28 TYPING REPERFORATOR AND TAPE PRINTER KEYBOARDS

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 contains the specific adjustments for the 28 typing reperforator and tape printer keyboards.

1.02 This section has been revised to include change in title, recent engineering changes and additions, and to rearrange the text so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

Note: Remove power from unit before making adjustment.

1.03 Maintenance procedures which apply only to mechanisms of a particular design, or to certain models of 28 keyboards, are so indicated in the titles of the paragraphs which contain these particular adjustment requirements.

1.04 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its triplever 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.

1.05 The adjustments are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions. 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.

1.06 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 front.

1.07 All electrical contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 percent of the contact diameter. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustment or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

1.08 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 and inspect contacts for gold-plating. Do not use burnishers, files, etc which will remove gold plating.

1.09 Use twill jean cloth (KS2423) (TP107162) to clean gold-plated contacts. Open 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. (See Paragraph 1.07.)

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 For optimum reliable operation in special low-voltage applications, clean gold-plated contacts with twill jean, as instructed above, at intervals of approximately 50 hours of actual contact operation. Since maintenance interval and life expectancy of the contacts are dependent on the signal circuit, maintenance interval may be lengthened for specific applications.

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 (Par. 2.14 and 2.15), 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.

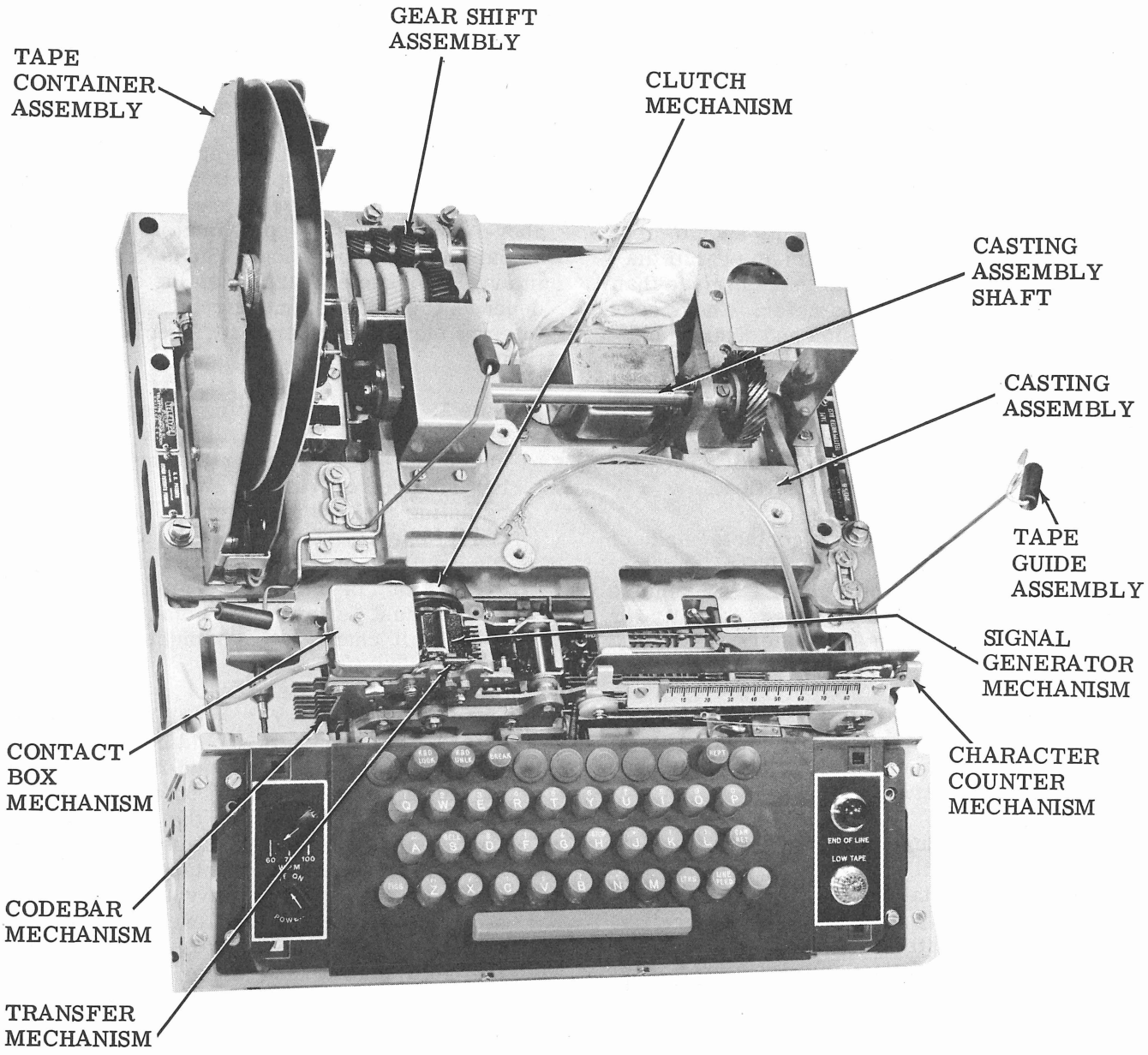


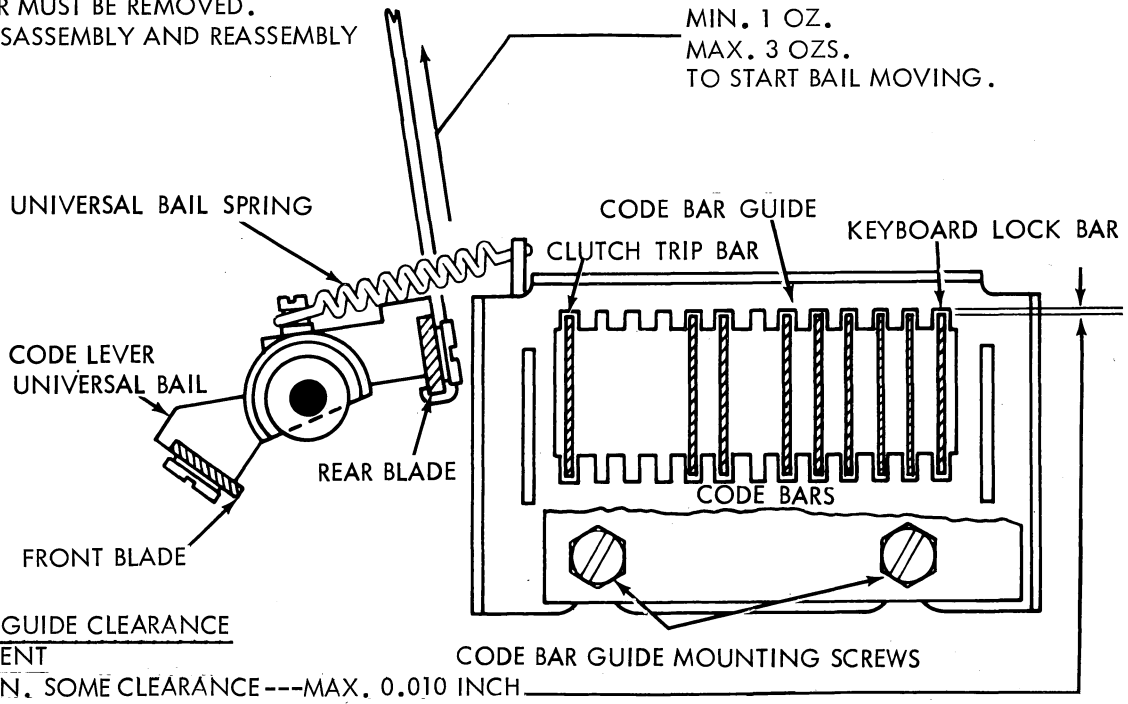
Figure 1 - 28 Tape Printer Keyboard (28 Typing Reperforator Keyboard is similar to the 28 Tape Printer Keyboard)

2. BASIC UNITS

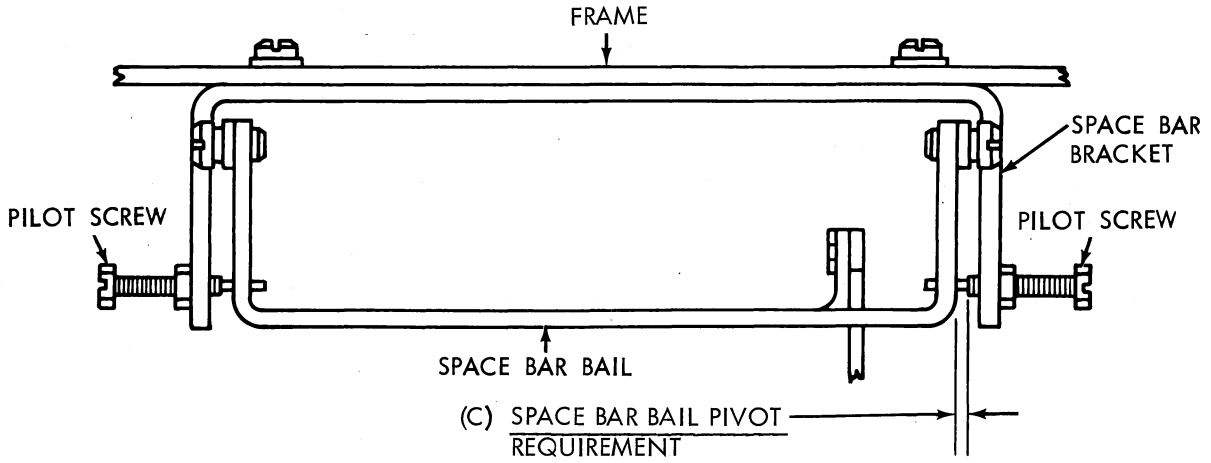
2.01 Codebar and Spacebar Mechanisms

(B) CODE LEVER UNIVERSAL BAIL SPRING
REQUIREMENT
GENERATOR CLUTCH DISENGAGED.
MIN. 1 OZ.
MAX. 3 OZS.
TO START BAIL MOVING.

NOTE 1: COVER MUST BE REMOVED.
SEE DISASSEMBLY AND REASSEMBLY



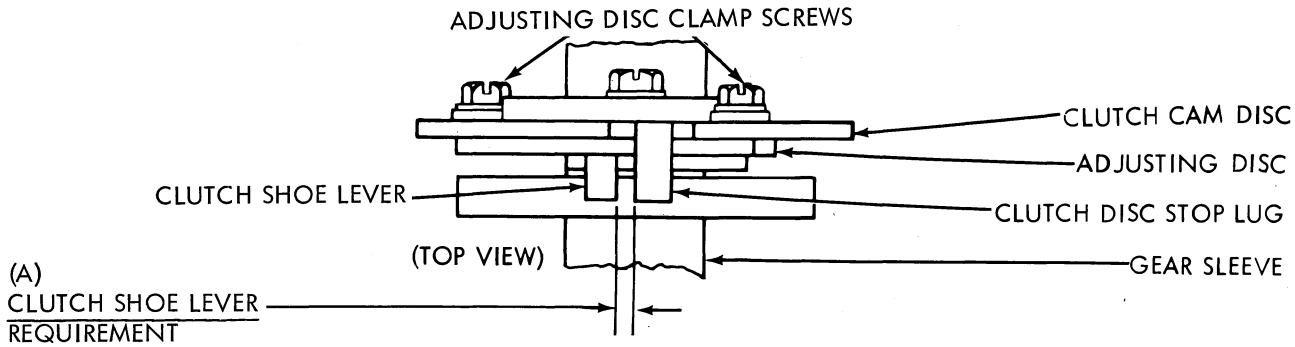
(A) CODE BAR GUIDE CLEARANCE
REQUIREMENT
MIN. SOME CLEARANCE---MAX. 0.010 INCH
CHECK BOTH ENDS OF CODE BARS. ALL CODE BARS, CLUTCH TRIP BAR AND KEYBOARD LOCK BAR SHALL MOVE FREELY WITHOUT BINDING AT ANY POINT IN THEIR TRAVEL.
TO ADJUST
LOOSEN MOUNTING SCREWS AND POSITION GUIDES.



(C) SPACE BAR BAIL PIVOT
REQUIREMENT
MIN. SOME END PLAY.
MAX. 0.010 INCH.
SPACE BAR FREE FROM BIND.
TO ADJUST
POSITION SPACE BAR WITH PILOT SCREWS.

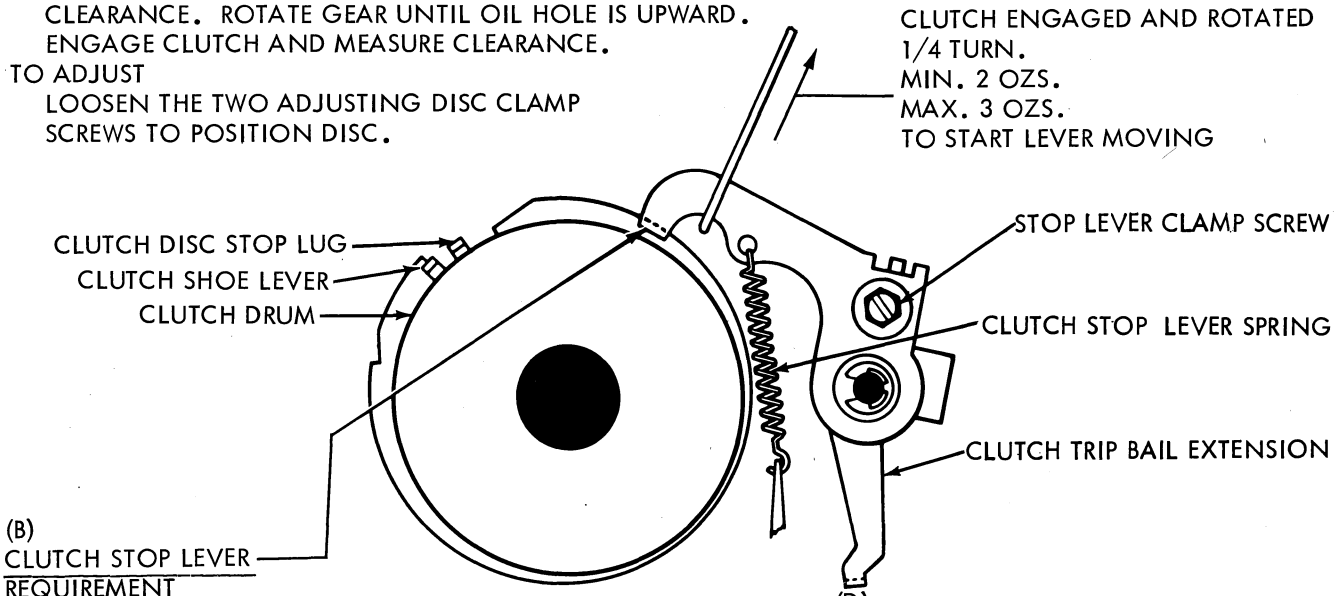
NOTE 2: THE BAIL SHOULD BE SO ADJUSTED THAT THE SPACE BAR CAN BE OPERATED WITHOUT BINDING IN THE HOLES IN THE GUIDE PLATE AND FRAME.

2.02 Signal Generator Clutch Mechanisms



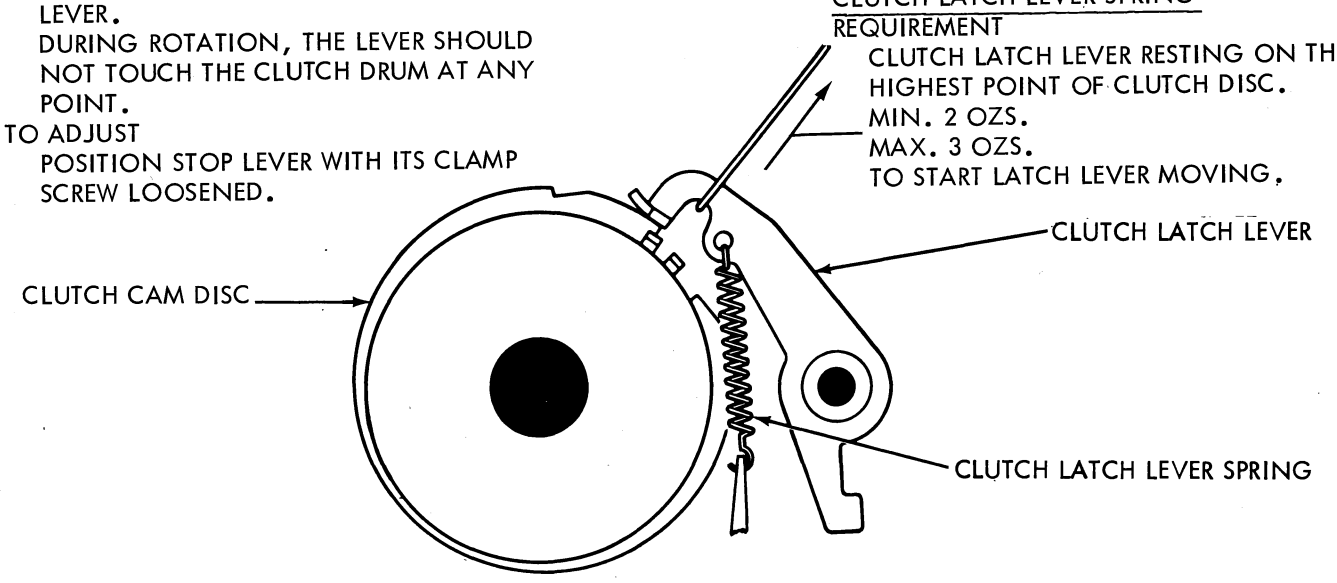
(A)
CLUTCH SHOE LEVER
REQUIREMENT
CLEARANCE WHEN CLUTCH IS DISENGAGED SHOULD BE 0.055 INCH TO 0.085 INCH LESS THAN WHEN CLUTCH IS ENGAGED.
TO CHECK
LATCH CLUTCH IN DISENGAGED POSITION AND MEASURE CLEARANCE. ROTATE GEAR UNTIL OIL HOLE IS UPWARD. ENGAGE CLUTCH AND MEASURE CLEARANCE.
TO ADJUST
LOOSEN THE TWO ADJUSTING DISC CLAMP SCREWS TO POSITION DISC.

(C)
CLUTCH STOP LEVER SPRING
REQUIREMENT
CLUTCH ENGAGED AND ROTATED 1/4 TURN.
MIN. 2 OZS.
MAX. 3 OZS.
TO START LEVER MOVING

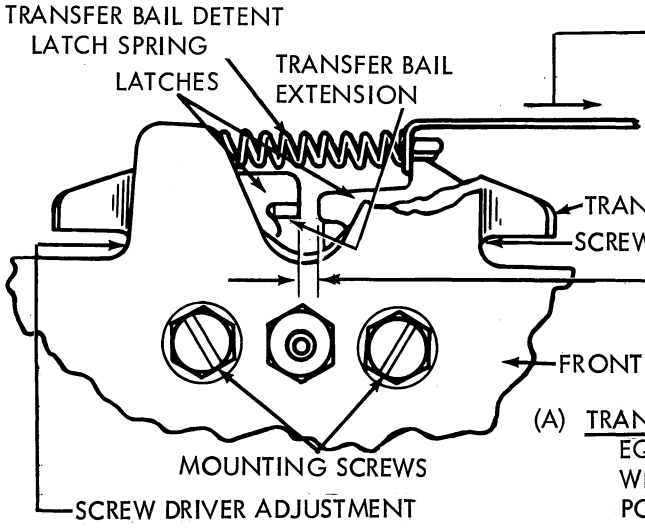


(B)
CLUTCH STOP LEVER
REQUIREMENT
SHOULD FULLY ENGAGE CLUTCH SHOE LEVER.
DURING ROTATION, THE LEVER SHOULD NOT TOUCH THE CLUTCH DRUM AT ANY POINT.
TO ADJUST
POSITION STOP LEVER WITH ITS CLAMP SCREW LOOSENED.

(D)
CLUTCH LATCH LEVER SPRING
REQUIREMENT
CLUTCH LATCH LEVER RESTING ON THE HIGHEST POINT OF CLUTCH DISC.
MIN. 2 OZS.
MAX. 3 OZS.
TO START LATCH LEVER MOVING.



