

**28 SINGLE-MAGNET  
TYPING REPERFORATOR  
REQUIREMENTS AND ADJUSTMENTS**

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## 1. GENERAL

1.01 This section contains the specific requirements and adjustments for the 28 single-magnet typing reperforator. The material herein, together with the section containing the general requirements on teletypewriter apparatus, provides the complete adjusting information for maintenance.

1.02 This section is reissued to revise various adjustment requirements in accordance with changes authorized for this apparatus by P98 series Bell System Practices listed at the end of this section, to include other authorized revisions and additions so as to bring the section generally up to date, and to change the title. Since this is a general revision, the marginal arrows ordinarily used to indicate changes have been omitted.

1.03 References to left or right, front or rear, and up or down refer to the apparatus in its normal operating position as viewed from the front with the selector mechanism to the right and the punch mechanism to the left.

1.04 When a requirement calls for the clutch to be **disengaged**, the clutch-shoe lever must be fully latched between its triplerver (or stoparm) 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:** When the main shaft is rotated by hand, the clutches do not fully disengage upon reaching their stop positions. In order to relieve the drag on the clutches and permit the main shaft to rotate freely, use a screwdriver to apply pressure on the stop lug of each clutch disc to cause it to engage its latchlever and thus disengage the internal expansion clutch.

1.05 **Manual Selection of Characters or Functions:** To manually operate the single-magnet typing reperforator, proceed as follows:

(1) Attach the armature clip to the selector magnet armature by carefully putting the flat-formed end of the armature clip over the top of the armature between the pole pieces and then hooking the projection under the edge of the armature. Finally, hook the top end of the armature clip over the top of the bakelite guard of the selector coil terminal. The spring tension of the armature clip will hold the selector armature in the marking (attracted) position.

(2) While holding the selector magnet armature operated by means of the armature clip, use the handwheel included with the special tools for servicing 28 teletypewriter appa-



ratus to manually rotate the main shaft in a counterclockwise direction until all the clutches are brought to their disengaged position.

- (3) Fully disengage all clutches in accordance with 1.04, Note.
- (4) Release the selector magnet armature momentarily to permit the selector clutch to engage.
- (5) Rotate the main shaft slowly until all the pushlevers have fallen to the left of their selecting levers.
- (6) Strip the pushlevers from their selector levers, which are spacing in the code combination of the character function that is being selected, and allow the pushlevers to move to the right.
- (7) The pushlevers and the selector levers move in succession starting with the inner lever No. 1 to the outer lever No. 5.
- (8) Continue to rotate the main shaft until all operations initiated by the selector action clear through the unit.

1.06 Where a single-magnet typing reperforator is used as a component of the 28 reperforator-transmitter unit or the 28 perforator-transmitter-base, refer to the applicable requirement sections for the additional adjustment requirements.

## 2. REQUIREMENTS AND ADJUSTMENTS

2.01 The following figures show the adjusting tolerances, position of parts, and spring tensions. The illustrations are arranged so that the adjustments are in the sequence that would be followed if a complete readjustment of apparatus were being made. In some cases, where an illustration shows interrelated parts, the sequence that should be followed in checking the requirements and making the adjustments is indicated by the letters (A), (B), (C), etc.

## A. Single-magnet Typing Reperforator

### 2.02 Selector and Function Mechanisms

**Note:** To facilitate adjustments, remove typing reperforator from base as follows:

1. For typing reperforator equipped with one-shaft mechanism, refer to section containing the disassembly and reassembly routines for the 28 typing reperforator.
2. For typing reperforator equipped with two-shaft mechanism, refer to section containing the disassembly and reassembly routines for the 28 reperforator-transmitter-base.

#### (A) CLUTCH SHOE LEVER

**NOTE:**

THIS ADJUSTMENT SHALL BE MADE FOR BOTH SELECTOR AND FUNCTION CLUTCHES.

**TO CHECK**

(1) DISENGAGE CLUTCH. MEASURE CLEARANCE.  
(2) ALIGN HEAD OF CLUTCH DRUM MOUNTING SCREW WITH STOP LUG. ENGAGE CLUTCH. MANUALLY PRESS SHOE LEVER AND STOP LUG TOGETHER AND ALLOW TO SNAP APART. MEASURE CLEARANCE.

**REQUIREMENT**

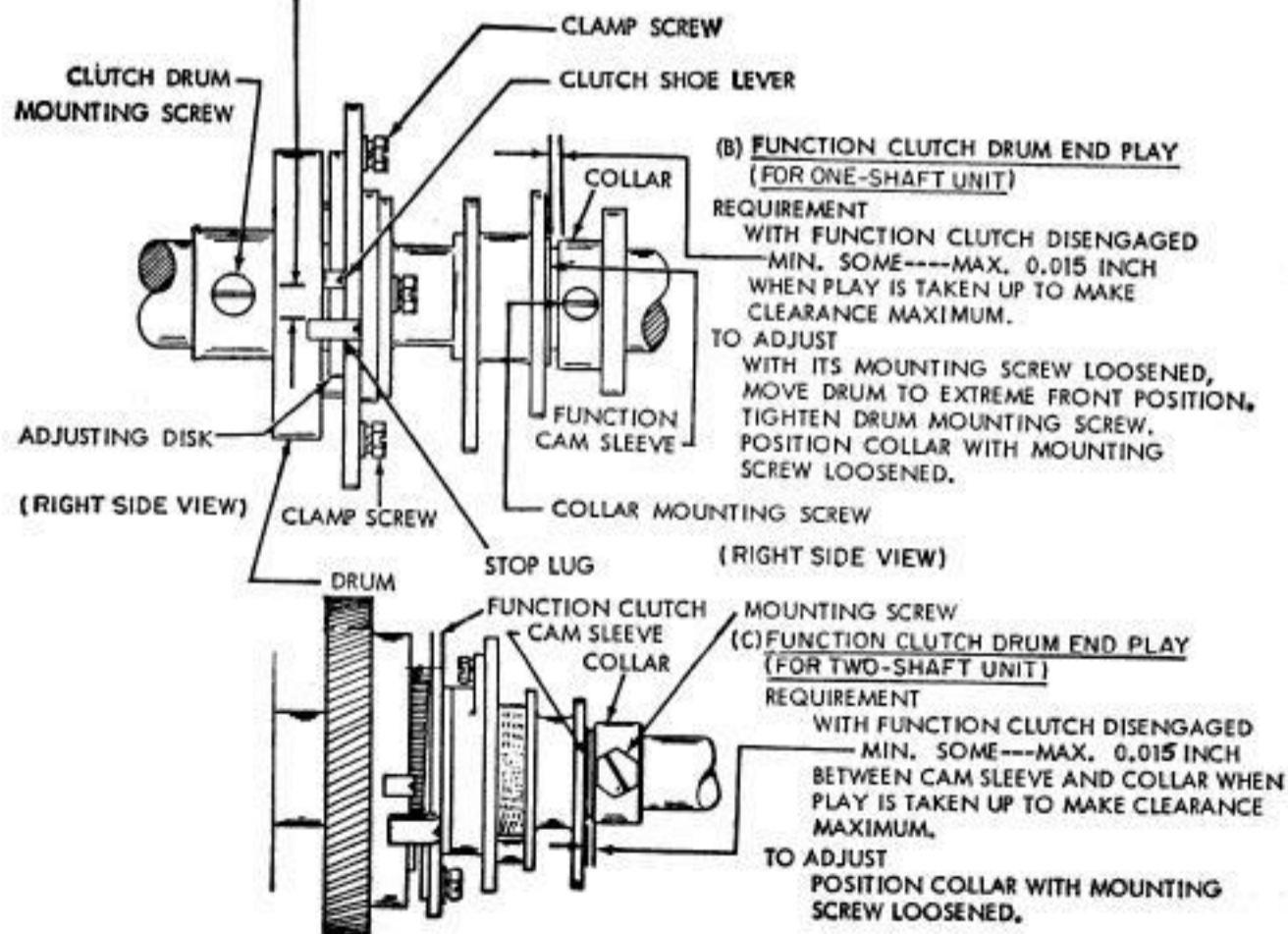
CLEARANCE BETWEEN SHOE LEVER AND STOP LUG  
MIN. 0.055 INCH---MAX. 0.085 INCH  
GREATER WHEN CLUTCH ENGAGED (2) THAN WHEN DISENGAGED (1).

**TO ADJUST**

ENGAGE WRENCH OR SCREWDRIVER WITH LUG ON ADJUSTING DISK. ROTATE DISK WITH CLAMP SCREWS LOOSENED.

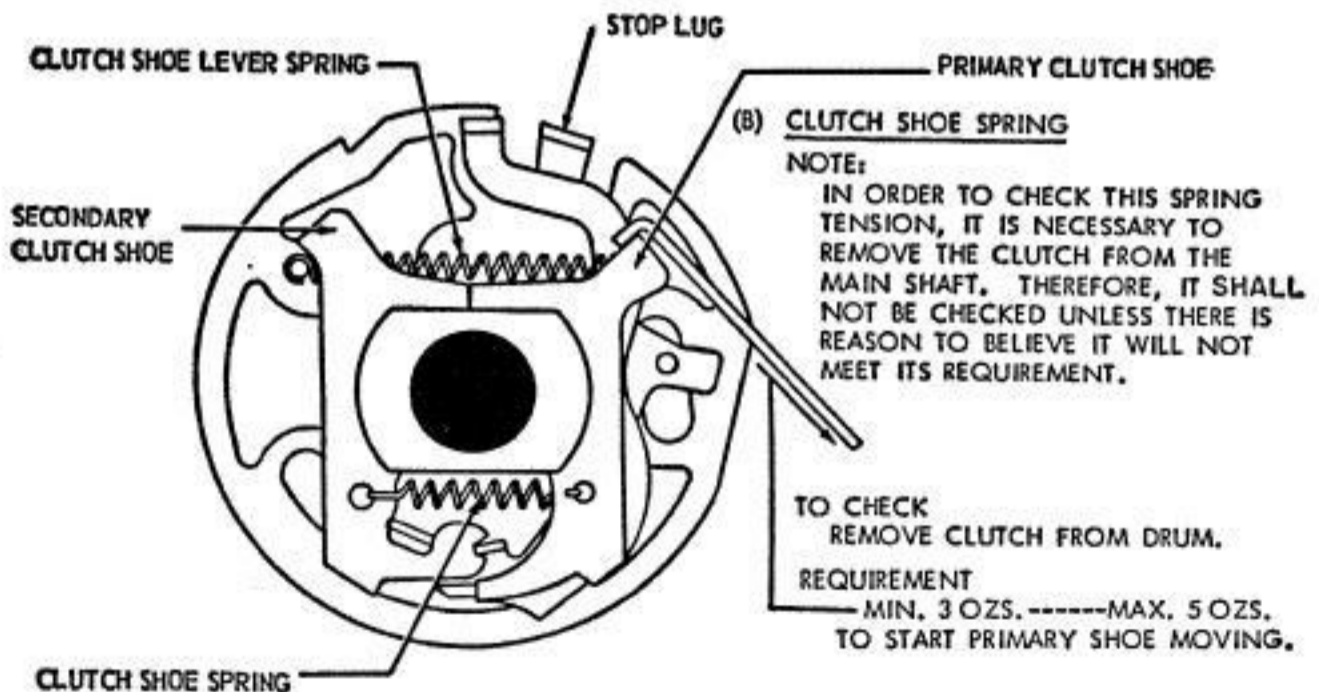
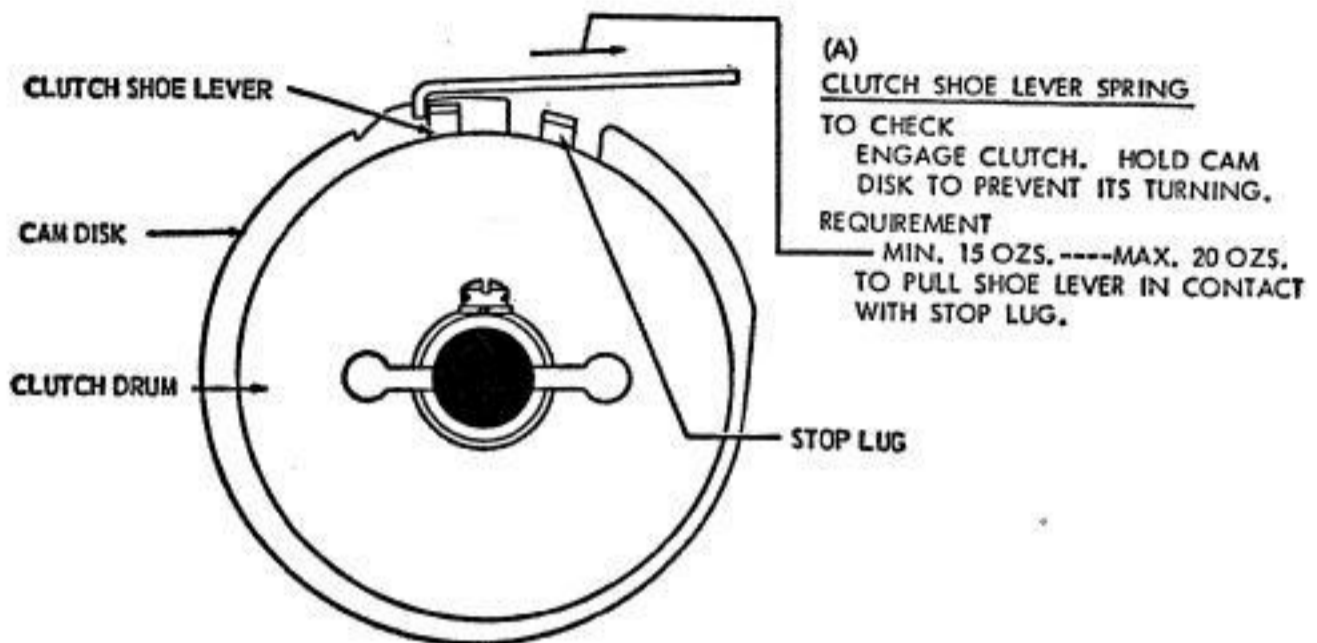
**NOTE:**

AFTER MAKING ADJUSTMENT, DISENGAGE CLUTCH. REMOVE DRUM MOUNTING SCREW. ROTATE DRUM IN NORMAL DIRECTION AND CHECK TO SEE IF IT DRAGS ON SHOE. IF IT DOES, REFINES ADJUSTMENT.



## 2.03 Selector and Function Mechanisms

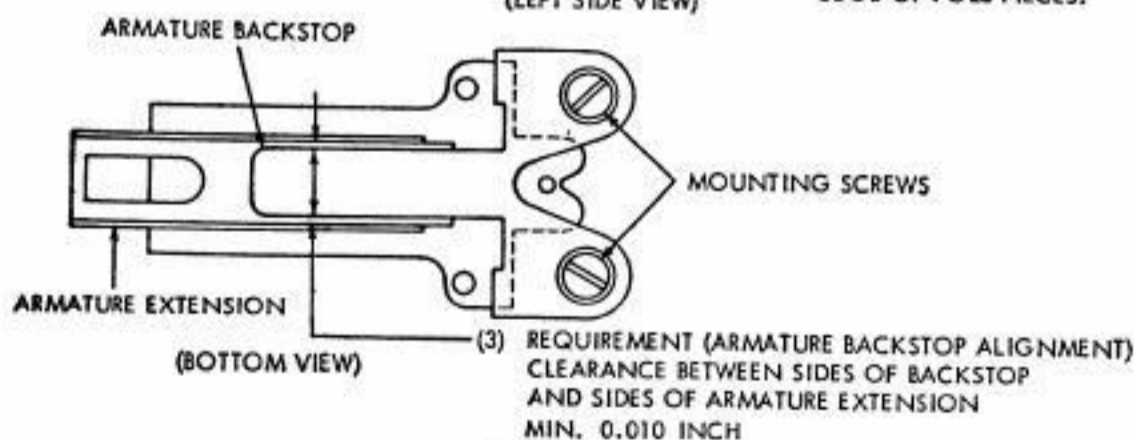
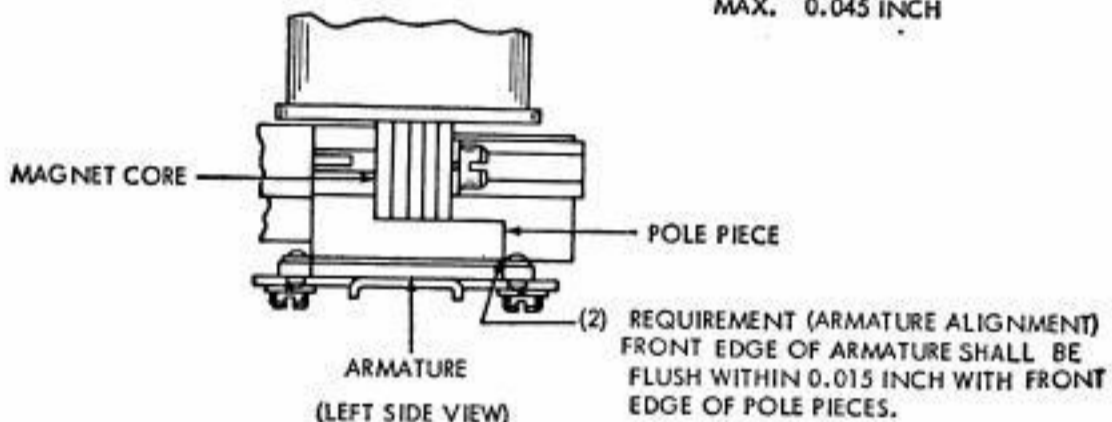
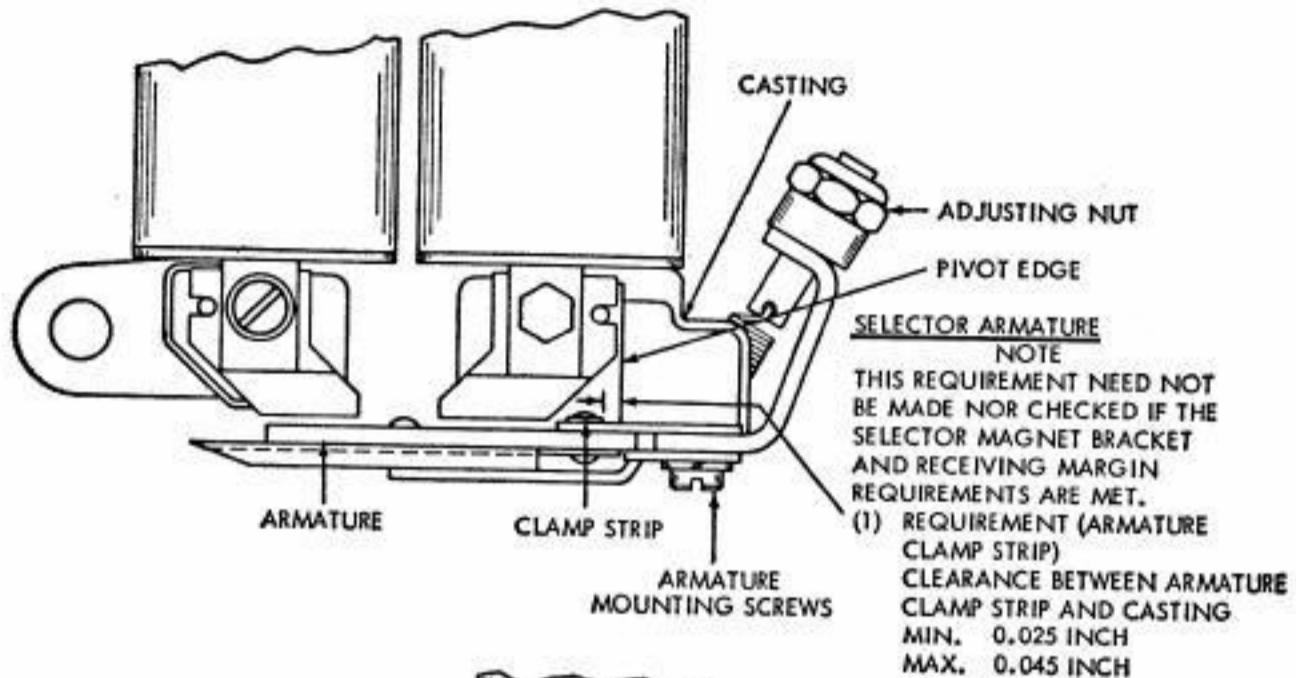
**NOTE:**  
THESE SPRING TENSIONS APPLY TO BOTH CLUTCHES.



## 2.04 Selector Mechanism

## NOTE

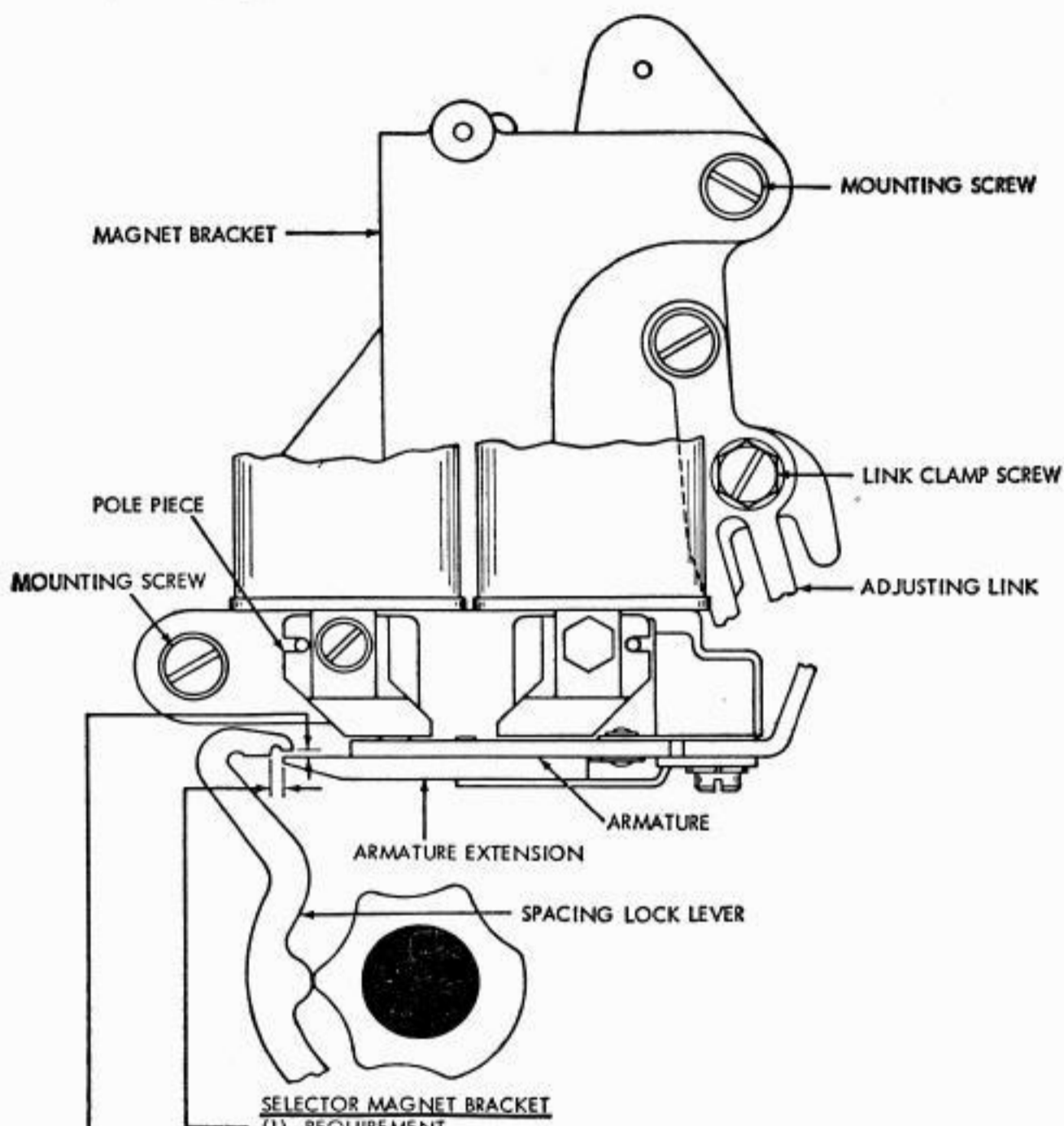
TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER AND SELECTOR MAGNET ASSEMBLIES. TO INSURE BETTER OPERATION, PULL A PIECE OF KS BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OF PAPER REMAIN BETWEEN THE POLE PIECES AND ARMATURE.



## TO ADJUST

1. POSITION ARMATURE SPRING ADJUSTING NUT TO HOLD ARMATURE FIRMLY AGAINST PIVOT EDGE OF CASTING.
2. POSITION ARMATURE AND BACKSTOP WITH MOUNTING SCREWS LOOSENED.

## 2.05 Selector Mechanism



### SELECTOR MAGNET BRACKET

#### (1) REQUIREMENT

SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SHOULDER ON SPACING LOCK LEVER  
 MIN. 0.020 INCH  
 MAX. 0.035 INCH

#### TO ADJUST

LOOSEN TWO MAGNET BRACKET MOUNTING SCREWS AND ADJUSTING LINK CLAMP SCREW. POSITION MAGNET BRACKET BY MEANS OF ADJUSTING LINK AND TIGHTEN LINK CLAMP SCREW ONLY.

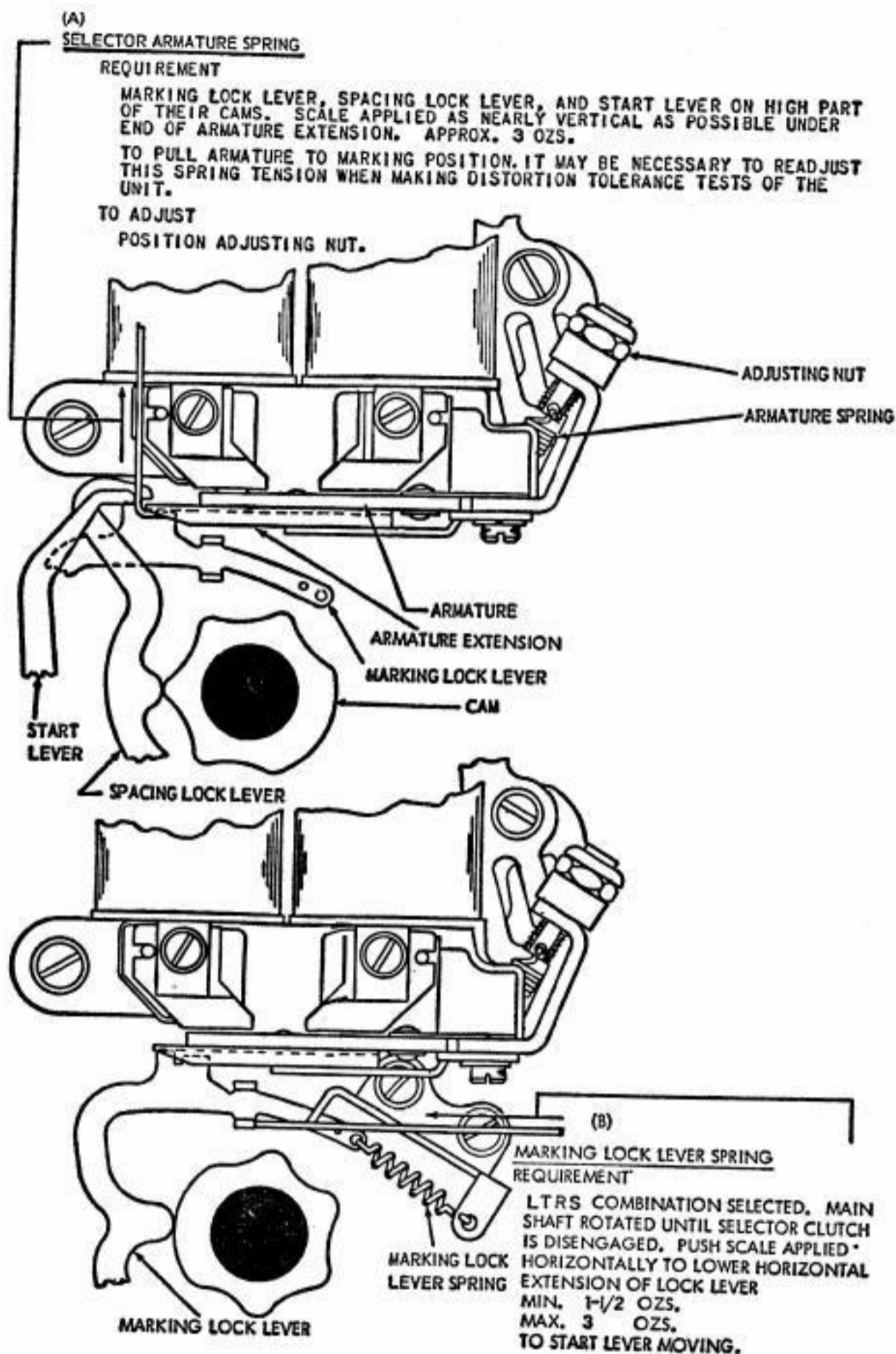
#### (2) REQUIREMENT

SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. SOME CLEARANCE BETWEEN UPPER SURFACE OF ARMATURE EXTENSION AND LOWER SURFACE OF SPACING LOCK LEVER WHEN LOCK LEVER IS HELD DOWNWARD  
 MAX. 0.003 INCH

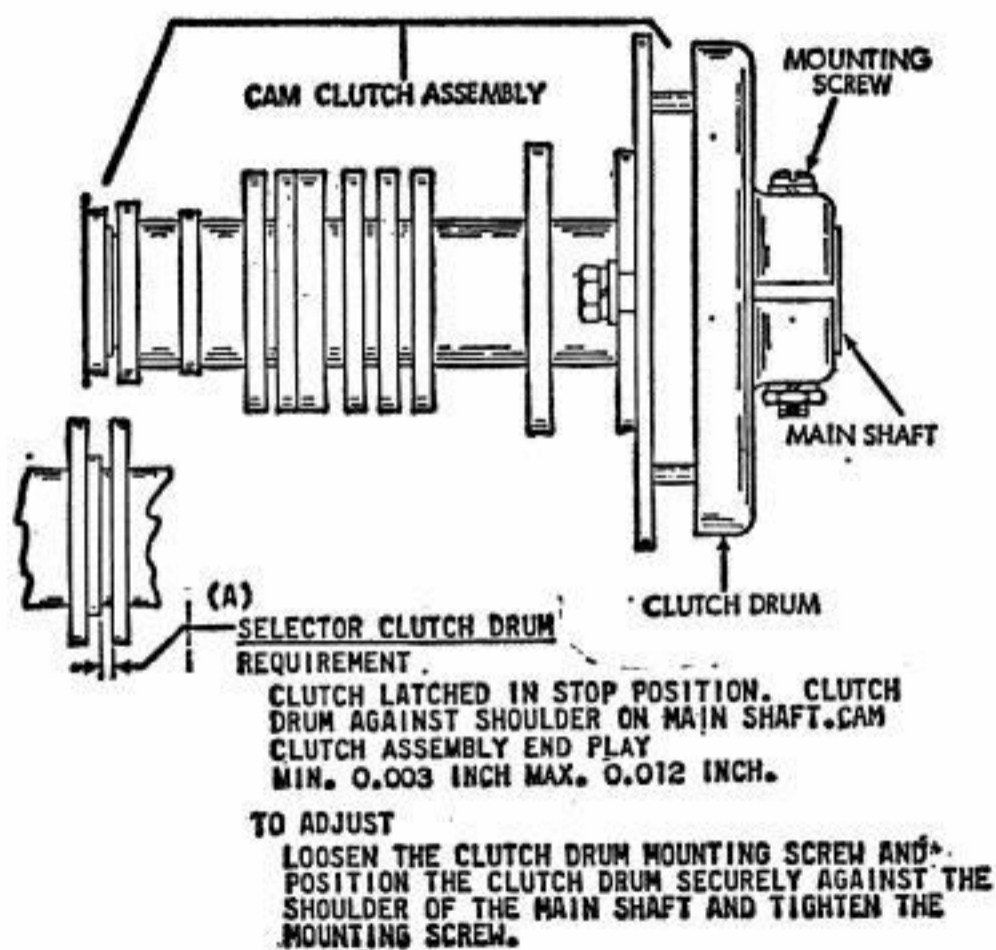
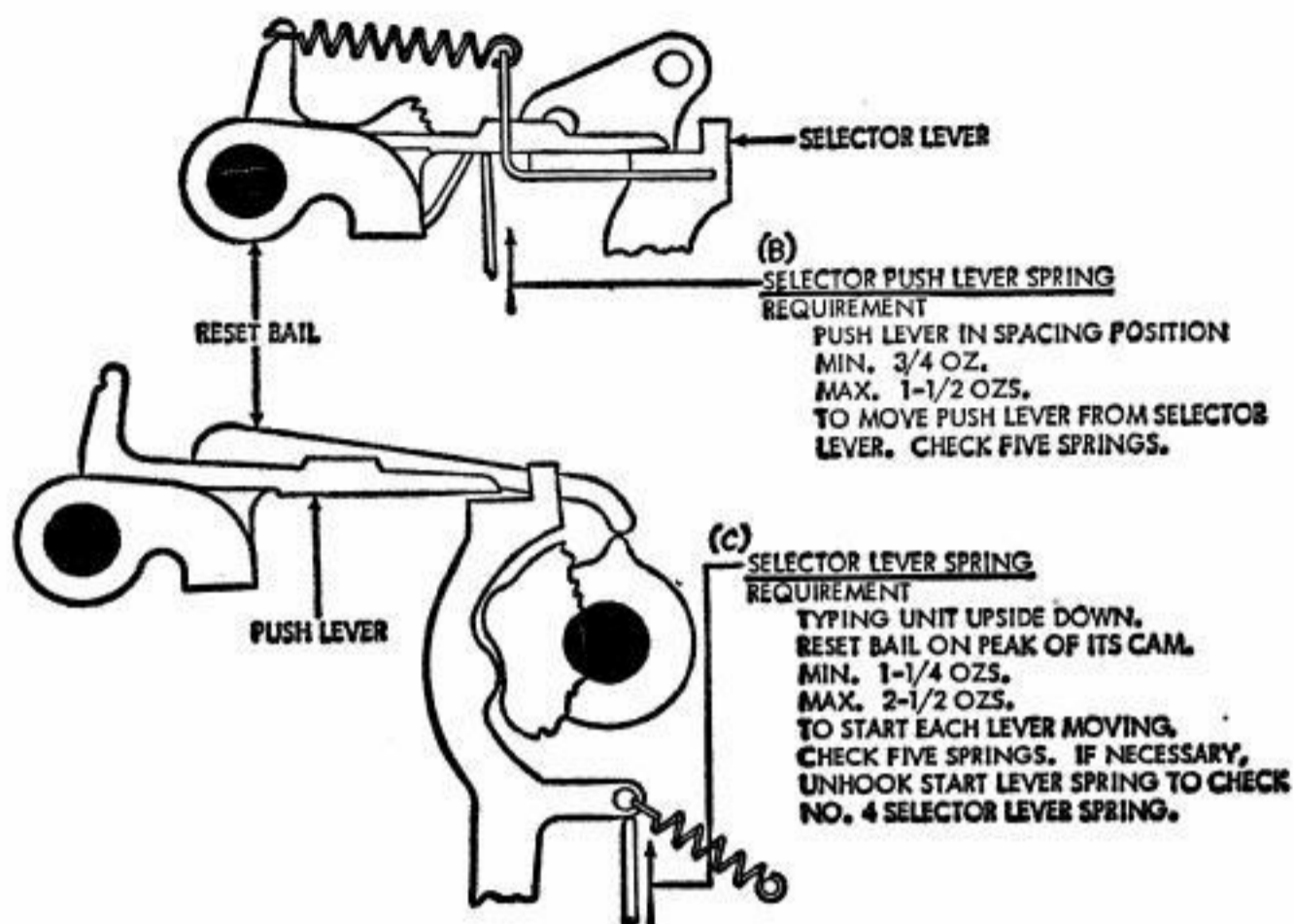
#### TO ADJUST

POSITION UPPER END OF MAGNET BRACKET. TIGHTEN TWO MAGNET BRACKET MOUNTING SCREWS. RECHECK REQUIREMENT (1).

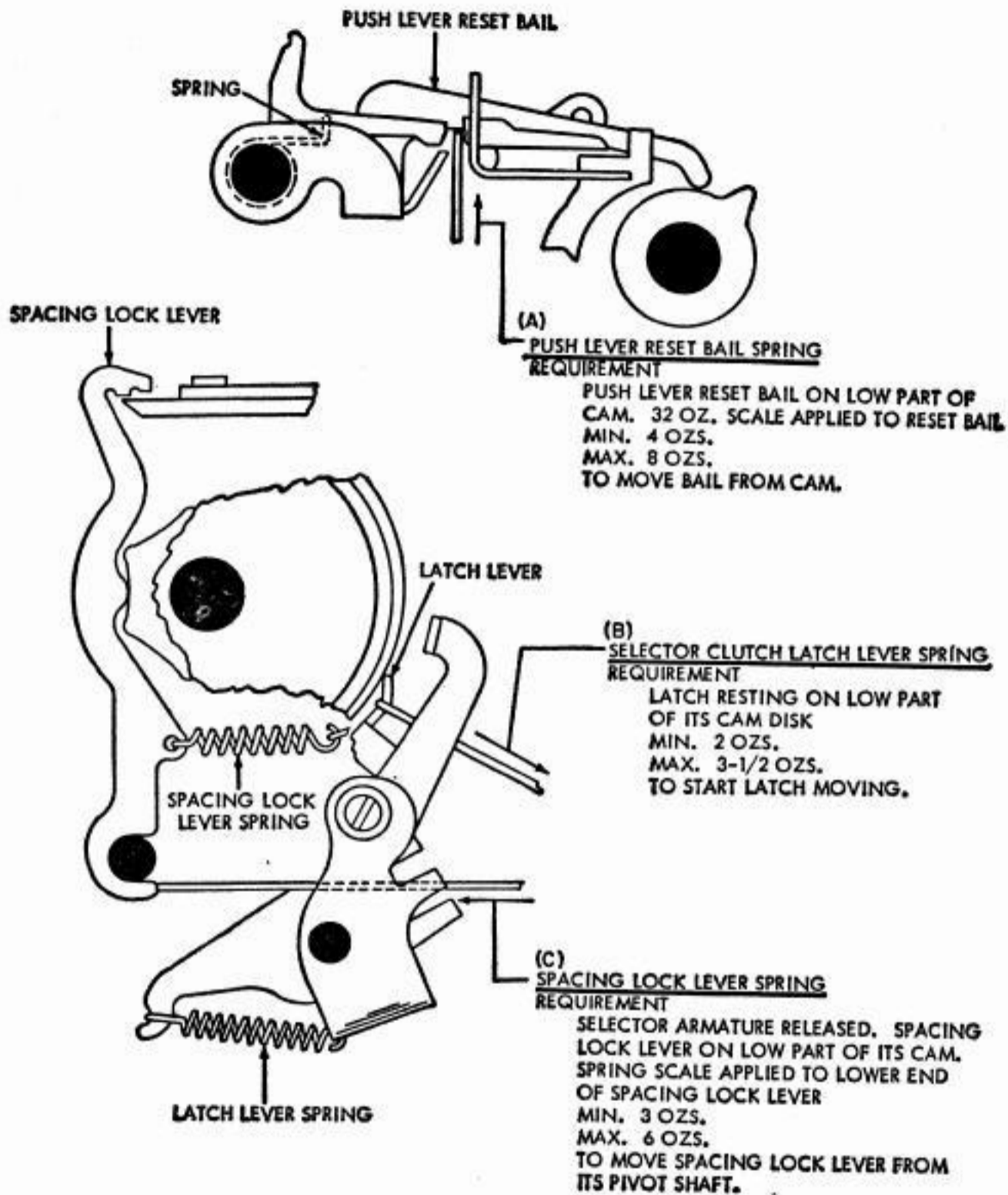
## 2.06 Selector Mechanism



## 2.07 Selector Mechanism



## 2.08 Selector Mechanism





## 2.09 Selector Mechanism

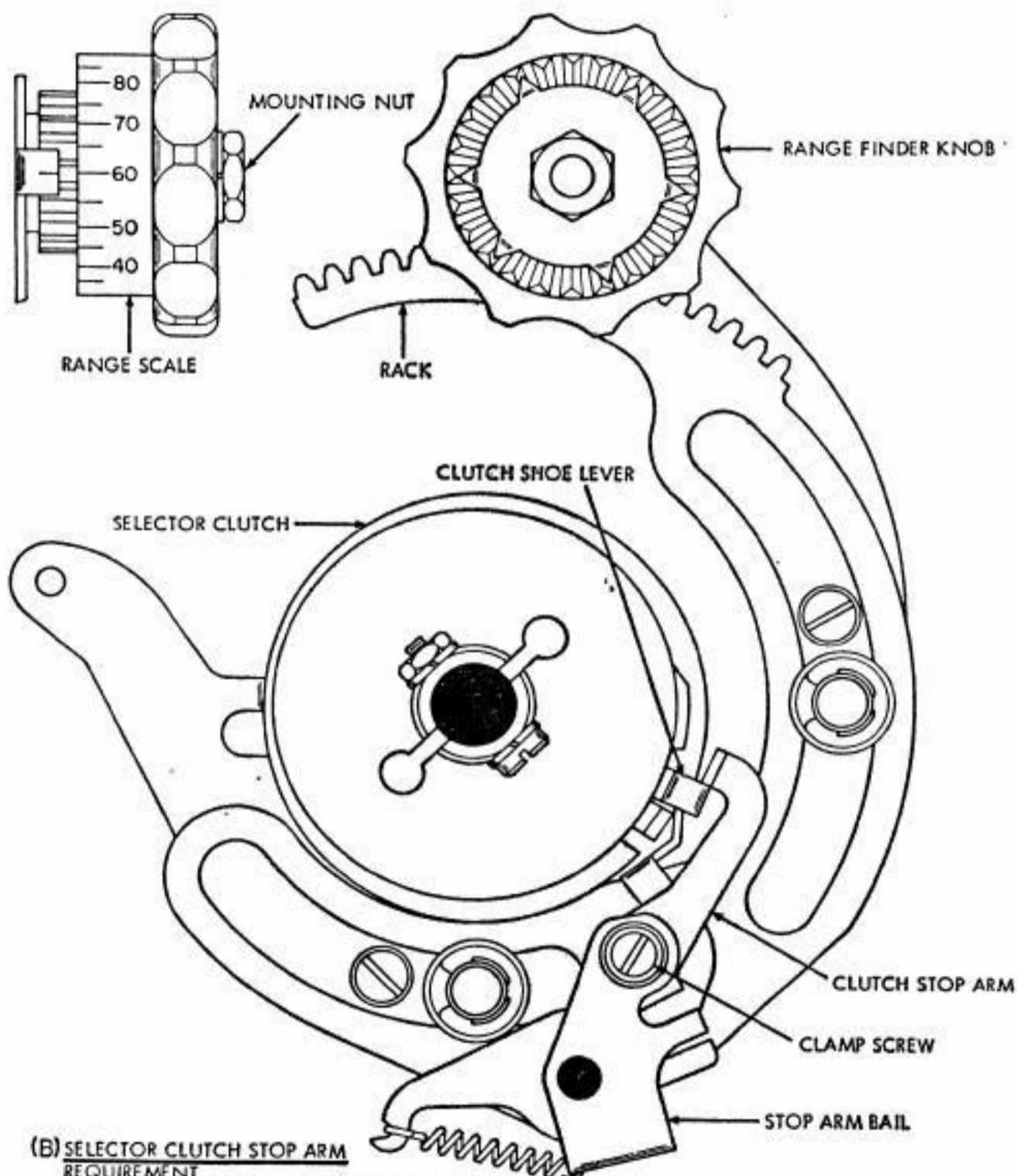
NOTE: REPLACE RANGE FINDER AND SELECTOR MAGNET ASSEMBLY.

### (A) RANGE FINDER KNOB PHASING REQUIREMENT

WITH RANGE FINDER KNOB TURNED TO EITHER END OF RACK, ZERO MARK ON SCALE SHALL BE WITHIN 3 POINTS OF SCRIBED LINE ON RANGE FINDER PLATE.

TO ADJUST

REMOVE MOUNTING NUT, DISENGAGE KNOB FROM RACK, AND POSITION KNOB. RE-ENGAGE KNOB WITH RACK AND REPLACE MOUNTING NUT.



### (B) SELECTOR CLUTCH STOP ARM REQUIREMENT

RANGE SCALE SET AT 60. SELECTOR CLUTCH DISENGAGED. ARMATURE IN MARKING POSITION. CLUTCH STOP ARM SHALL ENGAGE CLUTCH SHOE LEVER BY APPROXIMATELY FULL THICKNESS OF SHOE LEVER.

TO ADJUST

POSITION STOP ARM ON STOP ARM BAIL WITH CLAMP SCREW LOOSENED.

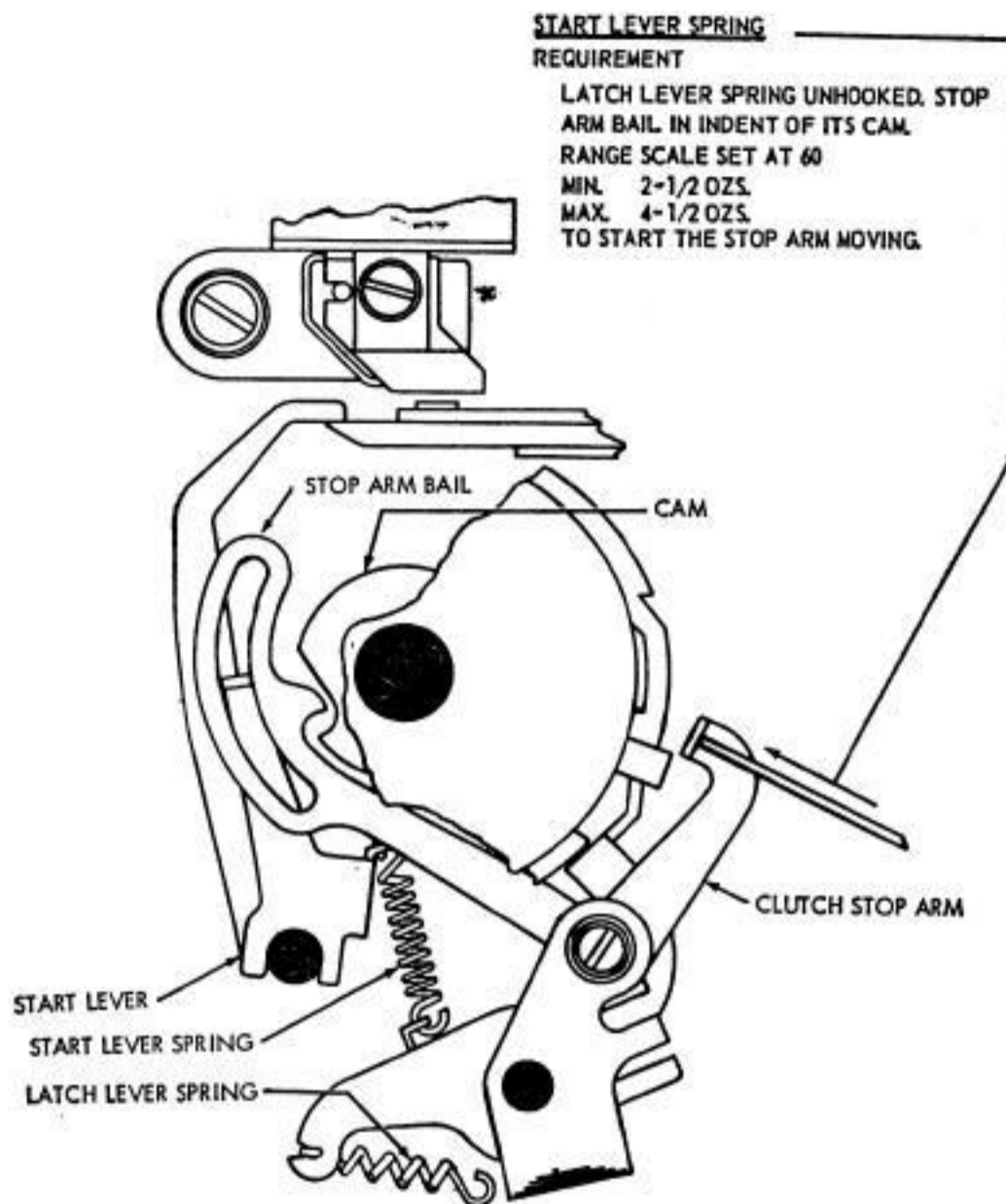
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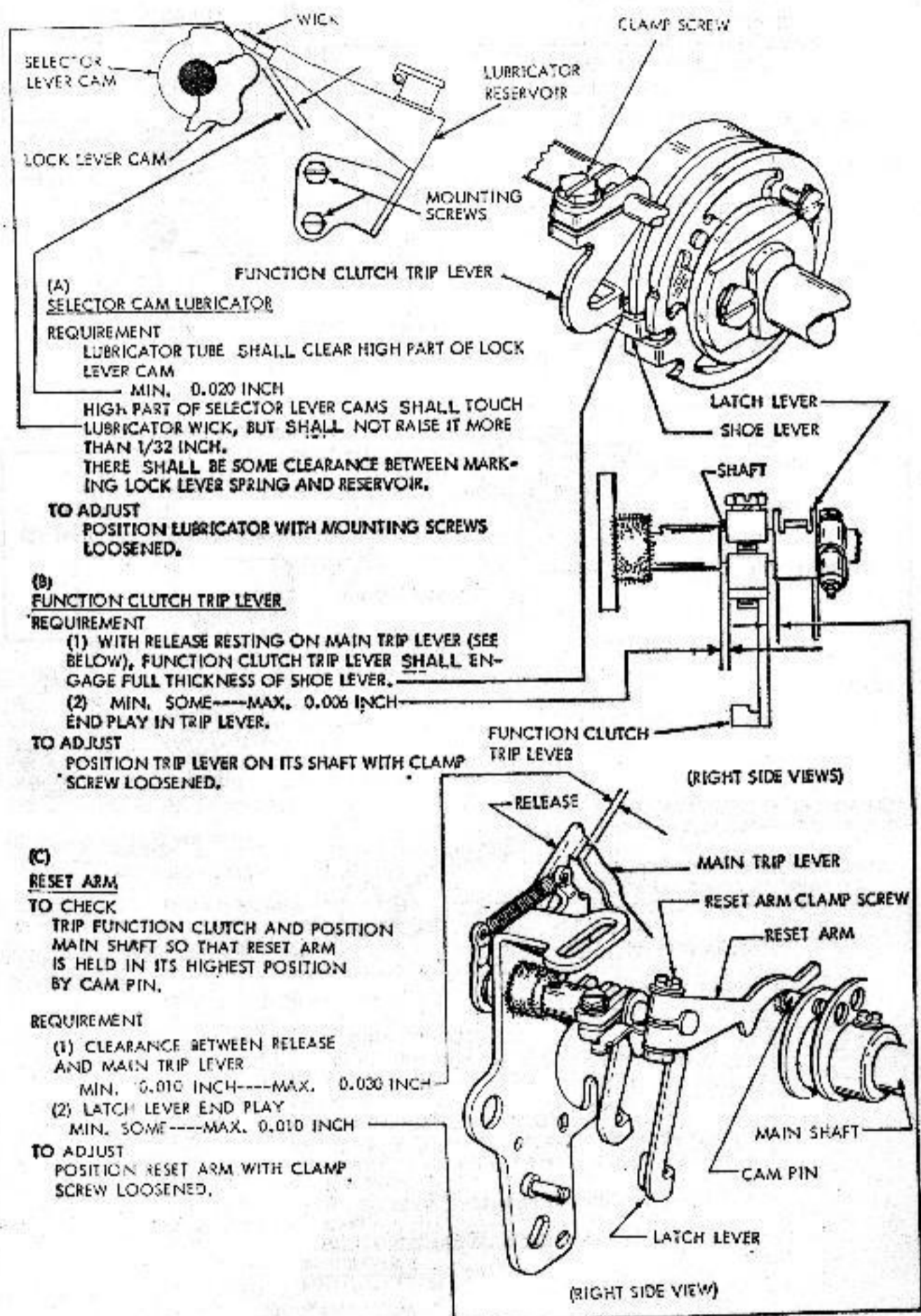
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## 2.10 Selector Mechanism



## 2.11 Selector and Function Mechanisms



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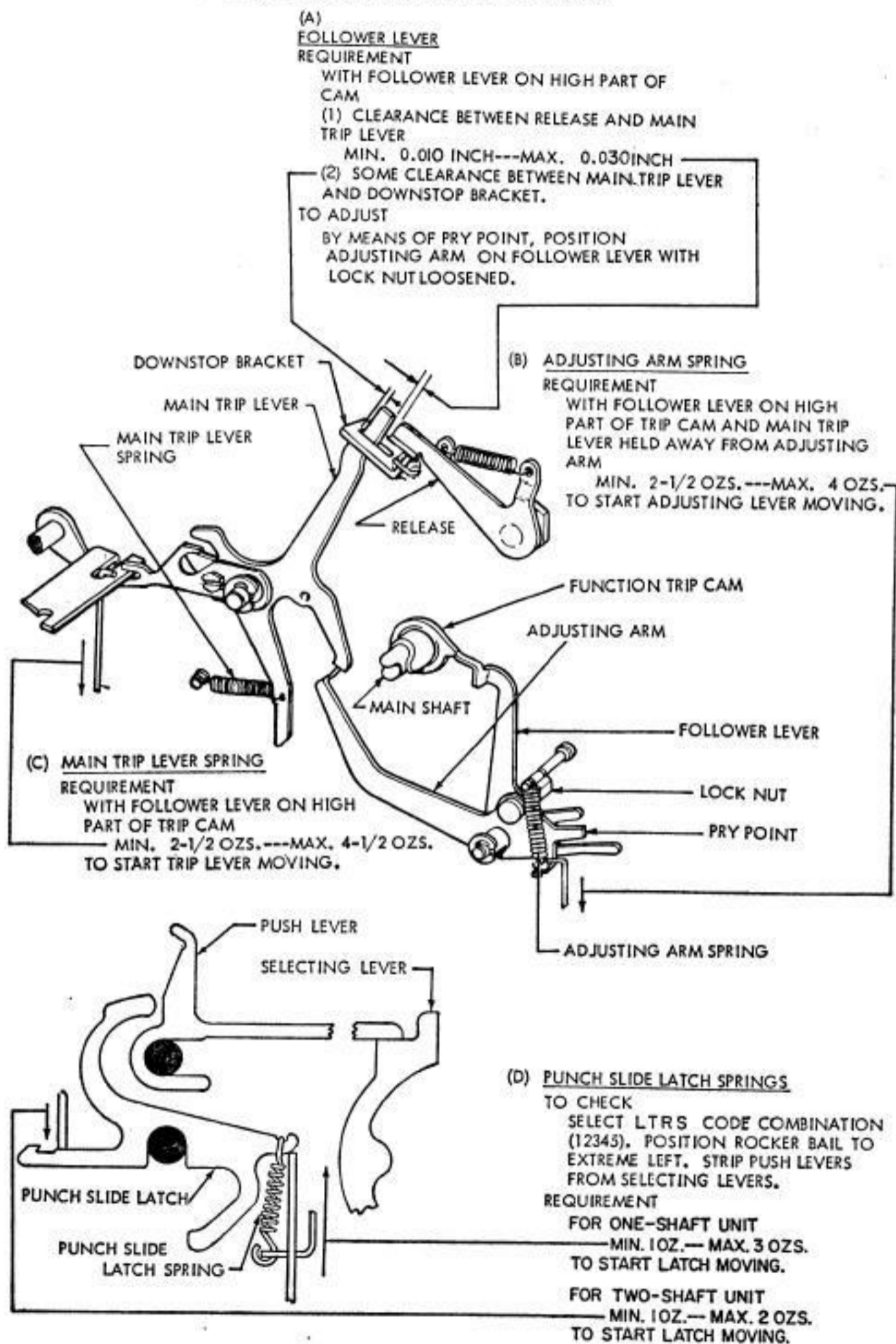
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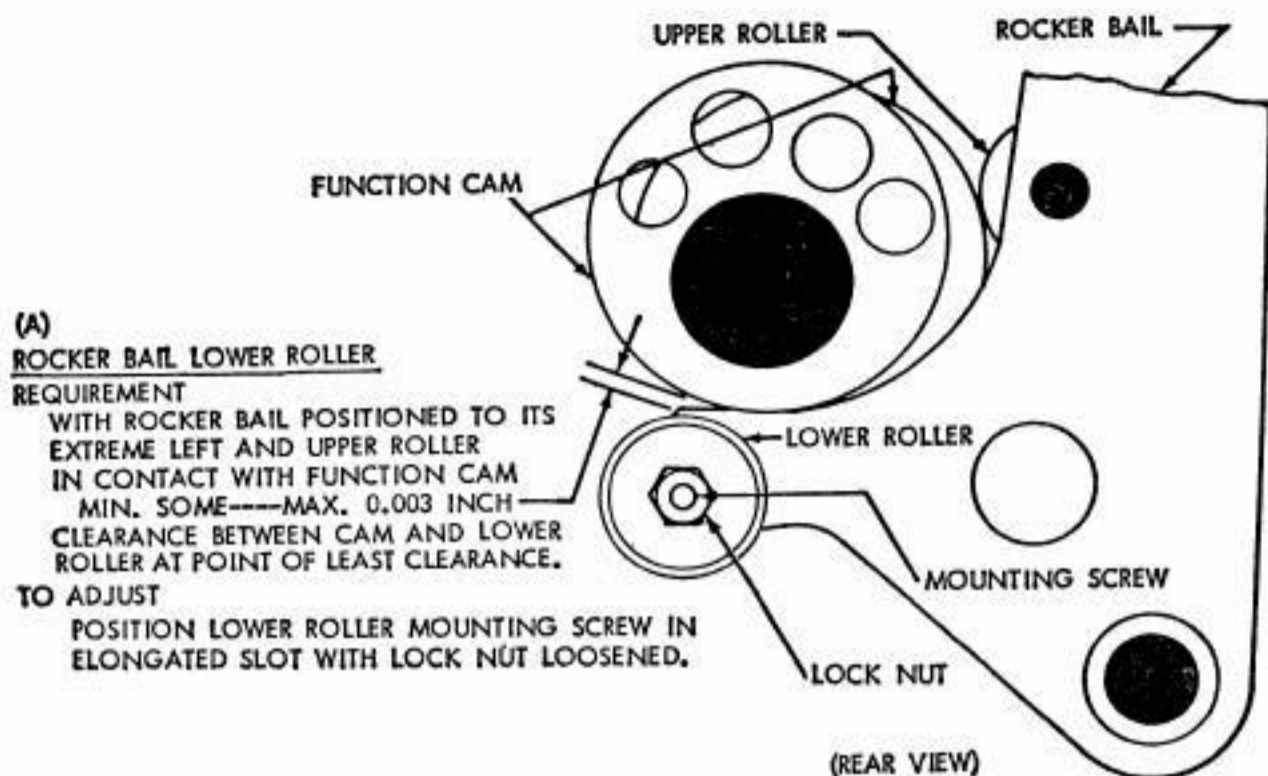
TYPING  
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 FORATOR

## 2.12 Selector, Function, and Punch Mechanisms

**Note:** For typing reperforator equipped with remote-control or automatic noninterfering LTRS tape feed-out mechanism, substitute the follower lever adjustment shown in 2.74(A).



