35 TAPE PRINTER KEYBOARD

ADJUSTMENTS

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

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1. GENERAL

1.01 This section provides the adjustment procedures for the 35 tape printer keyboard. It is reissued to incorporate recent engineering changes and information contained in TCN 1682. Marginal arrows indicate changes. Information on the 35 typing reperforator base can be found in Section 574-232-704.

1.02 The adjustments are arranged in a sequence that would be followed if a complete readjustment of the unit were undertaken. Tools and spring scales required to perform the adjustments are listed in the appropriate section. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened. The adjusting illustrations, in addition to indicating the adjusting tolerances, positions of moving parts, and spring tension, also show the angle at which the scale should be applied when measuring spring tensions. If a part that is mounted on shims is to be removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.03 When the requirement calls for a 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.

Note 1: To insure proper lubrication at all operating points, relubricate unit after approximately 300 to 500 hours of initial operation. Thereafter, lubricate at standard prescribed intervals.

Note 2: Check that clutch gaps have not widened beyond the required limits during their initial operation seating. Readjust if necessary.

1.04 References 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 operator's position in front of the unit.

1.05 The spring tensions given in this section are indicated values and should be checked with proper spring scales in the position indicated.

1.06 When cleaning plastic parts, use soap or detergent and water. Do not use solvents containing alchol or chlorinated components.

Note: Remove power from set (or unit) before making adjustments.

SIGNAL CONTACTS

1.07 Units may have signal contacts made of either unplated or gold-plated tungsten. If in doubt as to the type of contacts, remove signal generator cover (2.06) and inspect contacts for gold plating.

A. Cleaning

1.08 Use twill jean cloth (KS2423) to clean gold-plated contacts.

1.09 Open contacts. Drop strip of twill jean between them. Close contacts. Draw twill jean part way through. Open contacts and withdraw twill jean.

1.10 This procedure prevents small fibers at edges of twill jean strip from becoming lodged between contacts.

1.11 Clean unplated tungsten contacts in accordance with standard procedures.

B. Servicing for Special Low-Voltage Applications

1.12 For standard applications including those with data sets, observe standard maintenance procedures and intervals. Special low-voltage applications are covered below.

1.13 The recommended cleaning interval for gold-plated contacts in special low level applications (less than 250 microwatts) having an average weekly use of 60 hours should not exceed 90 days. This interval may be reduced, dependent on the signal circuit configuration, usage and environment. Contacts should be cleaned as described in 1.08 through 1.11.

Note 1: Applying operating voltage of standard Distortion Test Set directly to contacts may damage gold-plating and impair special low-voltage operation. When electrically adjusting or testing contacts (2.20), use an intermediate device, keyed by the contacts, to interrupt current to stroboscopic lamp of test set. This intermediate device must be capable of being keyed by a 3- to 20-volt change at maximum of 20 milliamperes.

Note 2: Normally for special low-voltage applications, contacts should be used in circuits operating between 3 and 20 volts dc at a current level not to exceed 60 milliamperes. Between 20 and 70 volts dc the current should be adjusted so as not to exceed a 120 milliwatt power level. The contacts are not normally intended for use with voltages above 70 volts dc. Exceeding this level for an appreciable length of time may result in damage to the gold plating and make them unfit for special low-voltage applications.

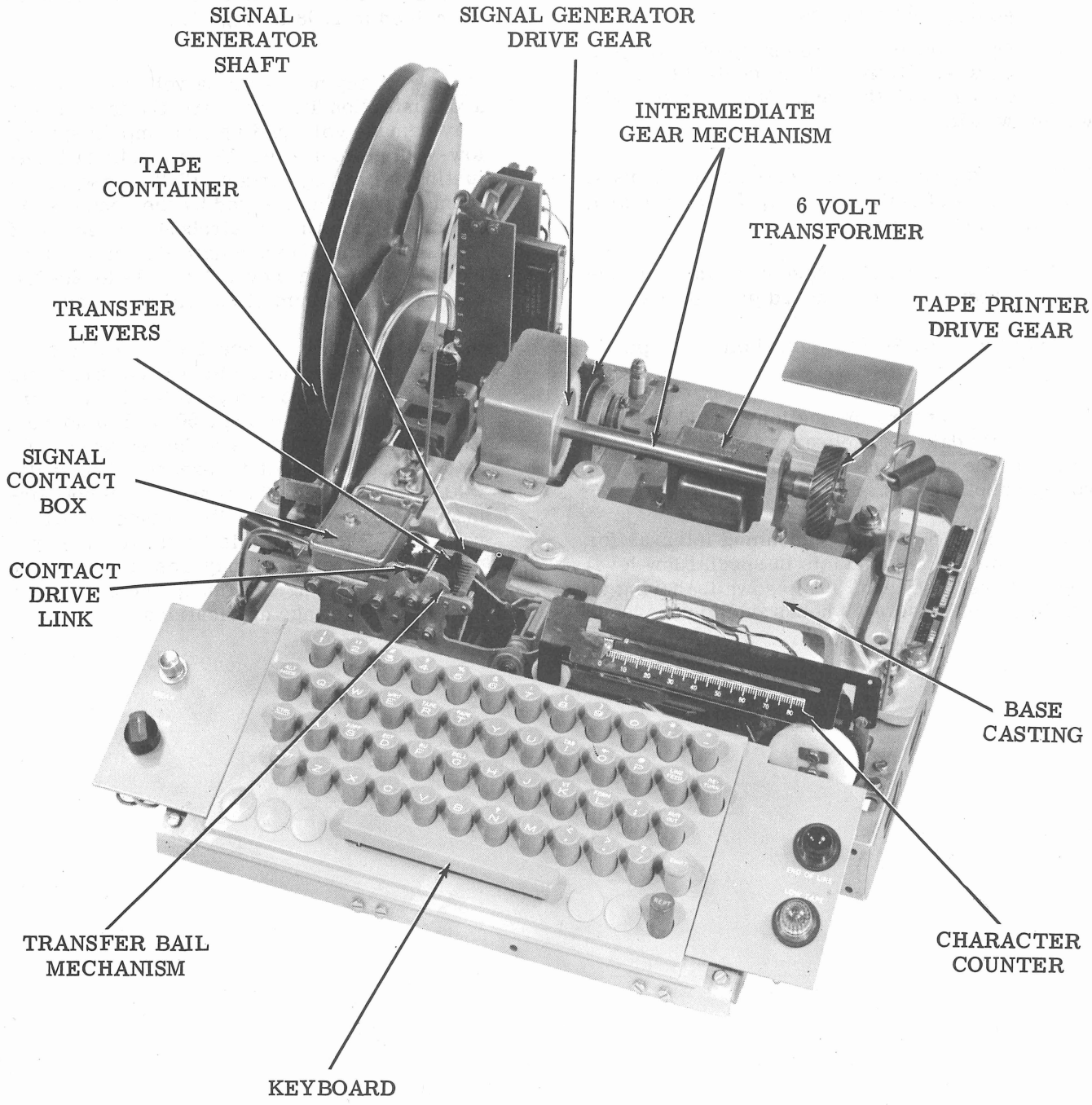


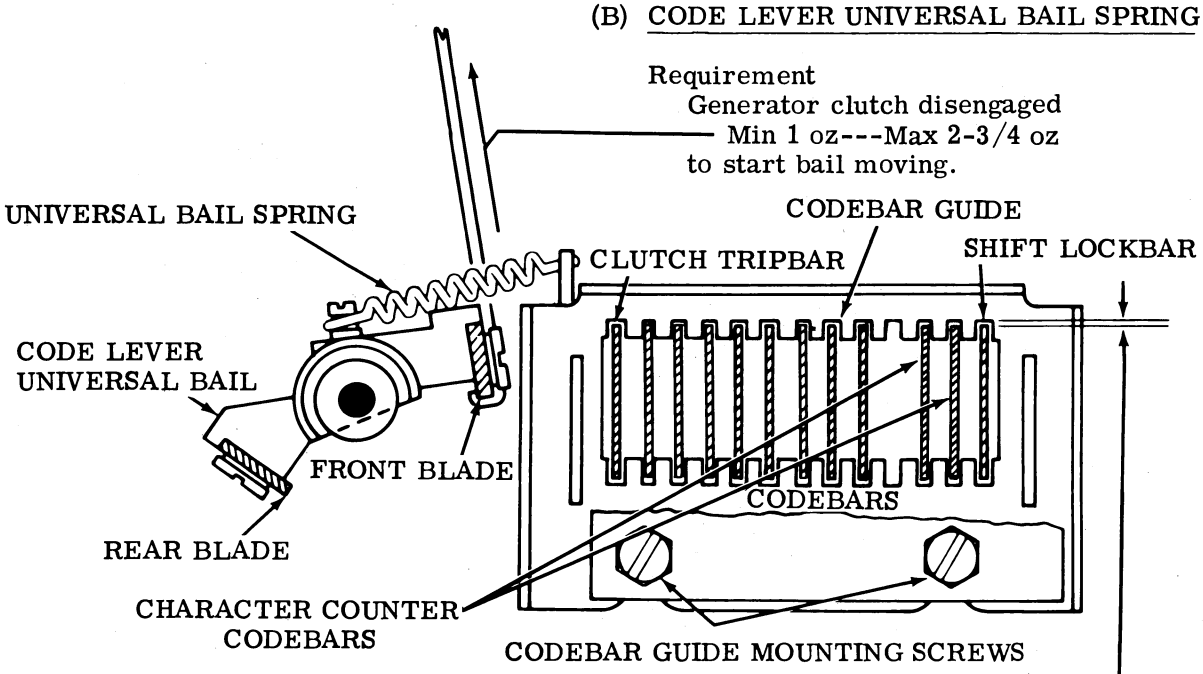
Figure 1 - Typical 35 Tape Printer Keyboard

2. BASIC UNIT

2.01 Codebar and Spacebar Mechanisms

(B) CODE LEVER UNIVERSAL BAIL SPRING

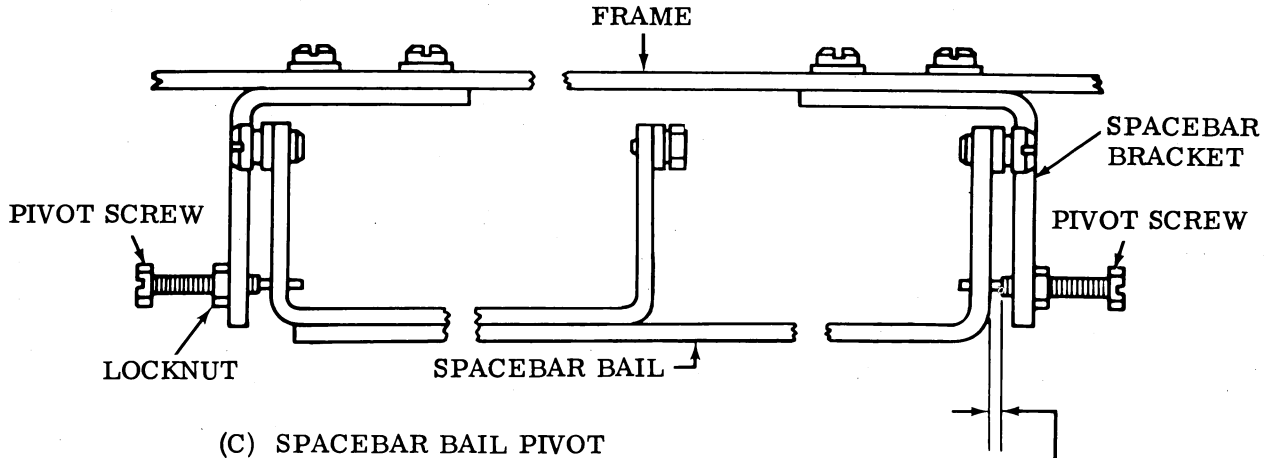
Requirement
Generator clutch disengaged
Min 1 oz---Max 2-3/4 oz
to start bail moving.



(A) CODEBAR GUIDE CLEARANCE

Requirement
Min some clearance---Max 0.006 inch
All codebars should move freely without bind.

To Adjust
Loosen mounting screws and position codebar guide.

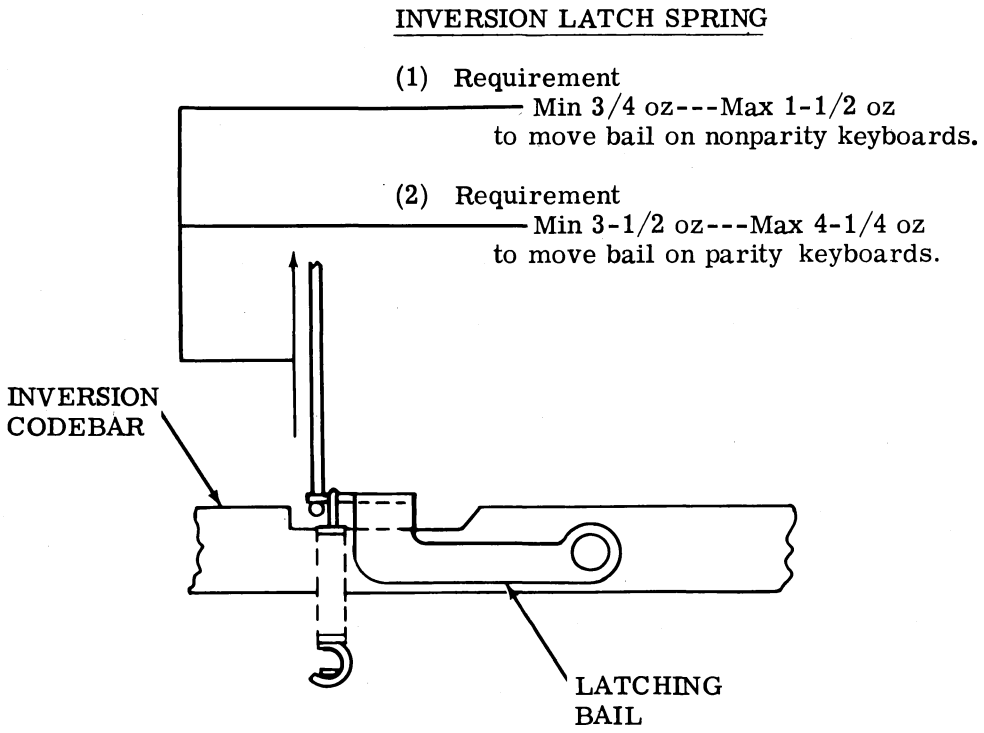


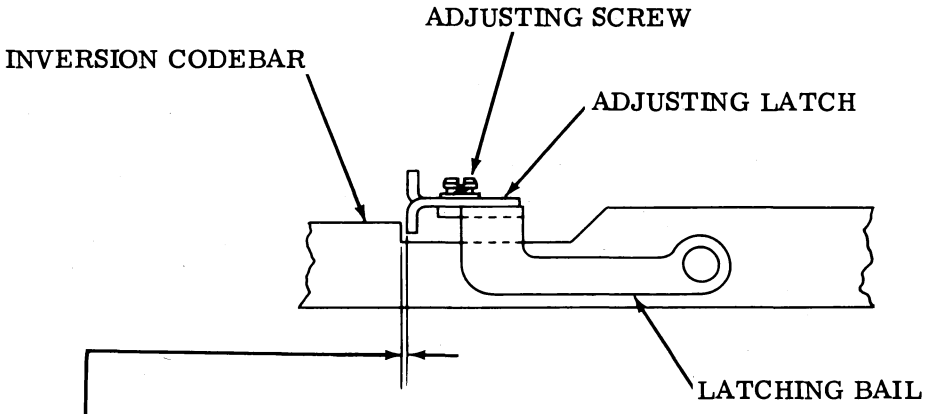
(C) SPACEBAR BAIL PIVOT

Requirement
Min some endplay---Max 0.010 inch
Spacebar free from bind.

