28 TYPING AND NONTYPING PERFORATORS

ADJUSTMENTS

CONTENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

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

1.02 This section contains the specific requirements and adjustments for the 28 typing and non-typing perforators.

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

1.04 The adjustments of each unit are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

1.05 Reference made to left or right, up or down, front or rear, etc apply to the unit in its normal operating position as viewed from the front.

1.06 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch lever 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 signal generator shaft is rotated by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve drag and permit the main shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latch lever and fully disengage the clutch.

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

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

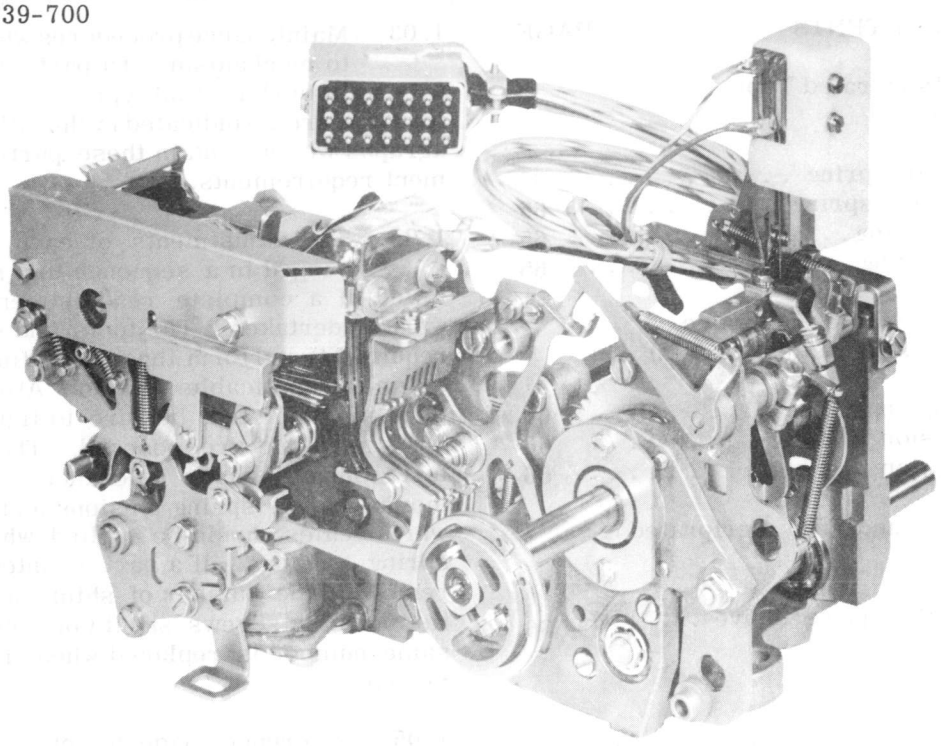


Figure 1 - 28 Non-Typing Perforator - Chadless Tape (With Code Reading Contacts, Timing Contacts and Backspace Mechanism)

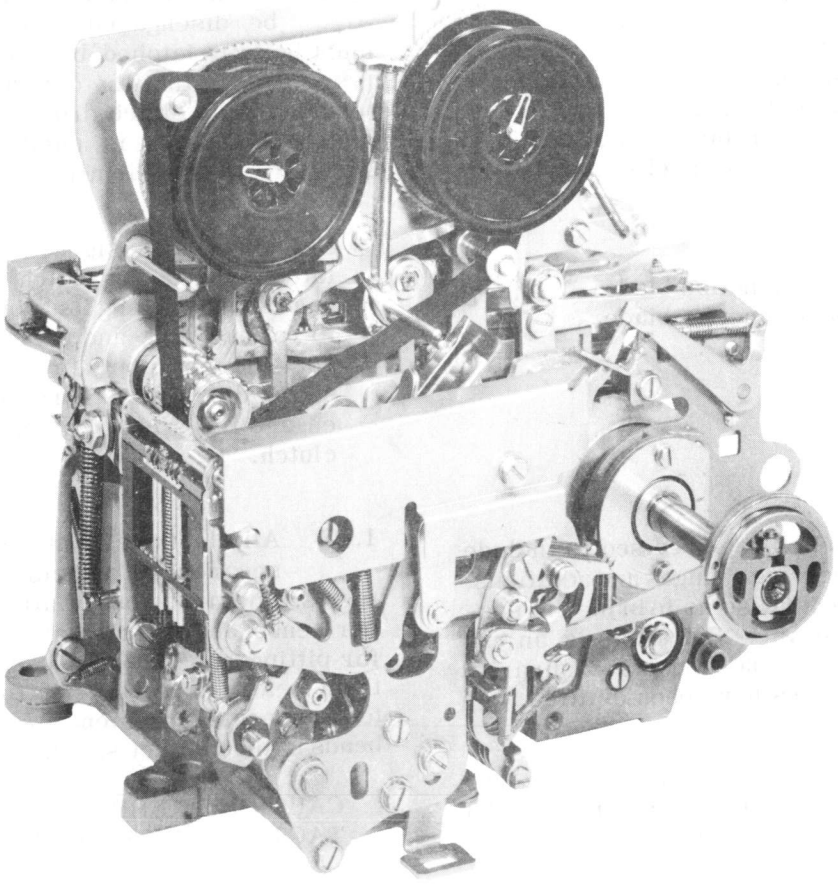


Figure 2 - 28 Typing Perforator - Chadless Tape (With Backspace Mechanism)

2. BASIC UNIT

2.01 Function Mechanism

NOTE: UNLESS OTHERWISE SPECIFIED, THESE ADJUSTMENTS APPLY TO BOTH TYPING AND NON-TYPING PERFORATORS.

(A) FUNCTION CLUTCH SHOE LEVER

TO CHECK

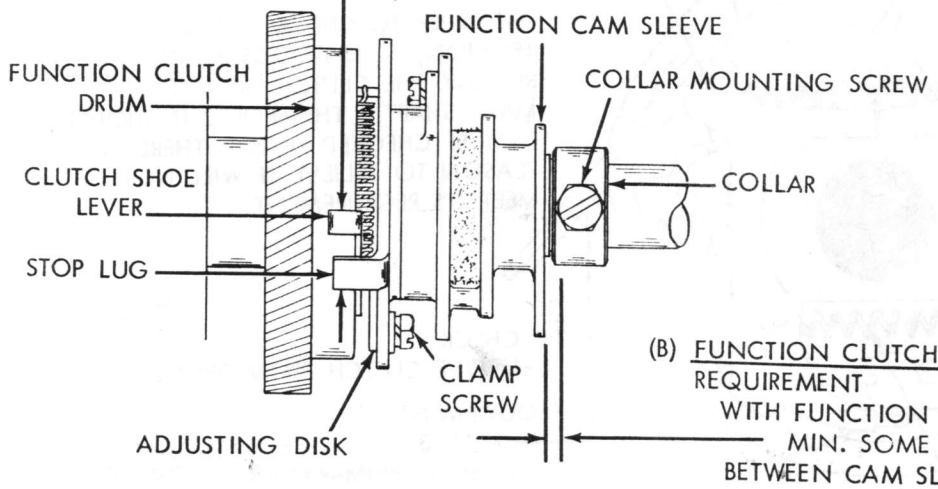
(1) DISENGAGE CLUTCH. MEASURE CLEARANCE.
(2) ALIGN HEAD OF CLUTCH DRUM MOUNTING SCREW WITH STOP LUG. ENGAGE CLUTCH. MANUALLY PRESS SHOE LEVER AND STOP LUG TOGETHER AND ALLOW TO SNAP APART. MEASURE CLEARANCE.

REQUIREMENT

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

TO ADJUST

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



(B) FUNCTION CLUTCH DRUM END PLAY

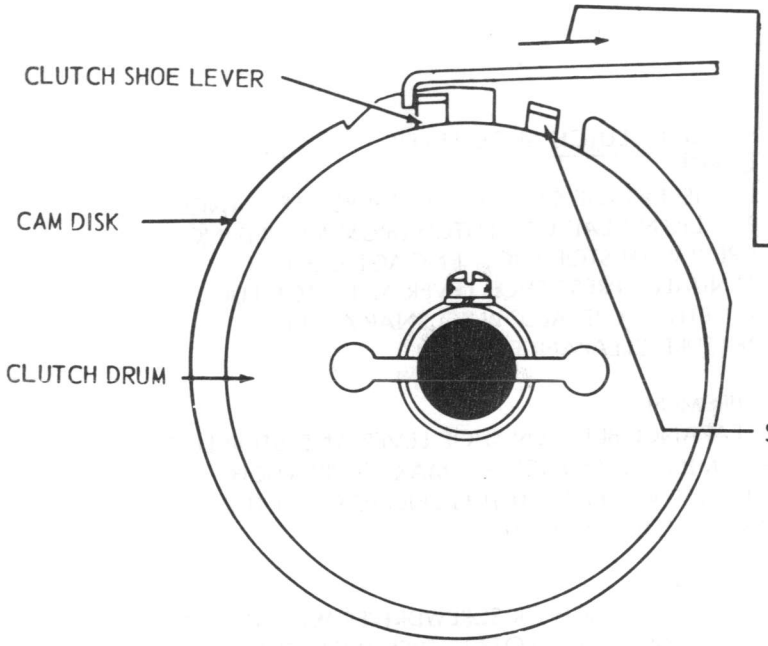
REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED.
MIN. SOME --- MAX. 0.015 INCH BETWEEN CAM SLEEVE AND COLLAR WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM.

TO ADJUST

POSITION COLLAR WITH MOUNTING SCREW LOOSENED.

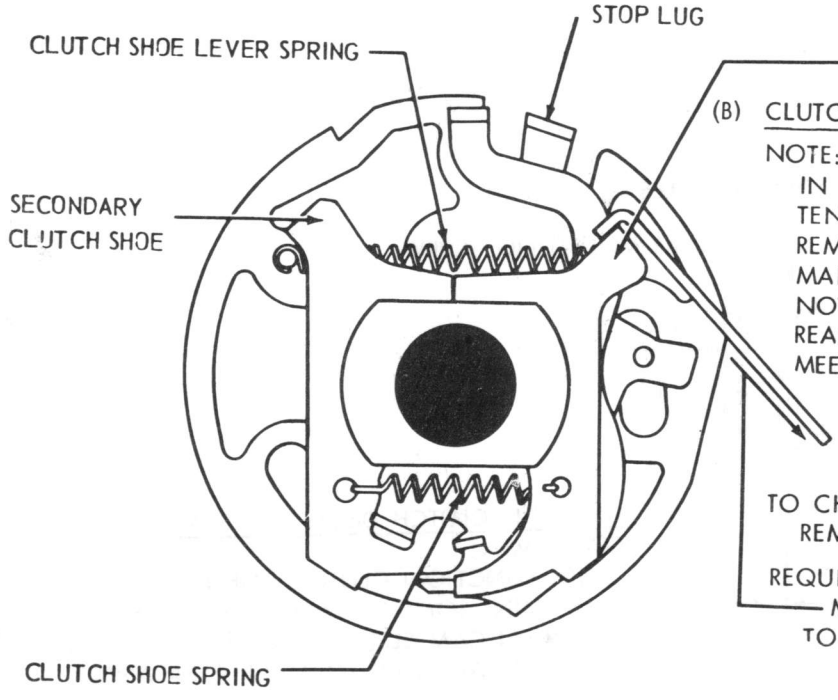
2.02 Function Mechanism continued



(A)
CLUTCH SHOE LEVER SPRING

TO CHECK
ENGAGE CLUTCH. HOLD CAM DISK TO PREVENT ITS TURNING.

REQUIREMENT
FOR TYPING PERFORATOR ONLY
MIN. 15 OZS ----- MAX. 20 OZS
FOR NON-TYPING PERFORATOR ONLY
MIN. 16 OZS ----- MAX. 22 OZS
CHECK BOTH SHOE LEVERS.



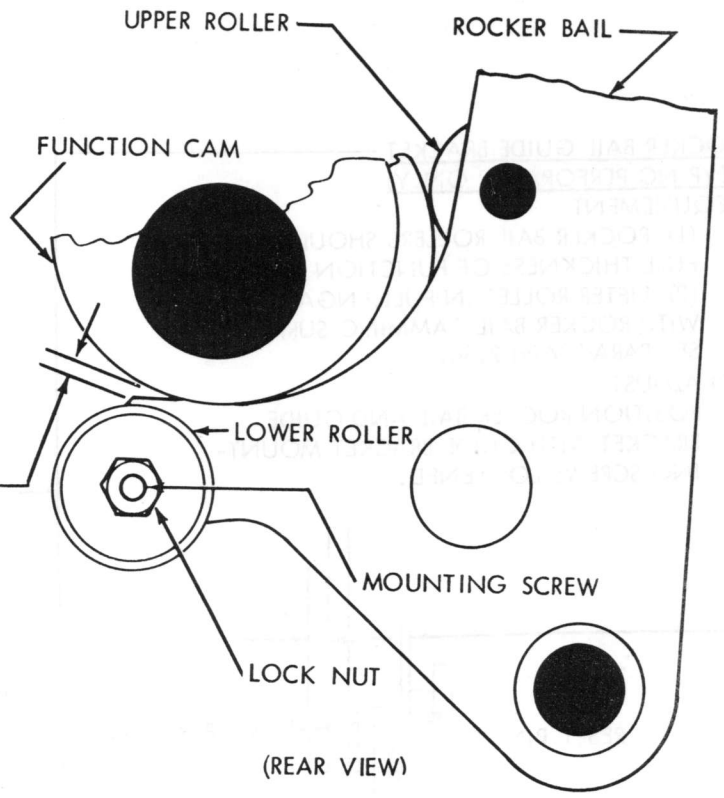
(B) CLUTCH SHOE SPRING

NOTE:
IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS REASON TO BELIEVE IT WILL NOT MEET ITS REQUIREMENT.

TO CHECK
REMOVE CLUTCH FROM DRUM.

REQUIREMENT
MIN. 3 OZS. ------MAX. 5 OZS.
TO START PRIMARY SHOE MOVING.

2.03 Function Mechanism continued



ROCKER BAIL
REQUIREMENT

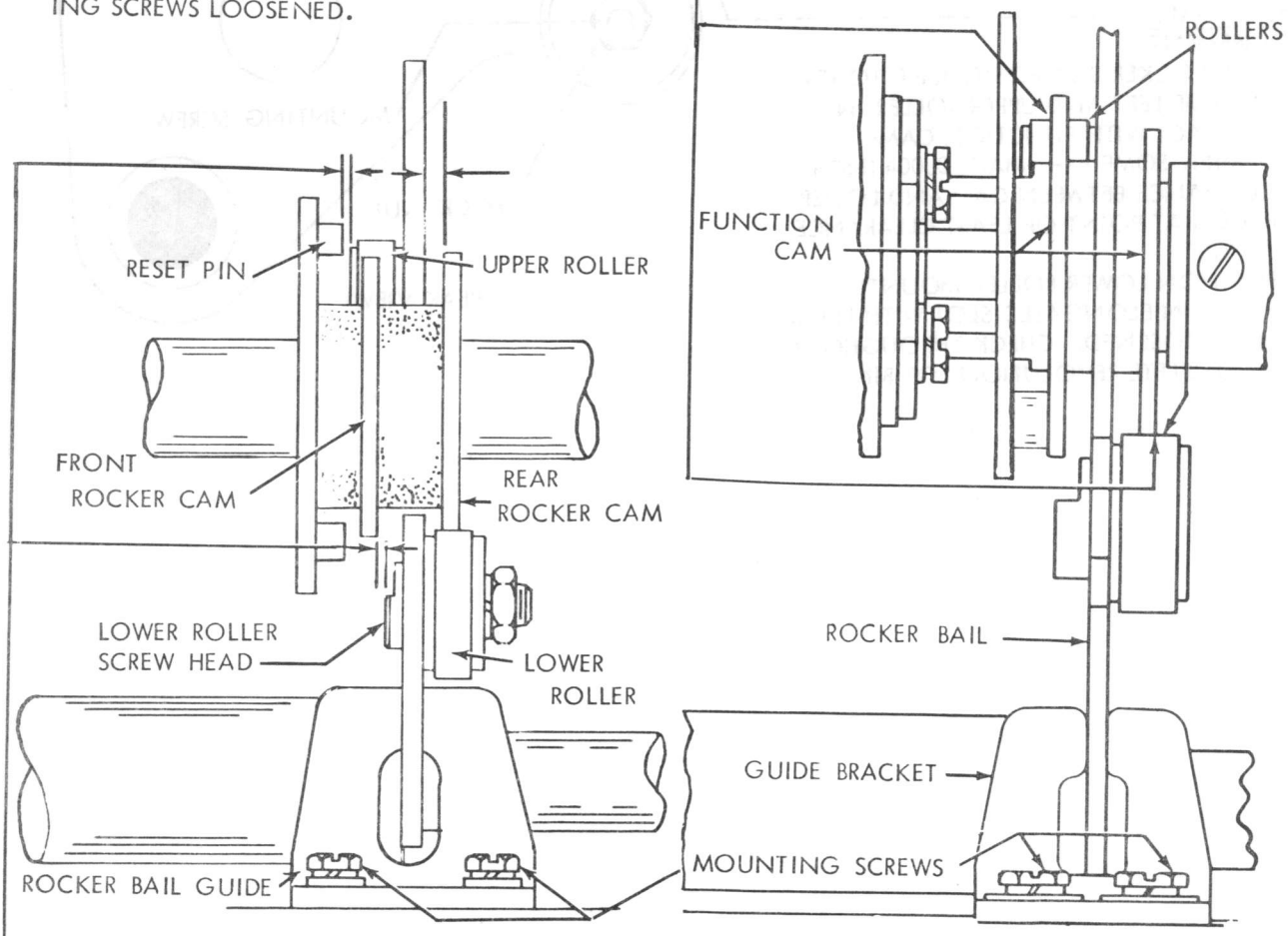
WITH ROCKER BAIL POSITIONED TO ITS EXTREME LEFT AND UPPER ROLLER IN CONTACT WITH FUNCTION CAM:
MIN. SOME -----MAX. 0.004 INCH CLEARANCE BETWEEN CAM AND LOWER ROLLER AT POINT OF LEAST CLEARANCE.

TO ADJUST

POSITION LOWER ROLLER MOUNTING SCREW IN ELONGATED SLOT WITH LOCK NUT LOOSENED. CHECK THROUGHOUT A COMPLETE REVOLUTION FOR BINDS.

2.04 Function Mechanism continued

ROCKER BAIL GUIDE BRACKET
(TYPING PERFORATOR ONLY)
REQUIREMENT
(1) ROCKER BAIL ROLLERS SHOULD ENGAGE FULL THICKNESS OF FUNCTION CAM.
(2) LIFTER ROLLER IN FULL ENGAGEMENT WITH ROCKER BAIL CAMMING SURFACE. SEE PARAGRAPH 2.36.
TO ADJUST
POSITION ROCKER BAIL AND GUIDE BRACKET WITH GUIDE BRACKET MOUNTING SCREWS LOOSENED.



ROCKER BAIL GUIDE BRACKET
(NON-TYPING PERFORATOR ONLY)
REQUIREMENT
CLEARANCE BETWEEN UPPER ROLLER AND RESET PINS; BETWEEN LOWER ROLLER SCREW HEAD AND FRONT CAM; BETWEEN ROCKER BAIL AND REAR ROCKER CAM. MIN. 0.010 INCH
TO ADJUST
POSITION ROCKER BAIL WITH GUIDE MOUNTING SCREWS LOOSENED.

2.05 Function Mechanism continued

(A) FUNCTION CLUTCH TRIP LEVER

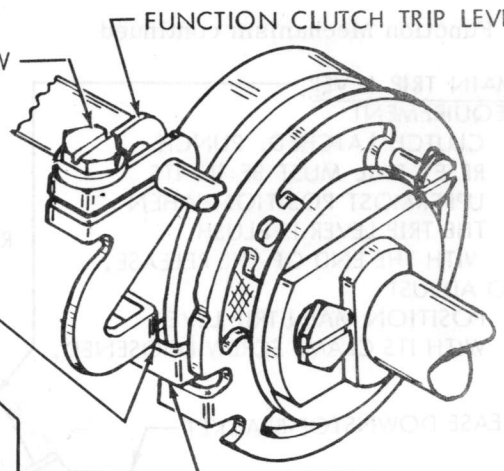
REQUIREMENT

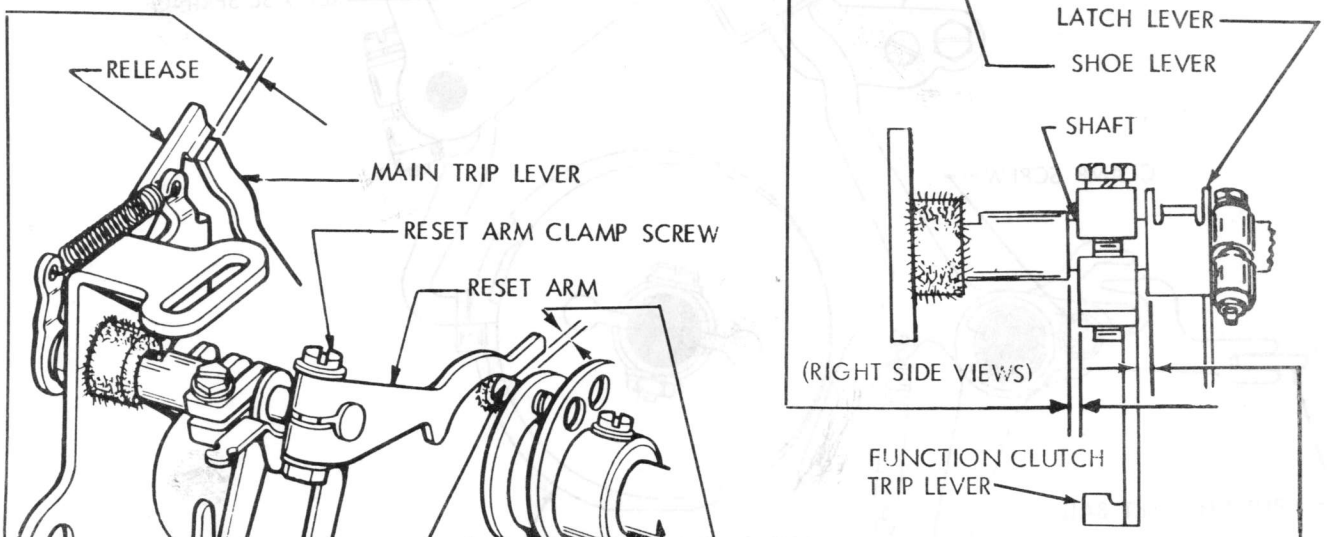
(1) WITH RELEASE RESTING ON MAIN TRIP LEVER (SEE BELOW), FUNCTION CLUTCH TRIP LEVER SHOULD ENGAGE FULL THICKNESS OF SHOE LEVER AT THE STOP WHERE BITE IS LEAST

(2) TRIP LEVER END PLAY:
MIN. SOME --- MAX. 0.010 INCH

TO ADJUST

POSITION TRIP LEVER ON ITS SHAFT WITH CLAMP SCREW LOOSENED.





(3) CLEARANCE BETWEEN RELEASE LEVER AND FUNCTION CAM:
MIN. SOME

(B)

RESET ARM

TO CHECK

TRIP FUNCTION CLUTCH AND POSITION MAIN SHAFT SO THAT RESET ARM IS HELD IN ITS HIGHEST POSITION BY CAM.

REQUIREMENT

(1) CLEARANCE BETWEEN RELEASE AND MAIN TRIP LEVER.

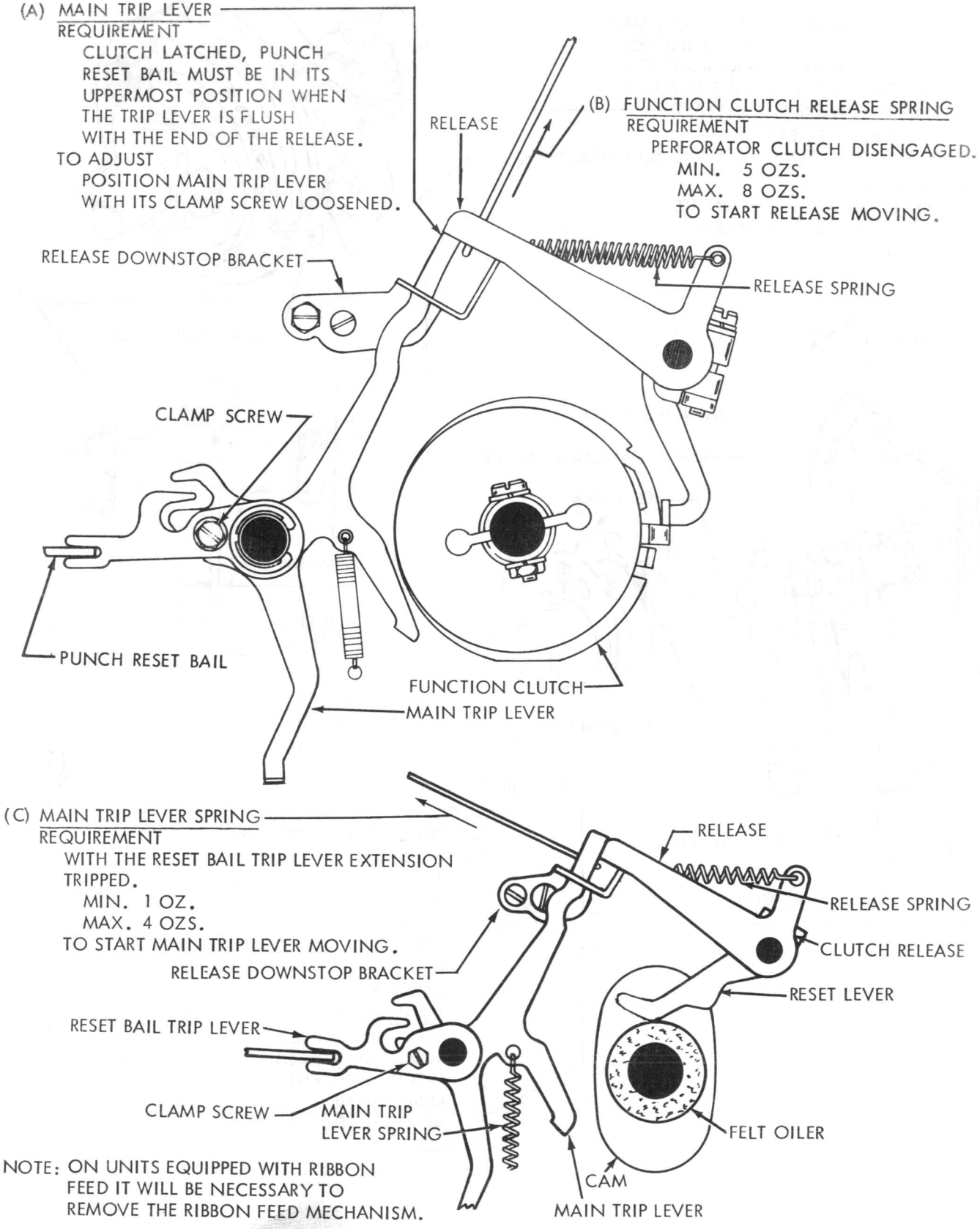
NON-TYPING PERFORATOR	TYPING PERFORATOR
MIN. 0.005 INCH	0.005 INCH
MAX. 0.030 INCH	0.030 INCH

(2) LATCH LEVER END PLAY:
MIN. SOME
MAX. 0.010 INCH

TO ADJUST

POSITION RESET ARM ON ITS SHAFT WITH ITS CLAMP SCREW LOOSENED.

2.06 Function Mechanism continued



2.07 Punch Mechanism

PERFORATOR POSITION -PRELIMINARY - (FOR NON-TYPING PERFORATOR ONLY)

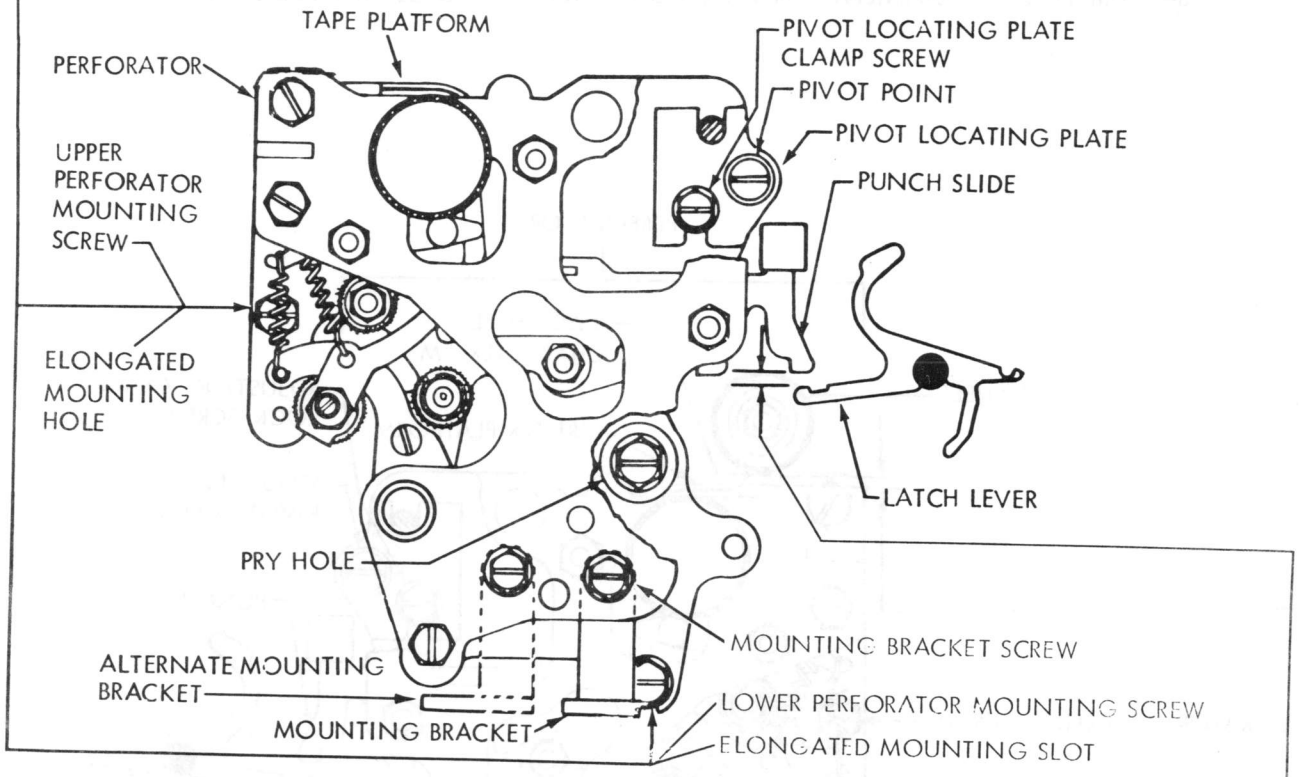
REQUIREMENT

THE PERFORATOR MECHANISM MOUNTING SCREW BENEATH PUNCH BLOCK AND MOUNTING SCREW AT LOWER EDGE OF PERFORATOR MECHANISM BACKPLATE SHALL BE LOCATED CENTRALLY WITHIN THEIR RESPECTIVE MOUNTING HOLES.

NOTE: THE MOUNTING HOLES ARE OVERSIZE TO FACILITATE USE OF PERFORATOR MECHANISM ON THE TYPING REPERFORATOR.

TO ADJUST

REMOVE MOUNTING SCREW AT THE LOWER EDGE OF PERFORATOR MECHANISM BACKPLATE, WITH THE TWO REMAINING BACKPLATE MOUNTING SCREWS AND MOUNTING BRACKET SCREW FRICTION TIGHT, POSITION PERFORATOR MECHANISM SO THAT THE TAPPED HOLE OF THE FRAME IS CENTRALLY LOCATED (AS GAUGED BY EYE) WITHIN LARGE BODY HOLE OF PUNCH MECHANISM BACKPLATE. TIGHTEN THE TWO BACKPLATE MOUNTING SCREWS AND RECHECK TO SEE THAT REQUIREMENT IS MET. REPLACE AND TIGHTEN THE LOWER BACKPLATE MOUNTING SCREW. TIGHTEN THE BRACKET MOUNTING SCREW.



PERFORATOR POSITION -FINAL - (FOR NON-TYPING PERFORATOR ONLY)

REQUIREMENT

WITH LETTERS COMBINATION SELECTED AND FUNCTION CLUTCH JUST TRIPPED.

MIN. 0.015 INCH --- MAX. 0.045 INCH

CLEARANCE BETWEEN THE CLOSEST LATCH LEVER AND ASSOCIATED PUNCH SLIDE.

TO ADJUST

LOOSEN (FRICTION TIGHT) REAR FRAME MOUNTING SCREWS (AND PIVOT LOCATING PLATE CLAMP SCREW IF THE TYPING UNIT IS USED ON THE PUNCH), THE FRONT MOUNTING BRACKET SCREWS, PLACE TIP OF SCREWDRIVER BETWEEN HEX HEAD SCREW AND ITS CLEARANCE HOLE RIM AND PRY UP OR DOWN. TIGHTEN SCREWS. (IF THE TYPING UNIT IS BEING USED, TIGHTEN PIVOT LOCATING PLATE CLAMP SCREW ONLY, AS THE NEXT ADJUSTMENT WILL BE TO OBTAIN CLEARANCE BETWEEN TYPEWHEEL AND PUNCH.

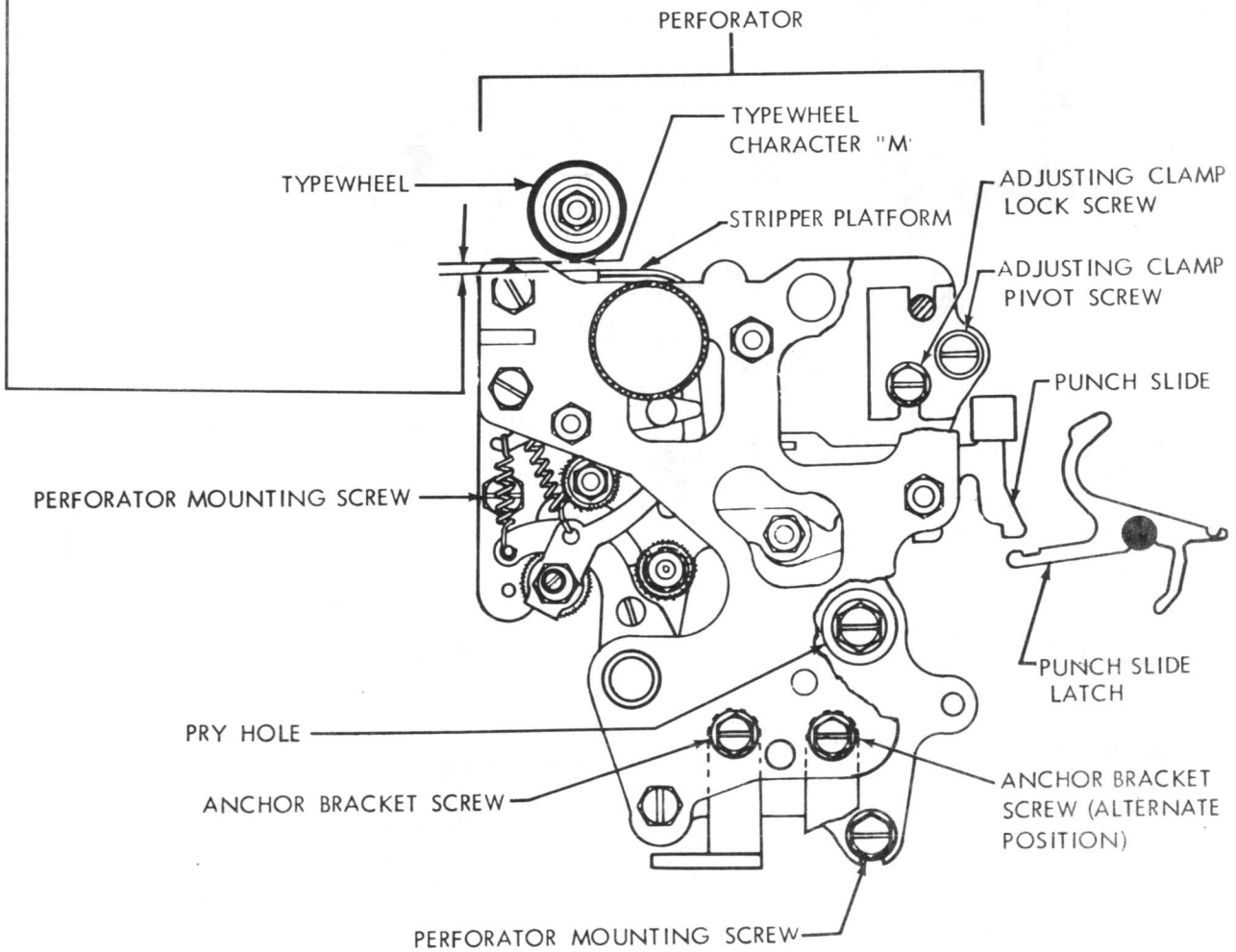
2.08 Punch Mechanism continued

PERFORATOR POSITION (FOR TYPING PERFORATOR ONLY)

(1) REQUIREMENT - (FOR TYPING PERFORATOR WITH SPRING RETRACTED PUNCH UNIT)
WITH UNIT IN STOP POSITION AND TYPEWHEEL IN THE LETTERS FIELD. CLEARANCE BETWEEN THE LETTER "Z" ON THE TYPEWHEEL AND THE TOP OF THE STRIPPER PLATFORM.
MIN. 0.090 INCH --- MAX. 0.110 INCH

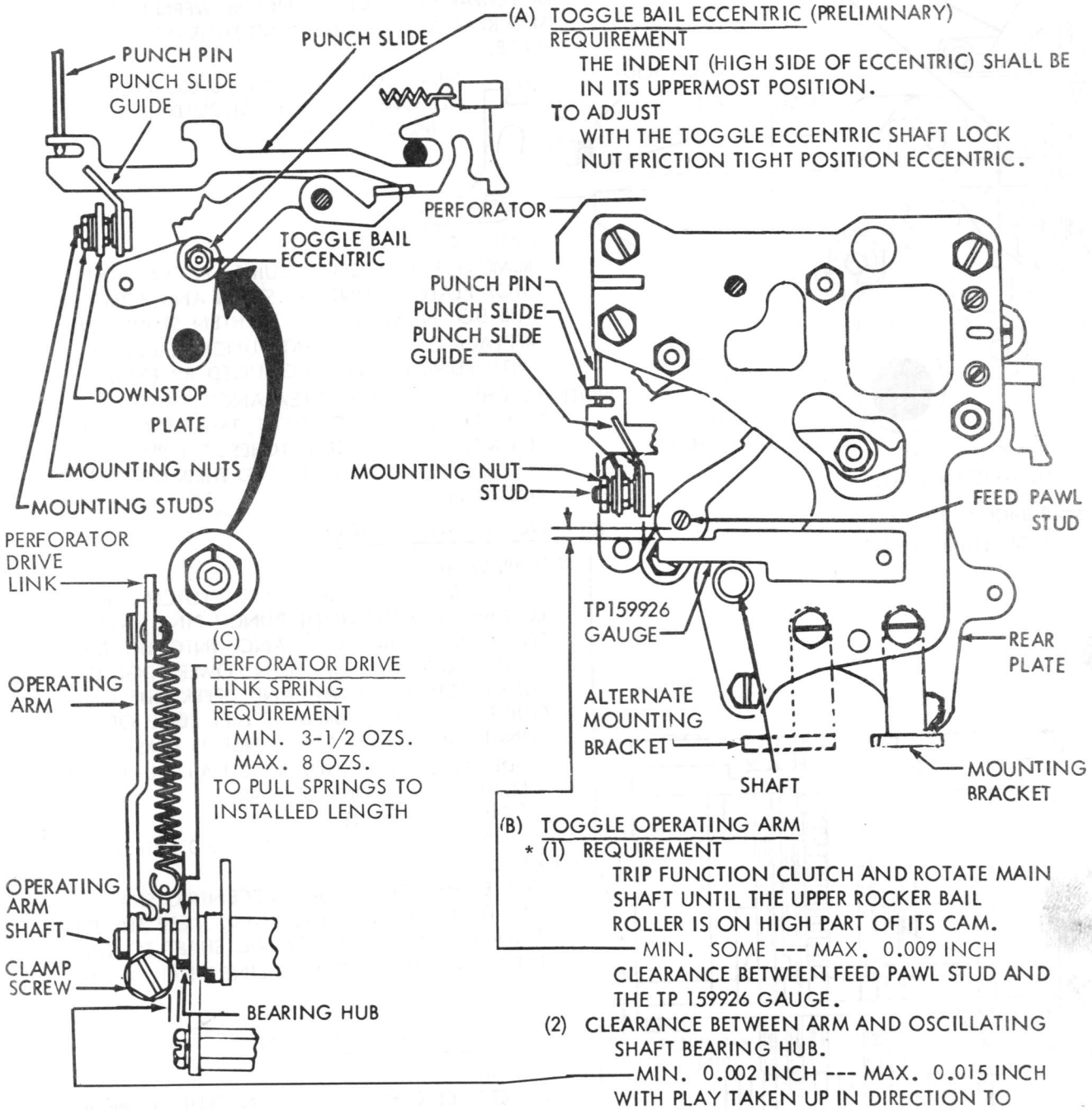
(2) REQUIREMENT - (FOR TYPING PERFORATOR WITH POWER RETRACTED PUNCH UNIT)
WITH UNIT IN STOP POSITION AND TYPEWHEEL IN THE FIGURES FIELD. CLEARANCE BETWEEN THE FIGURE "5" ON THE TYPEWHEEL AND THE TOP OF THE STRIPPER PLATFORM.
MIN. 0.075 INCH --- MAX. 0.095 INCH

TO ADJUST
REMOVE RIBBON FROM CARRIER. POSITION PERFORATOR 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.



2.09 Punch Mechanism continued

NOTE: BEFORE PROCEEDING WITH THE PUNCH MECHANISM ADJUSTMENTS, CHECK THE ROCKER BAIL CAM FOLLOWER ROLLER ADJUSTMENT AND LOOSEN THE PUNCH SLIDE DOWNSTOP MOUNTING NUT AND GUIDE MOUNTING STUD.



(A) TOGGLE BAIL ECCENTRIC (PRELIMINARY)

REQUIREMENT

THE INDENT (HIGH SIDE OF ECCENTRIC) SHALL BE IN ITS UPPERMOST POSITION.

TO ADJUST

WITH THE TOGGLE ECCENTRIC SHAFT LOCK NUT FRICTION TIGHT POSITION ECCENTRIC.

(C) PERFORATOR DRIVE LINK SPRING

REQUIREMENT

MIN. 3-1/2 OZS.
MAX. 8 OZS.
TO PULL SPRINGS TO INSTALLED LENGTH

(B) TOGGLE OPERATING ARM

* (1) REQUIREMENT

TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL THE UPPER ROCKER BAIL ROLLER IS ON HIGH PART OF ITS CAM.

MIN. SOME --- MAX. 0.009 INCH CLEARANCE BETWEEN FEED PAWL STUD AND THE TP 159926 GAUGE.

(2) CLEARANCE BETWEEN ARM AND OSCILLATING SHAFT BEARING HUB.

MIN. 0.002 INCH --- MAX. 0.015 INCH WITH PLAY TAKEN UP IN DIRECTION TO MAKE CLEARANCE MAXIMUM.

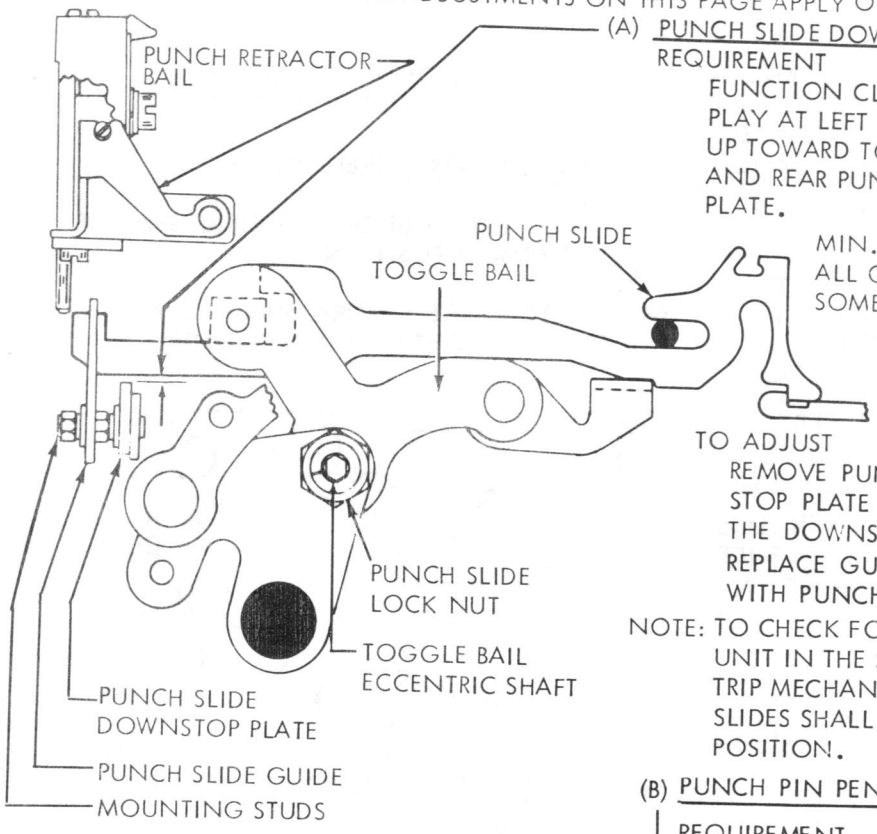
TO ADJUST

WITH LOCKSCREW FRICTION TIGHT, POSITION TOGGLE BAIL AND OPERATING ARM.

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

2.10 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



(A) PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

FUNCTION CLUTCH DISENGAGED. UP AND DOWN PLAY AT LEFT END OF PUNCH SLIDES TAKEN UP TOWARD TOP, CLEARANCE BETWEEN FRONT AND REAR PUNCH SLIDES AND THEIR DOWNSTOP PLATE.

