35 TYPING REPERFORATOR

ADJUSTMENTS

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

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1. GENERAL

1.01 This section provides adjustments and requirements for the 35 typing reperforator (Figure 1). It is reissued to incorporate recent engineering changes, the selector timing contact mechanism, and information contained in TCN 1092, TCN 1200 and also in the 574-233-700 addendum. Marginal arrows are used to indicate changes and additions.

1.02 The basic equipment includes selector mechanism, transfer mechanism, eight-level fully perforating punch mechanism, and printing mechanism. The printing mechanism includes letters-figures contacts and magnet and may include print suppression, remote control noninterfering rubout tape feed-out, end of feed-out timing contacts, and power drive backspace mechanisms.

1.03 Reference to left or right, front or rear, and up or down refer to the apparatus in its normal operating position, as viewed from the front with the selector mechanism to the right and the punch mechanism to the left. It is assumed that the elements depicted in illustrations in this section are being viewed from a position in front of the equipment, unless the illustrations are specifically labeled otherwise. In the illustrations, pivot points are shown by circles or ellipses that are solid black to indicate fixed points and cross-hatched to indicate floating points.

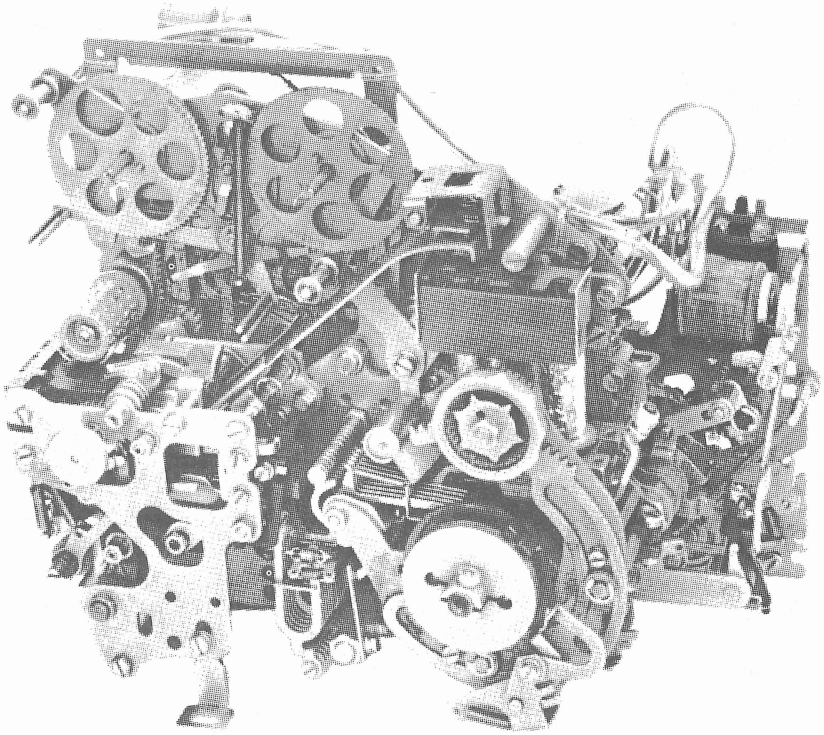


Figure 1 - Typical 35 Typing Reperforator (Front View)

1.04 Tools required to make the adjustments and test the spring tensions are listed in Section 570-005-800. Spring tensions given in this section are indications, not exact values, and should be checked with the correct scale applied in the positions shown in the drawings.

1.05 The unit is in its unoperated, or stop, condition when it is not under power. It is in its idling condition when it is under power and clutches are disengaged (steady marking condition of signal line). The unit is in the letters condition when the type wheel rack is in its upper position (the numerals appear on the top half of the type wheel). The unit is in the figures condition when the type wheel rack is in its lower position (the letters appear on the top half of the type wheel).

CAUTION: APPARATUS SHOULD NOT BE SEPARATED FROM ITS PROTECTIVE HOUSING UNLESS POWER IS DISCONNECTED. WHERE OPERATION OF THE EQUIPMENT IS REQUIRED AFTER IT HAS BEEN SEPARATED FROM ITS PROTECTIVE HOUSING, APPROPRIATE PRECAUTIONARY MEASURES SHOULD BE TAKEN TO PREVENT ACCIDENTS.

1.06 When a requirement calls for a clutch to be DISENGAGED, the clutch shoe lever must be fully latched between its trip lever (or stop arm) and latchlever. The main shaft will then turn freely without the clutch shoes dragging. When the clutch is ENGAGED, the shoe lever and cam disc stop-lug are moved apart, and the clutch shoes are wedged against the drum so that the clutch turns with the shaft.

Note: If the shaft is turned by hand, the clutch will not fully disengage upon reaching its stop position. Where a procedure calls for disengagement, rotate the clutch to its stop position, apply a screwdriver to the cam disc stop-lug and turn the disc in the normal direction of shaft rotation until the latchlever seats in its notch in the disc.

1.07 To manually operate the 35 typing reperforator, proceed as follows.

(a) Attach the TP321071 armature clip to the selector magnet armature by carefully putting the flat formed end of the armature clip over the top of the armature between the pole pieces and then hooking the projection under the edge of the armature. The spring tension of the armature clip will hold the selector armature in the marking (attracted) position.

(b) While holding the selector magnet attracted by means of the armature clip, manually rotate the main shaft in a counterclockwise direction until all the clutches are brought to their disengaged position.

(c) Fully disengage the clutches in accordance with 1.06, Note.

(d) Release the selector magnet armature momentarily to permit the selector clutch to engage.

(e) Rotate the main shaft slowly until all the pushlevers have fallen to the left of their selecting levers.

(f) Strip the pushlevers from their selector levers if they are spacing in the code combination of the character or function that is being selected. Allow the pushlevers to move to the right. The pushlevers and selector levers move in succession, starting with the inner lever no. 1 to the outer lever no. 8.

(g) Continue to rotate the main shaft until all operations initiated by the selector action clear through the unit.

1.08 Parts dismantled to facilitate checking or readjustment should be reassembled after the operation is completed. If a part mounted on shims is to be dismantled, the number of shims used at each mounting screw should be noted so that the same shim pileups can be replaced when the part is remounted. When parts removed are replaced, related adjustments which may have been affected should be checked.

1.09 Parts that are worn to the extent that they can no longer be made to meet the specified requirements by authorized adjustments, or which are worn to the extent that it seems probable that early further wear might cause a loss of adjustment, should be replaced by new parts. Springs which do not meet the requirements and for which there are no adjusting procedures should be discarded and replaced by new springs.

1.10 All contact points should meet squarely. Smaller points should fall wholly within the circumference of larger mating points. Points that are the same size should not be out of alignment more than 25 percent of the point diameter. Avoid sharp kinks or bends in the contact springs.

Note: Keep all electrical contacts free of oil and grease.

1.11 Where a 35 typing reperforator is used as a component of a receive-only or a send-receive set, it is mounted on a base or keyboard base. Refer to the base, keyboard and other applicable sections for gear mesh and additional adjustment requirements.

2. BASIC UNIT

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

2.02 Selector Mechanism

2.03 Function Mechanism

Note: For gear mesh adjustment, refer to applicable sections covering base or keyboard mounting facility.

(A) CLUTCH SHOE LEVER

Note: This adjustment should be made for both selecting and function clutches.

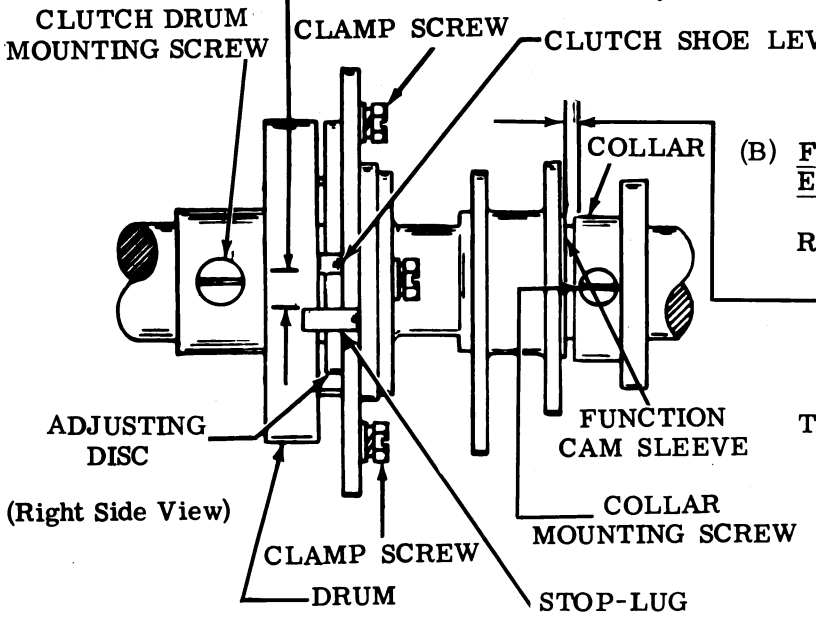
(1) To Check
Disengage clutch. Measure clearance.

(2) To Check
Align head of clutch drum mounting screw with stop-lug. Engage clutch. Manually press shoe lever and stop-lug together and allow to snap apart. Measure clearance.

Requirement
Clearance between shoe lever and stop-lug
—Min 0.055 inch---Max 0.085 inch
greater when clutch engaged (2) than when disengaged (1).

To Adjust
Engage wrench or screwdriver with lug on adjusting disc. Rotate disc with clamp screws loosened. Tighten screws.

Note: After making adjustment, disengage clutch. Remove drum mounting screw. Rotate drum in normal direction and check to see if it drags on shoe. If it does, refine adjustment.



(B) FUNCTION CLUTCH DRUM ENDPLAY

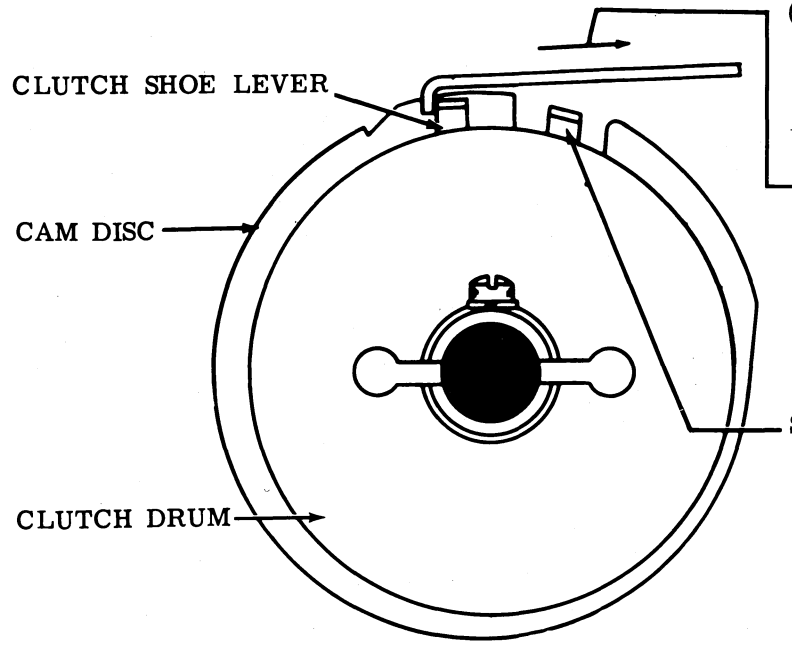
Requirement
With function clutch disengaged
—Min some---Max 0.015 inch
when play is taken up to make clearance maximum.

To Adjust
With its mounting screw loosened, move drum to extreme front position. Tighten drum mounting screw. Position collar with mounting screw loosened. Tighten screw.

2.04 Selector Mechanism (continued)

2.05 Function Mechanism (continued)

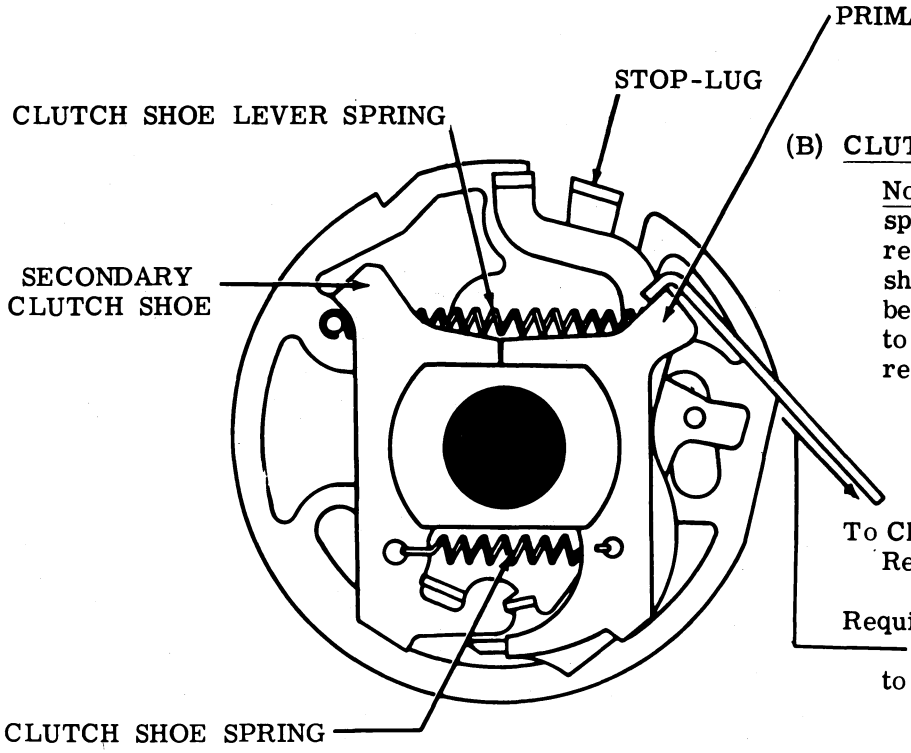
Note: These spring tensions apply to both clutches.



(A) CLUTCH SHOE LEVER SPRING

To Check
Engage clutch. Hold cam disc to prevent its turning.

Requirement
Min 15 oz---Max 20 oz
to pull shoe lever in contact with stop-lug.



(B) CLUTCH SHOE SPRING

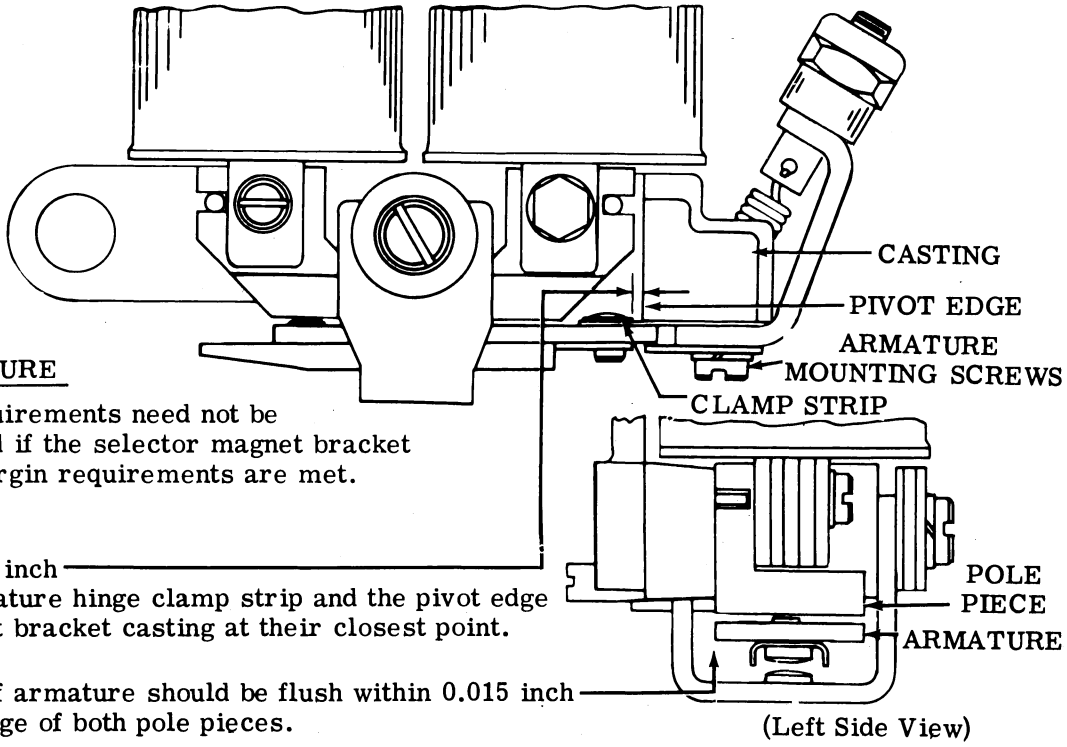
Note: In order to check this spring tension, it is necessary to remove the clutch from the main-shaft. Therefore, it should not be checked unless there is reason to believe it will not meet its requirement.

To Check
Remove clutch from drum.

Requirement
Min 3 oz---Max 5 oz
to start primary shoe moving.

2.06 Selector Mechanism (continued)

Note: To facilitate making the following adjustments, remove the range finder assembly and selector magnet assembly. To insure better operation, pull a piece of bond paper between the armature and the pole pieces to remove any oil or foreign matter that may be present. Make certain that no lint or pieces of paper remain between the pole pieces and the armature.



SELECTOR ARMATURE

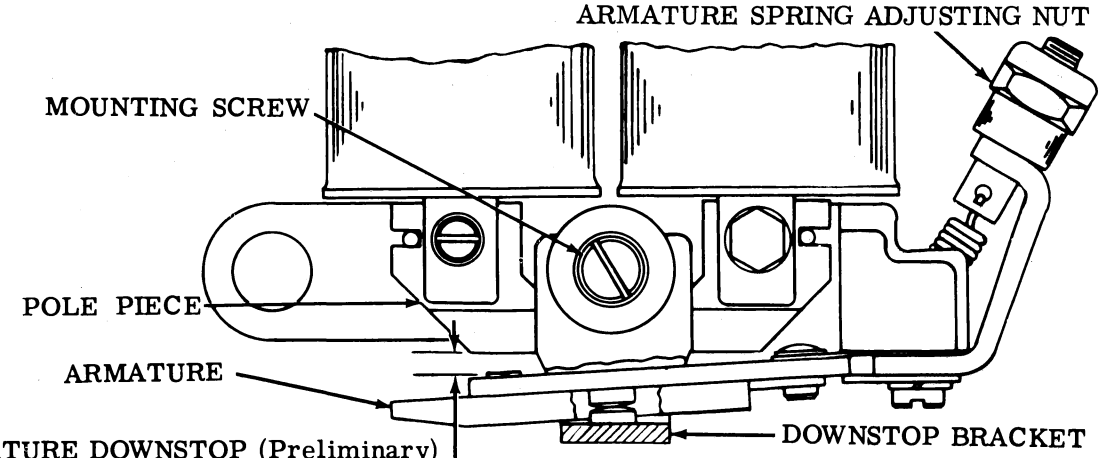
Note: These requirements need not be made nor checked if the selector magnet bracket and receiving margin requirements are met.

(1) Requirement
Clearance
Min 0.010 inch
between armature hinge clamp strip and the pivot edge of the magnet bracket casting at their closest point.

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

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

To Adjust
Position armature spring adjusting nut to hold armature firmly against pivot edge of casting. Position armature with mounting screws loosened. Tighten screws.



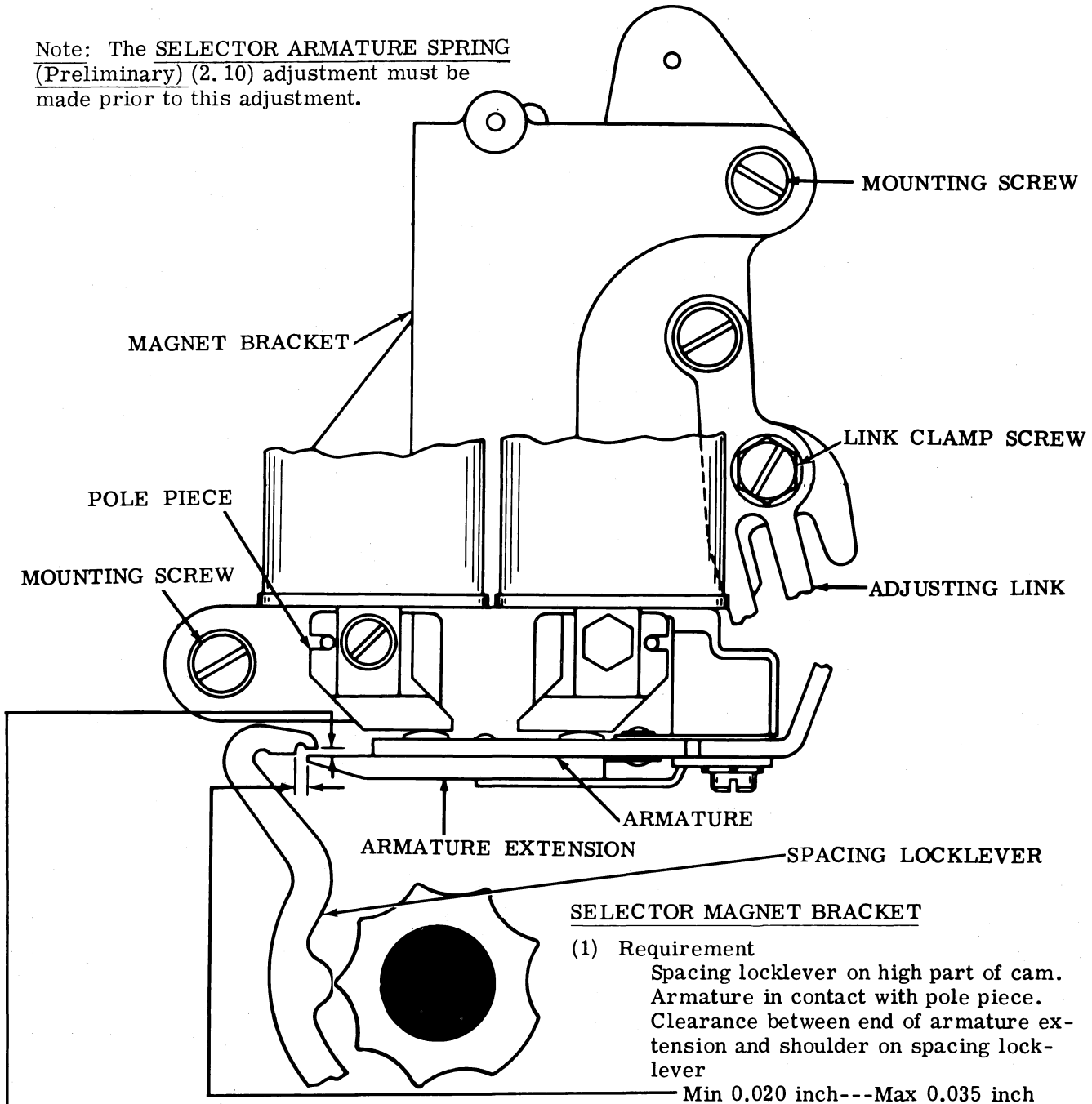
SELECTOR ARMATURE DOWNSTOP (Preliminary)

Requirement
Remove oil shield. With magnet de-energized, locklevers on high part of their cam, and armature resting against its downstop, clearance between end of armature and left edge of left pole piece
Min 0.030 inch---Max 0.035 inch

To Adjust
Position downstop bracket with mounting screw loosened. Replace oil shield and check OIL SHIELD (2.16) adjustment. Tighten screw.

2.07 Selector Mechanism (continued)

Note: The SELECTOR ARMATURE SPRING (Preliminary) (2.10) adjustment must be made prior to this adjustment.



SELECTOR MAGNET BRACKET

(1) Requirement

Spacing locklever on high part of cam. Armature in contact with pole piece. Clearance between end of armature extension and shoulder on spacing locklever

Min 0.020 inch---Max 0.035 inch

To Adjust

Loosen two magnet bracket mounting screws and adjusting link clamp screw. Position magnet bracket by means of adjusting link and tighten link clamp screw only.

Note: See following page for requirement (3).

(2) Requirement

Spacing locklever on high part of cam. Armature in contact with pole piece.

Min some---Max 0.003 inch clearance between upper surface of the upper step of the spacing locklever when locklever is held downward.

To Adjust

Position upper end of magnet bracket. Tighten two magnet bracket mounting screws. Recheck requirement (1).

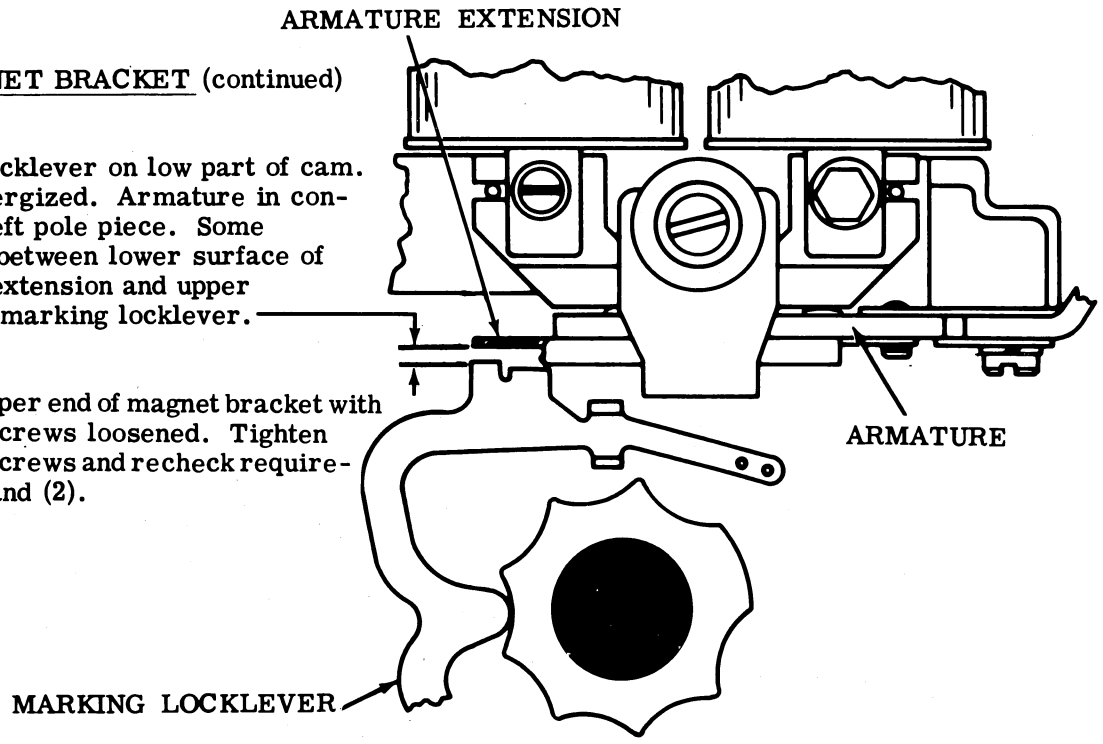
2.08 Selector Mechanism (continued)

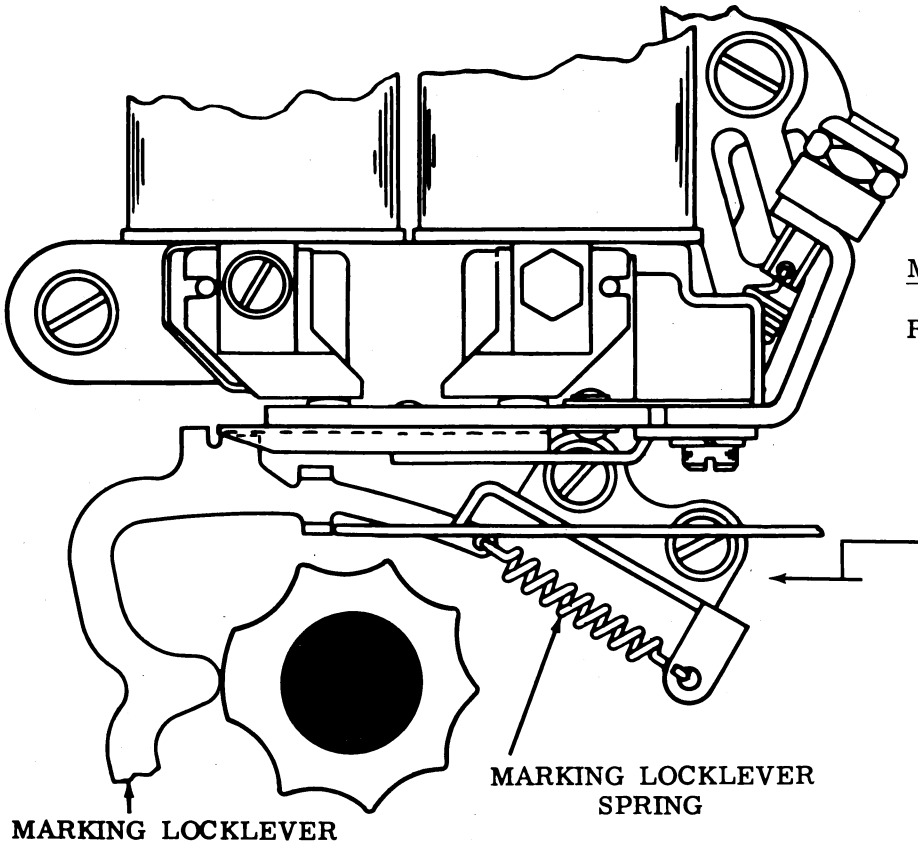
Note: See preceding page for SELECTOR MAGNET BRACKET adjustment, requirements (1) and (2).

SELECTOR MAGNET BRACKET (continued)

(3) Requirement
Marking locklever on low part of cam. Magnet energized. Armature in contact with left pole piece. Some clearance between lower surface of armature extension and upper surface of marking locklever.

To Adjust
Position upper end of magnet bracket with mounting screws loosened. Tighten mounting screws and recheck requirements (1) and (2).





MARKING LOCKLEVER SPRING

Requirement
RUBOUT combination (12345678) selected. Mainshaft rotated until selector clutch is disengaged. Push scale applied to lower extension of locklever
—Min 2 oz---Max 4 oz to start lever moving.

2.09 Selector Mechanism (continued)

SELECTOR ARMATURE DOWNSTOP (Final)

Requirement

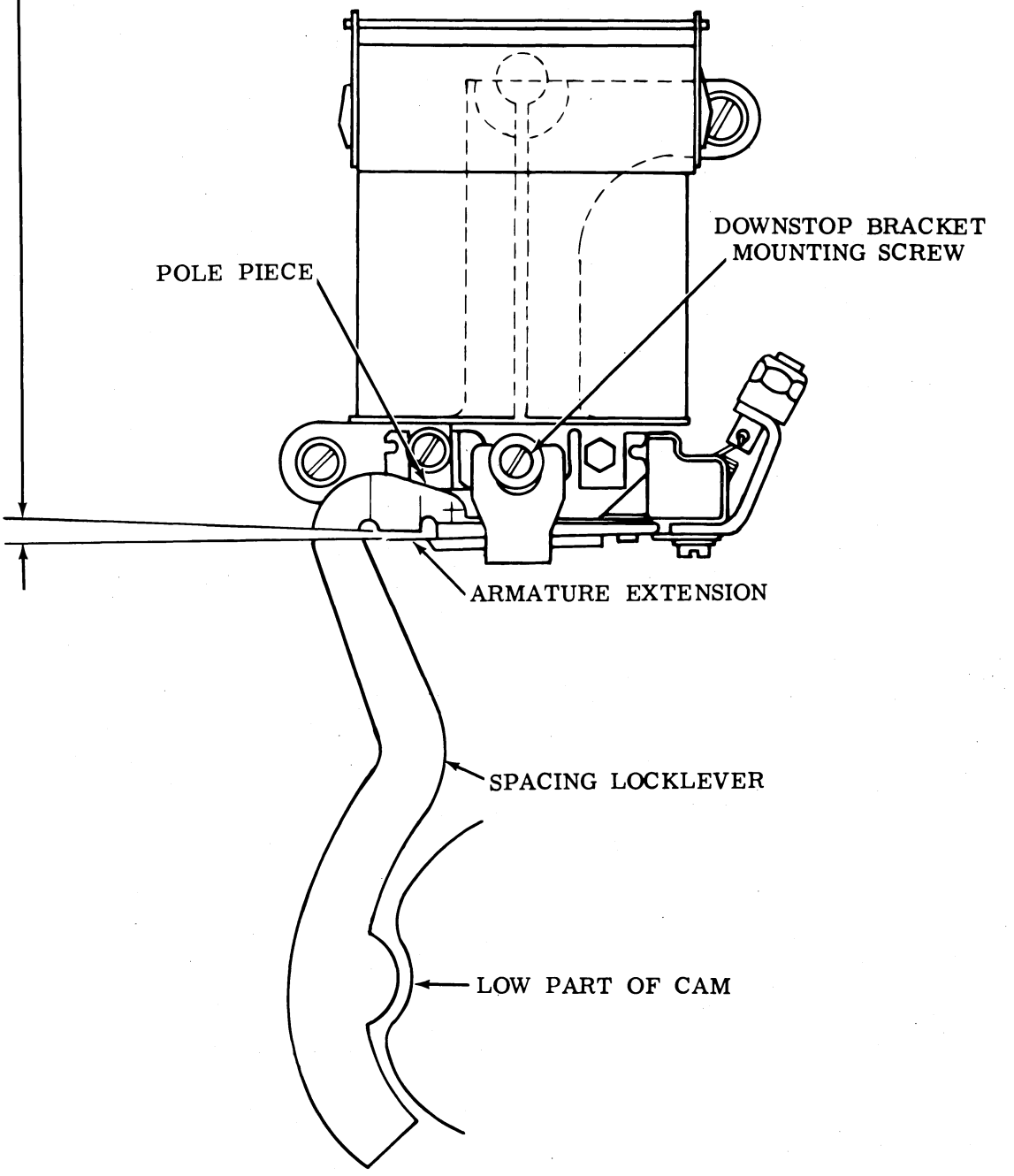
With the selector magnet de-energized and the spacing locklever on the low part of its cam, there should be

Min 0.005 inch---Max 0.015 inch

clearance between the top of the armature extension and the bottom of the lower step of the spacing locklever.

To Adjust

Refine the SELECTOR ARMATURE DOWNSTOP (Preliminary) (2.06) adjustment.



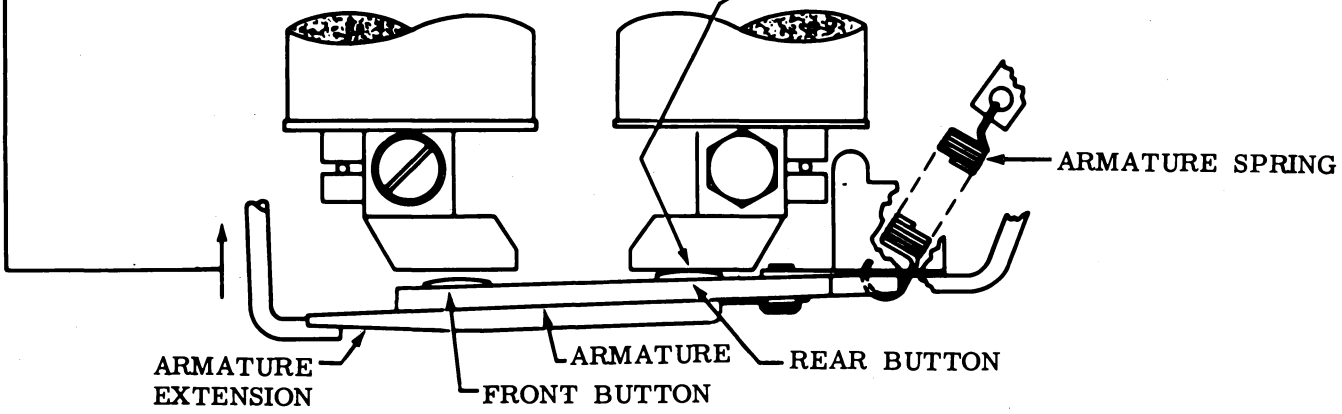
2.10 Selector Mechanism (continued)

SELECTOR ARMATURE SPRING (Preliminary)
(For Units Employing Selector Armature With Two Antifreeze Buttons Only)

Requirement
With locking levers and start lever on high part of their cams, scale applied as nearly vertical as possible under end of armature extension, it should require approximately the following tensions to move the rear antifreeze button against the magnet core.

0.060 Ampere — Approximately 21 grams
0.500 Ampere — Approximately 28 grams

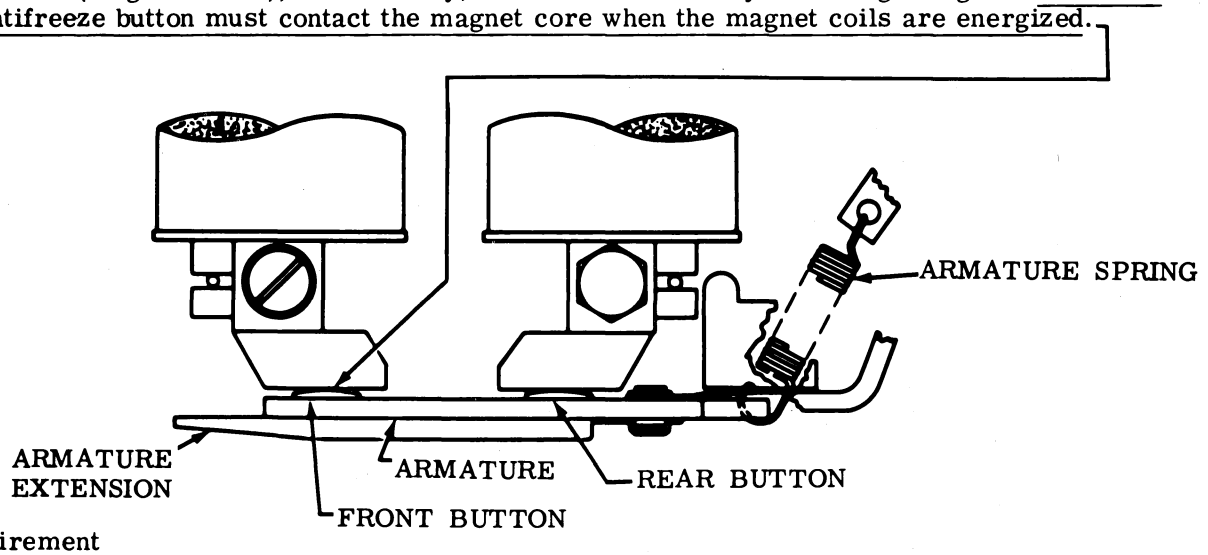
To Adjust
Position armature spring adjusting nut.



Note: See SELECTOR RECEIVING MARGIN (2.15) adjustment.

SELECTOR ARMATURE SPRING (Final)

(1) Requirement
When a distortion test set is available, the selector armature spring tension should be refined (15 grams min), if necessary, to obtain satisfactory receiving margins. The front antifreeze button must contact the magnet core when the magnet coils are energized.



(2) Requirement
See SELECTOR RECEIVING MARGIN (2.15) adjustment.

2.11 Selector Mechanism (continued)

SELECTOR ARMATURE SPRING (Preliminary) (continued)
(For Units Employing Selector Armature With Single Antifreeze Button Only)

(1) Requirement

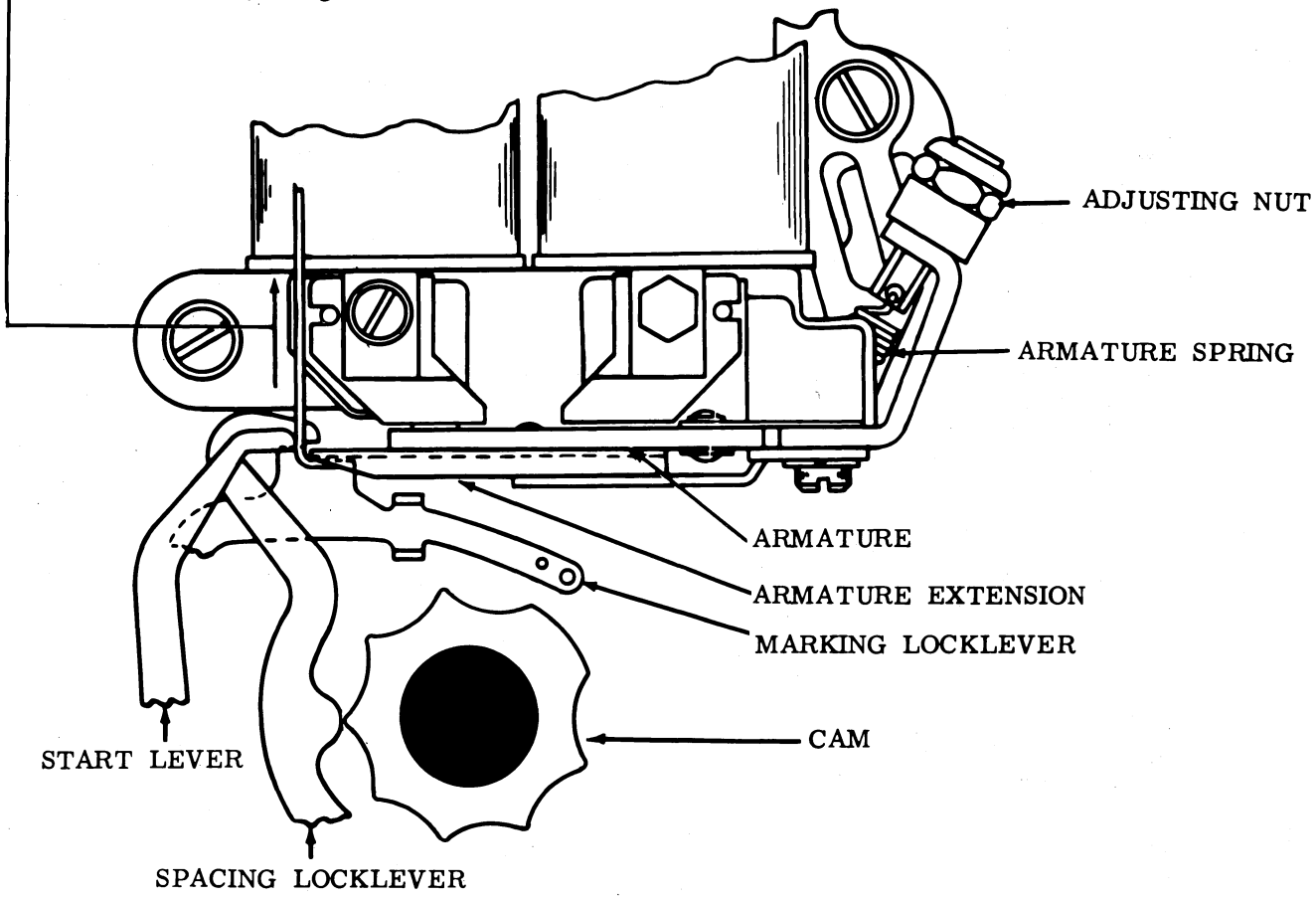
With locking levers and start lever on high part of their cams, scale applied as nearly vertical as possible under end of armature extension, it should require the following tensions to move armature to marking position:

0.060 Ampere - Min 2-1/2 oz---Max 3 oz
0.500 Ampere - Min 4-1/2 oz---Max 5-1/2 oz

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

To Adjust

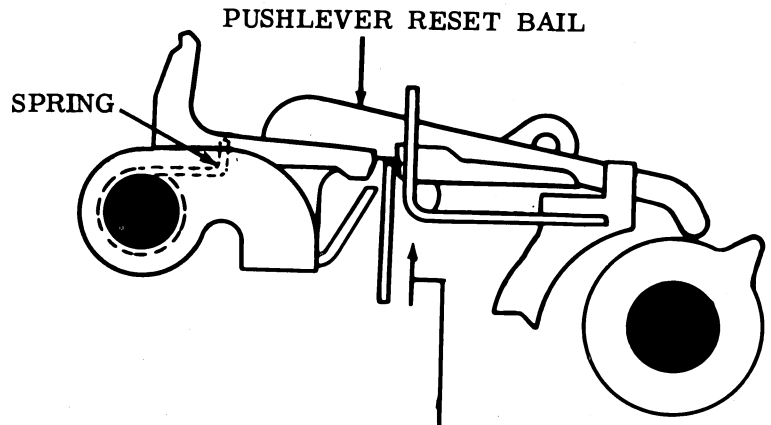
Position adjusting nut.