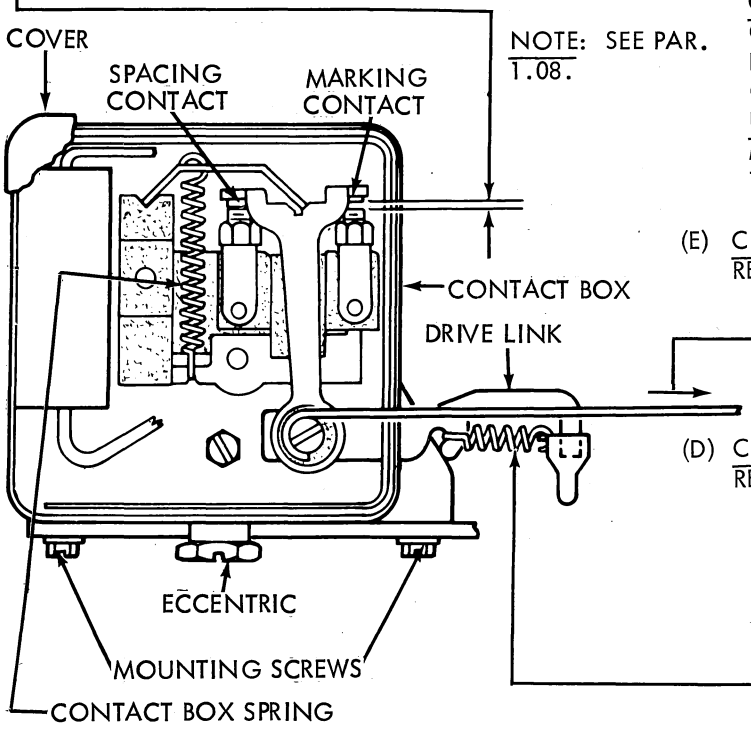
2.03 Signal Generator Contact Box and Transfer Bail Mechanism



(B) TRANSFER BAIL DETENT LATCH SPRING
REQUIREMENT
MIN. 2-3/4 OZS.
MAX. 4-1/4 OZS.
TO START LATCH MOVING.
HOLD TRANSFER BAIL TO THE LEFT.

(A) TRANSFER BAIL DETENT PLATE
EQUAL L. H. AND R. H. CLEARANCE WITHIN 0.002 INCH WHEN TRANSFER BAIL IS AT EXTREME L. H. OR R. H. POSITION AS THESE OCCUR IN SEQUENCE TO GENERATE "Y" CHARACTER ON "START" AND NO. 1 PULSES ONLY.
TO ADJUST
ROTATE DETENT PLATE RIGHT OR LEFT BY MEANS OF SCREWDRIVER WITH MOUNTING SCREWS LOOSENED.

(C) CONTACT BOX CONTACT CLEARANCE
REQUIREMENT
MARKING AND SPACING GAPS SHOULD BE EQUAL WITHIN 0.001 INCH.
TO CHECK
DEPRESS "Y" KEYLEVER AND ROTATE SIGNAL GENERATOR CAM SLEEVE UNTIL EACH CONTACT HAS FULLY OPENED.
TO ADJUST
LOOSEN MOUNTING SCREWS AND MOVE CONTACT BOX BY MEANS OF ECCENTRIC.
NOTE: CHECK BY MEANS OF SIGNAL CHECKING DEVICE WHERE POSSIBLE, AND CAREFULLY REFINE THE ADJUSTMENT TO ELIMINATE ALL BIAS FROM THE SIGNALS BY EQUALIZING THE CURRENT-ON AND CURRENT-OFF INTERVALS.



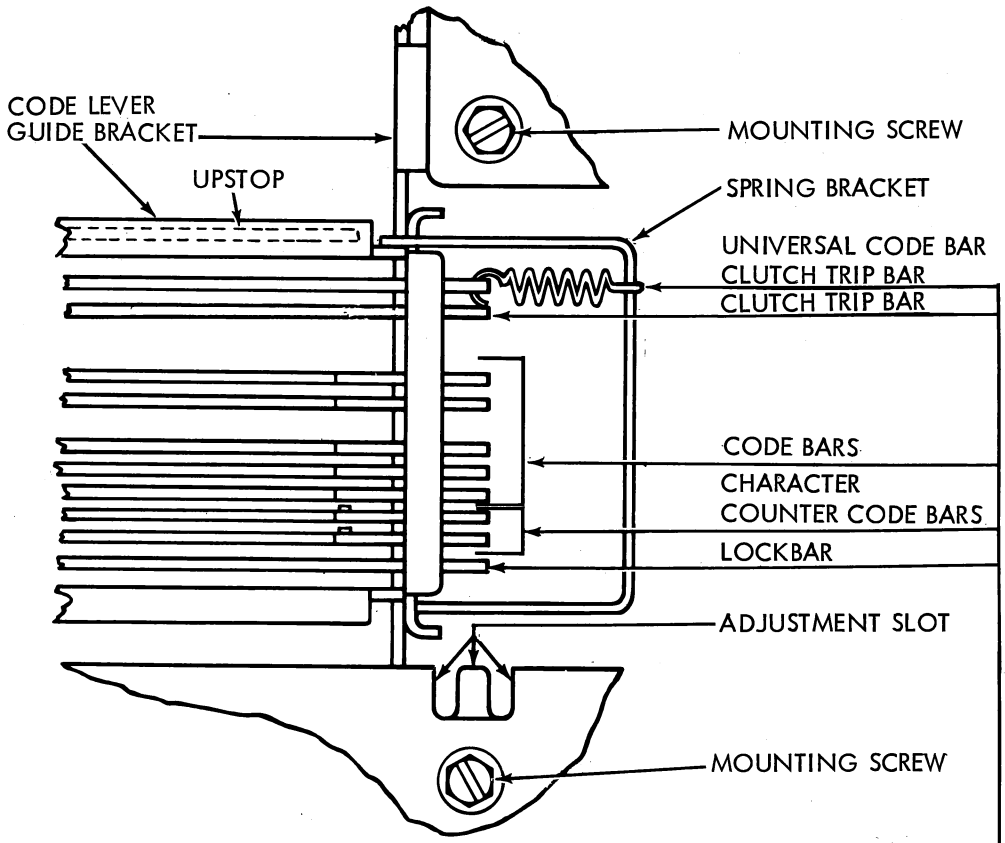
NOTE: SEE PAR. 1.08.

CAUTION: ON UNITS SO EQUIPPED - CLEAN GOLD CONTACTS BY PULLING TWILL JEAN HALF WAY THROUGH THE CLOSED CONTACTS, OPEN CONTACTS AND REMOVE TWILL JEAN. USE NO OTHER CLEANING OR BURNISHING METHODS. AVOID PITTING OR CHIPPING THE CONTACTS.

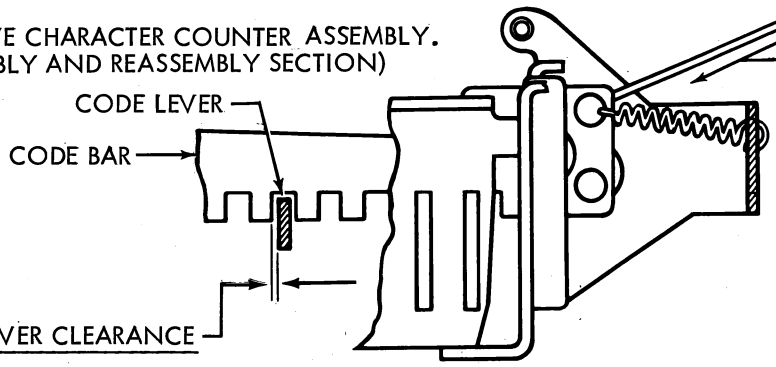
(E) CONTACT BOX SPRING
REQUIREMENT
TRANSFER BAIL HELD CLEAR OF DRIVE LINK.
MIN. 2 OZS.
MAX. 3 OZS.
TO START LINK MOVING.

(D) CONTACT BOX DRIVE LINK SPRING
REQUIREMENT
WITH MAIN SHAFT IN STOP POSITION AND TRANSFER BAIL DETENT LATCH SPRING UNHOOKED (SEE FIGURE ABOVE), MOVE LATCHES AWAY FROM TRANSFER BAIL EXTENSION. HOLD TOGGLE FIRMLY AGAINST CONTACTS.
MIN. 6 OZS.---MAX. 9 OZS.
TO START TRANSFER BAIL EXTENSION MOVING.

2.04 Code Bar and Code Lever Mechanisms



NOTE: IF NECESSARY REMOVE CHARACTER COUNTER ASSEMBLY.
(REFER TO DISASSEMBLY AND REASSEMBLY SECTION)



(A) CODE BAR AND CODE LEVER CLEARANCE

REQUIREMENT

CARRIAGE RETURN KEY DEPRESSED BUT NOT ENOUGH TO TRIP OFF UNIVERSAL BAIL LATCH OR CLUTCH BAR.

MIN. 0.006 INCH---MAX. 0.017 INCH

MEASURE AT CODE BAR #3.

TO ADJUST

POSITION GUIDE BY ADJUSTING SLOT WITH FOUR MOUNTING SCREWS LOOSENED.

(B) CLUTCH TRIP BAR SPRING

REQUIREMENT

BLANK KEY DEPRESSED TO ALLOW THE CLUTCH TRIP BAR TO FALL TO RIGHT.

SPRING UNHOOKED FROM BRACKET

MIN. 8 OZS.---MAX. 12 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

NOTE: SEE FOLLOWING PAGE FOR ADJUSTMENTS (C), (D), (E) AND (F)

2.05 Code Bar and Code Lever Mechanisms (continued)

NOTE: ADJUSTMENTS CONTINUED FROM PRECEDING PAGE.

(C) CLUTCH TRIP BAR SPRING (USED FOR SYNCHRONOUS PULSED TRANSMISSION)

REQUIREMENT

WITH THE CLUTCH DISENGAGED AND LATCHED, POWER OFF AND ARMATURE OF THE MAGNET ASSEMBLY HELD AWAY FROM THE CLUTCH TRIP BAR. PUSH AT THE RIGHT HAND END OF CLUTCH TRIP BAR.

MIN. 9 OZS.---MAX. 12 OZS.

TO START CLUTCH TRIP BAR MOVING.

NOTE: HOLD THE SWINGER OF THE CONTACT ASSEMBLY AWAY FROM THE UNIVERSAL CODE BAR WHEN MEASURING THE CLUTCH TRIP BAR SPRING TENSION.

(D) UNIVERSAL CODE BAR SPRING (USED FOR SYNCHRONOUS PULSED TRANSMISSION)

REQUIREMENT

WITH THE CLUTCH DISENGAGED AND LATCHED, DEPRESS THE BLANK KEY TO ALLOW THE UNIVERSAL CODE BAR TO FALL TO THE RIGHT. SPRING UNHOOKED FROM THE BRACKET.

MIN. 8 OZS.---MAX. 12 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

(E) CODE BAR SPRING

REQUIREMENT

LETTERS KEYLEVER DEPRESSED (POWER OFF) HOLD TRANSFER LEVERS TO THE RIGHT SO THEY DO NOT AFFECT THE CODE BARS.

MIN. 3 OZS.---MAX. 5 OZS.

TO START CODE BAR MOVING.

(F) LOCK BAR SPRING

REQUIREMENT

CLUTCH DISENGAGED, KEYBOARD LOCK KEYLEVER DEPRESSED. APPLY PUSH END OF SCALE AGAINST R. H. END OF LOCK BAR.

MIN. 2-1/2 OZS.---MAX. 6 OZS.

TO START LOCK BAR MOVING.

2.06 Function Bail and Lock Ball Mechanisms

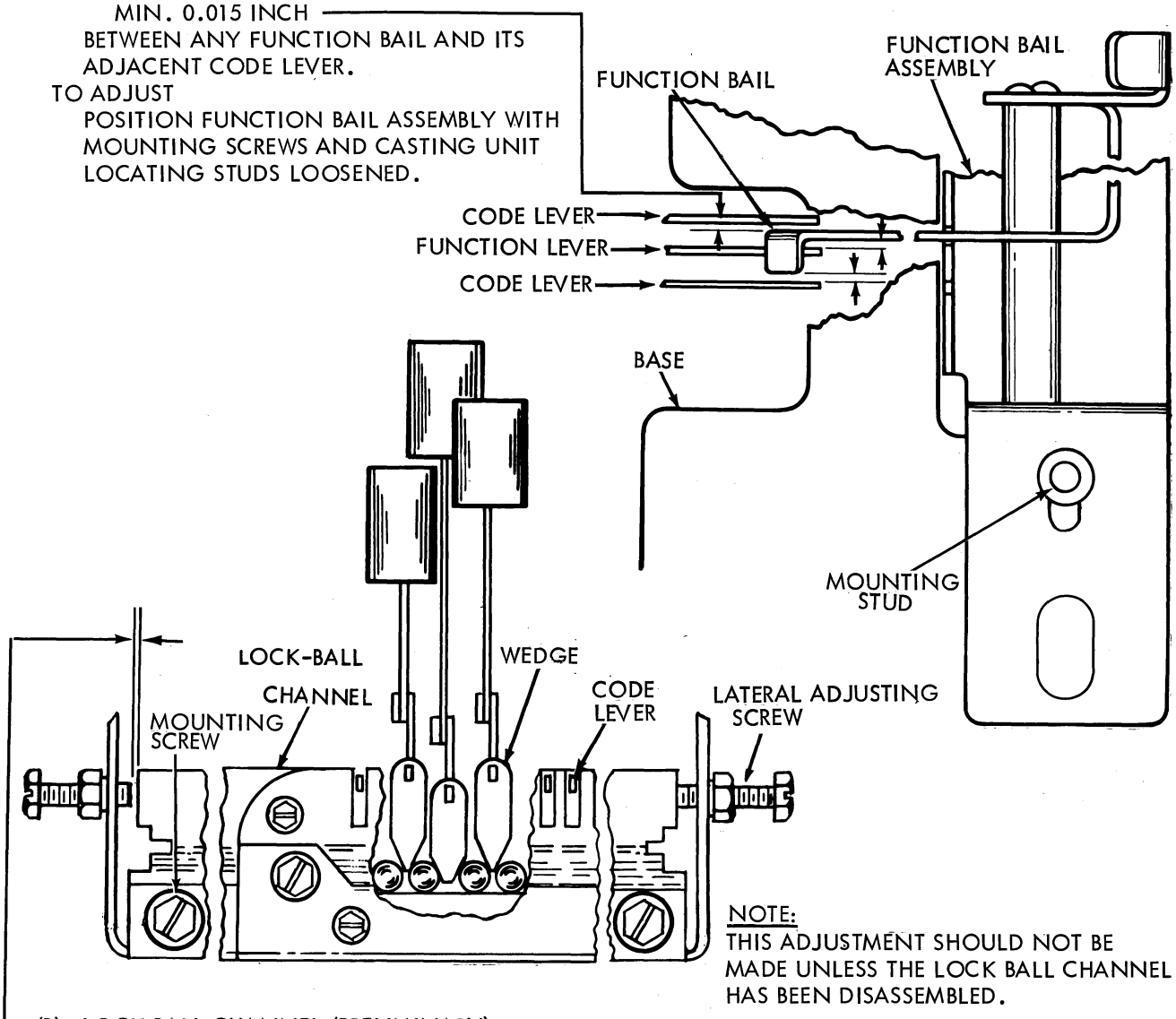
(A) FUNCTION BAIL AND CODE LEVER CLEARANCE

REQUIREMENT

MIN. 0.015 INCH BETWEEN ANY FUNCTION BAIL AND ITS ADJACENT CODE LEVER.

TO ADJUST

POSITION FUNCTION BAIL ASSEMBLY WITH MOUNTING SCREWS AND CASTING UNIT LOCATING STUDS LOOSENED.



NOTE:
THIS ADJUSTMENT SHOULD NOT BE MADE UNLESS THE LOCK BALL CHANNEL HAS BEEN DISASSEMBLED.

(B) LOCK BALL CHANNEL (PRELIMINARY)

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 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.

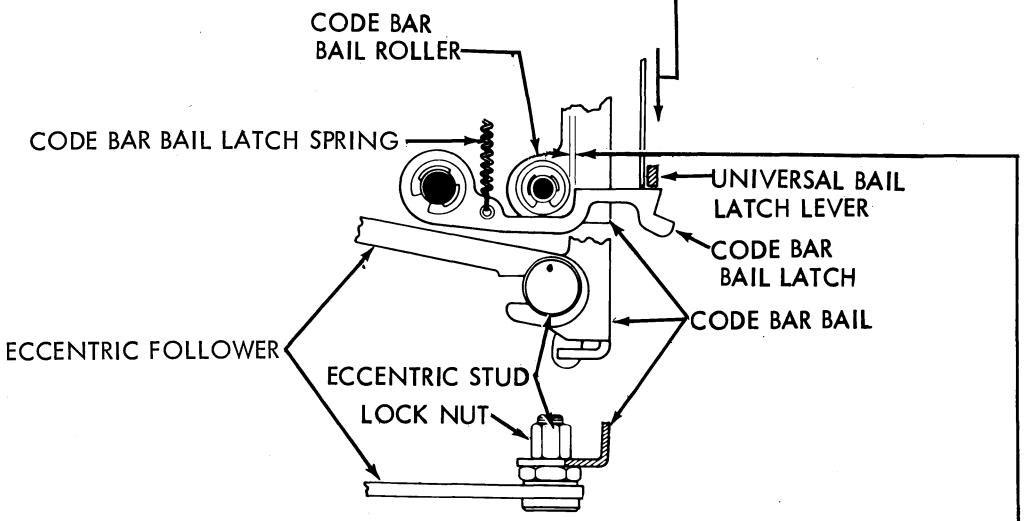
NOTE: A TOTAL OF 43 BALLS ARE REQUIRED IN THE BALL TRACK ASSEMBLY.

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-END-PLAY ADJUSTING SCREW.

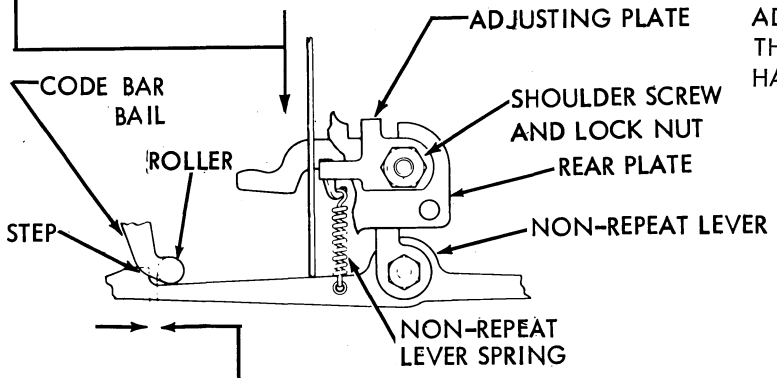
2.07 Code Bar Reset Bail and Nonrepeat Mechanisms

(A) CODE BAR RESET BAIL LATCH SPRING
REQUIREMENT
MIN. 1/2 OZS.
MAX. 1 1/2 OZS.
TO START CODE BAR BAIL LATCH MOVING.



(B) CODE BAR RESET BAIL
REQUIREMENT
CAM ECCENTRIC AND ARM WHICH HOLD THE BAIL IN EXTREME RESET POSITION TO THE LEFT.
MIN. 0.004 INCH
MAX. 0.012 INCH
BETWEEN CODE BAR BAIL ROLLER AND CODE BAR BAIL LATCH
TO ADJUST
WITH LOCK NUT LOOSENED, ADJUST ECCENTRIC STUD SO THAT HIGH POINT IS IN UPPER HALF OF ARC.

(C) NON-REPEAT LEVER SPRING
REQUIREMENT
ANY KEYLEVER DEPRESSED
MIN. 2 OZS.
MAX. 3-1/4 OZS.
TO START NON-REPEAT LEVER MOVING DOWNWARD.



(D) CODE BAR RESET BAIL AND NON-REPEAT LEVER CLEARANCE
REQUIREMENT
MECHANISM IN INITIAL TRIP-OFF POSITION, ANY KEY DEPRESSED, NO POWER.
MIN. 0.010 INCH
MAX. 0.020 INCH
BETWEEN ROLLER OF CODE BAR BAIL AND NON-REPEAT LEVER PICK-UP STEP.
TO ADJUST
LOOSEN LOCK NUT AND SHOULDER SCREW AND MOVE MECHANISM LEFT OR RIGHT.