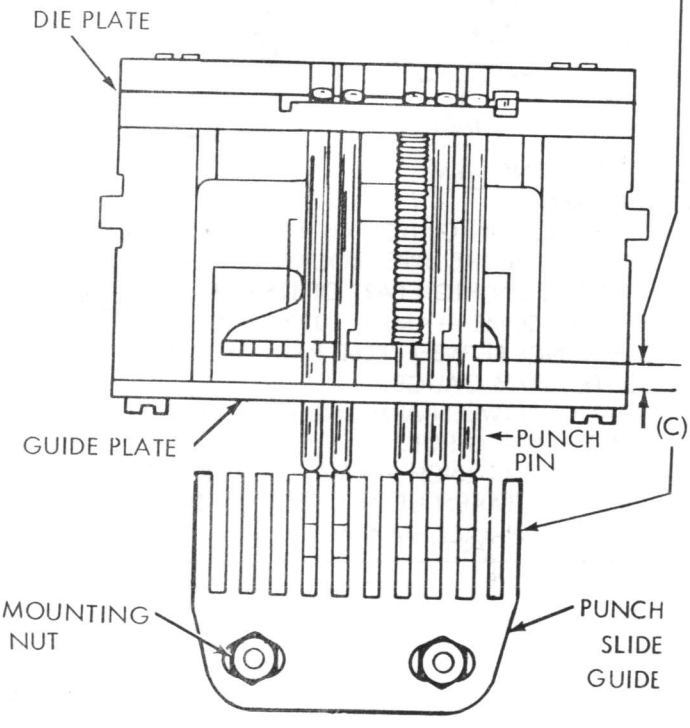
MIN. SOME --- MAX. 0.008 INCH ALL OTHER PUNCHES SHOULD HAVE SOME CLEARANCE.

TO ADJUST

REMOVE PUNCH SLIDE GUIDE, LOOSEN DOWNSTOP PLATE MOUNTING STUDS AND POSITION THE DOWNSTOP PLATE. TIGHTEN STUDS AND REPLACE GUIDE SO THAT PUNCH SLIDES ALIGN WITH PUNCH PINS (AS GAUGED BY EYE).

NOTE: TO CHECK FOR SOME CLEARANCE PLACE UNIT IN THE STOP POSITION, TRIP FUNCTION TRIP MECHANISM AND LATCHES, THE PUNCH SLIDES SHALL MOVE FREELY TO THEIR OPERATED POSITION.

(B) PUNCH PIN PENETRATION



REQUIREMENT

LETTERS MANUALLY SELECTED, CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE, CLEARANCE BETWEEN LOWER EDGE OF PUNCH RETRACTOR BAIL AND UPPER SIDE OF GUIDE PLATE (MEASURED AT LEFT EDGE OF PUNCH PINS WHERE CLEARANCE IS LEAST). THE CODE PUNCHES SHOULD PUNCH A FULL LID WITH A MINIMUM AMOUNT OF TEAR. (REFINE ADJUSTMENT).

MIN. 0.060 INCH --- MAX. 0.075 INCH

TO ADJUST

ROTATE THE TOGGLE BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT LOOSENED. KEEP THE INDENTATION IN THE ECCENTRIC SHAFT TO THE LEFT OF A VERTICAL CENTER LINE THROUGH THE SHAFT.

(C) PUNCH SLIDE GUIDE POSITION

REQUIREMENT

LETTERS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL THE PUNCH SLIDES JUST TOUCH THE PUNCH PINS. THE PUNCH SLIDES SHOULD ALIGN CENTRALLY WITH THEIR RESPECTIVE PUNCH PINS (GAUGED BY EYE).

TO ADJUST

POSITION THE PUNCH SLIDE GUIDE WITH ITS MOUNTING NUTS LOOSENED.

2.11 Punch Mechanism continued

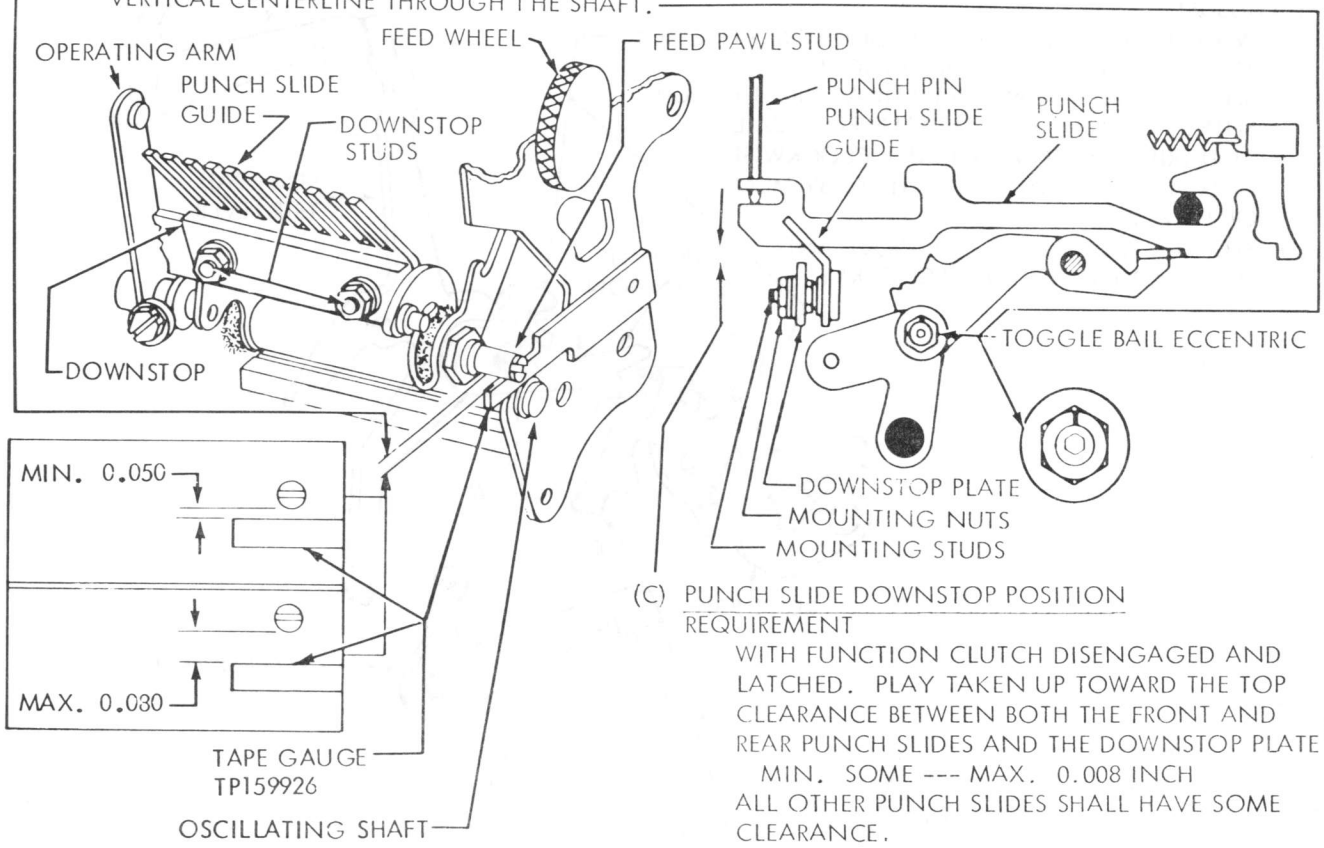
(A) PUNCH PIN PENETRATION
REQUIREMENT

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.

(1) WITH THE LETTERS COMBINATION SELECTED FUNCTION CLUTCH ENGAGED. ROTATE MAIN SHAFT UNTIL ALL PUNCH PINS ARE INTO OR ABOVE THE TAPE APERTURE IN PUNCH BLOCK. WITH THE TP159926 GAUGE IN POSITION
MIN. 0.050 INCH
CLEARANCE BETWEEN FEED PAWL STUD AND THE GAUGE.

(2) WITH LETTERS COMBINATION SELECTED, FUNCTION CLUTCH ENGAGED. ROTATE MAIN SHAFT UNTIL ALL PUNCH PINS HAVE CLEARED THE PUNCH BLOCK. WITH THE TP159926 GAUGE IN POSITION
MAX. 0.080 INCH
CLEARANCE BETWEEN FEED PAWL STUD AND GAUGE.

TO ADJUST
REFINE THE TOGGLE BAIL ECCENTRIC ADJUSTMENT KEEPING THE INDENT TO THE RIGHT OF A VERTICAL CENTERLINE THROUGH THE SHAFT.



(B) PUNCH SLIDE GUIDE
REQUIREMENT
THE PUNCH SLIDES SHOULD ALIGN WITH THEIR CORRESPONDING PUNCH PINS AND BE FREE OF BINDS AFTER TIGHTENING THE GUIDE MOUNTING STUDS. EACH PUNCH SLIDE SHOULD RETURN FREELY AFTER BEING PUSHED IN NOT MORE THAN 1/16 INCH.

TO ADJUST
POSITION THE GUIDE WITH ITS MOUNTING STUDS FRICTION TIGHT.

(C) PUNCH SLIDE DOWNSTOP POSITION
REQUIREMENT
WITH FUNCTION CLUTCH DISENGAGED AND LATCHED. PLAY TAKEN UP TOWARD THE TOP CLEARANCE BETWEEN BOTH THE FRONT AND REAR PUNCH SLIDES AND THE DOWNSTOP PLATE
MIN. SOME --- MAX. 0.008 INCH
ALL OTHER PUNCH SLIDES SHALL HAVE SOME CLEARANCE.

NOTE: TO CHECK FOR SOME CLEARANCE, PLACE UNIT IN STOP POSITION, TRIP FUNCTION TRIP MECHANISM AND LATCHES, THE PUNCH SLIDES SHALL MOVE FULLY TO THEIR OPERATED POSITION.

TO ADJUST
WITH UNIT IN STOP POSITION, LOOSEN THE TWO DOWNSTOP PLATE MOUNTING LOCK NUTS AND LOCATE THE DOWNSTOP PLATE TO MEET THE REQUIREMENT.

2.12 Punch Mechanism continued

RESET BAIL TRIP LEVER

REQUIREMENT

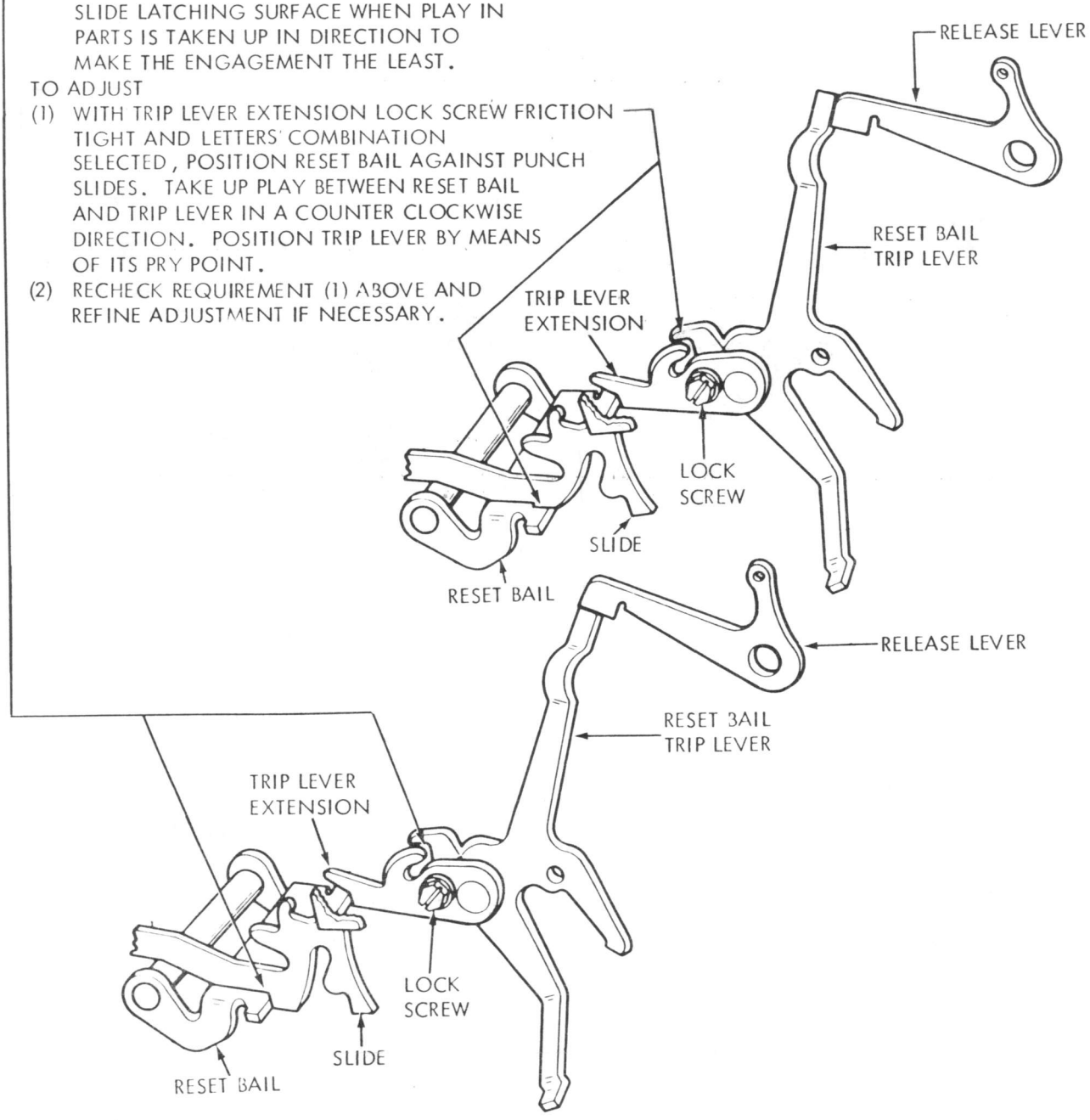
(1) MANUALLY SELECT BLANK COMBINATION. MANUALLY ROTATE RESET BAIL TRIP LEVER. THE PUNCH SLIDE RESET BAIL SHALL TRIP BEFORE THE FUNCTION CLUTCH IS TRIPPED.

(2) WITH FUNCTION AND SELECTOR CLUTCHES DISENGAGED AND LATCHED, THE PUNCH SLIDE RESET BAIL SHALL FULLY ENGAGE THE PUNCH SLIDE LATCHING SURFACE WHEN PLAY IN PARTS IS TAKEN UP IN DIRECTION TO MAKE THE ENGAGEMENT THE LEAST.

TO ADJUST

(1) WITH TRIP LEVER EXTENSION LOCK SCREW FRICTION TIGHT AND LETTERS' COMBINATION SELECTED, POSITION RESET BAIL AGAINST PUNCH SLIDES. TAKE UP PLAY BETWEEN RESET BAIL AND TRIP LEVER IN A COUNTER CLOCKWISE DIRECTION. POSITION TRIP LEVER BY MEANS OF ITS PRY POINT.

(2) RECHECK REQUIREMENT (1) ABOVE AND REFINE ADJUSTMENT IF NECESSARY.



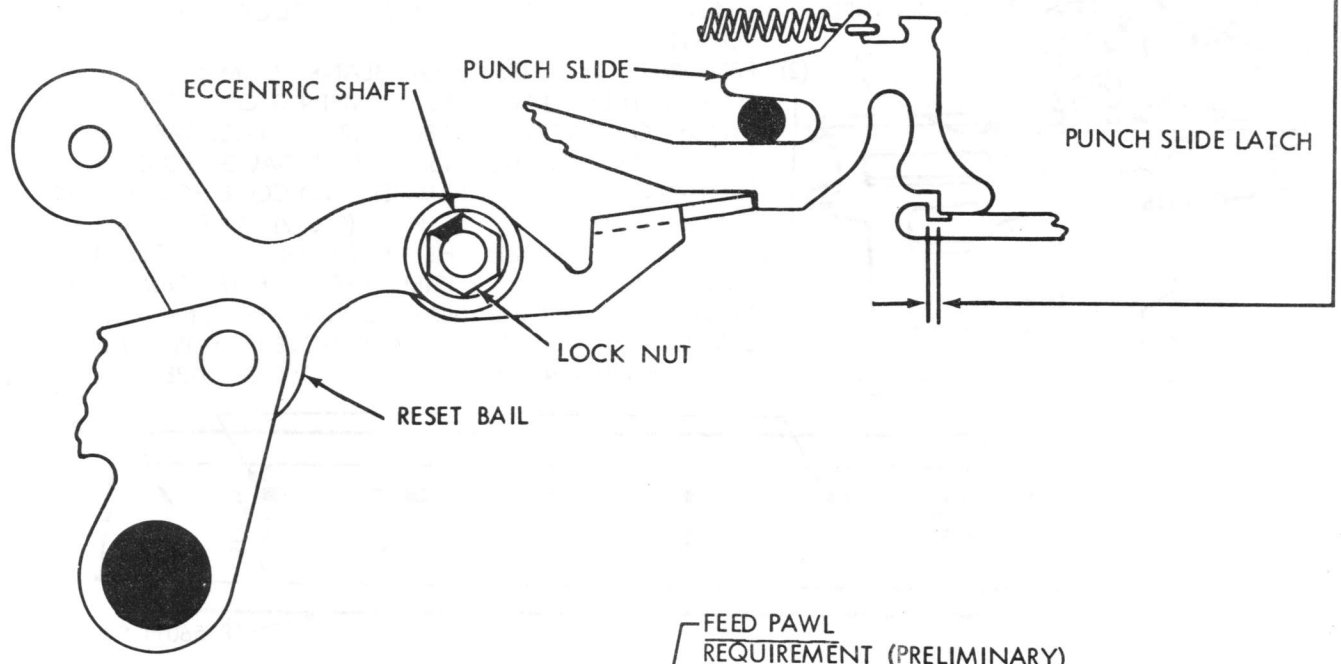
2.13 Punch Mechanism continued

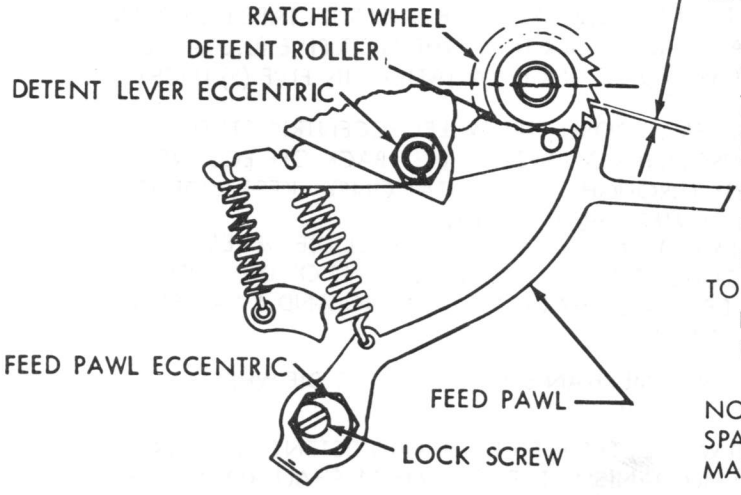
LATCH LEVER CLEARANCE

REQUIREMENT (FOR BOTH TYPING AND NON-TYPING PERFORATORS)
WITH "BLANK" COMBINATION SELECTED, THE FUNCTION CLUTCH DISENGAGED AND LATCHED.
CLEARANCE BETWEEN THE PUNCH SLIDE AND ITS ASSOCIATED LATCH LEVER.
MIN. 0.008 INCH
MAX. 0.020 INCH
FOR THE SLIDE HAVING THE LEAST CLEARANCE.

TO ADJUST
LOOSEN THE LOCK NUT ON THE RESET BAIL ECCENTRIC SHAFT AND POSITION THE RESET BAIL BY ROTATING THE ECCENTRIC SHAFT TO MEET THE REQUIREMENT: THE INDENT SHALL BE KEPT ABOVE THE HORIZONTAL CENTER LINE OF THE ECCENTRIC.

NOTE: ON KEYBOARD PERFORATORS NOT HAVING A "BLANK" KEY, SUBSTITUTE USE OF THE "T" KEY WHENEVER USE OF THE "BLANK" KEY IS REQUIRED.





FEED PAWL

REQUIREMENT (PRELIMINARY)
FUNCTION CLUTCH DISENGAGED, IDENTATION 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 SHOULD ENGAGE THE FIRST TOOTH BELOW A HORIZONTAL CENTER LINE THROUGH THE RATCHET WHEEL WITH NO PERCEPTIBLE CLEARANCE.

TO ADJUST
ROTATE THE FEED PAWL ECCENTRIC WITH LOCK NUT LOOSENED.

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

2.14 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.

FEED HOLE SPACING (PRELIMINARY)

REQUIREMENT

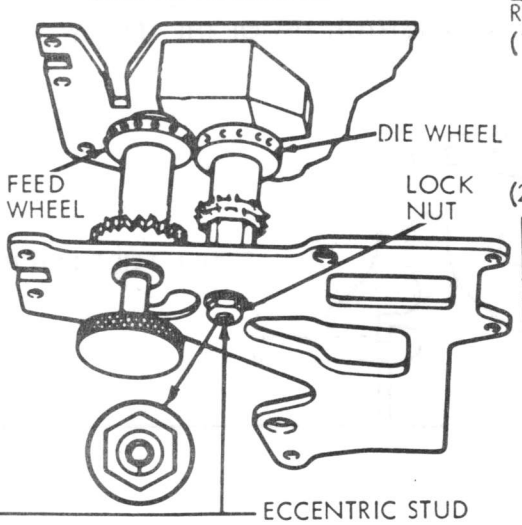
THE INDENT OF DIE WHEEL ECCENTRIC STUD SHALL BE POINTING DOWNWARD.

TO ADJUST

POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED.

NOTE

BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS.

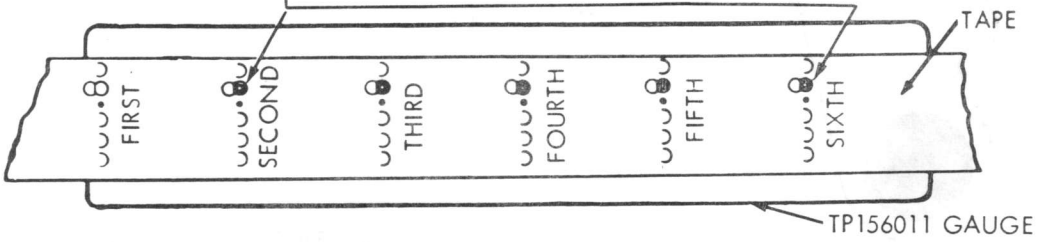


FEED HOLE SPACING (FINAL)

REQUIREMENT

(1) WITH TAPE SHOE BLOCKED AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. (CHECK THROUGH 3 OR 4 ROTATIONS).

(2) PERFORATE SIX SERIES OF (9) "BLANK" COMBINATIONS FOLLOWED BY (1) "LETTERS" COMBINATION. OPEN CHADS SO CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF THE TP156011 TAPE GAUGE SO CIRCULAR PORTION OF THE FIRST NUMBER TWO CODE HOLE IN TAPE IS CONCENTRIC WITH THE FIRST (0.072) HOLE OF TAPE GAUGE. (SEE NOTE). THE NEXT FOUR 0.072 HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH THE NUMBER TWO CODE HOLES IN TAPE AND CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER TWO CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIA. HOLE OF TAPE GAUGE.



NOTE: THE FIRST FIVE HOLES IN GAUGE ARE THE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER) BUT THE SIXTH HOLE IN GAUGE IS LARGER THAN THE FIRST FIVE (0.086 INCH DIAMETER). THIS ARRANGEMENT ALLOWS ± 0.007 INCH VARIATION IN FIVE (5) INCHES.

TO ADJUST

(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCK NUT AND ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL, BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 ROTATIONS). KEEP INDENT OF ECCENTRIC STUD BELOW THE HORIZONTAL CENTER LINE OF STUD.

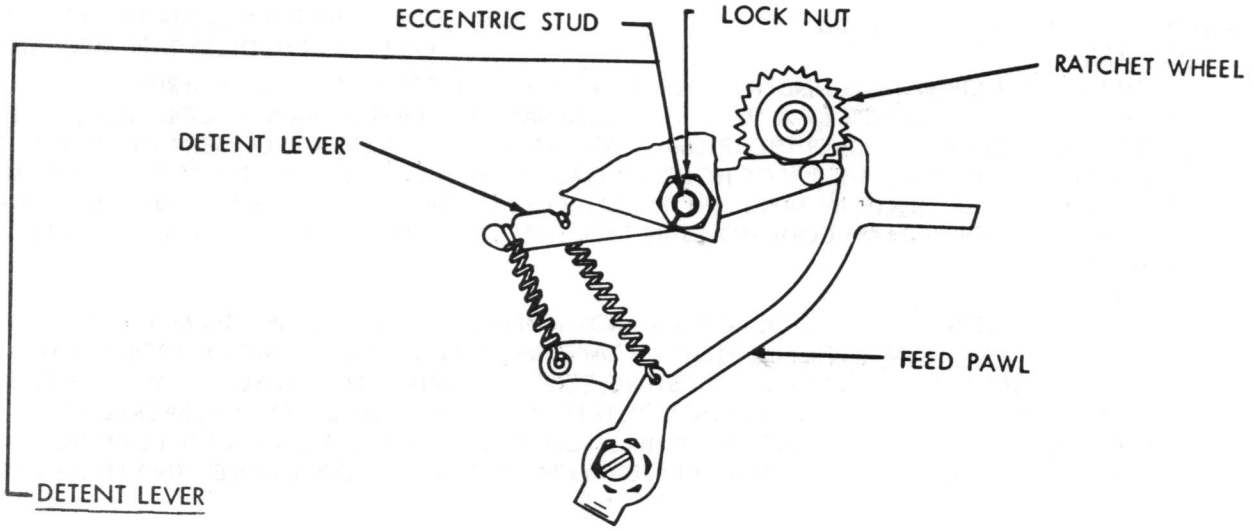
(2) CHECK TEN CHARACTERS PER INCH REQUIREMENT AND REFINE FEED WHEEL DIE WHEEL CLEARANCE ADJUSTMENT TO MEET THE REQUIREMENT BY MOVING INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE THE CHARACTER SPACING.

CAUTION: WITH THE TAPE REMOVED FROM THE PUNCH MECHANISM, BE SURE THE DIE WHEEL DOES NOT BIND.

(3) WITH THE TAPE SHOE AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND THE TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. FAILURE TO MEET THIS REQUIREMENT INDICATES THE DIE WHEEL ECCENTRIC HAS BEEN OVER-ADJUSTED. TO MEET THIS REQUIREMENT, REFINE THE ADJUSTMENT.

2.15 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



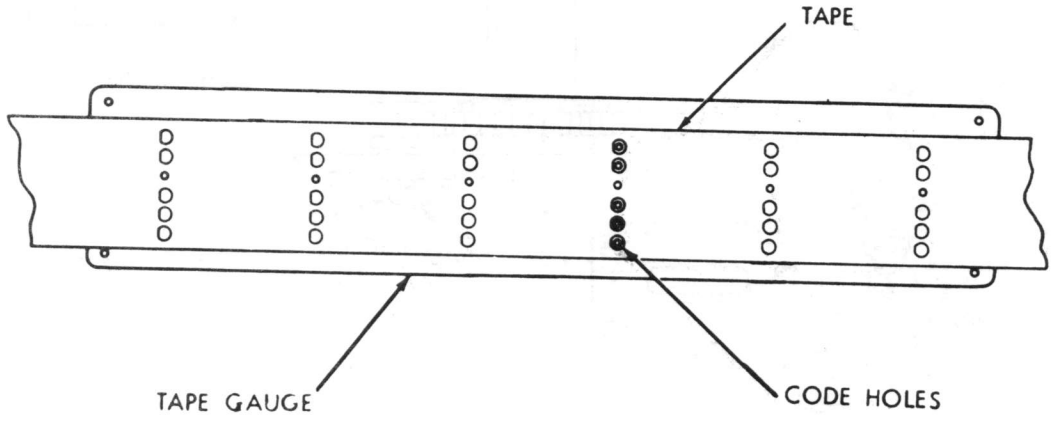
REQUIREMENT

A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION PERFORATED ON THE PERFORATOR MUST CONFORM TO THE TP156011 TAPE GAUGE. THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHOULD 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 REFINE THE FEED PAWL ADJUSTMENT.

RECHECK FEED PAWL ADJUSTMENT.



2.16 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.

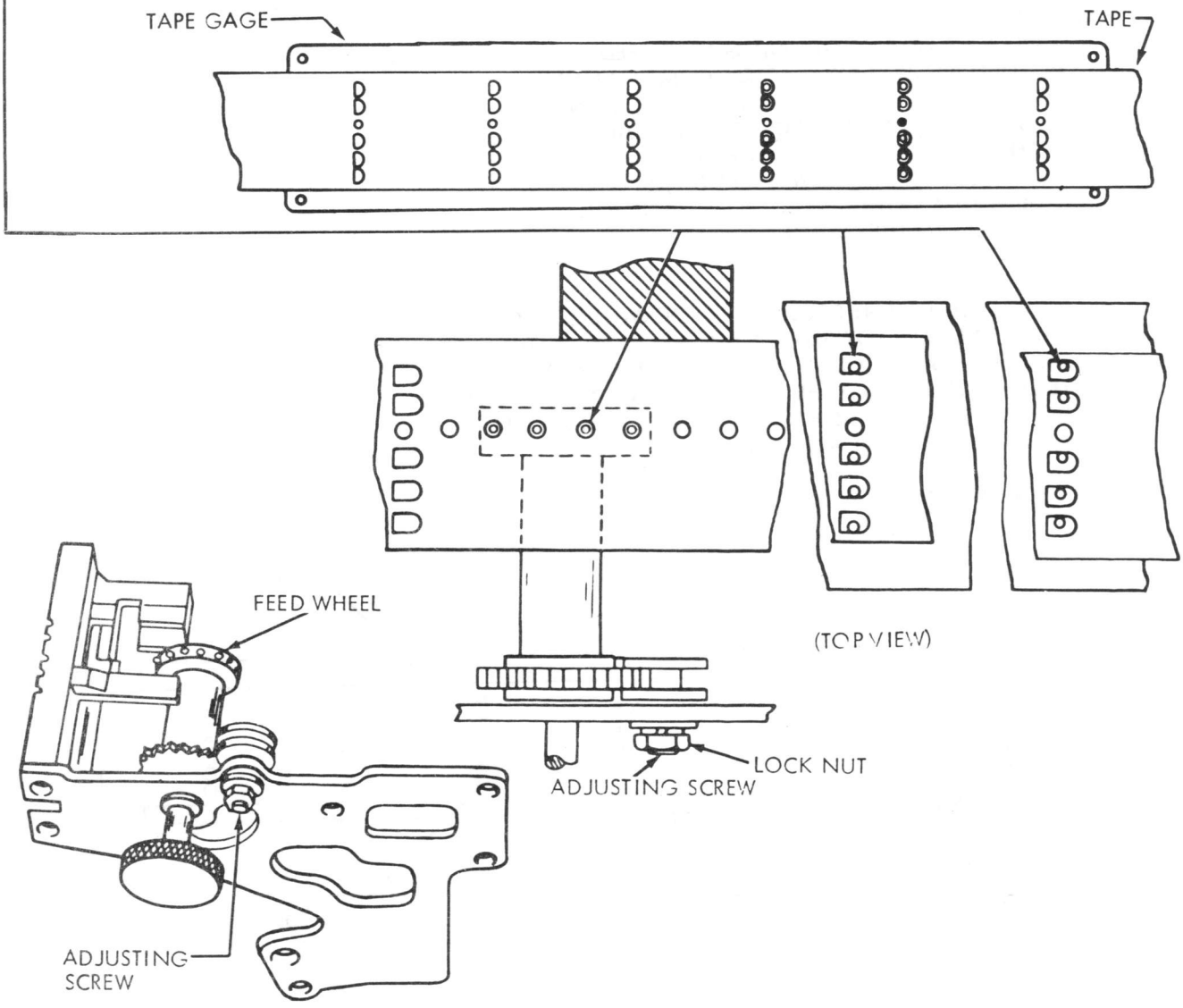
FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

WITH MACHINE OPERATING UNDER POWER, OBTAIN A TAPE CONSISTING OF A SERIES OF NINE "BLANKS" FOLLOWED BY A "LETTERS" COMBINATION. OPEN CHADS SO CODE HOLES ARE VISIBLE AND PLACE TAPE OVER THE TP156011 TAPE GAUGE WITH "LETTERS" COMBINATION FEED HOLES ENGAGING FEED PINS. THE LARGE HOLES IN GAUGE ARE THE SAME DIAMETER AS THE CIRCULAR PORTION OF CODE HOLES IN TAPE. THE SMALL HOLES IN GAUGE SERVE AS A GUIDE FOR GAUGING. THE CIRCULAR PORTION OF CODE HOLES IN TAPE SHALL BE CONCENTRIC WITH HOLES IN TAPE GAUGE.

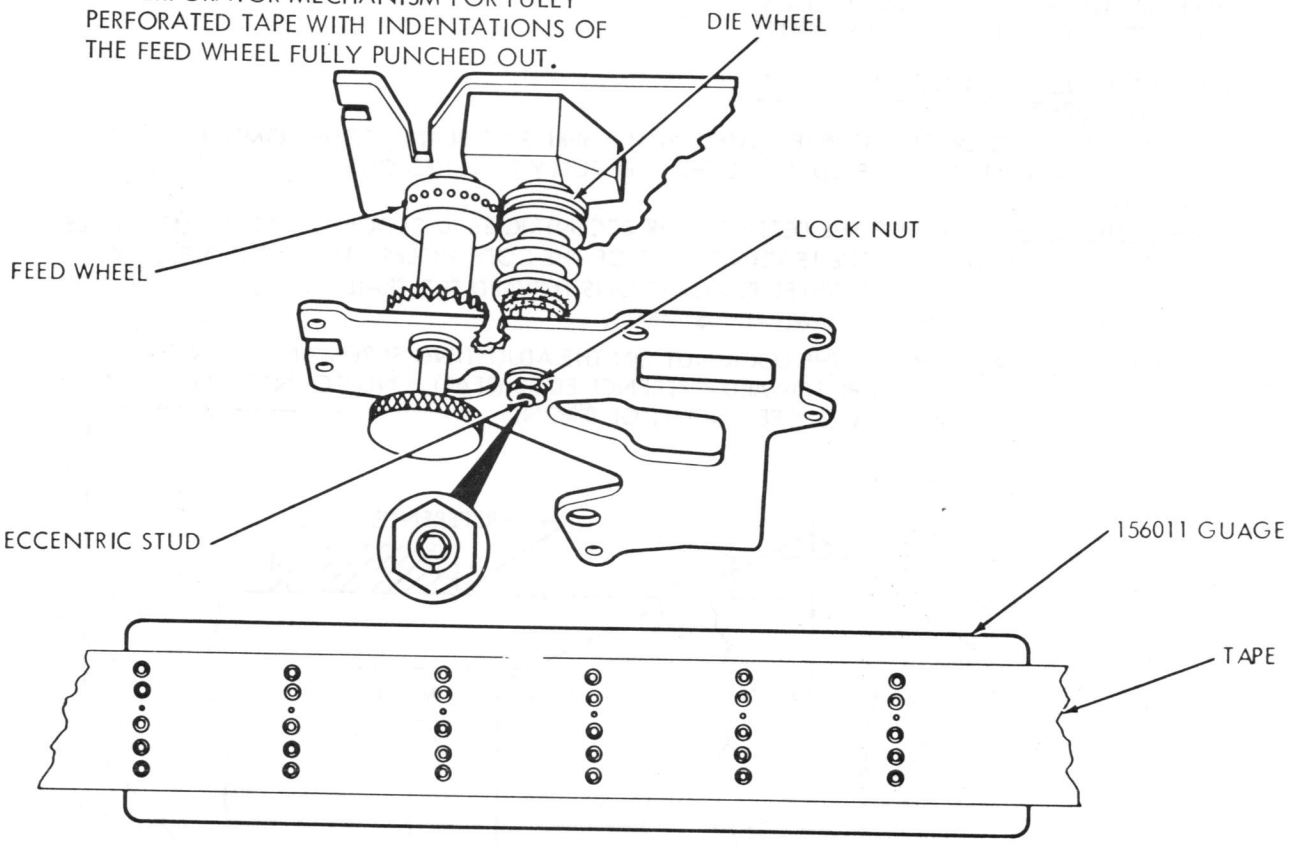
TO ADJUST

LOOSEN ADJUSTING SCREW LOCK NUT AND POSITION ADJUSTING SCREW. TO MOVE HOLES OF GAUGE AWAY FROM REFERENCE EDGE OF TAPE, MOVE FEED WHEEL TOWARDS FRONT PLATE OF PUNCH MECHANISM BY ROTATING ADJUSTING SCREW COUNTER CLOCKWISE. TO MOVE HOLES OF GAUGE TOWARD THE REFERENCE EDGE OF TAPE, MOVE FEED WHEEL TOWARD BACKPLATE OF PUNCH MECHANISM BY ROTATING ADJUSTING SCREW CLOCKWISE. TIGHTEN THE LOCK NUT. REFINE DETENT ADJUSTMENT TO ALIGN LATERAL CENTER LINES OF CODE HOLES AND FEED HOLE IF REQUIRED.



2.17 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL FULLY PUNCHED OUT.



NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENT CHECK BOTH TAPE GUIDE SPRING TENSIONS

FEED HOLE SPACING

(1) REQUIREMENT

WITH A PIECE OF TAPE PERFORATED WITH SIX SERIES OF 9 BLANK CODE COMBINATIONS FOLLOWED BY A LETTERS COMBINATION PLACED OVER THE SMOOTH SIDE OF THE 156011 TAPE GAUGE SO THAT THE CIRCULAR PORTION OF THE FIRST NUMBER 2 CODE HOLE IN THE TAPE IS CONCENTRIC WITH THE FIRST HOLE OF THE TAPE GAUGE, THE NEXT FOUR HOLES IN THE TAPE GAUGE SHOULD BE VISIBLE THROUGH THE NUMBER 2 CODE HOLES IN THE TAPE AND THE CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER 2 CODE HOLE IN THE TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIAMETER HOLE OF THE TAPE GAUGE.

(2) REQUIREMENT

WITH TAPE SHOE HELD AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED AND TAPE REMOVED, FEED WHEEL SHOULD ROTATE FREELY.

TO ADJUST

WITH TAPE REMOVED FROM THE PUNCH MECHANISM, LOOSEN THE ECCENTRIC LOCK NUT AND ROTATE THE DIE WHEEL ECCENTRIC SHAFT UNTIL IT BINDS AGAINST THE FEED WHEEL. BACK OFF THE ECCENTRIC UNTIL THE DIE WHEEL IS JUST FREE. KEEP THE INDENT OF THE ECCENTRIC BELOW THE HORIZONTAL CENTERLINE OF THE STUD. REFINE ADJUSTMENT FOR REQUIREMENT (1), IF NECESSARY, BY MOVING THE DIE WHEEL TOWARD THE FEED WHEEL TO DECREASE THE CHARACTER SPACING AND AWAY FROM THE FEED WHEEL TO INCREASE THE CHARACTER SPACING.

2.18 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL FULLY PUNCHED OUT.

FEED WHEEL INDENTATION ALIGNMENT

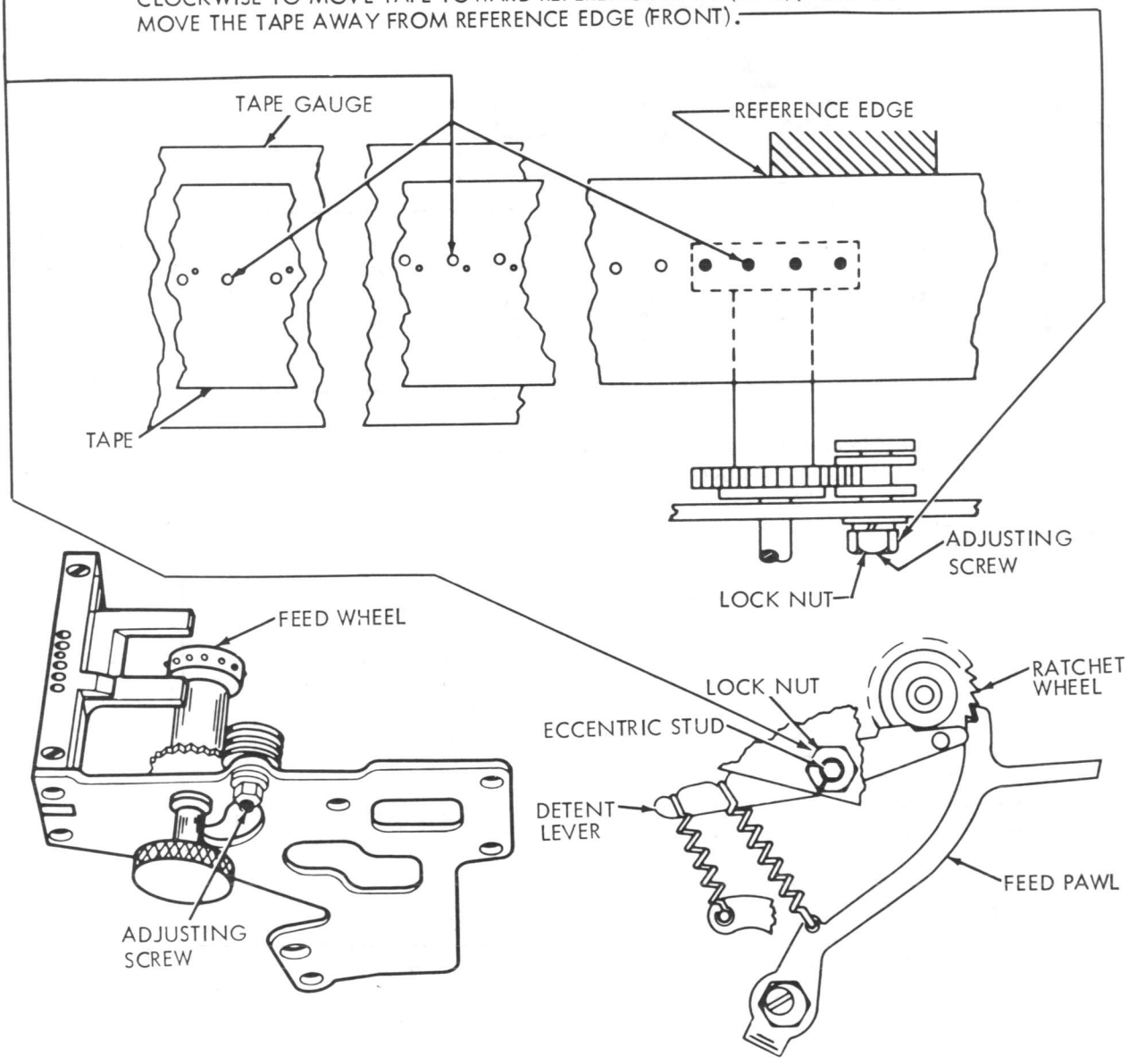
(1) REQUIREMENT

WHEN A PIECE OF TAPE IS PERFORATED WITH A SERIES OF BLANK CODE COMBINATIONS THE INDENTATIONS OF THE FEED WHEEL SHALL BE FULLY PUNCHED OUT.

TO ADJUST

RIGHT OR LEFT, ROTATE THE DETENT LEVER ECCENTRIC STUD CLOCKWISE TO MOVE THE FEED PERFORATION TOWARD THE LEADING EDGE OF THE CODE HOLES, AND COUNTER CLOCK - WISE TO MOVE THE FEED WHEEL PERFORATIONS TOWARD THE TRAILING EDGE OF THE CODE HOLES. REFINE THE FEED PAWL ADJUSTMENT.

FRONT TO REAR, LOOSEN THE LOCK NUT ON THE ADJUSTING SCREW AND TURN THE SCREW CLOCKWISE TO MOVE TAPE TOWARD REFERENCE EDGE (REAR), AND COUNTER CLOCKWISE TO MOVE THE TAPE AWAY FROM REFERENCE EDGE (FRONT).



2.19 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL BETWEEN THE FEED HOLES.

NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS.

FEED HOLE SPACING (FINAL)

REQUIREMENT

(1) WITH TAPE SHOE BLOCKED AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. (CHECK THROUGH 3 OR 4 ROTATIONS).

(2) PERFORATE SIX SERIES OF (9) "BLANK" COMBINATIONS FOLLOWED BY (1) "LETTERS" COMBINATION. PLACE TAPE OVER SMOOTH SIDE OF THE TP156011 TAPE GAUGE SO CIRCULAR PORTION OF THE FIRST NUMBER TWO CODE HOLE IN TAPE IS CONCENTRIC WITH THE FIRST (0.072) HOLE OF TAPE GAUGE. (SEE NOTE). THE NEXT FOUR 0.072 HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH THE NUMBER TWO CODE HOLES IN TAPE AND CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER TWO CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIA. HOLE OF TAPE GAUGE.