(2) Requirement

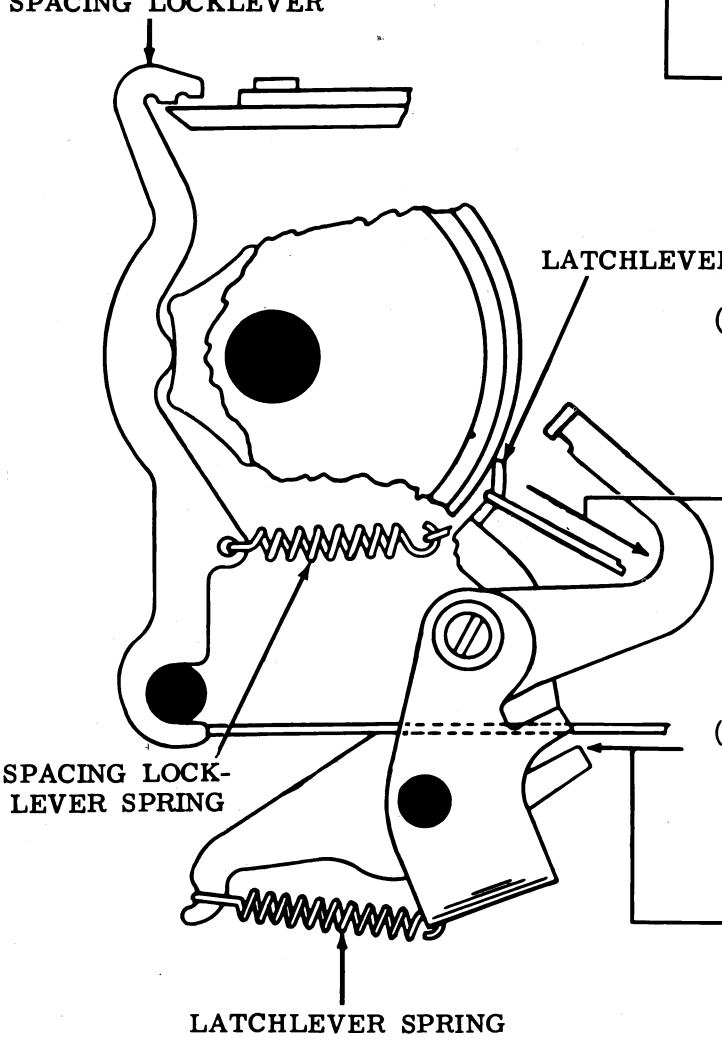
See SELECTOR RECEIVING MARGIN (2.15) for final adjustment.

2.12 Selector Mechanism (continued)



(A) PUSHLEVER RESET BAIL SPRING

Requirement
Pushlever reset bail on low part of cam, 32 oz scale applied to reset bail.
Min 4 oz---Max 8 oz
to move bail from cam.



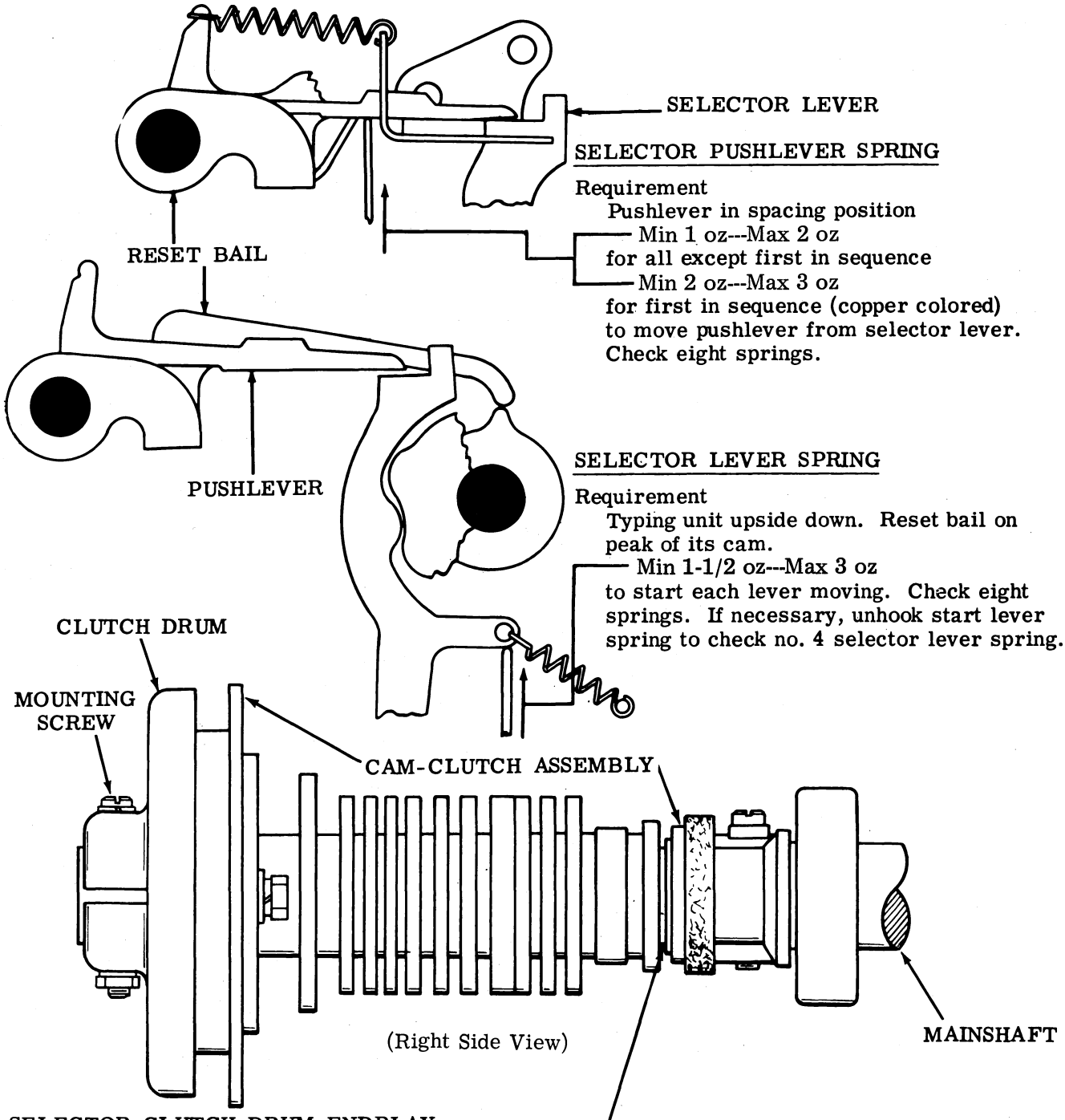
(B) SELECTOR CLUTCH LATCHLEVER SPRING

Requirement
Latch resting on low part of its cam disc.
Min 2 oz---Max 3-1/2 oz
to start latch moving.

(C) SPACING LOCKLEVER SPRING

Requirement
Selector armature released. Spacing locklever on low part of its cam. Spring scale applied to lower end of spacing locklever.
Min 3 oz---Max 6 oz
to move spacing locklever from its pivot shaft.

2.13 Selector Mechanism (continued)



SELECTOR PUSHLEVER SPRING

Requirement

Pushlever in spacing position

Min 1 oz---Max 2 oz for all except first in sequence

Min 2 oz---Max 3 oz for first in sequence (copper colored) to move pushlever from selector lever. Check eight springs.

SELECTOR LEVER SPRING

Requirement

Typing unit upside down. Reset bail on peak of its cam.

Min 1-1/2 oz---Max 3 oz to start each lever moving. Check eight springs. If necessary, unhook start lever spring to check no. 4 selector lever spring.

SELECTOR CLUTCH DRUM ENDPLAY

Requirement

Clutch latched in stop position. Cam assembly should have some endplay, not more than 0.010 inch.

To Adjust

Position clutch drum on mainshaft with mounting screw loosened.

2.14 Selector Mechanism (continued)

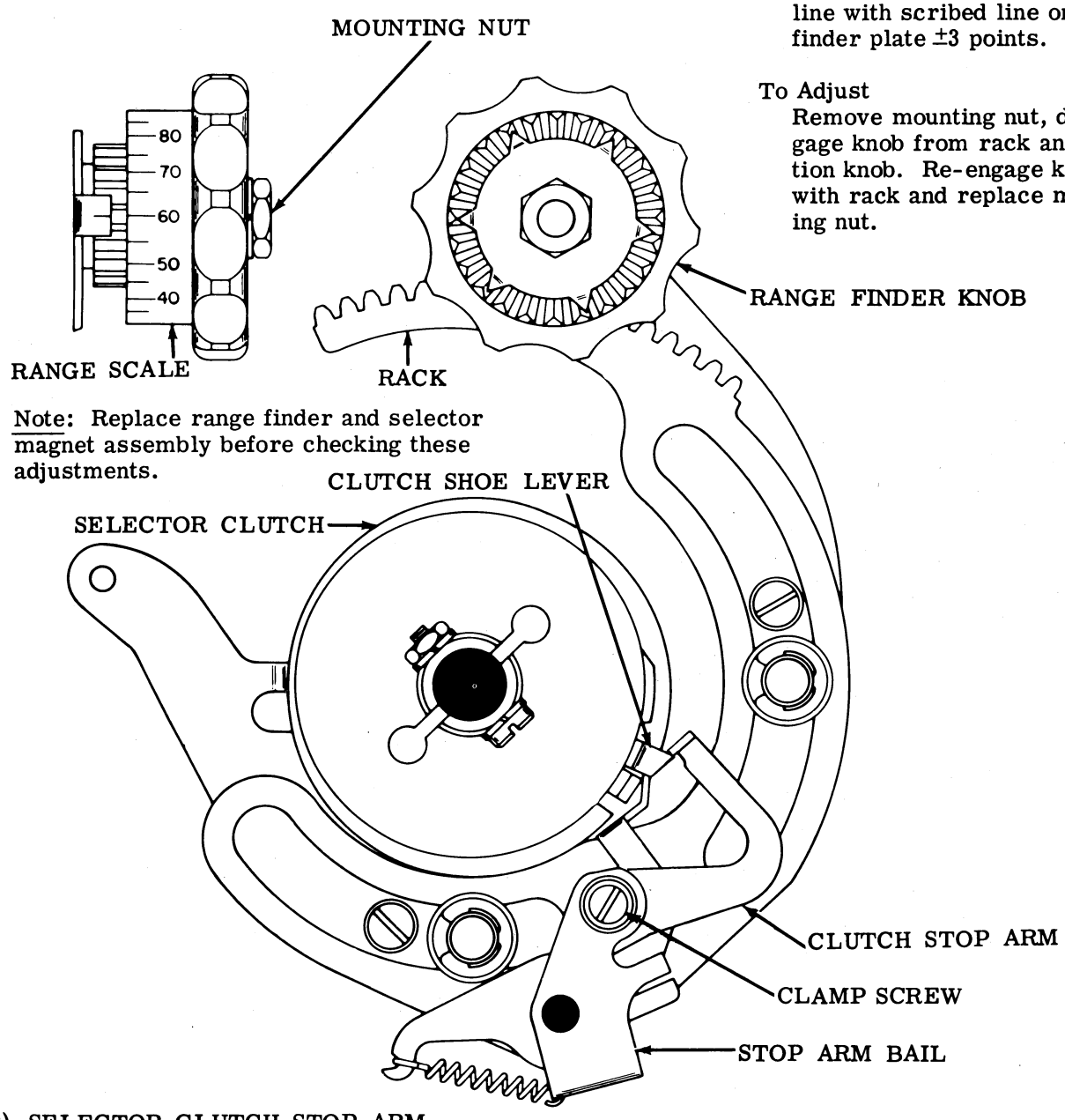
(A) RANGE FINDER KNOB PHASING

Requirement

With range finder knob turned to either end of rack, zero mark on scale should be in line with scribed line on range finder plate ±3 points.

To Adjust

Remove mounting nut, disengage knob from rack and position knob. Re-engage knob with rack and replace mounting nut.



Note: Replace range finder and selector magnet assembly before checking these adjustments.

(B) SELECTOR CLUTCH STOP ARM

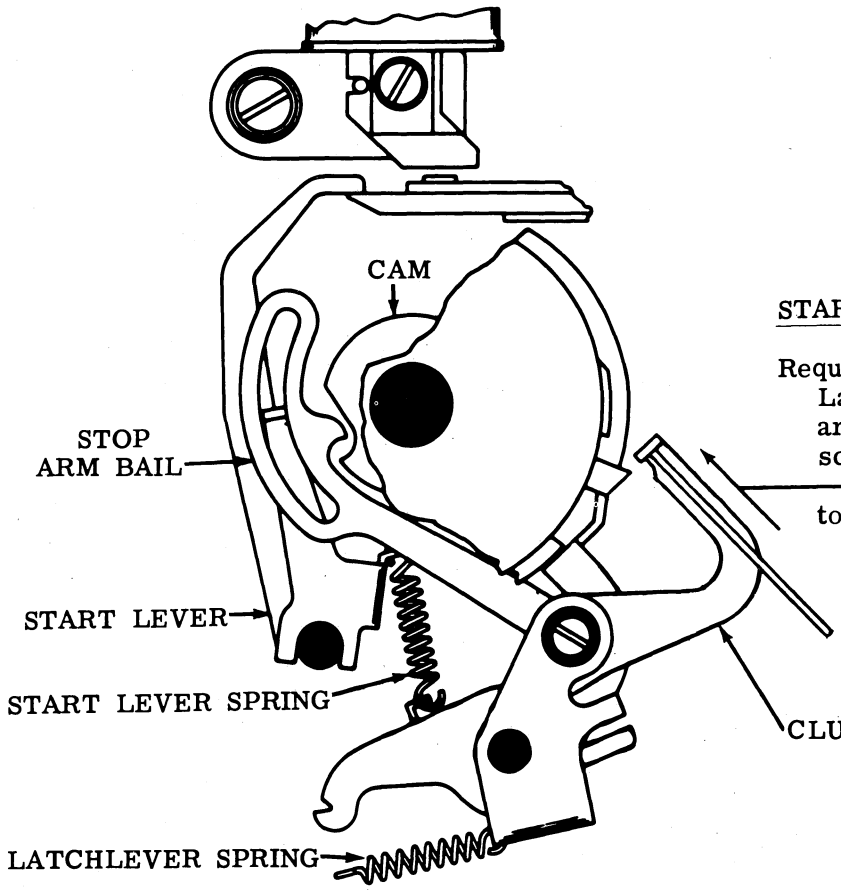
Requirement

Range scale set at 60. Selector clutch disengaged. Armature in marking position. Clutch stop arm should engage clutch shoe lever by approximately full thickness of stop arm.

To Adjust

Position stop arm on stop arm bail with clamp screw loosened. Tighten screw.

2.15 Selector Mechanism (continued)



SELECTOR RECEIVING MARGIN

(1) Requirement (For Units Employing Armature With One Antifreeze Button)
When a signal distortion test set is available for determining the receiving margins of the selector, and where the condition of the components is equivalent to that of new equipment, the range and distortion tolerances below should be met.

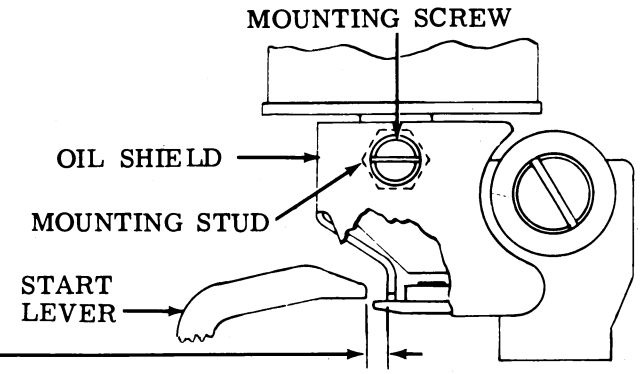
(2) Requirement (For Units Employing Armature With Two Antifreeze Buttons)
When a distortion test set is available, the selector armature spring tension should be refined, if necessary, to obtain satisfactory receiving margins. The front antifreeze button must contact the magnet core when the magnet coils are energized.

To Adjust
Refine the SELECTOR ARMATURE SPRING (2.10) adjustment.

SELECTOR RECEIVING MARGIN MINIMUM REQUIREMENTS

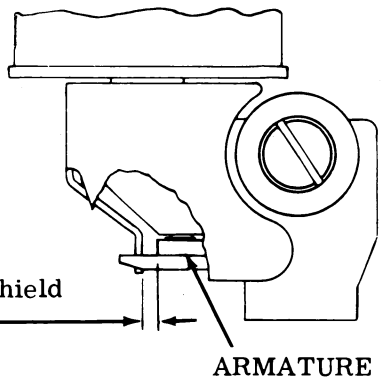
Current	Speed in WPM	Points Range with Zero Distortion	Percentage of Marking and Spacing Bias	End Distortion Tolerated with Scale at Bias Optimum Setting
0.500 Amp (Windings Series)	100	72	38	35

2.16 Selector Mechanism (continued)



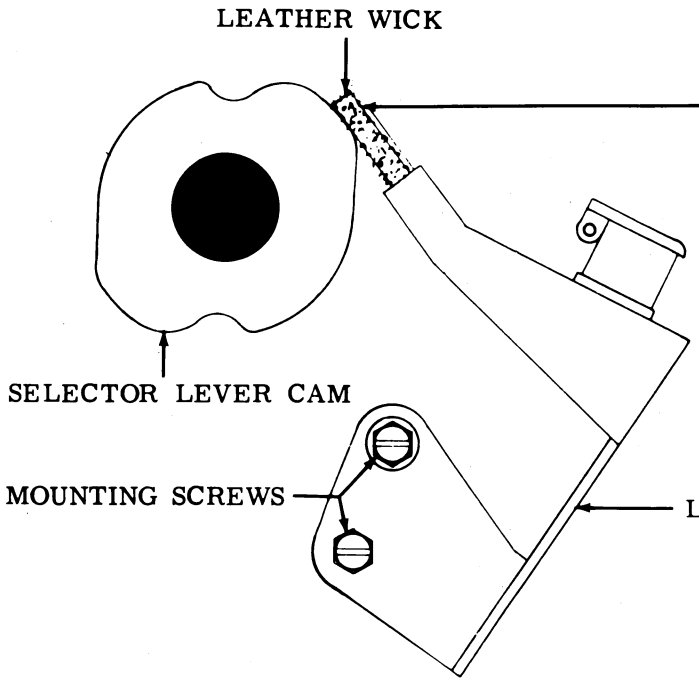
OIL SHIELD (If Applicable)

(1) Requirement
Magnet de-energized. Stop arm bail on low part of its cam. Clearance between start lever and oil shield
Min 0.020 inch



(2) Requirement
Magnet energized. Stop arm bail on high part of its cam. Clearance between end of armature and oil shield
Min 0.010 inch

To Adjust
Position shield with mounting screw loosened. Make sure oil shield mounting stud is secure before making adjustment. Check to be sure there is clearance between the oil shield and armature extension when the armature is energized. Tighten screw.



SELECTOR CAM LUBRICATOR

Requirement
High part of selector lever cams should contact leather wick but should not deflect wick more than 1/32 inch gauged visually.

To Adjust
Position lubricator assembly around lower screw with mounting screws loosened. Tighten screws.

2.17 Function Mechanism (continued)

Note 1: For units equipped with automatic noninterfering rubout tape feed-out mechanism, substitute adjustment in variable features, Part 3.

(A) TRIP CAM FOLLOWER LEVER (Preliminary)

(1) Requirement
With trip cam follower lever on high part of cam, clearance between clutch release lever and reset bail trip lever should be
Min 0.010 inch---Max 0.030 inch

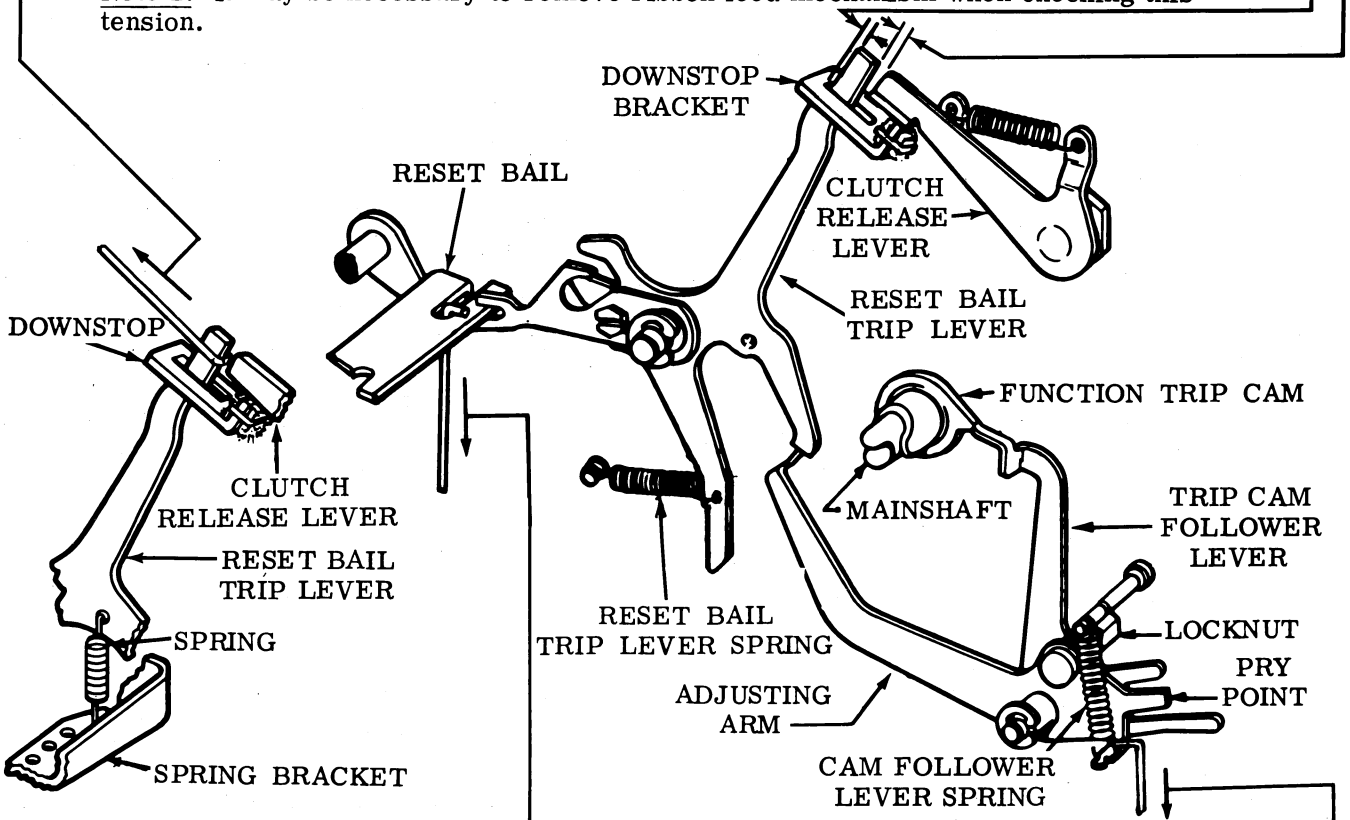
(2) Requirement
Some clearance between reset bail trip lever and left end of slot in downstop bracket.

To Adjust
By means of pry point, position adjusting arm on follower lever with locknut loosened. Tighten nut.

(C) RESET BAIL TRIP LEVER SPRING (Latest Design)

Requirement
Trip reset bail trip lever. With scale pulling at top of reset bail trip lever
Min 1 oz---Max 4 oz
to start lever moving.

Note 2: It may be necessary to remove ribbon feed mechanism when checking this tension.



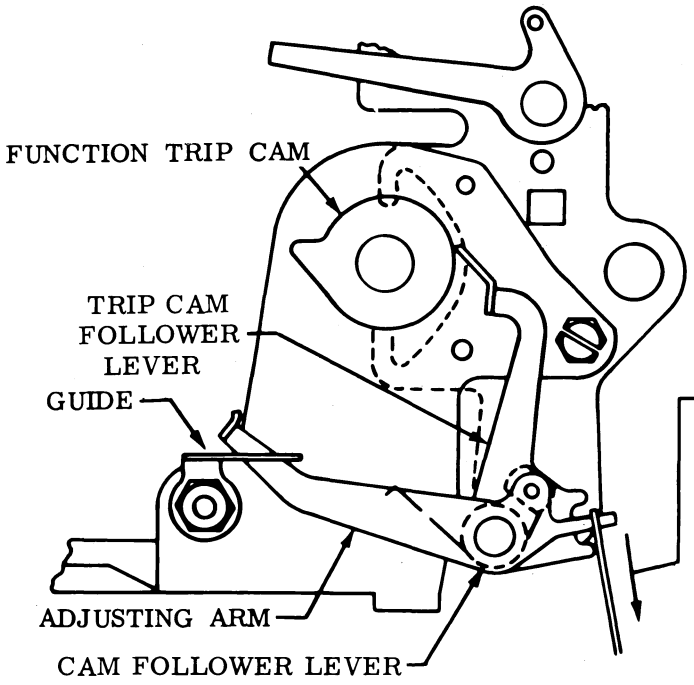
RESET BAIL TRIP LEVER SPRING (Early Design)

Requirement
With follower lever on high part of trip cam
Min 2-1/2 oz---Max 4-1/2 oz
to start trip lever moving.

(B) CAM FOLLOWER LEVER SPRING (Early Design)

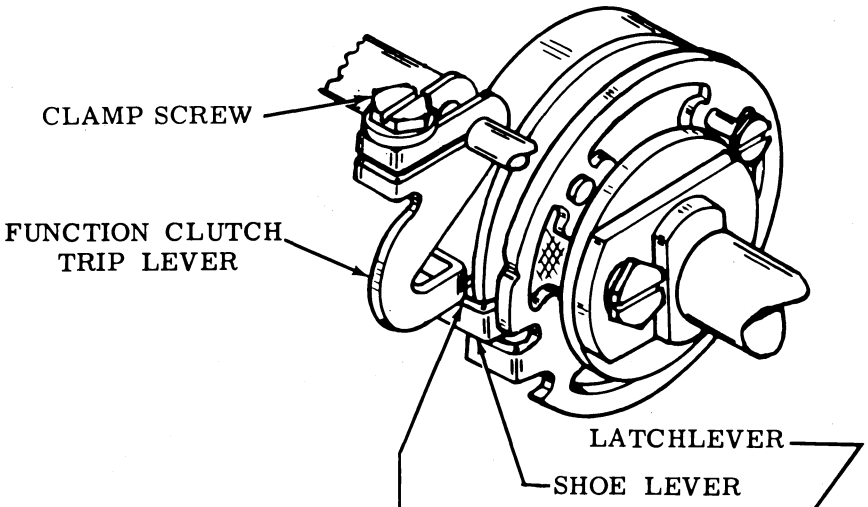
Requirement
With follower lever on high part of trip cam and main trip lever held away from adjusting arm
Min 2-1/2 oz---Max 4 oz
to start adjusting lever moving.

2.18 Function Mechanism (continued)



CAM FOLLOWER LEVER SPRING (Latest Design)

Requirement
With cam follower lever on low part of trip cam and reset bail trip lever held away from adjusting arm
Min 1 oz---Max 4 oz
to start adjusting arm moving.

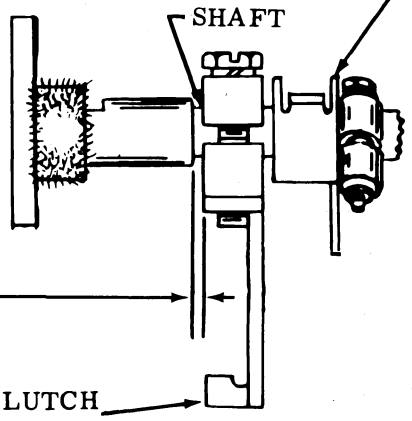


FUNCTION CLUTCH TRIP LEVER

(1) Requirement
With release resting on main trip lever (see 2.19), function clutch trip lever should engage full thickness of shoe lever.

(2) Requirement
Min some---Max 0.006 inch endplay in trip lever.

To Adjust
Position trip lever on its shaft with clamp screw loosened. Tighten screw.



(Right Side Views)

2.19 Function Mechanism (continued)

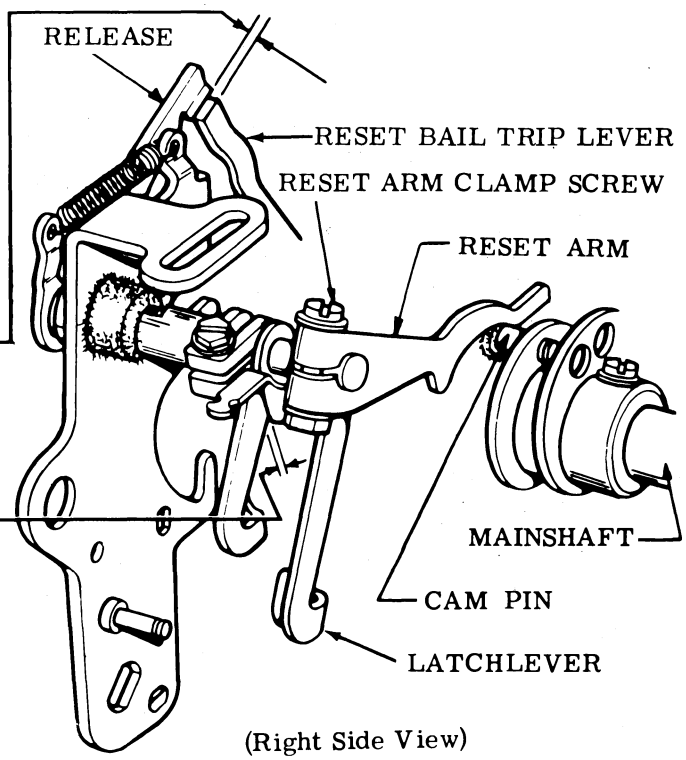
(A) RESET ARM

To Check
Trip function clutch and position mainshaft so that reset arm is held in its highest position by cam pin.

(1) Requirement
Clearance between release and reset bail trip lever
Min 0.010 inch---Max 0.030 inch

(2) Requirement
Latchlever endplay
Min some---Max 0.010 inch

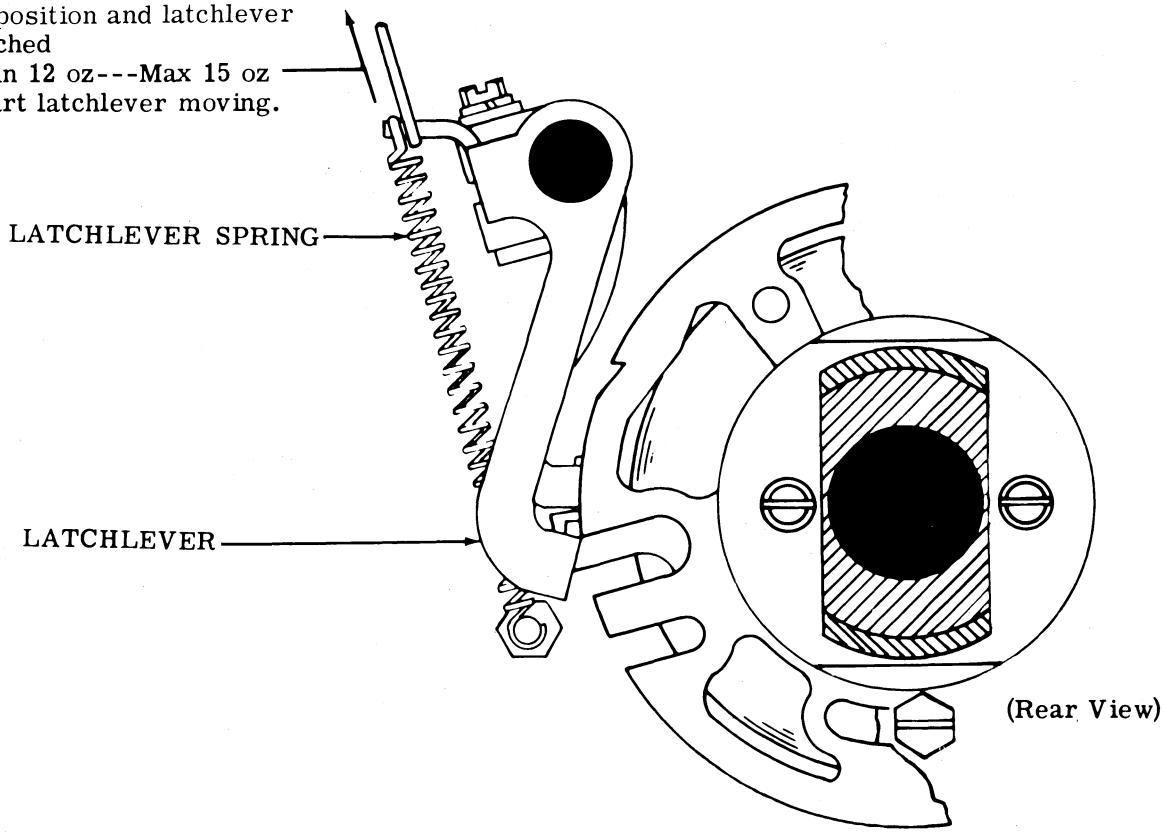
To Adjust
Position reset arm with clamp screw loosened. Tighten screw.



(Right Side View)

(B) FUNCTION CLUTCH LATCHLEVER SPRING

Requirement
With function clutch turned to stop position and latchlever unlatched
Min 12 oz---Max 15 oz
to start latchlever moving.



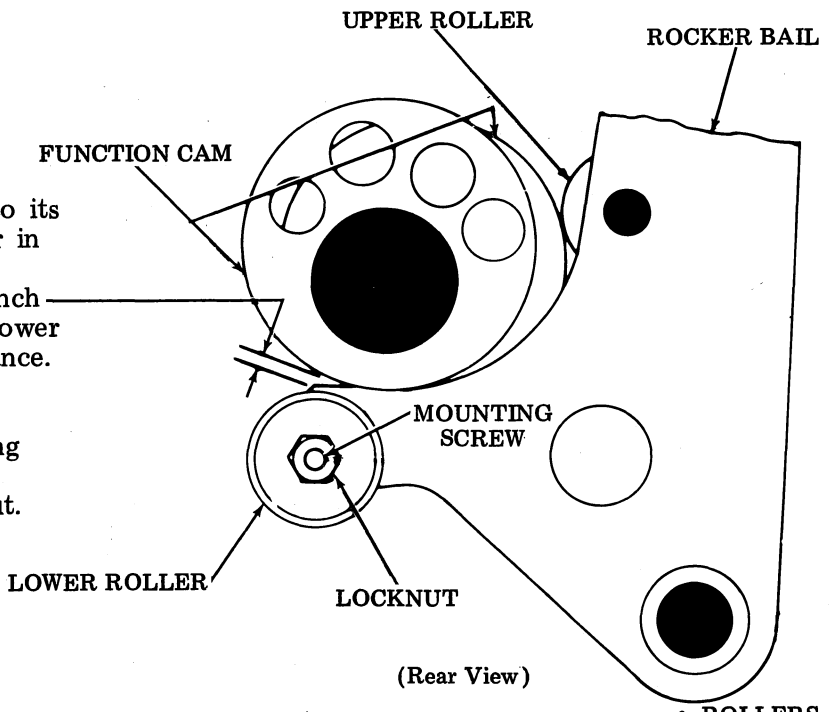
(Rear View)

2.20 Function Mechanism (continued)

(A) CAM FOLLOWER ROLLER

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 locknut loosened. Tighten nut.



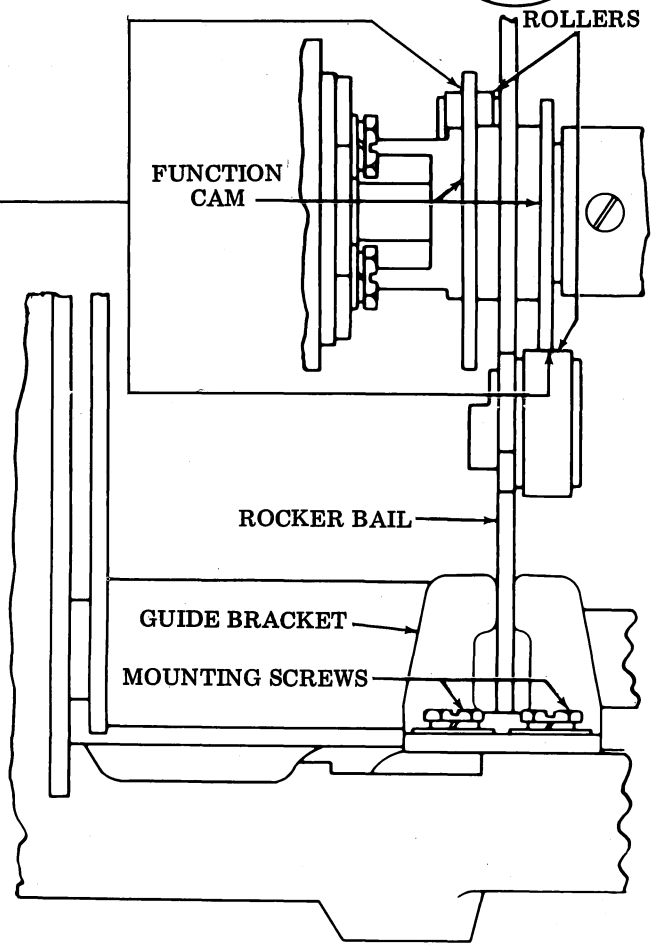
(Rear View)

(B) CAM FOLLOWER ROLLER ALIGNMENT

(1) Requirement
Rocker bail rollers should engage full thickness of function cam.

(2) Requirement
Lifter roller in full engagement with rocker arm camming surface (refer to TOGGLE LINK 2.44 illustration).

To Adjust
Position rocker bail and guide bracket with guide bracket mounting screws loosened. Tighten screws.



(Right Side View)

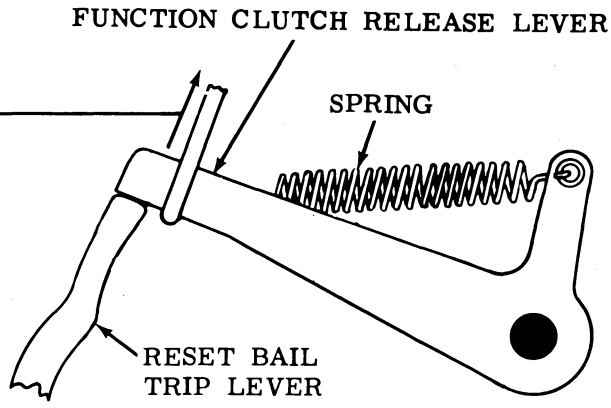
2.21 Function Mechanism (continued)

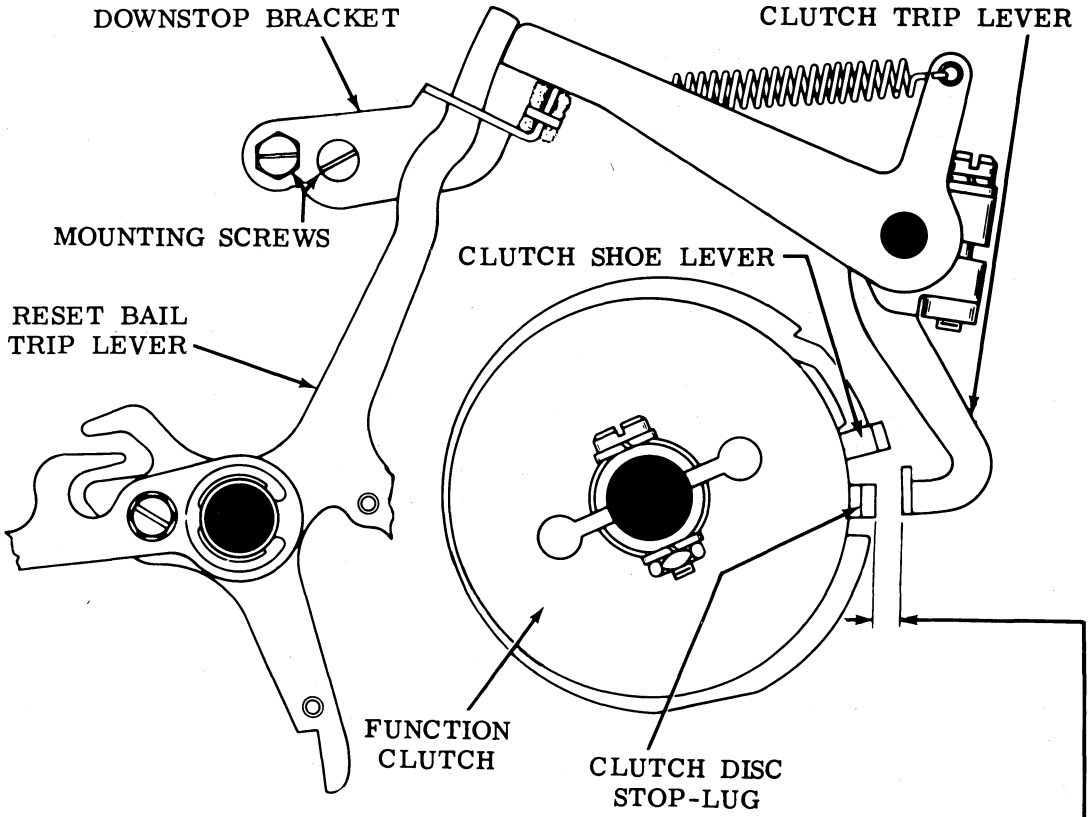
(A) FUNCTION CLUTCH RELEASE LEVER SPRING

Requirement

Trip function clutch. Rotate mainshaft until release lever is reset on reset bail trip lever.

Min 5 oz---Max 8 oz to start release moving.





(B) RELEASE DOWNSTOP BRACKET

Requirement

With function clutch tripped, rotate shaft until clearance between function clutch disc stop-lug and clutch stop lever is at a minimum. Release lever resting against downstop bracket. Clearance between function clutch disc stop-lug and stop lever

Min 0.002 inch---Max 0.045 inch

To Adjust

Remove tape guide. With downstop bracket mounting screws friction tight position bracket. Tighten screws.

2.22 Punch Mechanism

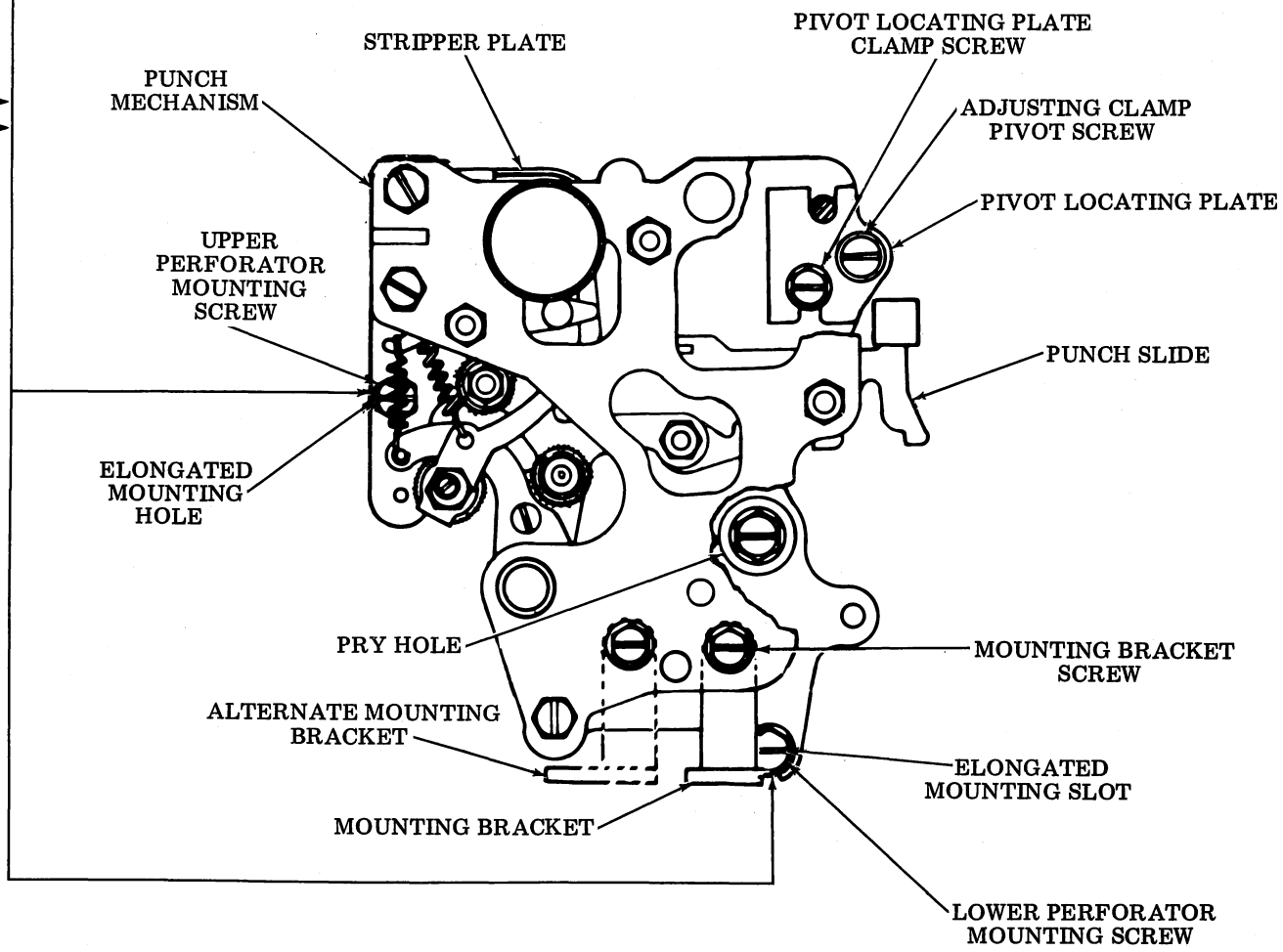
PUNCH MOUNTING PLATE (Preliminary)

Requirement

The punch mechanism mounting screw, beneath punch block, and mounting screw at lower edge of punch mechanism backplate should be located centrally within their respective mounting holes.