2.08 Lock Ball Mechanism (Preliminary)

(A) BALL WEDGELOCK AND BALL TRACK CLEARANCE (PRELIMINARY)

REQUIREMENT

ADJUSTMENT SCREW BACKED OUT TO PERMIT MAXIMUM BALL MOVEMENT WITHOUT THE BALLS ROLLING OUT OF TRACK. (FROM PREVIOUS LATERAL ADJUSTMENT.)

APPLY 32 OZS. OF PRESSURE TO THE "Q" OR THE "P" KEYLEVER

MIN. 0.005 INCH

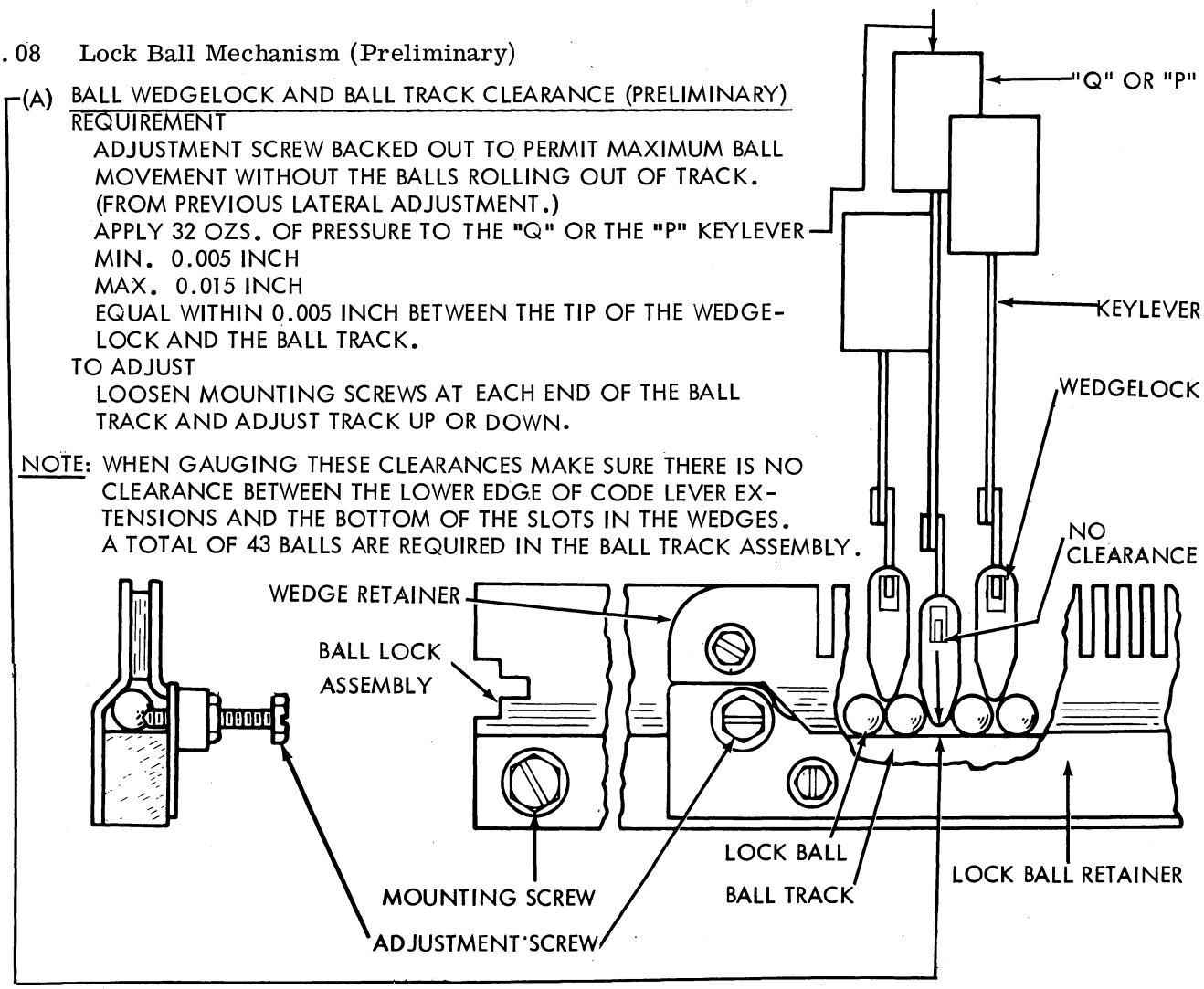
MAX. 0.015 INCH

EQUAL WITHIN 0.005 INCH BETWEEN THE TIP OF THE WEDGE-LOCK AND THE BALL TRACK.

TO ADJUST

LOOSEN MOUNTING SCREWS AT EACH END OF THE BALL TRACK AND ADJUST TRACK UP OR DOWN.

NOTE: WHEN GAUGING THESE CLEARANCES MAKE SURE 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.



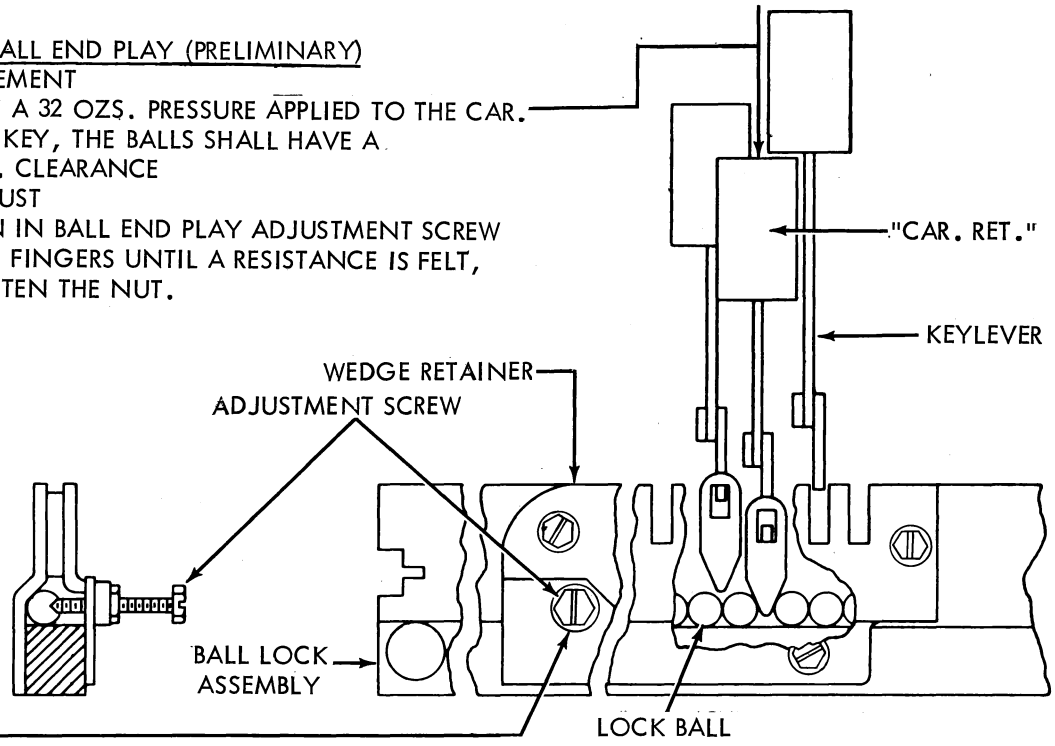
(B) LOCK BALL END PLAY (PRELIMINARY)

REQUIREMENT

WITH A 32 OZS. PRESSURE APPLIED TO THE CAR. RET. KEY, THE BALLS SHALL HAVE A MIN. CLEARANCE

TO ADJUST

TURN IN BALL END PLAY ADJUSTMENT SCREW WITH FINGERS UNTIL A RESISTANCE IS FELT, TIGHTEN THE NUT.



2.09 Universal Bail Mechanism

(A) UNIVERSAL BAIL LATCH LEVER (PRELIMINARY)

REQUIREMENT

SLOWLY DEPRESS "SPACE BAR" APPROXIMATELY IN THE CENTER WITH 32 OZS. PRESSURE. MANUALLY ROTATE UNIVERSAL BAIL BACKWARDS AND QUICKLY RELEASE.
MIN. 0.015 INCH---MAX. 0.025 INCH
CLEARANCE BETWEEN UNIVERSAL BAIL LATCH LEVER AND EXTENSION POST ON UNIVERSAL BAIL.

TO ADJUST

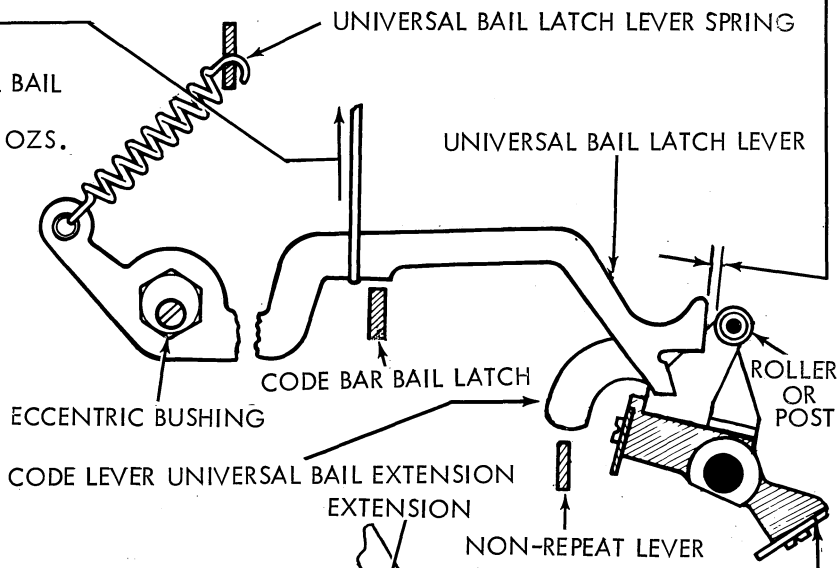
LOOSEN THE THREE SCREWS THAT FASTEN THE UNIVERSAL BAIL REAR BLADE. ROTATE ECCENTRIC BUSHING. KEEP HIGH PART OF ECCENTRIC BUSHING UP.

NOTE: ON UNITS EQUIPPED WITH REPEAT-SPACE FEATURE, REPEAT-SPACE SPRING MUST BE UNHOOKED FROM SIGNAL GENERATOR REAR PLATE BEFORE MAKING ABOVE ADJUSTMENT.

(B) UNIVERSAL BAIL LATCH SPRING

REQUIREMENT

CLUTCH DISENGAGED, UNIVERSAL BAIL HELD AWAY FROM LATCH LEVER.
MIN. 7-1/2 OZS. --- MAX. 11 OZS.
TO START LATCH LEVER MOVING.



(C) UNIVERSAL BAIL EXTENSION

REQUIREMENT (POWER OFF)

UNIVERSAL BAIL EXTENSION ROLLER RESTING AGAINST END OF UNIVERSAL BAIL LATCH LEVER
MIN. 0.050 INCH
MAX. 0.080 INCH
BETWEEN EXTENSION AND NON-REPEAT LEVER

TO CHECK

DEPRESS LETTERS KEYLEVER AND RELEASE IT. CHECK CLEARANCE.

TO ADJUST

WITH ITS TWO SCREWS FRICTION TIGHT POSITION THE ADJUSTABLE EXTENSION.

(D) UNIVERSAL BAIL REAR BLADE

REQUIREMENT

UNIT IN INITIAL TRIP-OFF CONDITION, NO KEY DEPRESSED, NO POWER, EXTENSION POST OF UNIVERSAL BAIL RESTING AGAINST THE END OF LATCH. SOME TO 0.025 INCH BETWEEN UNIVERSAL BAIL REAR BLADE AND ANY CODE LEVER.

TO ADJUST

POSITION REAR BLADE WITH MOUNTING SCREWS LOOSENED.

2.10 Lock Ball and Universal Bail Mechanisms (Final)

BALL WEDGELOCK, BALL END PLAY AND UNIVERSAL BAIL LATCH ADJUSTMENTS - (FINAL)

CHECK UNDER POWER

(1) REQUIREMENT
MIN. 2 OZS.
MAX. 6 OZS.
TO TRIP ANY CENTER ROW KEY.

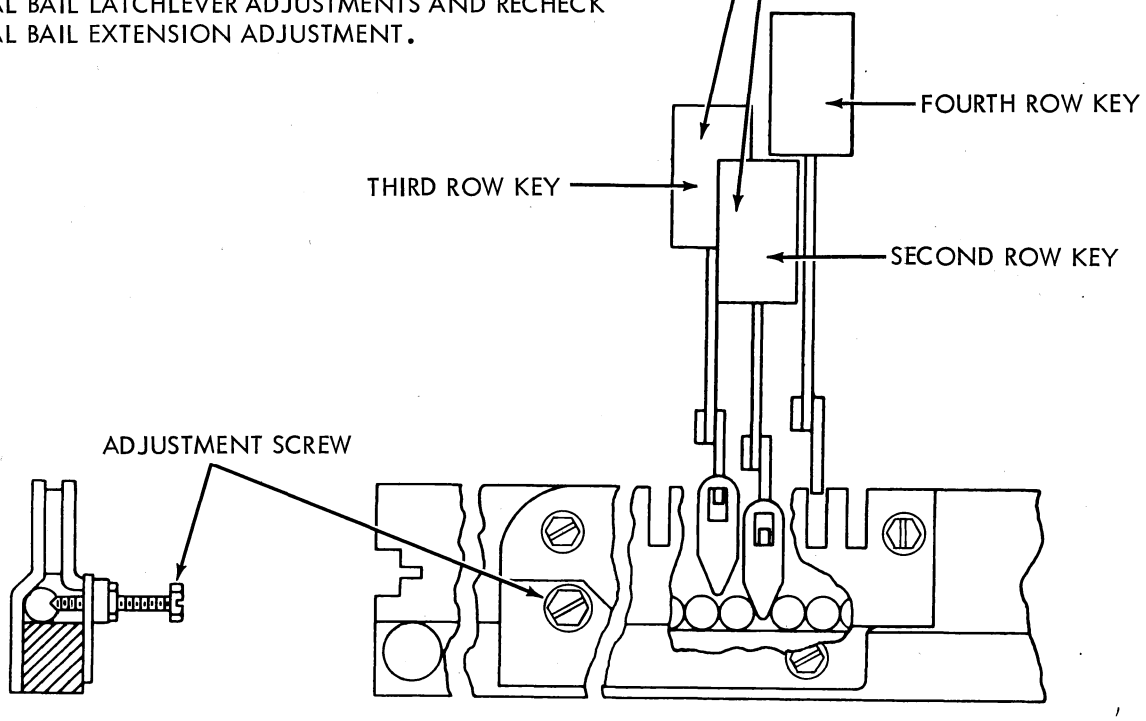
(2) REQUIREMENT
WITH 6-1/2 OZS. PRESSURE APPLIED PERPENDICULAR TO THE "A" KEY, DEPRESS EACH KEY IN THE THIRD ROW. THE "A" KEY SHALL TRIP EACH TIME A KEY IS RELEASED. REPEAT THIS CHECK WITH THE 6-1/2 OZS. PRESSURE ON THE "CAR. RET." KEY.

(3) REQUIREMENT
THE CLUTCH SHALL NOT TRIP WHEN ANY TWO KEYS ARE DEPRESSED SIMULTANEOUSLY.

(4) REQUIREMENT
WITH 5-1/4 $\pm$ 1/4 OZ. APPLIED TO THE "SPACE BAR," DEPRESS "CAR. RET." KEY. THE "SPACE BAR" SHALL TRIP EACH TIME THE "CAR. RET." KEY IS RELEASED BY MOVING THE FINGER OFF THE KEY IN A HORIZONTAL DIRECTION.

NOTE: DISREGARD REQUIREMENT (4) WHERE UNIT IS EQUIPPED WITH REPEAT-SPACE FEATURE.

TO ADJUST
IF NECESSARY, REFINE PRELIMINARY BALL WEDGELOCK AND BALL TRACK CLEARANCE, LOCK BALL END PLAY, AND UNIVERSAL BAIL LATCHLEVER ADJUSTMENTS AND RECHECK UNIVERSAL BAIL EXTENSION ADJUSTMENT.

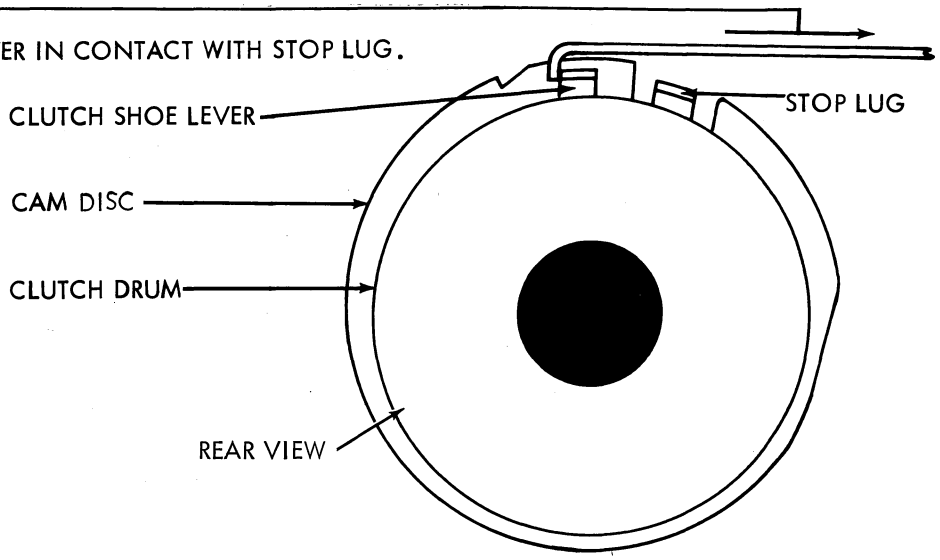


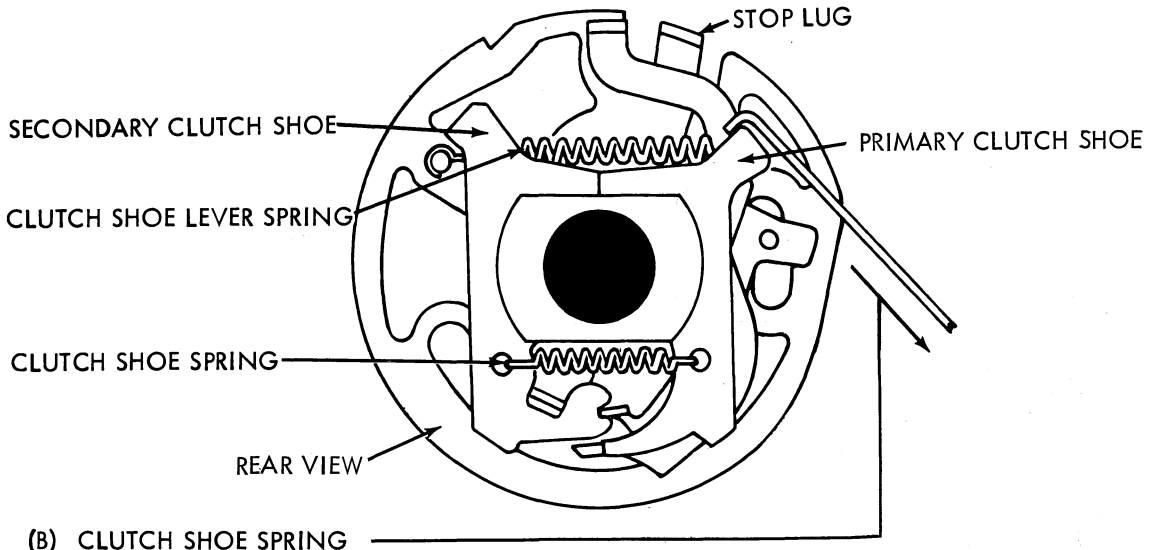
2.11 Signal Generator Clutch Mechanism

(A) CLUTCH SHOE LEVER SPRING

REQUIREMENT

CLUTCH ENGAGED,
CAM DISC HELD TO PREVENT TURNING.
MIN. 15 OZS.
MAX. 20 OZS.
TO MOVE SHOE LEVER IN CONTACT WITH STOP LUG.





