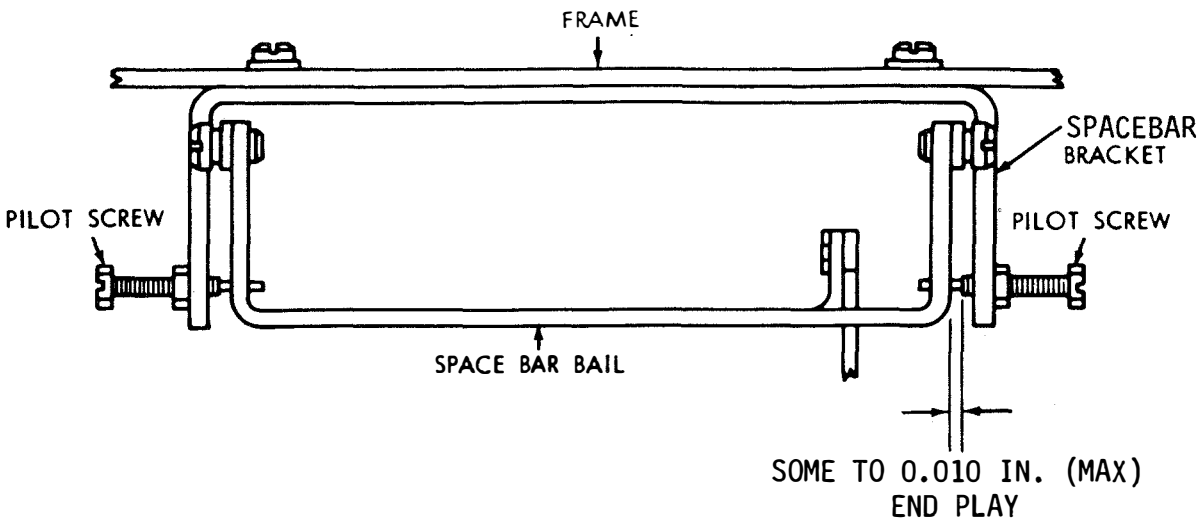


Figure 6-99. Spacebar Bail Pivot, Bottom View

(c) Unhook spring from bracket.

(d) Use spring scale to pull spring to installed length. This should require from 8 to 12 ounces maximum force.

(e) If force does not fall within requirements, replace spring.

(6) Clutch Trip Bar Spring (Synchronous Pulsed Transmission). Adjust as follows:

(a) Refer to Figure 6-100.

(b) Turn power OFF.

(c) Disengage and latch clutch. Hold magnet assembly armature away from clutch trip bar.

NOTE

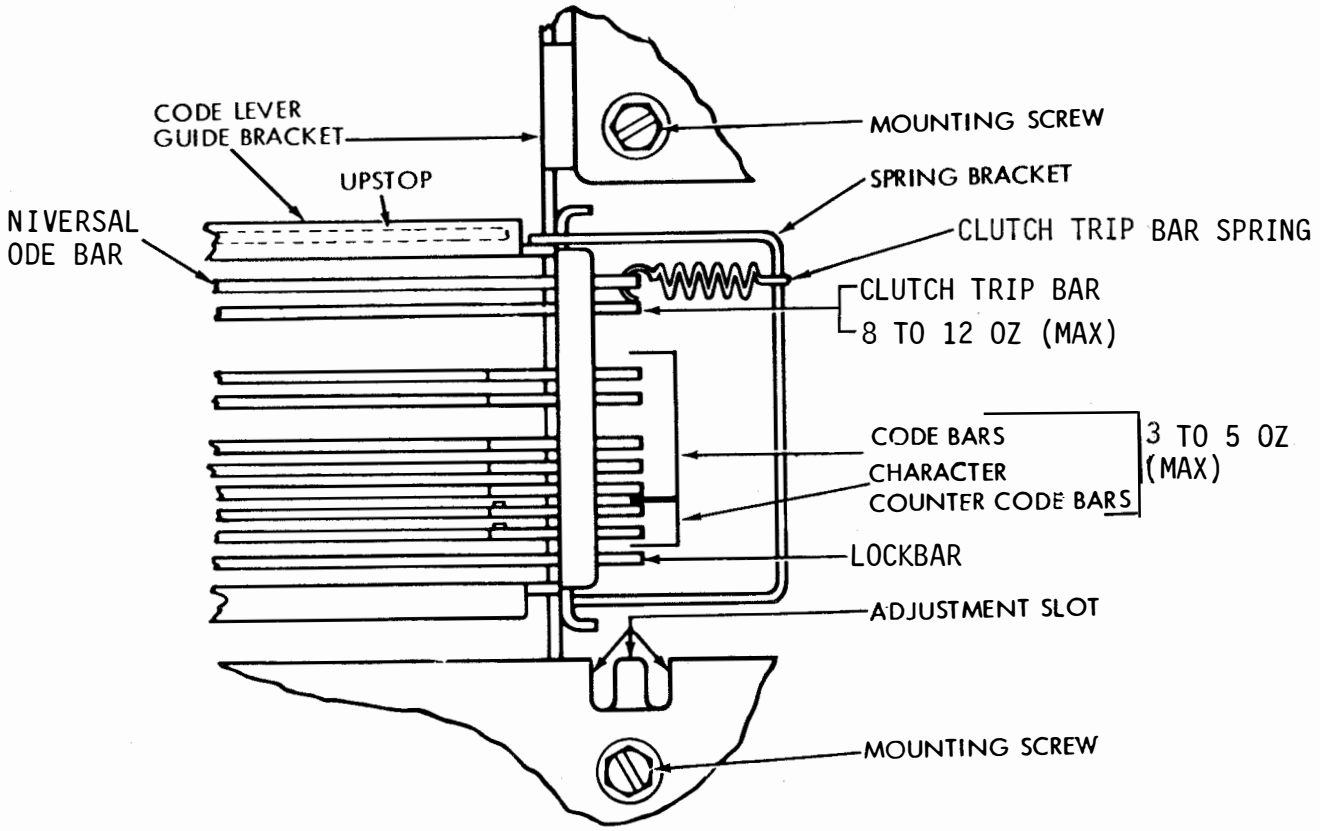
While measuring spring tension, hold swinger contact assembly away from universal code bar.

(d) Place spring scale pushrod against right hand end of clutch trip bar. It should require between 9 and 12 ounces maximum to start bar moving.

(e) If tension does not meet requirements, replace spring.

(7) Universal Code Bar (Synchronous Pulsed Transmission). Adjust as follows:

(a) Refer to Figure 6-100.



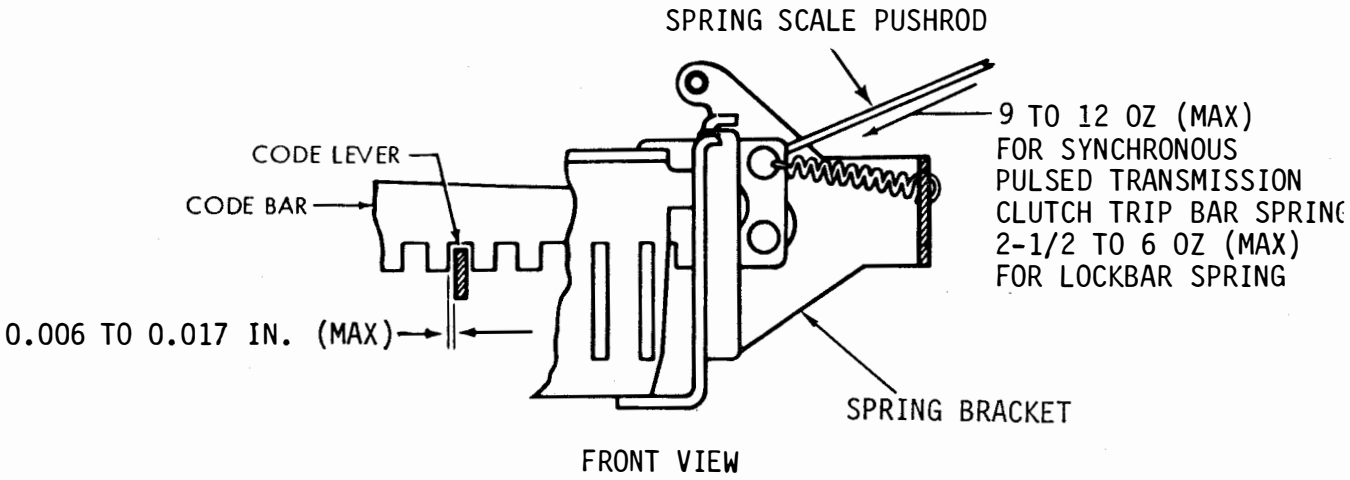


Figure 6-100. Code Bar and Code Lever Clearance, Clutch Trip Bar Spring, Universal Code Bar, Code Bar Spring, and Lockbar Spring

(b) Disengage and latch clutch.

(c) Depress BLANK key to allow universal code bar to fall to the right and unhook clutch trip bar spring from bracket.

(d) Use spring scale to pull spring to installed length. Force required should be from 8 to 12 ounces maximum.

(e) If spring does not meet specifications, replace spring.

(8) Code Bar Spring. Adjust as follows:

(a) Refer to Figure 6-100.

(b) Turn power OFF.

(c) Put keyboard in "K" position and depress LTRS keylever. Hold transfer levers to right so they do not affect the code bar.

(d) Use spring scale to measure force required to start code bars moving. This should be from 3 to 5 ounces maximum.

(e) If spring does not meet specifications, replace spring.

(9) Lockbar Spring. Adjust as follows:

(a) Refer to Figure 6-100.

(b) Disengage clutch and depress keyboard REC keylever.

(c) Apply push end of spring scale against right-hand end of lockbar. Force required to start lockbar moving should be from 2-1/2 to 6 ounces maximum.

(d) If spring does not meet specifications, replace spring.

(10) Function Bail and Code Lever Clearance. Adjust as follows:

NOTE

This adjustment should not be made unless the lock ball channel has been disassembled.

(a) Refer to Figure 6-101.

(b) Loosen mounting screws and typing unit locating studs.

(c) Position function bail assembly so that there is a minimum 0.015 inch clearance between any function bail and its adjacent code lever.

(d) Tighten mounting screws and typing unit locating studs.

(11) Code Bar Bail Latch Spring. Adjust as follows:

(a) Refer to Figure 6-102.

(b) Apply spring scale pushrod against end of code bar bail latch. It should require from 1/2 to 1-1/2 ounces maximum to start latch moving.

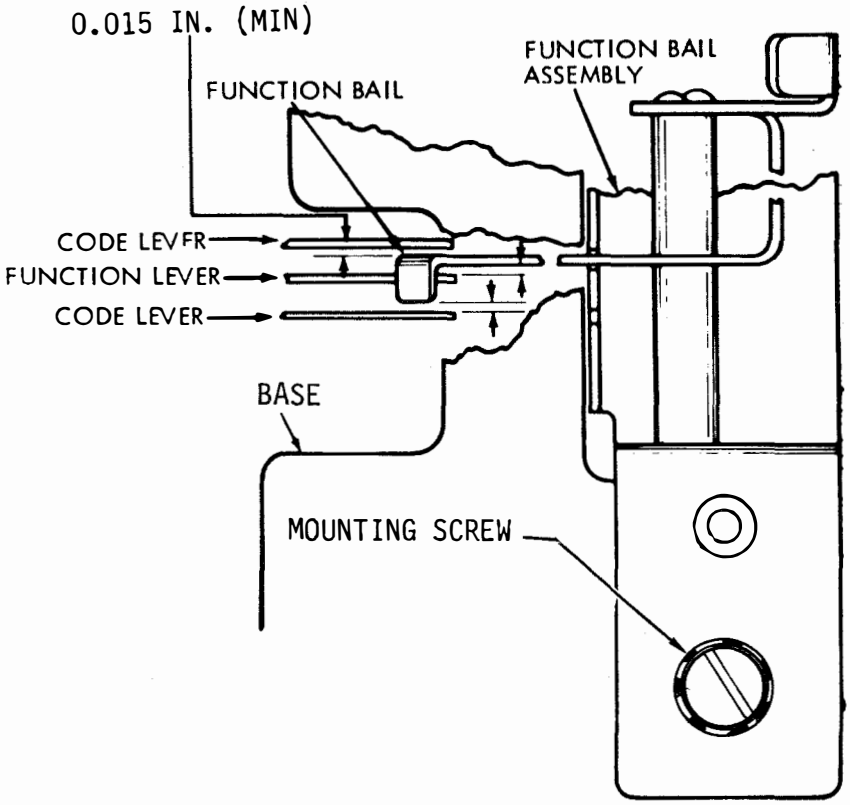


Figure 6-101. Function Bail and Code Lever Clearance

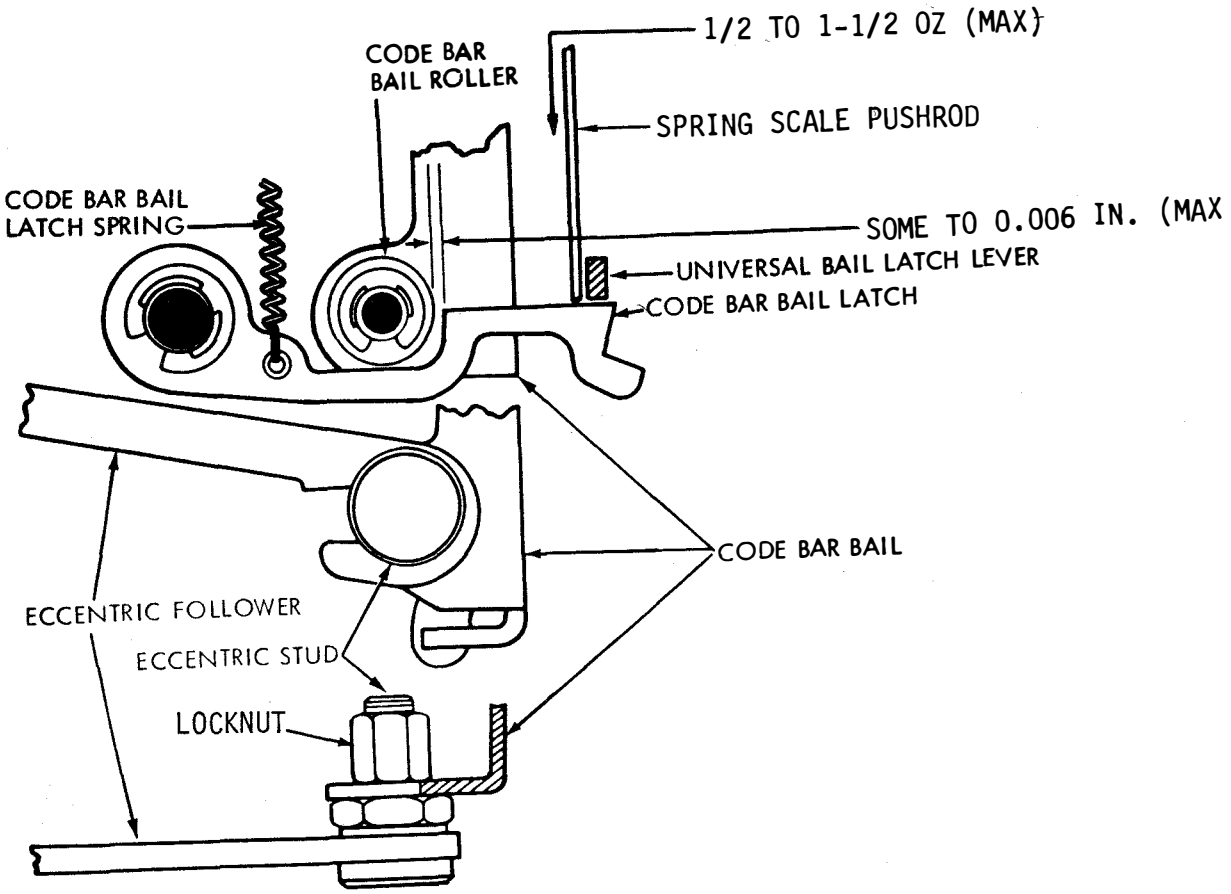


Figure 6-102. Code Bar Bail Latch Spring and Code Bar Bail

(c) If force required does not meet specifications, replace spring.

(12) Code Bar Bail. Adjust as follows:

(a) Refer to Figure 6-102.

(b) Place cam eccentric and arm which hold the bail in extreme reset position to the left.

(c) Clearance between code bar bail roller and code bar bail latch should be some to 0.006 inch maximum.

(d) To adjust, loosen locknut and adjust eccentric stud so that high part is in upper half of arc.

(e) Tighten locknut.

(13) Non-repeat Lever Spring. Adjust as follows:

(a) Refer to Figure 6-103.

(b) Depress any keylever.

(c) Place push end of spring scale against non-repeat lever. It should require from 2 to 3-1/4 ounces to start it moving downward.

(d) If required force does not fall within specifications, replace spring.

(14) Code Bar Bail and Non-repeat Lever Clearance. Adjust as follows:

(a) Refer to Figure 6-103.

(b) Turn power OFF.

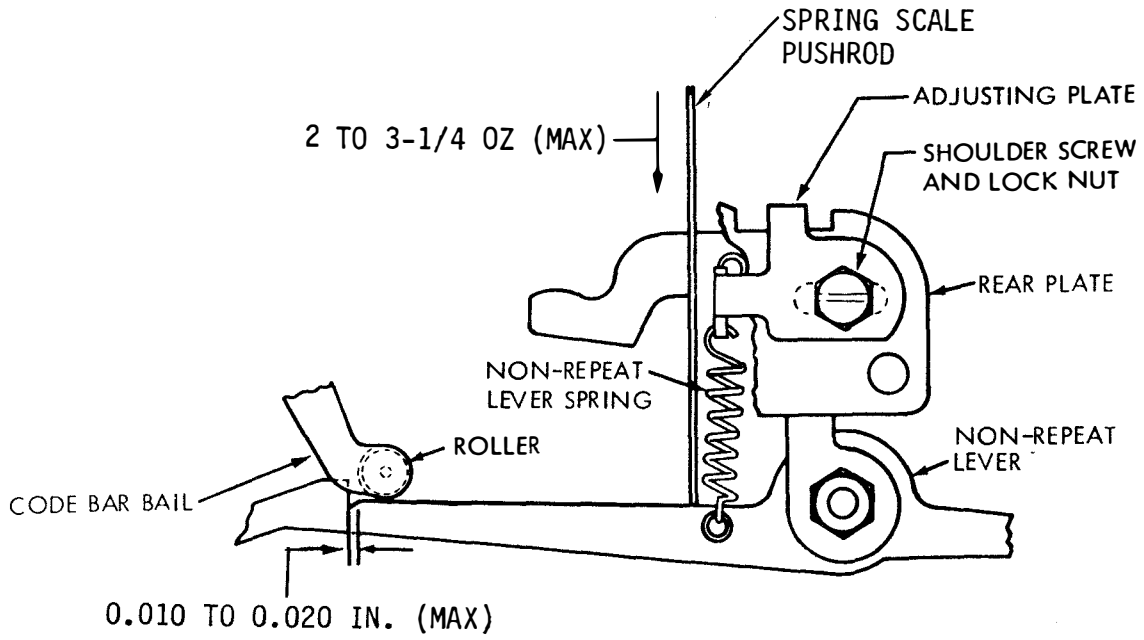


Figure 6-103. Non-repeat Lever Spring and Code Bar Bail and Non-repeat Lever Clearance

(c) Place mechanism in initial trip-off position and depress any key.

(d) Clearance between code bar bail roller and non-repeat lever pick-up step should be 0.010 to 0.020 inch maximum.

(e) Loosen locknut and shoulder screw and move mechanism left or right.

(f) Tighten locknut and shoulder screw.

(15) Universal Bail Latchlever (Prelminary). Adjust as follows:

NOTE

On keyboards equipped for repeat space operation, unhook the spring from the plate with stud.

(a) Refer to Figure 6-104.

(b) Depress spacebar slowly with 32 ounces of pressure. Manually rotate universal bail backwards and release quickly.

(c) Clearance between universal bail latchlever and roller or post on universal bail extension should be from 0.015 to 0.025 inch maximum.

(d) To adjust, rotate eccentric keeping high part of eccentric up.

(16) Universal Bail Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-104.

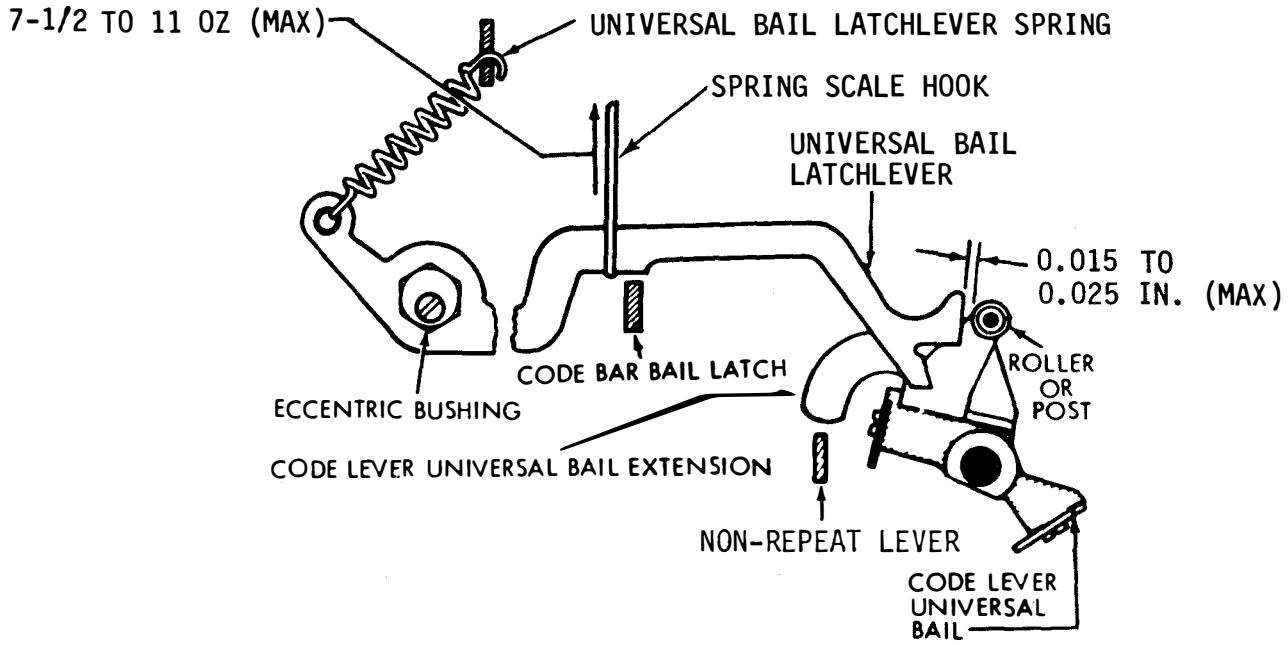


Figure 6-104. Universal Bail Latchlever (Preliminary) and Latchlever Spring

(b) Disengage clutch. Hold universal bail away from latchlever and hold repeat lever bellcrank down against its stop post.

(c) Use spring scale to measure force required to start latchlever moving. It should require from 7-1/2 to 11 ounces maximum.

(d) If force required does not match specifications, replace spring.

(17) Universal Bail Extension. Adjust as follows:

(a) Refer to Figure 6-105.

(b) Turn power OFF.

(c) Place universal bail extension roller resting against end of universal bail latchlever.

(d) Depress and release LETTERS keylever.

(e) Check clearance between extension and non-repeat lever. It should measure between 0.060 and 0.080 inch maximum.

(f) To adjust, position extension with clamp screws loosened. Tighten screw.

(18) Code Bar Bail Spring. Adjust as follows:

(a) Refer to Figure 6-106.

(b) Disengage clutch and unhook spring from arm.

(c) Use spring scale to pull spring to

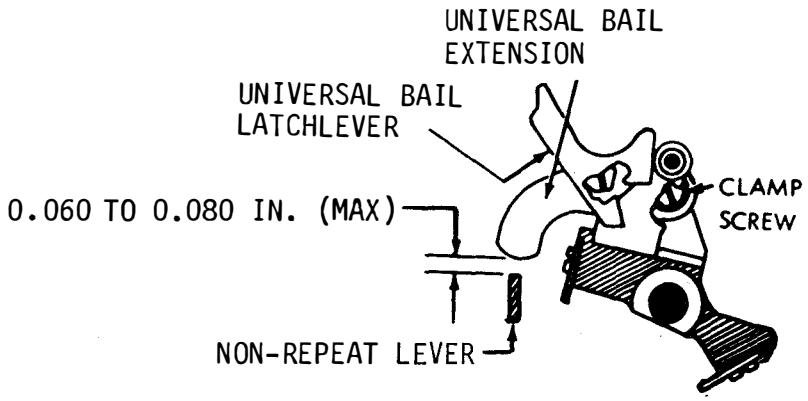


Figure 6-105. Universal Bail Extension

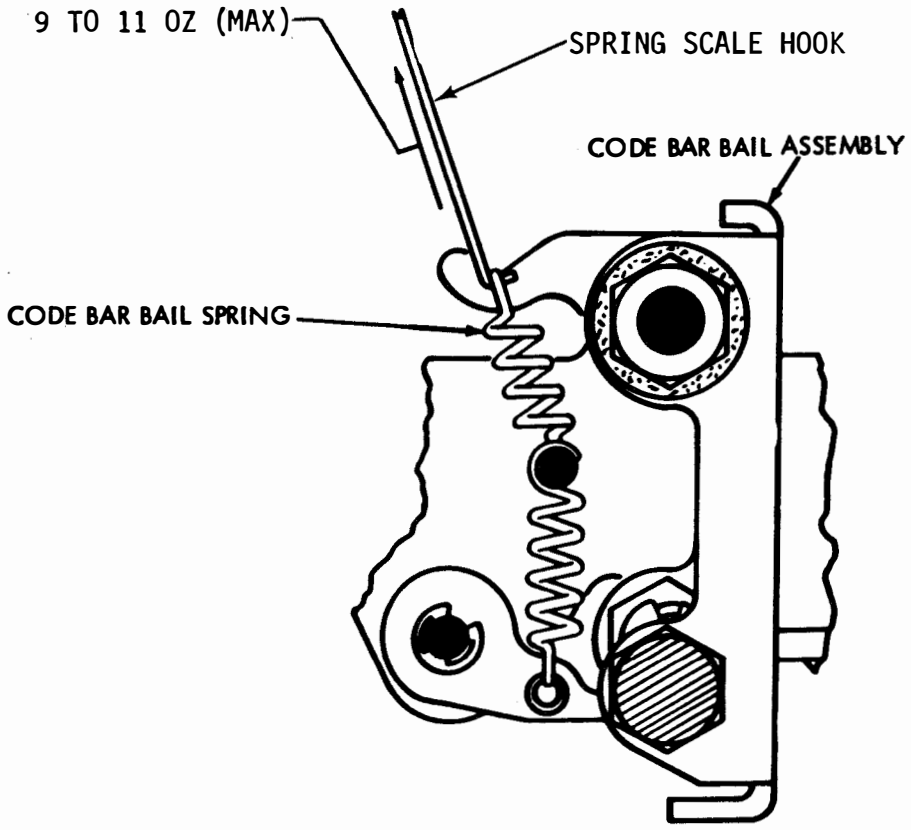


Figure 6-106. Code Bar Bail Spring

installed length. This should require from 9 to 11 ounces maximum force.

(d) If readings do not match specifications, replace spring.

(19) Code Bar Extension Spring. Adjust as follows:

(a) Refer to Figure 6-107.

(b) Apply spring scale pushrod to code bar extension and measure force required to start each extension moving. This should be from 5 to 7 ounces maximum.

(c) If force required does not match specifications, replace spring.

b. Signal Generator Mechanism Adjustments. Perform the following signal generator mechanism adjustments.

(1) Clutch Shoe Lever. Adjust as follows:

(a) Refer to Figure 6-108.

(b) Latch clutch in disengaged position and measure clearance.

(c) Rotate gear until oil hole is upwards, engage clutch and measure clearance.

(d) Clearance with clutch disengaged should be from 0.055 to 0.085 inch less than with clutch engaged.

(e) To adjust, loosen two adjusting disk clamp screws and position disk. Tighten clamp screw.

(2) Clutch Stop Lever. Adjust as follows:

(a) Refer to Figure 6-109.

(b) Position stop lever so that it fully engages clutch shoe lever.

(c) The lever should not touch the clutch drum at any point during rotation.

(d) To adjust, loosen stop lever clamp screw and position stop lever. Tighten screw.

(3) Clutch Stop Lever Spring. Adjust as follows:

(a) Refer to Figure 6-109.

(b) Engage clutch and rotate 1/4 turn.

(c) Use spring scale to measure force necessary to start lever moving. It should range from 2 to 3 ounces maximum.

(d) If force does not meet specifications, replace spring.

(4) Clutch Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-110.

(b) With the clutch latchlever resting on the highest point of clutch disk, hook spring scale under latchlever.

(c) It should require from 2 to 3 ounces maximum force to start latchlever moving.

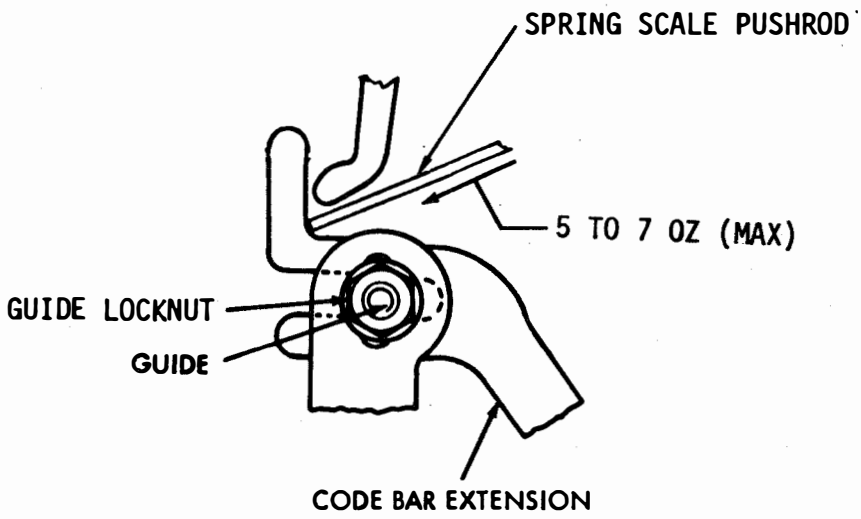


Figure 6-107. Code Bar Extension Spring

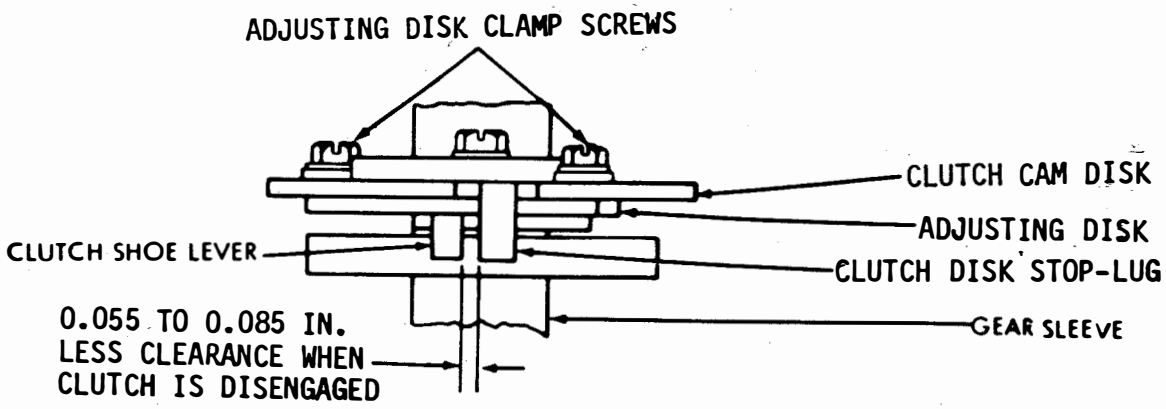


Figure 6-108. Clutch Shoe Lever, Top View

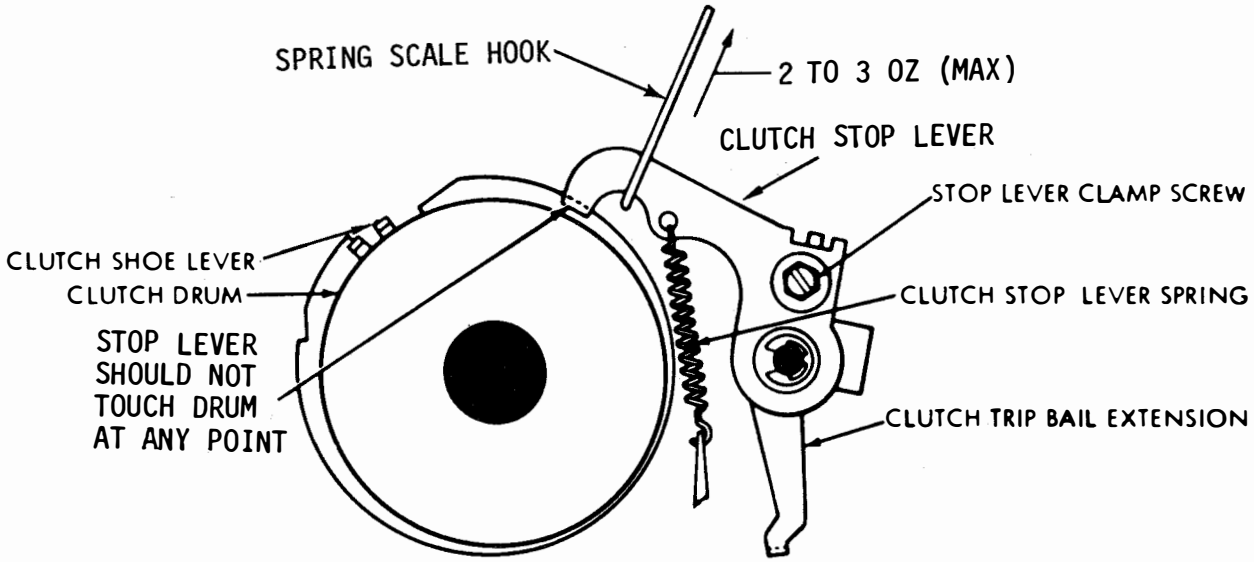


Figure 6-109. Clutch Stop Lever and Stop Lever Spring

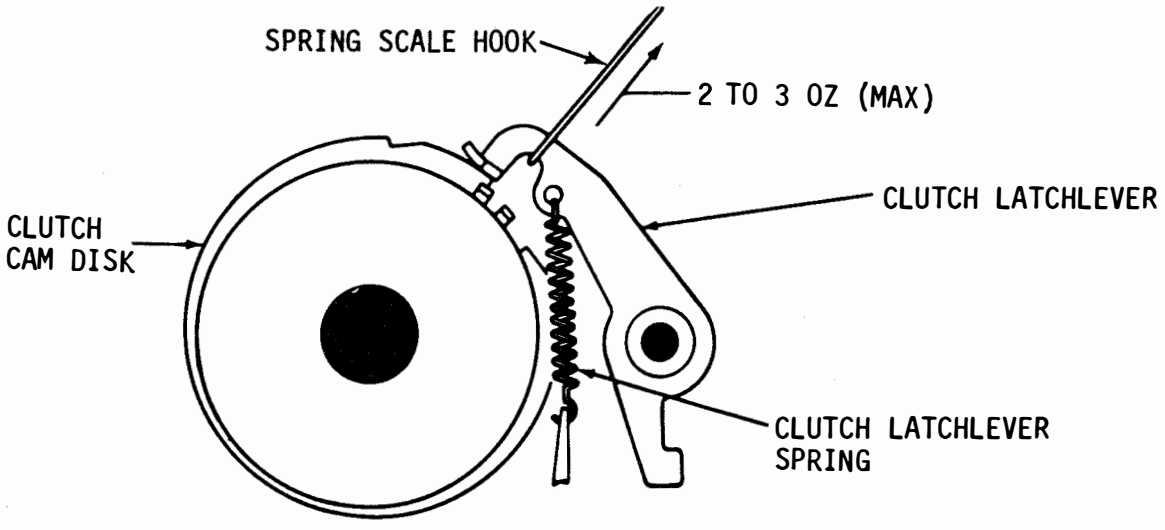


Figure 6-110. Clutch Latchlever Spring

(d) If force does not meet specifications, replace spring.

(5) Clutch Shoe Lever Spring. Adjust as follows:

(a) Refer to Figure 6-111.

(b) Engage clutch and hold cam disk to prevent turning.

(c) Hook spring scale hook over clutch shoe lever. It should require from 15 to 20 ounces maximum force to move shoe lever into contact with stop-lug.

(d) If force required does not fall within limits, replace spring.

(6) Clutch Shoe Spring. Adjust as follows:

NOTE

To check this spring tension, it is necessary to remove the clutch from the main signal generator drive shaft. Therefore, it should not be checked unless there is good reason to believe it does not meet its requirement.

(a) Refer to Figure 6-112.

(b) Remove clutch drum.

(c) Use spring scale to measure force necessary to start primary shoe moving away from secondary shoe.

(d) Force required should be from 3 to 5 ounces maximum.

(e) If force required does not fall within limits, replace spring.

(7) Transfer Bail Detent Plate. Adjust as follows:

(a) Refer to Figure 6-113.

(b) With transfer bail at extreme left-hand or right-hand position, as these occur in a character between start and number 1 pulses only, clearance should be equal within 0.002 inch on either side.

(c) To adjust, loosen detent plate mounting screws and use screwdriver to rotate detent plate right or left as needed.

(d) Tighten mounting screws.

(8) Transfer Bail Detent Latch Spring. Adjust as follows:

(a) Refer to Figure 6-113.

(b) Hold transfer bail to left.

(c) Use spring scale to measure force necessary to start latch moving.

(d) Force should measure from 2-3/4 to 4-1/4 ounces maximum.

(e) If force does not match requirement, replace spring.

(9) Signal Contact Clearance. Adjust as follows:

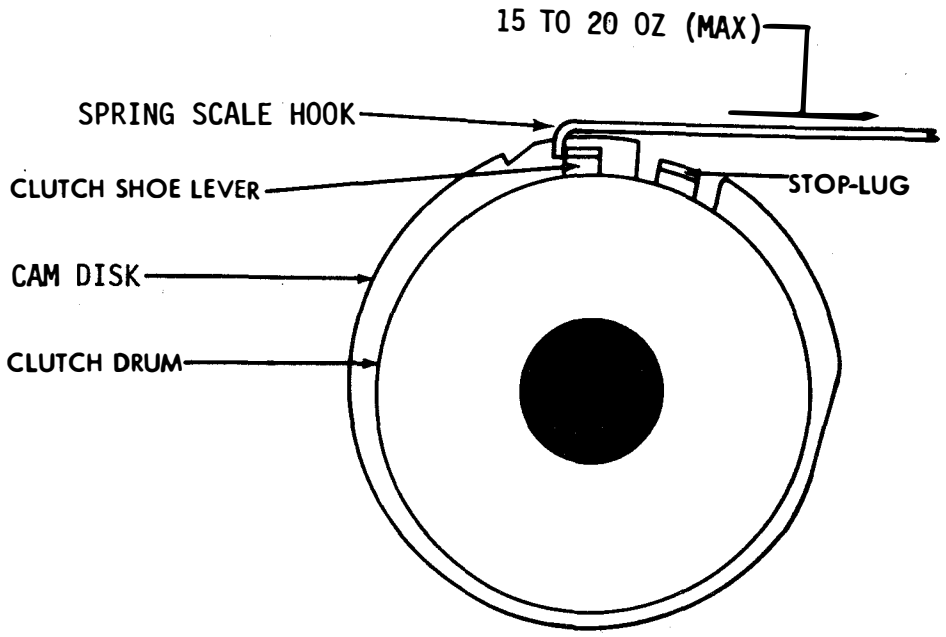


Figure 6-111. Generator Clutch Shoe Lever Spring

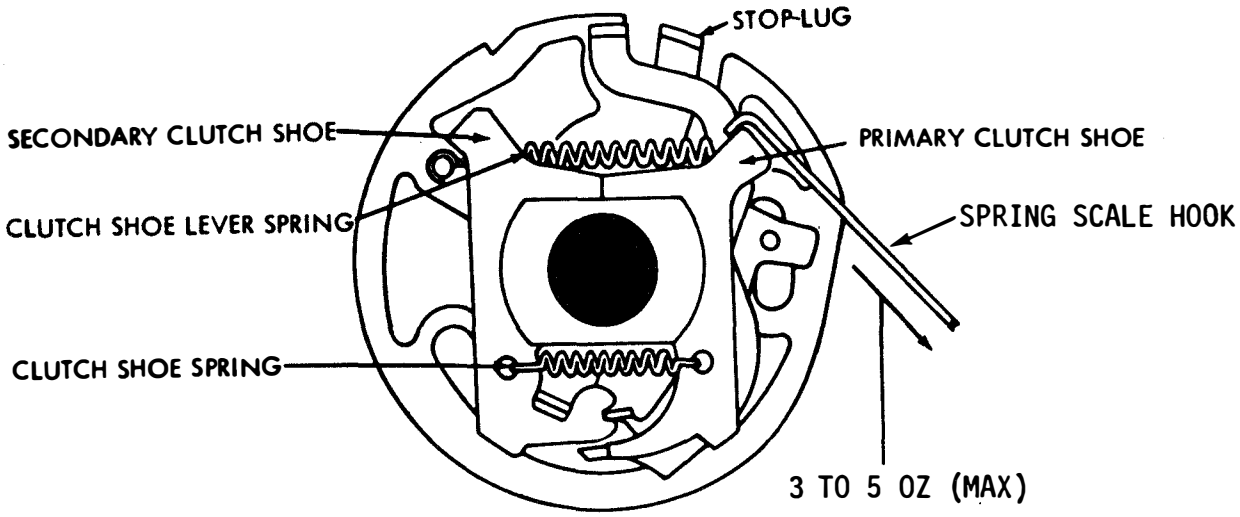


Figure 6-112. Clutch Shoe Spring

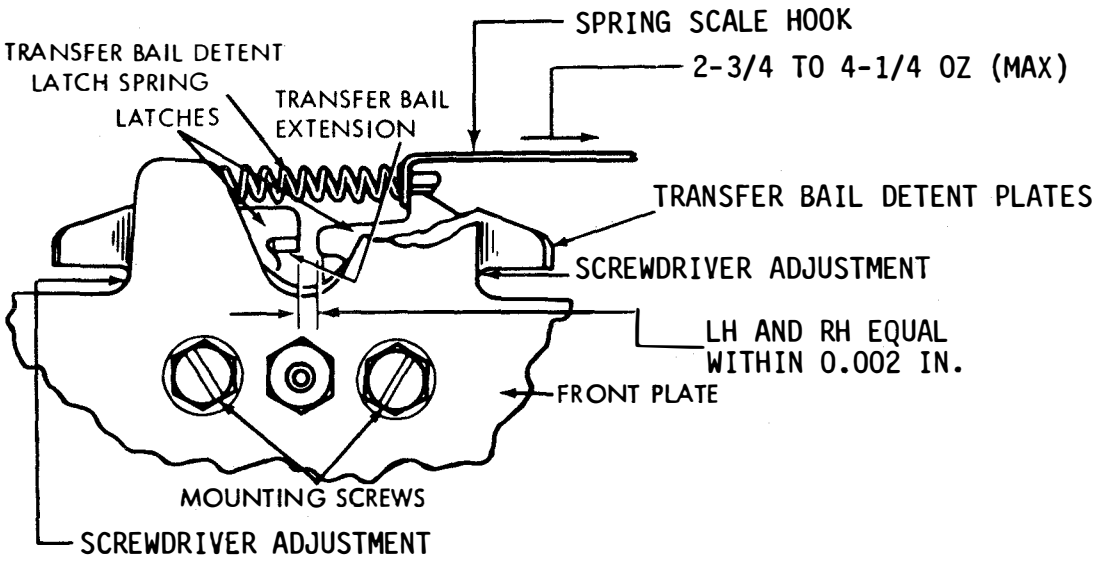


Figure 6-113. Transfer Bail Detent Plate and Detent Latch Spring

CAUTION

On units equipped with gold contacts, clean by passing bond paper between them. Use no other cleaning method. Avoid pitting or chipping contacts.

(a) Refer to Figure 6-114.

(b) Depress keylever and rotate signal generator cam sleeve until each contact has fully opened.

(c) Marking and spacing gap should be equal to within 0.001 inch.

(d) Loosen contact box mounting screws and move contact box by means of eccentric.

(e) Tighten mounting screws.

NOTE

Check the signal checking device where possible. Refine adjustment to eliminate signal bias by equalizing current-on and current-off intervals.

(10) Signal Contact Drive Link Spring. Adjust as follows:

(a) Refer to Figure 6-114.

(b) Place main shaft in STOP position and unhook transfer bail detent latch spring.

(c) Move latches away from transfer bail

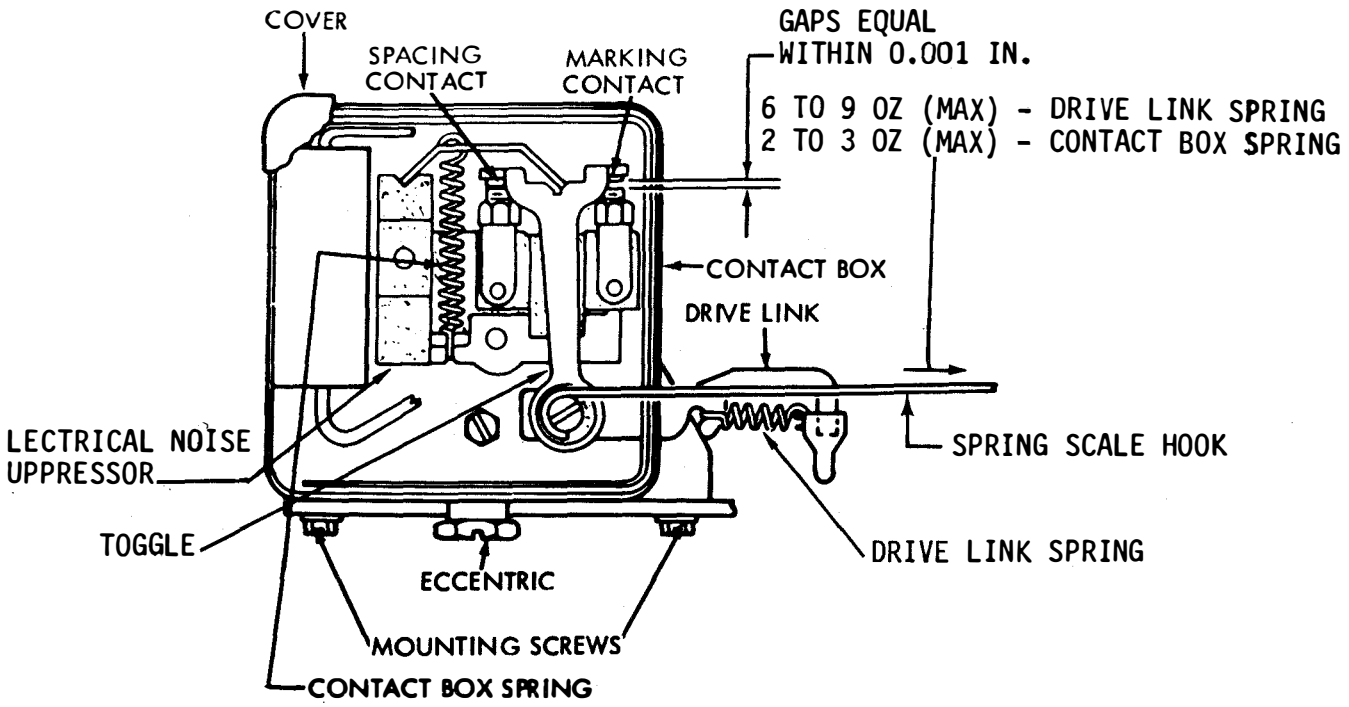


Figure 6-114. Signal Contact Clearance, Contact Drive Link Spring and Contact Spring

extension and hold toggle firmly against contacts.

(d) Use spring scale to measure force required to start transfer bail extension moving. It should read between 6 and 9 ounces maximum.

(e) If force does not meet specifications, replace spring.

(11) Signal Contact Spring. Adjust as follows:

(a) Refer to Figure 6-114.

(b) Remove drive link spring and hold transfer bail clear of drive link.

(c) Use spring scale to measure force required to start link moving. It should measure between 2 and 3 ounces maximum.

(d) If force does not meet specifications, replace spring.

(12) Signal Contact Clearance Using Test Set. Adjust as follows:

NOTE

For units equipped with signal regenerators, remove regenerator circuit card before applying test set probes to signal contacts. Applying operating voltage of signal distortion test set directly to gold-plated signal contacts may make them unsuitable for special low-voltage applications.

(a) Refer to Figure 6-115.

(b) Disconnect electrical noise suppressor from circuit.

(c) Connect signal contacts so as to interrupt (key) current to "strobe" lamp of test set. Test set and keyboard must operate at same speed. (See table on figure 6-115.)

(d) With BLANKS combination (-----) selected, orient scale of test set to align ZERO MARK of stop segment with beginning of stop pulse image. Length of trace shall be from the ZERO MARK to 141-1/2 divisions minimum, 142-1/2 maximum divisions (7.42 unit code only). To adjust, if variations occur, position scale so that variations extend equally on right and left of 142 mark.

(e) Nominal length of pulses No. 1, 2, 3, 4, and 5 is 100 divisions. To adjust, recheck Signal Contact Clearance requirement, paragraph 6-4b(9). Refine clearance, where necessary, to favor pulses 1 through 5 by orienting beginning of stop pulse trace up to ±5 divisions from ZERO MARK of segment (refer to requirements in steps (g) and (h).

(f) Each pulse trace (see step (i) below) to be free of undersirable breaks. To adjust, recheck Transfer Bail Detent Plate requirement, paragraph 6-4b(7). Where necessary, refine adjustment. Detent plate may be rotated either left or right as long as detent toggle latch continues to cam off projection of transfer bail.

(g) Beginning of each trace should fall between ZERO MARK and 5th division of scale segment or 95th division (previous segment) and ZERO MARK (see "R" and "Y" combination, paragraph 6-4b(13)).

(h) END of each trace (except stop pulse) should fall between 95th division (previous segment) and ZERO MARK or ZERO MARK and 5th division of scale segment (see "R" and "Y" combination, paragraph 6-4b(13)).

(i) Each trace of the marking code pulses may have a break within tolerance limits. The break should not occur prior to 95th division of observed pulse (1 through 5) or 137th division of stop pulse. See information on Figure 6-115 for permissible width of break at speed of operation.

(13) Signal Contact Clearance - Polar ("R" and "Y" Combination). Adjust as follows:

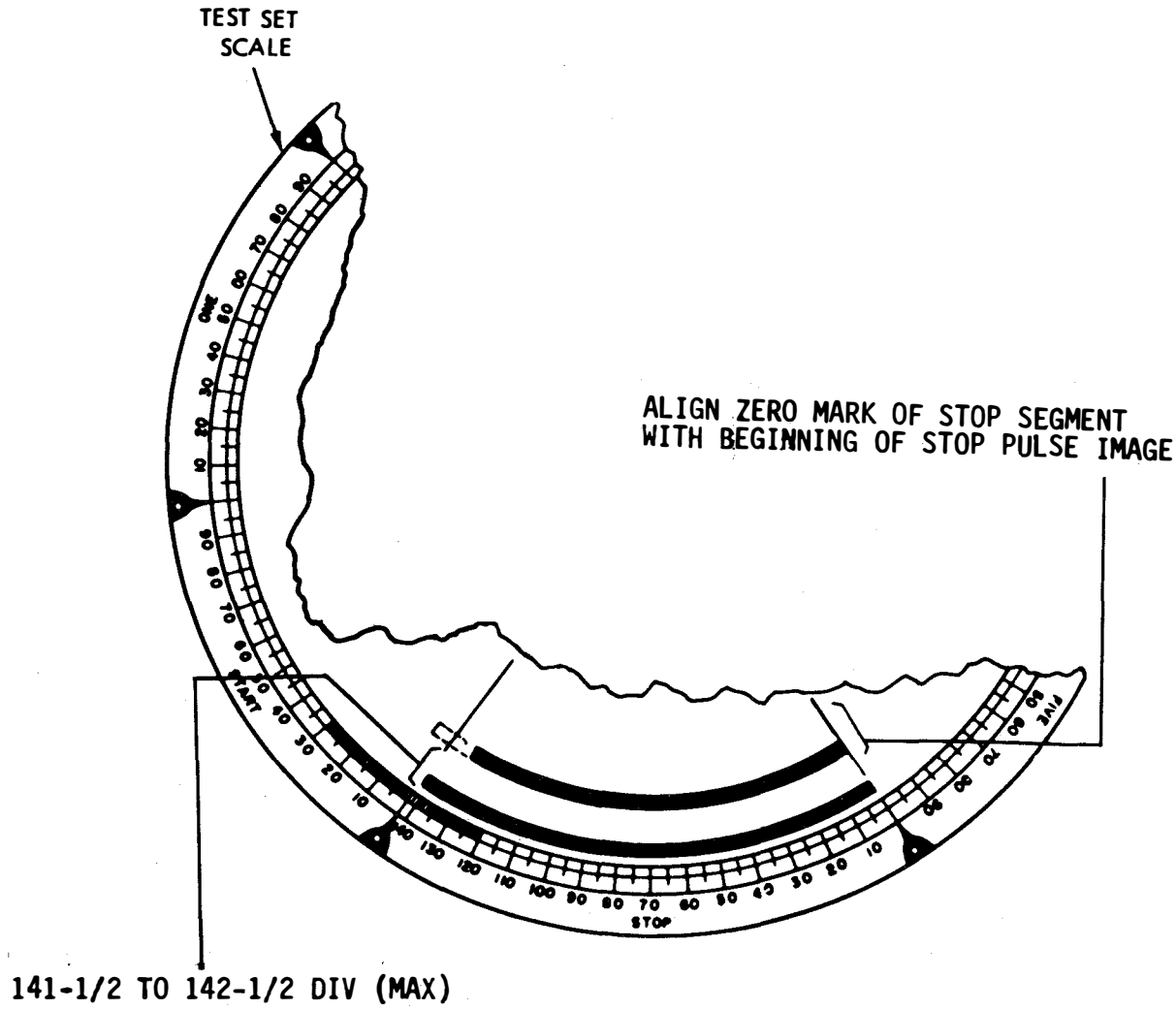
NOTE

See information on Figure 6-115 for permissible width of break at speed of operation.

(a) Refer to Figure 6-116.

(b) SPACING pulses shall start no earlier than 94th division of previous segment and not later than 6th division of pulse under observation.

(c) Trace of spacing pulse shall end no earlier than 94th division of pulse under observation and end



SIGNALING PULSE SPEED AND PERMISSIBLE WIDTH OF BREAK

SPEED	OPERATIONS PER MINUTE	WIDTH OF BREAK NOT TO EXCEED	REMARKS
60 W.P.M.	368.182	1 DIVISION	MARKING PULSES (1 THROUGH 5 & STOP)
75 W.P.M.	460.00	1-1/2 DIVISION	MARKING PULSES (1 THROUGH 5 & STOP)
100 W.P.M.	600.00	2 DIVISION	MARKING PULSES (1 THROUGH 5 & STOP)

Figure 6-115. Signal Contact Clearance Using Test Set

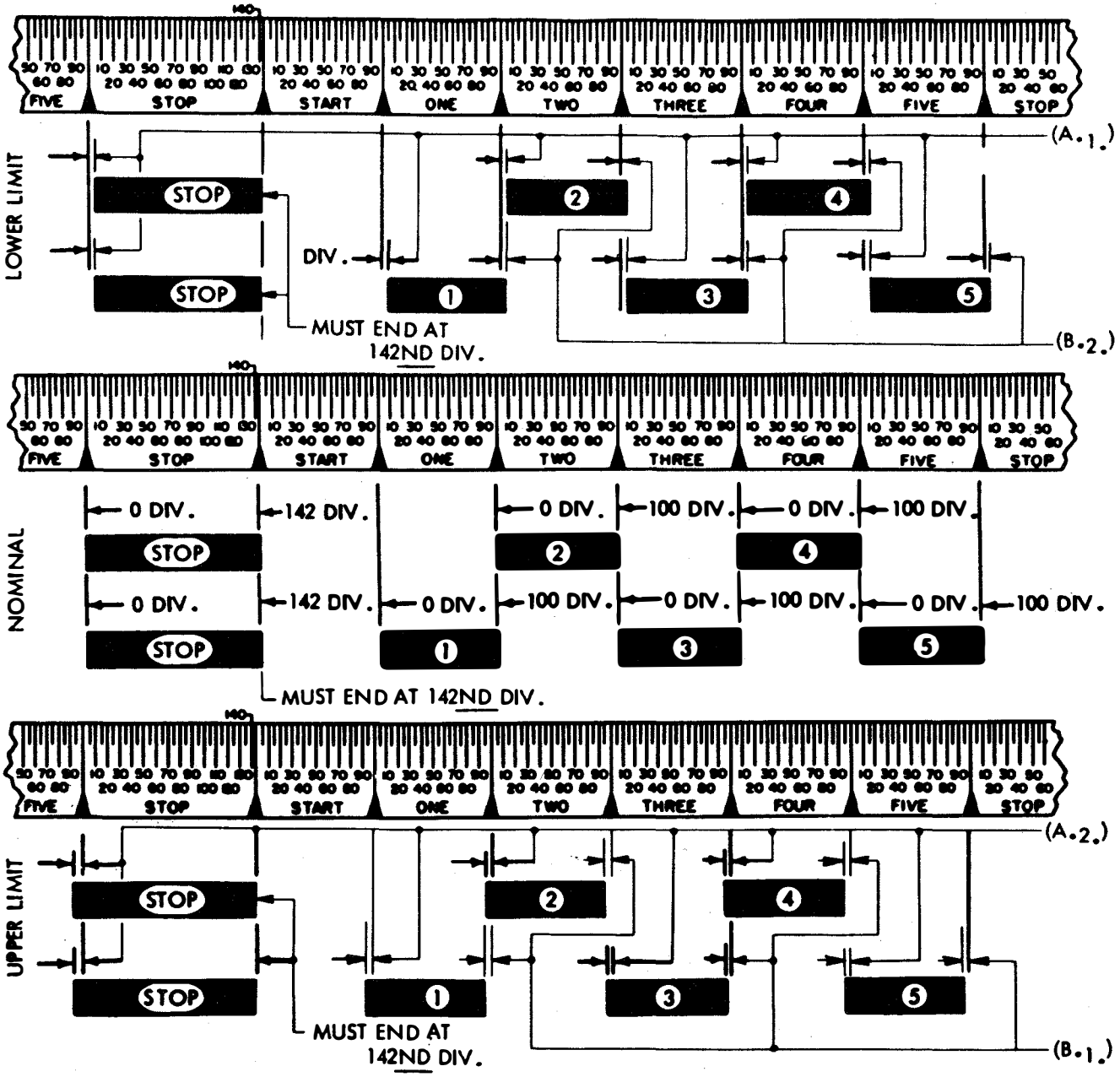


Figure 6-116. Signal Contact Clearance - Polar ("R" and "Y" Combination)

no later than 6th division of following pulse.

(d) Trace of START pulse shall begin no earlier than 136th division of stop segment and no later than 6th division of start segment. Start pulse shall end no earlier than 94th division of start segment and end no later than 6th division of number 1 segment.

(e) Spacing pulse may have a break provided the break is not over one division wide and it does not occur prior to 95th division of pulse under observation.

(14) Transfer Lever Spring. Adjust as follows:

(a) Refer to Figure 6-117.

(b) Disengage clutch.

(c) Use push end of spring scale against transfer lever to measure force needed to start each of 7 levers moving. Force should be from 1-1/2 to 2-1/2 ounces maximum.

(d) If force does not meet specifications, replace spring.

(15) Transfer Lever Locking Bail Spring. Adjust as follows:

(a) Refer to Figure 6-117.

(b) Disengage clutch and unhook upper end of spring from post.

(c) Use hook of spring scale to pull spring to installed length and measure force; it should require from 5 to 6 ounces maximum.

(d) If force does not meet specifications, replace spring.

c. Keyboard Mechanism Adjustments. Perform the following keyboard mechanism adjustments.

(1) Lock Ball Channel. Adjust as follows:

(a) Refer to Figure 6-118.

(b) Remove lock ball retainer.

(c) Remove a wedge from each end and one from the center to view position of code lever.

(d) When most of the code levers are centrally located in the lock ball channel slots, there should be some to 0.006 inch clearance between end of lock ball channel and adjusting screw.

(e) To adjust:

1. Loosen lock ball channel mounting screws, back off lateral adjusting screws, and position channel.

2. Turn one adjusting screw in against the end of the channel and lock it.

3. Turn the other adjusting screw in to the end of the channel, back it off 1/4 turn, and lock the screw.

4. Replace the wedges and check their

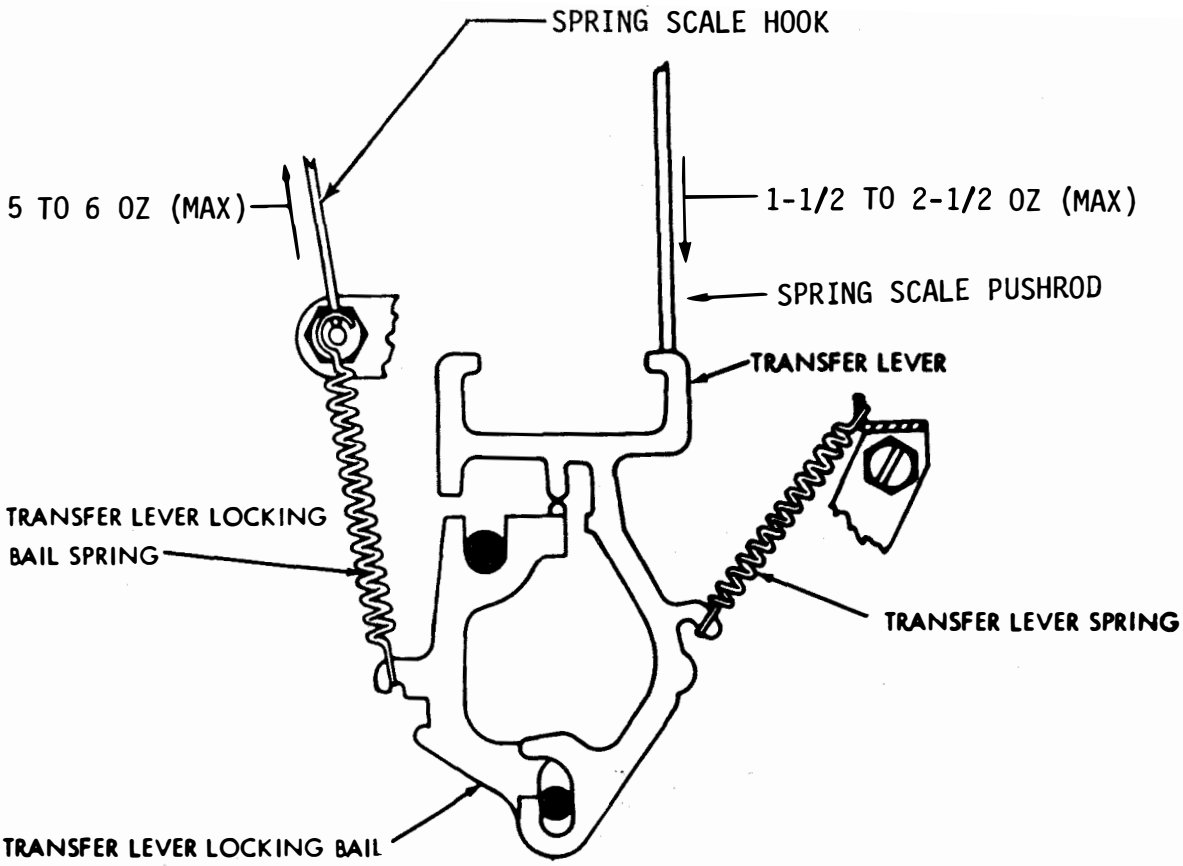


Figure 6-117. Transfer Lever Spring and Locking Bail Spring

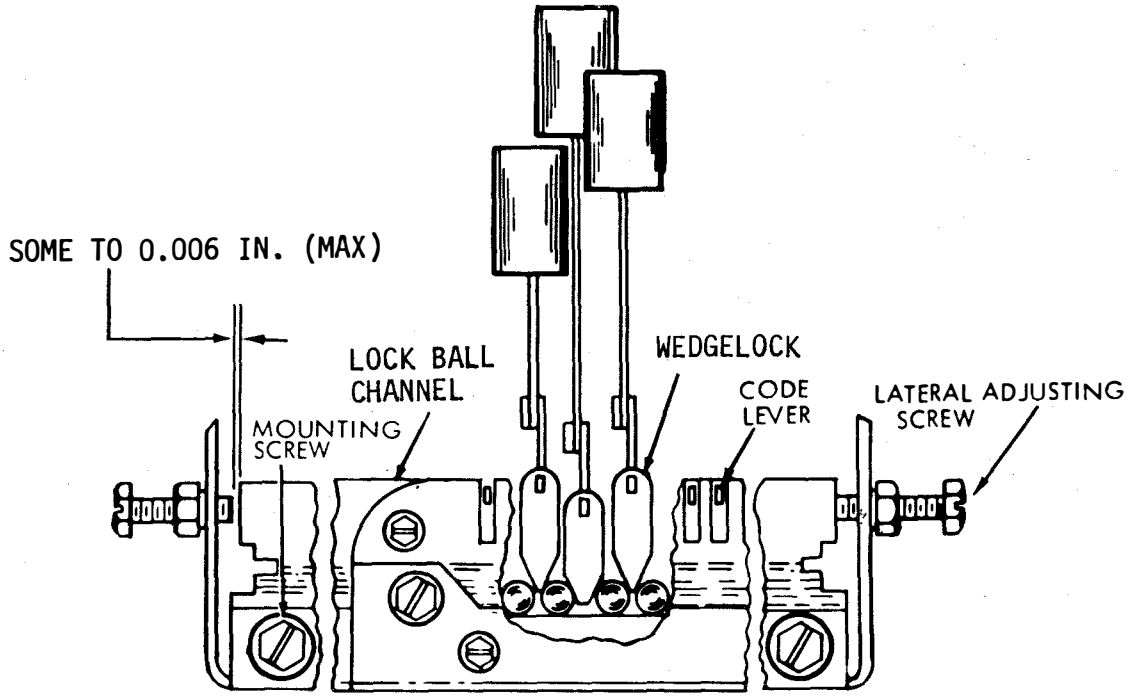


Figure 6-118. Keyboard Lock Ball Channel

position with respect to the balls.

5. Pull channel assembly downward until all code levers strike their upstop without wedges jumping out of position.

6. Replace lock ball retainer and back off end play adjusting screw.

7. Tighten mounting screws.

(2) Ball Wedgelock and Ball Track Clearance (Preliminary). Adjust as follows:

(a) Refer to Figure 6-119.

(b) Remove keyboard hood (see Disassembly and Reassembly, paragraph 6-26i).

(c) Back out adjustment screw for maximum ball movement, without having balls roll from track.

NOTE

In gauging these clearances, make sure that there is no clearance between the lower edge of code lever extensions and the bottom of the slots in the wedges. A total of 43 balls are required in the ball track assembly.

(d) Apply 32 ounces of pressure to "Q" or "P" keylever. Clearance between tip of wedgelock and ball track should be from 0.005 to 0.015

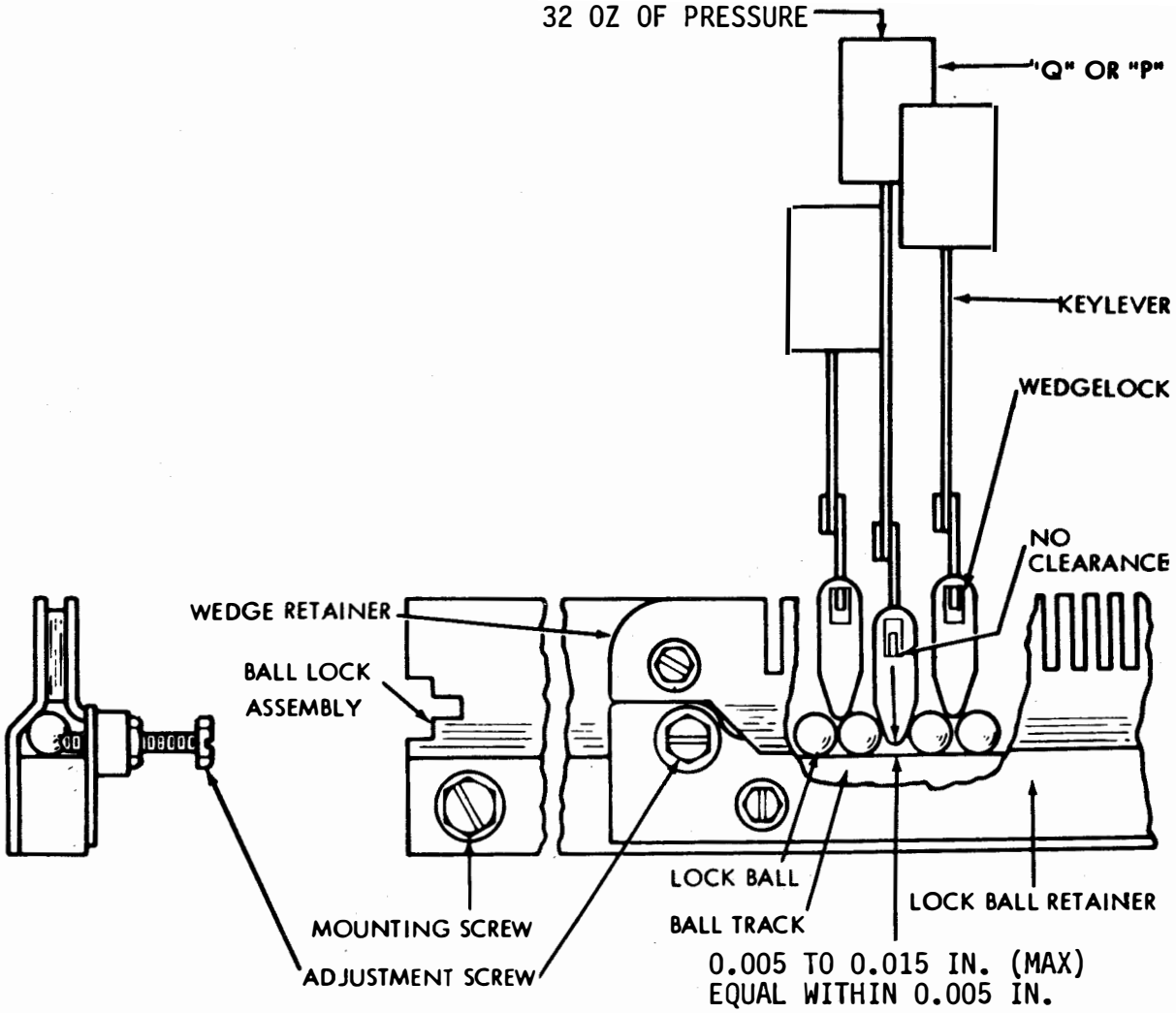


Figure 6-119. Ball Wedgelock and Ball Track Clearance (Preliminary)

inch maximum, equal to within 0.005 inch.

(e) Adjust by loosening mounting screws at each end of ball track and moving track up or down. Tighten screws.

(3) Lock Ball End Play (Preliminary). Adjust as follows:

(a) Refer to Figure 6-120.

(b) With 32 ounces of pressure applied to CAR RET key, balls should have minimum clearance.

(c) Adjust by hand-tightening adjustment screw until resistance is felt and tighten nut.

(4) Ball Wedgelock, Ball End Play, and Universal Bail Latchlever (Final). Adjust as follows:

(a) Refer to Figure 6-121.

(b) Power ON.

(c) Trip any center row key. It should require from 2 to 5 ounces maximum to do so.

(d) With 5-1/2 ounces pressure applied perpendicular to the "A" key, depress each key in the third row. The "A" key shall trip each time a key is released.

(e) Repeat this procedure with 5-1/2 ounces pressure on the CAR RET key.

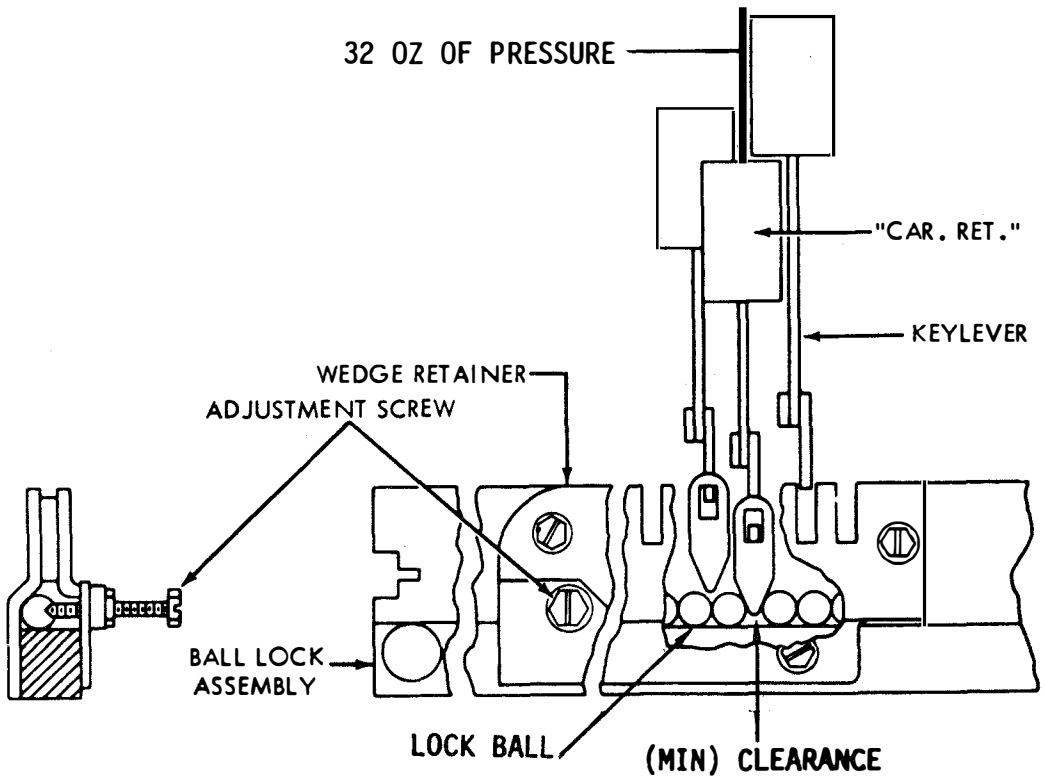


Figure 6-120. Lock Ball End Play (Preliminary)

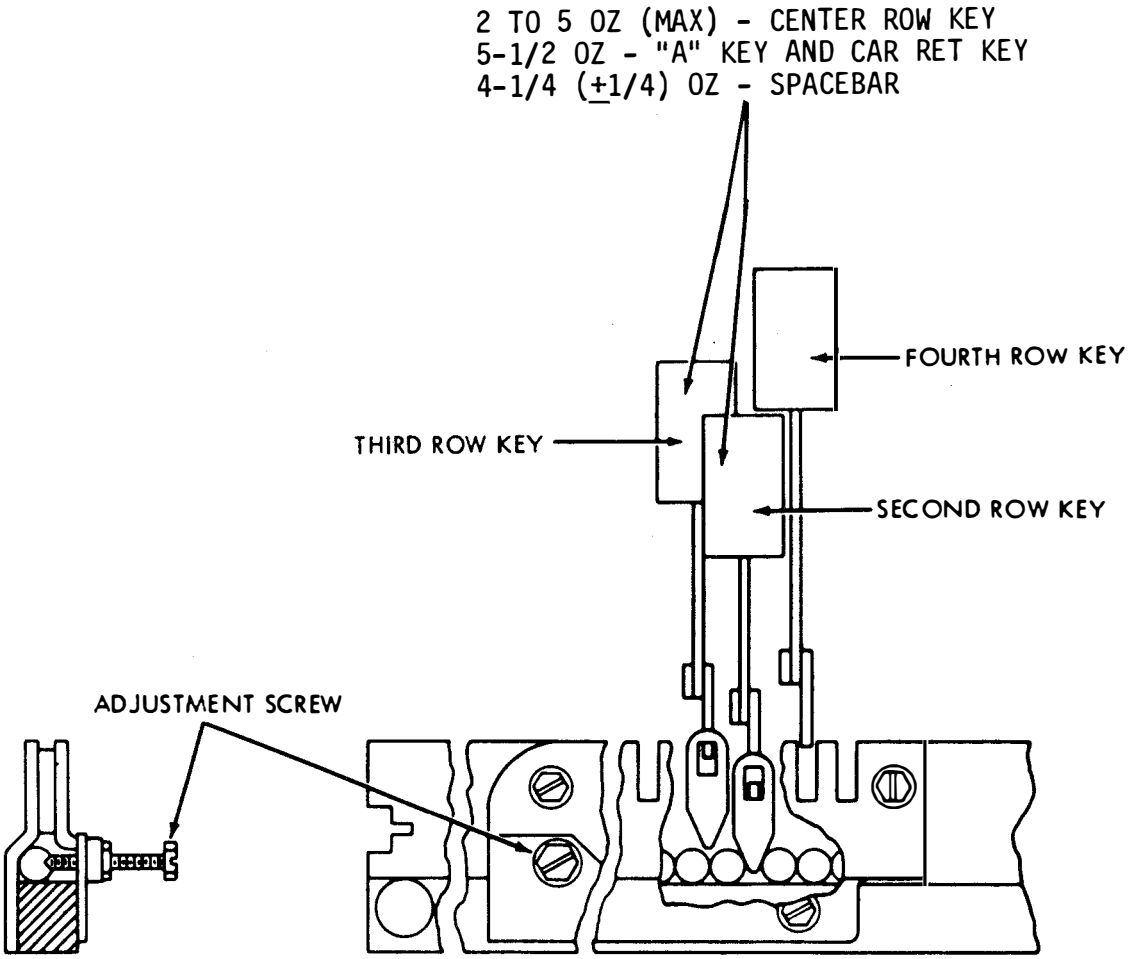


Figure 6-121. Ball Wedgelock, Ball End Play, and Universal Bail Latchlever (Final)

(f) The clutch shall not trip when any two keys are depressed simultaneously.

(g) Apply 4-1/4 ounces (±1/4) to SPACEBAR, and depress CAR RET key. Upon releasing key by moving finger away in horizontal direction, the SPACEBAR shall trip.

NOTE

Disregard multiple space operation if unit is equipped with 163775 Modification Kit for repeat-space operation.

(h) If necessary, refine preliminary adjustments: Ball Wedgelock, paragraph 6-4c(2); Lock Ball End Play, paragraph 6-4c(3); Universal Bail Latchlever, paragraph 6-4a(15); and Universal Bail Extension, paragraph 6-4a(17).

(5) Plunger Spring. Adjust as follows:

(a) Refer to Figure 6-122.

(b) Depress the plunger operating keylever.

(c) Use push end of spring scale to measure the force needed to start moving the plunger down. This should require from 2 to 5 ounces maximum.

(d) If force does not meet specifications, replace spring.

(6) Local Line-Feed Trip Link Spring. Adjust as follows:

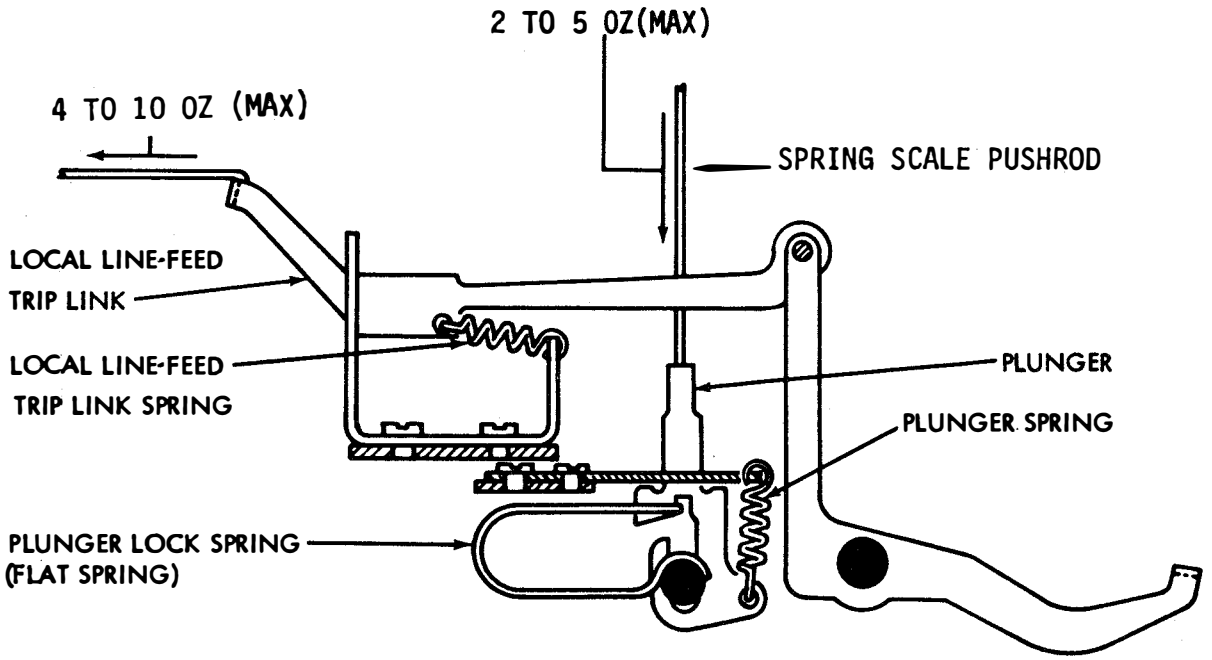


Figure 6-122. Plunger Spring and Local Line-Feed Trip Link Spring

(a) Refer to Figure 6-122.

(b) Attach hook of spring scale to trip link to measure force needed to start link moving. Force should require from 4 to 10 ounces maximum.

(c) If force does not meet specifications, replace spring.

(7) Code Lever Spring. Adjust as follows:

(a) Refer to Figure 6-123.

(b) Use push end of spring scale to measure force required to start code lever moving downward. This should require from 1 to 2 ounces maximum.

(c) Turn power ON.

(d) Disengage generator clutch and use same procedure to measure force required to operate keylever or spacebar. This should require from 3 to 5 ounces maximum.

(e) If force does not meet specifications, replace spring.

(8) Local Carriage Return Function Bail Spring. Adjust as follows:

(a) Refer to Figure 6-124.

(b) Use push end of spring scale to move keylever downward. It should require from 1 to 3 ounces maximum.

(c) If force does not match requirements, replace spring.

d. Interrelated Features Adjustments. Perform the following interrelated features adjustments.

(1) Margin Indicator Spring. Adjust as follows:

(a) Refer to Figure 6-125.

(b) Attach hook of spring scale to margin indicator switch lever as shown.

(c) Measure force needed to start lever moving. It should be from 7 to 11 ounces maximum.

(d) If force does not meet specifications, replace spring.

(2) Perforator Alignment. Adjust as follows:

(a) Refer to Figure 6-126.

(b) Punch slide latches should align with code bar extensions with 0.010 to 0.020 inch maximum space on right side of extension.

(c) Reset cam should align with its cam follower roller approximately 0.030 inch forward of the rear edge of roller.

(d) To adjust:

1. Loosen setscrews and disengage flexible couplings.

2. Loosen two alignment bracket screws and three perforator mounting screws.

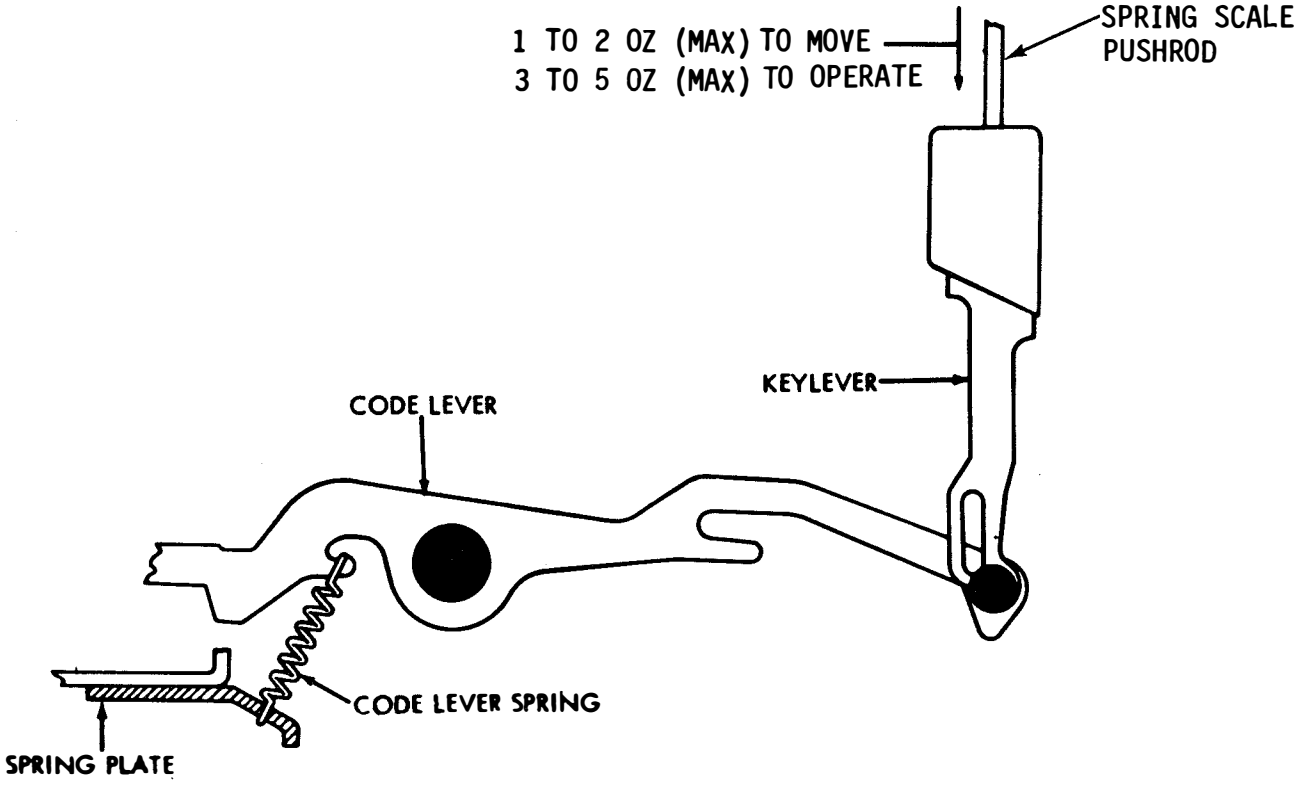


Figure 6-123. Code Lever Spring

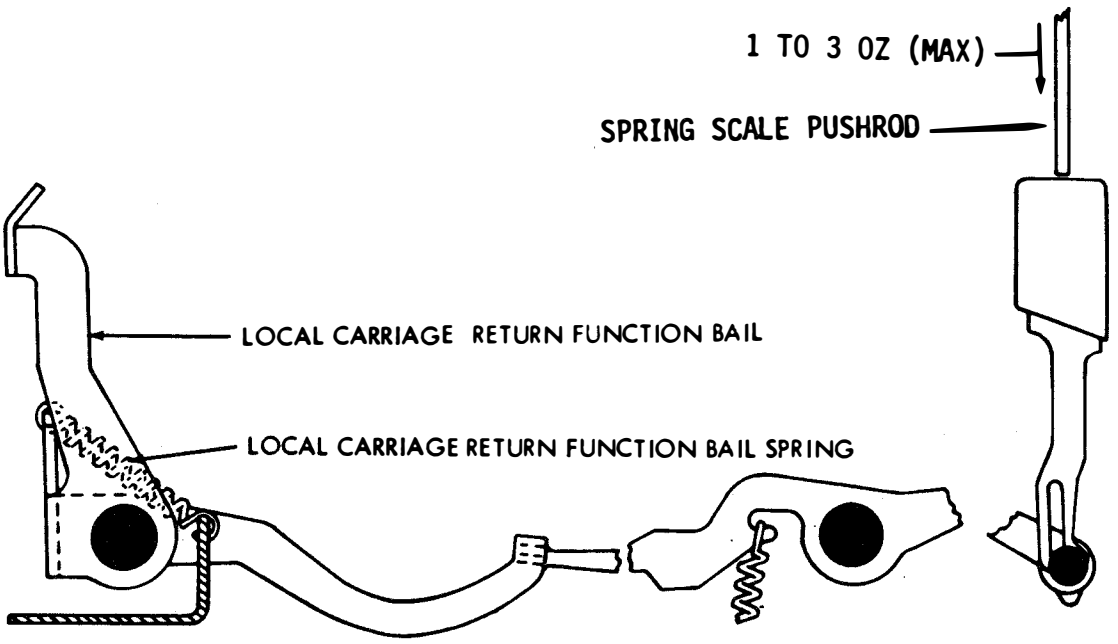


Figure 6-124. Local Carriage Return Function Bail Spring

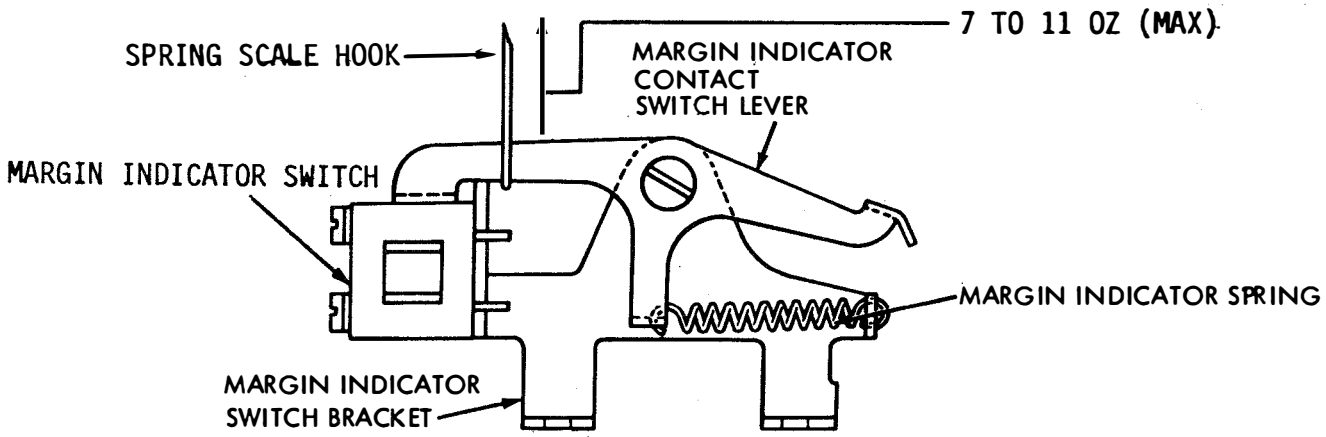


Figure 6-125. Margin Indicator Spring

3. Set extension guide pin in middle of guide bracket slot, align perforator and reset cam then tighten perforator mounting screws.

4. Position alignment bracket so that it contacts full length of perforator and tighten alignment bracket screws.

5. Position rear bearing bracket until perforator drive shaft lines up with bearing bracket shaft. Applying a straight-edge rule to the center of bearing bracket shaft should extend through center of perforator drive shaft. Tighten setscrews and engage coupling.

6. Refine line-up of punch slide latches and code bar extension guide bracket in its mounting holes.

(3) Follower Lever Spring. Adjust as follows:

(a) Refer to Figure 6-127.

(b) Disengage perforator clutch.

(c) Attach hook of spring scale to follower lever and measure force required to start roller away from reset cam. It should be from 12 to 18 ounces maximum.

(d) If force does not meet specifications, replace spring.

(4) Code Bar Bail. Adjust as follows:

(a) Refer to Figure 6-127.

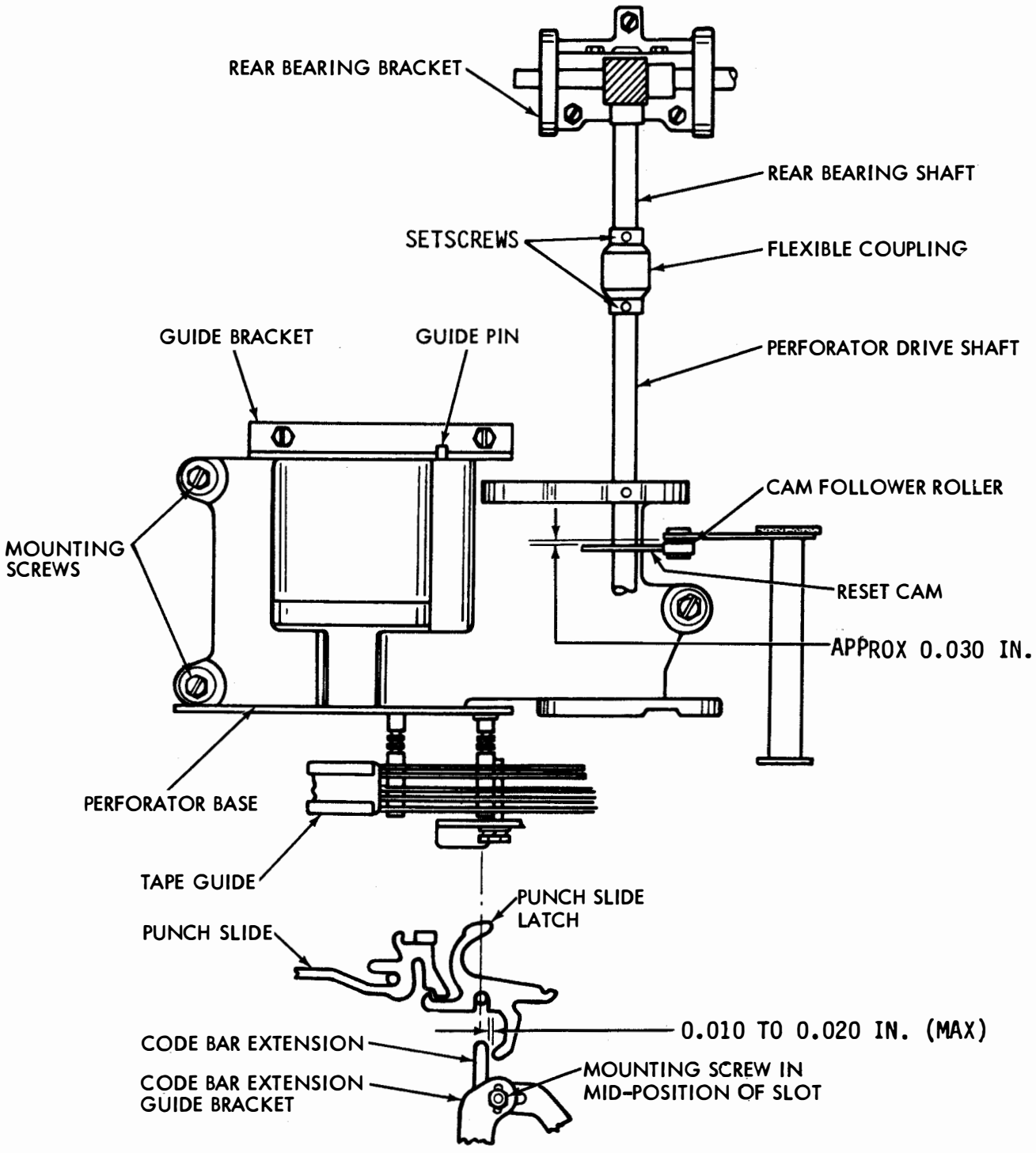


Figure 6-126. Perforator Alignment

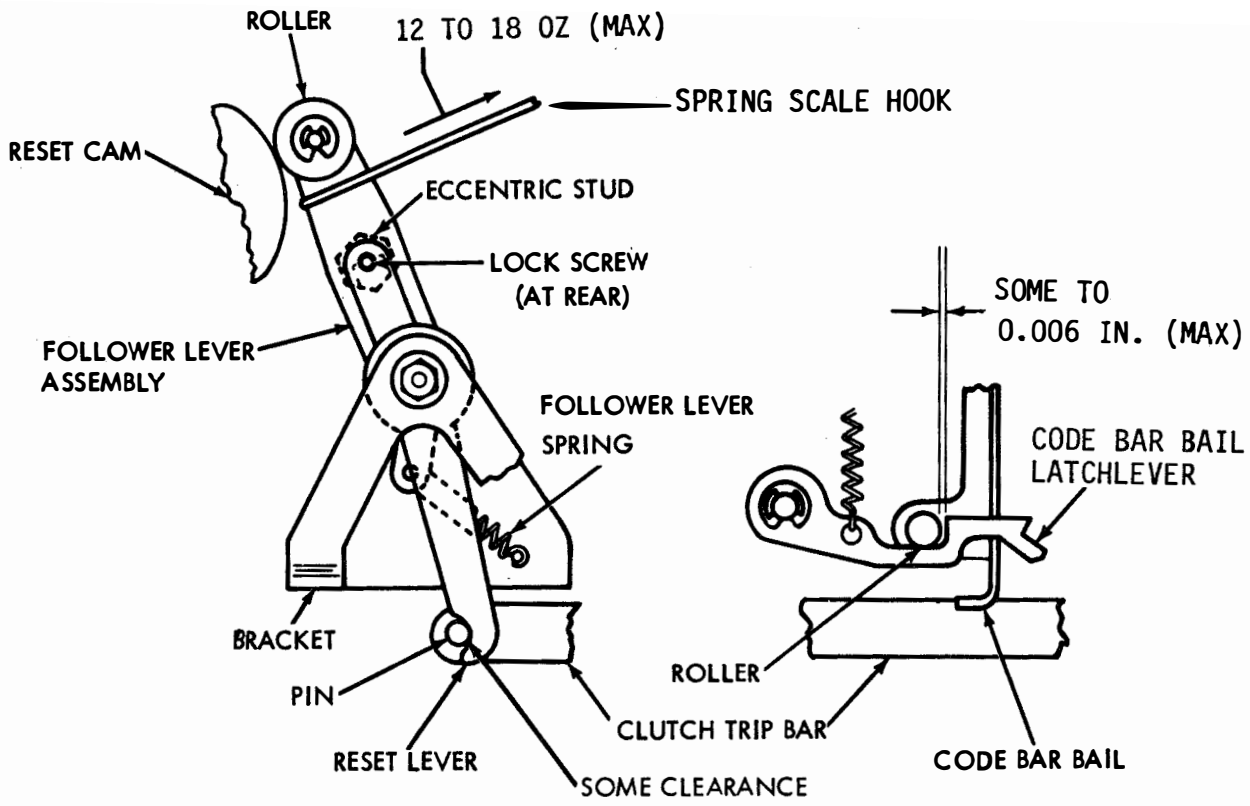


Figure 6-127. Follower Lever Spring and Code Bar Bail

(b) Control knob in "T" position and code bar bail at extreme left, clearance between code bar bail latchlever and roller should be some to 0.006 inch maximum.

(c) To adjust, loosen lock screw and position eccentric stud to meet requirement. Tighten lock screws and recheck.

(d) To check, latch all clutches and depress ITRS key. After all code bars have moved to right, there must be some clearance between follower reset lever and clutch trip bar pin.

(5) Punch Slide Latch Spring. Adjust as follows:

(a) Refer to Figure 6-128.

(b) Apply spring scale pushrod to latch arm of punch slide latch and measure force required to start latch moving. It should be from 1 to 3 ounces maximum.

(c) If force does not meet specifications, replace spring.

(6) Code Bar Extension and Punch Slide Latch. Adjust as follows:

(a) Refer to Figure 6-128.

(b) Control knob in "T" position, depress BLANK keylever, latch punch slide, and take up play between code bar extensions and code bars by moving and holding extensions at engagement with code bars. Clearance between extensions and closest punch slide latch should be some to 0.010 inch maximum.

(c) Depress LTRS keylever. Code bar extensions should rotate punch slide latches to release all punch slides. Check dynamic operation by depressing REPEAT and BLANK key simultaneously.

(d) Keyboard perforators without BLANK key, operate BLANK code bar lever by lifting with a spring hook.

(e) To adjust, loosen locknut and position guide vertically to obtain required clearance. Tighten locknut.

(7) Perforator Clutch Release Trip. Adjust as follows:

(a) Refer to Figure 6-129.

(b) Clearance between main trip lever and clutch release should be from 0.015 to 0.025 inch maximum.

(c) To adjust:

1. Place control knob in "T" position.

2. Loosen main trip lever latch clamp screws and move latch to extreme left.

3. Strike BLANK keylever. If keyboard does not have BLANK keylever use "T" keylever.

4. Move stop bracket right until it is out of engagement with the latch.

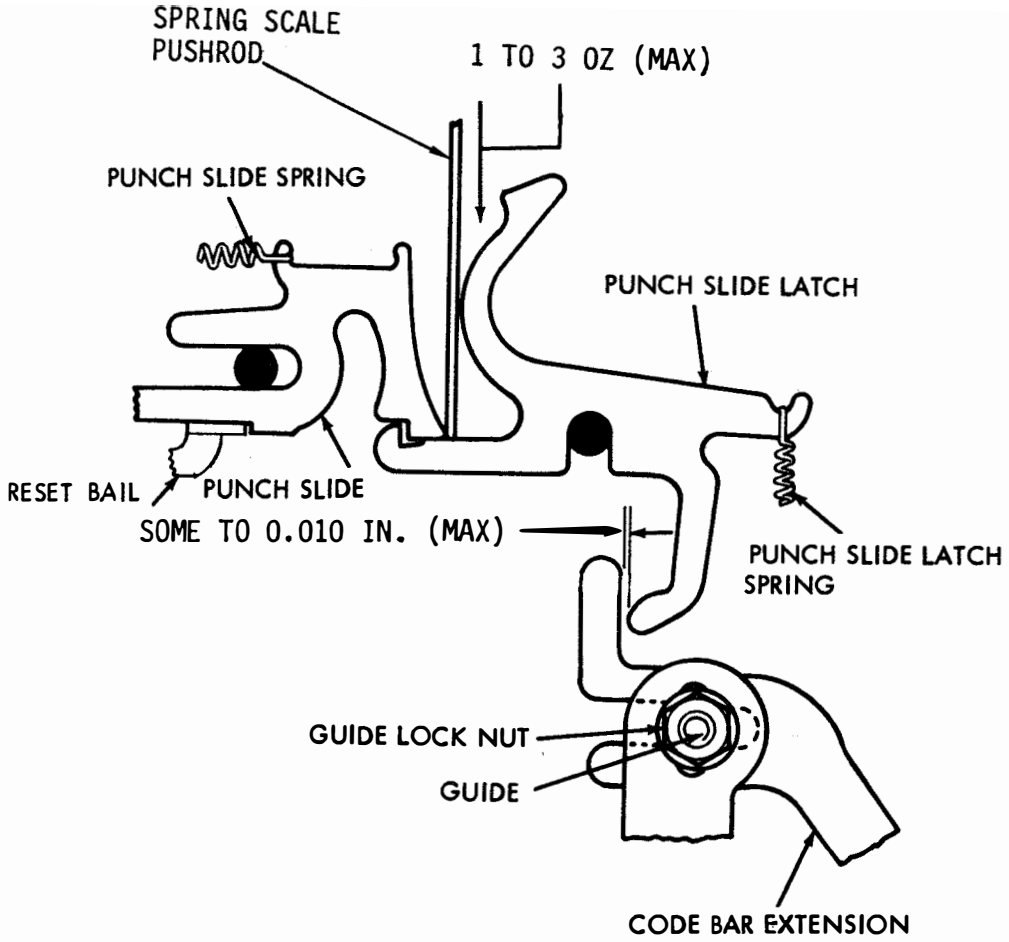


Figure 6-128. Punch Slide Latch Spring, Code Bar Extension, and Punch Slide Latch

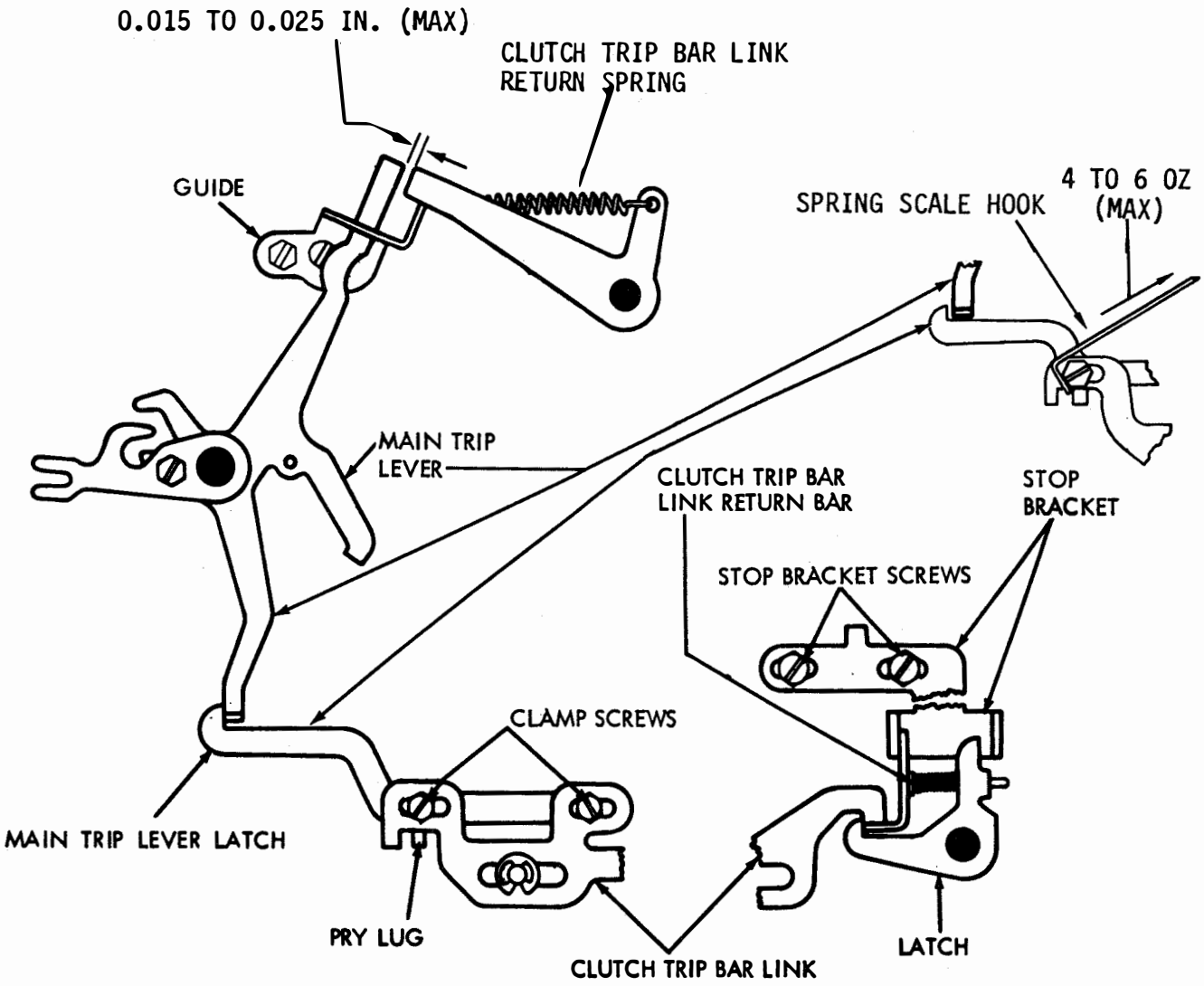


Figure 6-129. Perforator Clutch Release Trip and Trip Bar Link Return Spring

5. Move clutch trip bar extension right until it latches.

6. Position main trip lever latch right to obtain required clearance.

7. Tighten clamp screws.

(d) To check:

1. Loosen stop bracket screws friction tight and move bracket left, slowly, until latch just trips and tighten clamp screws.

2. Turn motor ON.

3. Depress BLANK and REPEAT keylevers simultaneously.

4. If operation is satisfactory, turn to "K-T" position and repeat. Turn to "K" position and back to "K-T" position.

5. Depress "A" keylever. Perforator clutch should trip. If it does not, move stop bracket slightly right and repeat step (c).

(8) Clutch Trip Bar Link Return Spring. Adjust as follows:

(a) Refer to Figure 6-129.

(b) Disengage clutch and put in "K-T" position.

(c) Attach spring scale hook over left clamp screw and measure force required to start main trip lever latch moving. It should be from 4 to 6 ounces maximum.

(d) If force does not meet specifications, replace spring.

(9) Code Bar Extension Blocking Assembly. Adjust as follows:

(a) Refer to Figure 6-130.

(b) With selector switch in "K" position, code bar extensions and character counter bars should not operate.

(c) Clearance between right end at code bar extensions and code bars should be some to 0.015 inch maximum.

(d) Clearance between blocking lever and side of notch in character counter bars should be some to 0.010 inch maximum.

(e) To adjust:

1. Latch clutch and turn control knob to "K" position. Strike LTRS keylever and rotate signal generator shaft to return code bars to extreme left.

2. Loosen adjusting screw to friction tight.

3. Position extension bail to obtain step (c) clearance and blocking lever to obtain step (d) clearance. Make certain that code bar extension bail is free on its guidepost.

4. Test operation in each position, "K", "K-T" and "T".

5. Tighten adjusting screw.

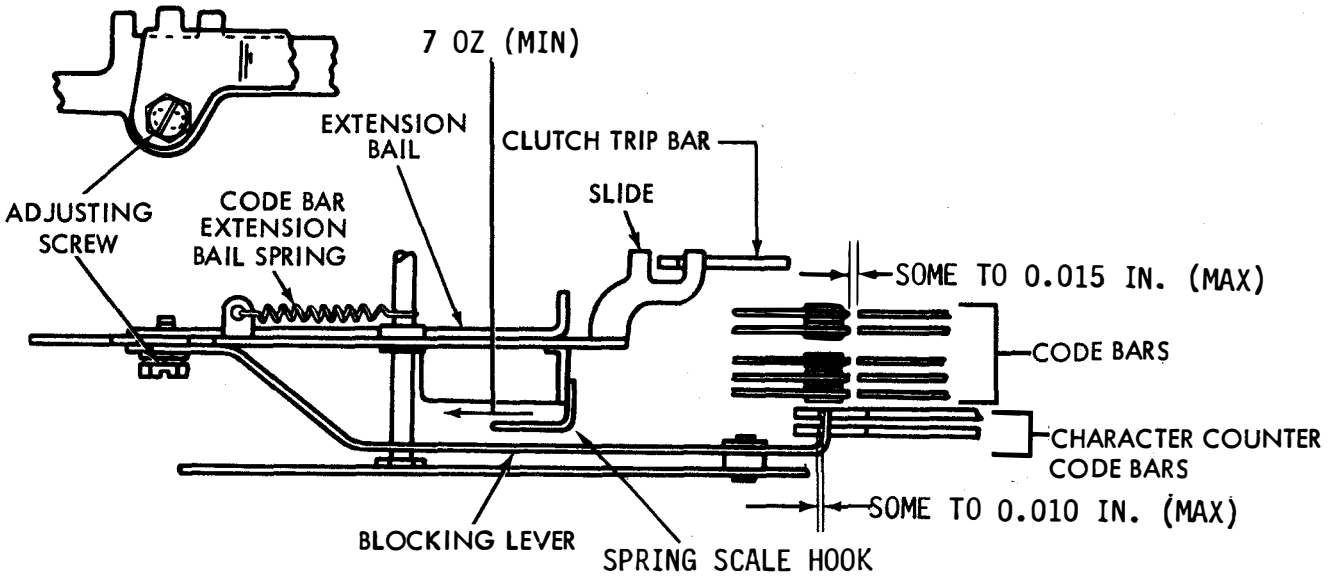


Figure 6-130. Code Bar Extension Blocking Assembly and Extension Bail Spring

(10) Code Bar Extension Bail Spring. Adjust as follows:

(a) Refer to Figure 6-130.

(b) Control knob in "K-T" position.

(c) Attach spring scale hook over bracket on extension bail and measure force required to start extension bail moving. It should be 7 ounces minimum.

(d) If force does not meet specifications, replace spring.

(11) Detent Lever Spring. Adjust as follows:

(a) Refer to Figure 6-131.

(b) Attach spring scale hook over detent lever and measure force required to start lever moving. It should be from 4 to 5 pounds maximum.

(c) If force does not meet specifications, replace spring.

(12) Keyboard Control Switch. Adjust as follows:

(a) Refer to Figure 6-132.

(b) In "T" position, normally-open contact or "K-T" position, normally-closed contact, the gap is 0.015 inch minimum.

(c) All contacts should close with some overtravel.

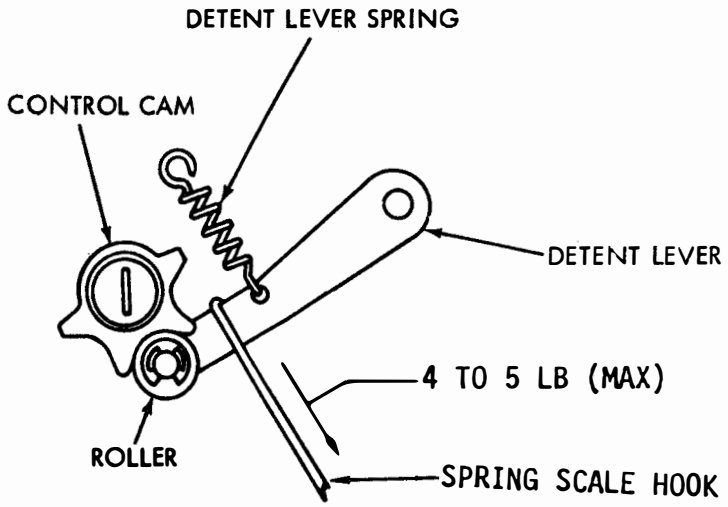


Figure 6-131. Detent Lever Spring

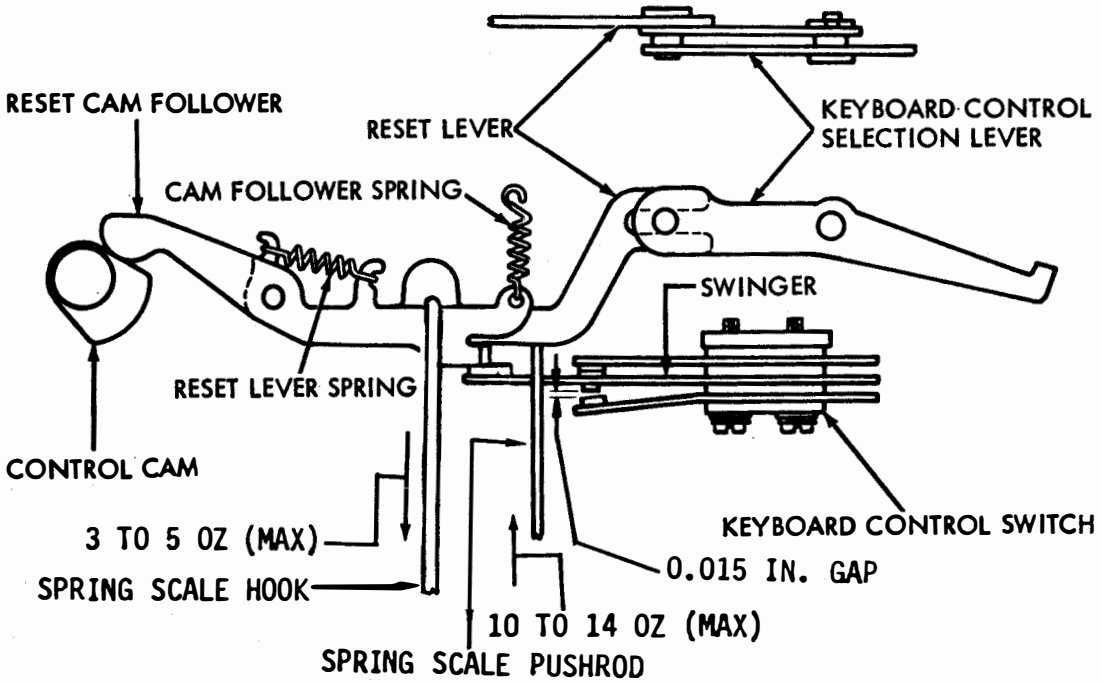


Figure 6-132. Keyboard Control Switch, Reset Lever Spring, and Cam Follower Spring

(d) To adjust, bend contact springs.

(13) Reset Lever Spring. Adjust as follows:

(a) Refer to Figure 6-132.

(b) Control knob in "T" position.

(c) Apply spring scale pushrod to reset lever and measure force required to start lever moving. It should be from 10 to 14 ounces maximum.

(d) If force does not meet specifications, replace spring.

(14) Cam Follower Spring. Adjust as follows:

(a) Refer to Figure 6-132.

(b) Attach spring scale hook over cam follower and measure force required to start cam follower moving. It should be from 3 to 5 ounces maximum.

(c) If force does not meet specifications, replace spring.

(15) Synchronous Motor Positioning. Adjust as follows:

CAUTION

If the motor should become blocked for several seconds, thermal cutout switch will break the circuit. Should this happen, allow motor to cool at least 5 minutes before manually depressing red button. Avoid repeated depression.

(a) Refer to Figure 6-133.

(b) The two oilers should be upward approximately equidistant from a vertical line through motor shaft.

(c) Loosen both clamp screws and position motor.

(d) Tighten clamp screws.

(16) Intermediate Gear Bracket. Adjust as follows:

(a) Refer to Figure 6-134.

(b) Position the complete intermediate gear mechanism bracket by utilizing the adjusting slots with the three hexagon head screws loosened.

(c) Align the typing unit driving gear to the typing unit driven gear.

(d) Measure the backlash between the two gears. There should be a barely perceptible amount of backlash between the typing unit driven gear and the typing unit driving gear at the point where the backlash is the least.

(e) Adjust the intermediate gear by raising or lowering the front end of the intermediate gear bracket by means of the fillister head adjusting and clamping screws located at the front end of the bracket. Refine requirements, if necessary.

(f) Measure the backlash. There should be a barely perceptible amount of backlash between the interme-

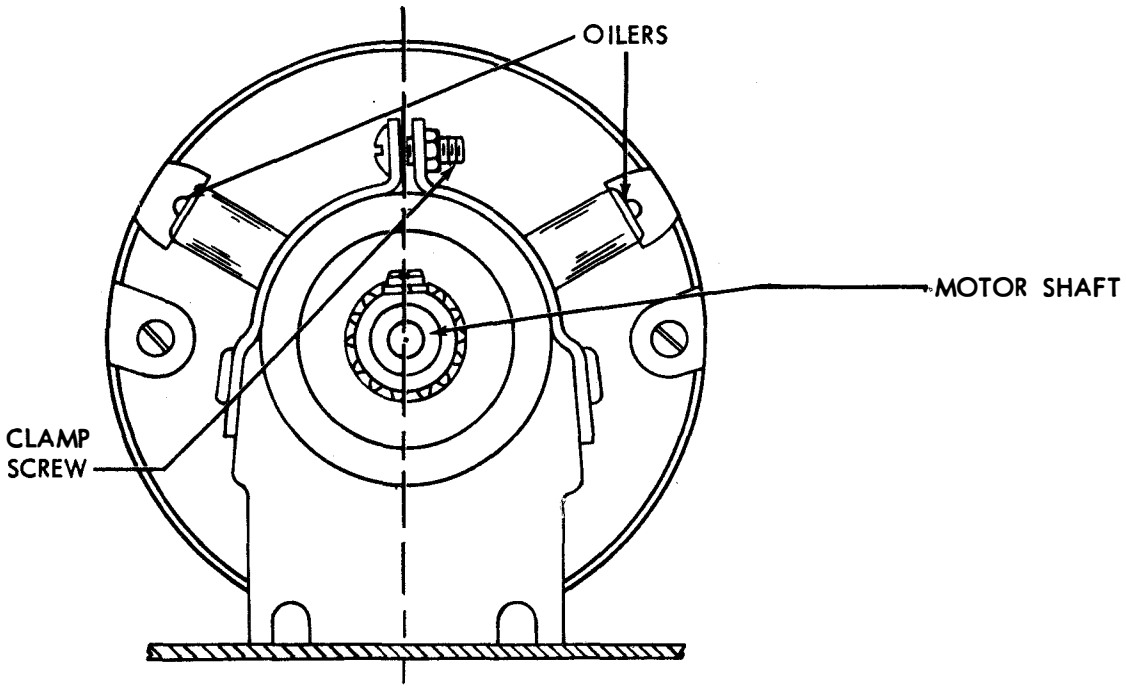


Figure 6-133. Synchronous Motor Positioning

diate driving gear and the intermediate driven gear at at the point where the backlash is the least.

(17) Mounting Typing Unit on Keyboard. Adjust as follows:

(a) Refer to Figure 6-135.

(b) Place typing unit on base, holding it tilted slightly to the right and lower right end into engagement with right locating stud.

(c) Ease the left end downward and rotate the motor by hand to properly mesh the gears.

(d) Secure the three mounting screws.

(e) Rotate motor by hand to ensure proper meshing of gears.

(18) Signal Generator Frame. Adjust as follows:

(a) Refer to Figure 6-136.

(b) With typing unit mounted in position, there should be perceptible amount of backlash between signal generator driven gear and signal generator driving gear at point of least backlash.

(c) To adjust, remove signal generator frame rear mounting screw and loosen shim screw. Add or subtract shims as required.

(d) Replace mounting screw and tighten both screws.

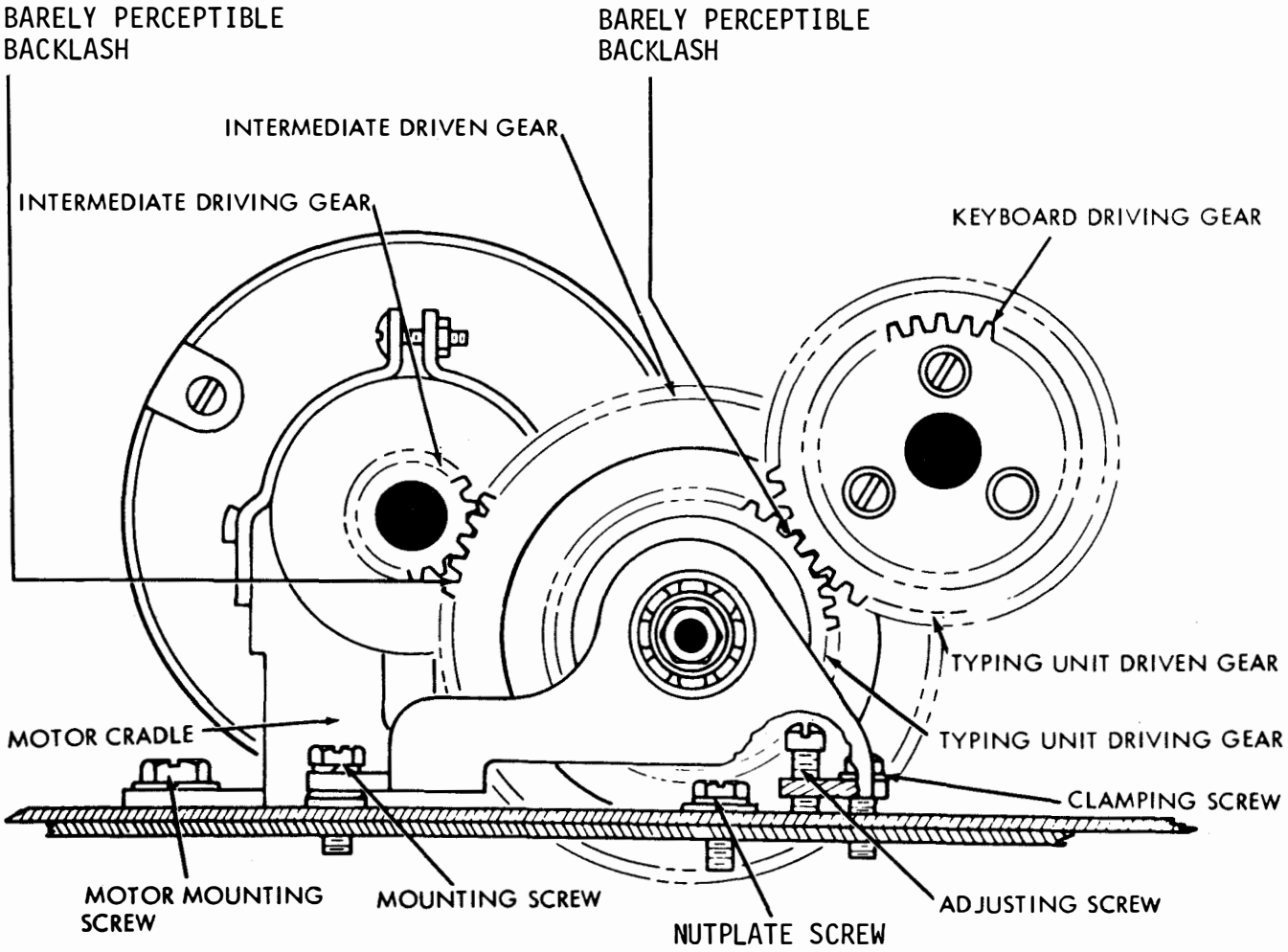


Figure 6-134. Intermediate Gear Bracket

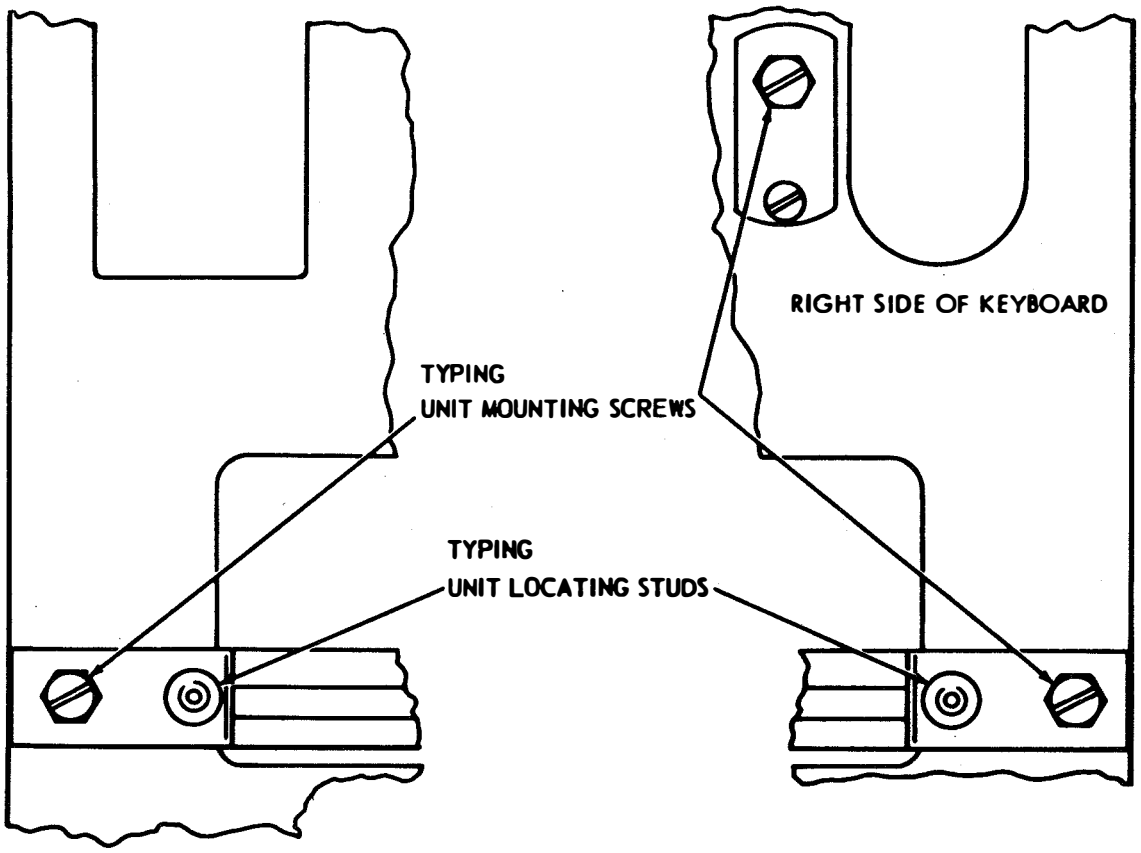


Figure 6-135. Mounting Typing Unit on Keyboard, Top View

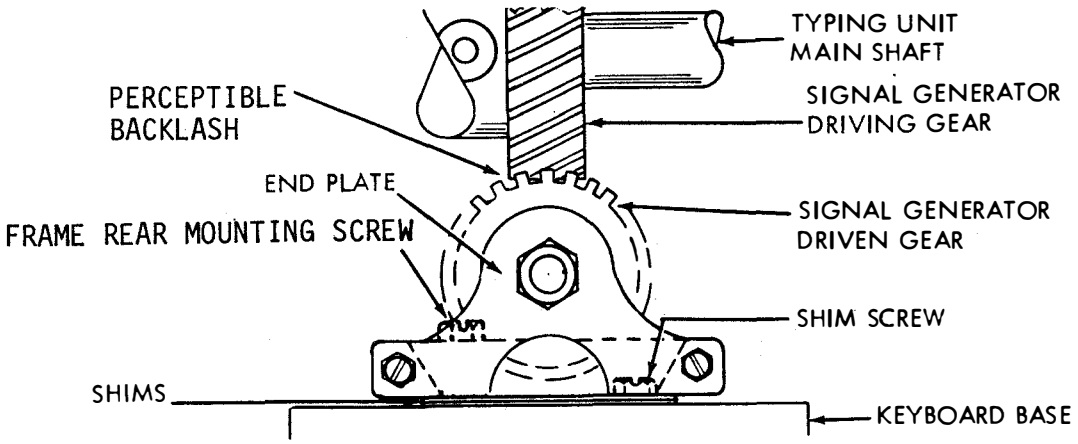


Figure 6-136. Signal Generator Frame, Rear View

6-5. TYPING AND NON-TYPING PERFORATOR UNIT ADJUSTMENTS. The following paragraphs describe typing and non-typing unit adjustments procedures for high-level and low-level operation.

NOTE

These adjustments apply to both typing and non-typing perforators, unless specified otherwise.

a. Function Mechanism Adjustments. Perform the following function mechanism adjustments.

(1) Function Clutch Shoe Lever. Adjust as follows:

(a) Refer to Figure 6-137.

(b) Disengage clutch and measure clearance.

(c) Align head of clutch drum mounting screw with stop-lug and engage clutch. Manually press shoe lever and stop-lug together then snap apart. Measure clearance.

(d) Clearance between shoe lever and stop-lug should be from 0.055 to 0.085 inch, maximum, greater when clutch is engaged then when disengaged.

(e) Engage wrench or screwdriver with lug on adjusting disk, loosen clamp screws, and rotate disk to obtain proper clearance.

(f) Tighten clamp screws.

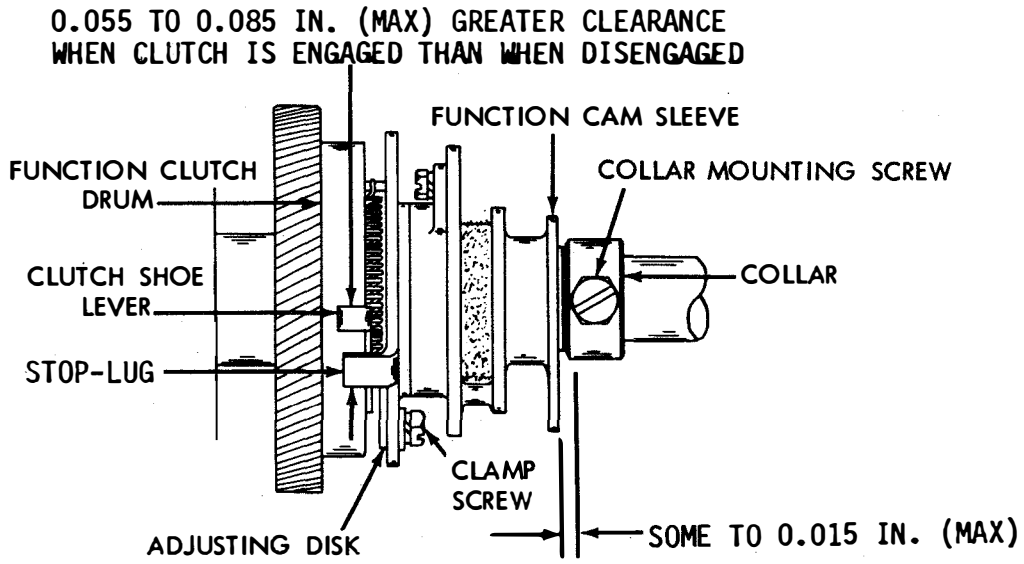


Figure 6-137. Function Clutch Shoe Lever and Drum End Play

(2) Function Clutch Drum End Play. Adjust as follows:

(a) Refer to Figure 6-137.

(b) Disengage clutch and take up play between cam sleeve and collar to make maximum clearance. There should be some to 0.015 inch maximum clearance.

(c) To adjust, loosen mounting screw and position collar. Tighten screw.

(3) Clutch Shoe Lever Spring. Adjust as follows:

(a) Refer to Figure 6-138.

(b) Engage clutch and hold cam disk to prevent its turning.

(c) Attach spring scale hook over shoe lever and measure force required to pull lever in contact with stop-lug.

(d) Check both shoe levers:

1. For typing perforators, force should measure 15 to 20 ounces maximum.

2. For non-typing perforators, force should measure 16 to 22 ounces maximum.

(e) If spring tension is incorrect, replace spring.

(4) Clutch Shoe Spring. Adjust as follows:

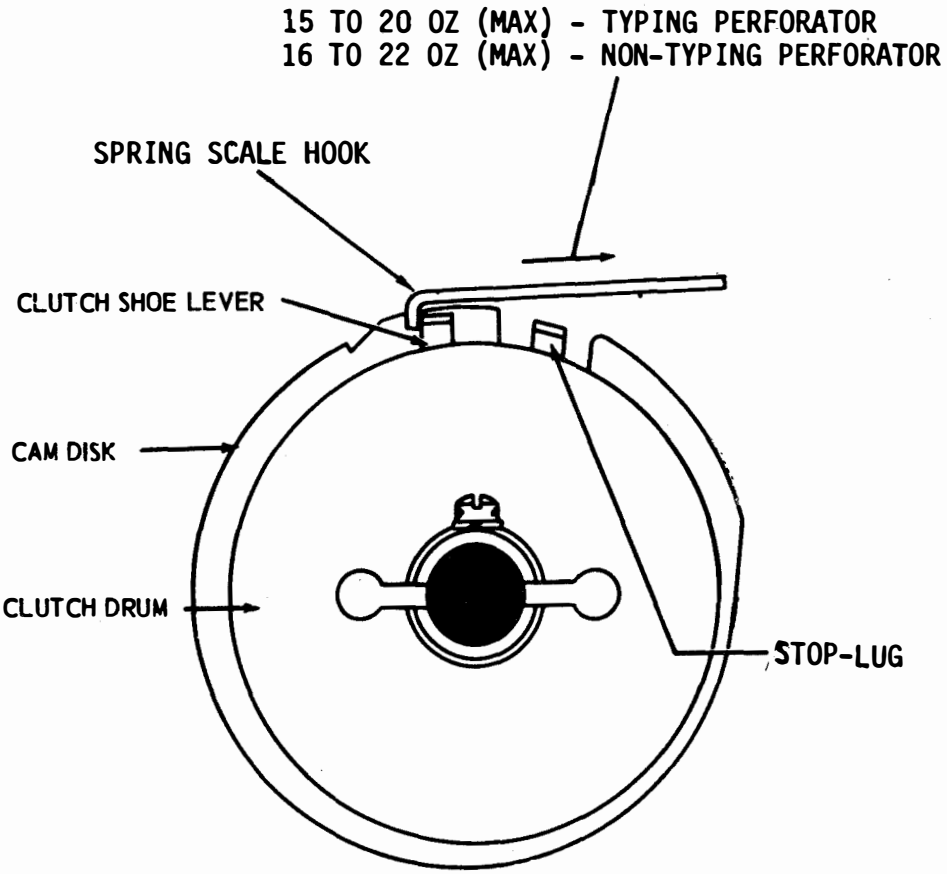


Figure 6-138. Clutch Shoe Lever Spring

NOTE

To check this spring tension it is necessary to remove the clutch from the main shaft. Therefore, it should not be checked unless there is reason to believe it will not meet its requirement.

(a) Refer to Figure 6-139.

(b) Remove clutch from drum.

(c) Attach spring scale hook over primary clutch shoe and measure force required to start primary shoe moving. It should measure 3 to 5 ounces maximum.

(d) If spring tension is incorrect, replace spring.

(5) Rocker Bail. Adjust as follows:

(a) Refer to Figure 6-140.

(b) Position rocker bail to its extreme left with upper roller in contact with function cam.

(c) Clearance between cam and lower roller at point of least clearance, should measure some to 0.004 inch maximum.

(d) To adjust, loosen locknut and position lower roller mounting screw in elongated slot to obtain required clearance.

(e) Check for binds throughout a complete revolution and tighten locknut.

(6) Rocker Bail Guide Bracket (Typing Perforator). Adjust as follows:

(a) Refer to Figure 6-141.

(b) Rocker bail rollers should engage full thickness of function cam.

(c) Lifter roller in full engagement with rocker bail camming surface.

(d) If necessary, loosen guide bracket mounting screws and position rocker bail and guide bracket to meet requirement.

(e) Tighten mounting screws.

(7) Rocker Bail Guide Bracket (Non-typing Perforator). Adjust as follows:

(a) Refer to Figure 6-141.

(b) Measure clearance between upper roller and reset pins, between lower roller screw head and front cam, and between rocker bail and rear cam.

(c) Each clearance should be 0.010 inch minimum.

(d) If necessary, loosen guide bracket mounting screws and position rocker bail.

(e) Tighten mounting screws.

(8) Function Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-142.

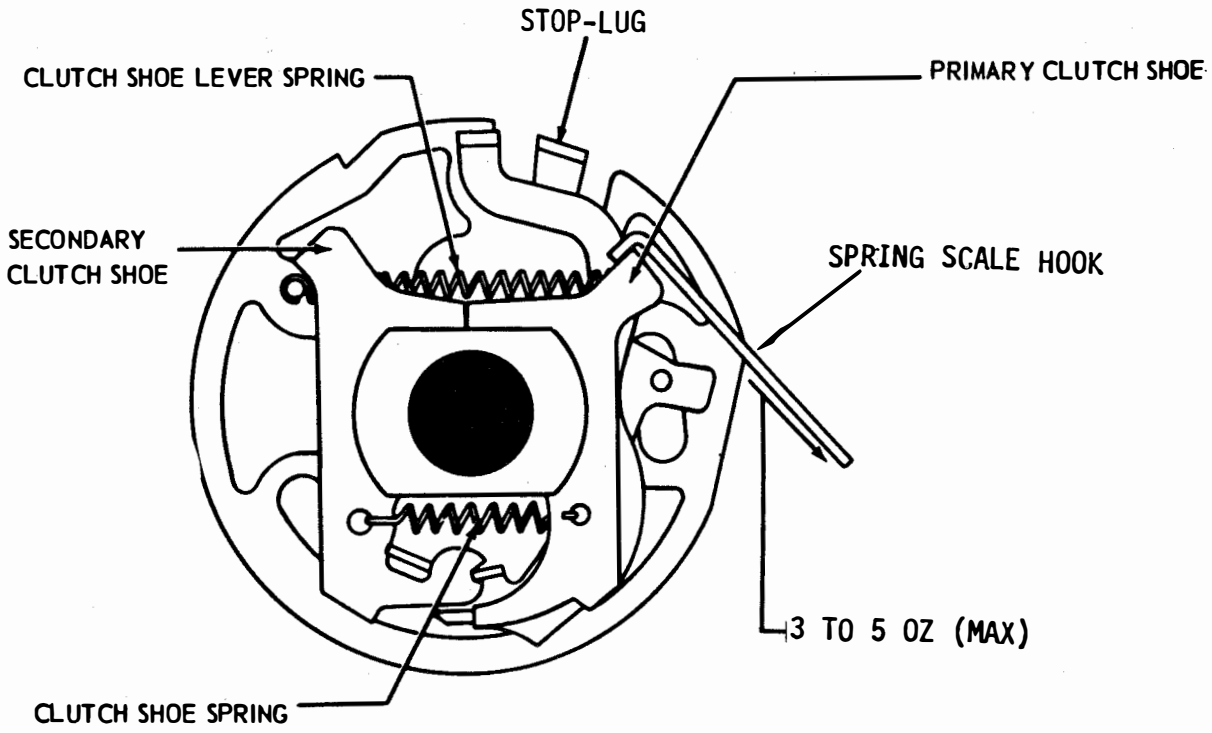


Figure 6-139. Clutch Shoe Spring

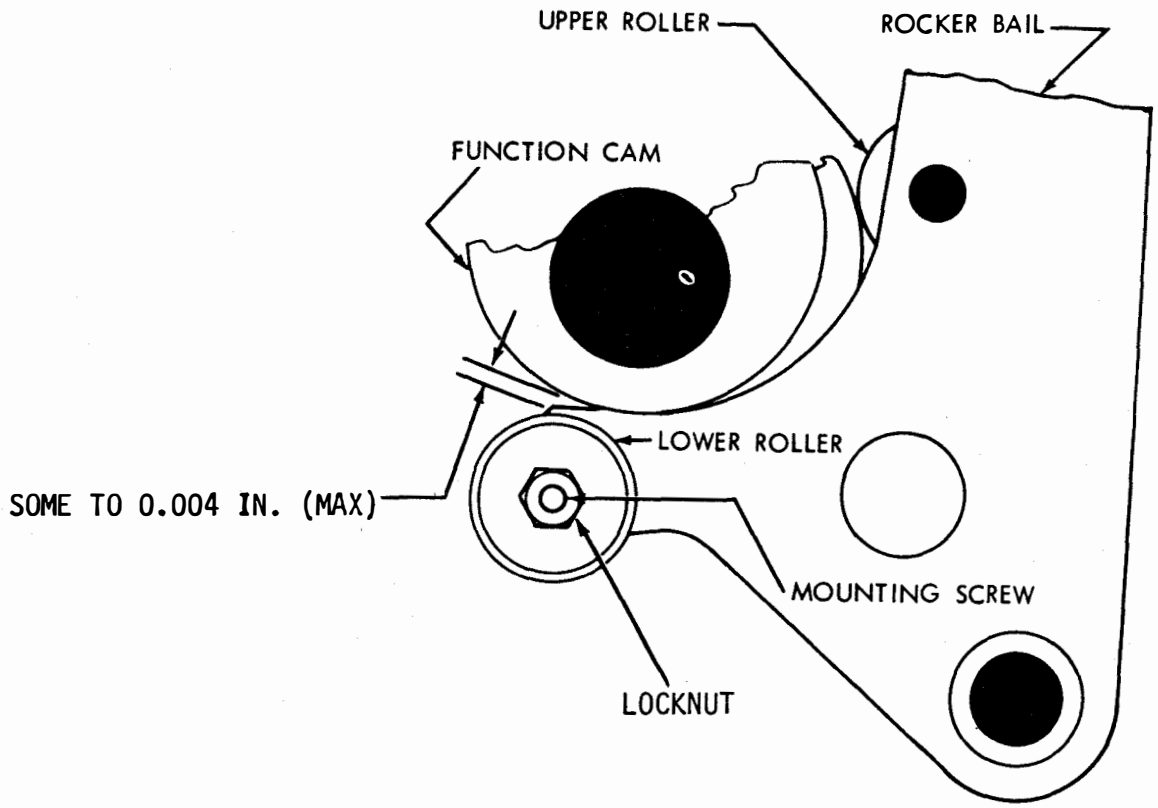


Figure 6-140. Rocker Bail, Rear View

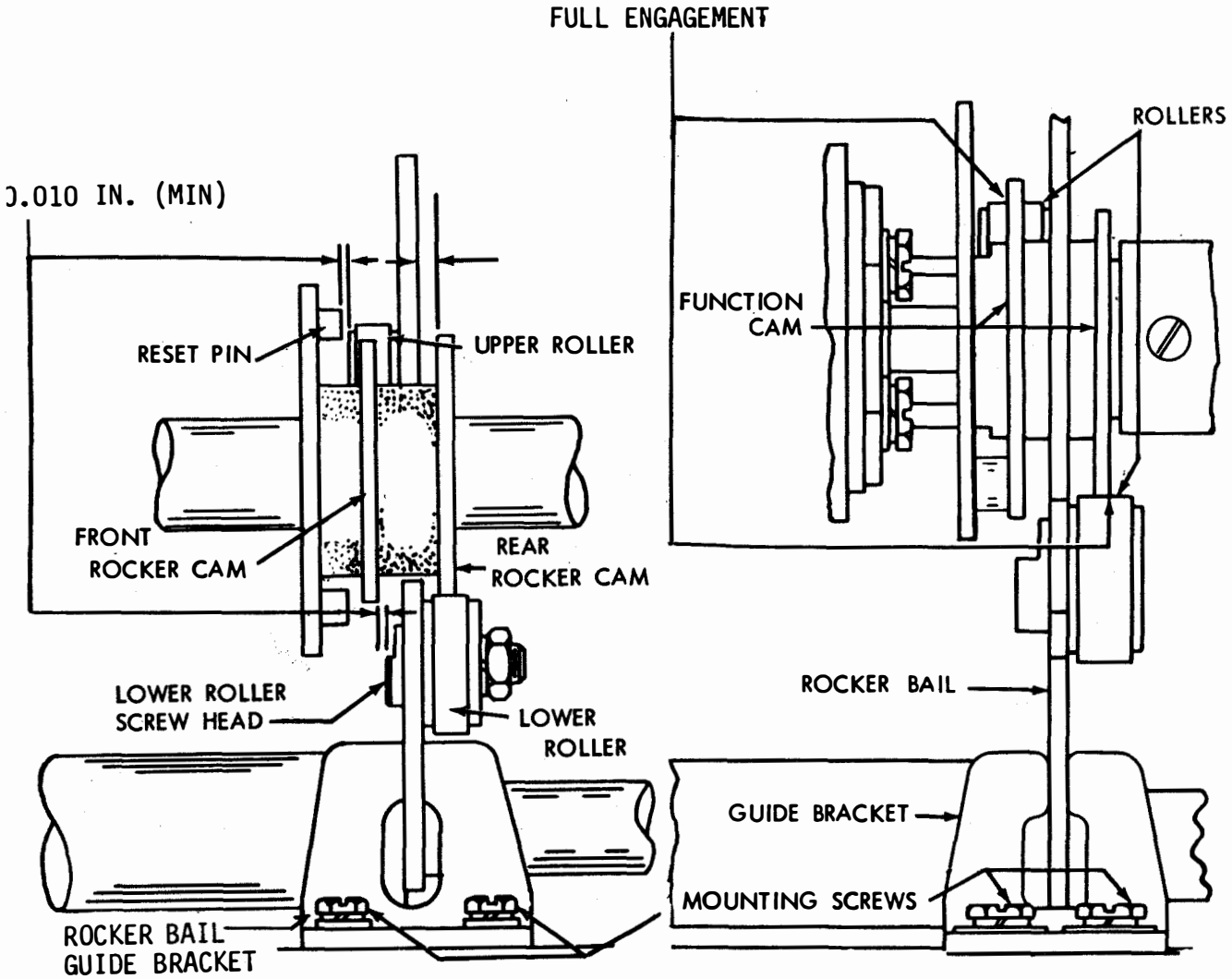


Figure 6-141. Rocker Bail Guide Bracket, Typing and Non-typing Perforator

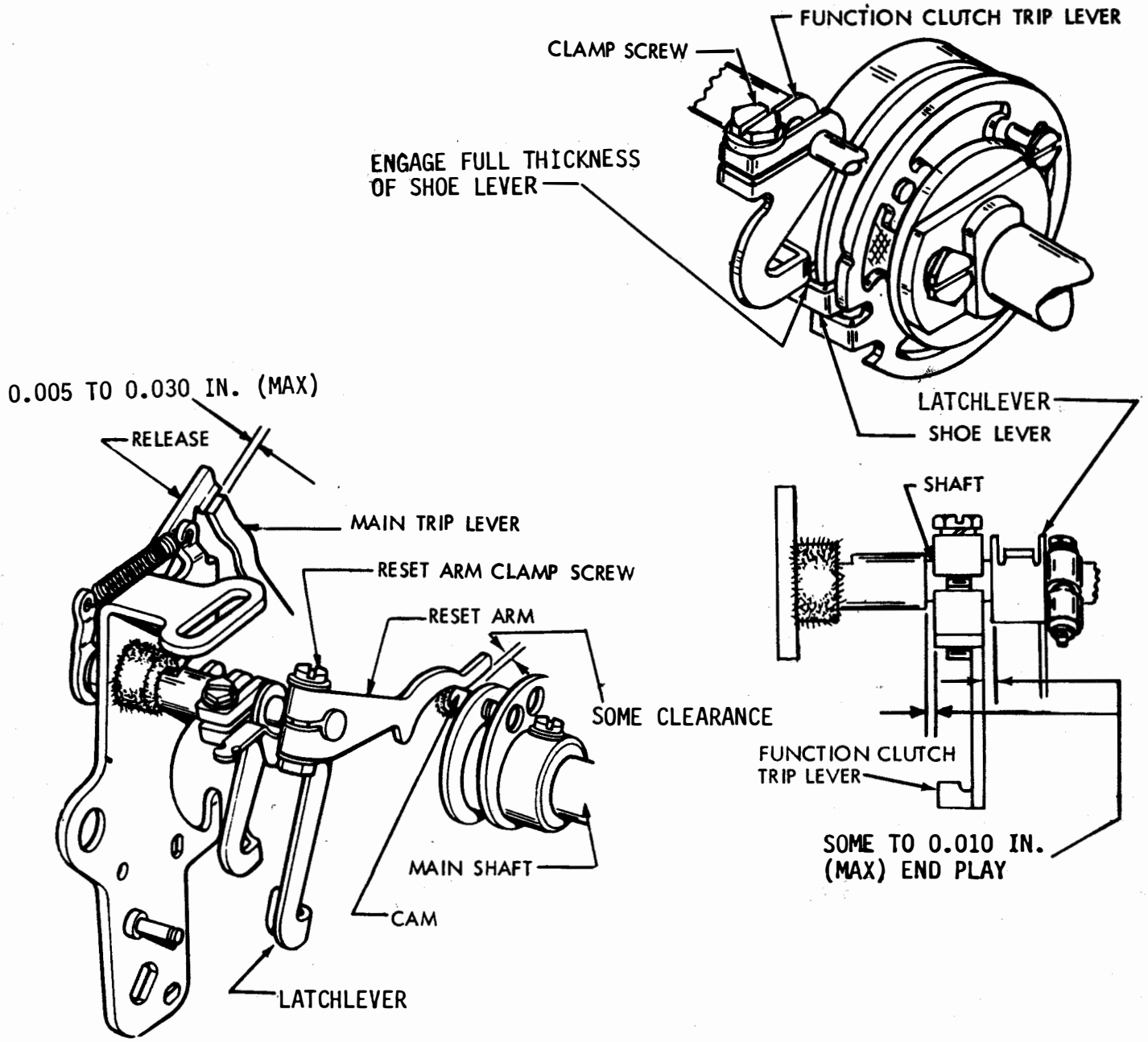


Figure 6-142. Function Clutch Trip Lever and Reset Arm, Right Side View

(b) With release resting on main trip lever, function clutch trip lever should engage full thickness of shoe lever at stop where bite is least.

(c) Trip lever end play should measure some to 0.010 inch maximum.

(d) To adjust, loosen clamp screw and position trip lever on its shaft. Tighten clamp screw.

(9) Reset Arm. Adjust as follows:

(a) Refer to Figure 6-142.

(b) Trip function clutch and position main shaft so the reset arm is held in its highest position by cam.

(c) Clearance between release and main trip lever should measure 0.005 to 0.030 inch maximum.

(d) Latchlever end play should measure some to 0.010 inch maximum.

(e) There should be some clearance between reset arm and cam.

(f) To adjust, loosen clamp screw and position reset arm. Tighten screw.

(10) Main Trip Lever. Adjust as follows:

(a) Refer to Figure 6-143.

(b) With clutch latched and trip lever flush with end of release, punch reset bail must be in its uppermost position.

(c) To adjust, loosen clamp screw and position main trip lever. Tighten clamp screw.

(11) Function Clutch Release Spring. Adjust as follows:

(a) Refer to Figure 6-143.

(b) Disengage perforator clutch.

(c) Attach spring scale hook to release and measure force required to start release moving. This should be 5 to 8 ounces maximum.

(d) If spring tension is incorrect, replace spring.

(12) Main Trip Lever Spring. Adjust as follows:

NOTE

On units equipped with ribbon-feed, it will be necessary to remove the ribbon-feed mechanism.

(a) Refer to Figure 6-144.

(b) Trip reset bail trip lever extension.

(c) Attach spring scale hook to main trip lever and measure force required to start lever moving. This should be 1 to 4 ounces maximum.

(d) If spring tension is incorrect, replace spring.

(13) Release Downstop Bracket. Adjust as follows:

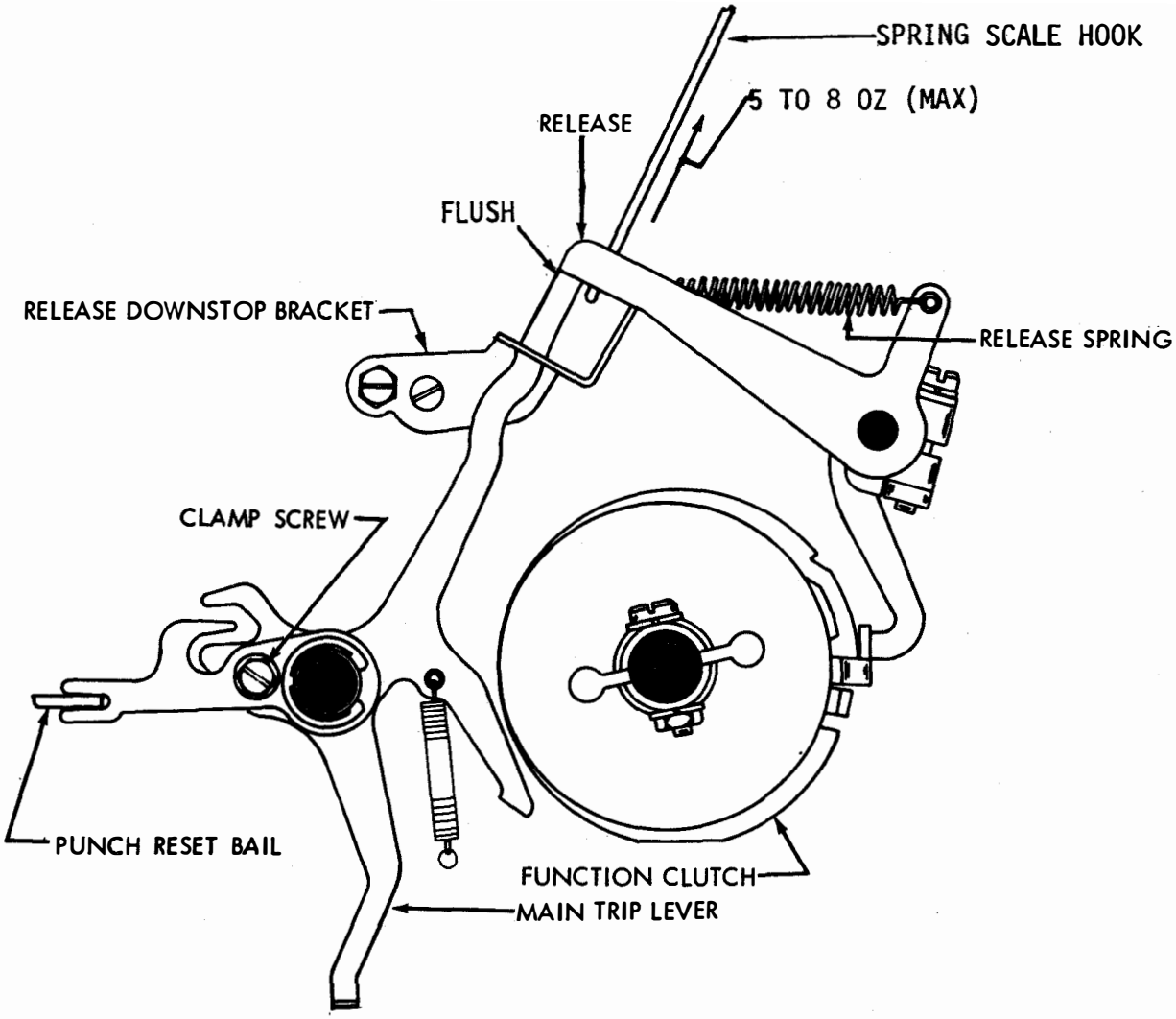


Figure 6-143. Main Trip Lever and Function Clutch Release Spring

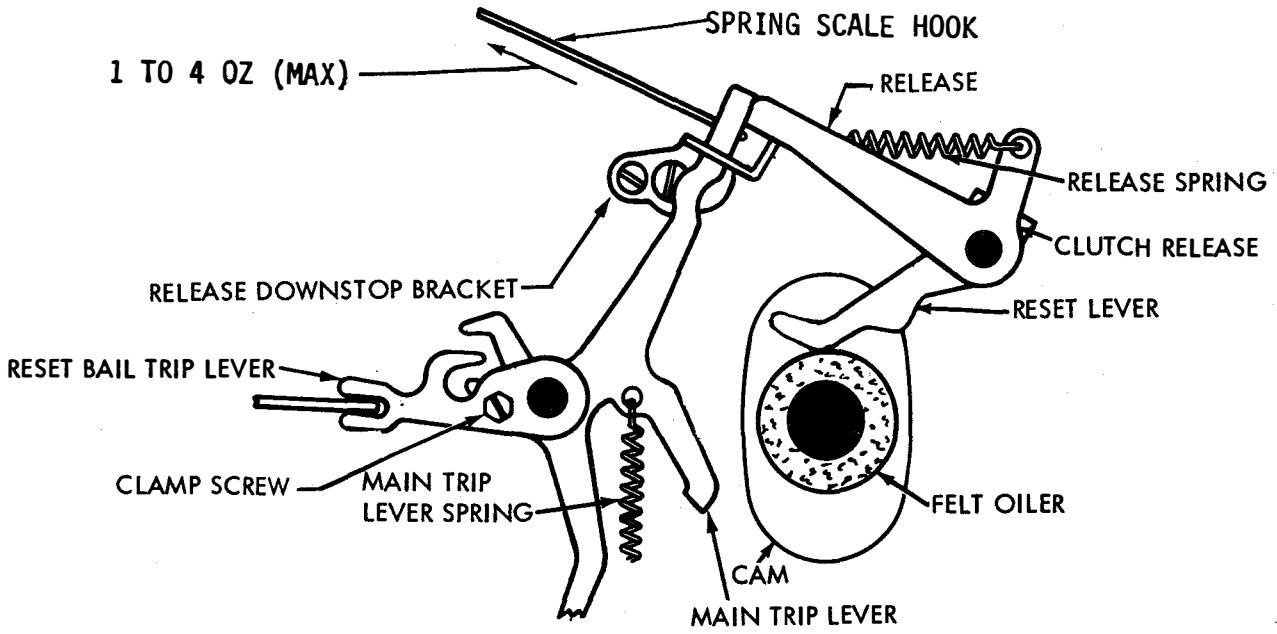


Figure 6-144. Main Trip Lever Spring

NOTE

On non-typing perforators with two-stop function clutch, gauge at stop having least clearance.

(a) Refer to Figure 6-145.

(b) Trip function clutch, rotate shaft until clearance between clutch disk stop-lug and stop lever is at minimum, and release is resting against downstop bracket.

(c) Measure clearance between stop-lug and stop lever. This should be 0.002 to 0.045 inch maximum.

(d) To adjust, remove tape guard and loosen downstop bracket mounting screw friction tight. Position bracket and recheck for some clearance between trip lever extension and left end of slot in release lever downstop bracket. Tighten mounting screws.

(14) Function Clutch Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-146.

(b) Turn function clutch to STOP position and unlatch latchlever.

(c) Attach spring scale hook to latchlever and measure force required to start latchlever moving. This should be 12 to 15 ounces maximum.

(d) If spring tension is incorrect, replace spring.

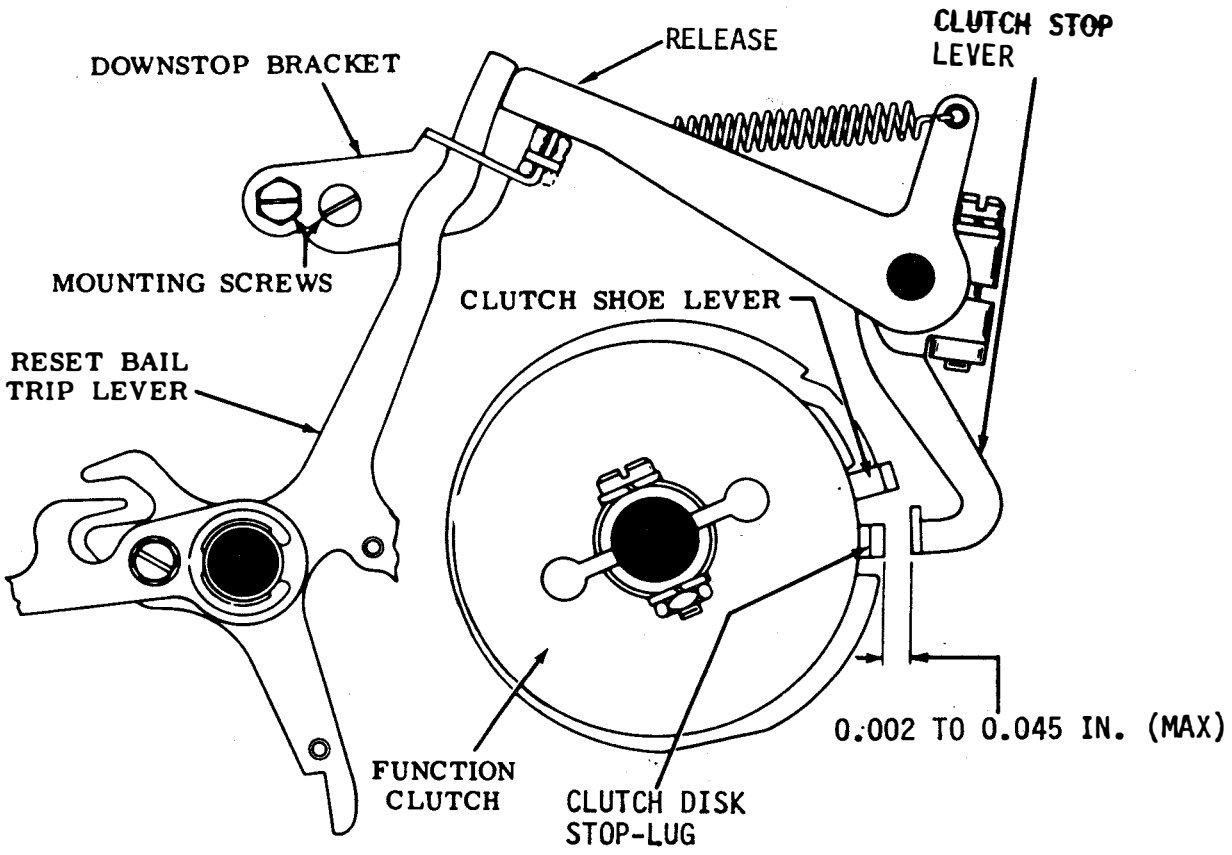


Figure 6-145. Release Downstop Bracket

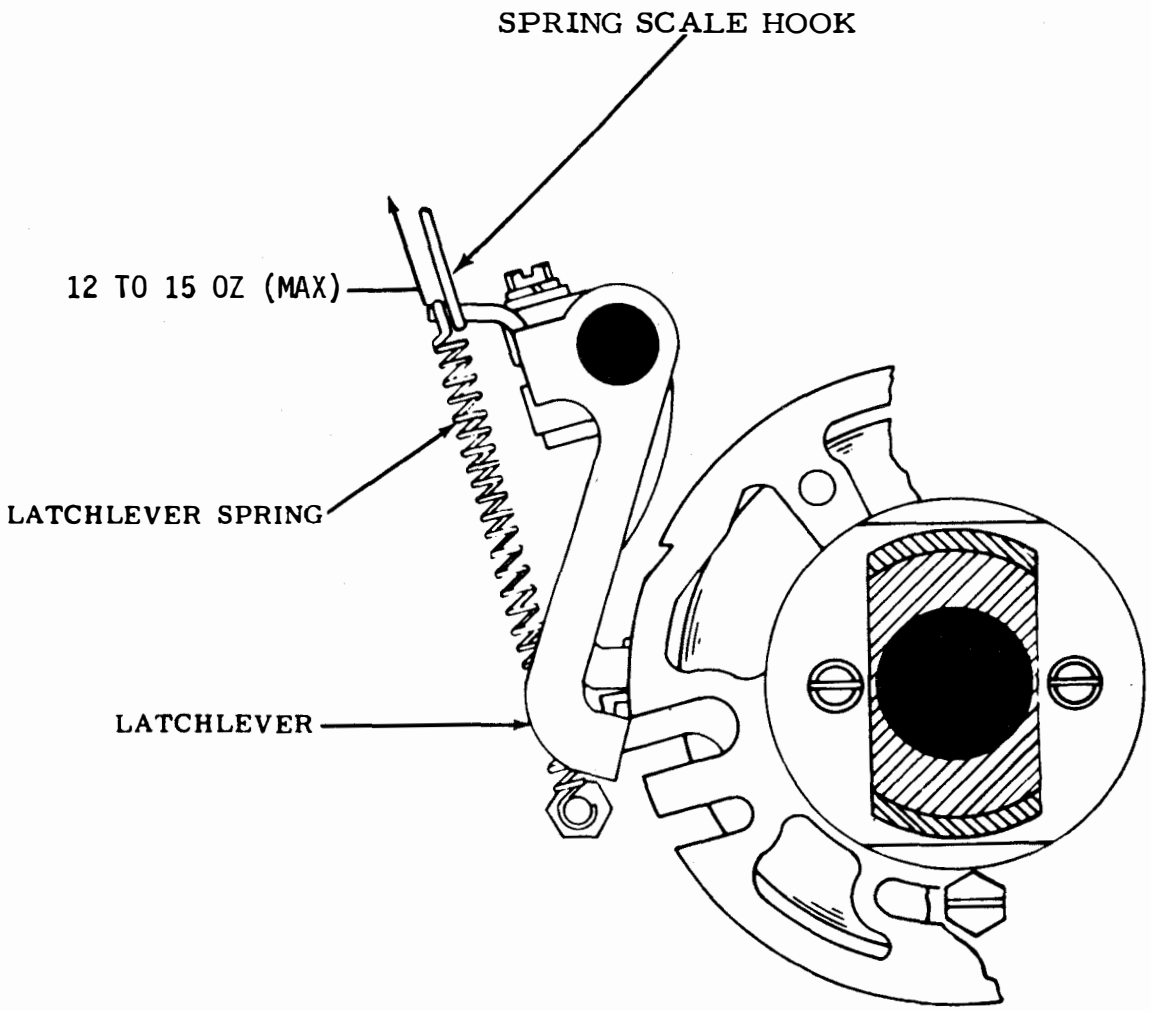


Figure 6-146. Function Clutch Latchlever Spring, Rear View

b. Punch Mechanism Adjustments. Perform the following punch mechanism adjustments.

NOTE

Before proceeding with the punch mechanism adjustments, check rocker bail cam follower roller adjustment and loosen punch slide downstop mounting nut and guide mounting stud.

(1) Toggle Bail Eccentric (Preliminary). Adjust as follows:

(a) Refer to Figure 6-147.

(b) Indent on high side of eccentric should be in its uppermost position.

(c) To adjust, loosen toggle eccentric shaft locknut friction tight and position eccentric. Tighten locknut.

(2) Toggle Operating Arm. Adjust as follows:

(a) Refer to Figure 6-148.

(b) Trip function clutch and rotate main shaft until upper rocker bail roller is on high part of its cam.

(c) Measure clearance between feed pawl stud and TP159926 gauge. There should be some to 0.009 inch maximum.

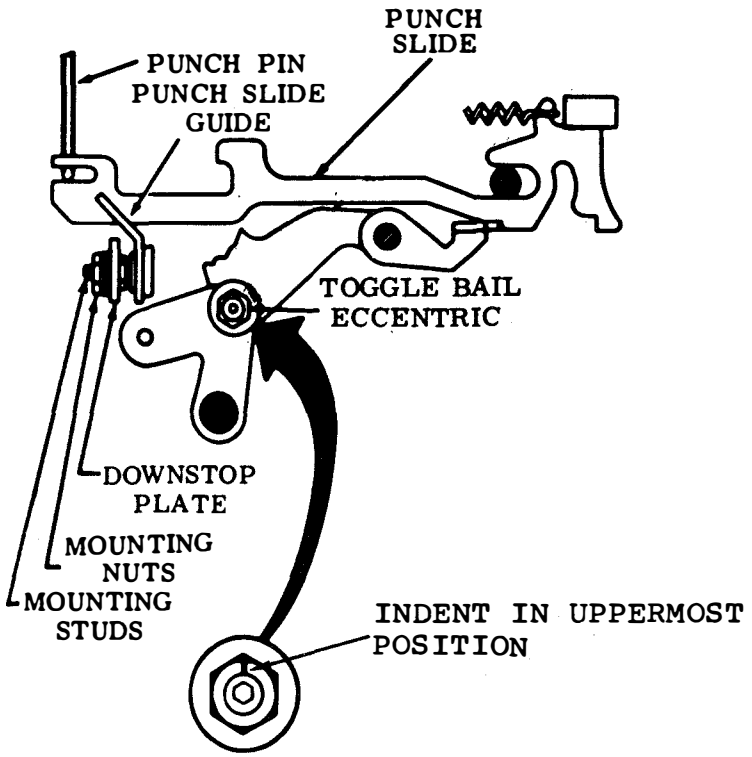


Figure 6-147. Toggle Bail Eccentric (Preliminary)

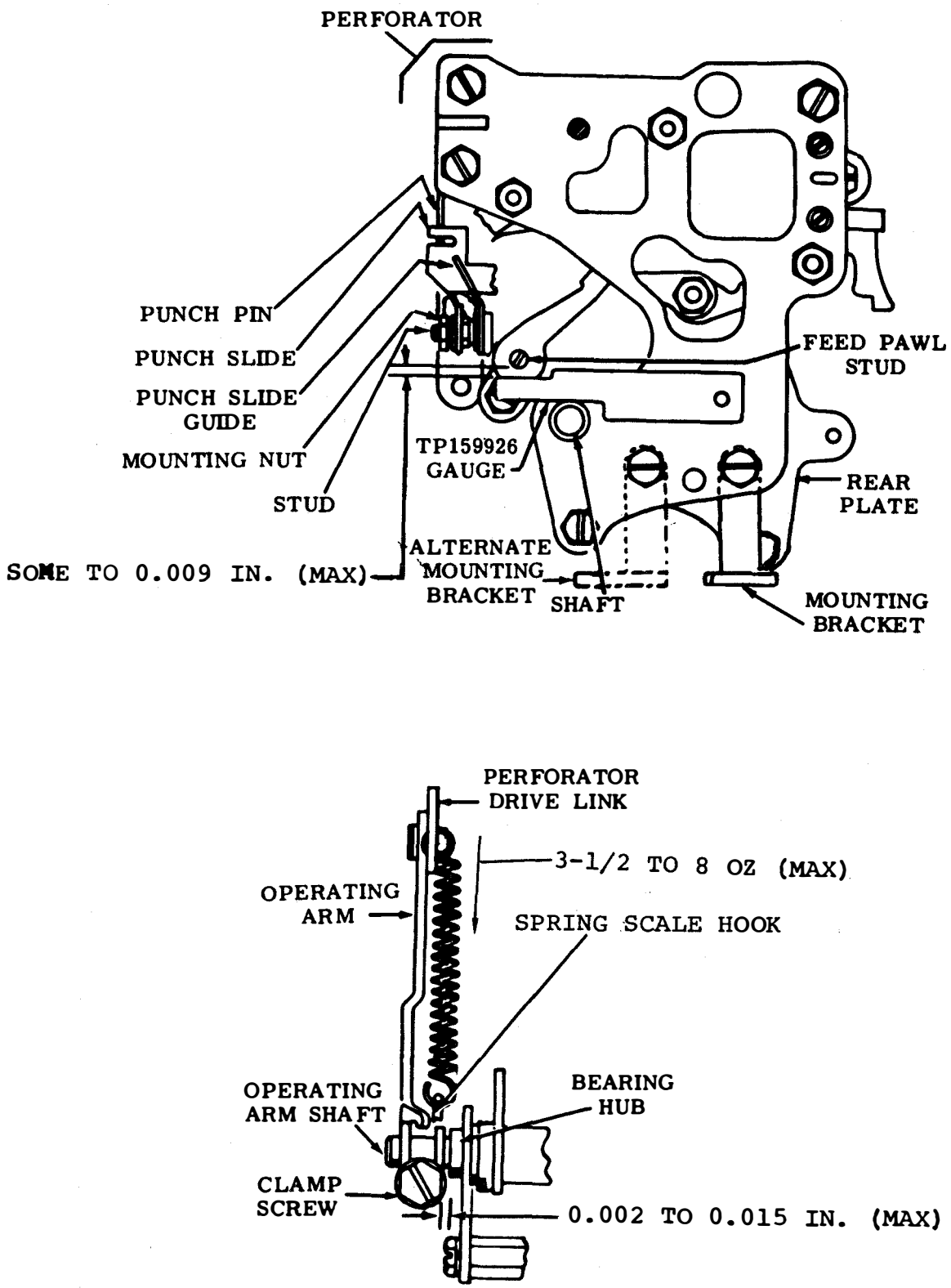


Figure 6-148. Toggle Operating Arm and Perforator Drive Link Spring

NOTE

After feed pawl adjustment has been made, if Punch Pin Penetration, paragraph 6-5e(2) or 6-5f(1), and Feed Pawl, paragraph 6-5b(6), requirements are met, this requirement should be considered fulfilled.

(d) Take up play in direction to make maximum clearance between arm and bearing hub. This should measure 0.002 to 0.015 inch maximum.

(e) To adjust, loosen lock screw friction tight and position toggle bail and operating arm to meet requirement. Tighten lock screw.

(3) Perforator Drive Link Spring. Adjust as follows:

(a) Refer to Figure 6-148.

(b) Attach spring scale hook to drive link spring and measure force required to pull spring to installed length. This should be 3-1/2 to 8 ounces maximum.

(c) If spring tension is incorrect, replace spring.

(4) Reset Bail Trip Lever. Adjust as follows:

(a) Refer to Figure 6-149.

(b) Manually select BLANK combination (-----) and rotate reset bail trip lever. Punch slide reset bail should trip before function clutch trips.

(c) Disengage and latch function and selector clutches, and take up play in parts in direction to make engagement the least.

(d) Punch slide reset bail should fully engage punch slide latching surface.

(e) To adjust, loosen extension lock screw friction tight and select LETTERS combination (12345). Position reset bail against punch slides and take up play between reset bail and trip lever in counterclockwise direction. Position trip lever by means of its pry point and tighten lock screw.

(f) Recheck step (b) and refine step (e), if necessary.

(5) Latchlever Clearance. Adjust as follows:

NOTE

On perforators not having a BLANK key, substitute use of the "T" key.

(a) Refer to Figure 6-150.

(b) Disengage and latch function clutch and select BLANK combination (-----).

(c) Measure clearance between punch slide having least clearance and its associated latchlever. This should be 0.008 to 0.020 inch maximum.

(d) To adjust, loosen locknut on reset bail eccentric shaft and position reset bail by rotating eccentric

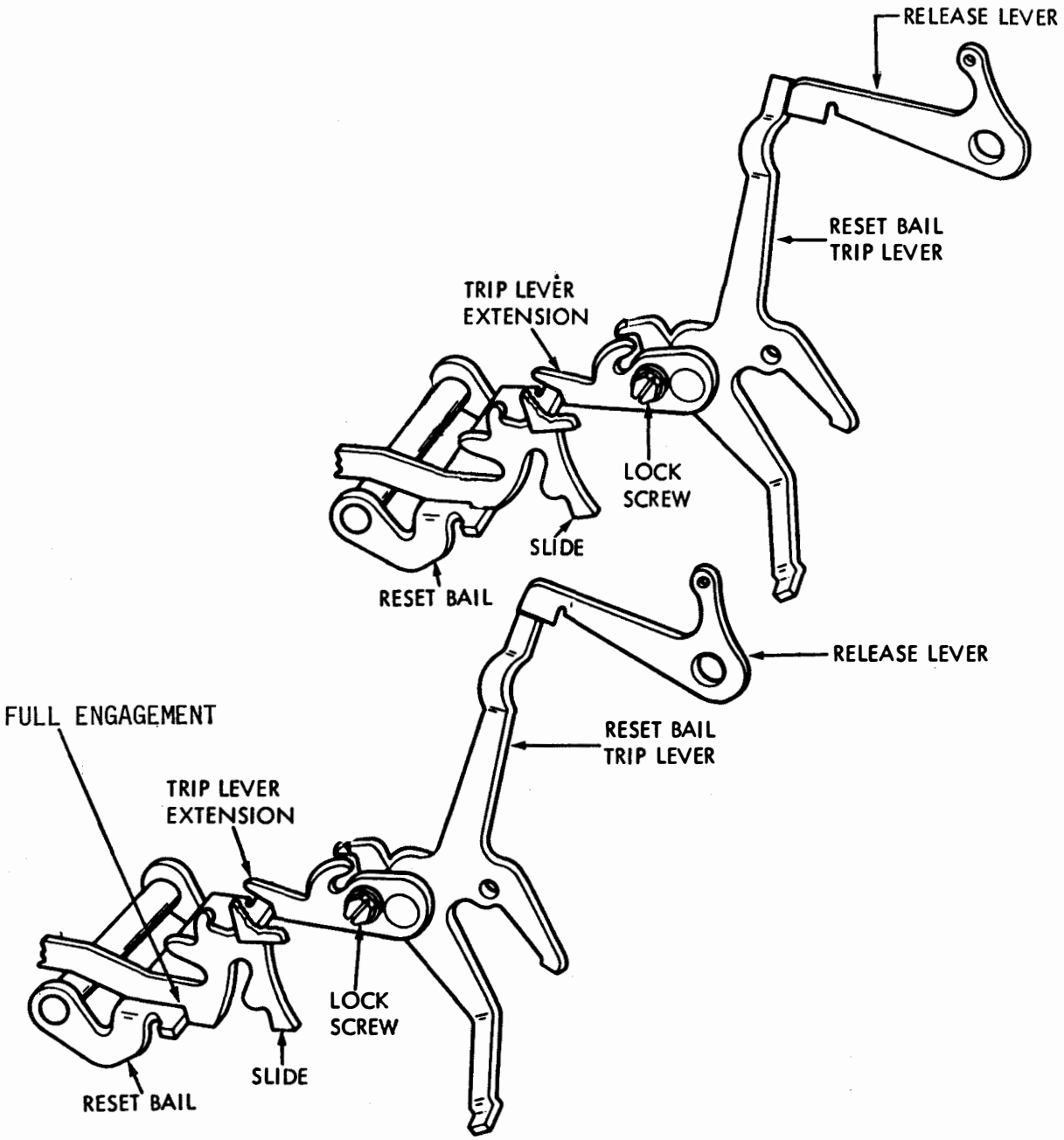


Figure 6-149. Reset Bail Trip Lever

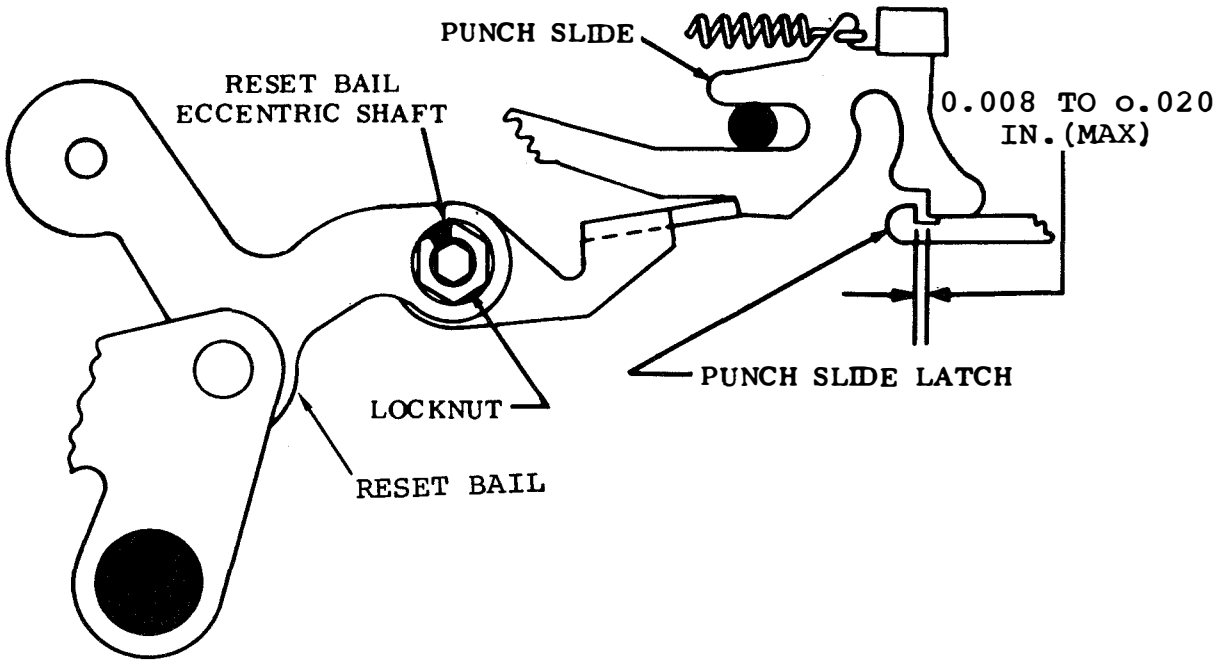


Figure 6-150. Latchlever Clearance

shaft to required clearance. Indent must be kept above horizontal line of the eccentric. Tighten locknut.

(6) Feed Pawl (Preliminary). Adjust as follows:

NOTE

This adjustment is related to Feed Hole Spacing, paragraphs 6-5e(4) and (5), and the two adjustments must be made at the same time.

(a) Refer to Figure 6-151.

(b) Disengage function clutch and detent roller in contact with ratchet wheel. High part of feed pawl eccentric to the right of its lock screw and indention in detent lever eccentric at right angle to lever.

(c) The feed pawl should engage first tooth below a horizontal centerline through the ratchet wheel with no perceptible clearance.

(d) To adjust, loosen locknut and rotate feed pawl eccentric. Tighten locknut.

(7) Tape Guide Spring (Tape Chute). Adjust as follows:

NOTE

In order to check this spring tension on units equipped with backspace mechanism, it is necessary to remove several parts. It should not be checked

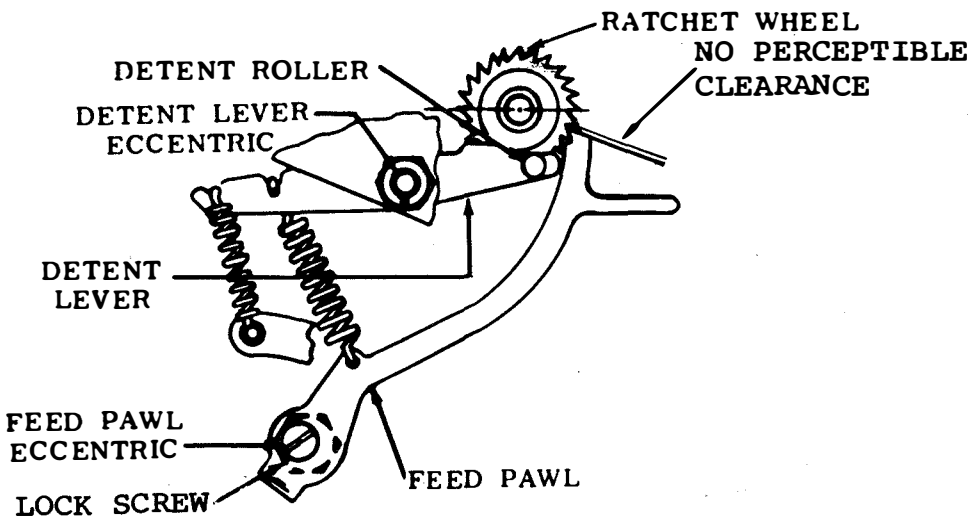


Figure 6-151. Feed Pawl (Preliminary)

unless there is reason to believe that requirements cannot be met.

(a) Refer to Figure 6-152.

(b) Disengage clutch and thread tape through punch assembly.

(c) Attach spring scale hook over spring and measure force required to just move spring away from tape. This should be 1-1/4 to 2-1/4 ounces maximum.

(d) To adjust, bend spring.

(8) Tape Guide Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-152.

(b) Attach a spring scale hook to tape guide assembly and measure force required to pull assembly away from block. This should require 16 ounces minimum.

(c) Tape guide assembly should be free to return to reset against the tape guide block after check.

(d) If requirement is not met, replace spring.

(e) If tape guide assembly is not free to return, reposition tape guide assembly mounting post.

(9) Tape Shoe Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-153.

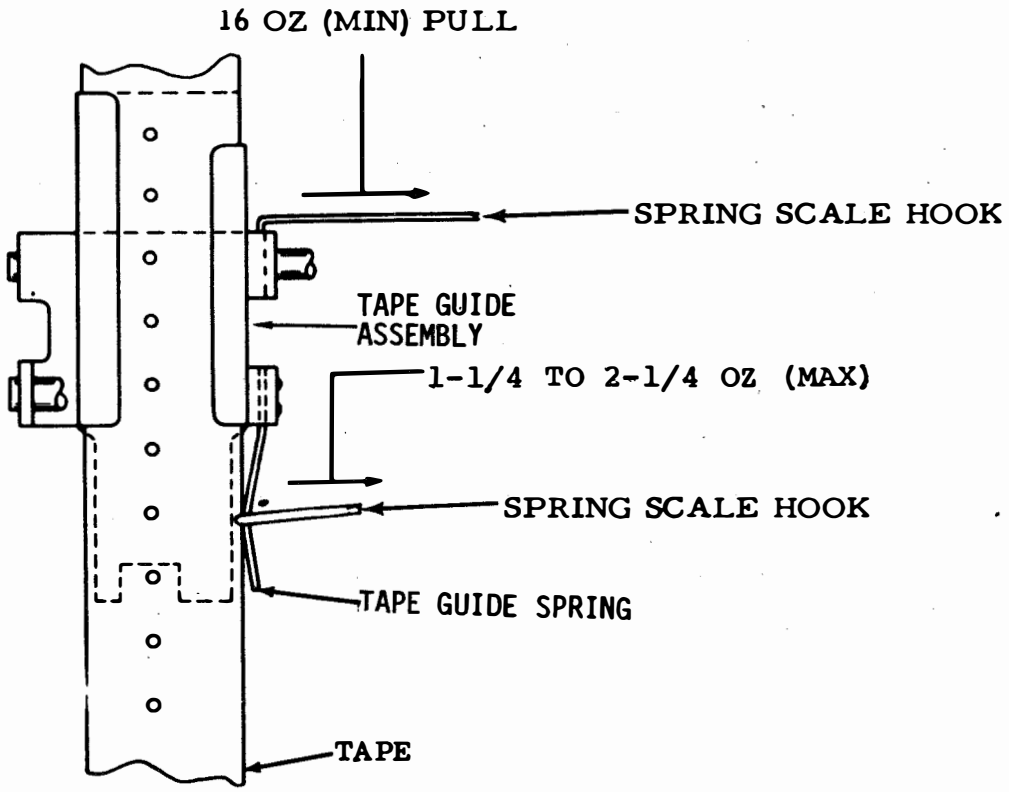


Figure 6-152. Tape Guide Spring (Tape Chute) and Tape Guide Assembly Spring

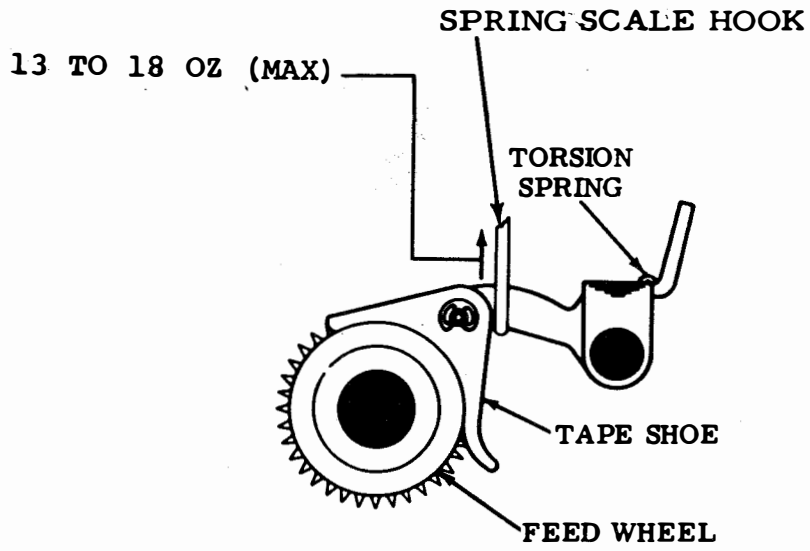


Figure 6-153. Tape Shoe Torsion Spring

(b) Attach spring scale hook over tape shoe and measure force required to move tape shoe from feed wheel.

(c) If requirement is not met, replace spring.

(10) Tape Guide. Adjust as follows:

(a) Refer to Figure 6-154.

(b) Rotate feed wheel until oil hole is upward. Center tape shoe and tape guide while holding guide downward.

(c) Clearance between adjusting plate and backstop post should be 0.002 to 0.008 inch maximum.

(d) To adjust, loosen clamp screw and position adjusting plate. Tighten screw.

(11) Tape Depressor Slide Spring. Adjust as follows:

(a) Refer to Figure 6-155.

(b) Put rocker bail in extreme left position.

(c) Apply spring scale pushrod to end of tape depressor slide and measure force required to start slide moving. This should be 1-1/2 to 2-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(12) Tape Guide Spring (On Units Not Equipped With Tape Guide Adjusting Plate.

(a) Refer to Figure 6-156.

(b) Attach spring scale hook to tape guide and measure force required to start tape guide bail moving upward. This should be 8 ounces minimum.

(c) If requirement is not met, replace spring.

(13) Tape Guide (On Units Not Equipped With Tape Guide Adjusting Plate). Adjust as follows:

(a) Refer to Figure 6-157.

(b) Clearance between tape guide and stripper platform should be 0.008 to 0.015 inch maximum.

(c) To adjust, loosen mounting screw friction tight and position tape guide, keeping guide against front plate of punch. Tighten screw.

(14) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-158.

(b) Disengage and latch function clutch and unhook detent spring from toggle bail.

(c) Attach spring scale hook over detent lever and measure force required to start detent lever moving. This should be 3 to 4-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

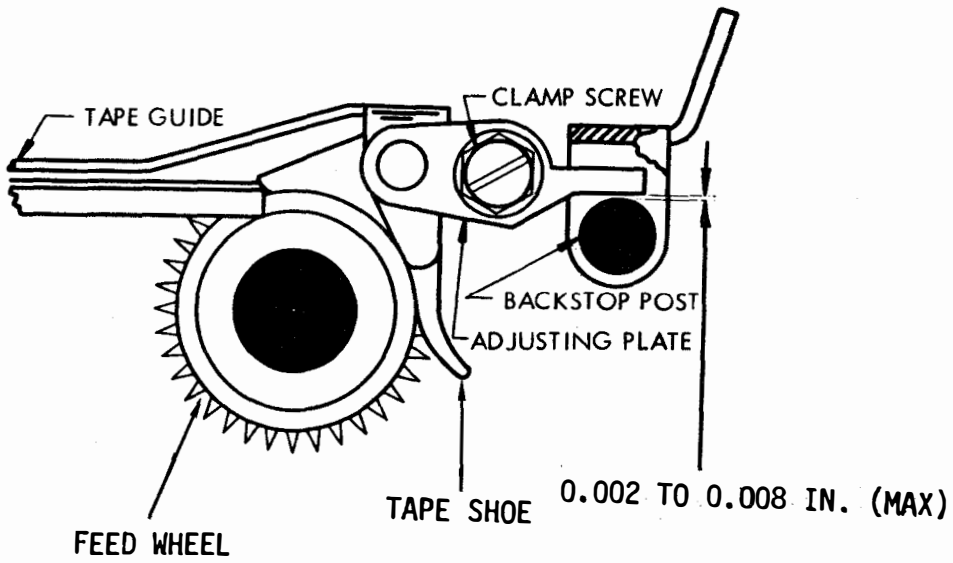


Figure 6-154. Tape Guide

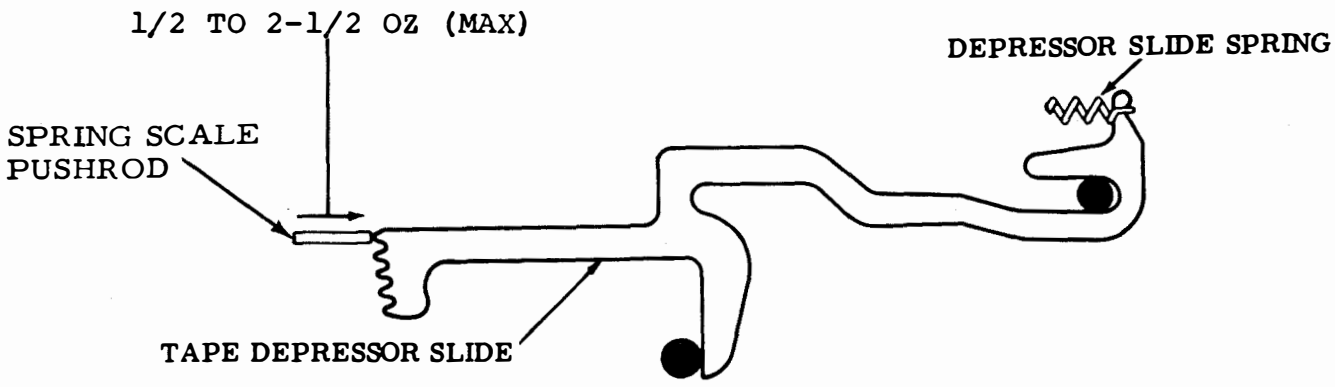


Figure 6-155. Tape Depressor Slide Spring

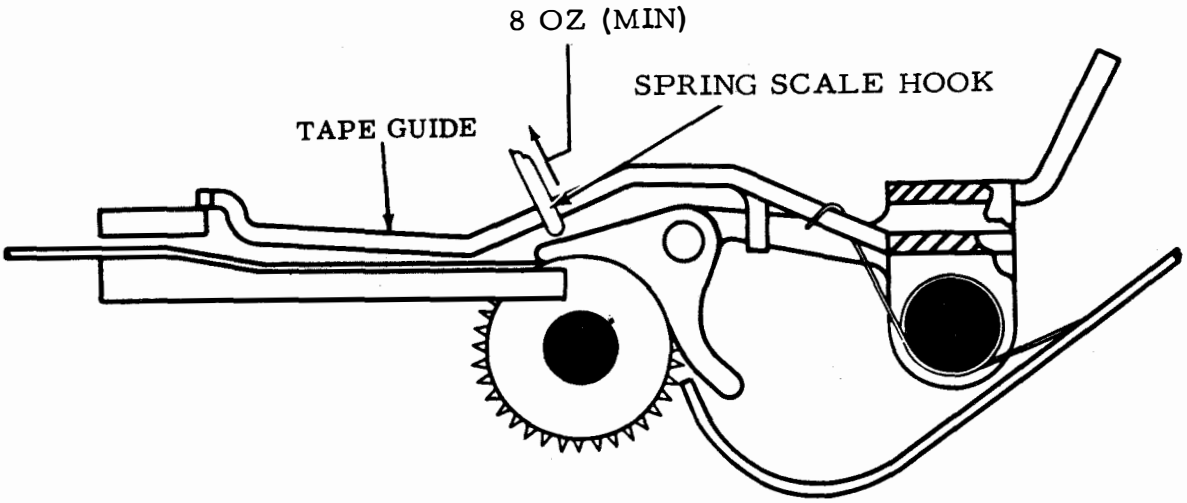


Figure 6-156. Tape Guide Spring (On Units Not Equipped with Tape Guide Adjusting Plate)

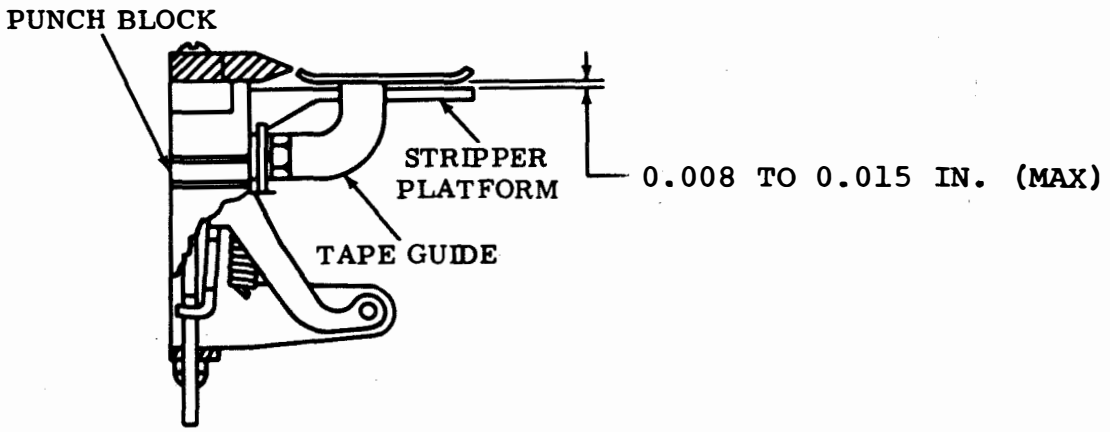


Figure 6-157. Tape Guide (On Units Not Equipped with Tape Guide Adjusting Plate)

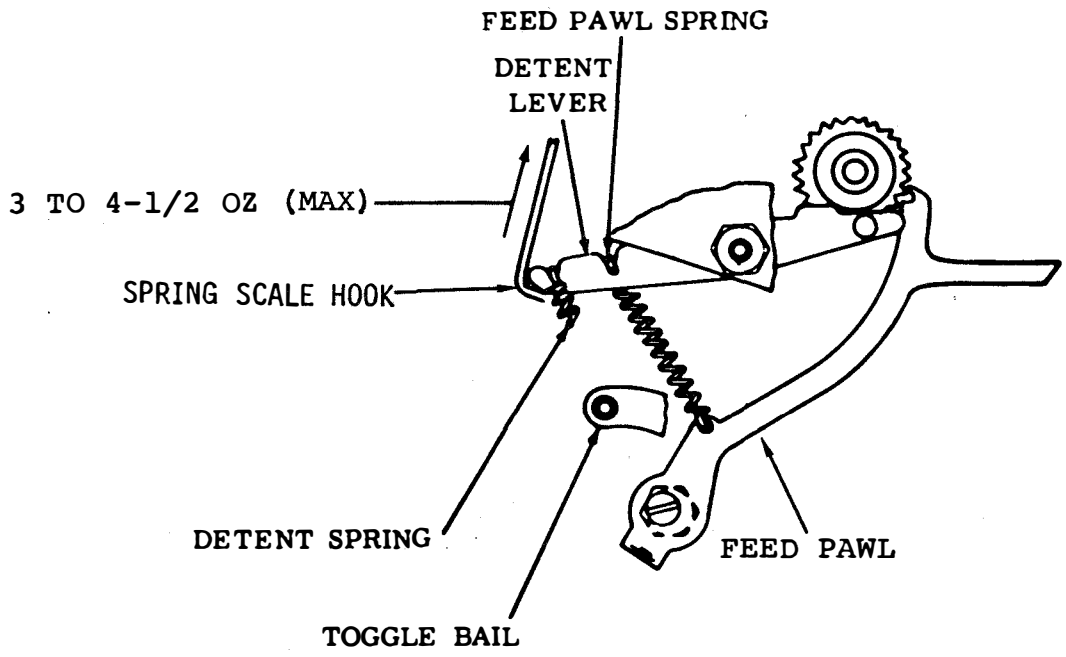


Figure 6-158. Feed Pawl Spring

(15) Detent Lever Spring. Adjust as follows:

(a) Refer to Figure 6-159.

(b) Disengage and latch function clutch and unhook feed pawl spring.

(c) Attach spring scale hook to detent lever and measure force required to start detent lever moving. This should be 7 to 10 ounces maximum.

(d) If requirement is not met, replace spring.

c. Punch Mechanism Adjustments (For Non-typing Perforator Only). Perform the following punch mechanism adjustments.

(1) Perforator Position (Preliminary). Adjust as follows:

NOTE

Mounting holes are oversized to facilitate use of perforator mechanism on the typing reperforator.

(a) Refer to Figure 6-160.

(b) Perforator mechanism mounting screw beneath punch block and mounting screw at lower edge of perforator mechanism backplate should be centrally located within their respective mounting holes.

(c) To adjust:

1. Loosen mounting bracket screw and two

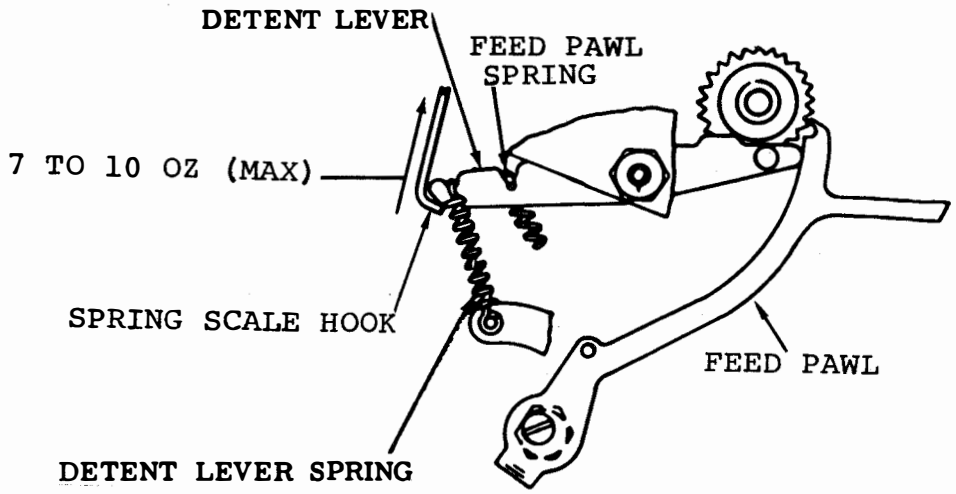


Figure 6-159. Detent Lever Spring

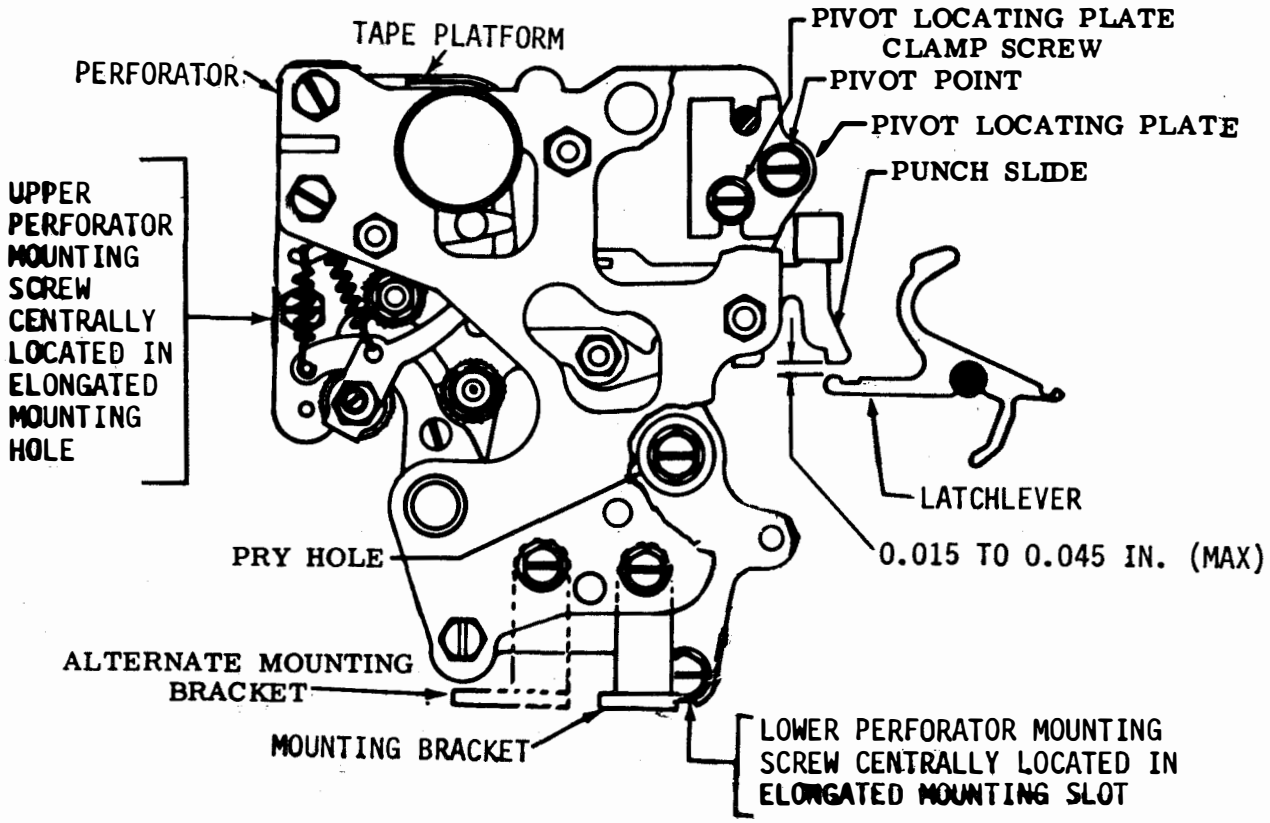


Figure 6-160. Perforator Position (Preliminary and Final) (Non-typing Perforator Only)

backplate mounting screws friction tight and remove the one mounting screw at lower edge of perforator mechanism backplate.

2. Position perforator mechanism so tapped hole of frame is located centrally within large body hole of punch mechanism backplate, as gauged by eye.

3. Tighten the two backplate mounting screws and recheck step (b).

4. Replace and tighten lower backplate screw and tighten bracket mounting screw.

(2) Perforator Position (Final). Adjust as follows:

(a) Refer to Figure 6-160.

(b) Select LETTERS combination (12345) and trip function clutch.

(c) Measure clearance between closest latchlever and its associated punch slide. This should be 0.015 to 0.045 inch maximum.

(d) To adjust:

1. Loosen rear frame mounting and front mounting bracket screws friction tight (and pivot locating plate clamp screw if typing unit is used on punch).

2. Place tip of screwdriver between hex-head screw and its clearance hole rim and pry up or down.

3. Tighten screws. (If typing unit is being used, tighten pivot locating plate clamp screw only, as next adjustment will be to obtain clearance between type wheel and punch.)

d. Punch Mechanism Adjustments (For Typing Perforator Only). Perform the following punch mechanism adjustments.

(1) Perforator Position (Spring Retracted Punch Unit). Adjust as follows:

(a) Refer to Figure 6-161.

(b) Place unit in STOP position and type wheel in LETTERS field.

(c) Measure clearance between letter "Z" on type wheel and top of stripper platform. This should be 0.090 to 0.110 inch maximum.

(d) To adjust:

1. Loosen the two perforator mounting screws, adjusting clamp pivot screw, and anchor bracket screw.

2. Remove ribbon from carrier and position perforator to obtain clearance. Tighten screw.

(e) Check Reset Bail Trip Lever, paragraph 6-5b(4), for some clearance and adjust, if necessary.

(2) Perforator Position (Power Retracted Punch Unit). Adjust as follows:

(a) Refer to Figure 6-161.

(b) Place unit in STOP position and type wheel in FIGURES field.

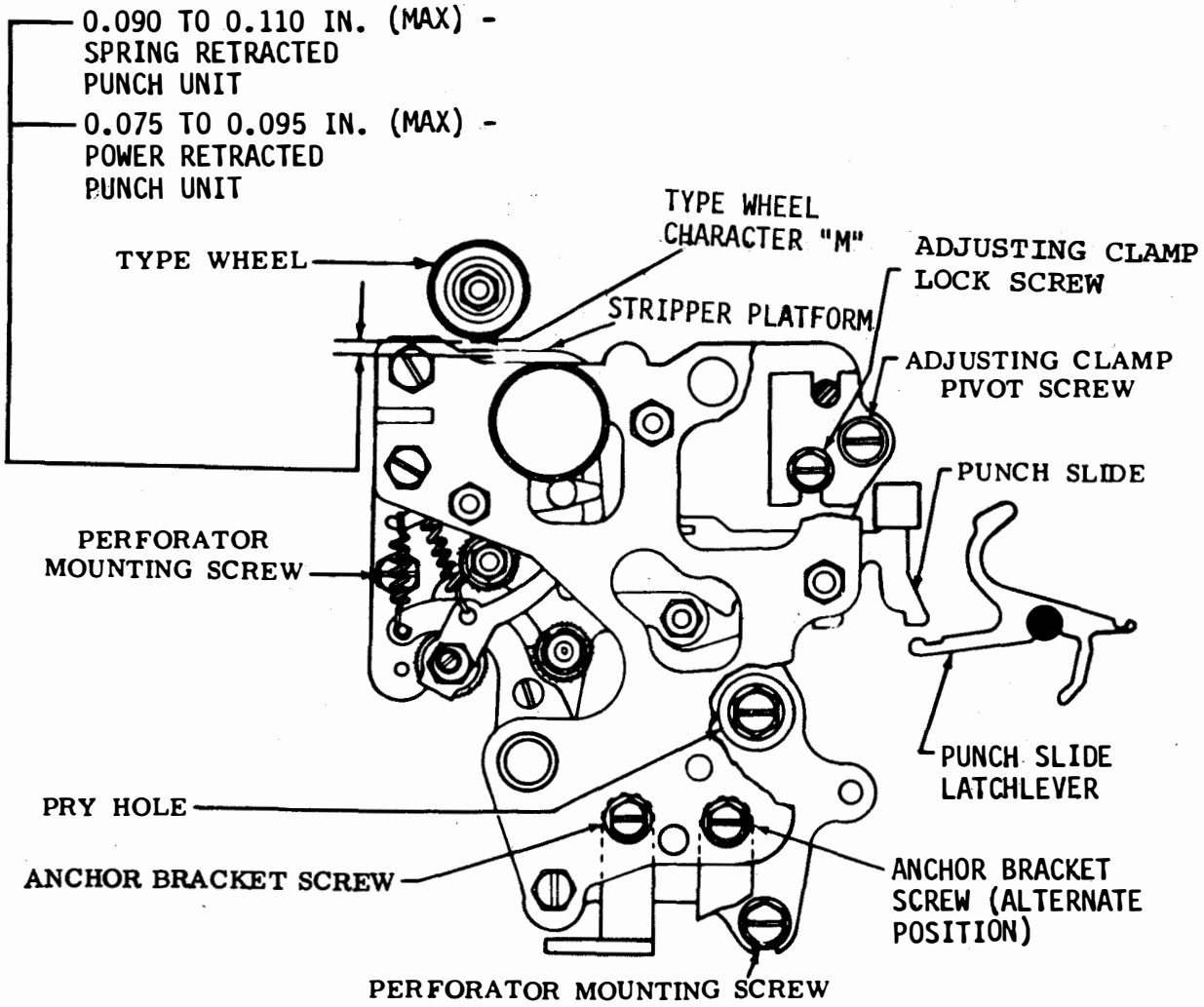


Figure 6-161. Perforator Position (Spring Retracted and Power Retracted Punch Unit) (Typing Perforator Only)

(c) Measure clearance between Figure "5" on type wheel and top of stripper platform. This should be 0.075 to 0.095 inch maximum.

(d) To adjust:

1. Loosen the two perforator mounting screws, adjusting clamp pivot screw, and anchor bracket screw.

2. Remove ribbon from carrier and position perforator to obtain clearance. Tighten screws.

(e) Check Reset Bail Trip Lever, paragraph 6-5b(4), for some clearance and adjust, if necessary.

e. Punch Mechanism Adjustments (For Chadless Tape Mechanism). Perform the following punch mechanism adjustments.

(1) Punch Slide Downstop Position. Adjust as follows:

(a) Refer to Figure 6-162.

(b) Disengage function clutch and up and down play at left end of punch slides taken up towards top.

(c) Measure clearance between front and rear punch slides and their downstop plate. This should be some to 0.008 inch maximum. All other punches should have some clearance.

NOTE

To check for clearance, place unit in STOP position, trip function trip mechanism and latches. The punch slides will move freely to their operated position.

(d) To adjust:

1. Remove punch slide guide and loosen downstop plate mounting studs.

2. Position downstop plate and tighten studs.

3. Replace guide so punch slides align with punch pins, as gauged by eye.

(2) Punch Pin Penetration. Adjust as follows:

(a) Refer to Figure 6-163.

(b) Manually select LETTERS combination (12345), engage clutch and rotate until punch pins have traveled maximum distance into die plate.

(c) Measure clearance (at left edge of punch pins where clearance is least) between lower edge of punch retractor bail and upper side of guideplate. This should be 0.060 to 0.075 inch maximum.

(d) Code punches should punch a full lid with a minimum amount of tear.

(e) To adjust, loosen toggle bail eccentric shaft locknut and rotate shaft keeping indentation in shaft to the left of a vertical centerline through shaft. Tighten locknut.

(3) Punch Slide Guide Position. Adjust as follows:

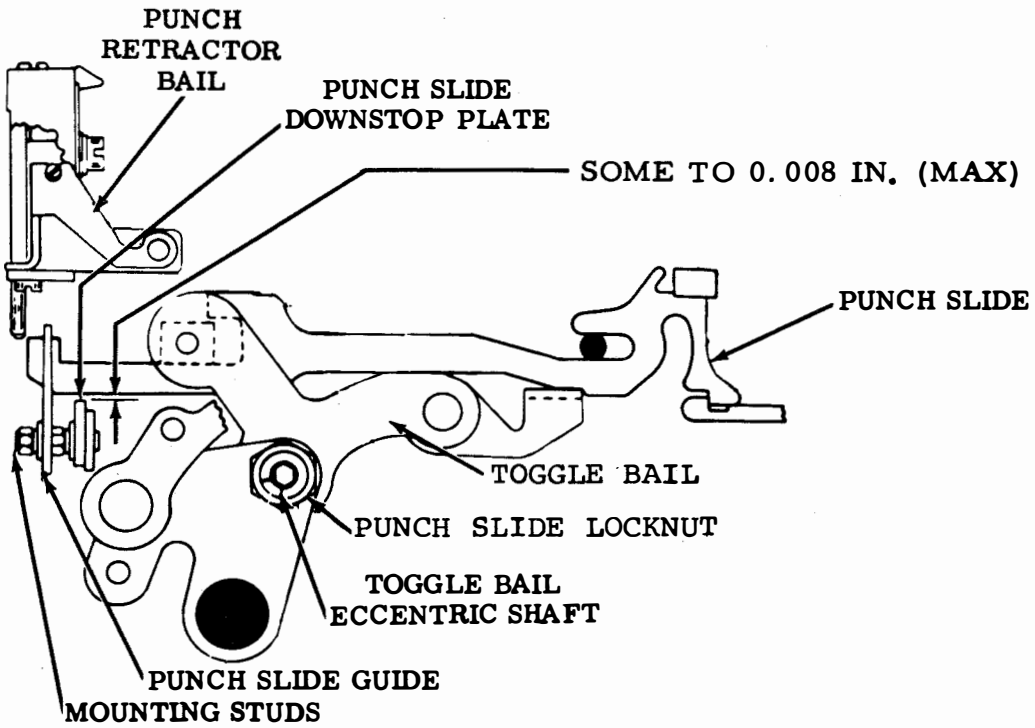


Figure 6-162. Punch Slide Downstop Position (Chadless Tape Mechanism)

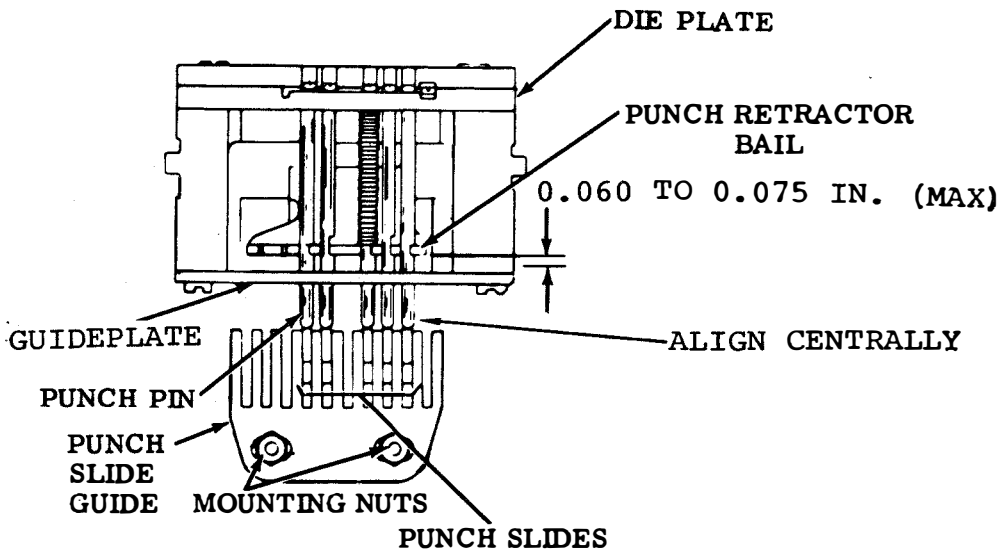


Figure 6-163. Punch Pin Penetration and Punch Slide Guide Position (Chadless Tape Mechanism)

(a) Refer to Figure 6-163.

(b) Manually select LETTERS combination (12345) and engage clutch and rotate until punch slides just touch punch pins.

(c) Punch slides should align centrally with their respective punch pins, as gauged by eye.

(d) To adjust, loosen punch slide guide mounting nut and position guide. Tighten nut.

(4) Feed Hole Spacing (Preliminary). Adjust as follows:

(a) Refer to Figure 6-164.

(b) Indent on die wheel eccentric stud should be pointing downward.

(c) To adjust, loosen locknut and position die wheel eccentric stud. Tighten locknut.

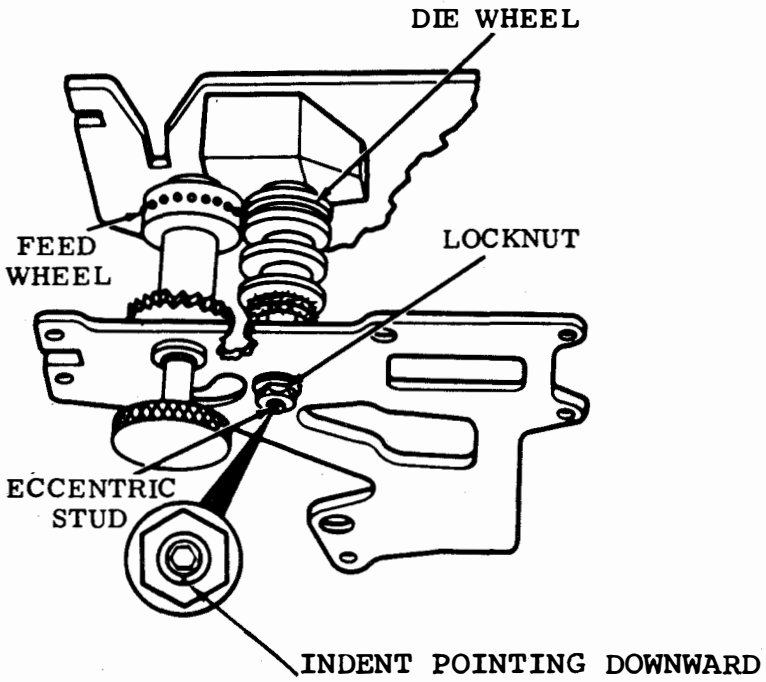
(5) Feed Hole Spacing (Final). Adjust as follows:

NOTE

Before proceeding with the following adjustments, check both tape guide spring tensions.

(a) Refer to Figure 6-164.

(b) With tape shoe blocked away from feed wheel, feed pawl and detent



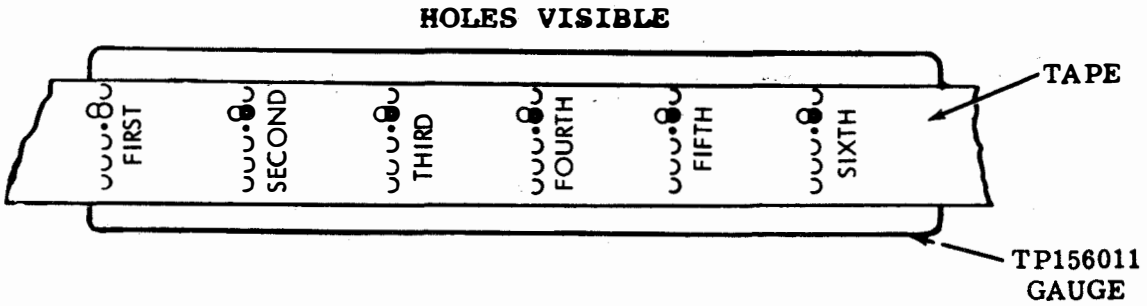


Figure 6-164. Feed Holes Spacing (Preliminary and Final) (Chadless Tape Mechanism)

disengaged, and tape removed from punch mechanism, feed wheel should rotate freely.

(c) Check by revolving feed wheel through three or four rotations.

NOTE

First through fifth holes in gauge are same size as code holes in tape (0.072 inch diameter). Sixth hole in gauge is larger (0.086 inch). This arrangement allows ±0.007 inch variation in 5 inches.

(d) Perforate six series of 9 BLANK combinations followed by 1 LETTERS combination. Open chads so code holes are visible. Place tape over smooth side of tape gauge, TP156011, so circular portion of first number two code hole in tape is concentric with first (0.072 inch) hole of tape gauge. The next four 0.072 inch holes in tape gauge will be visible through the number two code holes tape and circular portion of last (sixth) number two code hole in tape is entirely within the 0.086 inch diameter hole of tape gauge.

CAUTION

With tape removed from punch mechanism, be sure die wheel does not bind.

(e) To adjust:

1. Remove tape from punch mechanism and loosen die wheel eccentric stud locknut. Position die wheel so it just binds on feed wheel then back off eccentric so die wheel is just free. Check freeness through three or four rotations keeping eccentric stud indent below horizontal centerline of stud.

2. With tape shoe held away from feed wheel, feed pawl and detent disengaged, feed wheel should rotate freely.

3. Failure to meet these requirements indicates die wheel eccentric has been overadjusted. To correct refine adjustments.

(6) Detent Lever. Adjust as follows:

(a) Refer to Figure 6-165.

(b) Using the TP156011 tape gauge, check perforations on a piece of tape containing nine feed holes followed by a LETTERS combination.

(c) The lateral centerline through the code holes in the tape should coincide with a lateral centerline through the holes in the gauge.

(d) To adjust:

1. Rotate the detent eccentric clockwise to move feed holes toward the hinged edge of the code holes.

2. Rotate counterclockwise to move the feed holes toward the trailing edge of the code holes.

3. Tighten the eccentric locknut and refine the Feed Pawl adjustment, paragraph 6-5b(6).

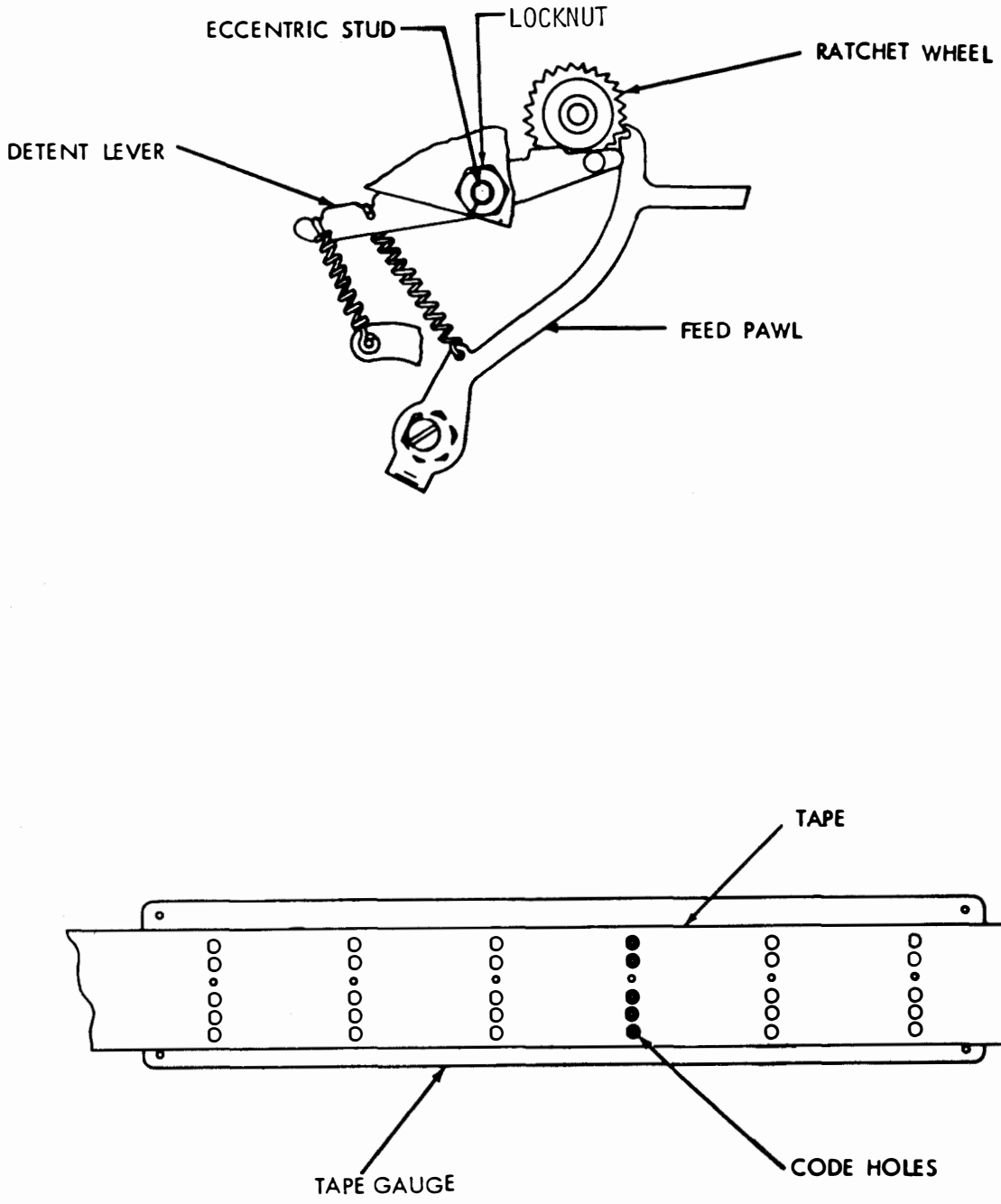


Figure 6-165. Detent Lever (Chadless Tape Mechanism)

(7) Feed Hole Lateral Alignment. Adjust as follows:

(a) Refer to Figure 6-166.

(b) With reperforator operating under power, obtain a tape with nine BLANK code combinations followed by a LETTER combination.

(c) Open chads so code holes are visible and place tape over TP156011 tape gauge with LETTERS combination feed holes engaging feed pins. Large holes in gauge are same diameter as circular portion of code holes in tape. Small holes in gauge serve as guide for gauging.

(d) Circular portion of code holes in tape should be concentric with holes in tape gauge.

(e) To adjust:

1. Loosen adjusting screw locknut and position adjusting screw.

2. To move holes of gauge away from reference edge of tape, move feed wheel towards front plate of punch mechanism by rotating adjusting screw counterclockwise.

3. To move holes of gauge towards reference edge of tape, move feed wheel towards backplate of punch mechanism by rotating adjusting screw clockwise.

4. Tighten locknut.

5. Refine Detent Lever adjustments, paragraph 6-5e(6), to align lateral centerlines of code holes and feed holes, if required.

(8) Punch Slide Spring. Adjust as follows:

(a) Refer to Figure 6-167.

(b) Set up LETTERS combination (12345), trip function clutch, and punch slides in selected position under punch pins.

(c) Apply spring scale pushrod to punch slide and measure the force required to start each slide moving. This should be 2-1/4 to 3-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(9) Retractor Bail Springs (Compression Springs Only and Combined Compression and Tension Springs). Adjust as follows:

(a) Refer to Figure 6-168.

(b) Disengage function clutch.

(c) Attach spring scale hook over punch pins and measure force required to lift retractor bail away from lower guide of punch block.

(d) For compression springs only, unhook tension spring. Force required should be 15 to 32 ounces maximum.

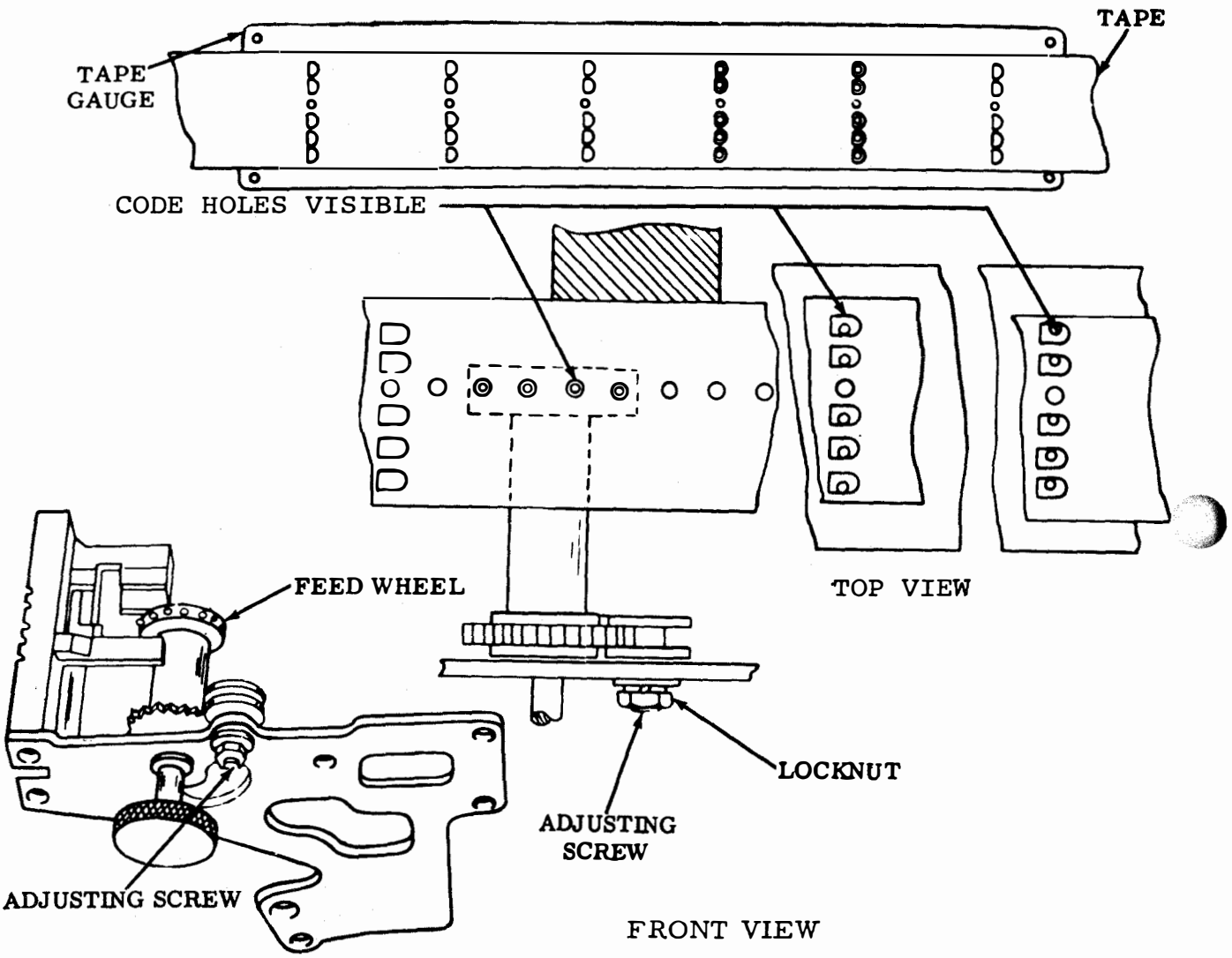


Figure 6-166. Feed Hole Lateral Alignment (Chadless Tape Mechanism)

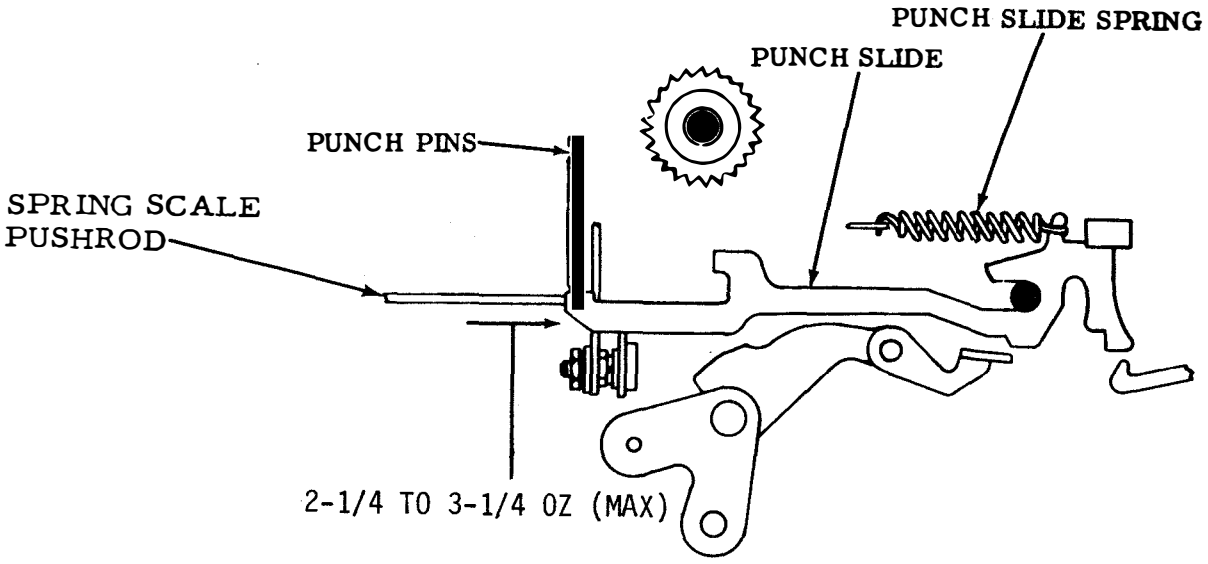


Figure 6-167. Punch Slide Spring (Chadless Tape Mechanism)

NOTE

To facilitate rehooking tension springs, place punch pins in uppermost position.

(e) For combined compression and tension spring, leave tension spring hooked. Force required should be 4 to 5 pounds maximum.

(f) If either requirement is not met, replace faulty spring.

(10) Tape Guide Spring (Punch Block). Adjust as follows:

(a) Refer to Figure 6-169.

(b) With tape removed from punch block, tape guide spring should rest against the clearance slot in block in a symmetrical manner.

(c) With tape remaining in punch block and perforator operating under power, the spring should not distort the edge of tape.

(d) To adjust, loosen mounting screw, bend the spring and position it. Tighten screw.

f. Punch Mechanism Adjustment (Fully Perforated Tape). Perform the following punch mechanism adjustments.

(1) Punch Pin Penetration. Adjust as follows:

(a) Refer to Figure 6-170.