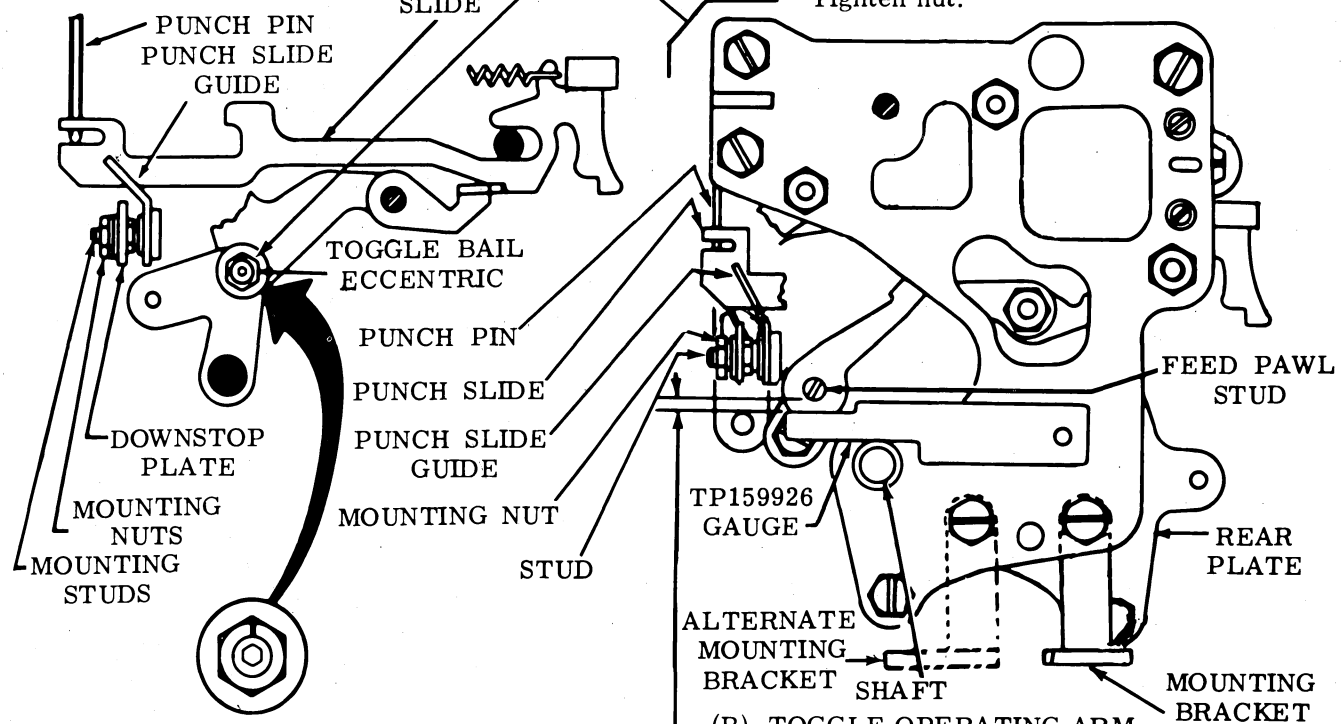
To Adjust

Remove mounting screw at the lower edge of punch mechanism backplate. With the two remaining backplate mounting screws and mounting bracket screw friction tight, position punch 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.



2.23 Punch Mechanism (continued)

Note: Before proceeding with the punch mechanism adjustments, check the CAM FOLLOWER ROLLER (2.20) 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) should be in its uppermost position.

To Adjust
With the toggle bail eccentric shaft locknut friction tight, position eccentric. Tighten nut.

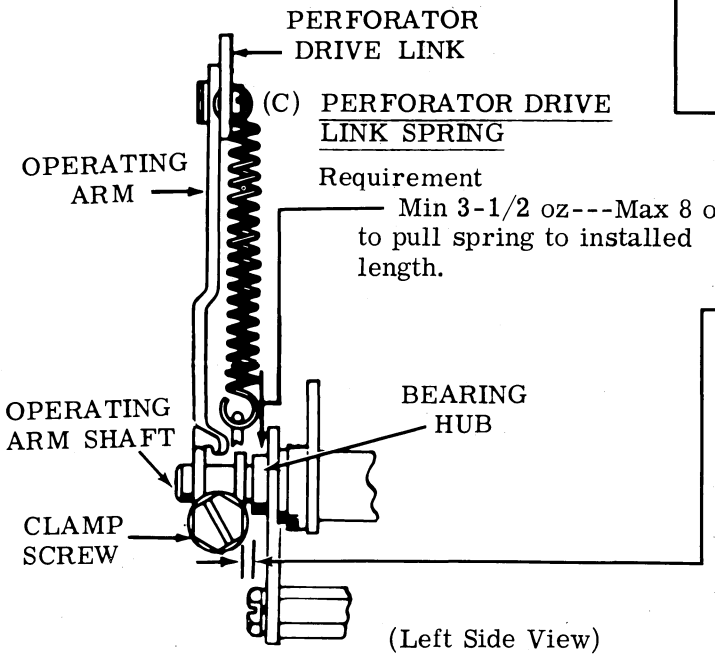
(B) TOGGLE OPERATING ARM

(1) Requirement
Trip function clutch and rotate mainshaft until the upper rocker bail roller is on high part of its cam.
Min 0.002 inch---Max 0.005 inch clearance between feed pawl stud and the TP159926 gauge.

(2) Requirement
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 minimum.

To Adjust
With clamp screw friction tight, position toggle bail and operating arm. Tighten screw.

Note: After FEED PAWL (2.27) adjustment has been made and PUNCH PIN PENETRATION (2.24) and FEED PAWL requirements are met, this requirement should be considered fulfilled.



(C) PERFORATOR DRIVE LINK SPRING

Requirement
Min 3-1/2 oz---Max 8 oz to pull spring to installed length.

(Left Side View)

2.24 Punch Mechanism (continued)

(A) PUNCH PIN PENETRATION

(1) Requirement

With the RUBOUT combination (12345678) 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) Requirement

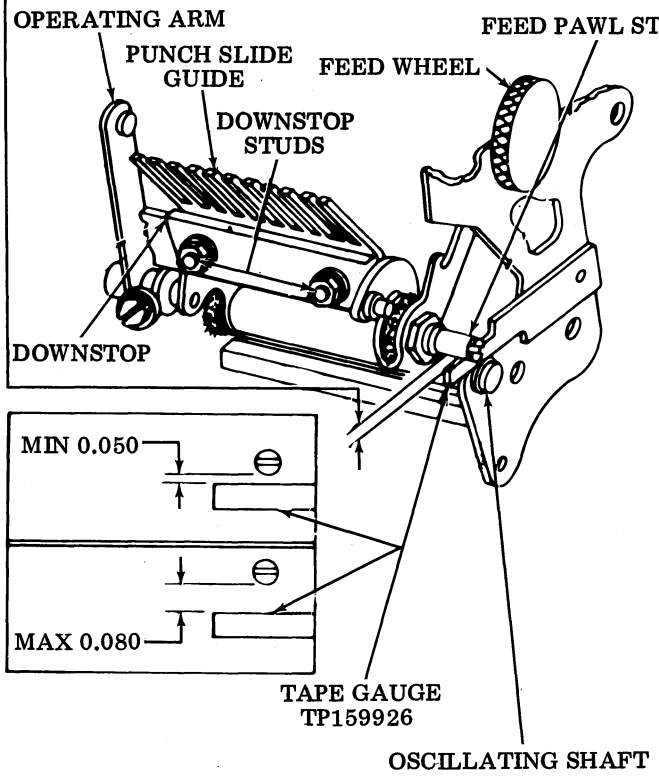
With RUBOUT combination selected, function clutch engaged, rotate main shaft until all punch pins have cleared the punch block. With the TP159926 gauge in position

Min some---Max 0.080 inch

clearance between feed pawl stud and gauge.

To Adjust

Refine the TOGGLE BAIL ECCENTRIC (2.23) adjustment keeping the indent to the right of a vertical centerline through the shaft. Tighten nut.



(B) PUNCH SLIDE GUIDE (Final)

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. Tighten studs.

(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

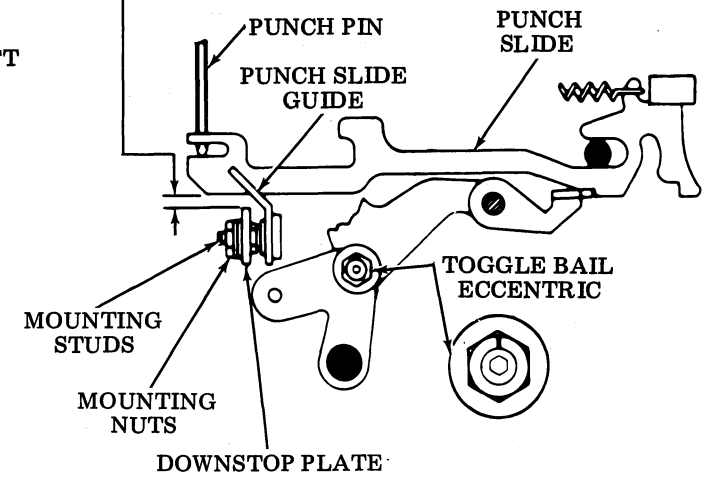
Min some---Max 0.008 inch

All other punch slides should have some clearance.

Note: To check for some clearance, place unit in stop position, trip function trip mechanism and latches. The punch slides should move fully to their operated position.

To Adjust

With unit in stop position, loosen the two downstop plate mounting locknuts and locate the downstop plate to meet the requirement. Tighten locknuts.



2.25 Punch Mechanism (continued)

PUNCH MOUNTING PLATE (Final)

(1) To Check

Select RUBOUT code combination (12345678). Rotate until function clutch trips with punch levers in extreme left-hand position.

Requirement

Clearance between punch slide and punch slide latch
Min 0.015 inch---Max 0.045 inch
at slide where clearance is least.

To Adjust

Loosen perforator mounting screws, adjusting clamp lockscrew, adjusting clamp pivot screw, and anchor bracket screw until friction tight. Place tip of screwdriver between screw and rim of pry hole and pry perforator up or down. Tighten only adjusting clamp lockscrew.

(2) To Check

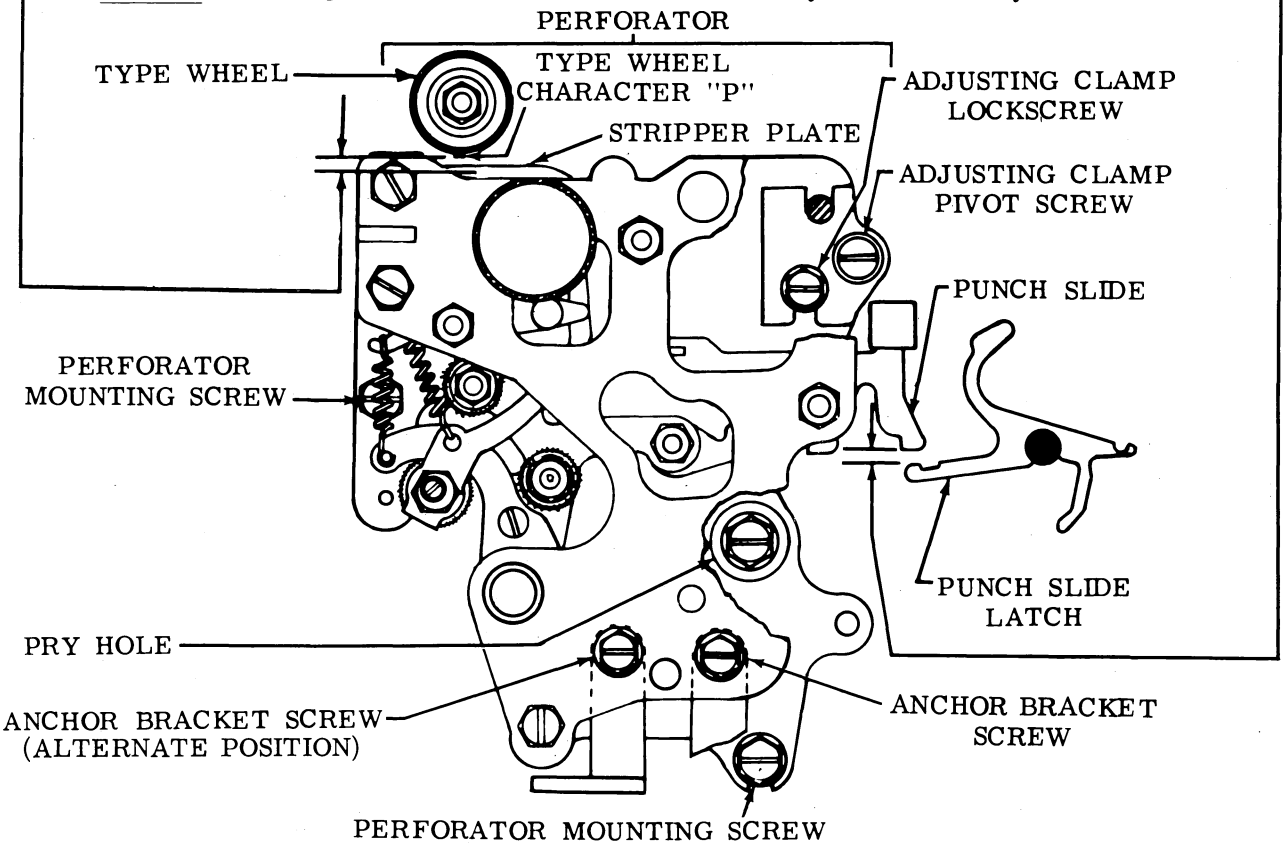
Remove ribbon and tape. With unit in stop position and upper no. 7 pushbar to the right, check clearance between rear leg of stripper plate and type wheel. Select the R code combination (-2--5-78), trip the function clutch, and move rocker bail to its extreme left position. Check clearance between front leg of the stripper plate and type wheel.

Requirement

Clearance between the character P and the front or rear leg of stripper plate (whichever has the least clearance) should be
Min 0.075 inch---Max 0.085 inch

To Adjust

Position perforator with two mounting screws, adjusting clamp pivot screw, and anchor bracket screw friction tight. Tighten screws. Check RESET BAIL TRIP LEVER (2.26) requirement for some clearance and adjust if necessary.



2.26 Punch Mechanism (continued)

RESET BAIL TRIP LEVER (Final)

(1) Requirement

Manually select the NULL code (BLANK) combination. Manually rotate reset bail trip lever. The punch slide reset bail should trip before the function clutch is tripped.

To Adjust

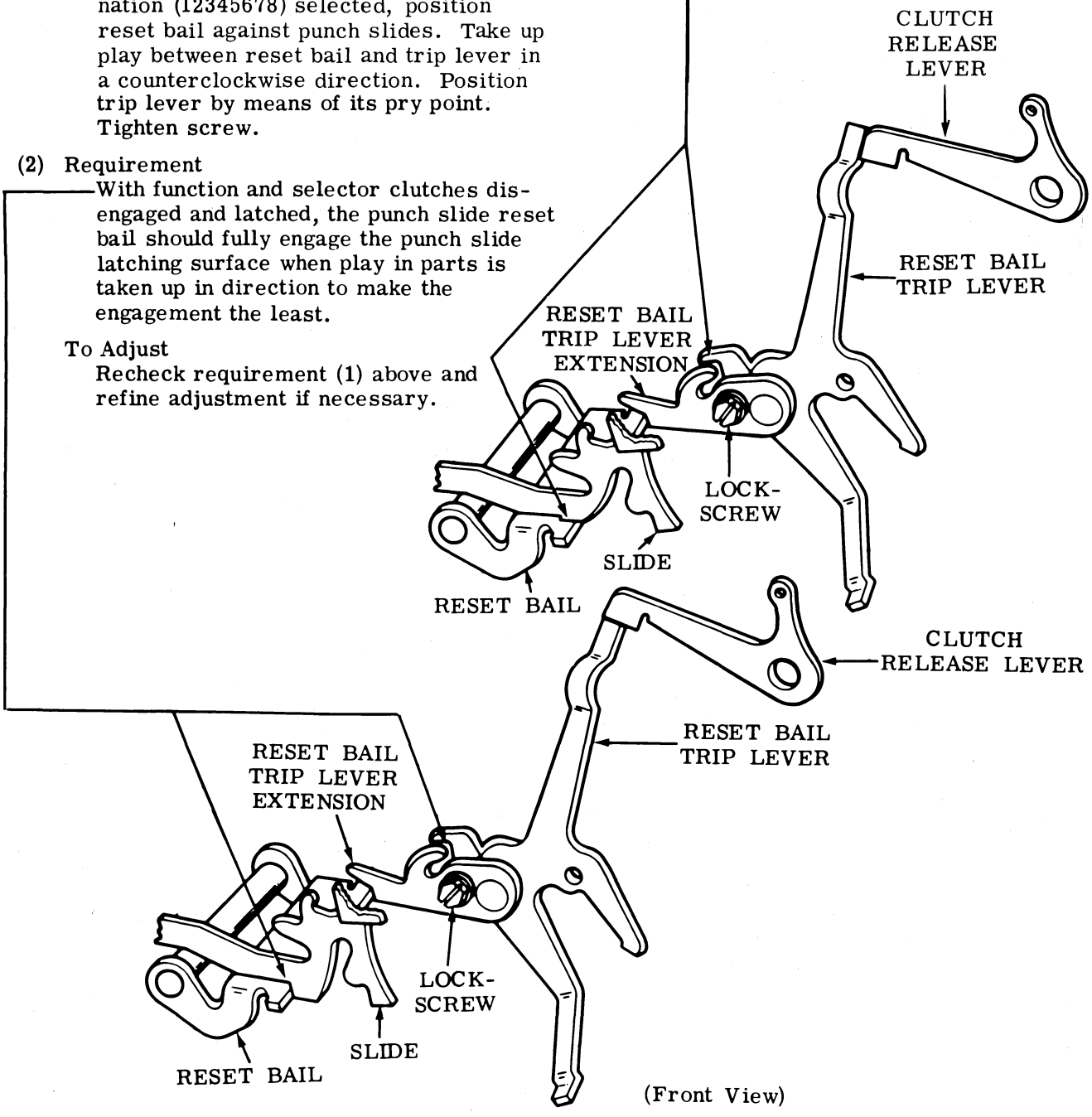
With trip lever extension lockscrew friction tight and RUBOUT combination (12345678) selected, position reset bail against punch slides. Take up play between reset bail and trip lever in a counterclockwise direction. Position trip lever by means of its pry point. Tighten screw.

(2) Requirement

With function and selector clutches disengaged and latched, the punch slide reset bail should fully engage the punch slide latching surface when play in parts is taken up in direction to make the engagement the least.

To Adjust

Recheck requirement (1) above and refine adjustment if necessary.



(Front View)

2.27 Punch Mechanism (continued)

(A) LATCHLEVER CLEARANCE

Requirement

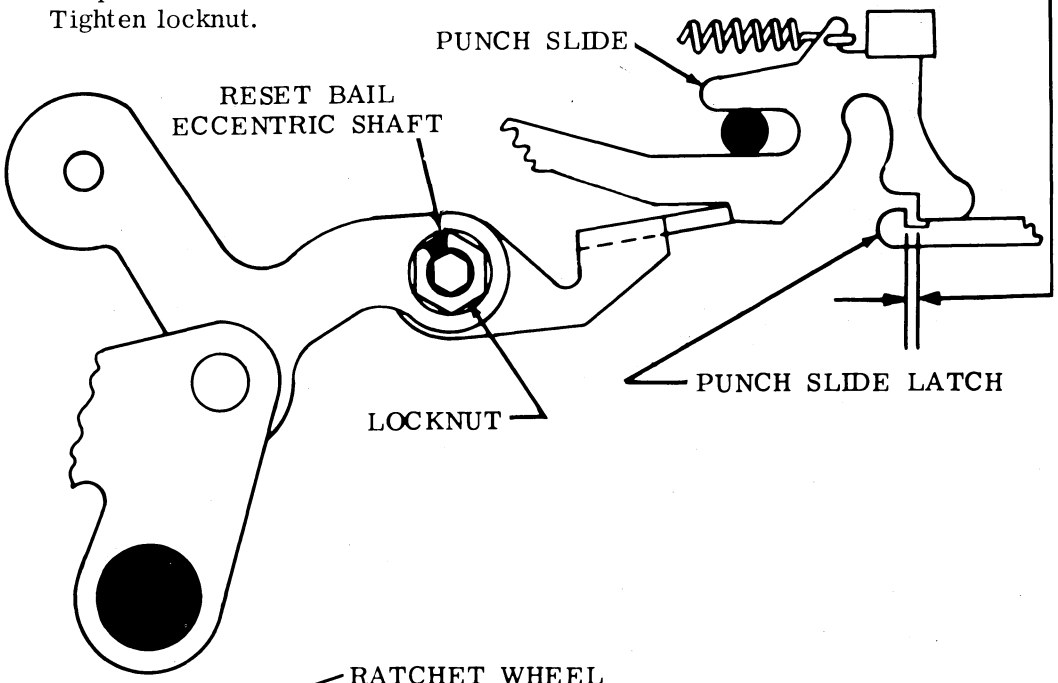
With NULL code (BLANK) combination selected, the function clutch disengaged and latched, clearance between the punch slide and its associated latchlever should be

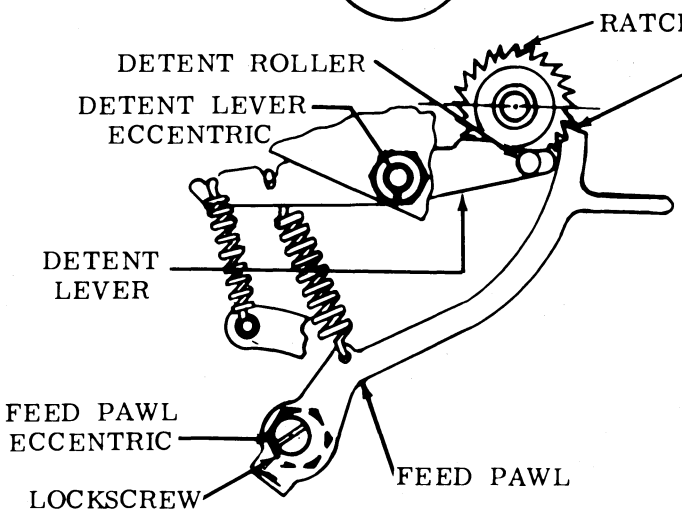
Min 0.008 inch---Max 0.020 inch

for the slide having the least clearance.

To Adjust

Rotate the reset bail eccentric shaft with its locknut loosened. Keep the indentation in the eccentric above center of shaft. Tighten locknut.





(B) FEED PAWL

Requirement

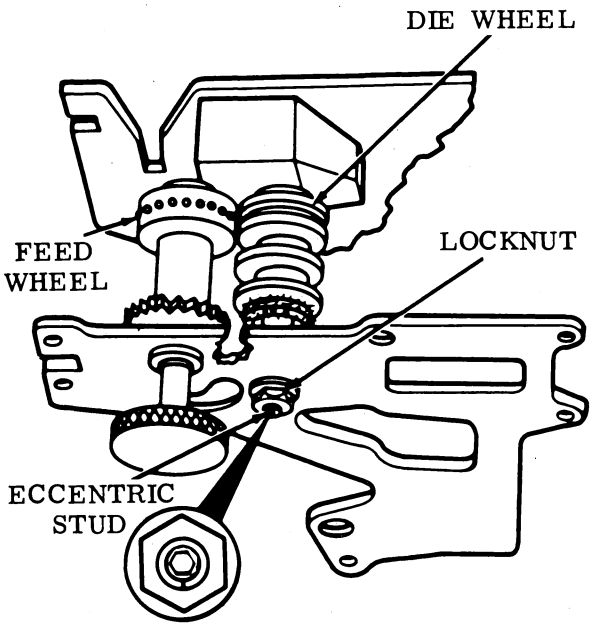
Function clutch disengaged, indentation in detent lever eccentric at right angle to lever, detent roller in contact with ratchet wheel, high part of feed pawl eccentric to the right of its lockscrew. The feed pawl should engage the first tooth below a horizontal centerline through the ratchet wheel with no perceptible clearance.

To Adjust

Rotate the feed pawl eccentric with lockscrew loosened. Tighten screw.

Note: This adjustment is related to TEN CHARACTERS PER INCH (2.28), and the two adjustments should be made at the same time.

2.28 Punch Mechanism (continued)



TEN CHARACTERS PER INCH (Preliminary)

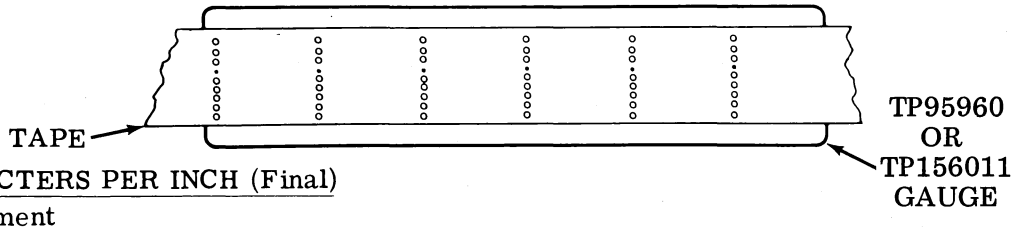
(1) Requirement
Indent of die wheel eccentric stud pointing downward.
To Adjust
Position die wheel eccentric stud with locknut loosened. Tighten nut.

(2) Requirement
With tape shoe blocked away from feed wheel, feed pawl and detent disengaged, and tape removed, feed wheel should rotate freely. Check through 3 or 4 revolutions of feed wheel. Refine requirement (1) above if necessary to meet this requirement.

Note: Before proceeding with the following adjustment check both BIAS SPRING (2.31) tensions, and if unit is equipped with a slack tape mechanism having a clamp plate with an adjustable wear disc, loosen the mounting nut and turn a new edge of the disc toward the tape. Tighten nut.

REPERFORATOR MOUNTING

Requirement
Mount the reperforator to the base and adjust in accordance with the associated base section.



TEN CHARACTERS PER INCH (Final)

(1) Requirement
With a piece of tape perforated with six series of 9 NULL code (BLANK) combinations followed by a rubout combination placed over the TP95960 gauge or the smooth side of the TP156011 tape gauge so that the circular portion of the first number 2 code hole in the tape is concentric with 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 should 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 punch mechanism, loosen eccentric locknut and rotate die wheel eccentric shaft until it binds against feed wheel. Back off eccentric until die wheel is just free. Check through 3 or 4 rotations. Keep the indent of 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. Tighten nut. Refine FEED PAWL (2.27) adjustment, if necessary.
CAUTION: WITH TAPE REMOVED. MAKE SURE FEED WHEEL AND DIE WHEEL DO NOT BIND. RECHECK REQUIREMENT (1). IF NECESSARY, REFINE.

Note: First through fifth holes in gauge are same size as code holes in tape (0.072 inch diameter). Sixth hole in gauge is larger (0.086 inch). This arrangement allows ±0.007 inch variation in 5 inches.

2.29 Punch Mechanism (continued)

(For Latest Design see 2.30)

LATERAL AND FRONT TO REAR FEED WHEEL POSITION DETENT (Early Design)

Requirement

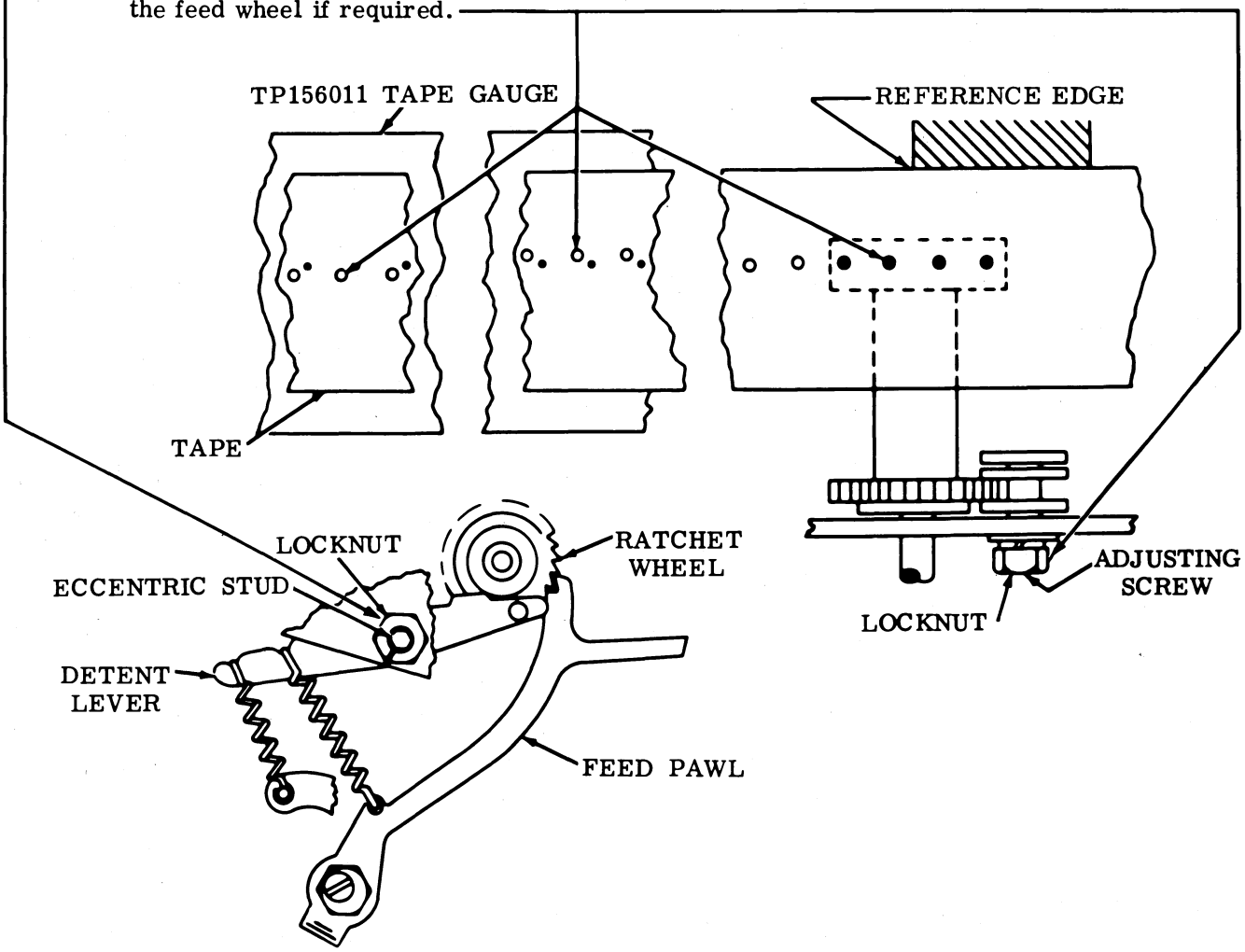
With the reperforator operating under power, obtain a tape sample consisting of a series of NULL (BLANK) perforations, by a visual inspection of the perforated feed holes, laterally and front to rear, the indentations of the feed wheel should be fully punched out.

(1) To Adjust (Laterally)

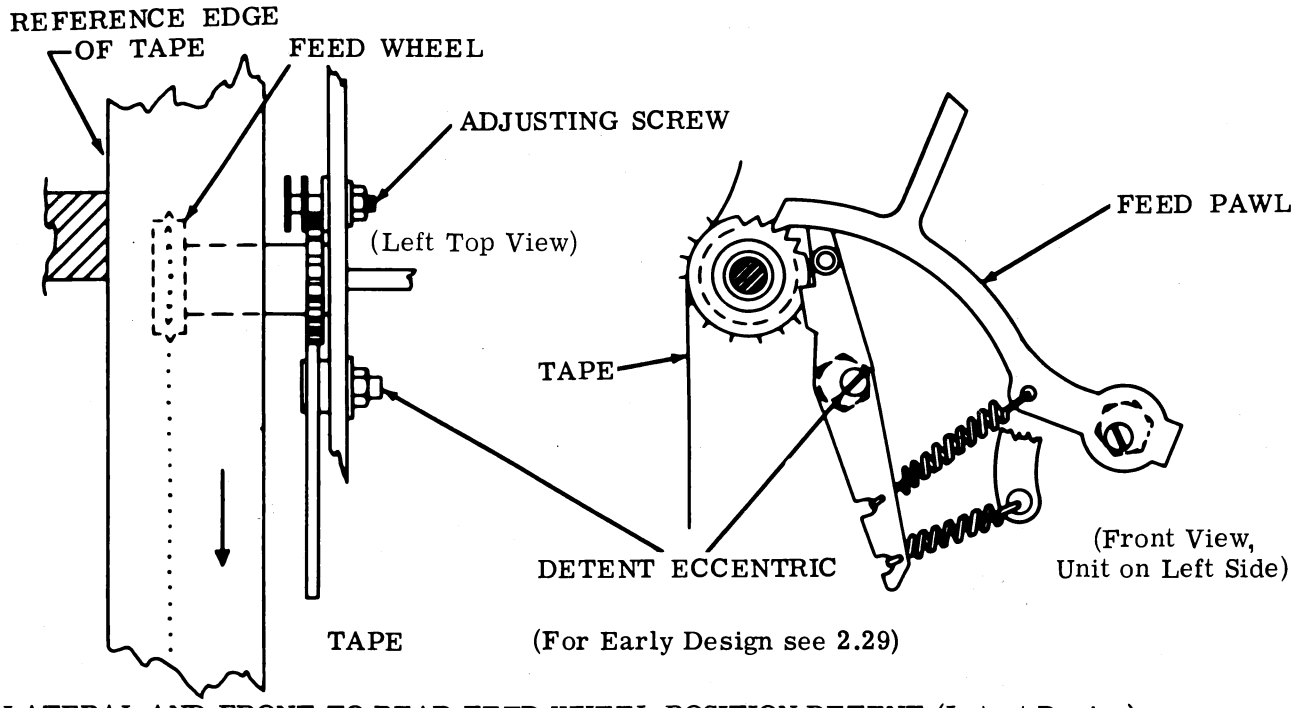
To meet the lateral requirement, loosen the detent eccentric stud locknut and rotate the detent eccentric clockwise to move the feed wheel perforations towards the leading edge of the feed hole. Rotate the detent eccentric counterclockwise to move the feed wheel perforation towards the trailing edge of the feed hole. Tighten nut. Refine the FEED PAWL (2.27) adjustment.

(2) To Adjust (Front to Rear)

To meet the front to rear requirement with respect to the reference edge of the tape, loosen the adjusting screw locknut and position the adjusting screw. To move the indentations in the tape away from the reference edge of the tape, move the feed wheel towards the front plate of the punch mechanism by rotating the adjusting screw counterclockwise. To move the indentations in the tape towards the reference edge of the tape, move the feed wheel towards the backplate of the punch mechanism by rotating the adjusting screw clockwise. Tighten nut. Refine the adjustment above to align the lateral indentations of the feed wheel if required.



2.30 Punch Mechanism (continued)



LATERAL AND FRONT TO REAR FEED WHEEL POSITION DETENT (Latest Design)

Requirement

The indentations punched by the feed wheel should be centrally located between the punched feed holes (gauged by eye) and on same horizontal centerline. The unit must backspace the tape at least 30 characters without losing its point of registration.

To Check

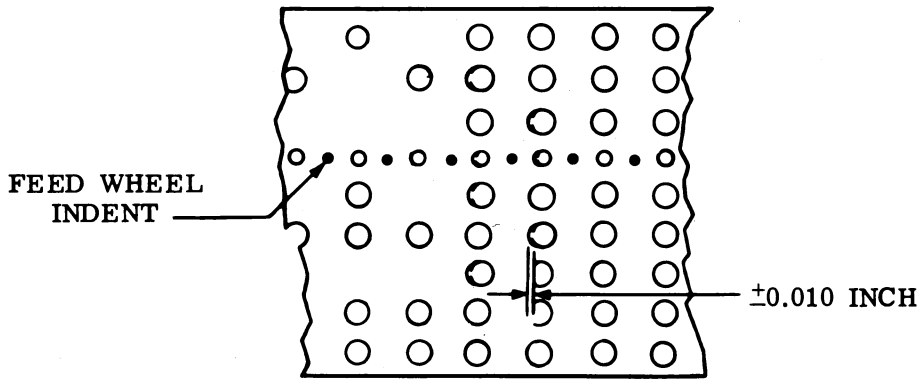
Perforate 6 inches of RY tape. Backspace 30 characters. Reperforate with RUBOUT characters. Code holes must coincide except for first two characters which may be elongated ±0.010 inch.

To Adjust (Laterally)

Rotate detent eccentric clockwise to move the feed wheel perforation toward the leading edge of the feed hole and rotate eccentric counterclockwise to move the perforation toward the trailing edge of the feed hole. Tighten locknut. Refine FEED PAWL (2.27) adjustment if necessary.

To Adjust (Front to Rear)

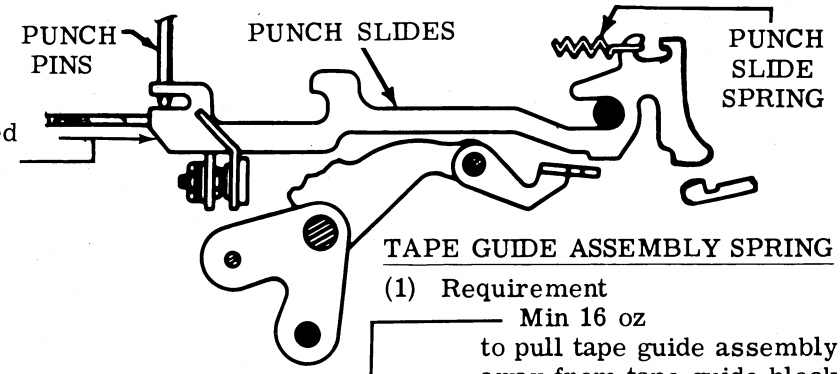
Loosen locknut on adjusting screw and rotate the screw counterclockwise to move the indentations in the tape away from the reference edge (rear) of the tape. To move indentations in the tape toward the reference edge of the tape, rotate adjusting screw clockwise. Tighten nut. Refine the LATERAL adjustment above if necessary.



2.31 Punch Mechanism (continued)

PUNCH SLIDE SPRING

Requirement
RUBOUT combination (12345678) set up, and punch slides in selected position
Min 2-1/4 oz---Max 3-1/4 oz
to start each slide moving.

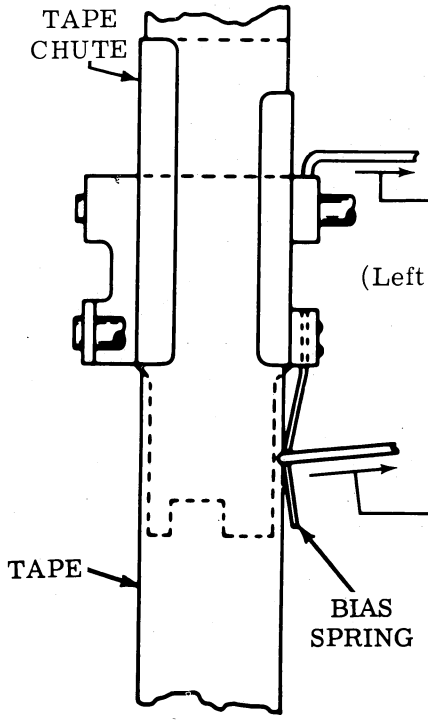


TAPE GUIDE ASSEMBLY SPRING

(1) Requirement
Min 16 oz
to pull tape guide assembly away from tape guide block.

(2) Requirement
Tape guide assembly should move freely on shaft.

To Adjust
With mounting screws loosened, position mounting post. Tighten screws.



(Left Top View)

BIAS SPRING (TAPE CHUTE)

Requirement
With selector and function clutches disengaged and latched, tape threaded through punch mechanism, it should require
Min 1-1/4 oz---Max 2-1/4 oz
to just move the spring away from the tape.

To Adjust
Bend the spring.

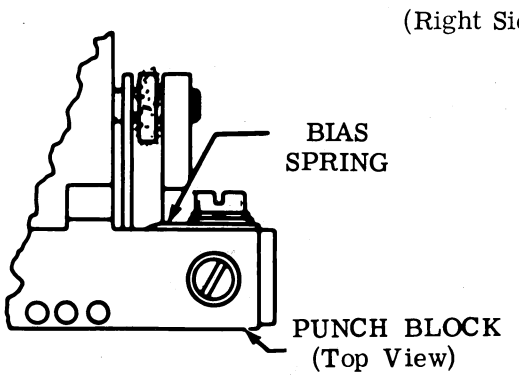
Note: It is necessary to remove several parts, on units equipped with backspace mechanism, in order to check this spring tension. It should not be checked unless there is good reason to believe that requirements are not met.

BIAS 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.

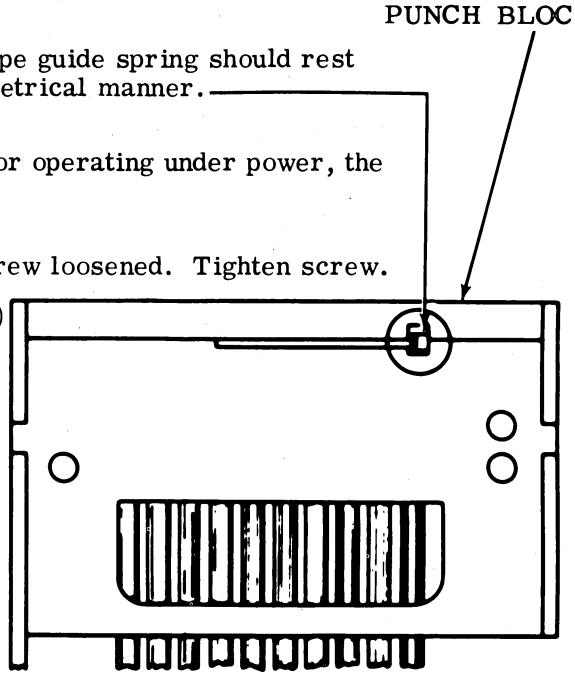
(2) Requirement
With tape in the punch block and the reperforator operating under power, the spring should not distort the edge of the tape.

To Adjust
Bend the spring and position it with its mounting screw loosened. Tighten screw.