(B) CLUTCH SHOE SPRING

NOTE:

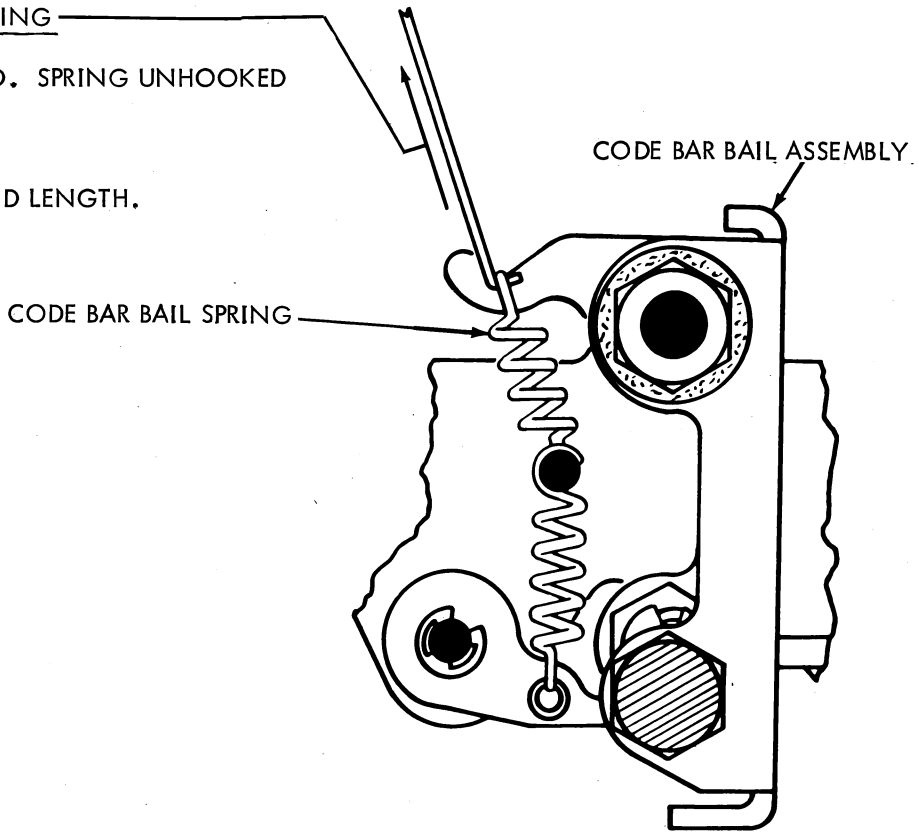
IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SIGNAL GENERATOR DRIVE SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO BELIEVE THAT IT DOES NOT MEET ITS REQUIREMENT.

REQUIREMENT

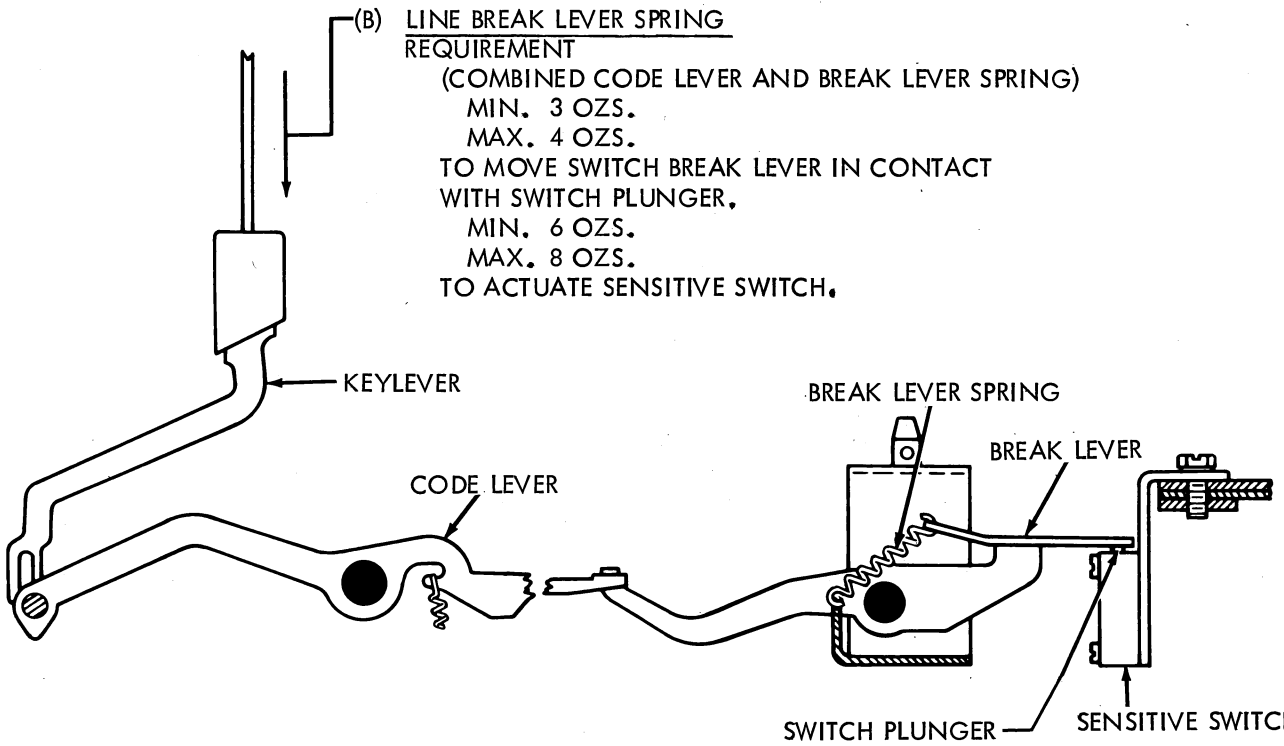
CLUTCH DRUM REMOVED.
MIN. 3 OZS.
MAX. 5 OZS.
TO START PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE AT POINT OF CONTACT.

2.12 Codebar Reset Bail and Line Break Lever Mechanisms

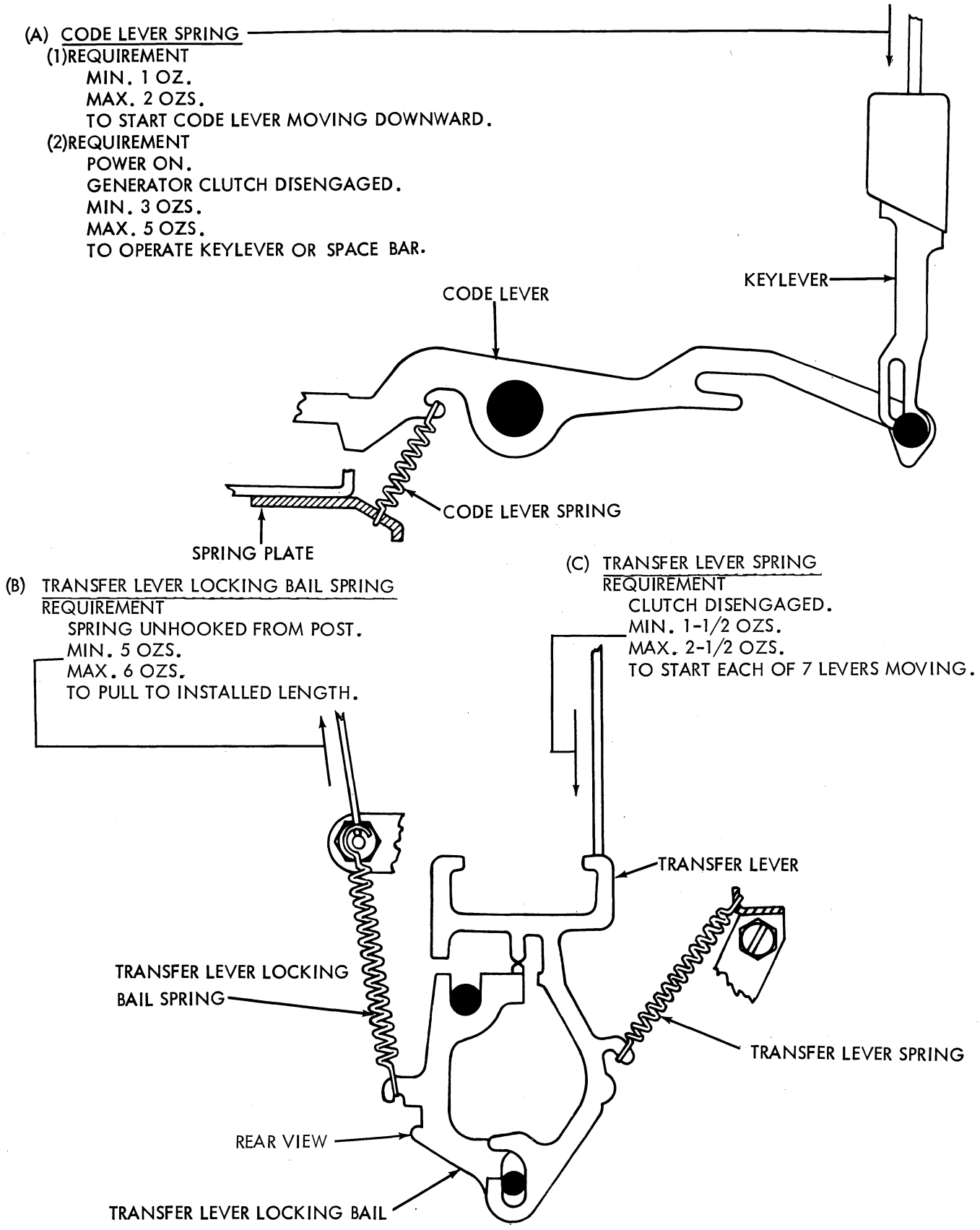
(A) CODEBAR RESET BAIL SPRING
REQUIREMENT
CLUTCH DISENGAGED. SPRING UNHOOKED FROM ARM.
MIN. 9 OZS.
MAX. 11 OZS.
TO PULL TO INSTALLED LENGTH.



(B) LINE BREAK LEVER SPRING
REQUIREMENT
(COMBINED CODE LEVER AND BREAK LEVER SPRING)
MIN. 3 OZS.
MAX. 4 OZS.
TO MOVE SWITCH BREAK LEVER IN CONTACT WITH SWITCH PLUNGER.
MIN. 6 OZS.
MAX. 8 OZS.
TO ACTUATE SENSITIVE SWITCH.



2.13 Signal Generator Transfer and Codelever Mechanisms



2.14 Signal Generator Mechanism continued

SIGNAL CONTACT CLEARANCE (USING SIGNAL TEST SET --- SUCH AS DXD/LSS)
PRELIMINARY --- WITH ELECTRICAL NOISE SUPPRESSOR DISCONNECTED FROM CIRCUIT, CONNECT SIGNAL CONTACTS SO AS TO INTERRUPT (KEY) CURRENT TO "STROBE" LAMP OF DXD OR LSS. TEST SET AND KEYBOARD MUST OPERATE AT SAME SPEED. (SEE TABLE 1-1).

REQUIREMENTS

(1) 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 (MIN. 141-1/2 DIVISIONS---MAX. 142-1/2 DIVISIONS) (7.42 UNIT CODE)
TO ADJUST - IF VARIATIONS OCCUR, POSITION SCALE SO THAT VARIATIONS EXTEND EQUALLY ON RIGHT & LEFT OF 142 MARK.

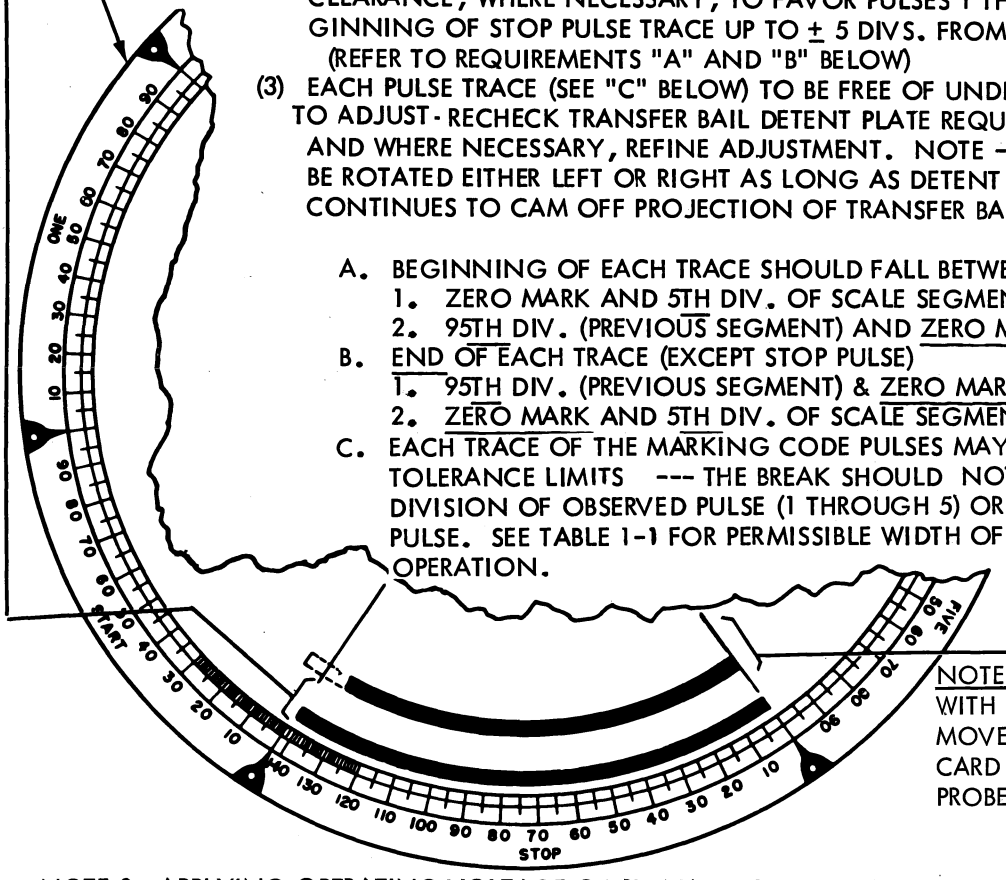
(2) NOMINAL LENGTH OF PULSES NO. 1, 2, 3, 4, & 5 IS 100 DIVISIONS.
TO ADJUST - RECHECK CONTACT CLEARANCE REQUIREMENT. REFINE CLEARANCE, WHERE NECESSARY, TO FAVOR PULSES 1 THRU 5 BY ORIENTING BEGINNING OF STOP PULSE TRACE UP TO ± 5 DIVS. FROM ZERO MARK OF SEGMENT (REFER TO REQUIREMENTS "A" AND "B" BELOW)

(3) EACH PULSE TRACE (SEE "C" BELOW) TO BE FREE OF UNDERSIRABLE BREAKS.
TO ADJUST - RECHECK TRANSFER BAIL DETENT PLATE REQUIREMENT AND WHERE NECESSARY, REFINE ADJUSTMENT. NOTE --- DETENT PLATE MAY BE ROTATED EITHER LEFT OR RIGHT AS LONG AS DETENT TOGGLE LATCH CONTINUES TO CAM OFF PROJECTION OF TRANSFER BAIL.

A. BEGINNING OF EACH TRACE SHOULD FALL BETWEEN
   1. ZERO MARK AND 5TH DIV. OF SCALE SEGMENT
   2. 95TH DIV. (PREVIOUS SEGMENT) AND ZERO MARK.
B. END OF EACH TRACE (EXCEPT STOP PULSE)
   1. 95TH DIV. (PREVIOUS SEGMENT) & ZERO MARK
   2. ZERO MARK AND 5TH DIV. OF SCALE SEGMENT.

SEE "R" & "Y" COMBINATION

C. 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 TABLE 1-1 FOR PERMISSIBLE WIDTH OF BREAK AT SPEED OF OPERATION.



NOTE 1: FOR UNITS EQUIPPED WITH SIGNAL REGENERATORS, REMOVE REGENERATOR CIRCUIT CARD BEFORE APPLYING TEST SET PROBES TO SIGNAL CONTACTS.

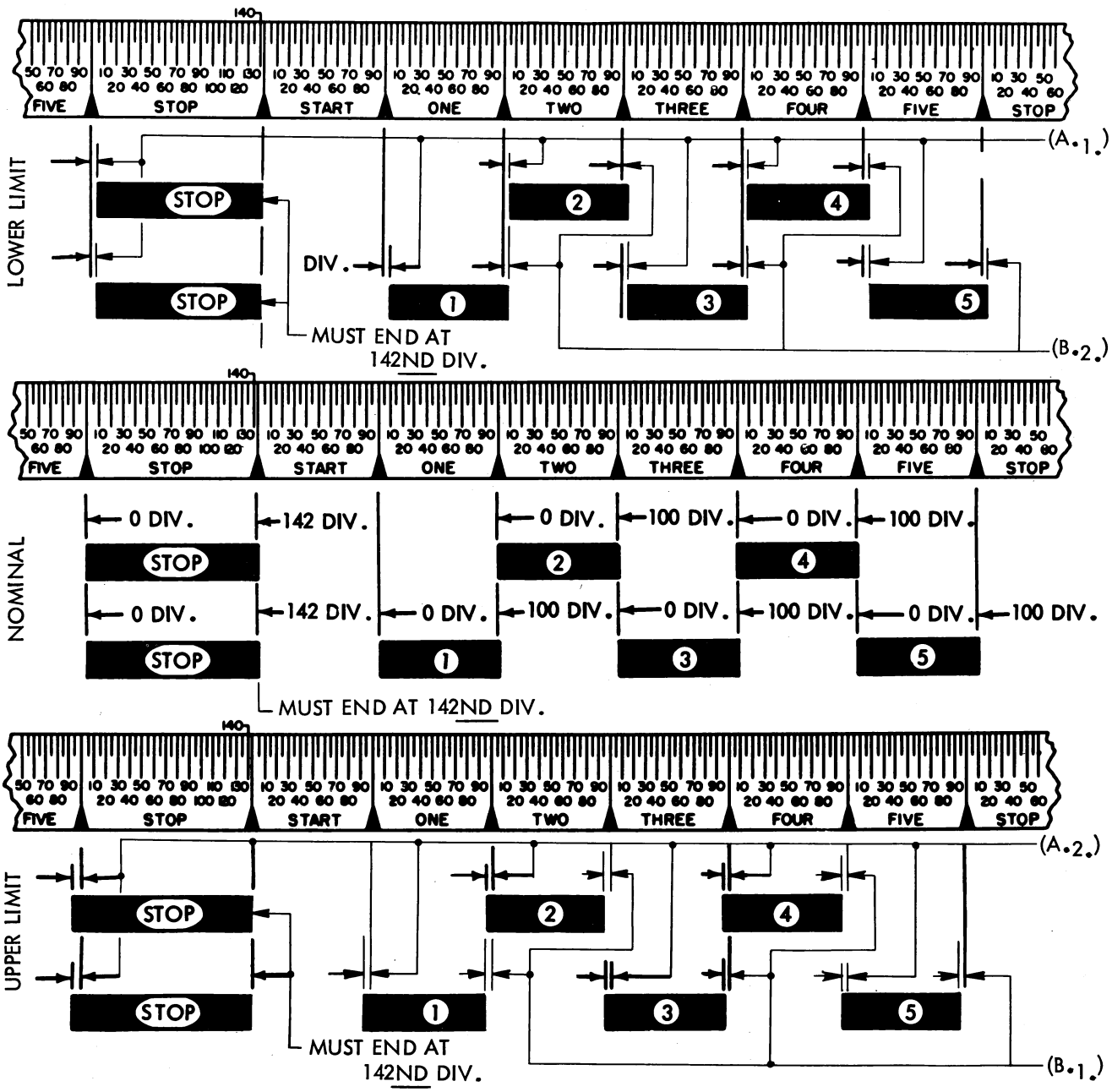
NOTE 2: APPLYING OPERATING VOLTAGE OF SIGNAL DISTORTION TEST SET DIRECTLY TO GOLD-PLATED SIGNAL CONTACTS MAY MAKE THEM UNSUITABLE FOR SPECIAL LOW-VOLTAGE APPLICATIONS. SEE PAR. 1.08 THRU 1.13 FOR SERVICING INSTRUCTIONS.

TABLE 1-1 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 DIVISIONS	MARKING PULSES (1 THROUGH 5 & STOP)
100 W.P.M.	600.00	2 DIVISIONS	MARKING PULSES (1 THROUGH 5 & STOP)

2.15 Signal Generator Mechanism continued

"R" AND "Y" COMBINATION



"R" AND "Y" COMBINATION

FOR UNITS WITH SPACING CONTACTS OF SIGNAL GENERATOR WIRED FOR POLAR OPERATION

REQUIREMENTS ---

(1) SPACING PULSES SHALL START NO EARLIER THAN 94TH DIV. OF PREVIOUS SEGMENT AND NO LATER THAN 6TH DIV. OF PULSE UNDER OBSERVATION.