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

TO ADJUST

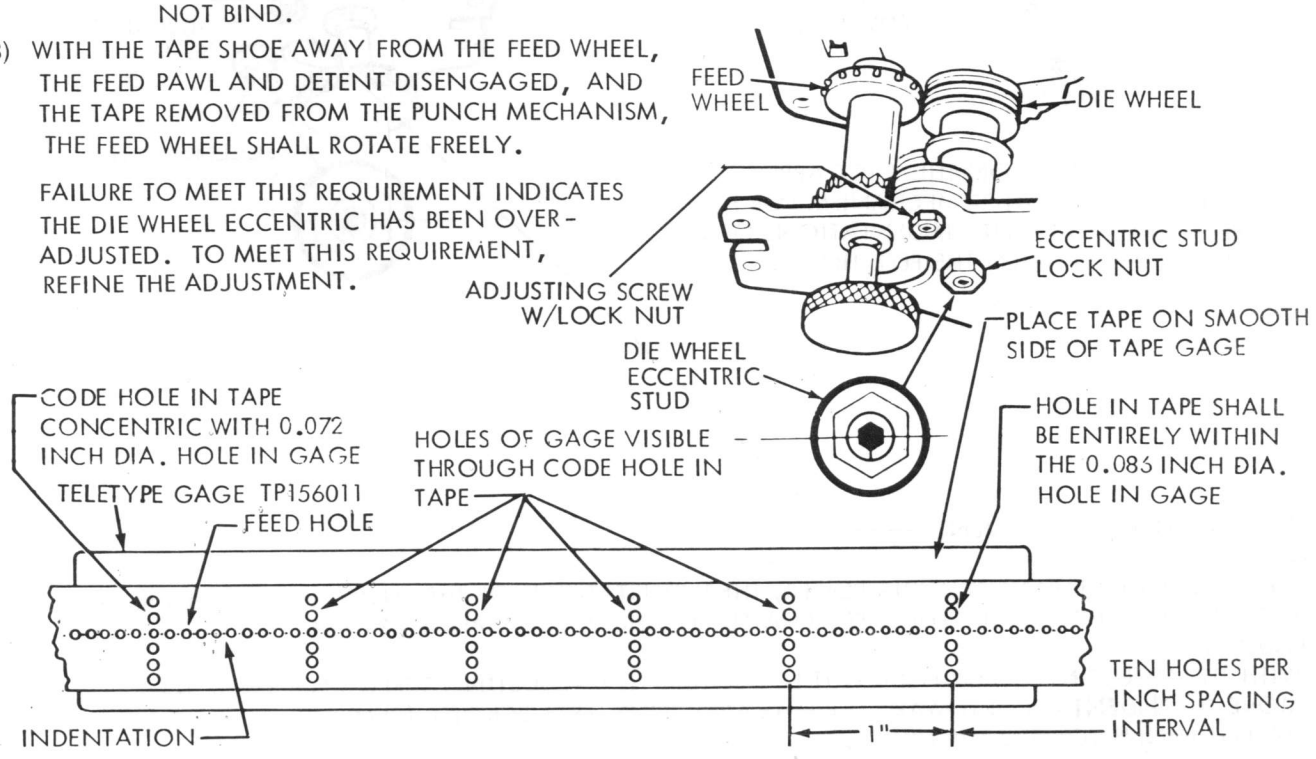
(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCK NUT AND ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL, BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 ROTATIONS). KEEP INDENT OFF ECCENTRIC STUD BELOW THE HORIZONTAL CENTER LINE OF STUD.

(2) CHECK TEN CHARACTERS PER INCH REQUIREMENT AND REFINE FEED WHEEL DIE WHEEL CLEARANCE ADJUSTMENT TO MEET THE REQUIREMENT BY MOVING INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE THE CHARACTER SPACING.

CAUTION: WITH THE TAPE REMOVED FROM THE PUNCH MECHANISM, BE SURE THE DIE WHEEL DOES NOT BIND.

(3) WITH THE TAPE SHOE AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND THE TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY.

FAILURE TO MEET THIS REQUIREMENT INDICATES THE DIE WHEEL ECCENTRIC HAS BEEN OVER-ADJUSTED. TO MEET THIS REQUIREMENT, REFINE THE ADJUSTMENT.



2.20 Punch Mechanism continued

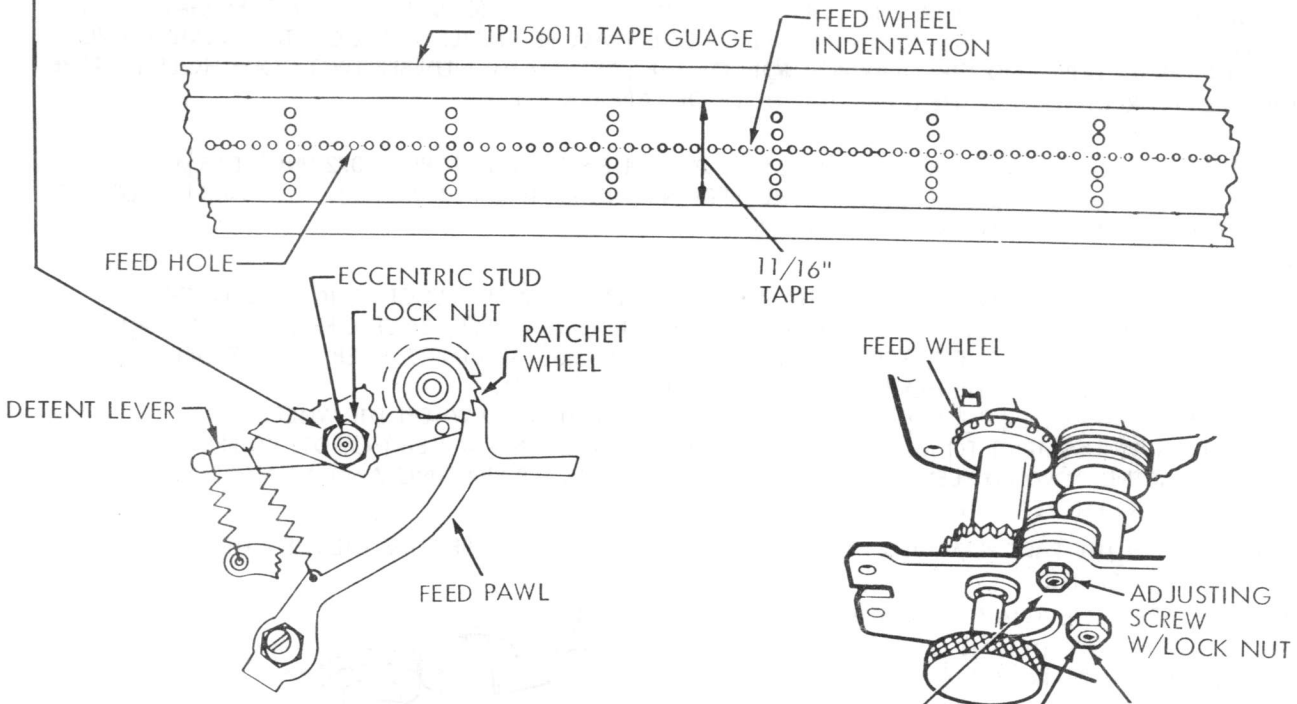
DETENT (FOR FULLY PERFORATED TAPE WITH INDENTATION OF FEED WHEEL BETWEEN THE FEED HOLES)

REQUIREMENT

WITH THE UNIT OPERATING UNDER POWER, THE INDENTATIONS OF THE FEED WHEEL SHALL BE CENTRALLY LOCATED BETWEEN TWO FULLY PERFORATED FEED HOLES, AS GAUGED BY EYE.

TO ADJUST

LOOSEN THE DETENT LEVER ECCENTRIC STUD LOCK NUT AND TURN THE ECCENTRIC STUD CLOCKWISE TO MOVE THE INDENTATION TOWARD THE LEADING EDGE OF THE FEED HOLE AND COUNTER CLOCKWISE TO MOVE THE INDENTATION TOWARD THE TRAILING EDGE. TIGHTEN THE LOCK NUT AND RE-CHECK THE FEED PAWL ADJUSTMENT.



NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL BETWEEN THE FEED HOLES.

FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

WITH THE UNIT OPERATING UNDER POWER, THE INDENTATIONS OF THE FEED WHEEL SHOULD BE ON A CENTERLINE BETWEEN THE FULLY PERFORATED FEED HOLES, AS GAUGED BY EYE.

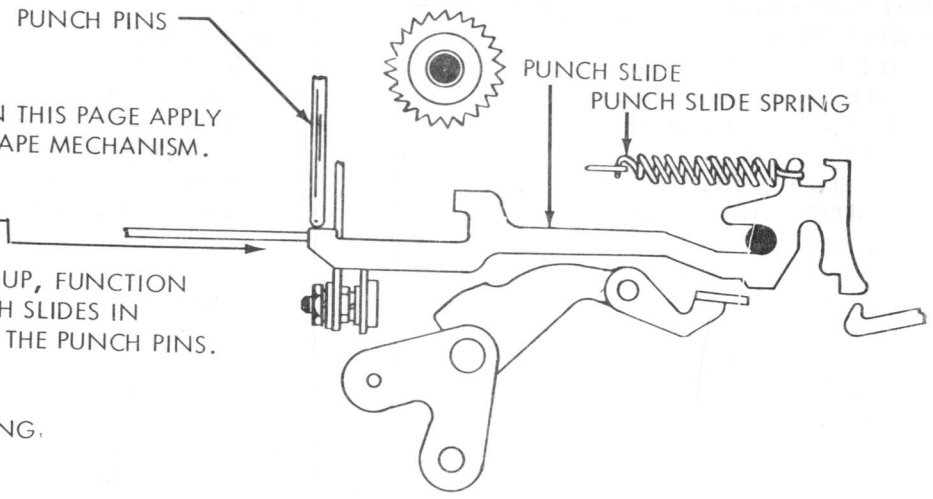
TO ADJUST

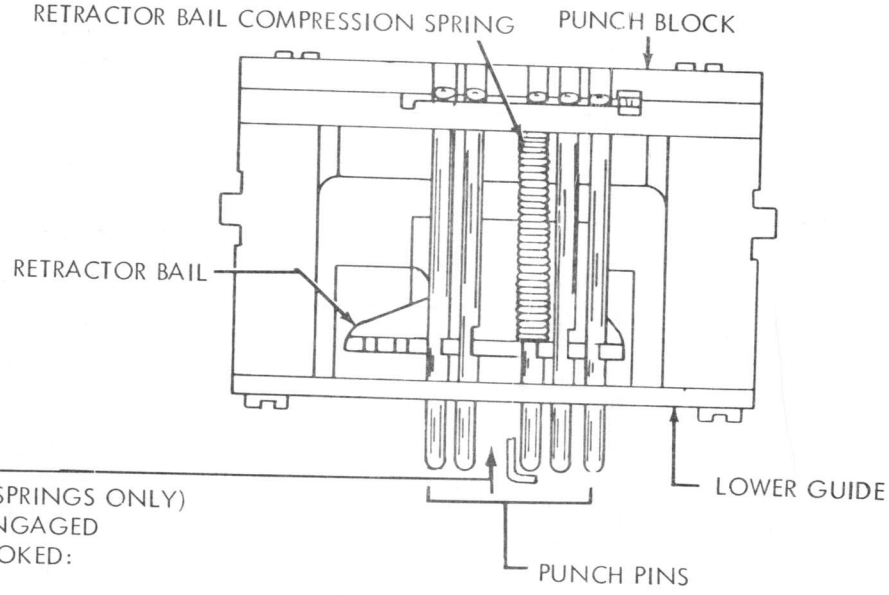
WITH THE ADJUSTING SCREW LOCK NUT LOOSE TURN THE ADJUSTING SCREW CLOCKWISE TO MOVE THE INDENTATION TOWARD THE REAR AND COUNTERCLOCKWISE TO MOVE THE INDENTATIONS TOWARD THE FRONT.

2.21 Punch Mechanism continued

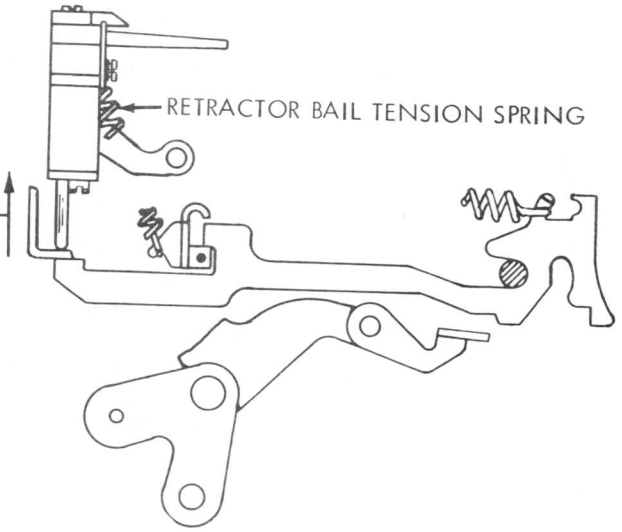
NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.

(A)
PUNCH SLIDE SPRING
REQUIREMENT
LETTERS COMBINATION SET UP, FUNCTION CLUTCH TRIPPED AND PUNCH SLIDES IN SELECTED POSITION UNDER THE PUNCH PINS.
MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.
TO START EACH SLIDE MOVING.





(B)
RETRACTOR BAIL SPRINGS
(1) REQUIREMENT (COMPRESSION SPRINGS ONLY) WITH FUNCTION CLUTCH DISENGAGED AND TENSION SPRINGS UNHOOKED:
MIN. 15 OZS.
MAX. 32 OZS.
TO LIFT RETRACTOR BAIL AWAY FROM LOWER GUIDE OF PUNCH BLOCK.



(2) REQUIREMENT (COMBINED COMPRESSION AND TENSION SPRINGS)
UNDER THE SAME CONDITIONS AS REQUIREMENT
(1) ABOVE, EXCEPT WITH TENSION SPRINGS HOOKED*
MIN. 4 LBS.
MAX. 5 LBS.
TO LIFT THE RETRACTOR BAIL AWAY FROM THE LOWER GUIDE OF THE PUNCH BLOCK.

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

2.22 Punch Mechanism continued

(B) TAPE GUIDE ASSEMBLY SPRING

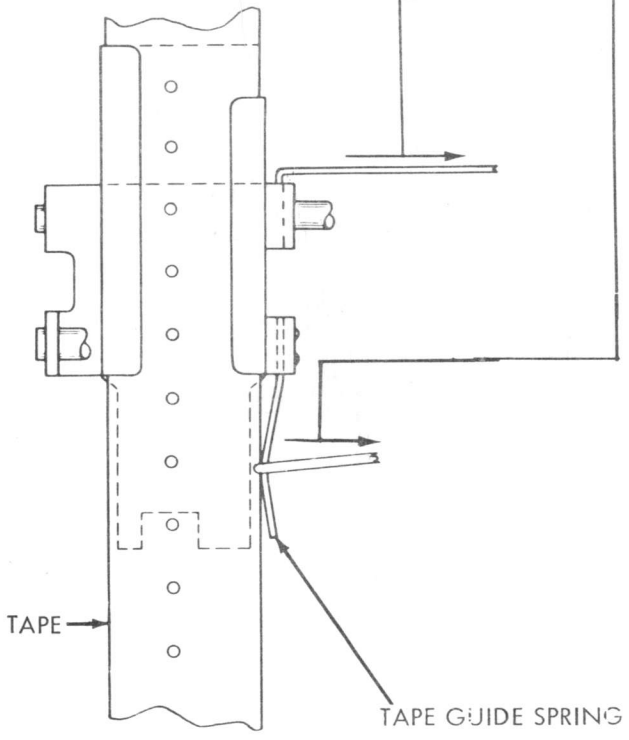
REQUIREMENT

THE TAPE GUIDE ASSEMBLY SHOULD BE FREE TO RETURN TO REST AGAINST THE TAPE GUIDE BLOCK AFTER A MIN. 16 OZS. IS USED TO PULL THE TAPE GUIDE ASSEMBLY AWAY FROM THE BLOCK.

TO ADJUST

REPLACE SPRING IF REQUIREMENT IS NOT MET.

IF THE TAPE GUIDE ASSEMBLY IS NOT FREE TO RETURN, REPOSITION THE TAPE GUIDE ASSEMBLY MOUNTING POST TO FREE THE TAPE GUIDE ASSEMBLY.



(A)

TAPE GUIDE SPRING (TAPE CHUTE)

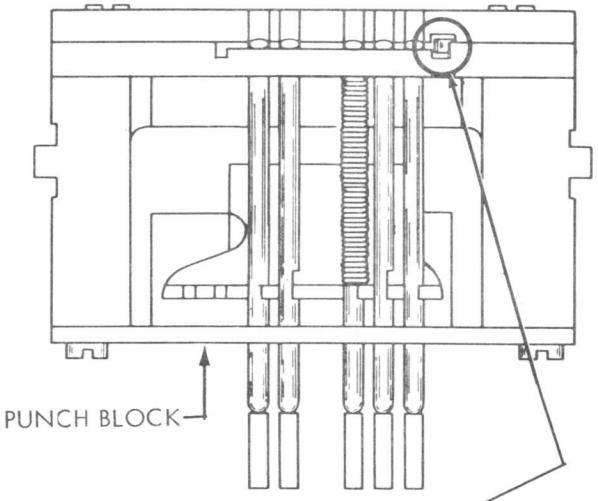
REQUIREMENT

CLUTCH DISENGAGED AND TAPE THREADED THROUGH THE PUNCH ASSEMBLY, IT SHOULD REQUIRE MIN. 1-1/4 OZS. MAX. 2-1/4 OZS. TO JUST MOVE THE SPRING AWAY FROM THE TAPE.

TO ADJUST

BEND THE SPRING.

NOTE: IN ORDER TO CHECK THIS SPRING TENSION ON UNITS EQUIPPED WITH BACKSPACE MECHANISM, IT IS NECESSARY TO REMOVE SEVERAL PARTS. IT SHOULD NOT BE CHECKED UNLESS THERE IS REASON TO BELIEVE THAT REQUIREMENTS CANNOT BE MET.



(C) TAPE GUIDE SPRING PUNCH BLOCK (FOR CHADLESS TAPE MECHANISM)

(1) REQUIREMENT

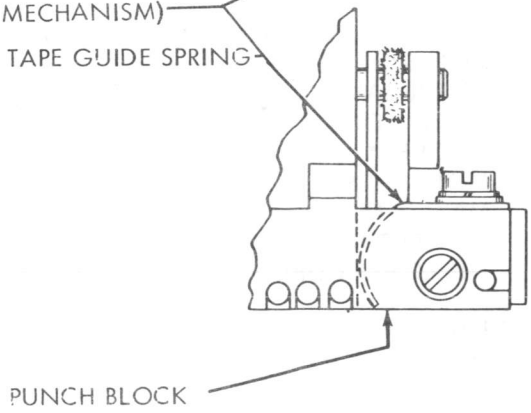
WITH THE TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMMETRICAL MANNER.

(2) REQUIREMENT

WITH TAPE IN THE PUNCH BLOCK AND THE PERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE.

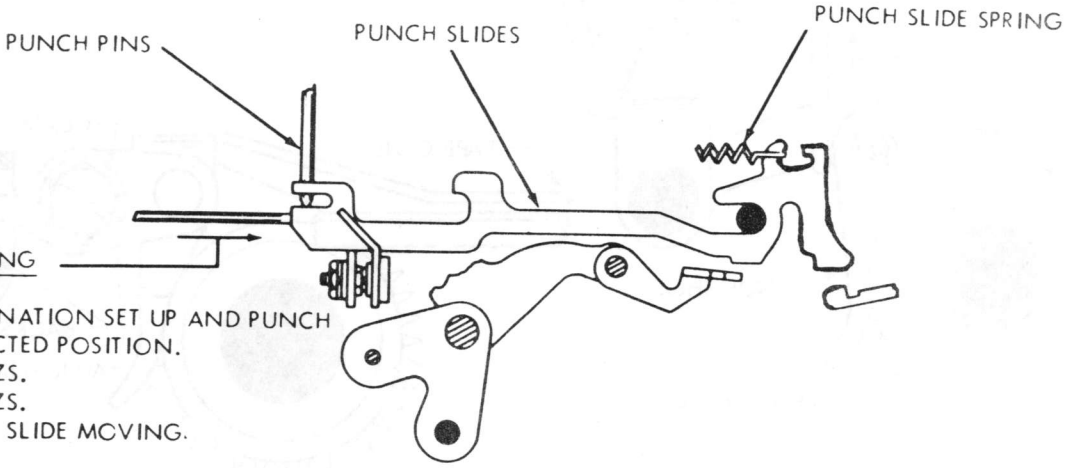
TO ADJUST

BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED.

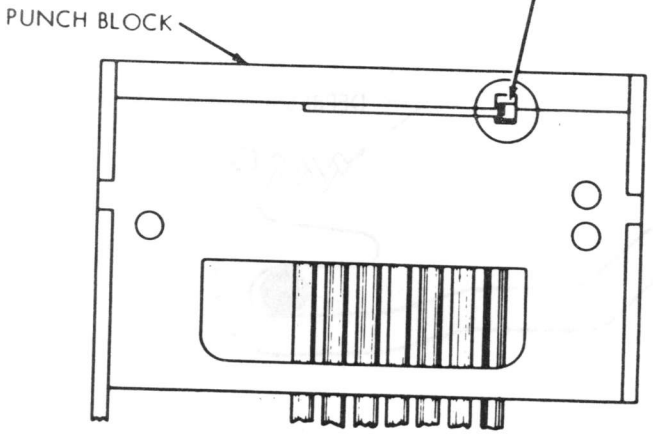


2.23 Punch Mechanism continued

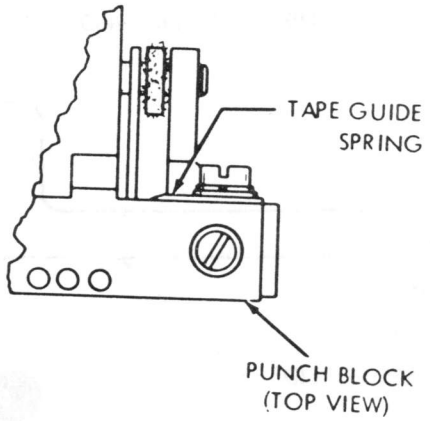
NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.



PUNCH SLIDE SPRING
REQUIREMENT
LETTERS COMBINATION SET UP AND PUNCH SLIDES IN SELECTED POSITION.
MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.
TO START EACH SLIDE MOVING.

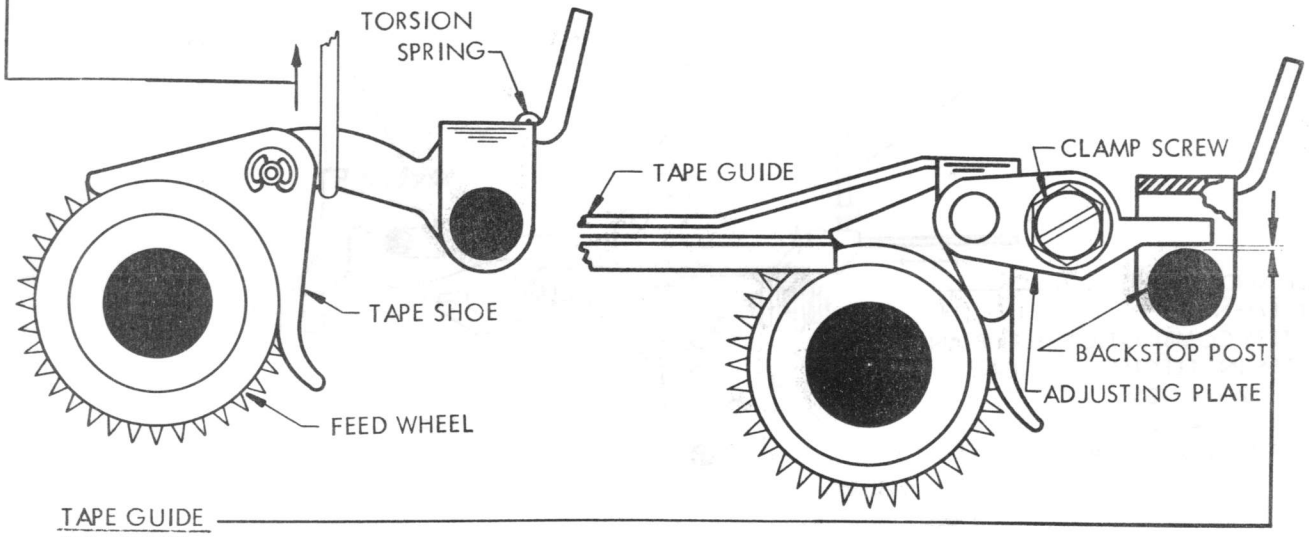


TAPE GUIDE SPRING (PUNCH BLOCK)
(1) REQUIREMENT
WITH TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMETRICAL MANNER.
(2) REQUIREMENT
WITH TAPE IN THE PUNCH BLOCK AND THE REPERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE.
TO ADJUST
BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED.



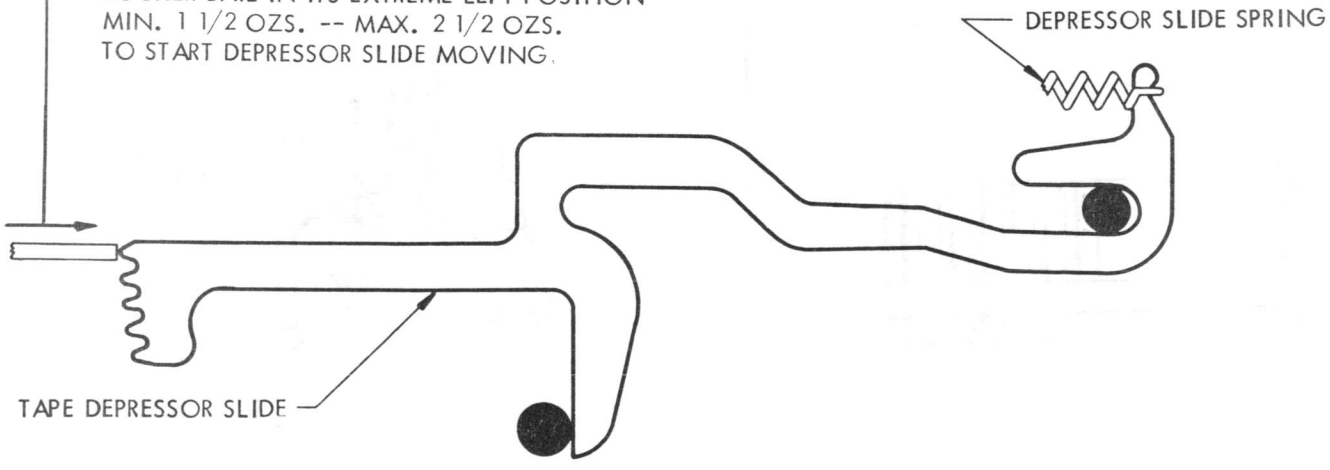
2.24 Punch Mechanism continued

TAPE SHOE TORSION SPRING
REQUIREMENT
MIN. 13 OZS. ---- MAX. 18 OZS.
TO MOVE TAPE SHOE FROM FEED WHEEL

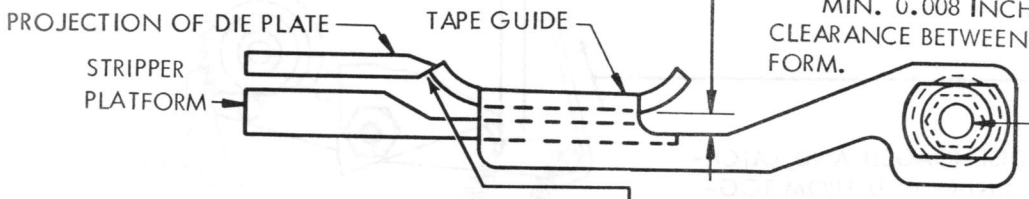


TAPE GUIDE
TO CHECK
ROTATE FEED WHEEL UNTIL OIL HOLE IS UPWARD.
CENTER TAPE SHOE AND TAPE GUIDE. HOLD TAPE GUIDE DOWNWARD.
REQUIREMENT
CLEARANCE BETWEEN ADJUSTING PLATE AND BACKSTOP POST
MIN. 0.002 INCH
MAX. 0.008 INCH
TO ADJUST
POSITION ADJUSTING PLATE WITH ITS CLAMP SCREW LOOSENED.

TAPE DEPRESSOR SLIDE SPRING
REQUIREMENT
ROCKER BAIL IN ITS EXTREME LEFT POSITION
MIN. 1 1/2 OZS. -- MAX. 2 1/2 OZS.
TO START DEPRESSOR SLIDE MOVING.



2.25 Punch Mechanism continued

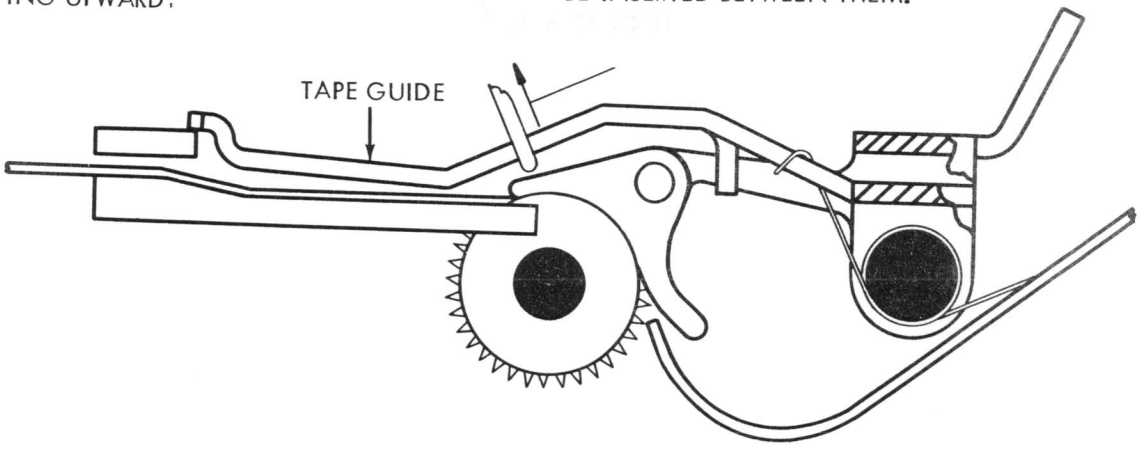


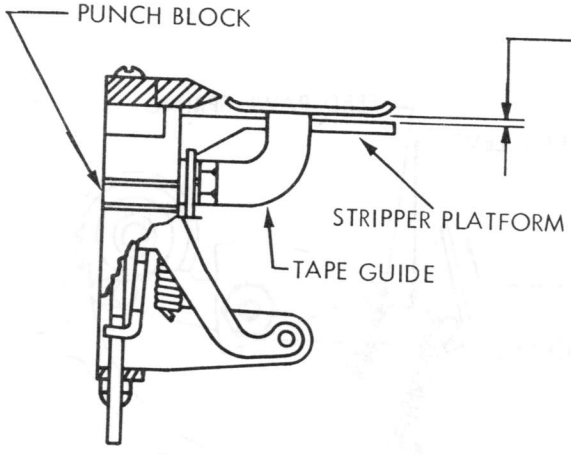
TAPE GUIDE (EARLY DESIGN)
REQUIREMENT
WITH TAPE GUIDE UNDER AND IN CONTACT WITH V SHAPED PROJECTION OF DIE PLATE*
MIN. 0.008 INCH -- MAX. 0.015 INCH CLEARANCE BETWEEN GUIDE AND TAPE PLATFORM.

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 WHILE HOLDING FEED WHEEL ADJUSTING SCREW STATIONARY BY MEANS OF AN ALLEN WRENCH.

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

TAPE GUIDE SPRING (ON UNITS NOT EQUIPPED WITH TAPE GUIDE ADJUSTING PLATE)
REQUIREMENT
MIN. 8 OZS. TO START TAPE GUIDE BAIL MOVING UPWARD.

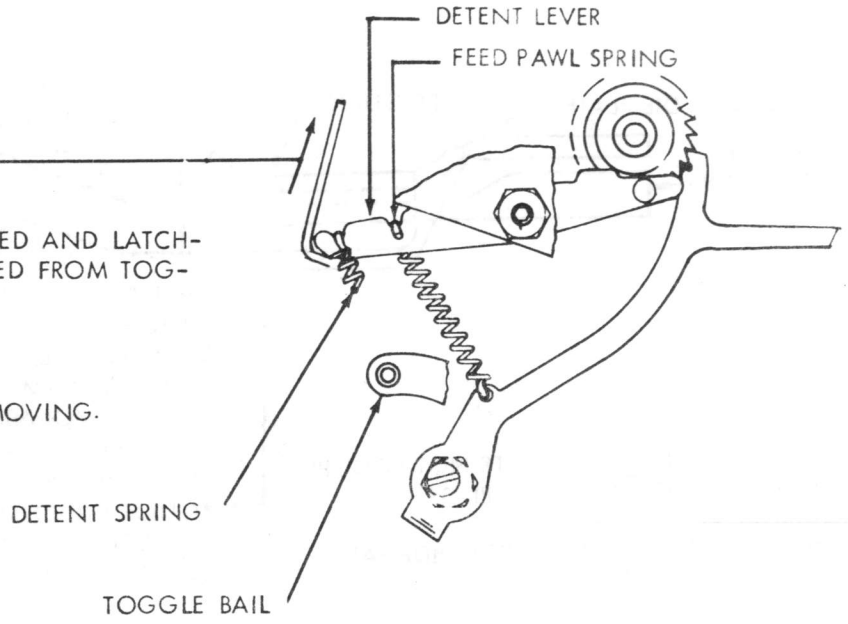




TAPE GUIDE (LATEST DESIGN)
REQUIREMENT
CLEARANCE UNDER THE TAPE GUIDE.
MIN. 0.008 INCH
MAX. 0.015 INCH

TO ADJUST
WITH MOUNTING SCREW FRICTION TIGHT, POSITION THE TAPE GUIDE. KEEPING THE GUIDE AGAINST THE FRONT PLATE OF THE PUNCH.

2.26 Punch Mechanism continued

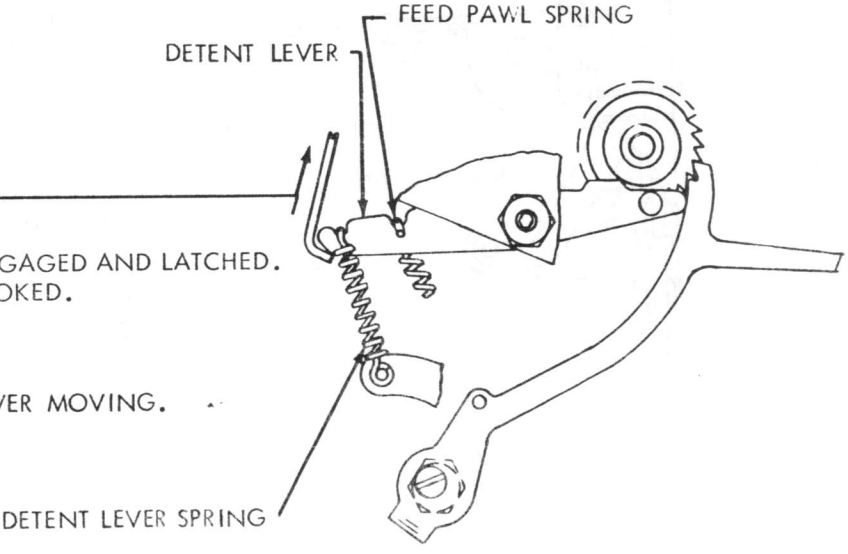


(A)
FEED PAWL SPRING

REQUIREMENT
FUNCTION CLUTCH DISENGAGED AND LATCHED. DETENT SPRING UNHOOKED FROM TOGGLE BAIL

MIN. 3 OZS.
MAX. 4-1/2 OZS.

TO START THE DETENT LEVER MOVING.



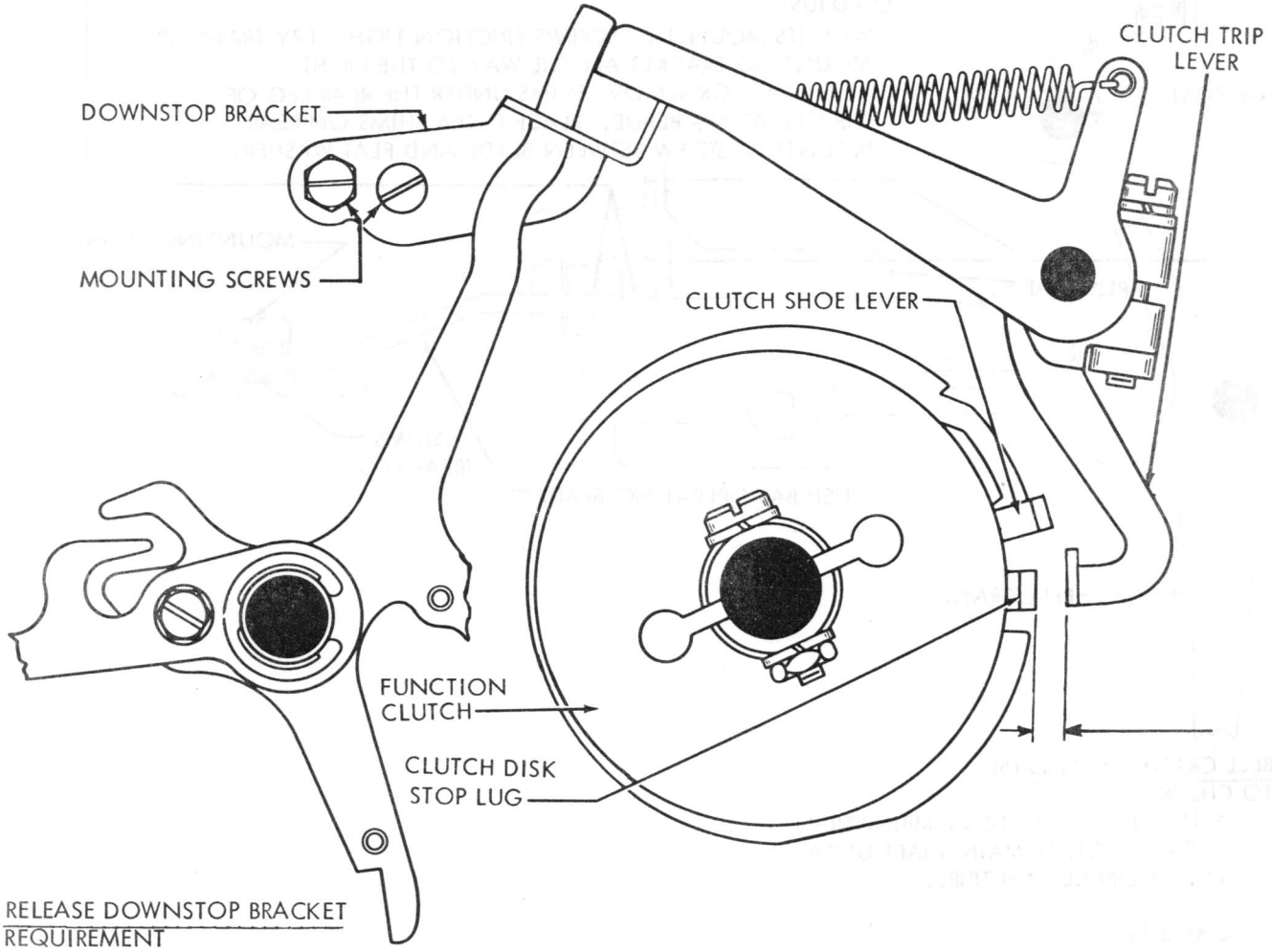
(B)
DETENT LEVER SPRING

REQUIREMENT
FUNCTION CLUTCH DISENGAGED AND LATCHED. FEED PAWL SPRING UNHOOKED.

MIN. 7 OZS.
MAX. 10 OZS.

TO START THE DETENT LEVER MOVING.

2.27 Function Mechanism continued



RELEASE DOWNSTOP BRACKET

REQUIREMENT

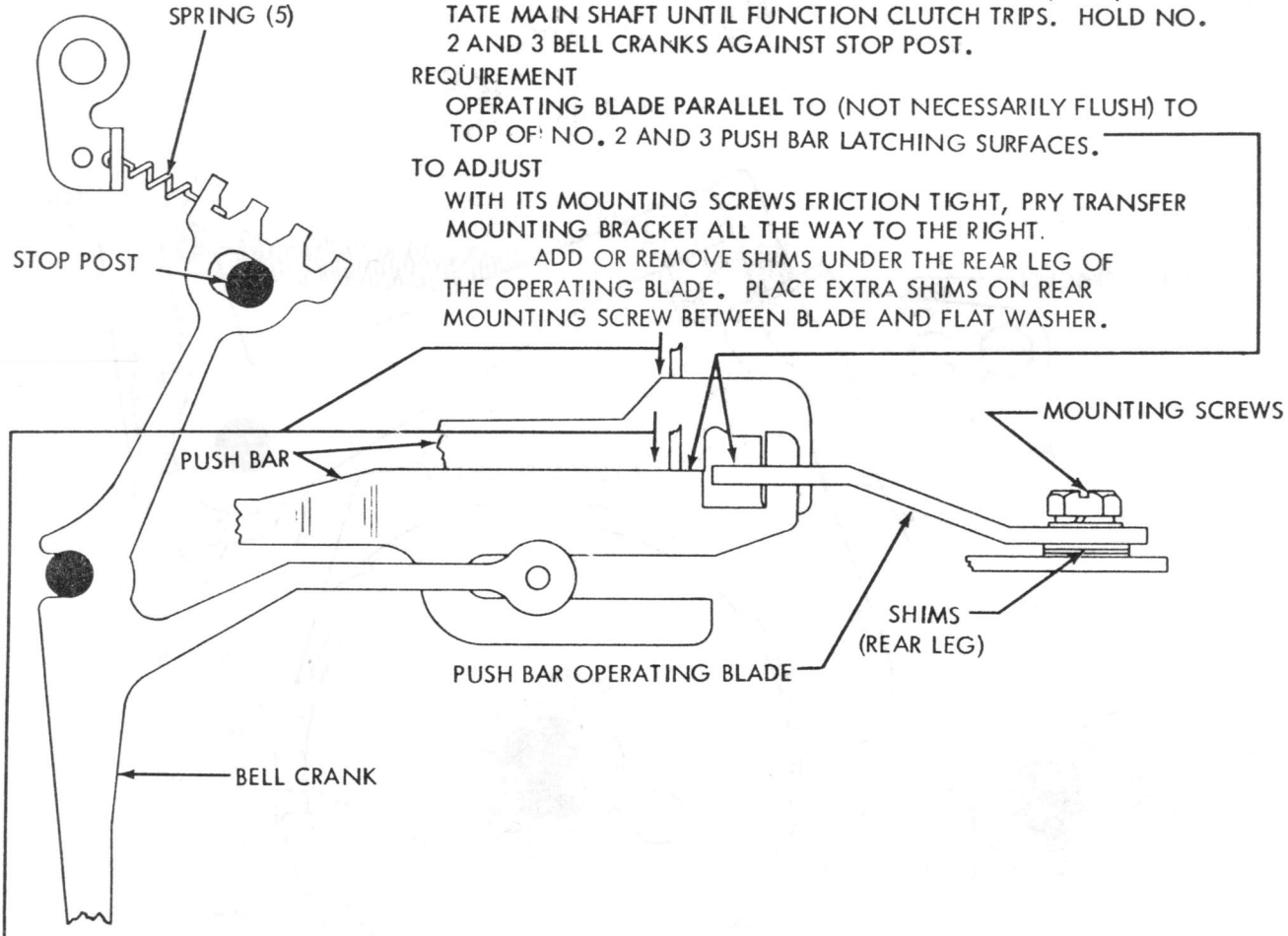
WITH FUNCTION CLUTCH TRIPPED, ROTATE SHAFT UNTIL CLEARANCE BETWEEN FUNCTION CLUTCH DISK STOP LUG AND CLUTCH STOP LEVER IS AT A MINIMUM. RELEASE RESTING AGAINST DOWNSTOP BRACKET. CLEARANCE BETWEEN FUNCTION CLUTCH DISK STOP LUG AND STOP LEVER:
MIN. 0.002 INCH---MAX. 0.045 INCH

TO ADJUST

REMOVE TAPE GUARD. WITH DOWNSTOP BRACKET MOUNTING SCREWS FRICTION TIGHT POSITION BRACKET. RECHECK FOR SOME CLEARANCE BETWEEN TRIP LEVER EXTENSION AND LEFT END OF SLOT IN RELEASE LEVER DOWNSTOP BRACKET.

NOTE: ON NON-TYPING PERFORATORS WITH 2-STOP FUNCTION CLUTCH, GAUGE AT STOP HAVING LEAST CLEARANCE.

2.28 Typing Mechanism



PUSH BAR OPERATING BLADE (PRELIMINARY)

TO CHECK

MANUALLY SELECT LETTERS 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 FLUSH) TO TOP OF NO. 2 AND 3 PUSH BAR LATCHING SURFACES.

TO ADJUST

WITH ITS MOUNTING SCREWS FRICTION TIGHT, PRY TRANSFER MOUNTING BRACKET ALL THE WAY TO THE RIGHT.

ADD OR REMOVE SHIMS UNDER THE REAR LEG OF THE OPERATING BLADE. PLACE EXTRA SHIMS ON REAR MOUNTING SCREW BETWEEN BLADE AND FLAT WASHER.