(Top View)

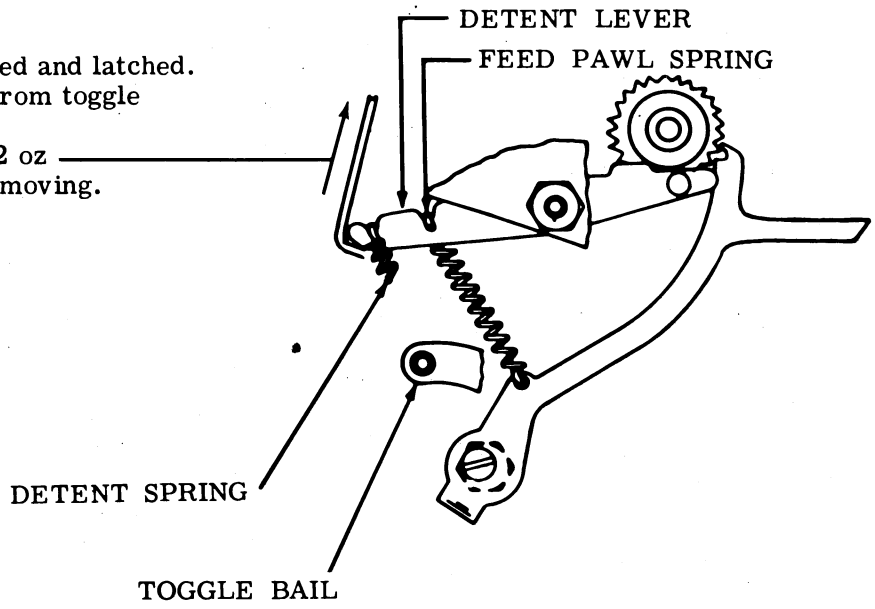
(Right Side View)



2.32 Punch Mechanism (continued)

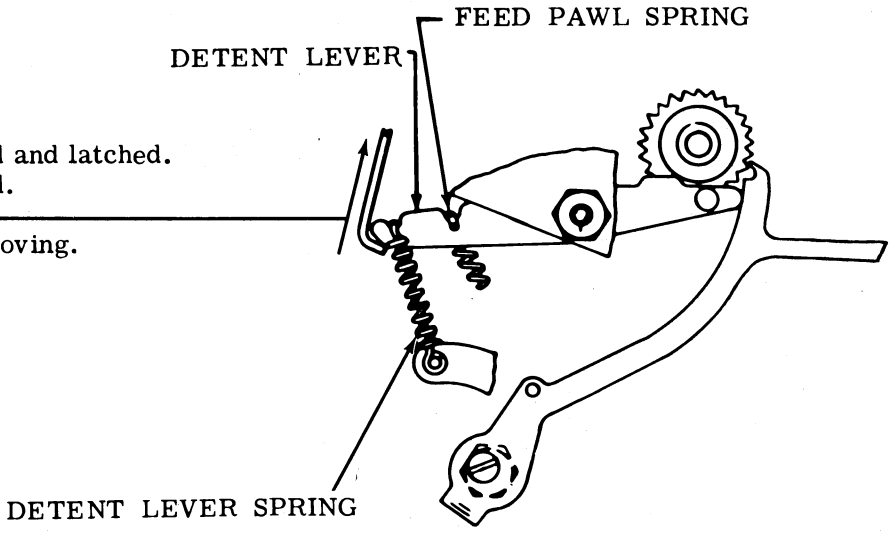
FEED PAWL SPRING

Requirement
Function clutch disengaged and latched.
Detent spring unhooked from toggle bail
Min 3 oz---Max 4-1/2 oz
to start the detent lever moving.



DETENT LEVER SPRING

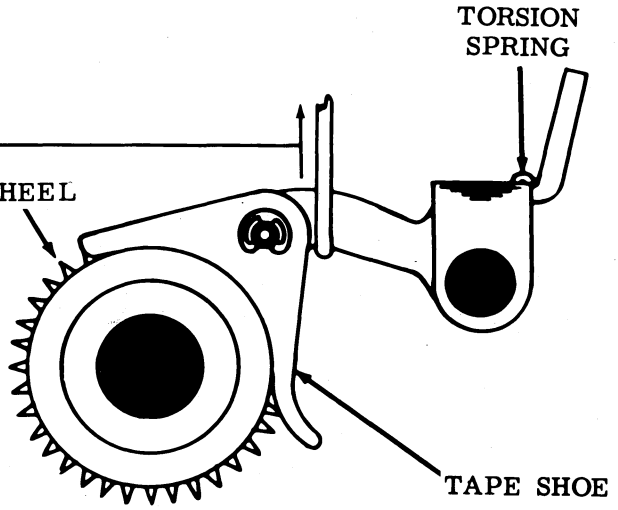
Requirement
Function clutch disengaged and latched.
Feed pawl spring unhooked.
Min 7 oz---Max 10 oz
to start the detent lever moving.

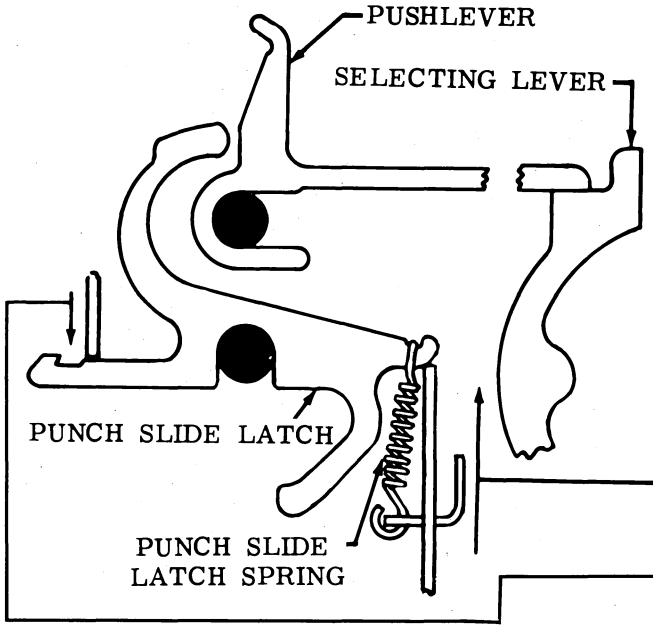


2.33 Punch Mechanism (continued)

TAPE SHOE TORSION SPRING

Requirement
Min 13 oz---Max 18 oz
to move tape shoe from feed wheel.





PUNCH SLIDE LATCH SPRING

To Check
Select RUBOUT code combination (12345678). Position rocker bail to extreme left. Strip pushlevers from selecting levers.

Requirement
For one-shaft unit
Min 1 oz---Max 3 oz
to start latch moving.
For two-shaft unit
Min 3/4 oz---Max 2 oz
to start latch moving.

2.34 Typing Mechanism

(A) PUSHBAR OPERATING BLADE (Preliminary)

To Check

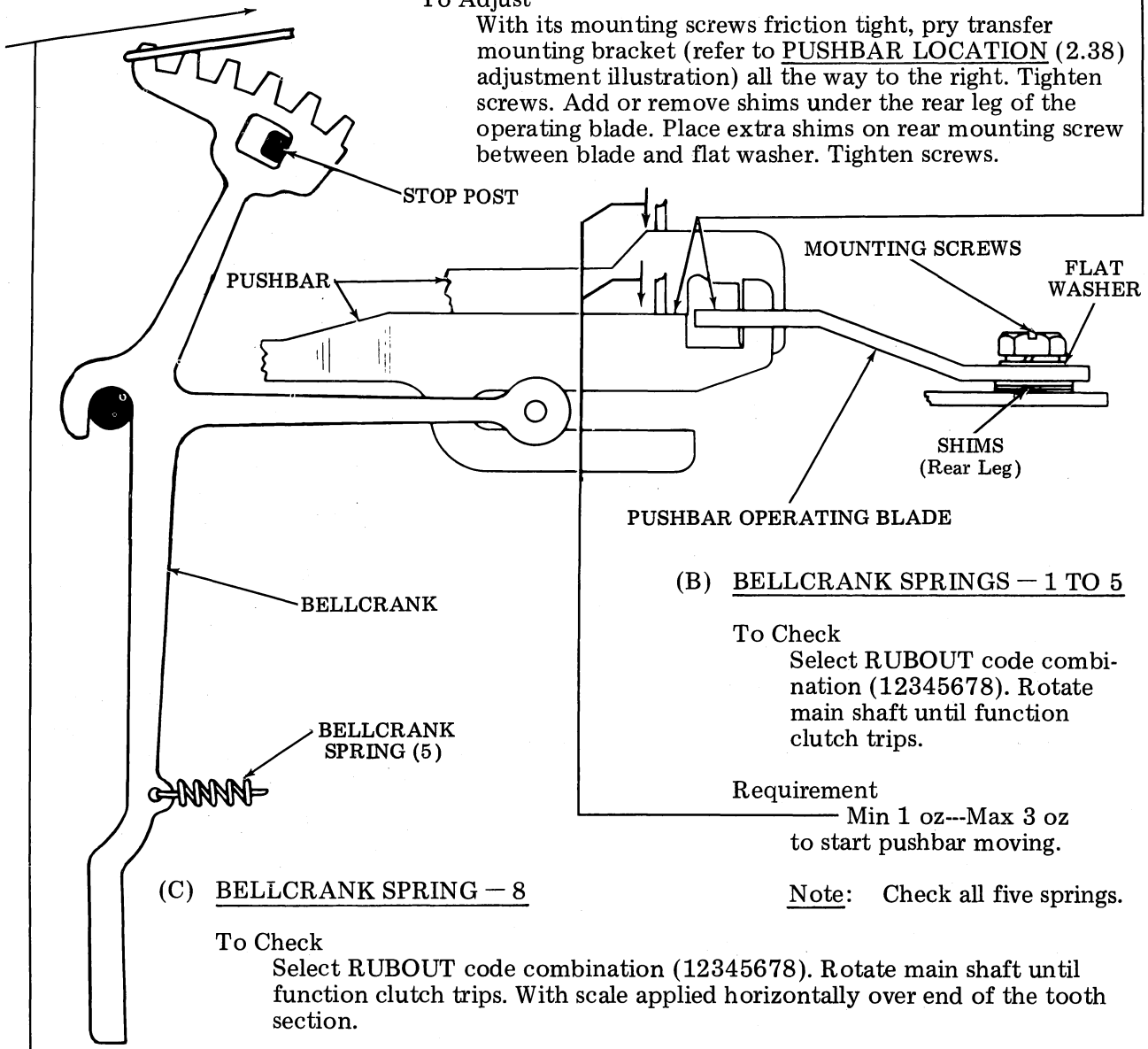
Manually select RUBOUT code combination (12345678). Rotate main shaft until function clutch trips. Hold no. 2 and 3 bellcranks against stop post (as illustrated).

Requirement

Operating blade parallel to (not necessarily flush with) no. 2 and 3 pushbars.

To Adjust

With its mounting screws friction tight, pry transfer mounting bracket (refer to PUSHBAR LOCATION (2.38) adjustment illustration) all the way to the right. Tighten screws. Add or remove shims under the rear leg of the operating blade. Place extra shims on rear mounting screw between blade and flat washer. Tighten screws.



(B) BELLCRANK SPRINGS — 1 TO 5

To Check

Select RUBOUT code combination (12345678). Rotate main shaft until function clutch trips.

Requirement

Min 1 oz---Max 3 oz to start pushbar moving.

(C) BELLCRANK SPRING — 8

Note: Check all five springs.

To Check

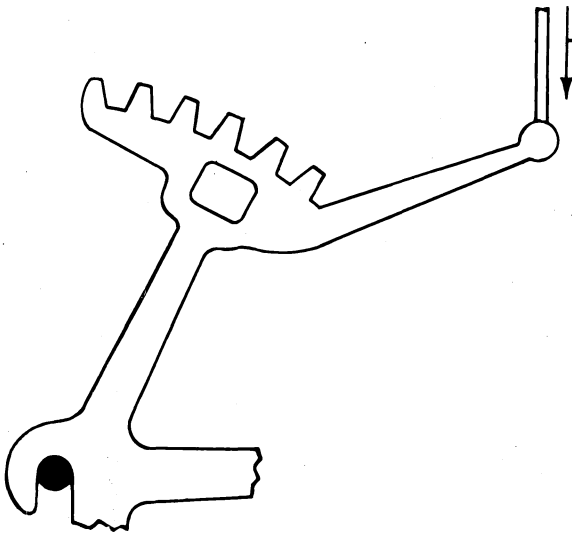
Select RUBOUT code combination (12345678). Rotate main shaft until function clutch trips. With scale applied horizontally over end of the tooth section.

Requirement

Min 3 oz---Max 5 oz to start bellcrank moving.

Note: This adjustment is completed on the following page.

2.35 Typing Mechanism (continued)



(D) BELLCRANK SPRINGS — 6 AND 7

To Check
Select RUBOUT code combination (12345678). Rotate mainshaft until function clutch trips.

(1) Requirement (Bellcrank Spring 6)
With scale applied vertically to ball end of bellcrank contact operating arm
— Min 2 oz---Max 4 oz
to start bellcrank moving.

(2) Requirement (Bellcrank Spring 7)
With no. 7 pulse lever spring removed and scale applied vertically to ball end of bellcrank operating arm
— Min 3 oz---Max 6 oz
to start bellcrank moving.

SHOULDER CLEARANCE

To Check
Manually select RUBOUT code combination (12345678). Rotate mainshaft until function clutch trips. Manually seat pushbars in detented position. In bar which is nearest left edge of blade, take up play to left and rear, and then release.

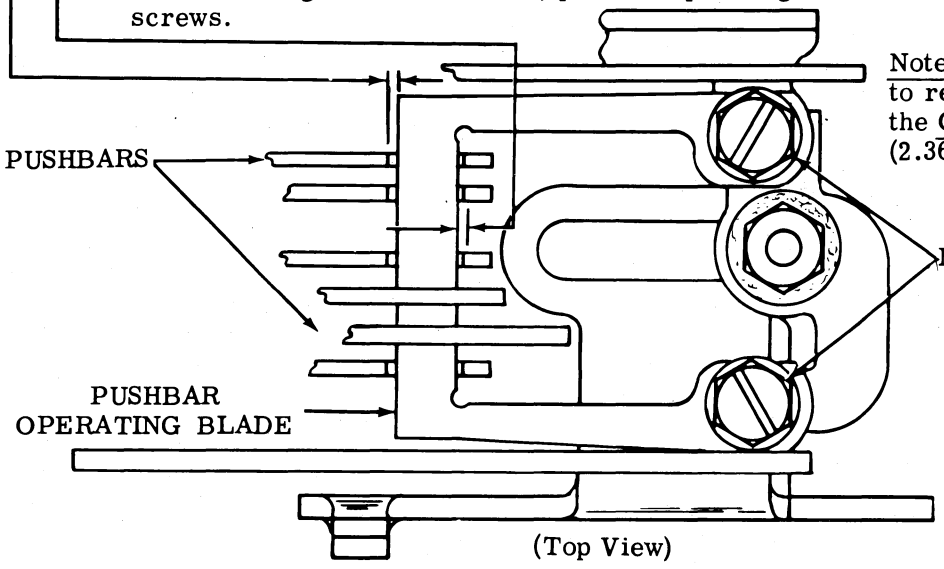
(1) Requirement
Clearance between bar and left edge of blade
— Min 0.015 inch---Max 0.030 inch

(2) Requirement
— Some clearance between right edge of blade and pushbars when play in bars has been taken up to right and released.

(3) Requirement
— With unit in stop position, some clearance between right edge of blade and bars when play in bars has been taken up to right and released.

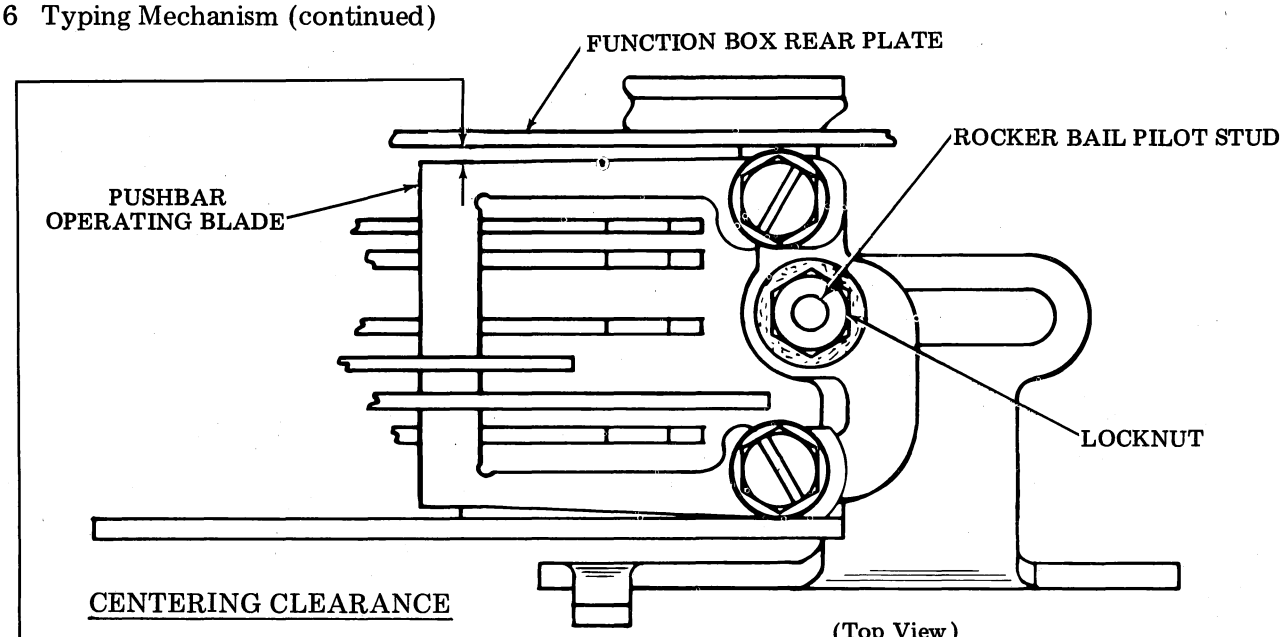
To Adjust
With mounting screws loosened, position operating blade in elongated holes. Tighten screws.

Note: It may be necessary to refine this adjustment after the CENTERING CLEARANCE (2.36) adjustment.



(Top View)

2.36 Typing Mechanism (continued)



CENTERING CLEARANCE

(Top View)

To Check

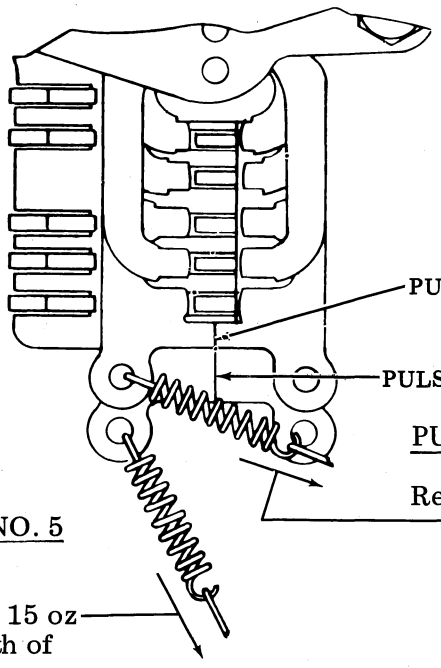
Place NULL code (all code levels spacing) in selector. Move rocker bail through one cycle of operation to find position of minimum clearance between function box rear plate and pushbar operating blade.

Requirement

Clearance between function box rear plate and pushbar operating blade
Min 0.005 inch---Max 0.020 inch
at a point in the cycle where play is taken up to make clearance minimum.

To Adjust

Position rocker bail pilot stud in elongated hole with locknut loosened. Tighten nut.



PULSE LEVER SPRING NO. 7

Requirement
Min 20 oz---Max 25 oz
to pull spring to length of
7/16 inch.

PULSE LEVER SPRING NO. 5

Requirement
Min 10 oz---Max 15 oz
to pull spring to length of
7/16 inch.

2.37 Typing Mechanism (continued)

BELLCRANK PUSHBAR ENGAGEMENT

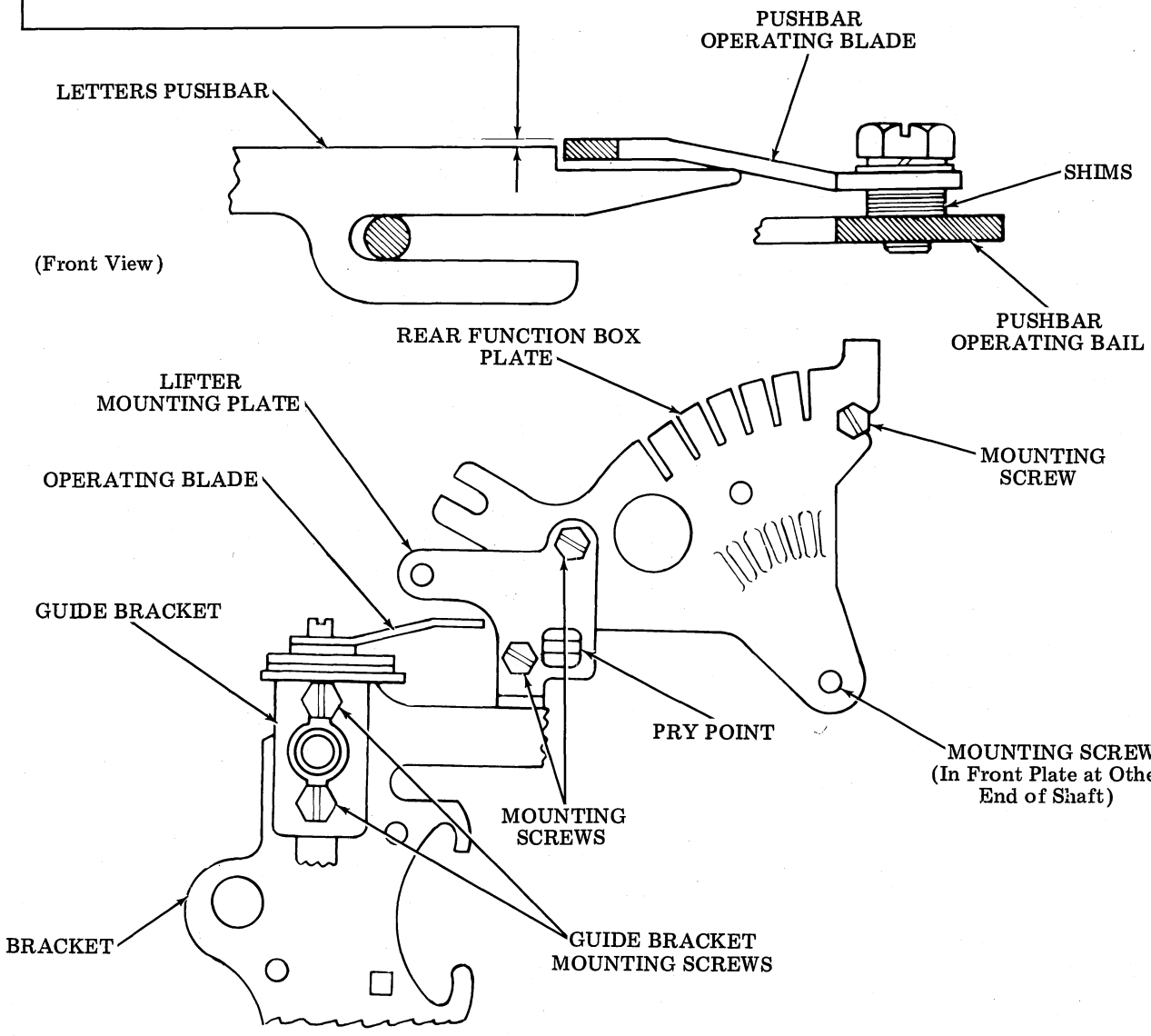
Requirement

With letters pushbar to extreme right and fully detented, RUBOUT code (12345678) selected, punch slides disengaged and function clutch tripped, eliminate play in downward direction, then release. Keep operating blade parallel with no. 2 and no.3 pushbars and take up function box play in a clockwise direction. The top of the operating blade should be

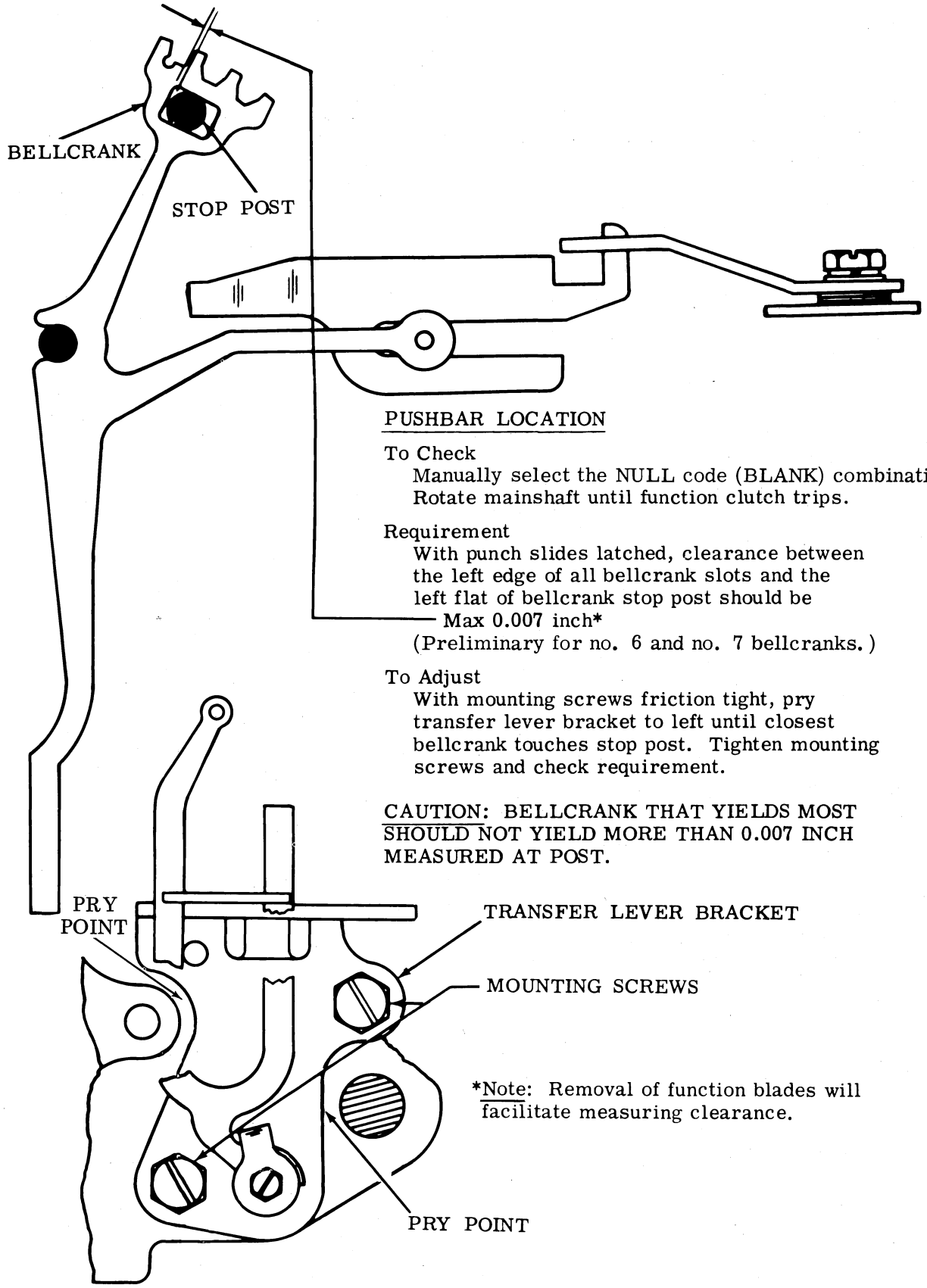
——— Min flush---Max 0.020 inch above top rubout pushbars.

To Adjust

Loosen the two screws mounting function box to spacer posts on front plate and set pry point in center of the cutout. Loosen the two screws which mount guide to the bracket and position guide to meet above requirement. Tighten screws.



2.38 Typing Mechanism (continued)



PUSHBAR LOCATION

To Check
Manually select the NULL code (BLANK) combination. Rotate mainshaft until function clutch trips.

Requirement
With punch slides latched, clearance between the left edge of all bellcrank slots and the left flat of bellcrank stop post should be Max 0.007 inch*
(Preliminary for no. 6 and no. 7 bellcranks.)

To Adjust
With mounting screws friction tight, pry transfer lever bracket to left until closest bellcrank touches stop post. Tighten mounting screws and check requirement.

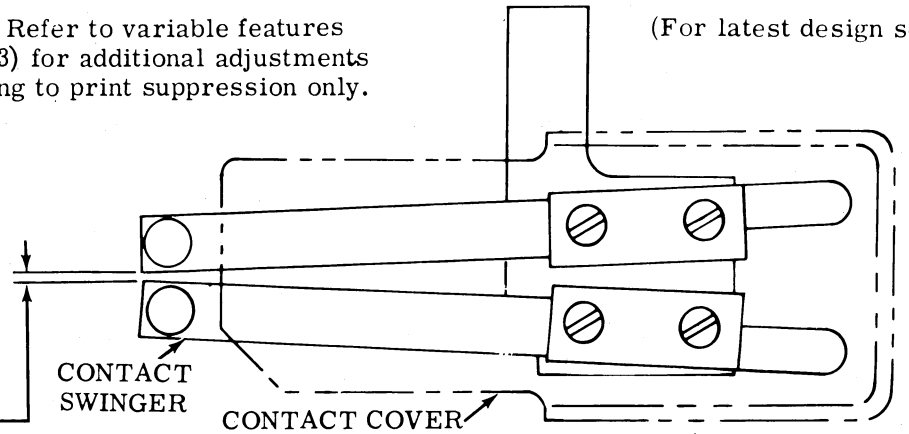
CAUTION: BELLCRANK THAT YIELDS MOST SHOULD NOT YIELD MORE THAN 0.007 INCH MEASURED AT POST.

*Note: Removal of function blades will facilitate measuring clearance.

2.39 Ribbon Shift and Print Suppression Mechanism (Early Design)

Note: Refer to variable features (Part 3) for additional adjustments applying to print suppression only.

(For latest design see 2.41)



RIBBON SHIFT AND PRINT SUPPRESSION CONTACTS

Note: The contact assembly can be identified by gold-plated contact points with a common transfer contact point on the contact swinger spring.

(1) Requirement

With the two contact swingers positioned toward each other, the clearance between the swingers should be

Min 0.035 inch---Max 0.060 inch

To Adjust

Disconnect all power from unit. Remove the contact assembly from the function box by removing the two mounting bracket screws. With the four contact cover mounting screws friction tight, position the contact swingers. Check the alignment of the associated contacts with each swinger and tighten the four contact cover mounting screws.

(2) Requirement — Preliminary

With the contact assembly still removed from the function box, there should be

Min 0.015 inch---Max 0.020 inch

clearance between the two swinger contact points and their associated normally open contact points. The top surface of the plastic insulators on both swingers should be parallel to each other and in the same plane (as gauged by eye).

(3) Requirement

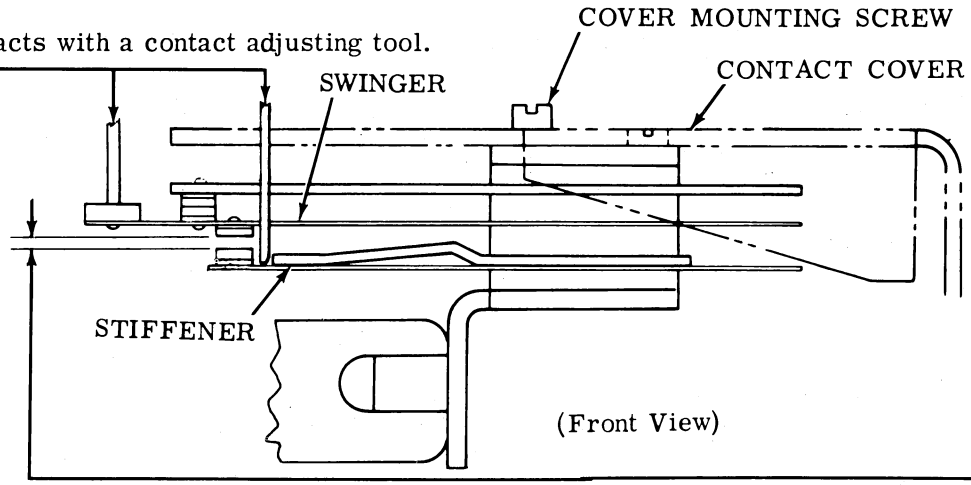
In addition to the clearance requirement, it should take

Min 2 oz---Max 3 oz

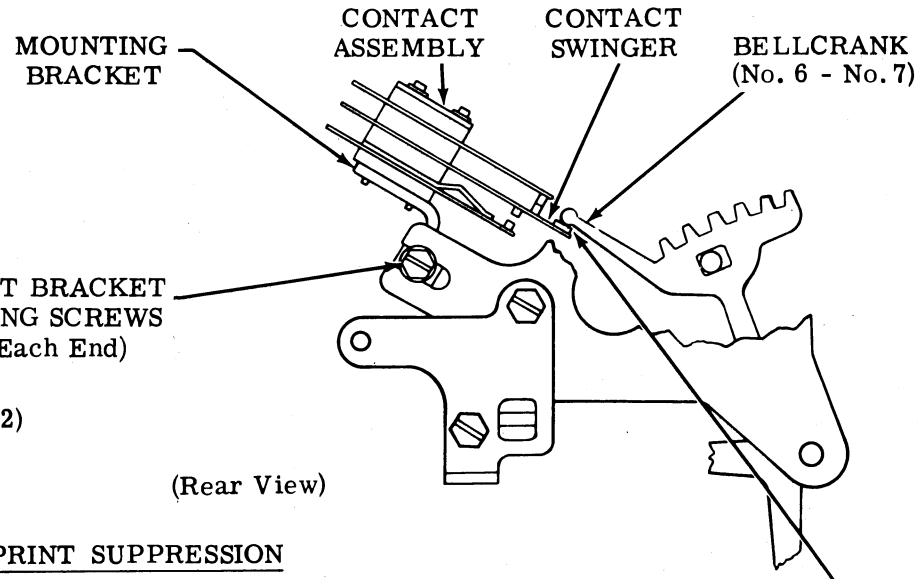
to start each swinger moving and to start normally open contacts moving away from their associated stiffeners.

To Adjust

Adjust the contacts with a contact adjusting tool.



2.40 Ribbon Shift and Print Suppression Mechanism (Early Design) (continued)



(For Latest Design see 2.42)

(Rear View)

RIBBON SHIFT AND PRINT SUPPRESSION CONTACT POSITION

Note: The following adjustments are to be made with the contact assembly mounted on the unit.

(1) Requirement

Manually select the NULL code (BLANK) combination. With the function clutch tripped, the follower portion of the no. 6 and no. 7 bellcranks should be centrally positioned with respect to the insulator followers on the contact swingers as viewed from the front of the unit.

To Adjust

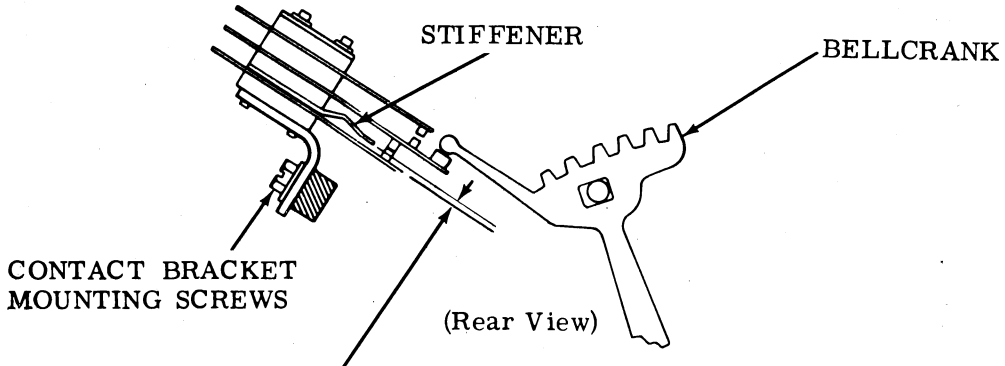
With the support bracket mounting screws friction tight, position the contact assembly. Tighten screws.

(2) Requirement

With the NULL code (BLANK) combination still selected and the function clutch tripped Min some---Max 0.004 inch clearance between each of the two spacing contacts and their stiffeners. Take up the play in the function box in a clockwise direction (as viewed from the selector side of the unit).

To Adjust

With the contact bracket mounting screws friction tight, position the bracket. Tighten screws.

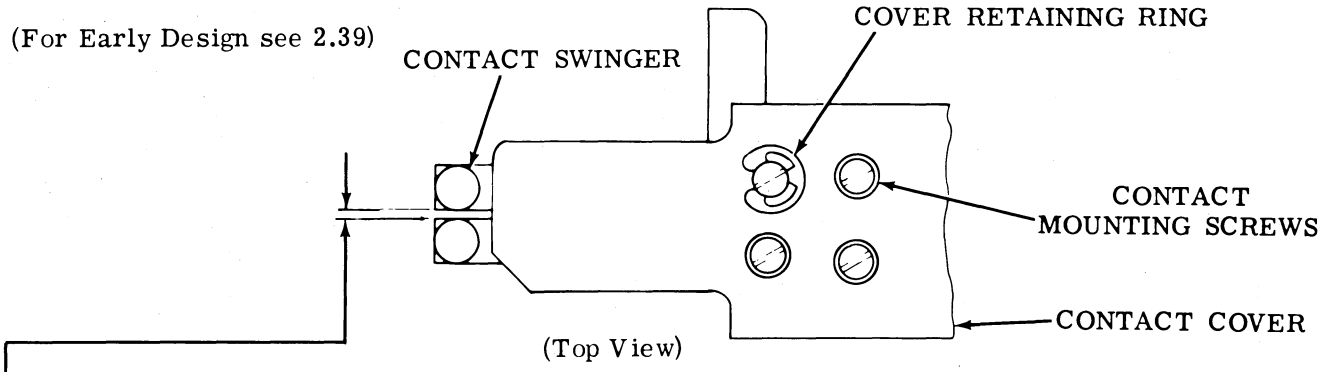


(Rear View)

2.41 Ribbon Shift and Print Suppression Mechanism (Latest Design)

Note: Refer to variable features (Part 3) for additional adjustments applying to print suppression only.

(For Early Design see 2.39)



RIBBON SHIFT AND PRINT SUPPRESSION CONTACTS

Note: The contact assembly can be identified by silver contact points with a common transfer contact point on the contact swinger spring and one retaining ring for fastening the cover. The cover may be removed by taking off the cover retaining ring snapped in place over the special cover mounting screw.

(1) Requirement

With the two contact swingers positioned toward each other, the clearance between the swingers should be

Min 0.035 inch---Max 0.060 inch

To Adjust

Disconnect all power from unit. Remove the contact assembly from the function box by removing the two mounting bracket screws. With the four contact mounting screws friction tight, position the contact swingers. Check the alignment of the associated contacts with each swinger and tighten the four screws.

(2) Requirement – Preliminary

With the contact assembly still removed from the function box, there should be

Min 0.015 inch---Max 0.020 inch

clearance between the two swinger contact points and their associated normally open contact points. The top surface of the plastic insulators on both swingers should be parallel to each other and in the same plane (as gauged by eye).

(3) Requirement

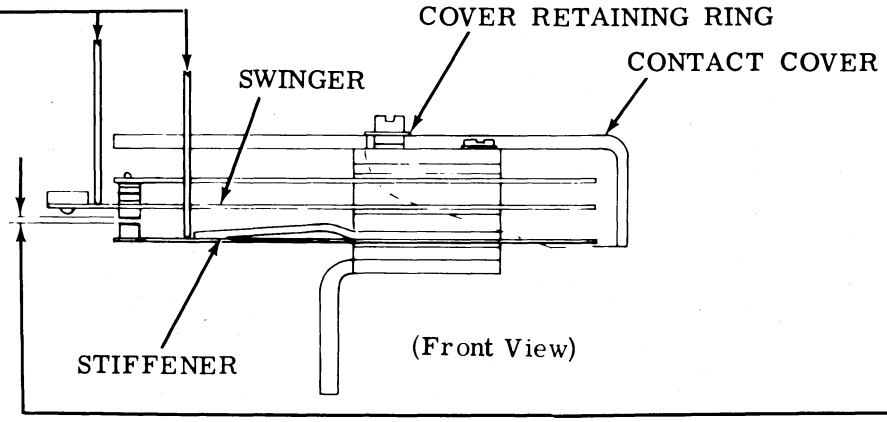
In addition to the clearance requirement, it should take

Min 45 grams---Max 60 grams

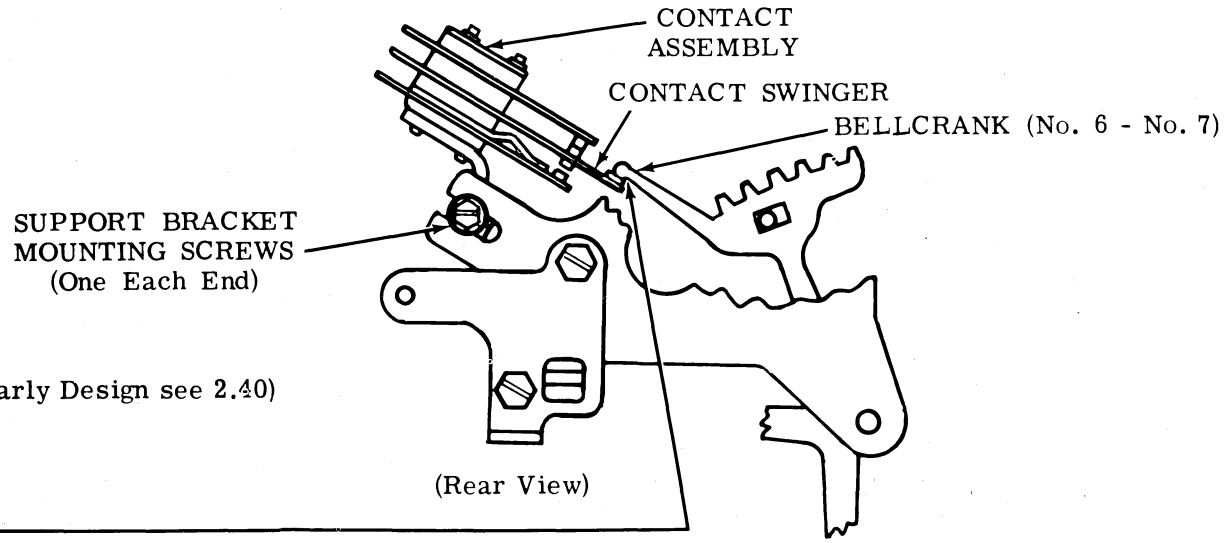
to start each swinger moving and to start normally open contacts moving away from their associated stiffeners.

To Adjust

Adjust the contacts with a contact adjusting tool.



2.42 Ribbon Shift and Print Suppression Mechanism (Latest Design) (continued)



RIBBON SHIFT AND PRINT SUPPRESSION CONTACT POSITION (Latest Design)

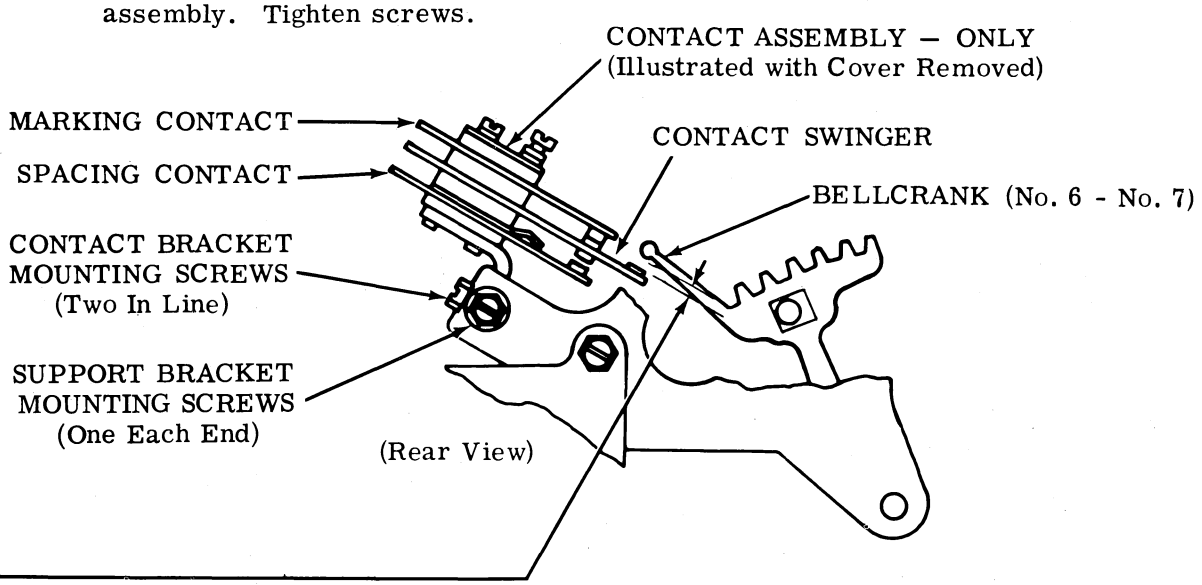
Note: The following adjustments are to be made with the contact assembly mounted on the unit.