To Adjust
Position spacebar with pivot screws.

2.02 Inversion Codebar Latch Mechanism (Early Design)





INVERSION CODEBAR LATCH

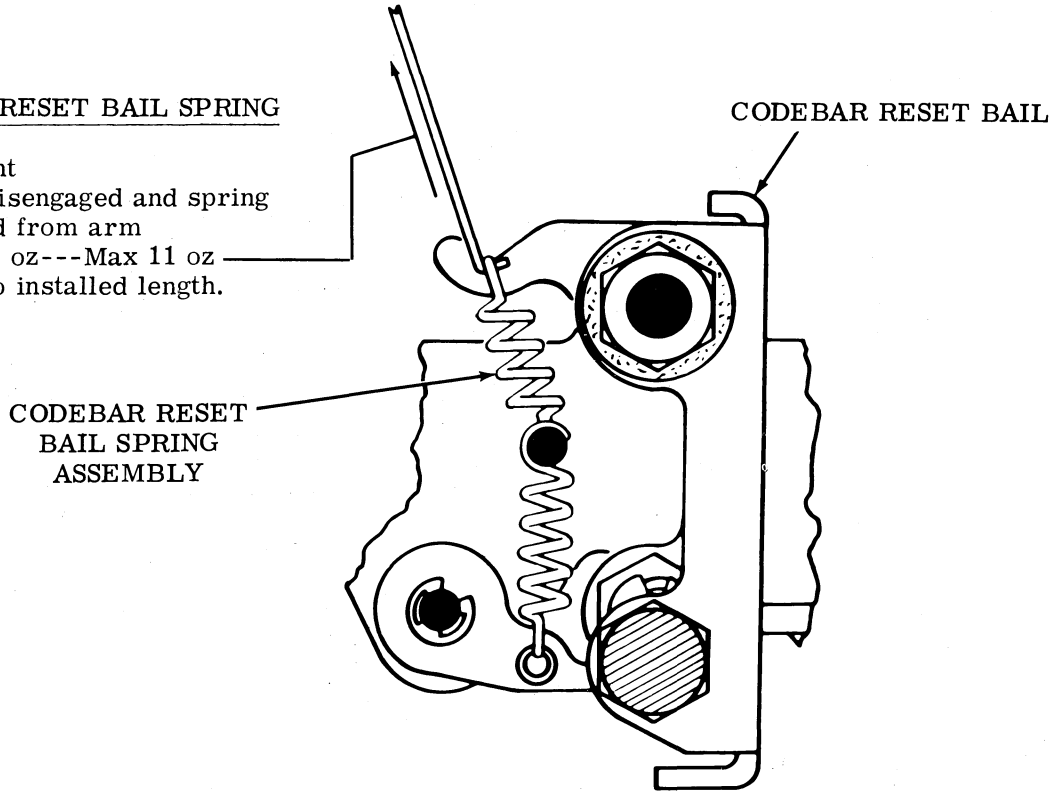
Requirement
Signal generator disengaged
Min 0.002 inch---Max 0.012 inch
gap between inversion codebar and its latch.

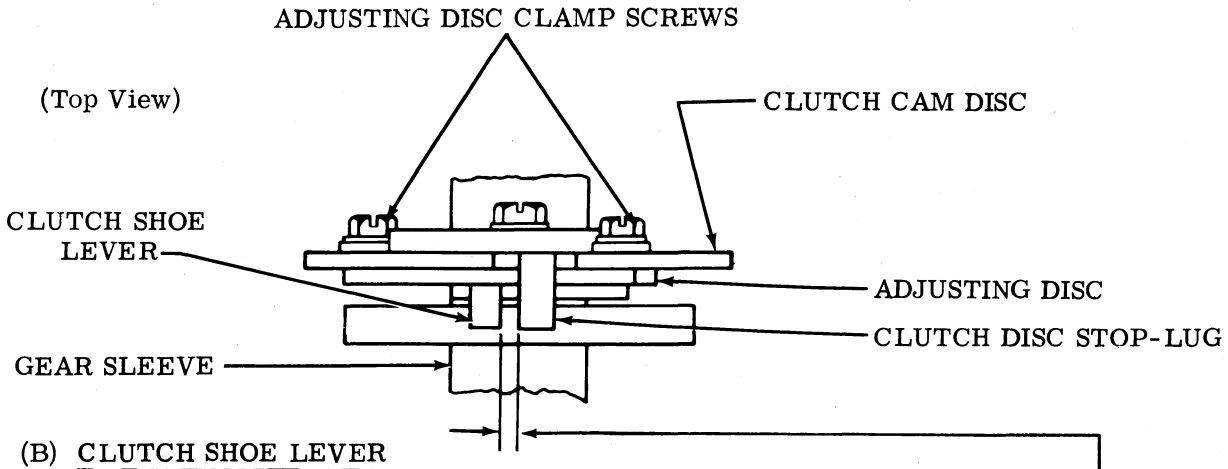
To Adjust
With screw on inversion bail friction tight,
move adjustable extension to obtain clearance.

2.03 Signal Generator Mechanism

(A) CODEBAR RESET BAIL SPRING

Requirement
Clutch disengaged and spring unhooked from arm
Min 9 oz---Max 11 oz
to pull to installed length.





(B) CLUTCH SHOE LEVER

To Check
Latch clutch in disengaged position and measure clearance. Rotate gear until oil hole is upward. Engage clutch and measure clearance.

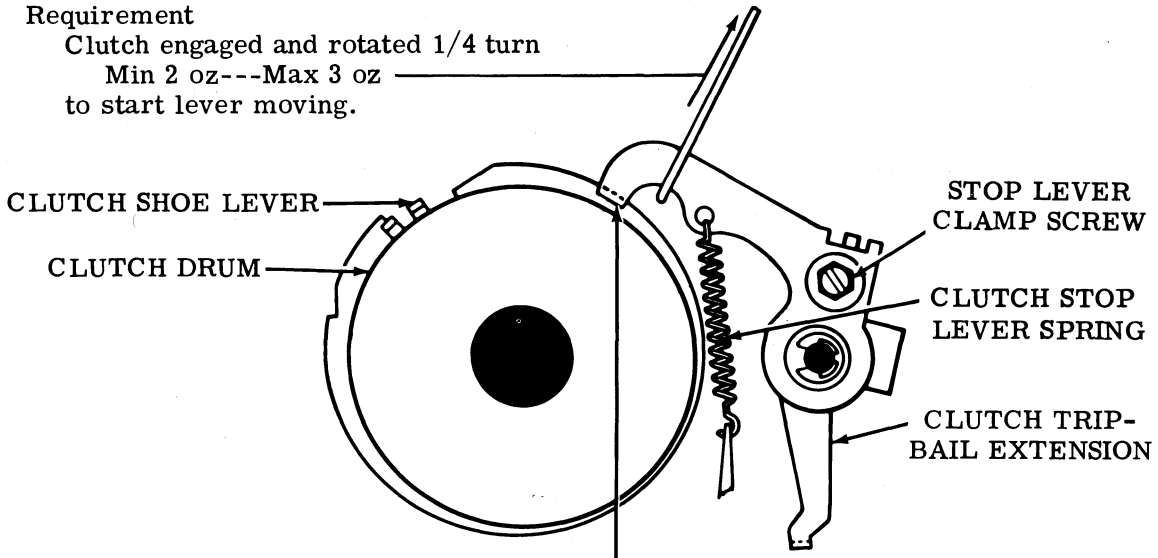
Requirement
Clearance when clutch is disengaged should be 0.055 inch to 0.085 inch less than when clutch is engaged.

To Adjust
Loosen the two adjusting disc clamp screws to position disc.

2.04 Signal Generator Mechanism (continued)

(B) CLUTCH STOP LEVER SPRING

Requirement
Clutch engaged and rotated 1/4 turn
Min 2 oz---Max 3 oz
to start lever moving.



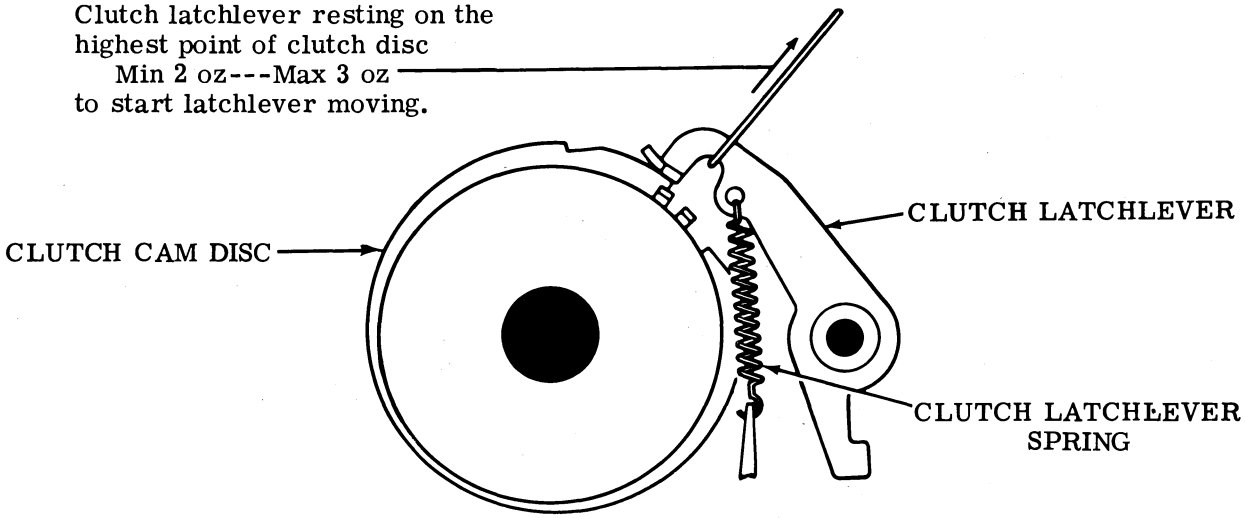
(A) CLUTCH STOP LEVER

Requirement
Should fully engage clutch shoe lever. During rotation, the lever should not touch the clutch drum at any point.

To Adjust
Position stop lever with its clamp screw loosened.

(C) CLUTCH LATCHLEVER SPRING

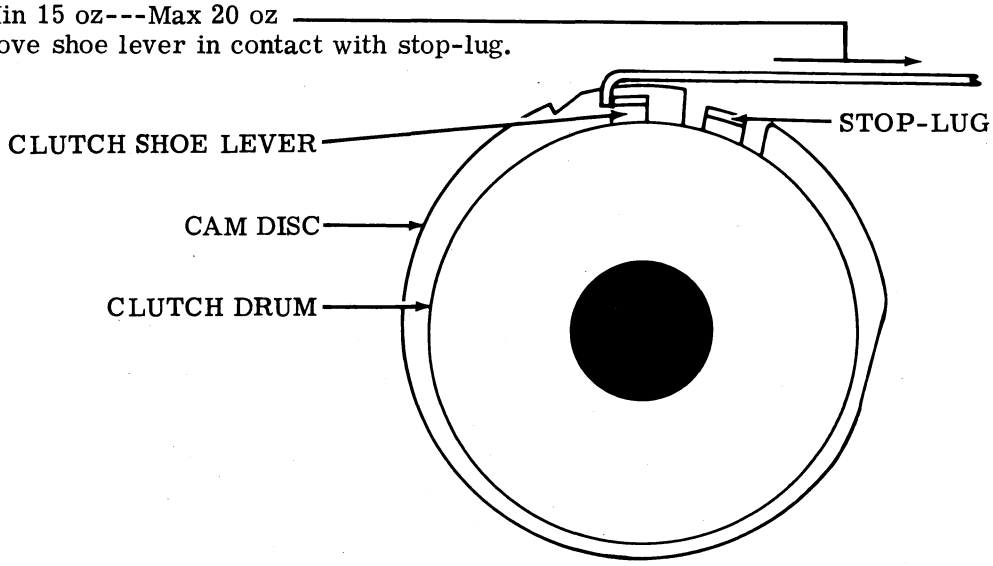
Requirement
Clutch latchlever resting on the highest point of clutch disc
Min 2 oz---Max 3 oz
to start latchlever moving.

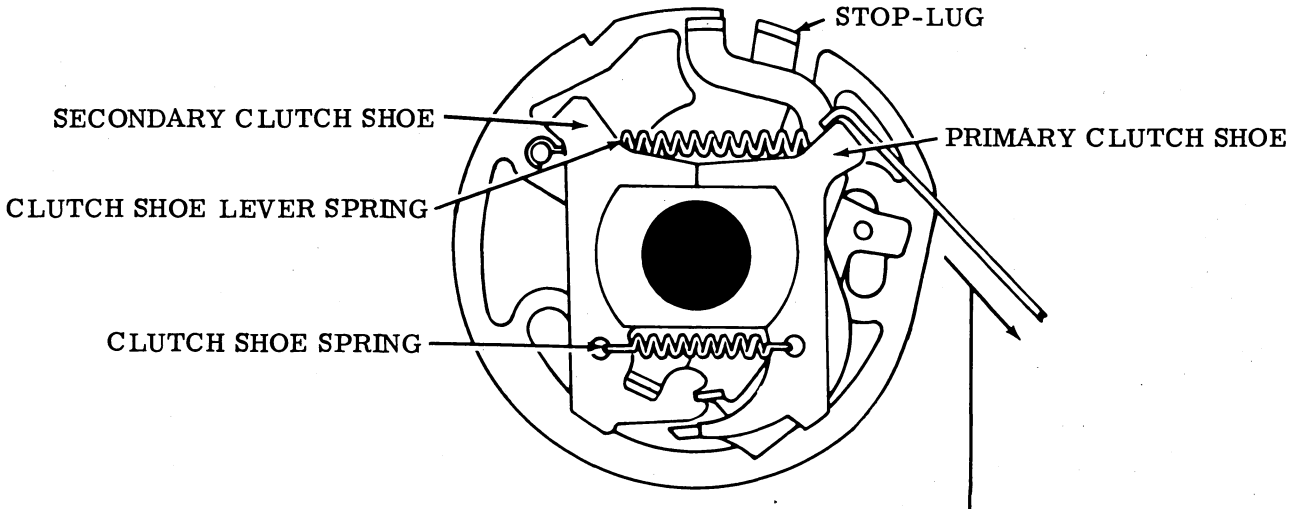


2.05 Signal Generator Mechanism (continued)

(A) CLUTCH SHOE LEVER SPRING

Requirement
Clutch engaged and cam disc held to prevent turning.
Min 15 oz---Max 20 oz
to move shoe lever in contact with stop-lug.