BELL CRANK SPRINGS (5)

TO CHECK

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

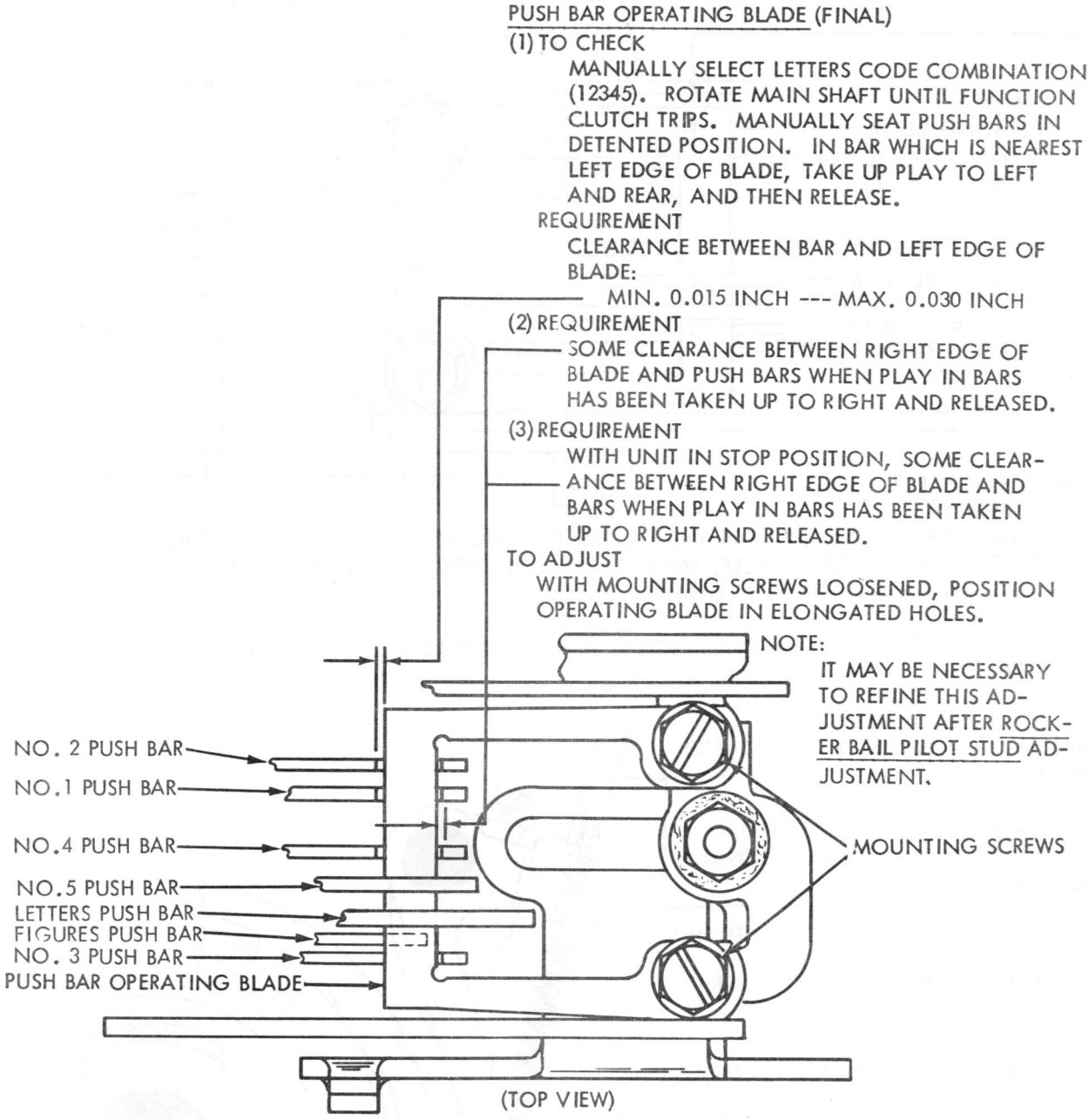
REQUIREMENT

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

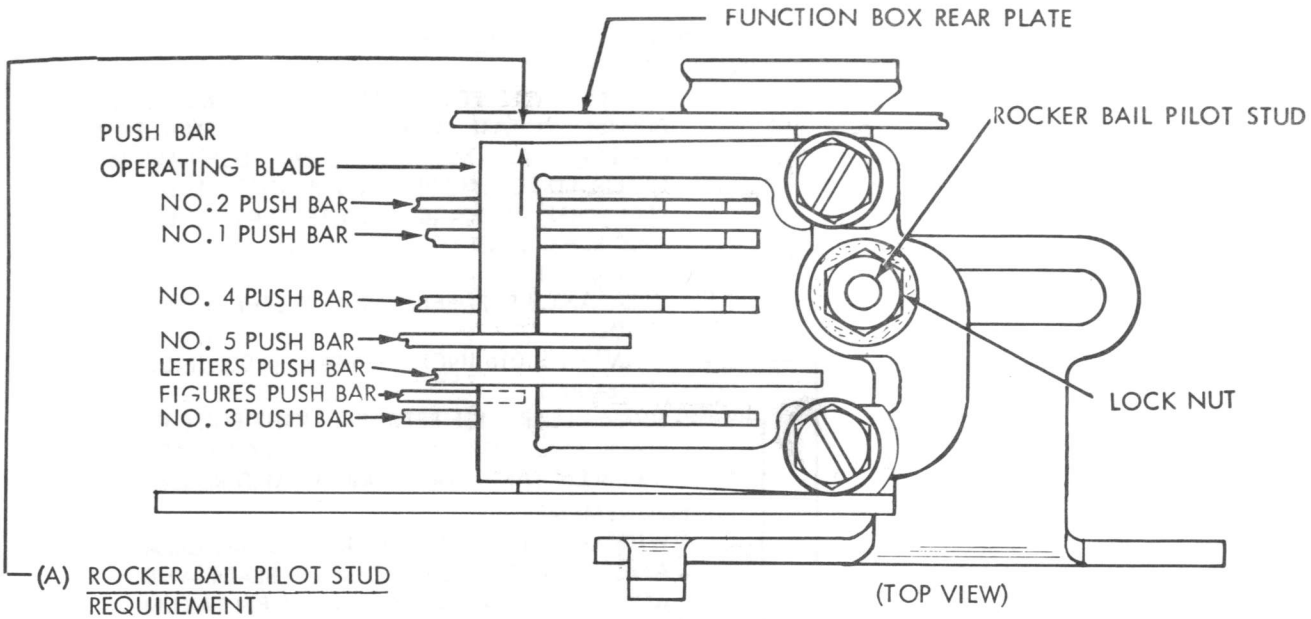
NOTE:

CHECK ALL FIVE SPRINGS.

2.29 Typing Mechanism continued



2.30 Typing Mechanism continued



(A) ROCKER BAIL PILOT STUD

REQUIREMENT

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

REQUIREMENT

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

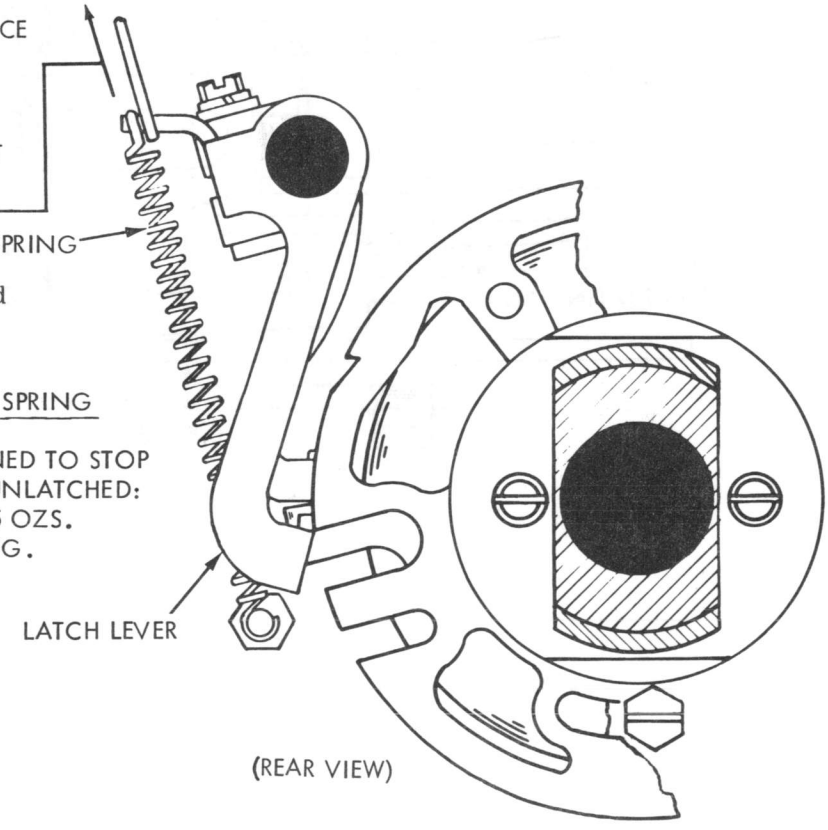
MIN. 0.005 INCH
MAX. 0.020 INCH

AT POINT IN THE CYCLE WHERE CLEARANCE IS MINIMUM.

TO ADJUST

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

2.31 Function Mechanism continued



(B) FUNCTION CLUTCH LATCH LEVER SPRING

REQUIREMENT

WITH FUNCTION CLUTCH TURNED TO STOP POSITION AND LATCH LEVER UNLATCHED:

MIN. 12 OZS. --- MAX. 15 OZS.

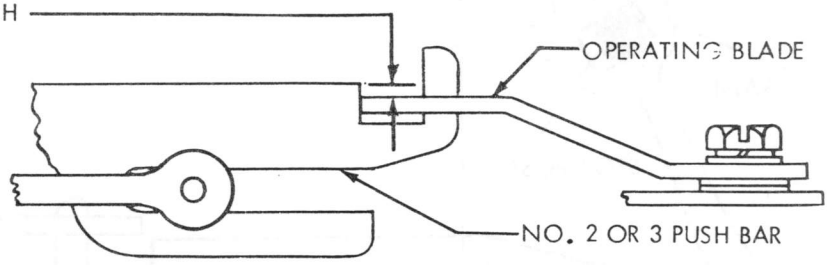
TO START LATCH LEVER MOVING.

2.32 Typing Mechanism continued

FUNCTION BOX
REQUIREMENT

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS, AND PUNCH SLIDES ARE DISENGAGED FROM LATCHES. THE TOP OF THE OPERATING BLADE SHALL BE:

FLUSH --- MAX. 0.020 INCH

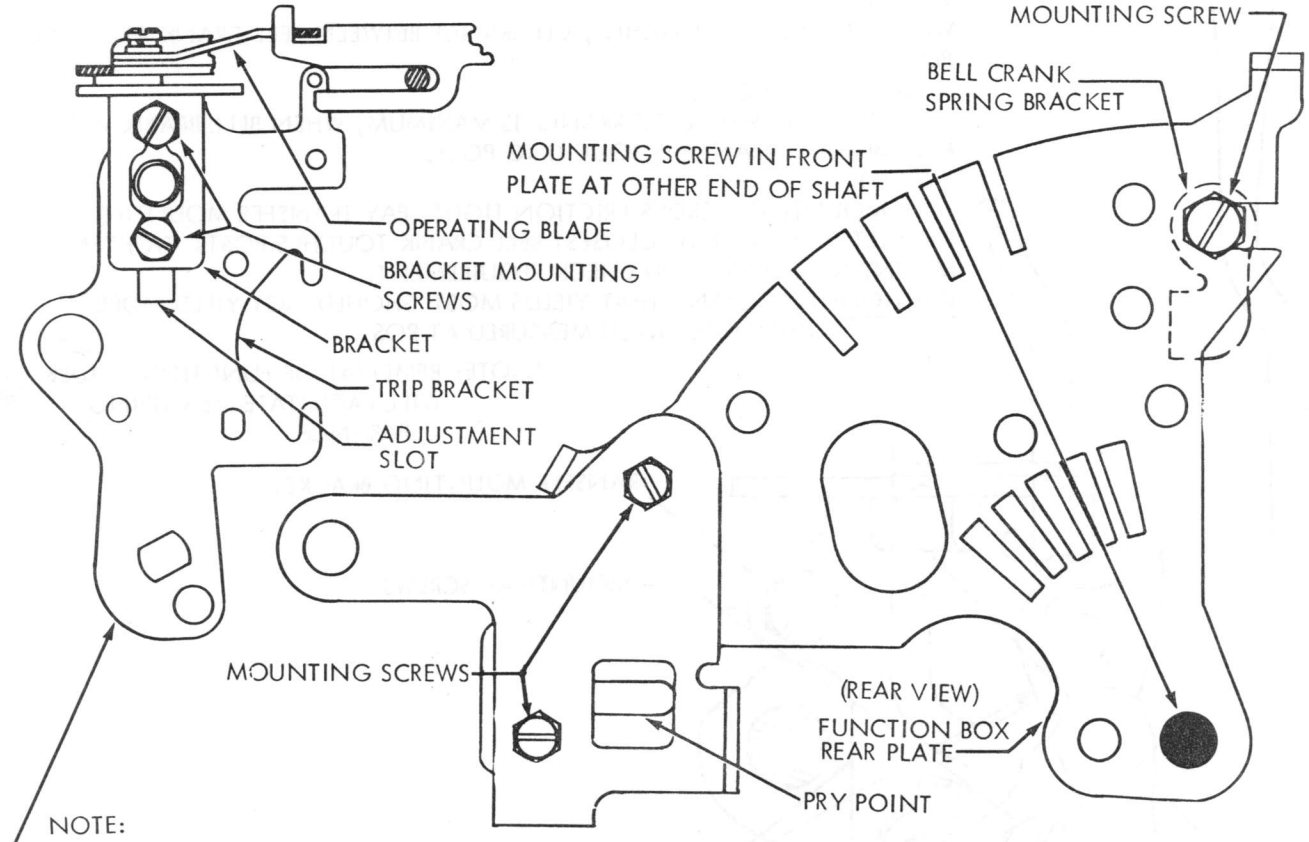


BELOW THE TOPS OF THE NO. 2 AND 3 PUSH BARS. TAKE UP PLAY IN PUSHBARS IN A DOWNWARD DIRECTION THEN RELEASE.

NOTE: WHEN UNIT IS MOUNTED AS PART OF THE KEYBOARD PERFORATOR TRANSMITTER, IT MAY BE NECESSARY TO REFINE THE ADJUSTMENT WITHIN ITS LIMITS TO INCREASE OPERATING MARGINS OF THE UNIT.

TO ADJUST

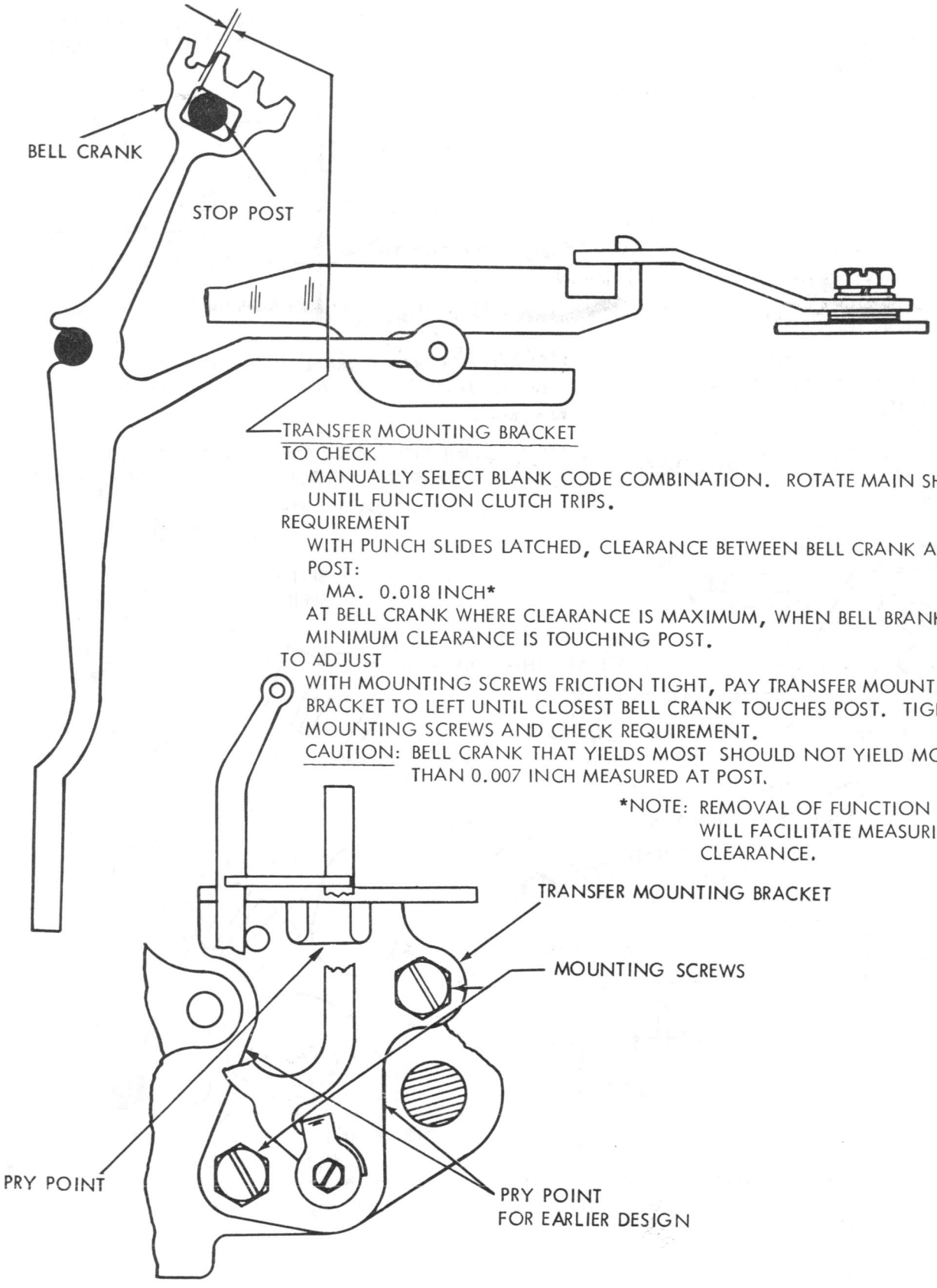
WITH THREE MOUNTING SCREWS IN REAR PLATE AND ONE MOUNTING SCREW IN FRONT PLATE LOOSENED, POSITION FUNCTION BOX BY MEANS OF PRY POINT. CHECK POSITION OF BELL CRANK SPRING BRACKET.



NOTE:

ON UNITS EQUIPPED WITH TWO-PIECE TRIP BRACKET, SET ABOVE ADJUSTMENT IN CENTER OF ITS RANGE AND TIGHTEN SCREWS. LOOSEN TWO SCREWS WHICH MOUNT GUIDE TO BRACKET AND POSITION GUIDE TO MEET ABOVE REQUIREMENT.

2.33 Typing Mechanism continued



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:

MA. 0.018 INCH*

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

TO ADJUST

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

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

*NOTE: REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.34 Typing Mechanism continued

(A) LETTERS AND FIGURES YIELD ARMS

(1) TO CHECK

TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL ROCKER BAIL IS TO EXTREME LEFT. MANUALLY PLACE ARM ASSEMBLIES IN LETTERS POSITION. HOLD LETTERS-FIGURES BELL CRANK AGAINST LEFT EDGE OF STOP POST.

REQUIREMENT

MIN. SOME----MAX. 0.006 INCH* CLEARANCE BETWEEN BELL CRANK AND LETTERS EXTENSION ARM.

(CONTINUED ON FOLLOWING PAGE)

(B)

FIGURES ARM ASSEMBLY SPRING

REQUIREMENT

WITH ARM ASSEMBLIES IN LETTERS POSITION:

MIN. 1-1/2 OZS.----MAX. 3-1/2 OZS. TO PULL SPRING TO INSTALLED LENGTH.

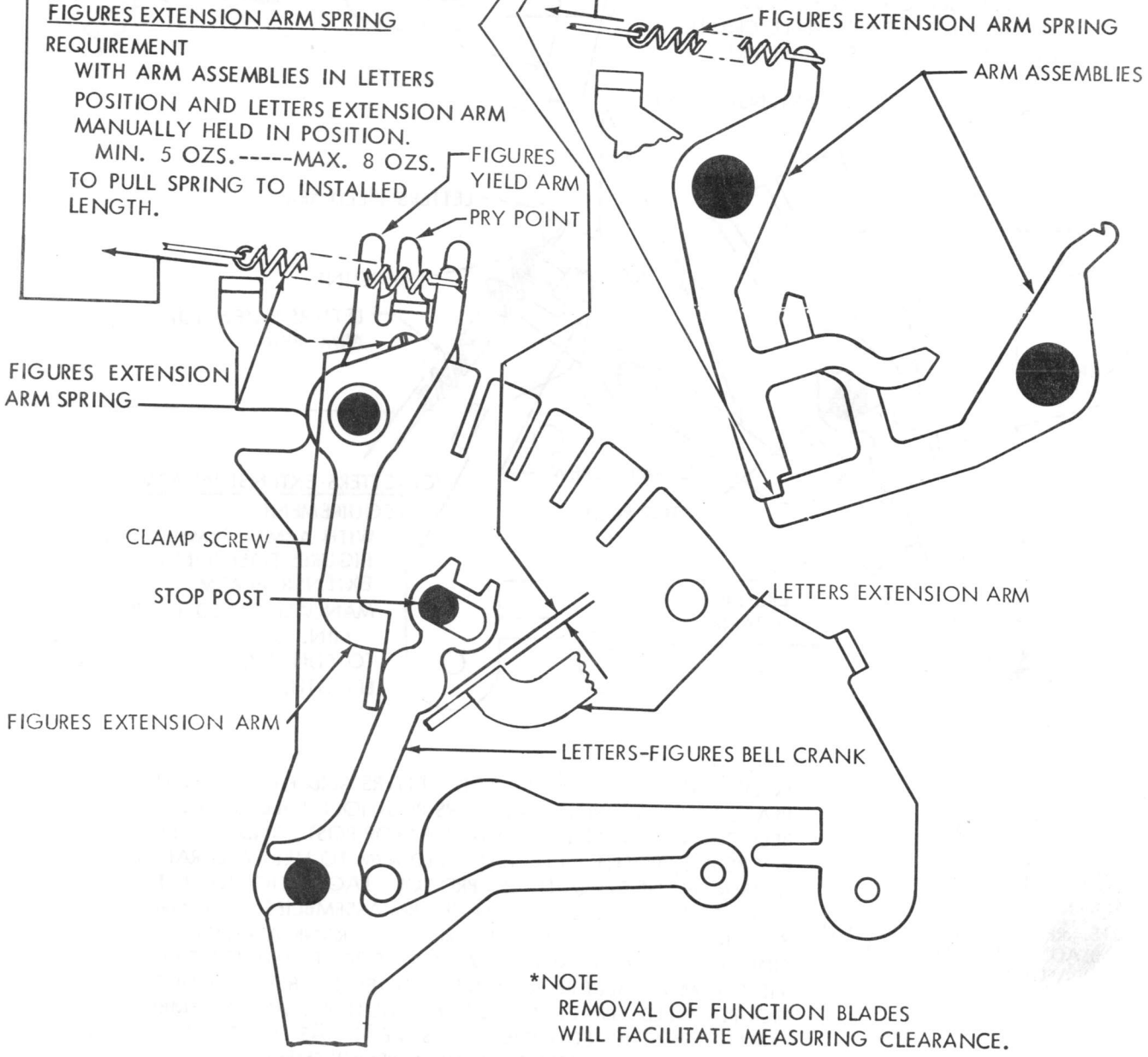
(C)

FIGURES EXTENSION ARM SPRING

REQUIREMENT

WITH ARM ASSEMBLIES IN LETTERS POSITION AND LETTERS EXTENSION ARM MANUALLY HELD IN POSITION.

MIN. 5 OZS.-----MAX. 8 OZS. TO PULL SPRING TO INSTALLED LENGTH.



*NOTE

REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.35 Typing Mechanism continued

(B) LETTERS ARM ASSEMBLY SPRING

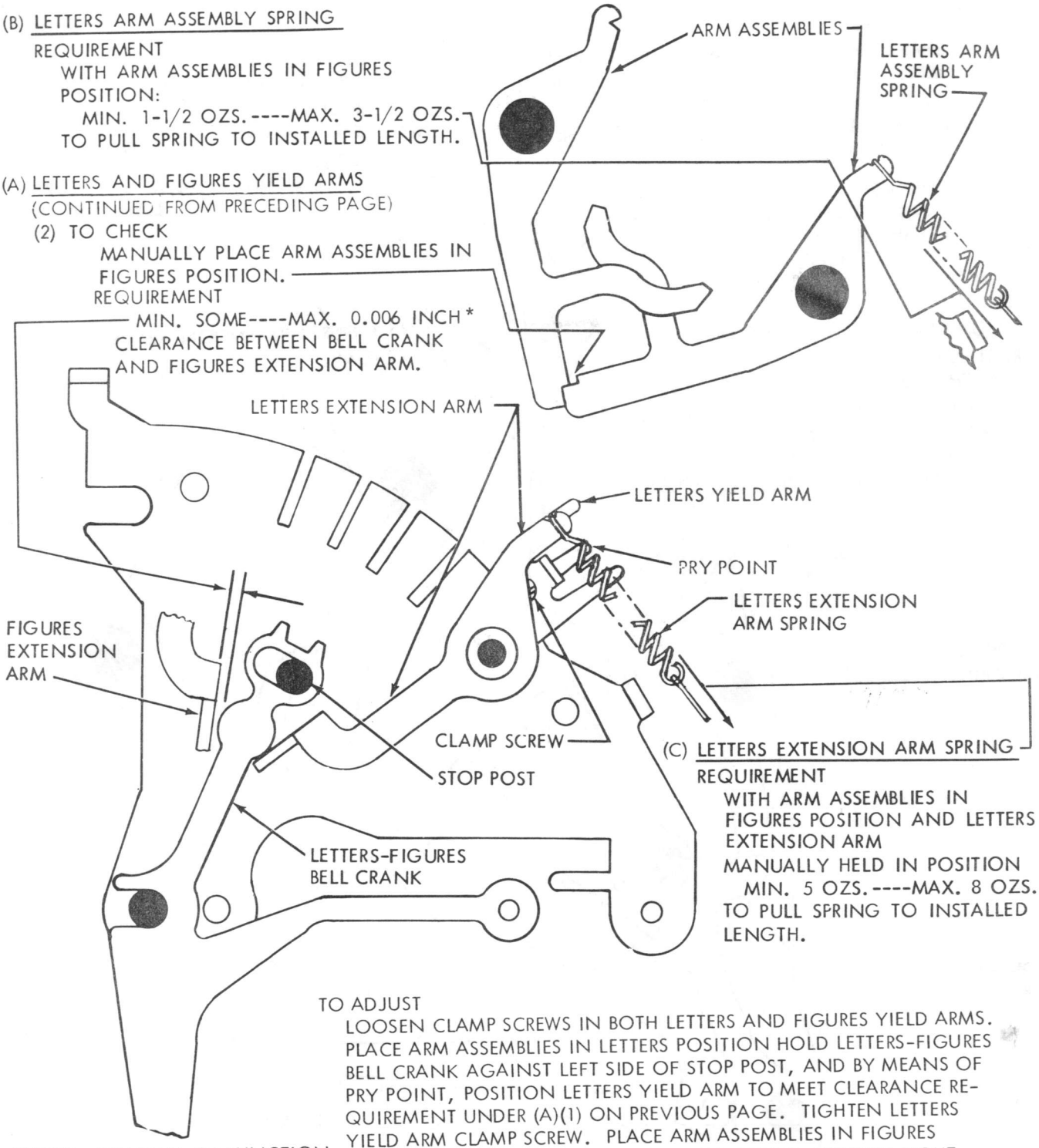
REQUIREMENT
WITH ARM ASSEMBLIES IN FIGURES POSITION:
MIN. 1-1/2 OZS.----MAX. 3-1/2 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(A) LETTERS AND FIGURES YIELD ARMS

(CONTINUED FROM PRECEDING PAGE)

(2) TO CHECK
MANUALLY PLACE ARM ASSEMBLIES IN FIGURES POSITION.

REQUIREMENT
MIN. SOME----MAX. 0.006 INCH* CLEARANCE BETWEEN BELL CRANK AND FIGURES EXTENSION ARM.



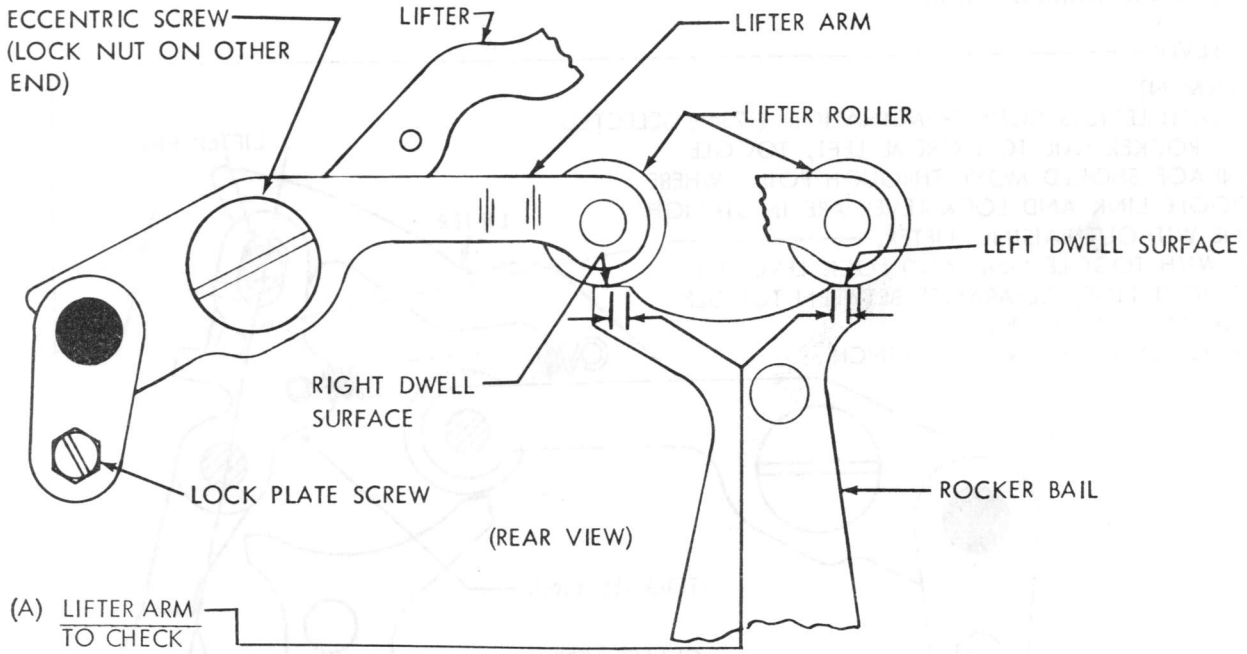
(C) LETTERS EXTENSION ARM SPRING

REQUIREMENT
WITH ARM ASSEMBLIES IN FIGURES POSITION AND LETTERS EXTENSION ARM MANUALLY HELD IN POSITION
MIN. 5 OZS.----MAX. 8 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

TO ADJUST
LOOSEN CLAMP SCREWS IN BOTH LETTERS AND FIGURES YIELD ARMS. PLACE ARM ASSEMBLIES IN LETTERS POSITION HOLD LETTERS-FIGURES BELL CRANK AGAINST LEFT SIDE OF STOP POST, AND BY MEANS OF PRY POINT, POSITION LETTERS YIELD ARM TO MEET CLEARANCE REQUIREMENT UNDER (A)(1) ON PREVIOUS PAGE. TIGHTEN LETTERS YIELD ARM CLAMP SCREW. PLACE ARM ASSEMBLIES IN FIGURES POSITION. HOLD LETTERS-FIGURES BELL CRANK AGAINST RIGHT SIDE OF STOP POST, AND BY MEANS OF PRY POINT POSITION FIGURES YIELD ARM TO MEET REQUIREMENT UNDER (2) ABOVE. TIGHTEN FIGURES YIELD ARM CLAMP SCREW. CAUTION: ARM ASSEMBLIES MAY CHANGE POSITION DURING ADJUSTMENT. AS TIGHTENING OF SCREWS MAY AFFECT ADJUSTMENT, RECHECK REQUIREMENTS.

*NOTE: REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.36 Typing Mechanism continued



(A) LIFTER ARM
TO CHECK

TRIP FUNCTION CLUTCH. MOVE ROCKER BAIL TO EXTREME LEFT POSITION AND OBSERVE TRAVEL OF LIFTER ROLLER ON RIGHT DWELL SURFACE. MOVE ROCKER BAIL TO EXTREME RIGHT POSITION AND OBSERVE TRAVEL OF ROLLER ON LEFT DWELL SURFACE.

REQUIREMENT

APPROXIMATELY EQUAL TRAVEL ON EACH DWELL SURFACE.

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.

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

(B) LIFTER ARM ECCENTRIC SCREW

REQUIREMENT

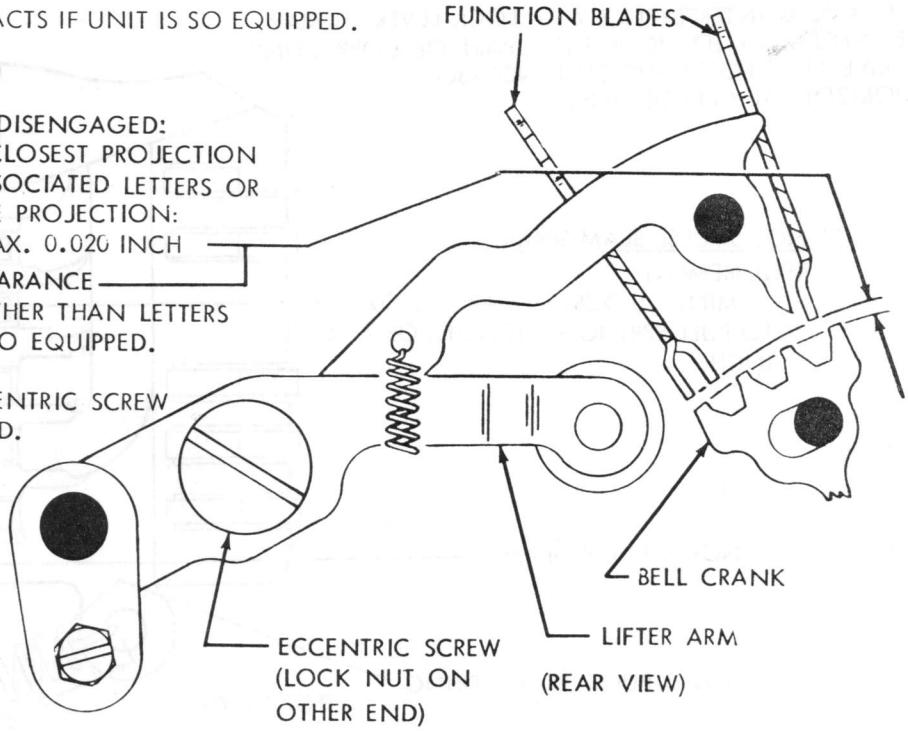
WITH FUNCTION CLUTCH DISENGAGED:

(1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LETTERS OR FIGURES FUNCTION BLADE PROJECTION:
MIN. 0.008 INCH--- MAX. 0.020 INCH

(2) MIN. 0.005 INCH CLEARANCE FOR FUNCTION BLADES OTHER THAN LETTERS AND FIGURES IF UNIT IS SO EQUIPPED.

TO ADJUST

POSITION LIFTER ARM ECCENTRIC SCREW WITH LOCK NUT LOOSENED.



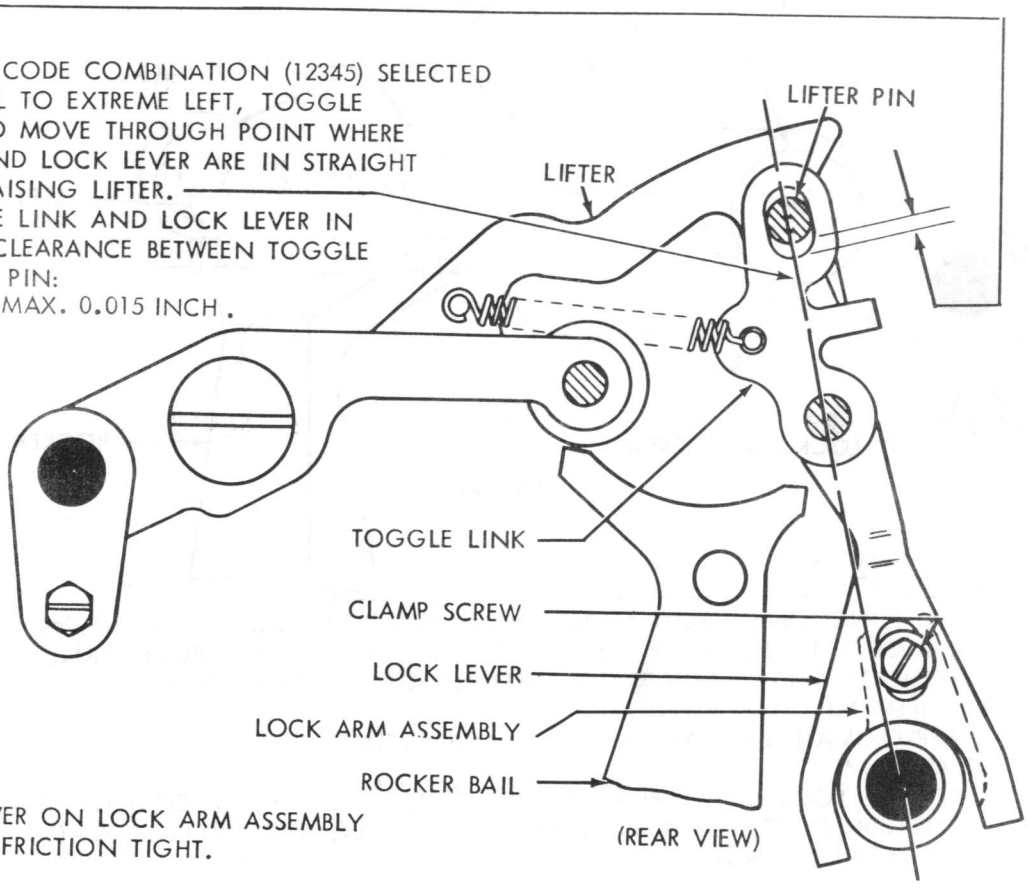
2.37 Typing Mechanism continued

(A) LOCK LEVER

REQUIREMENT

(1) WITH LETTERS CODE COMBINATION (12345) SELECTED AND ROCKER BAIL TO EXTREME LEFT, TOGGLE LINKAGE SHOULD 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. 0.015 INCH.



TO ADJUST

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

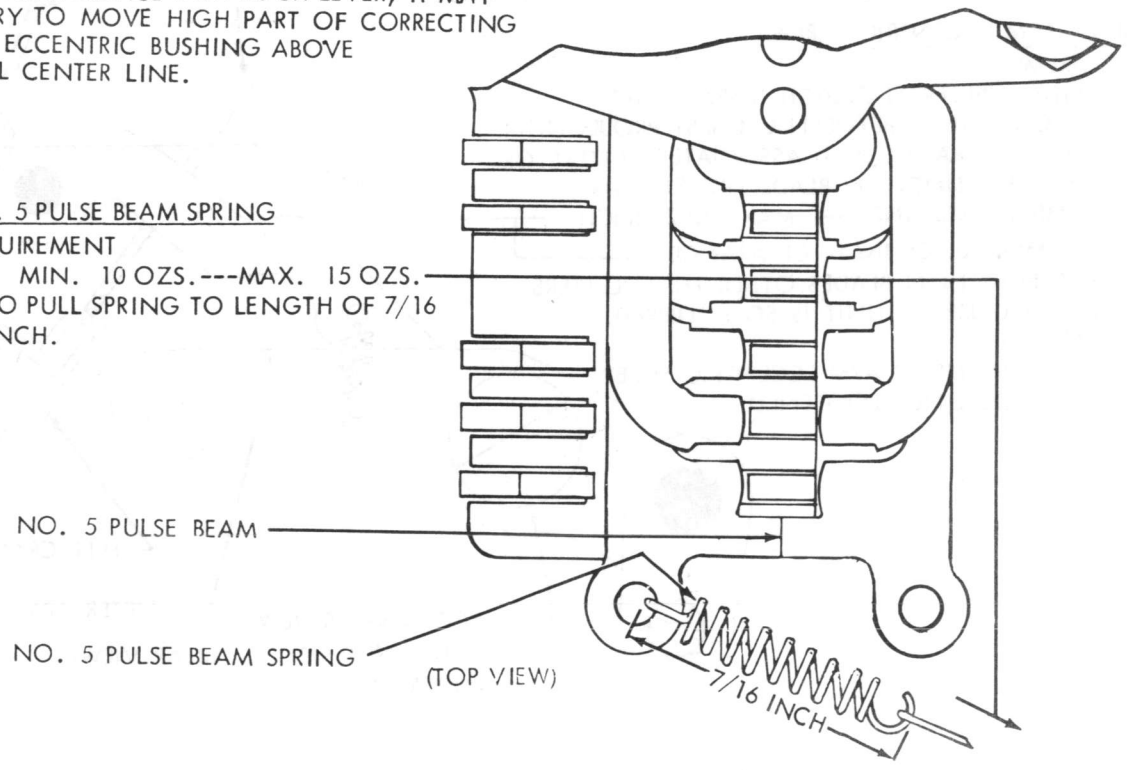
NOTE:

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

(B) NO. 5 PULSE BEAM SPRING

REQUIREMENT

MIN. 10 OZS.---MAX. 15 OZS. TO PULL SPRING TO LENGTH OF 7/16 INCH.



2.38 Typing Mechanism continued

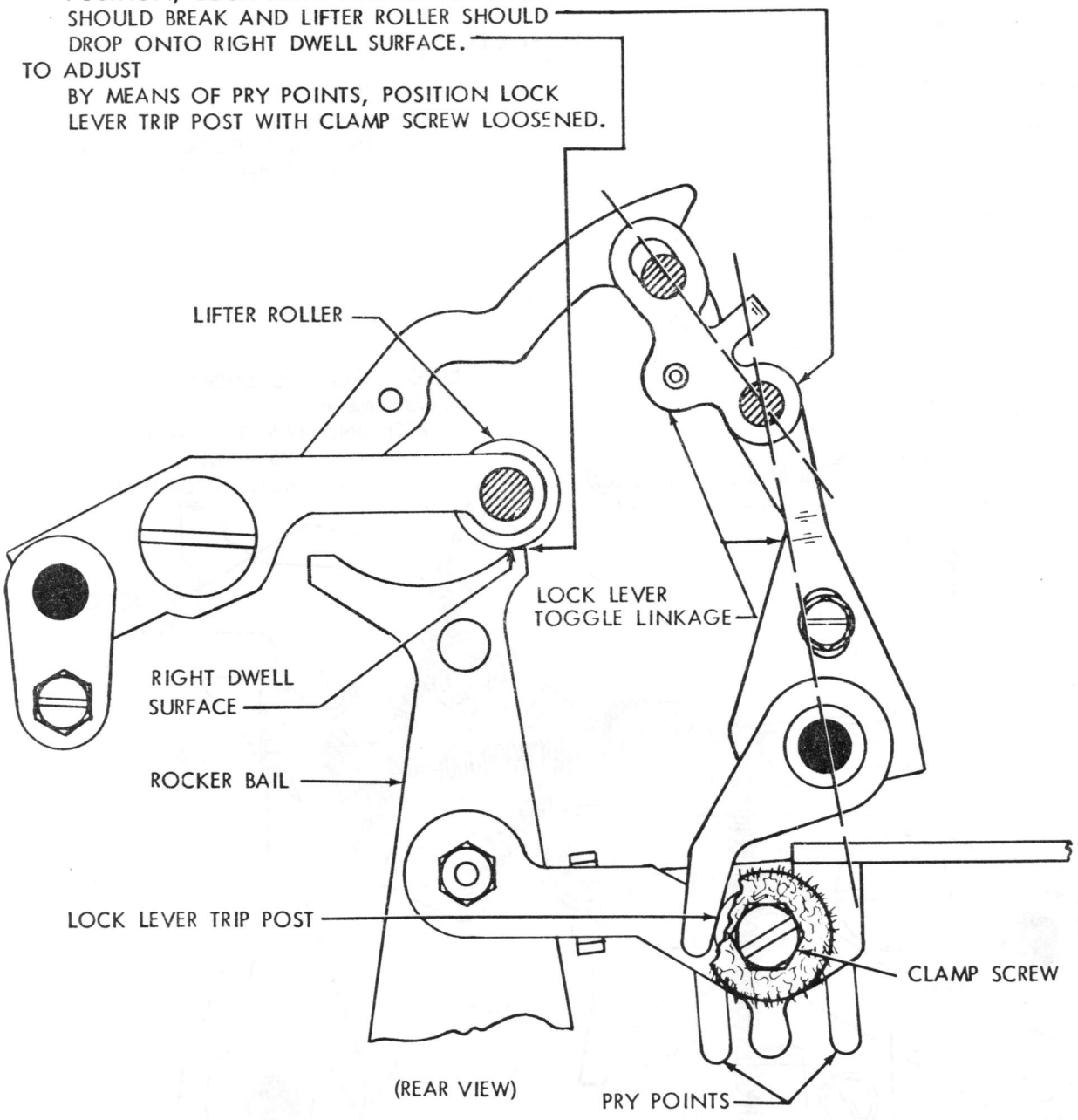
LOCK LEVER TRIP POST

REQUIREMENT

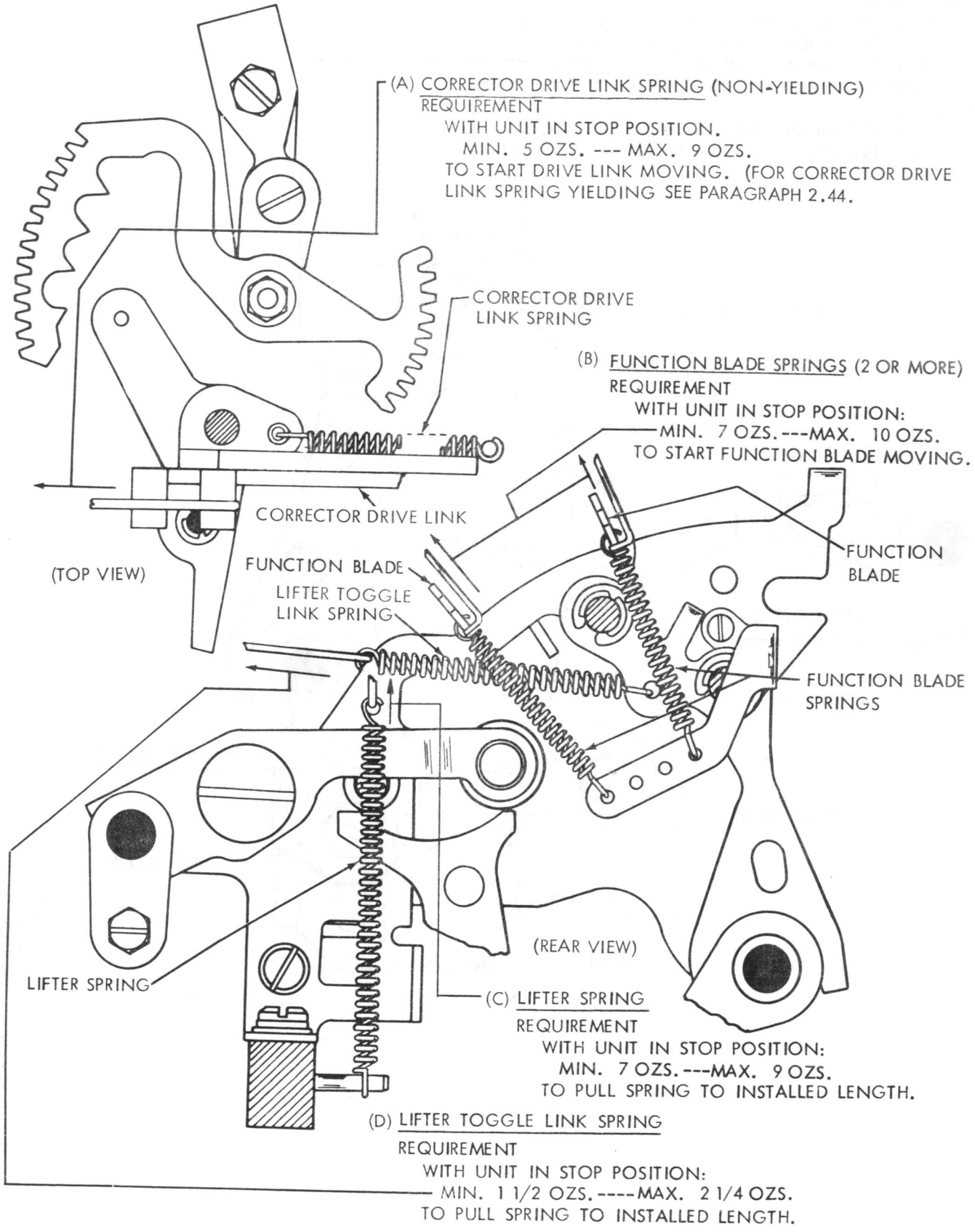
AS ROCKER BAIL APPROACHES EXTREME RIGHT POSITION, LOCK LEVER TOGGLE LINKAGE SHOULD BREAK AND LIFTER ROLLER SHOULD DROP ONTO RIGHT DWELL SURFACE.