(b) With the LETTERS combination (12345) selected and function clutch

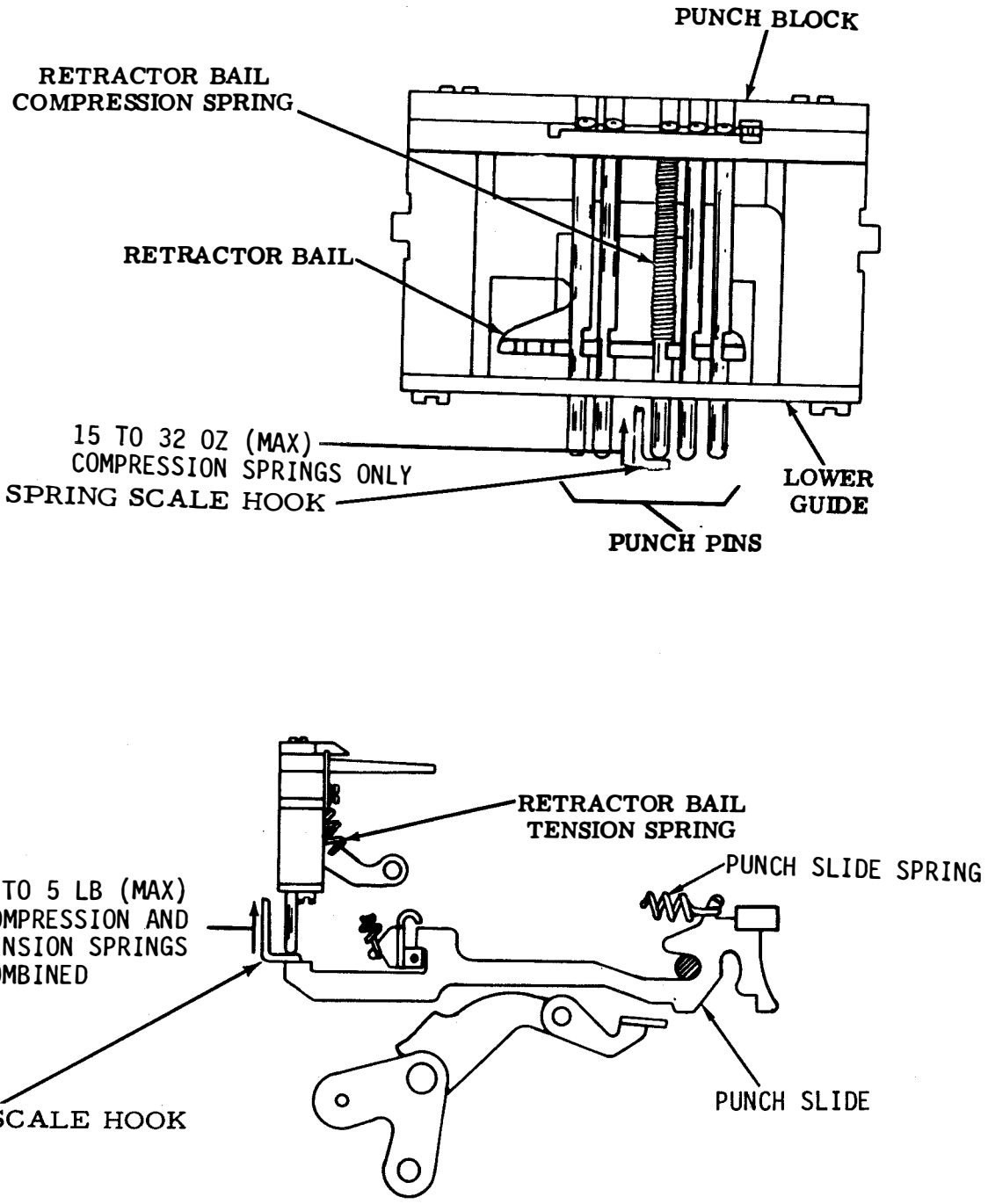
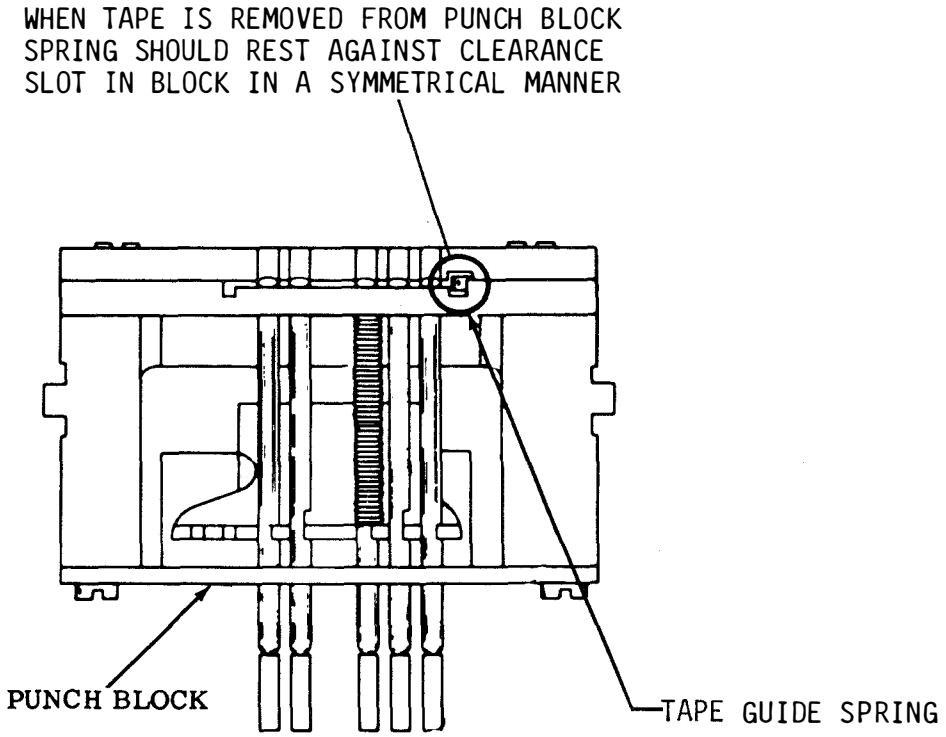
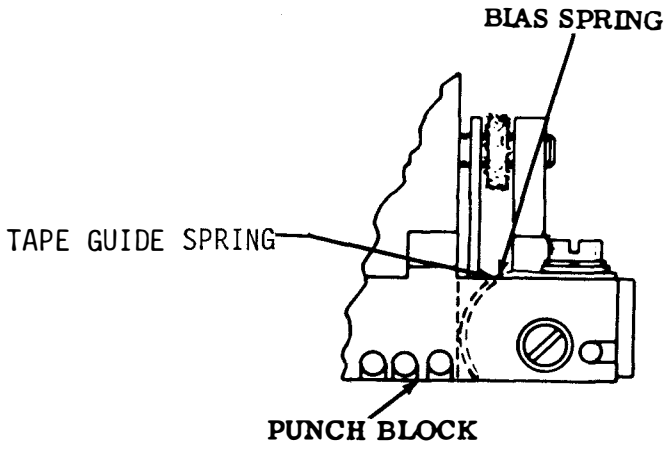


Figure 6-168. Retractor Bail Springs (Chadless Tape Mechanism)



LEFT SIDE VIEW



TOP VIEW

Figure 6-169. Tape Guide Spring (Chadless Tape Mechanism)

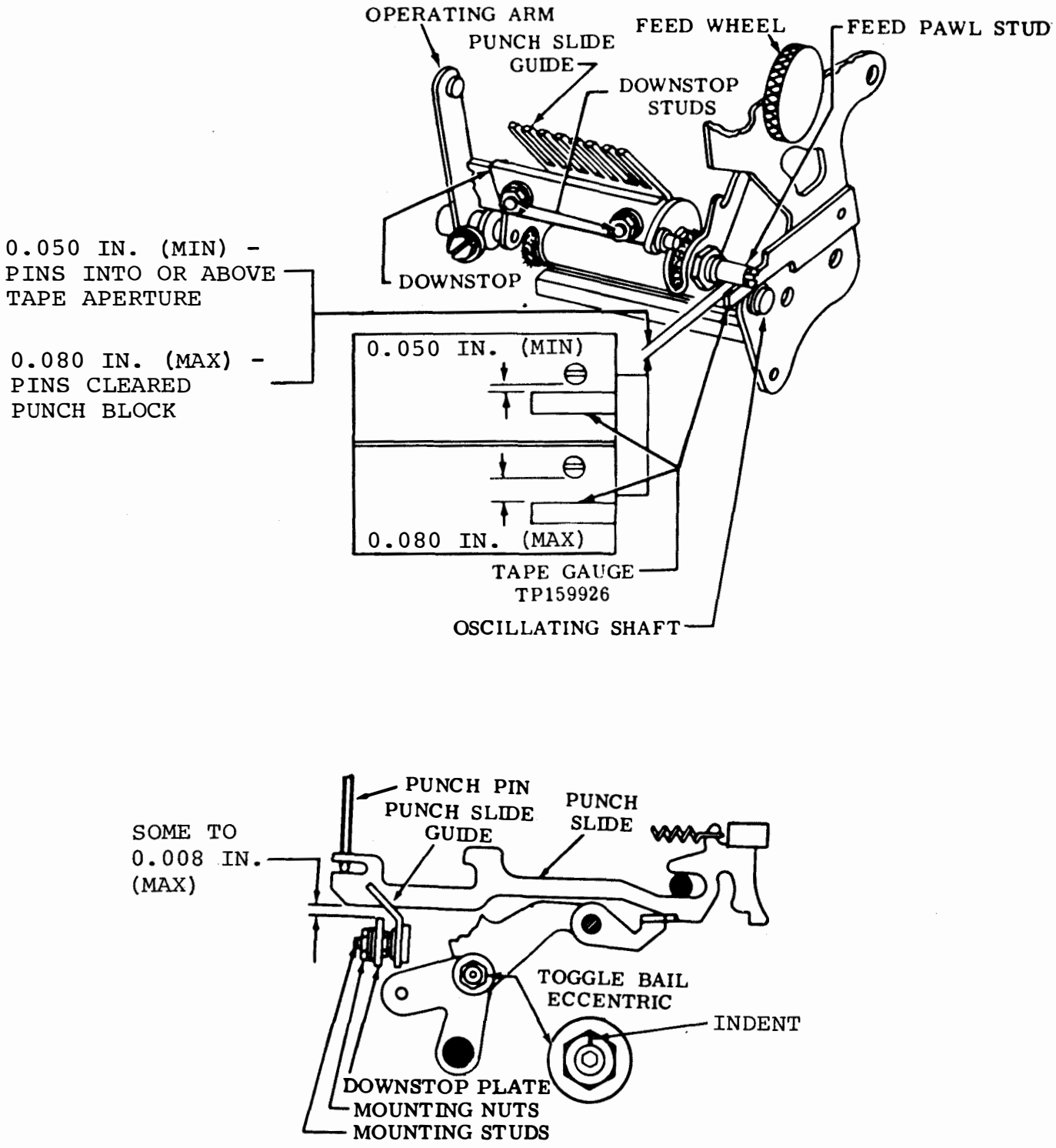


Figure 6-170. Punch Pin Penetration, Punch Slide Guide, and Punch Slide Downstop Position (Fully Perforated Tape Mechanism)

engaged, rotate main shaft until all punch pins are into or above the tape aperture in the punch block.

(c) With gauge TP159926 in position on top of oscillating shaft, measure clearance between feed pawl stud and the gauge. This should be 0.050 inch minimum.

(d) With LETTERS combination (12345) selected, and function clutch engaged, rotate main shaft until all punch pins have cleared the punch block.

(e) With gauge TP159926 in position on top of oscillating shaft, measure clearance between feed pawl stud and the gauge. This should be 0.080 inch maximum.

(f) To adjust, refine the Toggle Bail Eccentric adjustment, paragraph 6-5b(1), keeping the indent to the right of a vertical centerline through the shaft.

(2) Punch Slide Guide. Adjust as follows:

(a) Refer to Figure 6-170.

(b) Punch slides should align with their corresponding punch pins and be free of binds, after tightening the guide mounting studs.

(c) Each punch slide should return freely after being pushed in not more than 1/16 inch.

(d) To adjust, loosen mounting studs friction tight and position guide. Tighten studs.

(3) Punch Slide Downstop Position. Adjust as follows:

(a) Refer to Figure 6-170.

(b) Disengage and latch function clutch, and take up play toward the top.

(c) Check clearance between both the front and rear punch slides and the downstop plate. There should be some to 0.008 inch maximum. All other punch slides should have some clearance.

NOTE

To check the other punch slides for some clearance, place unit in STOP position and trip function mechanism and latches. The punch slides should move fully to their operated position.

(d) To adjust:

1. Put unit in STOP position.

2. Loosen two downstop plate mounting locknuts and locate downstop plate to meet requirement. Tighten locknuts.

(4) Punch Slide Spring. Adjust as follows:

(a) Refer to Figure 6-171.

(b) Set up LETTERS combination (12345) and punch slides in selected position.

(c) Apply spring scale pushrod to punch slide and measure force required to start each slide moving. This should be 2-1/4 to 3-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(5) Tape Guide Spring (Punch Block). Adjust as follows:

(a) Refer to Figure 6-172.

(b) With tape removed from punch block, bias spring should rest against clearance slot in block in a symmetrical manner.

(c) With tape in punch block and reperforator operating under power, spring should not distort edge of tape.

(d) To adjust, bend spring and position with mounting screws loosened. Tighten screws.

g. Punch Mechanism Adjustment (Fully Perforated Tape with Indentations of Feed Wheel Fully Punched Out). Perform the following punch mechanism adjustments.

(1) Feed Hole Spacing. Adjust as follows:

NOTE

Before proceeding with the following adjustment, check both tape guide spring tensions.

(a) Refer to Figure 6-173.

(b) With a piece of tape perforated with six series of nine BLANK code combinations followed by a LETTERS combination placed over the smooth side of the TP156011 tape gauge so that the circular portion of the first number 2 code hole in the tape is concentric with first hole of tape gauge, the next four holes in tape gauge should be visible through the number 2 code holes in tape and circular portion of last (sixth) number 2 code hole in tape shall be entirely within 0.086 inch diameter hole of tape gauge.

(c) With tape shoe held away from feed wheel, feed pawl and detent disengaged and tape removed, feed wheel should rotate freely.

(d) To adjust:

1. Remove tape from punch mechanism.

2. Loosen eccentric locknut and rotate die wheel eccentric shaft until it binds against the feed wheel.

3. Back off eccentric until die wheel is just free keeping indent of eccentric below horizontal centerline of stud.

4. Tighten locknut.

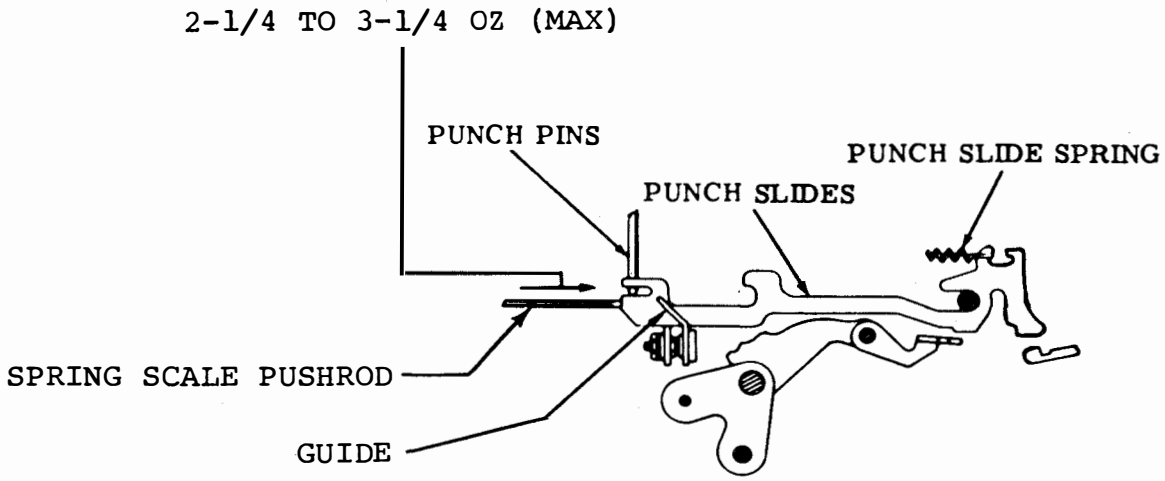


Figure 6-171. Punch Slide Spring (Fully Perforated Tape Mechanism)

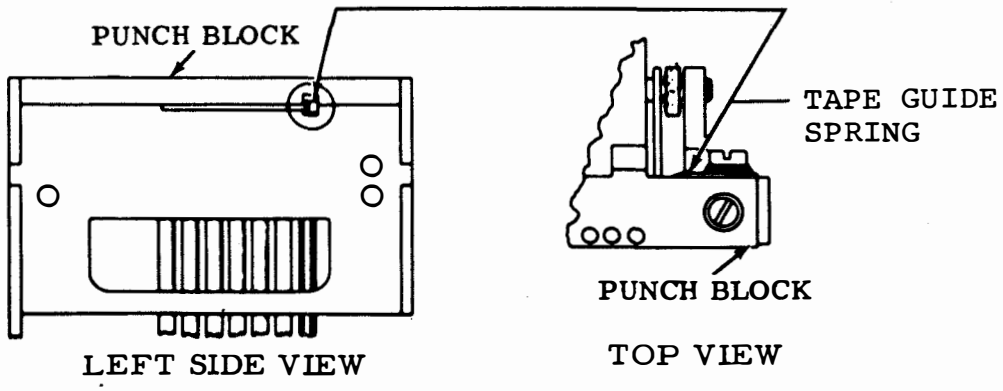
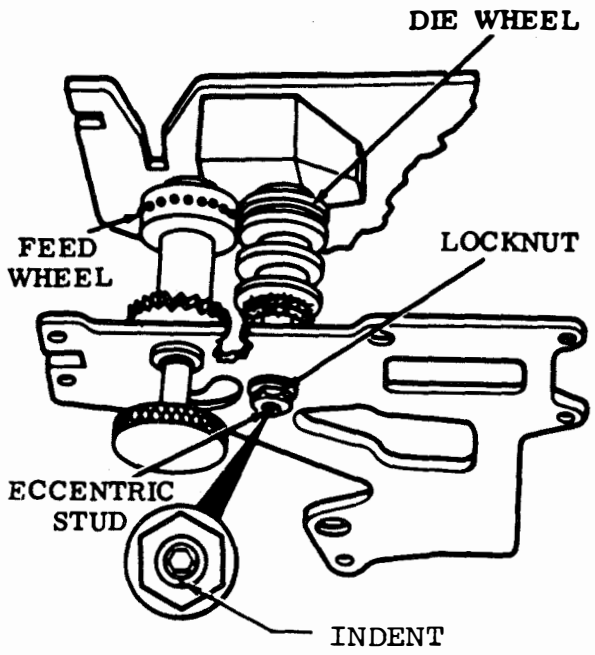


Figure 6-172. Tape Guide Spring (Punch Block) (Fully Perforated Tape Mechanism)



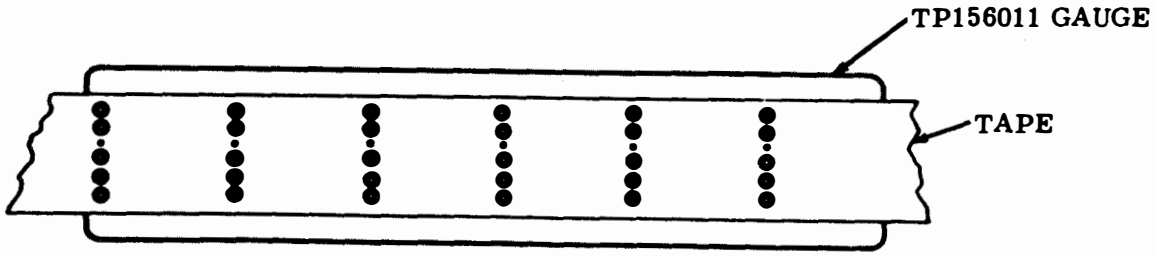


Figure 6-173. Feed Hole Spacing (Fully Perforated Tape With Indentations of Feed Wheel Fully Punched Out)

(e) Refine adjustment, if necessary, by moving die wheel toward feed wheel to decrease character spacing and away from feed wheel to increase character spacing.

(2) Feed Wheel Indentation Alignment. Adjust as follows:

(a) Refer to Figure 6-174.

(b) When a piece of tape is perforated with a series of BLANK code combinations, indentations of feed wheel shall be fully punched out.

(c) To adjust:

1. Right or left, rotate detent lever eccentric stud clockwise to move feed perforation toward leading edge of code holes and counterclockwise to move feed wheel perforations toward trailing edge of code holes. Refine feed pawl adjustment.

2. Front to rear, loosen locknut on adjusting screw and turn screw clockwise to move tape toward reference edge (rear), and counterclockwise to move tape away from reference edge (front). Tighten locknut.

h. Punch Mechanism Adjustment (Fully Perforated Tape with Indentations of Feed Wheel Between Feed Holes). Perform the following punch mechanism adjustment.

NOTE

Before proceeding with the following adjustments, check both tape guide spring tensions. The first five holes in gauge are the same size as code holes in tape (0.075 inch diameter) but the sixth hole in gauge is larger than the first five (0.086 inch diameter). This arrangement allows ±0.007 inch variation in five inches.

(1) Feed Hole Spacing (Final). Adjust as follows:

(a) Refer to Figure 6-175.

(b) With tape shoe blocked away from feed wheel, feed pawl and detent disengaged, and tape removed from the punch mechanism, feed wheel should rotate freely. Check through 3 or 4 rotations.

(c) Perforate six series of 9 BLANK combinations followed by 1 LETTERS combination. Place tape over smooth side of TP156011 tape gauge so circular portion of first number 2 code hole in tape is concentric with first (0.072) hole of tape gauge. The next four 0.072 holes in tape gauge shall be visible through number 2 code holes in tape and circular portion of last (sixth) number 2 code hole in tape shall be entirely within 0.086 inch diameter hole of tape gauge.

CAUTION

With tape removed from the punch mechanism, be sure the die wheel does not bind.

(d) To adjust:

1. With tape removed from punch mechanism, loosen die wheel eccentric stud locknut and

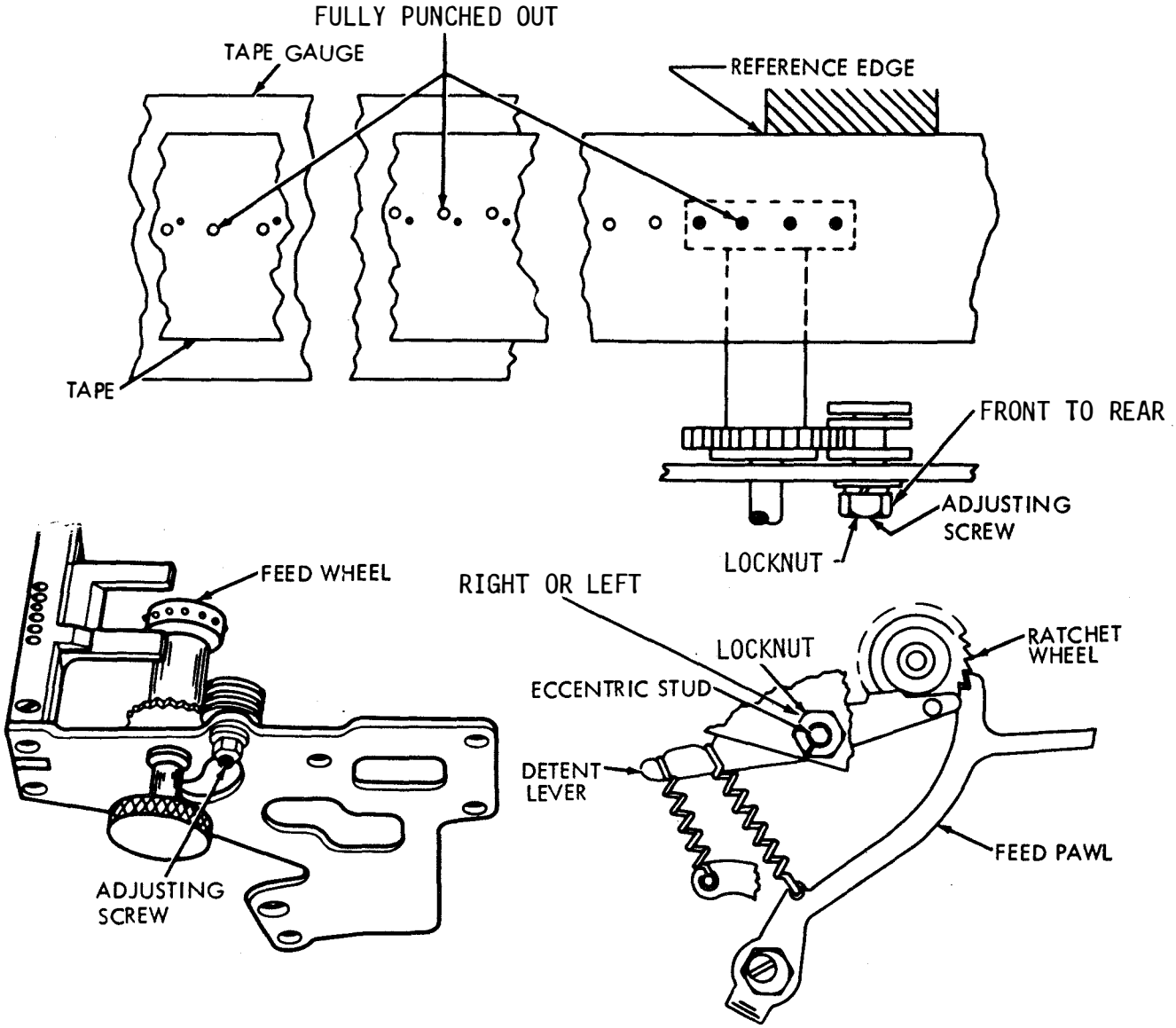


Figure 6-174. Feed Wheel Indentation Alignment (Fully Perforated Tape With Indentations of Feed Wheel Fully Punched Out)

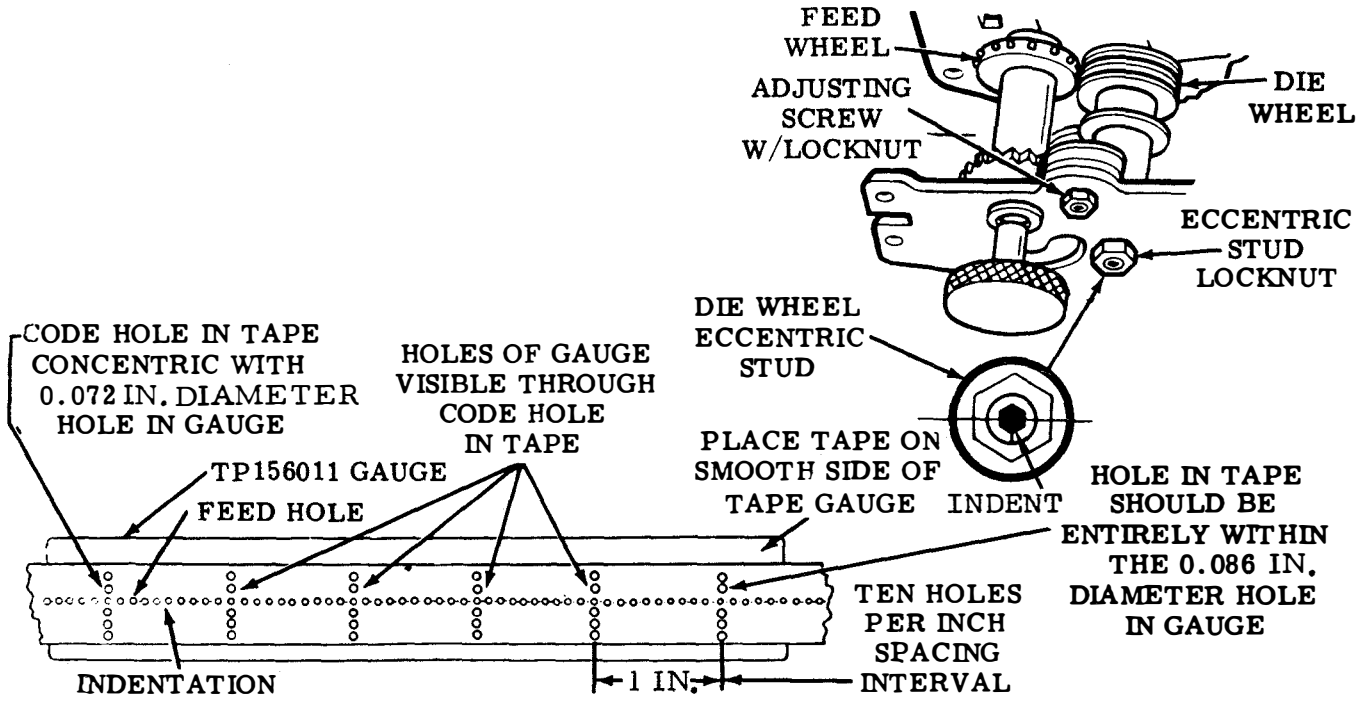


Figure 6-175. Feed Hole Spacing (Final) (Fully Perforated Tape With Indentations of Feed Wheel Between Feed Holes)

adjust die wheel so that it just binds on feed wheel. Back off eccentric so die wheel is just free (check freeness through 3 or 4 rotations) keeping indent of eccentric stud below horizontal centerline of stud.

2. Check ten characters per inch requirement and refine feed wheel die wheel clearance adjustment to meet requirement. Moving indent of die wheel eccentric stud toward feed wheel to decrease character spacing and away from feed wheel to increase the character spacing.

3. With tape shoe away from feed wheel, feed pawl and detent disengaged, and tape removed from punch mechanism, the feed wheel should rotate freely.

(e) Failure to meet this requirement indicates die wheel eccentric has been overadjusted. To meet this requirement, refine adjustment.

(2) Feed Hole Lateral Alignment. Adjust as follows:

(a) Refer to Figure 6-176.

(b) With unit operating under power, indentations of feed wheel should be on centerline between fully perforated feed holes, as gauged by eye.

(c) To adjust:

1. Loosen adjusting screw locknut.

2. Turn adjusting screw clockwise to move indentations towards rear.

3. Turn counterclockwise to move indentations towards front.

4. Tighten locknut.

(3) Detent. Adjust as follows:

(a) Refer to Figure 6-176.

(b) With unit operating under power, indentations of feed wheel should be centrally located between two fully perforated feed holes, as gauged by eye.

(c) To adjust:

1. Loosen detent lever eccentric stud locknut.

2. Turn stud clockwise to move indentations towards leading edge of feed hole.

3. Turn counterclockwise to move indentation toward trailing edge.

4. Tighten locknut and recheck feed pawl adjustment.

i. Typing Mechanism Adjustments. Perform the following typing mechanism adjustments.

(1) Pushbar Operating Blade (Preliminary). Adjust as follows:

(a) Refer to Figure 6-177.

(b) Manually select LETTERS code combination (12345) and rotate main shaft until function clutch trips.

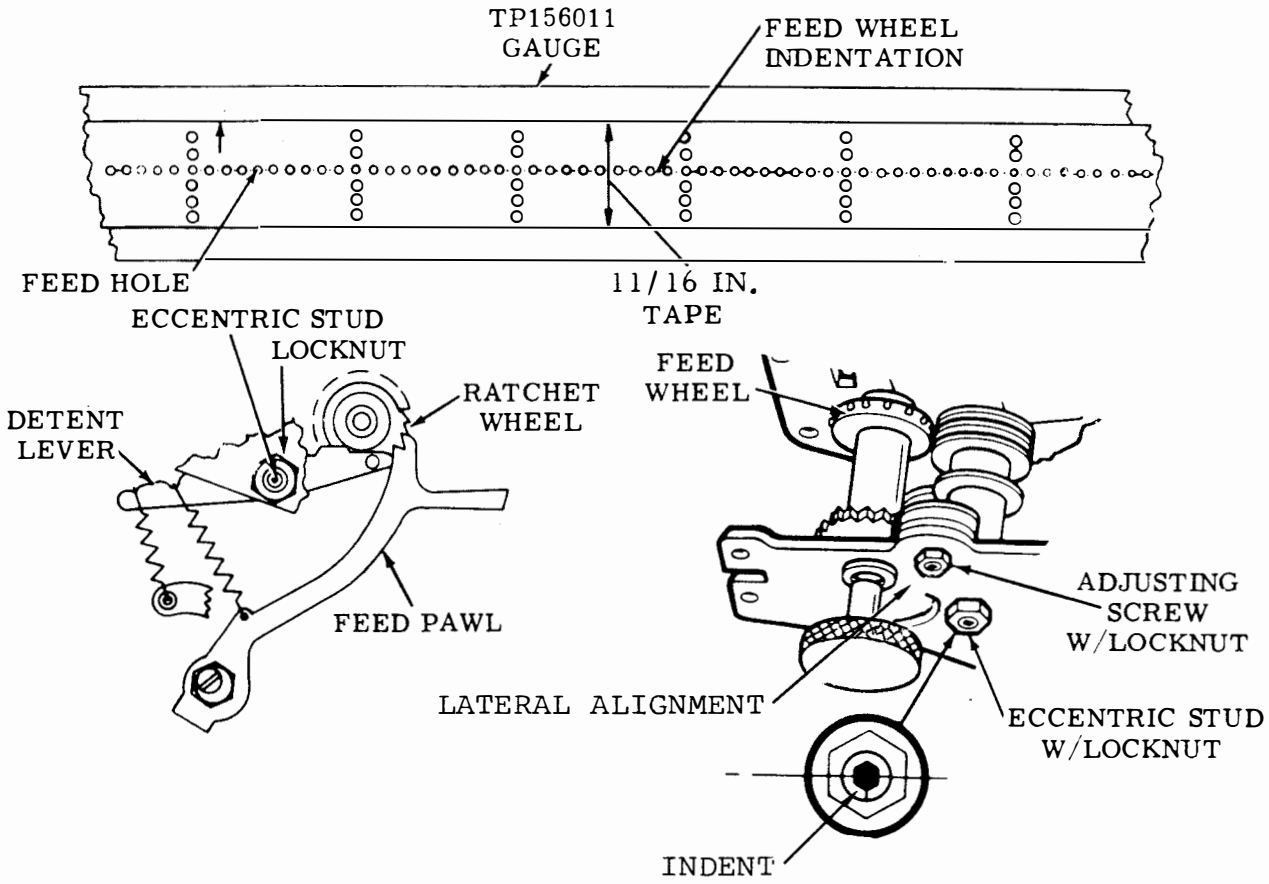


Figure 6-176. Feed Hole Lateral Alignment and Detert (Fully Perforated Tape With Indentations of Feed Wheel Between Feed Holes)

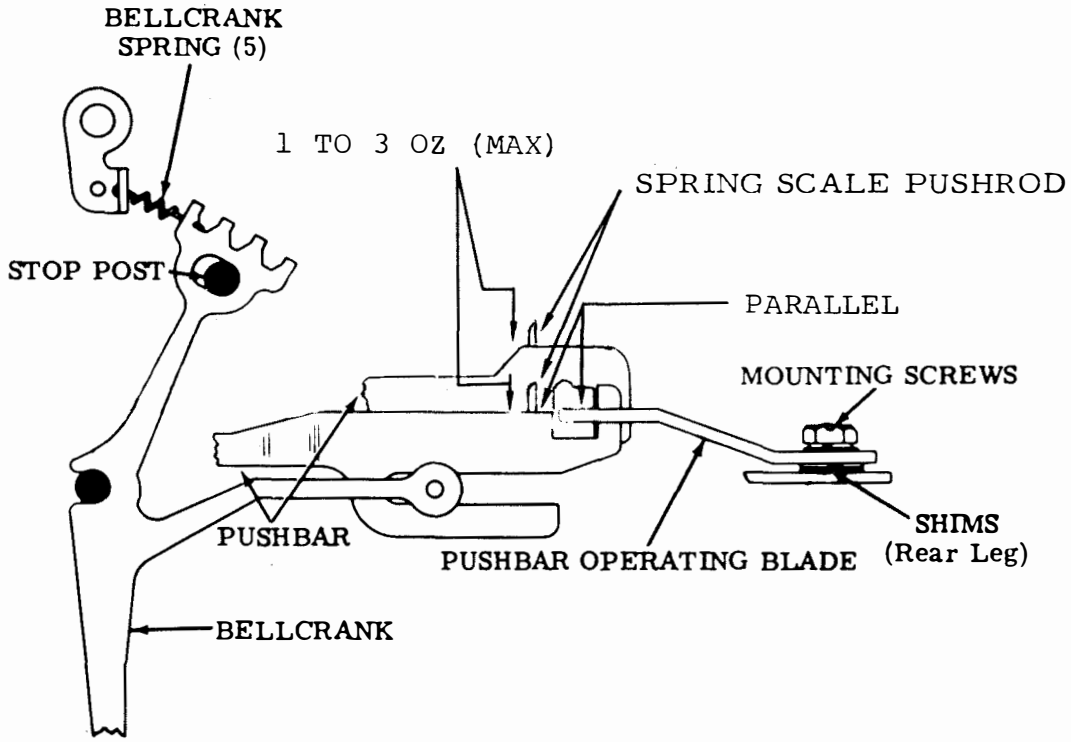


Figure 6-177. Pushbar Operating Blade (Preliminary) and Bellcrank Springs (Five)

Hold number 2 and 3 bellcranks against stop post.

(c) Operating blade should be parallel to top of number 2 and 3 pushbar but not necessarily flush.

(d) To adjust:

1. Loosen mounting screws and pry transfer mounting bracket all the way to the right.

2. Add or remove shims under rear leg of operating blade. Place extra on rear mounting screw between blade and flat washer.

3. Tighten screws.

(2) Bellcrank Springs (Five). Adjust as follows:

(a) Refer to Figure 6-177.

(b) Select LETTERS code combination (12345) and rotate main shaft until function clutch trips.

(c) Apply spring scale pushrod to pushbars and measure force required to start pushbar moving. This should be 1 to 3 ounces maximum. Check all five springs.

(d) If requirement is not met, replace spring.

(3) Pushbar Operating Blade (Final). Adjust as follows:

NOTE

It may be necessary to refine this adjustment after Rocker Bail Pilot Stud adjustment, paragraph 6-5i(4).

(a) Refer to Figure 6-178.

(b) Manually select LETTERS code combination (12345) and rotate main shaft until function clutch trips. Manually seat pushbars detented position.

(c) Take up play in pushbar nearest left edge of blade to the left and rear and then release. Check clearance between pushbar and left edge of blade. This should be 0.015 to 0.030 inch maximum.

(d) When play in pushbar has been taken up to right and released, there should be some clearance between right edge of blade and pushbars.

(e) Place unit in STOP position and take up play in pushbars to the right and release. There should be some clearance between right edge of blade and pushbars.

(f) To adjust, loosen mounting screws and position operating blade in elongated holes. Tighten screws.

(4) Rocker Bail Pilot Stud. Adjust as follows:

(a) Refer to Figure 6-179.

(b) Select BLANK combination (-----) and trip function clutch. Position rocker bail through a complete cycle, taking up play between rocker bail and function box rear plate for minimum clearance.

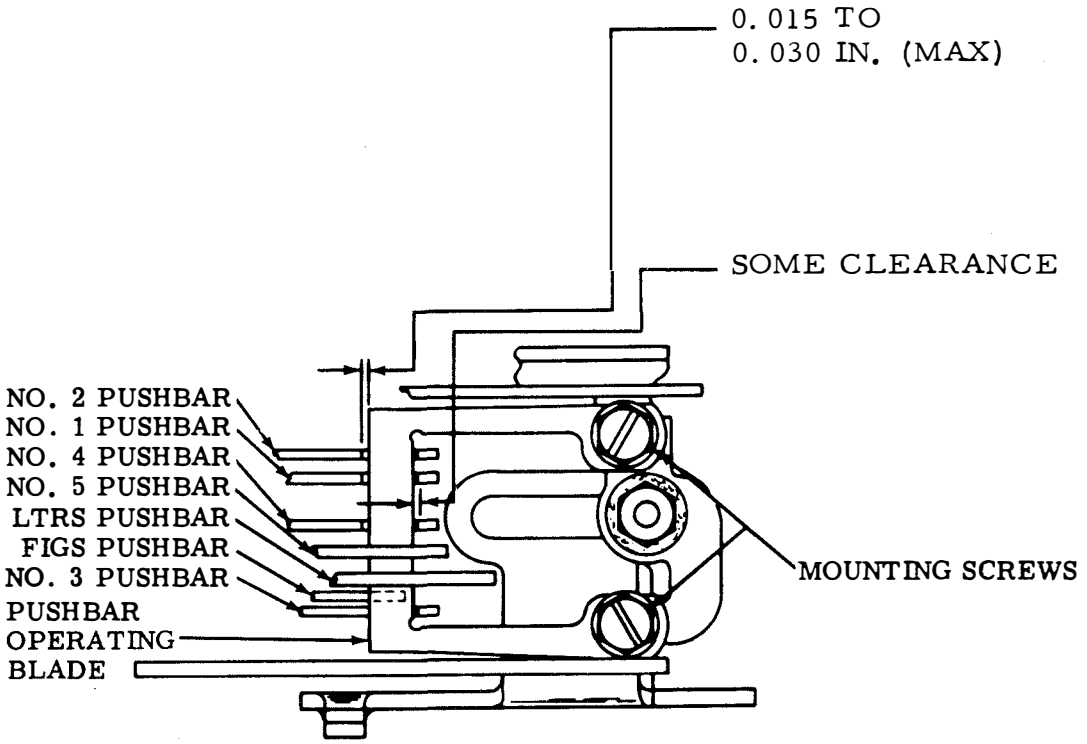


Figure 6-178. Pushbar Operating Blade (Final), Top View

(c) Measure clearance between function box rear plate and rear edge of pushbar operating blade at point in cycle where clearance is minimum. This should be 0.005 to 0.020 inch maximum.

(d) To adjust, loosen locknut and position rocker bail pilot stud in elongated hole. Tighten locknut.

(5) Number 5 Pulse Beam Spring. Adjust as follows:

(a) Refer to Figure 6-180.

(b) Attach spring scale hook to beam spring and measure force required to pull spring to length of 7/16 inch. This should be 10 to 15 ounces maximum.

(c) If requirement is not met, replace spring.

(6) Function Box. Adjust as follows:

NOTE

When unit is mounted as part of the keyboard perforator transmitter, it may be necessary to refine this adjustment within its limits to increase operating margins of unit.

(a) Refer to Figure 6-181.

(b) Manaully select LETTERS code combination (12345), rotate main shaft until function clutch trips, and disengage punch slides from latches.

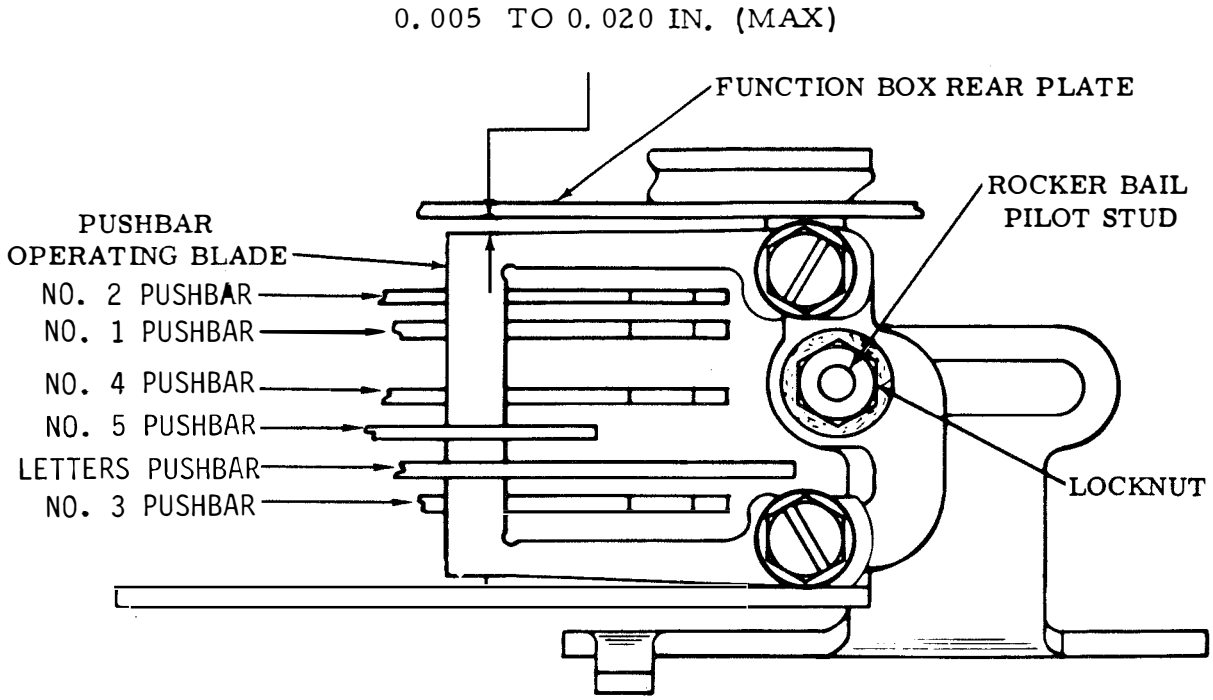


Figure 6-179. Rocker Bail Pilot Stud, Top View

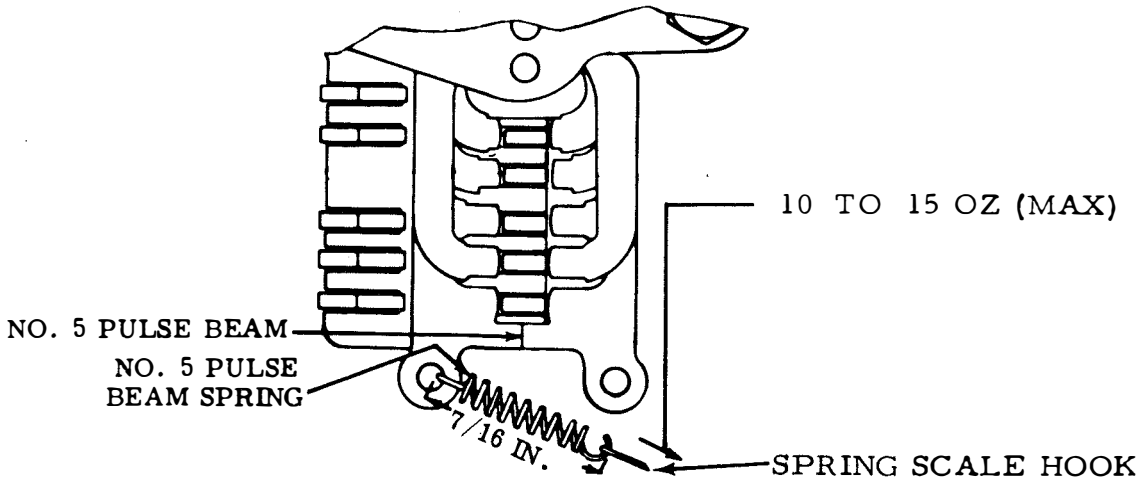
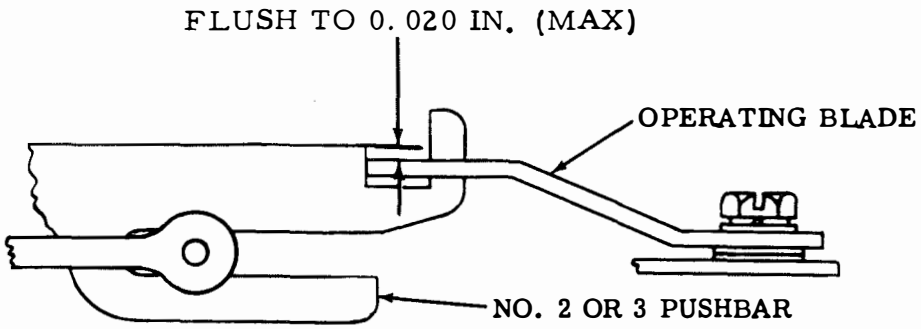
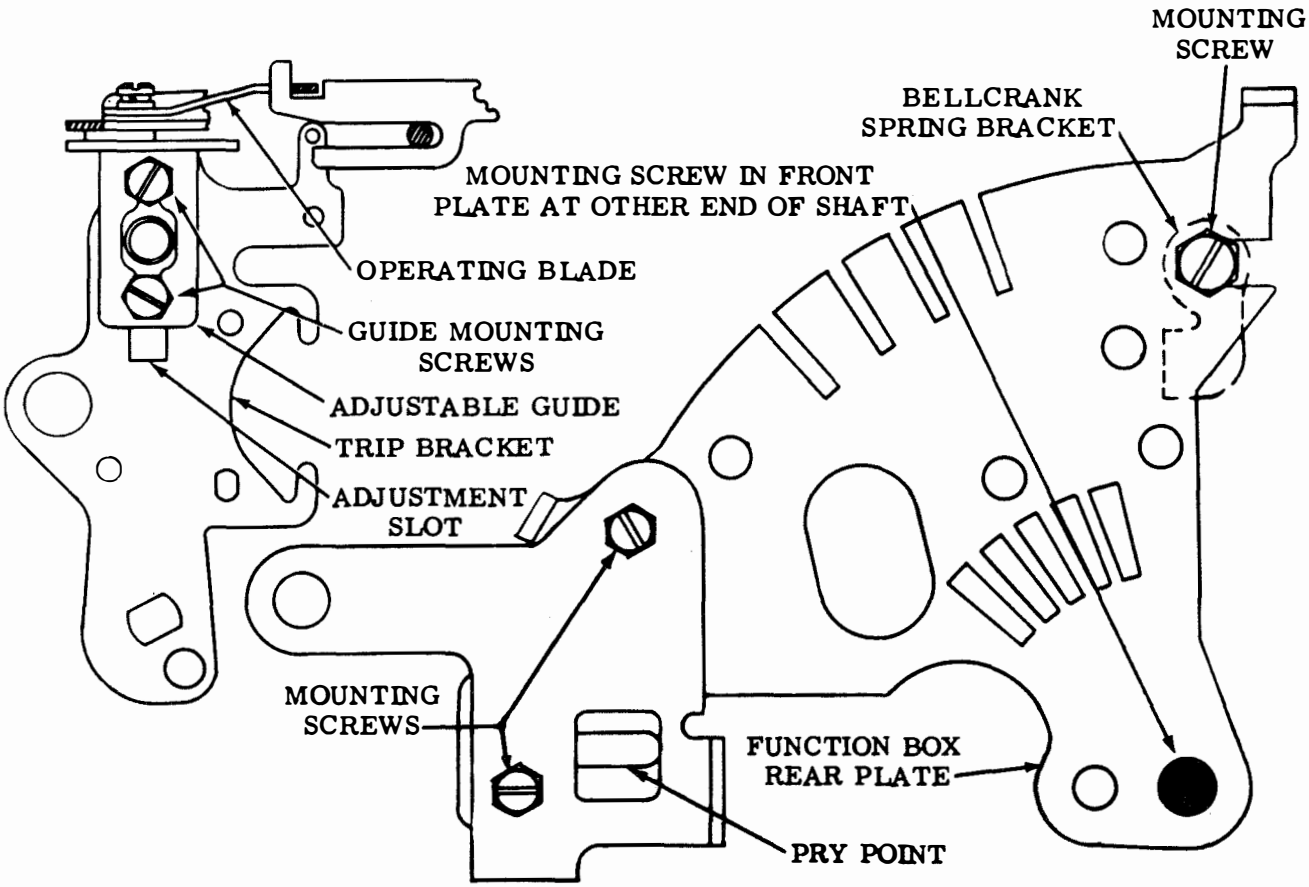


Figure 6-180. Number 5 Pulse Beam Spring, Top View



FRONT VIEW



REAR VIEW

Figure 6-181. Function Box

(c) Take up play in pushbars in downward direction and release. The top of operating blade should be flush to 0.020 inch maximum below tops of number 2 and 3 pushbars.

(d) To adjust:

1. Loosen the three rear plate mounting screws and front plate mounting screw.

2. By means of pry point, position function box and check position of bellcrank spring bracket.

3. Tighten all screws.

(e) If unit is equipped with two-piece bracket, set above adjustment in center of its range and tighten screws. Loosen two screws that mount guide to bracket and position guide to meet requirement.

(7) Transfer Mounting Bracket. Adjust as follows:

CAUTION

Bellcrank that yields most should not yield more than 0.007 inch measured at post.

(a) Refer to Figure 6-182.

(b) Manually select BLANK code combination (-----) and rotate main shaft until function clutch trips.

NOTE

Removal of function blades will facilitate measuring clearance.

(c) Latch punch slides and measure clearance between bellcrank and stop post at bellcrank where clearance is maximum when the bellcrank with minimum clearance is touching post. This should be 0.018 inch maximum.

(d) To adjust, loosen mounting screws friction tight and pry transfer mounting bracket to left until closest bellcrank touches post. Tighten screws.

(8) LETTERS-FIGURES Yield Arms. Adjust as follows:

CAUTION

Arm assemblies may change position during adjustment. Recheck tolerances after screws have been tightened.

(a) Refer to Figures 6-183 and 6-184.

(b) Trip function clutch and rotate main shaft until rocker bail is to extreme left.

NOTE

Removing function blades will facilitate measuring clearance.

(c) For FIGURES yield arms, manually place arm assemblies in LETTERS position and hold LETTERS-FIGURES bellcrank against left edge of

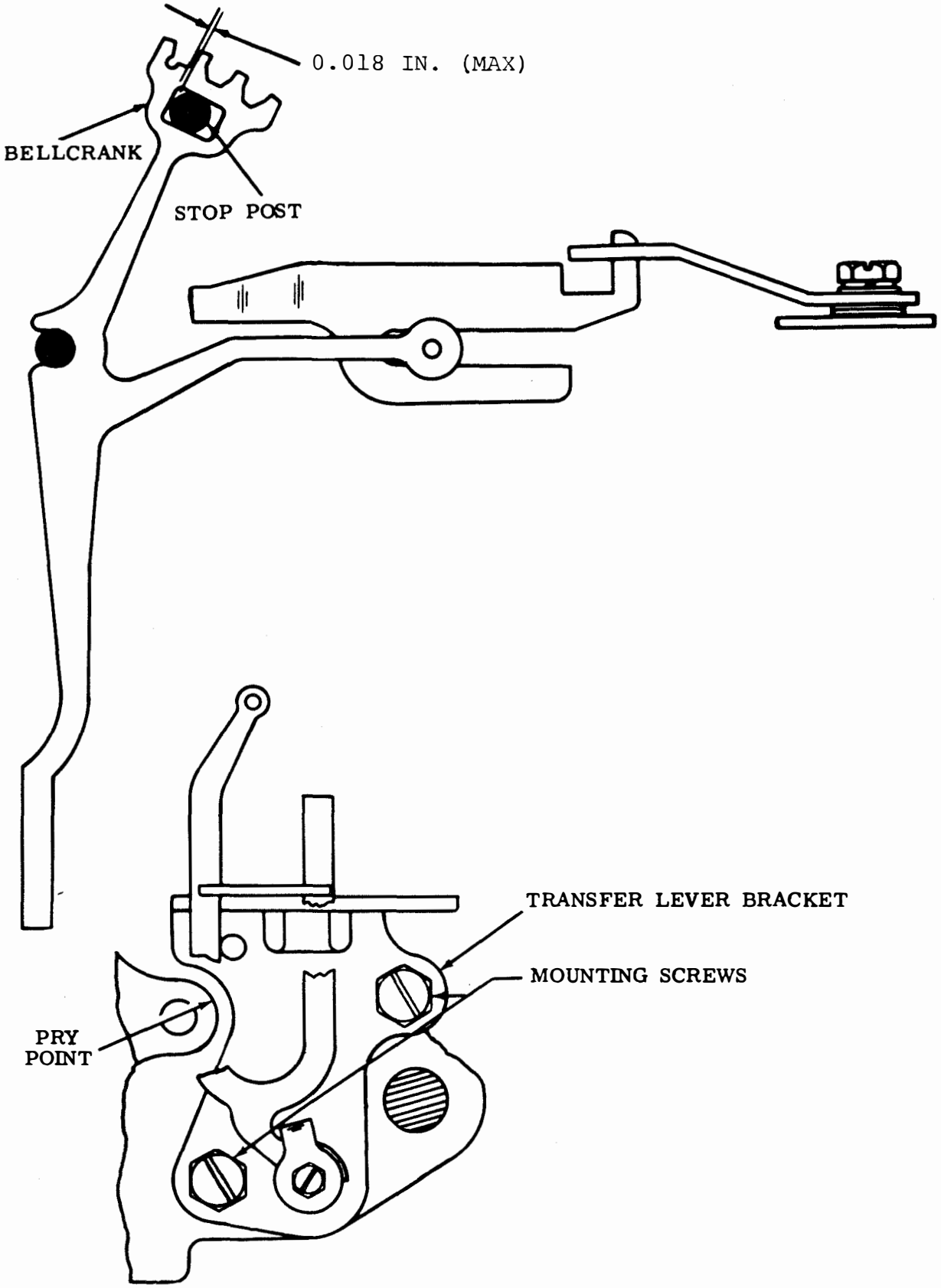


Figure 6-182. Transfer Mounting Bracket, Front View

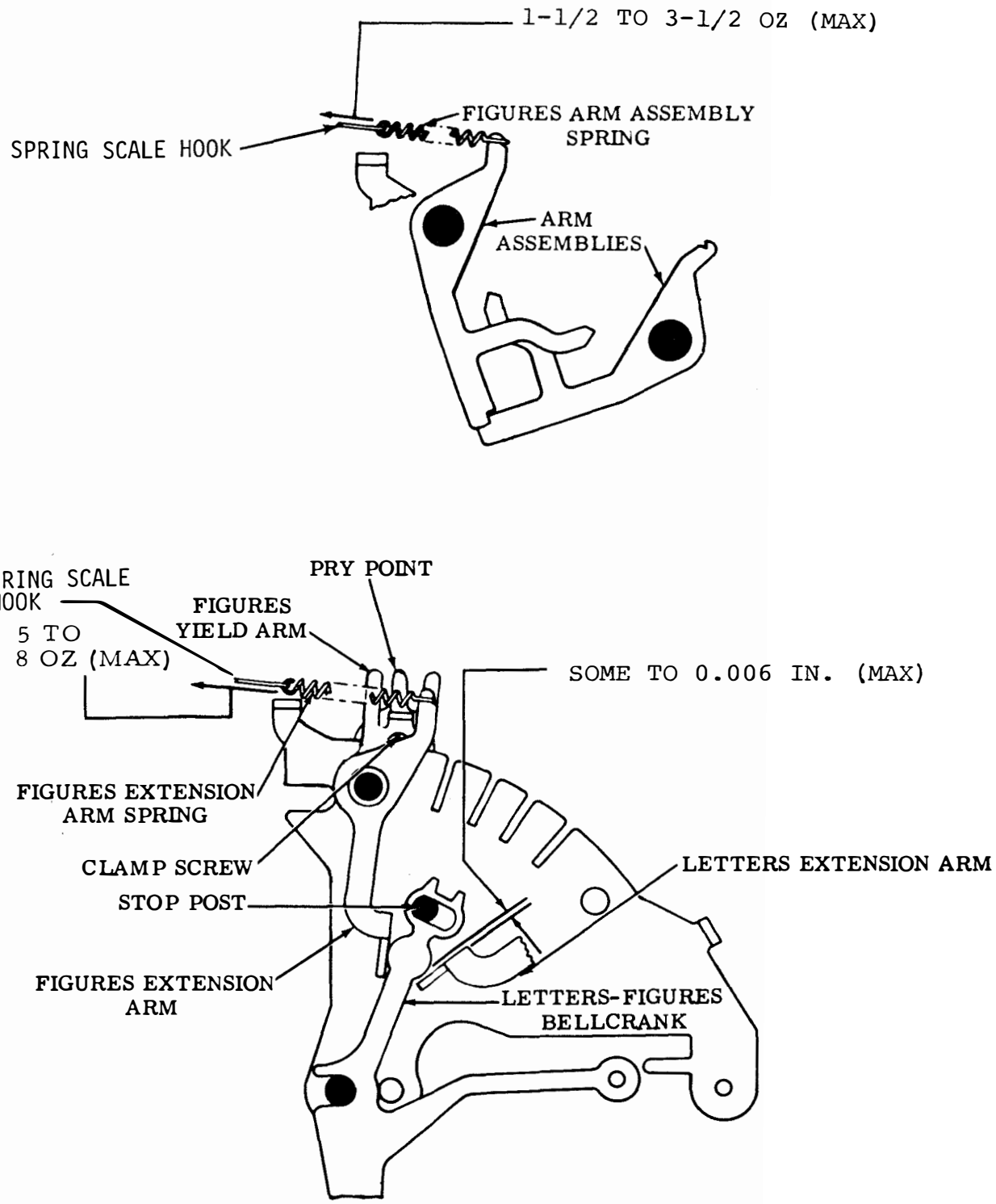
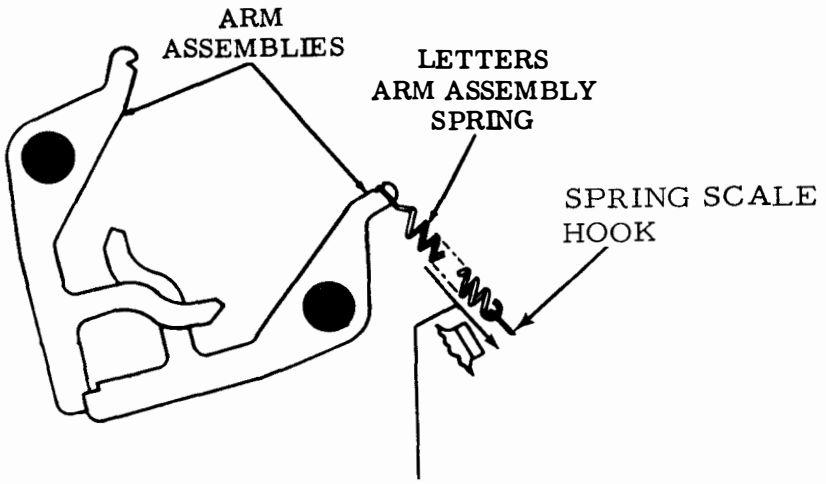


Figure 6-193. LETTERS-FIGURES Yield Arms, FIGURES Arm Assembly Spring, and FIGURES Extension Arm Spring



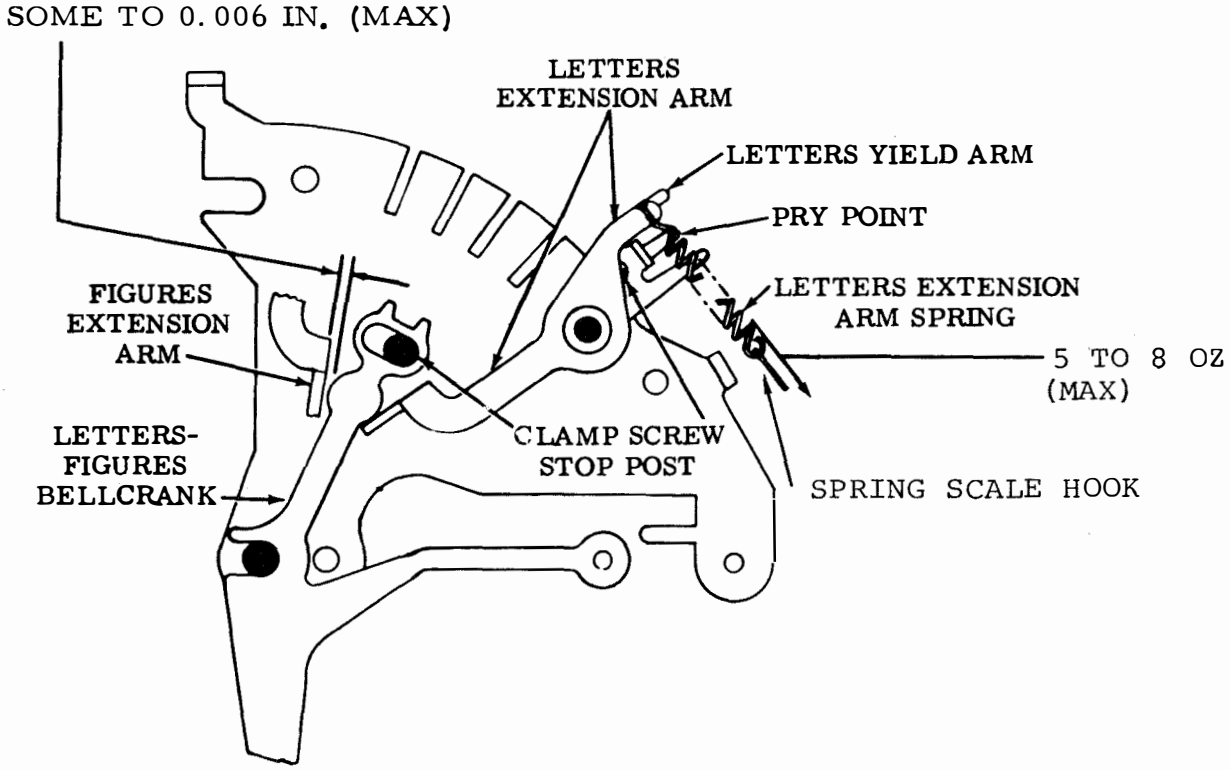


Figure 6-184. LETTERS-FIGURES Yield Arms, LETTERS Arm Assembly Spring, and LETTERS Extension Arm Spring

stop post. Measure clearance between bellcrank and LETTERS extension arm. (See Figure 6-183.)

(d) For LETTERS yield arms, manually place arm assemblies in FIGURES position and hold LETTERS-FIGURES bellcrank against right edge of stop post. Measure clearance between bellcrank and FIGURES extension arm. (See Figure 6-184.)

(e) There should be some to 0.006 inch maximum clearance for each arm.

(f) To adjust:

1. Loosen clamp screws in both LETTERS and FIGURES yield arms.

2. For FIGURES yield arm, place arm assemblies in LETTERS position and hold LETTERS-FIGURES bellcrank against left side of stop post. Using pry point, position LETTERS yield arm to specified clearance. Tighten FIGURES yield arm clamp screw. (See Figure 6-183.)

3. For LETTERS yield arm, place arm assemblies in FIGURES position. Using pry point, position FIGURES yield arm to specified clearance. Tighten LETTERS yield arm clamp screw. (See Figure 6-184.)

(9) FIGURES Arm Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-183.

(b) Put arms assemblies in LETTERS position.

(c) Attach spring scale hook to arm assembly spring and measure force required to pull spring to installed length. This should be 1-1/2 to 3-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(10) FIGURES Extension Arm Spring. Adjust as follows:

(a) Refer to Figure 6-183.

(b) Put arm assemblies in LETTERS position and manually hold LETTERS extension arm in position.

(c) Attach spring scale hook to extension arm spring and measure force required to pull spring to installed length. This should be 5 to 8 ounces maximum.

(d) If requirement is not met, replace spring.

(11) LETTERS Arm Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-184.

(b) Put arm assemblies in FIGURES position.

(c) Attach spring scale hook to arm assembly spring and measure force required to pull spring to installed length. This should be 1-1/2 to 3-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(12) LETTERS Extension Arm Spring. Adjust as follows:

(a) Refer to Figure 6-184.

(b) Put arm assemblies in FIGURES position and manually hold LETTERS extension arm in position.

(c) Attach spring scale hook to extension arm spring and measure force required to pull spring to installed length. This should be 5 to 8 ounces maximum.

(d) If requirement is not met, replace spring.

(13) Lifter Arm. Adjust as follows:

NOTE

Remove timing contacts if unit is so equipped.

(a) Refer to Figure 6-185.

(b) Trip function clutch and move rocker bail to extreme left position and observe travel of lifter roller on right dwell surface. Move rocker bail to extreme right position and observe travel of roller on left dwell surface.

(c) There should be approximately equal travel on each dwell surface.

(d) To adjust, loosen lock plate screw and eccentric screw locknut friction tight and position lifter arm on

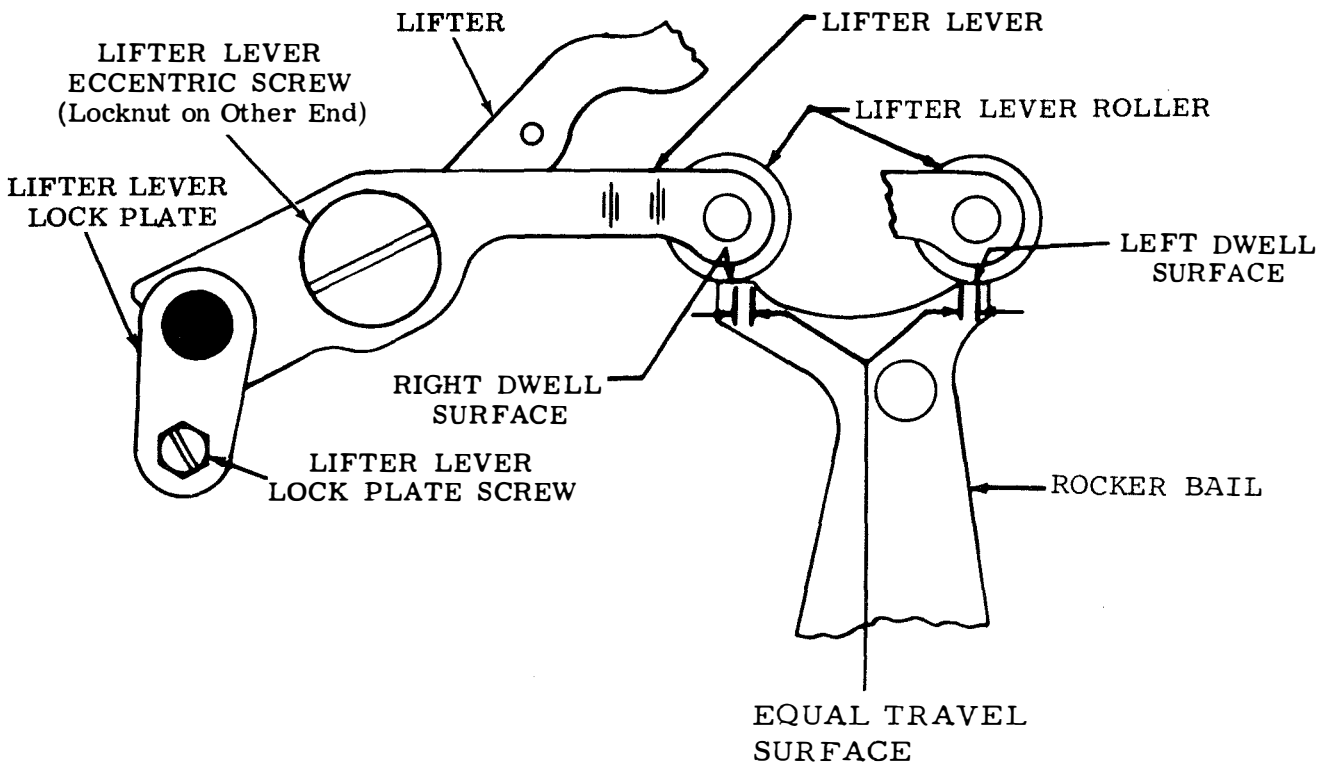


Figure 6-185. Lifter Arm, Rear View

lifter. Tighten screw but do not tighten locknut, yet.

(14) Lifter Arm Eccentric Screw. Adjust as follows:

(a) Refer to Figure 6-186.

(b) Disengage function clutch.

(c) Measure clearance between closest bellcrank projection and associated function blade.

1. For LETTERS or FIGURES function blade clearance should be 0.008 to 0.020 inch maximum.

2. For any other function blade, if unit is so equipped, clearance should be 0.005 inch minimum.

(d) To adjust, loosen eccentric screw locknut and position eccentric screw. Tighten locknut.

(15) Locklever. Adjust as follows:

NOTE

To avoid interference with lower toggle link clamp screw and axial connector link, it may be necessary to move high part of corrector bushing above horizontal centerline.

(a) Refer to Figure 6-187.

(b) With LETTERS code combination (12345) selected and rocker bail in extreme left position, toggle linkage should move through point where toggle link and locklever are in a straight line without raising lifter.

(c) With toggle link and locklever in a straight line, measure clearance between toggle link and lifter pin. This should be some to 0.015 inch maximum.

(d) To adjust, loosen clamp screw friction tight and position locklever on lock arm assembly. Tighten screw.

(16) Locklever Trip Post. Adjust as follows:

(a) Refer to Figure 6-188.

(b) Observe as rocker arm approaches extreme right position.

(c) The locklever toggle linkage should break and lifter roller should drop onto right dwell surface.

(d) To adjust, loosen clamp screw and use pry points to position locklever trip post. Tighten clamp screw.

(17) Corrector Drive Link Spring (Non-yielding). Adjust as follows:

(a) Refer to Figure 6-189.

(b) With unit in STOP position, use spring scale to measure force required to start drive link moving. This should be 5 to 9 ounces maximum.

(c) If requirement is not met, replace spring.

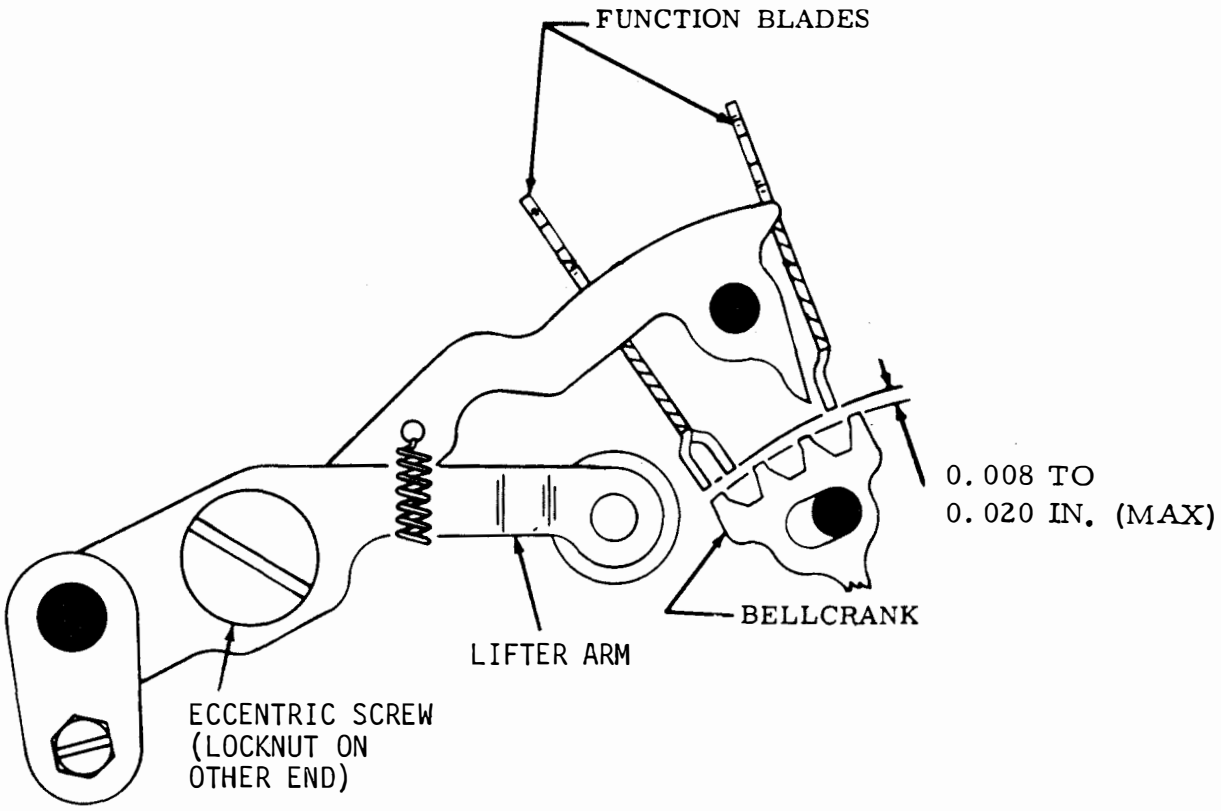


Figure 6-186. Lifter Arm Eccentric Screw, Rear View

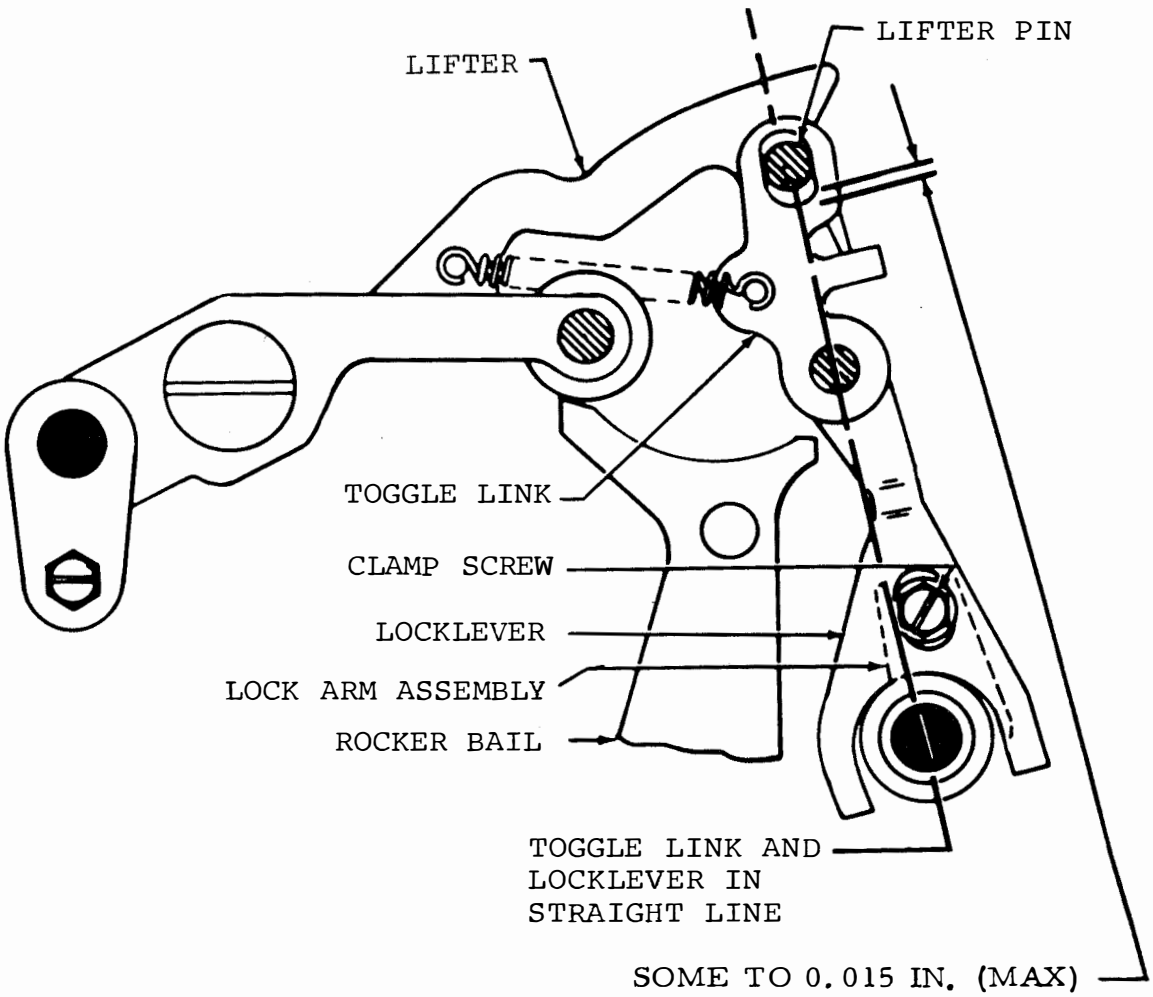


Figure 6-187. Locklever, Rear View

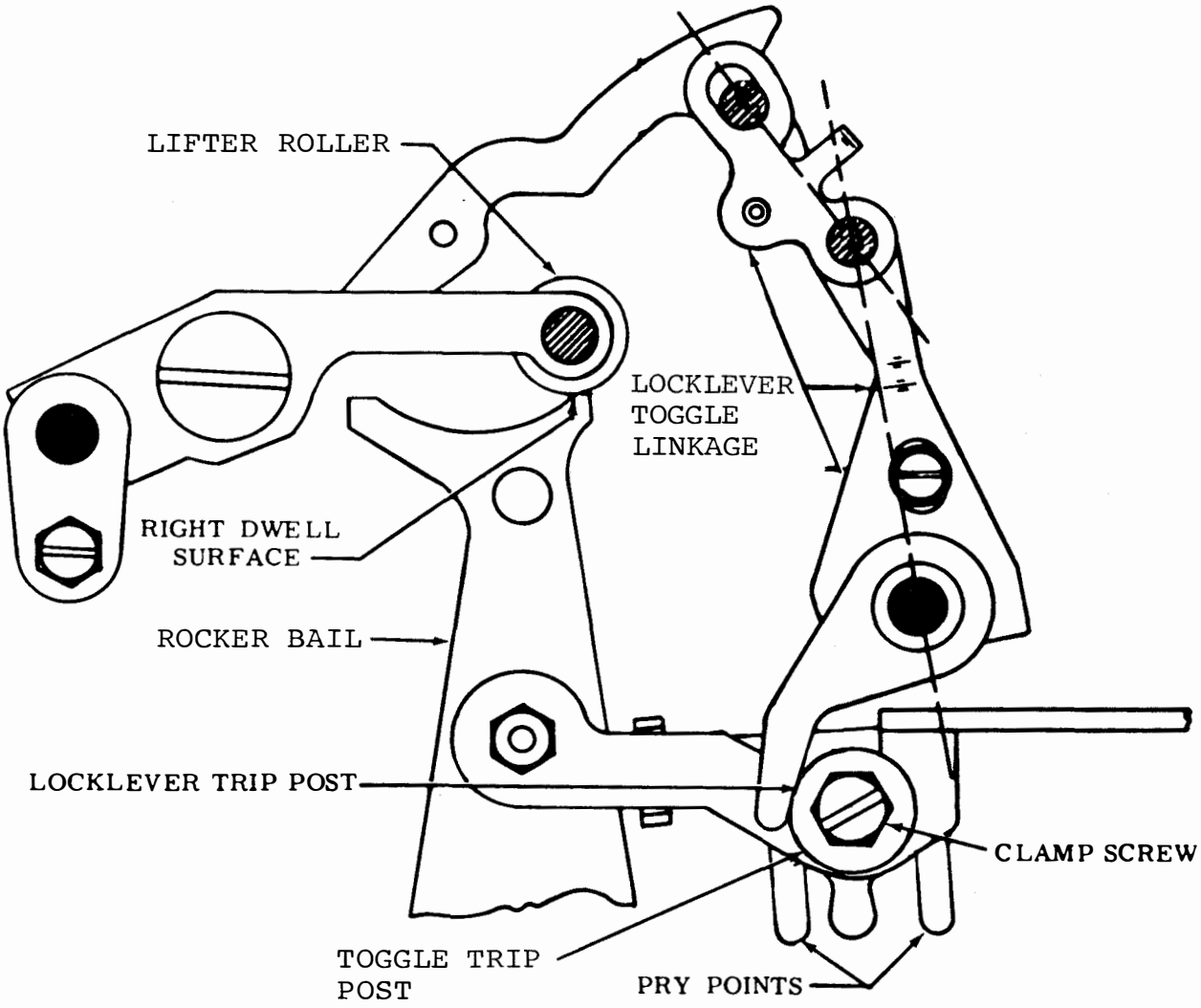


Figure 6-188. Locklever Trip Post, Rear View

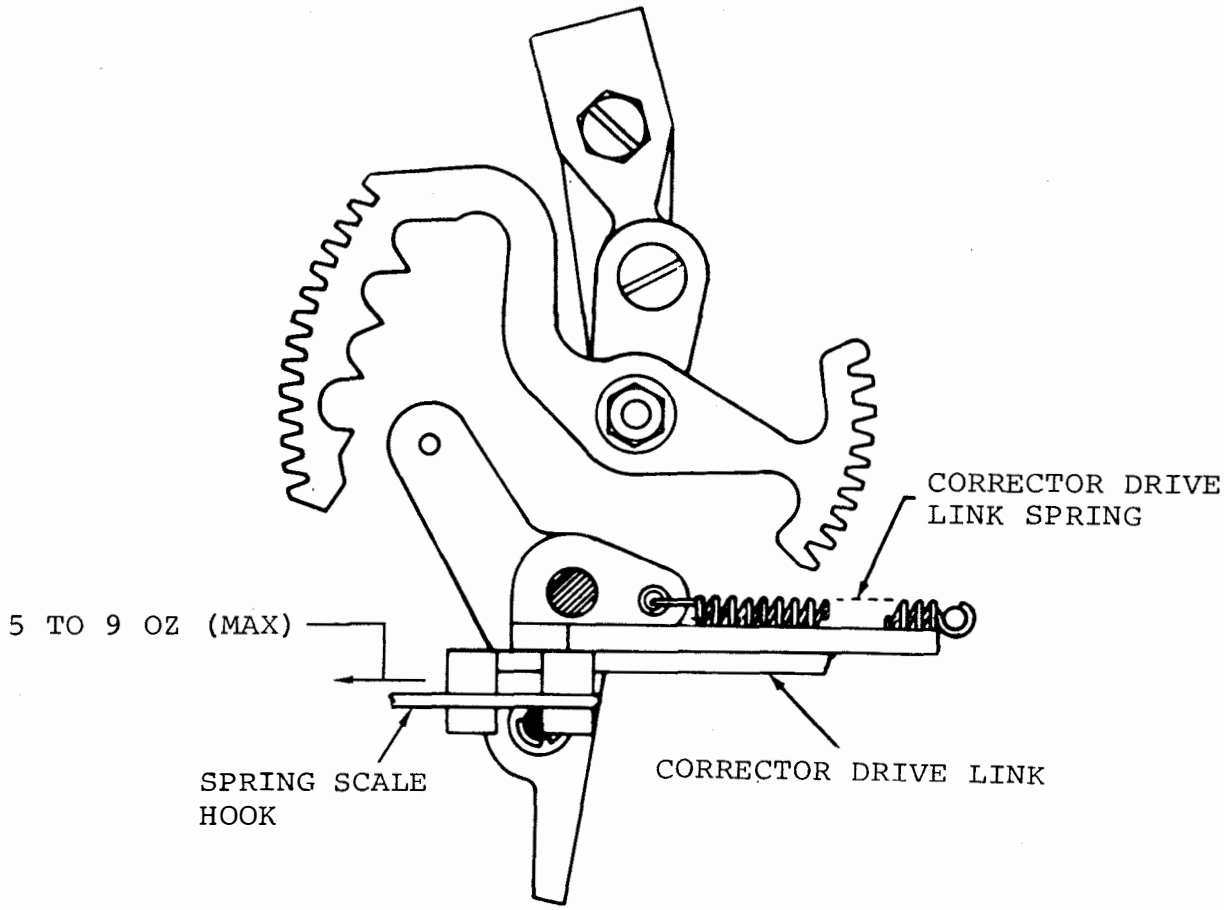


Figure 6-189. Corrector Drive Link Spring (Non-yielding), Top View

(18) Function Blade Springs (Two or More). Adjust as follows:

(a) Refer to Figure 6-190.

(b) With unit in STOP position, use spring scale to measure force required to start function blade moving. This should be 7 to 10 ounces maximum.

(c) If requirement is not met, replace springs.

(19) Lifter Spring. Adjust as follows:

(a) Refer to Figure 6-190.

(b) With unit in STOP position, use spring scale to measure force required to pull spring to installed length. This should be 7 to 9 ounces maximum.

(c) If requirement is not met, replace spring.

(20) Lifter Toggle Link Spring. Adjust as follows:

(a) Refer to Figure 6-190.

(b) With unit in STOP position, use spring scale to measure force required to pull spring to installed length. This should be 1-1/2 to 2-1/4 ounces maximum.

(c) If requirement is not met, replace spring.

(21) Oscillating Bail Drive Link. Adjust as follows:

(a) Refer to Figure 6-191.

(b) Position rocker bail to extreme left. Sector mounting stud, toggle pivot screw, and oscillating bail adjusting screw should approximately line up.

(c) To adjust, loosen locknut friction tight and position oscillating link by means of its eccentric bushing. Tighten locknut.

(22) Oscillating Bail Pivot. Adjust as follows:

(a) Refer to Figure 6-191.

(b) With BLANK code combination (-----) selected, rotate main shaft, taking up axial play in type wheel shaft toward front of unit.

(c) Axial corrector roller should enter first notch of sector centrally.

(d) To adjust:

1. Loosen oscillating bail adjusting screw friction tight and select BLANK combination.

2. Position oscillating bail by means of elongated mounting hole so corrector roller enters first notch of sector when rocker bail moves to extreme left position.

3. Hold corrector roller firmly in first notch and take up play in oscillating bail linkage by applying force to oscillating bail. Tighten screw.

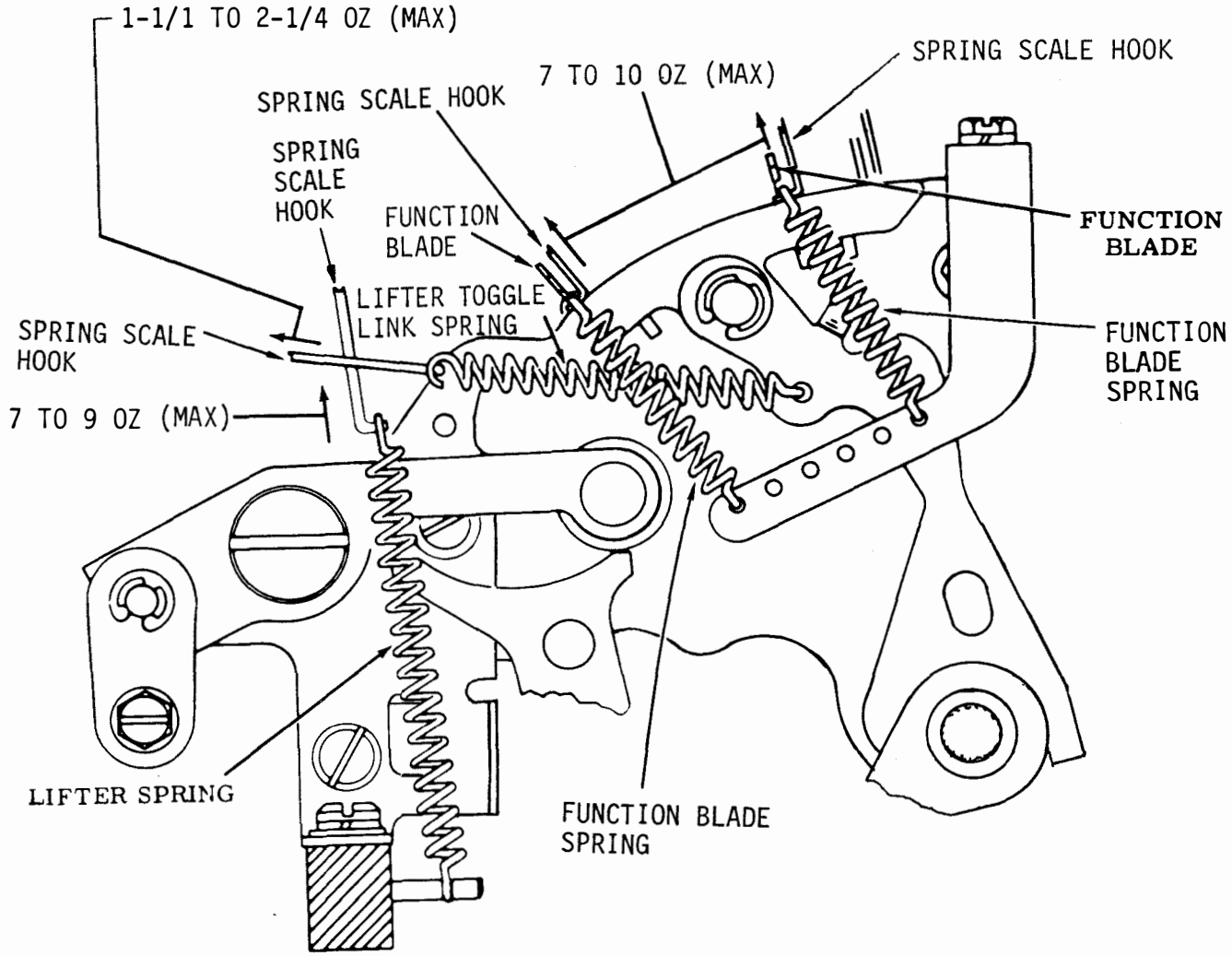


Figure 6-190. Function blade Springs, Lifter Spring and Lifter Toggle Link Spring, Rear View

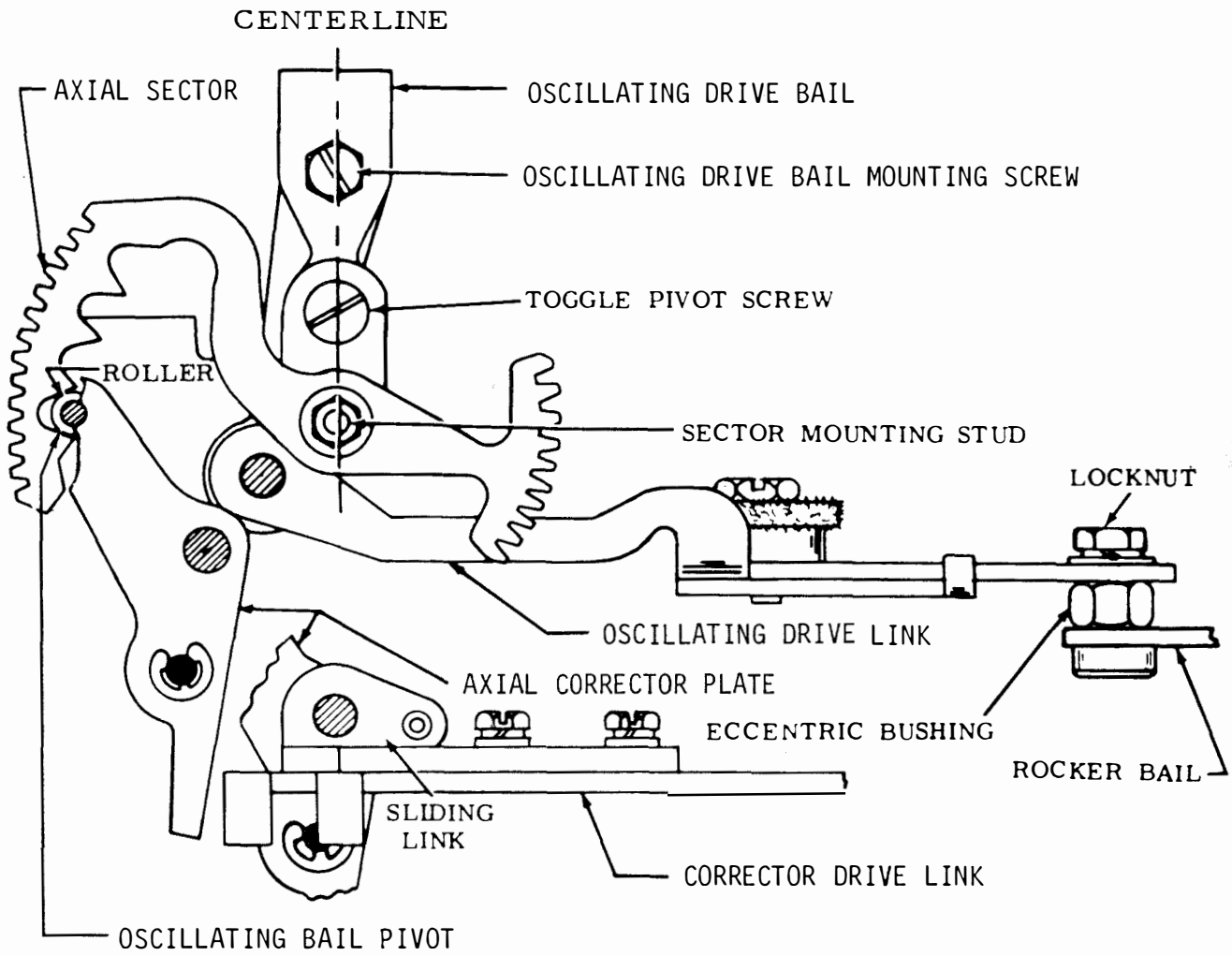


Figure 6-191. Oscillating Bail Drive Link and Bail Pivot, Top View

(23) Axial Sector Alignment. Adjust as follows:

NOTE

On units equipped with larger (0.594 inch diameter) roller, no adjustment is required.

(a) Refer to Figure 6-192.

(b) Teeth of axial sector and axial output rack should engage by their full thickness.

(c) Guide roller should be free to rotate.

(d) To adjust:

1. Loosen locknut and disengage rack.

2. Remove retaining ring and guide roller.

3. Add or remove shims and place extra shims on top of shim used to retain felt washer.

4. Tighten locknut.

(24) Eccentric Shaft Detent Lever Spring. Adjust as follows:

NOTE

Check all six springs. There are two on the axial positioning mechanism and four on the rotary positioning mechanism.

(a) Refer to Figure 6-193.

(b) Attach spring scale hook to detent lever and measure force required to start detent lever moving. This should be 7 and 10 ounces maximum.

(c) If requirement is not met, replace spring.

(25) Axial Output Rack Guide Roller. Adjust as follows:

(a) Refer to Figure 6-194.

(b) Select LINE-FEED code combination (-2---) and rotate main shaft until eccentric has rotated 90 degrees.

(c) Take up play to make maximum clearance between output rack and guide roller and measure clearance. This should be some to 0.008 inch maximum.

(d) To adjust, loosen locknut and position guide roller mounting stud in elongated hole. Tighten locknut.

(26) Pushbar Guide Bracket. Adjust as follows:

(a) Refer to Figure 6-195.

(b) Manually select CARRIAGE RETURN code combination (---4-) and rotate main shaft so that number 4 pushbar moves through complete range of travel.

(c) Take up play to make maximum clearance between number 4 pushbar and guide bracket throughout complete travel of pushbar.

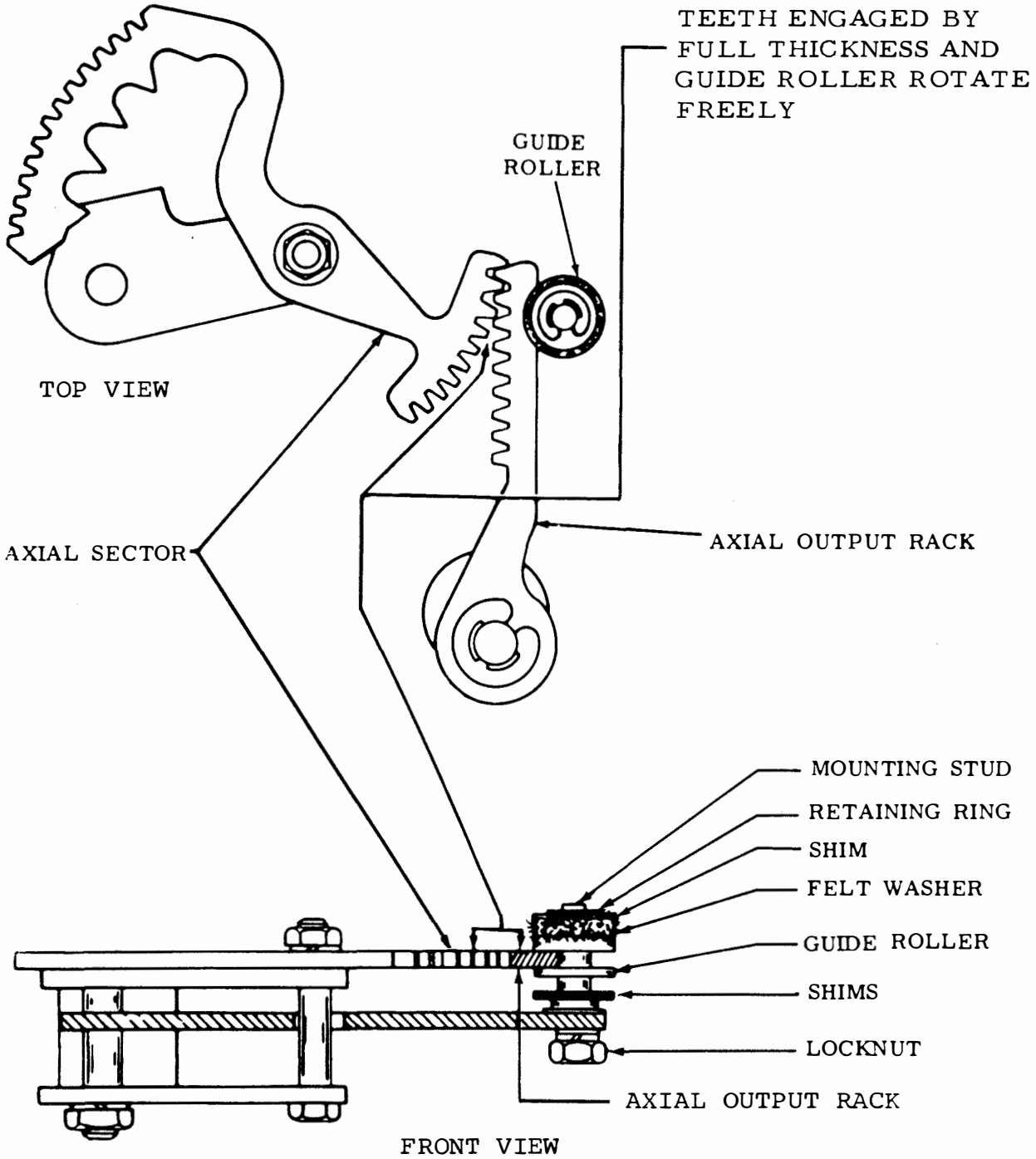
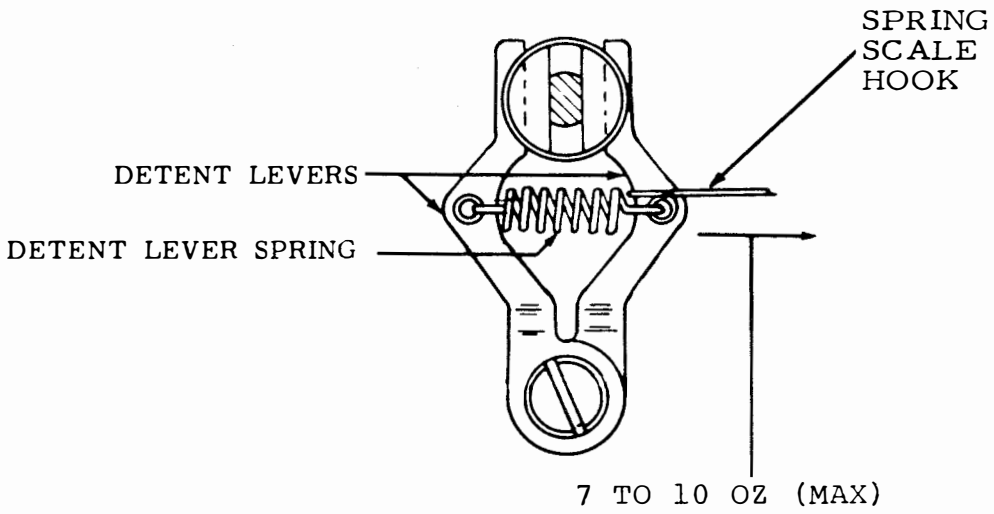


Figure 6-192. Axial Sector Alignment



TOP VIEW OF SPRING ON AXIAL POSITIONING MECHANISM

Figure 6-193. Eccentric Shaft Detent Lever Spring, Top View

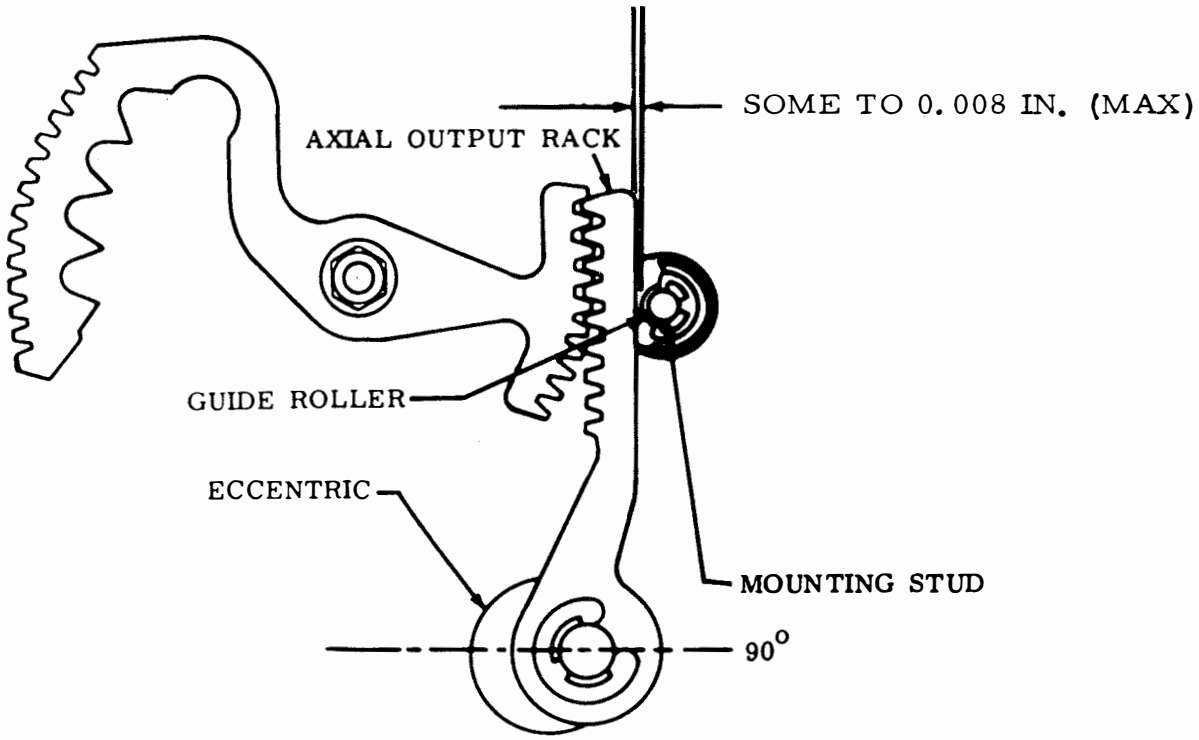


Figure 6-194. Axial Output Rack Guide Foller, Top View

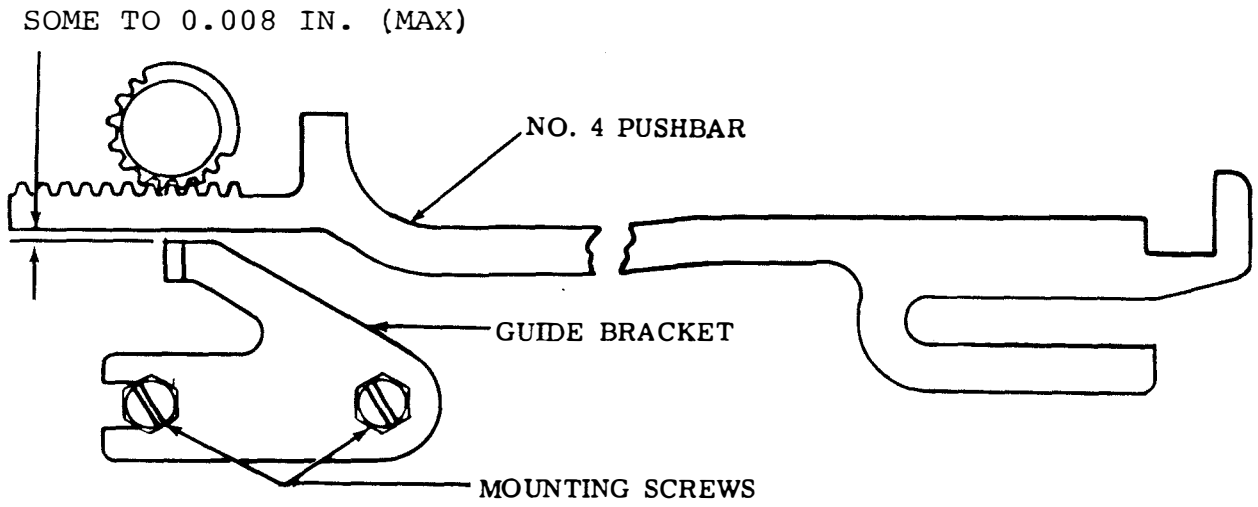


Figure 6-195. Pushbar Guide Bracket, Front View

There should be some to 0.008 inch maximum clearance.

(d) To adjust, loosen mounting screw and position guide bracket. Tighten screws.

(27) Axial Corrector (Non-Yielding). Adjust as follows:

(a) Refer to Figure 6-196.

(b) Select BLANK code combination (-----). Trip function clutch and move rocker bail to extreme left. Observe that roller on axial corrector plate is firmly seated in first notch of axial sector.

(c) Select LETTERS code combination (12345), trip function clutch, and move rocker bail to extreme left. Observe that roller on axial corrector plate is firmly seated in fourth notch of axial sector.

(d) To adjust, loosen drive link adjusting screw. While holding roller firmly seated in first notch and drive link down (bottomed) against bushing, tighten adjustment screws.

(28) Idler Gear Eccentric Shaft. Adjust as follows:

(a) Refer to Figure 6-197.

(b) Place unit in LETTERS condition and disengage function clutch.

(c) Measure clearance between idler gear tooth and type wheel rack tooth. This should be some to 0.015

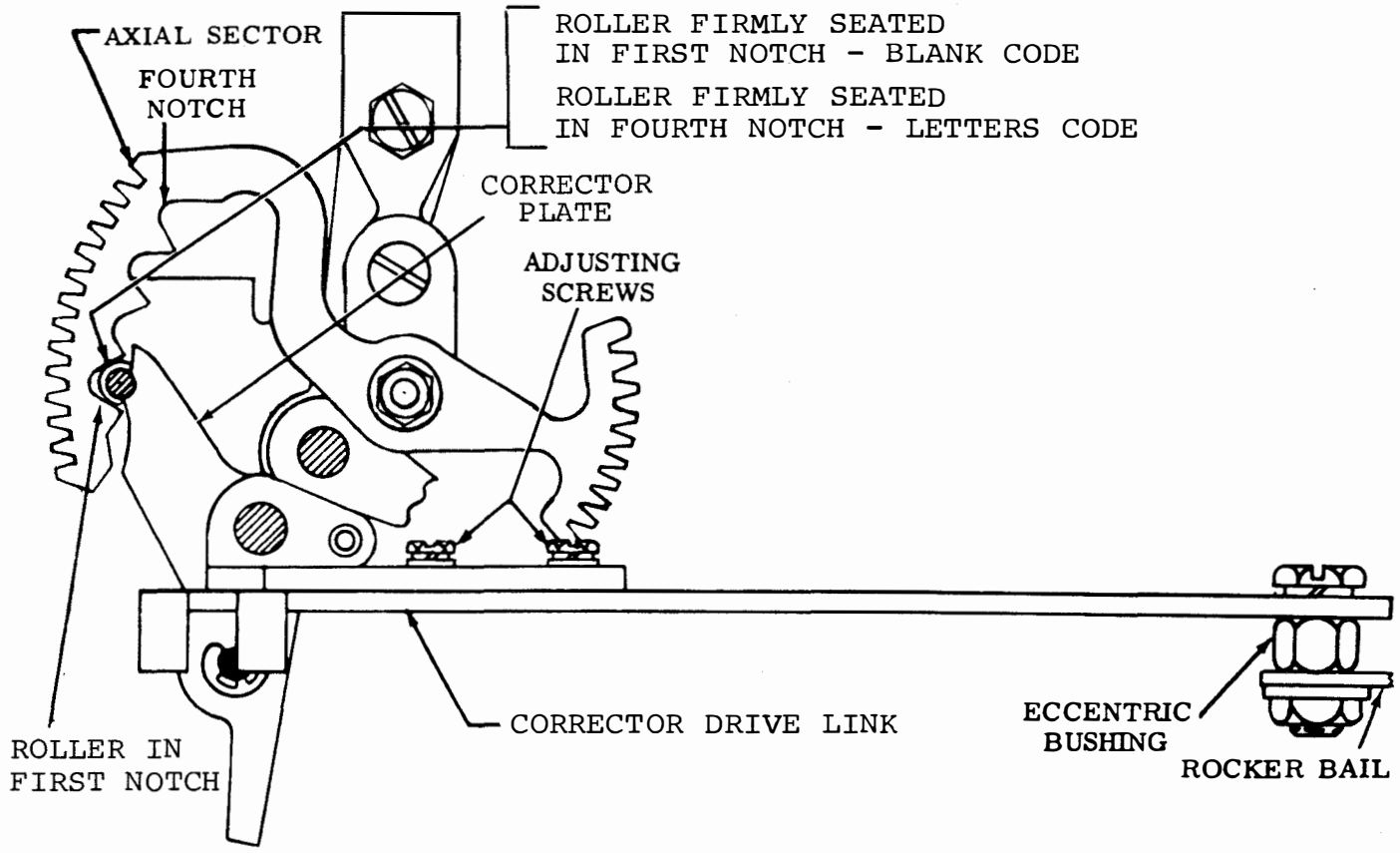


Figure 6-196. Axial Corrector (Non-yielding), Top View

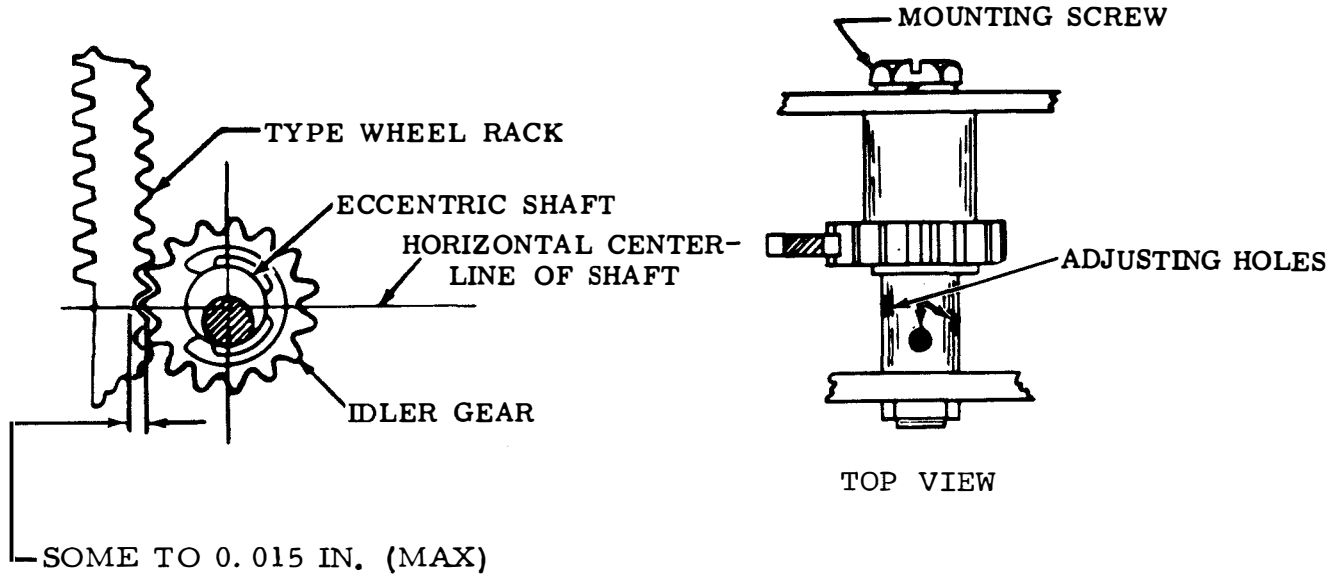


Figure 6-197. Idler Gear Eccentric Shaft

inch maximum. Check rack for binds throughout its travel.

(d) To adjust, loosen mounting screw friction tight and position idler gear eccentric shaft using three adjusting holes in top of shaft. Tighten screw.

(29) Corrector Drive Link Extension Spring (Yielding). Adjust as follows:

(a) Refer to Figure 6-198.

(b) Select BLANK code combination (-----), trip function clutch, and place rocker bail in extreme left position.

(c) Attach 32-ounce spring scale hook on end of corrector axial plate and measure force required to move roller from notch in sector. This should be 16 to 32 ounces maximum.

(d) If requirement is not met, replace spring.

(30) Axial Corrector (Yielding). Adjust as follows:

(a) Refer to Figure 6-198.

(b) Select all spacing code combination (BLANK), trip function clutch, and place rocker bail in extreme left position. Axial corrector roller should seat in first sector notch.

(c) Measure clearance between each end of slot and spring post. This should be a minimum of 0.005 inch.

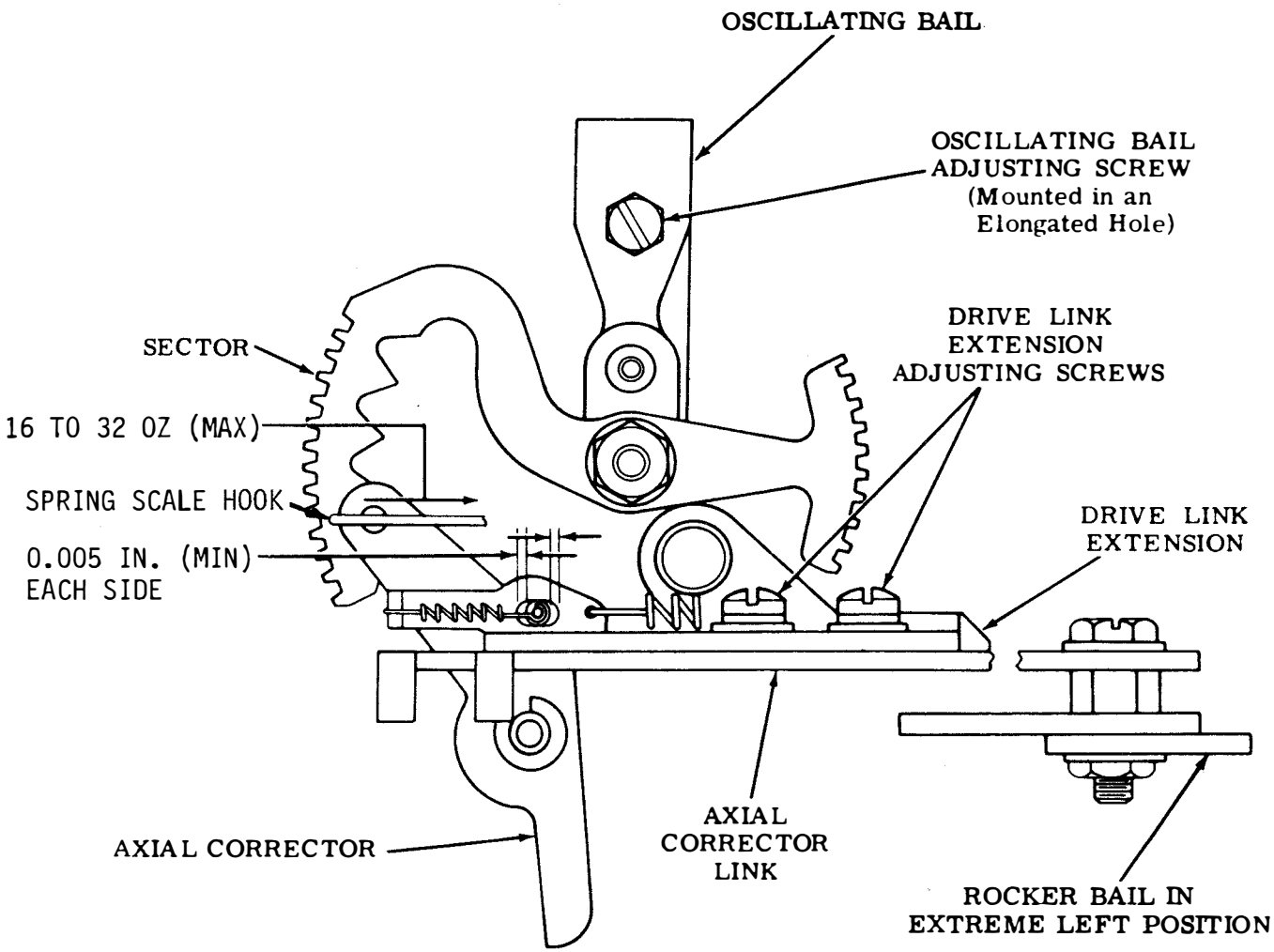


Figure 6-198. Corrector Drive Link Extension Spring and Axial Corrector (Yielding)

(d) Select LETTERS combination (12345). Check both sides and seating in fourth notch. Turn the true arc, fastening drive link extension to corrector plate, to check requirement.

(e) To adjust, loosen drive link extension adjusting screws and position extension. Tighten screws.

(31) Rotary Correcting Lever. Adjust as follows:

(a) Refer to Figure 6-199.

(b) Loosen correcting clamp adjusting screw, place unit in FIGURES condition, select number 9 code combination (---45), trip function clutch, position rocker bail to extreme left, and manually seat rotary correcting lever in type wheel rack.

(c) Second tooth from top of rack should seat between lobes on correcting lever.

(d) To adjust, loosen eccentric bushing locknut and clamp adjusting screw. Place correcting lever pivot to right of centerline and position correcting lever. Tighten locknut only.

(e) With unit still in FIGURES condition, select (--34-) code combination and check engagement of fifth tooth. Place unit in LETTERS condition, select (---4-) code combination and check engagement of ninth tooth. Then select (--3-5) code combination and check sixteenth tooth engagement.

(f) To adjust, refine step (d).

(g) With unit in LETTERS condition, select LETTERS code combination (12345). Position rocker bail to extreme left and manually seat correcting lever in rack.

1. Lobes of rotary correcting lever should be firmly seated in type wheel rack.

2. End play between correcting clamp and eccentric bushing should measure some to 0.006 inch maximum.

(h) To adjust:

1. With adjusting screw still loosened and function clutch still tripped, rotate main shaft until roller on axial correcting plate approaches seated position in notch of axial sector.

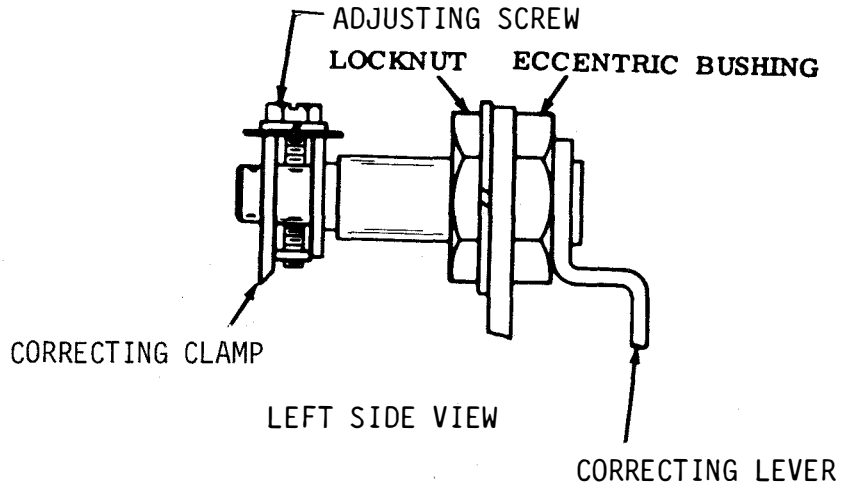
2. When clearance between roller and sector measures between some and 0.005 inch maximum, position correcting lever finger-tight against rack and tighten clamp adjusting screw.

(32) Printing Trip Link. Adjust as follows:

(a) Refer to Figure 6-200.

(b) Trip function clutch, position rocker bail to extreme left and manually lift accelerator so latching surfaces of printing latch and accelerator are even.

(c) Measure clearance between latch and accelerator. This should be some to 0.015 inch maximum.



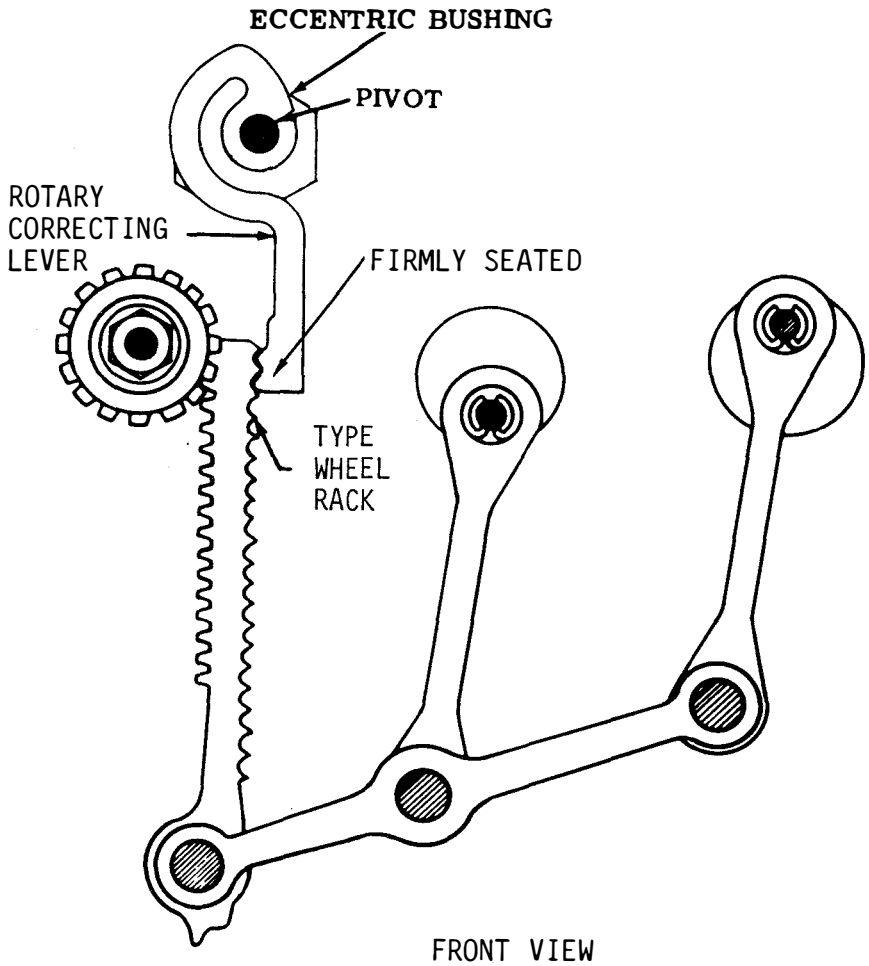


Figure 6-199. Rotary Correcting Lever (Sheet 1 of 2)

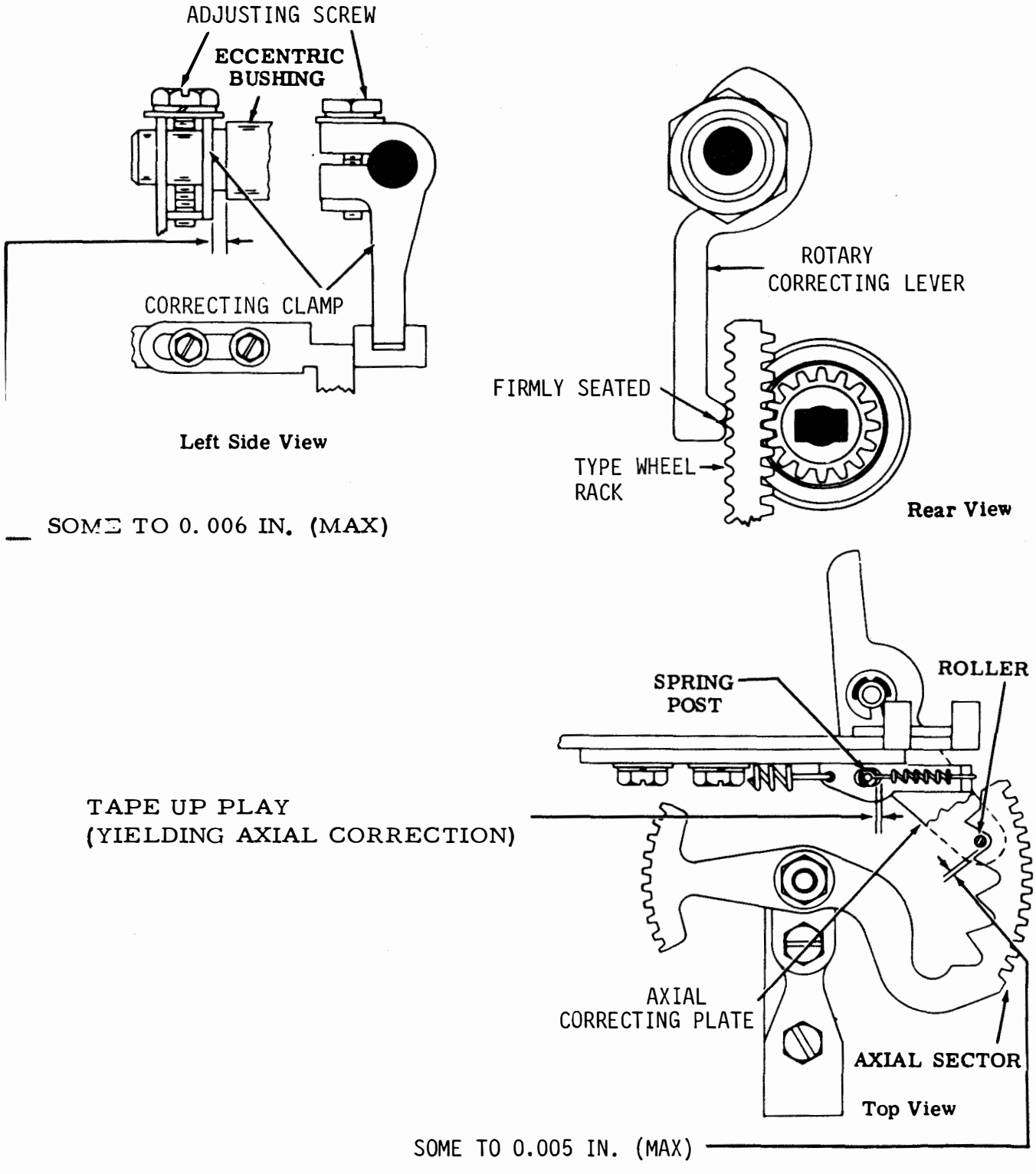


Figure 6-199. Rotary Correcting Lever (Sheet 2 of 2)

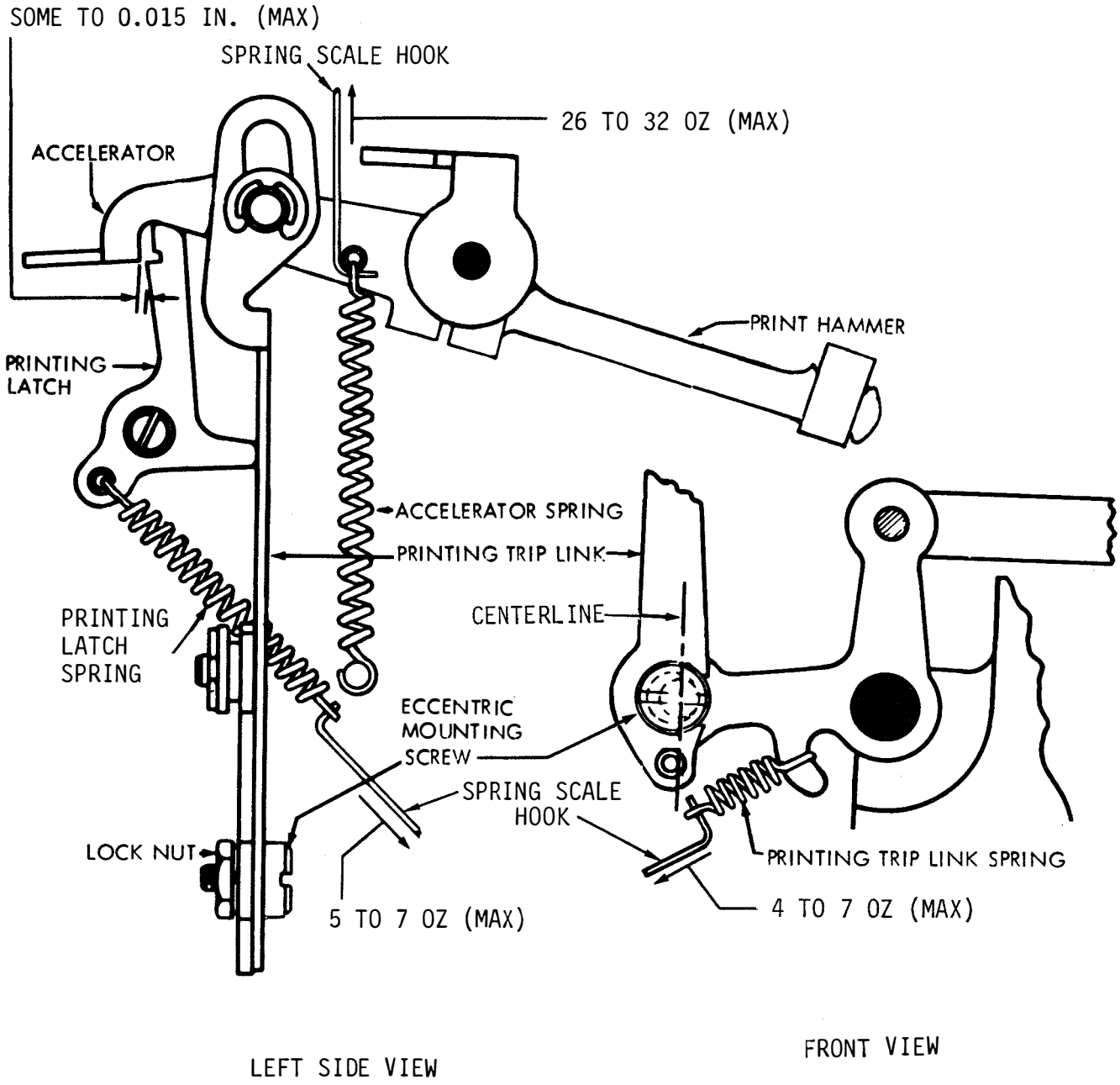


Figure 6-200. Printing Trip Link, Trip Link Spring, Latch Spring, and Accelerator Spring

(d) To adjust, loosen locknut and position printing trip link by means of eccentric mounting screw, keeping high of screw to left of centerline. Tighten locknut.

(33) Printing Trip Link Spring. Adjust as follows:

(a) Refer to Figure 6-200.

(b) Attach spring scale hook to the trip link spring and measure force required to pull spring to position length. This should be 4 to 7 ounces maximum.

(c) If requirement is not met, replace spring.

(34) Printing Latch Spring. Adjust as follows:

(a) Refer to Figure 6-200.

(b) Place unit in idle condition and attach spring scale hook to latch spring to measure force required to pull spring to position length. This should be 5 to 7 ounces maximum.

(c) If requirement is not met, replace spring.

(35) Accelerator Spring. Adjust as follows:

(a) Refer to Figure 6-200.

(b) Place unit in idle condition, attach spring scale hook to accelerator spring, and measure force required to pull spring to installed length. This should be 26 to 32 ounces maximum.

(c) If requirement is not met, replace spring.

(36) Print Hammer Spring. Adjust as follows:

(a) Refer to Figure 6-201.

(b) Place unit in idle condition, apply spring scale pushrod to print hammer lever and push until top of hammer head is level with type wheel.

(c) Force required should measure from 1 to 3 ounces maximum.

(d) If requirement is not met, replace spring.

j. Typing Mechanism Adjustment (Fully Perforated Tape). Perform the following typing mechanism adjustments.

(1) Ribbon Carrier. Adjust as follows:

NOTE

There should be some end play between carrier and rear guidepost when unit is in STOP position.

(a) Refer to Figure 6-202.

(b) With unit in STOP position and function clutch disengaged, ribbon should overlap tape and last printed character should be visible.

(c) To adjust, loosen lock screw and position ribbon oscillating lever by means of adjusting slot. Tighten screw.

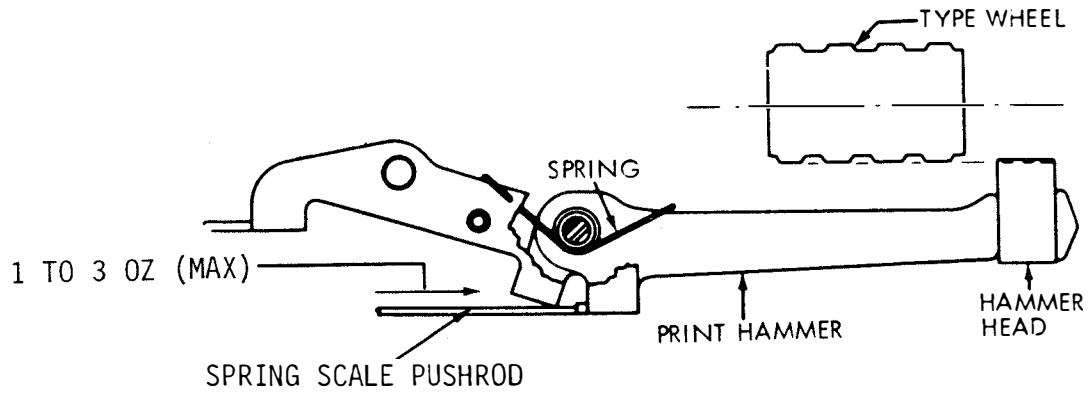


Figure 6-201. Print Hammer Spring

(2) Print Hammer (Preliminary). Adjust as follows:

(a) Refer to Figure 6-203.

(b) Clearance between print hammer and feed wheel pin points should measure 0.030 to 0.040 inch maximum.

(c) To adjust, loosen print hammer shaft locknut and position print hammer by turning shaft clockwise to move hammer towards feed wheel and counterclockwise to move hammer away. Tighten locknut.

(3) Type Wheel Positioning and Print Hammer (Final). Adjust as follows:

(a) Refer to Figure 6-203.

(b) Select "N" code combination (--345), position rocker bail to extreme left position, and check that rotary corrector is firmly seated in type wheel rack.

(c) Type wheel and print hammer alignment should be such that a full character is printed uniformly between feed holes.

(d) To adjust, loosen type wheel locknut and position type wheel. If necessary refine print hammer adjustment making certain print hammer head does not come in contact with feed wheel. Tighten locknut.

k. Typing Mechanism Adjustments (Chadless Tape). Perform the following typing mechanism adjustments.

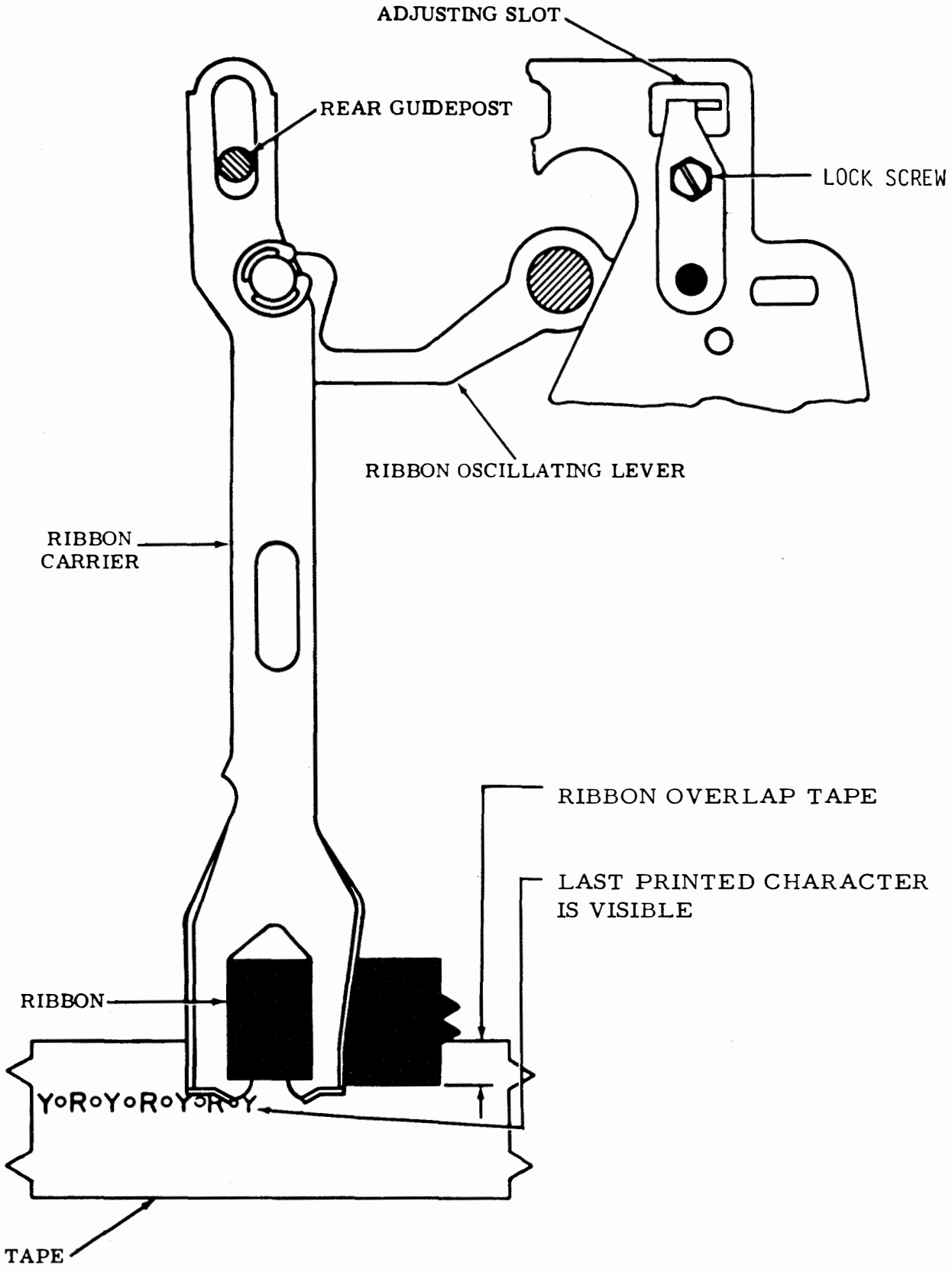
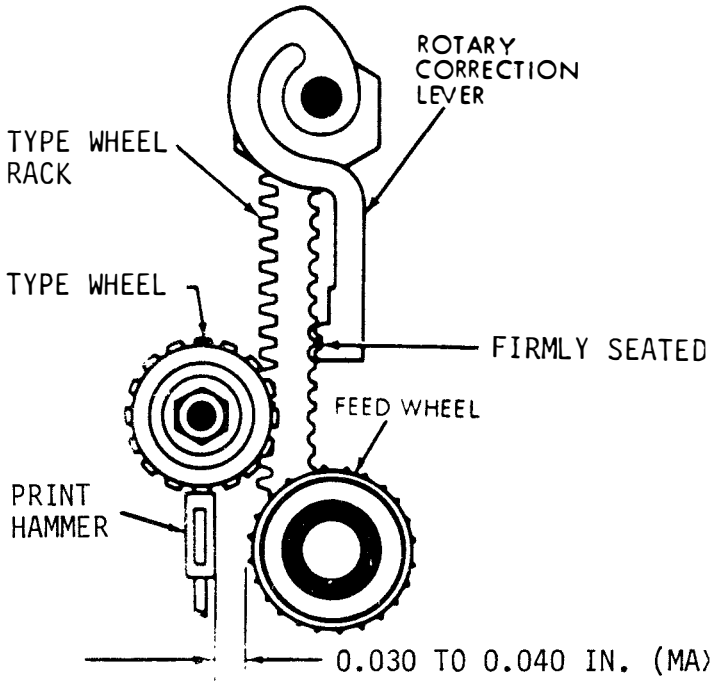


Figure 6-202. Ribbon Carrier (Fully Perforated Tape), Top View



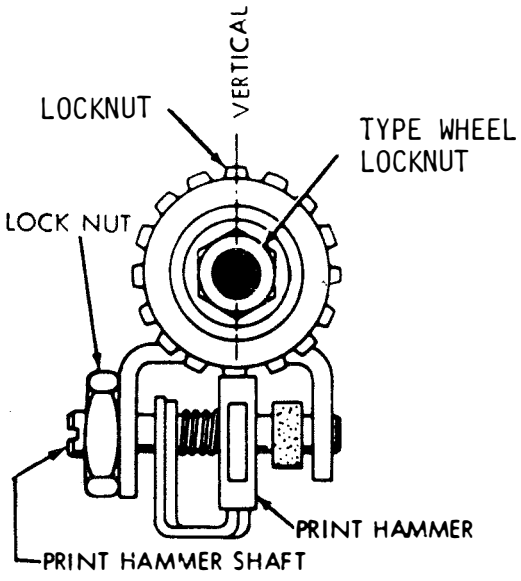


Figure 6-203. Print Hammer (Preliminary and Final) and Type Wheel Positioning (Fully Perforated Tape), Front View

(1) Ribbon Carrier. Adjust as follows:

NOTE

There should be some end play between carrier and rear guidepost when unit is in STOP position.

(a) Refer to Figure 6-204.

(b) With unit in STOP position and function clutch disengaged, ribbon should overlap by a small amount and last printed character should be visible.

(c) To adjust, loosen lock screw and position ribbon oscillating lever by means of adjusting slot. Tighten lock screw.

(2) Type Wheel. Adjust as follows:

NOTE

For best results, it may be necessary to make print hammer adjustments (3) below, and then refine this adjustment.

(a) Refer to Figure 6-205.

(b) Select "M" code combination (--345), place rocker bail to extreme left, and the correcting lever should be firmly seated in type wheel rack.

(c) Align type wheel with print hammer so full character is printed uniformly and 6, ±1/4, code hole spaces behind its perforated code hole.

(d) To adjust, loosen locknut and position type wheel. Check printing by manually lifting accelerator to latched position and releasing it. Tighten locknut.

(3) Print Hammer. Adjust as follows:

NOTE

It may be necesary to remake type wheel adjustment, (2) above, and then refine this adjustment.

(a) Refer to Figure 6-206.

(b) With unit operating under power, print hammer and type wheel should be aligned to obtain best quality of printing.

(c) To adjust, loosen locknut and position print hammer shaft. Tighten locknut.

1. Ribbon Mechanism Adjustments. Perform the following ribbon mechanism adjustments.

(1) Drive Arm. Adjust as follows:

(a) Refer to Figure 6-207.

(b) Position rocker bail to extreme left and hold ribbon reversing arm under lower reversing extension of feed pawl.

(c) There should be some clearance between

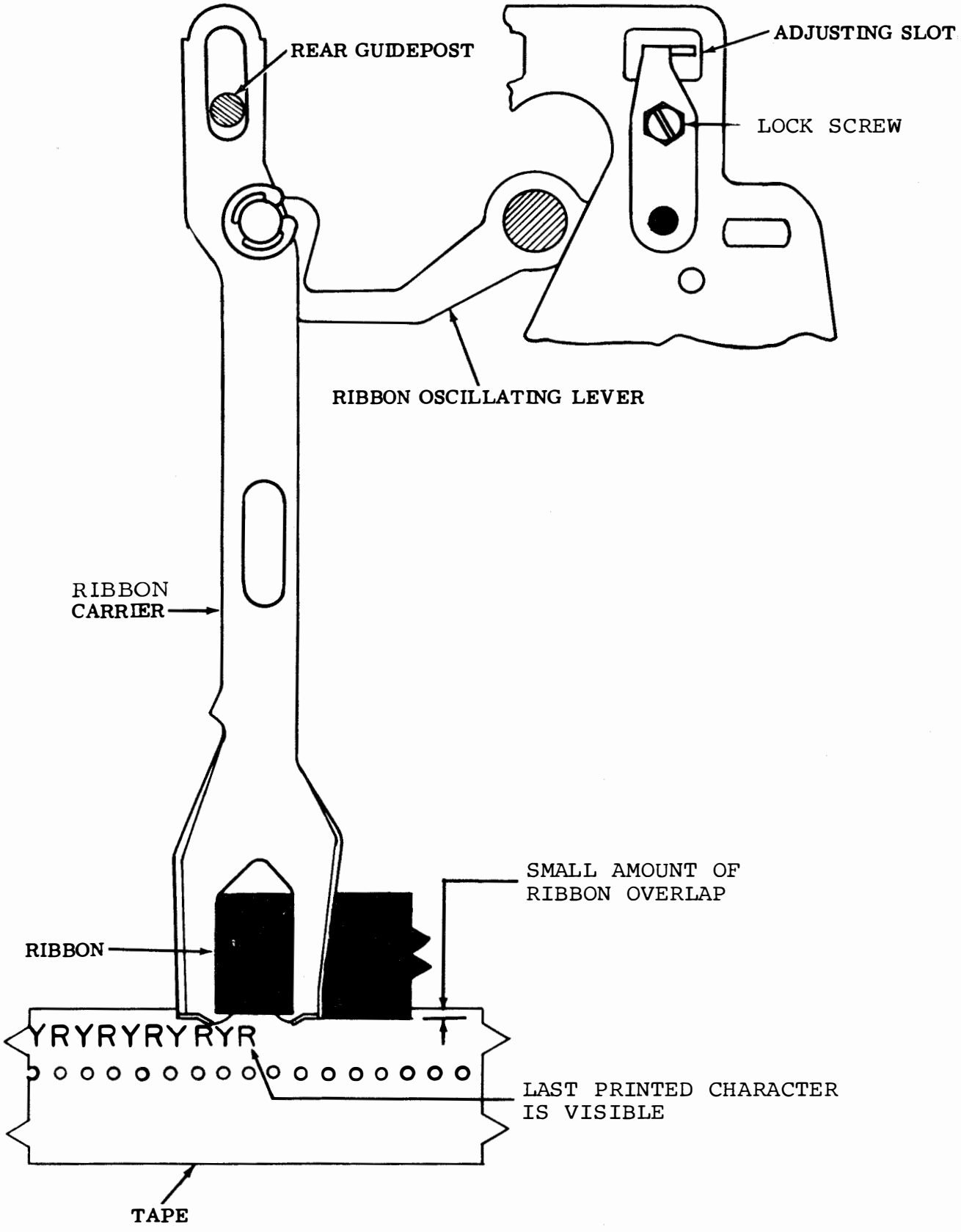


Figure 6-204. Ribbon Carrier (Chadless Tape), Top View

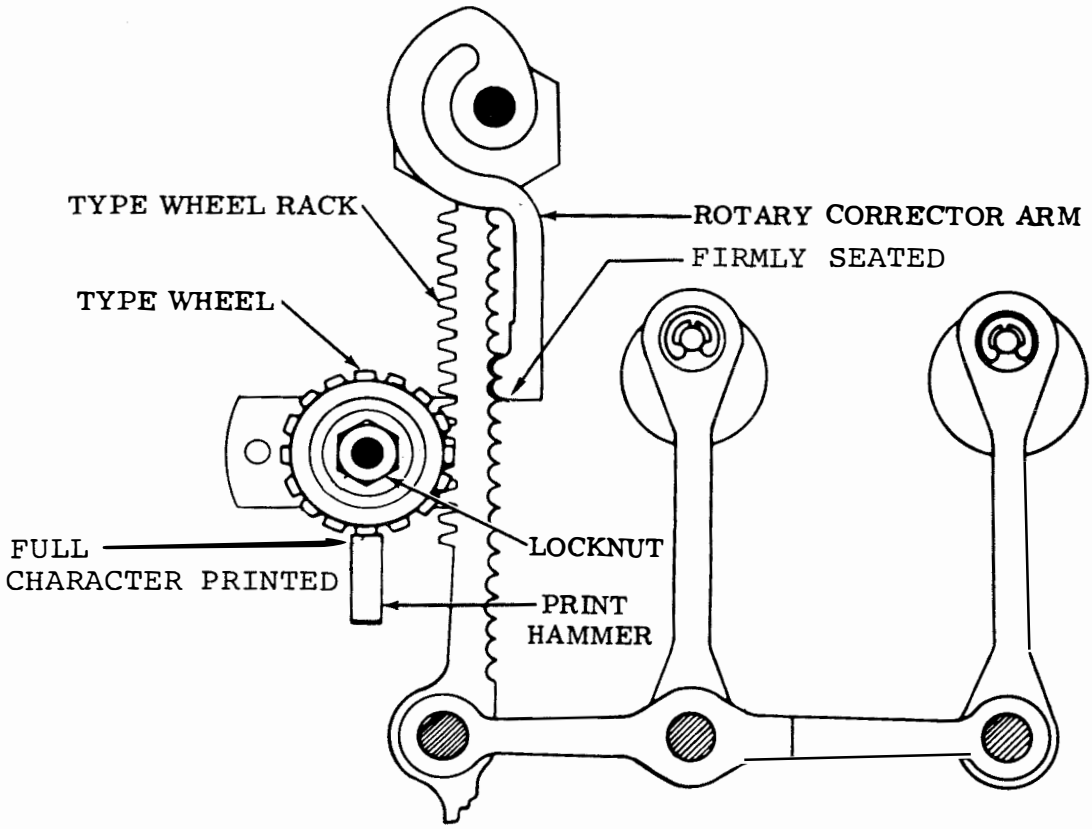


Figure 6-205. Type Wheel (Chadless Tape)

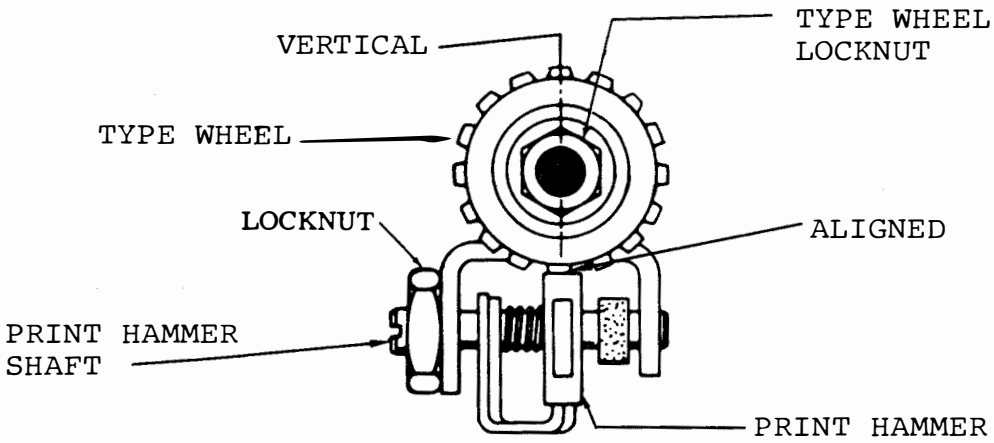


Figure 6-206. Print Hammer (Chadless Tape)

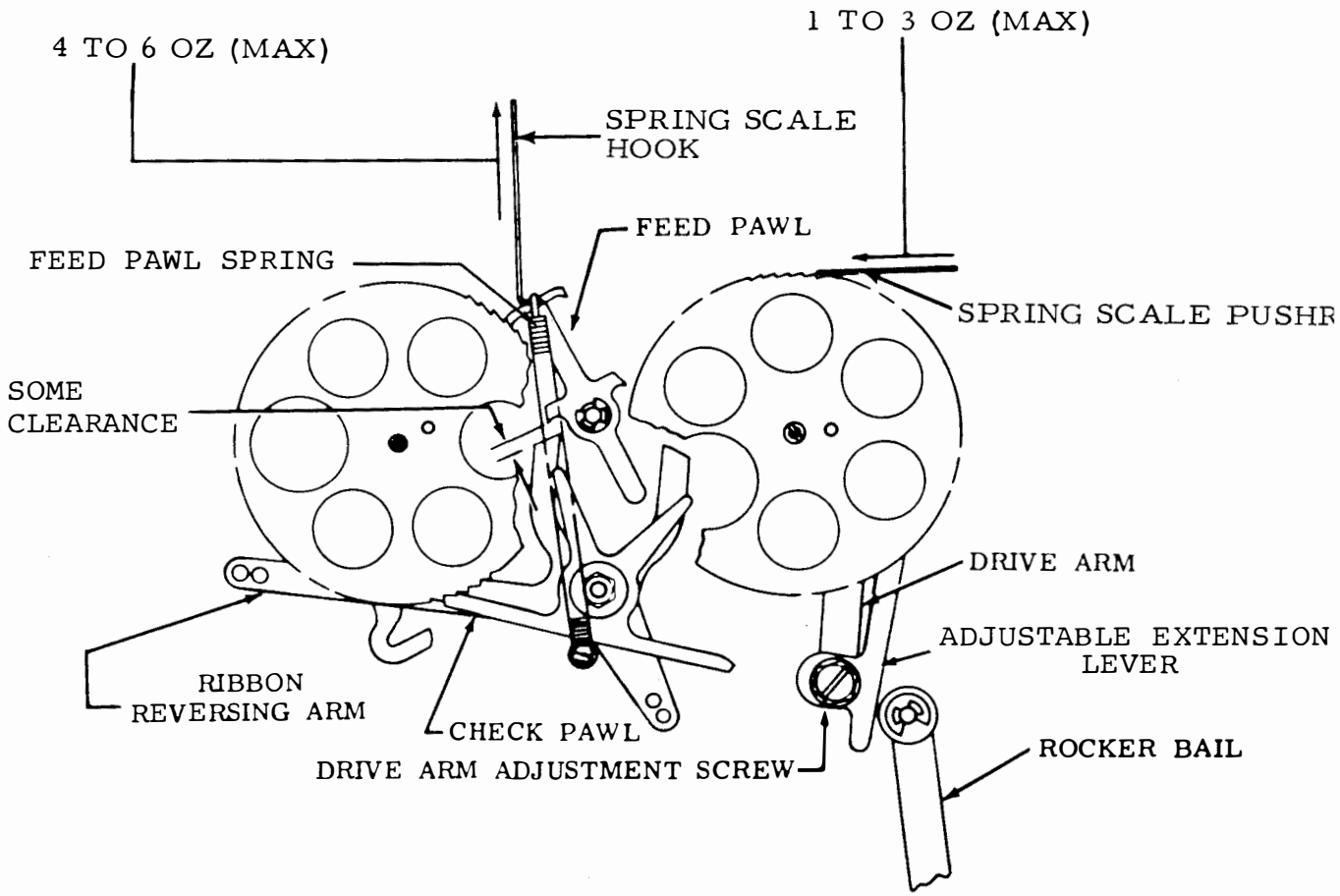


Figure 6-207. Drive Arm, Feed Pawl Spring, and Ratchet Wheel Torque Spring, Front View

blocking edge of ribbon reverse arm and reversing extension of feed pawl but not so great as to allow feed pawl to feed more than two teeth at a time and feed pawl should be detented in both its right and left position.

(d) To adjust, loosen mounting screw and position drive arm adjustable extension lever. Tighten screw.

(2) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-207.

(b) Place rocker bail to extreme right position.

(c) Attach spring scale hook to feed pawl spring and measure force required to pull spring to its installed length. This should be 4 to 6 ounces maximum.

(d) If requirement is not met, replace spring.

(3) Ratchet Wheel Torque Spring. Adjust as follows:

(a) Refer to Figure 6-207.

(b) Apply spring scale pushrod tangentially to ratchet wheel and measure force required to start wheel to rotate. This should be 1 to 3 ounces maximum.

(c) If requirement is not met, replace spring.

(4) Drive Arm Spring. Adjust as follows:

(a) Refer to Figure 6-208.

(b) Place rocker bail to extreme right position.

(c) Attach spring scale hook to drive arm spring and measure force required to pull spring to installed length. This should be 9 to 14 ounces maximum.

(d) If requirement is not met, replace spring.

(5) Detent Spring. Adjust as follows:

(a) Refer to Figure 6-208.

(b) Put reversing arm in extreme left or right position.

(c) Apply spring scale hook to detent spring and measure force required to pull spring to installed length. This should be 2 to 4 ounces maximum.

(d) If requirement is not met, replace spring.

6-6. AUXILIARY TYPING REPERFORATOR UNIT ADJUSTMENTS. The following paragraphs describe auxiliary typing reperforator adjustment procedures for high-level and low-level operation.

NOTE

When adjustment procedures call for clutch to be disengaged, clutch shoe lever must be fully latched between its trip lever and latch-lever so that clutch shoes

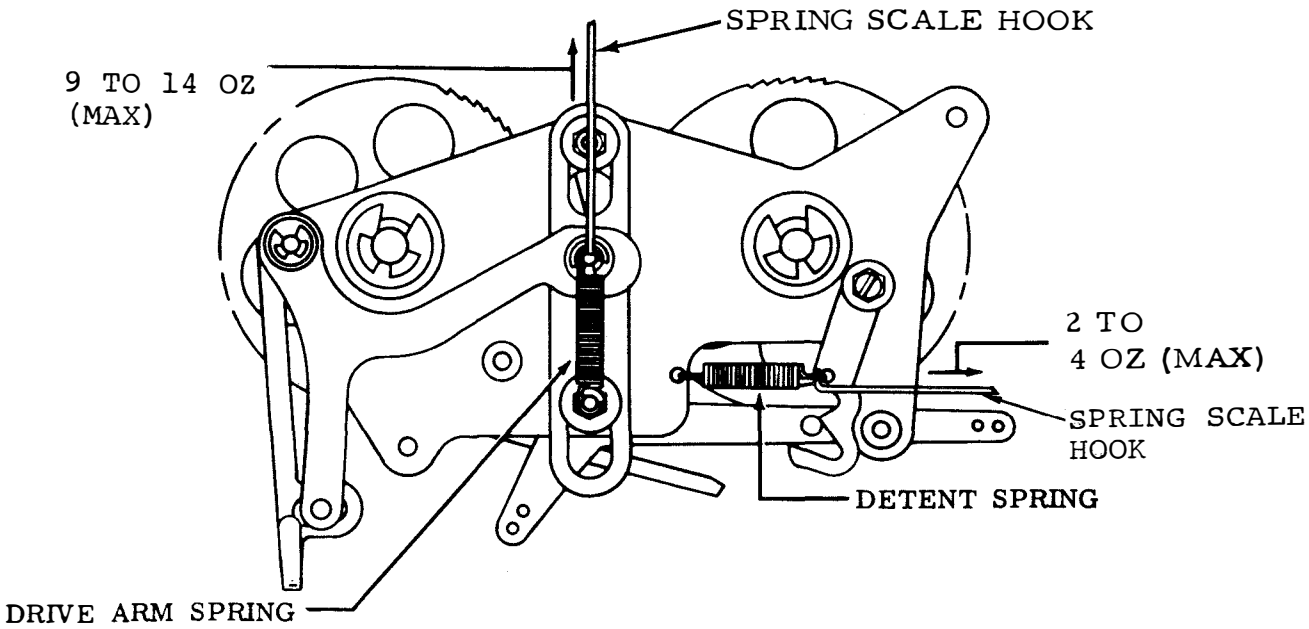


Figure 6-208. Drive Arm Spring and Detent Springs, Rear View

release their tension on the clutch drum. When engaged, clutch shoes are wedged firmly against clutch drum. When main shaft is rotated by hand, clutch does not fully disengage upon reaching its STOP position. In order to relieve drag on the clutch and permit main shaft to rotate freely, apply pressure on a lug of clutch disk with a screwdriver to cause it to engage its latchlever and thus disengage the internal expansion clutch shoes from clutch drum.

a. Selector Mechanism Adjustments. Perform selector mechanism adjustments in accordance with the following paragraphs.

(1) Clutch Shoe Lever. Adjust as follows:

(a) Refer to Figure 6-209.

(b) Disengage clutch and measure clearance between clutch shoe lever and stop-lug.

(c) Align head of clutch drum mounting screw with stop-lug and engage clutch. Manually press shoe lever and stop-lug together and allow to snap apart. Measure clearance again.

(d) Clearance should be between 0.055 and 0.085 inch maximum greater with clutch engaged than when disengaged.

(e) Engage wrench or screwdriver with lug on adjusting disk and loosen clamp screws.

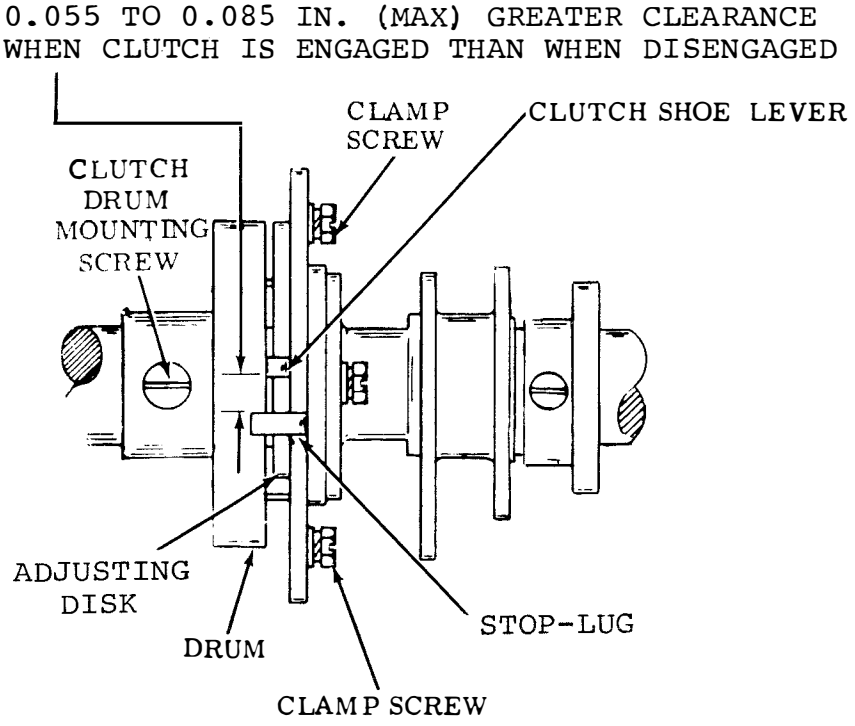


Figure 6-209. Selector Clutch Shoe Lever, Right Side View

(f) Rotate disk until proper clearance is achieved.

(g) Tighten screws.

(2) Clutch Shoe Lever Spring. Adjust as follows:

(a) Refer to Figure 6-210.

(b) Engage clutch and hold cam disk to prevent turning.

(c) Attach spring scale hook over clutch shoe lever and pull shoe lever in contact with stop-lug.

(d) The force required should be between 15 and 20 ounces maximum.

(e) If spring tension is incorrect, replace spring.

(3) Clutch Shoe Spring. Adjust as follows:

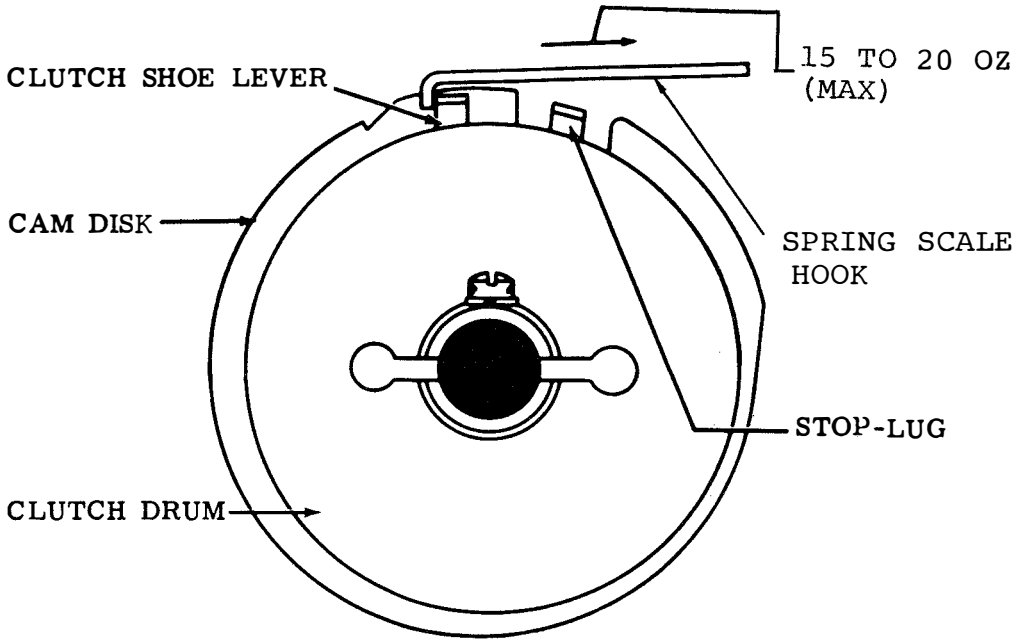
NOTE

To check this spring tension, it is necessary to remove the clutch from the main shaft. Therefore, it should not be checked unless there is reason to believe it will not meet its requirement.

(a) Refer to Figure 6-211.

(b) Remove clutch from drum.

(c) Attach spring scale hook over primary clutch shoe.



NOTE: THESE SPRING TENSIONS APPLY TO BOTH CLUTCHES

Figure 6-210. Selector and Function Clutch Shoe Lever Spring, Front View

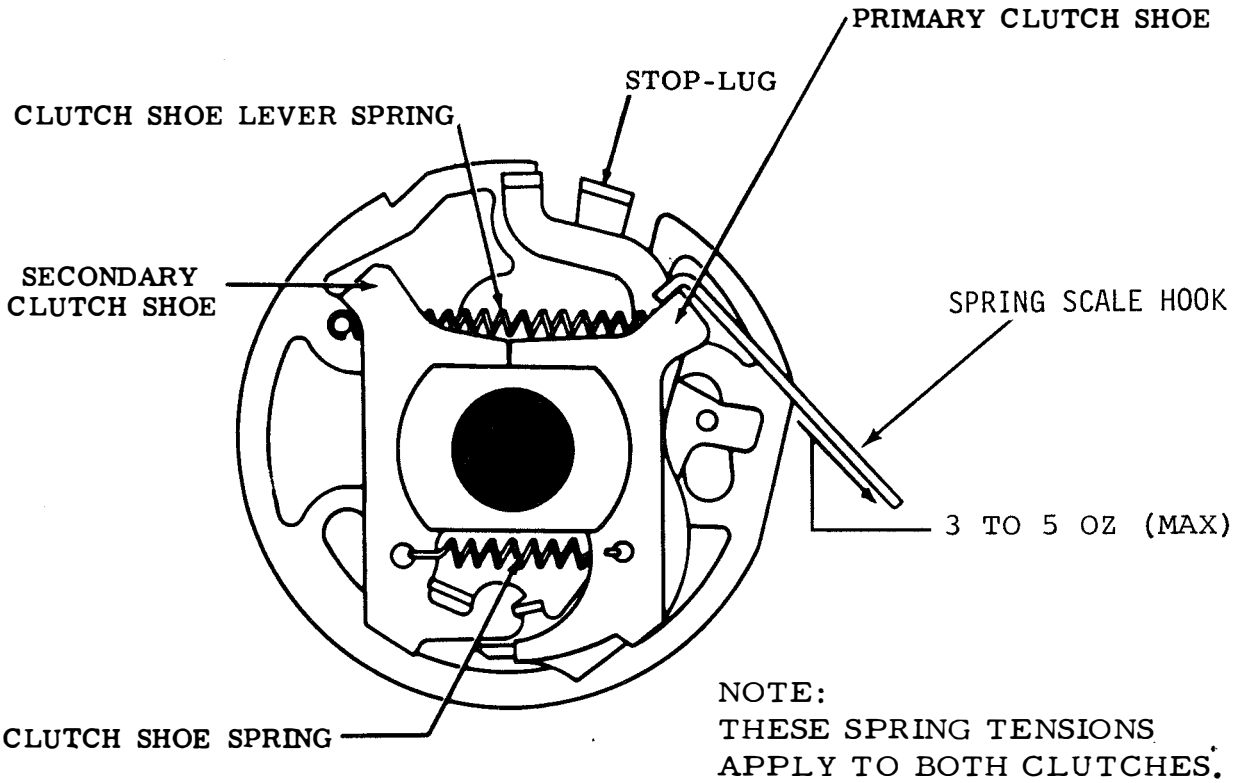


Figure 6-211. Selector and Function Clutch Shoe Spring, Front View

(d) The force required to start primary shoe moving should be between 3 and 5 ounces.

(e) If spring tension is incorrect, replace spring.

(4) Selector Armature. Adjust as follows:

NOTE

This adjustment need not be made or checked if the selector magnet bracket and receiving margin requirements are met.

(a) Refer to Figure 6-212.

(b) Remove range finder assembly and selector magnet assembly.

NOTE

To ensure better operation, pull a piece of bond paper between the armature and the pole pieces to remove any oil or foreign matter that may be present. Make certain that no lint or pieces of paper remain between the pole pieces and the armature.

(c) Clearance between armature hinge clamp and pivot edge of magnet bracket casting at their closest point should measure 0.010 inch minimum.

(d) Clearance between outer edge of armature and outer edge of both pole pieces should be flush within 0.015 inch.

(e) Start lever should drop freely into armature extension slot.

(f) To adjust, position armature spring adjusting nut to hold armature firmly against pivot edge of casting. Position armature with mounting screws loosened. Tighten screws.

(5) Selector Armature Downstop (Preliminary). Adjust as follows:

(a) Refer to Figure 6-213.

(b) Magnet must be de-energized, locklevers on high part of their cam, and armature resting against its downstop.

(c) Clearance between end of armature and left edge of left pole piece should be between 0.030 and 0.035 inch maximum.

(d) To adjust, position downstop bracket to required clearance with mounting screw loosened. Tighten screw.

(6) Selector Armature Spring (Preliminary) (Single Antifreeze Button Units). Adjust as follows:

NOTE

This spring can be adjusted for maximum selector performance only when typing reperforator is connected to the specific circuit over which it is to operate under service conditions. Since there are several operating speeds and since circuits vary widely, it is impossible to adjust spring for maximum performance at the factory.

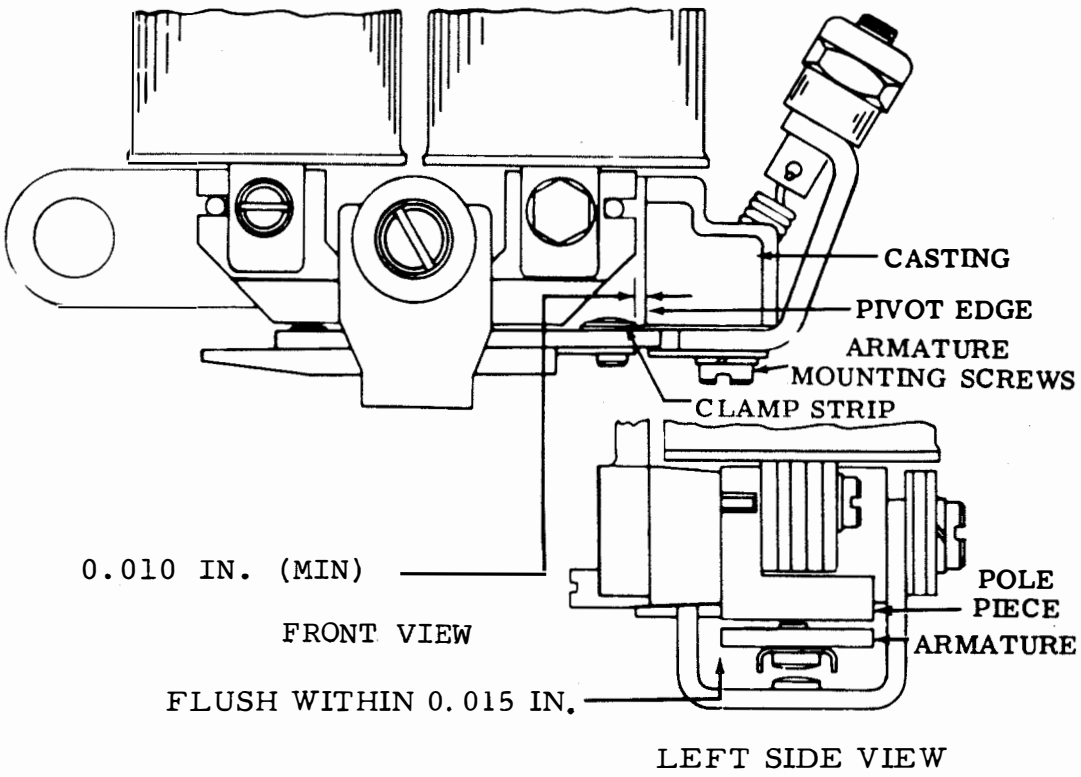


Figure 6-212. Selector Armature

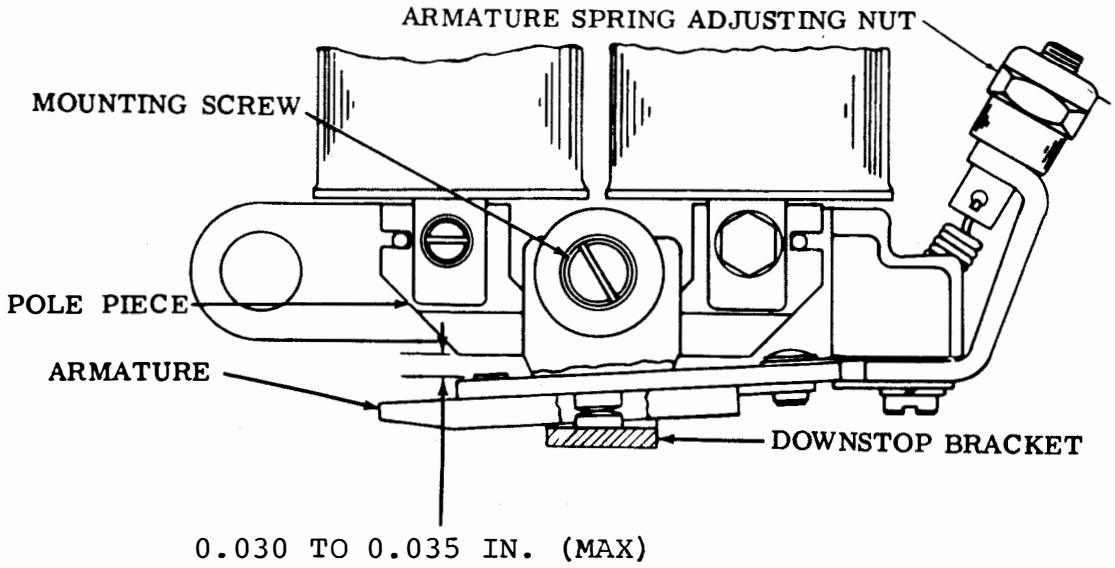


Figure 6-213. Selector Armature Downstop (Preliminary), Front View

This spring tension requirement is given to permit operation prior to measurement of receiving margins. Readjustment made to obtain satisfactory receiving margin should not be disturbed in order to meet requirements of this adjustment. The final spring tension should be held as close as possible to the values given below, consistent with good receiving margins.

(a) Refer to Figure 6-214.

(b) With locking lever and start lever on high part of cams, apply spring scale as nearly vertical as possible under end of armature extension.

(c) The following tensions should be required to move the armature to the marking position:

1. 1-1/2 to 2 ounces maximum for 0.020 and 0.035 ampere.

2. 2-1/2 to 3 ounces maximum for 0.060 ampere.

(d) To adjust, position adjusting nut to specified tolerance of step (c) above.

(e) For final adjustments, see Selector Receiving Margin, paragraph 6-6a(22).

(7) Selector Armature Spring (Preliminary) (Two Antifreeze Button Unit). Adjust as follows:

(a) Refer to Figure 6-215.

(b) With locking levers and start lever on high part of cams, apply spring scale as nearly vertical as possible under end of armature extension.

(c) The following tensions should be required to move the rear antifreeze button against the magnet core:

1. Approximately 14 grams for 0.020 ampere.

2. Approximately 18 grams for 0.030 ampere.

3. Approximately 21 grams for 0.060 ampere.

(d) To adjust, position armature spring adjusting nut to tolerance specified in step (c) above.

(e) Refer to adjustments for Selector Receiving Margin, paragraph 6-6a(23).

(8) Selector Armature Spring (Final) (Two Antifreeze Button Unit). Adjust as follows:

(a) Refer to Figure 6-215.

(b) When a distortion test set is available, selector armature spring tension should be refined to obtain satisfactory receiving margins.

(c) The front antifreeze button must contact the magnet core when the magnet coils are energized.

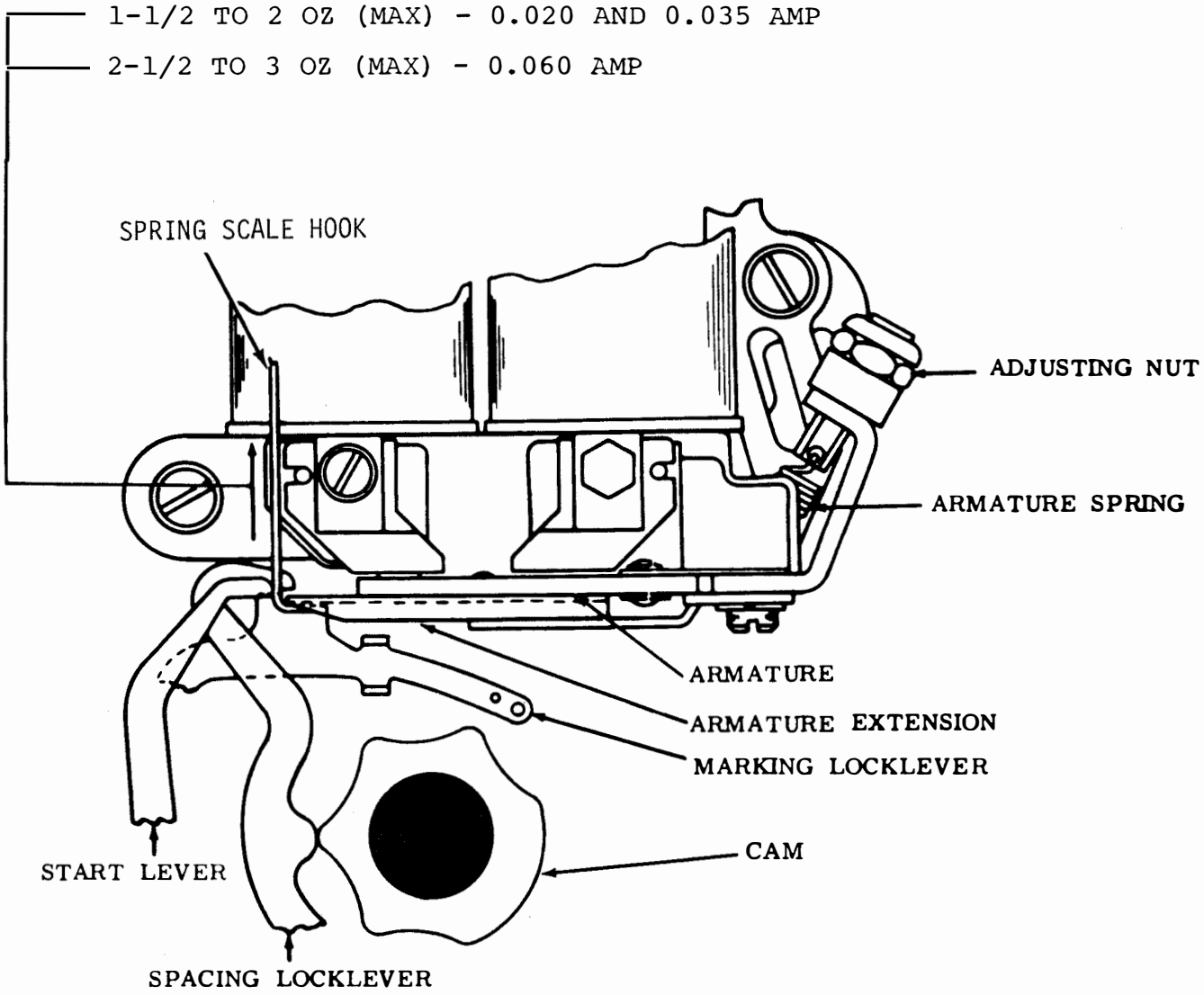


Figure 6-214. Selector Armature Spring (Preliminary) (Single Antifreeze Button Unit), Front View

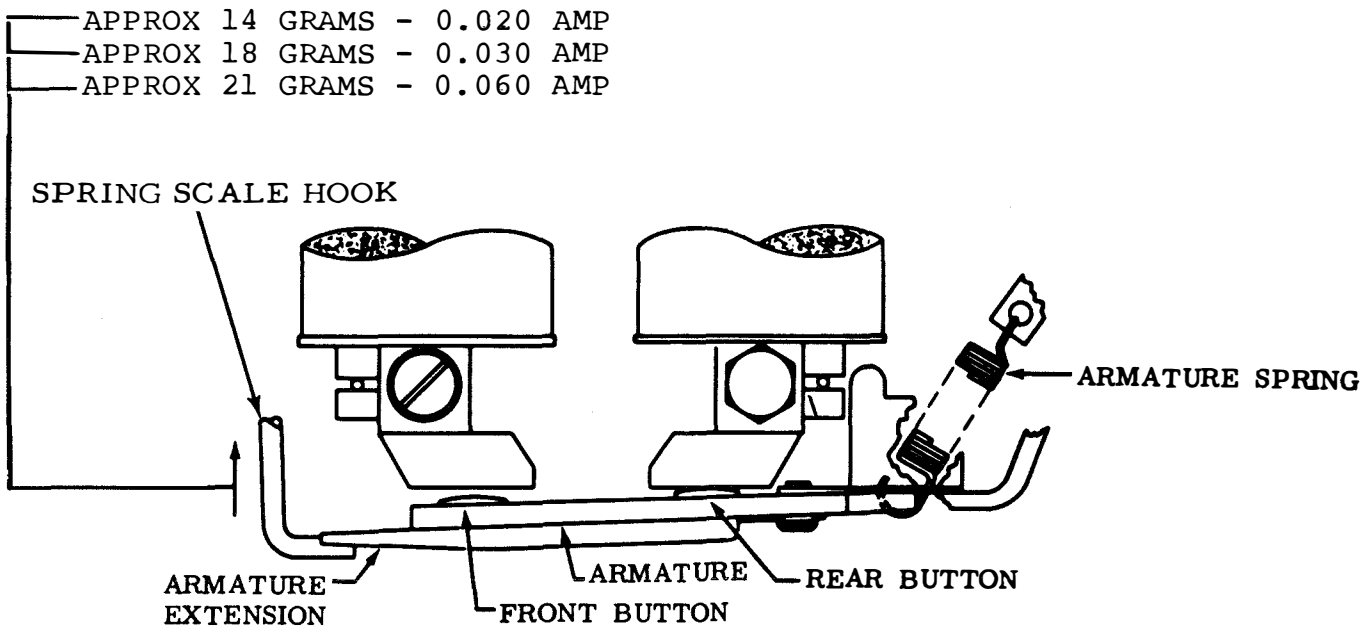


Figure 6-215. Selector Armature Spring (Preliminary and Final) (Two Antifreeze Button Units), Front View

(d) For final adjustments see Selector Receiving Margin, paragraph 6-6a(23).

(9) Selector Magnet Bracket. Adjust as follows:

NOTE

The appropriate preliminary Selector Armature Spring adjustment, paragraphs 6-6a(6) or (7) must be made prior to this adjustment.

(a) Refer to Figure 6-216.

(b) With spacing locklever on high part of cam, and armature in contact with pole piece, measure clearance between end of armature extension and shoulder on spacing locklever.

(c) The clearance should be between 0.020 and 0.035 inch maximum.

(d) To adjust, loosen two magnet bracket mounting screws and adjusting link clamp screw. Position magnet bracket by adjusting link and tighten link clamp screw only.

(e) With spacing locklever on high part of cam, and armature in contact with pole piece, measure clearance between upper surface of the upper step of the spacing locklever when locklever is held downward.

(f) There should be some clearance, not to exceed 0.003 inch.

(g) To adjust, position upper end of magnet bracket. Tighten two magnet

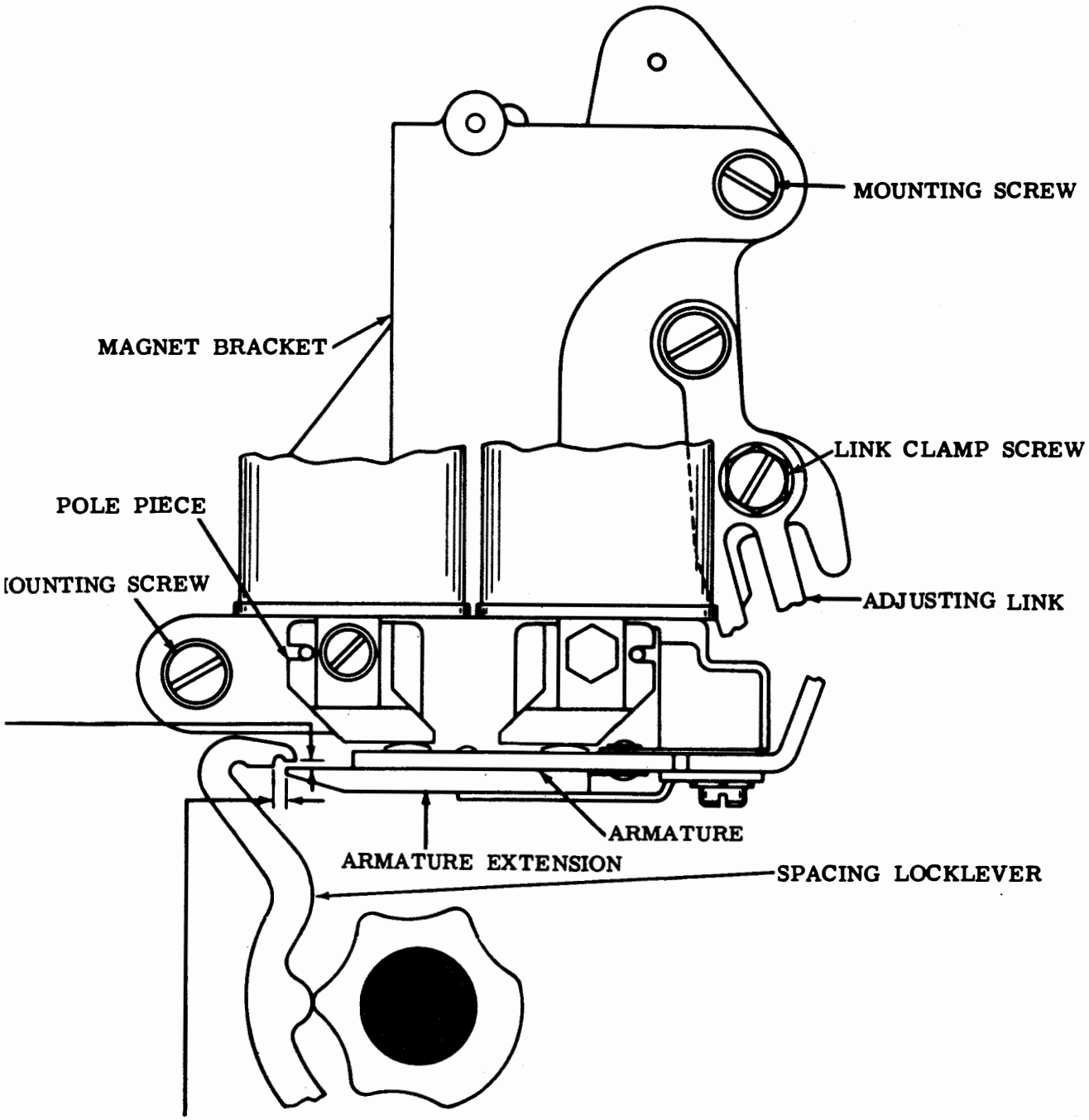


Figure 6-216. Selector Magnet Bracket, Front View

bracket mounting screws and recheck steps (b) and (c).

(10) Selector Magnet Bracket Marking Locklever. Adjust as follows:

(a) Refer to Figure 6-217.

(b) With marking locklever on low part of cam, magnet energized, and armature in contact with left pole piece, check clearance between lower surface of armature extension and upper surface of marking locklever.

(c) There should be some clearance visible.

(d) To adjust, loosen mounting screws and position upper end of magnet bracket so there is clearance, and tighten mounting screws.

(e) Recheck adjustments in paragraph 6-6a(9).

(11) Marking Locklever Spring. Adjust as follows:

(a) Refer to Figure 6-218.

(b) With LETTERS combination (12345) set and main shaft rotated until selector clutch is disengaged, push the spring scale pushrod against lower extension of locklever.

(c) The marking locklever should start moving when a force between 1-1/2 and 3 ounces maximum is applied.

(d) If force does not match requirements, replace spring and recheck.

(12) Selector Armature Downstop (Final). Adjust as follows:

(a) Refer to Figure 6-219.

(b) With selector magnet de-energized and spacing locklever on low part of cam, measure clearance between top of armature extension and bottom of lower step of spacing locklever.

(c) The clearance should be between 0.005 and 0.015 inch maximum.

(d) To adjust, refine adjustment in Selector Armature Downstop (Preliminary), paragraph 6-6a(5).

(13) Selector Pushlever Spring. Adjust as follows:

(a) Refer to Figure 6-220.

(b) With pushlever in spacing position, apply spring scale to pushlever to measure tension required to move pushlever from selector lever. Check five springs.

(c) Tension should be between 3/4 and 1-1/2 ounces maximum.

(d) Replace spring if not within specified tension.

(14) Selector Lever Spring. Adjust as follows:

(a) Refer to Figure 6-221.

(b) Place typing reperforator unit on left end and reset bail on peak of its cam.

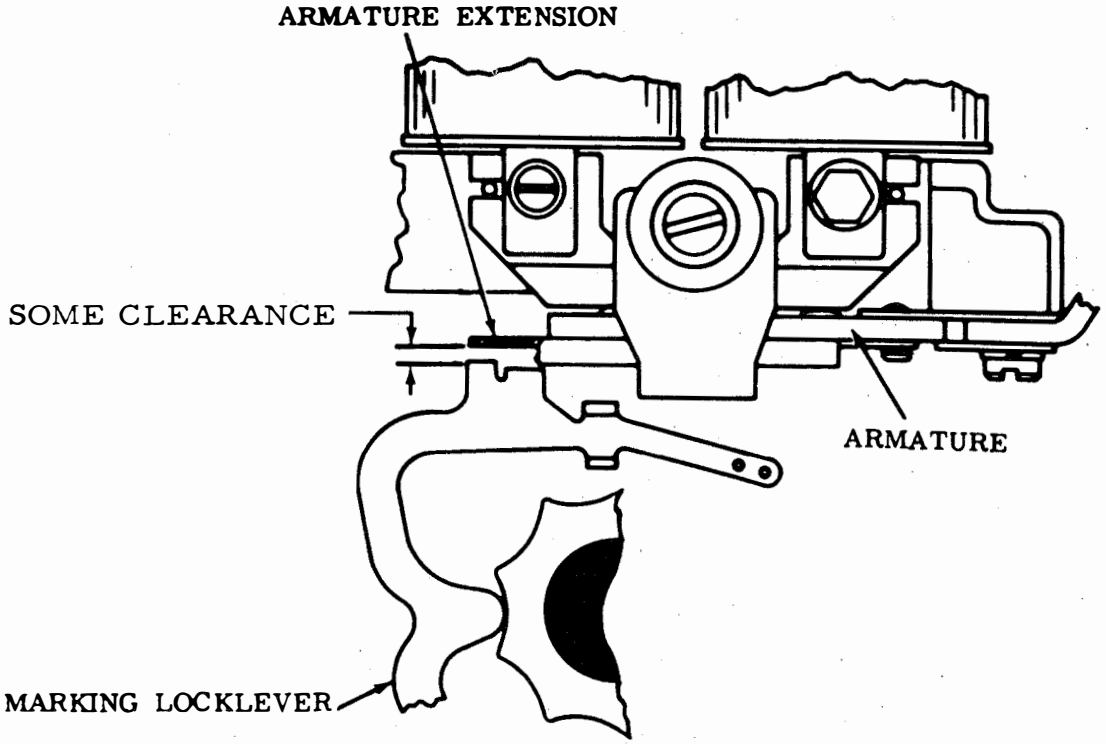


Figure 6-217. Selector Magnet Bracket Marking Locklever, Front View

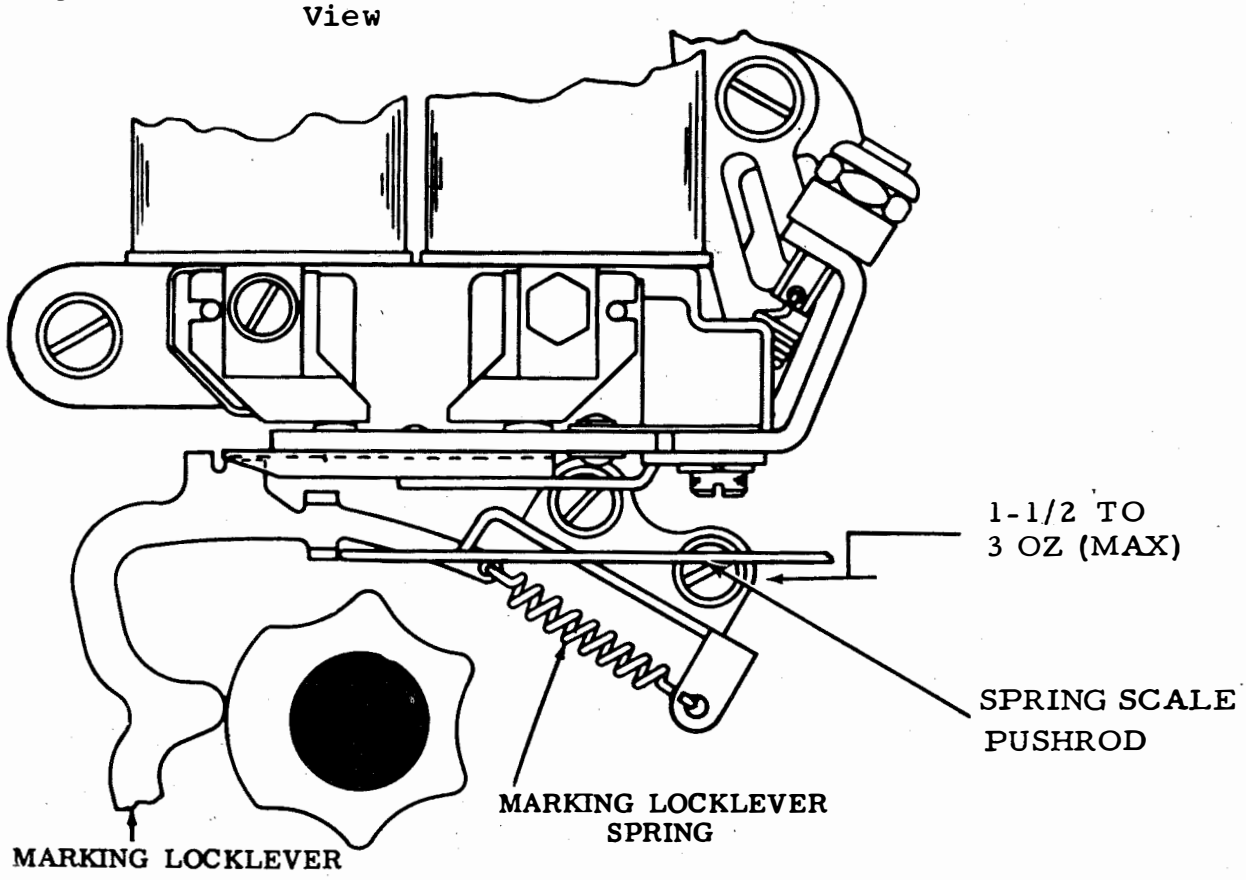


Figure 6-218. Marking Locklever Spring, Front View

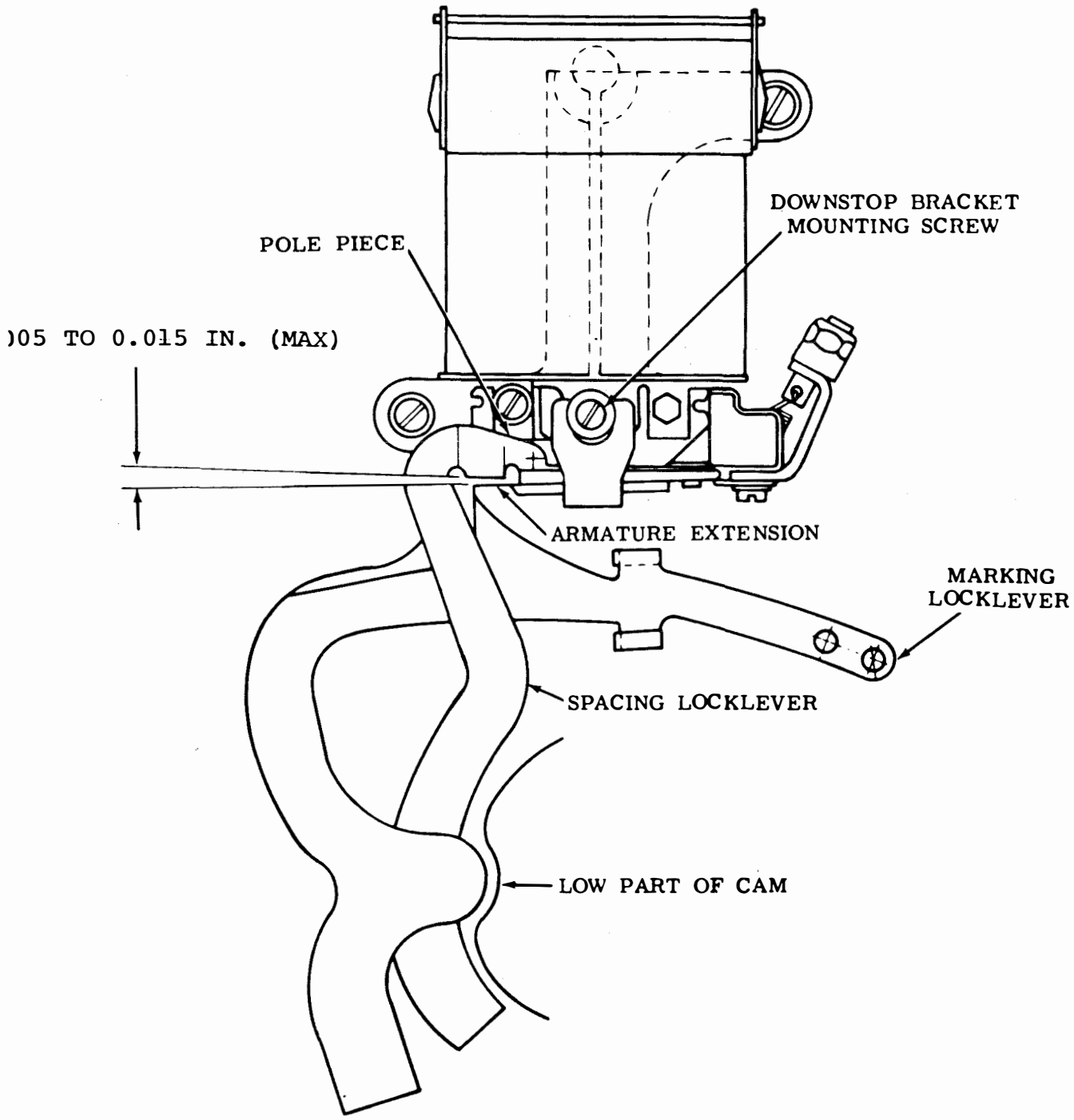


Figure 6-219. Selector Armature Downstop (Final), Front View

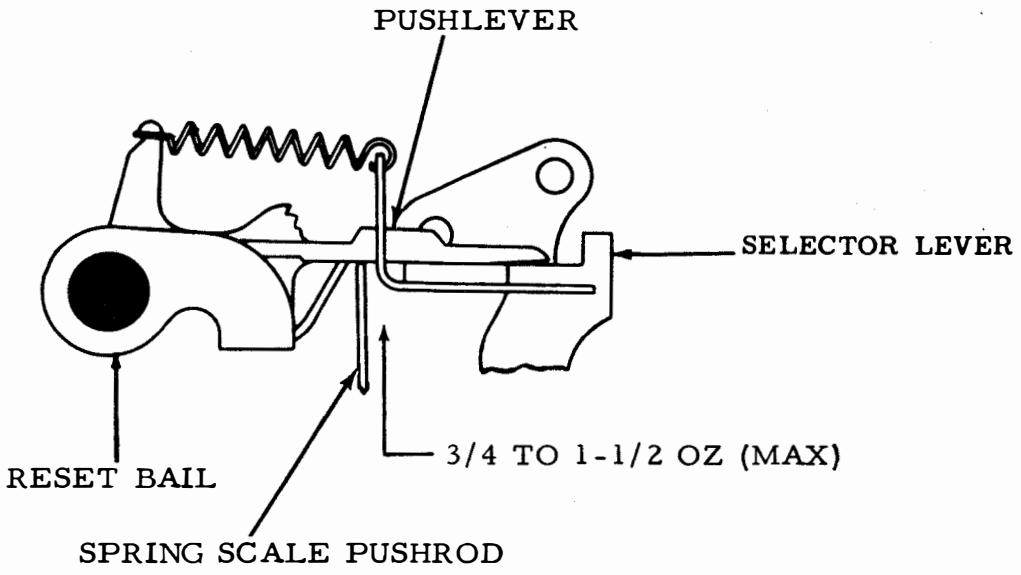


Figure 6-220. Selector Pushlever Spring

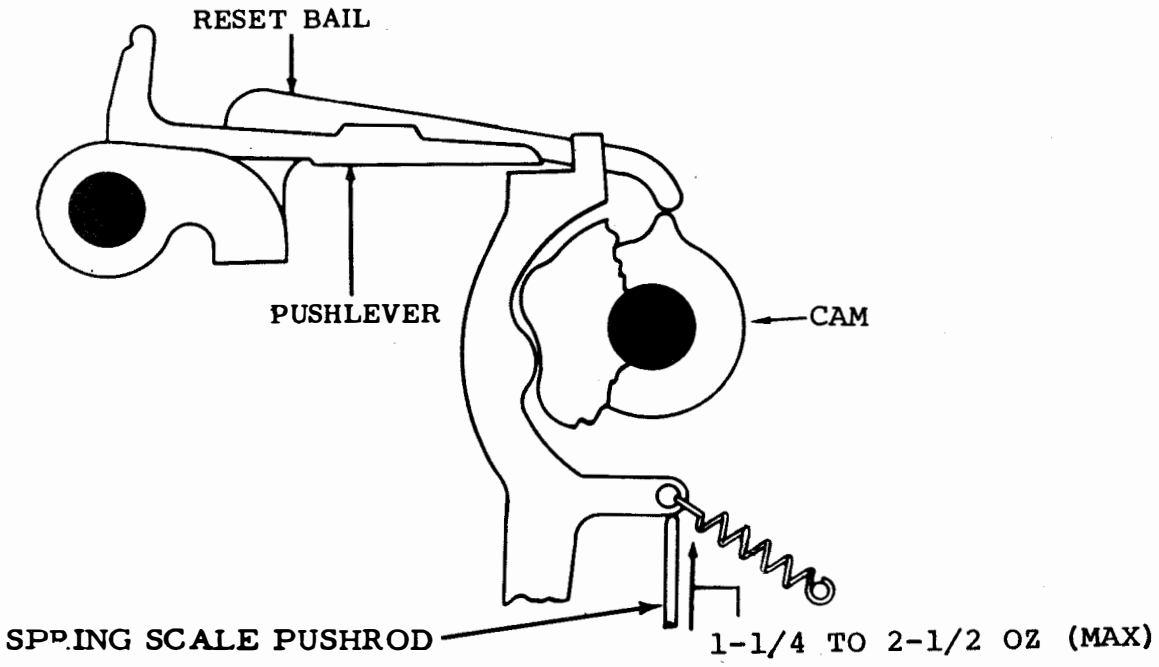


Figure 6-221. Selector Lever Spring

(c) Use spring scale to check force required to start each lever moving. Check five springs. If necessary, unhook start lever spring to check number 4 selector spring.

(d) Force required is 1-1/4 to 2-1/2 ounces maximum.

(e) Replace spring if not within specified tension.

(15) Selector Clutch Drum End Play. Adjust as follows:

(a) Refer to Figure 6-222.

(b) With clutch latched in STOP position, measure cam assembly end play.

(c) Cam assembly should have some end play, not to exceed 0.010 inch.

(d) To adjust, loosen mounting screw, position clutch drum on main shaft, and tighten screw.

(16) Pushlever Reset Bail Spring. Adjust as follows:

(a) Refer to Figure 6-223.

(b) With pushlever reset bail on low part of cam, apply 32-ounce spring scale to reset bail and measure force required to move bail from cam.

(c) Force should be between 4 and 8 ounces.

(d) Replace spring, if not within this tolerance.

(17) Selector Clutch Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-224.

(b) With latchlever resting on low part of its cam disk, attach spring scale to latchlever and measure force required to start latchlever moving.

(c) Force should be between 2 and 3-1/2 ounces maximum.

(d) If force does not match specifications, replace spring.

(18) Spacing Locklever Spring. Adjust as follows:

(a) Refer to Figure 6-224.

(b) With selector armature released and spacing locklever on low part of cam, apply spring scale to lower end of spacing locklever. Measure force required to move spacing locklever from its pivot shaft.

(c) Force should be between 3 and 6 ounces maximum.

(d) If force does not match specifications, replace spring.

NOTE

Replace range finder and selector magnet assembly before making adjustments in paragraphs 6-6a(19) and (20).

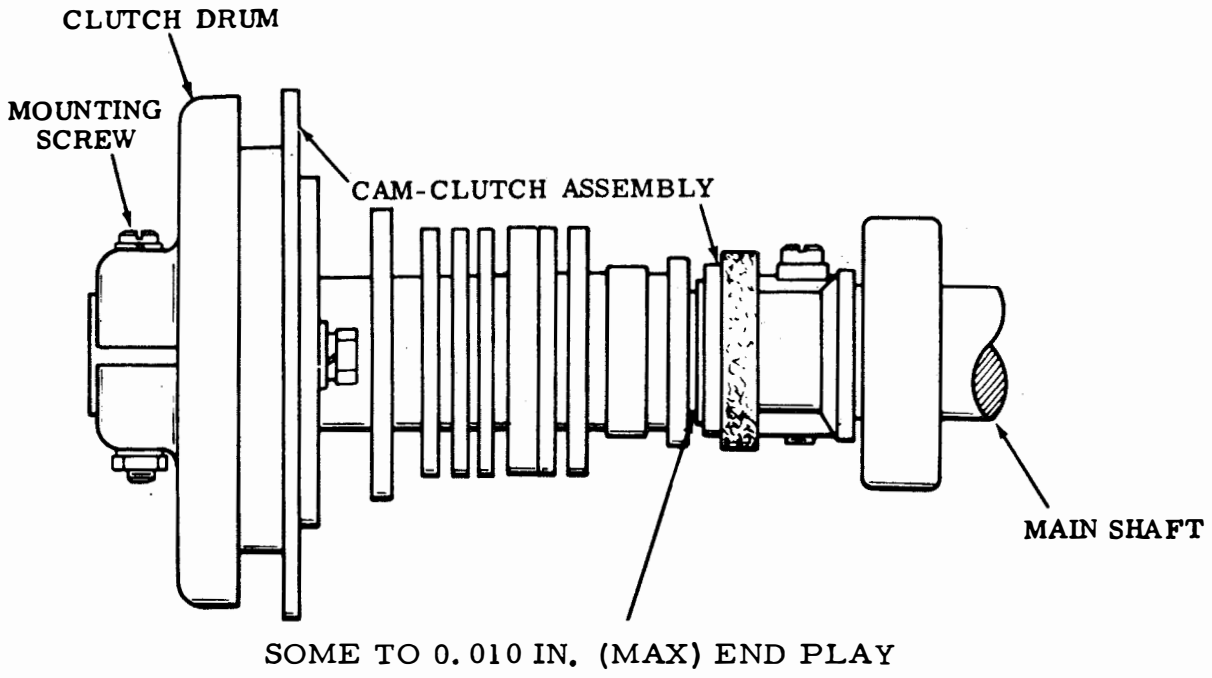


Figure 6-222. Selector Clutch Drum End Play, Right Side View

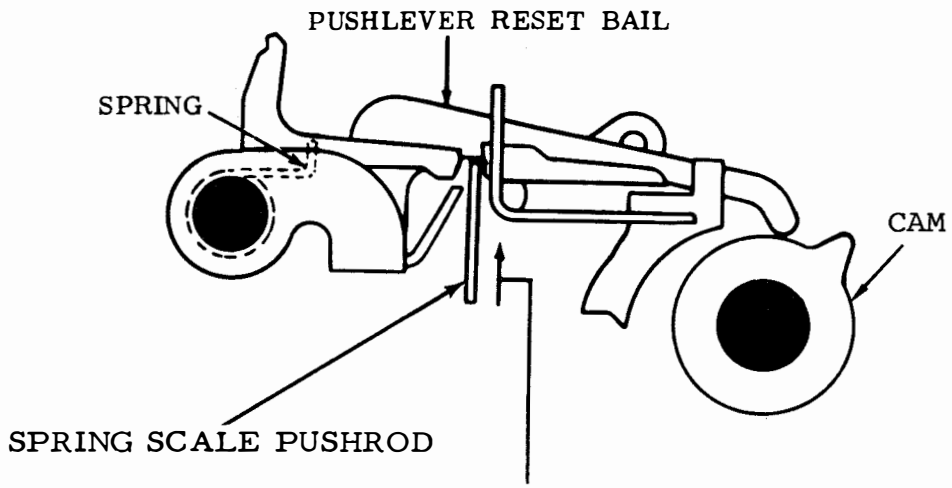


Figure 6-223. Pushlever Reset Bail Spring, Front View

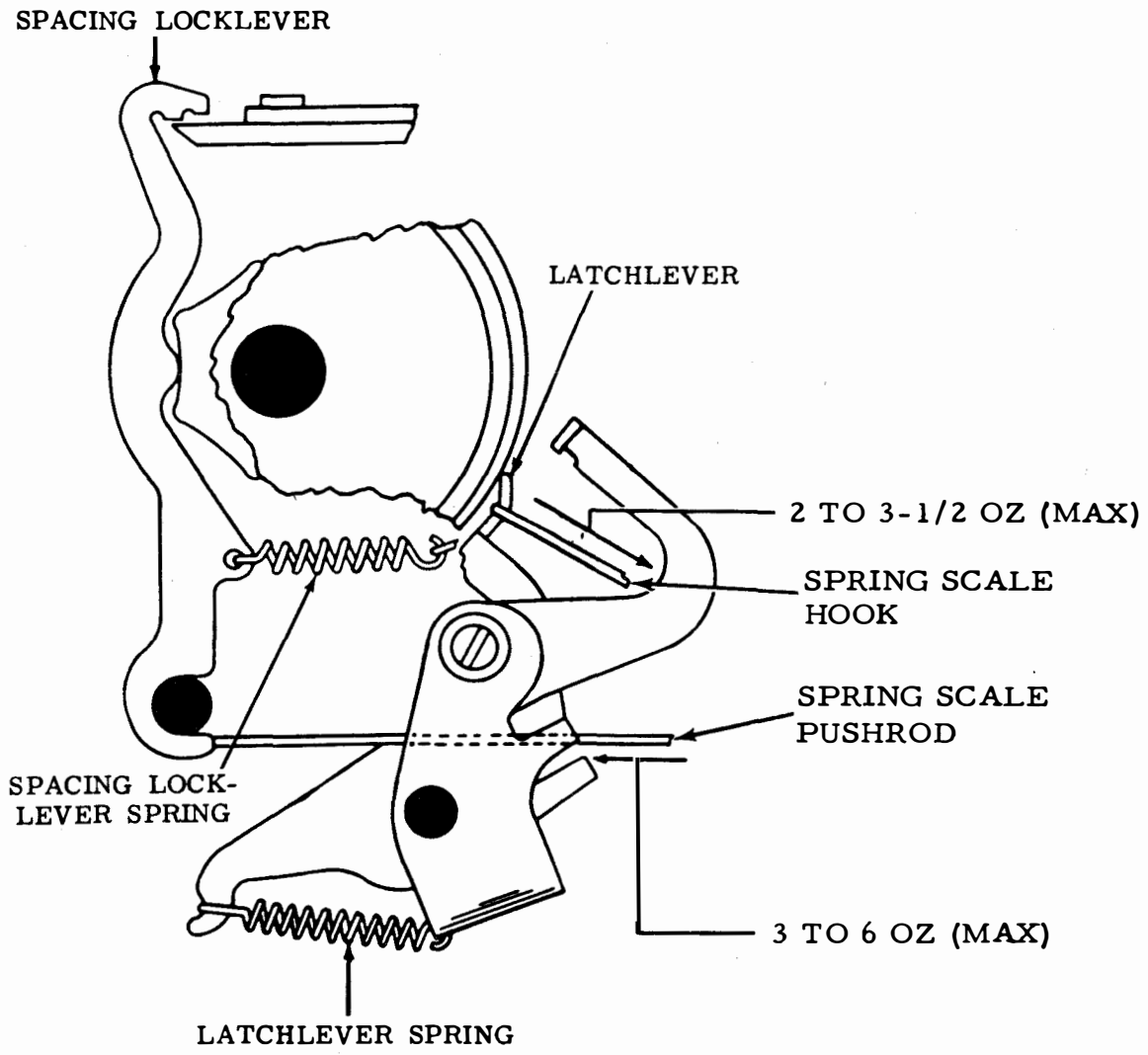


Figure 6-224. Selector Clutch Latchlever Spring and Spacing Locklever Spring, Front View

(19) Range Finder Knob Phasing. Adjust as follows:

(a) Refer to Figure 6-225.

(b) With range finder knob turned to either end of rack, zero mark on scale should be in line with scribed line on range finder plate (±3 points).

(c) To adjust, remove mounting nut, disengage knob from rack and position knob. Reengage knob with rack and replace mounting nut.

(20) Selector Clutch Stop Arm. Adjust as follows:

(a) Refer to Figure 6-225.

(b) With range scale set at 60, selector clutch disengaged, and armature in marking position, clutch stop arm should engage clutch shoe lever by approximately full thickness of stop arm.

(c) To adjust, loosen clamp screw and position clutch stop arm on stop arm bail.

(d) Tighten clamp screw.

(21) Start Lever Spring. Adjust as follows:

(a) Refer to Figure 6-226.

(b) With latchlever spring unhooked, stop arm bail in indent of cam, and range scale set at 60, apply spring scale to stop arm.

(c) Force required to start the stop arm moving should be between 2-1/2 and 4-1/4 ounces maximum.

(d) If not within this specified tension, replace spring.

(22) Selector Receiving Margin (One Antifreeze Button Armature Unit). Adjust as follows:

(a) Refer to Selector Armature Spring adjustments, paragraph 6-6a(6), Figure 6-214.

(b) When a signal distortion test set is available for determining the receiving margins of the selector, and where the condition of the components is equivalent to that of new equipment, the range and distortion tolerances below should be met. See Table 6-1.

(c) To adjust, refine the Selector Armature Spring adjustment, paragraph 6-6a(6).

(23) Selector Receiving Margin (Two Antifreeze Button Units). Adjust as follows:

NOTE

Typing reperforators operating with 30-milliampere selector coil current with coils in series should have receiving margin test run at, and meet the requirements for, 100 wpm speed, 60 milliampere selector coils in parallel. Testing at 30 milliamperes is not required.

(a) Refer to Selector Armature Spring

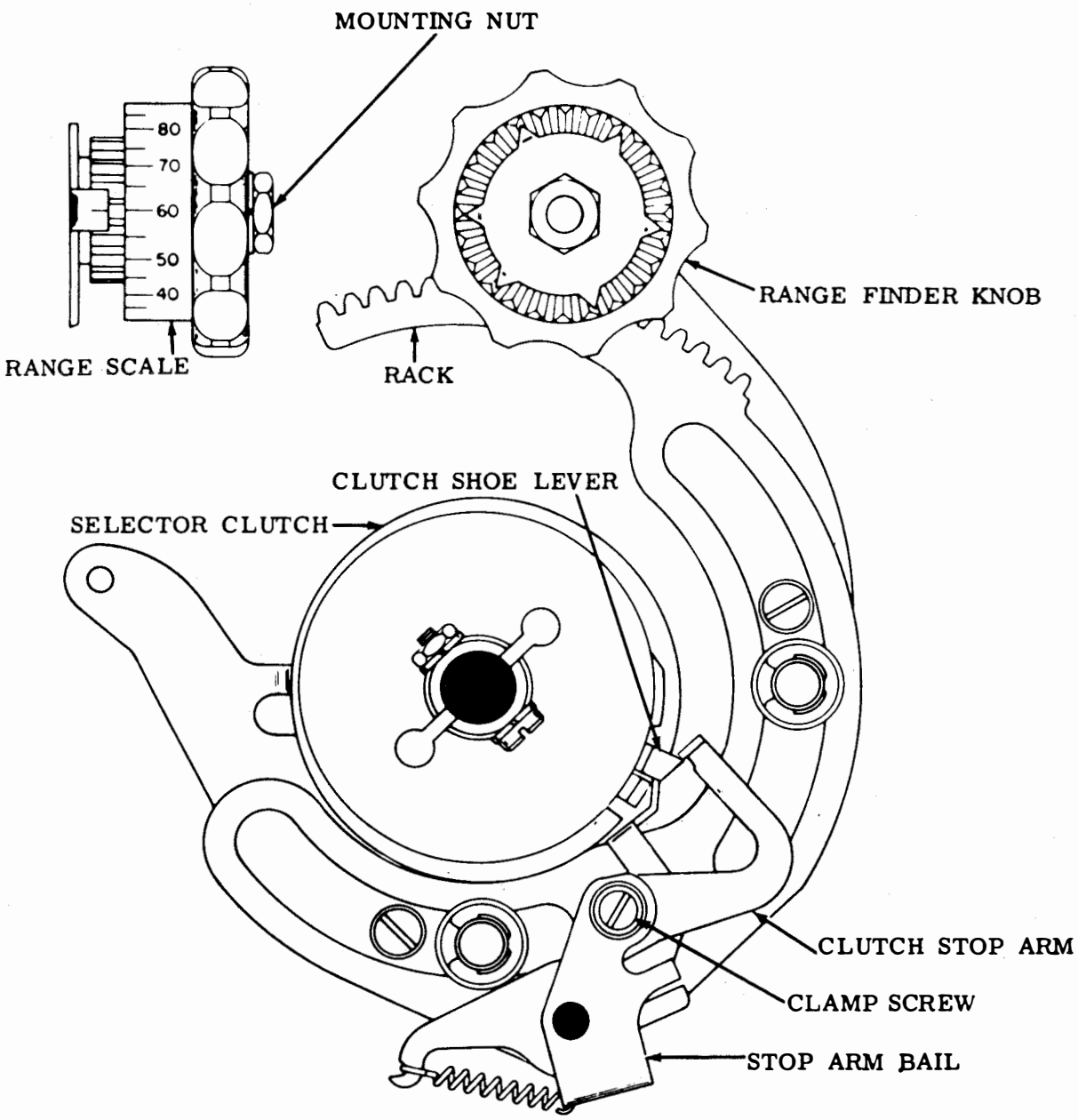


Figure 6-225. Range Finder Knob Phasing and Selector Clutch Stop Arm, Front View

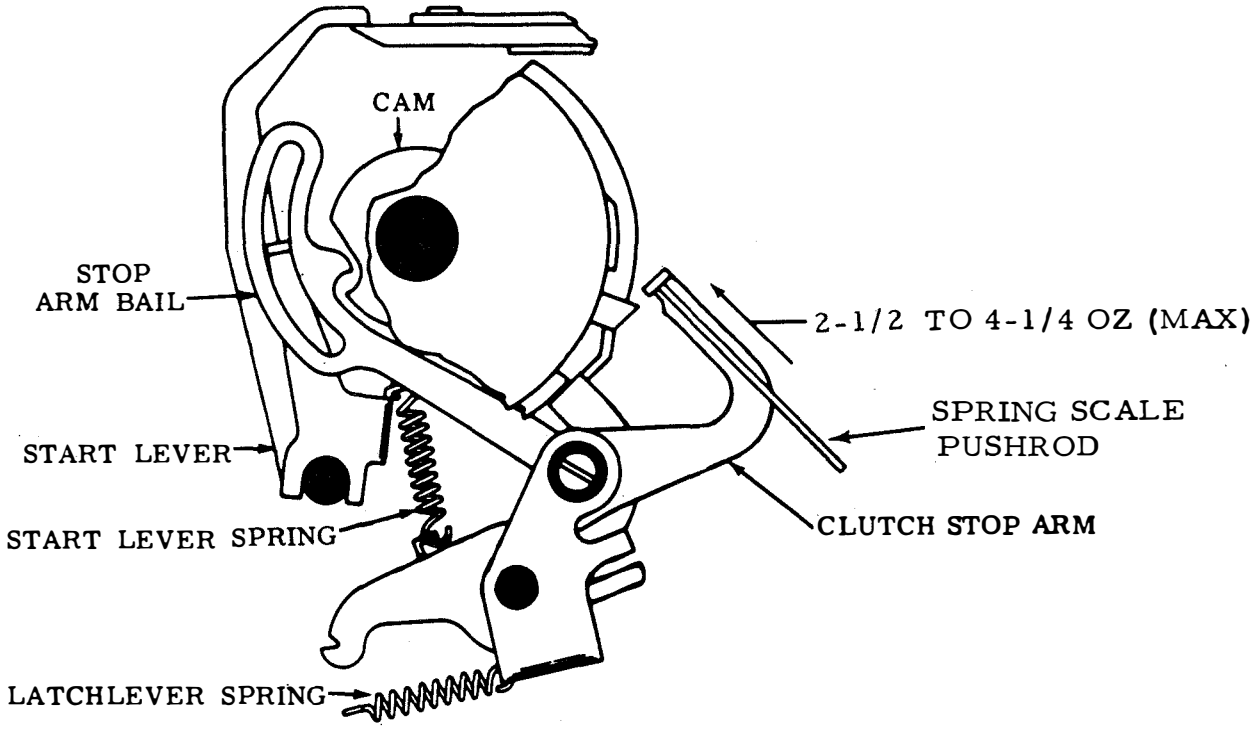


Figure 6-226. Start Lever Spring, Front View

Table 6-1. Selector Receiving Margin Minimum Requirement

Current	Speed in WPM	Points Range With Zero Distortion	Percentage of Marking and Spacing Bias Tolerated	End Distortion Tolerated With Scale at Bias Optimum Setting
0.060 Amp (windings parallel)	60 75 100	72	40	35
0.020 Amp (windings series)	60 75	72	40	35
0.035 Amp (windings series)	65 (45.5 baud) 106 (75.0 baud)	72	40	35

adjustments, paragraph 6-6a(7), Figure 6-215.

(b) When a distortion test set is available, the selector armature spring tension should be refined, if necessary, to obtain satisfactory receiving margins (see Table 6-1). The front antifreeze button must contact the magnet core when the magnet coils are energized.

(c) To adjust, refine the Selector Armature Spring adjustment, paragraph 6-6a(7).

NOTE

Units employing TP319204 and TP327383 selector assemblies should have receiving margins performed with the selector under test being driven by a TP323810 selector magnet driver (SMD). The distortion test set must interface with the SMD, i.e., rectangular waveform with +6 volts corresponding to the marking state and -6 volts corresponding to the spacing state. The specified distortion limits apply to the signal driving the SMD rather than the selector coils. The receiving margin of the selector should conform to the minimumm requirements listed below:

Speed in WPM	100
Points Range with Zero Distortion	70
Overall Bias	35
End Distortion Tolerated With Scale at Bias Optimum Setting	30
Optimum Setting	30

If necessary refine the Selector Armature Spring, paragraphs 6-6a(6) or (7).

(24) Selector Cam Lubricator. Adjust as follows:

(a) Refer to Figure 6-227.

(b) With high part of selector lever cam contacting leather wick, visually gauge amount of wick deflection.

(c) Amount of deflection should be 1/32 inch or less.

(d) With high surface of locklever cam at closest distance to edge of reservoir, measure clearance.

(e) Clearance should be 0.020 inch minimum.

(f) To adjust, loosen mounting screws and position lubricator assembly around lower screw. Tighten screws.

NOTE

There should be some clearance between the marking locklever spring and the oil reservoir.

b. Function Mechanism Adjustment. Perform the following function mechanism adjustments.

(1) Clutch Shoe Lever. Adjust as follows:

(a) Refer to Figure 6-228.

(b) Disengage clutch and measure clearance

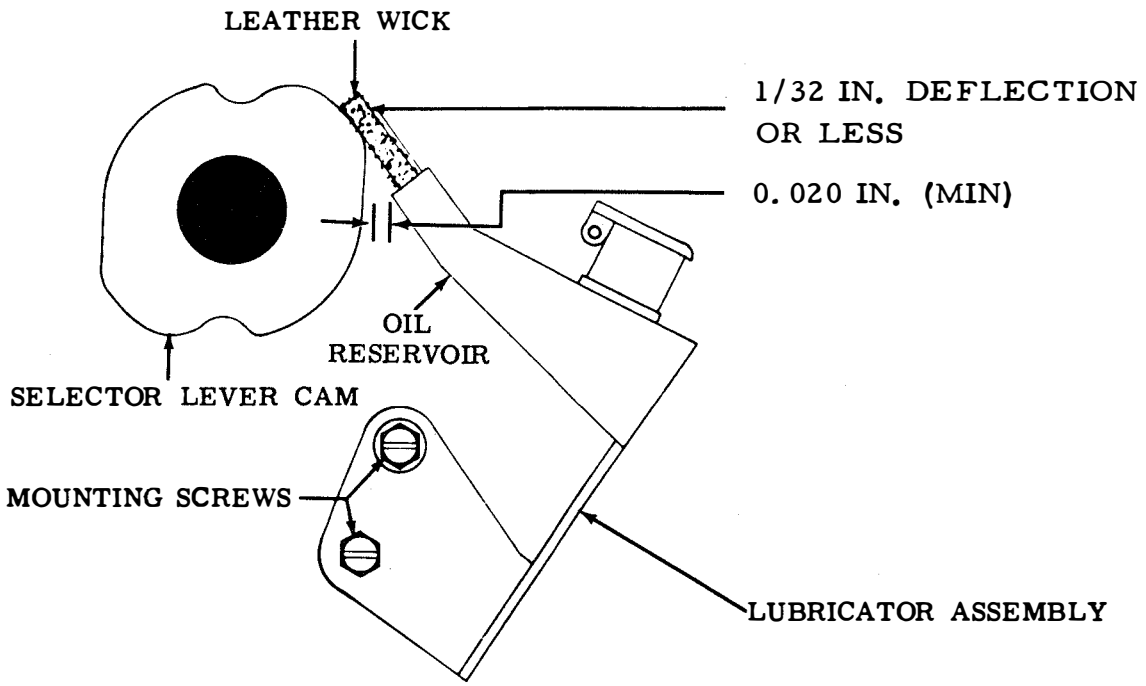


Figure 6-227. Selector Cam Lubricator, Front View

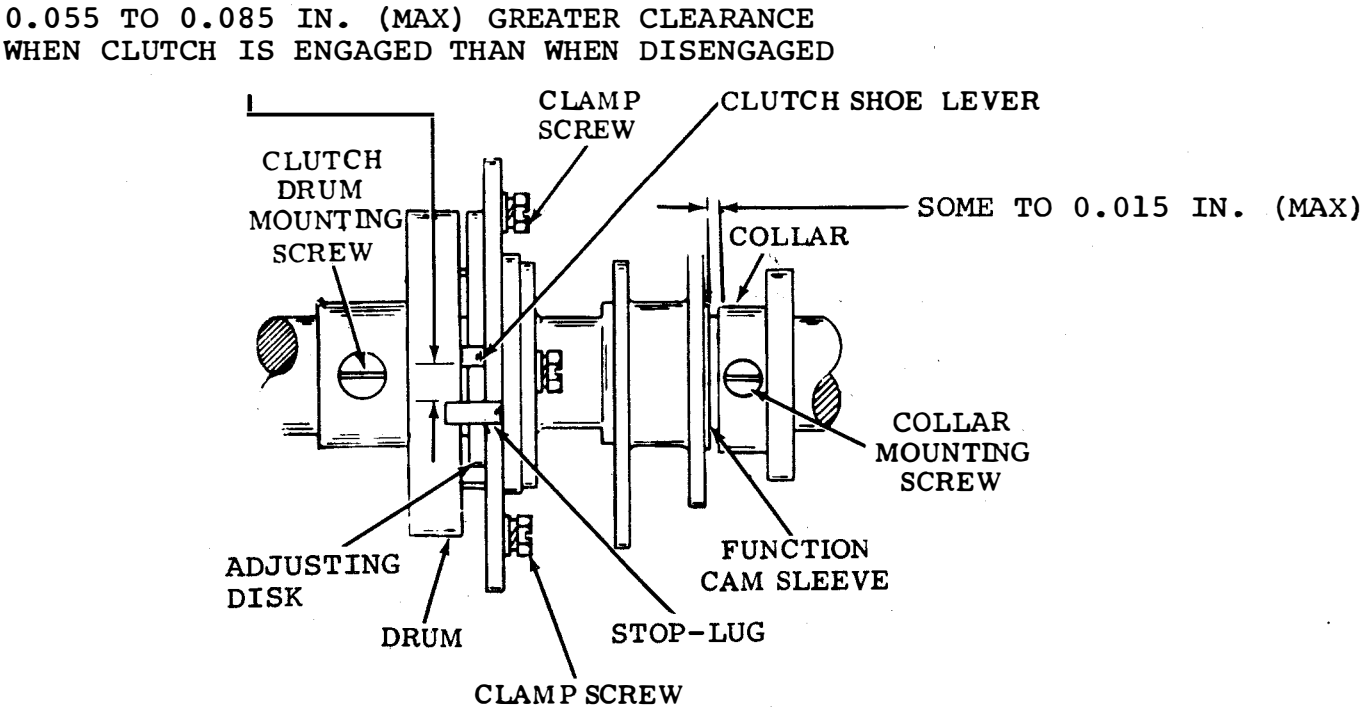


Figure 6-228. Function Clutch Shoe Lever and Clutch Drum End Play for One-Shaft Units, Right Side View

between clutch shoe lever and stop-lug.

(c) Align head of clutch drum mounting screw with stop-lug and engage clutch. Manually press shoe lever and stop-lug together and allow to snap apart. Measure clearance again.

(d) Clearance should be between 0.055 and 0.085 inch maximum greater with clutch engaged than when disengaged.

(e) Engage wrench or screwdriver with lug on adjusting disk and loosen clamp screws.

(f) Rotate disk until proper clearance is achieved.

(g) Tighten screws.

(2) Function Clutch Drum End Play For One-Shaft Units. Adjust as follows:

(a) Refer to Figure 6-228.

(b) With clutch shoe lever held in disengaged position, measure clearance between collar and function cam sleeve.

(c) There should be some clearance, not to exceed 0.015 inch.

(d) If clearance is not correct, loosen collar mounting screw and drum mounting screws.

(e) Move drum to extreme front position and tighten drum mounting screw.

(f) Position collar to meet requirement and tighten screw.

(3) Function Clutch Drum End Play For Two-Shaft Units. Adjust as follows:

(a) Refer to Figure 6-229.

(b) With function clutch disengaged, measure tolerance between collar and cam sleeve.

(c) When play is taken up to make clearance maximum, there should be some clearance, not to exceed 0.015 inch.

(d) To adjust, loosen collar mounting screw and position collar. Tighten screw.

(4) Clutch Shoe Lever Spring. See paragraph 6-6a(2) for adjustments.

(5) Clutch Shoe Spring. See paragraph 6a(3) for adjustments.

(6) Function Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-230.

(b) With release resting on main trip lever, function clutch trip lever should engage full thickness of shoe lever.

(c) Trip lever end play should be between some and 0.006 inch maximum.

(d) To adjust, loosen clamp screw and position trip lever on its shaft to required specification.

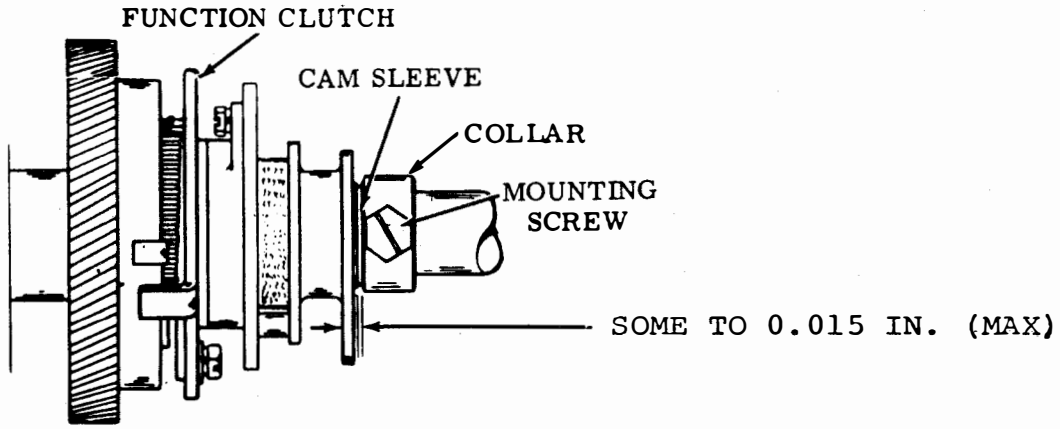


Figure 6-229. Function Clutch Drum End Play for Two-Shaft Units, Right Side View

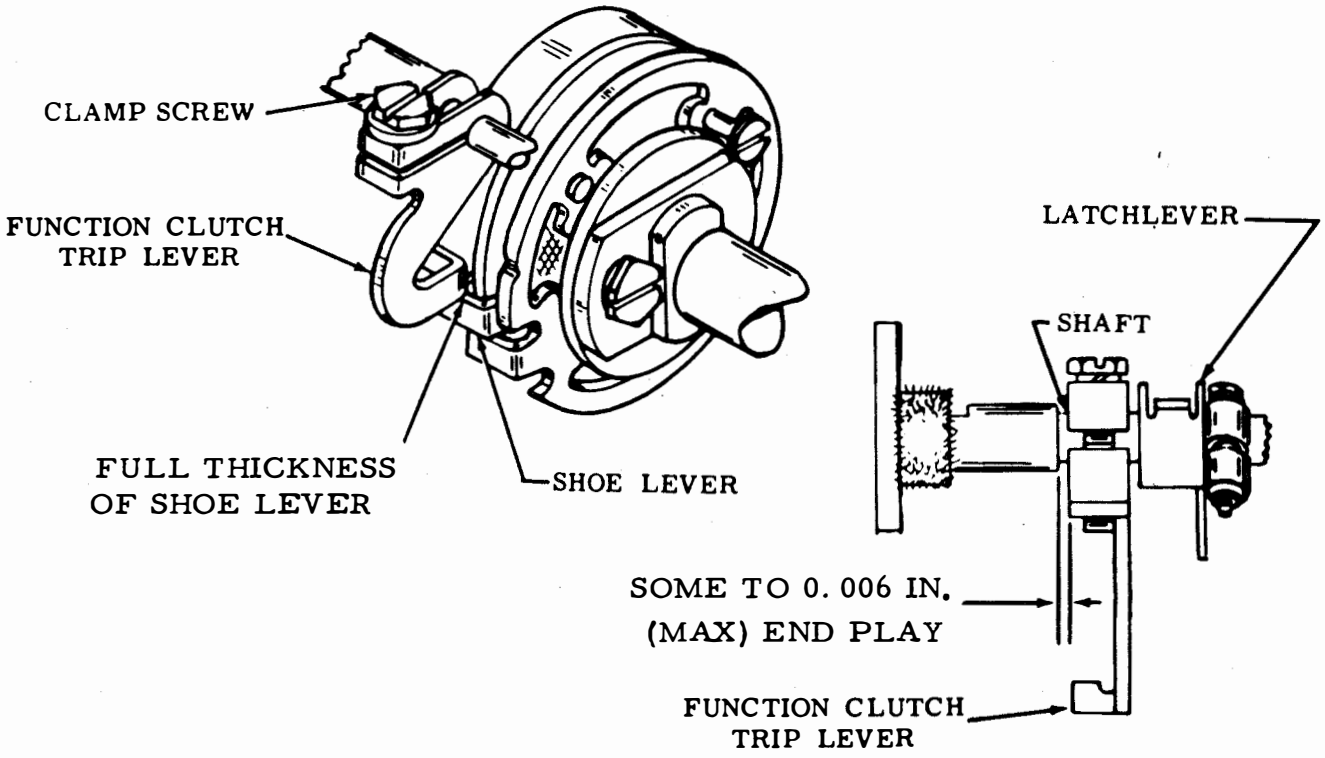


Figure 6-230. Function Clutch Trip Lever, Right Side View

(e) Tighten clamp screw.

(7) Reset Arm. Adjust as follows:

(a) Refer to Figure 6-231.

(b) Trip function clutch and position main shaft so that reset arm is held in its highest position by the cam pin.

(c) Clearance between release and reset bail trip lever should be between 0.005 and 0.030 inch maximum.

(d) With reset lever resting fully on the cam pin, measure clearance between release and reset bail trip lever.

(e) There should be some clearance.

(f) With mechanism positioned as in step (d), measure the latchlever end play.

(g) There should be some clearance, not to exceed 0.010 inch.

(h) To adjust, loosen clamp screw, position reset arm, and tighten screw.

(8) Function Clutch Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-232.

(b) With function clutch turned to STOP position and latchlever unlatched, attach spring scale hook and measure force required to start latchlever moving.