## 2.13 Function Mechanism



(B)

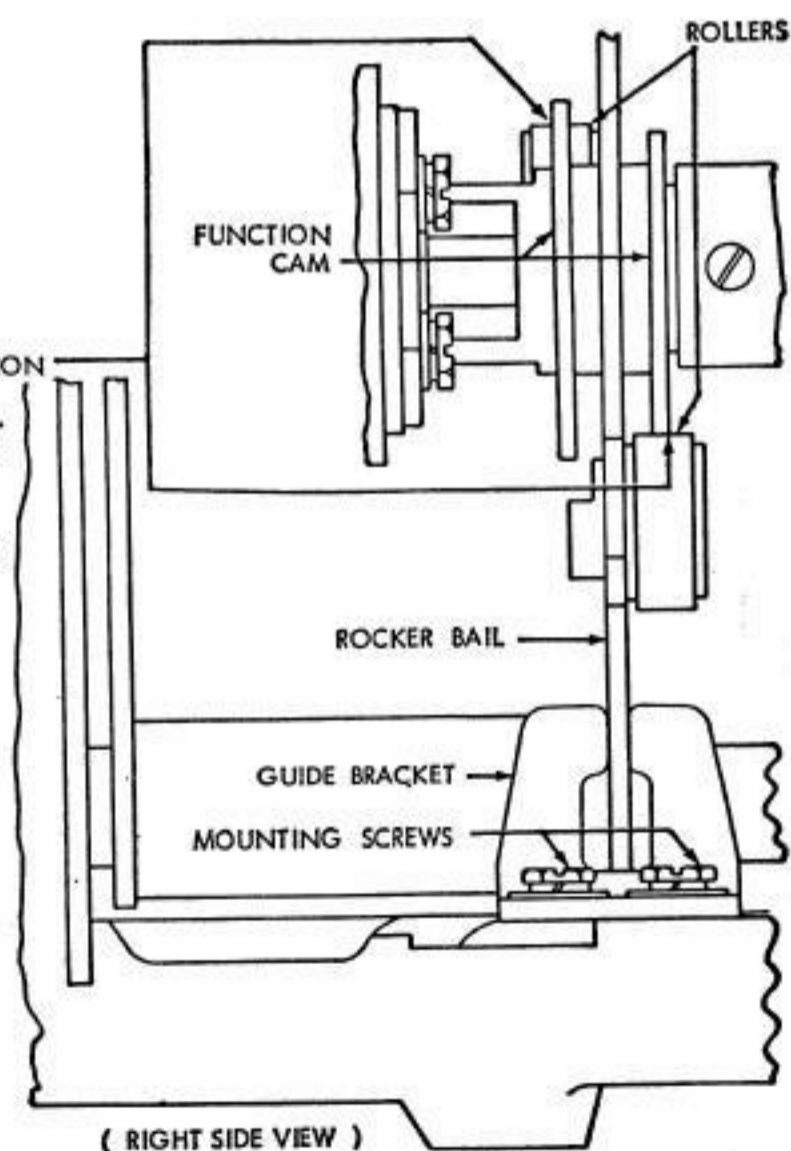
**ROCKER BAIL GUIDE BRACKET**

**REQUIREMENT**

- (1) ROCKER BAIL ROLLERS SHALL ENGAGE FULL THICKNESS OF FUNCTION CAM.
- (2) LIFTER ROLLER IN FULL ENGAGEMENT WITH ROCKER BAIL CAMMING SURFACE.

**TO ADJUST**

POSITION ROCKER BAIL AND GUIDE BRACKET WITH GUIDE BRACKET MOUNTING SCREWS LOOSENED.



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## 2.14 Punch Mechanism

**Note:** For typing reperforator equipped with two-shaft mechanism, refer to the section containing the requirements and adjustments for the 28 reperforator-transmitter-base.

### (A) PUNCH MOUNTING POSITION---PRELIMINARY

#### REQUIREMENT

REPERFORATOR MOUNTING SCREWS CENTRALLY LOCATED IN ELONGATED MOUNTING HOLES.

#### TO ADJUST

REMOVE LOWER REPERFORATOR MOUNTING SCREW. WITH UPPER REPERFORATOR MOUNTING SCREW, ADJUSTING CLAMP PIVOT SCREW, AND ANCHOR BRACKET MOUNTING SCREW FRICTION TIGHT, POSITION REPERFORATOR SO THAT TAPPED HOLE IN MAIN PLATE IS CENTRALLY LOCATED (AS GAUGED BY EYE) IN LOWER ELONGATED MOUNTING HOLE IN REPERFORATOR REAR PLATE. TIGHTEN UPPER REPERFORATOR MOUNTING SCREW AND ADJUSTING CLAMP PIVOT SCREW. RECHECK REQUIREMENT. REPLACE AND TIGHTEN LOWER REPERFORATOR MOUNTING SCREW. TIGHTEN ANCHOR BRACKET MOUNTING SCREW.

#### NOTE:

BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK ROCKER BAIL LOWER ROLLER ADJUSTMENT.

### (B) ROCKER ARM TO CHECK

TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL ROCKER BAIL UPPER ROLLER IS ON HIGH PART OF FUNCTION CAM. PLACE GAUGE AS SHOWN. TAKE UP PLAY TO MAKE CLEARANCE BETWEEN GAUGE AND FEED PAWL STUD MINIMUM.

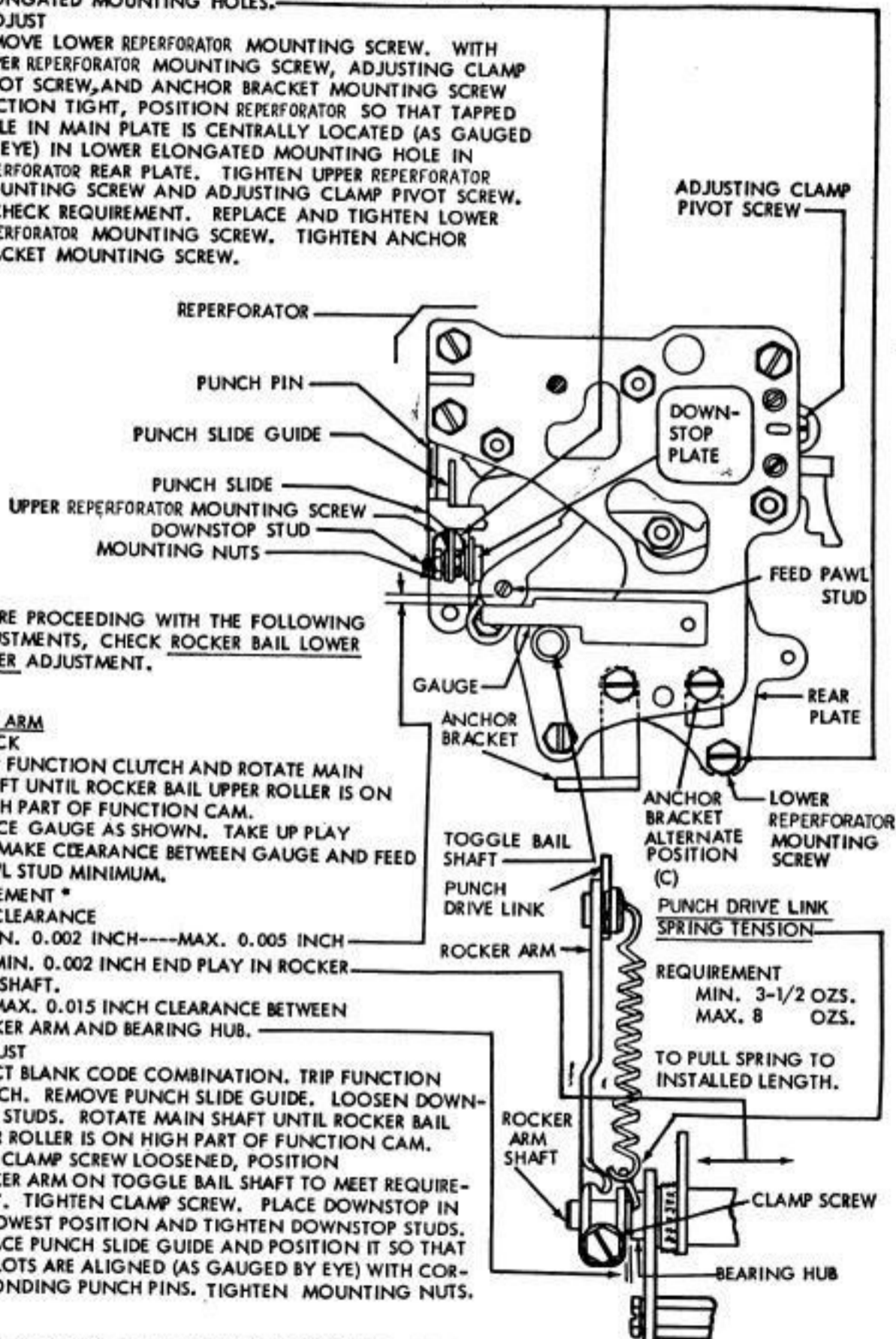
#### REQUIREMENT \*

- (1) CLEARANCE  
MIN. 0.002 INCH---MAX. 0.005 INCH
- (2) MIN. 0.002 INCH END PLAY IN ROCKER ARM SHAFT.
- (3) MAX. 0.015 INCH CLEARANCE BETWEEN ROCKER ARM AND BEARING HUB.

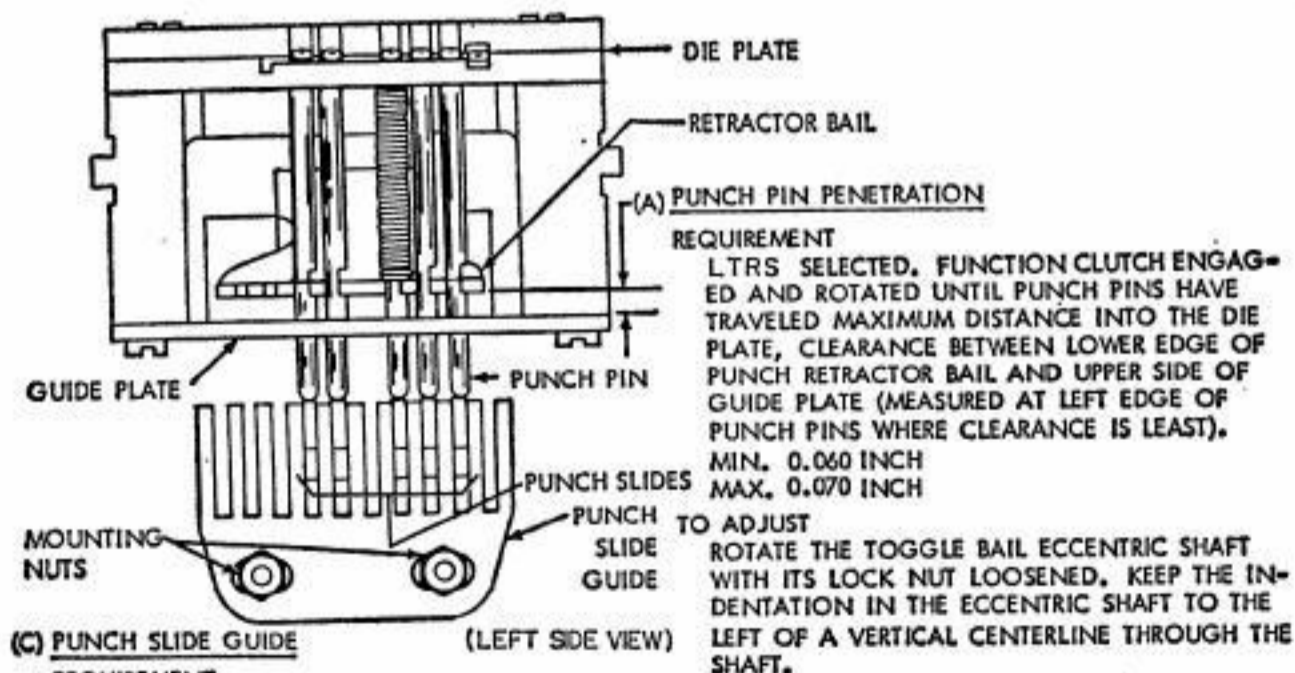
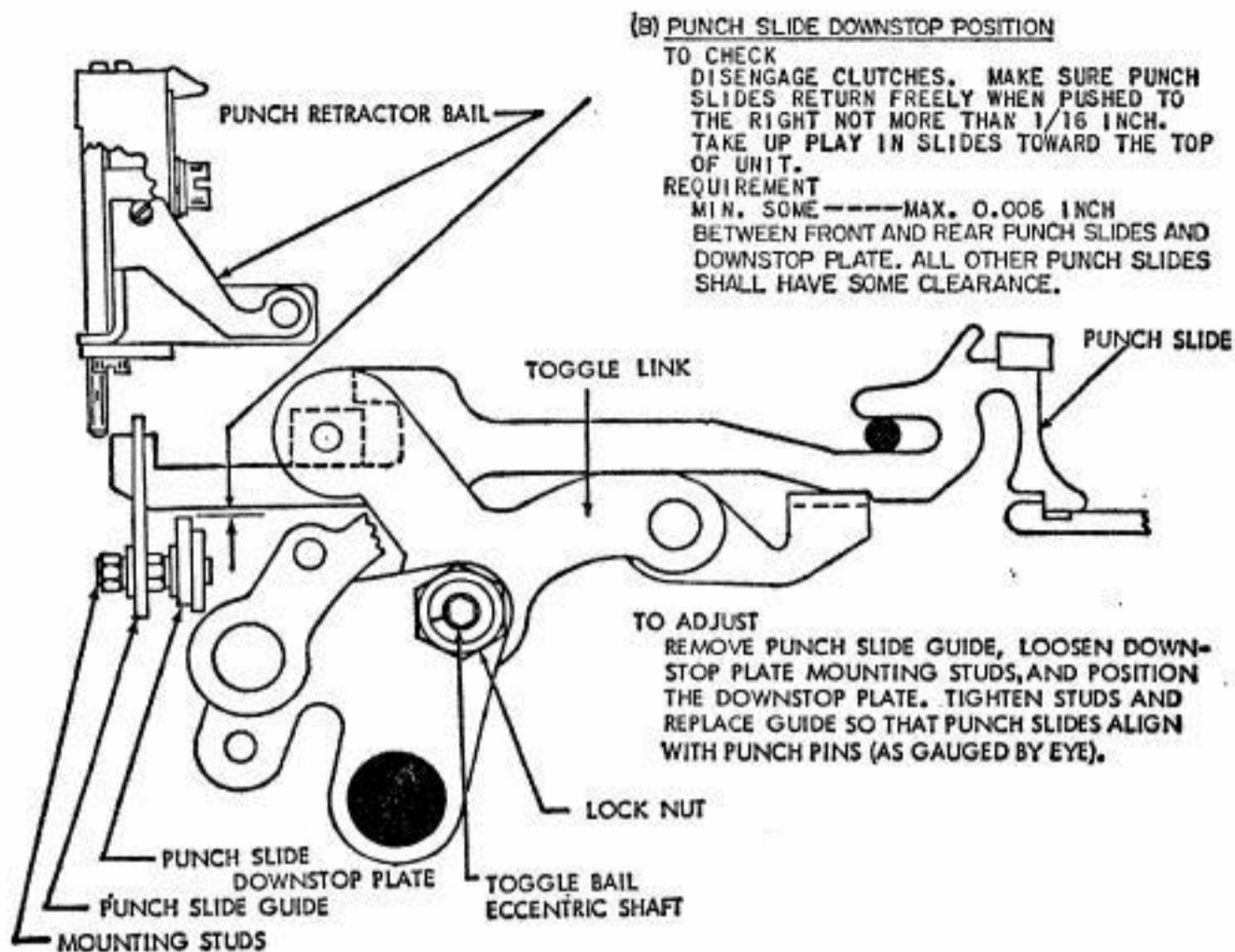
#### TO ADJUST

SELECT BLANK CODE COMBINATION. TRIP FUNCTION CLUTCH. REMOVE PUNCH SLIDE GUIDE. LOOSEN DOWNSTOP STUDS. ROTATE MAIN SHAFT UNTIL ROCKER BAIL UPPER ROLLER IS ON HIGH PART OF FUNCTION CAM. WITH CLAMP SCREW LOOSENED, POSITION ROCKER ARM ON TOGGLE BAIL SHAFT TO MEET REQUIREMENT. TIGHTEN CLAMP SCREW. PLACE DOWNSTOP IN ITS LOWEST POSITION AND TIGHTEN DOWNSTOP STUDS. REPLACE PUNCH SLIDE GUIDE AND POSITION IT SO THAT ITS SLOTS ARE ALIGNED (AS GAUGED BY EYE) WITH CORRESPONDING PUNCH PINS. TIGHTEN MOUNTING NUTS.

\*AFTER FEED PAWL ADJUSTMENT HAS BEEN MADE, IF PUNCH PIN PENETRATION AND FEED PAWL REQUIREMENTS ARE MET, THIS REQUIREMENT SHALL BE CONSIDERED FULFILLED.



## 2.15 Punch Mechanism



## 2.16 Punch Mechanism

**Note:** Where a typing reperforator is part of a 28 perforator-transmitter-base, omit Part (1) of this adjustment.

### PUNCH MOUNTING POSITION ---FINAL

#### (1) TO CHECK (SEE NOTE ABOVE)

SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

#### REQUIREMENT

CLEARANCE BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH:

MIN. 0.020 INCH----MAX. 0.030 INCH

AT SLIDE WHERE CLEARANCE IS LEAST.

#### TO ADJUST

LOOSEN REPERFORATOR MOUNTING SCREWS, ADJUSTING CLAMP LOCK SCREW, ADJUSTING CLAMP PIVOT SCREW, AND ANCHOR BRACKET SCREW UNTIL FRICTION TIGHT. PLACE TIP OF SCREWDRIVER BETWEEN SCREW AND RIM OF PRY HOLE AND PRY REPERFORATOR UP OR DOWN. TIGHTEN ONLY ADJUSTING CLAMP LOCK SCREW.

#### (2) TO CHECK

WITH UNIT IN LTRS POSITION, CLEARANCE SHALL BE BETWEEN TAPE GUIDE AND CHARACTER "M". SELECT "V" CODE COMBINATION (-2345). TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.

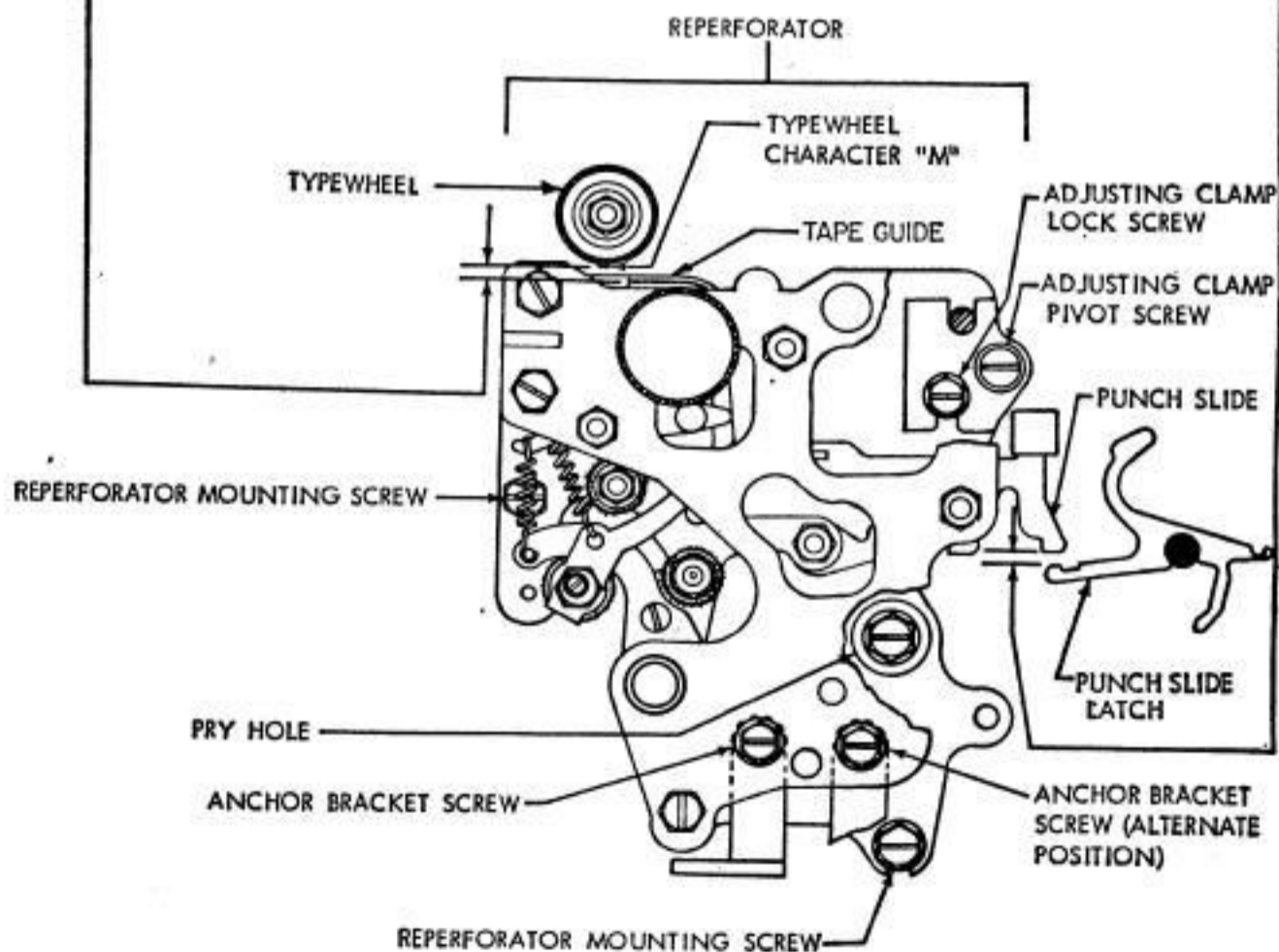
#### REQUIREMENT

CLEARANCE BETWEEN TAPE GUIDE AND TYPEWHEEL CHARACTER "M"

MIN. 0.075 INCH----MAX. 0.095 INCH

#### TO ADJUST

REMOVE RIBBON FROM CARRIER. POSITION REPERFORATOR WITH TWO MOUNTING SCREWS, ADJUSTING CLAMP PIVOT SCREW, AND ANCHOR BRACKET SCREW LOOSENED. CHECK RESET BAIL TRIP LEVER REQUIREMENT FOR SOME CLEARANCE AND ADJUST IF NECESSARY.

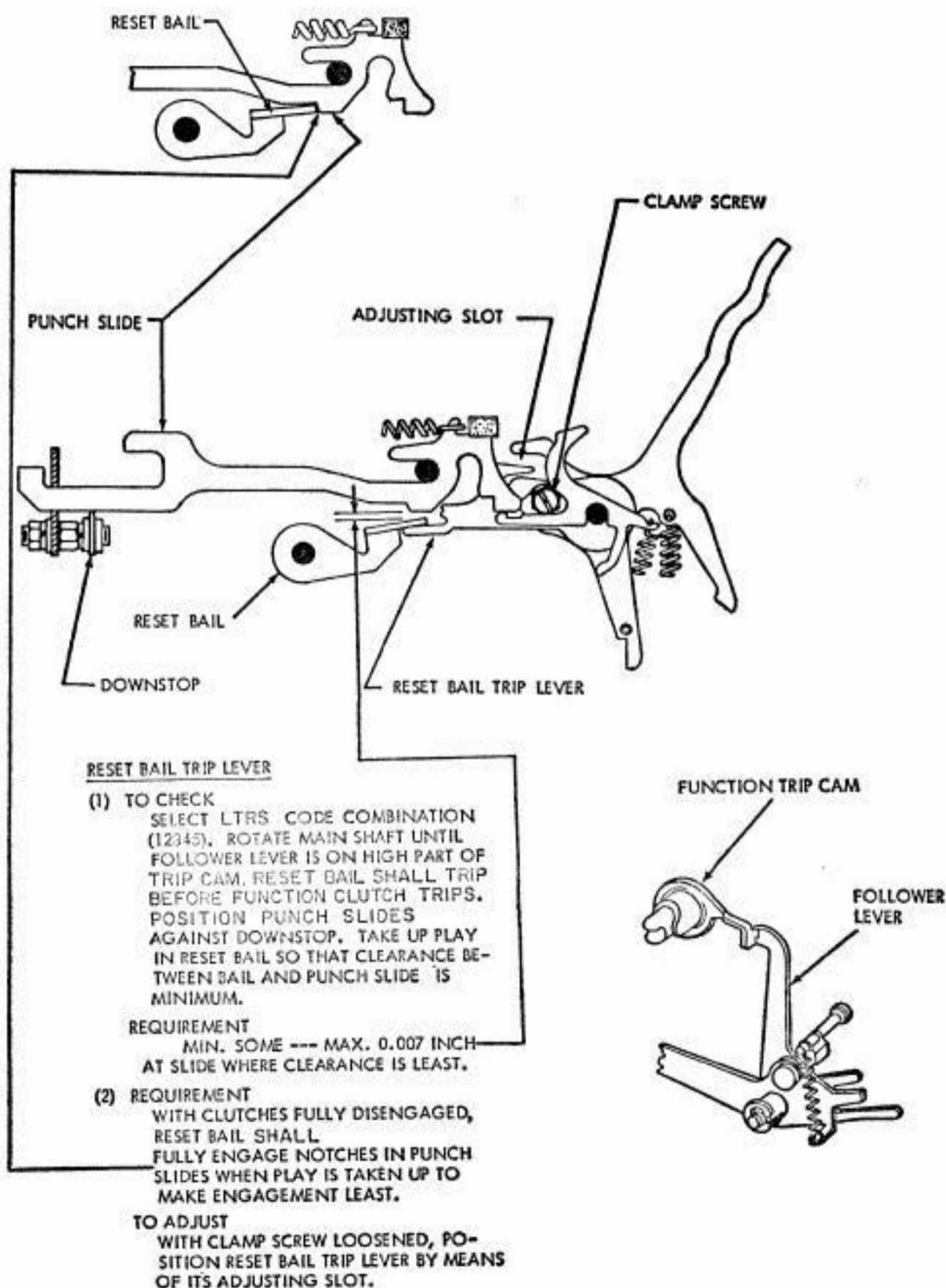




## 2.17 Punch Mechanism

### Note:

1. For typing reperforator equipped with two-shaft mechanism, omit this adjustment.
2. For typing reperforator equipped with remote-control or automatic noninterfering LTRS tape feed-out mechanism, substitute the **reset bail tripler** adjustment shown in 2.75.



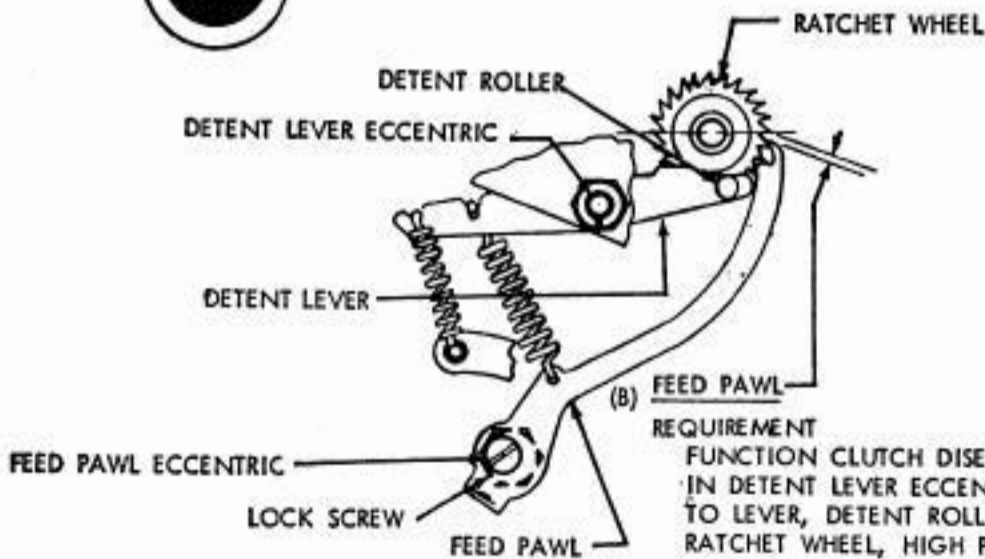
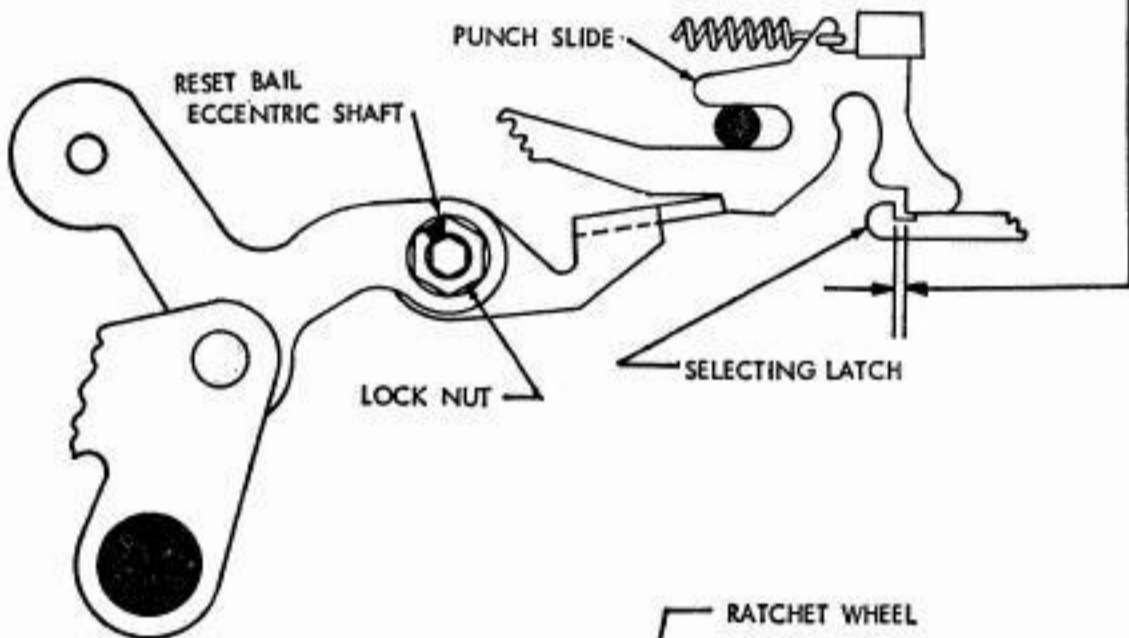
## 2.18 Punch Mechanism

### (A) PUNCH SLIDE RESET BAIL

#### REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED  
 MIN. 0.005 INCH----MAX. 0.015 INCH  
 BETWEEN PUNCH SLIDE AND PUNCH SLIDE  
 LATCH.  
 TO ADJUST

ROTATE THE RESET BAIL ECCENTRIC SHAFT  
 WITH ITS LOCK NUT LOOSENED. KEEP THE  
 INDENTATION IN THE ECCENTRIC ABOVE  
 CENTER OF SHAFT.



#### (B) REQUIREMENT

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 THE RIGHT OF ITS LOCK SCREW,  
 THE FEED PAWL SHALL ENGAGE THE FIRST  
 TOOTH BELOW A HORIZONTAL CENTERLINE  
 THROUGH RATCHET WHEEL WITH  
 NO PERCEPTIBLE CLEARANCE.

#### TO ADJUST

ROTATE THE FEED PAWL ECCENTRIC WITH LOCK  
 SCREW LOOSENED.

#### NOTE

THIS ADJUSTMENT IS RELATED TO FEED HOLE  
 SPACING AND TWO ADJUSTMENTS  
 SHALL BE MADE AT THE SAME TIME.

## 2.19 Punch Mechanism

**Note:** To replace the typing reperforator on the base, proceed as follows:

1. For typing reperforator equipped with one-shaft mechanism, refer to section containing the disassembly and reassembly routines for the 28 typing reperforator.
2. For typing reperforator equipped with two-shaft mechanism, refer to section containing the disassembly and reassembly routines for the 28 reperforator-transmitter-base.

FEED HOLE SPACING ----PRELIMINARY.

REQUIREMENT

INDENT OF DIE WHEEL ECCENTRIC STUD POINTING DOWNWARD.

TO ADJUST

POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED.

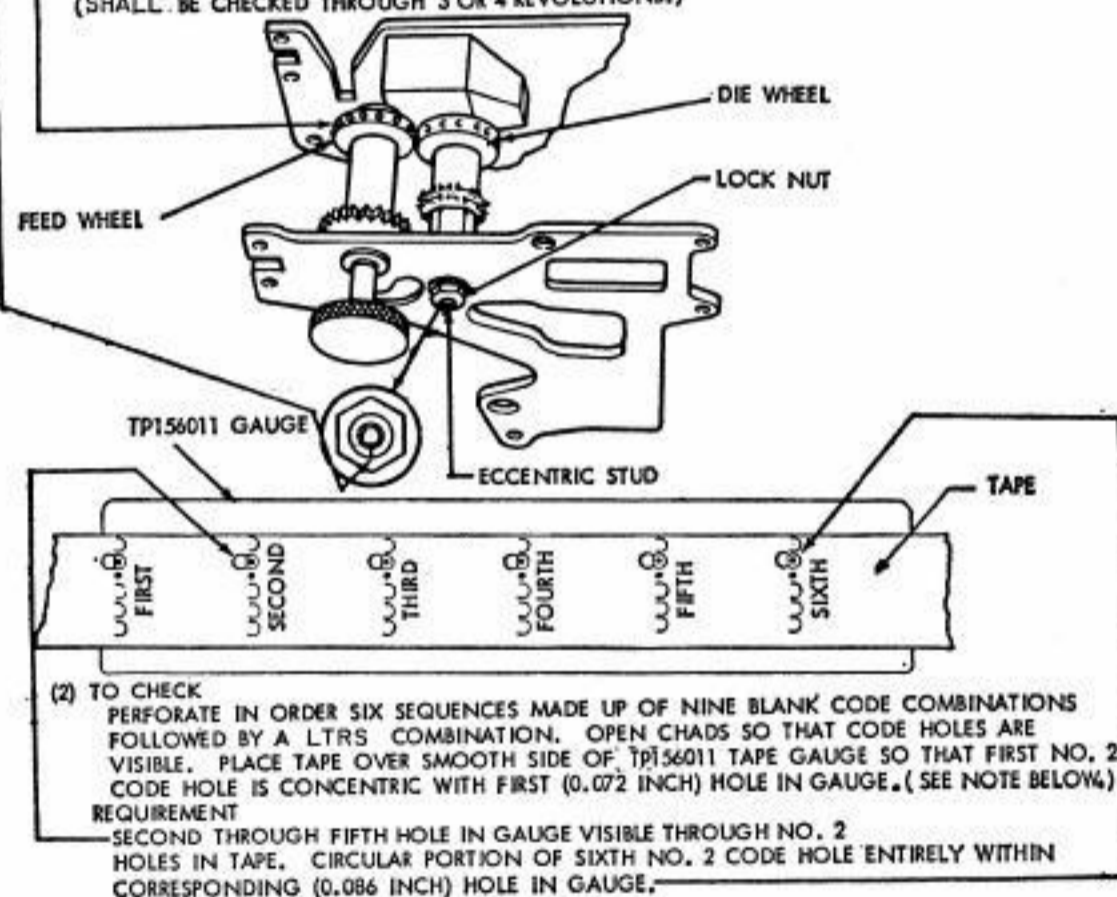
NOTE:

BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH BIASING SPRING ADJUSTMENTS.

FEED HOLE SPACING ----FINAL

(1) REQUIREMENT

WITH TAPE SHOE BLOCKED AWAY FROM FEED WHEEL, FEED PAWL, AND DETENT DISENGAGED, AND TAPE REMOVED: FEED WHEEL SHALL ROTATE FREELY. (SHALL BE CHECKED THROUGH 3 OR 4 REVOLUTIONS.)



(2) TO CHECK

PERFORM IN ORDER SIX SEQUENCES MADE UP OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LTRS COMBINATION. OPEN CHADS SO THAT CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF TP156011 TAPE GAUGE SO THAT FIRST NO. 2 CODE HOLE IS CONCENTRIC WITH FIRST (0.072 INCH) HOLE IN GAUGE. (SEE NOTE BELOW.)

REQUIREMENT

SECOND THROUGH FIFTH HOLE IN GAUGE VISIBLE THROUGH NO. 2 HOLES IN TAPE. CIRCULAR PORTION OF SIXTH NO. 2 CODE HOLE ENTIRELY WITHIN CORRESPONDING (0.086 INCH) HOLE IN GAUGE.

TO ADJUST

A. WITH TAPE REMOVED, KEEPING INDENT BELOW CENTER OF STUD, POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED SO THAT DIE WHEEL JUST BINDS ON FEED WHEEL. BACK OFF ECCENTRIC STUD SO THAT FEED WHEEL IS JUST FREE TO ROTATE. CHECK FREEDOM THROUGH 3 OR 4 REVOLUTIONS OF WHEEL.

B. REFINE THE ABOVE ADJUSTMENT TO MEET REQUIREMENT UNDER (2). MOVE INDENT IN ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE AND AWAY FROM FEED WHEEL TO INCREASE FEED HOLE SPACING. CAUTION: WITH TAPE REMOVED, MAKE SURE FEED WHEEL AND DIE WHEEL DO NOT BIND.

C. RECHECK REQUIREMENT (1). IF IT IS NOT MET, ECCENTRIC HAS BEEN OVER ADJUSTED. REFINES.

NOTE:

FIRST THROUGH FIFTH HOLES IN GAUGE ARE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER). BUT SIXTH HOLE IN GAUGE IS LARGER (0.086 INCH). THIS ARRANGEMENT ALLOWS  $\pm 0.007$  INCH VARIATION IN 5 INCHES.

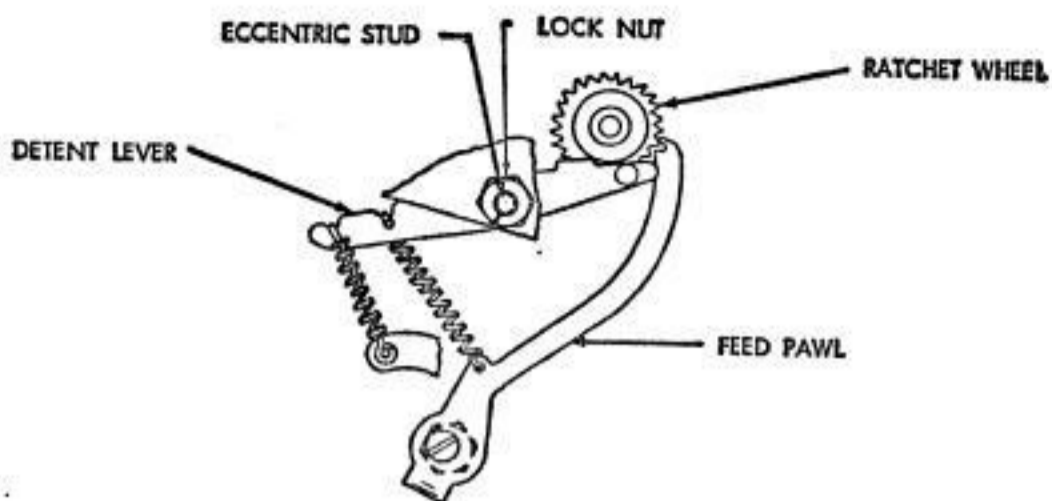
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## 2.20 Punch Mechanism



### DETENT LEVER

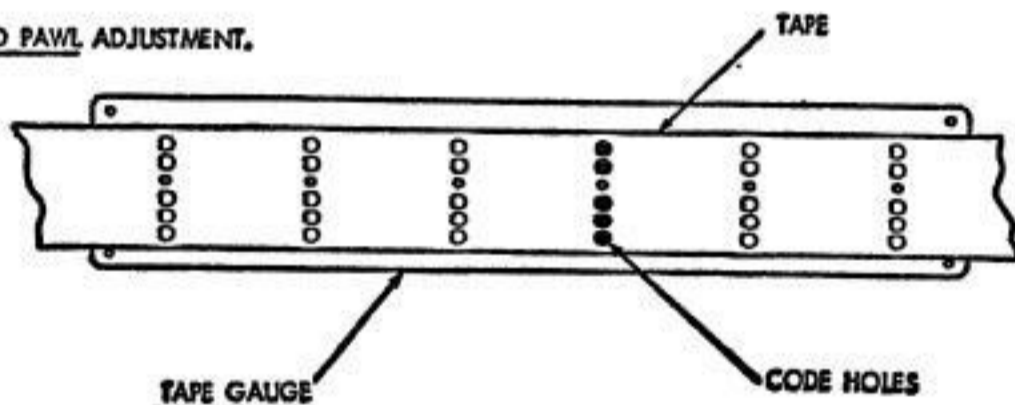
#### REQUIREMENT

A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY ' LTRS COMBINATION PERFORATED ON REPERFORATOR MUST CONFORM TO THE TP 156011 TAPE GAUGE. THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHALL COINCIDE WITH A LATERAL CENTERLINE THROUGH THE HOLES IN THE GAUGE.

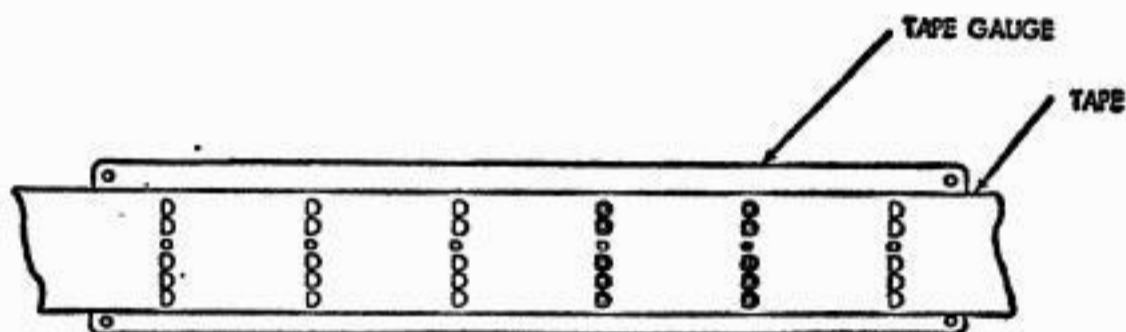
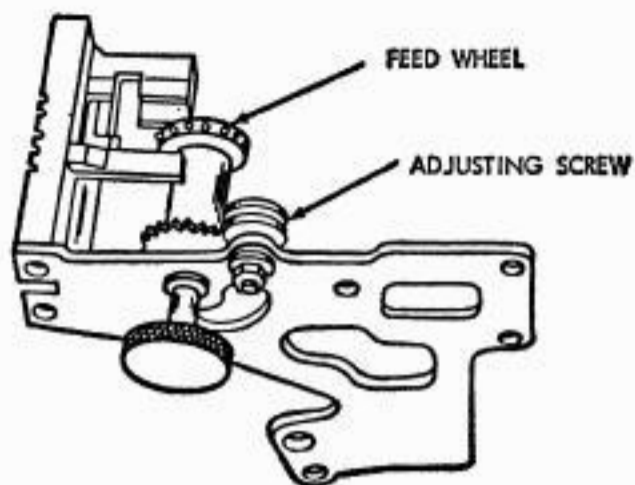
#### TO ADJUST

ROTATE THE DETENT ECCENTRIC CLOCKWISE TO MOVE THE FEED HOLES TOWARD THE HINGED EDGE OF THE CODE HOLES AND COUNTERCLOCKWISE TO MOVE THE FEED HOLES TOWARD THE TRAILING EDGE OF THE CODE HOLES. TIGHTEN THE ECCENTRIC LOCK NUT AND REFINES THE FEED PAWL ADJUSTMENT.

#### RECHECK FEED PAWL ADJUSTMENT.



## 2.21 Punch Mechanism



### FEED HOLE LATERAL ALIGNMENT

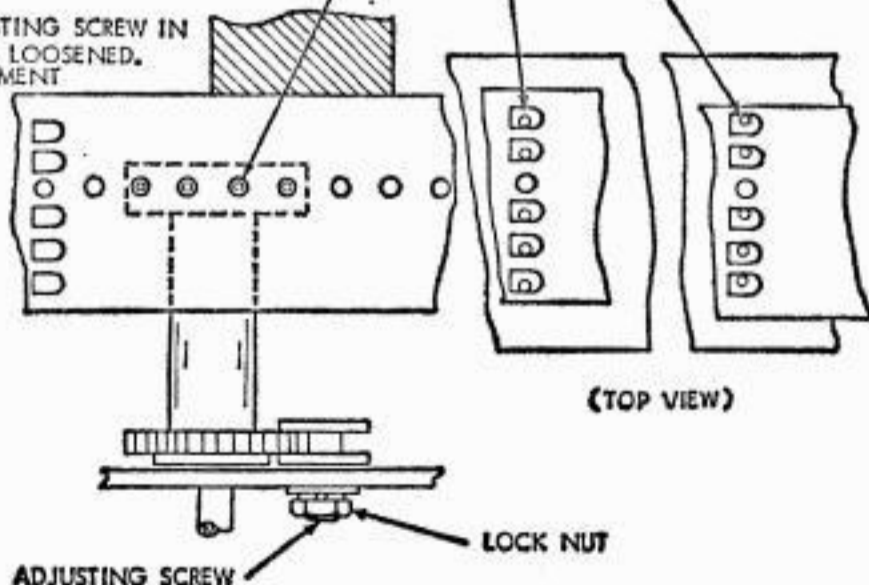
#### REQUIREMENT.

WHEN A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LTRS COMBINATION IS PERFORATED BY THE REPERFORATOR AND CHECKED BY THE TAPE GAUGE, THE CODE HOLES IN THE TAPE SHALL BE

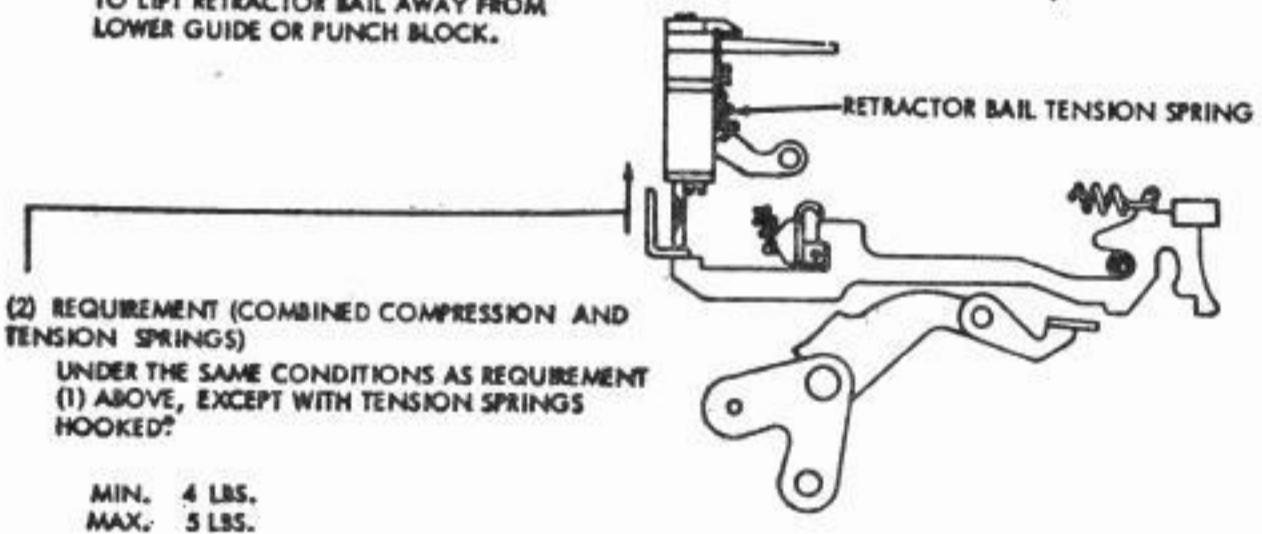
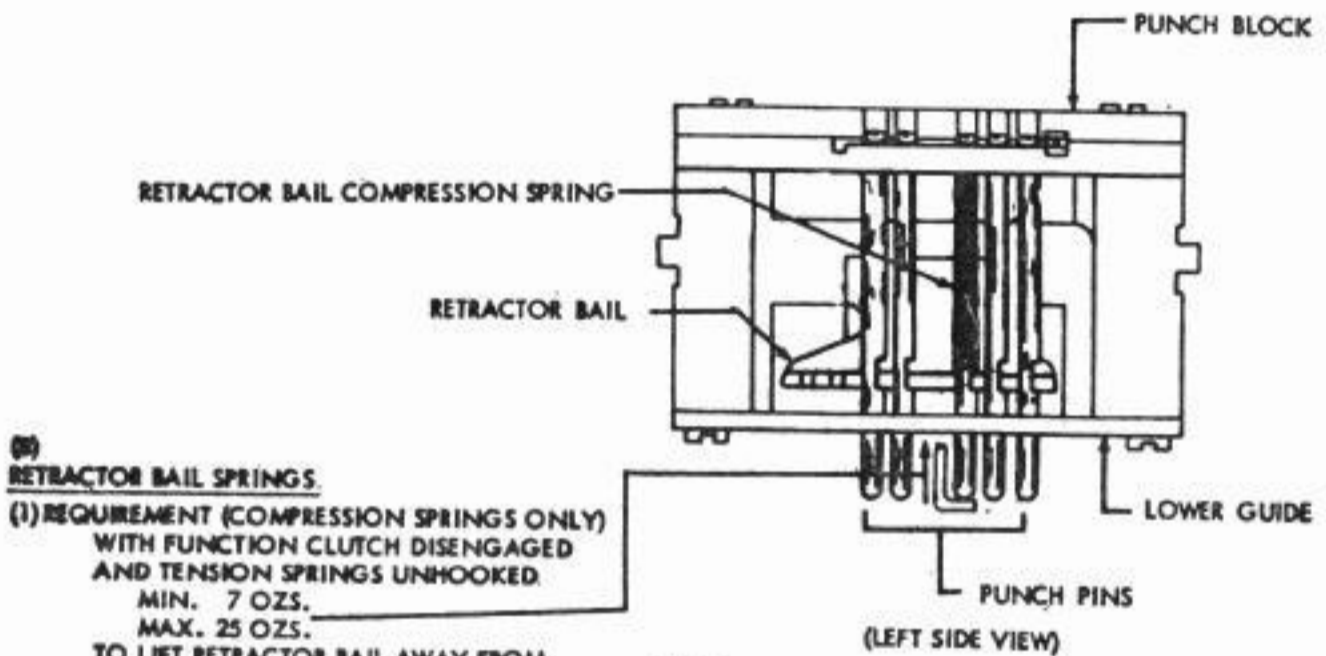
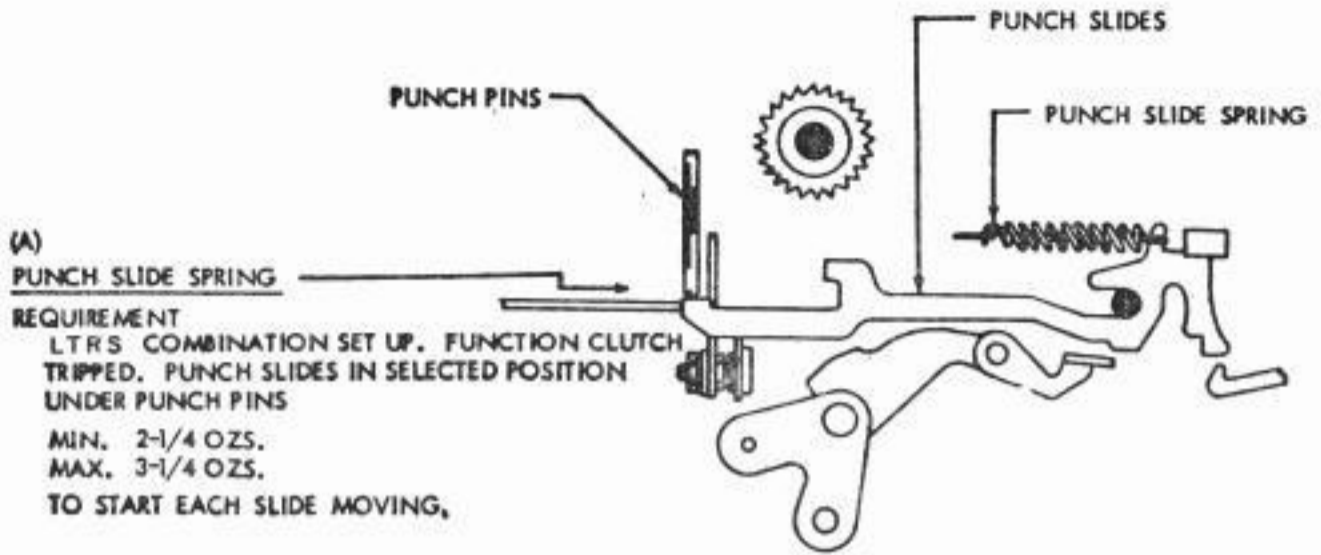
CONCENTRIC WITH THE HOLES IN THE GAUGE.