TO ADJUST

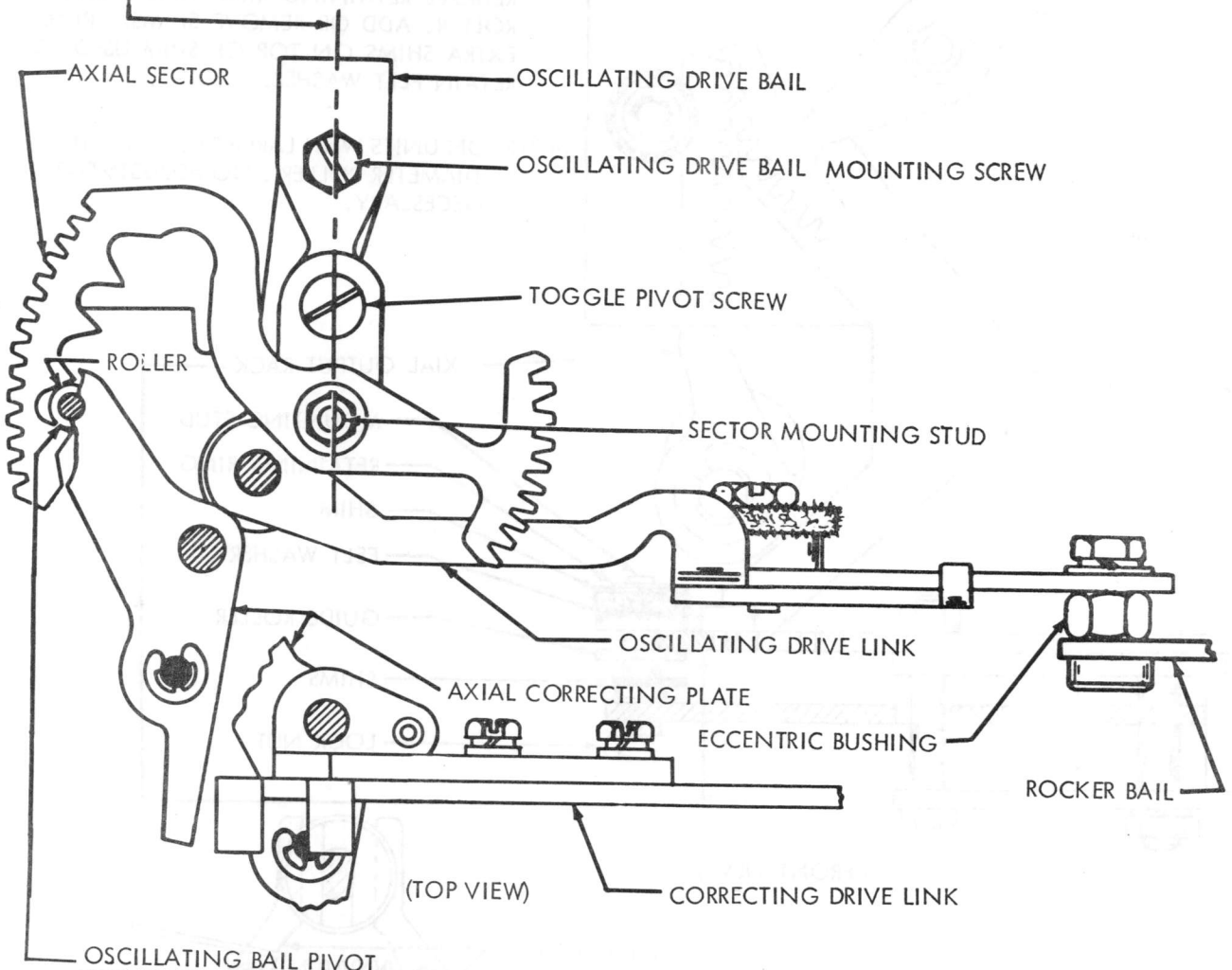
BY MEANS OF PRY POINTS, POSITION LOCK LEVER TRIP POST WITH CLAMP SCREW LOOSENED.



2.39 Typing Mechanism continued



2.40 Typing Mechanism continued



2.41 Typing Mechanism continued

(A) AXIAL SECTOR ALIGNMENT

REQUIREMENT

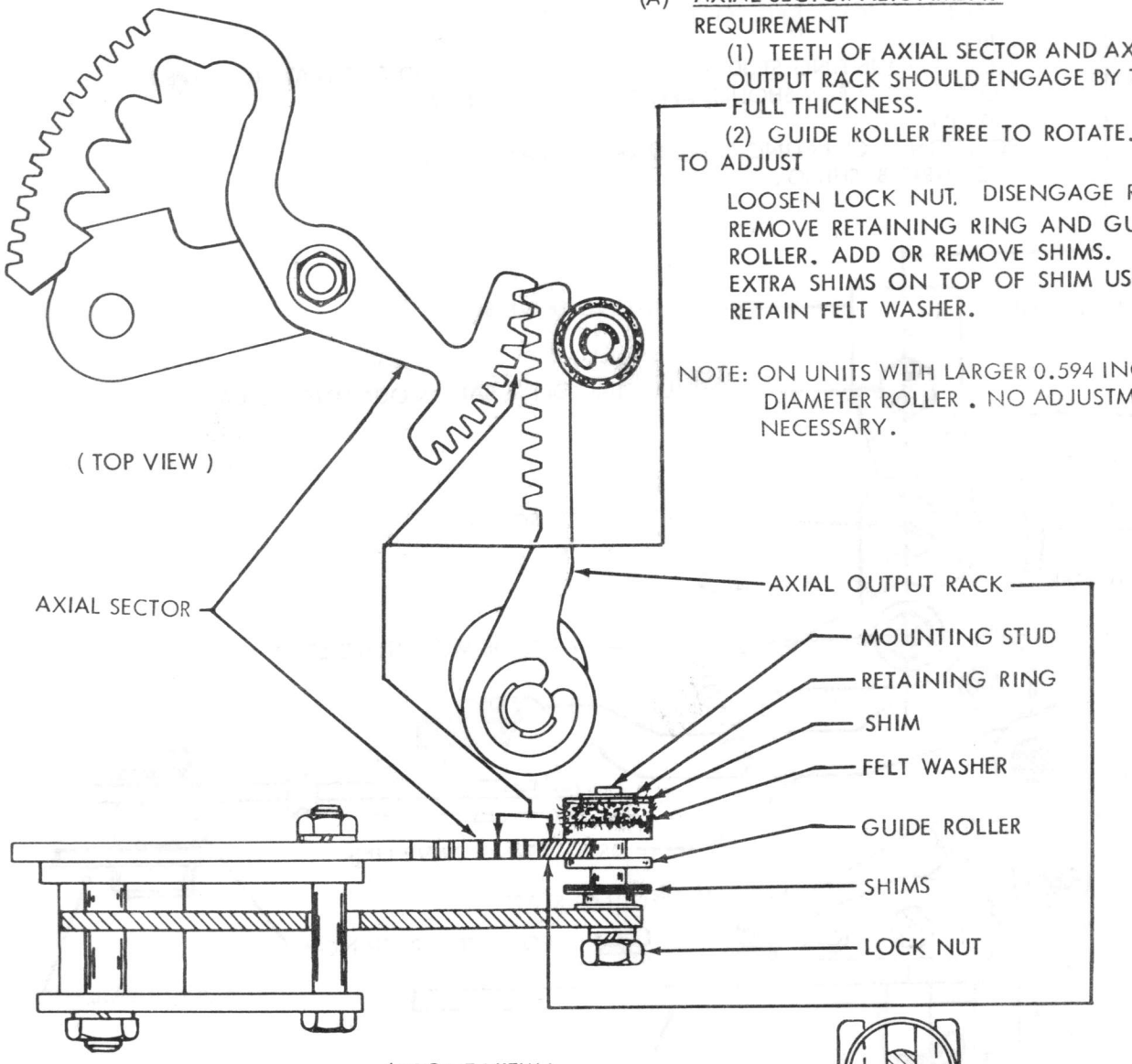
(1) TEETH OF AXIAL SECTOR AND AXIAL OUTPUT RACK SHOULD ENGAGE BY THEIR FULL THICKNESS.

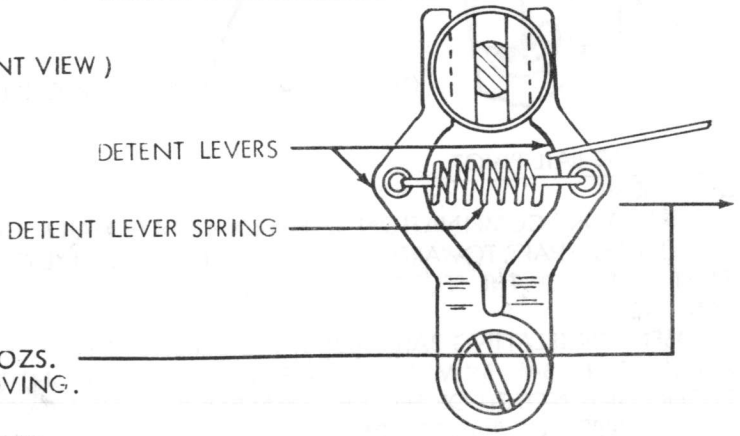
(2) GUIDE ROLLER FREE TO ROTATE.

TO ADJUST

LOOSEN LOCK NUT. DISENGAGE RACK. REMOVE RETAINING RING AND GUIDE ROLLER. ADD OR REMOVE SHIMS. PLACE EXTRA SHIMS ON TOP OF SHIM USED TO RETAIN FELT WASHER.

NOTE: ON UNITS WITH LARGER 0.594 INCH DIAMETER ROLLER . NO ADJUSTMENT IS NECESSARY.





(B) ECCENTRIC SHAFT

DETENT LEVER SPRINGS

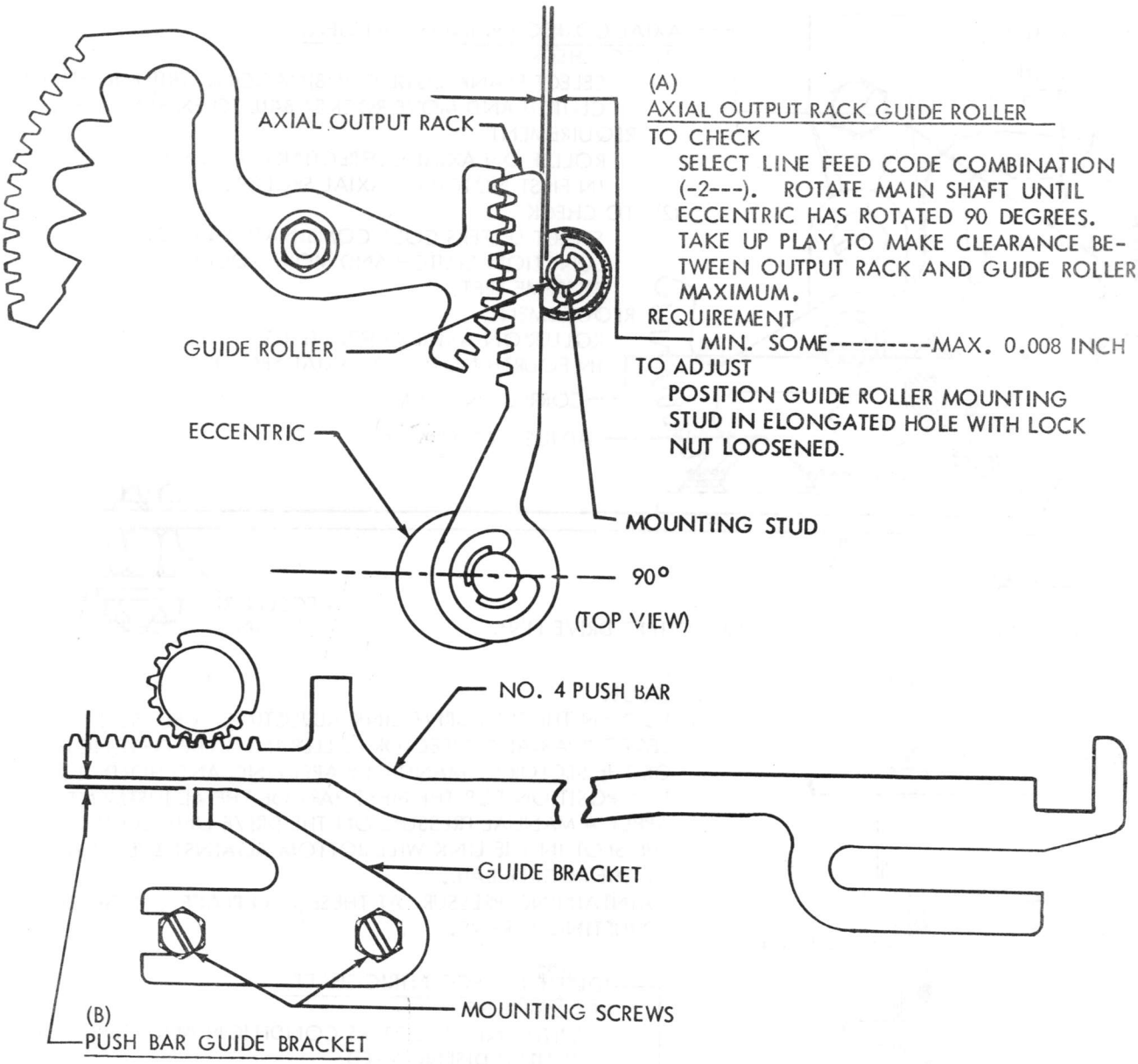
MIN. 7 OZS.---MAX. 10 OZS. TO START DETENT LEVER MOVING.

NOTE:

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

(TOP VIEW OF SPRINGS ON AXIAL POSITIONING MECHANISM)

2.42 Typing Mechanism continued



(A)
AXIAL OUTPUT RACK GUIDE ROLLER

TO CHECK
SELECT LINE FEED CODE COMBINATION (-2---). ROTATE MAIN SHAFT UNTIL ECCENTRIC HAS ROTATED 90 DEGREES. TAKE UP PLAY TO MAKE CLEARANCE BETWEEN OUTPUT RACK AND GUIDE ROLLER MAXIMUM.

REQUIREMENT
MIN. SOME---------MAX. 0.008 INCH

TO ADJUST
POSITION GUIDE ROLLER MOUNTING STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.

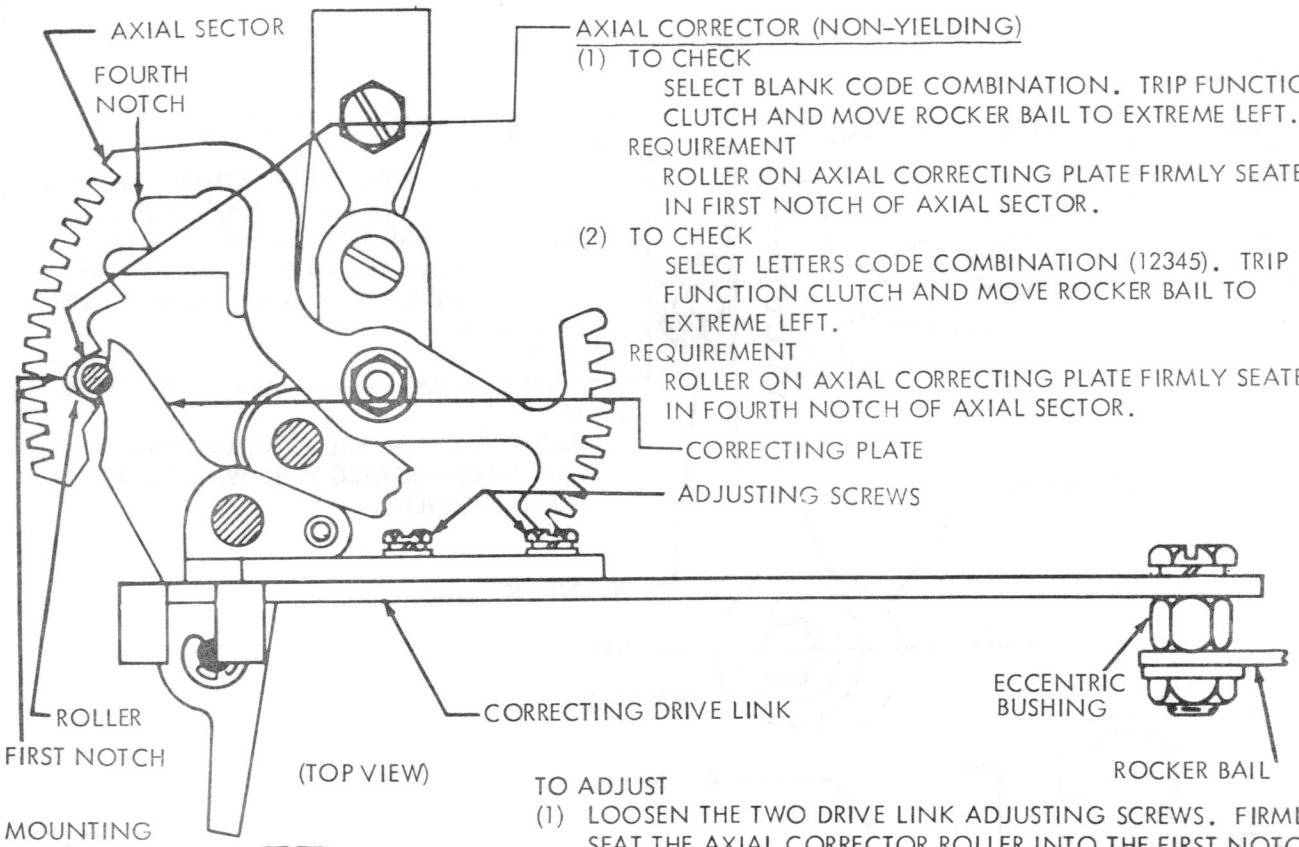
(B)
PUSH BAR GUIDE BRACKET

TO CHECK
MANUALLY SELECT CARRIAGE RETURN CODE COMBINATION (---4-). ROTATE MAIN SHAFT SO THAT NO. 4 PUSH BAR MOVES THROUGH COMPLETE RANGE OF TRAVEL.

REQUIREMENT
WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM:
MIN. SOME---MAX. 0.008 INCH
BETWEEN NO. 4 PUSH BAR AND GUIDE BRACKET THROUGHOUT COMPLETE TRAVEL OF BAR.

TO ADJUST
POSITION GUIDE BRACKET WITH MOUNTING SCREWS LOOSENED.

2.43 Typing Mechanism continued



AXIAL CORRECTOR (NON-YIELDING)

(1) TO CHECK
SELECT BLANK CODE COMBINATION. TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.
REQUIREMENT
ROLLER ON AXIAL CORRECTING PLATE FIRMLY SEATED IN FIRST NOTCH OF AXIAL SECTOR.

(2) TO CHECK
SELECT LETTERS CODE COMBINATION (12345). TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.
REQUIREMENT
ROLLER ON AXIAL CORRECTING PLATE FIRMLY SEATED IN FOURTH NOTCH OF AXIAL SECTOR.

CORRECTING PLATE

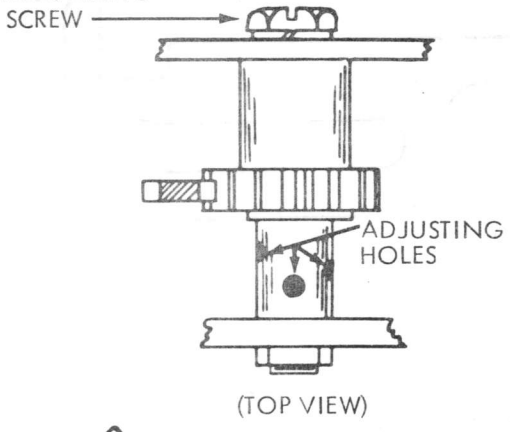
ADJUSTING SCREWS

TO ADJUST

(1) LOOSEN THE TWO DRIVE LINK ADJUSTING SCREWS. FIRMLY SEAT THE AXIAL CORRECTOR ROLLER INTO THE FIRST NOTCH OF THE SECTOR BY MANUALLY APPLYING AND HOLDING THIS POSITION FOR THE NEXT PART OF THE ADJUSTMENT.

(2) APPLY A MANUAL PRESSURE ON THE DRIVE LINK SUCH THAT THE SLOT IN THE LINK WILL BOTTOM AGAINST THE BUSHING OF THE ROCKER BAIL.

(3) MAINTAINING PRESSURE AT THESE TWO PLACES. TIGHTEN ADJUSTING SCREWS.



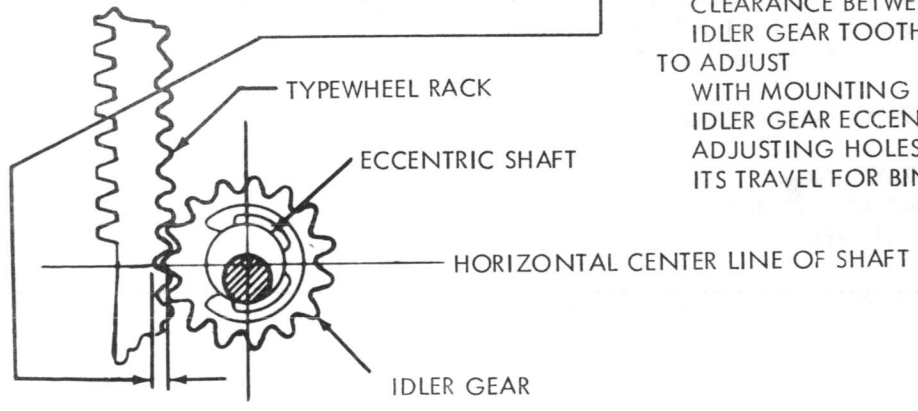
IDLER GEAR ECCENTRIC SHAFT

REQUIREMENT

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

TO ADJUST

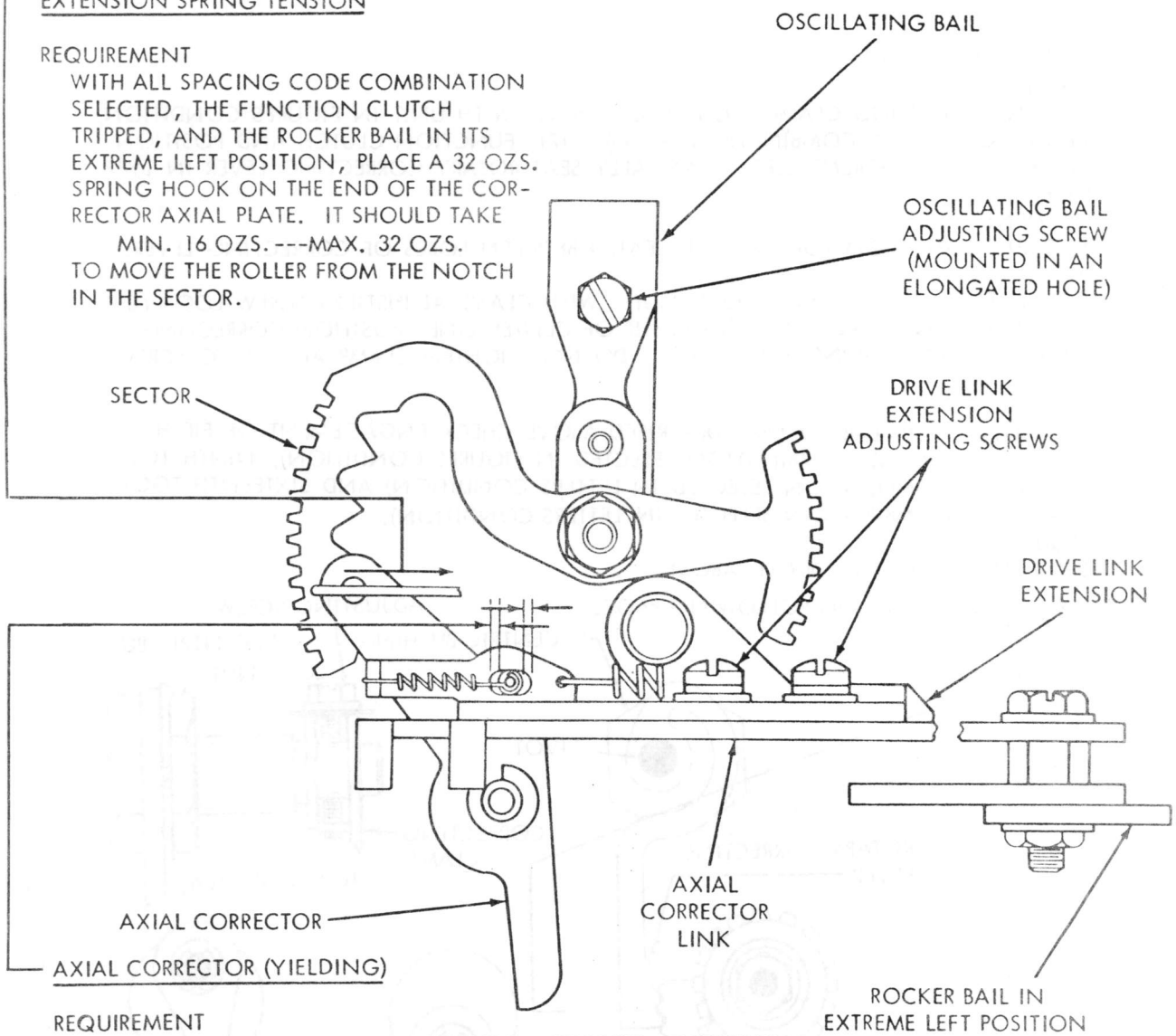
WITH MOUNTING SCREW LOOSENED, POSITION IDLER GEAR ECCENTRIC SHAFT BY MEANS OF THREE ADJUSTING HOLES. CHECK RACK THROUGHOUT ITS TRAVEL FOR BINDS.



2.44 Typing Mechanism continued

CORRECTOR DRIVE LINK (YIELDING) EXTENSION SPRING TENSION

REQUIREMENT
WITH ALL SPACING CODE COMBINATION SELECTED, THE FUNCTION CLUTCH TRIPPED, AND THE ROCKER BAIL IN ITS EXTREME LEFT POSITION, PLACE A 32 OZS. SPRING HOOK ON THE END OF THE CORRECTOR AXIAL PLATE. IT SHOULD TAKE
MIN. 16 OZS. ---MAX. 32 OZS.
TO MOVE THE ROLLER FROM THE NOTCH IN THE SECTOR.



AXIAL CORRECTOR (YIELDING)

REQUIREMENT
WITH ALL SPACING CODE COMBINATION SELECTED, FUNCTION CLUTCH TRIPPED AND ROCKER BAIL IN ITS EXTREME LEFT POSITION, THE AXIAL CORRECTOR ROLLER SHOULD SEAT IN THE FIRST SECTOR NOTCH AND THERE SHOULD BE
MIN. 0.005 INCH
BETWEEN THE ENDS OF THE SLOT AND THE SPRING POST. CHECK BOTH SIDES AND CHECK SEATING IN FOURTH NOTCH (LETTERS SELECTION). TURN THE TRU ARC FASTENING THE DRIVE LINK EXTENSION TO THE CORRECTOR PLATE TO CHECK THE MINIMUM REQUIREMENT.

TO ADJUST
LOOSEN TWO DRIVE LINK ADJUSTING SCREWS. POSITION DRIVE LINK TO MEET THE REQUIREMENT AND RETIGHTEN THE SCREWS.

2.45 Typing Mechanism continued

ROTARY CORRECTING LEVER

(1) TO CHECK

LOOSEN CORRECTING CLAMP ADJUSTING SCREW. WITH UNIT IN FIGURES 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.

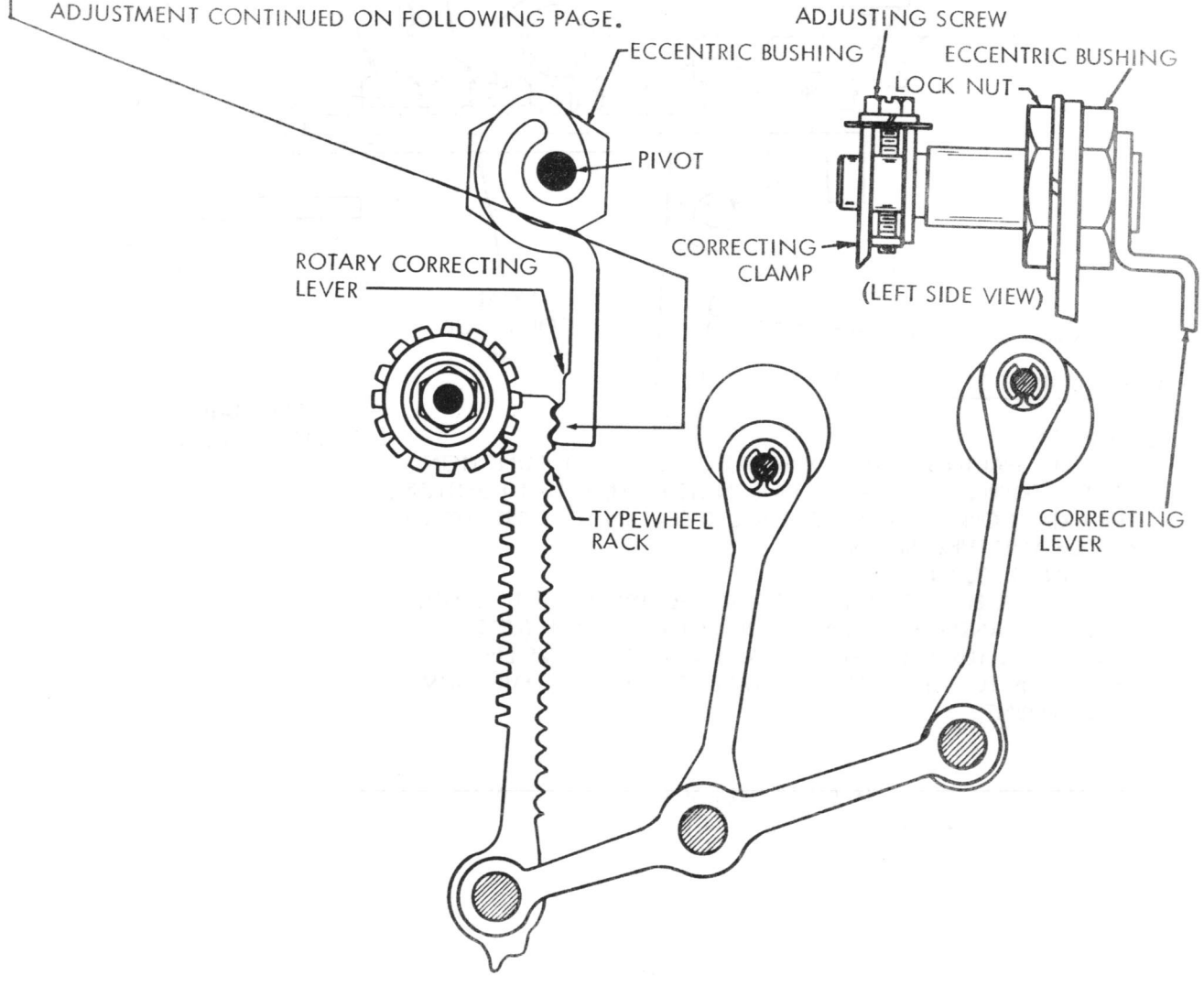
(2) TO CHECK

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

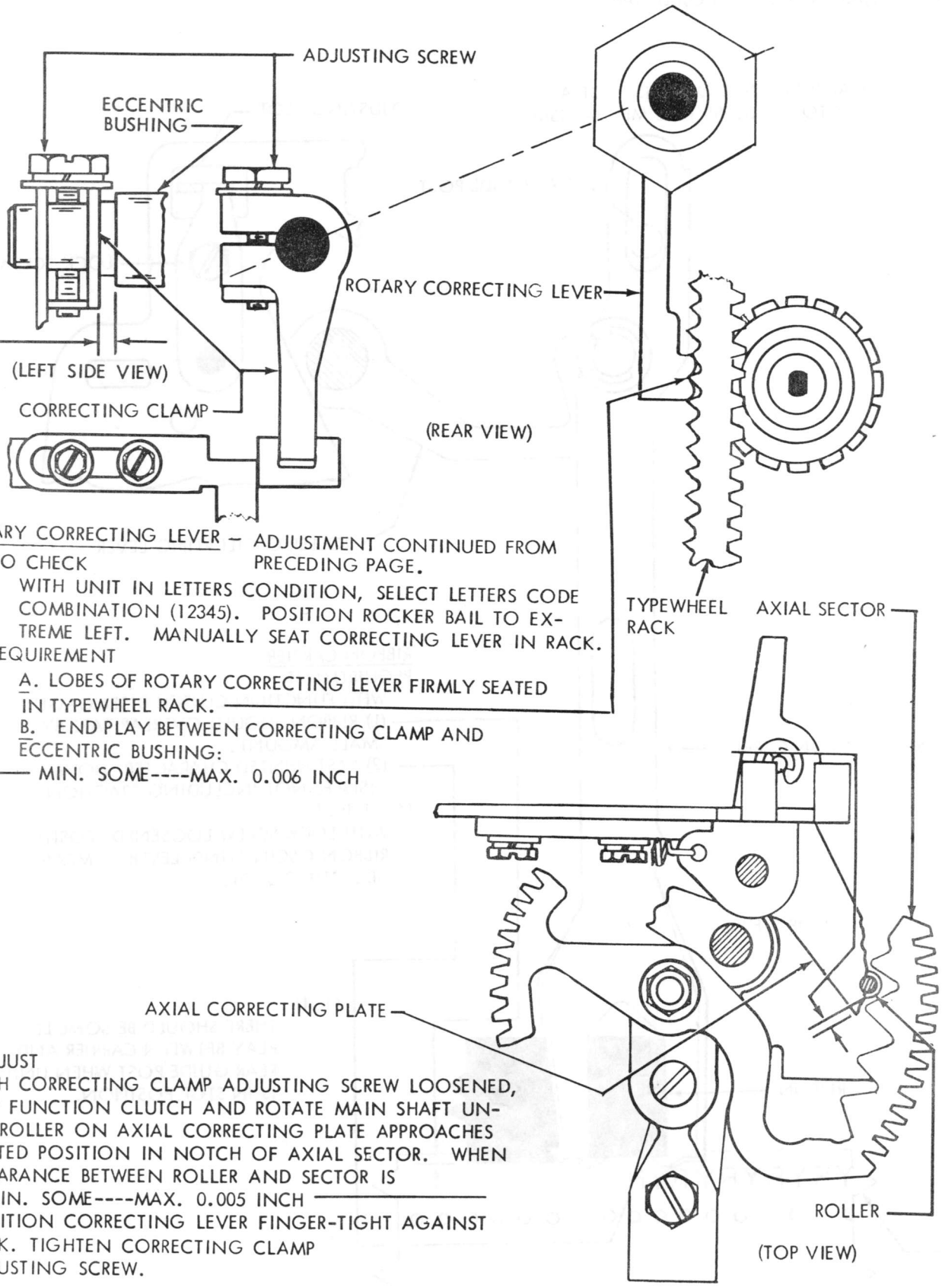
TO ADJUST

REFINE ADJUSTMENT UNDER (1) ABOVE.

ADJUSTMENT CONTINUED ON FOLLOWING PAGE.



2.46 Typing Mechanism continued



ROTARY CORRECTING LEVER – ADJUSTMENT CONTINUED FROM PRECEDING PAGE.

(3) TO CHECK

WITH UNIT IN LETTERS CONDITION, SELECT LETTERS CODE COMBINATION (12345). POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT CORRECTING LEVER IN RACK.

REQUIREMENT

A. LOBES OF ROTARY CORRECTING LEVER FIRMLY SEATED IN TYPEWHEEL RACK.

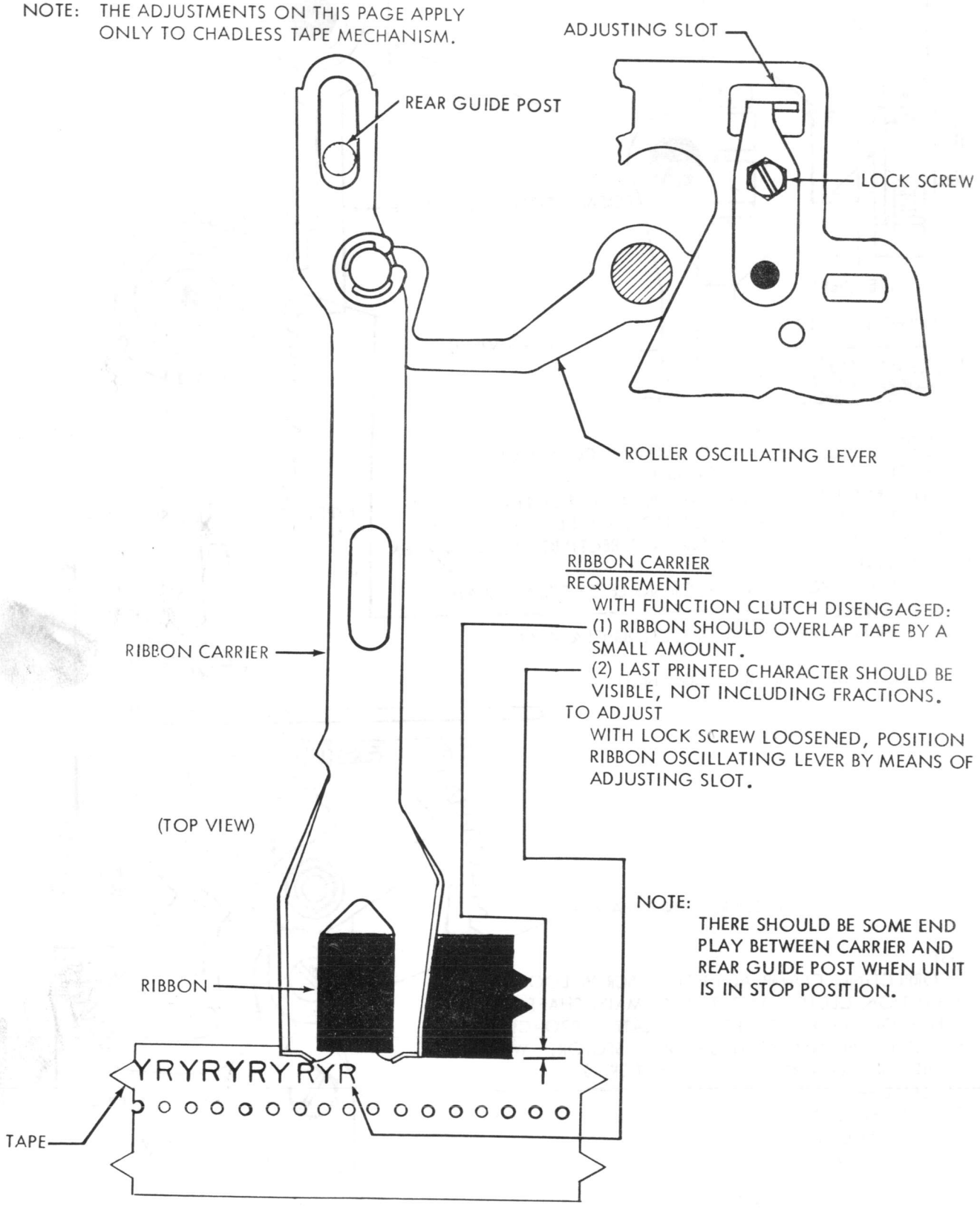
B. END PLAY BETWEEN CORRECTING CLAMP AND ECCENTRIC BUSHING:
MIN. SOME----MAX. 0.006 INCH

TO ADJUST

WITH CORRECTING CLAMP ADJUSTING SCREW LOOSENED, TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL ROLLER ON AXIAL CORRECTING PLATE APPROACHES SEATED POSITION IN NOTCH OF AXIAL SECTOR. WHEN CLEARANCE BETWEEN ROLLER AND SECTOR IS
MIN. SOME----MAX. 0.005 INCH
POSITION CORRECTING LEVER FINGER-TIGHT AGAINST RACK. TIGHTEN CORRECTING CLAMP ADJUSTING SCREW.

2.47 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



RIBBON CARRIER

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:

(1) RIBBON SHOULD OVERLAP TAPE BY A SMALL AMOUNT.

(2) LAST PRINTED CHARACTER SHOULD BE VISIBLE, NOT INCLUDING FRACTIONS.

TO ADJUST

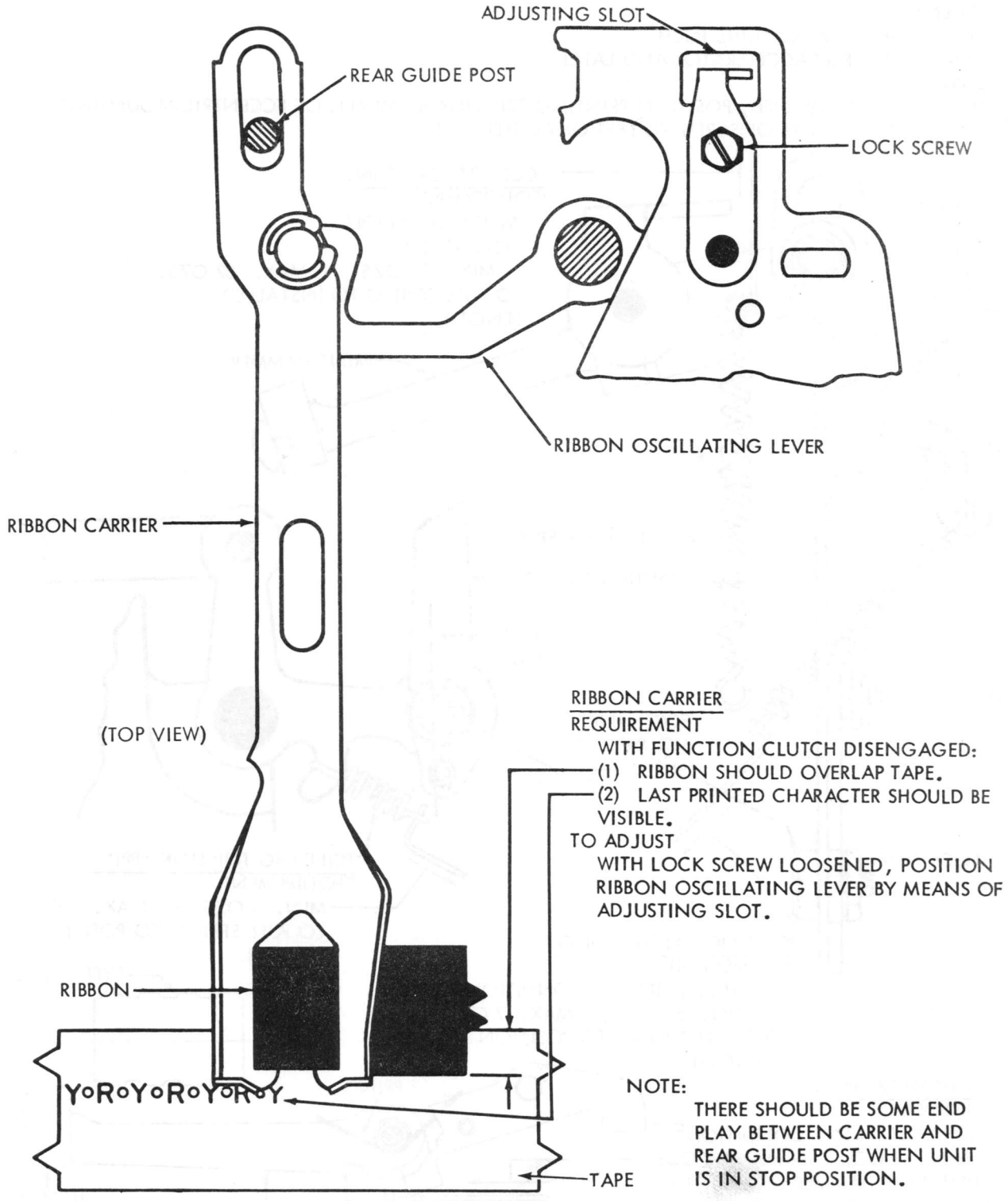
WITH LOCK SCREW LOOSENED, POSITION RIBBON OSCILLATING LEVER BY MEANS OF ADJUSTING SLOT.

NOTE:

THERE SHOULD BE SOME END PLAY BETWEEN CARRIER AND REAR GUIDE POST WHEN UNIT IS IN STOP POSITION.

2.48 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.



RIBBON CARRIER

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:

(1) RIBBON SHOULD OVERLAP TAPE.

(2) LAST PRINTED CHARACTER SHOULD BE VISIBLE.

TO ADJUST

WITH LOCK SCREW LOOSENED, POSITION RIBBON OSCILLATING LEVER BY MEANS OF ADJUSTING SLOT.

NOTE:

THERE SHOULD BE SOME END PLAY BETWEEN CARRIER AND REAR GUIDE POST WHEN UNIT IS IN STOP POSITION.