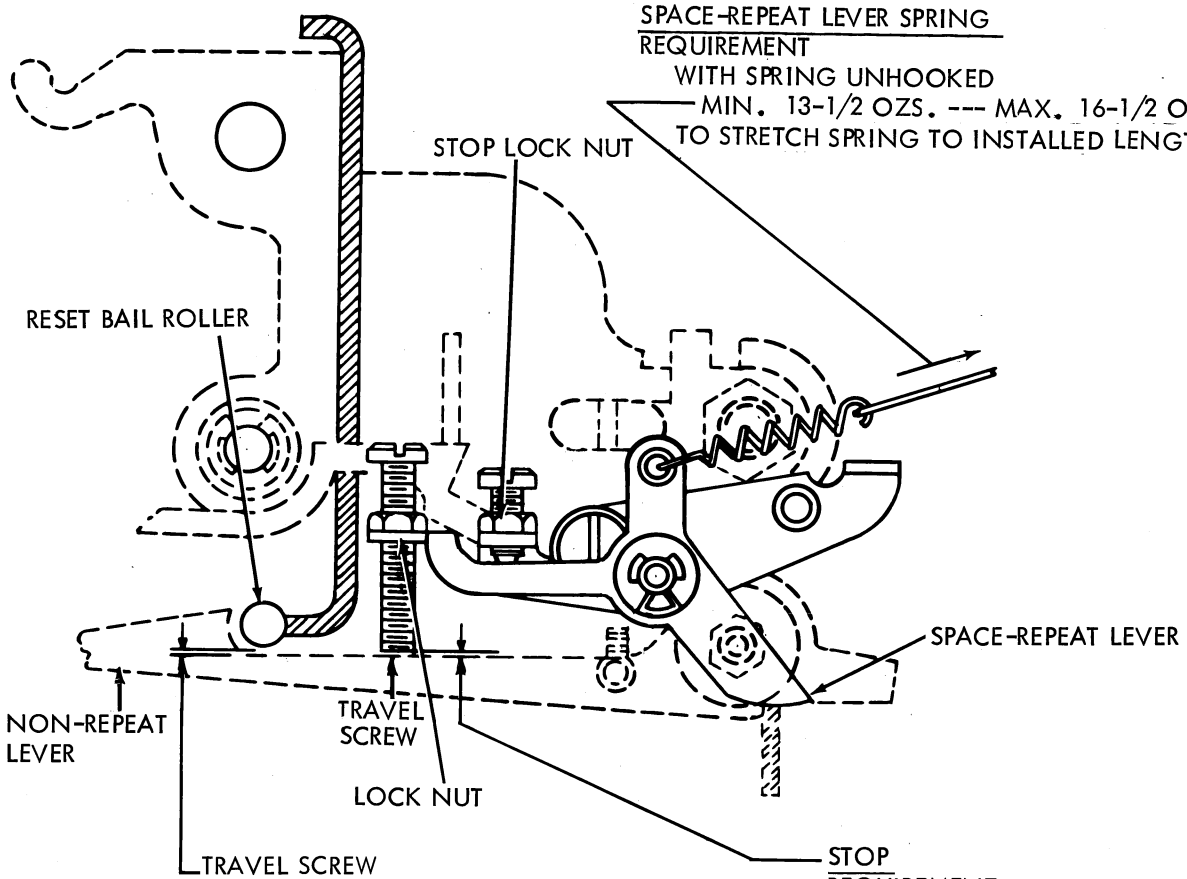
(2) TRACE OF SPACING PULSE SHALL END NO EARLIER THAN 94TH DIV. OF PULSE UNDER OBSERVATION AND END NO LATER THAN 6TH DIV. OF FOLLOWING PULSE.

(3) TRACE OF START PULSE SHALL BEGIN NO EARLIER THAN 136TH DIV. OF STOP SEGMENT AND NO LATER THAN 6TH DIV. OF START SEGMENT. START PULSE SHALL END NO EARLIER THAN 94TH DIV. OF START SEGMENT AND END NO LATER THAN 6TH DIV. OF NO. 1. SEGMENT.

(4) SPACING PULSE MAY HAVE A BREAK PROVIDED THE BREAK IS NOT OVER ONE DIVISION WIDE AND IT DOES NOT OCCUR PRIOR TO 95TH DIV. OF PULSE UNDER OBSERVATION.

2.16 Repeat-on-Space Mechanism (Latest Mechanism)

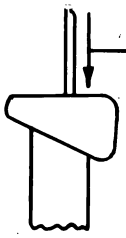
Note: For early mechanism see Par. 4.04.



TRAVEL SCREW
REQUIREMENT
WITH SPACE KEY FULLY DEPRESSED:
MIN. 0.035 INCH---MAX. 0.080 INCH
BETWEEN RESET BAIL ROLLER AND
NON-REPEAT LEVER.
TO ADJUST
WITH SPACE KEY FULLY DEPRESSED.
ADJUST TRAVEL SCREW BY LOOSENING
TRAVEL SCREW LOCK NUT. RECHECK
AFTER ADJUSTMENT.

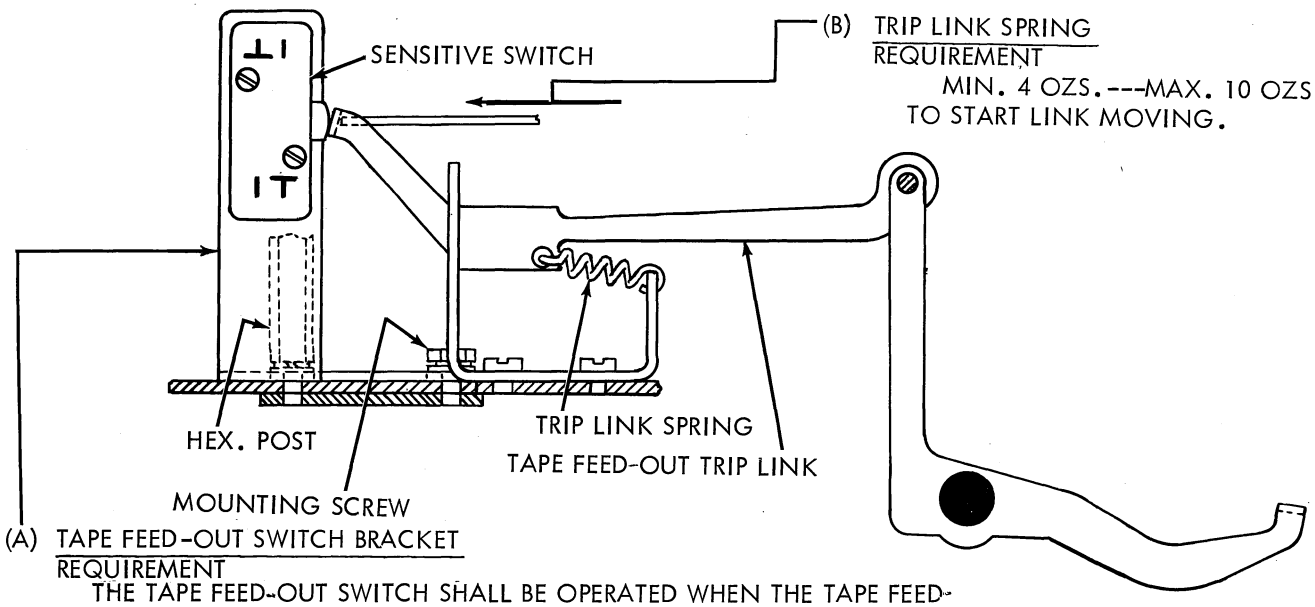
STOP
REQUIREMENT
MIN. 0.002 INCH---MAX. 0.020 INCH
BETWEEN SPACE-REPEAT LEVER AND
NON-REPEAT LEVER.
TO ADJUST
DEPRESS "G" KEYLEVER TO TRIP KEY-
BOARD CLUTCH. POSITION STOP BY
LOOSENING STOP LOCK NUT.
RECHECK AFTER ADJUSTMENT.

NOTE:
SPACE BAR TOUCH TO OBTAIN A
REPEAT IS AFFECTED BY THIS ADJUST-
MENT. TO GET A LIGHTER TOUCH,
ADJUST TO UPPER LIMIT. TO OBTAIN
A HEAVIER TOUCH ADJUST TO THE
LOWER LIMIT.



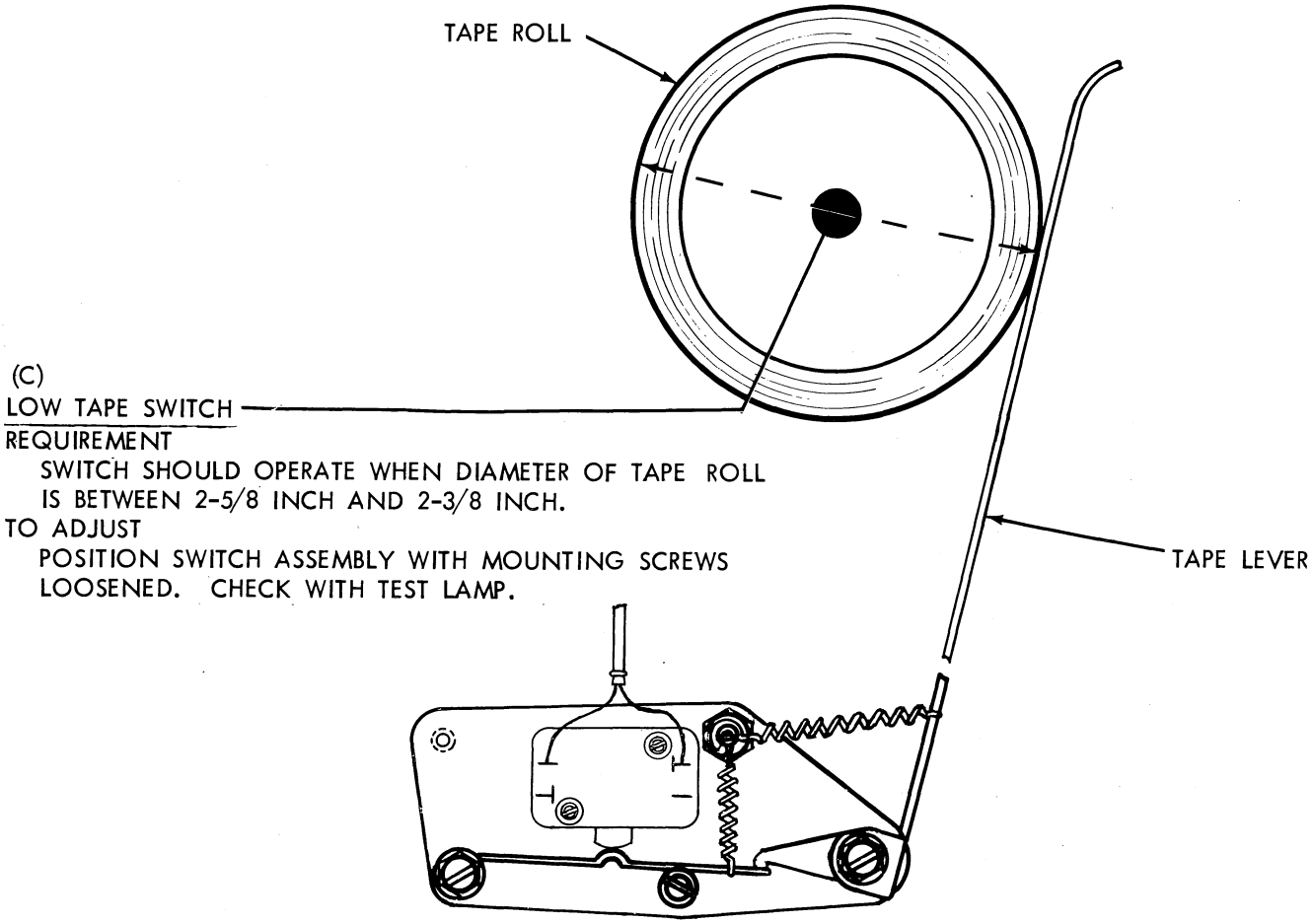
SPACE BAR
(1) REQUIREMENT (SINGLE SPACE)
NORMAL KEY TOP PRESSURE
TO TRANSMIT SINGLE SPACE
(2) REQUIREMENT (REPEAT SPACE)
SPACE BAR FULLY DEPRESSED AND
HELD DOWN TO EFFECT CONTINUOUS
SPACE TRANSMISSION.

2.17 Tape Feed-Out and Low Tape Mechanisms



REQUIREMENT
THE TAPE FEED-OUT SWITCH SHALL BE OPERATED WHEN THE TAPE FEED-OUT KEY IS DEPRESSED.

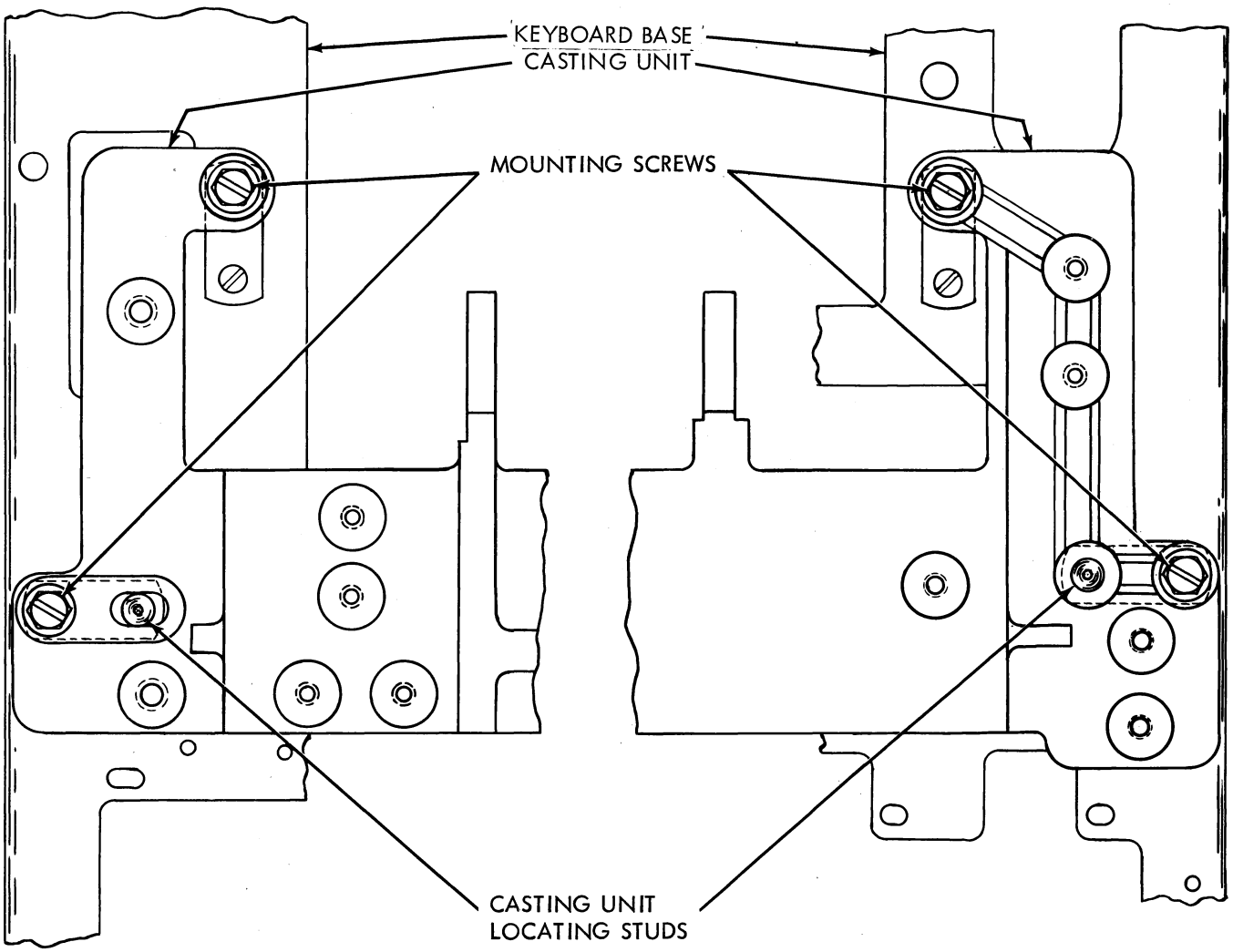
TO ADJUST
POSITION THE TAPE FEED-OUT SWITCH BRACKET WITH THE MOUNTING SCREW AND THE HEXAGONAL POST FRICTION TIGHT.



REQUIREMENT
SWITCH SHOULD OPERATE WHEN DIAMETER OF TAPE ROLL IS BETWEEN 2-5/8 INCH AND 2-3/8 INCH.

TO ADJUST
POSITION SWITCH ASSEMBLY WITH MOUNTING SCREWS LOOSENED. CHECK WITH TEST LAMP.

2.18 Base and Casting Assembly



CASTING ASSEMBLY TO KEYBOARD BASE

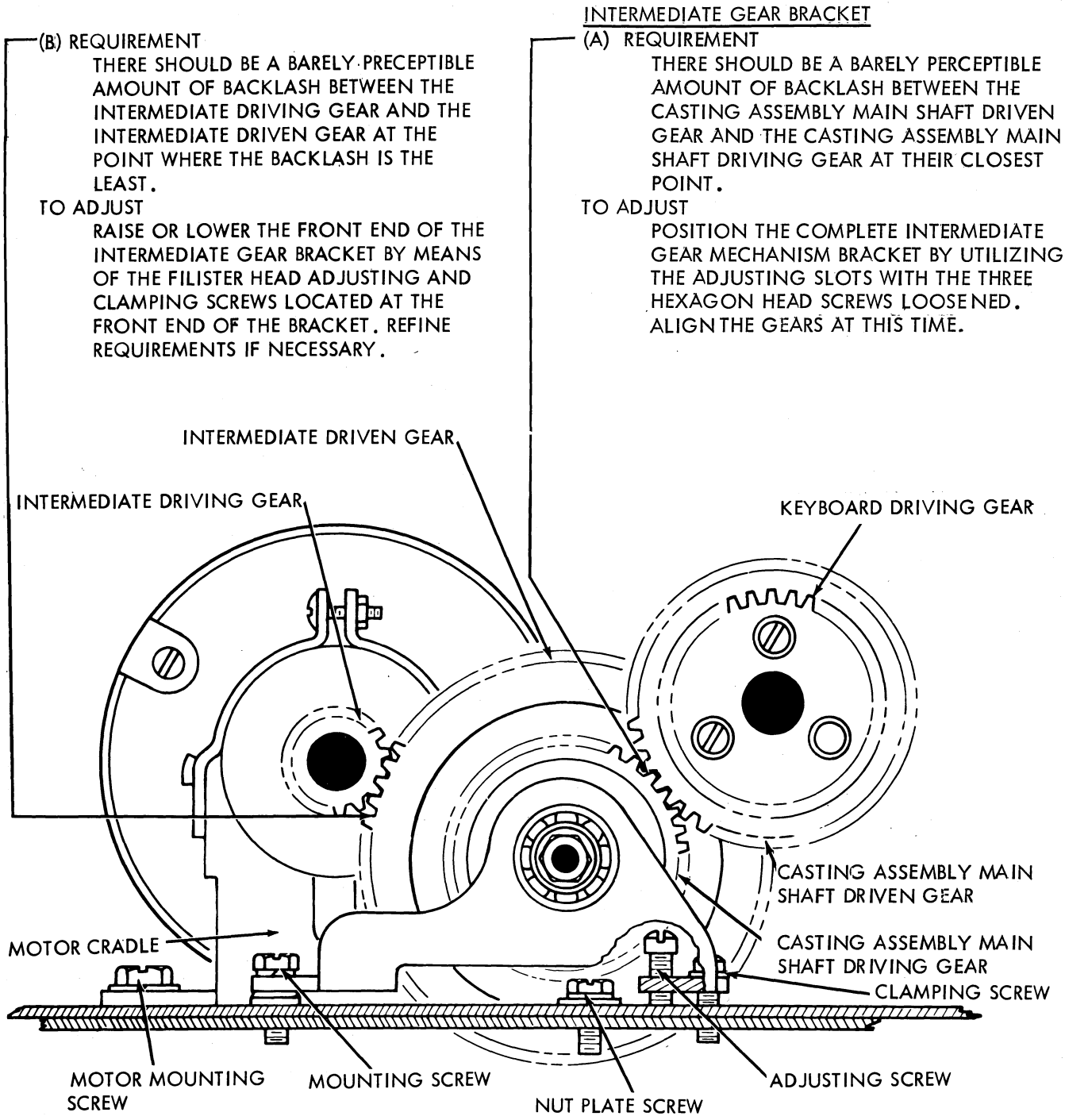
REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE CASTING ASSEMBLY MAIN SHAFT DRIVEN GEAR AND ITS DRIVING GEAR AT THE POINT WHERE THE BACKLASH IS 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.