(B) CLUTCH SHOE SPRING

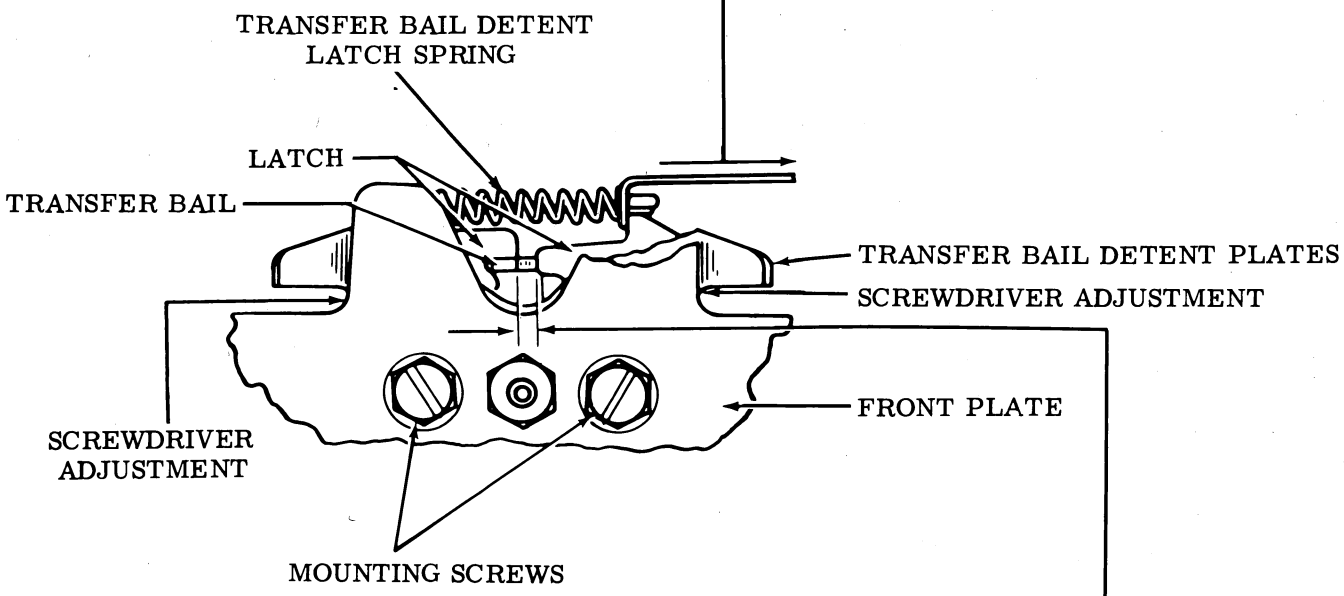
Note: In order to check this spring tension, it is necessary to remove the clutch from the main signal generator drive shaft. Therefore, it should not be checked unless there is good reason to believe that it does not meet its requirement.

Requirement
Clutch drum removed
Min 3 oz---Max 5 oz
to start primary shoe moving away from secondary shoe at point of contact.

2.06 Signal Generator Mechanism (continued)

(B) TRANSFER BAIL DETENT LATCH SPRING

Requirement
Min 2-3/4 oz---Max 4-1/4 oz to start latch moving. Hold transfer bail to left.



(A) TRANSFER BAIL DETENT PLATE

Requirement
Equal left-hand and right-hand clearance within 0.002 inch when transfer bail is at extreme left-hand or right-hand position as these occur in a character between start and no. 1 bits only.

To Adjust
Rotate detent plate right or left by means of screwdriver with mounting screws loosened.

2.07 Signal Generator Mechanism (continued)

Note: Refer to 1.12 for servicing gold-plated signal contacts. See notes in 2.20.

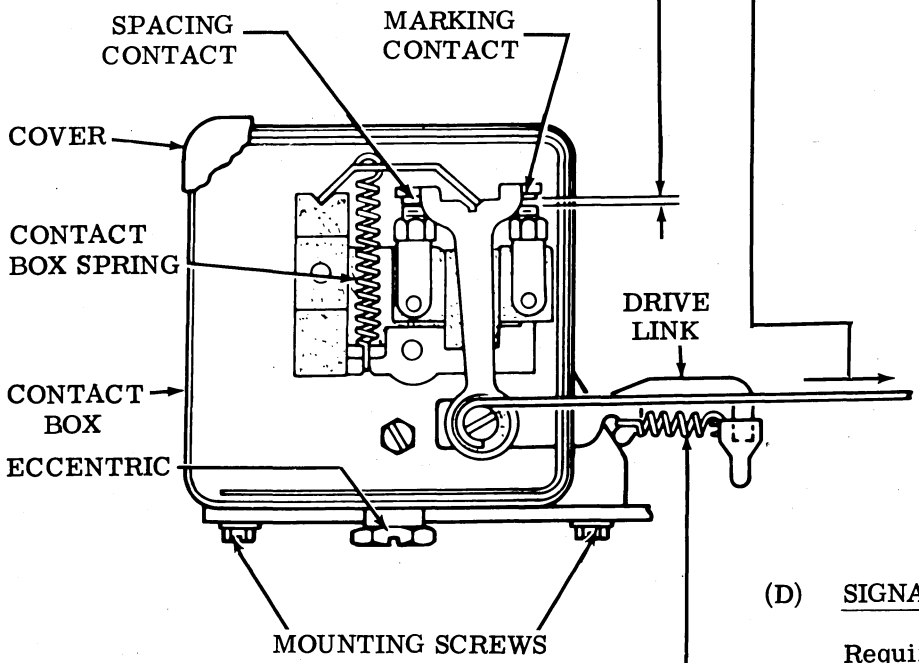
(C) SIGNAL CONTACT CLEARANCE

To Check
Depress Y keylever and rotate signal generator cam sleeve until each contact has fully opened.

Requirement
Marking and spacing gaps should be equal within 0.001 inch.

To Adjust
Loosen mounting screws and move contact box by means of eccentric.

Note: Check by means of signal device where possible, and carefully refine the adjustment to eliminate all bias from the signals by equalizing the current-on and current-off intervals (2.20).



(E) SIGNAL CONTACT SPRING

Requirement
Remove drive link spring transfer bail holding clear of drive link.
Min 2 oz---Max 3 oz to start link moving.

(D) SIGNAL CONTACT DRIVE LINK

Requirement
With main shaft in stop position and transfer bail detent latch spring unhooked (figure above), move latches away from transfer bail extension. Hold toggle firmly against contacts.
Min 6 oz---Max 9 oz to start transfer bail extension moving.

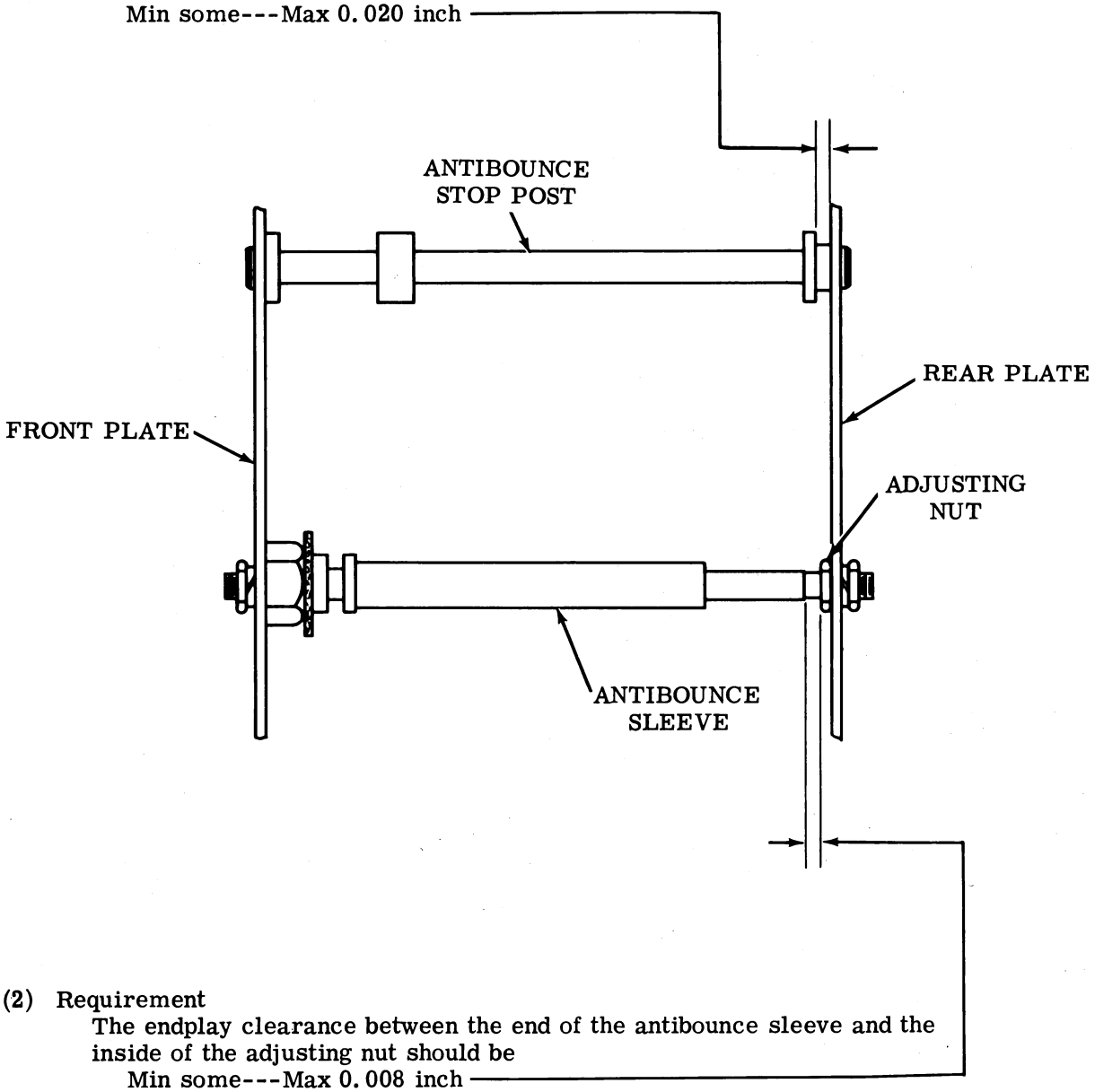
2.08 Signal Generator Mechanism (continued)

(F) ANTIBOUNCE STOP POST CLEARANCE (If Adjustable)

(1) Requirement

The endplay clearance between the shoulder of the antibounce stop post and inside of the rear plate should be

Min some---Max 0.020 inch



(2) Requirement

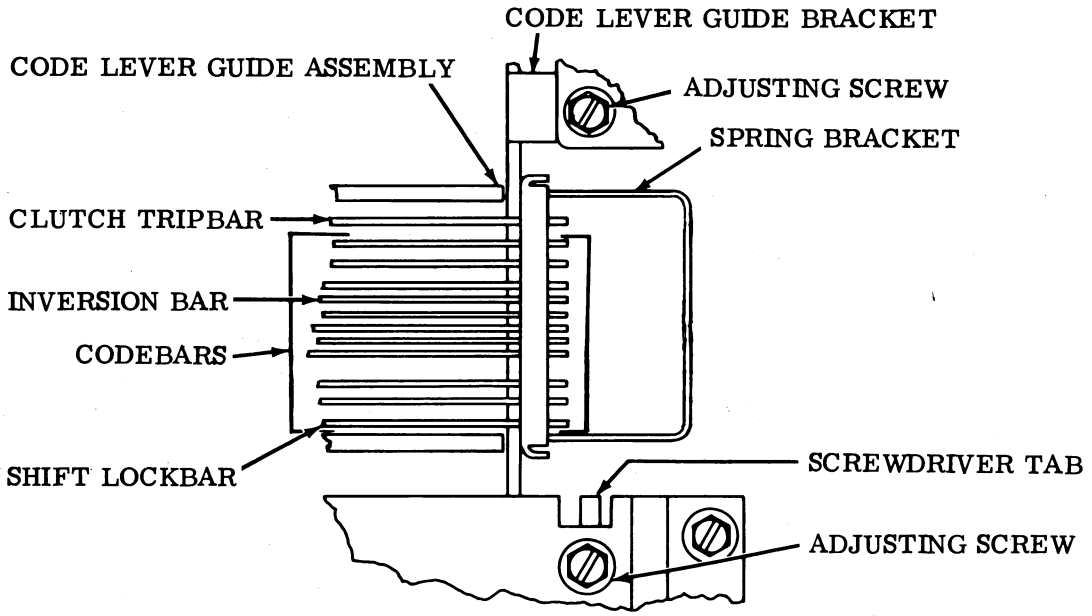
The endplay clearance between the end of the antibounce sleeve and the inside of the adjusting nut should be

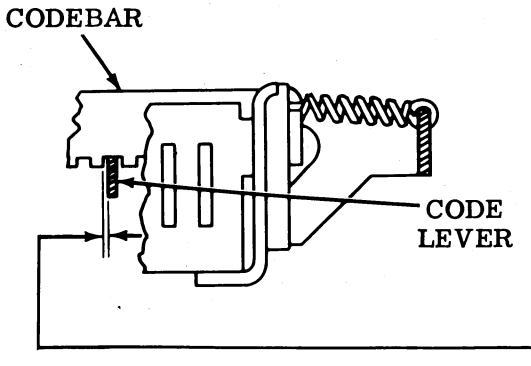
Min some---Max 0.008 inch

To Adjust

Loosen the outboard nut and adjust by means of the adjusting nut located on the antibounce sleeve shaft, on the inside of the rear plate. The locking of the shaft is attained by tightening the outboard nut.