2.49 Typing Mechanism continued

PRINTING TRIP LINK

TO CHECK

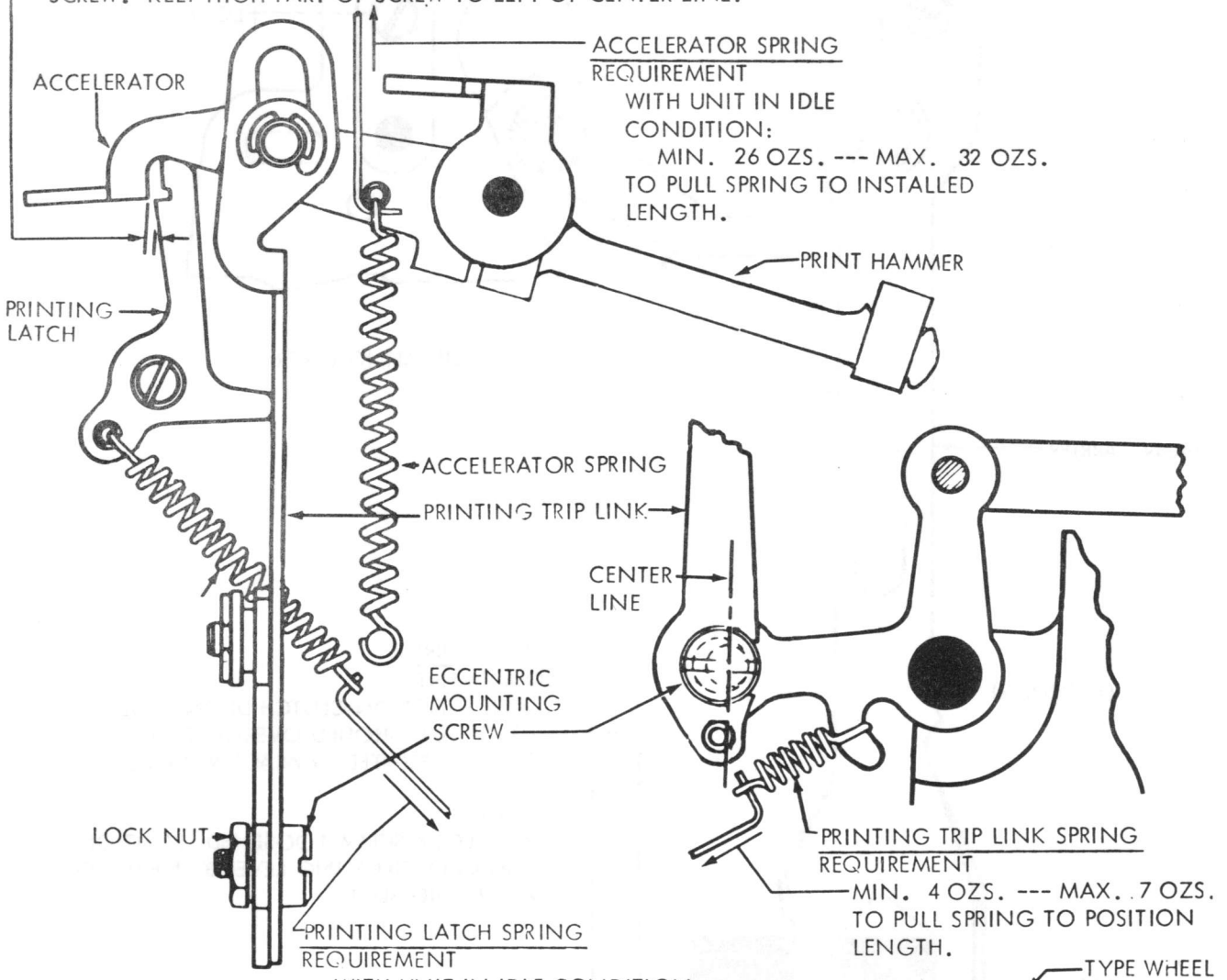
TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY LIFT ACCELERATOR SO THAT LATCHING SURFACES OF PRINTING LATCH AND ACCELERATOR ARE EVEN.

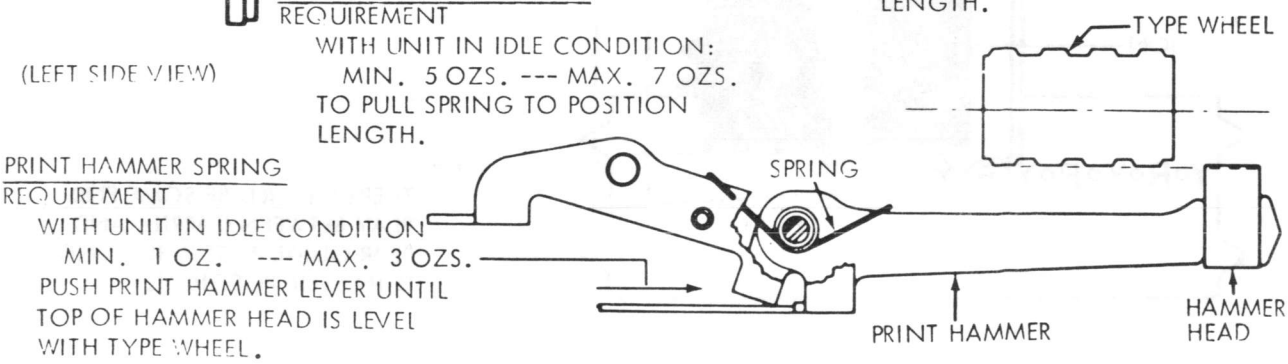
REQUIREMENT

MIN. SOME --- MAX. 0.015 INCH CLEARANCE BETWEEN ACCELERATOR AND LATCH.

TO ADJUST

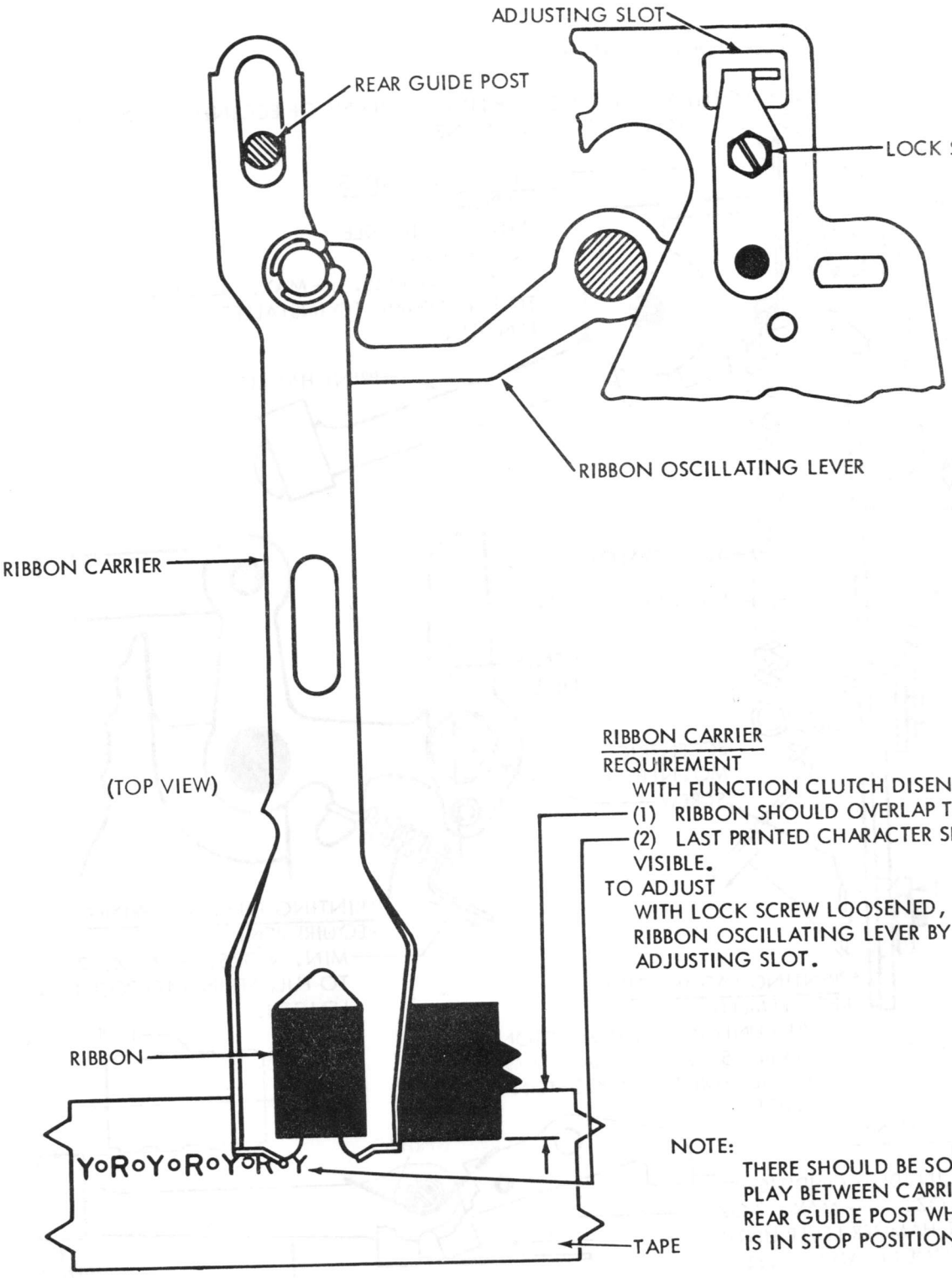
WITH LOCK NUT LOOSENED, POSITION PRINTING TRIP LINK BY MEANS OF ECCENTRIC MOUNTING SCREW. KEEP HIGH PART OF SCREW TO LEFT OF CENTER LINE.





2.48 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.



RIBBON CARRIER

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:

(1) RIBBON SHOULD OVERLAP TAPE.

(2) LAST PRINTED CHARACTER SHOULD BE VISIBLE.

TO ADJUST

WITH LOCK SCREW LOOSENED, POSITION RIBBON OSCILLATING LEVER BY MEANS OF ADJUSTING SLOT.

NOTE:

THERE SHOULD BE SOME END PLAY BETWEEN CARRIER AND REAR GUIDE POST WHEN UNIT IS IN STOP POSITION.

2.49 Typing Mechanism continued

PRINTING TRIP LINK

TO CHECK

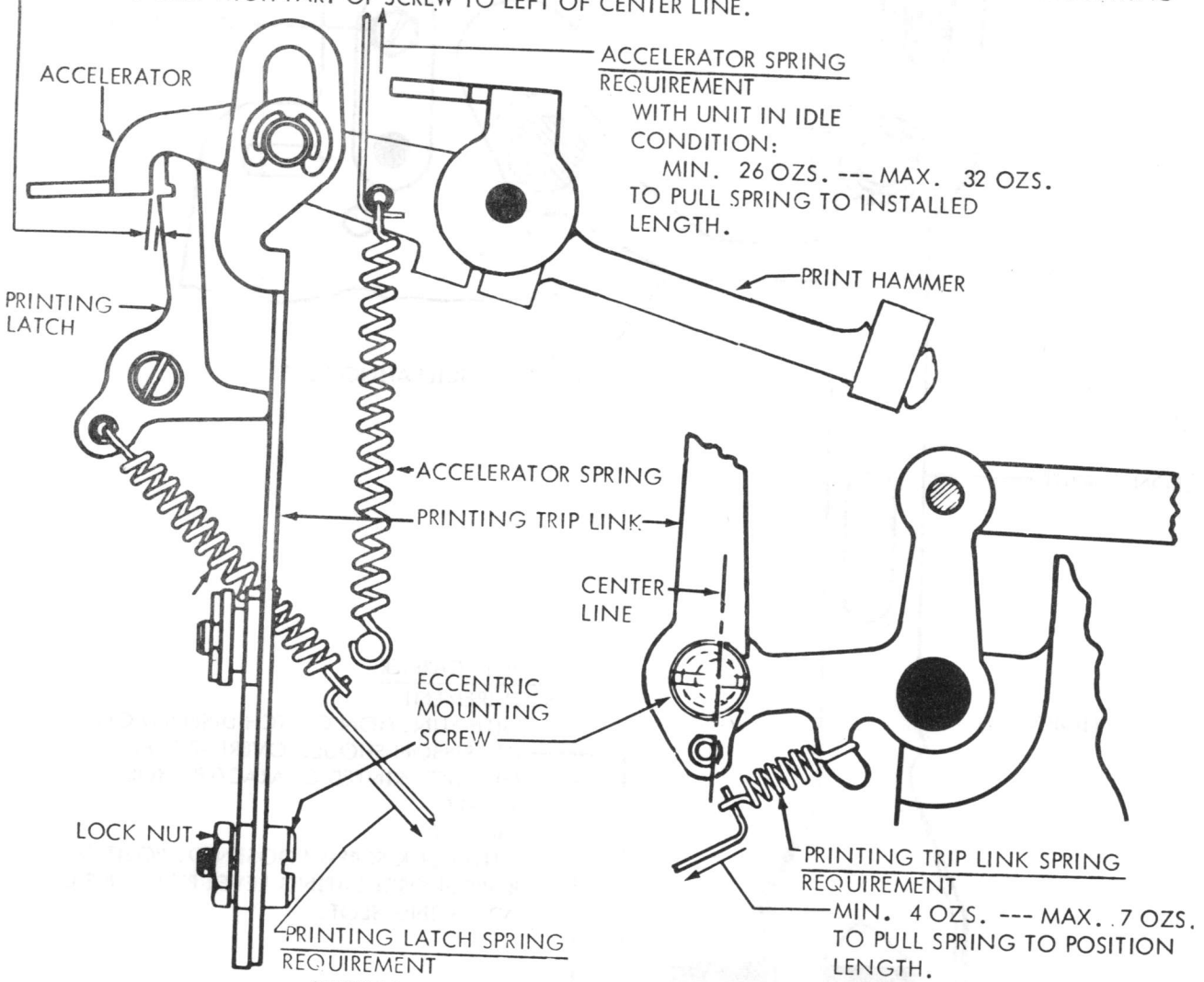
TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY LIFT ACCELERATOR SO THAT LATCHING SURFACES OF PRINTING LATCH AND ACCELERATOR ARE EVEN.

REQUIREMENT

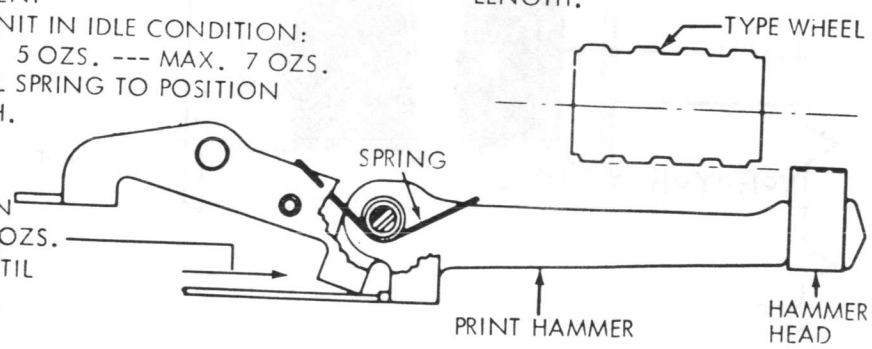
MIN. SOME --- MAX. 0.015 INCH CLEARANCE BETWEEN ACCELERATOR AND LATCH.

TO ADJUST

WITH LOCK NUT LOOSENED, POSITION PRINTING TRIP LINK BY MEANS OF ECCENTRIC MOUNTING SCREW. KEEP HIGH PART OF SCREW TO LEFT OF CENTER LINE.



(LEFT SIDE VIEW)



PRINT HAMMER SPRING

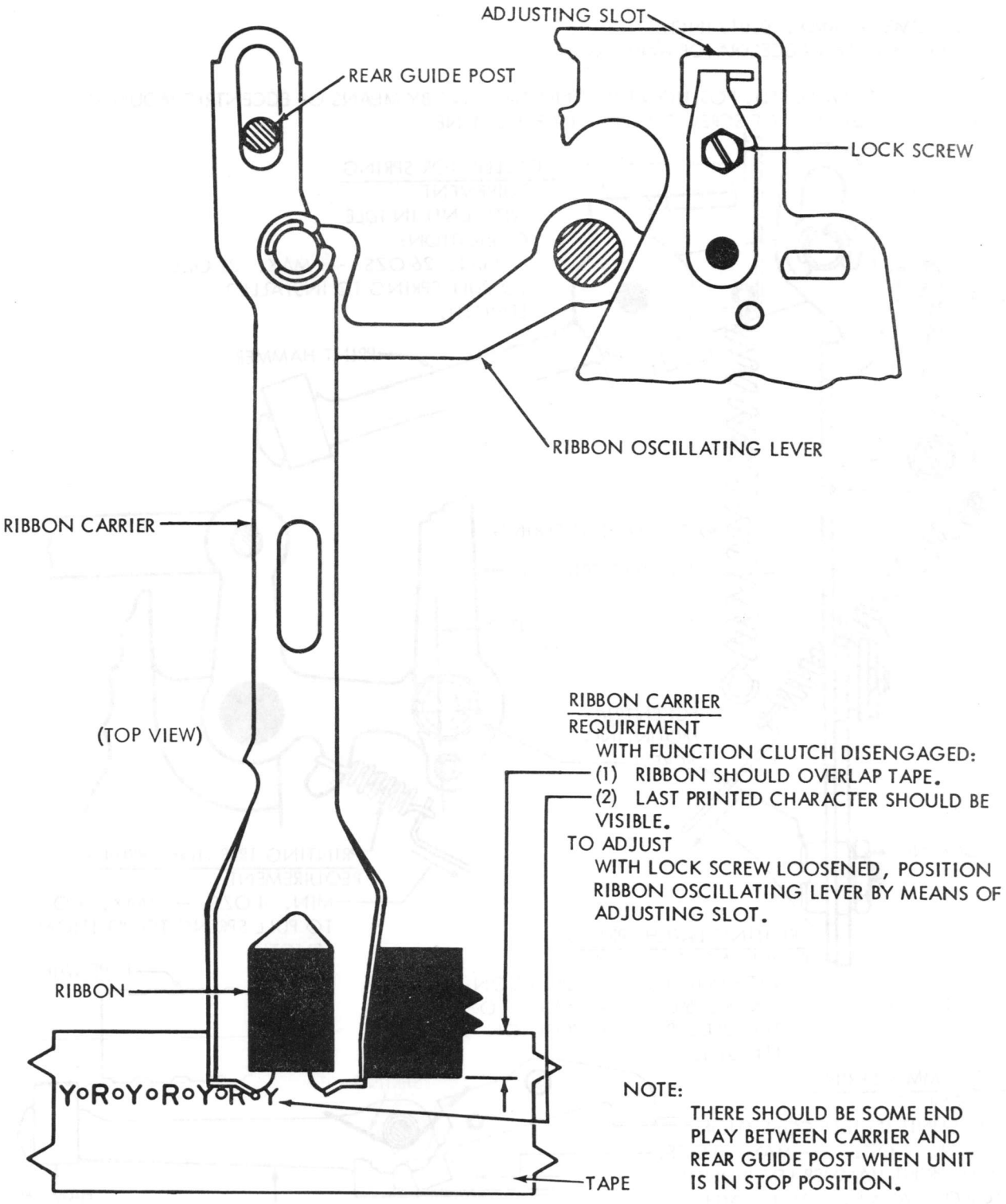
REQUIREMENT

WITH UNIT IN IDLE CONDITION MIN. 1 OZ. --- MAX. 3 OZS.

PUSH PRINT HAMMER LEVER UNTIL TOP OF HAMMER HEAD IS LEVEL WITH TYPE WHEEL.

2.48 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.



RIBBON CARRIER

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:

(1) RIBBON SHOULD OVERLAP TAPE.

(2) LAST PRINTED CHARACTER SHOULD BE VISIBLE.

TO ADJUST

WITH LOCK SCREW LOOSENED, POSITION RIBBON OSCILLATING LEVER BY MEANS OF ADJUSTING SLOT.

NOTE:

THERE SHOULD BE SOME END PLAY BETWEEN CARRIER AND REAR GUIDE POST WHEN UNIT IS IN STOP POSITION.

2.49 Typing Mechanism continued

PRINTING TRIP LINK

TO CHECK

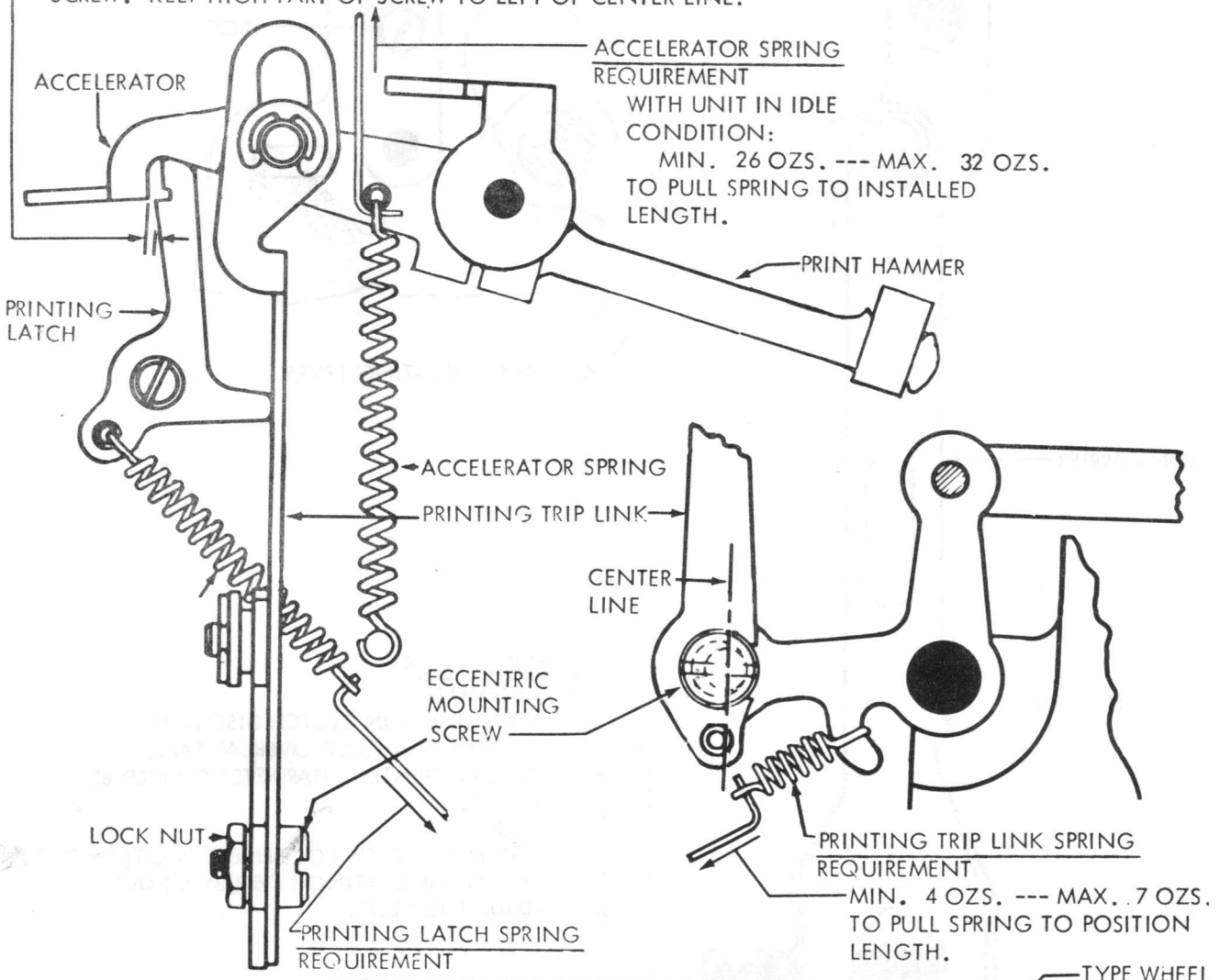
TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY LIFT ACCELERATOR SO THAT LATCHING SURFACES OF PRINTING LATCH AND ACCELERATOR ARE EVEN.

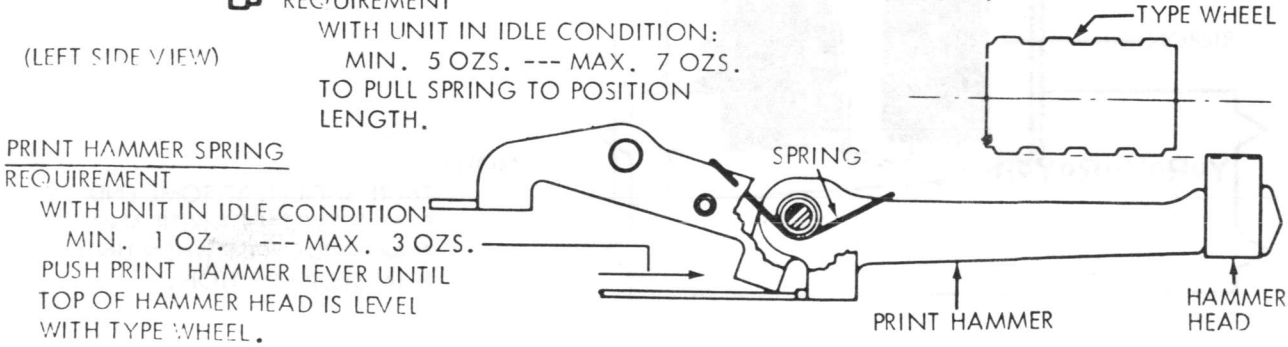
REQUIREMENT

MIN. SOME --- MAX. 0.015 INCH CLEARANCE BETWEEN ACCELERATOR AND LATCH.

TO ADJUST

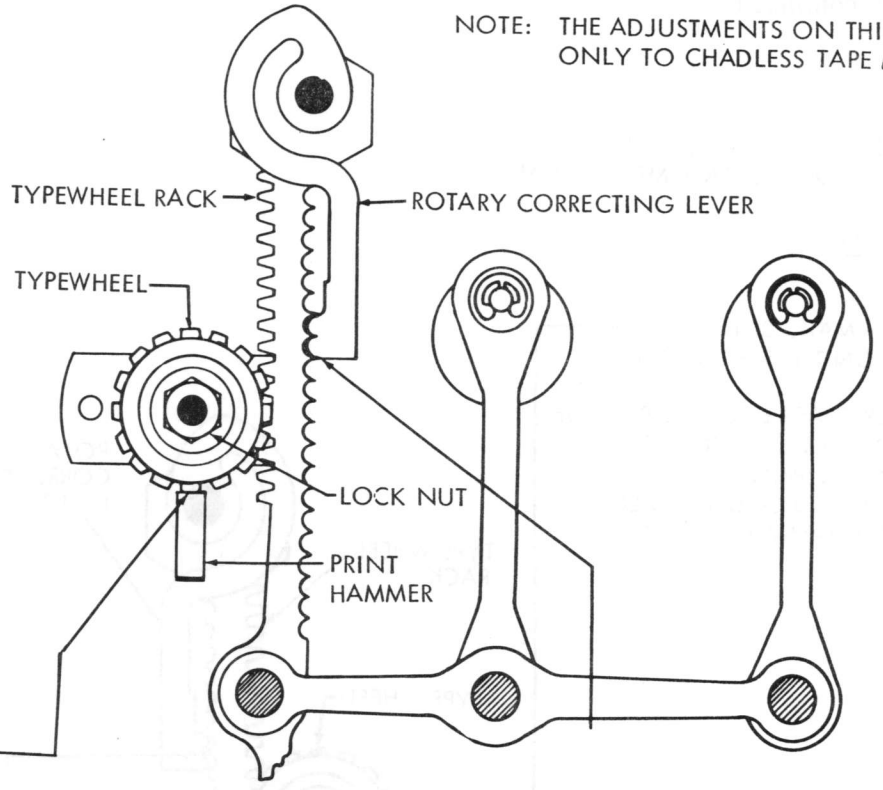
WITH LOCK NUT LOOSENED, POSITION PRINTING TRIP LINK BY MEANS OF ECCENTRIC MOUNTING SCREW. KEEP HIGH PART OF SCREW TO LEFT OF CENTER LINE.





2.50 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



(A)
TYPEWHEEL
TO CHECK

SELECT "M" CODE COMBINATION (--345). PLACE ROCKER BAIL TO EXTREME LEFT. CORRECTING LEVER SHOULD BE FIRMLY SEATED IN TYPEWHEEL RACK.

REQUIREMENT

TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY AND $6 \pm 1/4$ CODE HOLE SPACES BEHIND ITS PERFORATED CODE HOLES.

TO ADJUST

POSITION TYPEWHEEL WITH LOCK NUT LOOSENED. CHECK PRINTING BY MANUALLY LIFTING ACCELERATOR TO LATCHED POSITION AND RELEASING IT.

NOTE:

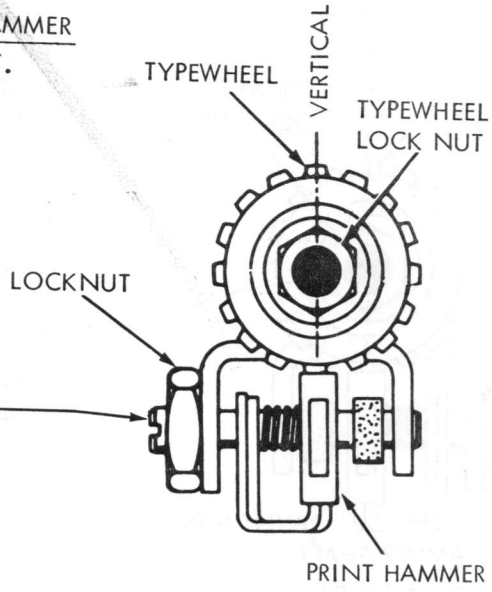
FOR BEST RESULTS IT MAY BE NECESSARY TO MAKE PRINT HAMMER ADJUSTMENT (BELOW) AND THEN REFINE THIS ADJUSTMENT.

(B)
PRINT HAMMER
REQUIREMENT

WHEN OPERATING UNDER POWER, PRINT HAMMER AND TYPEWHEEL ALIGNED SO AS TO OBTAIN BEST QUALITY OF PRINTING.

TO ADJUST

POSITION PRINT HAMMER SHAFT WITH LOCK NUT LOOSENED.



NOTE:

IT MAY BE NECESSARY TO REMAKE TYPEWHEEL ADJUSTMENT (ABOVE) AND THEN REFINE THIS ADJUSTMENT.

2.51 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.

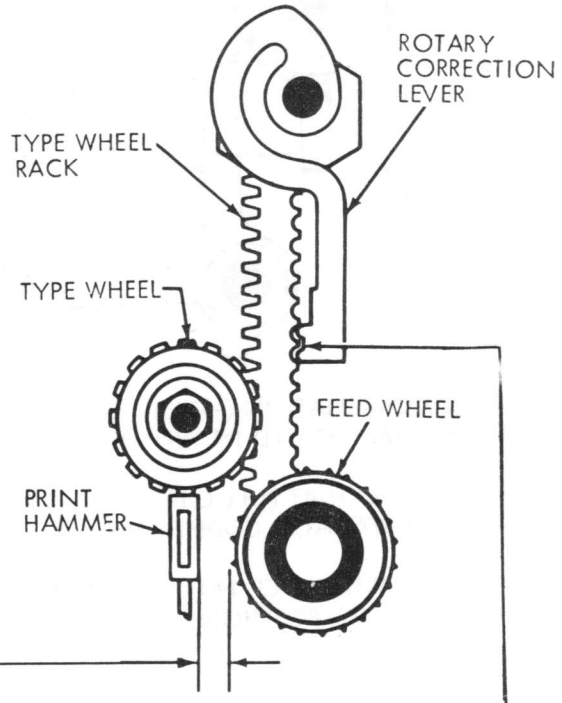
PRINT HAMMER (PRELIMINARY)

REQUIREMENT

POSITION PRINT HAMMER MIN. 0.030 INCH --- MAX. 0.040 INCH FROM THE PIN POINTS ON THE FEED WHEEL.

TO ADJUST

WITH THE PRINT HAMMER SHAFT LOCK NUT LOOSE POSITION THE PRINT HAMMER BY TURNING THE SHAFT CLOCKWISE TO MOVE PRINT HAMMER TOWARD THE FEED WHEEL AND COUNTER CLOCKWISE TO MOVE THE PRINT HAMMER AWAY FROM THE FEED WHEEL.



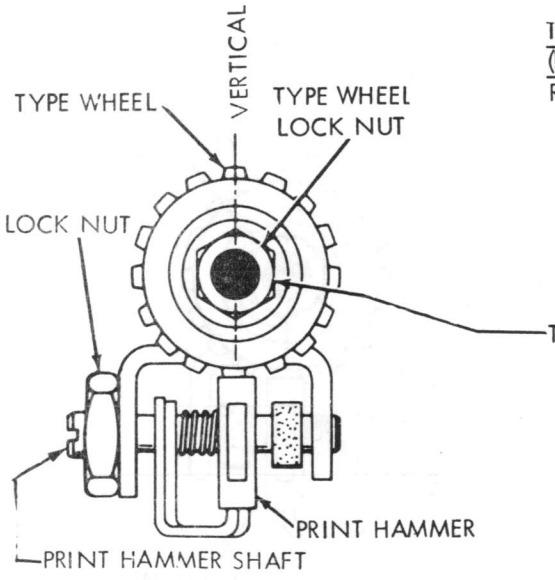
TYPE WHEEL POSITIONING AND PRINT HAMMER (FINAL)

REQUIREMENT

WITH "M" CODE COMBINATION (--345) SELECTED, AND ROCKER BAIL IN ITS EXTREME LEFT POSITION CHECK THAT THE ROTARY CORRECTOR IS FIRMLY SEATED IN THE TYPE WHEEL RACK. THE TYPE WHEEL AND PRINT HAMMER ALIGNMENT COULD BE SUCH THAT A FULL CHARACTER IS PRINTED UNIFORMLY BETWEEN THE FEED HOLES.

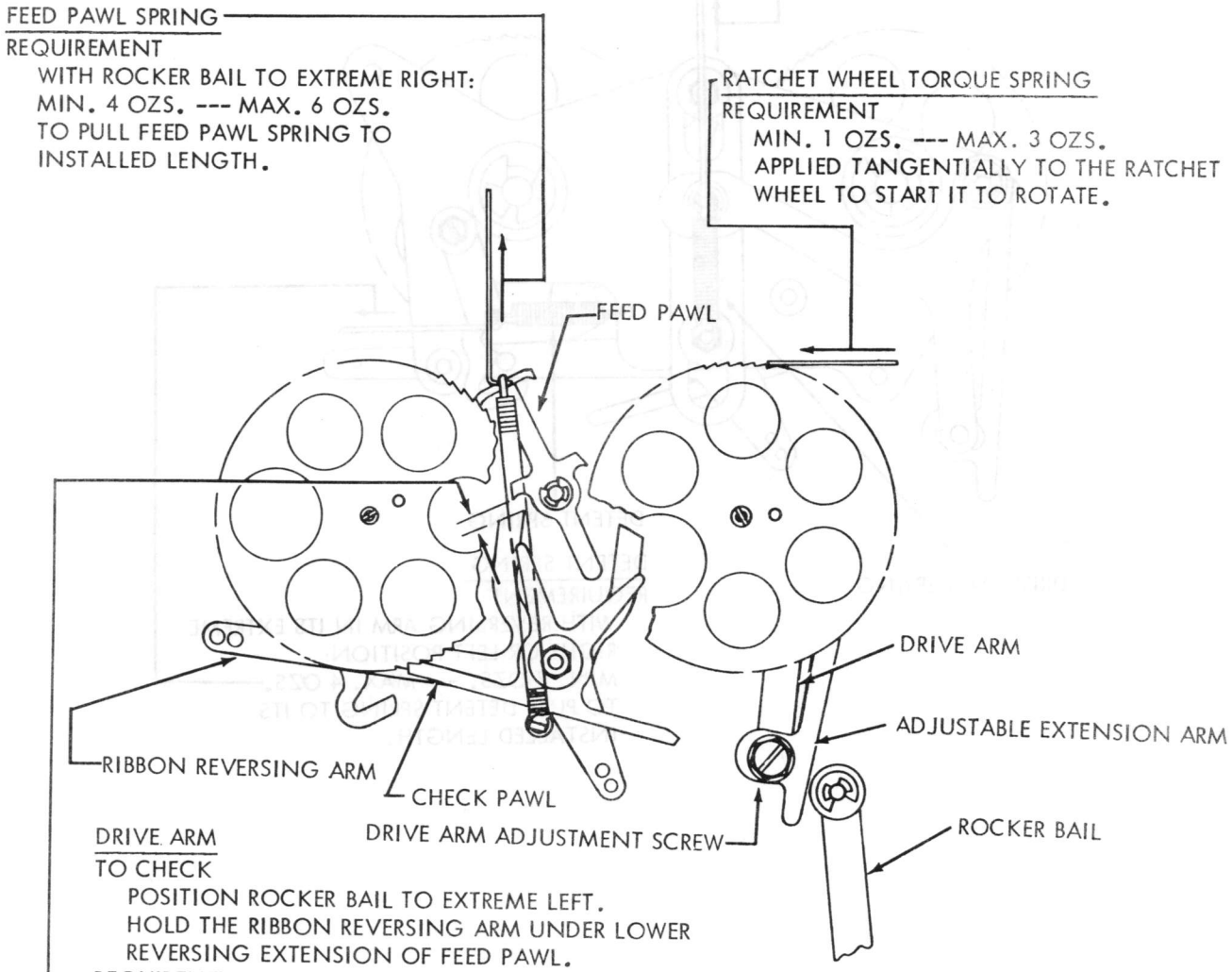
TO ADJUST

WITH TYPEWHEEL LOCK NUT LOOSE POSITION THE TYPE WHEEL. IF NECESSARY, REFINE THE PRINT HAMMER ADJUSTMENT MAKING CERTAIN THE PRINT HAMMER HEAD DOES NOT COME IN CONTACT WITH THE FEED WHEEL.



FRONT VIEW

2.52 Ribbon Mechanism



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

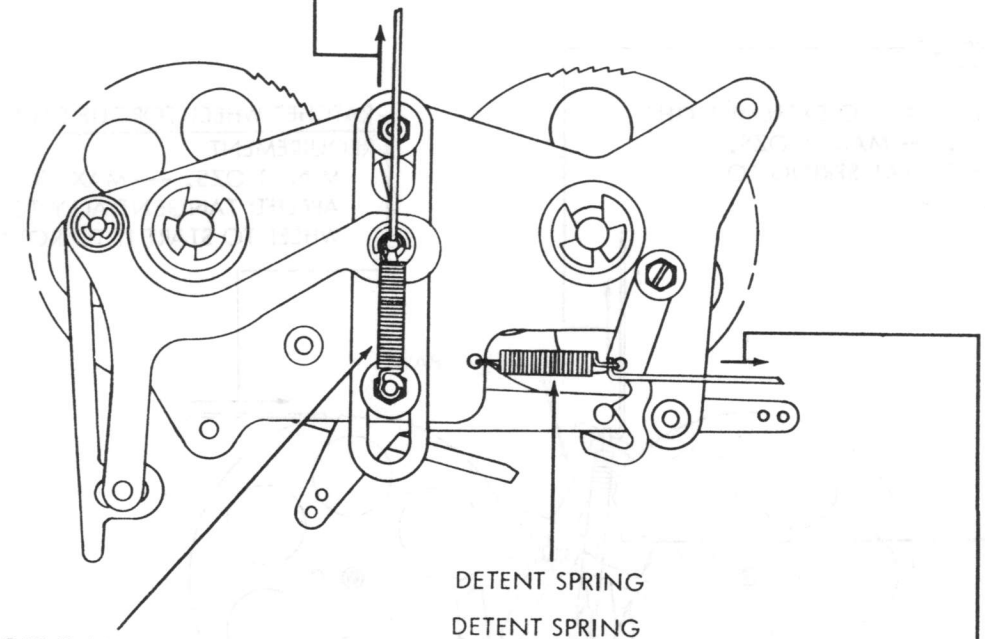
POSITION DRIVE ARM ADJUSTABLE EXTENSION LEVER WITH ITS MOUNTING SCREW LOOSENED.

2.53 Ribbon Mechanism continued

DRIVE ARM SPRING

REQUIREMENT

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



DETENT SPRING

DRIVE ARM SPRING

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.

3. VARIABLE FEATURES

NOTE: UNLESS OTHERWISE SPECIFIED, THE FOLLOWING BACKSPACE ADJUSTMENTS APPLY TO BOTH THE CHADLESS AND FULLY PERFORATED TAPE MECHANISMS.

3.01 Manual and Power Drive Backspace Mechanism (For Chadless Tape)

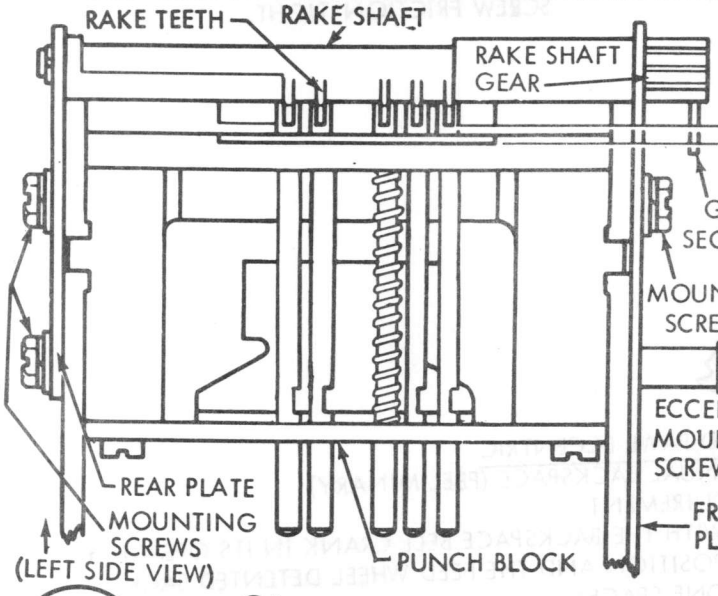
RAKE (A)

(1) REQUIREMENT

WITH ROTATIONAL PLAY IN RAKE TAKEN UP TO LEFT, BOTTOM SURFACE OF RAKE TEETH SHOULD BE WITHIN 0.040 INCH OF THE 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.



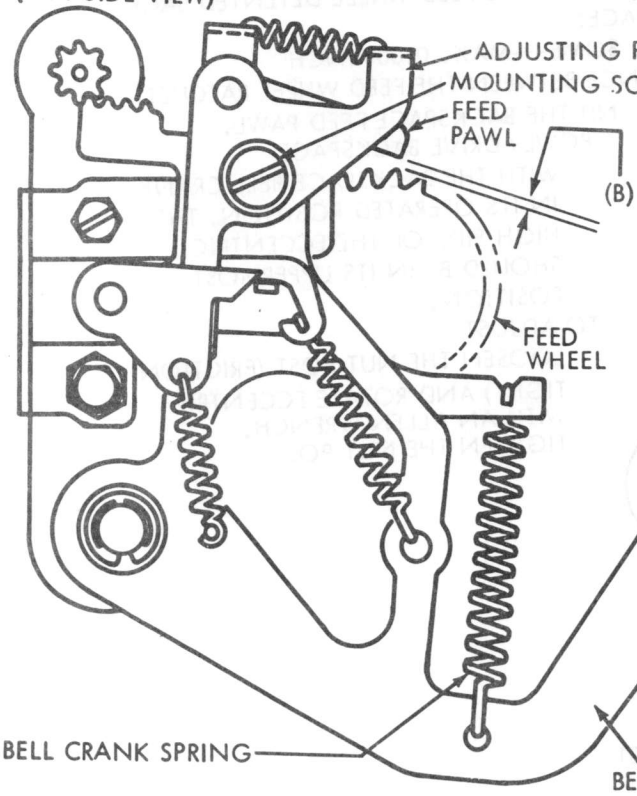
(2) REQUIREMENT

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 THE FOUR PUNCH BLOCK MOUNTING SCREWS FRICTION TIGHT, POSITION THE RAKE MOUNTING PLATE AND BELL CRANK MOUNTING PLATE SO THAT THE FRONT EDGE OF BOTH PLATES IS APPROXIMATELY IN LINE WITH THE VERTICAL PLANE OF THE PUNCH BLOCK. WITH THE RAKE IN THE OPERATED POSITION (BELL CRANK IN MAXIMUM DOWNWARD POSITION) MOVE THE RAKE UP OR DOWN TO MEET CLEARANCE REQUIREMENT. TIGHTEN SCREWS AND REPLACE THE 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

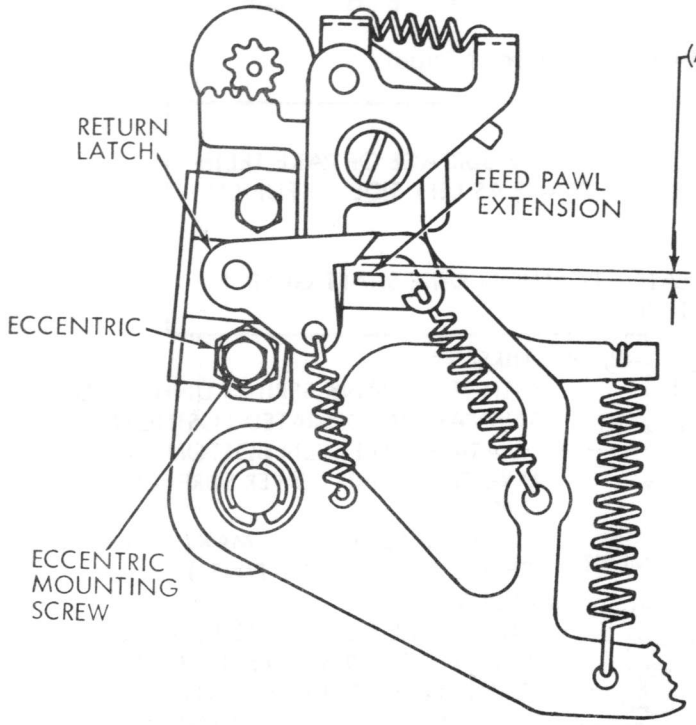
MIN. 0.006 INCH---MAX. 0.040 INCH

(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.