2.19 Intermediate Gear Mechanism

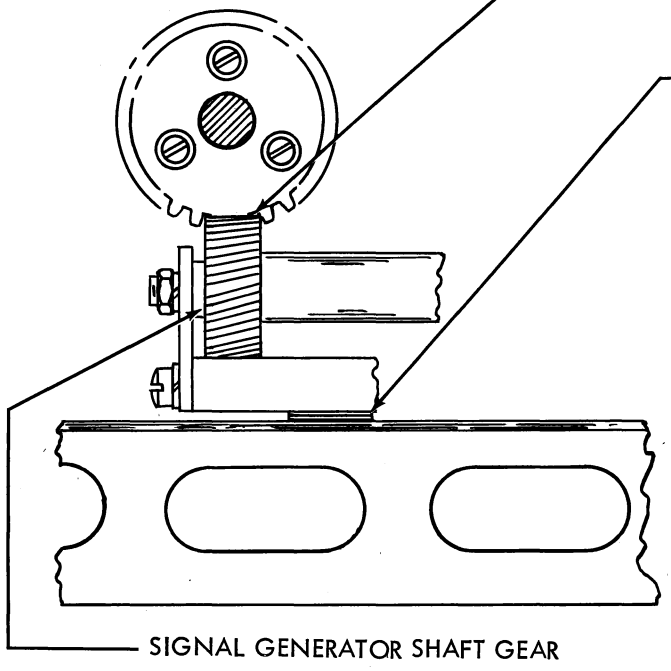


2.20 Signal Generator and Typing Reperforator Gear Mechanisms

(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.

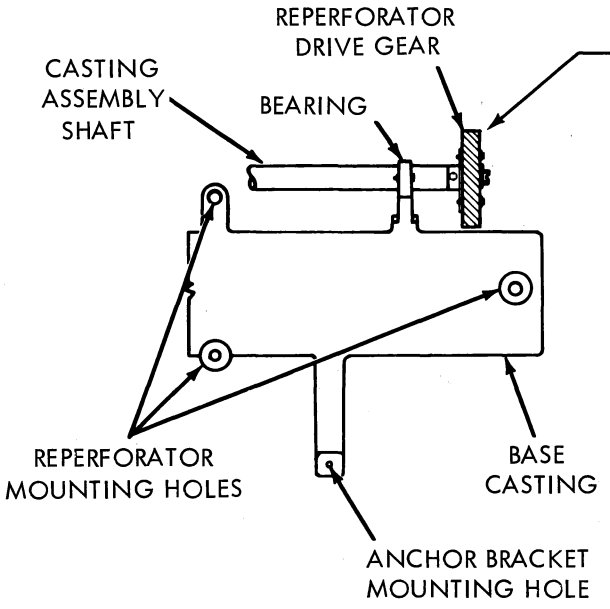
TO ADJUST
REMOVE THE SIGNAL GENERATOR AND ADD OR SUBTRACT SHIMS AT THE REAR GENERATOR MOUNT TO OBTAIN THE PROPER CLEARANCE.



(B) TYPING REPERFORATOR SHAFT GEAR MESH

REQUIREMENT
CENTER THE GEAR ON THE TYPING REPERFORATOR MAIN SHAFT WITH THE GEAR ON THE CASTING ASSEMBLY SHAFT.

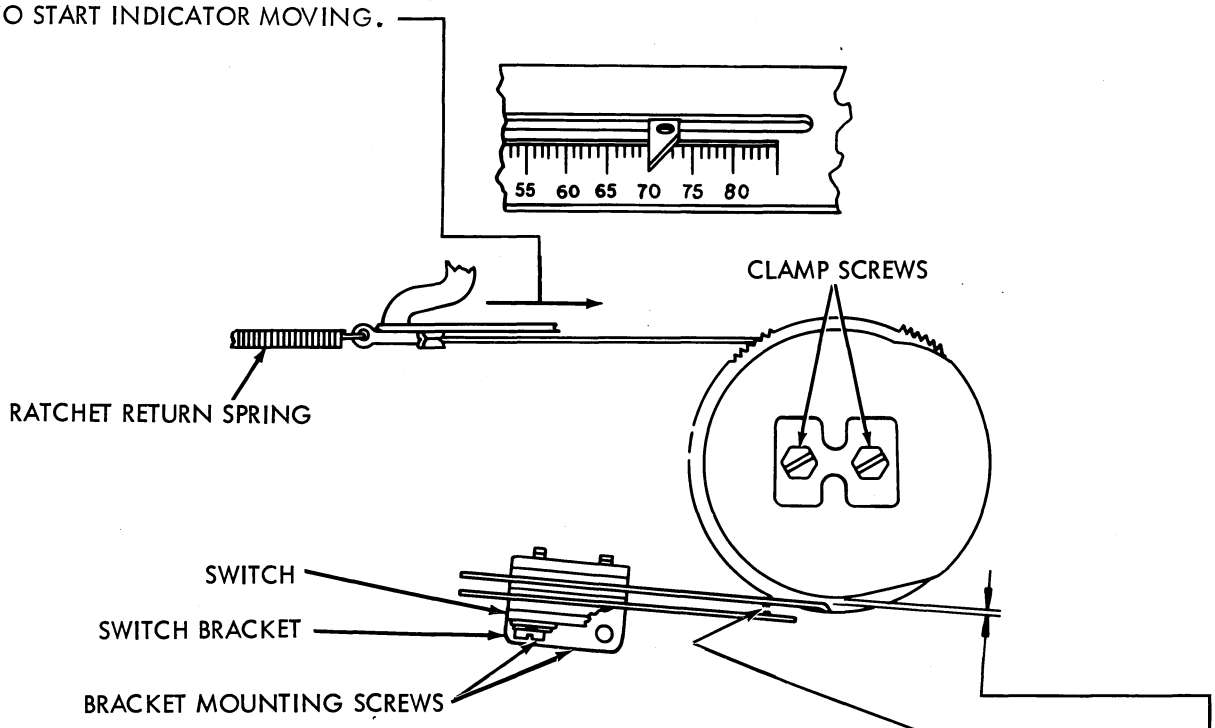
TO ADJUST
POSITION THE TYPING REPERFORATOR IN ITS OVER SIZE MOUNTING HOLES WITH ITS MOUNTING SCREWS LOOSENED AND ADJUST HUB ON REPERFORATOR.



2.21 Character Counter Mechanism (Later Design)

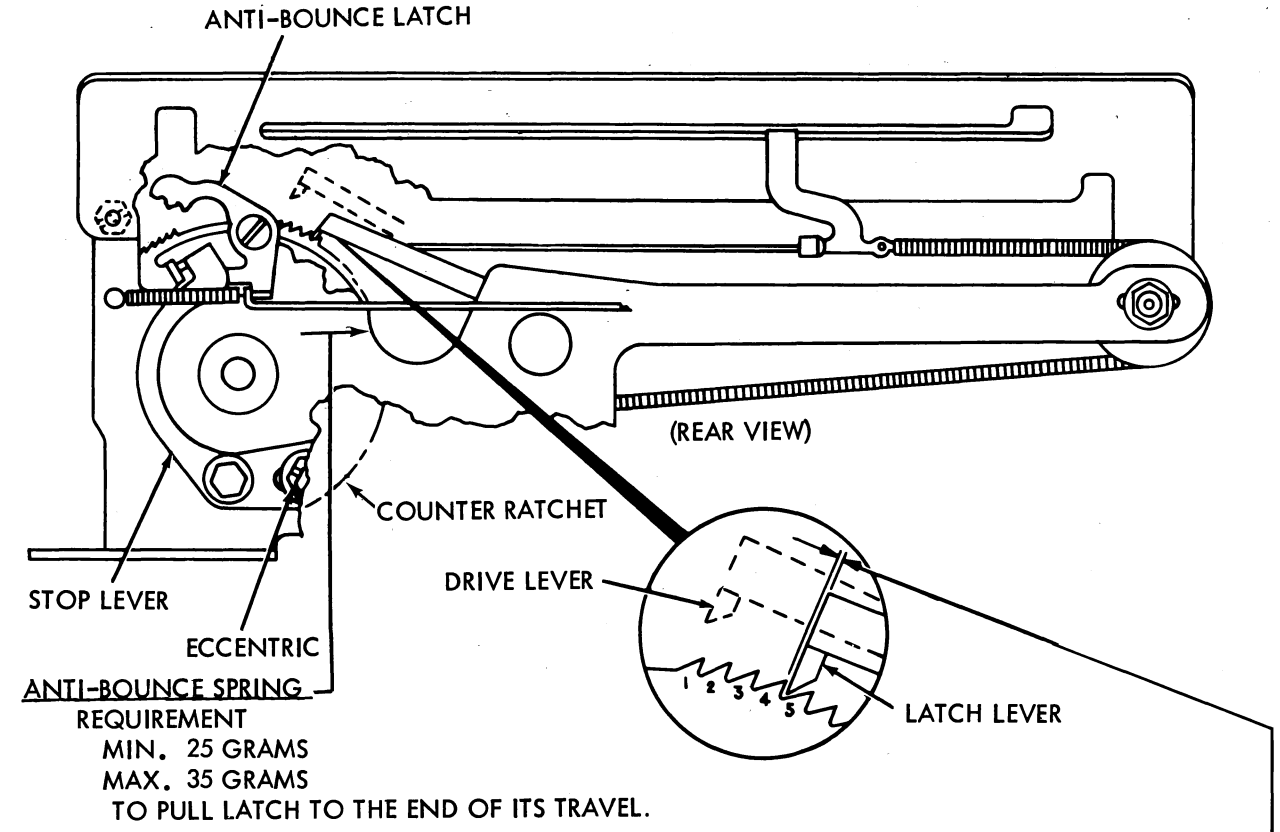
Note: For early design see Par. 4.01.

RATCHET DRUM ASSEMBLY RETURN SPRING
REQUIREMENT
(1) WHEN INDICATOR POINTS TO 35 ON THE SCALE.
MIN. 1/2 OZS. --- MAX. 1-1/2 OZS.
TO START INDICATOR MOVING.
(2) WHEN INDICATOR POINTS TO 70 ON THE SCALE.
MIN. 1-1/2 OZS. --- MAX. 2-1/2 OZS.
TO START INDICATOR MOVING.

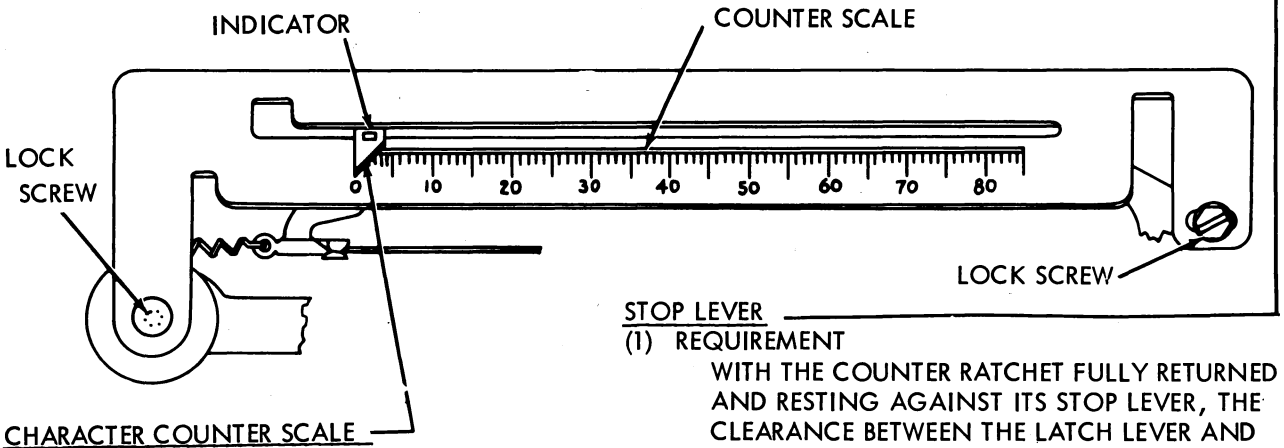


CHARACTER COUNTER END-OF-LINE SWITCH
(1) REQUIREMENT
THE END-OF-LINE SWITCH SHOULD CLOSE AT A PRESET NUMBER OF CHARACTERS.
(2) BEFORE INSTALLING COUNTER ON KEYBOARD, TIGHTEN CLAMP SCREWS AND SWITCH BRACKET MOUNTING SCREWS FRICTION TIGHT. WITH SWITCH LEAF SPRINGS APPROXIMATELY PARALLEL TO SWITCH MOUNTING BRACKET (GAGE BY EYE)
MIN. 0.005 INCH --- MAX. 0.020 INCH
BETWEEN LEAF SPRING SWITCH CONTACTS.
TO ADJUST
(1) BEND LOWER LEAF SPRING.
(2) POSITION SWITCH BRACKET UNTIL UPPER SWITCH LEAF SPRING CLEARS THE LOW PART OF THE CAM BY
MIN. SOME --- MAX. 0.025 INCH
CHECK CLOSEST POINT AND TIGHTEN MOUNTING SCREWS. SET INDICATOR TO COUNT DESIRED, AND ADJUST CAM UNTIL SWITCH JUST CLOSES. TIGHTEN CLAMP SCREWS.
TO CHECK
MOVE RATCHET DRUM UNTIL INDICATOR TRAVERSES THE ENTIRE SCALE. THE SWITCH SHOULD CLOSE ON DESIRED COUNT, WITH A SMALL AMOUNT OF OVERTRAVEL OF BOTH BLADES. IT MAY BE NECESSARY TO REFINE ABOVE ADJUSTMENTS WHEN OPERATING ON THE EXTREME ENDS OF 65 TO 80 CHARACTER RANGE.

2.22 Character Counter Mechanism continued



ANTI-BOUNCE 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 LATCH LEVER AND THE FACE OF THE 4TH RATCHET TOOTH SHOULD BE
MIN. 0.002 INCH
MAX. 0.010 INCH

(2) REQUIREMENT
THE ANTI-BOUNCE 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.

2.23 Character Counter Mechanism continued

(A) CHARACTER COUNTER STROKE

REQUIREMENT

WHEN CHARACTER AND REPEAT KEYS ARE DEPRESSED, THE COUNTER SHOULD OPERATE CONSISTENTLY.

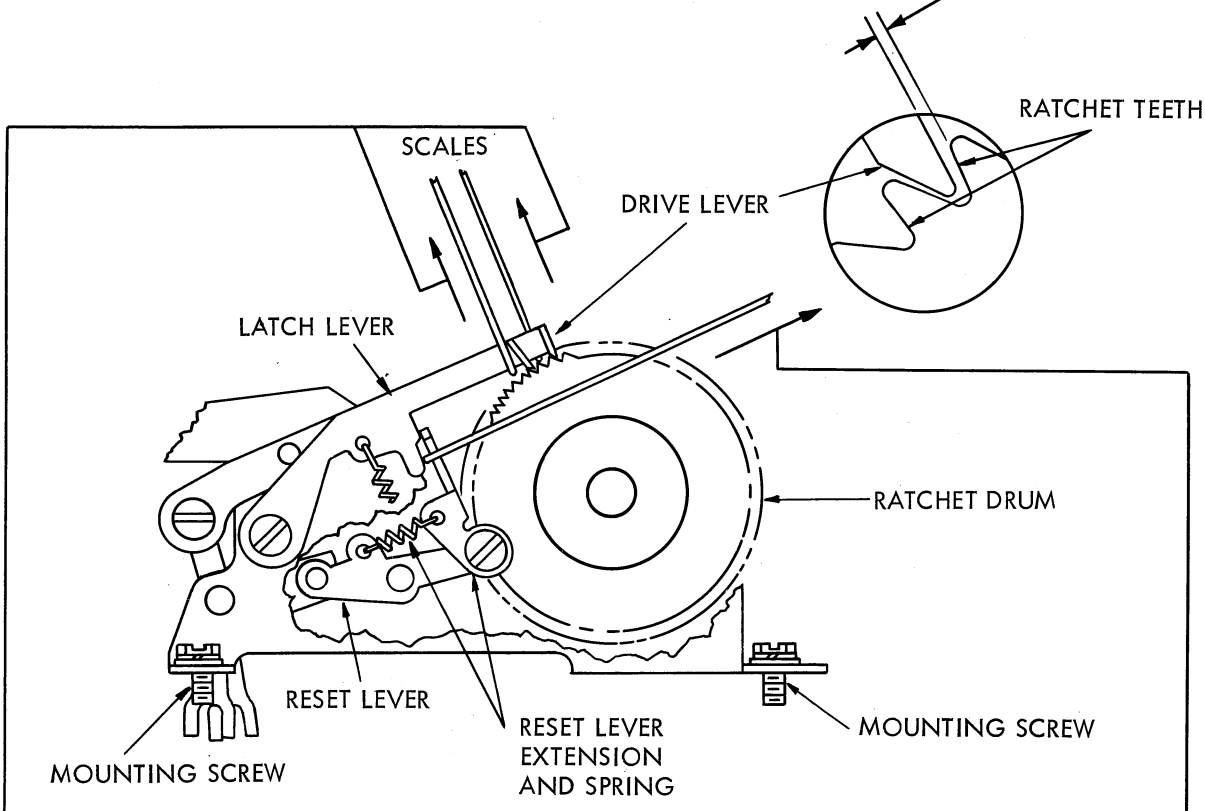
WHEN CARRIAGE RETURN KEY IS DEPRESSED, THE COUNTER SHOULD RESET WITHOUT BINDING. THE COUNTER MECHANISM SHOULD COUNT THE FIRST CHARACTER ON A RESTART AFTER RESET CONDITION.

MIN. 0.006 INCH
MAX. 0.015 INCH

BETWEEN DRIVE LEVER AND RATCHET TOOTH, WHEN COUNTER IS SET NEAR MID-POINT 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.



(C) LATCH LEVER AND DRIVE SPRING

REQUIREMENT

MIN. 1/2 OZ.
MAX. 1 OZ.
TO MOVE EITHER LEVER.