#### TO ADJUST

TURN THE FEED WHEEL ADJUSTING SCREW IN OR OUT WITH ITS LOCK NUT LOOSENED. REFINE DETENT LEVER ADJUSTMENT IF NECESSARY.

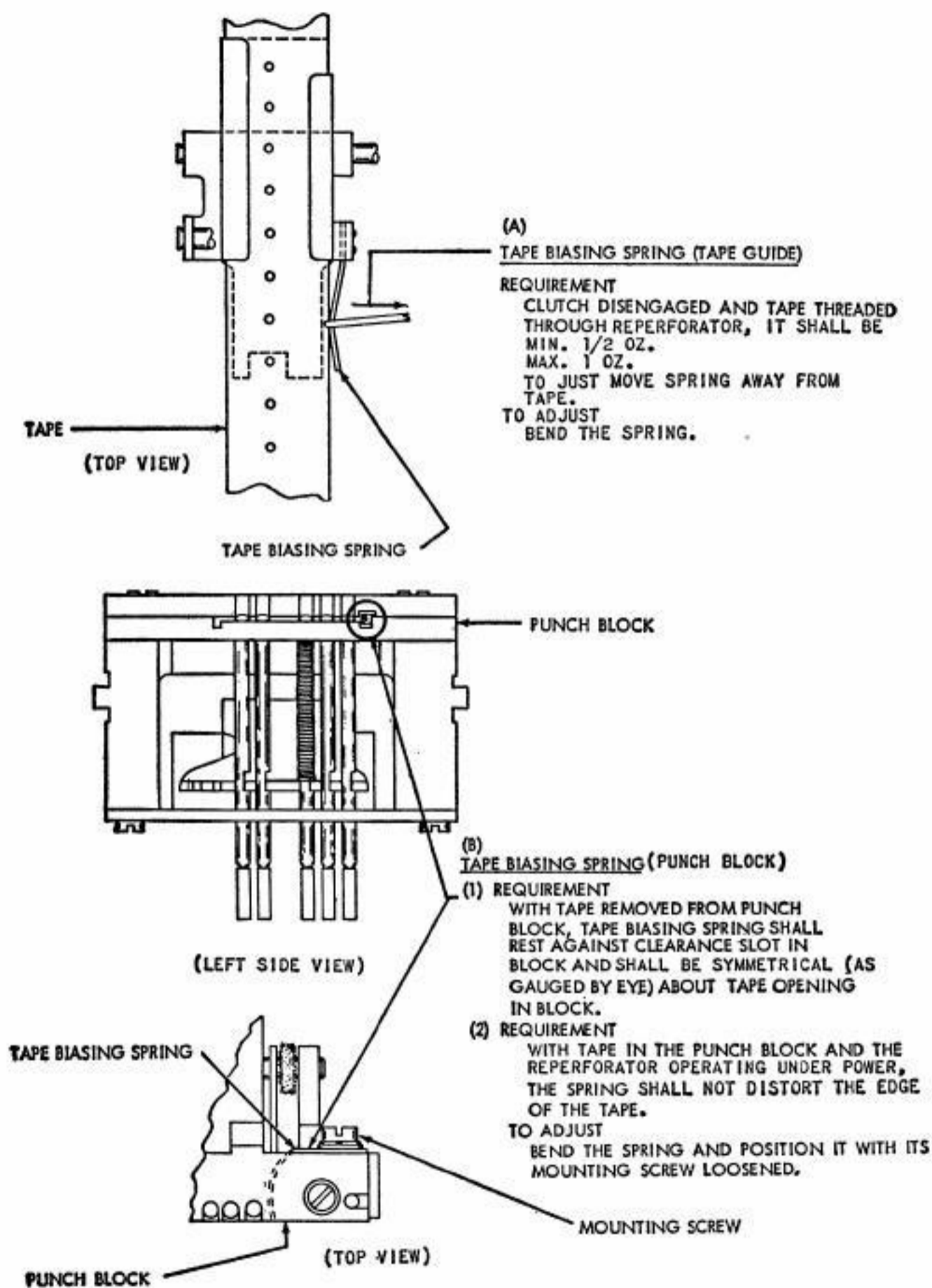


## 2.22 Punch Mechanism

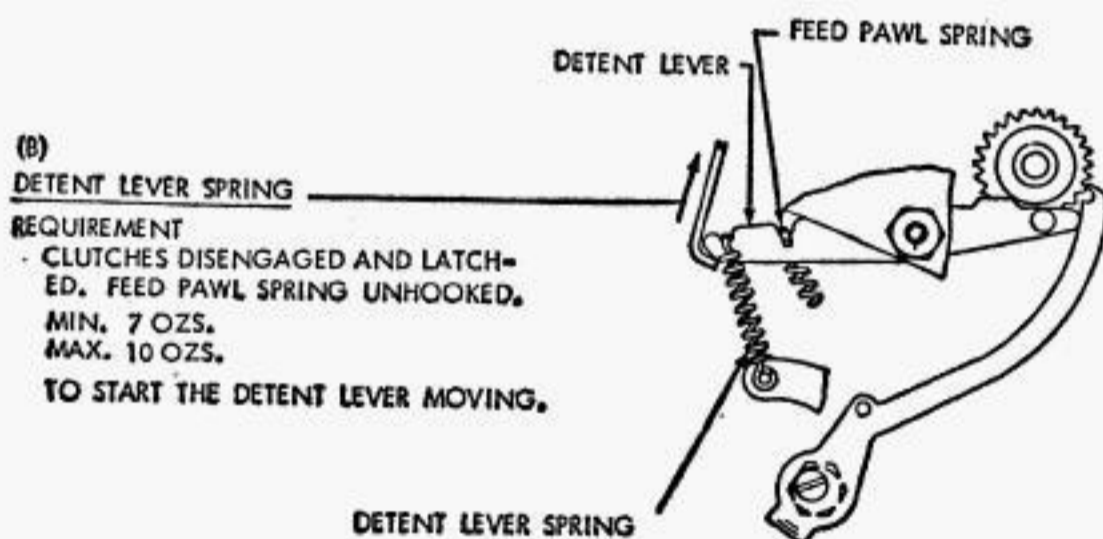
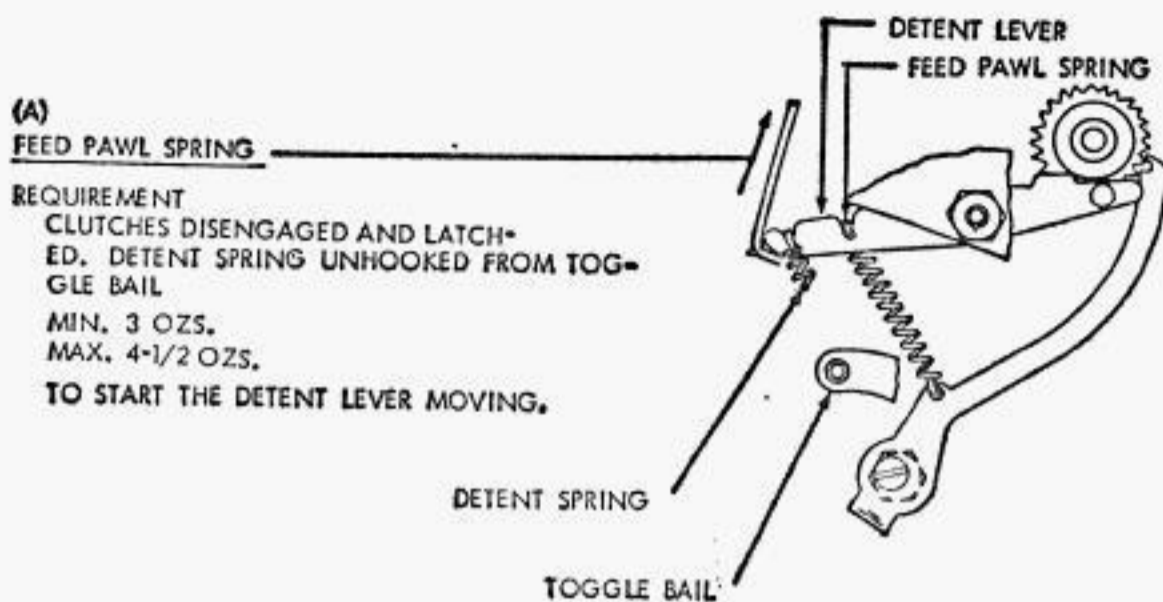


\*TO FACILITATE REHOOKING TENSION SPRINGS, PLACE PUNCH PINS IN UPPERMOST POSITION.

## 2.23 Punch Mechanism

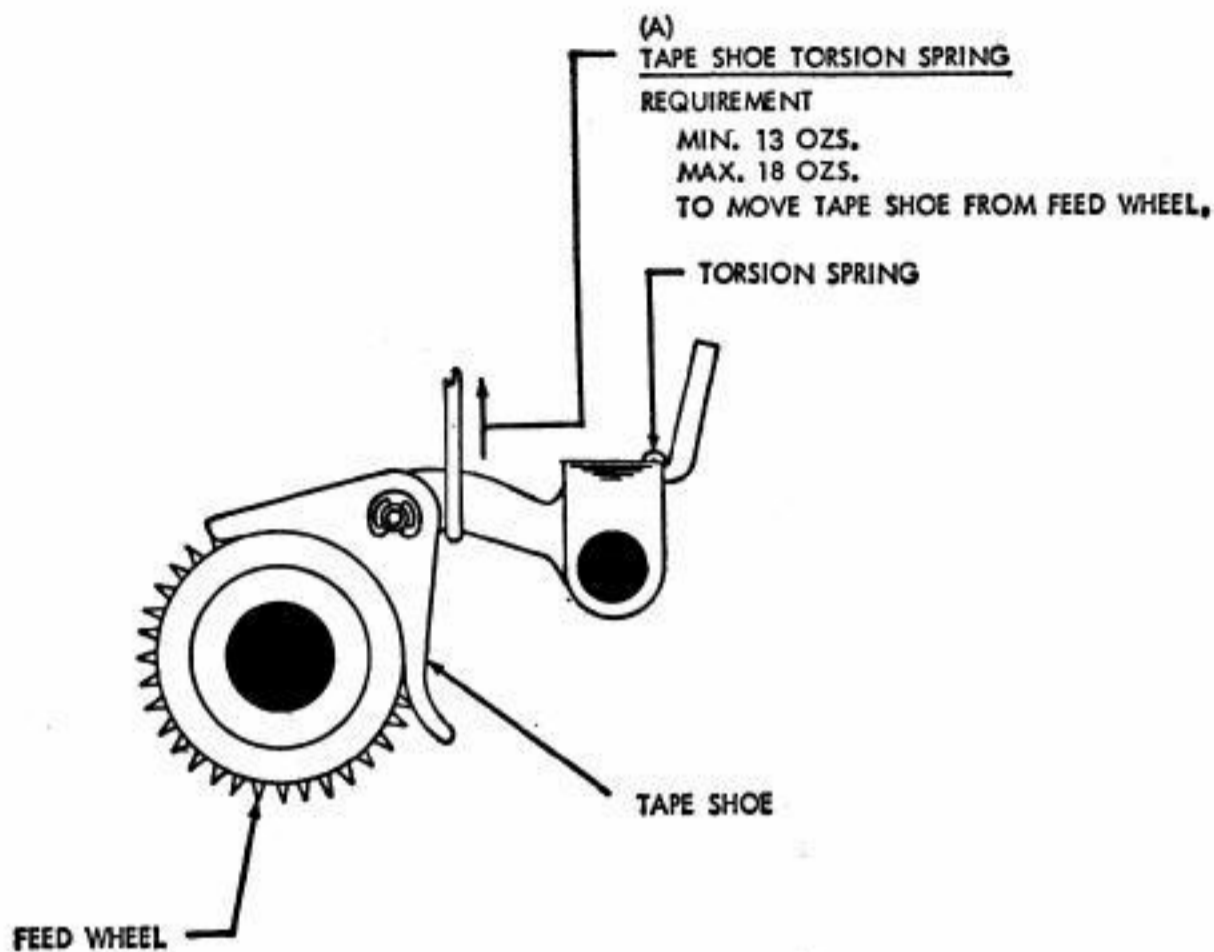


## 2.24 Punch Mechanism

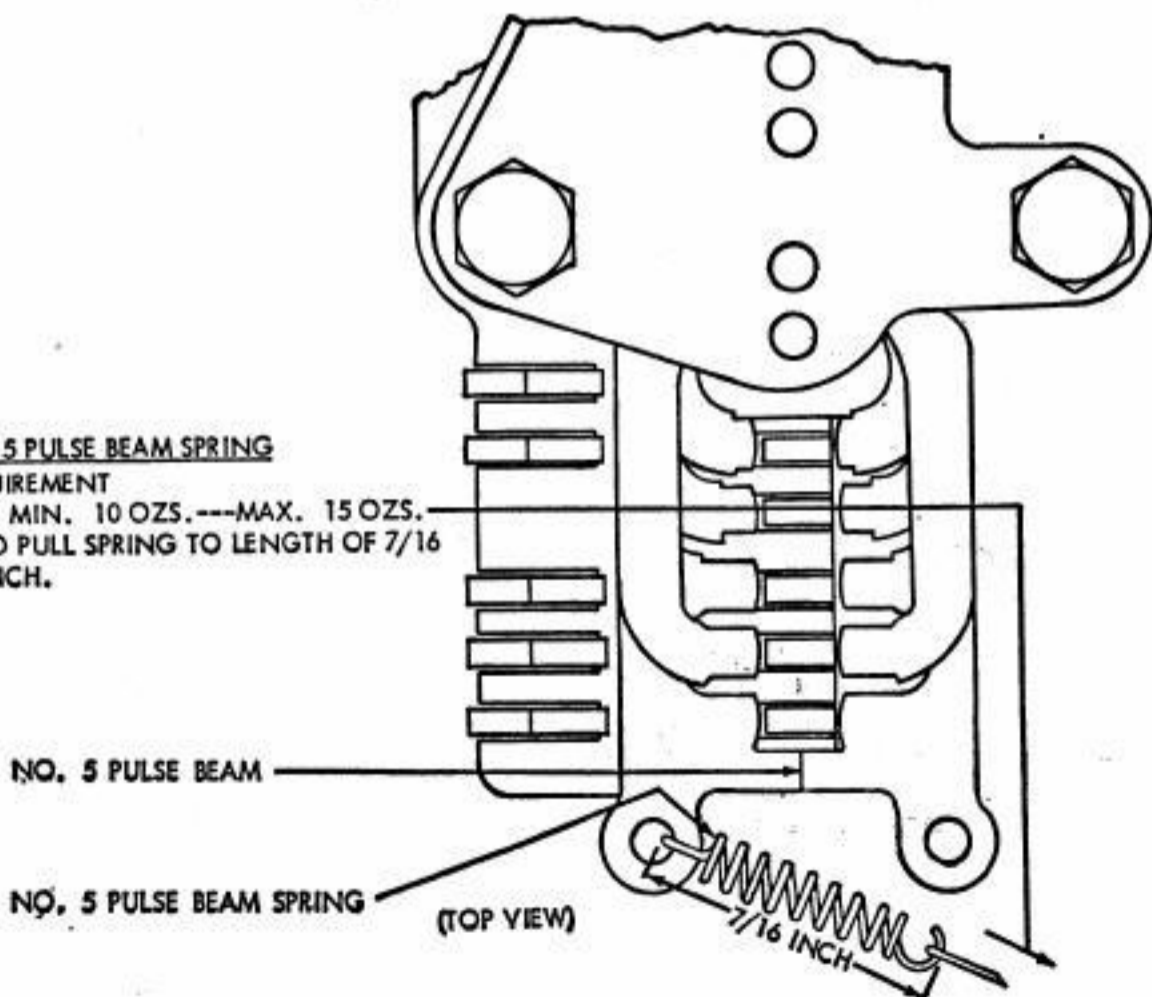




## 2.25 Punch and Typing Mechanisms



(B) NO. 5 PULSE BEAM SPRING  
 REQUIREMENT  
 MIN. 10 OZS. --- MAX. 15 OZS.  
 TO PULL SPRING TO LENGTH OF 7/16 INCH.



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## 2.26 Function Mechanism

### (A) FUNCTION CLUTCH RELEASE SPRING

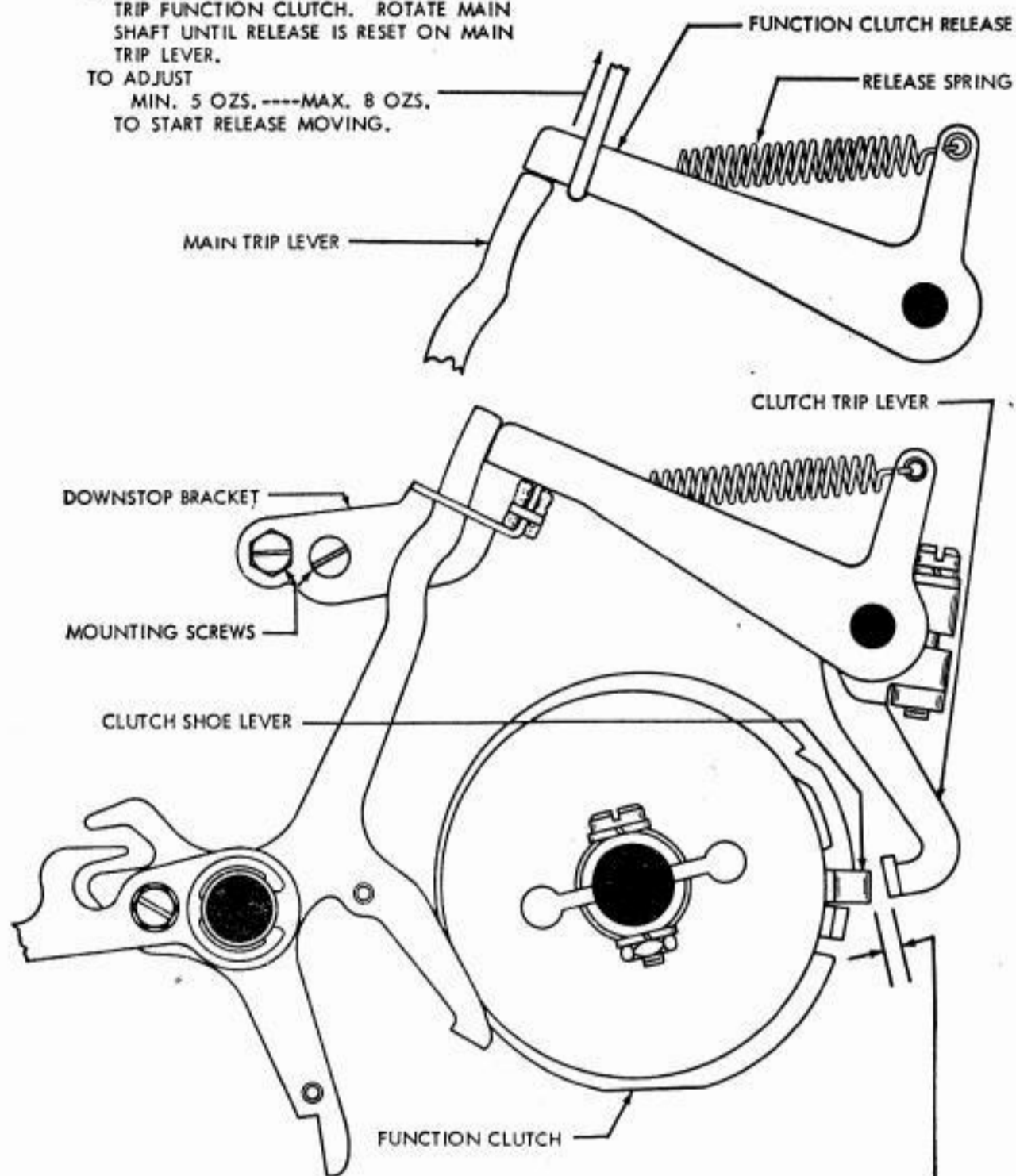
TO CHECK

TRIP FUNCTION CLUTCH. ROTATE MAIN SHAFT UNTIL RELEASE IS RESET ON MAIN TRIP LEVER.

TO ADJUST

MIN. 5 OZS. ----MAX. 8 OZS.

TO START RELEASE MOVING.



### (B) RELEASE LEVER DOWNSTOP BRACKET

REQUIREMENT

WITH FUNCTION CLUTCH TRIPPED AND SHAFT ROTATED UNTIL CLEARANCE BETWEEN THE FUNCTION CLUTCH DISC STOP LUG AND THE CLUTCH TRIP LEVER IS AT A MINIMUM. WITH THE RELEASE LEVER RESTING AGAINST THE DOWNSTOP BRACKET, THERE SHALL BE

MIN. 0.002 INCH ----MAX. 0.045 INCH CLEARANCE BETWEEN THE FUNCTION CLUTCH DISC STOP LUG AND THE TRIP LEVER.

TO ADJUST

REMOVE TAPE GUARD. POSITION DOWNSTOP BRACKET WITH MOUNTING SCREWS FRICTION TIGHT.

## 2.27 Typing Mechanism

### (A) PUSH BAR OPERATING BLADE (PRELIMINARY)

#### TO CHECK

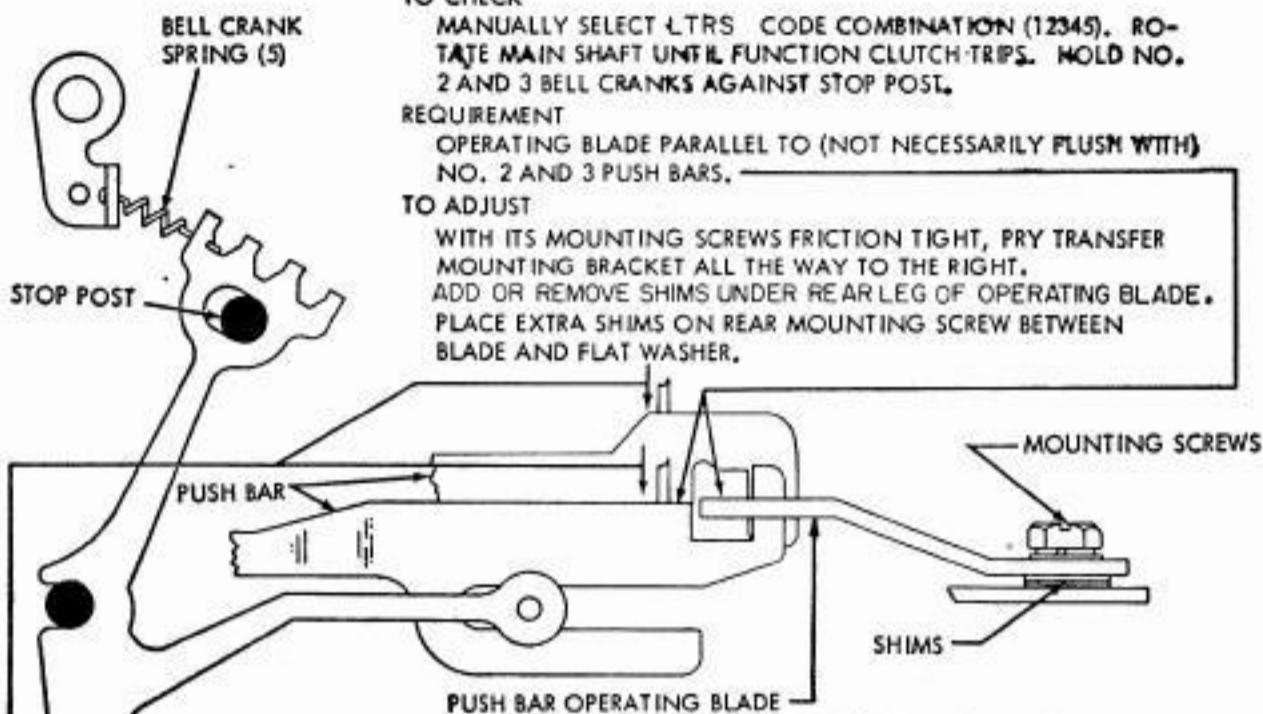
MANUALLY SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. HOLD NO. 2 AND 3 BELL CRANKS AGAINST STOP POST.

#### REQUIREMENT

OPERATING BLADE PARALLEL TO (NOT NECESSARILY PLUMB WITH) NO. 2 AND 3 PUSH BARS.

#### TO ADJUST

WITH ITS MOUNTING SCREWS FRICTION TIGHT, PRY TRANSFER MOUNTING BRACKET ALL THE WAY TO THE RIGHT. ADD OR REMOVE SHIMS UNDER REAR LEG OF OPERATING BLADE. PLACE EXTRA SHIMS ON REAR MOUNTING SCREW BETWEEN BLADE AND FLAT WASHER.



### (B) PUSH BAR OPERATING BLADE (FINAL)

#### (1) TO CHECK

MANUALLY SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. MANUALLY SEAT PUSH BARS IN DETENTED POSITION. IN BAR WHICH IS NEAREST LEFT EDGE OF BLADE, TAKE UP PLAY TO LEFT AND REAR, AND THEN RELEASE.

#### REQUIREMENT

CLEARANCE BETWEEN BAR AND LEFT EDGE OF BLADE:

MIN. 0.015 INCH---MAX. 0.030 INCH

#### (2) REQUIREMENT

SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND PUSH BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

#### (3) REQUIREMENT

WITH UNIT IN STOP POSITION, SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

#### TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION OPERATING BLADE IN ELONGATED HOLES.

#### NOTE:

IT MAY BE NECESSARY TO REFINE THIS ADJUSTMENT AFTER ROCKER BAIL PILOT STUD ADJUSTMENT.

### (C) BELL CRANK SPRINGS (5)

#### TO CHECK

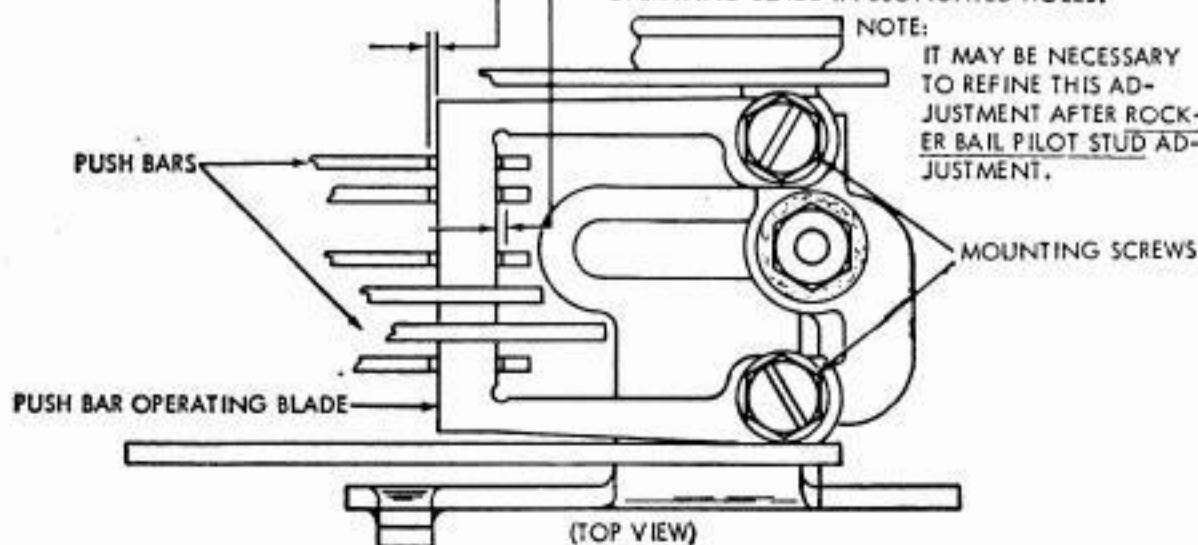
SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

#### REQUIREMENT

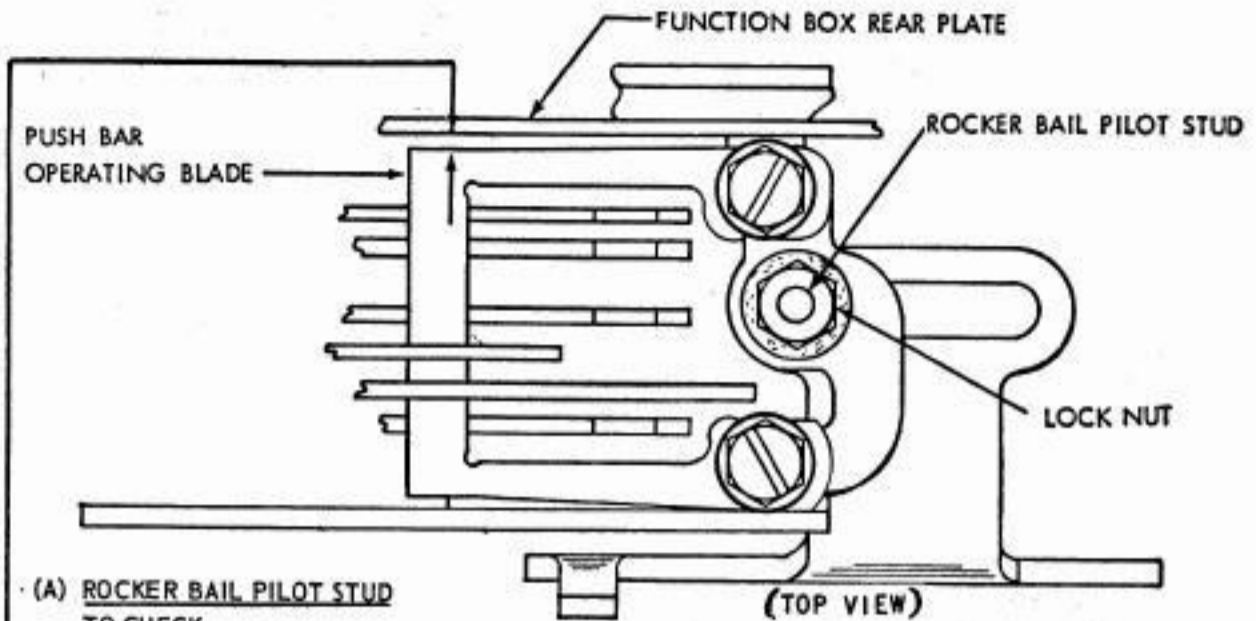
MIN. 1 OZ. ---MAX. 3 OZS.  
TO START PUSH BAR MOVING

#### NOTE:

CHECK ALL FIVE SPRINGS.



## 2.28 Function and Typing Mechanisms



**(A) ROCKER BAIL PILOT STUD TO CHECK**

SELECT BLANK COMBINATION AND TRIP FUNCTION CLUTCH. POSITION ROCKER BAIL THROUGH A COMPLETE CYCLE TAKING UP THE PLAY BETWEEN THE ROCKER BAIL AND THE FUNCTION BOX REAR PLATE TO MAKE THE CLEARANCE A MINIMUM.

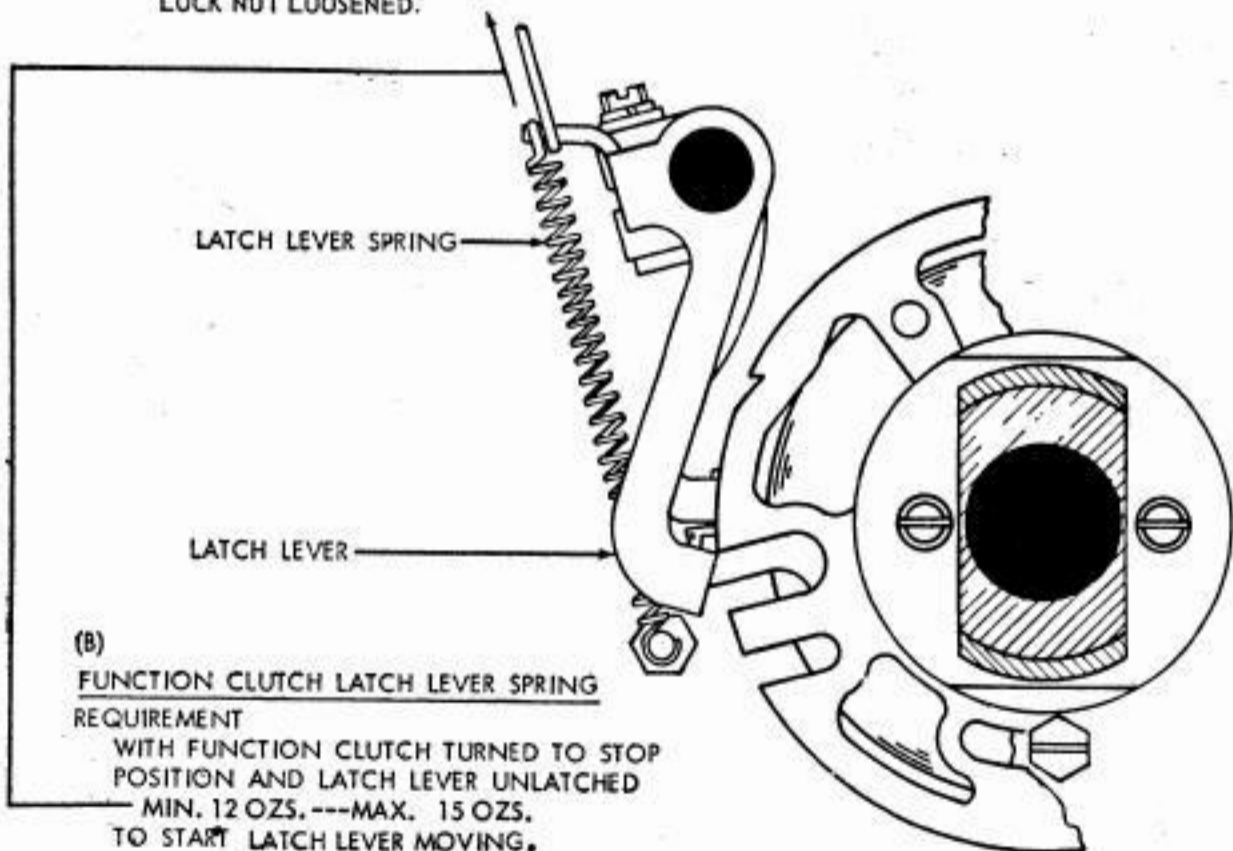
**REQUIREMENT**

CLEARANCE BETWEEN FUNCTION BOX REAR PLATE AND REAR EDGE OF PUSH BAR OPERATING BLADE

MIN. 0.005 INCH---MAX. 0.020 INCH AT THE POINT IN THE CYCLE WHERE THIS CLEARANCE IS AT A MINIMUM.

**TO ADJUST**

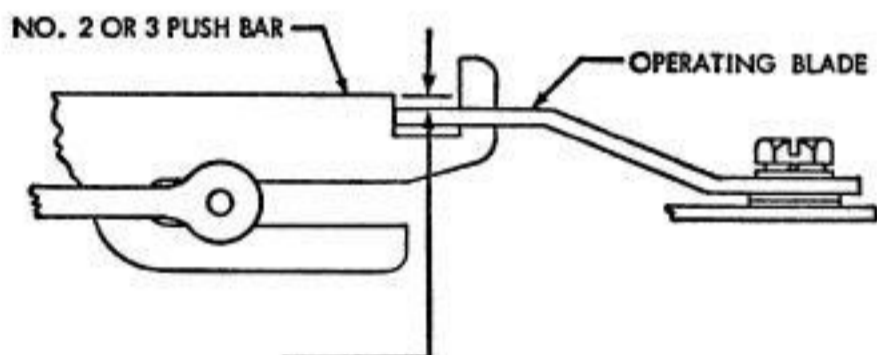
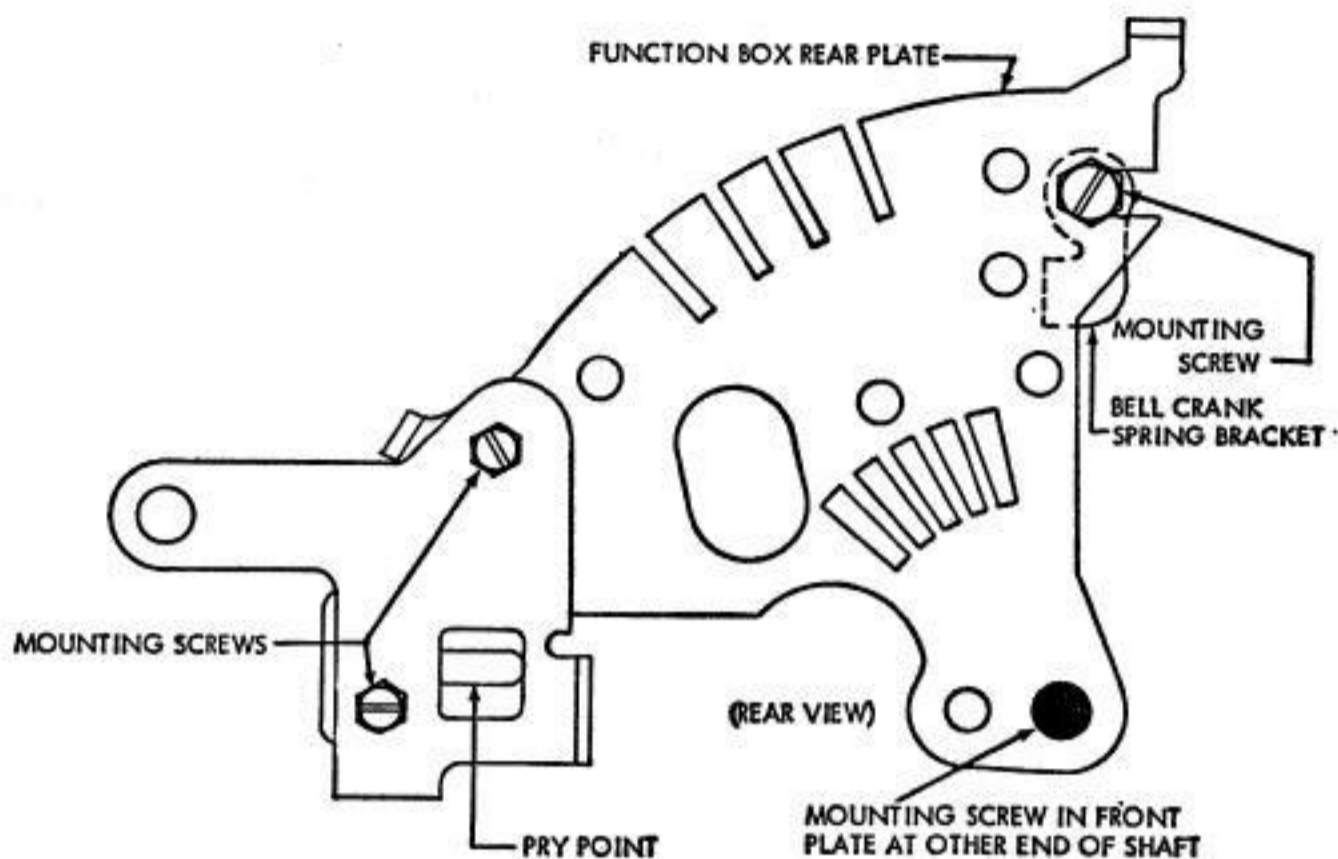
POSITION ROCKER BAIL PILOT STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.



**(B) FUNCTION CLUTCH LATCH LEVER SPRING REQUIREMENT**

WITH FUNCTION CLUTCH TURNED TO STOP POSITION AND LATCH LEVER UNLATCHED  
MIN. 12 OZS.---MAX. 15 OZS.  
TO START LATCH LEVER MOVING.

## 2.29 Typing Mechanism



### FUNCTION BOX

#### TO CHECK

MANUALLY SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS, PUNCH SLIDES ARE DISENGAGED FROM LATCHES AND BLADE JUST TOUCHES PUSH BARS. IN NO. 2 AND 3 PUSH BARS, TAKE UP PLAY DOWNWARD AND RELEASE.

#### REQUIREMENT

TOP SURFACE OF OPERATING BLADE  
 FLUSH -----MAX. 0.020 INCH  
 BELOW TOP SURFACE OF NO. 2 AND 3 PUSH BARS.

#### TO ADJUST

USING PRY POINT, POSITION FUNCTION BOX WITH THREE MOUNTING SCREWS IN REAR PLATE AND ONE MOUNTING SCREW IN FRONT PLATE LOOSENED. CHECK POSITION OF BELL CRANK SPRING BRACKET.

#### NOTE:

WHERE A TYPING REPERFORATOR IS PART OF A 28 PERFORATOR-TRANSMITTER-BASE, IT MAY BE NECESSARY TO REFINE THE FUNCTION-BOX ADJUSTMENT WITHIN ITS LIMITS TO INCREASE OPERATING MARGINS OF A TYPING REPERFORATOR.

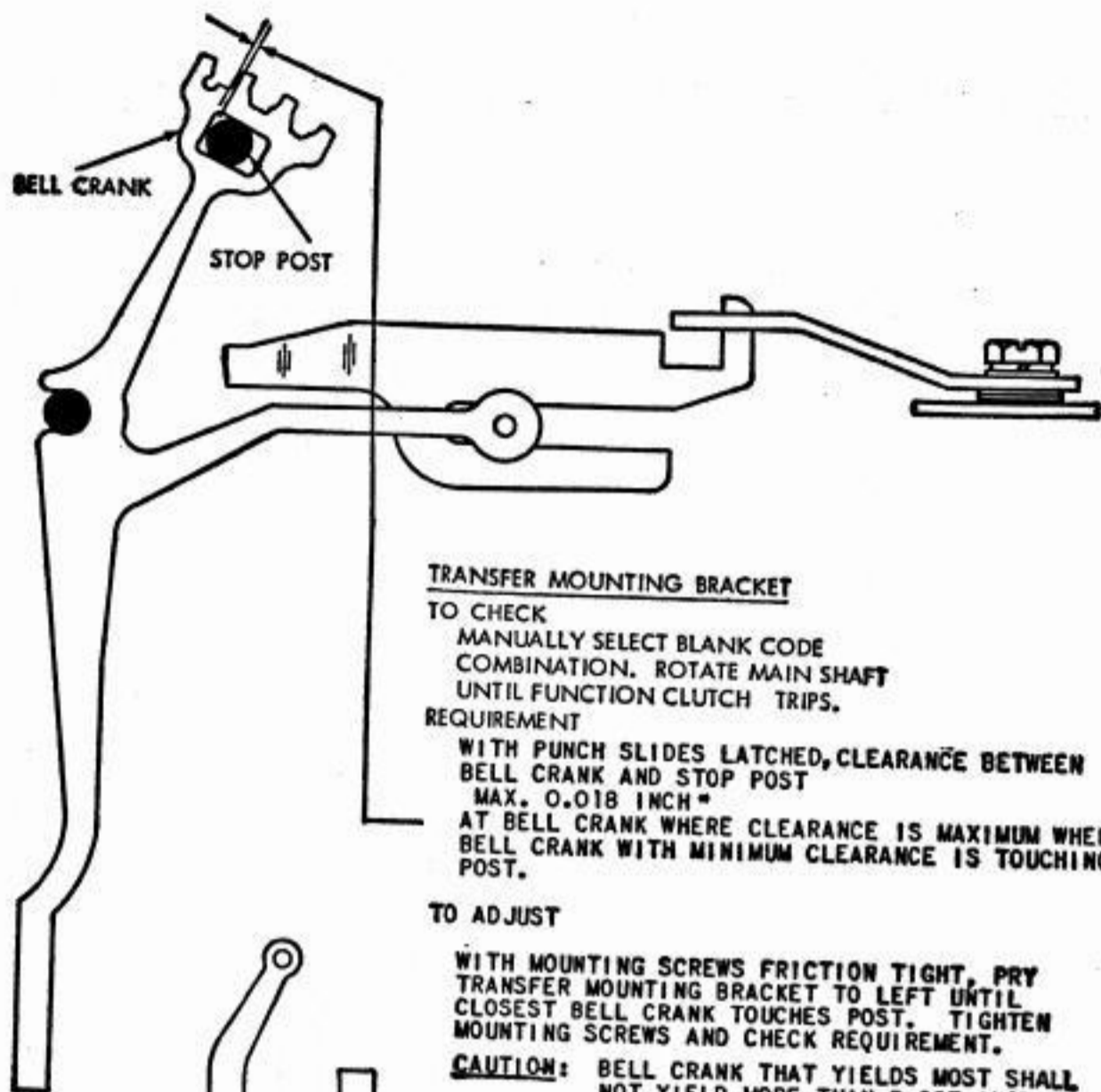
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## 2.30 Typing Mechanism



### TRANSFER MOUNTING BRACKET

#### TO CHECK

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

#### REQUIREMENT

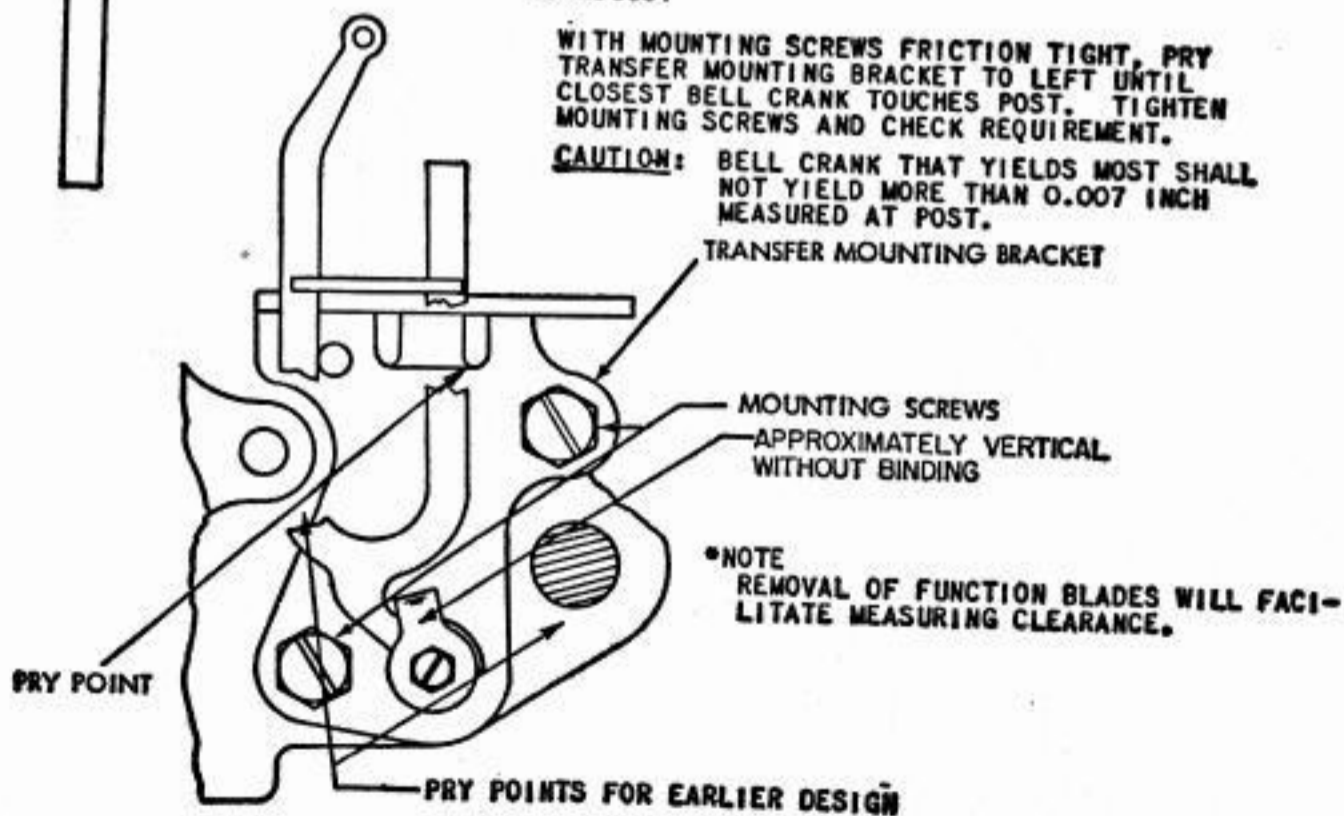
WITH PUNCH SLIDES LATCHED, CLEARANCE BETWEEN BELL CRANK AND STOP POST  
MAX. 0.018 INCH\*

AT BELL CRANK WHERE CLEARANCE IS MAXIMUM WHEN BELL CRANK WITH MINIMUM CLEARANCE IS TOUCHING POST.

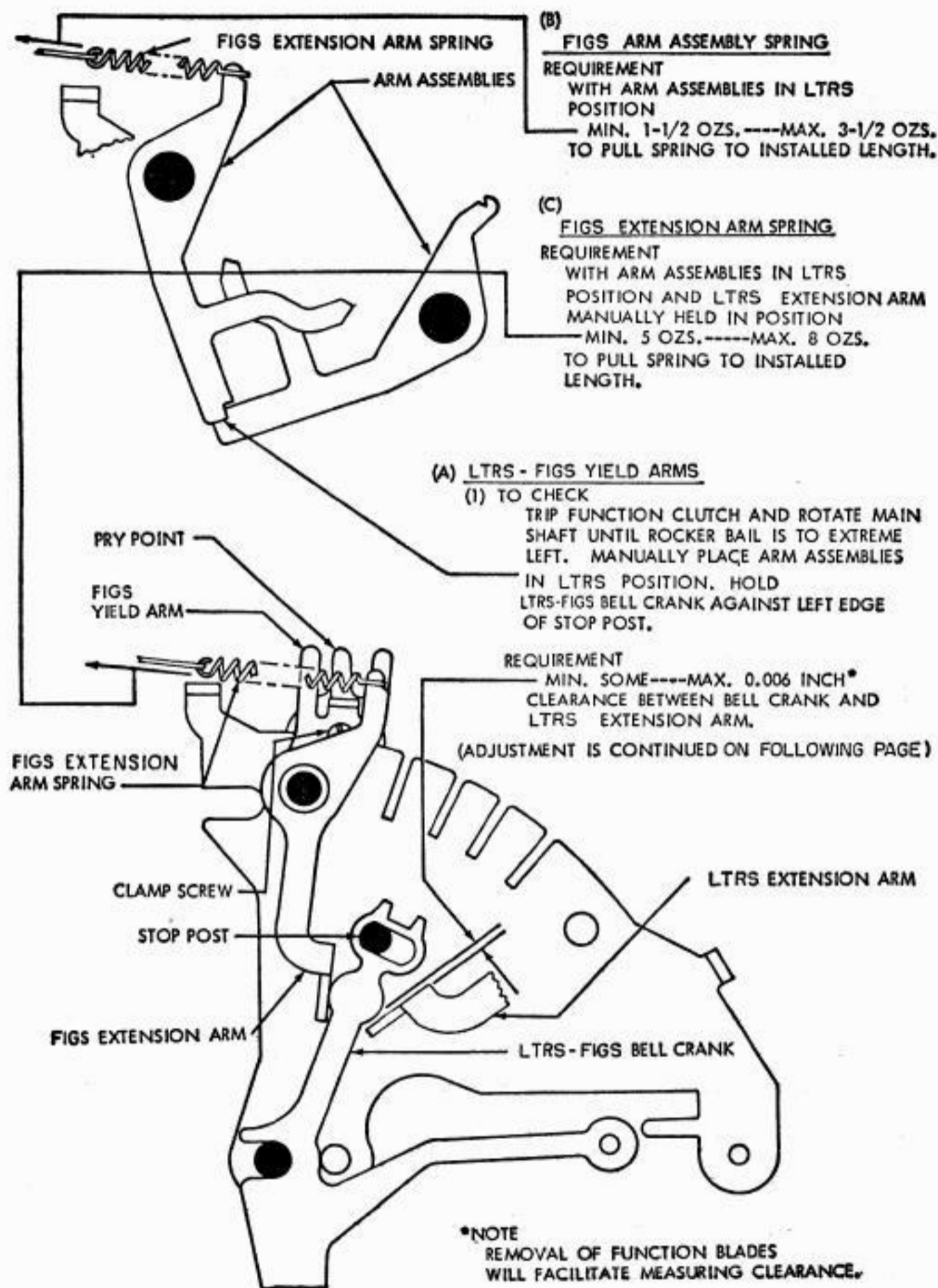
#### TO ADJUST

WITH MOUNTING SCREWS FRICTION TIGHT, PRY TRANSFER MOUNTING BRACKET TO LEFT UNTIL CLOSEST BELL CRANK TOUCHES POST. TIGHTEN MOUNTING SCREWS AND CHECK REQUIREMENT.