3.02 Manual and Power Drive Backspace Mechanism (For Chadless Tape) continued



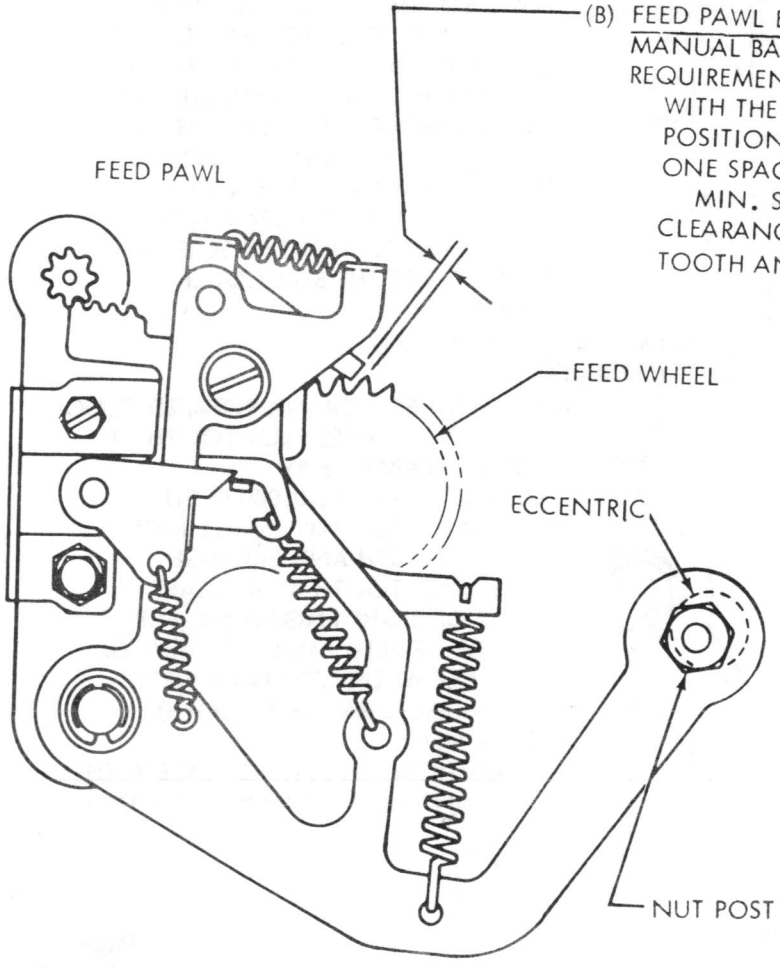
(A) RETURN LATCH REQUIREMENT

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 ECCENTRIC MANUAL BACKSPACE (PRELIMINARY) REQUIREMENT

WITH THE BACKSPACE BELL CRANK IN ITS OPERATED POSITION AND THE FEED WHEEL DETENTED BACK ONE SPACE:

MIN. SOME---MAX. 0.003 INCH

CLEARANCE BETWEEN THE FEED WHEEL RATCHET TOOTH AND THE BACKSPACE FEED PAWL.

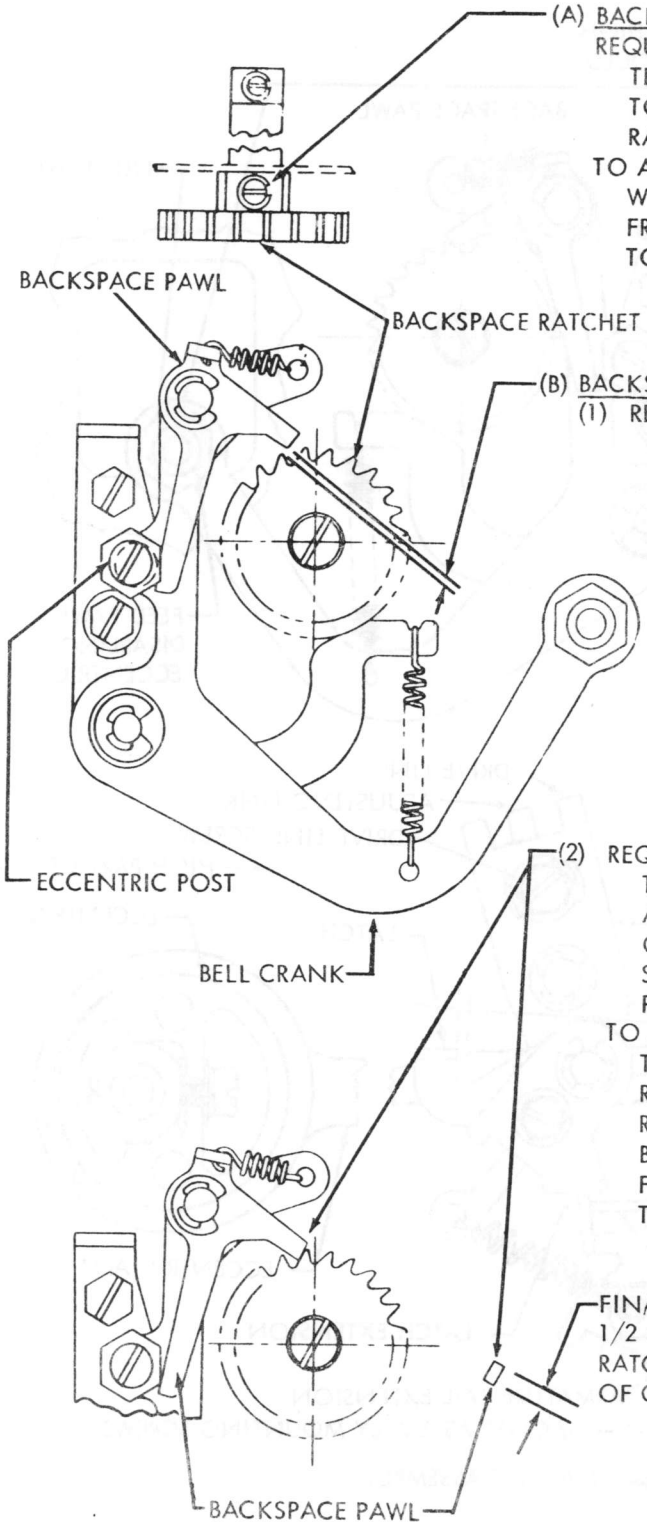
POWER DRIVE BACKSPACE

WITH THE BACKSPACE BELL CRANK IN ITS OPERATED POSITION, THE HIGH SIDE OF THE ECCENTRIC SHOULD BE IN ITS UPPERMOST POSITION.

TO ADJUST

LOOSEN THE NUT POST (FRICTION TIGHT) AND ROTATE ECCENTRIC WITH AN ALLEN WRENCH. TIGHTEN THE NUT POST.

3.03 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape)



3.04 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) continued

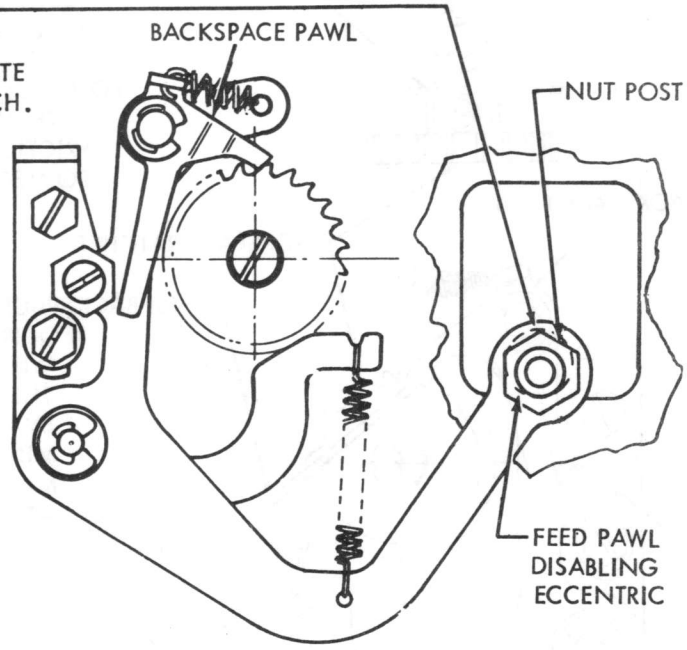
(A) FEED PAWL DISABLING

REQUIREMENT

WHEN BELL CRANK IS IN OPERATED POSITION HIGH SIDE OF FEED PAWL DISABLING ECCENTRIC SHOULD BE IN UPPERMOST POSITION.

TO ADJUST

WITH NUT POST FRICTION TIGHT, ROTATE ECCENTRIC WITH A 0.060" ALLEN WRENCH.



3.05 Power Drive Backspace Mechanism (For Fully Perforated Tape) (Early Design)

(B) DRIVE LINK

REQUIREMENT

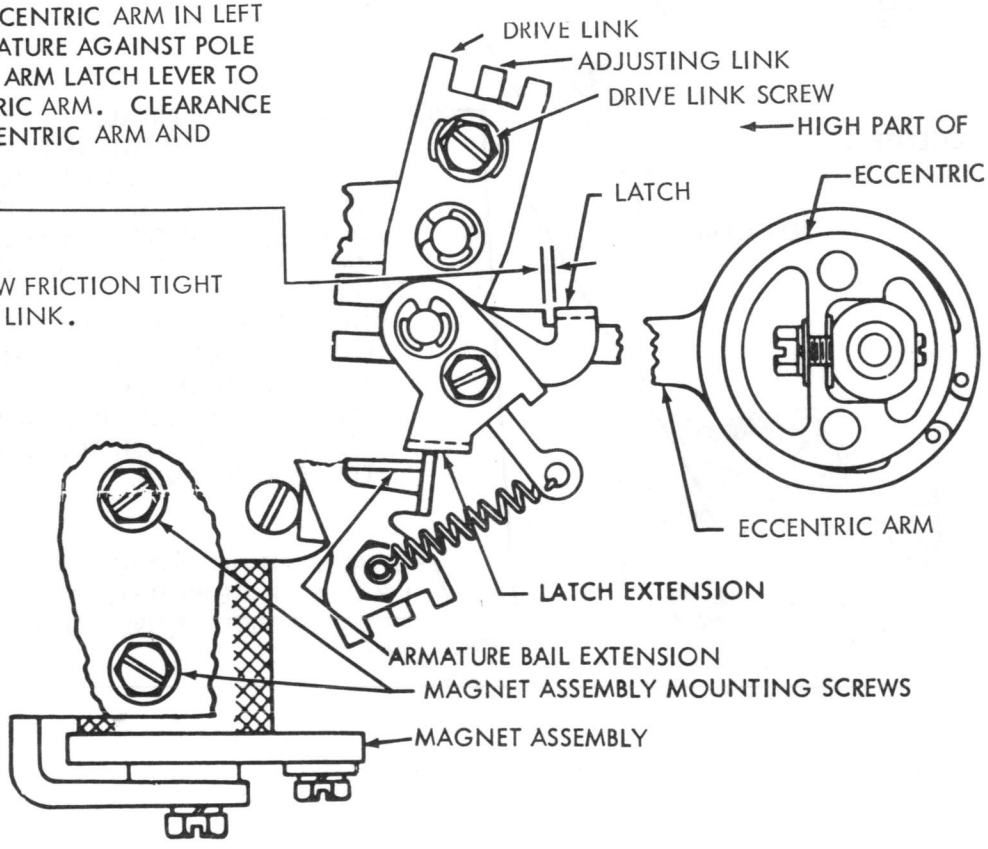
WITH HIGH PART OF ECCENTRIC ARM IN LEFT HAND POSITION, ARMATURE AGAINST POLE FACE TO ALLOW DRIVE ARM LATCH LEVER TO REST AGAINST ECCENTRIC ARM. CLEARANCE BETWEEN STEP ON ECCENTRIC ARM AND LATCH.

MIN. 0.040 INCH

MAX. 0.045 INCH

TO ADJUST

WITH DRIVE LINK SCREW FRICTION TIGHT POSITION ADJUSTING LINK.



3.06 Power Drive Backspace Mechanism (Early Design) continued

(A) ARMATURE HINGE

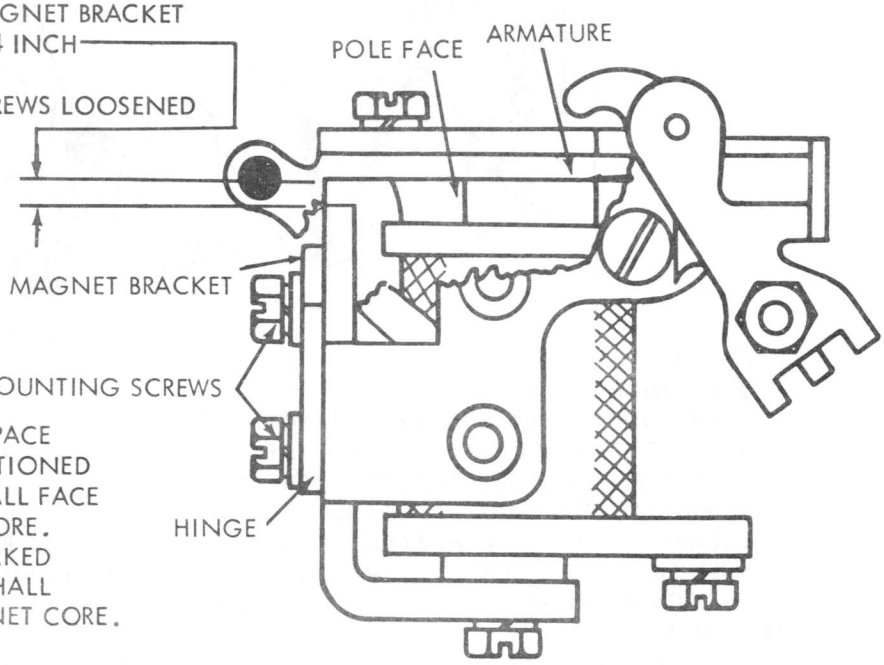
REQUIREMENT

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

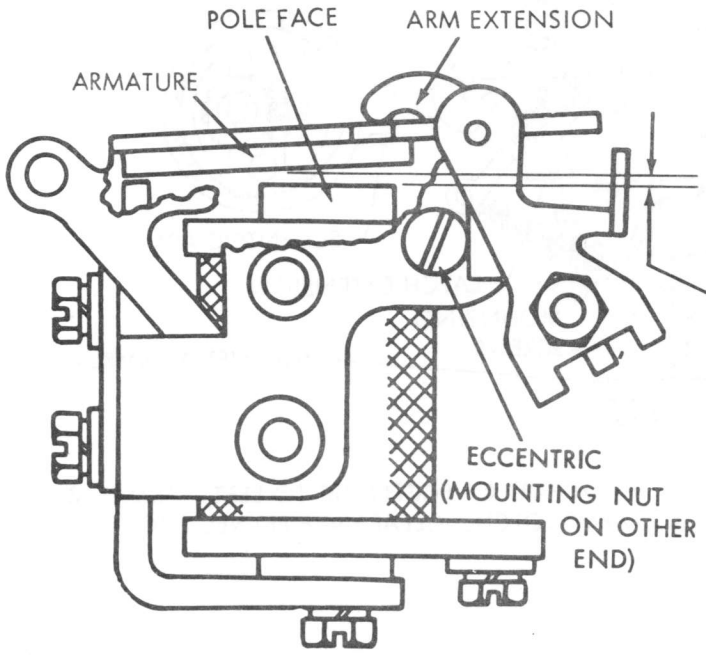
WITH HINGE MOUNTING SCREWS LOOSENED POSITION ARMATURE.

NOTE: THE FOLLOWING ADJUSTMENTS ARE FOR USE WITH THE EARLY DESIGN BACKSPACE MAGNET ASSEMBLY. LATER DESIGN USE A NON-ADJUSTABLE BACKSPACE MAGNET ASSEMBLY.



NOTE:
FOR "DC" OPERATION, THE BACKSPACE MAGNET ARMATURE SHALL BE POSITIONED SO THAT THE SIDE MARKED "C" SHALL FACE THE POLE FACE OF THE MAGNET CORE. FOR "AC" OPERATION, THE UNMARKED SIDE OF THE MAGNET ARMATURE SHALL FACE THE POLE FACE OF THE MAGNET CORE.

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



(B) ARMATURE UP-STOP

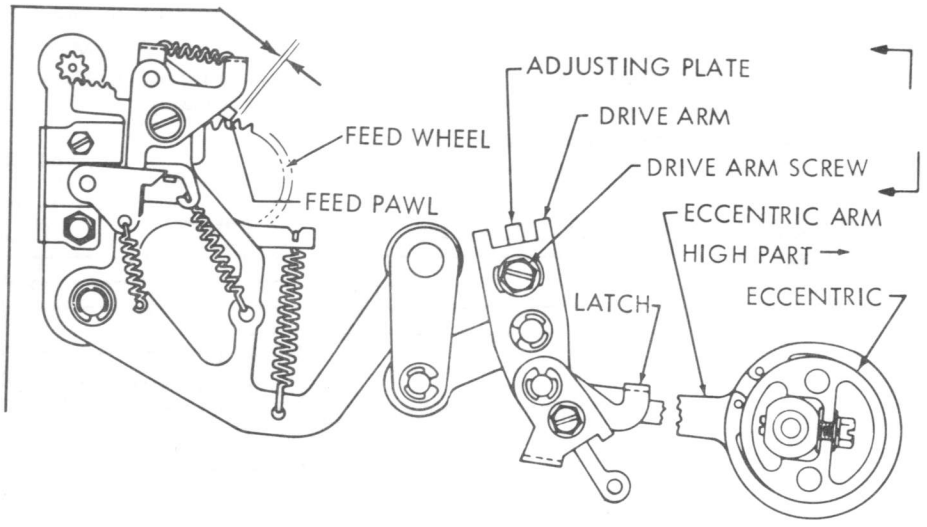
REQUIREMENT

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.

→ 3.07 Power Drive Backspace Mechanism (For Chadless Tape) (Early Design) continued



→ (A) DRIVE ARM

REQUIREMENT

WITH DRIVE ARM LATCH LEVER ENGAGED WITH ECCENTRIC LINK, MAIN SHAFT ROTATED TO PLACE ECCENTRIC IN ITS EXTREME RIGHT HAND POSITION AND FEED WHEEL DETENTED BACK ONE SPACE:

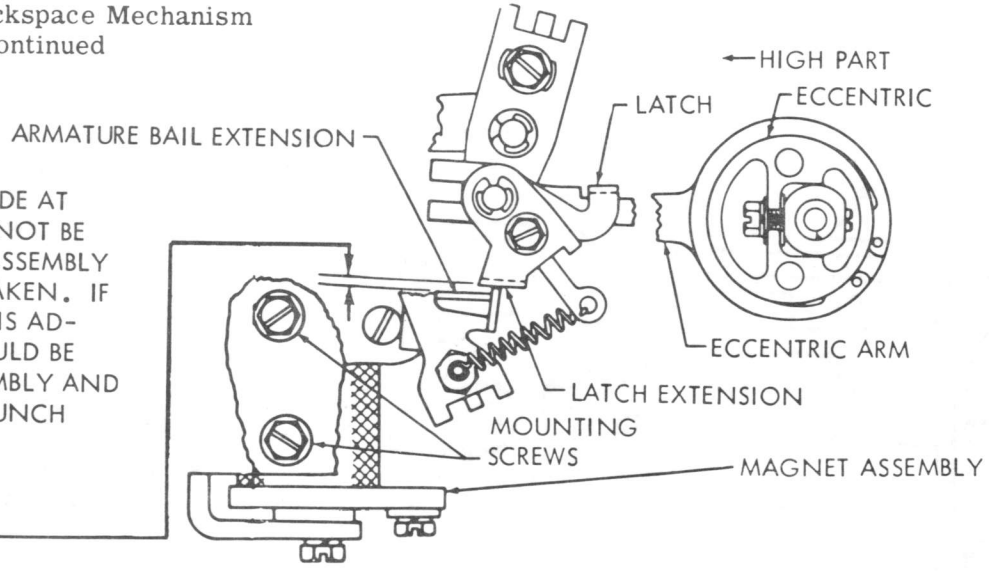
MIN. SOME---MAX. 0.003 INCH

CLEARANCE BETWEEN THE BACKSPACE FEED PAWL AND THE RATCHET TOOTH. CHECK WITH FEED WHEEL SHAFT OIL HOLE IN THE UPPERMOST POSITION AND RECHECK EACH 90 DEGREES ABOUT THE PERIPHERY OF THE FEED WHEEL.

TO ADJUST

→ LOOSEN DRIVE ARM SCREW (FRICTION TIGHT) AND POSITION ADJUSTING PLATE.

3.08 Power Drive Backspace Mechanism (Early Design) continued



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

(B)
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 TOP OF 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.

3.09 Power Drive Backspace Mechanism (Early Design) continued

(A) 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.

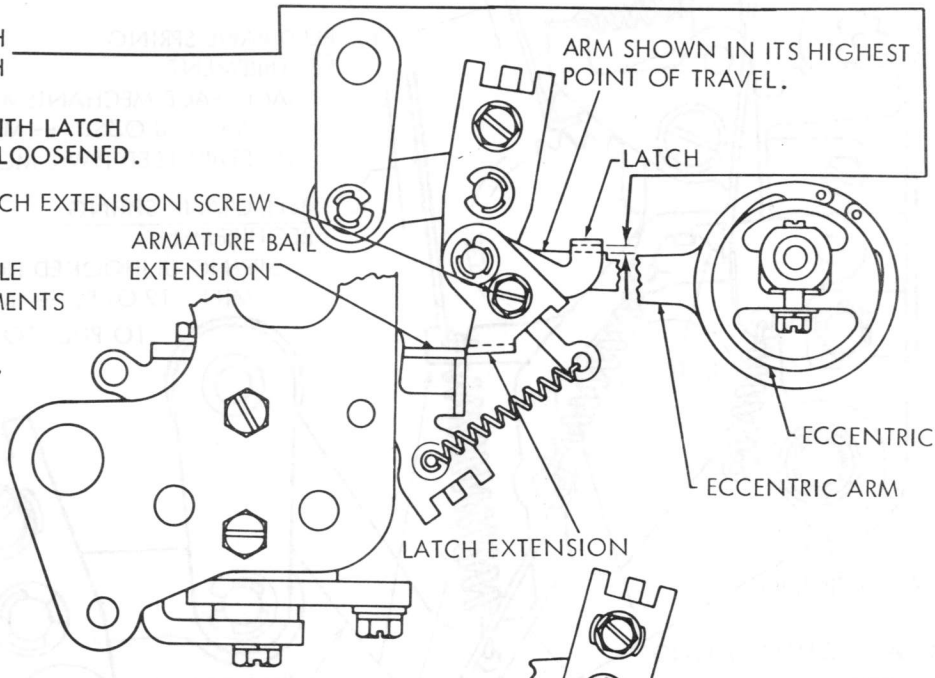
MIN. 0.005 INCH
MAX. 0.025 INCH

TO ADJUST

POSITION LATCH WITH LATCH EXTENSION SCREW LOOSENED.

NOTE 1:

ON UNITS EQUIPPED WITH ONE PIECE NON-ADJUSTABLE LATCH LEVER THE REQUIREMENTS IN THE "FINAL POWER OR MANUAL" MUST BE MET.



(B) NON-REPEAT ARM

REQUIREMENT

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

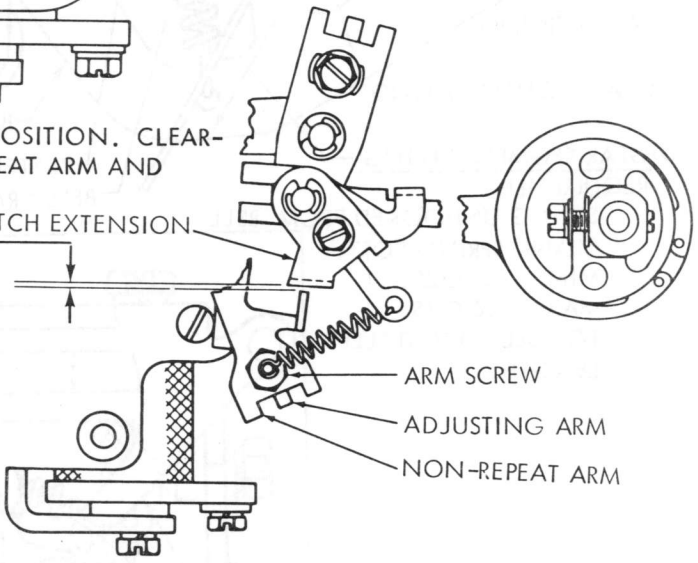
MIN. 0.002 INCH
MAX. 0.010 INCH

TO ADJUST

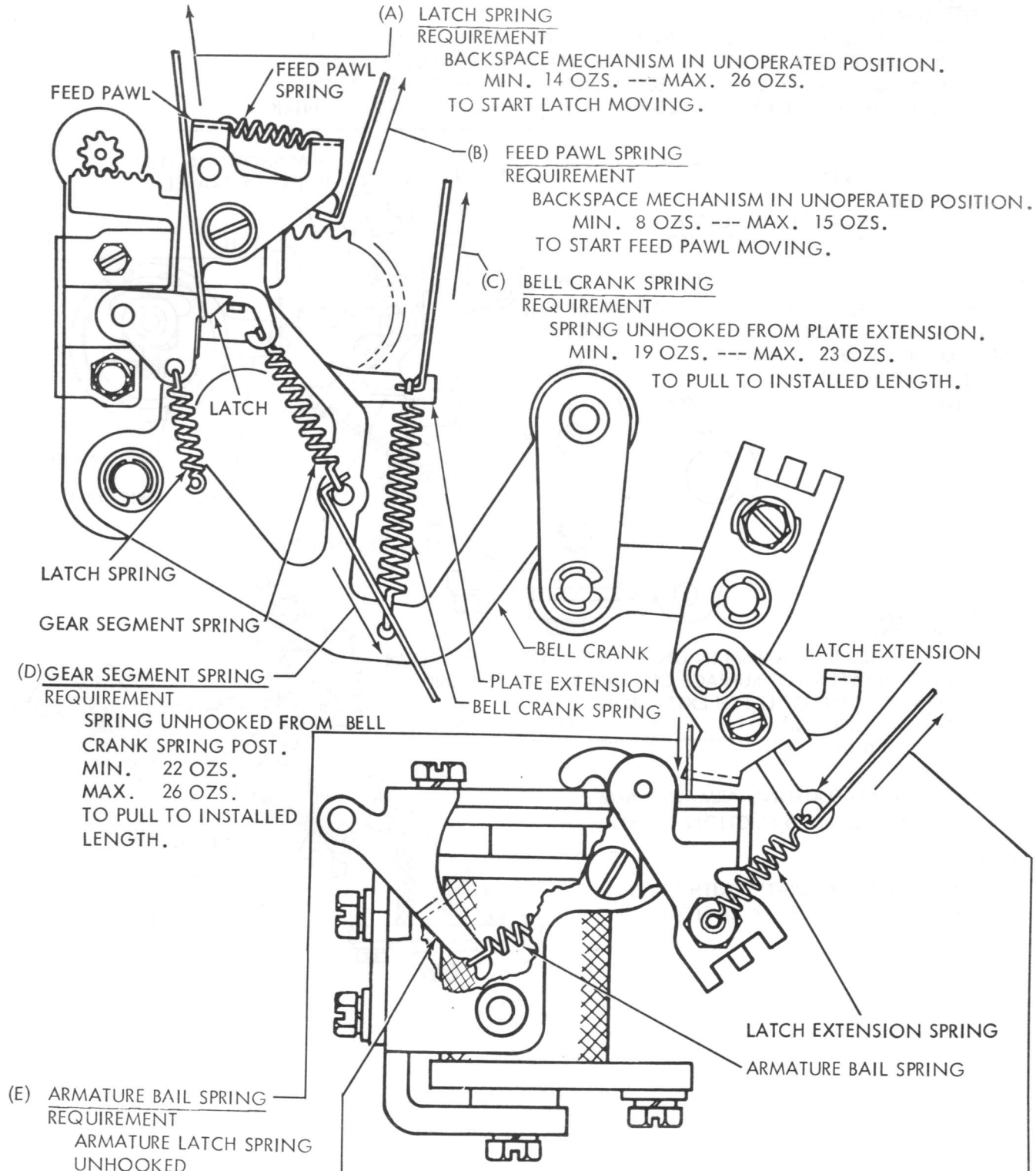
POSITION ADJUSTING ARM WITH ARM SCREW LOOSENED FRICTION TIGHT.

NOTE 2:

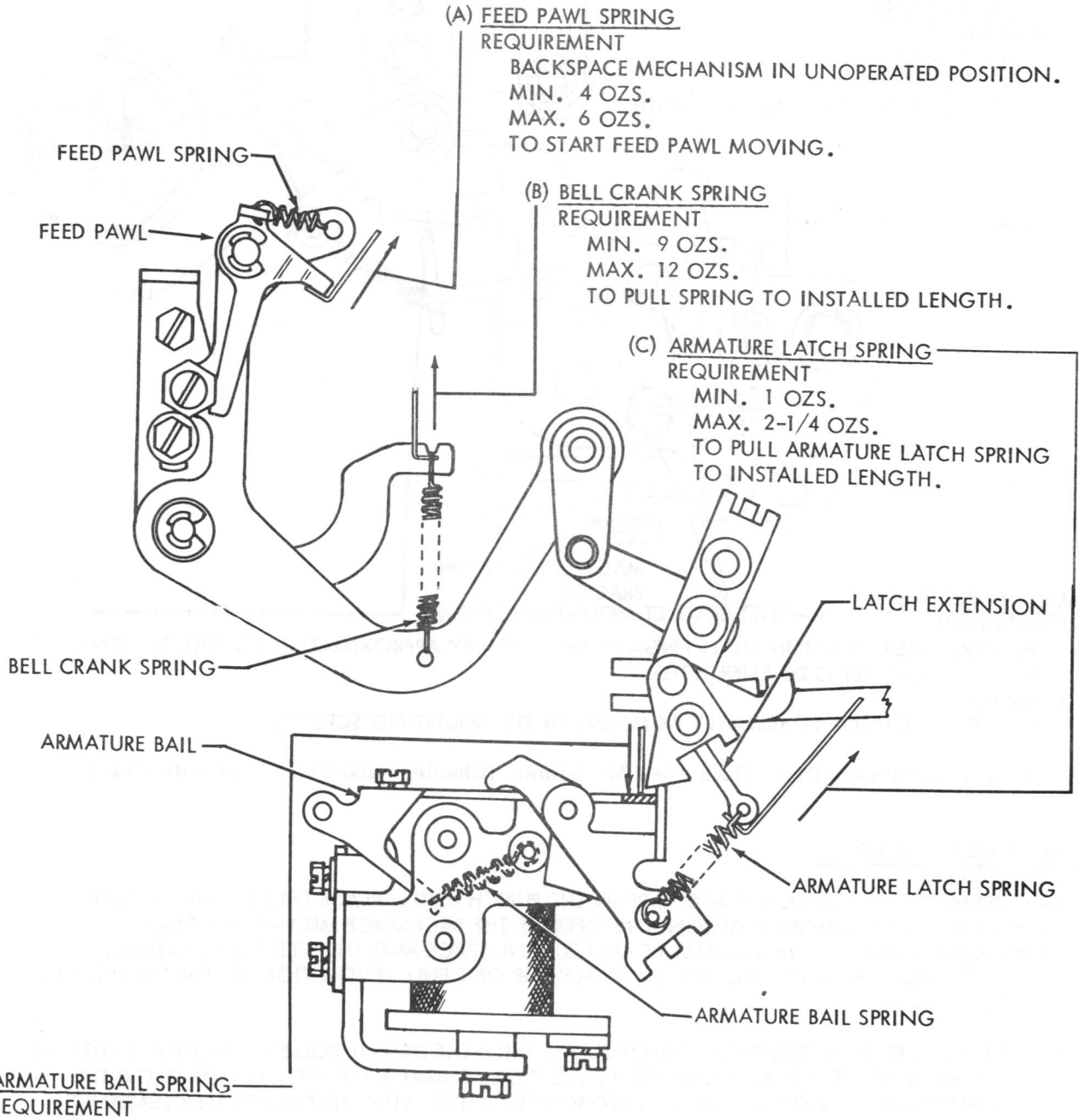
MUST NOT BE OPERATED WITH LATCH AGAINST ARMATURE EXTENSION.



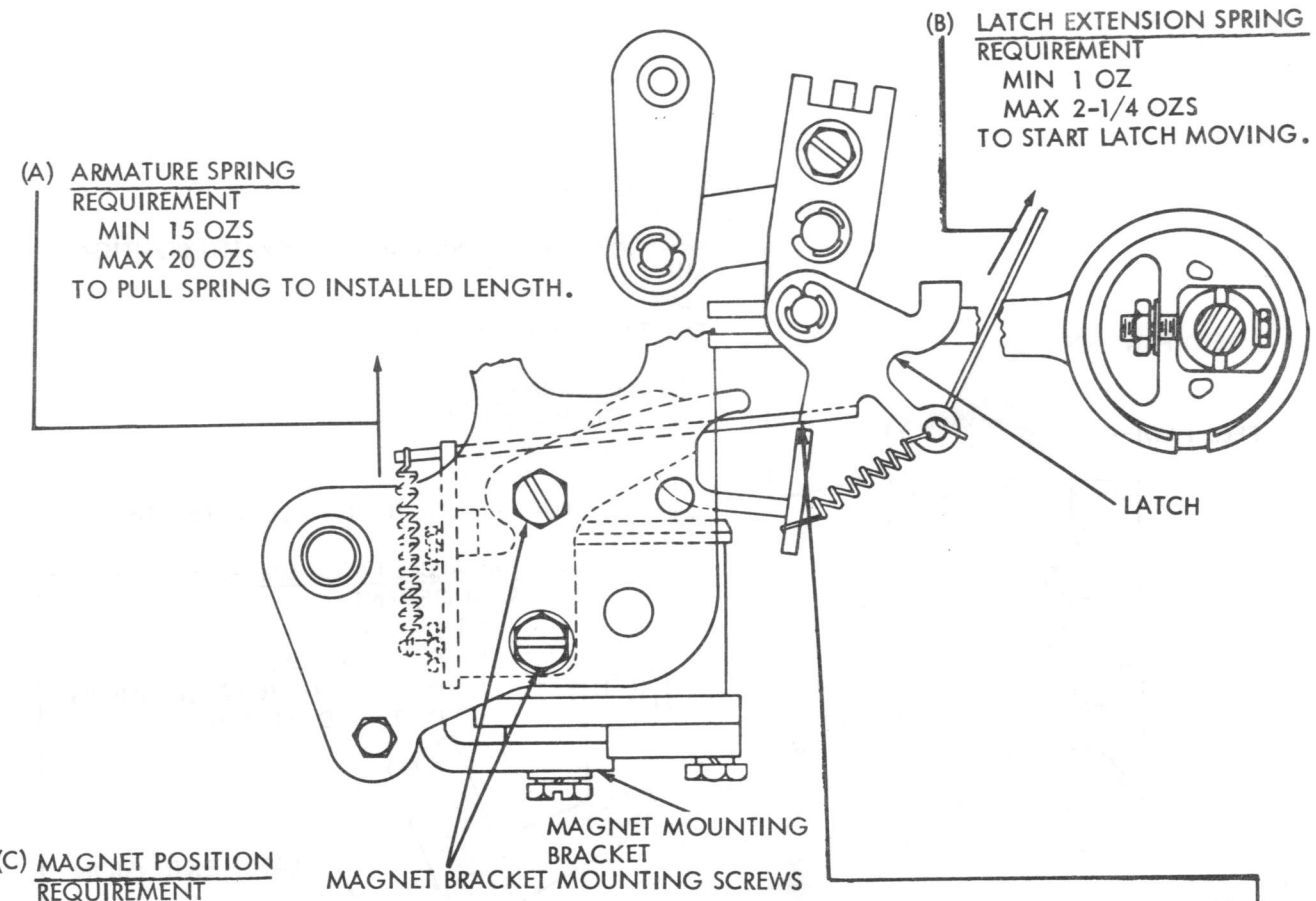
3.10 Manual and Power Drive Backspace Mechanism (For Chadless Tape) (Early Design) continued



3.11 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) (Early Design) continued



3.12 Power Drive Backspace Mechanism (Latest Design)
(Non-Adjustable Backspace Magnet Assembly)



(C) MAGNET POSITION
REQUIREMENT
THE ARMATURE EXTENSION SHALL ENGAGE THE LATCH BY APPROXIMATELY ITS FULL THICKNESS WHEN THE MAGNET IS DE-ENERGIZED.
TO ADJUST
POSITION THE MAGNET ASSEMBLY BY MEANS OF ITS MOUNTING SCREWS.

3.13 Manual and Power Drive Backspace Mechanism (Chadless and Fully Perforated Tape)

(D)
FINAL MANUAL OR POWER
REQUIREMENT
UNIT OPERATING UNDER POWER AND TAPE IN THE PUNCH UNIT. PLACE THE FEED WHEEL SHAFT OIL HOLE IN ITS UPPERMOST POSITION AND OPERATE THE BACKSPACE MECHANISM ONCE. THE BACKSPACE RATCHET WHEEL SHALL BE BACKED ONE SPACE AND THE FEED WHEEL RATCHET TO A FULLY DETENTED POSITION. RECHECK EVERY 90° FOR ONE FULL REVOLUTION OF THE BACKSPACE RATCHET WHEEL.

NOTE 1: A FULLY DETENTED POSITION IS DEFINED AS: WITH THE DETENT ROLLER IN CONTACT WITH THE RATCHET WHEEL THE PUNCH UNIT FEED PAWL SHALL ENGAGE THE FIRST TOOTH BELOW THE HORIZONTAL CENTER LINE OF THE RATCHET FEED WHEEL WITH NO PERCEPTIBLE CLEARANCE.

TO ADJUST
(FOR CHADLESS TAPE MECHANISM) REFINE FEED PAWL ADJUSTMENTS.

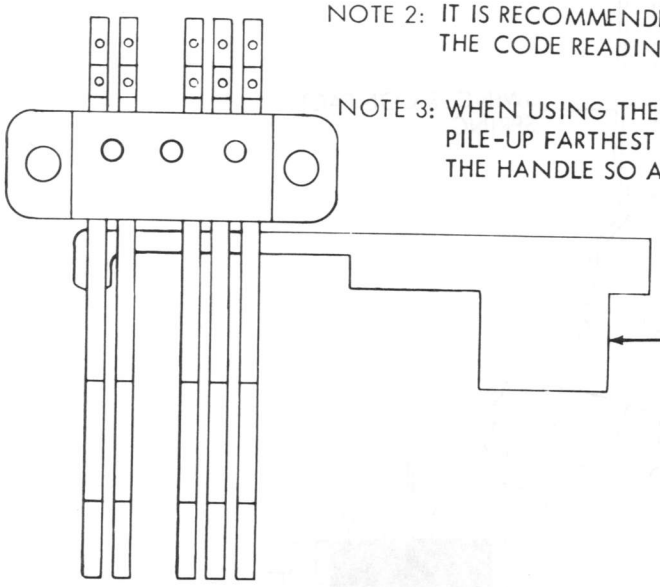
(FOR FULLY PERFORATED TAPE MECHANISM) LOOSEN ARM ADJUSTING SCREW AND MOVE ADJUSTING PLATE.

3.14 Code Reading Contacts

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 SHOULD 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.

NOTE 3: WHEN USING THE CONTACT SPRING BENDER, START WITH THE CONTACT PILE-UP FARTHEST FROM THE HANDLE OF THE TOOL AND WORK TOWARD THE HANDLE SO AS NOT TO DISTURB ADJUSTMENTS ALREADY MADE.



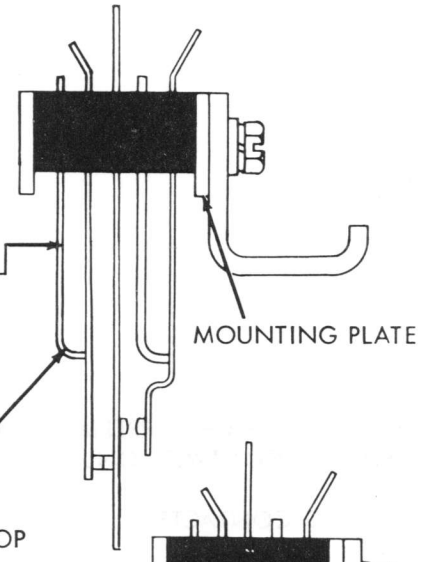
(LEFT SIDE VIEW)

(A)

MARKING CONTACT BACKSTOPS

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

TO ADJUST
BEND MARKING CONTACT BACKSTOPS.



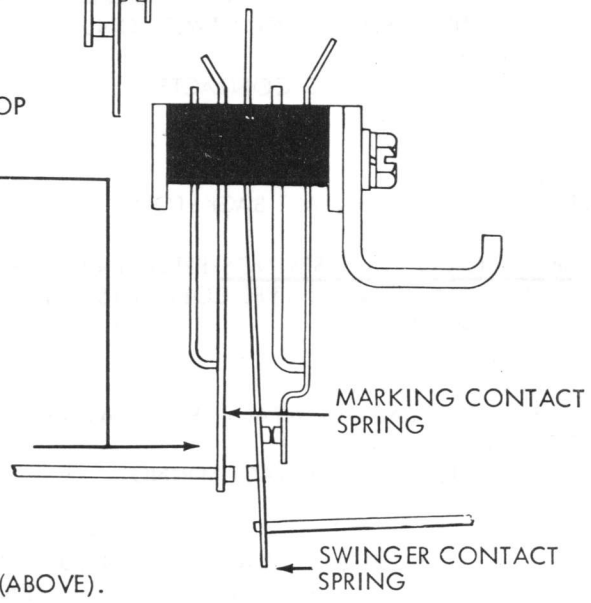
(B)

MARKING CONTACT SPRINGS-PRELIMINARY

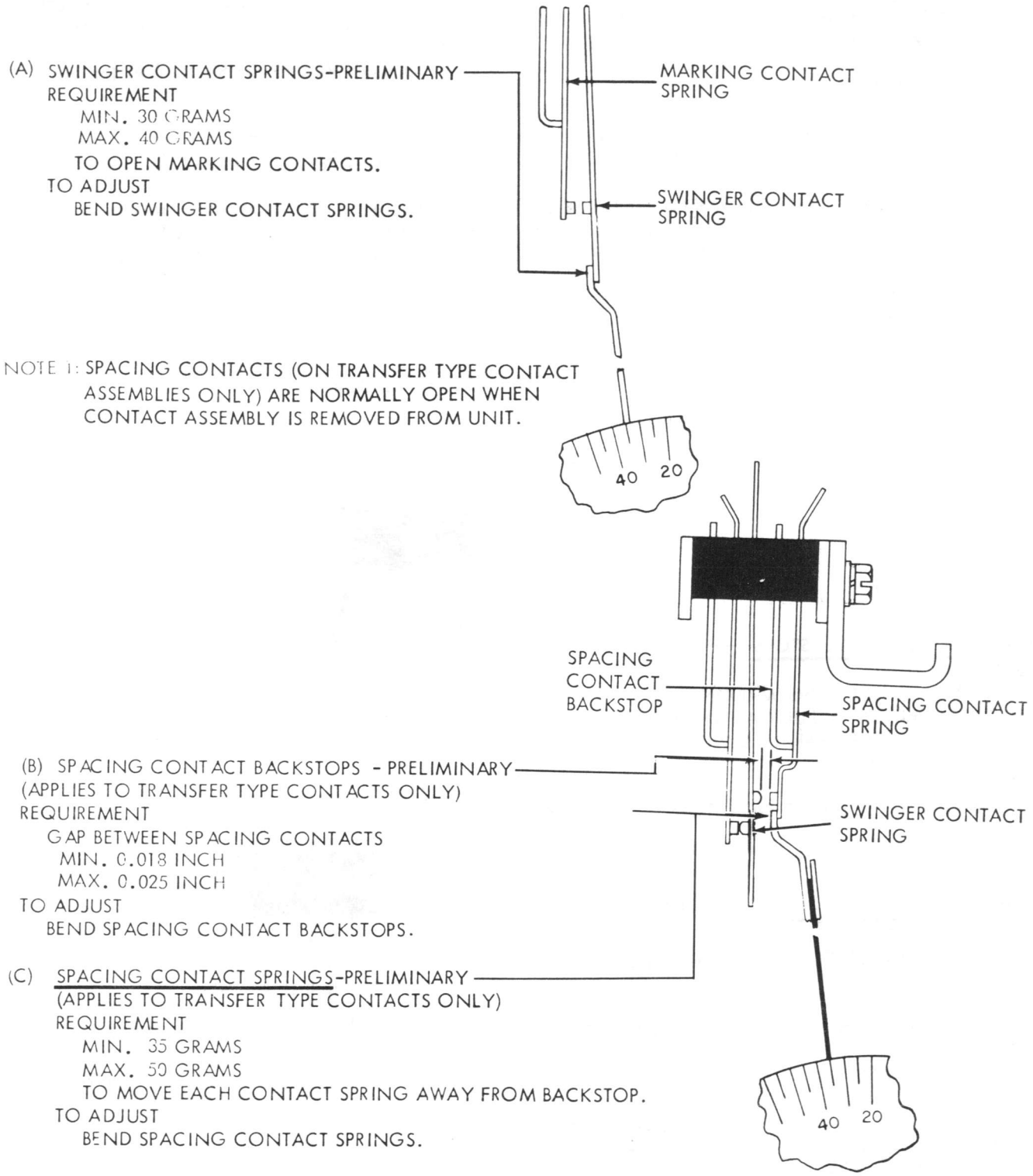
REQUIREMENT
WITH SWINGER CONTACT SPRING HELD AWAY:
MIN. 2 OZS.
MAX. 6 OZS.
TO MOVE EACH SPRING AWAY FROM BACKSTOP.

TO ADJUST
BEND MARKING CONTACT SPRINGS.

NOTE 4:
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).