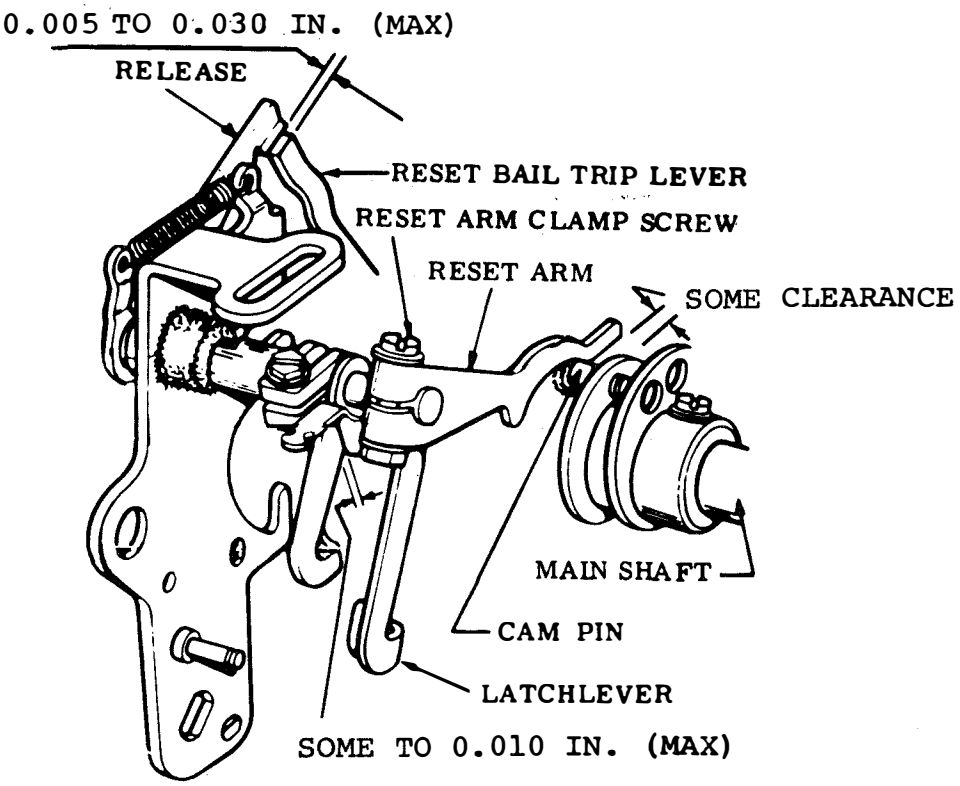


Figure 6-231. Reset Arm, Right Side View

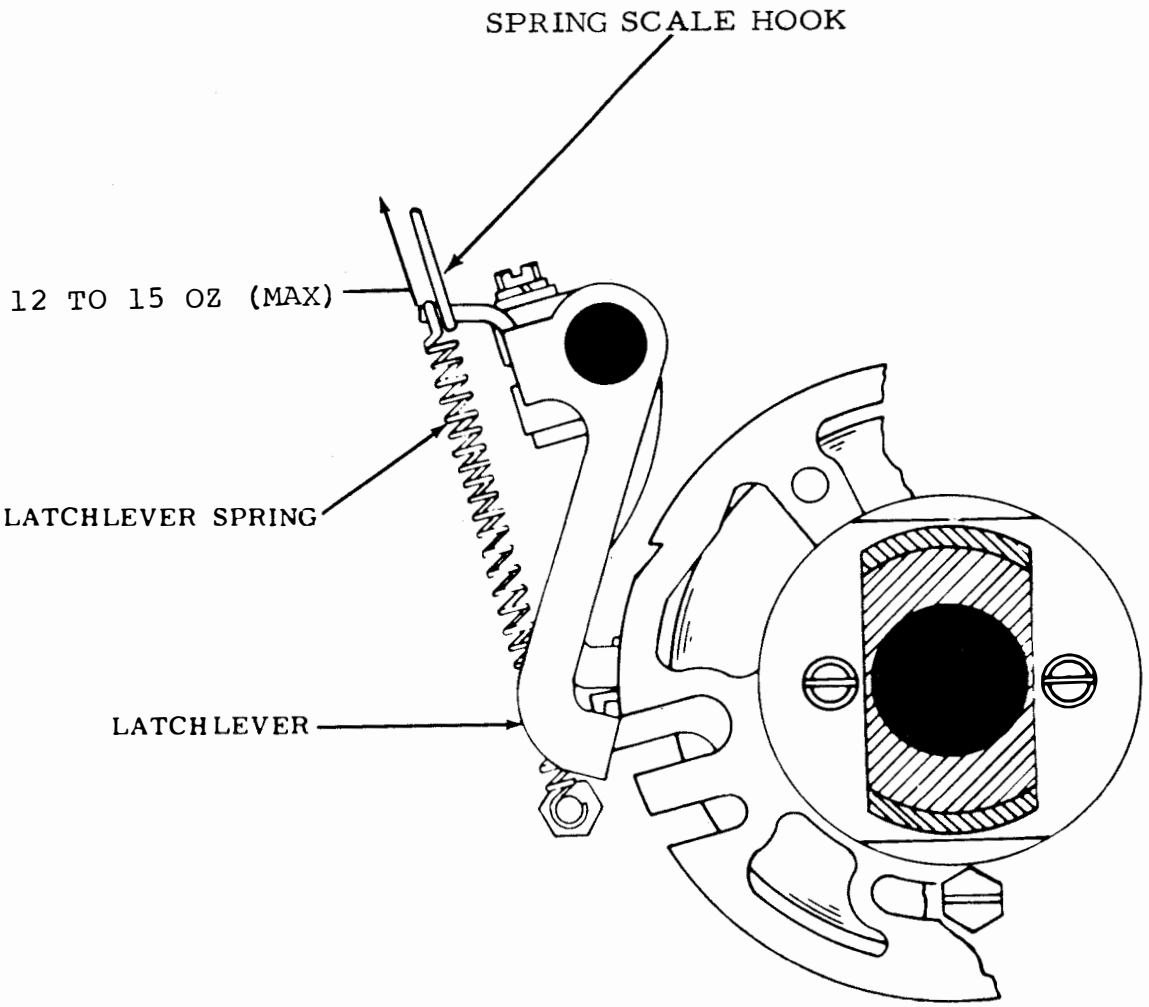


Figure 6-232. Function Clutch Latchlever Spring, Rear View

(c) The force should be between 12 and 15 ounces maximum.

(d) If requirement is not met, replace spring.

(9) Trip Cam Follower Lever (Preliminary). Adjust as follows:

(a) Refer to Figure 6-233.

(b) Place trip cam follower lever on high part of cam.

(c) Clearance between clutch release lever and reset bail trip lever should be between 0.010 and 0.030 inch maximum.

(d) There should be some clearance between reset bail trip lever and left end of slot in downstop bracket.

(e) To adjust, loosen locknut and, by means of pry point, position adjusting arm on follower lever. Tighten locknut.

(10) Reset Bail Trip Lever Spring. Adjust as follows:

NOTE

It may be necessary to remove ribbon-feed mechanism when checking this tension.

(a) Refer to Figure 6-233.

(b) With spring scale hook pulling at top of reset bail trip lever, trip the lever and measure the force required to start lever moving.

(c) The scale should read between 1 and 4 ounces maximum.

(d) If requirement is not met, replace spring.

(11) Cam Follower Lever Spring. Adjust as follows:

(a) Refer to Figure 6-234.

(b) With cam follower lever on low part of trip cam and reset bail trip lever held away from adjusting arm, attach spring scale hook to cam follower lever and measure force required to start the adjusting arm moving.

(c) The scale should read between 1 and 4 ounces maximum.

(d) If requirement is not met, replace spring.

(12) Cam Follower Roller. Adjust as follows:

(a) Refer to Figure 6-235.

(b) With rocker bail positioned to its extreme left and upper roller in contact with function cam, measure clearance between cam and lower roller at point of least clearance.

(c) There should be some clearance, not to exceed 0.004 inch maximum.

(d) To adjust, loosen locknut, position lower roller mounting screw in

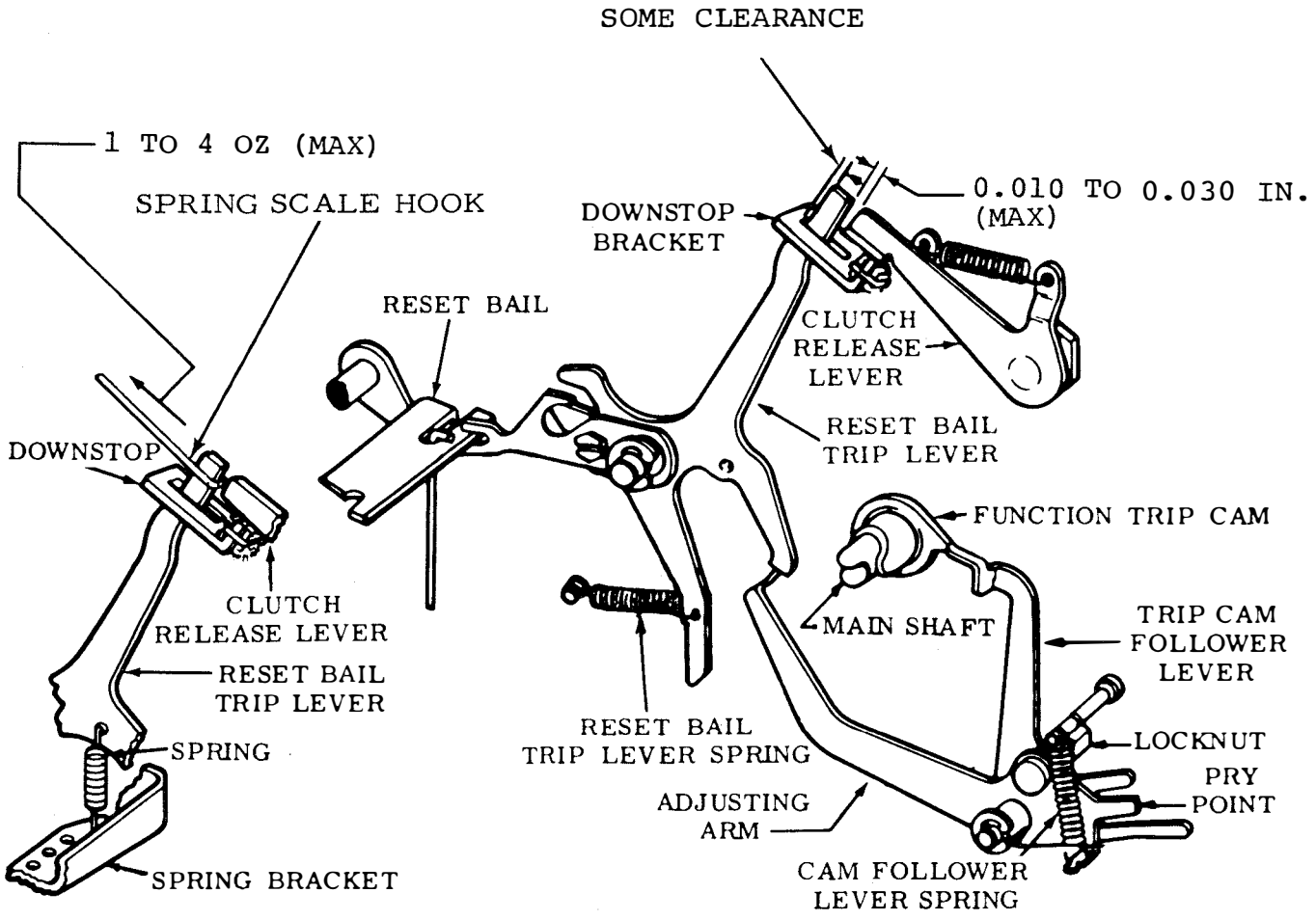


Figure 6-233. Trip Cam Follower Lever (Preliminary) and Reset Bail Trip Lever Spring, Front View

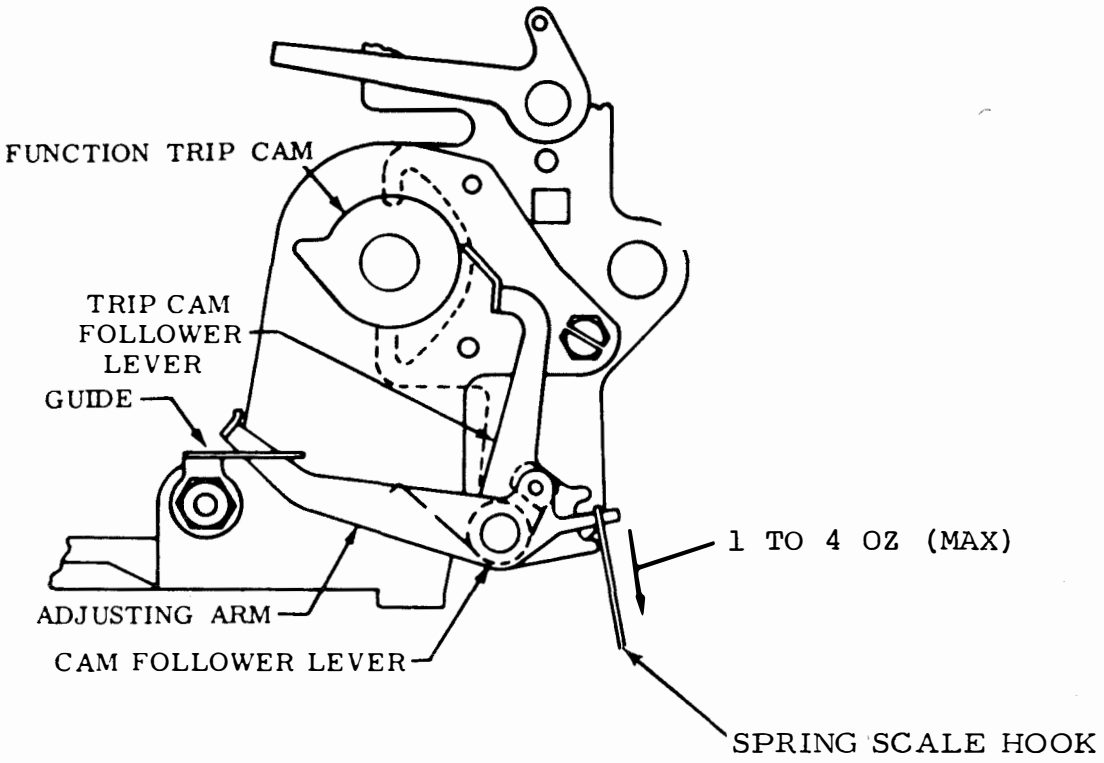


Figure 6-234. Cam Follower Lever Spring, Front View

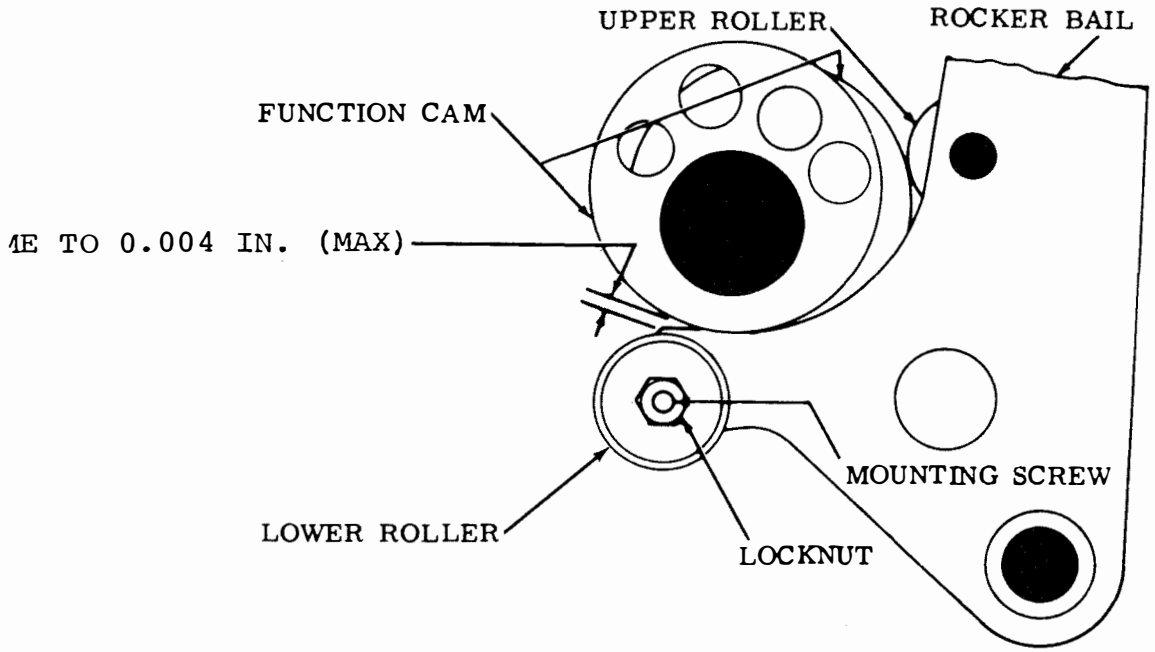


Figure 6-235. Cam Follower Roller, Rear View

elongated slot, and tighten locknut.

(13) Cam Follower Roller Alignment. Adjust as follows:

(a) Refer to Figure 6-236.

(b) Check rocker bail roller and function cam alignment.

(c) Rocker bail rollers should engage full thickness of function cam.

(d) Lifter roller should be in full engagement with rocker bail camming surface.

(e) To adjust, loosen guide bracket mounting screws, position rocker bail and guide bracket, and tighten screws.

(14) Function Clutch Release Lever Spring. Adjust as follows:

(a) Refer to Figure 6-237.

(b) Trip function clutch, rotate main shaft until release lever is reset on reset bail trip lever, and attach spring scale hook to function clutch release lever.

(c) The force required to start release lever moving should be between 5 and 8 ounces maximum.

(d) If requirement is not met, replace spring.

(15) Release Lever Downstop Bracket. Adjust as follows:

(a) Refer to Figure 6-238.

(b) With function clutch tripped, rotate shaft until clearance between function clutch disk stop-lug and clutch stop lever is at a minimum.

(c) With release lever resting against downstop bracket, clearance between function clutch disk stop-lug and stop lever should be between 0.002 and 0.045 inch maximum.

(d) To adjust:

1. Remove tape guide.

2. Loosen downstop brakcet mounting screws friction tight and position bracket.

3. Tighten screws.

(e) Recheck for some clearance between trip lever extension and left end of slot in release lever downstop bracket.

c. Punch Mechanism Adjustments. Perform punch mechanism adjustment in accordance with the following paragraphs.

(1) Punch Mounting Plate (Preliminary). Adjust as follows:

NOTE

The mounting holes are oversized to facilitate use of punch mechanism on the typing reperforator.

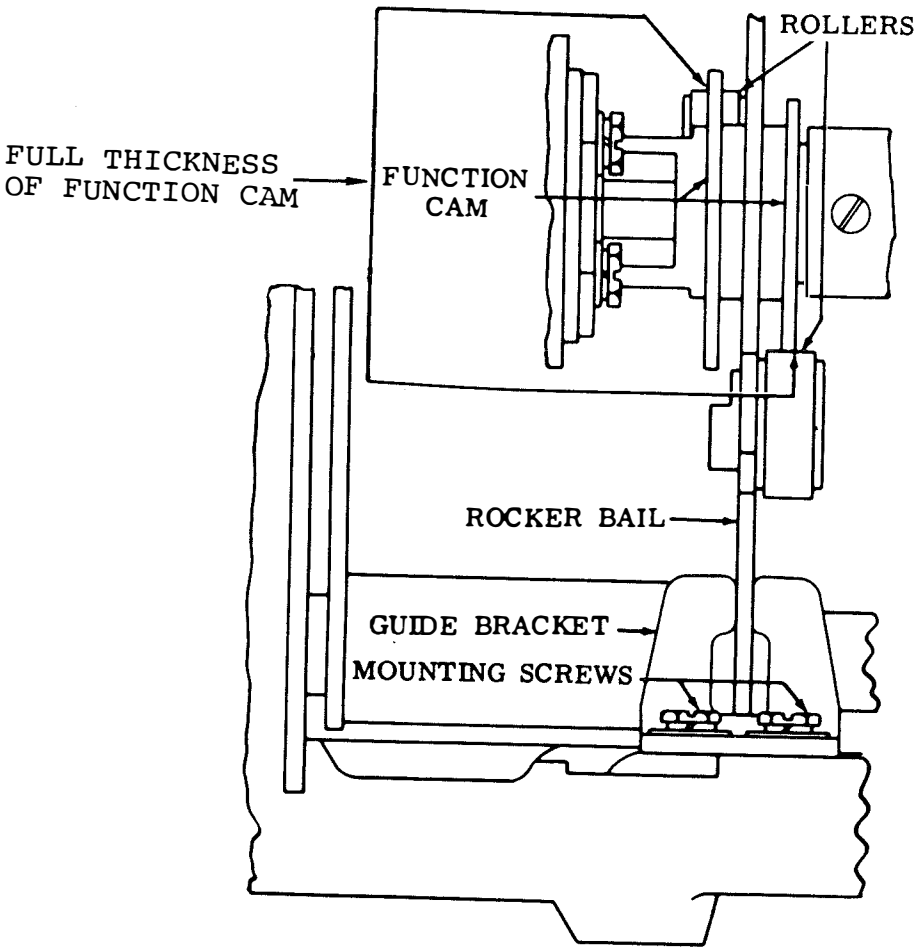


Figure 6-236. Cam Follower Roller Alignment, Right Side View

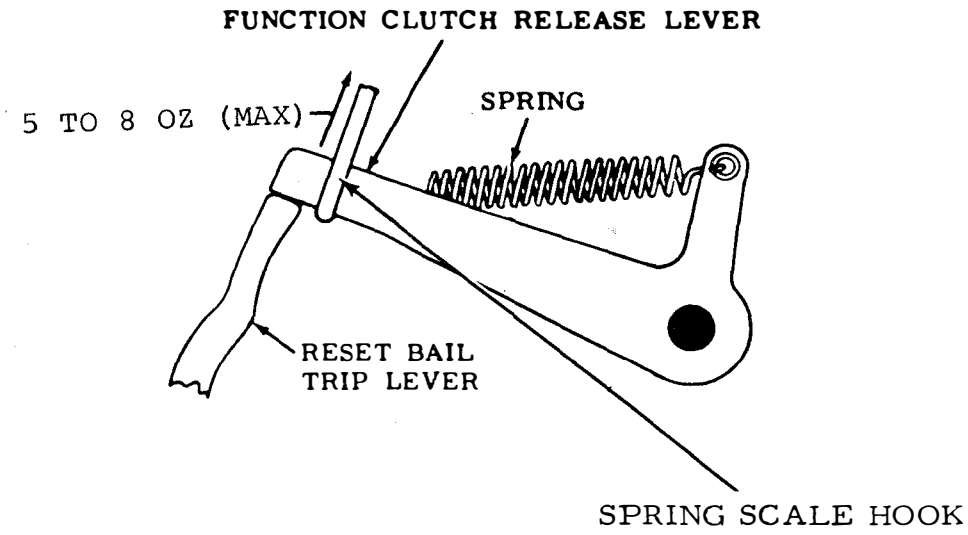


Figure 6-237. Function Clutch Release Lever Spring, Front View

(a) Refer to Figure 6-239.

(b) Observe punch mechanism mounting screw and mounting screw at lower edge of punch mechanism backplate.

(c) Screws should be centrally located in their elongated mounting slots.

(d) To adjust:

1. Remove mounting screws at lower edge of punch mechanism backplate.

2. Loosen two remaining backplate mounting screws and mounting bracket screw until they are friction tight.

3. Position mechanism so that tapped hole of frame is centrally located (as gauged by eye) within large body hole of punch mechanism backplate.

4. Tighten two backplate mounting screws and recheck position.

5. Replace and tighten lower backplate mounting screw and bracket mounting screw.

(2) Punch Mounting Plate (Final). Adjust as follows:

(a) Refer to Figure 6-240.

(b) With LETTERS code combination (12345) selected, rotate until function clutch trips with punch levers in extreme left-hand position.

(c) Clearance between punch slide and punch slide latch at slide where

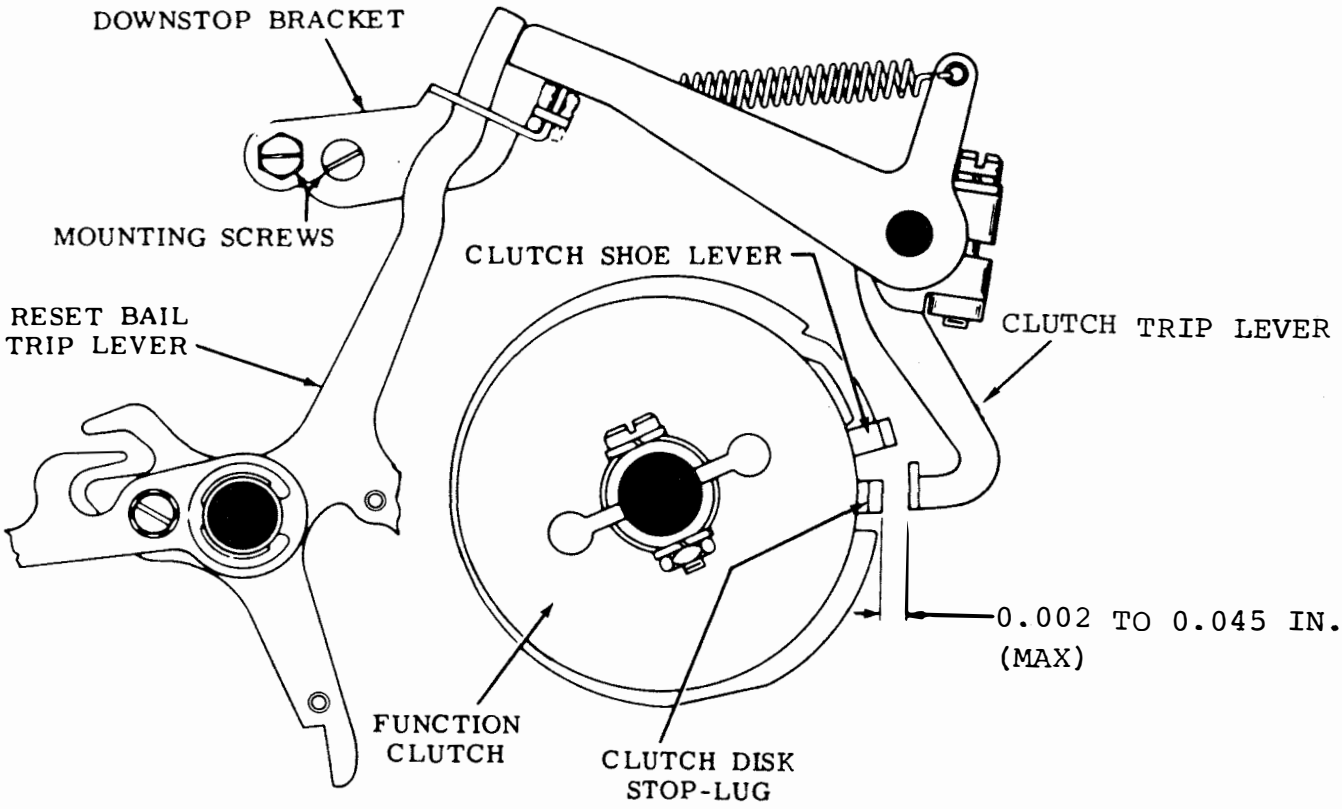


Figure 6-238. Release Lever Downstop Bracket, Front View

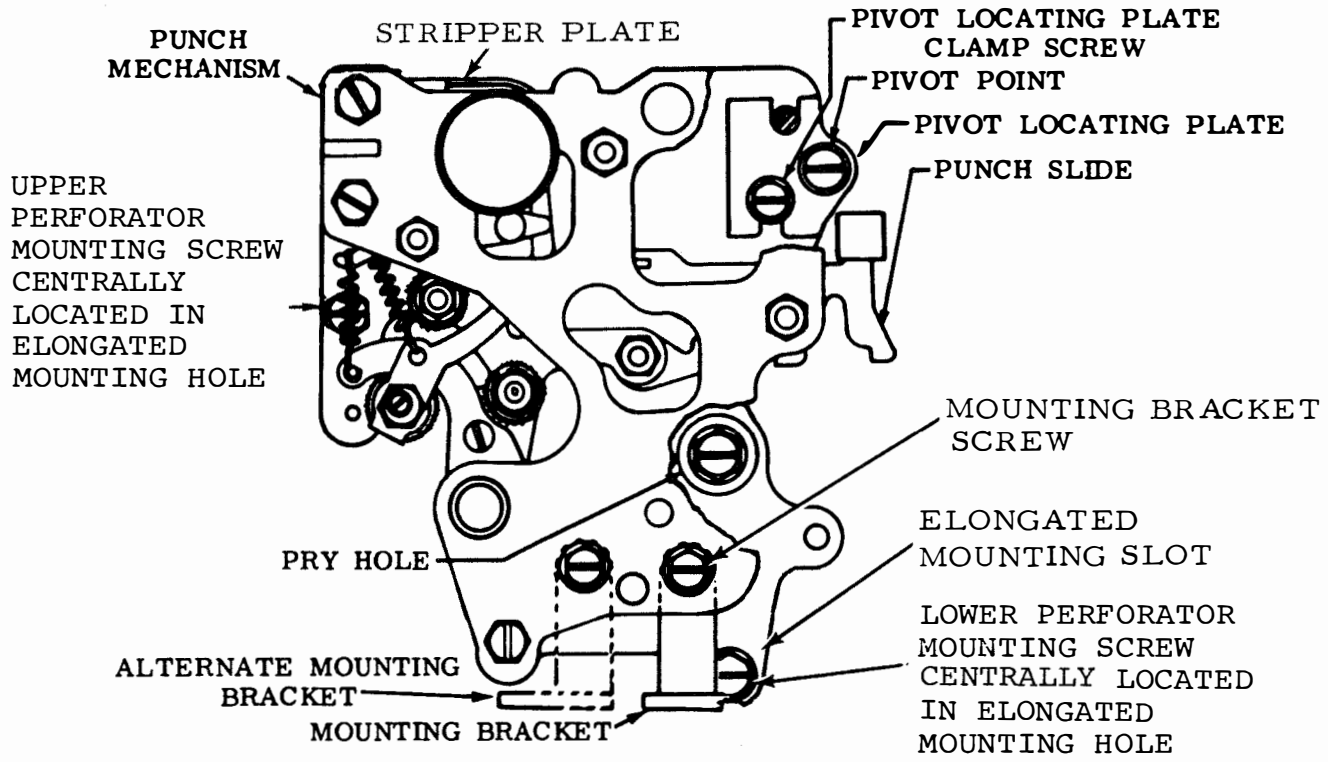


Figure 6-239. Punch Mounting Plate (Preliminary), Front View

clearance is least, should be between 0.015 and 0.045 maximum.

(d) To adjust:

1. Loosen perforator mounting screws, adjusting clamp lock screw, adjusting clamp pivot screw, and anchor bracket screw until friction tight.

2. Place screwdriver tip between screw and rim of pry hole and pry perforator up or down.

3. Tighten only the adjusting clamp lock screw.

NOTE

The following adjustment is for typing reperforator with spring retracted punch unit.

(e) With unit in STOP position and type wheel in LETTERS field, clearance between letter "Z" on type wheel and top of stripper platform should measure between 0.090 and 0.110 inch maximum.

NOTE

The following adjustment is for typing reperforators with power retracted punch unit.

(f) With unit in STOP position and type wheel in FIGURES field, clearance between Figures "5" on type wheel and top of stripper platform should be between 0.075 and 0.095 inch maximum.

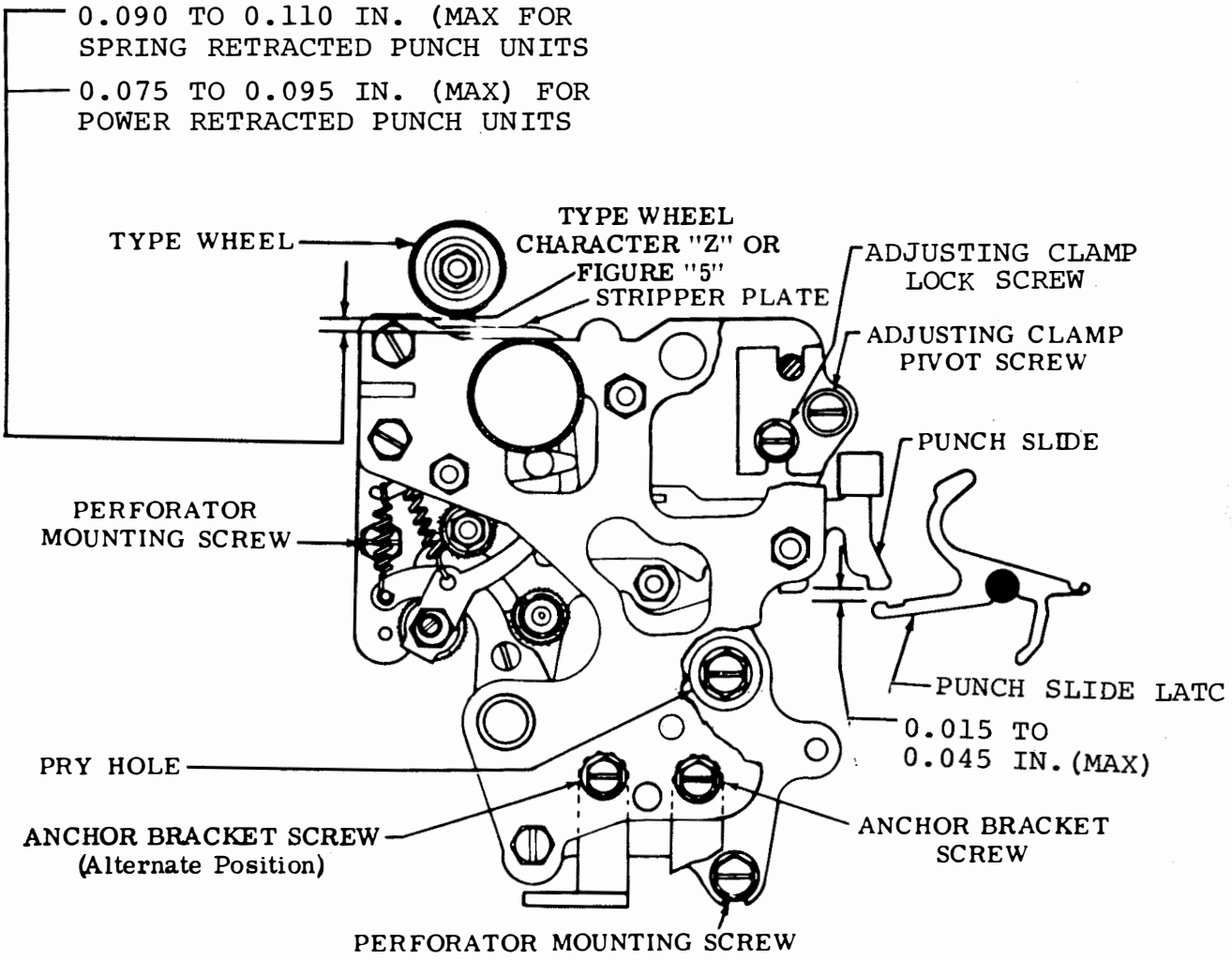


Figure 6-240. Punch Mounting Plate (Final), Front View

(g) For steps (e) and (f), adjust as follows:

1. Remove ribbon from carrier.

2. Loosen two mounting screws, adjusting clamp pivot screw, and anchor bracket screw.

3. Position perforator as specified.

4. Tighten screws.

NOTE

Before proceeding with punch mechanism adjustment, check the Cam Follower Roller adjustment, paragraph 6-6b(12), and loosen punch slide downstop mounting nut and guide mounting stud.

(3) Toggle Bail Eccentric (Preliminary). Adjust as follows:

(a) Refer to Figure 6-241.

(b) Observe that indent (located on high side of eccentric) is in uppermost position.

(c) To adjust, loosen toggle bail eccentric shaft locknut until it is friction tight, position eccentric, and tighten locknut.

(4) Toggle Operating Arm. Adjust as follows:

(a) Refer to Figure 6-242.

(b) Trip function clutch and rotate main shaft until rocker bail roller is on high part of cam.

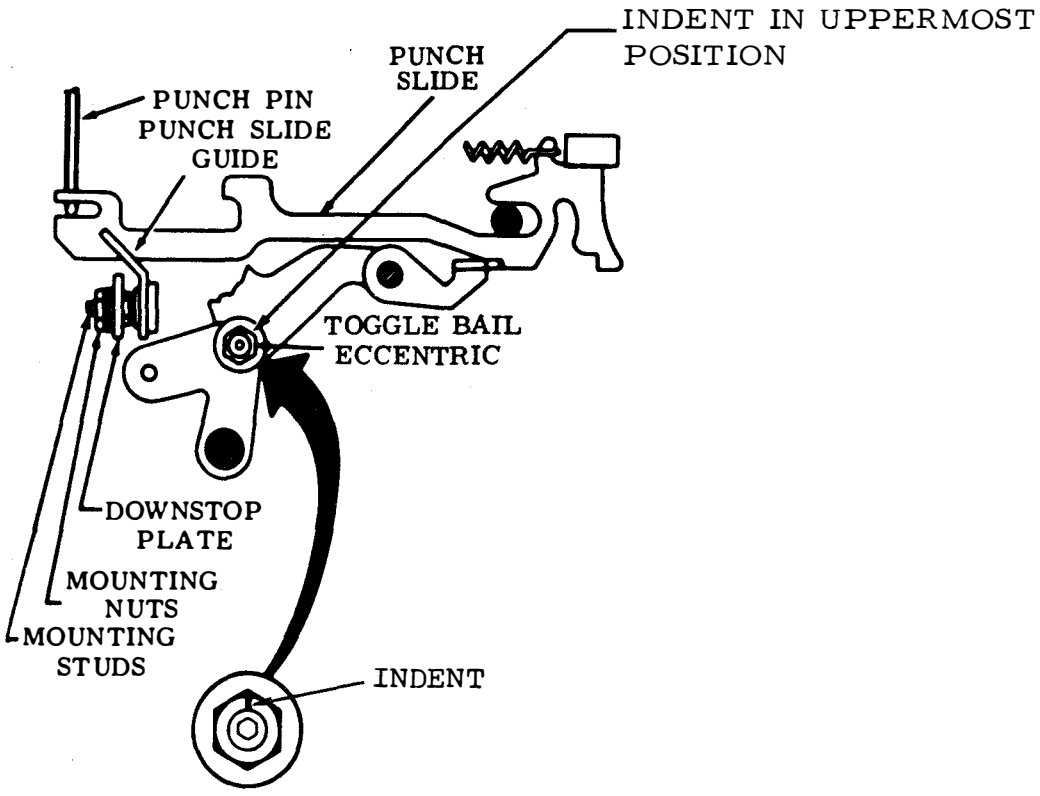
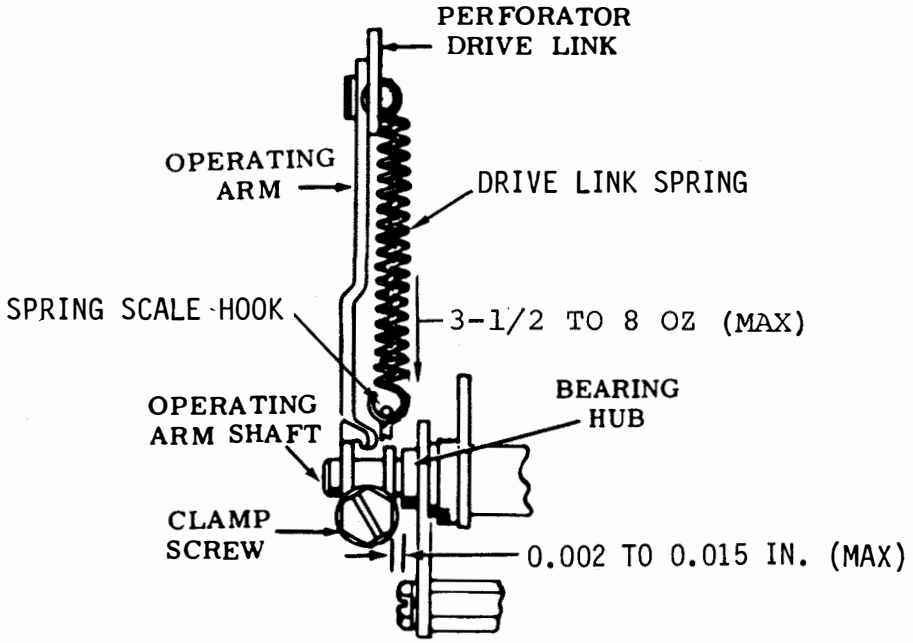
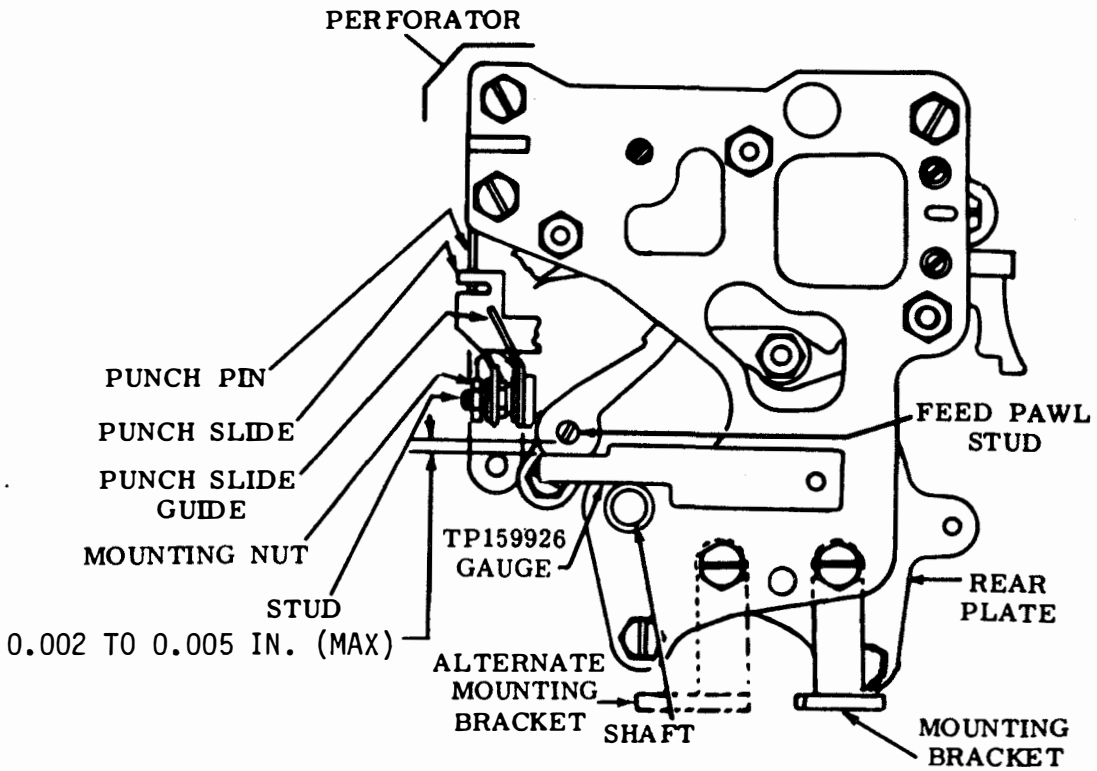


Figure 6-241. Toggle Bail Eccentric (Preliminary), Front View



LEFT SIDE VIEW



FRONT VIEW

Figure 6-242. Toggle Operating Arm and Perforator Drive Link Spring

(c) Clearance between feed pawl stud and TP159926 gauge should measure between 0.002 and 0.005 inch maximum.

(d) Take up play in direction to make clearance between operating arm and oscillating arm shaft bearing hub a minimum.

(e) Clearance should measure 0.002 to 0.015 inch maximum.

(f) To adjust, loosen clamp screw friction tight. Position toggle bail and operating arm and tighten screw.

NOTE

After Feed Pawl Adjustment paragraph 6-6c(7), and Punch Pin Penetration adjustment, paragraph 6-6e(2), have been made, this requirement should be considered fulfilled.

(5) Perforator Drive Link Spring. Adjust as follows:

(a) Refer to Figure 6-242.

(b) Attach spring scale hook to drive link spring and measure force required to pull spring to installed length.

(c) This should measure 3-1/2 to 8 ounces maximum.

(d) If requirement is not met, replace spring.

(6) Latchlever Clearance. Adjust as follows:

(a) Refer to Figure 6-243.

(b) With BLANK combination (-----) selected, and function clutch disengaged and latched, clearance between punch slide and associated latchlever should be from 0.008 to 0.020 inch maximum for slide with least clearance.

(c) To adjust, loosen locknut and rotate reset bail eccentric shaft, keeping the indentation in the eccentric above the center of shaft.

(d) Tighten locknut.

(7) Feed Pawl. Adjust as follows:

NOTE

This adjustment is related to "Ten Characters per Inch" paragraphs 6-6d(5) and (6), and the two adjustments should be made at the same time.

(a) Refer to Figure 6-244.

(b) With function clutch disengaged, indentation in detent lever eccentric at right angle to lever, detent roller in contact with ratchet wheel, high part of feed pawl eccentric to right of lock screw, check alignment of feed pawl and ratchet wheel.

(c) Feed pawl should engage first tooth below a horizontal centerline through ratchet wheel with no perceptible clearance.

(d) To adjust, loosen lock screw and rotate

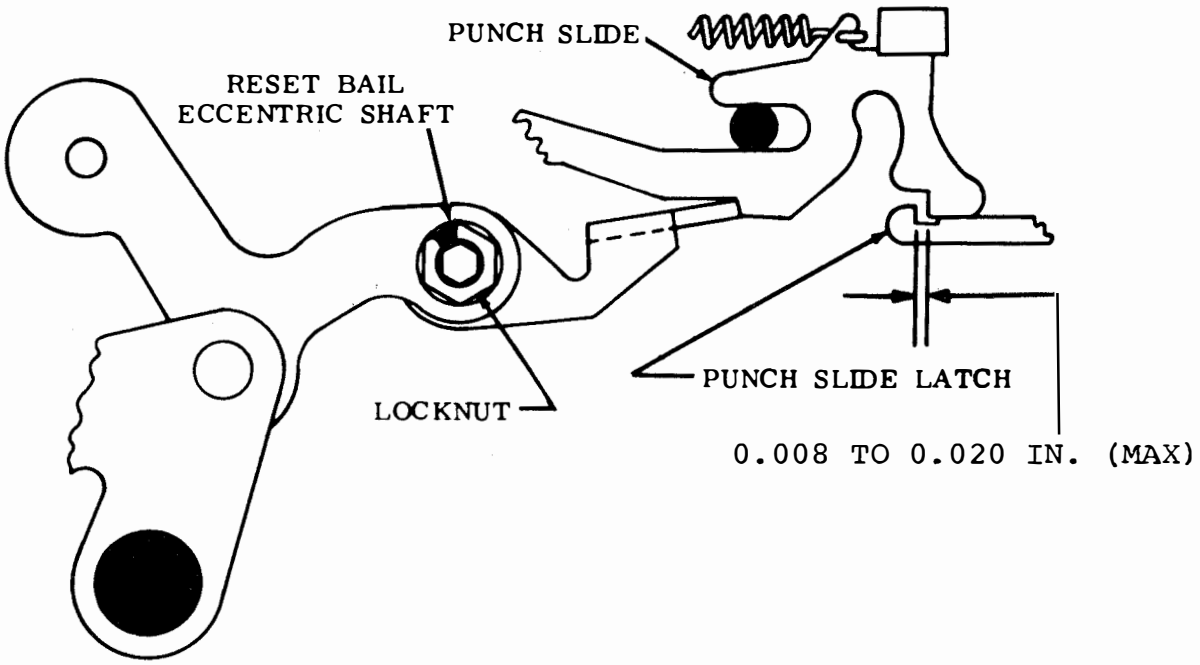


Figure 6-243. Latchlever Clearance, Front View

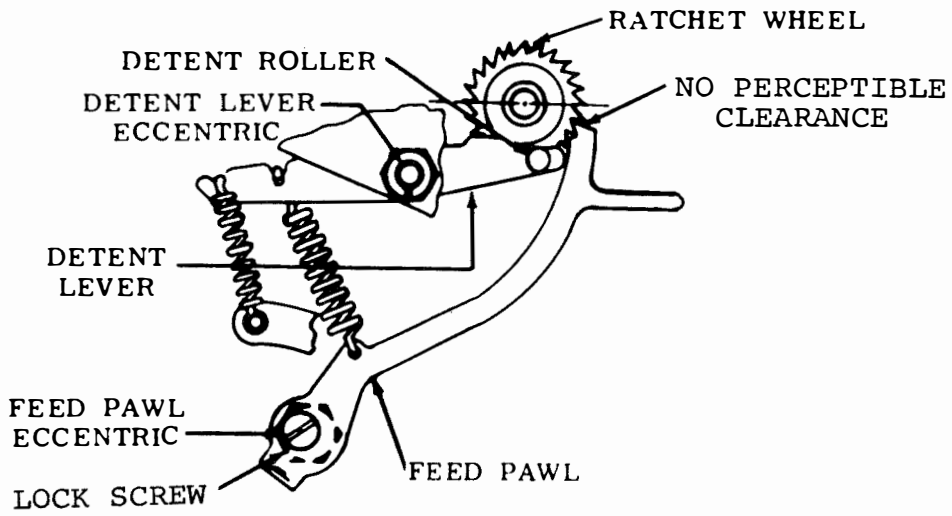


Figure 6-244. Feed Pawl, Front View

feed pawl eccentric. Tighten screw.

(8) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-245.

(b) Disengage and latch function clutch.

(c) With detent spring unhooked from toggle bail, use spring scale to measure force required to start detent lever moving. This should require from 3 to 4-1/2 ounces maximum.

(d) If requirements are not met, replace spring.

(9) Detent Lever Spring. Adjust as follows:

(a) Refer to Figure 6-246.

(b) Disengage and latch function clutch.

(c) With feed pawl spring unhooked, use spring scale to measure force required to start detent lever moving. This should be from 7 to 10 ounces maximum.

(d) If requirement is not met, replace spring.

(10) Tape Shoe Torsion Spring. Adjust as follows:

NOTE

This adjustment does not apply to tape printer.

(a) Refer to Figure 6-247.

(b) Use spring scale to measure force required to move tape from feed wheel. This should measure from 13 to 18 ounces maximum.

(c) If requirement is not met, replace spring.

(11) Tape Depressor Slide Spring. Adjust as follows:

NOTE

This adjustment does not apply to tape printer.

(a) Refer to Figure 6-248.

(b) With rocker bail in extreme left position, use spring scale to measure force necessary to start depressor slide moving. This should measure from 1-1/2 to 2-1/2 ounces maximum.

(c) If requirement is not met, replace spring.

(12) Tape Guide. Adjust as follows:

NOTE

This adjustment does not apply to tape printer.

(a) Refer to Figure 6-249.

(b) Clearance under tape guide should be from 0.008 to 0.015 inch maximum.

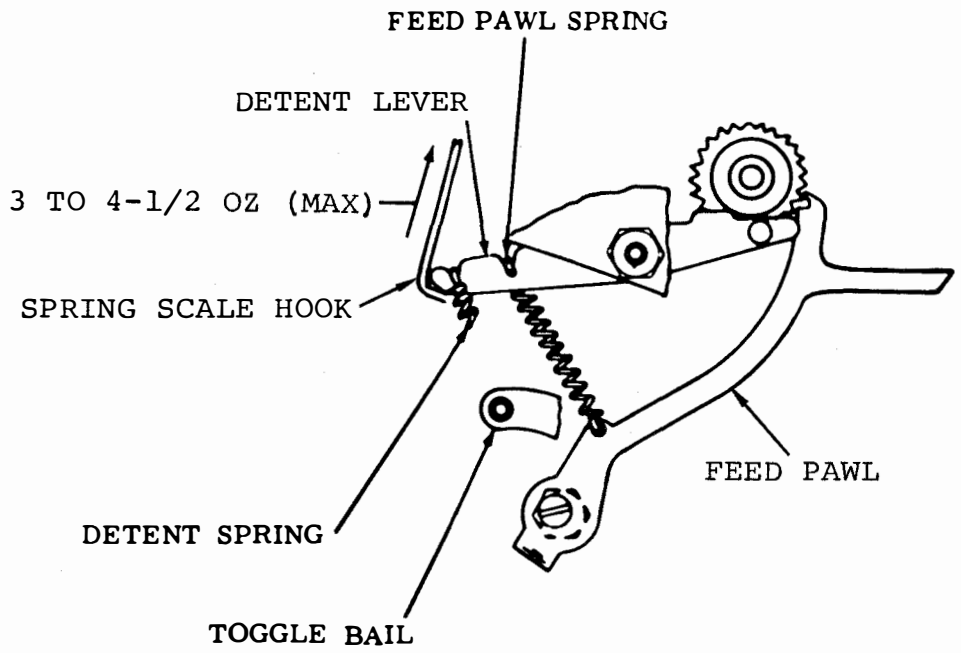


Figure 6-245. Feed Pawl Spring, Front View

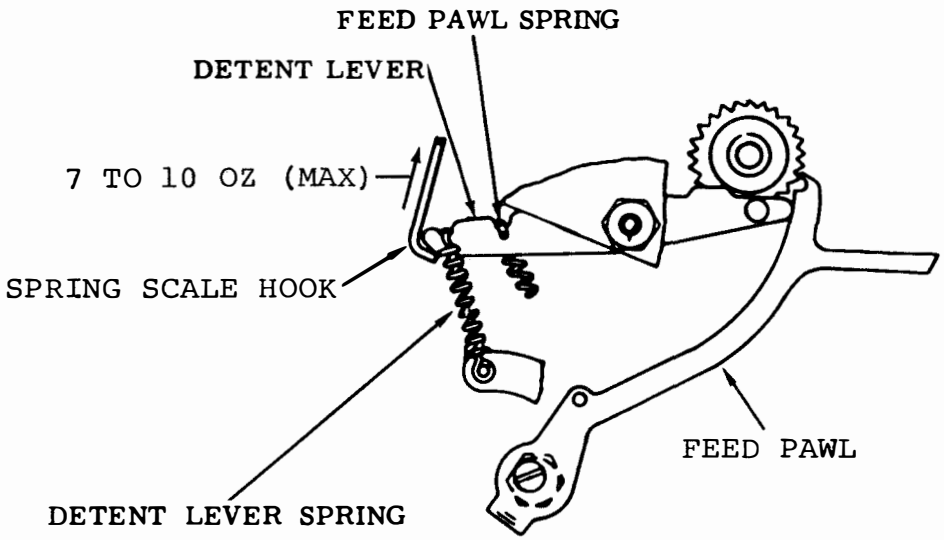


Figure 6-246. Detent Lever Spring, Front View

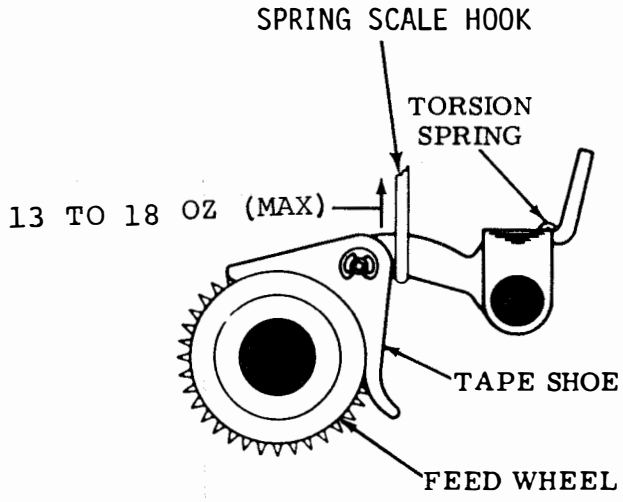


Figure 6-247. Tape Shoe Torsion Spring, Front View

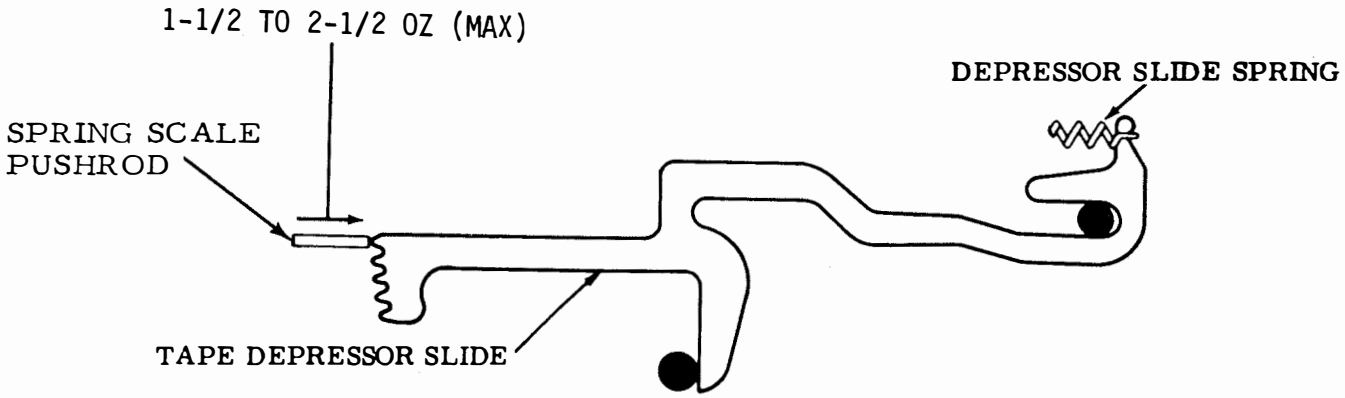


Figure 6-248. Tape Depressor Slide Spring, Front View

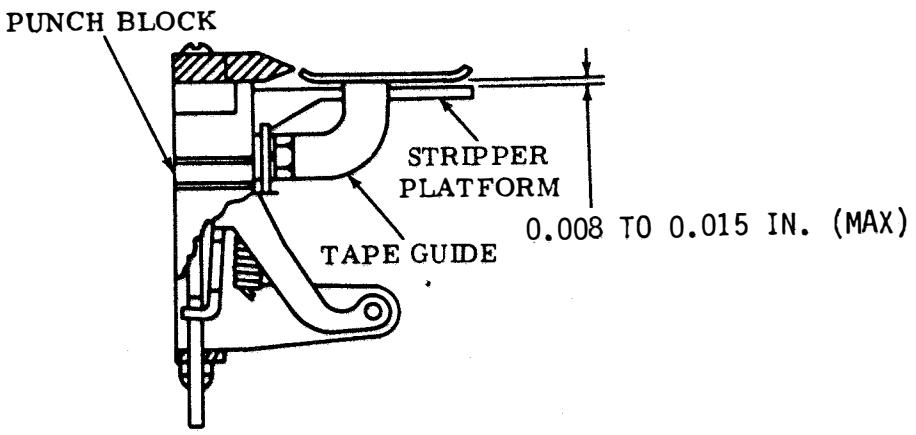


Figure 6-249. Tape Guide, Front View

(c) To adjust, loosen mounting screw friction tight and position tape guide, keeping it against front plate of punch.

(d) Tighten mounting screw.

(13) Tape Guide Spring (for Units Not Equipped with Tape Guide Adjusting Plate). Adjust as follows:

NOTE

This adjustment does not apply to tape printer.

(a) Refer to Figure 6-250.

(b) Use spring scale to measure force required to start tape guide rail moving upward. This should require 8 ounces (minimum).

(c) If requirement is not met, replace spring.

d. Punch Mechanism (For Chadless Tape) Adjustments. Perform punch mechanism (chadless tape) adjustments in accordance with the following paragraphs.

NOTE

None of the following adjustments apply to tape printer.

(1) Punch Pin Penetration. Adjust as follows:

(a) Refer to Figures 6-251 and 6-252.

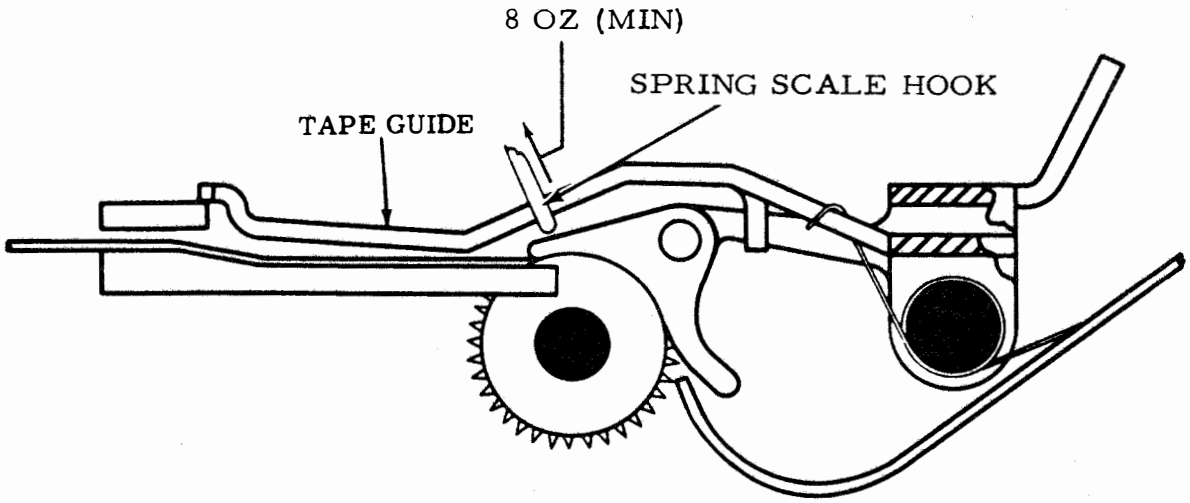


Figure 6-250.Tape Guide Spring, Front View

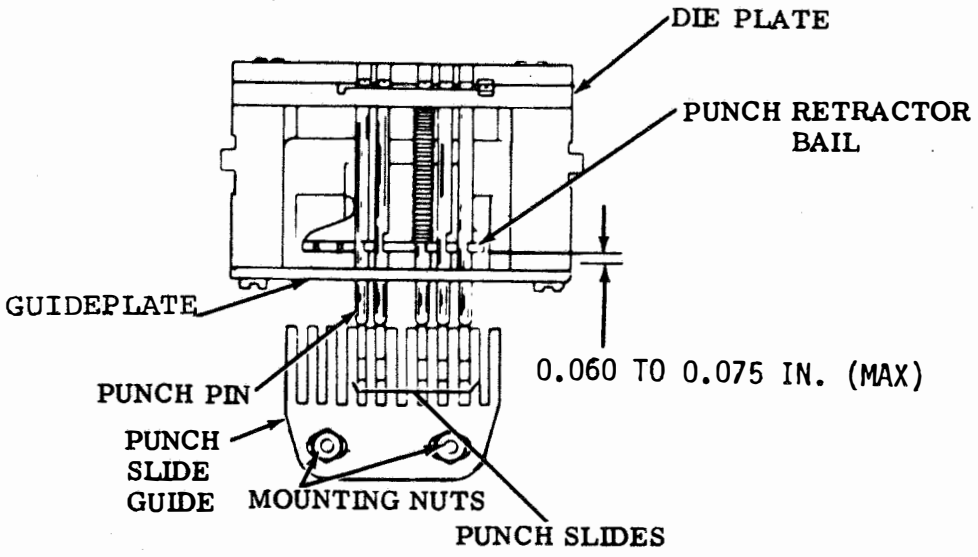


Figure 6-251. Punch Pin Penetration and Punch Slide Guide (For Chadless Tape), Left Side View

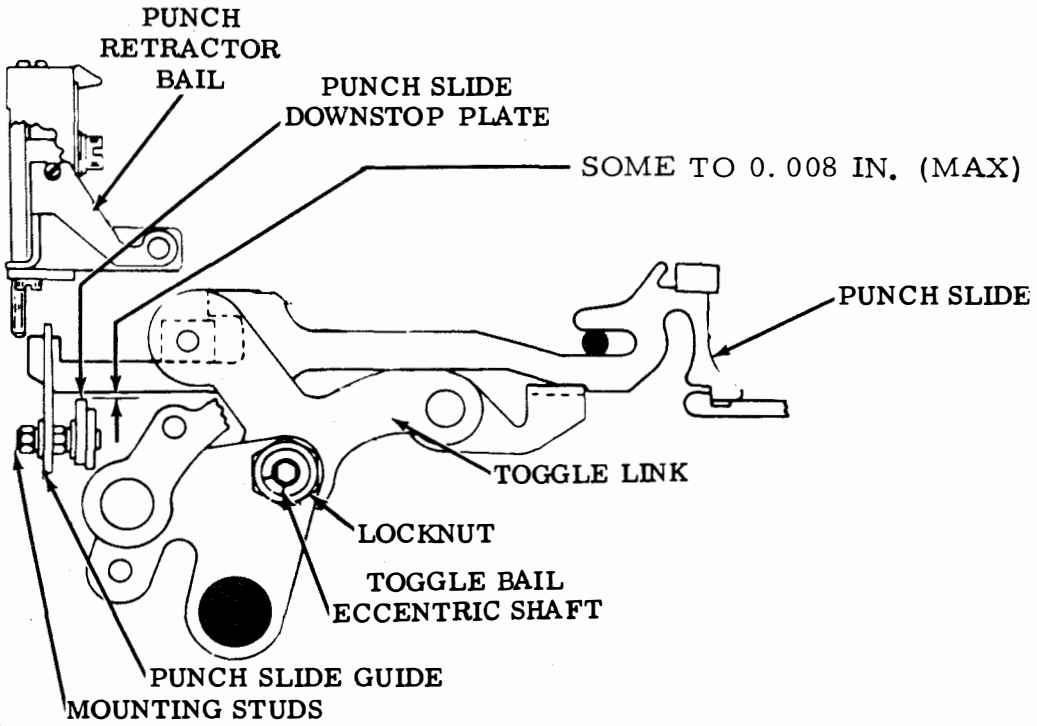


Figure 6-252. Punch Slide Downstop Plate Position (For Chadless Tape), Front View

(b) Select LETTERS code (12345). Engage and rotate function clutch until punch pins have traveled the maximum distance into die plate.

(c) Clearance between lower edge of punch retractor bail and upper side of guideplate should be 0.060 to 0.075 inch maximum. Measure adjacent to number 1 and number 5 punch pins where clearance is least.

(d) To adjust, loosen locknut and rotate toggle bail eccentric shaft keeping indentation in eccentric shaft to left of a vertical centerline through shaft (figure 6-252). Tighten locknut.

NOTE

Code punches should punch a full tape lid with a slight amount of tear. The tear should be restricted to a minimum. Refine adjustment, if necessary.

(2) Punch Slide Guide. Adjust as follows:

(a) Refer to Figure 6-251.

(b) Select LETTERS code (12345). Engage and rotate function clutch until punch slides just touch punch pins.

(c) Punch slides should align centrally with punch pins (as gauged by eye).

(d) To adjust, loosen mounting nuts and position punch slide guide. Tighten nuts.

(3) Punch Slide Downstop Plate Position. Adjust as follows:

(a) Refer to Figure 6-252.

(b) Select LETTERS code (12345), unit in STOP position (clutches disengaged), and trip function reset trip mechanism for some clearance.

(c) There should be enough clearance to allow all punch slides to move freely during operation.

(d) There should be some clearance, not to exceed 0.008 inch between front and rear punch slides and downstop plate.

(e) To adjust:

1. Pemove punch slide guide.

2. Loosen downstop plate mounting studs and position downstop plate.

3. Tighten studs and replace guide so that punch slides align with punch pins (as gauged by eye).

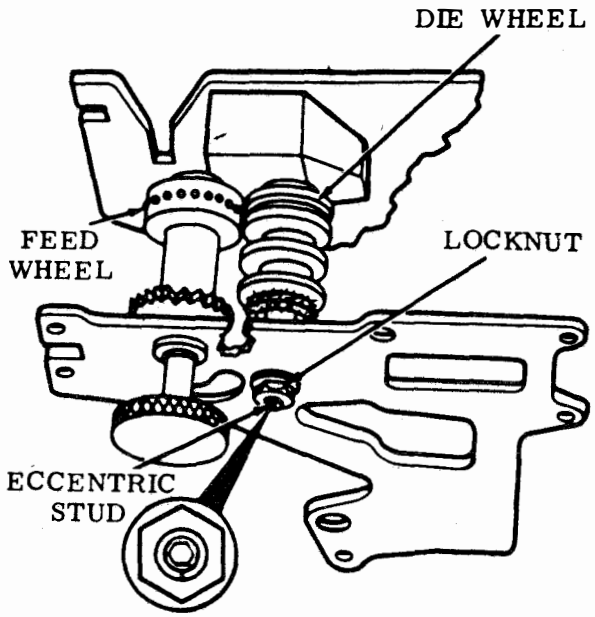
(4) Reperforator Mounting. Adjust as follows:

(a) Refer to Figure 6-253.

(b) Mount reperforator to base and adjust in accordance with associated base section.

(5) Ten Characters Per Inch (Preliminary). Adjust as follows:

(a) Refer to Figure 6-253.



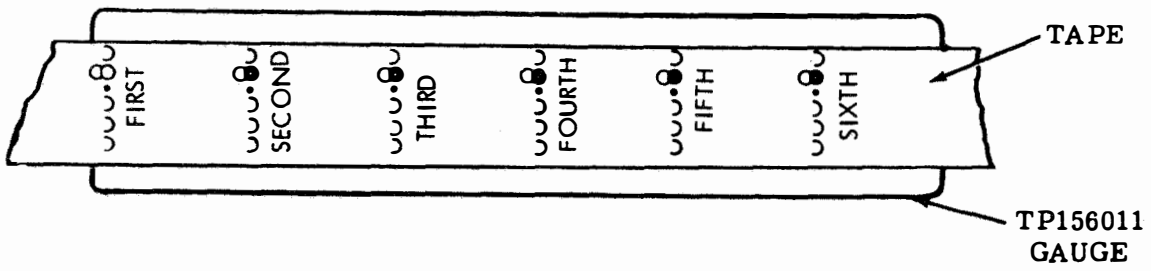


Figure 6-253. Reperforator Mounting and Ten Characters per Inch (Preliminary and Final) (For Chadless Tape), Front View

(b) Indent of die wheel eccentric stud should point straight down.

(c) To adjust, loosen locknut, position die wheel eccentric stud, and tighten locknut.

(d) With tape shoe blocked away from feed wheel, feed pawl and detent disengaged, and tape removed, feed wheel should rotate freely.

(e) Check by revolving feed wheel three or four times.

(f) Refine adjustment in step (c), if necessary to meet this requirement.

NOTE

Before proceeding with the following adjustment, check both Bias Spring tensions, paragraphs 6-6d(12) and (14), and if unit is equipped with a slack tape mechanism having a clamp plate with adjustable wear disk, loosen the mounting nut and turn a new edge of the disk toward the tape. Tighten nut.

(6) Ten Characters Per Inch (Final). Adjust as follows:

(a) Refer to Figure 6-253.

(b) Check a perforated tape as follows:

1. Perforate with six series of 9 BLANK code combinations followed by a LETTERS combination.

2. Place tape over the TP95960 gauge or the smooth side of the TP156011 tape gauge so that the circular portion of the first number 2 code in the tape is concentric with the first hole of the tape gauge.

3. Observe alignment of tape and gauge.

(c) The next four holes in the tape gauge should be visible through the number 2 code holes in the tape and the circular portion of the last (sixth) number 2 code hole in the tape should be entirely within the 0.086 inch diameter hole of the tape gauge.

(d) With the tape shoe held away from feed wheel, feed pawl and detent disengaged and tape removed, feed wheel should rotate freely.

CAUTION

With tape removed, make sure feed wheel and die wheel do not bind. Recheck adjustment, if necessary.

(e) To adjust:

1. Remove tape from punch mechanism.

2. Loosen eccentric locknut and rotate die wheel eccentric shaft until it binds against feed wheel.

3. Back off eccentric until die wheel is just free.

4. Check through three or four rotations keeping the indent of eccentric

below the horizontal centerline of the stud.

5. Refine adjustment above, if necessary, by moving die wheel toward feed wheel to decrease character spacing and away from the wheel to increase.

6. Tighten locknut.

7. Refine Feed Pawl adjustment, paragraph 6-6c(7), if necessary.

NOTE

First through fifth holes in gauge are same size as code holes in tape (0.072 inch diameter). Sixth hole in gauge is larger (0.086 inch). This arrangement allows ±0.007 inch variation in 5 inches.

(7) Detent Lever. Adjust as follows:

(a) Refer to Figure 6-254.

(b) Using the TP156011 tape gauge, check perforations on a piece of tape containing 9 BLANK combinations followed by a LETTERS combination.

(c) The lateral centerline through the code holes in the tape should coincide with a lateral centerline through the holes in the gauge.

(d) To adjust:

1. Rotate detent eccentric clockwise to move feed holes toward hinged edge of code holes.

2. Rotate detent counterclockwise to move feed holes toward trailing edge of code holes.

3. Tighten the eccentric locknut and refine the Feed Pawl Adjustment, paragraph 6-6c(7).

(8) Feed Hole Lateral Alignment. Adjust as follows:

NOTE

If unit is equipped with tape guide (early design), locknut must be loosened before this adjustment is made.

(a) Refer to Figure 6-255.

(b) With reperforator operating under power, obtain a tape with 9 BLANK code combinations followed by a LETTER combination.

(c) Open chads so code holes are visible and place tape over TP156011 tape gauge with LETTERS combination feed holes engaging feed pins. (Large holes in gauge are same diameter as circular portion of code holes in tape. Small holes in gauge serve as guide for gauging.)

(d) Circular portion of code holes in tape should be concentric with holes in tape gauge.

(e) To adjust:

1. Loosen adjusting screw locknut and position adjusting screw.

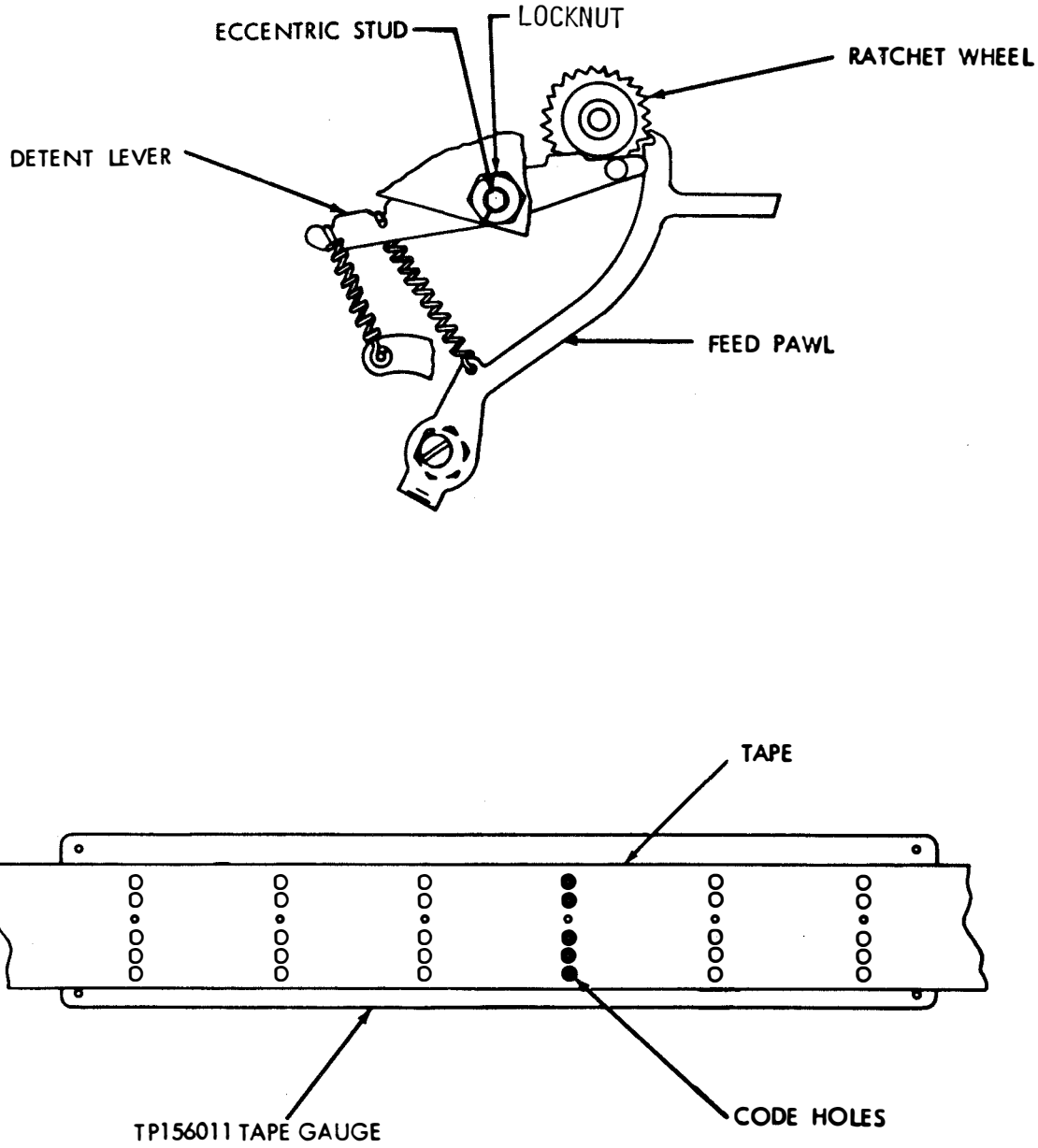


Figure 6-254. Detent Lever (For Chadless Tape), Front View

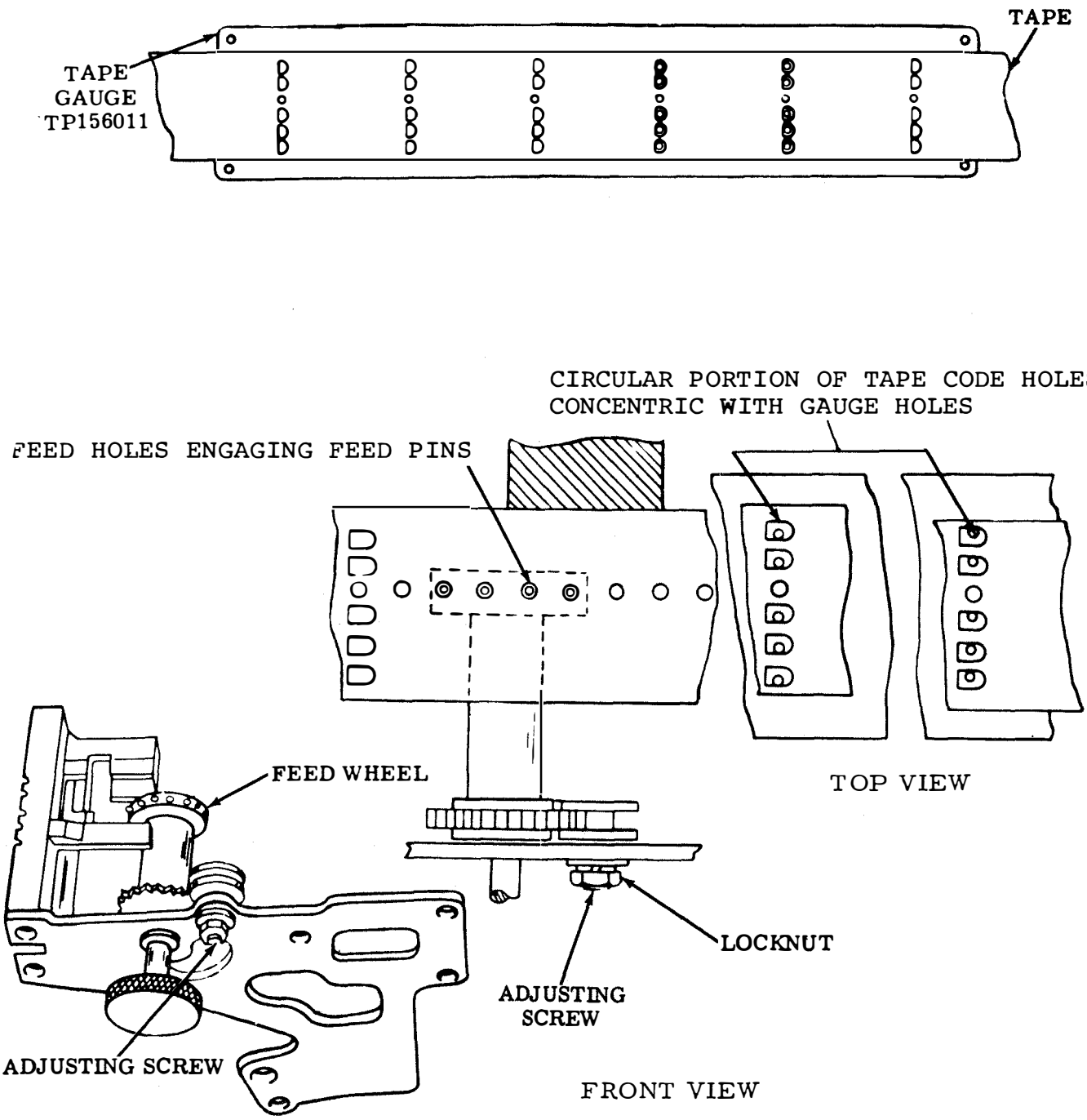


Figure 6-255. Feed Hole Lateral Alignment

2. To move holes of gauge away from reference edge of tape, move feed wheel towards front plate of punch mechanism by rotating adjusting screw counterclockwise.

3. To move holes of gauge towards reference edge of tape, move feed wheel towards backplate of punch mechanism by rotating adjusting screw clockwise.

4. Tighten locknut.

5. Refine Detent Lever adjustments, paragraph 6-6d(7), to align lateral centerlines of code holes and feed holes, if required.

(9) Punch Slide Spring. Adjust as follows:

(a) Refer to Figure 6-256.

(b) Set up LETTERS combination (12345), trip function clutch, and place punch slides in selected position under punch pins.

(c) Apply spring scale pushrod to punch slide and measure the force required to start each slide moving. This should be between 2-1/4 and 3-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(10) Retractor Bail Springs - Compression Springs Only. Adjust as follows:

(a) Refer to Figure 6-257.

(b) Disengage function clutch and unhook tension springs.

(c) Apply spring scale hook to punch pins and measure force necessary to lift retractor bail from lower guide or punch block. This should be between 8 and 32 ounces maximum.

(d) If requirement is not met, replace springs.

(11) Retractor Bail Springs - Compression and Tension Springs (Combined). Adjust as follows:

(a) Refer to Figures 6-257 and 6-258.

(b) Repeat paragraph (10) above except with tension springs hooked.

NOTE

To facilitate rehooking tension springs, place punch pins in uppermost position.

(c) The required force should be between 4 and 5 pounds maximum.

(d) If spring scale reading is not within specified range, and compression springs check out, replace tension springs.

(12) Bias Spring (Tape Chute). Adjust as follows:

NOTE

To check this spring tension on units equipped with backspace mechanism it is

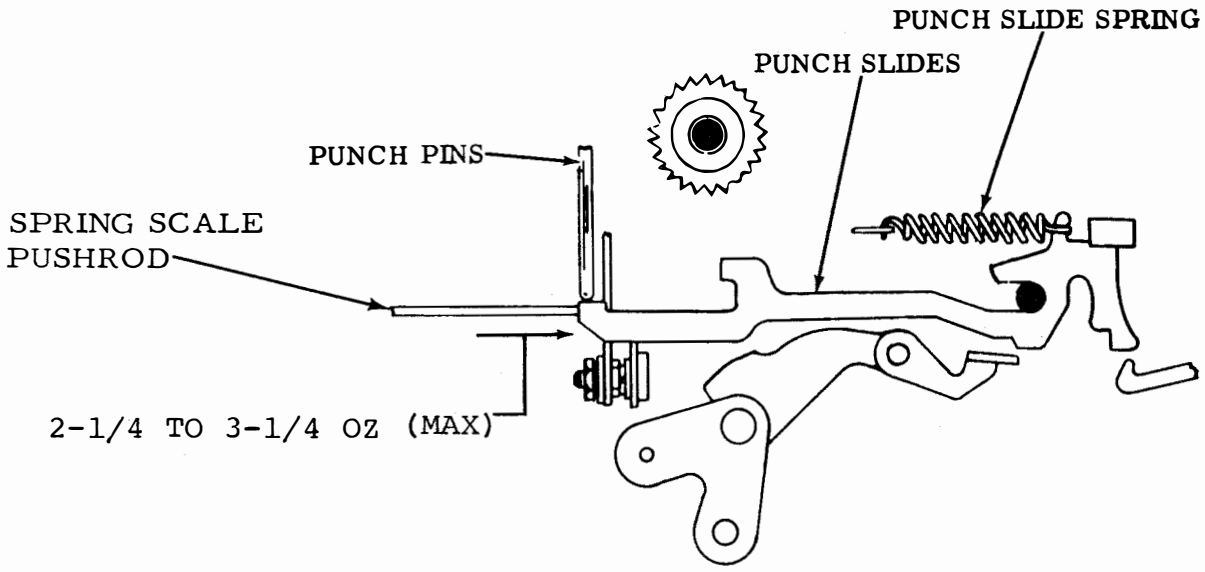


Figure 6-256. Punch Slide Spring (For Chadless Tape), Front View

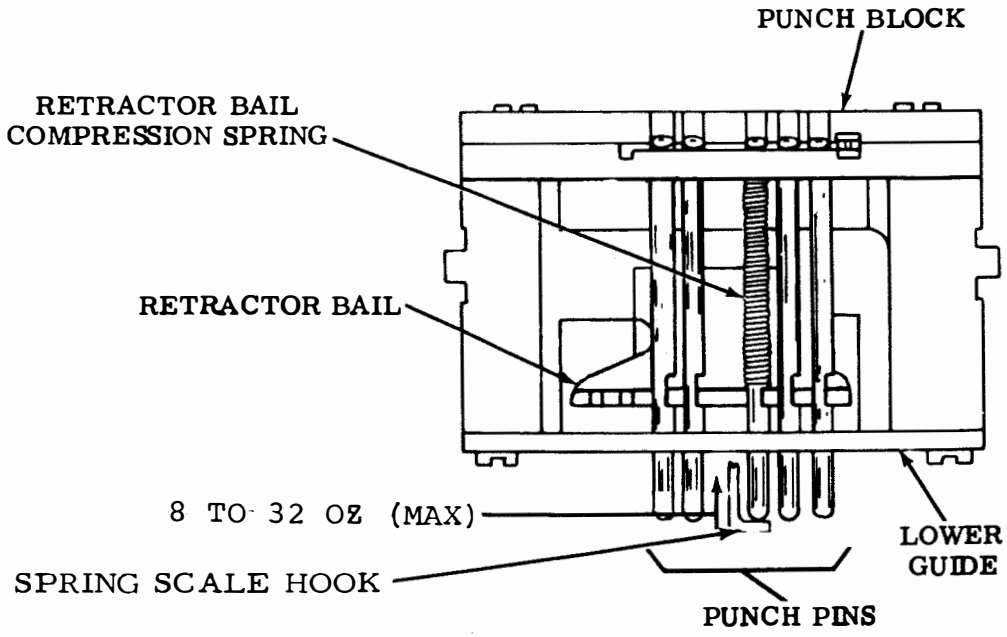


Figure 6-257. Retractor Bail Compression Springs (For Chadless Tape), Left Side View

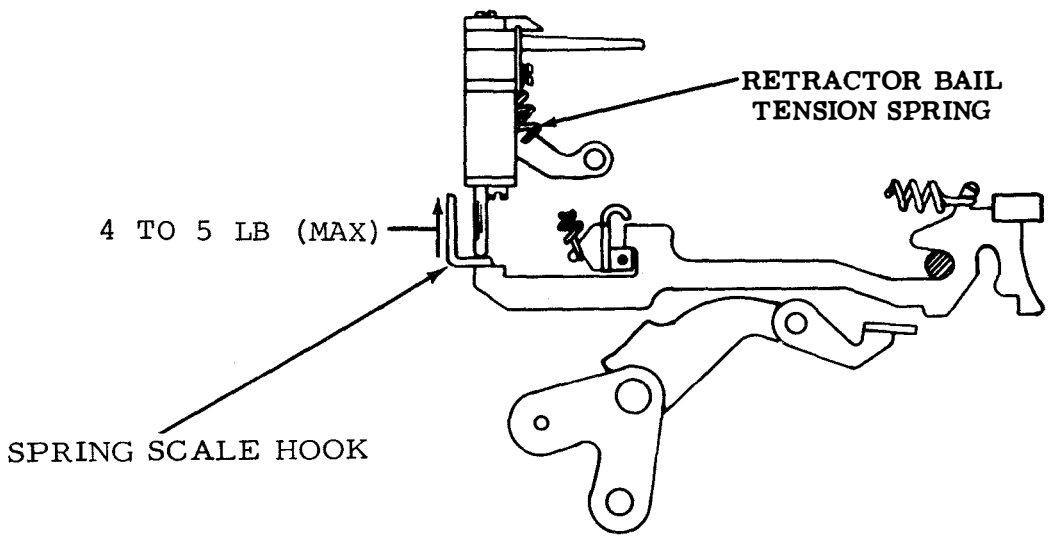


Figure 6-258. Retractor Bail Compression and Tension Springs (Combined) (For Chadless Tape), Front View

necessary to remove several parts. It should not be checked unless there is reason to believe that requirements cannot be met.

(a) Refer to Figure 6-259.

(b) Disengage clutch and thread tape through punch assembly.

(c) Apply spring scale hook to bias spring and measure force required to just move spring away from tape. This should be between 1-1/4 and 2-1/4 ounces maximum.

(d) To adjust, bend spring and recheck step (c) above.

(13) Tape Guide Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-259.

(b) Attach spring scale hook to tape guide assembly and pull assembly away from block using a minimum pull of 16 ounces.

(c) Tape guide assembly should be free to return to rest against tape guide block.

(d) Replace bias spring if requirement is not met.

(e) If tape guide assembly is not free to return, reposition tape guide assembly mounting post to free tape guide assembly.

(14) Bias Spring (Punch Block). Adjust as follows:

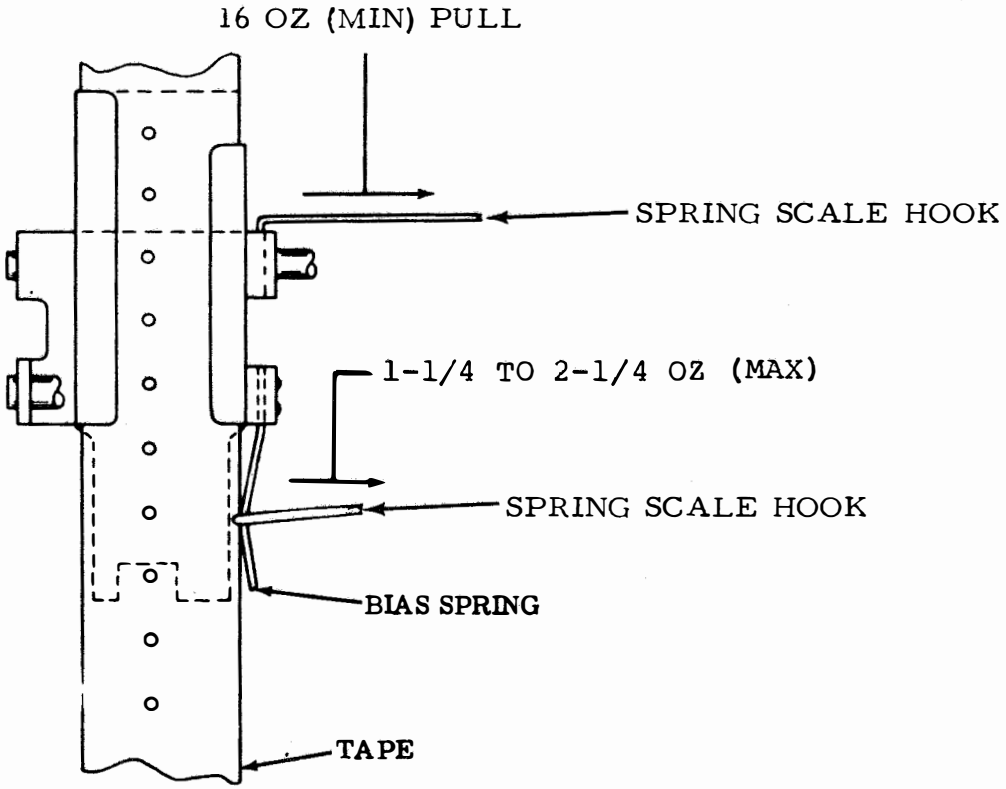


Figure 6-259. Bias Spring (Tape Chute) and Tape Guide Assembly Spring (For Chadless Tape), Top View

(a) Refer to Figure 6-260.

(b) With tape removed from punch block, bias spring should rest against clearance slot in block in a symmetrical manner.

(c) With tape in punch block and perforator operating under power, spring should not distort edge of tape.

(d) To adjust, bend spring, loosen mounting screw and position spring. Tighten screw.

e. Punch Mechanism (For Fully Perforated Tape) Adjustments. Perform punch mechanism adjustments (fully perforated tape) in accordance with the following paragraphs.

NOTE

None of the following adjustments apply to tape printer except paragraphs (1) and (5), below.

(1) Punch Slide Latch Spring. Adjust as follows:

(a) Refer to Figure 6-261.

(b) Select LETTERS code combination (12345), position rocker bail to extreme left and strip pushlevers from selecting levers.

(c) Apply spring scale pushrod to slide latch and measure force required to start latch moving:

1. For one-shaft units, it should require 1 to 3 ounces maximum.

2. For two-shaft units, it should require 3/4 to 2 ounces maximum.

(d) If force does not meet specifications, replace spring.

(2) Punch Pin Penetration. Adjust as follows:

(a) Refer to Figure 6-262.

(b) Select LETTERS combination (12345), engage function clutch, and rotate main shaft until all punch pins are into or above the tape aperture in the punch block.

(c) With gauge TP159926 in position on top of oscillating shaft, clearance between feed pawl stud and the gauge shouuld measure 0.050 inch minimum.

(d) Select LETTERS combination (12345), engage function clutch, and rotate main shaft until all punch pins have cleared the punch block.

(e) With gauge TP159926 in position on top of oscillating shaft, clearance between feed pawl stud and the gauge should measure some to 0.080 inch maximum.

(f) To adjust, refine the Toggle Bail Eccentric adjustment, paragraph 6-6c(3), keeping the indent to the right of a vertical centerline through the shaft.

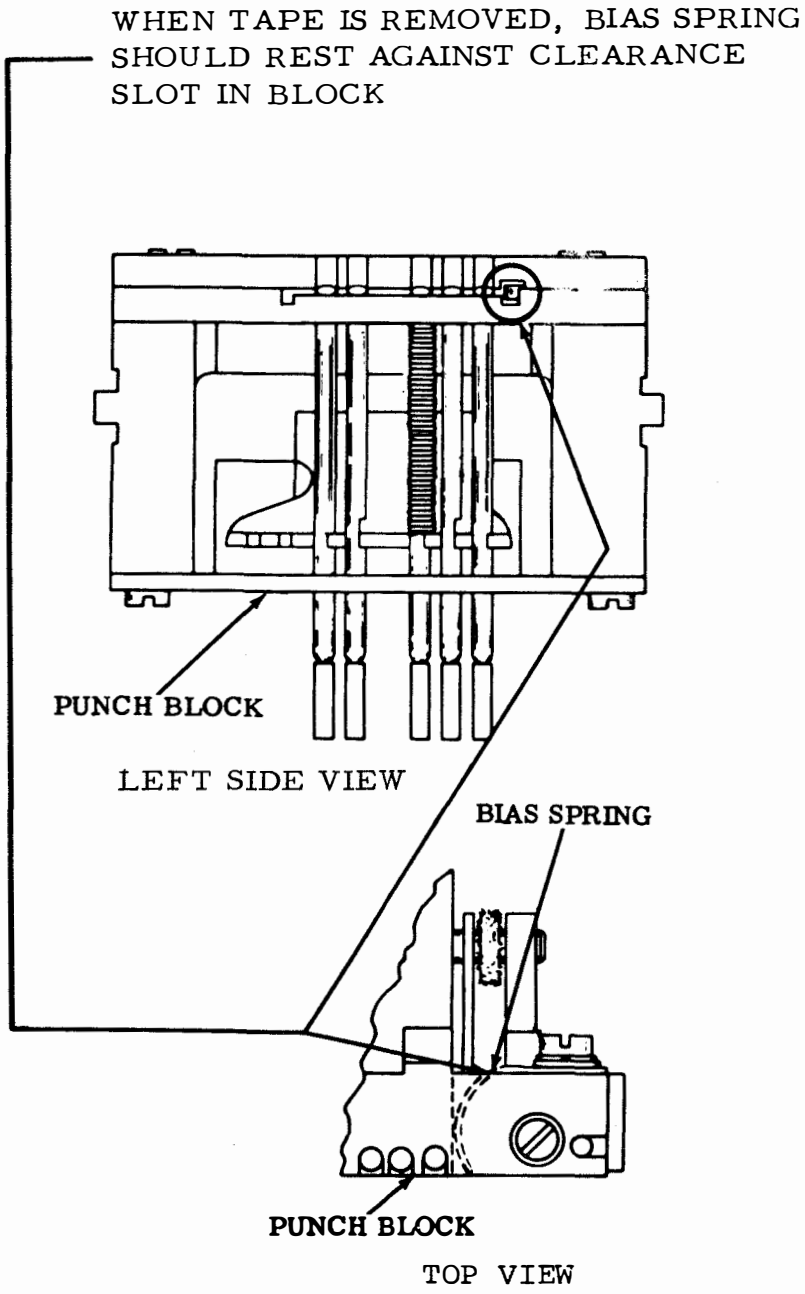


Figure 6-260. Bias Spring (Punch Block) (For Chadless Tape)

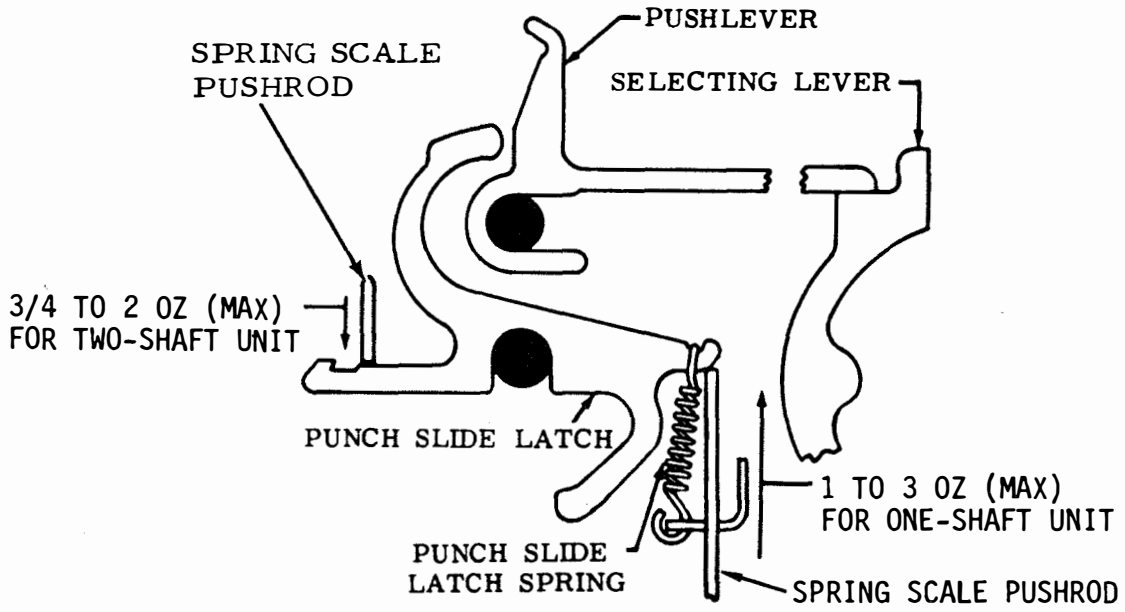


Figure 2-261. Punch Slide Latch Spring (For Fully Perforated Tape), Front View

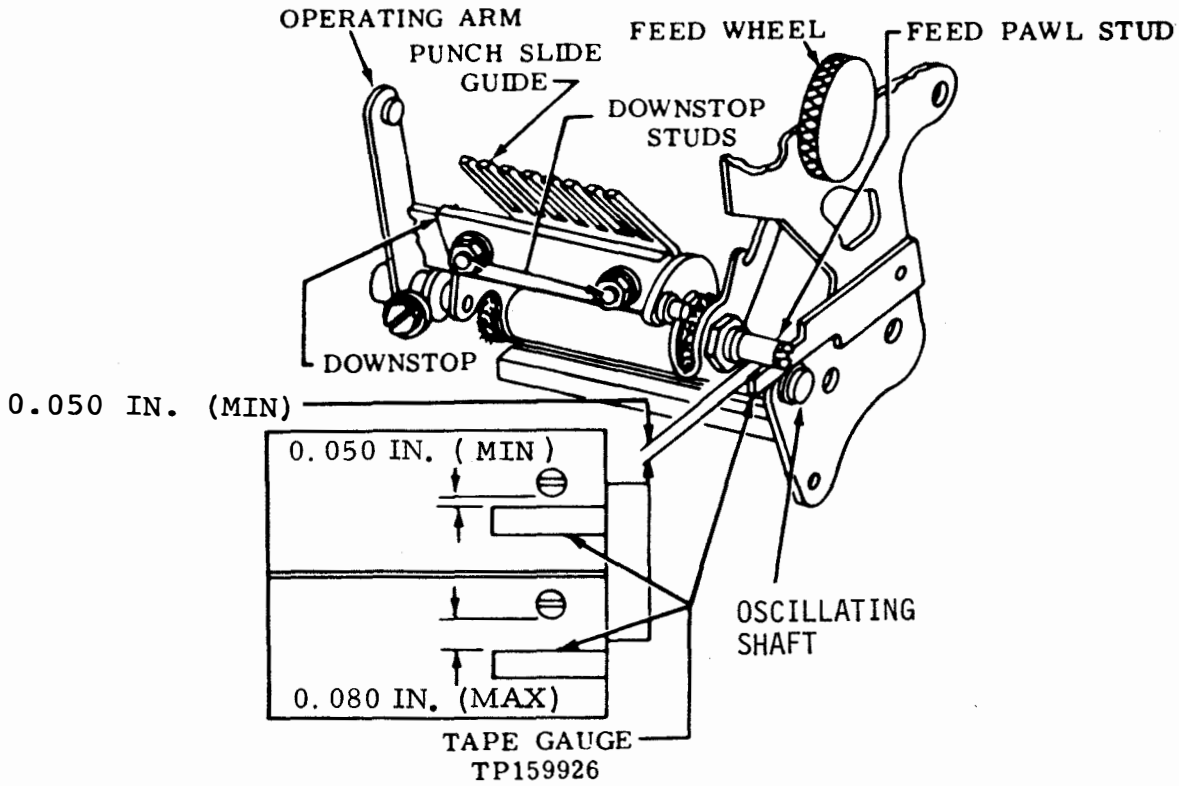


Figure 6-262. Punch Pin Penetration (For Fully Perforated Tape), Left Side View

(3) Punch Slide Downstop Position. Adjust as follows:

(a) Refer to Figure 6-263.

(b) Select LETTERS combination (12345), disengage and latch function clutch, and take up play toward the top.

(c) Clearance between both the front and rear punch slides and the downstop plate should measure some to 0.008 inch maximum. All other punch slides should have some clearance.

(d) To check the other punch slides for some clearance, place unit in STOP position and trip function mechanism and latches. The punch slides should move fully to their operated position.

(e) To adjust, put unit in STOP position, loosen two downstop plate mounting locknuts, and locate downstop plate to meet required clearance. Tighten locknut.

(4) Punch Slide Guide (Final). Adjust as follows:

(a) Refer to Figure 6-263.

(b) Punch slides should align with their corresponding punch pins and be free of binds, after tightening the guide mounting studs.

(c) Each punch slide should return freely after being pushed in not more than 1/16 inch.

(d) To adjust, loosen mounting studs friction

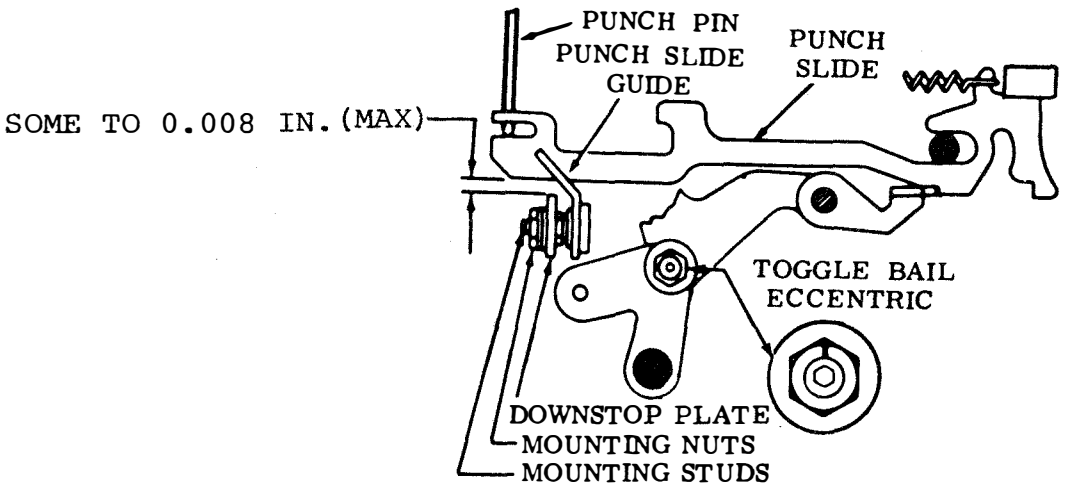


Figure 6-263. Punch Slide Downstop Position and Punch Slide Guide (Final) (For Fully Perforated Tape), Front View

tight and position guide. Tighten studs.

(5) Punch Slide Spring. Adjust as follows:

NOTE

On units equipped with backspace mechanism, it is necessary to remove several parts to check this spring tension. It should not be checked unless there is good reason to believe that it does not meet requirements.

(a) Refer to Figure 6-264.

(b) Set up LETTERS combination (12345) and punch slides in selected position.

(c) Apply spring scale pushrod to punch slide and measure force required to start each slide moving. This should be between 2-1/4 and 3-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(6) Tape Guide Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-265.

(b) Attach spring scale hook to tape guide assembly and pull assembly away from block using a minimum pull of 16 ounces. With spring scale hook attached to tape guide assembly, the force required to pull assembly from block should be 16 ounces minimum.

(c) Tape guide assembly should be free to return to rest against tape guide block.

(d) If spring does not meet requirement, replace bias spring.

(e) If tape guide assembly is not free to return, reposition tape guide assembly mounting post to free tape guide assembly.

(7) Bias Spring (Tape Chute). Adjust as follows:

(a) Refer to Figure 6-265.

(b) Disengage clutch and thread tape through punch assembly. Apply spring scale hook to bias spring and measure force required to just move spring away from tape. This should be between 1-1/4 and 2-1/4 ounces maximum.

(c) To adjust, bend spring and recheck step (c) above.

(8) Bias Spring (Punch Block). Adjust as follows:

(a) Refer to Figure 6-266.

(b) With tape removed from punch block, bias spring should rest against clearance slot in block in a symmetrical manner.

(c) With tape in punch block and reperforator operating under power, spring should not distort edge of tape.

(d) To adjust, bend spring, loosen mounting

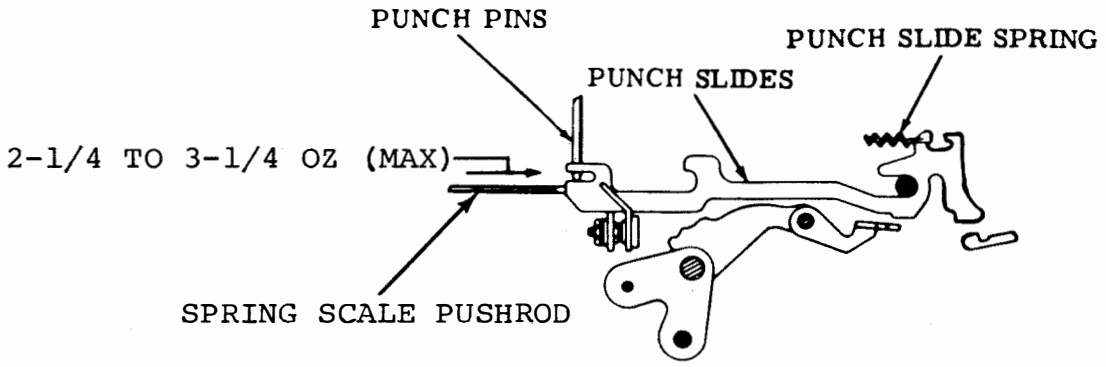


Figure 6-264. Punch Slide Spring (For Fully Perforated Tape), Front View

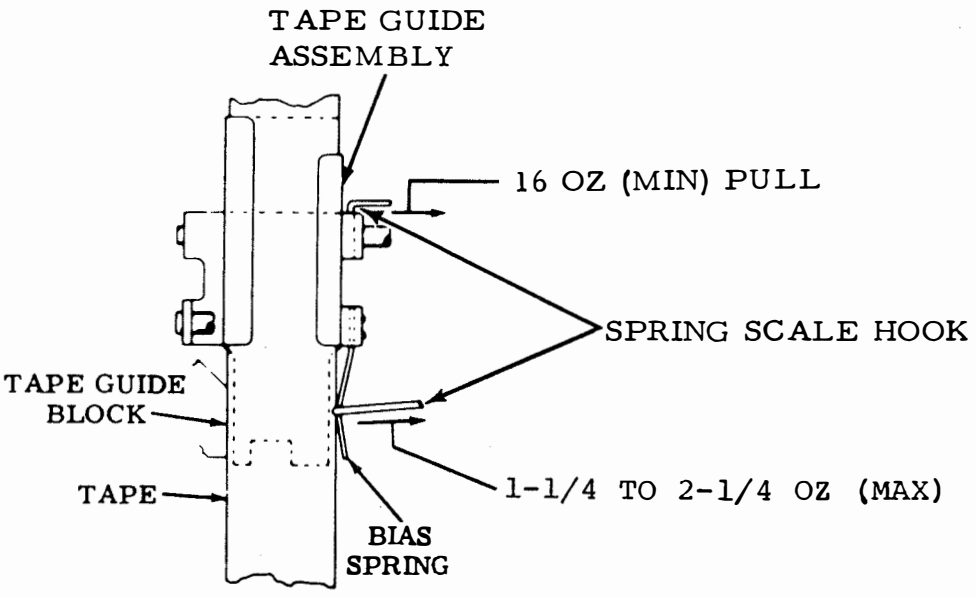


Figure 6-265. Tape Guide Assembly Spring and Bias Spring (Tape Chute) (For Fully Perforated Tape), Top View

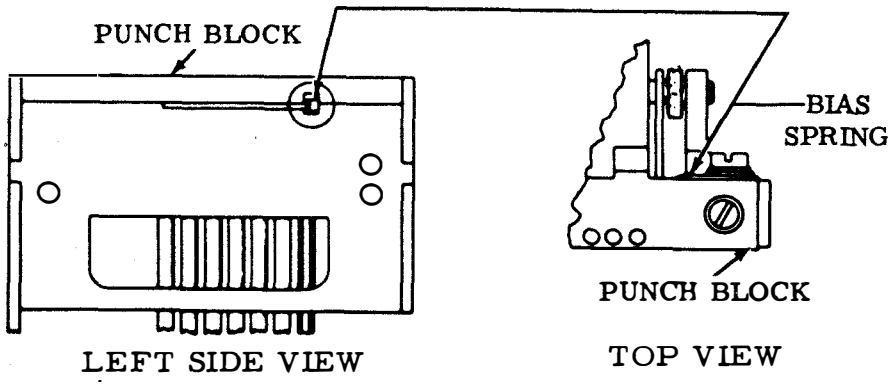


Figure 6-266. Bias Spring (Punch Block) (For Fully Perforated Tape)

screw and position spring. Tighten screws.

f. Punch Mechanism (For Fully Perforated Tape With Indentation of Feed Wheel Between Feed Holes) Adjustments. Perform punch mechanism adjustments (fully perforated tape with feed wheel indentation) in accordance with the following paragraphs.

NOTE

None of the following adjustments apply to tape printer. Before proceeding with the following adjustments, check both tape guide spring tensions, paragraph 6-6e(5) through (8). These adjustments are for five-level fully perforated tapes, with indentation of feed wheel between feed holes:

1. 11/16-inch wide tape with printing between feed holes.
2. 7/8-inch wide tape having a margin for printing at top of tape.
3. 7/8-inch wide tape having a margin for printing at bottom of tape (see figure 6-268).

(1) Ten Characters Per Inch (Final). Adjust as follows:

(a) Refer to Figure 6-267.

(b) With tape shoe blocked away from feed wheel, feed pawl and detent disengaged, and tape removed

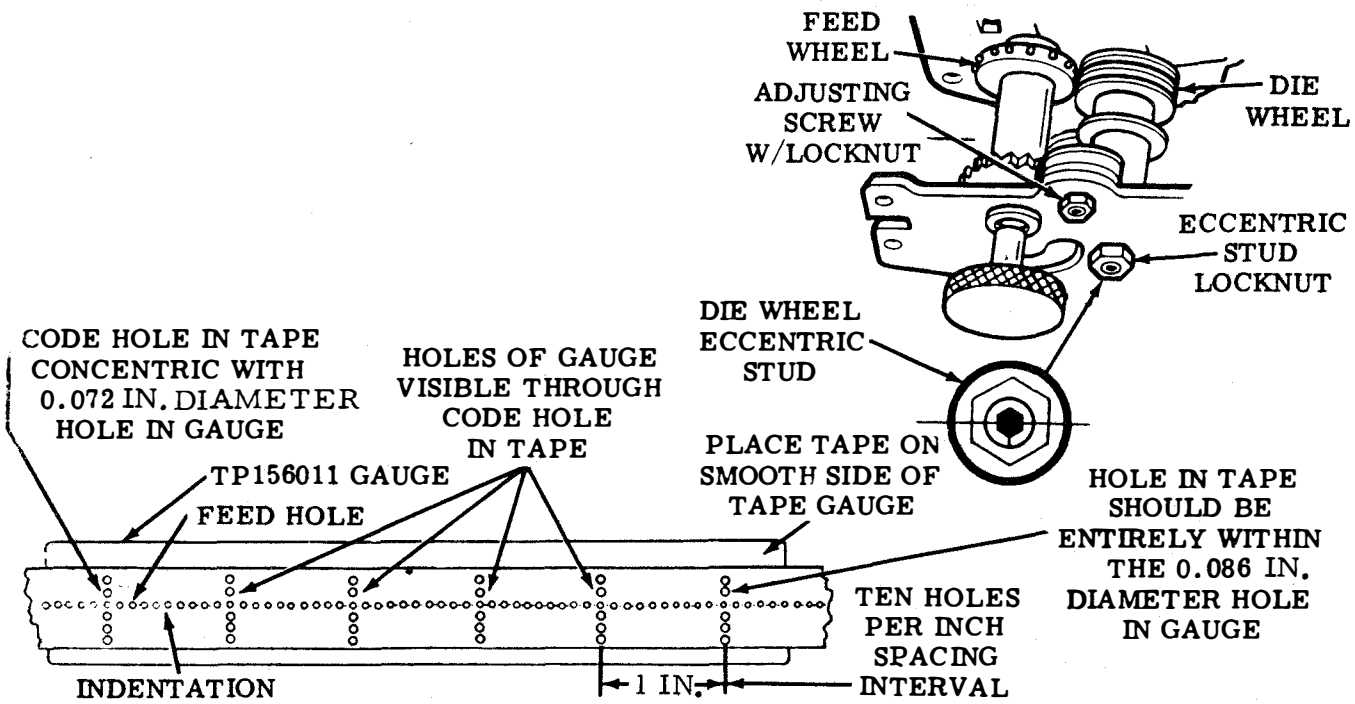


Figure 6-267. Ten Characters Per Inch (Final) (For Fully Perforated Tape With Indentations of Feed Wheel Between Feed Holes), Front View

from punch mechanism, feed wheel should rotate freely. Check through three or four rotations.

(c) Perforate six series of 9 BLANK combinations followed by a LETTERS combination.

NOTE

The first five holes in gauge are the same size as code holes in tape (0.075 inch diameter), but the sixth hole in gauge is larger than the first five (0.086 inch diameter). This arrangement allows ±0.007 inch variation in every 5 inches.

(d) Place tape over smooth side of TP156011 gauge so circular portion of first number 2 code hole in tape is concentric with first 0.072 inch hole of gauge (see note above).

(e) The next four 0.072 holes in tape gauge should be visible through the number 2 code holes in tape, and circular portion of the last (sixth) number 2 code hole in tape should be entirely within the 0.086 inch diameter hole of the tape gauge.

CAUTION

With tape removed from punch mechanism, be sure die wheel does not bind.

(f) To adjust:

1. Remove tape from punch mechanism.

2. Loosen die wheel eccentric stud locknut and adjust die wheel so that it just binds on feed wheel.

3. Back off eccentric so die wheel is just free (check freeness) through three or four rotations.

4. Keep indent off eccentric stud below the horizontal centerline of stud.

(g) Check step (b) and refine step (f) above to meet the requirement. (Move indent of die wheel eccentric stud towards feed wheel to decrease character spacing and away from feed wheel to increase spacing.)

(h) With tape shoe away from feed wheel, feed pawl and detent disengaged, and tape removed from punch mechanism, feed wheel should rotate freely.

(i) Failure to rotate freely indicates die wheel eccentric has been overadjusted. To correct, refine step (f) above.

(2) Lateral and Front-to-Rear Feed Wheel Position Detent. Adjust as follows:

(a) Refer to Figure 6-268.

(b) With unit operating under power, indentations of feed wheel should be centrally located between two fully perforated feed holes, as gauged by eye.

(c) To adjust:

1. Loosen detent lever eccentric stud locknut.

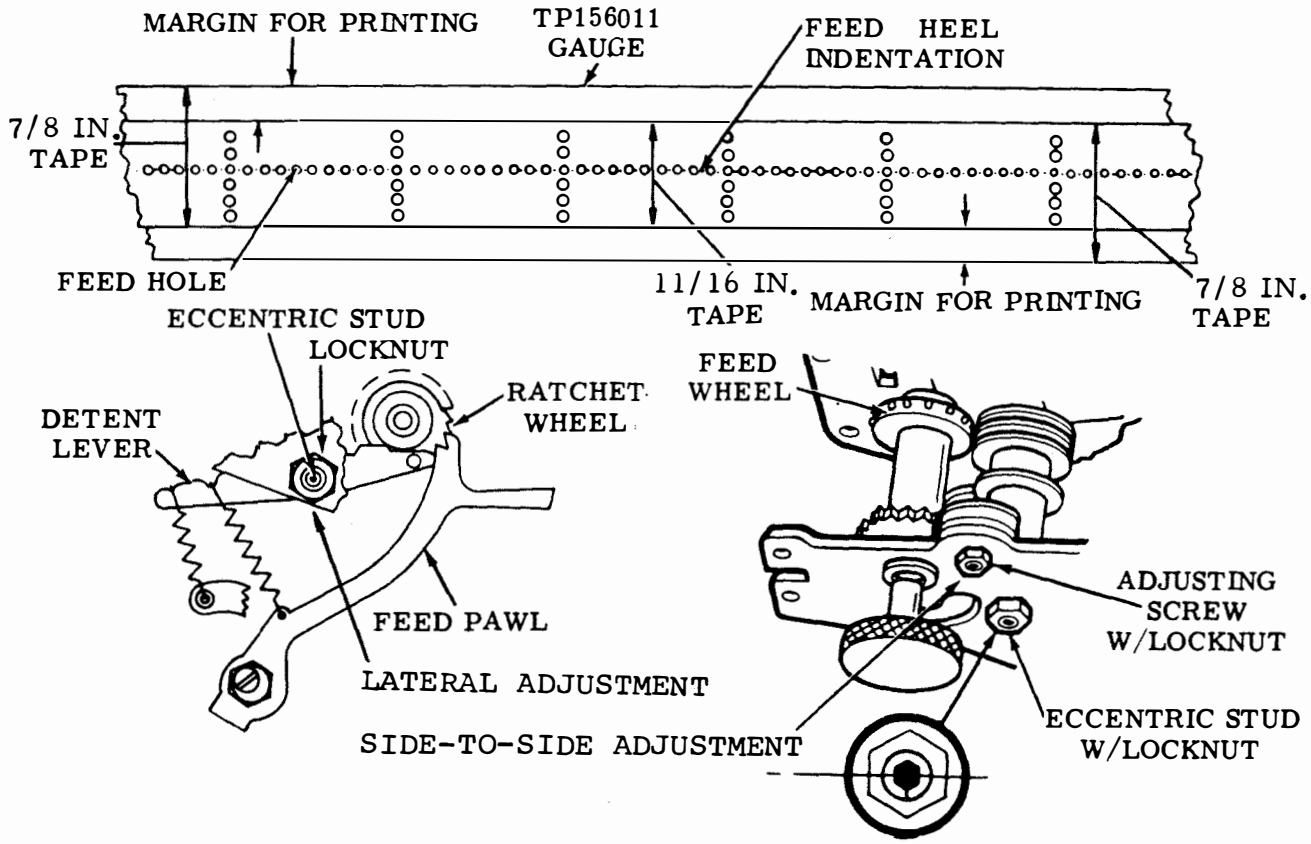


Figure 6-268. Lateral and Front-to-Rear Feed Wheel Position Detent (For Fully Perforated Tape With Indentation of Feed Holes), Front View

2. Turn eccentric stud clockwise to move indentation towards leading edge of feed hole.

3. Turn eccentric stud counterclockwise to move indentation towards trailing edge.

4. Tighten locknut and recheck Feed Pawl adjustment, paragraph 6-6c(7).

(d) With unit operating under power, indentations of feed wheel should be on a centerline between fully perforated feed holes, as gauged by eye.

(e) To adjust:

1. Loosen adjusting screw locknut.

2. Turn adjusting screw clockwise to move indentation toward rear.

3. Turn adjusting screw counterclockwise to move indentation toward front.

4. Tighten locknut.

g. Typing Mechanism Adjustments. Perform typing mechanism adjustments in accordance with the following paragraphs.

(1) Pushbar Operating Blade (Preliminary). Adjust as follows:

(a) Refer to Figure 6-269.

(b) Manually select LETTERS code combination (12345) and rotate main shaft until function clutch trips.

(c) Hold number 2 and 3 bellcranks against stop post and operating blade is parallel (not necessarily flush) to top of number 2 and 3 pushbar latching surfaces.

(d) To adjust:

1. Loosen mounting screws friction tight and pry transfer mounting bracket all the way to the right.

2. Add or remove shims under rear leg of operating blade.

3. Place extra shims on rear mounting screw between blade and flat washer.

4. Tighten mounting screws.

(2) Bellcrank Springs (Five). Adjust as follows:

(a) Refer to Figure 6-269.

(b) Select LETTERS code combination (12345) and rotate main shaft until function clutch trips.

(c) Apply spring scale pushrod to top of pushbar and measure force required to start pushbar moving. This should be between 1 and 3 ounces maximum. Check all five springs.

(d) If requirement is not met, replace spring.

(3) Shoulder Clearance. Adjust as follows:

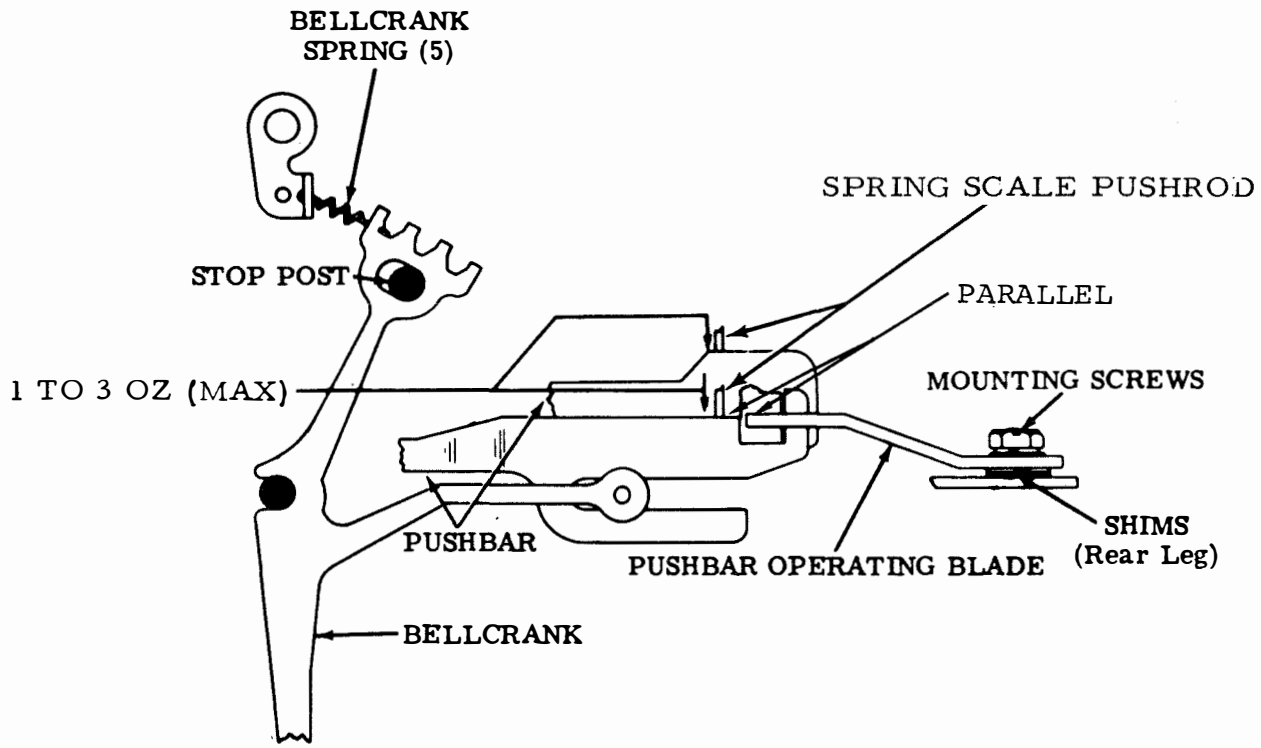


Figure 6-269. Pushbar Operating Blade (Preliminary) and Bellcrank Springs, Front View

NOTE

It may be necessary to refine this adjustment after Centering Clearance adjustment, paragraph 6-6g(4).

(a) Refer to Figure 6-270.

(b) Manually select LETTERS code combination (12345), rotate main shaft until function clutch trips, and manually seat pushbars in detented position.

(c) In bar nearest to left edge of blade, take up play to left and rear and then release.

(d) Clearance between bar and left edge of blade should be between 0.015 and 0.030 inch maximum.

(e) There should be some clearance between the right edge of blade and pushbars when play in bars has been taken up to right and released.

(f) With unit in STOP position, there should be some clearance between right edge of blade and bars when play in bars has been taken up to right and released.

(g) To adjust, loosen mounting screws and position operating blade in elongated holes. Tighten screws.

(4) Centering Clearance. Adjust as follows:

(a) Refer to Figure 6-271.

(b) Select BLANK code combinations (-----).

(c) Position rocker bail through a complete cycle to ensure clearance is a minimum.

(d) Measure the clearance between function box rear plate and pushbar operating blade at a point in the cycle where play is taken up to make minimum clearance.

(e) Clearance should be between 0.005 and 0.020 inch maximum.

(f) To adjust, loosen locknut and position rocker bail pilot stud in elongated hole. Tighten locknut.

(5) Number 5 Pulse Beam Spring. Adjust as follows:

(a) Refer to Figure 6-272.

(b) Attach spring scale hook to number 5 pulse beam spring and measure force required to stretch spring to 7/16 inch in length.

(c) Force required should be between 10 and 15 ounces maximum.

(d) If requirement is not met, replace spring.

(6) Function Box. Adjust as follows:

NOTE

When unit is mounted as part of keyboard perforator transmitter, it may be necessary to refine adjustment within its limits to increase operating margins of unit. On units equipped with two-piece trip bracket, set

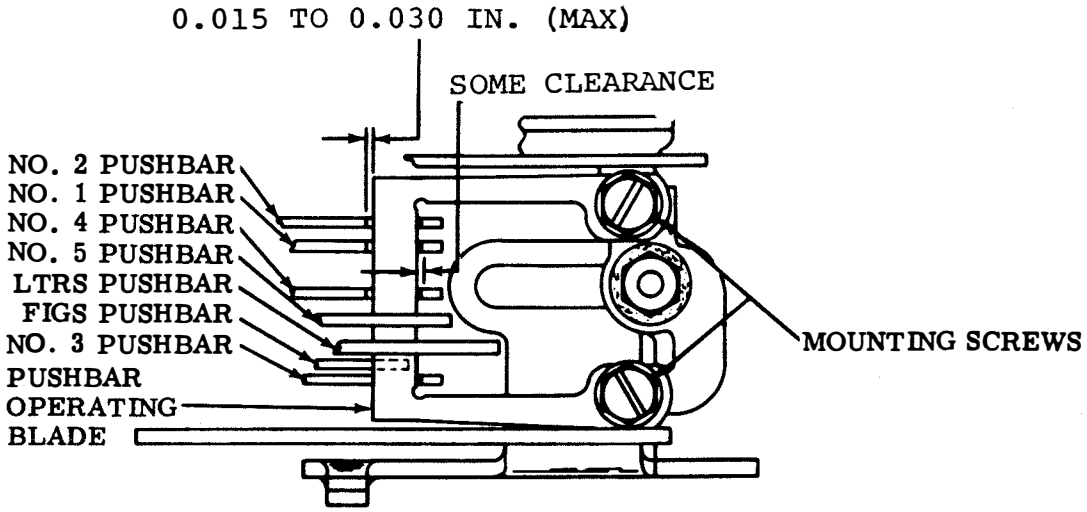


Figure 6-270. Shoulder Clearance, Top View

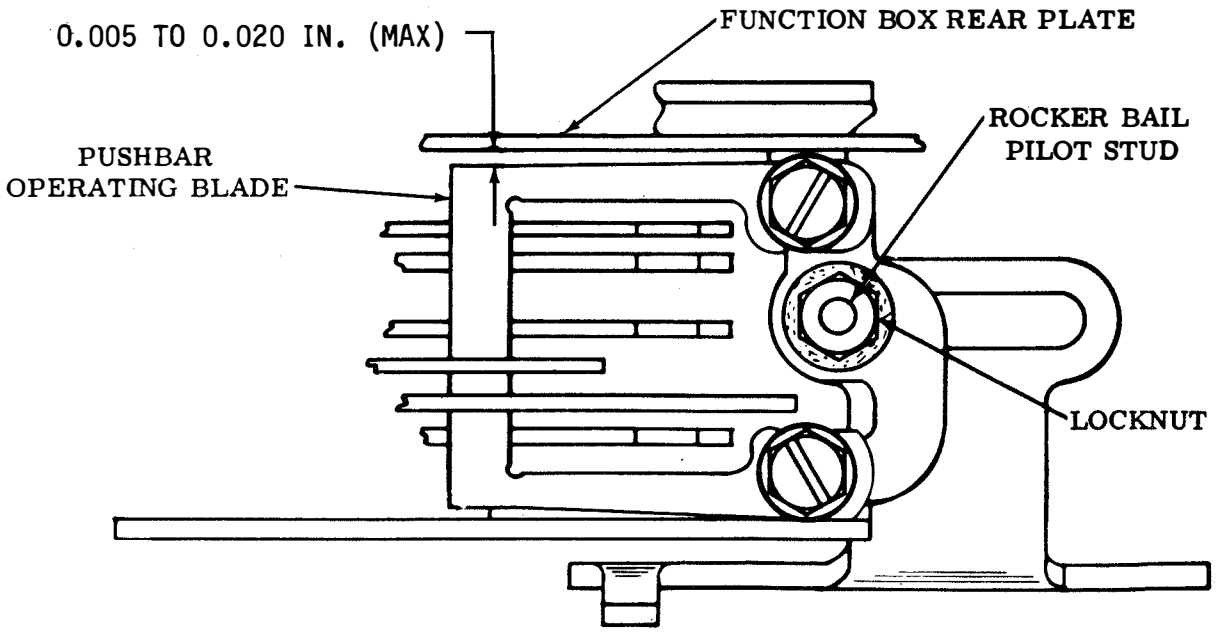


Figure 6-271. Centering Clearance, Top View

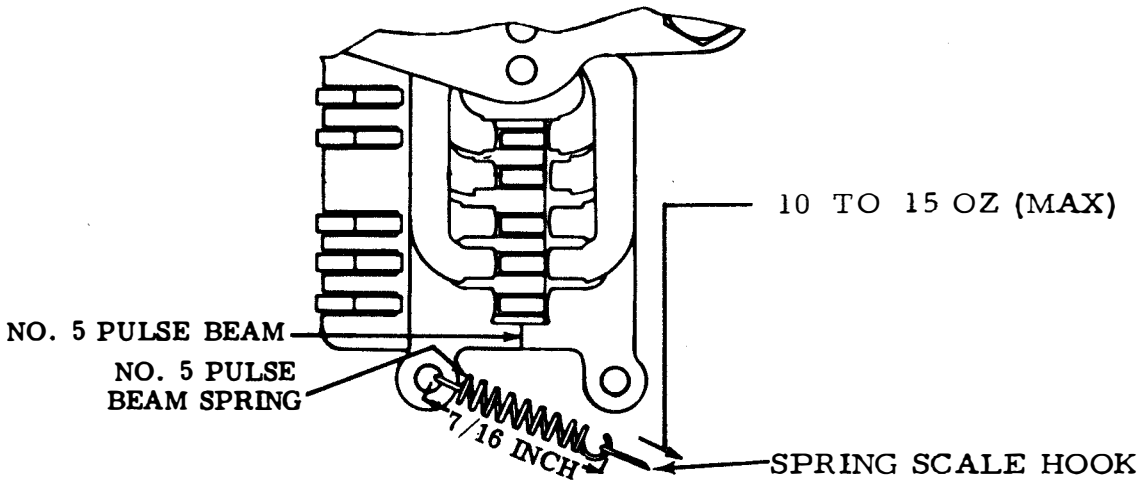


Figure 6-272. Number 5 Pulse Beam Spring, Top View

adjustment in center of its range and tighten screws. Loosen two screws which mount guide to bracket and position guide to meet the following requirement. Tighten screws.

(a) Refer to Figure 6-273.

(b) Manually select LETTERS code combination (12345), rotate main shaft until function clutch trips, and punch slides are disengaged from latches.

(c) Top of operating blade should be flush to 0.020 inch maximum below tops of number 2 and number 3 pushbars.

(d) Take up play in downward direction and release.

(e) To adjust, loosen three mounting screws in rear plate and one in front plate and position function box with a pry point. Check position of bellcrank and tighten screws.

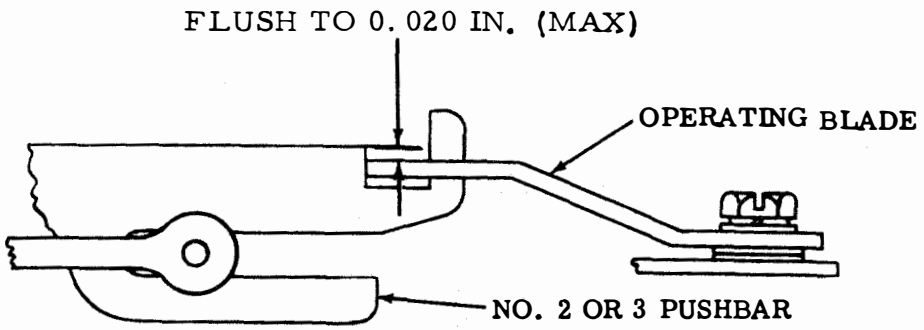
(7) Pushbar Location. Adjust as follows:

CAUTION

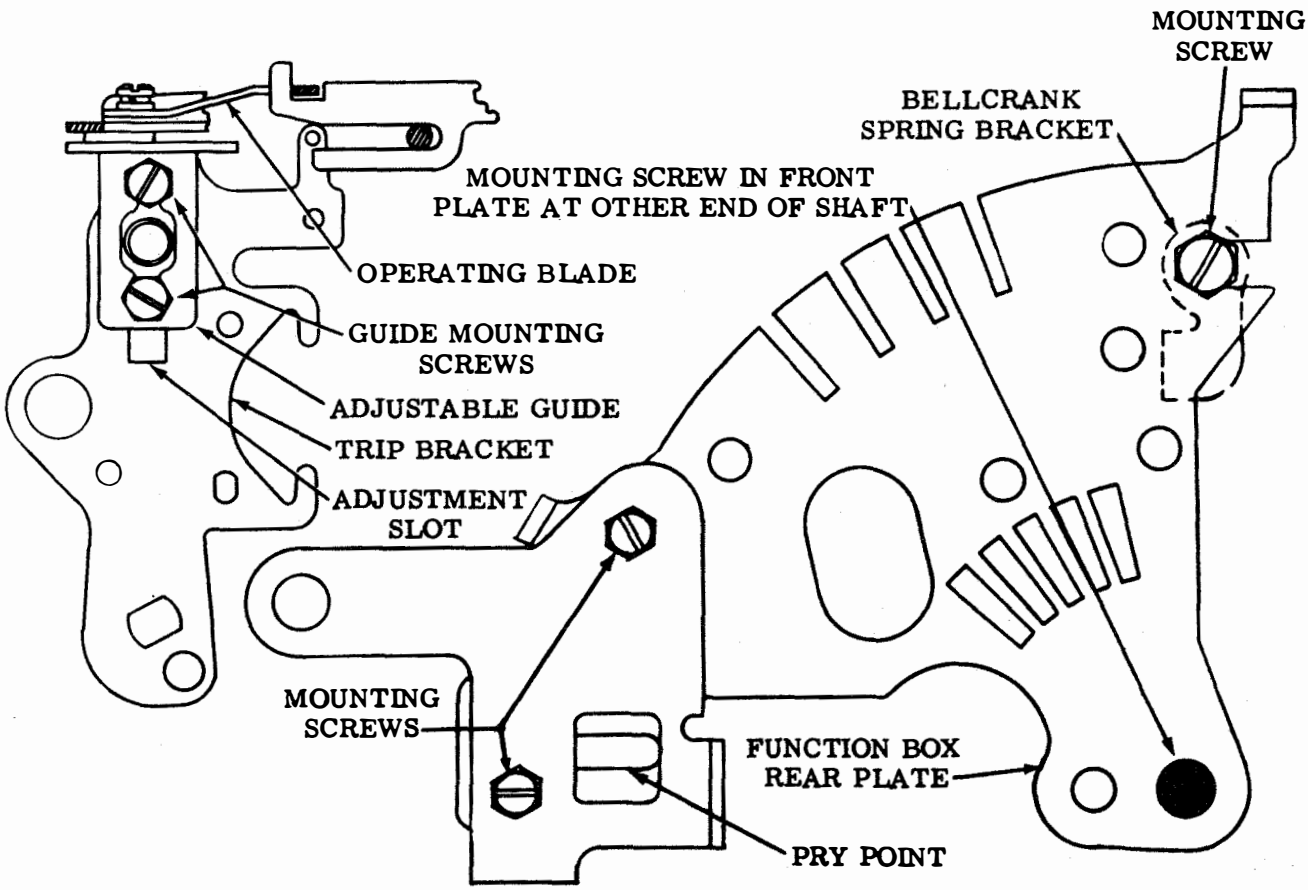
Bellcrank that yields most should not yield more than 0.007 inch measured at post.

(a) Refer to Figure 6-274.

(b) Manually select BLANK code combination (-----) and rotate main shaft until function clutch trips.



FRONT VIEW



REAR VIEW

Figure 6-273. Function Box

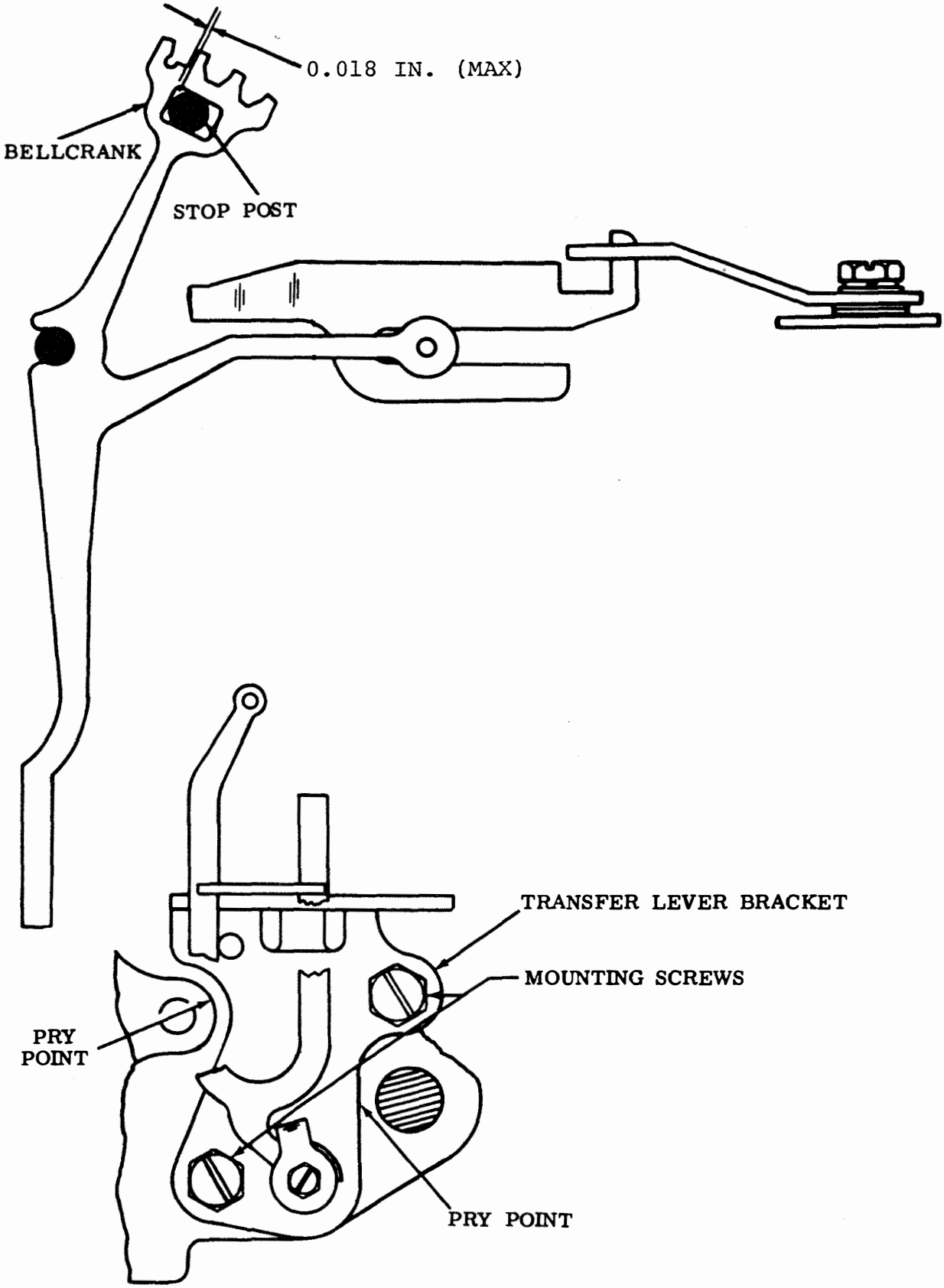


Figure 6-274. Pushbar Location, Front View

NOTE

Removal of function blades will facilitate measuring clearance.

(c) With punch slides latched, clearance between the left edge of all bellcrank slots and the left flat of bellcrank stop post should be 0.018 inch maximum.

(d) To adjust, loosen mounting screws friction tight and pry transfer lever bracket to left until closest bellcrank touches stop post. Tighten mounting screws and recheck.

(8) LETTERS-FIGURES Yield Arms. Adjust as follows:

CAUTION

Arm assemblies may change position during adjustment. Recheck tolerance after screws have been tightened.

(a) Refer to Figures 6-275 and 6-276.

(b) Trip function clutch and rotate main shaft until rocker bail is to extreme left.

NOTE

Removing function blades will facilitate measuring clearance.

(c) For FIGURES yield arm manually place arm assemblies in LETTERS position and hold LETTERS-FIGURES bellcrank against left edge of stop post. Measure clearance between bellcrank and LETTERS extension arm. (See figure 6-275.)

(d) For LETTERS yield arm, manually place arm assemblies in FIGURES position and hold LETTER-FIGURES bellcrank against right edge of stop post. Measure clearance between bellcrank and FIGURES extension arm (see figure 6-276).

(e) There should be some clearance, not to exceed 0.006 inch, each arm.

(f) To adjust:

1. Loosen clamp screws in both LETTERS and FIGURES yield arms.

2. For FIGURES yield arm, place arm assemblies in LETTERS position and hold LETTERS-FIGURES bellcrank against left side of stop post. Using pry point, position LETTERS yield arm to specified clearance. Tighten FIGURES yield arm clamp screw (see Figure 6-275).

3. For LETTERS yield arm, place arm assemblies in FIGURES position. Using pry point, position FIGURES yield arm to specified clearance. Tighten LETTERS yield arm clamp screw (see Figure 6-276).

(9) FIGURES Arm Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-275.

(b) Put arm assemblies in LETTERS position.

(c) Attach spring scale hook to arm assembly and measure force

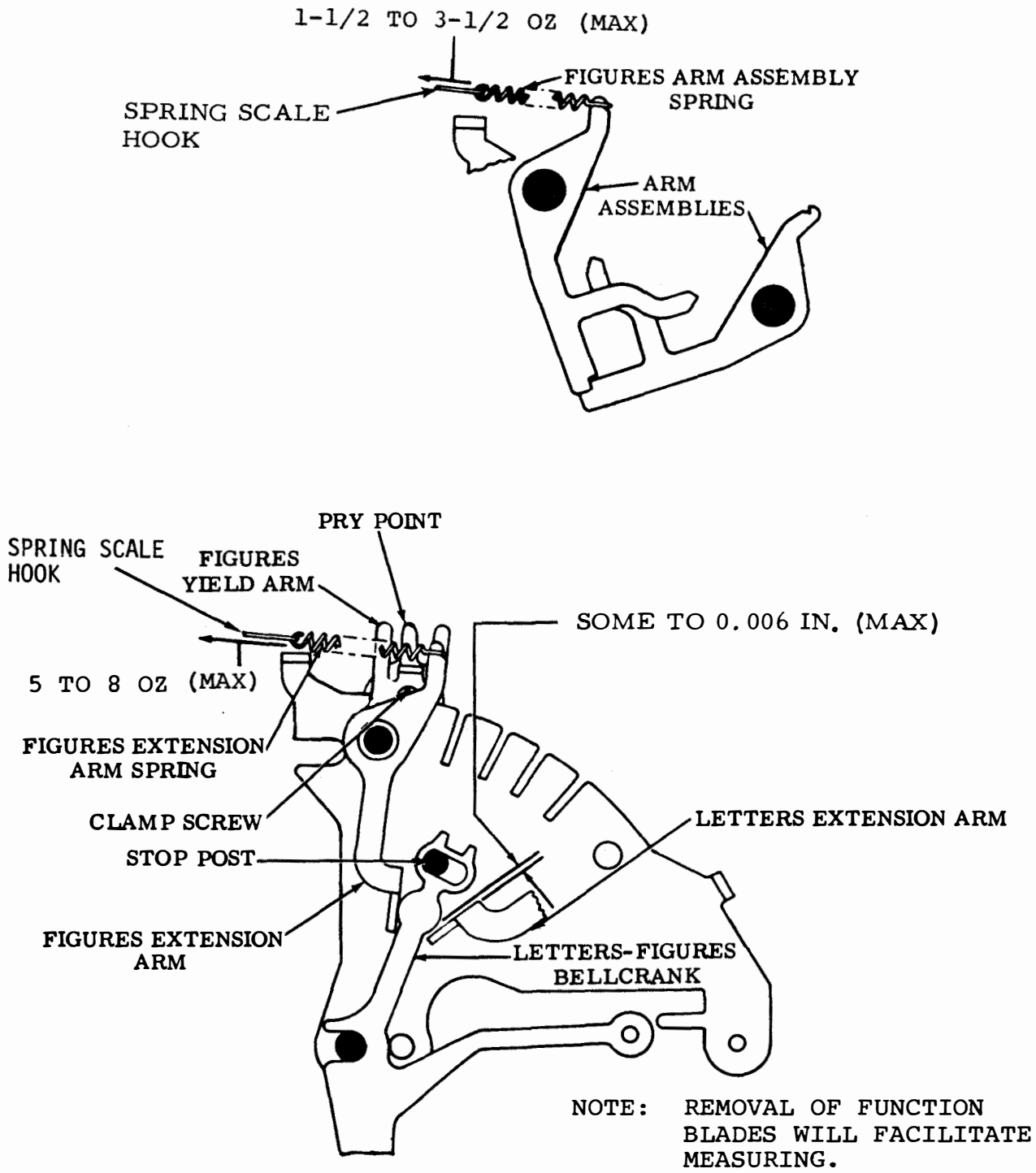
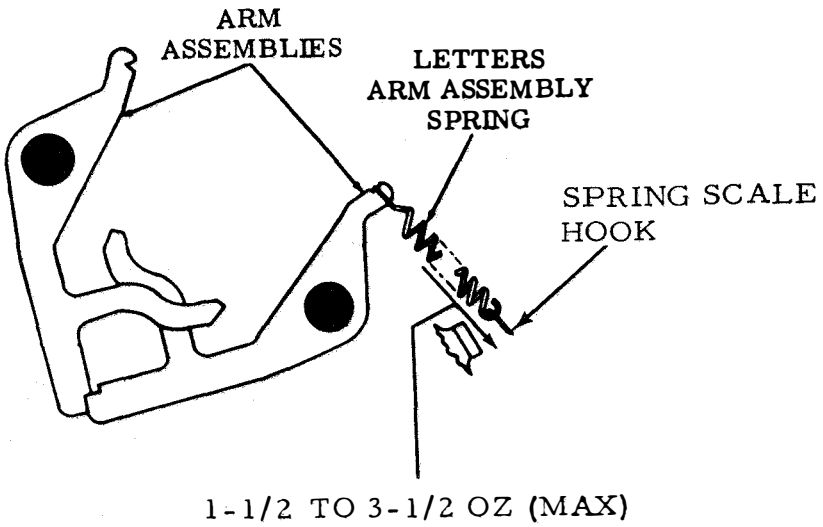


Figure 6-275. LETTERS-FIGURES Yield Arms, FIGURES Arm Assembly Spring, and FIGURES Extension Arm Spring, Front View



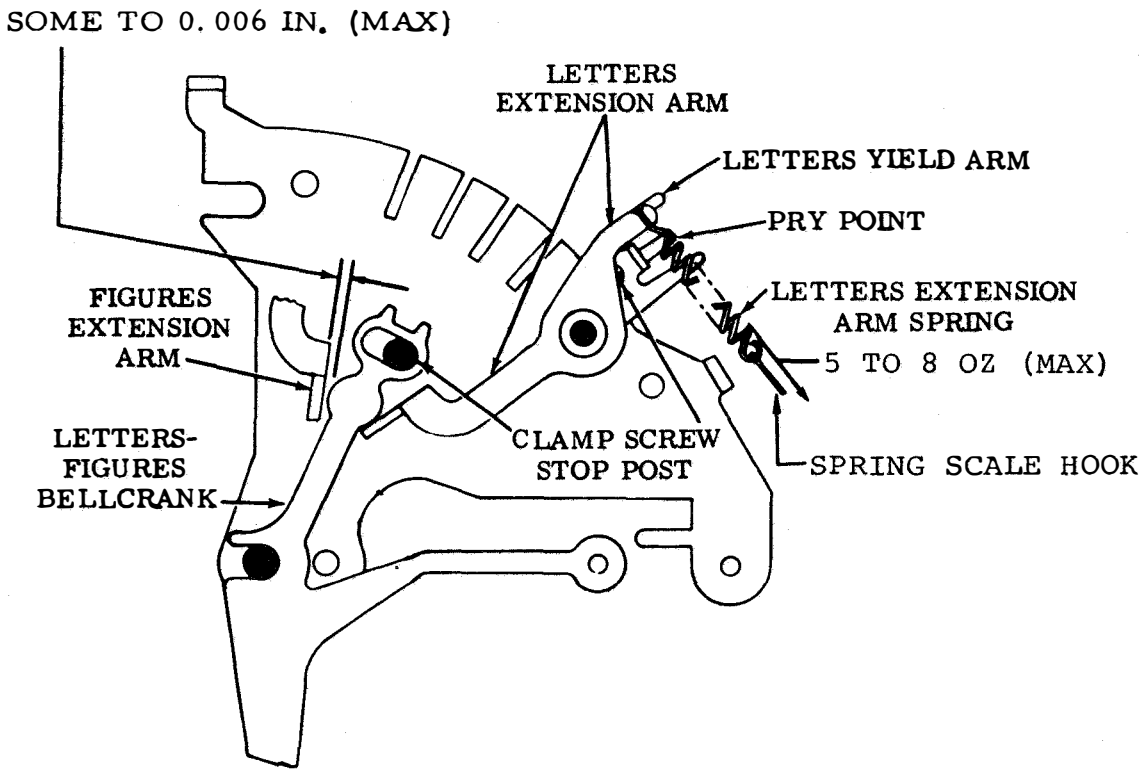


Figure 6-276. LETTEPS-FIGURES Yield Arms, LETTERS Arm Assembly Spring, and LETTERS Extension Arm Spring, Front View

required to pull spring to installed length. This should be 1-1/2 to 3-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(10) FIGURES Extension Arm Spring. Adjust as follows:

(a) Refer to Figure 6-275.

(b) Put arm assemblies in LETTERS position and manually hold LETTERS extension arm in position.

(c) Attach spring scale hook to FIGURES extension arm spring and measure force required to pull spring to installed length. This should be between 5 to 8 ounces.

(d) If requirement is not met, replace spring.

(11) LETTERS Arm Assembly Spring. Adjust as follows:

(a) Refer to Figure 6-276.

(b) Place arm assemblies in FIGURES position.

(c) Attach spring scale hook to LETTERS arm assembly spring and measure force required to pull spring to installed length. This should be 1-1/2 to 3-1/2 ounces.

(d) If requirement is not met, replace spring.

(12) LETTERS Extension Arm Spring. Adjust as follows:

(a) Refer to Figure 6-276.

(b) Put arm assemblies in FIGURES position and manually hold LETTERS extension arm in position.

(c) Attach spring scale extension arm and measure force required to pull spring to installed length. This should be 5 to 8 ounces maximum.

(d) If requirement is not met, replace spring.

(13) Cam Follower Roller Arm Position. Adjust as follows:

NOTE

Remove timing contact, if unit is so equipped.

(a) Refer to Figure 6-277.

(b) Trip function clutch.

(c) Move rocker arm to extreme left position and observe travel of lifter roller on right dwell surface. Move rocker bail to extreme right position and observe travel of roller on left dwell surface.

(d) Travel on each dwell surface should be approximately the same.

(e) To adjust:

1. Loosen lifter lever lock plate screw and eccentric screw locknut friction tight.

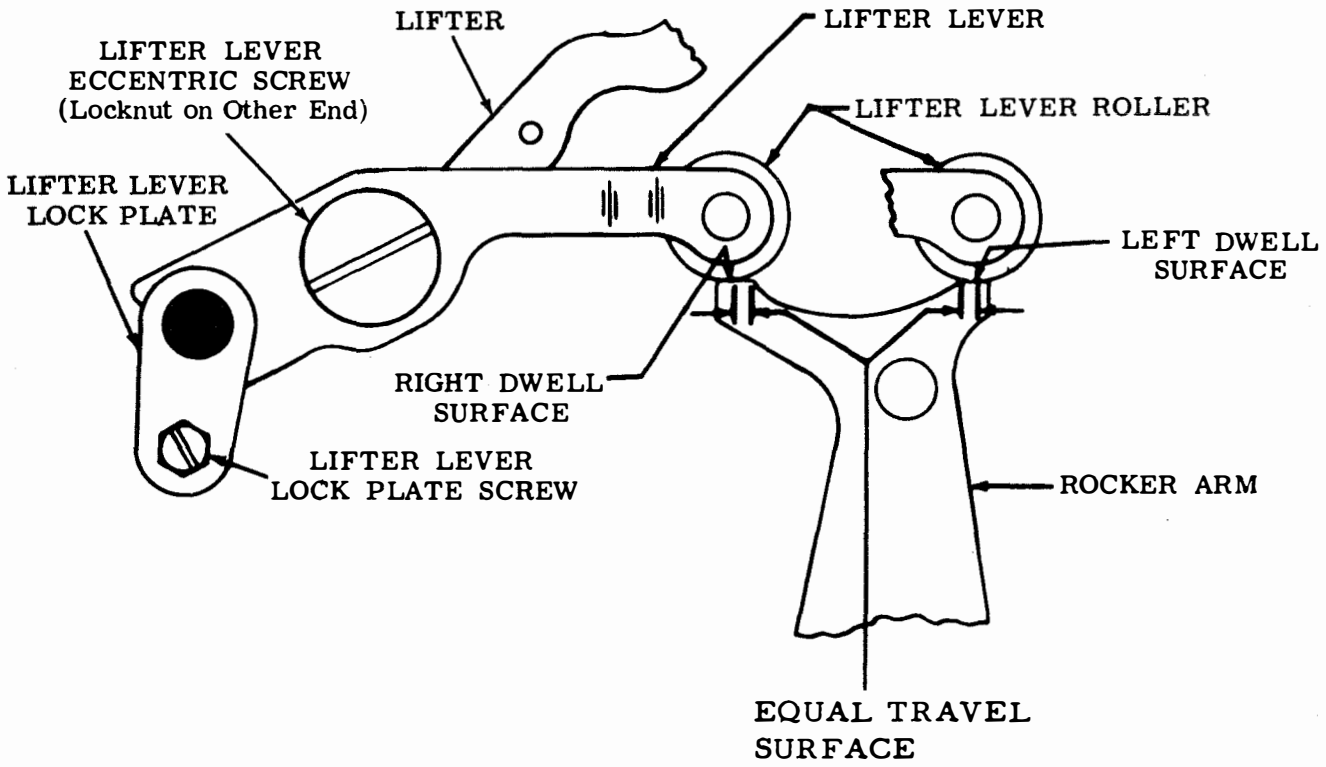


Figure 6-277. Cam Follower Roller Arm Position, Rear View

2. Position lifter lever and tighten lifter lever lock place screw.

3. Do not tighten locknut.

(14) Lifter Operating Range. Adjust as follows:

(a) Refer to Figure 6-278.

(b) With function clutch disengaged, measure clearance between closest projection of bellcranks and associated function blade projection.

(c) The clearance should be between 0.008 and 0.020 inch.

NOTE

The minimum clearance for function blades other than LETTERS-FIGURES, if unit is so equipped, is 0.005 inch.

(d) To adjust, loosen locknut and position lifter lever eccentric screw. Tighten screw.

(15) Toggle Link. Adjust as follows:

NOTE

To avoid interference with lower toggle link clamp screw and axial connector link, it may be necessary to move high part of corrector bushing above horizontal centerline.

(a) Refer to Figure 6-279.

(b) With rocker arm to extreme left, select LETTERS code combination (12345).

(c) Toggle linkage should move through a point where upper and lower toggle links are in a straight line without raising lifter blade.

(d) With upper and lower toggle links in a straight line, measure clearance between the upper toggle link and lifter blade pin.

(e) Clearance should be some to 0.015 inch maximum.

(f) To adjust, loosen clamp screw friction tight and position toggle link by moving its extension arm up or down. Tighten clamp screw.

(16) Toggle Trip Arm. Adjust as follows:

(a) Refer to Figure 6-280.

(b) Observe as rocker arm approaches extreme right position.

(c) The lifter toggle should break and lifter arm roller should drop onto right dwell surface.

(d) To adjust, loosen clamp screw and use pry points to position toggle trip post. Tighten clamp screw.

(17) Lifter Toggle Link Spring. Adjust as follows:

(a) Refer to Figure 6-281.

(b) With unit in STOP position, use spring

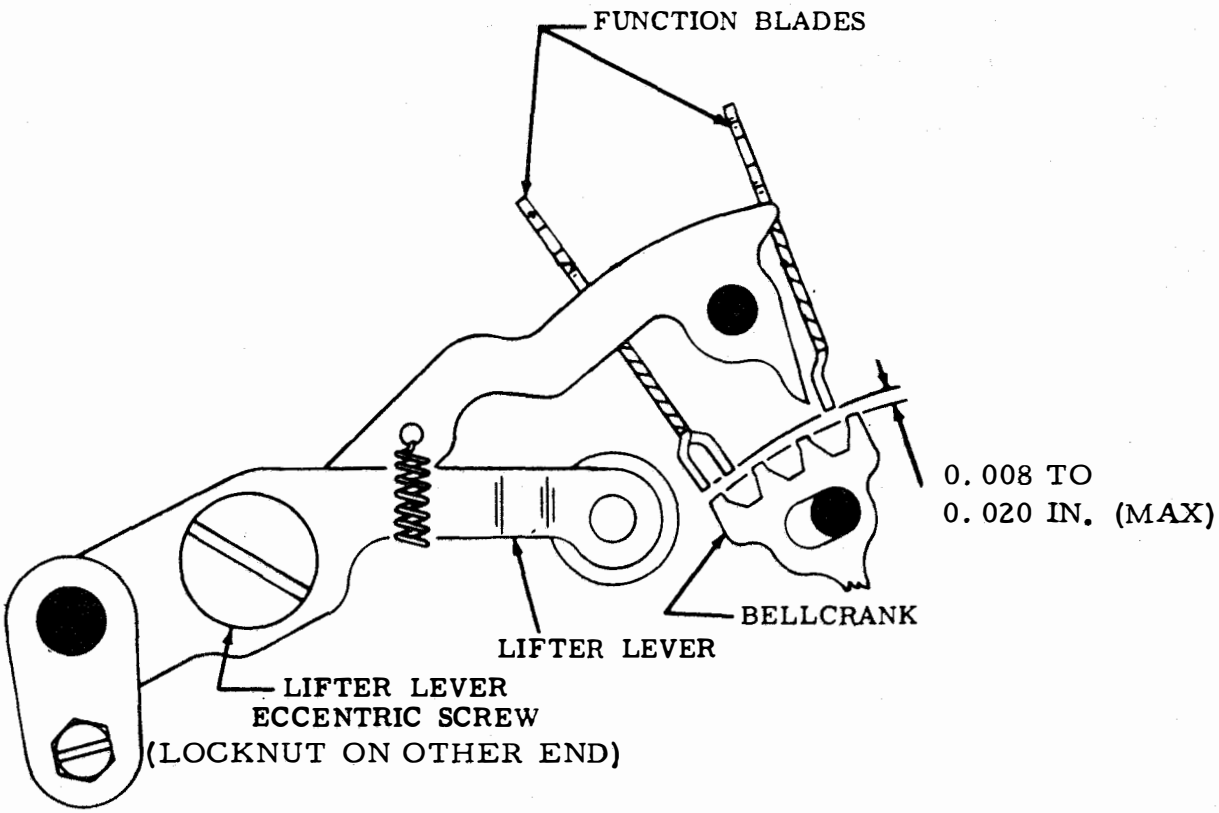


Figure 6-278. Lifter Operating Range, Rear View

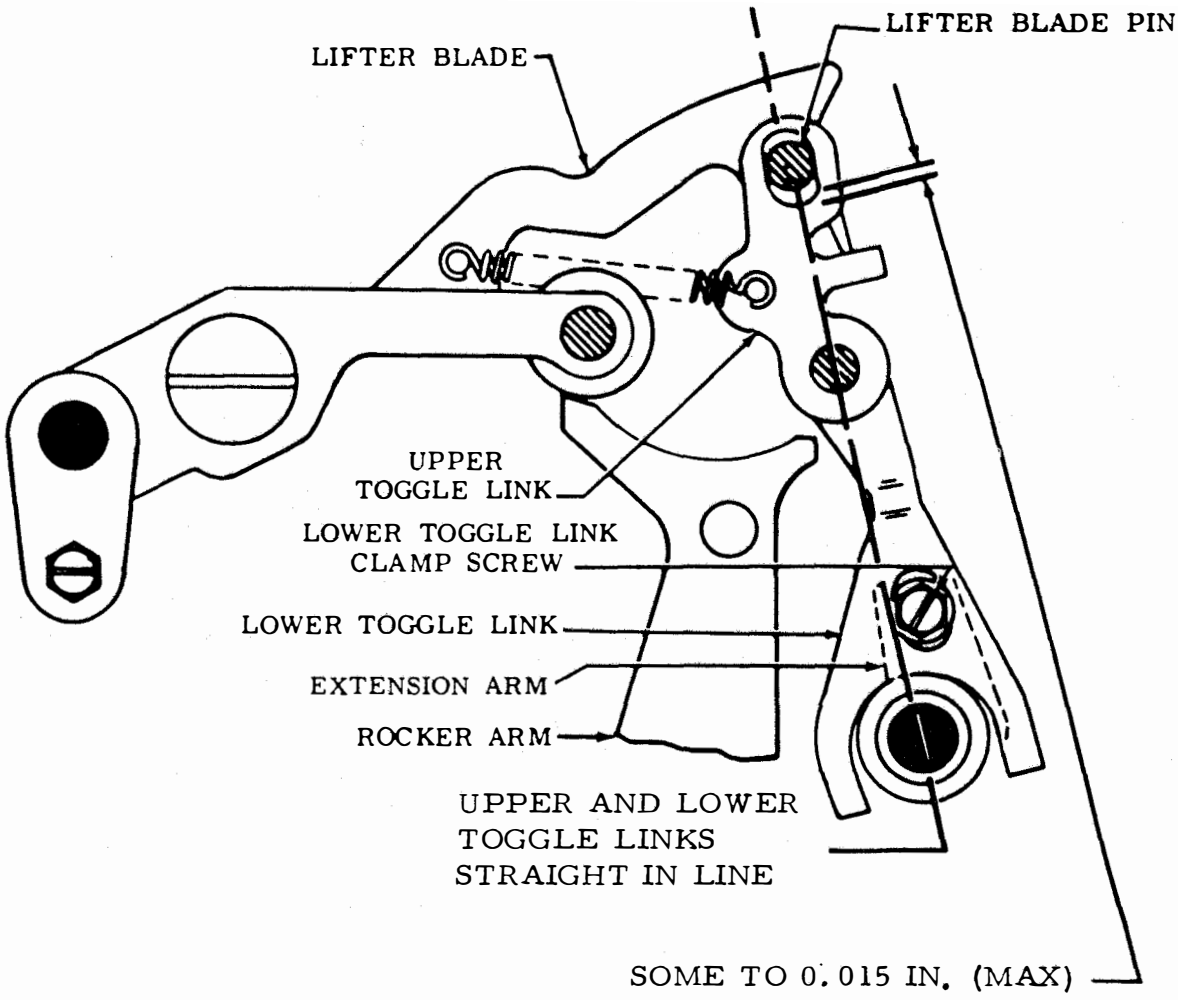


Figure 6-279. Toggle Link, Rear View

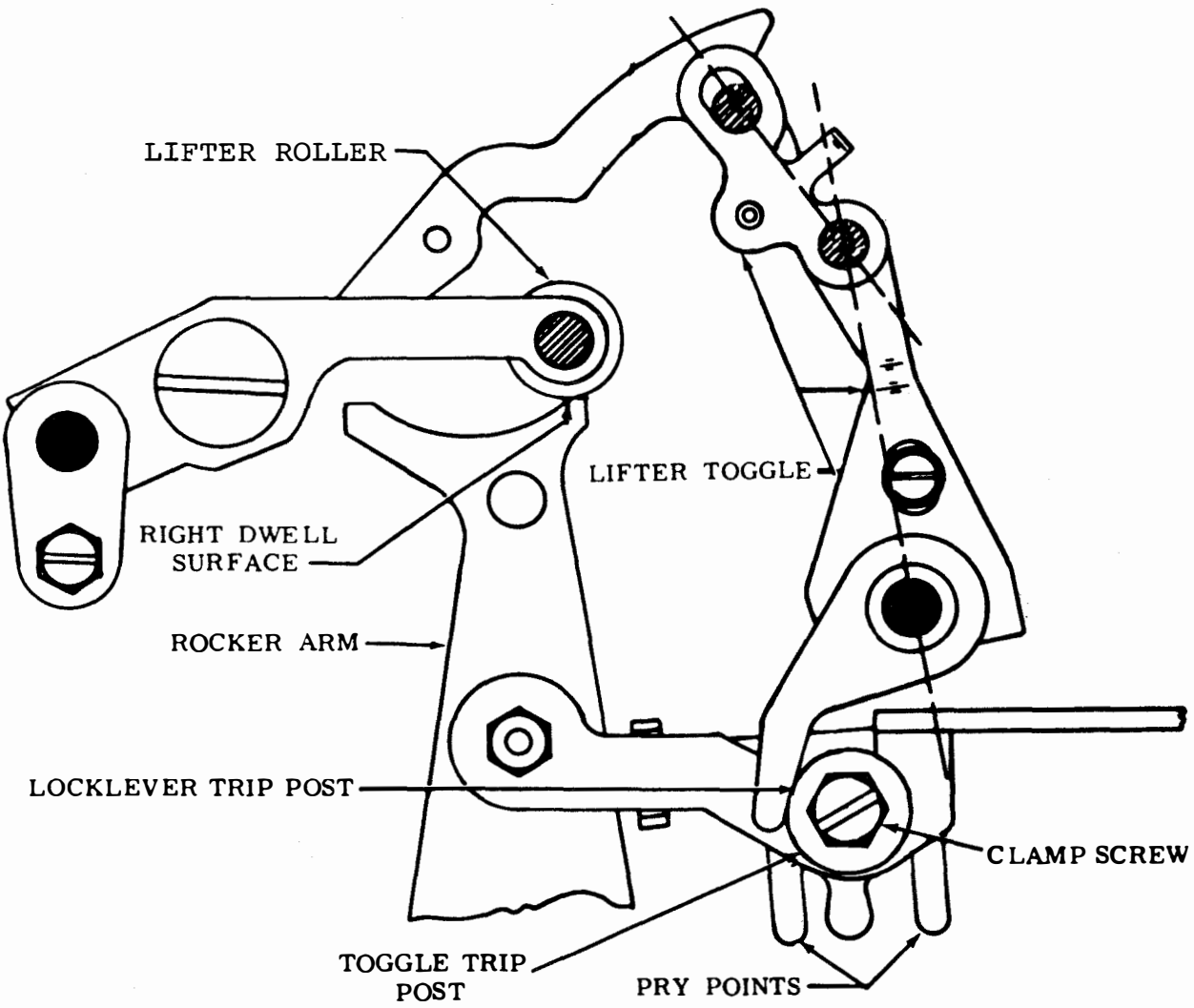


Figure 6-280. Toggle Trip Arm, Rear View

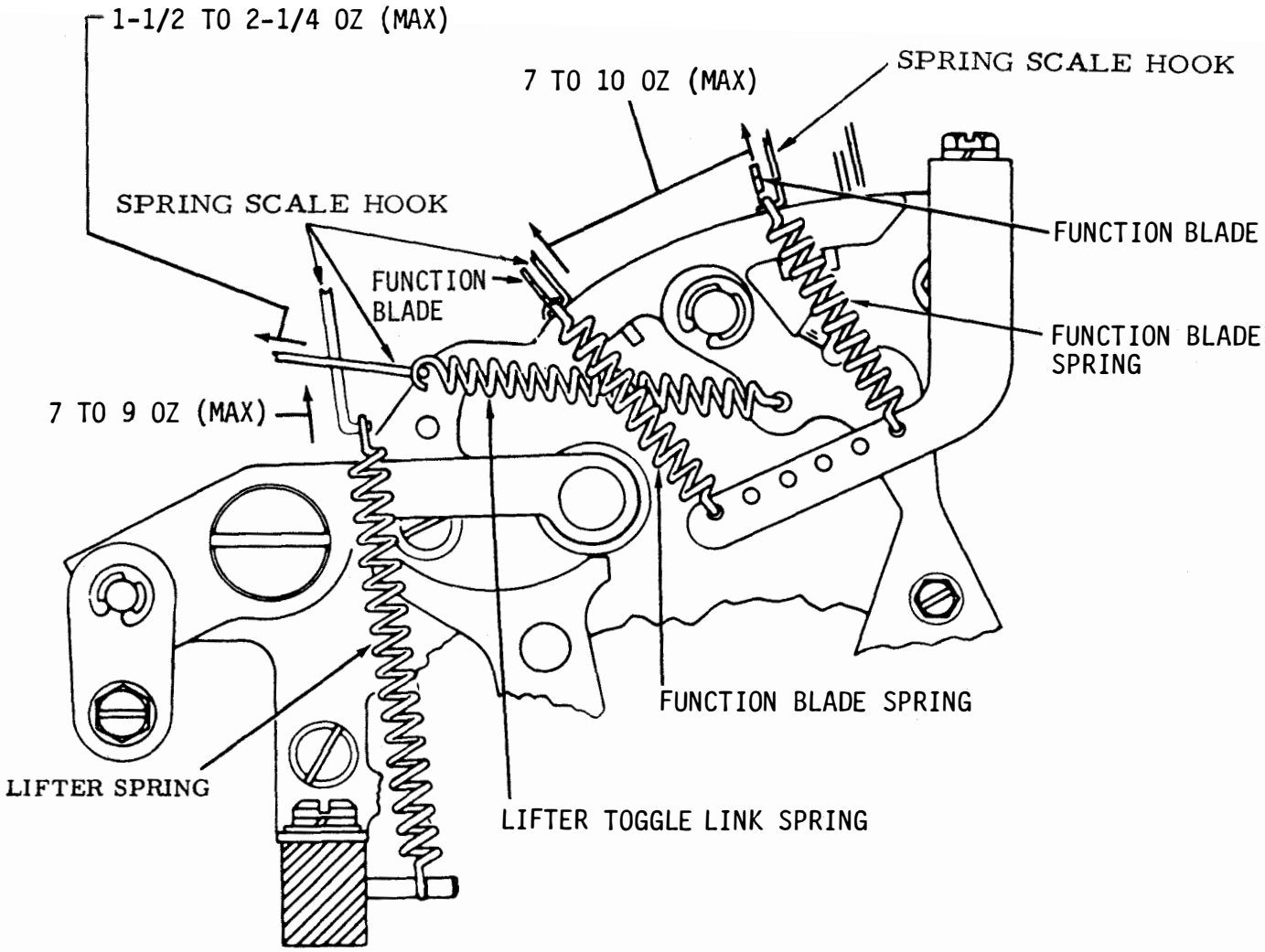


Figure 6-281. Lifter Toggle Link Spring, Function Blade Springs, and Lifter Spring, Rear View

scale to measure force required to pull spring to installed length.

(c) Force should be between 1-1/2 and 2-1/4 ounces maximum.

(d) If force does not meet requirements, replace spring.

(18) Function Blade Springs (Two or More). Adjust as follows:

(a) Refer to Figure 6-281.

(b) With unit in STOP position, use spring scale to measure force required to start function blade moving.

(c) Force should be between 7 and 10 ounces maximum.

(d) If not within specified limits, replace springs.

(19) Lifter Spring. Adjust as follows:

(a) Refer to Figure 6-281.

(b) With unit in STOP position, use spring scale to measure force required to pull spring to installed length.

(c) Force should be from 7 to 9 ounces maximum.

(d) If not within specified limits, replace spring.

(20) Correcting Drive Link Spring Non-yielding). Adjust as follows:

(a) Refer to Figure 6-282.

(b) With unit in STOP position, use spring scale to measure force required to start drive link moving.

(c) Force should be between 5 and 9 ounces maximum.

(d) If not within specified limits, replace spring.

(21) Oscillating Bail Drive Link. Adjust as follows:

(a) Refer to Figure 6-283.

(b) Position rocker bail to extreme left. Sector mounting stud, toggle pivot screws, and oscillating bail adjusting screw should approximately line up.

(c) To adjust, loosen locknut friction tight and position oscillating link by means of its eccentric bushing. Tighten locknut.

(22) Oscillating Bail Pivot. Adjust as follows:

(a) Refer to Figure 6-283.

(b) With BLANK code combination (-----) selected, rotate main shaft, taking up axial play in type wheel shaft toward front of unit.

(c) Axial corrector roller should enter first notch of sector centrally.

(d) To adjust:

1. With oscillating bail adjusting screw

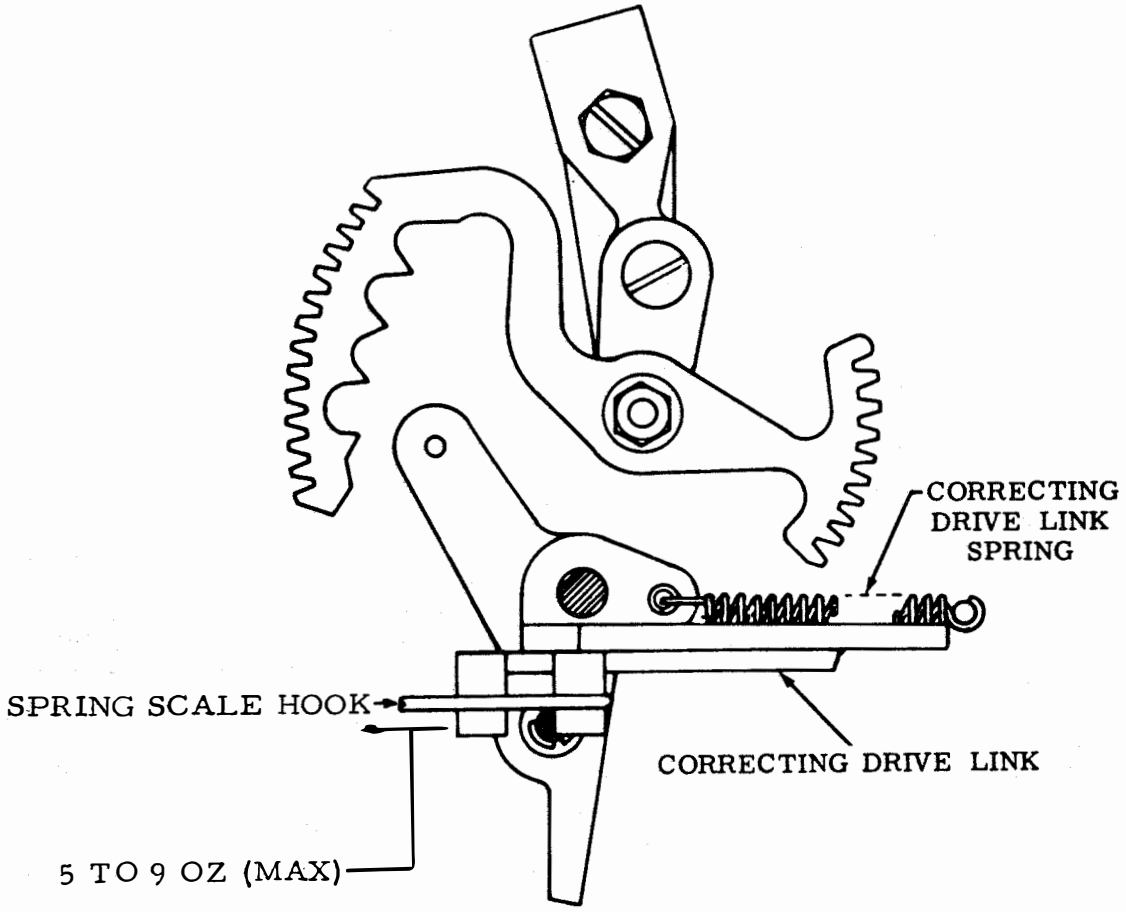


Figure 6-282. Correcting Drive Link Spring (Non-Yielding), Top View

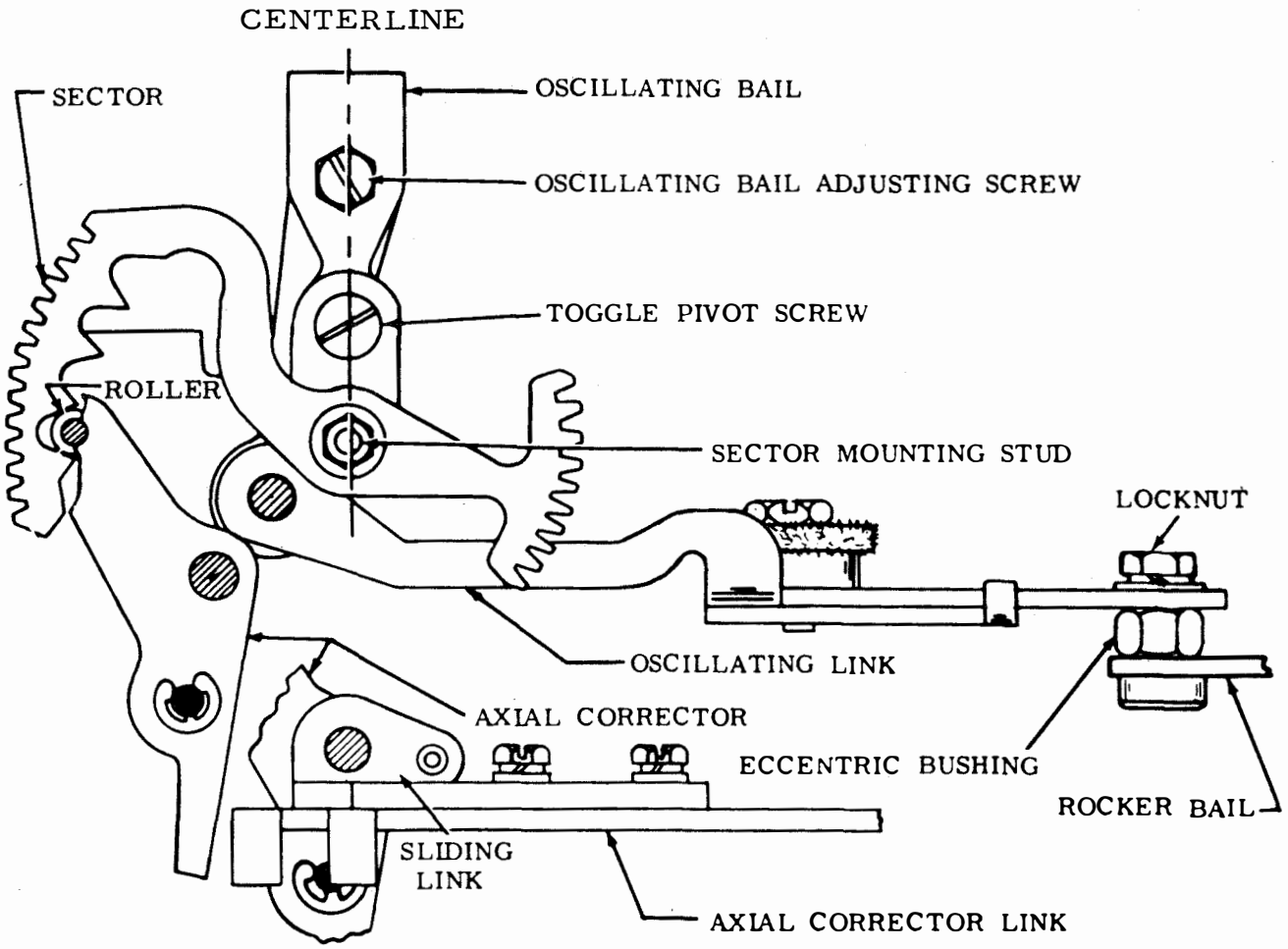


Figure 6-283. Oscillating Bail Drive Link and Pivot, Top View

friction tight, select BLANK combination.

2. Position oscillating bail by means of elongated mounting hold so corrector roller enters first notch of sector when rocker bail moves to extreme left position.

3. Hold corrector roller firmly in first notch and take up play in oscillating bail linkage by applying force to oscillating bail. Tighten screw.

(23) Axial Sector Alignment. Adjust as follows:

NOTE

On units equipped with larger (0.594 inch diameter) roller, no adjustment is required.

(a) Refer to Figure 6-284.

(b) Teeth of axial sector and axial output rack should engage by their full thickness.

(c) Guide roller should be free to rotate.

(d) To adjust:

1. Loosen locknut and disengage rack.

2. Remove rataining ring and guide roller.

3. Add or remove shims and place extra shims on top of shim used to retain felt washer.

4. Tighten locknut.

(24) Eccentric Shaft Detent Lever Spring. Adjust as follows:

NOTE

Check all six springs. There are two on the axial positioning mechanism and four on the rotary positioning mechanism.

(a) Refer to Figure 6-285.

(b) Attach spring scale hook to detent lever and measure force required to start detent lever moving.

(c) Force should be between 7 and 10 ounces maximum.

(d) Replace spring if not within limits.

(25) Axial Output Rack Guide Roller. Adjust as follows:

(a) Refer to Figure 6-286.

(b) Select LINE-FEED code combination (-2---) and rotate main shaft until eccentric has rotated 90 degrees.

(c) Take up play to make maximum clearance between output rack and guide roller and measure clearance. This should be some to 0.008 inch maximum.

(d) To adjust, loosen locknut and position guide roller mounting stud in elongated hole. Tighten locknut.

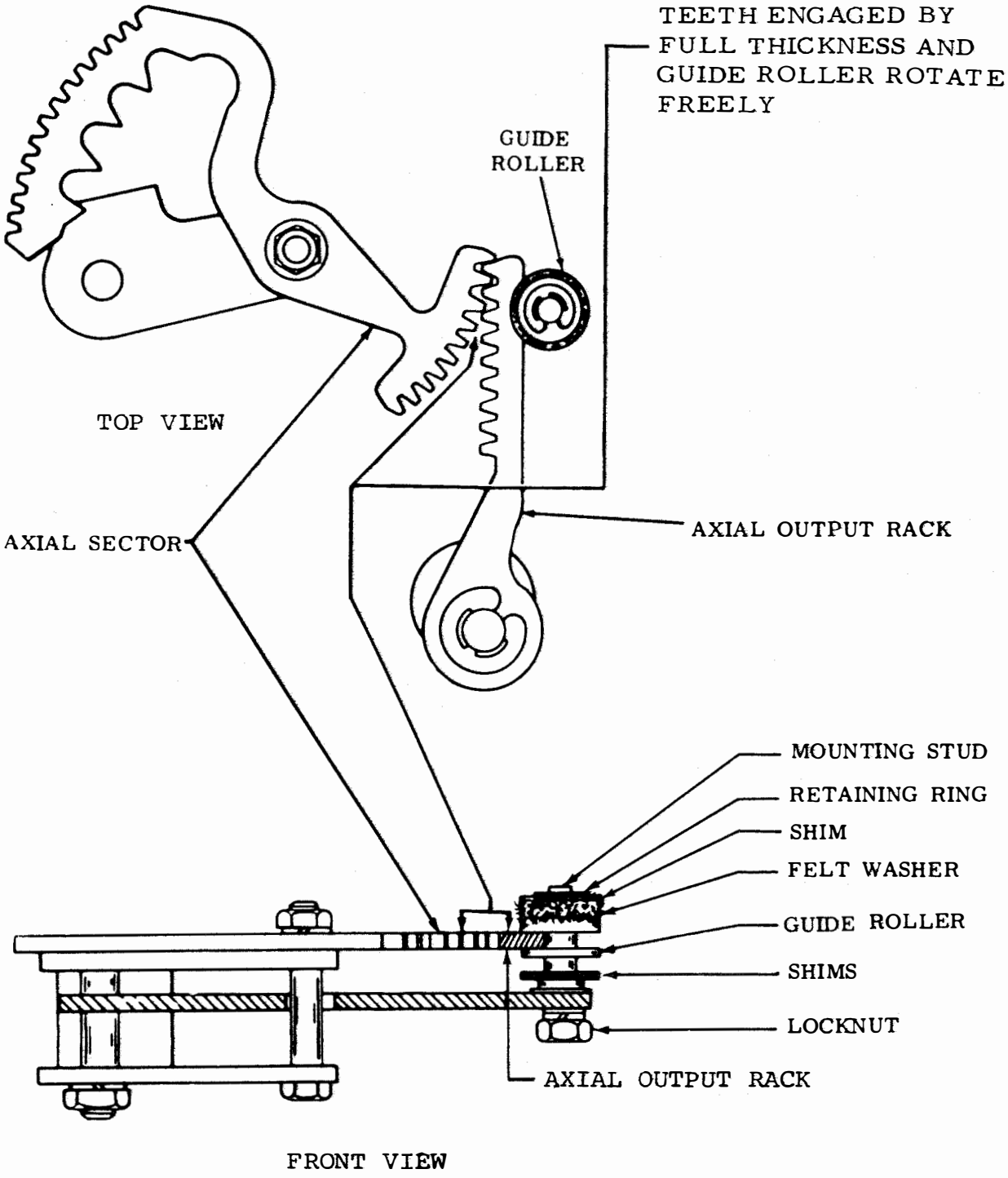
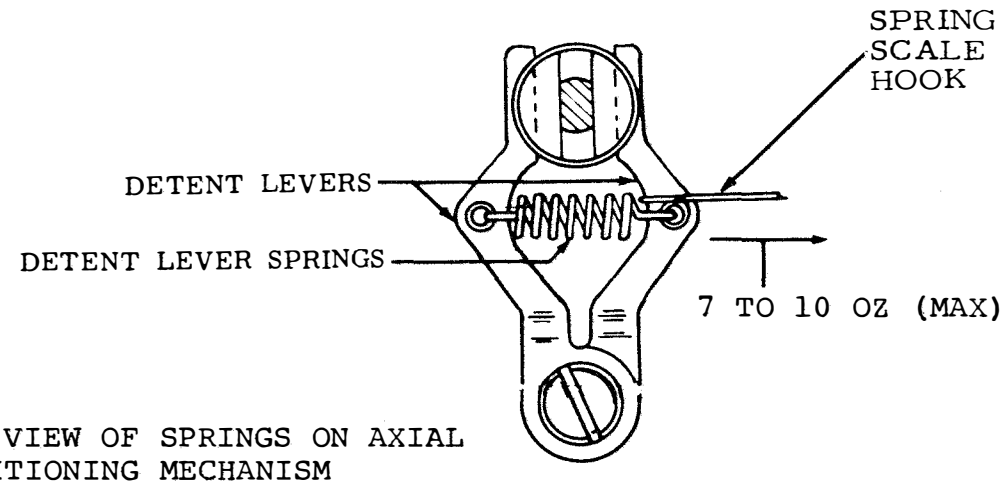


Figure 6-284. Axial Sector Alignment



TOP VIEW OF SPRINGS ON AXIAL POSITIONING MECHANISM

Figure 6-285. Eccentric Shaft Detent Lever Spring, Top View

(26) Pushbar Guide Bracket. Adjust as follows:

(a) Refer to Figure 6-287.

(b) Manually select CARRIAGE RETURN code combination (---4-).

(c) Rotate main shaft so that number 4 pushbar moves through complete range of travel.

(d) Take up play to make maximum clearance between number 4 pushbar and guide bracket throughout complete travel of pushbar.

(e) Clearance should measure some to 0.008 inch maximum.

(f) To adjust, loosen mounting screw and position guide bracket. Tighten screws.

(27) Correcting Drive Link (Non-yielding). Adjust as follows:

(a) Refer to Figure 6-288.

(b) Select BLANK code combination (-----), trip function clutch, and move rocker bail to extreme left. Observe that roller on axial correcting plate is firmly seated in first notch of axial sector.

(c) Select LETTERS code combination (12345), trip function clutch, and move rocker bail to extreme left. Observe that roller on axial correcting plate is firmly seated in fourth notch of axial sector.

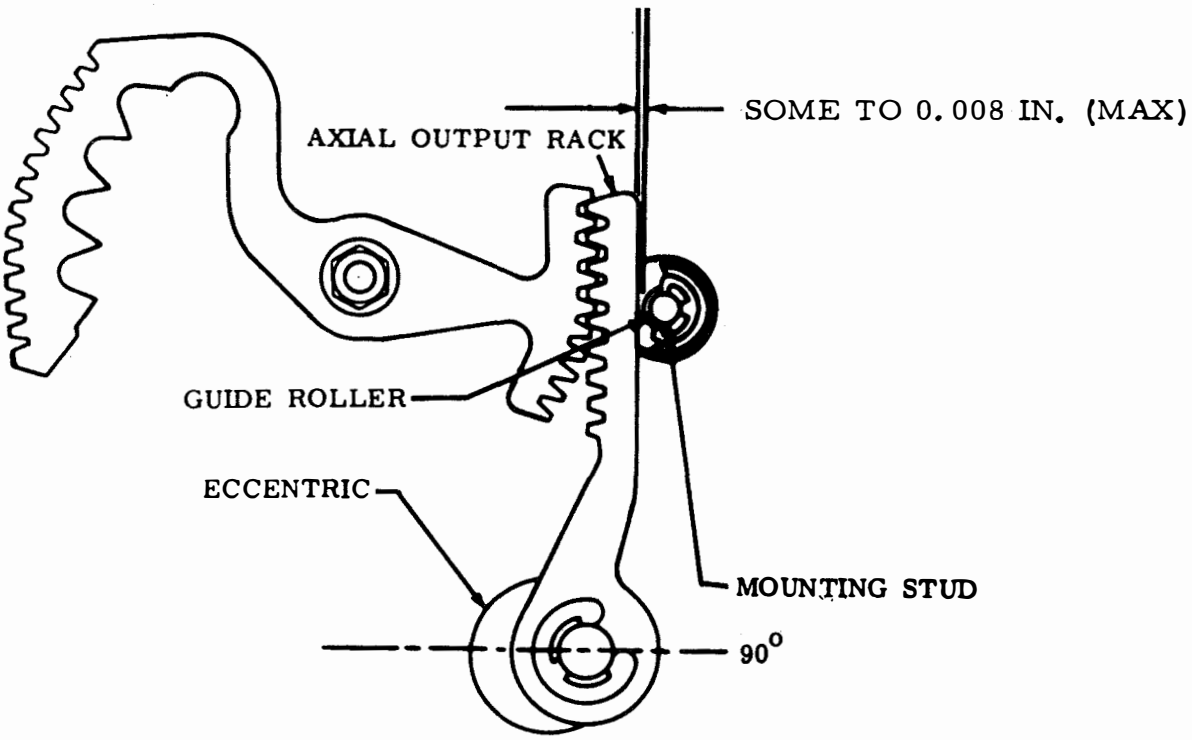


Figure 6-286. Axial Output Rack Guide Roller, Top View

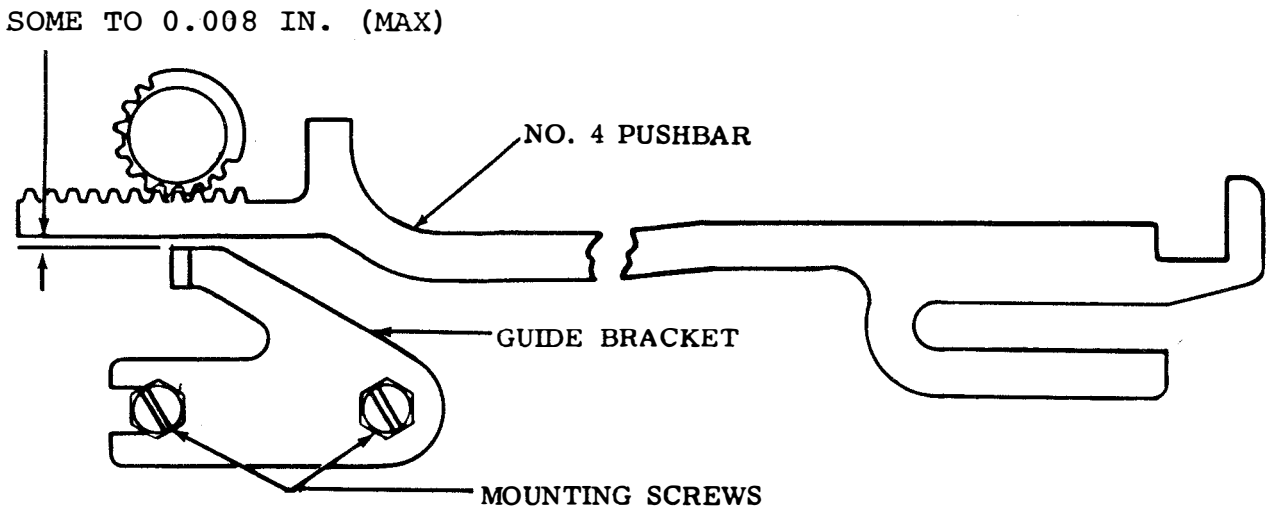


Figure 6-287. Pushbar Guide Bracket, Front View

(d) To adjust:

1. Loosen drive link adjusting screws.

2. Holding roller firmly seated in first notch and drive link down (bottomed) against bushings, tighten adjusting screws.

(28) Type Wheel Rack Clearance. Adjust as follows:

(a) Refer to Figure 6-289.

(b) Place unit in the LETTERS field and disengage function clutch.

(c) Measure clearance between idler gear and rack at closest point when all play is taken up in a direction to make a maximum clearance.

(d) This should measure some to 0.015 inch maximum and there should be clearance throughout travel of the rack.

(e) To adjust, loosen mounting screw friction tight and position idler gear eccentric shaft using three adjusting holes in top of shaft. Tighten screw.

(29) Corrector Drive Link Extension Spring (Yielding) Adjust as follows:

(a) Refer to Figure 6-290.

(b) Select BLANK code combination (-----), trip function clutch, and place rocker bail in extreme left position.

(c) Attach 32-ounce spring scale hook on

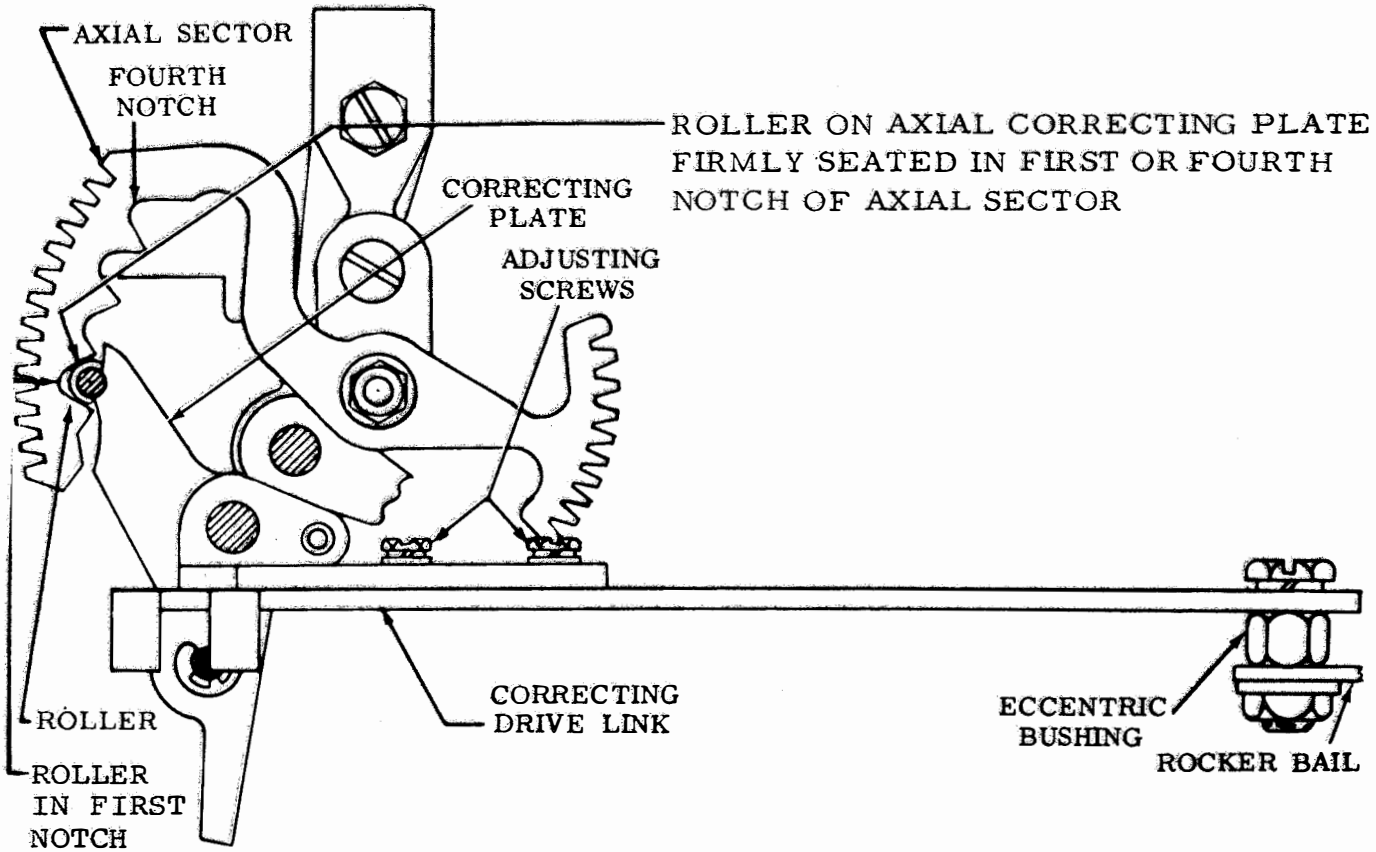


Figure 6-288. Correcting Drive Link (Non-Yielding), Top View

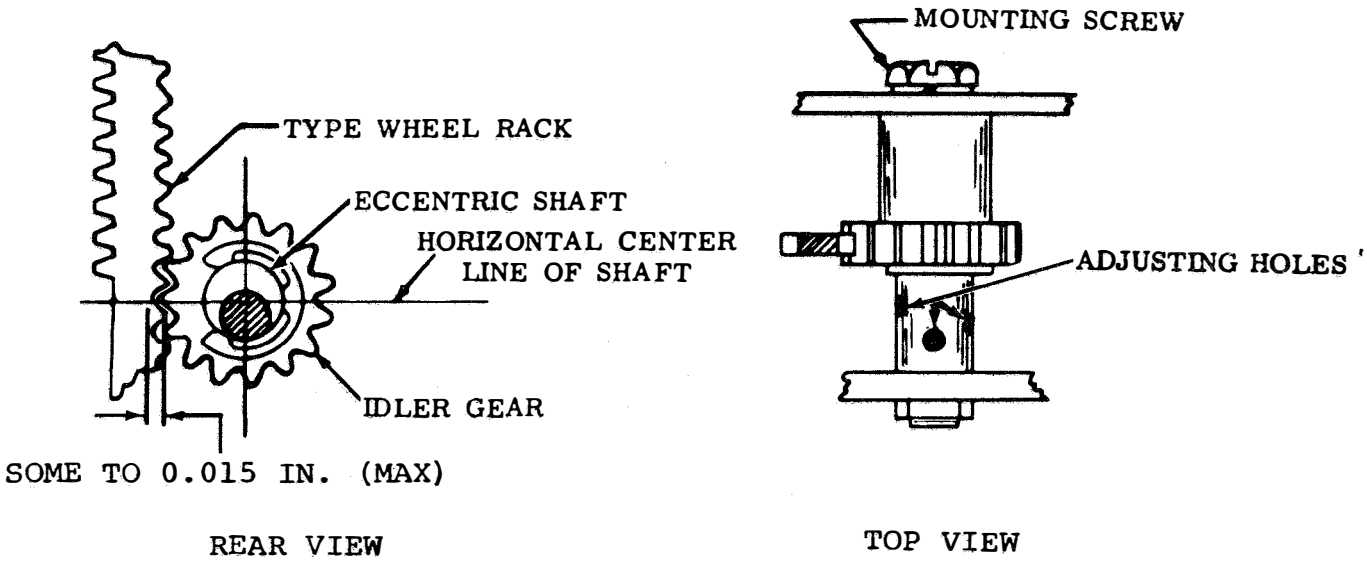


Figure 6-289. Type Wheel Rack Clearance

end of corrector axial plate and measure force required to move roller from notch in sector. This should be 16 to 32 ounces maximum.

(d) If scale reading does not meet specified limits, install new spring.

(30) Axial Corrector (Yielding). Adjust as follows:

(a) Refer to Figure 6-290.

(b) Select BLANK code combination (-----), trip function clutch, and place rocker bail in extreme left position.

(c) Axial corrector roller should seat in first sector notch and clearance between each end of slot and spring post should be a minimum of 0.005 inch.

(d) Select LETTERS combination (12345) and check seating in fourth notch.

(e) Turn retaining ring that fastens drive link extension to corrector plate to meet minimum requirement.

(f) To adjust, loosen two drive link adjusting screws and reposition drive link. Tighten screws.

(31) Rotary Corrector Mesh. Adjust as follows:

(a) Refer to Figure 6-291.

(b) With clamp arm loosened, FIGURE 9 combination selected (number 4 and number 5 pulse marking in FIGURES position), and rocker bail in extreme left position, the second tooth from top of

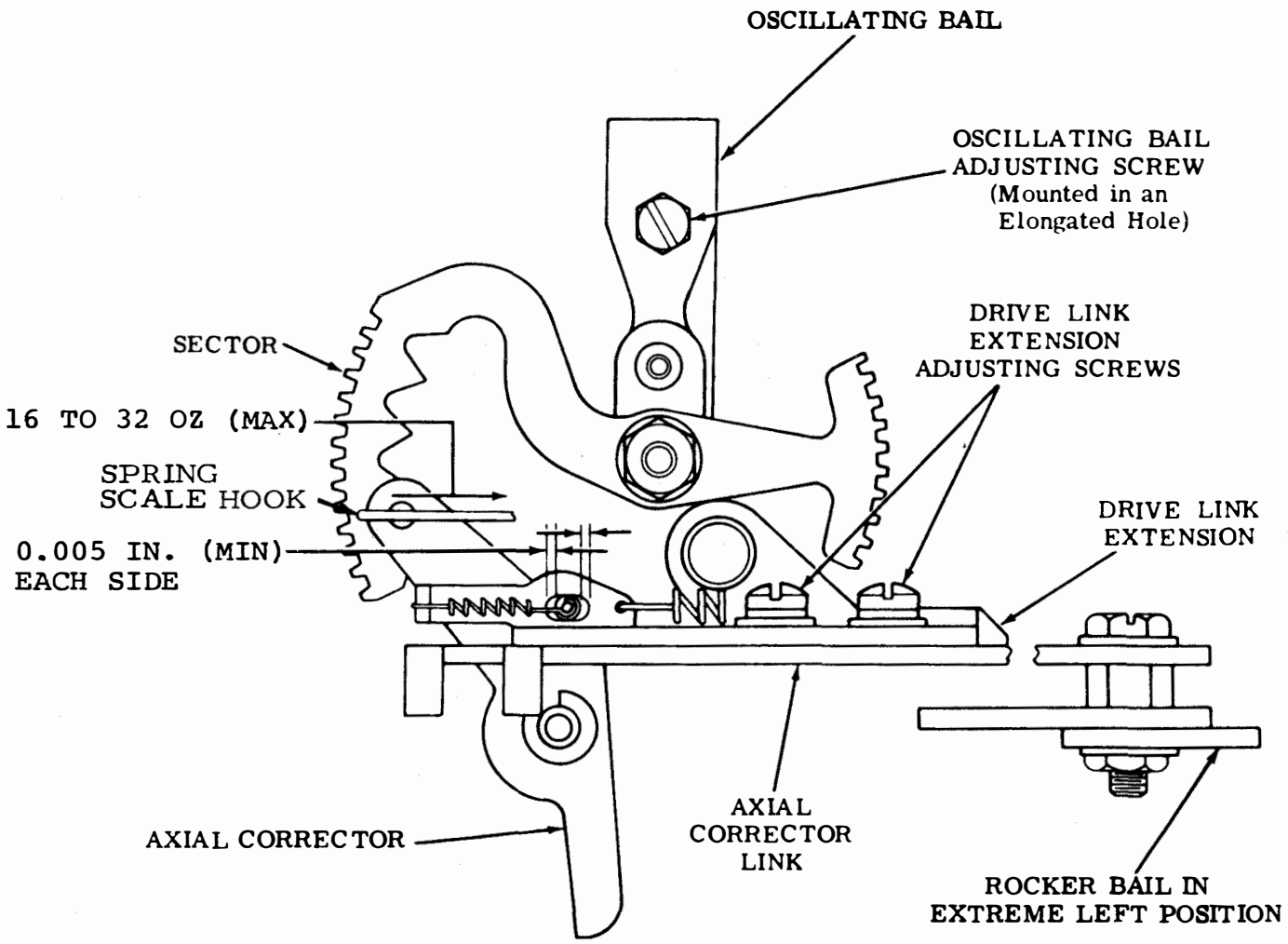
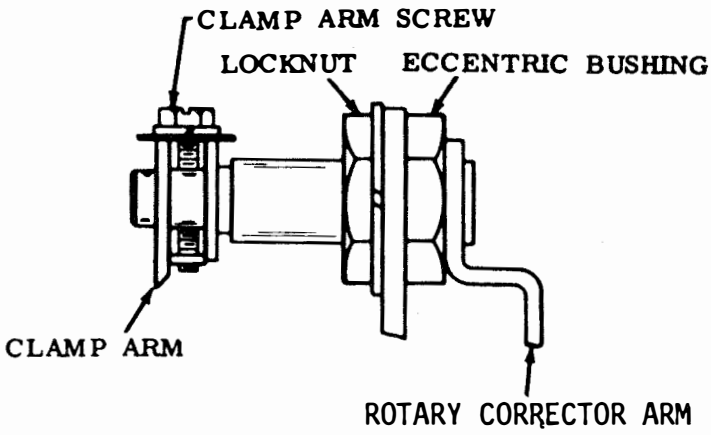
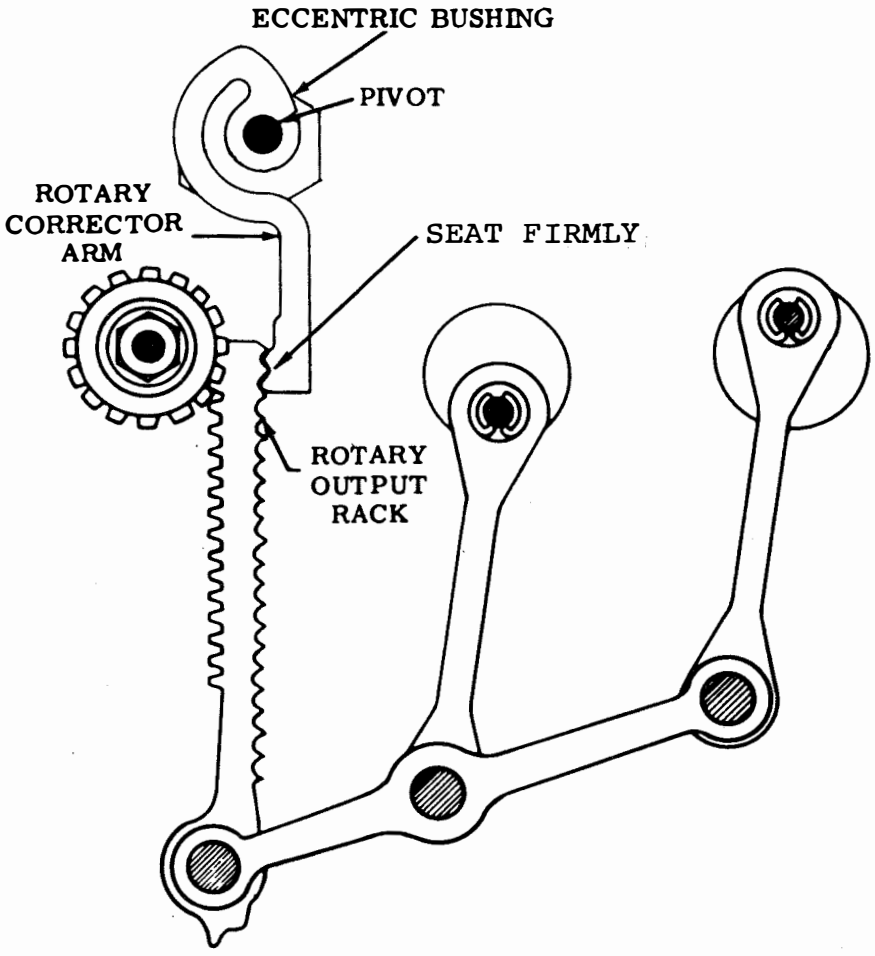


Figure 6-290. Corrector Drive Link Extension Spring and Axial Corrector (Yielding), Top View



LEFT SIDE VIEW



FRONT VIEW

Figure 6-291. Rotary Corrector Mesh

rotary output rack (with pushbars manually detented) should seat firmly between rotary corrector arm lobes.

(c) To adjust:

1. Loosen clamp arm screw and eccentric bushing locknut.

2. With corrector arm pivot to right of center of bushing, position rotary corrector.

3. Tighten bushing locknut but do not tighten clamp arm screw at this point.

(d) Check engagement in similar manner to step (b) of fifth tooth (number 3 and number 4 marking in FIGURES position), ninth tooth (number 4 pulse marking in LETTERS position), and sixteenth tooth (number 3 and number 5 pulse marking in LETTERS field).

(e) Refine adjustment (c) above.

(32) Rotary Corrector Arm. Adjust as follows:

(a) Refer to Figure 6-292.

(b) With LETTERS combination (12345) selected in LETTERS field and rocker bail to extreme left, manually seat corrector arm firmly in output rack.

(c) Place unit in STOP position and measure end play between clamp arm and bushing. This should be some to 0.006 inch maximum.

(d) To adjust:

1. Units equipped with yeilding axial corrector, allow rocker bail to approach extreme left and the spring post of axial corrector starts to leave end of slot, take up play of drive arm in operating fork towards main bail and position rotary corrector arm finger tight against rotary output rack. Tighten clamp arm screw.

2. Units equipped with non-yielding axial corrector, allow rocker bail to approach extreme left and measure clearance between axial corrector and sector notch. When clearance is some to 0.005 inch maximum, positioning rotary corrector arm finger tight against rotary output rack and tightening corrector clamp arm screw.

(33) Printing Latch. Adjust as follows:

NOTE

For unit with adjustable printing latch mounting bracket, follow steps (a) through (h). For non-adjustable, follow steps (a), (b), (c), and (h).

(a) Refer to Figure 6-293.

(b) With rocker bail in extreme left position, manually raise print hammer accelerator.

(c) Clearance between accelerator and printing latch should be some to 0.015 inch maximum.

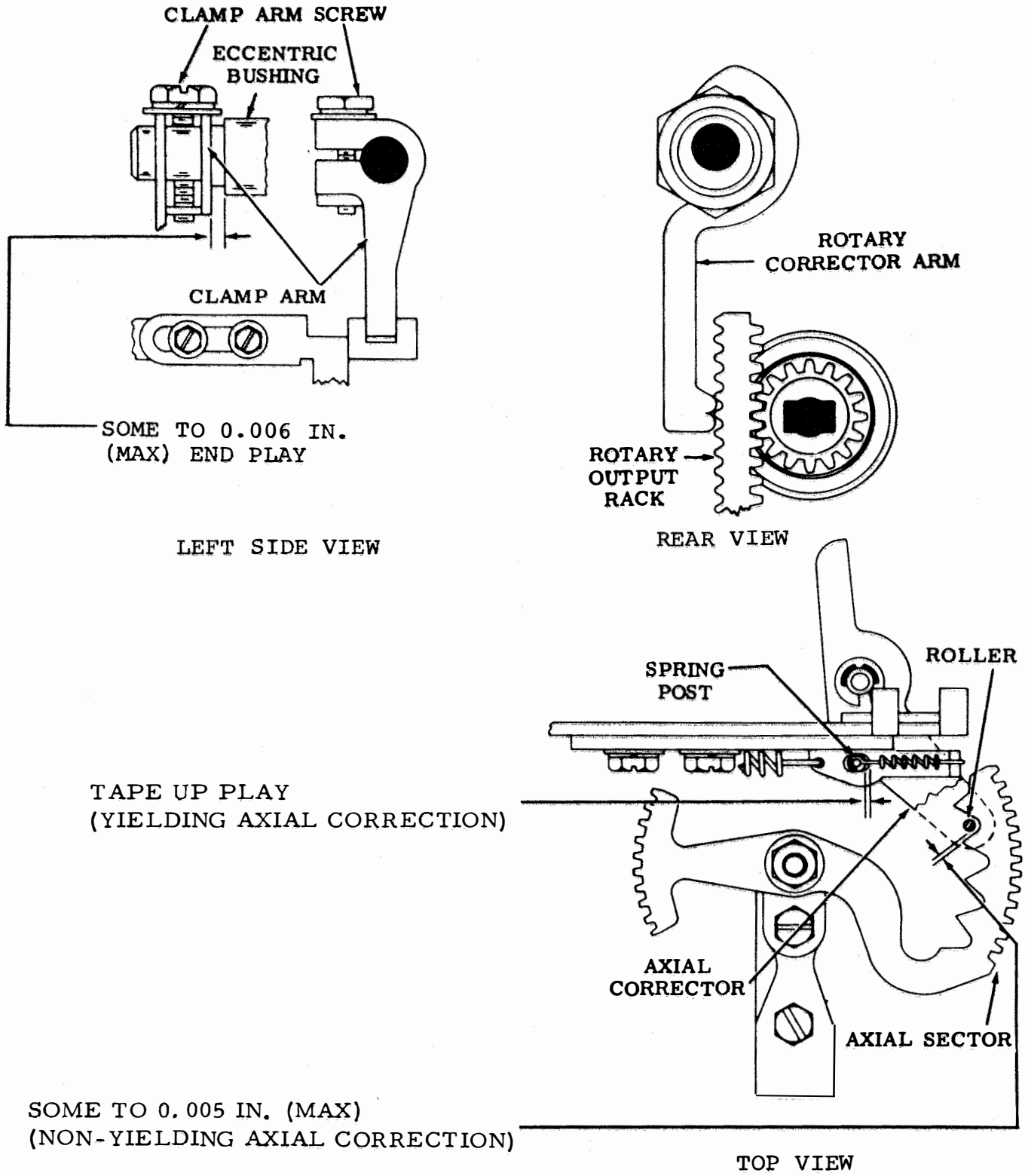


Figure 6-292. Rotary Corrector Arm

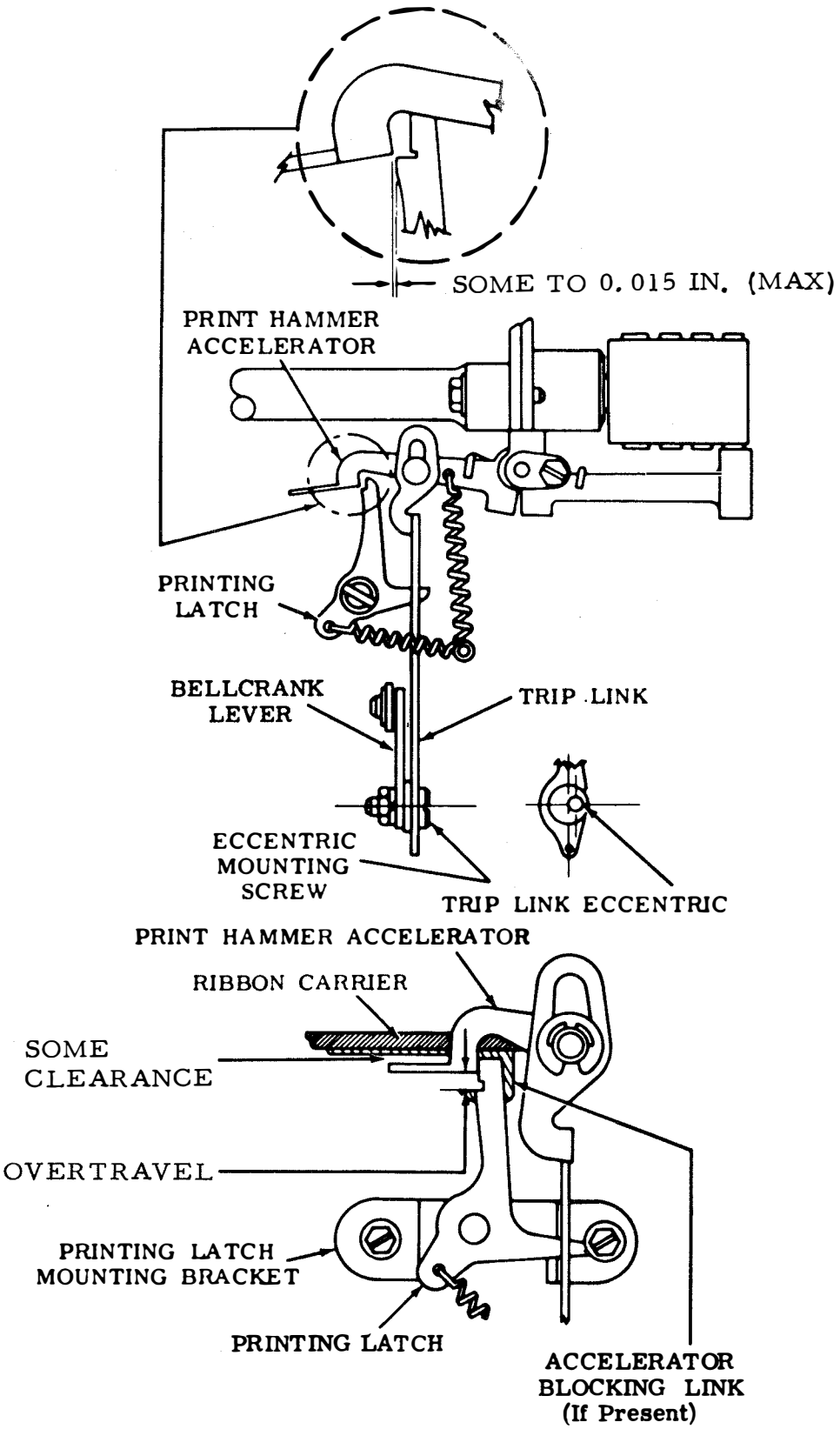


Figure 6-293. Printing Latch, Ieft Side Views

(d) With rocker bail in extreme right position, there should be some overtravel of print hammer accelerator with respect to latching surface of printing latch and some clearance between print hammer accelerator and ribbon carrier (or accelerator blocking link if present).

(e) To adjust, position rocker bail to extreme right and with high part of eccentric to left, rotate eccentric so that clearance between print hammer accelerator and ribbon carrier is approximately 0.065 inch.

(f) With mounting screw friction tight, position printing latch mounting bracket to extreme rear.

(g) With rocker bail to extreme left, move printing latch mounting bracket toward front until print hammer accelerator just trips, tighten mounting screws.

(h) With rocker bail to extreme left, loosen locknut and position trip link eccentric (keeping high part to left) until clearance between printing latch and print hammer accelerator is some to 0.015 inch maximum. Tighten locknut.

(34) Print Hammer Return Spring. Adjust as follows:

(a) Refer to Figure 6-294.

(b) With unit in STOP position, attach spring scale hook to hammer lever.

(c) Force required to pull hammer lever so that top of hammerhead is level with type wheel should be between 1 and 3 ounces maximum.

(d) If force does not match specifications, replace spring.

(35) Print Hammer Accelerator Spring. Adjust as follows:

(a) Refer to Figure 6-294.

(b) With unit in STOP position, attach spring scale hook to accelerator spring.

(c) Force required to pull spring to installed length should be between 26 and 32 ounces maximum.

(d) If scale reading does not meet specified limits, install new spring.

(36) Print Hammer Accelerator Latch Spring. Adjust as follows:

(a) Refer to Figure 6-294.

(b) With unit in STOP position, attach spring scale hook to accelerator latch spring.

(c) Force required to pull spring to installed length should be between 5 and 7 ounces maximum.

(d) If scale reading does not meet specified limits, install new spring.

(37) Print Hammer Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-295.

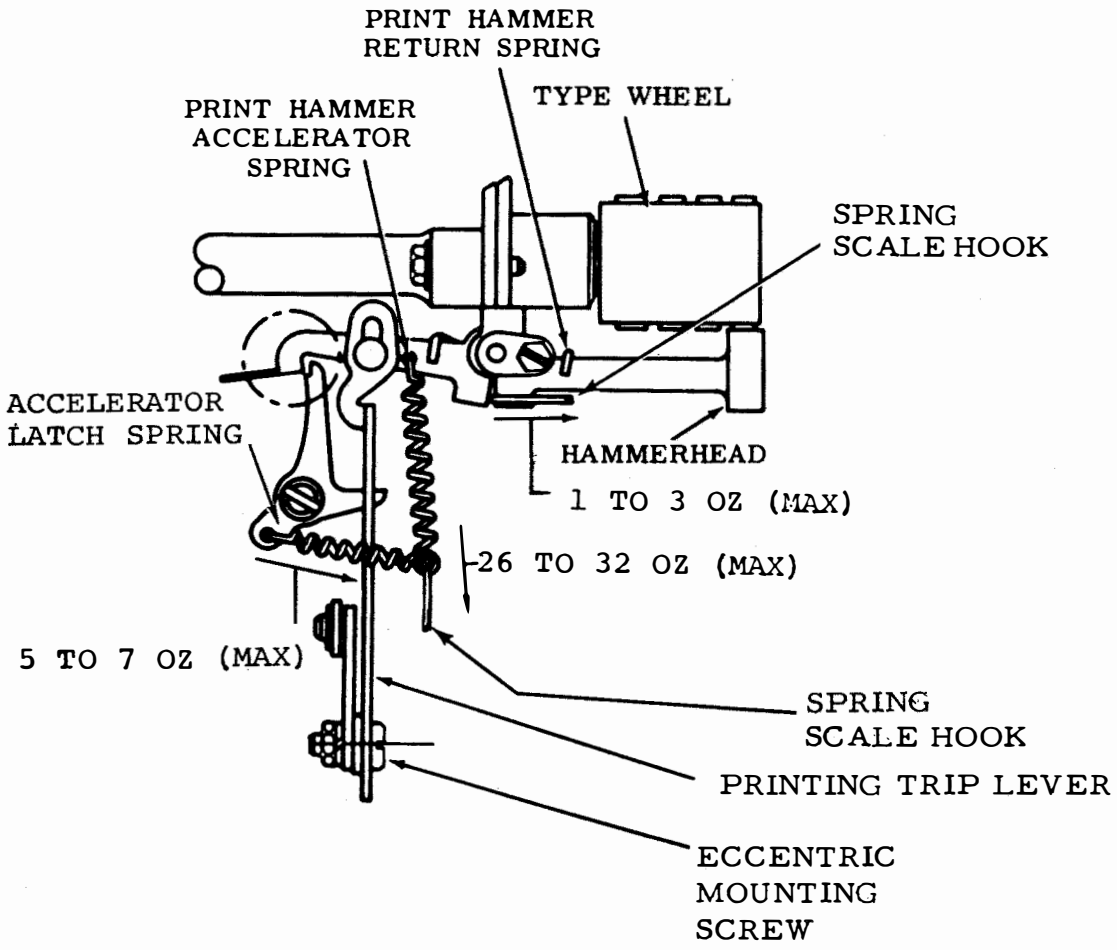


Figure 6-294. Print Hammer Return Spring, Accelerator Spring, and Accelerator Latch Spring, Left Side View

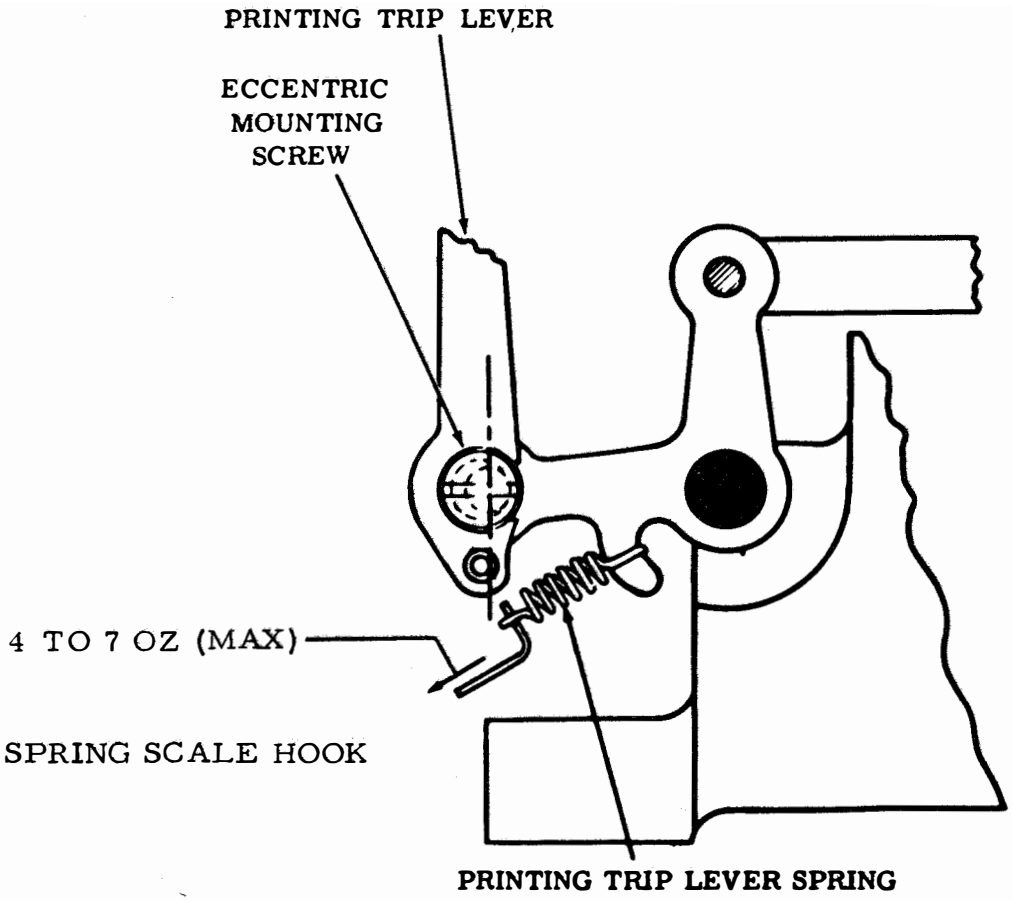


Figure 6-295. Print Hammer Trip Lever Spring, Front View

(b) Attach spring scale hook to print hammer trip lever spring.

(c) Force required to pull spring to installed length should be between 4 and 7 ounces.

(d) If scale reading does not meet specified limits, install new spring.

h. Typing Mechanism Adjustments (For Chadless Tape). Perform typing mechanism (chadless tape) adjustments in accordance with the following paragraphs.

NOTE

There should be some end play between carrier and rear guidepost when unit is in STOP position.

(1) Ribbon Carrier. Adjust as follows:

(a) Refer to Figure 6-296.

(b) With unit in STOP position, ribbon should overlap and last printed character, not including fractions, should be visible.

(c) To adjust, loosen lock screw and position ribbon oscillating lever by means of adjusting slot. Tighten screw.

(2) Type Wheel (Preliminary). Adjust as follows:

NOTE

It may be necessary to proceed to next adjustment (step (3) below) then come back and refine this adjustment.

(a) Refer to Figure 6-297.

(b) Select "H" code combination (--3-5), place rocker bail to extreme left and rotary corrector arm firmly engaged.

(c) Type wheel should be aligned so that full character is printed uniformly with 6 ±1/4 code hold spaces behind perforated code holes.

(d) To adjust, loosen locknut and position type wheel. Check printing by manually lifting accelerator to latched position and releasing it. Tighten locknut.

(3) Type Wheel (Final). Adjust as follows:

NOTE

For best results it may be necessary to make Print Hammer adjustment, (step (4) below) and then refine this adjustment.

(a) Refer to Figure 6-297.

(b) With unit operating under power, all characters should be legible, with 6 ±1/4 code hole spaces behind perforated code holes.

(c) To adjust, loosen locknut and refine type wheel position. Tighten locknut.

(4) Print Hammer. Adjust as follows:

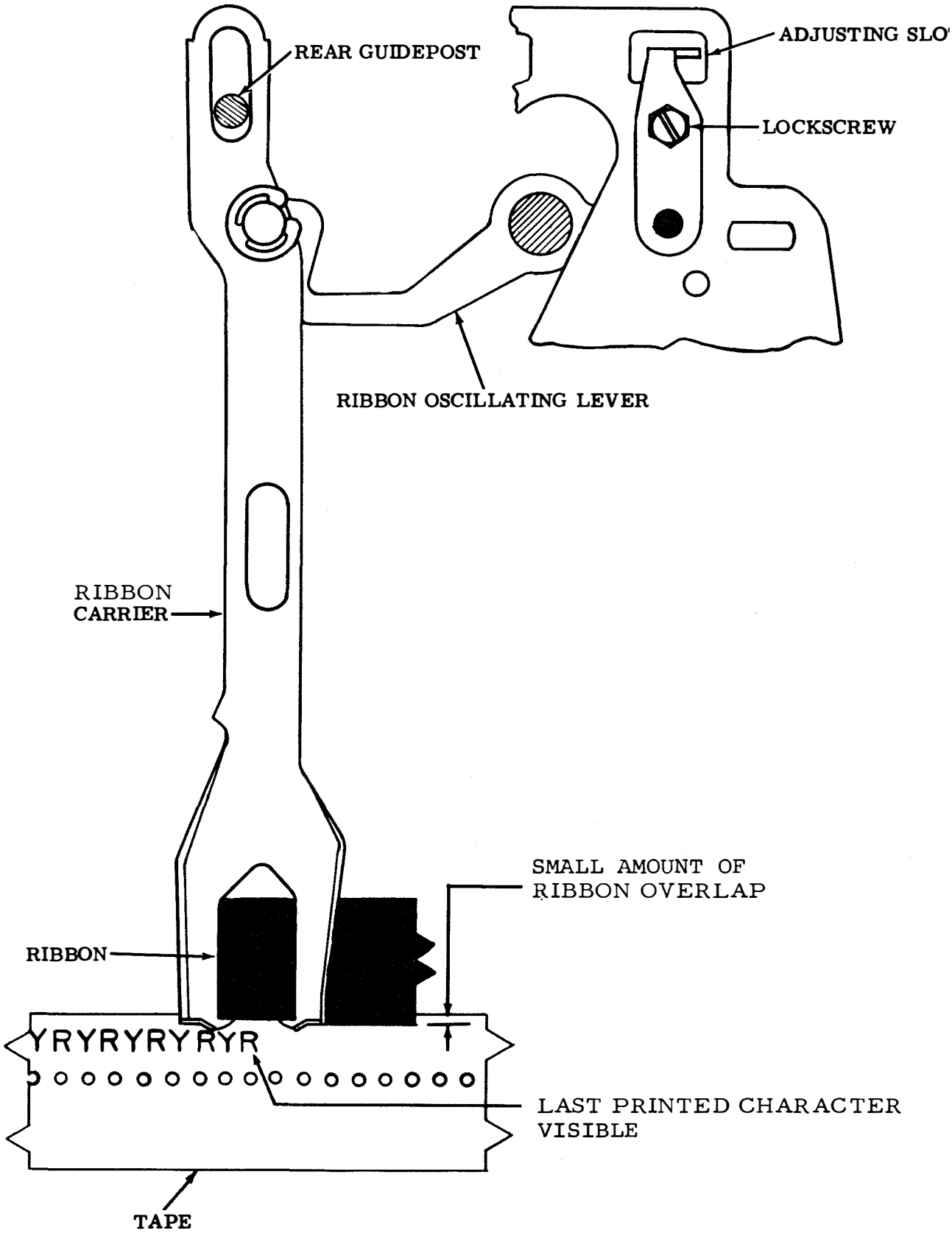


Figure 6-296. Ribbon Carrier (For Chadless Tape), Top View

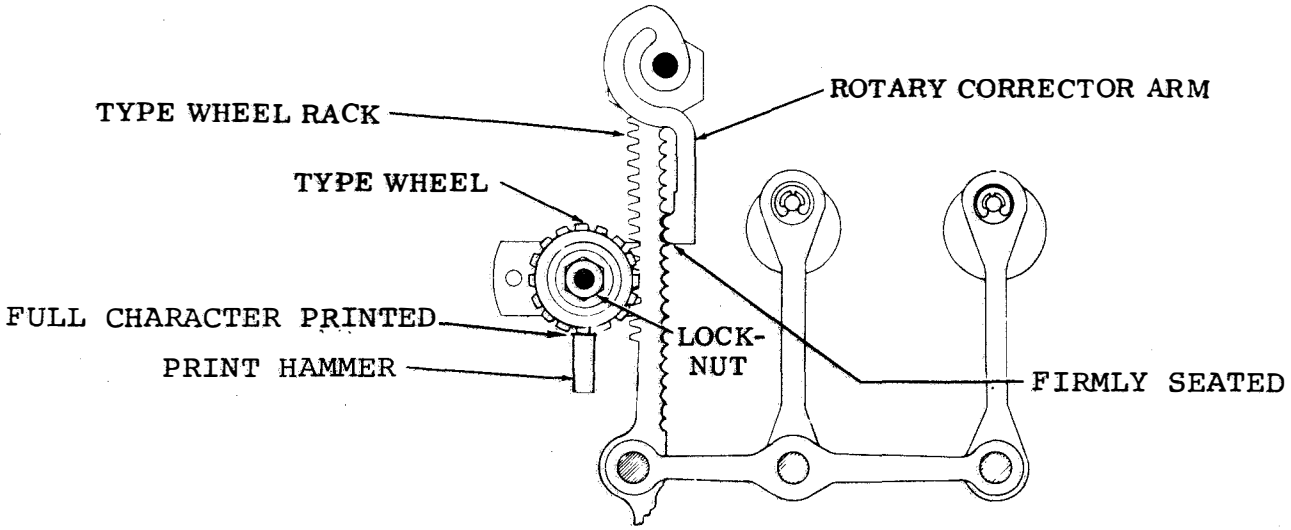


Figure 6-297. Type Wheel (Preliminary and Final) (For Chadless Tape), Front View

NOTE

It may be necessary to remake Type Wheel adjustments (steps (2) and (3) above) and then refine this adjustment.

(a) Refer to Figure 6-298.

(b) When operating under power, print hammer and type wheel should align to obtain best quality printing.

(c) To adjust, loosen locknut and position print hammer shaft. Tighten locknut.

i. Typing Mechanism Adjustments (For Fully Perforate Tape). Perform typing mechanism (fully perforated tape) adjustments in accordance with the following paragraphs.

NOTE

The adjustments in steps (2), (3), and (4) below do not apply to tape printer.

(1) Ribbon Carrier. Adjust as follows:

NOTE

There should be some end play between carrier and rear guidepost when unit is in stop position.

(a) Refer to Figure 6-299.