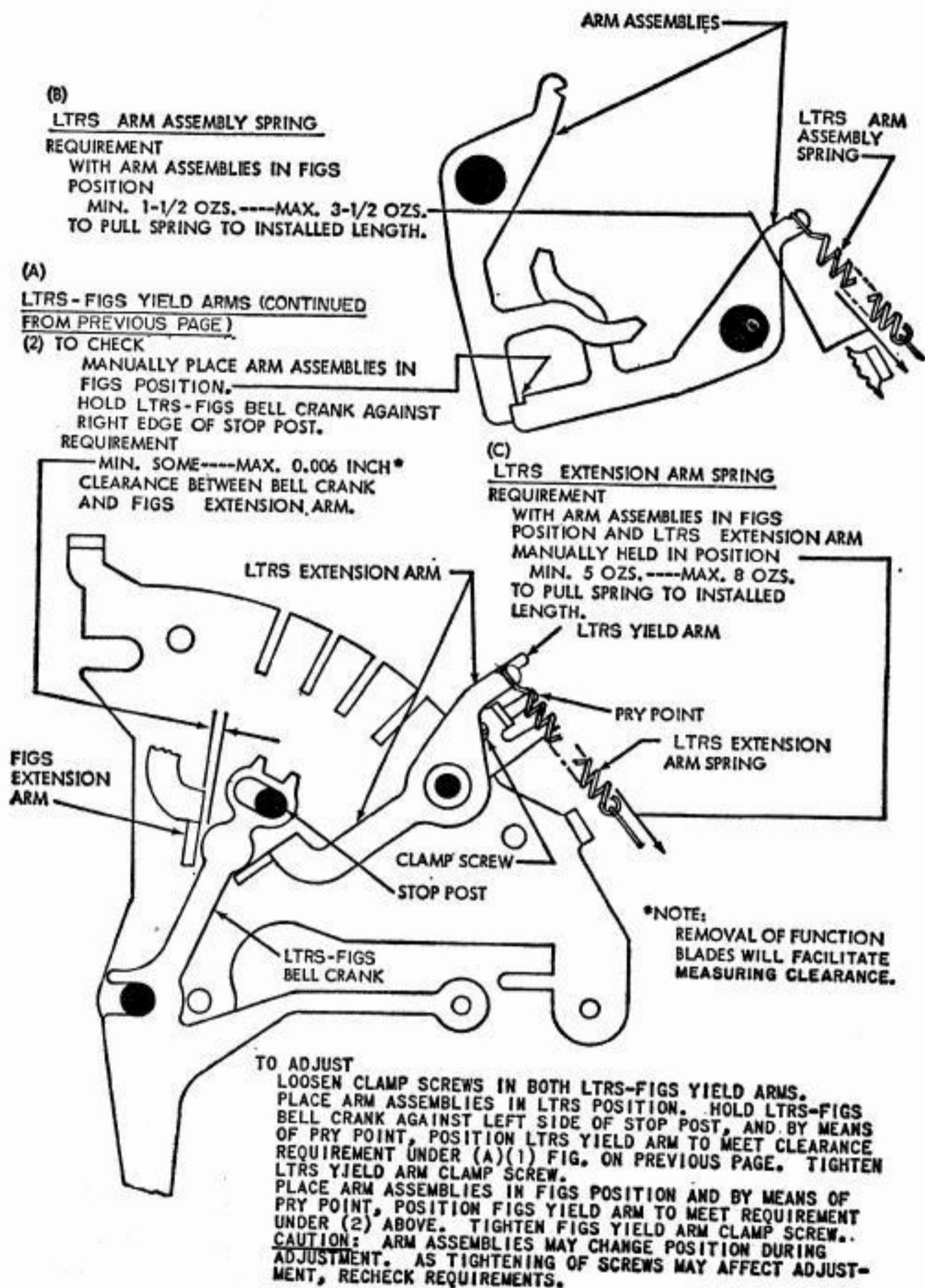
**CAUTION:** BELL CRANK THAT YIELDS MOST SHALL NOT YIELD MORE THAN 0.007 INCH MEASURED AT POST.



## 2.31 Typing Mechanism

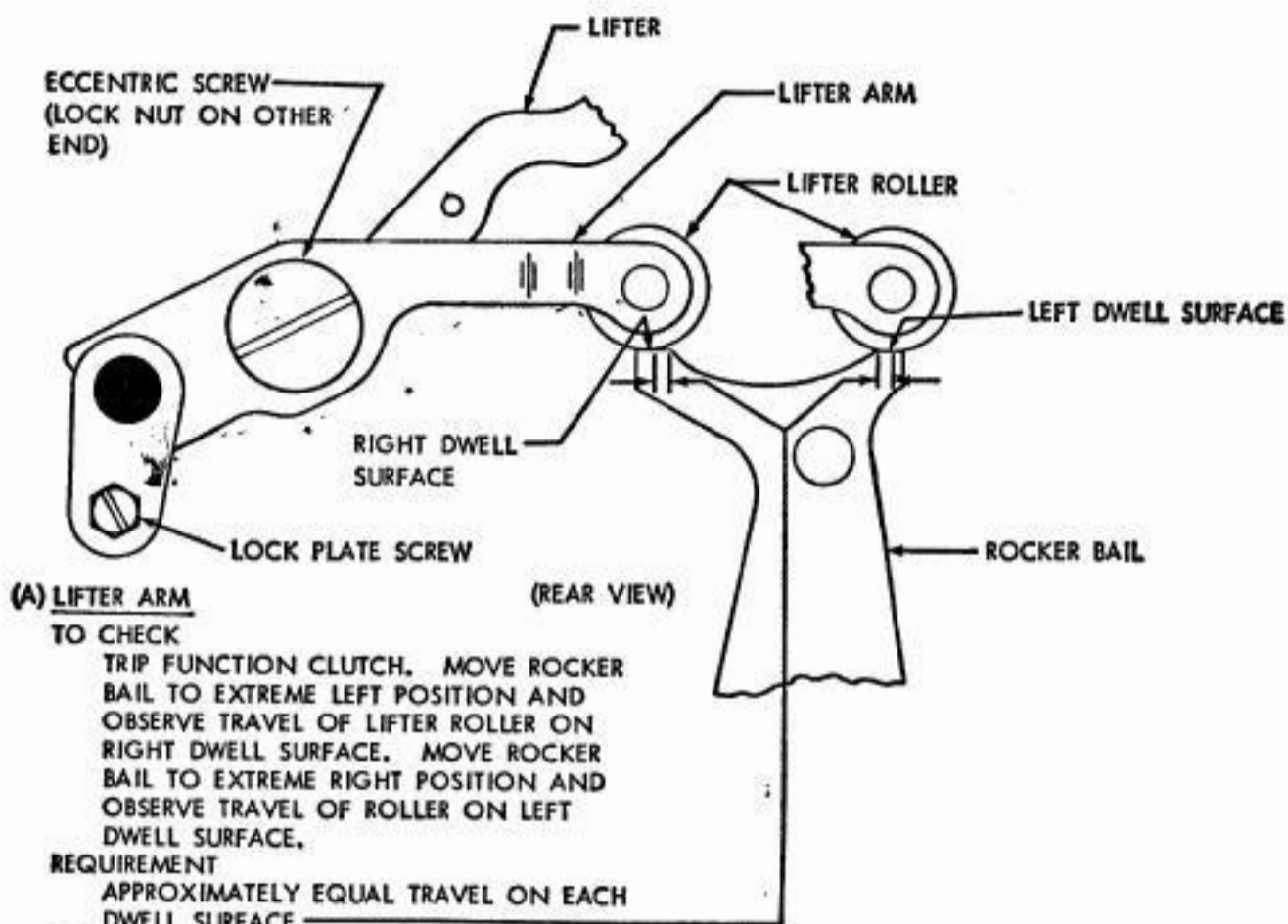


## 2.32 Typing Mechanism





## 2.33 Typing Mechanism

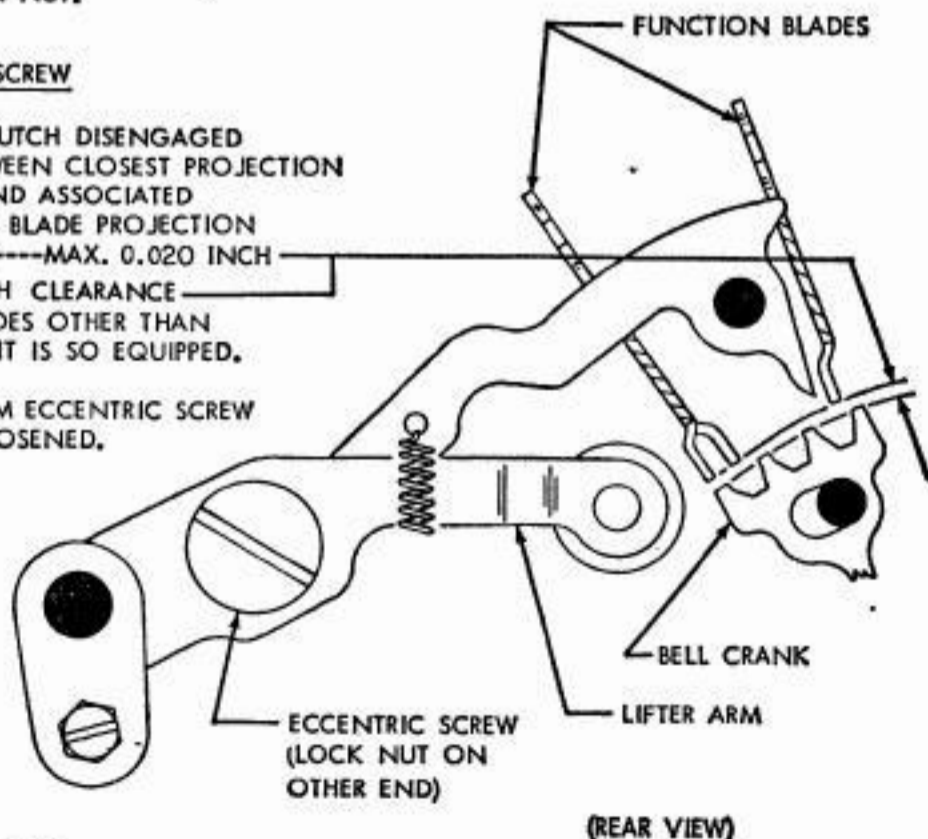


**TO ADJUST\***  
 LOOSEN LOCK PLATE SCREW UNTIL FRICTION TIGHT. WITH ECCENTRIC SCREW LOCK NUT FRICTION TIGHT, POSITION LIFTER ARM ON LIFTER. TIGHTEN LOCK PLATE SCREW. DO NOT TIGHTEN LOCK NUT.

### (B) LIFTER ARM ECCENTRIC SCREW

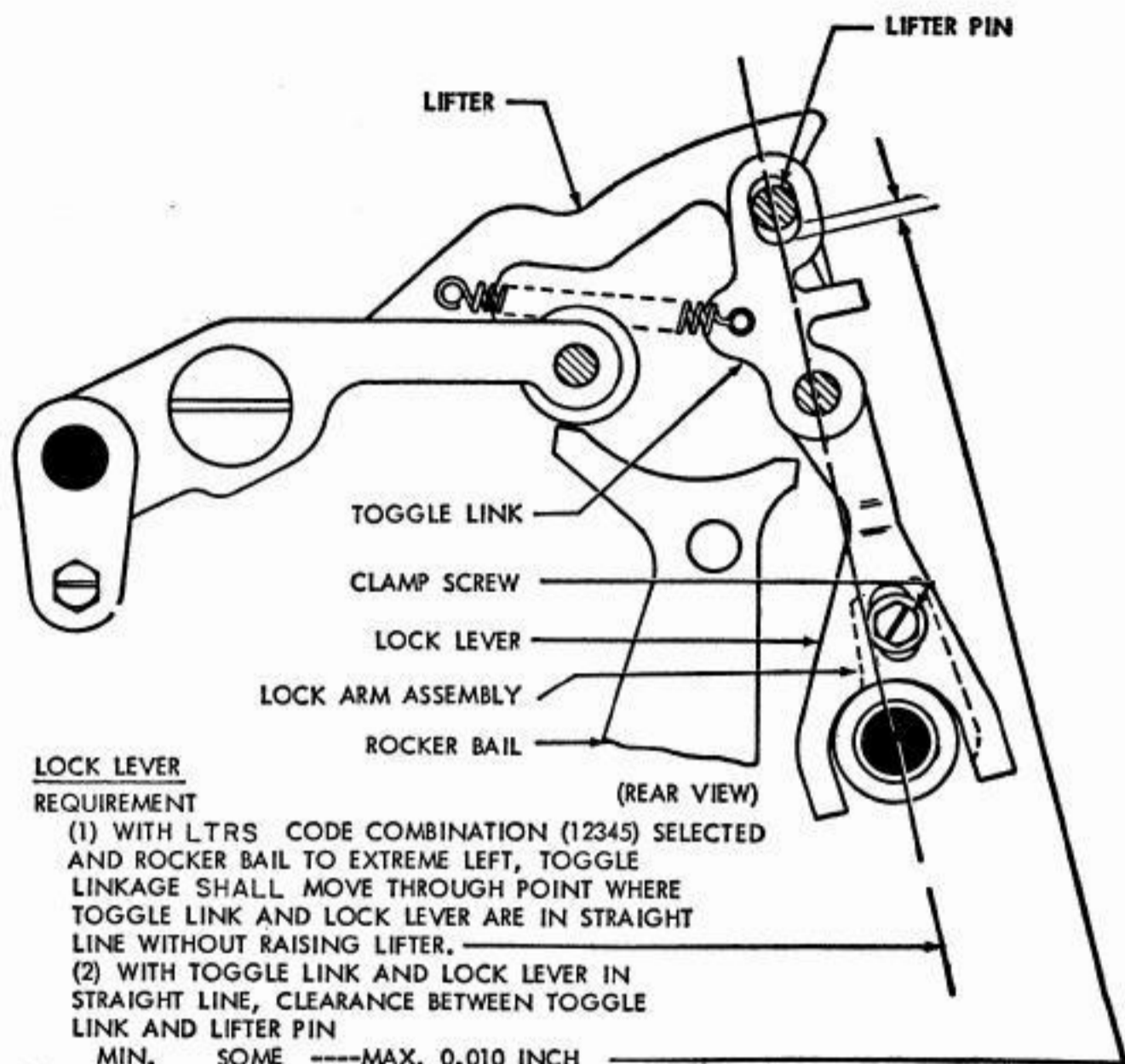
**REQUIREMENT**  
 WITH FUNCTION CLUTCH DISENGAGED  
 (1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LTRS-FIGS FUNCTION BLADE PROJECTION  
 MIN. 0.008 INCH----MAX. 0.020 INCH  
 (2) MIN. 0.005 INCH CLEARANCE

FOR FUNCTION BLADES OTHER THAN LTRS - FIGS IF UNIT IS SO EQUIPPED.  
**TO ADJUST**  
 POSITION LIFTER ARM ECCENTRIC SCREW WITH LOCK NUT LOOSENED.



\*NOTE  
 REMOVE TIMING CONTACTS IF UNIT IS SO EQUIPPED.

## 2.34 Typing Mechanism



### LOCK LEVER

#### REQUIREMENT

(1) WITH LTRS CODE COMBINATION (12345) SELECTED AND ROCKER BAIL TO EXTREME LEFT, TOGGLE LINKAGE SHALL MOVE THROUGH POINT WHERE TOGGLE LINK AND LOCK LEVER ARE IN STRAIGHT LINE WITHOUT RAISING LIFTER.

(2) WITH TOGGLE LINK AND LOCK LEVER IN STRAIGHT LINE, CLEARANCE BETWEEN TOGGLE LINK AND LIFTER PIN

MIN. SOME ----MAX. 0.010 INCH

#### TO ADJUST

POSITION LOCK LEVER ON LOCK ARM ASSEMBLY WITH CLAMP SCREW FRICTION TIGHT.

#### NOTE:

TO AVOID INTERFERENCE WITH LOCK LEVER, IT MAY BE NECESSARY TO MOVE HIGH PART OF CORRECTING DRIVE LINK ECCENTRIC BUSHING ABOVE HORIZONTAL CENTER LINE.

## 2.35 Typing Mechanism

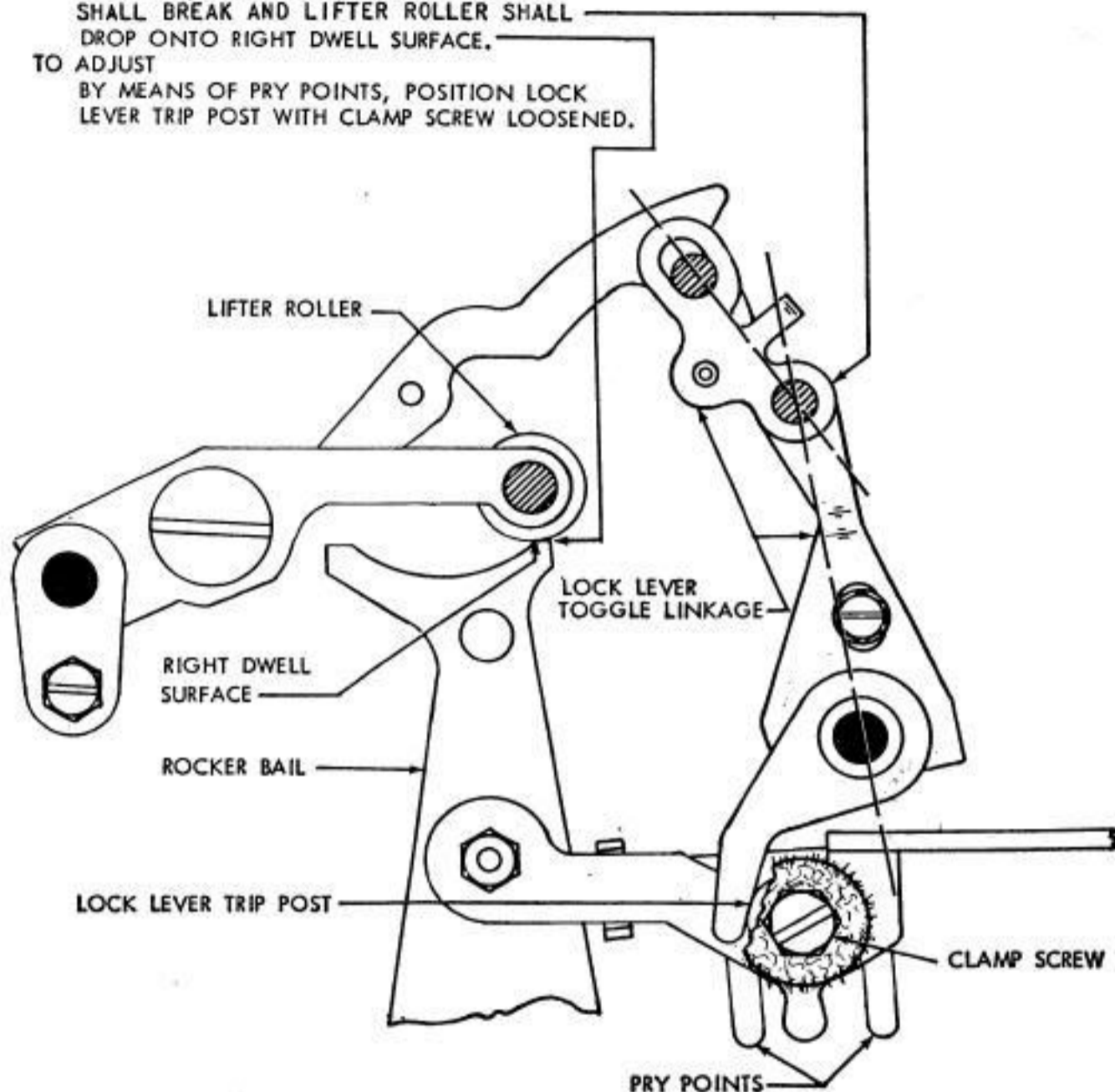
### LOCK LEVER TRIP POST

#### REQUIREMENT

AS ROCKER BAIL APPROACHES EXTREME RIGHT POSITION, LOCK LEVER TOGGLE LINKAGE SHALL BREAK AND LIFTER ROLLER SHALL DROP ONTO RIGHT DWELL SURFACE.

#### TO ADJUST

BY MEANS OF PRY POINTS, POSITION LOCK LEVER TRIP POST WITH CLAMP SCREW LOOSENED.



(REAR VIEW)

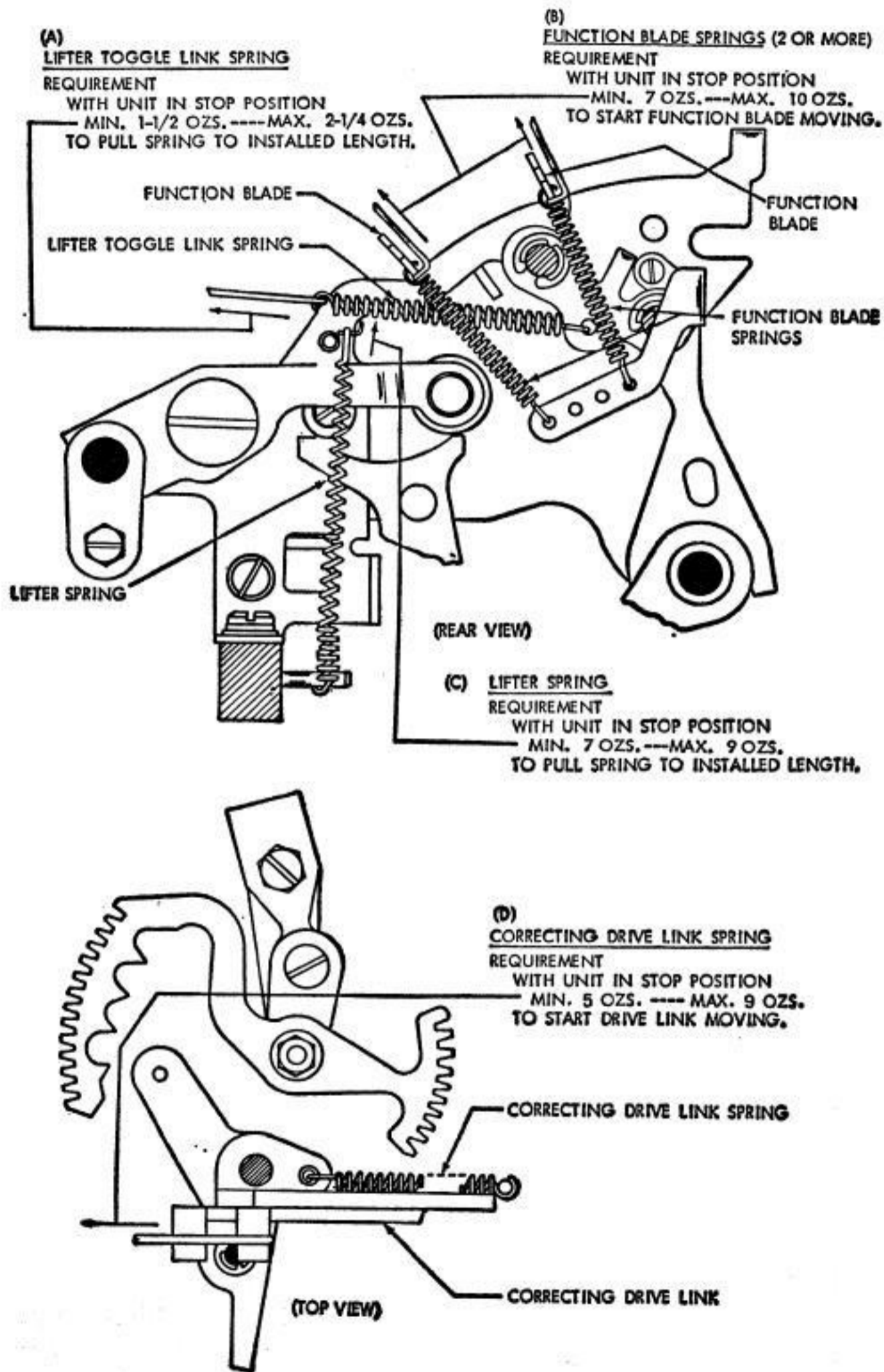
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## 2.36 Typing Mechanism



## 2.37 Typing Mechanism

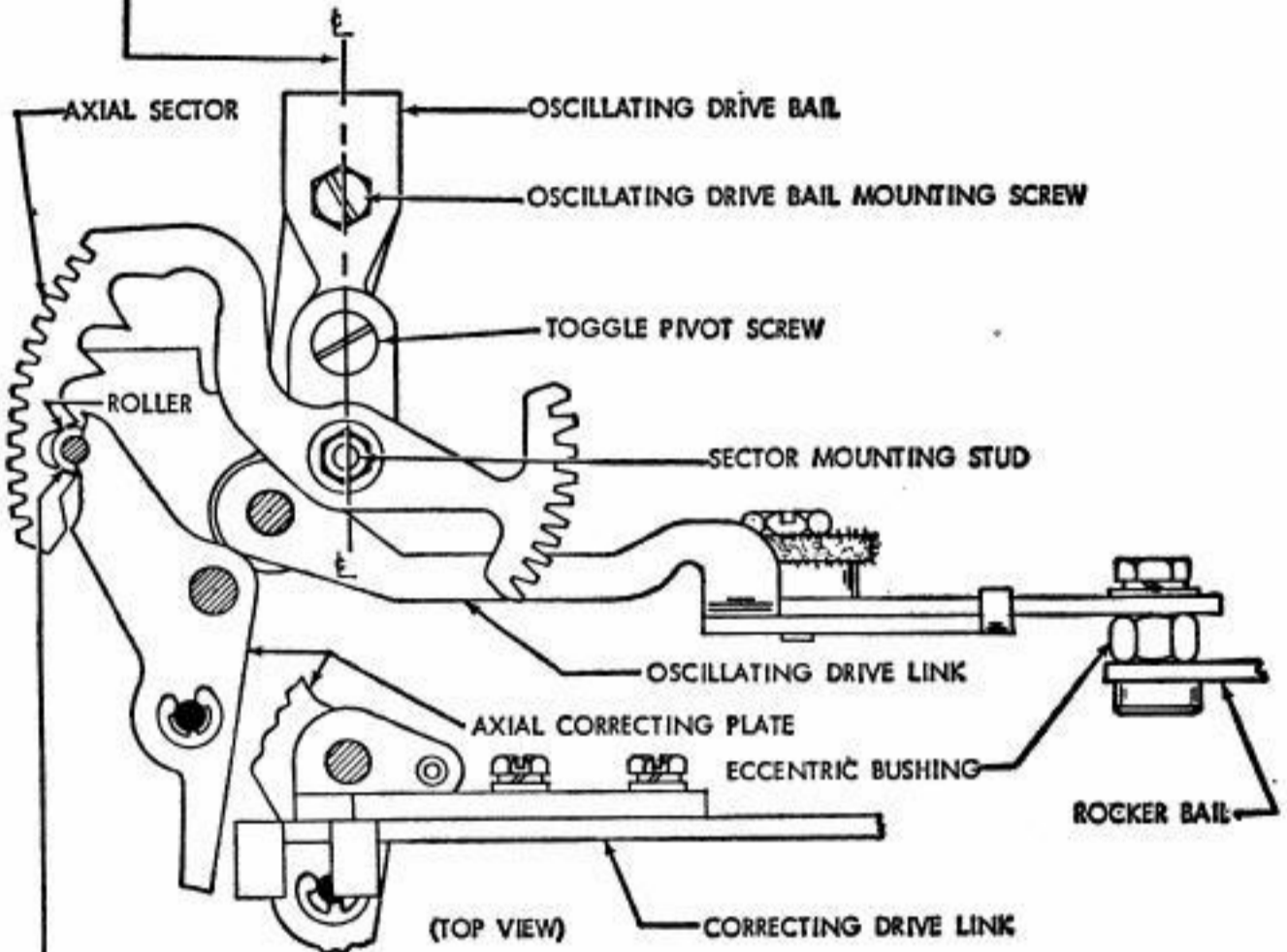
### (A) OSCILLATING DRIVE LINK

TO CHECK  
POSITION ROCKER BAIL TO ITS EXTREME LEFT.

#### REQUIREMENT

SECTOR MOUNTING STUD, TOGGLE PIVOT SCREW, AND OSCILLATING DRIVE BAIL MOUNTING SCREW SHALL APPROXIMATELY LINE UP.

TO ADJUST  
POSITION OSCILLATING DRIVE LINK BY MEANS OF ITS  
ECCENTRIC BUSHING.



### (B) OSCILLATING DRIVE BAIL

TO CHECK  
MANUALLY SELECT BLANK CODE COMBINATION.  
ROTATE MAIN SHAFT UNTIL ROCKER BAIL IS TO  
EXTREME LEFT.

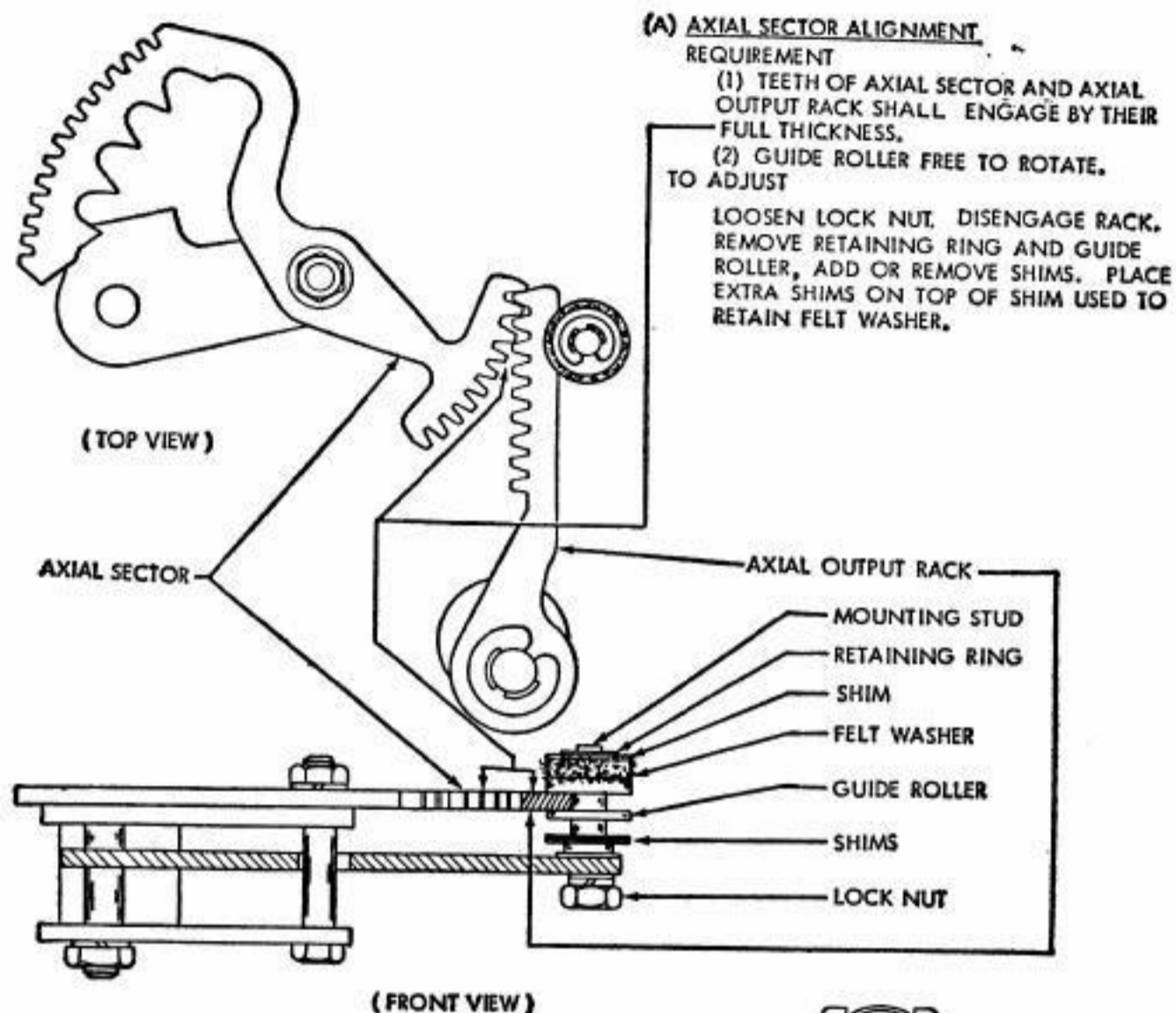
#### REQUIREMENT

(1) ROLLER ON AXIAL CORRECTING PLATE SEATED  
FIRMLY IN CENTER OF FIRST NOTCH OF AXIAL  
SECTOR.

#### TO ADJUST

WITH OSCILLATING DRIVE BAIL MOUNTING SCREW LOOSENED,  
POSITION THE CORRECTING DRIVE LINK SO THAT THE ROLLER  
FITS SNUGLY IN FIRST NOTCH. ROLLER SHALL RIDE  
CENTRALIZED IN NOTCH WITH NOTCH TOUCHING BOTH SIDES,  
AND THE DRIVE BAIL SHALL BE LOOSE AND IN POSITION  
CORRESPONDING TO THAT OF CORRECTING PLATE.

## 2.38 Typing Mechanism

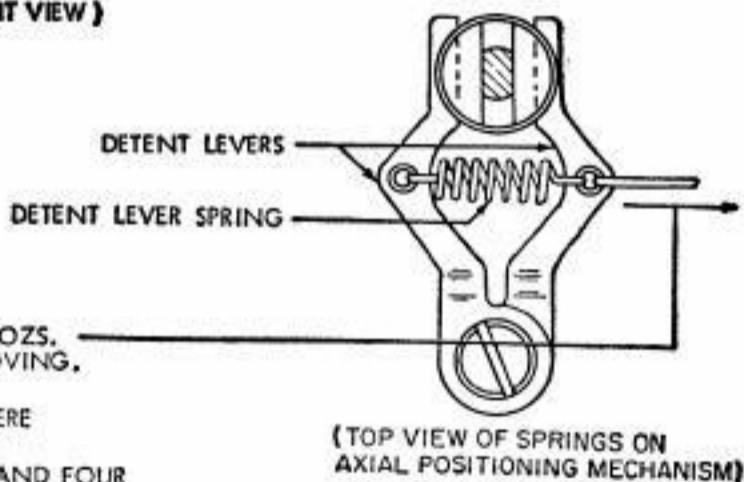


**ECCENTRIC SHAFT**  
**(B) DETENT LEVER SPRINGS (6)**

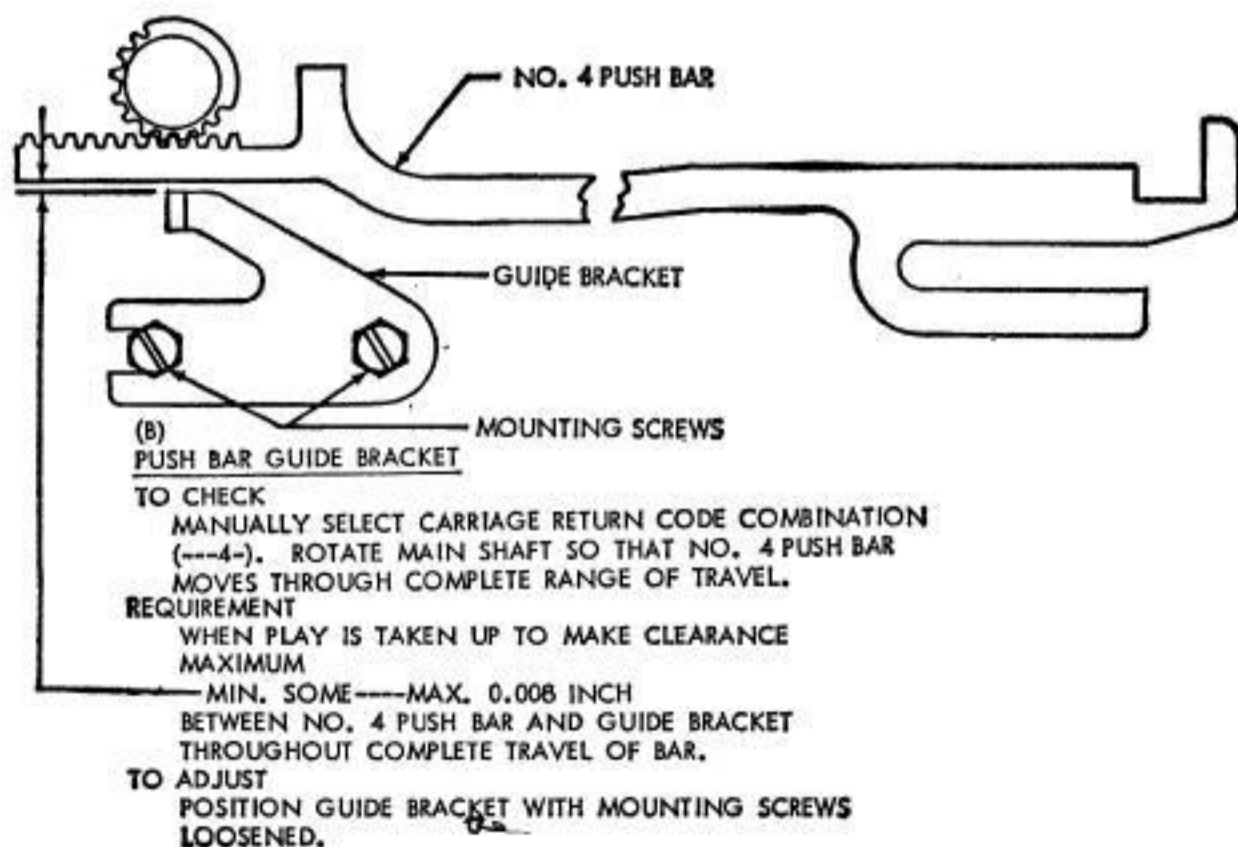
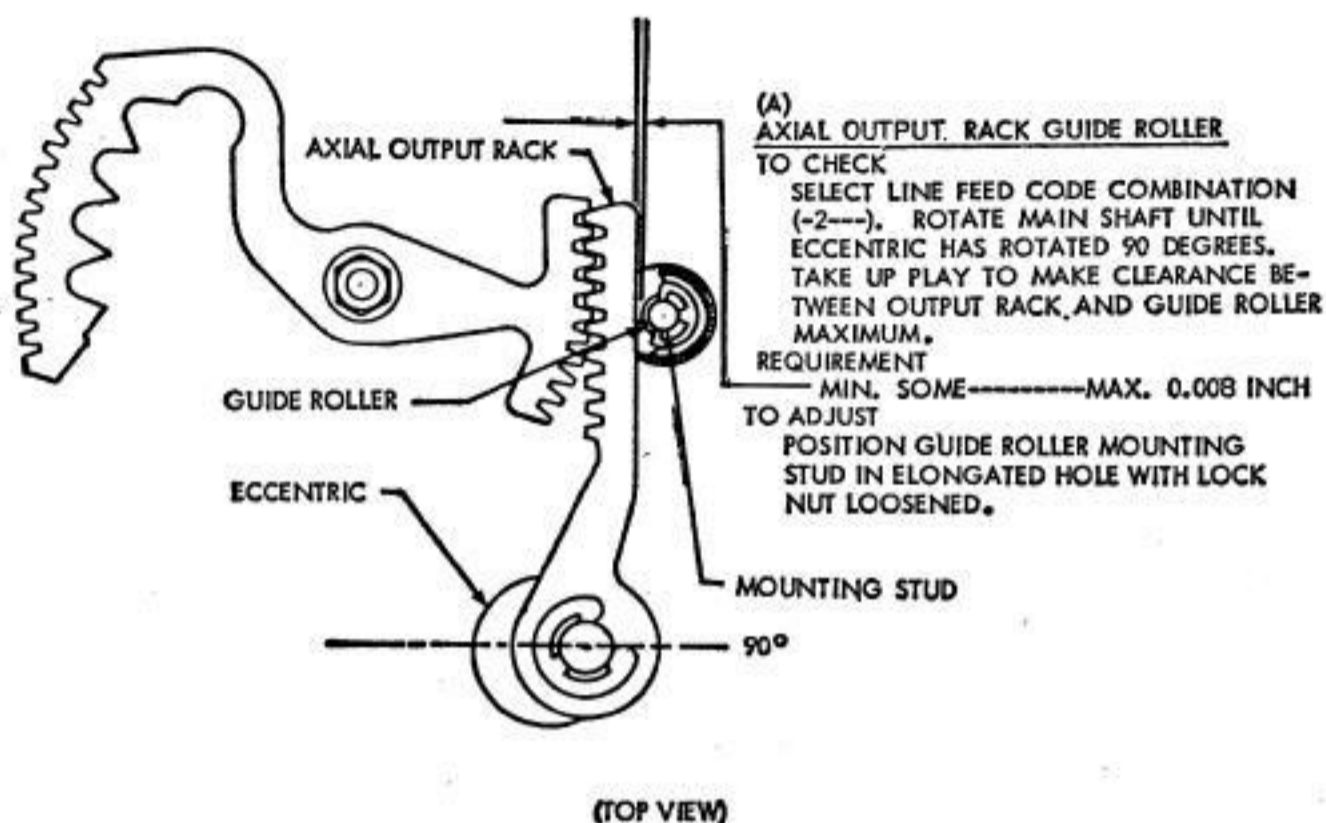
MIN. 7 OZS. --- MAX. 10 OZS.  
 TO START DETENT LEVER MOVING.

**NOTE:**

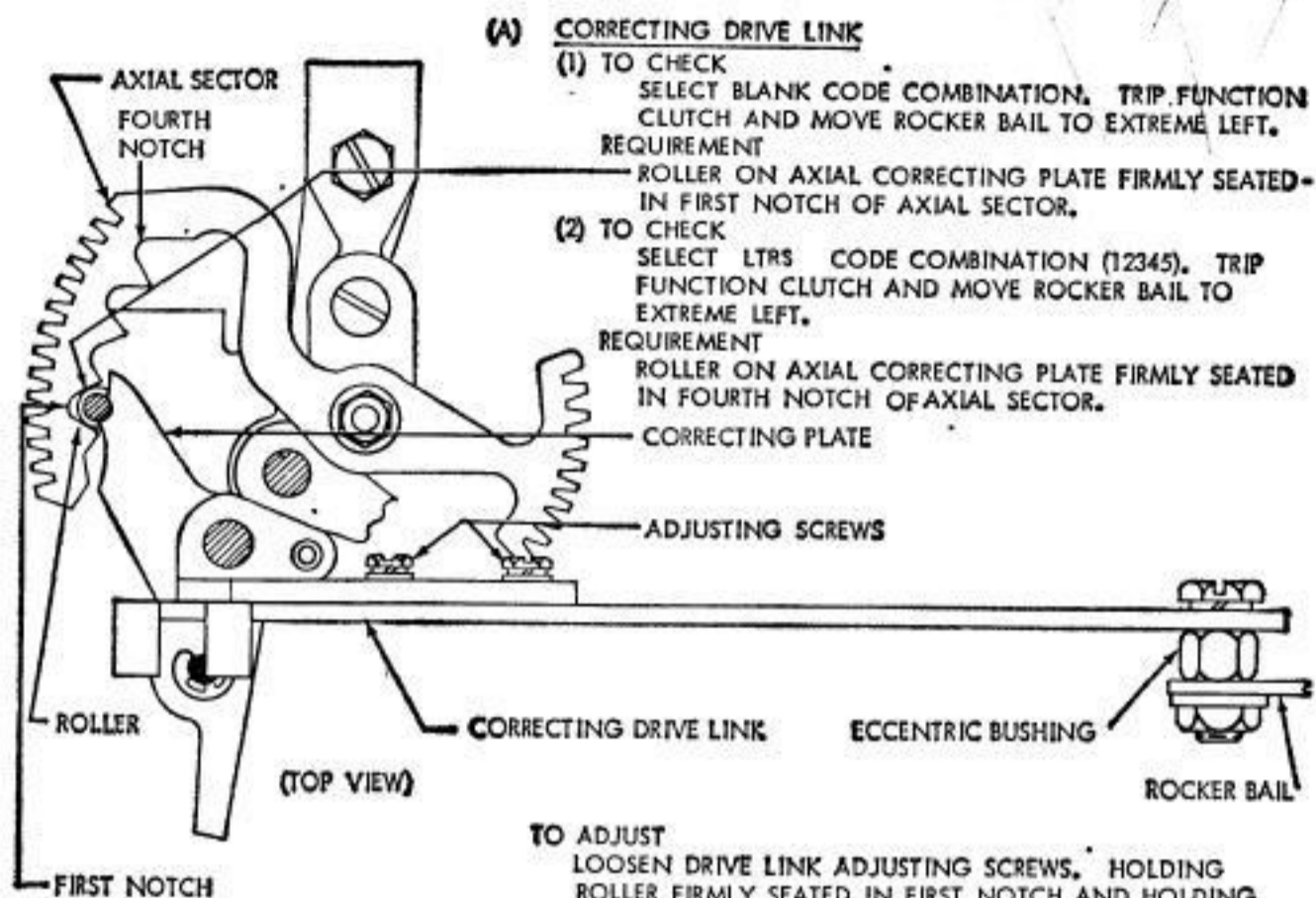
CHECK ALL 6 SPRINGS. THERE ARE TWO ON THE AXIAL POSITIONING MECHANISM AND FOUR ON THE ROTARY POSITIONING MECHANISM.



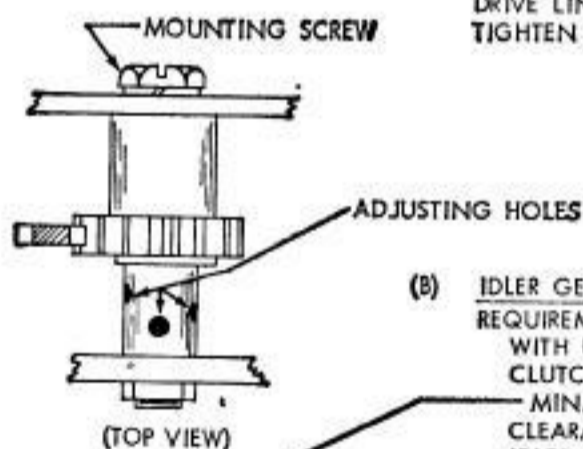
## 2.39 Typing Mechanism



## 2.40 Typing Mechanism



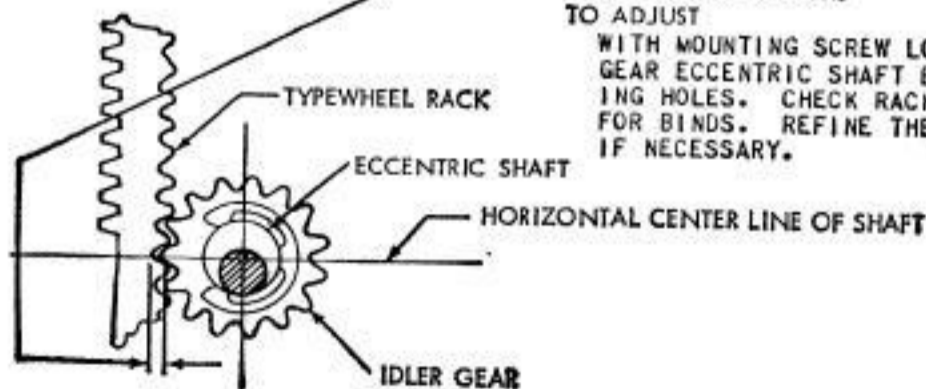
**TO ADJUST**  
 LOOSEN DRIVE LINK ADJUSTING SCREWS, HOLDING ROLLER FIRMLY SEATED IN FIRST NOTCH AND HOLDING DRIVE LINK DOWN (BOTTOMED) AGAINST BUSHING, TIGHTEN ADJUSTING SCREWS.



**(B) IDLER GEAR ECCENTRIC SHAFT**

**REQUIREMENT**  
 WITH UNIT IN LTRS CONDITION AND FUNCTION CLUTCH DISENGAGED  
 MIN. SOME----MAX. 0.015 INCH  
 CLEARANCE BETWEEN TYPEWHEEL RACK TOOTH AND IDLER GEAR TOOTH.

**TO ADJUST**  
 WITH MOUNTING SCREW LOOSENED, POSITION IDLER GEAR ECCENTRIC SHAFT BY MEANS OF THREE ADJUSTING HOLES. CHECK RACK THROUGHOUT ITS TRAVEL FOR BINDS. REFINE THE CLEARANCE ADJUSTMENT IF NECESSARY.





## 2.41 Typing Mechanism

### ROTARY CORRECTING LEVER

#### (1) TO CHECK

LOOSEN CORRECTING CLAMP ADJUSTING SCREW. WITH UNIT IN FIGS CONDITION, SELECT NO. 9 CODE COMBINATION (---45). TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT ROTARY CORRECTING LEVER IN TYPE WHEEL RACK.

#### REQUIREMENT

SECOND TOOTH FROM TOP OF RACK SEATED BETWEEN LOBES OF CORRECTING LEVER.

#### TO ADJUST

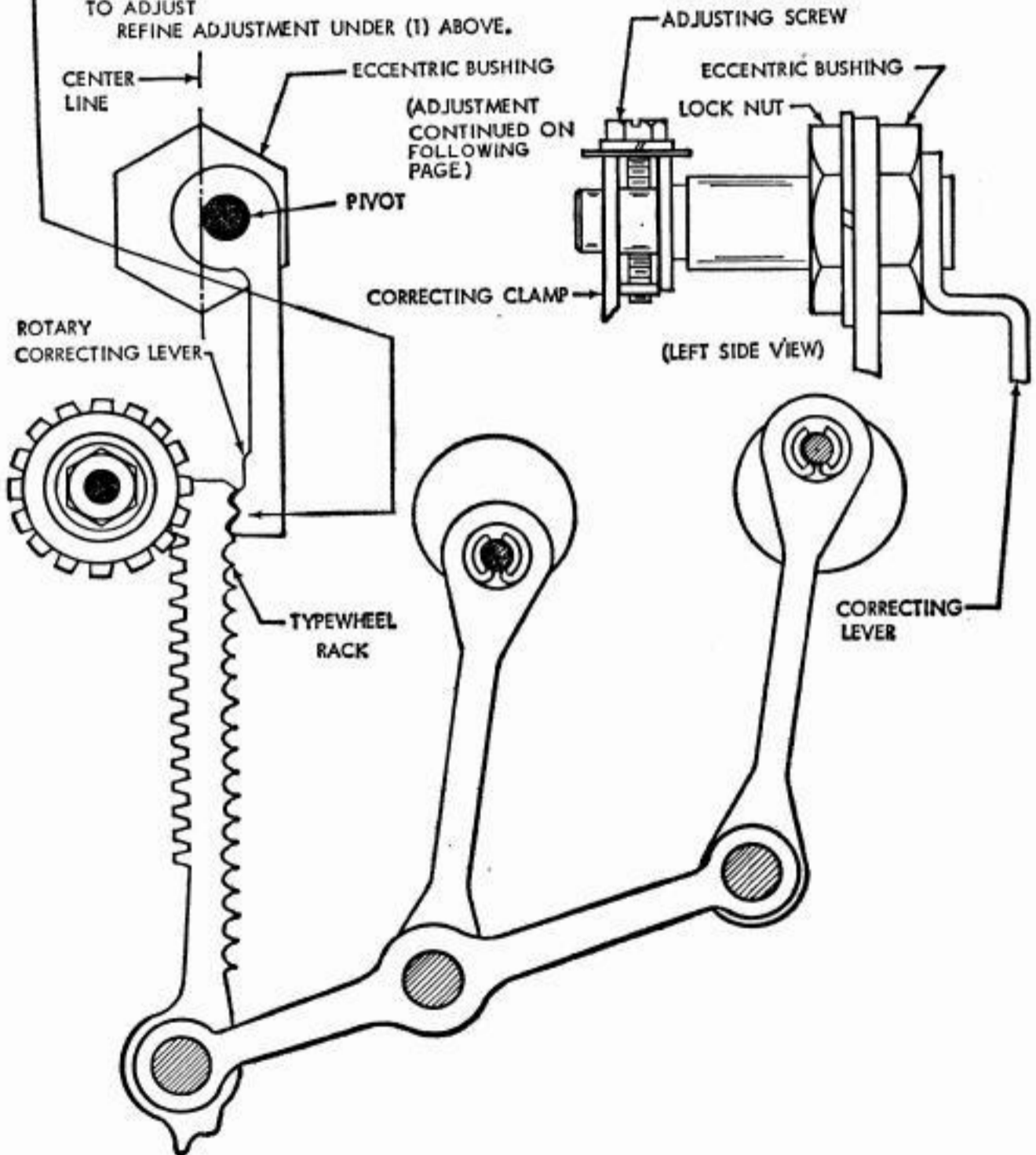
LOOSEN ECCENTRIC BUSHING LOCK NUT. WITH CLAMP ADJUSTING SCREW LOOSENED AND CORRECTING LEVER PIVOT TO RIGHT OF CENTER LINE, POSITION CORRECTING LEVER. TIGHTEN BUSHING LOCK NUT. DO NOT TIGHTEN CLAMP ADJUSTING SCREW AT THIS TIME.

#### (2) TO CHECK

IN A MANNER SIMILAR TO THAT DESCRIBED ABOVE, CHECK ENGAGEMENT OF FIFTH TOOTH (--34- CODE COMBINATION SELECTED IN FIGS CONDITION), NINTH TOOTH (---4- CODE COMBINATION SELECTED IN LTRS CONDITION), AND SIXTEENTH TOOTH (--3-5 CODE COMBINATION SELECTED IN LTRS CONDITION).

#### TO ADJUST

REFINE ADJUSTMENT UNDER (1) ABOVE.