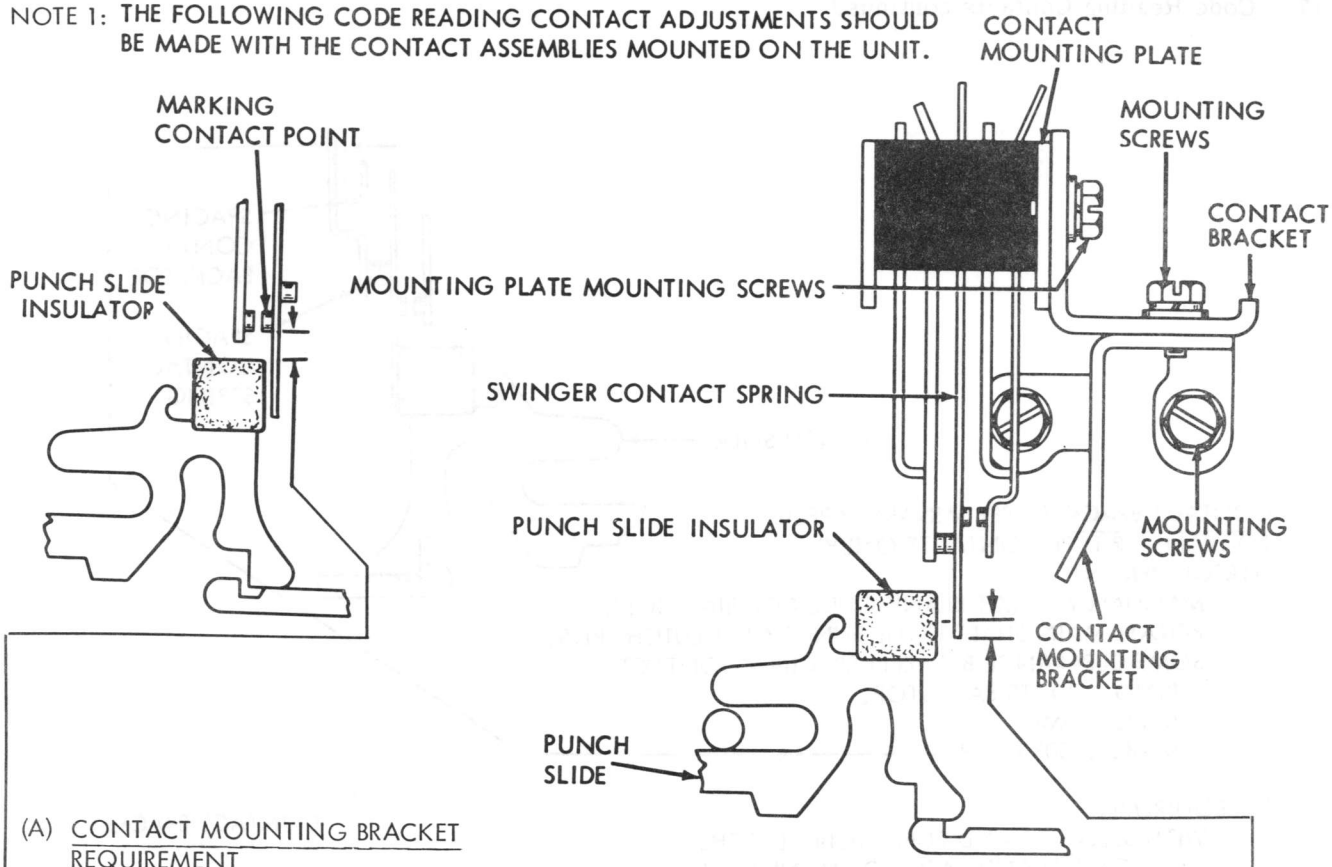
3.15 Code Reading Contacts continued



NOTE 2: 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.

3.16 Code Reading Contacts continued

NOTE 1: THE FOLLOWING CODE READING CONTACT ADJUSTMENTS SHOULD BE MADE WITH THE CONTACT ASSEMBLIES MOUNTED ON THE UNIT.



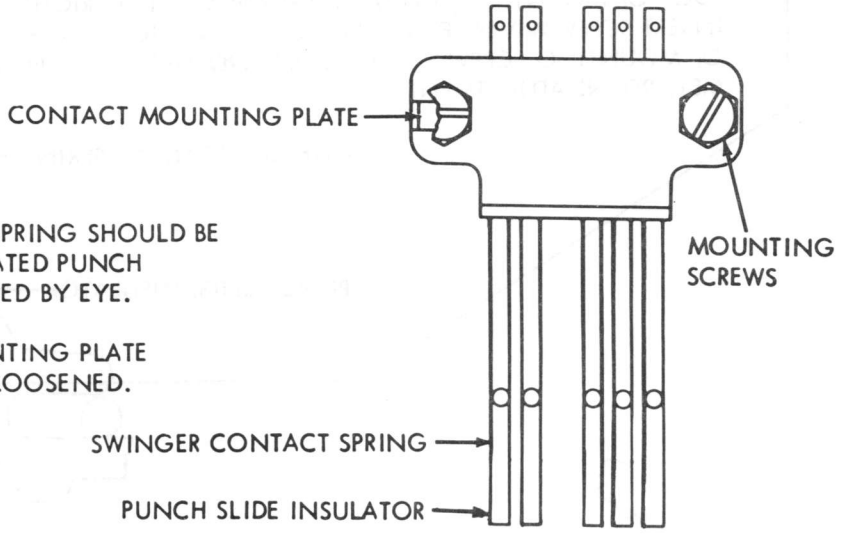
(A) CONTACT MOUNTING BRACKET
REQUIREMENT

(1) WITH FUNCTION CLUTCH DISENGAGED AND LATCHED, THERE SHALL BE MIN. 0.015 INCH CLEARANCE BETWEEN THE CLOSEST NORMALLY CLOSED CONTACT SPRING (MARKING CONTACT) AND PUNCH SLIDE INSULATOR.

(2) WITH LETTERS COMBINATION SELECTED AND PUNCH PINS IN THEIR UPPERMOST POSITION, THE SWINGER SHALL BE PARALLEL TO RIGHT END OF PUNCH SLIDE AND EXTEND BELOW ITS CENTER, AS GAGED BY EYE.

TO ADJUST

POSITION CONTACT MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.



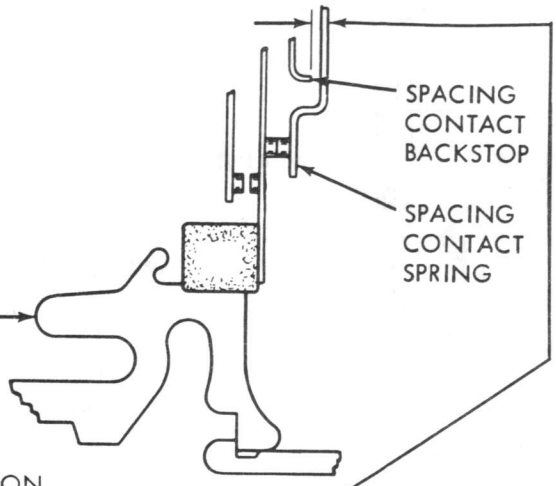
(B) CONTACT MOUNTING PLATE
REQUIREMENT

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

TO ADJUST

POSITION CONTACT MOUNTING PLATE WITH MOUNTING SCREWS LOOSENED.

3.17 Code Reading Contacts continued



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.

MIN. SOME
MAX. 0.008 INCH

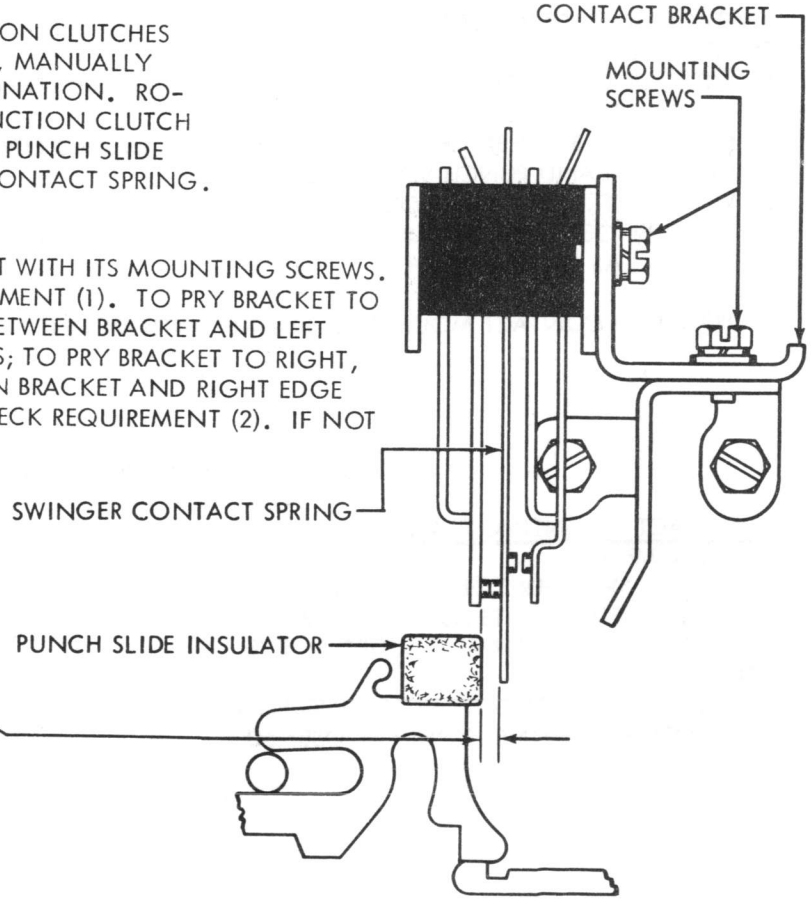
(2) REQUIREMENT

WITH SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT LETTERS CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING.

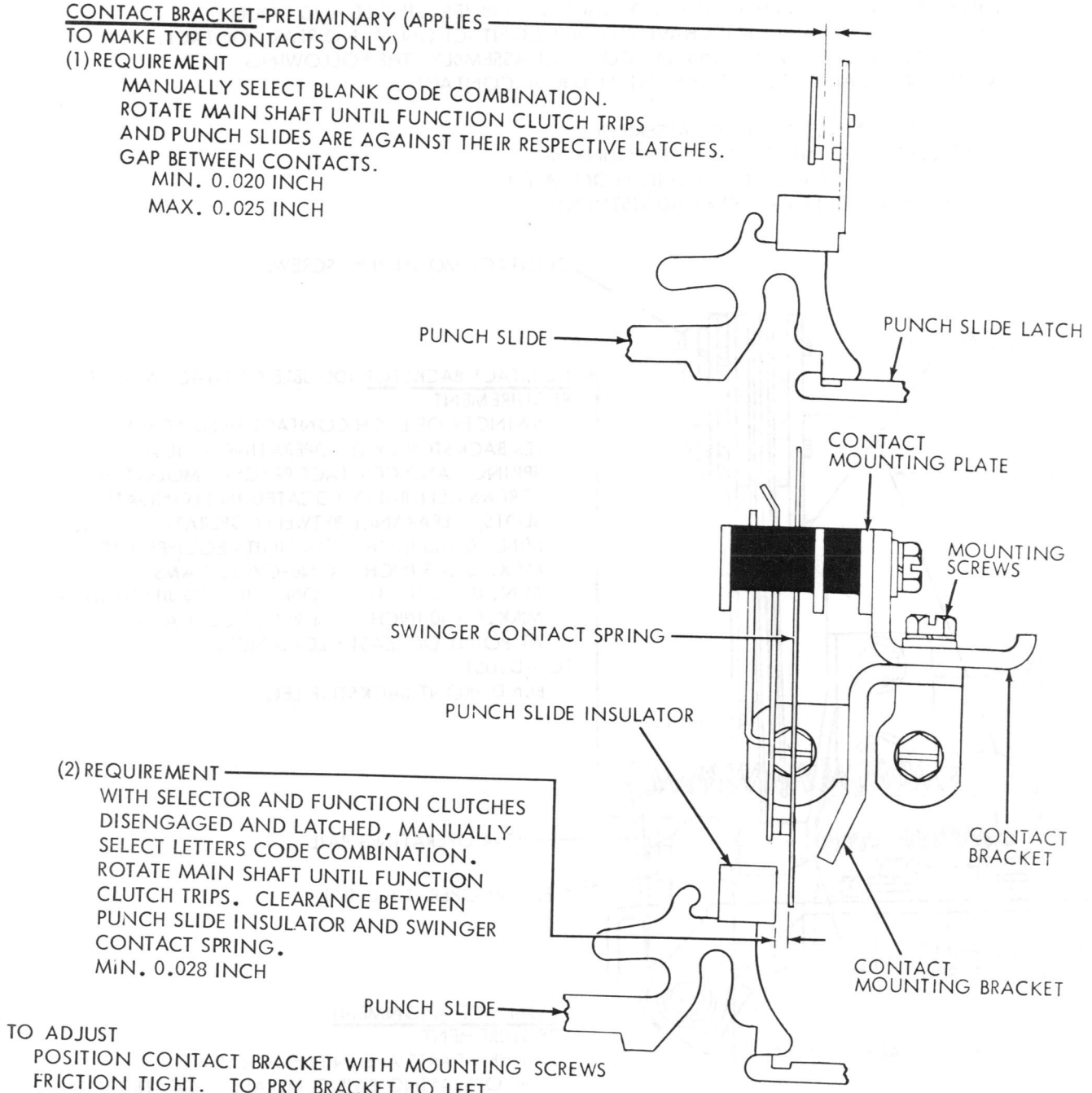
MIN. 0.028 INCH

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.



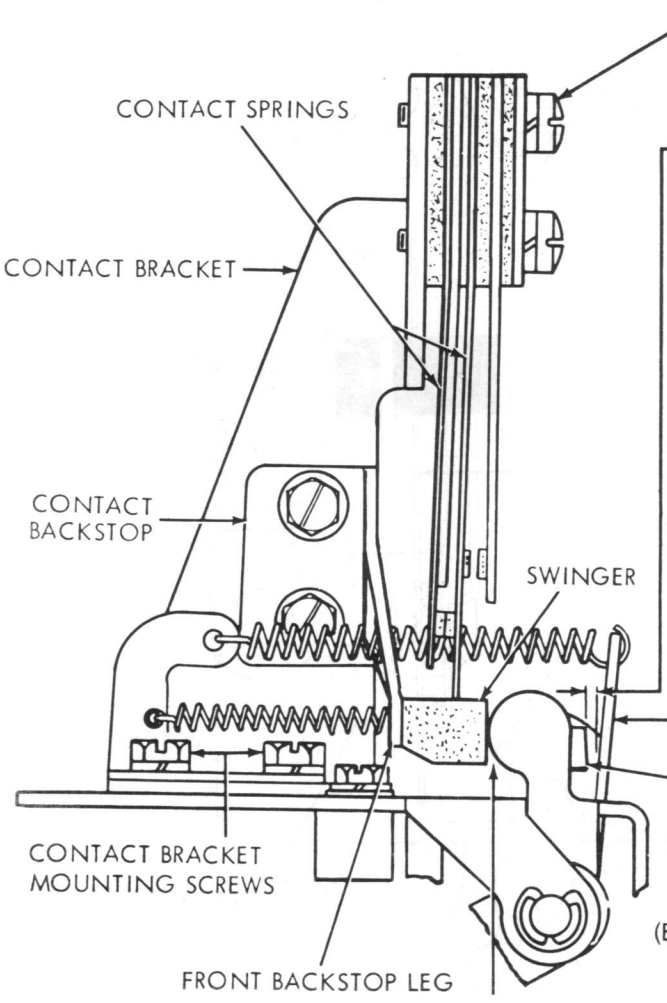
3.18 Code Reading Contacts continued



3.19 Timing Contacts

NOTE 1: 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 2: IN CASE OF SINGLE-CONTACT ASSEMBLY, MAKE CERTAIN CONTACT BRACKET MOUNTING SCREWS ARE CENTRALLY LOCATED IN ELONGATED SLOTS, AND PROCEED TO NEXT ADJUSTMENT.



(A)

CONTACT BACKSTOP (DOUBLE CONTACT ASSEMBLY)

REQUIREMENT

SWINGER OF EACH CONTACT HELD AGAINST ITS BACKSTOP BY ITS OPERATING BAIL AND SPRING, AND CONTACT BRACKET MOUNTING SCREWS CENTRALLY LOCATED IN ELONGATED SLOTS, CLEARANCE BETWEEN OPERATING BAILS

MIN. 0.040 INCH
MAX. 0.045 INCH

ON UNITS EQUIPPED WITH ONE-CYCLE CAMS,

MIN. 0.035 INCH
MAX. 0.040 INCH

ON UNITS EQUIPPED WITH TWO-CYCLE CAMS

AT POINT OF LEAST CLEARANCE.

TO ADJUST

BEND FRONT BACKSTOP LEG.

(B) CONTACT ALIGNMENT

REQUIREMENT

WHEN PARTS ARE IN ENGAGEMENT:

(1) OPERATING BAIL CENTRALLY LOCATED WITH RESPECT TO SWINGER.

(2) MATING CONTACT POINTS ALIGNED.

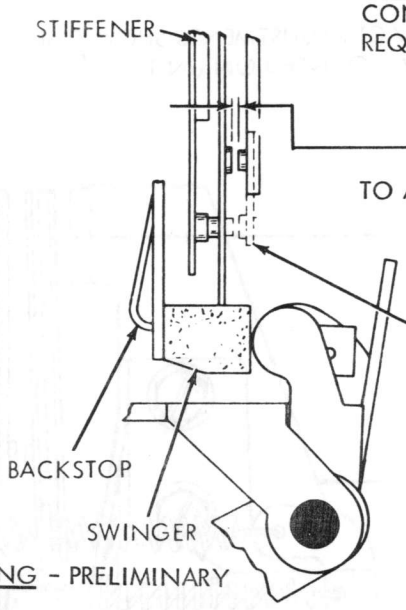
TO ADJUST

POSITION CONTACT SPRINGS WITH CONTACT MOUNTING SCREWS LOOSENED.

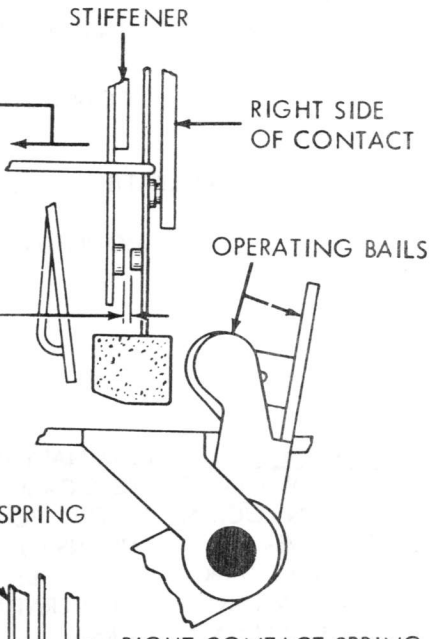
3.20 Timing Contacts continued

NOTE 1: 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.

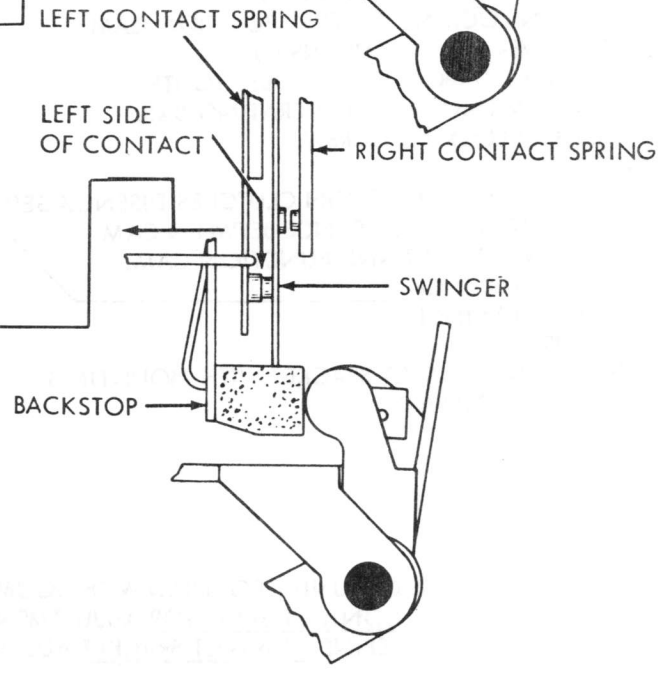


(B) SWINGER CONTACT SPRING - PRELIMINARY
REQUIREMENT
OPERATING BAIL HELD AWAY FROM SWINGER
MIN. 4 1/2 OZS.
MAX. 5 1/2 OZS.
TO OPEN RIGHT SIDE OF CONTACT
TO ADJUST
BEND SWINGER CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND READJUST IF NECESSARY.



(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.

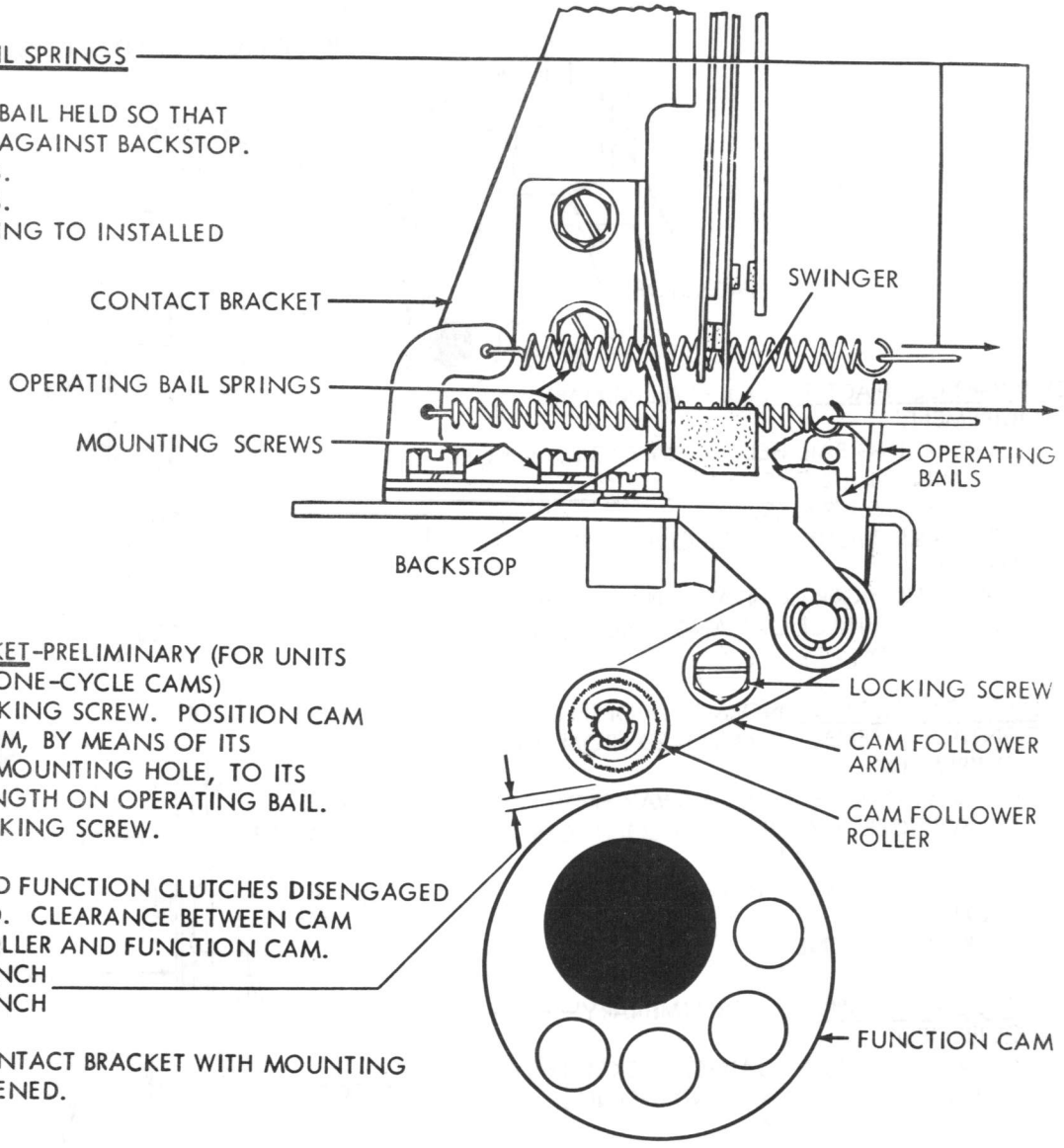
(D) LEFT CONTACT SPRING - PRELIMINARY
REQUIREMENT
SWINGER HELD AGAINST BACKSTOP BY ITS OPERATING BAIL AND SPRING.
MIN. 4 1/2 OZS.
MAX. 5 1/2 OZS.
TO OPEN LEFT SIDE OF CONTACT.
TO ADJUST
BEND LEFT CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND LEFT CONTACT GAP, AND READJUST IF NECESSARY.



3.21 Timing Contacts continued

NOTE 1: THE FOLLOWING TIMING CONTACT ADJUSTMENTS SHOULD BE MADE WITH CONTACT ASSEMBLY MOUNTED ON UNIT.

(B) 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.



(A) 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 2: ON UNITS EQUIPPED WITH DOUBLE CONTACT ASSEMBLIES, RECHECK CONTACT BACKSTOP ADJUSTMENT. IF REQUIREMENT IS NOT MET, REFINE CONTACT BRACKET ADJUSTMENT.

3.22 Code Reading Contacts continued

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

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

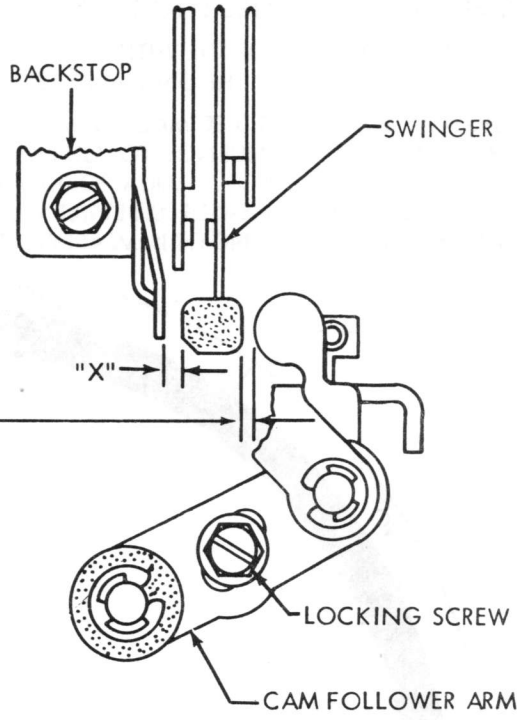
REQUIREMENT

SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED. CLEARANCE BETWEEN BAIL AND SWINGER INSULATOR OF PILE-UP HAVING LEAST CLEARANCE SHOULD BE 0.118 INCH MINUS CLEARANCE "X" BETWEEN BACKSTOP AND SWINGER INSULATOR.

TO ADJUST

POSITION CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

NOTE 1: THE RANGE OF THIS ADJUSTMENT IS 0.005 INCH. FOR EXAMPLE; IF CLEARANCE "X" IS 0.080 INCH, THE NORMAL ADJUSTMENT IS 0.038 INCH AND THE RANGE OF ADJUSTMENT IS 0.035 INCH TO 0.040 INCH.

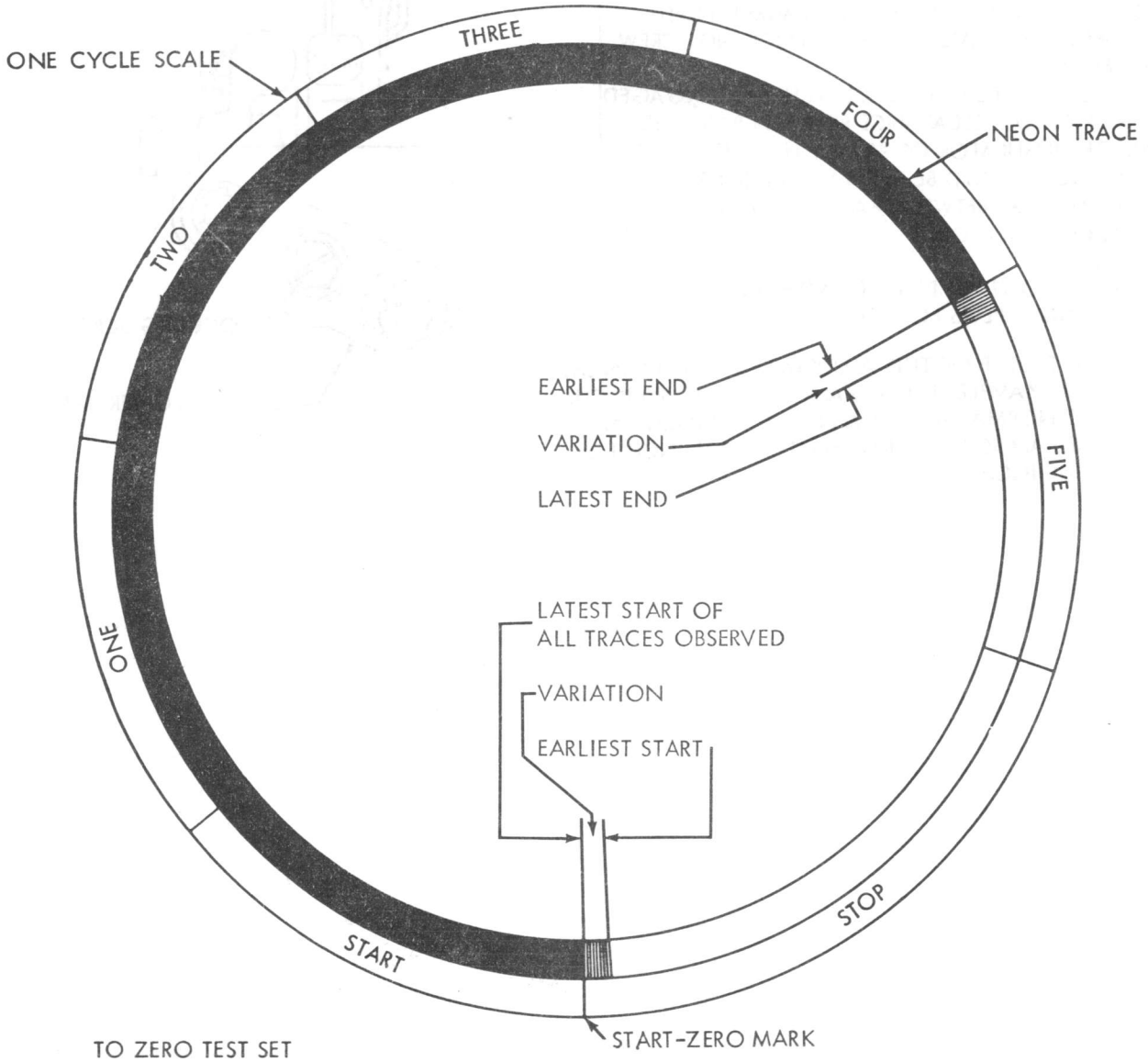


3.23 Code Reading Contacts Strobing (Using Signal Distortion Test Set)

THE FOLLOWING TESTS REQUIRE THE USE OF A TELETYPE SIGNAL DISTORTION TEST SET. THEY SHOULD 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.

ALL TEST SHOULD BE MADE WITH THE CONTROL KNOB OF THE MODEL 28 ASR IN THE K-T POSITION AND WITH THE UNIT AND TEST SET OPERATING AT 600 O.P.M.

OBSERVATIONS ARE TO BE MADE OF A NEON TRACE ON THE GRADUATED DISC 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.

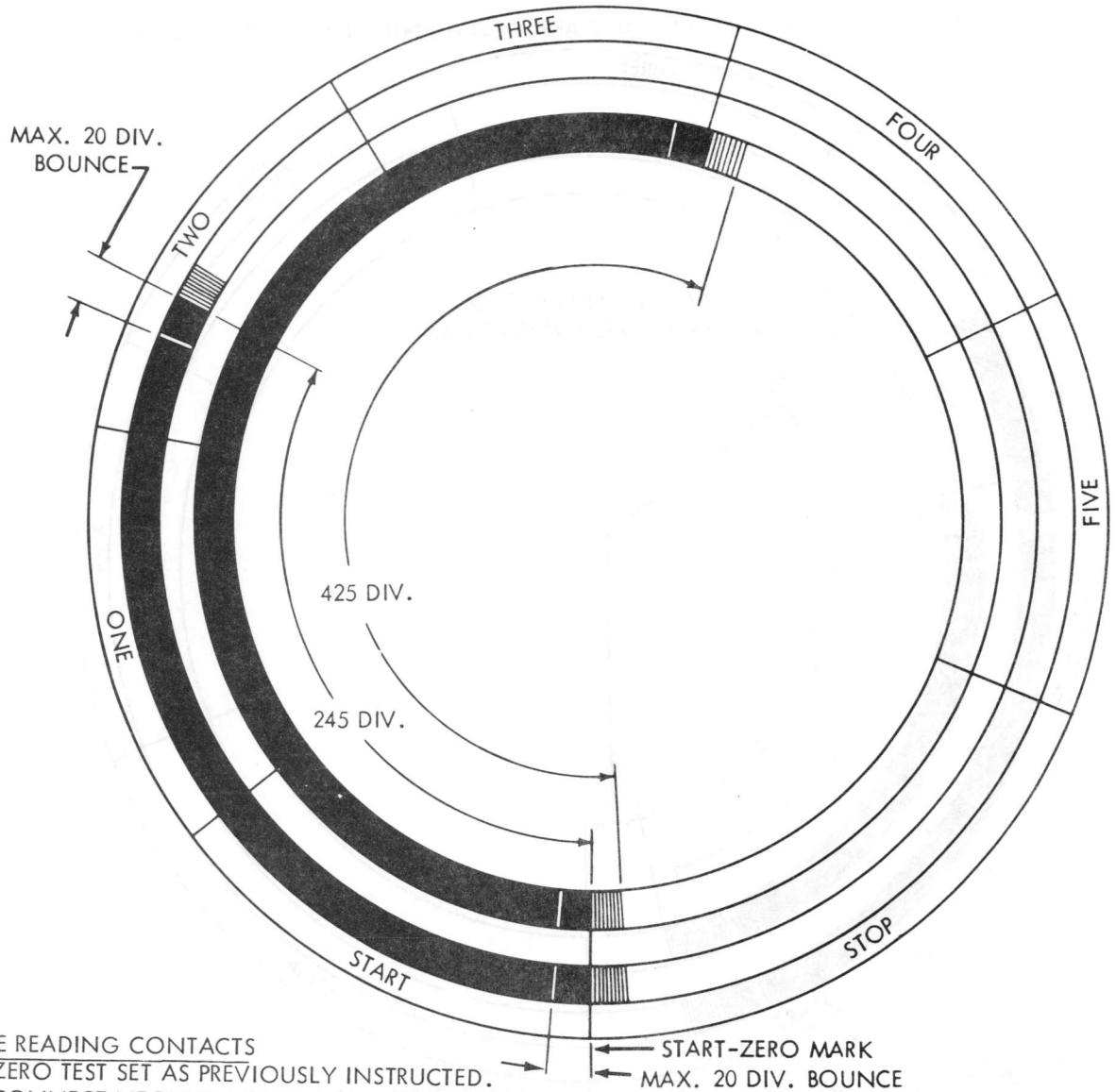


TO ZERO TEST SET

CONNECT NEON TRACE TO NO. 1 CODE READING CONTACT (REARMOST). WITH UNIT RECEIVING LETTERS 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.

3.24 Code Reading Contacts Strobing continued

NOTE 1: TEST PROCEDURES ON THIS PAGE APPLY TO A UNIT WITH 2-CYCLE CLUTCH



CODE READING CONTACTS

(1) ZERO TEST SET AS PREVIOUSLY INSTRUCTED.

(2) CONNECT NEON TRACE TO MARKING SIDE OF CODE READING CONTACT. (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE TRACE.

REQUIREMENTS

A. SIGNAL LENGTH
MIN. 245 DIVISIONS
MAX. 425 DIVISIONS

B. BOUNCE SHOULD END WITHIN MAX. OF 20 DIVISIONS OF EARLIEST START AND EARLIEST END OF TRACE.

(3) TO ADJUST

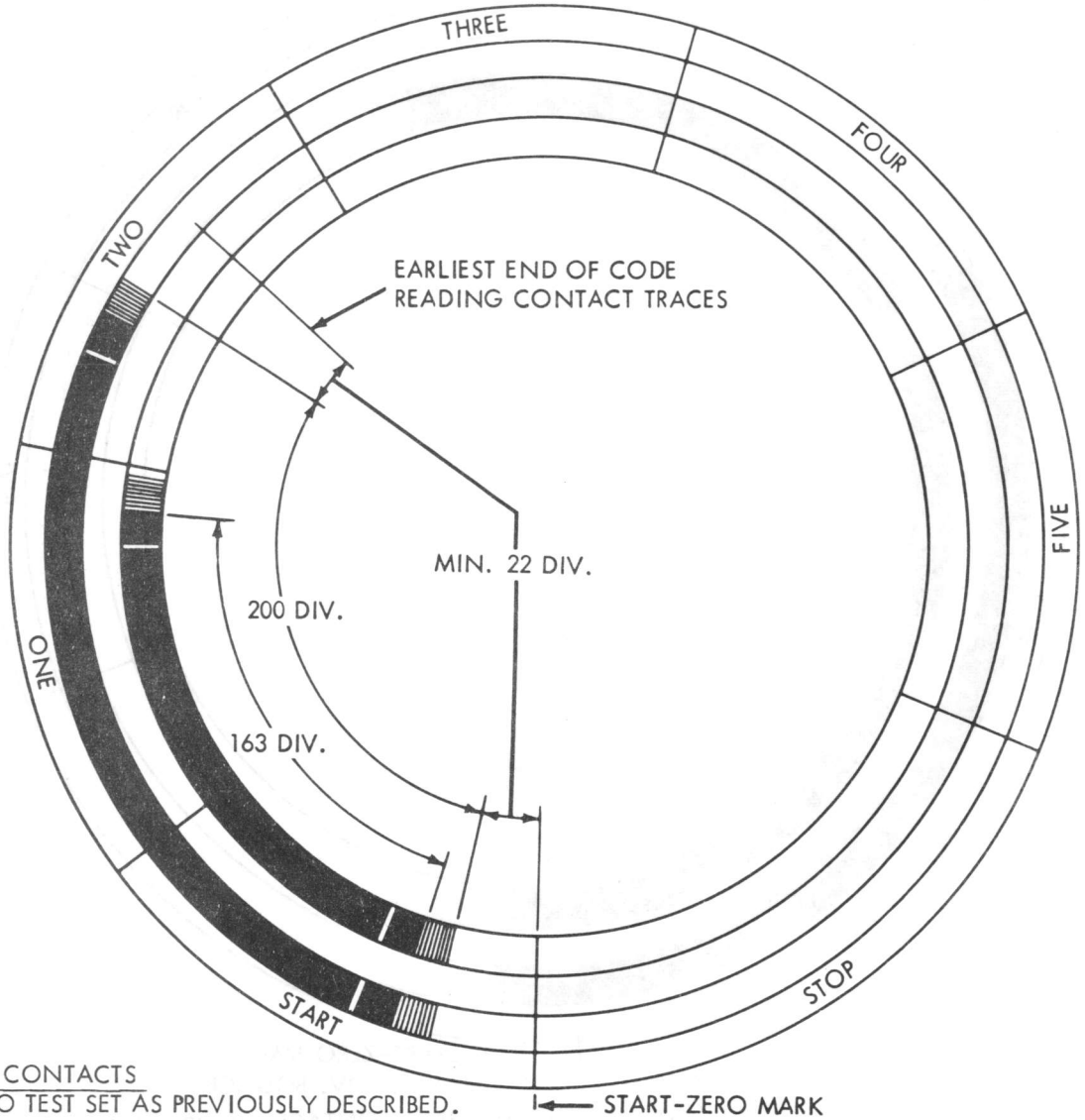
A. IF REQUIREMENTS UNDER (2)A. ARE NOT MET, REFINE CONTACT BRACKET ADJUSTMENT. IF NECESSARY, REFINE CONTACT GAP TO MEET STROBE REQUIREMENTS. RECHECK CONTACT SPRING TENSIONS.

B. IF BOUNCE REQUIREMENTS UNDER (2)B. ARE NOT MET, REFINE MARKING CONTACT SPRING AND SWINGER CONTROL SPRING TENSIONS.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.25 Timing Contacts Strobing

NOTE 1: TEST PROCEDURES ON THIS PAGE APPLY TO A UNIT WITH 2-CYCLE CLUTCH



TIMING CONTACTS

(1) ZERO TEST SET AS PREVIOUSLY DESCRIBED.

(2) CONNECT NEON TRACE TO RIGHT SIDE OF FRONT CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS FROM KEYBOARD TRANSMISSION, OBSERVE TRACE.

REQUIREMENTS

A. EARLIEST START MIN. 22 DIVISIONS AFTER START-ZERO MARK.

B. LATEST END MIN. 22 DIVISIONS BEFORE EARLIEST END OF CODE READING CONTACT TRACES.

C. TRACE LENGTH
MIN. 163 DIVISIONS
MAX. 200 DIVISIONS

D. BOUNCE SHOULD END WITHIN MAX. OF 5 DIVISIONS OF EARLIEST START OR LATEST END OF TRACE.

(3) TO ADJUST

A. IF REQUIREMENTS UNDER (2)A., B., AND C. ARE NOT MET, REFINE RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, AND LEFT CONTACT SPRING.

B. IF BOUNCE REQUIREMENTS UNDER (2)D. ARE NOT MET, REFINE SWINGER CONTACT SPRING AND LEFT CONTACT SPRING.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.26 Unshift-On-Space Mechanism

(A)
UNSHIFT-ON-SPACE FUNCTION BLADE

(1) TO CHECK

REMOVE SIGNAL BELL CONTACT ASSEMBLY WITH BRACKET AND SIGNAL BELL FUNCTION BLADE.

SELECT FIGURES CODE COMBINATION (12-45). ROTATE MAIN SHAFT UNTIL LIFTER ROLLER IS ON LOW PART OF ROCKER BAIL'S CAMMING SURFACE AND UNSHIFT-ON-SPACE FUNCTION BLADE RESTS ON BELL CRANKS.

REQUIREMENT

MIN. SOME---MAX. 0.015 INCH BETWEEN STRIPPER BLADE AND LETTERS EXTENSION ARM.

(2) TO CHECK

SELECT SPACE CODE COMBINATION (--3--). ROTATE MAIN SHAFT UNTIL STRIPPER BLADE TOUCHES LETTERS EXTENSION ARM.

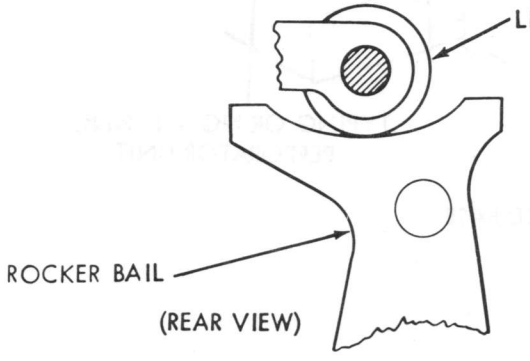
REQUIREMENT

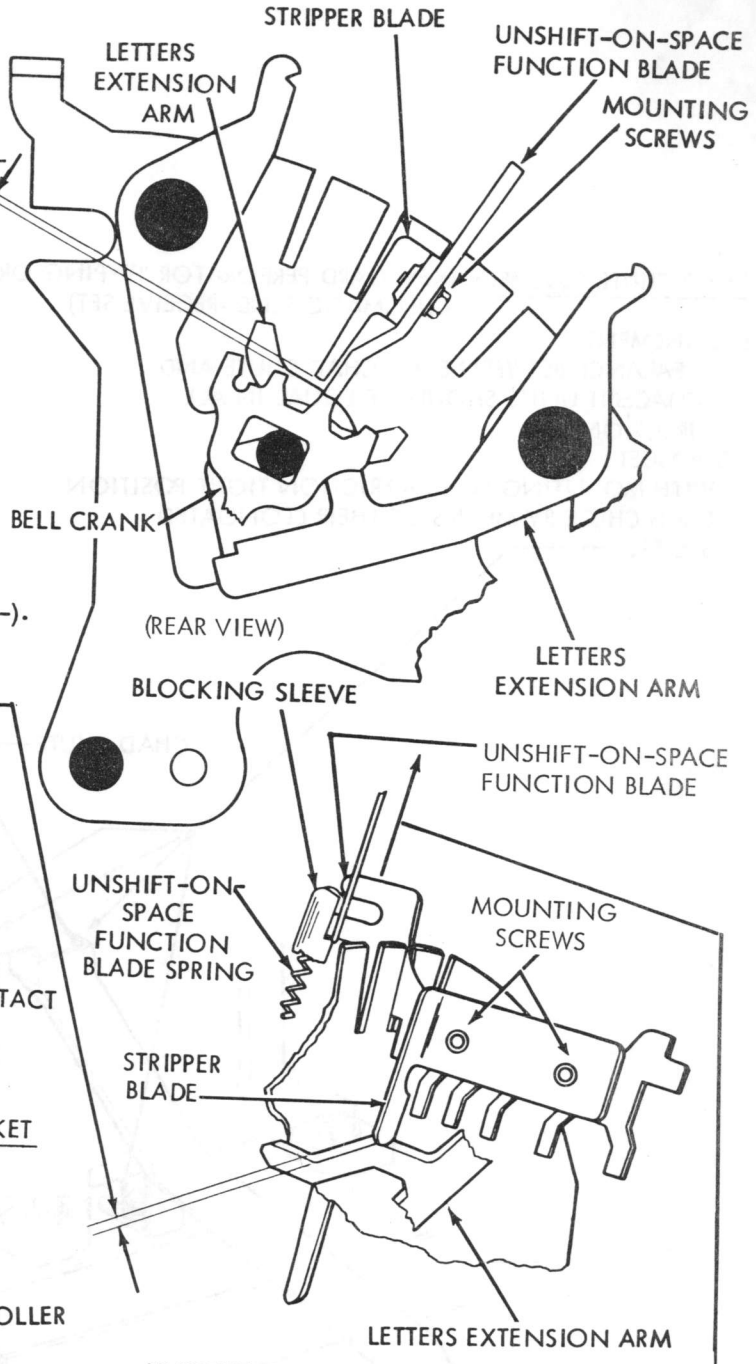
WHEN PLAY IS TAKEN UP IN EITHER DIRECTION, STRIPPER BLADE SHOULD ENGAGE AN EQUAL THICKNESS OF LETTERS EXTENSION ARM.

TO ADJUST

POSITION STRIPPER BLADE ON FUNCTION BLADE WITH TWO MOUNTING SCREWS LOOSENED, REINSTALL SIGNAL BELL CONTACT ASSEMBLY WITH BRACKET AND SIGNAL BELL FUNCTION BLADE.

MAKE SIGNAL BELL CONTACT MOUNTING BRACKET ADJUSTMENT





(B) UNSHIFT-ON-SPACE FUNCTION BLADE SPRING

REQUIREMENT

WITH UNIT IN STOP POSITION AND LONG SLOT IN BLOCKING SLEEVE ENGAGING FUNCTION BLADE:

MIN. 10 OZS.---- MAX. 13 OZS. TO START BLADE MOVING.

3.27 Chad Chute Assembly (Keyboard Perforator Typing or Non-Typing)

CHAD CHUTE ASSEMBLY (KEYBOARD PERFORATOR "TYPING OR NON-TYPING" AUTOMATIC SEND-RECEIVE SET)

REQUIREMENT
CLEARANCE BETWEEN EACH CHAD CHUTE AND ADJACENT UNITS SHOULD BE EQUAL IN ALL DIRECTIONS.

TO ADJUST
WITH MOUNTING SCREWS FRICTION TIGHT POSITION EACH CHUTE BY MEANS OF THEIR ELONGATED SLOTS.