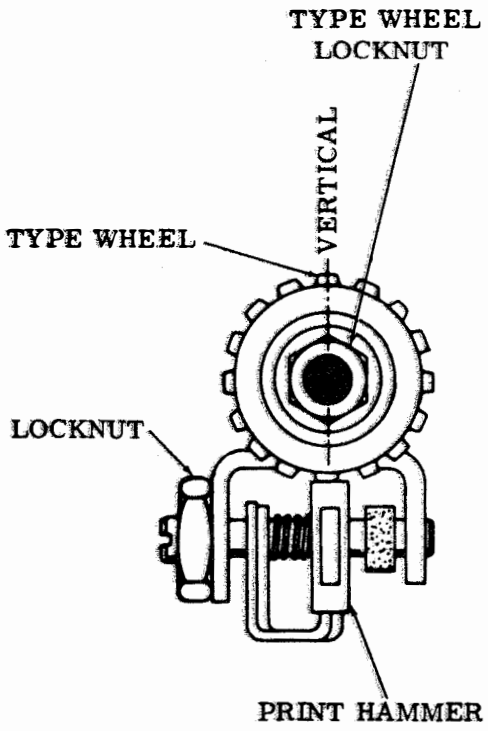


Figure 6-298. Print Hammer (For Chadless Tape), Front View

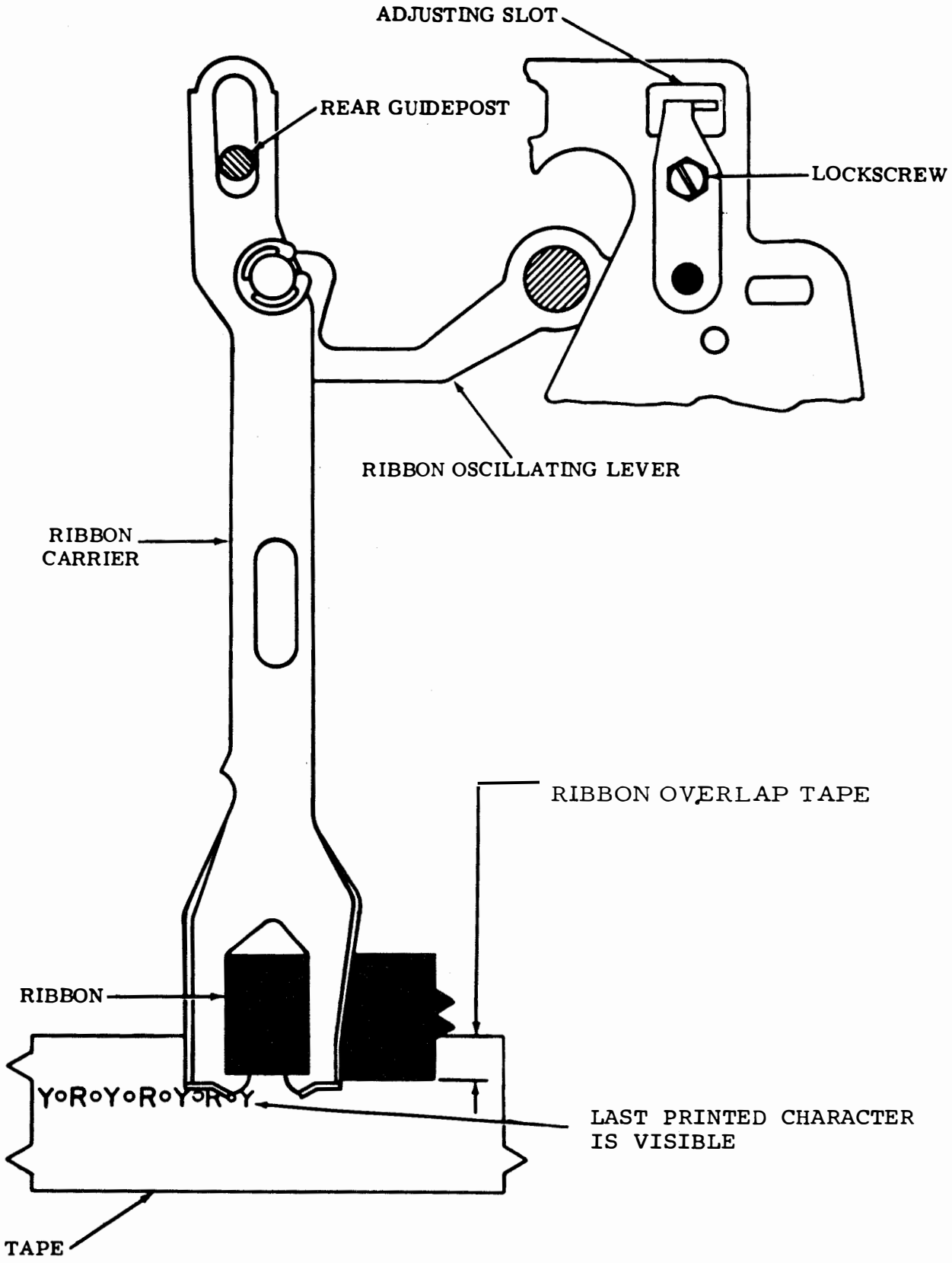


Figure 6-299. Ribbon Carrier (For Fully Perforated Tape), Top View

(b) With unit in STOP position, ribbon should overlap and last printed character should be visible.

(c) To adjust, loosen lock screw and position ribbon oscillating lever by means of adjusting slot. Tighten screw.

NOTE

For best results, it may be necessary to make Print Hammer adjustment, step (4) below, then refine steps (2) and (3) adjustments.

(2) Type Wheel (Preliminary). Adjust as follows:

(a) Refer to Figure 6-300.

(b) Select "H" code combination (--3-5), place rocker bail to extreme left and corrector arm firmly seated in type wheel rack.

(c) Type wheel should be aligned so that full character is printed uniformly and 6-1/2 code hole spaces behind perforated code hole.

(d) To adjust, loosen locknut and position type wheel. Check printing by manually lifting accelerator to latched position and releasing it. Tighten locknut.

(3) Type Wheel (Final). Adjust as follows:

(a) Refer to Figure 6-300.

(b) With unit operating under power, all characters should be legible with 6-1/2 code hole spaces behind perforated code holes.

(c) To adjust, loosen locknut to friction tight and refine type wheel positions. Tighten locknut.

(4) Print Hammer. Adjust as follows:

NOTE

It may be necessary to make Type Wheel (Final) adjustment, step (3) above, then refine this adjustment.

(a) Refer to Figure 6-301.

(b) With unit operating under power and print hammer aligned with type wheel, check quality of printing.

(c) There should be some clearance between pin points on feed wheel and side of print hammerhead.

(d) To adjust, loosen locknut to friction tight and position print hammer shaft. Tighten locknut.

j. Ribbon Mechanism Adjustments. Perform ribbon mechanism adjustments in accordance with the following paragraphs.

(1) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-302.

(b) Place rocker bail to extreme right.

(c) Apply spring scale hook to feed pawl spring, measure force necessary

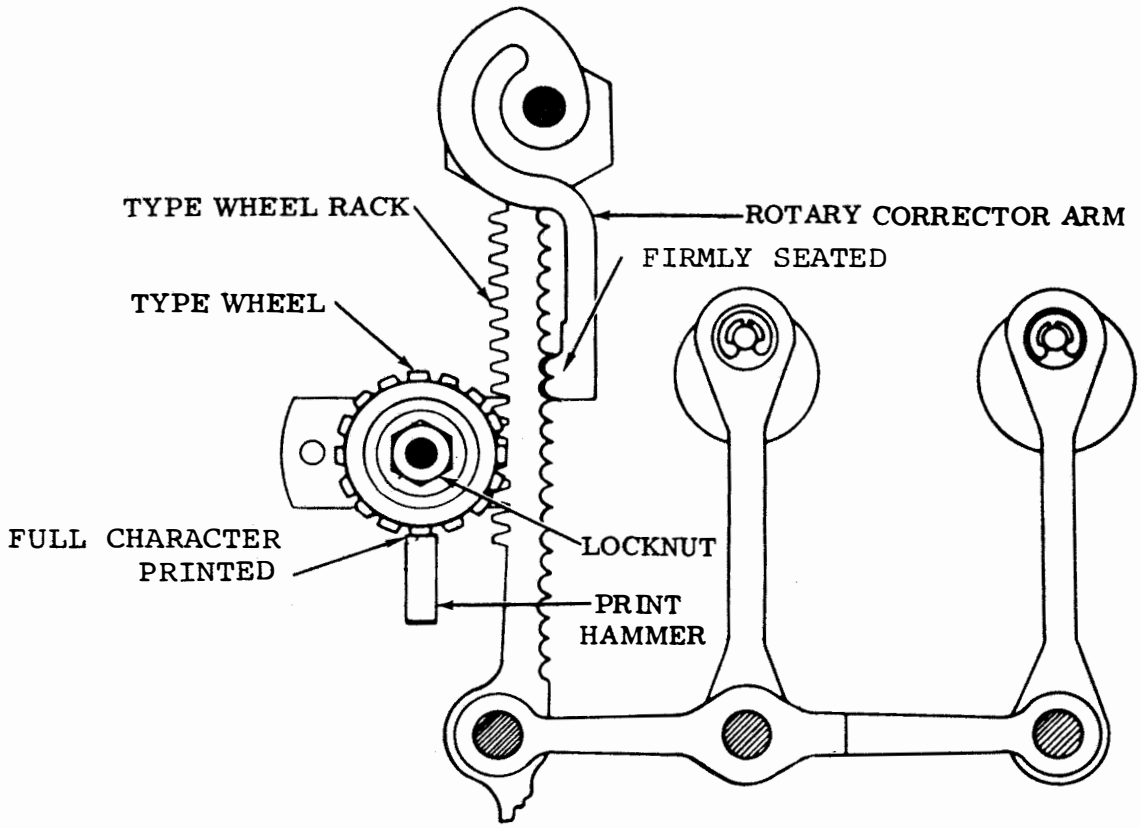


Figure 6-300. Type Wheel (Preliminary and Final) (For Fully Perforated Tape), Front View

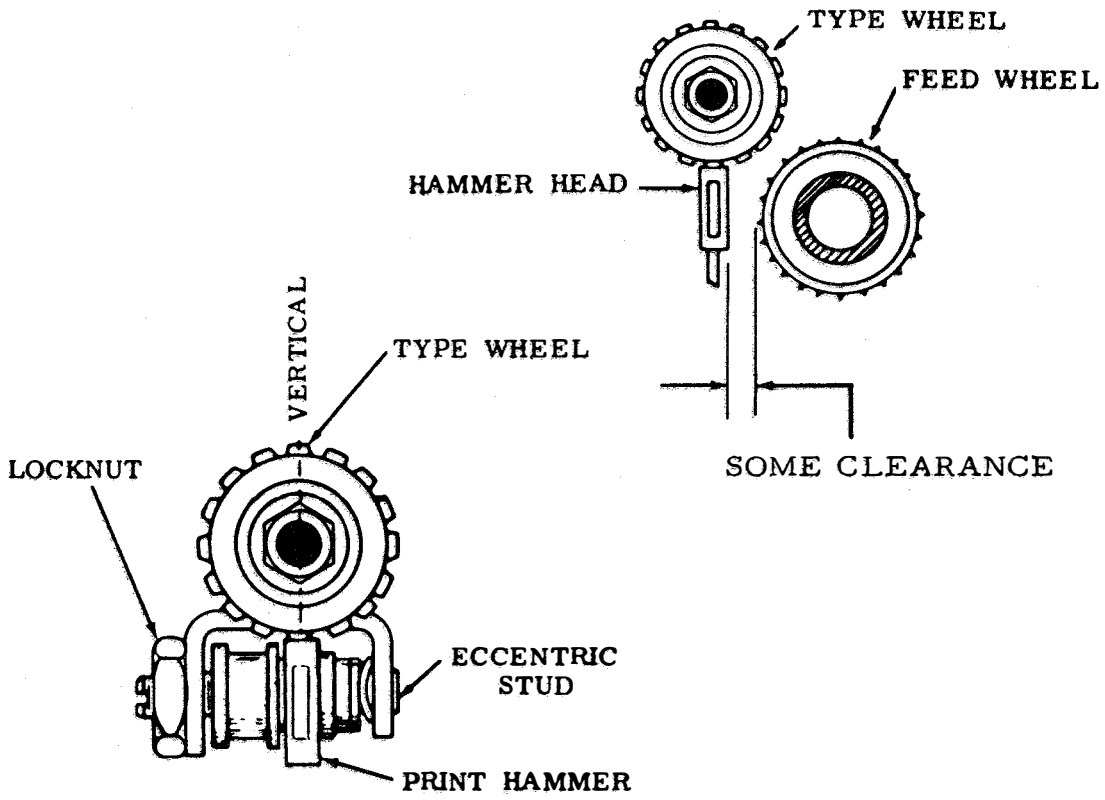


Figure 6-301. Print Hammer (For Fully Perforated Tape), Front View

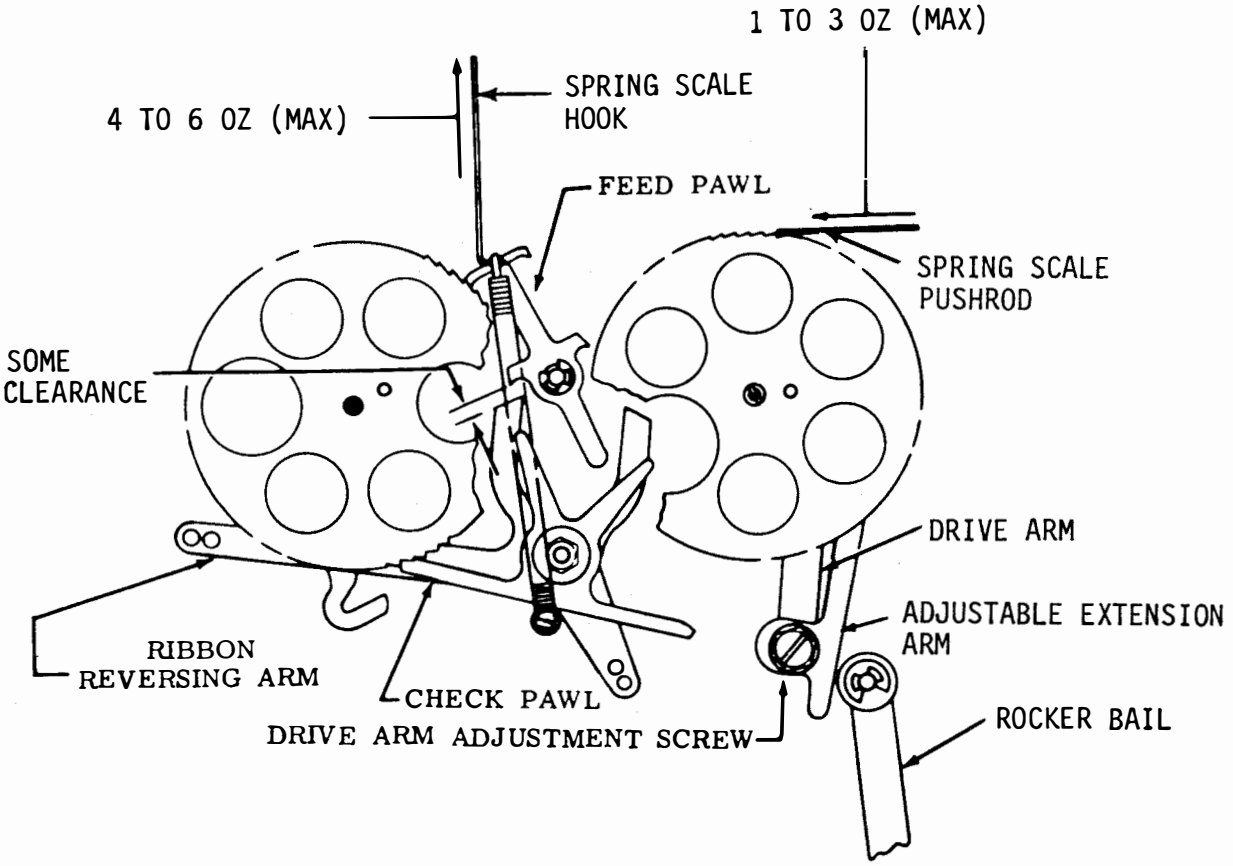


Figure 6-302. Feed Pawl Spring, Ratchet Wheel Torque Spring and Drive Arm

to pull feed pawl spring to installed length. This should measure from 4 to 6 ounces maximum.

(d) If requirement is not met, replace spring.

(2) Ratchet Wheel Torque Spring. Adjust as follows:

(a) Refer to Figure 6-302.

(b) Apply spring scale pushrod tangentially to ratchet wheel. Force required to start wheel rotation should be from 1 to 3 ounces maximum.

(c) If requirement is not met, replace spring.

(3) Drive Arm. Adjust as follows:

(a) Refer to Figure 6-302.

(b) Position rocker bail to extreme left and hold ribbon reversing arm under lower reversing extension of feed pawl.

(c) There should be some clearance between blocking edge of ribbon reverse arm and reversing extension of feed pawl, but not so great as to allow feed pawl to feed more than two teeth at a time.

(d) To adjust, loosen mounting screw and position drive arm adjustable extension lever. Tighten screw.

k. Slack Tape Mechanism Adjustments. Perform slack tape mechanism adjustments in accordance with the following paragraphs.

(1) Clamp Plate Screw With Disk. Adjust as follows:

NOTE

This adjustment should be made once every lubrication period or when the ten holes per inch requirement is not being held.

(a) Refer to Figure 6-303.

(b) Loosen nut and turn screw with disk so that a new area of the disk contacts tape.

(c) Tighten nut.

(2) Clamp Plate Spring. Adjust as follows:

(a) Refer to Figure 6-303.

(b) Apply spring scale pushrod to tab of clamp plate and measure force required to start clamp plate moving. This should be 30 grams minimum.

(c) If scale reading does not meet specified limits, install new spring.

(3) Tape Platform. Adjust as follows:

(a) Refer to Figure 6-303.

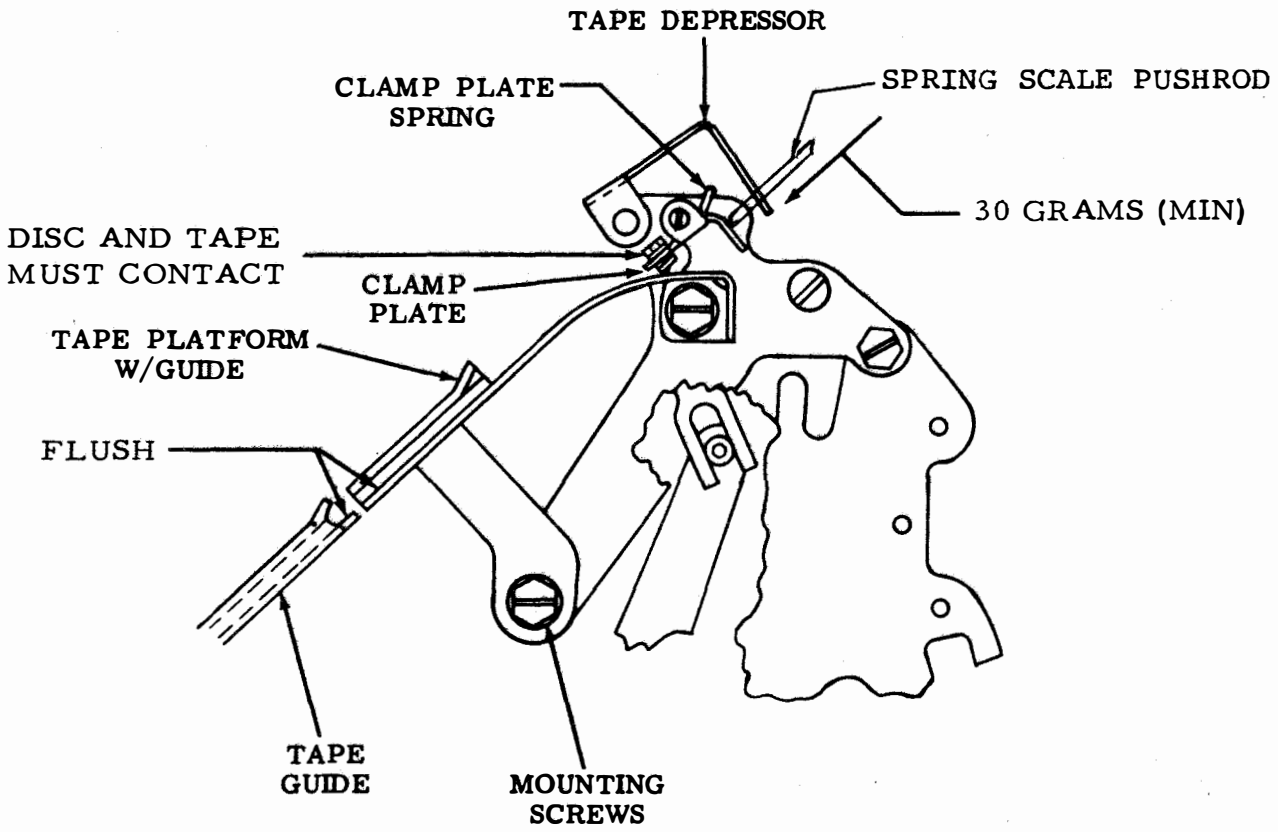


Figure 6-303. Clamp Plate Screw with Disk, Clamp Plate Spring, and Tape Platform, Front View

(b) Top surface of tape platform should be flush with top surface of tape guide.

(c) To adjust, loosen tape platform mounting screws and reposition tape platform. Tighten screws.

1. Chad Chute Assemblies (Fully Perforated Tape). Perform the following chad chute assembly adjustments.

(1) Chad Chute Assembly Keyboard Typing Reperforator. Adjust as follows:

(a) Refer to Figure 6-304.

(b) Clearance between each chad chute and adjacent units should be equal in all directions.

(c) To adjust, loosen mounting screws friction tight and position each chute by means of their elongated slots. Tighten screws.

(2) Chad Chute Assembly for Auxiliary Typing Reperforator. Adjust as follows:

(a) Refer to Figure 6-305.

(b) Clearance between each chad chute and adjacent unit should be equal in all directions.

(c) To adjust, loosen mounting screws friction tight and position chad chute by means of their elongated slots. Tighten screw.

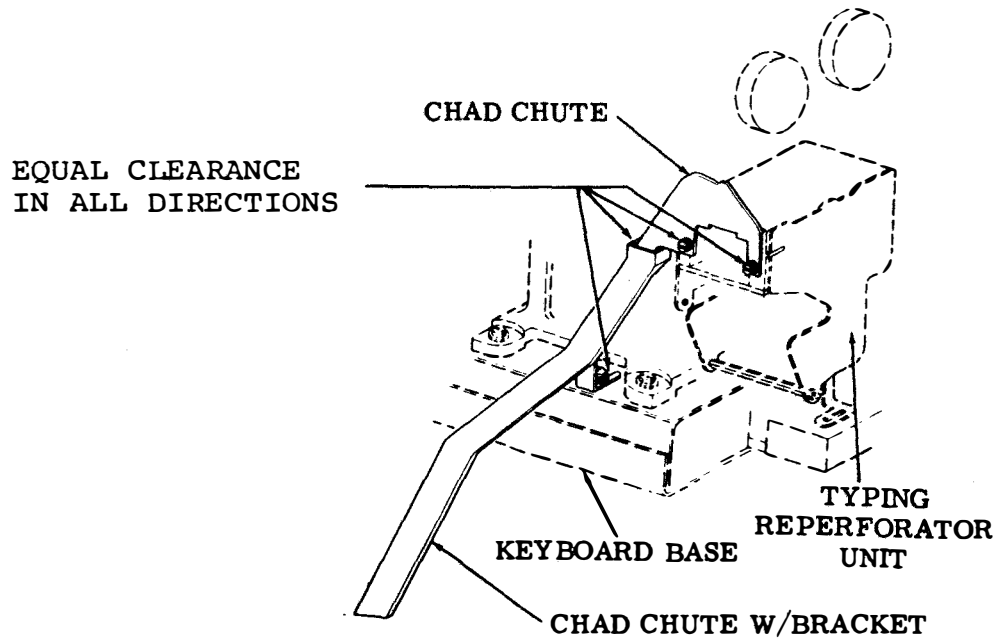


Figure 6-304. Chad Chute Assembly for Keyboard Typing Reperforator, Left Side View

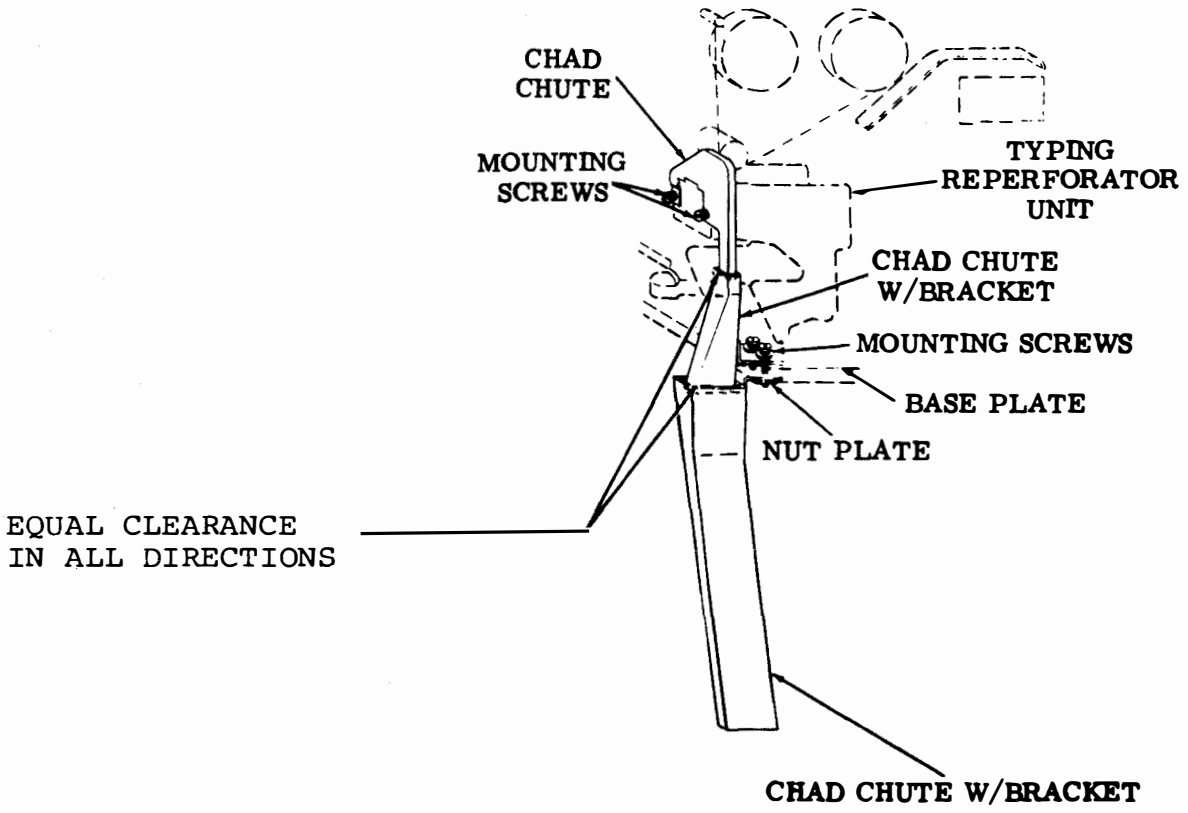


Figure 6-305. Chad Chute Assembly for Auxiliary Typing Reperfcrator, Front View

m. Tape Guide Chute Mechanism for Auxiliary Typing Reperforator. Perform the following tape guide chute adjustments.

NOTE

Tape guide chute should not touch typing reperforator or cabinet. Tape should feed without binding or twisting.

(1) Refer to Figure 6-306.

(2) With top and middle dome doors open, front and rear ends of chute should align with punch block tape aperture and with hole in auxiliary control panel.

(3) To adjust:

(a) Loosen mounting screws friction tight and position chute horizontally.

(b) Loosen upper adjusting screw friction tight in nut plate and position chute vertically.

(c) Tighten screws.

6-7. AUXILIARY TYPING REPERFORATOR BASE. The following paragraphs describe auxiliary typing reperforator base adjustment procedures for high-level and low-level operation.

a. Tape-Out Mechanism Adjustment. Perform the following tape-out mechanism adjustments.

(1) Tape-Out Switch Assembly. Adjust as follows:

(a) Refer to Figure 6-307.

(b) Switch just closes when tape roll is reduced to 2-3/8 inch.

(c) To adjust, loosen mounting screws and position switch assembly. Tighten screws.

(2) Switch Lever Spring. Adjust as follows:

(a) Refer to Figure 6-307.

(b) Attach spring scale hook to spring and measure force required to pull spring to 1-1/4 inches. This should be 8-1/2 to 10 ounces maximum.

(c) If requirement is not met, replace spring.

(3) Tape-Out Lever Spring. Adjust as follows:

(a) Refer to Figure 6-307.

(b) Attach spring scale hook to spring and measure force required to pull spring to 1-17/32 inches. This should be 6 to 8 ounces maximum.

(c) If requirement is not met, replace spring.

(4) Tape-Out Lever. Adjust as follows:

(a) Refer to Figure 6-307.

(b) Switch lever should be out of engagment with switch actuator when tape roll is removed.

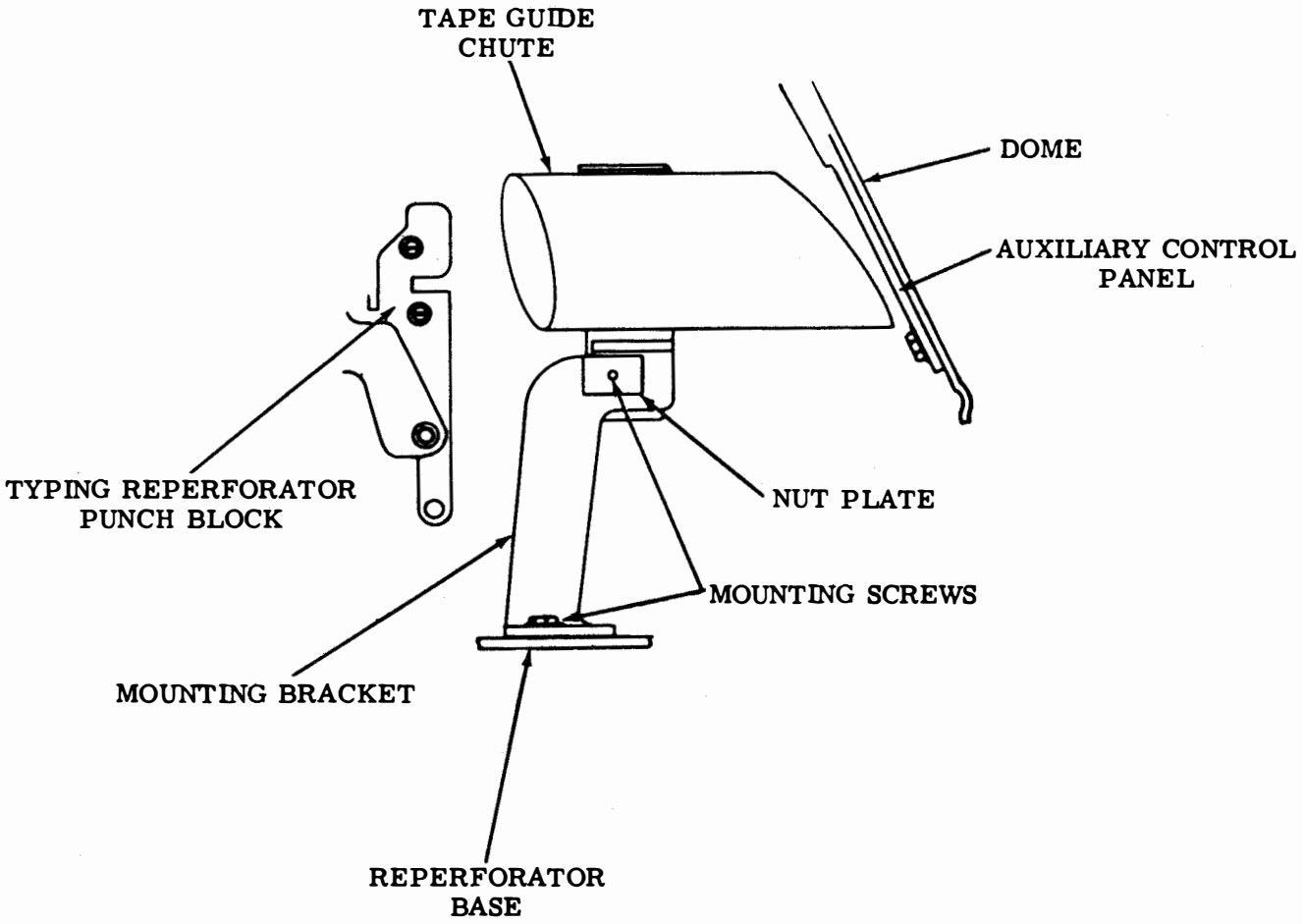


Figure 6-306. Tape Guide Chute for Auxiliary Typing Reperforator, Left Side View

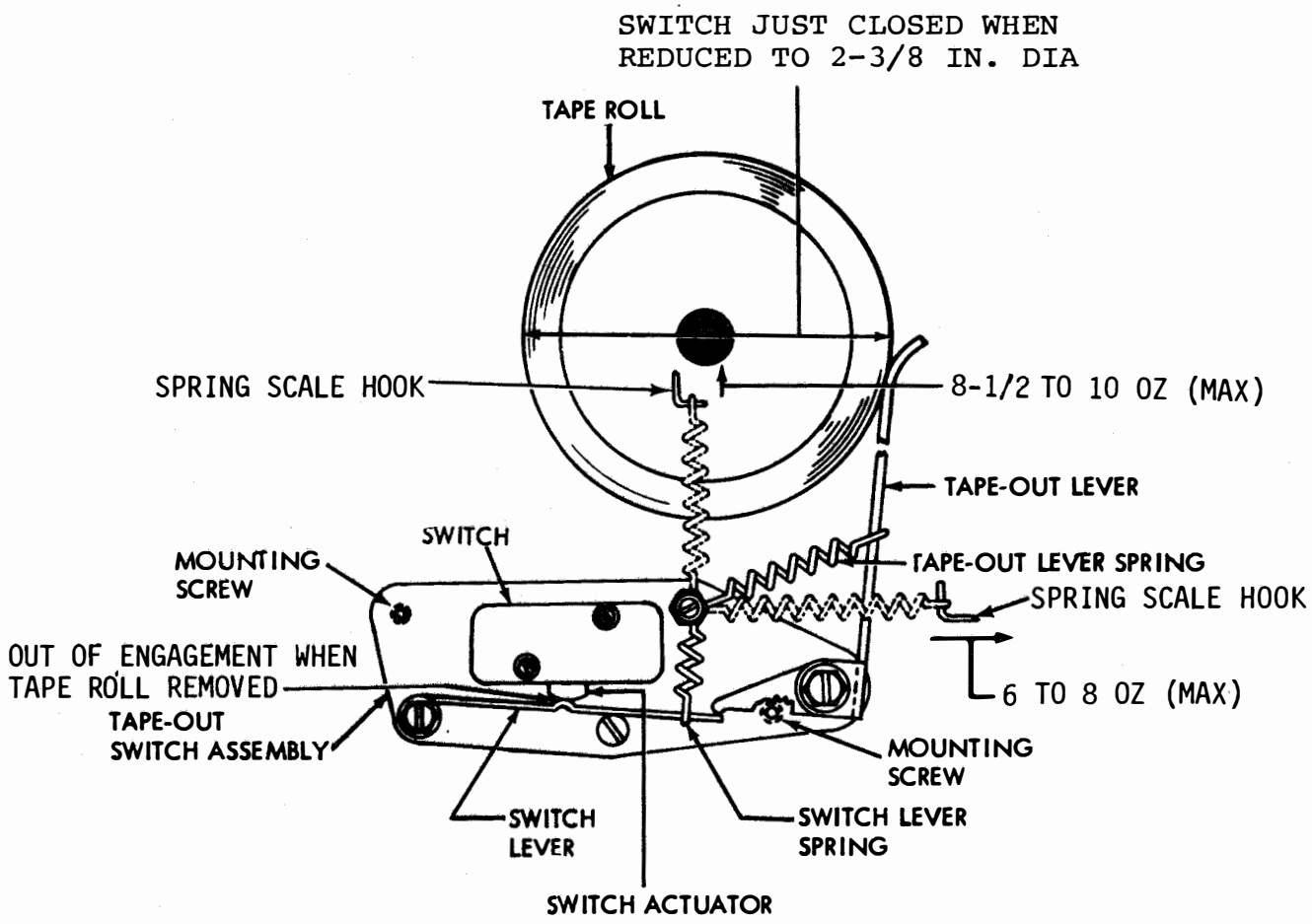


Figure 6-307. Tape-Out Switch Assemlby, Switch Lever Spring, Tape-Out Lever Spring, and Tape-Out Lever

(c) To adjust, check steps (2) and (3) above.

(d) Replace spring(s) that do not meet requirements.

b. Drive Mechanism Adjustment. Perform the following drive mechanism adjustments.

(1) Intermediate Drive Assembly. Adjust as follows:

(a) Refer to Figure 6-308.

(b) There should be barely perceptible backlash between motor drive gear and driven gear at their closest point.

(c) To adjust, loosen three mounting screws and position intermediate drive assembly. Tighten screws.

(2) Timing Belt. Adjust as follows:

(a) Refer to Figure 6-308.

(b) There should be minimal slack in belt.

(c) To adjust:

1. Loosen two anchor bracket screws and three mounting screws and position reperforator unit.

2. Tighten three mounting screws.

3. Press anchor bracket against base plate and tighten screw holding bracket to reperforator.

4. Tighten screw holding bracket to base.

(d) Recheck for minimum slack.

(3) Tape Container. Adjust as follows:

(a) Refer to Figure 6-308.

(b) It should be possible to load full tape roll in container through access door.

(c) To adjust, loosen mounting screws and position container. Tighten screws.

6-8. TRANSMITTER DISTRIBUTOR UNIT. The following paragraphs describe transmitter distributor unit adjustment procedures for high-level and low-level operation.

NOTE

Remove transmitter distributor unit from its base before making adjustments. When the adjustment procedures calls for the clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latchlever so that the clutch shoes release their tension on the clutch drum. When engaged, the clutch shoe lever is unlatched and the clutch shoes are wedged firmly against the clutch drum. When the main shaft is rotated by hand, the clutch does not fully disengage upon reaching its STOP position. In order to relieve the drag on the clutch and permit the main shaft to rotate freely, apply

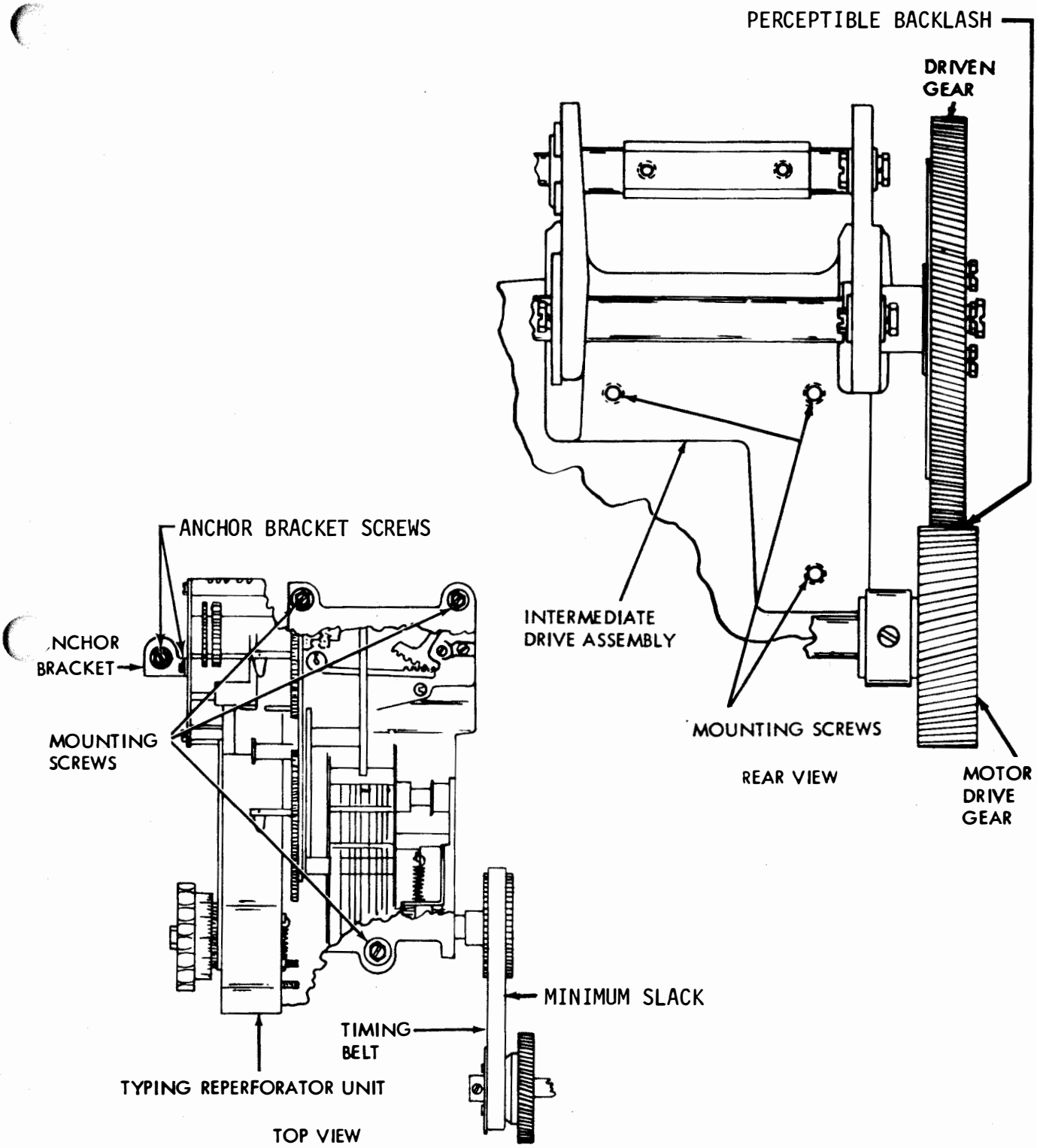


Figure 6-308. Intermediate Drive Assembly, Timing Belt, and Tape Container

pressure on a lug of the clutch disk with a screwdriver to cause it to engage its latchlever and thus disengage the internal expansion clutch shoes from the clutch drum.

a. Clutch Mechanism Adjustments. Perform the following mechanism adjustments.

(1) Clutch Shoe Lever Spring. Adjust as follows:

(a) Refer to Figure 6-309.

(b) Invert unit and rotate main shaft until shoe lever and stop-lug are up.

(c) Engage clutch and hold cam disk to prevent turning.

(d) Attach spring scale hook to stop-plug and measure force required to move shoe lever in contact with stop-lug. This should be 15 to 20 ounces maximum. If set is equipped with tape slack mechanism, force required should be 9 to 11 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(2) Clutch Shoe Spring. Adjust as follows:

(a) Refer to Figure 6-309.

(b) Remove clutch from main shaft and remove clutch drum.

(c) Attach spring scale hook to stop-lug and measure force required to start primary shoe moving away from secondary shoe at point of contact. This should be 3 to 5 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(e) Replace clutch drum and install clutch on main shaft.

(3) Clutch Shoe Lever. Adjust as follows:

(a) Refer to Figure 6-310.

(b) Trip transmitter distributor clutch.

(c) Pull shoe lever opposite stop-lug with force of 32 ounces and release force slowly to engage clutch shoes.

(d) Measure and note clearance between shoe lever and stop-lug.

(e) Disengage clutch.

(f) Pull shoe lever opposite stop-lug with

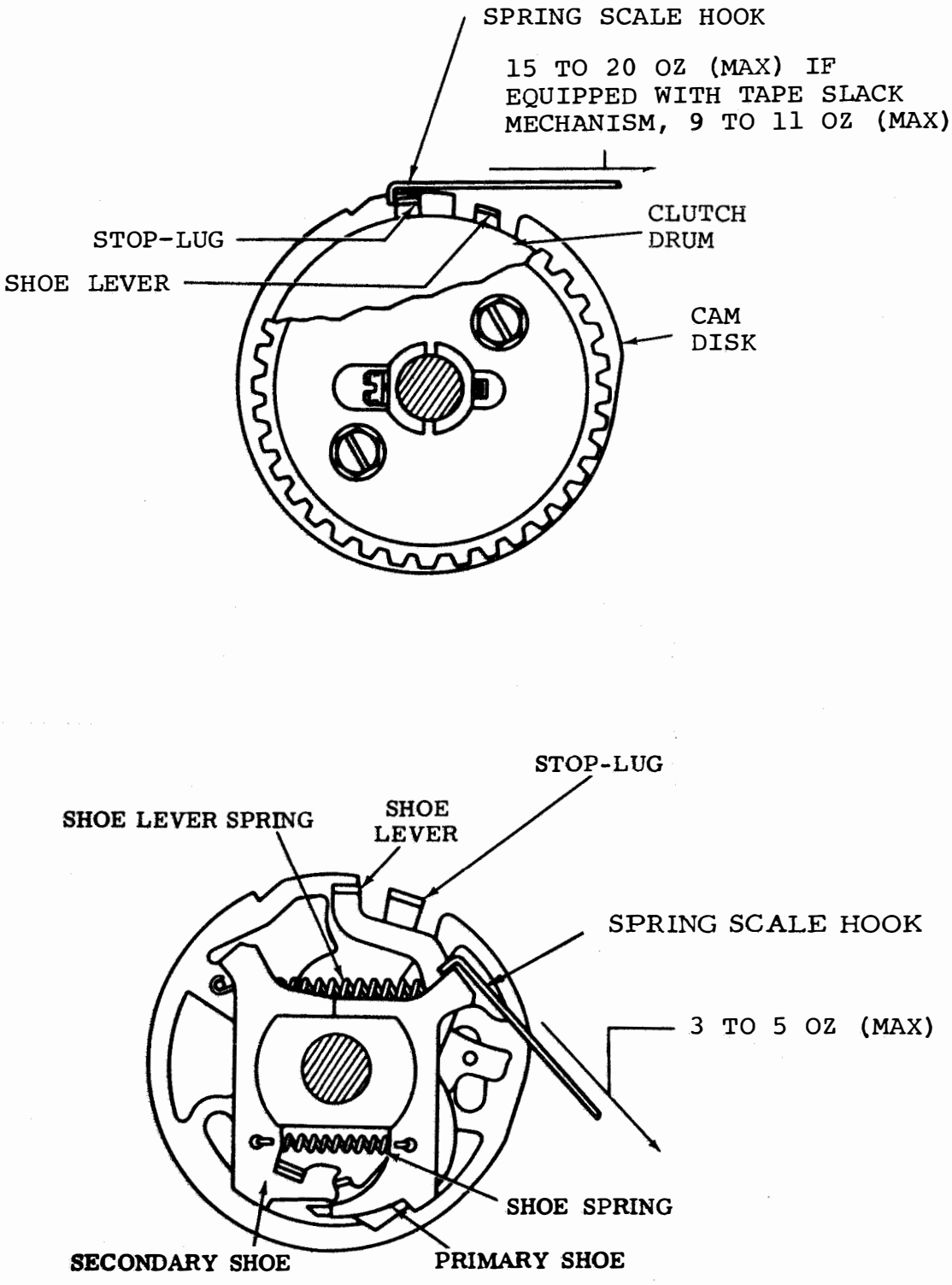


Figure 6-309. Clutch Shoe Lever Spring and Clutch Shoe Springs, Rear View

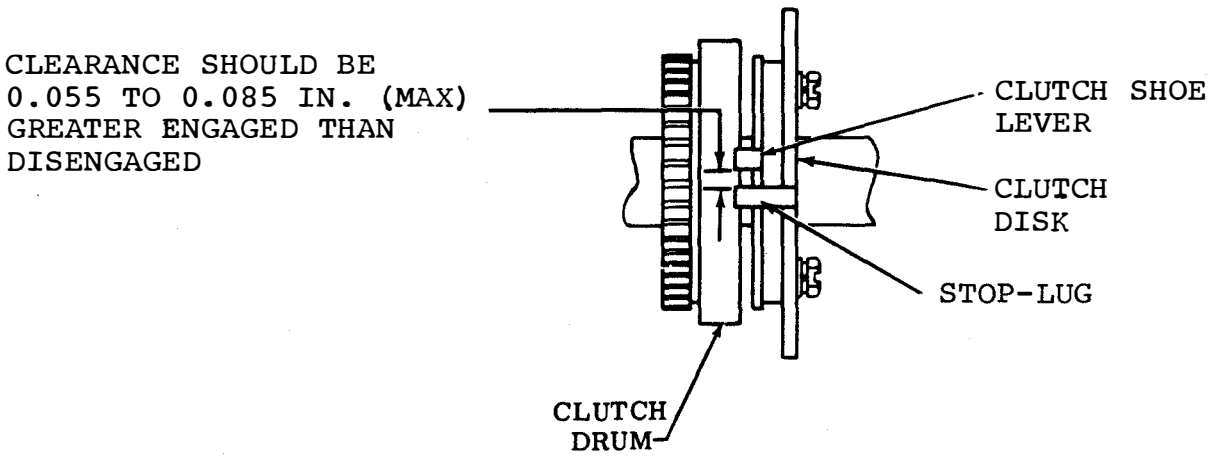


Figure 6-310. Clutch Shoe Lever, Left Side View

force of 32 ounces and release force slowly.

(g) Measure and note clearance between shoe lever and stop-lug.

(h) Clearance should be 0.055 to 0.085 inch maximum greater with clutch engaged than when disengaged.

(i) If difference exceeds specified limits, loosen clutch disk clamp screws.

(j) Place wrench over stop-lug and move disk.

(k) Repeat steps (b) through (h) until difference is within specified limits.

(l) Tighten clutch disk clamp screws.

(4) Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-311.

(b) Trip transmitter distributor clutch.

(c) Place main bail in highest position and rotate clutch until stop-lug is opposite trip lever.

(d) Take up play in trip bail to maximize clearance between stop-lug and trip lever. Clearance should be between 0.012 and 0.025 inch.

(e) Take up play in trip bail to minimize clearance between stop-lug and trip lever. There should be some clearance.

(f) If clearance in either step (d) or

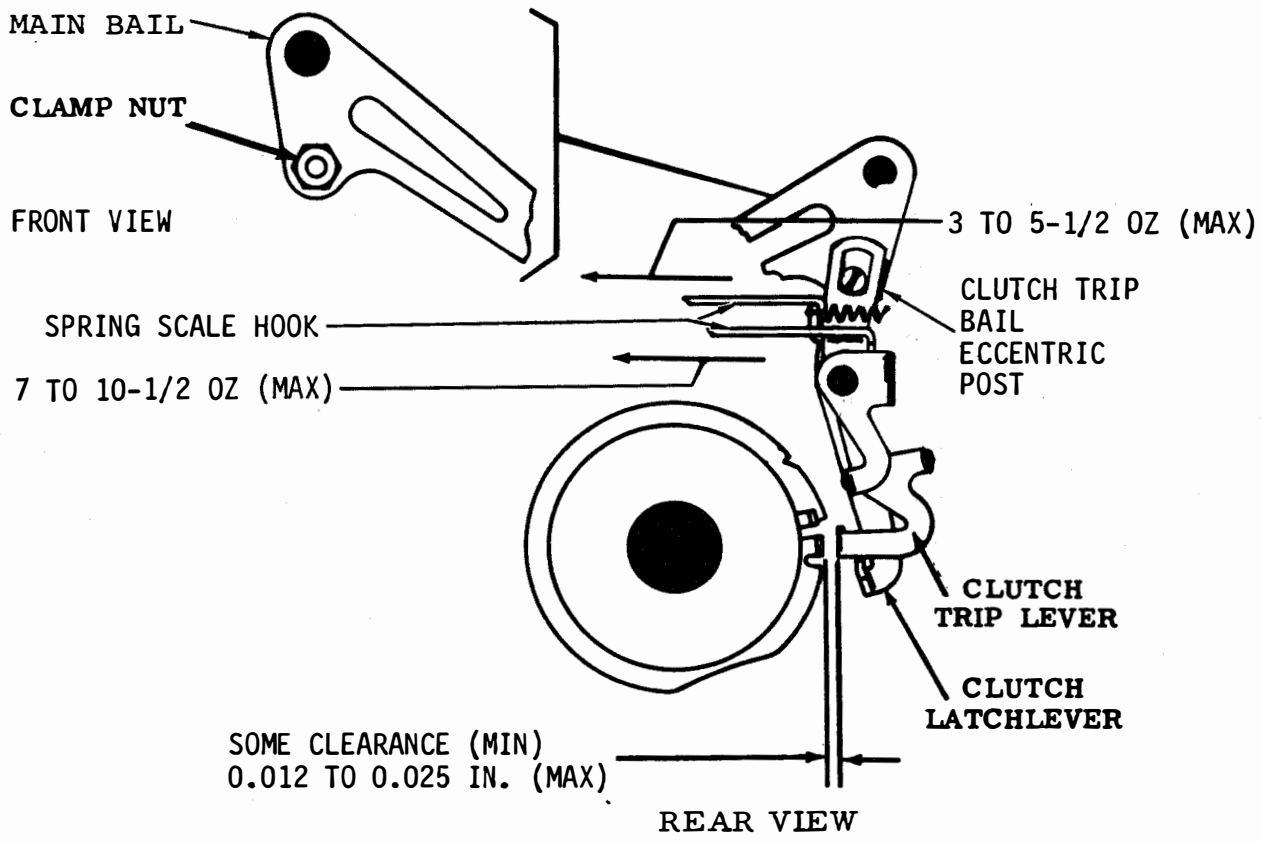


Figure 6-311. Clutch Trip Lever, Clutch Trip Lever Spring, and Clutch Latchlever Spring

step (e) exceeds specified limits, loosen clamp nut to the point of friction tightness and rotate trip bail eccentric post.

(g) Repeat step (d).

(h) Tighten clamp nut.

(5) Clutch Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-311.

(b) Engage clutch.

(c) Attach spring scale hook to clutch trip lever and measure force required to start clutch trip lever moving. This should be 7 to 10-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(6) Clutch Latch-lever Spring. Adjust as follows:

(a) Refer to Figure 6-311.

(b) Trip clutch and rotate shaft until latchlever is on low part of disk.

(c) Attach spring scale hook to clutch latchlever and measure force required to start clutch latchlever moving. This should be 3 to 5-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(7) Clutch Magnet Assembly (Preliminary). Adjust as follows:

(a) Refer to Figure 6-312.

(b) Hold armature in energized position.

(c) Take up play to maximize clearance. Armature should contact top core face and there should be some to 0.004 inch maximum clearance between bottom core face and armature at point of least clearance. In sets with tape shoe and tape feed assurance mechanisms, there should be 0.004 to 0.007 inch maximum clearance.

(d) If clearances exceed specified limits, remove magnet bracket mounting screws and magnet assembly from unit. Loosen two hinge mounting screws on bottom of magnet assembly and position mounting hinge to obtain clearances specified in step (c).

(e) Replace and tighten all mounting screws.

(f) Continue to hold armature in energized position, place high part of eccentric toward top of assembly and measure clearance between armature bail and eccentric backstop. This should be 0.045 to 0.055 inch maximum.

(g) If clearance exceeds specified limit, loosen eccentric backstop clamp nut and position screw. Tighten clamp nut.

(h) Refer to Figure 6-313.

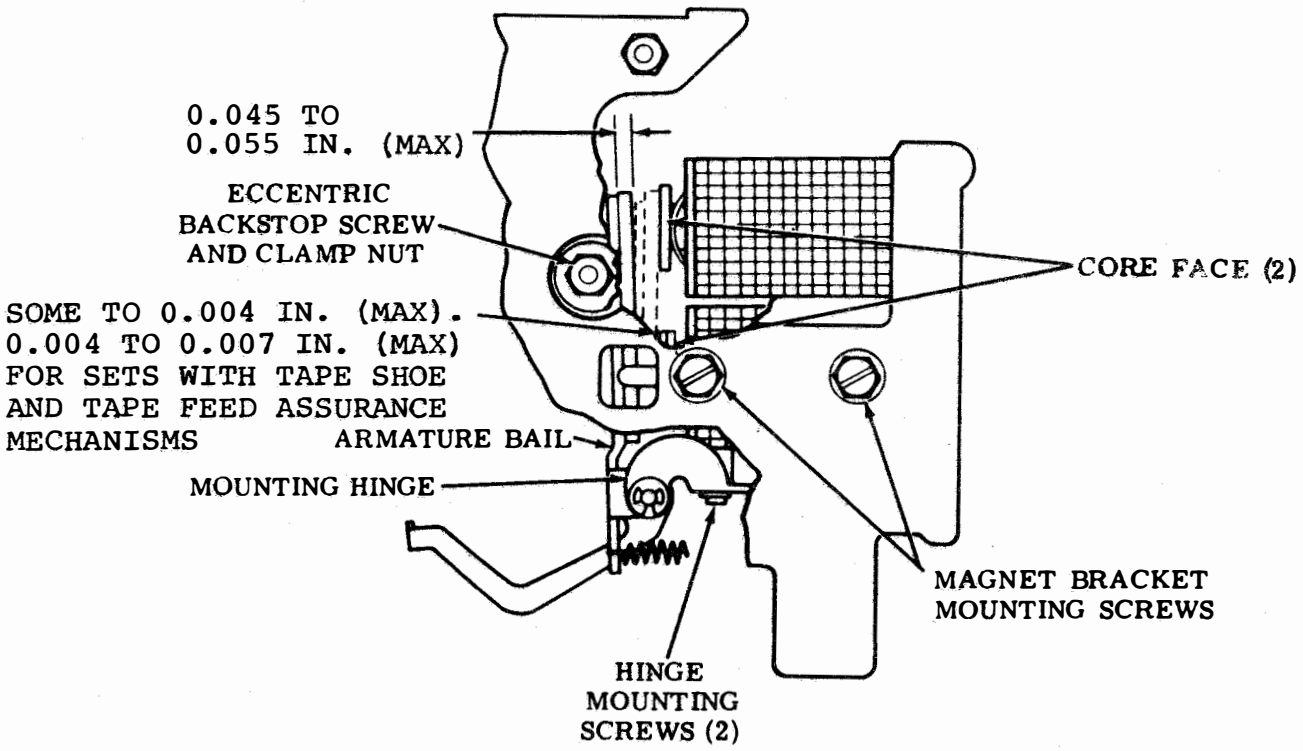


Figure 6-312. Clutch Magnet Assembly (Preliminary - Core Clearance and Armature Bail Clearance), Rear View

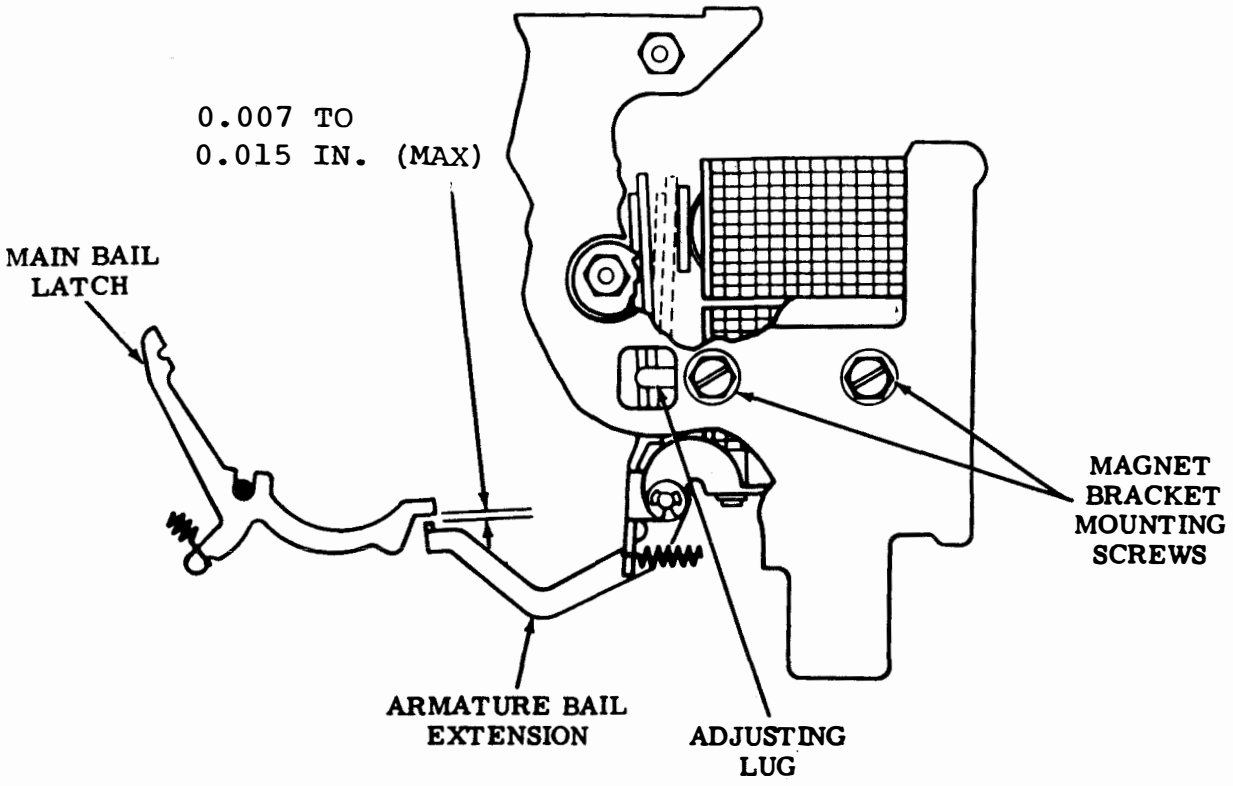


Figure 6-313. Clutch Magnet Assembly (Preliminary - Main Bail Latch/Armature Bail Extension Clearance, Rear View

(i) Reinstall magnet assembly in unit and disengage clutch.

(j) Measure clearance between end of armature bail extension and main bail latch. Clearance should be 0.007 to 0.015 inch maximum.

(k) If clearance exceeds specified limits, loosen magnet bracket mounting screws friction tight.

(l) Move bracket to its lowermost position and position bracket by means of adjusting lug on bracket which is visible through hole in rear plate. When specified clearance is obtained, tighten mounting screws.

NOTE

The above adjustments may be considered final unless ac power is used. A check should be made to ensure chatter is minimized. If chatter is excessive, adjustments in steps (b) through (l) should be repeated.

(m) Refer to Figure 6-314.

(n) Energize clutch magnet.

(o) Ensure there is some clearance between vertical surfaces of main bail and main bail latch.

(p) If there is no clearance, loosen magnet bracket mounting screws friction tight.

(q) Move bracket to its lowermost position and position bracket by means of adjusting lug on bracket which is visible through hole in rear plate.

(r) De-energize clutch magnet and tighten magnet bracket mounting screws.

(8) Main Bail Latch Spring. Adjust as follows:

(a) Refer to Figure 6-314.

(b) Invert unit and release main bail latch.

(c) Apply spring scale pushrod to main bail latch and measure force required to start main bail latch moving. This should be 3/4 to 2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(9) Armature Bail Spring. Adjust as follows:

(a) Refer to Figure 6-314.

(b) Place armature in de-energized position and hold main bail latch away from armature bail extension.

(c) Apply spring scale hook to armature and measure force required to start bail moving:

1. This should be 1 to 2 ounces maximum.

2. For sets with tape shoe and tape feed assurance mechanisms, force should be 3-3/4 to 4-3/4 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

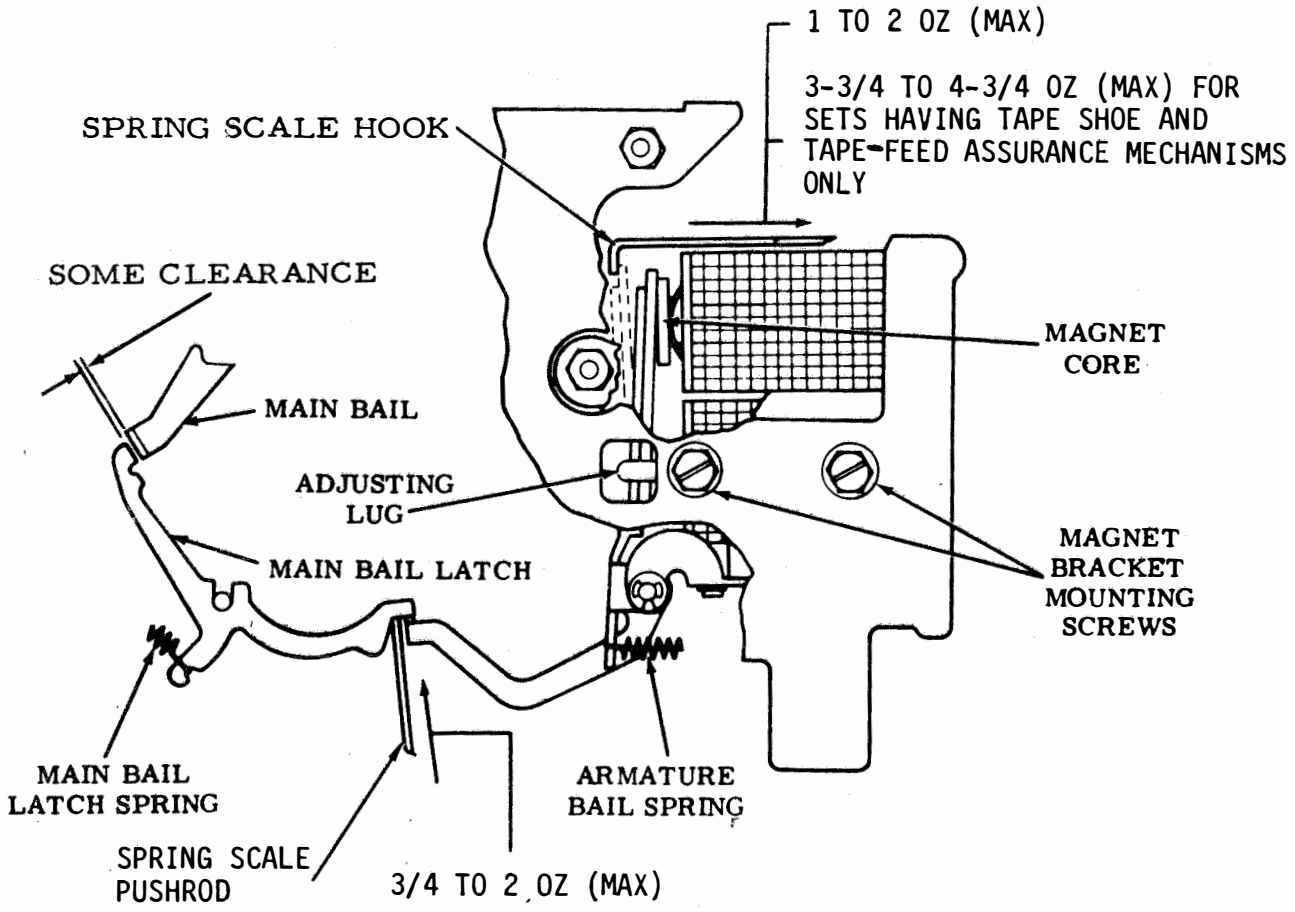


Figure 6-314. Clutch Magnet Assembly (Preliminary - Main Bail/Main Bail Latch/Armature Clearance), Main Bail Latch Spring, and Armature Bail Spring, Rear View

b. Tape Lid Adjustments. Perform the follwoing tape lid adjustments.

(1) Tape Lid. Adjust as follows:

NOTE

Lubricate prior to adjustment. Refer to lubrication instructions in Chapter 4.

(a) Refer to Figure 6-315.

(b) Remove top plate and tape guideplate.

(c) Hold tape lid against notch in tape guideplate, align feed wheel groove with slot in tape guideplate, and line up tape-out pin holes.

(d) Measure clearance between tape lid and pivot shoulder. There should be some to 0.010 inch maximum clearance.

(e) If clearance exceeds specified limits, loosen bracket mounting nuts.

(f) Insert tip of gauge TP156743 through slot in tape guideplate and into feed wheel groove.

(g) Position bracket to obtain specified clearance and tighten nuts.

(h) Position tape lid so that its front bearing surface touches tape guideplate.

(i) Measure clearance between indicated fin and tape guideplate. Clearance should be between 0.010 and 0.018 inch maximum.

(j) If clearance exceeds specified limits, loosen bracket mounting screws.

(k) While pressing tape lid against tape guideplate, position bearing bracket and recheck requirement in step (d).

(l) If clearance in steps (d) or (i) cannot be met, position bearing bracket so its mounting screws are located in centers of holes in bracket. Then repeat steps (c) through (j).

NOTE

When tape guideplate and top plate are assembled together with reader, tape lid may touch top plate and clearance different from that specified in step (i) can be expected. However, with tape lid closed, the minimum allowable clearance between tape guideplate and heel pad is 0.002 inch.

(m) Latch tape lid against tape guideplate ensuring release plunger has some end play.

(n) If there is no end play, loosen locknut.

(o) Raise tape lid and rotate high part of eccentric toward bearing bracket.

(p) Close tape lid and continue rotating high part of eccentric toward bearing bracket until latch bail just falls under flat on post.

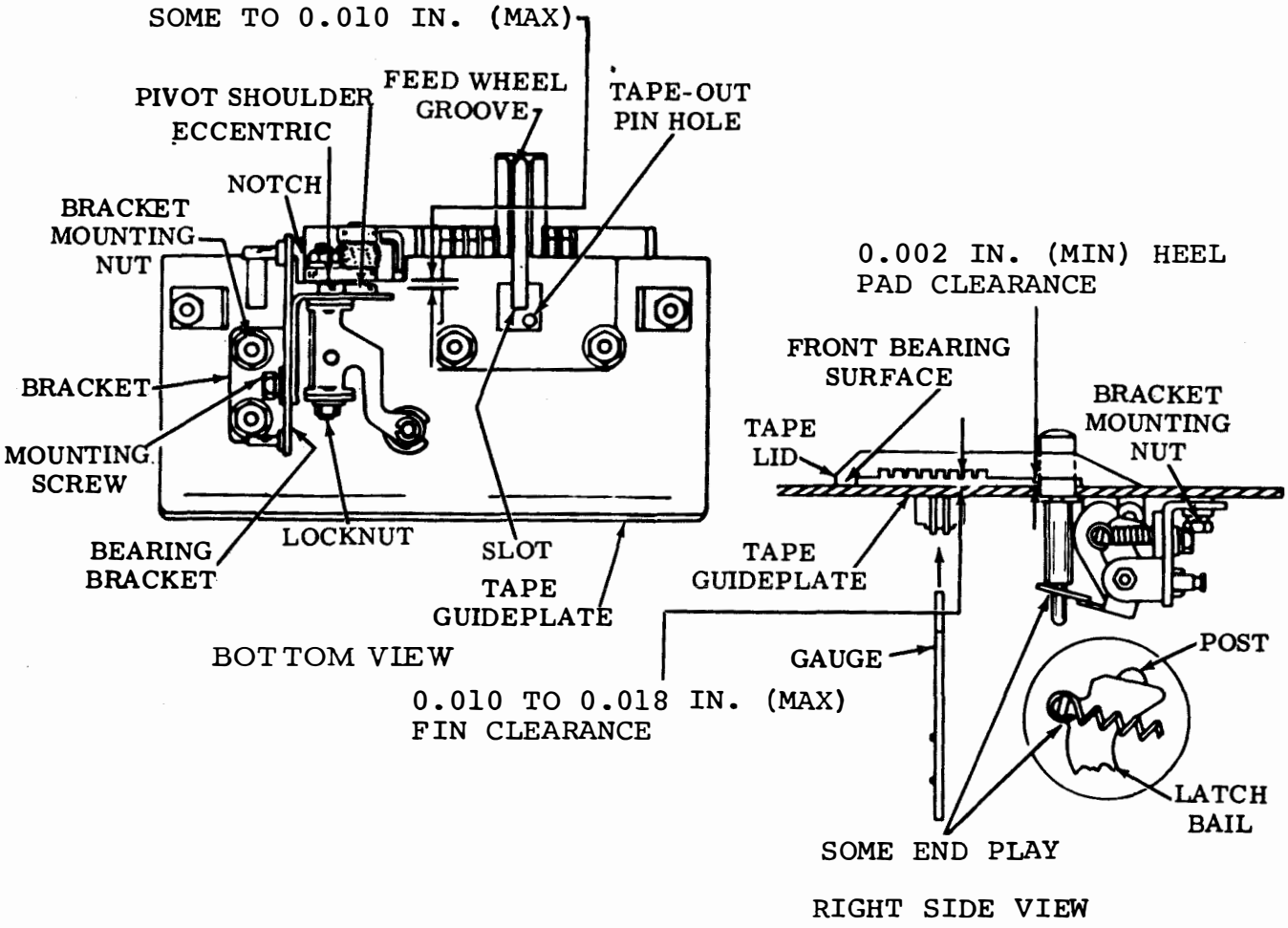


Figure 6-315. Tape Lid

(q) Recheck operation of latch bail by depressing release plunger with tape lid held down.

(r) Tighten locknut.

(2) Tape Guide. Adjust as follows:

NOTE

Tape guides may touch gauge, but should not bind against gauge when it is removed.

(a) Refer to Figure 6-316.

(b) Unlatch tape lid and position gauge as illustrated in Figure.

(c) There should be some clearance not exceeding 0.003 inch between gauge and each tape guide.

(d) Ensure edge of wear plate is flush with edge of tape guideplate.

(e) Ensure tape does not ride up sides of tape guides.

(f) If requirements of steps (c), (d), and (e) are not met, loosen mounting nuts.

(g) Position wear plate until it overhangs tape guideplate.

(h) Push gauge down until two studs on gauge butt against tape guideplate so as to position edge of wear plate flush with edge of tape guideplate.

(i) Hold gauge and wear plate and position each tape guide to obtain clearance specified in step (c).

(j) Tighten mounting nuts.

(3) Start-Stop Detent Bail Spring. Adjust as follows:

(a) Refer to Figure 6-317.

(b) Place control lever in RUN position.

(c) Apply spring scale pushrod to detent bail and measure force required to start detent bail moving away from control lever. This should be 14 to 22 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(4) Tape Lid Release Plunger Spring. Adjust as follows:

(a) Refer to Figure 6-318.

(b) Unlatch tape lid.

(c) Place tape guideplate in a horizontal position and hold it there.

(d) Apply spring scale pushrod to tape lid release plunger and measure force required to start tape lid bail moving. This should be 28 to 48 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(5) Tape Lid Spring. Adjust as follows:

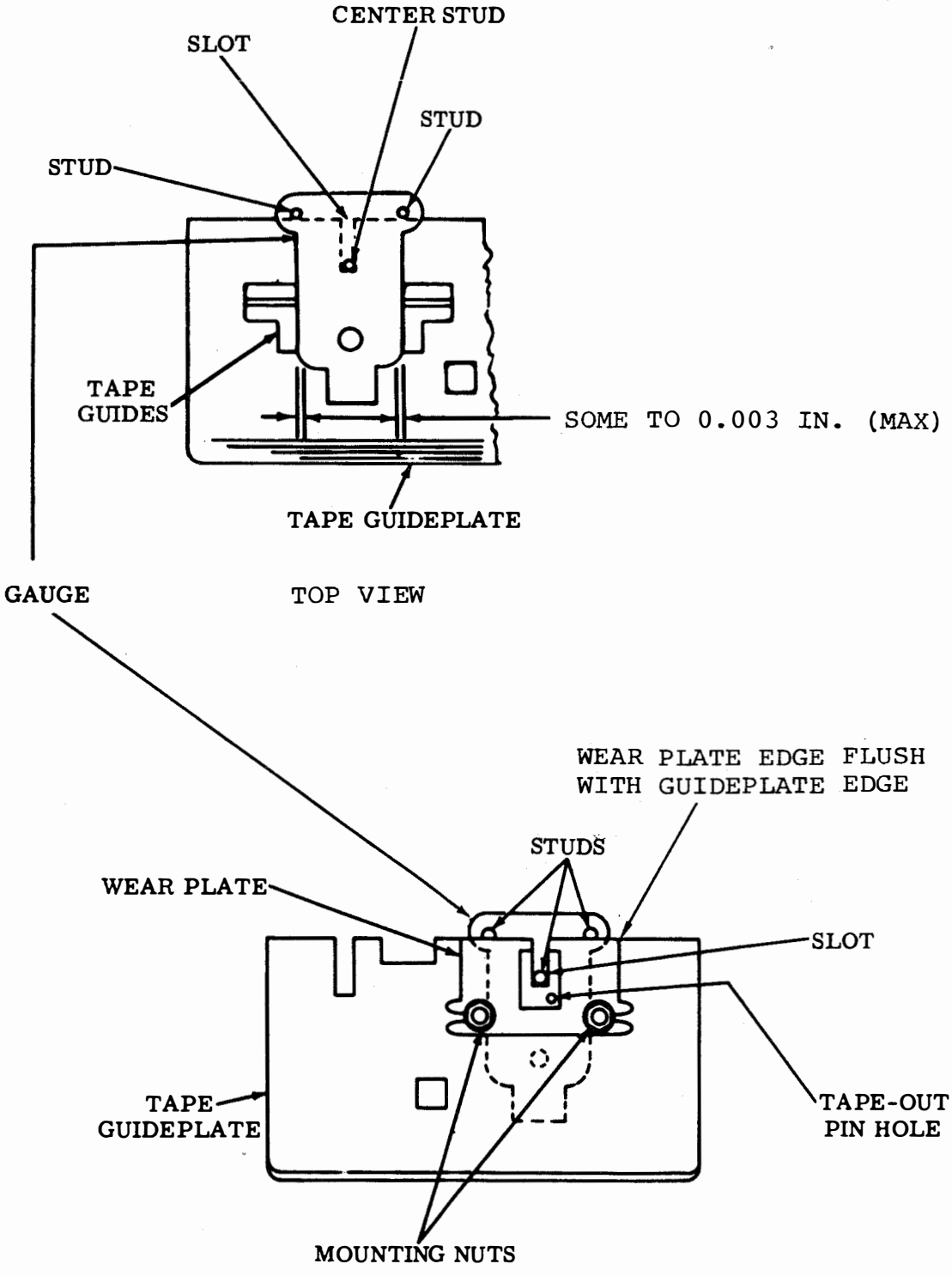


Figure 6-316. Tape Guide

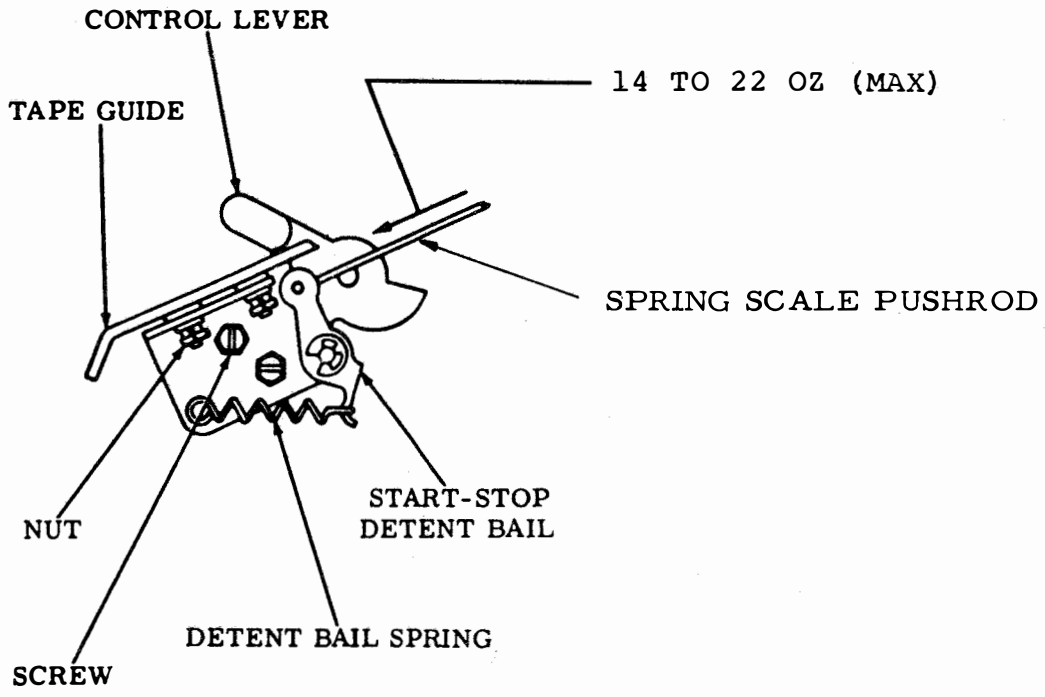


Figure 6-317. Start-Stop Detent Bail Spring, Rear View

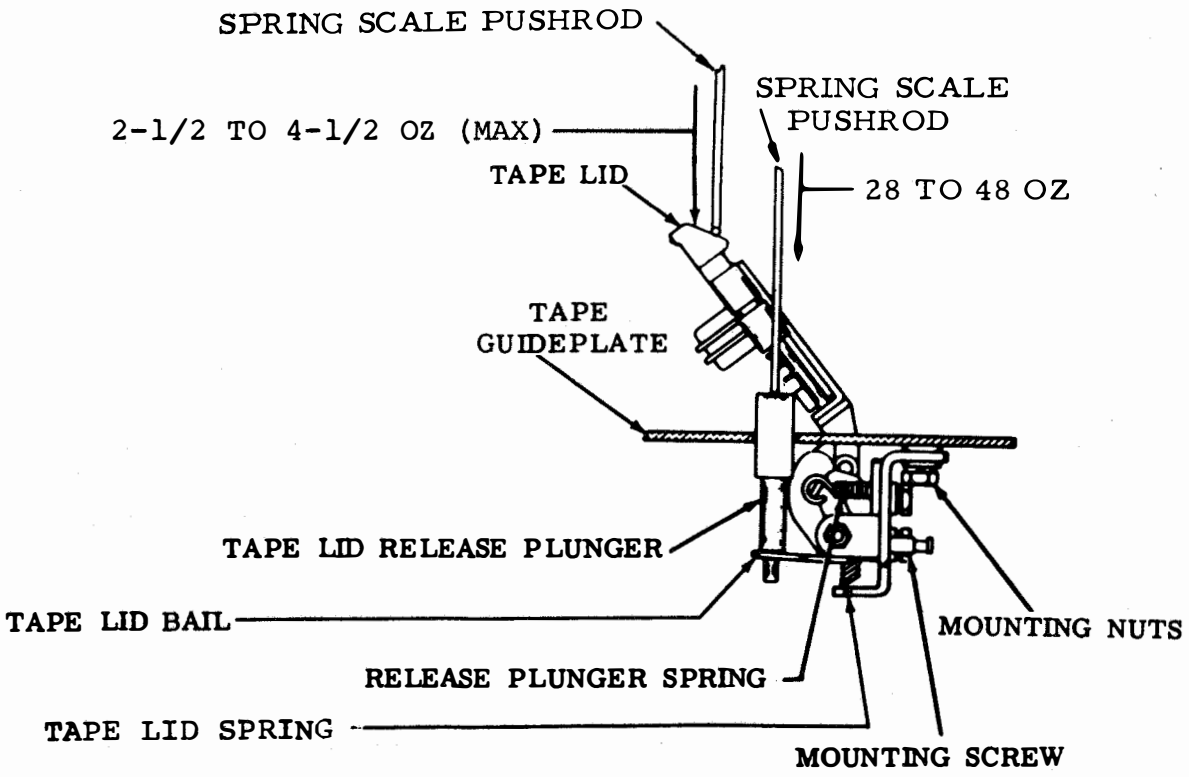


Figure 6-318. Tape Lid Release Plunger Spring and Tape Lid Spring, Right Side View

(a) Refer to Figure 6-318.

(b) Hold release plunger in fully depressed position.

(c) Hold tape guideplate in horizontal position.

(d) Apply spring scale pushrod to tape lid and measure force required to move open end of tape lid against tape guideplate. This should be 2-1/2 to 4-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(6) Tape Guideplate. Adjust as follows:

NOTE

To prevent damage to tape-out pin, place stop arm in its lowest position and hold control lever bail extension from feed wheel ratchet.

(a) Refer to Figure 6-319.

(b) Ensure feed wheel post does not interfere with mounting brackets of top plate and tape guideplate.

(c) If any interference is evident, loosen clamp nut and rotate feed wheel post to eliminate interference.

(d) Ensure tape guideplate rests firmly against a minimum of three of four projections on side plates.

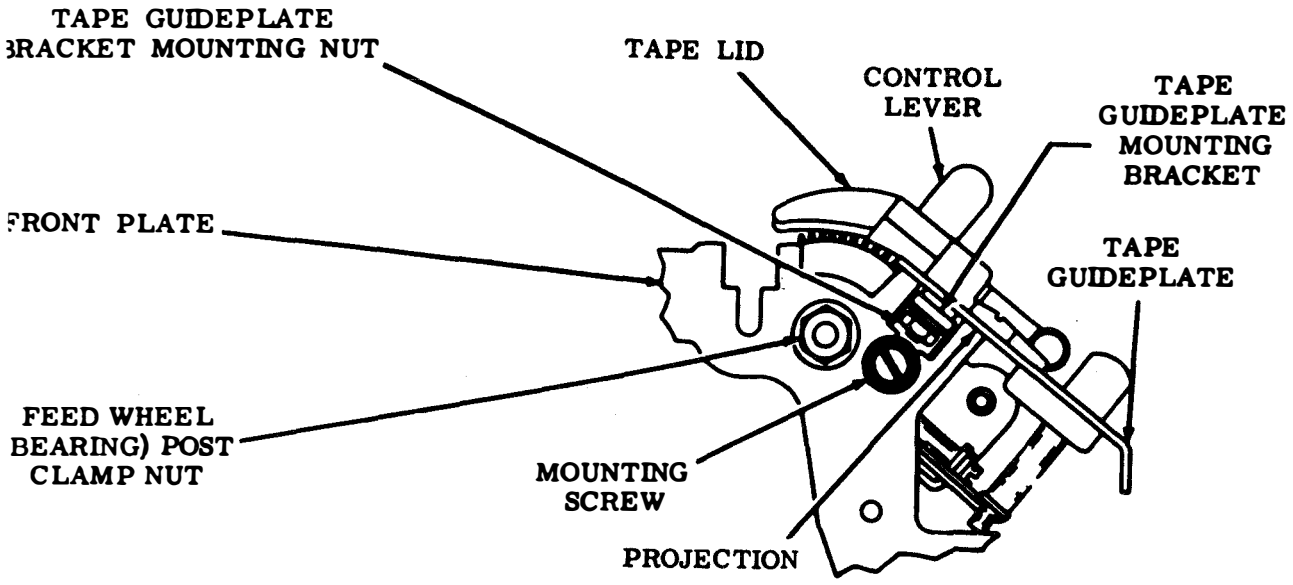


Figure 6-319. Tape Guideplate, Front View

(e) To adjust, rotate unit clutch to its STOP position.

(f) Trip clutch to put sensing pins in their highest positions. Unlatch tape lid and place control lever to RUN position.

(g) Loosen mounting screws and mounting nuts friction tight.

(h) Position tape guideplate on reader so guideplate rests firmly against a minimum of three of four projections on side plates.

(i) Place tape-out pin in hole in tape guideplate.

(j) Tighten mounting screws. Do not tighten mounting nuts until top plate, paragraph 6-8c(1), adjustments are made.

(k) Ensure edge of tape guideplate projects over side plates by equal amounts as gauged by eye.

NOTE

Tight-tape bail extension must be under top plate.

c. Top Plate and Coverplate Adjustments. Perform the following top and coverplate adjustments.

(1) Top Plate. Adjust top plate as follows:

(a) Refer to Figure 6-320.

(b) Remove coverplate and unlatch tape lid.

(c) Ensure coverplate top surface is flush with or 0.003 inch maximum below tape guideplate top surface along width of tape lid when top plate is resting on a minimum of five or six projections on side plates.

(d) If adjustment is necessary, loosen mounting screws and mounting nuts friction tight.

(e) Position top plate and tighten mounting screws.

NOTE

Mounting nuts loosened in step (d) will be tightened after step (i) below.

(f) Tighten tape guideplate mounting nuts left friction tight during Tape Guideplate adjustment of paragraph 6-8b(6).

(g) Ensure feed wheel slot is aligned with tape guideplate slot so feed wheel rotates freely when control lever is in free position.

(h) If adjustment is necessary, move top plate toward either side plate.

(i) Tighten mounting nuts left friction tight as noted after step (e).

(j) Latch tape lid.

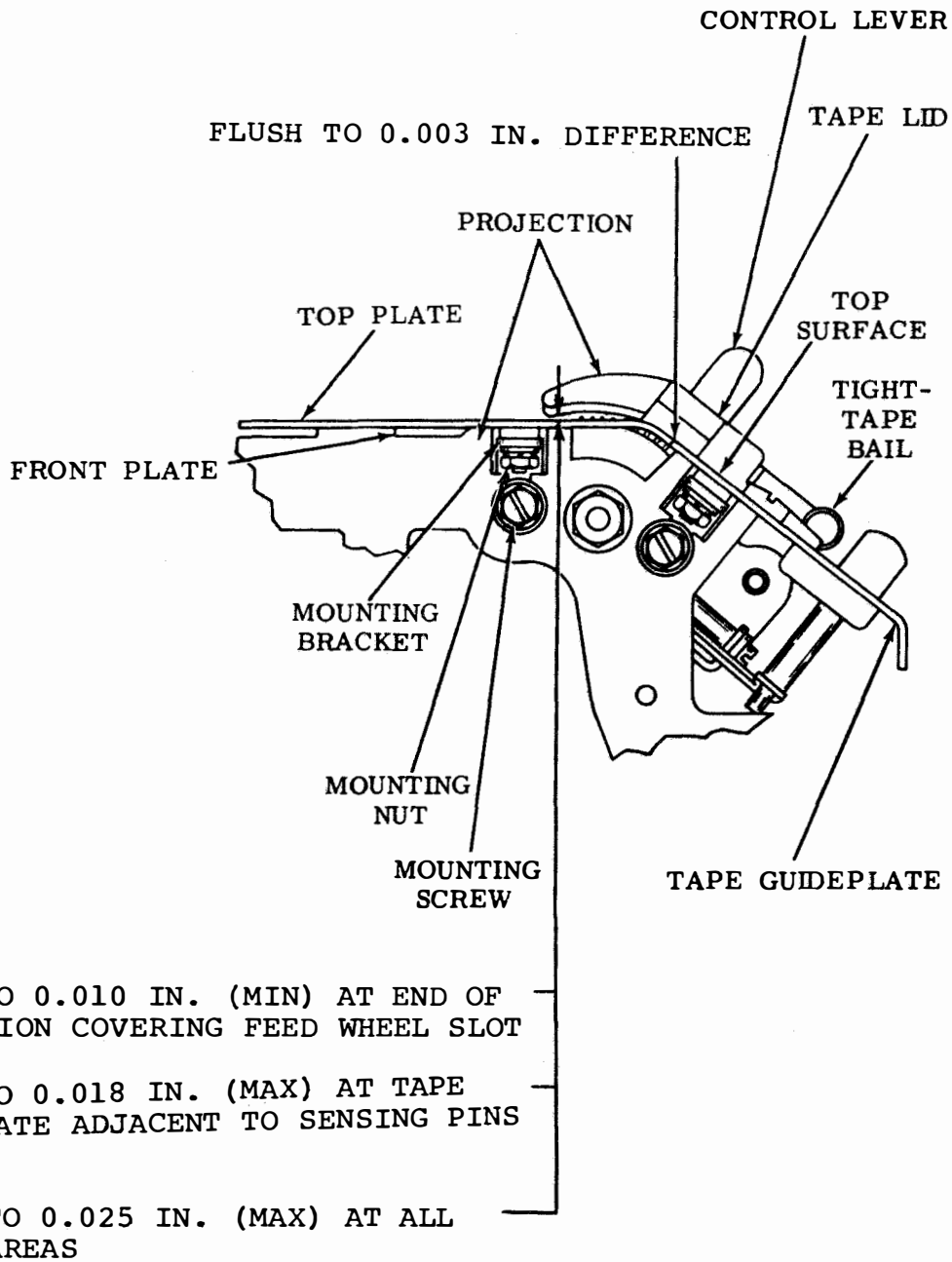


Figure 6-320. Top Plate, Front View

(k) Take up play toward tape guideplate and measure clearance between tape lid projection and top plate at the following points:

1. At end of extension covering feed wheel slot, 0.010 inch minimum.

2. At tape guideplate adjacent to sensing pins, between 0.010 and 0.018 inch maximum.

3. At all other areas, between 0.010 and 0.025 inch maximum.

(l) If clearance in step (k) exceeds specified limits, loosen tape lid bearing bracket mounting screws and position tape lid. Tighten screws.

(m) Recheck Tape Lid adjustment steps (a) through (k) in paragraph 6-8b(1).

(2) Coverplate. Adjust as follows:

(a) Refer to Figure 6-321.

(b) Ensure the following conditions:

1. Right edge of coverplate holds flush against left edge of top plate by the coverplate detents.

2. Coverplate rests against at least three of the four projections (front and rear plate).

3. Front edge of coverplate aligns with top plate.

(c) If all conditions specified in step (b) are not met, loosen detenting nut clamp screw friction tight (front end and rear plate).

(d) Move clamp screws to their extreme lower right position, then tighten clamp screws.

(e) Loosen detent bracket and spring plate mounting nuts.

(f) Place cover on unit and position horizontally to meet conditions specified in step (b).

(g) Retighten mounting nuts.

(3) Coverplate Detent Spring. Adjust as follows:

(a) Refer to Figure 6-321.

(b) Apply spring scale pushrod to center of one detent.

(c) Force required to start plunger moving should be between 28 and 48 ounces maximum.

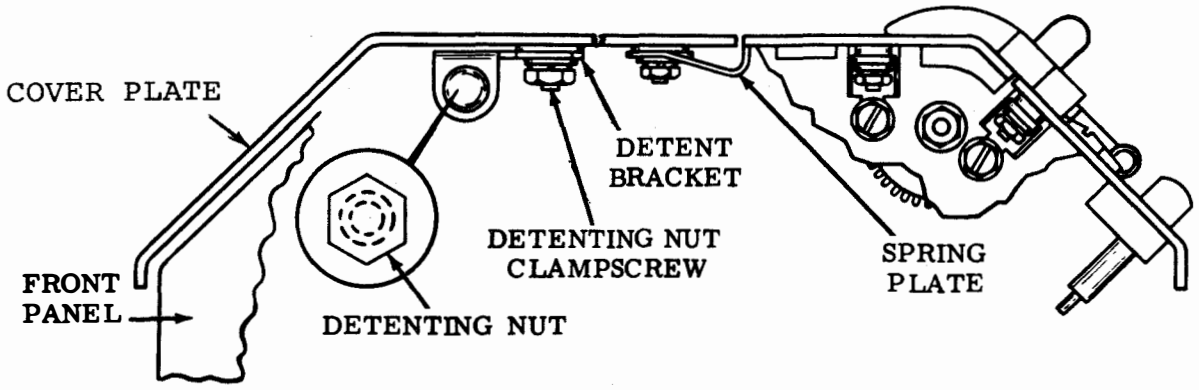
(d) If scale reading exceeds specified limits, install new spring.

d. Tape-Out Switch Assembly Adjustments. Perform the following tape-out switch assembly adjustments.

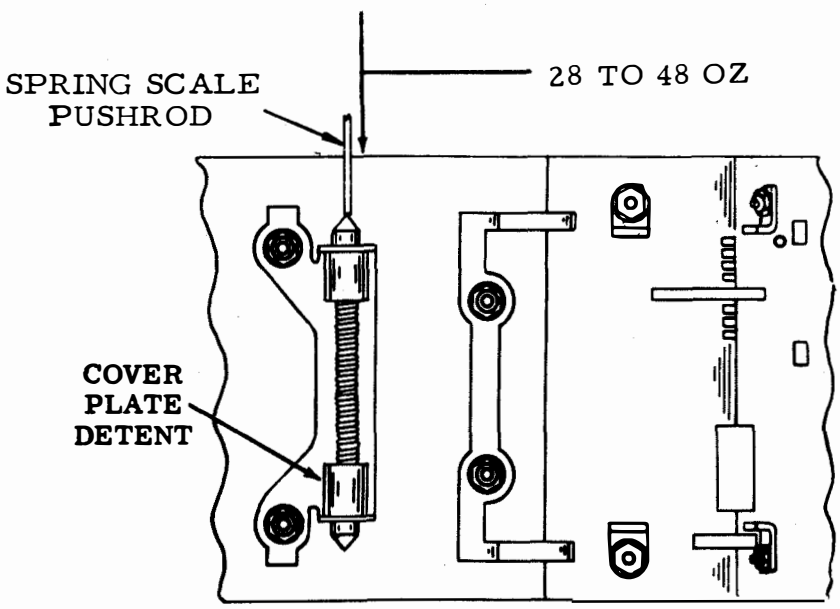
(1) Tape-Out Contact Assembly. Adjust as follows:

(a) Refer to Figure 6-322.

(b) Loosen spring bracket and move it downward until tape-out pin



FRONT VIEW



BOTTOM VIEW

Figure 6-321. Coverplate and Coverplate Detent Spring

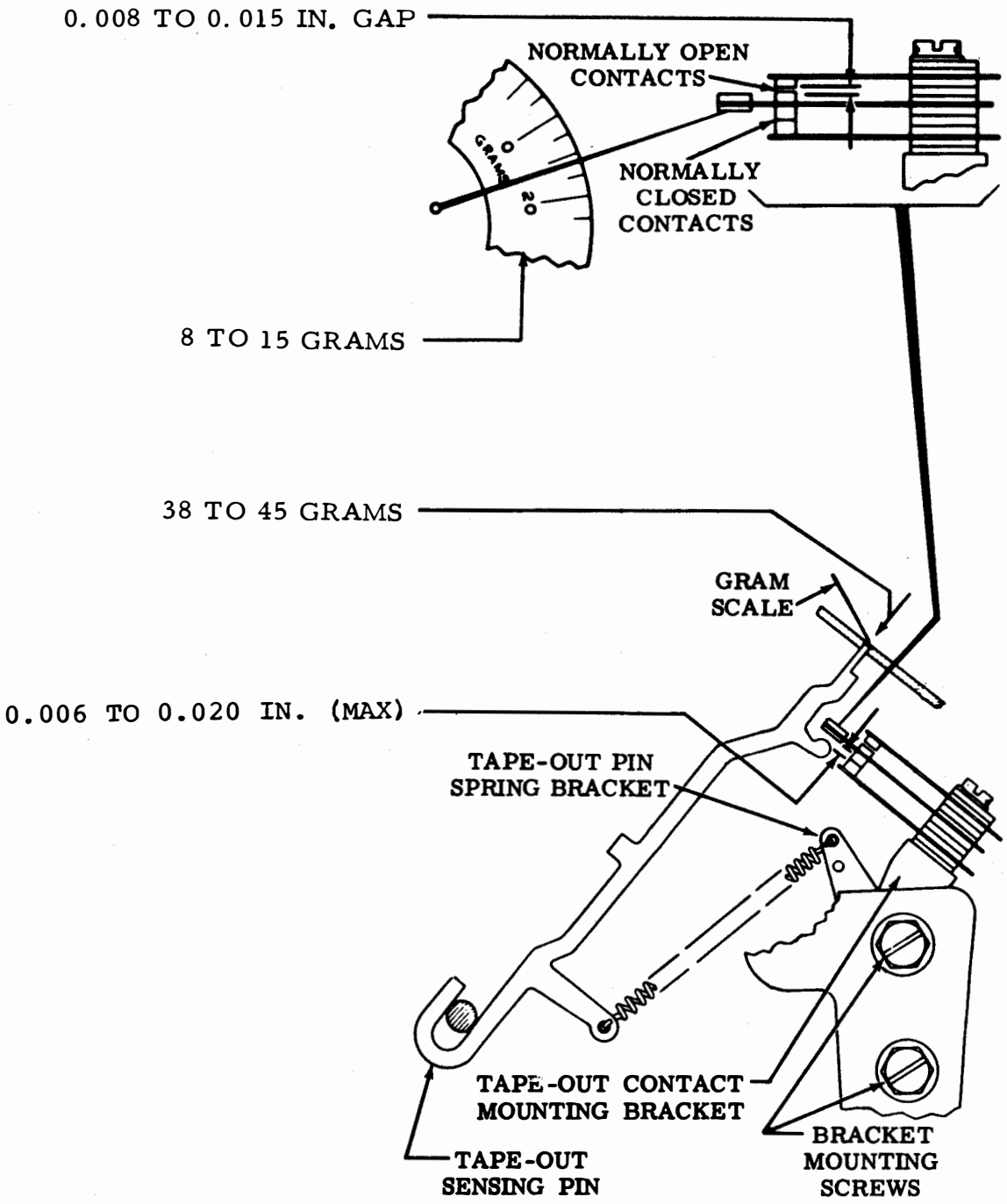


Figure 6-322. Tape-Out Contact Assembly, Tape-Out Sensing Pin Spring, and Tape-Out Contact Bracket, Front View

extension no longer touches insulation on contact swinger.

(c) Measure gap between normally-open contacts. Gap should be between 0.008 and 0.015 inch maximum.

(d) Apply gram scale to insulation on contact swinger.

(e) Force required to separate normally-closed contacts should be between 8 and 15 grams maximum.

(f) If contact gap, step (c), or contact swinger tension exceeds limits specified, step (e), unhook tape-out pin spring, remove bracket screws and remove contact assembly from unit. Form contact swinger using TP110445 spring bender.

(g) Replace contact assembly with swinger over tape-out pin extension.

(h) Place spring bracket shoulder bushing on upper hole and washer on lower mounting hole.

(i) Install tape-out pin spring.

(2) Tape-Out Sensing Pin Spring. Adjust as follows:

(a) Refer to Figure 6-322.

(b) Place control lever in RUN position.

(c) Apply gram scale to tape-out pin.

(d) Force required to move tape-out pin to a position flush with tape guideplate should be between 38 and 45 grams maximum.

(e) If scale reading exceeds specified limits, loosen lower bracket mounting screw and position spring bracket to obtain specified reading.

(f) Tighten bracket mounting screw.

(3) Tape-Out Contact Bracket. Adjust as follows:

(a) Refer to Figure 6-322.

(b) Insert tape under lid to hold tape-out pin down.

(c) Measure clearance between tape-out pin upper extension and underside of insulation on swinger contact. Clearance should be between 0.006 and 0.020 inch maximum.

(d) If clearance exceeds specified limits, loosen bracket mounting screws and adjust bracket to obtain specified clearance.

(e) Tighten bracket mounting screws.

(4) Tape-Out Sensing Pin. Adjust as follows:

(a) Refer to Figure 6-323.

(b) Place control lever in STOP position.

(c) Top of pin should be flush to 0.010 inch maximum below top surface of tape guideplate.

(d) If adjustment is required, loosen stop arm clamp screw friction tight and position stop arm to meet requirement.

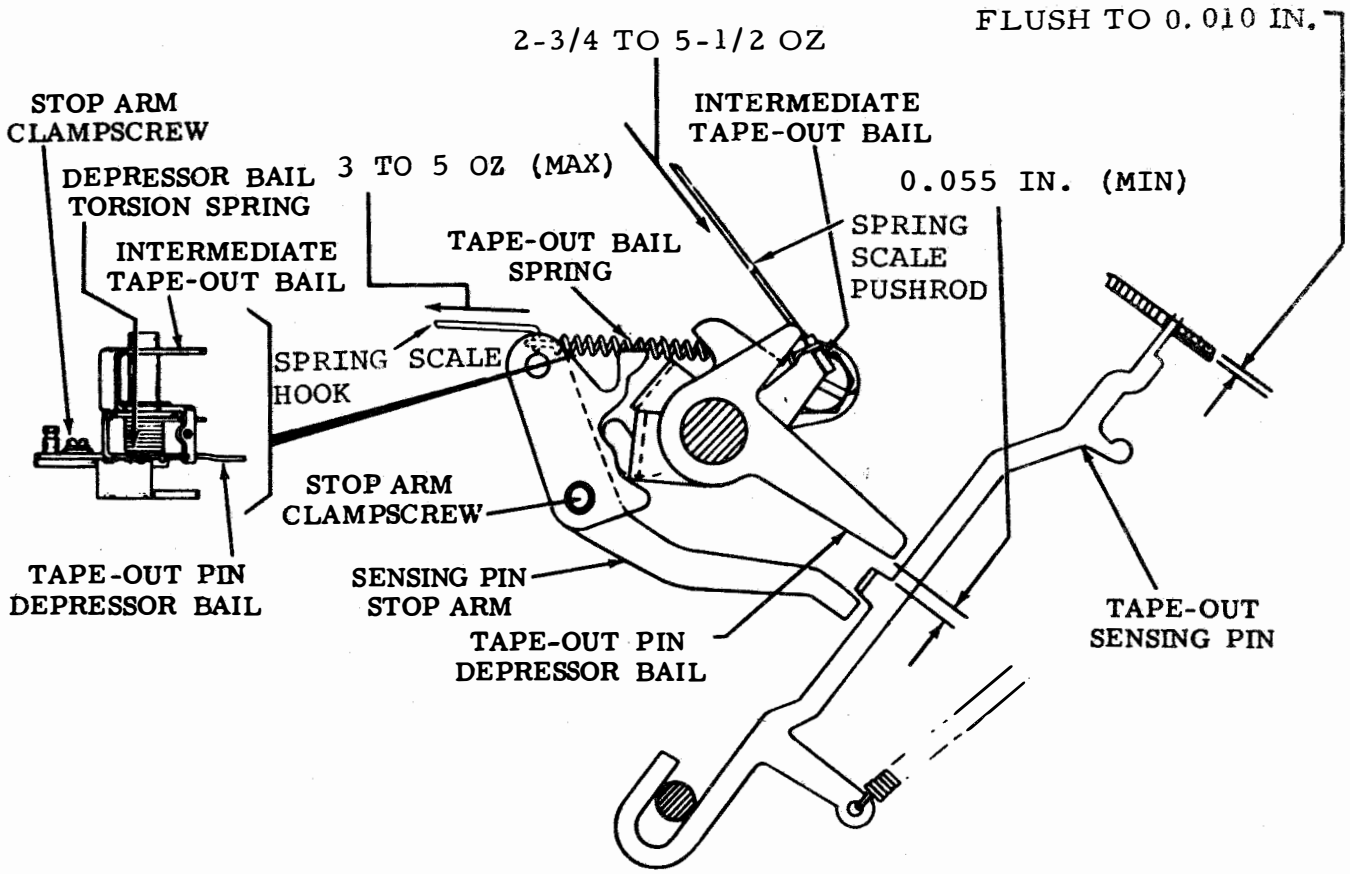


Figure 6-323. Tape-Out Sensing Pin, Depressor Bail Torsion Spring, and Intermediate Tape-Out Bail Spring, Front View

(e) Tighten stop arm clamp screw.

(f) Place control lever in RUN position.

(g) Clearance between tape-out pin depressor bail and tape-out sensing pin extension should be 0.055 inch minimum.

(h) If clearance exceeds specified limit, loosen tape-out bail clamp screw and position extension arm to meet requirement.

(i) Tighten clamp screw.

(j) Recheck step (b) through (e).

(5) Depressor Bail Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-323.

(b) Place control lever in STOP position.

(c) Unhook one end of intermediate tape-out bail spring.

(d) Apply spring scale pushrod to intermediate tape-out bail.

(e) Force required to start tape-out bail moving away from tape-out pin depressor bail should be between 2-3/4 and 5-1/2 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(6) Intermediate Tape-Out Bail Spring. Adjust as follows:

(a) Refer to Figure 6-323.

(b) Place control lever in RUN position.

(c) Unhook intermediate tape-out bail spring at post end.

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to its installed length should be between 3 and 5 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(7) Tape-Out Sensing Pin (For Units Equipped with Tape Lid Sensing Lever). Adjust as follows:

(a) Refer to Figure 6-324.

(b) Manually hold tape-out pin against stop arm.

(c) Top of pin should be flush to 0.010 inch maximum below top surface of guideplate.

(d) If adjustment is required, loosen adjusting screw and position stop arm to meet requirement of step (c).

(e) Tighten adjusting screw.

e. Start-Stop Switch Assembly and Tight-Tape Mechanism Adjustments. Perform the following start-stop switch assembly and tight-tape mechanism adjustments.

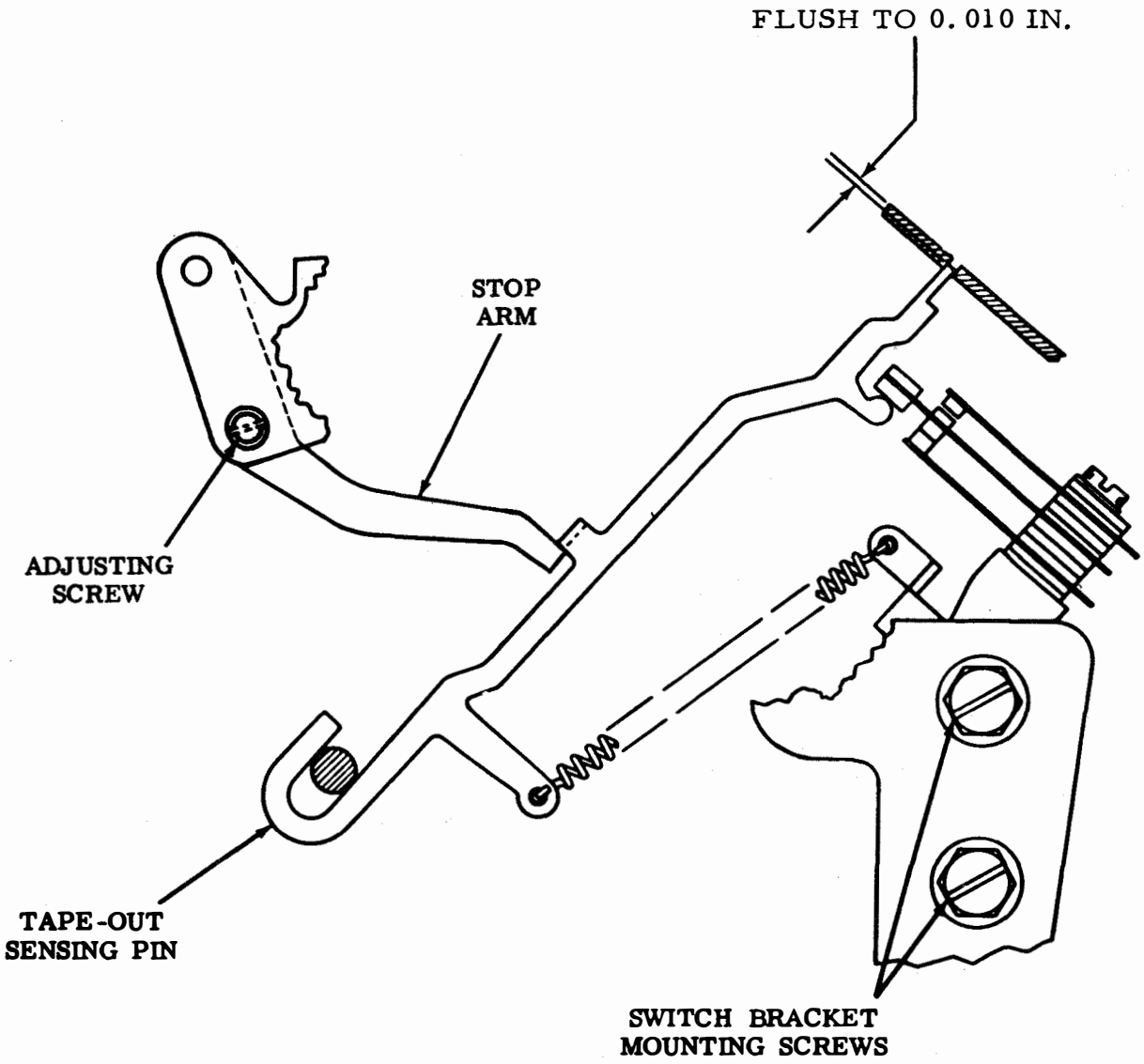


Figure 6-324. Tape-Out Sensing Pin (For Units Equipped With Tape Lid Sensing Lever), Front View

(1) Start-Stop Switch Bracket. Adjust as follows:

(a) Refer to Figure 6-325.

(b) Place control lever in RUN position and disengage clutch.

(c) Measure clearance between start-stop bail extension and insulator on start-stop switch swinger. Clearance should be between 0.006 and 0.015 inch maximum.

(d) If clearance exceeds specified limits, loosen switch bracket mounting screws and position switch bracket to meet requirements.

(e) Tighten bracket mounting screws.

(f) Ensure start-stop bail extension and contact arm fully engage the insulated portion of start-stop switch swinger.

(g) If necessary, loosen mounting screws and position start-stop switch swinger to obtain engagement.

(h) Tighten mounting screws.

(2) Tight-Tape Start-Stop Contact Spring. Adjust as follows:

(a) Refer to Figure 6-325.

(b) Place control lever in RUN position.

(c) Attach spring scale hook to contact spring and measure force required to separate contacts. This should be 3 to 4 ounces maximum.

(d) If scale reading exceeds specified limits, use TP110445 bending tool to bend contact spring to obtain specified tension.

(e) Recheck step (1) above.

(3) Start-Stop Switch Bracket (For Units Equipped with Tape Lid Sensing Lever). Adjust as follows:

(a) Refer to Figure 6-326.

(b) Position intermediate tight-tape arm to center of its adjusting range with contact arm.

(c) Ensure that tight-tape start-stop contacts remain closed when tight-tape bail is raised 0.045 inch and open as bail is raised to 0.075 inch.

(d) To adjust:

1. Loosen tight-tape intermediate arm clamp screw and position pry point midway in contact operating arm adjusting slot.

2. Re-tighten clamp screw.

3. Loosen switch bracket screws friction tight and position contact pileup to meet requirement.

4. Tighten screws.

(e) Ensure contact arm fully engages insulated part of switch swinger.

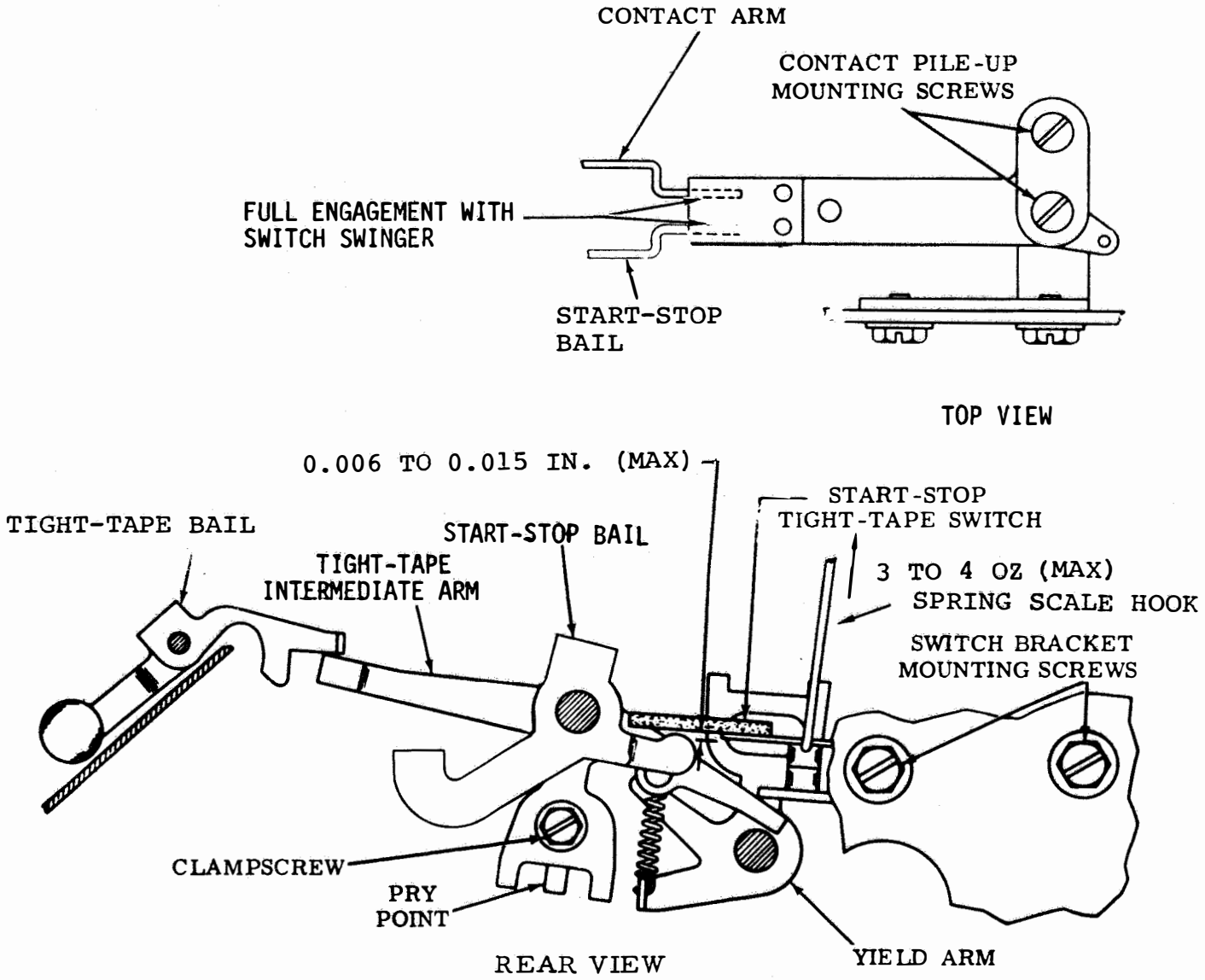
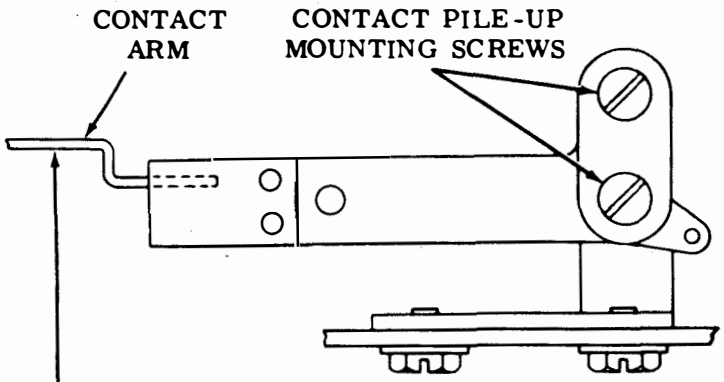


Figure 6-325. Start-Stop Switch Bracket and Tight-Tape Start-Stop Contact Spring



CONTACT ARM TO FULL ENGAGE
INSULATED PART OF SWITCH SWINGER

REMAIN CLOSED WITH BAIL RAISED 0.045 IN.
OPEN AS BAIL REACHES 0.075 IN.

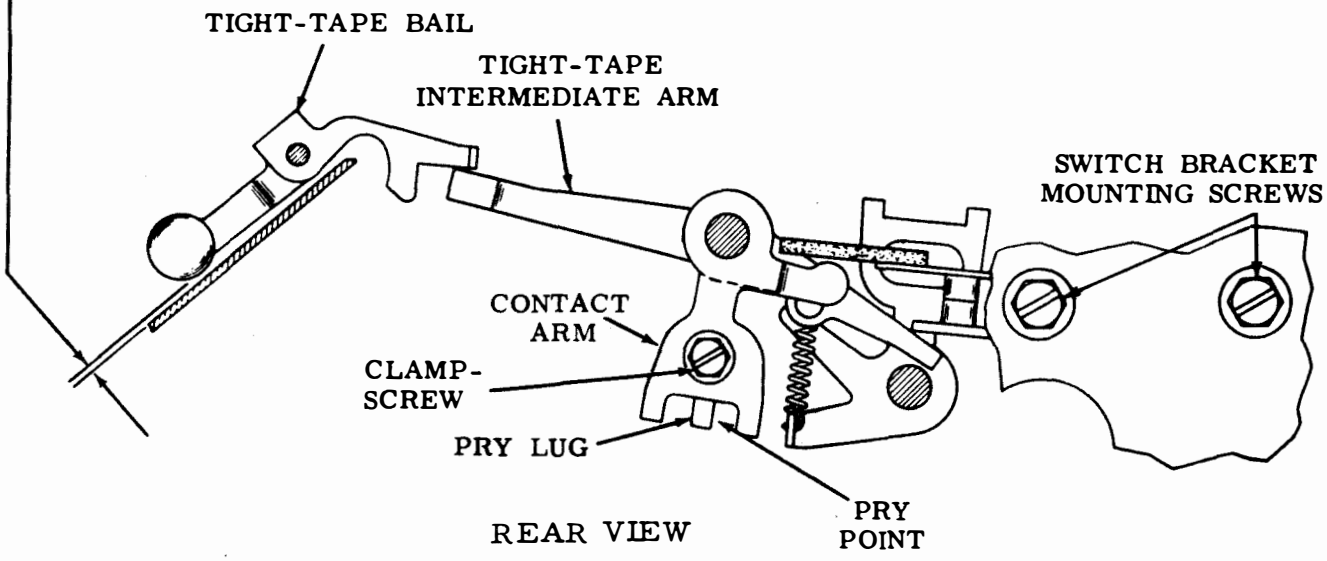


Figure 6-326. Start-Stop Switch Bracket (For Units Equipped With Tape Lid Sensing Lever)

(f) If necessary, loosen contact pileup mounting screws and position contact pileup mounting bracket.

(g) Tighten mounting screws.

(4) Tight-Tape Intermediate Arm. Adjust as follows:

(a) Refer to Figure 6-327.

(b) Place control lever in RUN position.

(c) Ensure that tight-tape start-stop contacts remain closed when tight-tape bail is raised 0.045 inch from tape guideplate and open as bail is raised to 0.075 inch.

(d) To adjust, loosen clamp screw and position tight-tape intermediate arm using pry points.

(e) Tighten clamp screw.

(5) Tight-Tape Intermediate Arm Spring. Adjust as follows:

(a) Refer to Figure 6-327.

(b) Place control lever in RUN position.

(c) Attach gram scale to yield arm and measure force required to start yield arm moving. This should be 20 to 40 grams maximum.

(d) If scale reading exceeds specified limits, install new spring.

f. Feed Wheel Mechanism Adjustments. Perform the following feed wheel mechanism adjustments.

(1) Main Bail Spring. Adjust as follows:

(a) Refer to Figure 6-328.

(b) Remove top plate, disengage clutch, and place unit on its back.

(c) Unhook main bail spring from main bail and attach spring scale hook to main bail.

(d) Force required to extend spring to its installed length should be between 6 and 10 ounces maximum.

(e) If spring scale reading exceeds specified limits, install new spring.

(2) Feed Ratchet Detent Spring. Adjust as follows:

(a) Refer to Figure 6-328.

(b) Rotate main shaft to STOP position and hold feed pawl away from its ratchet.

(c) Attach spring scale hook and measure force required to start roller spring away from ratchet. This should be 8 to 13 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(3) Main Bail Trip Lever. Adjust as follows:

(a) Refer to Figure 6-328.

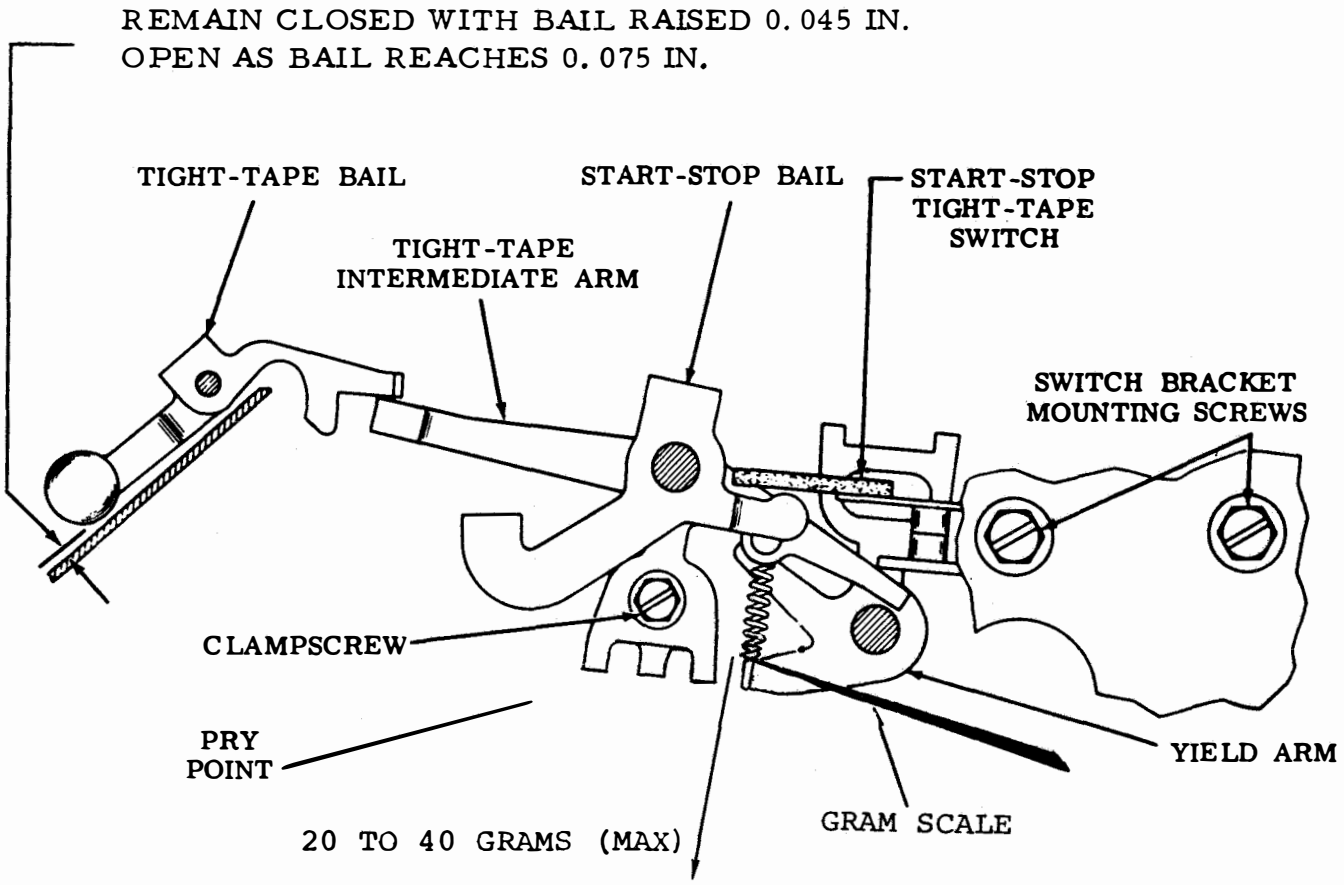


Figure 6-327. Tight-Tape Intermediate Arm and Intermediate Arm Spring, Rear View

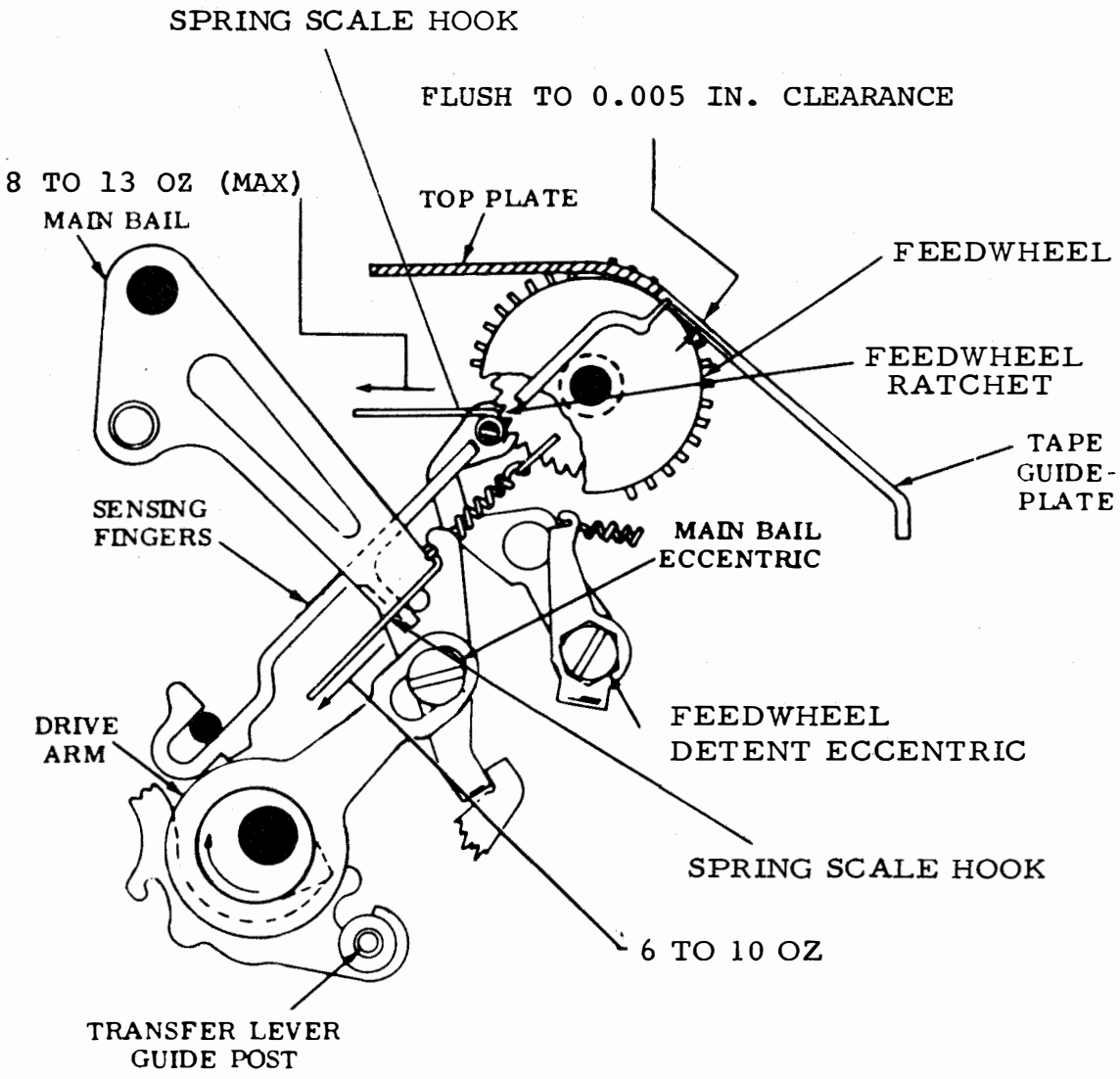


Figure 6-328. Main Bail Spring, Feed Ratchet Detent Spring, and Main Bail Trip Lever, Front View

(b) Replace top plate and place unit in STOP position.

(c) Clearance between tip of highest sensing pin and top surface of tape guideplate should be flush to 0.005 inch below.

(d) If clearance exceeds specified limits, disengage clutch and loosen front and rear transfer lever guide eccentric post locknuts.

(e) Position highest point of eccentric post (indicated by dot on end of post) to left and rotate post so its eccentric positions trip lever and tighten locknuts.

(4) Main Bail. Adjust as follows:

(a) Refer to Figure 6-329.

(b) Place main bail in lowest position.

(c) Horizontal clearance between main bail arm and main bail latchlever should measure some to 0.015 inch maximum.

(d) If clearance exceeds specified limits, loosen nut on eccentric screw.

(e) Turn main bail eccentric screw so high part is to the right.

(f) Position main bail eccentric screw to obtain specified clearance.

(g) Check and refine step (3) above, if necessary.

(5) Sensing Pin Spring. Adjust as follows:

(a) Refer to Figure 6-330.

(b) Open tape lid and disengage unit clutch.

(c) Hold armature in energized positions and rubout deleter bail (if present) away from sensing pins.

(d) Apply spring scale pushrod to each sensing pin in turn.

(e) Force required to move each sensing pin flush with surface of tape guideplate should be between 3 and 5 ounces maximum.

(f) If scale reading for any pin exceeds specified limits, install new spring.

(6) Feed Wheel Detent. Adjust as follows:

NOTE

When unit is used to read chadless tape, sensing pins should be made to favor trailing edge of code hole.

(a) Refer to Figure 6-331.

(b) Open tape lid and disengage unit clutch to place sensing pins in their lowest positions.

(c) Move high part of feed wheel ratchet detent eccentric toward right.

(d) Punch an all marking code combination on a new piece of tape. Place tape

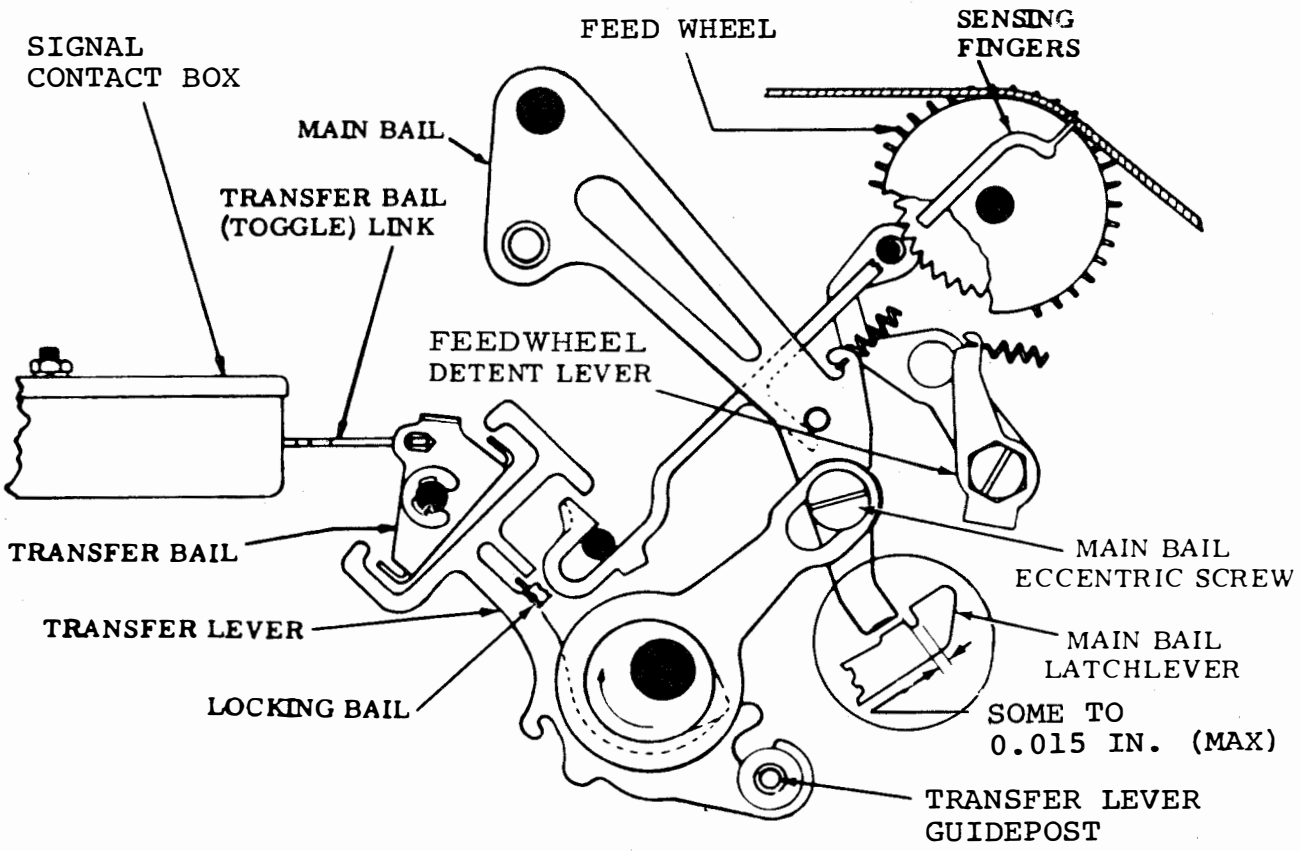


Figure 6-329. Main Bail, Front View

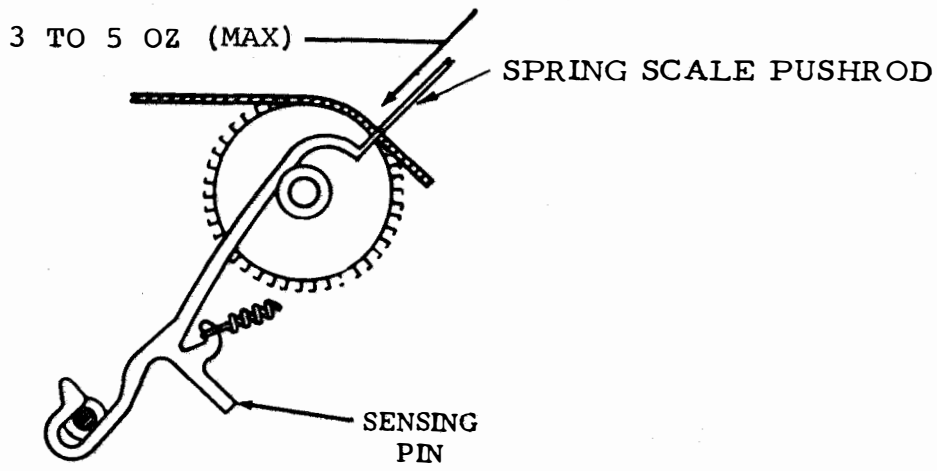


Figure 6-330. Sensing Pin Spring, Front View

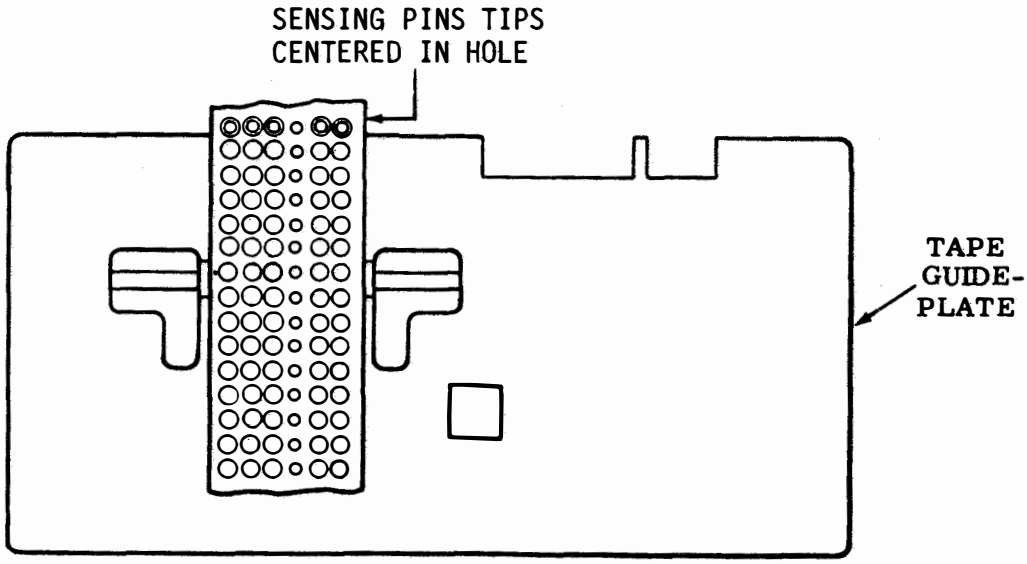


Figure 6-331. Feed Wheel Detent, Top View

on feed wheel and over sensing pins.

(e) Lightly take up play in tape toward right.

(f) Ensure tip of each pin is centrally located in its code hole.

(g) To adjust, loosen feed wheel ratchet detent eccentric to point of friction tightness and hold feed pawl away from feed wheel ratchet.

(h) Rotate feed wheel detent ratchet eccentric, keeping high part of eccentric toward right. Tighten eccentric.

(7) Feed Pawl. Adjust as follows:

(a) Refer to Figure 6-332.

(b) Remove top plate.

(c) With high part of feed pawl eccentric toward right (left for units equipped with tape withhold mechanism) as viewed from rear plate, disengage clutch to place sensing pins in their lowest positions.

(d) Clearance between feed pawl and ratchet tooth just engaged should measure some to 0.003 inch maximum.

(e) If clearance exceeds specified limits, loosen feed pawl eccentric locknut and position feed pawl eccentric. Repeat steps (c) and (d) at four positions on feed wheel ratchet spaced approximately 90 degrees apart.

(f) Tighten locknut.

(8) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-332.

(b) Rotate unit clutch to STOP position.

(c) Attach spring scale hook to feed pawl and measure force required to start pawl moving. This should be 2 to 3-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

g. Transfer Mechanism Adjustments. Perform the following transfer mechanism adjustments.

(1) Transfer Lever Spring. Adjust as follows:

(a) Refer to Figure 6-333.

(b) Disengage unit clutch.

(c) Apply spring scale pushrod to each transfer lever in turn and measure force required to start each transfer lever spring moving. This should be 1/2 to 1-1/2 ounces maximum.

(d) If scale reading for any spring exceeds specified limits, install new spring.

(2) Locking Bail Spring. Adjust as follows:

(a) Refer to Figure 6-334.

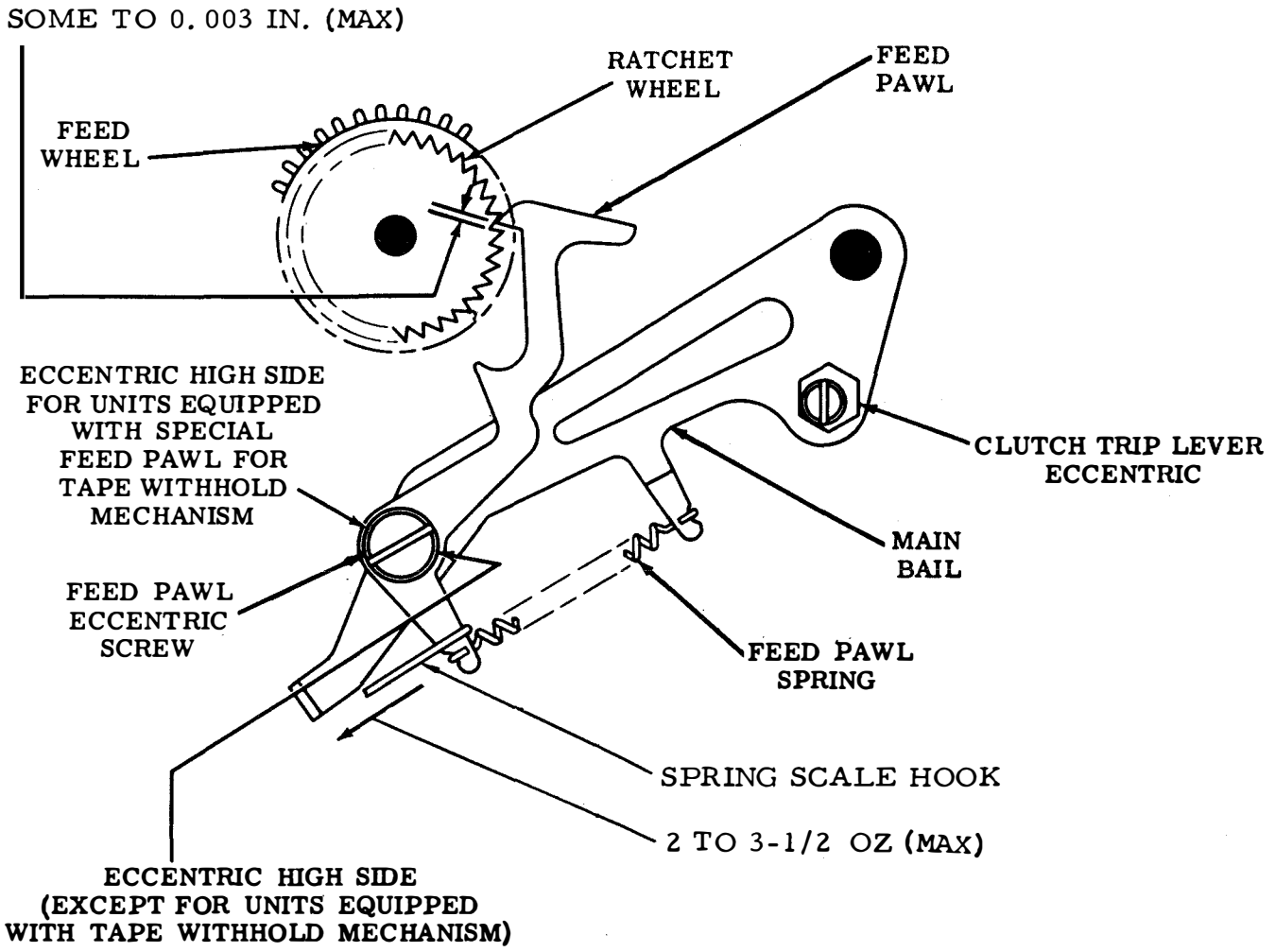


Figure 6-332. Feed Pawl and Feed Pawl Spring, Rear View

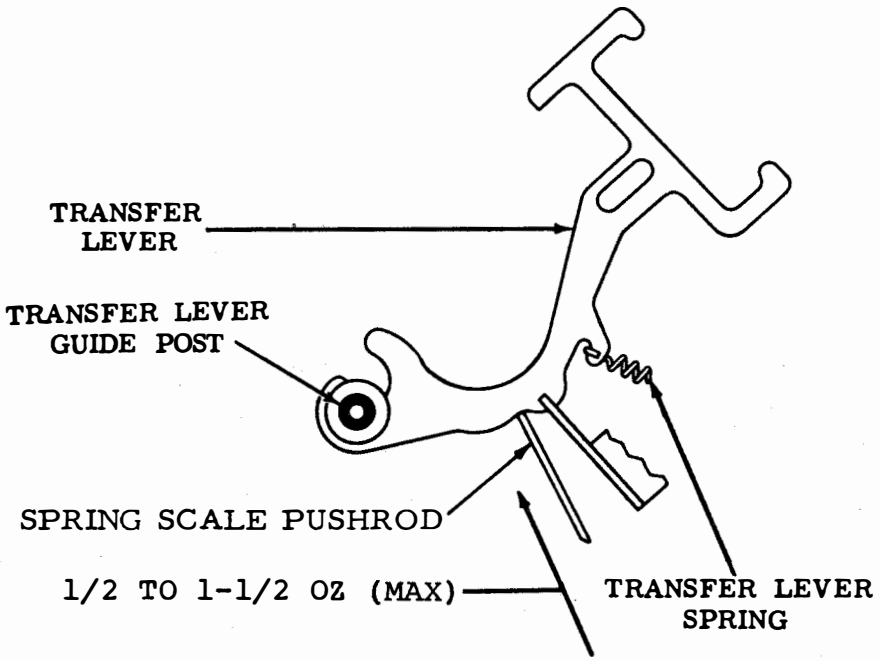


Figure 6-333. Transfer Lever Spring, Rear View

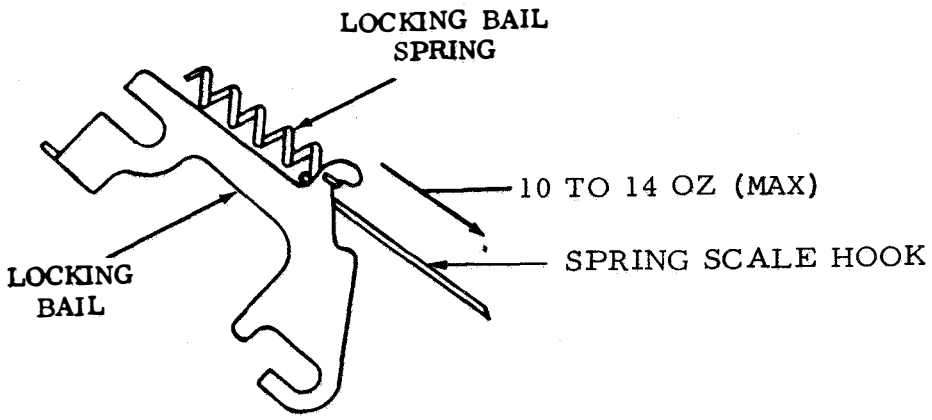


Figure 6-334. Locking Bail Spring, Front View

(b) Attach spring scale hook to locking bail and measure force required to extend locking bail spring to its installed length. This should be 10 to 14 ounces maximum.

(c) If scale reading exceeds specified limits, install new spring.

(3) Transfer Bail Stabilizer. Adjust as follows:

(a) Refer to Figure 6-335.

(b) Select a LETTERS combination (12345).

(c) Rotate main shaft until number three transfer lever is on high part of its cam.

(d) Measure and note clearance between side of transfer bail extension and marking latch.

(e) Select BLANK combination (-----).

(f) Rotate main shaft until number three transfer lever is on high part of its cam.

(g) Measure and note clearance between side of transfer bail extension and spacing latch.

(h) Difference between clearances noted in steps (d) and (g) should be equal within 0.002 inch.

(i) If difference exceeds specified limit, loosen stabilizer assembly mounting screws friction tight and position assembly to equalize clearances. Tighten screws.

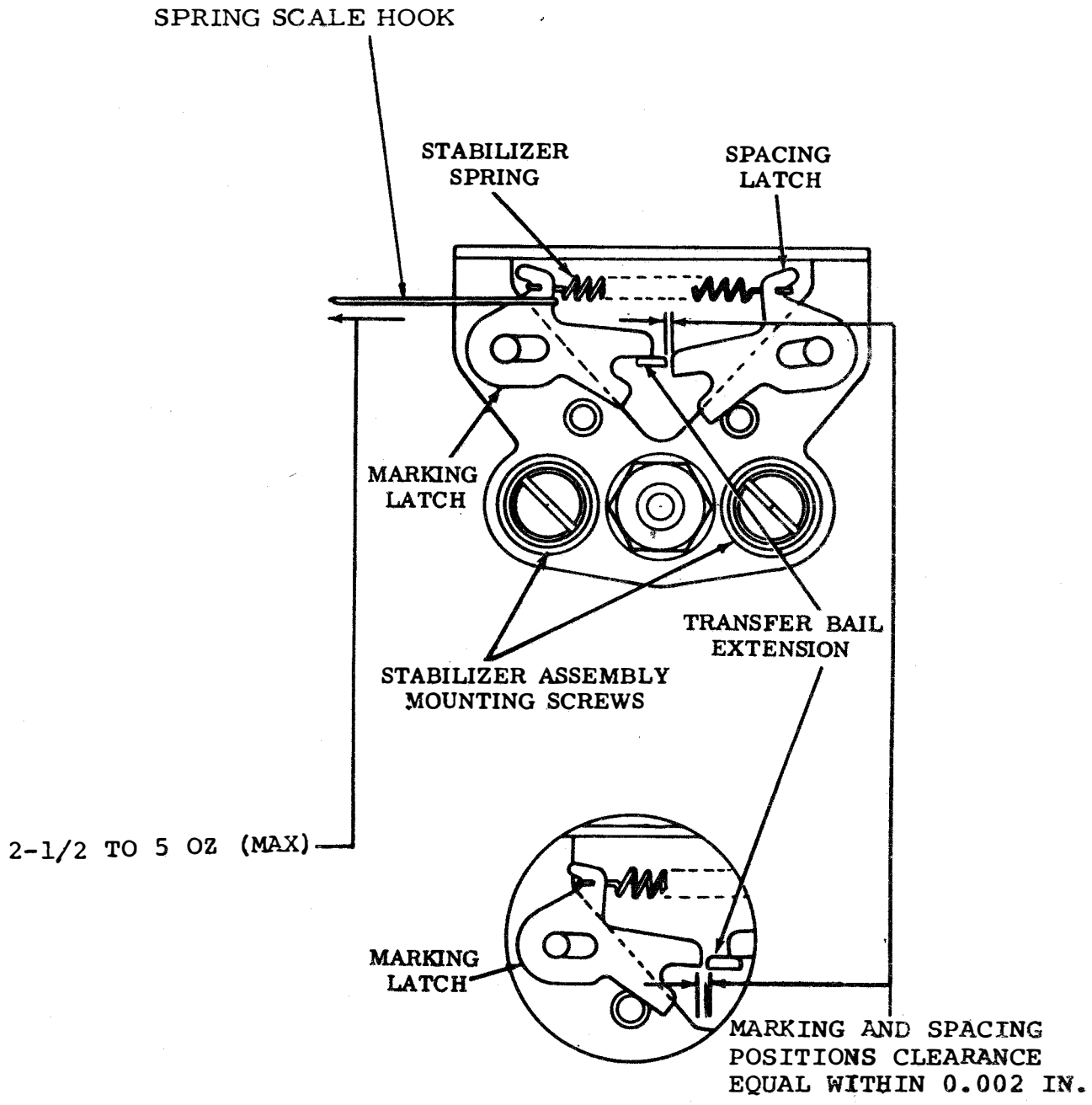


Figure 6-335. Transfer Bail Stabilizer and Stabilizer Spring, Front View

(4) Stabilizer Spring. Adjust as follows:

NOTE

Latches should drop in place as other transfer levers cam the transfer bail.

(a) Refer to Figure 6-335.

(b) Rotate clutch to STOP position.

(c) Attach spring scale hook to marking latch and measure force required to start stabilizer latch moving. This should be 2-1/2 to 5 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

h. Signal Contacts Adjustments. Perform the following signal contacts adjustments.

CAUTION

If contacts are gold-plated clean them by partially drawing a strip of TP107162 twill jean between them.

(1) Signal Contact Clearance. Adjust as follows:

(a) Refer to Figure 6-336.

(b) Remove coverplate and signal contact box cover.

(c) Engage unit clutch and rotate main shaft slowly until spacing contact is fully open.

(d) Measure and note spacing contact gap.

(e) Continue rotating main shaft until marking contact is fully open.

(f) Measure and note marking contact gap.

(g) Difference between spacing and marking contact gaps, steps (d) and (f), should be equal within 0.001 inch.

(h) If difference exceeds specified limit, loosen mounting screws.

(i) Use eccentric to position contact box to equalize spacing and marking gap.

(j) Tighten mounting screws.

NOTE

Before operating, refine signal contact clearance adjustment as described in Signal Contacts-Electrical, paragraph 6-8h(4).

(2) Drive Link Spring. Adjust as follows:

(a) Refer to Figure 6-336.

(b) Trip clutch and rotate shaft to STOP position.

(c) Unhook stabilizer spring, move latches away from transfer bail extension, and hold toggle firmly against spacing contact.

(d) Attach spring scale hook to drive link

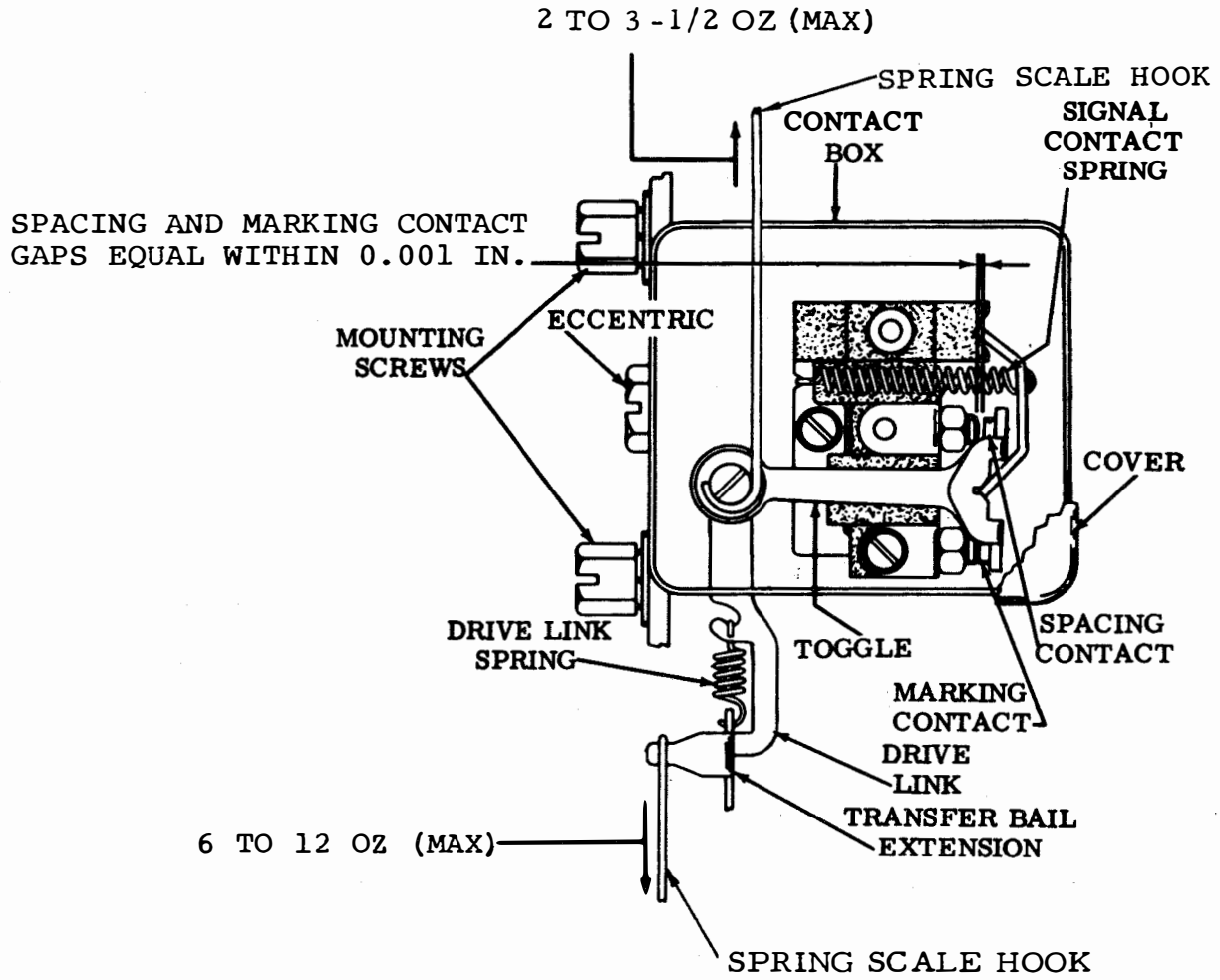


Figure 6-336. Signal Contact Clearance, Drive Link Spring, and Signal Contact Spring, Right Side Top View

and measure force required to start transfer bail extension moving. This should be 6 to 12 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(f) Reconnect stabilizer spring.

(3) Signal Contact Spring. Adjust as follows:

(a) Refer to Figure 6-336.

(b) Place transmitter in STOP position.

(c) Remove contact box cover, unhook drive link end of toggle drive link spring and move transfer bail toward right (spacing) position so both toggle contacts are closed.

(d) Hook an 8-ounce spring scale over pivot screw and pull horizontally to left.

(e) Force required to open left-hand contact should be 2 to 3-1/2 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(g) Reconnect drive link end of toggle drive link spring.

(4) Signal Contacts - Electrical. Adjust as follows:

NOTE

Gold-plated signal contacts should not be electrically adjusted unless there is an intermediate device available which, when keyed by signal contacts, will interrupt the current to the stroboscopic test set. The intermediate device must be capable of being keyed by a 3- to 20-volt change in voltage at a current not in excess of 20 milliampere. The standard stroboscopic test set operating voltage must not be applied directly to the signal contacts because of the possibility of damaging the gold-plating on the contacts thus impairing their operating efficiency in low-level application.

(a) Refer to Figure 6-337.

(b) Use strobing adjustment procedure to check and adjust signal contacts electrically and refine mechanical adjustments for transmitter distributor unit. Use same procedure for checking both marking and spacing pulses for both 5-level and 6-level and all unit codes. Data appropriate to each level and unit code is tabulated in Tables 6-2, 6-3, and 6-4. Use data from appropriate Table to make marking and spacing pulses for all units.

(c) Following is a general adjustment procedure for adjusting marking pulse. Data appropriate to a 5-level, 7.42 unit code from Table 6-3 is included parenthetically as an example.

1. Plug a signal distortion set having the appropriate scale (7.42) into signal line so marking contacts of transmitter distributor unit

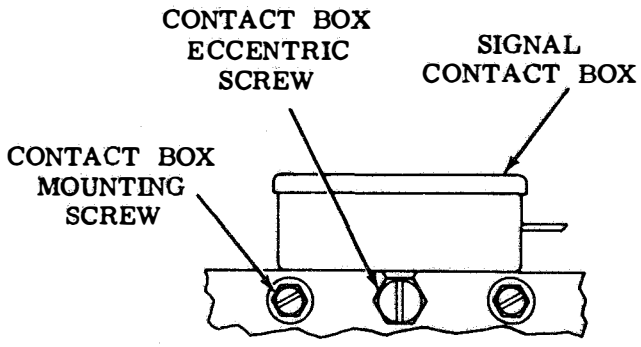


Figure 6-337. Signal Contacts - Electrical, Front View

under test will interrupt the current to stroboscopic lamp in DXD.

2. Have tranmitter distributor unit transmitting "Y" or "R" continuously, and test set and transmitter distributor unit operating at same speed (100 wpm).

3. Rotate test scale to align 0-scale mark of START segment (end of STOP segment) with end of stop pulse image indicated by the rotating strobe light.

NOTE

End of stop pulse image should not vary more than one division in either direction when scale is positioned so variation is centered about 0-scale mark of START segment.

4. Check position of each pulse against position tabulated. Each pulse should be in its designated segment on test scale within specified tolerance Figure (15 divisions).

NOTE

Each marking code pulse may have one break, provided the break is not longer than allowable break width (1 division) specified and the break comes within the tolerance range (5 divisions) and end of pulse.

5. To adjust, loosen two contact box mounting screws friction tight.

Table 6-2. Pulse Data - Five-Level Unit, 7.00 Units Code

Pulse	Marking		Spacing	
Range	*Nominal	Tolerance	*Nominal	Tolerance
Stop Pulse	36 (Stop) to 142 (Stop)	Begin ±5 Div End ±1/2 Div	36 (Stop) to 142 (Start)	Begin ±6 Div End ±1/2 Div
Start Pulse	142 (Stop) to 6 (One)	Begin ±5 Div End ±5 Div	142 (Stop) to 6 (One)	Begin ±6 Div End -5, +6 Div
Pulse 1	6 (One) to 12 (Two)	Begin ±5 Div End ±5 Div	6 (One) to 12 (Two)	Begin ±6 Div End -5, +6 Div
Pulse 2	12 (Two) to 18 (Three)	Begin ±5 Div End ±5 Div	12 (Two) to 18 (Three)	Begin ±6 Div End -5, +6 Div
Pulse 3	18 (Three) to 24 (Four)	Begin ±5 Div End ±5 Div	18 (Three) to 24 (Four)	Begin ±6 Div End -5, +6 Div
Pulse 4	24 (Four) to 30 (Five)	Begin ±5 Div End ±5 Div	24 (Four) to 30 (Five)	Begin ±6 Div End -5, +6 Div
Pulse 5	30 (Five) to 36 (Stop)	Begin ±5 Div End ±5 Div	30 (Five) to 36 (Stop)	Begin ±6 Div End -6, +6 Div
Allowable Break Width	1 Div	Must fall within pulse tolerance	1 Div	Must fall within pulse tolerance

*Ranges specified apply only for test sets (DXD(having a 7.42 unit code scale.

Table 6-3. Pulse Data - Five-Level Units, 7.42 Unit Code

Pulse	Marking		Spacing	
Range	*Nominal	Tolerance	*Nominal	Tolerance
Stop Pulse	0 (Stop) to 0 (Start)	Begin ±5 Div End ±1/2 Div	0 (Stop) to 0 (Start)	Begin ±6 Div End ±1/2 Div
Start Pulse	0 (Start) to 0 (One)	Begin ±5 Div End ±5 Div	0 (Start) to 0 (One)	Begin ±6 Div End ±6 Div
Pulse 1	0 (One) to 0 (Two)	Begin ±5 Div End ±5 Div	0 (One) to 0 (Two)	Begin ±6 Div End -5, +6 Div
Pulse 2	0 (Two) to 0 (Three)	Begin ±5 Div End ±5 Div	0 (Two) to 0 (Three)	Begin ±6 Div End -5, +6 Div
Pulse 3	0 (Three) to 0 (Four)	Begin ±5 Div End ±5 Div	0 (Three) to 0 (Four)	Begin ±6 Div End -5, +6 Div
Pulse 4	0 (Four) to 0 (Five)	Begin ±5 Div End ±5 Div	0 (Four) to 0 (Five)	Begin ±6 Div Begin ±6 Div
Pulse 5	0 (Five) to 0 (Stop)	Begin ±5 Div End ±5 Div	0 (Five) to 0 (Stop)	Begin ±6 Div End -5, +6 Div
Allowable Break Width	±1 Div	Must fall within tolerance limits	±1 Div	Must fall within tolerance limits

*Ranges specified apply only for test sets (DXD(having a 7.42 unit code scale.

Table 6-4. Pulse Data - Six Level Units, 8.50 Unit Code

Pulse	Marking		Spacing	
Range	*Nominal	Tolerance	*Nominal	Tolerance
Stop Pulse	0 (Stop) to 0 (Start)	Begin ±7 Div End ±1/2 Div	0 (Stop) to 0 (Start)	Begin ±8 Div End ±1/2 Div
Start Pulse	0 (Start) to 0 (One)	Begin ±7 Div End ±7 Div	0 (Start) to 0 (One)	Begin ±8 Div End ±8 Div
Pulse 1	0 (One) to 0 (Two)	Begin ±7 Div End ±7 Div	0 (One) to) (Two)	Begin ±8 Div End ±8 Div
Pulse 2	0 (Two) to 0 (Three)	Begin ±7 Div End ±7 Div	0 (Two) to 0 (Three)	Begin ±8 Div End ±8 Div
Pulse 3	0 (Three) to 0 (Four)	Begin ±7 Div End ±7 Div	0 (Three) to 0 (Four)	Begin ±8 Div End ±8 Div
Pulse 4	0 (Four) to 0 (Five)	Begin ±7 Div End ±7 Div	0 (Four) to 0 (Five)	Begin ±8 Div End ±8 Div
Pulse 5	0 (Five) to 0 (Six)	Begin ±7 Div End ±7 Div	0 (Five) to 0 (Six)	Begin ±8 Div End ±8 Div
Pulse 6	0 (Six) to 0 (Stop)	Begin ±7 Div End ±7 Div	0 (Six) to 0 (Stop)	Begin ±8 Div End ±8 Div
Allowable Break Width	1 Div	Must lie within tolerance limits	1 Div	Must lie within tolerance limits

*Ranges specified apply only for test sets (DXD(having a 7.42 unit code scale.

6. Rotate eccentric of contact box mounting bracket to right or left until requirements above are met.

7. Tighten mounting screws and recheck adjustment.

NOTE

If signal requirements cannot be met, refine Transmitter Distributor Gear Backlash adjustment, paragraphs 6-8i(1) and (2), and Transfer Bail Stabilizer adjustment, paragraph 6-8g(3).

(d) The general adjustment procedure for adjusting spacing pulse is identical to that outlined for marking pulse, step (c) above, but tolerances may differ. Refer to appropriate Table for pulse data when making adjustment.

i. Basic Gear Adjustments. Perform the following basic gear adjustments.

(1) Intermediate Gear. Adjust as follows:

(a) Refer to Figure 6-338.

(b) Ensure amount of backlash between intermediate driving gear and transmitter distributor unit gear is barely perceptible.

(c) If adjustment is necessary, loosen three mounting screws which hold transmitter distributor unit to its base and position unit to meet requirement.

(d) Tighten mounting screws.

(2) Transmitter Distributor Gear Backlash. Adjust as follows:

(a) Refer to Figure 6-338.

(b) Ensure amount of backlash between drive gear and transmitter distributor unit distributor gear is barely perceptible.

(c) If adjustment is necessary, loosen three mounting screws which hold transmitter distributor unit to its base.

(d) Position transmitter distributor unit to obtain barely perceptible backlash.

(e) Tighten mounting screws.

6-9. MOTOR UNIT ADJUSTMENTS. The following paragraphs describe motor unit adjustment procedures for high-level and low-level operation.

WARNING

The electric power shall be disconnected before the apparatus is removed from its protective housing. Where operation of the apparatus after its removal from the housing is required, power shall be applied with appropriate precautionary measures taken to prevent accident.

a. Standard and Heavy Duty Synchronous Motor Unit Adjustments. Perform the following standard

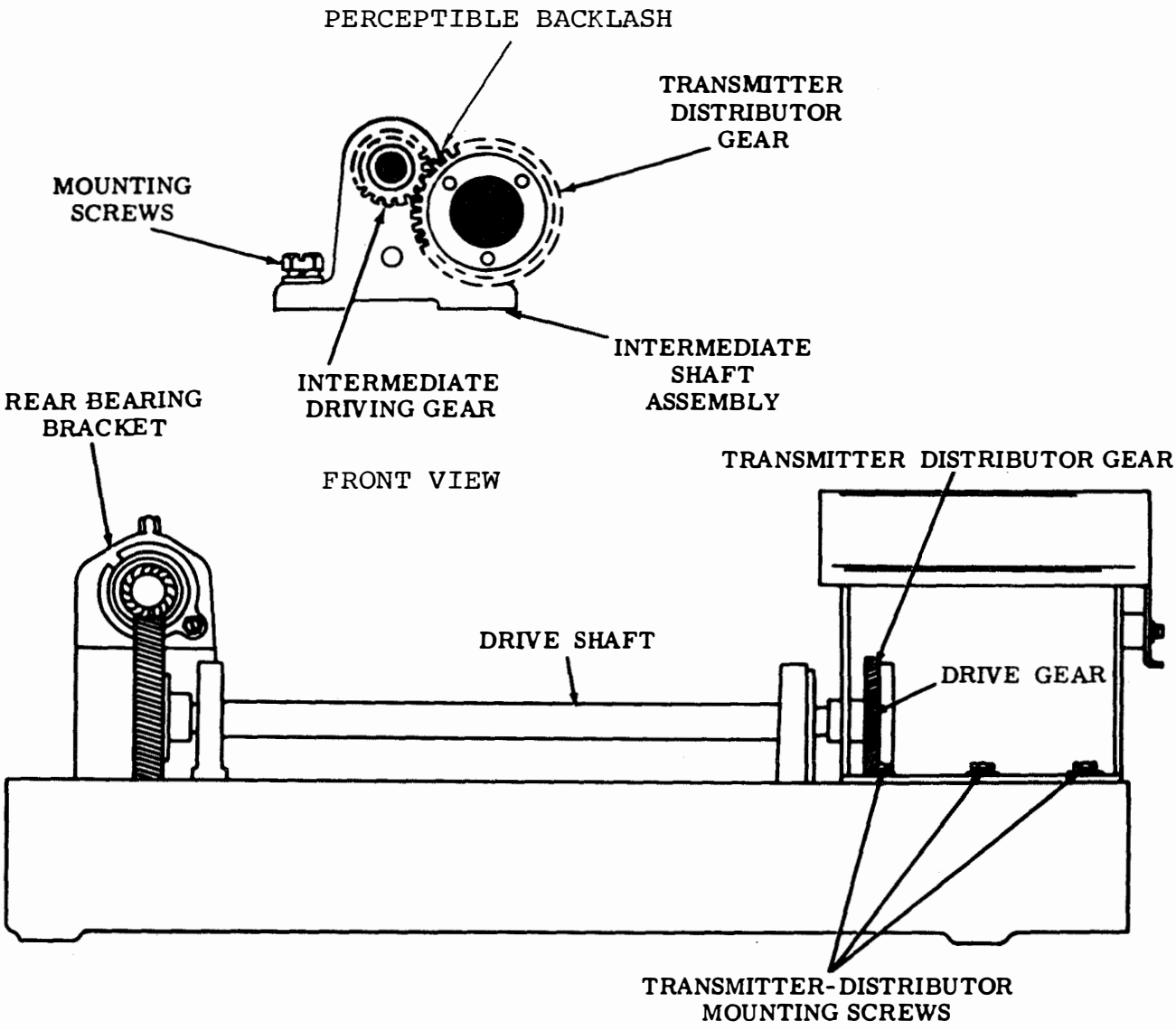


Figure 6-338. Intermediate Gear - Transmitter Distributor Gear Backlash

and heavy duty synchronous motor unit adjustments.

CAUTION

If motor becomes blocked, for several seconds, thermostatic cutout switch (on units so equipped) will break circuit. Should this happen, allow motor to cool at least 5 minutes before depressing red reset button. Avoid repeated resetting.

(1) Motor Positioning. Adjust as follows:

(a) Refer to Figure 6-339.

(b) For upright mounted motor, oilers should be upward and approximately equidistant from a vertical line through motor shaft.

(c) For inverted mounted motor, oiler should be downward and approximately equidistant from a vertical line through motor shaft.

(d) To adjust, loosen the two clamp screws and position motor. Tighten screws.

(2) Centrifugal Switch. Adjust as follows:

(a) Refer to Figure 6-340.

(b) With motor stopped (centrifugal switch extends towards contacts) and contact assembly closed, there should be a minimum of 0.020 inch overtravel, as gauged by eye.

(c) To adjust, loosen contact assembly screws friction tight and position contact assembly. Tighten screws.

(d) With motor running (centrifugal switch toward motor) there should be 0.015 to 0.025 inch maximum clearance between contacts.

(e) To adjust, stop motor and loosen contact assembly screws friction tight. Readjust step (c) and tighten screws.

(f) Clearance between centrifugal switch assembly and metal cover should be 0.050 inch minimum.

(g) To adjust, loosen mounting cover screws friction tight and lower cover until interference is felt. Then raise cover to meet requirement and tighten screws.

b. Series Governed Motor Unit Adjustments. Perform the following series governed motor unit adjustments.

CAUTION

Excessive pressure against governor cover assembly during removal may damage screened window.

(1) Motor Positioning. Adjust as follows:

(a) Not illustrated.

(b) Motor should be centrally positioned in its rubber mounts so as to provide at least 0.020 clearance between the motor housing and the cradle at the governor end.

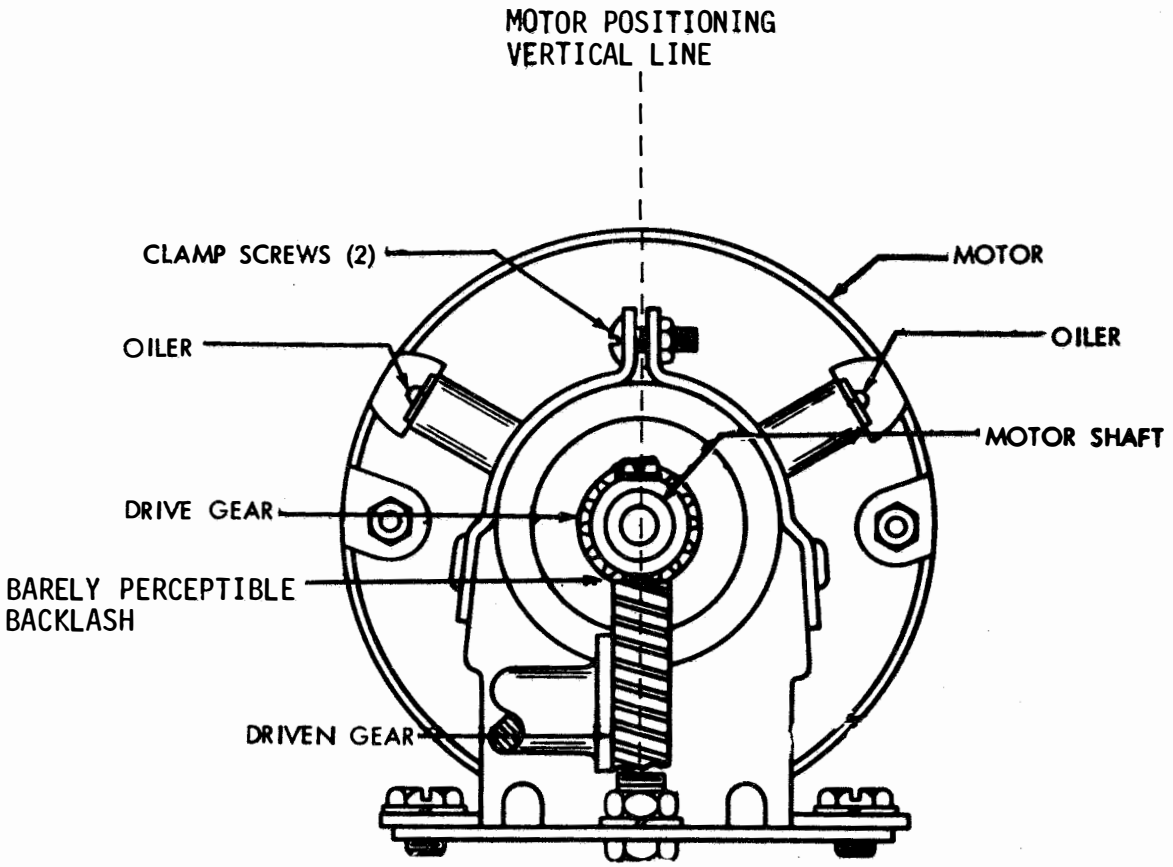
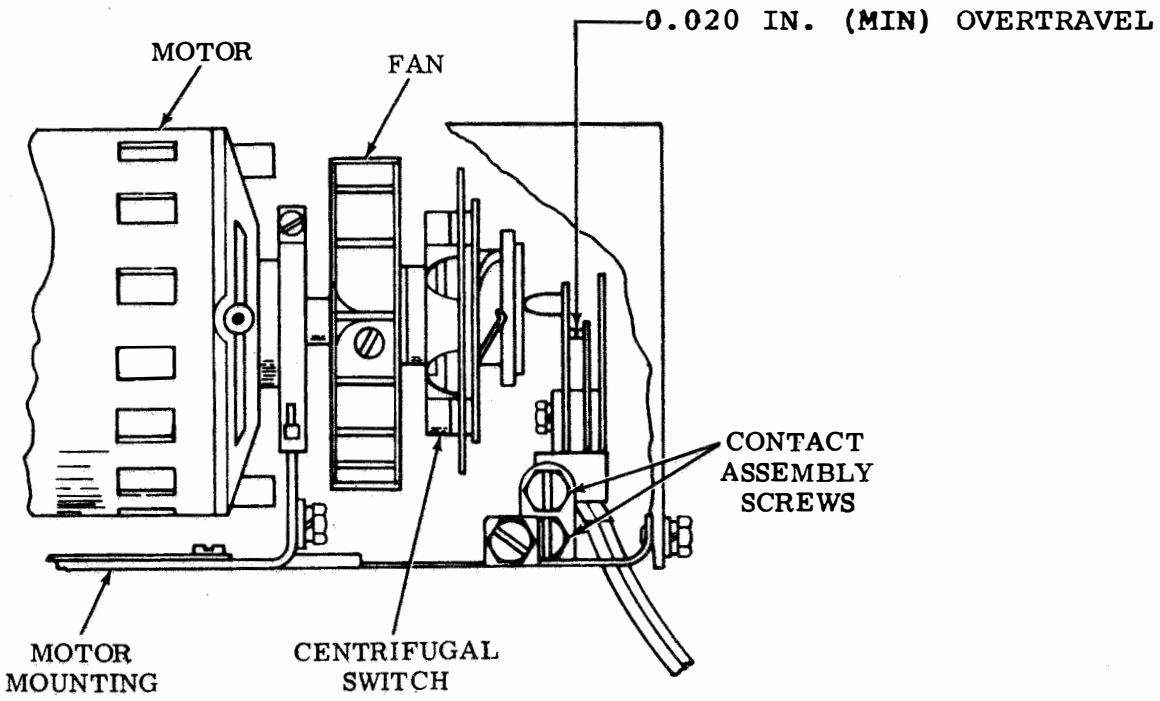


Figure 6-339. Motor Positioning



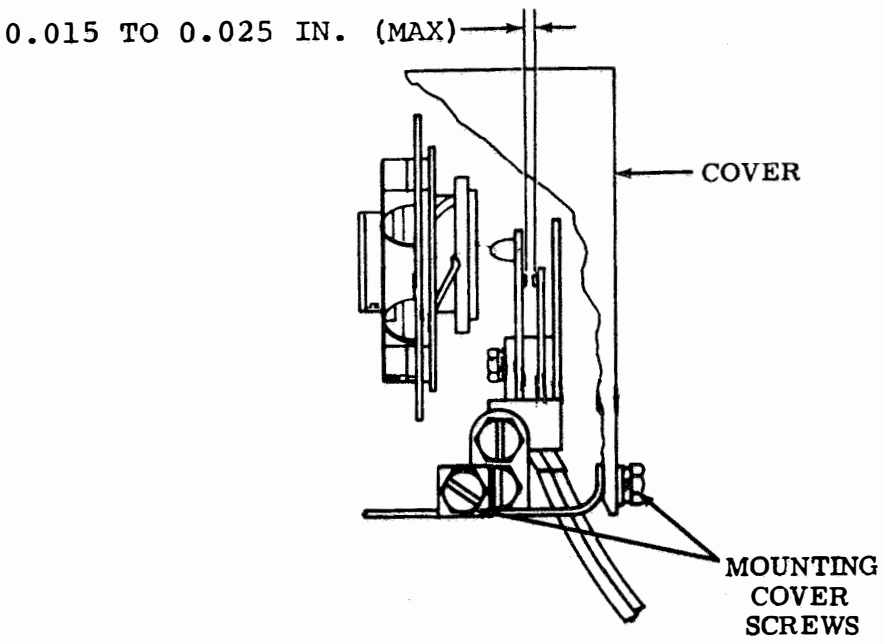


Figure 6-340. Centrifugal Switch, Side View

The cable should also clear the grommet in the screen by at least 0.030 inch.

(2) Governor Contact. Adjust as follows:

(a) Refer to Figure 6-341.

(b) The contact should meet squarely and not overlap more than 0.010 inch.

(c) To adjust, loosen contact arm clamp screw and post. Position stationary contact arm and tighten screw and post.

(3) Governor Contact Backstop. Adjust as follows:

(a) Refer to Figure 6-341.

(b) Clearance between movable contact arm and its eccentric backstop should be 0.020 to 0.040 inch maximum.

(c) To adjust, loosen clamping screw and rotate eccentric backstop. Tighten screw.

(4) Governor Brush Spring. Adjust as follows:

(a) Refer to Figure 6-342.

(b) Remove governor fan.

(c) Apply spring scale pushrod to brush and measure force required to move spring flush with brush cover. This should be 4 to 6 ounces maximum.

(d) If requirement is not met, replace spring.

(e) Check governor brushes for wear and replace any brush that is worn to length of approximately 15/32 inch (2/3 of original length).

(5) Motor Speed Adjustment. Adjust as follows:

(a) Refer to Figure 6-343.

(b) With target illuminated and viewed through the vibrating shutters of a 120 vibrations per second (vps) tuning fork the spots on the 4-spot target should appear stationary while rotating. With target illuminated and viewed through the vibrating shutters of an 87.6 vps tuning fork the spots on the 6-spot target should appear stationary while rotating and with speed slightly increased the spots on the 35-spot target should appear stationary.

(c) To adjust, stop motor and turn adjusting screw as indicated on governor cover. For units with screened governor covers, stop motor, remove the TP152035 plug from cover and turn adjusting screw as indicated on periphery of target.

NOTE

It is possible to adjust the motor at some multiple of the correct speed. To check motor speed when used with a page printer, return type box carriage to left margin, set up any character in selector and manually trip type box clutch trip lever.

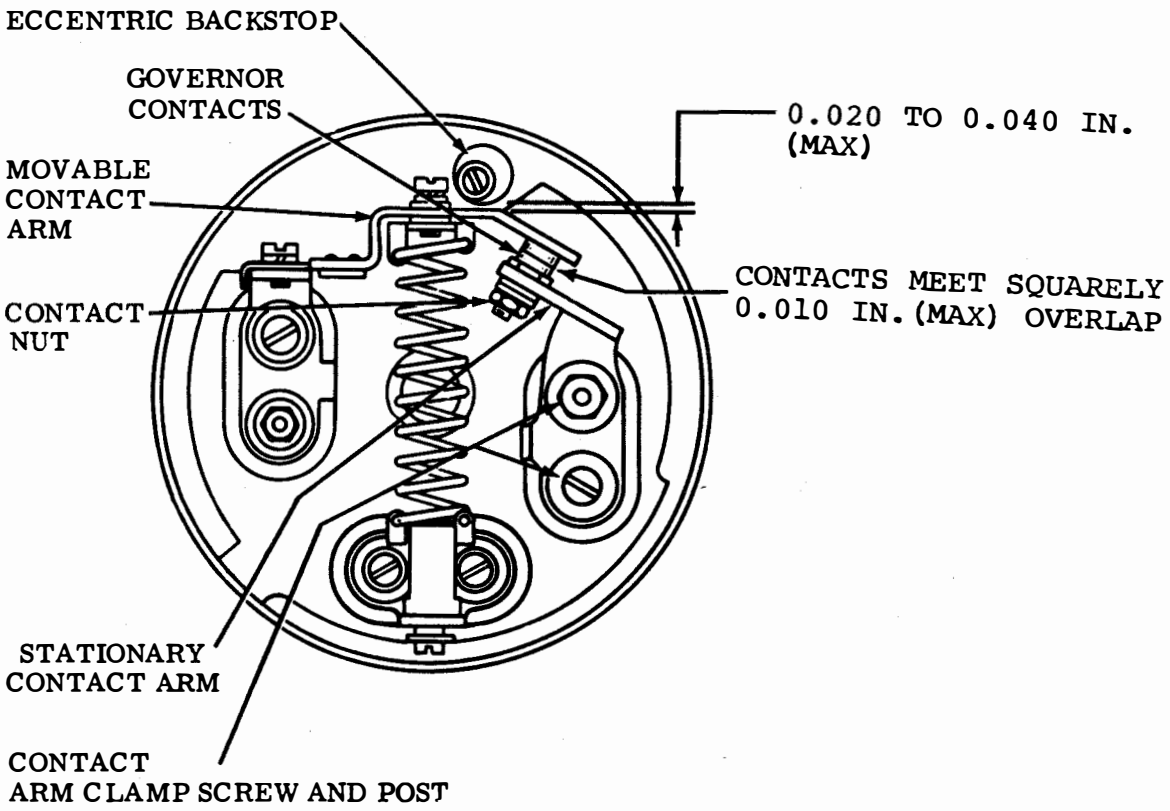


Figure 6-341. Governor Contact and Contact Backstop

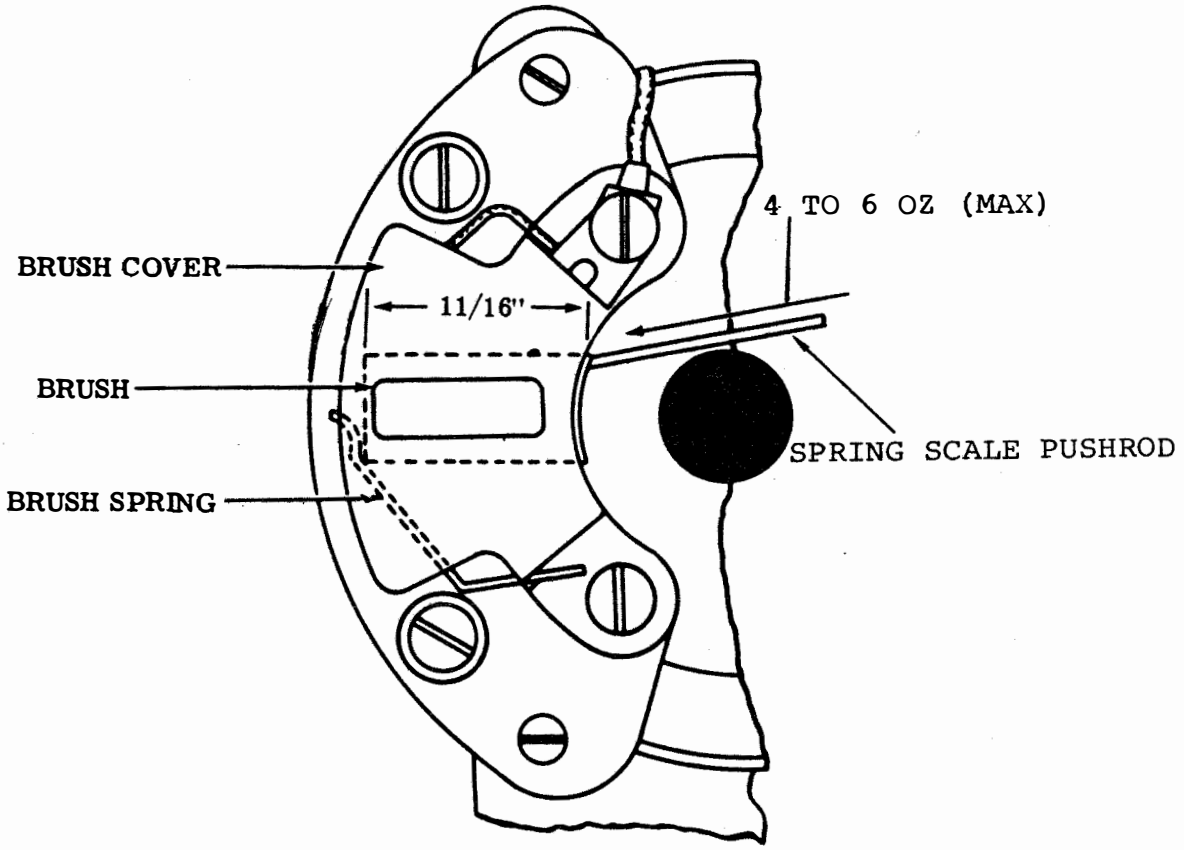


Figure 6-342. Governor Brush Spring

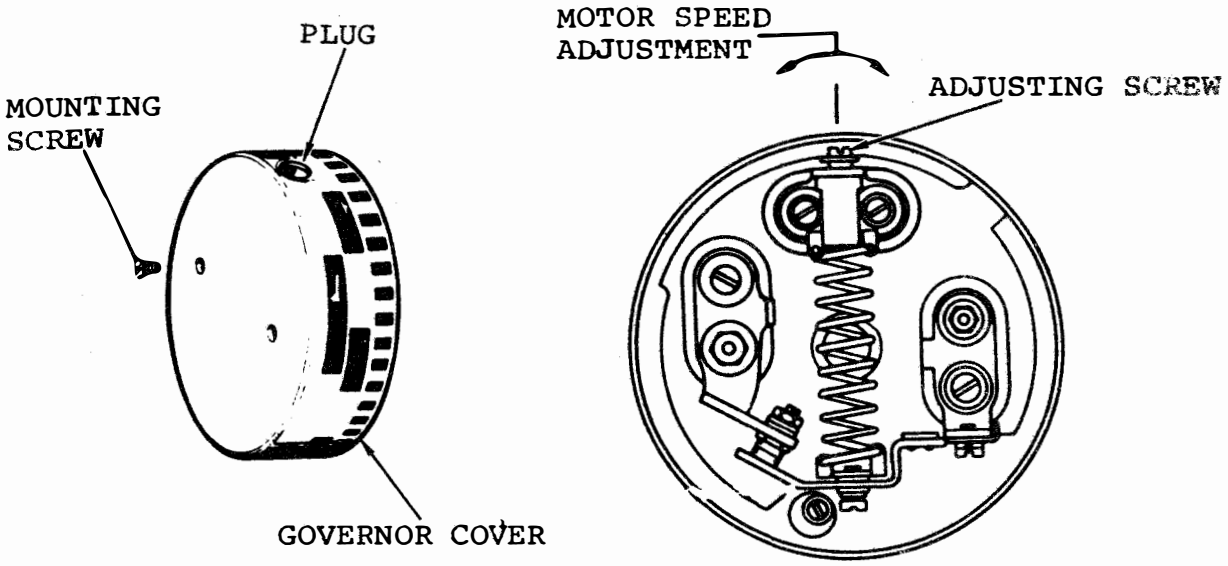


Figure 6-343. Motor Speed Adjustment

Printing should occur as follows:

WPM	Printed Characters	Required Time
60	70	10 seconds
75	44	5 seconds
100	57	5 seconds

(6) Motor Brushes. Adjust as follows:

NOTE

When removing motor brushes, note their positions so brush will be reinserted in same holder with same side up.

(a) Refer to Figure 6-344.

(b) Check pigtail, inside the brush spring.

(c) It should be securely fastened between brush and eyelet and be free of kinks to allow brush spring to extend properly.

(d) Brush should move freely in its holder and measure 11/24 inch minimum.

(e) If requirement (d) is not met, replace brush.

c. Plastic Type Axial Fan Cable Clamp Interference Adjustment. Perform the following plastic axial fan adjustment.

(1) Refer to Figure 6-345.

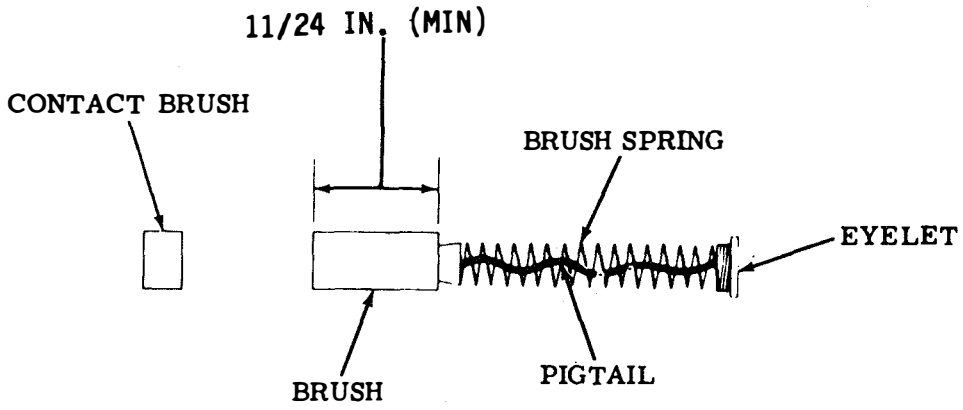


Figure 6-344. Motor Brushes

(2) When installing a plastic type axial fan or a motor with a plastic type axial fan, there may be interference between the fan and cable clamp on the typing unit.

(3) To adjust, remove the cable clamp and tie cable up under the connector bracket and flat against the side plate to prevent possible interference with the plastic type axial fan.

6-10. CABINET ADJUSTMENT. The following paragraphs describe cabinet adjustment procedures for high-level and low-level operation.

NOTE

Reference made to left or right, up or down, front or rear, etc., apply to the unit in its normal operating position as viewed from the front. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

a. Dome Centering. Adjust as follows:

(1) Refer to Figure 6-346.

(2) Center dome on cabinet, left and right, and approximately 0.050 inch from front edge of cabinet or so extruded portions of left front door line up with right front crossbar.

(3) To adjust:

(a) Disconnect upstop latch arm on right side

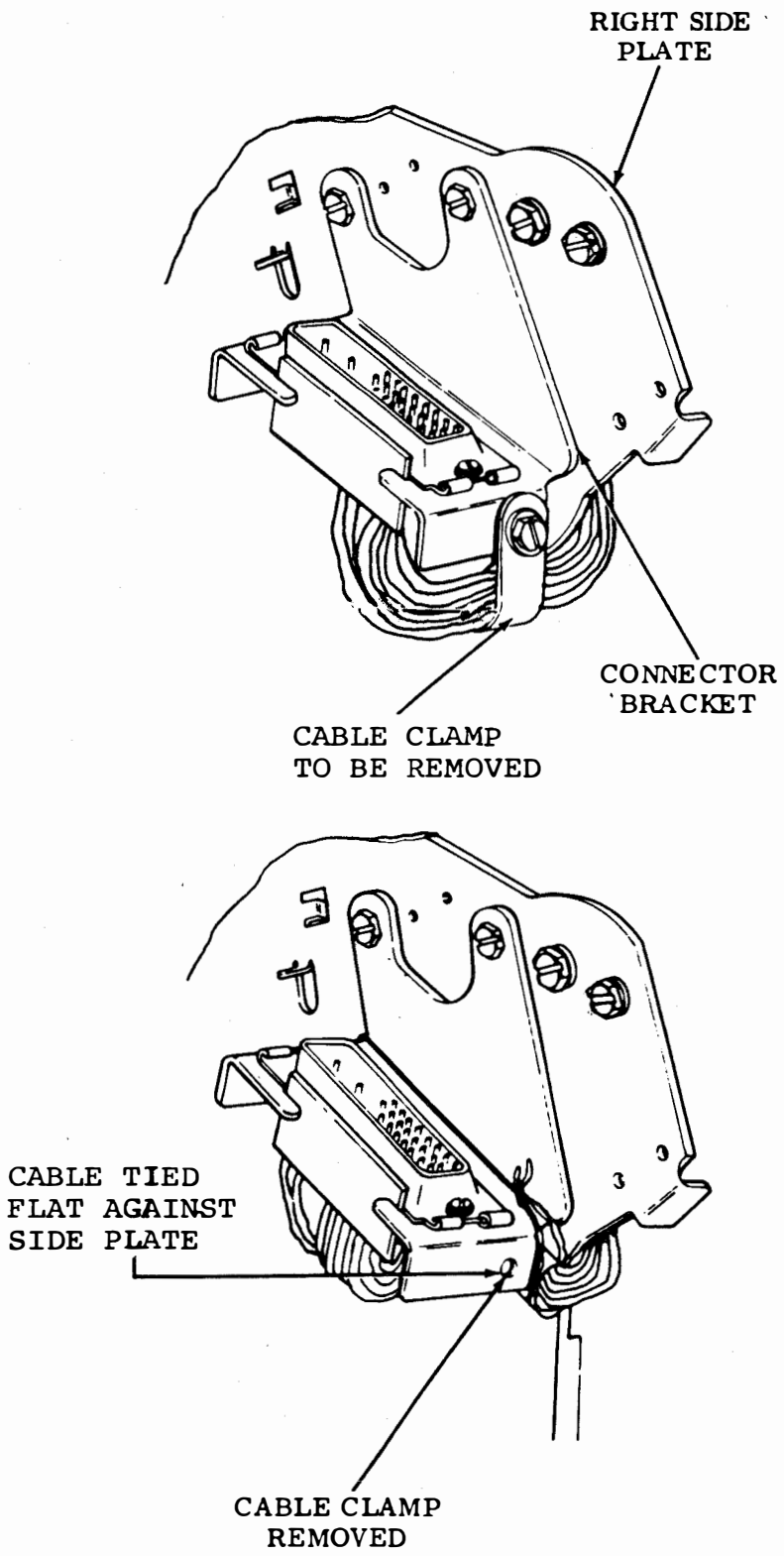


Figure 6-345. Plastic Type Axial Fan Cable Clamp Interference, Right Rear View

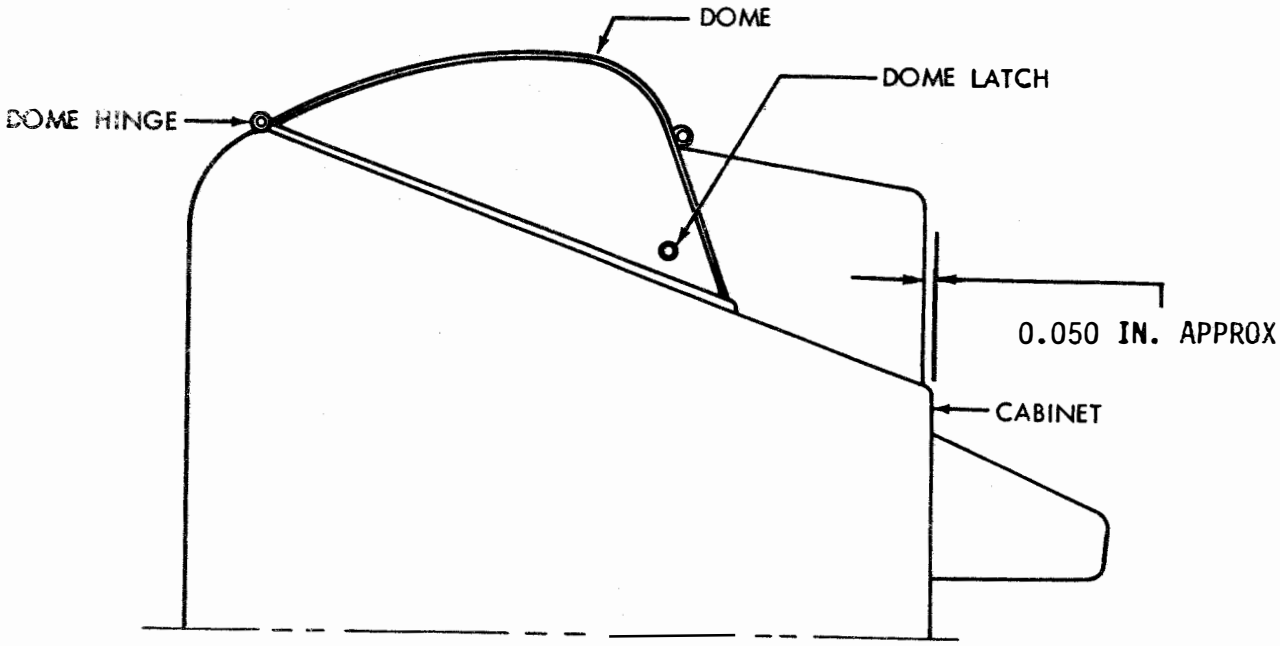


Figure 6-346. Dome Centering

of dome and pivot dome rearward over back. Pry end of torsion bars out of hole and slip out from rear of bracket in dome.

(b) Loosen screws that secure dome hinge to cabinet and position dome. When closed, dome should rest along top front edge on cabinet body, right and left front crossbar with some daylight showing rearwardly along top flange of sides towards rear hinge. Tighten screws.

b. Dome Latch. Adjust as follows:

NOTE

It may be necessary to remove blank control panel to make this adjustment.

(1) Refer to Figure 6-347.

(a) When dome is latched, there should be a slight pressure on rubber bumper.

(b) To adjust:

1. Loosen pivot screws on both right and left latches.

2. Position latches to provide some to 0.032 inch between each latch and its latching surface and lock the screws.

3. Position rubber bumper to provide 0.030 to 0.045 inch between dome and cabinet and secure the bumpers.

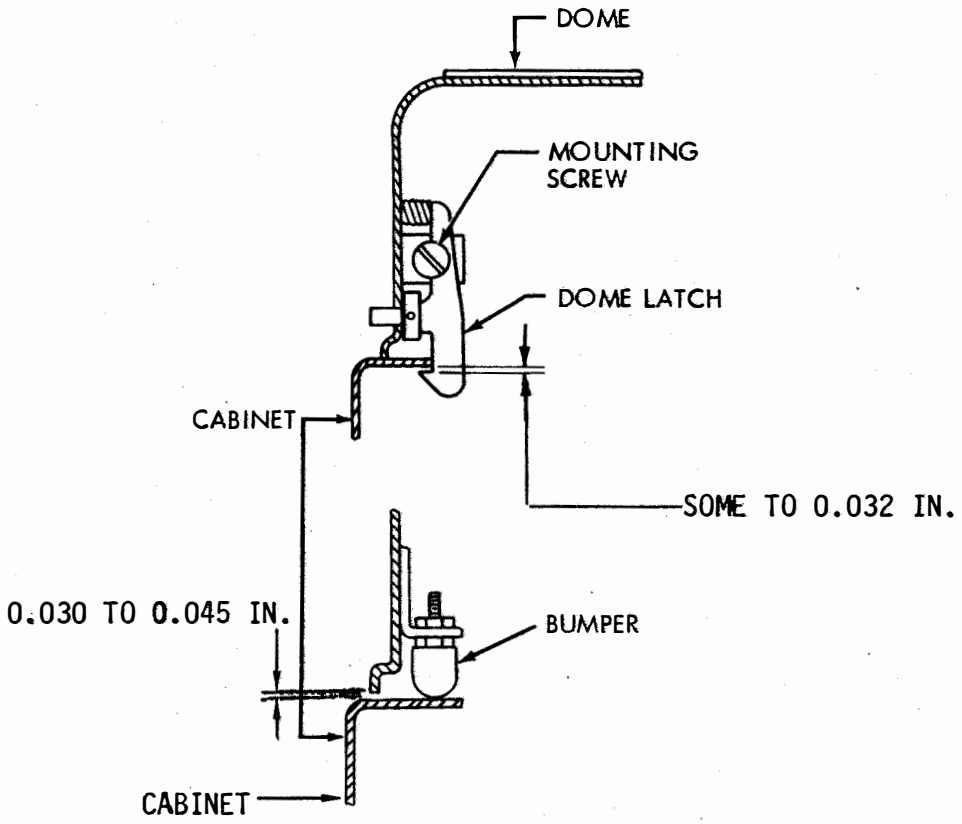


Figure 6-347. Dome Latch

4. A slight pressure should latch the dome.

5. Tighten screws.

(2) Dome latch button should not depress completely into dome.

(3) To adjust:

1. Loosen mounting screw and position latch toward outside surface of dome.

2. Pivot dome open rearwardly over back of cabinet.

3. Replace ends of torsion rods by sliding straight portion of rods under bracket on gearset in corners of dome until bend end of rod slips into retaining hole in front of brakcet.

4. Pivot dome forward and replace upstop latch arm on right side of dome.

5. Tighten screw.

c. Torsion Bar. Adjust as follows:

(1) Refer to Figure 6-348.

(2) When closed dome is released from its latches, the torsion bars should lift dome 7 to 9 inches maximum above front edge of cabinet.

(3) When dome is started down by slight push from its fully open position, it should not close or latch.

(4) To adjust, turn shoulder nut on eyebolt clockwise to increase or counterclockwise to decrease spring torque.

d. Left and Right Top Doors. Adjust as follows:

(1) Refer to Figure 6-349.

(2) Each door should set squarely and uniformly on contour of dome.

(3) To adjust, loosen hinge mounting screws and position door. Tighten screws.

e. Middle Top Door. Adjust as follows:

(1) Refer to Figure 6-349.

(2) Door should rest flat and squarely on dome and reinforcement channel fits over its guide bracket in dome.

(3) To adjust, remove spring detent from center of dome. Loosen hinge and bracket mounting screws and position door. Tighten screws.

f. Right Front Door. Adjust as follows:

(1) Refer to Figure 6-349.

(2) Both left and right edges of right front door should be even with right top door and rest flat on horizontal surface of dome when closed.

(3) To adjust, remove thumbscrews, latches, and springs from door. Loosen mounting screws and position door. Tighten screws and replace thumbscrews, latches, and springs.

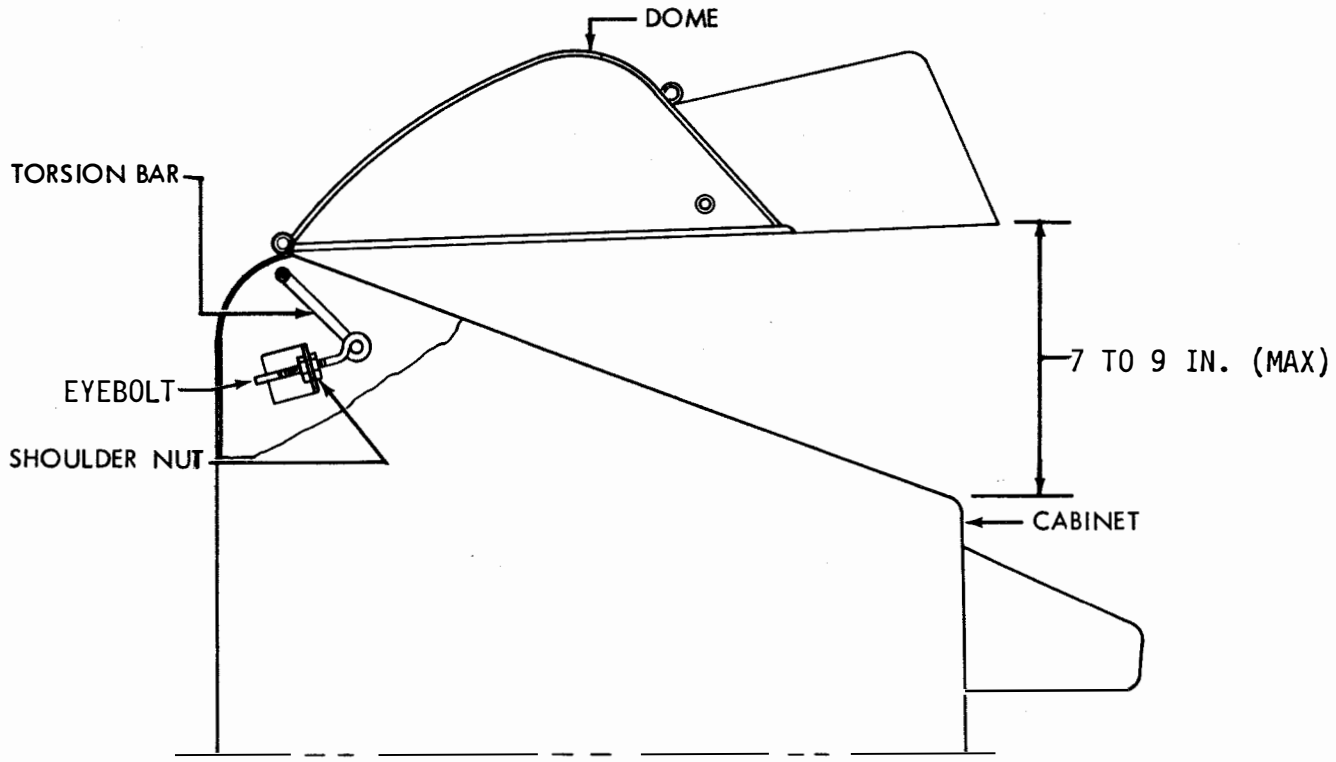


Figure 6-348. Torsion Bar

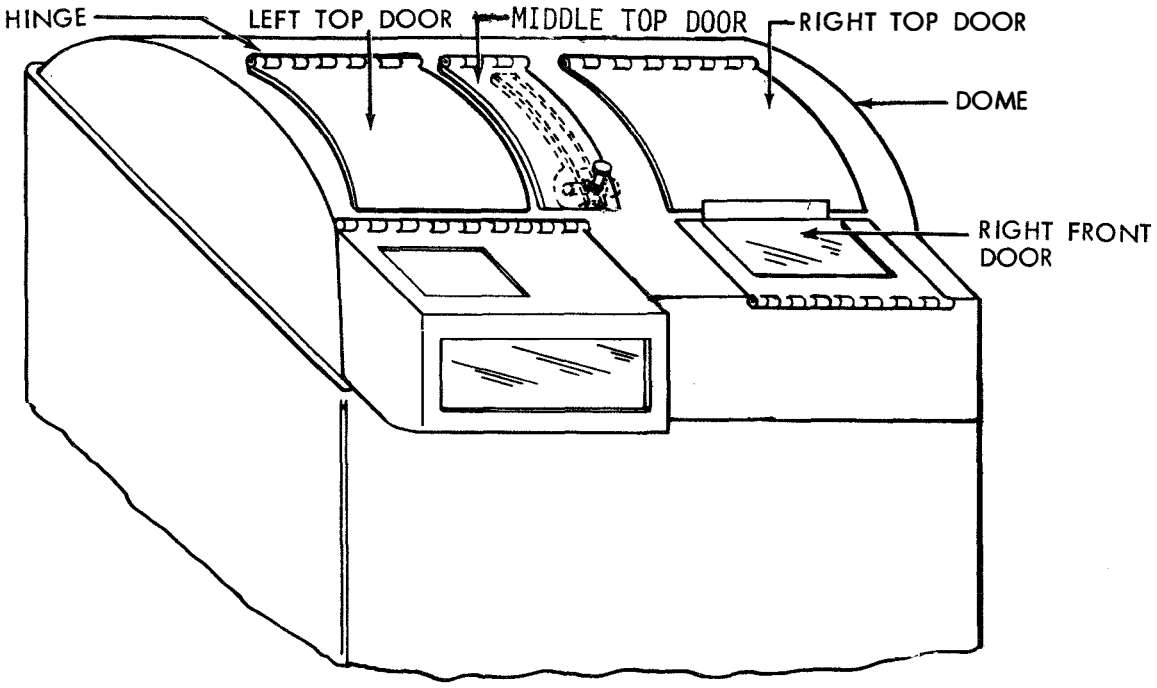


Figure 6-349. Left, Right, and Middle Top Doors and Right Front Door

g. Left Front Door. Adjust as follows:

(1) Refer to Figure 6-350.

(2) Door should set squarely on its opening and flat on dome.

(3) To adjust, remove latch thumbscrew, latch, and torsion spring anchor post. Loosen hinge mounting screws and position door. Tighten screws and replace thumbscrew, latch, and post.

(4) Torsion spring should raise door upward until stopped by stop guide before it reaches a vertical position.

(5) To adjust, rotate torsion spring post to acquire sufficient lifting power, loosen stop guide mounting screw and position stop guide. Tighten screw.

(6) Door latch should hold door closed reasonably tight and have sufficient latching surface on its bracket.

(7) To adjust, loosen adjusting bracket mounting screws and position bracket horizontally. Modify bracket up or down position, if necessary, and tighten screws.

h. Paper Guide. Adjust as follows:

(1) Refer to Figure 6-351.

(2) When right top door is closed, bottom edge of paper guide should be 7/64 to 9/64 inch maximum below bottom edge of window surface in right front door.

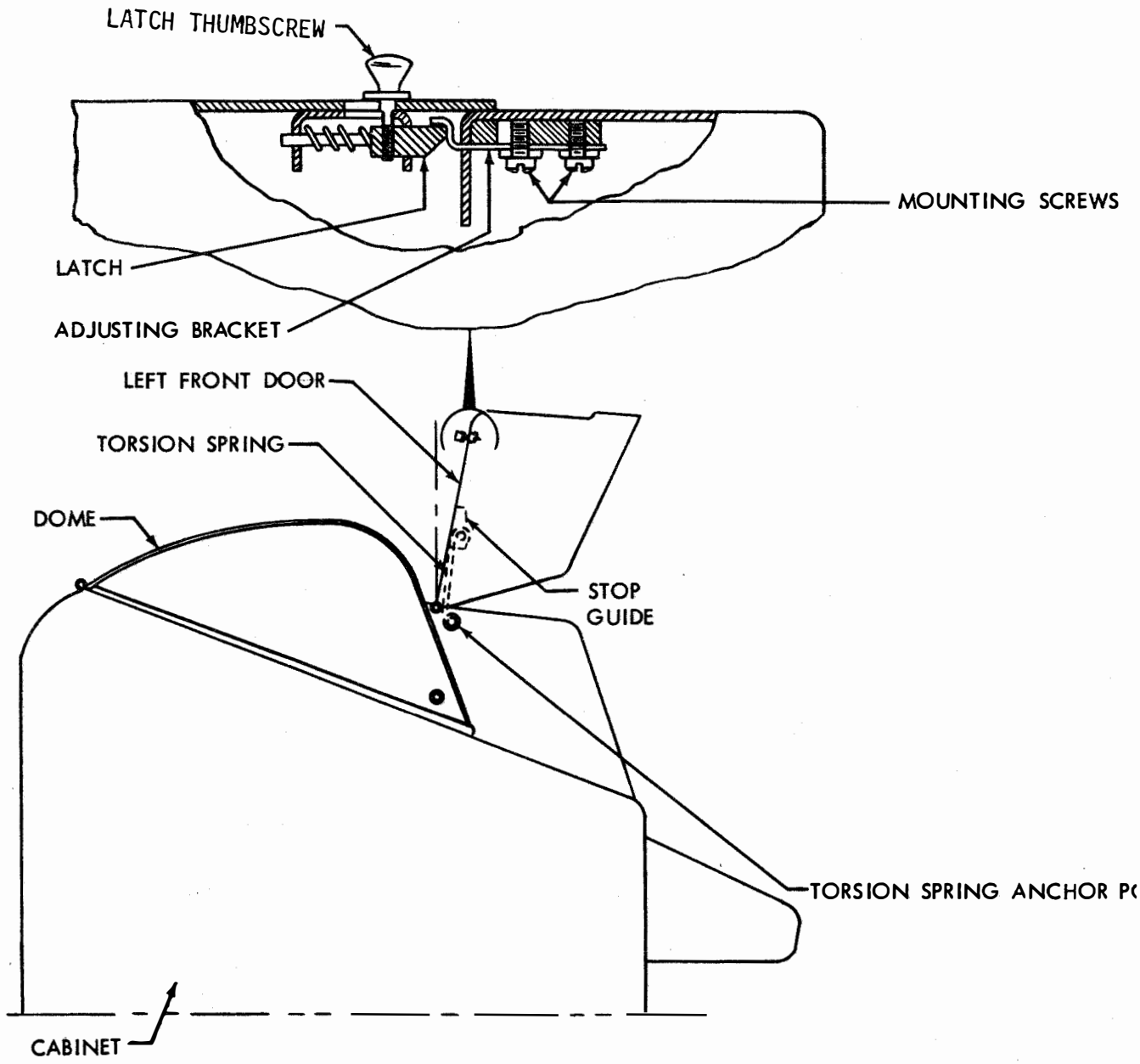


Figure 6-350. Left Front Door

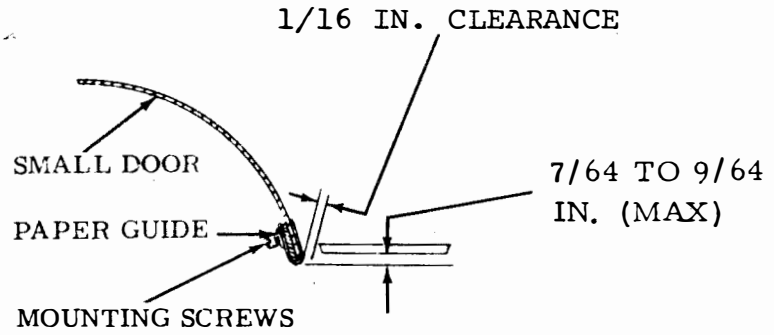


Figure 6-351. Paper Guide and Window

(3) To adjust, loosen paper guide mounting screws and position paper guide. Tighten screws.

i. Window. Adjust as follows:

(1) Refer to Figure 6-351.

(2) Paper guide on right front door should clear window by 1/16 inch when door is opened or closed.

(3) To adjust, loosen window retainer mounting screws and position window. Tighten screws.

j. Lamp Position. Adjust as follows:

(1) Refer to Figure 6-352.

(2) Clearance between each lamp and its lens or the dome should measure 1/16 inch minimum.

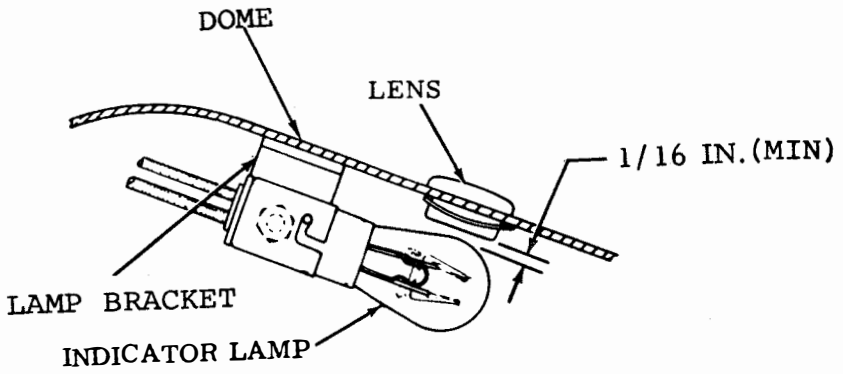
(3) To adjust, loosen lamp holder mounting screws and position holder. Tighten screws.

k. Cradle. Adjust as follows:

(1) Refer to Figure 6-353.

(2) Under normal load, distance between top of cradle railing and shelf on cabinet should measure 2 inches, ±1/32 inch.

(3) To adjust, loosen locknuts on vibration dampener number 1, 2, and 3 on top of left and right rails and nut on lower end of number 4 mount stud. Rotate adjusting



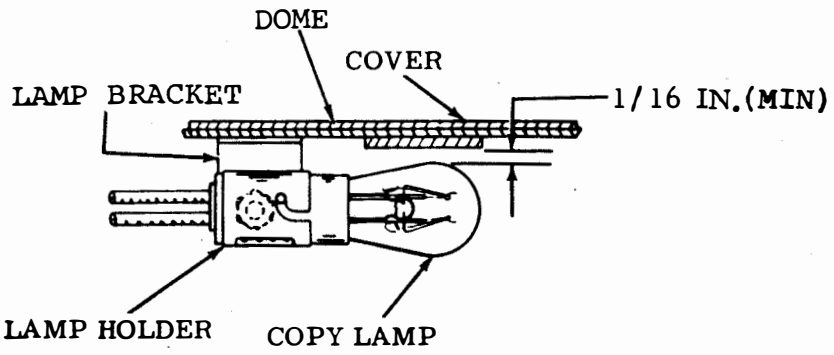


Figure 6-352. Lamp Position

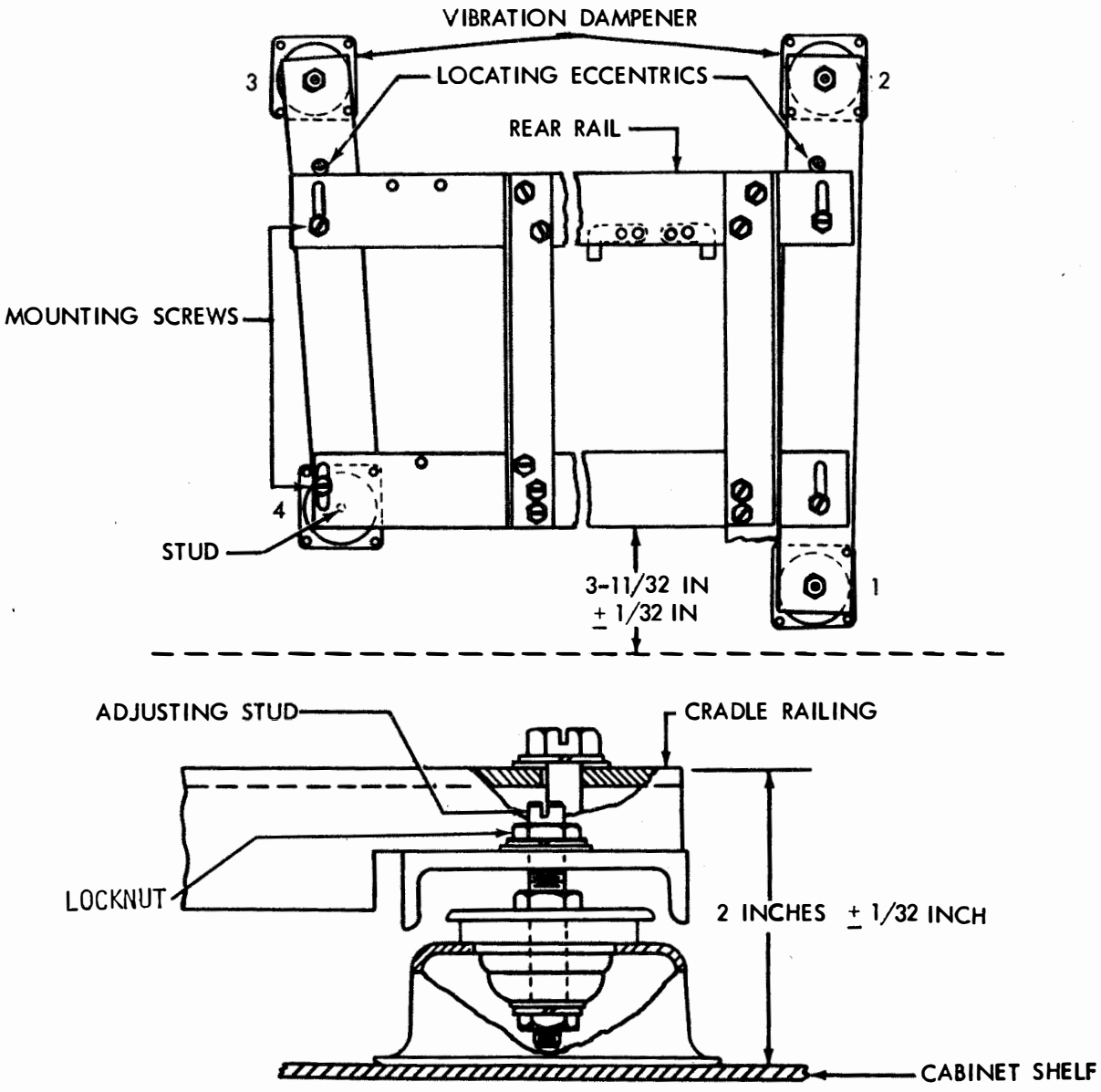


Figure 6-353. Cradle

studs until rails have reached desired height.

(4) Front rail should be parallel to and approximately 3-11/32 inches, ±1/32 inch, from front of cabinet.

(5) To adjust, loosen the four mounting screws and two locating eccentrics. Position rail assembly to required distance. Rotate locating eccentrics against rear rail and lock in position. Tighten screws.

l. Left Front Crossbar. Adjust as follows:

NOTE

The front crossbar brackets are installed at the factory and should not be disturbed unless it is necessary to remove for replacement.

(1) No reference Figure.

(2) Position adjustable crossbar brackets 0.050 inch from front edge of cabinet body crossbar.

m. Transmitter Housing. Adjust as follows:

(1) No reference Figure.

(2) Position housing mounting bracket on left front crossbar to provide a minimum of 0.020 inch between housing and transmitter unit.

n. Copyholder. Adjust as follows:

(1) Refer to Figure 6-354.

(2) Line guide should have sufficient tension to prevent it from slipping down its shaft and also hold copy in place.

(3) To adjust, remove shaft mounting screws or nuts from shaft and turn shaft to increase spring tension. Replace screws or nuts.

o. Armature Spring Tension. Adjust as follows:

(1) Refer to Figure 6-355.

(2) Apply spring scale pushrod against armature and measure force required to push armature against core, vertically. This should be 1/2 to 1 ounce maximum.

(3) If requirement is not met, replace spring.

p. Remote Signal Bell. Adjust as follows:

(1) Refer to Figure 6-356.

(2) Hold armature against magnet core and measure clearance between armature ball and bell. This should be 0.020 to 0.035 inch maximum.

(3) To adjust, bend armature extension just below the armature spring.

q. Chad Chute and Chad Bin Assemblies. Adjust as follows:

(1) Refer to Figure 6-357.

(2) Cabinet door should close without interfering

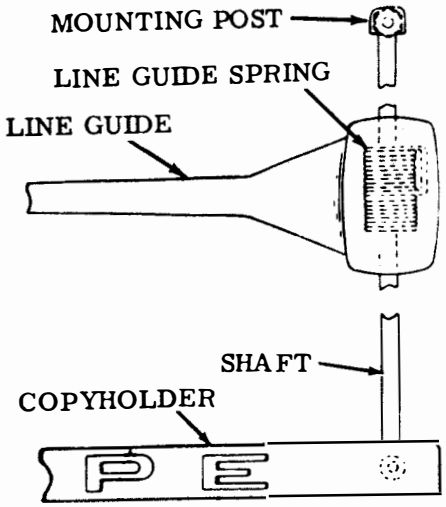


Figure 6-354. Copyholder

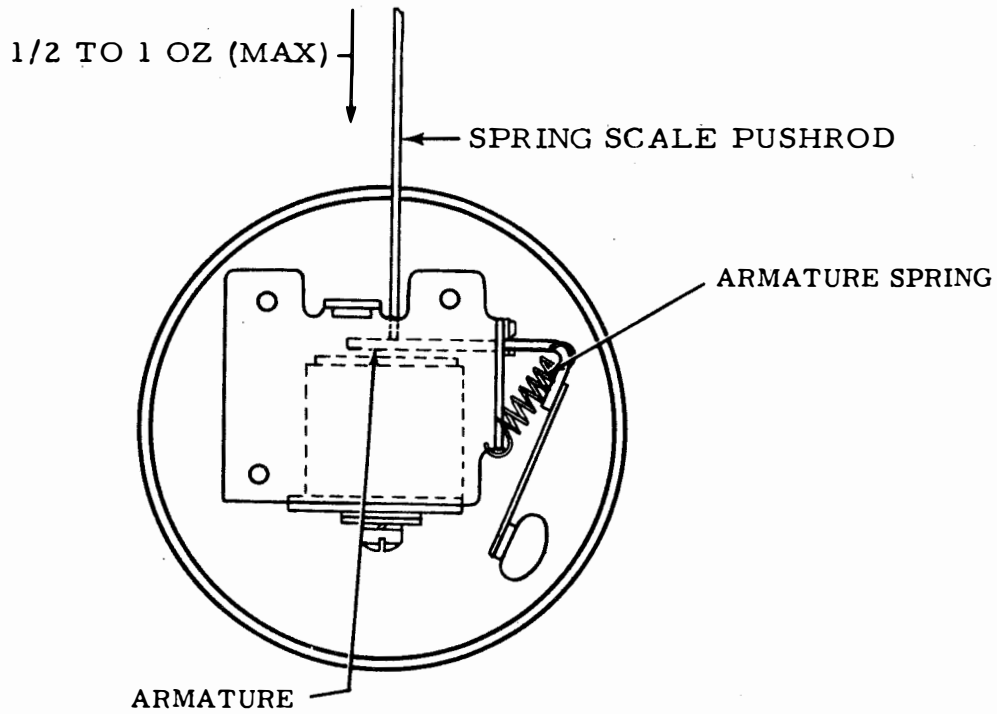


Figure 6-355. Cabinet Armature Spring Tension

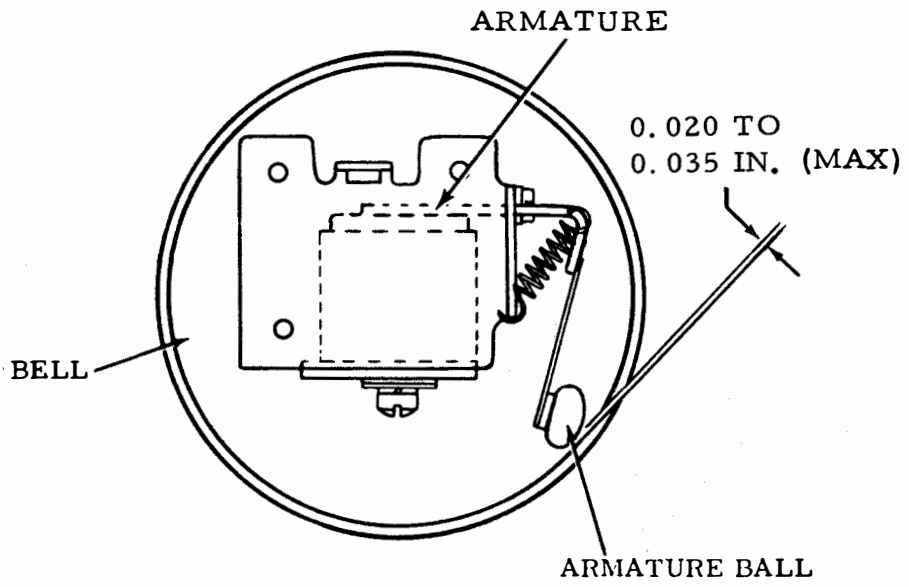


Figure 6-356. Cabinet Remote Signal Bell

with chad bin when chad bin is inserted on slide plates.

(3) To adjust, using the slack in the mounting screw body holes, position chad chute and chad bin left and right side plates.

r. Message Tray Position. Adjust as follows:

(1) Refer to Figure 6-358.

(2) The three-shelf message tray should not interfer with cabinet dome torsion bars.

(3) To adjust, loosen mounting screws and position message tray. Tighten screws.

6-11. ELECTRICAL SERVICE UNIT ADJUSTMENTS. The following paragraphs describe electrical service unit adjustment procedures for high-level and low-level operation.

NOTE

Remove power from unit before making adjustments.

a. Electrical Motor Control Mechanism (If Equipped) Adjustments. Perform the following electrical motor control mechanism adjustments.

(1) Stop Armature Spring. Adjust as follows:

(a) Refer to Figure 6-359.

(b) Latch stop armature on start armature and unhook armature spring.

(c) Use spring scale hook to measure force

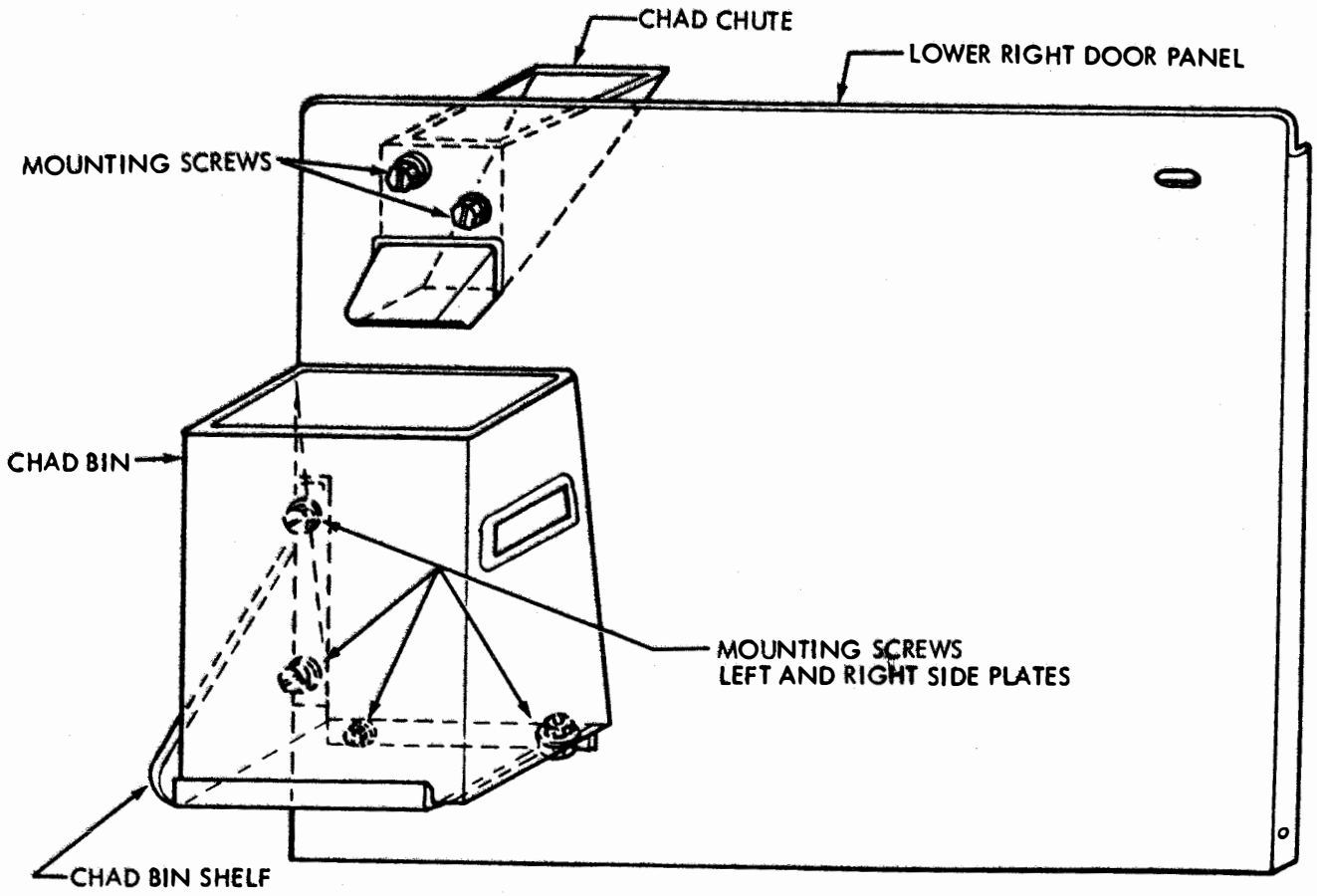


Figure 6-357. Chad Chute and Chad Bin Assemblies

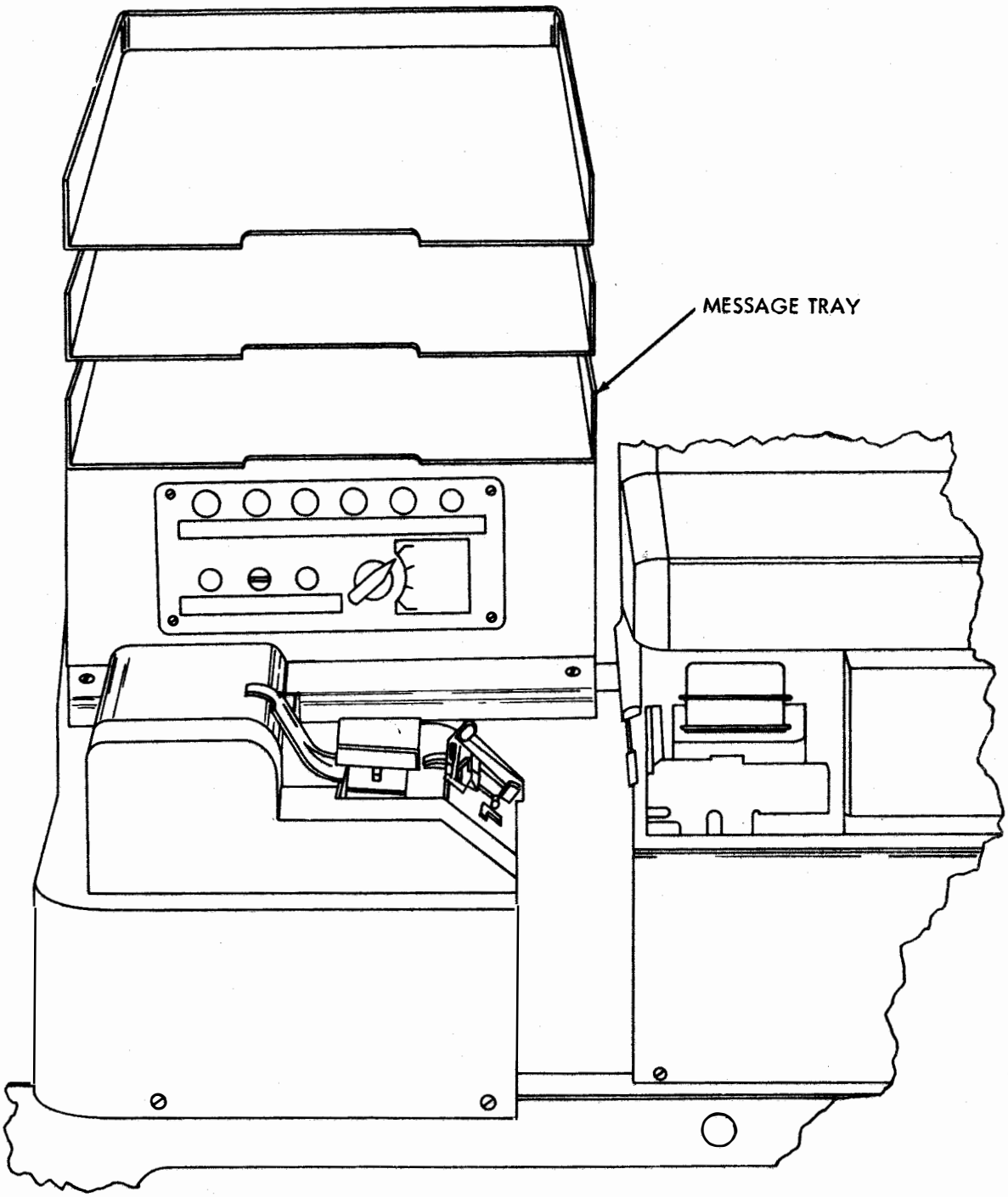


Figure 6-358. Message Tray Position

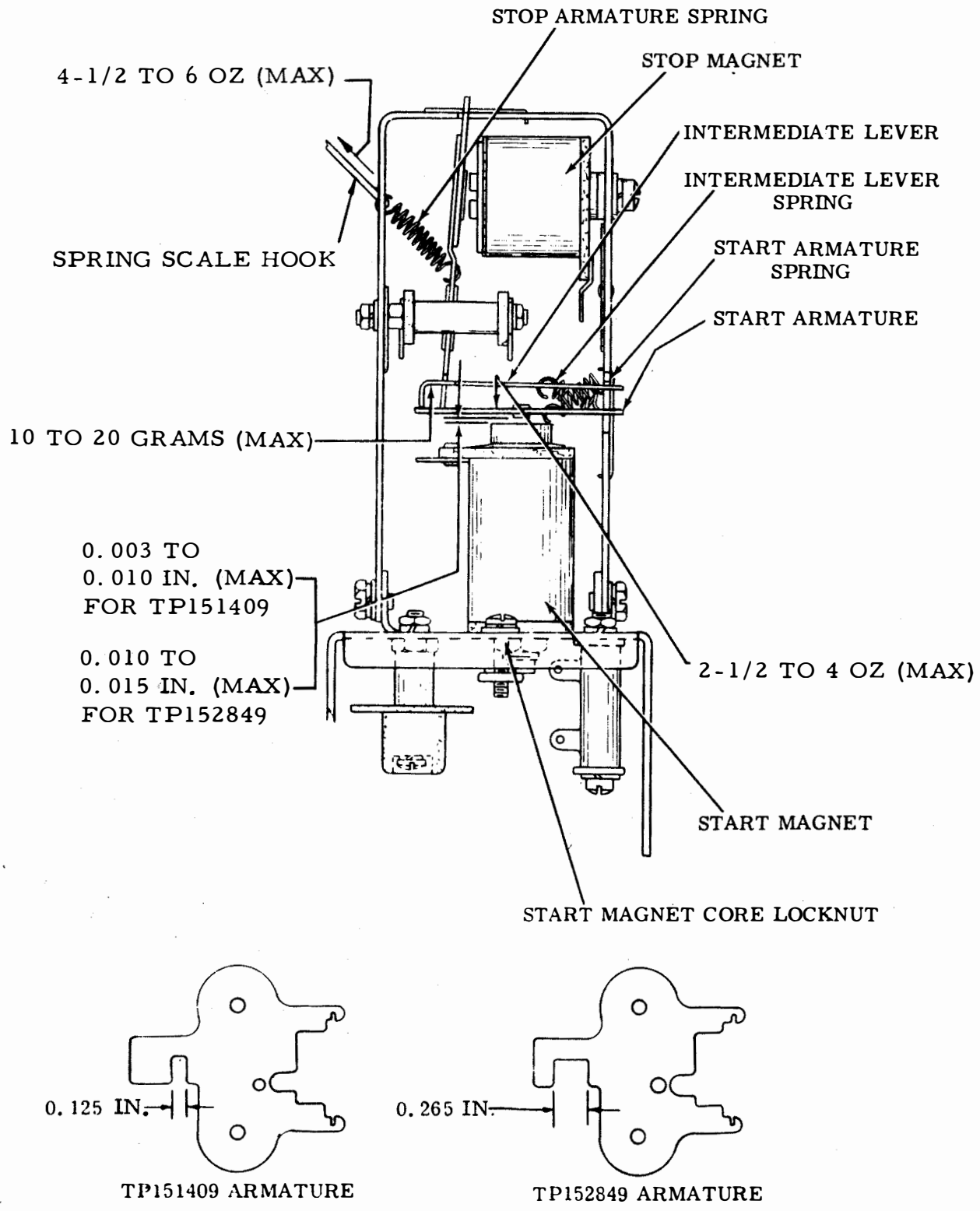


Figure 6-359. Stop Armature Spring, Intermediate Lever Spring, Start Armature Spring, and Start Magnet Core

required to pull spring to installed length. This should be 4-1/2 to 6 ounces maximum.