2.09 Codebar and Code Lever Mechanism





(A) CODEBAR AND CODE LEVER CLEARANCE

Requirement

Permutation must be such that highest level is spacing and located furthest right. While key is held down and cam cycled to stop position, gap between left-hand side of key code lever and codebar blocked should be Min 0.006 inch---Max 0.017 inch

To Adjust

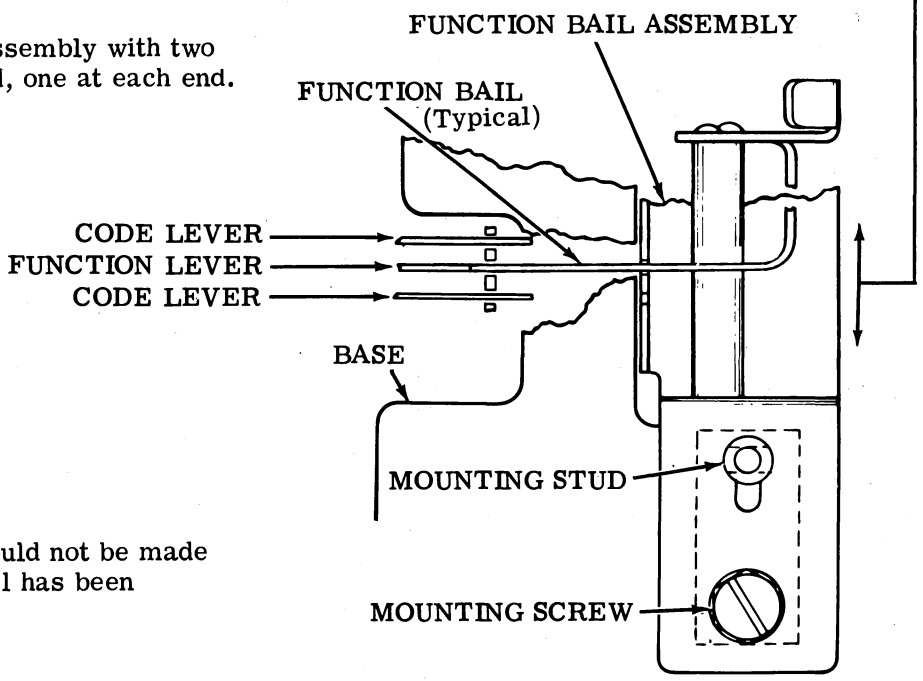
Position guide by adjusting slot with 4 mounting screws loosened.

2.10 Function Bail and Lock Ball Track Mechanism

(A) FUNCTION BAIL LEVERS AND CODE LEVER CLEARANCE

Requirement
Function bails should operate within their guides without binding.

To Adjust
Position function bail assembly with two mounting studs loosened, one at each end.

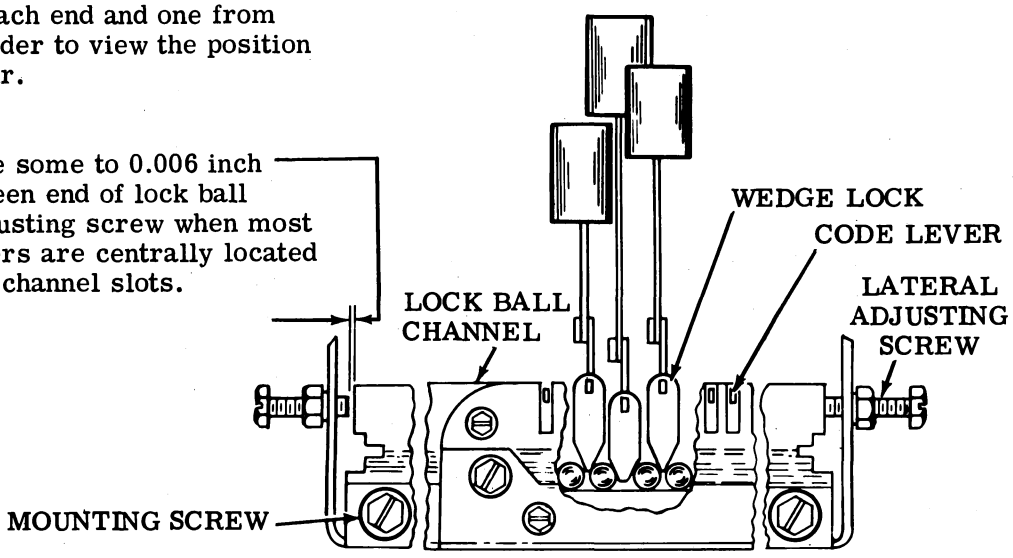


(B) LOCK BALL CHANNEL

Note: This adjustment should not be made unless the lock ball channel has been disassembled.

To Check
Remove the lock ball retainer. Remove a wedge from each end and one from the center in order to view the position of the code lever.

Requirement
There should be some to 0.006 inch clearance between end of lock ball channel and adjusting screw when most of the code levers are centrally located in the lock ball channel slots.



To Adjust
Loosen the lock ball channel mounting screws. Back off lateral adjusting screws and position channel. Turn one adjusting screw in against the end of the channel and lock it. Turn the other adjusting screw in to the end of the channel and back it off 1/4 turn. Lock the screw. Replace the wedges and check their position with respect to the balls. Pull channel assembly downward until all code levers strike their upstop without wedges jumping out of position. Replace lock ball retainer. Back off ball endplay adjusting screw.

2.11 Signal Generator Mechanism (continued)

(A) CODEBAR RESET BAIL

Requirement

Cam eccentric and arm holding bail extreme reset position to left.

Min some---Max 0.006 inch between roller bearing mounted on reset bail and reset bail latch.

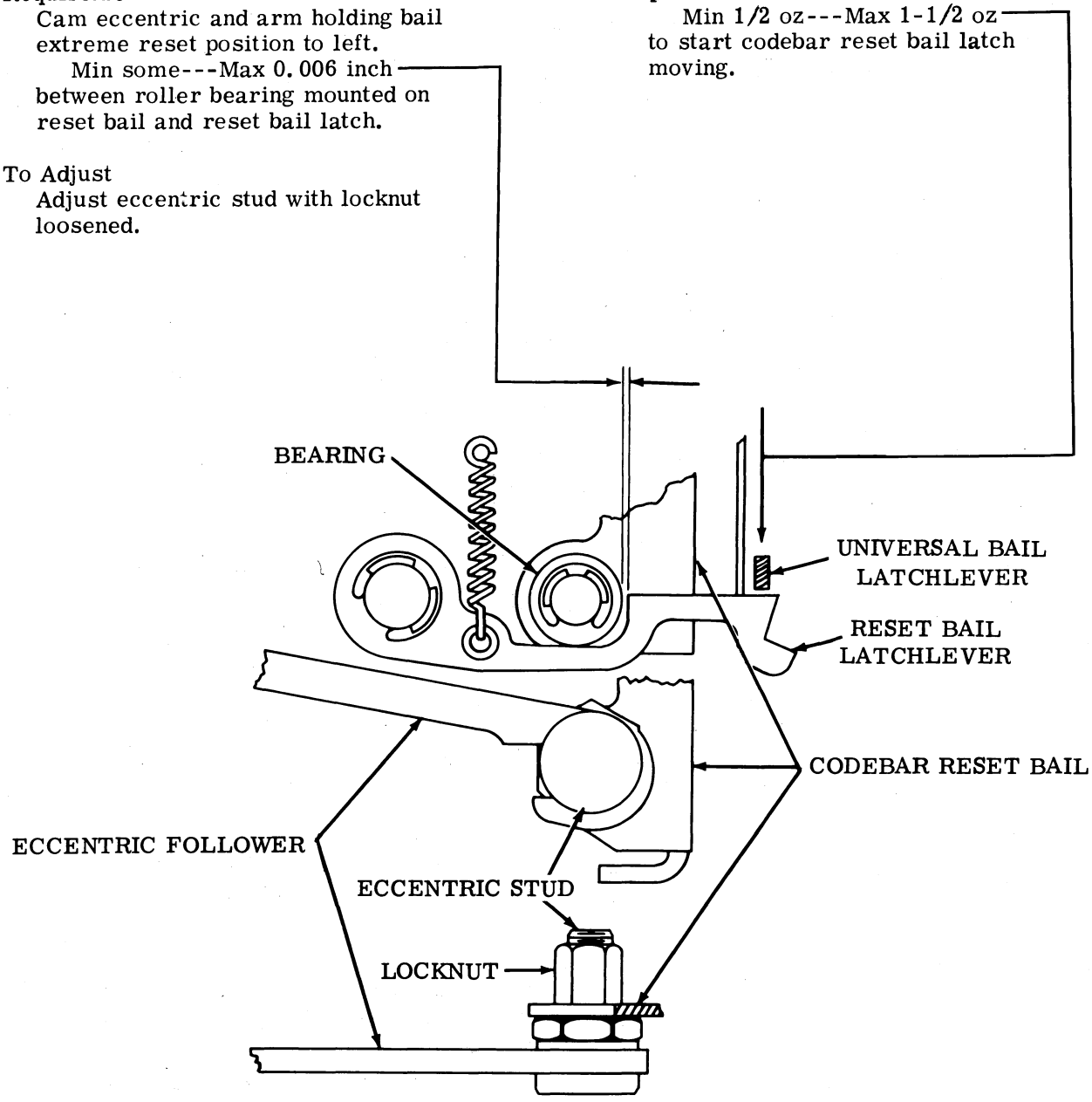
To Adjust

Adjust eccentric stud with locknut loosened.

(B) CODEBAR RESET BAIL LATCH SPRING

Requirement

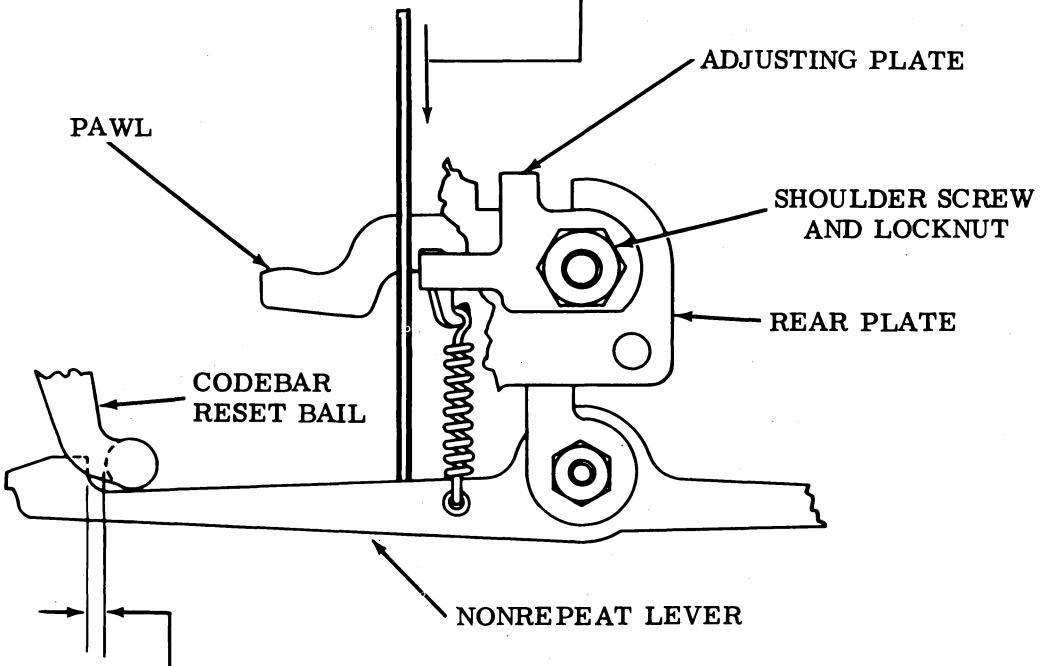
Min 1/2 oz---Max 1-1/2 oz to start codebar reset bail latch moving.



2.12 Nonrepeat Lever Mechanism

(B) NONREPEAT LEVER SPRING

Requirement
Clutch disengaged. Any keylever depressed.
Min 2-1/4 oz---Max 3-1/4 oz
to start nonrepeat lever moving downward.



(A) CODEBAR RESET BAIL AND NONREPEAT LEVER

Requirement
Mechanism in initial trip-off condition, any key depressed, and no power.
Min some---Max 0.010 inch
between roller of reset bail and nonrepeat lever pick-up step.

Note: Do not permit clutch to rotate when tripping off.

2.13 Wedge Lock and Ball Track Mechanism

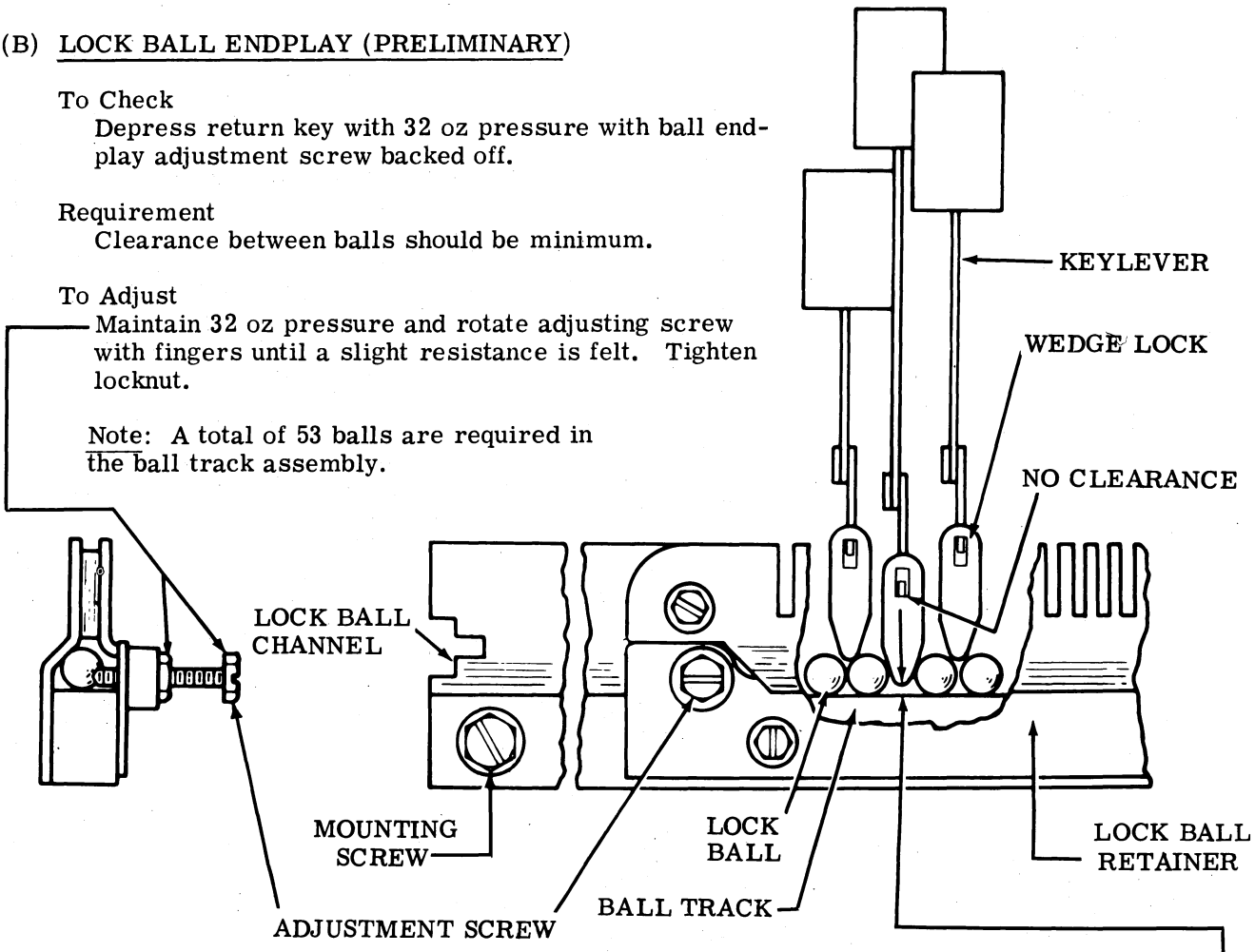
(B) LOCK BALL ENDPLAY (PRELIMINARY)

To Check
Depress return key with 32 oz pressure with ball endplay adjustment screw backed off.