(1) Requirement

Manually select the NULL code (BLANK) combination. With the function clutch tripped, the follower portion of the no. 6 and no. 7 bellcranks should be centrally positioned with respect to the insulator followers on the contact swingers as viewed from the front of the unit.

To Adjust

With the support bracket mounting screws friction tight, position the contact assembly. Tighten screws.



(2) Requirement

*With the RUBOUT combination (12345678) selected and the function clutch tripped, there should be

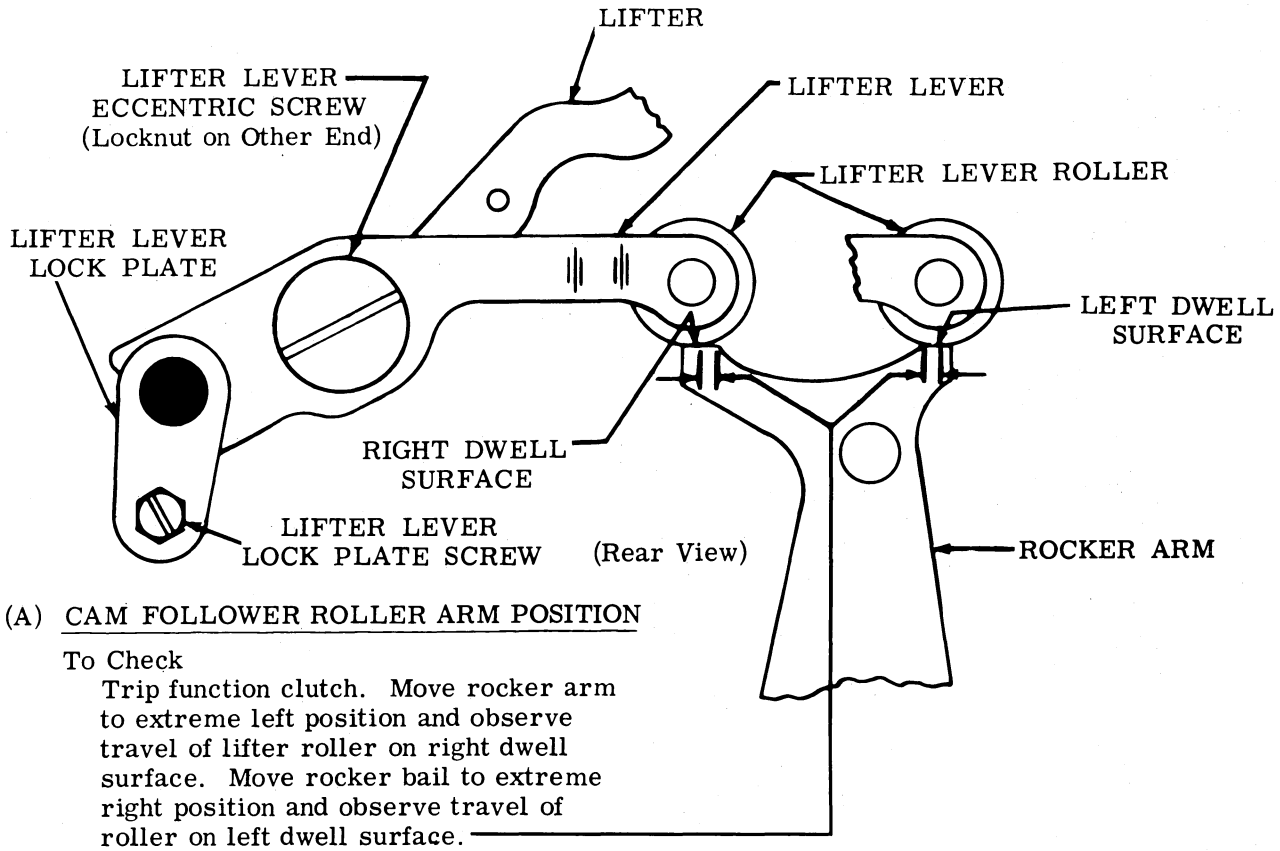
Min 0.025 inch---Max 0.045 inch

clearance between the bellcranks and the insulated portion of their respective swingers. Take up the play in the function box to make the clearance maximum.

To Adjust

With the contact bracket mounting screws friction tight, position the bracket. Tighten screws. Replace the cover and secure it with the cover retaining ring.

2.43 Typing Mechanism (continued)



(A) CAM FOLLOWER ROLLER ARM POSITION

To Check
Trip function clutch. Move rocker arm to extreme left position and observe travel of lifter roller on right dwell surface. Move rocker bail to extreme right position and observe travel of roller on left dwell surface.

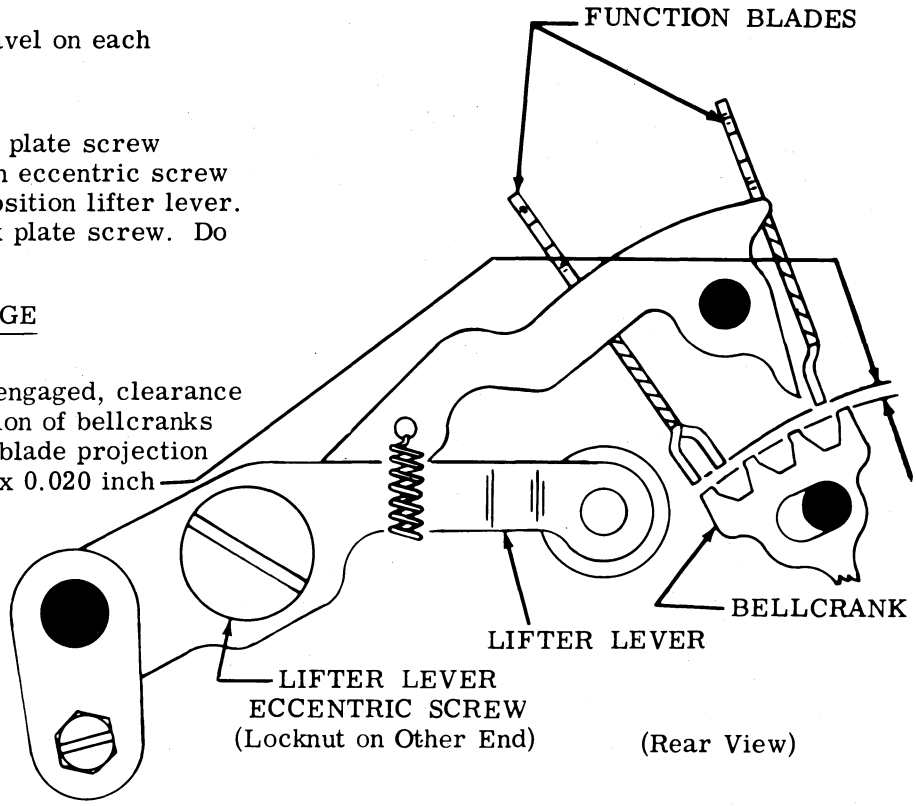
Requirement
Approximately equal travel on each dwell surface.

To Adjust
Loosen lifter lever lock plate screw until friction tight. With eccentric screw locknut friction tight, position lifter lever. Tighten lifter lever lock plate screw. Do not tighten locknut.

(B) LIFTER OPERATING RANGE

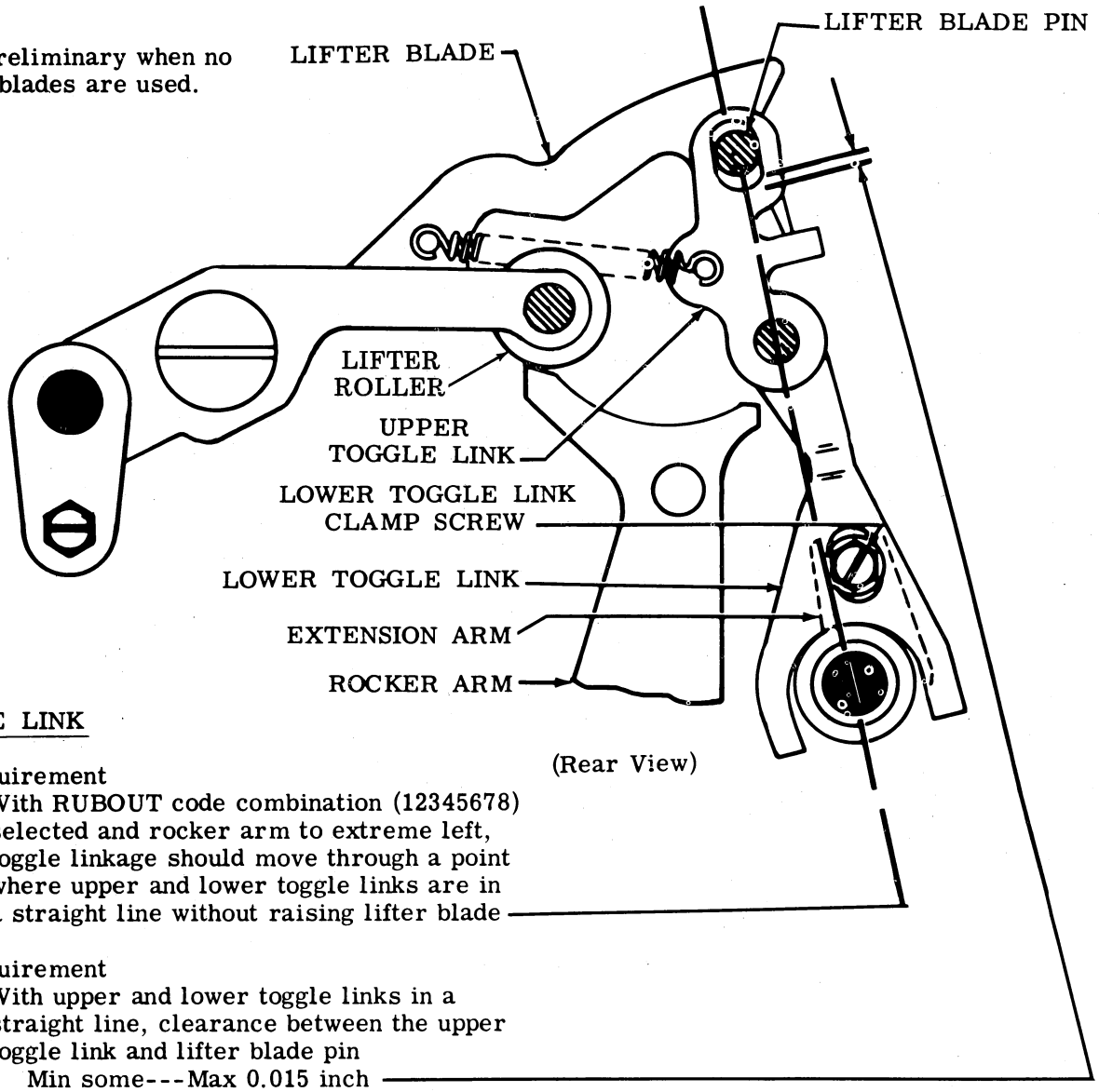
Requirement
With function clutch disengaged, clearance between closest projection of bellcranks and associated function blade projection
Min 0.008 inch---Max 0.020 inch

To Adjust
Position lifter lever eccentric screw with locknut loosened. Tighten locknut.



2.44 Typing Mechanism (continued)

Note: Preliminary when no function blades are used.



TOGGLE LINK

(1) Requirement
With RUBOUT code combination (12345678) selected and rocker arm to extreme left, toggle linkage should move through a point where upper and lower toggle links are in a straight line without raising lifter blade

(2) Requirement
With upper and lower toggle links in a straight line, clearance between the upper toggle link and lifter blade pin
Min some---Max 0.015 inch

To Adjust
Position lower toggle link by moving its extension arm up or down with clamp screw friction tight. Tighten clamp screw.

Note: To avoid interference with the lower toggle link clamp screw and the axial corrector link, it may be necessary to move the high part of the corrector bushing above its horizontal center line.

2.45 Typing Mechanism (continued)

Note: Preliminary when no function blades are used.

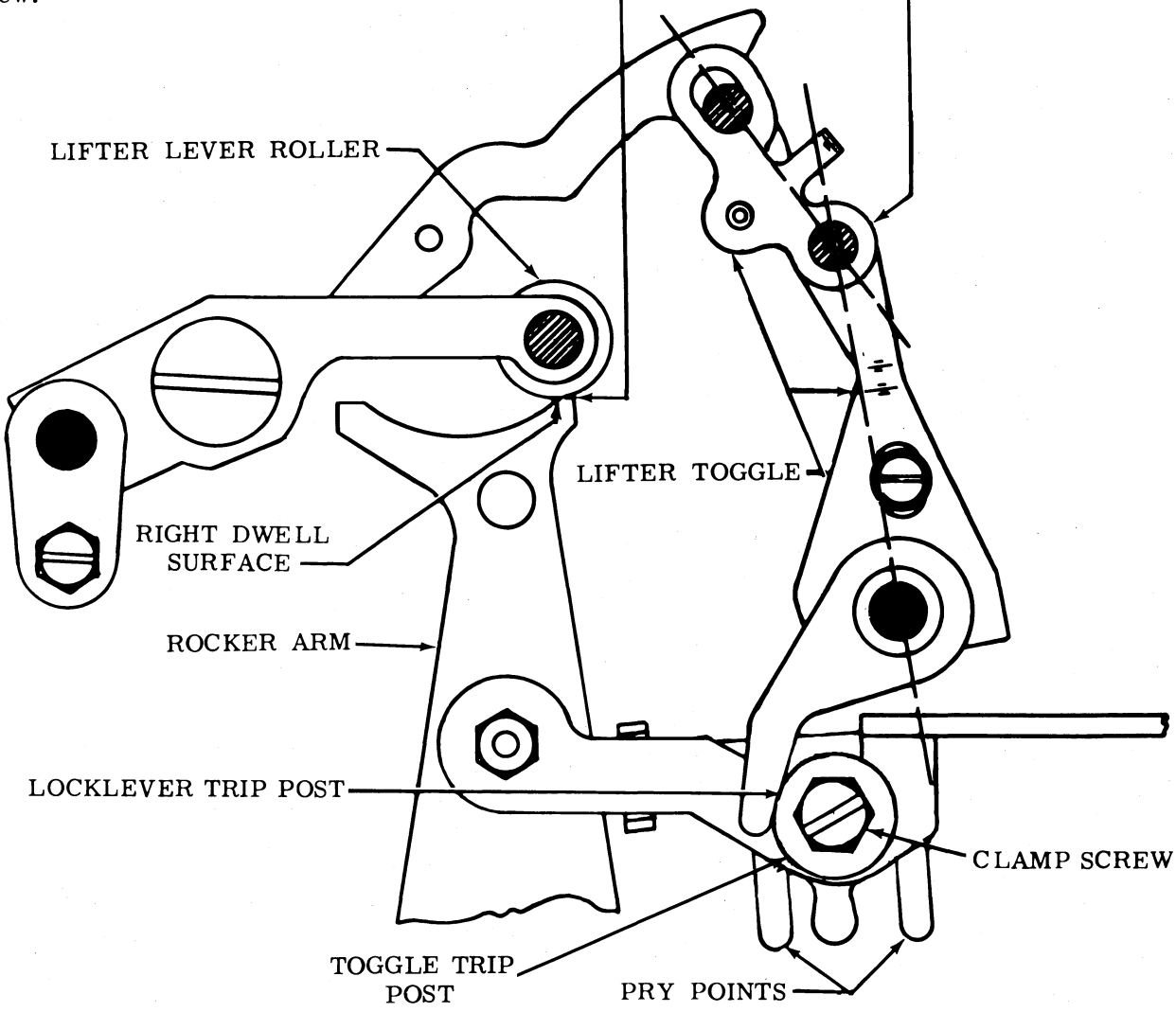
TOGGLE TRIP ARM

Requirement

As rocker arm approaches extreme right position, the lifter toggle should break and lifter arm roller should drop onto right dwell surface.

To Adjust

By means of pry points, position toggle trip post with clamp screw loosened. Tighten clamp screw.



(Rear View)

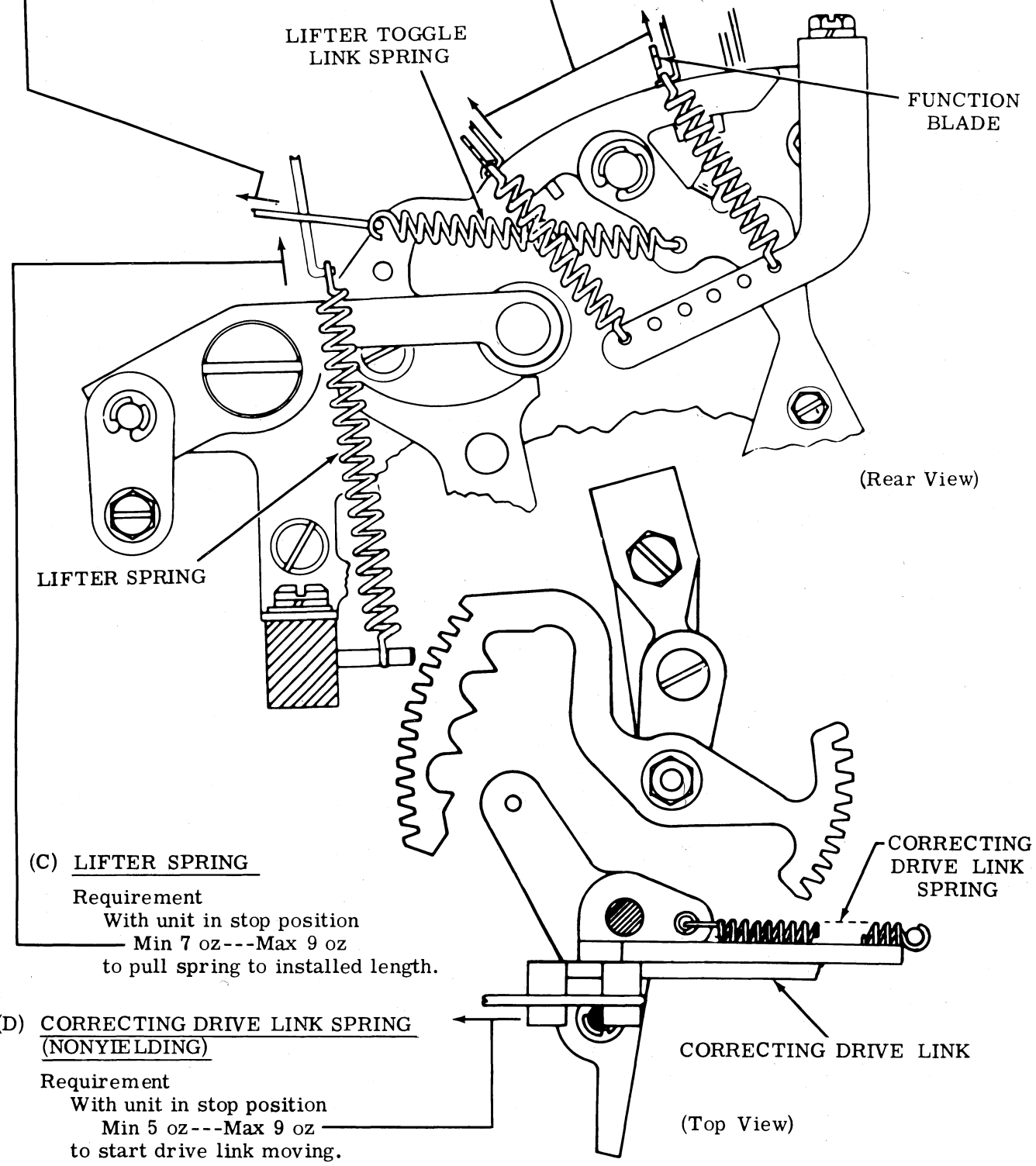
2.46 Typing Mechanism (continued)

(A) LIFTER TOGGLE LINK SPRING

Requirement
With unit in stop position
Min 1-1/2 oz---Max 2-1/4 oz
to pull spring to installed length.

(B) FUNCTION BLADE SPRING (2 Or More)

Requirement (If so equipped)
With unit in stop position
Min 7 oz---Max 10 oz
to start function blade moving.



(C) LIFTER SPRING

Requirement
With unit in stop position
Min 7 oz---Max 9 oz
to pull spring to installed length.

(D) CORRECTING DRIVE LINK SPRING (NONYIELDING)

Requirement
With unit in stop position
Min 5 oz---Max 9 oz
to start drive link moving.

2.47 Typing Mechanism (continued)

(A) OSCILLATING BAIL DRIVE LINK

To Check

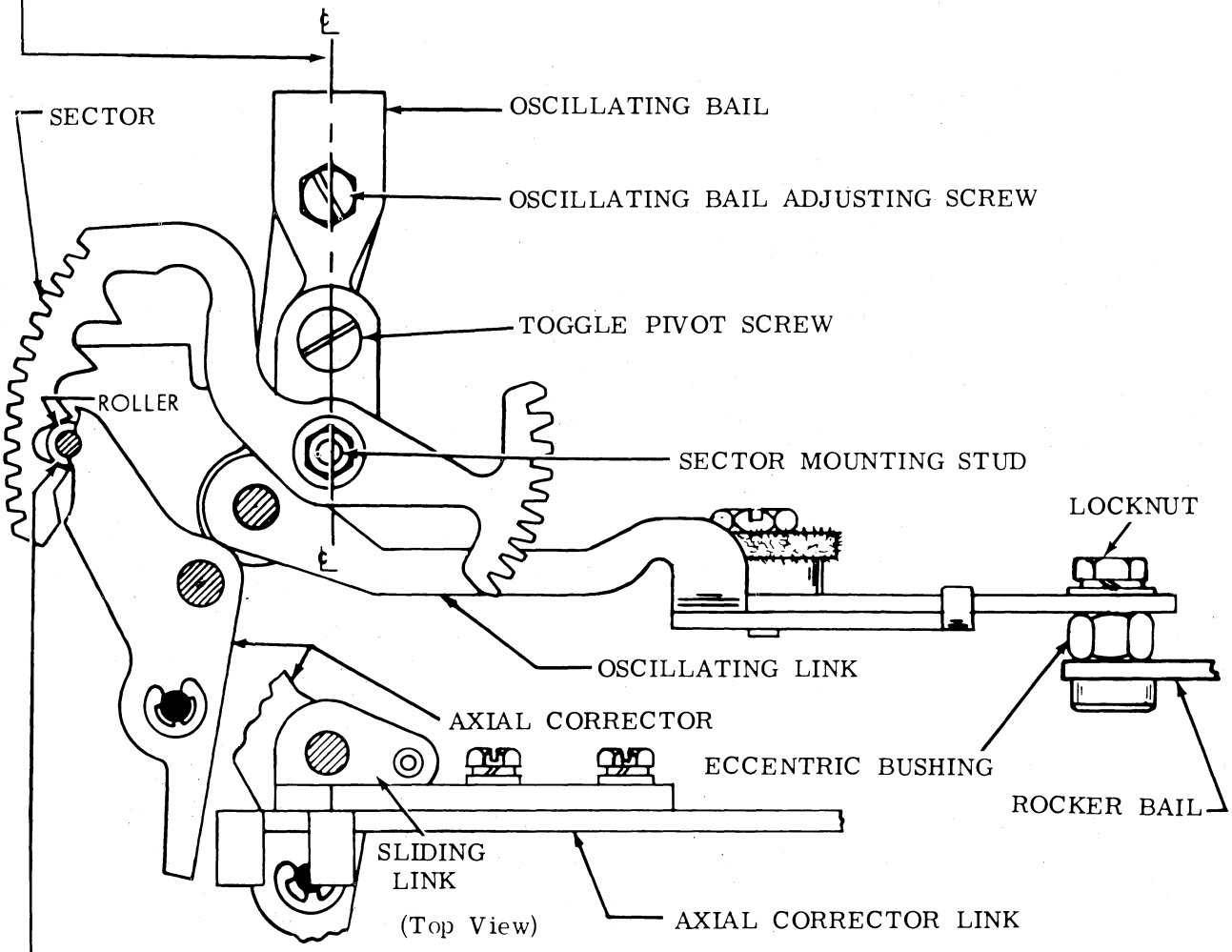
Position rocker bail to its extreme left.

Requirement

Sector mounting stud, toggle pivot screw and oscillating bail adjusting screw should approximately line up.

To Adjust

With locknut friction tight, position oscillating link by means of its eccentric bushing. Tighten locknut.



(B) OSCILLATING BAIL PIVOT

Requirement

With NULL (BLANK) combination selected, rotate mainshaft taking up the axial play in type wheel shaft toward the front of the unit. The axial corrector roller should enter first notch of the sector centrally.

To Adjust

With oscillating bail adjusting screw friction tight, select NULL combination. Position oscillating bail by means of its elongated mounting hole so corrector roller enters first notch of the sector when rocker bail moves to its extreme left position. Hold corrector roller firmly in first notch and take up the play in oscillating bail linkage by applying a force to the oscillating bail. Tighten oscillating bail adjusting screw.

2.48 Typing Mechanism (continued)

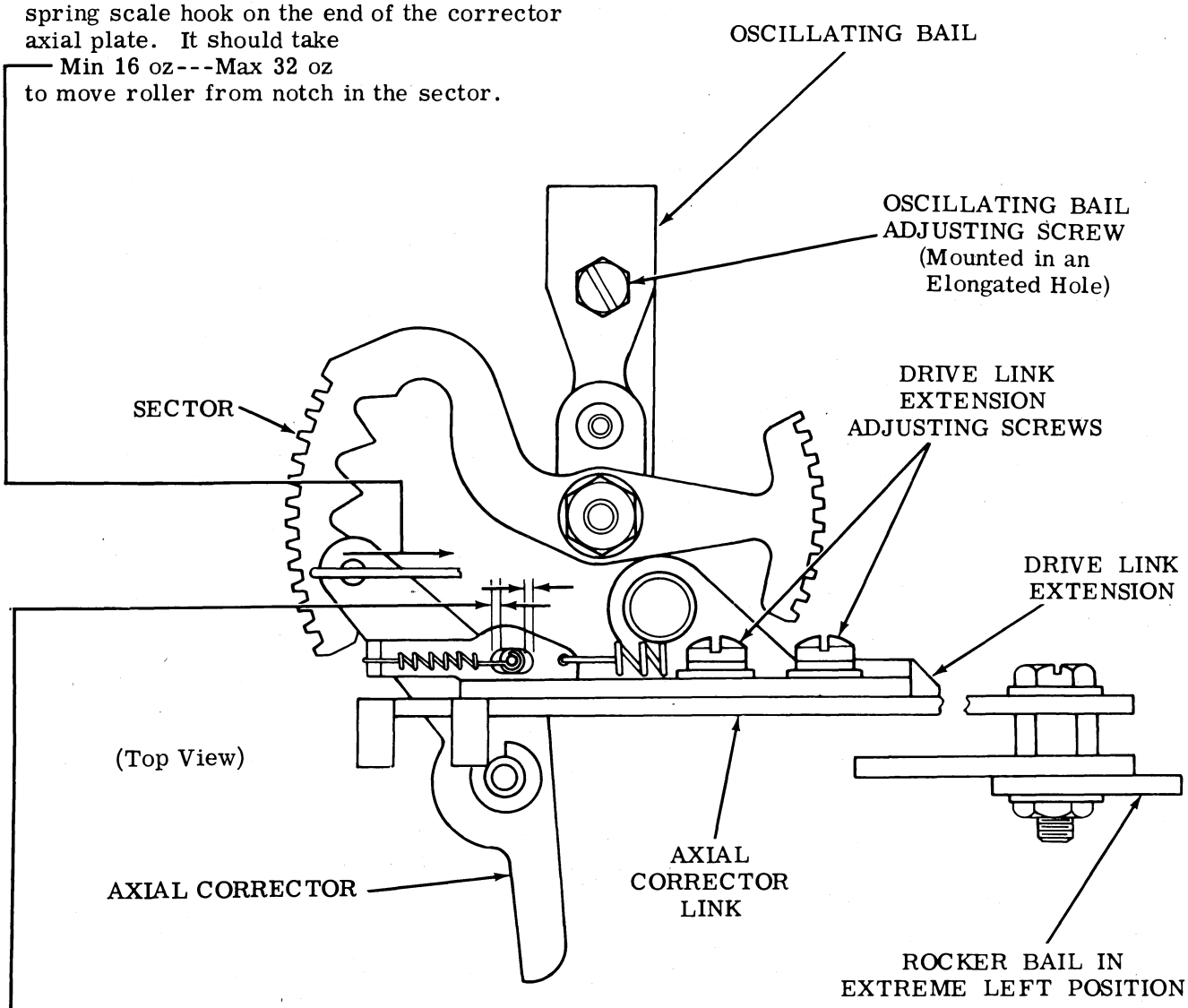
CORRECTING DRIVE LINK (YIELDING) EXTENSION SPRING

Requirement

With the NULL code (BLANK) combination selected, function clutch tripped, and rocker bail in its extreme left position, place a 32 oz spring scale hook on the end of the corrector axial plate. It should take

Min 16 oz---Max 32 oz

to move roller from notch in the sector.



AXIAL CORRECTOR (YIELDING)

Requirement

With the NULL code (BLANK) 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 retaining ring that fastens drive link extension to 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.

2.49 Typing Mechanism (continued)

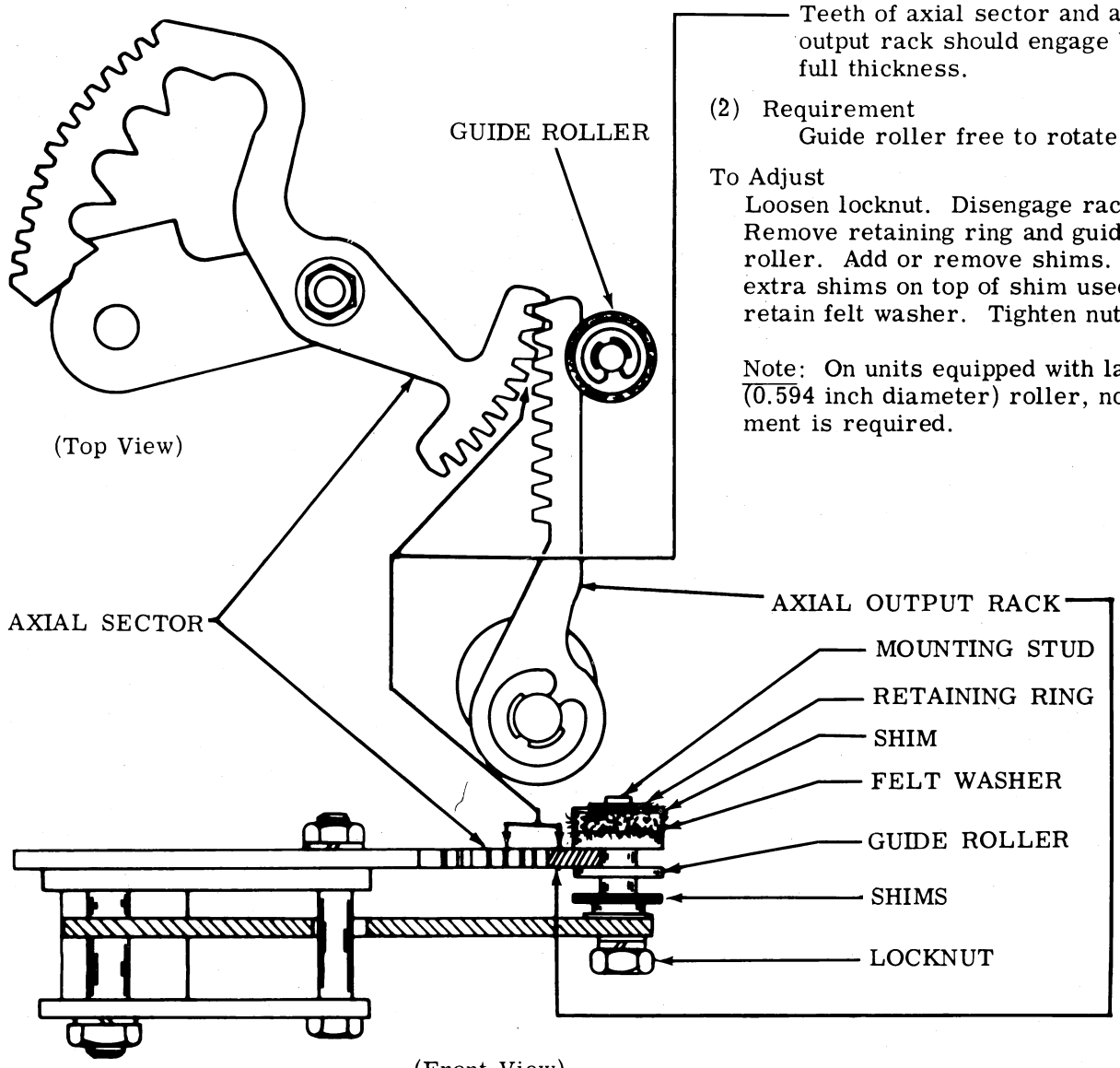
(A) AXIAL SECTOR ALIGNMENT

(1) Requirement
Teeth of axial sector and axial output rack should engage by their full thickness.

(2) Requirement
Guide roller free to rotate.

To Adjust
Loosen locknut. Disengage rack. Remove retaining ring and guide roller. Add or remove shims. Place extra shims on top of shim used to retain felt washer. Tighten nut.

Note: On units equipped with larger (0.594 inch diameter) roller, no adjustment is required.

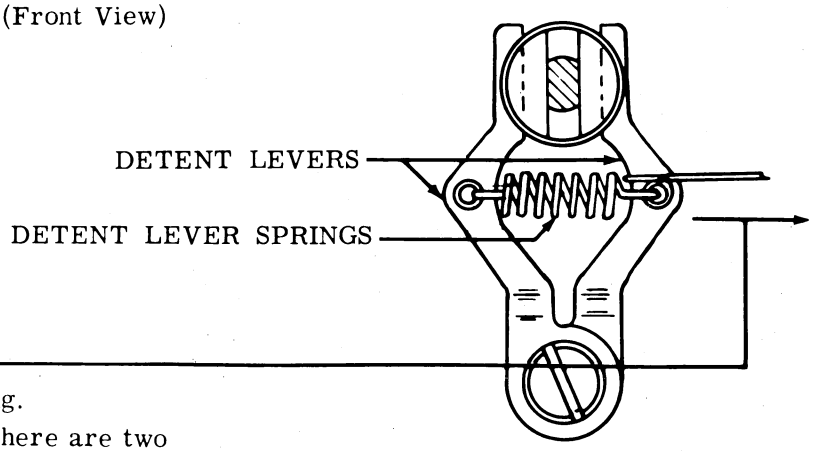


(Front View)

(B) ECCENTRIC SHAFT
DETENT LEVER SPRING (6)

Requirement
Min 7 oz---Max 10 oz
to start detent lever moving.

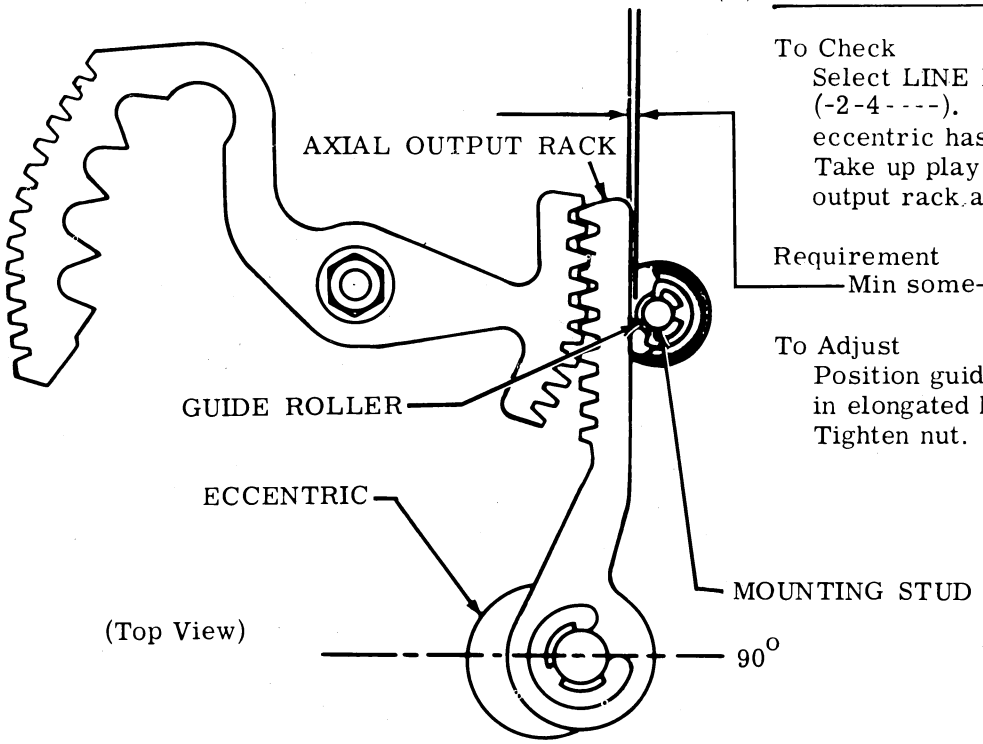
Note: Check all 6 springs. There are two on the axial positioning mechanism and four on the rotary positioning mechanism.



(Top View of Springs on Axial Positioning Mechanism)

2.50 Typing Mechanism (continued)

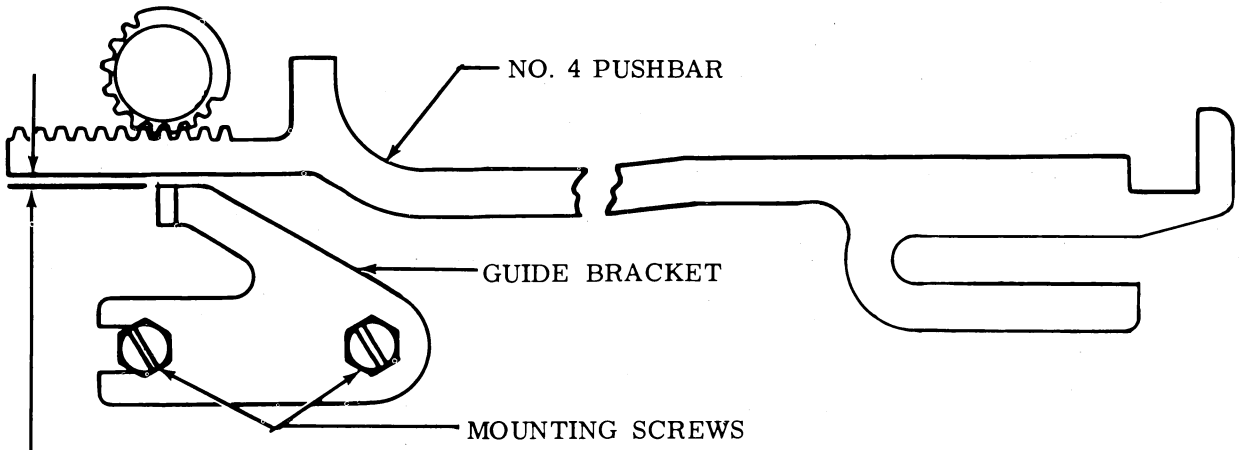
(A) AXIAL OUTPUT RACK GUIDE ROLLER



To Check
Select LINE FEED code combination (-2-4----). Rotate mainshaft 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 locknut loosened. Tighten nut.



(B) PUSHBAR GUIDE BRACKET

To Check
Manually select CARRIAGE RETURN code combination (1-34---8). Rotate mainshaft so that no. 4 pushbar 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 pushbar and guide bracket throughout complete travel of bar.

To Adjust
Position guide bracket with mounting screws loosened. Tighten screws.

2.51 Typing Mechanism (continued)

(A) CORRECTING DRIVE LINK (NONYIELDING)

(1) To Check

Select the NULL code (BLANK) 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

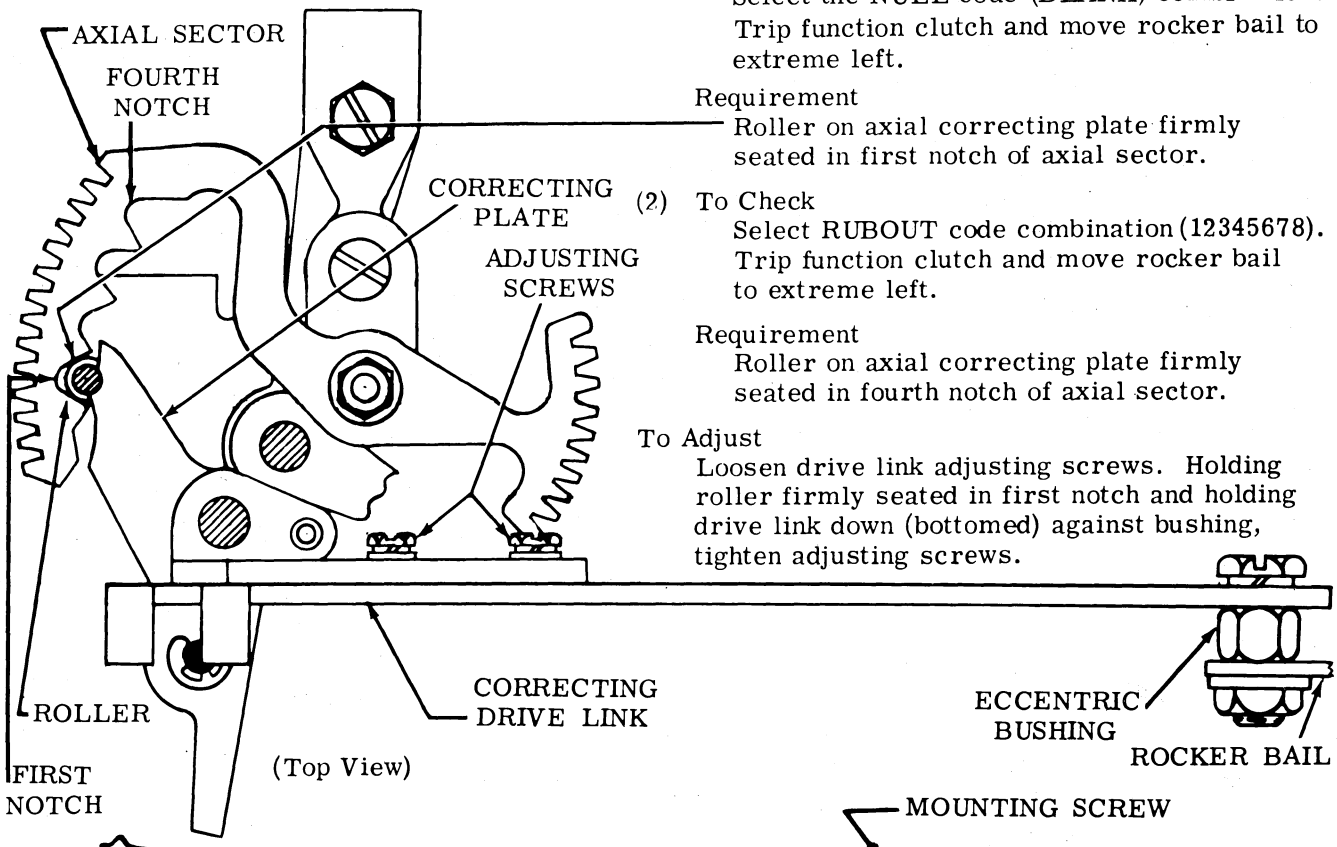
Select RUBOUT code combination (12345678). Trip function clutch and move rocker bail to extreme left.