(d) If requirement is not met, replace spring.

(2) Intermediate Lever Spring. Adjust as follows:

(a) Refer to Figure 6-359.

(b) Hold stop and start armatures against their core.

(c) Apply gram scale to underside of intermediate lever just right of its downward extension and push upward. Force required to start lever moving upward should be 10 to 20 grams maximum.

(d) If requirement is not met, replace spring.

(3) Start Armature Spring. Adjust as follows:

(a) Refer to Figure 6-359.

(b) Place stop armature in attracted position and hold intermediate lever upward.

(c) Apply 8-ounce scale to start armature at right of intermediate lever lower extension. Force required to hold start armature against core should be 2-1/2 to 4 ounces maximum.

(d) If requirement is not met, replace spring.

(4) Start Magnet Core. Adjust as follows:

(a) Refer to Figure 6-359.

(b) Place stop armature in unattracted position.

(c) Clearance between start magnet core and antifreeze rivet on start armature should be as follows:

1. For TP151409 armature, 0.003 to 0.010 inch maximum.

2. For TP152849 armature, 0.010 to 0.015 inch maximum.

(d) To adjust, loosen start magnet core locknut and advance or retard the start magnet cores with a screwdriver. Tighten locknut.

b. Relay Motor Control Mechanism (If Equipped) Adjustments. Perform the following relay motor control mechanism adjustments.

(1) Switch Position. Adjust as follows:

(a) Refer to Figure 6-360.

(b) Depress solenoid plunger slowly. Switch should operate when plunger is within 0.005 inch maximum from end of its travel. Check by audible click or using a test lamp.

(c) To adjust, loosen switch mounting screws. Hold plunger downward and move switch toward plunger until it operates. Tighten screws.

(2) Middle Contact Spring. Adjust as follows:

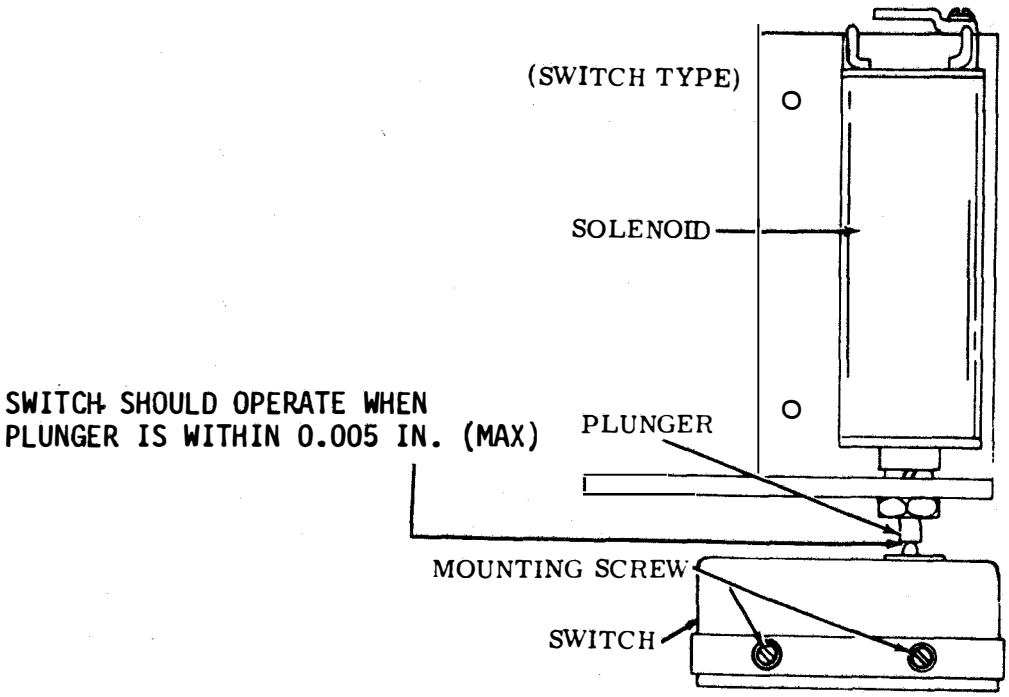


Figure 6-360. Switch Position

(a) Refer to Figure 6-361.

(b) With solenoid plunger unoperated, use spring scale to measure force necessary to break contact with inner contact. This should require from 2 to 3 ounces maximum.

(c) To adjust, from middle contact spring with suitable spring bender.

(3) Outer Contact Spring. Adjust as follows:

(a) Refer to Figure 6-362.

(b) With solenoid plunger held operated, use spring scale to measure force necessary to break contact with middle contact spring. This should require from 12 to 16 ounces maximum.

(c) To adjust, form outer contact spring with suitable spring bender.

(4) Inner Contact Spring Gap. Adjust as follows:

(a) Refer to Figure 6-362.

(b) With solenoid plunger held operated, clearance between inner and middle contact spring surface should be from 0.025 to 0.030 inch maximum.

(c) To adjust, form inner contact spring with suitable spring bender.

c. Signal Bell Adjustments. Perform the following signal bell adjustments.

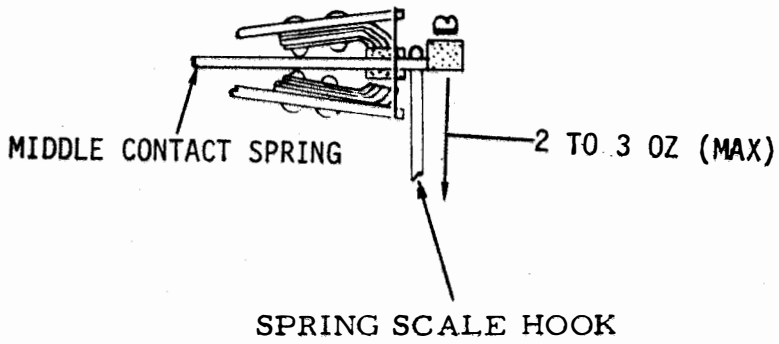


Figure 6-361. Middle Contact Spring

(1) Armature Spring Tension. Adjust as follows:

(a) Refer to Figure 6-363.

(b) Apply spring scale pushrod to armature and measure force required to push armature against core vertically. This should be 1/2 to 1 ounce maximum.

(c) If requirement is not met, replace spring.

(2) Remote Signal Bell. Adjust as follows:

(a) Refer to Figure 6-364.

(b) Hold armature against magnet core and measure clearance between armature ball and bell. This should be 0.020 to 0.035 inch maximum.

(c) To adjust, bend the armature extension just below the armature spring.

d. Line Test Key Assembly Adjustments. Perform the line test key adjustment as follows:

NOTE

This key is carefully adjusted at the factory and should not need readjusting unless it has been disassembled or mutilated.

(1) Refer to Figure 6-365.

(2) When knob is moved downward, contacts 9-10 should close before contact 8-10 and 5-6 open.

(3) To adjust, form contact leaf springs with spring bender to meet requirements.

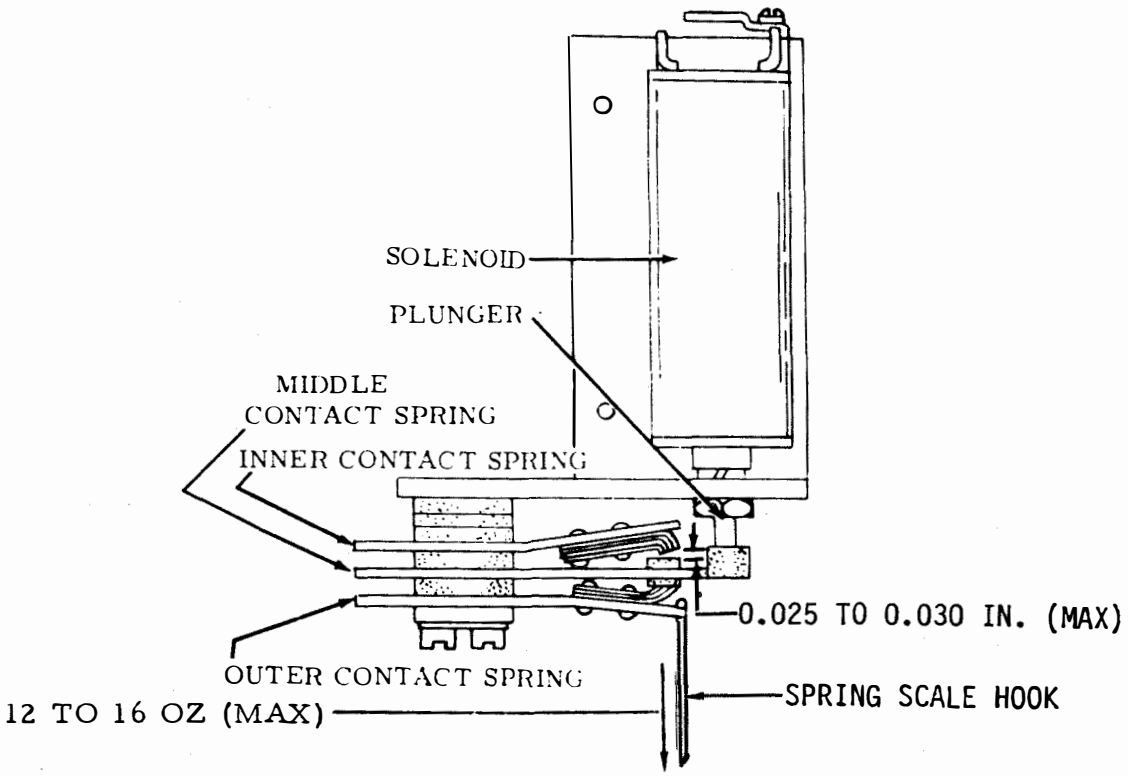


Figure 6-362. Outer Contact Spring and Inner Contact Spring Gap

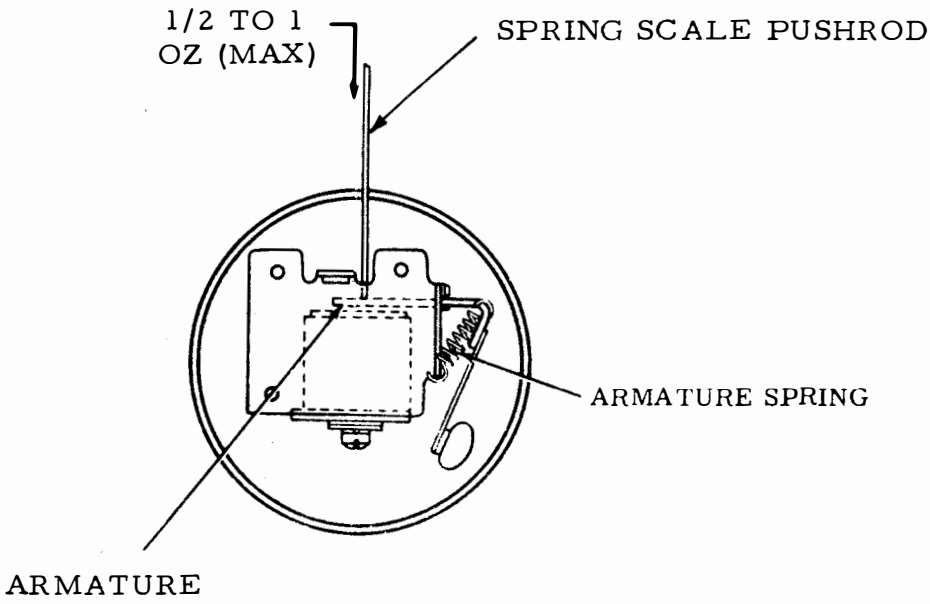


Figure 6-363. Electrical Service Unit Armature Spring Tension

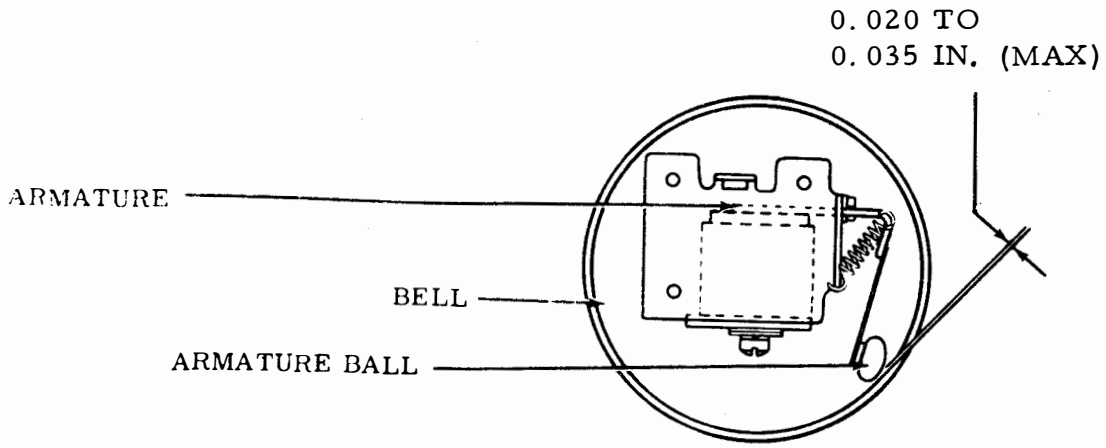
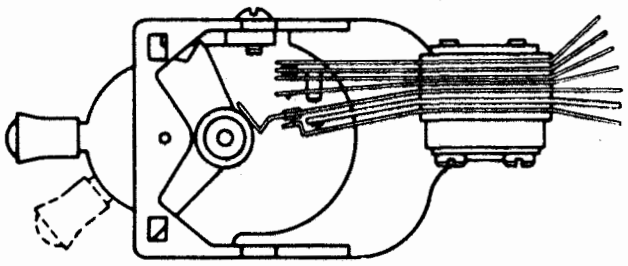


Figure 6-364. Electrical Service Unit Remote Signal Bell



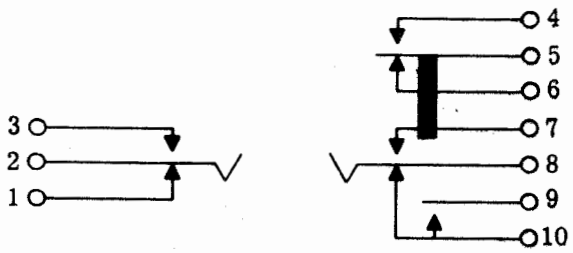


Figure 6-365. Electrical Service Unit Line Test Key

SECTION II. ADJUSTMENTS, BASIC UNIT, VARIABLE FEATURES

6-12. TYPING UNIT (VARIABLE FEATURES). The following paragraphs describe the variable features of typing unit adjustment procedures. Some paragraphs may refer back to Section I for adjustments.

a. Horizontal Tabulator Mechanism Adjustments. Perform the following horizontal tabulator mechanism adjustments.

(1) Spacing Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-366.

(b) Disengage spacing clutch and place trip lever arm and intermediate bail in their upward position.

(c) Outer surface of trip lever should be flush with outer surface of shoe lever or under-flush to 0.010 inch maximum when checked at stop-lug with least bite.

(d) To adjust, loosen adjusting screw friction tight and position spacing clutch trip lever. Tighten screw.

(e) If this adjustment is changed, check adjustment of Latch Bail Adjusting Plate, paragraph 6-12a(9).

(2) Clutch Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-367.

(b) Engage spacing clutch and rotate until trip lever rests on stop-lug.

(c) Attach spring scale hook to clutch trip lever near the spring and measure force required to move trip lever away from stop-lug. This should be 11-1/4 to 14-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(3) Operating Lever Extension Link. Adjust as follows:

NOTE

Prior to this adjustment, check the Function Reset Bail Blade adjustment, paragraph 6-3.1f(1).

(a) Refer to Figure 6-368.

(b) If unit has two-stop function clutch, and disengage function clutch and rotate type box clutch 1/2 revolution past stop position.

(c) If unit has one-stop function clutch, rotate function clutch until function pawl stripper blade is in its lower position and function reset bail roller is on high part of its cam.

NOTE

When pulling function pawl to rear, if the operating lever cam arm should strip off the tabulator slide arm before the function pawl is latched on the function bar,

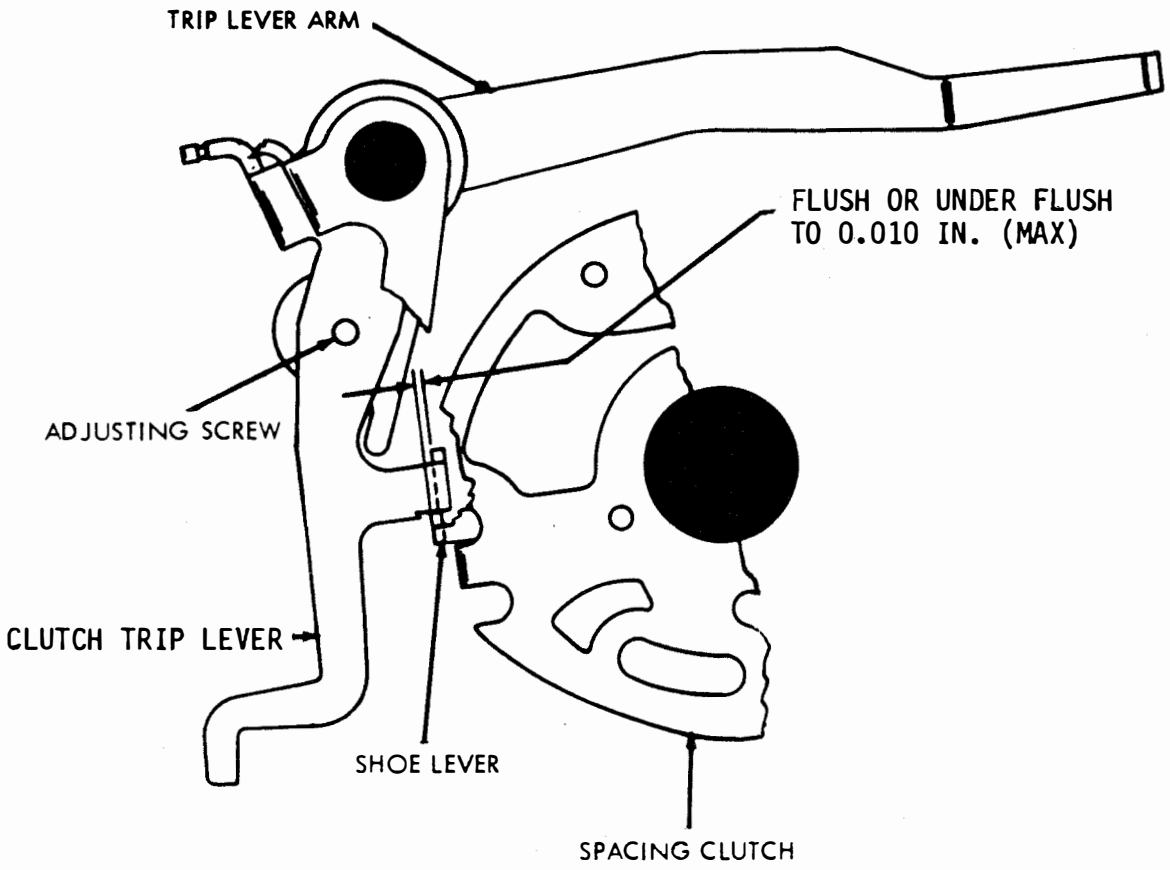
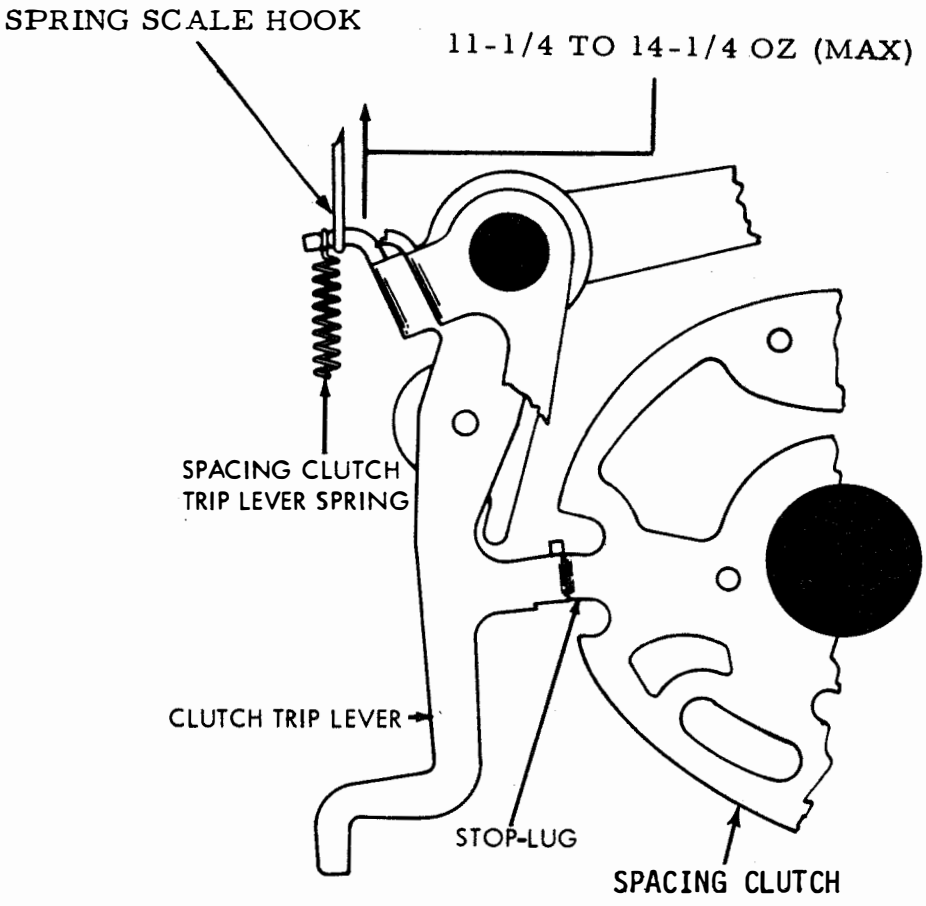


Figure 6-366. Spacing Clutch Trip Lever, Left View



Fiugre 6-367. Clutch Trip Lever Spring, Left View

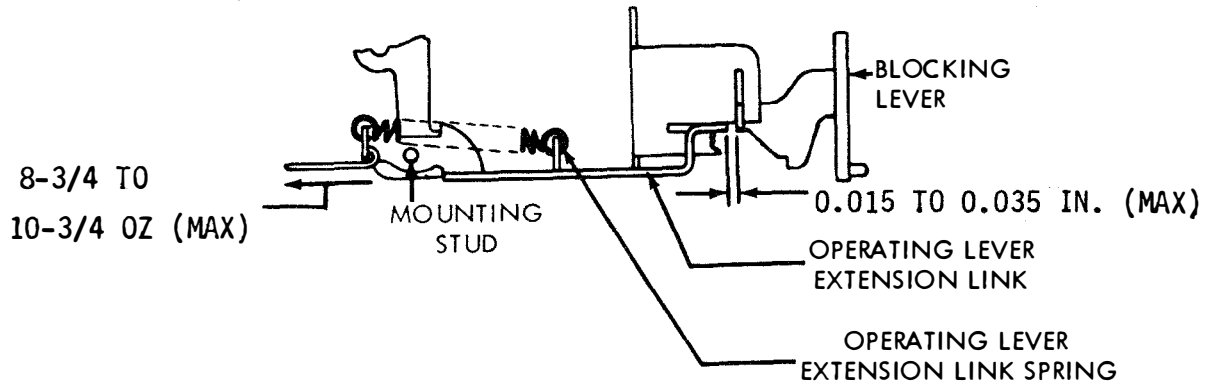


Figure 6-368. Operating Lever Extension Link and Extension Link Spring, Left Side View

temporarily disable cam plate stripper bail arm by loosening its adjusting screw.

(d) Pull horizontal tabulator function pawl to rear until it latches on its function bar.

(e) Clearance between front end of operating lever extension link and blocking surface of blocking lever should measure 0.015 to 0.035 inch maximum.

(f) To adjust, loosen mounting stud friction tight and position extension link on operating lever. Tighten stud.

NOTE

If unit is equipped with a transmitter control contact, check Transmitter Control Contact Gap adjustment, paragraph 6-12a(22) and readjust gap, if necessary.

(4) Operating Lever Extension Link Spring. Adjust as follows:

NOTE

If unit is equipped with transmitter control contact, hold contact spring away from stud when measuring tension.

(a) Refer to Figure 6-368.

(b) Unhook trip arm latchlever spring and place operating lever in operated position with extension link against blocking lever.

(c) Attach spring scale hook and measure force required to start operating lever extension link moving. This should be 8-3/4 to 10-3/4 ounces maximum.

(d) If requirement is not met, replace spring and reconnect trip arm latchlever spring.

(5) Operating Lever Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-369.

(b) Place operating lever in unoperated position and take up play in extension link and blocking lever to minimize clearance.

(c) Clearance between front end of extension link and lower projection of blocking lever should measure 0.020 to 0.045 inch maximum.

(d) To adjust, loosen mounting screws and position adjusting plate on bracket. Tighten mounting screws.

NOTE

If unit is equipped with a transmitter control contact, check Transmitter Control Gap adjustment, paragraph 6-12a(22), and readjust gap, if necessary.

(6) Trip Lever Arm Latch Bail. Adjust as follows:

(a) Refer to Figure 6-370.

(b) Place operating lever in unoperated position and trip lever arm up.

(c) Clearance between trip lever arm and trip lever arm latch bail should measure 0.020 to 0.040 inch maximum.

(d) To adjust, loosen latch bail adjusting screw locknut and position adjusting screw. Tighten locknut.

(7) Trip Lever Arm Latch Bail Spring. Adjust as follows:

(a) Refer to Figure 6-370.

(b) Place operating lever in unoperated condition.

(c) Attach spring scale hook as shown and measure force required to start latch bail moving. This should be 2-1/2 to 4-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(8) Intermediate Bail Spring. Adjust as follows:

(a) Refer to Figure 6-371.

(b) Place stop arm and intermediate bail in unoperated position.

(c) Attach spring scale hook to bail spring and measure force required to pull spring to installed length. This should be 1-1/2 to 3-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(9) Latch Bail Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-371.

(b) Position operating lever extension link to rear, latch it on blocking

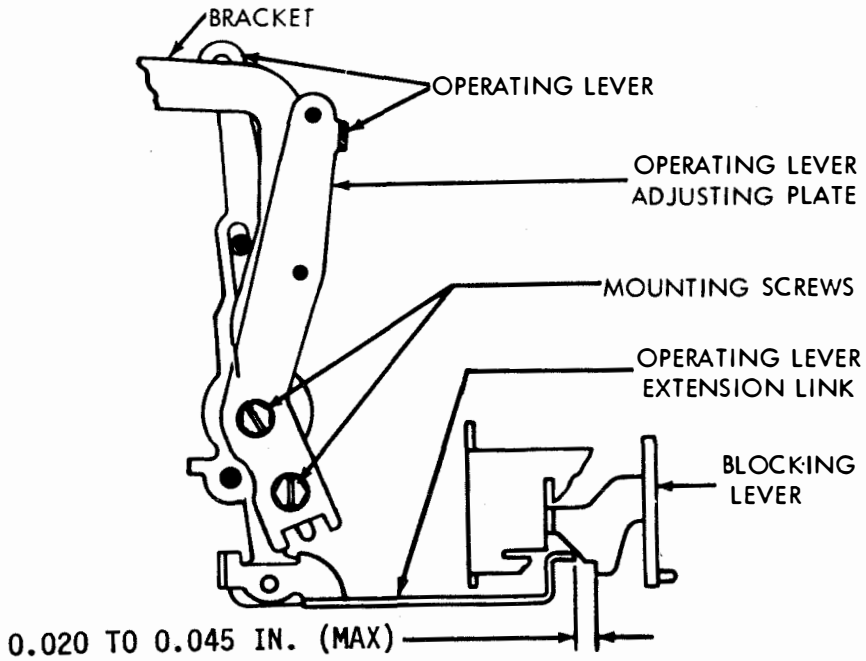


Figure 6-369. Operating Lever Adjusting Plate, Left Side View

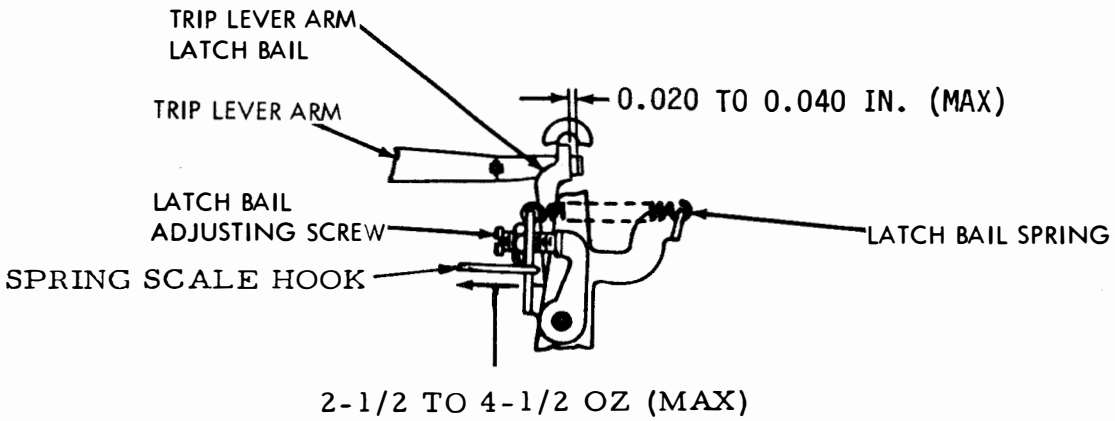


Figure 6-370. Trip Lever Arm Latch Bail and Latch Bail Spring, Left Side View

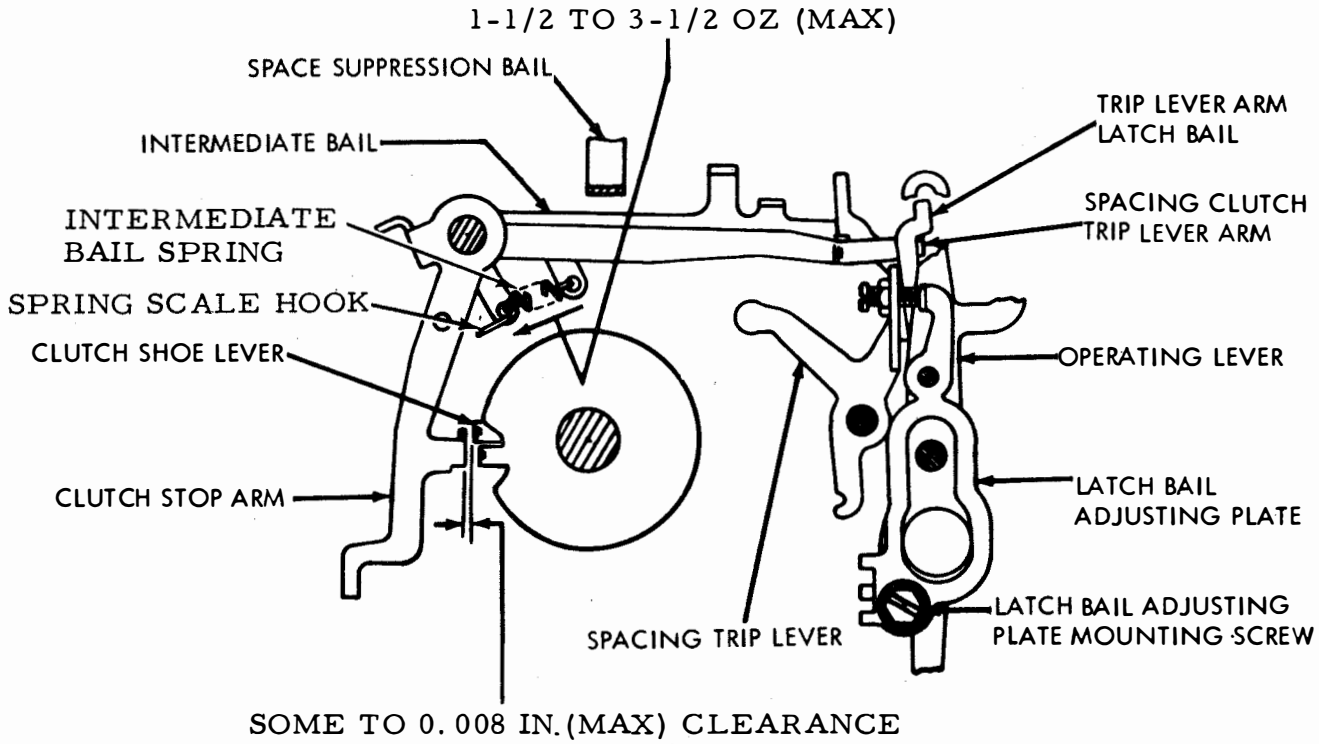


Figure 6-371. Intermediate Bail Spring and Latch Bail Adjusting Plate, Left Side View

lever, and place latch bail in fully latched position.

(c) Push forward on space suppression bail to disengage spacing trip lever from intermediate bail.

(d) Clearance between clutch stop arm and clutch shoe lever having least clearance should measure some to 0.008 inch maximum.

(e) To adjust, loosen mounting screws and position latch bail adjusting plate to obtain specified clearance. Tighten screws.

(10) Cam Plate Stripper Bail. Adjust as follows:

(a) Refer to Figure 6-372.

(b) Place operating lever and tabulator slide arm in unoperated position and rotate spacing clutch until high part of restoring cam is opposite stripper bail.

(c) Clearance between restoring cam and stripper bail should measure 0.010 to 0.025 inch maximum.

(d) To adjust, loosen stripper bail arm screw friction tight and position stripper bail plate on stripper bail to obtain specified clearance. Tighten screw.

(11) Horizontal Tabulator Slide Arm Spring. Adjust as follows:

(a) Refer to Figure 6-372.

(b) Place operating lever in operated position and place slide arm in unoperated position.

(c) Apply spring scale pushrod to horizontal tabulator slide arm and measure force required to start slide arm moving. This should be 1-1/2 to 4-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(12) Operating Lever Cam Arm Spring. Adjust as follows:

(a) Refer to Figure 6-372.

(b) Place operating lever in unoperated position and unlatch horizontal tabulator function pawl.

(c) Apply spring scale hook to stripper bail arm and measure force required to start stripper bail moving. This should be 4 to 9 ounces maximum.

(d) If requirement is not met, replace spring.

(13) Spacing Cutout Transfer Bail Set Collar. Adjust as follows:

(a) Refer to Figure 6-373.

(b) Spacing cutout transfer bail set collar end play should measure some to 0.008 inch maximum.

(c) To adjust, loosen set collar adjusting screw and position set collar to obtain required end play. Tighten screw.

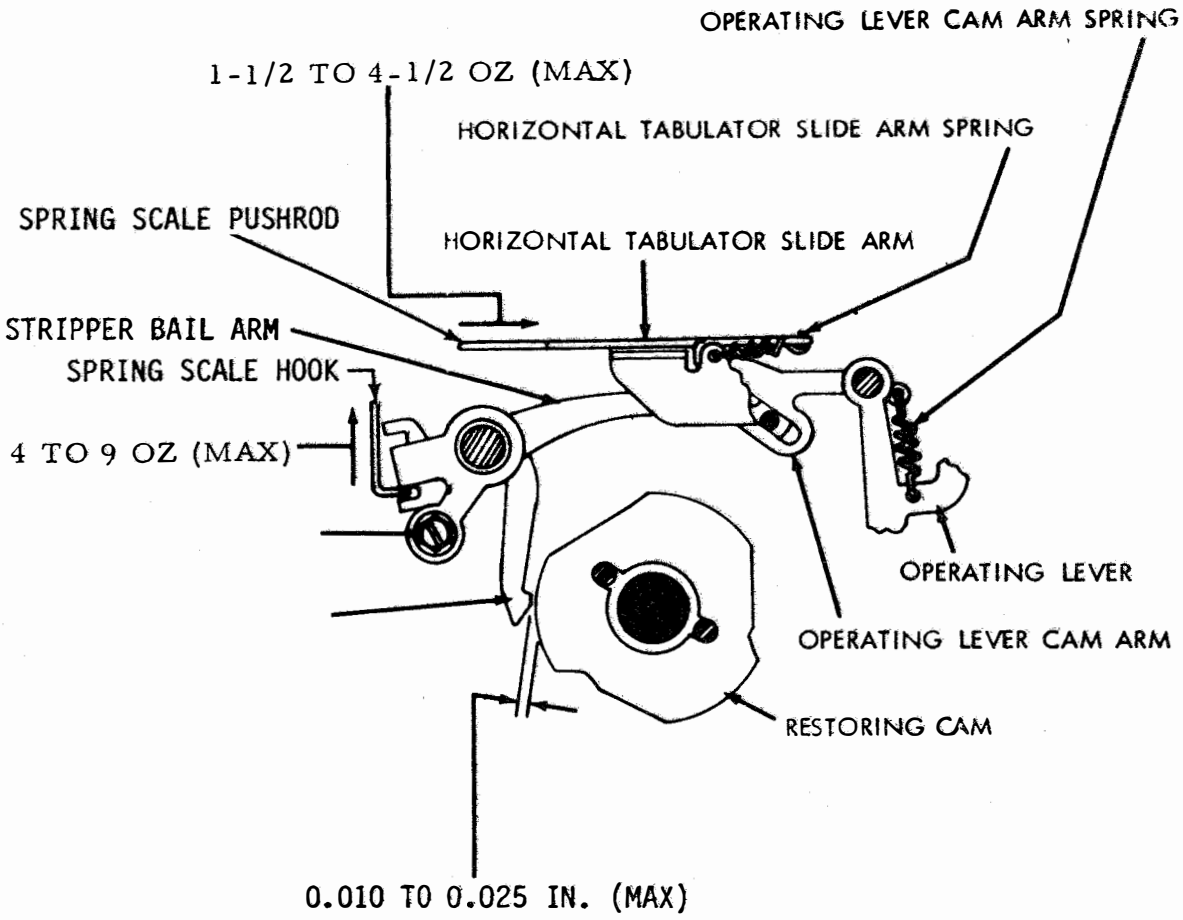


Figure 6-372. Cam Plate Stripper Bail, Horizontal Tabulator Slide Arm Spring, and Oscillating Lever Cam Arm Spring, Left Side View

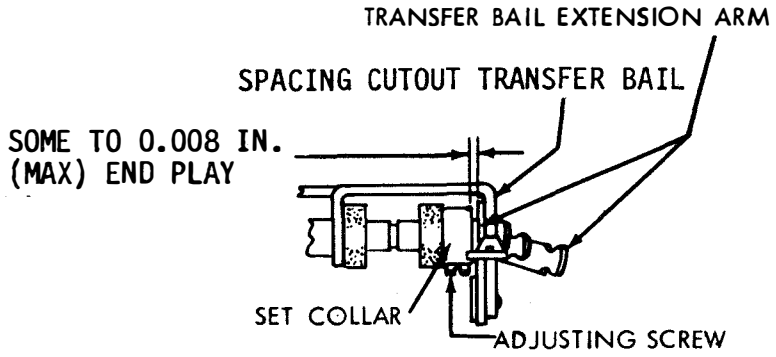


Figure 6-373. Spacing Cutout Transfer Bail Set Collar, Bottom View

(14) Right Margin. Adjust as follows:

(a) Refer to Figure 6-374.

(b) Place type box in position to print character on which spacing cutout is desired.

(c) Pull forward on part of transfer bail extending below mounting shaft until it is in fully operated position.

(d) Clearance between spacing cutout lever on spacing drum and bail extension arm should measure 0.006 to 0.025 inch maximum.

NOTE

Four screws must be loosened to adjust circular cutout levers. Do not loosen hexagon head screw that clamps front ring.

(e) To adjust, loosen clamp screw and position cutout lever. Tighten clamp screw.

(15) Space Suppression Bypass Spring. Adjust as follows:

(a) Refer to Figure 6-374.

(b) Detach end of spring opposite bail extension pawl.

(c) Attach spring scale hook to free end of spring and measure force required to start bail extension pawl moving. This should be 20 to 26 ounces maximum.

(d) If requirement is not met, replace spring.

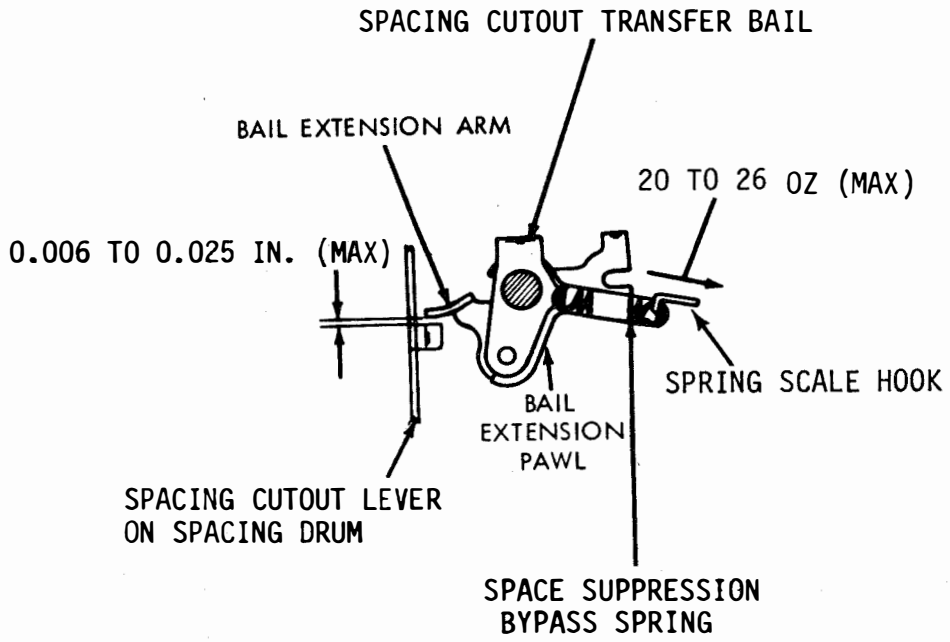


Figure 6-374. Right Margin and Space Suppression Bypass Spring, Right Side View

(16) Tabulator Pawl (Preliminary). The purpose of this preliminary adjustment is to select the tabulator stop to be used as reference in making final tabulator pawl horizontal and vertical adjustments.

NOTE

Before making this adjustment, check Left Margin, paragraph 6-3.1d(17) and Spacing Gear Phasing, paragraph 6-3.1d(1).

(a) Refer to Figure 6-375.

(b) Beginning with the fifteenth slot counterclockwise from roller on tabulator ring, place tabulator stops approximately an equal number of slots apart around the periphery of ring corresponding to length of printed line.

(c) To move stops, hook small spring hook in hole and pull out radially from drum. Holding stop away from drum, slide it on garter spring to desired position and insert in slot. Spacing drum may have to be rotated to make some slots accessible.

CAUTION

Make sure all stops are firmly seated and not turned sideways. Do not use pliers to move stops.

(d) Disengage all clutches so front facing feed pawl is in lower position. Position pawl adjusting plate at center of horizontal and vertical adjustments. To adjust vertically, loosen both mounting screws. To adjust horizontally, loosen left screw only.

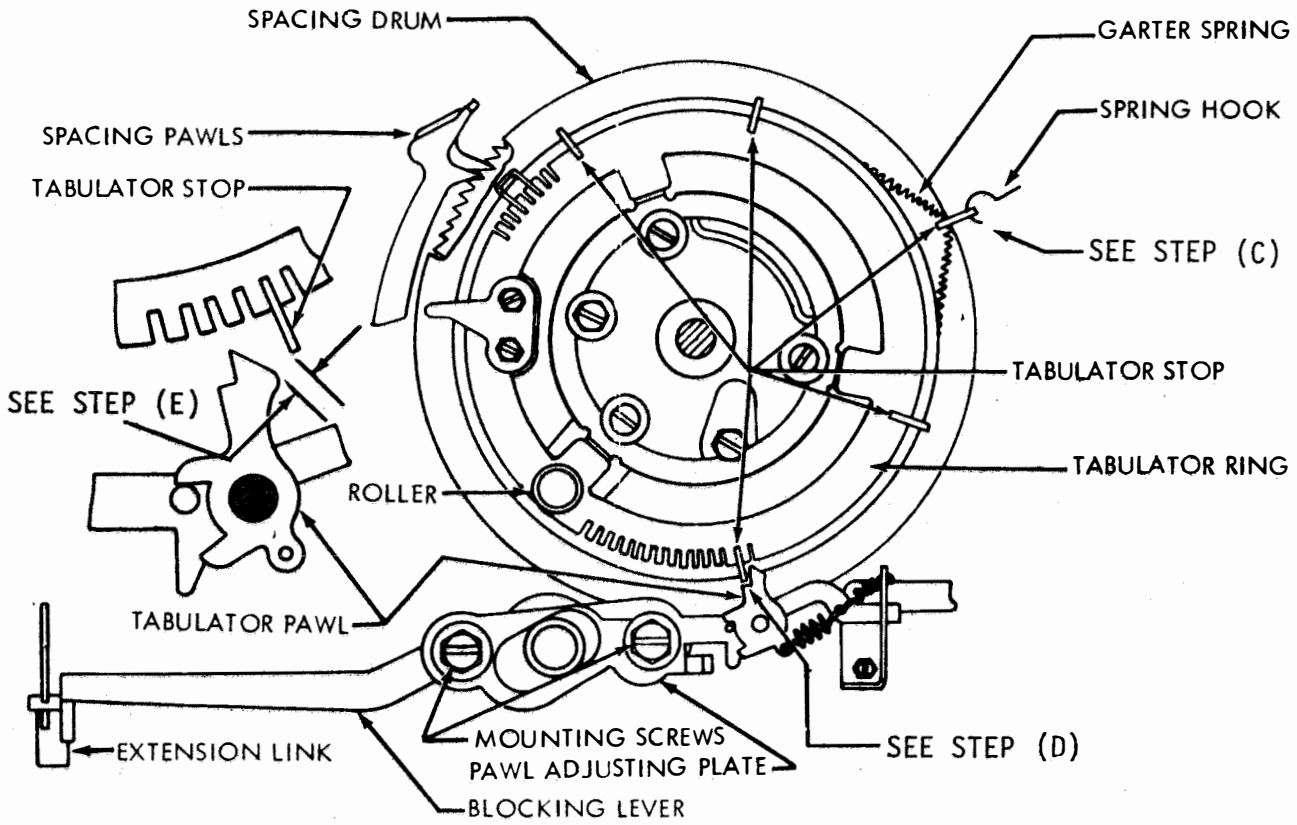


Figure 6-375. Tabulator Pawl (Preliminary), Front View

Vertical adjustment should be made before horizontal adjustment. Disengage spacing feed pawls and allow drum to rotate to extreme counterclockwise position. Keeping spacing clutch disengaged, manually advance drum until first stop is to immediate left of pawl. Position adjusting plate horizontally so stop is aligned with left edge of pawl shoulder.

(e) Place blocking lever and operating lever slide arm in unblocked position. Disengage feed pawls and let drum rotate two spaces counterclockwise. Both feed pawls should be fully engaged. Block extension link with blocking lever. Measure and note clearance between stop and slope on pawl.

(f) Rotate drum clockwise until next stop is just to left of pawl. Repeat procedure described in step (e) for this and all remaining stops.

(g) Use stop having greatest clearance as reference in making final horizontal and vertical pawl adjustments.

(17) Blocking Lever Return Spring. Adjust as follows:

(a) Refer to Figure 6-376.

(b) Hold extension link to rear.

(c) Attach spring scale hook to blocking lever at junction between blocking and tabulator pawl.

(d) Force required to start blocking lever moving should be from 2-1/2 to 4-1/2 ounces maximum.

(e) If requirement is not met, replace spring.

(18) Tabulator Pawl-Vertical (Final). Adjust as follows:

(a) Refer to Figure 6-376.

(b) Position spacing drum so reference tabulator stop as determined by preliminary Tabulator Pawl adjustment, paragraph 6-12a(16), is opposite shoulder on pawl.

(c) Block extension link with blocking lever.

(d) Clearance between tabulator pawl and stop should measure 0.055 to 0.075 inch maximum.

(e) To adjust, loosen two mounting screws and position pawl adjusting plate. Tighten right screw only, using wrench to prevent bushing from turning.

(19) Tabulator Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-376.

(b) Apply spring scale hook to tabulator pawl at point of spring attachment and measure force required to start tabulator pawl moving. This should be 3 to 5 ounces maximum.

(c) If requirement is not met, replace spring.

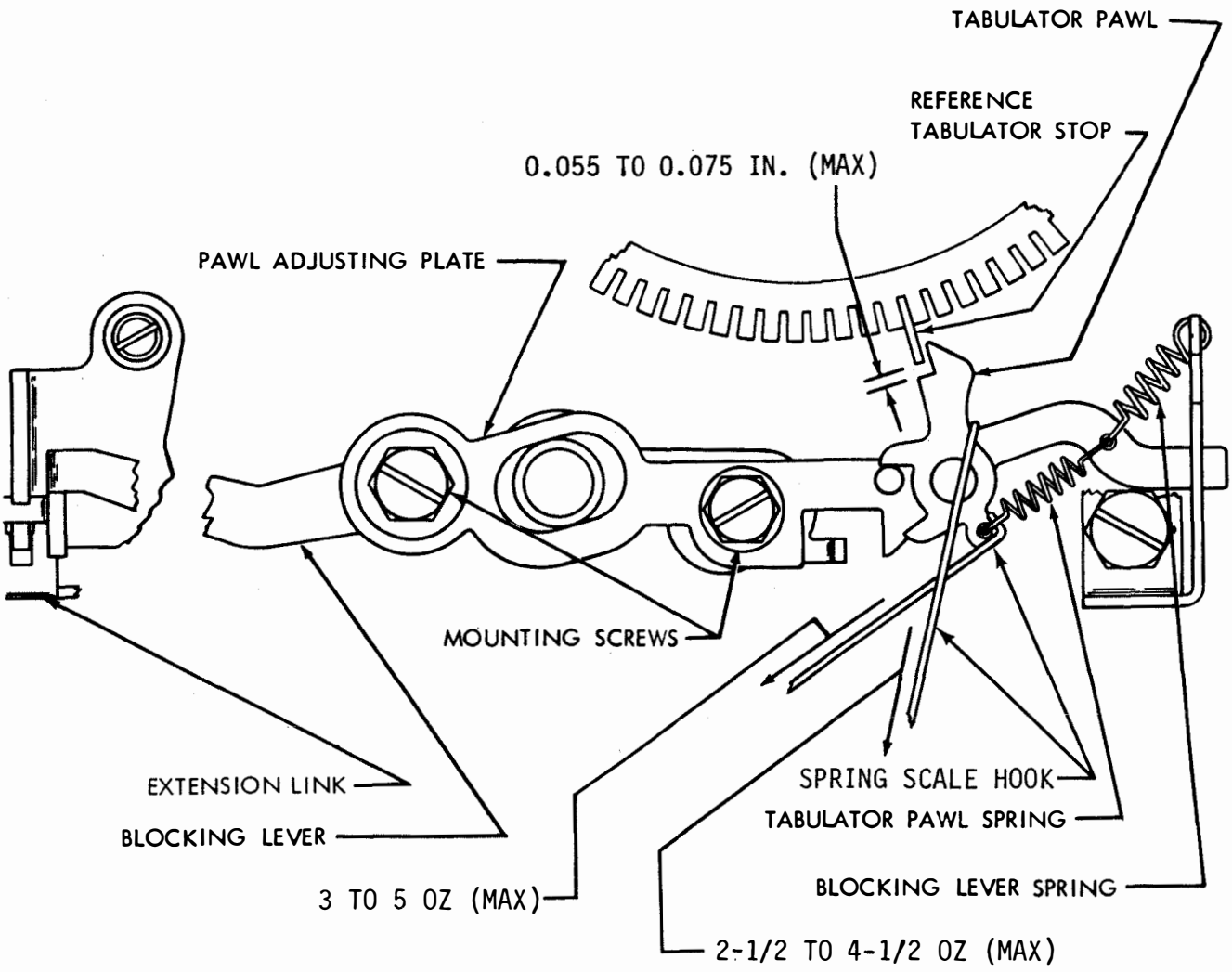


Figure 6-376. Blocking Lever Return Spring, Tabulator Pawl-Vertical (Final), and Tabulator Pawl Spring, Front View

(20) Tabulator Pawl-Horizontal (Final). Adjust as follows:

(a) Refer to Figure 6-377.

(b) Disengage all clutches so front spacing feed pawl is in lower position as shown in Figure 6-375.

(c) Position spacing drum so that reference tabulator stop determined in paragraph 6-12a(16) is immediately to left of pawl. Operating lever slide arm should be forward in unblocked position.

(d) Disengage feed pawls and allow drum to rotate one space counterclockwise. Both feed pawls should be fully engaged.

(e) Move extension link rearward to blocked position.

(f) Trip spacing clutch stop lever and slowly rotate main shaft until blocking lever is just tripped. Then take up play in spacing shaft toward rear.

(g) Ensure some portion of clutch disk stop-lug is aligned with rear surface of spacing shaft gear.

(h) If alignment does not occur, repeat steps (b) through (e).

(i) Trip spacing clutch and rotate shaft until middle of stop-lug is in line with rear surface of gear.

(j) If blocking lever trips too soon, loosen left mounting screw and move pawl adjusting plate to left until extension link can be blocked.

(k) Slowly move plate to right until blocking lever just trips.

(l) When adjusting trip-off point, care should be taken that blocking lever is cammed down by stop and not manually moved out of blocked position.

(m) Reensure that some portion of clutch disk stop-lug is aligned with rear surface of spacing shaft gear.

(n) After obtaining trip-off point, continue rotating main shaft until spacing clutch is disengaged. Pawl should be to right of stop. When extension link is moved to rear, blocking lever should move to blocked position.

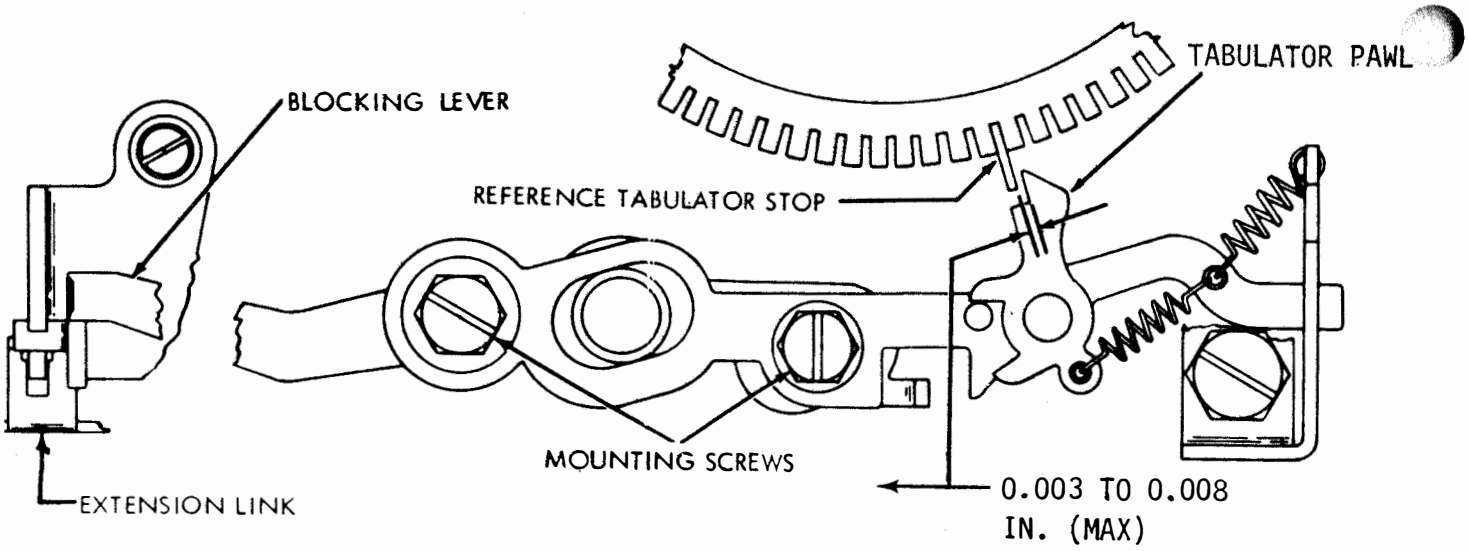
(o) If tip of pawl rests on end of stop, readjust plate to right so that clearance between pawl and stop is from 0.003 to 0.008 inch maximum.

(p) Tighten left mounting screw.

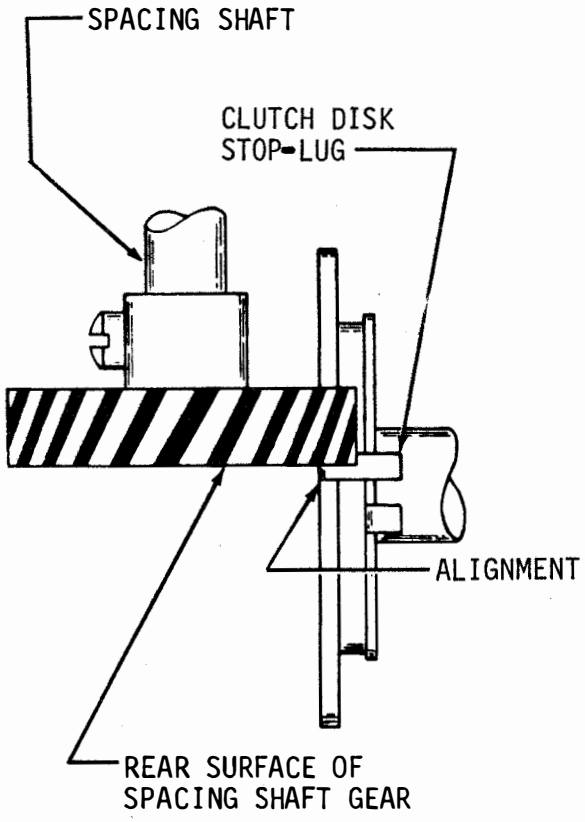
(21) Tabulator Stop Settings. Adjust as follows:

NOTE

For instructions on how to move tabulator stops, see paragraph 6-12a(16). When printing forms, check stop settings in relation to columns. Corresponding stops on all machines on a circuit must be the same number of slots from left margin.



FRONT VIEW



BOTTOM VIEW

Figure 6-377. Tabulator Pawl-Horizontal (Final)

(a) Refer to Figure 6-378.

(b) To adjust columnar tabulator stops, place carriage in position to print first character in column.

(c) Place stop in slot immediately to left of pawl.

(d) To facilitate inserting stops, mark desired slot and rotate drum to more accessible position.

(e) For setting near left margin, count number of spacing operations from left margin and place stop corresponding number of slots counterclockwise from roller.

NOTE

Before making this adjustment, check right margin and tabulator pawl adjustments.

(f) To adjust right margin tabulator stop (with wide shelf), position printing carriage at right margin (spacing cutout operated).

(g) Insert stop with wide shelf in slot immediately to left of pawl. Shelf should extend to right so pawl rests on it.

NOTE

If either adjustment, Operating Lever Extension Link, paragraph 6-12a(3), or Operating Lever Adjusting Plate, paragraph 6-12a(5) are changed, recheck (22) and (23), below.

(22) Transmitter Control Contact Gap. Adjust as follows:

NOTE

If slack in switch cable assembly is insufficient to permit access to mounting screws, loosen cable ties and reposition cable to obtain a slight amount of slack at switch end.

(a) Refer to Figure 6-379.

(b) Pull operating lever extension link to rear until it is blocked by blocking lever.

(c) Gap between contacts should measure 0.010 to 0.020 inch maximum.

(d) If contact gap exceeds specified limits, loosen mounting screw and position contact assembly bracket. Bracket pivots about a pin at upper end of bracket.

(23) Transmitter Control Contact Spring. Adjust as follows:

(a) Refer to Figure 6-380.

(b) Place operating lever in unoperated position.

(c) Attach spring scale hook to long contact spring and measure force required to barely open contacts. This should be 3-1/2 to 4-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, loosen mounting screw

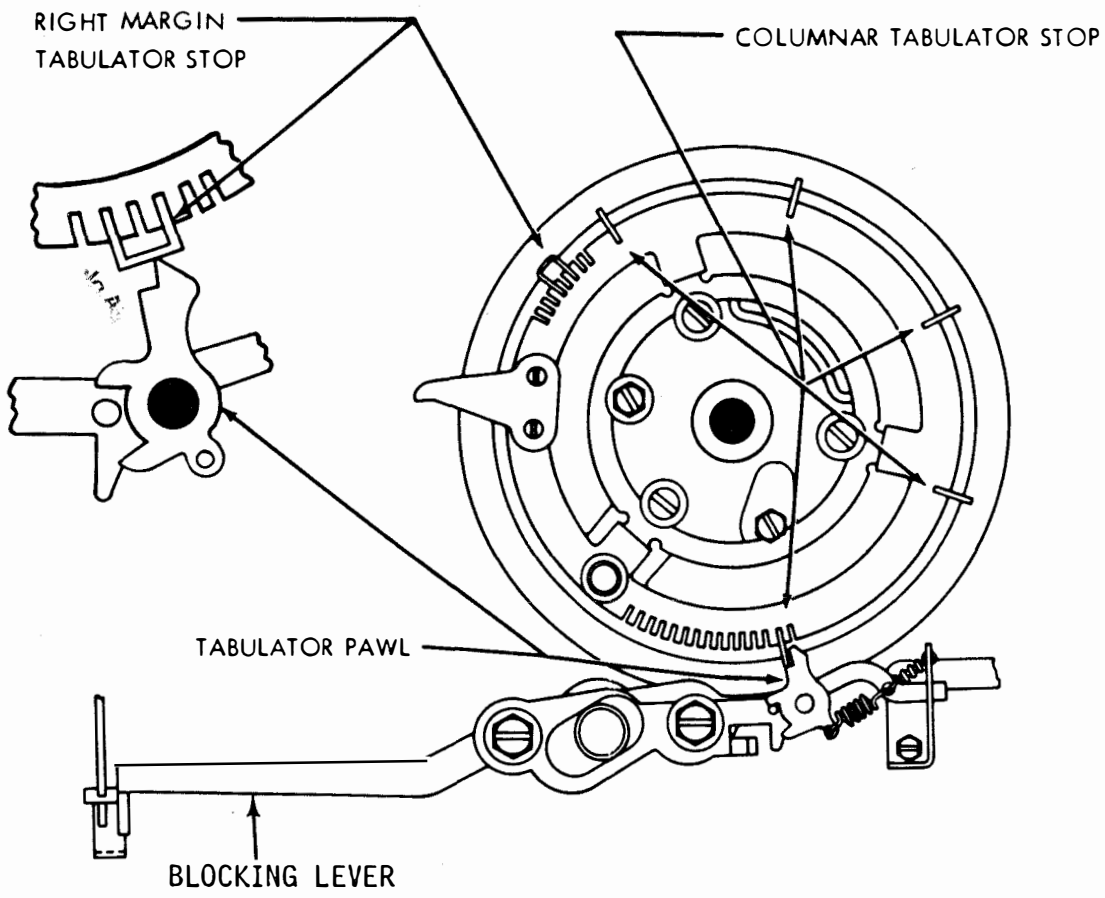


Figure 6-378. Tabulator Stop Setting, Front View

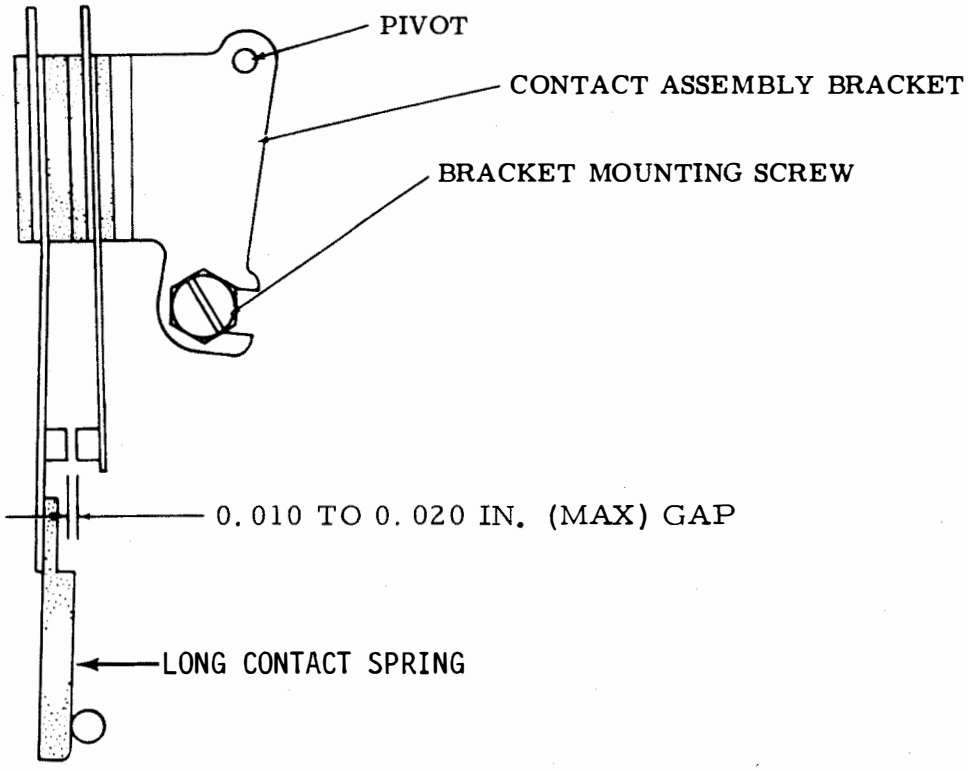


Figure 6-379. Transmitter Control Contact Gap, Left Side View

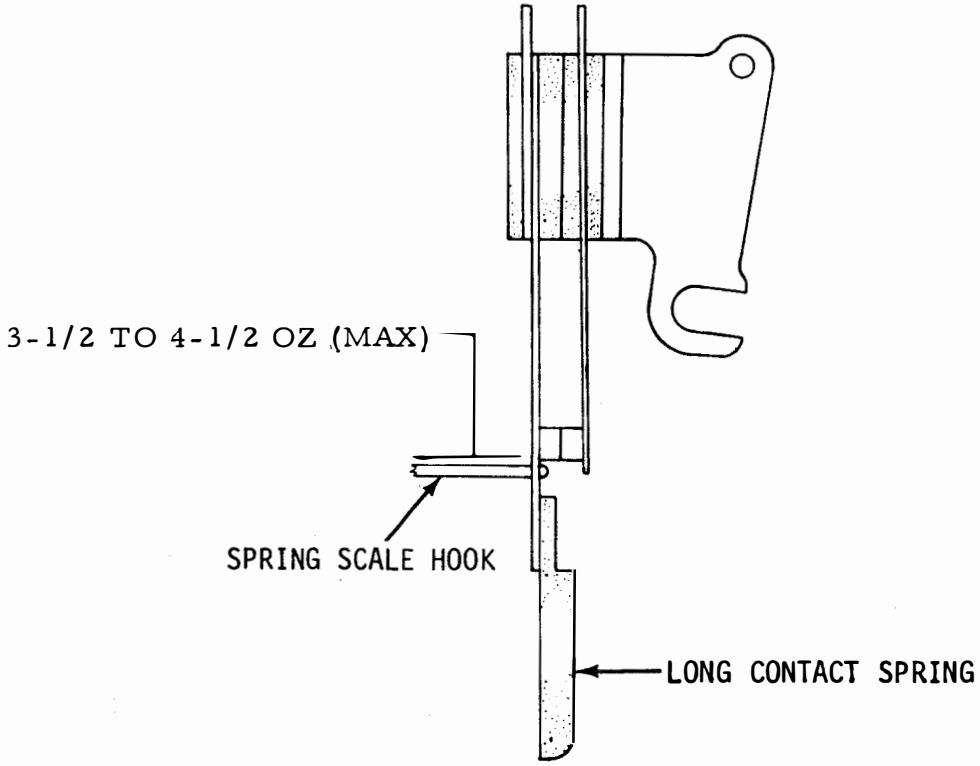


Figure 6-380. Transmitter Control Contact Spring, Left Side View

and pivot contact bracket toward rear until it clears mounting screw.

(e) Slide bracket to left of pin in upper end of bracket mounting plate and lift switch out to a more accessible position.

(f) Adjust spring tension by bending long contact spring.

(g) Install contact bracket assembly by reversing procedures in steps (d) and (e).

(h) Tighten mounting screw.

b. Page Feed-Out Mechanism Adjustments. Perform the following page feed-out mechanism adjustments.

(1) Page Feed-Out Gear Play. Adjust as follows:

(a) Refer to Figure 6-381.

(b) Ensure page feed-out gear backlash is barely perceptible.

(c) If backlash is excessive, loosen nut on gear pivot post and position gear pivot post. Tighten nut.

(2) Mounting Bracket. Adjust as follows:

(a) Refer to Figure 6-381.

(b) Select feed-out sequence, disengage code bar clutch. Take up play in blocking arm and feed-out slide to make clearance minimum.

(c) Clearance between blocking arm and page feed-out slide should measure 0.002 to 0.015 inch maximum.

(d) To adjust, loosen mounting bracket mounting screws and position lower part of mounting bracket. Tighten screws.

(3) Indexing Disk. Adjust as follows:

(a) Refer to Figure 6-381.

(b) Disengage line-feed clutch, position index plate adjacent to bail, and take up play between gears to minimize clearance.

(c) Clearance between highest numbered index plate and bail should measure 0.020 to 0.040 inch maximum. Clearance should be from 0.020 to 0.040 inch maximum.

NOTE

If page feed-out gear has uneven number of teeth, rotate platen until screw head in platen spur gear is up and platen is detented. Then proceed with adjustment.

(d) If clearance exceeds specified limits, disengage gear from idler, turn handwheel clockwise until index plate just operates bail, and engage first tooth on idler.

(e) Loosen three mounting screws and position indexing disk. Tighten screws.

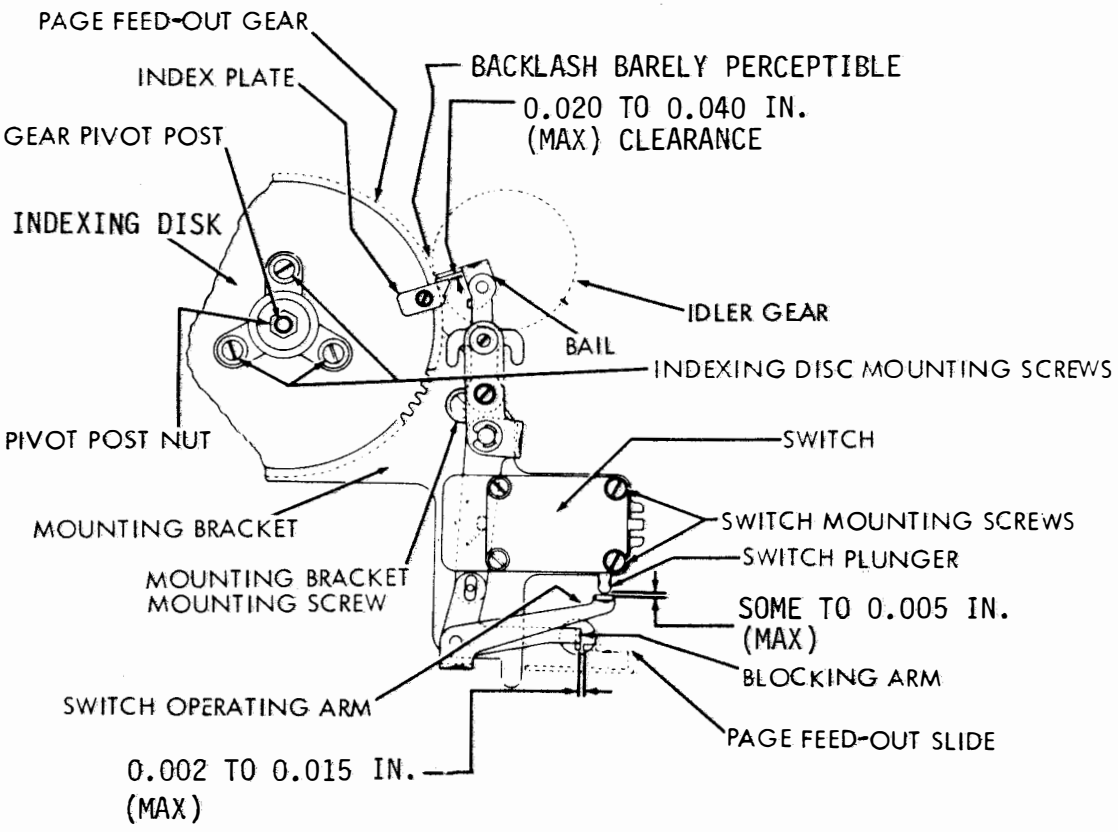


Figure 6-381. Page Feed-Out Gear Play, Mounting Bracket, Indexing Disk, and Switch Operating Arm (Transmitter Control), Left Side View

(4) Switch Operating Arm (Used Only With Transmitter Control). Adjust as follows:

(a) Refer to Figure 6-381.

(b) Place blocking arm in position to block slide.

(c) Clearance between switch operating arm and switch plunger should measure some to 0.005 inch maximum.

(d) If clearance exceeds specified limits, loosen two mounting screws and position switch. Tighten screws.

(5) Pointer. Adjust as follows:

(a) Refer to Figure 6-382.

(b) Disengage line-feed clutch and position index plate adjacent to bail.

(c) Ensure pointer is aligned with notch in indexing disk and clears disk by approximately 1/16 inch.

(d) If pointer is misaligned or clearance exceeds specified limit, loosen mounting screws and position pointer. Tighten screws.

(6) Blocking Arm. Adjust as follows:

(a) Refer to Figure 6-382.

(b) Set bail on peak of index plate.

(c) Clearance between blocking arm and upper surface of page feed-out slide should measure 0.005 to 0.045 inch maximum.

(d) If clearance is not within specified limits, loosen mounting screws and position adjustable arm. Tighten screws.

NOTE

If requirement cannot be met for each plate, reposition plate with mounting screw loosened.

(7) Blocking Arm Spring. Adjust as follows:

(a) Refer to Figure 6-382.

(b) Place blocking arm in unblocked position.

(c) Unhook end of spring from blocking arm and attach spring scale hook to free end of spring.

(d) Force required to pull spring to its operating length should measure 3 to 5 ounces maximum.

(e) If requirement is not met, replace spring.

c. Selective Calling Mechanism Adjustment. Perform the following selective calling mechanism adjustments.

(1) Type Box Clutch Trip Lever (Selective Calling Units With or Without Off-Line Shift Solenoid). Adjust as follows:

(a) Refer to Figure 6-383.

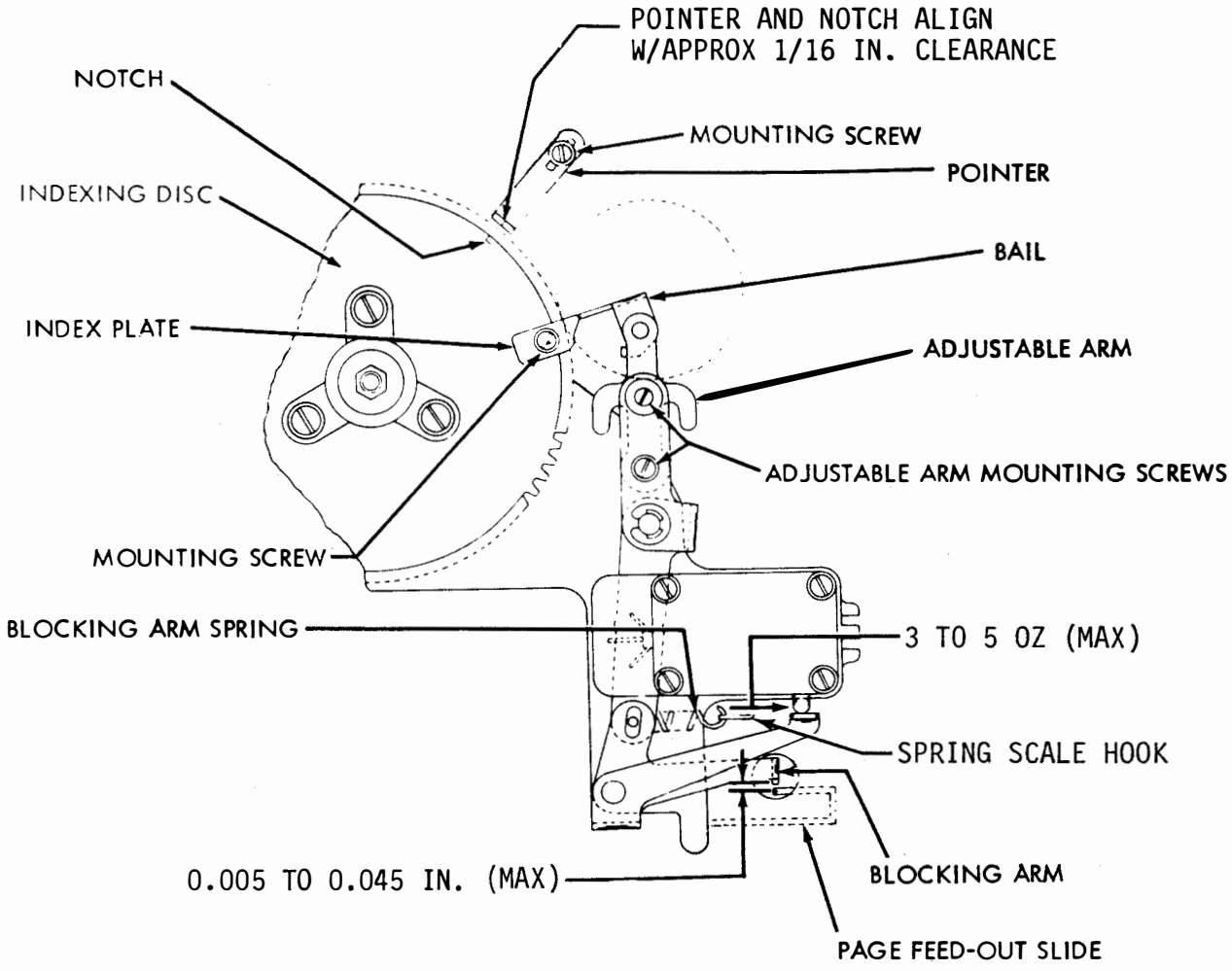


Figure 6-382. Pointer, Blocking Arm, and Blocking Arm Spring, Left Side View

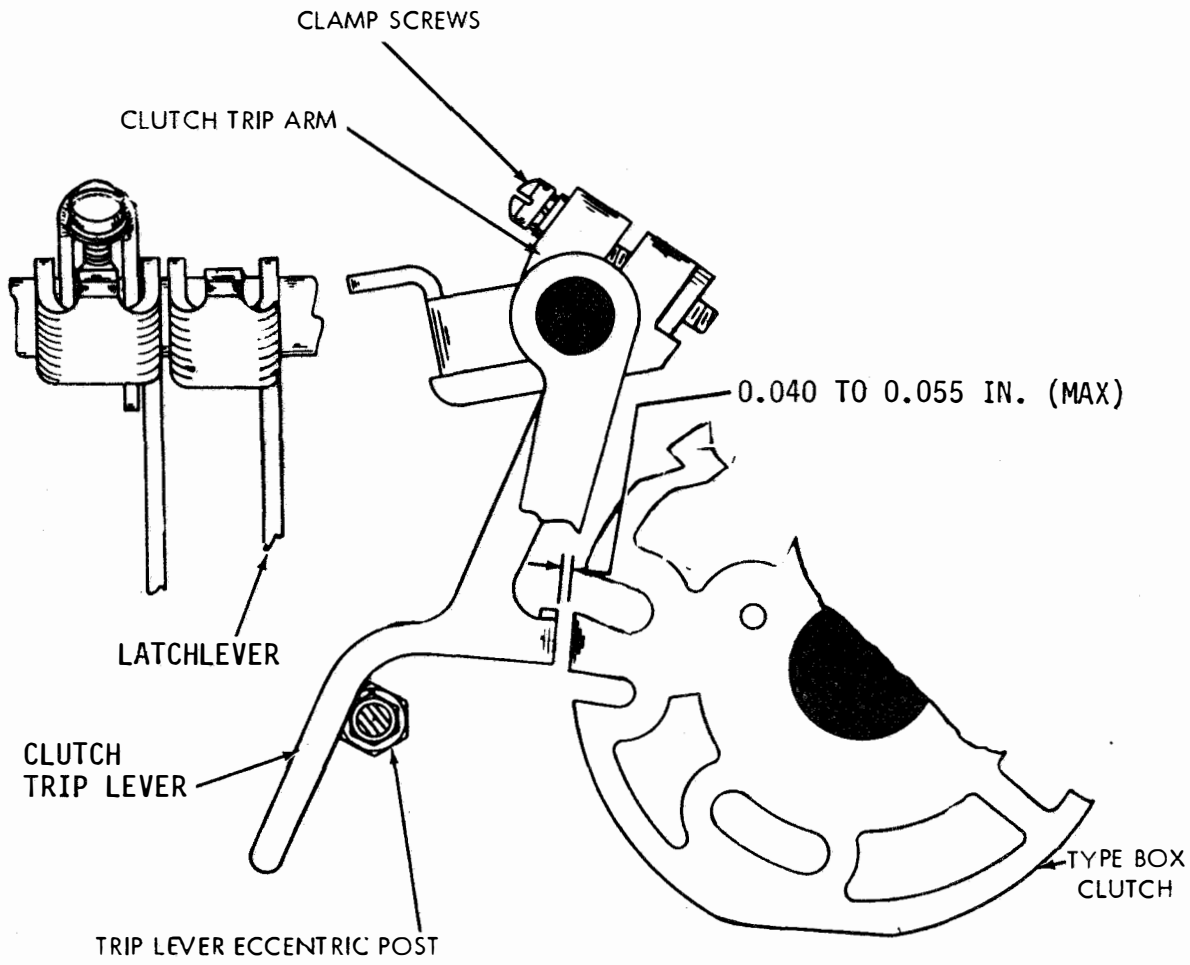


Figure 6-383. Type Box Clutch Trip Lever (Selective Calling Units, With or Without Off-Line Shift Solenoid), Left Side View

(b) Position trip shaft cam follower roller on lowest surface of cam (located on code bar clutch).

(c) Clearance between inner face of type box clutch trip lever and clutch disk stop-lug should measure 0.040 to 0.055 inch maximum.

(d) If clearance exceeds specified limits, loosen clamp screw and position stop. Tighten clamp screw.

(2) Print Suppressor Code Bar Spring. Adjust as follows:

(a) Refer to Figure 6-384.

(b) Move suppressor code bar to left.

(c) Apply spring scale pushrod to code bar and measure force required to start code bar moving. This should be 4-1/2 to 7-1/2 ounces maximum. Code bars should be free of binds.

(d) If requirement is not met, replace spring.

(3) Code Bar Shift Mechanism. Adjust as follows:

(a) Refer to Figure 6-385.

(b) Place function clutch in STOP position, latch function lever (shift mechanism) on its lower releasing latch, and shift all code bars to the right.

(c) Ensure notch in suppressor code bar is in alignment with notches in other code bars.

(d) To adjust, loosen guideplate clamp nuts and position upper or lower guideplate to align notches.

(e) Position guideplate so movement of fork is not restricted within range of adjustment. Tighten clamp nuts.

(f) Repeat steps (b) through (e) for each stunt case.

(4) Condition Code (Zero) Code Bar Shift Mechanism. Adjust as follows:

(a) Refer to Figure 6-385.

(b) Place function clutch in STOP position, latch function lever (shift mechanism), and shift all code bars to the right.

(c) Ensure notch in suppressor code bar is in alignment with notches in other code bars.

(d) To adjust, loosen guideplate clamp nuts and position upper or lower guideplate to align notches.

(e) Position associated guideplate so movement of fork is not restricted. Tighten clamp nuts.

(5) Off-Line Shift Solenoid Bracket Assembly (Off-Line Only). Adjust as follows:

(a) Refer to Figure 6-385.

(b) Place function clutch in STOP position and shift all code bars to the right.

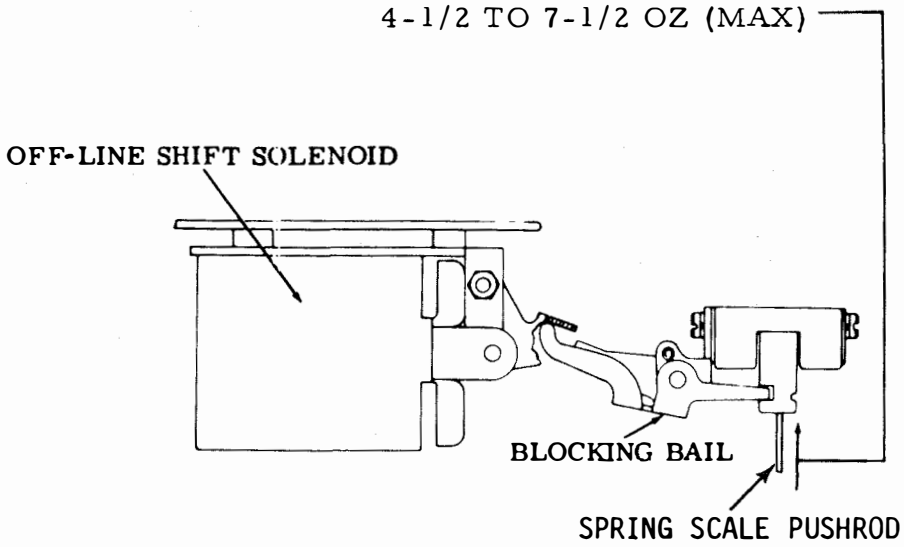


Figure 6-384. Print Suppressor Code Bar Spring, Front View

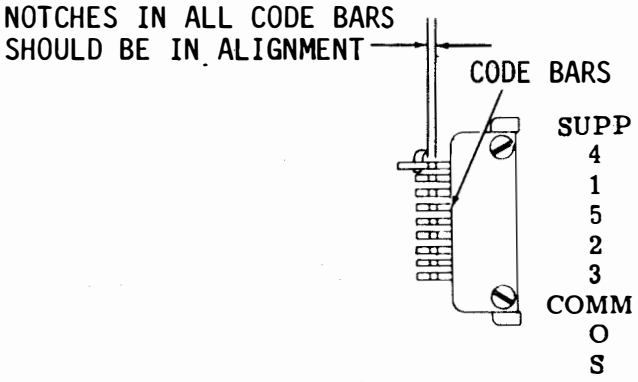


Figure 6-385. Code Bar Shift Mechanism, Condition Code (Zero) Code Bar Shift Mechanism, and Off-Line Shift Solenoid Bracket Assembly, Front View

(c) Ensure notch in suppression code bar is in alignment with notches in other code bars.

(d) To adjust, loosen mounting screws and position solenoid bracket assembly. Tighten screws.

(6) Blocking Bail. Adjust as follows:

(a) Refer to Figure 6-386.

(b) Latch function lever of any stunt case code bar shift mechanism and rotate main shaft until lower surface of suppression arm is in approximate alignment with bottom surface of blocking bail extension.

(c) With play taken up to produce minimum clearance, clearance between suppression arm and blocking bail extension should be 0.008 to 0.055 inch maximum.

(d) To adjust, loosen mounting screw and position extension to obtain specified clearance. Tighten mounting screw.

(e) Refine adjustment if necessary and recheck each shift mechanism.

(f) Refine stunt case code bar shift mechanism adjustment of any shift mechanism that does not meet the above requirements.

(7) Off-Line Stunt Shift Solenoid Spring. Adjust as follows:

(a) Refer to Figure 6-386.

(b) Place solenoid in unoperated position and unhook one end of spring.

(c) Attach spring scale hook to free end of spring and measure force required to pull spring to its installed length. This should be 2 to 4-1/2 ounces maximum.

(d) If requirement is not met, replace spring.

(8) Type Box Clutch Suppression Arm. Adjust as follows:

(a) Refer to Figure 6-386.

(b) Place suppression arm in blocking position and rotate shaft until function clutch shoe lever is opposite function clutch trip lever.

(c) Clearance between trip arm extension and clutch trip lever should measure 0.003 inch minimum.

(d) Clearance between function clutch shoe lever and function clutch trip lever should measure 0.006 inch minimum.

(e) If clearance in either step (c) or step (d) exceeds specified limit, loosen suppression arm mounting screw and position suppression arm. Tighten screw.

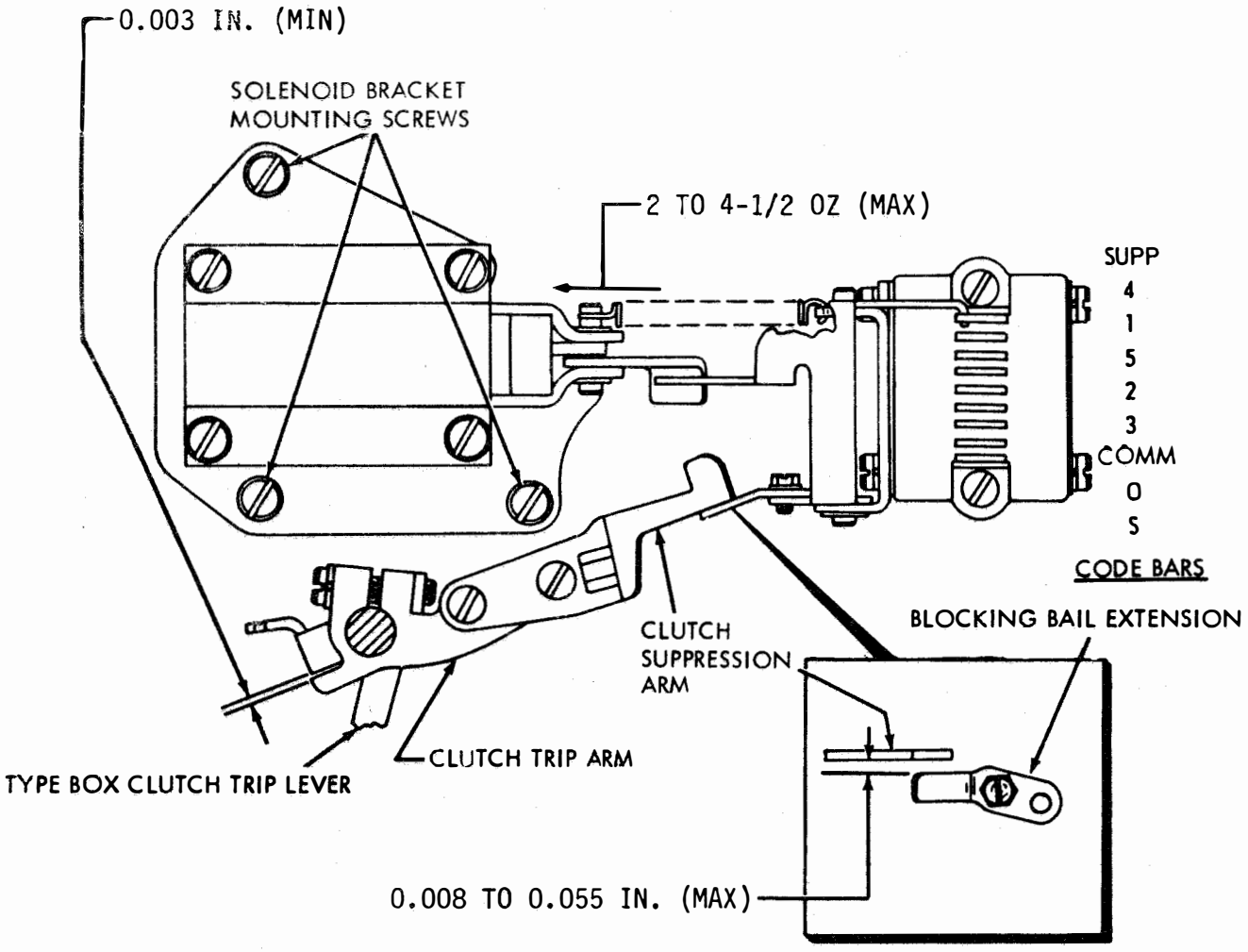


Figure 6-386. Blocking Bail, Off-Line Stunt Shift Solenoid Spring, and Type Box Clutch Suppression Arm, Front View

(9) Condition Code Shift Fork Spring. Adjust as follows:

(a) Refer to Figure 6-387.

(b) Unhook one end of spring and attach spring scale hook to free end of spring.

(c) Force required to extend spring to its installed length should measure 1 to 3 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring. Otherwise, reconnect free end of spring.

(10) Automatic Carriage Return/Line-Feed Blocking Slide Spring. Adjust as follows:

(a) Refer to Figure 6-388.

(b) Unhook spring end opposite from condition code shift fork and attach spring scale hook to free end of spring.

(c) Force required to extend spring to its installed length should measure 1 to 3 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring. Otherwise, reconnect free end of spring.

d. Local Backspace Mechanism Adjustment. Perform the following local backspace mechanism adjustments.

(1) Camming Bail Spring. Adjust as follows:

(a) Refer to Figure 6-389.

(b) Apply spring scale pushrod to backspace camming bail and measure force required to start bail moving. This should be 1 to 2-1/4 ounces maximum.

(c) If requirement is not met, replace spring.

(2) Camming Bail Stop Arm. Adjust as follows:

(a) Refer to Figure 6-390.

(b) Disengage spacing clutch, place front feed pawl in lower position, and hold backspace bail in operated position. Trip clutch and rotate main shaft until front and rear feed pawl teeth are in line.

(c) Clearance between pawl and tooth on spacing drum ratchet wheel should measure 0.015 to 0.035 inch maximum.

(d) To adjust, position adjusting plate on intermediate arm in center of its adjusting range. Loosen stop arm mounting screw friction tight and position camming bail stop arm. Tighten screw.

(e) There should be some clearance between feed pawl teeth and ratchet throughout travel of carriage from left to right.

(f) Refine adjustment described in step (d), if necessary.

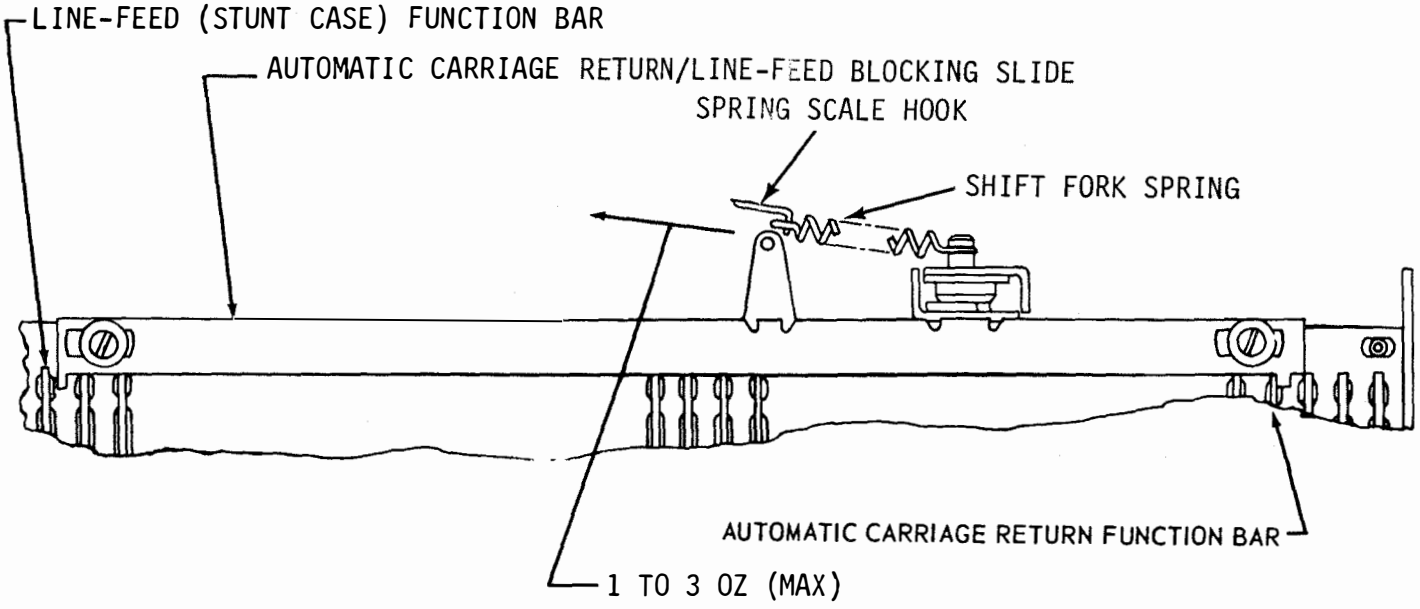


Figure 6-387, Condition Code Shift Fork Spring, Front View

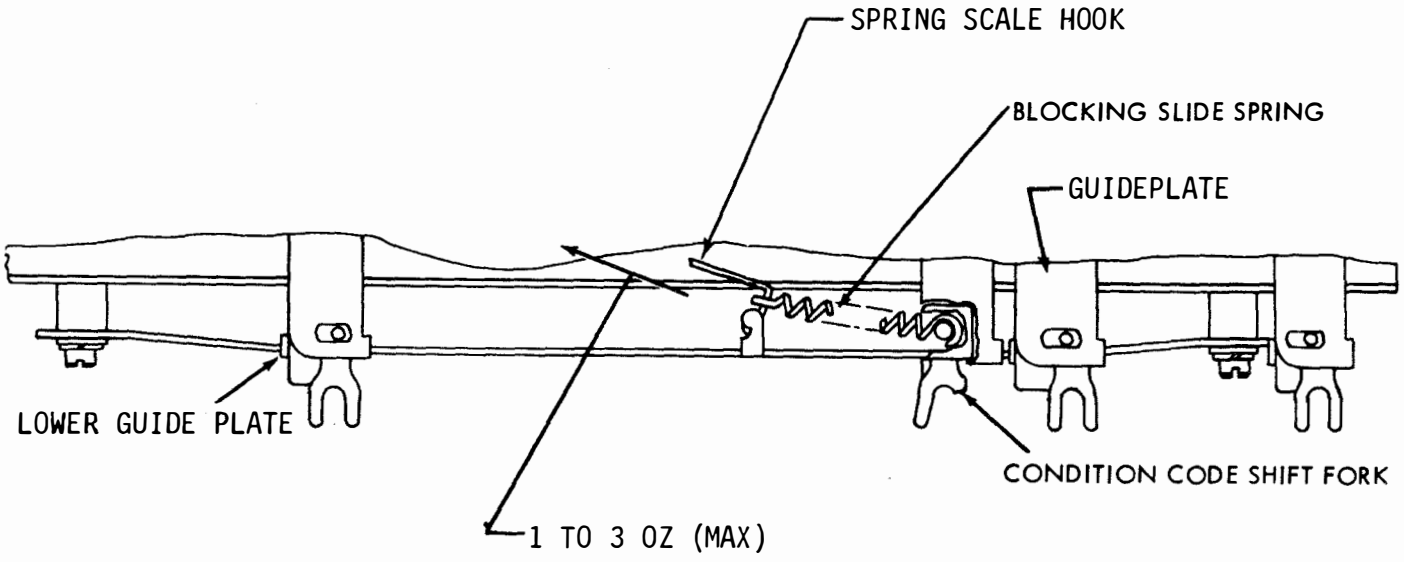


Figure 6-388. Automatic Carriage Return/Line-Feed Blocking Slide Spring, Top View

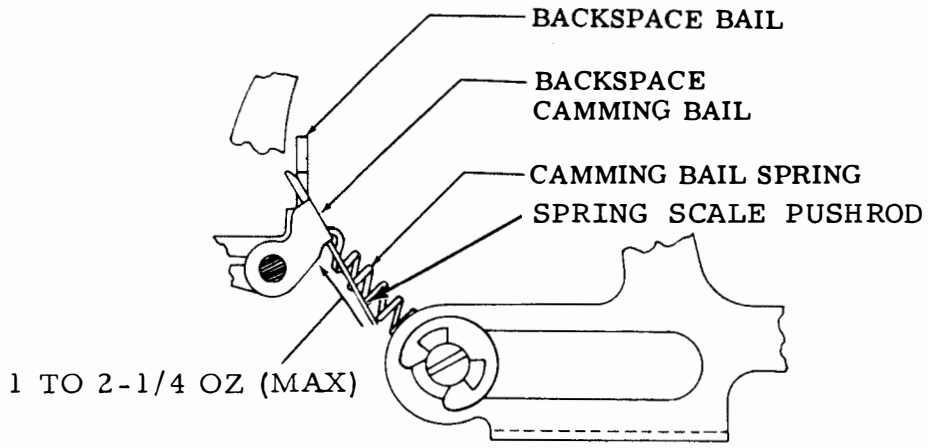


Figure 6-389. Camming Bail Spring, Front View

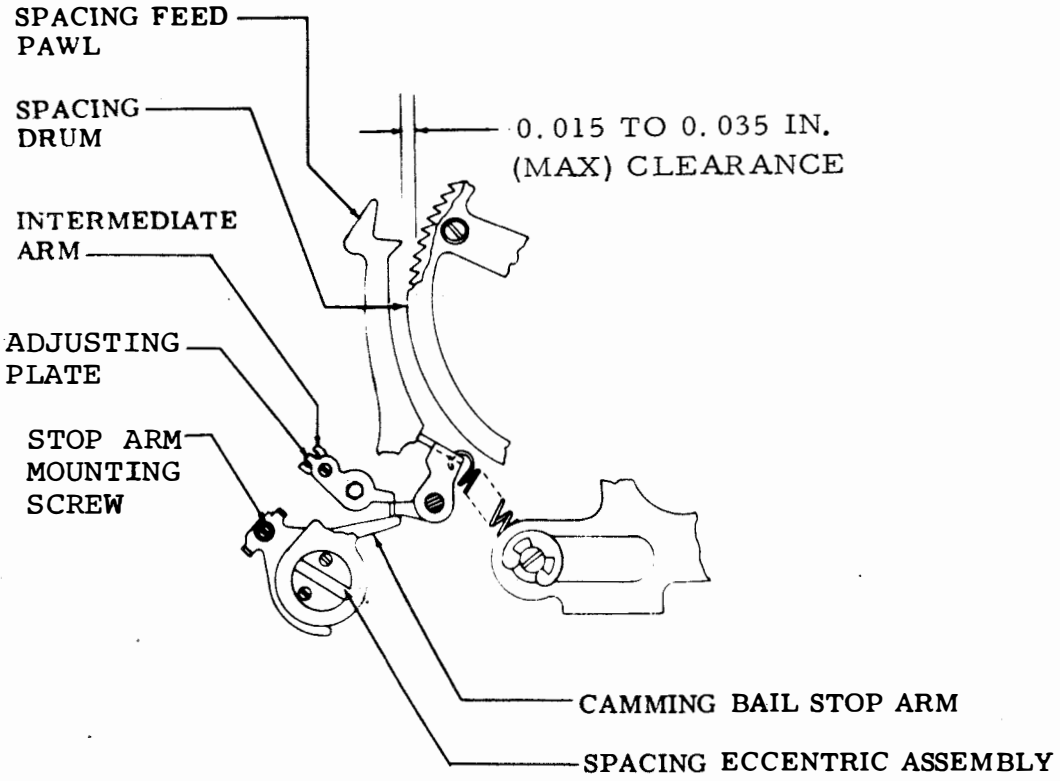


Figure 6-390. Camming Bail Stop Arm, Front View

e. Answer-Back Mechanism FIGURES Stunt Box Contact Adjustment. Perform the answer-back mechanism FIGURES stunt box contact adjustment as follows:

(1) Refer to Figure 6-391.

(2) With stunt box mounted on typing unit, manually set up LETTERS combination (12345) on typing unit selector.

(3) Rotate typing unit main shaft until function lever is in extreme forward position toward contact insulator.

(4) Clearance between contact insulator and function lever should measure some to 0.010 inch maximum.

(5) If clearance exceeds specified limits, loosen contact mounting screws and add or remove shims.

(6) Tighten mounting screws.

f. Print Suppression Mechanism Adjustments. Perform the following print suppression mechanism adjustments.

(1) Zero Code Bar Shift Mechanism. Adjust as follows:

(a) Refer to Figure 6-392.

(b) Rotate function clutch until function bars are in extreme rear position.

(c) Hook line-feed function pawl over its function bar and strip it.

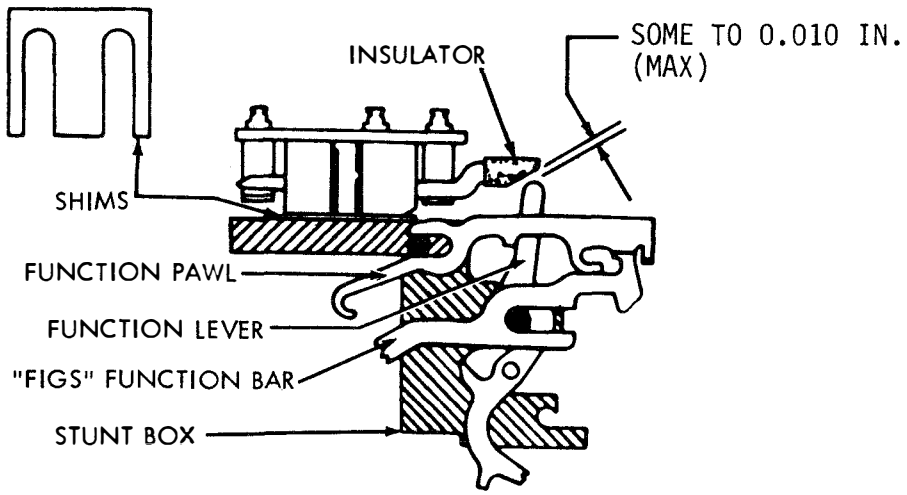


Figure 6-391. FIGURES Stunt Box Contact, Right Side View

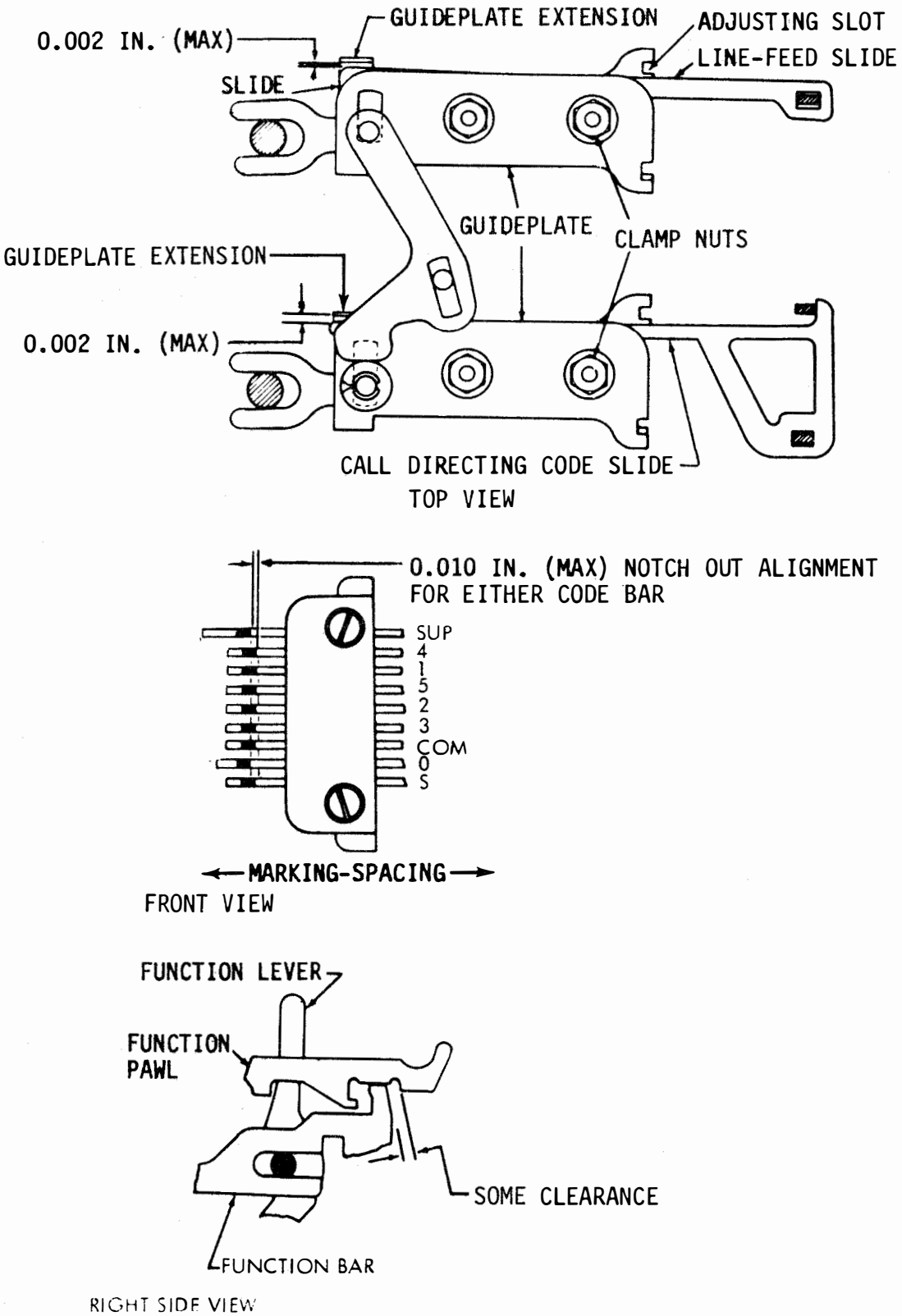


Figure 6-392. Zero Code Bar Shift Mechanism and Suppression Code Bar Mechanism

(d) Notch in zero code bar should line up vertically with notches in 4, 1, 5, 2, and 3 code bars, although it may be out of alignment by 0.010 inch maximum in marking direction.

(e) Clearance between guideplate and slide should measure 0.002 inch maximum.

(f) If clearance exceeds specified limits, loosen guideplate clamp nuts and position guideplate by its lower adjusting slot. Tighten nuts.

(2) Suppression Code Bar Mechanism. Adjust as follows:

(a) Refer to Figure 6-392.

(b) Place function bars in rear position.

(c) Hook call directing function pawl over its function bar and strip it.

(d) Notch in suppression code bar should line up vertically with notches in 4, 1, 5, 2, and 3 code bars by 0.010 inch maximum.

(e) Clearance between guideplate extension and slide should measure 0.002 inch maximum.

(f) If clearance exceeds specified limits, loosen guideplate clamp nuts and position guideplate by its lower adjusting slot. Tighten nuts.

(g) Alternately hook line-feed function pawl and call directing function pawl over their respective function bars.

(h) Ensure there is some clearance between rear end of function bar and face of notch on function pawl.

(i) If not, refine adjustments made in steps (d) and (c).

g. Continuous Spacing Mechanism Adjustments. Perform the following continuous spacing mechanism adjusments.

(1) Function Clutch Trip Lever. Adjust as follows:

(a) Refer to Figure 6-393.

(b) Deenergize solenoid and disengage function clutch.

(c) Function clutch trip lever should engage clutch shoe lever by full thickness of shoe lever. When checking two-stop clutches, check at lug with least bite.

NOTE

When positioning the solenoid mounting plate, move each end equally to avoid binding between solenoid plunger and function clutch trip lever.

(d) If engagement is not as specified, loosen mounting screws and position solenoid mounting plate. Tighten screws.

(2) Solenoid Plunger Spring. Adjust as follows:

(a) Refer to Figure 6-393.

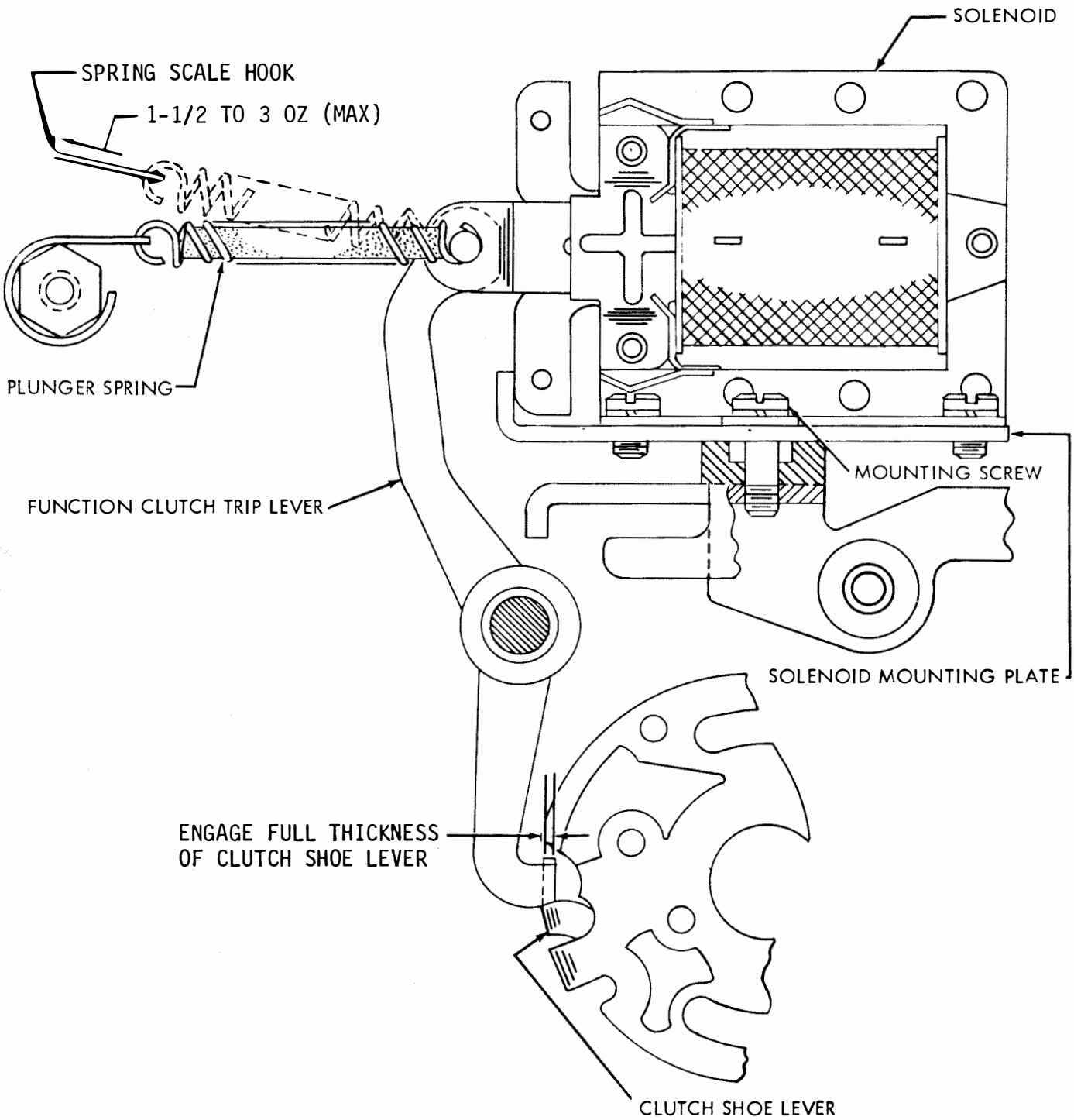


Figure 6-393. Function Clutch Trip Lever and Solenoid Plunger Spring, Left Side View

(b) De-energize solenoid and unhook spring end farthest from function clutch trip lever.

(c) Attach spring scale hook to free end of spring and measure force required to pull spring to position length. This should be 1-1/2 to 3 ounces maximum.

(d) If requirements are not met, replace spring.

(3) Suppression Bail Adjusting Bracket. Adjust as follows:

(a) Refer to Figure 6-394.

(b) Rotate function clutch until suppression bail is in extreme forward position.

(c) Push carriage return and line-feed function slide arms forward manually until carriage return and line-feed levers are tripped.

(d) Ensure slide arms rest against slide arm brackets.

(e) Clearance between projection on carriage return slide arm and guide bars should measure 0.070 to 0.095 inch maximum.

(f) If clearance exceeds specified limits, loosen adjusting bracket clamp screw and adjust bracket.

(g) Tighten clamp screw and recheck.

NOTE

When checking two-stop clutches, check clearance with clutch in each position.

(4) Reset Bail Operating Spring. Adjust as follows:

(a) Refer to Figure 6-395.

(b) Place function reset bail in forward position.

(c) Apply spring scale hook to connecting link and measure force required to start bail moving. This should be 2-1/2 to 3-1/2 pounds maximum.

(d) If requirement is not met, replace spring.

(5) Carriage Return Lever. Adjust as follows:

NOTE

Before making the following adjustment, check the carriage return lever adjustment. With the stunt box removed, the standard adjusting procedure cannot be followed. Refer to paragraph 6-3.1d(14) and use the procedure described in the following steps.

(a) Refer to Figure 6-396.

(b) Place printing carriage on returned position.

(c) Trip function clutch and rotate main

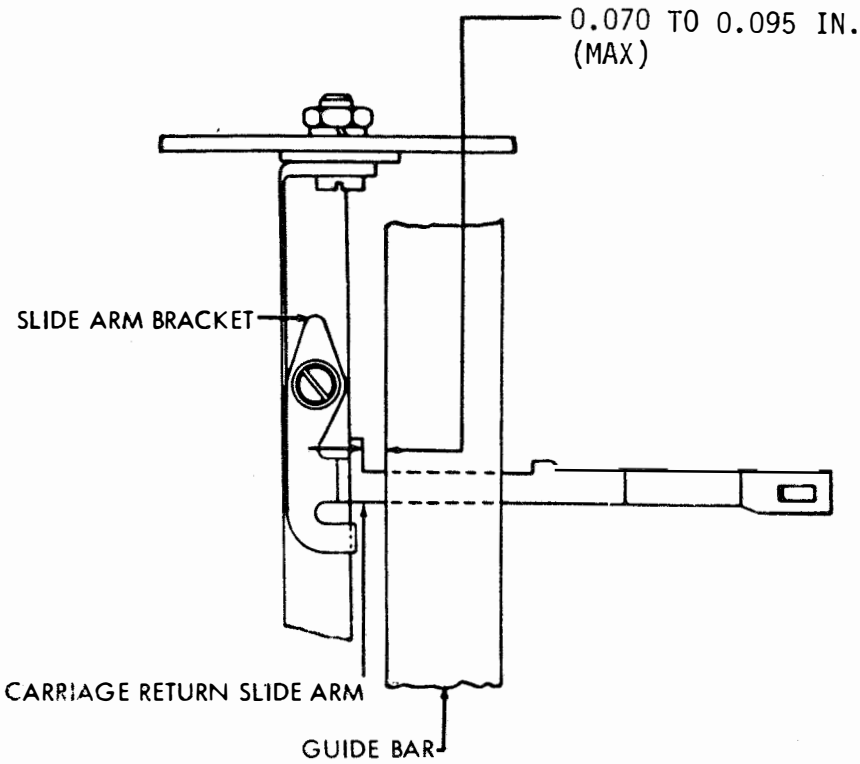


Figure 6-394. Suppression Bail Adjusting Bracket, Top View

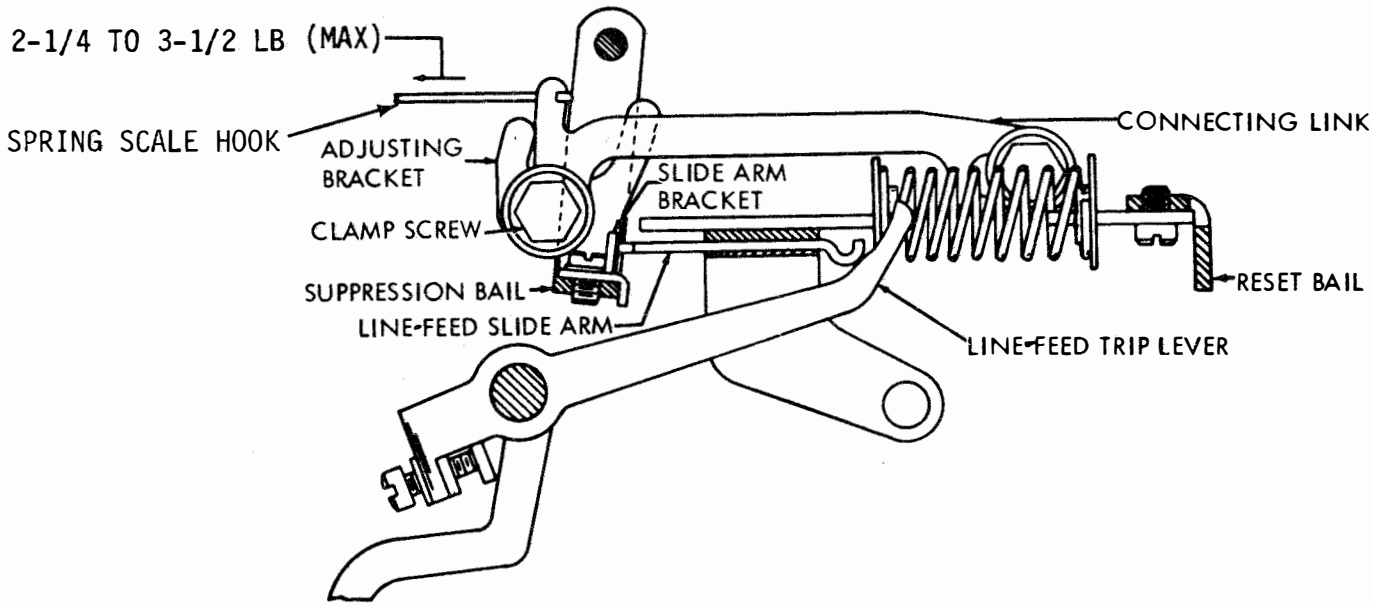


Figure 6-395. Reset Bail Operating Spring, Left Side View

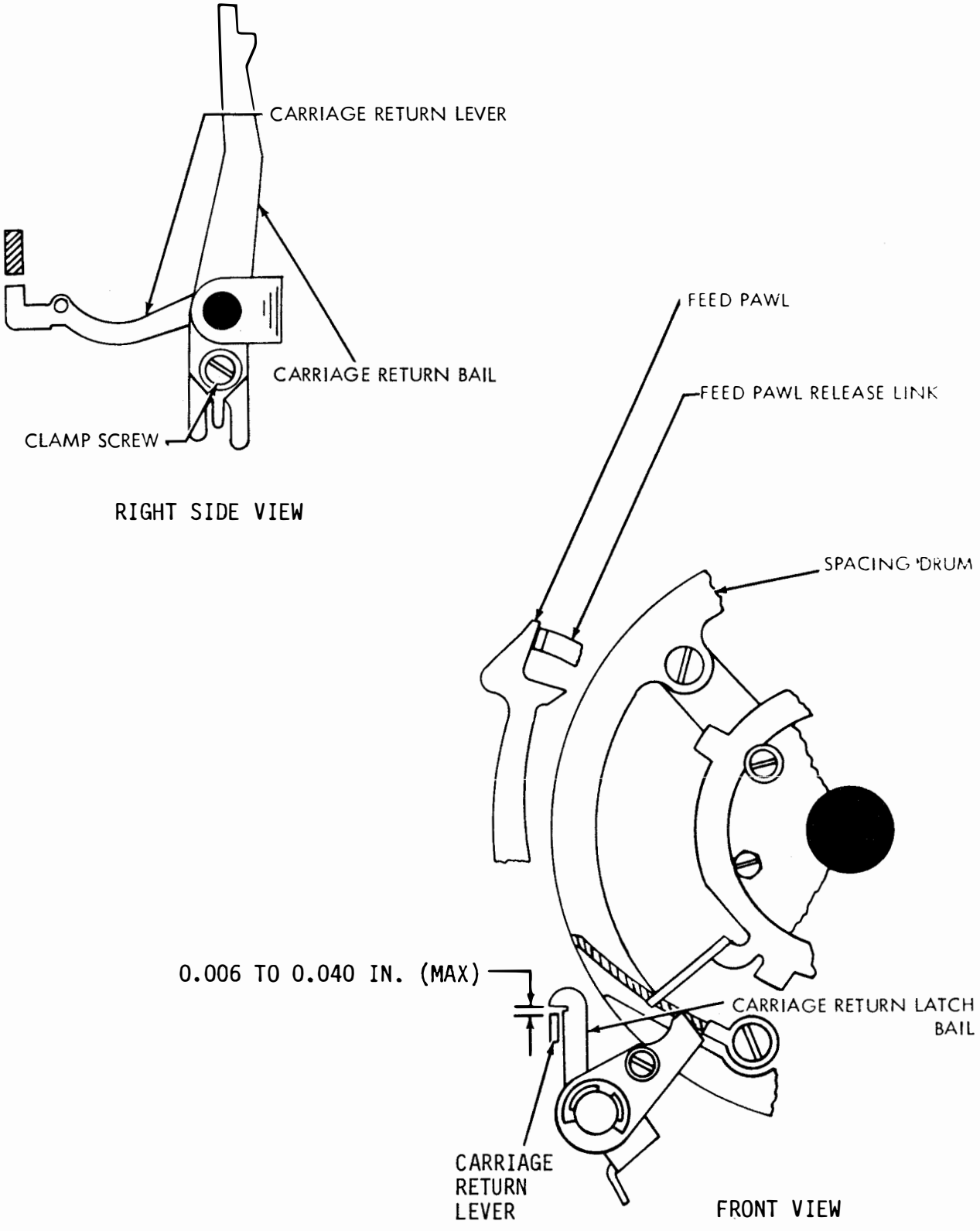


Figure 6-396. Carriage Return Lever

shaft until suppression bail is in extreme forward position.

(d) Locate spacing drum so carriage return bail rests against carriage return lever extension.

(e) Clearance between carriage return latch bail and carriage return lever should measure 0.006 to 0.040 inch maximum.

(f) If clearance exceeds specified limits, loosen clamp screw and position carriage return lever on carriage return latch bail. Tighten screw.

h. Paper-Out Alarm Mechanism Adjustments. Perform the following paper-out alarm mechanism adjustments.

(1) Switch Position. Adjust as follows:

(a) Refer to Figure 6-397.

(b) Move switch toward upper limit of its travel in mounting holes.

(c) Ensure horizontal axis of switch lies in a plane parallel to switch bracket.

(d) If not, loosen two mounting screws.

(e) Position and align switch to meet requirement.

(f) Tighten two mounting screws.

(2) Switch Bracket Spring. Adjust as follows:

(a) Refer to Figure 6-397.

(b) Apply spring scale pushrod to top of switch bracket operating lever near spring hook.

(c) Force required to move switch bracket clear of switch plunger should be 11 to 18 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(3) Switch Operating Lever. Adjust as follows:

(a) Refer to Figure 6-398.

(b) Remove paper roll.

(c) Ensure upper surface of lever lies in a plane parallel with underside of hexagonal paper spindle and rests approximately 1/4 inch from spindle.

(d) If requirement is not met, loosen mounting screw and position switch assembly upward or downward.

(e) Tighten switch assembly mounting screw.

i. Vertical Tabulation and Transmitter Distributor Control Mechanism Adjustments. Perform the following vertical tabulation and transmitter distributor control mechanism adjustments.

(1) Page Feed-Out Gear Play. Adjust as follows:

(a) Refer to Figure 6-399.

(b) Ensure backlash between idler gear and

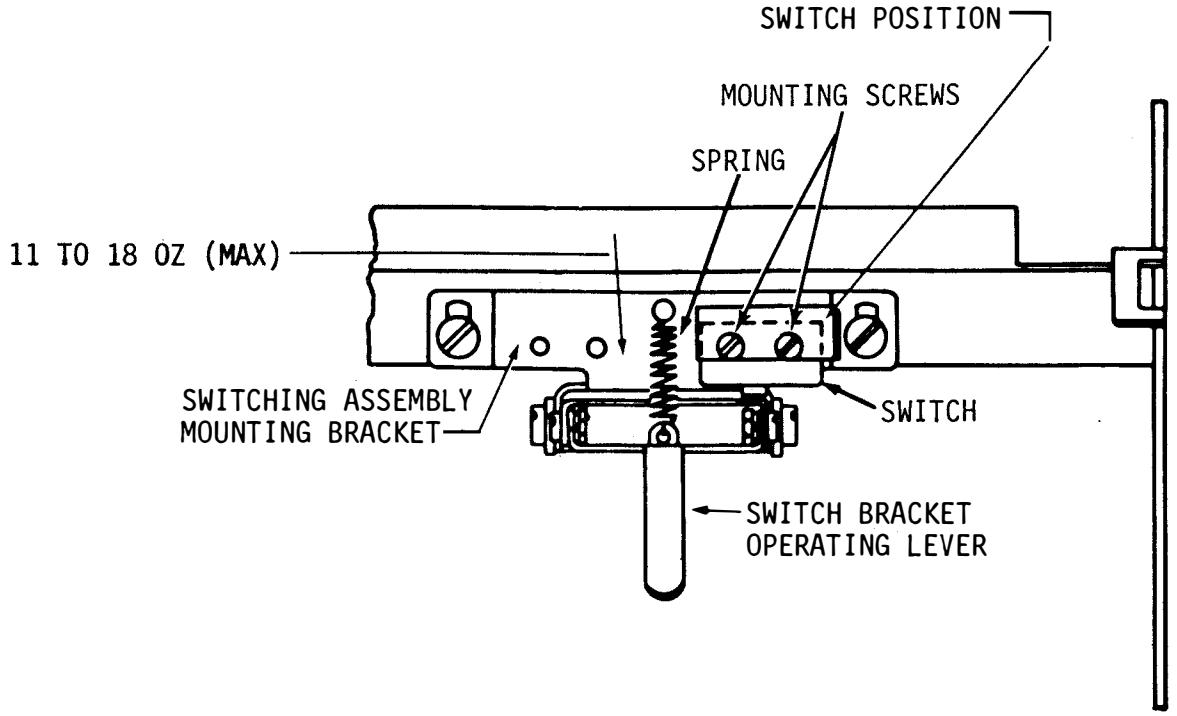


Figure 6-397. Switch Position and Switch Bracket Spring, Rear View

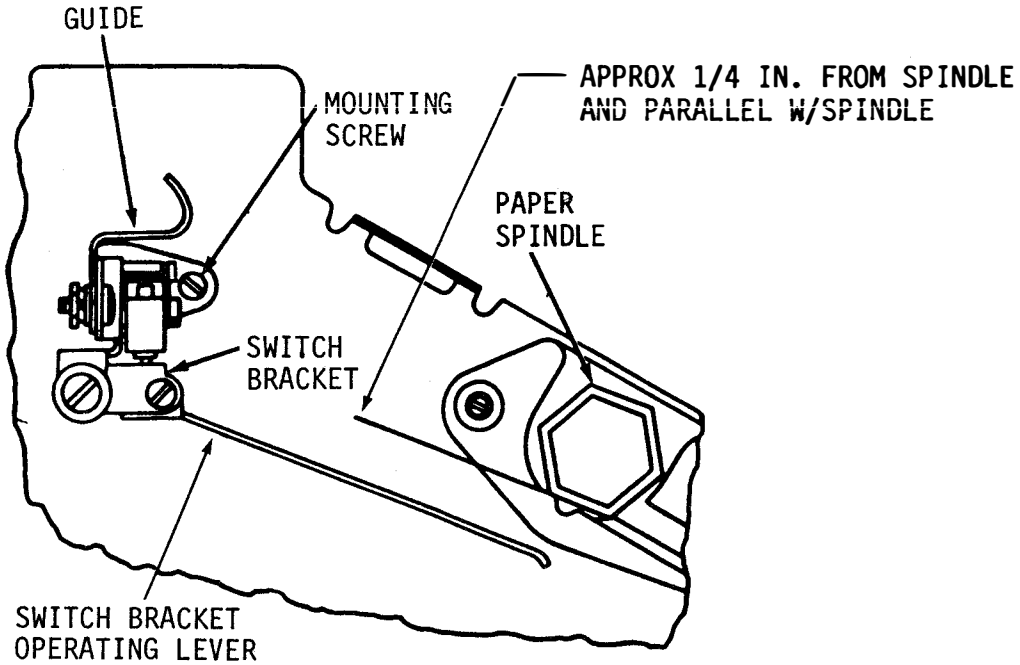


Figure 6-398. Switch Operating Lever, Right Side View

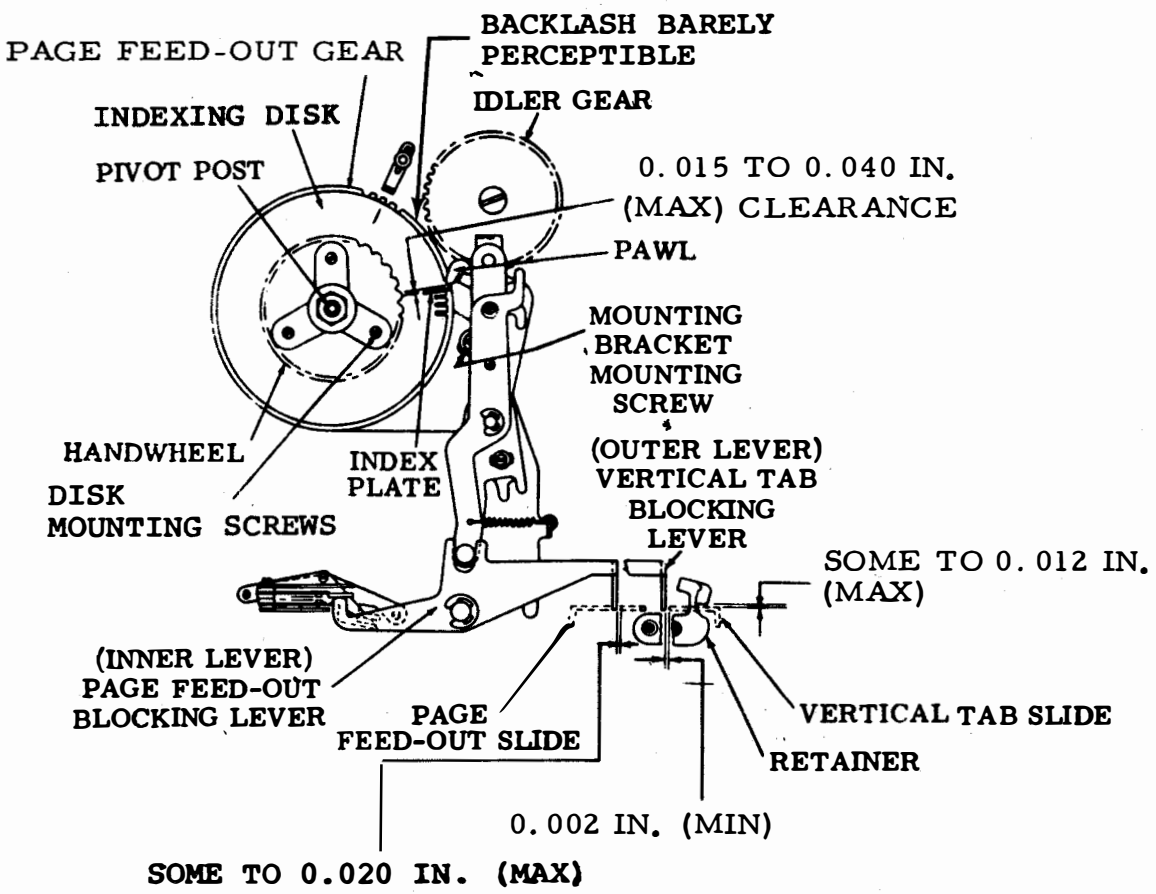


Figure 6-399. Page Feed-Out Gear Play, Mounting Bracket, Indexing Disk, and Vertical Tabulator Slide Retainer, Left Side View

feed-out gear is barely perceptible.

(c) If backlash appears excessive, loosen nut and position gear pivot post to reduce backlash.

(d) Tighten nut.

(e) Ensure gears mesh accurately when checked at three equal distances around circumference of gear.

(2) Mounting Bracket. Adjust as follows:

(a) Refer to Figure 6-399.

(b) Select upper case letter "Z" (1---5).

(c) Hold stripper blade and rotate main shaft until page feed-out slide is in its most forward position.

(d) Take up play in page feed-out blocking to minimize clearance.

(e) Clearance between feed-out blocking lever (inner lever) and feed-out slide should measure some to 0.020 inch maximum.

(f) Select upper case letter "J" (12-4-) and rotate main shaft until vertical tab slide is in its most forward position.

(g) Take up play in vertical tab blocking lever to minimize clearance.

(h) Clearance between vertical tab slide and vertical tab blocking lever (outer lever) should be 0.002 inch minimum.

(i) If clearance in either step (e) or step (h) exceeds specified limits, loosen bracket mounting screws and position lower portion of mounting bracket.

(j) Tighten mounting screws.

(3) Indexing Disk. Adjust as follows:

(a) Refer to Figure 6-399.

(b) Disengage line-feed clutch, position index plate adjacent to pawl, and take up slack in gears to minimize gap.

(c) Clearance between index plate and pawl should measure 0.015 to 0.040 inch maximum.

(d) If clearance exceeds specified limits, pull feed-out gear out of engagement with idler gear.

(e) Turn feed-out gear handwheel clockwise until index plate just operates pawl, then engage first tooth on idler.

(f) Loosen three index disk mounting screws and position disk to obtain specified clearance. Tighten screws.

(4) Vertical Tabulator Slide Retainer. Adjust as follows:

(a) Refer to Figure 6-399.

(b) Clearance between vertical tabulator slide and retaining edge of retainer should measure some to 0.012 inch maximum.

(c) If clearance exceeds limit, loosen mounting screws and position retainer forward and locate it up or down. Tighten screw.

(5) Page Feed-Out Index Plate Position. Adjust as follows:

(a) Refer to Figure 6-400.

(b) Place an index plate in numbered slots on disk corresponding to length of page form to be used.

(c) Synchronize page feed-out with a form by positioning form so typing unit will print in first typing line of form.

(d) When typing unit is in STOP position, top of ribbon guide should be in alignment with bottom of printing lines.

(e) If top of ribbon guide is not in alignment with bottom of printing line, place page form in desired position and disengage page feed-out gear from its idler gear.

(f) Rotate feed-out gear until notch in indexing disk is in alignment with pointer on side of printer.

(g) Reengage page feed-out gear with its idler gear.

(6) Blocking Lever. Adjust as follows:

(a) Refer to Figure 6-400.

(b) Position index plate so pawl is at peak of index plate.

(c) Clearance between bottom of blocking lever and top of slide should measure 0.005 to 0.045 inch maximum.

(d) If clearance exceeds specified limits, loosen mounting screws and position adjustable arm. Tighten screws.

(e) Repeat for each remaining blocking lever.

(7) Pointer. Adjust as follows:

(a) Refer to Figure 6-400.

(b) Disengage line-feed clutch and move index plate adjacent to pawl.

(c) Ensure pointer is aligned with notch in indexing disk and clears all index plates by approximately 1/16 inch.

(d) If clearance is insufficient, loosen mounting screw and position pointer on side frame. Tighten screws.

(8) Switch Contact Pressure (Transmitter Control Only). Adjust as follows:

(a) Refer to Figure 6-400.

(b) With contacts closed, apply spring scale pushrod to contact swinger.

(c) Force required to move contact swinger away from its mating contact should measure 2 to 3 ounces maximum.

(d) If scale reading exceeds specified

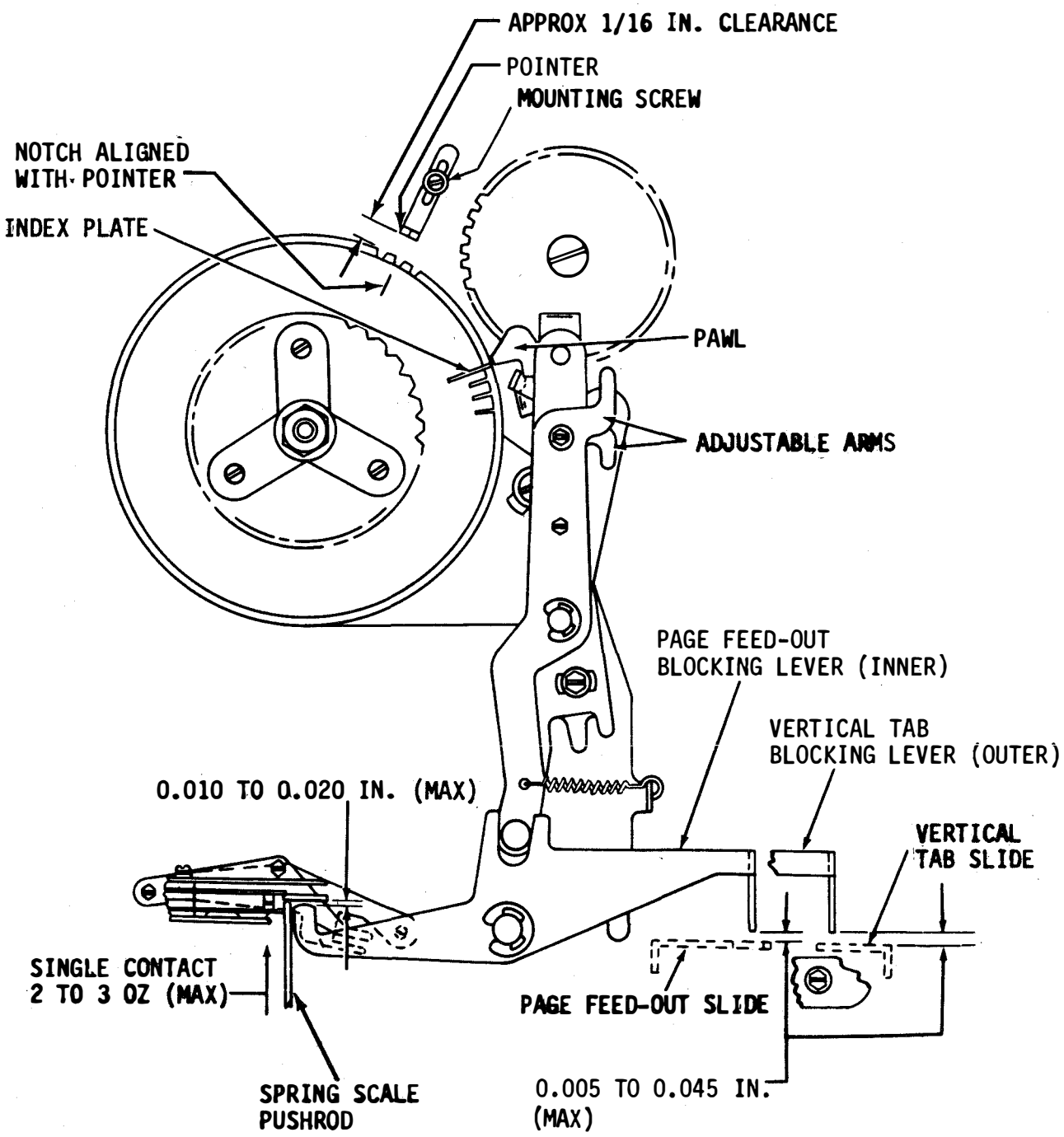


Figure 6-400. Page Feed-Out Index Plate Position, Blocking Lever, Pointer, and Switch Contact Pressure, Left Side View

limits, bend swinger to obtain proper contact pressure.

(9) Transmitter Control Switch for Transfer Type Contacts (Transmitter Control Only). Adjust as follows:

(a) Refer to Figure 6-401.

(b) Rotate main shaft until feed-out and vertical tabulator blocking levers are unoperated (blocking levers resting on slides).

(c) Close normally-closed (lower) contacts.

(d) Clearance between insulated extension of swinger and lobes of feed-out and vertical tabulator blocking levers should measure some to 0.005 inch maximum.

(e) If clearance exceeds specified limit, loosen transmitter control switch mounting screws and position contact assembly. Tighten screws.

(f) Select FEED-OUT code combination.

(g) Rotate main shaft until feed-out slide is in its extreme forward position and feed-out blocking lever drops behind its slide to close normally-open (upper) contacts.

(h) Ensure lobe of feed-out blocking lever (inner lever) fully engages insulated extension of contact swinger.

(i) Ensure feed-out blocking lever rests firmly on function arm guide bar. Check by lifting lever lightly at contact end.

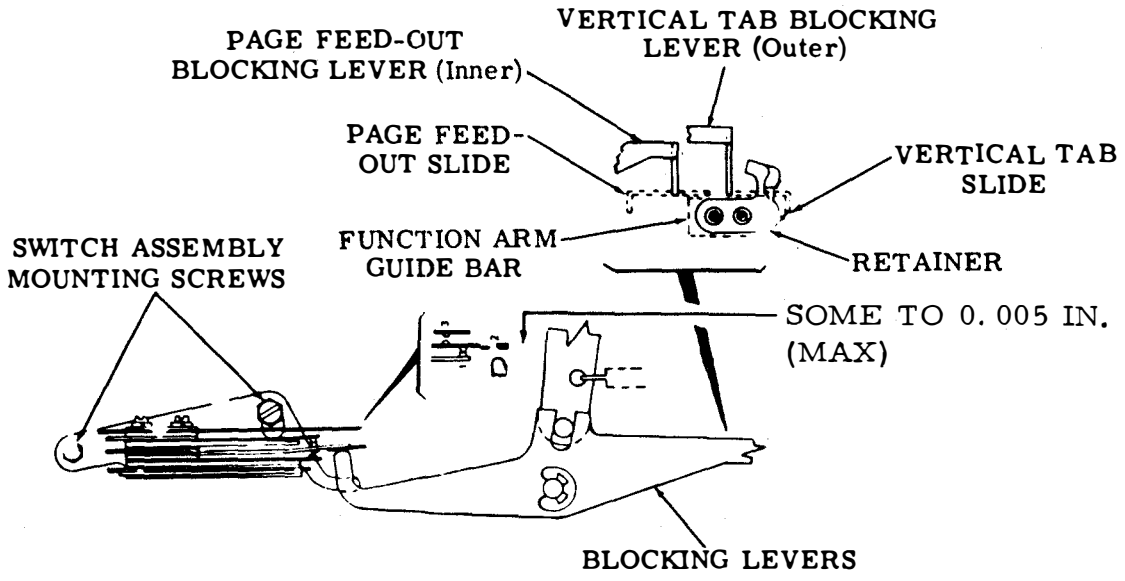


Figure 6-401. Transmitter Control Switch for Transfer Type Contacts, Left Side View

(j) Ensure feed-out blocking lever separates normally-open contact spring from its stiffener as upper contact closes.

(k) To adjust, loosen contact pileup mounting screws and position assembly. Tighten screws.

(l) Select vertical tabulator combination. Rotate main shaft until feed-out slide is in its extreme forward position and feed-out blocking lever drops behind its slide to close normally-open (upper) contacts.

(m) Ensure lobe of vertical tabulator blocking lever (outer) fully engages insulated extension of swinger.

(n) Ensure vertical tabulator blocking lever rests firmly on function arm guide bar. Check by lifting lever lightly at contact end.

(o) Ensure vertical tabulator blocking lever separates normally-open contact spring from its stiffener as upper contact closes.

(p) To adjust, loosen contact pileup mounting screws and positon assembly. Tighten screws.

(10) Transmitter Control Switch for Single-Contact Type Control (Transmitter Control Only). Adjust as follows:

(a) Refer to Figure 6-402.

(b) Rotate main shaft until feed-out and vertical tabulation blocking levers are resting on top of slides.

(c) With transmitter control contacts closed, there should be some clearance between insulated extension of swinger and lobe of feed-out and vertical tabulator blocking levers.

(d) If there is no clearance, loosen contact assembly mounting screws and position contact assembly. Tighten screws.

(e) Select FEED-OUT code combination.

(f) Rotate main shaft until feed-out slide is in its extreme forward position and feed-out blocking lever drops behind its slide to open contacts.

(g) Clearance between switch contacts should be from 0.010 to 0.020 inch maximum.

(h) If clearance exceeds specified limits, refine adjustment of steps (b) through (d).

(i) Select vertical tabulator code combination.

(j) Rotate main shaft until vertical tabulator slide is in its extreme forward positon and vertical tabulator blocking lever drops behind its slide to open contacts.

(k) Clearance between switch contacts should measure 0.010 to 0.020 inch maximum.

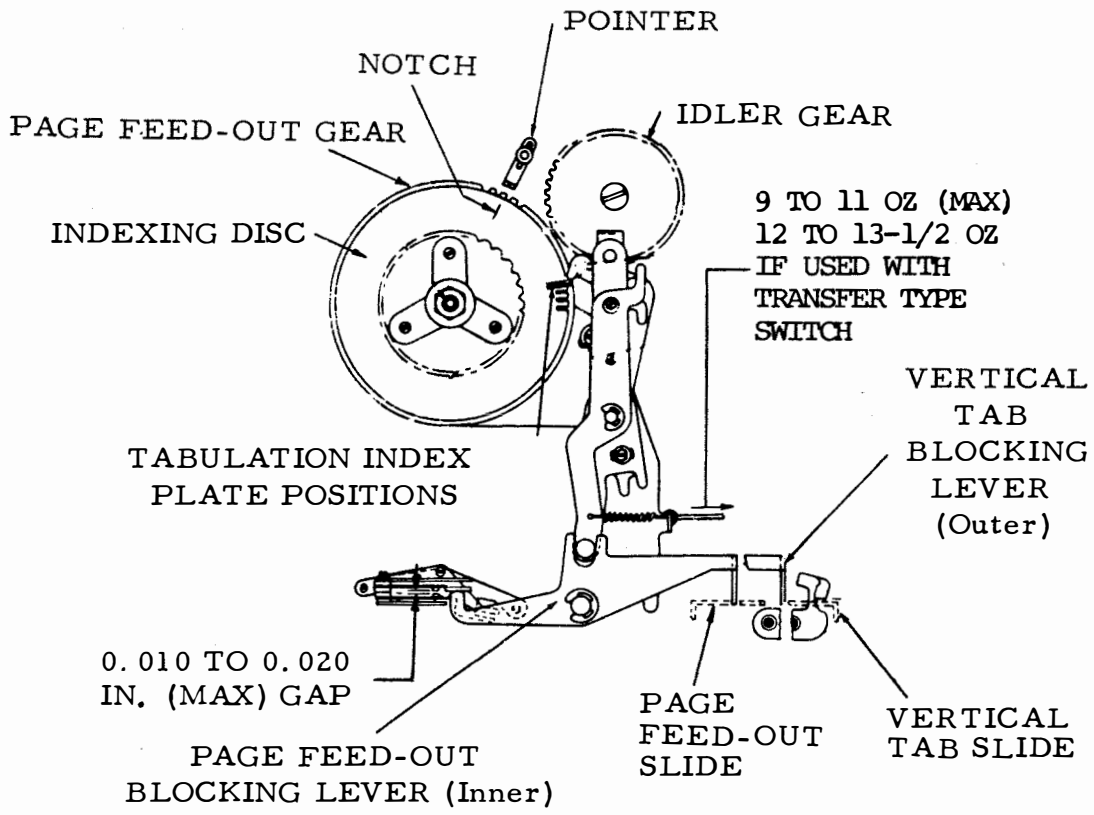


Figure 6-402. Transmitter Control Switch for Single-Contact Type Control, Tabulation Index Plate Position, and Blocking Lever Spring, Left Side View

(l) If clearance exceeds specified limits, refine adjustment of steps (b) through (d).

(11) Tabulation Index Plate Position. Adjust as follows:

(a) Refer to Figure 6-402.

(b) Rotate main shaft until feed-out and vertical tabulation blocking levers are resting on top of slides.

(c) With transmitter control contacts closed, there should be some clearance between insulated extension of swinger and lobe of feed-out and vertical tabulator blocking levers.

(d) If there is no clearance, loosen contact assembly mounting screws.

(e) Position contact assembly to obtain some clearance and tighten mounting screws.

(f) Line-feed platen to desired first line of printing in that form.

(g) Place tabulation index plate in alignment with pointer on side of printer.

(h) Install additional tab index plates of succeeding desired printing lines within the form.

(i) When tabulation at a given point is not needed rotate tabulation index plates one-quarter turn on their sides.

(12) Blocking Lever Spring. Adjust as follows:

(a) Refer to Figure 6-402.

(b) Unhook blocking lever spring at end opposite from blocking lever.

(c) Position blocking lever on top of slide.

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to position length should be from 9 to 11 ounces maximum. If blocking lever spring is used with transfer type switch, force required to extend spring should be from 12 to 13-1/2 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring. Reconnect free end of spring.

(13) Switch Contacts for Transfer Type Control Switch (Transmitter Control Only). Adjust as follows:

(a) Refer to Figure 6-403.

(b) Close normally-closed (lower) contacts.

(c) Lift swinger free of mating contact with gram scale.

(d) Force required to move lower contact spring away from its stiffener should be not less than 30 grams minimum.

(e) If scale reading is less than specified

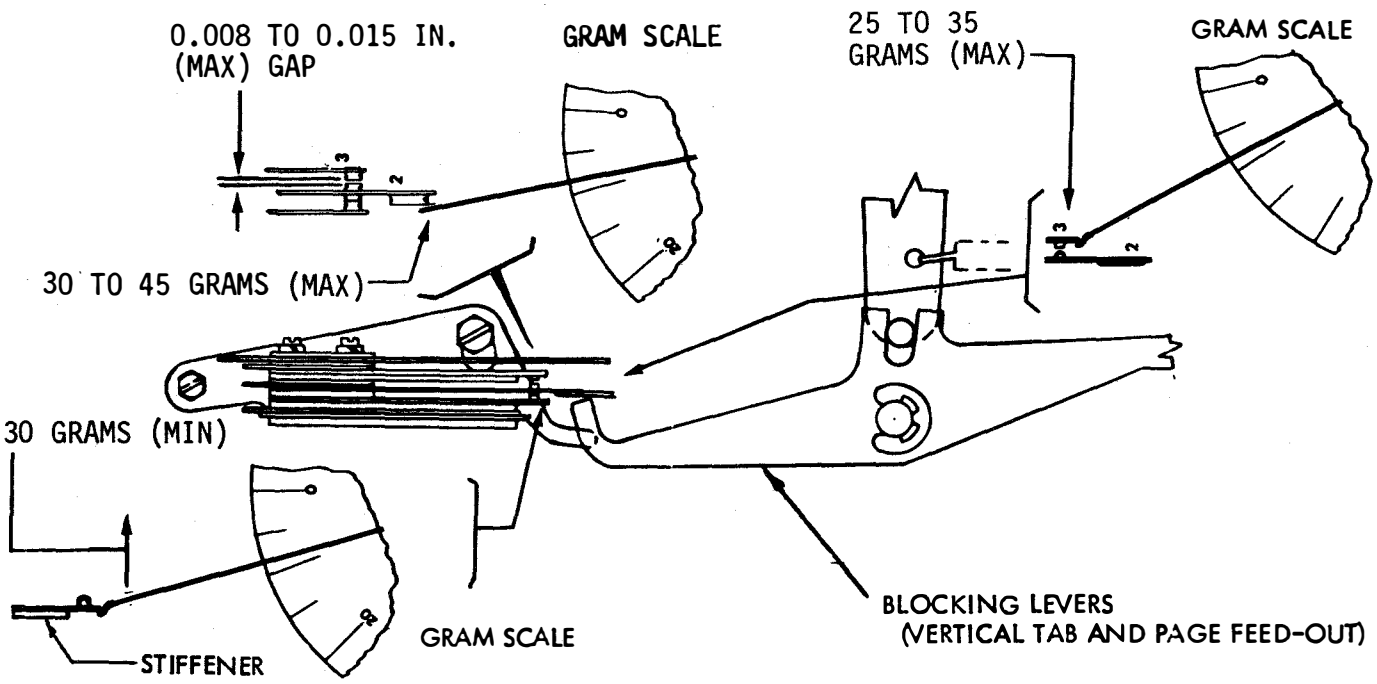


Figure 6-403. Switch Contacts for Transfer Type Control Switch (Transmitter Control Only), Left Side View

limits, form lower contact to increase scale reading.

(f) With lower contact closed, move swinger away from its mating contacts with gram scale.

(g) Force required should be between 30 and 45 grams maximum.

(h) If scale reading exceeds specified limits, form swinger by bending.

(i) With lower contact closed, gap between upper contact and mating contact of swinger should measure 0.008 to 0.015 inch maximum.

(j) If gap exceeds specified limits, position stiffener of normally-closed contact to obtain specified gap.

(k) Pull upper contact away from its stiffener with gram scale.

(l) Force required should measure 25 to 35 grams maximum.

(m) If scale reading exceeds specified limits, form upper contact by bending and repeat steps (i) and (j).

(14) Tabulator Bail Spring. Adjust as follows:

(a) Refer to Figure 6-404.

(b) Attach spring scale hook to tabulator bail.

(c) Force required to pull bail away from its backstop lever should measure 3 to 8 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(15) Form-Out Pawl Springs. Adjust as follows:

(a) Refer to Figure 6-405.

(b) Attach spring scale hook to form-out pawl.

(c) Force required to pull pawl away from its backstop lever should measure 3 to 8 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(16) Line-Feed Clutch Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-406.

(b) Engage and rotate clutch until trip lever rests on stop-lug.

(c) Apply spring scale hook to trip lever.

(d) Force required to move lever away from stop-lug should be from 9 to 12 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(17) Stunt Box Switch Spring. Adjust as follows:

(a) Refer to Figure 6-407.

(b) Close switch contacts.

(c) Attach spring scale hook to contact arm. The force required to open switch contact should be from 1 to 2 ounces maximum. If the required force exceeds the limits, replace spring.

(d) If switch is removed from stunt box, perform the following adjustments:

1. Measure clearance between contact arm and vertical portion of contact slip. Clearance should be 0.006 inch minimum. If switch has contacts both front and rear the same limit is applicable.

2. If clearance is less than 0.006 inch, loosen contact plate screws, and position contact plate. Then tighten contact plate screws. Contact must be made before function lever touches top plate.

3. On switches with front and rear, check gap between formed-over end of front contact clip and bottom of contact arm when rear contact is closed. Gap should be from 0.008 to 0.028 inch maximum.

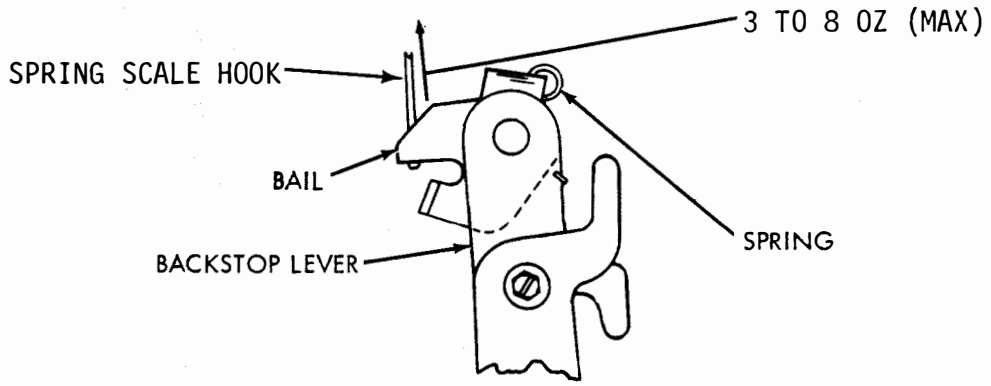


Figure 6-404. Tabulator Bail Spring, Left Side View

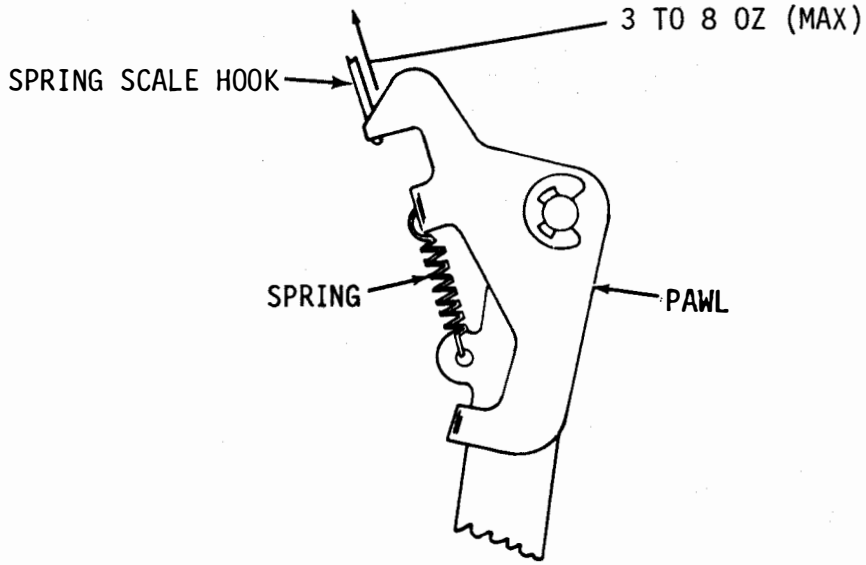


Figure 6-405. Form-Out Pawl Spring, Left Side View

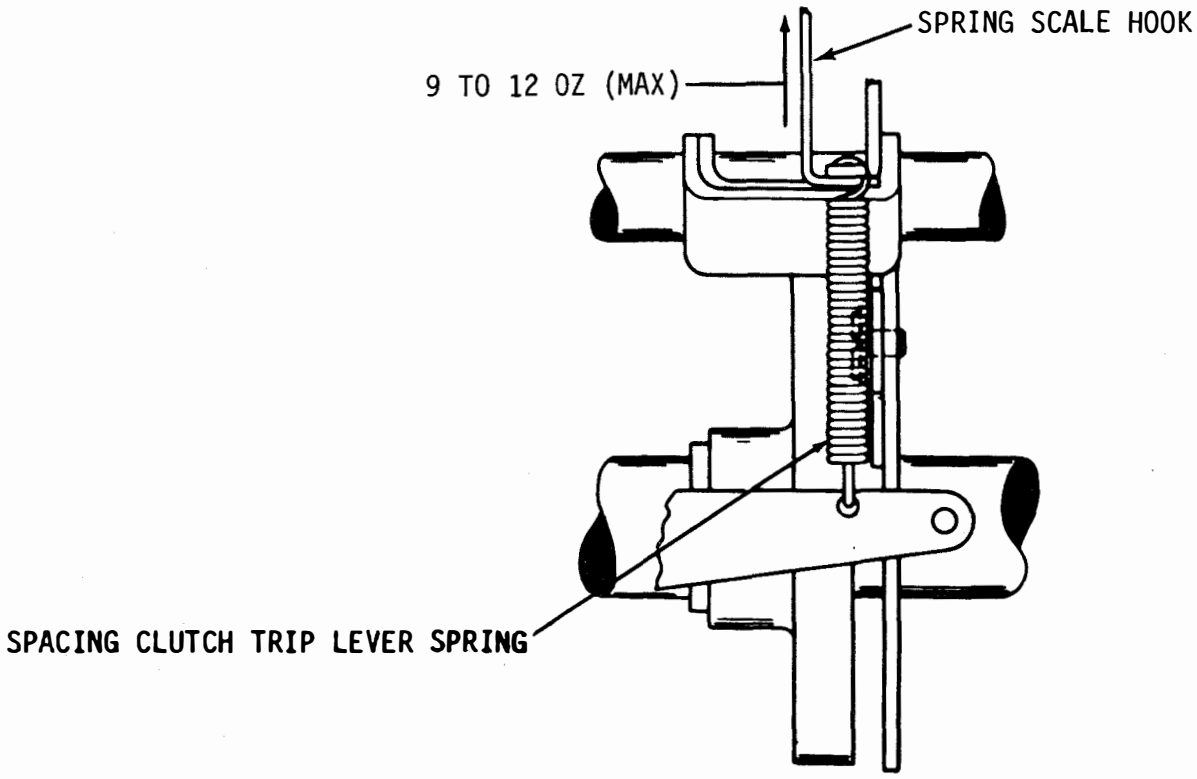


Figure 6-406. Line-Feed Clutch Trip Lever Spring, Rear View

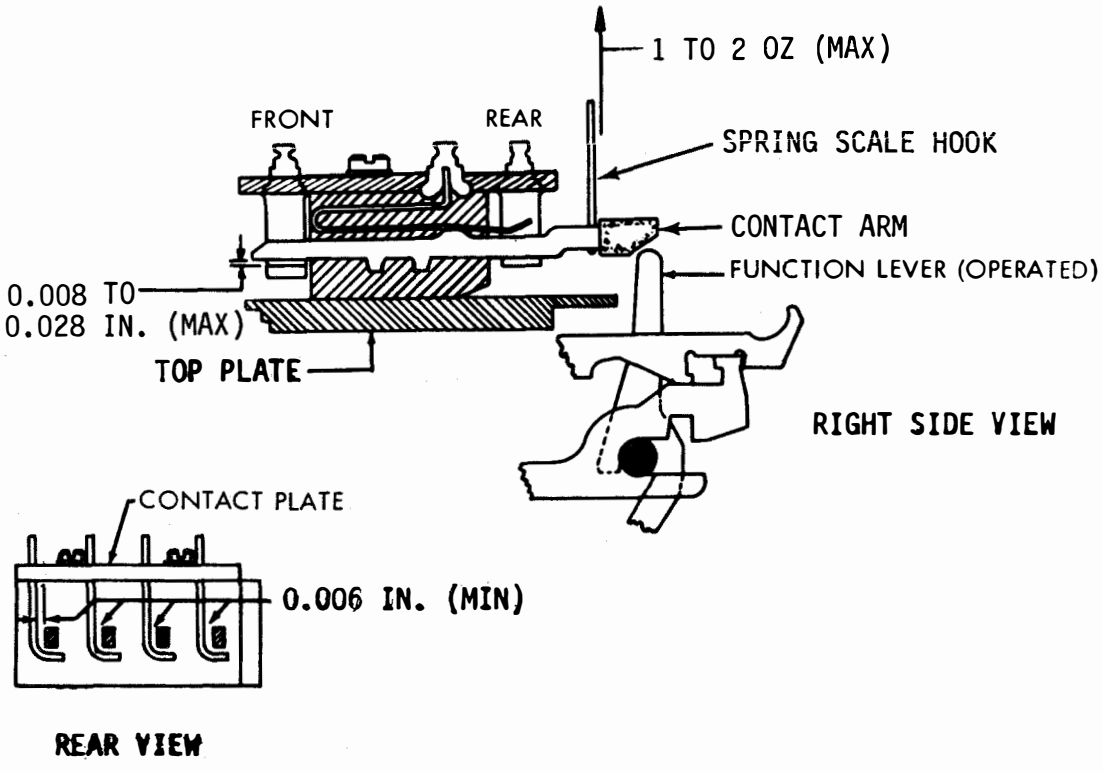


Figure 6-407. Stunt Box Switch Spring

j. Universal Contact (Selector) Mechanism Adjustments. Perform the following universal contact selector mechanism adjustments.

(1) Contact Mounting Bracket. Adjust as follows:

(a) Refer to Figure 6-408.

(b) Ensure drive arm linkage is vertically aligned to prevent binds.

(c) To adjust, loosen contact mounting bracket mounting screws and position bracket to align drive arm linkage.

(d) Tighten mounting screws.

(2) Contact Block. Adjust as follows:

(a) Refer to Figure 6-408.

(b) Ensure contact faces are in a vertical straight line.

(c) To adjust, loosen two contact mounting screws and press contact block toward rear of typing unit firmly against screws.

(d) Tighten mounting screws.

(3) Contact Drive Arm Position. Adjust as follows:

(a) Refer to Figure 6-408.

(b) Rotate code bar clutch until it is disengaged and latched in stop position.

(c) Measure upper contact gap and note measurement.

(d) Trip code bar clutch. Rotate clutch 180 degrees or until lower contacts reach maximum opening.

(e) Measure lower contact gap and note measurement.

(f) Upper and lower contact gaps should be equal within 0.010 inch maximum.

(g) To adjust, loosen contact drive arm clamp screw and position contact drive arm.

(h) Tighten clamp screw.

(4) Contact Arm Spring. Adjust as follows:

(a) Refer to Figure 6-409.

(b) Remove shoulder screw connecting contact arm to drive link.

(c) Attach spring scale hook to contact arm vertically, either upward or downward.

(d) Force required to open either contact should measure 2 to 5 ounces maximum.

(e) If scale reading exceeds specified limit, install new spring.

k. Universal Contact (Stunt Box) Mechanism Adjustments. Perform the following universal contact stunt box mechanism adjustments.

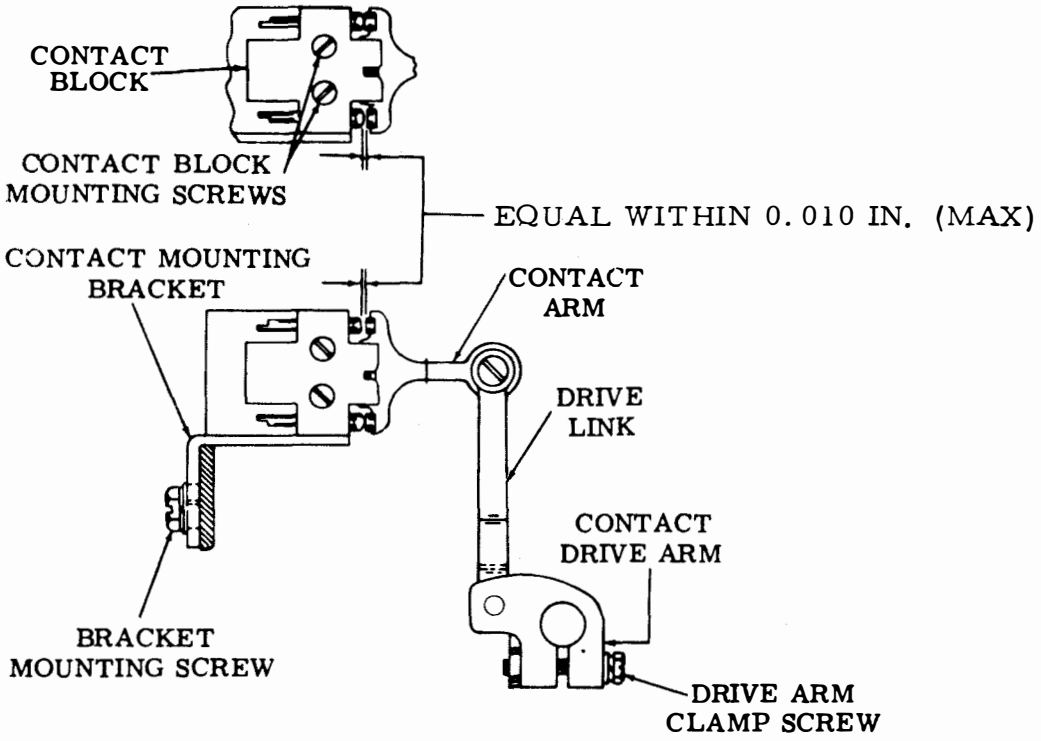


Figure 6-408. Contact Mounting Bracket, Contact Block, and Contact Drive Arm Position, Right Side View

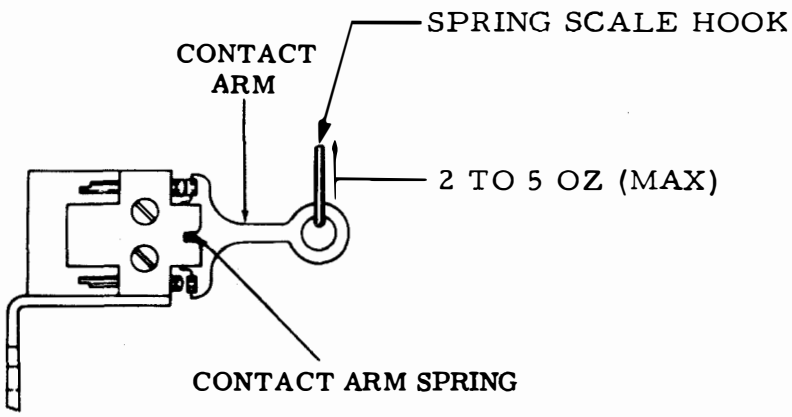


Figure 6-409. Contact Arm Spring, Right Side View

NOTE

These adjustments should be made with contact bracket assembly removed. If contact screws are disturbed to obtain a requirement, they must be retightened and all preceeding requirements rechecked.

CAUTION

If it is necessary to increase contact spring tensions, it is advisable to remove contact spring to increase its curvature. Avoid damage to contact springs when adjusting stiffeners in assembly

(1) Contact. Adjust as follows:

(a) Refer to Figure 6-410.

(b) Ensure contact springs and stiffeners are mounted vertically and contact prints are aligned as gauged by eye.

(c) If contact points are misaligned, loosen assembly screws and position contact springs and stiffeners. Tighten screws.

(d) Ensure stiffeners are parallel with contact brackets. If not, form stiffeners.

(e) Contact springs should rest against their stiffeners throughout their width.

(f) If necessary, bend top formed section of stiffener or contact spring.

(2) Normally-Open Contact Gap. Adjust as follows:

(a) Refer to Figure 6-410.

(b) Close normally-closed contacts.

(c) Normally-open contact gap should measure 0.020 to 0.025 inch maximum.

(d) If necessary, bend stiffener to obtain specified contact gap.

(3) Contact Springs (Two Springs). Adjust as follows:

(a) Refer to Figure 6-410.

(b) Apply spring hook to either of the contact springs.

(c) With swinger held away, force required to move each contact spring away from its stiffener should measure 2 to 3 ounces maximum.

(d) If scale reading for either contact spring exceeds specified limits, remove and reform contact springs.

(4) Swinger Spring. Adjust as follows:

(a) Refer to Figure 6-410.

(b) Attach spring scale hook to swinger.

(c) Force required to move swinger from normally-closed contact should measure 4 to 6 ounces maximum.

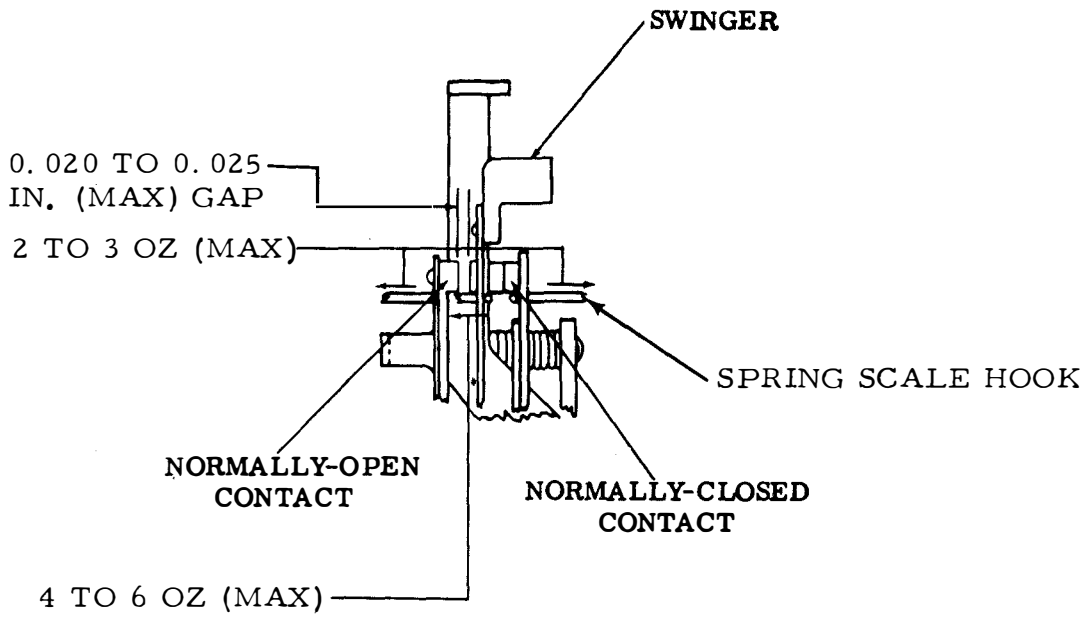


Figure 6-410. Contact, Normally-Open Contact Gap, Contact Spring, and Swinger Spring, Right Rear View

(d) If necessary, bend swinger to obtain specified scale reading.

(5) Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-411.

(b) Rotate stripper bail shaft until latchlever rests on high part of trip cam.

(c) Attach spring scale hook to latchlever.

(d) Force required to move latchlever away from trip cam should measure 1/2 to 2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(6) Trip Cam. Adjust as follows:

(a) Refer to Figure 6-411.

(b) Rotate stripper bail shaft to locate drive link at its lowest point.

(c) Clearance between latchlever and latch cam should measure 0.003 inch minimum.

(d) If clearance exceeds specified limit, loosen trip cam mounting screws and rotate trip cam. Tighten screws.

NOTE

As a check to ensure trip cam is not installed 180 degrees out of place, rotate main shaft so that stripper shaft drive link moved downward.

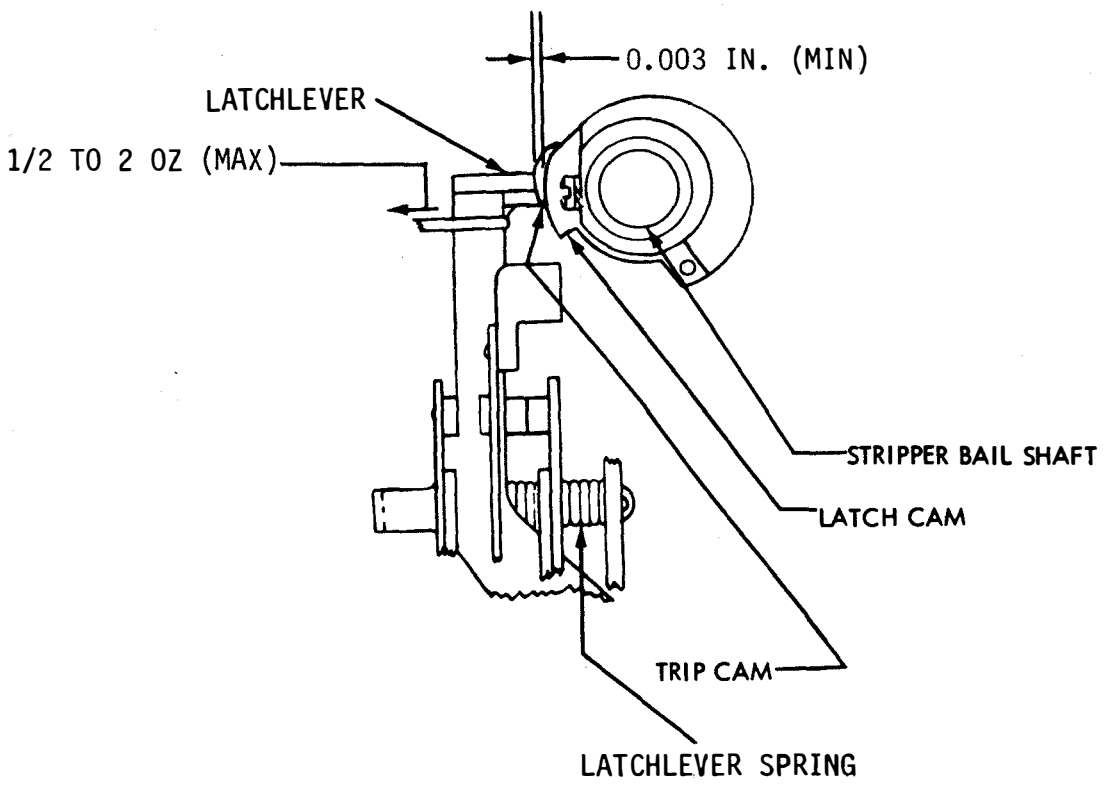


Figure 6-411. Latchlever Spring and Trip Cam, Right Rear View

(7) Contact Bracket and Drive Cam. Adjust as follows:

NOTE

Make the contact bracket and drive cam adjustment with contact assembly installed on stunt box.

(a) Refer to Figure 6-412.

(b) Place drive link in its uppermost position.

(c) Clearance between top of latchlever and latch cam should measure 0.003 to 0.008 inch maximum.

(d) Rotate main shaft until latchlever rests firmly on latch cam.

(e) Clearance between normally-open contact spring and upper end of its stiffener should measure 0.005 to 0.010 inch maximum.

(f) If clearance exceeds specified limits in either step (c) or step (e), loosen screws and reposition contact bracket and, if necessary, drive cam. Tighten screw.

(8) Contact Bracket and Drive Cam Position. The following adjustment should be used for general application final timing using distortion test set or similar equipment.

(a) Refer to Figure 6-412.

(b) The normally-open universal contacts should close within

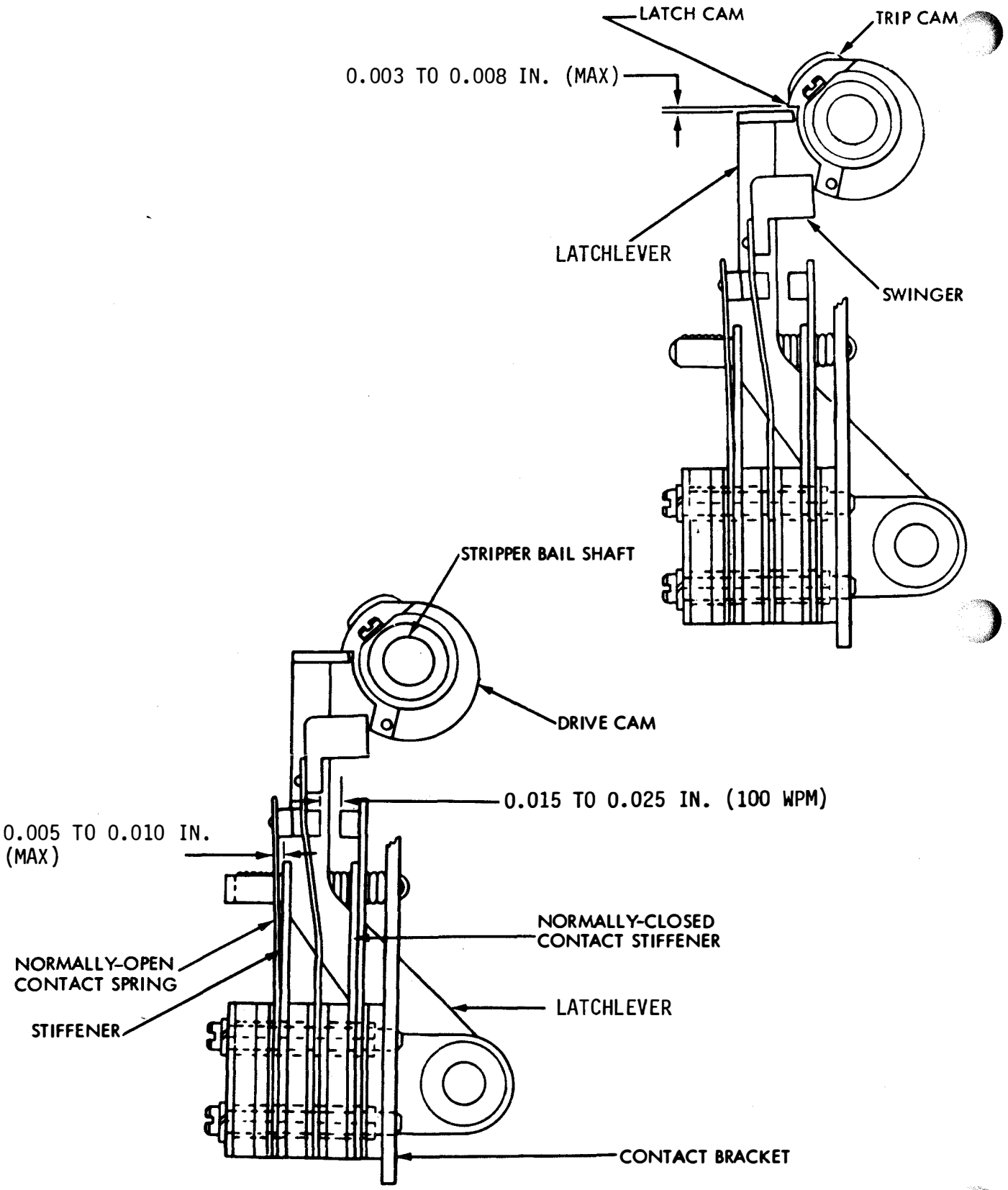


Figure 6-412. Contact Bracket and Drive Cam, Right Rear View

±5 milliseconds of closure of normally-open stunt box contact.

(c) To adjust, refine Drive Cam adjustment and, if necessary, Contact Bracket adjustment, paragraph 6-12k(7) by rotating drive cam within specified limits.

(9) Trip Cam Position. The following adjustment should be used for general application final timing using distortion test set or similar equipment.

(a) Refer to Figure 6-411 and 6-412.

(b) Normally-open universal contacts should open between -0 and +5 milliseconds before the opening of normally-open stunt box contact.

(c) To adjust, refine Trip Cam adjustment, paragraph 6-12k(6), by rotating trip cam on its shaft within specified limits.

(10) Normally-Closed Contact (100 WPM for 83B2 Switching System). The following adjustment should be used for special application timing using distortion test set or similar equipment.

NOTE

The relation between normally-closed universal contact marking pulse and stop impulse of receiving signal varies with range scale setting of unit.

(a) Refer to Figure 6-412.

(b) Normally-closed contacts should close within 50 to 80 divisions after start of stop pulse.

(c) Normally-open contact should close prior to end of number 3 pulse.

(d) Normally-open contact should remain closed for at least 238 divisons (100 words per minute DXD with 742 scale divisions).

(11) General Requirements After Timing Adjustments. It is very important that the following requirements be met.

(a) With the drive link in its uppermost position, check for following requirements:

1. The latch cam shall not overtravel or hang up on the swinger insulator.

2. There shall be at least 0.003 inch clearance between the latching surface of the latch cam and the latching surface of the latchlever.

3. The clearance between the normally-open contact spring and its stiffener shall not exceed 0.025 inch.

(b) With the drive link in its lowermost position, check the following requirements:

1. The top of the swinger insulator must clear the cutout section of the latch cam.

2. There shall be at least 0.003 inch

clearance between the front edge of the latchlever latching surface and the high part of the latch cam.

(c) With the latch cam in its latched position, there shall be at least 0.005 inch clearance between the normally-open contact spring and the upper end of its stiffener.

(d) The latching surface of the latchlever shall cover the width of the trip cam and latch cam.

1. Form Alignment Switch Mechanism Adjustment. Perform the following form alignment switch mechanism adjustments.

(1) Form Alignment Switch. Adjust as follows:

CAUTION

Remove power from form alignment switch before permitting this adjustment.

(a) Refer to Figure 6-413.

(b) Rotate form-out disk until form alignment lever falls into notch.

(c) Lift lever just enough to place a 0.010 inch feeler gauge in notch. Then allow lever to rest on feeler gauge. Switch should be activated.

(d) If switch is not activated, loosen mounting screws and position switch at pry points so switch is activated. Tighten screws.

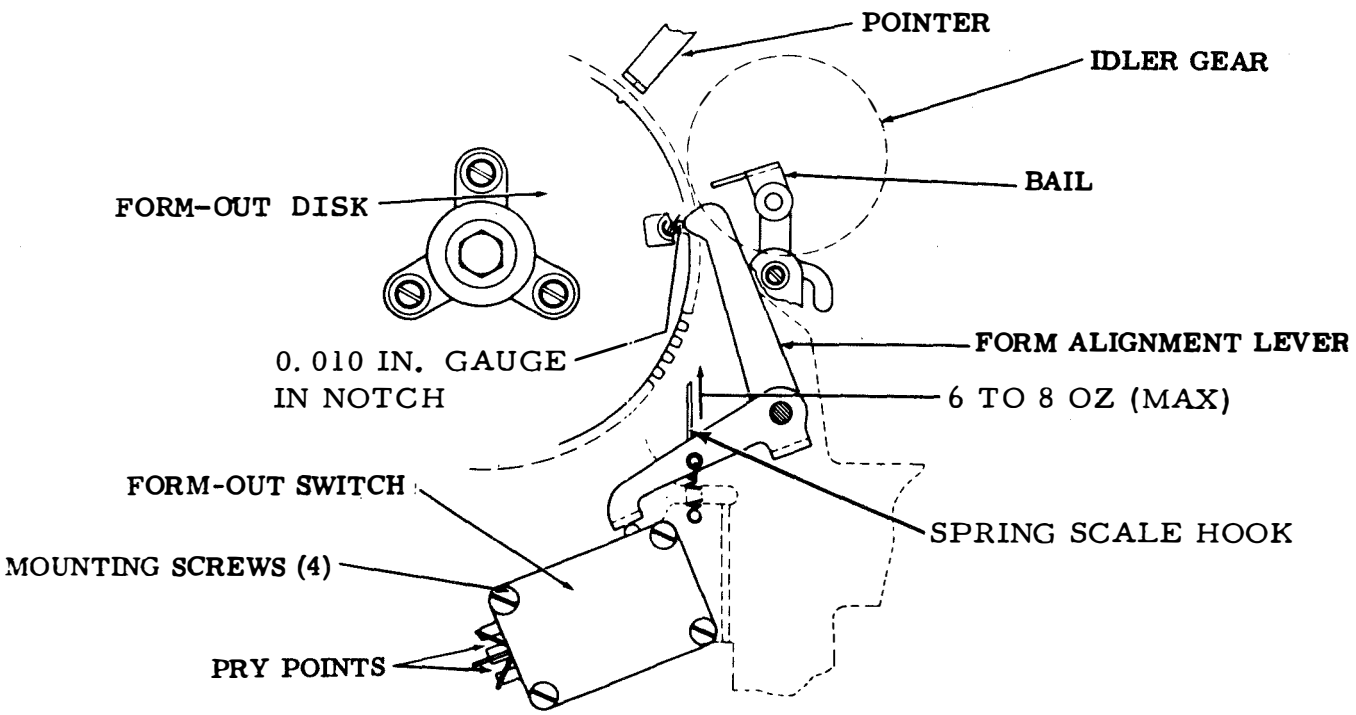


Figure 6-413. Form Alignment Switch and Form Alignment Switch Spring, Left Side View

(e) Rotate disk until lever rests on outer edge. Switch should not be activated.

(f) If switch is activated, loosen mounting screws and position switch at pry points so switch is not activated. Tighten screws.

(2) Form Alignment Switch Spring. Adjust as follows:

(a) Refer to Figure 6-413.

(b) Rotate form-out disk so form alignment lever rests on outer edge of disk (not in notch).

(c) Attach spring scale hook to switch operating lever at point of spring attachment.

(d) Force required to move lever from outer edge of disk should measure 6 to 8 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(3) Form Feed-Out Adjustment. The form feed-out adjustment consists of the page feed-out mechanism adjustment procedures described in paragraph 6-12b(1) through (7).

m. DC Magnet Operated Print Suppression Adjustment. Perform the following dc magnet operated printer suppression adjustments.

NOTE

Keep pole face free of oil and grease.

(1) Type Box Clutch Trip Lever. Adjust as follows:

(a) Refer to paragraph 6-3.1c(12) and Figure 6-33.

(b) Refine clearance between inner face of type box clutch trip lever and clutch disk stop-lug to 0.040 to 0.055 inch maximum.

(2) Type Box Clutch Suppression Arm. Refer to paragraph 6-12c(8) for adjustments.

(3) Blocking Bail. Refer to paragraph 6-12c(6) for adjustments.

(4) Armature Extension Overtravel. Adjust as follows:

(a) Refer to Figure 6-414.

(b) Place blocking bail extension in position on block suppression arm and hold armature against magnet pole face.

(c) Overtravel of armature extension should measure 0.010 to 0.015 inch maximum.

(d) Ensure there is no clearance between blocking surface of armature extension and bottom surface of suppression arm.

(e) With suppression arm blocked by armature extension, rotate blocking bail extension.

(f) Ensure blocking bail extension slides under suppression arm with no perceptible clearance.

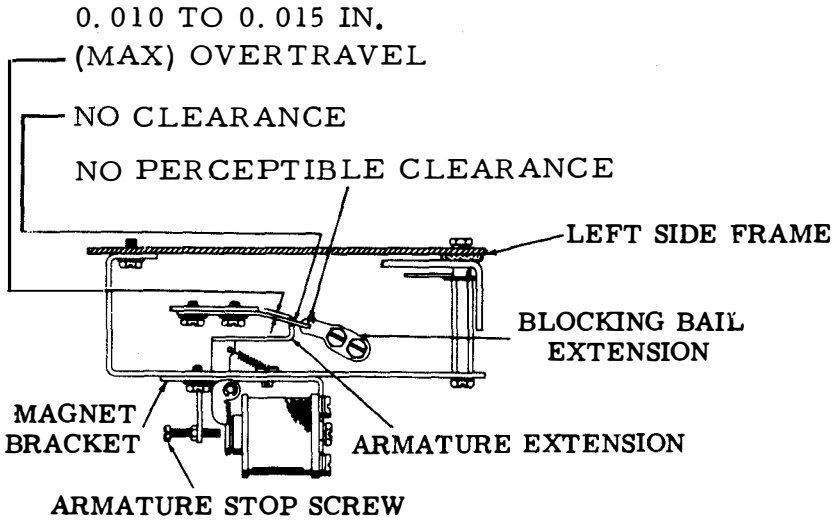


Figure 6-414. Armature Extension Overtravel, Left Side View

(g) If armature extension overtravel exceeds specified limits, loosen magnet bracket mounting screws.

(h) Using an eccentric adjusting tool, pivot magnet up or down and to the front or rear, and tighten screws.

(i) Press armature extension firmly against bottom of suppression arm. If necessary, add or remove shims between suppression arm and type box clutch trip arm. Recheck 6-12c(6) and (8).

(5) Armature Extension Clearance. Adjust as follows:

(a) Refer to Figure 6-415

(b) Release armature.

(c) Clearance between end of armature extension and suppression arm should measure 0.012 to 0.030 inch maximum.

(d) If clearance exceeds specified limits, loosen armature stop screw clamp nut and position armature with armature stop screw. Tighten nut.

(e) Recheck step (4) above.

(6) Blocking Bail Extension Clearance. Adjust as follows:

(a) Refer to Figure 6-415.

(b) Ensure there is no interference between armature extension and blocking bail extension.

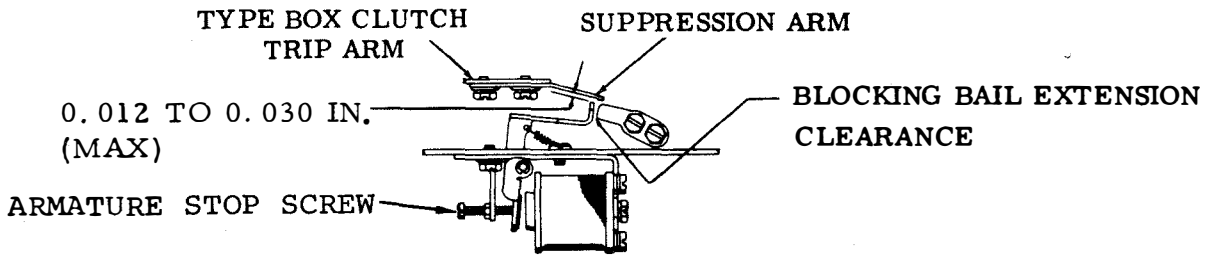


Figure 6-415. Armature Extension Clearance and Blocking Bail Extension Clearance, Left Side View

(c) If there is interference, refine steps (1) through (5), above.

n. Print Suppression and Off-Line Stunt Shift Control Mechanism Adjustments. Perform the following print suppression off-line stunt shift control mechanism adjustments.

NOTE

Keep pole face free of oil and grease.

(1) Print Suppression Code Bar Position. Adjust as follows:

(a) Refer to Figure 6-416.

(b) Energize print suppression magnet and place all code bars in spacing position.

(c) Viewing from rear of unit above stunt box, ensure notches in suppression code bar align with notches in other code bars.

(d) If notches do not align properly, loosen mounting screws.

(e) Operate magnet armature either manually or electrically.

(f) Place all code bars in spacing position.

(g) Pivot armature extension in its elongated mounting hole to obtain alignment of notches.

(h) Tighten mounting screws.

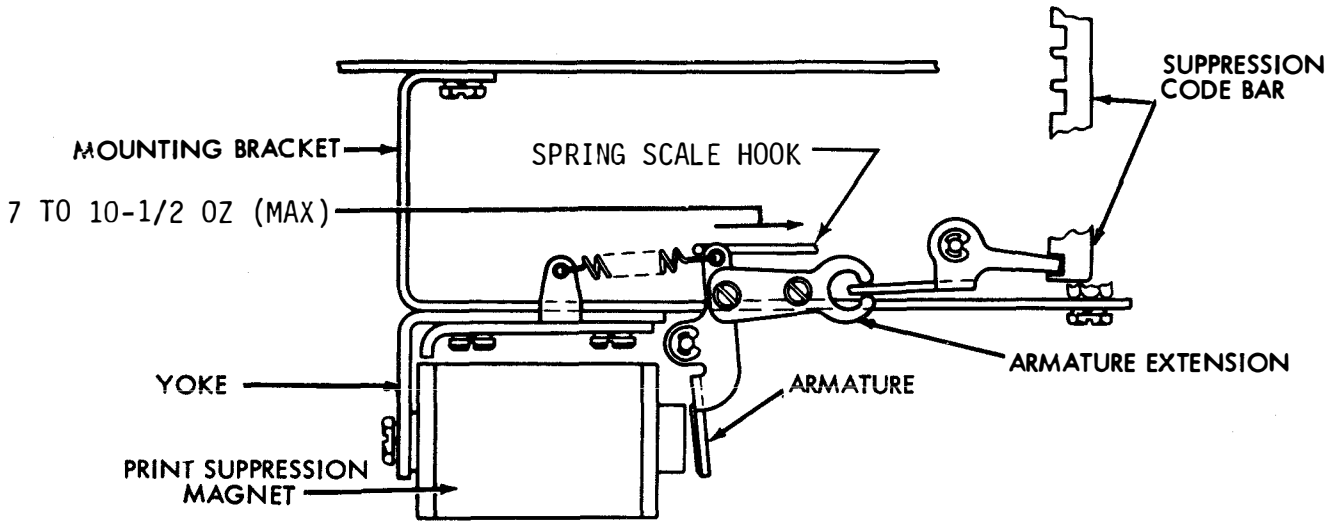


Figure 6-416. Print Suppression Code Bar Position and Suppression Magnet Armature Return Spring, Left Side Top View

(2) Print Suppression Magnet Armature Return Spring. Adjust as follows:

(a) Refer to Figure 6-416.

(b) Deenergize print suppression magnet.

(c) Attach spring scale hook to armature at point of return spring attachment.

(d) Force required to start armature moving toward magnet core should measure 7 to 10-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(3) Type Box Clutch Trip Lever. Adjust as follows:

(a) Refer to paragraph 6-3.1c(12) and Figure 6-33.

(b) Refine clearance between inner face of type box clutch trip lever and clutch disk stop-lug to 0.040 to 0.055 inch maximum

(4) Type Box Clutch Suppression Arm. Refer to paragraph 6-12(8) for adjustments.

(5) Blocking Bail. Refer to paragraph 6-12c(6) for adjustments.

o. LETTERS-FIGURES Code Bar Shift Magnet Mechanism. Perform the following LETTERS-FIGURES code bar shift magnet mechanism adjustments.

NOTE

Keep pole face free of oil and grease.

(1) Shift Magnet Yoke. Adjust as follows:

(a) Refer to Figure 6-417.

(b) Hold magnet armature against core.

(c) Clearance between armature and end of heel piece should measure some to 0.003 inch maximum.

(d) If necessary, loosen clamp screw and position yoke to obtain specified clearance.

(e) Tighten clamp screw.

(2) Shift Magnet Armature. Adjust as follows:

(a) Refer to Figure 6-417.

(b) Place magnet armature in operated position and place shift code bar in full marking position.

(c) Clearance between armature and transfer lever should measure some to 0.005 inch maximum.

(d) If clearance exceeds specified limits, loosen bracket mounting screw and position magnet forward or backward.

(e) Tighten bracket mounting screw.

(f) Place magnet armature in unoperated position and place shift code bar in full spacing position.

(g) Clearance between armature and transfer lever should measure some to 0.010 inch maximum.

(h) If necessary, loosen locknut and position armature backstop screw to obtain specified clearance.

(i) Tighten locknut.

(3) Shift Magnet Armature Return Spring. Adjust as follows:

(a) Refer to Figure 6-417.

(b) Unhook one end of shift magnet armature return spring and attach spring scale hook to free end of spring.

(c) Force required to extend spring to its installed length should measure 1 to 3 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(4) Shift Code Bar Return Spring. Adjust as follows:

(a) Refer to Figure 6-418.

(b) Trip type box clutch and rotate main shaft until printing track is in lowest position.

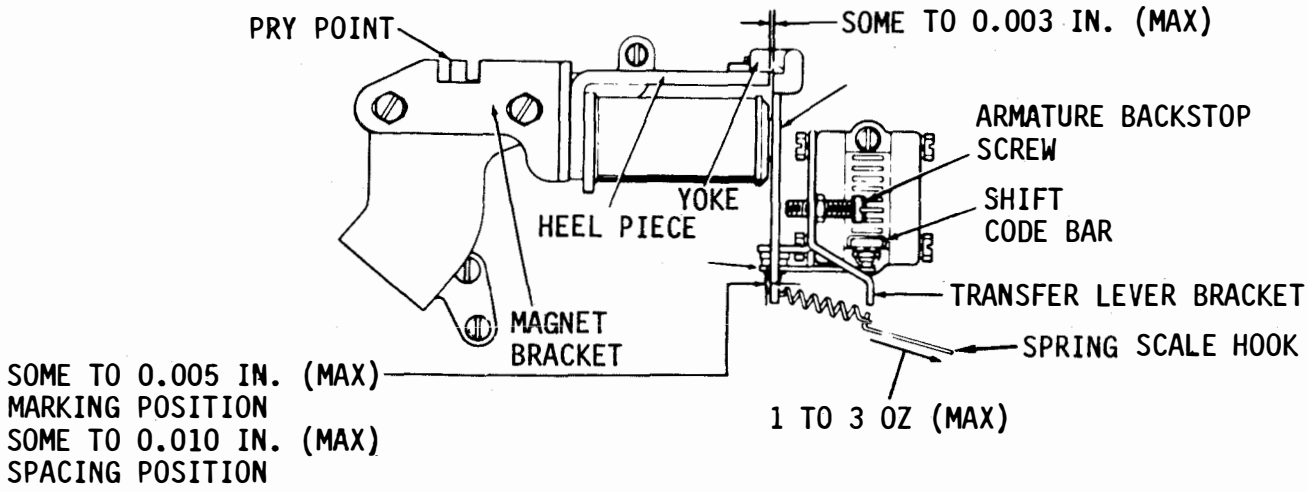


Figure 6-417. Shift Magnet Yoke, Shift Magnet Armature, and Shift Magnet Armature Return Spring, Left Side View

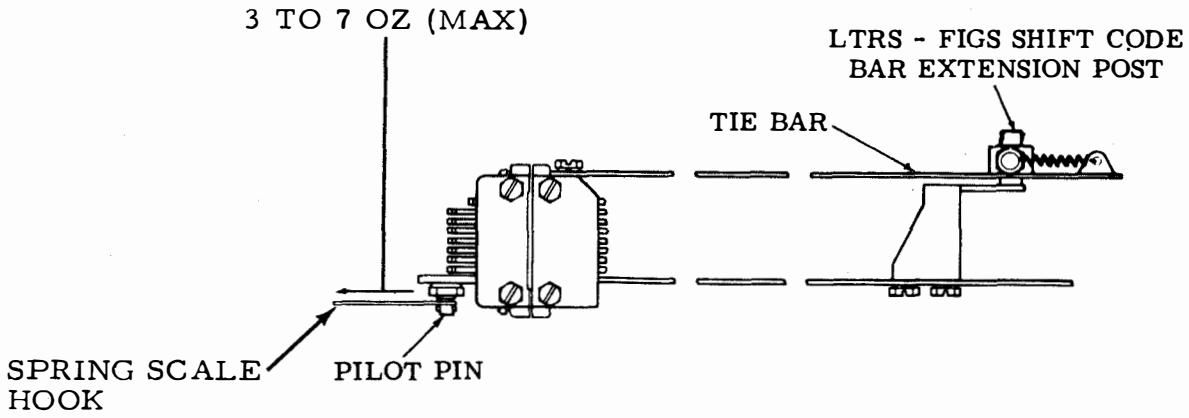


Figure 6-418. Shift Code Bar Return Spring, Front View

(c) Attach spring scale hook to pilot pin.

(d) Force required to start code bar moving should measure 3 to 7 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

p. Form Feed-Out Mechanism Torsion Spring Adjustments. Perform the form feed-out torsion spring adjustments as follows:

(1) Refer to Figure 6-419.

(2) Disengage line-feed clutch trip lever.

(3) Attach spring scale hook at lower end of bail.

(4) Force required to start bail moving should measure 1/8 to 1-1/4 ounces maximum.

(5) If requirement is not met, replace spring.

q. Two-Color Ribbon Mechanism Adjustments. Perform the following two-color ribbon mechanism adjustments.

NOTE

Refer to the following paragraphs for related requirements:

1. Vertical Position Lock-lever Extension, 6-3.1e(14)

2. Ribbon Reverse Spur Gear, 6-3.1g(14)

3. Ribbon Reverse Detent, 6-3.1g(15)

4. Ribbon Feed Lever Bracket, 6-3.1g(17)

5. Ribbon Ratchet Wheel Friction Spring, 6-3.1g(19)

(1) Ribbon Magnet Hinge Bracket, Left and Right (Preliminary). Adjust as follows:

(a) Refer to Figure 6-420.

(b) Position armature against pole piece in energized position.

(c) Clearance between armature and pole piece should not measure more than 0.005 inch maximum.

(d) If necessary, loosen mounting screws and position hinge bracket to obtain specified clearance.

(e) Tighten screws.

(2) Ribbon Magnet Bracket, Left and Right (Preliminary). Adjust as follows:

(a) Refer to Figure 6-420.

(b) Set adjusting screw to lowest position.

(c) Disengage all clutches.

(d) Hold magnet armature stop lever against magnet core.

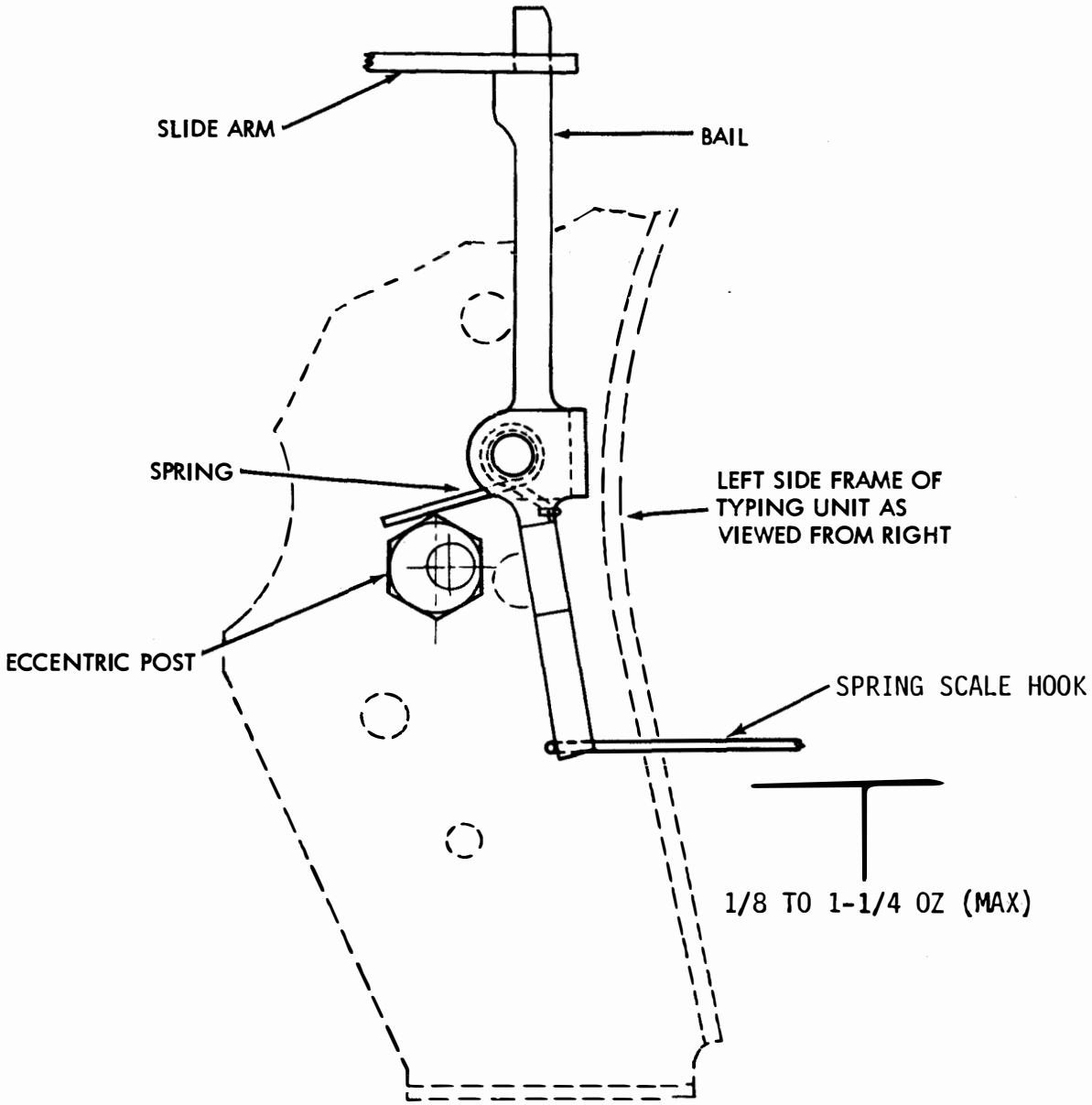


Figure 6-419. Form Feed-Out Torsion Spring

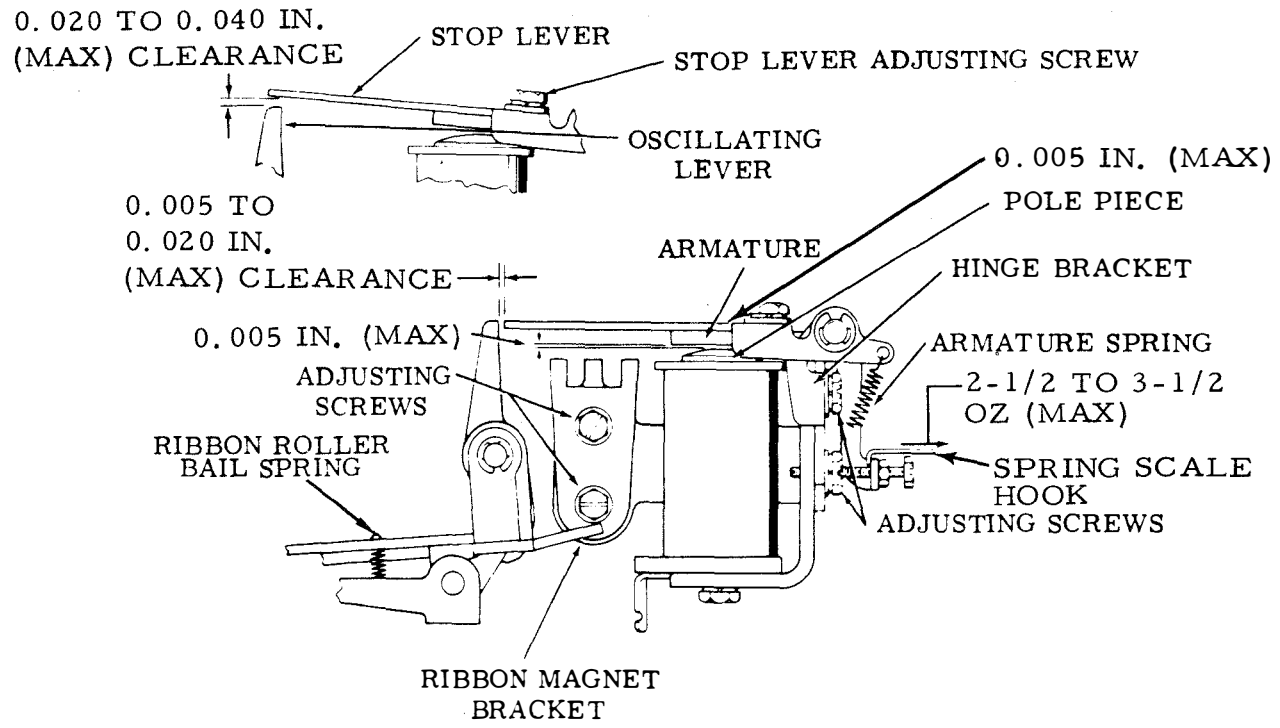


Figure 6-420. Ribbon Magnet Hinge Bracket, Armature Spring, and Ribbon Magnet Bracket (Preliminary and Final), Left and Right, End View

(e) Lever should be parallel to oscillating lever top surface and engage oscillating lever by at least half of stop lever thickness as gauged by eye.

(f) Hold stop lever against magnet core and take up play towards front of unit.

(g) Clearance between stop lever and oscillating lever should measure 0.005 to 0.020 inch maximum.

(h) If necessary, loosen ribbon magnet bracket adjusting screws and position ribbon magnet bracket to obtain specified clearance.

(i) Tighten adjusting screws.

(3) Ribbon Magnet Hinge Bracket, Left and Right (Final). Adjust as follows:

(a) Refer to Figure 6-420.

(b) Position armature in de-energized position.

(c) Rotate main shaft until oscillating lever is fully under stop lever.

(d) Clearance between oscillating lever and stop lever should measure 0.020 to 0.040 inch maximum.

(e) If necessary, loosen locknut and use stop lever adjusting screw to obtain specified clearance.

(f) Tighten locknut.

(4) Armature Spring, Left and Right. Adjust as follows:

(a) Refer to Figure 6-420.

(b) Attach spring scale hook as shown and measure force required to seat armature against pole piece. This should be 2-1/2 to 3-1/2 ounces maximum.

(c) If requirement is not met, replace spring.

(5) Ribbon Magnet Bracket (Final) (Operational Requirement). Adjust as follows:

(a) Refer to Figure 6-420.

(b) Operate printer at 60, 75, or 100 words per minute while printing a test message.

(c) When ribbon magnets are energized, printer should print in red color.

(d) If printer prints in black color, turn left and right ribbon bracket roller bail adjusting screws one-half turn up.

(e) Refine paragraphs (1) through (3) above and repeat steps (b) through (d).

(6) Ribbon Roller Bail Spring, Left and Right. Adjust as follows:

(a) Refer to Figure 6-421.

(b) Disengage all clutches and set adjusting screw in lowest position.

(c) Attach spring scale hook as shown and measure force required to start lifter bail moving. This should be 4 to 6 ounces maximum.

(d) If requirements are not met, replace spring.

(7) Ribbon Reversing Lever Spring, Right and Left. Adjust as follows:

(a) Refer to Figure 6-421.

(b) Attach spring scale hook to ribbon reversing lever.

(c) Force required to start ribbon reversing lever moving should measure 1/2 to 1-1/2 ounces maximum.

(d) If scale reading exceeds specified limits install new spring.

(8) Ribbon Guide Lever Spring, Left and Right. Adjust as follows:

(a) Refer to Figure 6-421.

(b) Attach spring scale hook to ribbon guide lever.

(c) Force required to start lever moving should measure 1 to 2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

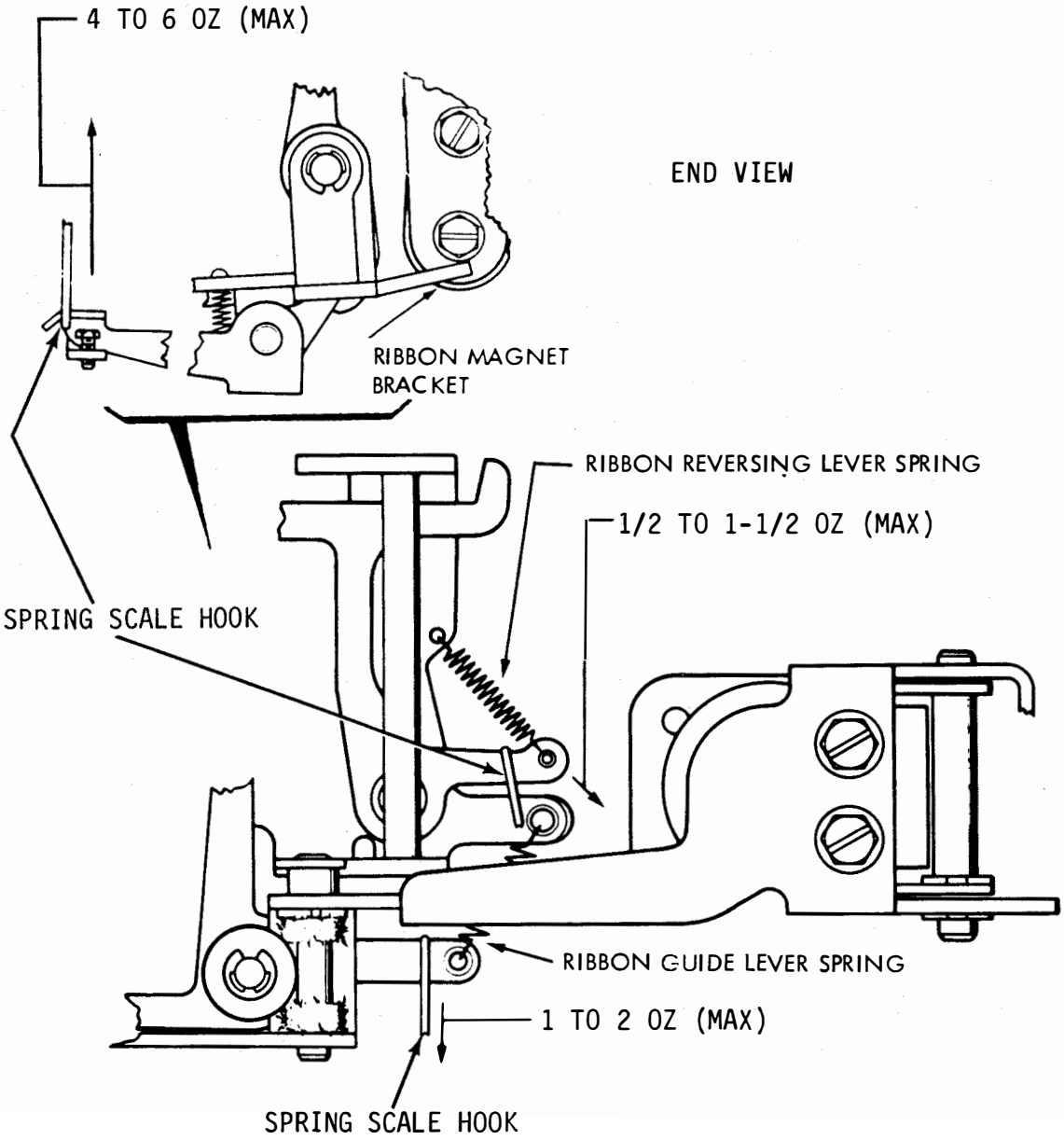


Figure 6-421. Ribbon Roller Bail Spring, Ribbon Reversing Lever Spring, and Ribbon Guide Lever Spring, Left and Right

r. Paper Jam Alarm (Sprocket Feed) Adjustments. Perform the following paper jam alarm sprocket feed adjustments.

(1) Wire Bail. Adjust as follows:

NOTE

Before proceeding with adjustment of wire bail, loosen switch plate mounting screws and rotate both switch and latch to a position where they do not interfere with bail. Position spring post by means of set collar so spring has some initial tension. Spring post should be approximately 30 degrees from vertical as indexed in Figure 6-423.

(a) Refer to Figure 6-422.

(b) Ensure wire bail rests on paper fingers approximately in radius of fingers.

(c) Wire bail should touch at least one finger with not more than 0.015 inch maximum clearance between other finger and wire bail.

(d) If necessary, bend wire bail to meet requirement.

NOTE

Ensure there is no bind in bail after making adjustment.

(2) Switch Position. Adjust as follows:

(a) Refer to Figure 6-423.

(b) Hold wire bail against paper fingers and latch operating lever behind operating bail.

(c) Clearance between top of bail and bottom of step in lever should measure 0.035 to 0.065 inch maximum.

(d) Lever should depress switch plungers sufficiently to operate switches.

(e) If requirements are not met, loosen screws and position switch plate.

(f) Tighten screws.

(3) Bail Spring. Adjust as follows:

(a) Refer to Figure 6-424.

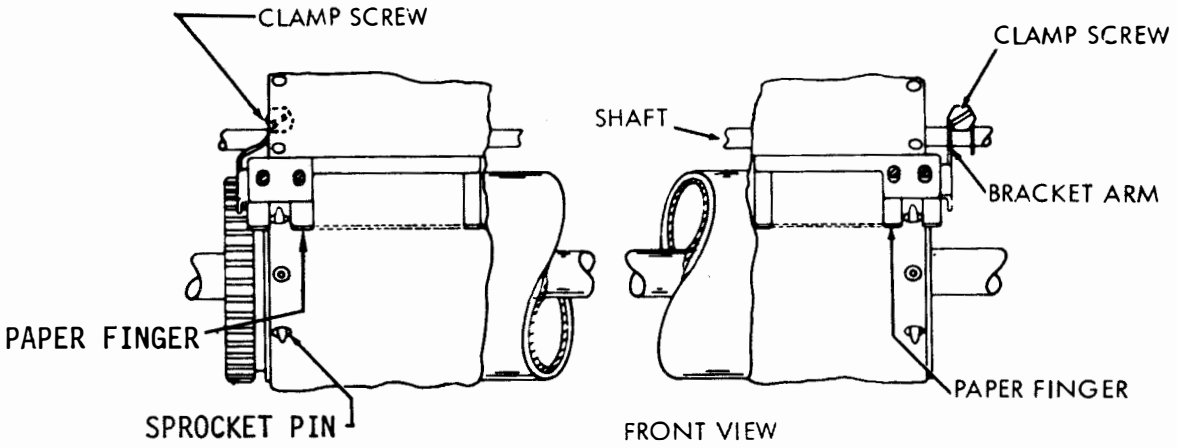
(b) Attach spring scale hook to center of wire bail and pull vertically.

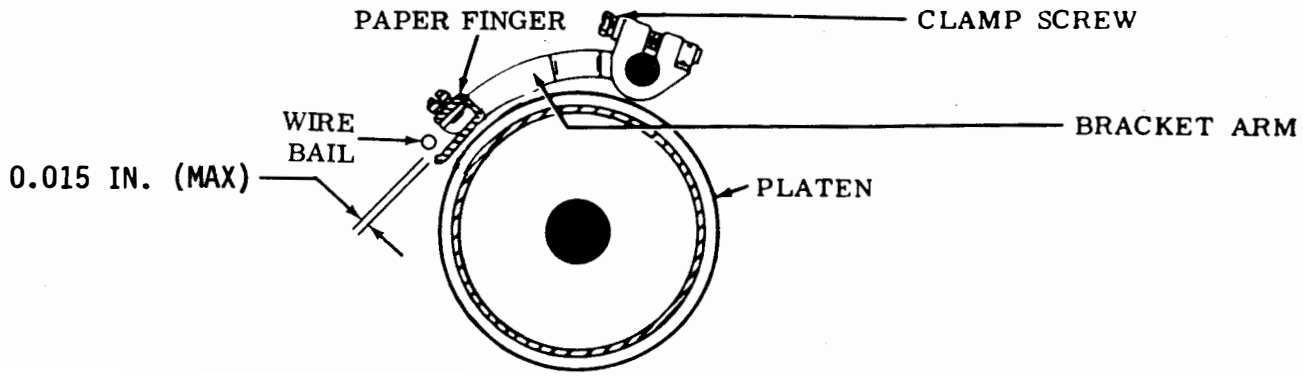
(c) Force required to lift wire bail high enough to release operating lever and operate switches should measure 1/2 to 1-1/2 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(e) With collar positioned laterally, there should be some to 0.006 inch end play for bail.

(f) To adjust, loosen setscrew and position collar. Tighten setscrew.





RIGHT SIDE VIEW

Figure 6-422 Wire Bail

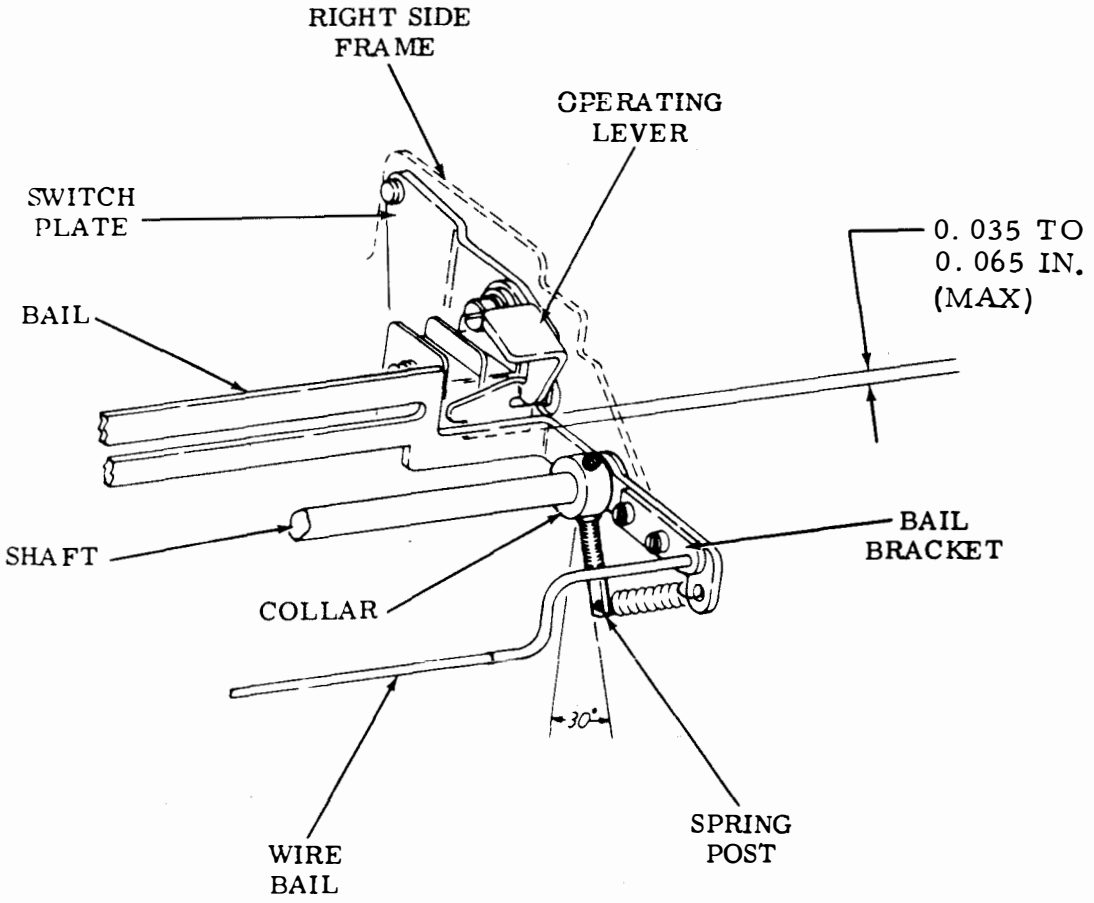
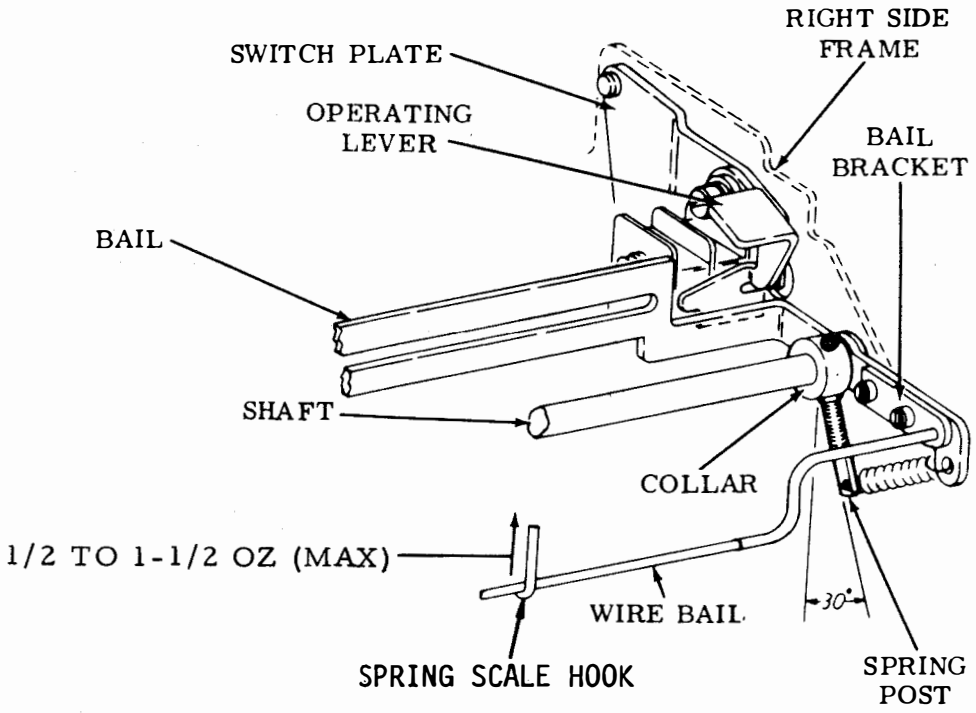


Figure 6-423. Switch Position, Right Front View



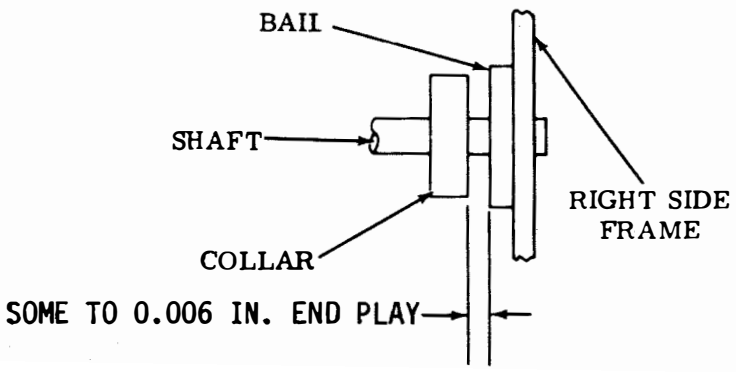


Figure 6-424. Bail Spring, Right Front View

6-13. PERFORATOR TRANSMITTER BASE UNIT ADJUSTMENTS. The following paragraphs describe the variable features of perforator transmitter base unit adjustment procedures. Some paragraphs may refer back to Section I for adjustments.

a. Electrical Line Break Mechanism-Combined Code Lever and Break Lever Springs Adjustment. Perform the electrical line break lever spring adjustments as follows:

(1) Refer to Figure 6-425.

(2) Apply spring scale pushrod to top of keylever and measure force required to move switch break lever in contact with switch plunger. This should be 3 to 4 ounces maximum.

(3) If requirement is not met, replace spring.

b. Local Paper Feed-Out Mechanism-Switch Lever Spring Adjustment. Perform the local paper feed-out mechanism switch lever spring adjustments as follows:

(1) Refer to Figure 6-426.

(2) Apply spring scale hook to switch lever and measure force required to pull switch lever free of switch actuating pin. This should be 11 to 14 ounces maximum.

(3) If requirement is not met, replace spring.

c. Tape-Out Switch Mechanism Adjustments. Perform the following tape-out switch mechanism adjustments.

(1) Low-Tape Switch. Adjust as follows:

(a) Refer to Figure 6-427.

(b) Switch should operate when diameter of tape measures between 2-3/4 and 2-3/8 inches.

(c) To adjust, loosen four mounting screws and position switch assembly. Check with test lamp then tighten screws.

(2) Tape-Out Lever Spring. Adjust as follows:

(a) Refer to Figure 6-427.

(b) Unhook spring from tape lever and attach spring scale hook to loose end of spring.

(c) Force required to pull spring to length of 1-17/32 inches should measure 6 to 8 ounces maximum.

(d) If requirement is not met, replace spring.

(3) Switch Lever Spring. Adjust as follows:

(a) Refer to Figure 6-427.

(b) Unhook spring from switch lever and attach spring scale hook to loose end of spring.

(c) Force required to pull spring to length of 1-1/4 inches should measure 6 to 7 ounces maximum.

(d) If requirement is not met, replace spring.