Requirement
Clearance between balls should be minimum.

To Adjust
Maintain 32 oz pressure and rotate adjusting screw with fingers until a slight resistance is felt. Tighten locknut.

Note: A total of 53 balls are required in the ball track assembly.



(A) BALL WEDGE LOCK AND BALL TRACK CLEARANCE (PRELIMINARY)

To Check
Depress Q and P keylever alternately with 32 oz pressure and measure clearance in each instance. There should be no clearance between lower edge of code lever extensions and bottom of slots in wedges.

Requirement
Clearance between tip of wedge and ball track
Min 0.005 inch---Max 0.015 inch
and equal within 0.005 inch.

To Adjust
Position ball track up or down with the two mounting screws loosened.

Note: Remove keyboard hood in order to make this adjustment. See disassembly and reassembly section.

2.14 Universal Bail Latchlever Mechanism

(B) UNIVERSAL BAIL LATCH SPRING

Requirement
Clutch disengaged, universal bail held away from latchlever
Min 7-1/2 oz---Max 11 oz to start latchlever moving.

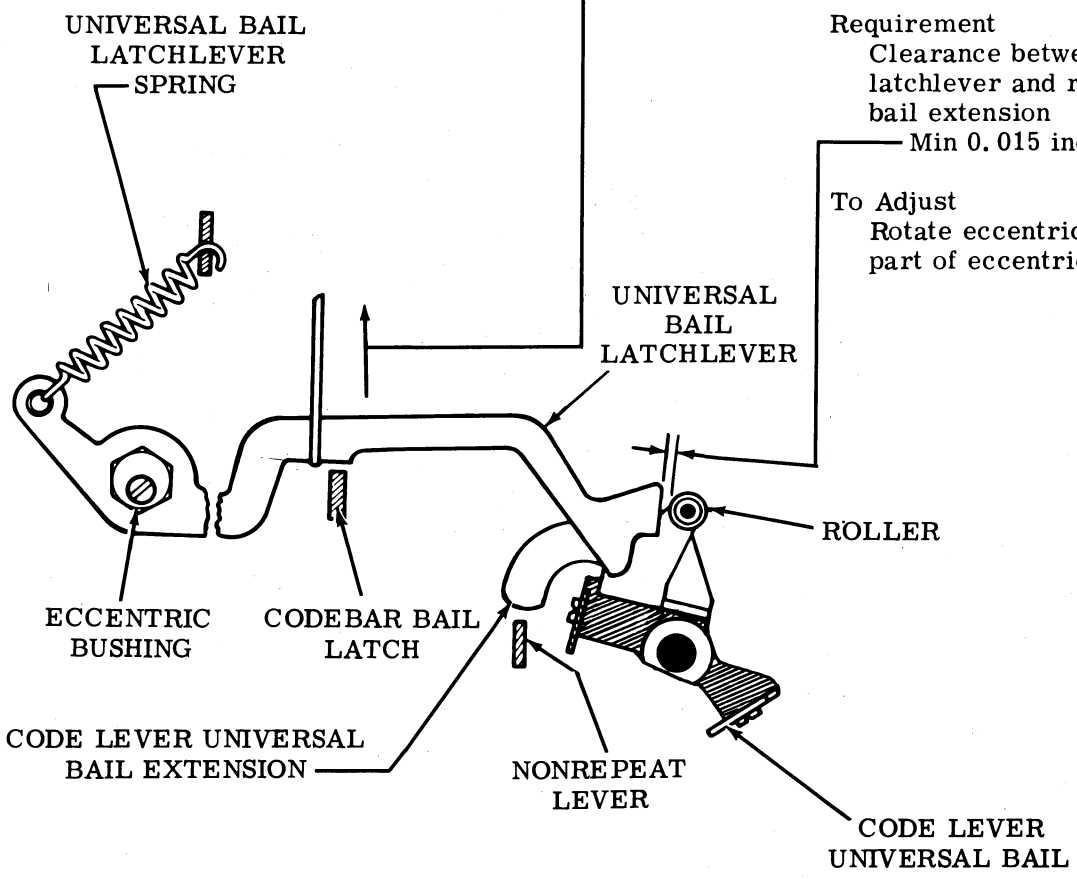
(A) UNIVERSAL BAIL LATCHLEVER (PRELIMINARY)

Note: Before making the following adjustments, loosen the three screws fastening the universal bail rear blade.

To Check
Depress G key slowly with 32 oz pressure. Manually rotate universal bail backwards and release quickly.

Requirement
Clearance between universal bail latchlever and roller on universal bail extension
Min 0.015 inch---Max 0.025 inch

To Adjust
Rotate eccentric. Keep high part of eccentric up.



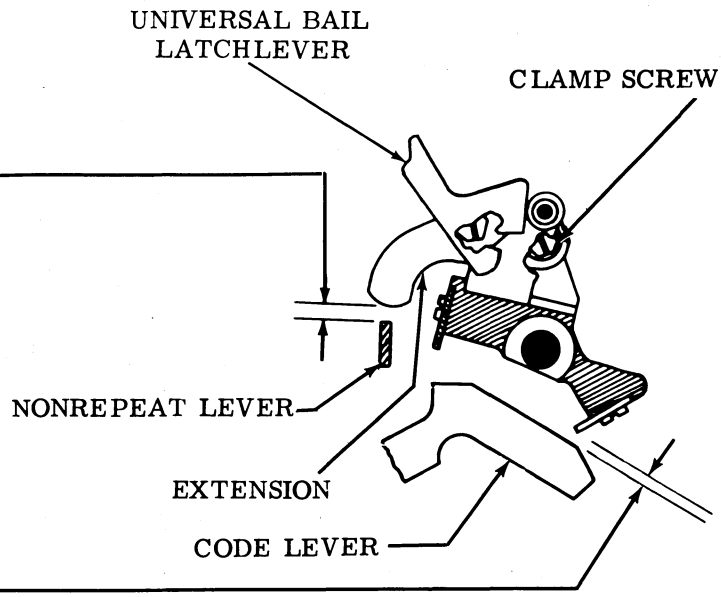
2.15 Universal Bail Latchlever Mechanism (continued)

(C) UNIVERSAL BAIL EXTENSION

To Check
Depress rubout keylever and release it. Check clearance.

Requirement (power off)
Universal bail extension roller resting against end of universal bail latchlever
Min 0.050 inch---Max 0.080 inch between extension and nonrepeat lever.

To Adjust
Position the extension with its clamp screw loosened.



(E) UNIVERSAL BAIL REAR BLADE

Requirement
Initial trip-off condition, no key depressed, no power, universal bail extension post against end of latch.
Min some---Max 0.015 inch between universal bail blade and any code lever.

(D) BALL-LOCK-WEDGE, BALL ENDPLAY, AND UNIVERSAL BAIL LATCH (FINAL)

(1) Requirement (under power)
Trip off pressure of any third row key should be
Min 2 oz---Max 6 oz

(2) Requirement
Apply 6-1/2 oz pressure perpendicular to the A key, depress each key in third row. The A key should trip each time a key is released.

(3) Requirement
Repeat (2) with the 6-1/2 oz pressure on return key.

(4) Requirement
The clutch should not trip when two keys are depressed simultaneously.

Note: The keyboard should operate with a "smooth rolling" action. To check, exert 16 oz pressure simultaneously on each of two questionable keytops. Slowly remove pressure from right keytop. The keyboard should trip as the pressure is being removed. Remove pressure from left keytop to return the keyboard to its stop condition. Repeat the entire procedure except, this time slowly remove pressure from left keytop to trip the keyboard.

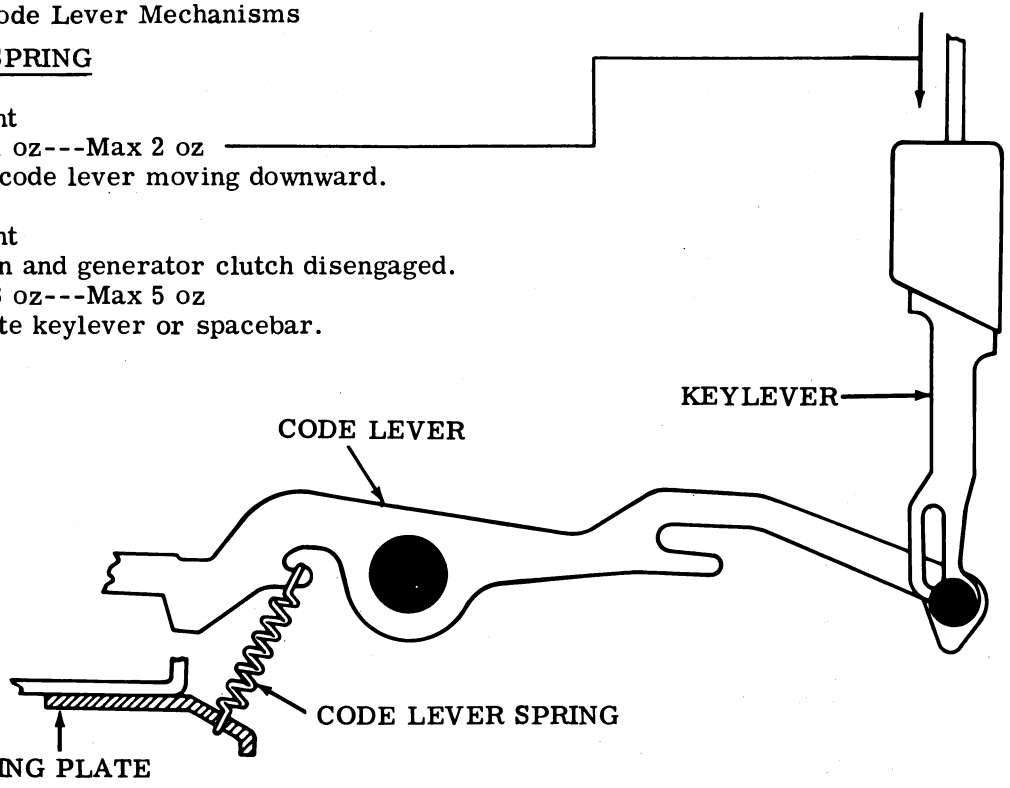
To Adjust
If necessary, refine BALL WEDGE LOCK AND BALL TRACK CLEARANCE (PRELIMINARY) (2.13), LOCK BALL ENDPLAY (PRELIMINARY) (2.13), UNIVERSAL BAIL LATCHLEVER (PRELIMINARY) (2.14), and UNIVERSAL BAIL EXTENSION (2.15).

2. 16 Transfer and Code Lever Mechanisms

(A) CODE LEVER SPRING

(1) Requirement
Min 1 oz---Max 2 oz
to start code lever moving downward.

(2) Requirement
Power on and generator clutch disengaged.
Min 3 oz---Max 5 oz
to operate keylever or spacebar.