Requirement

Roller on axial correcting plate firmly seated in fourth notch of axial sector.

To Adjust

Loosen drive link adjusting screws. Holding roller firmly seated in first notch and holding drive link down (bottomed) against bushing, tighten adjusting screws.



(B) TYPE WHEEL RACK CLEARANCE

Requirement

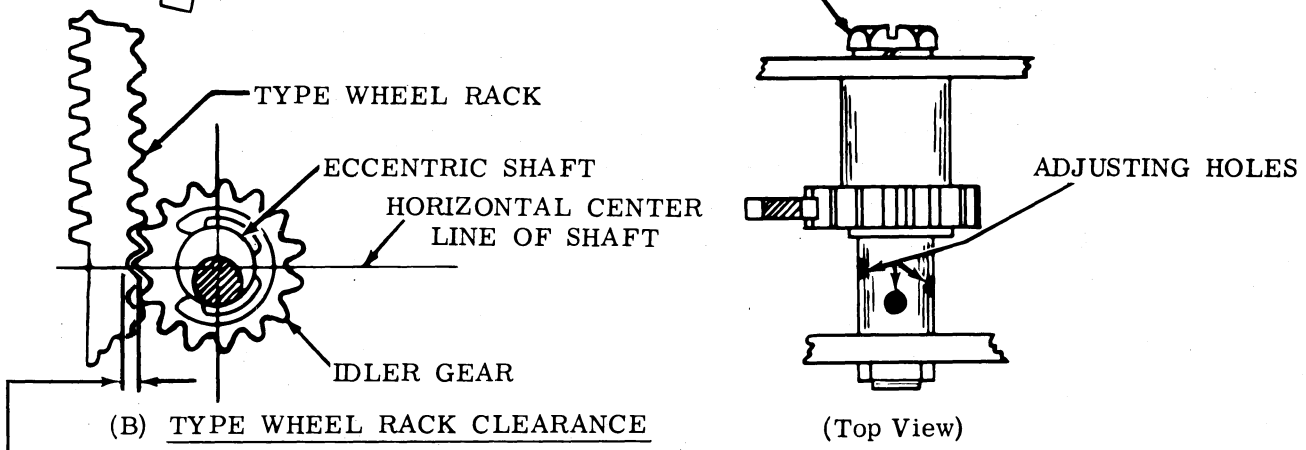
With function clutch disengaged and upper no. 7 pushbar to the right

Min some---Max 0.015 inch

clearance between idler gear and rack at the closest point when all play is taken up in a direction to make clearance a maximum. There should be some clearance throughout travel of the rack.

To Adjust

With mounting screw friction tight, position idler gear eccentric shaft by means of three adjusting holes in top of shaft. Tighten screw.



2.52 Typing Mechanism (continued)

ROTARY CORRECTOR MESH

(1) Requirement

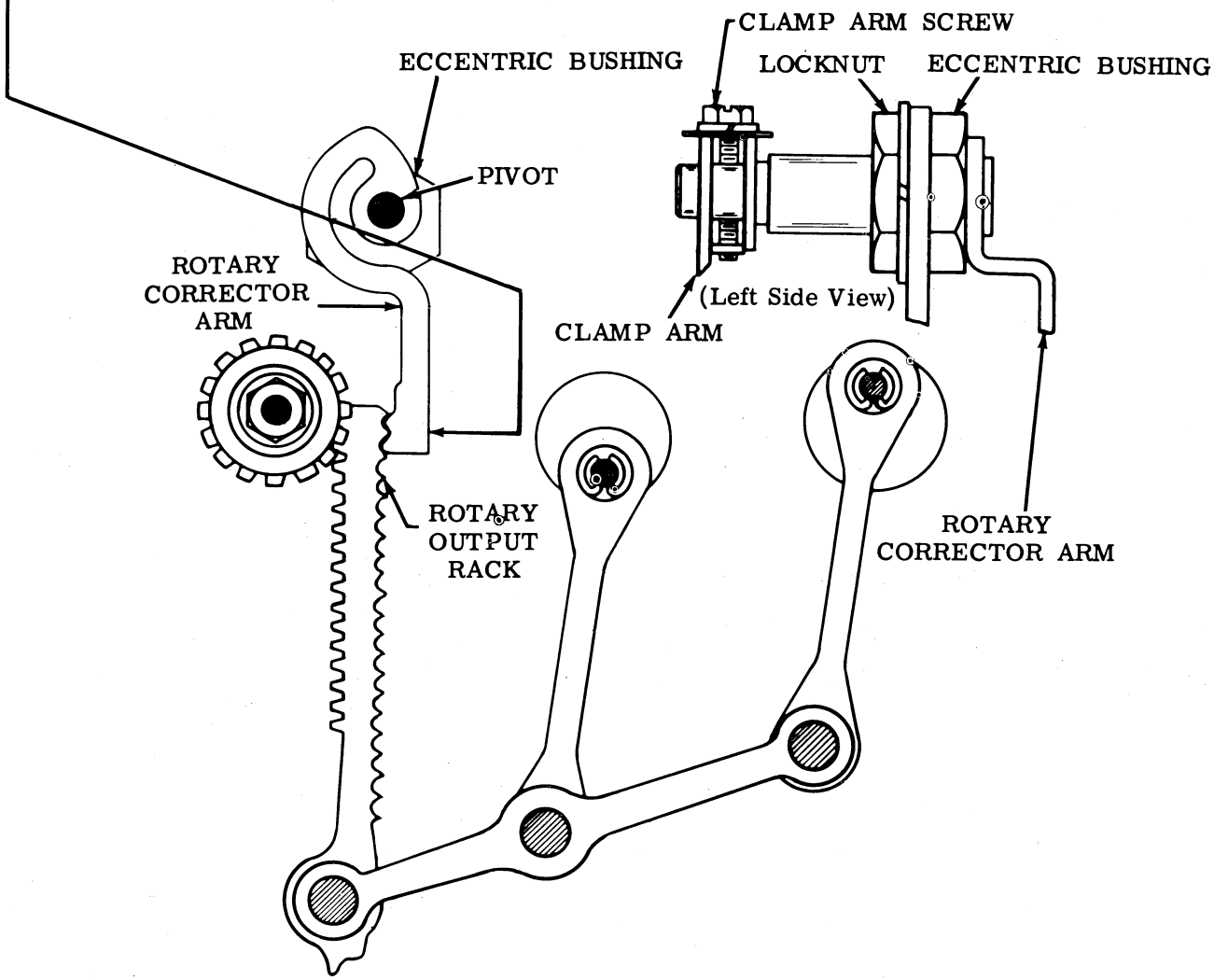
With X code combination (---45-78) selected and the pushbars manually detented, the second tooth from the top of the rotary output rack should seat between the lobes of the rotary corrector arm.

To Adjust

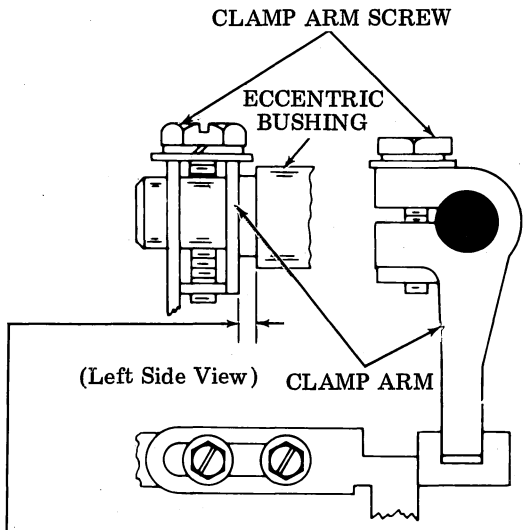
Loosen clamp arm screw and eccentric bushing locknut. With the pivot of the corrector arm to the right of the center of the bushing, position rotary corrector. Tighten bushing locknut. Do not tighten clamp arm screw at this point.

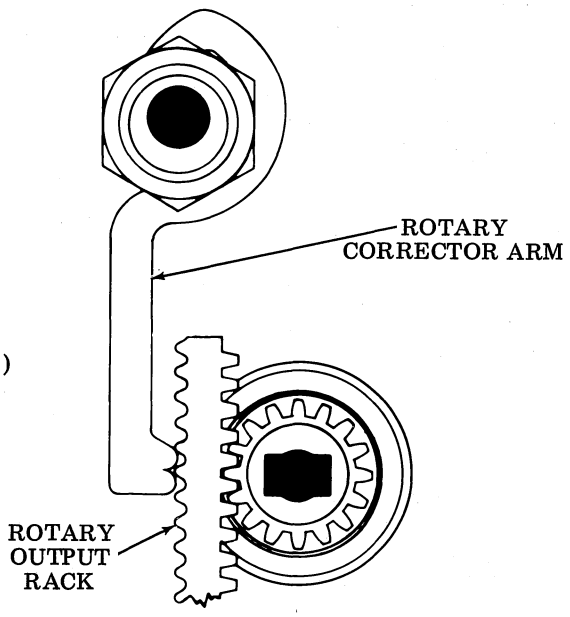
(2) Requirement

In a manner similar to that described above, check engagement of fifth tooth (--34--78), ninth tooth (---4---8), and sixteenth tooth (--3-5---). Refine the adjustment if necessary.



2.53 Typing Mechanism (continued)





ROTARY CORRECTOR ARM

To Check

Place a C code (12----78 marking) in selector and complete one cycle of operation. Place a RUBOUT code (12345678 marking) in selector. Position rocker bail to extreme left. Manually seat corrector arm in rack.

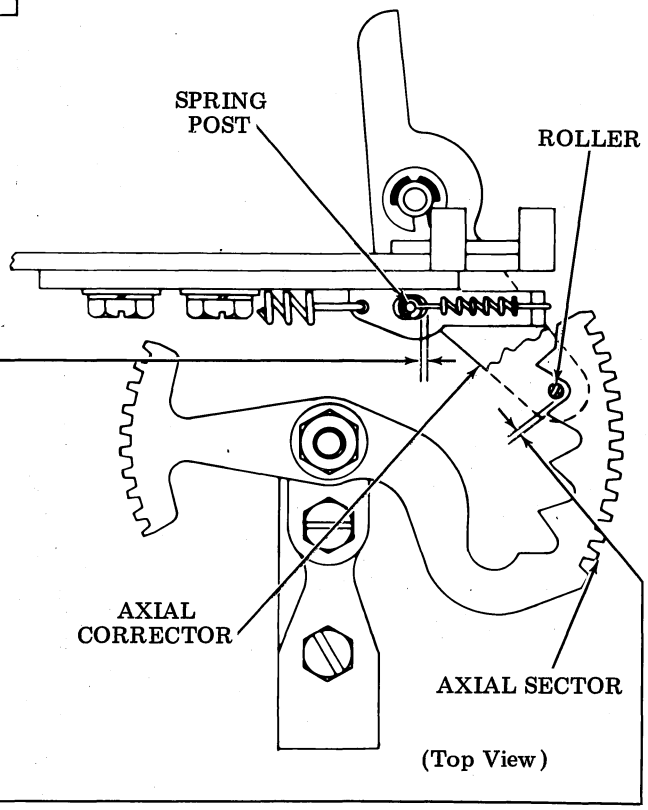
Requirement

The rotary corrector arm should seat firmly in the rotary output rack.

Min some---Max 0.006 inch endplay between clamp arm and bushing, with unit in the stop position.

To Adjust (Units equipped with a yielding axial corrector)

As the rocker bail approaches the extreme left and the spring post of the axial corrector starts to leave the end of its slot, take up play of drive arm in its operating fork towards main bail and position the rotary corrector arm finger tight against rotary output rack and tighten clamp arm screw.



To Adjust (Units equipped with nonyielding axial corrector)

As the rocker bail approaches the extreme left, measure clearance between the axial corrector roller and the sector notch. When clearance is

Min some---Max 0.005 inch

position rotary corrector arm finger tight against rotary output rack, and tighten corrector clamp arm screw.

2.54 Ribbon Shift and Print Suppression Mechanism (Latest Design) (continued)

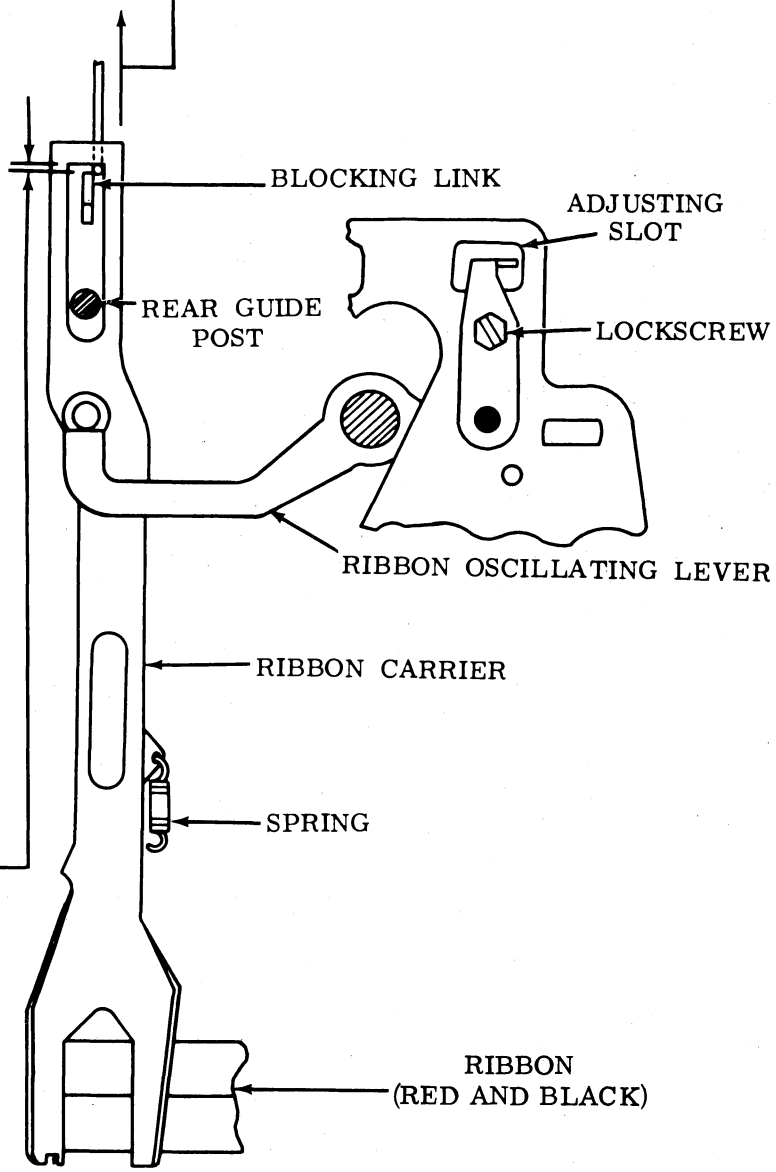
RIBBON CARRIER SPRING

Requirement
With unit in stop position
Min 7 oz---Max 10 oz
to start carrier moving.

RIBBON CARRIER

Requirement
With function clutch disengaged, manually lift blocking lever so that it is opposite ribbon carrier and against the type wheel shaft housing.
Min 0.040 inch---Max 0.060 inch clearance between blocking link and ribbon carrier.

To Adjust
Loosen lockscrew. Position ribbon oscillating lever, using adjusting slot. Tighten screw.



(Front Top View)

2.55 Ribbon Shift and Print Suppression Mechanism (Early Design) (continued)

Note: The following adjustments apply to units with graphics either suppressed or in red (red of red-black ribbon towards rear of unit) when magnet is de-energized.

(B) ARMATURE AIR GAP

Requirement

With armature on downstop screw

Min 0.015 inch---Max 0.020 inch clearance between magnet core and armature at closest point and

Min some---Max 1/32 inch clearance between rear of armature slot and ribbon shift blocking link as gauged by eye.

To Adjust

Position magnet bracket with mounting screws loosened. Tighten screws. Check for binds.

(A) ARMATURE DOWNSTOP

Requirement

With rocker bail in extreme left position and ribbon carrier biased downward, hold the blocking link against the type wheel shaft housing.

Min some---Max 0.005 inch clearance between top surface of blocking link and lower surface of ribbon carrier.

To Adjust

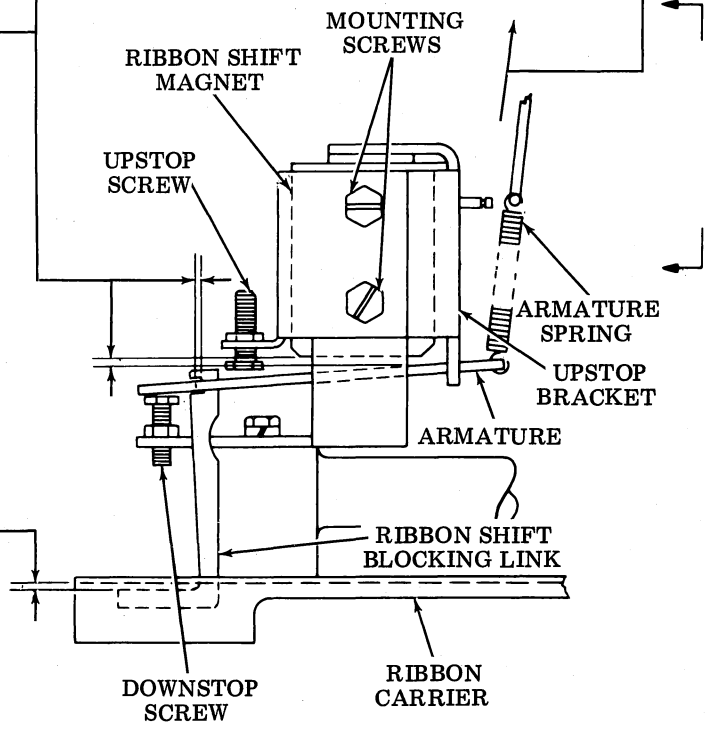
Position armature downstop screw with locknut loosened. Tighten locknut.

(D) ARMATURE SPRING

Requirement

With spring disconnected

Min 3-1/2 oz---Max 4-1/2 oz when pulled to installed length.



(C) ARMATURE UPSTOP

Requirement

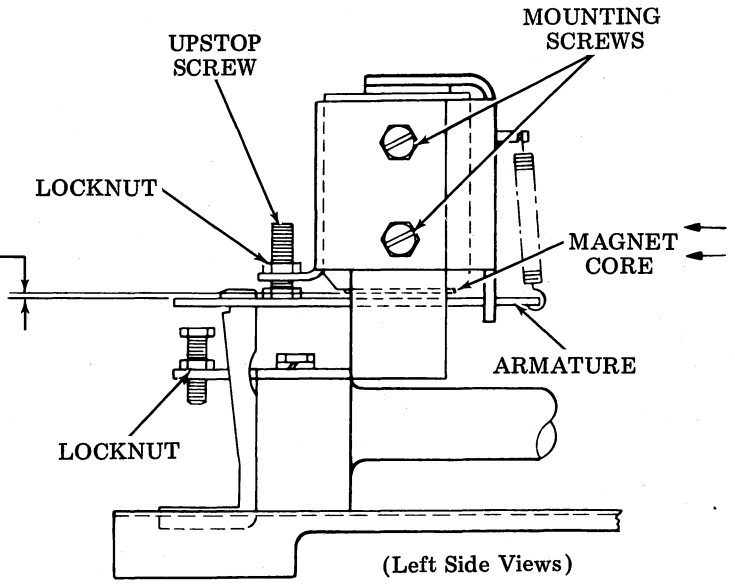
With armature held against upstop screw (magnet is not to be energized) and ribbon carrier biased upward

Min 0.005 inch---Max 0.010 inch clearance between magnet core and armature at closest point.

To Adjust

Position upstop screw with locknut loosened. Tighten locknut.

Note: Refer to Part 3 for additional print suppression adjustments.



(Left Side Views)

2.56 Ribbon Shift and Print Suppression Mechanism (Latest Design) (continued)

Note: The following adjustments apply to units with printing of graphics either suppressed or in red (red of red-black ribbon towards front of unit) when magnet is de-energized.

(A) ARMATURE AIR GAP AND DOWNSTOP

Requirement
With armature resting on downstop screw
Min 0.015 inch---Max 0.020 inch
clearance between magnet core and armature at closest point.

To Adjust
Position downstop screw with locknut loosened. Tighten locknut.

(B) RIBBON SHIFT BLOCKING LINK

Requirement
With armature held against upstop screw (magnet is not to be energized) and ribbon carrier biased upward
Min some---Max 0.008 inch
clearance between blocking link lower surface and ribbon carrier top surface at closest point and
Min some---Max 0.031 inch
clearance between rear of armature slot and blocking link as gauged by eye.

To Adjust
Position magnet bracket with mounting screws loosened. Tighten screws.

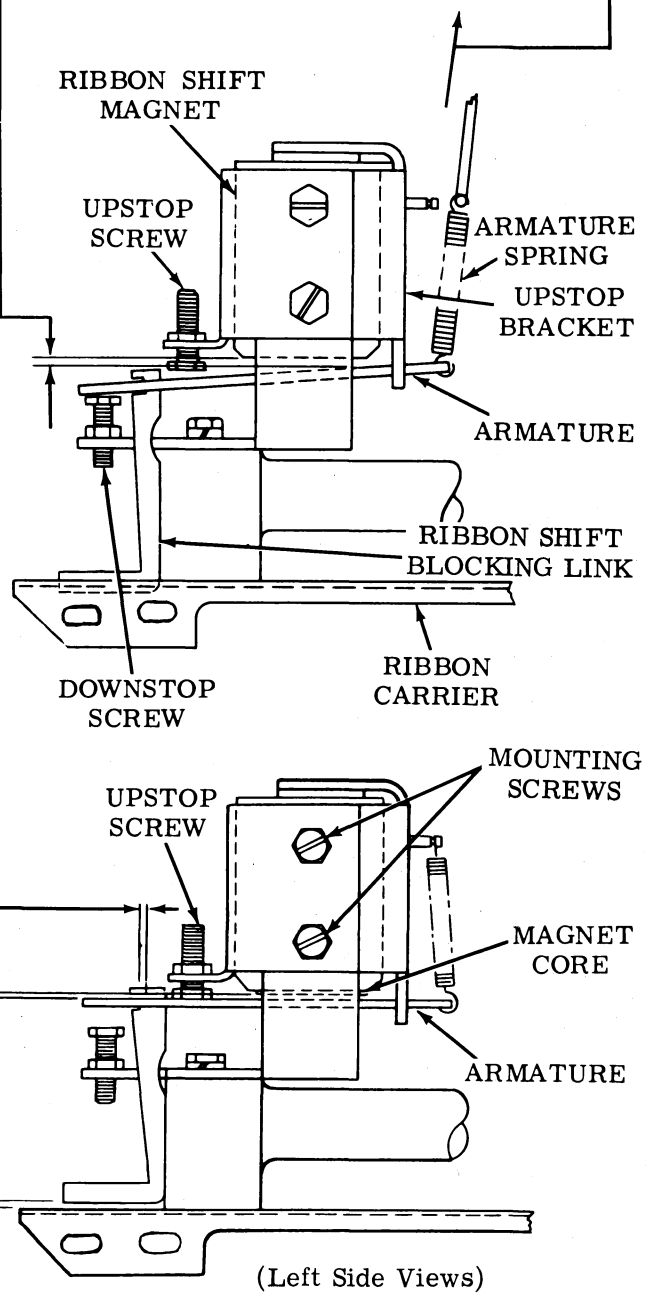
(C) ARMATURE UPSTOP

Requirement
With armature held against upstop screw (magnet is not to be energized) ribbon carrier biased upward
Min 0.005 inch---Max 0.010 inch
clearance between magnet core and armature at closest point.

To Adjust
Position upstop screw with locknut loosened. Tighten lock nut.

(D) ARMATURE SPRING

Requirement
With spring disconnected
Min 3-1/2 oz---Max 4-1/2 oz
when pulled to installed length.



(Left Side Views)

Note: Refer to Part 3 for additional print suppression adjustments.

2.57 Typing Mechanism (continued)

PRINTING LATCH

Note 1: For units with adjustable printing latch mounting bracket.

(1) Requirement

With rocker bail in its extreme left position, manually raise the print hammer accelerator. The clearance between the print hammer accelerator and the printing latch should be

Min some---Max 0.015 inch

(2) Requirement

With rocker bail in its extreme right position, there should be some overtravel of the print hammer accelerator with respect to the latching surface of the printing latch and some clearance between the print hammer accelerator and the ribbon carrier (or accelerator blocking link if present).

To Adjust

(1) Position the rocker bail to the extreme right. With the high part of the eccentric to the left, rotate the eccentric so that the clearance between the print hammer accelerator and the ribbon carrier is

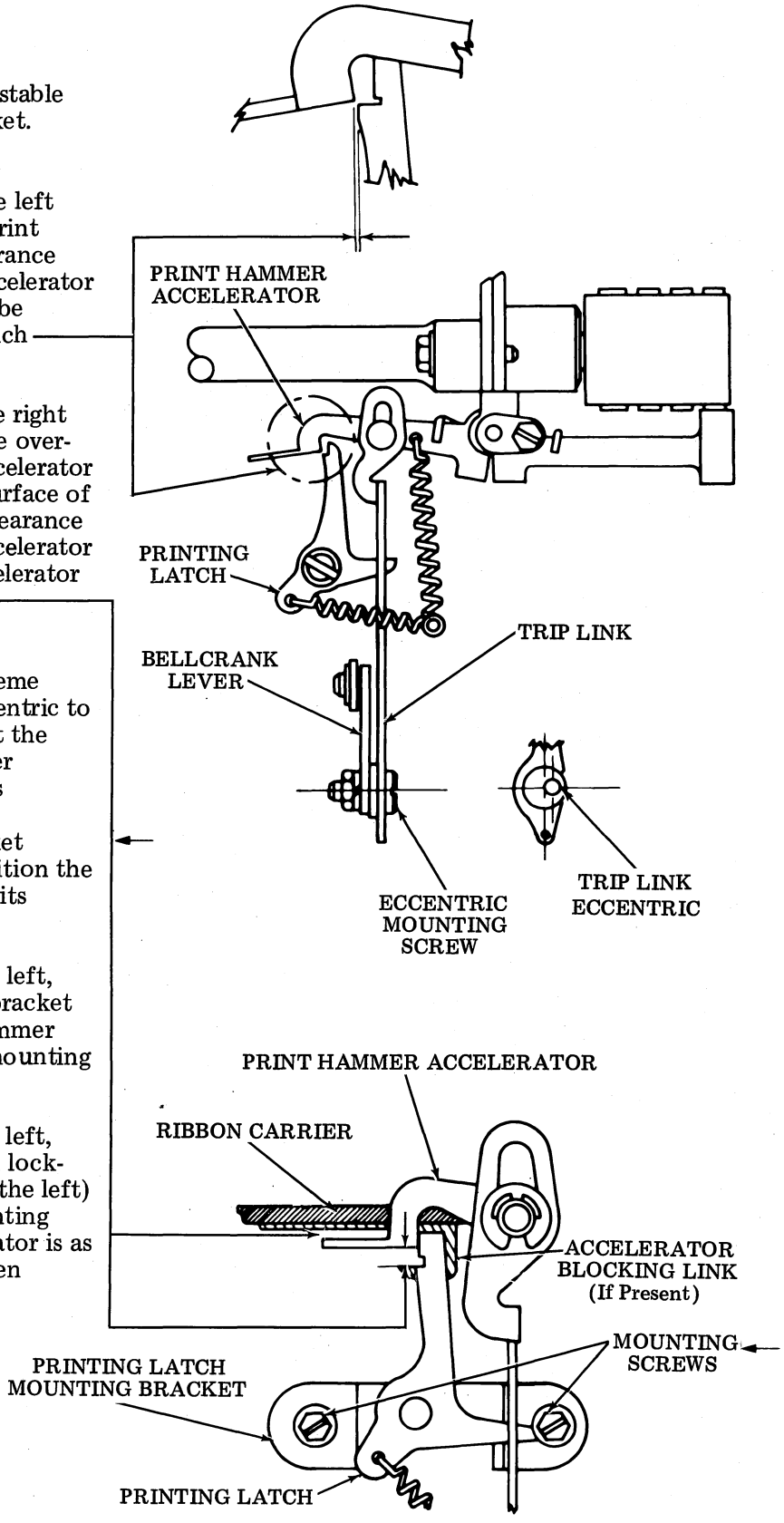
Approximately 0.065 inch

With printing latch mounting bracket mounting screws friction tight, position the printing latch mounting bracket to its extreme rear position.

(2) With the rocker bail to the extreme left, move the printing latch mounting bracket toward the front until the print hammer accelerator just trips. Tighten the mounting screws.

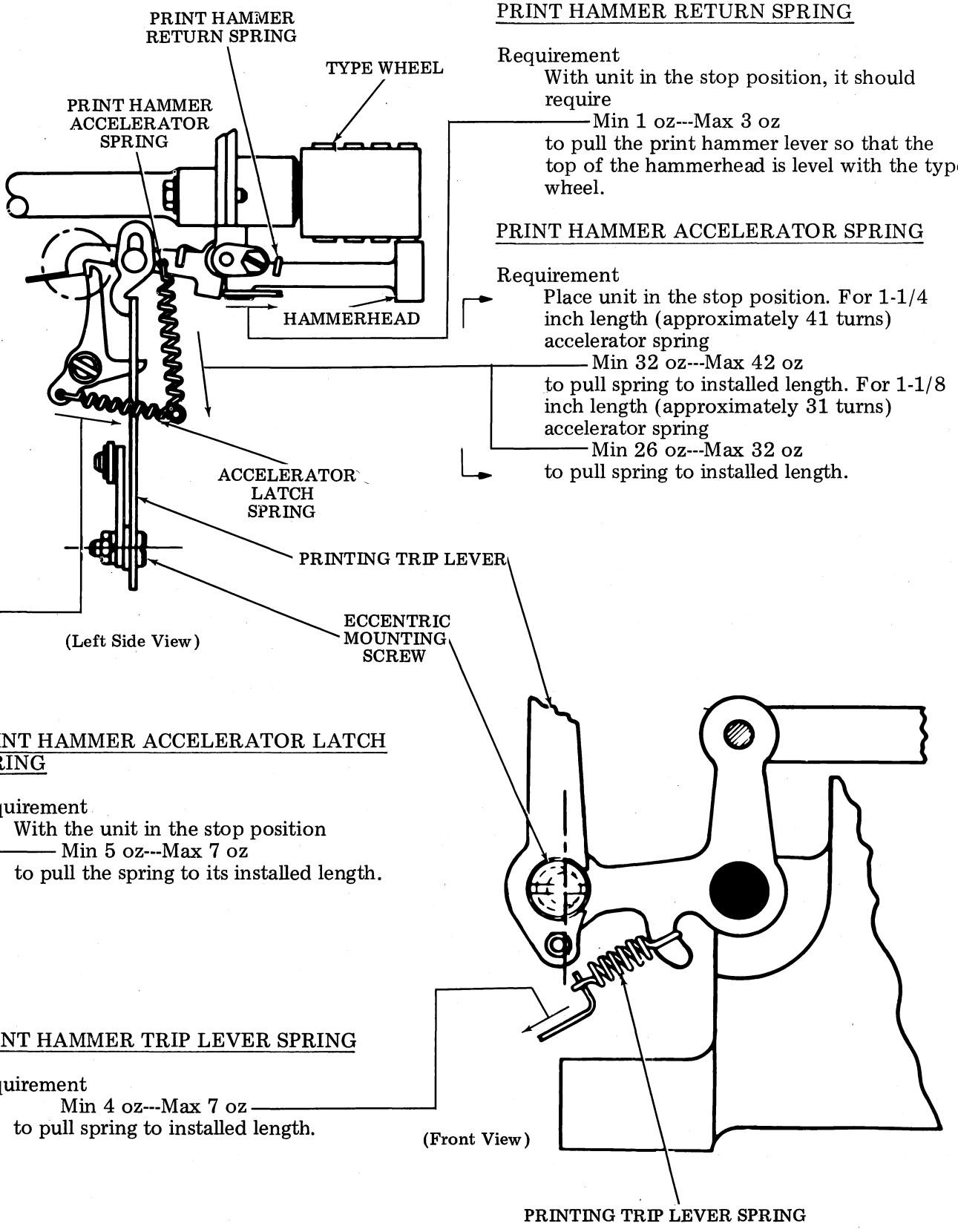
(3) With the rocker bail to the extreme left, position the trip link eccentric with locknut loose (keeping the high part to the left) until the clearance between the printing latch and the print hammer accelerator is as called for in requirement (1). Tighten eccentric locknut.

Note 2: For units with non-adjustable printing latch mounting bracket use above "(1) Requirement" and adjust according to "To Adjust (3)."



(Left Side Views)

2.58 Typing Mechanism (continued)



PRINT HAMMER RETURN SPRING

Requirement
With unit in the stop position, it should require
Min 1 oz---Max 3 oz
to pull the print hammer lever so that the top of the hammerhead is level with the type wheel.

PRINT HAMMER ACCELERATOR SPRING

Requirement
Place unit in the stop position. For 1-1/4 inch length (approximately 41 turns) accelerator spring
Min 32 oz---Max 42 oz
to pull spring to installed length. For 1-1/8 inch length (approximately 31 turns) accelerator spring
Min 26 oz---Max 32 oz
to pull spring to installed length.

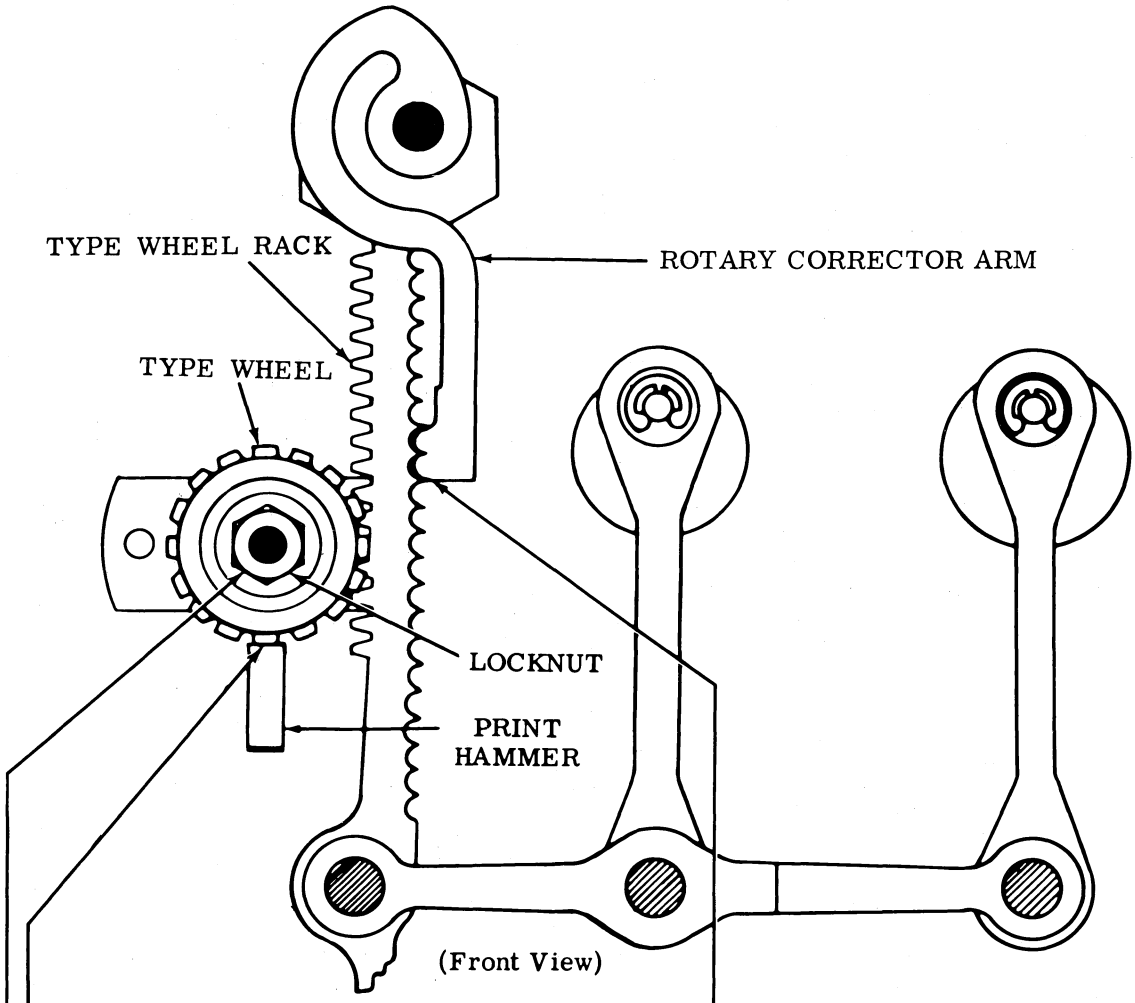
PRINT HAMMER ACCELERATOR LATCH SPRING

Requirement
With the unit in the stop position
Min 5 oz---Max 7 oz
to pull the spring to its installed length.

PRINT HAMMER TRIP LEVER SPRING

Requirement
Min 4 oz---Max 7 oz
to pull spring to installed length.

2.59 Typing Mechanism (continued)



TYPE WHEEL (Preliminary)

To Check
Select H code combination (---4--7-). Place rocker bail to extreme left. Corrector arm should be firmly seated in type wheel rack.

Requirement
Type wheel aligned so that full character is printed uniformly and six and one half code hole spaces behind its perforated code hole.

To Adjust
Position type wheel with locknut 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 (2.60) adjustment and then refine this adjustment.

TYPE WHEEL (Final)

To Check
With unit operating under power.

Requirement
All characters should be legible and six and one half code hole spaces behind the perforated code holes.

To Adjust
Refine type wheel position with locknut friction tight. Tighten locknut.

Note: For best results, it may be necessary to make PRINT HAMMER (2.60) adjustment and then refine this adjustment.

2.60 Typing Mechanism (continued)

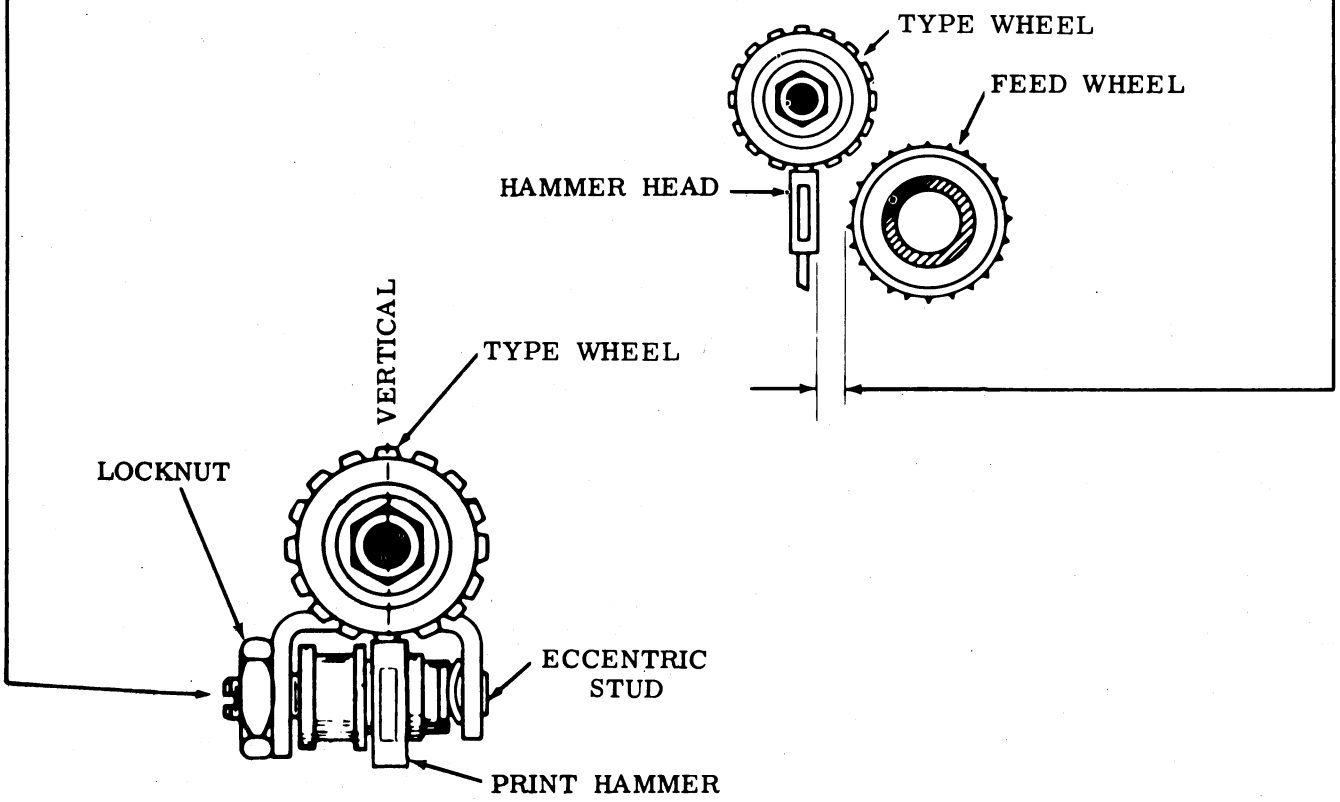
PRINT HAMMER

To Check
With unit operating under power.

Requirement
Print hammer aligned with type wheel so as to obtain quality printing with some clearance between the pin points on the feed wheel and the side of the print hammer head.

To Adjust
Position print hammer shaft with its locknut friction tight. Tighten locknut.

Note: It may be necessary to make the TYPE WHEEL (Final) (2.59) adjustment and then refine this adjustment.



(Front View)

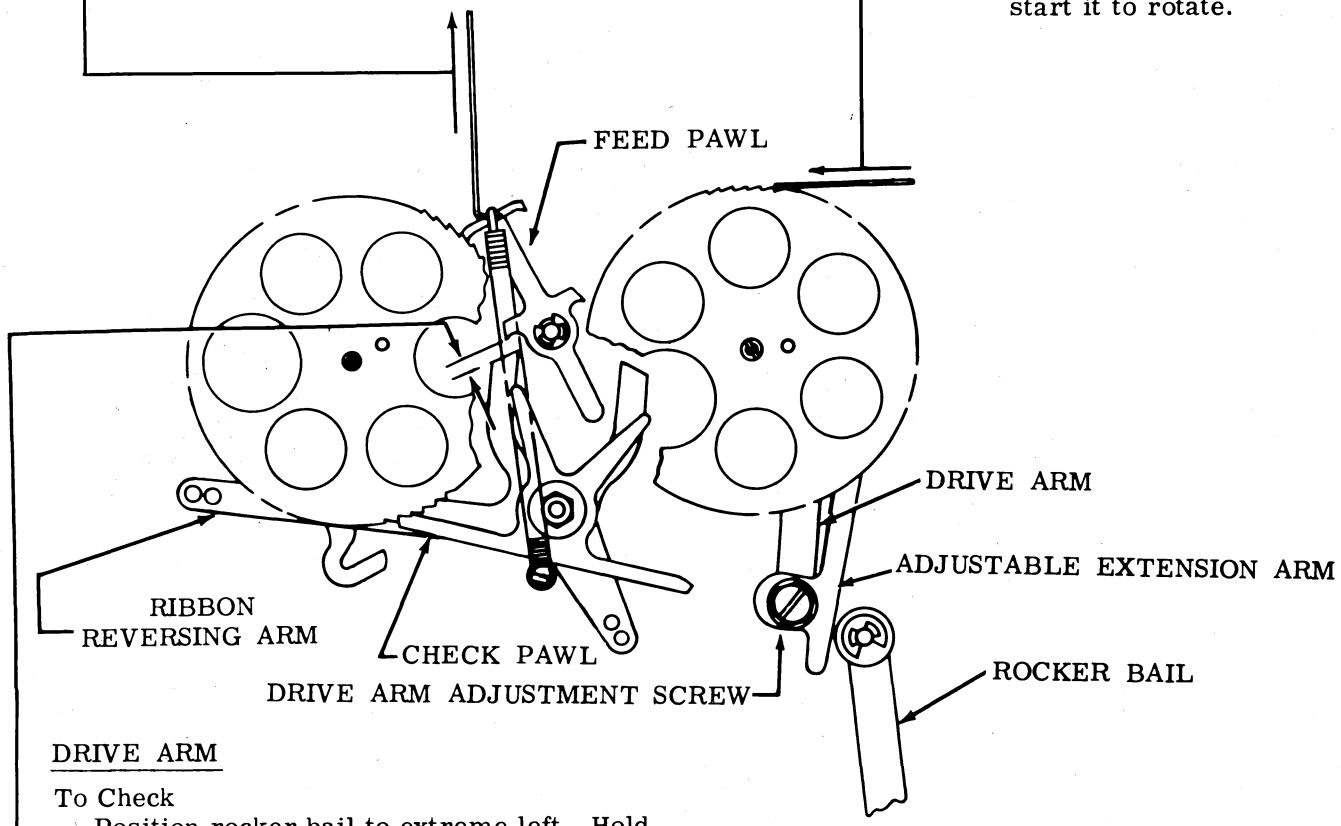
2.61 Typing Mechanism (continued)

FEED PAWL SPRING

Requirement
With rocker bail to extreme right
Min 4 oz---Max 6 oz
to pull feed pawl spring to installed length.