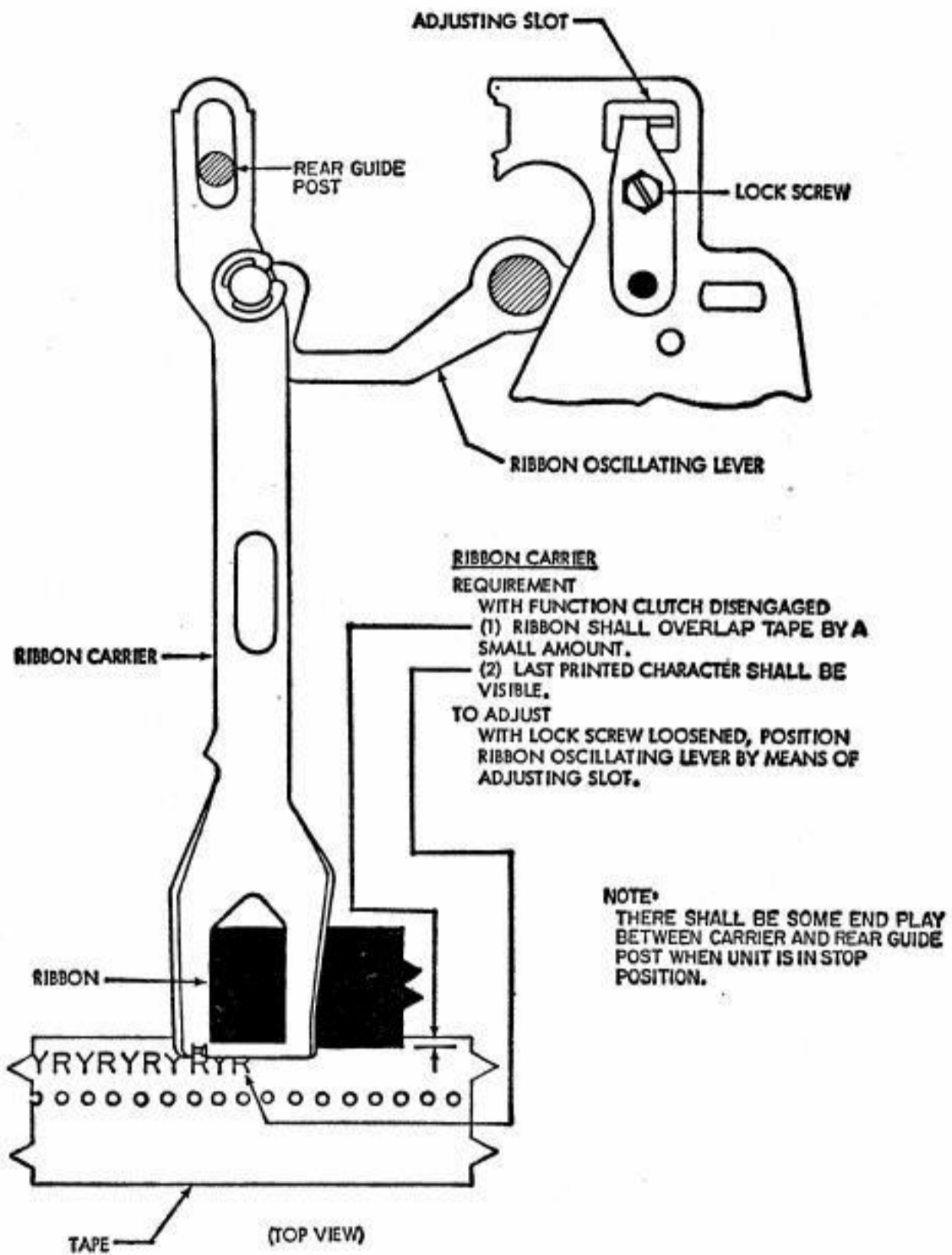
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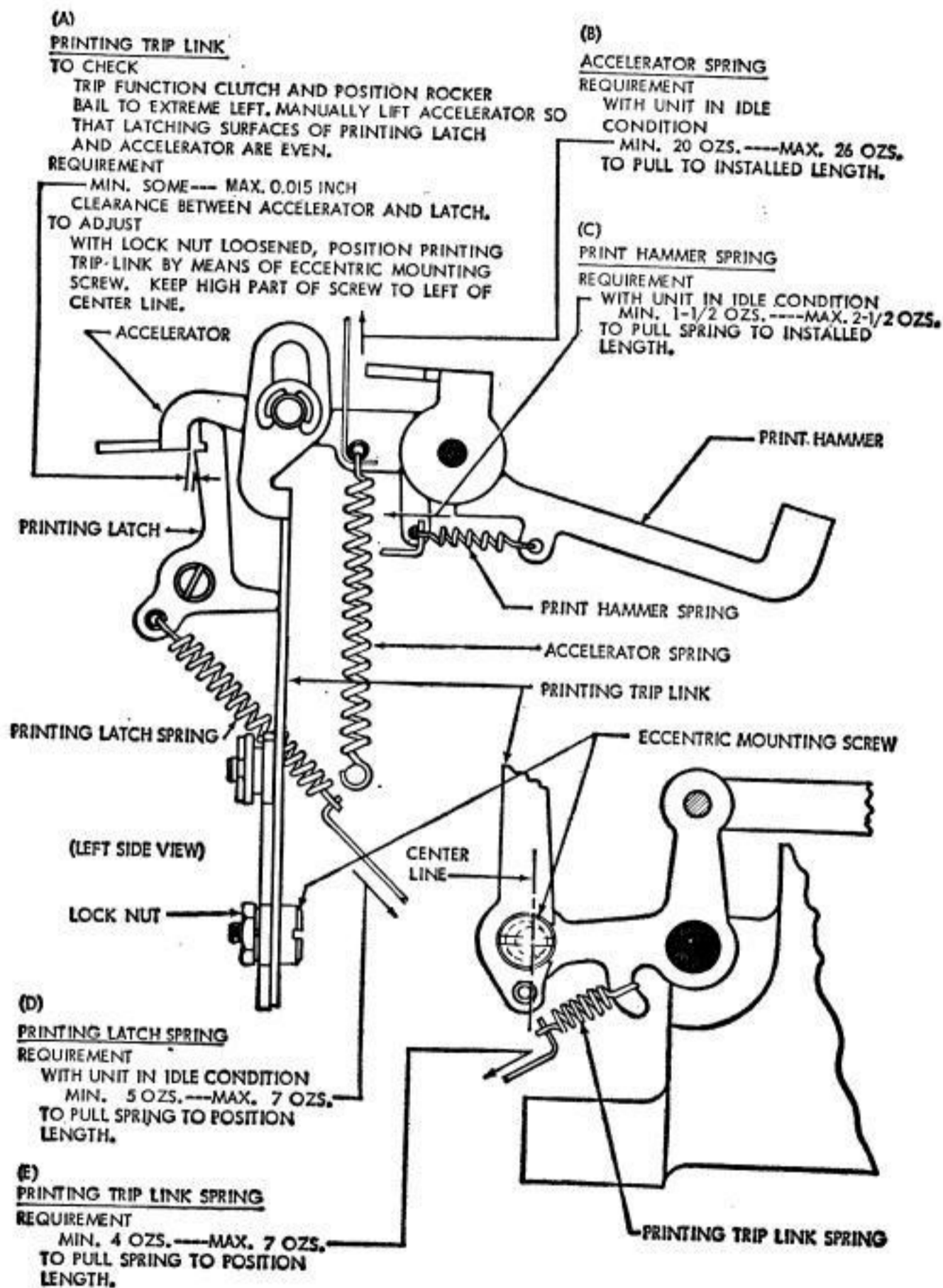
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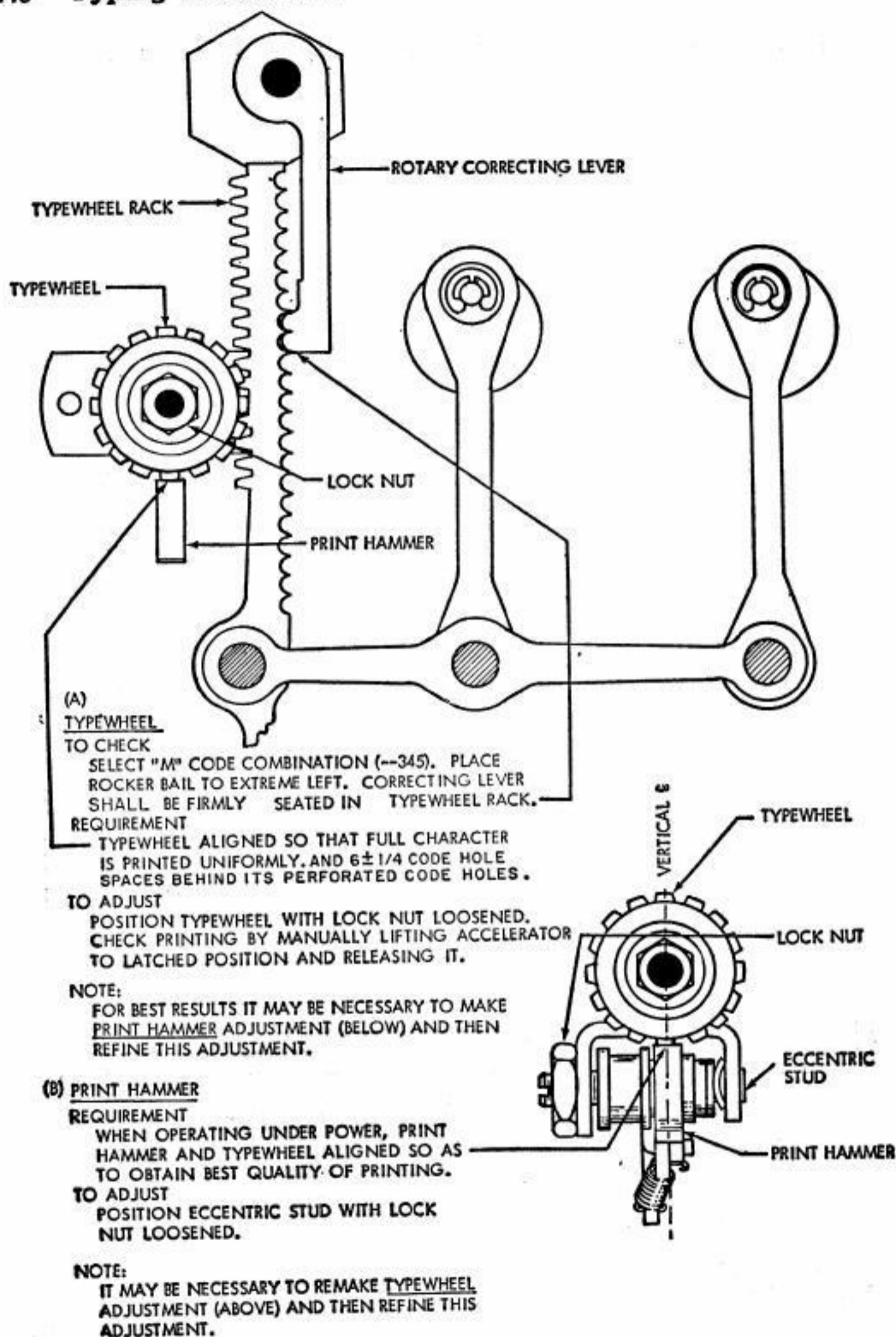
## 2.43 Typing Mechanism



## 2.44 Typing Mechanism



## 2.45 Typing Mechanism



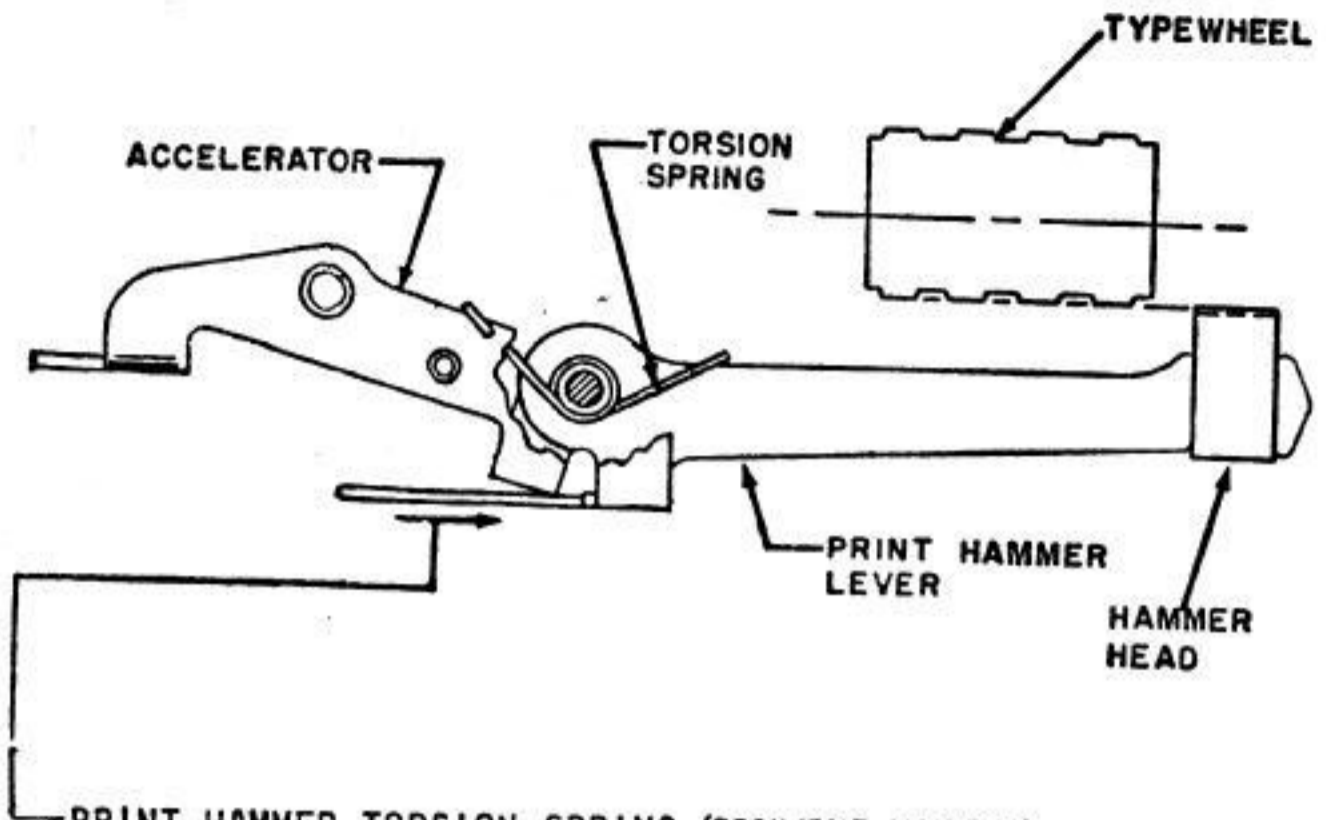
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## 2.46 Typing Mechanism



PRINT HAMMER TORSION SPRING (RESILIENT HAMMER)  
REQUIREMENT

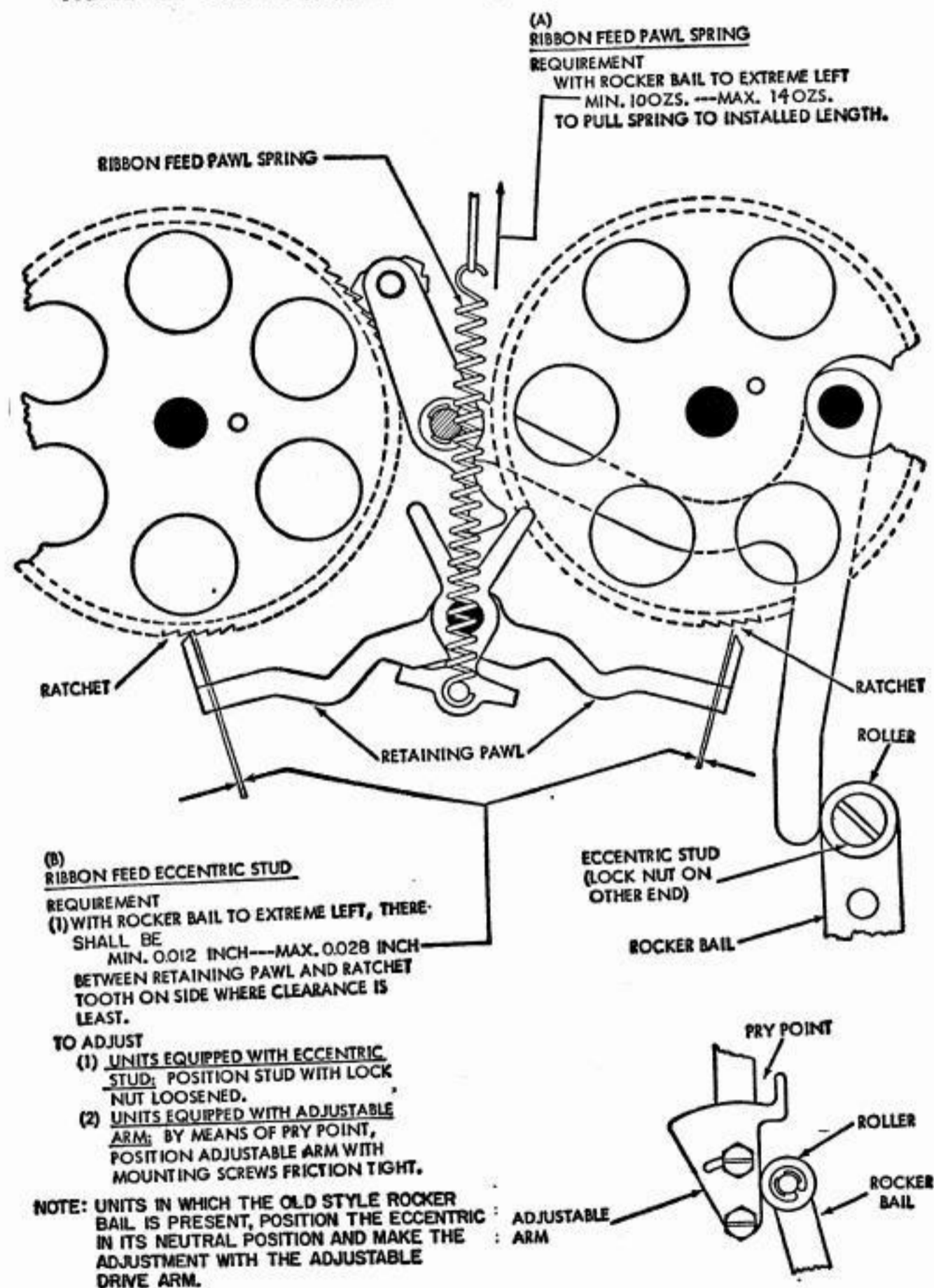
WITH CLUTCHES LATCHED IN STOP POSITION  
AND PUSH END OF SCALE APPLIED TO PRINT  
HAMMER LEVER

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

TO PUSH TOP OF PRINT HAMMER HEAD SO AS  
TO BE LEVEL WITH CHARACTERS ON BOTTOM  
OF TYPEWHEEL.

## 2.47 Typing Mechanism

**Note:** On units equipped with spring washer behind ribbon spool.



## 2.48 Typing Mechanism

**Note:** On units equipped with spring washer behind ribbon spool.

(A)

### RIBBON FEED DRIVE ARM SPRING

#### REQUIREMENT

WITH UNIT IN STOP POSITION  
MIN. 3 OZS. ---MAX. 5 OZS.  
TO PULL SPRING TO INSTALLED LENGTH.

(C) RIBBON RATCHET WHEEL SPRING WASHERS

#### REQUIREMENT

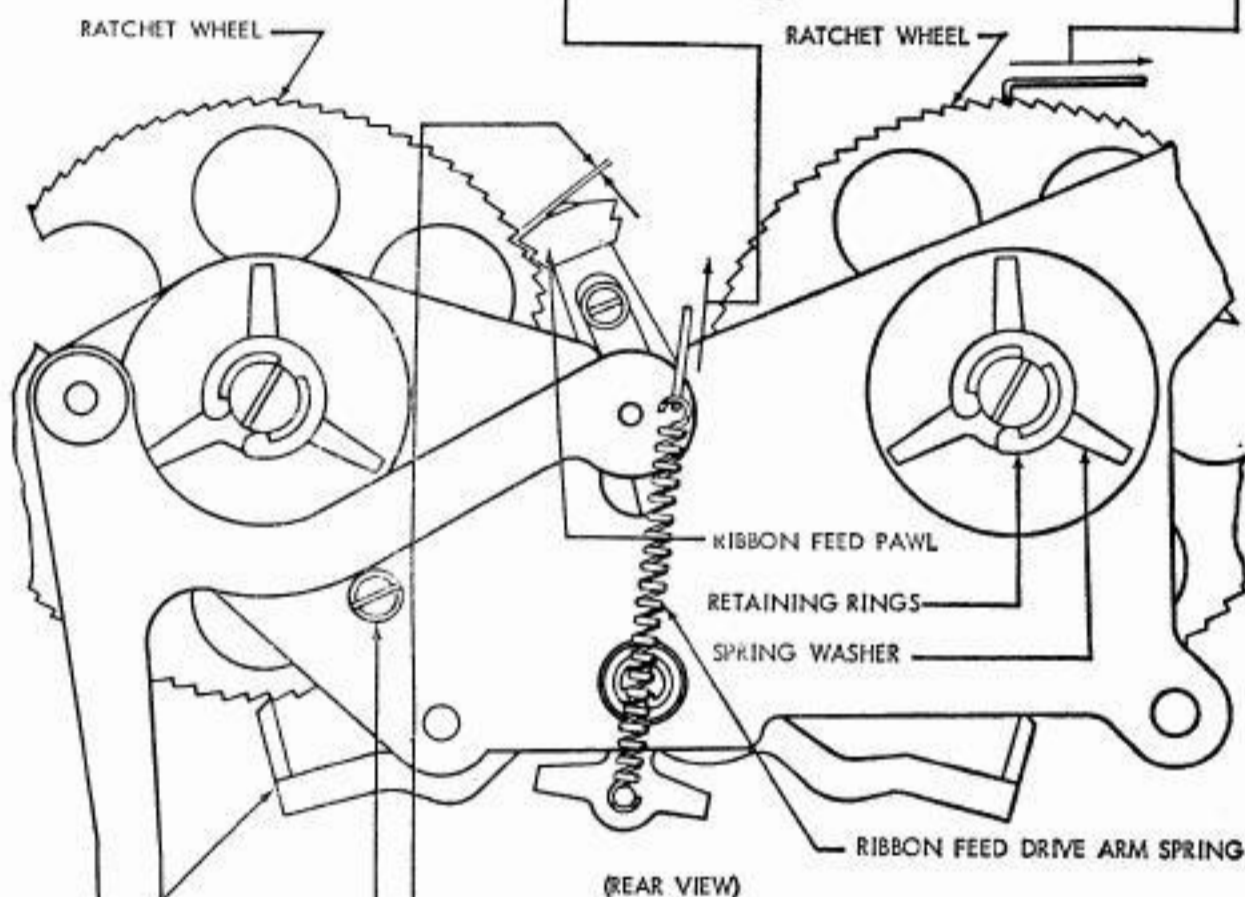
WITH FEED PAWL AND RETAINING PAWL  
SHIFTED TO OPPOSITE RATCHET WHEEL  
MIN. 1 OZ. ---MAX. 2-1/2 OZS.  
TO START WHEEL TURNING.

#### TO ADJUST

REMOVE RETAINING RING AND BEND SPRING  
WASHER.

#### NOTE:

MAKE THIS ADJUSTMENT FOR BOTH RATCHET  
WHEELS.



RETAINING PAWL

DOWNSTOP ECCENTRIC  
(LOCK NUT ON OTHER END)

(B) RIBBON FEED PAWL DOWNSTOP ECCENTRIC

#### TO CHECK

DISENGAGE FUNCTION CLUTCH. TAKE UP  
BACKLASH IN RATCHET WHEEL SO THAT CLEARANCE  
BETWEEN FEED PAWL AND RATCHET  
TOOTH IS AT MINIMUM. MEASURE CLEARANCE.  
REPEAT FOR OTHER RATCHET WHEEL.

#### REQUIREMENT

(1) CLEARANCE BETWEEN FEED PAWL AND  
RATCHET TOOTH:

MIN. 0.020 INCH --- MAX. 0.040 INCH  
ON SIDE WHERE CLEARANCE IS LEAST.

(2) PAWL SHALL FEED ONE TOOTH AT A TIME.

#### TO ADJUST

POSITION DOWNSTOP ECCENTRIC WITH LOCK  
NUT LOOSEMED.

## 2.49 Typing Mechanism

**Note:** On units equipped with spring washer behind ribbon spool.

### (A) RIBBON REVERSING PLATE

TO CHECK  
POSITION ROCKER BAIL TO EXTREME LEFT.  
HOLD REVERSING ARM UNDER REVERSING PLATE  
AND MEASURE CLEARANCE.  
WITH FEED PAWL AGAINST OTHER RATCHET,  
REPEAT PROCEDURE FOR OTHER REVERSING ARM,

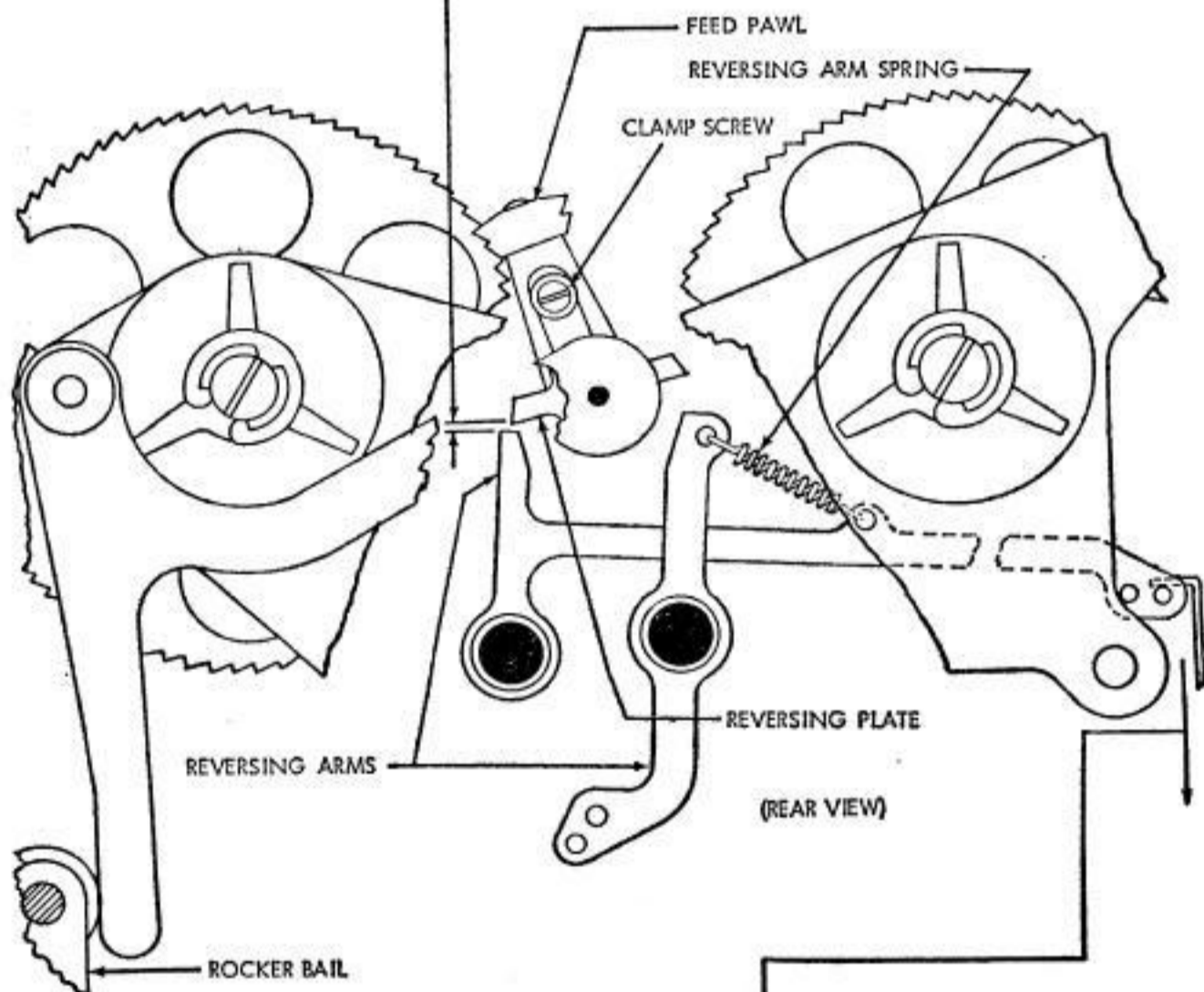
#### REQUIREMENT

CLEARANCE BETWEEN REVERSING ARM AND  
REVERSING PLATE

MIN. 0.010 INCH—MAX. 0.020 INCH  
AT REVERSING ARM WHERE CLEARANCE IS  
LEAST.

#### TO ADJUST

POSITION REVERSING PLATE WITH CLAMP SCREW  
LOOSENED.



### (B) RIBBON FEED REVERSING ARM SPRING

#### REQUIREMENT

WITH FEED PAWL IN HIGHEST POSITION  
MIN. 10 GRAMS TO 30 GRAMS  
TO START REVERSING ARM MOVING.

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## 2.50 Typing Mechanism

**Note.** On units equipped with helical-type spring behind ribbon spool.

### RIBBON FEED PAWL SPRING

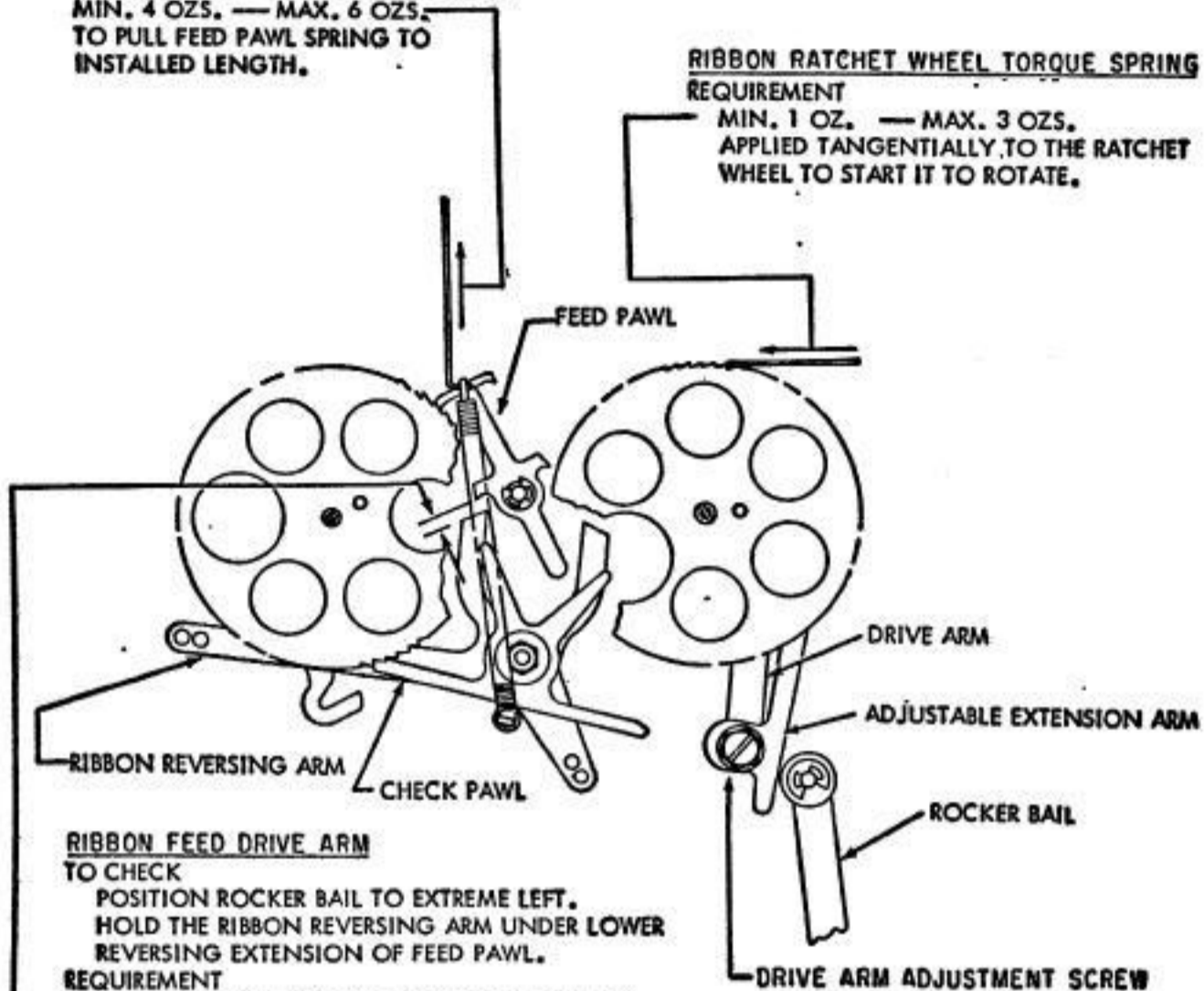
#### REQUIREMENT

WITH ROCKER BAIL TO EXTREME RIGHT  
MIN. 4 OZS. — MAX. 6 OZS.  
TO PULL FEED PAWL SPRING TO  
INSTALLED LENGTH.

### RIBBON RATCHET WHEEL TORQUE SPRING

#### REQUIREMENT

MIN. 1 OZ. — MAX. 3 OZS.  
APPLIED TANGENTIALLY TO THE RATCHET  
WHEEL TO START IT TO ROTATE.



### RIBBON FEED DRIVE ARM

#### TO CHECK

POSITION ROCKER BAIL TO EXTREME LEFT.  
HOLD THE RIBBON REVERSING ARM UNDER LOWER  
REVERSING EXTENSION OF FEED PAWL.

#### REQUIREMENT

- (1) CLEARANCE BETWEEN BLOCKING EDGE OF RIBBON REVERSE ARM AND REVERSING EXTENSION OF FEED PAWL  
MIN. SOME
- (2) CLEARANCE SHALL NOT BE SO GREAT AS TO ALLOW FEED PAWL TO FEED MORE THAN TWO TEETH AT A TIME.
- (3) FEED PAWL DETENTED IN BOTH ITS RIGHT AND LEFT POSITION.

#### TO ADJUST

POSITION DRIVE ARM ADJUSTABLE EXTENSION LEVER WITH ITS MOUNTING SCREW LOOSENED.

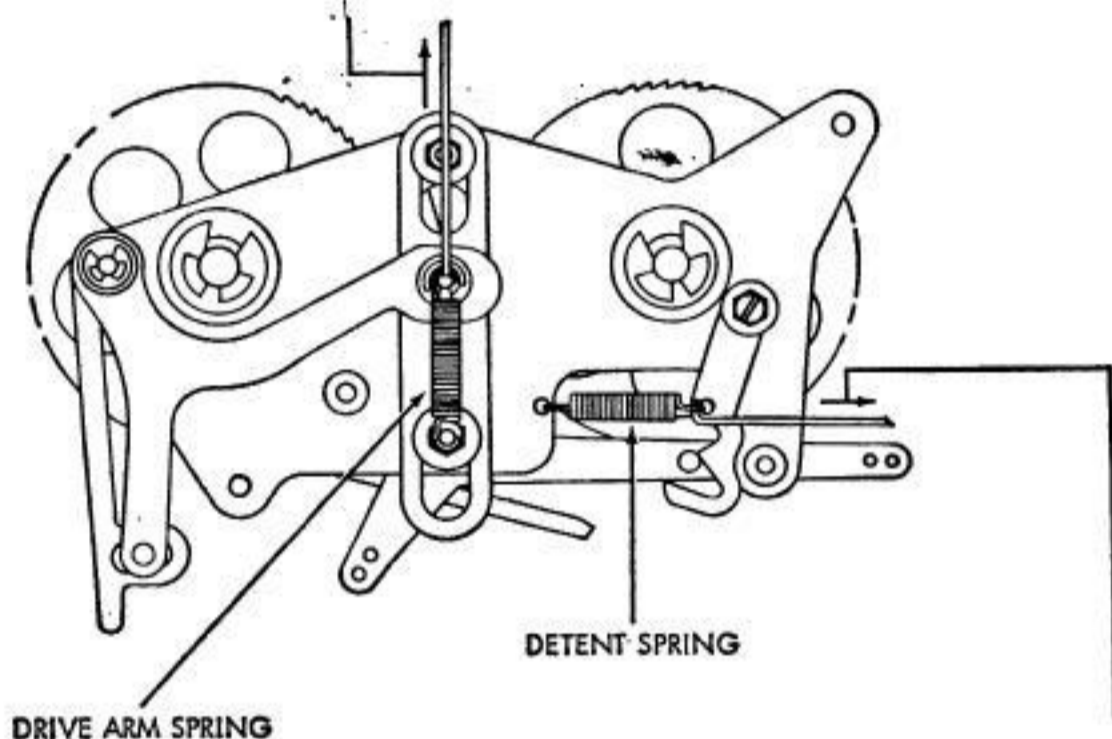
## 2.51 Typing Mechanism

**Note:** On units equipped with helical-type spring behind ribbon spool.

### RIBBON FEED DRIVE ARM SPRING

#### REQUIREMENT

WITH ROCKER BAIL TO EXTREME RIGHT  
MIN. 9 OZS. --- MAX. 14 OZS.  
TO PULL DRIVE ARM SPRING TO  
INSTALLED LENGTH.



### RIBBON FEED DETENT SPRING

#### REQUIREMENT

WITH REVERSING ARM IN ITS EXTREME  
RIGHT OR LEFT POSITION  
MIN. 2 OZS. --- MAX. 4 OZS.  
TO PULL DETENT SPRING TO ITS  
INSTALLED LENGTH.

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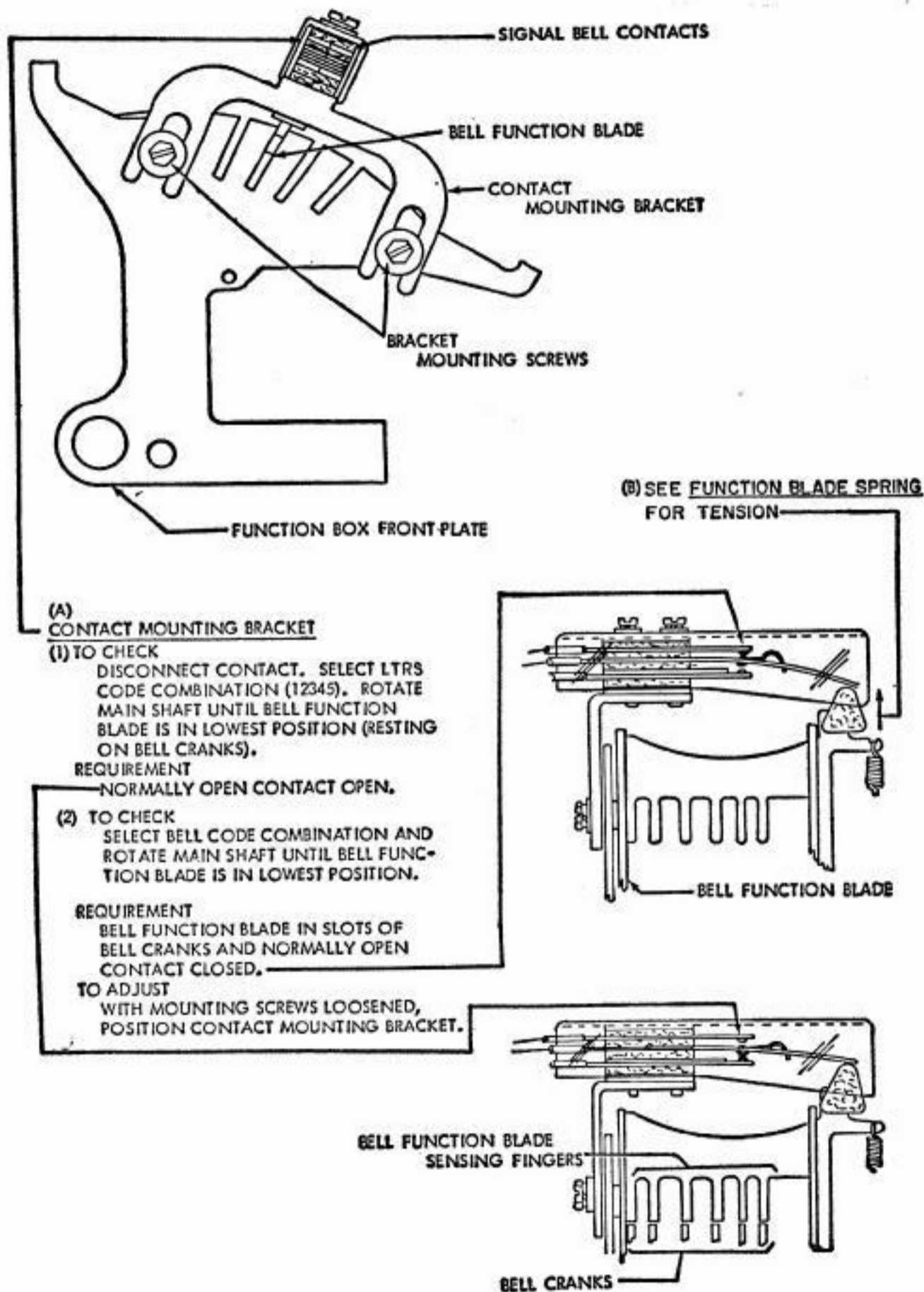
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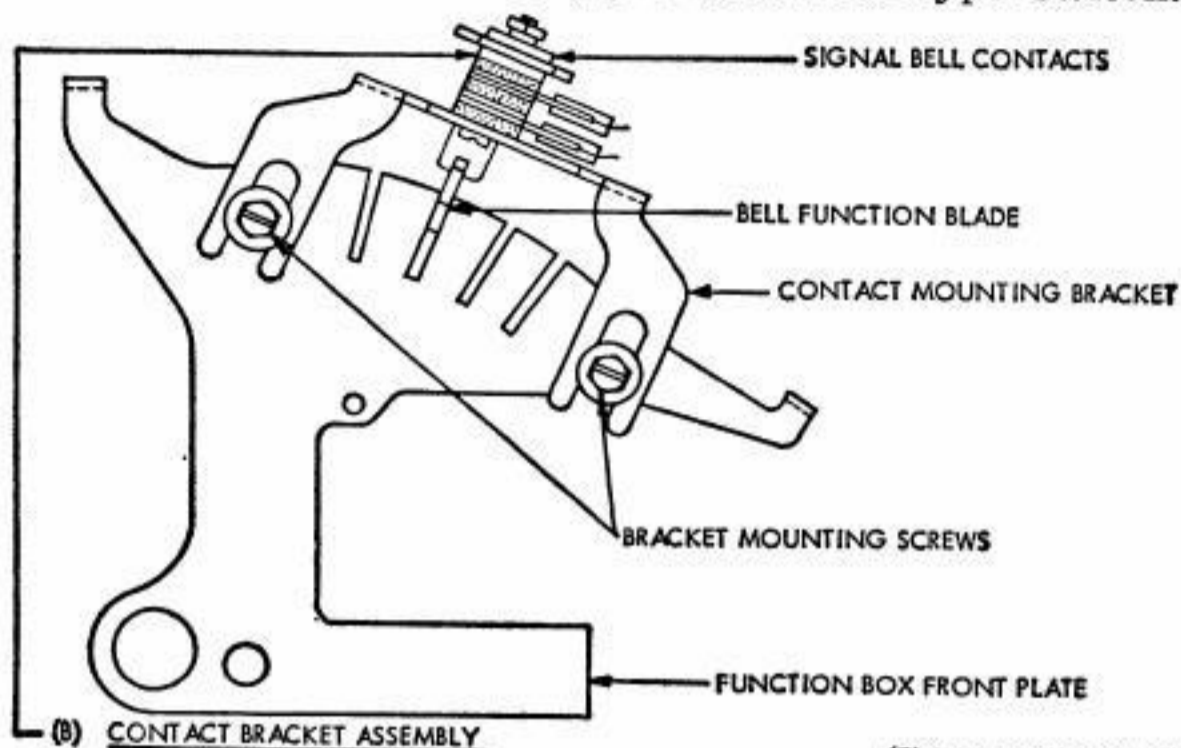
## 2.53 Signal-bell Contact Mechanisms

**Note:** On units equipped with overcentering-type switch.



## 2.54 Signal-bell Contact Mechanisms

**Note:** On units equipped with leaf-type switch.



(1) REQUIREMENT  
THE CONTACT ASSEMBLY SHALL BE CENTRALLY LOCATED OVER THE BELL FUNCTION BLADE INSULATOR.

(2) REQUIREMENT  
WITH LTRS CODE COMBINATION (12345) SELECTED, ROTATE MAIN SHAFT UNTIL BELL FUNCTION BLADE IS IN ITS LOWEST POSITION (RESTING ON BELL CRANKS). GAP BETWEEN CONTACTS  
MIN. 0.015 INCH  
MAX. 0.025 INCH

(3) REQUIREMENT  
WITH BELL FUNCTION BLADE IN ITS SELECTED POSITION, THE CONTACTS SHALL BE CLOSED.  
TO ADJUST  
WITH MOUNTING SCREWS LOOSENED, POSITION CONTACT BRACKET ASSEMBLY.

### (A) SIGNAL BELL CONTACT

NOTE 1  
COMPLETE THE FOLLOWING ADJUSTMENTS WITH THE SIGNAL BELL CONTACT ASSEMBLY REMOVED FROM THE FUNCTION BOX FRONT PLATE.

(1) REQUIREMENT  
CONTACT SPRINGS SHALL BE APPROXIMATELY PARALLEL TO TOP OF BRACKET.

TO ADJUST  
BEND CONTACT SPRING.

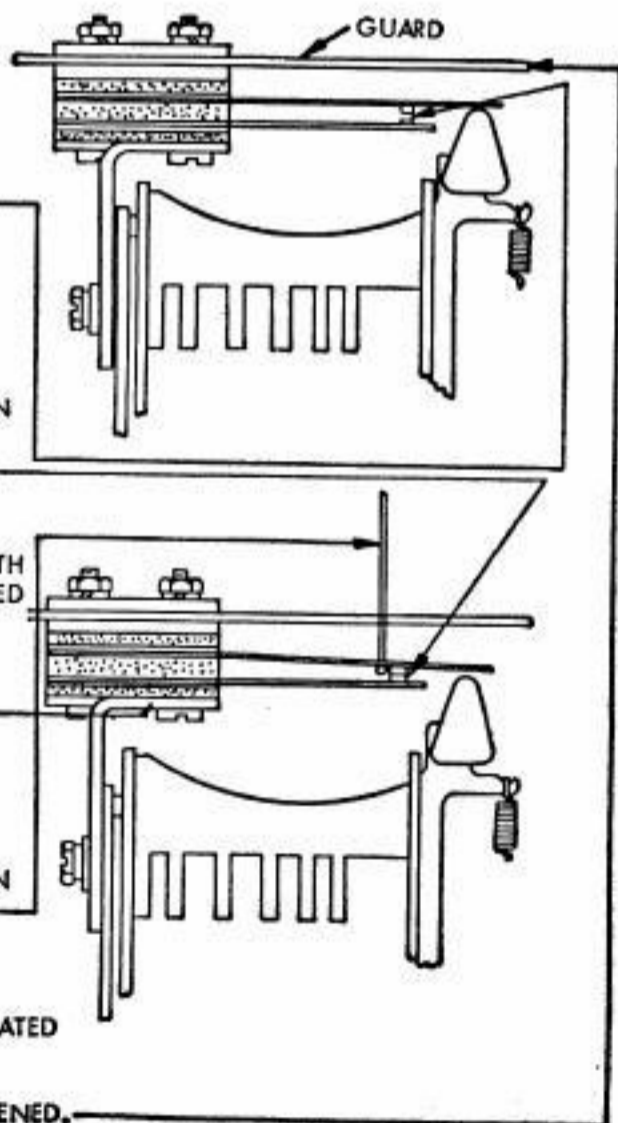
(2) REQUIREMENT  
MIN. 1-1/2 OZS.  
MAX. 2-1/2 OZS.  
WITH PULL APPLIED AT CONTACT POINT TO OPEN CONTACTS.

TO ADJUST  
BEND UPPER CONTACT SPRING.

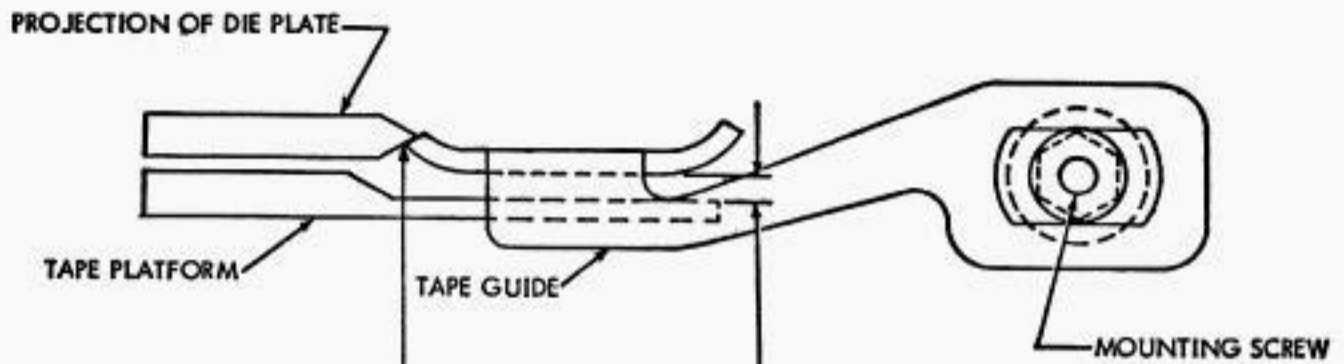
(3) REQUIREMENT  
THE CONTACT GUARD SHALL BE CENTRALLY LOCATED OVER THE CONTACT SPRINGS.

TO ADJUST  
POSITION GUARD WITH MOUNTING NUTS LOOSENED.  
(GAUGE BY EYE).

(C) SEE FUNCTION BLADE SPRING FOR TENSION.



## 2.55 Tape-guide Mechanism



### TAPE GUIDE

#### REQUIREMENT

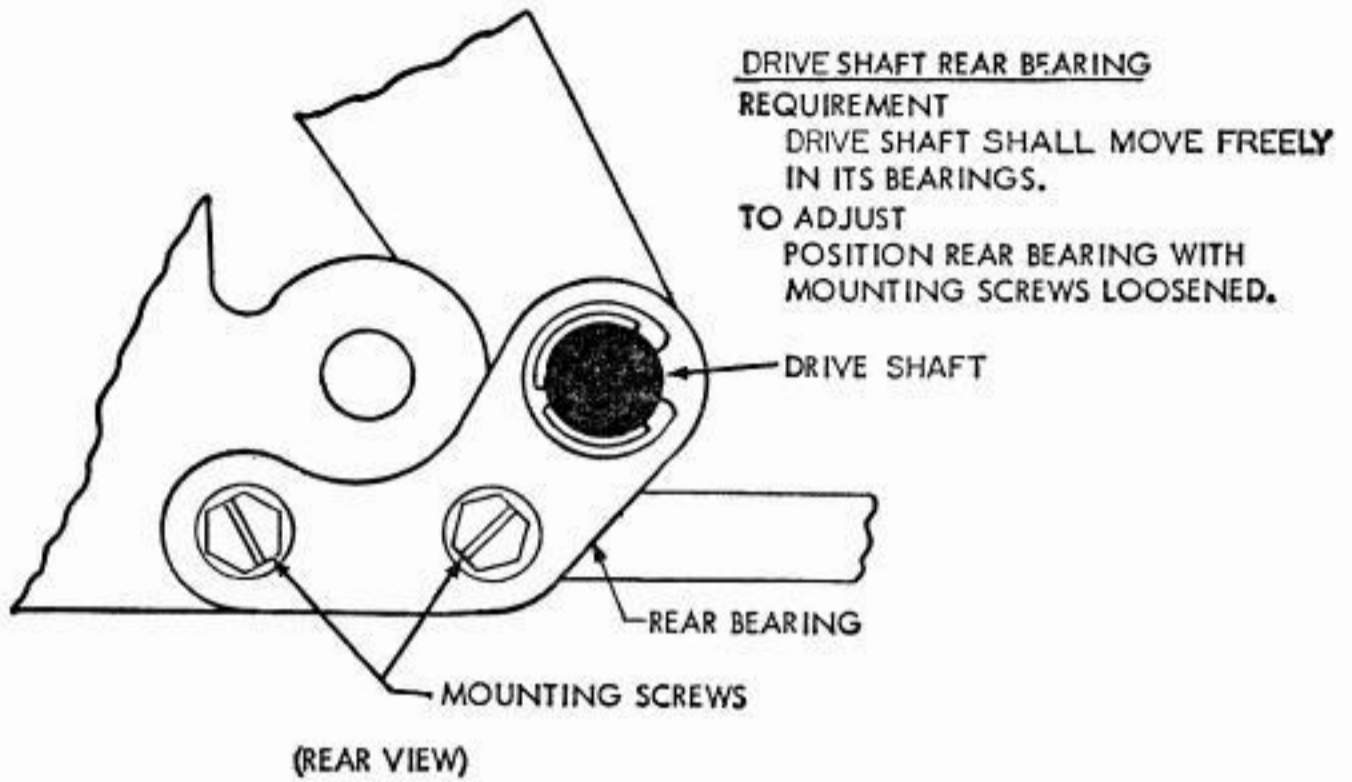
WITH TAPE GUIDE UNDER AND IN CONTACT WITH V-SHAPED PROJECTION OF DIE PLATE \*  
MIN. 0.008 INCH----MAX. 0.015 INCH  
CLEARANCE BETWEEN GUIDE AND TAPE PLATFORM.

#### TO ADJUST

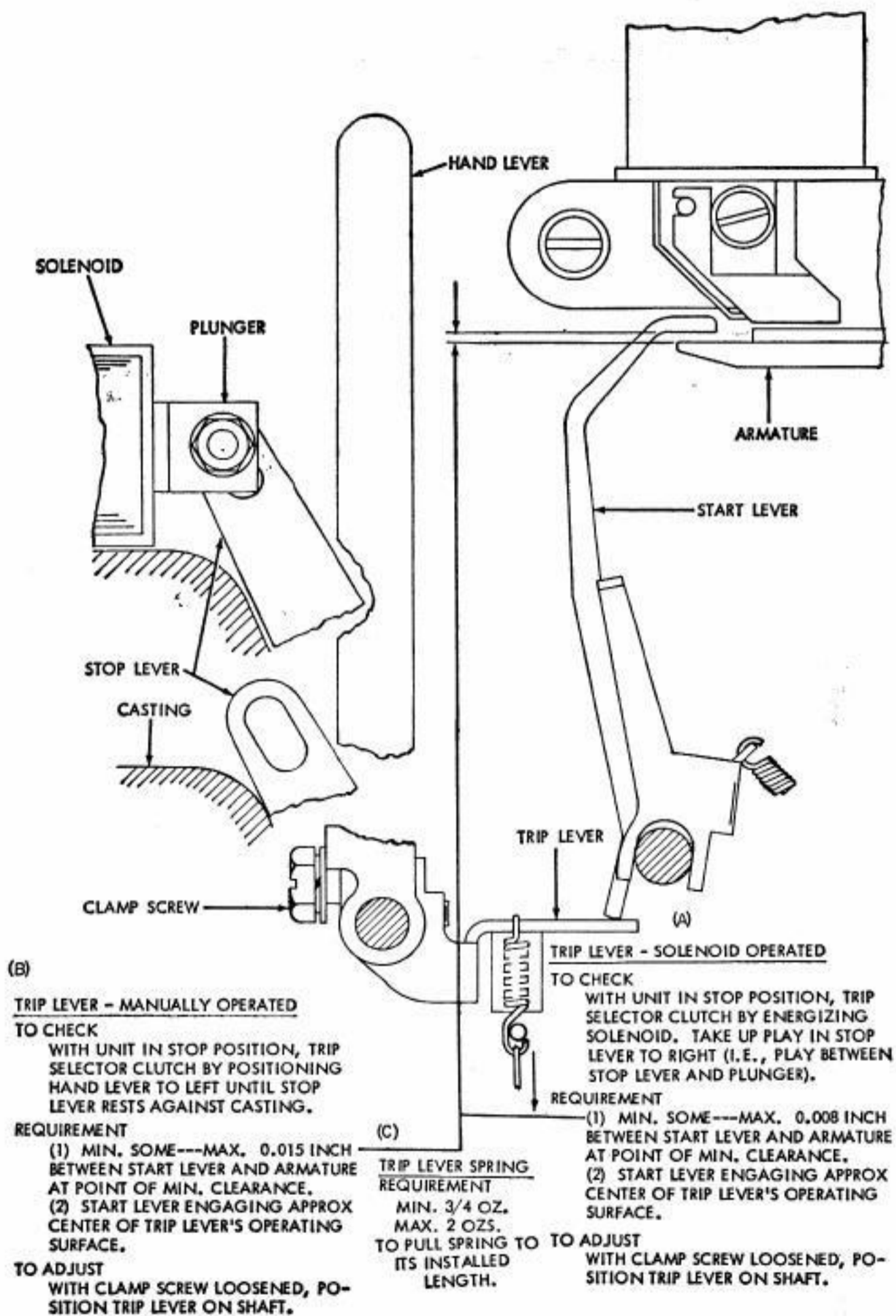
WITH MOUNTING SCREW FRICTION TIGHT, PLACE 0.010 INCH FLAT GAUGE BETWEEN GUIDE AND TAPE PLATFORM. PRESS GUIDE DOWN AND TO LEFT. TIGHTEN MOUNTING SCREW, KEEPING FEED WHEEL ADJUSTING SCREW STATIONARY BY MEANS OF ALLEN WRENCH.