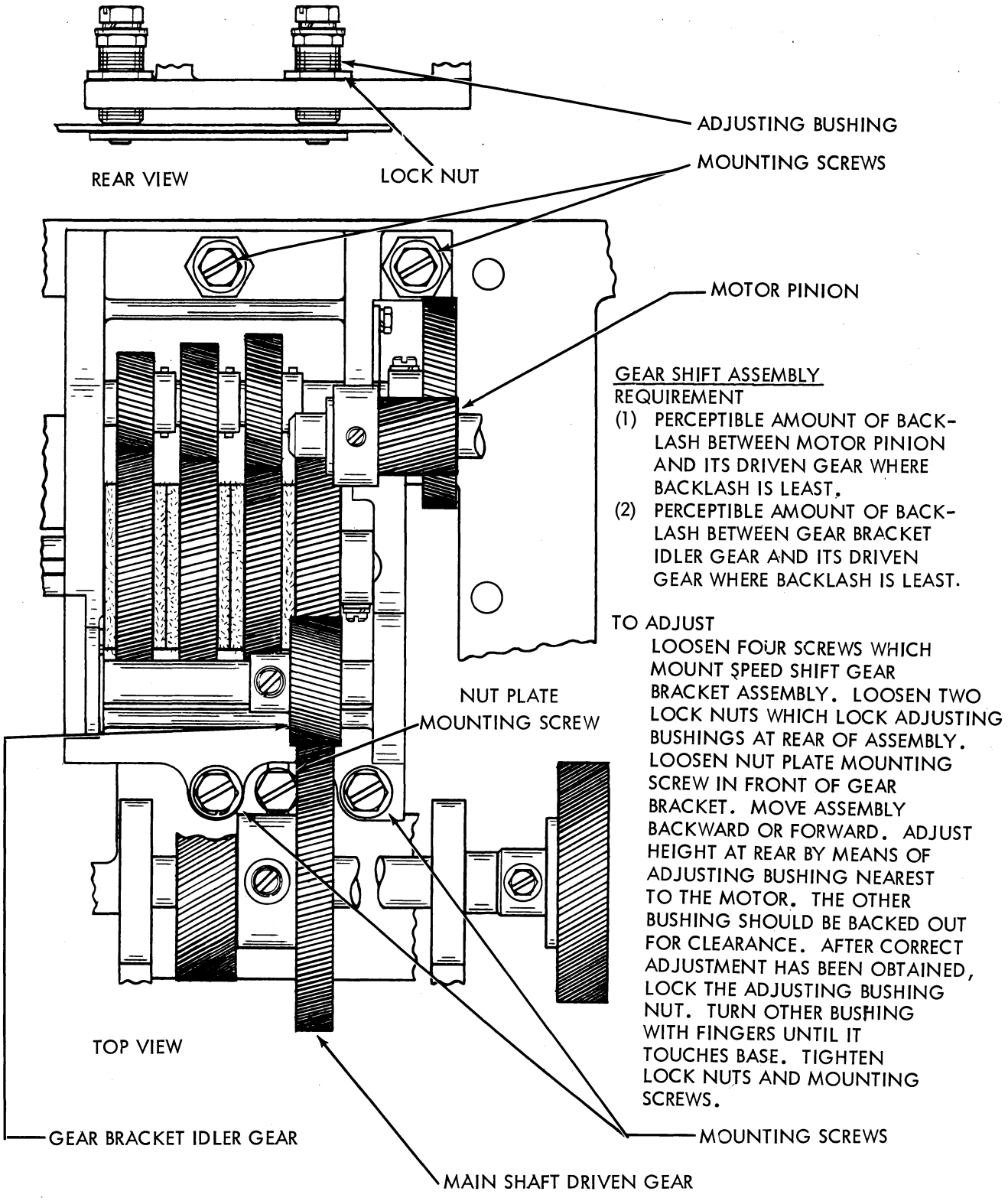
(B) RESET LEVER EXTENSION SPRING

REQUIREMENT

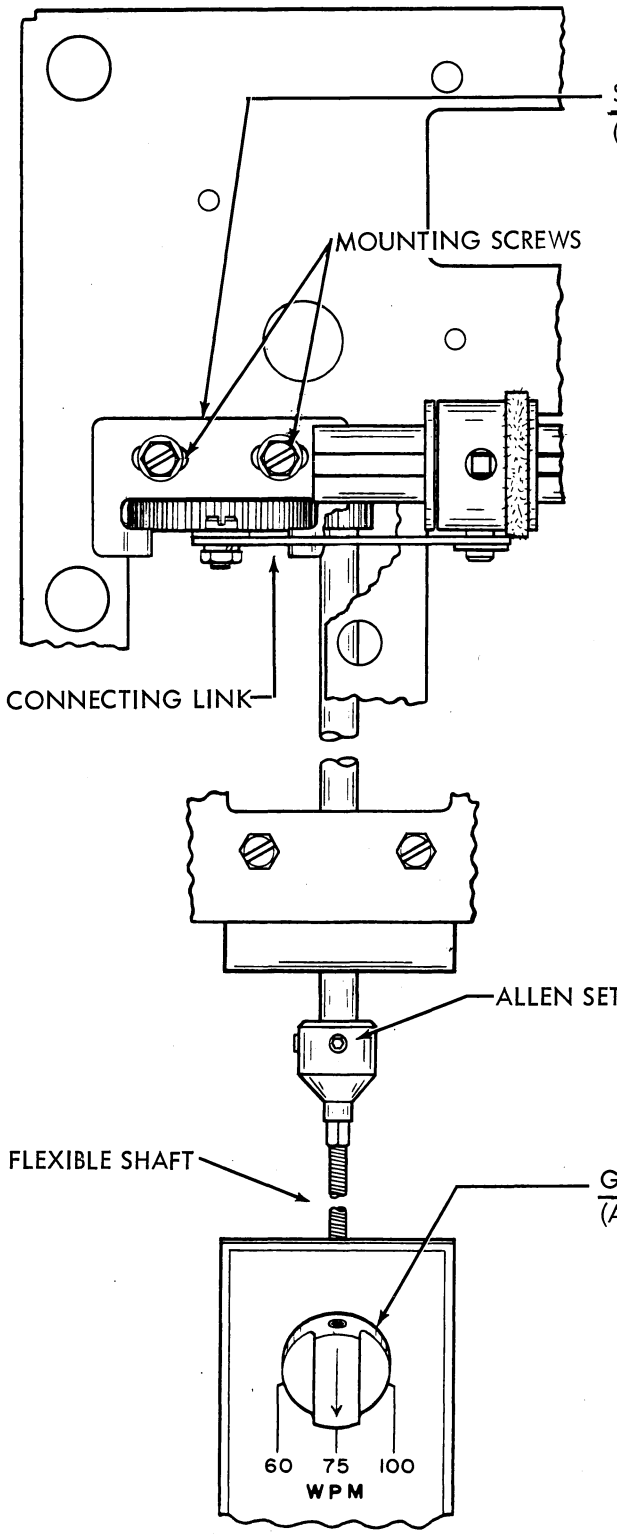
WITH CODE BARS IN LATCHED POSITION.
MIN. 1/2 OZS. --- MAX. 1-1/4 OZS.
TO START LEVER MOVING.

2.24 Tape Printer Keyboard

Note: The following adjustments, plus applicable 28 typing reperforator keyboard adjustments, are required to adjust the 28 tape printer keyboard.



2.25 Tape Printer Keyboard continued



STOP AND REAR SHAFT MOUNTING BRACKET

(B) REQUIREMENT

(1) SPEED SHIFT KNOB POINTING TO 60 AND 100 WPM MARKS WHEN GEAR IS ADJUSTED TO THESE POSITIONS WITH ANY OVER-TRAVEL APPROXIMATELY EQUAL.

(2) REAR SHAFT MOUNTING BRACKET POSITIONED SO THAT LINK IS PARALLEL TO FLANGED SLEEVE AND BEARING ASSEMBLY.

TO ADJUST

LOOSEN TWO SCREWS WHICH MOUNT STOP AND REAR SHAFT MOUNTING BRACKET. POSITION BRACKET SIDEWAYS FOR REQUIREMENT 1 AND BACKWARD OR FORWARD FOR REQUIREMENT 2.

GEAR SHIFT KNOB

(A) REQUIREMENT

WITH GEAR SHIFT SET AT 75 WPM, POINTER ON KNOB SHOULD POINT TO 75 WPM MARK WITH ANY PLAY BEING EQUAL ON EITHER SIDE OF MARK.

TO ADJUST

LOOSEN TWO ALLEN SET SCREWS WHICH FASTEN FLEXIBLE SHAFT. POSITION FLEXIBLE SHAFT UNTIL REQUIREMENT IS MET.

2.26 Tape Printer Keyboard continued

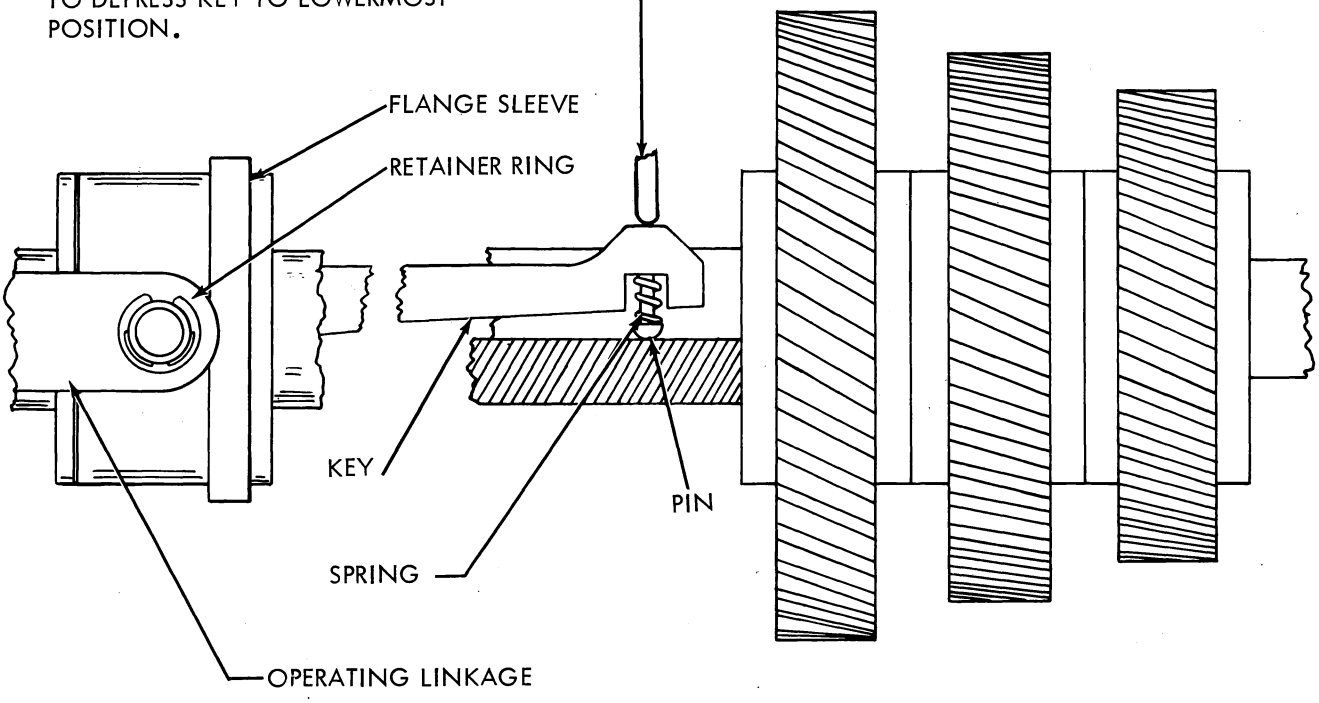
GEAR SHIFT KEY SPRING

TO CHECK

DISCONNECT OPERATING LINKAGE FROM FLANGE SLEEVE BY REMOVING RETAINER RING . MOVE SPRING OUT FROM UNDER GEARS. CAUTION: PULL KEY TO LEFT SLOWLY. WHEN HEAD OF SPRING PIN BEGINS TO EMERGE HOLD IT IN PLACE UNTIL COMPLETELY OUT. OTHERWISE PIN AND SPRING WILL FLY WITH DANGER OF LOSS.

REQUIREMENT

MIN. 25 OZS. --- MAX. 40 OZS. TO DEPRESS KEY TO LOWERMOST POSITION.



3. VARIABLE FEATURES

3.01 Power Backspace Mechanism

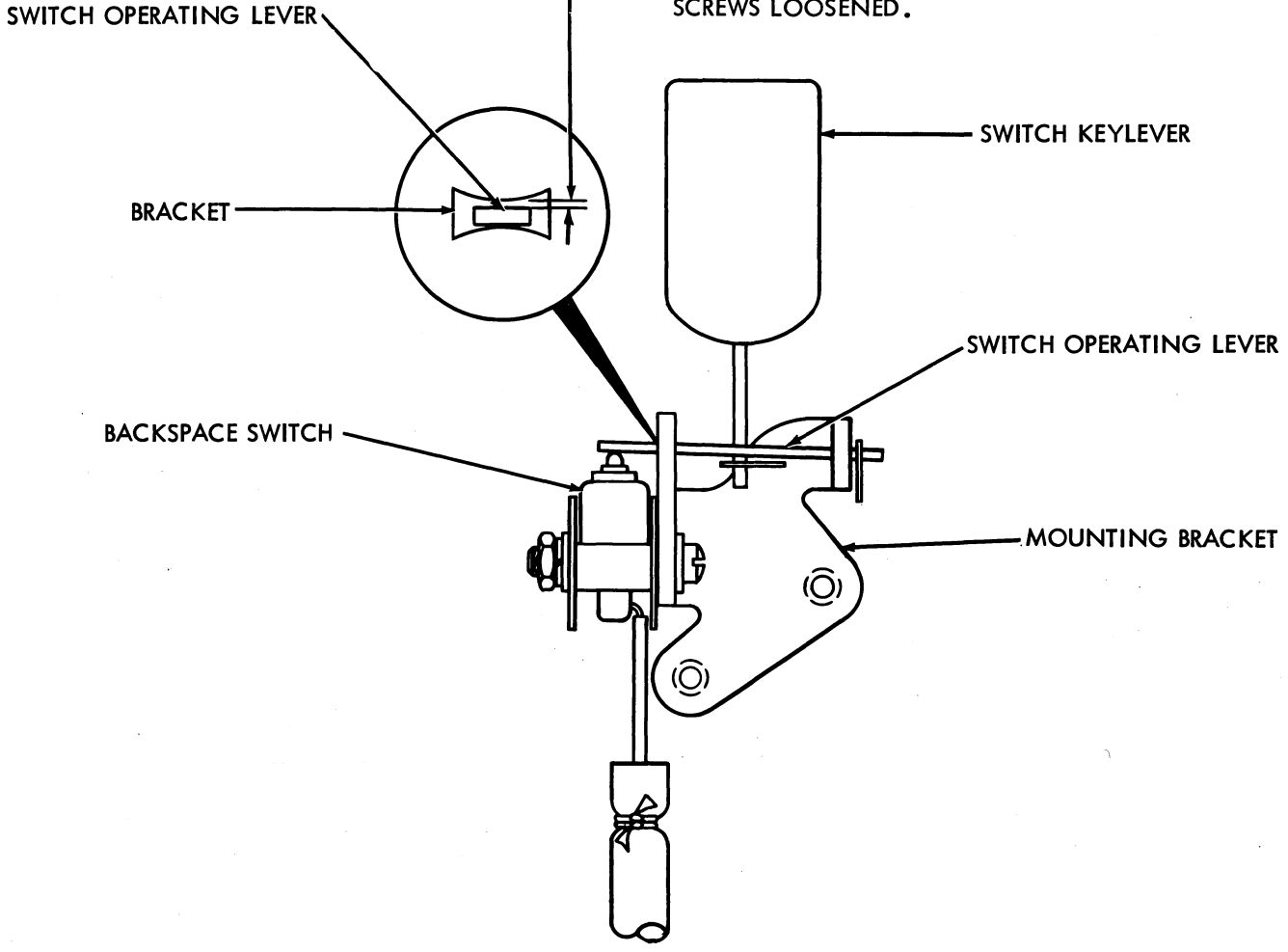
POWER BACKSPACE SWITCH POSITION

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) REQUIREMENT
WITH SWITCH OPERATING LEVER HELD PARALLEL TO THE TOP OF ITS MOUNTING BRACKET AND DEPRESSED TO LIMIT OF ITS TRAVEL, THE SWITCH SHALL BE OPERATED.

(2) REQUIREMENT
WITH SWITCH IN UNOPERATED CONDITION AND OPERATING LEVER HELD PARALLEL TO TOP OF ITS MOUNTING BRACKET, THERE SHOULD BE SOME CLEARANCE BETWEEN THE OPERATING LEVER AND TOP OF THE CURVED SLOT IN THE BRACKET.

TO ADJUST
POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED.



3.02 Synchronous Pulse Mechanism

(A) MOUNTING BRACKET

TO CHECK

WITH MAGNET NOT ATTRACTED AND CLUTCH TRIP BAR IN FURTHEST LEFT POSITION.

REQUIREMENT

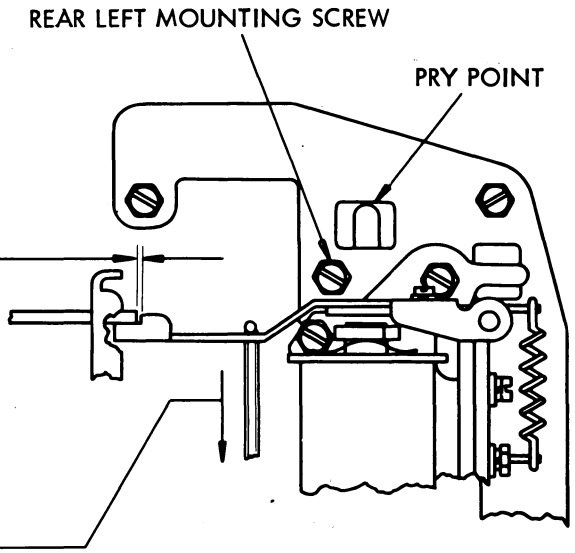
MIN. 0.005 INCH --- MAX. 0.015 INCH BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

TO ADJUST

POSITION MOUNTING BRACKET WITH THREE MOUNTING SCREWS LOOSE BY MEANS OF PRY POINT.

NOTE:

TIGHTEN REAR LEFT MOUNTING SCREW AND MAKE MOUNTING BRACKET ADJUSTMENT



(D) MAGNET ARMATURE

TO CHECK

CLUTCH TRIP BAR IN EXTREME LEFT POSITION. HOOK 32 OZ. SCALE TO ARMATURE LEVER AS SHOWN. MEASURE AT RIGHT ANGLE TO ARMATURE LEVER AS INDICATED.

REQUIREMENT

MIN. 3 OZS. --- MAX. 5 OZS. TO PULL ARMATURE LEVER FROM CLUTCH TRIP BAR.

(B) MOUNTING BRACKET

TO CHECK

WITH ARMATURE LEVER HELD AGAINST MAGNET POLE FACE AND CLUTCH TRIP BAR IN FURTHEST RIGHT POSITION.

REQUIREMENT

MIN. 0.005 INCH --- MAX. 0.015 INCH BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

TO ADJUST

WITH RIGHT REAR AND LEFT FRONT MOUNTING BRACKET SCREWS LOOSE POSITION MOUNTING BRACKET BY MEANS OF PRY POINT.

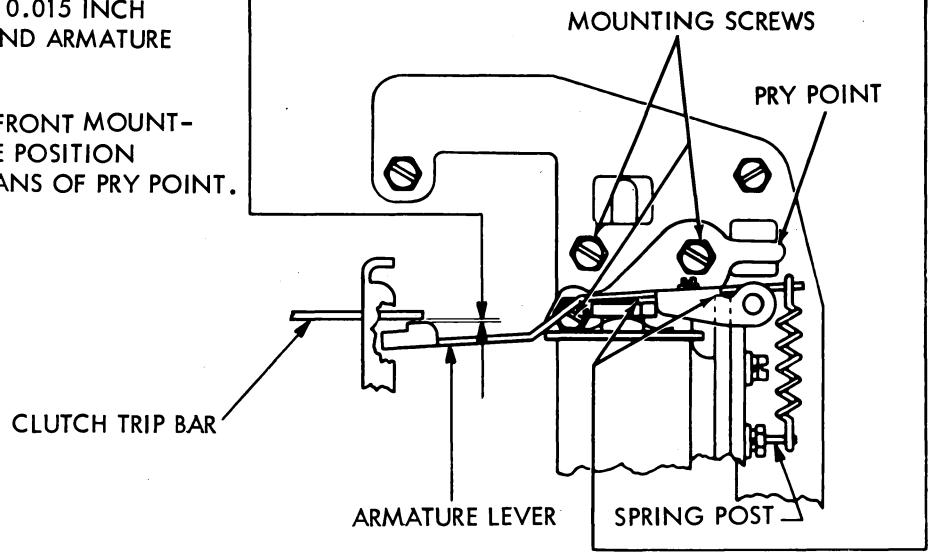
(C) ARMATURE HINGE

REQUIREMENT

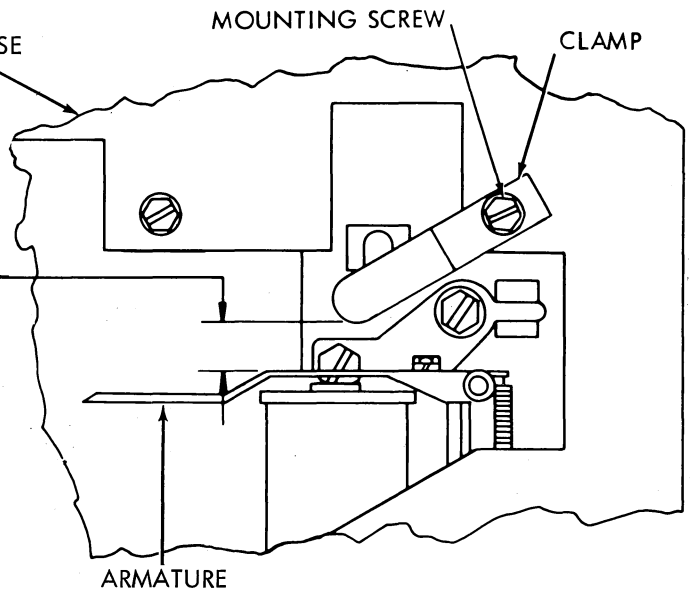
WITH ARMATURE IN ATTRACTED POSITION ARMATURE FLUSH WITH POLE FACE AND MAGNET BRACKET EXTENSION.