RATCHET WHEEL TORQUE SPRING

Requirement
Min 1 oz---Max 3 oz
applied tangentially to the ratchet wheel to start it to rotate.



DRIVE ARM

To Check
Position rocker bail to extreme left. Hold the ribbon reversing arm under lower reversing extension of feed pawl.

(1) Requirement
Clearance between blocking edge of ribbon reverse arm and reversing extension of feed pawl
Min some

(2) Requirement
Clearance should not be so great as to allow feed pawl to feed more than two teeth at a time.

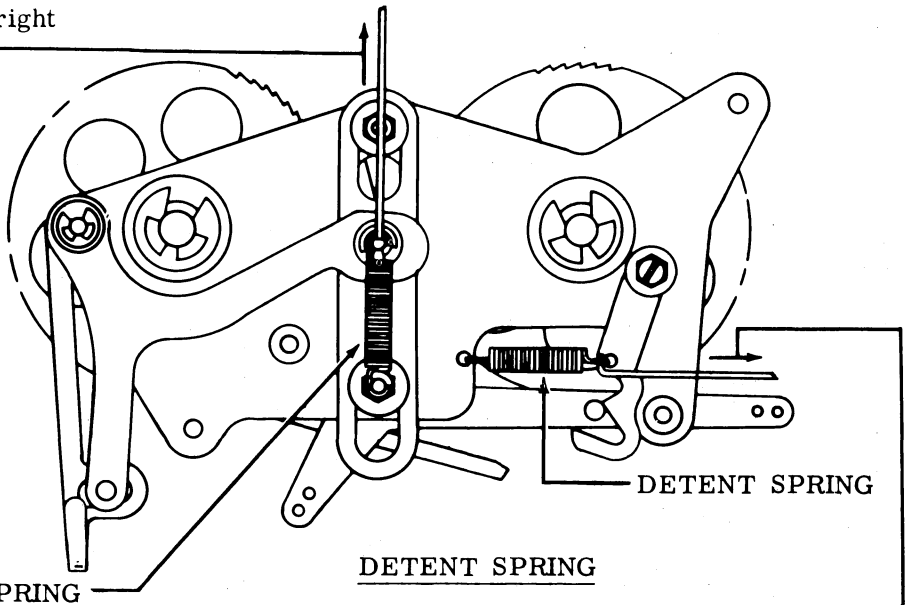
(3) Requirement
Feed pawl detented in both its right and left position.

To Adjust
Position drive arm adjustable extension lever with its mounting screw loosened. Tighten screw.

2.62 Typing Mechanism

DRIVE ARM SPRING

Requirement
With rocker bail to extreme right
Min 9 oz---Max 14 oz
to pull drive arm spring to
installed length.



(Rear View)

DETENT SPRING

Requirement
With reversing arm in its extreme
right or left position
Min 2 oz---Max 4 oz
to pull detent spring to its installed
length.

2.63 Slack Tape Mechanism

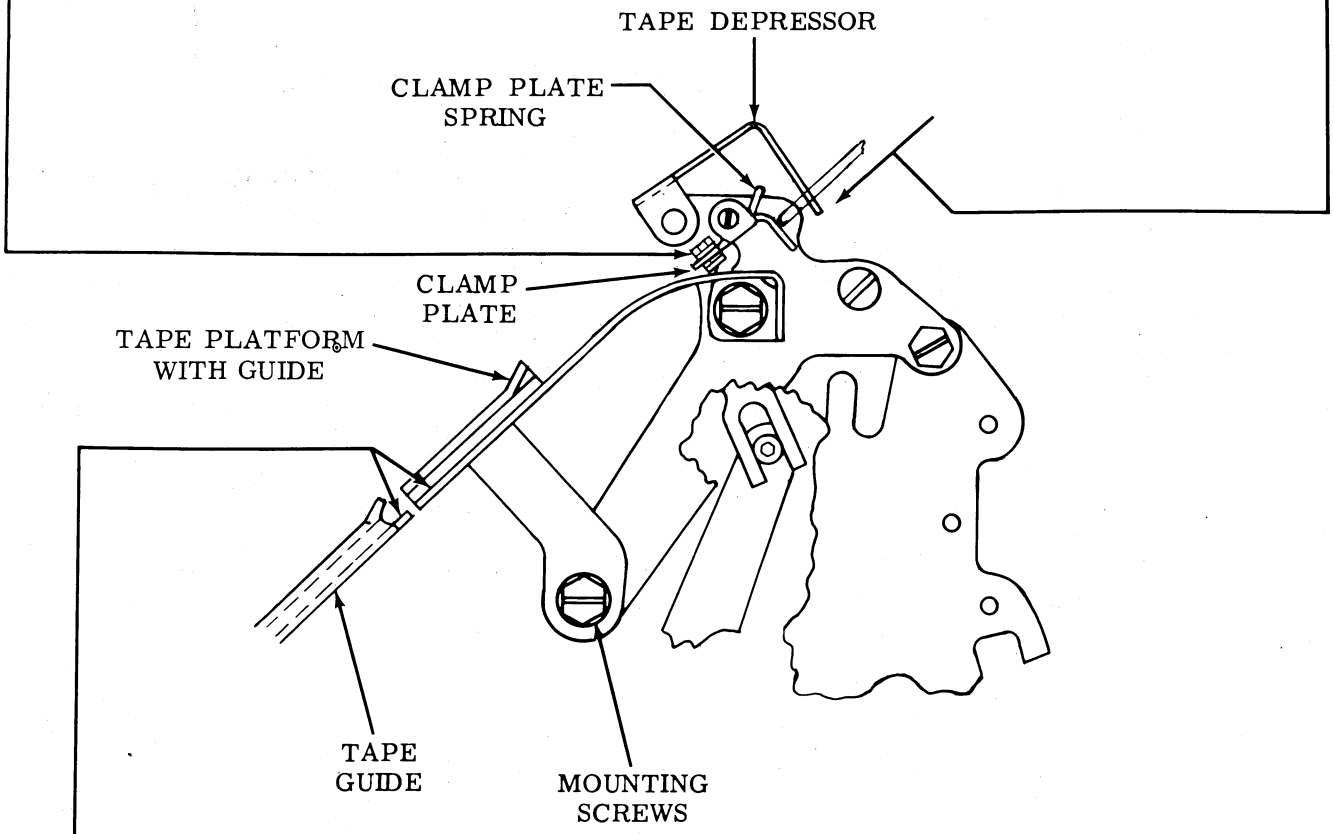
CLAMP PLATE SCREW WITH DISC

Requirement
Loosen nut and turn screw with disc so that a new area of the disc contacts the tape. Tighten nut.

Note: This adjustment should be made once every lubrication period or when the ten holes per inch requirement is not being held.

CLAMP PLATE SPRING

Requirement
Min 30 grams applied to tab of clamp plate to start it moving



(Front View)

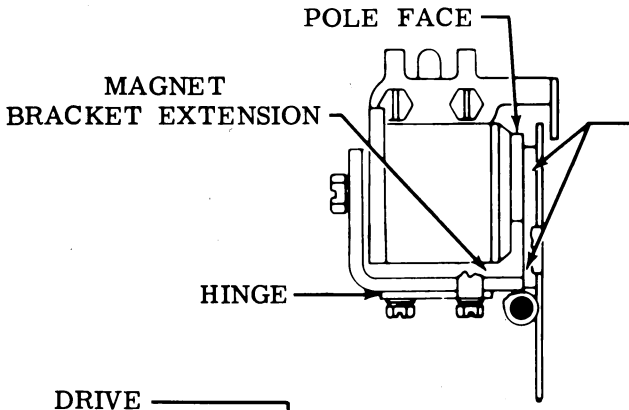
TAPE PLATFORM

Requirement
The top surface of tape platform and tape guide should be flush with the top surface of tape guide.

To Adjust
With tape platform mounting screws loosened, position tape platform. Tighten screws.

3. VARIABLE FEATURES

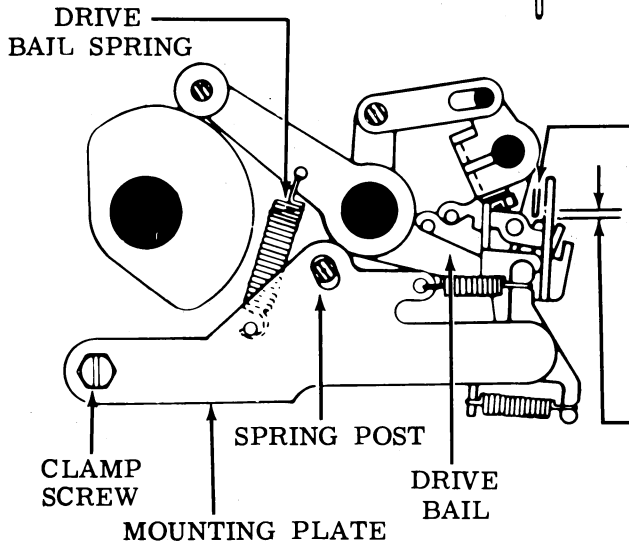
3.01 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism



(A) ARMATURE HINGE

Requirement
With armature manually operated, it should be flush against pole face and magnet bracket extension.

To Adjust
Loosen armature hinge bracket mounting screws, position armature and tighten screws.



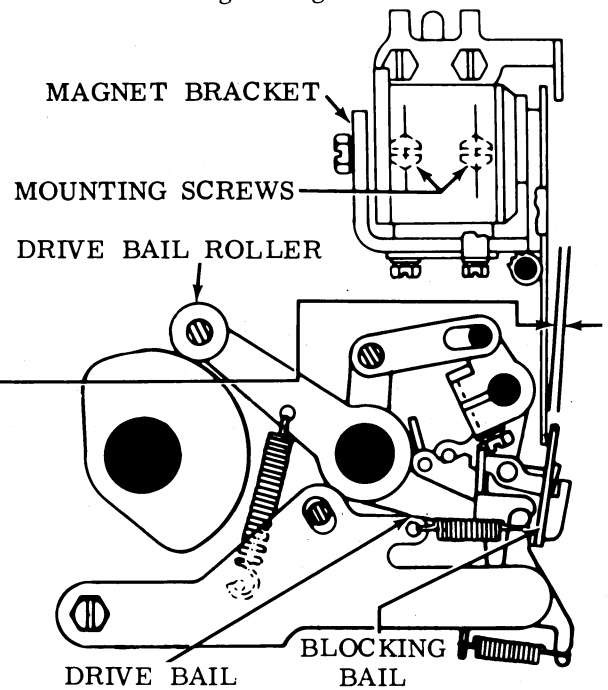
(B) DRIVE BAIL SPRING

Requirement
Rotate mainshaft until drive bail is on high part of its cam.
Min 23 oz---Max 32 oz
to start the drive bail moving.

(C) MOUNTING PLATE

Requirement
With armature in unoperated position. Rotate mainshaft until drive bail is on high part of its cam. Clearance between the blocking bail and drive bail surface
Min 0.006 inch---Max 0.015 inch

To Adjust
Position blocking bail with mounting plate clamp screw and spring post friction tight. Tighten screw and nut.



(D) MAGNET ASSEMBLY

Requirement
With armature held in operated position, rotate mainshaft until drive bail roller is on high part of its cam. Clearance between blocking bail and right edge of drive bail at its closest point
Min 0.005 inch---Max 0.015 inch

To Adjust
Position magnet assembly, armature held against magnet pole piece with magnet bracket mounting screws friction tight. Tighten screws.

3.02 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

(A) BLOCKING LATCH TORSION SPRING

Requirement

With armature in unoperated position and drive bail roller on high part of its cam.

Min 15 grams---Max 40 grams to start blocking latch moving.

(B) ARMATURE BACKSTOP

(1) Requirement

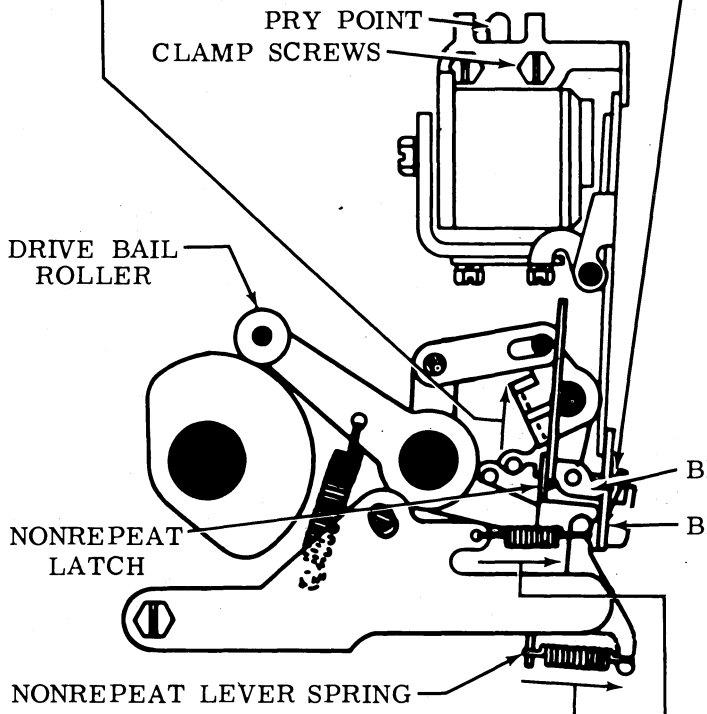
With armature in operated position, rotate mainshaft until drive bail roller is on high part of its cam. The drive bail should engage the blocking bail by at least 2/3 of its thickness.

(2) Requirement

Min some---Max 0.006 inch between blocking latch and nonrepeat latch.

To Adjust

With the armature backstop mounting screws friction tight, position by means of pry point. Tighten screws.



(C) NONREPEAT LEVER SPRING

Requirement

With armature in unoperated position and drive bail roller on high part of its cam

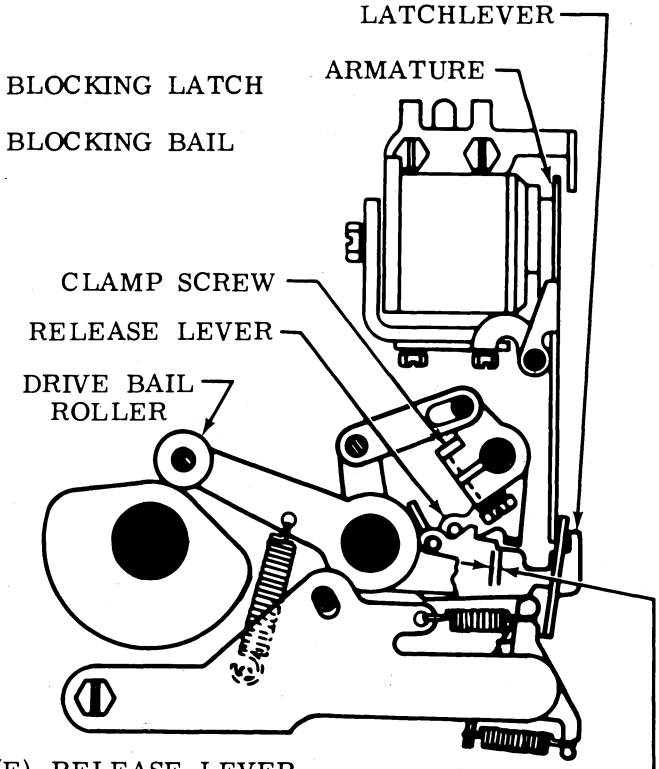
Min 6 oz---Max 9 oz to pull spring to installed length.

(D) BLOCKING BAIL SPRING

Requirement

With armature in unoperated position and drive bail roller on high part of its cam.

Min 3 oz---Max 5 oz to pull spring to installed length.



(E) RELEASE LEVER

Requirement

With armature in operated position, rotate mainshaft until drive bail roller is in indent of its cam. Clearance between release lever and latchlever.

Min 0.010 inch---Max 0.025 inch

To Adjust

With clamp screw friction tight, position release lever. Tighten screw.

3.03 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

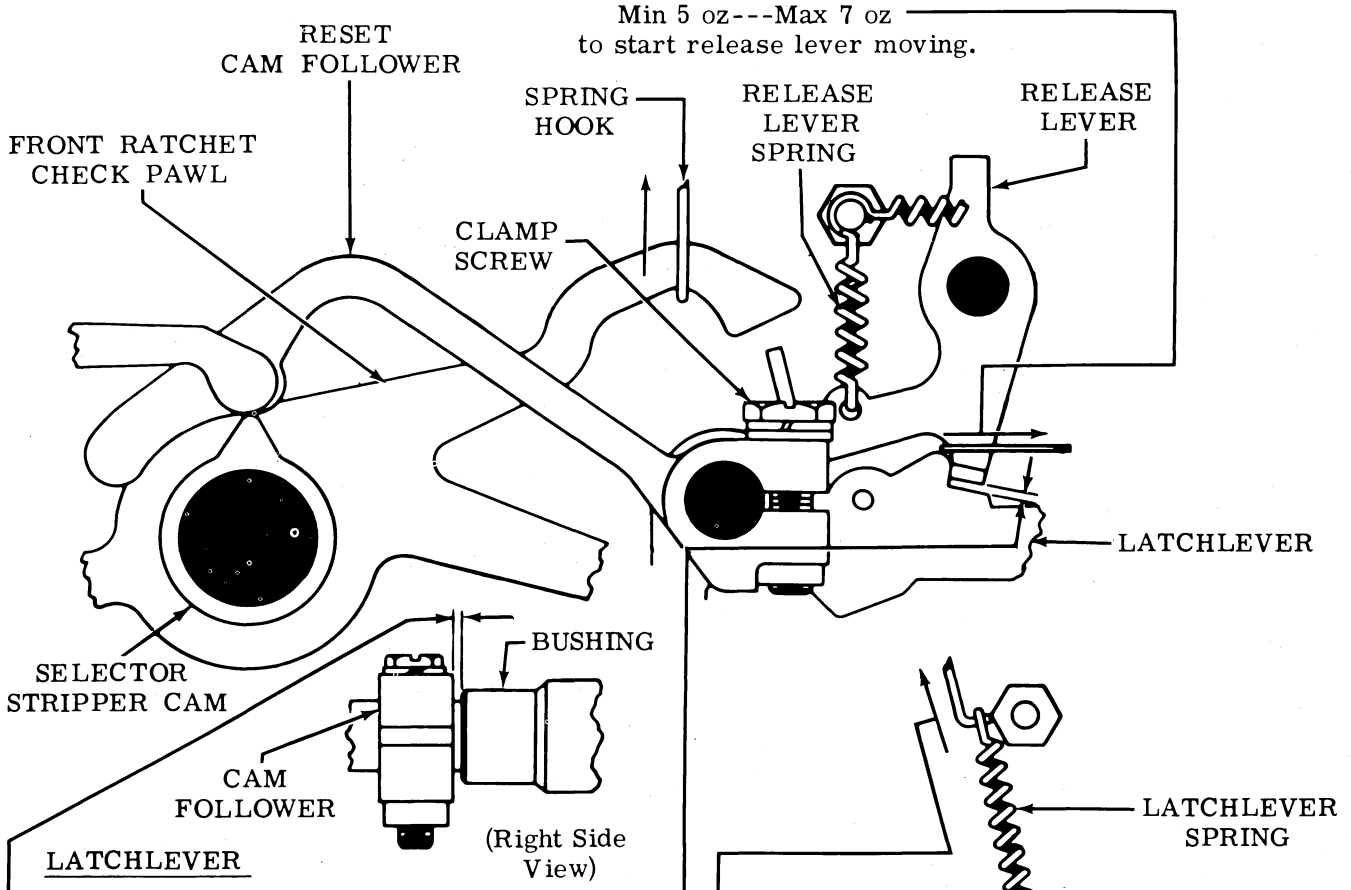
RELEASE LEVER SPRING

To Check

Trip selector clutch. Rotate mainshaft until reset cam follower is on peak of reset bail cam. With spring hook, hold front ratchet check pawl away from release lever.

Requirement

Min 5 oz---Max 7 oz to start release lever moving.



LATCHLEVER

(1) Requirement

Trip selector clutch. Rotate mainshaft until stripper cam follower is on peak of cam, where the clearance for the following adjustment is at a minimum.

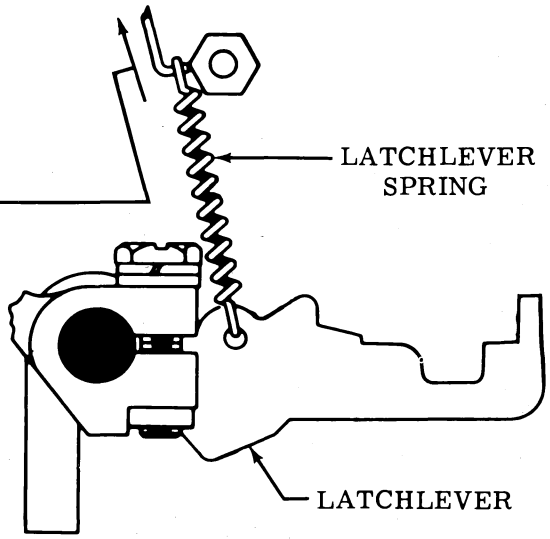
Min 0.018 inch---Max 0.028 inch between release lever and latchlever.

(2) Requirement

Min some---Max 0.008 inch endplay between cam follower and bushing.

To Adjust

Position latchlever with clamp screw on stripper cam follower loosened.



LATCHLEVER SPRING

To Check

Trip selector clutch. Rotate mainshaft until reset cam follower is on peak of reset bail cam.

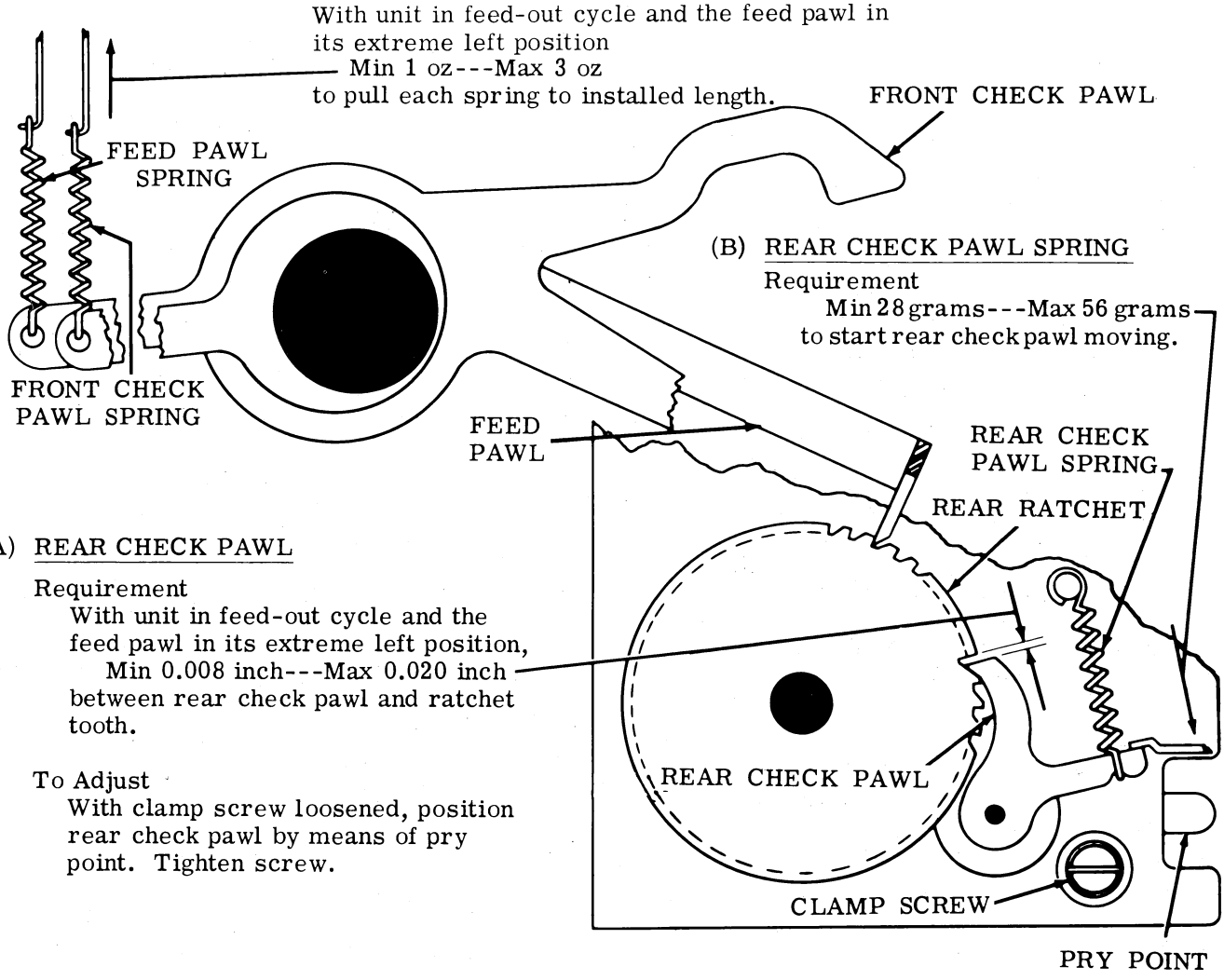
Requirement

Min 2 oz---Max 4 oz to pull spring to installed length.

3.04 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

(C) FEED PAWL AND FRONT CHECK PAWL SPRINGS

Requirement
With unit in feed-out cycle and the feed pawl in its extreme left position
Min 1 oz---Max 3 oz
to pull each spring to installed length.



(B) REAR CHECK PAWL SPRING

Requirement
Min 28 grams---Max 56 grams
to start rear check pawl moving.

(A) REAR CHECK PAWL

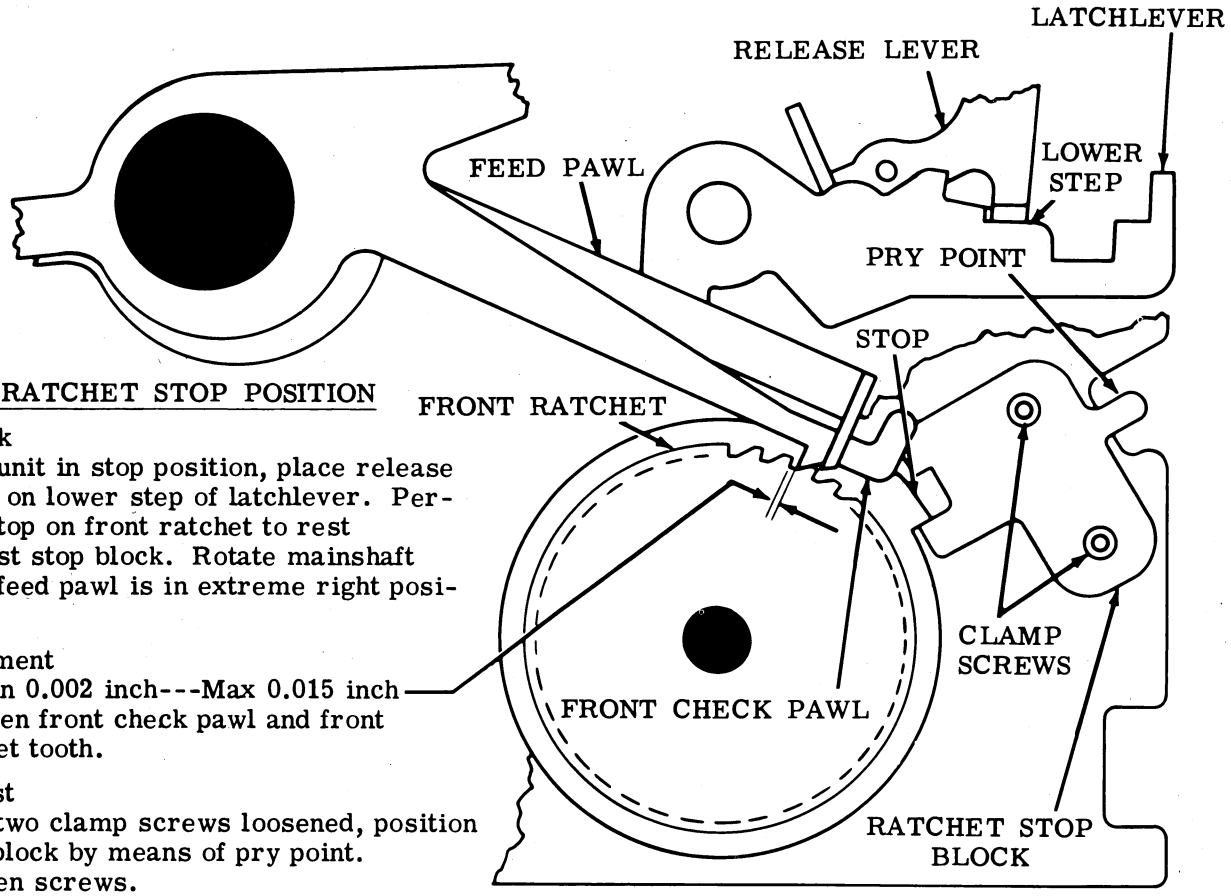
Requirement
With unit in feed-out cycle and the feed pawl in its extreme left position,
Min 0.008 inch---Max 0.020 inch
between rear check pawl and ratchet tooth.

To Adjust
With clamp screw loosened, position rear check pawl by means of pry point. Tighten screw.

Note: Proceed to FRONT RATCHET STOP POSITION (3.05) adjustment.

3.05 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

Note: See REAR CHECK PAWL (3.04) adjustment before making this adjustment.



FRONT RATCHET STOP POSITION

To Check

With unit in stop position, place release lever on lower step of latchlever. Permit stop on front ratchet to rest against stop block. Rotate mainshaft until feed pawl is in extreme right position.

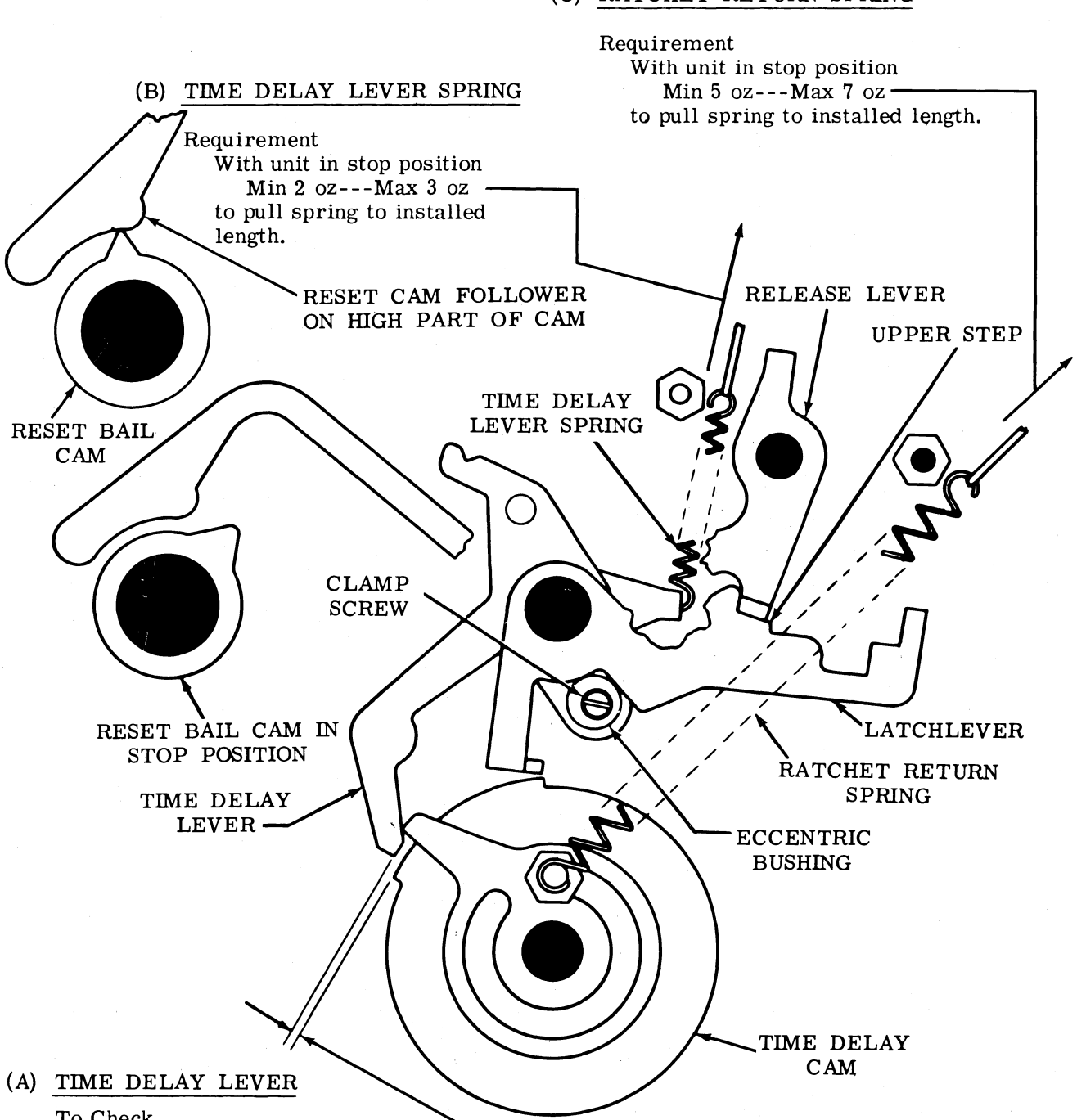
Requirement

Min 0.002 inch---Max 0.015 inch between front check pawl and front ratchet tooth.

To Adjust

With two clamp screws loosened, position stop block by means of pry point. Tighten screws.

3.06 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)



(A) TIME DELAY LEVER

To Check
Trip selector clutch and rotate mainshaft until reset cam follower is on high part of reset bail cam.

(1) Requirement
Min 0.040 inch---Max 0.060 inch clearance between time delay lever and high part of time delay cam.

(2) Requirement
With unit in stop position
Min some
clearance between time delay lever and high part of time delay cam.

To Adjust
With clamp screw loosened, position eccentric bushing. Tighten screw.

3.07 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

(A) RELEASE ARM

(1) Requirement

With unit in the feed-out cycle, ratchets advanced beyond the time delay, clearance between the drive arm and upper surface of release arm

Min 0.010 inch---Max 0.030 inch

Rotate cam so that the mating surfaces of the drive arm bail and release arm are approximately parallel.

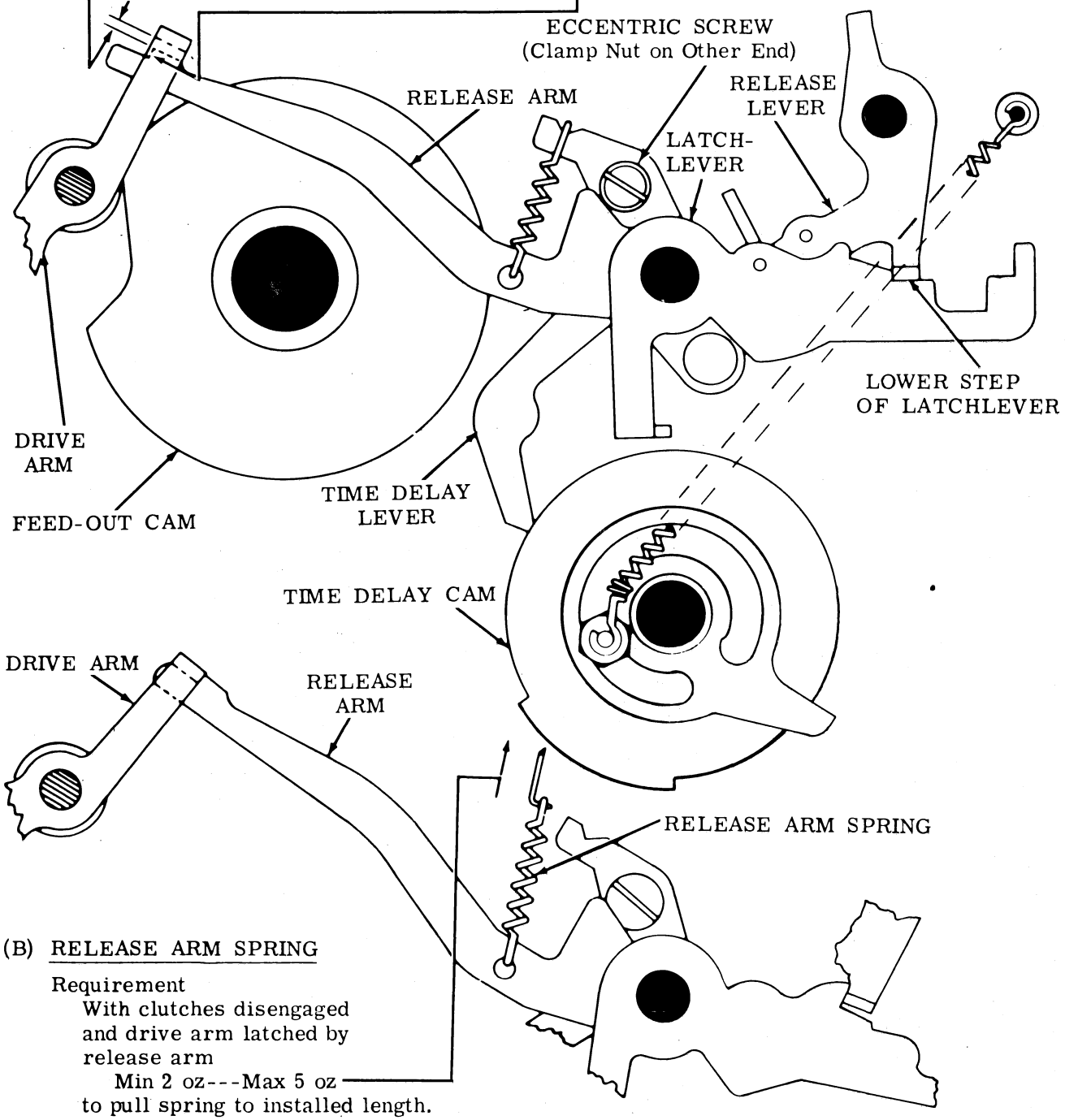
(2) Requirement

With unit in stop position, the surface of the drive arm bail that does not engage the release arm should not exceed

Max 0.015 inch

To Adjust

With clamp nut friction tight, position release arm by means of eccentric screw on time delay lever. Tighten nut.



(B) RELEASE ARM SPRING

Requirement

With clutches disengaged and drive arm latched by release arm

Min 2 oz---Max 5 oz

to pull spring to installed length.

3.08 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

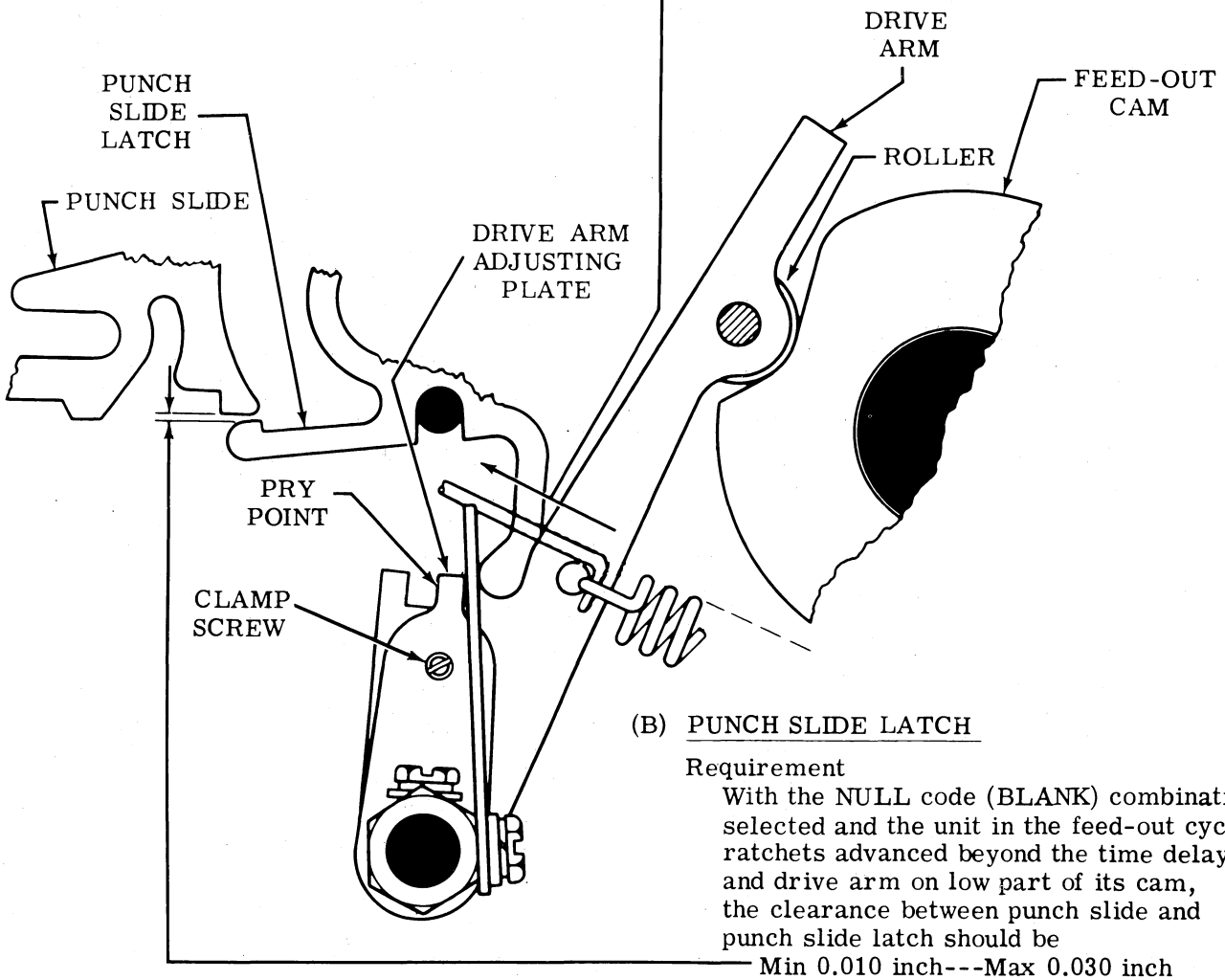
(A) DRIVE ARM SPRING

Requirement

With unit in feed-out cycle and drive arm roller held firmly against its cam indent

Min 42 oz---Max 50 oz

to pull spring to installed length.



(B) PUNCH SLIDE LATCH

Requirement

With the NULL code (BLANK) combination selected and the unit in the feed-out cycle, the ratchets advanced beyond the time delay and drive arm on low part of its cam, the clearance between punch slide and punch slide latch should be

Min 0.010 inch---Max 0.030 inch

at slide where clearance is a minimum.

Note: See that the reset bail is tripped.

To Adjust

With clamp screw loosened, position drive arm adjusting plate by means of its pry point. Tighten screw.

3.09 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

(B) ADJUSTING LEVER

To Check

Place unit in feed-out cycle by positioning release lever on lower step of latch-lever and advancing high part of time delay cam beyond time delay lever. Position mainshaft so that drive arm roller is on low part of cam.

(1) Requirement

Min 0.010 inch--Max 0.030 inch between release and main trip lever.

(2) Requirement

Some clearance between main trip lever and downstop bracket.

To Adjust

Loosen the clamp screw on the adjusting lever and position, making sure the adjusting lever rides fully on the slide trip lever. Tighten screw.