\*GUIDE IS CONSIDERED "IN CONTACT" WITH PROJECTION WHEN 0.0015 INCH GAUGE CANNOT BE INSERTED BETWEEN THEM.

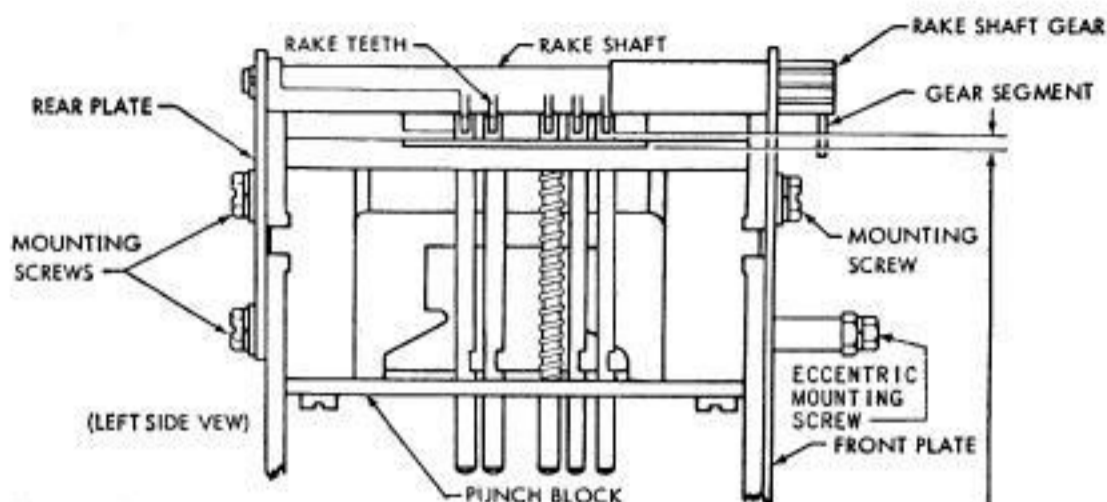
## 2.56 Manual- and Solenoid-operated Interfering LTRS Tape Feed-out Mechanisms



## 2.57 Manual- and Solenoid-operated Interfering LTRS Tape Feed-out Mechanisms



## 2.58 Backspace Mechanisms (Manual and Power Drive)



## (A) RAKE (FOR CHAOLLESS TAPE UNITS ONLY)

## (1) REQUIREMENT

WITH ROTATIONAL PLAY IN RAKE TAKEN UP TO LEFT, BOTTOM SURFACE OF RAKE TEETH SHALL BE IN SAME VERTICAL PLANE AS LEFT SIDE OF PUNCH BLOCK OR SLIGHTLY TO THE RIGHT.

## TO ADJUST

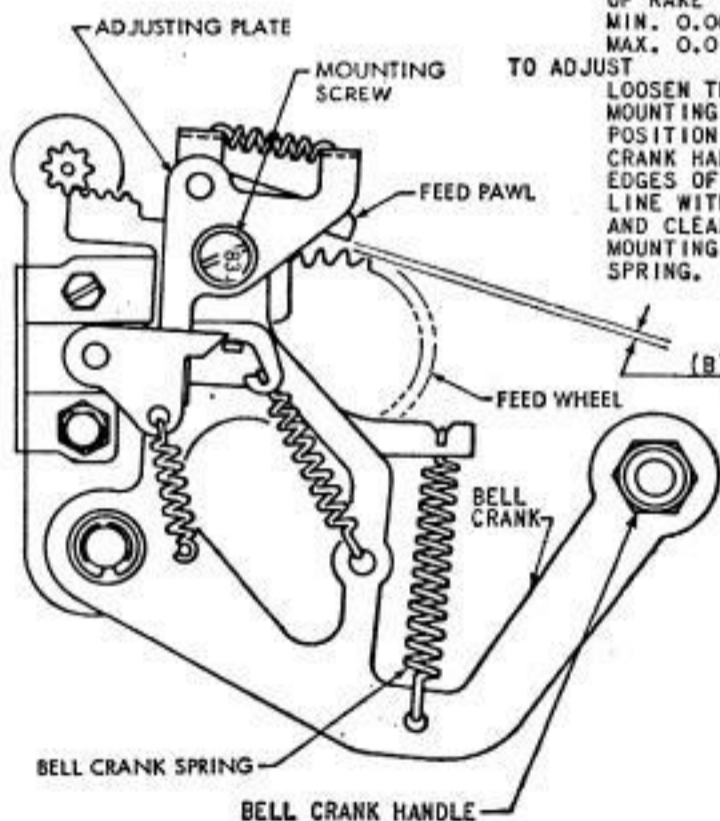
REMOVE TWO MOUNTING SCREWS FROM REAR PLATE. POSITION RAKE SHAFT GEAR IN RELATION TO GEAR SEGMENT. REPLACE MOUNTING SCREWS.

## (2) REQUIREMENT

WITH BELL CRANK SPRING UNHOOKED AND RAKE IN OPERATED POSITION, CLEARANCE BETWEEN BOTTOM OF RAKE TEETH AND LOWER SURFACE OF TAPE SLOT:  
MIN. 0.007 INCH  
MAX. 0.011 INCH (CHECK AT NO. 1 & 5 PINS.)

## TO ADJUST

LOOSEN THREE MOUNTING SCREWS AND ECCENTRIC MOUNTING SCREW UNTIL FRICTION TIGHT. POSITION FRONT AND REAR PLATES, WITH BELL CRANK HANDLE FULLY DEPRESSED, UNTIL LEFT EDGES OF BOTH PLATES ARE APPROXIMATELY IN LINE WITH VERTICAL PLANE OF PUNCH BLOCK AND CLEARANCE MEETS REQUIREMENT. TIGHTEN MOUNTING SCREWS AND REPLACE BELL CRANK SPRING.



## (B) FEED PAWL ADJUSTING PLATE

## REQUIREMENT

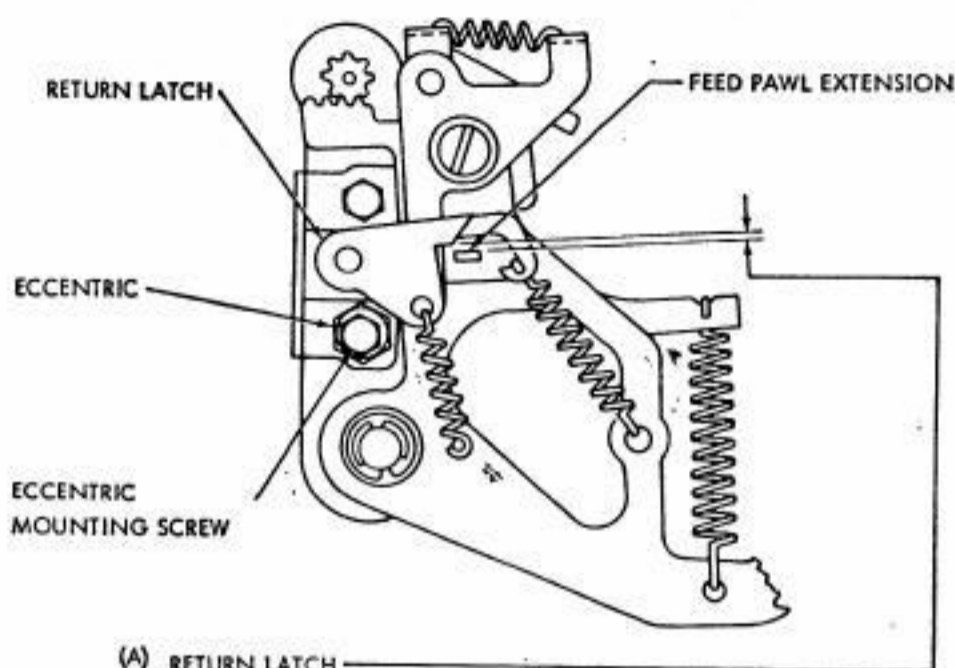
- (1) PRELIMINARY: WITH BELL CRANK ROTATED CLOCKWISE, FEED PAWL SHALL MISS FIRST TOOTH AT POINT OF LEAST CLEARANCE BY MIN. 0.008 INCH - MAX. 0.040 INCH
- (2) FINAL: FEED PAWL SHALL MISS FIRST TOOTH AND ENGAGE SECOND TOOTH BY AT LEAST 1/2 OF RIGHT ENGAGING SURFACE OF FEED PAWL (AS GAUGED BY EYE WHEN FEED PAWL FIRST CONTACTS RATCHET TOOTH).

## TO ADJUST

POSITION ADJUSTING PLATE WITH MOUNTING SCREW FRICTION TIGHT.



## 2.59 Backspace Mechanisms (Manual and Power Drive)

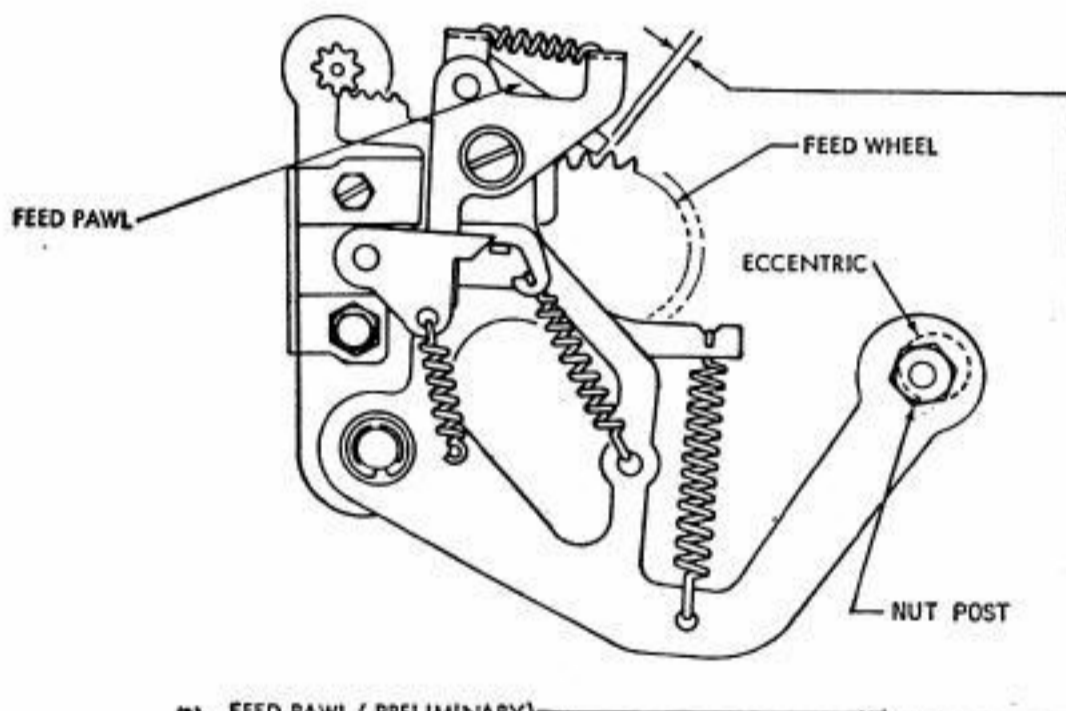


(A) RETURN LATCH REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION.  
 CLEARANCE BETWEEN RETURN LATCH AND FEED PAWL EXTENSION:  
 MIN. 0.004 INCH  
 MAX. 0.020 INCH

TO ADJUST

ADJUST ECCENTRIC WITH MOUNTING SCREW FRICTION TIGHT.



(B) FEED PAWL (PRELIMINARY) REQUIREMENT

BACKSPACE BELL CRANK ASSEMBLY IN OPERATED POSITION (BELL CRANK DOWNWARD, IN LOWEST POSITION), AND FEED WHEEL DETENTED BACK ONE SPACE. CLEARANCE BETWEEN FEED WHEEL RATCHET TOOTH AND FEED PAWL  
 MIN. SOME --- MAX. 0.003 INCH  
 CHECK WITH FEED WHEEL SHAFT OIL HOLE IN UPPERMOST POSITION AND RECHECK EACH 90 DEGREES ABOUT THE PERIPHERY OF FEED WHEEL.

TO ADJUST

BY MEANS OF 0.060 INCH ALLEN WRENCH, ROTATE ECCENTRIC WITH NUT POST FRICTION TIGHT.

## 2.60 Backspace Mechanism (Power Drive)

### (A) ARMATURE HINGE

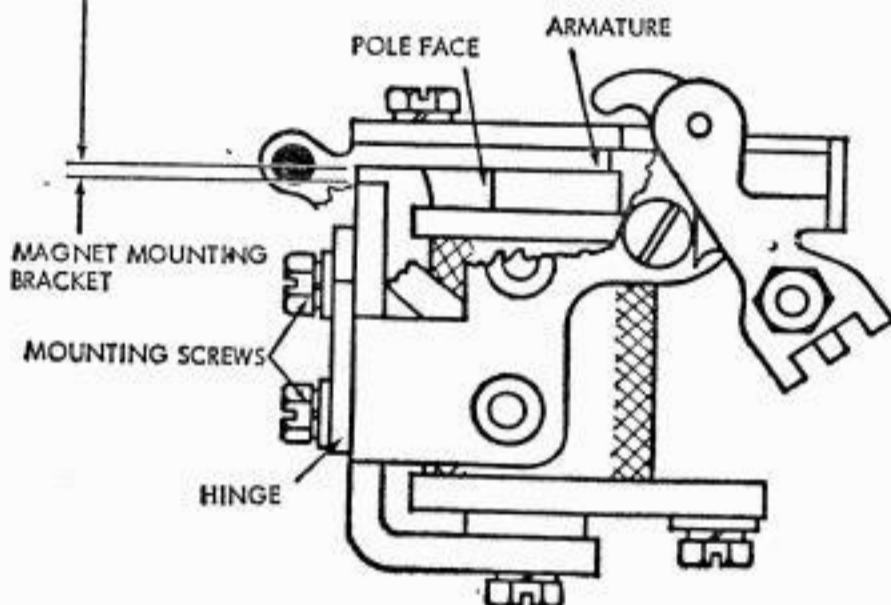
#### REQUIREMENT

ARMATURE BAIL SPRING REMOVED. WITH ARMATURE HELD AGAINST POLE FACE AND PLAY TAKEN UP AT HINGE IN DOWNWARD DIRECTION, CLEARANCE BETWEEN ARMATURE AND MAGNET BRACKET

MIN. SOME ——— MAX. 0.004 INCH

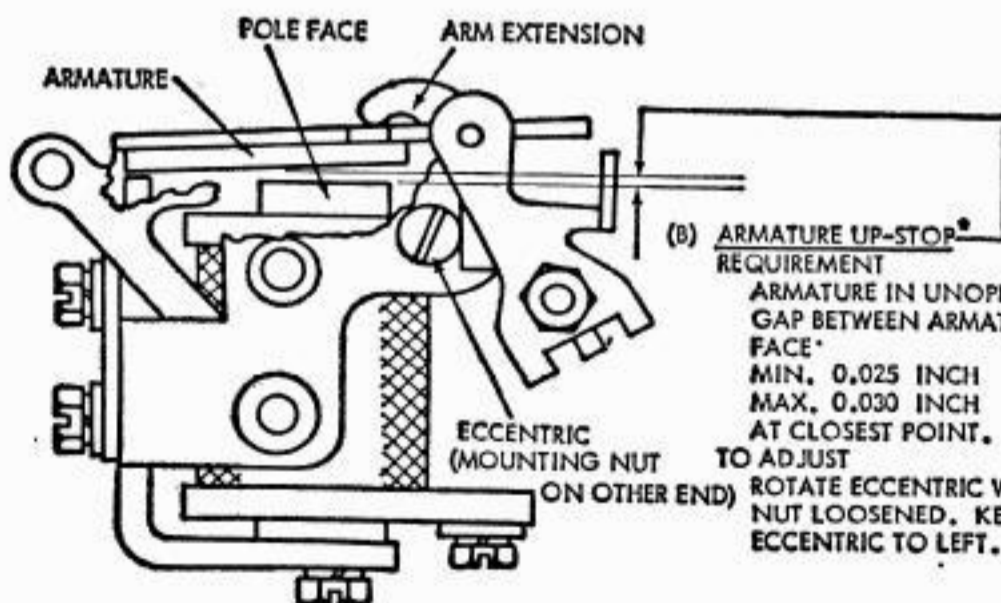
#### TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION HINGE. WHILE ADJUSTMENT IS BEING MADE, ARMATURE SHALL TOUCH FRONT AND REAR OF POLE FACE.



#### \*NOTE

THIS ADJUSTMENT IS MADE AT FACTORY AND SHALL NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, THE PUNCH UNIT SHALL BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE THE PUNCH UNIT POSITION ADJUSTMENT.



### (B) ARMATURE UP-STOP\*

#### REQUIREMENT

ARMATURE IN UNOPERATED POSITION, GAP BETWEEN ARMATURE AND POLE FACE\*

MIN. 0.025 INCH

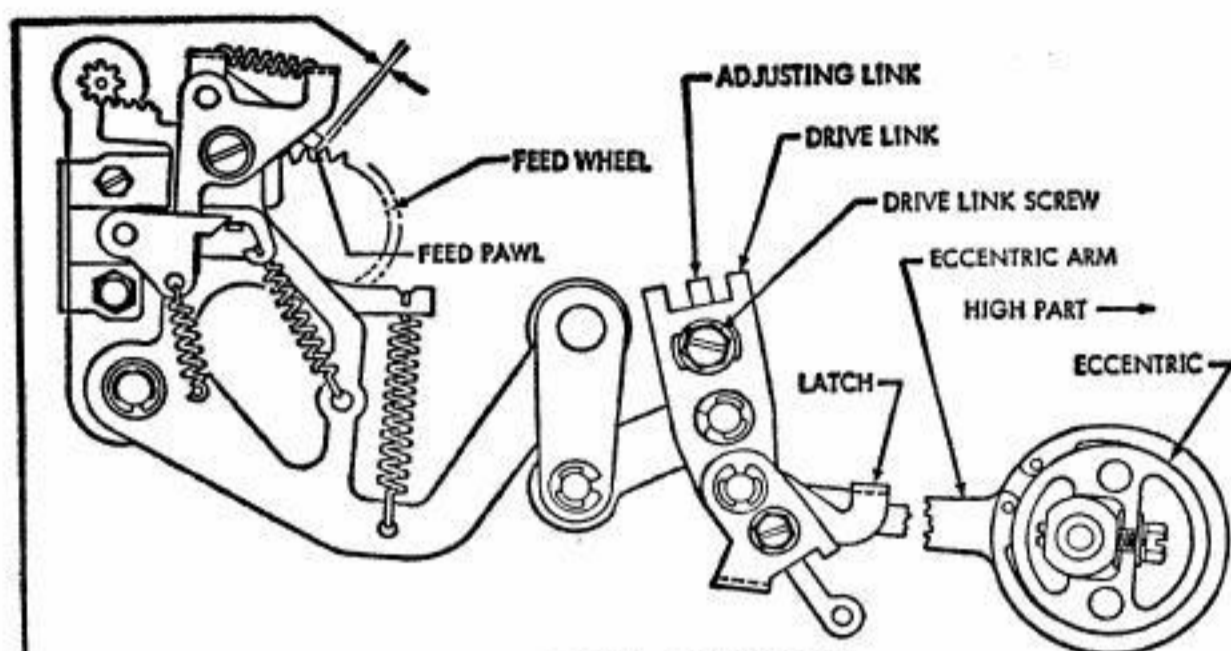
MAX. 0.030 INCH

AT CLOSEST POINT.

#### TO ADJUST

ROTATE ECCENTRIC WITH MOUNTING NUT LOOSENED. KEEP HIGH PART OF ECCENTRIC TO LEFT.

## 2.61 Backspace Mechanisms (Manual and Power Drive)



### (A) DRIVE LINK (POWER DRIVE ONLY - PRELIMINARY)

#### REQUIREMENT

BACKSPACE MECHANISM IN OPERATED POSITION. FEED WHEEL IN DETENTED POSITION. LATCH ENGAGED WITH ECCENTRIC ARM. HIGH PART OF ECCENTRIC TO RIGHT. CLEARANCE BETWEEN FEED PAWL AND FEED WHEEL RATCHET TOOTH

MIN. SOME  
MAX. 0.003 INCH

CHECK WITH FEED WHEEL SHAFT OIL HOLE IN UPPERMOST POSITION AND RECHECK EACH 90 DEGREES ABOUT THE PERIPHERY OF FEED WHEEL.

#### TO ADJUST

BY MEANS OF PRY POINT, POSITION ADJUSTING LINK WITH DRIVE LINK SCREW FRICTION TIGHT.

### (B) FEED PAWL (MANUAL AND POWER DRIVE - FINAL) AND DRIVE LINK (POWER DRIVE ONLY - FINAL)

#### TO CHECK

UNIT OPERATING UNDER POWER AND TAPE IN PUNCH UNIT. PLACE FEED WHEEL SHAFT OIL HOLE IN UPPERMOST POSITION. OPERATE BACKSPACE MECHANISM ONCE.

#### REQUIREMENT

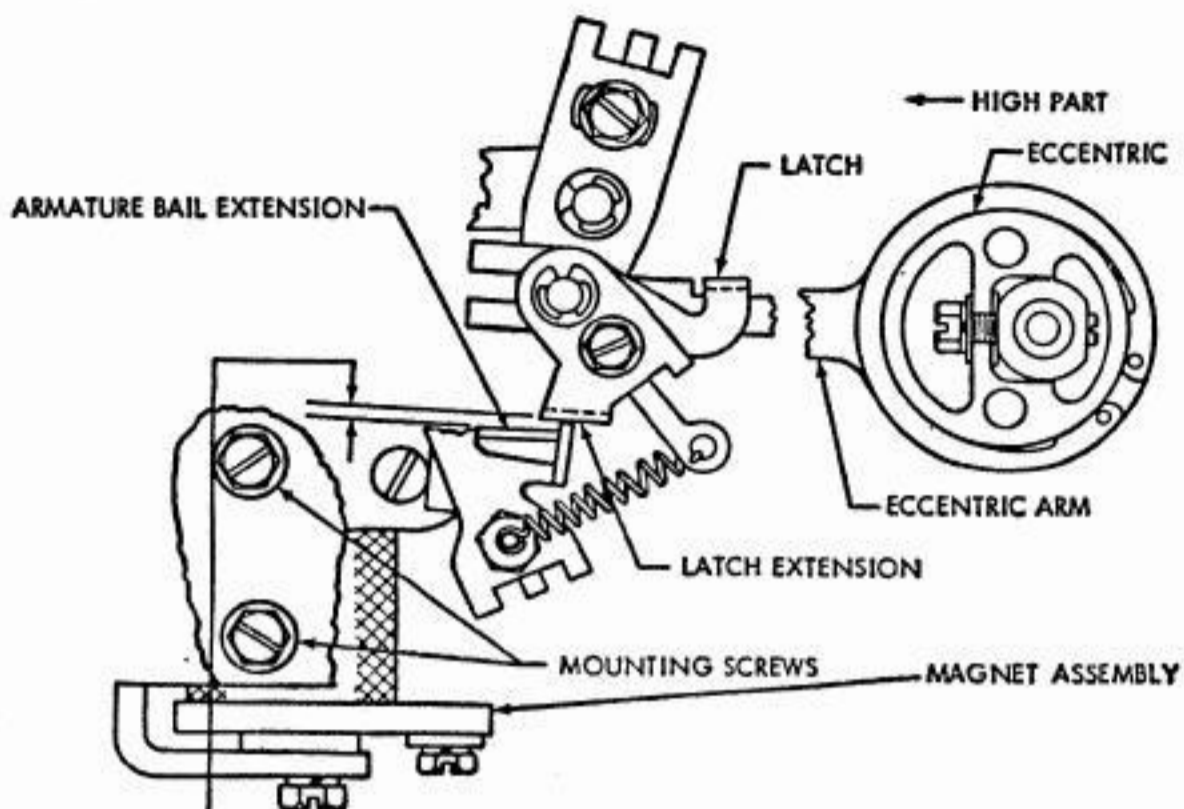
RATCHET WHEEL SHALL BE BACKED ONE SPACE TO A FULLY DETENTED POSITION. CHECK FOR EACH 90 DEGREES ABOUT THE PERIPHERY OF FEED WHEEL.

**NOTE:** A FULLY DETENTED POSITION IS DEFINED AS: "WITH DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, PUNCH UNIT FEED PAWL SHALL ENGAGE FIRST TOOTH BELOW HORIZONTAL CENTER LINE OF RATCHET FEED WHEEL WITH NO PERCEPTIBLE CLEARANCE."

#### TO ADJUST

REFINE FEED PAWL (PRELIMINARY) AND DRIVE LINK (PRELIMINARY) ADJUSTMENTS.

## 2.62 Backspace Mechanism (Power Drive)



### LATCH EXTENSION

#### REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. HIGH PART OF ECCENTRIC TO LEFT. ARMATURE AGAINST POLE FACE. LATCH RESTING ON ECCENTRIC ARM NOTCH. CLEARANCE BETWEEN ARMATURE BAIL EXTENSION AND LATCH EXTENSION

MIN. 0.005 INCH --- MAX. 0.020 INCH

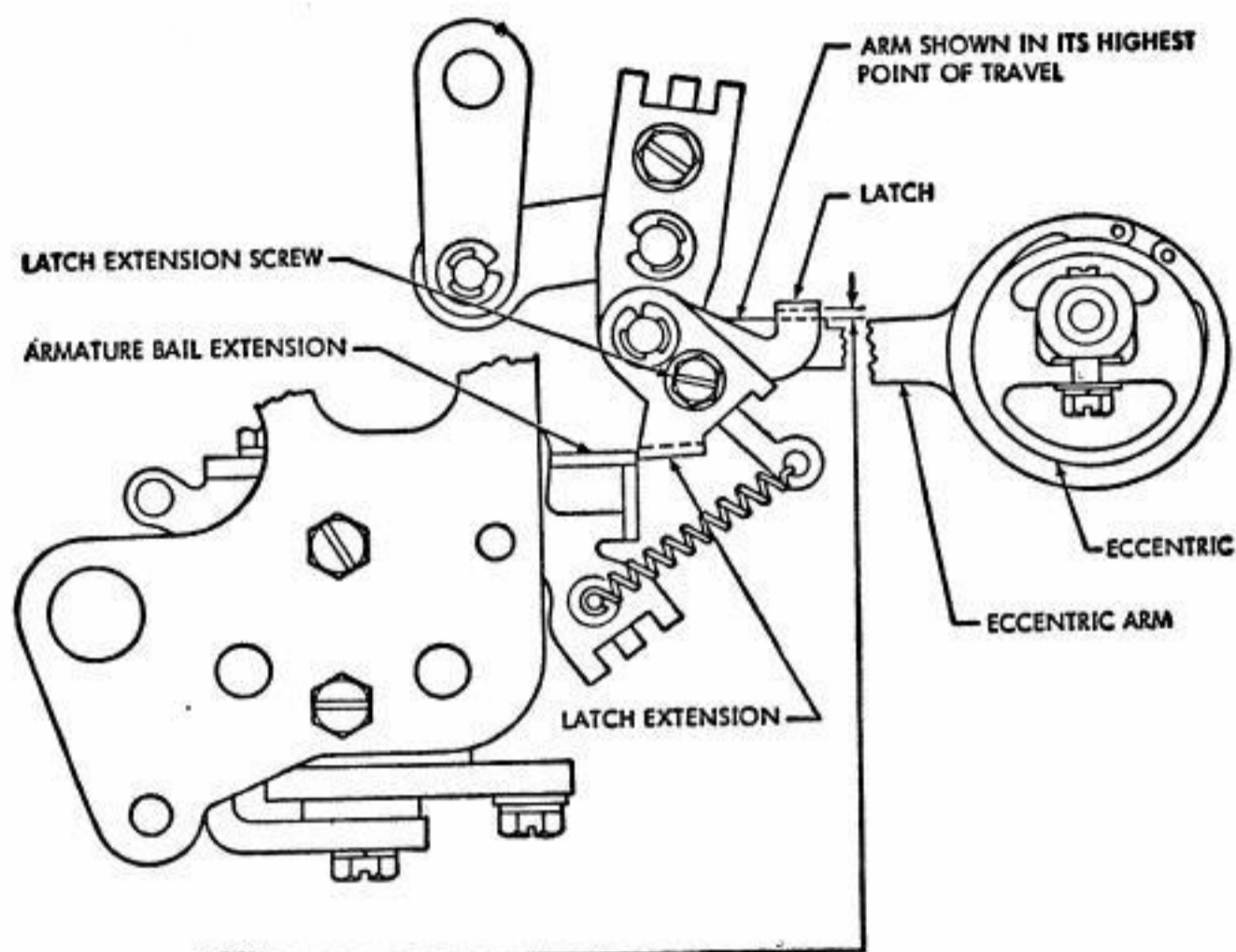
#### TO ADJUST

SWING MAGNET CLOCKWISE OR COUNTERCLOCKWISE, AS NECESSARY, WITH MOUNTING SCREWS FRICTION TIGHT.

#### NOTE

THIS ADJUSTMENT IS MADE AT FACTORY AND SHALL NOT BE DISTURBED UNLESS A REASSEMBLY OF UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, PUNCH UNIT SHALL BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE PUNCH UNIT POSITION ADJUSTMENT.

## 2.63 Backspace Mechanism (Power Drive)



### LATCH

#### REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. ARMATURE OFF POLE FACE (DE-ENERGIZED). LATCH EXTENSION AGAINST END OF ARMATURE BAIL EXTENSION. ECCENTRIC ARM AT ITS CLOSEST POINT TO UNDERSIDE OF LATCH. CLEARANCE BETWEEN LATCH AND ECCENTRIC

ARM

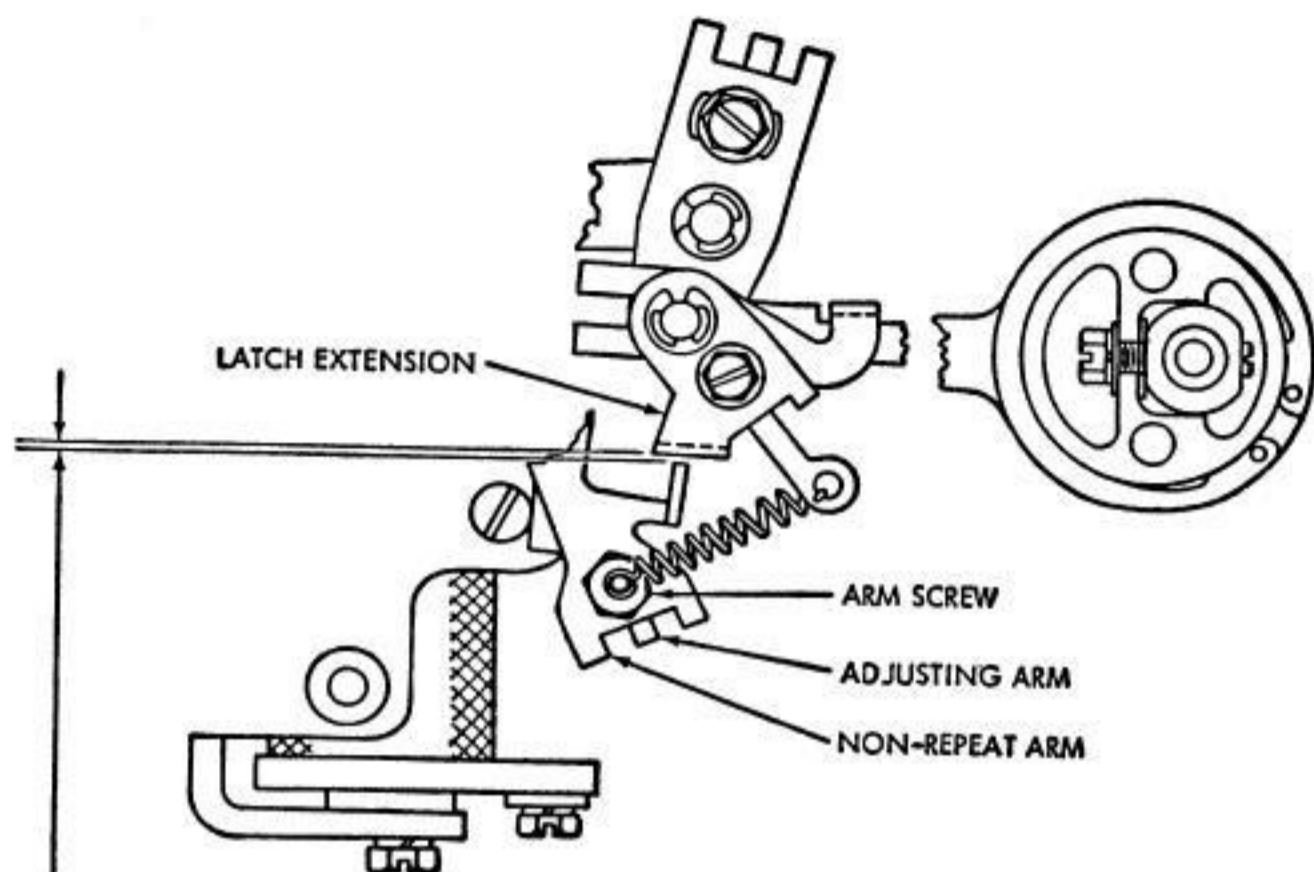
MIN. 0.005 INCH

MAX. 0.025 INCH

#### TO ADJUST

POSITION LATCH WITH LATCH EXTENSION SCREW LOOSENED.

## 2.64 Backspace Mechanism (Power Drive)



**NON-REPEAT ARM  
REQUIREMENT**

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEAR-  
ANCE BETWEEN TOP SURFACE OF NON-REPEAT ARM AND  
LOWEST POINT OF LATCH EXTENSION

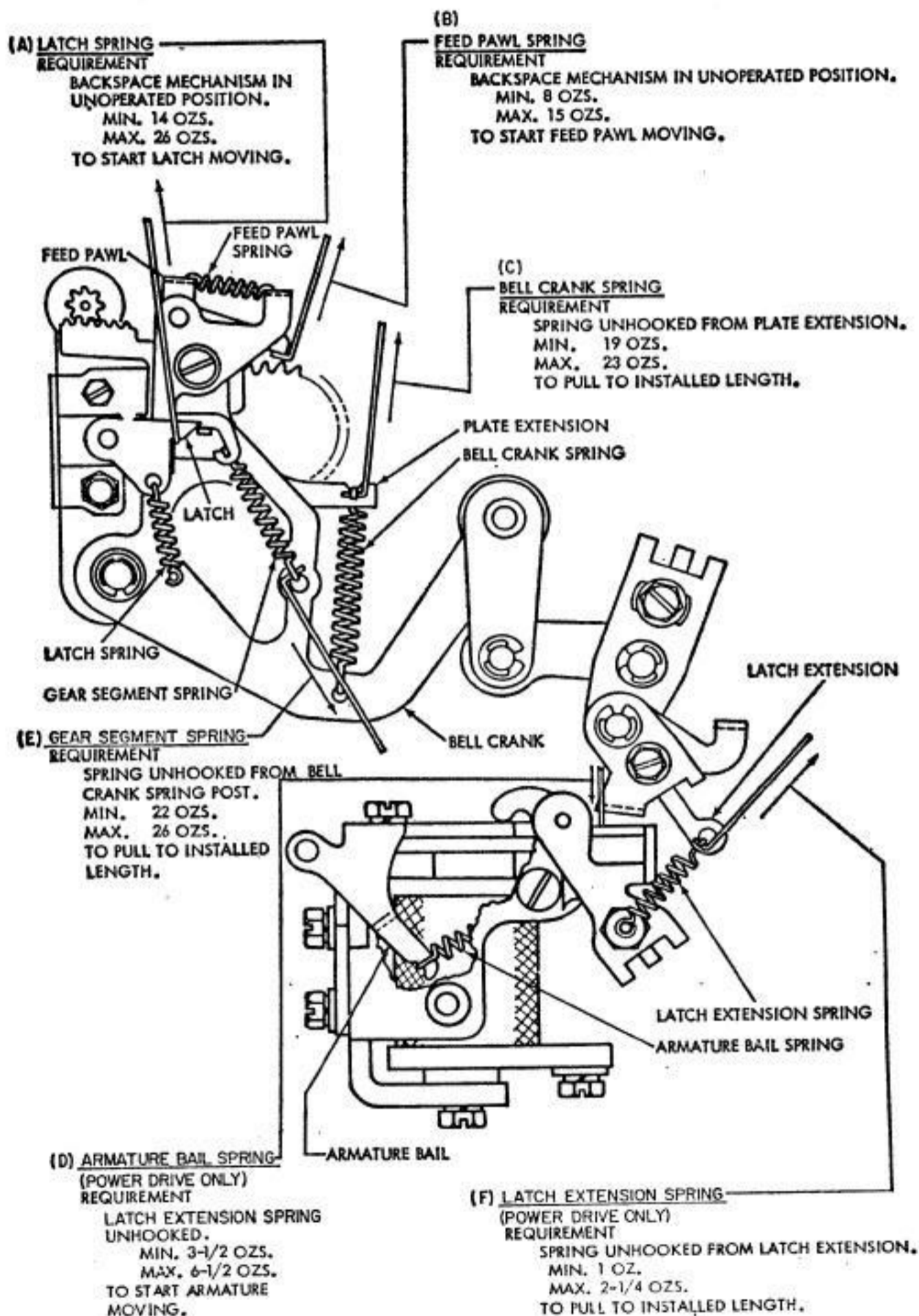
MIN. 0.002 INCH

MAX. 0.010 INCH

**TO ADJUST**

POSITION ADJUSTING ARM WITH ARM SCREW LOOSENED FRICTION TIGHT.

## 2.65 Backspace Mechanisms (Manual and Power Drive)



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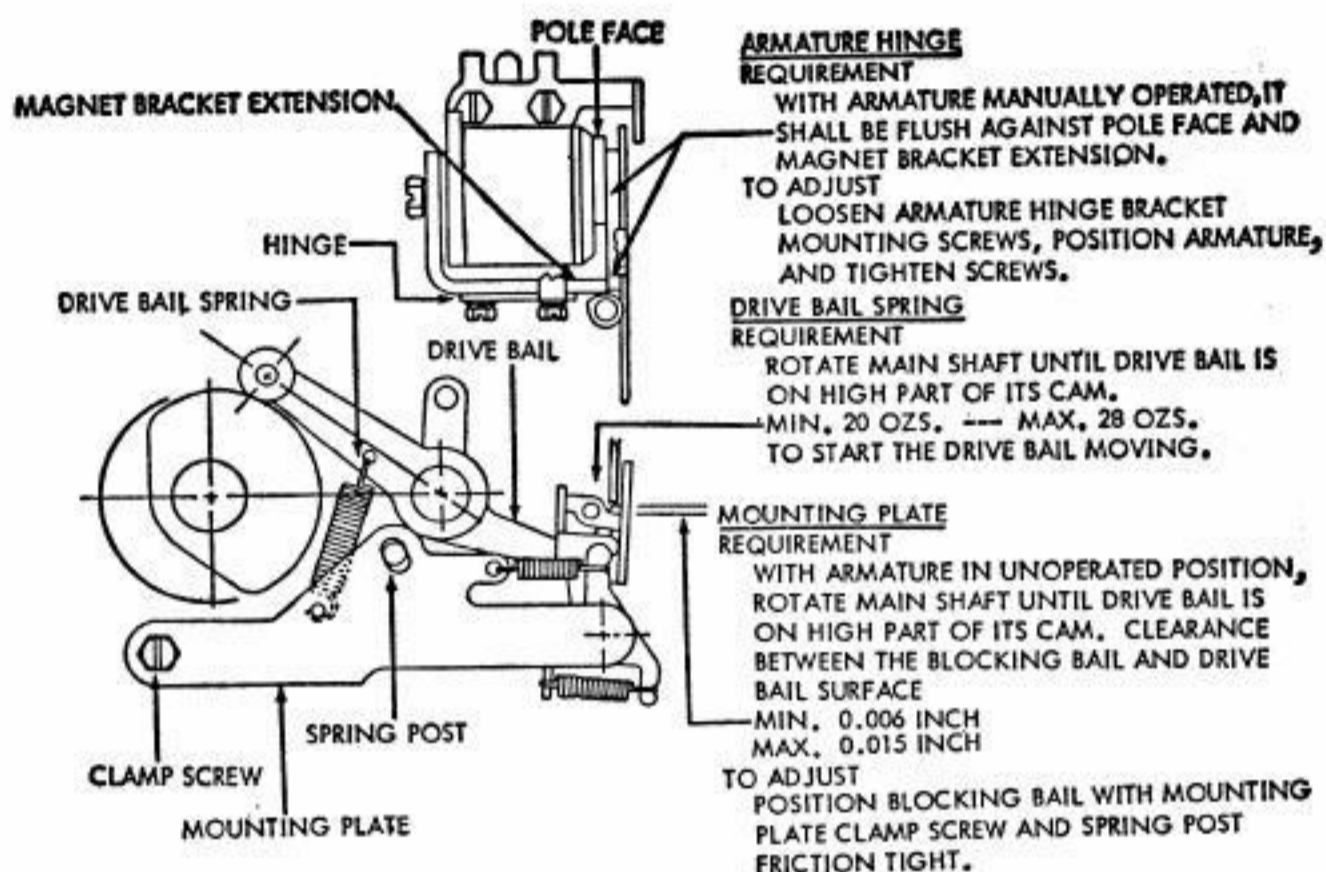
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## 2.67 Remote-control Noninterfering LTRS Tape Feed-out Mechanism



### MAGNET ASSEMBLY

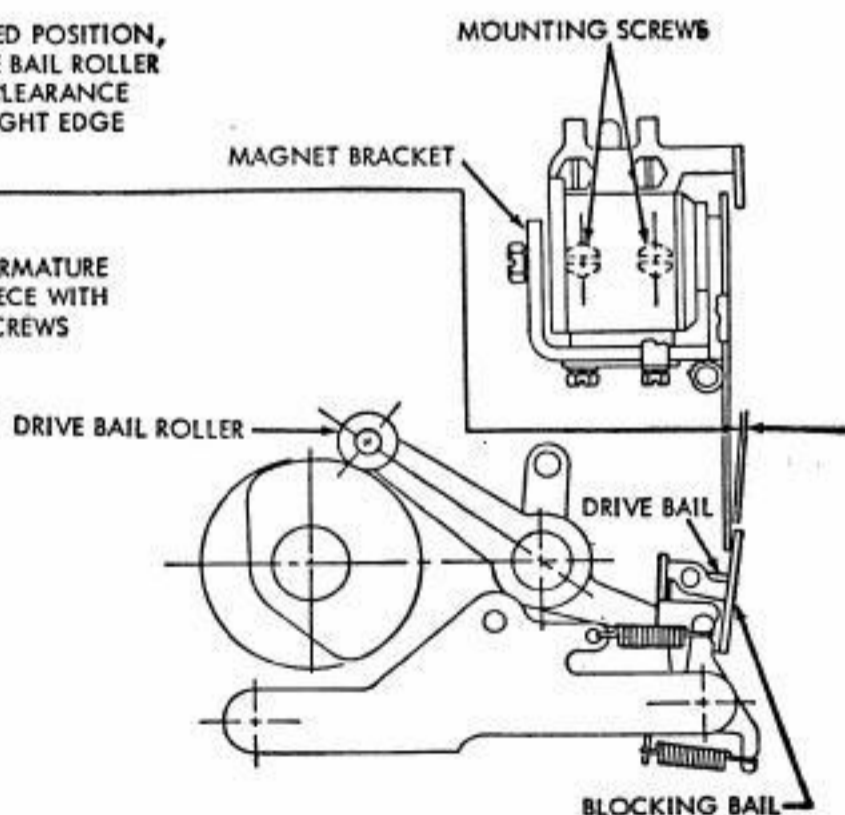
#### REQUIREMENT

WITH ARMATURE HELD IN OPERATED POSITION, ROTATE MAIN SHAFT UNTIL DRIVE BAIL ROLLER IS ON HIGH PART OF ITS CAM. CLEARANCE BETWEEN BLOCKING BAIL AND RIGHT EDGE OF DRIVE BAIL.

MIN. 0.010 INCH  
 MAX. 0.025 INCH

#### TO ADJUST

POSITION MAGNET ASSEMBLY, ARMATURE HELD AGAINST MAGNET POLE PIECE WITH MAGNET BRACKET MOUNTING SCREWS FRICTION TIGHT.



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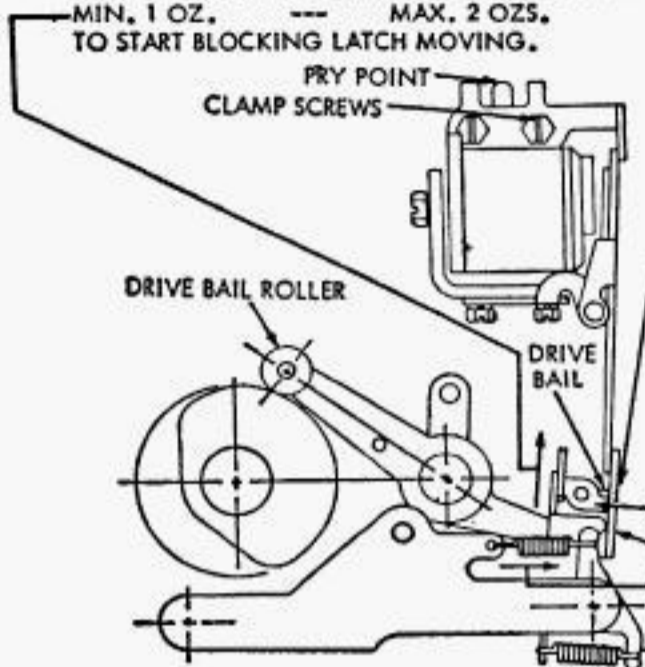
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## 2.68 Remote-control Noninterfering LTRS Tape Feed-out Mechanism

### BLOCKING LATCH TORSION SPRING REQUIREMENT

WITH ARMATURE IN UNOPERATED POSITION AND DRIVE BAIL ROLLER ON HIGH PART OF ITS CAM  
 MIN. 1 OZ. --- MAX. 2 OZS.  
 TO START BLOCKING LATCH MOVING.



### ARMATURE BACKSTOP REQUIREMENT

WITH ARMATURE IN UNOPERATED POSITION, ROTATE MAIN SHAFT UNTIL DRIVE BAIL ROLLER IS ON HIGH PART OF ITS CAM. BLOCKING BAIL SHALL FULLY ENGAGE THE DRIVE BAIL.  
 TO ADJUST WITH THE ARMATURE BACKSTOP MOUNTING SCREWS FRICTION TIGHT, POSITION BY MEANS OF PRYPOINT.

### NON-REPEAT LEVER SPRING REQUIREMENT

WITH ARMATURE IN UNOPERATED POSITION AND DRIVE BAIL ROLLER ON HIGH PART OF ITS CAM  
 MIN. 8 OZS. --- MAX. 10 OZS.  
 TO PULL SPRING TO INSTALLED LENGTH.

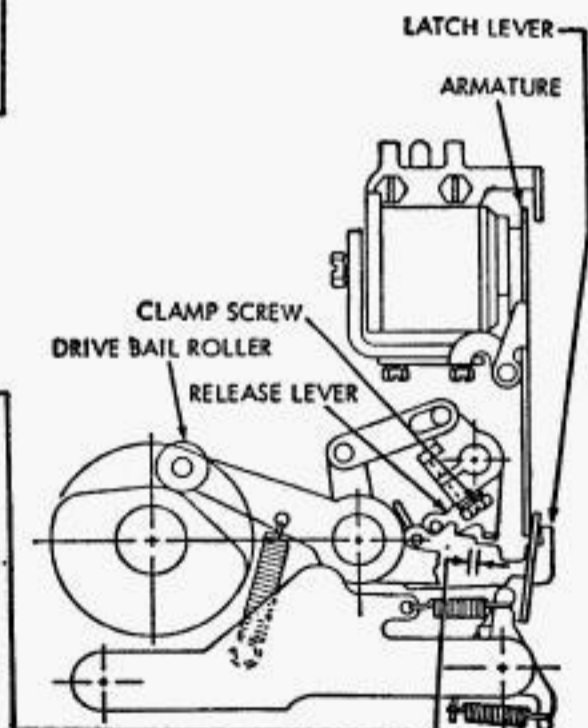
### BLOCKING BAIL SPRING REQUIREMENT

WITH ARMATURE IN UNOPERATED POSITION AND DRIVE BAIL ROLLER ON HIGH PART OF ITS CAM  
 MIN. 5 OZS. --- MAX. 7 OZS.  
 TO PULL SPRING TO INSTALLED LENGTH.

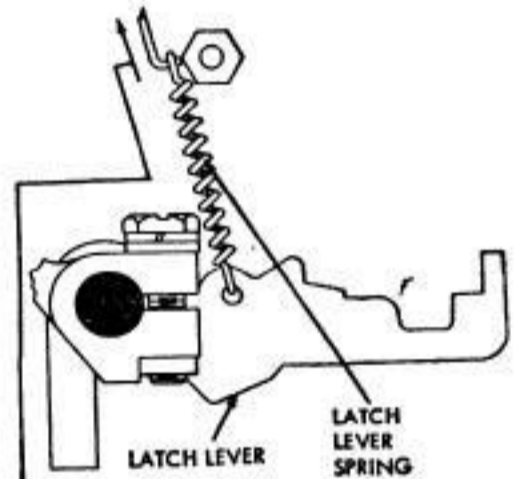
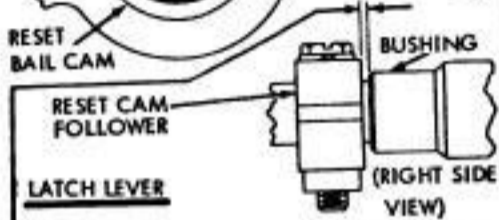
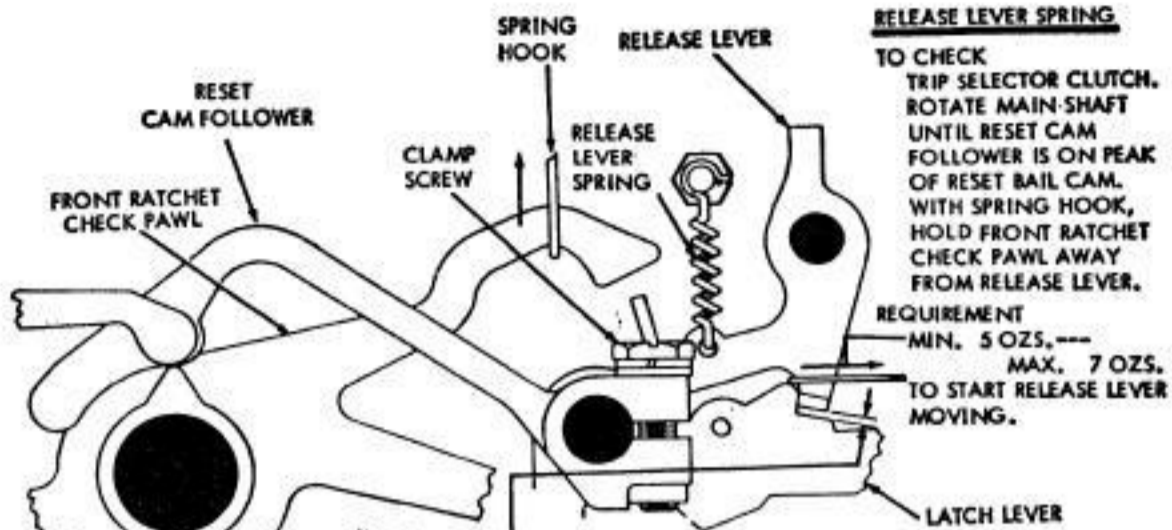
### RELEASE LEVER REQUIREMENT

WITH ARMATURE IN OPERATED POSITION, ROTATE MAIN SHAFT UNTIL DRIVE BAIL ROLLER IS IN INDENT OF ITS CAM. CLEARANCE BETWEEN RELEASE LEVER AND LATCH LEVER  
 MIN. 0.010 INCH  
 MAX. 0.025 INCH

TO ADJUST WITH CLAMP SCREW FRICTION TIGHT POSITION RELEASE LEVER.



## 2.69 Remote-control Noninterfering LTRS Tape Feed-out Mechanism

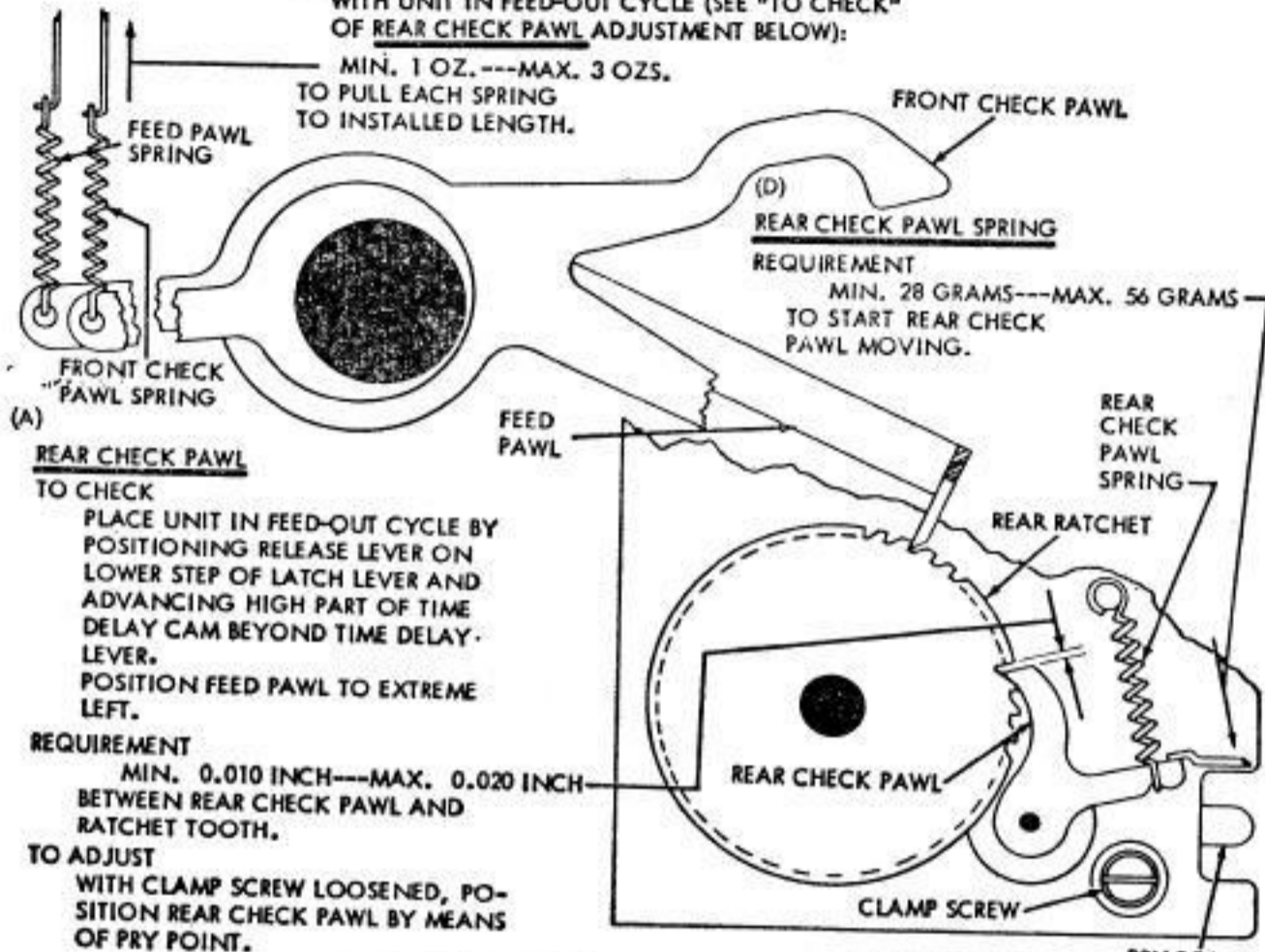


## 2.70 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms

### (C) FEED PAWL AND FRONT CHECK PAWL SPRINGS

REQUIREMENT  
WITH UNIT IN FEED-OUT CYCLE (SEE "TO CHECK"  
OF REAR CHECK PAWL ADJUSTMENT BELOW):

MIN. 1 OZ. --- MAX. 3 OZS.  
TO PULL EACH SPRING  
TO INSTALLED LENGTH.