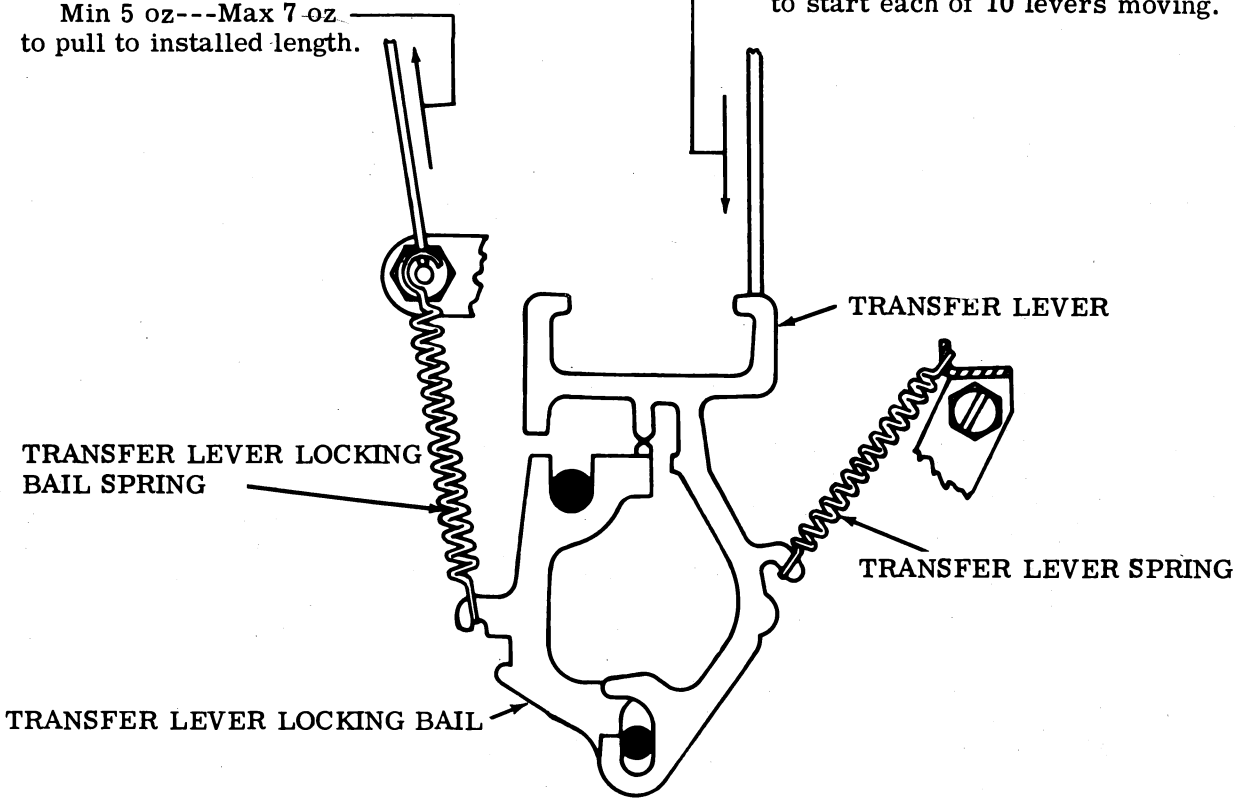


(B) TRANSFER LEVER LOCKING BAIL SPRING

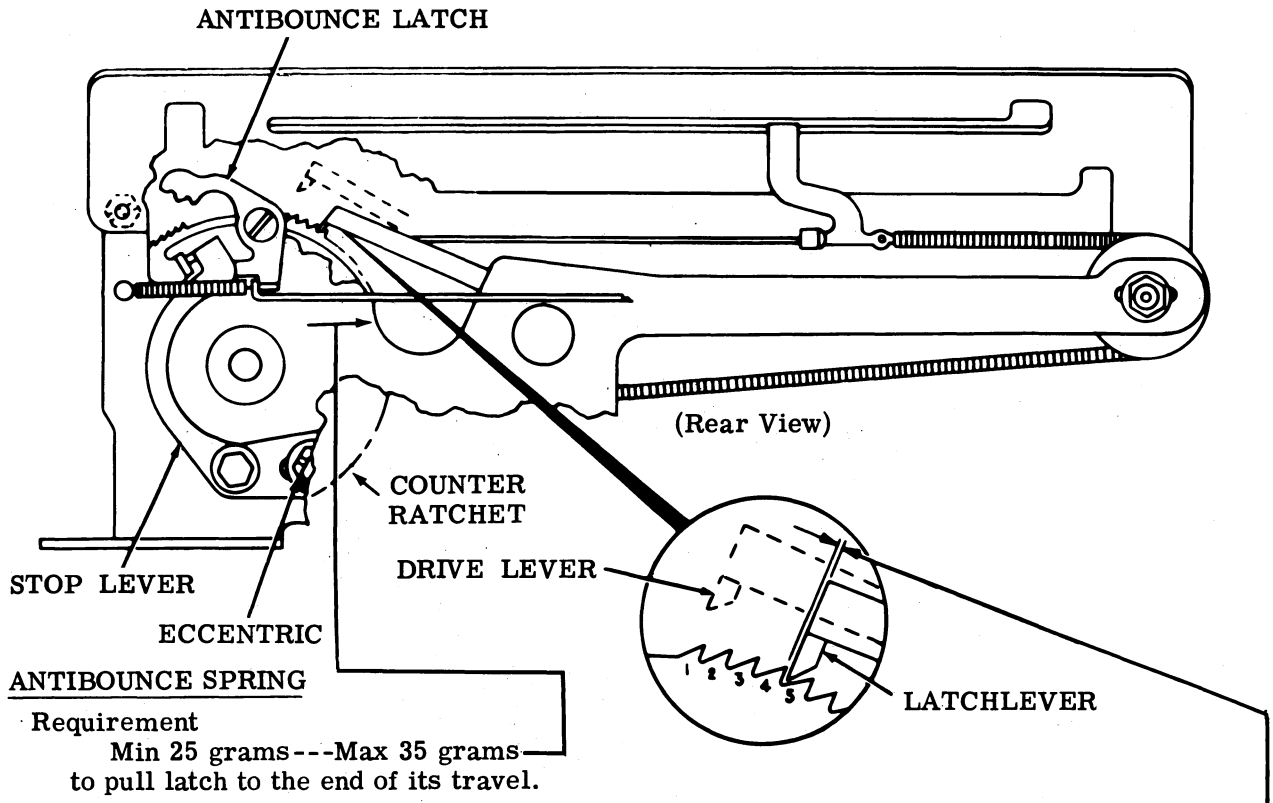
Requirement
Spring unhooked from post
Min 5 oz---Max 7 oz
to pull to installed length.

(C) TRANSFER LEVER SPRING

Requirement
Clutch disengaged
Min 1-1/2 oz---Max 2-1/2 oz
to start each of 10 levers moving.

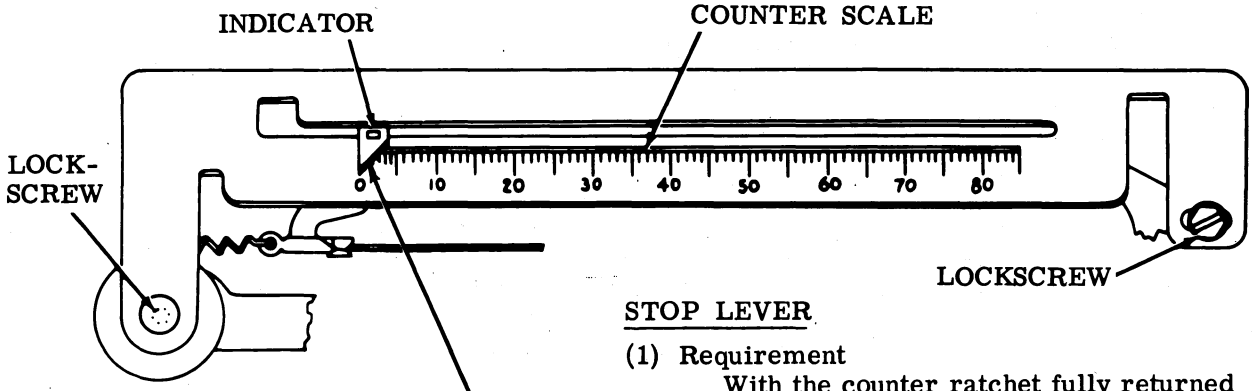


2.17 Character Counter Mechanism



ANTIBOUNCE SPRING

Requirement
Min 25 grams---Max 35 grams to pull latch to the end of its travel.



CHARACTER COUNTER SCALE

(1) Requirement
When indicator is at extreme left of scale, it should point to zero.

To Adjust
Set indicator to left. Loosen lock-screws and position scale.

(2) Requirement
Point of indicator should not touch throughout its entire travel.

To Adjust
Form the indicator.

STOP LEVER

(1) Requirement
With the counter ratchet fully returned and resting against its stop lever, the clearance between the latchlever and the face of the 4th ratchet tooth should be
Min 0.002 inch---Max 0.010 inch

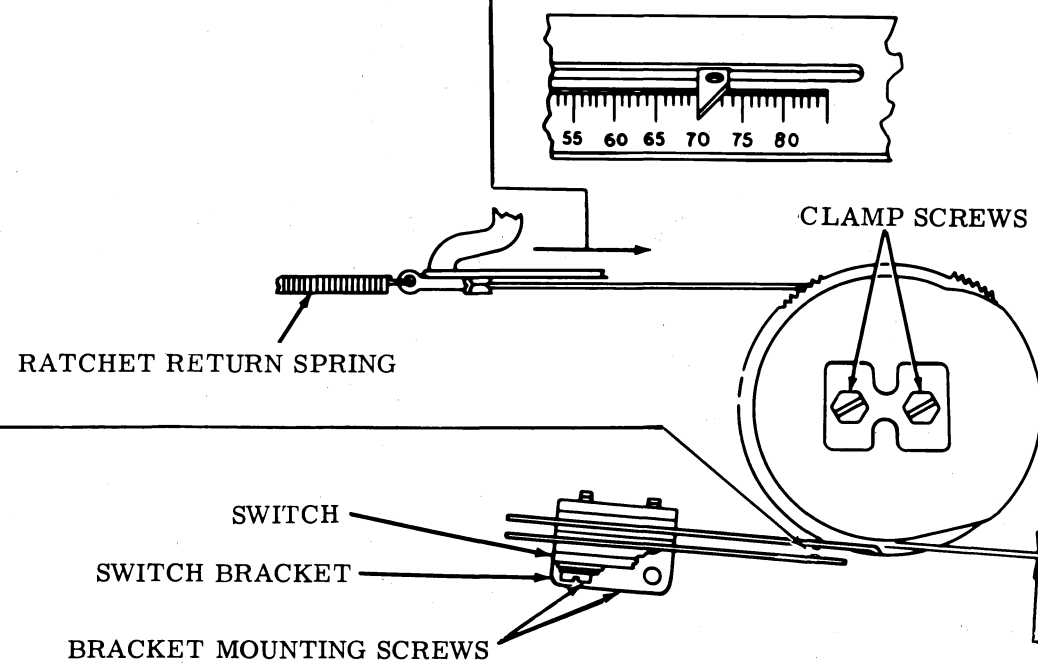
(2) Requirement
The antibounce latch should not interfere with the rotation of the ratchet

To Adjust
Hold the drive lever out of engagement with the ratchet and rotate the stop lever eccentric.

2.18 Character Counter Mechanism (continued)

RATCHET DRUM ASSEMBLY RETURN SPRING

Requirement
1/2 to 1-1/2 oz when indicator points to 35 on the scale.
1-1/2 to 2-1/2 oz when indicator points to 70 on the scale.



CHARACTER COUNTER END-OF-LINE SWITCH

(1) Requirement
The switch should close at a preset number of characters.

(2) Requirement
Before installing the counter on the keyboard, tighten the clamp screws and switch bracket mounting screws friction tight. Make adjustment with the switch leaf springs approximately parallel to the switch mounting bracket (gauge by eye) and with
Min 0.005 inch---Max 0.020 inch
clearance between the leaf spring switch contacts (bend lower leaf spring).

To Adjust
Position switch bracket until the upper switch leaf spring clears the low of the cam
Min some---Max 0.025 inch
Check closest point and tighten bracket screws. Set indicator to count desired and adjust cam until the switch just closes. Tighten clamp screws.

To Check
Move ratchet drum until the indicator traverses the entire scale. The switch should close on the desired count, with a small amount of overtravel of both blades. It may be necessary to refine the above adjustments when operating on the extreme ends of the 65 to 80 character range.

2.19 Character Counter Mechanism (continued)

CHARACTER COUNTER STROKE

(1) Requirement

When character and repeat keys are depressed, the counter should operate consistently in T or K-T position. When carriage return key is depressed, the counter should reset without binding. The mechanism should count the first character on a restart after reset condition.

(2) Requirement

There should be

Min 0.006 inch---Max 0.015 inch

between drive lever and ratchet tooth when counter is set near midpoint of its range.

To Adjust

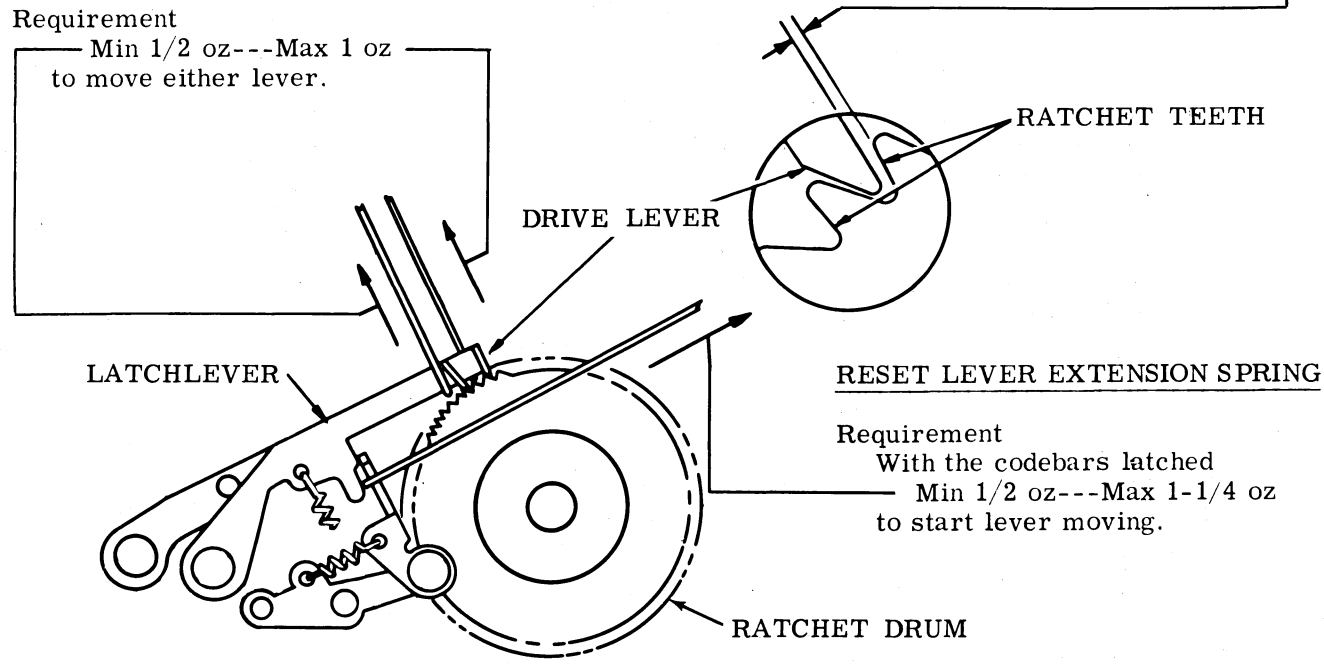
Loosen mounting screws. With keyboard in T position, start motor and strike carriage return key and then E key. Turn off motor. Depress E key. Position character counter frame for clearance. Turn control knob to K-T position and recheck. Refine if necessary.

RESET LATCHLEVER AND DRIVE LEVER SPRING

Requirement

Min 1/2 oz---Max 1 oz

to move either lever.