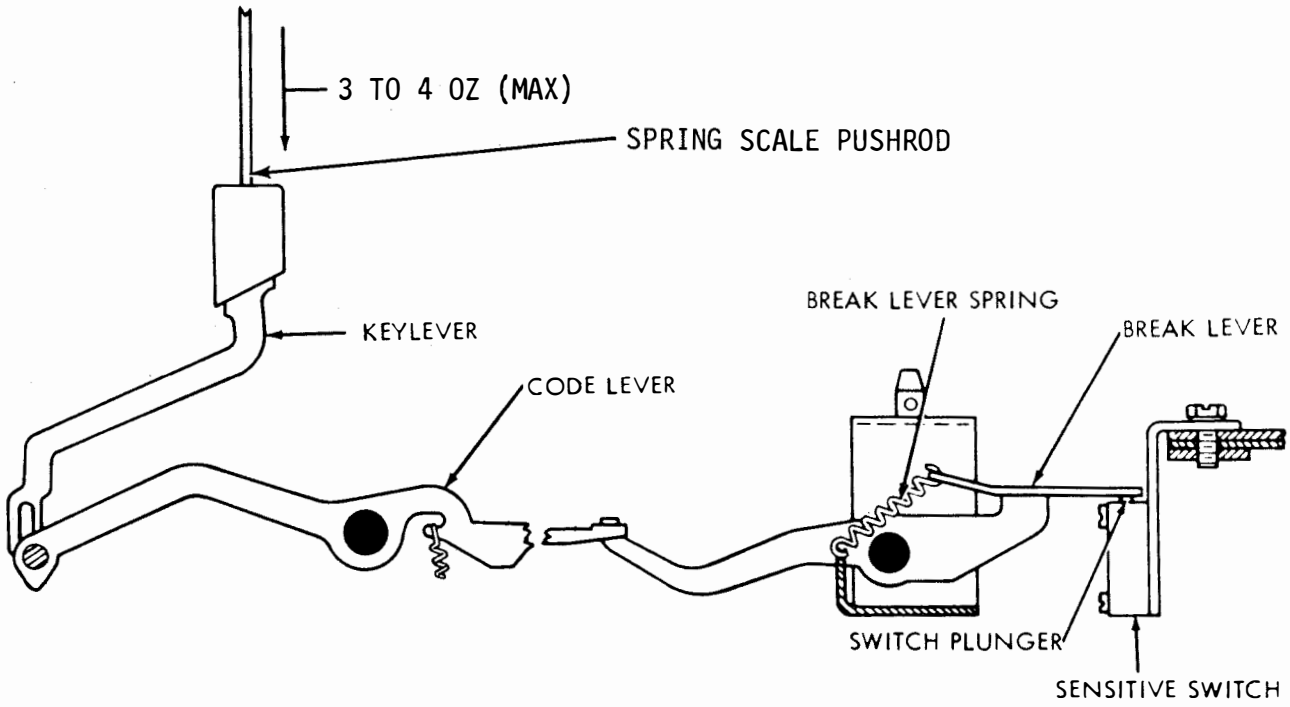


Figure 6-425. Line Break Lever Spring

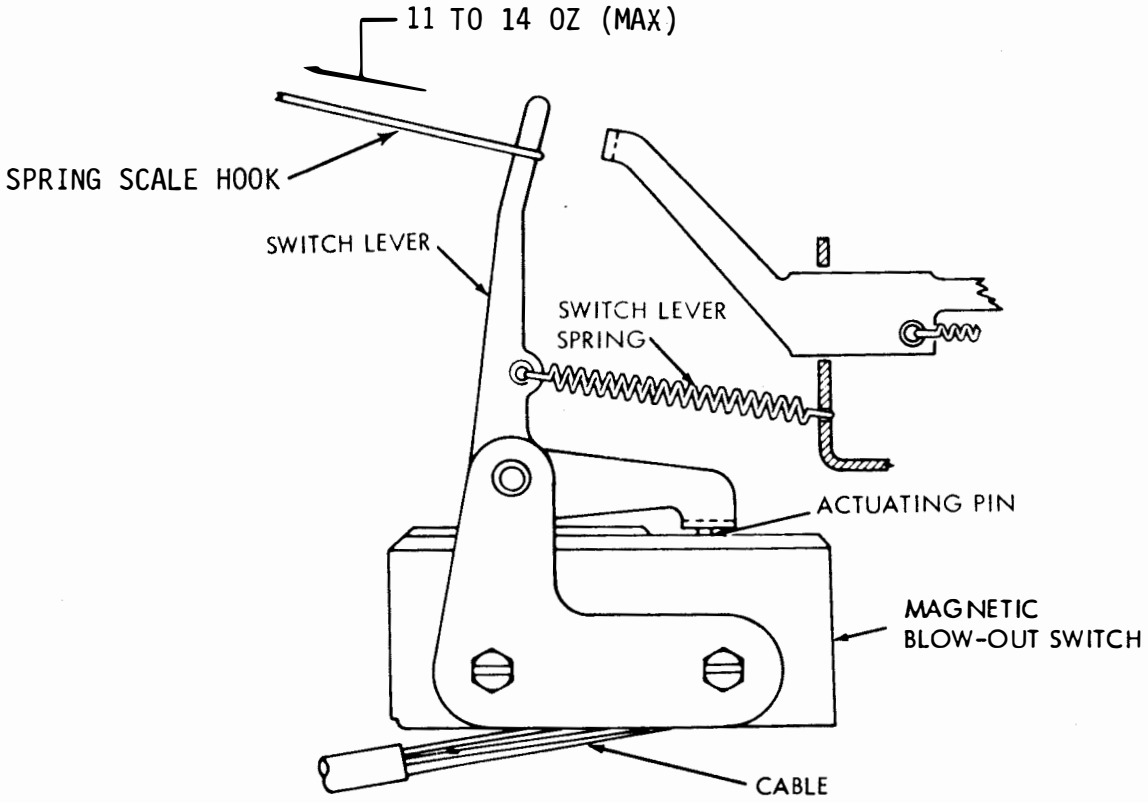


Figure 6-426. Switch Lever Spring

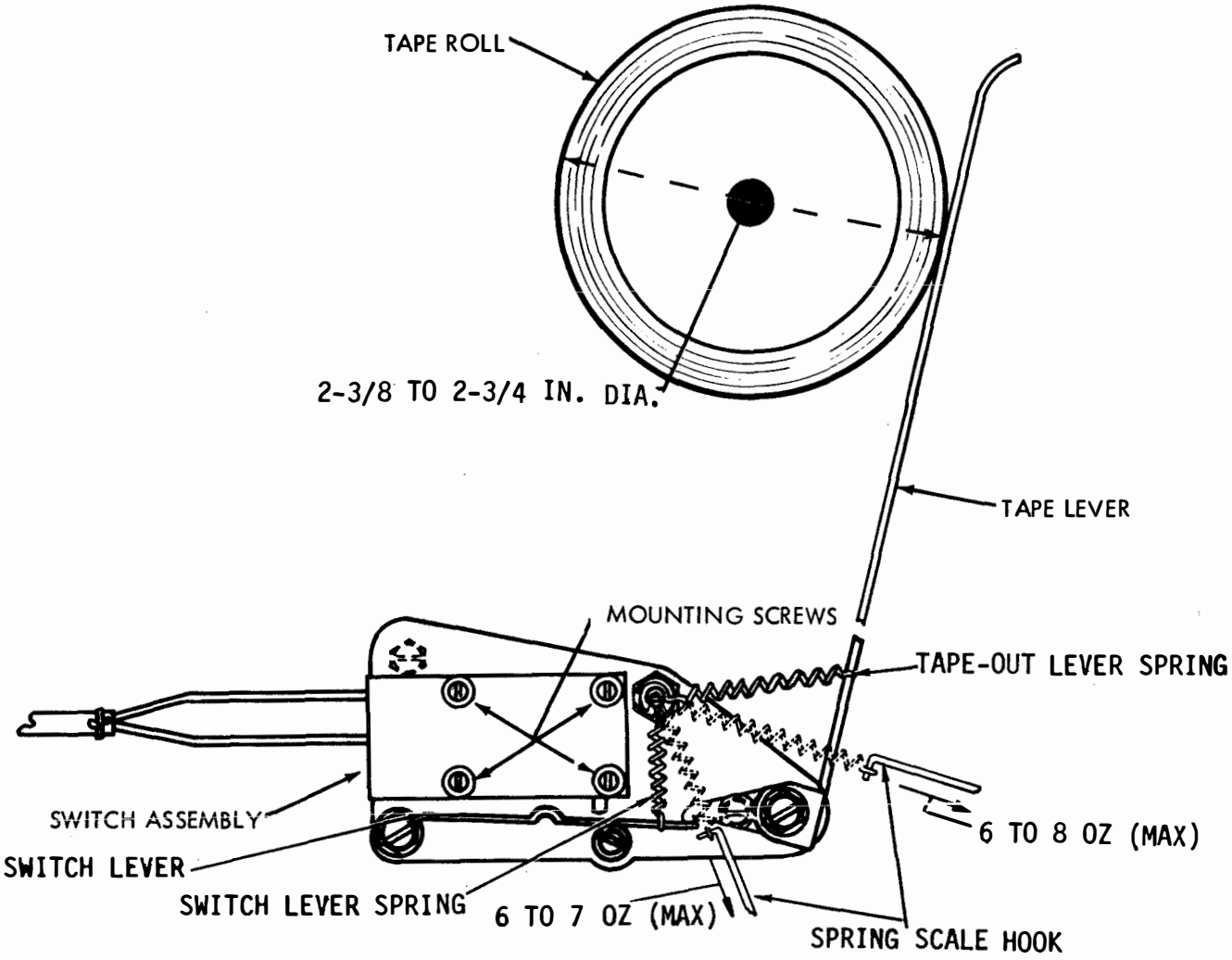


Figure 6-427. Low-Tape Switch, Tape-Out Lever Spring, and Switch Lever Spring

d. Keyboard Lockbar Switch Mechanism Adjustments. Perform the following keyboard lockbar switch mechanism adjustments.

(1) Keyboard Lockbar Switch. Adjust as follows:

(a) Refer to Figure 6-428.

(b) With PECEIVE key depressed, contact gap of normally-open contacts (numbers 1, 2, and 3) should be 0.008 inch minimum.

(c) With SEND key depressed, contact gap of normally-closed contact (number 4) should be 0.008 inch minimum.

(d) All contacts should close with some overtravel.

(e) To adjust, bend contact springs.

(2) Keyboard Lockbar Switch Spring. Adjust as follows:

(a) Refer to Figure 6-428.

(b) Latch lockbar. (If equipped with electrical lock-out, depress SEND keylever.)

(c) Attach spring scale hook over lockbar lever and measure force required to start switch spring moving. This should be 8 to 15 ounces maximum.

(d) If requirement is not met, replace spring.

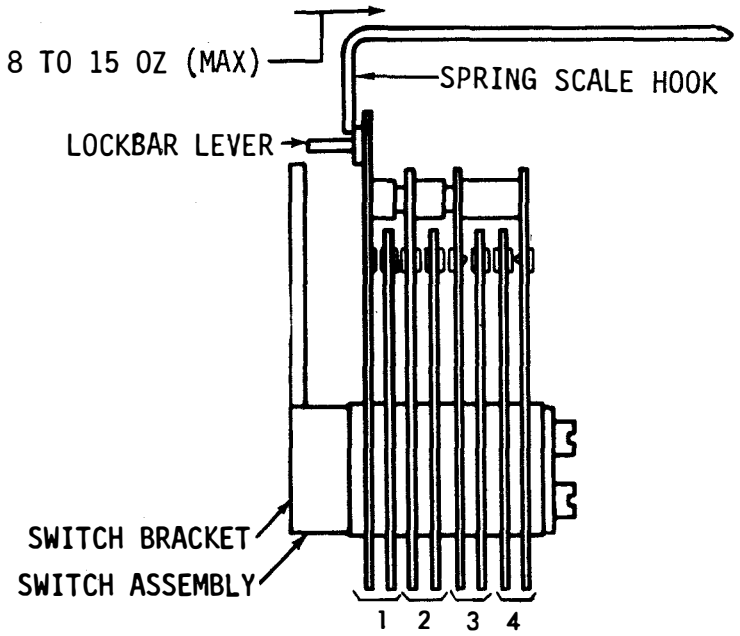


Figure 6-428. Keyboard Lockbar Switch and Lockbar Switch Spring

e. Character Counter Mechanism Adjustments. Perform the following character counter mechanism adjustments.

(1) Cord Assembly. Adjust as follows:

(a) Refer to Figure 6-429.

(b) Rotate pulley until indicator points to "75" on the scale.

(c) To adjust, view end of pulley and adjust as shown.

(2) Antibounce Spring. Adjust as follows:

(a) Refer to Figure 6-430.

(b) Attach spring scale hook to antibounce latch and measure force required to pull latch to end of its travel. This should be 25 to 35 grams maximum.

(c) If requirement is not met, replace spring.

(3) Stop Lever. Adjust as follows:

(a) Refer to Figure 6-430.

(b) With counter ratchet fully returned and resting against its stop lever, clearance between latchlever and face of 4th ratchet tooth should measure 0.002 to 0.010 inch maximum.

(c) The antibounce latch should not interfere with rotation of ratchet.

(d) To adjust, hold drive lever out of engagement with ratchet and rotate stop lever eccentric.

(4) Character Counter Scale. Adjust as follows:

(a) Refer to Figure 6-431.

(b) The indicator should point to zero when it is at extreme left of scale.

(c) To adjust, loosen lock screws and position indicator to the left. Tighten screws.

(d) Point of indicator should not touch throughout entire travel of scale.

(e) To adjust, form indicator.

(5) Character Counter End-of-Line Switch. Adjust as follows:

NOTE

Before installing counter on keyboard perforator, tighten clamp screws and bracket mounting screws friction tight.

(a) Refer to Figure 6-432.

(b) Switch should close at a preset number of characters and switch leaf springs approximately parallel to switch mounting bracket as gauged by eye.

(c) Clearance between leaf spring contacts

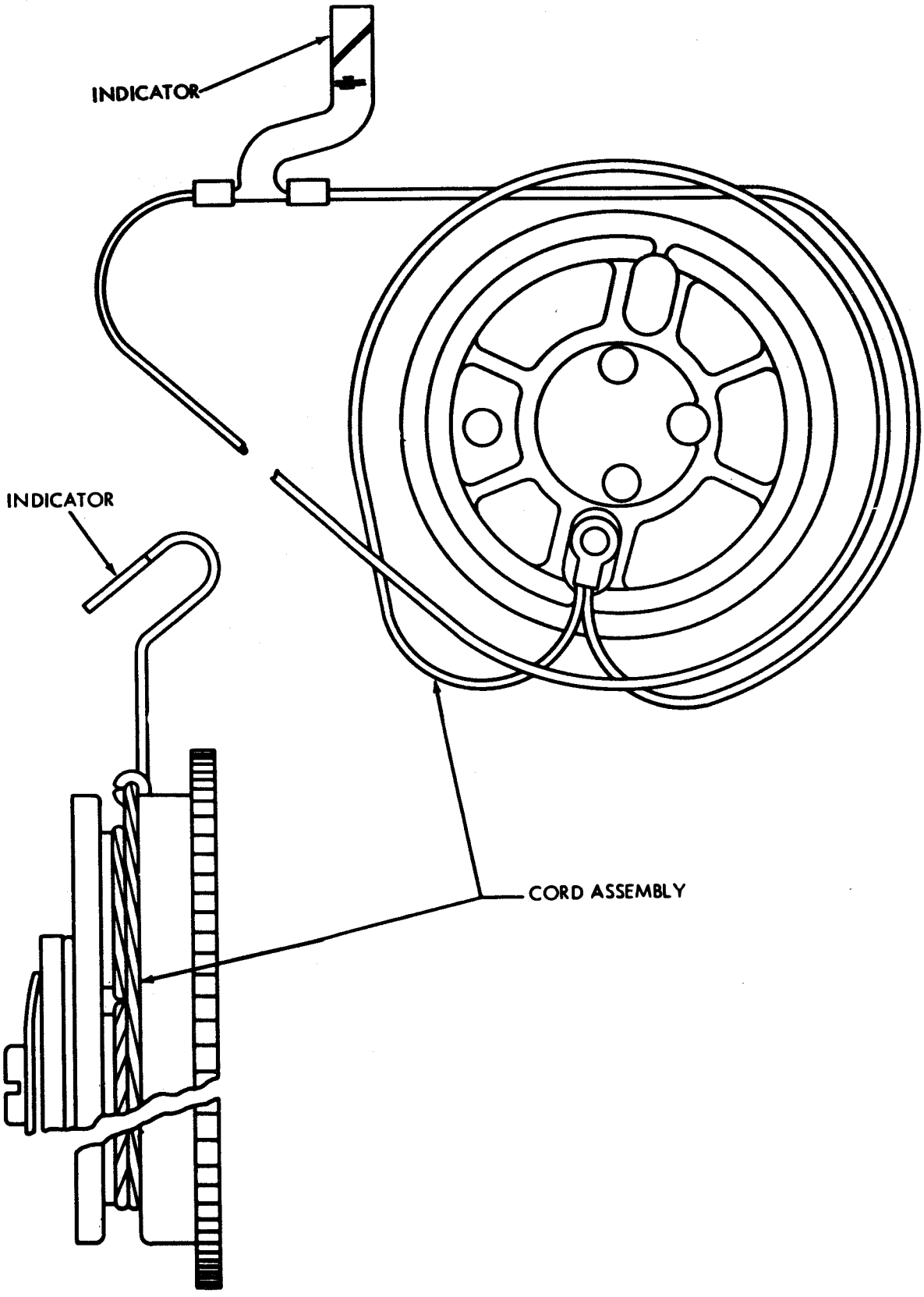


Figure 6-429. Cord Assembly

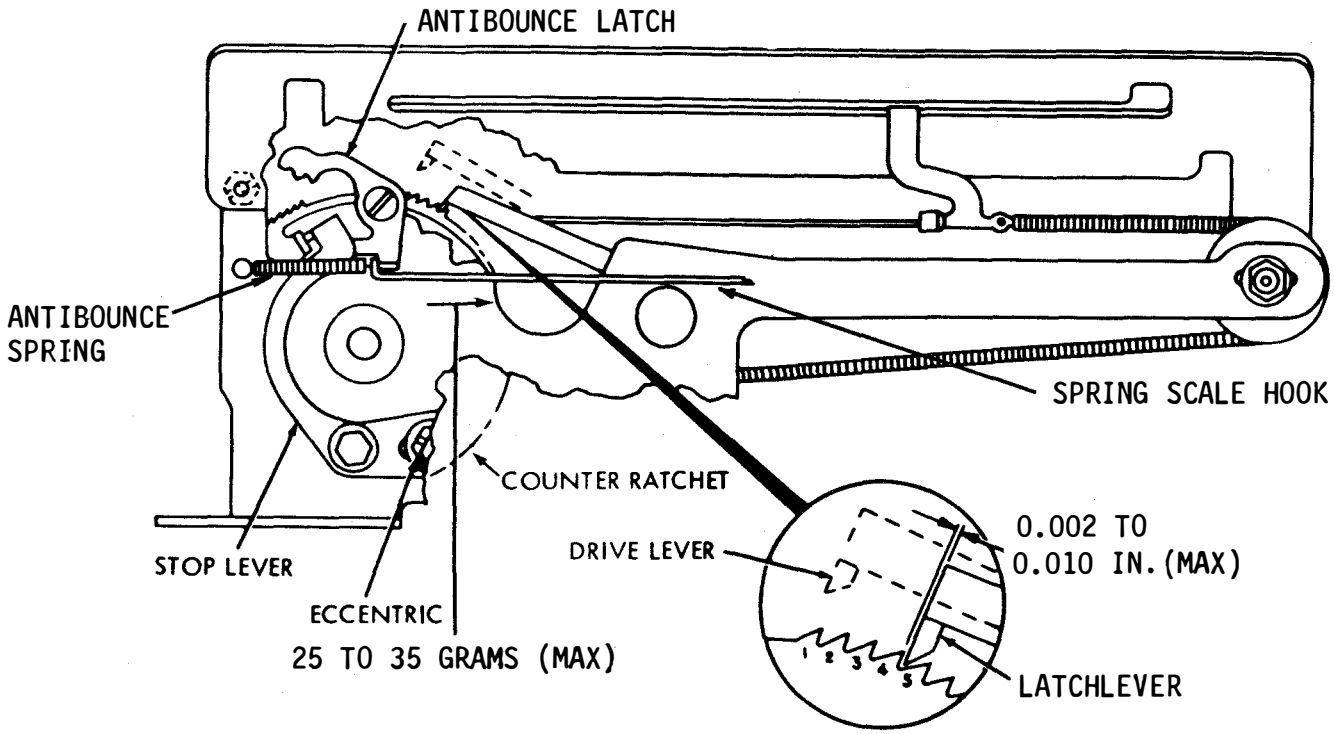


Figure 6-430. Antibounce Spring and Stop Lever, Rear View

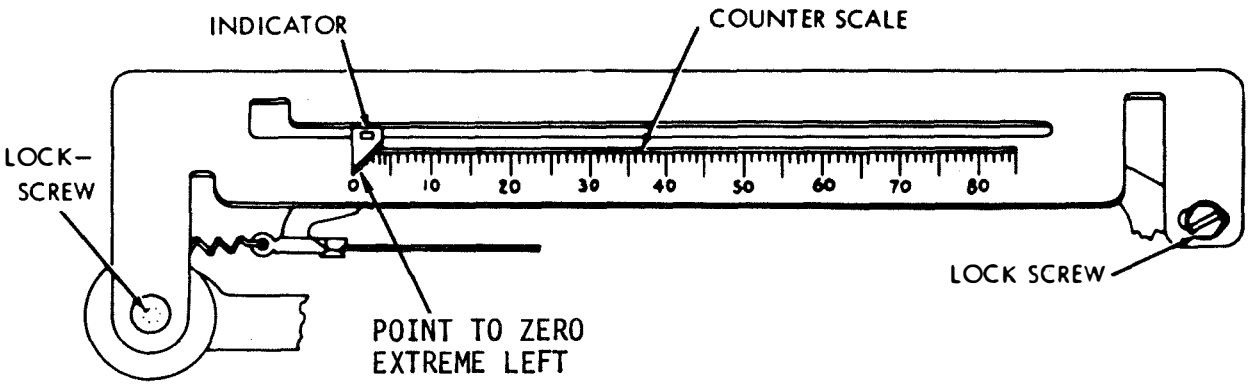


Figure 6-431. Character Counter Scale

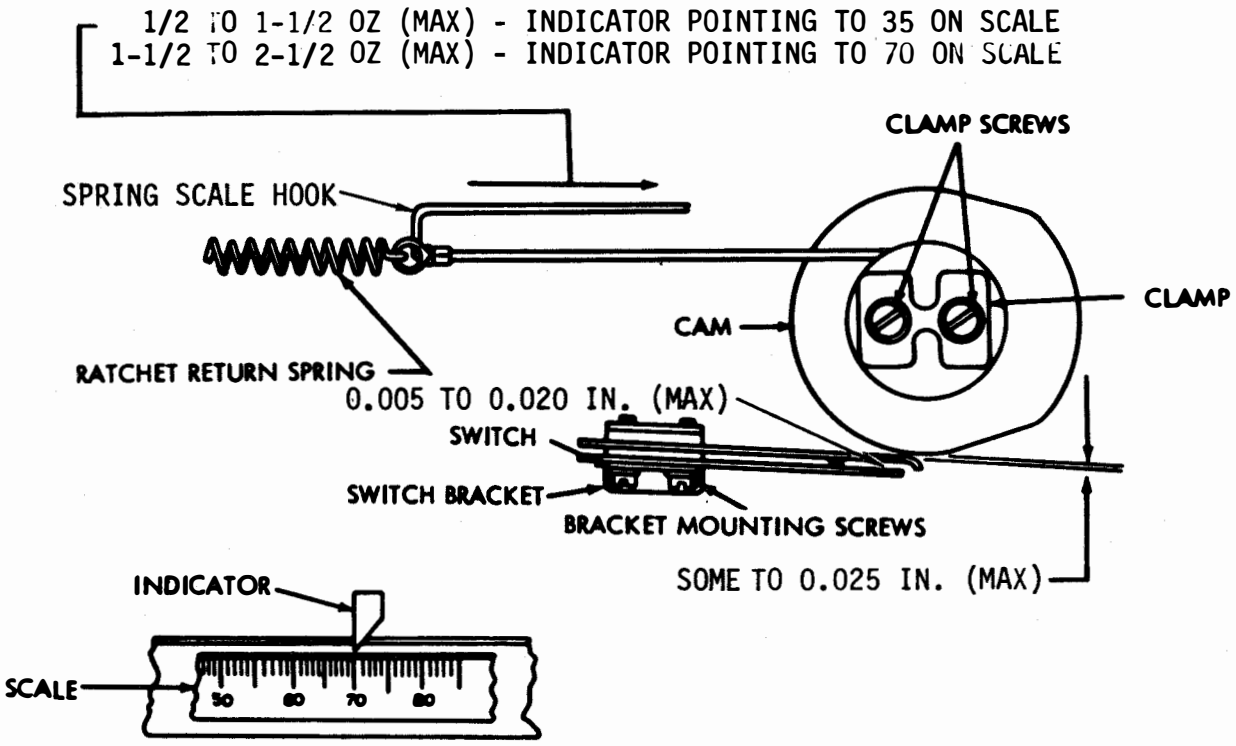


Figure 6-432. Character Counter End-of-Line Switch and Ratchet Drum Assembly Return Spring

should measure 0.005 to 0.020 inch maximum. Bend lower leaf spring, if necessary.

(d) Position switch bracket until there is some to 0.025 inch maximum clearance between upper leaf spring and low part of cam.

(e) Check closest point and tighten bracket screws.

(f) Set indicator to count desired, adjust cam until switch just closes, and tighten clamp screws.

(g) To check operation:

1. Move ratchet drum until indicator traverses the entire scale.

2. The switch should close on desired count, with a small amount of overtravel of both blades.

3. It may be necessary to refine the above adjustments when operating on the extreme ends of the 65 to 80 character range.

(6) Ratchet Drum Assembly Return Spring. Adjust as follows:

(a) Refer to Figure 6-432.

(b) Use spring scale to measure force required to start indicator moving.

1. When indicator is at 35 on scale, force should be between 1/2 and 1-1/2 ounces.

2. When indicator is at 70, force should be between 1-1/2 to 2-1/2 ounces.

(c) If force does not match requirements, replace spring.

(7) Character Counter Stroke. Adjust as follows:

(a) Refer to Figure 6-433.

(b) Counter should operate consistently in "T" or "K-T" position when character and repeat keys are depressed.

(c) Counter should reset without binding when CAR RET key is depressed.

(d) Upon restart after reset, counter mechanism should count first character.

(e) When counter is set near mid-point of range, clearance between drive lever and ratchet tooth should measure 0.006 to 0.015 inch maximum.

(f) To adjust:

1. Loosen mounting screws.

2. Place keyboard in "T" position, start motor, strike CAR RET key, and then "E" key.

3. Turn off motor and depress "E" key.

4. Position character counter frame for clearance.

5. Turn control knob to "K-T" position and tighten screws.

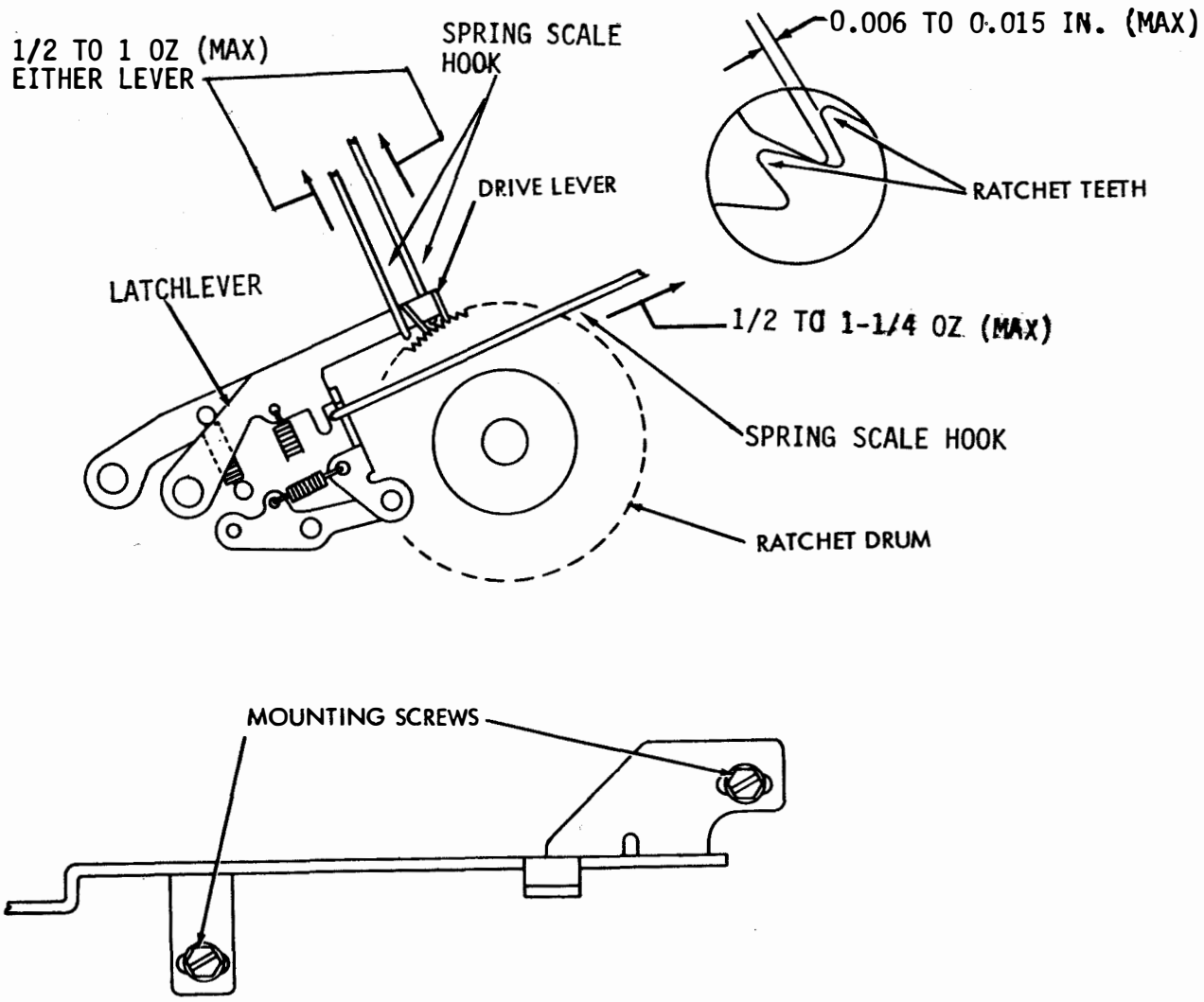


Figure 6-433. Character Counter Stroke, Reset Latchlever Spring, Drive Lever Spring, and Reset Lever Extension Spring

6. Recheck and refine if necessary.

(8) Reset Latchlever and Drive Lever Springs. Adjust as follows:

(a) Refer to Figure 6-433.

(b) Use spring scale to measure force necessary to move either lever. This should be between 1/2 and 1 ounce maximum.

(c) If requirement is not met, replace spring.

(9) Reset Lever Extension Spring. Adjust as follows:

(a) Refer to Figure 6-433.

(b) With code bars in latched position, use spring scale to measure force necessary to start lever moving. This should be from 1/2 to 1-1/4 ounces maximum.

(c) If requirement is not met, replace spring.

f. Repeat-On-Space Mechanism Adjustments. Perform the following repeat-on-space mechanism adjustments.

(1) Travel Screw. Adjust as follows:

NOTE

Spacebar repeat touch is affected by this adjustment. For lighter touch, adjust to upper limit. For heavier touch, adjust to lower limit.

(a) Refer to Figure 6-434.

(b) With spacebar fully depressed, clearance between reset bail roller and non-repeat lever should measure 0.035 to 0.080 inch maximum.

(c) To adjust, loosen travel screw locknut, depress SPACEBAR fully and reset travel screw. Tighten locknut.

(2) Stop. Adjust as follows:

(a) Refer to Figure 6-434.

(b) Clearance between space-repeat lever travel screw and non-repeat lever should measure 0.002 to 0.020 inch maximum.

(c) To adjust, loosen stop screw locknut and depress "G" keylever to trip keyboard clutch. Position stop and tighten locknut. Recheck clearance.

(3) Space-Repeat Lever Spring. Adjust as follows:

(a) Refer to Figure 6-434.

(b) Unhook spring and attach spring scale to loose end of spring.

(c) Force required to stretch spring to installed length should measure 13-1/2 to 16-1/2 ounces maximum.

(d) If force does not match requirements, replace spring.

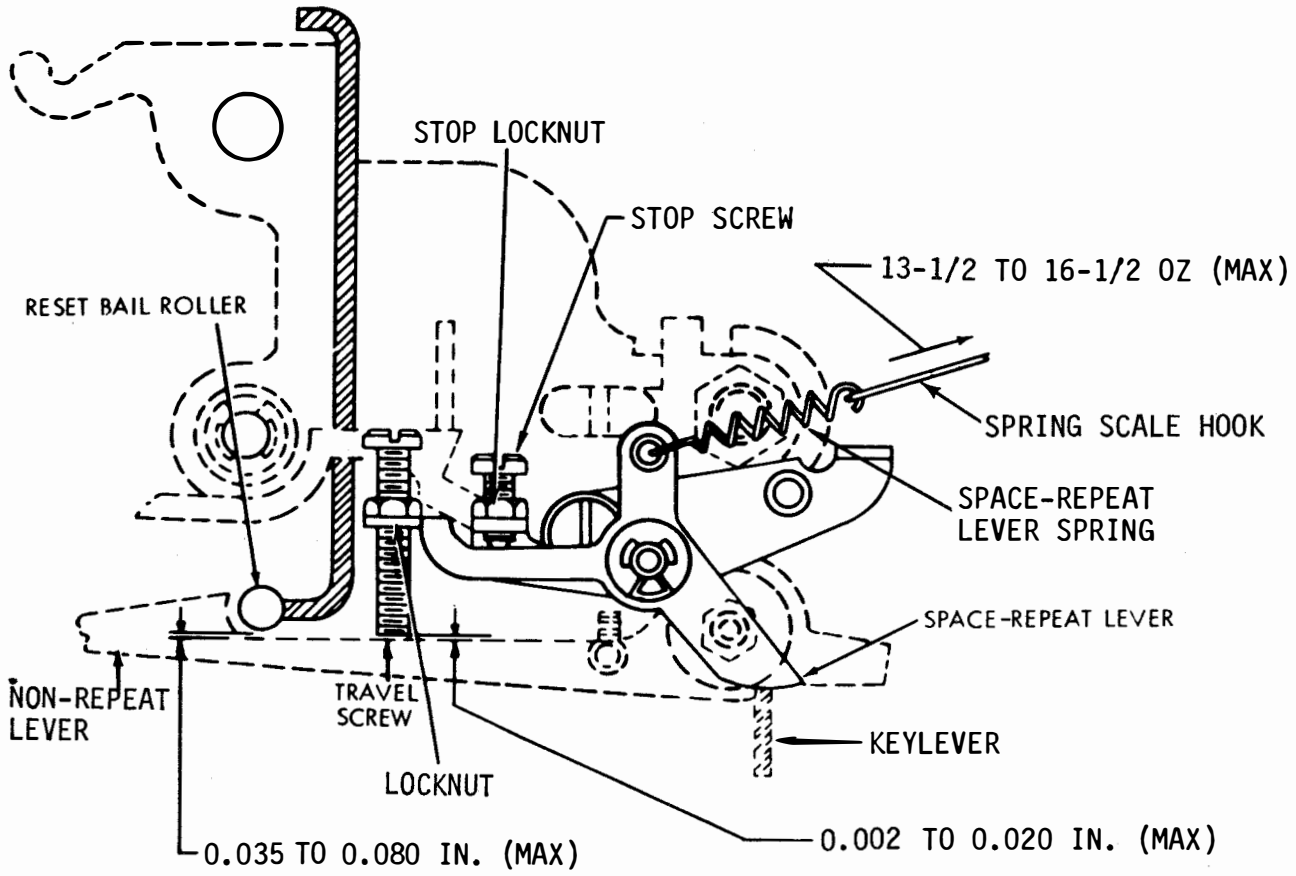


Figure 6-434. Travel Screw, Stop, and Space-Repeat Lever Spring

(4) Spacebar. Adjust as follows:

(a) Refer to Figure 6-435.

(b) It should require normal (light) keytop pressure to transmit single space.

(c) It should require full and sustained spacebar pressure to affect continuous space transmission..

g. Time Delay Mechanism Adjustments. Perform the following time delay mechanism adjustments.

(1) Time Delay Ratchet Wheel Tension. Adjust as follows:

(a) Refer to Figure 6-436.

(b) Hold off all pawls and attach spring scale hook over ratchet wheel tooth.

(c) Force required to move ratchet wheel should measure 2 to 8 ounces maximum.

(d) To adjust, remove and bend friction springs.

(2) Time Delay Switch Position. Adjust as follows:

(a) Refer to Figure 6-436.

(b) With contact pawl not blocked by latchlever and on high part of ratchet wheel, and ratchet wheel play taken up in downward direction, clearance between contact pawl and switch plunger should be some to 0.010 inch maximum.

(c) To adjust, loosen switch mounting screws and position switch.

(d) Tighten mounting screws.

(3) Contact Latch Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-437.

(b) Unhook latch pawl spring at anchor and attach spring scale hook to loose end.

(c) Force required to pull spring to installed length should measure 12 to 15 ounces maximum.

(d) If requirement is not met, replace spring.

(4) Contact Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-437.

(b) With contact pawl latched on end of latchlever apply spring scale pushrod to top part of contact pawl.

(c) Force required to start pawl moving should measure 8 to 12 ounces maximum.

(d) If requirement is not met, replace spring.

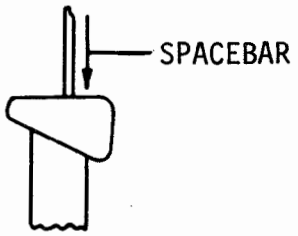


Figure 6-435. Spacebar

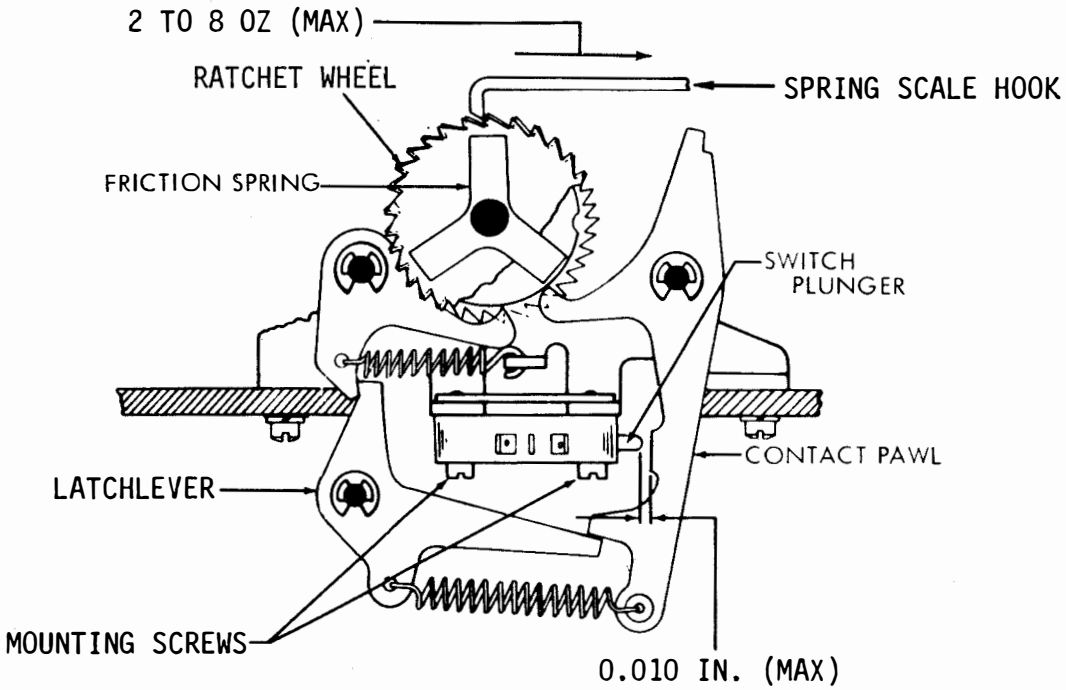


Figure 6-436. Time Delay Ratchet Wheel Tension and Time Delay Switch Position

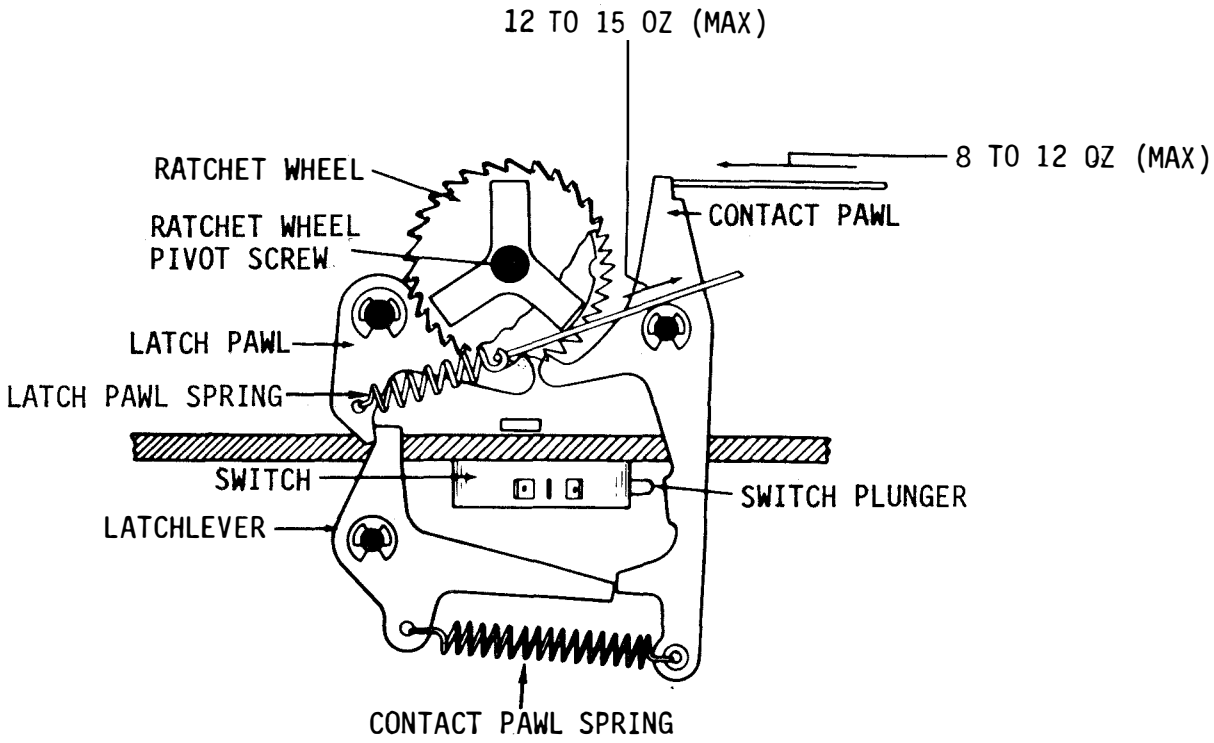


Figure 6-437. Contact Latch Pawl Spring and Contact Pawl Spring

(5) Time Delay Mechanism Position. Adjust as follows:

(a) Refer to Figure 6-438.

(b) With typing unit on base and drive bracket extension in rear position, clearance between contact pawl and latching lever should be 0.020 inch minimum.

(c) To adjust, remove typing unit from base and loosen time delay mounting screws.

(d) Rotate ratchet wheels until latch pawl drops into indents in the two ratchet wheels.

(e) Lift eccentric follower pawl upward and take up play by pressing ratchet wheels backwards.

(f) With eccentric follower pawl at end of its extreme forward travel, position mechanism so that point of lower beveled edge of follower pawl rests on peak of first ratchet-wheel tooth forward of a vertical centerline through ratchet wheel, or over travels the peak by not more than 0.010 inch maximum.

(g) Recheck minimum clearance of 0.020 inch with typing unit on keyboard base.

(h) If necessary, refine adjustment.

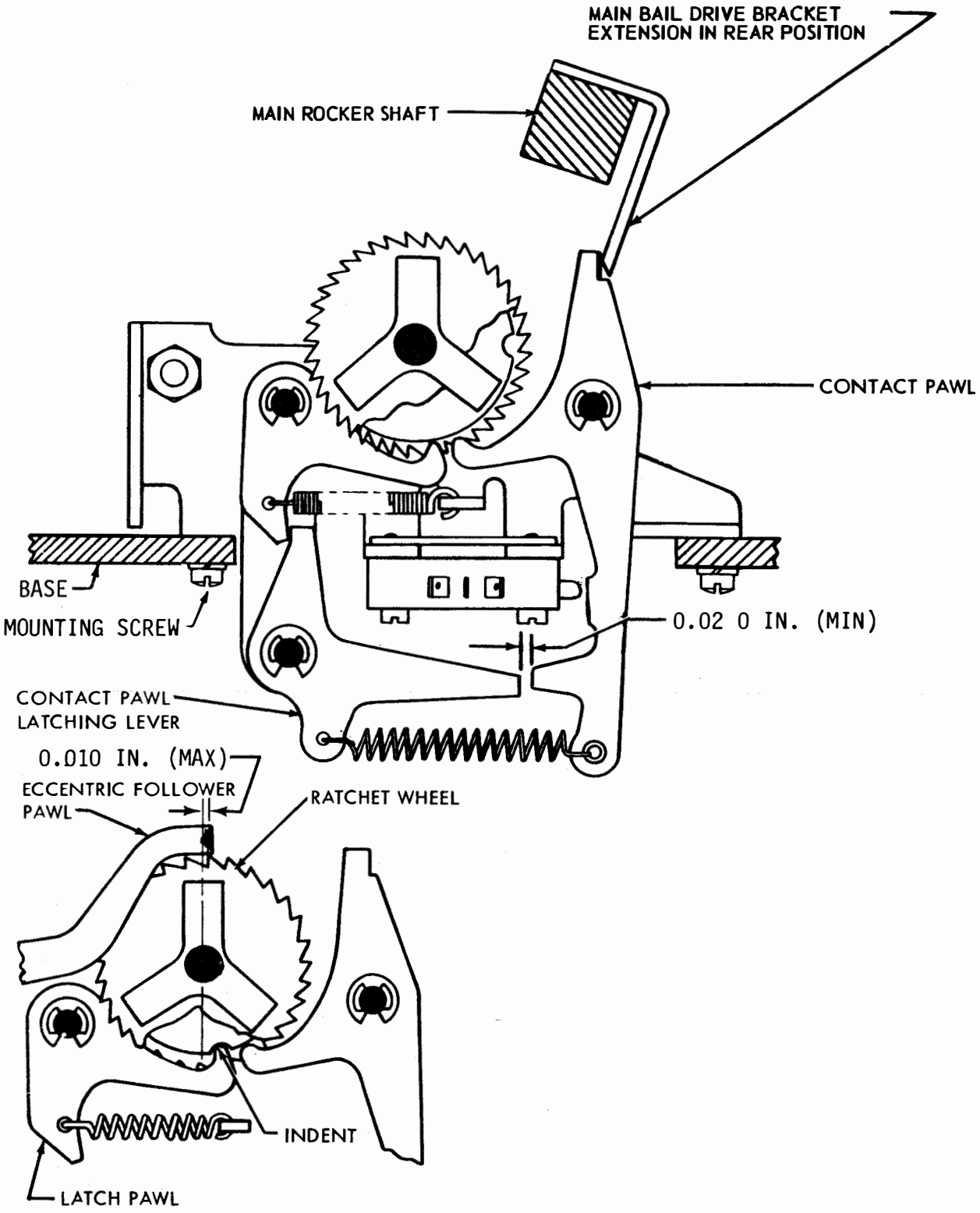


Figure 6-438. Time Delay Mechanism Position

(6) Eccentric Follower Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-439.

(b) With eccentric follower pawl in extreme forward position attach spring scale hook over follower pawl.

(c) Force required to start pawl moving should measure 1-1/2 to 4 ounces maximum.

(d) If force does not match requirements, replace spring.

(7) Time Delay Disabling Device. Adjust as follows:

(a) Refer to Figure 6-439.

(b) To disable the time delay mechanism when not required, loosen adjusting lever mounting screw.

(c) Press downward on lever to raise eccentric follower pawl out of engagement with ratchet wheel.

(d) Tighten mounting screw.

h. Synchronous Pulse Mechanism Adjustments. Perform the following synchronous pulse mechanism adjustments.

(1) Mounting Bracket (Not Attracted). Adjust as follows:

(a) Refer to Figure 6-440.

(b) With magnet not attracted and clutch trip bar in farthest position, clearance between clutch trip bar and armature lever should be 0.005 to 0.015 inch maximum.

(c) To adjust, loosen three mounting screws and position mounting bracket with pry point.

(d) Tighten mounting screws.

(2) Magnet Armature. Adjust as follows:

(a) Refer to Figure 6-440.

(b) With clutch trip bar at extreme left, hook 32-ounce spring scale at right angle to armature lever.

(c) Force required to pull armature lever from clutch trip bar should measure 3 to 5 ounces maximum.

(d) If force does not meet requirements, replace spring.

(3) Mounting Bracket (Attracted). Adjust as follows:

(a) Refer to Figure 6-441.

(b) With armature lever held against magnet pole face and clutch trip bar at farthest right, clearance between clutch trip bar and armature lever should be 0.005 to 0.015 inch maximum.

(c) To adjust, loosen right rear and left front mounting bracket screws and position bracket with pry point.

(d) Tighten screws.

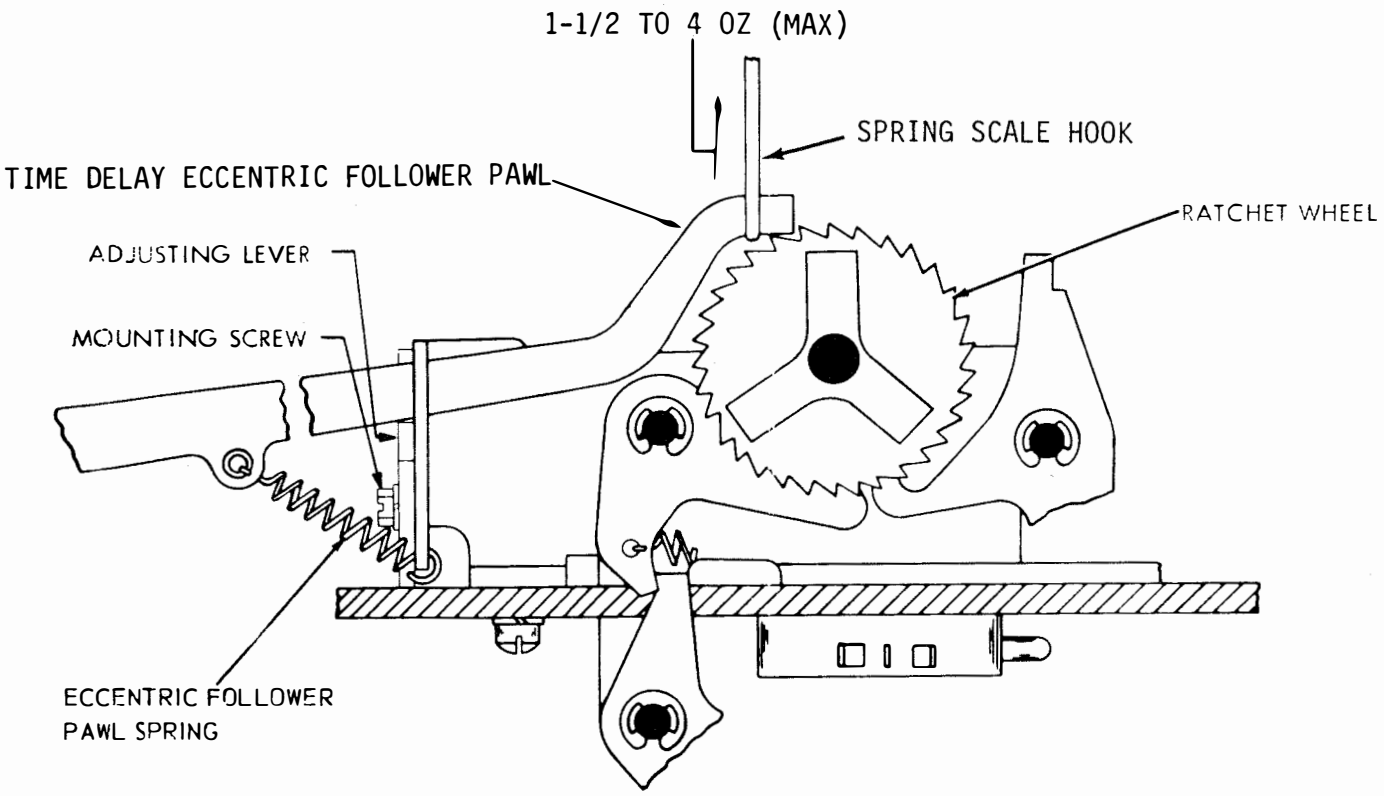


Figure 6-439. Eccentric Follower Pawl Spring and Time Delay Disabling Device

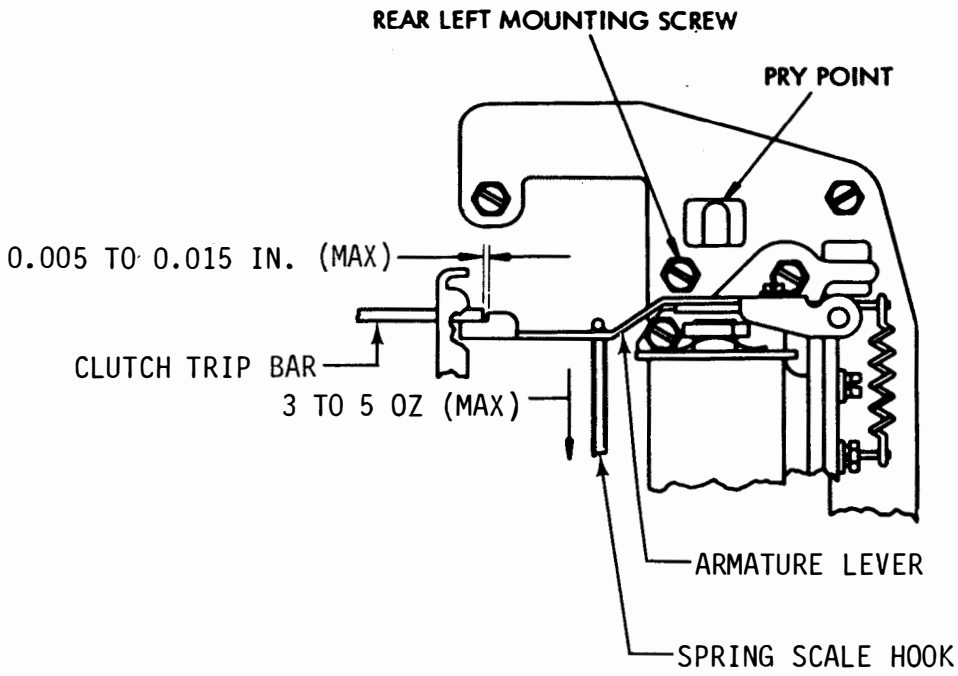


Figure 6-440. Mounting Bracket (Not Attracted) and Magnet Armature

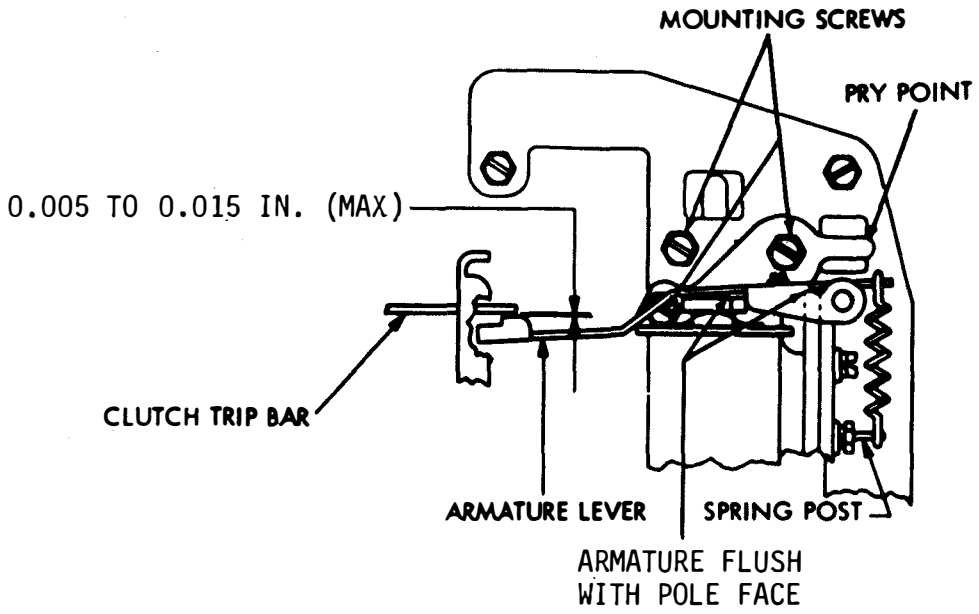


Figure 6-441. Mounting Bracket (Attracted) and Armature Hinge

(4) Armature Hinge. Adjust as follows:

(a) Refer to Figure 6-441.

(b) With armature in attracted position, armature should be flush with pole face and magnet bracket extension.

(c) To adjust, loosen hinge bracket mounting screw and spring post, and position armature.

(d) Tighten screw and spring post.

(5) Contact Gap. Adjust as follows:

(a) Refer to Figure 6-442.

(b) With universal code bar in STOP position, contact gap should be from 0.020 to 0.035 inch maximum.

(c) To adjust, loosen bracket mounting screws and position bracket.

(d) Tighten mounting screws.

(6) Universal Code Bar Contact. Adjust as follows:

(a) Refer to Figure 6-443.

(b) With universal code bar in operated position, use spring scale to measure force necessary to open contacts. This should require 3-1/2 to 4-1/2 ounces maximum.

(c) To adjust, bend contact swinger.

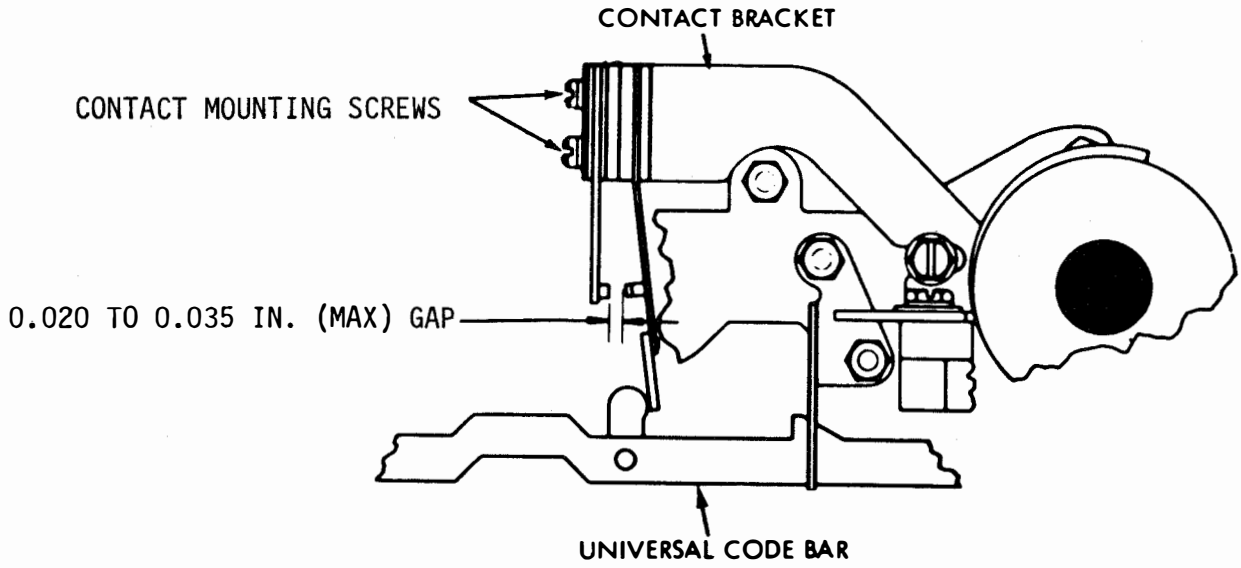


Figure 6-442. Contact Gap

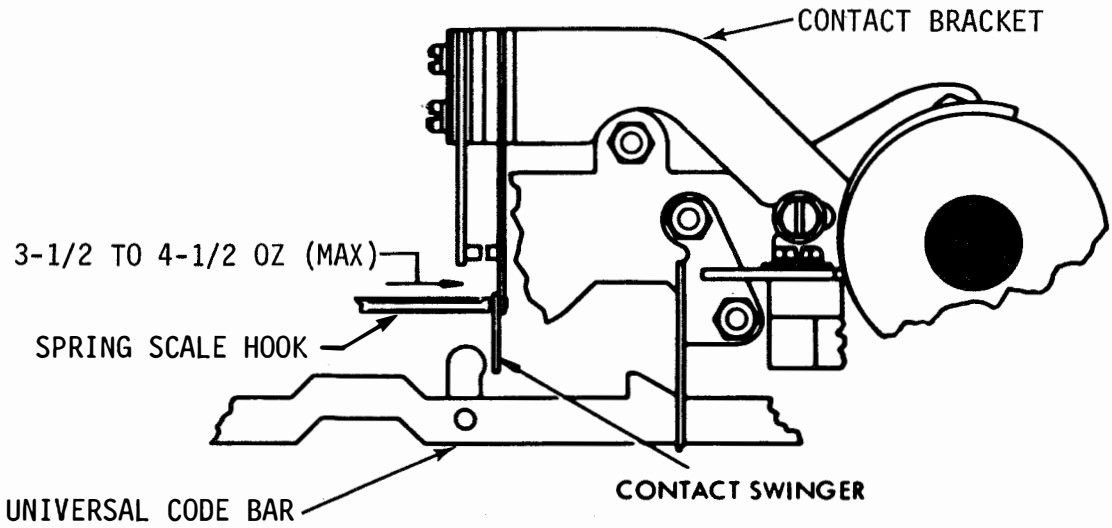


Figure 6-443. Universal Code Bar Contact

(7) Armature Clamp. Adjust as follows:

NOTE

To make keyboard operable without electrical pulse to operate stepping magnet, loosen clamp mounting screw and rotate clamp counterclockwise to hold the armature in the operating position. Maintain 0.005 to 0.015 inch clearance between clutch trip bar and armature lever.

(a) Refer to Figure 6-444.

(b) With armature operated, clearance between armature clamp and armature should be approximately 3/8 inch.

(c) To adjust, loosen mounting screw and position clamp.

(d) Tighten mounting screw.

i. Power Backspace Switch Position Adjustment. Perform the power backspace switch adjustments as follows:

NOTE

This is not a routine adjustment and should be checked and made only if trouble in its operation is encountered or parts are disassembled and replaced.

(1) Refer to Figure 6-445.

(2) With switch operating lever held parallel to the top of its mounting bracket

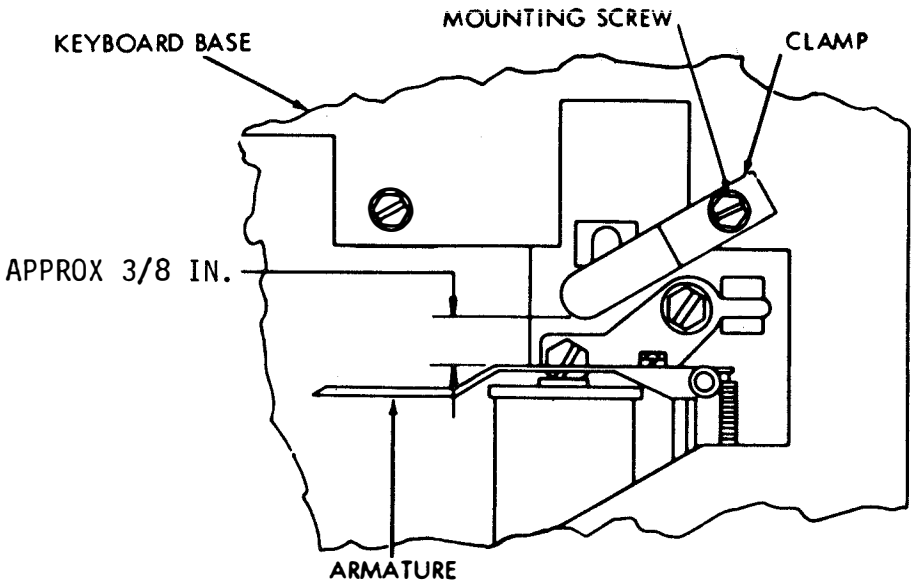


Figure 6-444. Armature Clamp

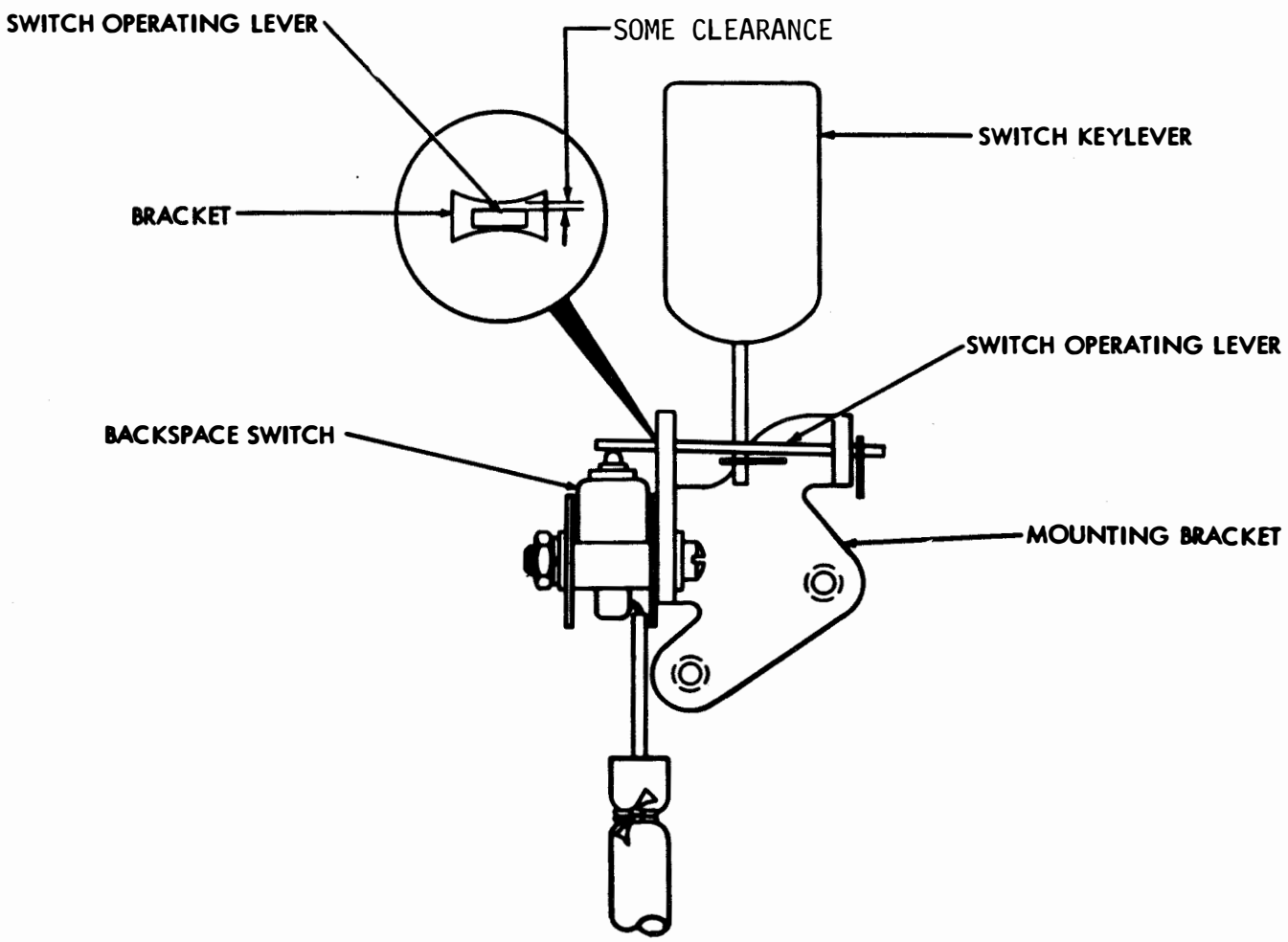


Figure 6-445. Power Backspace Switch Position

and depressed to limit of its travel, the switch shall be operated.

(3) With switch in unoperated condition and operating lever held parallel to top of its mounting bracket, there should be some clearance between operating lever and top of curved slot in the bracket.

(4) To adjust, loosen mounting screws and position switch. Tighten screws.

j. Remote Control Gearshift Mechanism Adjustment. Perform the following remote control gearshift mechanism adjustments.

(1) Gearshift. Adjust as follows:

(a) Refer to Figure 6-446.

(b) Backlash between motor pinion and its driven gear, and between typing unit driven and driving gears should be some to 0.005 inch maximum, at points of minimum backlash.

(c) To adjust, loosen four screws which mount assembly bracket to base, nut plate mounting screw at front of assembly bracket, and locknuts on adjusting bushings.

(d) Position gearshift bracket assembly front to rear, and raise or lower rear of assembly by rotating adjusting bushing nearest motor.

(e) Position other bushing against base plate.

(f) Tighten all screws and locknuts.

(2) Gearshift Magnet Armature Spring. Adjust as follows:

(a) Refer to Figure 6-446.

(b) With magnet deenergized, apply spring scale pushrod against armature.

(c) Force necessary to start armature moving should measure 2-1/2 to 8 ounces maximum.

(d) If requirement is not met, replace spring.

(3) Armature Stop. Adjust as follows:

(a) Refer to Figure 6-447.

(b) With armature in open position and armature stop against casting, clearance between gearshift lever and stud on sleeve should measure 0.010 to 0.020 inch maximum.

(c) To adjust, loosen gearshift lever clamp screw and position armature stop while holding gearshift lever in position. Tighten clamp screw.

(4) Gearshift Magnet. Adjust as follows:

(a) Refer to Figure 6-448.

(b) Armature pole face should meet magnet pole face squarely.

(c) Loosen gearshift lever clamp screw and position armature.

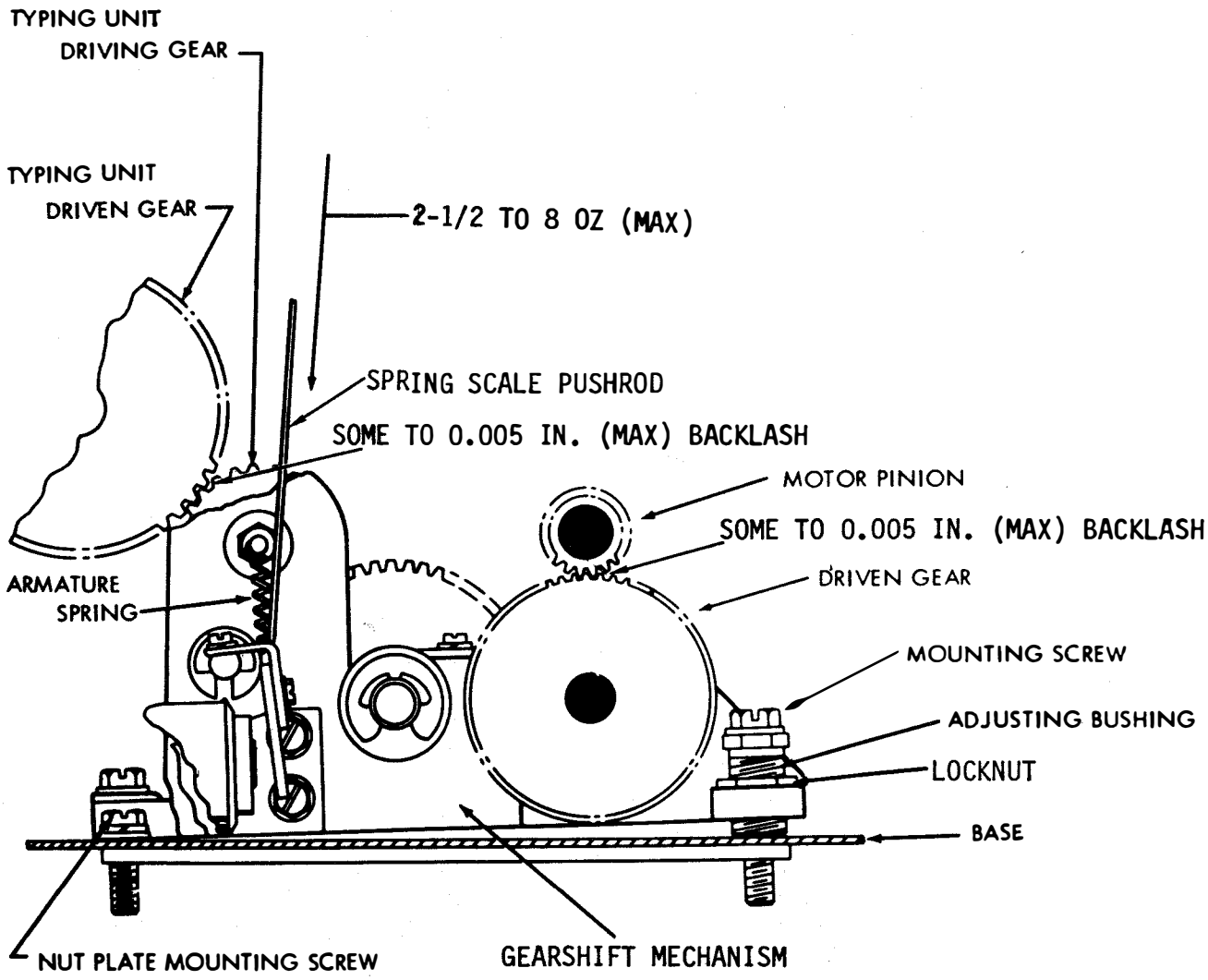


Figure 6-446. Gearshift Mechanism and Magnet Armature Spring

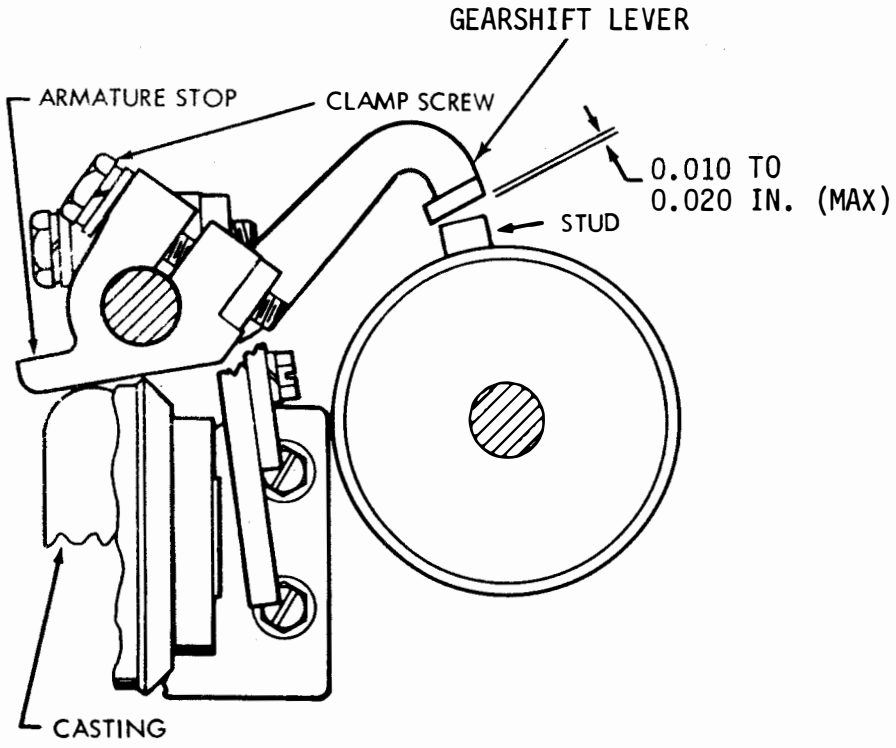


Figure 6-447. Armature Stop

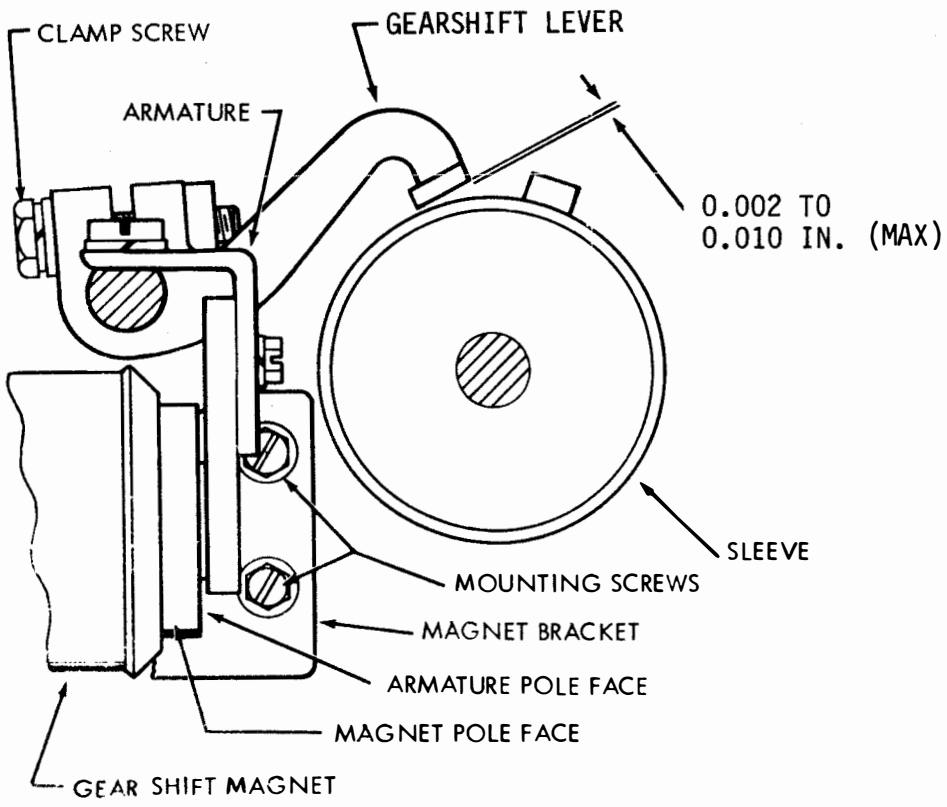


Figure 6-448. Gearshift Magnet and Clutch Stop Lever

(d) Loosen magnet bracket mounting screws and position magnet.

(e) Tighten all screws.

(5) Clutch Stop Lever. Adjust as follows:

(a) Refer to Figure 6-448.

(b) With armature resting against magnet pole face, clearance between gearshift lever and sleeve should be from 0.002 to 0.010 inch maximum.

(c) To adjust, loosen gearshift lever clamp screws and position lever. Tighten clamp screw.

k. Universal Keyboard Switch. Perform the following universal keyboard adjustments.

(1) Keyboard Universal Switch (Preliminary). Adjust as follows:

(a) Refer to Figure 6-449.

(b) Centerline of insulated portion of universal switch assembly should align with centerline of code bar lever.

(c) To adjust, loosen switch assembly mounting screw and position assembly laterally on retainer bar. Tighten screw.

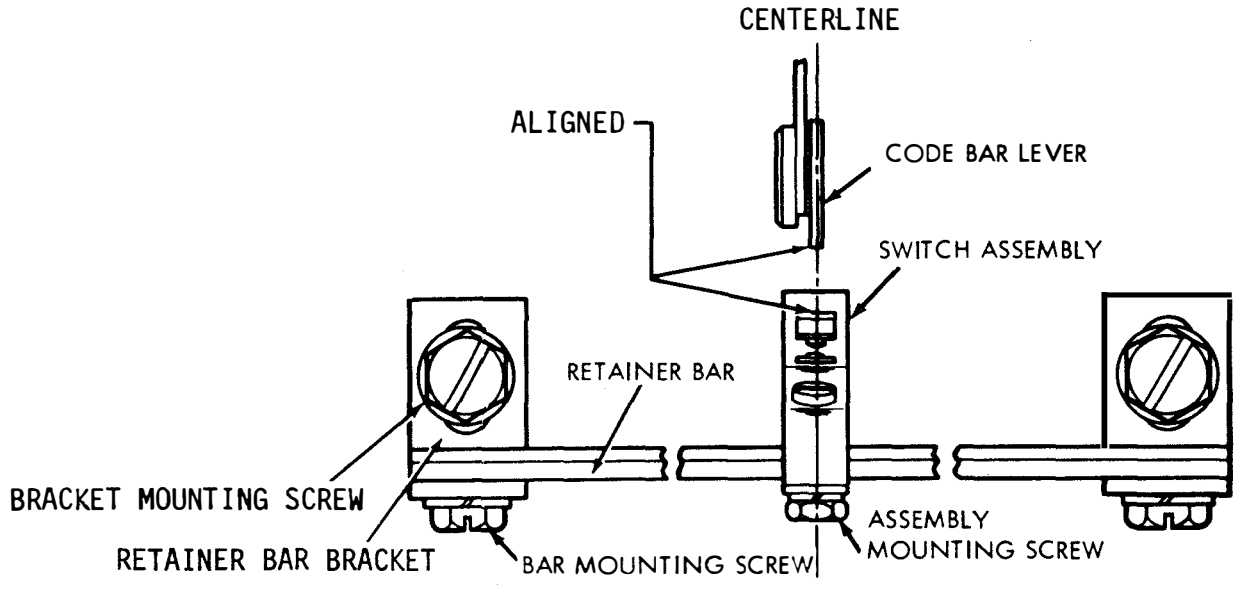


Figure 6-449. Keyboard Universal Switch (Preliminary), Front View

(2) Keyboard Universal Switch (Horizontal). Adjust as follows:

(a) Refer to Figure 6-450.

(b) Centerline of insulated portion of universal switch assembly should align with centerline of lowermost portion of code bar lever.

(c) To adjust, loosen retainer bar mounting screws and position bar forward on rearward as required. Tighten screws.

(3) Keyboard Universal Switch (Vertical). Adjust as follows:

(a) Refer to Figure 6-450.

(b) Pull contact function lever down against code bar bracket at rear and front of contact lever touching center of contact insulator.

(c) Clearance between center and lower contact points should be from 0.015 to 0.025 inch maximum.

(d) To adjust, bend upper contact spring.

(e) With contact operating key depressed with 16 ounces pressure, clearance between center and lower contact points should be at least 0.010 inch minimum.

(f) With contact operating key fully depressed, center and lower contacts should close with some overtravel.

(g) To adjust, loosen right and left bracket mounting screws and position complete assembly. Tighten screws.

l. Answer-Back Mechanism Adjustments. Perform the following answer-back mechanism adjustments.

(1) Magnet Yoke. Adjust as follows:

NOTE

Remove answer-back mechanism from keyboard while making this adjustment.

(a) Refer to Figure 6-451.

(b) With tip of stop lever held against stop blade, clearance between latching surfaces of stop lever extension and stop lever latch should be 0.005 to 0.015 inch maximum.

(c) To adjust, loosen magnet yoke mounting screws and position yoke. Tighten screws.

(2) Stop Lever Latch. Adjust as follows:

(a) Refer to Figure 6-452.

(b) Hold armature against magnet core and place stop lever in its maximum counterclockwise position.

(c) Clearance between stop lever and stop lever latch should be 0.002 to 0.007 inch maximum.

(d) Clearance between stop lever and stop

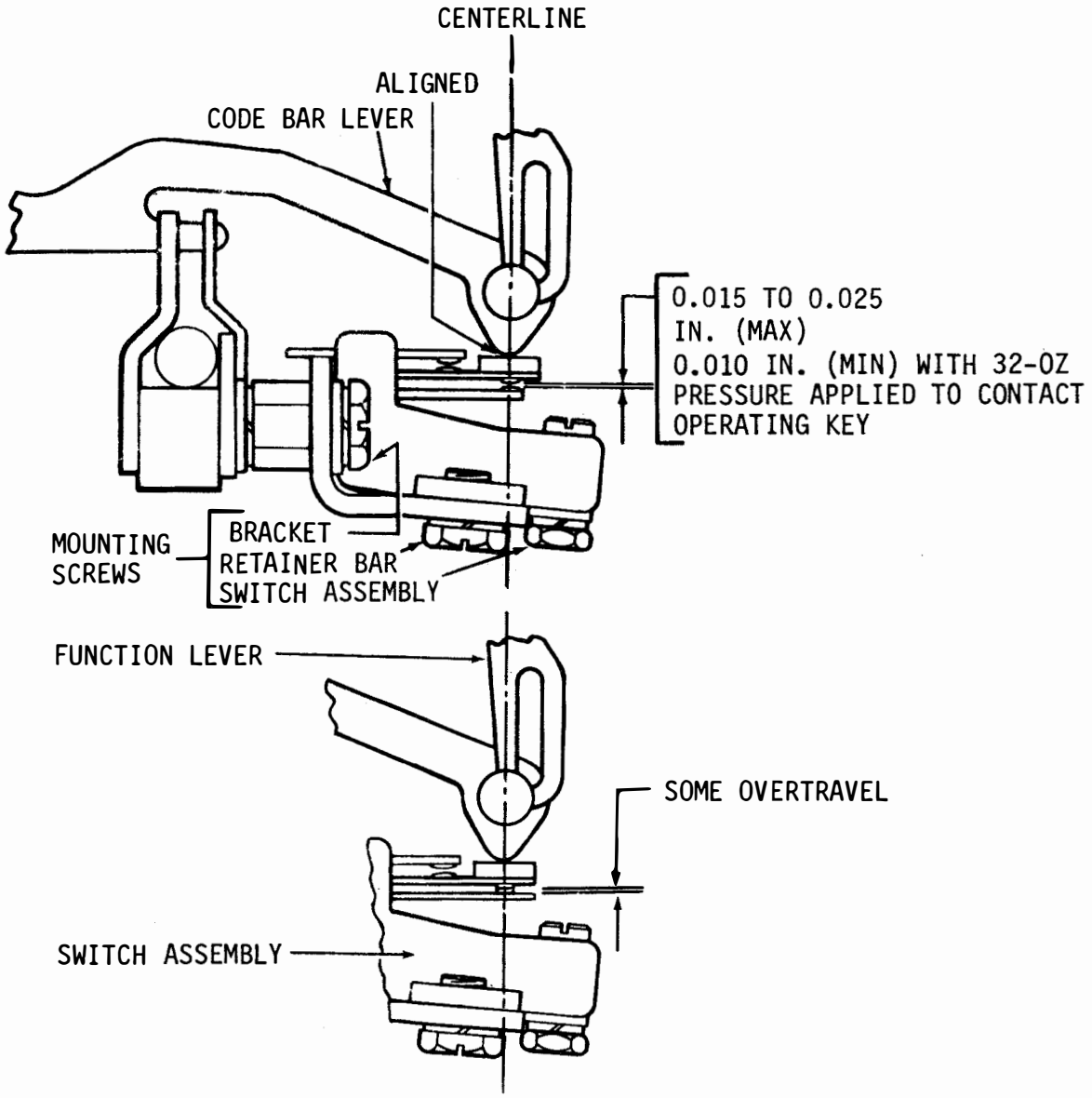


Figure 6-450. Keyboard Universal Switch (Horizontal and Vertical), Left View

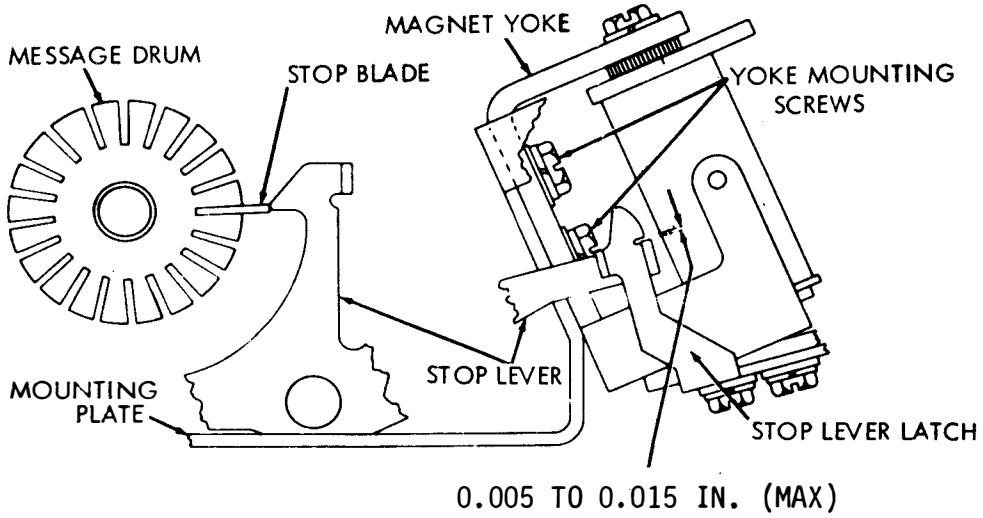


Figure 6-451. Magnet Yoke

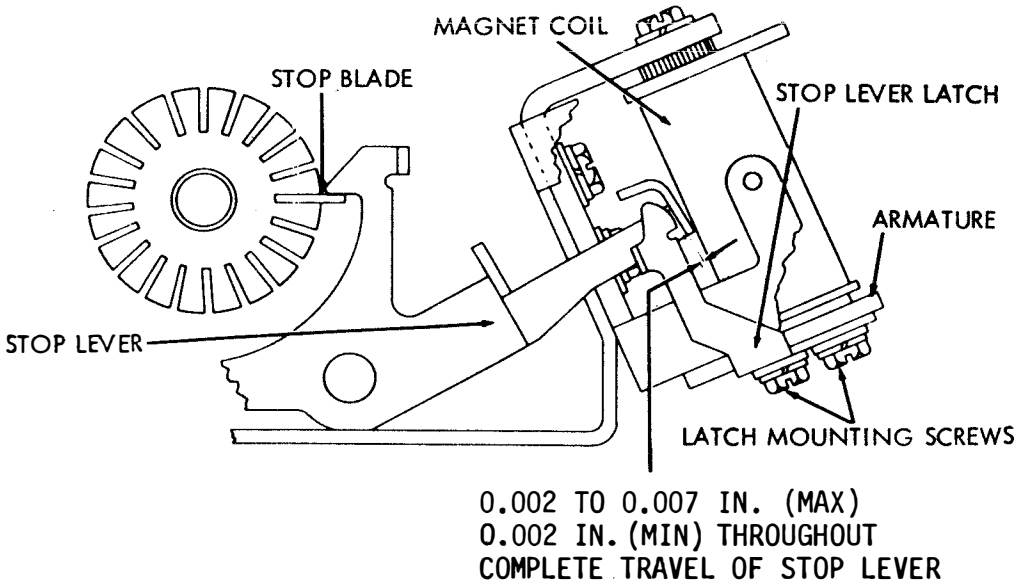


Figure 6-452. Stop Lever Latch

lever latch should be 0.002 inch minimum throughout a complete travel of the stop lever.

(e) To adjust, loosen latch mounting screws and position stop lever. Tighten screws.

NOTE

Remove message drum and drive plate assembly from mechanism to facilitate the following adjustments (3) through (7).

(3) Sensing Lever Springs. Adjust as follows:

(a) Refer to Figure 6-453.

(b) Hold signal generator clutch in STOP position.

(c) Apply spring scale pushrod to sensing lever and measure force required to start each sensing lever moving. This should be 1/4 to 1-1/4 ounces maximum.

(d) If force does not match specifications, replace springs.

(4) Character Generator Mounting Plate. Adjust as follows:

(a) Refer to Figure 6-453.

(b) Sensing levers should be centered on full width of their associated code bars.

(c) Clearance between shoulders of code bars number 1 and number 5, and their associated sensing levers, should be 0.002 to 0.012 inch maximum.

(d) To adjust, loosen mounting screws and position mounting plate.

(e) Tighten mounting screws.

(5) Detent Lever Spring. Adjust as follows:

(a) Refer to Figure 6-454.

(b) Hold signal generator clutch in STOP position.

(c) Apply spring scale pushrod to detent lever and measure force required to start detent lever moving. This should be 22 to 26 ounces maximum.

(d) If force does not match requirements, replace spring.

(6) Drive Link. Adjust as follows:

(a) Refer to Figure 6-455.

(b) With signal generator cam eccentric and arm holding code bar bail in extreme left reset position, clearance between drive plate extension and blocking lever should be 0.002 to 0.007 inch maximum.

(c) To adjust, loosen adjusting screws and position drive links by means of adjusting slots.

(d) Tighten adjusting screws.

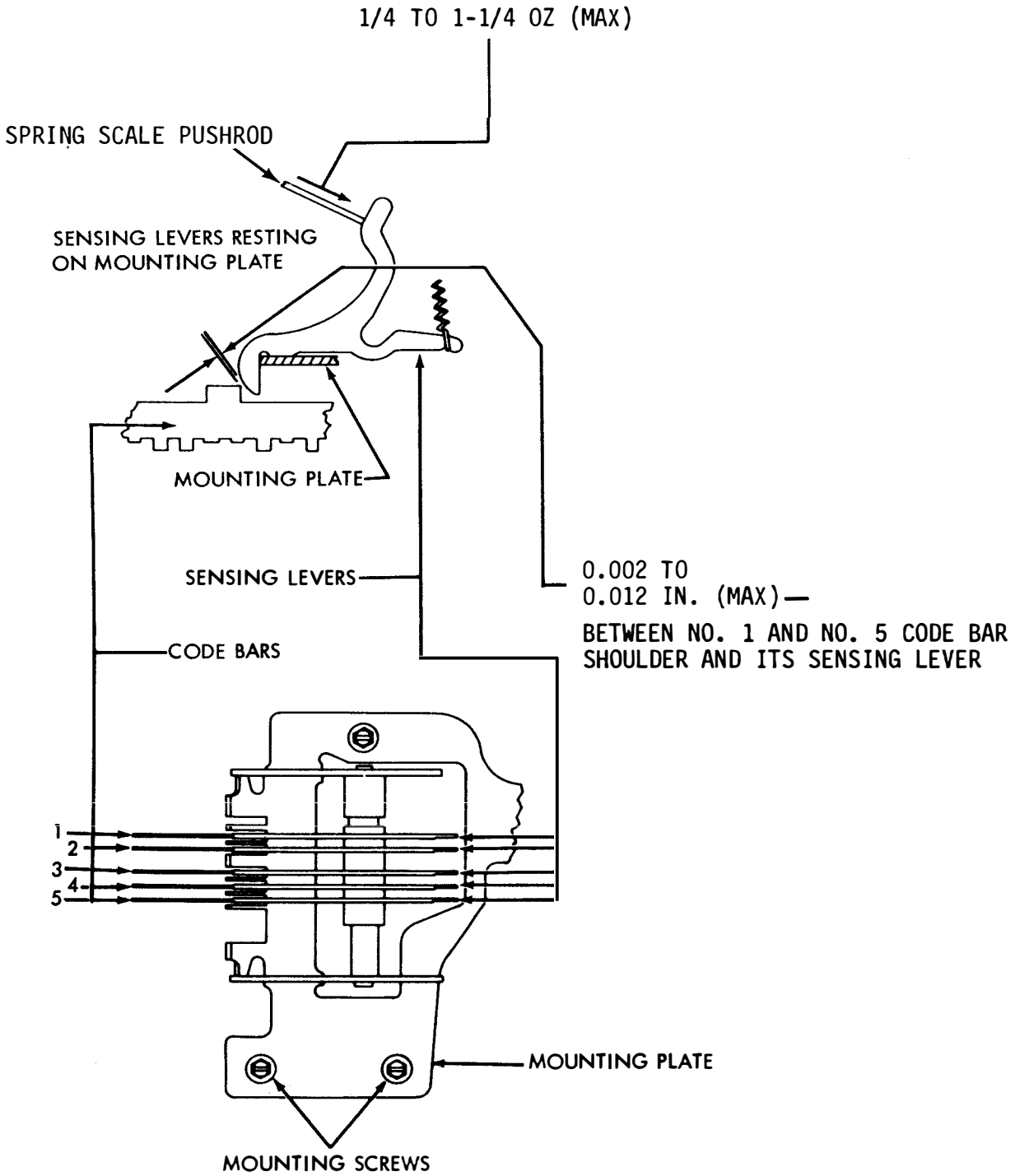


Figure 6-453. Sensing Lever Springs and Character Generator Mounting Plate

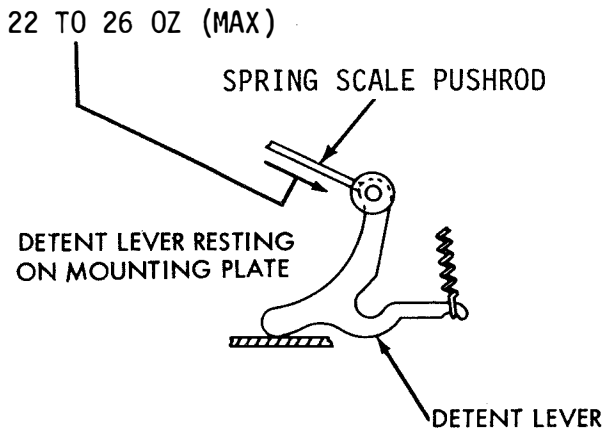


Figure 6-454. Detent Lever Spring

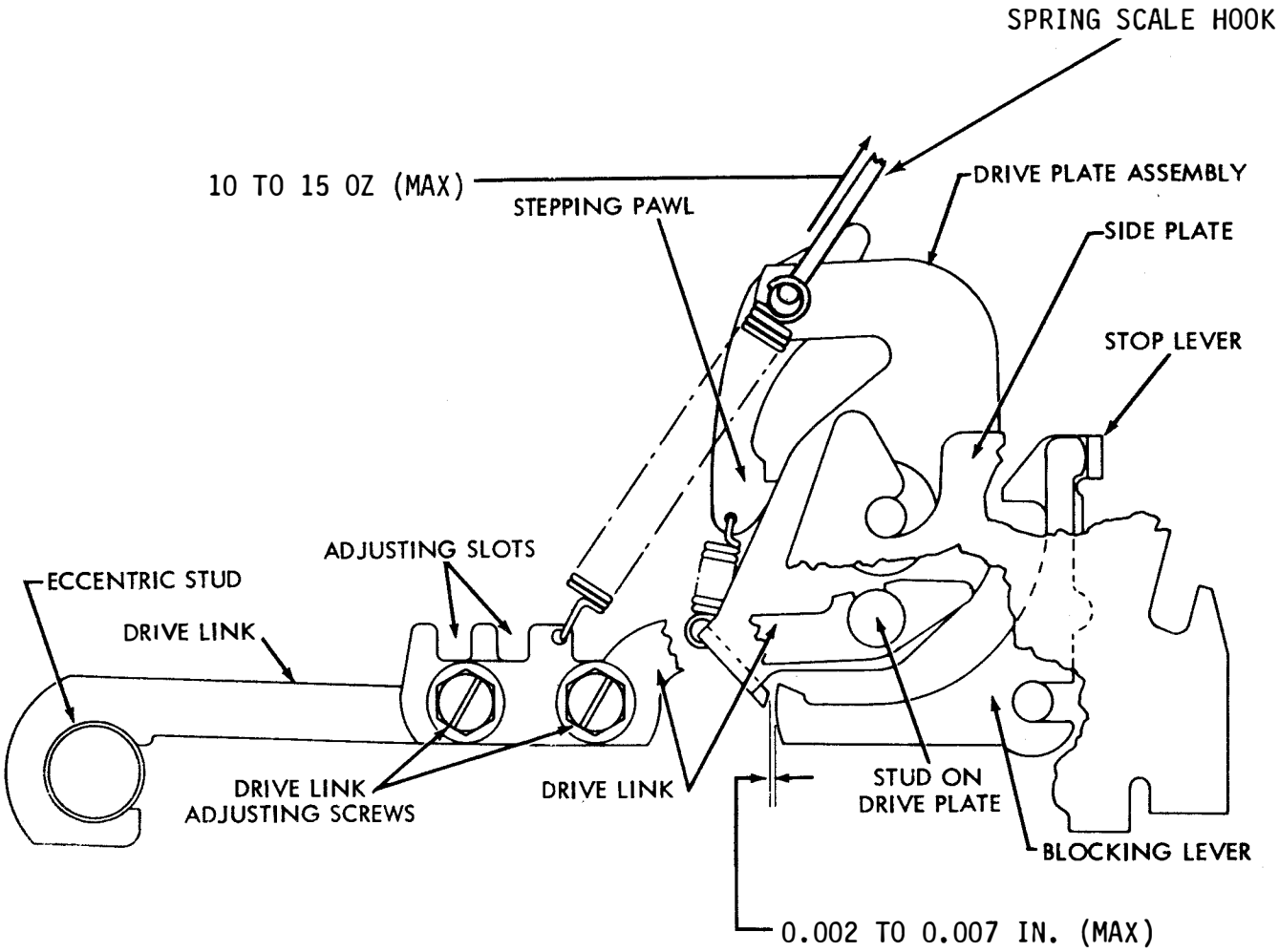


Figure 6-455. Drive Link and Drive Link Spring

(7) Drive Link Spring. Adjust as follows:

(a) Refer to Figure 6-455.

NOTE

Perform this adjustment before final installation of message drum and drive plate assembly.

(b) Place signal generator clutch in STOP position.

(c) Attach spring scale hook to drive link spring and measure force necessary to pull spring to installed length. This should be 10 to 15 ounces maximum.

(d) If force does not meet requirements, replace spring.

NOTE

Adjustments (8) through (15) below, should be made after installation of the answer-back mechanism on the keyboard. During installation, the following keyboard adjustments should be checked: Code Bar and Code Lever Clearance, paragraph 6-4a(4); Code Bar Bail, paragraph 6-4a(12); Code Bar Bail and Non-repeat Lever Clearance, paragraph 6-4a(14); Universal Bail Latchlever, paragraph 6-4a(15); Universal Bail Extension, paragraph 6-4a(17).

(8) Stepping Pawl. Adjust as follows:

(a) Refer to Figure 6-456.

(b) Place message drum fully detented position, and signal generator cam and arm holding code bar bail in extreme left reset position.

(c) Clearance between stepping pawl and any code blade should be 0.018 to 0.030 inch maximum.

(d) To adjust, loosen locknut and position eccentric stud so that its high point is toward the top. Tighten locknut.

(9) Stepping Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-457.

(b) Place signal generator clutch in STOP position.

(c) Apply spring scale pushrod to stepping pawl and measure force required to start pawl moving. This should be 2-1/2 to 3-1/2 ounces maximum.

(d) If force does not match requirements, replace spring.

(10) Latch Operating Lever Spring. Adjust as follows:

(a) Refer to Figure 6-457.

(b) Place signal generator clutch in STOP position.

(c) Attach spring scale hook over end of latch operating lever and

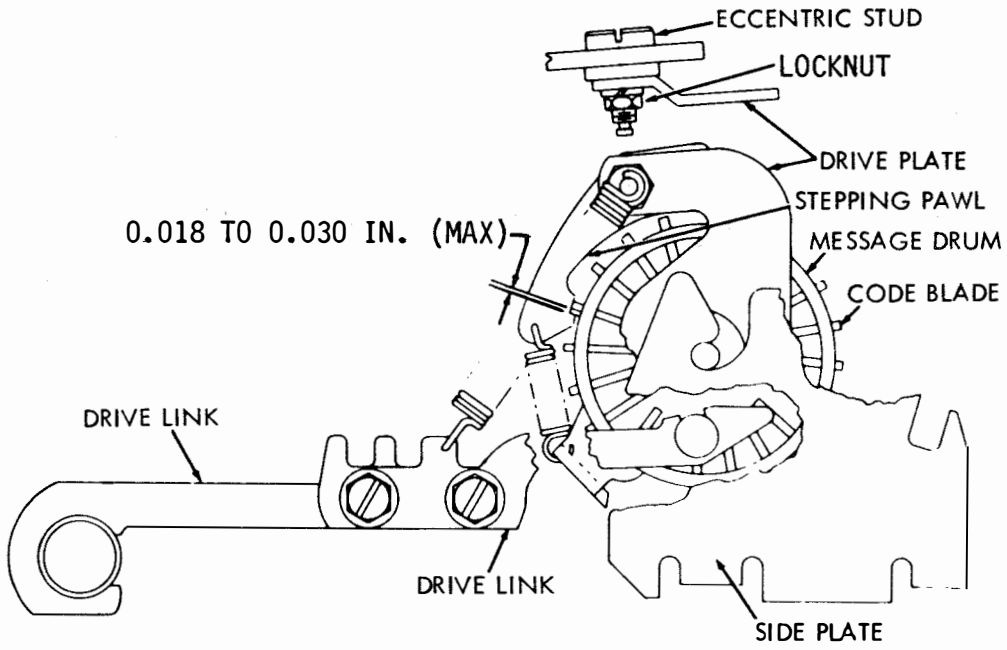


Figure 6-456. Stepping Pawl

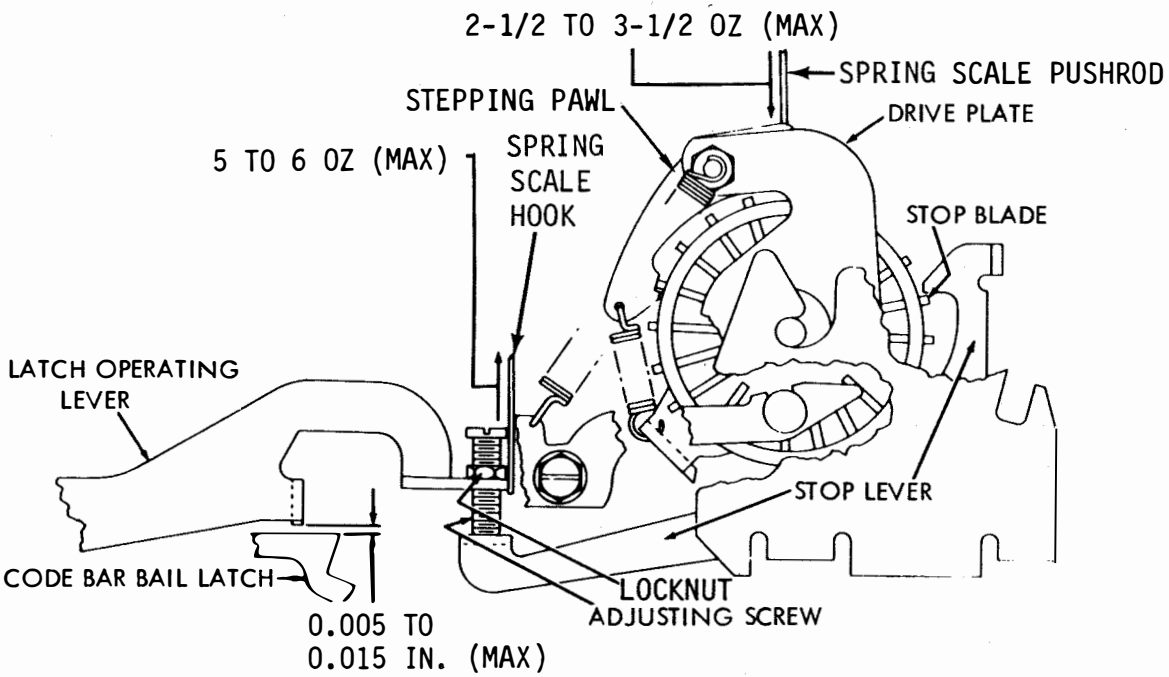


Figure 6-457. Stepping Pawl Spring, Latch Operating Lever Spring, and Latch Operating Lever Adjusting Screw

meausre force required to start lever moving. This should be 5 to 6 ounces maximum.

(d) If force does not match requirement, replace spring.

(11) Latch Operating Lever Adjusting Spring. Adjust as follows:

(a) Refer to Figure 6-457.

(b) Fully disengage signal generator clutch and latch stop lever on magnet armature latch.

(c) Clearance between extension on latch operating lever and code bar bail latch should be 0.005 to 0.015 inch maximum.

(d) To adjust, loosen locknut and position latch operating adjusting screw. Tighten locknut.

(12) Blocking Lever Spring. Adjust as follows:

(a) Refer to Figure 6-458.

(b) Place signal generator clutch in STOP position and unhook blocking lever spring from stop lever.

(c) Attach spring scale hook to loose end of spring and measure force necessary to pull spring to installed length. This should require 1 to 2 ounces maximum.

(d) If force does not match specifications, replace spring.

(13) Armature Latch Spring. Adjust as follows:

(a) Refer to Figure 6-459.

(b) Place signal generator clutch in STOP position and unhook armature latch spring from post on magnet yoke.

(c) Attach spring scale hook to loose end of spring and measure force necessary to pull spring to installed length. This should require from 2 to 4 ounces maximum.

(d) If force does not meet requirements, replace spring.

(14) Motor Control Relay Switch. Adjust as follows:

(a) Refer to Figure 6-460.

(b) Switch should be in operated position when armature is held against magnet core.

(c) To adjust, loosen mounting screws and position switch. Tighten screws.

(15) Coding Message Drum. Adjust as follows:

(a) Refer to Figure 6-461.

(b) Remove message drum from answer-back assembly and take out code blades as follows:

1. Remove drive link spring allowing drive link to drop out of engagement with stud on drive plate.

2. Lift message drum from notches.

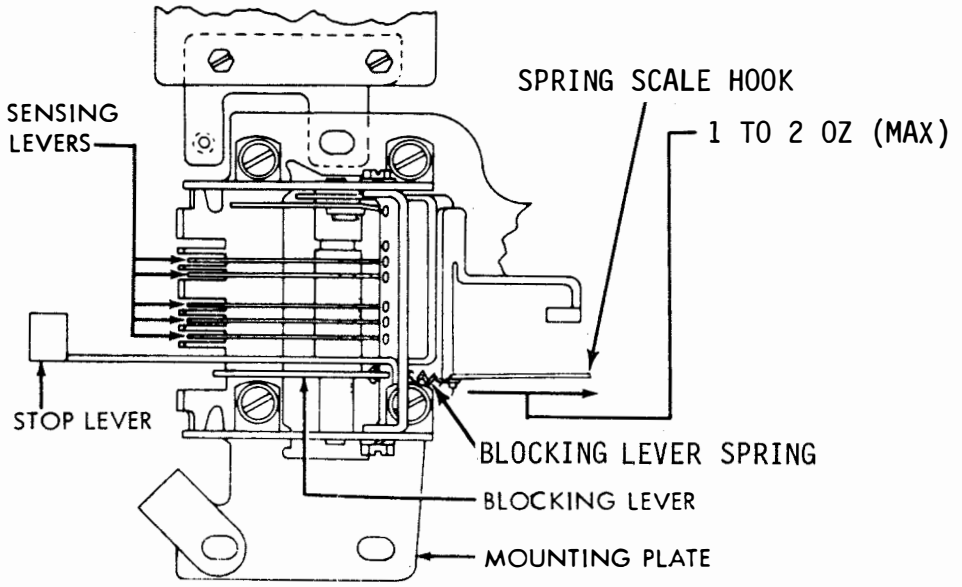


Figure 6-458. Blocking Lever Spring

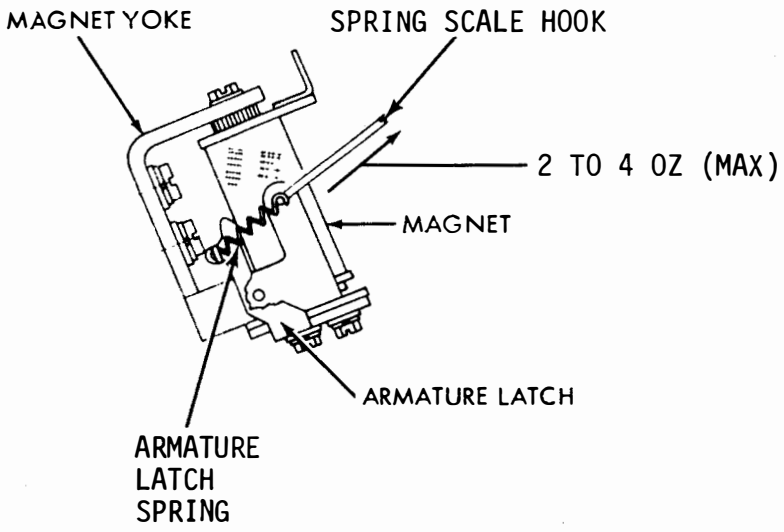


Figure 6-459. Armature Latch Spring

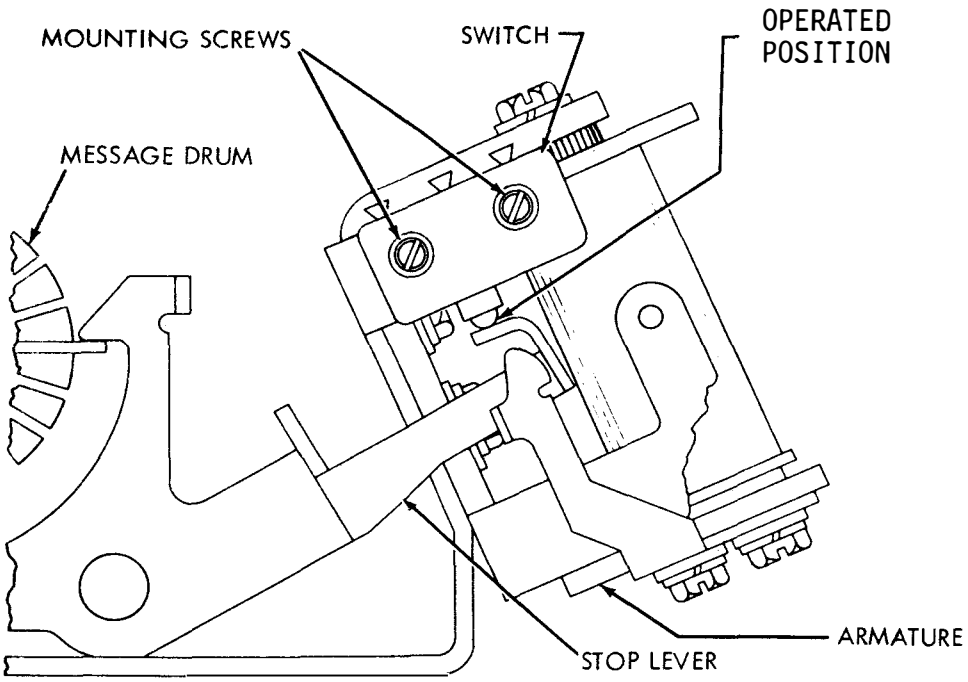


Figure 6-460. Motor Control Relay Switch

3. Depress stepping pawl extension and pull drum off shaft.

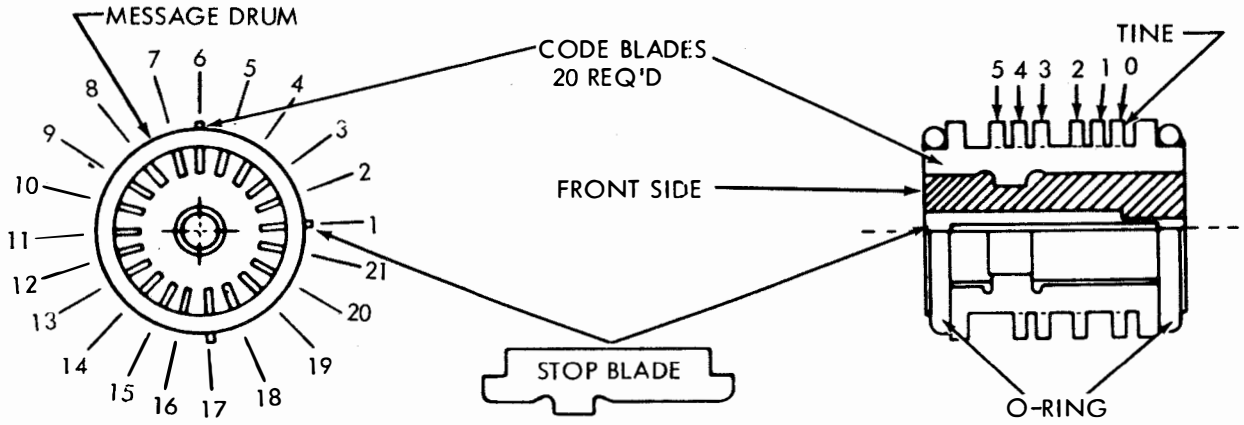
4. Remove "O" ring from one end of drum and take out twenty code blades. It is not necessary to take out stop blade.

(c) Code "A" blade by breaking off unwanted tines at scored line at base of each tine. Figure 6-461 indicates tines to be removed for a particular character. Hold each blade securely near score mark of tine to be removed for a particular character. Hold each blade securely near score mark of tine to be removed. In standard 5 level operation, the "0" code level tine is disregarded.

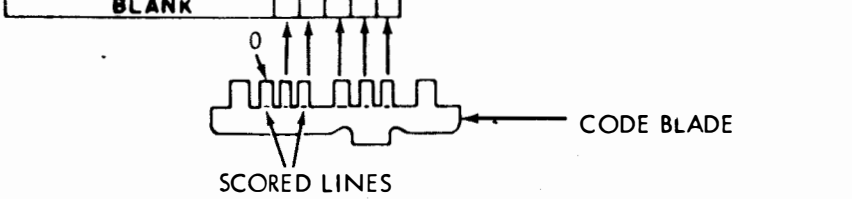
(d) Code the drum in a counterclockwise direction starting with number 2 code blade (adjacent to stop blade). Begin message with LETTERS (stop blade) followed by CARRIAGE RETURN and LINE-FEED. End message with CARRIAGE RETURN and LINE-FEED. This leaves 16 characters available for message proper. Code any unused characters with LETTERS or BLANKS, since each slot position in drum must be occupied by a code blade.

(e) Install coded blades in proper slots in drum. Insert end of blade under remaining "O" ring and rotate blade toward center of drum until it is fully seated. When all slots are filled, replace "O" ring removed in (b) above.

(f) Apply grease to shaft of message drum. Reassemble mechanism, reversing procedure of step (b). Be sure parts are properly seated.



LETTERS	TYPICAL FIG. ARRGT.	CODE 1	2	3	4	5
A	—	■	■	□	□	□
B	?	■	□	□	■	■
C	:	□	■	■	■	□
D	$	■	□	□	■	□
E	3	■	□	□	□	□
F	!	■	□	■	□	□
G	&	□	■	□	■	■
H	#	□	□	■	□	■
I	8	□	■	■	□	□
J	'	■	■	□	■	□
K	(	■	■	■	■	□
L	)	□	■	□	□	■
M	.	□	□	■	■	■
N	,	□	□	■	■	□
O	9	□	□	■	□	■
P	0	□	■	■	□	□
Q	1	■	■	■	□	□
R	4	□	■	□	■	□
S	BELL	■	□	□	■	□
T	5	□	□	□	■	■
U	7	■	■	■	□	□
V	;	□	■	■	■	■
W	2	■	■	□	□	■
X	/	■	□	■	□	■
Y	6	■	□	■	□	□
Z	"	■	□	□	□	■
CARRIAGE RETURN		□	□	□	■	□
LINE FEED		□	■	□	□	□
LETTERS SHIFT		■	■	■	■	■
FIGURES SHIFT		■	■	□	■	■
SPACE		□	□	■	□	□
BLANK		□	□	□	□	□



■ — LEAVE TINE

□ — REMOVE TINE

Figure 6-461. Coding Message Drum

Lubricate per instruction in appropriate section.

m. Answer-Back Mechanism (FIGS D) Keyboard Lock Bail Eccentric Adjustment. Perform the answer-back mechanism (FIGS D) keyboard lock bail eccentric adjustment as follows:

NOTE

Adjustment requirement for "FIGS D" answer-back mechanism are identical to those in paragraphs 6-131(1) through (15), plus the following adjustment.

(1) Refer to Figure 6-462.

(2) Fully depress both "KYBD LOCK" and "HERE IS" keys and hold tightly.

(3) Clearance between keyboard locklever with hub and keyboard lock function lever should be some to 0.006 inch maximum.

(4) To adjust, loosen locknut and position eccentric with high point toward front of keyboard. Tighten locknut.

n. Clutch Trip Delay Mechanism. Perform the following clutch trip delay mechanism adjustments.

(1) Clutch Trip Delay. Adjust as follows:

NOTE

If signal distortion test set is available, minimum gap requirement shall be considered met if 100 wpm

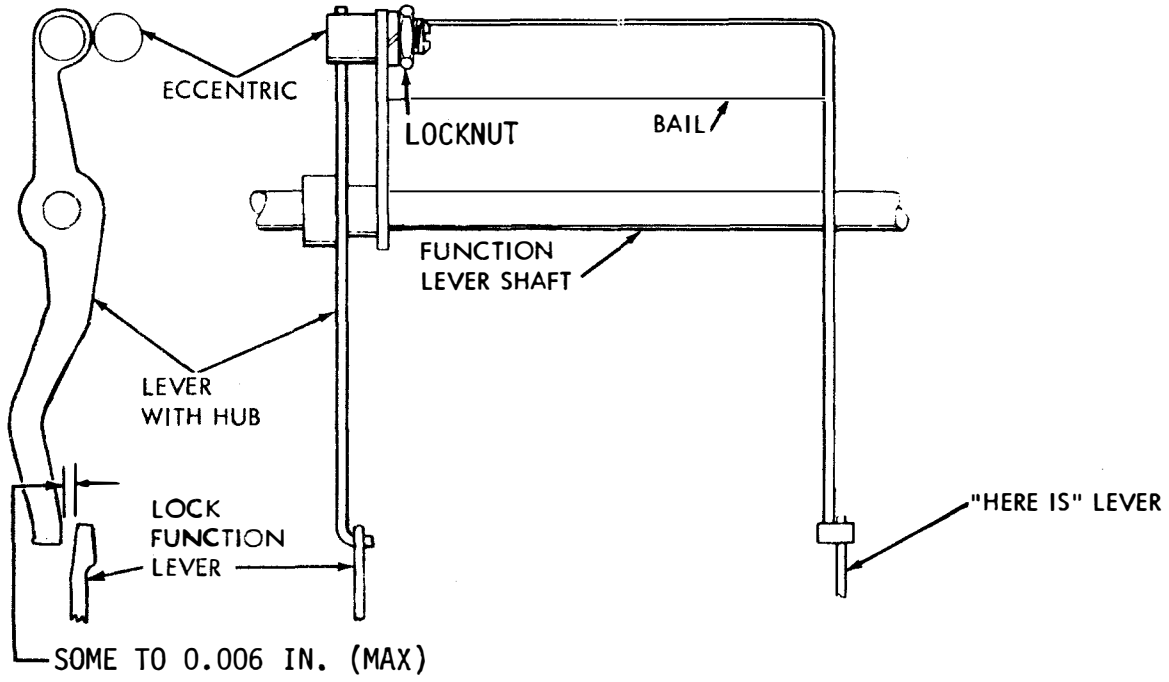


Figure 6-462. Keyboard Lock Bail Eccentric, Top View

signal generator strobe requirements can be met.

(a) Refer to Figure 6-463.

(b) Place keyboard in "K-T" position.

(c) With keyboard in its tripped position and signal generator shaft rotated so that clutch is approximately 180 degrees from its latched position, depress LTRS keylever.

(d) Slowly continue rotation of signal generator shaft in clockwise direction noting gap between nearest edge of clutch shoe lever and clutch stop lever.

(e) Code bar bail shall not trip until gap measures 3/8 to 1/2 inch maximum.

(f) To adjust, loosen clamping screw friction tight and position blocking lever utilizing pry point provided. Tighten screw.

(2) Trip Delay Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-464.

(b) Disengage keyboard clutch.

(c) Apply pushrod of an 8-ounce scale vertically to edge of formed-end blocking lever and measure force required to start block lever moving. This should be 4-1/2 to 8 ounces maximum.

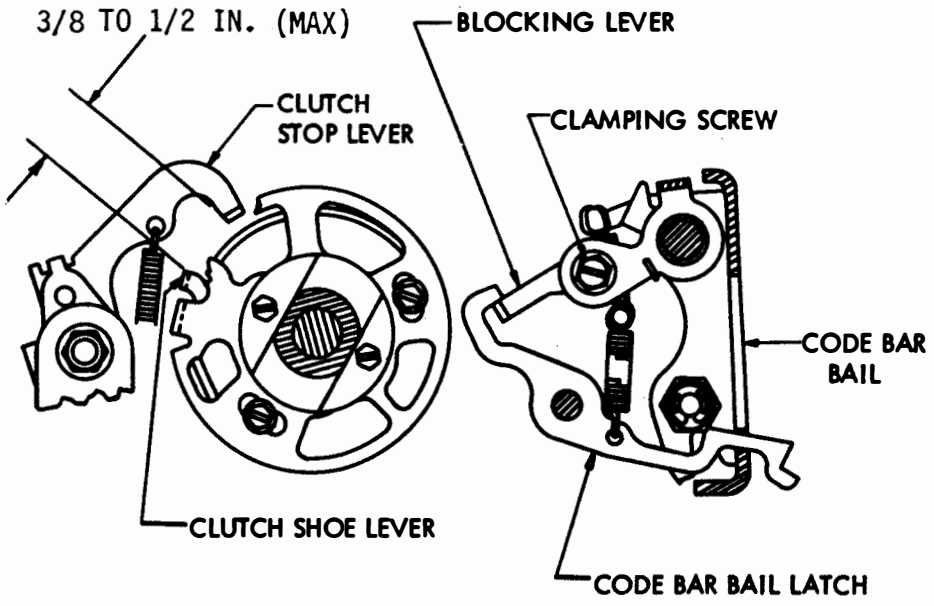


Figure 6-463. Clutch Trip Delay

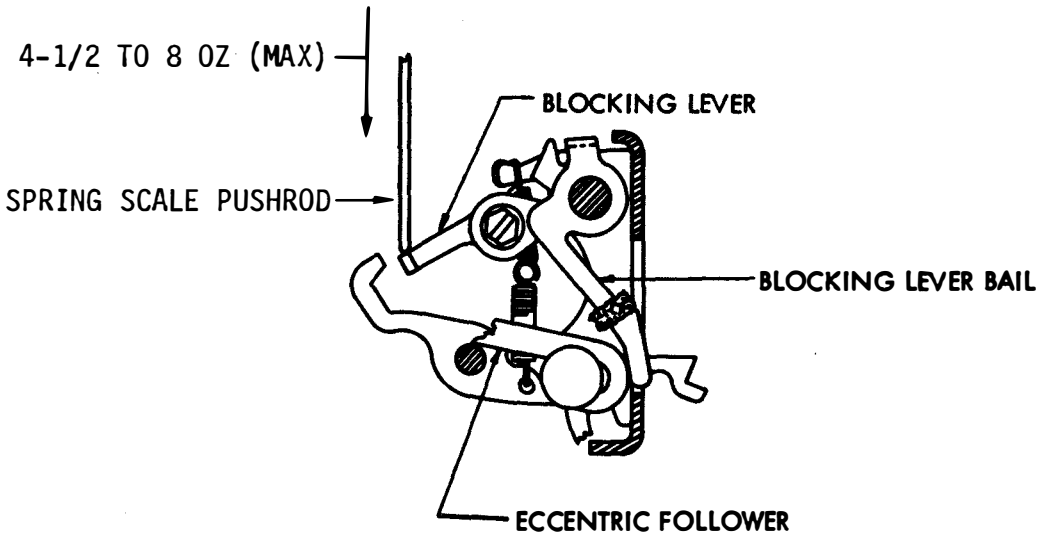


Figure 6-464. Trip Delay Torsion Spring

(d) If requirement is not met, replace spring.

6-14. TYPING AND NON-TYPING PERFORATOR UNIT ADJUSTMENTS. The following paragraphs describe the variable features of typing and non-typing perforator unit adjustment procedures.

a. Manual and Power Drive Backspace Mechanism for Chadless Tape Adjustments. Perform the following backspace mechanism adjustments.

(1) Rake Assembly. Adjust as follows:

(a) Refer to Figure 6-465.

(b) With rotation play in rake taken up to left, bottom surface of rake teeth should be within 0.040 inch of same vertical plane as left side of punch block or slightly to the right.

(c) To adjust, remove two rear plate mounting screws and position rake shaft gear in relation to gear segment. Replace screws.

(d) With bellcrank spring unhooked and rake in operated position, check clearance at number 1 and number 5 pins between bottom of rake teeth and lower surface of tape slot. This should be 0.007 to 0.011 inch maximum.

(e) To adjust:

1. Loosen the four punch block mounting screws friction tight.

2. Position rake mounting plate and bellcrank mounting plate so that

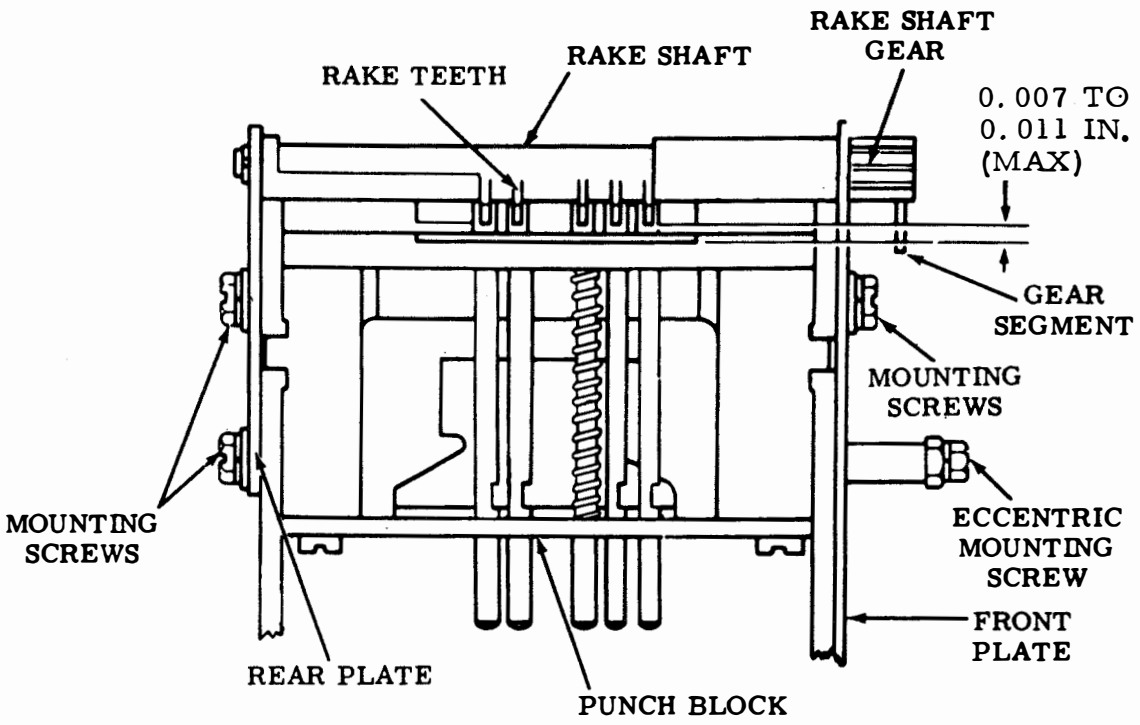


Figure 6-465. Rake Assembly, Perforator, Left Side View

front edge of both plates is approximately in line with the vertical plane of punch block.

3. With the rake in the operated position (bellcrank in maximum downward position) move rake up or down to meet clearance requirement.

4. Tighten screws and replace bellcrank spring.

(2) Feed Pawl Adjusting Plate (Preliminary and Final). Adjust as follows:

(a) Refer to Figure 6-466.

(b) Preliminary check: with bellcrank rotated clockwise, feed pawl should miss first tooth at point of least clearance by 0.006 to 0.040 inch maximum.

(c) Final check: feed pawl should miss first tooth and engage second tooth by at least 1/2 of right engaging surface of feed pawl, as gauged by eye, when feed pawl first contacts ratchet tooth.

(d) To adjust, loosen mounting screw friction tight, and position adjusting plate. Tighten screw.

(3) Return Latch. Adjust as follows:

(a) Refer to Figure 6-467.

(b) Put backspace mechanism in unoperated position.

(c) Clearance between return latch and feed pawl extension should measure 0.004 to 0.020 inch maximum.

(d) To adjust, loosen eccentric mounting screw friction tight and adjust eccentric. Tighten screw.

(4) Feed Pawl Eccentric (Preliminary). Adjust as follows:

(a) Refer to Figure 6-468.

(b) For manual backspace:

1. Place backspace bellcrank in operated position and feed wheel detented back one space.

2. Clearance between feed wheel ratchet tooth and backspace feed pawl should be some to 0.003 inch maximum.

(c) For power driven backspace:

1. Place backspace bellcrank in its operated position.

2. High side of eccentric should be in its uppermost position.

(d) To adjust, loosen nut post friction tight and rotate eccentric with an Allen wrench. Tighten nut post.

b. Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) Adjustments. Perform the following backspace mechanism adjustments.

(1) Backspace Ratchet. Adjust as follows:

(a) Refer to Figure 6-469.

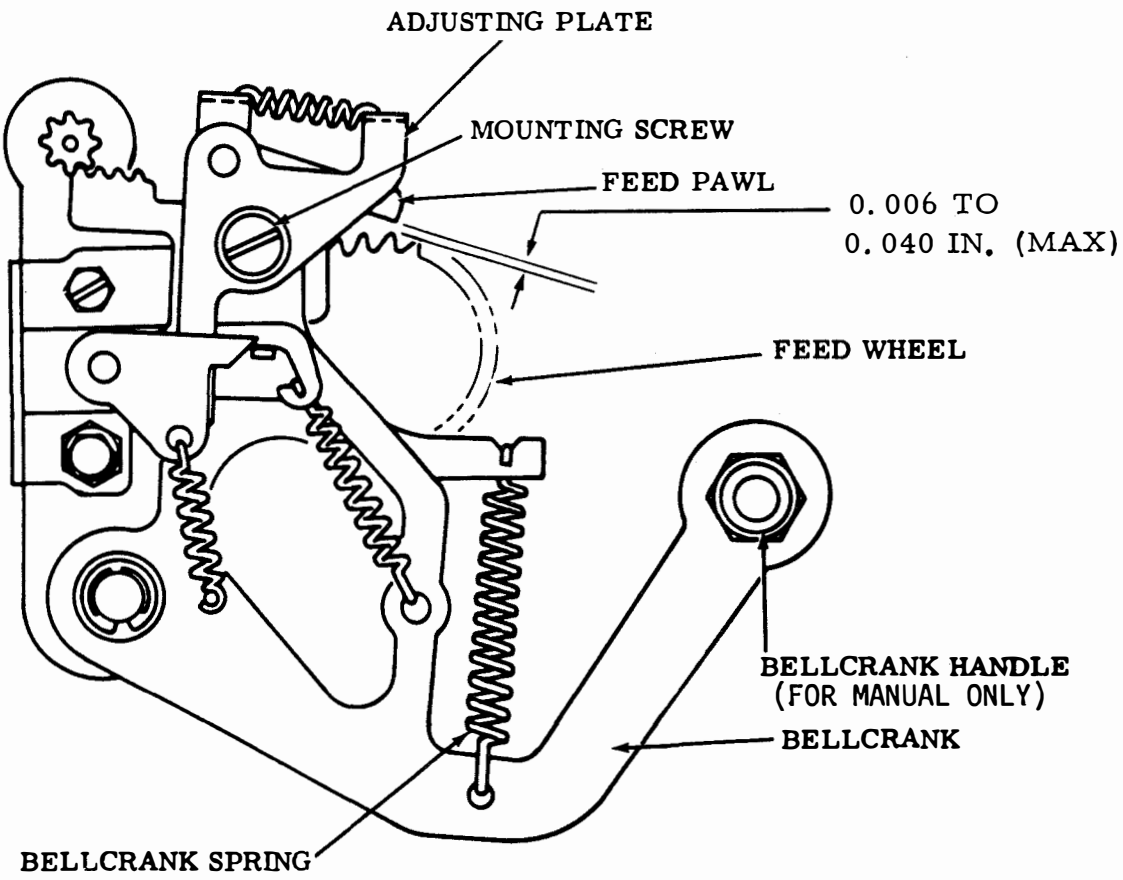


Figure 6-466. Feed Pawl Adjusting Plate (Preliminary and Final), Perforator

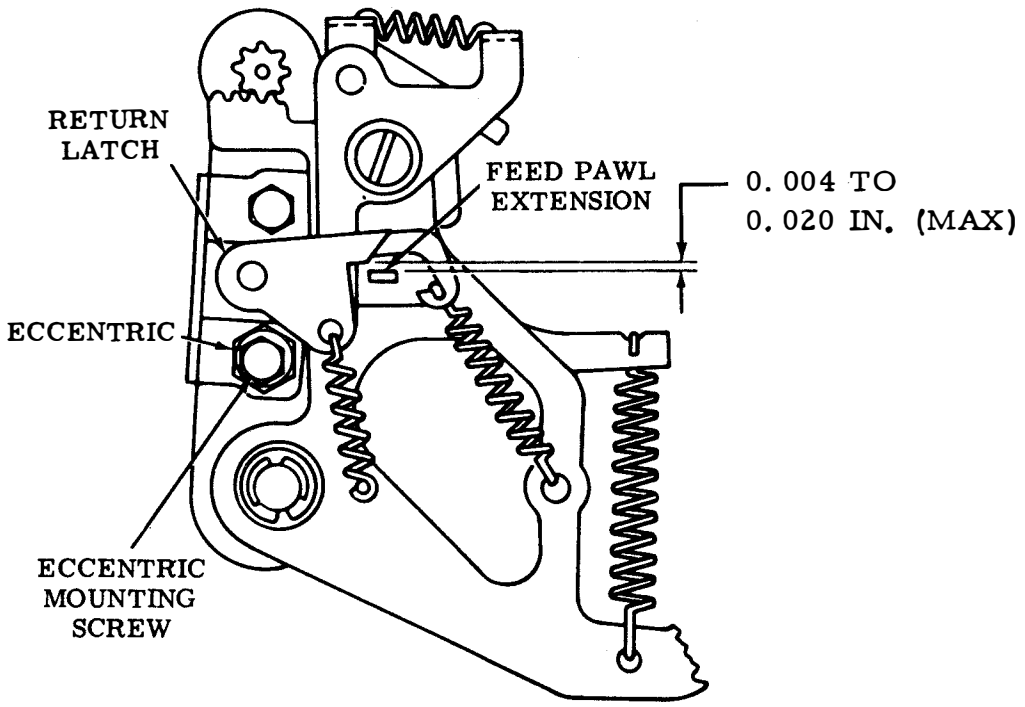


Figure 6-467. Return Latch, Perforator

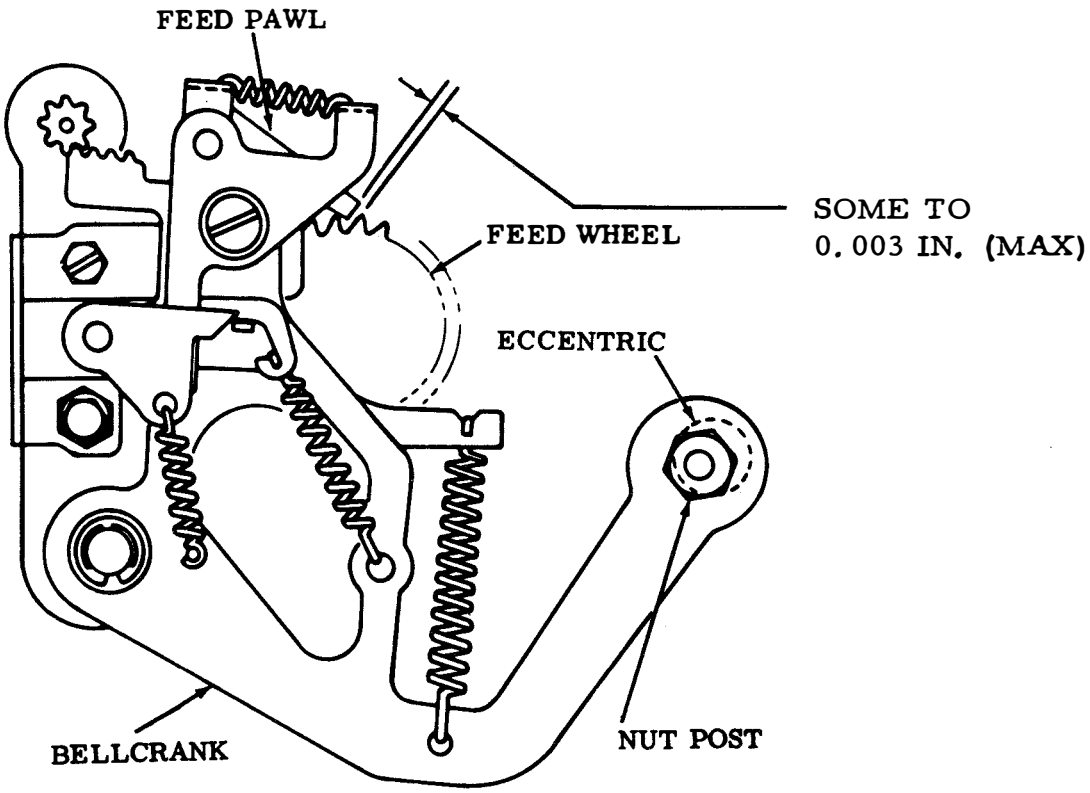


Figure 6-468. Feed Pawl Eccentric (Prelminary) (For Chadless Tape), Perforator

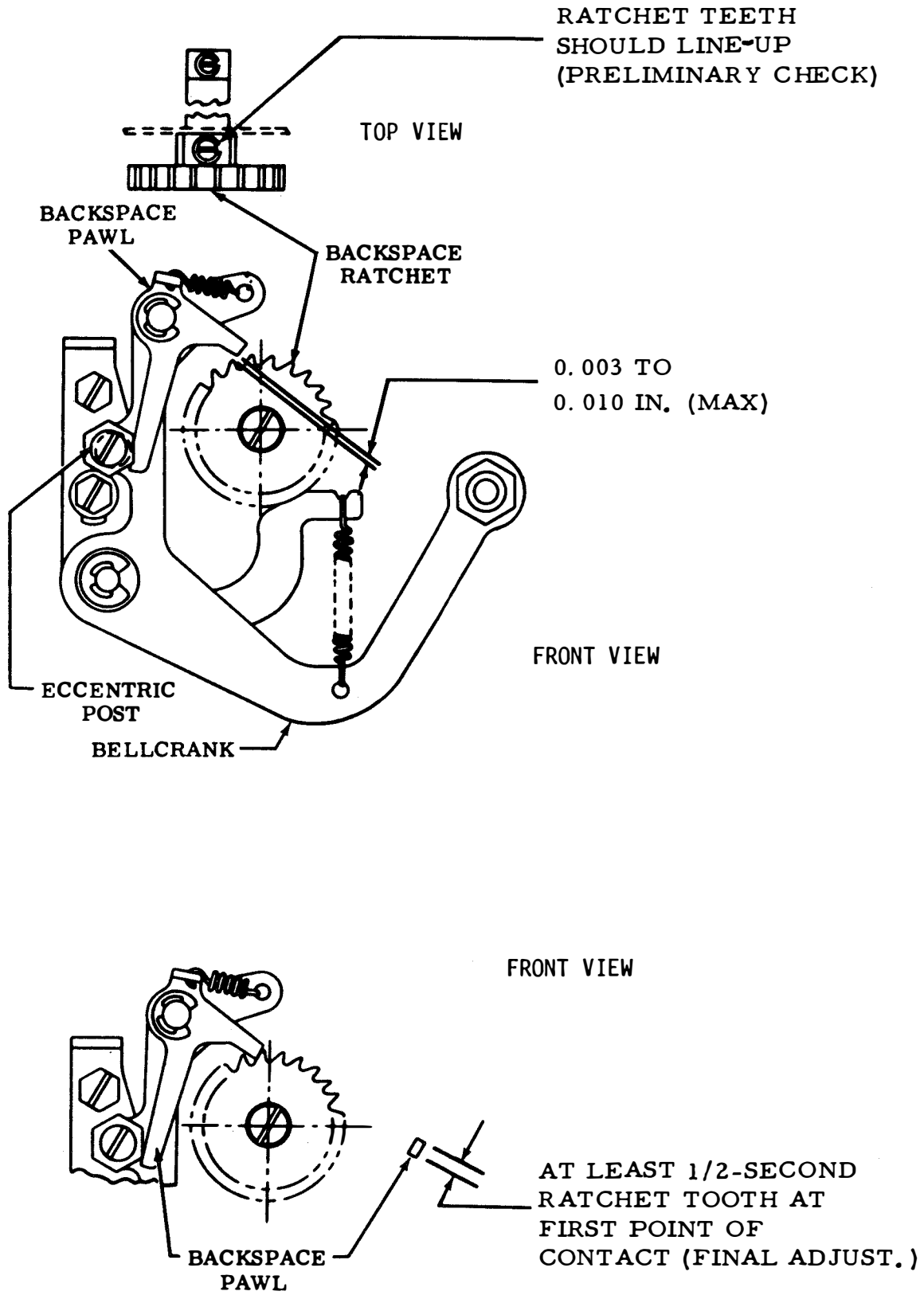


Figure 6-469. Backspace Ratchet and Backspace Pawl Clearance (Preliminary and Final), Perforator

(b) Teeth of backspace ratchet and feed wheel ratchet should visually line up and feed wheel ratchet should be in detented position.

(c) To adjust, loosen adjusting clamp mounting screw friction tight and rotate backspace ratchet. Tighten screw.

(2) Backspace Pawl Clearance (Preliminary and Final). Adjust as follows:

(a) Refer to Figure 6-469.

(b) Preliminary check: with backspace bellcrank rotated clockwise, backspace pawl should miss first tooth at point of least clearance by 0.003 to 0.010 inch maximum.

(c) Final check: backspace pawl should miss first tooth and engage second tooth by at least 1/2 the right engaging surface of backspace pawl, as gauged by eye, when backspace pawl first contacts ratchet tooth.

(d) To adjust:

1. Take up all rotational play of backspace ratchet in relation to feed ratchet by rotating it clockwise at same time rotate bellcrank clockwise.

2. Loosen mounting screw friction tight and rotate eccentric post to meet the requirements.

3. Tighten screw.

(3) Feed Pawl Disabling. Adjust as follows:

(a) Refer to Figure 6-470.

(b) When bellcrank is in operated position, high side of feed pawl disabling eccentric should be in uppermost position.

(c) To adjust, loosen nut post friction tight and rotate eccentric with a 0.060 inch Allen wrench. Tighten nut post.

c. Power Drive Backspace Mechanism for Nonadjustable Backspace Magnet Assembly. Perform the following backspace mechanism adjustments.

(1) Armature Spring. Adjust as follows:

(a) Refer to Figure 6-471.

(b) Using a spring scale, measure force required to pull spring to installed length. This should be 15 to 20 ounces maximum.

(c) If requirements are not met, replace spring.

(2) Latch Extension Spring. Adjust as follows:

(a) Refer to Figure 6-471.

(b) Attach spring scale hook to latch extension and measure force required to start latch moving. This should be 1 to 2-1/4 ounces maximum.

(c) If requirement is not met, replace spring.

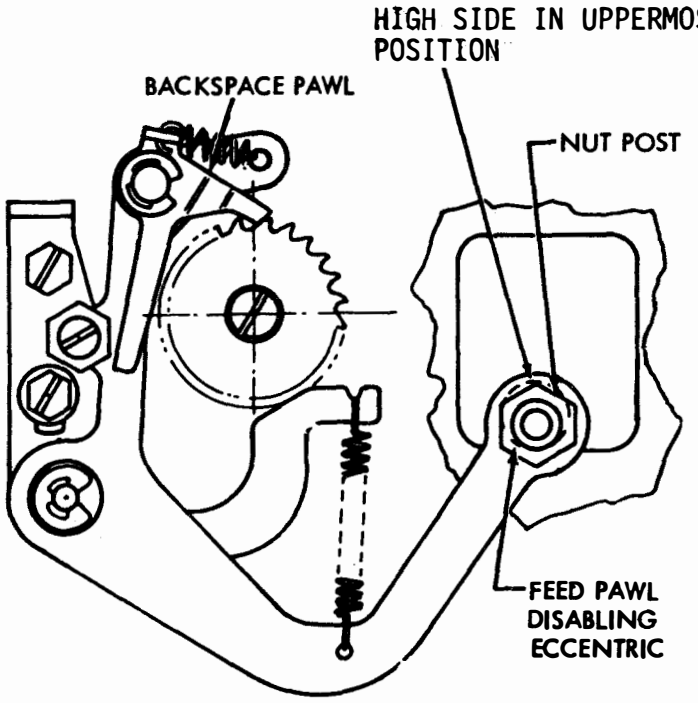


Figure 6-470. Feed Pawl Disabling (For Fully Perforated Tape), Perforator

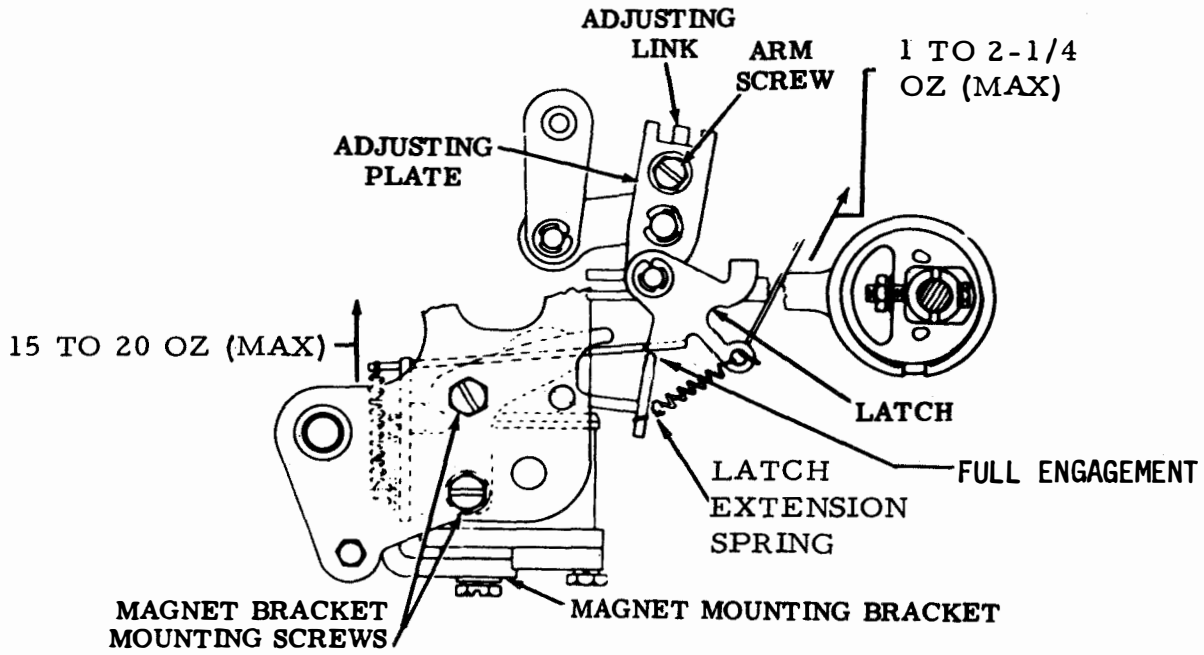


Figure 6-471. Armature Spring, Latch Extension spring, and Magnet Position, Perforator

(3) Magnet Position. Adjust as follows:

(a) Refer to Figure 6-471.

(b) When magnet is de-energized, armature extension should engage latch by approximately its full thickness.

(c) To adjust, loosen magnet assembly mounting screws and position magnet assembly. Tighten screws.

d. Manual and Power Drive Backspace Mechanism (For Chadless or Fully Perforated Tape) Final Adjustments. Adjust as follows:

(1) No reference Figure.

(2) Unit operating under power and put tape in punch unit.

(3) Place feed wheel shaft oil hole in its uppermost position and operate mechanism once.

(4) Backspace ratchet wheel shall be backed one space and feed wheel ratchet in a fully detented position.

NOTE

A fully detented position is when the detent roller is in contact with ratchet wheel and punch unit feed pawl engages the first tooth below horizontal centerline of feed wheel ratchet with no perceptible clearance.

(5) Recheck every 90 degrees for one full revolution of backspace ratchet wheel.

(6) To adjust:

1. For chadless tape mechanism, refine Feed Pawl Disabling, paragraph 6-14b(3), adjustment.

2. For fully perforated tape, loosen arm screw and move adjusting plate, see Figure 6-471.

e. Unshift-on-Space Mechanism Adjustment. Perform the following unshift-on-space mechanism adjustments.

(1) Unshift-on-Space Function Blade. Adjust as follows:

(a) Refer to Figure 6-472.

(b) Remove signal bell contact assembly with bracket and signal bell function blade.

(c) Select FIGURES code combination (12-45) and rotate main shaft until lifter roller is on low part of rocker bails camming surface and unshift-on-space function blade rests on bellcranks.

(d) Clearance between stripper blade and LETTERS extension arm should be some to 0.015 inch maximum.

(e) Select SPACE combination (--3--) and rotate main shaft until stripper blade touches LETTERS extension arm.

(f) When play is taken up in either direction, stripper blade should engage an equal thickness of LETTERS extension arm.

(g) To adjust, loosen mounting screws, position

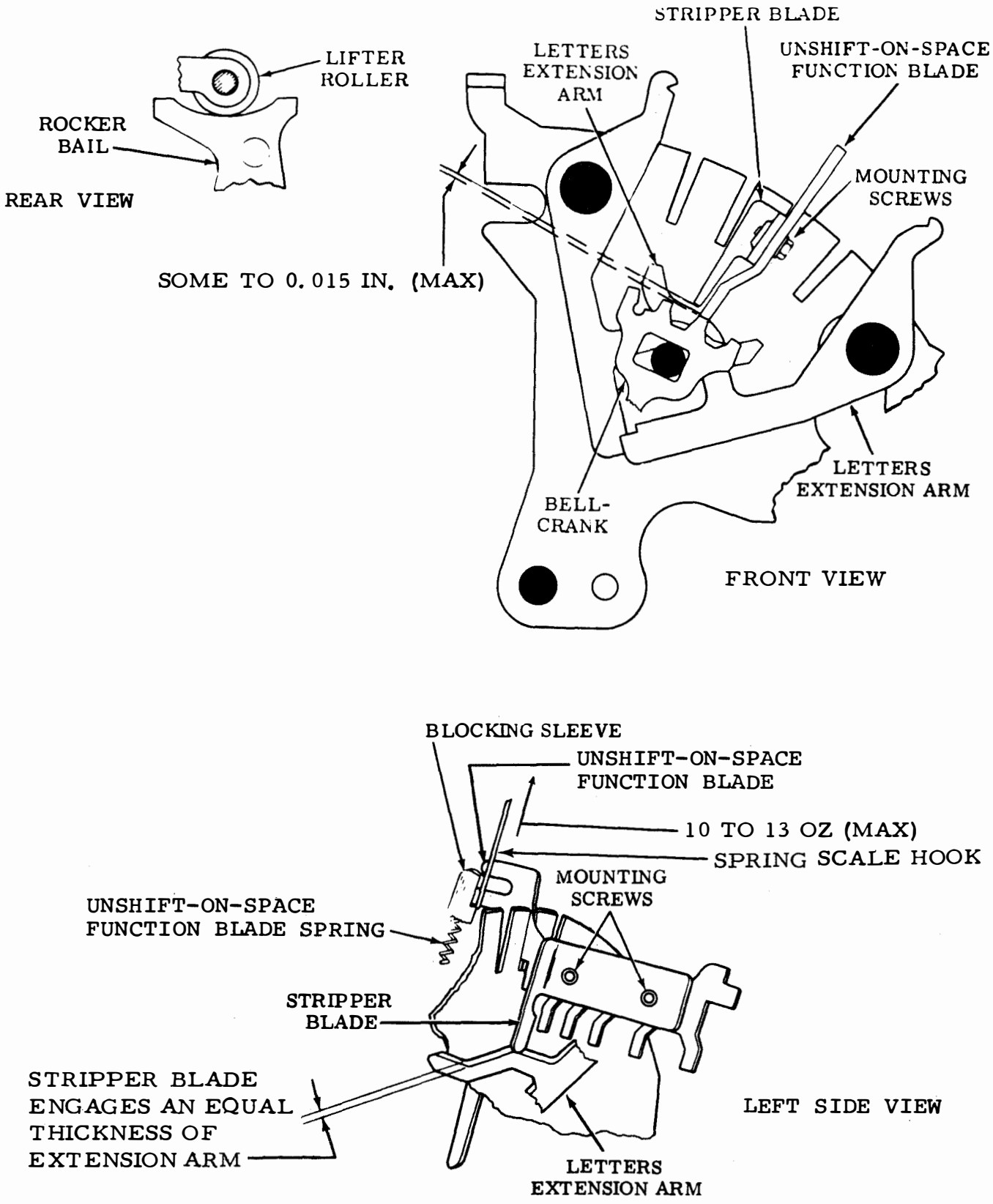


Figure 6-472. Unshift-On-Space Function Blade and Function Blade Spring, Perforator

stripper blade on function blade. Tighten screws.

(h) Reinstall signal bell contact assembly with bracket and signal bell contact blade.

(2) Unshift-on-Space Function Blade Spring. Adjust as follows:

(a) Refer to Figure 6-472.

(b) Move unit to STOP position with long slot in blocking sleeve engaging function blade.

(c) Attach spring scale hook over function blade and measure force required to start blade moving. This should be 10 to 13 ounces maximum.

(d) If requirement is not met, replace spring.

f. Chad Chute Assembly. Perform the chad chute assembly adjustments as follows:

(e) Refer to Figure 6-473.

(1) Clearance between each chad chute and adjacent units should be equal in all directions.

(2) To adjust, loosen mounting screws friction tight and position each chute by means of their elongated slots. Tighten screws.

6-15. AUXILIARY TYPING REPERFORATOR UNIT ADJUSTMENTS. The following paragraphs describe the variable features of auxiliary typing reperforator unit adjustment procedures.

a. Unshift-On-Space Mechanism. Perform the following unshift-on-space mechanism adjustments.

(1) Unshift-On-Space Function Blade. Adjust as follows:

(a) Refer to Figure 6-474.

(b) Remove signal bell contact assembly with bracket and signal bell function blade.

(c) Select FIGURES code combination (12-45).

(d) Rotate main shaft until lifter roller is on low part of rocker bail's camming surface and unshift-on-space function blade rests on bellcranks.

(e) Clearance between stripper blade and letters extension arm should be some to 0.015 inch maximum.

(f) Select SPACE code combination (--3--).

(g) Rotate main shaft until stripper blade touches letters extension arm.

(h) When play is taken up in either direction, stripper blade should engage an equal thickness of letters extension arm.

(i) To adjust mechanism, loosen two function blade mounting screws and position stripper blade on function blade to meet above requirements.

(j) Tighten two mounting screws.

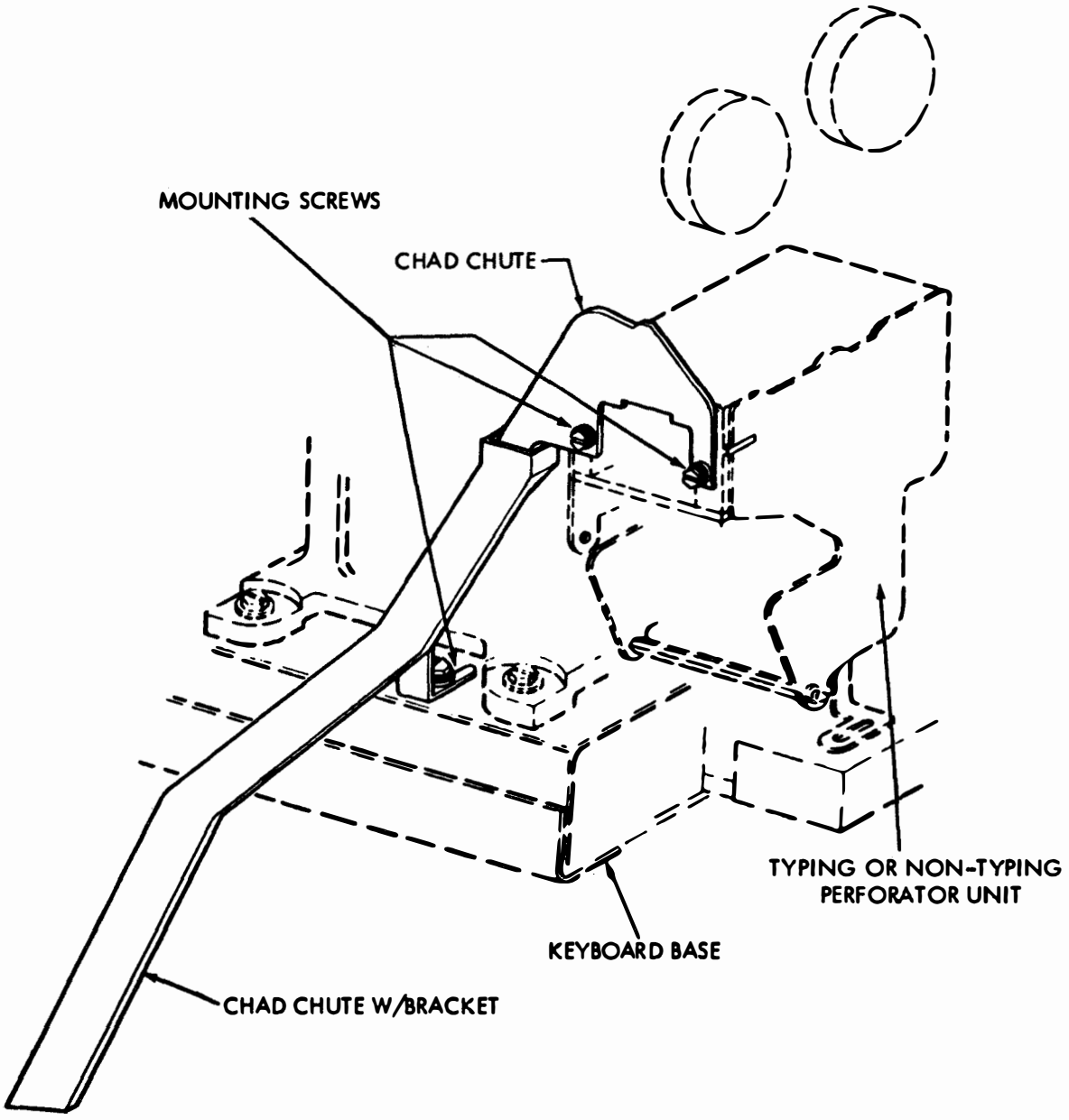


Figure 6-473. Chad Chute Assembly, Perforator

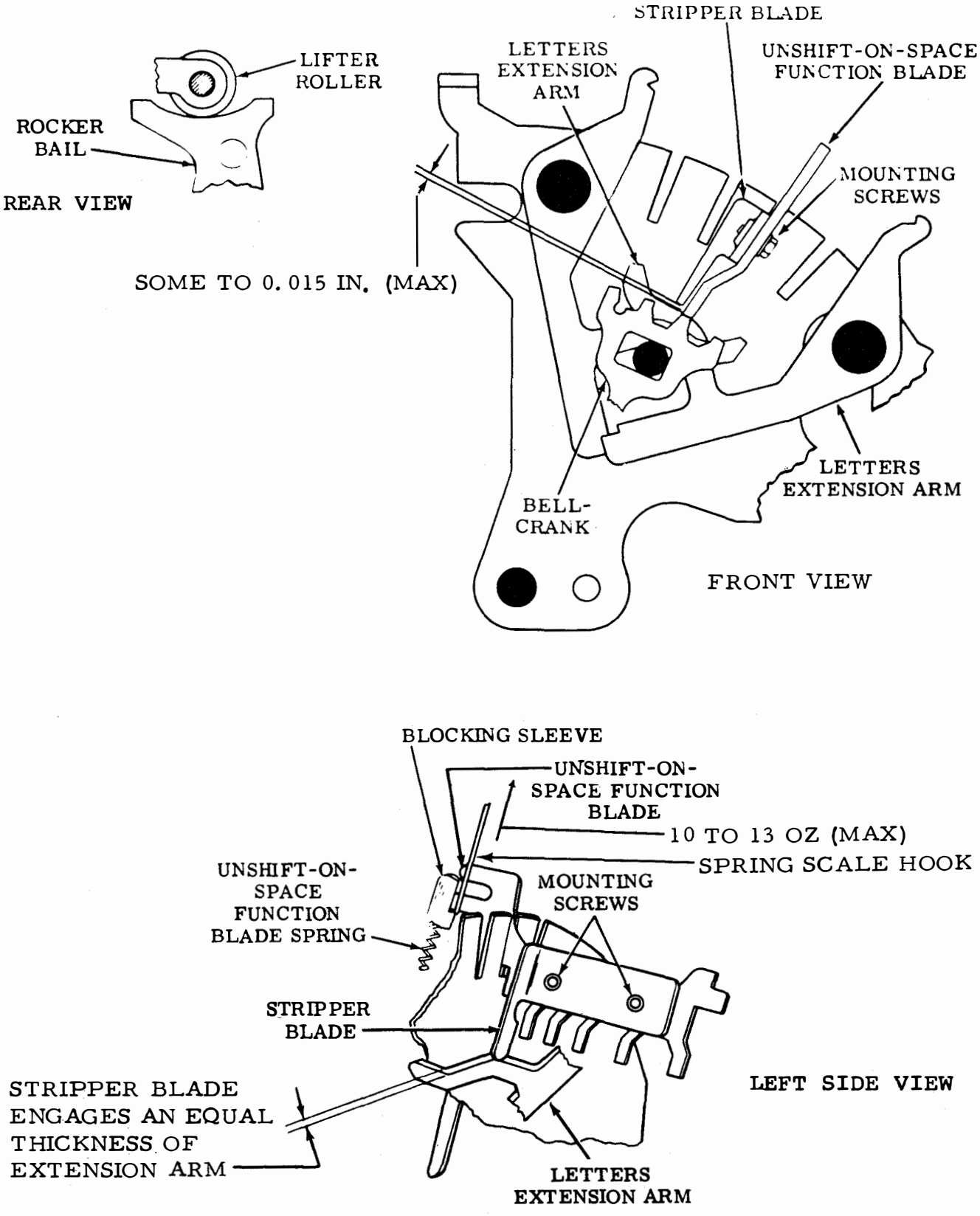


Figure 6-474. Unshift-On-Space Function Blade and Function Blade Spring, Reperforator

(k) Reinstall signal bell contact assembly with bracket and signal bell contact blade.

(2) Unshift-On-Space Function Blade Spring. Adjust as follows:

(a) Refer to Figure 6-474.

(b) Move unit to STOP position with long slot in blocking sleeve engaging function blade.

(c) Attach spring scale hook over function blade and measure force required to start blade moving. This should be 10 to 13 ounces maximum.

(d) If requirement is not met, replace spring.

b. Signal Bell Contact Mechanism Adjustments. Perform the following signal bell contact mechanism adjustments.

(1) Contact Bracket Assembly. Adjust as follows:

(a) Refer to Figure 6-475.

(b) The contact assembly should be centrally located over the bell function blade insulator.

(c) With LETTERS code combination (12345) selected, rotate main shaft until bell function blade is in its lowest position (resting on bellcranks).

(d) Gap between contacts should be 0.015 and 0.025 inch maximum.

(e) With bell function blade in its selected position, contacts should be closed.

(f) To adjust, loosen bracket mounting screws and position contact bracket assembly.

(g) Tighten mounting screws.

(2) Function Blade Spring. For adjustment refer to paragraph 6-6g(18) and Figure 6-281.

(3) Signal Bell Contact. Adjust as follows:

NOTE

Complete the following adjustment with signal bell contact assembly removed from the function box front plate.

(a) Refer to Figure 6-475.

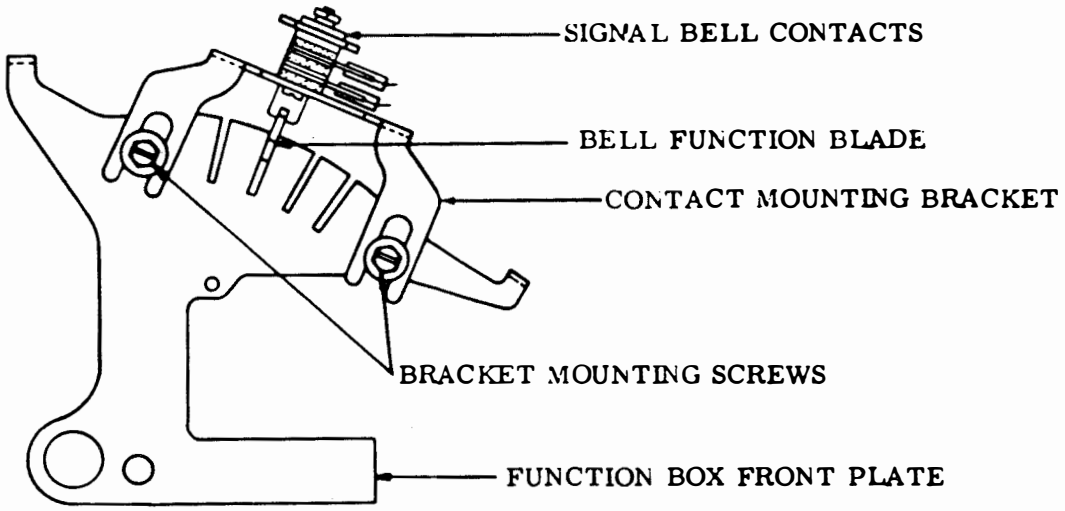
(b) Contact springs should be approximately parallel to top of bracket.

(c) Adjust by bending contact spring.

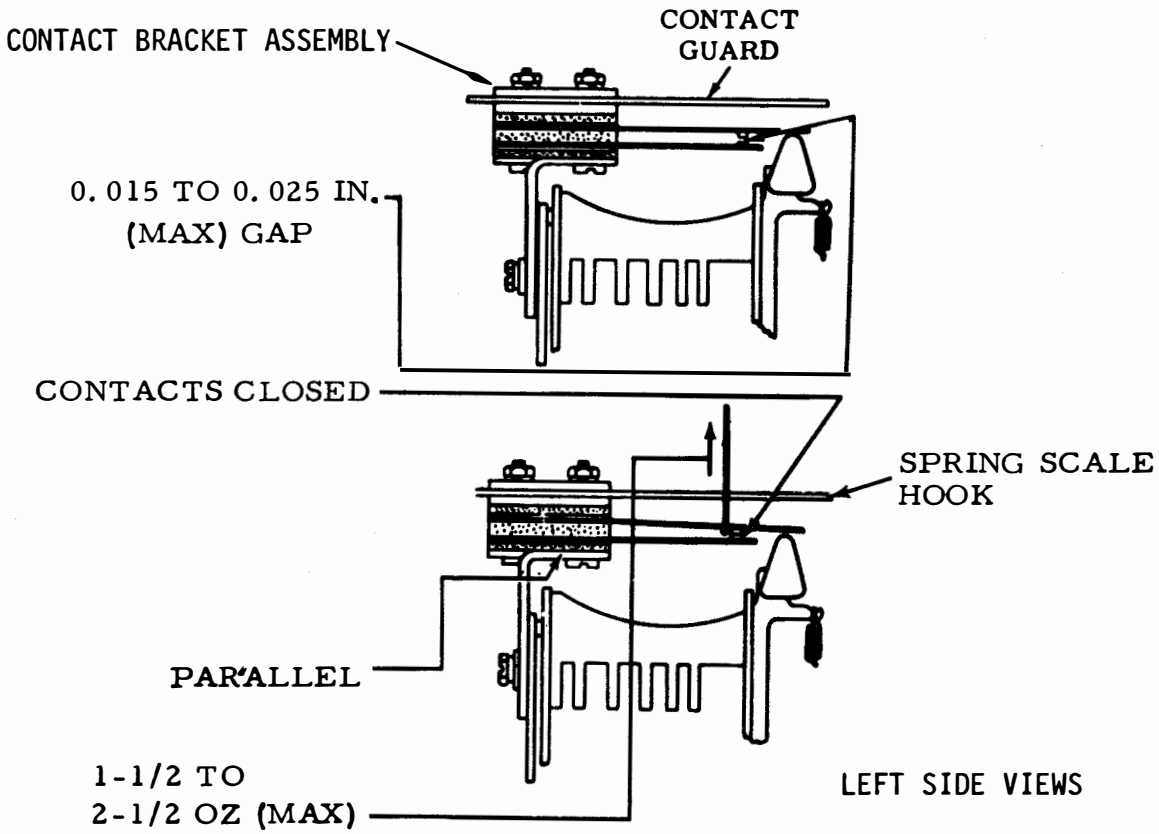
(d) Attach spring scale hook over contact near contact point and measure force required to open contacts. This should be 1-1/2 to 2-1/2 ounces maximum.

(e) Adjust by bending upper contact spring.

c. Print Suppression on Function Mechanism Adjustments. Perform the following print suppression on function mechanism adjustments.



FRONT VIEW



LEFT SIDE VIEWS

Figure 6-475. Signal Bell Contact and Contact Bracket Assembly, Reperforator

(1) Print Hammer Stop (Preliminary). Adjust as follows:

(a) Refer to Figure 6-476.

(b) With head of print hammer against character on type wheel, clearance between print hammer lever and print hammer stop should be some to 0.010 inch maximum.

(c) To adjust, loosen two mounting screws and position print hammer stop by means of its elongated upper hole.

(d) Tighten mounting screws.

(2) Print Hammer Stop (Final). Adjust as follows:

(a) Refer to Figure 6-476.

(b) With unit operating under power, the amount of smudge should be held to a minimum where print suppression is required.

(c) Refine preliminary adjustment procedure as required.

d. Manual and Power Drive Backspace Mechanism For Chadless Tape Adjustments. Perform the following manual and power drive backspace mechanism adjustments.

(1) Rake Assembly. Adjust as follows:

(a) Refer to Figure 6-477.

(b) With rotational play in rake taken up to left, bottom surface of rake teeht is within 0.040 inch of the same vertical plane as left side of punch block or slightly to the right.

(c) To adjust, remove two mounting screws from rear plate and position rake shaft gear in relation to gear segment. Replace screws.

(d) With bell-crank spring unhooked and rake in operated position, clearance between bottom of rake teeth and lower surface of tape slot should be 0.007 to 0.011 inch maximum (check at number 1 and number 5 pins).

(e) To ajdust, loosen eccentric mounting screw friction tight.

(f) With bell-crank handle fully depressed, position front and rear plates until left edge of both plates are approximately in line with vertical plane of punch block and clearance requirement is met.

(g) Tighten all mounting screws and hook up bellcrank spring.

(2) Feed Pawl Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-478.

(b) Preliminary check: with bellcrank rotated clockwise, feed pawl should miss first tooth at point of least clearance by 0.006 to 0.040 inch maximum.

(c) Final check: feed pawl should miss first tooth and engage second tooth by at least 1/2 of right

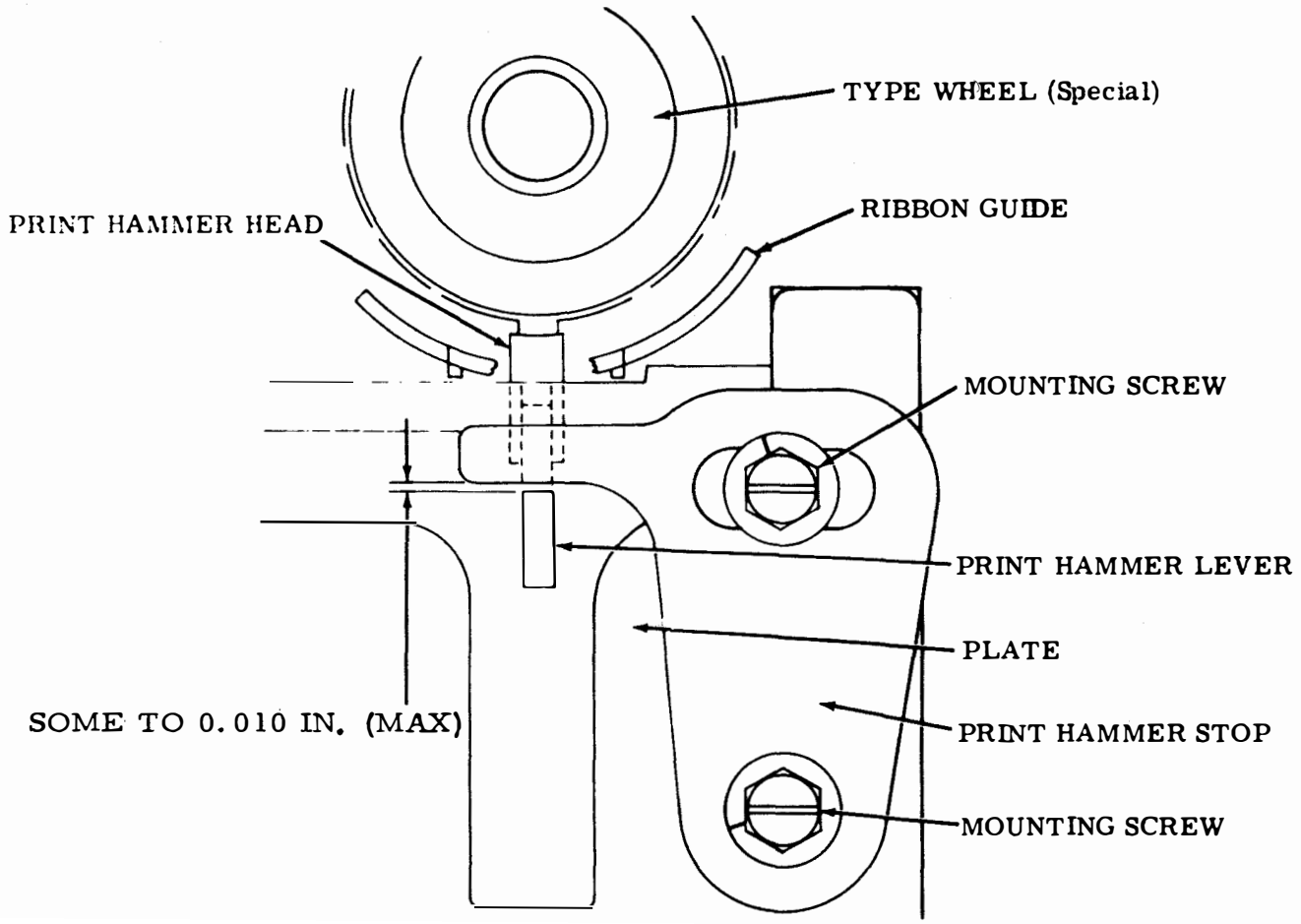


Figure 6-476. Print Hammer Stop (Preliminary and Final), Reperforator, Front View

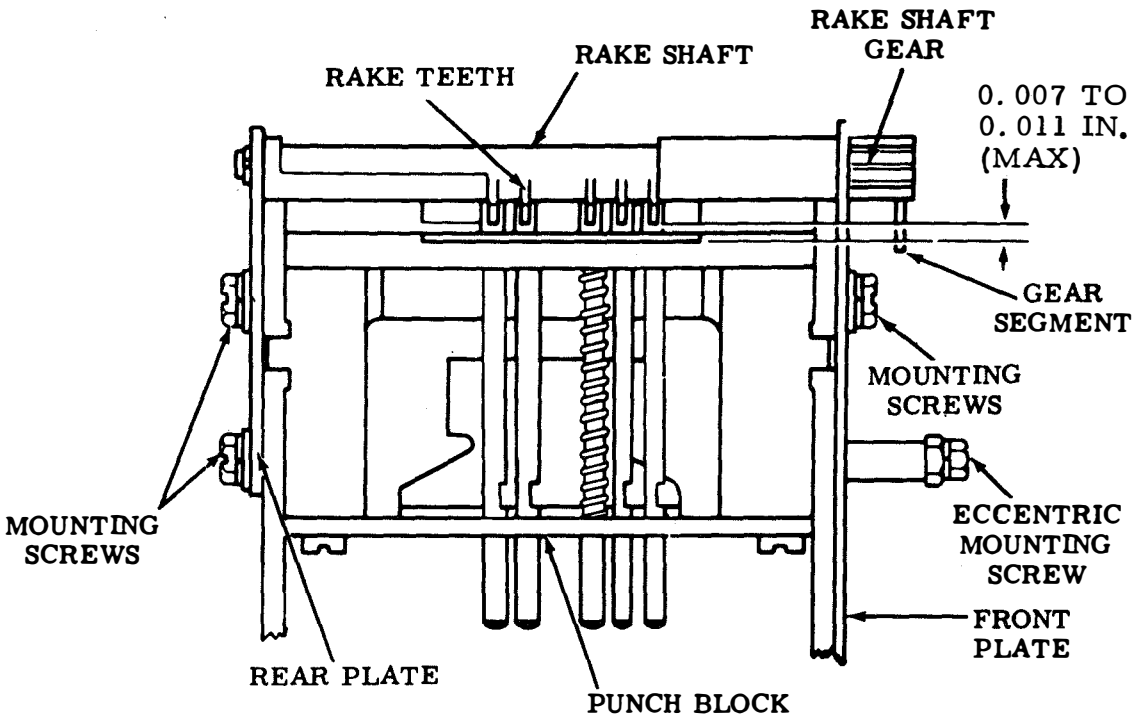


Figure 6-477. Rake Assembly, Reperforator, Left Side View

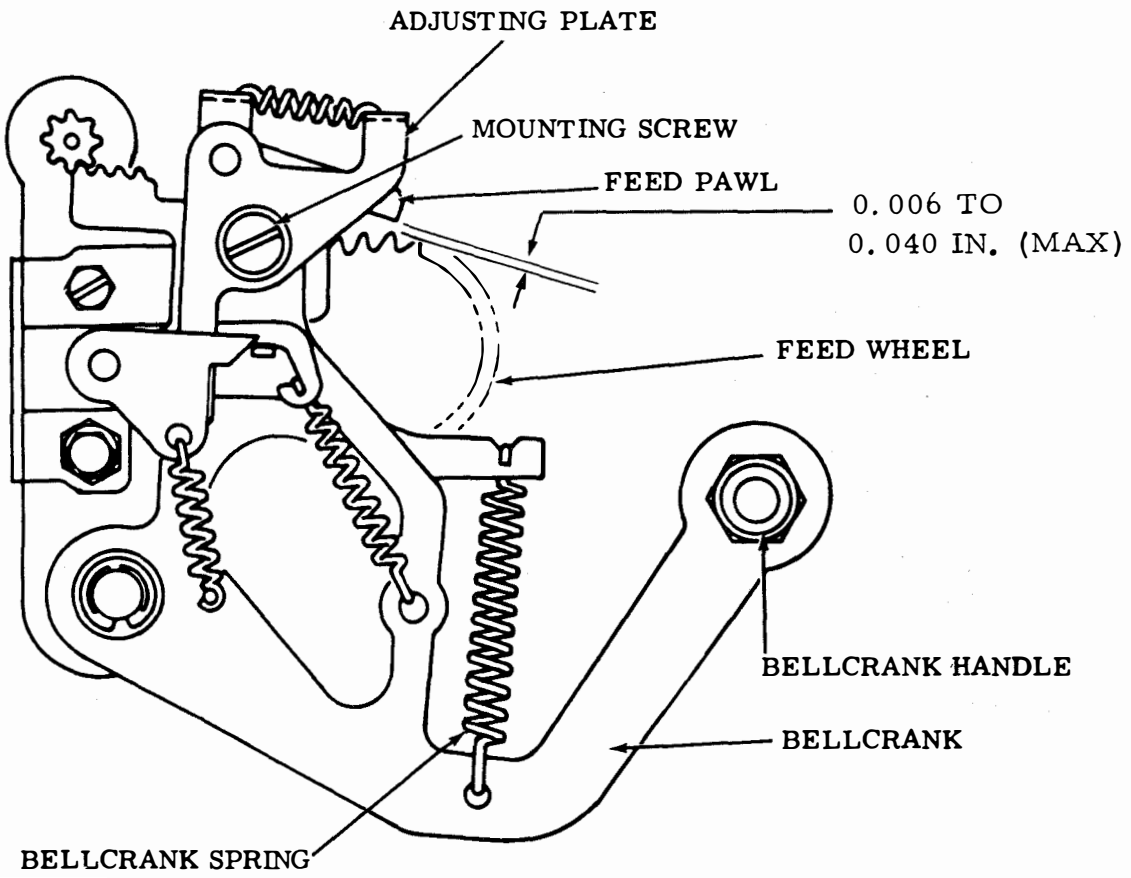


Figure 6-478. Feed Pawl Adjusting Plate, Reperforator

engaging surface of feed pawl, as gauged by eye, when feed pawl first contacts ratchet tooth.

(d) To adjust, loosen mounting screw friction tight, and position adjusting plate. Tighten screw.

(3) Return Latch. Adjust as follows:

(a) Refer to Figure 6-479.

(b) Put backspace mechanism in unoperated position.

(c) Clearance between return latch and feed pawl extension should measure 0.004 to 0.020 inch maximum.

(d) To adjust, loosen eccentric mounting screw friction tight and adjust eccentric. Tighten screw.

(4) Feed Pawl Eccentric (Preliminary). Adjust as follows:

(a) Refer to Figure 6-480.

(b) For manual backspace:

1. Place backspace bellcrank in operated position and feed wheel detented back one space.

2. Clearance between feed wheel ratchet tooth and backspace feed pawl should be some to 0.003 inch maximum.

(c) For power driven backspace:

1. Place backspace bellcrank in its operated position.

2. High side of eccentric should be in its uppermost position.

(d) To adjust, loosen nut post friction tight and rotate eccentric with an Allen wrench. Tighten nut post.

e. Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) Adjustments. Perform the following manual and power drive backspace mechanism adjustments.

(1) Backspace Ratchet. Adjust as follows:

(a) Refer to Figure 6-481.

(b) Teeth of backspace ratchet and feed wheel ratchet should visually line up and feed wheel ratchet should be in detented position.

(c) To adjust, loosen adjusting clamp mounting screw friction tight and rotate backspace ratchet. Tighten screw.

(2) Backspace Pawl Clearance (Preliminary and Final). Adjust as follows:

(a) Refer to Figure 6-481.

(b) Preliminary check: with backspace bellcrank rotated clockwise, backspace pawl should miss first tooth at point of least clearance by 0.003 to 0.010 inch maximum.

(c) Final check: backspace pawl should miss first tooth and engage second tooth by at least 1/2 the right engaging surface of backspace pawl, as gauged by eye, when backspace pawl first contacts ratchet tooth.

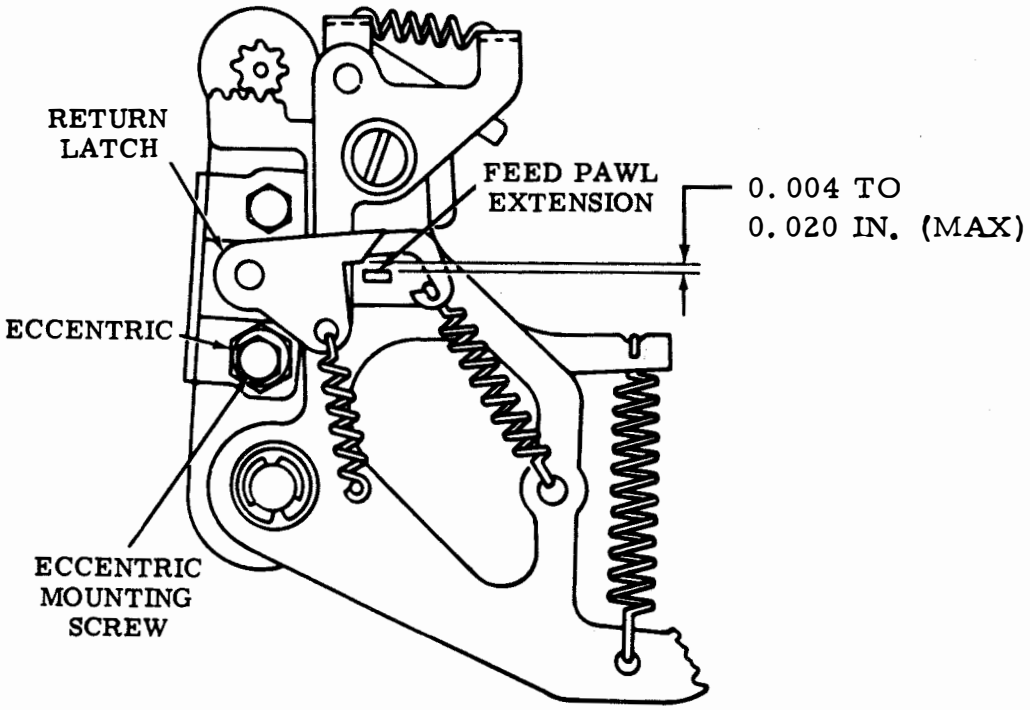


Figure 6-479. Return Latch, Reperforator

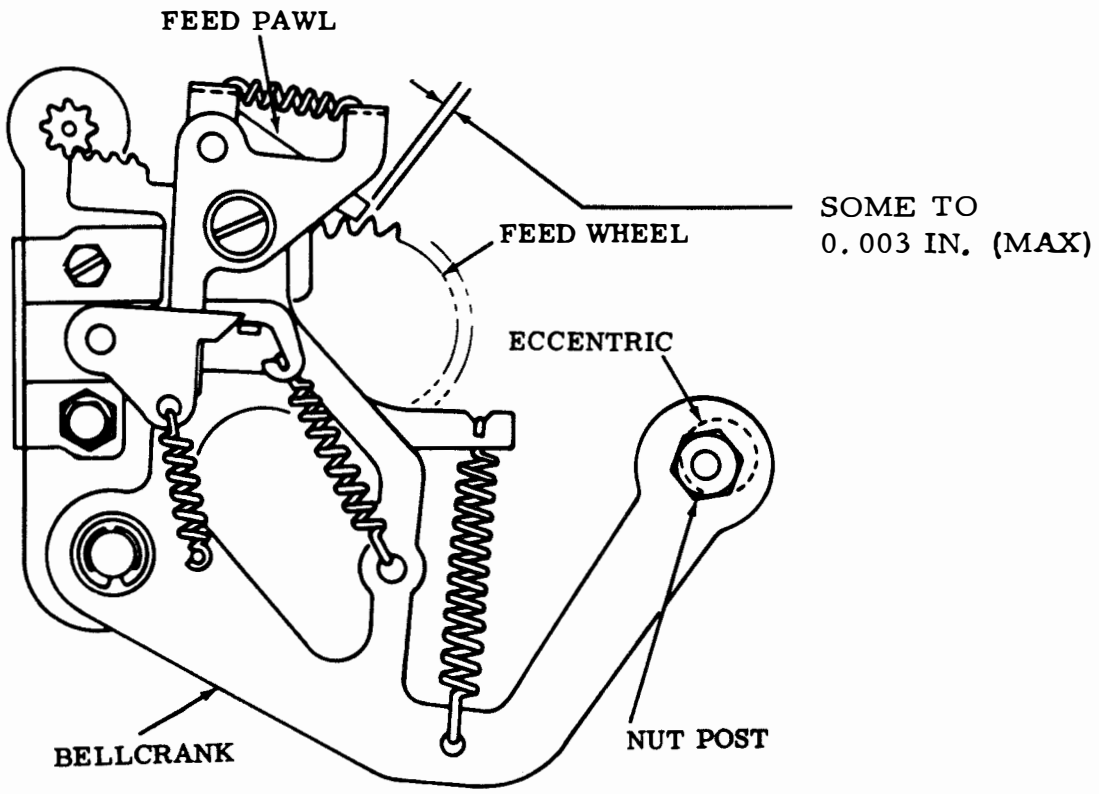


Figure 6-480. Feed Pawl Eccentric (Preliminary) (For Chadless Tape), Reperforator

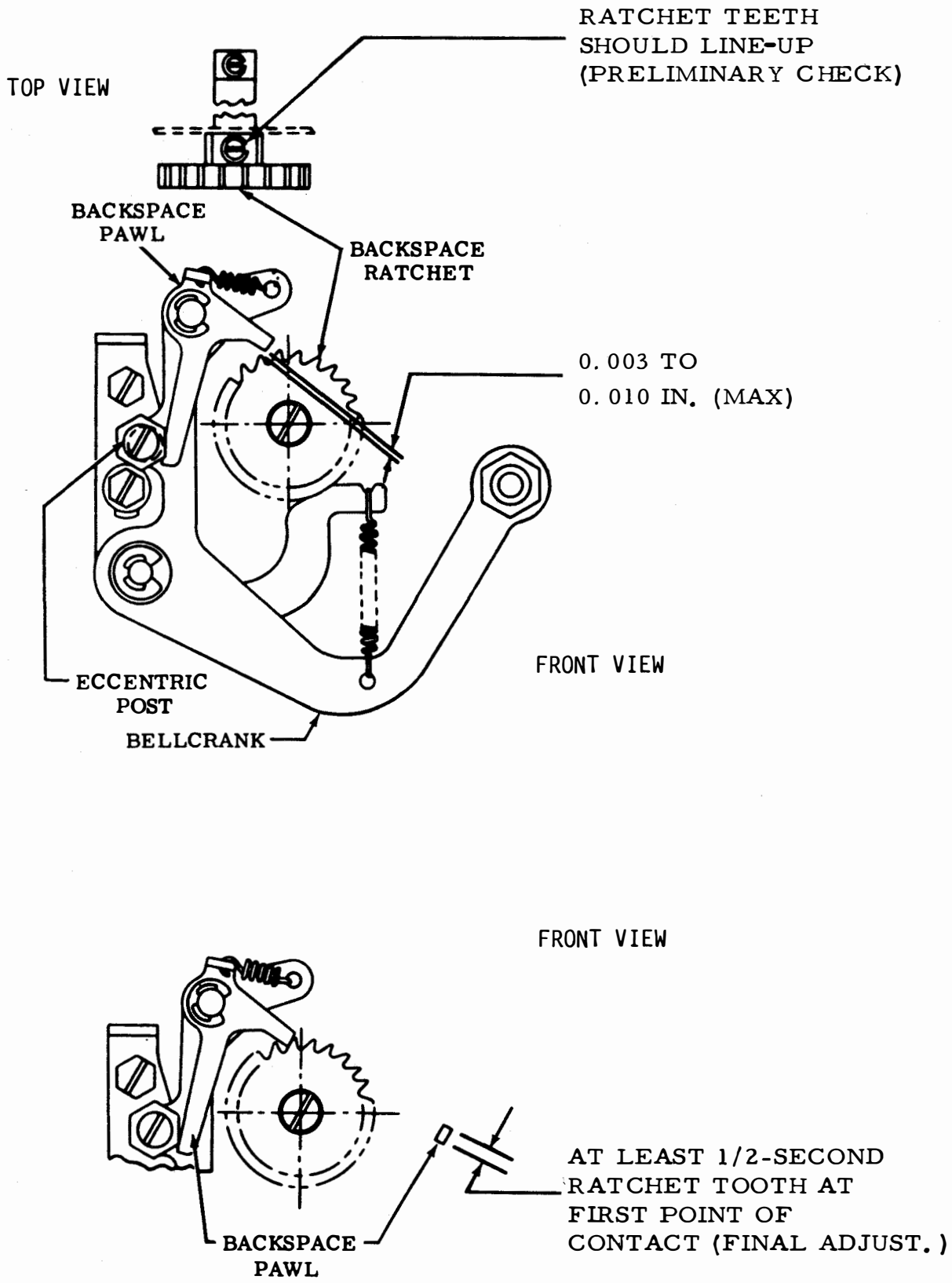


Figure 6-481. Backspace Ratchet and Backspace Pawl Clearance (Preliminary and Final)

(d) To adjust:

1. Take up all rotational play of backspace ratchet in relation to feed ratchet by rotating it clockwise at same time rotate bellcrank clockwise.

2. Loosen mounting screw friction tight and rotate eccentric post to meet the requirement.

3. Tighten screw.

(3) Feed Pawl Eccentric (Preliminary). Adjust as follows:

(a) Refer to Figure 6-482.

(b) For manual backspace:

1. Place backspace bellcrank assembly in operated position and feed wheel detented back one space.

2. Take up all rational play of the backspace ratchet in a direction to make maximum clearance.

3. Clearance between backspace ratchet tooth and backspace feed pawl should measure some to 0.003 inch maximum.

(c) For power driven backspace:

1. Place backspace bellcrank in its operated position.

2. High side of eccentric should be in its uppermost position.

(d) To adjust, loosen nut post friction tight and rotate eccentric with a hex wrench.

(e) Tighten nut post.

f. Power Drive Backspace Mechanism Adjustments. Perform the following power drive backspace mechanism adjustments. the following paragraphs.

(1) Armature Spring. Adjust as follows:

(a) Refer to Figure 6-483.

(b) Using spring scale, measure force required to pull spring to installed length. This should be 15 to 20 ounces maximum.

(c) If requirement is not met, replace spring.

(2) Latch Extension Spring. Adjust as follows:

(a) Refer to Figure 6-483.

(b) Attach spring scale hook to latch extension and measure force required to start latch moving. This should be 1 to 2-1/4 ounces maximum.

(c) If requirement is not met, replace spring.

(3) Magnet Position. Adjust as follows:

(a) Refer to Figure 6-483.

(b) When magnet is deenergized, armature extension should engage latch by approximately its full thickness.

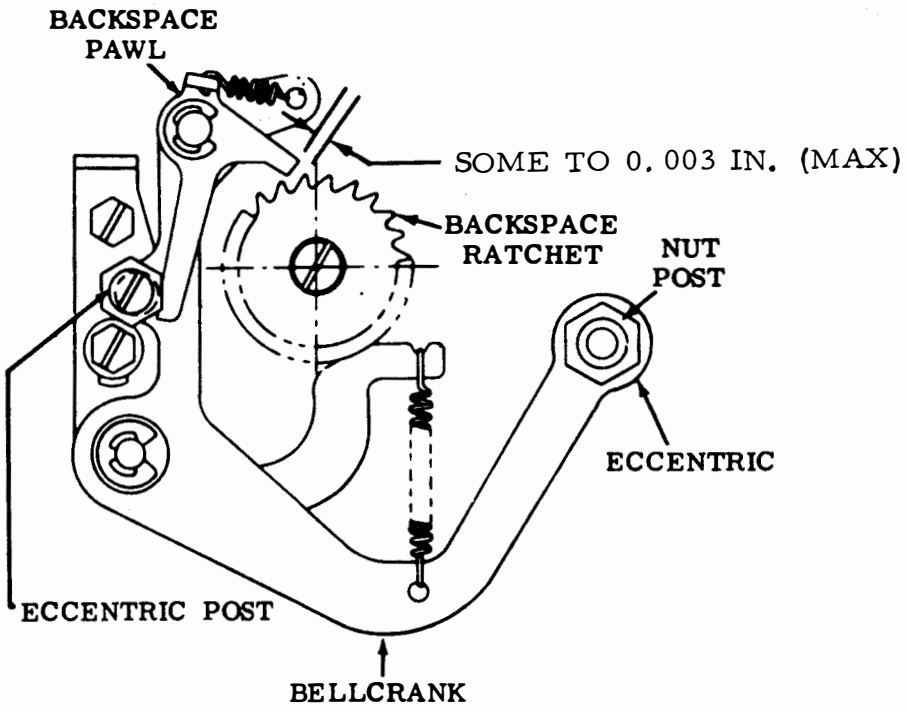


Figure 6-482. Feed Pawl Eccentric (Preliminary) (For Fully Perforated Tape), Reperforator

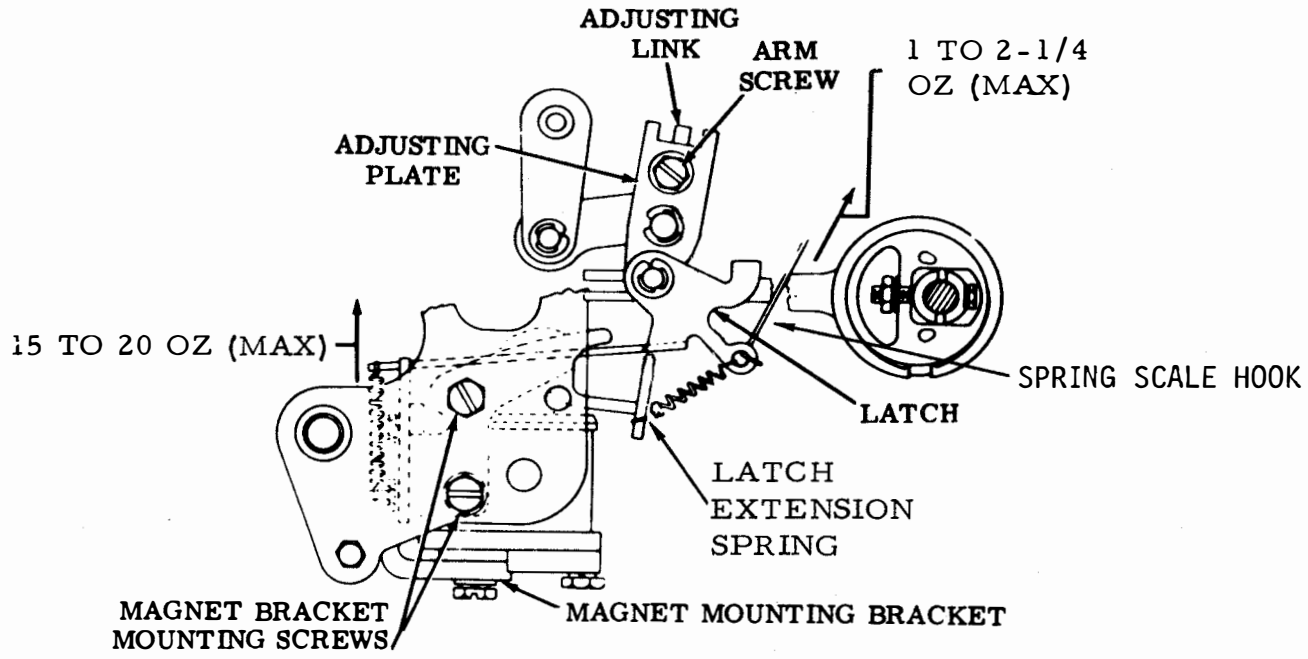


Figure 6-483. Armature Spring, Latch Extension Spring, and Magnet Position, Reperforator, Front View

(c) To adjust, loosen magnet assembly mounting screws and position magnet assembly. Tighten screws.

g. Manual and Power Drive Mechanism for Chadless or Fully Perforated Tape Final Adjustment. Adjust as follows:

(1) No reference Figure.

(2) With tape in the unit, place the feed wheel shaft oil hole in its uppermost position.

(3) Operate backspace mechanism once.

(4) The ratchet wheel should be backed one space into a fully detented position.

NOTE

A fully detented position is when the detent roller in contact with the ratchet wheel and punch unit feed pawl engages the first tooth below horizontal centerline of feed wheel ratchet with no perceptible clearance.

(5) With unit operating under power, perforate approximately 2 inches of tape with LETTERS code combination selected.

(6) Backspace twelve characters in succession with unit still under power.

(7) Again perforate approximately two inches of tape with LETTERS code selected.

(8) Clipping of the code holes should be held to a minimum, and should not exceed 0.005 inches, as gauged by eye.

(9) To adjust:

(a) On manual operated mechanisms, refine Feed Pawl Eccentric (Preliminary), paragraph 6-15d(4) or 6-15e(3).

(b) On backspace mechanisms equipped with power drive, loosen the arm adjusting screw and position adjusting plate, see Figure 6-483.

(c) Tighten arm adjusting screw.

h. Remote Control Noninterfering LTRS and FLANK Tape Feed-Out Mechanism Adjustments. Perform the following feed-out mechanism adjustments.

(1) Armature Hinge. Adjust as follows:

(a) Refer to Figure 6-484.

(b) With armature manually operated, it should be flush against pole face and magnet bracket extension.

(c) To adjust, loosen mounting screws and position armature.

(d) Tighten screws.

(2) Drive Bail Spring. Adjust as follows:

(a) Refer to Figure 6-485.

(b) Rotate main shaft until drive bail is on high part of its cam.

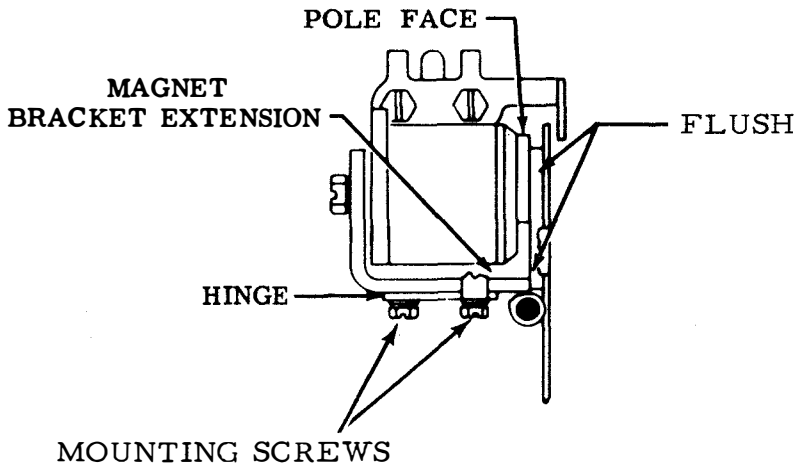


Figure 6-484. Armature Hinge, Reperforator, Front View

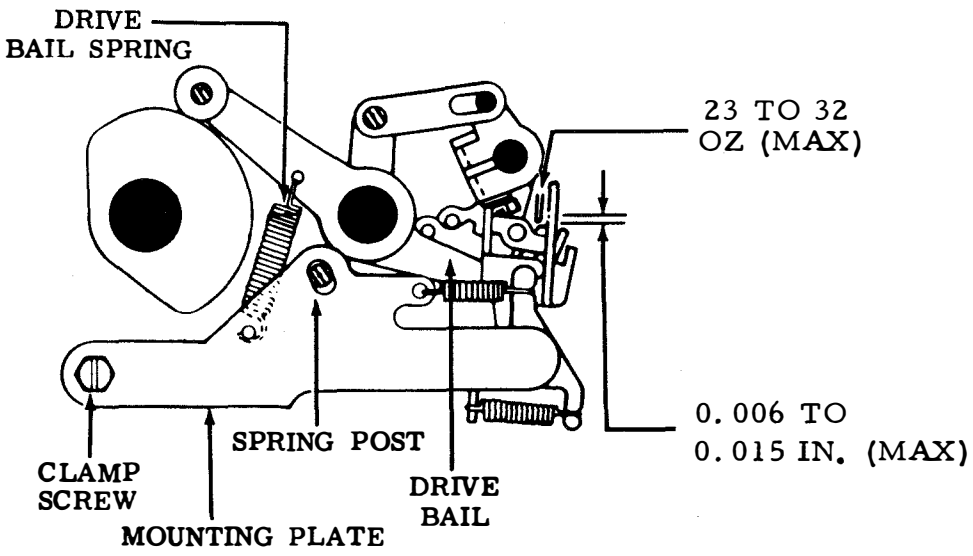


Figure 6-485. Drive Bail Spring and Mounting Plate, Reperforator, Front View

(c) Using a spring scale, force required to start drive bail moving should measure 23 to 32 ounces maximum.

(d) If requirement is not met, replace spring.

(3) Mounting Plate. Adjust as follows:

(a) Refer to Figure 6-485.

(b) With armature in unoperated position, rotate main shaft until drive bail is on high part of its cam.

(c) Clearance between blocking bail and drive bail surface should be 0.006 to 0.015 inch maximum.

(d) To adjust, loosen clamp screw and spring post friction tight and position blocking bail.

(e) Tighten mounting screw and spring post.

(4) Magnet Assembly. Adjust as follows:

(a) Refer to Figure 6-486.

(b) With armature held in operated position, rotate main shaft until drive bail roller is on high part of cam.

(c) Clearance between blocking bail and right edge of drive bail at its closest point should be 0.005 to 0.015 inch maximum.

(d) To adjust, loosen mounting screws friction tight and hold armature against magnet pole piece.

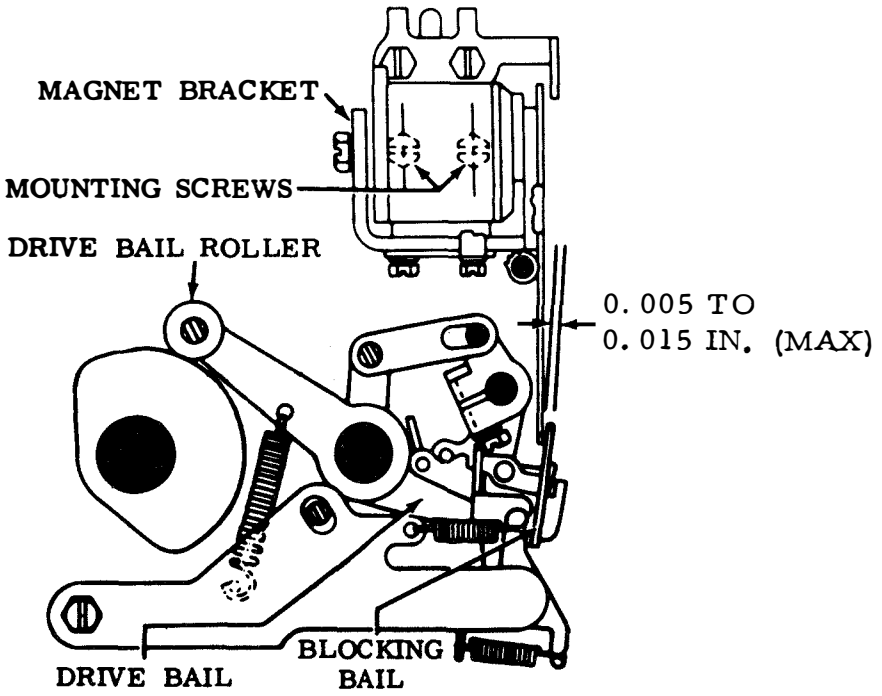


Figure 6-486. Magnet Assembly, Reperforator, Front View

(e) Position magnet assembly and tighten screws.

(5) Blocking Latch Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-487.

(b) Loosen two clamp screws.

(c) With armature in unoperated position and drive bail roller on high part of its cam, position magnet bracket extension so that between 15 grams and 40 grams will be required to start blocking latch moving.

(d) Tighten mounting screws.

(e) If requirement is not met, replace spring.

(6) Blocking Bail Spring. Adjust as follows:

(a) Refer to Figure 6-487.

(b) With armature in unoperated position and drive bail on high part of its cam, measure tension with spring scale.

(c) Between 3 and 5 ounces should be required to pull spring to installed length.

(d) If requirement is not met, replace spring.

(7) Non-repeat Lever Spring. Adjust as follows:

(a) Refer to Figure 6-487.

(b) With armature in unoperated position and drive bail roller on high part of its cam, measure tension with a spring scale.

(c) Between 6 and 9 ounces should be required to pull spring to installed length.

(d) If requirement is not met, replace spring.

(8) Armature Backstop. Adjust as follows:

(a) Refer to Figure 6-487.

(b) With armature in operated position, rotate main shaft until drive bail roller is on high part of its cam.

(c) The drive bail engages the blocking bail by at least two-thirds of its thickness.

(d) Clearance between blocking latch and non-repeat latch should be some to 0.006 inch maximum.

(e) To adjust, loosen armature backstop mounting screws friction tight and position armature backstop by means of pry point.

(f) Tighten mounting screws.

(9) Release Lever. Adjust as follows:

(a) Refer to Figure 6-488.

(b) With armature in operated position, rotate main shaft until drive

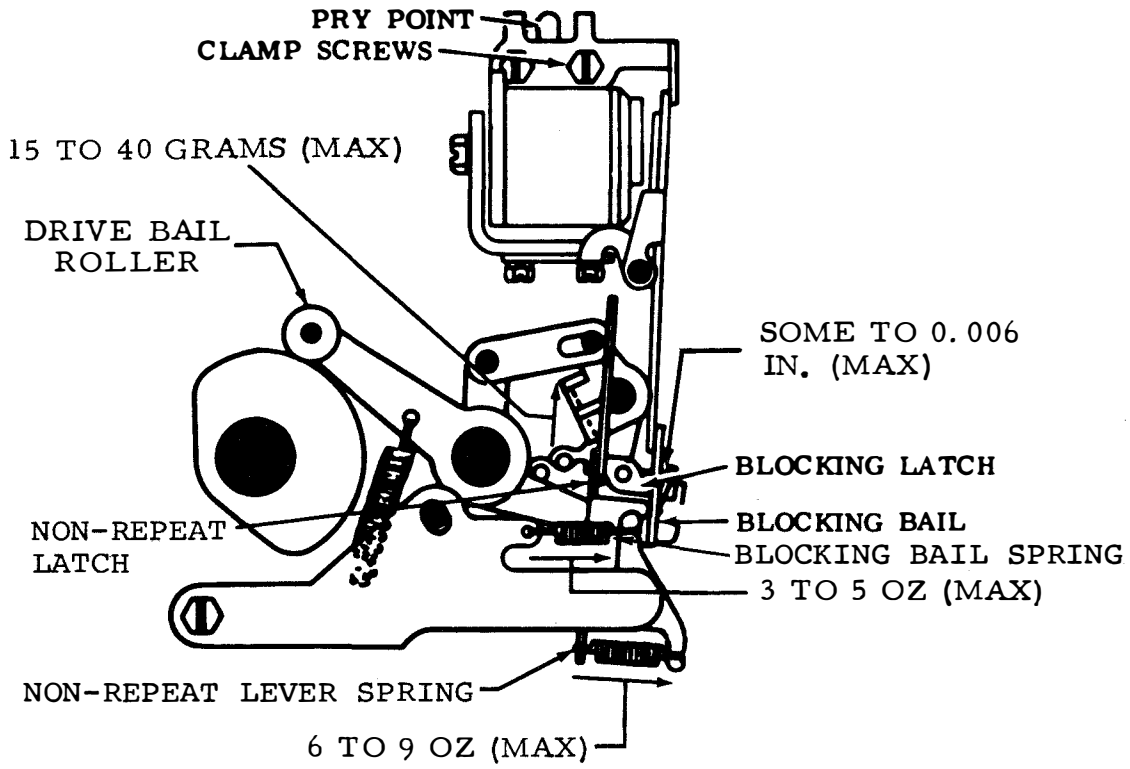


Figure 6-487. Blocking Latch Torsion Spring, Blocking Bail Spring, Non-repeat Lever Spring, and Armature Backstop, Reperforator, Front View

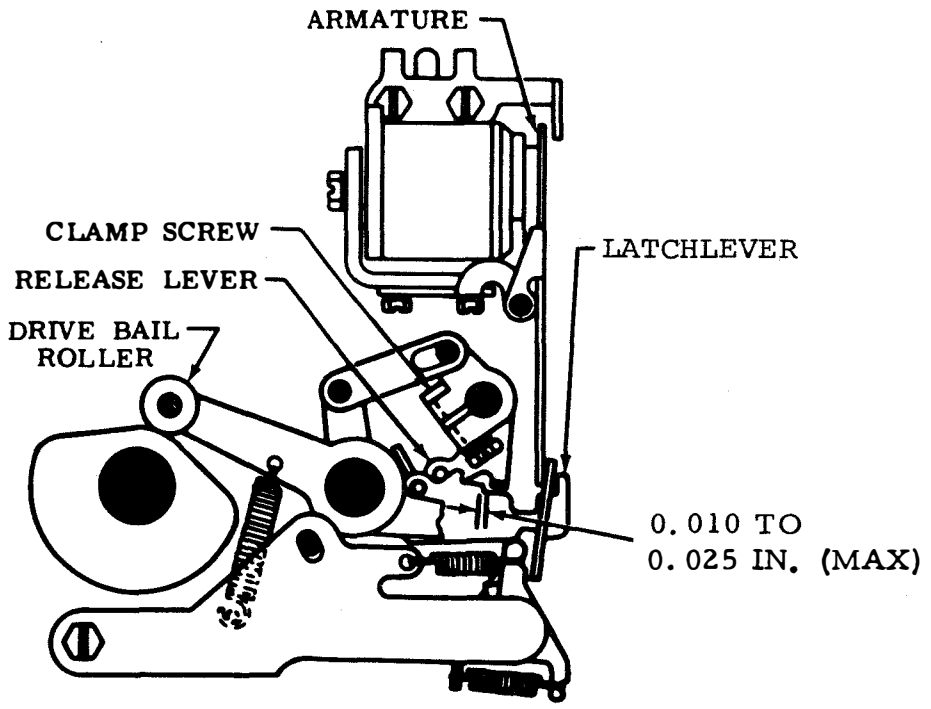


Figure 6-488. Release Lever, Reperforator, Front View

bail roller is in detent of its cam.

(c) Clearance between release lever and latchlever should be 0.010 to 0.025 inch maximum.

(d) To adjust, loosen clamp screw friction tight and position release lever.

(e) Tighten clamp screw.

(10) Latchlever. Adjust as follows:

(a) Refer to Figure 6-489.

(b) Trip selector clutch.

(c) Rotate main shaft until stripper cam follower is on peak of cam. Clearance between release lever and latchlever should be 0.018 to 0.028 inch maximum.

(d) and latchlever is at a minimum.

(e) End play between cam follower and bushing should be some to 0.008 inch maximum. To adjust, loosen mounting screws friction tight and hold armature against magnet pole piece.

(f) Tighten clamp screw.

(11) Release Lever Spring. Adjust as follows:

(a) Refer to Figure 6-489.

(b) Trip selector clutch.

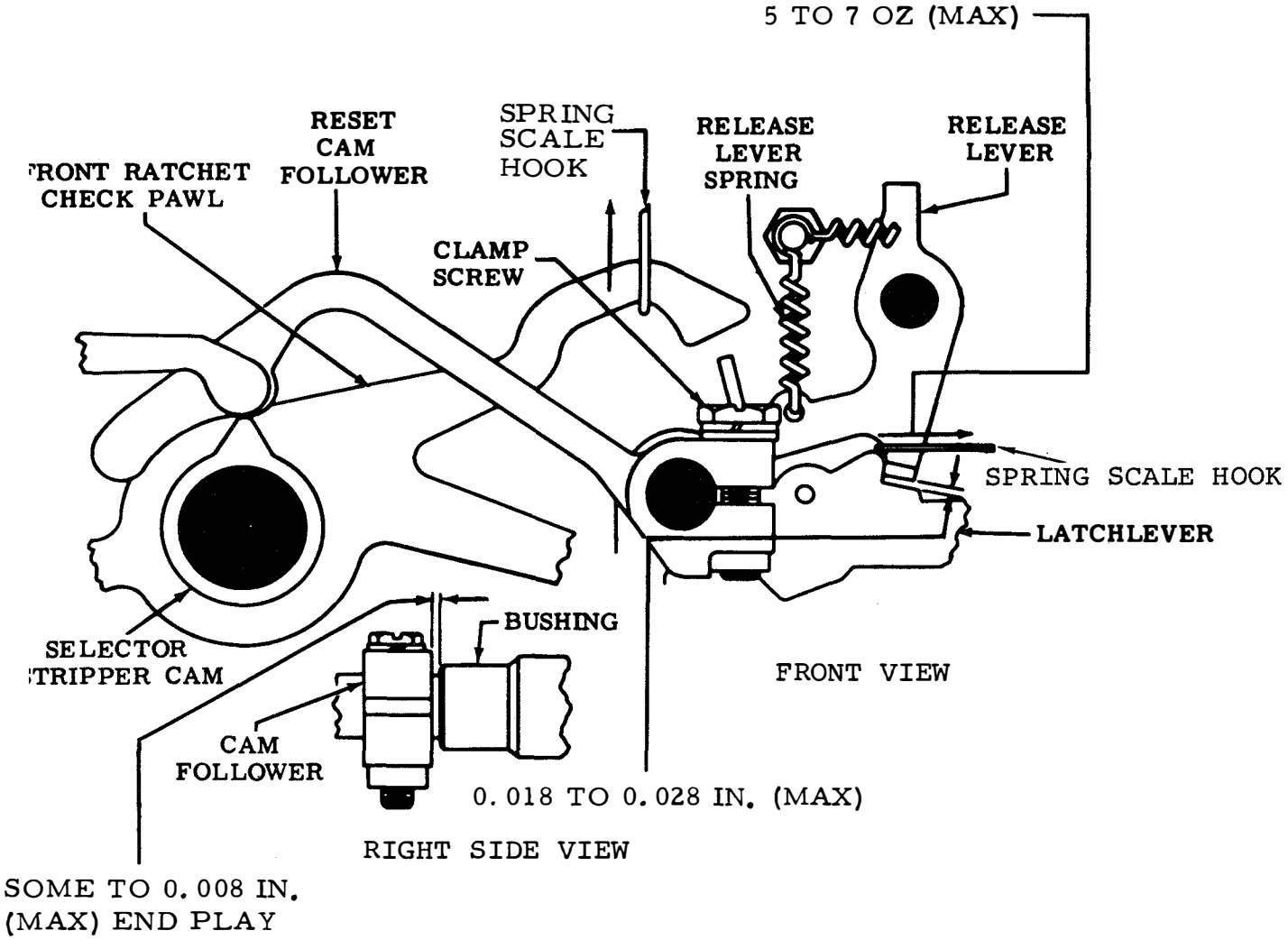


Figure 6-489. Latchlever and Release Lever Spring, Reperforator

(c) Rotate main shaft until reset cam follower is on peak of reset bail cam.

(d) With spring hook, hold front ratchet check pawl away from release lever.

(e) Attach spring scale hook over release lever and measure force required to start lever moving. This should be 5 to 7 ounces maximum.

(f) If requirement is not met, replace spring.

(12) Latchlever Spring. Adjust as follows:

(a) Refer to Figure 6-490.

(b) Trip selector clutch.

(c) Rotate main shaft until reset cam follower is on peak of reset bail cam.

(d) Check spring tension using spring scale.

(e) For remote control noninterfering LTRS tape feed-out mechanism, between 2 and 4 ounces should be required to pull spring to installed length.

(f) For remote control noninterfering BLANK tape feed-out mechanism, between 9 and 12 ounces should be required to pull spring to installed length.

(13) Release Arm. Adjust as follows:

(a) Refer to Figure 6-491.

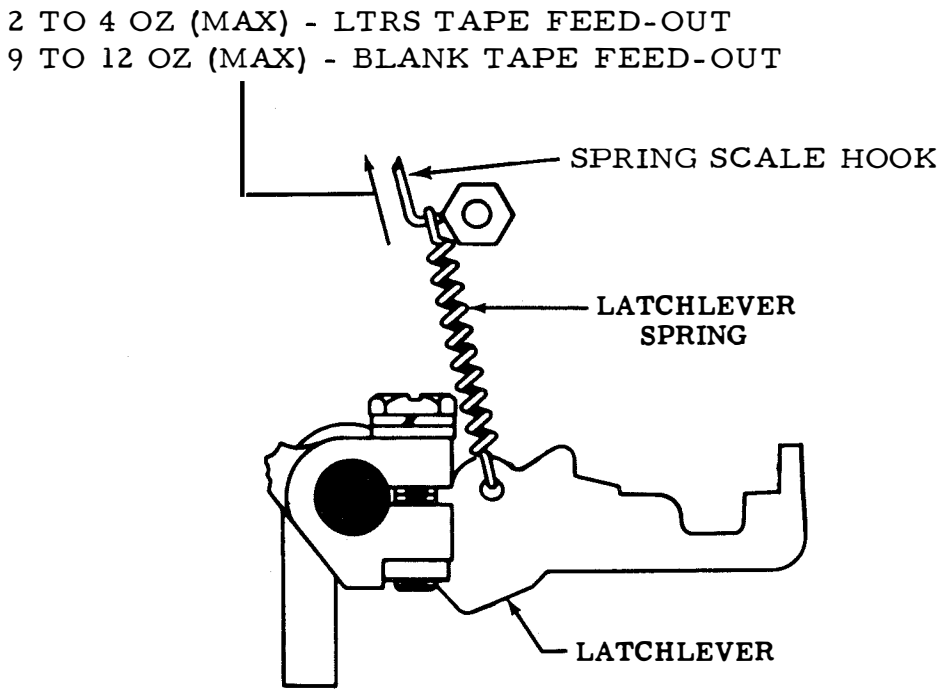


Figure 6-490. Latchlever Spring, Reperforator, Front View

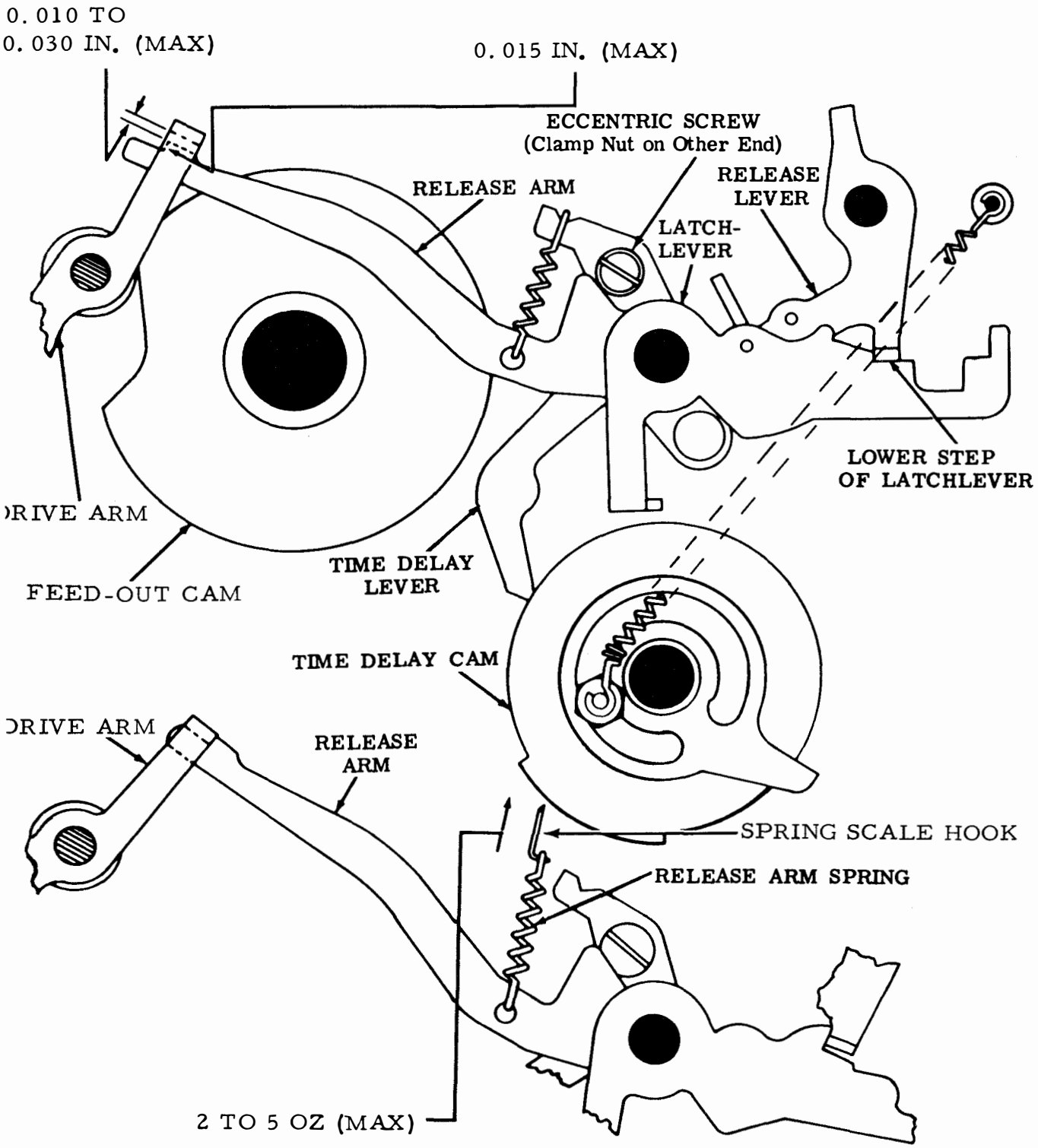


Figure 6-491. Release Arm and Release Arm Spring, Reperforator, Front View

(b) Rotate cam so that the mating surfaces of the drive arm bail and release arm are approximately parallel.

(c) With the unit in feed-out cycle and ratchets advanced beyond the time delay, clearance between drive arm and upper surface of release arm should measure 0.010 to 0.030 inch maximum.

(d) With unit in STOP position, not over 0.015 inch clearance should exist between the surface of drive arm bail that does not engage the release arm.

(e) To adjust, loosen clamp nut friction tight and position release arm by means of eccentric screw on release lever.

(f) Tighten clamp nut.

(14) Release Arm Spring. Adjust as follows:

(a) Refer to Figure 6-491.

(b) Disengage clutches and latch drive arm by release arm.

(c) Attach spring scale hook to spring and measure force required to pull spring to installed length. This should be 2 to 5 ounces maximum.

(d) If requirement is not met, replace spring.

(15) Rear Check Pawl. Adjust as follows:

(a) Refer to Figure 6-492.

(b) With unit in feed-out cycle and feed pawl at extreme left, clearance between rear check pawl and ratchet tooth should measure 0.008 to 0.020 inch maximum.

(c) To adjust, loosen clamp screw and position pawl with pry point. Tighten screw.

(16) Rear Check Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-492.

(b) Attach spring scale hook over end of rear check pawl and measure force required to start pawl moving. This should be from 28 to 56 grams maximum.

(c) If force does not match requirements, replace spring.

(17) Feed Pawl and Front Check Pawl Springs. Adjust as follows:

(a) Refer to Figure 6-492.

(b) Place unit in feed-out cycle and feed pawl at extreme left.

(c) Attach spring scale hook to loose end of each spring and measure force required to pull each pawl spring to installed length. This should be 1 to 3 ounces maximum.

(d) If force does not match requirements, replace spring(s).

(18) Front Ratchet STOP Position. Adjust as follows:

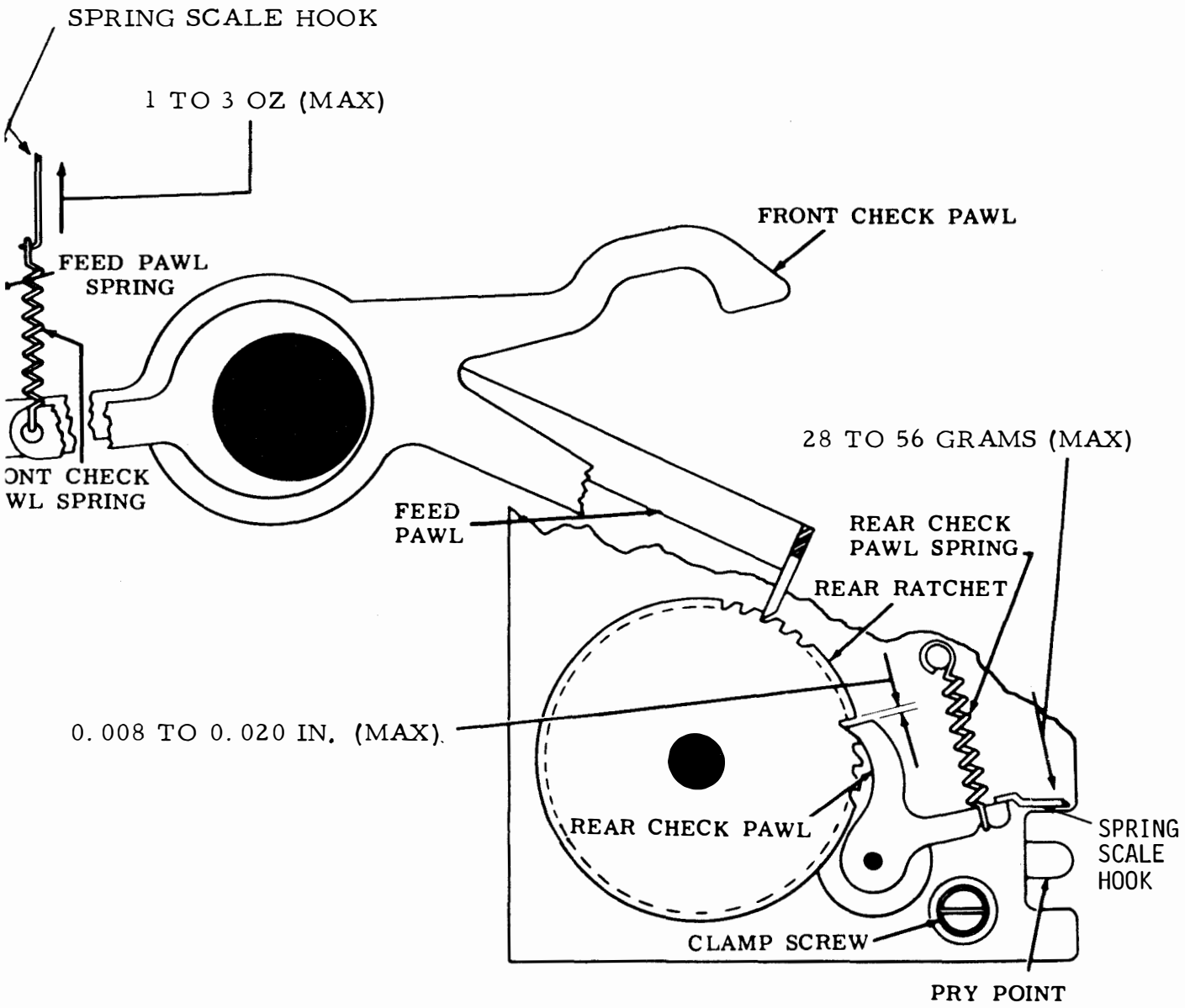


Figure 6-492. Rear Check Pawl, Pear Check Pawl Spring, and Feed Pawl and Front Check Pawl Springs, Reperforator, Front View

NOTE

See Rear Check Pawl, paragraph 6-15h(15), adjustment before making this adjustment.

(a) Refer to Figure 6-493.

(b) With unit in STOP position, place release lever on lower step of latchlever.

(c) Allow stop on front ratchet to rest against stop block and rotate main shaft until feed pawl is at extreme right position.

(d) Clearance between front check pawl and front ratchet tooth should be 0.002 to 0.015 inch maximum.

(e) To adjust, loosen two clamp screws and position stop block by means of pry points. Tighten screws.

(19) Time Delay Lever. Adjust as follows:

(a) Refer to Figure 6-494.

(b) Trip selector clutch and rotate main shaft until reset cam follower is on high part of reset bail cam.

(c) Clearance between time delay lever and high part of time delay cam should measure 0.040 to 0.060 inch maximum.

(d) With unit in STOP position, there should be some clearance between time delay lever and high part of time delay cam.

(e) To adjust, loosen clamp screw and position eccentric bushing. Tighten screw.

(20) Time Delay Lever Spring. Adjust as follows:

(a) Refer to Figure 6-494.

(b) With unit in STOP position, use spring scale to measure force necessary to pull spring to installed length. This should require 2 to 3 ounces maximum.

(c) If force does not match specifications, replace spring.

(21) Ratchet Return Spring. Adjust as follows:

(a) Refer to Figure 6-494.

(b) With unit in STOP position, use spring scale to measure force necessary to pull spring to installed length. This should require 5 to 7 ounces maximum.

(c) If force does not match specifications, replace spring.

(22) Drive Arm Spring. Adjust as follows:

(a) Refer to Figure 6-495.

(b) With unit in feed-out cycle and drive arm roller held firm against cam indent, use spring scale to measure force necessary to pull spring to installed length. This should require 42 to 50 ounces maximum.

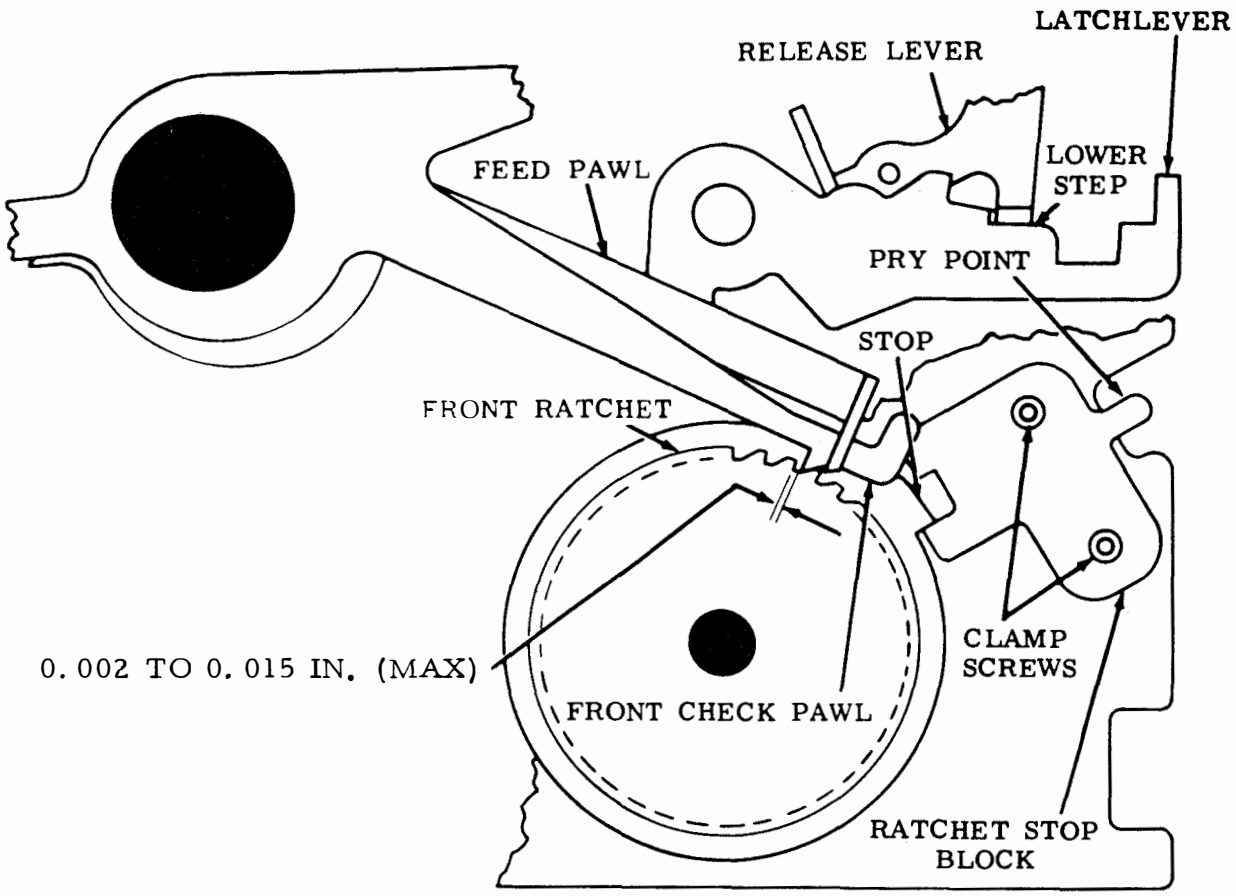


Figure 6-493. Front Ratchet STOP Position, Reperforator, Front View

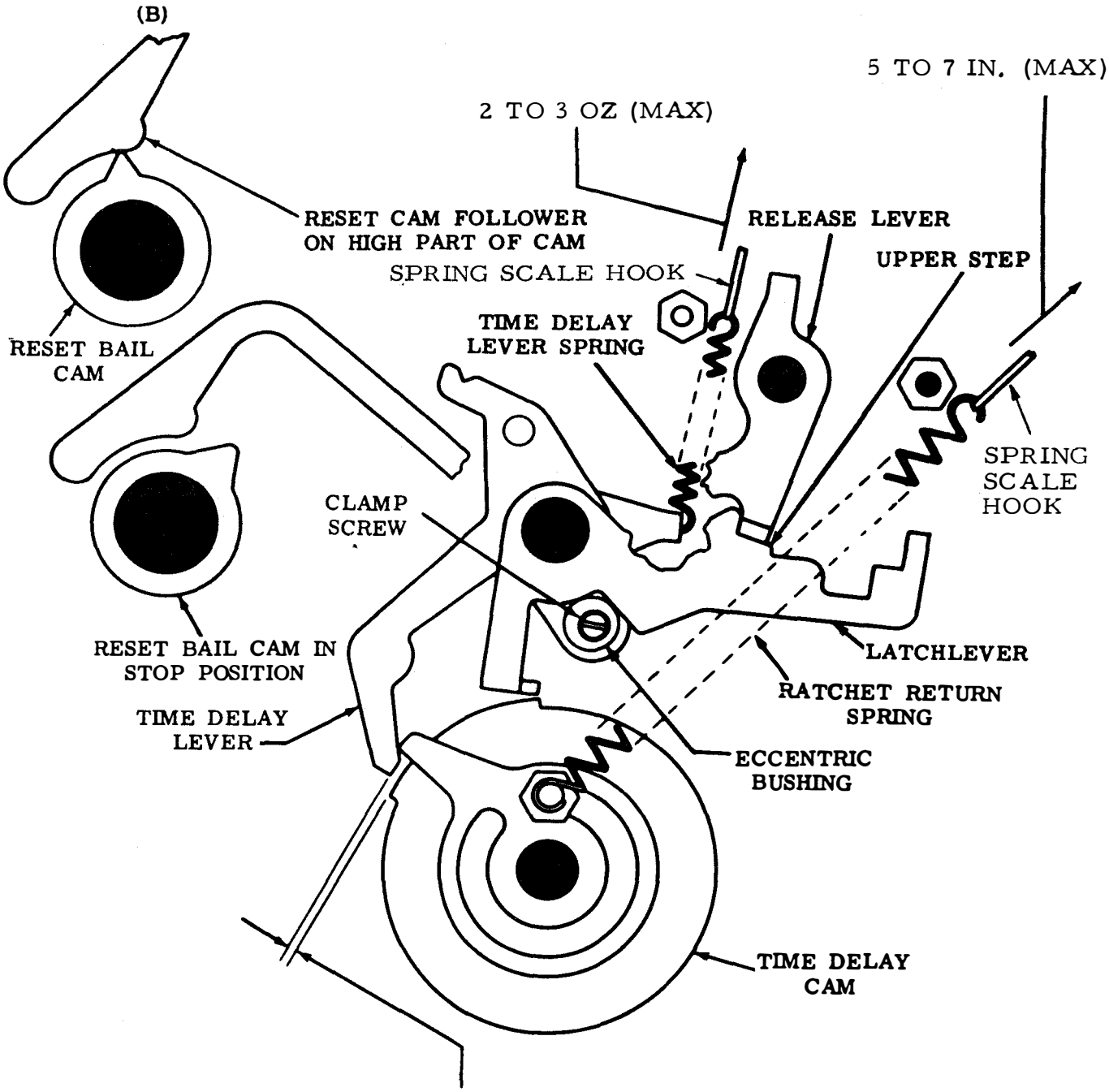


Figure 6-494. Time Delay Lever, Time Delay Lever Spring, and Ratchet Return Spring, Reperforator, Front View

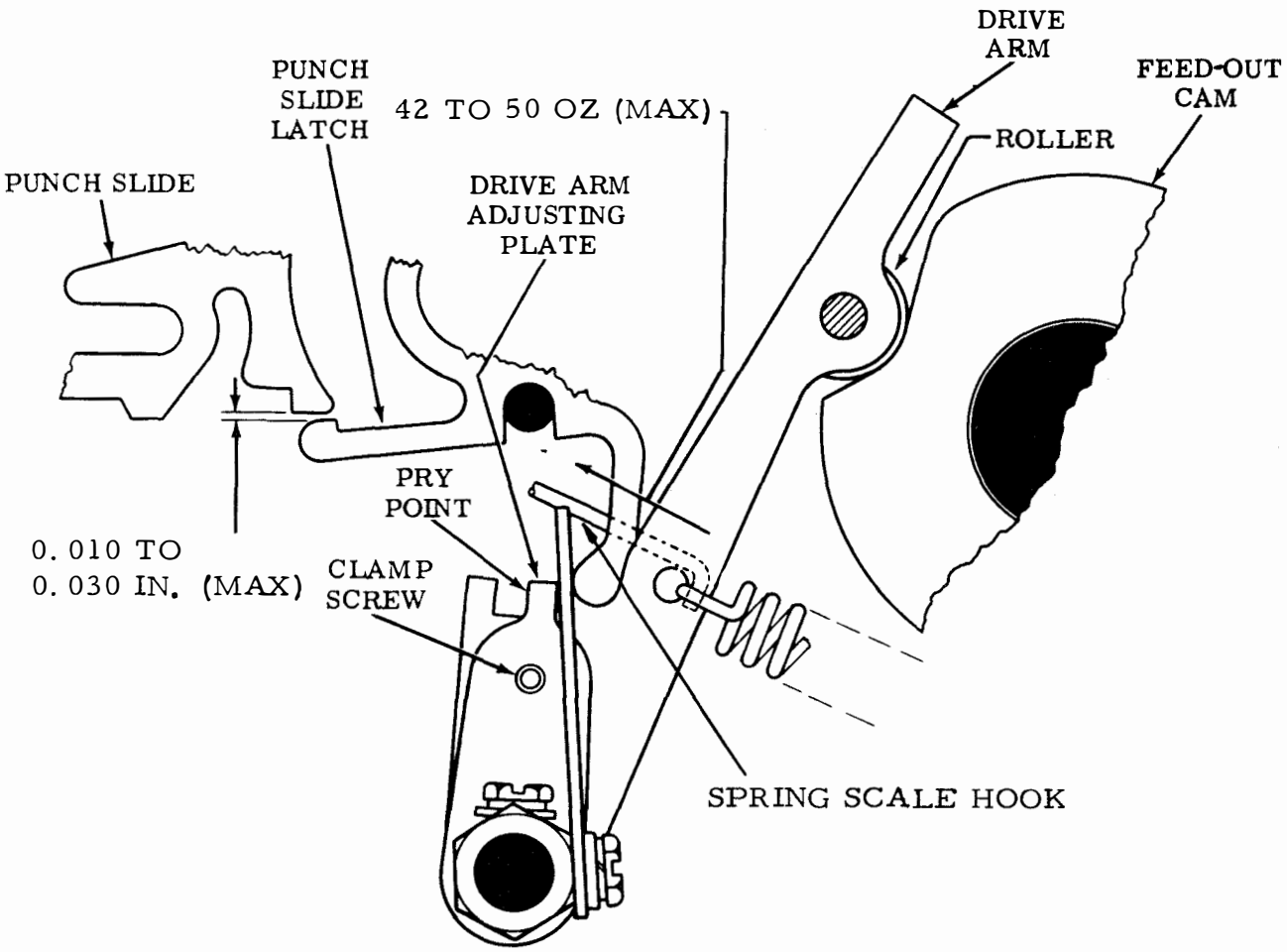


Figure 6-495. Drive Arm Spring and Punch Slide Latch, Reperforator, Front View

(c) If force does not match requirements, replace spring.