TO ADJUST

POSITION ARMATURE WITH HINGE BRACKET MOUNTING SCREW AND SPRING POST LOOSE.

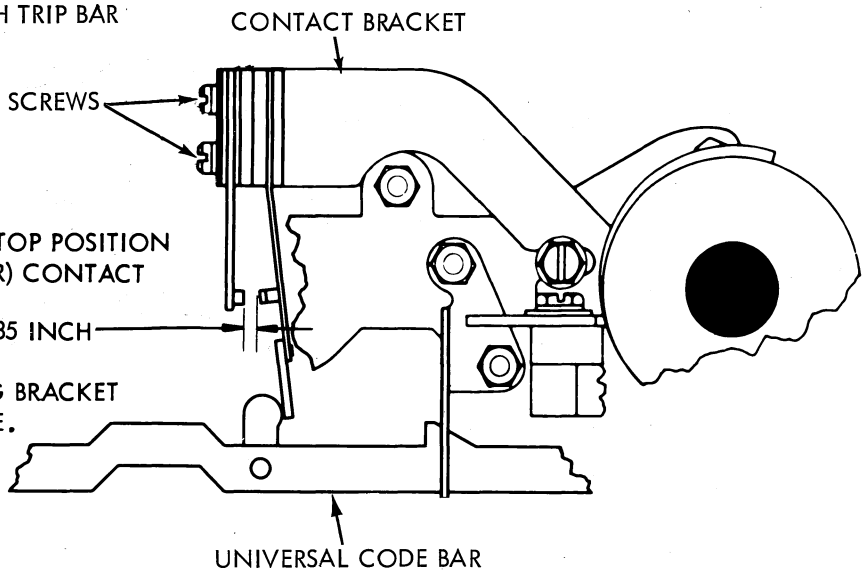


3.03 Synchronous Pulse Mechanism continued

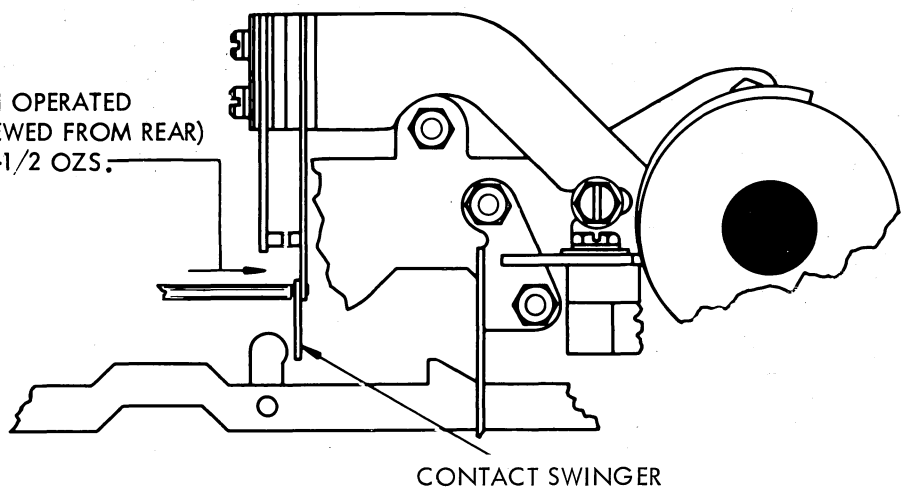


ARMATURE CLAMP
REQUIREMENT
WITH ARMATURE OPERATED, CLEARANCE BETWEEN ARMATURE CLAMP AND ARMATURE APPROX. 3/8 INCH
TO ADJUST
POSITION CLAMP WITH ITS MOUNTING SCREW LOOSENED.

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 INCH TO 0.015 INCH CLEARANCE BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.



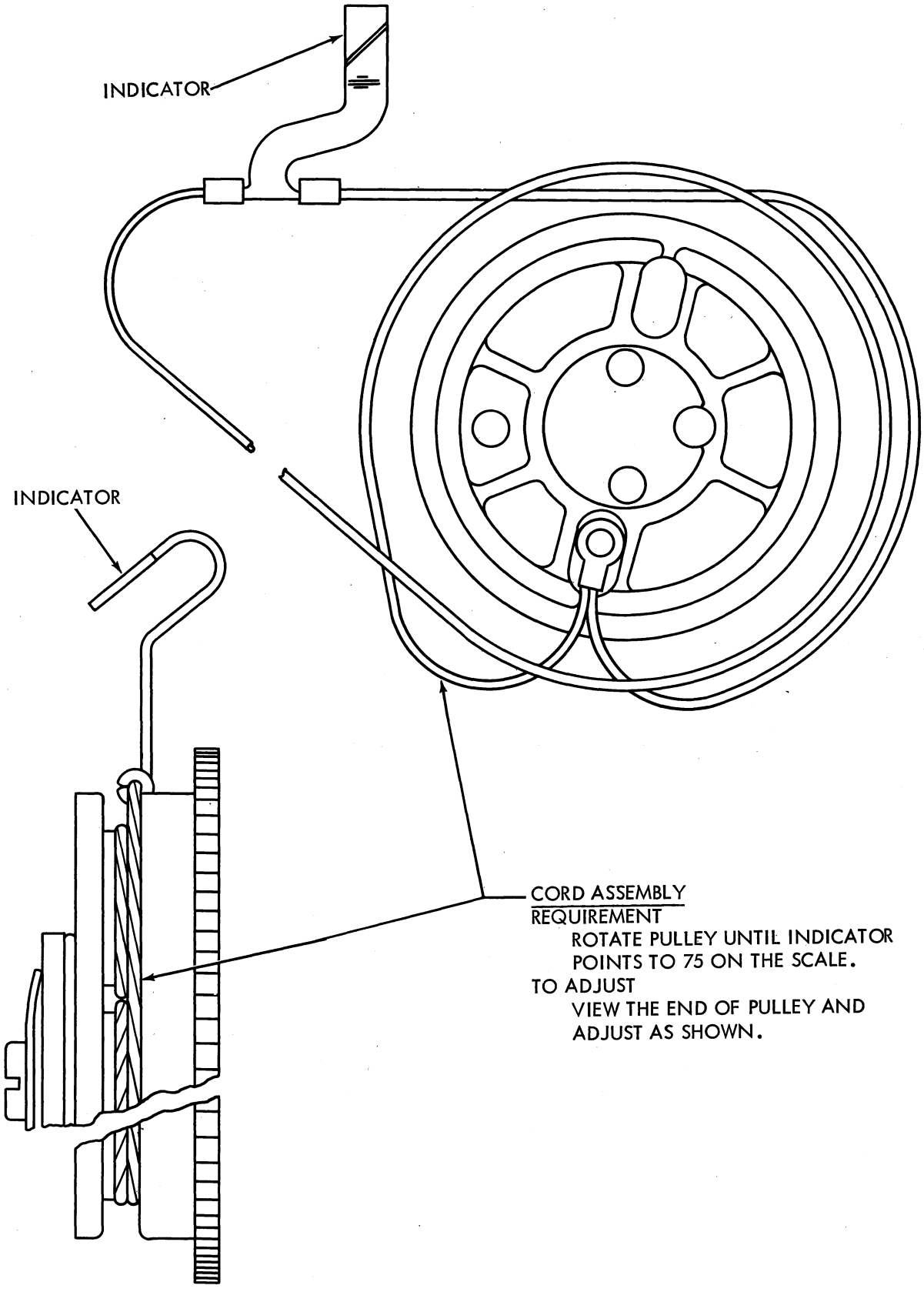
CONTACT GAP
REQUIREMENT
WITH UNIVERSAL CODE BAR IN STOP POSITION (TO RIGHT AS VIEWED FROM REAR) CONTACT GAP SHOULD BE
MIN. 0.020 INCH --- MAX. 0.035 INCH
TO ADJUST
POSITION CONTACT MOUNTING BRACKET WITH MOUNTING SCREWS LOOSE.



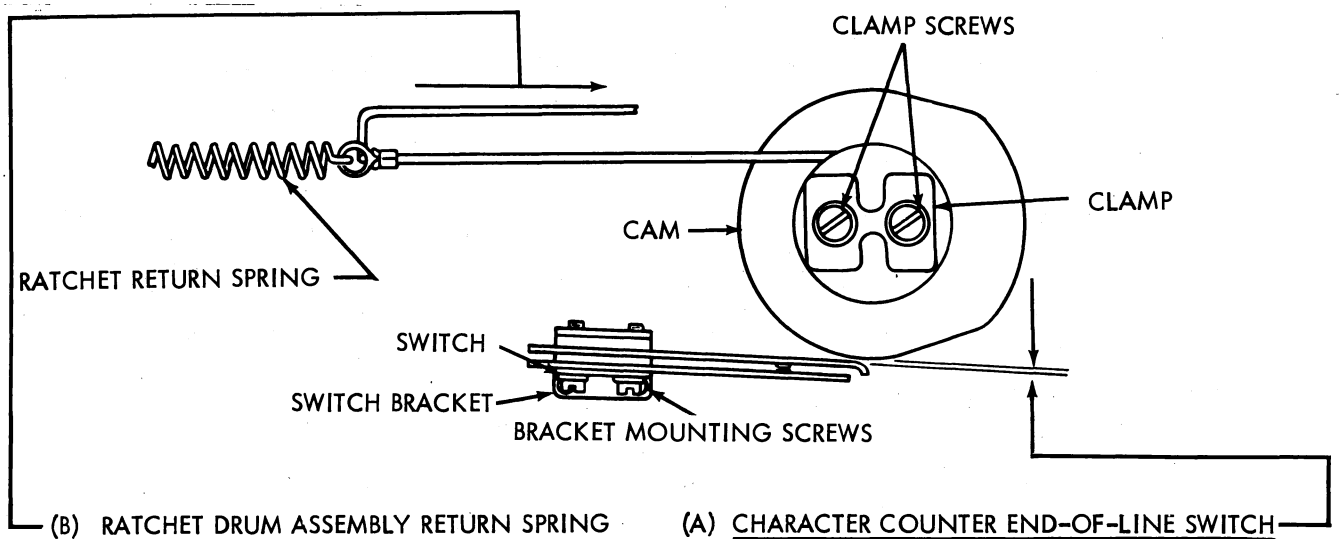
UNIVERSAL CODE BAR CONTACT
REQUIREMENT
WITH UNIVERSAL CODE BAR IN OPERATED POSITION (TO THE LEFT AS VIEWED FROM REAR)
MIN. 3-1/2 OZS. --- MAX. 4-1/2 OZS.
TO OPEN CONTACTS.
TO ADJUST
BEND CONTACT SWINGER.

4. EARLIER DESIGN MECHANISMS

4.01 Character Counter Mechanism (For later design see Par. 2.21.)



4.02 Character Counter Mechanism continued

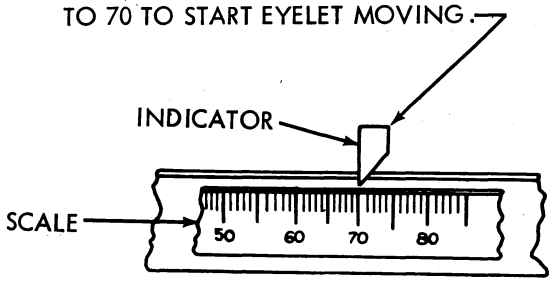


(B) RATCHET DRUM ASSEMBLY RETURN SPRING

REQUIREMENT

1-1/2 TO 2-1/2 OZS. WHEN INDICATOR POINTS TO 0 TO START EYELET MOVING.

3-1/2 TO 6-1/2 OZS. WHEN INDICATOR POINTS TO 70 TO START EYELET MOVING.



(A) CHARACTER COUNTER END-OF-LINE SWITCH

(1) REQUIREMENT (REMOVE CHARACTER COUNTER)

THE SWITCH SHOULD CLOSE AT A PRESET NUMBER OF CHARACTERS WITH A SMALL AMOUNT OF OVERTRAVEL BY BOTH CONTACT SPRINGS.

(2) REQUIREMENT

CLEARANCE BETWEEN LONG CONTACT SPRING AND LOW PART OF CAM.
MIN. 0.012 - MAX. 0.025 INCH

TO ADJUST

POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED. THEN SET COUNTER TO THE DESIRED COUNT. LOOSEN CAM CLAMP SCREWS AND POSITION CAM UNTIL CONTACTS CLOSE WITH SOME OVERTRAVEL. REPLACE UNIT.

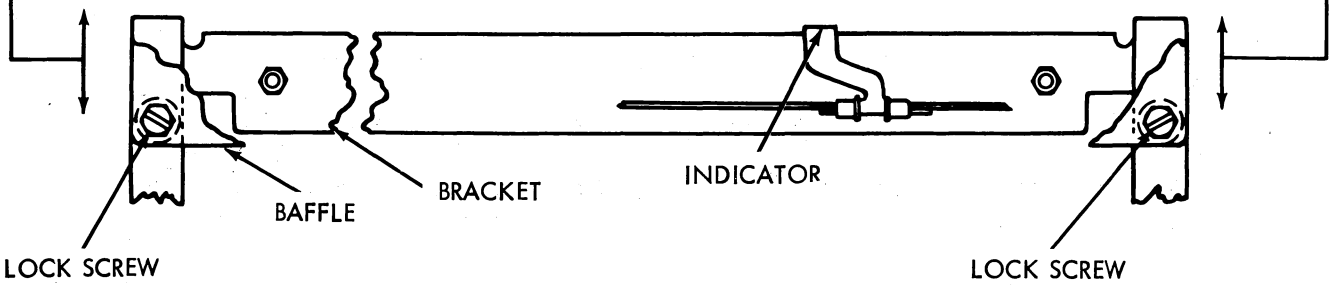
(C) CHARACTER COUNTER SCALE BRACKET

REQUIREMENT

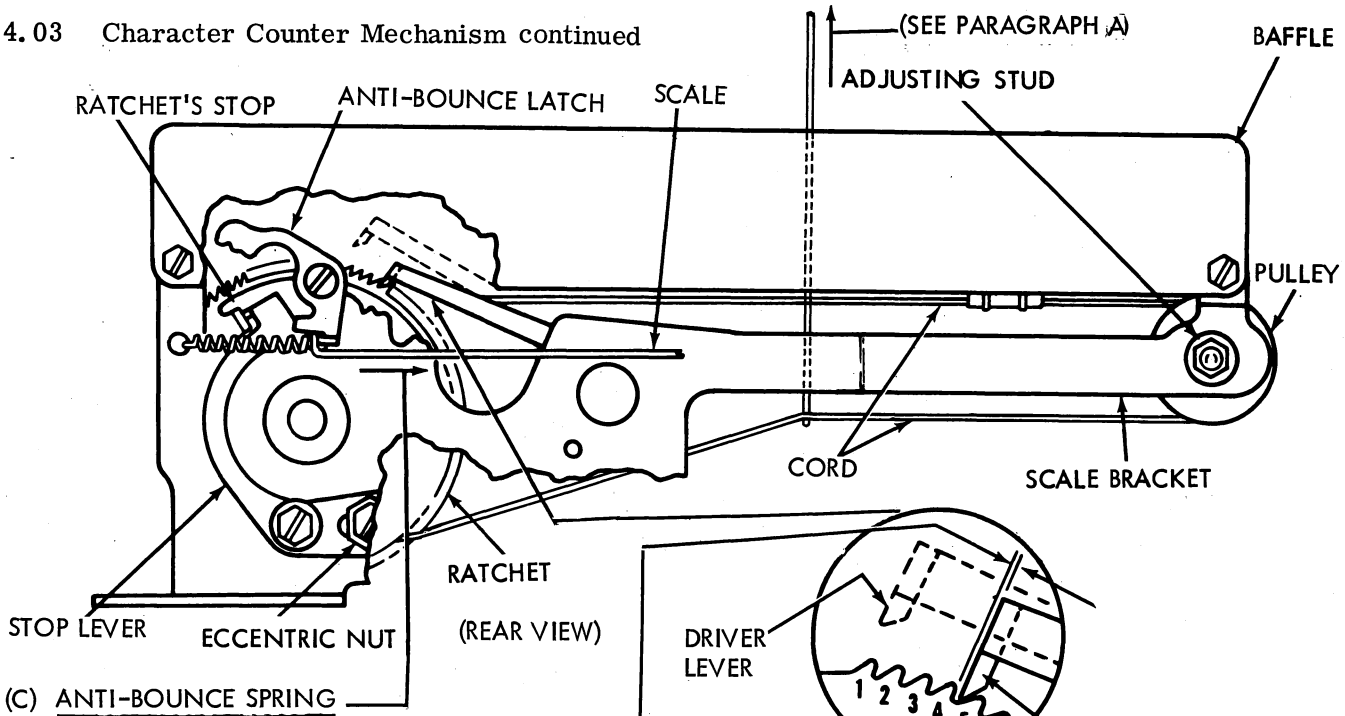
CHARACTER COUNTER BRACKET ADJUSTED TO UPPERMOST POSITION.

TO ADJUST

LOOSEN LOCK SCREWS AND POSITION BRACKET. CORD SHOULD REMAIN IN STRAIGHT LINE.



4.03 Character Counter Mechanism continued



(C) ANTI-BOUNCE SPRING

REQUIREMENT

ANTI-BOUNCE LATCH RESTING AGAINST STOP LEVER.

MIN. 25 GRAMS---MAX. 35 GRAMS TO MOVE LATCH TO END OF ITS OPERATING TRAVEL.

(A) CHARACTER COUNTER IDLER PULLEY

(1) REQUIREMENT

INDICATOR IN RETURNED ZERO POSITION. SCALE APPLIED PERPENDICULAR TO LOWER CORD AT A POINT UNDER NUMBER 30 ON THE INDICATOR SCALE.

MIN. 1 OZ.---MAX. 2 OZS.

(2) REQUIREMENT

LOWER CORD SHALL BE APPROXIMATELY PARALLEL TO THE SCALE BRACKET.

TO ADJUST

LOOSEN ADJUSTING STUD MOUNTING SCREW AND POSITION PULLEY.

NOTE:

HOLD PAWLS AWAY AND ROTATE DRUM TO MAKE CERTAIN THAT IT DOES NOT BIND AT ITS BEARING.

(B) STOP LEVER

(1) REQUIREMENT

WITH THE COUNTER RATCHET FULLY RETURNED AND RESTING AGAINST ITS STOP LEVER, THE CLEARANCE BETWEEN THE LATCH LEVER AND THE FACE OF THE 4TH RATCHET TOOTH SHOULD BE

MIN. 0.002 INCH---MAX. 0.010 INCH.

(2) REQUIREMENT

THE ANTI-BOUNCE LATCH SHOULD NOT INTERFERE WITH THE ROTATION OF THE RATCHET.

TO ADJUST

HOLD THE FEED LEVER OUT OF ENGAGEMENT WITH THE RATCHET AND ROTATE THE STOP LEVER ECCENTRIC.

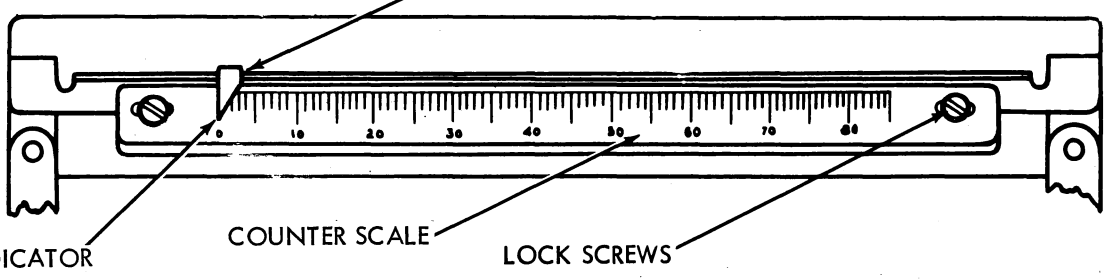
(D) CHARACTER COUNTER SCALE

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.



4.04 Repeat-On-Space Mechanism (For later design see Par. 2.16.)