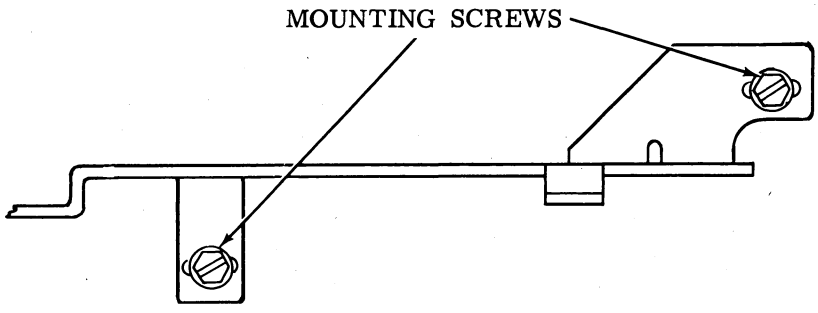
RESET LEVER EXTENSION SPRING

Requirement

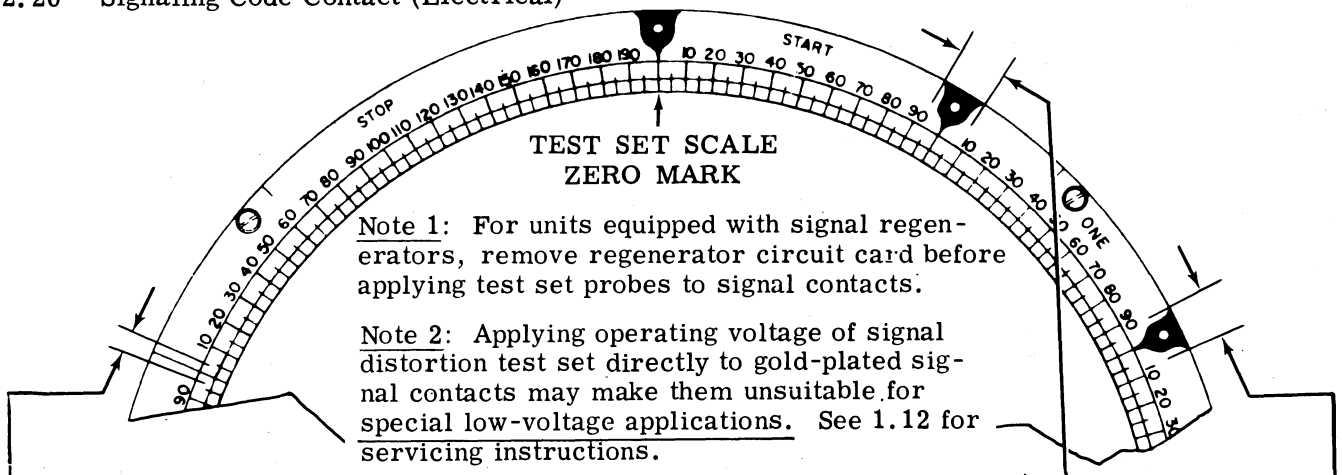
With the codebars latched

Min 1/2 oz---Max 1-1/4 oz

to start lever moving.



2.20 Signaling Code Contact (Electrical)



Note 1: For units equipped with signal regenerators, remove regenerator circuit card before applying test set probes to signal contacts.

Note 2: Applying operating voltage of signal distortion test set directly to gold-plated signal contacts may make them unsuitable for special low-voltage applications. See 1.12 for servicing instructions.

SIGNALING CODE CONTACT (STROBING) (Use DXD Test Set if available.)

Procedure

(1) Disconnect arc suppressor or rf filter. Reconnect signal generator contacts so current to stroboscope lamp of DXD test set is interrupted. Synchronize signal generator with DXD so end of stop pulse image is in line with "O" mark of start pulse on DXD scale when transmission is continuous and both units are operating at 100 wpm (600 rpm).

Note: If end of stop pulse varies, adjust the scale so the variation extends equally to either side of "O" mark of start pulse on scale.

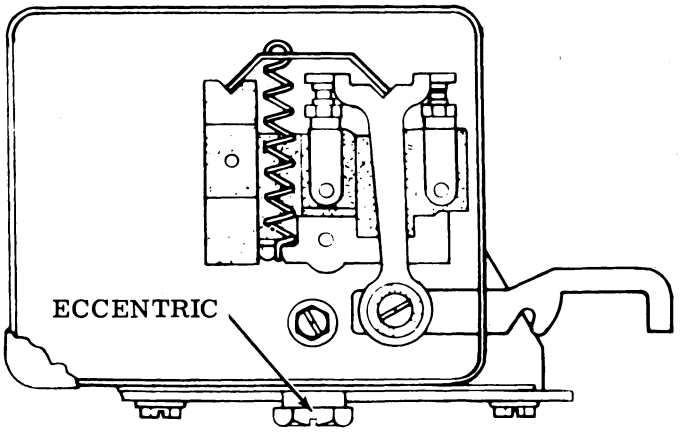
(2) Nominal length of intelligence pulses is 100 divisions. If adjustment to feeler gauges does not permit pulse lengths within tolerance, refine contact box adjustment. Favor intelligence pulses by using up to +8 division tolerance on beginning of stop pulse, so each is near as possible to 100 divisions in length.

(1) Requirement
Each marking code pulse to begin not later than 8 mark and no earlier than 92 mark of previous pulse.

(2) Requirement
Each marking code pulse to end not earlier than 92 mark or later than 8 mark in pulse following one being observed.

(3) Requirement
Marking code pulses may have break not more than 3 divisions wide and occurring only at end of code pulse image between the 92 mark and end of image.

(4) Requirement
Stop image should not change in length or position more than 1 division while changing from U to * selection.

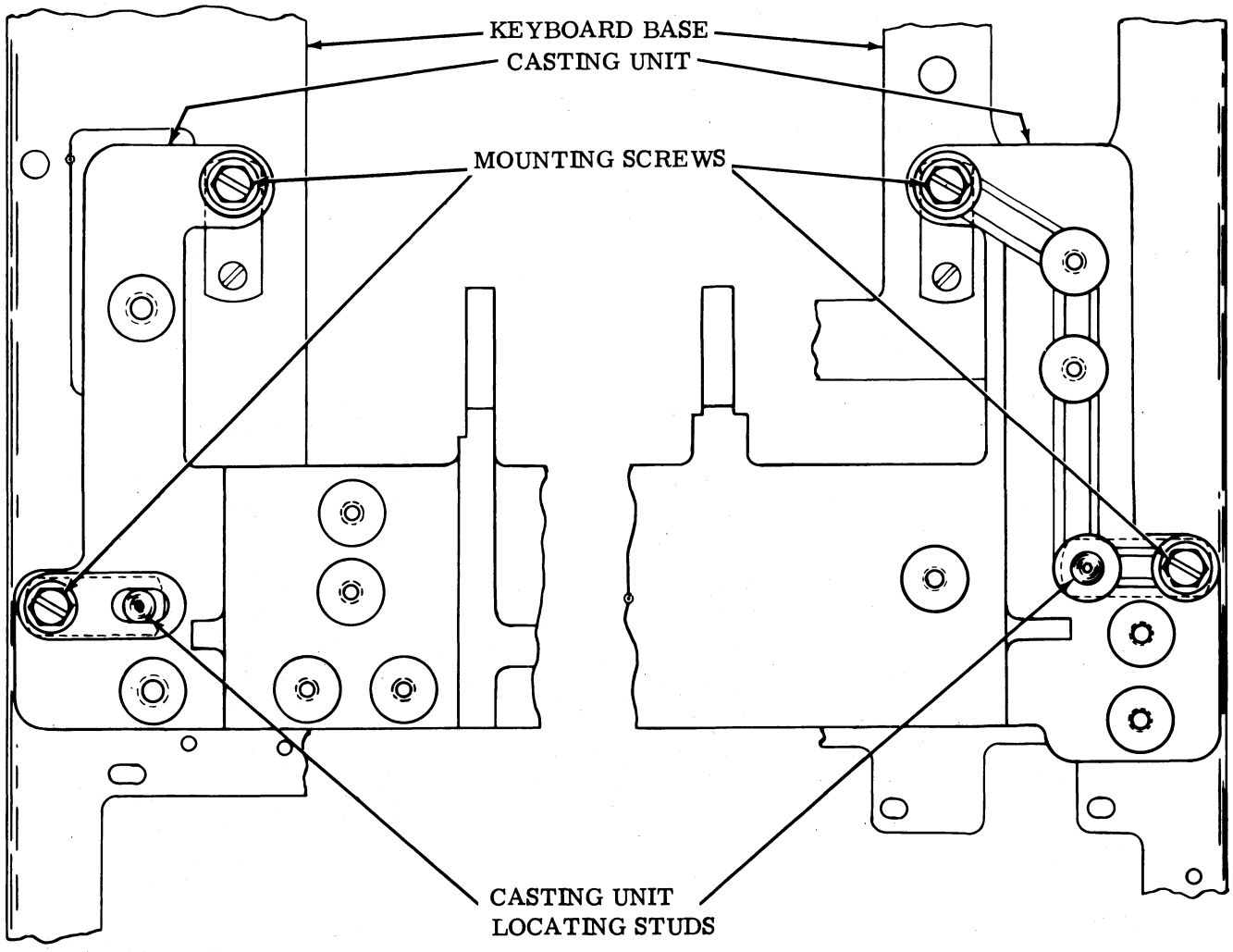


Note: If necessary, reposition stabilizer mechanism so end of stop image coincides with "O" mark of start pulse on scale. (Do not remove scale.)

(5) Requirement
DXD strobing should yield allowable spacing signal distortion of ±12%.

To Adjust
Loosen mounting screws and move contact box by means of eccentric.

2.21 Keyboard Base and Casting Assembly



CASTING ASSEMBLY TO KEYBOARD BASE

Requirement

There should be a barely perceptible amount of play between the casting assembly main shaft driven gear and its driving gear at the point where the backlash is in the least.

To Adjust

With the front feet of the casting assembly placed over the locating studs provided on the keyboard base and its mounting screws loosened, position the casting assembly utilizing its oversize mounting holes.

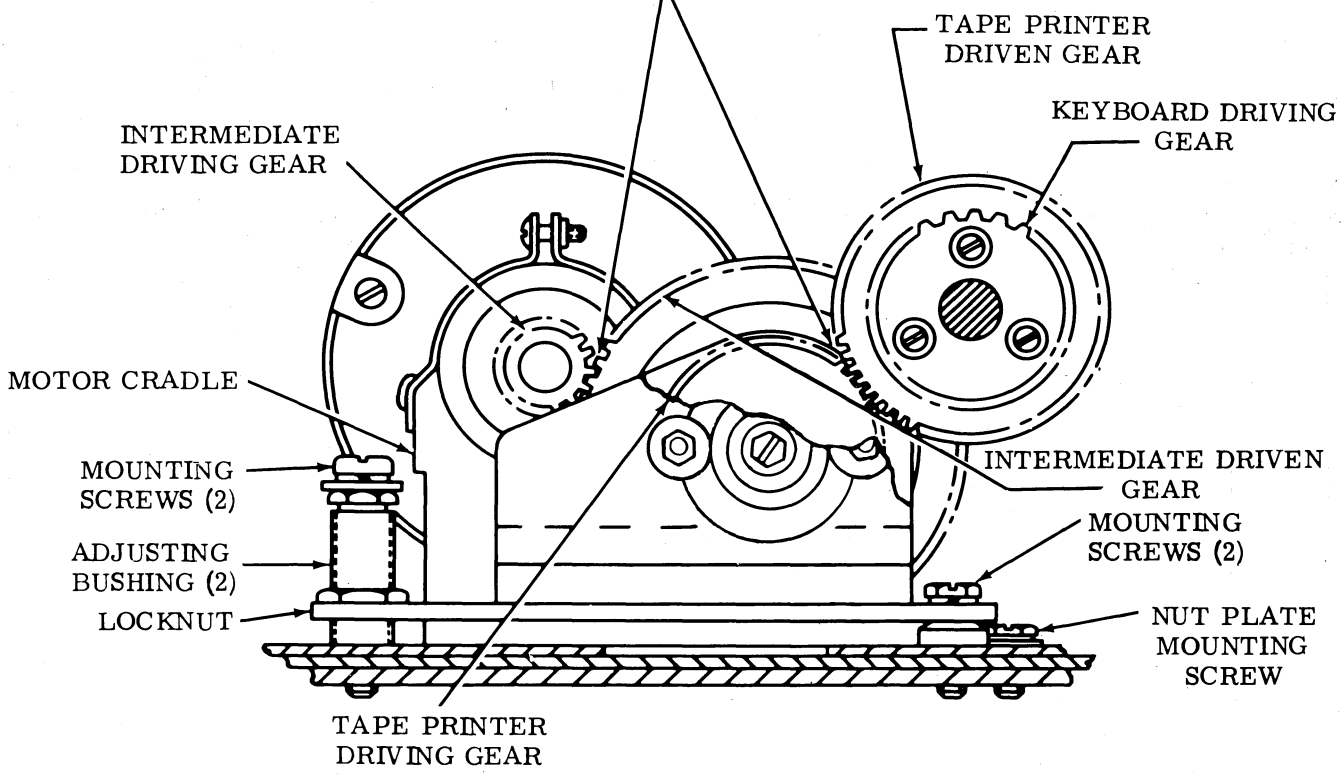
2.22 Keyboard, Motor, and Tape Printer Gearing

INTERMEDIATE GEAR ASSEMBLY

Requirement

Backlash between motor pinion and its driven gear, and between tape printer main shaft gear and its driving gear

Min 0.004 inch---Max 0.008 inch as gauged by feel.

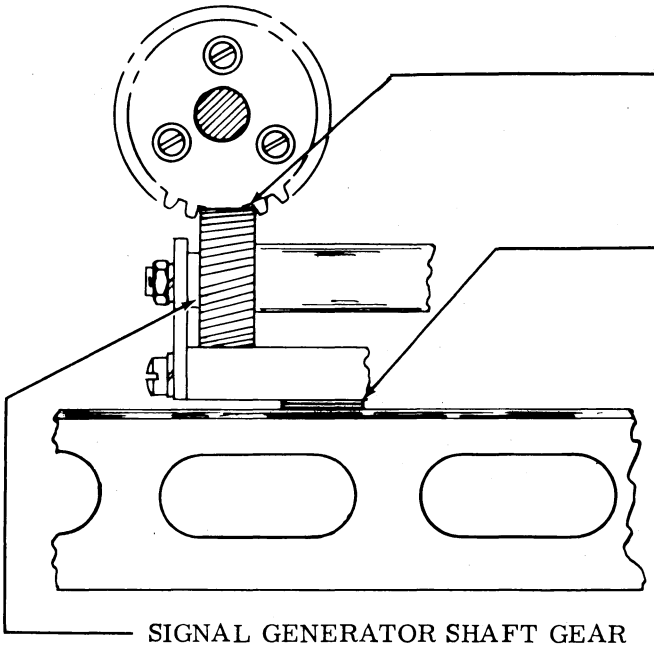


To Adjust

Loosen the four intermediate gear assembly mounting screws. Loosen two locknuts which lock adjusting bushings at rear of assembly. Loosen nut plate mounting screw just in front of gear bracket. Move assembly backward or forward and adjust height at rear by means of adjusting bushing nearest motor (back out other bushing for clearance after correct adjustment is obtained). Lock adjusting bushing nut, turn other bushing with fingers until it touches base, and tighten locknut.