(23) Punch Slide Latch. Adjust as follows:

(a) Refer to Figure 6-495.

(b) Set up BLANK code combination (-----) in selector.

(c) Place unit in feed-out cycle, with ratchets advanced beyond time delay and drive arm on low part of its cam.

(d) Ensure that reset bail is tripped.

(e) There should be 0.010 to 0.030 inch maximum clearance between punch slide and punch slide latch at slide where clearance is least.

(f) To adjust, loosen clamp screw and position drive arm adjusting plate by means of pry point. Tighten clamp screw.

(24) Trip Cam Follower. Adjust as follows:

(a) Refer to Figure 6-496.

(b) With follower lever on high part of trip cam, clearance between release and main trip lever should be 0.010 to 0.030 inch maximum.

(c) There should be some clearance between main trip lever and downstop bracket.

(d) To adjust, loosen locknut and position adjusting arm by means of pry point. Tighten locknut.

(25) Adjusting Lever. Adjust as follows:

(a) Refer to Figure 6-496.

(b) Place unit in feed-out cycle by positioning release lever on lower step of latchlever and advancing high part of time delay cam beyond time delay lever.

(c) Position main shaft so that drive arm roller is on low part of cam.

(d) Clearance between main trip lever should be 0.010 to 0.030 inch maximum.

(e) There should be some clearance between main trip lever and downstop bracket.

(f) To adjust, loosen clamp screw and position adjusting lever, making sure adjusting lever rides fully on slide trip lever. Tighten clamp screw.

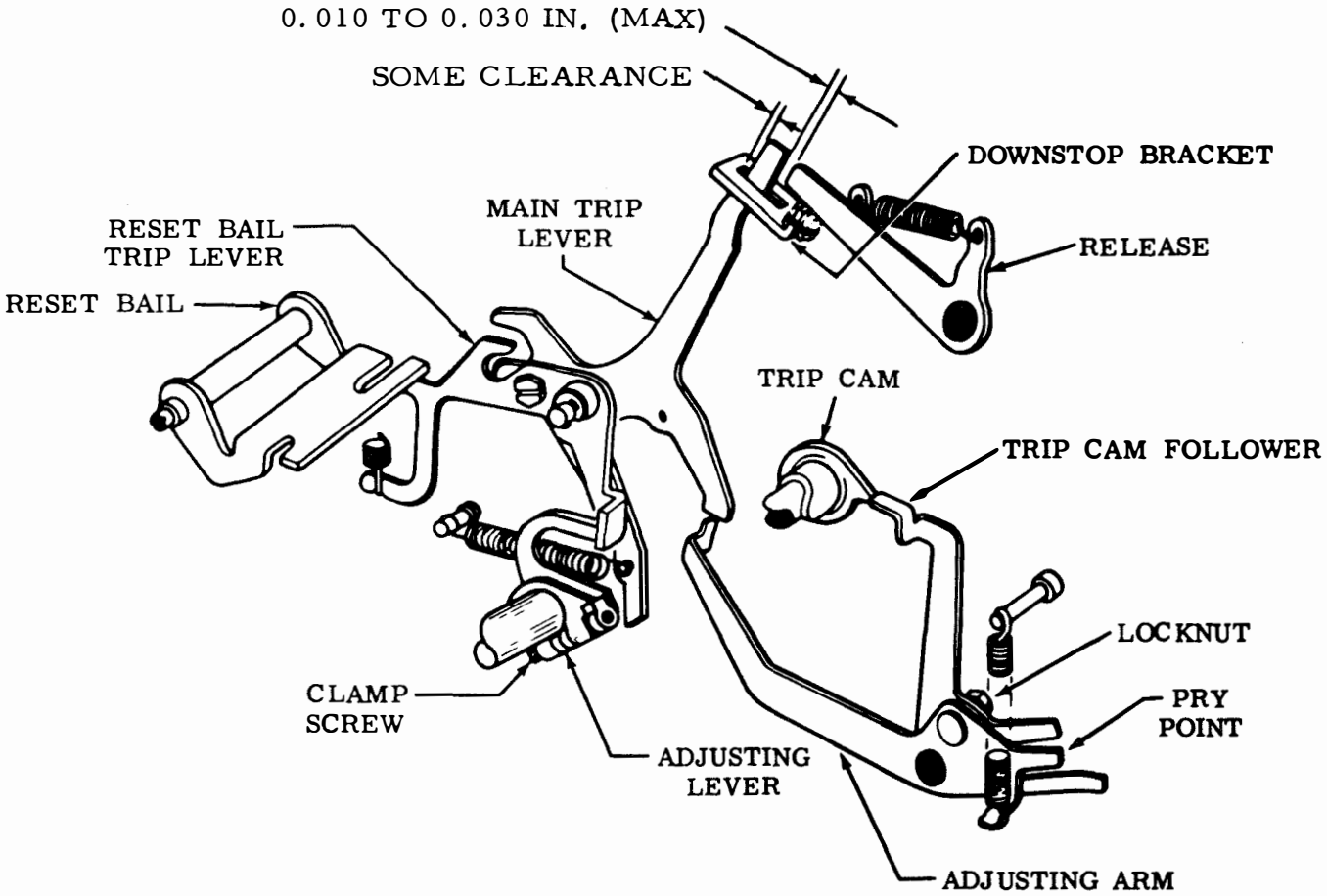
(26) Reset Bail Trip Lever. Adjust as follows:

(a) Refer to Figure 6-497.

(b) Select LETTERS code combination (12345) and rotate main shaft until function clutch trips.

(c) Position punch slides against downstop, with trip cam follower on high part of cam.

(d) Clearance between punch slide and reset bail should be 0.008 to 0.020 inch maximum.



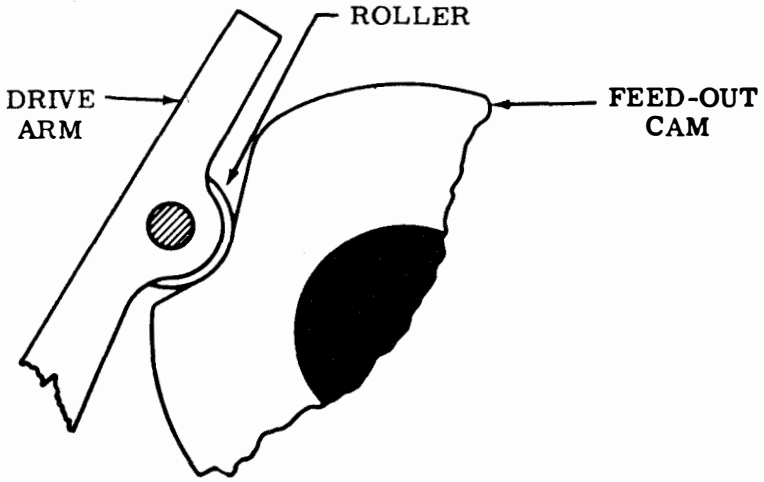


Figure 6-496. Trip Cam Follower and Adjusting Lever, Peperforator, Front View

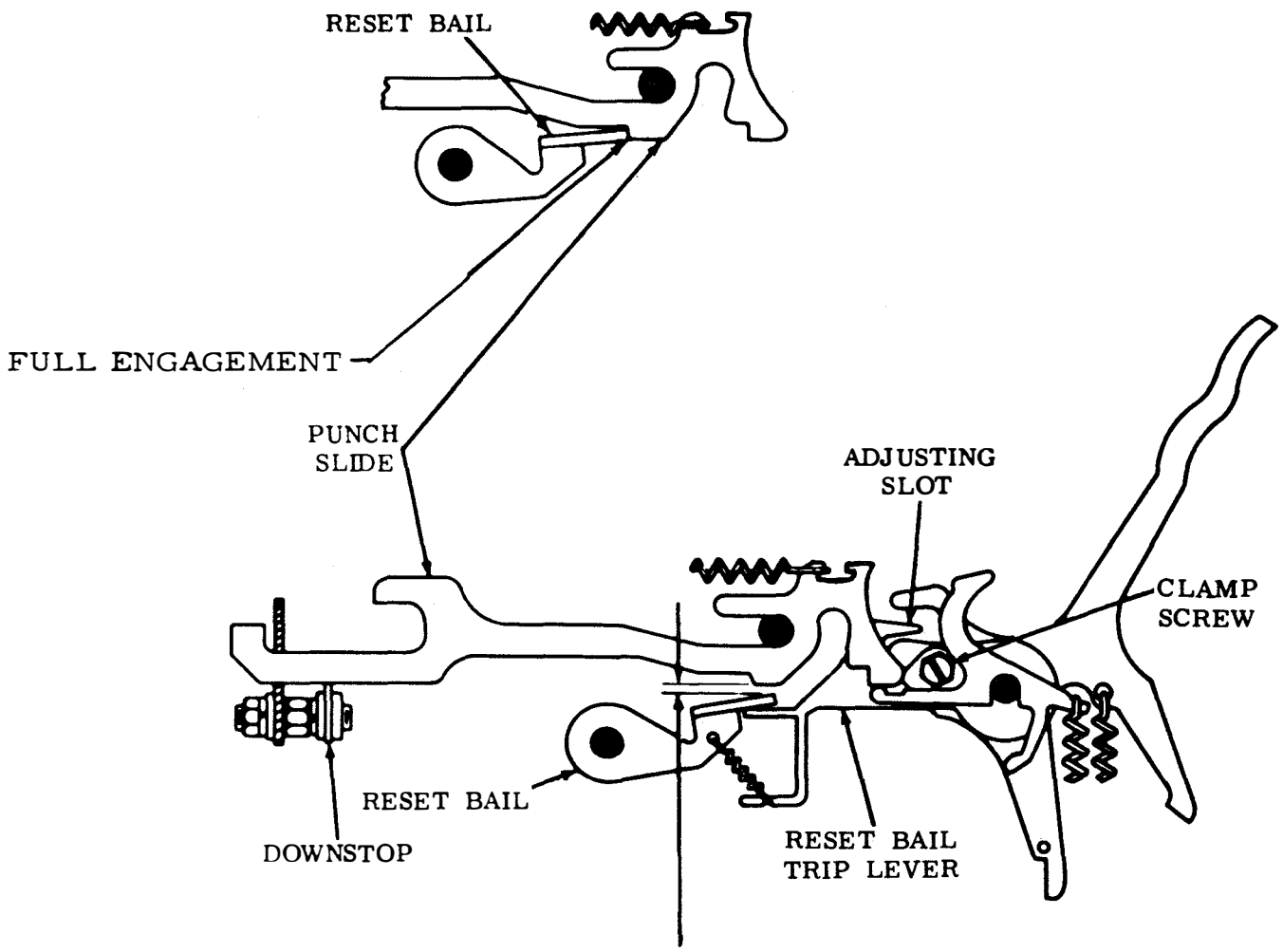


Figure 6-497. Reset Bail Trip Lever, Reperforator, Front View

(e) With clutches fully disengaged and latched, reset bail should fully engage notches in punch slides.

(f) To adjust, loosen clamp screw and position reset bail trip lever by means of adjusting slot. Tighten screw.

(27) Tape Length Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-498.

(b) Place unit in feed-out cycle by positioning release lever on lower step of latchlever.

(c) Advance ratches manually so that front ratchet is in tooth preceeding trip off.

(d) Rotate main shaft until feed pawl is at extreme left.

(e) Clearance between adjusting plate and latchlever projection should be 0.002 to 0.020 inch maximum.

(f) Operating under power, unit should feed out correct length of tape. Amount of tape can be set up for any length up to 18 inches.

(g) To adjust, loosen spring post friction tight and position adjusting plate. Tighten spring post.

(28) Blocking Link (Horizontal Clearance). Adjust as follows:

(a) Refer to Figure 6-499.

(b) With unit in STOP position and release lever in upper step of latchlever, manually trip function clutch.

(c) Clearance between right edge of punch slide reset bail and blocking link should be 0.005 to 0.018 inch maximum.

(d) With selector range scale set at 120, the blocking link should be centered between the clutch disk mounting screws and the selector stop arm bail.

(e) To adjust, loosen adjusting lever clamp screw and position blocking link. Tighten screw.

(29) Blocking Link Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-499.

(b) With unit in STOP position and release lever on lower step of latchlever, use spring scale to measure force necessary to start block link moving. This should require 25 to 45 grams maximum.

(c) If force does not match requirements, replace spring.

(30) Reset Bail Latch. Adjust as follows:

(a) Refer to Figure 6-500.

(b) For vertical clearance, select LETTERS code combination (12345), rotate main shaft until function clutch trips and punch slides are to extreme left.

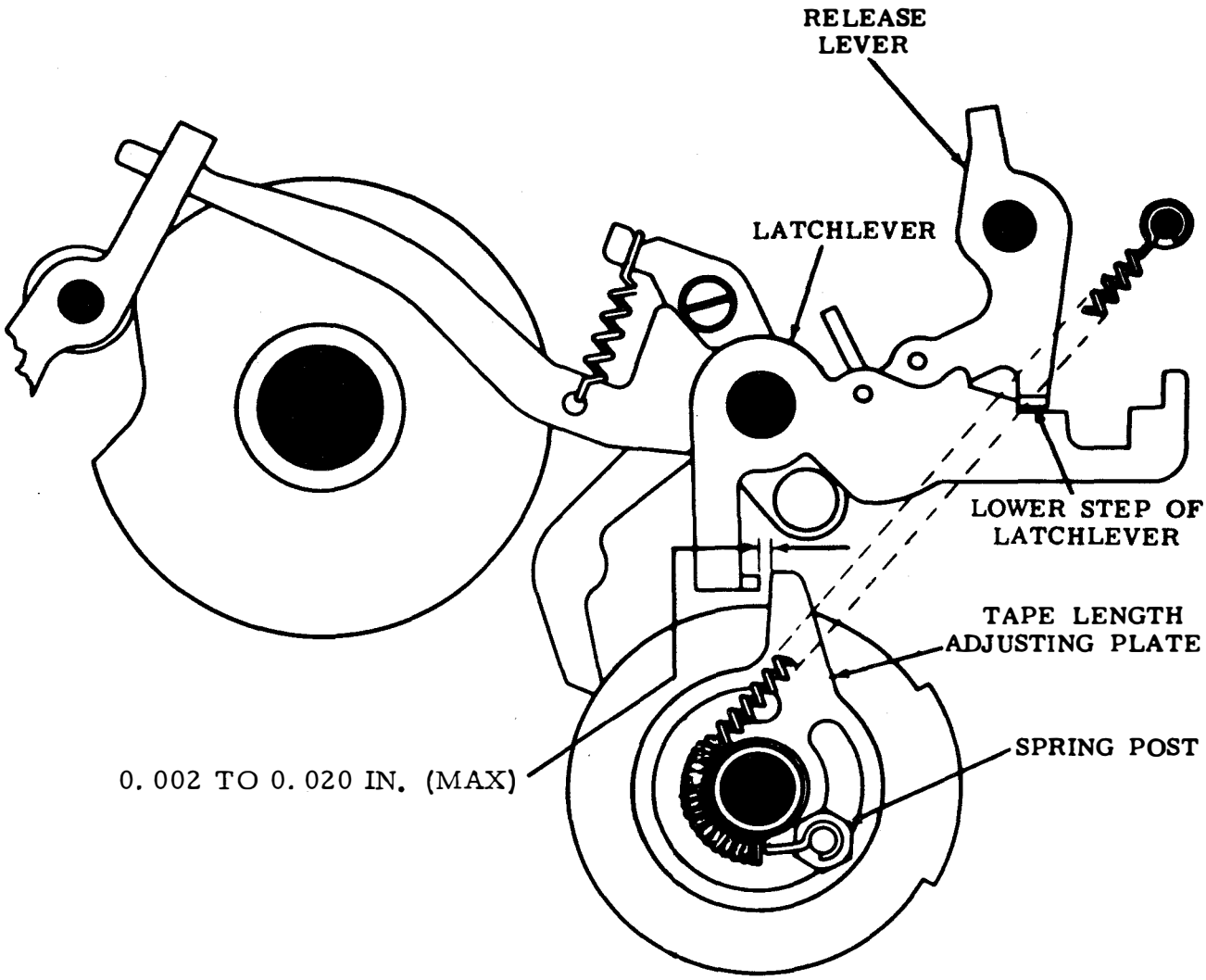


Figure 6-498. Tape Length Adjusting Plate, Reperforator, Front View

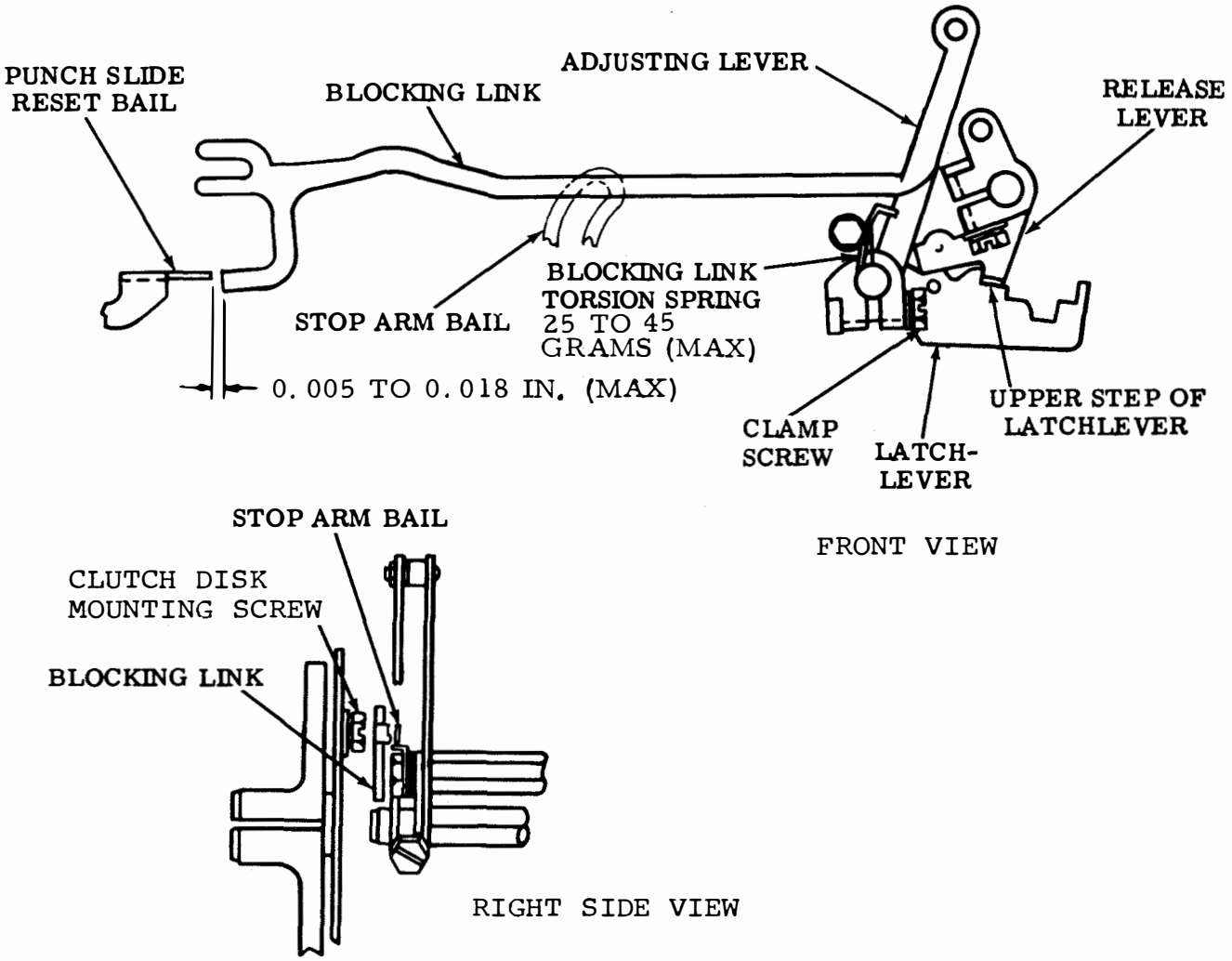


Figure 6-499. Blocking Link (Horizontal Clearance) and Blocking Link Torsion Spring, Reperforator

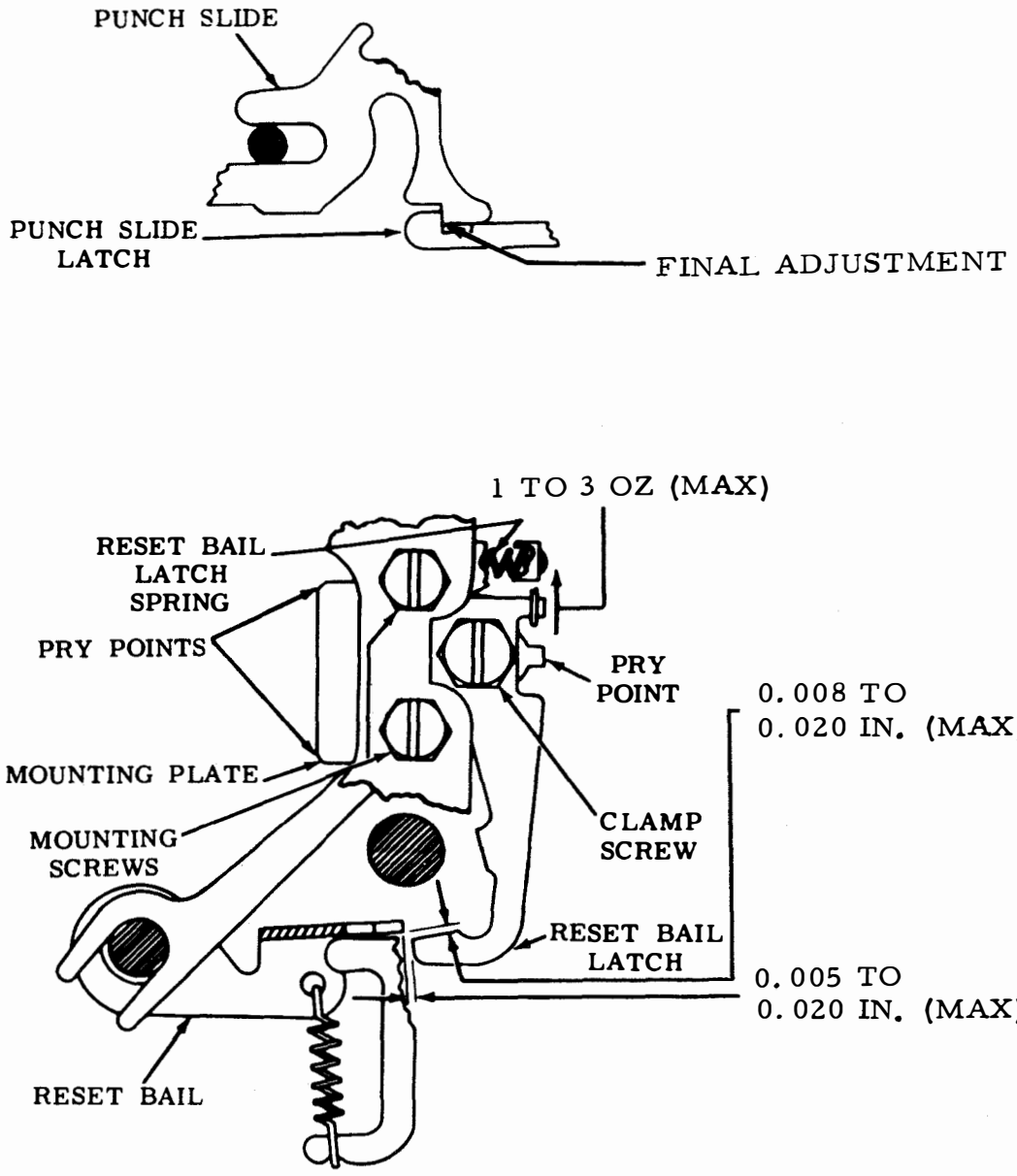


Figure 6-500. Reset Bail Latch and Bail Latch Spring, Reperforator, Front View

(c) Manually set up BLANK (-----) code combination in selector and rotate main shaft until punch slides are just latched.

(d) Clearance between reset bail and reset bail latch should be from 0.008 to 0.020 inch maximum.

(e) To adjust, loosen mounting screws and position mounting plate at pry points. Tighten screws.

(f) For horizontal clearance, disengage clutches.

(g) Clearance between reset bail and reset bail latch should be 0.005 and 0.020 inch maximum.

(h) To adjust, loosen clamp screw and position bail latch at pry points so latching surface is approximately at midpoint in thickness of reset bail. Tighten screws.

(i) Select LETTERS code combination (12345) and rotate main shaft until function clutch trips.

(j) Manually set up BLANK (-----) code combination and rotate main shaft to STOP position.

(k) Punch slides are latched by punch slide latches.

(l) To adjust, refine steps (b) through (h).

(31) Reset Bail Latch Spring. Adjsut as follows:

(a) Refer to Figure 6-500.

(b) With unit in STOP condition, use spring scale to measure force necessary to start reset bail latch moving. This should require 1 to 3 ounces maximum.

(c) If force does not match requirement, replace spring.

(32) Reset Bail Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-501.

(b) Disengage both clutches and trip function clutch by pivoting main trip lever counterclockwise.

(c) Hold reset bail trip lever up against reset bail.

(d) Attach spring scale hook to end of spring and measure force required to pull spring to installed length. This should be 18 to 24 ounces maximum.

(e) If requirement is not met, replace spring.

i. End of Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanism Adjustments. Perform the following feed-out mechanism adjustments.

(1) Contact Swinger (Preliminary). Adjust as follows:

(a) Refer to Figure 6-502.

(b) Use spring scale to measure force necessary to open normally-closed contact.

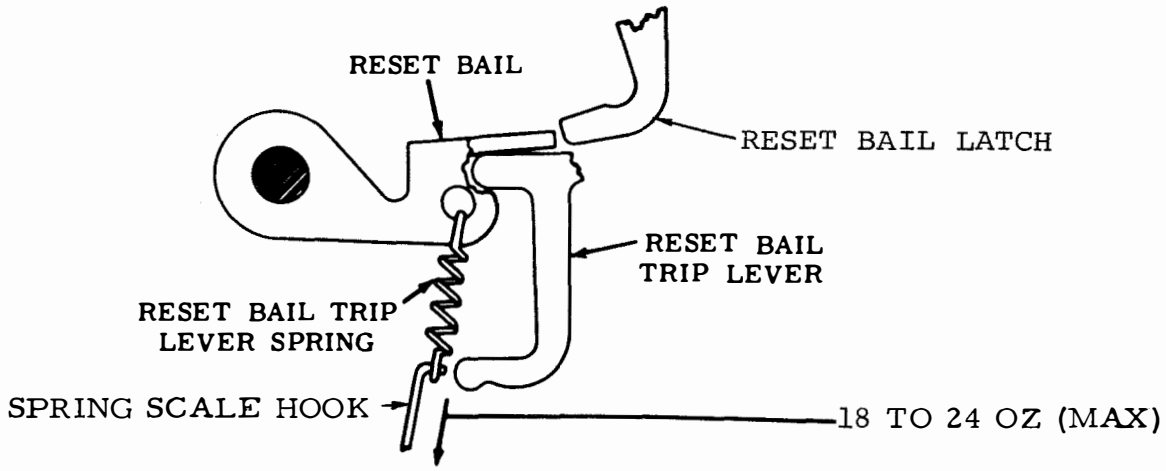


Figure 6-501. Reset Bail Trip Lever Spring, Reperforator, Front View

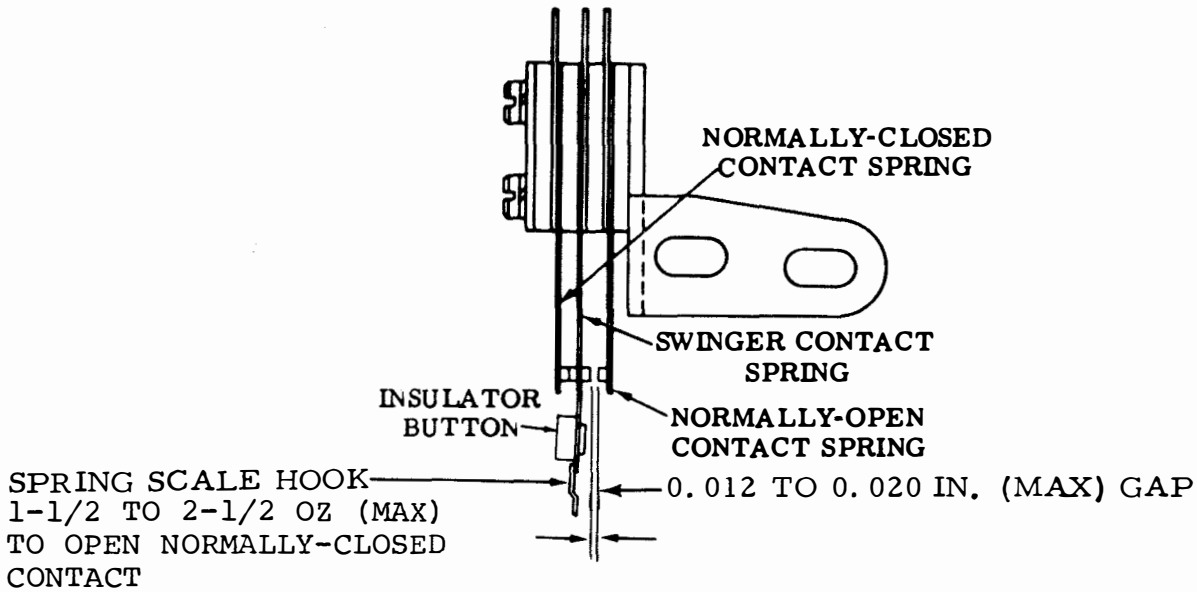


Figure 6-502. Contact Swinger and Contact Spring Gap (Preliminary), Reperforator, Front View

This should require 1-1/2 to 2-1/2 ounces maximum.

(c) To adjust, bend swinger.

(2) Contact Spring Gap (Preliminary). Adjust as follows:

(a) Refer to Figure 6-502.

(b) Normally-open contact gap should be 0.012 to 0.020 inch maximum.

(c) To adjust, bend contact spring.

(3) Contact Assembly. Adjust as follows:

(a) Refer to Figure 6-503.

(b) Insulator button on swinger should be centrally located in bail extension yoke.

(c) To adjust, loosen mounting screws and position contact assembly.

(d) Tighten screws.

(4) Tape Length Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-504.

(b) With unit in STOP position, BLANK (-----) combination selected, and release lever positioned on lower step of latchlever, manually advance ratchets so that feed pawl is in front ratchet tooth preceeding trip off.

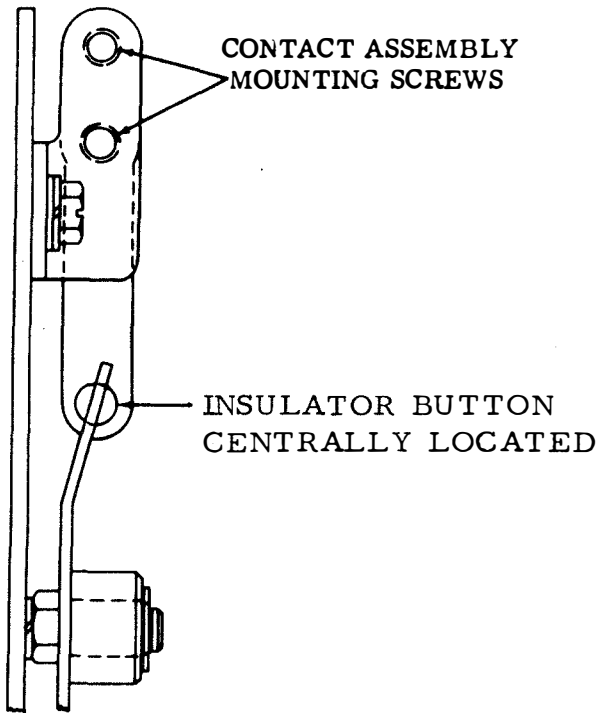


Figure 6-503. Contact Assembly, Reperforator, Right Side View

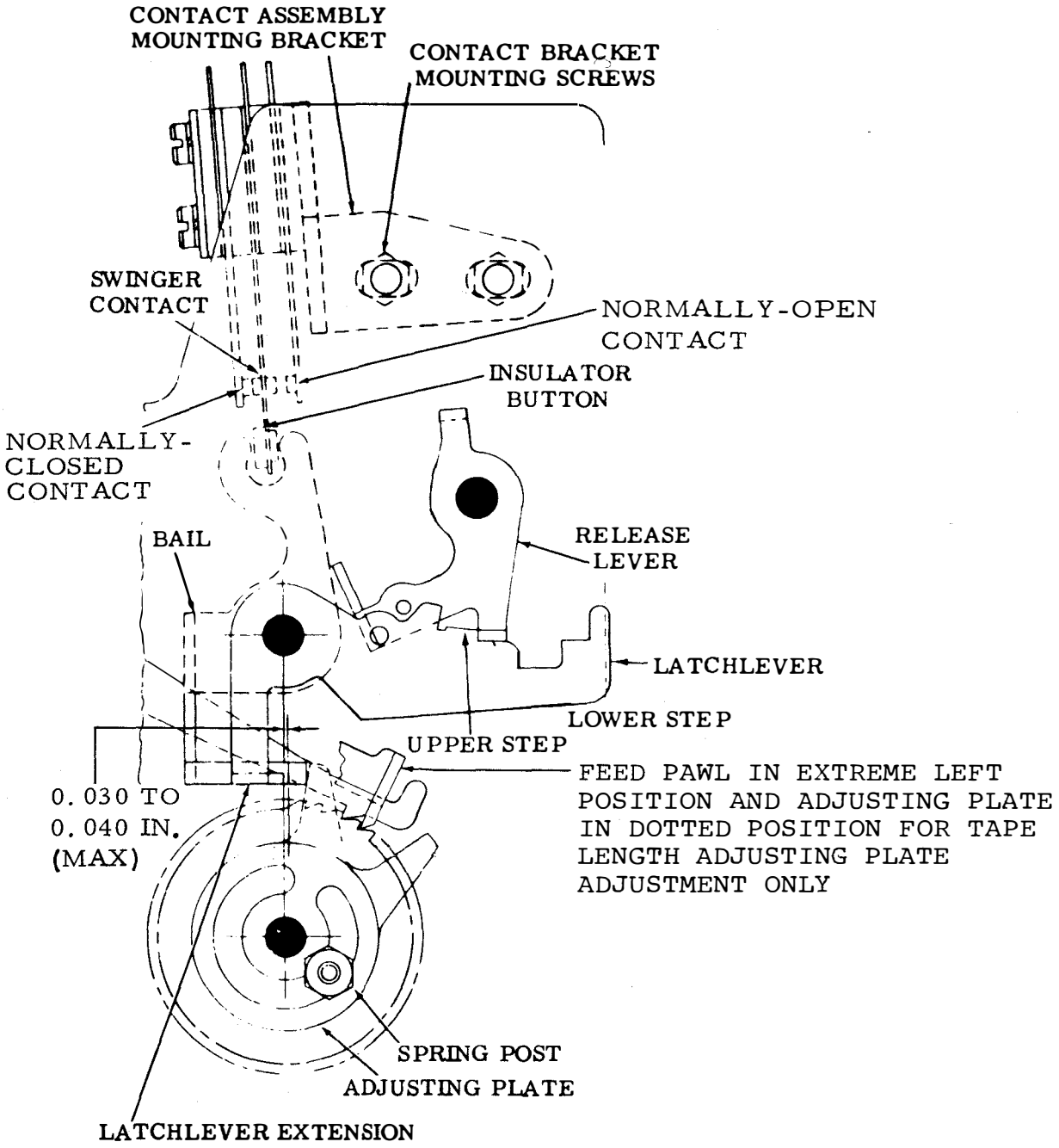


Figure 6-504. Tape length Adjusting Plate and Contact Assembly Mounting Bracket, Reperforator, Front View

(c) Turn main shaft until feed pawl is in extreme left position and hold bail against adjusting plate lightly.

(d) Clearance between bail and latchlever extension should be 0.030 to 0.040 inch maximum.

(e) When operating under power, unit should feed-out correct length of tape.

(f) To adjust, loosen spring post and position adjusting plate. Tighten spring post.

(5) Contact Assembly Mounting Bracket. Adjust as follows:

(a) Refer to Figure 6-504.

(b) Place unit in STOP position and place release lever on lower step of latchlever.

(c) Position bail so clearance is minimal.

(d) Clearance between latchlever extension and bail should be 0.030 to 0.040 inch maximum.

(e) To adjust, loosen mounting screws and position contact bracket. Tighten screws.

6-16. TRANSMITTER DISTRIBUTOR UNIT ADJUSTMENTS. The following paragraphs describe the variable features of transmitter distributor unit adjustment procedures.

a. Tight-Tape and Tape Shoe Mechanism Adjustments. Perform the following tight-tape and tape shoe mechanism adjustments.

(1) Tight-Tape Switch. Adjust as follows:

(a) Refer to Figure 6-505.

(b) Place control lever in RUN position.

(c) Raise tight-tape arm until tight-tape switch contacts open.

(d) Gap between tight-tape arm and tape guideplate flange should measure 9/32 to 13/32 inch maximum.

(e) If gap exceeds specified limits, loosen clamp screw and position tight-tape intermediate arm using adjusting slot.

(f) Tighten clamp screw.

(2) Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-506.

(b) Attach spring scale hook as shown in Figure.

(c) Force required to lift tape shoe should be not less than 2-1/2 ounces.

(d) If scale reading is less than specified limits, install new spring.

(3) Tape Shoe. Adjust as follows:

(a) Refer to Figure 6-506.

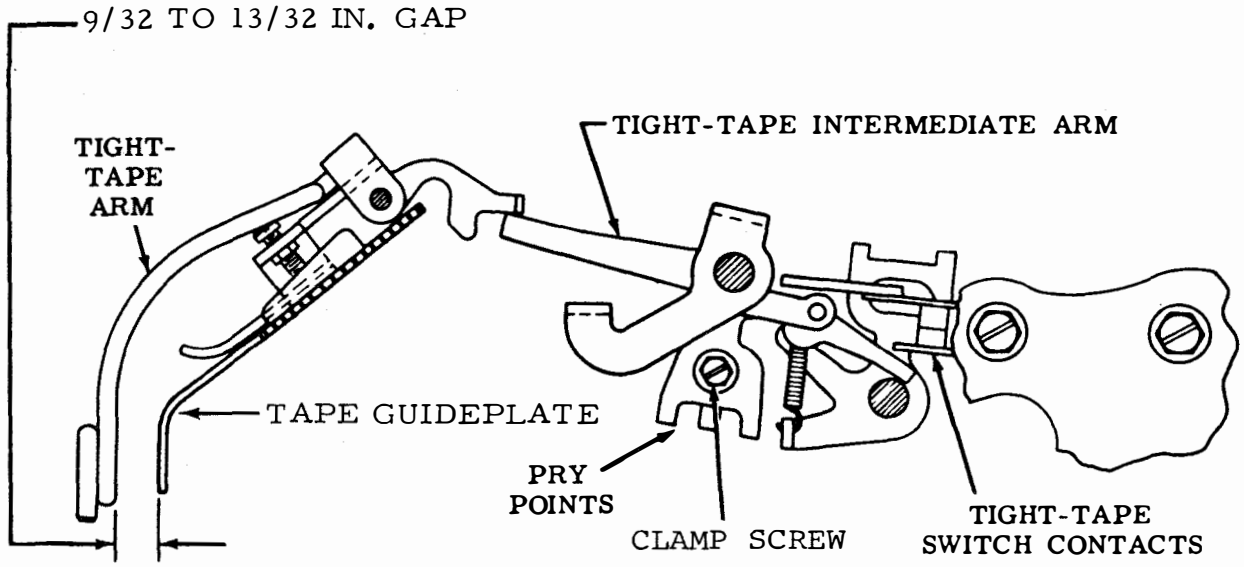


Figure 6-505. Tight-Tape Switch, Rear View

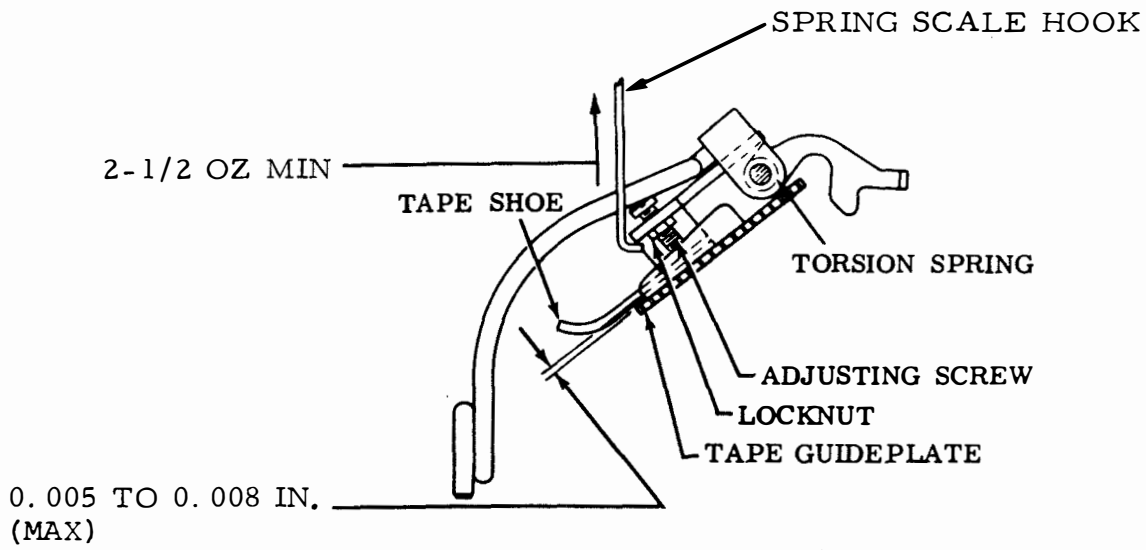


Figure 6-506. Torsion Spring and Tape Shoe, Rear View

(b) Latch tape lid in position.

(c) Clearance between tape guideplate and tape shoe should measure 0.005 to 0.008 inch maximum

(d) If clearance exceeds specified limits, loosen locknut and rotate adjusting screw.

(e) Tighten locknut.

b. Tape Feed Assurance Mechanism Adjustments. Perform the following tape feed assurance mechanism adjustments.

(1) Tape Sensing Feed Wheel Phasing. Adjust as follows:

(a) Refer to Figure 6-507.

(b) Place fresh fully perforated tape (10 holes per inch) on tape guideplate across feed wheel and tape feed assurance wheel.

NOTE

If tape is not available, use TP165800 gauge.

(c) Set detent adjusting lever screw at midrange.

(d) Ensure tape lies flat on tape guideplate between feed wheel and tape feed assurance wheel.

(e) If not, loosen bracket mounting screws friction tight and position bracket to meet requirement.

(f) Tighten bracket mounting screws.

(g) If necessary, refine adjustment by rotating detent lever adjusting screw.

(2) Tape Motion Contact Gap. Adjust as follows:

(a) Refer to Figure 6-507.

(b) Place detent lever in detented position.

(c) Gap between normally-closed contacts should measure 0.005 to 0.010 inch maximum.

(d) If gap exceeds specified limits, bend contact leaf and stiffener to meet requirement.

(e) Tape Motion Contact Swinger. Adjust as follows:

(a) Refer to Figure 6-507.

(b) Hold detent lever away from contact swinger.

(c) Attach spring scale hook to contact swinger and measure force required to separate contacts. This should be 15 to 25 grams maximum.

(d) If scale reading exceeds specified limits, bend swinger to meet requirement.

(e) Recheck step (2) above.

(4) Detent Lever Spring. Adjust as follows:

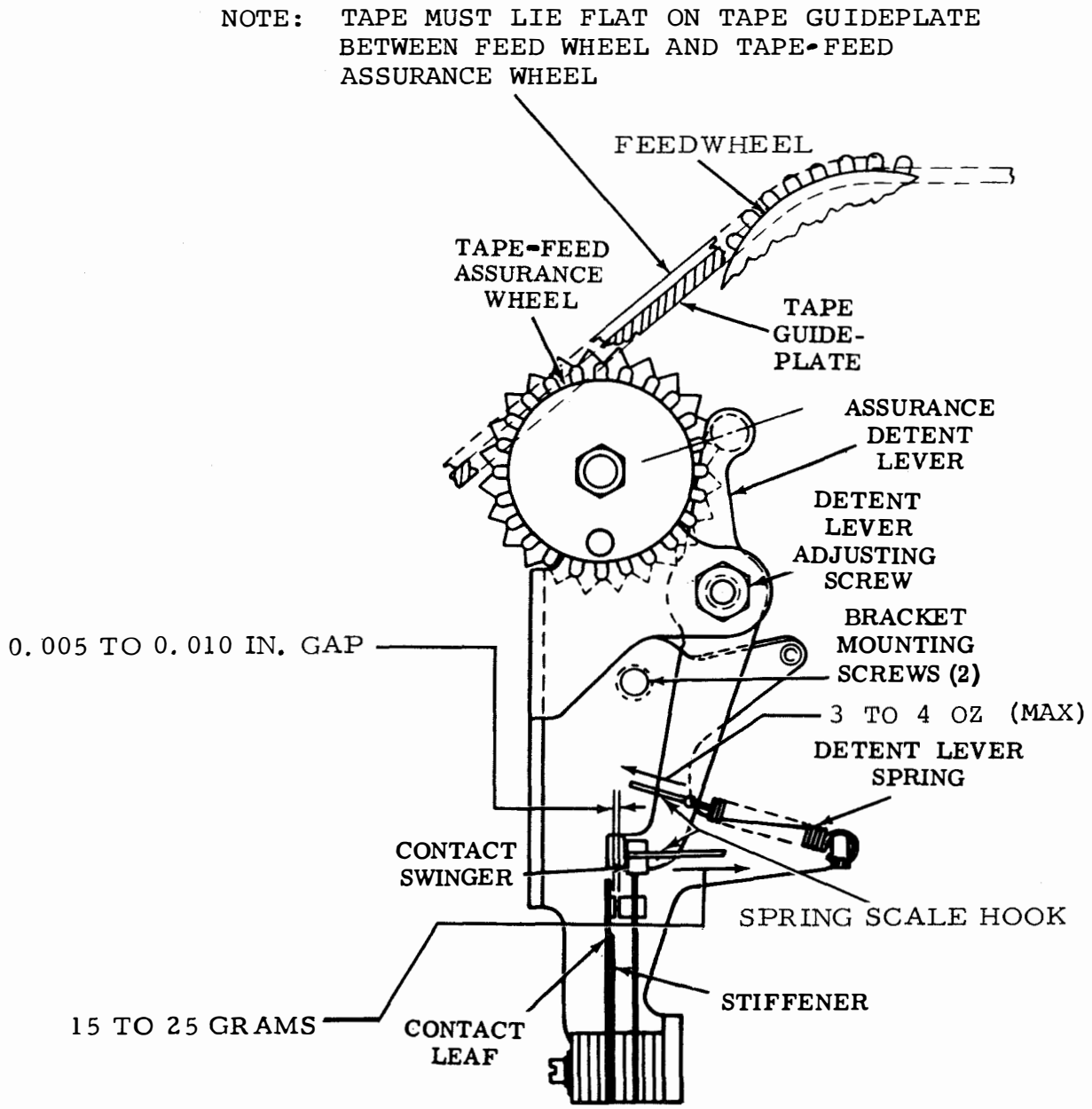


Figure 6-507. Tape Sensing Feed Wheel Phasing, Tape Motion Contact Gap, Tape Motion Contact Swinger, and Detent Lever Spring, Rear View

(a) Refer to Figure 6-507.

(b) Hold contact lever away from detent lever.

(c) Attach spring scale hook to contact lever and measure force required to move roller from ratchet. This should be 3 to 4 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

c. Tape-Out Mechanism Adjustments. Perform the following tape-out mechanism adjustments.

(1) Tape-Out Contact. Adjust as follows:

(a) Refer to Figure 6-508.

(b) Loosen contact bracket mounting screws.

(c) Pivot contact assembly until pad on tape-out pin extension is not touching swinger pad.

(d) Gap between normally-open (upper) contacts should measure 0.015 to 0.025 inch.

(e) If gap exceeds specified limits, bend upper contact spring to meet requirement.

(f) Return contact assembly to original position and tighten contact bracket mounting screws.

(g) Attach spring scale hook to swinger pad as shown in Figure.

(h) Force required to separate normally-closed (lower) contacts should be between 8 and 15 grams maximum.

(i) If scale reading exceeds specified limits, bend contact swinger to meet requirement. Recheck steps (b) through (e).

(j) Hold tape-out pin down, remove tape from unit, close tape lid, and place unit in RUN condition.

(k) With some clearance between tape-out pin extension and underside of contact swinger, gap between normally-closed contacts should measure 0.008 to 0.018 inch maximum.

(l) If gap exceeds specified limits, loosen contact bracket mounting screws and adjust contact mounting bracket to meet requirement.

(m) Tighten contact bracket mounting screws.

(2) Tape-Out Bail Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-508.

(b) Apply spring scale pushrod as shown in Figure.

(c) Force required to separate bail from tape-out pin should be between 8 and 12 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(3) Tape-Out Pin Spring. Adjust as follows:

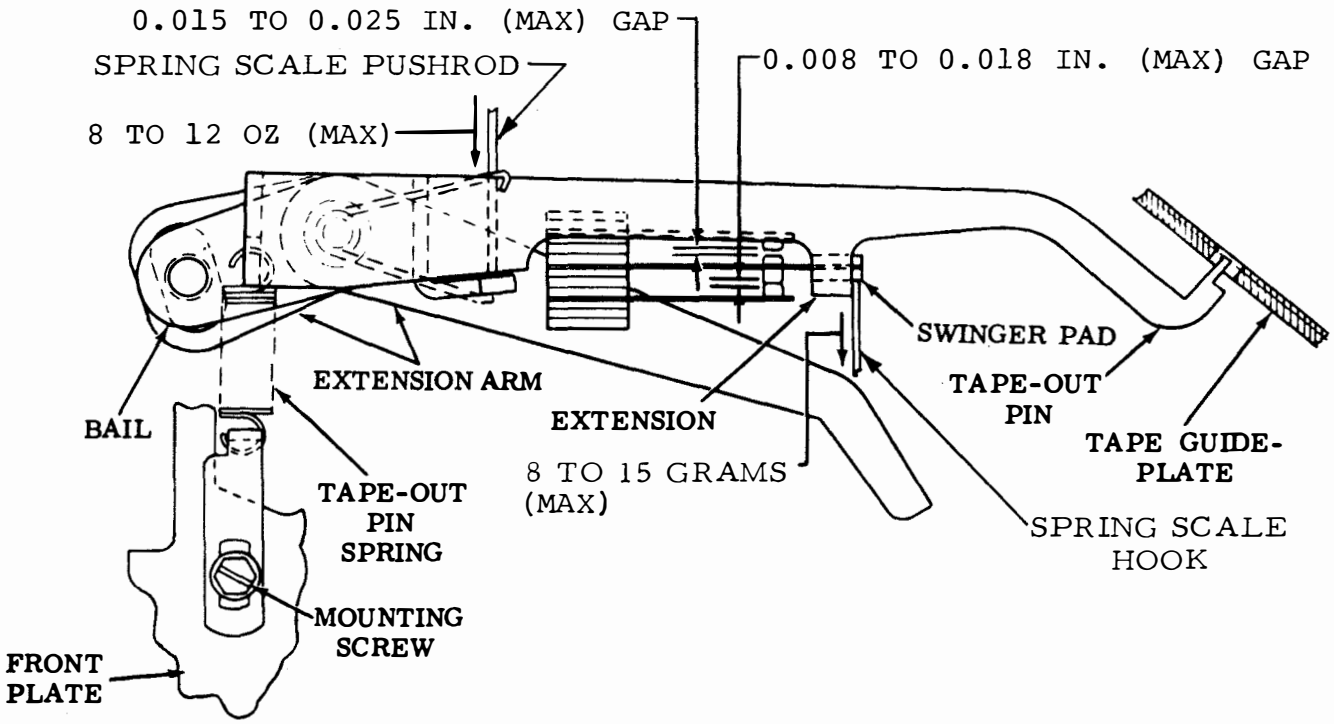


Figure 6-508. Tape-Out Contact and Tape-Out Bail torsion Spring, Front View

(a) Refer to Figure 6-509.

(b) Remove tape and open tape lid.

(c) Apply spring scale pushrod to edge of tape-out pin.

(d) Force required to press tape-out pin flush with tape guideplate should measure 1/2 to 1 ounce maximum.

(e) If scale reading exceeds specified limits, install new spring.

(4) Tape-Out Pin. Adjust as follows:

(a) Refer to Figure 6-509.

(b) Place control lever in either FREE or STOP position.

(c) Tape-out pin should be flush with surface of tape guideplate or 0.010 inch maximum below surface of tape guideplate.

(d) If position of tape-out pin is not as specified, place control lever in STOP position and loosen screw which holds stop arm to bracket with posts. Adjust stop arm to bring tape-out pin position within requirement.

(e) Tighten screw.

d. Code Reading Contacts Adjustments. Perform the following code reading contacts adjustments.

NOTE

Remove code reading contact assembly from transmitter distributor unit before making initial adjustments, paragraphs (1) through (4) below. When using contact spring bender, start with contact pile-up farthest from handle of tool and work toward the handle so as not to disturb adjustments already made.

(1) Normally-Closed Contacts - Backstop. Adjust as follows:

(a) Refer to Figure 6-510.

(b) Ensure lower contact leaves for all levels are parallel with mounting plate and aligned with each other.

(c) If necessary, bend backstop to meet requirement.

(2) Normally-Closed Contacts - Spring. Adjust as follows:

(a) Refer to Figure 6-511.

(b) Hold swinger away from lower contact leaf using spring scale hook.

(c) Apply spring scale pushrod to lower contact leaf.

(d) Force required to move lower contact leaf away from its backstop should measure 2 to 6 ounces maximum.

(e) Bend lower leaf to meet requirement.

(f) Release swinger to allow normally-closed contacts to close.

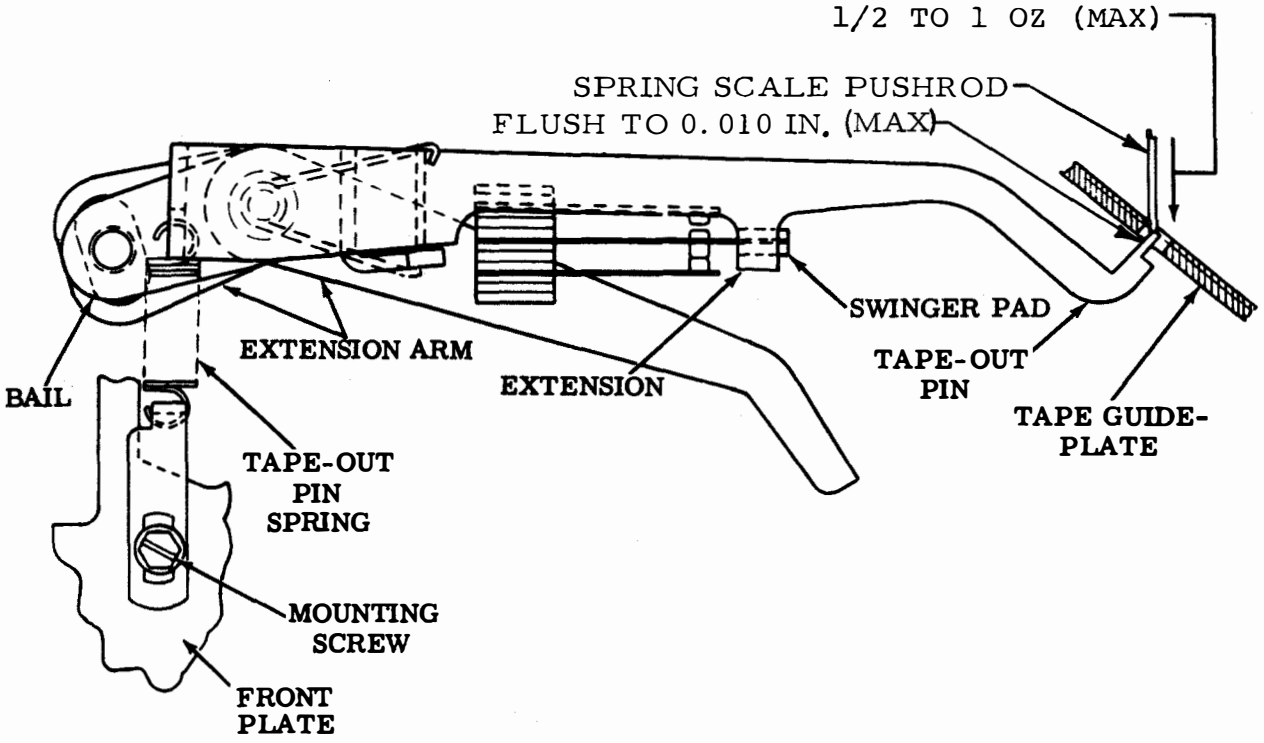


Figure 6-509. Tape-Out Pin Spring and Tape-Out Pin, Front View

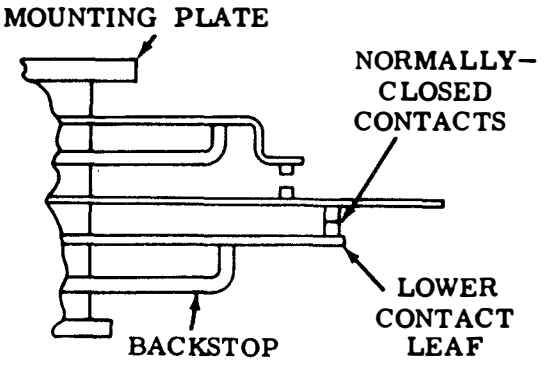


Figure 6-510. Normally-Closed Contacts - Backstop, Front View

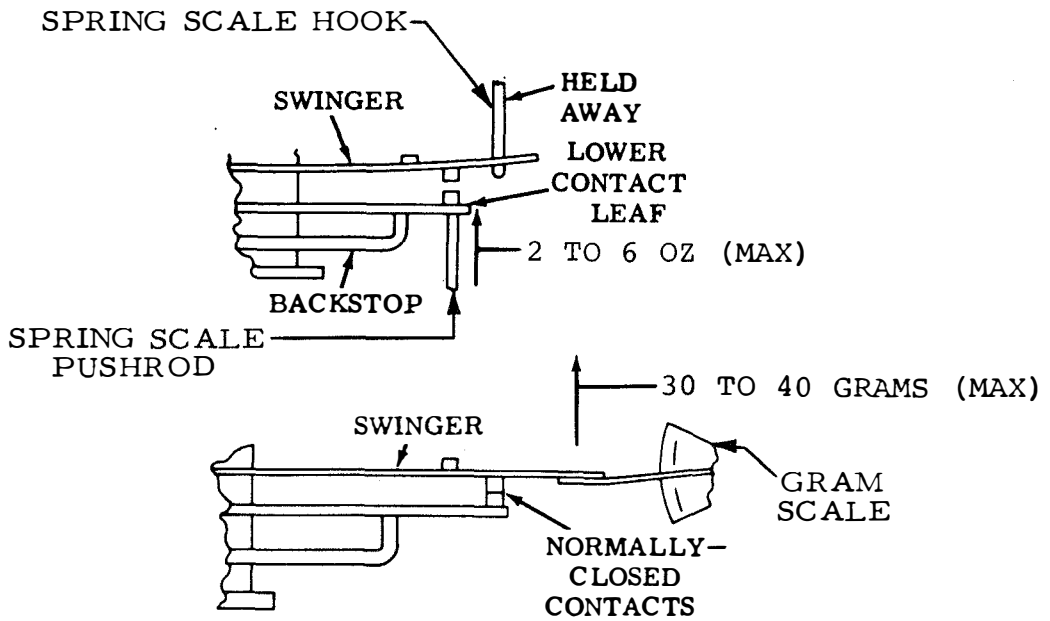


Figure 6-511. Normally-Closed Contacts - Spring, Front View

(g) Apply gram scale to swinger.

(h) Force required to open normally-closed contacts should measure 30 to 40 grams maximum.

(i) Bend swinger to meet requirement.

NOTE

If it is necessary to bend backstop to obtain required tension, repeat Normally-Closed Contact - Backstop adjustment, paragraph (1) above.

(3) Normally-Open Contact - Gap. Adjust as follows:

(a) Refer to Figure 6-512.

(b) Gap between normally-open contact should measure 0.010 to 0.015 inch maximum.

(c) Bend upper contact leaf backstop to obtain specified gap.

(4) Normally-Open Contact - Spring. Adjust as follows:

(a) Refer to Figure 6-512.

(b) Apply gram scale to normally-open contact.

(c) Force required to move normally-open contact away from backstop should measure 30 to 40 grams maximum.

(d) Bend upper contact leaf to meet requirement.

NOTE

If it is necessary to bend backstop to obtain specified tension perform Normally-Open Contact - Gap adjustment, paragraph (3) above.

(5) Contact Assembly Positioning. Adjust as follows:

NOTE

Replace code reading contact assembly in transmitter distributor and place contact assembly bracket approximately centered in its adjustment range before making secondary adjustments, paragraph (5) through (11). Remove contact box to facilitate adjustments.

(a) Refer to Figure 6-513.

(b) Ensure each swinger is aligned with its sensing arm as gauged by eye.

(c) If any swinger is misaligned, loosen pile-up mounting screws and position pile-up so that swinger is in alignment with its sensing arm.

(d) Tighten pile-up mounting screws.

(6) Contact Swinger - Sensing Arm Clearance. Adjust as follows:

(a) Refer to Figure 6-514.

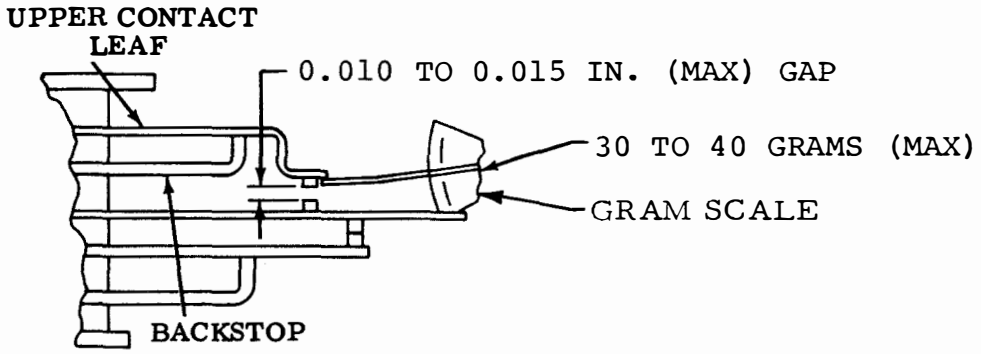


Figure 6-512. Normally-Open Contacts - Gap and Normally-Open Contacts - Spring, Front View

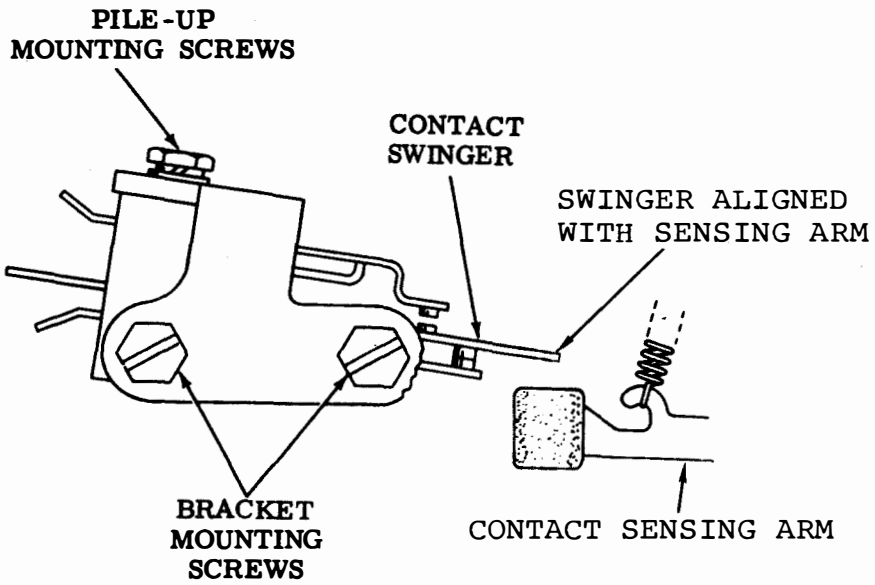


Figure 6-513. Contact Assembly Positioning, Front View

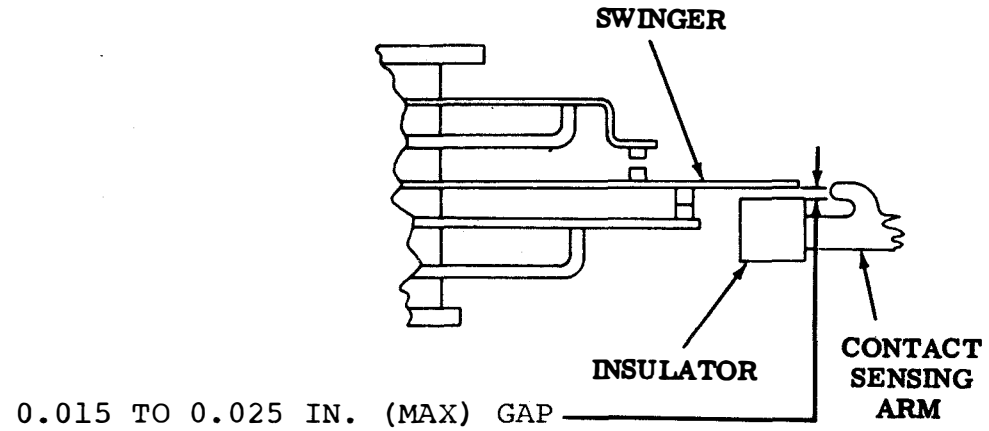


Figure 6-514. Contact Swinger - Sensing Arm Clearance, Front View

(b) Place upstop post out of the way and sensing arms in their uppermost positions.

(c) Select BLANK combination (-----).

(d) Gap between contact assembly swinger and insulator on contact sensing arm should measure 0.015 to 0.025 inch maximum.

(e) If gap exceeds specified limits loosen contact bracket mounting screws and position bracket to meet requirement.

(f) Tighten contact bracket mounting screws.

(7) Contact Sensing Arm - Upstop Clearance. Adjust as follows:

(a) Refer to Figure 6-515.

(b) Rotate main shaft until sensing arms are in their highest positions and engage clutch.

(c) Select a LETTERS combination (12345).

(d) Clearance between upper contact leaf and its backstop should measure some to 0.008 inch maximum.

(e) If there is no clearance or clearance exceeds specified limit, loosen nut that holds eccentric upstop to front plate. Turn eccentric to meet requirement keeping high part of eccentric toward the left.

(f) Tighten eccentric nut.

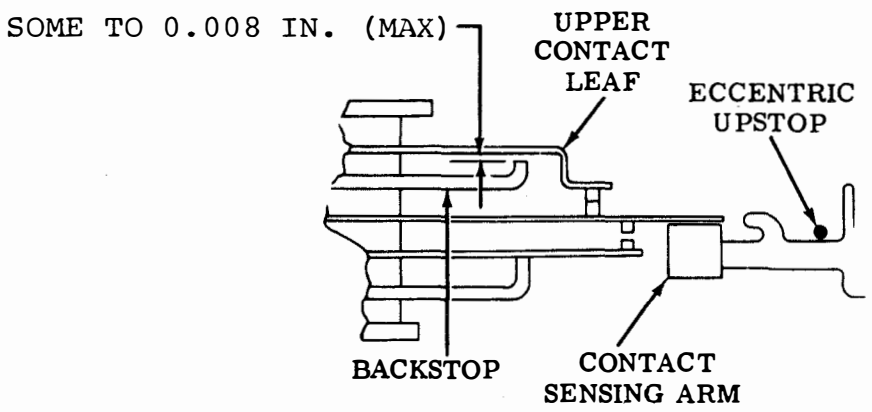


Figure 6-515. Contact Sensing Arm - Upstop Clearance, Front View

(8) Sensing Arm - Transfer Lever Alignment. Adjust as follows:

(a) Refer to Figure 6-516.

(b) Trip clutch.

(c) Select BLANK combination (-----).

(d) Ensure each sensing arm engages at least 2/3 of its associated transfer lever as gauged by eye.

(e) If engagement is not as specified, add TP8896 shims between plate assembly and split bail spacer to meet requirement. Store remaining shims under flat washer at end of split bail eccentric screw.

(9) Sensing Arm Spring. Adjust as follows:

(a) Refer to Figure 6-516.

(b) Disengage clutch.

(c) Apply spring scale pushrod to sensing arm.

(d) Force required to start sensing arm moving should measure 2-1/2 to 3-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(10) Split Bail Eccentric. Adjust as follows:

(a) Refer to Figure 6-516.

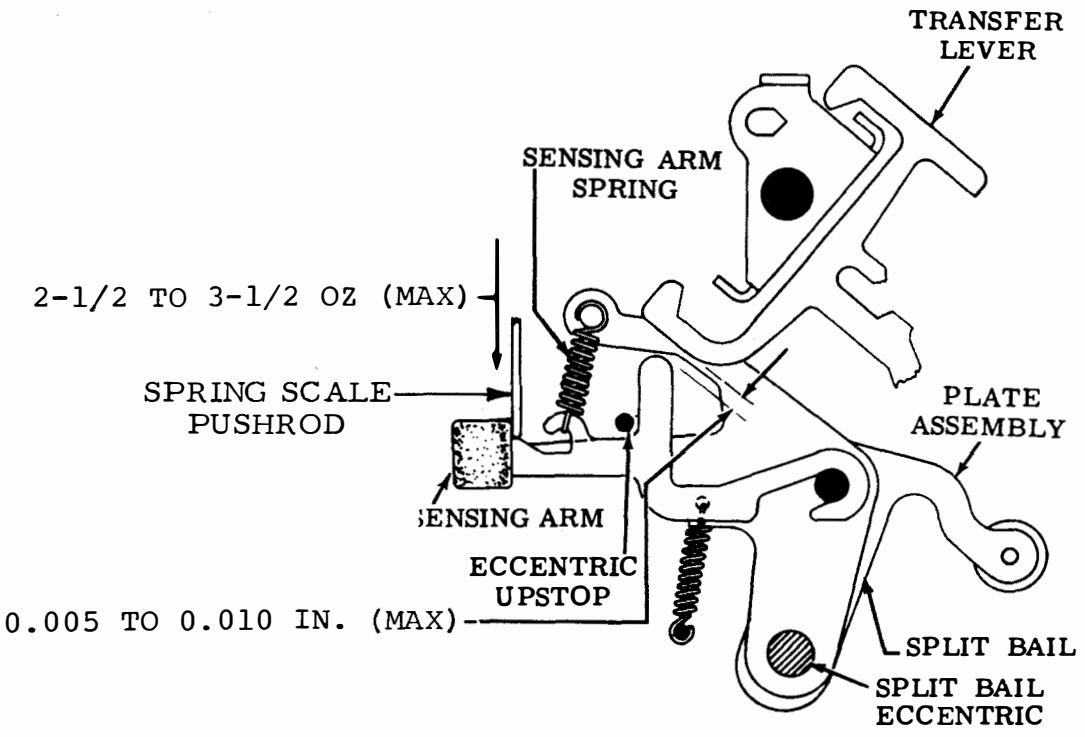


Figure 6-516. Sensing Arm - Transfer Lever Alignment, Sensing Arm Spring and Split Bail Eccentric, Front View

(b) Trip clutch.

(c) Select BLANK combination (-----).

(d) Clearance between closest transfer lever and its associated sensing arm should measure 0.005 to 0.010 inch maximum.

(e) If clearance exceeds specified limits, loosen split bail eccentric locknut and rotate split bail eccentric to meet requirement.

(f) Tighten locknut.

(11) Contact Swinger - Sensing Arm Clearance (Strobing). Adjust contact swinger - sensing arm clearance (strobing) as follows:

NOTE

When strobing the code reading contacts, use a DXD scale whose unit corresponds to that of the unit being checked. Refer to Table 6-5, Contact Operating Requirements (contact swinger - sensing arm clearance). Synchronize the signal generator on the transmitter distributor unit with the DXD so that the end of the stop pulse image is in line with the end of the stop pulse on the DXD scale when transmission is continuous. Use a normal signal line direct current of 60 milliampere ±10 percent or 20 milliampere ±10 percent to strobe the contacts.

(a) Ensure contacts open and close within the range specified in Table 6-5.

(b) Ensure breaks in pulses are confined to first and last 10 divisions of the trace.

(c) If requirements in steps (a) or (b) are not met, loosen contact bracket mounting screws.

(d) Position bracket to meet requirement and tighten mounting screws.

NOTE

After making this adjustment, check clearance between contact swinger and insulator on contact sensing arm when BLANK combination (-----) has been selected and main shaft is rotated to place sensing arms in their highest position. There must be some clearance. If requirement cannot be met, recheck paragraphs (1) through (4).

e. Auxiliary Contacts Adjustments. Perform the following auxiliary contacts adjustments.

NOTE

Make initial adjustments with auxiliary contacts removed from transmitter distributor unit, paragraphs (1) and (2), below.

(1) Normally-Open Contacts. Adjust as follows:

(a) Refer to Figure 6-517.

Table 6-5. Contact Operating Requirements (Contact Swinger - Sensing Arm Clearance)

		Beginning Pulse			End of Pulse			
Levels	Unit Code	Scale Segment	Scale (Div)	Tolerance (Div)	Scale Segment	Scale (Div)	Tolerance (Div)	Max Pulse Length Osc (Div)
5	7.00	Pulse 1	25	±20	Pulse 5	15	±20	3
5	7.42	Pulse 1	30	±20	Pulse 5	40	±20	3
6	8.50	Pulse 0	45	±25	Pulse 5	5	±25	4

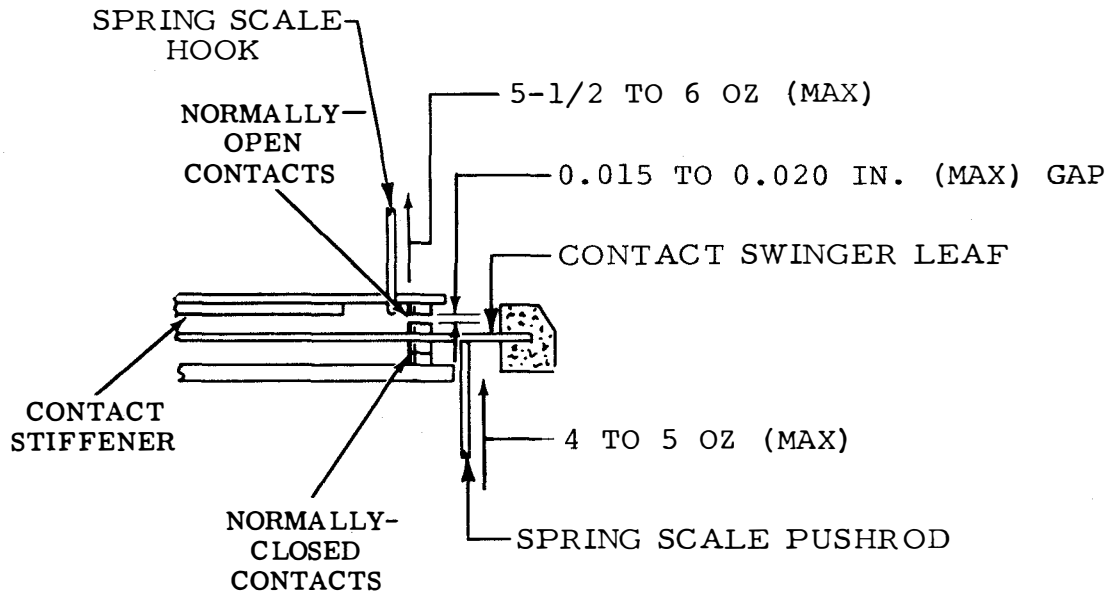


Figure 6-517. Normally-Open and Normally-Closed Contacts, Front View

(b) Attach spring scale hook to normally-open contact leaf.

(c) Force required to move contact leaf away from stiffeners should be between 5-1/2 and 6 ounces maximum.

(d) If scale reading exceeds specified limits, bend normally-open contact leaf to meet requirement.

(e) Gap between normally-open contacts should measure 0.015 to 0.020 inch maximum.

(f) If gap exceeds specified limits, bend contact stiffener to meet requirement.

(2) Normally-Closed Contacts. Adjust as follows:

(a) Refer to Figure 6-517.

(b) Apply spring scale pushrod to contact swinger.

(c) Force required to open normally-closed contacts should be between 4 and 5 ounces maximum.

(d) If scale reading exceeds specified limits, bend contact swinger leaf to meet requirement.

NOTE

Make secondary adjustments with auxiliary contacts installed in transmitter distributor unit, paragraph (3) through (4), below.

(3) Contact Sensing Arm. Adjust as follows:

(a) Refer to Figure 6-518.

(b) Disengage and latch clutch.

(c) Ensure swinger insulator is centrally positioned with respect to its operating bail.

(d) If insulator is not centrally positioned, loosen contact assembly screws and position swinger and contact springs to meet requirement.

(e) Tighten contact assembly screws.

(f) Clearance between swinger insulator and bail should measure 0.040 to 0.050 inch maximum.

(g) If clearance exceeds specified limits, loosen contact bracket mounting screws and position contact bracket to meet requirement.

(h) Tighten contact bracket mounting screws.

(4) Auxiliary Contact Operating Bail Spring. Adjust as follows:

(a) Refer to Figure 6-518.

(b) Disengage clutch.

(c) Disconnect end of auxiliary contact operating bail spring farthest from operating bail.

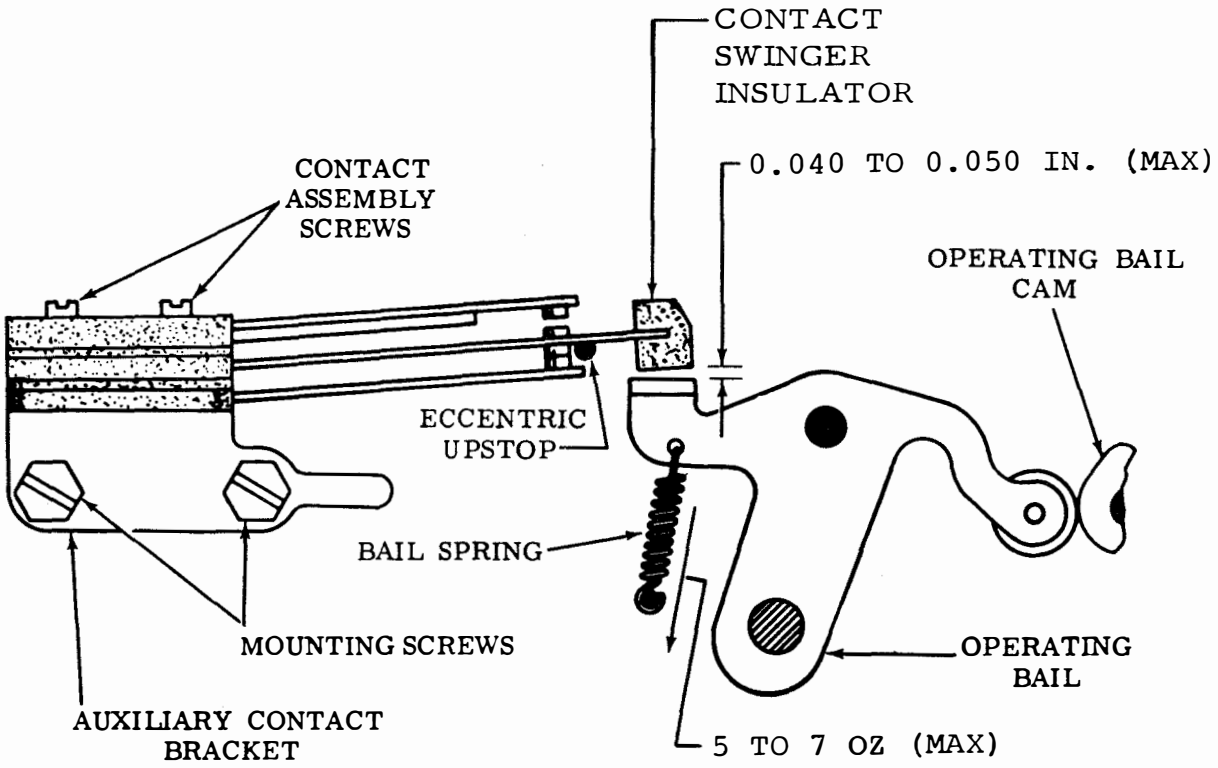


Figure 6-518. Contact Sensing Arm and Auxiliary Contact Operating Bail Spring, Front View

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to its installed length should be between 5 and 7 ounces.

(f) If requirement is not met, install new spring.

(g) Reconnect free end of spring.

(5) Contact Swinger - Operating Bail Clearance. Adjust contact swinger - operating bail clearance as follows:

NOTE

When strobing the auxiliary contacts, use a DXD scale whose unit corresponds to that of the unit being checked. Refer to Table 6-6, Contact Operating Requirements (contact swinger - operating bail clearance). Synchronize the signal generator on the transmitter distributor unit with the DXD so that the end of the stop pulse image is in line with the end of the stop pulse on the DXD scale when transmission is continuous. Use a normal signal line direct current of 60 milliampere ±10 percent or 20 milliampere ±10 percent to strobe the contacts.

(a) Ensure contacts open and close within the range specified in Table 6-6.

(b) If contacts do not open and close within the

Table 6-6. Contact Operating Requirements (Contact Swinger - Operating Bail Clearance)

Beginning Pulse					End of Pulse		
Levels	Unit Code	Scale Segment	Scale (Div)	Tolerance (Div)	Scale Segment	Scale (Div)	Tolerance (Div)
5	7.00	Pulse 1	65	±15	Pulse 4	65	±15
5	7.42	Pulse 1	75	±15	Pulse 4	90	±15
6	8.50	Pulse 1	0	±20	Pulse 4	60	±20

specified range, loosen contact bracket mounting screws.

(c) Position bracket to meet requirement and tighten mounting screws.

f. Tape Lid Sensing Lever Adjustments. Perform the following tape lid sensing lever adjustments.

(1) Switch Lever Spring. Adjust as follows:

(a) Refer to Figure 6-519.

(b) Open tape lid.

(c) Apply spring scale pushrod to switch lever.

(d) Force required to separate switch lever from contact swinger pad should be between 20 and 35 grams maximum.

(e) If scale reading exceeds specified limits, install new spring.

(2) Switch Lever. Adjust as follows:

(a) Refer to Figure 6-519.

(b) Open tape lid and depress tape-out sensing pin.

(c) Gap between normally-closed tape-out switch contacts should measure 0.005 to 0.035 inch maximum.

(d) If gap exceeds specified limits, loosen adjustment screw.

(e) Seat tape lid sensing lever firmly against tape guideplate and rotate switch lever clockwise or counterclockwise as necessary to meet requirement.

(f) Tighten adjustment screw.

g. Tape Deflector Adjustments. Perform the following tape deflector adjustments.

(1) Tape Deflector Bracket. Adjust as follows:

(a) Refer to Figure 6-520.

(b) Place unit in operating position.

(c) Ensure deflector tang is positioned centrally in its hole in top plate.

(d) If tang is not in center of hole, remove rear screw which holds tape deflector spring to cover.

(e) Loosen forward screw and position tape deflector.

(f) Replace rear screw and tighten both forward and rear screws.

(2) Tape Deflector Spring. Adjust as follows:

(a) Refer to Figure 6-520.

(b) Attach spring scale hook over deflector.

(c) Force required to start deflector moving from its operating position should measure 1-1/2 to 4 ounces maximum.

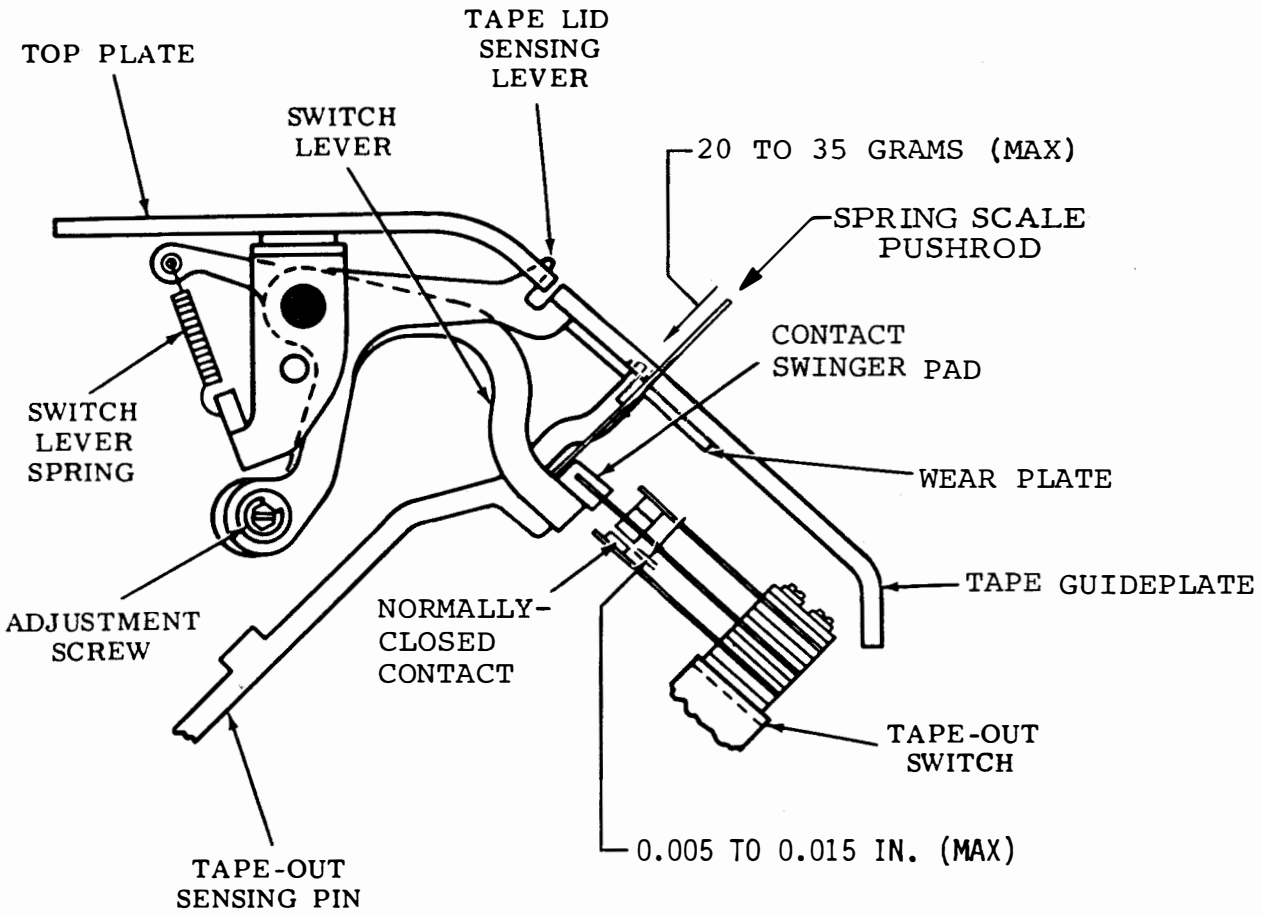


Figure 6-519. Switch Lever Spring and Switch Lever, Front View

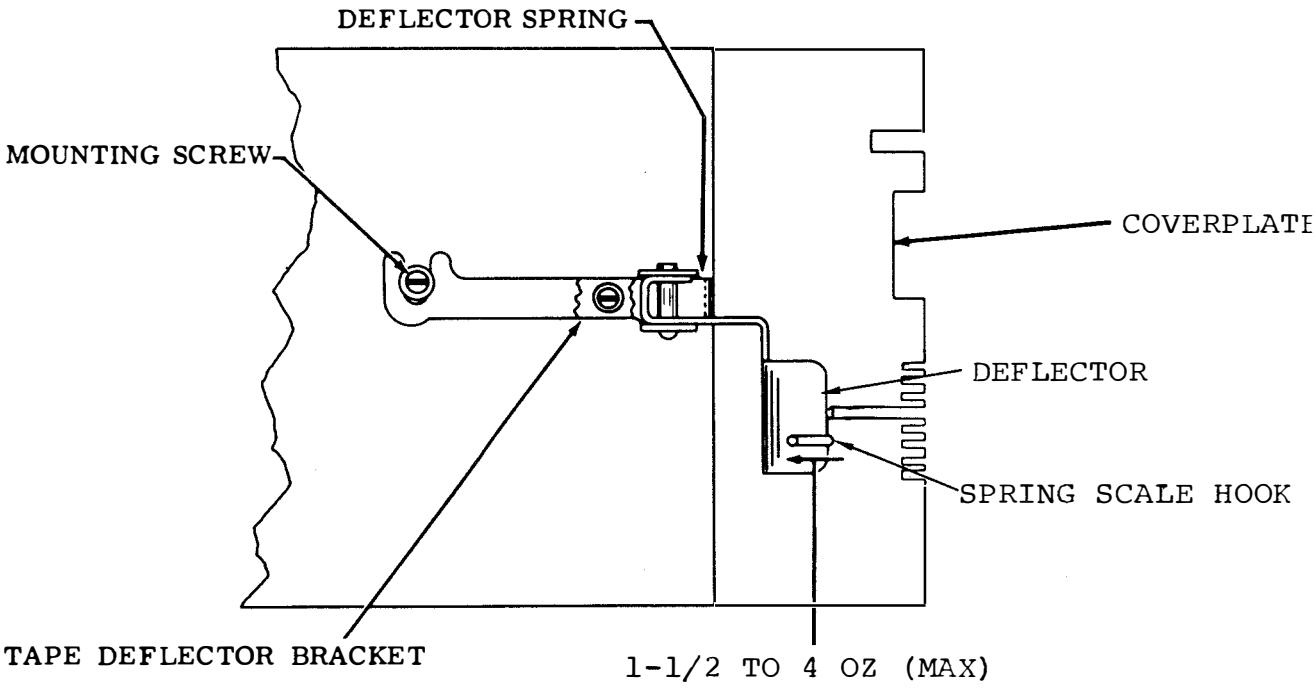


Figure 6-520. Tape Deflector Bracket and Spring, Top View

(d) If scale reading exceeds specified limits, loosen mounting screw and position spring using enlarged mounting slot.

(e) Tighten mounting screw.

h. Start - Stop Pulse Contact Adjustments. Perform the following start - stop pulse contact adjustments.

(1) Contact Lever. Adjust as follows:

(a) Refer to Figure 6-521.

(b) Remove contact assembly from unit.

(c) Ensure there is no clearance between contact lever and insulator.

(d) Apply gram scale to upper contact spring.

(e) Force required to move insulator from contact operating lever should measure 20 to 30 grams maximum.

(f) If scale reading exceeds specified limits, bend lower contact spring to meet requirement.

(2) Contact Gap (Start and Stop Contact). Adjust as follows:

(a) Refer to Figure 6-521.

(b) Contact assembly still removed from unit.

(c) Contact gap between upper spring and lower spring should measure 0.012 to 0.018 inch maximum.

(d) If gap exceeds specified limits, bend upper contact spring to meet requirement.

(3) Contact Bracket. Adjust as follows:

(a) Refer to Figure 6-522.

(b) Contact assembly still removed from unit.

(c) Place unit in STOP position and latch clutch.

(d) Clearance between contact operating lever and transfer lever should measure 0.012 to 0.018 inch maximum.

(e) If clearance exceeds specified limits, loosen mounting bracket screws and position assembly to meet requirement.

(f) Tighten mounting bracket screws and install contact assembly in unit.

(4) Contact Bracket (Strobing). Adjust as follows:

NOTE

When strobing auxiliary contacts, use a 7.42 unit DXD scale. Synchronize transmitter distributor unit signal generator with the DXD so the end of the stop pulse image is in line with the stop pulse on the DXD scale when transmission is continuous. Use normal signal line direct current of 60 milliampere ±10 percent to strobe contacts.

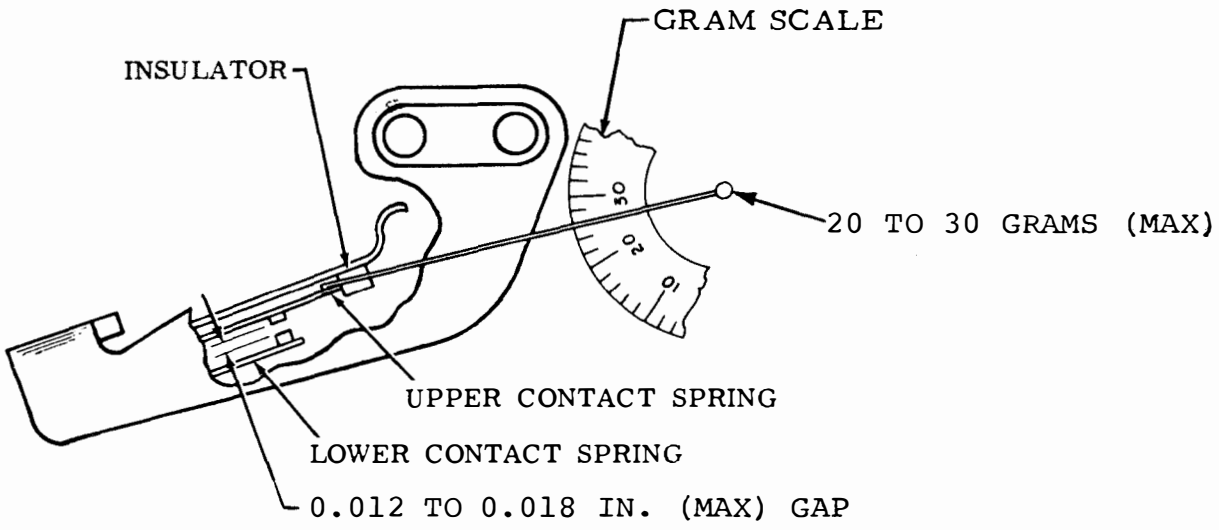


Figure 6-521. Contact Lever and Contact Gap (Start and Stop Contacts), Front View

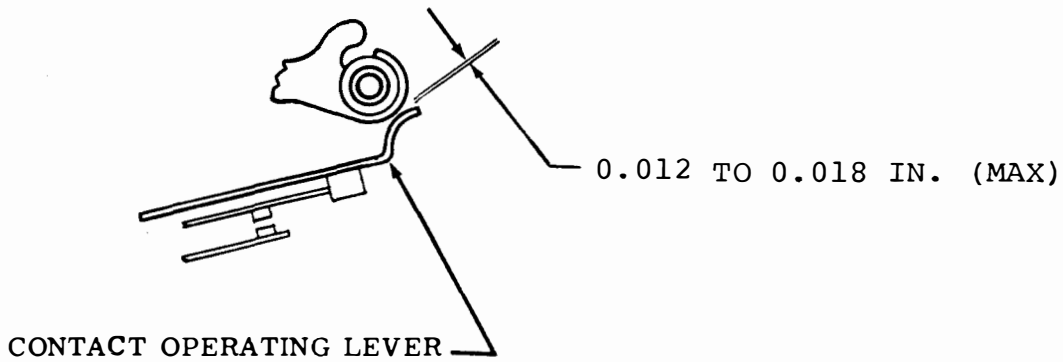


Figure 6-522. Contact Bracket, Front View

(a) Ensure contacts close within range specified in Table 6-7.

NOTE

Breaks are permissible within 5 divisions of the beginning or end of a trace.

(b) If closure range is not within specified limits, loosen contact bracket mounting screw and position contact bracket to meet requirement.

(c) Tighten contact bracket mounting screws.

i. Rub-Out Deleter Adjustments. Perform the following rub-out deleter adjustments.

(1) Rub-Out Deleter Bail Guide. Adjust as follows:

(a) Refer to Figure 6-523.

(b) Place each sensing pin in its highest position.

(c) Ensure deleter bail moves freely in its guide.

(d) Ensure rub-out deleter bail rests against lower projection of sensing pin when rub-out permutation code is present.

(e) If not, loosen mounting screws friction tight and position deleter bail guide to meet requirements.

(f) Tighten mounting screws.

(2) Sensing Pin Spring. Adjust as follows:

(a) Refer to Figure 6-524.

(b) Place sensing pin in its highest position.

(c) Hold rub-out deleter bail away from pin.

(d) Apply spring scale pushrod to sensing pin as shown in Figure.

(e) Force required to move sensing pin to a position flush with surface of tape guide should be between 3 and 5 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(3) Rub-Out Deleter Bail Spring. Adjust as follows:

(a) Refer to Figure 6-524.

(b) Place sensing pin in its highest position.

(c) Apply spring scale pushrod to rub-out deleter bail as shown in Figure.

(d) Force required to move bail away from sensing pin should be 1 to 2-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

j. Tape Notch Sensing Mechanism Adjustments. Perform the following tape notch sensing mechanism adjustments.

Table 6-7. Contact Operating Requirements (Contact Bracket - Strobing)

	Min Closure	Closure Range
Stop Contact	95 Div	0 Div of Stop Segment to 142nd Div of Stop Segment
Start Contact	60 Div	122nd Div of Stop Segment to 95th Div of Start Segment

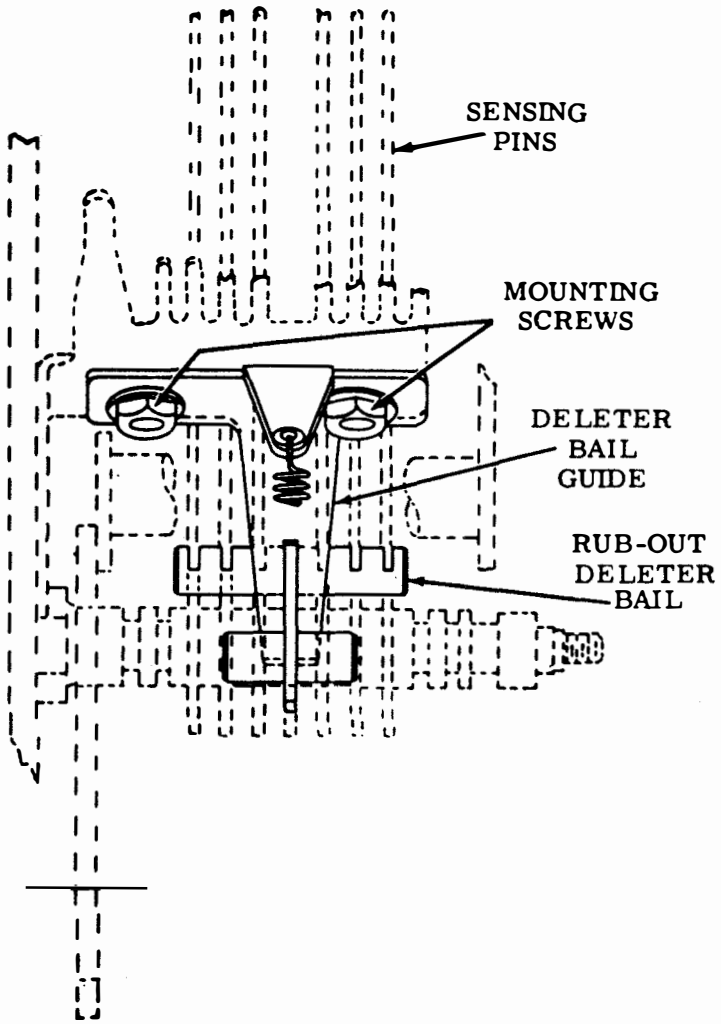


Figure 6-523. Rub-Out Deleter Bail Guide, Right Side View - Oblique

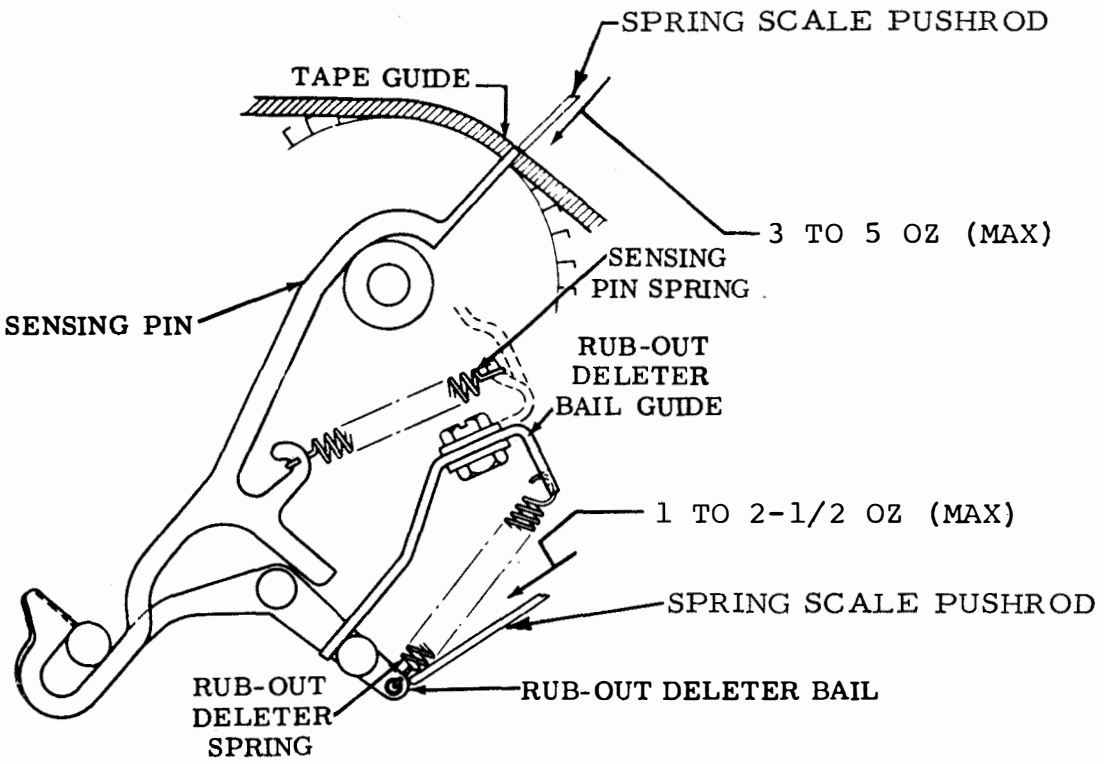


Figure 6-524. Sensing Pin Spring and Pub-Out Deleter Bail Spring, Front View

(1) Tape Notch Sensing Pin Spring. Adjust as follows:

(a) Refer to Figure 6-525.

(b) Place sensing pin in highest position.

(c) Apply spring scale pushrod to sensing pins as shown in Figure.

(d) Force required to move sensing pin to a position flush with surface of top plate should be between 1 and 3 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(2) Tape Notch Sensing Contact. Adjust as follows:

(a) Refer to Figure 6-525.

(b) Fnsure insulator on swinger is centrally positioned relative to extension on sensing pin.

(c) If not, loosen contact assembly mounting screws and position contact assembly to meet requirements.

(d) Tighten mounting screws.

(e) Place sensing pin flush with top plate.

(f) Check for some clearance between sensing pin extension and insulator of contact swinger.

(g) Gap between normally-open contacts should measure 0.008 to 0.015 inch maximum.

(h) If gap exceeds specified limits, bend swinger to meet requirement.

(i) Hold sensing pin extension away from swinger and apply gram scale to swinger as shown in Figure.

(j) Force required to just separate normally-closed contacts should be 8 to 15 grams maximum.

(k) If scale reading exceeds limits, bend lower contact spring to obtain specified scale reading.

(3) Contact Bracket (Strobing). Adjust as follows:

NOTE

When using tape notch sensing contacts, use a 7.42 unit DXD scale. Synchronize the transmitter distributor so the end of stop pulse image is in line with the end of stop pulse on DXD scale when transmission is continuous. Use a normal direct current line signal of 60 milliampere ±10 percent or 20 milliampere ±10 percent to strobe these contacts.

(a) For units with tape slack arm proceed as follows:

1. Ensure contact opens no earlier than the 15 mark of the first pulse and opens no later than the 55 mark of the first pulse.

2. Ensure contact closes no earlier than

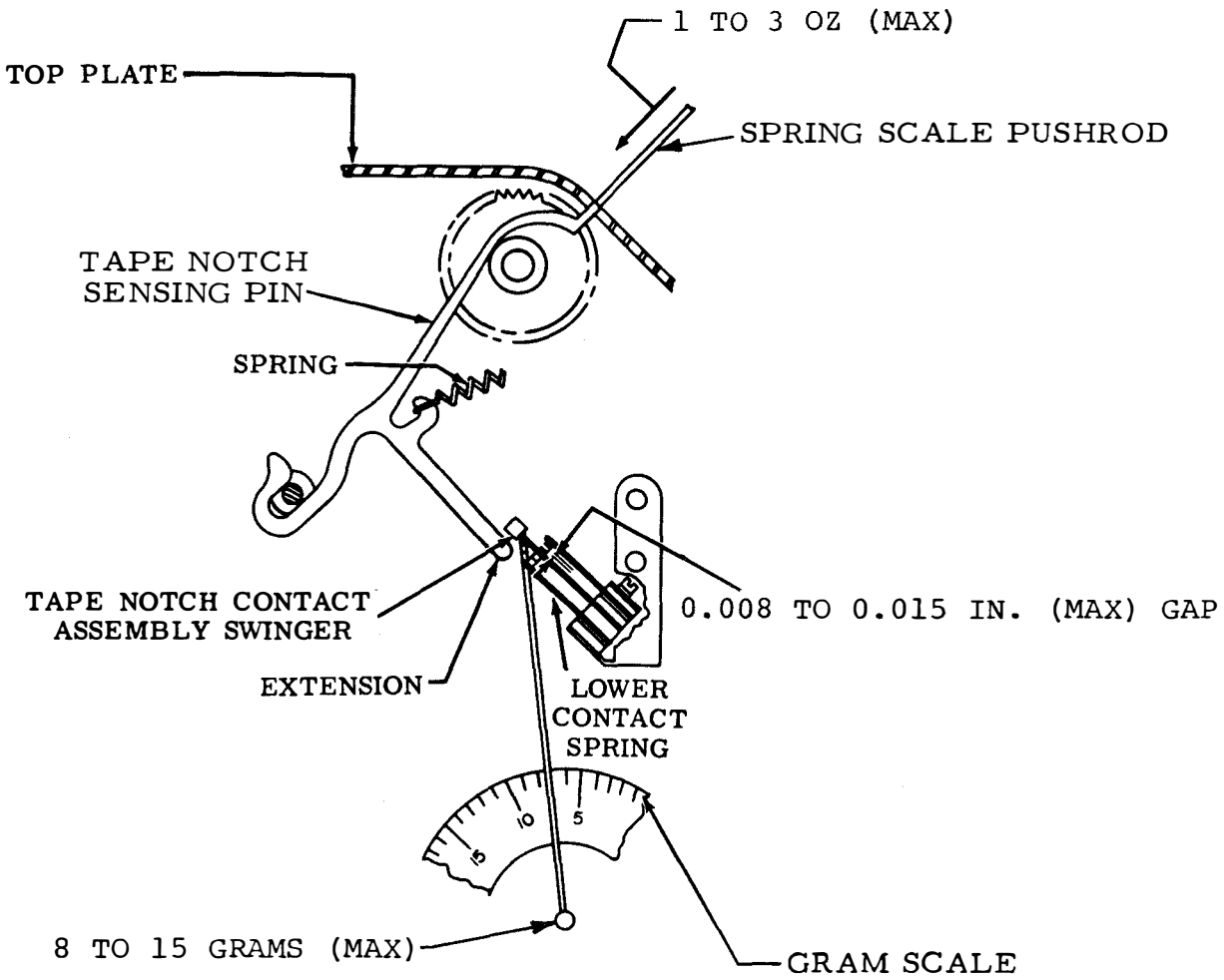


Figure 6-525. Tape Notch Sensing Pin Spring and Tape Notch Sensing Contact, Front View

the 15 mark of the fifth pulse and closes no later than the 55 mark of the fifth pulse.

3. Permit contact breaks between the 15 mark and the 55 mark of the fifth pulse.

CAUTION

Do not permit magnitude of the breaks to extend beyond these limits.

4. To adjust, loosen bracket contact mounting screws and position contact bracket to meet requirements.

5. Tighten mounting screws.

(b) For units without tape slack arm, proceed as follows:

1. Ensure contact closes no earlier than the 15 mark of the first pulse and closes no later than the 55 mark of the first pulse.

2. Ensure contact opens no earlier than the 15 mark of the fifth pulse and opens no later than the 55 mark of the fifth pulse.

3. Permit contact breaks between the 15 and 55 marks of the first pulse.

CAUTION

Do not permit the magnitude of the breaks to extend beyond these limits.

4. To adjust, loosen bracket contact mounting screws and position contact bracket to meet requirements.

5. Tighten mounting screws.

k. Transmitter Stop Mechanism Adjustments. Perform the following transmitter stop mechanism adjustments.

(1) Start-Stop Gap (For Tabulator Control). Adjust as follows:

(a) Refer to Figure 6-526.

(b) Position timing bail on lower part of its cam.

(c) Start-stop contact gap should measure 0.018 to 0.025 inches maximum.

(d) If gap exceeds specified limits, loosen clamp screw which holds yield arm to timing arm friction tight.

(e) Position timing arm to meet requirement and tighten clamp screw.

(2) Timing Bail Spring. Adjust as follows:

(a) Refer to Figure 6-526.

(b) Apply spring scale pushrod to timing bail as shown in Figure.

(c) Force required to start bail moving should be 5-1/2 to 8 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

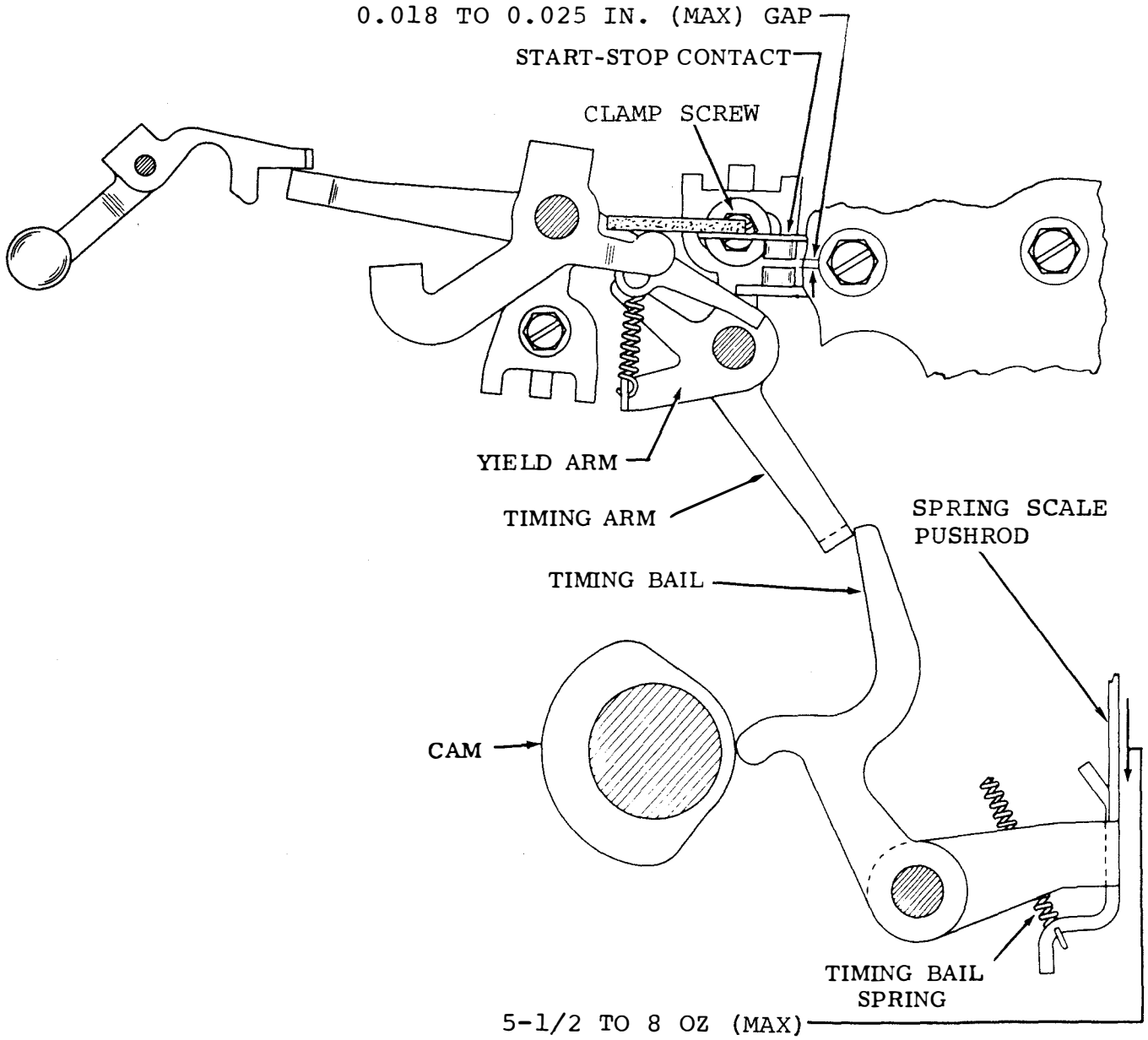


Figure 6-526. Start-Stop Gap (For Tabulator Control) and Timing Bail Spring, Rear View

l. Tape Slack Arm Adjustment. Perform tape slack arm and tape slack contacts adjustment as follows:

(1) Refer to Figure 6-527.

(2) Close tape lid and place control lever in RUN position.

(3) Raise tape slack arm to its maximum height.

(4) Gap between tape slack contacts should measure 0.010 to 0.020 inch maximum.

(5) If gap exceeds specified limits, loosen clamp screw and position pry points to obtain specified contact gap. Tighten clamp screws.

m. Tape Withhold Mechanism Adjustments. Perform the following tape withhold mechanism adjustments.

(1) Magnet Armature Gap. Adjust as follows:

(a) Refer to Figure 6-528.

(b) Place armature in attracted position.

(c) Gap between end of armature adjusting screw and plate should measure 0.025 to 0.035 inch maximum.

(d) If gap exceeds specified limits, loosen armature adjusting screw locknut friction tight and turn screw to meet requirement. Tighten locknut.

(2) Blocking Bail Arm Eccentric. Adjust as follows:

(a) Refer to Figure 6-529.

(b) Place each sensing pin in its lowest position.

(c) Place high part of blocking bail arm eccentric pivot to right at approximately the same angular position as feed pawl eccentric.

(d) Ensure there is some clearance between extension on blocking bail and tail of feed pawl.

(e) If there is no clearance, loosen arm eccentric clamp screw and rotate arm eccentric to meet requirement.

(f) Tighten clamp screw.

(3) Blocking Bail Eccentric Pivot. Adjust as follows:

(a) Refer to Figure 6-529.

(b) Trip clutch, hold armature attracted and main shaft latched in STOP position.

(c) Clearance between blocking bail extension and feed pawl at closest point should measure 0.002 to 0.035 inch maximum.

(d) If clearance exceeds specified limits, loosen eccentric pivot clamp screw friction tight and rotate pivot to meet requirement. Tighten clamp screw.

(e) Check Blocking Bail Arm Eccentric

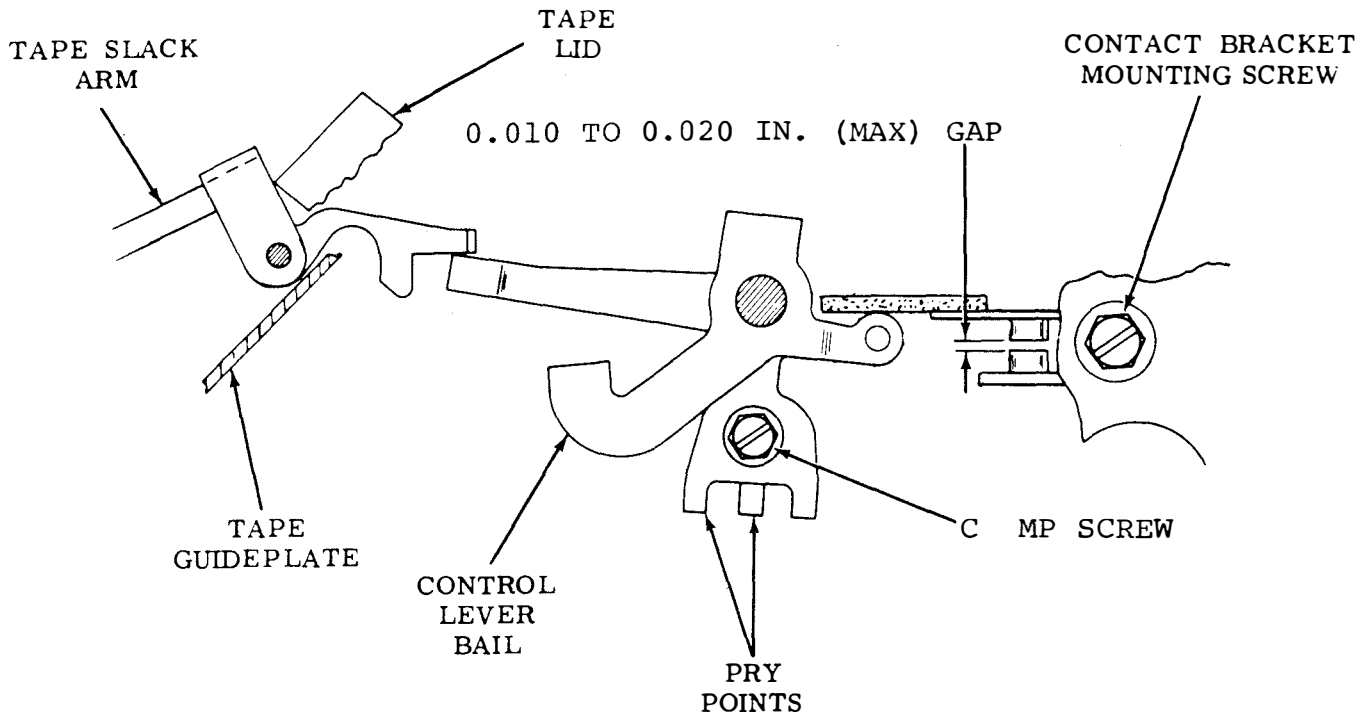


Figure 6-527. Tape Slack Arm Adjustment and Contact Gap, Rear View

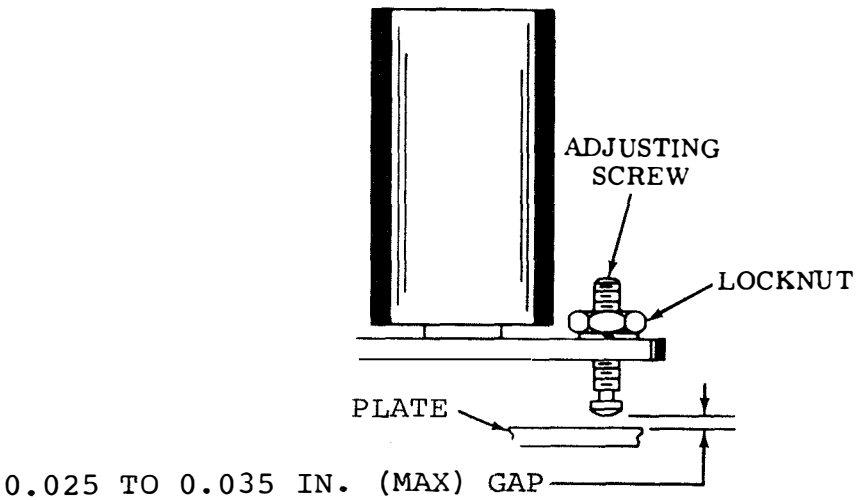


Figure 6-528. Magnet Armature Gap, Front View

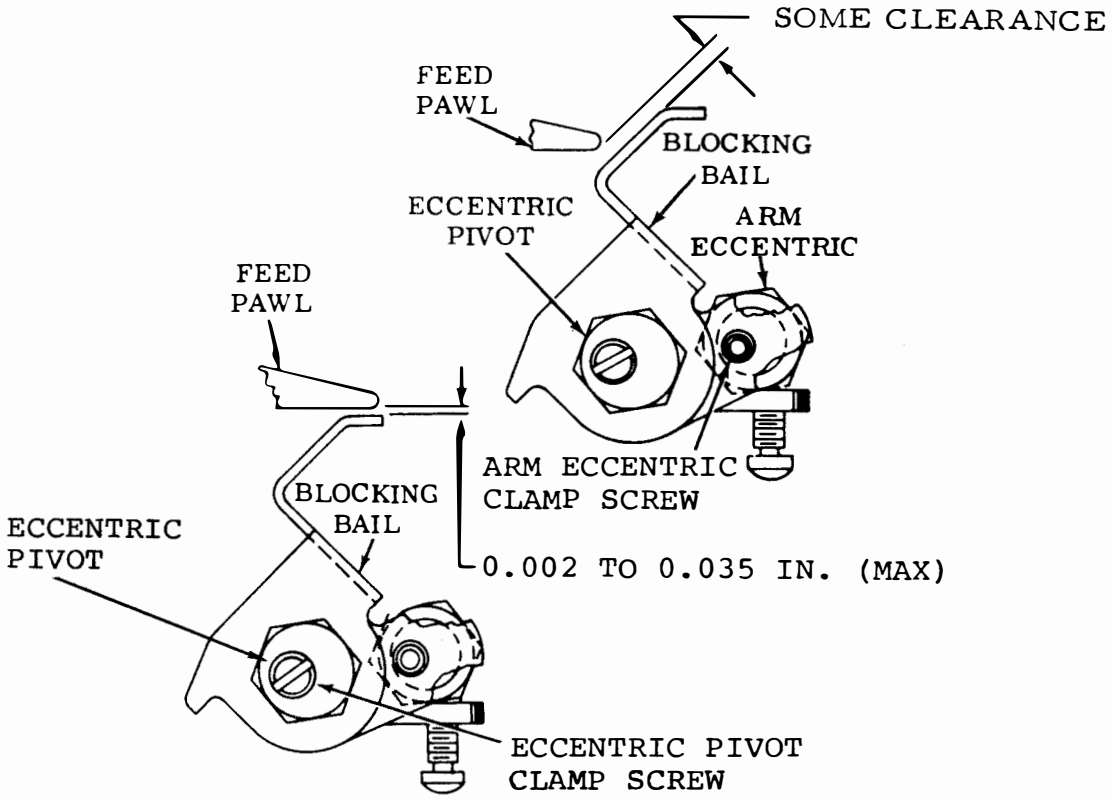


Figure 6-529. Blocking Bail Arm Eccentric and Blocking Bail Eccentric Pivot, Front View

adjustment, paragraph 6-16m(2) and refine if necessary.

(f) Ensure there is some clearance not exceeding 0.015 inch between feed pawl and feed ratchet at closest point as feed pawl is cammed out of ratchet during blocking operation (Magnet Armature in attracted position).

(g) If necessary, refine paragraph 6-16m(2) and steps (b) through (d), above.

SECTION III. ADJUSTMENT, BASIC UNIT, EARLIER DESIGN

6-17. TYPING UNIT ADJUSTMENTS. The following paragraphs describe the early design typing unit adjustment procedures for high-level and low-level units operation.

a. Selector Mechanism Adjustments. Perform the following selector mechanism adjustments.

(1) Bail Lever Guide. Adjust as follows:

NOTE

This adjustment applies only to units equipped with adjustable guides.

(a) Refer to Figure 6-530.

(b) Ensure there is some clearance each side of guide fork and of start lever throughout its travel.

(c) If clearance is insufficent, loosen mounting nut and position bail lever guide.

(d) Tighten mounting nut.

(2) Start Lever Spring. Adjust as follows:

(a) Refer to Figure 6-530.

(b) Unhook end of latchlever spring.

(c) Position stop arm bail in indent of its cam.

(d) Set range scale at 60.

(e) Apply spring scale pushrod to clutch stop arm.

(f) Force required to start stop arm moving should be from 2-1/2 to 4-1/2 ounces maximum.

(g) If scale reading exceeds specified limits, install new start lever spring.

NOTE

The following adjustments need not be made if Selector Magnet Bracket, paragraph 6-3.1a(5) and Receiving Margin, paragraph 6-3.1a(17) adjustments have been made. If necessary to make this adjustment, remove range finder and selector magnet assemblies. To ensure better operation, put a piece of KS bond paper between armature and pole pieces to remove any oil or foreign matter that may be present. Ensure no lint or pieces of paper remain between pole pieces and armature.

(3) Selector Armature Clamp Strip. Adjust as follows:

(a) Refer to Figure 6-531.

(b) Clearance between armature clamp strip and casting at their closest point should be 0.010 inch minimum.

(c) If clearance is less than specified minimum, loosen mounting screws.

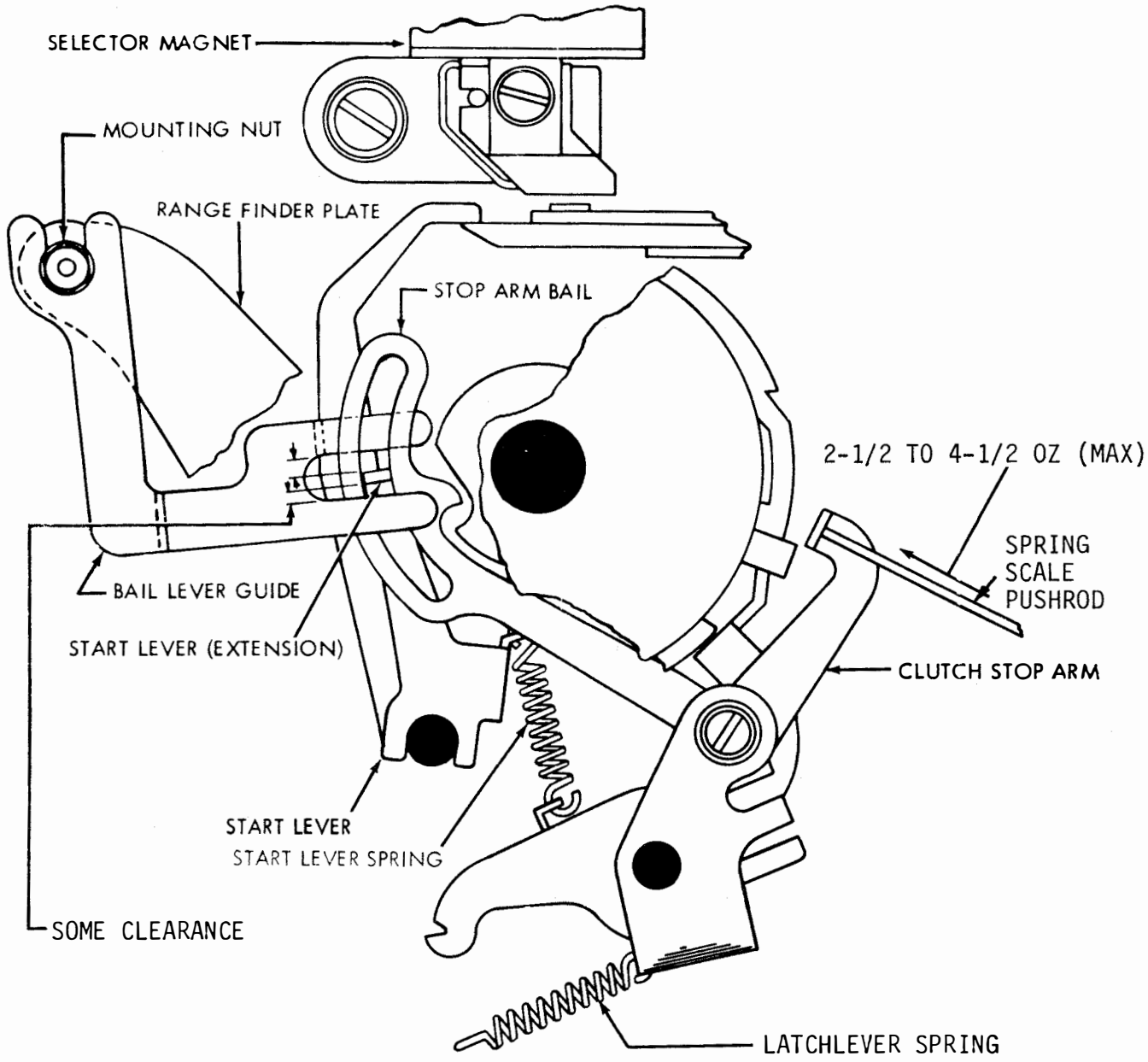
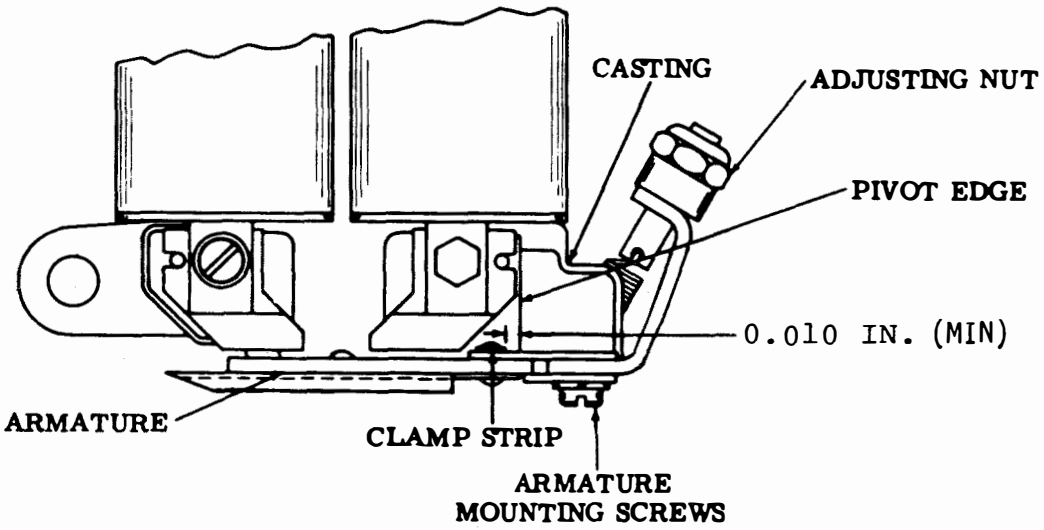
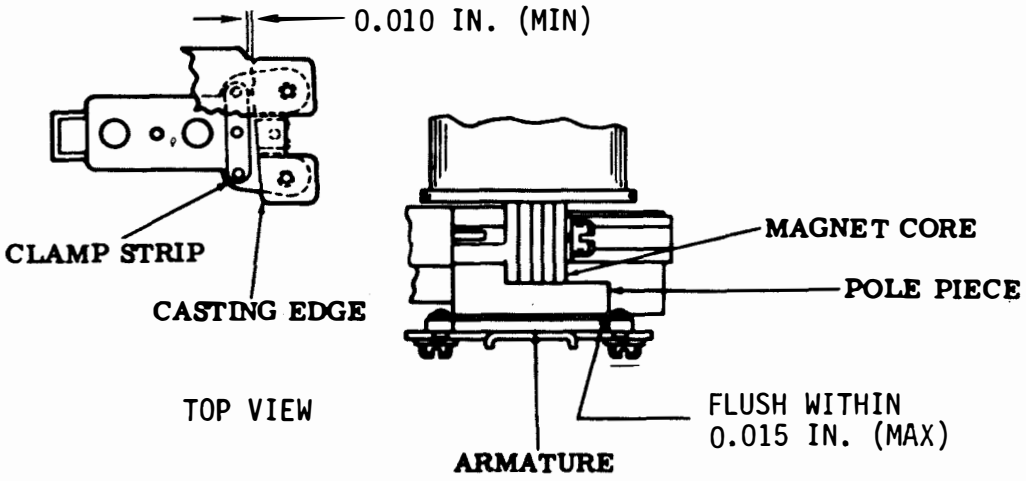


Figure 6-530. Bail Lever Guide and Start Lever Spring, Right Side View



RIGHT SIDE VIEW



FRONT VIEW

Figure 6-531. Selector Armature Clamp Strip and Armature Alignment

(d) Position armature spring firmly against pivot edge of casting to obtain specified clearance between armature clamp strip and casting.

(e) Tighten mounting screws.

(4) Selector Armature Alignment. Adjust as follows:

(a) Refer to Figure 6-531.

(b) Ensure outer edge of armature is flush with outer edge of both pole pieces within 0.015 inch maximum.

(c) If not, loosen mounting screws and position armature spring adjusting nut to hold armature firmly against edge of casting.

(d) Tighten mounting screws.

(5) Selector Armature Backstop Alignment (TP152424 Only). Adjust as follows:

(a) Refer to Figure 6-532.

(b) Clearance between sides of backstop and sides of armature extension should be 0.010 inch minimum.

(c) If clearance is less than specified minimum, loosen mounting screws.

(d) Position armature spring adjusting nut to hold armature firmly against pivot edge of casting.

(e) Position armature and backstop.

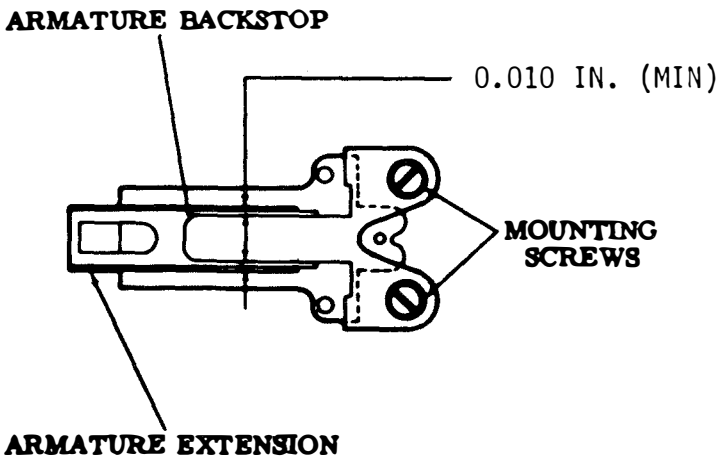


Figure 6-532. Selector Armature Backstop Alignment, Bottom View

(f) Tighten mounting screws.

b. Code Bar Mechanism Adjustments. Perform the following code bar mechanism adjustments.

(1) Code Bar Shift Lever Drive Arm. Adjust as follows:

(a) Refer to Figure 6-533.

(b) Place code bar shift lever link in uppermost position.

(c) Measure clearance between tops of rollers and tops of cam slots in code box shift levers. There should be some clearance not exceeding 0.025 inch on the close lever.

(d) If clearance exceeds specified limit, loosen clamp screw.

(e) Position code bar shift lever drive arm on its shaft to meet requirement and to provide some end play not exceeding 0.006 inch.

(f) Tighten clamp screw.

(2) Code Bar Shift Lever Link Guide Bracket. Adjust as follows:

(a) Refer to Figure 6-534.

(b) Motion of front and rear code bar shift levers should be equalized with respect to code bar travel.

(c) Select BLANK combination (-----).

(d) Rotate main shaft until code bar shift lever link reaches highest travel. Then take up play to maximize clearance.

(e) Clearance between front code bar shift lever and shoulder on nearest code bar shiftbar should measure 0.002 to 0.025 inch maximum.

(f) Select LETTERS combination (12345).

(g) Rotate main shaft until code bar shift lever link reaches highest travel. Then take up play to maximize clearance.

(h) Clearance between rear code bar shift lever and shoulder of code bar shiftbar should measure 0.002 to 0.025 inch maximum.

(i) If clearance exceeds specified limits, loosen three code bar shift lever link guide bracket mounting screws.

(j) Position guide bracket to meet requirements in steps (e) and (h) and tighten mounting screws.

c. Main Shaft and Trip Shaft Mechanism Adjustments. Perform the following main shaft and trip shaft mechanism adjustments.

(1) Antideflection Plate (If So Equipped). Adjust as follows:

(a) Refer to Figure 6-535.

(b) Place typing unit upside down on bench.

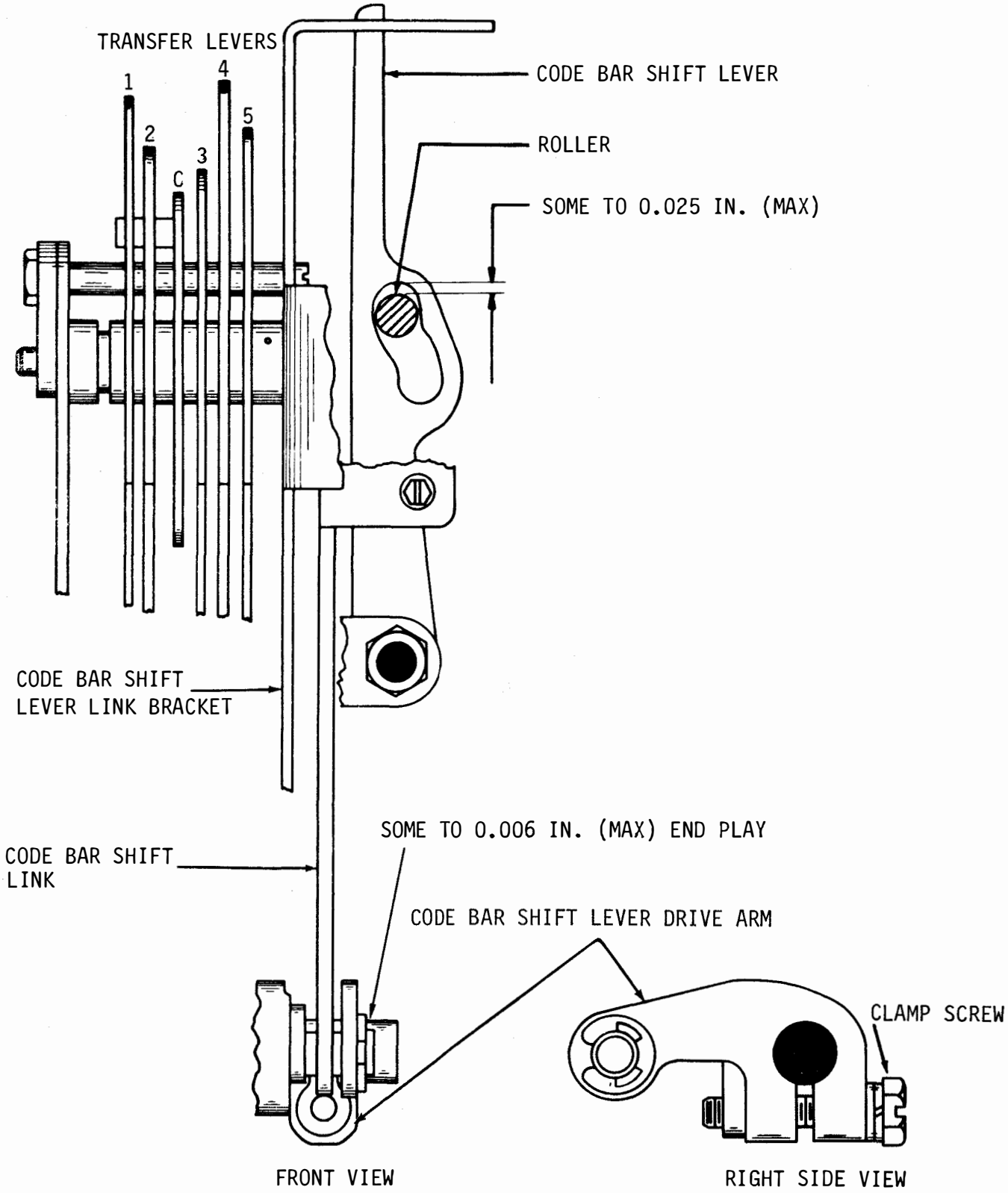
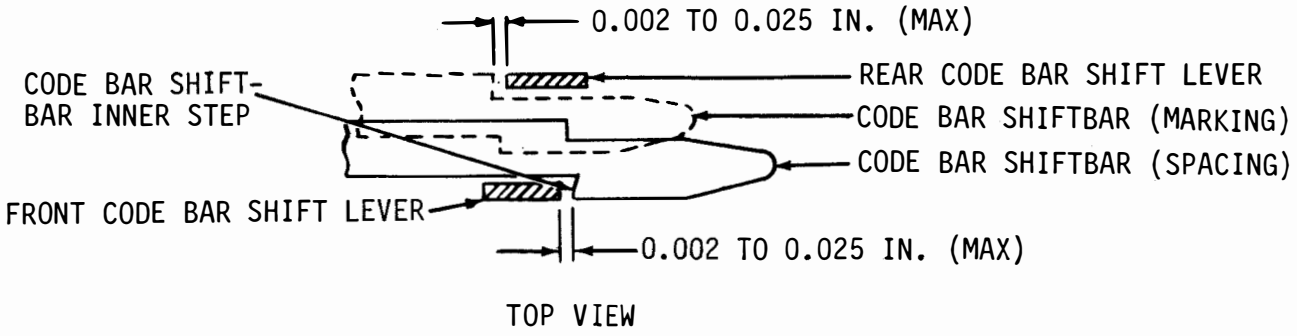
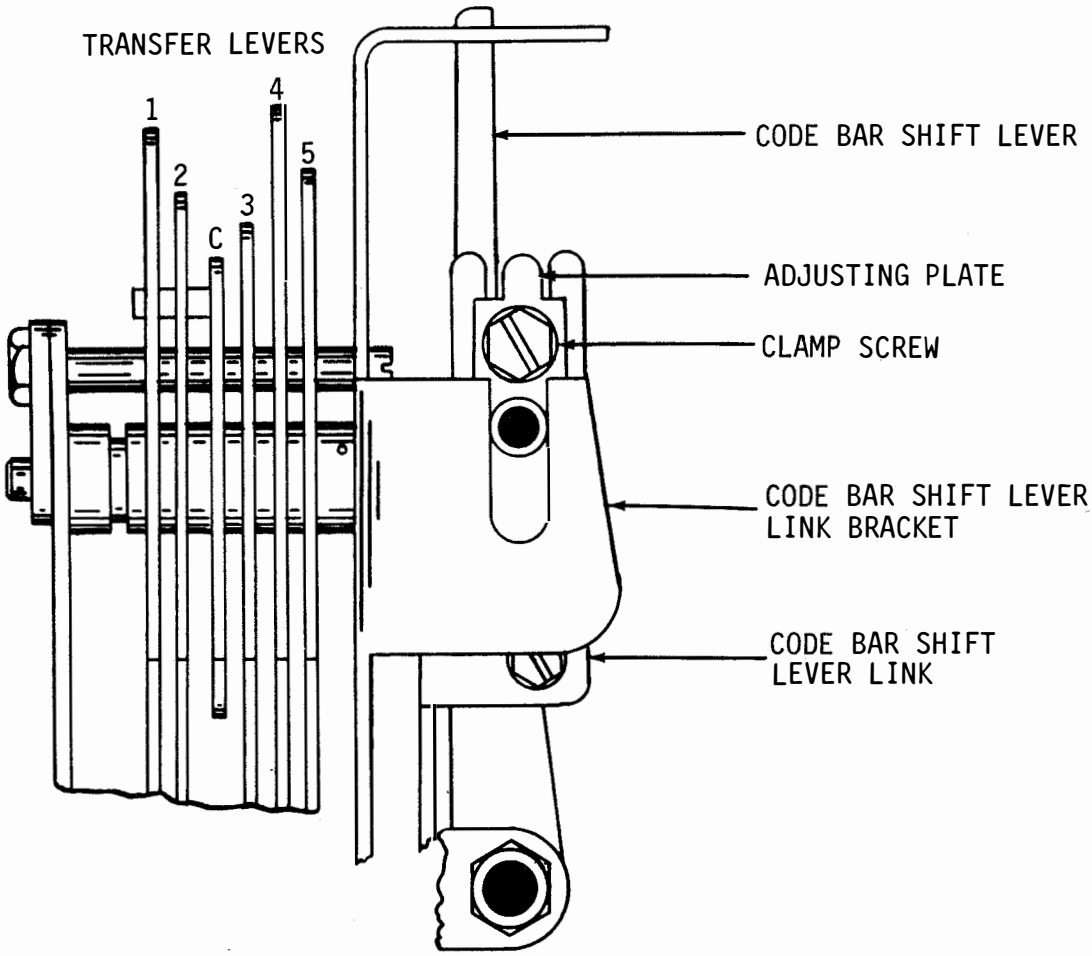


Figure 6-533. Code Bar Shift Lever Drive Arm



TOP VIEW



FRONT VIEW

Figure 6-534. Code Bar Shift Lever Link Guide Bracket

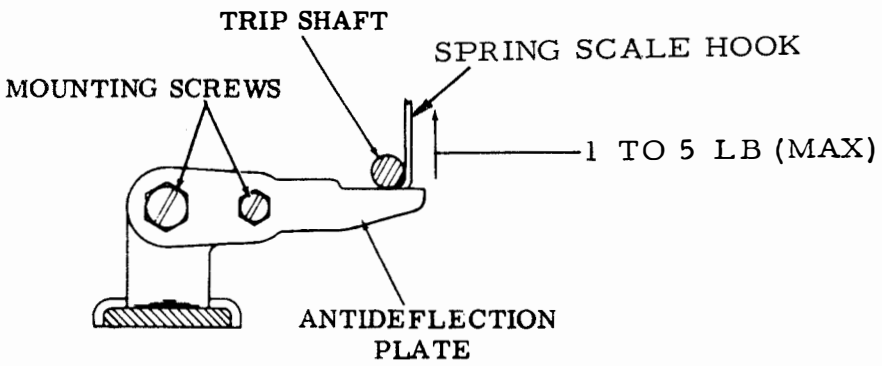


Figure 6-535. Antideflection Plate, Left Side View, Upside Down

(c) Latch function, spacing, line-feed, and type box clutch disengaged.

(d) Attach spring scale hook to trip shaft as shown in Figure.

(e) Force required to pull trip shaft away from antideflection plate should be between 1 and 5 pounds maximum.

(f) If scale reading exceeds specified limits, loosen antideflection plate mounting screws.

(g) Position plate to meet requirement and tighten mounting screws.

(2) Clutch Trip Shaft Set Collars. Adjust as follows:

(a) Refer to Figure 6-536.

(b) Spacing clutch latchlever side play should measure some to 0.008 inch maximum.

(c) If side play exceeds specified limit, loosen setscrew in spacing clutch latchlever set collar.

(d) Position set collar to meet requirement and tighten setscrew.

(e) Ensure approximate alignment of right end of stop extension on trip lever with right end of stop extension on shoe lever.

(f) If adjustment is necessary, loosen setscrew in line-feed clutch trip lever set collar.

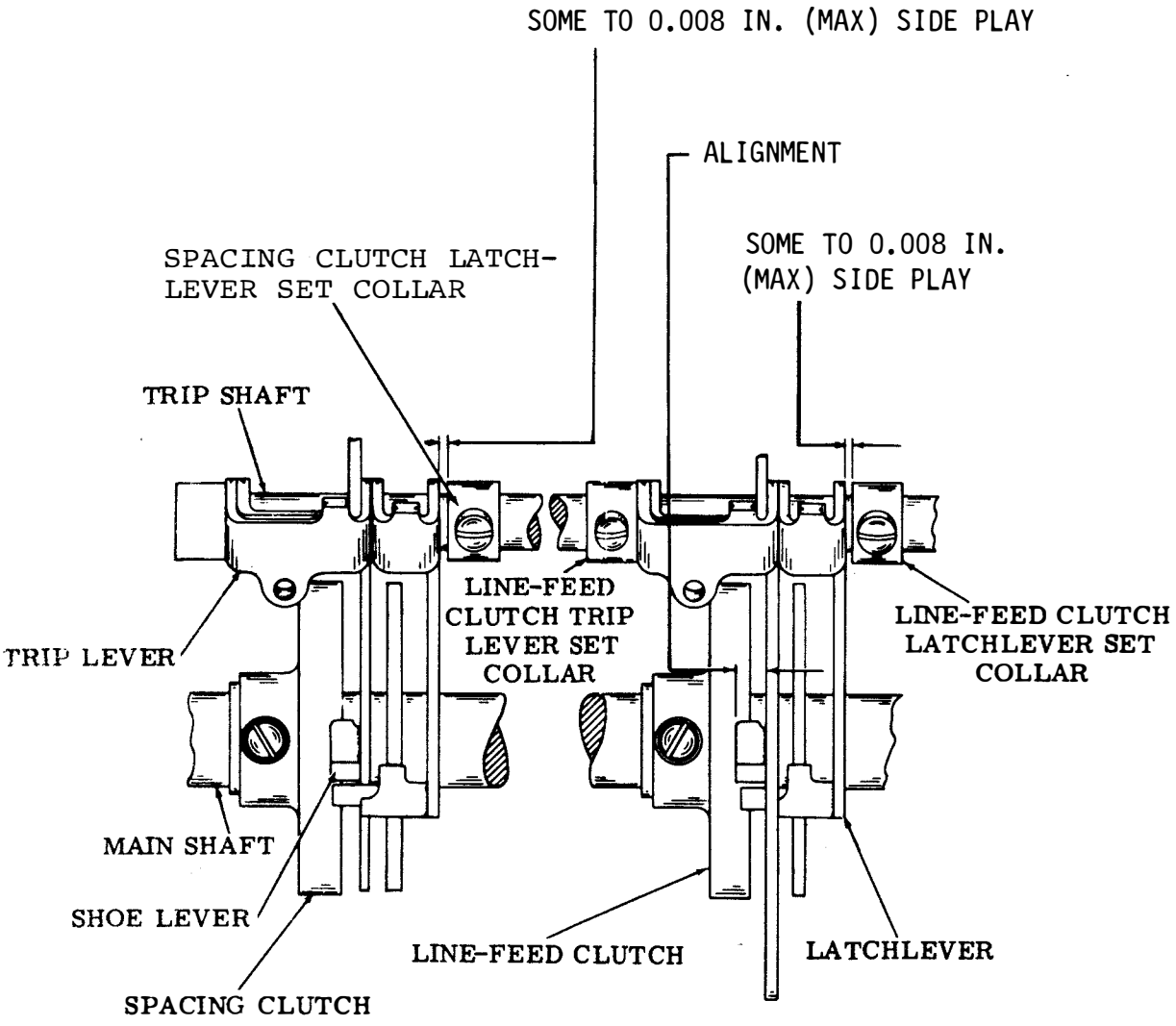


Figure 6-536. Clutch Trip Shaft Set Collars, Rear View

(g) Position set collar to align stop extension ends and tighten setscrew.

(h) Line-feed clutch latchlever side play should measure some to 0.008 inch maximum.

(i) If side play exceeds specified limit, loosen setscrew in line-feed clutch latchlever set collar.

(j) Position set collar to meet requirement and tighten setscrew.

(3) Clutch Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-537.

(b) Engage and rotate clutch until trip lever rests on stop-lug.

(c) Attach spring scale hook as shown in Figure.

(d) Force required to move lever away from stop-lug shall be as follows:

1. For spacing clutch spring, between 11 and 16 ounces maximum.

2. For line-feed clutch spring, between 9 and 12 ounces maximum.

3. For type box clutch spring, between 5 and 7-1/4 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(4) Spacing Clutch Trip Lever Adjust as follows:

(a) Refer to Figure 6-538.

(b) Disengage spacing and type box clutches

(c) Place trip lever arm in upward position.

(d) If unit does not have U-shaped line-feed clutch trip lever, spacing clutch trip lever should be flush or underflush by one-half thickness of shoe lever with outer surface of shoe lever. Check at stop-lug with least bite.

(e) If unit does have U-shaped line-feed clutch trip lever, spacing clutch trip lever should engage shoe lever by full thickness of shoe lever. Check at stop-lug with least bite.

(f) Loosen adjusting screw locking nut and turn adjusting screw to position spacing clutch trip arm.

(g) Tighten locking nut.

d. Spacing Mechanism Adjustments. Perform the following spacing mechanism adjustments.

NOTE

If adjustments (1) and (2) are made, check the following related adjustments: 6-3.1g(3) and 6-17d(4) through (7).

(1) Oscillating Rail Slide Position. Adjust as follows:

(a) Refer to Figure 6-539.

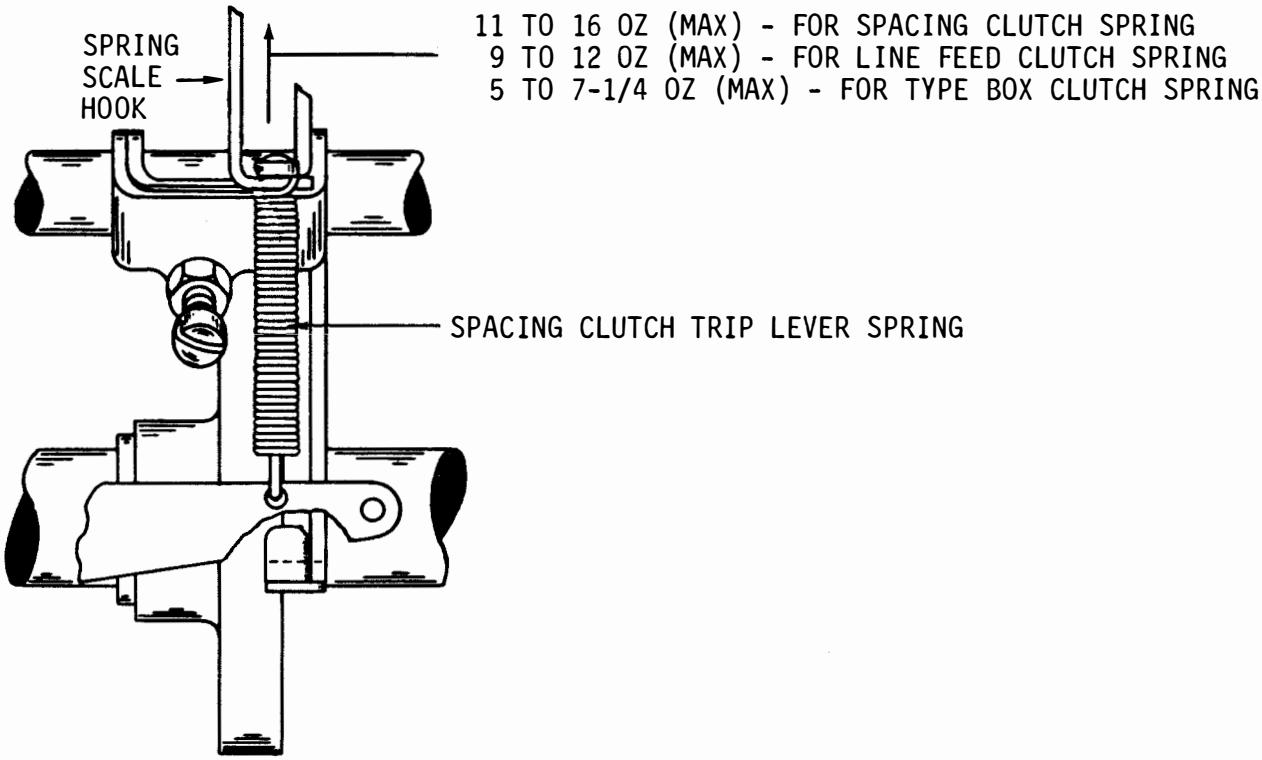


Figure 6-537. Clutch Trip Lever Spring, Rear View

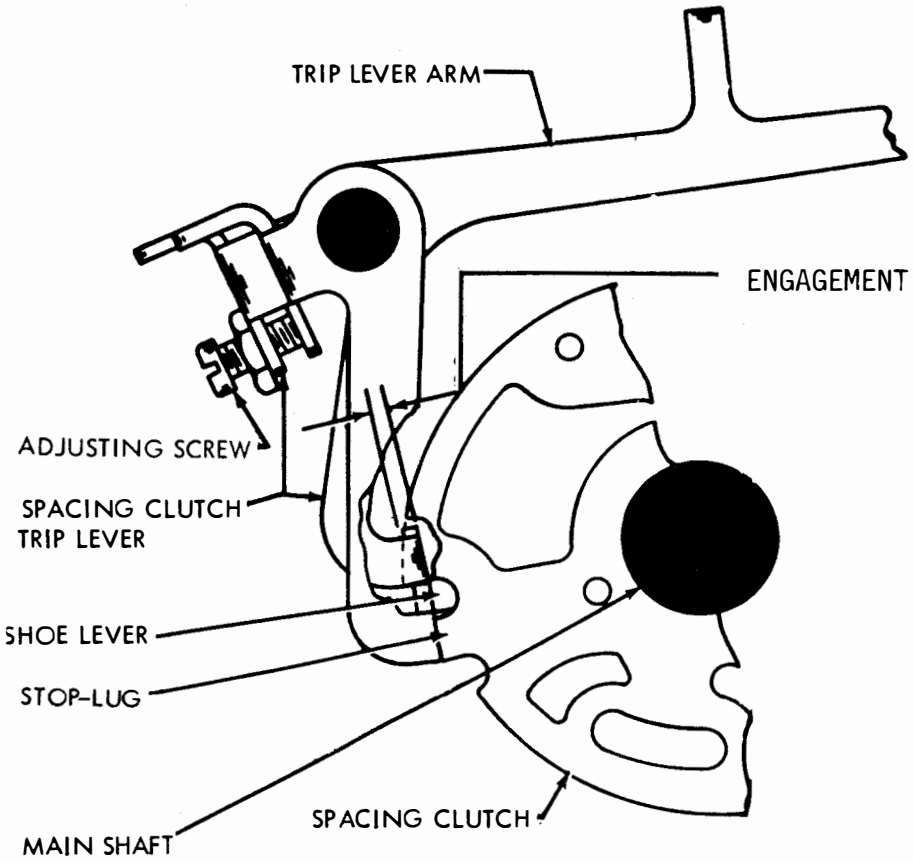


Figure 6-538. Spacing Clutch Trip Lever, Left Side View

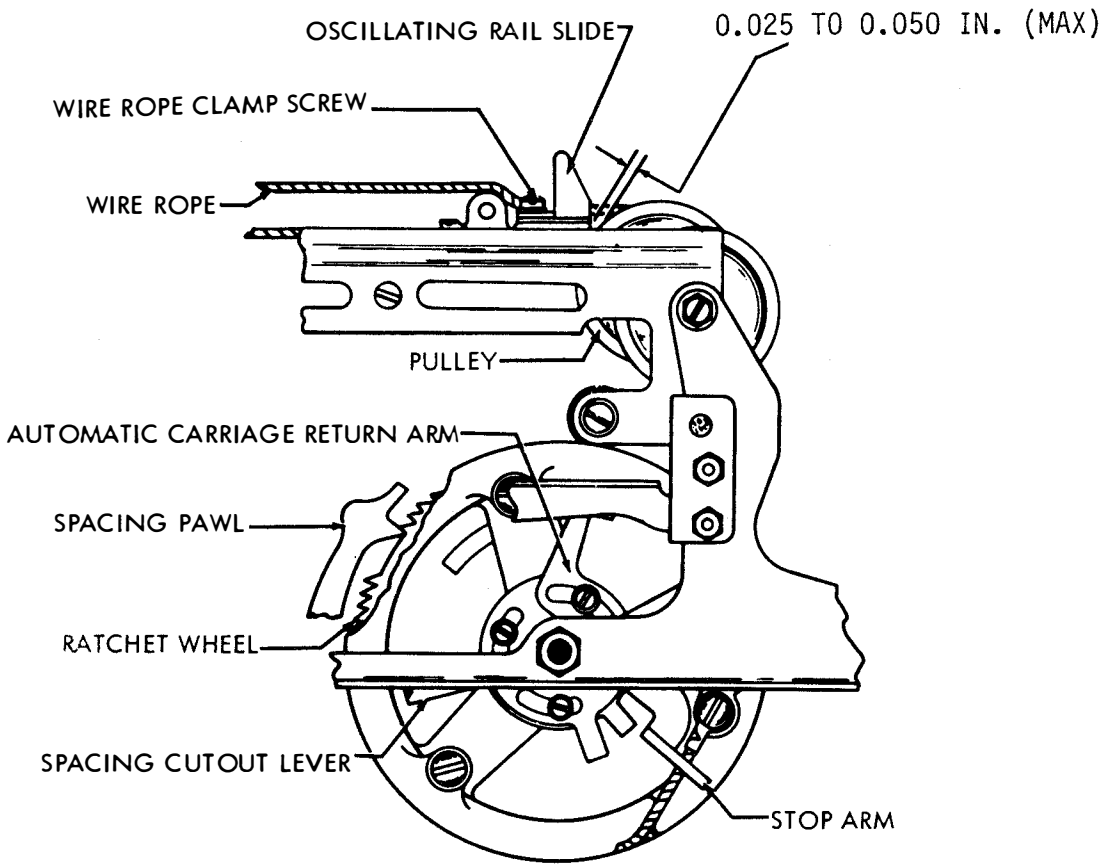


Figure 6-539. Oscillating Rail Slide Position, Front View

(b) Place spacing cutout lever and automatic carriage return/line-feed arm in maximum counter-clockwise position on spacing drum.

(c) Disengage spacing clutch and position farthest advanced spacing pawl so it is engaged with tooth just above cutaway section in ratchet wheel.

(d) Clearance between right end of oscillating rail slide and pulley should measure 0.025 to 0.050 inch maximum.

(e) If clearance exceeds specified limits, loosen clamp screws and position slide on wire rope to meet requirement. Tighten clamp screws.

(2) Spacing Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-540.

(b) Place each spacing pawl in least advanced position, resting against ratchet wheel.

(c) Unhook each spring from its bracket.

(d) Attach spring scale hook to free end of each spring in turn.

(e) Force required to extend each spring to its installed length should measure 2-1/2 to 4 ounces maximum. On units equipped for 6 spaces per inch, the force should be 8 to 10 ounces maximum.

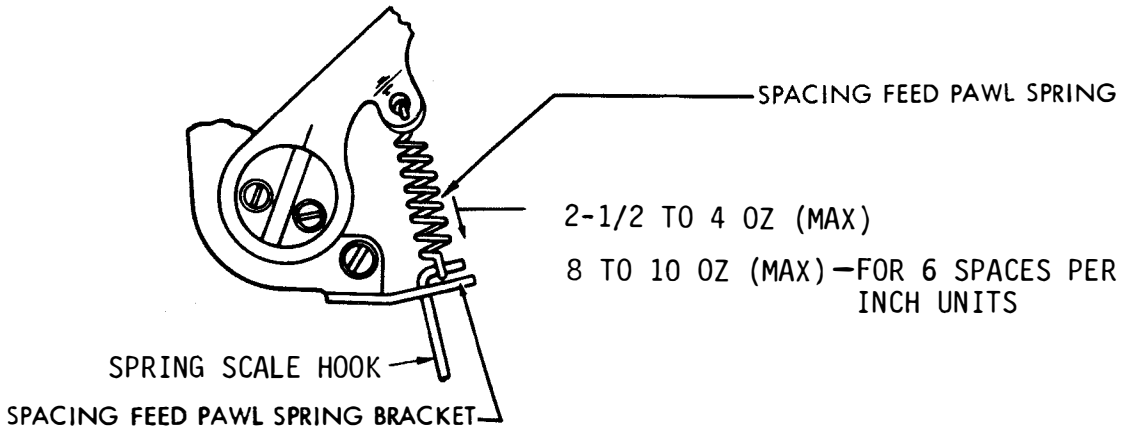


Figure 6-540. Spacing Feed Pawl Spring, Front View

(f) If scale reading for any spring exceeds specified limits, install new spring.

(3) Printing Carriage Position. Refer to paragraph 6-3.1g(3) for adjustments.

NOTE

If adjustments (4) or (5) are made, check the following related adjustments: paragraphs 6-3.1g(3) and 6-17d(1), (2), (6), and (7).

(4) Automatic Carriage Return/Line-Feed Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-541.

(b) Disengage function clutch.

(c) Attach spring scale hook to bellcrank.

(d) Force required to move bellcrank should measure 6-1/2 to 11 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(5) Left Margin. Adjust as follows:

NOTE

The following adjustments are for a 72-character line. For other lengths of line, ranging from 65 to 86 characters, the margin can be varied as desired. For Sprocket Feed units, refer to paragraph 6-3.1h(13).

(a) Refer to Figure 6-541.

(b) Disengage type box clutch.

(c) Place spacing drum in returned position.

(d) Shift type box to LETTERS position.

(e) Center of LTRS print indicator on type box should be between 15/16 and 1-1/16 inch from left edge of platen.

(f) Disengage spacing clutch.

(g) Place front spacing feed pawl in farthest advanced position and spacing drum fully returned.

(h) Take up play in spacing shaft gear in clockwise direction.

(i) Clearance between pawl and shoulder of ratchet wheel tooth immediately ahead should measure 0.002 to 0.015 inch maximum.

(j) Place rear pawl in farthest advanced position.

(k) Ensure rear pawl rests at bottom of indentation between ratchet wheel teeth.

(l) If requirements are not met, loosen mounting screws and position stop arm on spacing drum to obtain specified clearance and pawl position.

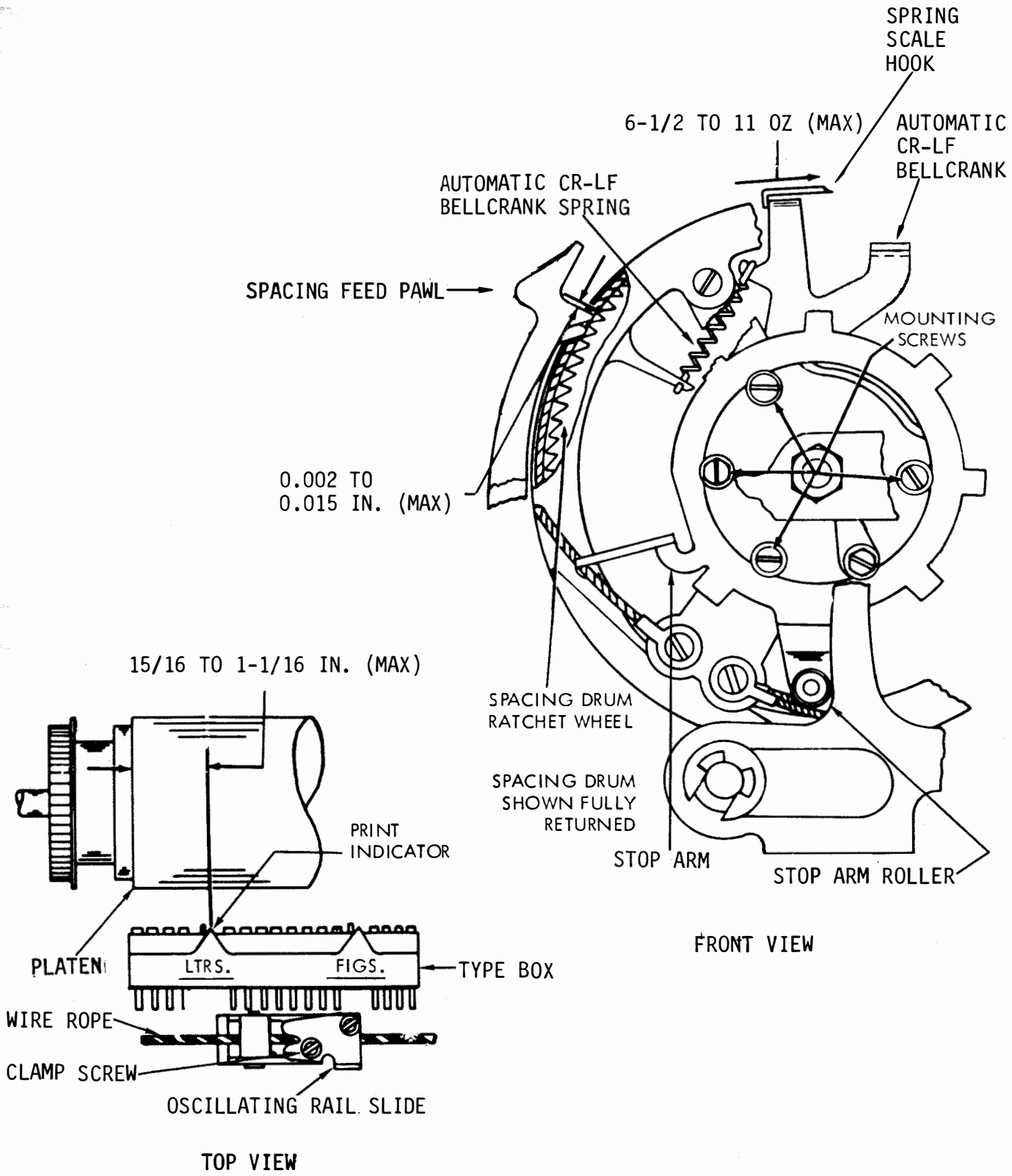


Figure 6-541. Automatic Carriage Return/Line-Feed Bellcrank Spring

(m) Tighten mounting screws.

NOTE

If adjustments (6), (7), and (8) are made, check the following related adjustments: 6-3.1g(3) and 6-17d(1), (2), (10), and (11).

(6) Right Margin. Adjust as follows:

(a) Refer to Figure 6-542.

(b) Place type box carriage in position (operating on base) to print character on which spacing cutout is desired.

(c) Place front facing pawl in farthest advanced position.

(d) Hold spacing cutout transfer bail in its uppermost position.

(e) Clearance between upper edge of spacing cutout lever and cutout transfer bail should measure 0.006 to 0.025 inch maximum.

(f) If clearance exceeds specified limits, loosen cutout lever clamp screw and position cutout lever to meet requirement.

(g) Tighten clamp screw.

(7) Spacing Cutout Transfer Bail Spring. Adjust as follows:

(a) Refer to Figure 6-542.

(b) Apply spring scale pushrod to spacing extent transfer bail.

(c) Force required to start bail moving should be 1 to 3-1/2 ounces maximum.

(d) If spring scale reading exceeds specified limits, install new spring.

(8) Decelerating Slide Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-543.

(b) Attach spring scale hook to right decelerating slide bellcrank spring.

(c) Force required to start bellcrank moving should be between 3/4 and 1-3/4 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(e) Repeat steps (b) through (d) for left decelerating slide bellcrank spring.

(9) Automatic Carriage Return and Line-Feed Arm. Adjust as follows:

NOTE

Range of adjustment is from 65th to 85th character. For units equipped with universal spacing drum, see 6-3.1d(21).

(a) Refer to Figure 6-544.

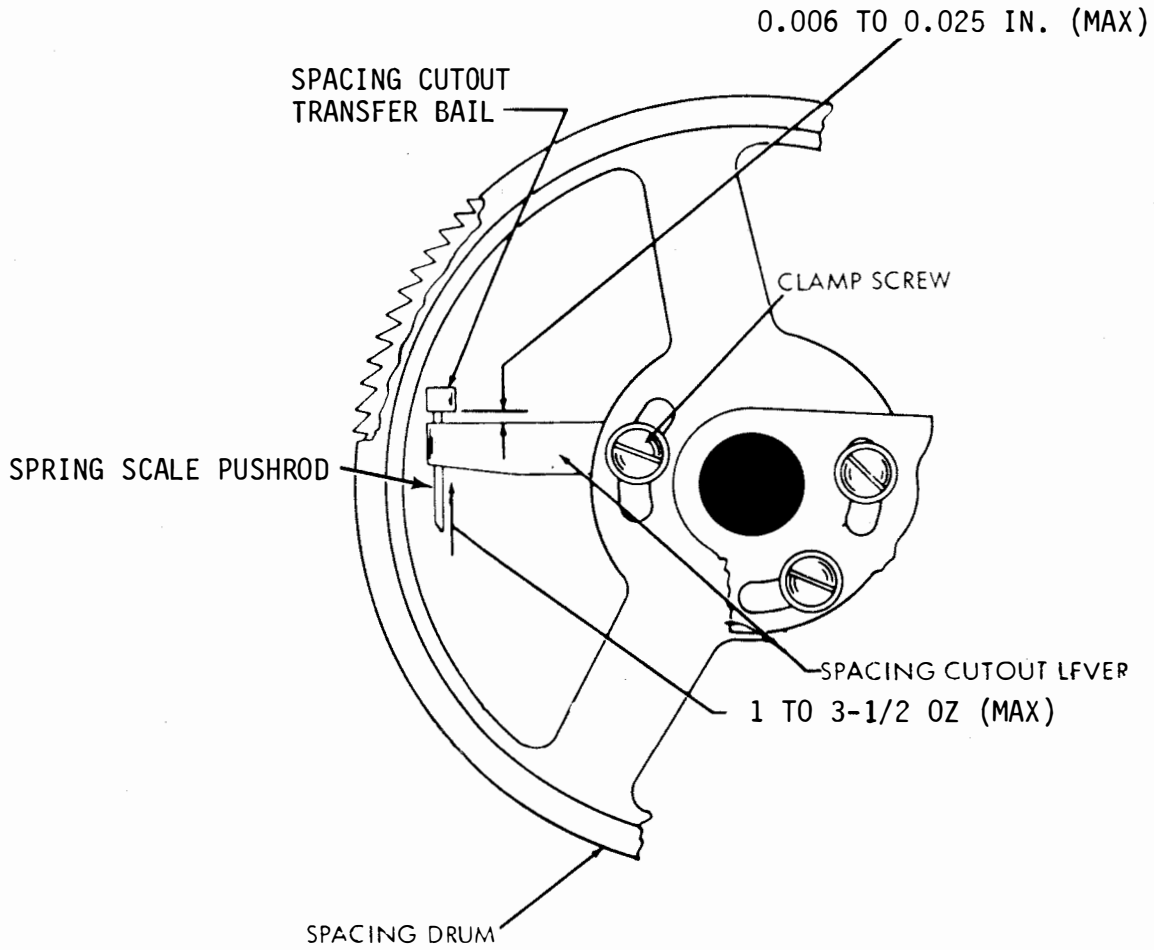


Figure 6-542. Right Margin and Spacing Cutout Transfer Bail Spring, Front View

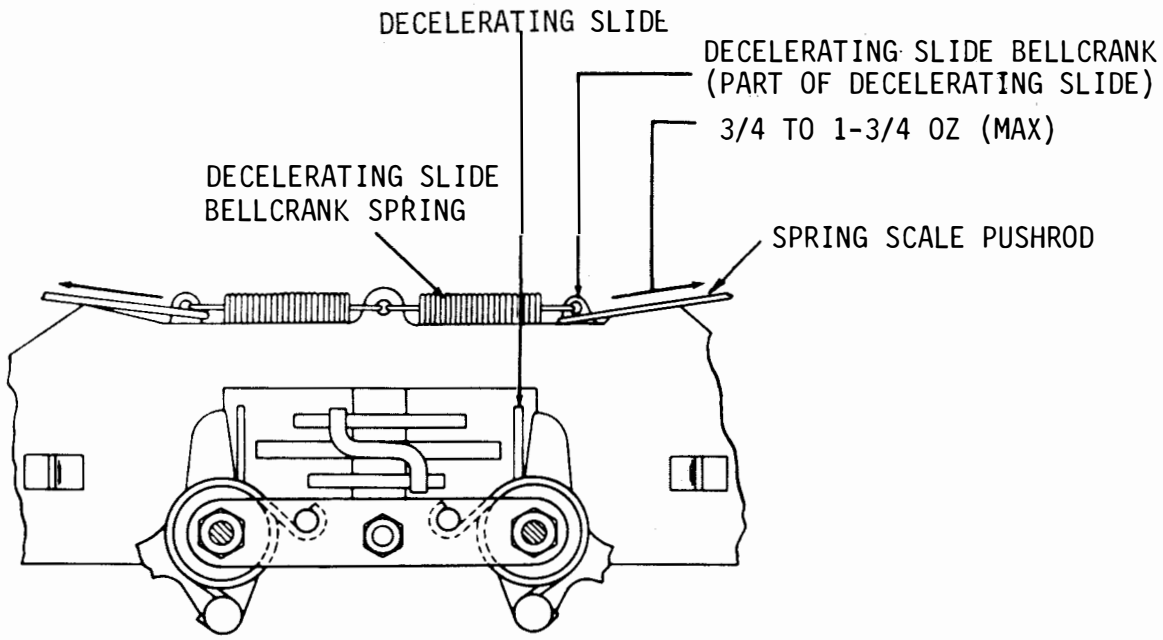


Figure 6-543. Decelerating Slide Bellcrank Spring, Front View

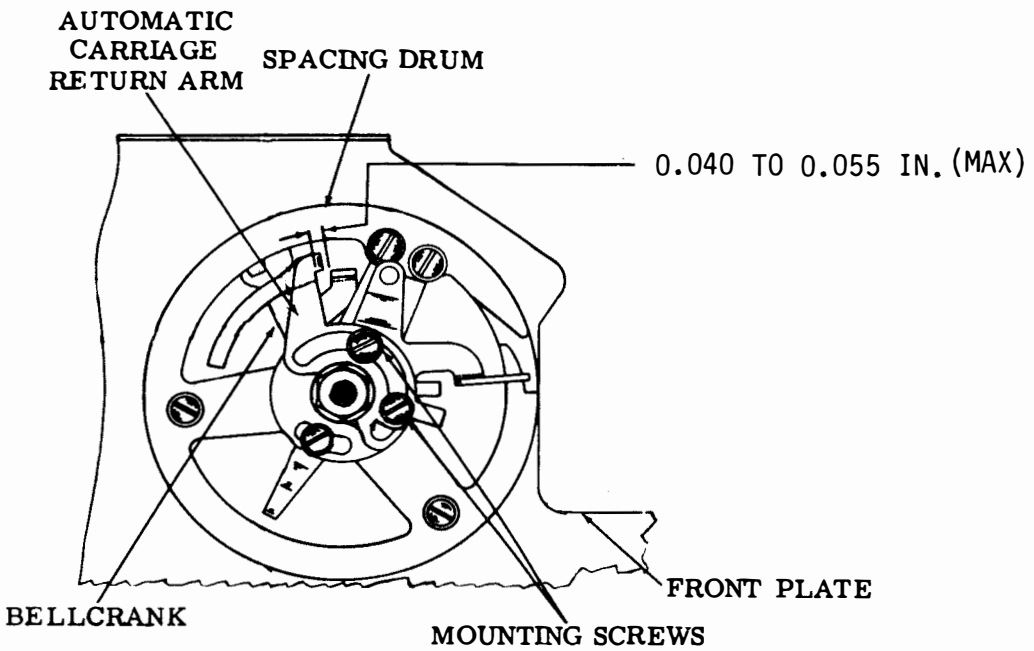


Figure 6-544. Automatic Carriage Return and Line-Feed Arm, Front View

(b) Place carriage in position (operating on base) to print two spaces before last desired characters.

(c) Place front spacing pawl in farthest advanced position.

(d) Clearance between leading end of automatic carriage return arm and bellcrank should measure 0.040 to 0.055 inch maximum.

(e) If clearance exceeds specified limits, loosen mounting screws and position automatic return arm to meet requirement.

(f) Tighten mounting screws.

(10) Margin Indicator Lamp. Adjust as follows:

(a) Refer to Figure 6-545.

(b) Operate unit under power.

(c) Margin indicator lamp should become illuminated on desired character.

(d) If lamp does not become illuminated on desired character, loosen three cam disk mounting screws.

(e) Set type box to print desired character.

(f) Position cam disk counterclockwise on spring drum so switch just opens. If a line shorter than 72 characters is required and range of rotation in one slot is not sufficient, it may be necessary to remove cam disk mounting screws and insert them in adjacent slots of disk.

(g) Tighten mounting screws.

e. Function Mechanism Adjustments. Perform the following function mechanism adjustments.

(1) FIGURES-LETTERS Shift Code Bar Operating Mechanism. Adjust as follows:

NOTE

This adjustments applies to units with non-adjustable guideplates. For units with adjustable guideplates, refer to paragraph 6-3.1f(1).

(a) Refer to Figure 6-546.

(b) Disengage function clutch at position giving least clearence.

(c) Rotate type box clutch 1/2 revolution.

(d) Hold FIGURES function lever in rearward position with tension of 32 ounces.

(e) Take up play in pawl to maximize clearance.

(f) Clearance between function pawl shoulder and face of function bar should measure 0.002 to 0.015 inch maximum.

(g) If clearance exceeds specified limits, loosen clamp nuts and position shift assembly to meet requirement.

(h) Take up play in mounting holes to rear. Tighten clamp nuts.

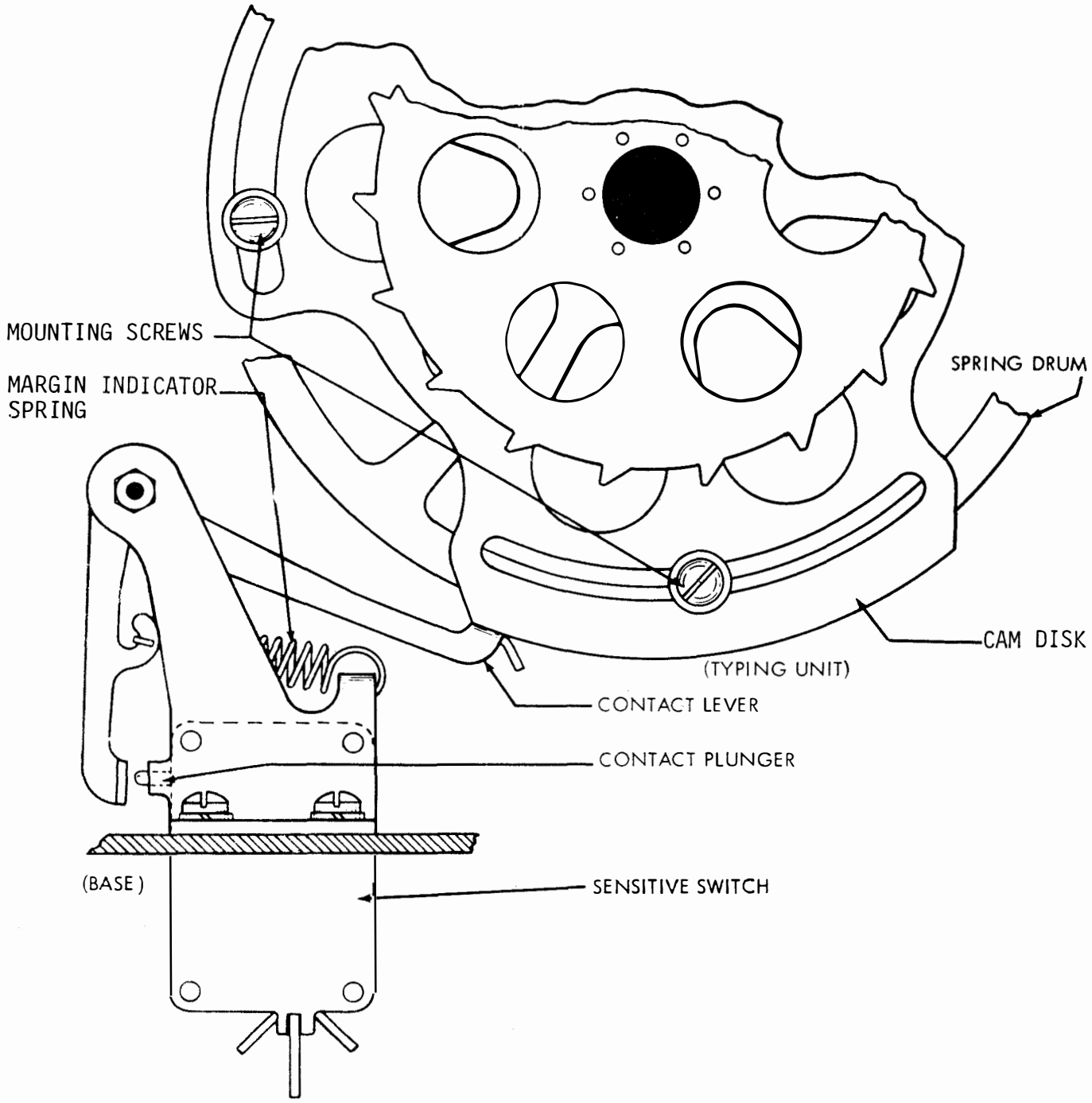


Figure 6-545. Margin Indicator Lamp, Front View

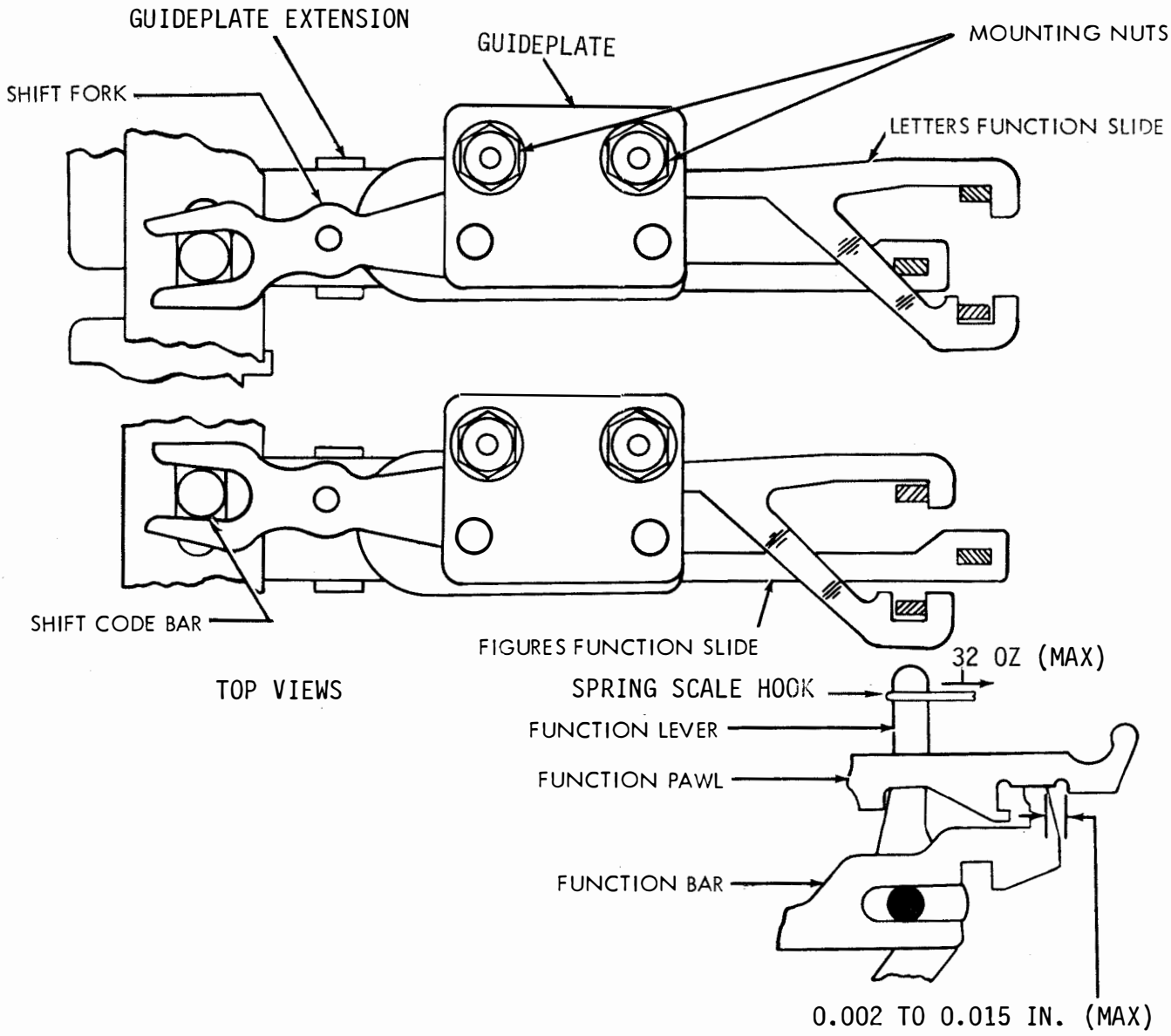


Figure 6-546. FIGURES-LETTERS Shift Code Bar Operating Mechanism

(i) Disengage FIGURES function pawl.

(j) Repeat steps (d) through (h) for LETTERS function pawl.

CAUTION

Manually operate LETTERS and FIGURES function lever alternately. Levers should be free of binds.

(2) Function Reset Bail Blade. Adjust as follows:

NOTE

This adjustment applies only to units with a two-stop function clutch. If unit has a one-stop function clutch, refer to 6-3.1f(3).

(a) Refer to Figure 6-547.

(b) Disengage function clutch at stop position which yields least clearance.

(c) Disengage type box clutch.

(d) Unlatch all function pawls from their function bars.

NOTE

If there is no bar in a designated slot use nearest bar. If there is a bar on each side of a designated vacant slot, use bar in higher numbered slot. Slots are numbered from left to right facing rear of unit.

(e) Holding each function bar in maximum rearward position, measure clearance between bars located in stunt box slot 1, 4, 11, 18, 28, 33, 38 and 41, and reset bail blade.

(f) Clearance between each function bar and reset bail blade should be between 0.018 and 0.035 inch maximum.

(g) If clearance exceeds specified limits, loosen reset bail blade mounting screws friction tight.

(h) Position blade on reset bail to meet requirement and tighten mounting screws.

(i) Rotate type box clutch one-half revolution.

(j) Hold each function lever, one at a time, in rearmost position with a maximum of 2 pounds tension. Latch associated pawl.

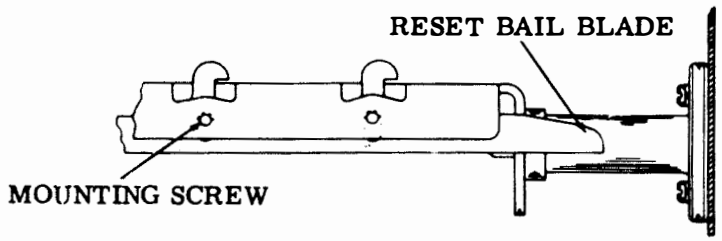
(k) Attach spring scale hook to function pawl and apply 32 ounces tension. The function pawl should overtravel its bar a minimum of 0.002 inch.

(l) If overtravel is less than specified amount, refine the adjustment performed in steps (b) through (h).

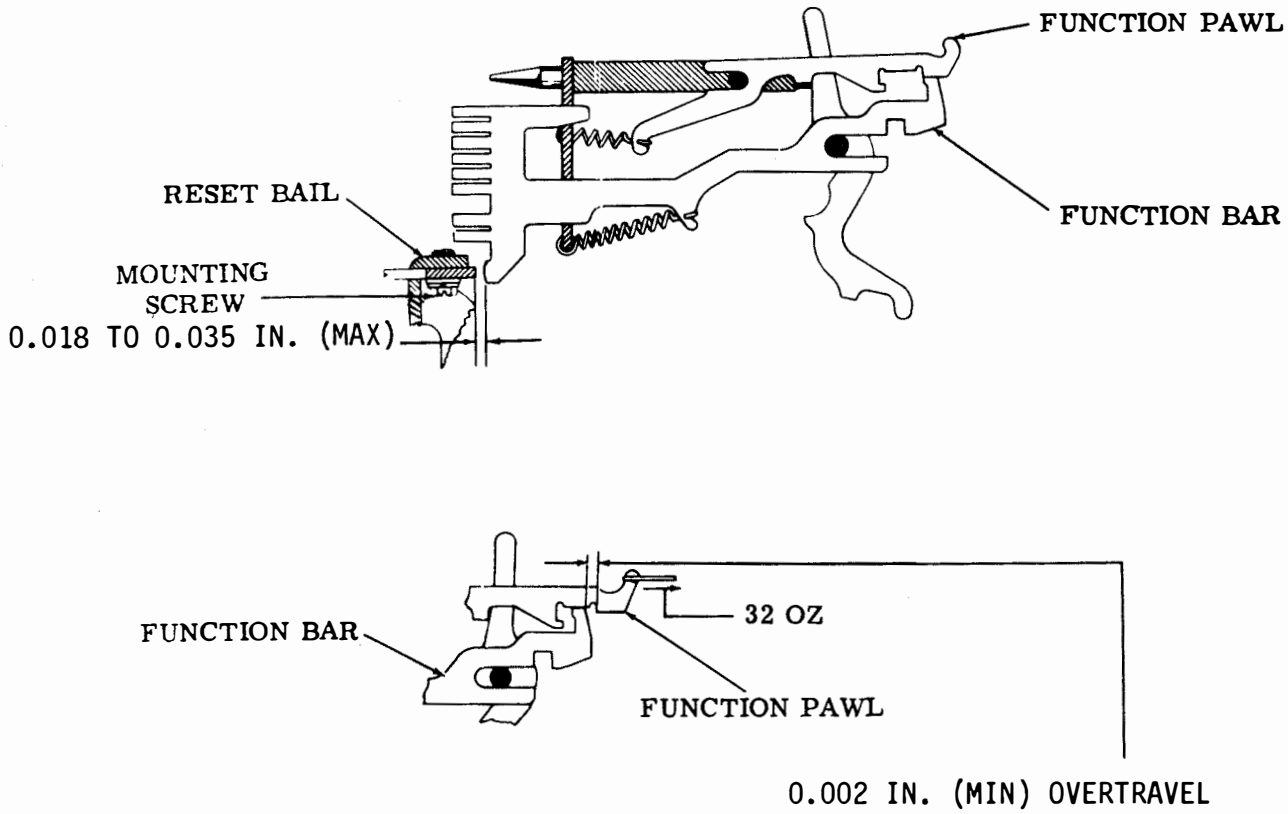
(3) Function Stripper Blade Arms. Adjust as follows:

(a) Refer to Figure 6-548.

(b) Place single-double line-feed lever in double line-feed position.



REAR TOP VIEW



RIGHT SIDE VIEWS

Figure 6-547. Function Reset Bail Blade

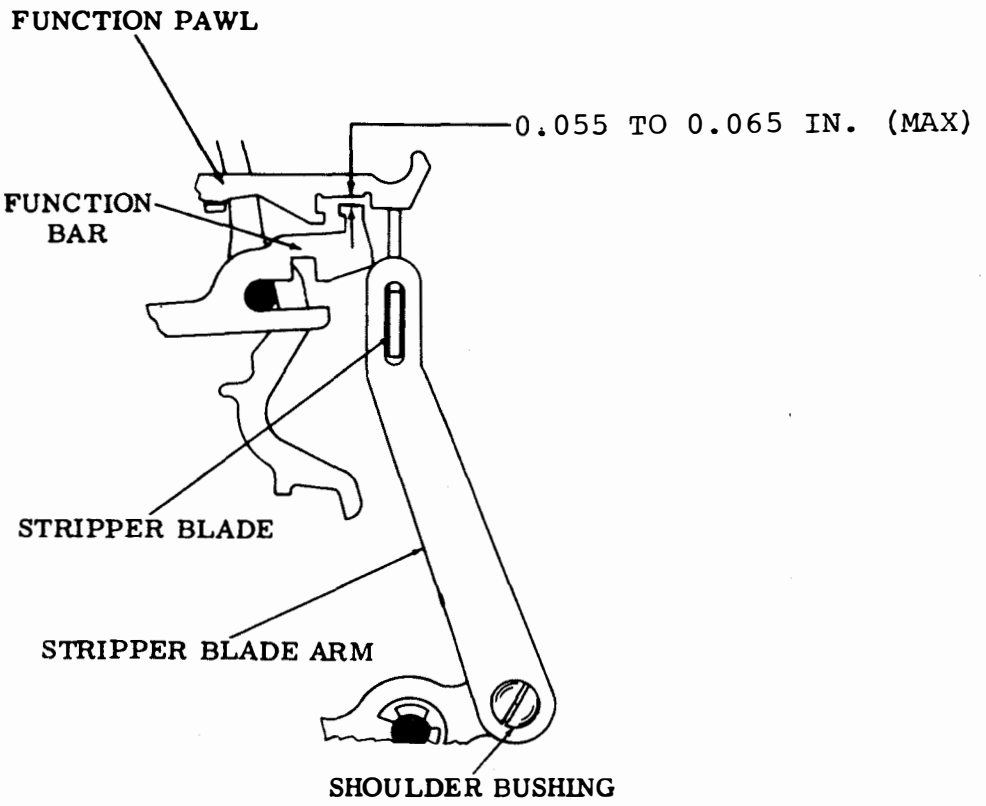


Figure 6-548. Function Stripper Blade Arms, Right Side View

(c) Disengage type box clutch and function clutch.

(d) Hold left line-feed function pawl in its rear position resting on upper edge of stripper blade.

(e) Clearance between upper edge of function bar and lower surface of notched section of function pawl should measure 0.055 to 0.065 inch maximum.

(f) Clearance for LETTERS function pawl near opposite end of stripper blade should measure 0.055 to 0.065 inch maximum.

(g) If either clearance exceeds specified limits, loosen locknut.

(h) Position shoulder bushing at lower end at right and left stripper blade arm to meet requirement.

(i) Tighten locknut.

(4) Bell or Motor Stop Function Contact. Adjust as follows:

(a) Refer to Figure 6-549.

(b) Position function lever so normally-closed contacts are open.

(c) Contact gap should measure 0.010 to 0.020 inch maximum.

(d) If gap exceeds specified limits, bend lower contact spring to meet requirement.

(e) Position function lever so normally-closed contacts are closed.

(f) Attach spring scale hook to upper contact spring as shown in Figure.

(g) Force required to open contacts should measure 1-1/2 to 1-3/4 ounces maximum.

(h) If scale reading exceeds specified limits, bend upper contact spring to obtain specified scale reading and repeat steps (b) through (d)

(5) Function Contact Spring. Adjust as follows:

CAUTION

Care should be exercised in soldering to contact springs since excessive heat will anneal the springs.

(a) Refer to Figure 6-550.

(b) Close contacts.

(c) Attach spring scale hook as shown and measure force required to open switch contact.

(d) This should measure 1 to 2 ounces maximum, when function lever is operated or unoperated.

(e) If the required force exceeds the specified limits, replace spring.

f. Positioning Mechanism Adjustments. Perform the

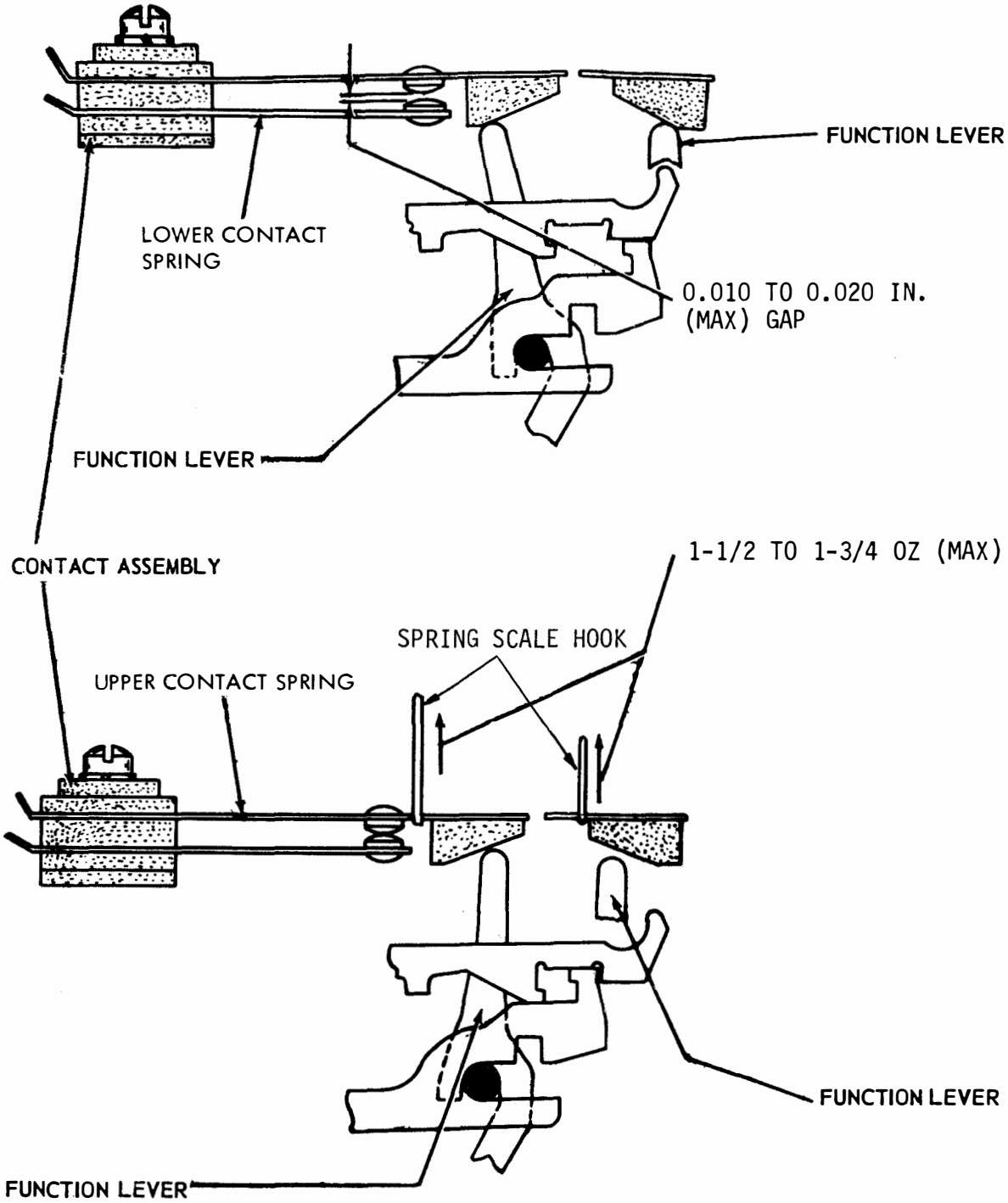
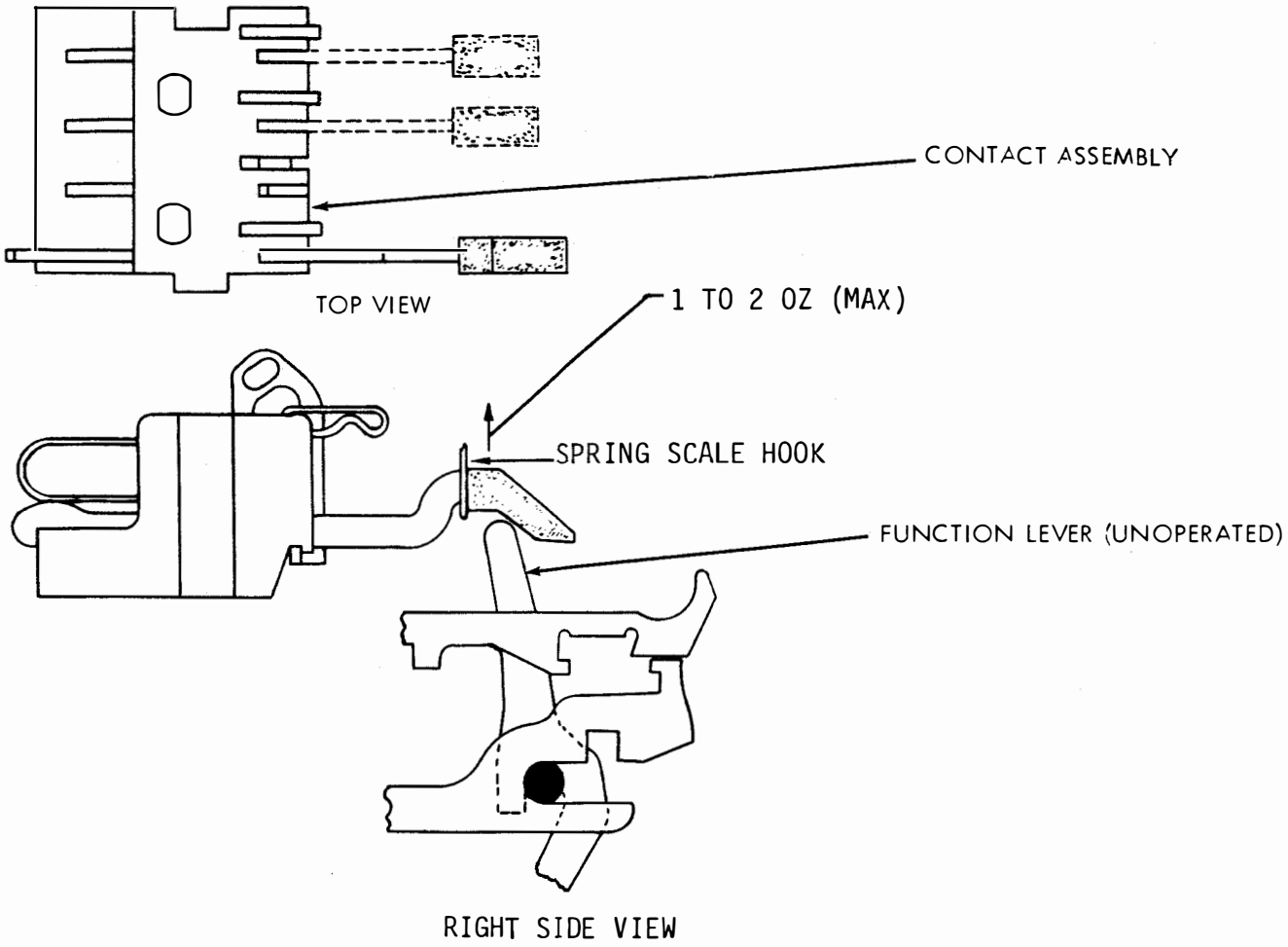


Figure 6-549. Bell or Motor Stop Function Contact, Right Side View



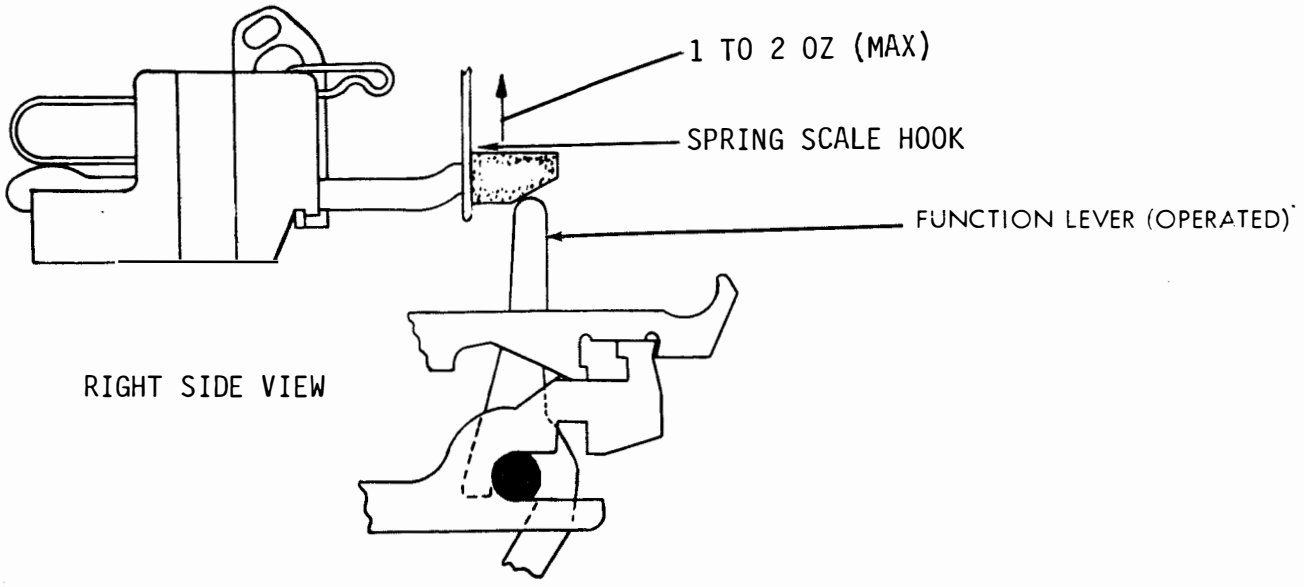


Figure 6-550. Function Contact Spring, Operated and Unoperated

following positioning mechanism adjustments.

(1) Horizontal Positioning Drive Linkage with Earlier Design Driver Linkage and Tension Springs. Adjust as follows:

(a) Refer to Figure 6-551.

(b) Disengage type box clutch.

(c) Position code bars 4 and 5 for spacing (right).

(d) Measure clearance between each side of center horizontal stop slide and decelerating slides on side where knee link is straight. Each clearance should be between 0.015 and 0.040 inch and they should be equal within 0.005 inch.

(e) If clearances exceed specified limits, loosen bearing stud and connecting strip mounting screws friction tight.

(f) Position one or both bearing studs on connecting strip to provide from 0.025 to 0.035 inch clearance between center horizontal slide and decelerating slide on side where linkage is not buckled. Tighten two connecting strip mounting screws.

(g) Change position of reversing slide and check opposite clearance. Equalize by shifting both studs and connecting strip as a unit.

(h) Hold drive linkage hub against lower vertical link of the drive linkage.

(i) Tighten two bearing stud mounting screws.

(j) Check linkage for freeness throughout a complete cycle.

(k) Type box clutch disk should have some movement in normal direction of rotation in stop position.

(2) Horizontal Positioning Drive Linkage Tension Spring. Adjust as follows:

NOTE

The loops of this spring are offset from center in same direction. Spring must be hooked on its anchors so side of spring where loops are located is toward rear of machine. When removing either spring, be careful to avoid kinks in loops.

(a) Refer to Figure 6-551.

(b) Unhook spring from its post.

(c) Place linkage in its unbuckled position.

(d) Attach spring scale hook to free end of spring.

(e) Force required to extend spring to its installed length should be 14 to 18 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(g) Hook free end of spring back on its post.

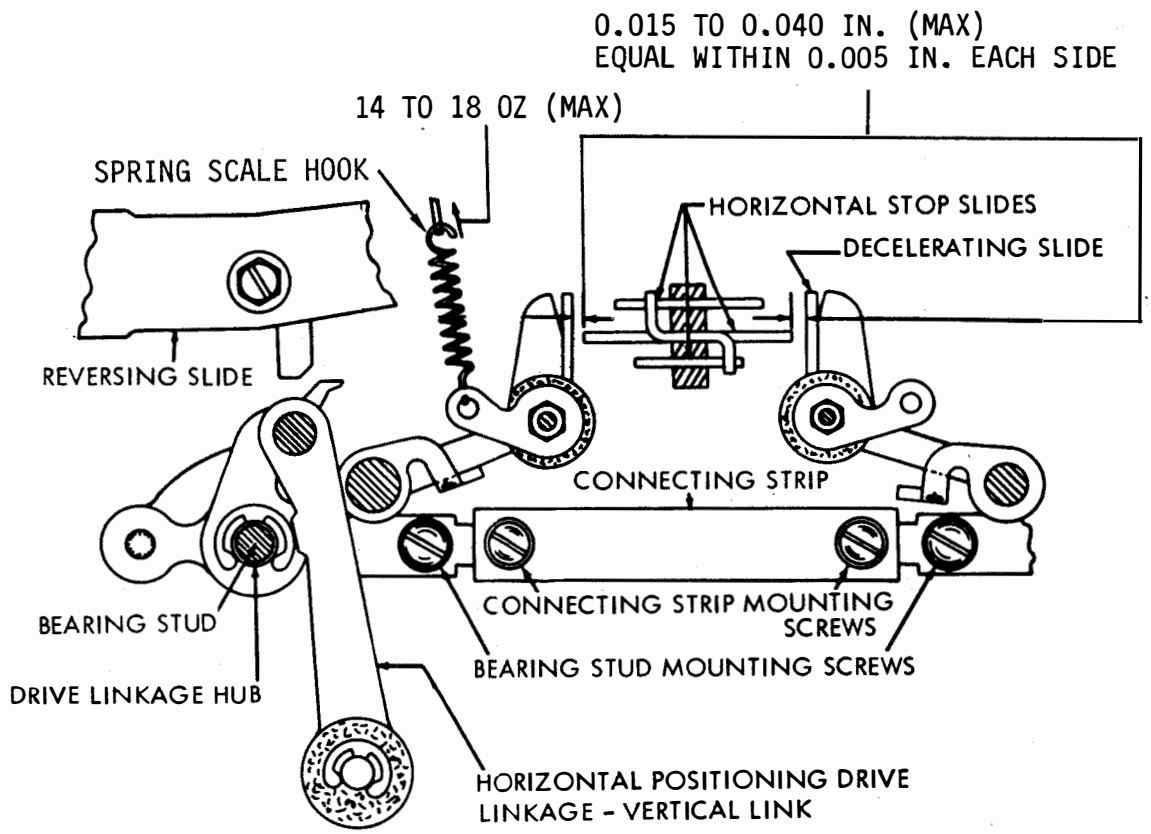


Figure 6-551. Horizontal Positioning Drive Linkage and Drive Linkage Tension Spring With Earlier Design Drive Linkage and Tension Springs, Front View

(3) Horizontal Positioning Drive Linkage with Earlier Design Drive Linkage and Torsion Springs. Adjust as follows:

(a) Refer to Figure 6-552.

(b) Disengage type box clutch.

(c) Position code bars 4 and 5 for spacing (right).

(d) Measure clearance between each side of center horizontal stop slide and decelerating slides on side where knee link is straight. Each clearance should be between 0.015 and 0.040 inch and they should be equal within 0.008 inch.

(e) If clearances exceed specified limits, loosen bearing stud and connecting strip mounting screws friction tight.

(f) Position one or both bearing studs on connecting strip to provide from 0.025 to 0.035 inch clearance between center horizontal slide and decelerating slide on side where linkage is not buckled. Tighten two connecting strip mounting screws.

(g) Change position of reversing slide and check opposite clearance. Equalize by shifting both studs and connecting strip as a unit.

(h) Hold drive linkage hub against lower vertical link of the drive linkage.

(i) Tighten two bearing stud mounting screws.

(j) Check linkage for freeness throughout a complete cycle.

(k) Type box clutch disk should have some movement in normal direction of rotation in stop position.

(4) Horizontal Positioning Drive Linkage Torsion Spring. Adjust as follows:

(a) Refer to Figure 6-552.

(b) Place linkage in unbuckled position.

(c) Apply spring scale pushrod near end of upper extension.

(d) Force required to start link buckling should be between 6 and 12 ounces maximum.

(e) If scale reading exceeds specified limits install new spring.

(5) Shift Linkage Spring. Adjust as follows:

NOTE

This adjustment is for torsion type shift linkage springs.

(a) Refer to Figure 6-553.

(b) Place link in straight position.

(c) Apply spring scale hook to linkage as shown in Figure.

(d) Force required to start each link

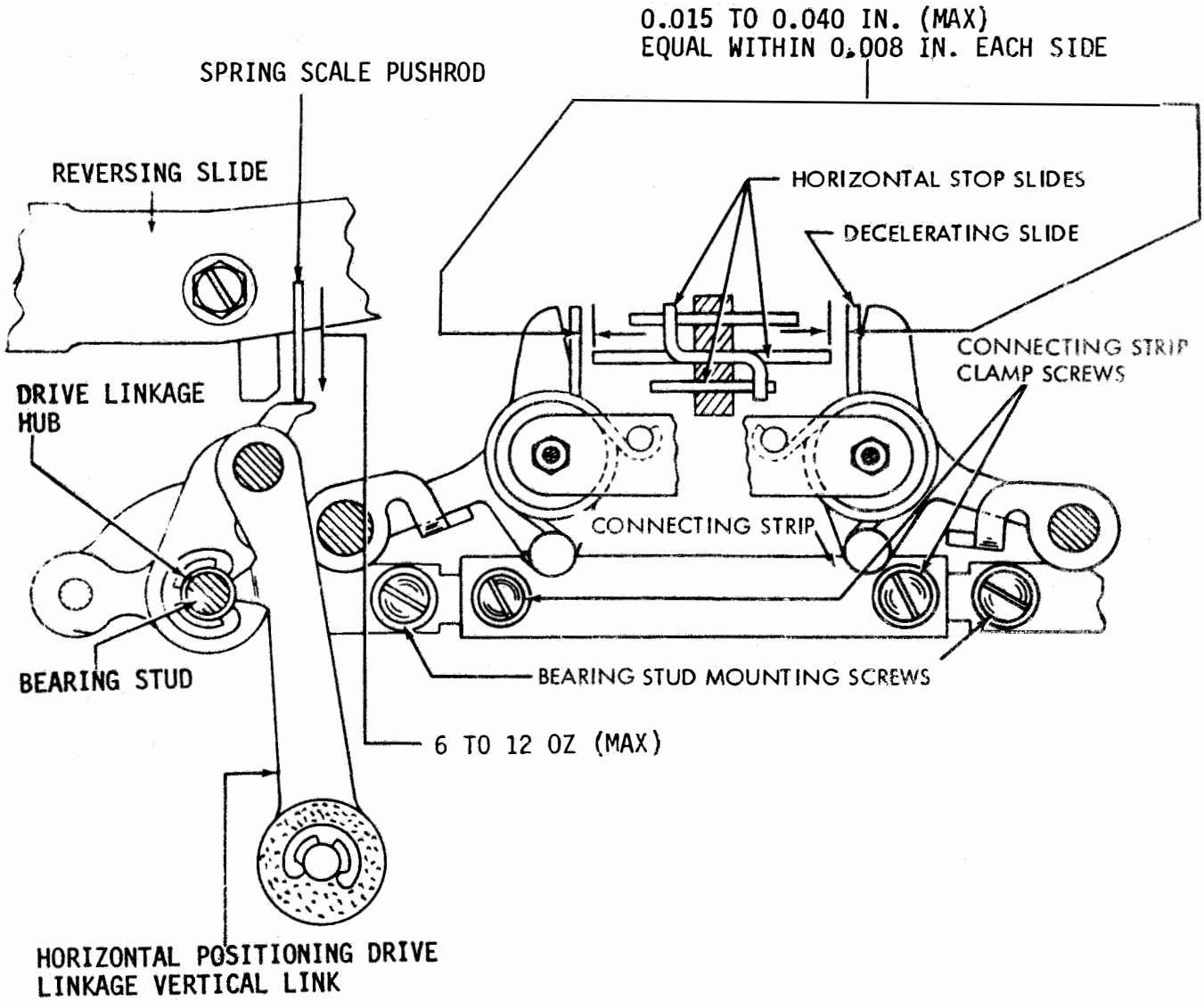


Figure 6-552. Horizontal Positioning Drive Linkage and Drive Linkage Torsion Spring with Earlier Design Drive Linkage and Torsion Springs, Front View

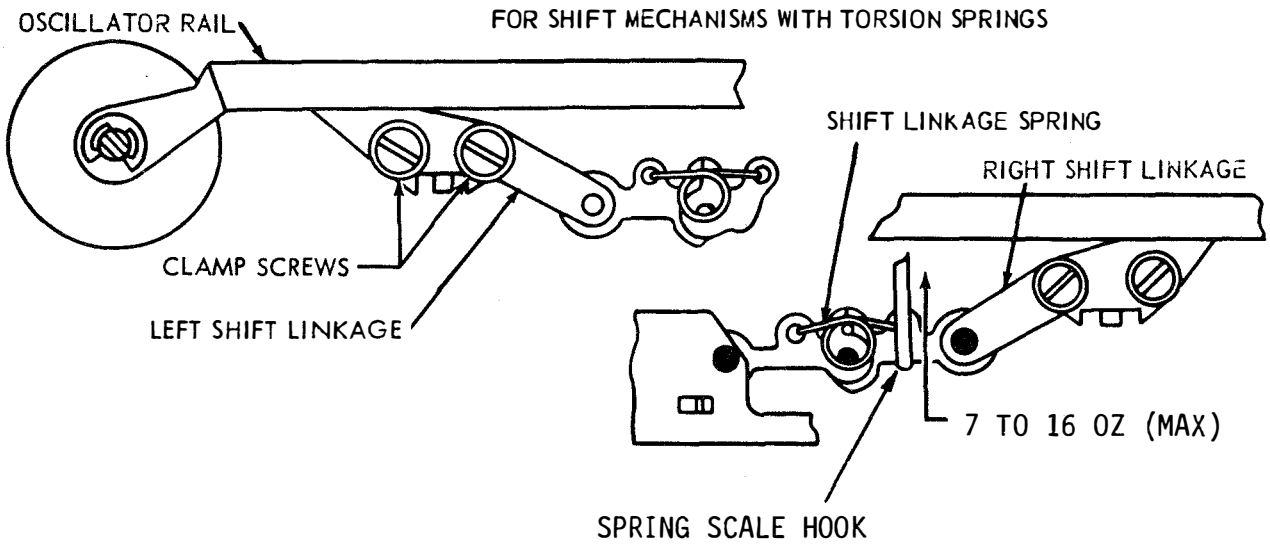


Figure 6-553. Shift Linkage Spring, Early Design, Front View

moving should be 7 to 16 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

g. Printing Mechanism Adjustments. Perform the following printing mechanism adjustments.

(1) Type Box Carriage Roller. Adjust as follows:

(a) Refer to Figure 6-554.

(b) Move carriage to right end of track and place in upper position.

(c) Remove drive link.

(d) Ensure minimum vertical play without binding throughout entire travel of type box carriage.

(e) If requirement is not met, loosen clamp screw.

(f) Position lower roller arm to relieve binding or reduce play.

(g) Tighten clamp screw.

(2) Printing Hammer Stop Bracket (for Thick Type Box with Dummy Pallets). Adjust as follows:

(a) Refer to Figure 6-555.

(b) Place type box in BLANK or CARRIAGE RETURN position (whichever does not print) and near center of platen.

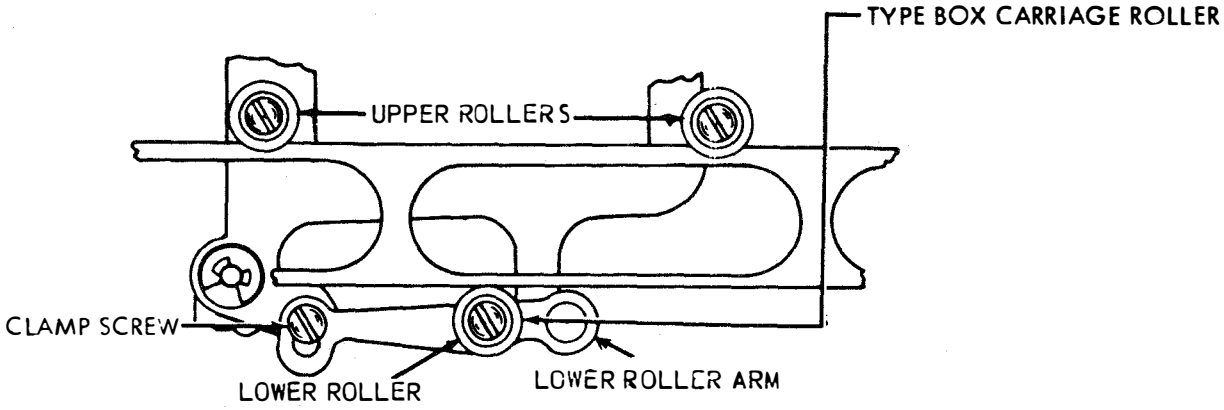


Figure 6-554. Type Box Carriage Roller, Front View

(c) Place printing track in its downward position.

(d) Hold printing hammer against its stop with a force of 8 ounces.

(e) Clearance between printing hammer and dummy type pallet should measure 0.008 to 0.020 inch maximum.

(f) If clearance exceeds specified limits, loosen mounting screw and the hammer bail pivot stud.

(g) Position stop bracket to meet requirement.

(h) Tighten screw and stud.

NOTE

For sprocket-feed units, see paragraph 6-3.1h(15).

(3) Printing Arm. Adjust as follows:

NOTE

The printing arm adjustment should always be made with the printing hammer operating bail spring bracket in the number 1 position.

(a) Refer to Figure 6-555.

(b) Place printing track in maximum downward position.

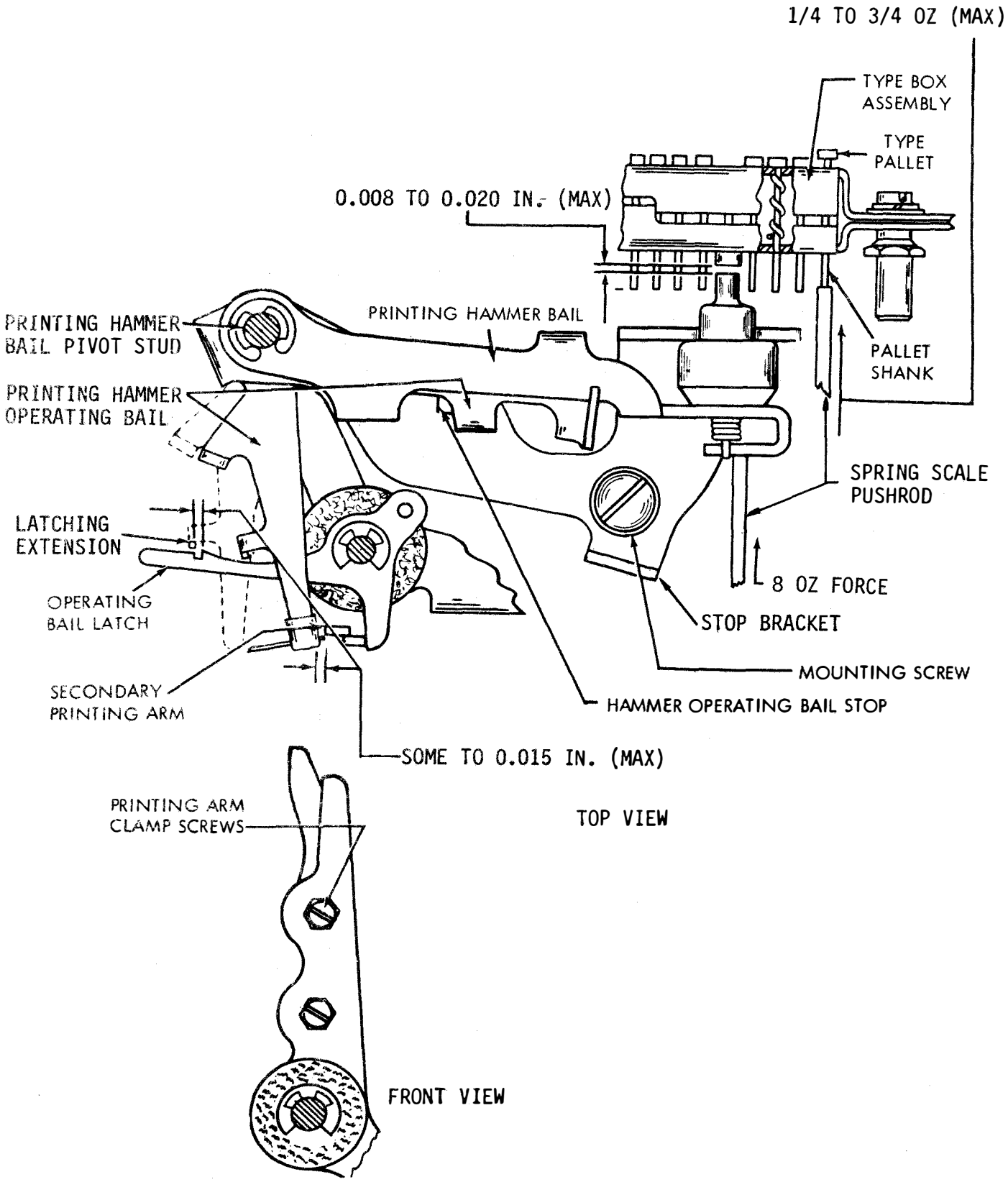


Figure 6-555. Printing Hammer Stop Bracket, Printing Arm, and Type Pallet Spring

(c) Position printing hammer operating bail against its stop.

(d) Hold printing arm slide downward over each printing track mounting screw to maximize clearance.

(e) Clearance between secondary printing arm and forward extension of hammer operating bail should measure some to 0.015 inch maximum.

(f) Place printing track in uppermost position.

(g) Latching extension of printing hammer operating bail should overtravel latching surface of operating bail latch by not less than 0.006 inch. Check right and left positions.

(h) If requirements are not met, loosen clamp screws.

(i) Position secondary printing arm to obtain specified clearance or overtravel.

(j) Tighten clamp screws.

(4) Type Pallet Spring. Adjust as follows:

(a) Refer to Figure 6-555.

(b) Remove type box from unit.

(c) Apply 8-ounce spring scale pushrod vertically to end of pallet shank.

(d) Force required to start pallet moving should be between 1/4 and 3/4 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(5) Ribbon Reverse Spur Gear. Adjust as follows:

(a) Refer to Figure 6-556.

(b) When right reversing lever is in maximum downward position, left reversing lever should be in its maximum upward position.

(c) If requirement is not met, loosen detent cam setscrews and left spur gear nut.

(d) Securely tighten right spur gear nut.

(e) Move right reversing lever to its maximum downward position and hold left reversing lever in its maximum upward position.

(f) Tighten left spur gear nut.

(g) Tighten detent cam setscrews.

(6) Ribbon Reverse Detent. Adjust as follows:

(a) Refer to Figure 6-556.

(b) Ensure detent seats approximately equally in upper and lower portions of detent cam.

(c) If necessary, loosen setscrews and position cam on shaft.

(d) Allow left end of detent stud to be

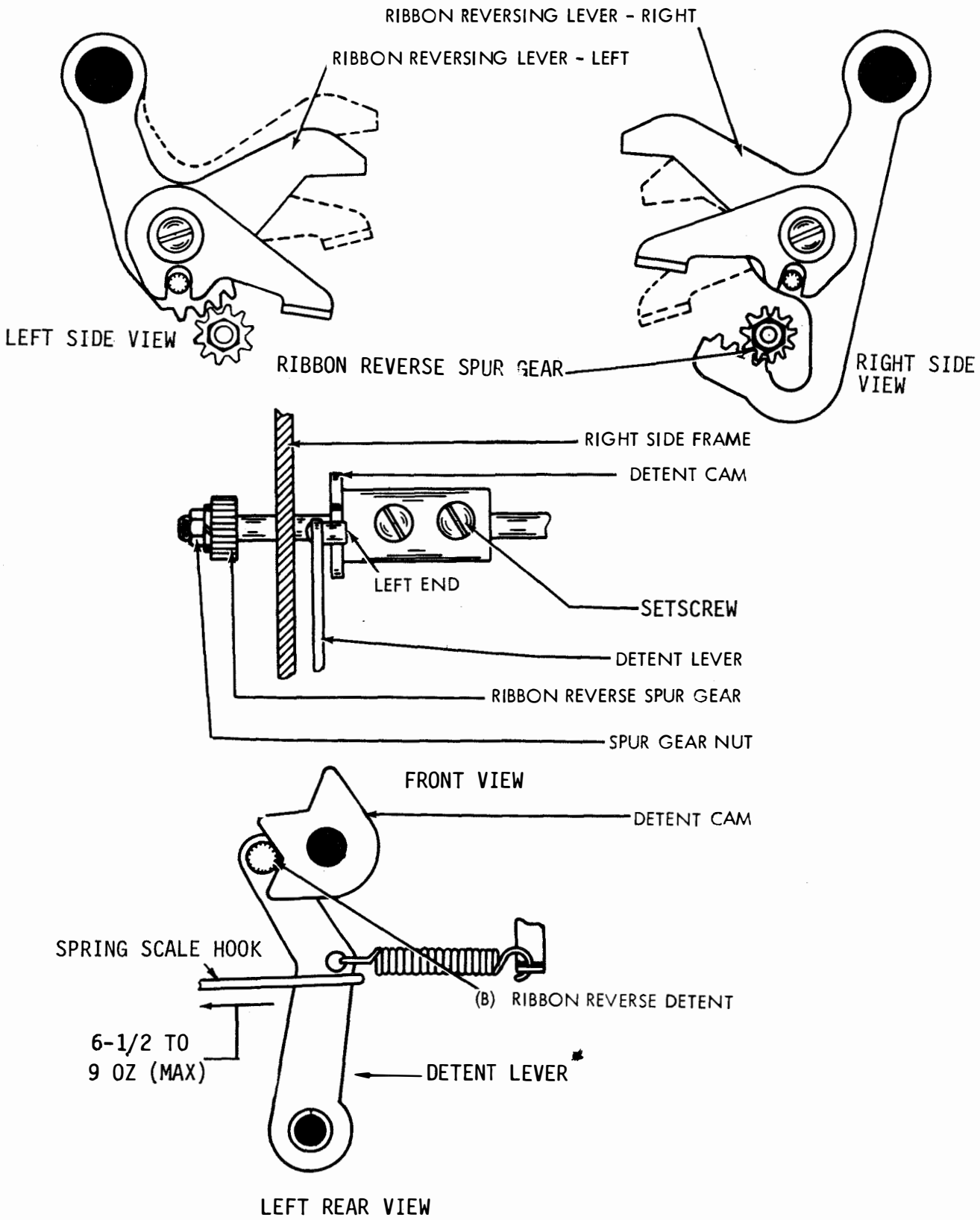


Figure 6-556. Ribbon Reverse Spur Gear, Detent, and Detent Lever Spring

approximately flush with left face of cam (take up play in detent to right of printer).

(e) Tighten setscrews.

(7) Ribbon Reverse Detent Lever Spring. Adjust as follows:

(a) Refer to Figure 6-556.

(b) Seat detent in notch of cam.

(c) Hold right ribbon reversing lever downward.

(d) Attach sprign scale hook to detent lever.

(e) Force required to start detent lever moving should be between 6-1/2 and 9 ounces.

(f) If scale reading exceeds specified limits, install new spring.

h. Line-Feed Mechanism and Platen Mechanism Adjustments. Perform the following line-feed and platen mechanism adjustments.

(1) Single-Double Line-Feed Lever. Adjust as follows:

NOTE

This adjustment applies only to units with a two-stop function clutch.

(a) Refer to Figure 6-557.

(b) Place single-double line-feed lever in single line-feed position.

(c) Set up LINE-FEED combination (-2---).

(d) Rotate main shaft until line-feed function pawl stopper is in contact with line-feed function pawl.

(e) When play is taken up in a direction to make overlap a minimum, pawl should overlap stripper by at least one-half the pawl thickness.

(f) If adjustment is necessary, loosen locking nut and turn the lever adjusting screw to meet requirement.

(g) Tighten locking nut.

(2) Line-Feed Stripper Bail Spring. Adjust as follows:

(a) Refer to Figure 6-558.

(b) Disengage line-feed clutch.

(c) Attach spring scale hook to end at line-feed stripper bail.