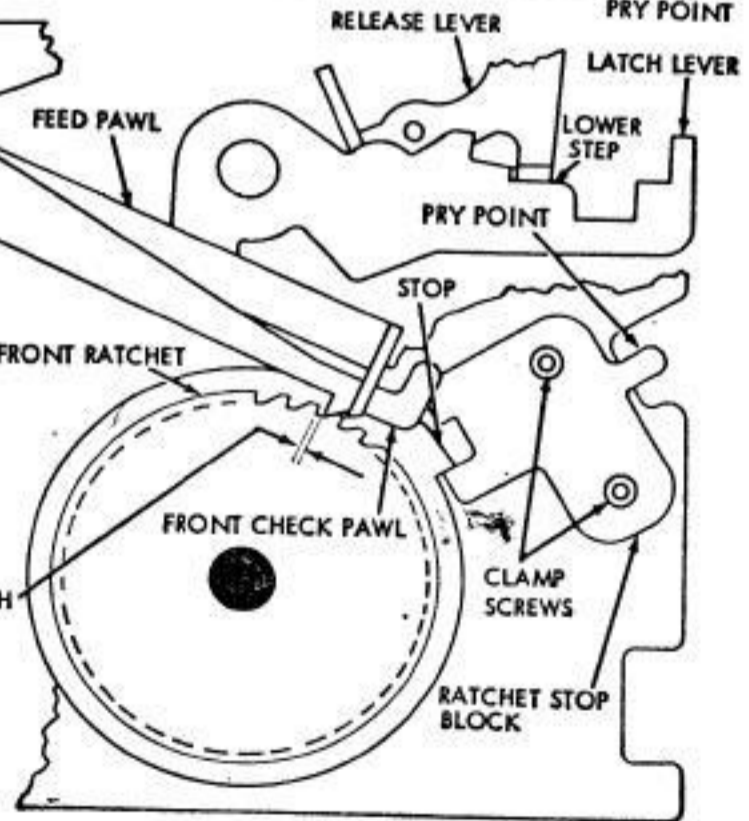
**(A) REAR CHECK PAWL**  
TO CHECK  
PLACE UNIT IN FEED-OUT CYCLE BY  
POSITIONING RELEASE LEVER ON  
LOWER STEP OF LATCH LEVER AND  
ADVANCING HIGH PART OF TIME  
DELAY CAM BEYOND TIME DELAY  
LEVER.  
POSITION FEED PAWL TO EXTREME  
LEFT.

REQUIREMENT  
MIN. 0.010 INCH --- MAX. 0.020 INCH  
BETWEEN REAR CHECK PAWL AND  
RATCHET TOOTH.  
TO ADJUST  
WITH CLAMP SCREW LOOSENED, PO-  
SITION REAR CHECK PAWL BY MEANS  
OF PRY POINT.

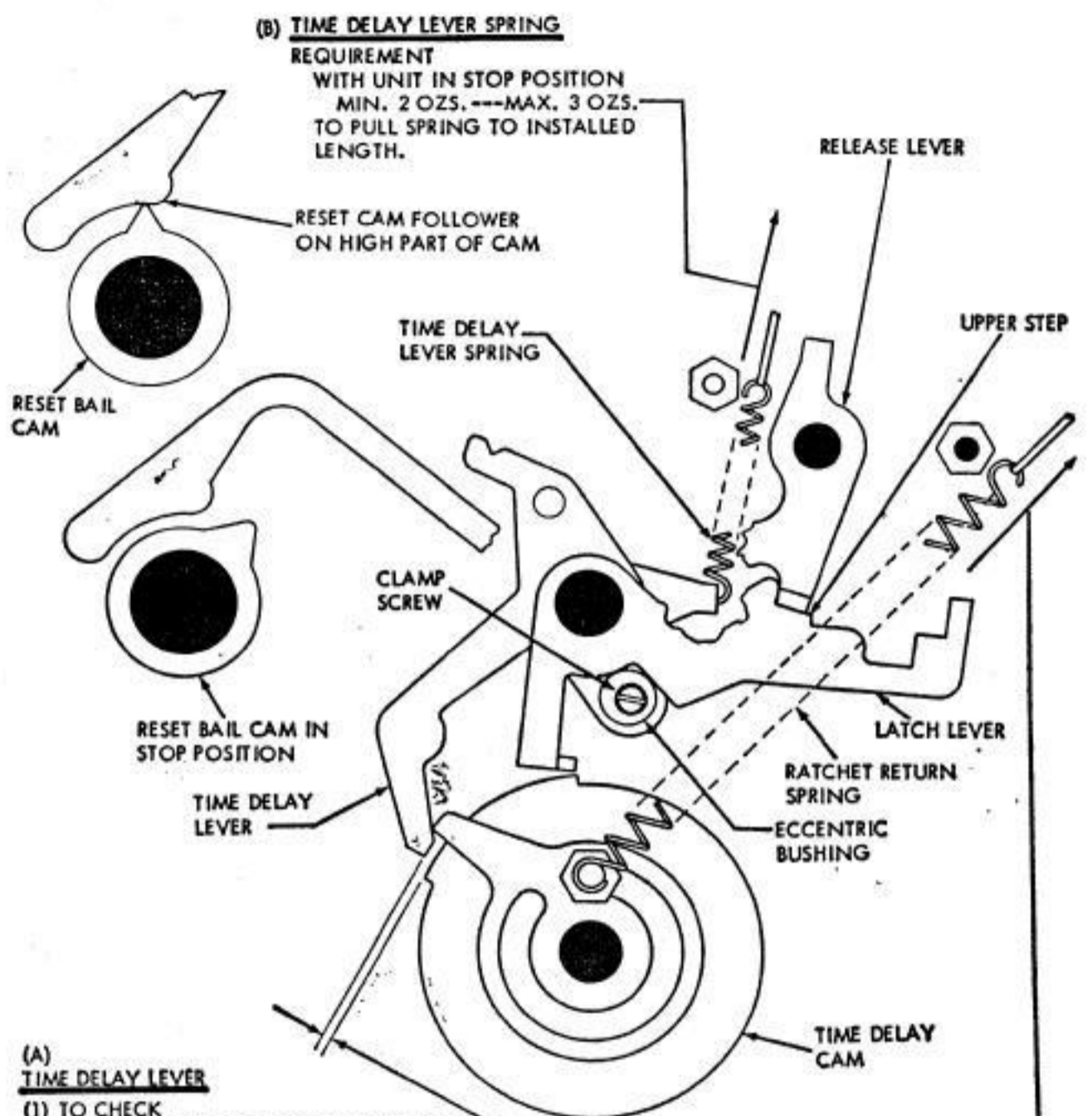
REQUIREMENT  
MIN. 28 GRAMS --- MAX. 56 GRAMS  
TO START REAR CHECK  
PAWL MOVING.

**(B) RATCHET STOP BLOCK**  
TO CHECK  
WITH UNIT IN STOP POSITION, PLACE  
RELEASE LEVER ON LOWER STEP OF  
LATCH LEVER. PERMIT STOP ON FRONT  
RATCHET TO REST AGAINST STOP BLOCK.  
ROTATE MAIN SHAFT UNTIL FEED PAWL  
IS IN EXTREME RIGHT POSITION.

REQUIREMENT  
MIN. 0.002 INCH --- MAX. 0.010 INCH  
BETWEEN FRONT CHECK PAWL AND  
FRONT RATCHET TOOTH.  
TO ADJUST  
WITH TWO CLAMP SCREWS LOOSENED  
POSITION STOP BLOCK BY MEANS OF  
PRY POINT.



## 2.71 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms



### (A) TIME DELAY LEVER

- (1) TO CHECK TRIP SELECTOR CLUTCH AND ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON HIGH PART OF RESET BAIL CAM.

REQUIREMENT  
MIN. 0.040 INCH---MAX. 0.060 INCH---  
CLEARANCE BETWEEN TIME DELAY LEVER AND  
HIGH PART OF TIME DELAY CAM.

- (2) REQUIREMENT  
WITH UNIT IN STOP POSITION  
MIN. SOME \_\_\_\_\_  
CLEARANCE BETWEEN TIME DELAY LEVER AND  
HIGH PART OF TIME DELAY CAM.

TO ADJUST  
WITH CLAMP SCREW LOOSENED, POSITION  
ECCENTRIC BUSHING.

### (B) TIME DELAY LEVER SPRING

REQUIREMENT  
WITH UNIT IN STOP POSITION  
MIN. 2 OZS.---MAX. 3 OZS.---  
TO PULL SPRING TO INSTALLED  
LENGTH.

### (C) RATCHET RETURN SPRING

REQUIREMENT  
WITH UNIT IN STOP POSITION  
MIN. 5 OZS.---MAX. 7 OZS.---  
TO PULL SPRING TO INSTALLED-LENGTH.

## 2.72 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms

### (A) RELEASE ARM

#### TO CHECK

PLACE UNIT IN FEED-OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER. ADVANCE RATCHETS BEYOND TIME DELAY (HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER). POSITION FEED-OUT CAM AS SHOWN.

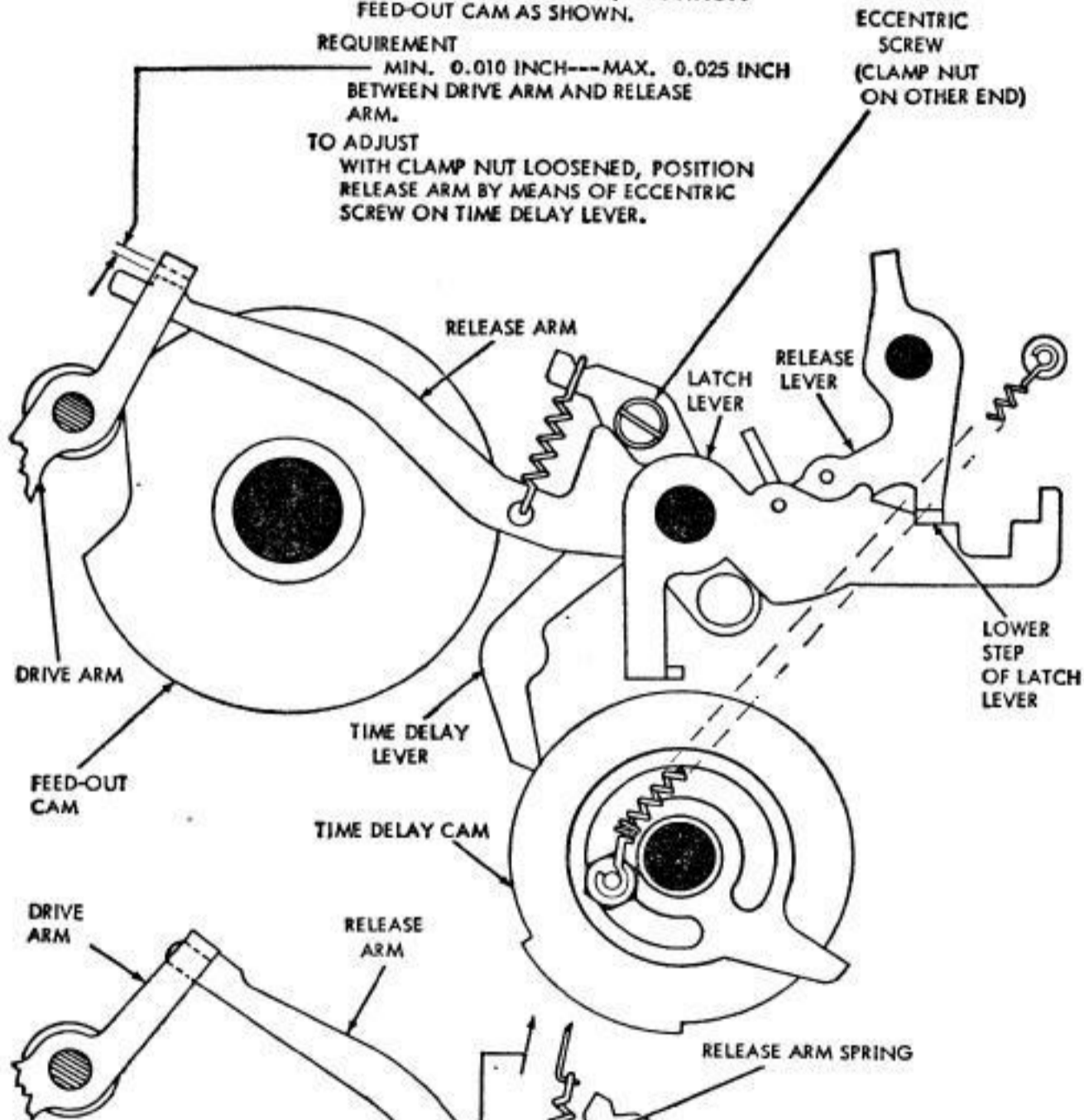
#### REQUIREMENT

MIN. 0.010 INCH---MAX. 0.025 INCH BETWEEN DRIVE ARM AND RELEASE ARM.

#### TO ADJUST

WITH CLAMP NUT LOOSENED, POSITION RELEASE ARM BY MEANS OF ECCENTRIC SCREW ON TIME DELAY LEVER.

ECCENTRIC SCREW (CLAMP NUT ON OTHER END)



### (B) RELEASE ARM SPRING

#### REQUIREMENT

WITH CLUTCHES DISENGAGED AND DRIVE ARM LATCHED BY RELEASE ARM

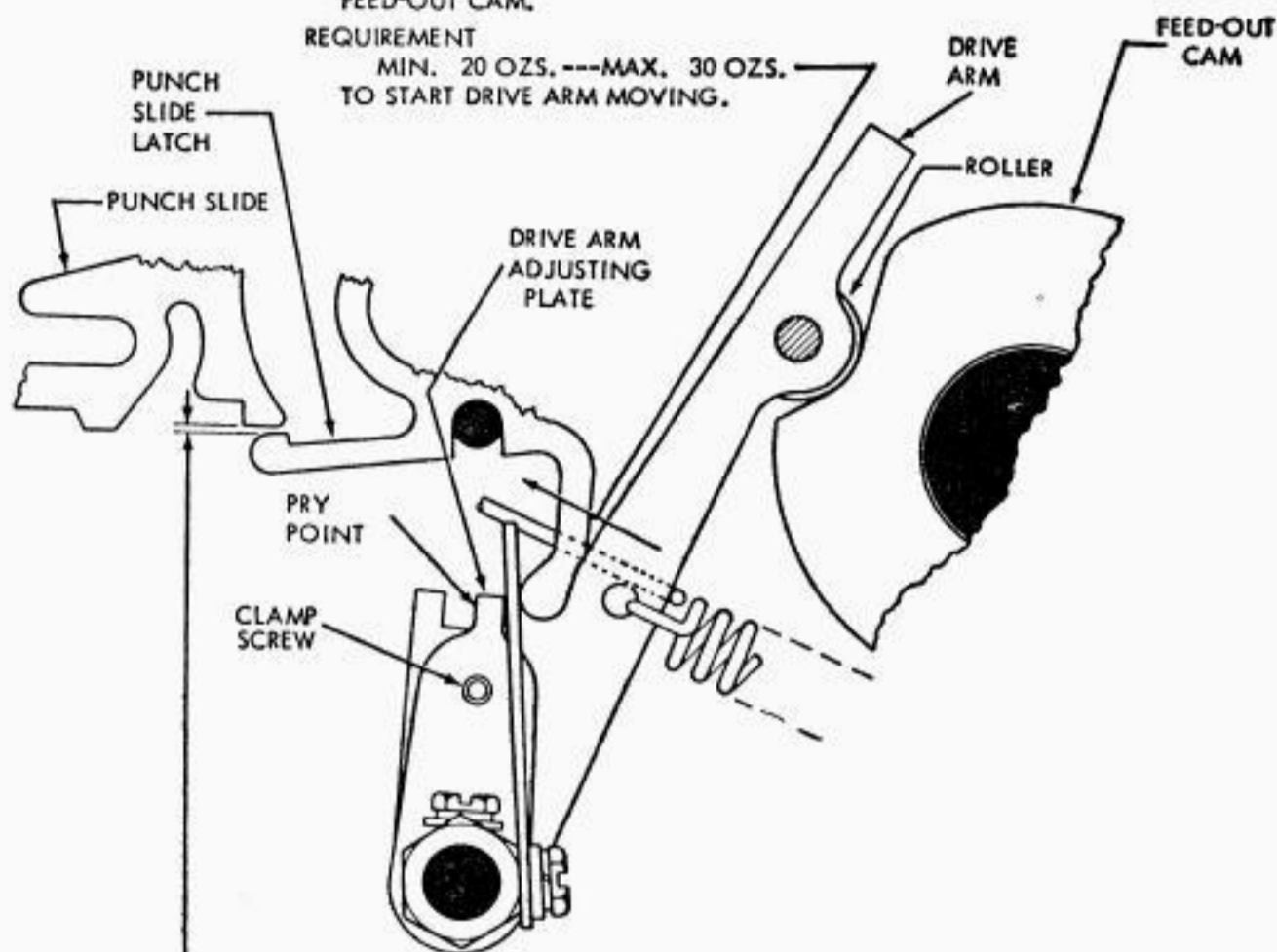
MIN. 2 OZS.---MAX. 5 OZS. TO PULL SPRING TO INSTALLED LENGTH.

## 2.73 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms

### (A) DRIVE ARM SPRING

PLACE UNIT IN FEED-OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER AND ADVANCING HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER. ROTATE MAIN SHAFT UNTIL DRIVE ARM ROLLER IS ON LOW PART OF FEED-OUT CAM.

REQUIREMENT  
MIN. 20 OZS. ---MAX. 30 OZS.  
TO START DRIVE ARM MOVING.



### (B) DRIVE ARM ADJUSTING PLATE

#### TO CHECK

SET UP BLANK CODE COMBINATION (-----) IN SELECTOR. PLACE UNIT IN FEED-OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER AND ADVANCING HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER. ROTATE MAIN SHAFT UNTIL DRIVE ARM ROLLER IS ON LOW PART OF FEED-OUT CAM. MAKE SURE THAT RESET BAIL IS IN LOWER POSITION.

#### REQUIREMENT

MIN. 0.010 INCH ---MAX. 0.030 INCH  
BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH AT SLIDE WHERE CLEARANCE IS LEAST.

#### TO ADJUST

WITH CLAMP SCREW LOOSENED, POSITION DRIVE ARM ADJUSTING PLATE BY MEANS OF PRY POINT.

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## 2.74 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms

### (B) ADJUSTING LEVER

#### TO CHECK

PLACE UNIT IN FEED-OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER AND ADVANCING HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER.

POSITION MAIN SHAFT SO THAT DRIVE ARM ROLLER IS ON LOW PART OF FEED-OUT CAM.

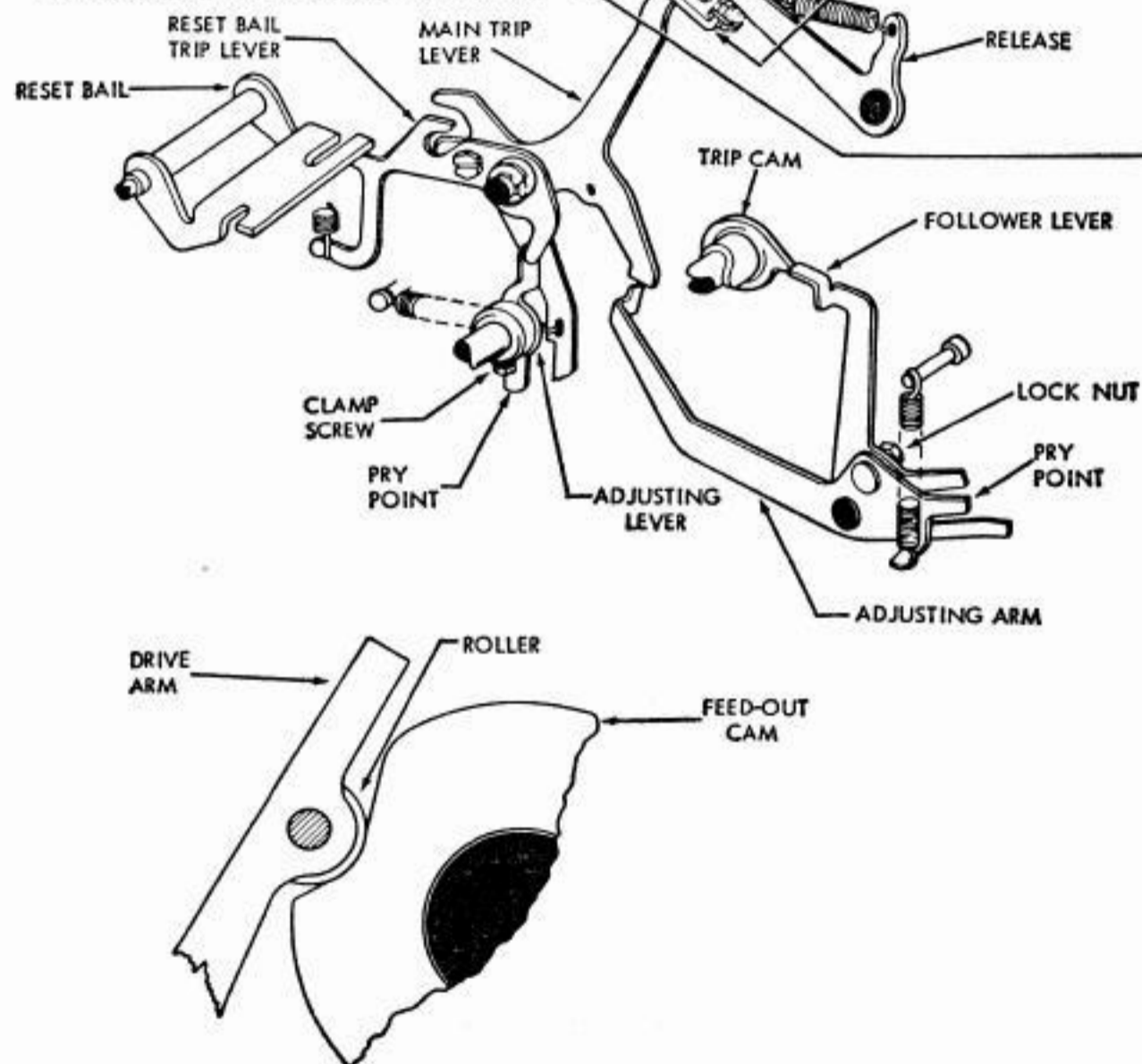
#### REQUIREMENT

(1) MIN. 0.010 INCH---MAX. 0.030 INCH BETWEEN RELEASE AND MAIN TRIP LEVER.

(2) SOME CLEARANCE BETWEEN MAIN TRIP LEVER AND DOWNSTOP BRACKET.

#### TO ADJUST

WITH CLAMP SCREW LOOSENED, POSITION ADJUSTING LEVER BY MEANS OF PRY POINT.



### (A) FOLLOWER LEVER

#### REQUIREMENT

WITH FOLLOWER LEVER ON HIGH PART OF TRIP CAM

(1) MIN. 0.010 INCH---MAX. 0.030 INCH BETWEEN RELEASE AND MAIN TRIP LEVER.

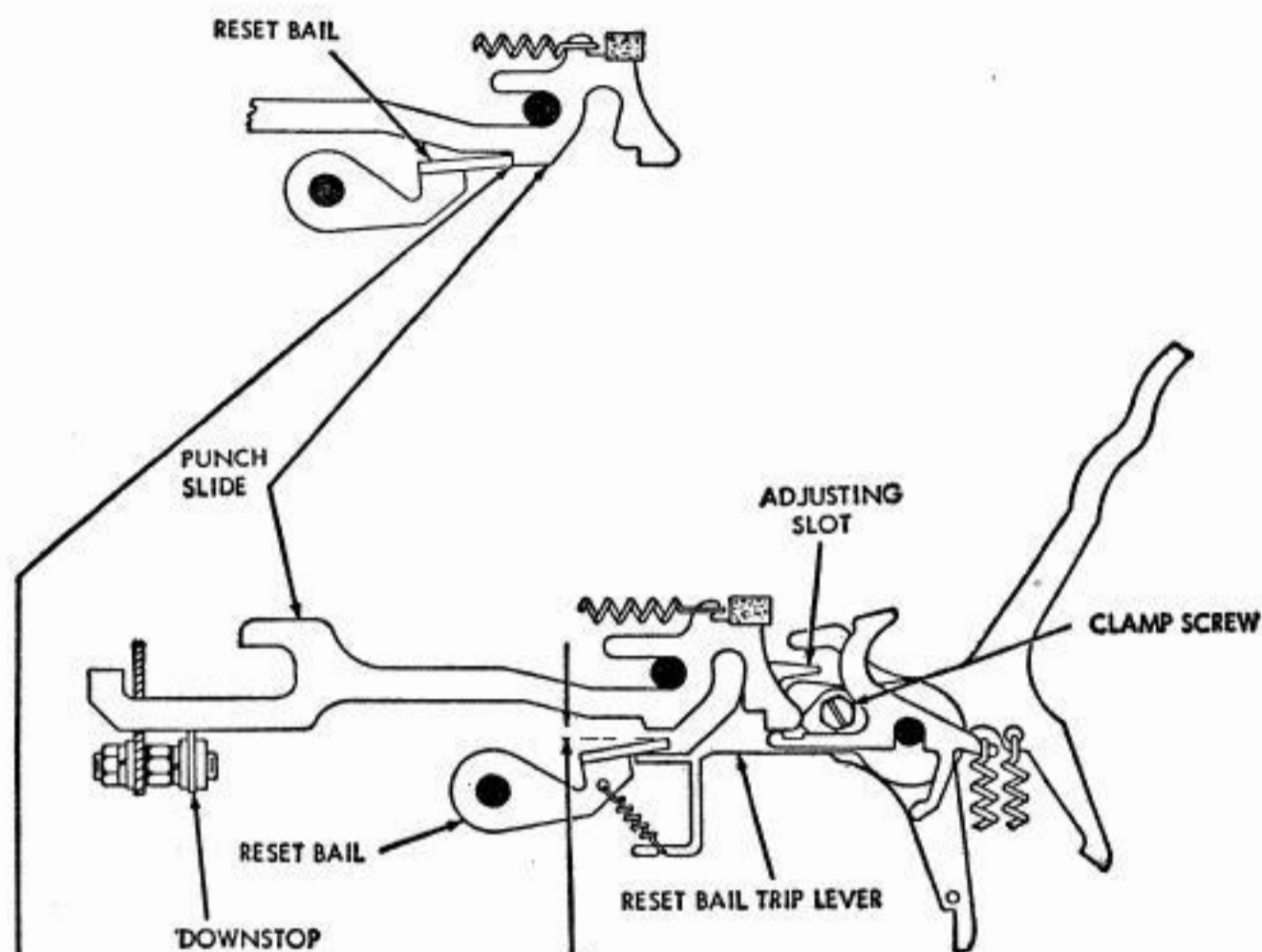
(2) SOME CLEARANCE BETWEEN MAIN TRIP LEVER AND DOWNSTOP BRACKET.

#### TO ADJUST

WITH LOCK NUT LOOSENED, POSITION ADJUSTING ARM BY MEANS OF PRY POINT.



## 2.75 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms



### RESET BAIL TRIP LEVER

- (1) TO CHECK  
SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. POSITION PUNCH SLIDES AGAINST DOWNSTOP.  
REQUIREMENT.  
MIN. 0.008 INCH --- MAX. 0.020 INCH  
BETWEEN PUNCH SLIDE AND RESET BAIL.
- (2) REQUIREMENT  
WITH CLUTCHES FULLY DISENGAGED  
RESET BAIL SHALL FULLY ENGAGE NOTCHES  
IN PUNCH SLIDES.

TO ADJUST  
WITH CLAMP SCREW LOOSENED, POSITION  
RESET BAIL TRIP LEVER BY MEANS OF ADJUST-  
ING SLOT.

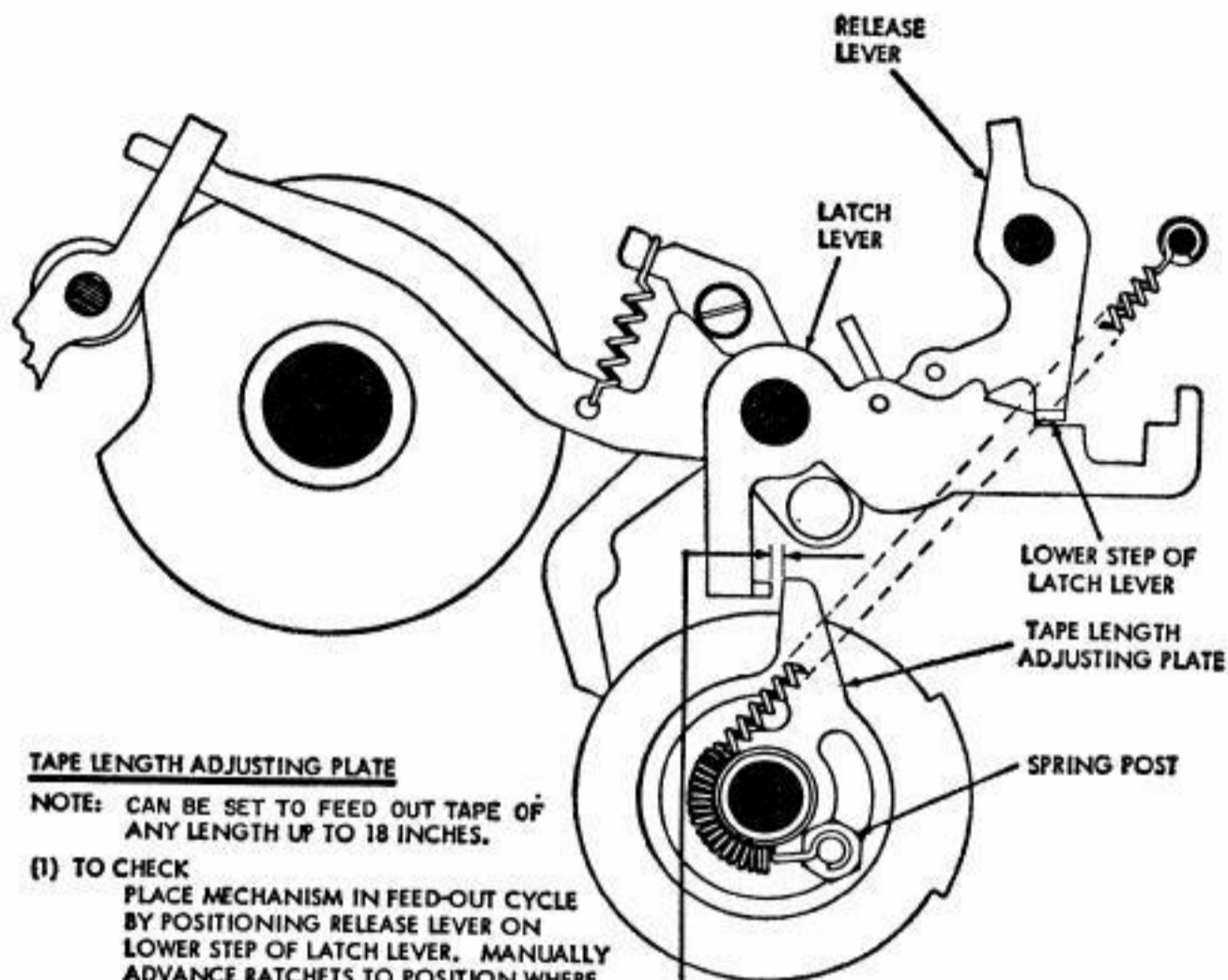
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## 2.76 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms



### TAPE LENGTH ADJUSTING PLATE

NOTE: CAN BE SET TO FEED OUT TAPE OF ANY LENGTH UP TO 18 INCHES.

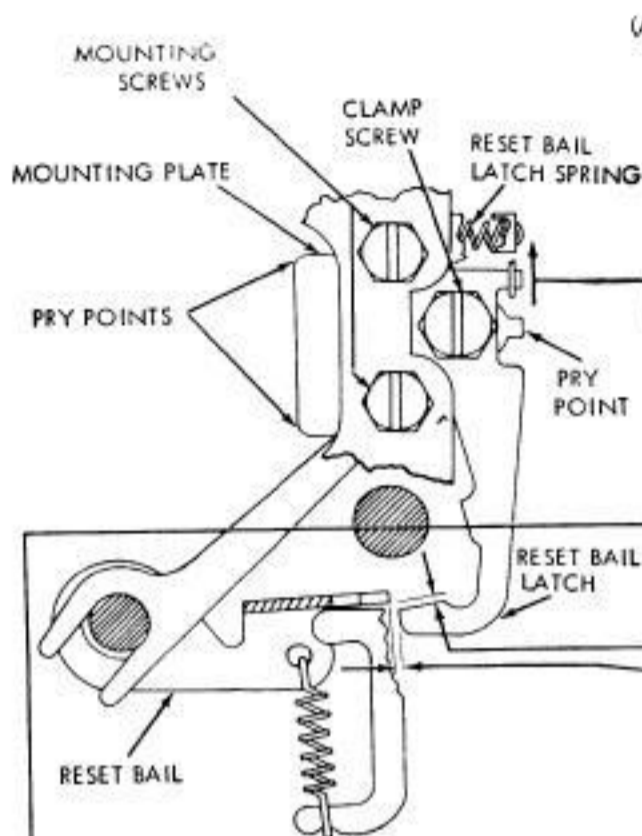
- (1) TO CHECK  
 PLACE MECHANISM IN FEED-OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER. MANUALLY ADVANCE RATCHETS TO POSITION WHERE NEXT ROTATION OF MAIN SHAFT SHALL STOP FEED-OUT CYCLE. (FEED PAWL MUST BE IN DEEP TOOTH OF REAR RATCHET.)

REQUIREMENT  
 MIN. 0.002 INCH — MAX. 0.020 INCH BETWEEN ADJUSTING PLATE AND LATCH LEVER.

- (2) REQUIREMENT  
 WHEN OPERATING UNDER POWER, UNIT SHALL FEED OUT CORRECT LENGTH OF TAPE.

TO ADJUST  
 WITH SPRING POST LOOSENED, POSITION ADJUSTING PLATE.

## 2.77 Automatic and Remote-control Noninterfering LTRS Tape Feed-out Mechanisms



### (A) RESET BAIL LATCH

- (1) TO CHECK (VERTICAL CLEARANCE), SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS AND PUNCH SLIDES ARE TO EXTREME LEFT. SET UP BLANK CODE COMBINATION (-----) IN SELECTOR BY STRIPPING ALL PUSH LEVERS FROM SELECTING LEVERS. ROTATE MAIN SHAFT UNTIL PUNCH SLIDES ARE JUST LATCHED.

#### REQUIREMENT

MIN. 0.008 INCH---MAX. 0.020 INCH BETWEEN RESET BAIL AND RESET BAIL LATCH.

#### TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION MOUNTING PLATE BY MEANS OF PRY POINTS.

- (2) REQUIREMENT (HORIZONTAL CLEARANCE) WITH CLUTCHES DISENGAGED

MIN. 0.005 INCH---MAX. 0.020 INCH BETWEEN RESET BAIL AND RESET BAIL LATCH.

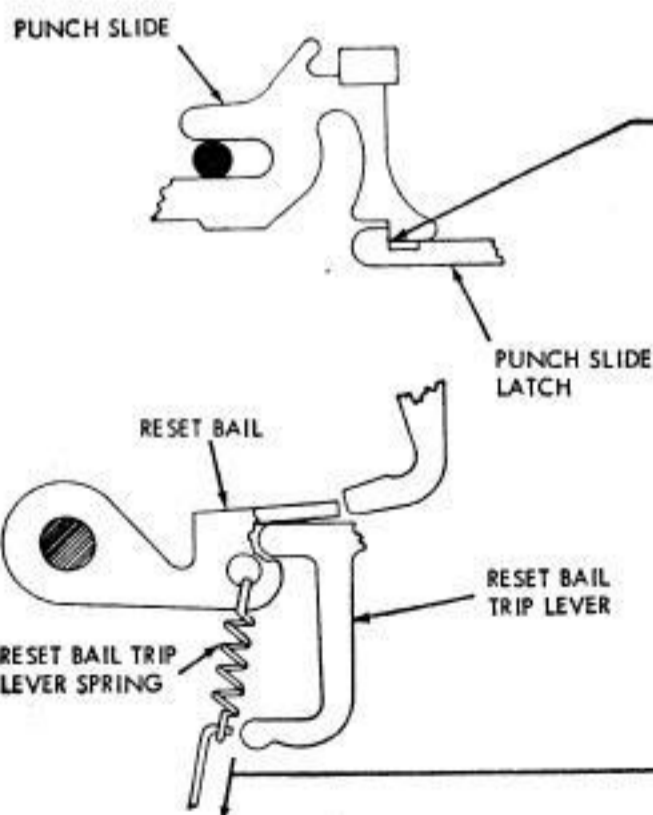
#### TO ADJUST

POSITION RESET BAIL SO THAT APPROX HALF ITS THICKNESS IS BELOW TOP SURFACE OF ITS LATCH. WITH CLAMP SCREW LOOSENED, POSITION RESET BAIL LATCH BY MEANS OF PRY POINT.

### (B) RESET BAIL LATCH SPRING

#### REQUIREMENT

WITH UNIT IN STOP CONDITION  
MIN. 1 OZ.---MAX. 3 OZS.  
TO START RESET BAIL LATCH MOVING.



- (3) TO CHECK SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. SET UP BLANK CODE COMBINATION (-----) IN SELECTOR BY STRIPPING ALL PUSH LEVERS FROM SELECTING LEVERS. ROTATE MAIN SHAFT TO STOP POSITION.

#### REQUIREMENT

PUNCH SLIDES LATCHED BY PUNCH SLIDE LATCHES.

#### TO ADJUST

REFINE (1) AND (2) ABOVE.

### (C) RESET BAIL TRIP LEVER SPRING

#### TO CHECK

DISENGAGE BOTH CLUTCHES. TRIP FUNCTION CLUTCH BY PIVOTING MAIN TRIP LEVER COUNTERCLOCKWISE. HOLD RESET BAIL TRIP LEVER UP AGAINST RESET BAIL.

#### REQUIREMENT

MIN. 18 OZS.---MAX. 24 OZS.  
TO PULL SPRING TO INSTALLED LENGTH.

**2.78 External Manual Interfering LTRS Tape Feed-out Mechanism**

**(A) Feed-out Lever**

**Requirement:** Feed-out lever shall not touch sides of tape guide.

**To Adjust:** Bend feed-out lever.

**Note:** Remake **manually operated tripler** and **tripler spring** adjustments.

**(B) Arm**

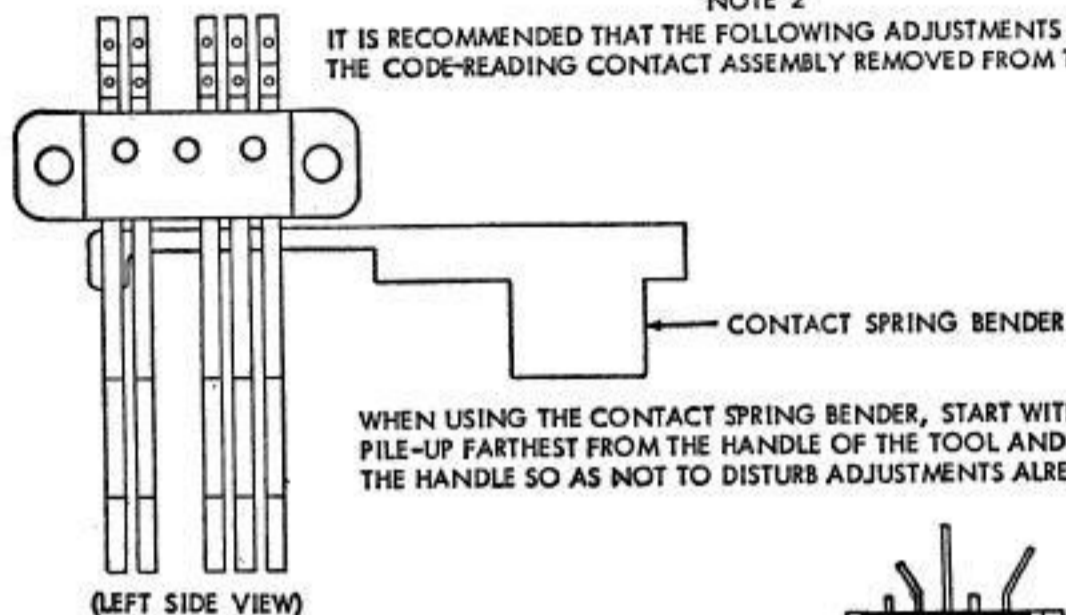
**Requirement:** With cover positioned as specified in section containing the requirements and adjustments for typing reperforator cover, and arm just touching feed-out lever, handle shall be approximately horizontal. Gauge by eye.

**To Adjust:** Remove cover, loosen arm adjusting nut friction tight, position arm, and tighten nut.

## 2.79 Code-reading Contact Mechanisms (Make-only and Transfer Types)

**NOTE 1**  
UNLESS SPECIFICALLY STATED OTHERWISE, THE FOLLOWING CODE-READING CONTACT ADJUSTMENTS APPLY TO BOTH THE TRANSFER (BREAK BEFORE MAKE) TYPE AND MAKE-TYPE CONTACTS. WHEN AN ADJUSTMENT IS APPLICABLE TO BOTH TYPES, THE TRANSFER-TYPE CONTACTS ARE USED IN THE ILLUSTRATIONS. WHEN TESTING THESE CONTACTS ON ASR SETS, THE CONTROL KNOB SHALL BE IN THE K-T POSITION.

**NOTE 2**  
IT IS RECOMMENDED THAT THE FOLLOWING ADJUSTMENTS BE MADE WITH THE CODE-READING CONTACT ASSEMBLY REMOVED FROM THE UNIT.

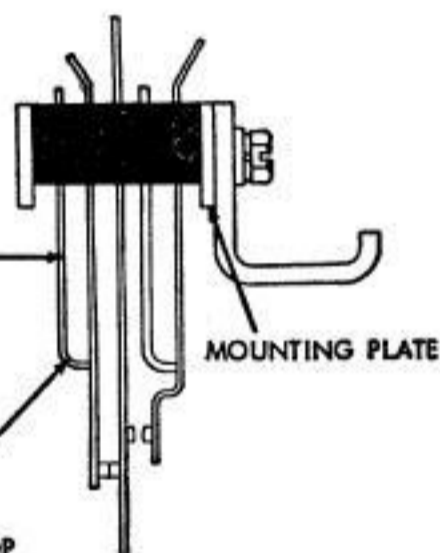


**(A)**  
MARKING CONTACT BACKSTOPS  
REQUIREMENT

AS GAUGED BY EYE, FIVE MARKING CONTACT SPRINGS SHALL ALIGN WITH EACH OTHER AND BE PARALLEL WITH MOUNTING PLATE.

TO ADJUST  
BEND MARKING CONTACT BACKSTOPS.

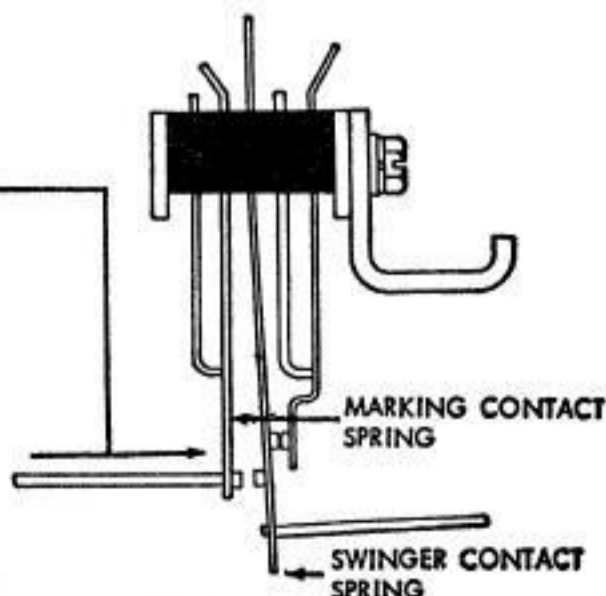
MARKING CONTACT BACKSTOP



**(B)**  
MARKING CONTACT SPRINGS-PRELIMINARY  
REQUIREMENT

WITH SWINGER CONTACT SPRING HELD AWAY  
MIN. 2 OZS.  
MAX. 6 OZS.  
TO MOVE EACH SPRING AWAY FROM BACKSTOP.  
TO ADJUST  
BEND MARKING CONTACT SPRINGS.

**NOTE:**  
TO INCREASE TENSION OF MARKING CONTACT SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM SPRING, BEND SPRING, AND THEN RE-BEND BACKSTOP TO MEET REQUIREMENT OF MARKING CONTACT BACKSTOPS ADJUSTMENT ABOVE.



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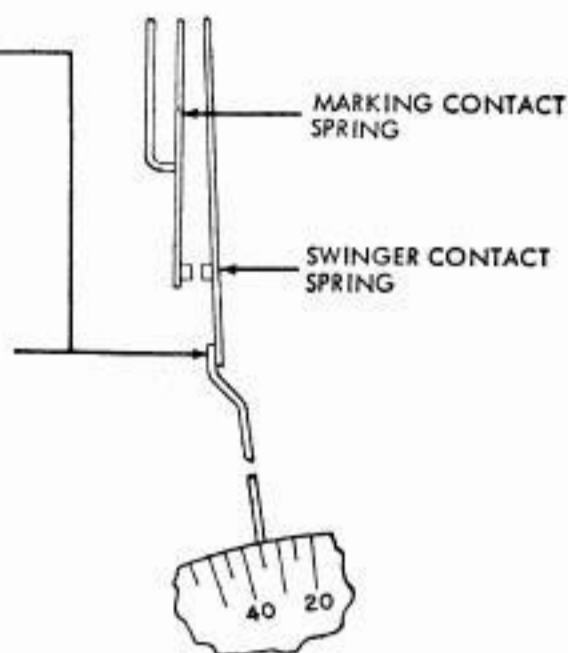
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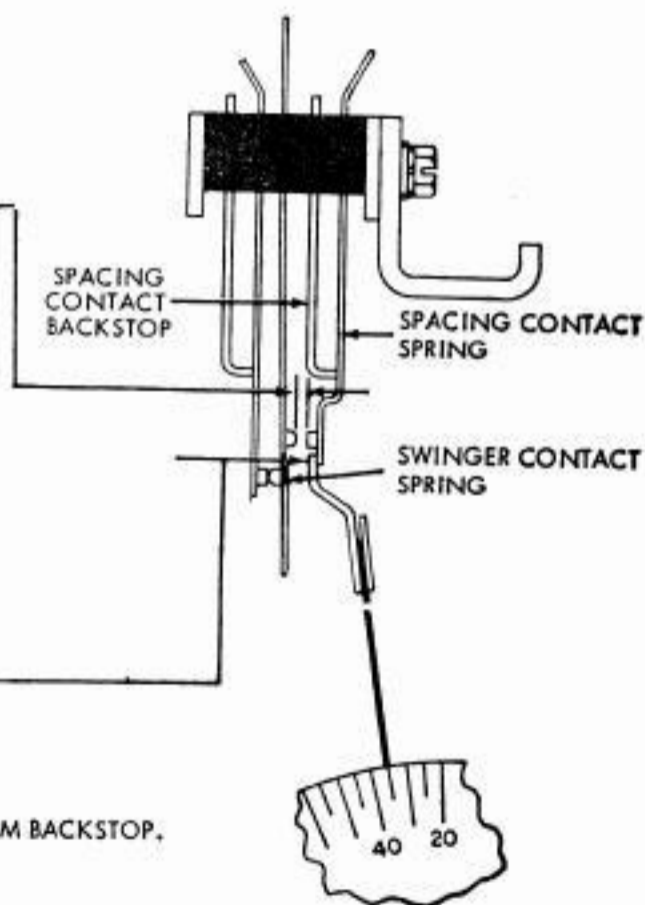
## 2.80 Code-reading Contact Mechanisms (Make-only and Transfer Types)

- (A) SWINGER CONTACT SPRINGS-PRELIMINARY REQUIREMENT  
 MIN. 30 GRAMS  
 MAX. 40 GRAMS  
 TO OPEN MARKING CONTACTS.  
 TO ADJUST  
 BEND SWINGER CONTACT SPRINGS.



NOTE:  
 SPACING CONTACTS (ON TRANSFER-TYPE CONTACT ASSEMBLIES ONLY)  
 ARE NORMALLY OPEN WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT.

- (B) SPACING CONTACT BACKSTOPS - PRELIMINARY (APPLIES TO TRANSFER-TYPE CONTACTS ONLY) REQUIREMENT  
 GAP BETWEEN SPACING CONTACTS  
 MIN. 0.010 INCH  
 MAX. 0.015 INCH  
 TO ADJUST  
 BEND SPACING CONTACT BACKSTOPS.

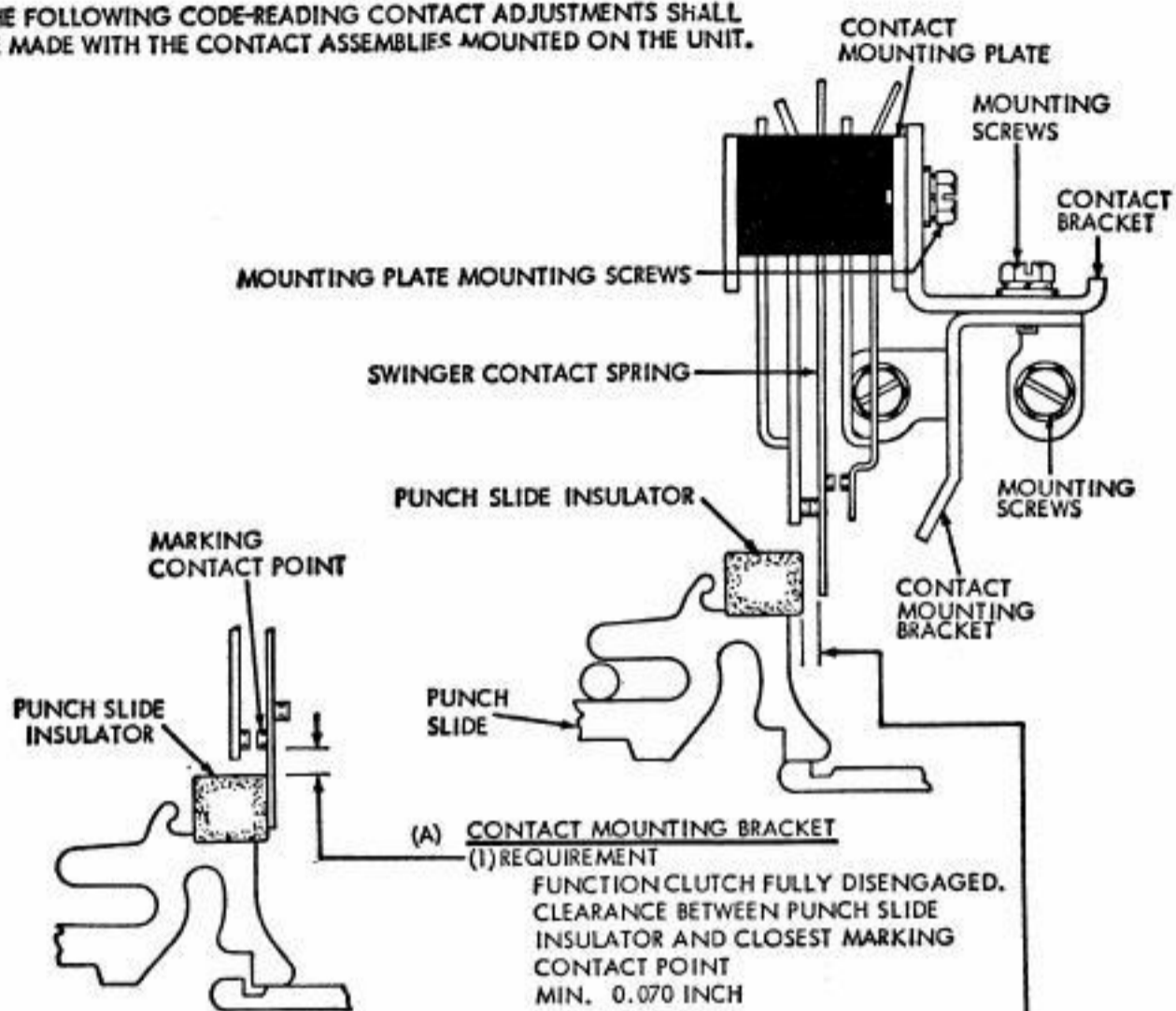


- (C) SPACING CONTACT SPRINGS-PRELIMINARY (APPLIES TO TRANSFER-TYPE CONTACTS ONLY) REQUIREMENT  
 MIN. 30 GRAMS  
 MAX. 40 GRAMS  
 TO MOVE EACH CONTACT SPRING AWAY FROM BACKSTOP,  
 TO ADJUST  
 BEND SPACING CONTACT SPRINGS.

NOTE:  
 TO INCREASE TENSION OF SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM SPRING, BEND SPRING, AND THEN RE-BEND BACKSTOP TO MEET REQUIREMENT OF SPACING CONTACT BACKSTOPS ADJUSTMENT ABOVE.