2.23 Casting Assembly, Signal Generator, and Tape Printer Gearing

(A) SIGNAL GENERATOR SHAFT GEAR MESH



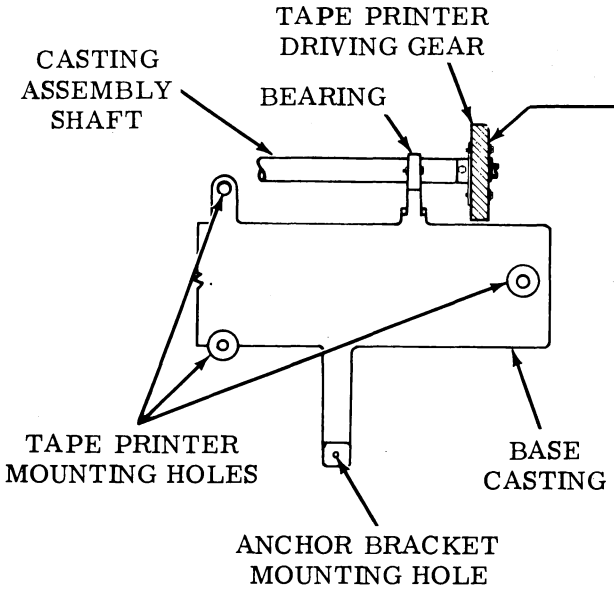
Requirement

There should be a barely perceptible amount of backlash between the signal generator shaft gear and its driving gear at their closest point.

To Adjust

Remove the signal generator and add or subtract shims at the rear generator mount to obtain the proper clearance.

(B) TAPE PRINTER SHAFT GEAR MESH



Requirement

Center the gear on the tape printer main shaft with the gear on the casting assembly shaft.

To Adjust

Position the tape printer in its over-size mounting holes with its mounting screws loosened, and adjust hub on tape printer.

2.24 Low Tape Switch

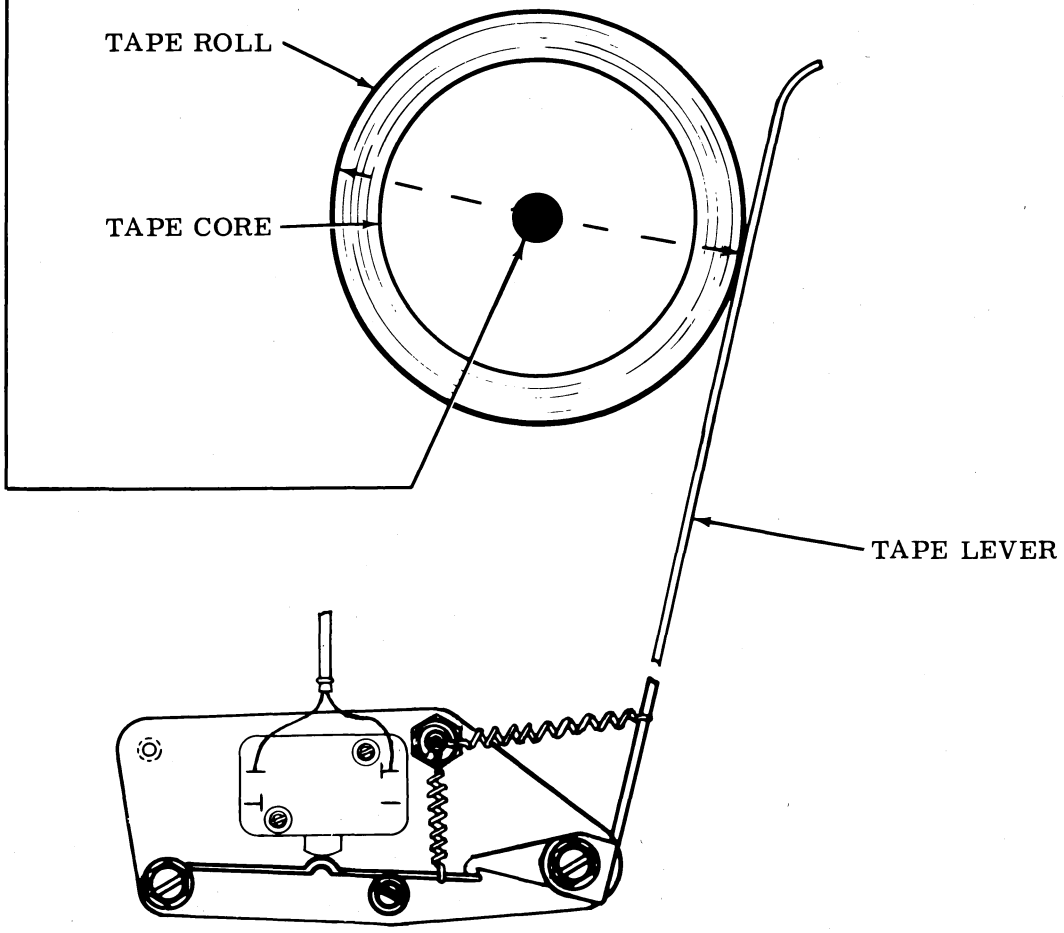
LOW TAPE SWITCH

Requirement

For 2-inch diameter tape core: Switch should operate when diameter of tape roll is approximately 2-9/16 inches.
For 1-inch diameter tape core: Switch should operate when diameter of tape roll is between 1-1/2 and 2 inches.

To Adjust

Position switch assembly with mounting screws loosened. Bend tape lever if necessary.

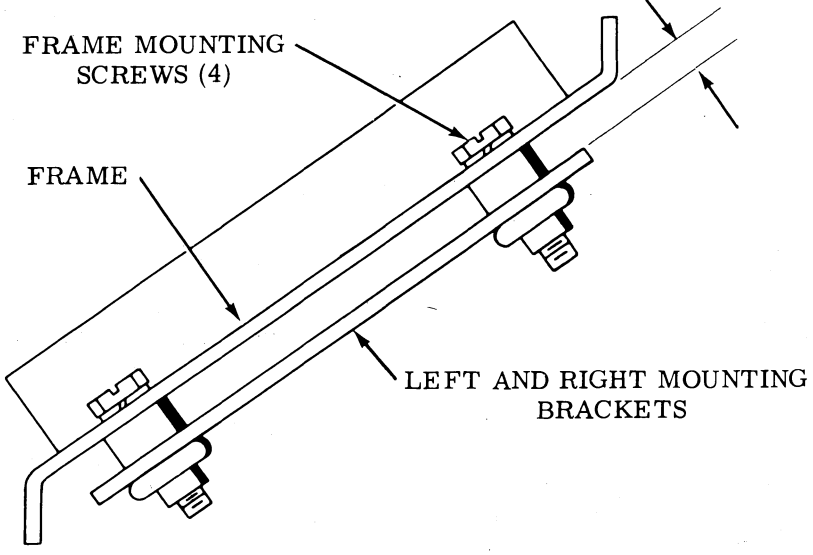


2.25 Keytop Guide Mechanism

KEYTOP GUIDE SPACING

Requirement
Gap between frame and left and right mounting bracket should be
Min 0.141 inch---Max 0.171 inch

To Adjust
Tighten or loosen the four frame mounting screws as required.



2.26 Inversion Codebar Latch Mechanism (Latest Design, Even Parity)

INVERSION CODEBAR LATCH

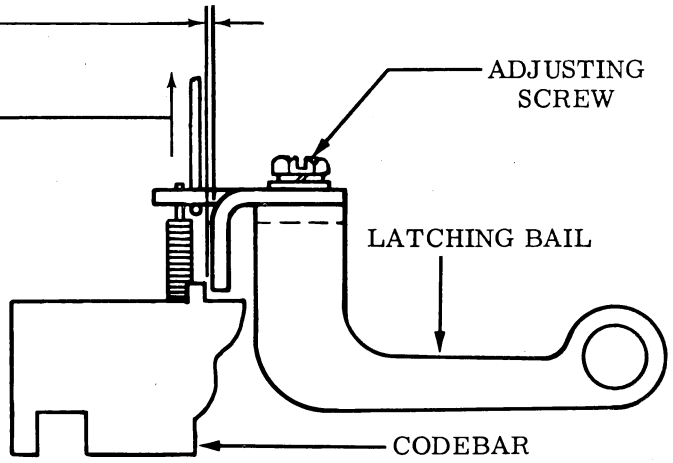
Requirement

Signal generator clutch disengaged.

Min 0.002 inch---Max 0.012 inch gap between number 5 and 8 inversion codebars and their respective latches. Check clearance at both the number 5 and 8 inversion codebars and adjust to whichever is closest.

To Adjust

With respective screws on inversion bail latch friction tight, move adjustable extension to obtain clearance. Tighten screws and recheck clearance.



No. 5 Inversion Bar

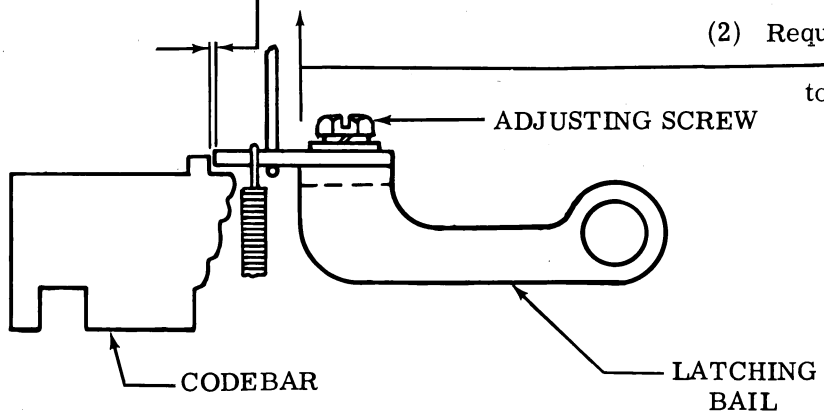
INVERSION BAR LATCHING BAIL SPRING

(1) Requirement

Min 2-1/2 oz---Max 3-1/2 oz to move bail.

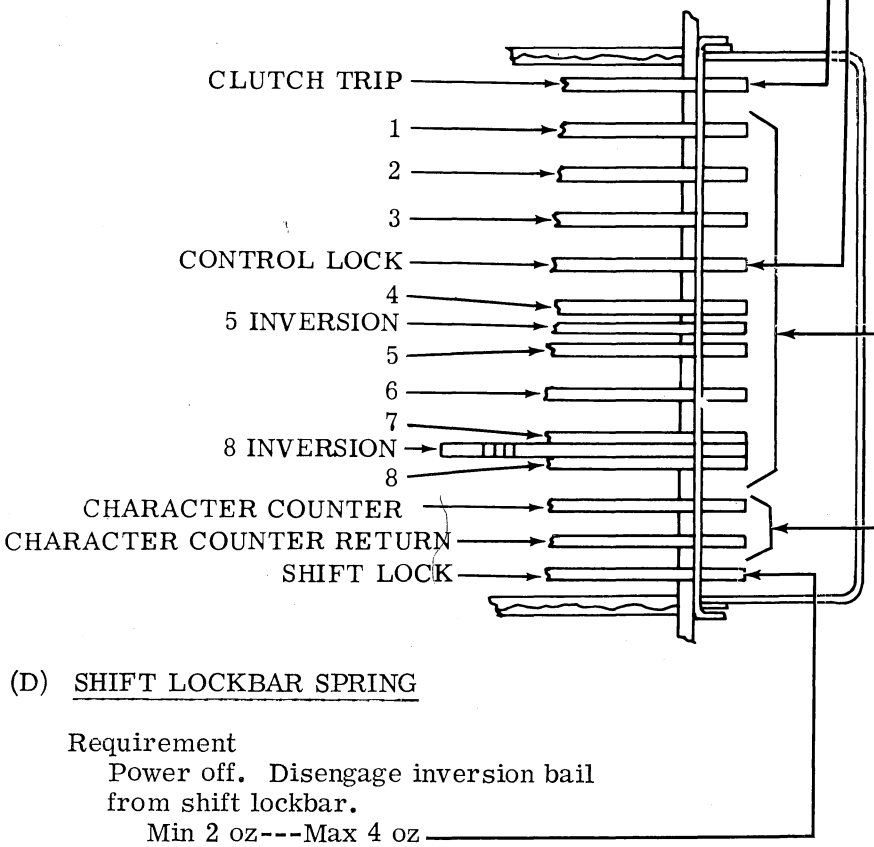
(2) Requirement

Min 1-1/2 oz---Max 2-1/2 oz to move bail.



No. 8 Inversion Bar

2.27 Codebar Arrangement for Even Parity



(B) CLUTCH TRIPBAR SPRING

Requirement
Clutch disengaged and power off
Min 8 oz---Max 12 oz
to move bar.

(E) CONTROL LOCKBAR SPRING

Requirement
Power off. Disengage inversion bail from shift lockbar.
Min 5 oz---Max 7-1/2 oz
to start bar moving.

(C) CODEBAR SPRINGS (No. 1, 2, 3, 4, 5, 6, 7 and 8)

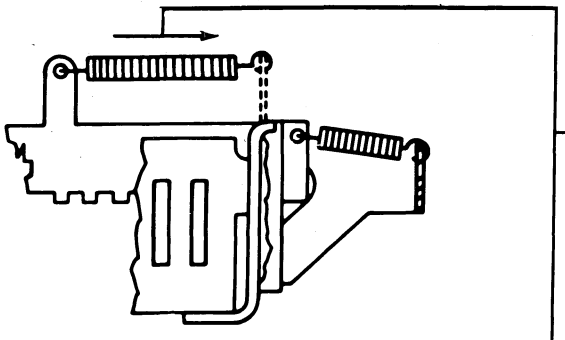
Requirement
Depress rubout or delete key. Power off. Transfer levers held right.
Min 5 oz---Max 7-1/2 oz
to start each bar moving.

(F) COUNTER AND RETURN BAR SPRINGS

Requirement
Power off. Depress rubout or delete key. Position transfer levers to right.
Min 2 oz---Max 4 oz
to start bar moving.

(D) SHIFT LOCKBAR SPRING

Requirement
Power off. Disengage inversion bail from shift lockbar.
Min 2 oz---Max 4 oz
to start bar moving.



(G) NO. 5 AND NO. 8 INVERSION BAR SPRINGS

Requirement
With codebar in latched position unhook spring at guide
Min 6 oz---Max 8 oz
to pull to installed length.

(H) TRANSITION CODEBAR SPRING

Requirement
With codebar in latched position, unhook spring at guide
Min 1/2 oz---Max 1-1/2 oz
to pull to installed length.

(A) CODEBAR AND CODE LEVER CLEARANCE

See 2.09