(d) Force required to start stripper bail moving upward should be 1/2 to 2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

6-18. AUXILIARY TYPING REPERFORATOR ADJUSTMENTS. The following paragraphs describe early design auxiliary typing reperforator unit adjustment procedures.

a. Function Mechanism Adjustments. Perform the

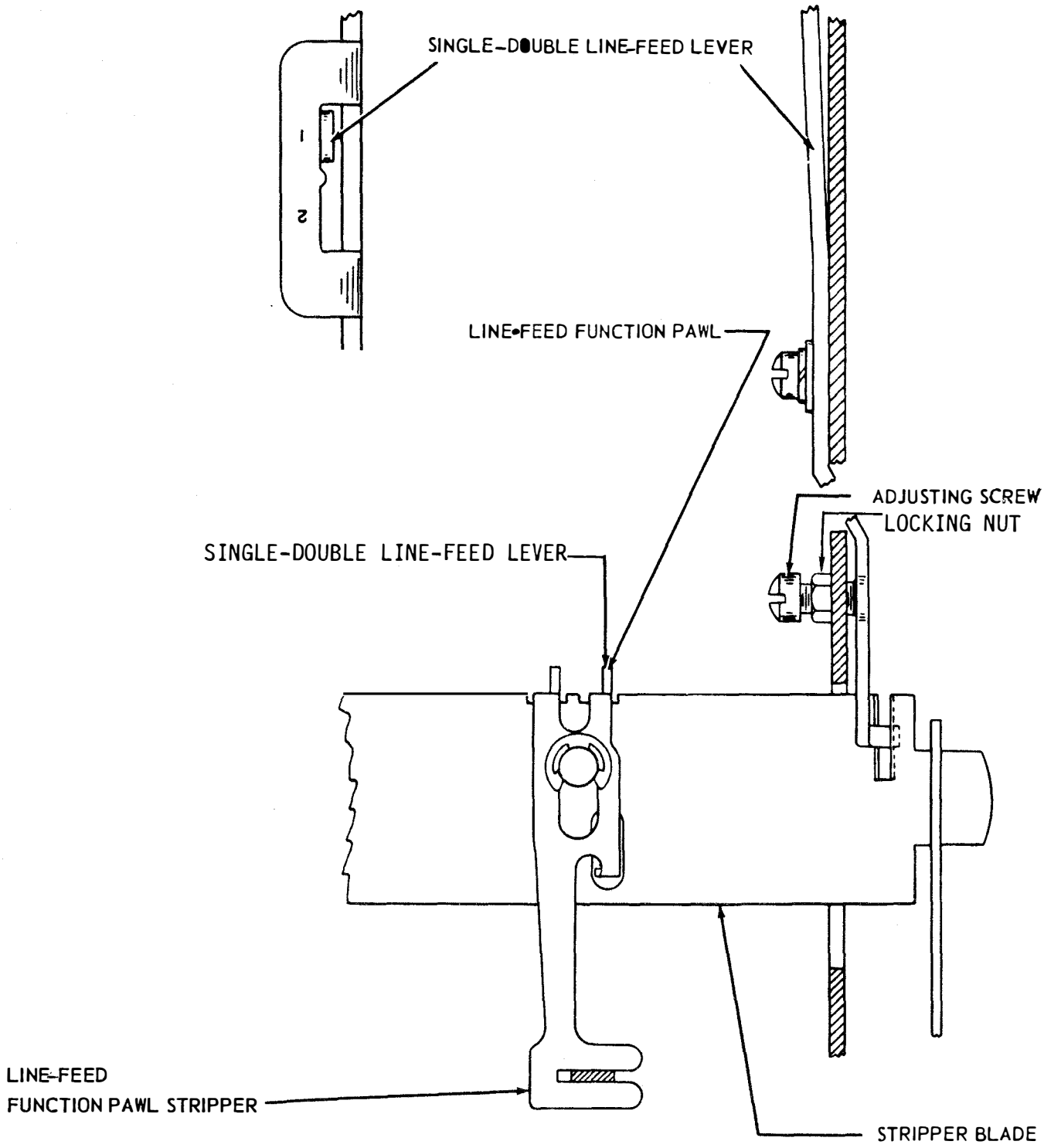


Figure 6-557. Single-Double Line-Feed Lever, Rear View

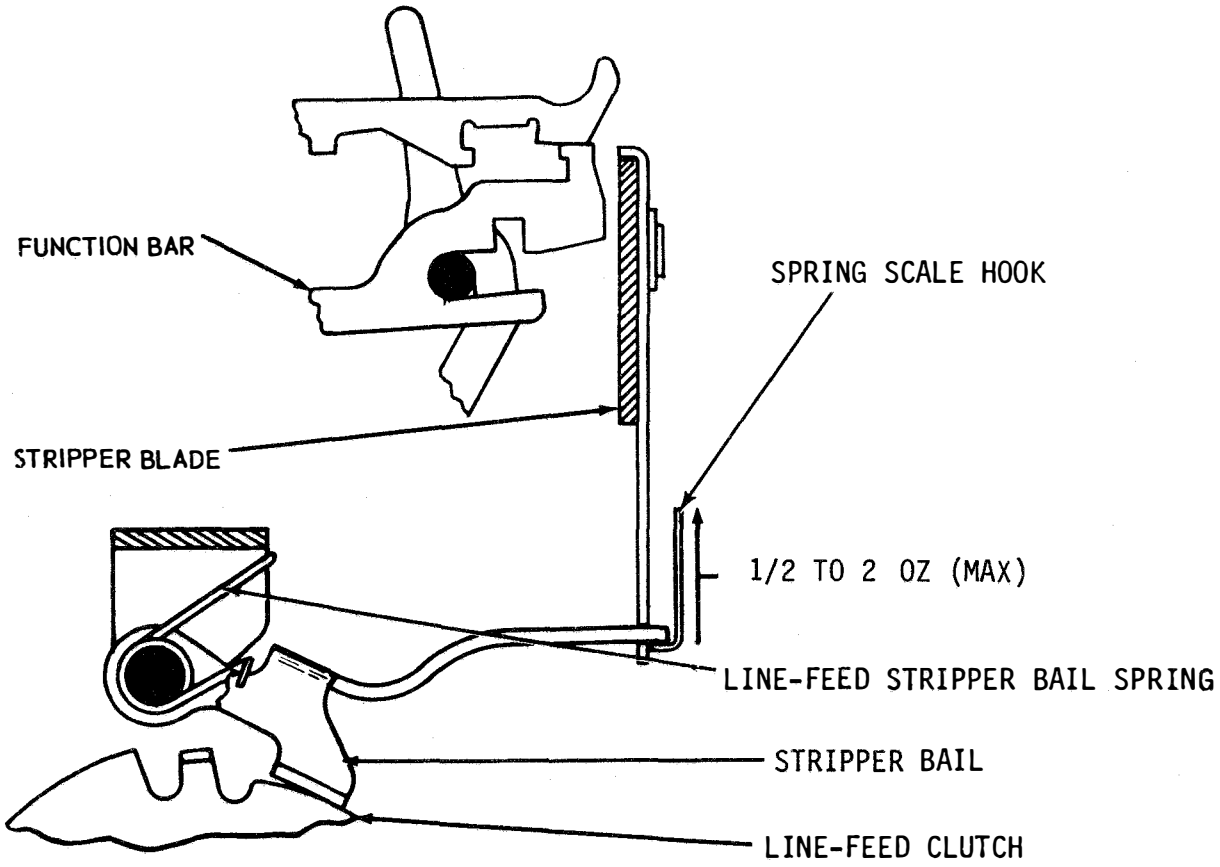


Figure 6-558. Line-Feed Stripper Bail Spring, Right Side View

following function mechanism adjustments.

(1) Cam Follower Lever Spring. Adjust as follows:

(a) Refer to Figure 6-559.

(b) With follower lever on high part of trip cam and main trip lever held away from adjusting arm, attach spring scale hook to end of spring.

(c) Force required to start lever moving should measure 2-1/2 to 4 ounces maximum.

(d) If requirement is not met, replace spring.

(2) Reset Bail Trip Lever Spring. Adjust as follows:

(a) Refer to Figure 6-559.

(b) With follower lever on high part of trip cam, attach spring scale hook over reset bail.

(c) If requirment is not met, replace spring.

b. Punch Mechanism Adjustments For Fully Perforated Tape With Indentations of Feed Wheel Fully Punched Out. Perform the following punch mechanism adjustments.

NOTE

None of the following adjustments apply to tape printer.

(1) Ten Characters Per Inch (Preliminary). Adjus as follows:

(a) Refer to Figure 6-560.

(b) Indent of die wheel eccentric stud should be pointing downward.

(c) If necessary, loosen locknut and position stud to meet requirement.

(d) Tighten locknut.

(e) With tape shoe blocked away from feed wheel, feed pawl and detent disengaged, and tape removed, feed wheel should rotate freely.

(f) Check through three or four rotations of feed wheel.

(g) Refine step (c) to meet requirement.

NOTE

Before proceeding with final adjustment, check Bias Spring tensions as outlined in paragraphs 6-6e(7) and (8). If the unit is equipped with a slack tape mechanism having a clamp plate with an adjustable wear disk, loosen the mounting nut and turn a new edge of the disk toward the tape. Tighten nut.

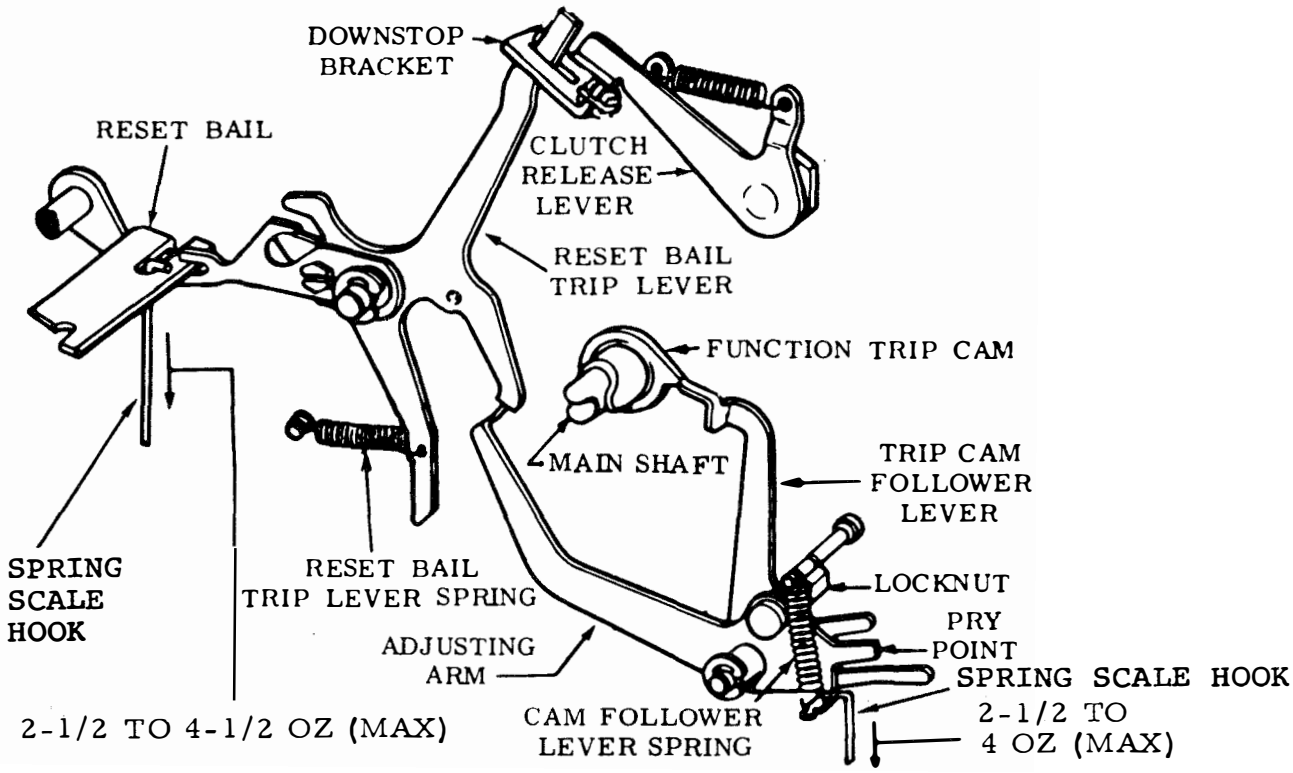
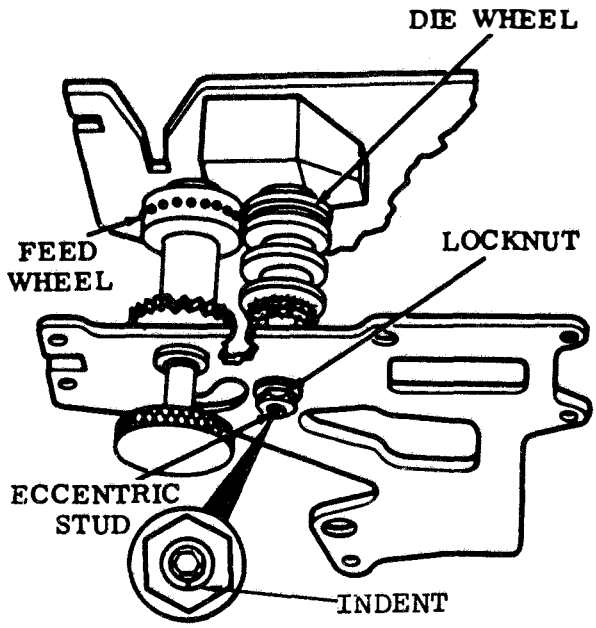


Figure 6-559. Cam Follower Lever Spring and Reset Bail Trip Lever Spring, Front View



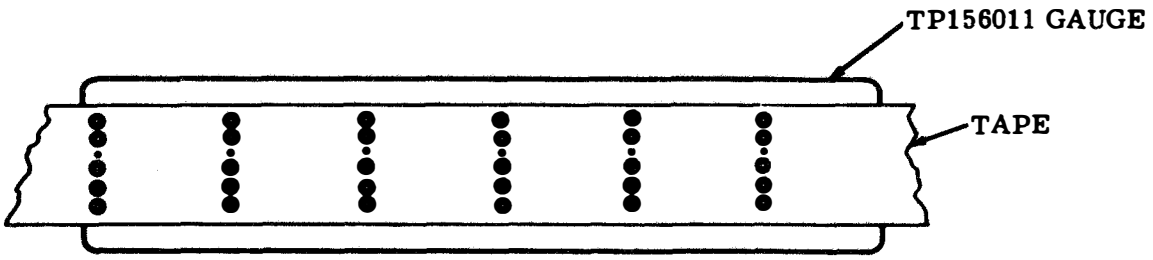


Figure 6-560. Ten Characters Per Inch (Preliminary and Final), Early Design, Front View

(2) Ten Characters Per Inch (Final). Adjust as follows:

(a) Refer to Figure 6-560.

(b) Place a piece of tape perforated with six series of 9 BLANK code combaintions followed by a LETTERS combination over the TP95960 gauge or the smooth side of TP156011 tape gauge so that the circular portion of the first number 2 code hole in the tape is concentric with the first hole in the tape gauge.

(c) The next four holes in the tape gauge should be visible through the number 2 code holes in the tape, and the circular portion of the last (sixth) number 2 code hole in the tape should be entirely within the 0.086 inch diameter hole in the tape gauge.

(d) With tape shoe held away from feed wheel, feed pawl and detent disengaged, and tape removed, feed wheel should rotate freely.

(e) If feed wheel does not turn freely, loosen eccentric locknut and rotate die wheel eccentric shaft (with tape removed) until it binds against feed wheel.

(f) Back off eccentric until die wheel is just free.

(g) Check through three or four rotations of die wheel.

(h) Keep the indent of eccentric below the horizontal centerline of the stud.

NOTE

First through fifth holes in gauge are same size as code holes in tape (0.072 inch diameter). Sixth hole in gauge is larger (0.086 inch). This allows for ±0.007 inch variation in 5 inches.

(i) If necessary, refine adjustment by moving die wheel toward the feed wheel to decrease the character spacing or away from the feed wheel to increase the character spacing.

(j) Tighten nut.

(k) Refine Feed Pawl adjustment, paragraph 6-6c(7), as necessary.

CAUTION

With tape removed, make sure feed wheel and die wheel do not bind. Recheck final adjustment, above, and refine if necessary.

(3) Lateral and Front-to-Rear Wheel Position Detent. Adjust as follows:

(a) Refer to Figure 6-561.

(b) With the reperforator operating under power obtain a tape sample consisting of a series of BLANK code perforations.

(c) Verify by visual inspection of the perforated feed holes, laterally and front-to-rear, that the indentations of the feed wheel are fully punched out.

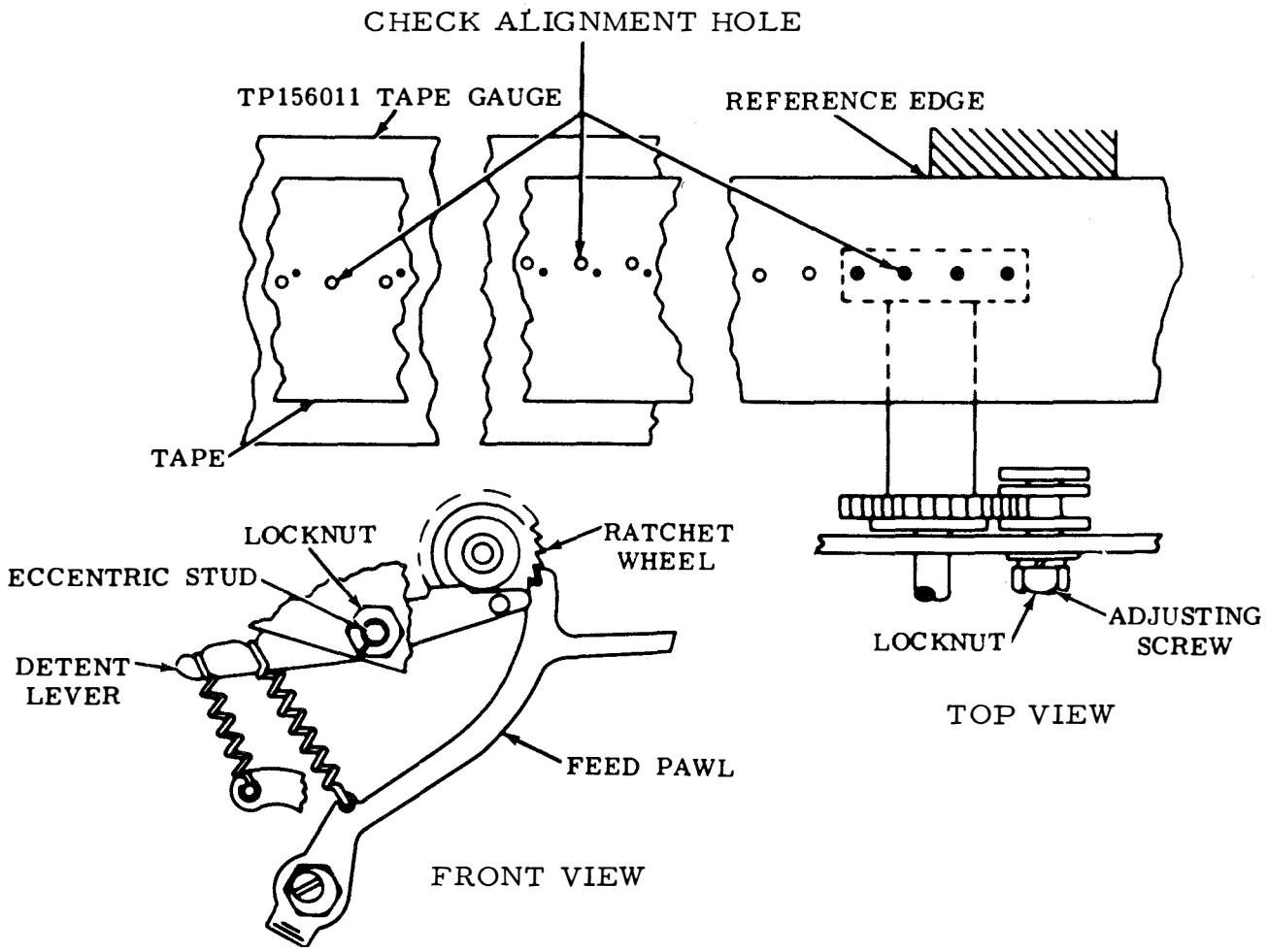


Figure 6-561. Lateral and Front-to-Rear Wheel Position Detent, Early Design

(d) Lateral Adjustment:

1. Loosen detent eccentric stud locknut.

2. Rotate detent eccentric clockwise to move the feed wheel perforations toward leading edge of feed hole.

3. Rotate detent eccentric counterclockwise to move feed wheel perforations toward trailing edge of feed hole.

4. Tighten locknut.

5. Refine Feed Pawl adjustment, paragraph 6-6c(7).

(e) Front-to-Rear Adjustment:

1. Loosen adjusting screw locknut and position screw.

2. To move the indentations in the tape away from the reference edge of the tape, move the wheel towards the front plate of the punch mechanism by rotating the adjusting screw counterclockwise.

3. To move the indentations in the tape towards the reference edge of the tape, move the feed wheel towards the backplate of the punch mechanism by rotating the adjusting screw clockwise.

4. Tighten locknut.

(f) Refine the lateral adjustment above, to align the lateral indentations of feed wheel, if required.

c. Punch Mechanism Adjustment. Perform the punch mechanism tape guide adjustments as follows:

NOTE

This adjustment does not apply to tape printer. Guide is considered "in contact" with projection when 0.015 inch gauge cannot be inserted between them.

(1) Refer to Figure 6-562.

(2) With tape guidw under and in contact with "V" shaped projection of die plate, clearance between guide and tape platform should measure 0.008 to 0.015 inch maximum.

(3) To adjust:

(a) Loosen mounting screw friction tight and place 0.010 inch flat gauge between guide and tape platform.

(b) Press guide down and to left.

(c) Tighten mounting screw while holding feed wheel adjusting screw stationary by means of a hex wrench.

d. Ribbon Mechanism Adjustments. Perform the following ribbon mechanism adjustments.

(1) Detent Spring. Adjust as follows:

(a) Refer to Figure 6-563.

(b) With reversing arm in its extreme

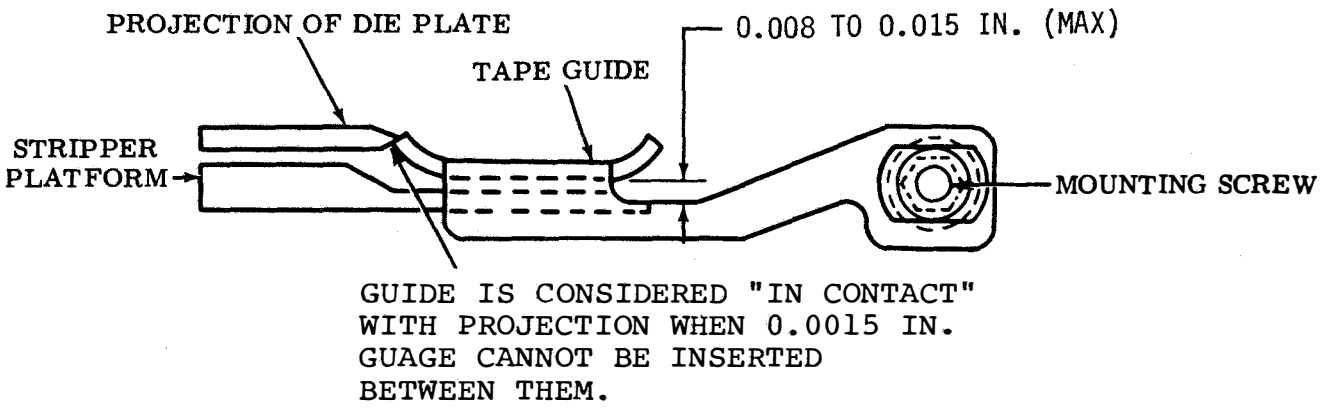


Figure 6-562. Tape Guide, Early Design, Front View

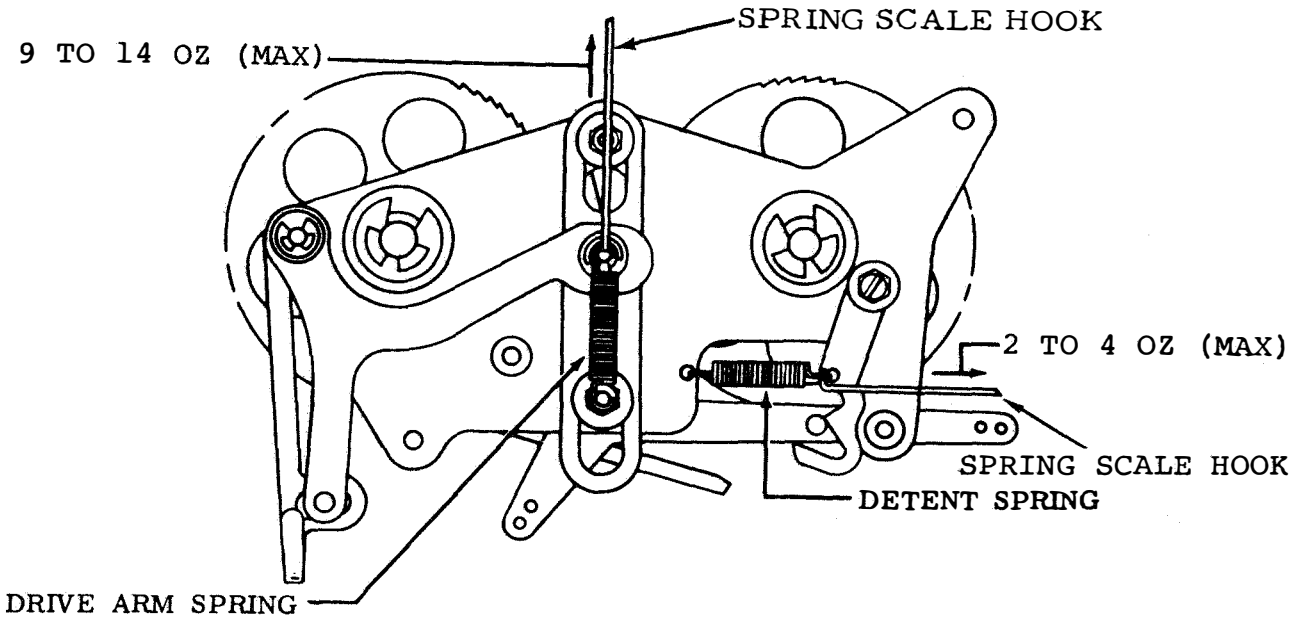


Figure 6-563. Detent Spring and Drive Arm Spring, Rear View

right or left position, apply spring scale hook to end of spring.

(c) Force required to pull detent spring to its installed length should measure 2 to 4 ounces maximum.

(d) If requirement is not met, replace spring.

(2) Drive Arm Spring. Adjust as follows:

(a) Refer to Figure 6-563.

(b) With rocker bail in extreme right position, apply spring scale hook to end of spring.

(c) Force required to pull drive arm spring to its installed length should measure 9 to 14 ounces maximum.

(d) If requirement is not met, replace spring.

e. Slack Tape Mechanism Adjustments. Perform the following slack tape mechanism adjustments.

(1) Clamp Plate Spring. Adjust as follows:

(a) Refer to Figure 6-564.

(b) Disengage and latch function clutch and clamp plate spring bowed to the right.

(c) Attach spring scale hook over edge of clamp plate.

(d) Force required to move clamp plate from bottom of slot in tape depressor should measure 18 to 24 ounces maximum.

(e) If requirement is not met, replace spring.

(2) Tape Platform Adjust as follows:

(a) Refer to Figure 6-564.

(b) Top surface of tape platform should be flush with top surface of tape guide.

(c) To adjust, loosen tape platform mounting screws and position platform to meet requirement.

(d) Tighten mounting screws.

6-19. TRANSMITTER DISTRIBUTOR UNIT ADJUSTMENTS. The following paragraphs describe the early design transmitter distributor unit adjustment procedures which differ from those in Section I.

NOTE

Before making the following adjustments, remove top and tape guideplate from unit and lubricate tape lid mechanism.

a. Tape Lid Adjustment. Adjust as follows:

(1) Refer to Figure 6-565.

(2) Hold tape against notch in tape guideplate.

(3) Align feed wheel groove in tape lid with slot in plate.

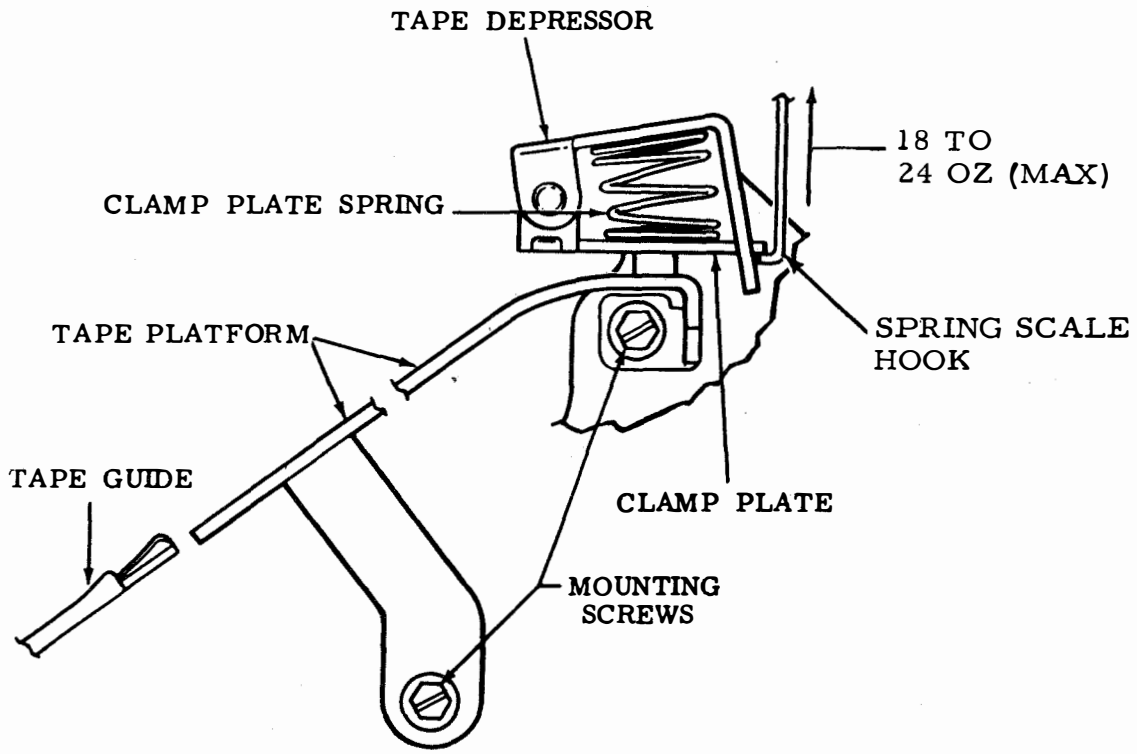


Figure 6-564. Clamp Plate Spring and Tape Platform, Front View

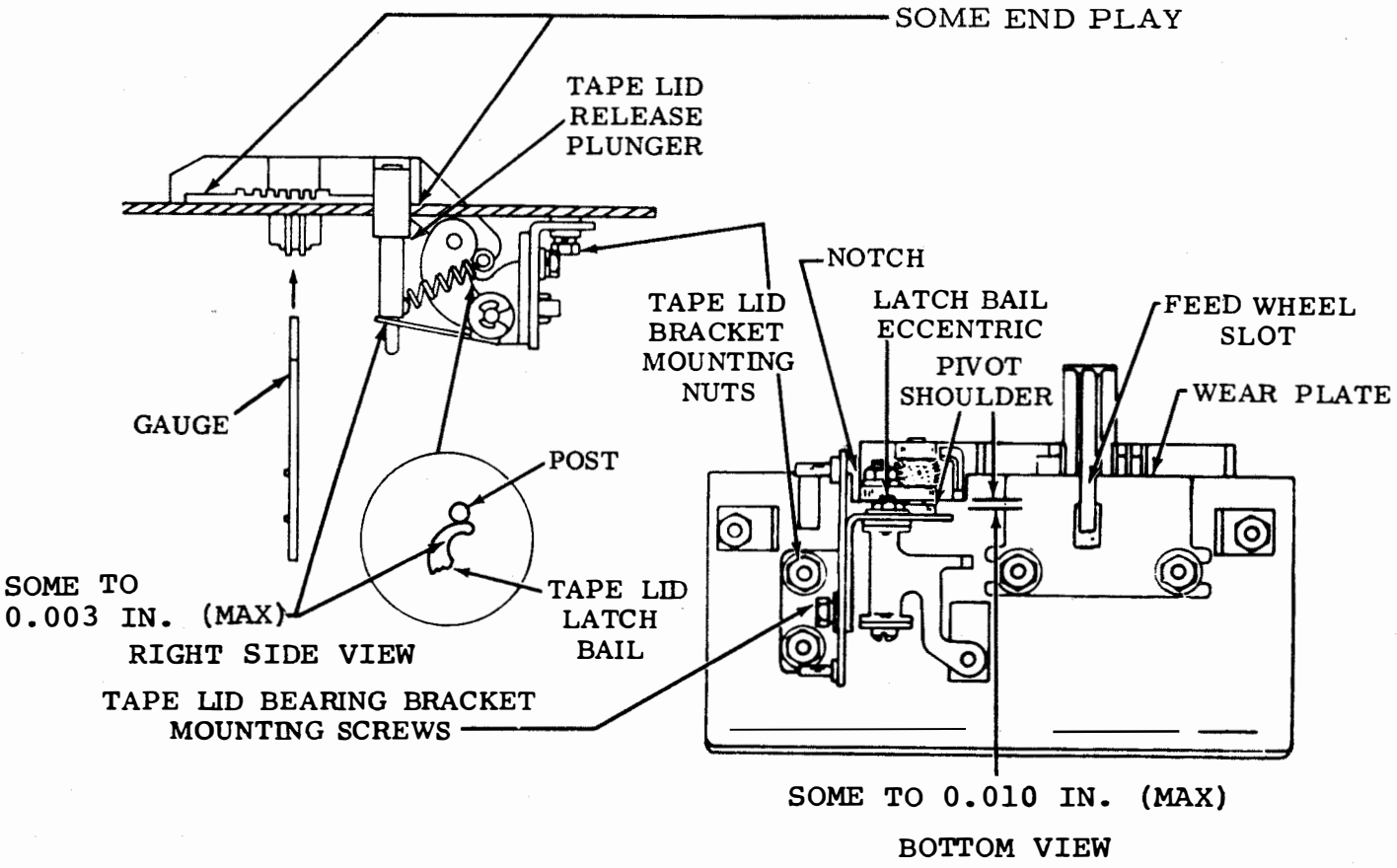


Figure 6-565. Tape Lid

(4) Align tape-out pin hole in palte tape lid with hole in plate.

(5) Clearance between tape lid and pivot shoulder should measure some to 0.010 inch maximum.

(6) If clearance is not as specified, loosen tape lid mounting nuts friction tight.

(7) Insert tip of TP156743 gauge through slot and into groove of lid and position tape lid bracket to meet requirement. Tighten nuts.

(8) Ensure tape lid front bearing rests squarely against tape guideplate.

(9) Clearance between rear bearing surface and tape guideplate should measure some to 0.003 inch maximum.

NOTE

When both plates are assembled on unit, left edge of lid may touch top plate and some change in this clearance may be expected.

(10) If clearance exceeds specified limits, loosen tape lid bracket mounting screws friction tight.

(11) Press tape lid against tape guideplate and position bracket.

(12) Recheck requirement then tighten screws.

(13) Latch tape lid against tape guideplate.

(14) The release plunger should have some end play.

(15) If there is no end play, loosen eccentric mounting post locknut friction tight.

(16) Raise tape lid and rotate high part of eccentric toward tape guideplate.

(17) Close lid and rotate eccentric toward bracket until latch just falls under flat on post.

(18) Depress plunger. With lid held down, operate plunger. Tip of latch should clear post.

b. Tape Lid Release Plunger Spring Adjustment For Units Without Tape Lid Spring. Adjust as follows:

(1) Refer to Figure 6-566.

(2) Hold tape guideplate horizontal and unlatch tape lid.

(3) Apply spring scale hook rod to tape lid release plunger.

(4) Force required to start tape lid bail moving should measure 28 to 48 ounces maximum.

(5) If scale reading exceeds specified limits, install new spring.

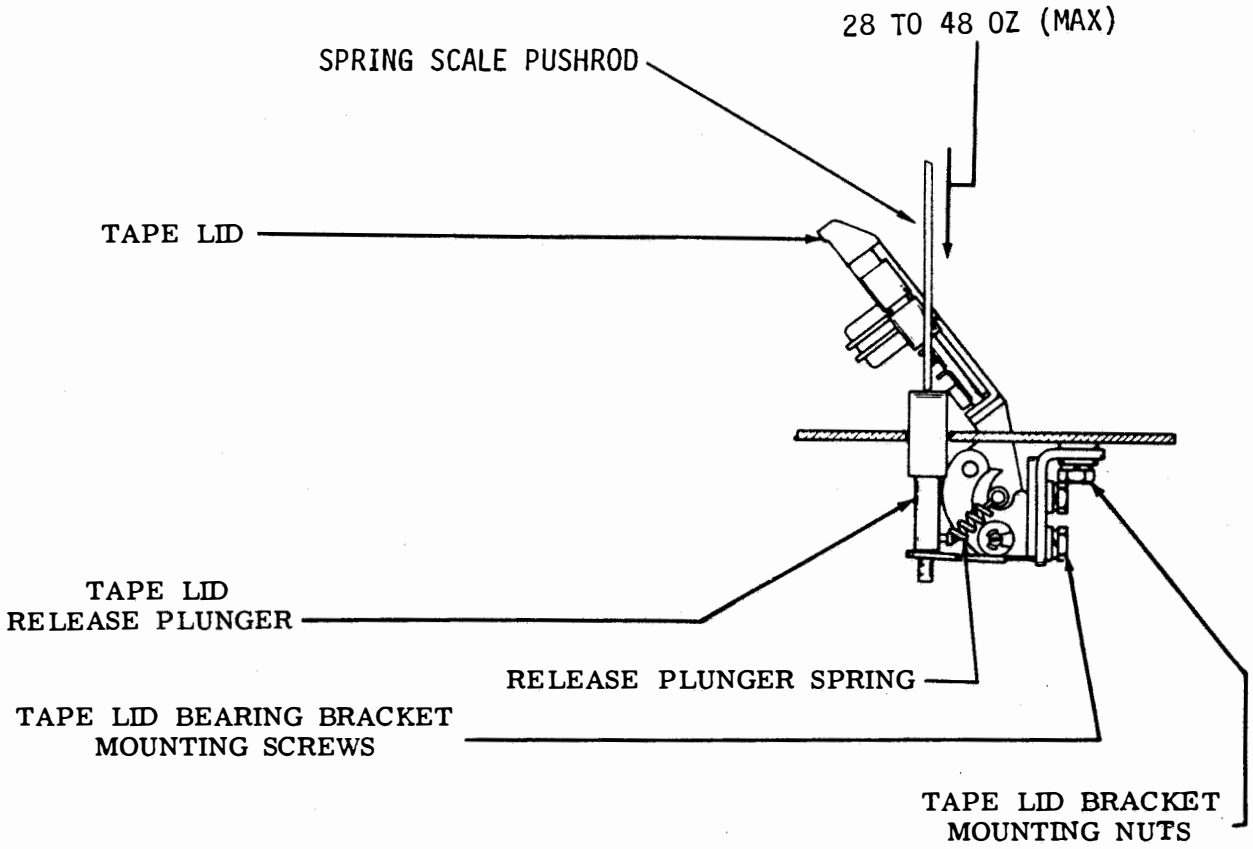


Figure 6-566. Tape Lid Release Plunger Spring For Units Without Tape Lid Spring, Right Side View

SECTION IV. ADJUSTMENTS, EARLIER DESIGN, VARIABLE FEATURES

6-20. TYPING UNIT ADJUSTMENTS. The following paragraphs describe the adjustments required for the early design variable features typing unit.

a. Horizontal Tabulator Mechanism Adjustment. Perform the following horizontal tabulator mechanism adjustments.

(1) Operating Lever Slide Arm. Adjust as follows:

NOTE

Prior to making this adjustment, check Function Reset Bail Block adjsutment in paragraph 6-17e(2).

(a) Refer to Figure 6-567.

(b) On units with two-stop function clutches, disengage function clutch and rotate type box clutch one-half revoluation past stop position.

(c) On units with one-stop function clutch, rotate clutch until function pawl stripper blade is in its lower position and function reset bail roller is on high part of cam.

(d) Pull horizontal tabulator function pawl to rear and latch it over function bar.

(e) Clearance between blocking arm and operating lever slide arm should measure 0.015 to 0.035 inch maximum.

(f) If clearance exceeds specified limits, loosen mounting stud friction tight and position slide arm on operating lever to meet requirement.

(g) Tighten mounting stud.

(2) Operating Lever Extension Link Spring. Adjust as follows:

(a) Refer to Figure 6-567.

(b) Unhook trip arm latch bail spring and place operating lever in operated position.

(c) Place operating lever slide arm against blocking link.

(d) Apply spring scale hook to link edge.

(e) Force required to start link moving should measure 8-3/4 to 10-3/4 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(g) Reconnect trip arm latch bail spring.

(3) Tabulator Shaft Spring (Torsion). Adjust as follows:

(a) Refer to Figure 6-567. For location of spring, see Figure 6-574.

(b) Place operating lever in unoperated position.

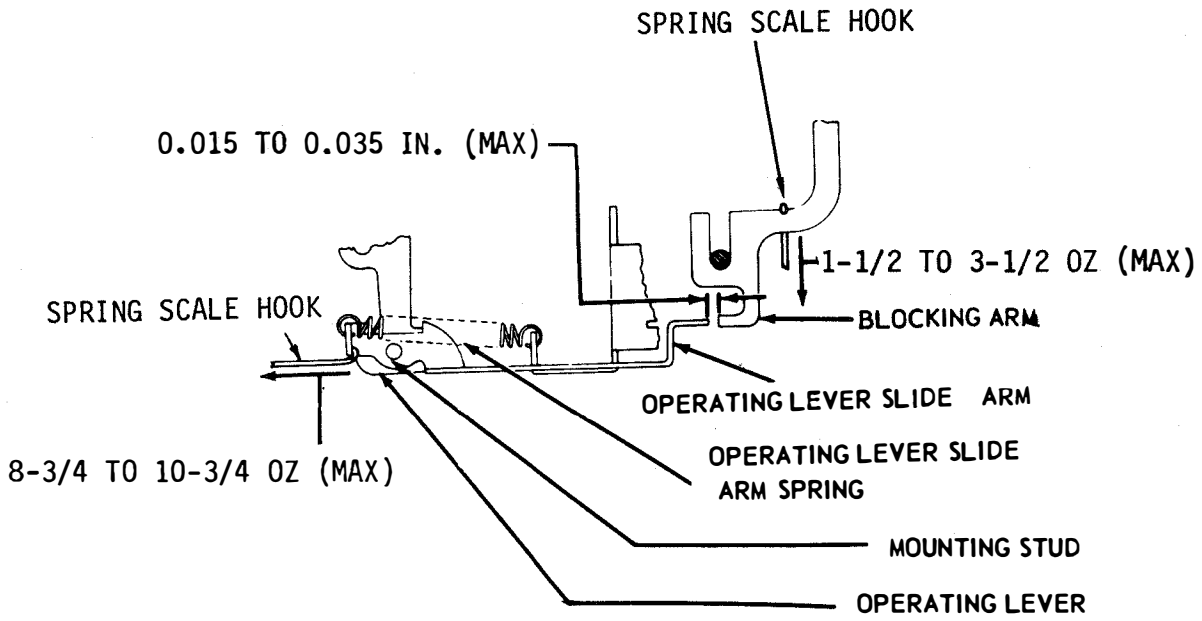


Figure 6-567. Operating Lever Slide Arm, Operating Lever Extension Link Spring, and Tabulator Shaft Spring (Torsion), Left Side View

(c) Attach spring scale hook to blocking arm.

(d) Force required to start slide arm moving should measure 1-1/2 to 3-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(4) Operating Lever Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-568.

(b) Place operating lever in unoperated position.

(c) Clearance between blocking arm and operating lever slide arm should measure 0.070 to 0.085 inch maximum.

(d) If clearance exceeds specified limits, loosen mounting screws.

(e) Position adjusting plate on bracket to meet requirement and tighten screws.

(5) Trip Arm Latch Bail. Adjust as follows:

(a) Refer to Figure 6-569.

(b) Place operating lever in unoperated position and spacing trip arm up.

(c) Clearance between trip arm latch bail and spacing trip arm should measure 0.020 to 0.040 inch maximum.

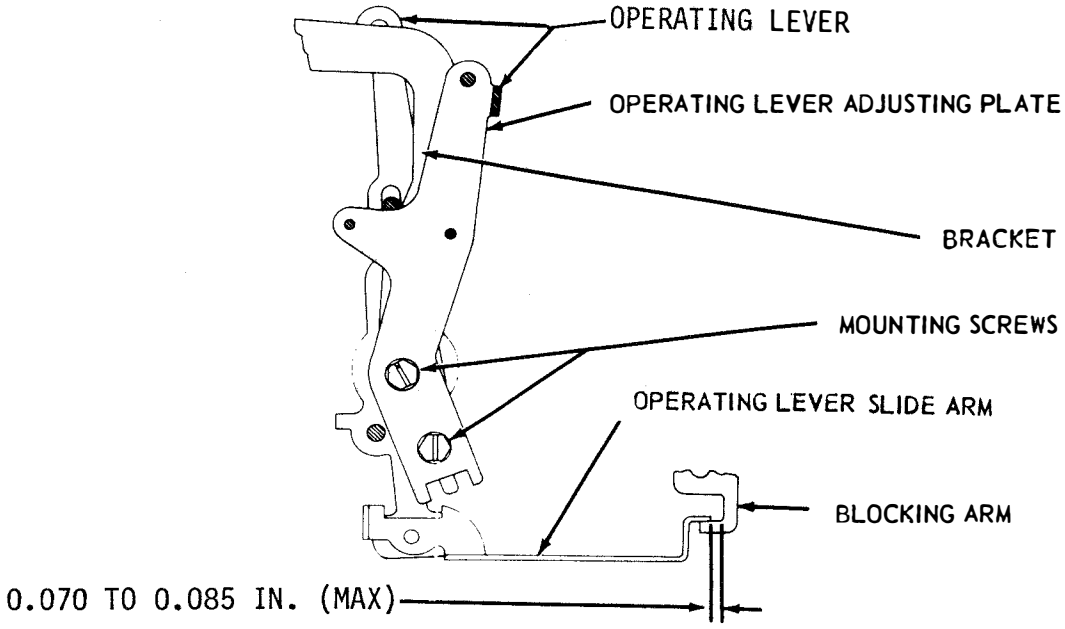


Figure 6-568. Operating Lever Adjusting Plate, Left Side View

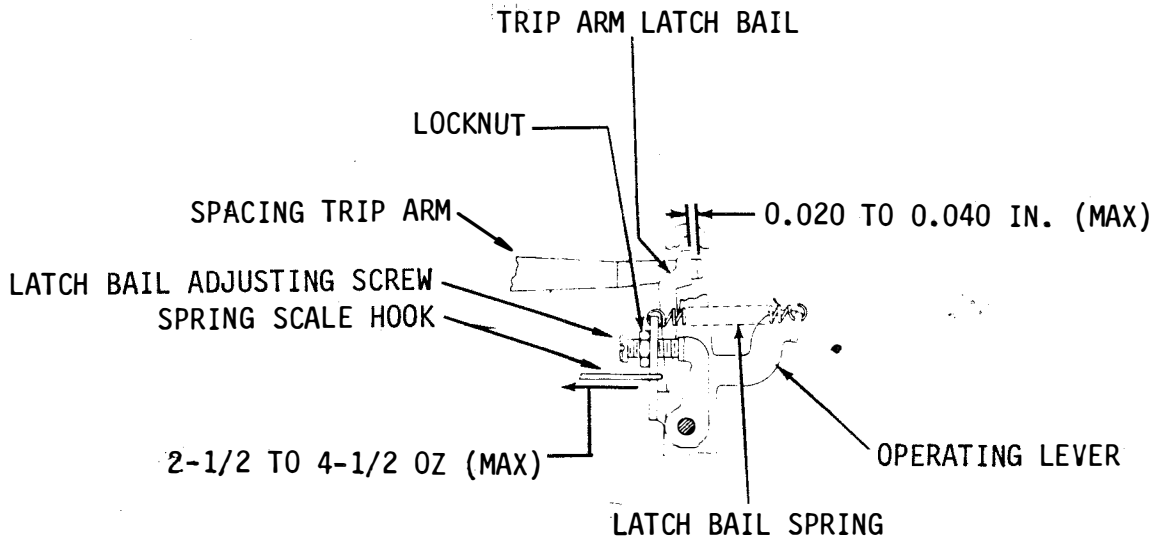


Figure 6-569. Trip AArm Latch Bail and Trip Arm Latch Bail Spring, Left Side View

(d) If clearance exceeds specified limits, loosen locknuts and position latch bail adjusting screw to meet requirement. Tighten locknut.

(6) Trip Arm Latch Bail Spring. Adjust as follows:

(a) Refer to Figure 6-569.

(b) Place operating lever in unoperated position.

(c) Attach spring scale hook over latch bail near spring.

(d) Force required to start trip arm latch bail moving should measure 2-1/2 to 4-1/2 ounces maximum.

(e) If scale reading exceeds specified limits, install new spring.

(7) Trip Arm Latch Bail Adjusting Plate. Adjust as follows:

(a) Refer to Figure 6-570.

(b) Disengage spacing clutch and type box clutch.

(c) Place operating lever slide arm to rear and latched on blocking arm.

(d) Place latch bail in fully latched position.

(e) Position spacing trip arm down and bearing up against latching surface of latch bail.

(f) Clearance between spacing trip arm and spacing trip lever should measure some to 0.080 inch maximum.

(g) If clearance exceeds specified limits, loosen mounting screw friction tight.

(h) Position latch bail adjusting plate to meet requirement and tighten screw.

(8) Spacing Cutout Transfer Bail Set Collar. Adjust as follows:

(a) Refer to Figure 6-571.

(b) Measure transfer bail end play. There should be some end play not exceeding 0.008 inch.

(c) If end play exceeds specified limit, loosen set collar adjusting screw.

(d) Position set collar to meet requirement and tighten screw.

(9) Cam Plate Stripper Bail. Adjust as follows:

(a) Refer to Figure 6-572.

(b) Place operating lever and tabulator slide arm in their unoperated position.

(c) Rotate spacing clutch until high part of spacing cam is opposite cam arm follower bail.

(d) Clearance between cam arm follower bail and high part of spacing cam should measure 0.010 to 0.025 inch maximum.

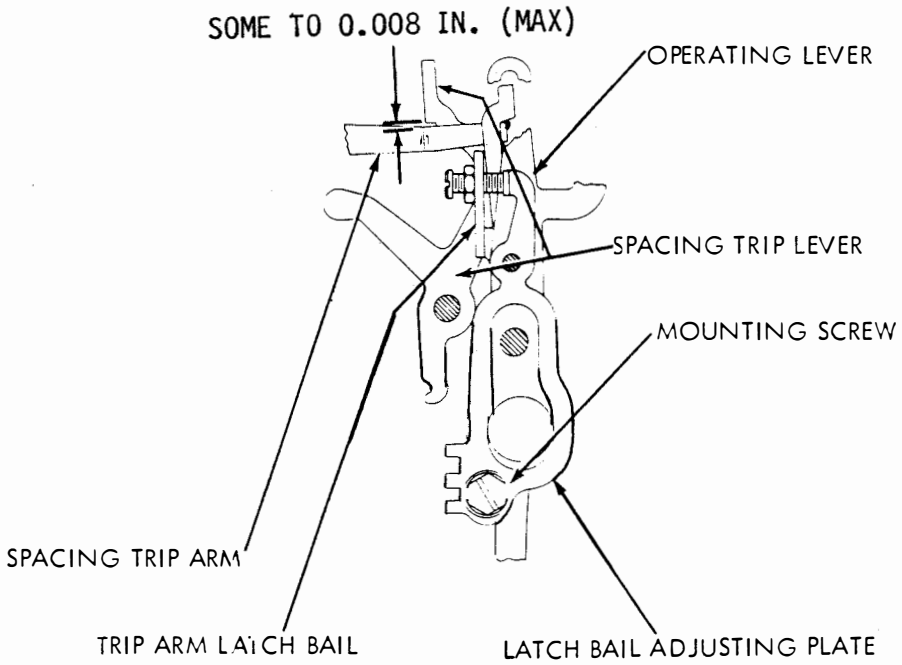


Figure 6-570. Trip Arm Latch Bail Adjusting Plate, Left View

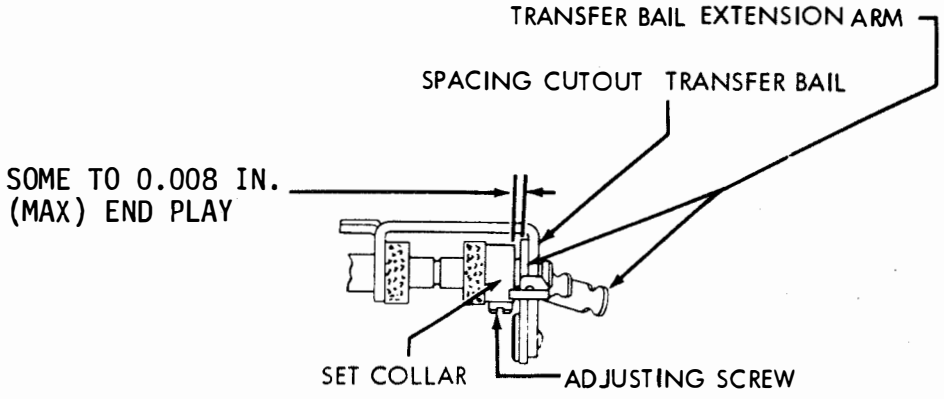


Figure 6-571. Spacing Cutout Transfer Bail Set Collar, Bottom View

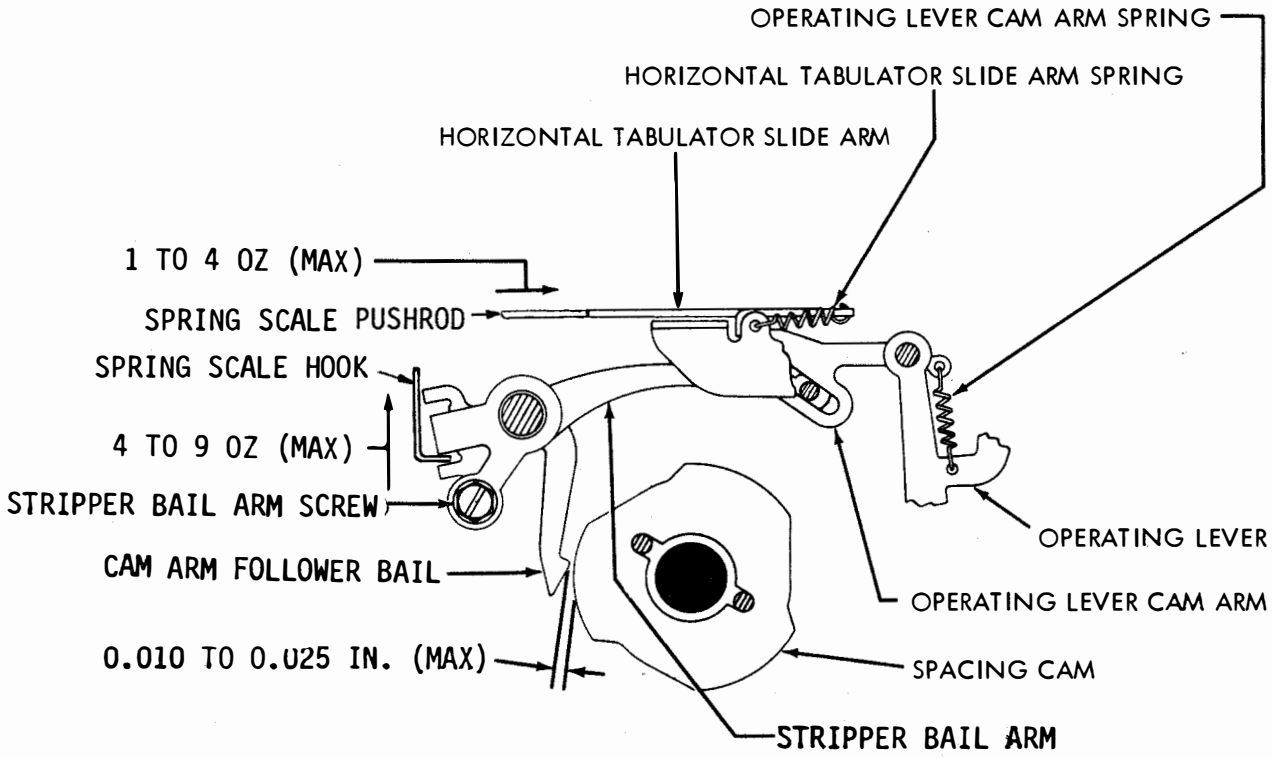


Figure 6-572. Cam Plate Stripper Bail, Horizontal Tabulator Slide Arm Spring, and Operating Lever Cam Plate Spring, Left Side View

(e) If clearance exceeds specified limits, loosen stripper bail arm screw friction tight.

(f) Position stripper bail arm on cam arm follower bail to meet requirement and tighten screw.

(10) Horizontal Tabulator Slide Arm Spring. Adjust as follows:

(a) Refer to Figure 6-572.

(b) Place operating lever in operated position.

(c) Place slide arm in unoperated position.

(d) Apply spring scale pushrod to horizontal tabulator slide arm.

(e) Force required to start slide arm moving should measure 1 to 4 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(11) Operating Lever Cam Plate Spring. Adjust as follows:

(a) Refer to Figure 6-572.

(b) Place operting lever in unoperated position.

(c) Unlatch horizontal tabulator function pawl.

(d) Attach spring scale hook to stripper bail arm.

(e) Force required to start stripper bail arm moving should measure 4 to 9 ounces maximum.

(f) If scale reading exceeds specified limits, install new spring.

(12) Right Margin. Adjust as follows:

(a) Refer to Figure 6-573.

(b) Place type box in position to print character on which spacing cutout is desired.

(c) Pull forward on part of transfer bail extending below mounting shaft until bail is in fully operated position.

(d) Clearance between bail extension arm and spacing cutout lever on spacing drum should measure 0.006 to 0.025 inch maximum.

NOTE

See Figure 6-542 for location of clamp screws. Three screws must be loosened to adjust circular cutout levers.

(e) If clearance exceeds specified limits loosen clamp screws and position cutout lever to meet requirement. Tighten clamp screws.

(13) Space Suppression Bypass Spring. Adjust as follows:

(a) Refer to Figure 6-573.

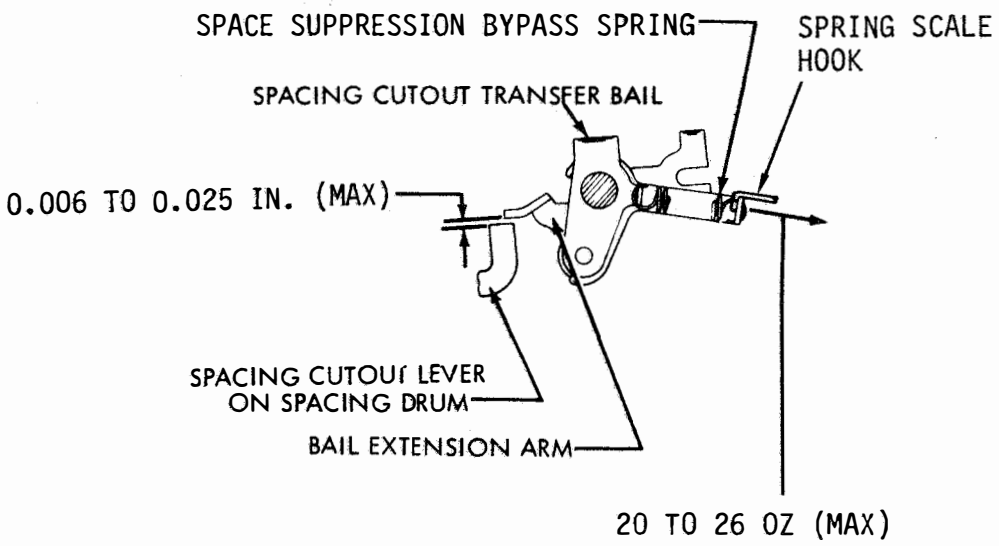


Figure 6-573. Right Margin and Space Suppression Bypass Spring, Right Side View

(b) Attach spring scale hook to space suppression bypass lug.

(c) Force required to start bail extension arm moving should be from 20 to 26 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(14) Tabulator Shaft Mounting Brackets. Adjust as follows:

(a) Refer to Figure 6-574.

(b) Move lever slide arm to rear so blocking arm and tabulator stop are in extreme upper position.

(c) Measure clearance near left and right ends of tabulator shaft as shown in Figure. Clearances should be between 0.050 and 0.065 inch maximum and should be equal within 0.007 inch.

(d) If clearances exceed specified limits or they are not equal within specified limit, loosen mounting screws.

(e) Position mounting bracket to meet requirement and tighten screws.

NOTE

Ensure shaft is free of binds.

(15) Tabulator Pawl Springs. Adjust as follows:

(a) Refer to Figure 6-574.

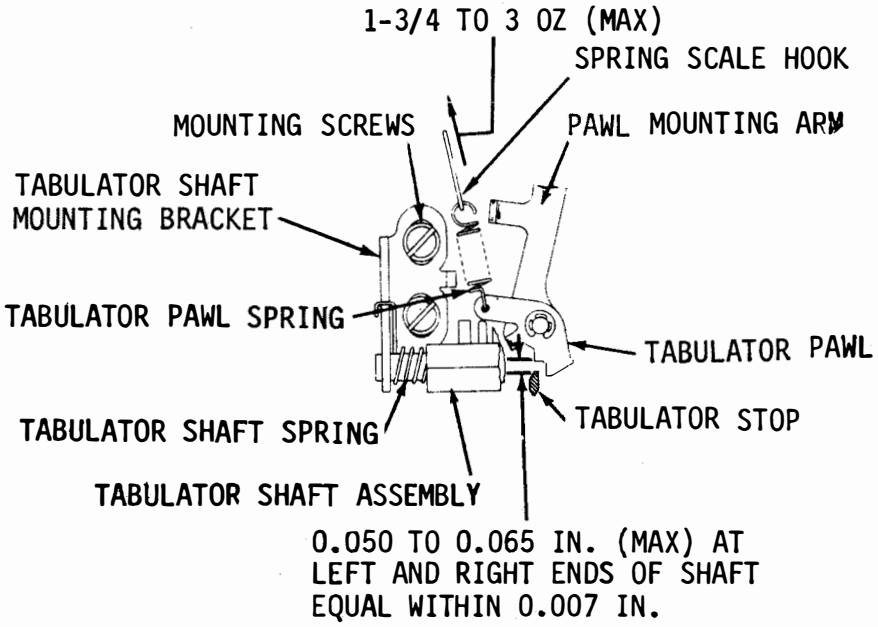


Figure 6-574. Tabulator Shaft Mounting Brackets and Tabulator Pawl Spring, Front View

(b) Attach spring scale hook to tabulator pawl spring.

(c) Force required to extend spring to its installed length should measure 1-3/4 to 3 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

(16) Pawl Mounting Arm Operating Range (Preliminary). Adjust as follows:

NOTE

Prior to this adjustment, check the requirements in the following adjustments: Oscillating Rail Slide, paragraph 6-3.1d(3); Printing Carriage Position, paragraph 6-3.1g(3); Printing Carriage Lower Roller, paragraph 6-3.1g(1).

(a) Refer to Figure 6-575.

(b) If unit has sprocket feed platen, position high part of eccentric toward lower roller mounting screw.

(c) If unit has friction feed platen, perform following operations:

1. Disengage spacing clutch.

2. Ensure farthest advanced spacing pawl engages tooth immediately above cutaway section of ratchet.

3. Ensure tabulator pawl rides up on fixed stop and high part of eccentric is toward fork of pawl mounting arm.

(d) Clearance between tabulator pawl and fixed tabulator stop near right end of shaft should measure 0.070 to 0.090 inch maximum.

(e) If clearance exceeds specified limits, loosen nut.

(f) Position eccentric to meet requirement and tighten nut.

(17) Pawl Mounting Arm Operating Range (Final). Adjust as follows:

(a) Refer to Figure 6-576.

(b) Determine maximum limit of operating range as follows:

1. Set five tabulator stops as shown in Figure.

2. Position pawl immediately to right of stop number 1.

NOTE

Measure all clearances at stop number one with play taken up in carriage to minimize gap.

3. Position eccentric to set clearance approximately 0.030 inch.

4. Mark column location by printing a character on paper.

5. Position pawl immediately to right of step number 2 and mark column location as in step 4 above.

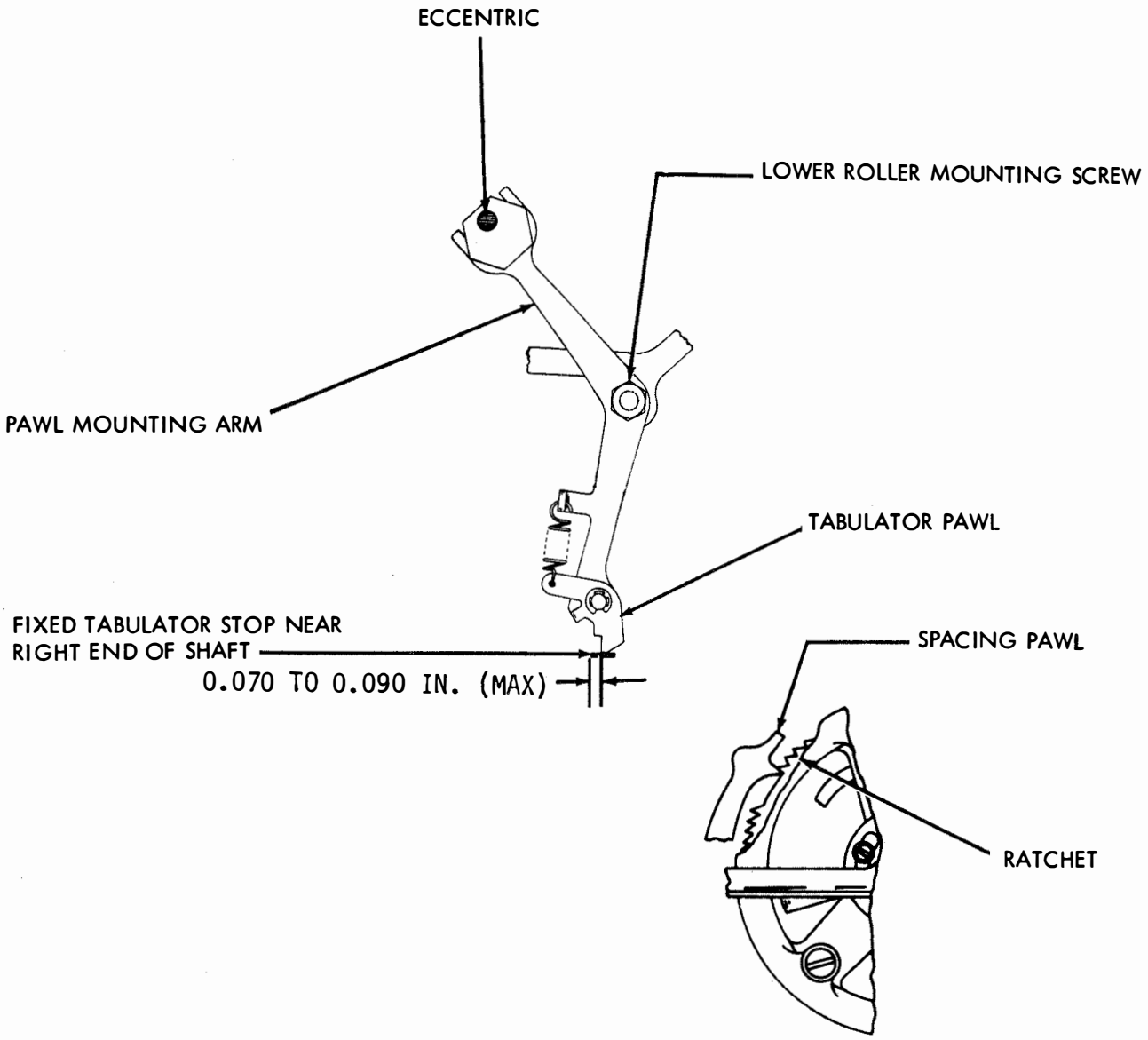


Figure 6-575. Pawl Mounting Arm Operating Range (Preliminary), Front View

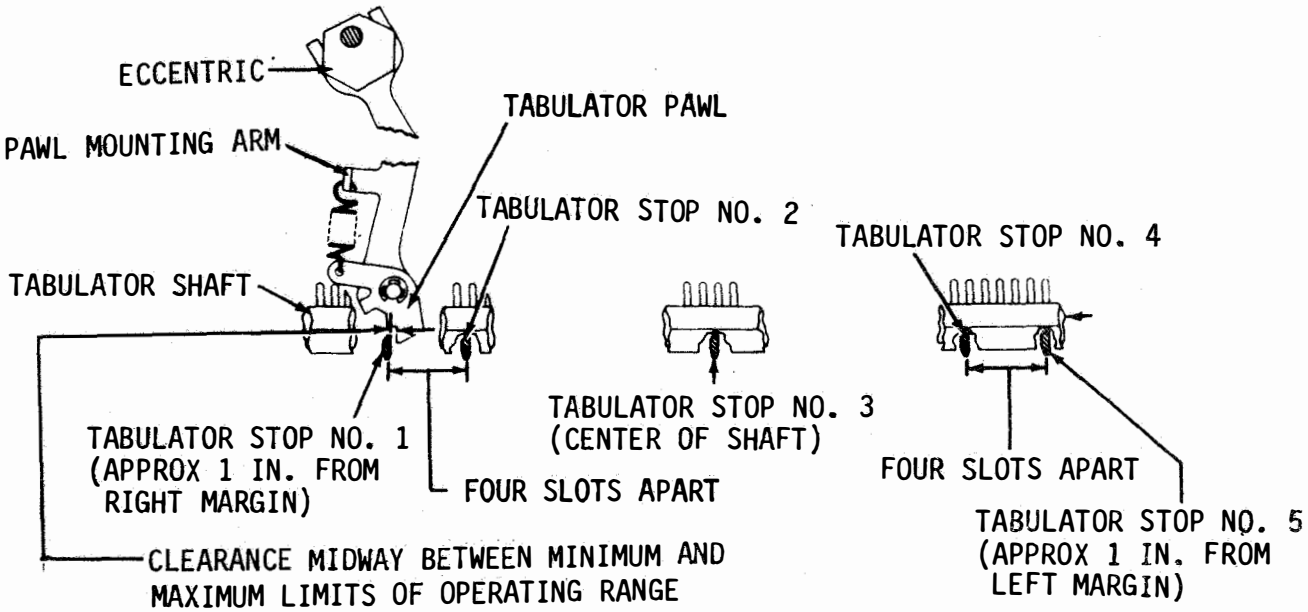


Figure 6-576. Pawl Mounting Arm Operating Range (Final) and Columnar Tabulator Stops, Front Views

6. Repeat step 5 for remaining three steps.

7. Gradually increase clearance until carriage stops one space before any column while receiving FIGURES "G" LETTERS"X" from transmitter distributor.

NOTE

If unit is not equipped with transmitter distributor control, put fill-in characters of LETTERS or FIGURES in tape to delay printing until carriage completes travel.

8. Decrease clearance until ten lines of tabulator operation can be made without error.

9. Gauge clearances and record values.

(c) Determine minimum limit of operating range as follows:

1. Place front feed pawl in farthest advanced position.

2. Repeat steps 1 and 2 in (b) above.

3. Gradually decrease clearance until carriage stops one space after any column.

4. Increase clearance until ten lines of tabular operation can be made without error.

5. Gauge clearances and record values.

(d) If adjustment is necessary, determine midpoint of range as follows:

1. If minimum limit is positive, add it to maximum limit and divide the sum by two. Use quotient as midpoint of range.

2. If minimum limit is zero or negative, use one-half the maximum limit as midpoint of range. The difference between limits is normally not less than 0.045 inch.

3. Tighten nut.

(18) Columnar Tabulator Stops. Adjust as follows:

NOTE

When printing forms, check stop settings with relation to columns. Corresponding stops on all machines connected in the same circuit must be the same number of spacing operations from left margin.

(a) Refer to Figure 6-576.

(b) Place carriage in position to print first character to column.

(c) Insert stop in slot immediately to left of tabulator pawl.

(d) Store extra stops in slots beyond printing line of either end of shaft.

(19) Tabulator Stop Setting-Right Margin Tabulator Stop with Wide Shelf. Adjust as follows:

NOTE

Prior to this adjustment, check the requirements in the following paragraphs: Right Margin, 6-20a(12); Pawl Mounting Arm Operating Range (Preliminary), 6-20a(16) and (Final), 6-20a(17).

(a) No reference Figure.

(b) Position printing carriage at right margin (spacing cutout operated).

(c) Insert stop with wide shelf in slot immediately to left of tabulator pawl.

b. Paper-Out Alarm Mechanism Adjustment. Perform the following paper-out alarm mechanism adjustments.

(1) Bellcrank Follower. Adjust as follows:

(a) Refer to Figure 6-577.

(b) Clearance between a flat side of paper spindle and bellcrank follower should measure approximately 1/4 inch.

(c) To adjust, loosen mounting screws and position switch to obtain specified clearance. Tighten screws.

(2) Bellcrank Follower Spring. Adjust as follows:

(a) Refer to Figure 6-577.

(b) Attach spring scale hook to bellcrank follower at point of contact with paper roll.

(c) Force required to start follower moving should be 2 to 3 ounces maximum.

(d) If scale reading exceeds specified limits, install new spring.

6-21. TYPING AND NON-TYPING PERFORATOR UNIT ADJUSTMENTS. The following paragraphs describe early design variable features of typing and non-typing perforator unit adjustment procedures, which may differ from those in Section II.

a. Manual and Power Drive Backspace Mechanism Adjustment (For Chadless Tape). Perform the following backspace mechanism adjustments.

(1) Drive Arm (Power Drive Only). Adjust as follows:

(a) Refer to Figure 6-578.

(b) Engage drive arm latchlever engaged with eccentric link and rotate main shaft to place eccentric in its extreme right position and feed wheel detented back one space.

(c) Clearance between the backspace feed pawl and the ratchet tooth should measure some to 0.003 inch maximum.

(d) Check again, with feed wheel shaft oil hole in the uppermost position and recheck each 90 degrees about the periphery of the feed wheel.

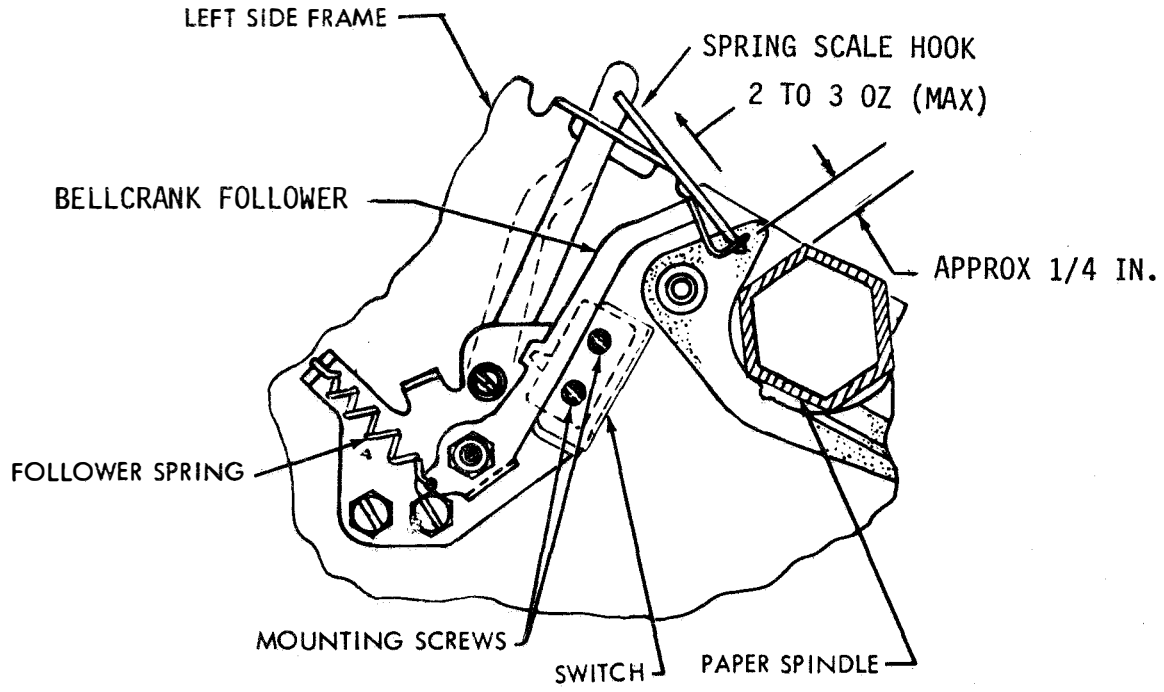


Figure 6-577. Bellcrank Follower and Bellcrank Follower Spring, Left Rear View

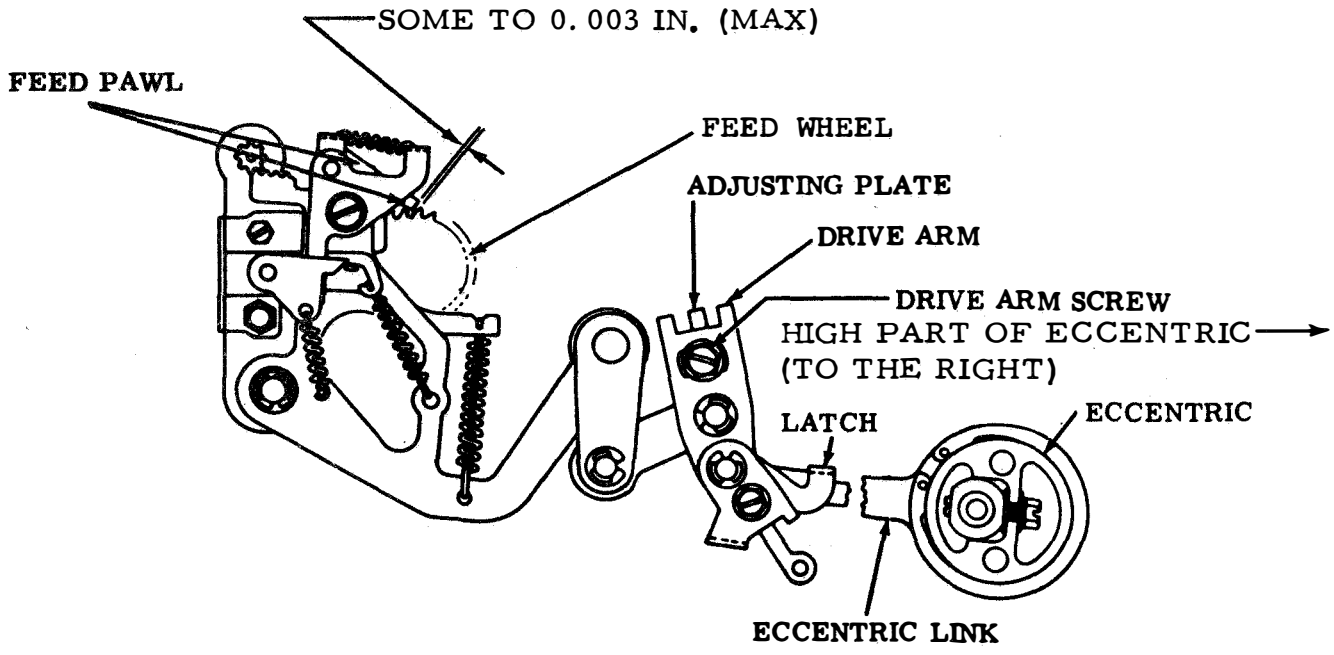


Figure 6-578. Drive Arm for Chadless Tape, Perforator

(e) To adjust, loosen drive arm screw friction tight and position adjusting plate. Tighten screw.

(2) Latch Spring. Adjust as follows:

(a) Refer to Figure 6-579.

(b) Place backspace mechanism in unoperated position and attach spring scale hook over latch.

(c) Force required to start latch moving should measure 14 to 26 ounces maximum.

(d) If requirements is not met, replace spring.

(3) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-579.

(b) Place backspace mechanism in unoperated position and attach spring scale hook over lower end of feed pawl.

(c) Force required to start pawl moving should measure 8 to 15 ounces maximum.

(d) If requirement is not met, replace spring.

(4) Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-579.

(b) Unhook bellcrank spring from plate extension and attach to spring scale hook.

(c) Force required to pull spring to installed length should measure 19 to 23 ounces maximum.

(d) If requirement is not met, replace spring.

(5) Gear Segment Spring. Adjust as follows:

(a) Refer to Figure 6-579.

(b) Unhook gear segment spring from bellcrank spring post and attach spring scale hook.

(c) Force required to pull spring to installed length should measure 22 to 26 ounces maximum.

(d) If requirement is not met, replace spring.

(6) Armature Bail Spring. Adjust as follows:

(a) Refer to Figure 6-579.

(b) Unhook armature latch spring and apply spring scale pushrod to armature.

(c) Force required to start armature bail moving should measure 3-1/2 to 6-1/2 ounces maximum.

(d) If requirement is not met, replace armature bail spring.

(7) Latch Extension Spring (Power Drive Only). Adjust as follows:

(a) Refer to Figure 6-579.

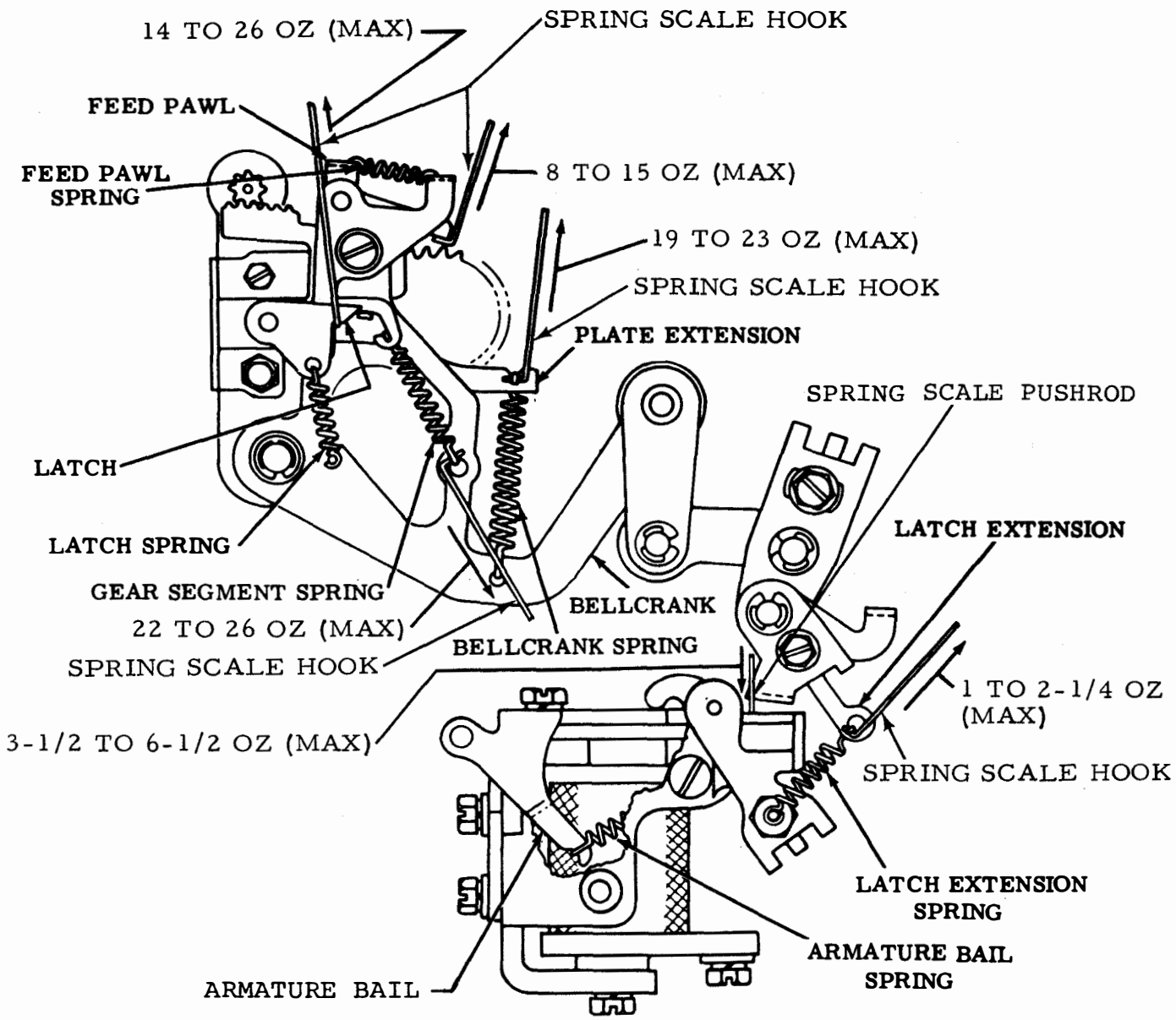


Figure 6-579. Latch, Feed Pawl, Bellcrank, Gear Segment, Armature Bail, and Latch Extension Springs (For Chadless Tape), Perforator

(b) Unhook latch extension spring from latch extension and attach spring scale hook.

(c) Force required to pull spring to installed length should measure 1 to 2-1/4 ounces maximum.

(d) If requirements are not met, replace spring.

b. Manual and Power Drive Backspace Mechanism Adjustment (For Fully Perforated Tape). Perform the following backspace mechanism adjustments.

(1) Drive Link (Power Drive Only). Adjust as follows:

(a) Refer to Figure 6-580.

(b) Place high part of eccentric arm in left hand position and armature against pole face to allow lever on drive arm latch to rest against eccentric arm.

(c) Clearance between step on eccentric arm and latch should be 0.040 to 0.045 inch maximum.

(d) To adjust, loosen drive link screw friction tight and position adjusting link. Tighten screw.

(2) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-581.

(b) Place backspace mechanism in unoperated position and attach spring scale hook over feed pawl.

(c) Force required to start pawl moving should measure 4 to 6 ounces maximum.

(d) If requirement is not met, replace spring.

(3) Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-581.

(b) Attach spring scale hook to end of bellcrank spring.

(c) Force required to pull spring to installed length should measure 9 to 12 ounces maximum.

(d) If requirement is not met, replace spring.

(4) Armature Latch Spring. Adjust as follows:

(a) Refer to Figure 6-581.

(b) Attach spring scale hook over latch extension.

(c) Force required to pull armature latch spring to installed length should measure 1 to 2-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(5) Armature Bail Spring. Adjust as follows:

(a) Refer to Figure 6-581.

(b) Unhook armature latch spring and apply

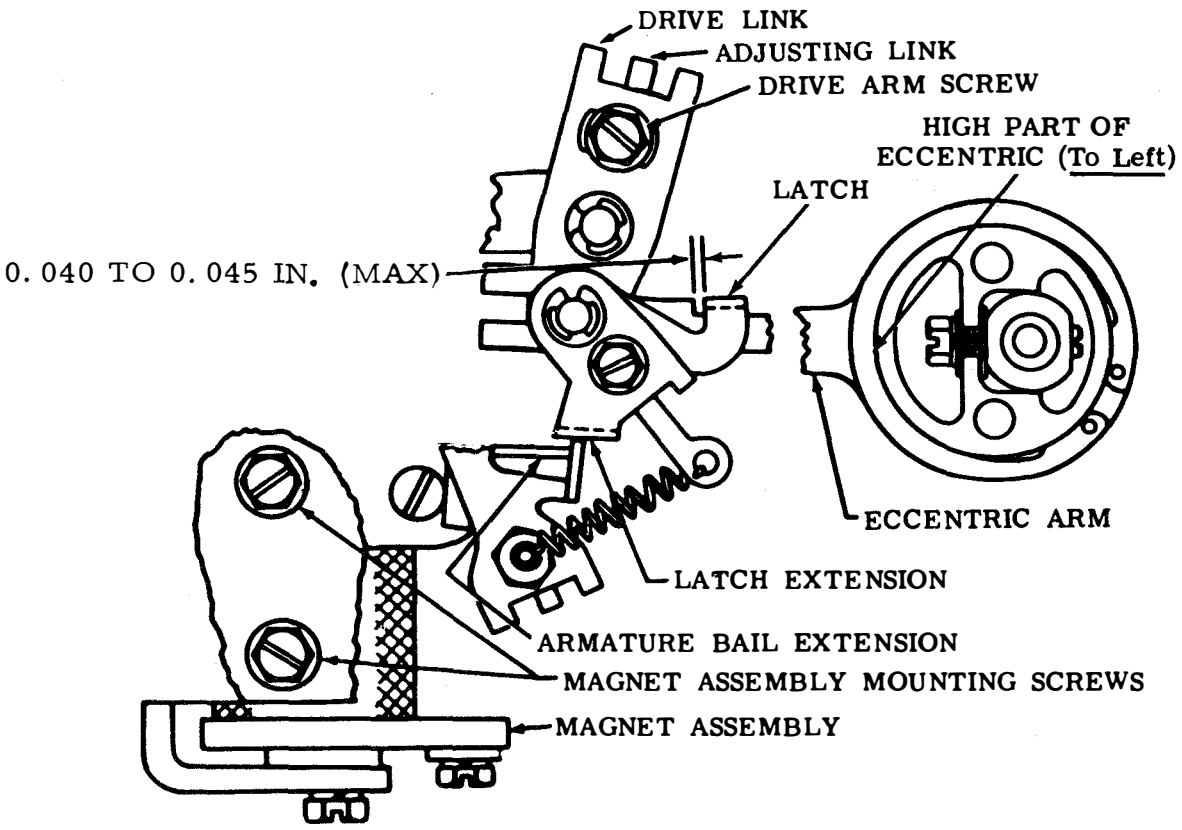


Figure 6-580. Drive Link (For Fully Perforated Tape), Perforator

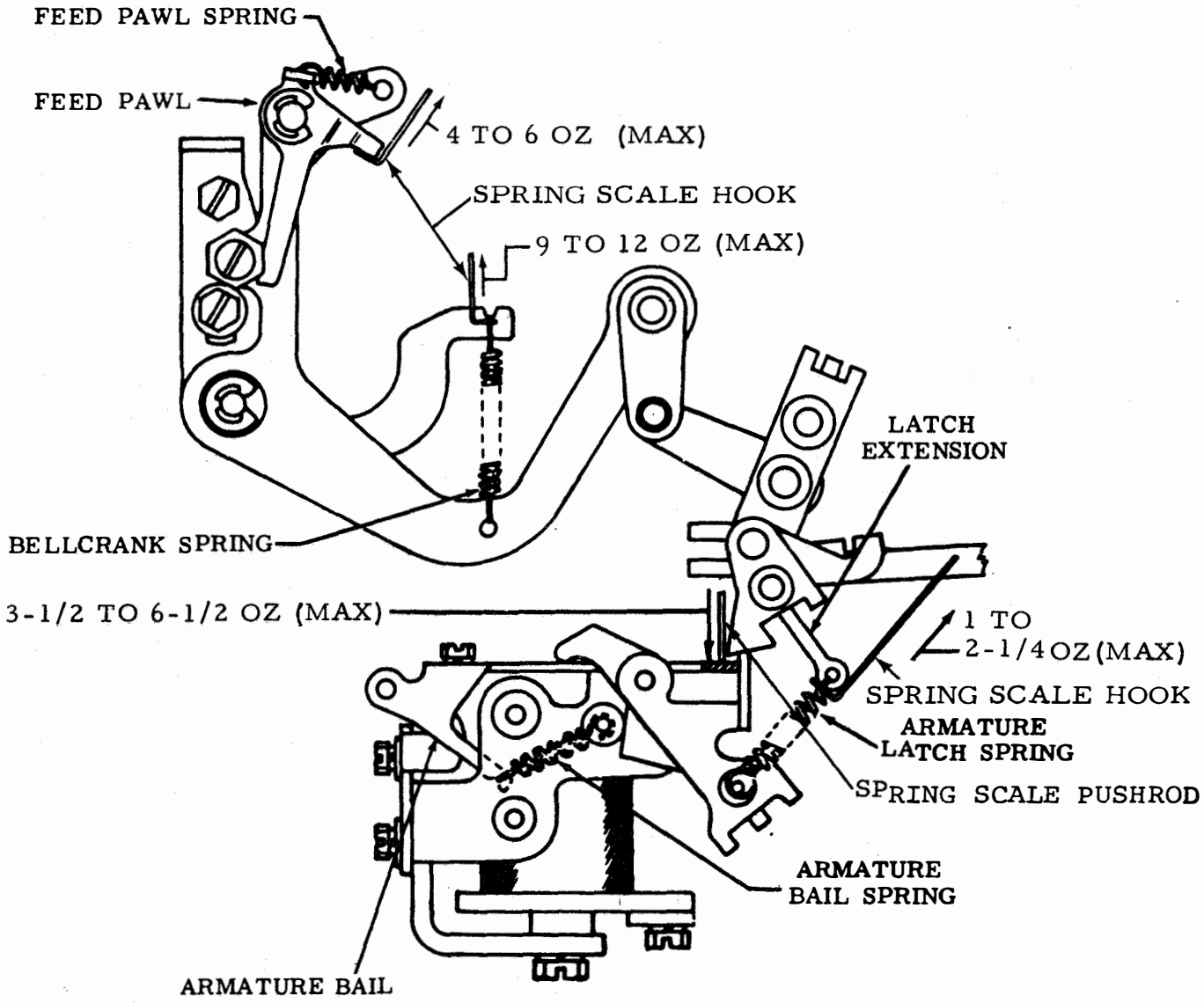


Figure 6-581. Feed Pawl, Bellcrank, Armature Latch, and Armature Bail Springs (For Fully Perforated Tape), Perforator

spring scale pushrod to armature.

(c) Force required to start armature bail moving should measure 3-1/2 to 6-1/2 ounces maximum.

(d) If requirement is not met, replace armature bail spring.

c. Power Drive Backspace Mechanism Adjustments. Perform the following backspace mechanism adjustments.

NOTE

The following adjustments are for use with the early design backspace magnet assembly. Later design use a non-adjustable backspace magnet assembly. For "DC" operation the backspace magnet armature shall be position-so that the side marked "C" shall face the pole face of the magnet core. For "AC" operation, the unmarked side of the magnet armature shall face the pole face of the magnet core.

(1) Armature Hinge. Adjust as follows:

(a) Refer to Figure 6-582.

(b) Remove armature bail spring, hold armature against pole face, and take up play at hinge in a downward direction.

(c) Clearance between armature and magnet bracket should measure some to 0.004 inch maximum.

(d) To adjust, loosen hinge mounting screws and position armature. Tighten screws.

NOTE

The following adjustments, (2) and (3), are made at factory and should not be disturbed unless a reassembly of the unit is undertaken.

(2) Armature Upstop. Adjust as follows:

(a) Refer to Figure 6-583.

(b) Place armature in unoperated position.

(c) Gap between armature and pole face, at closest point, should measure 0.025 to 0.030 inch maximum.

(d) To adjust, loosen eccentric, mounting nut and rotate eccentric keeping high part to left. Tighten nut.

(3) Latch Extension. Adjust as follows:

(a) Refer to Figure 6-584.

(b) Place backspace mechanism in unoperated position, high part of eccentric to left, armature against pole face, and latch resting on eccentric arm notch.

(c) Clearance between top of armature bail extension and latch extension should be 0.005 to 0.020 inch maximum.

(d) To adjust, loosen mounting screws friction tight and swing magnet assembly

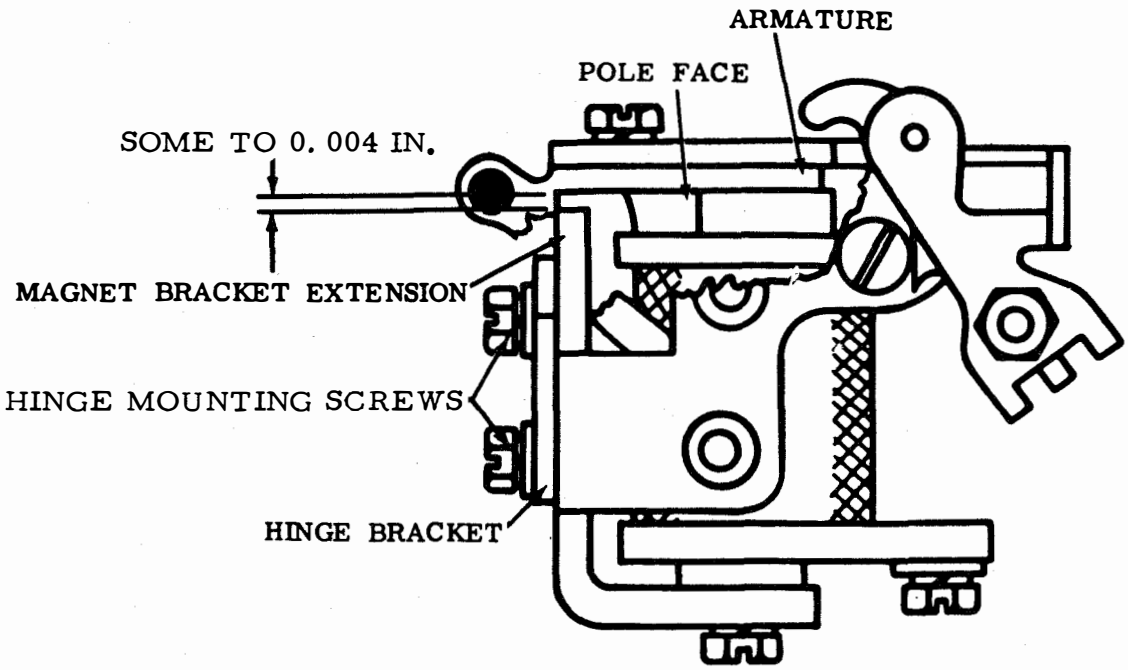


Figure 6-582. Power Driven Backspace Mechanism Armature Hinge, Perforator

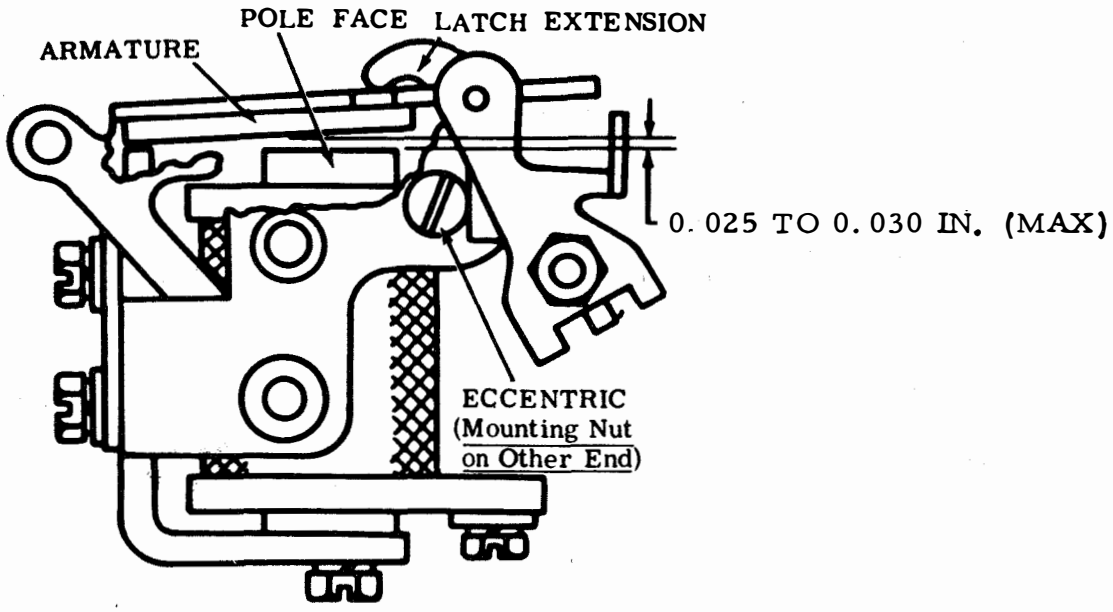


Figure 6-583. Power Driven Backspace Mechanism Armature Upstop, Perforator

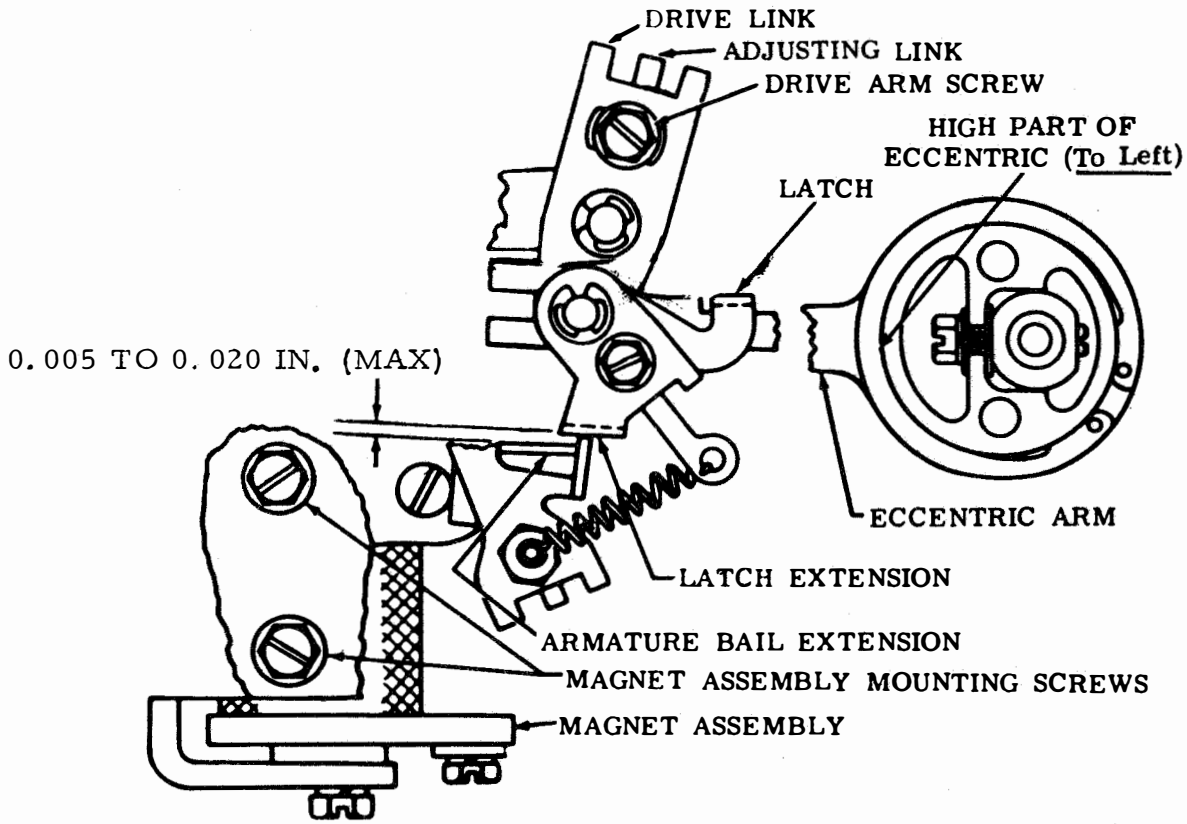


Figure 6-584. Power Driven Backspace Mechanism Latch Extension, Perforator

clockwise or counterclockwise, as necessary. Tighten screws.

(4) Latch. Adjust as follows:

NOTE

On units equipped with one piece nonadjustable latch-lever the requirements in the "final power or manual" must be met.

(a) Refer to Figure 6-585.

(b) Place backspace mechanism in unoperated position, armature off pole face (de-energized), latch extension against end of armature bail extension and eccentric arm at closest point to underside of latch.

(c) Clearance between latch and eccentric arm should be 0.005 to 0.025 inch maximum.

(d) To adjust, loosen latch extension screw and position latch. Tighten screw.

(5) Non-repeat Arm. Adjust as follows:

NOTE

Must not be operated with latch against armature extension.

(a) Refer to Figure 6-586.

(b) Place backspace mechanism in unoperated position.

(c) Clearance between top surface of non-repeat arm and lowest point of latch extension should be 0.002 to 0.010 inch maximum.

(d) To adjust, loosen arm screw friction tight and position adjusting arm. Tighten screw.

6-22. AUXILIARY TYPING REPERFORATOR UNIT ADJUSTMENTS. The following paragraphs describe the early design variable features of auxiliary typing reperforator unit adjustment procedures.

a. Manual and Power Drive Backspace Mechanism Adjustments (For Chadless Tape). Perform the following backspace mechanism adjustments.

(1) Drive Arm (Preliminary). Adjust as follows:

(a) Refer to Figure 6-587.

(b) Ensure drive arm latchlever is engaged with eccentric link, main shaft rotated to place eccentric in its extreme right-hand position, and feed wheel detented back one space.

(c) Clearance between the backspace feed pawl and the ratchet tooth should measure some to 0.003 inch maximum.

(d) Check again, with feed wheel shaft oil hole in the uppermost position and recheck each 90 degrees around the periphery of the feed wheel.

(e) To adjust, loosen drive arm screw friction

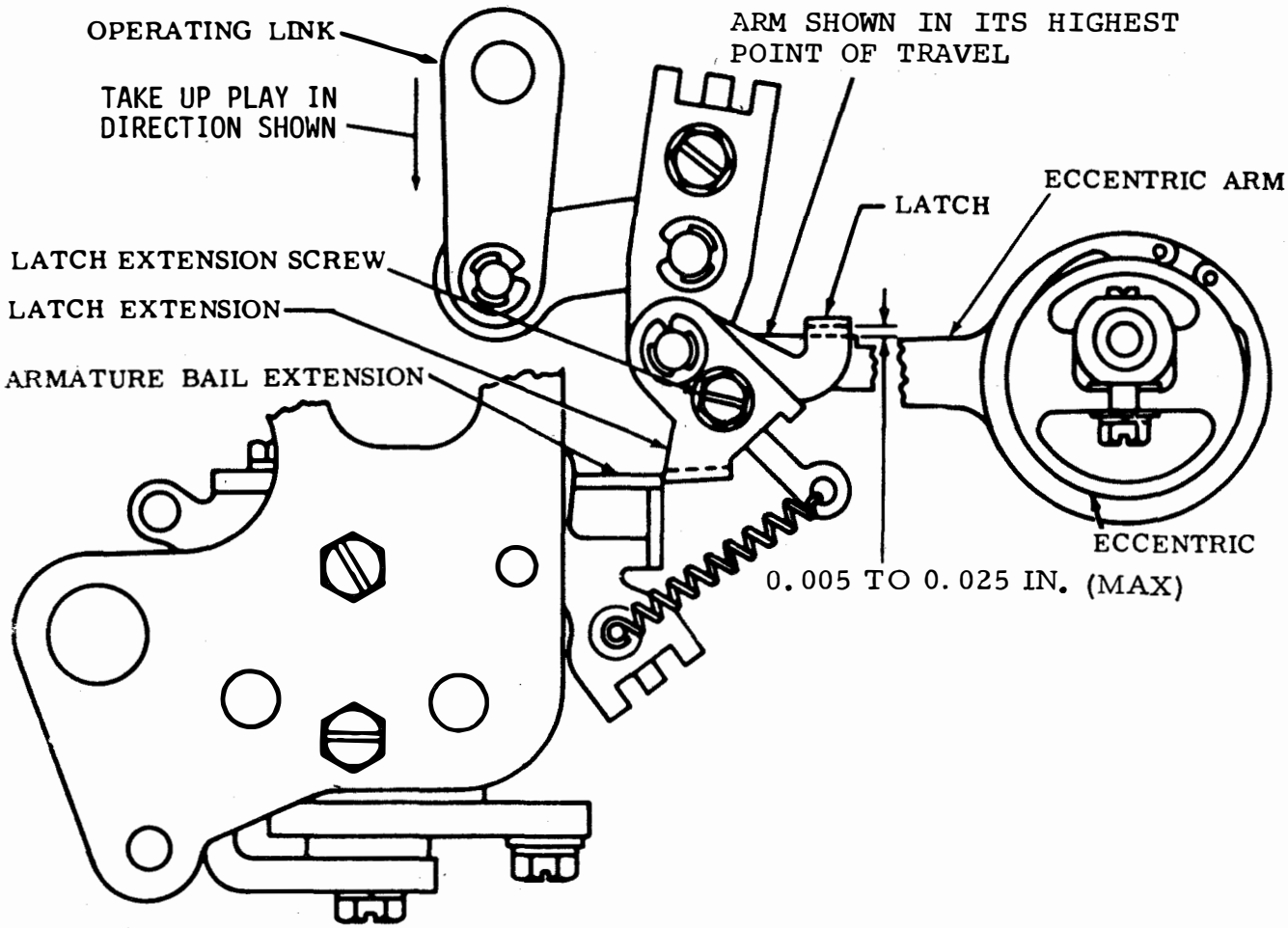


Figure 6-585. Power Driven Backspace Mechanism Latch, Perforator

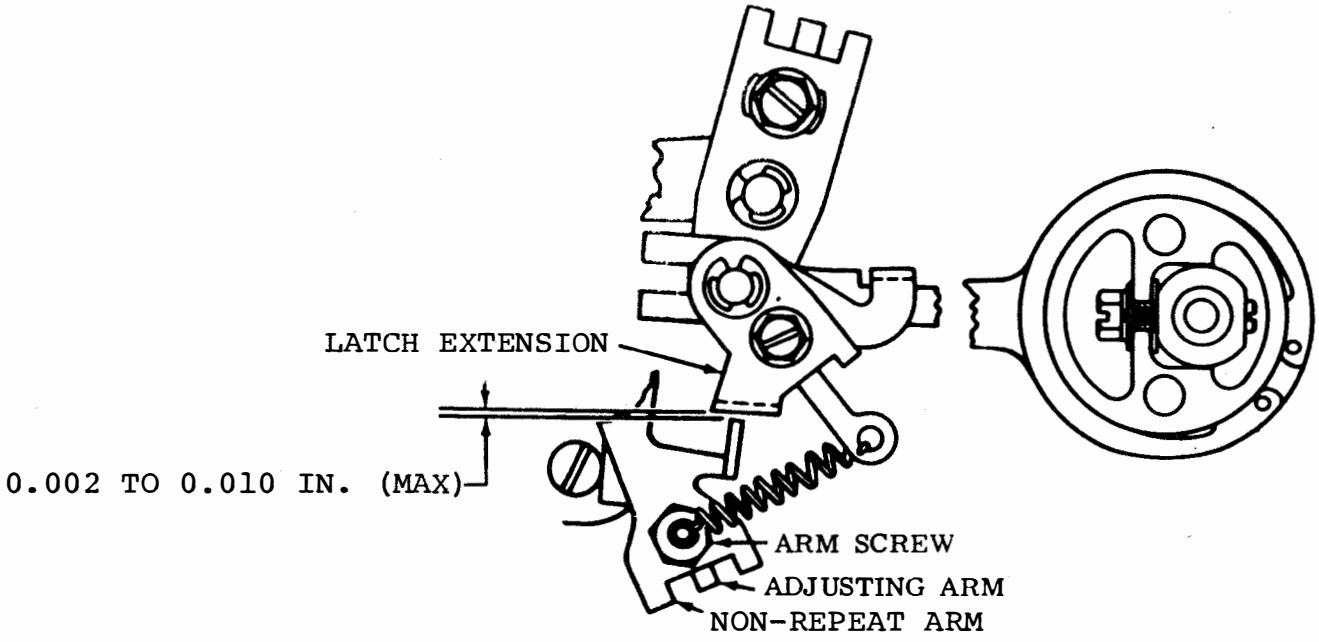


Figure 6-586. Power Driven Backspace Mechanism Non-repeat Arm, Perforator

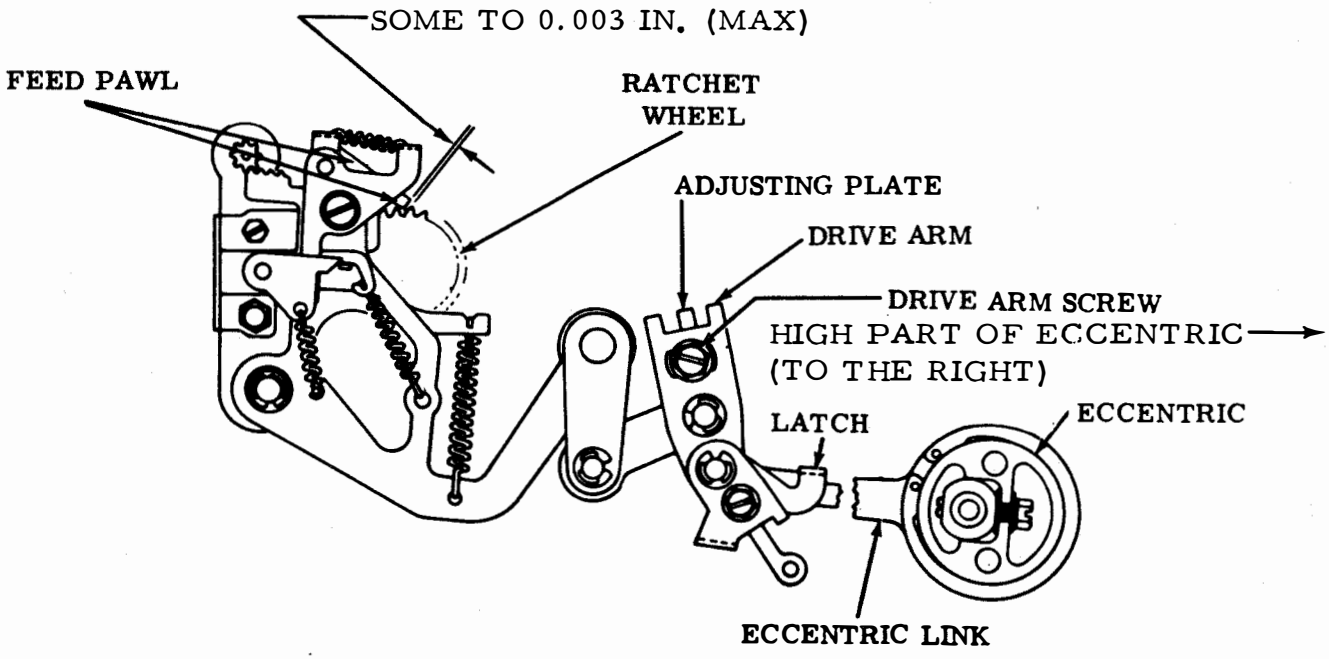


Figure 6-587. Drive Arm (Preliminary) (For Chadless Tape), Reperforator, Front View

tight and move adjusting plate to meet requirement.

(f) Tighten screw.

(2) Latch Spring. Adjust as follows:

(a) Refer to Figure 6-588.

(b) Place backspace mechanism in unoperated position.

(c) Attach spring scale hook over latch.

(d) Force required to start latch moving should measure 14 to 26 ounces maximum.

(e) If requirement is not met, replace spring.

(3) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-588.

(b) Place backspace mechanism in unoperated position.

(c) Attach spring scale hook over end of feed pawl.

(d) Force required to start feed pawl moving should measure 8 to 15 ounces maximum.

(e) If requirement is not met, replace spring.

(4) Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-588.

(b) Unhook spring from plate extension and attach spring scale hook to loose end of spring.

(c) Force required to pull spring to installed length should measure 19 to 23 ounces maximum.

(d) If requirement is not met, replace spring.

(e) Reconnect bellcrank spring.

(5) Gear Segment Spring. Adjust as follows:

(a) Refer to Figure 6-588.

(b) Unhook spring from bellcrank spring post and attach spring scale hook to loose end of spring.

(c) Force required to pull spring to its installed length should measure 22 to 26 ounces maximum.

(d) If requirement is not met, replace spring.

(e) Reconnect gear segment spring.

(6) Armature Bail Spring. Adjust as follows:

(a) Refer to Figure 6-588.

(b) Unhook armature latch spring.

(c) Apply spring scale pushrod to armature.

(d) Force required to start armature bail moving should measure 3-1/2 to 6-1/2 ounces maximum.

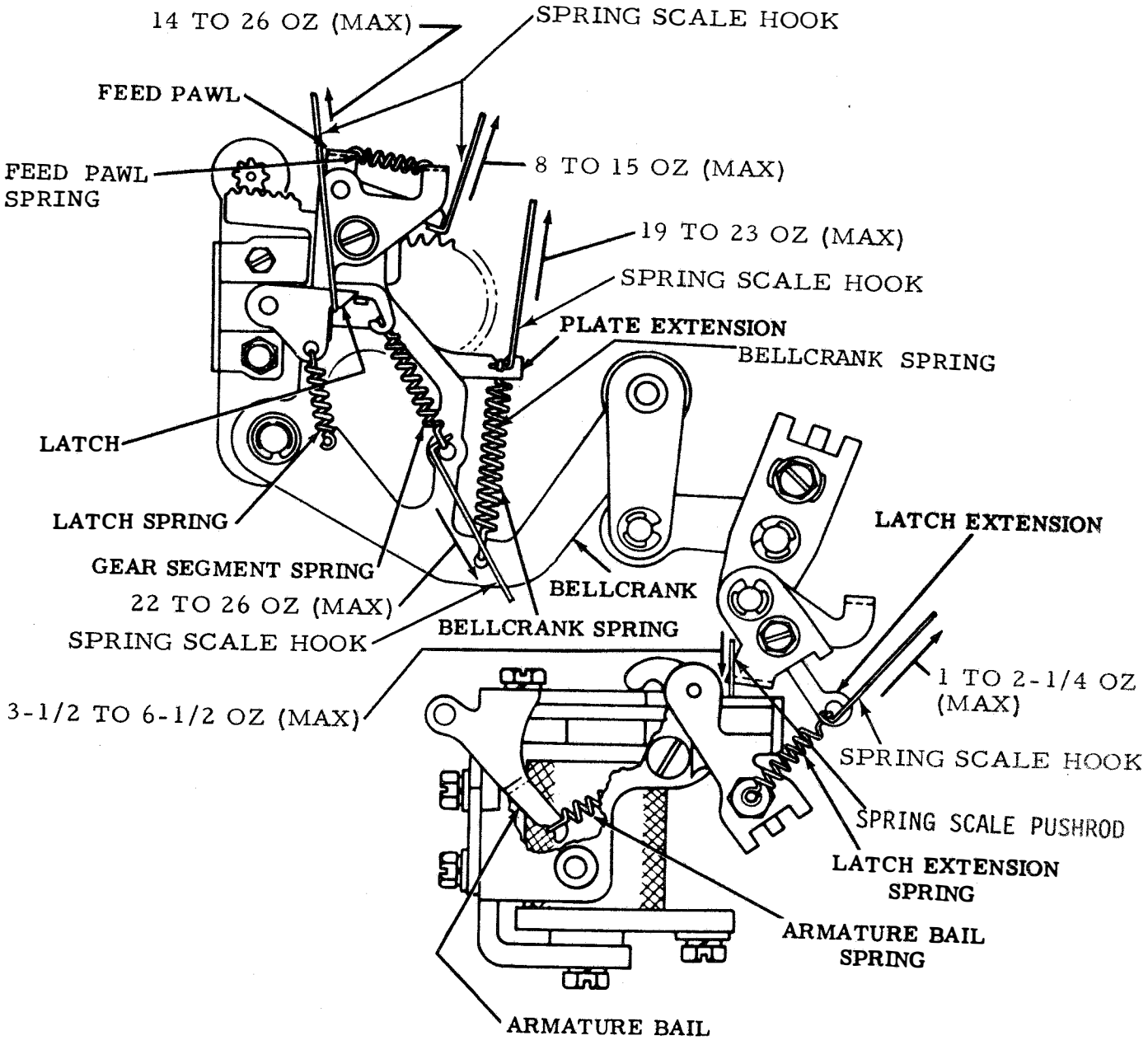


Figure 6-588. Latch, Feed Pawl, Bellcrank, Gear Segment, Armature Bail, and Latch Extension Springs (For Chadless Tape), Reperforator

(e) If requirement is not met, replace spring.

(f) Reconnect armature latch spring.

(7) Latch Extension Spring (Power Driven Only). Adjut as follows:

(a) Refer to Figure 6-588.

(b) Unhook spring from latch extension and attach spring scaale hook to loose end of spring.

(c) Force required to pull spring to its installed length should measure 1 to 2-1/4 ounces maximum.

(d) If requirement is not met, replace spring.

(e) Reconnect latch extension spring.

b. Power Drive Backspace Mechanism Adjustments. Perform the following backspace mechanism adjustments.

(1) Latch. Adjust as follows:

(a) Refer to Figure 6-589.

(b) Ensure backspace mechanism is in unoperated position, armature off pole face (de-energized), and latch extension end of armature.

(c) Eccentric arm should be at its closest point to underside of latch and play taken up to make clearance a minimum.

(d) Clearance between latch and eccentric arm should measure 0.005 to 0.025 inch maximum.

(e) To adjust, loosen latch extension screw friction tight and position latch to meet requirement.

(f) Tighten latch extension screw.

NOTE

On units equipped with one-piece nonadjustable latch-lever, the requirements of paragraph 6-15g must be met.

(2) Non-repeat Arm. Adjust as follows:

(a) Refer to Figure 6-590.

(b) Ensure backspace mechanism is in unoperated position.

(c) Clearance between top surface of non-repeat arm and lowest point of latch extension should be 0.002 to 0.010 inch maximum.

(d) To adjust loosen arm screw friction tight, and position adjusting arm to meet requirement.

(e) Tighten arm screw.

c. Power Drive Backspace Mechanism Adjustments for Fully Perforated Tape. Perform the following backspace mechanism adjustments.

(1) Armature Hinge Adjust as follows:

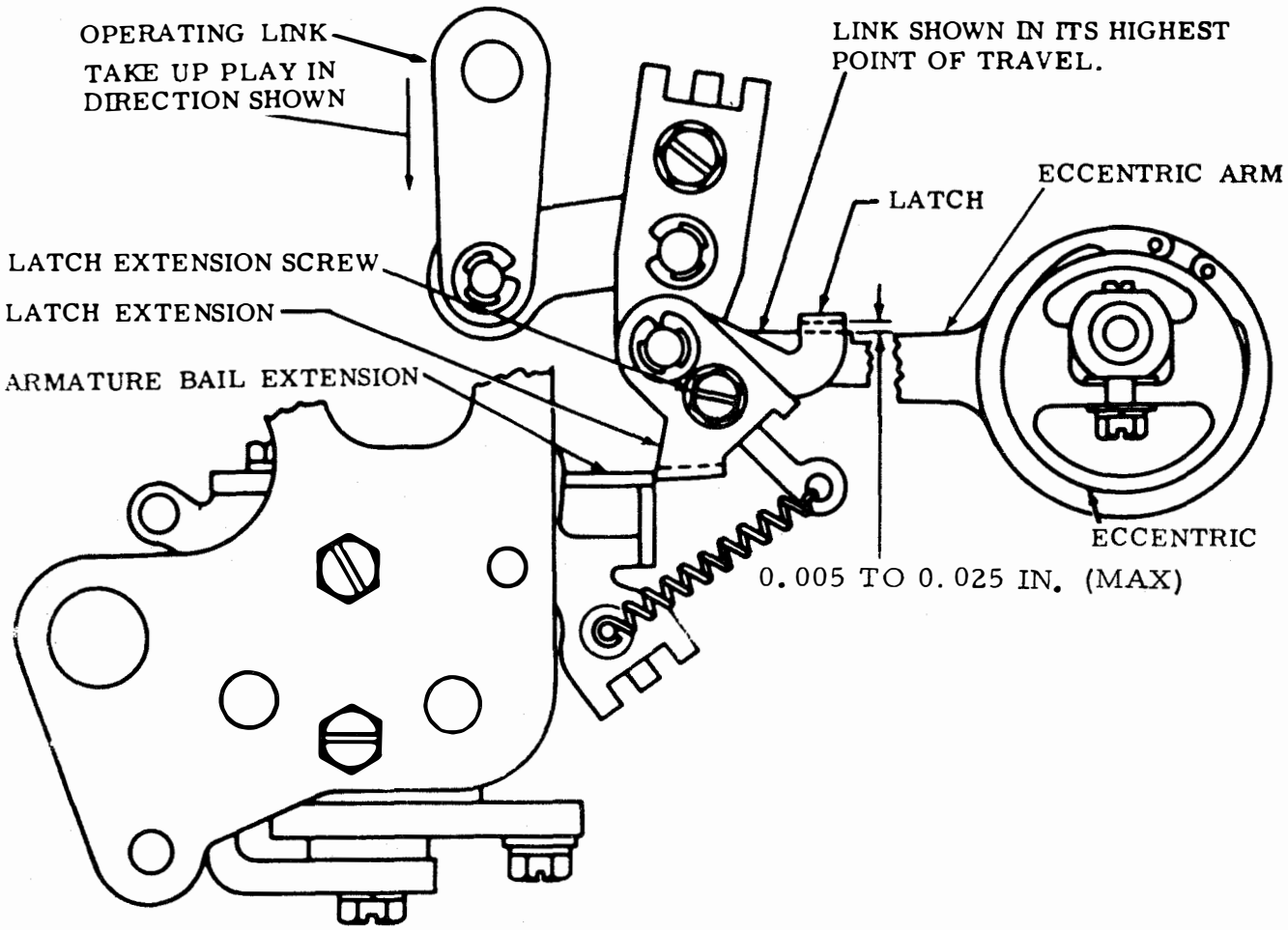


Figure 6-589. Power Drive Backspace Mechanism Latch, Reperforator

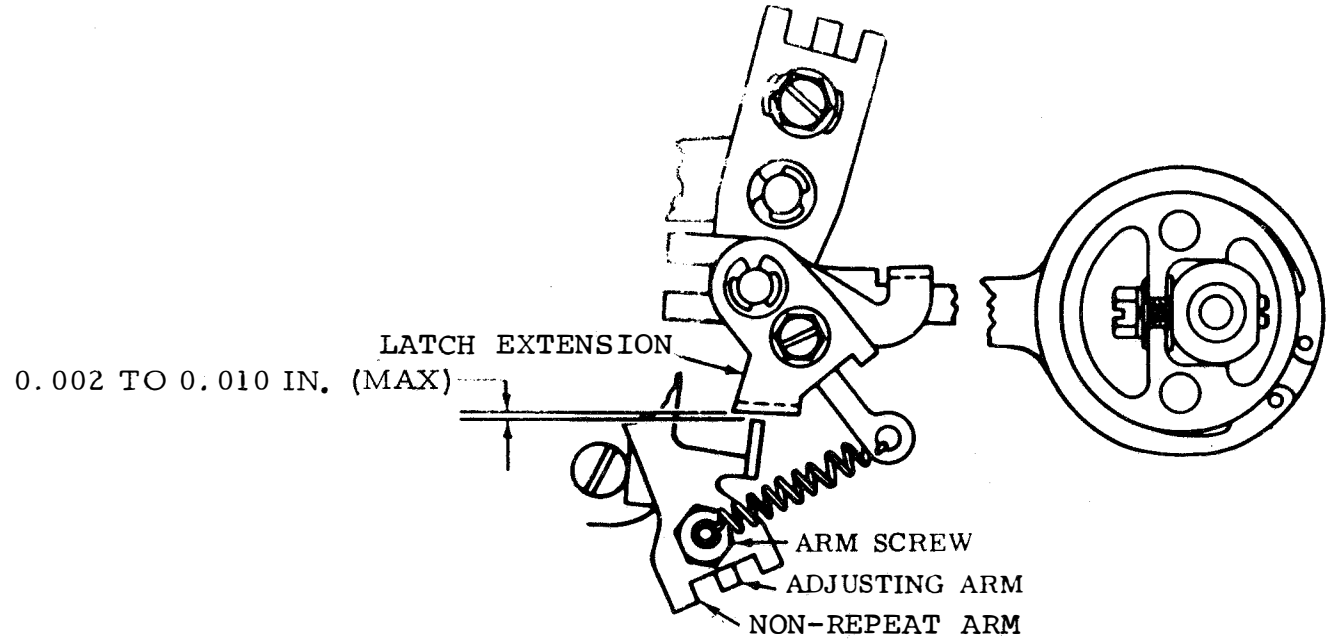


Figure 6-590. Power Driven Backspace Mechanism Non-repeat Arm, Reperforator

NOTE

For "DC" operation, the armature should be positioned so that the side marked "C" faces pole face of magnet core. For "AC" operation, unmarked side faces pole face of magnet core.

(a) Refer to Figure 6-591.

(b) Remove armature bail spring, hold armature against pole face, and take up play at hinge in a downward direction.

(c) Clearance between armature and magnet bracket should measure some to 0.004 inch maximum.

(d) To adjust, loosen hinge mounting screws friction tight and position hinge to meet requirement. Armature should touch front and rear of pole face.

(e) Tighten mounting screws and reconnect armature bail spring. Recheck step (c).

NOTE

Adjustments (2) and (4), below, should not be disturbed unless a reassembly of the unit is undertaken. If necessary to make these adjustments the punch must be removed. Refer to Disassembly and Assembly instruction in Section V.

(2) Armature Upstop. Adjust as follows:

(a) Refer to Figure 6-592.

(b) Place armature in unoperated position.

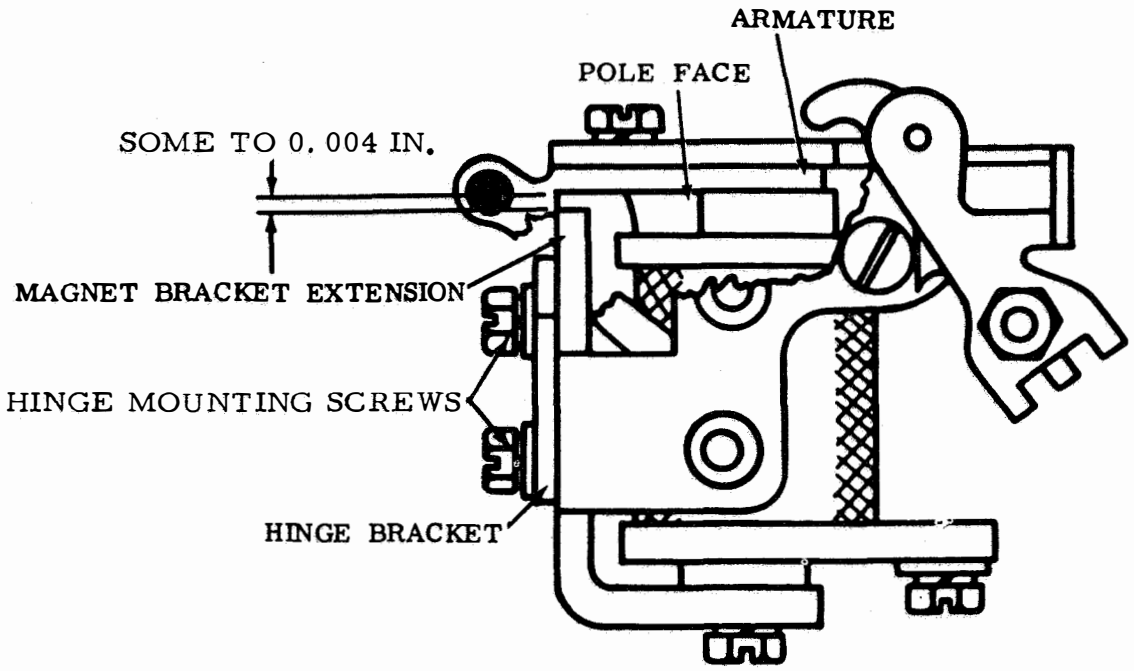


Figure 6-591. Armature Hinge, Reperforator

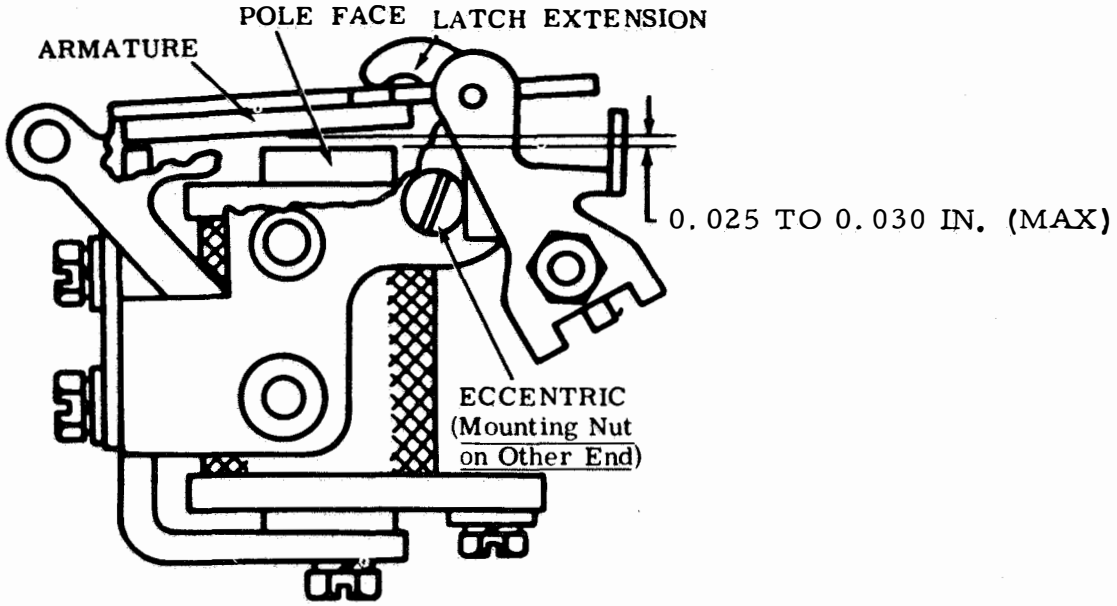


Figure 6-592. Armature Upstop, Reperforator

(c) Gap between armature and pole face, at closest point, should measure 0.025 to 0.030 maximum.

(d) To adjust, loosen eccentric mounting nut and rotate eccentric keeping high part of eccentric to left. Tighten nut.

(3) Drive Link. Adjust as follows:

(a) Refer to Figure 6-593.

(b) Ensure high part of eccentric arm in left position, armature is against pole face to allow drive arm latchlever to reset against eccentric link and play is taken up to make gap a minimum.

(c) Clearance between step on eccentric arm and latchlever should measure 0.040 to 0.045 inch maximum.

(d) To adjust, loosen drive arm screw friction tight and position adjusting link to meet requirement. Tighten screw.

(4) Latch Extension. Adjust as follows:

(a) Refer to Figure 6-593.

(b) Ensure backspace mechanism is in unoperated position, eccentric high part to the left, armature against the pole face, and latch resting on eccentric arm notch.

(c) Clearance between top of armature bail extension and latch extension should be 0.005 to 0.020 inch maximum.

(d) To adjust, loosen magnet mounting screws friction tight and swing magnet left or right as required. Tighten screw.

(5) Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-594.

(b) Place backspace mechanism in unoperated position.

(c) Attach spring scale hook over feed pawl lever.

(d) Force required to start feed pawl moving should measure 4 to 6 ounces maximum.

(e) If requirement is not met, replace spring.

(6) Bellcrank Spring. Adjust as follows:

(a) Refer to Figure 6-594.

(b) Place backspace mechanism in unoperated position.

(c) Attach spring scale hook to upper end of spring.

(d) Force required to pull spring to installed length should measure 9 to 12 ounces maximum.

(e) If requirement is not met, replace spring.

(7) Armature Latch Spring. Adjust as follows:

(a) Refer to Figure 6-594.

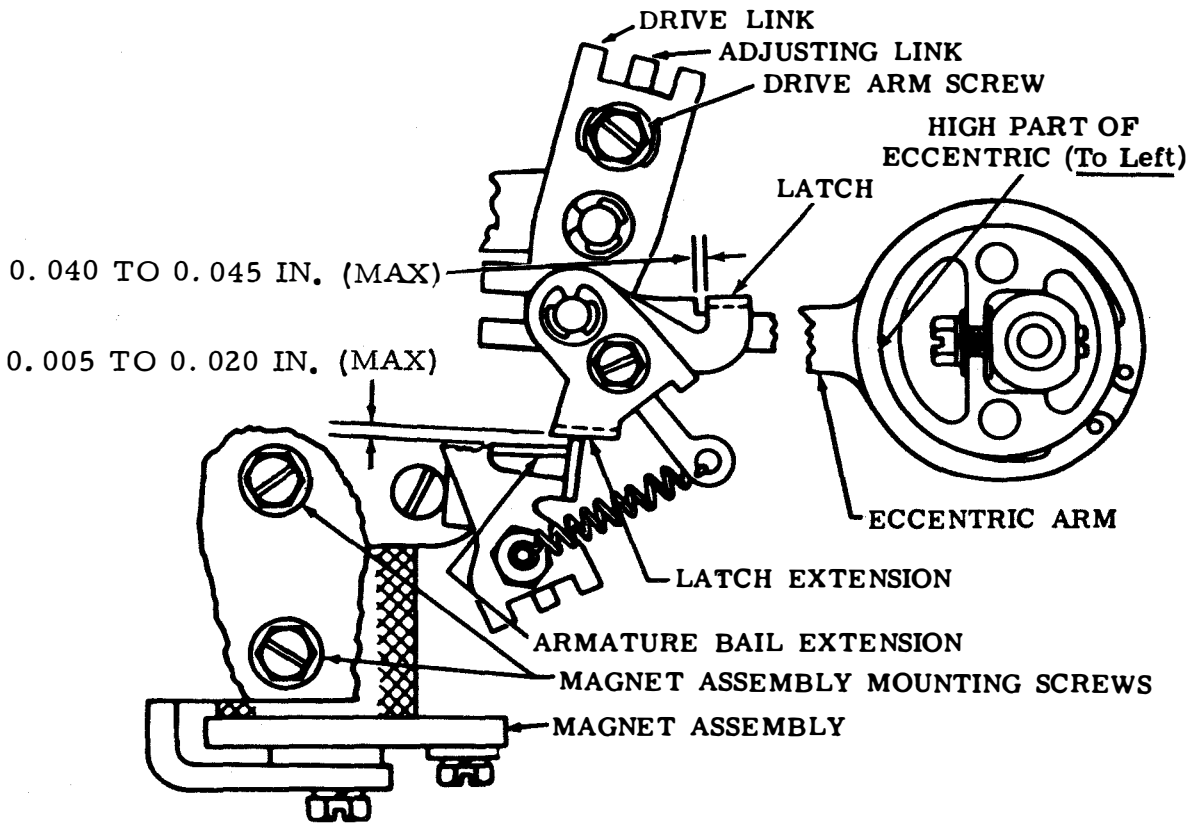


Figure 6-593. Drive Link and Latch Extension (For Fully Perforated Tape), Reperforator

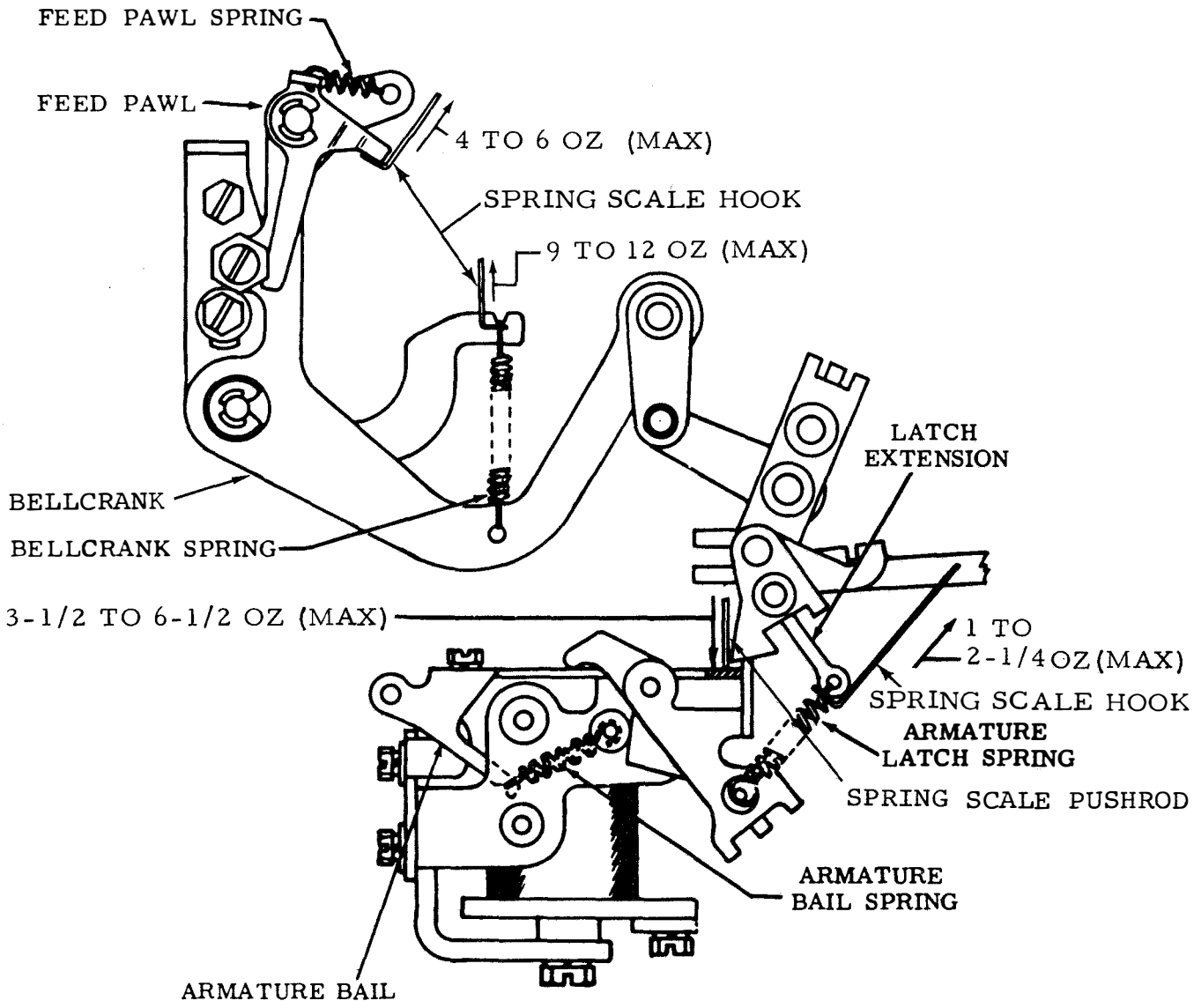


Figure 6-594. Feed Pawl, Bellcrank, Armature Latch, and Armature Bail Springs (For Fully Perforated Tape), Peperforator

(b) Place backspace mechanism in unoperated position.

(c) Attach spring scale hook to latch extension where spring is fastened.

(d) Force required to pull spring to installed length should measure 1 to 2-1/4 ounces maximum.

(e) If requirement is not met, replace spring.

(8) Armature Bail Spring. Adjust as follows:

(a) Refer to Figure 6-594.

(b) Place backspace mechanism in unoperated position.

(c) Unhook armature latch spring and apply spring scale pushrod to armature.

(d) Force required to start armature moving should measure 3-1/2 to 6-1/2 ounces maximum.

(e) If requirement is not met, replace spring.

(f) Reconnect armature latch spring.

d. Ribbon-Feed Mechanism Adjustments (For Chadless and Fully Perforated Tape). Perform the following ribbon-feed mechanism adjustments.

(1) Ribbon-Feed Pawl Spring. Adjust as follows:

(a) Refer to Figure 6-595.

(b) Place rocker bail set to extreme left.

(c) Force required to pull spring to installed length should measure 10 to 14 ounces maximum.

(d) If requirement is not met, replace spring.

(2) Ribbon-Feed Eccentric Stud. Adjust as follows:

NOTE

In units using the old style rocker bail, position the eccentric in its neutral position and make the adjustment with the adjustable drive arm.

(a) Refer to Figure 6-595.

(b) Place rocker bail to extreme left.

(c) Clearance between retaining pawl and ratchet tooth on side where clearance is least should be 0.012 to 0.028 inch maximum.

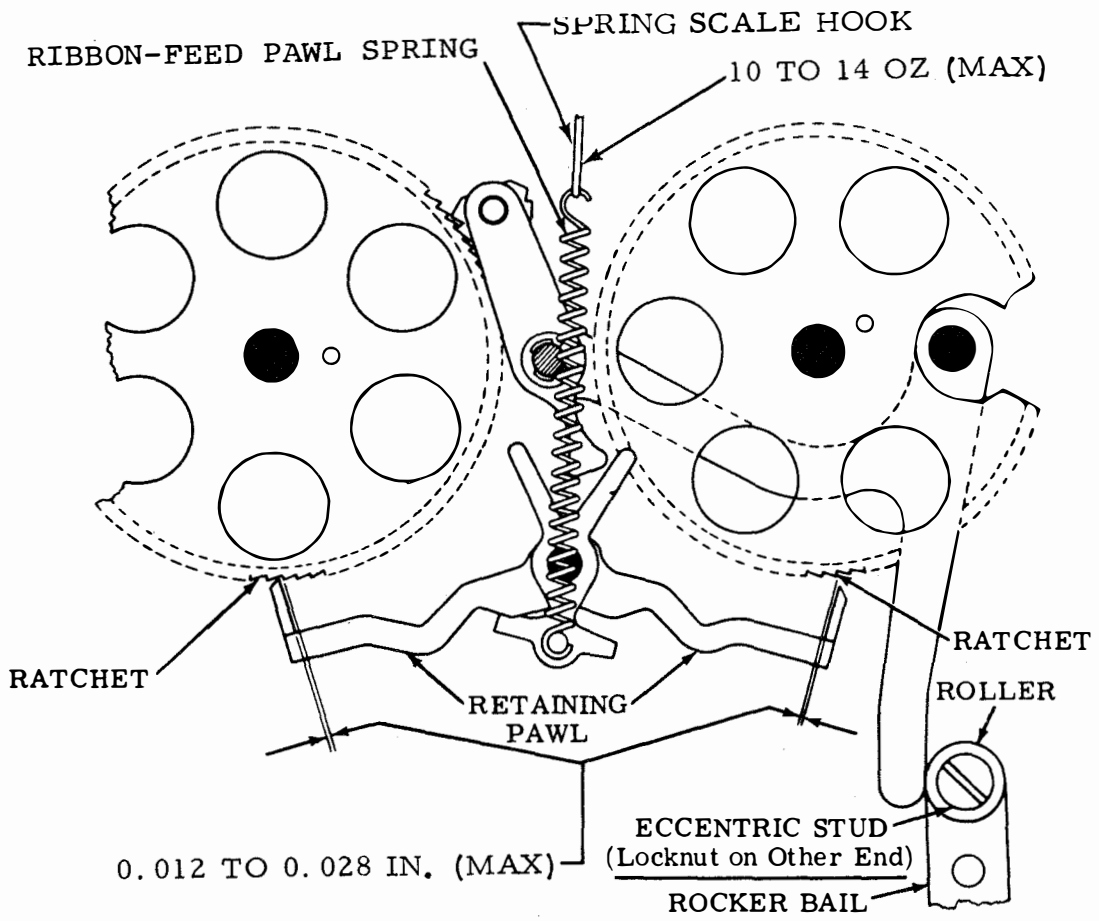
(d) To adjust units equipped with eccentric stud:

1. Loosen eccentric stud locknut.

2. Position eccentric stud to meet requirement and tighten locknut.

(e) To adjust units equipped with adjustable arm:

1. Loosen mounting screws friction tight.



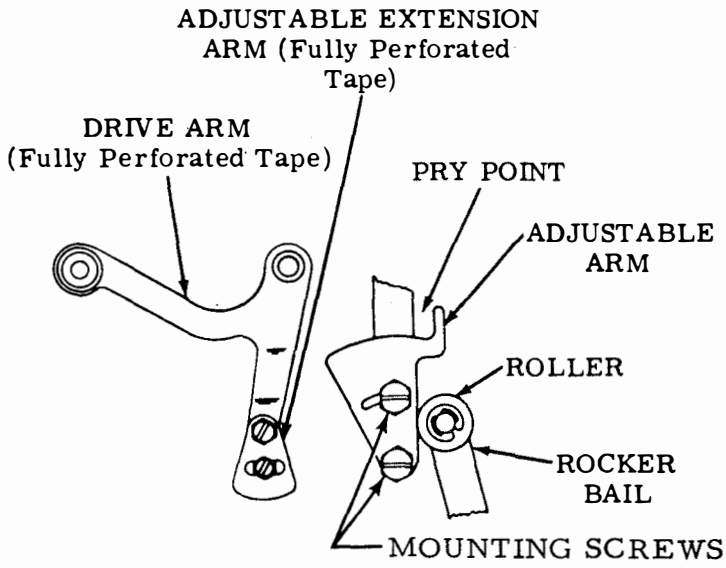


Figure 6-595. Ribbon-Feed Pawl Spring and Eccentric Stud, Reperforator

2. Position adjustable arm by means of pry point and tighten screws.

(3) Ribbon-Feed Drive Arm Spring. Adjust as follows:

(a) Refer to Figure 6-596.

(b) Place unit in STOP position.

(c) Attach spring scale hook to upper end of spring.

(d) Force required to pull spring to installed length should measure 3 to 5 ounces maximum.

(e) If requirement is not met, replace spring.

(4) Ribbon-Feed Pawl Downstop Eccentric. Adjust as follows:

(a) Refer to Figure 6-596.

(b) To check operation of feed pawl:

1. Disengage function clutch.

2. Take up backlash in ratchet wheel so that clearance between feed pawl and ratchet tooth is at minimum.

3. Measure clearance for each ratchet wheel.

(c) Clearance between feed pawl and ratchet tooth, on side with least clearance, should measure 0.020 to 0.040 inch maximum.

(d) Pawl should feed one tooth at a time.

(e) To adjust, loosen downstop eccentric locknut and position downstop eccentric to meet requirements.

(f) Tighten locknut.

(5) Ribbon Ratchet Wheel Spring Washers. Adjust as follows:

(a) Refer to Figure 6-596.

(b) With feed pawl and retaining pawl shifted to opposite ratchet wheel attach spring scale hook over ratchet tooth.

(c) Force required to start wheel turning should measure 1 to 2-1/2 ounces maximum.

(d) If tension is not within limits, remove retaining ring and bend spring washer.

(e) Replace retaining ring and recheck tension.

(f) Repeat procedure for other ratchet wheel.

(6) Ribbon Reversing Plate. Adjust as follows:

(a) Refer to Figure 6-597.

(b) To check:

1. Position rocker bail to extreme left and hold reversing arm under reversing plate and measure clearance.

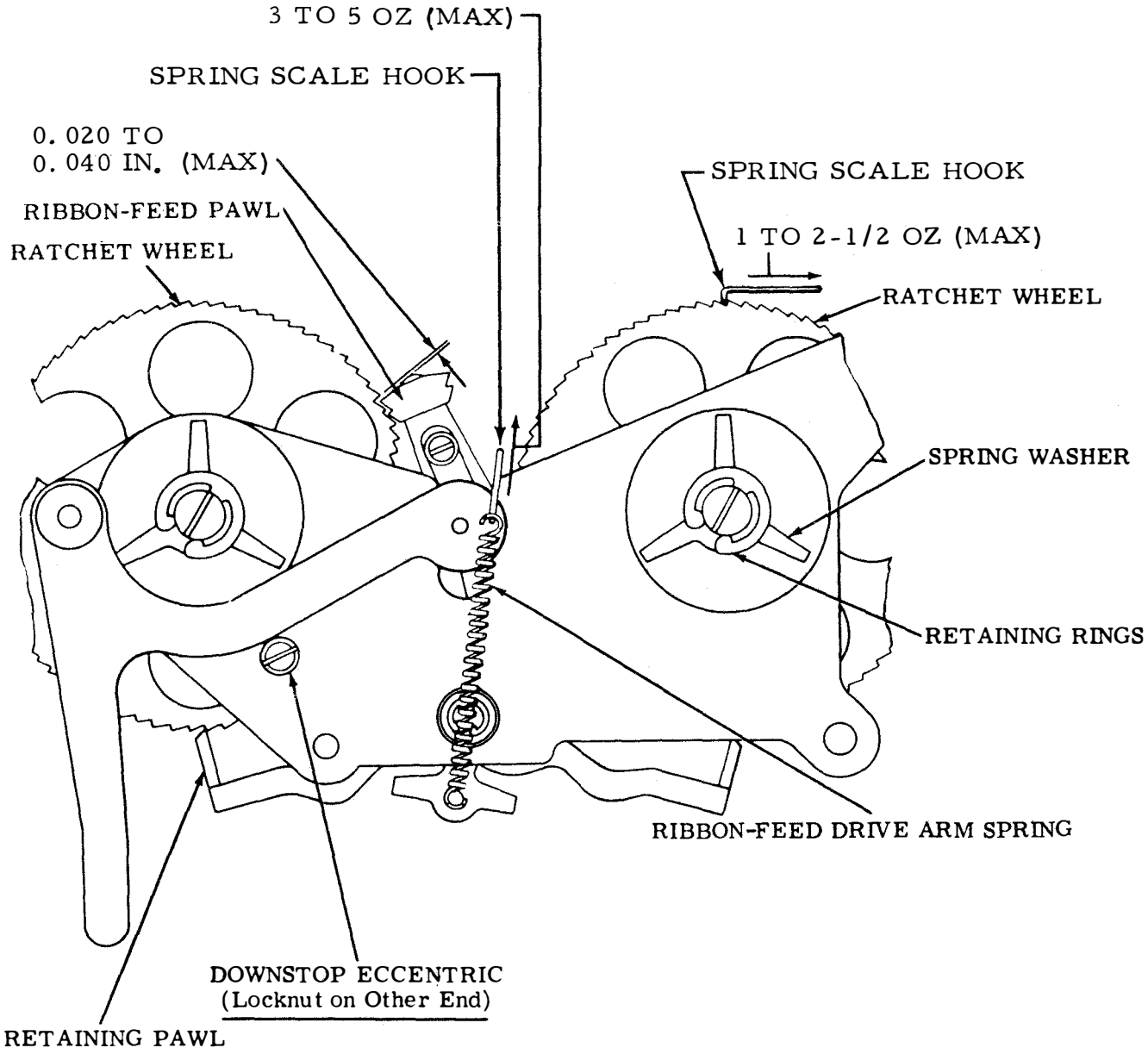


Figure 6-596. Ribbon-Feed Drive Arm Spring, Ribbon-Feed Pawl Downstop Eccentric, and Ribbon Ratchet Wheel Spring Washers, Reperforator, Rear View

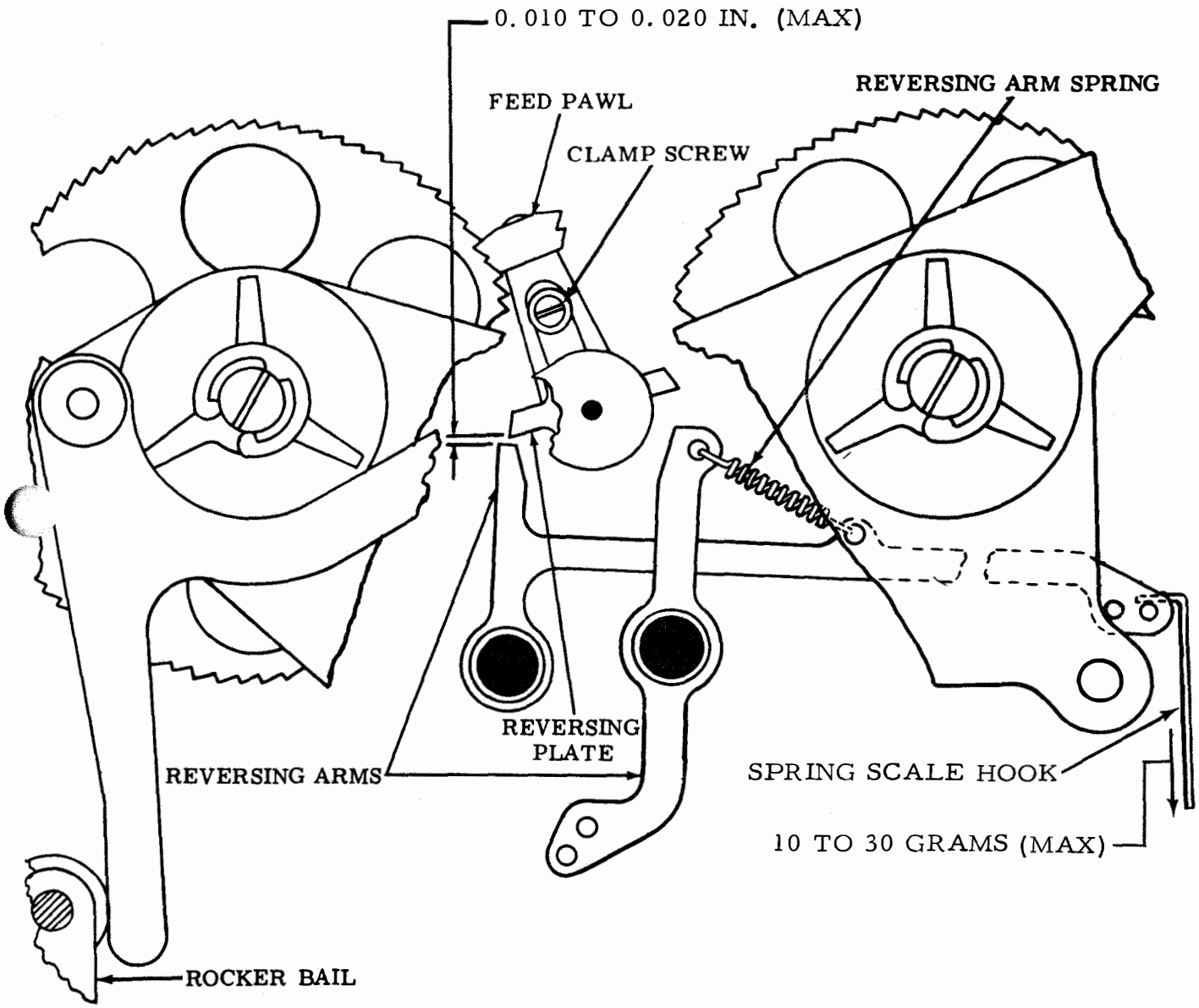


Figure 6-597. Ribbon Reversing Plate and Ribbon-Feed Reversing Arm Spring, Reperforator, Rear View

2. Hold feed pawl against other ratchet and repeat procedure for other reversing arm.

(c) Clearance between reversing plate and reversing arm, at arm where clearance is least, should be 0.010 to 0.020 inch maximum.

(d) To adjust, loosen clamp screw and position reversing plate to meet requirement.

(e) Tighten clamp screw and recheck clearance on both reversing arms.

(7) Ribbon-Feed Reversing Arm Spring. Adjust as follows:

(a) Refer to Figure 6-597.

(b) Place feed pawl in highest position.

(c) Attach spring scale hook to extreme end of reversing arm.

(d) Force required to start reversing arm moving should measure 10 to 30 grams maximum.

(e) If requirement is not met, replace spring.

e. Signal Bell Contact Mechanism Adjustments. Perform the following signal bell contact mechanism adjustments.

(1) Contact Mounting Bracket. Adjust as follows:

(a) Pefer to Figure 6-598.

(b) Disconnect contact, select LETTERS code combination (12345) and rotate main shaft bell function blade until bell function blade is in lowest position (resting on bellcranks).

(c) Normally-open contact should be open.

(d) Select BELL code combination (1-3--) and rotate main shaft until bell function blade is in lowest position.

(e) Bell function blade should be in slots of bellcranks and normally-open contacts are closed.

(f) To adjust, loosen bracket mounting screws and position bracket as required. Tighten screws.

(2) Function Blade Spring. Adjust as follows:

(a) Refer to Figure 6-598.

(b) Place unit in STOP position.

(c) Using a spring scale, force required to start function blade should measure 7 to 10 ounces maximum.

(d) If requirements are not met, replace spring.

CAUTION

There should be some clearance between ribbon feed drive roller and contact mounting bracket when unit is in STOP position. If necessary, refine above adjustment.

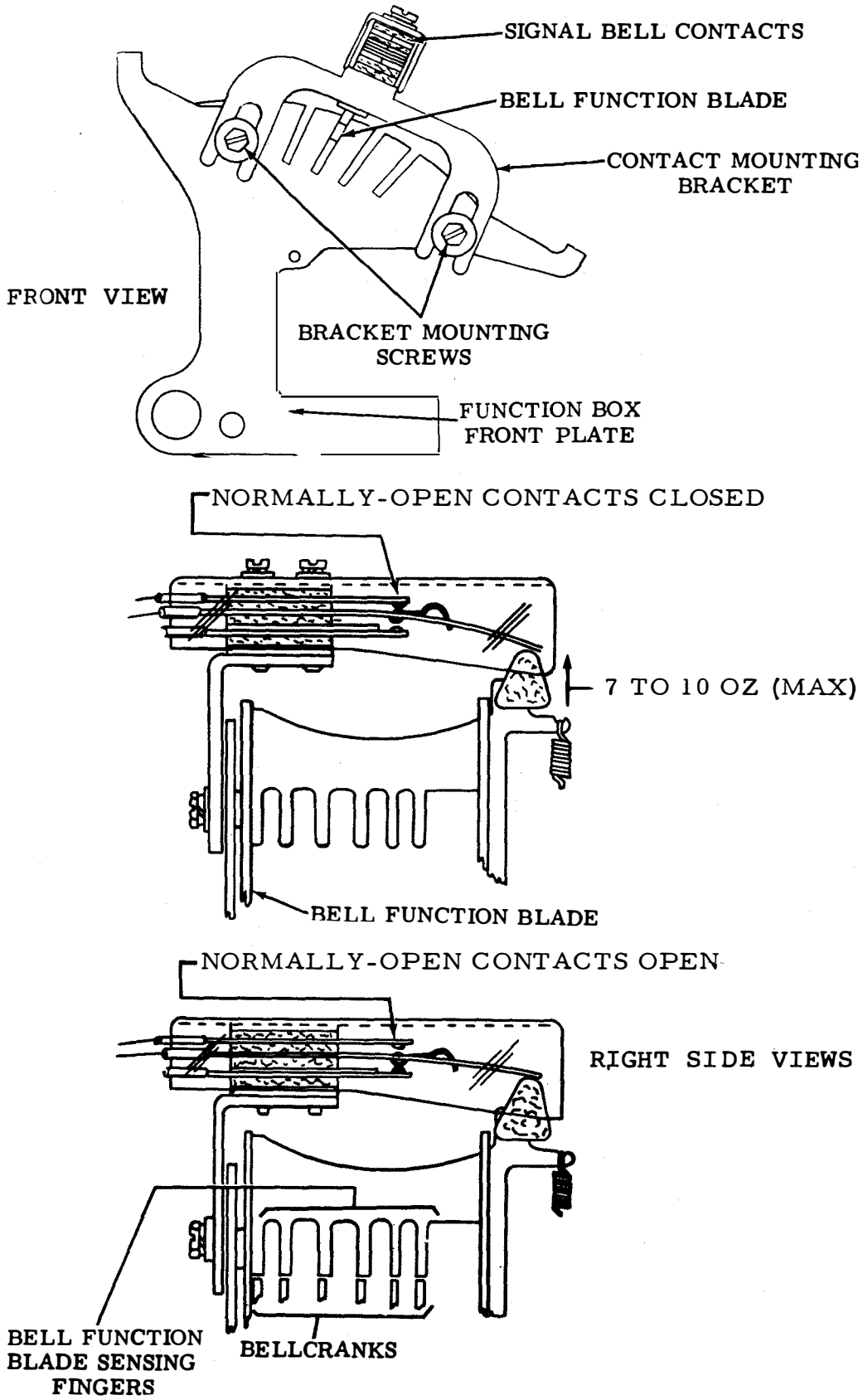


Figure 6-598. Contact Mounting Bracket and Function Blade Spring, Peperforator

f. Multiple Mounted Function Blade Contacts Adjustment. Perform the following multiple mounted function blade contacts adjustments.

NOTE

The following adjustments (1), (2), and (3) should be made prior to installing the contact bracket assembly on unit.

(1) Normally-Open Contact Gap. Adjust as follows:

(a) Refer to Figure 6-599.

(b) Clearance between contact points should be 0.010 to 0.020 inch maximum.

(c) To adjust, bend stiffener.

(2) Normally-Open Contact Spring. Adjust as follows:

(a) Refer to Figure 6-599.

(b) Attach spring scale hook over end of contact spring.

(c) Force required to move contact spring away from its stiffener should measure 3 to 4-1/2 ounces maximum.

(d) To adjust, bend upper contact spring and recheck gap, (1) above.

(3) Normally-Closed Contact Spring. Adjust as follows:

(a) Refer to Figure 6-599.

(b) Attach spring scale hook over end of swinger contact spring.

(c) Force required to move swinger contact away from normally-closed contact should measure 2-1/2 to 3-1/2 ounces maximum.

(d) To adjust, bend swinger contact spring.

NOTE

The following adjustment should be made after the contact bracket assembly has been mounted to the unit.

(4) Normally-Closed Contact Gap. Adjust as follows:

(a) Refer to Figure 6-600.

(b) Place function blade in nonselect position and function blade lifter in its lowest position.

(c) Clearance between contacts points should be 0.010 to 0.020 inch maximum.

(d) To adjust, bend lower contact spring.

NOTE

Select each function blade in turn and determine that there is a definite transfer from make to break contact. Refine (4) above if required.

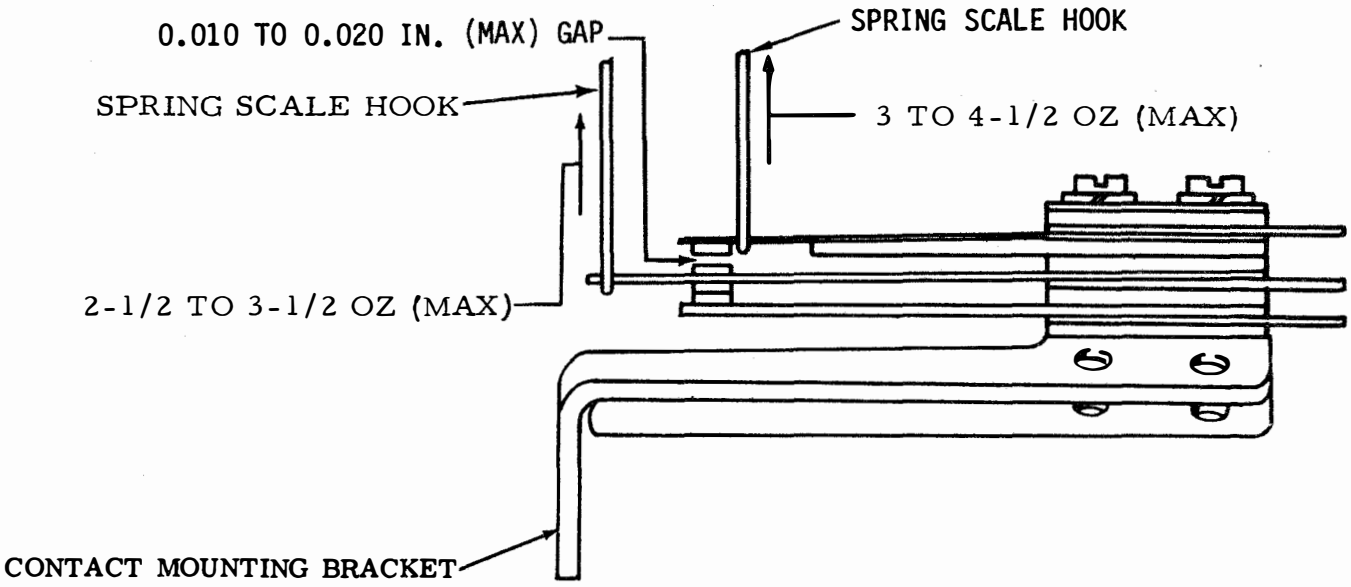


Figure 6-599. Normally-Open Contact Gap, Normally-Open and Normally-Closed Contact Springs, Reperforator, Right Side View

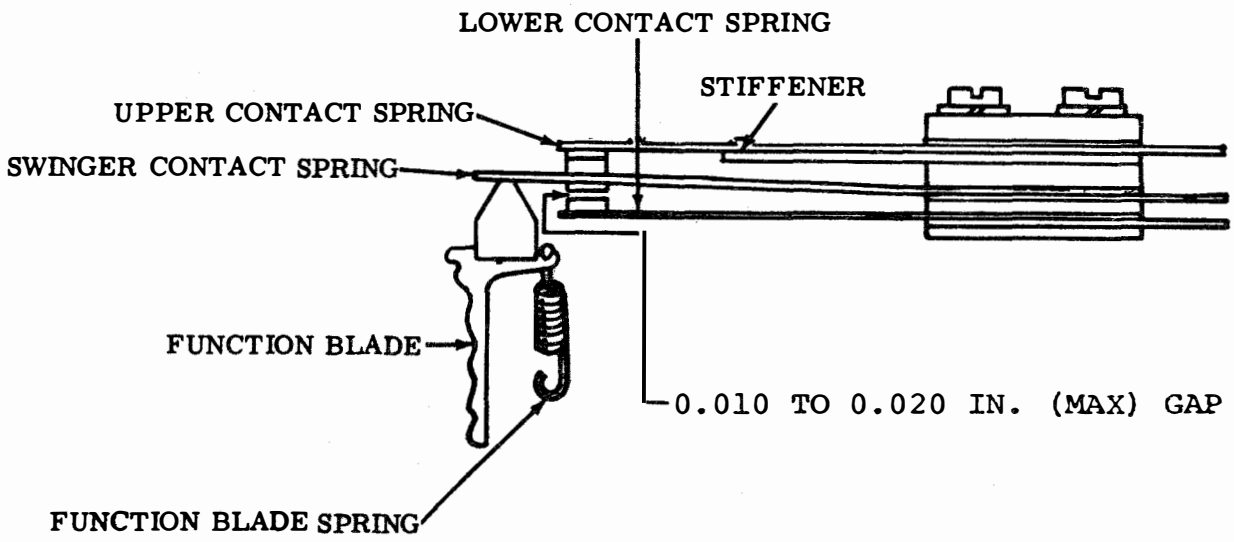


Figure 6-600. Normally-Closed Contact Gap, Reperforator, Right Side View

SECTION V. REPAIR

6-23. GENERAL. This section contains procedures for disassembling and reassembling Automatic Send-Receive Teletypewriter Sets Model 28. After a fault has been isolated to a specific mechanical function, and the trouble cannot be corrected by performing an adjustment, a defective mechanical part is indicated. Repair action will then consist of removal and replacement of the defective component. Refer to the exploded views found in appropriate parts literature for an illustration of the mechanism to be disassembled.

NOTE

On sets equipped with a form supply container on the rear of the cabinet, rearward foot extensions should be in position to prevent cabinet from tilting when any of the components are removed.

6-24. DISASSEMBLY AND REASSEMBLY PROCEDURES. The following procedures are provided to enable the technician to disassemble the teletypewriter set to gain access to a defective component and to reassemble the set after the defective component has been replaced. The procedures will also provide an aid to the technician when disassembly is required for inspection, cleaning and lubrication. Disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When removing a subassembly from the cabinet or unit, the procedure followed and the location from which parts are removed must be carefully noted so that reassembly can be done correctly. When assembling subassemblies, be sure to check all associated adjustments, clearances, and spring tensions. Where no specific instructions are given for reassembly, reverse the procedures used in the removal.

NOTE

If a part is mounted on shims, the number of shims used at each of its mounting screws should be noted at the time of removal, so that the same shim pil-up can be replaced when the part is reassembled. Retaining rings are of spring steel and have a tendency to release suddenly. Hold the ring with left-hand to prevent rotation, and place the blade of a suitable screwdriver in one of the slots of the retaining ring. Rotate the screwdriver in a direction to increase the diameter of the retaining ring. It will come off easily without springing. Avoid loss of springs in disassembly by holding one spring loop with the left-hand while gently removing the opposite loop with a spring hook or suitable probe. Do not stretch or distort springs in removal.

6-25. TYPING UNIT MODEL 28. The following procedures describe removal and replacement of principle subassemblies used in Model 28 typing units. With cabinet lid raised or enclosure cover removed, loosen and remove four screws that secure typing unit to base. Disconnect cable plug connector from side frame. Lift typing unit off.

a. Type Box Removal and Replacement. Perform the following procedures to remove, disassemble, reassemble, and replace the type box. Refer to Figure 7-35.

(1) Removal. To remove type box, proceed as follows:

(a) Trip type box latch to right.

(b) Lift right end of type box upward to an angle of approximately 45 degrees and pull toward right to disengage it from left hand bearing stud.

(2) Disassembly. To disassemble type box for replacing type pallet or spring, proceed as follows:

(a) Remove both screws and nuts that secure front plate to rear plate assembly. Separate the two plates.

(b) Remove spring from pallet by compressing it slightly and pulling formed end out of slot in pallet.

NOTE

This spring should be discarded once it has been removed.

(c) When installing new spring, make certain that formed end extends through slot in pallet.

(3) Reassembly. To reassemble type box, proceed as follows:

(a) Line up front plate with rear plate assembly and draw the two plates together until head of pallet leaves rear plate by approximately 1/16 inch.

(b) This may be accomplished by using two 6-40 screws (at least 11/32 inch long) and nuts in place of two screws and nuts removed when disassembling.

(c) Tighten only enough to hold pallets as specified. Do not clamp plates together until all pallets have been moved into correct position.

(d) Manipulate pallets until they fall into their respective openings in front plate. Press plates together.

(e) Replace screws and nuts used in step (3)(b) with screws and nuts removed in step (2)(a).

(4) Replacement. To replace type box, reverse procedures.

CAUTION

To avoid springing type box latch, type box should be firmly seated on bearing stud and point of latch should be placed in notch of type box plate before moving latch to its locked position.

b. Printing Carriage Removal and Replacement. Perform the following procedures to remove and replace the printing carriage. Refer to Figure 7-34.

(1) Removal. To remove printing carriage, proceed as follows:

(a) Loosen two screws in printing carriage clamp plate and disengage carriage from upper draw-wire rope.

(b) Move carriage to left of track and tilt power part forward to disengage rollers from track.

(2) Replacement. To replace printing carriage, reverse removal procedure.

(a) Make certain that printing arm is correctly reengaged with printing track.

(b) Position carriage clamp on upper draw-wire rope for correct printing carriage position as specified in adjustment section.

c. Type Box Carriage Removal and Replacement. Perform the following procedures to remove and replace the type box carriage. Refer to Figures 7-14 and 7-15.

(1) Removal. To remove type box carriage, proceed as follows:

(a) Move type box carriage to extreme right hand position.

(b) Select any character in bottom row of type box and rotate main shaft until type box carriage is in uppermost position.

(c) Remove ribbon from ribbon guide.

(d) Remove retainer ring from stud in right hand end of type box carriage link. Disengage link from carriage.

(e) Hold ribbon guide forward and right ribbon reverse lever back. Pull carriage toward right to disengage it from carriage track.

(2) Replacement. To replace type box carriage, reverse removal procedure.

d. Front Plate Removal and Replacement. Perform the following procedures to remove and replace the front plate. Refer to Figures 7-20 and 7-21.

(1) Removal. To remove front plate, proceed as follows:

(a) Manually move type box carriage to extreme right.

(b) Select any character in the bottom row of type box and rotate main shaft until type box carriage is in its uppermost position.

(c) Remove retainer ring from type box carriage link right hand stud and disengage link from carriage. (See instructions for removing link retainer in paragraph 6-25c(1)(d)).

(d) Remove two screws which secure main bail drive bracket to rocker shaft.

(e) Remove spacing shaft gear.

(f) Remove four screws which secure front plate assembly to typing unit side frames.

(g) Pull front plate assembly forward to disengage it from connecting parts in typing unit.

(2) Replacement. To replace front plate, reverse removal procedure.

(a) Make certain that TP150770 and TP150771 code bar bellcranks, TP152596 LETTERS-FIGURES shift slide, TP152522 reversing slide shift lever, TP150438 automatic CR-LF bellcrank, and TP152545 carriage return lever extension are properly engaged with their mating parts.

(b) Replace and tighten front plate mounting screws.

(c) Replace spacing shaft gear. See Spacing Gear Phasing, paragraph 6-3.1d(1), for adjustments.

e. Stunt Box Removal and Replacement. Perform the following procedures to remove and replace the stunt box. Refer to Figures 7-31 and 7-37.

(1) Removal. To remove stunt box, proceed as follows:

(a) Remove TP151627 rear tie bar from typing unit side frames.

(b) Remove line-feed function pawl stripper from stripper blade.

(c) Remove single-double line-feed lever screw and disengage lever from notch in stripper blade.

(d) Stripper blade is either removed or disengaged from typing unit, depending on design.

1. For early design: hold the stripper blade toward right side of typing unit and unhook stripper blade left hand arm from blade. Pull stripper blade toward left side of typing unit to disengage stripper blade from right hand arm. Remove stripper blade from typing unit.

2. For late design: loosen screw and remove retaining ring from TP153291 camshaft drive arm. Slide drive arm out of engagement with stripper blade drive arm.

(e) Remove screws which secure stunt box assembly in typing unit.

(f) Lift stunt box assembly upward to disengage it from its locating brackets and pull toward rear to disengage all code bar forks from code bars. Remove, if present, contact assembly and cable clamp from stunt box. Remove stunt box.

NOTE

Before replacing stunt box, proceed with paragraphs 6-25f through j.

(2) Replacement. To replace stunt box, proceed as follows:

(a) To replace stunt box, push it forward in its guide rails to within 1/8 inch of its final position.

(b) Manually disengage function pawls from functions bars and push stunt box assembly forward and downward until it is latched in place on its locating brackets.

(c) Replace stunt box mounting screws, receptacle, and selector magnet wires.

f. Stunt Box Switch Removal and Replacement. Perform the following procedures to remove and replace the stunt box switch. Pefer to Figures 7-40 and 7-41.

(1) Removal. To remove and replace contact arm in stunt box switch, proceed as follows:

(a) Remove two screws that hold contact plate to block.

(b) Carefully unsolder wire from TP157889 contact arm spring. (It is not necessary to unsolder contact arm spring wire from switches having TP172591 contact spring.)

(c) Remove contact plate assembly from contact block.

(d) Remove contact arm(s) from contact plate assembly.

1. For early design: slip TP157889 contact arm spring from contact plate.

2. For late design: slip TP172591 contact arm spring out of engagement with center lug of section being replaced.

(2) Replacement. To replace stunt box switch, proceed as follows:

(a) Place new spring in position on contact plate.

(b) Before mounting contact plate on block, make sure end of spring rests on top of formed-over portion of contact clip. There should be some clearance between low end of spring (front) and upper edge of contact arm to avoid interference with normal movement of contact arm.

(c) Replace contact plate assembly, with contact arms removed, in contact block. Mount contact block in required location with two screws friction tight.

(d) Carefully resolder any leads that may have been removed, being careful to avoid overheating.

(e) Insert pointed end of contact arm, notch downward, between bent up end of spring and formed-over portion of contact clip. Push arm into operating position in contact block.

(f) Before tightening contact plate screws, see paragraph 6-12i(17) for adjustment information.

g. Function Bar Removal and Replacement. Perform the following procedure to remove and replace the function bar. Refer to Figure 7-43.

(1) Removal. To remove function bar, proceed as follows:

(a) Unhook function bar spring.

(b) Hold function bar toward rear of stunt box and disengage function pawl from function bar.

(c) Pull function bar toward front to remove from stunt box.

(2) Replacement. To replace the function bar, reverse removal procedure.

h. Function Pawl Removal and Replacement. Perform the following procedures to remove and replace the function pawl. Refer to Figure 7-20.

(1) Removal. To remove function pawl, after function bar has been removed, proceed as follows:

(a) Remove pawl spring.

(b) Hold associated function lever back.

(c) Remove pawl from top of stunt box.

(2) Replacement. To replace function pawl, reverse removal procedure.

i. Function Lever Removal and Replacement. Perform the following procedures to remove and replace the function lever. Refer to Figure 7-39.

(1) Removal. To remove function lever, after function bar and function pawl have been removed, proceed as follows:

(a) Remove TP152889 shaft retainer plate.

(b) Remove TP150547 shaft nearest front of stunt box.

(c) Unhook spring from function lever and remove lever through top of stunt box.

(2) Replacement. To replace function lever, reverse removal procedure.

j. Function Lever Spring Plate Removal and Replacement. Perform the following procedures to remove and replace the function lever spring plate. Refer to Figure 7-39.

(1) Removal. To remove function lever spring plate or latch, after function bar, function pawl, and function lever have been removed, proceed as follows:

(a) Loosen screws that fasten three TP150689 guide blocks to lower side of guide bar.

(b) Remove spring from TP152660 spring plate or TP154613 latch.

(c) Pull downward on function lever spring plate or latch to snap it out of engagement with retainer shaft.

(2) Replacement. To replace function lever spring plate, reverse removal procedure.

k. Code Bar Assembly Removal and Replacement. Perform the following procedures to remove and replace code bar assembly. Refer to Figure 7-32.

NOTE

To remove code bar assembly, remove front plate assembly, paragraph 6-25d, and stunt box assembly, paragraph 6-25e, must be removed first.

(1) Removal. To remove code bar assembly, proceed as follows:

(a) Remove screws and lockwashers which secure code bar assembly to side frame.

(b) Remove TP150301 code bar shiftbar retainer plate from right hand code bar guide bracket.

NOTE

To unblock suppression code bar, loosen TP151152 screw that mounts TP154650 code bar clip and retaining plate to left hand code bar guide bracket, and rotate code bar clip up out of engagement with suppression code bar. Tighten TP151152 screw.

(c) Unblock suppression code bar. Remove the TP152548 and TP152255 code bar shiftbars and springs from code bars and pull code bar assembly forward and left.

(2) Replacement. To replace code bar assembly, reverse removal procedure, but do not tighten mounting screws.

(a) Hook short extension of TP152257 spring in spring hole of code bar. Short extension of spring should be hooked from bottom of code bar, and long extensions should be hooked over top of the code bar shiftbar.

(b) Loosen TP151630 code bar assembly tie bar screws and hold code bar guide brackets back and downward firmly against locating surfaces on side frame and tighten four mounting screws.

(c) Tighten two tie bar screws.

1. Main Shaft Removal and Replacement. Perform the following procedures to remove and replace the main shaft. Refer to Figure 7-16.

NOTE

To remove main shaft, the Selector Cam-Clutch Assembly, paragraph 6-25q, and Selector Mechanisms, paragraph 6-25r, must be removed first.

(1) Removal. To remove main shaft, proceed as follows:

(a) Set typing unit upside down.

(b) Return carriage to left hand position.

(c) Remove screw that secures spacing shaft in spacing collar.

(d) Remove spacing shaft with gear.

(e) Remove screw that secures the collar and clamp to right end of main shaft.

(f) Remove TP152573 main shaft right hand bearing retainer plate.

(g) Remove TP150010 retainer plate at TP150046 clutch bearing and remove TP150244 link.

(h) Remove two screws from TP152537 main shaft left hand bearing clamp.

(i) Unhook springs from trip levers and

latchlevers associated with all clutches. Position code bar clutch so that low part of clutch cam clears spring arm on cam follower. Unhook code bar clutch cam follower spring.

(j) Remove TP153300 function clutch arm by removing two screws and retainer ring.

(k) Unhook spring from TP153573 function bar reset bail.

(l) Move main shaft assembly toward left to disengage code bar clutch and function clutch links from connecting pins.

(m) Lift left end of shaft assembly out of side frame. Position shaft so that function clutch link passes suppression assembly bracket; then remove shaft assembly from typing unit.

NOTE

Disassembly of the main shaft and clutch assemblies can be accomplished by referring to exploded views contained in appropriate parts tables in Chapter 7. It should be noted that when assembling clutches having cams and disks marked "0" for identification, marked side of parts should face away from clutch side of assembly. Function and code bar clutches should have driving links assembles so that longer end of hub faces away from clutch side of assembly.

(2) Replacement. To reinstall main shaft assembly, reverse removal procedure.

(a) Line-feed clutch spur gear should be positioned with flat side toward line-feed clutch spacer and with indentation in gear toward special washer between gear and main shaft ball bearing.

(b) To phase spacing gears, refer to paragraph 6-3.1d(1) and remake stripper blade drive cam position adjustment, paragraph 6-3.1f(9).

m. Upper Draw-Wire Rope Removal and Replacement. Perform the following procedures to remove and replace the upper draw-wire rope. Refer to Figure 7-19.

(1) Removal. To remove upper draw-wire rope, return carriage to left hand position and proceed as follows:

(a) Loosen nut on front end of spring drum stud. Operate ratchet escapement lever to unwind carriage return spring.

(b) Remove upper draw-wire rope from clamp plate on printing carriage and clamp on oscillator rail slide.

(c) Loosen clamp screw that secures upper draw-wire rope to spring drum. Remove wire rope from drum.

(d) Remove screw in spacing drum that secures ends of wire rope. Remove rope from drum.

(2) Replacement. To replace upper draw-wire rope, reverse removal procedure.

n. Lower Draw-Wire Rope Removal and Replacement. Perform the following procedures to remove and replace the lower

draw-wire rope. Refer to Figure 7-19.

(1) Removal. To remove lower draw-wire rope, proceed as follows:

(a) Remove screw that secures wire rope to spacing drum. Remove end of rope from drum.

(b) After loosening screws that secure TP150796 margin indicator cam disk on spring drum, position disk to expose lower draw-wire rope mounting screw.

(c) Remove lower draw-wire rope screw and rope from spring drum.

(d) Loosen screws in pulley bearing studs that mount draw-wire rope pulleys and move studs toward center of typing unit.

(2) Replacement. To replace draw-wire rope, reverse removal procedure.

(a) Make certain that lower draw-wire rope is in front of upper draw-wire rope in track around drums.

(b) Adjust the position of the type box, paragraph 6-3.1g(13), the printing carriage, paragraph 6-3.1g(3), and the wire rope tension as outlined in paragraph 6-3.1d(9).

o. Platen (Friction Feed) Removal and Replacement. Perform the following procedures to remove and replace the friction feed platen. Refer to Figure 7-11.

(1) Removal. To remove platen, proceed as follows:

(a) Remove line-feed spur gear.

(b) Remove TP150719 and TP150720 platen bearing retainers.

(c) Remove TP152832 paper straightener shaft.

(d) Hold off detent and lift platen out of side frame.

(2) Replacement. To replace platen, reverse removal procedure.

(a) When replacing each platen bearing retainer, put upper screw in first. Leave screw slightly loose.

(b) Press lower end of retainer downward and hook it into the elongated hole in side frame.

(c) Replace lower screw and tighten both screws.

p. Platen (Sprocket Feed) Removal and Replacement. Perform the following procedures to remove and replace the sprocket feed platen. Refer to Figure 7-10.

(1) Removal. To remove platen, proceed as follows:

(a) Remove guide bracket assembly.

(b) Remove spur gear from left end.

(c) Remove TP150719 and TP150720 platen bearing retainers.

(d) Hold off detent bail and remove platen.

(e) Remove sprocket hub assembly from platen assembly.

NOTE

The TP153673 shaft tool, and TP153797 retaining tool must be used when disassembling the TP153700 platen hub in order to hold spring loaded pins in place when feed cam is replaced.

(f) Insert TP153673 shaft tool into hub and fasten it with TP151346 screw.

(g) Remove TP157286 clamp and TP153699 cam from assembly.

(h) Insert hub into TP153797 retaining tool.

(2) Replacement. To replace platen, reverse removal procedure.

(a) When replacing TP153686 right sleeve bearing, chamfer side or side marked "O" must face end of shaft and wide part placed toward front of unit.

(b) When replacing each platen bearing retainer, put its upper screw in first. Leave screw slightly loose.

(c) Press lower end of retainer downward, and hook it into elongated hole in side frame.

(d) Replace lower screw and tighten both screws.

q. Selector Cam-Clutch Removal and Replacement. Perform the following procedures to remove and replace the selector cam-clutch. Refer to Figure 7-16.

(1) Removal. To remove selector cam-clutch, proceed as follows:

(a) Facing right end of typing unit, lift TP152410 pushlever reset bail from its cam, and move pushlever reset bail to rear, latching it in raised position on pushlever guide.

(b) Push marking locklever (and blocked selector levers) to left until selector magnet armature latches with marking locklever.

(c) Remove screw which secures selector clutch drum to main shaft. Position clutch cam disk so that stop-lug is in uppermost position.

CAUTION

Cam-clutch should come off main shaft easily. Do not force it.

(d) Hold start lever and spacing locklever away from selector cam-clutch assembly, grasp selector cam-clutch by clutch cam disk (not by drum) and pull forward by rotating cam-clutch slowly.

(2) Replacement. To replace cam-clutch assembly, proceed as follows:

(a) Reverse removal procedures, except as cam-clutch approaches fully installed position, move trip

shaft lever and clutch latchlever so that they ride on their respective cams.

(b) Restore pushlever reset bail and armature to their operating positions.

r. Selector Mechanism Removal and Replacement. Perform the following procedures to remove and replace the selector mechanism. Refer to Figures 7-24 and 7-28.

NOTE

To remove selector mechanism, the cam-clutch assembly, paragraph 6-25q, must be removed first.

(1) Removal. To remove selector mechanism, proceed as follows:

(a) Remove TP151658 screw that secures selector mechanism to TP152546 intermediate bracket on code bar positioning mechanism.

(b) Remove from selector mechanism spring which connects with common transfer lever on code bar positioning mechanism.

(c) Remove remaining three selector mounting screws and lift selector from main shaft bearing housing.

(2) Replacement. To replace selector mechanism reverse removal procedures.

s. Code Bar Positioning Mechanism Removal and Replacement. Perform the following procedures to remove and replace the code bar positioning mechanism. Refer to Figures 7-22 and 7-23.

(1) Removal. To remove code bar positioning mechanism, proceed as follows:

(a) Unhook the mechanism from the selector spring attached to common transfer lever and restore any operating pushlevers to spacing position by raising TP152410 pushlever reset bail.

(b) Loosen clamp screw on TP150447 shift lever drive arm, and remove two screws which mount mechanism to side frame and selector mounting plate.

(c) Manipulate transfer levers and TP152548 or TP152255 code bar shiftbars while gently twisting mechanism off code bar shiftbars.

(2) Replacement. To replace code bar positioning mechanism, proceed as follows:

(a) Rotate main shaft to STOP position.

(b) Push code bar shiftbars to marking position.

(c) Manipulate code bar shiftbars and transfer levers so that shiftbars line up with their respective slots in TP150525 bracket, and slide shiftbars through slots, one at a time, leaving bottom slot vacant.

t. Range Finder Assembly Removal and Replacement. Perform the following procedures to remove and replace the range finder assembly. Refer to Figure 7-24.

(1) Removal. To remove range finder assembly, proceed as follows:

(a) Remove two screws and nuts that secure range finder plate to selector mounting plate.

(b) Move TP152438 stop arm bail forward so that it disengages from TP161342 start lever and clears selector clutch disk, while rocking range finder assembly back and forth as it is removed.

(2) Replacement. To replace range finder assembly, reverse removal procedure.

NOTE

For units equipped with TP152897 bail lever guide, do not tighten nut until bail lever guide adjustment has been checked, see paragraph 6-17a(1).

u. Selector Magnet Assembly Removal and Replacement. Perform the following procedures to remove and replace the selector magnet assembly. Refer to Figures 7-26 and 7-27.

(1) Removal. To remove selector magnet assembly proceed as follows:

(a) Remove two screws and nuts which mount range finder to selector.

(b) Remove selector magnet cable from coil terminal screws.

(c) Remove two magnet assembly mounting screws and lift assembly out.

(2) Replacement. To replace selector magnet assembly, reverse removal procedure.

6-26. PERFORATOR TRANSMITTER BASE. Perform the following procedures to remove and replace the principle subassemblies of the perforator transmitter base. Remove the four TP151549 screws that secure base to cradle or subbase. Disconnect cable plug from connector at rear or keyboard base. Remove the base with motor unit and typing or non-typing perforator still in position.

a. Character Counter Removal and Replacement. Perform the following procedures to remove and replace the character counter. Refer to Figure 7-80.

(1) Removal. To remove character counter, proceed as follows:

(a) Remove the two screws that secure the TP179279 character counter bracket to the keyboard base.

(b) Raise the character counter and remove the two screws that hold TP158050 switch to TP158021 bracket.

(c) Remove the character counter assembly.

(2) Replacement. To replace character counter, reverse removal procedure.

b. Tape Container Removal and Replacement. Perform the following procedures to remove and replace the tape container. Refer to Figure 7-79.

(1) Removal. To remove tape container, proceed as follows:

(a) Remove the four mounting screws which hold TP158233 panel mounting bracket to the base.

(b) Remove four screws that hold tape container to bracket.

(c) Remove tape container assembly.

(2) Replacement. To replace tape container, reverse removal procedure.

c. Perforator (Typing and Non-typing) and Removal and Replacement. Perform the following procedures to remove and replace the typing and non-typing perforators. Refer to Figures 7-58 and 7-94.

(1) Removal. To remove perforator, proceed as follows:

(a) Loosen two setscrews on TP193565 shaft coupling located on TP144992 rear shaft.

(b) Slide coupling to the rear to disengage it.

(c) Remove three screws securing TP158169 non-typing or TP159861 typing perforator frames to the base.

(d) Remove screw securing TP156184 bracket to the base.

(e) Raise perforator slightly from the base being careful not to damage the code bar extension or related springs or components.

(f) If unit is equipped with power backspace, disconnect AC current from machine and unscrew the leads from under the magnet assembly before removing the perforator.

(2) Replacement. To replace perforator, reverse removal procedure.

d. Margin Indicator Removal and Replacement. Perform the following procedures to remove and replace the margin indicator. Refer to Figure 7-74.

(1) Removal. To remove margin indicator, proceed as follows:

(a) Remove the two screws which retain TP158162 switch mounting bracket to TP158160 reset cam follower lever assembly bracket.

(b) Remove margin indicator.

(2) Replacement. To replace margin indicator, reverse removal procedure.

e. Reset Cam Follower Removal and Replacement. Perform the following procedures to remove and replace the reset cam follower. Refer to Figure 7-74.

(1) Removal. To remove reset cam follower, proceed as follows:

(a) Remove the screws which hold TP158160 reset cam follower lever assembly bracket to TP158113 basket frame.

(b) Remove the screws that secure bracket to the base.

(c) Disengage the follower lever assembly from the selector lever assembly.

(2) Replacement. To replace reset cam follower, reverse removal procedure.

f. Auxiliary Electrical Switch Removal and Replacement. Perform the following procedure to remove and replace the auxiliary electrical switch. Refer to Figure 7-75.

(1) Removal. To remove switch (including housing), proceed as follows:

(a) Disconnect cable leads from TP158250 terminal board located just to the right of the perforator drive shaft.

(b) Remove three screws securing the auxiliary switch housing to the base.

(c) Slide housing to the rear and disengage TP158208 gear from TP158210 shaft.

(d) Lift the housing out.

(e) Disengage drive shaft from TP158114 extension basket control cam.

(2) Replacement. To replace switch, reverse removal procedure.

g. Code Bar Extension Basket Removal and Replacement. Perform the following procedures to remove and replace the code bar extension basket. Refer to Figure 7-73.

(1) Removal. To remove code bar extension basket, proceed as follows:

(a) Remove the screw that secures left end of TP158113 extension basket to the base.

(b) Slide extension basket to the left and disengage reset lever from keyboard control selection lever assembly.

NOTE

For reassembly purposes, observe how TP158061 link guide pin and TP158060 trip bar link latch spring which encases it, are engaged between TP158135 clutch trip bar link latch. Be sure that selection lever assembly straddles the clutch trip bar extension lever, and that selection lever fork engages its mating pin.

(2) Replacement. To replace code bar extension basket, reverse removal procedure.

h. Signal Generator Removal and Replacement. Perform the following procedures to remove and replace the signal generator. Refer to Figures 7-67 and 7-90.

(1) Removal. To remove signal generator, proceed as follows:

(a) Remove the typing unit.

(b) Remove the TP154131 contact box cover.

(c) Disconnect signal line leads from the TP154042 and TP154043 contact terminals.

(d) Remove the two screws at front of TP154200 signal generator frame and screw at right rear of the frame.

(e) Lift the signal generator carefully, while holding the TP154179 universal bail back so that the TP154237 non-repeat lever clears and the springs will not be excessively stretched.

CAUTION

If the non-repeat lever is pulled down approximately 90 degrees from the normal position, its spring might be stretched beyond elastic limits which will result in assembly malfunction. Make sure the lever is in its slot before setting it down.

(2) Replacement. To replace signal generator, reverse removal procedure.

i. Keyboard Hood Removal and Replacement. Perform the following procedures to remove and replace the keyboard hood. Refer to Figure 7-62.

(1) Removal. To remove keyboard hood, proceed as follows:

(a) Remove the four screws securing TP154198 windows and labels.

(b) Remove the two screws underneath TP154110 hood which mounts hood to TP154203 hood mounting bracket.

(c) Remove the four screws on top of hood which secure the hood to the TP154210 (left) and TP154211 (right) frame mounting brackets.

(d) Pull the hood forward for removal.

(e) Stretch the rubber TP154020 keyboard seal off its TP154057 and TP154058 plates.

(f) Remove the four screws and two TP154203 hood mounting brackets.

(g) Remove upper TP154058 seal plate by removing three screws at the rear.

(h) Remove the TP154057 lower seal plate by removing the screws at the front.

(2) Replacement. To replace keyboard hood, reverse removal procedure.

j. Contact Box Removal and Replacement. Perform the following procedure to remove and replace the contact box. Refer to Figures 7-88, 7-89, and 7-91.

(1) Removal. To remove contact box, proceed as follows:

(a) Remove TP154131 contact box cover.

(b) Disconnect the signal line leads.

(c) Unhook the TP86304 drive link spring.

(d) Remove the two screws at front of TP154009 front plate which secures contact box assembly.

(e) Disengage TP156644 drive link from transfer bail and lift off the assembly.

(2) Replacement. To replace contact box, reverse removal procedure.

k. Keyboard Removal and Replacement. Perform the following procedures to remove and replace the keyboard. Refer to Figure 7-53.

NOTE

Remove the typing unit, paragraph 6-25; signal generator assembly, paragraph 6-26h; and keyboard hood assembly, paragraph 6-26i, before removing keyboard assembly. For easier disassembly and reassembly of the keyboard assembly, stand the base on its rear.

(1) Removal. To remove keyboard, proceed as follows:

(a) Remove the four screws securing the TP154210 (left) and TP154211 (right) front frames to front of TP158000 base.

(b) Remove the two screws which secure TP154068 (right) and TP154069 (left) code lever guide brackets at the top of the base.

(c) Remove the two screws at extreme right and left of the TP154055 front bracket which mounts it on the base.

(d) After the screws are removed, (b) and (c), tip up the front of the keyboard assembly and pull it forward, disengaging the function levers.

(e) Note that all of the function levers are under their corresponding function bails with the exception of the keyboard lock function lever which fits on top of its function bail.

(f) When reassembling, depress the keyboard lock keylever so that lock function lever will insert over its bail instead of under the bail as the other function levers should.

(2) Replacement. To replace keyboard, reverse removal procedure.

l. Transfer Lever Locking Bail Removal and Replacement. Perform the following procedures to remove and replace the transfer locking bail. Refer to Figure 7-106.

NOTE

Remove the signal generator assembly, paragraph 6-26h, and contact box assembly, paragraph 6-26j, from the keyboard first.

(1) Removal. To remove transfer lever locking bail, proceed as follows:

(a) Remove the TP70388 transfer lever locking bail spring.

(b) Trip the clutch and rotate the shaft until the cam is positioned so that TP151140 locking bail can be unhooked and dropped from its guiding post.

(c) Turn the locking bail clockwise until it is at right angle to the guide. Remove locking bail from bottom of the frame.

NOTE

It may be necessary to move the shaft back and forth to position the cam for maximum clearnace.

(2) Replacement. To replace transfer lever locking bail, reverse removal procedure.

m. Signal Generator Shaft Removal and Replacement. Perform the following procedures to remove and replace the signal generator shaft. Refer to Figure 7-68.

NOTE

Remove the transfer lever locking bail, paragraph 6-261, first.

(1) Removal. To remove signal generator shaft, proceed as follows:

(a) Remove the screws that mount TP154101 clutch shaft rear mounting plate to TP154200 signal generator frame.

(b) Remove the nut that locks the shaft to front of the signal generator frame.

(c) Holding TP154033 clutch lever and TP154034 clutch stop lever away, pull back on shaft rear mounting plate to disengage shaft from front plate.

(d) Remove the cam, clutch and shaft assembly by rotating the assembly to clear the various transfer levers. Rotate the assembly to clear the various transfer levers.

(e) Remove TP154019 code bar bail eccentric follower.

NOTE

The felt washer TP154138 and TP154083 spacer will fall free. Reposition the felt washer and cam spacer before reassembly.

(f) To remove clutch and cam assembly from shaft, disengage the clutch by holding the clutch shoe lever against stop-lug. Slide cam and clutch assembly off shaft.

(2) Replacement. To replace signal generator shaft, reverse removal procedure.

n. Keylever Guideplate Removal and Replacement Perform the following procedures to remove and replace the keylever guideplate. Refer to Figure 7-60.

NOTE

Remove the keyboard hood assembly, paragraph 6-26i, first.

(1) Removal. To remove keylever guideplate, proceed as follows:

(a) Remove the TP151045 spacebar by unscrewing the two shoulder screws that secure it to TP154117 spacebar bail.

(b) Remove the screw on keylever guideplate under the spacebar.

(c) Remove the two screws in upper corners of

guideplate which hold the guideplate to the frame.

(d) Work the guideplate off keytops and allow them to fall free.

NOTE

When replacing the guideplate over the keylevers, flop all the levers to the rear. Place front end of guideplate down on the frame. Push keylevers into their respective holes starting with the bottom row and proceeding upwards to the top row. row.

(2) Replacement. To replace keylever guideplate, reverse removal procedure.

6-27. TYPING AND NON-TYPING PERFORATORS. Perform the following procedures to remove and replace the principle subassemblies of the non-typing perforators. Remove typing unit, paragraph 6-25, and keyboard base, paragraph 6-26, from the cabinet. Loosen the setscrew on TP193565 coupling located on rear of shaft. Slide coupling and/or short shaft in such a manner to disengage it. Remove screw which secures TP156184 anchor bracket to base. Carefully lift the reperforator upward while tilting the unit to one side. Disconnect wires from backspace magnet. Remove the unit from the base.

NOTE

Some of the subassemblies may have to remain removed to facilitate removal of other subassemblies.

a. Punch and Magnet Assemblies and Backspace Mechanism Removal and Replacement. Perform the following procedures to remove and replace the punch and magnet assemblies and the backspace mechanism. Refer to Figure 7-94.

(1) Removal. To remove punch and magnet assemblies, proceed as follows:

(a) Unhook TP90573 perforator drive link spring and disengage TP192709 link.

(b) Remove the three screws that secure TP156024 rear plate to TP159472 main plate.

(c) Remove the three screws which hold the perforator main plate to either TP158169 or TP159861 non-typing or typing perforator frame.

(d) Remove the one screw that anchors the unit to the base.

(e) Disengage TP159961 eccentric arm and the assemblies will come free as a unit.

(2) Replacement. To replace punch and magnet assemblies, reverse removal procedure.

b. Ribbon-Feed Mechanism (Typing Perforator Only) Removal and Replacement. Perform the following procedures to remove and replace the ribbon-feed mechanism. Refer to Figures 7-108 and 7-109.

(1) Removal. To remove ribbon-feed mechanism, proceed as follows:

(a) Remove the ribbon.

(b) Remove the two screws that secure the ribbon mechanism.

(2) Replacement. To replace ribbon-feed mechanism, reverse removal procedure.

c. Transfer Mechanism (Typing Perforator Only) Removal and Replacement. Perform the following procedures to remove the transfer mechanism. Refer to Figure 7-106.

(1) Removal. To remove transfer mechanism, proceed as follows:

(a) Remove the TP150241 main trip lever spring.

(b) Remove the two mounting screws.

(c) Remove the transfer mechanism from the perforator.

(2) Replacement. To replace transfer mechanism, reverse removal procedure.

d. Typing Mechanism (Typing Perforator Only) Removal and Replacement. Perform the following procedures to remove and replace the typing mechanism. Refer to Figures 7-94 and 7-110.

(1) Removal. To remove typing mechanism, proceed as follows:

(a) Remove the TP156872 operating blade from rocker bail assembly by removing two mounting screw, lockwashers and flat washers.

(b) Carefully remove the shims. Take note from where and how many were removed.

(c) Disconnect TP159512 printing trip link by removing retaining ring that secures it to the hammer accelerator.

(d) Remove the nut, lockwasher and flat washer on the rocker bail assembly.

(e) Remove the TP156936 eccentric on the rocker bail assembly and disconnect the TP159526 oscillating drive link.

(f) Remove TP95378 spring from TP156478 accelerator and TP90606 spring from TP156252 lifter.

(g) Remove the screw and washer that secures TP159434 lifter plate to the TP162862 bar on the frame.

(h) Remove the screw and lockwasher that secure TP159525 axial bracket to the TP159404 post on the frame.

(i) Remove the screw, lockwasher and flat washer which secure TP159487 function box front plate to TP159472 main plate.

(j) Remove the TP119653 retaining ring from the TP159659 eccentric shaft and remove TP151629 nut.

(k) Remove TP159536 idler gear, TP159659 shaft and lockwasher by removing TP159658 mounting screw.

(l) Remove the three screws, lockwashers and flat washers that secure TP159535 front plate to the frame.

(m) Remove the typing mechanism from the frame assembly.

(2) Replacement. To replace typing mechanism, reverse removal procedure.

e. Function Box Mechanism Removal and Replacement. Perform the following procedures to remove and replace the function box mechanism. Refer to Figure 7-101.

(1) Removal. To remove function box mechanism, proceed as follows:

(a) Remove the mounting screw, lockwasher and flat washer from TP159535 front plate.

(b) Remove the function box mechanism.

(2) Replacement. To replace function box mechanism, reverse removal procedure.

f. Axial Plate Assembly Removal and Replacement. Perform the following procedures to remove and replace the axial plate assembly. Refer to Figures 7-102 and 7-110.

(1) Removal. To remove axial plate assembly, proceed as follows:

(a) Remove the TP3870 correcting drive link spring.

(b) Remove the TP119651 retainer ring and TP156413 correcting drive link.

(c) Remove TP119649 retaining ring and disconnect TP156869 ribbon guide from TP156870 ribbon oscillating lever.

(d) Remove the three mounting screws, lockwashers and flat washers from the axial plate assembly.

(e) Remove the axial plate assembly.

(2) Replacement. To replace axial plate assembly, reverse removal procedure.

(a) The rearmost tooth of the rack on TP156332 type wheel shaft must mesh with rearmost tooth space in TP156294 axial sector.

(b) The foremost tooth on the axial sector must mesh into the second tooth space on the shaft. There is an extra tooth space on the forward portion of the shaft rack.

NOTE

After function box mechanism and axial assembly have been removed, the remainder of typing mechanism is the front plate assembly.

g. Pushbars Removal and Reassembly. Perform the following procedures to remove and replace the pushbars. Refer to Figures 7-101 and 7-102.

(1) Removal. To remove pushbars, proceed as follows:

(a) Remove the typing mechanism, paragraph 6-27d.

(b) Remove the function box mechanism, paragraph 6-27e, from the typing mechanism.

(c) Remove the pushbar by disengaging the pushbar rack from its pinion.

(2) Replacement. To replace pushbars, reverse removal procedure.

NOTE

In assembling the pushbars to the various eccentric assemblies, great care must be exercised to assure correct rack-pinion gear mesh.

(a) Gear tooth engagement of racks for pushbars 1 through 5 are as follows:

1. The first tooth of the pinion is meshed to the first tooth space on the rack. (Later units have an identifying mark on the eccentric and pushbar).

2. The last tooth on the pinion should also mesh into the last tooth space on the rack.

CAUTION

Misalignment of the mesh by as little as one tooth will produce a jam in the machine and cause part breakage if the machine is put under power while the condition exists.

(b) Assembly of the LETTERS and FIGURES pushbars to the left of the eccentric assembly must follow the assembly of the detents on the same eccentric. Proceed as follows:

1. Starting with the left eccentric in the lower detented position, locate the gear tooth of the pinion which is at the top dead center. The oil hole in the eccentric housing can be used as a reference since it is located at top dead center.

2. The first tooth space of rack of the LETTERS pushbar must engage the tooth located directly below. The indicating mark on the pushbar and the eccentric shaft should be in line.

3. Pull the LETTERS pushbar all the way on the pinion. The eccentric shaft should now be in the upper detent position.

4. Locate the tooth at bottom dead center. The first tooth space of the FIGURES pushbar should engage the tooth just located.

5. Full travel of either pushbar will allow the eccentric shaft to rotate from one detented position to the other without jamming if assembly is correct.

CAUTION

As before, misalignment of the mesh by as little as one tooth will produce a jam in the machine and cause part breakage if the machine is put under power while this condition exists.

h. Rocker Bail Assembly Removal and Replacement. Perform the following procedures to remove and replace the rocker bail assembly. Refer to Figures 7-94 and 7-110.

(1) Removal. To remove rocker bail assembly, proceed as follows:

(a) Disconnect TP156937 printing drive link by removing retaining ring at its left end.

(b) Remove the nut, lockwasher, flat washer, felt washer, bushing and screw from TP156871 operating blade mounting bail.

(c) Remove the nut, lockwasher and TP156366 rocker bail shaft.

(d) Remove the rocker bail assembly.

(2) Replacement. To replace rocker bail assembly, reverse removal procedure.

i. Main Shaft Assembly Removal and Replacement. Perform the following procedures to remove and replace the main shaft assembly. Refer to Figures 7-94 and 7-95.

(1) Removal. To remove main shaft assembly, proceed as follows:

(a) Remove the spring from TP158172 function clutch latchlever.

(b) Remove range finder and selecting mechanisms, if present.

(c) Remove the retaining ring, spring washer and flat washers from forward end of TP154397 main shaft.

(d) Remove the screw and lockwasher from TP158184 function clutch drum.

(e) Remove the screw and lockwasher from TP173340 collar.

(f) Remove the screw and lockwasher from TP158745 bearing clamp.

(g) Pull the main shaft out of rear of the unit also removing the cam-clutch and collar.

CAUTION

Note the location of the main shaft needle roller bearings as shown on illustrations of parts in appropriate section. Move the main shaft toward the rear of the unit a small amount at a time and exercise care not to drop or contaminate the 20 needle rollers in each race. A small spring may be stretched around the shaft and rollers with the ends of the spring hooked together. The garter spring, in conjunction with the grease, will hold the rollers in place. When replacing the main shaft, make sure the rollers are clean. Lubricate the race and bearings with TP88973 grease. Apply bearings with TP88973 grease. Apply a liberal amount of oil at each end of the bearing sleeve.

(2) Replacement. To replace main shaft assembly, reverse removal procedure.

NOTE

When the main shaft is inserted in the cam-clutch, hold the latter firmly so that the drum is not pushed off the clutch. Compress

the drum and cam disk together so that holes in the drum and clutch bearings are aligned.

j. Power Drive Backspace Mechanism Removal And Replacement. Perform the following procedures to remove and replace the power drive backspace mechanism. Refer to Figure 7-112.

(1) Removal. To remove power drive mechanism, proceed as follows:

(a) Unhook TP84575 spring from TP159958 drive link latch.

(b) Loosen the screw on TP159960 eccentric and pull TP159961 eccentric arm off TP159963 hub.

(c) Disengage the eccentric arm from its guide between TP159958 latch and TP159955 drive link.

(d) Unscrew TP159956 post from between TP159954 adjusting link and front punch frame. Remove the link and latch assembly.

(e) Remove the two screws on the front punch frame and remove the magnet assembly.

(2) Replacement. To replace power drive backspace mechanism, reverse removal procedure.

k. Manual Backspace Mechanism Removal And Replacement. Perform the following procedures to remove and replace the manual backspace mechanism. Refer to Figure 7-97.

(1) Removal. To remove manual backspace mechanism, proceed as follows:

(a) Unscrew the two screws which secure TP159900 plate to the rear punch frame and remove TP159902 rake shaft.

(b) Remove the two screws and TP159916 eccentric from TP159987 guide bracket on the left side of the punch front plate.

(c) Remove TP159903 bellcrank assembly.

(2) Replacement. To replace manual backspace mechanism, reverse removal procedures.

6-28. AUXILIARY TYPING REPERFORATOR. Perform the following procedures to remove and replace the principle subassemblies of the auxiliary typing reperforator.

WARNING

Hazardous voltages are present which can cause injury to personnel. Disconnect external AC or DC power source before working on reperforator and tape-printer units.

a. Selector Mechanism Removal and Replacement. Perform the following procedures to remove and replace the selector mechanism. Refer to Figure 7-131.

(1) Removal. To remove selector mechanism, proceed as follows:

(a) Remove the screw, lockwasher, and nut from TP150001 selector clutch drum.

(b) Place TP152410 reset bail in its raised position.

(c) Holding TP152432 stop arm and TP152405 marking locklever to the left, grasp the cam-clutch by the cam disk (not by the drum) and pull forward rotating the cam-clutch slowly. The cam-clutch should come off easily.

CAUTION

Do not force removal of cam-clutch. Damage to equipment may result.

(d) Unhook the function clutch latchlever spring and remove TP156472 spring post by removing its nut and lockwasher.

(e) Remove the screw and lockwasher that pass through TP156867 frame and TP152400 selector mounting plate into TP152402 selector lever guide.

(f) Remove TP152457 oil wick, screw, lockwasher, and TP159467 wick holder.

(g) Remove the selecting mechanism.

(2) Replacement. To replace selector mechanism, reverse removal procedure.

b. Ribbon-Feed Mechanism Removal and Replacement. Perform the following procedures to remove and replace ribbon-feed mechanism. Refer to Figures 7-133 and 7-138.

(1) Removal. To remove ribbon-feed mechanism, proceed as follows:

(a) Remove the ribbon, two mounting screws and lockwashers.

(b) Remove ribbon-feed mechanism.

(2) Replacement. To replace ribbon-feed mechanism, reverse removal procedure.

c. Perforator Mechanism Removal and Replacement. Perform the following procedures to remove and replace the perforator mechanism. Refer to Figures 7-120 and 7-123.

(1) Removal. To remove perforator mechanism, proceed as follows:

(a) Remove the TP90573 spring and disconnect TP192709 perforator drive link from TP156884 rocker arm.

(b) Remove the TP159621 shoulder screw with lockwasher from TP159622 clamp.

(c) Remove the two mounting screws, lockwashers, and flat washers, that fasten TP156024 rear plate to TP159472 main plate.

(d) Remove the perforator mechanism.

(2) Replacement. To replace perforator mechanism, reverse removal procedure.

NOTE

When remounting the perforator mechanism, make certain that TP156059 reset bail fits in the fork of TP159430 reset bail trip lever and

that the print hammer fits in its slot in the mechanism.

d. Transfer Mechanism Removal and Replacement. Perform the following procedures to remove and replace the transfer mechanism. Refer to Figure 7-130.

(1) Removal. To remove transfer mechanism, proceed as follows:

(a) Remove TP49084 main trip lever spring.

(b) Remove mounting screws, lockwashers, and flat washers from TP159488 transfer mounting bracket.

(c) Remove transfer mechanism.

(2) Replacement. To replace transfer mechanism, reverse removal procedure.

e. Typing Mechanism Removal and Replacement. Perform the following procedures to remove and replace the typing mechanism. Refer to Figures 7-126 and 7-134.

(1) Removal. To remove typing mechanism, proceed as follows:

(a) Remove the TP156872 operating blade from the rocker bail assembly by removing the two mounting screws, lockwasher, flat washers, and shims.

(b) Remove the retaining ring and disconnect TP159512 printing trip link.

(c) Remove the nut, lockwasher, and flat washer from TP156396 eccentric on TP162350 rocker bail and disconnect TP159526 oscillating drive link.

(d) Remove the spring from TP156478 accelerator and the spring from TP156252 function blade lifter.

(e) Remove the screw with lockwasher that fastens TP159434 lifter plate to the TP162862 mounting bar on the frame.

(f) Remove the screw and lockwasher that secure TP159525 axial bracket to TP159404 post on the frame.

(g) Remove the screw, lockwasher, and flat washer that fasten TP159487 function box front plate to TP159472 main plate.

(h) Remove the retaining ring from TP159659 idler gear eccentric shaft.

(i) Remove the TP159659 eccentric shaft, TP159536 idler gear, TP151629 special nut and lockwasher by removing TP159658 mounting screw.

(j) Remove the three screws, lockwashers, and flat washers that secure the TP159535 front plate to the frame.

(k) Remove the typing mechanism from the frame assembly.

(2) Replacement. To replace typing mechanism, reverse removal procedure.

f. Function Box Mechanism Removal and Replacement. Perform the following procedures to remove and replace the function box

mechanism. Refer to Figure 7-128.

(1) Removal. To remove function box mechanism, proceed as follows:

(a) Remove mounting screw, lockwasher, and flat washer that pass through TP156316 function box rear plate and TP159483 spring bracket into TP159535 front plate.

(b) Remove function box from typing mechanism.

(2) Replacement. To replace function box mechanism, reverse removal procedure.

g. Axial Plate Assembly Removal and Replacement. Perform the following procedures to remove and replace the axial plate assembly. Refer to Figures 7-126, 7-127, and 7-134.

(1) Removal. To remove axial plate assembly, proceed as follows:

(a) Remove the TP3870 correcting drive link spring.

(b) Remove TP156413 correcting drive link by removing the retaining ring from TP304542 axial corrector plate.

(c) Remove the retaining ring and disconnect TP156869 ribbon guide from TP156870 ribbon oscillating lever.

(d) Remove the screw and lockwasher that fastens TP159525 axial plate to TP160943 type wheel shaft housing.

(e) Remove the three mounting screws and lockwashers from TP159525 axial plate and remove the axial plate assembly.

(2) Replacement. To replace axial plate assembly, reverse removal procedure.

NOTE

The last tooth on the type wheel shaft shall mesh with the last full tooth space of TP156294 gear sector. (If a partial space occurs at the rear of the section, disregard it.) Also, the first tooth of the gear sector shall mesh with the second tooth space on the type wheel shaft. There is an extra tooth space on the forward portion of the type wheel shaft. The correct axial output rack sector engagement is when the last tooth on the TP156313 axial output rack and the last tooth space of TP156294 gear sector shall mesh. Also, the first tooth of the axial output rack and the first tooth space on the gear sector shall mesh.

h. Rocker Bail Assembly Removal and Replacement. Perform the following procedures to remove and replace the rocker bail assembly. Refer to Figure 7-121.

(1) Removal. To remove rocker bail assembly, proceed as follows:

(a) Disconnect TP156937 printing drive-line by removing the retaining ring at its left end.

(b) Remove the nut, lockwasher, flat washer, felt washer, bushing, and screw from TP156871 operating blade mounting bail.

(c) Remove the nut, lockwasher, TP156921 adjusting lever guide, and TP156366 rocker bail shaft.

(d) Remove the rocker bail assembly.

i. Main Shaft Assembly Removal and Replacement. Perform the following procedures to remove and replace the main shaft assembly. Refer to Figure 7-122.

(1) Removal. To remove main shaft assembly, proceed as follows:

(a) Remove the spring from TP150355 clutch latchlever.

(b) Remove the retaining ring, spring washer, and flat washers from the forward end of TP154397 main shaft.

(c) Remove the screw and lockwasher (if present) from TP150000 function clutch drum.

(d) Remove the screw and lockwasher from TP173340 collar.

(e) Remove the screw and lockwasher from TP158745 bearing clamp.

(f) Pull the main shaft out of rear of unit, removing the cam clutch and the collar.

CAUTION

Note the location fo the main shaft TP154398 needle bearings as shown in the parts section. Move the main shaft toward the rear of the unit a small amount at a time and exercise care not to drop or contaminate the 20 needle bearings in each race. A rubber band, string, or spring may be stretched around the shaft and needle bearings with the ends of the spring hooked together. The spring, in conjunction with the grease, will hold the needle bearings in plate. Make sure the needle bearings are clean. Lubricate the race and bearings with TP195298 (Beacon 325) grease or its equivalent. Apply a liberal amount of MIL-L-17672 oil at each end of the bearing sleeve.

(2) Replacement. To replace main shaft assembly, reverse removal procedure.

NOTE

When the main shaft is inserted into the cam-clutch, hold the cam-clutch firmly so that the drum is not pushed off the clutch, and compress the drum and cam disk together so that the holes in drum and clutch bearings are aligned.

j. Pushbars Removal and Replacement. Perform the following procedures to remove and replace the pushbars. Refer to Figure 7-126.

(1) Removal. To remove pushbars, proceed as follows:

(a) Remove typing mechanism, paragraph 6-28e.

(b) Remove function box mechanism, paragraph 6-28f, from typing mechanism.

(c) Remove pushbar by disengaging the pushbar rack from its associated pinion.

(2) Replacement. To replace pushbars, reverse the removal procedure.

(a) Verify correct gear tooth engagement of racks on pushbars as follows:

1. When assembling the pushbards (no. 1 to no. 5 inclusive) to the various eccentric assemblies, exercise great care to assure the correct rack-pinion gear mesh.

2. The correct mesh is such that the first tooth space on the rack is meshed. On later units this is identified by a mark on the pushbar and a mark on the eccentric.

3. The last tooth on the pinion and the last tooth space on the rack should also mesh to avoid misalignment.

CAUTION

Misalignment of the mesh by as little as one tooth will produce a jam in the machine and cause part breakage if the machine is put under power while this condition exists.

(b) Assembly of the LETTERS and FIGURES pushbars to the left eccentric assembly must follow the assembly of the detents on the same eccentric. Proceed as follows:

1. Starting with the left eccentric in the lower detented position, locate the gear tooth of the pinion which is at top dead center. (Using the oil hole in the eccentric housing as a reference may help since it also is located at top dead center.)

2. The first tooth space of the rack of the LETTERS pushbar must engage the tooth directly below. This requirement is met when the indicating mark on the pushbar and eccentric shaft are in line.

3. Pull the LETTERS pushbar all the way on the pinion. The eccentric shaft should now be in the upper detented position.

4. Locate the tooth at bottom dead center. The first tooth space of the rack on the FIGURES pushbar should engage the tooth just located.

5. Full travel of either pushbar should result in the eccentric shaft being rotated from one detented position to the other without jamming. Avoid misalignment.

CAUTION

As before, a misalignment of the mesh by one tooth will cause a jam and parts breakage if the machine is put under power while this condition exists.

6-29. TRANSMITTER DISTRIBUTOR UNIT. The following procedures describe removal and replacement of principle subassemblies of the transmitter distributor unit. Remove the three screws that secure the transmitter distributor unit to the base and lift unit free. On earlier models remove cable connections from the terminal board and cable clamps from the base.

NOTE

To facilitate adjustments on earlier models, a generous length of cable is provided between the unit and its terminal block to allow rotation or inversion of the unit. The AC or DC potential must be disconnectedd from its power source. Later model units plug into position on their bases. Exercise care when replacing the unit to keep the cable free of any moving part.

a. Coverplate Assembly Removal and Replacement. Perform the following procedures to remove and replace the coverplate assembly.

(1) Removal. To remove coverplate assembly, proceed as follows:

(a) Loosen detenting nut.

(b) Lift the coverplate assembly from its detented postion.

(2) Replacement. To replace coverplate assembly, proceed as follows:

(a) Align the end of coverplate end and slide the tips of the spring plate under the edge of the top plate.

(b) Snap the coverplate down into its detented position.

b. Top Plate Removal and Replacement. Perform the following procedures to remove and replace top plate.

(1) Removal. To remove top plate, proceed as follows:

(a) Loosen the front and rear mounting screws.

(b) Lift top plate upward.

(2) Replacement. To replace top plate, proceed as follows:

(a) Guide the mounting screws into the notch of the front and rear plates.

(b) Align the sensing pins and feed wheel with their respective slots.

(c) Refer to Top Plate adjustment, paragraph 6-8c(1), if the plates do not align.

c. Tape Guideplate Removal and Replacement. Perform the following procedures to remove and replace the tape guideplate. Refer to Figure 7-178.

(1) Removal. To remove tape guideplate, proceed as follows:

(a) Loosen the front and rear mounting screws.

(b) Slide the plate upward.

(2) Replacement. To replace tape guideplate, proceed as follows:

(a) Guide the mounting screws into the respective notch of the front and rear plates while guiding the tape-out pin into its notch and locating the sensing pins against the left edge of the tape guideplate.

(b) Refer to Tape Guideplate adjustment, paragraph 6-8b(6).

d. Oil Reservoir Removal and Replacement. Perform the following procedures to remove and replace the oil reservoir. Refer to Figure 7-171.

(1) Removal. To remove oil reservoir, proceed as follows:

(a) Remove the screws that secure the casting.

(b) Lift the reservoir upward and toward the right.

(2) Replacement. To replace oil reservoir, reverse removal procedure.

e. Rear Plate Assembly Removal and Replacement. Perform the following procedures to remove and replace the rear plate assembly. Refer to Figures 7-170 and 7-171.

(1) Removal. To remove rear plate assembly, proceed as follows:

(a) Remove cable assembly leads from start-stop contact assembly and magnet assembly.

(b) Remove nuts and lockwashers from bottom posts.

(c) Remove main shaft retaining ring.

(d) Remove TP151630 screws securing plate to TP156622 post.

(e) Remove the two screws which hold the clutch trip magnet assembly bracket to the rear plate and remove clutch trip magnet assembly.

(f) Remove rear plate assembly from the remainder of unit.

(2) Replacement. To replace rear plate assembly, reverse removal procedure.

f. Main Shaft Assembly Removal and Replacement. Perform the following procedures to remove and replace the main shaft assembly. Refer to Figure 7-177.

(1) Removal. To remove main shaft assembly, proceed as follows:

(a) Remove TP156831 clamp and TP156832 plate from front plate assembly.

(b) Remove main shaft assembly.

(2) Replacement. To replace main shaft assembly, reverse removal procedure.

g. Center Plate Assembly Removal and Replacement. Perform the following procedures to remove and replace center plate assembly. Refer to Figure 7-170.

(1) Removal. To remove the center plate, proceed as follows:

(a) Remove the TP156622 post.

(b) Remove the two nuts which hold the center plate to the two guide posts.

(c) Remove the TP7603 spring.

(d) Remove the center plate assembly.

(2) Replacement. To replace centerplate assembly, reverse removal procedure.

h. Contact Box Assembly Removal and Replacement. Perform the following procedures to remove and replace the contact box assembly. Refer to Figures 7-173 through 7-176.

(1) Removal. To remove contact box assembly, proceed as follows:

(a) Remove coverplate in accordance with procedure in paragraph 6-29a.

(b) Remove nut and lockwasher and lift cover from the contact box.

(c) Disconnect spring.

(d) Tag and disconnect signal line leads after removing two screws and lockwasher.

(e) Remove two screws, lockwashers and washer, and lift the contact box from front plate.

(2) Replacement. To replace contact box assembly, reverse removal procedure.

i. Front Plate Mechanism Disassembly and Reassembly. The remaining mechanisms in the distributor transmitter are associated with the front plate. Perform the following procedures to disassemble and reassemble the front plate mechanism. Refer to Figure 7-169.

(1) Disassembly. Disassemble front plate as follows:

(a) Remove screws, lockwashers, and nut plate to detach the switch bracket, adjusting bracket, bushing, and spacer, all of which are part of the switch assembly. (Removal of the leads required disassembly of the switch.)

(b) Disconnect leads to the tape-out switch.

(2) Reassembly. To reassemble front plate mechanism, reverse disassembly procedure.

NOTE

When reassembling the transmitter distributor, verify that the tip of the tape-out sensing pin rides through the aperture for it in the tape lid, and that the upper extension of the pin rides under the switch swinger. The sensing pins should be centered in their slots on the top plate. If the clutch lever is tripped, the pins will extend in above the installed position of the tape guideplate and coverplate, and assembly will be easier than if clutch is latched.

6-30. MOTOR UNITS. The following procedures describe

the removal, disassembly, reassembly, and replacement of ASR Teletypewriter Sets motor units.

NOTE

To help identify motor unit to be disassemblied, refer to Motor Unit Identification table (Table 6-8). First find motor unit code number on identification plate located on motor bracket, then find code number in table. (For example, a LMU3 motor is found under the heading Standard and Heavy Duty Motor Units.)

WARNING

Remove electrical power from set before starting removal and disassembly of motor units.

a. Standard and Heavy Duty Synchronous Motors. Perform the following procedures to remove and replace the standard and heavy duty synchronous motors. Refer to Figures 7-188, and 7-190 through 7-192.

(1) Removal. To remove motor unit, proceed as follows:

(a) If set contains typing unit, it must be removed to gain access to motor unit. Proceed as follows:

1. Remove electrical cable connector(s) from right side of typing unit.

2. Remove four screws and lift typing unit off base.

Table 6-8. Motor Unit Identification Table

Standard and Heavy Duty Motor Units	Series Governed Motor Units
LMU3, LMU12, LMU38,LMU50	LMU39, LMU41

(b) Remove any shaft extensions or hardware attached to motor shaft that would prevent removal of motor unit.

(c) Loosen screws and remove motor power line leads from base terminal block.

(d) Remove four screws and lockwashers that secure motor unit to the base and remove motor unit from base.

(2) Disassembly. To disassemble motor unit, proceed as follows:

(a) To remove motor from cradle:

1. Loosen mounting strap screw on each end of motor and remove motor unit.

2. Remove remaining motor components by loosening screws and clamps that secure them to mounting bracket. On some units motor components are secured by tension springs. Unhook ends of springs to remove motor components.

3. For components mounted in compartment below motor and secured to mounting plate, loosen four screws and remove mounting plate. Motor components are now exposed for removal.

(b) To remove end shields and rotor, proceed as follows:

1. Remove fan from shaft, if furnished.

2. Remove screw and lockwasher that mount pinion to shaft and remove pinion from shaft.

3. Remove two nuts and two bolts that secure end shields to stator and remove end shilds, rotor, spring, and washer.

(3) Reassembly. To reassemble motor, reverse disassembly procedure.

(a) Position spring with tapered end down.

(b) Place washer on top of spring in end shield bearing recess located at leads end of stator.

(c) Pinion end of rotor, which is longest shaft end from ball bearing, is positioning opposite to leads end of stator.

(d) For motor adjustments, refer to paragraph 6-9a.

(4) Replacement. When replacing motor unit on base, reverse removal procedure, and make sure ground strap is attached to mounting screw.

b. Series Governed Motors. Perform the following procedures to remove and replace the series governed motors. Refer to Figures 7-189, and 7-193 through 7-197.

(1) Removal. To remove motor unit, proceed as follows:

(a) If set contains typing unit, it must be removed to gain access to motor unit. Proceed as follows:

1. Remove electrical cable connector(s) from right side of typing unit.

2. Remove four screws and lift typing unit off base.

(b) Remove the retaining ring that holds regulating lever link to brake shoe slide.

(c) Remove gear guard and connections that prevent removal of motor unit.

(d) Loosen screws and remove motor power line leads from base terminal block.

(e) Remove four screws and lockwashers that secure motor unit to base and lift motor unit off base.

(2) Disassembly. To disassemble the motor unit, proceed as follows:

(a) Remove the four screws that hold the screened cover to the motor end and remove screened cover.

NOTE

To avoid damaging screen, do not grip cover over screened openings.

(b) Remove the two screws on the rear face of governor cover and remove governor cover.

(c) Remove loosening (but do not remove) the two screw on the front and rear brake guide and remove governor brake shoe assembly.

(d) Remove the governor gear train assembly by removing screw and lockwasher that is threaded through the shaft, and remove governor train.

NOTE

Position of each brush should be noted or marked so that each may be inserted in same holder with same side up. Make sure insulators are kept inside each brush cap.

(e) Remove motor brush caps and motor brushes.

(f) Loosen mounting strap on governor end and unhook from cradle. Do not remove this mounting strap.

(g) Loosen and remove mounting strap on opposite end of motor and remove motor from cradle.

NOTE

Motor units that do not have their components soldered to the bracket compartment may be completely removed by loosening the motor components mounting screw, lockwashers, and clamps. In some units, the motor can be removed from the cradle for only a short distance due to the length of the cable stored in the bracket compartment.

(h) To remove end shield and armature, proceed as follows:

1. Remove screw and lockwasher that mount

pinion to shaft and remove pinion from shaft.

2. Remove two nuts and lockwashers securing end shield to the stator.

3. When removing end shield, it may be necessary to pry it loose from stator.

4. Remove armature. Remove washers and spring found in end shield bearing recess on governor end. Spring is positioned with tapered end in the end shield bearing recess with the washers on top of spring.

(3) Reassembly. To reassemble motor units, proceed as follows:

(a) Hold motor in upright position, being careful not to damage governor brushes, and place tapered end of spring downward into bearing recess and place washers on top of spring.

NOTE

Before pushing armature shaft completely through end shield on governor end, governor brushes must be pushed into their respective spring loaded brush holders and held depressed so that armature shaft can clear brushes.

(b) Place armature into stator with commutator end down and make sure armature shaft clears governor brushes.

NOTE

Most motor units have ball oilers positioned upward (opposite leads out location). For inverted mounting, ball oilers are positioned downward (same side as leads out location).

(c) Assemble end shield with ball oilers in line with oilers on governor end and place washer and nut on each end shield bolt and tighten nuts.

(d) Place motor on cradle mounting bracket and position both mounting straps making sure mounting strap screw heads face to right while viewing governor end.

(e) Tighten mounting strap screws and check rightness of both screws on governor brush terminals.

(f) Replace pinion on shaft with lockwasher and screw and tighten screw.

(g) Replace motor brushes making sure they are properly assembled. Insulators must be in brush caps and pigtails of brushes should be free from kinks and move freely in spring coils.

(h) Replace screened cover with access hole facing up (opposite from motor leads).

NOTE

Make sure governor brush leads do not interfere with governor arms. Push leads down to allow ample clearance. Position each brush

pigtail terminal to allow free travel of brush in guide.

(i) When replacing governor, retract each carbon brush as governor is pushed on shaft. Align hole in flat side of governor hub with threaded hole in shaft. Place lockwasher and screw through governor hub hole and thread into the shaft. Tighten screw.

(j) For motor adjustments, refer to paragraph 6-9b.

(k) Position access plate on screened cover and replace four screws, lockwshers and flat washers. Tighten screw.

NOTE

Make sure governor gear train assembly clears the governor shoes by rotating motor shaft manually. Adjust brake guide if necessary.

(l) Replace brake shoe slide assembly with brake slide lever to the left when viewing governor end.

(m) Tighten the front brake guide and rear brake guide screws.

(n) Replace screened end cap and tighten four screws.

NOTE

As before, to avoid damaging the screen, donot grip cover over screen openings.

(4) Replacement. To replace motor unit on mounting base, proceed as follows:

(a) Assemble motor unit to mounting base as follows:

(b) Place motor unit on mounting base.

(c) Assemble ground strap and four mounting screws to base. Tighten screws.

(d) Align the hole in the brake slide lever and link assembly stud and retainer ring.

(e) Replace typing unit and four mounting screws. Tighten screws.

(f) Replace electrical cable connector(s) on right side of typing unit.

6-31. CABINET. The following procedures describe removal and replacement of principle subassemblies from the cabinet.

a. Front Panel Removal and Replacement. Perform the following procedures to remove and replace the front panel. Refer to Figure 7-199.

(1) Removal. To remove front panel, proceed as follows:

(a) Remove the typing unit in accordance with the procedures outlined in paragraph 6-25.

NOTE

Care must be taken to avoid damage to the character counter.

(b) Remove the two screws, lockwashers and flat washers at the left of the panel and loosen the thumbscrew, inside of cabinet, at right end of panel.

(c) Slide the front panel out to the left.

(2) Replacement. To replace front panel, reverse removal procedures.

b. Transmitter Distributor Housing (Pivoted and Fixed Head, Multicontact) Removal and Replacement. Perform the follown g procedures to remove and replace the transmitter distirbutor housing. Pefer to Figures 7-210 and 7-211.

(1) Removal. To remove housing, proceed as follows:

(a) Remove the two screws, lockwashers and flat washers that mount it to cabinet.

(b) Remove the screw, lockwasher and flat washer (inside of teletypewriter cabinet) that secures the lower right hand corner of the crossbar to the cabinet.

CAUTION

Do not loosen or remove the screw and washers that secure the adjusting plate. This plate is factory positioned.

(c) Loosen the two screws, lockwashers, and flat washers that secure the left edge of the crossbar (with nut plate) to the left panel of the cabinet.

(d) Remove the crossbar by sliding it to the left.

(2) Replacement. To replace housing, reverse removal procedures.

c. Transmitter Distributor Housing (Fixed Head, Single or Multicontact) Removal and Replacement. Perform the following procedures to remove and replace the transmitter distributor housing. Refer to Figures 7-210 and 7-211.

(1) Removal. To remove housing, proceed as follows:

(a) Slide housing forward to release it from the detent spring securing it in place.

(b) Remove the screw, lockwasher and flat washer (inside of cabinet) that secures the lower right-hand corner of the crossbar to the cabinet.

CAUTION

Do not loosen or remove the screw, lockwasher, and flat washer that secures the adjusting plate, which is factory positioned.

(c) Loosen the two screws that secure the left edge of the crossbar (with nut plate) to the left panel of the cabinet.

(d) Remove the crossbar by sliding it toward the left and rear to disengage it from the slotted holes in the cabinet.

(2) Replacement. To replace housing, reverse removal procedures.

6-32. ELECTRICAL SERVICE UNITS. The following procedures describe removal and replacement of various components of the electrical service unit (ESU). Refer to the appropriate wiring diagram when it is necessary to remove a component.

CAUTION

Remove power source from unit before starting removal procedures.

a. Electrical Service Units Without Auxiliary Equipment Removal and Replacement. Perform the following procedures to remove and replace the electrical service unit. Refer to Figures 7-262 through 7-293.

(1) Removal. To remove the ESU, proceed as follows:

(a) Raise the dome of the cabinet and disconnect all plugs and receptacles from the typing unit.

(b) Remove the typing unit in accordance with procedures outlined in paragraph 6-25.

(c) Disconnect all plugs and receptacles from the perforator transmitter base.

(d) Remove the mounting studs from each end of the ESU.

(e) Remove the power control switch assembly bracket at the right end of unit and the line-test-key control assembly at the left end.

(f) Remove the various components from the ESU by removing their mounting screws and disconnecting wire or cable connections, as necessary.

(g) If it is necessary to remove the ESU from the cabinet, disconnect the remaining wires and cables.

NOTE

It may be necessary to remove the perforator transmitter in order to completely remove the ESU from the cabinet. Refer to the appropriate section for procedures in removing the equipment from the cabinet.

(2) Replacement. To replace ESU, reverse removal procedures.

b. Electrical Service Units With Auxiliary Equipment Removal and Replacement. Perform the following procedures to remove and replace the electrical unit. Refer to Figures 7-212 through 7-303.

(1) Removal. To remove the ESU, proceed as follows:

NOTE

When ASR sets include an auxiliary typing reperforator, an electrical service unit is used in the lower compartment of the ASR cabinet. For disassembly purpose of these units open the bottom compartment.

(a) Disconnect all plugs and receptacle connections between the ESU and other components and all wires and cables from the cabinet terminal boards.

(b) Remove the studs securing the ESU to the relay rack and lift the unit out.

(c) To remove the various components from the ESU, remove mounting screws and disconnect wire and cable connections, where necessary.

(2) Replacement. To replace the ESU, reverse the removal procedure.