## 2.81 Code-reading Contact Mechanisms (Make-only and Transfer Types)

**NOTE:**  
THE FOLLOWING CODE-READING CONTACT ADJUSTMENTS SHALL BE MADE WITH THE CONTACT ASSEMBLIES MOUNTED ON THE UNIT.



**(A) CONTACT MOUNTING BRACKET**

**(1) REQUIREMENT**

FUNCTION CLUTCH FULLY DISENGAGED. CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND CLOSEST MARKING CONTACT POINT  
MIN. 0.070 INCH  
MAX. 0.090 INCH

**(2) REQUIREMENT**

LTRS COMBINATION SELECTED AND PUNCH PINS IN HIGHEST POSITION. SWINGER CONTACT SPRINGS SHALL BE PARALLEL TO PUNCH SLIDE INSULATOR AS GAUGED BY EYE.

**TO ADJUST**

POSITION CONTACT MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.

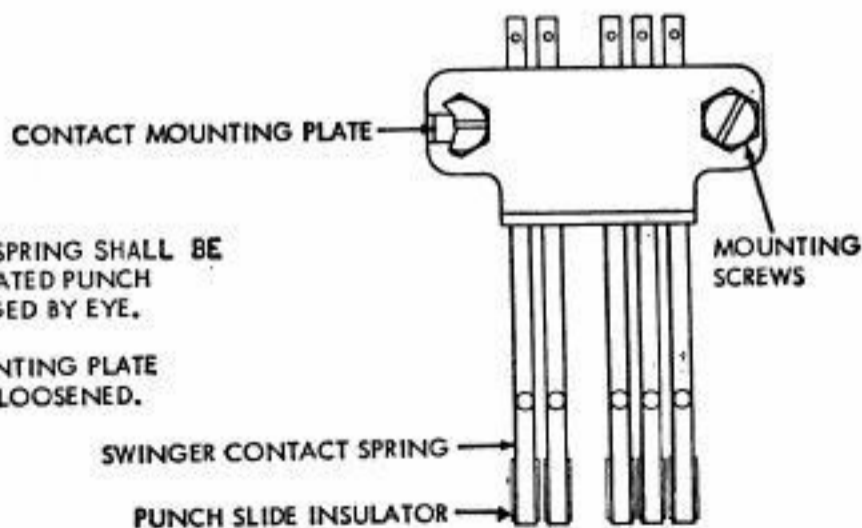
**(B) CONTACT MOUNTING PLATE**

**REQUIREMENT**

EACH SWINGER CONTACT SPRING SHALL BE ALIGNED WITH ITS ASSOCIATED PUNCH SLIDE INSULATOR AS GAUGED BY EYE.

**TO ADJUST**

POSITION CONTACT MOUNTING PLATE WITH MOUNTING SCREWS LOOSENED.

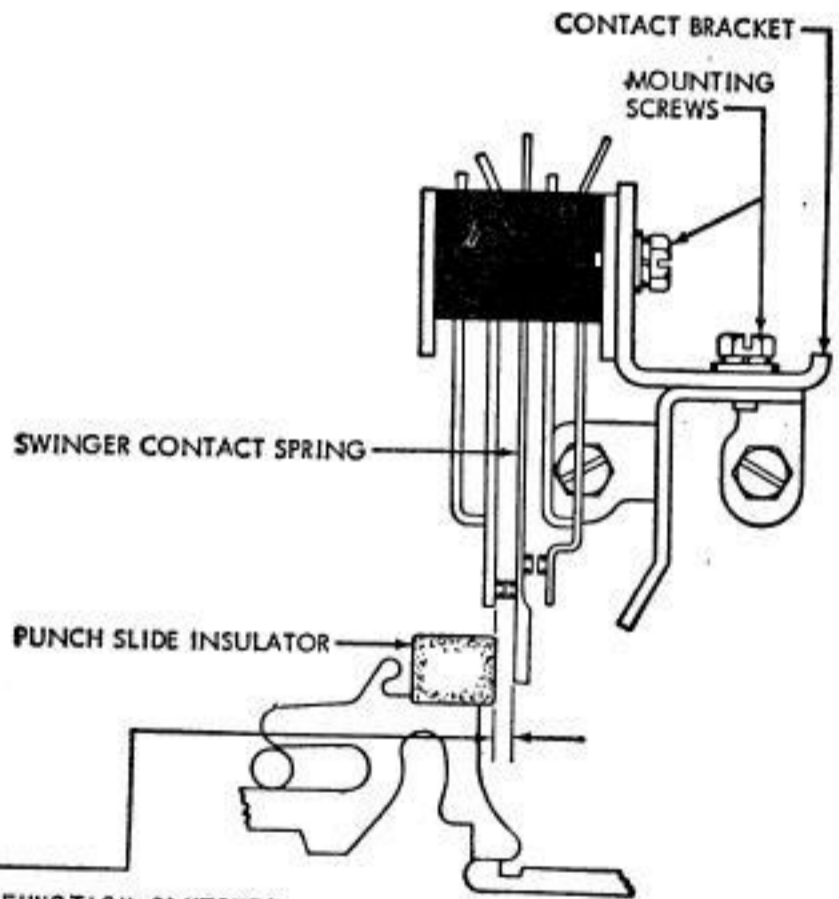
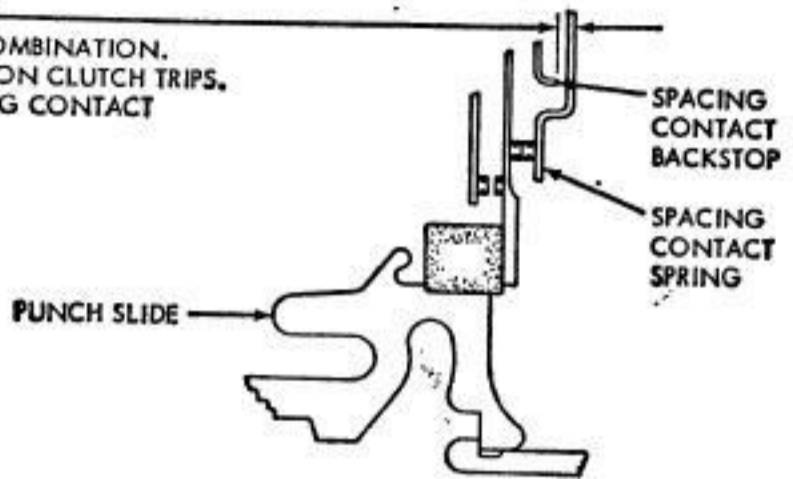


## 2.82 Code-reading Contact Mechanism (Transfer Type)

**CONTACT BRACKET-PRELIMINARY (APPLIES TO TRANSFER-TYPE CONTACTS ONLY)**

**(1) REQUIREMENT**

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. SOME CLEARANCE BETWEEN SPACING CONTACT SPRING AND ITS BACKSTOP  
MAX. 0.008 INCH



**(2) REQUIREMENT**

WITH THE SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT THE LTRS CODE COMBINATIONS AND TRIP THE FUNCTION CLUTCH. CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING  
MIN. 0.028 INCH

**TO ADJUST**

POSITION CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED TO MEET REQUIREMENT (1). TO PRY BRACKET TO LEFT, INSERT SCREWDRIVER BETWEEN BRACKET AND LEFT EDGE OF MOUNTING SCREWS; TO PRY BRACKET TO RIGHT, INSERT SCREWDRIVER BETWEEN BRACKET AND RIGHT EDGE OF MOUNTING SCREWS. CHECK REQUIREMENT (2). IF NOT MET, REFINE ADJUSTMENT.



## 2.83 Code-reading Contact Mechanism (Make-only Type)

### CONTACT BRACKET (APPLIES TO MAKE-TYPE CONTACTS ONLY)---PRELIMINARY

#### (1) TO CHECK

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS AND PUNCH SLIDES ARE AGAINST THEIR RESPECTIVE LATCHES.

#### REQUIREMENT

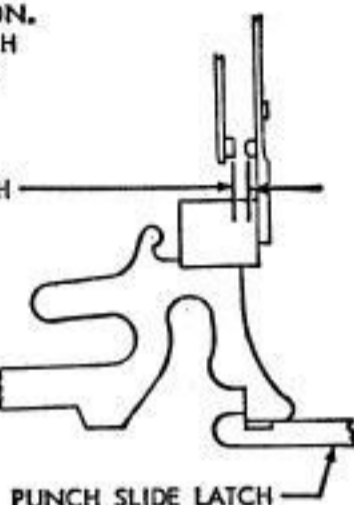
CONTACT GAP  
MIN. 0.010 INCH ----- MAX. 0.015 INCH  
(SEE NOTE)

#### NOTE

WHERE A TYPING REPERFORATOR IS PART OF A 28 PERFORATOR-TRANSMITTER-BASE, CONTACT GAP SHALL BE  
MIN. 0.015 INCH  
MAX. 0.020 INCH

PUNCH SLIDES

PUNCH SLIDE LATCH



#### (2) TO CHECK

WITH THE SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT THE LTRS CODE COMBINATION AND TRIP THE FUNCTION CLUTCH.

#### REQUIREMENT

CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING  
MIN. 0.028 INCH

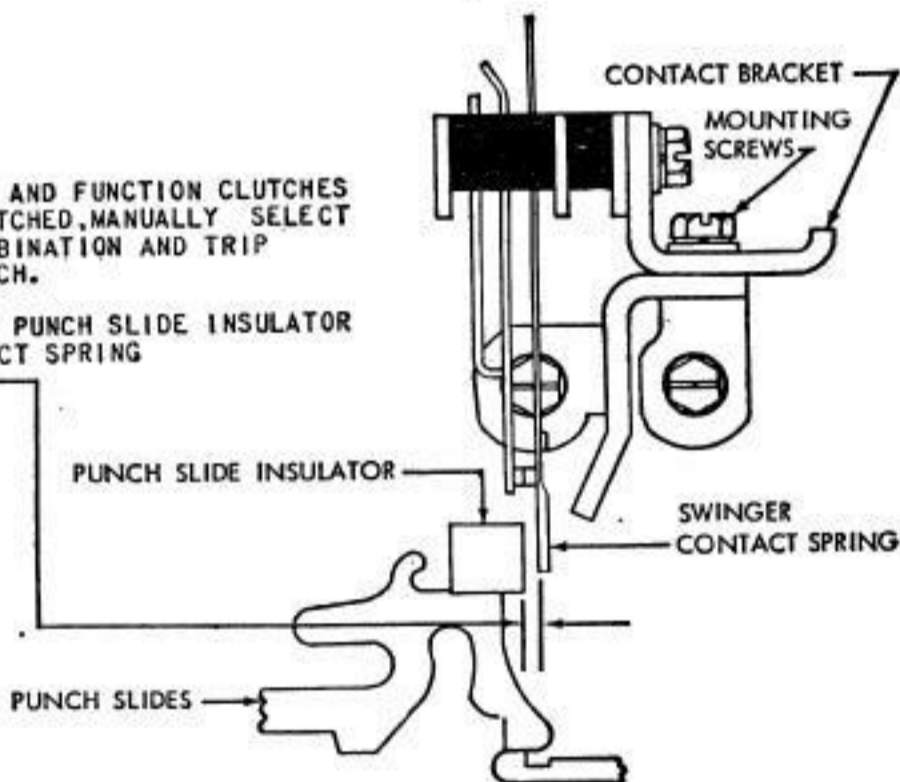
PUNCH SLIDE INSULATOR

CONTACT BRACKET

MOUNTING SCREWS

SWINGER CONTACT SPRING

PUNCH SLIDES



#### TO ADJUST

POSITION CONTACT BRACKET WITH MOUNTING SCREWS FRICTION TIGHT. TO PRY BRACKET TO LEFT, INSERT SCREWDRIVER BETWEEN BRACKET AND LEFT EDGE OF MOUNTING SCREW; TO PRY BRACKET TO RIGHT, INSERT SCREWDRIVER BETWEEN BRACKET AND RIGHT EDGE OF MOUNTING SCREW.

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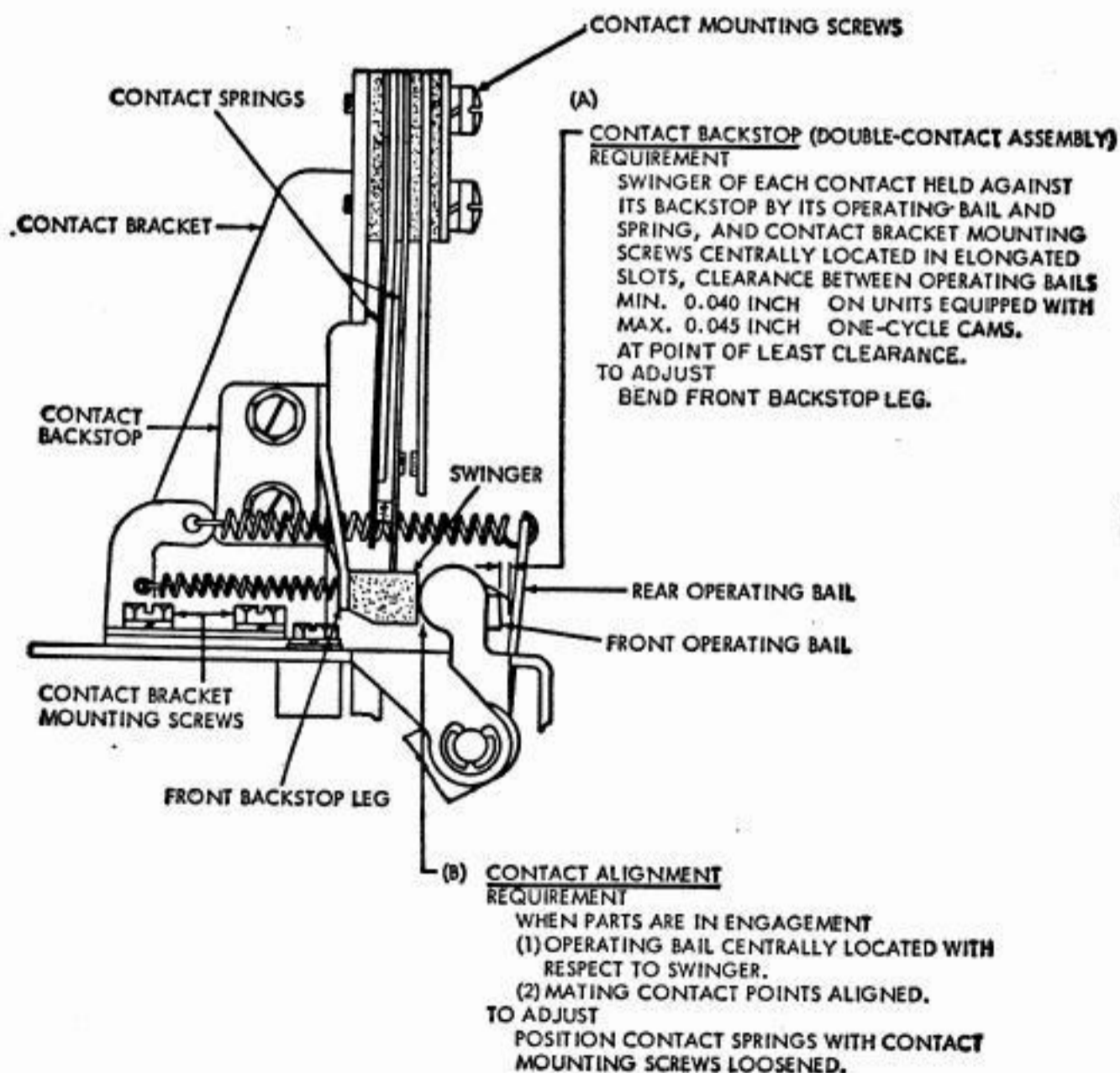
## 2.84 Auxiliary Timing Contact Mechanisms (Single-contact and Double-contact Types)

**NOTE:**

THERE ARE TWO TYPES OF TIMING CONTACT ASSEMBLIES, SINGLE AND DOUBLE. SINGLE-CONTACT ASSEMBLIES HAVE A FRONT CONTACT ONLY, NO REAR CONTACT. IF UNIT IS EQUIPPED WITH A DOUBLE-CONTACT ASSEMBLY, THE FOLLOWING ADJUSTMENTS APPLY TO BOTH FRONT AND REAR CONTACTS.

**NOTE:**

IN CASE OF SINGLE-CONTACT ASSEMBLY, MAKE CERTAIN CONTACT BRACKET MOUNTING SCREWS ARE CENTRALLY LOCATED IN ELONGATED SLOTS, AND PROCEED TO NEXT ADJUSTMENT.



## 2.85 Auxiliary Timing Contact Mechanisms (Single-contact and Double-contact Types)

NOTE:  
IT IS RECOMMENDED THAT THE FOLLOWING TIMING CONTACT ADJUSTMENTS  
BE MADE WITH CONTACT ASSEMBLIES REMOVED FROM THE UNIT.

- (A) **RIGHT CONTACT GAP** (NORMALLY CLOSED WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT).  
REQUIREMENT  
SWINGER HELD AGAINST ITS BACKSTOP.  
GAP BETWEEN CONTACTS  
MIN. 0.020 INCH  
MAX. 0.025 INCH  
TO ADJUST  
BEND RIGHT CONTACT SPRING.
- 
- (B) **SWINGER CONTACT SPRING-PRELIMINARY**  
REQUIREMENT  
OPERATING BAIL HELD AWAY FROM SWINGER  
MIN. 4-1/2 OZS.  
MAX. 5-1/2 OZS.  
TO OPEN RIGHT SIDE OF CONTACT.  
TO ADJUST  
BEND SWINGER CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND READJUST IF NECESSARY.
- 
- (C) **LEFT CONTACT GAP** (NORMALLY OPEN WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT)  
REQUIREMENT  
OPERATING BAIL HELD AWAY FROM SWINGER, GAP BETWEEN CONTACTS  
MIN. 0.020 INCH  
MAX. 0.025 INCH  
TO ADJUST  
BEND STIFFENER.
- 
- (D) **LEFT CONTACT SPRING-PRELIMINARY**  
REQUIREMENT  
SWINGER HELD AGAINST BACKSTOP BY ITS OPERATING BAIL AND SPRING.  
MIN. 4-1/2 OZS.  
MAX. 5-1/2 OZS.  
TO OPEN LEFT SIDE OF CONTACT.  
TO ADJUST  
BEND LEFT CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND LEFT CONTACT GAP, AND READJUST IF NECESSARY.
- 

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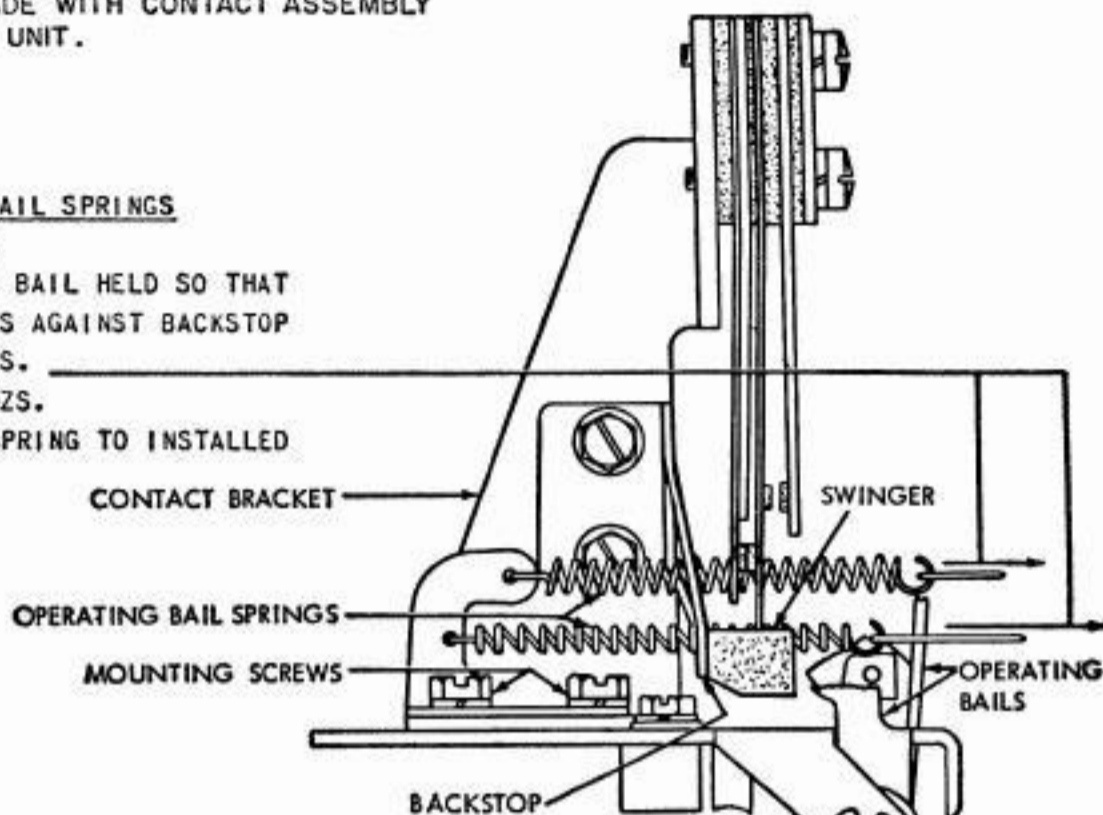
## 2.86 Auxiliary Timing Contact Mechanisms (Single-contact and Double-contact Types)

THE FOLLOWING TIMING CONTACT ADJUSTMENTS SHALL BE MADE WITH CONTACT ASSEMBLY MOUNTED ON UNIT.

### (A) OPERATING BAIL SPRINGS

#### REQUIREMENT

OPERATING BAIL HELD SO THAT SWINGER IS AGAINST BACKSTOP  
MIN. 7 OZS.  
MAX. 12 OZS.  
TO PULL SPRING TO INSTALLED LENGTH.



### (B)

#### CONTACT BRACKET - PRELIMINARY (FOR UNITS EQUIPPED WITH ONE-CYCLE CAMS)

LOOSEN LOCKING SCREW. POSITION CAM FOLLOWER ARM BY MEANS OF ITS ELONGATED MOUNTING HOLE, TO ITS MINIMUM LENGTH ON OPERATING BAIL. TIGHTEN LOCKING SCREW.

#### REQUIREMENT

SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED. CLEARANCE BETWEEN CAM FOLLOWER ROLLER AND FUNCTION CAM

MIN. 0.050 INCH

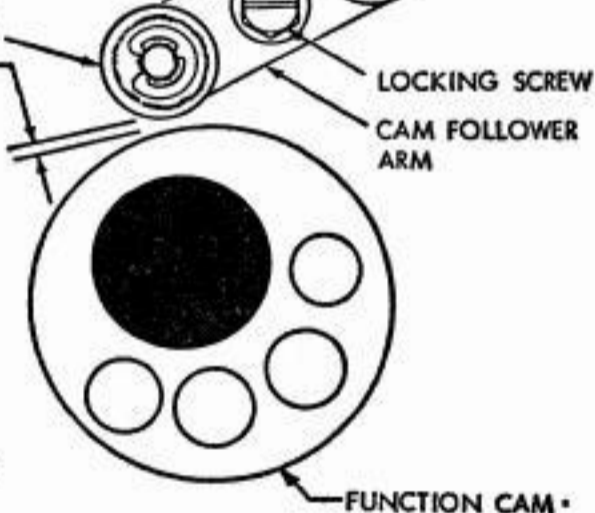
MAX. 0.055 INCH

#### TO ADJUST

POSITION CONTACT BRACKET WITH MOUNTING SCREWS LOOSENED.

#### NOTE:

ON UNITS EQUIPPED WITH DOUBLE-CONTACT ASSEMBLIES, RECHECK CONTACT BACKSTOP ADJUSTMENT. IF REQUIREMENT IS NOT MET, REFINE CONTACT BRACKET ADJUSTMENT.



## 2.87 LTRS-FIGS Contact Mechanism

NOTE:  
TO FACILITATE CONTACT SPRING ADJUSTMENT,  
(A) REMOVE CONTACT ASSEMBLY FROM UNIT.

### MIDDLE CONTACT SPRING

#### REQUIREMENT

MIN. 25 GRAMS---MAX. 40 GRAMS  
TO OPEN UPPER SIDE OF CONTACT.

TO ADJUST  
BEND MIDDLE CONTACT SPRING.

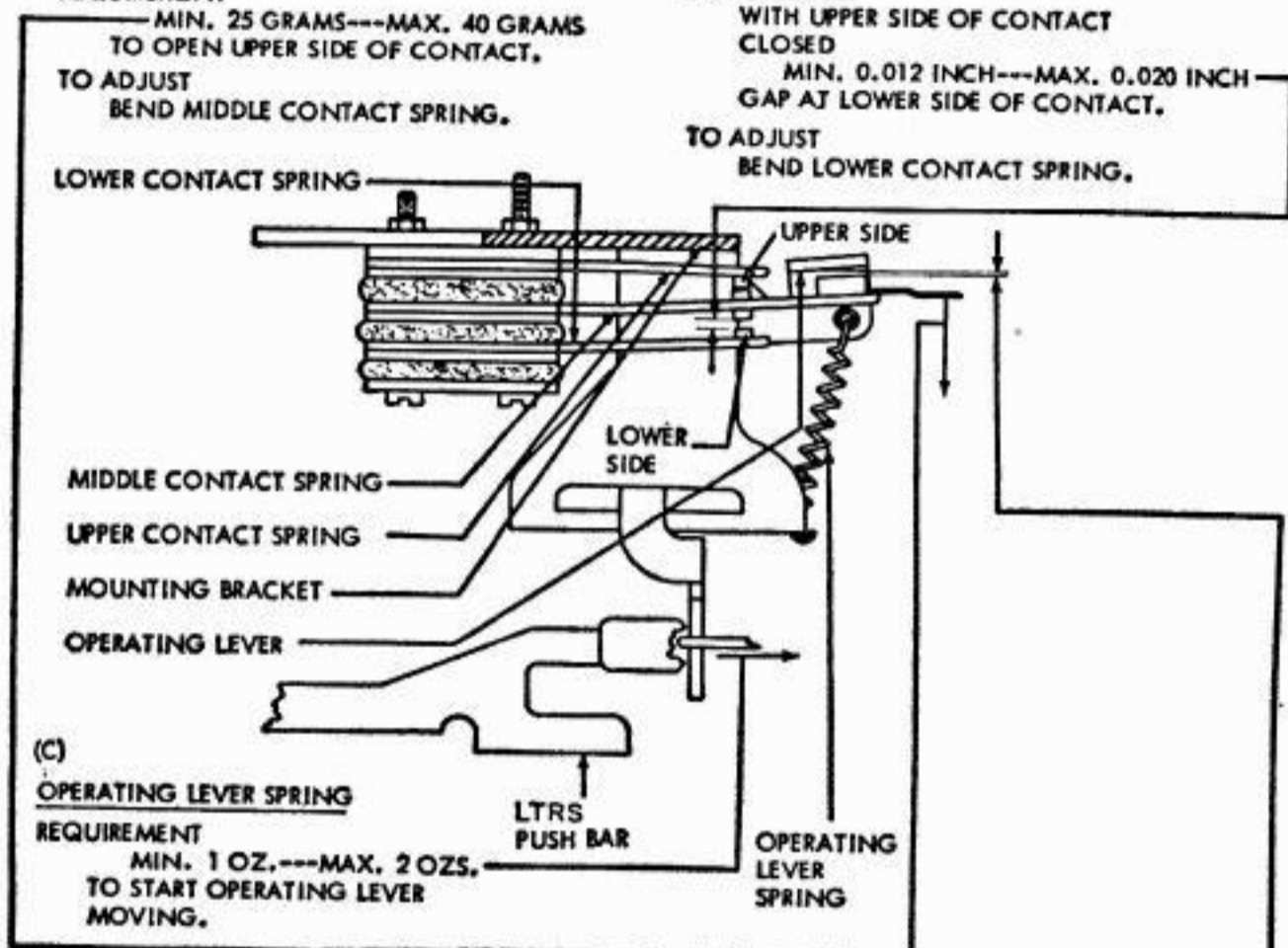
### LOWER CONTACT SPRING

#### REQUIREMENT

WITH UPPER SIDE OF CONTACT  
CLOSED

MIN. 0.012 INCH---MAX. 0.020 INCH  
GAP AT LOWER SIDE OF CONTACT.

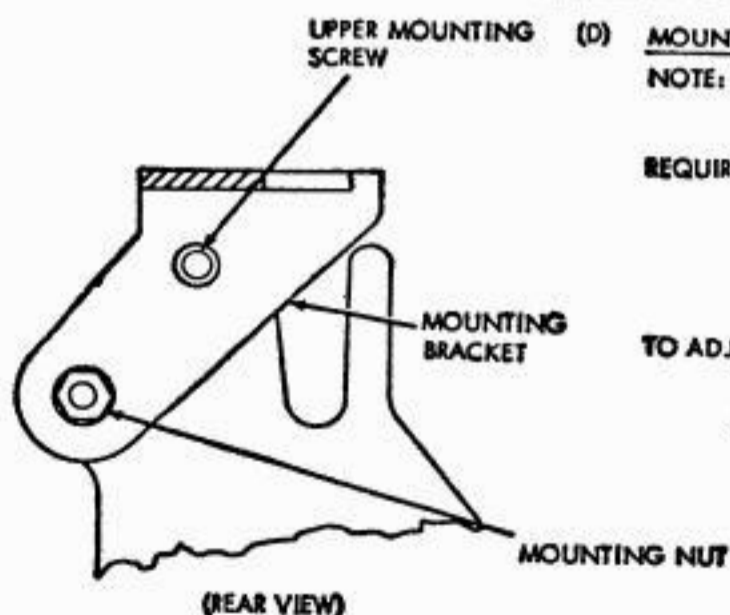
TO ADJUST  
BEND LOWER CONTACT SPRING.



### (C) OPERATING LEVER SPRING

#### REQUIREMENT

MIN. 1 OZ.---MAX. 2 OZS.  
TO START OPERATING LEVER  
MOVING.



### (D) MOUNTING BRACKET

NOTE: CONTACT ASSEMBLY SHALL BE  
MOUNTED ON UNIT BEFORE THIS  
ADJUSTMENT IS MADE.

#### REQUIREMENT

WITH UNIT IN LTRS CONDITION  
AND FUNCTION CLUTCH DISENGAGED  
MIN. 0.005 INCH---MAX. 0.015 INCH  
BETWEEN OPERATING LEVER AND  
INSULATOR ON MIDDLE CONTACT SPRING.

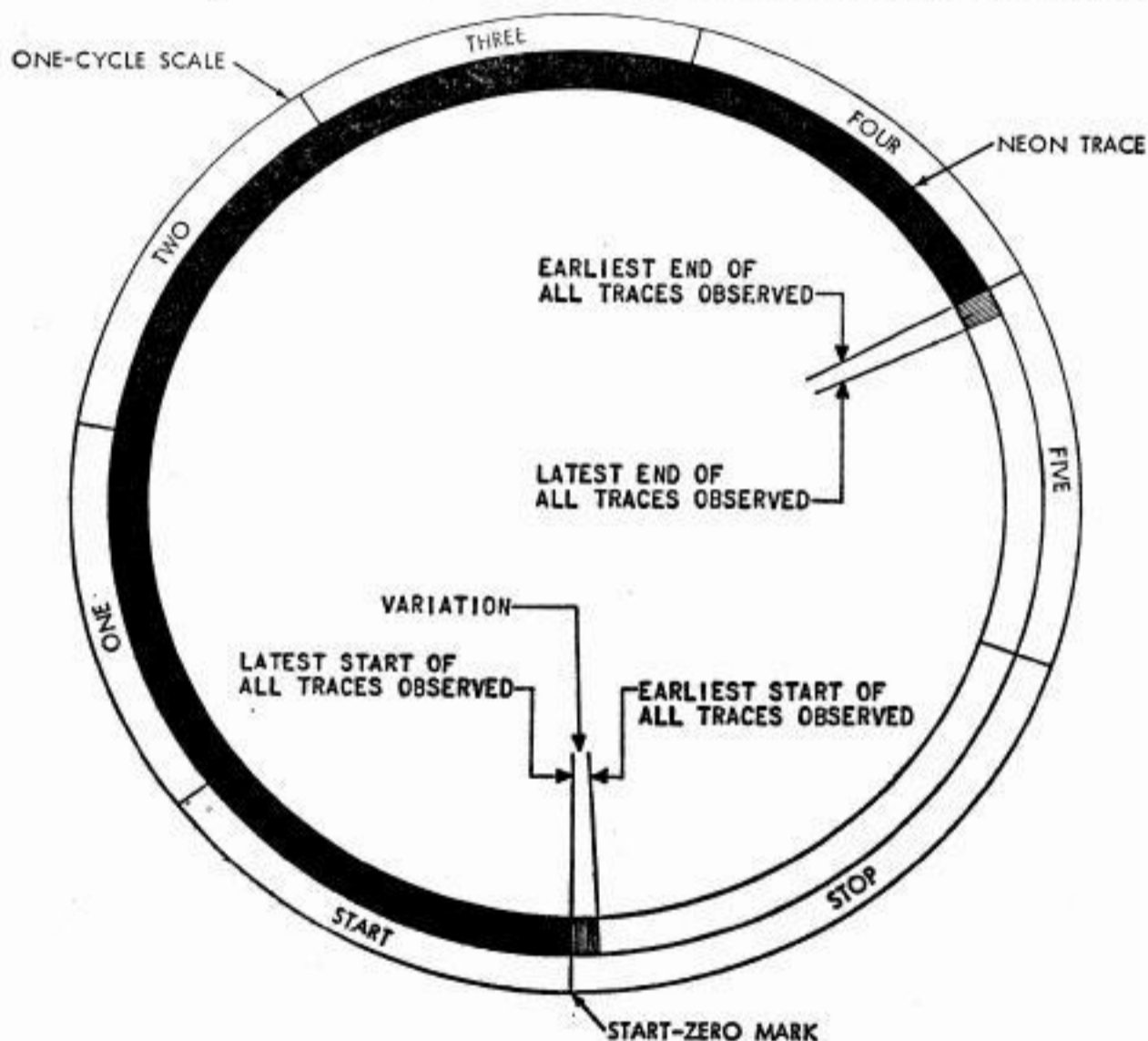
TO ADJUST  
WITH MOUNTING NUT AND UPPER  
MOUNTING SCREW LOOSENED, PO-  
SITION MOUNTING BRACKET.

## 2.88 Contact-timing Measurements (To Zero Test Set)

THE FOLLOWING TESTS REQUIRE THE USE OF A 29A STROBOSCOPIC TEST SET OR A 1A TELETYPEWRITER TEST SET. THEY SHALL BE MADE AFTER THE CONTACT ASSEMBLIES HAVE BEEN ADJUSTED AS INSTRUCTED ON THE PRECEDING PAGES. WHERE REQUIREMENTS ARE NOT MET, DESIGNATED ADJUSTMENTS MUST BE REFINED, AND/OR RELATED LENGTHS MAY HAVE TO BE CHANGED TO MEET TIMING REQUIREMENTS.

TESTS ON 600 OPERATION-PER MINUTE UNITS OR LOWER SHALL BE MADE WITH THE REPERFORATOR AND THE TEST SET OPERATING AT 600 O.P.M. TESTS OF UNITS USED ON THE AUTOMATIC SEND-RECEIVE (ASR) SET SHALL BE MADE WITH THE CONTROL KNOB OF THE 28ASR IN THE K-T POSITION AND WITH THE UNIT AND THE TEST SET OPERATING AT 600 O.P.M.

OBSERVATIONS ARE TO BE MADE OF A NEON TRACE ON THE GRADUATED DISK OF A TEST SET. TRACE WILL HAVE TENDENCY TO "JUMP", THAT IS, IT WILL NOT BE STEADY ENOUGH TO BE ACCURATELY MEASURED. VARIATION MAY BE AS HIGH AS TEN DIVISIONS ON SCALE. MINIMUM SIGNAL LENGTH IS MEASURED BETWEEN LATEST START AND EARLIEST END OF ALL TRACES. MAXIMUM SIGNAL LENGTH IS MEASURED BETWEEN EARLIEST START AND LATEST END OF ALL TRACES.

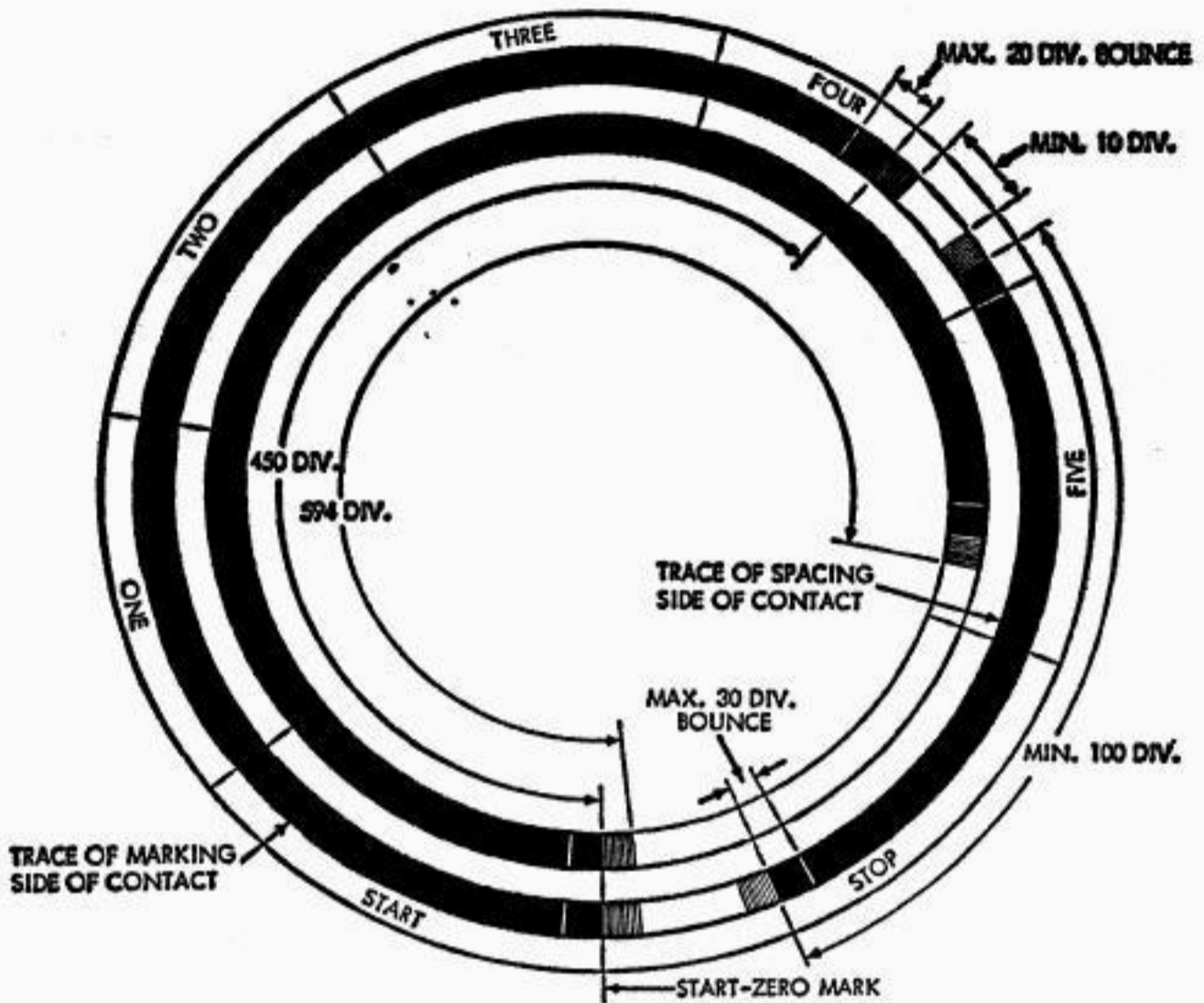


### TO ZERO TEST SET

CONNECT NEON TRACE TO NO. 1 CODE-READING CONTACT (REAR MOST). WITH UNIT RECEIVING LTRS CODE COMBINATIONS, OBSERVE AND NOTE POINT AT WHICH TRACE ENDS. TRACES WILL JUMP AS DESCRIBED ABOVE; NOTE EARLIEST END OF TRACES. REPEAT FOR REMAINING CONTACTS. OF ALL TRACES OBSERVED, CHOOSE ONE THAT STARTS THE LATEST. SET "START-ZERO" MARK OF SCALE AT LATEST START OF CHOSEN TRACE. RECORD EARLIEST END OF CHOSEN TRACE FOR FUTURE ADJUSTMENT REFERENCES.

## 2.89 Contact-timing Measurements for Code-reading Contacts

NOTE:  
TEST PROCEDURES ON THIS PAGE APPLY TO 600 O.P.M. UNITS OR LOWER ONLY.



### CODE-READING CONTACTS

- (1) ZERO TEST SET AS INSTRUCTED.
- (2) CONNECT NEON TRACE TO MARKING SIDE OF A CODE-READING CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION), WITH UNIT RECEIVING CONTINUOUS LTRS CODE COMBINATIONS, OBSERVE TRACE.

#### REQUIREMENTS

- A. SIGNAL LENGTH
  - MIN. 450 DIVISIONS
  - MAX. 594 DIVISIONS
- B. BOUNCE SHALL END WITHIN MAX. OF 20 DIVISIONS OF [EARLIEST START] AND [LATEST END OF ALL TRACES].
- (3) (APPLIES TO TRANSFER-TYPE CONTACTS ONLY) CONNECT NEON TRACE TO BOTH SIDES OF CONTACT, WITH UNIT RECEIVING LTRS CODE COMBINATIONS, OBSERVE TRACE.
  - REQUIREMENTS
  - A. BREAK IN TRACE INDICATING BREAK BEFORE MAKE
    - MIN. 10 DIVISIONS
  - B. SIGNAL LENGTH OF SPACING SIDE OF CONTACT
    - MIN. 100 DIVISIONS
  - C. BOUNCE SHALL END WITHIN 30 DIVISIONS OF EARLIEST START AND LATEST END OF TRACE.
- (4) TO ADJUST
  - A. IF REQUIREMENTS UNDER (2) A., (3) A., OR (3) B. ARE NOT MET, REFINE CONTACT BRACKET ADJUSTMENT. WHEN REFINING (2) A., ATTEMPT TO ADJUST TOWARD MAXIMUM SIGNAL LENGTH.
  - B. IF BOUNCE REQUIREMENTS UNDER (2) B. AND (3) C. ARE NOT MET, REFINE SWINGER CONTACT SPRING AND SPACING CONTACT SPRING TENSIONS.
  - C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

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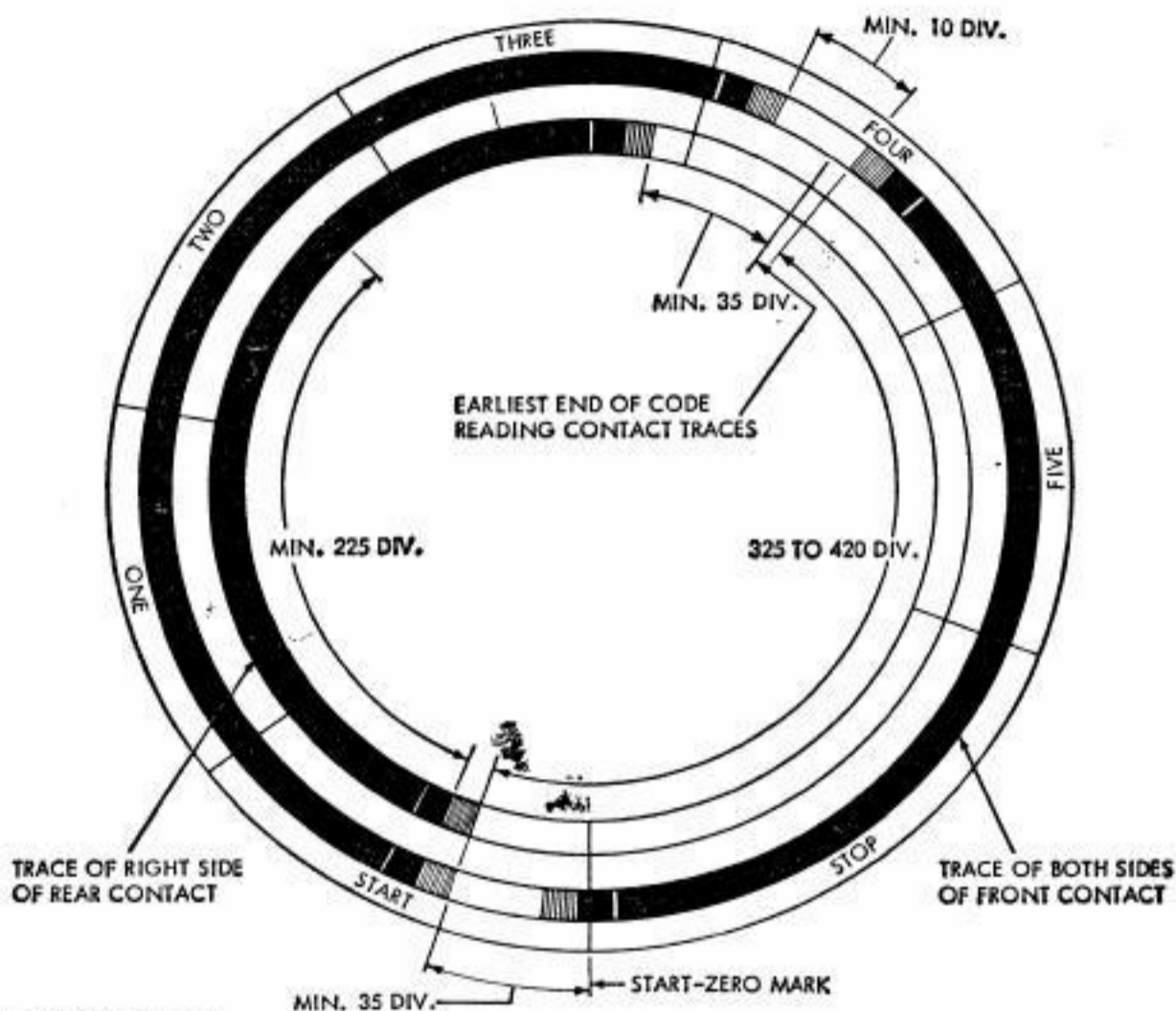
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## 2.90 Contact-timing Measurements for Auxiliary Timing Contacts

TEST PROCEDURES ON THIS PAGE APPLY ONLY TO 600 O.P.M. UNITS (BELL 8281 SYSTEM) USING ONE-CYCLE CAMS.

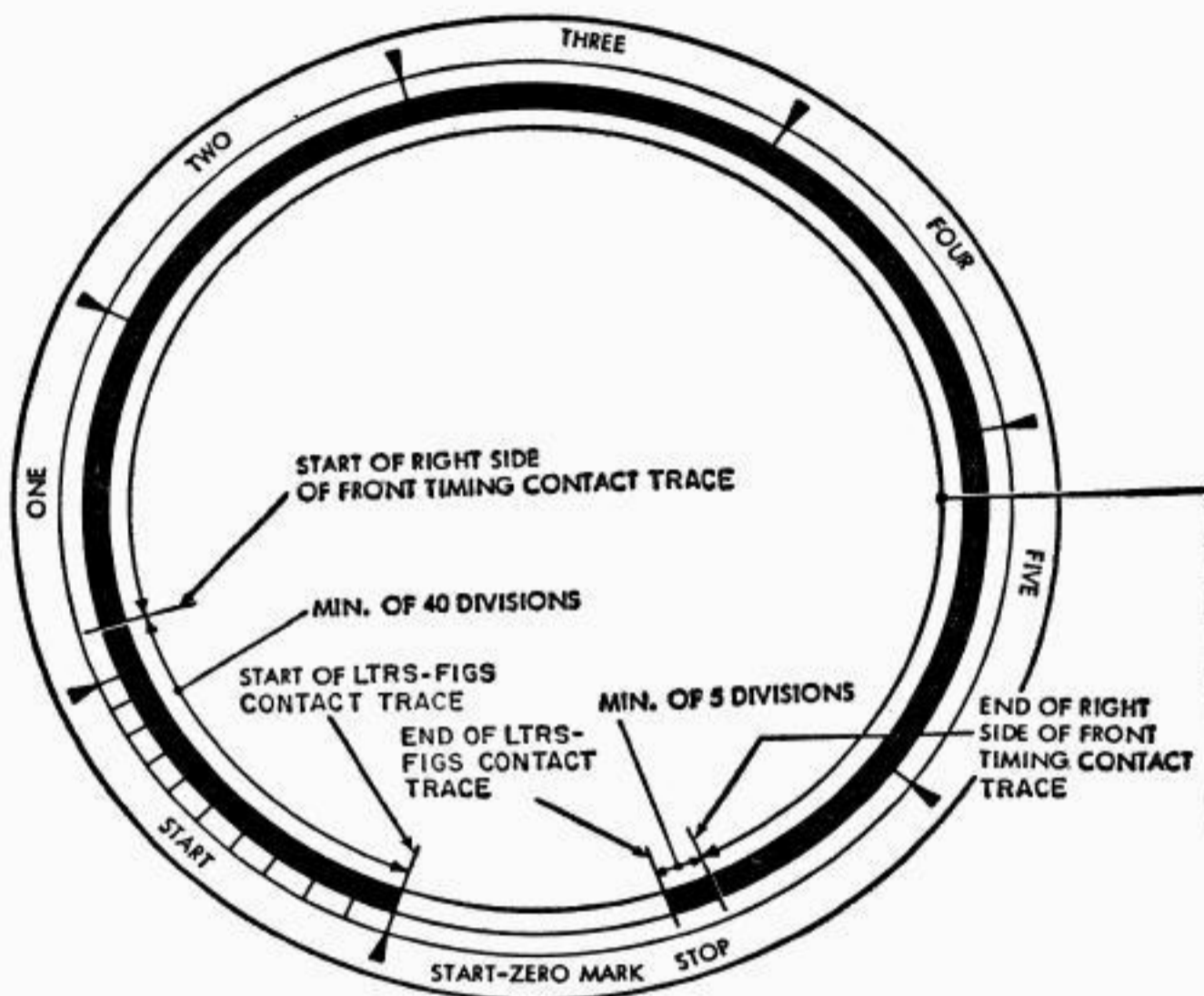


### TIMING CONTACTS

- (1) ZERO TEST SET AS PREVIOUSLY DESCRIBED.
- (2) REAR CONTACT
  - A. CONNECT NEON TRACE TO RIGHT SIDE OF REAR CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LTRS CODE COMBINATIONS, OBSERVE TRACE. REQUIREMENTS
    1. EARLIEST START MIN. OF 35 DIVISIONS AFTER START-ZERO MARK.
    2. LATEST END MIN. OF 35 DIVISIONS BEFORE EARLIEST END OF CODE-READING CONTACT TRACES.
    3. MIN. TRACE LENGTH 225 DIVISIONS.
    4. BOUNCE SHALL END WITHIN MAX. 5 DIVISIONS OF START AND END OF ANY TRACE.
- (3) FRONT CONTACT
  - A. CONNECT NEON TRACE TO BOTH SIDES OF FRONT CONTACT. WITH UNIT RECEIVING LTRS CODE COMBINATIONS, OBSERVE TRACE. REQUIREMENTS
    1. BREAK IN TRACE TO INDICATE BREAK BEFORE MAKE MIN. 10 DIVISIONS
    2. BETWEEN EARLIEST STARTS OF TRACES OF RIGHT AND LEFT (NORMALLY OPEN AND NORMALLY CLOSED) SIDES OF CONTACT MIN. 325 DIVISIONS---MAX. 420 DIVISIONS
    3. BOUNCE SHALL END WITHIN MAX. 5 DIVISIONS OF EARLIEST START AND LATEST END OF ANY TRACE.
- (4) TO ADJUST
  - A. IF TIMING REQUIREMENTS UNDER (2) A. 1., 2., 3., AND (3) A. 1. AND 2. ARE NOT MET, REFINE CONTACT BRACKET ADJUSTMENT AND/OR RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, AND LEFT CONTACT SPRING ADJUSTMENTS.
  - B. IF BOUNCE REQUIREMENTS UNDER (2) A. 4. AND (3) A. 3. ARE NOT MET, REFINE SWINGER CONTACT SPRING AND LEFT CONTACT SPRING TENSIONS.
  - C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.



## 2.91 Contact-timing Measurements for LTRS-FIGS Contacts



IF UNIT IS EQUIPPED WITH CODE-READING AND/OR TIMING CONTACTS, TEST <sup>19</sup> TO BE MADE AFTER INSTALLATION AND ADJUSTMENT OF THESE CONTACTS

### LTRS-FIGS CONTACTS

#### TO CHECK

CONNECT CABLE LEADS OF LTRS-FIGS CONTACT TO NEON TRACE LAMP OF TEST SET. SET CONTROL SWITCHES OF TEST SET TO FOLLOWING POSITIONS: (1) VIEW-TRANSMIT SWITCH TO VIEW; (2) LINE-DIST. SWITCH TO LINE; AND MOTOR SWITCH TO ON. ALTERNATELY SELECT LTRS (12345) AND FIGS (12-45). SET START-ZERO MARK OF TEST-SET SCALE AT START OF CONTACT TRACE. CONNECT RIGHT SIDE OF FRONT TIMING CONTACT (PROBE) TO NEON TRACE LAMP; RECORD START AND END OF TRACE. RECONNECT LTRS-FIGS CONTACT TO TRACE LAMP AND ALTERNATELY SELECT LTRS-FIGS.

#### REQUIREMENT

- (1) NO CHATTER OR BOUNCE OF LTRS-FIGS CONTACT DURING TIME WHEN TIMING CONTACT IS CLOSED.
- (2) TRACE OF LTRS-FIGS CONTACT START MIN. OF 40 DIVISIONS BEFORE START OF TRACE OF TIMING CONTACT AND END MIN. OF 5 DIVISIONS AFTER END OF TIMING CONTACT.

#### TO ADJUST

- (1) IF (1) OF REQUIREMENT IS NOT MET, REFINE MIDDLE AND LOWER CONTACT SPRING ADJUSTMENTS.
- (2) IF (2) OF REQUIREMENT IS NOT MET, REFINE MOUNTING BRACKET ADJUSTMENT.

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### 3. ASSOCIATED BELL SYSTEM PRACTICE

3.01 The following Bell System Practice provides additional information that may be required in connection with this section.

<u>Subject</u>	<u>Section</u>
Alphabetical Index of 28-type Equipment, Bell System Practices, and Associated 28 ASR Station Drawings .....	P34.001

### CHANGES AUTHORIZED BY P98 SERIES BELL SYSTEM PRACTICES

<u>Par. No.</u>	<u>Adjustment Requirements</u>	<u>Includes Changes as Authorized by Section</u>
2.15 (B)	Punch Slide Downstop Position.....	P98.871
2.27 (B)	Pushbar Operating Blade (Final).....	P98.874
2.32 (A)	LTRS-FIGS Yield Arms .....	P98.873
2.39 (A)	Axial Output Rack Guide Roller.....	P98.903
2.42	Rotary Correcting Lever .....	P98.874
2.45 (A)	Typewheel .....	P98.894
2.47 (B)	Ribbon-feed Eccentric Stud .....	P98.873
2.80 (B)	Spacing Contact Backstops.....	P98.748