(A) TRIP CAM FOLLOWER

(1) Requirement

With follower lever on high part of trip cam

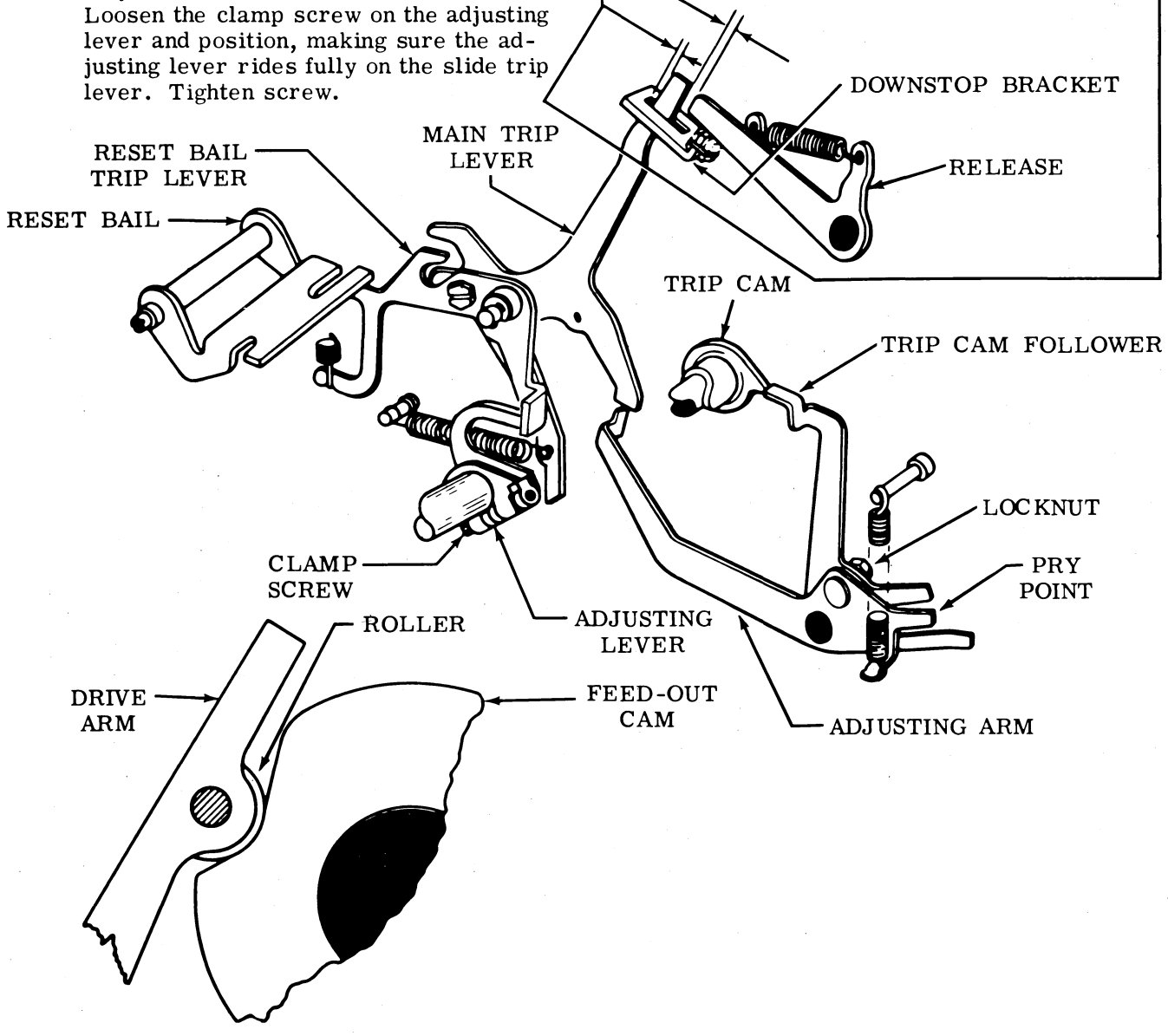
Min 0.010 inch---Max 0.030 inch between release and main trip lever.

(2) Requirement

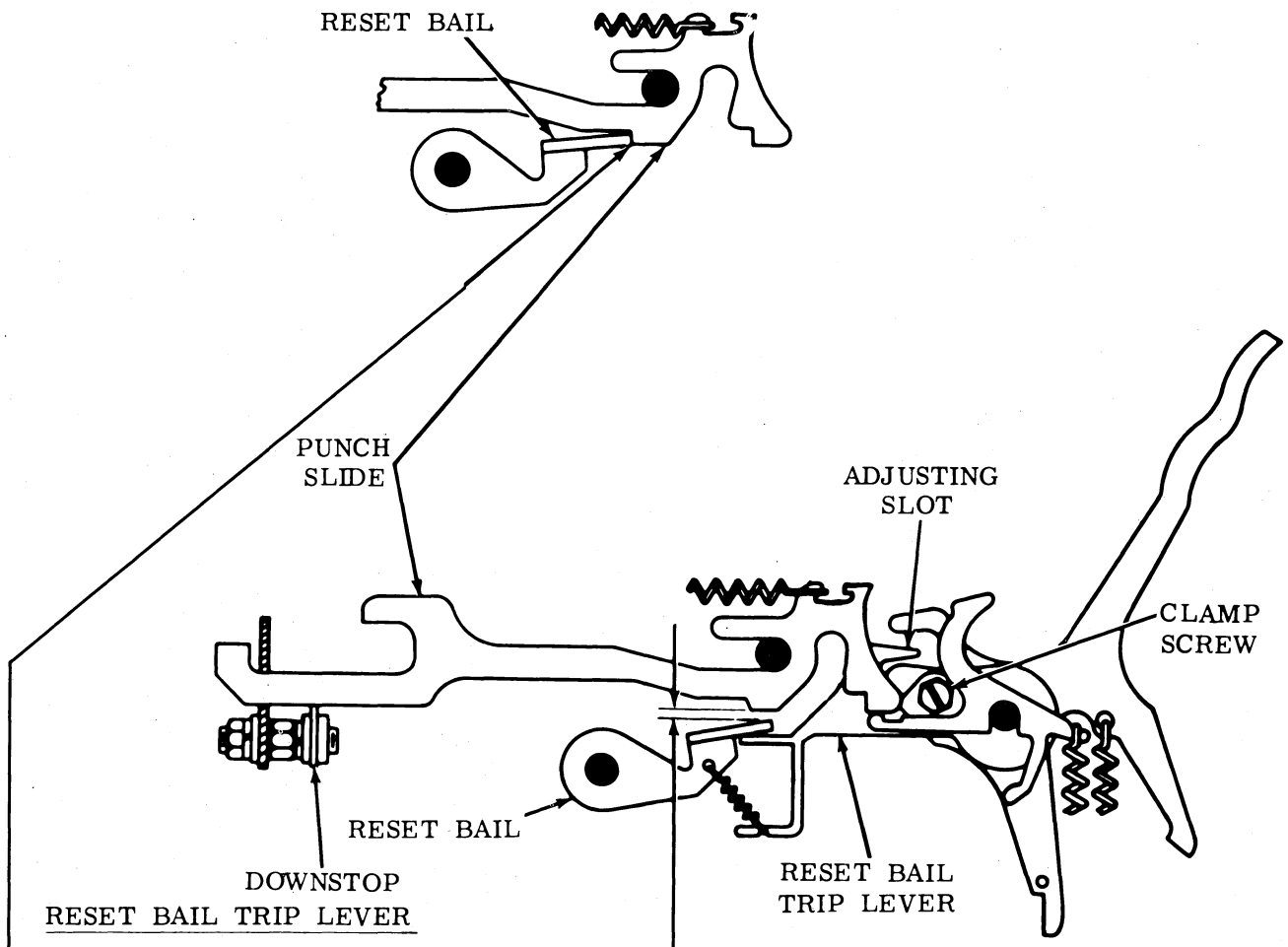
Some clearance between main trip lever and downstop bracket.

To Adjust

With locknut loosened, position adjusting arm by means of pry point. Tighten nut.



3.10 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)



RESET BAIL TRIP LEVER

To Check

Select RUBOUT code combination (12345678). Rotate mainshaft until function clutch trips. Position punch slides against downstop. Trip cam follower on high part of cam.

(1) Requirement

Min 0.008 inch---Max 0.020 inch between punch slide and reset bail.

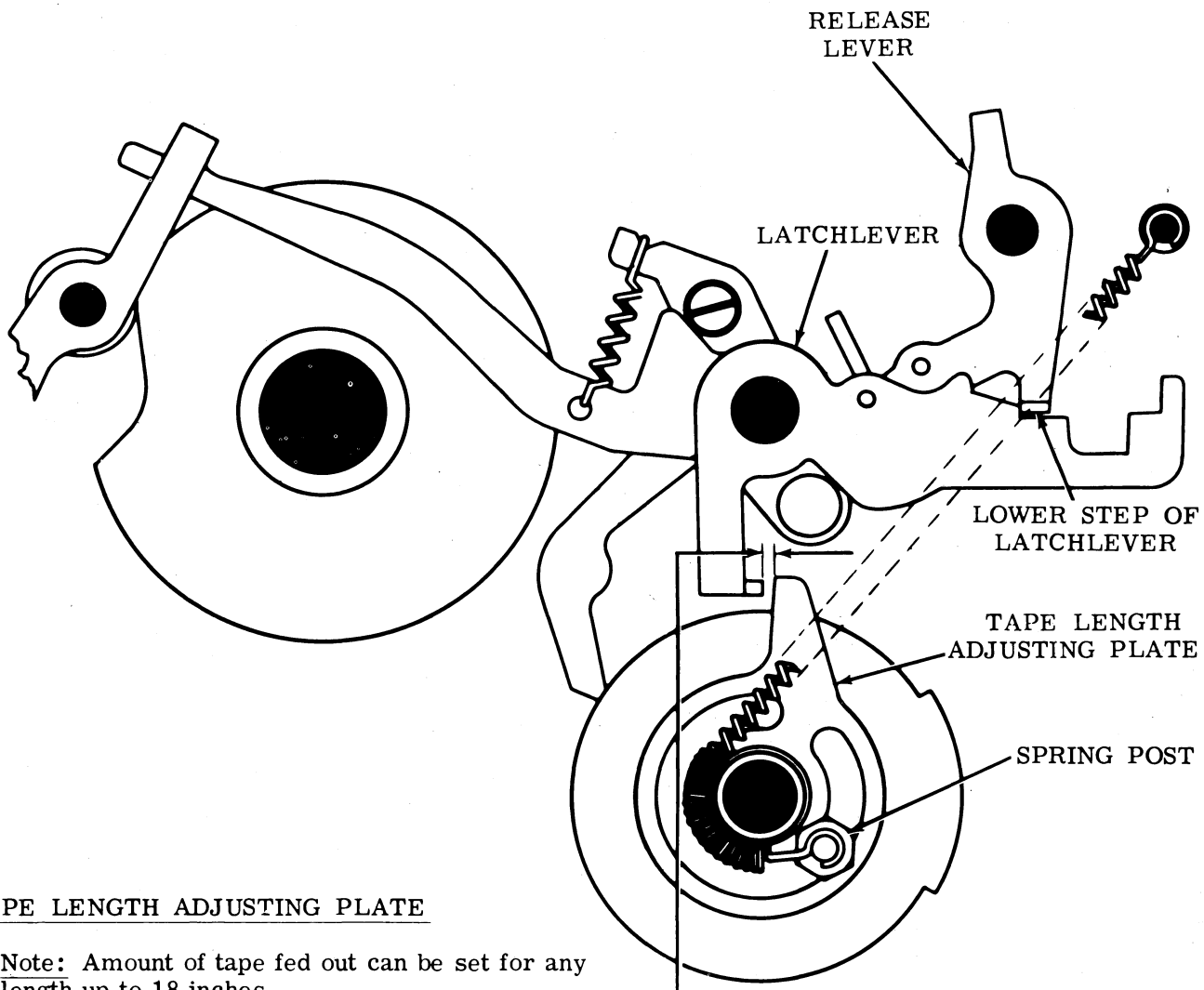
(2) Requirement

With clutches fully disengaged and latched, reset bail should fully engage notches in punch slides.

To Adjust

With clamp screw loosened, position reset bail trip lever by means of adjusting slot. Tighten clamp screw.

3.11 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)



TAPE LENGTH ADJUSTING PLATE

Note: Amount of tape fed out can be set for any length up to 18 inches.

(1) Requirement

Place unit in feed-out cycle by positioning release lever on lower step of latchlever. Manually advance ratchets so that front ratchet is in the tooth preceding trip off. Rotate mainshaft until feed pawl is in the extreme left position. Clearance between adjusting plate and latchlever projection

Min 0.002 inch---Max 0.020 inch

(2) Requirement

When operating under power, unit should feed out correct length of tape.

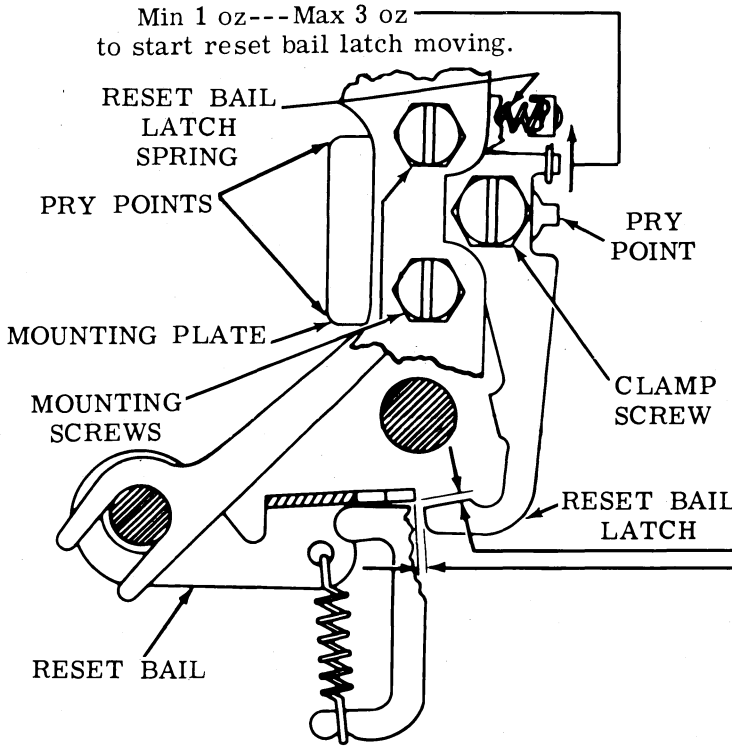
To Adjust

With spring post friction tight. Position adjusting plate. Tighten spring post.

3.12 Remote Control Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

(B) RESET BAIL LATCH SPRING

Requirement
With unit in stop condition
Min 1 oz---Max 3 oz
to start reset bail latch moving.



(A) RESET BAIL LATCH

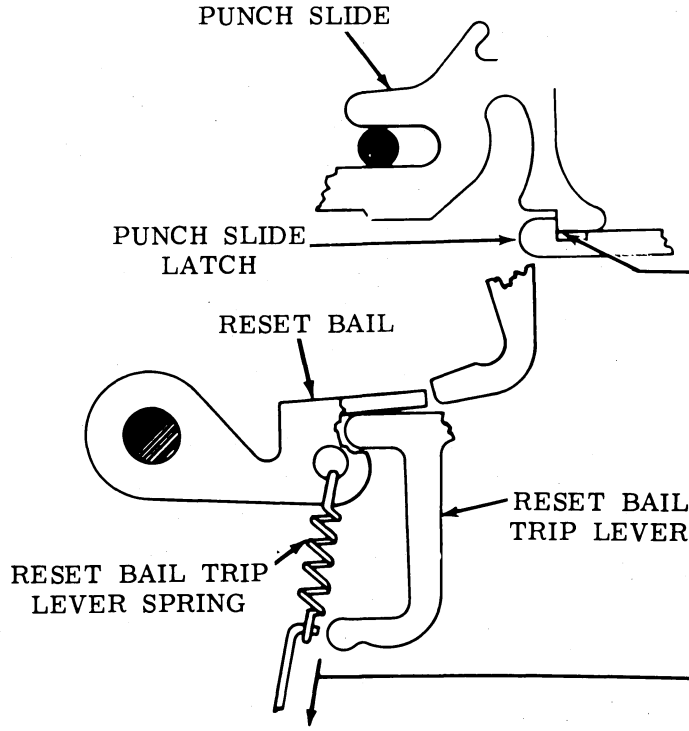
(1) To Check (Vertical Clearance)
Select RUBOUT code combination (12345678). Rotate mainshaft until function clutch trips and punch slides are to extreme left. Manually set up the NULL code (BLANK) combination in selector. Rotate mainshaft until punch slides are just latched.

(1) Requirement
Min 0.008 inch---Max 0.020 inch between reset bail and reset bail latch.

To Adjust
With mounting screws loosened, position mounting plate by means of pry points. Tighten screws.

(2) Requirement (Horizontal Clearance)
With clutches disengaged,
Min 0.005 inch---Max 0.020 inch between reset bail and reset bail latch.

To Adjust
With a clamp screw loosened, position bail latch by means of its pry points so its latching surface is approximately at midpoint in thickness of the reset bail. Tighten screw.



(2) To Check
Select RUBOUT code combination (12345678). Rotate mainshaft until function clutch trips. Manually set up the NULL code (BLANK) combination. Rotate mainshaft to stop position.

Requirement
Punch slides latched by punch slide latches.

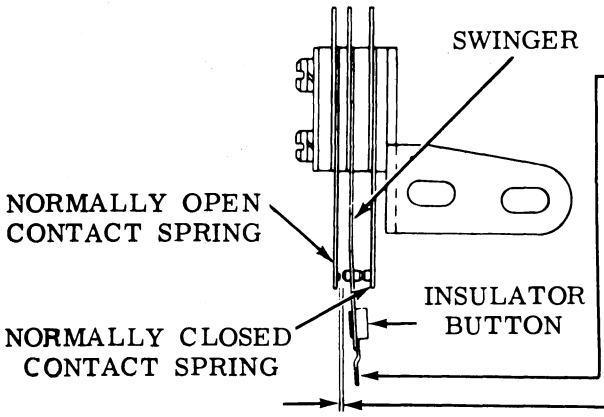
To Adjust
Refine requirements (1) and (2) above.

(C) RESET BAIL TRIP LEVER SPRING

To Check
Disengage both clutches. Trip function clutch by pivoting main trip lever counterclockwise. Hold reset bail trip lever up against reset bail.

Requirement
Min 18 oz---Max 24 oz
to pull spring to installed length.

3.13 End of Feed-Out Contacts for Noninterfering RUBOUT Tape Feed-Out Mechanism



(A) CONTACT SWINGER (Preliminary)

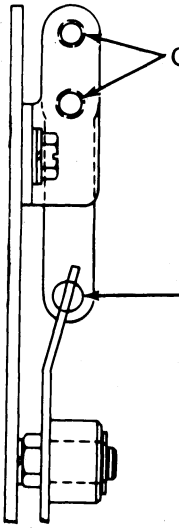
Requirement
Min 25 grams---Max 40 grams to open normally closed contact.

To Adjust
Bend swinger.

(B) CONTACT SPRING GAP (Preliminary)

Requirement
Normally open contact gap
Min 0.012 inch---Max 0.020 inch

To Adjust
Bend contact spring.



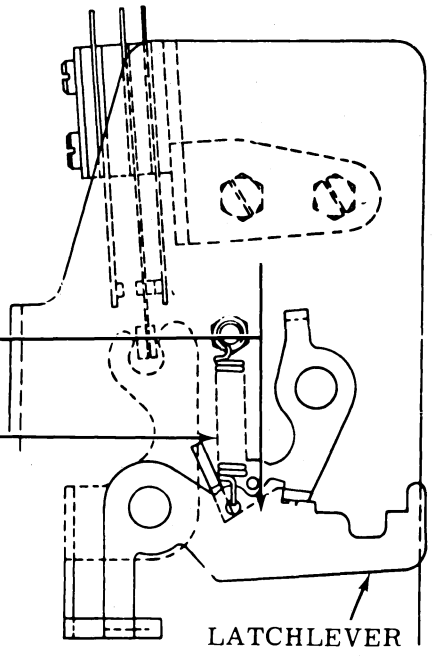
(C) CONTACT ASSEMBLY

Requirement
Insulator button on swinger should be centrally located in bail extension yoke.

To Adjust
With mounting screws loosened, position contact assembly. Tighten screws.

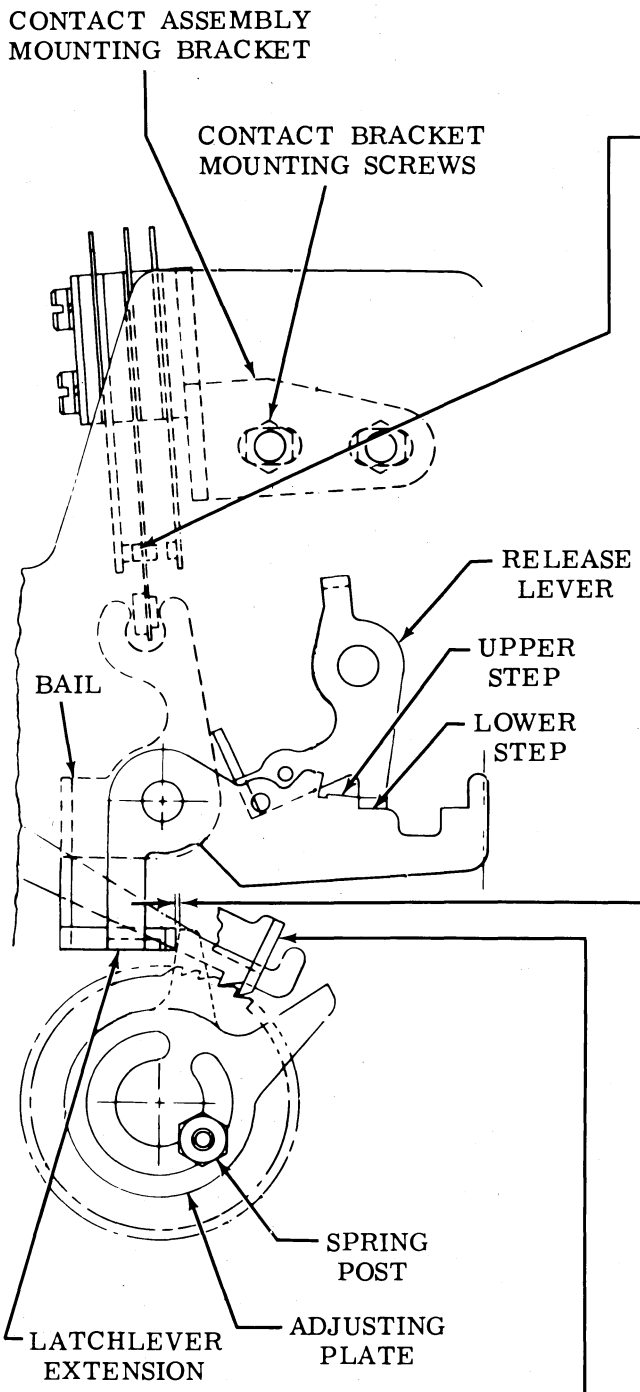
LATCHLEVER SPRING

Requirement
Trip selector and rotate mainshaft until stripper cam follower lies on high part of its cam
Min 9 oz---Max 12 oz
to stretch spring to its installed length.



3.14 End of Feed-Out Contacts for Noninterfering RUBOUT Tape Feed-Out Mechanism (continued)

Note: See preliminary contact adjustments, 3.13.



(D) CONTACT ASSEMBLY MOUNTING BRACKET

(1) Requirement (Unit in stop position)
When normally open contacts are used and release lever is above lower step of latchlever
— Min 0.005 inch visible overtravel of swinger after it makes contact with normally open contact.

(2) Requirement
When normally closed contacts are used and release lever is on upper step of latchlever, the normally closed contacts should be closed and bail should not exert any force against swinger insulator button.

To Adjust
Position contacts with bracket mounting screws loosened. Tighten screws.

(E) TAPE LENGTH ADJUSTING PLATE

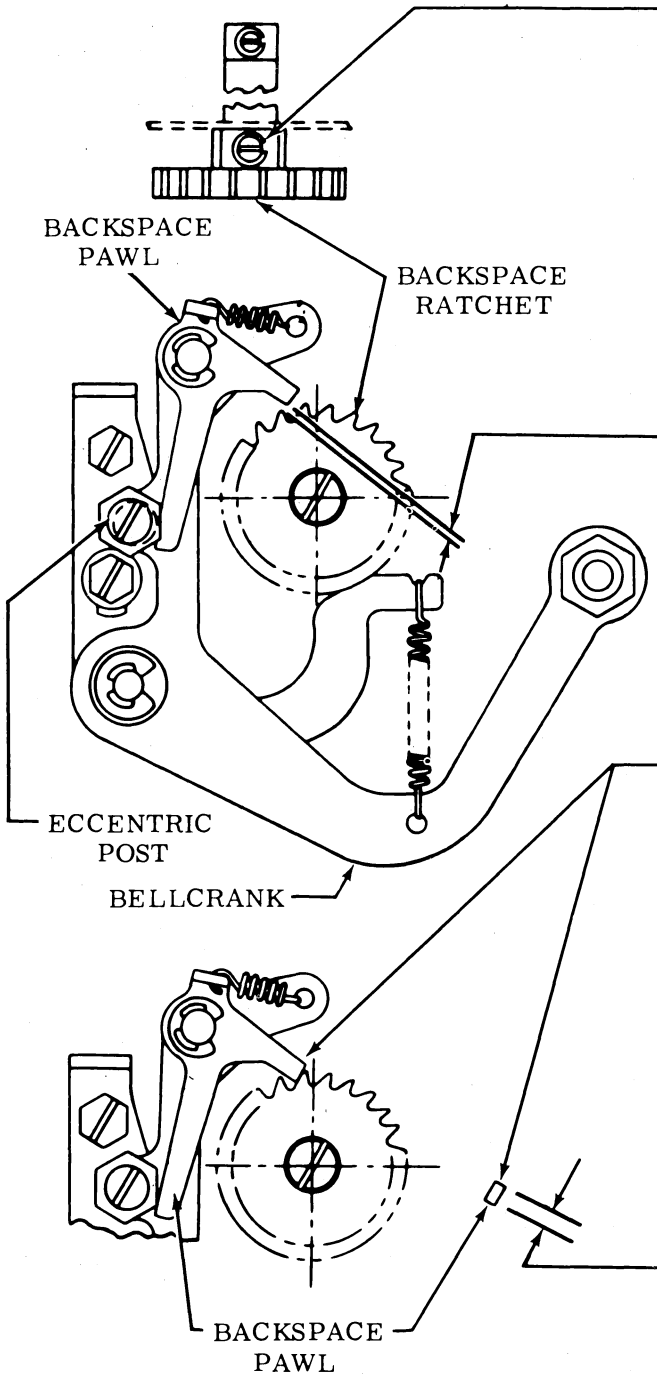
(1) Requirement
With unit in stop position and release lever on lower step of latchlever, manually advance ratchets so that feed pawl is in the front tooth preceding trip off (not in deep tooth of rear ratchet). Hold bail lightly against latchlever extension
— Min 0.002 inch---Max 0.020 inch clearance between adjusting plate and bail.

(2) Requirement
When operating under power, unit should feed out correct length of tape.

To Adjust
Position adjusting plate with spring post loosened. Tighten spring post.

Note: Feed pawl in extreme left position and adjusting plate in dotted position for adjustment (B), CONTACT SPRING GAP (Preliminary) only.

3.15 Manual and Power Drive Backspace Mechanism



(A) BACKSPACE RATCHET

Requirement

Teeth of backspace and feed wheel ratchets to line up (visual alignment). Feed wheel ratchet to be in detented position.

To Adjust

With adjusting clamp mounting screw friction tight, rotate backspace ratchet to meet the requirement. Tighten screw.

(B) BACKSPACE PAWL CLEARANCE

(1) Requirement (Preliminary)

With backspace bellcrank rotated clockwise, the backspace pawl should miss the first tooth by a clearance of Min 0.003 inch---Max 0.010 inch at point of least clearance.

(2) Requirement (Final)

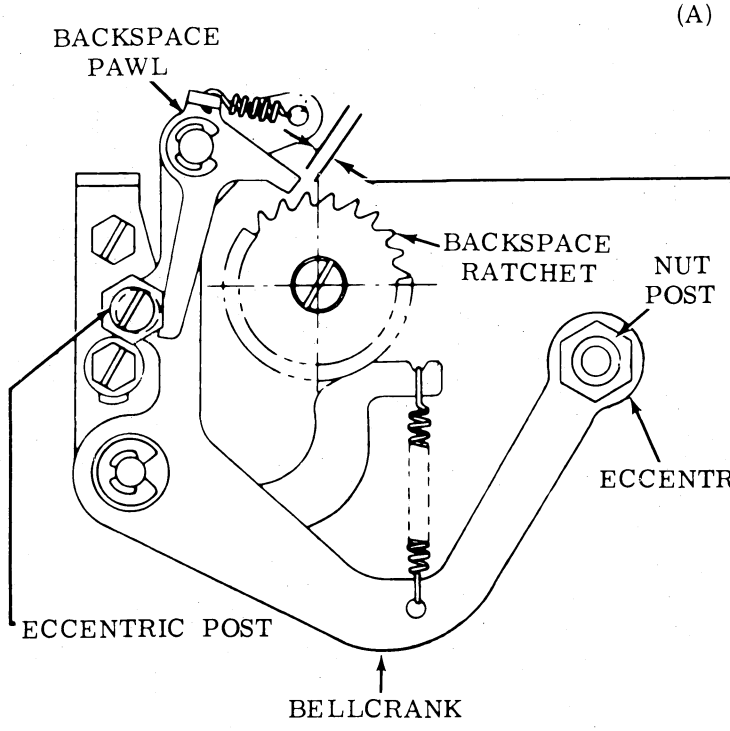
The backspace pawl should miss the first tooth and engage the second tooth by at least 1/2 of the right engaging surface of the backspace pawl (as gauged by eye) when backspace pawl first contacts the ratchet tooth.

To Adjust

Take up all rotational play of backspace ratchet in relation to feed ratchet by rotating it clockwise at same time rotate bellcrank clockwise. With mounting screw friction tight, rotate eccentric post to meet the requirements. Tighten screw.

Final minimum engagement: 1/2 of surface with second ratchet tooth at first point of contact.

3.16 Manual and Power Drive Backspace Mechanism (continued)



(A) FEED PAWL ECCENTRIC (Preliminary)

(1) Requirement (Manual Backspace)
With the backspace bellcrank assembly in its operated position and the feed wheel detented back one space.
Min some---Max 0.003 inch clearance between the backspace ratchet tooth and the backspace feed pawl with all the rotational play of the backspace ratchet taken up in a direction to make the clearance maximum.

(2) Requirement (Power Drive Backspace)
With the backspace bellcrank assembly in its operated position, the high side of the eccentric should be in its uppermost position.

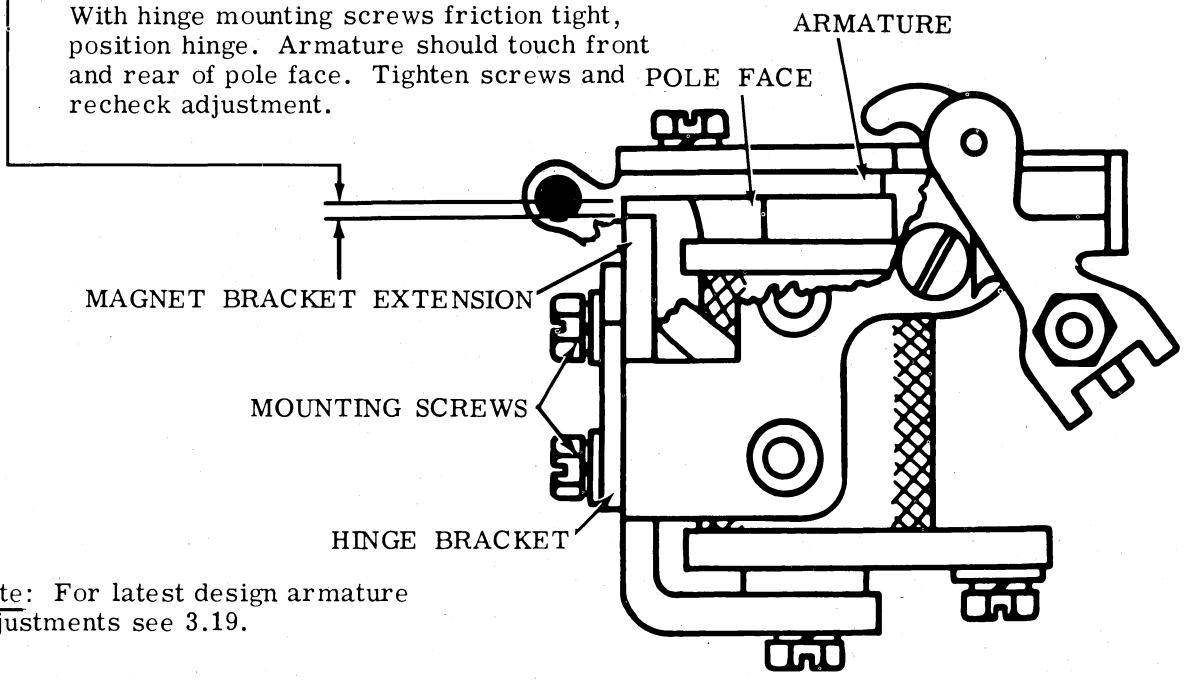
To Adjust
Loosen the nut post (friction tight) and rotate the eccentric with a hex wrench. Tighten the nut post.

(B) ARMATURE HINGE (Early Design)

Requirement
With armature bail spring removed, armature held against the pole face, take up play at hinge in a downward direction. Clearance between the armature and magnet bracket.
Min some---Max 0.004 inch

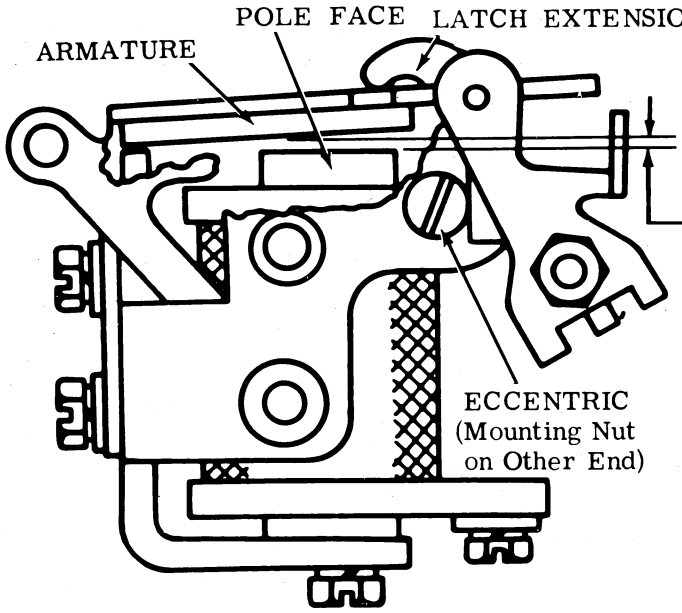
To Adjust
With hinge mounting screws friction tight, position hinge. Armature should touch front and rear of pole face. Tighten screws and recheck adjustment.

Note: For dc operation, the armature should be positioned so that the side marked "C" faces pole face of magnet core. For ac operation, unmarked side faces pole face of magnet core.



Note: For latest design armature adjustments see 3.19.

3.17 Power Drive Backspace Mechanism



(A) ARMATURE UPSTOP (Early Design)

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. Tighten nut.

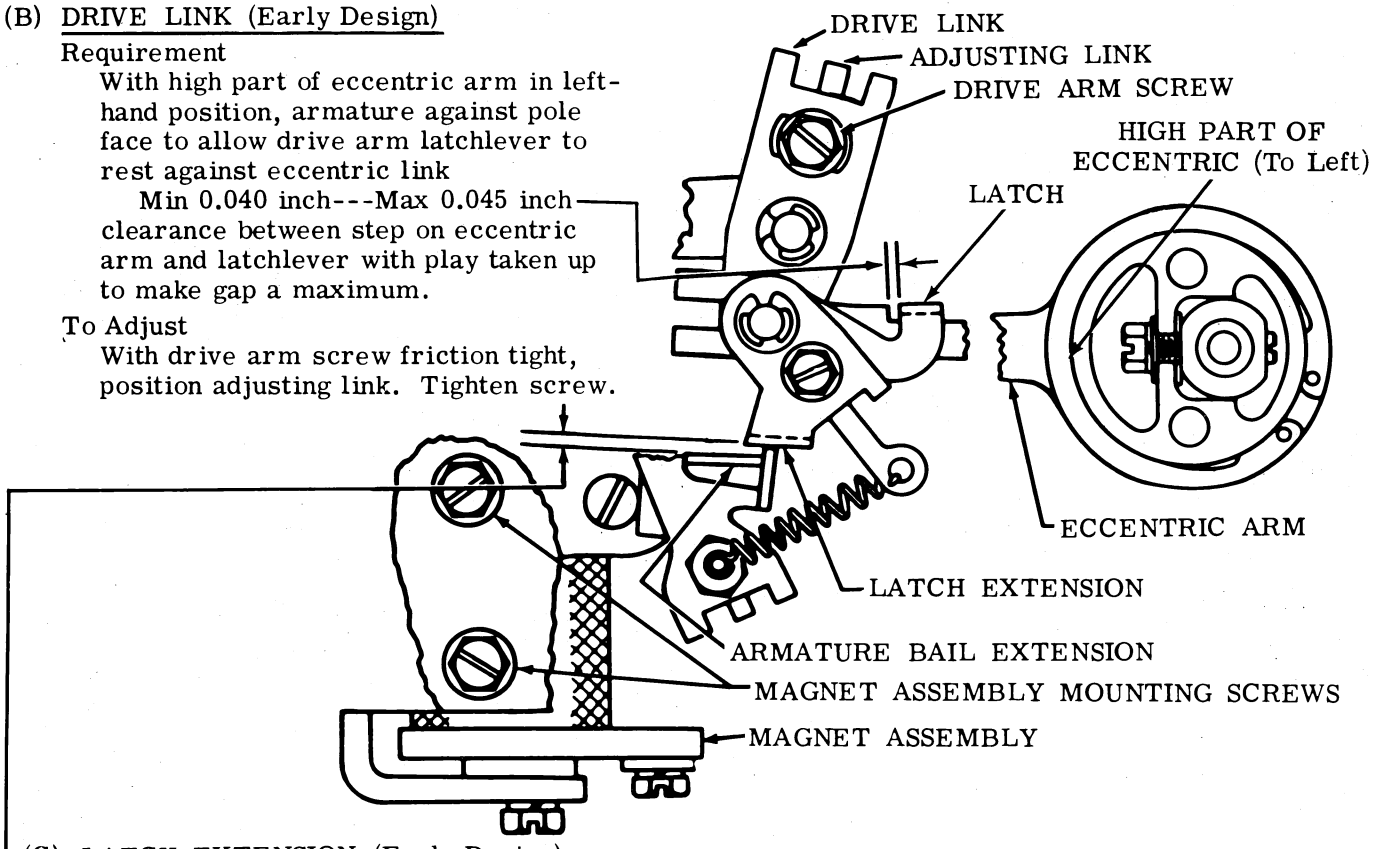
(B) DRIVE LINK (Early Design)

Requirement

With high part of eccentric arm in left-hand position, armature against pole face to allow drive arm latchlever to rest against eccentric link Min 0.040 inch---Max 0.045 inch clearance between step on eccentric arm and latchlever with play taken up to make gap a maximum.

To Adjust

With drive arm screw friction tight, position adjusting link. Tighten screw.



(C) LATCH EXTENSION (Early Design)

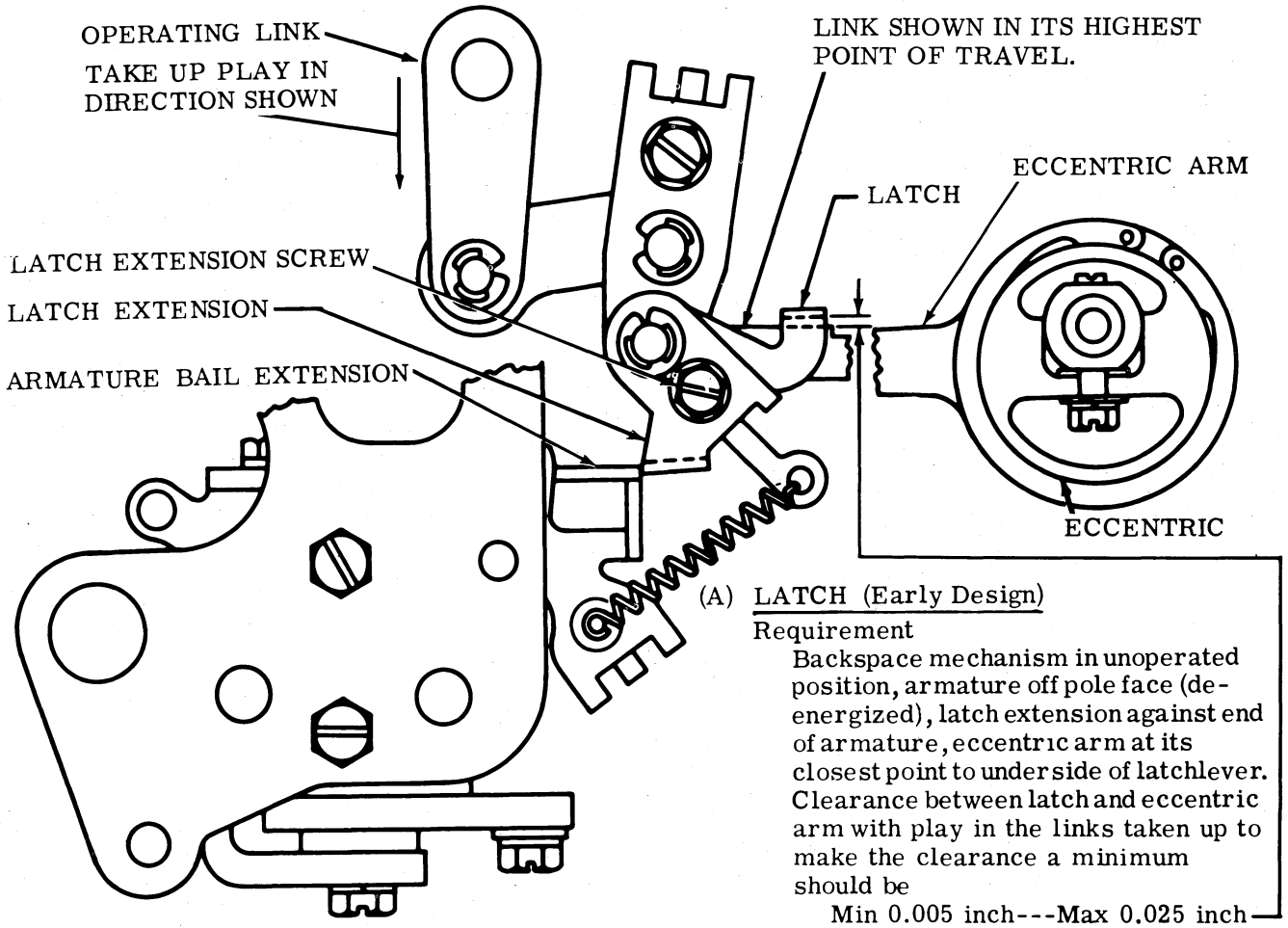
Requirement

With backspace mechanism in unoperated position, eccentric high part at the left, armature against the pole face, latch resting on the eccentric arm notch, clearance between top of armature bail extension and latch extension Min 0.005 inch---Max 0.020 inch

To Adjust

With magnet assembly mounting screws friction tight, swing magnet left or right. Tighten screws.

3.18 Power Drive Backspace Mechanism (continued)



(A) LATCH (Early Design)

Requirement

Backspace mechanism in unoperated position, armature off pole face (de-energized), latch extension against end of armature, eccentric arm at its closest point to underside of latchlever. Clearance between latch and eccentric arm with play in the links taken up to make the clearance a minimum should be

Min 0.005 inch---Max 0.025 inch

To Adjust

With latch extension screw friction tight, position latch. Tighten screw.

(B) NONREPEAT ARM (Early Design)

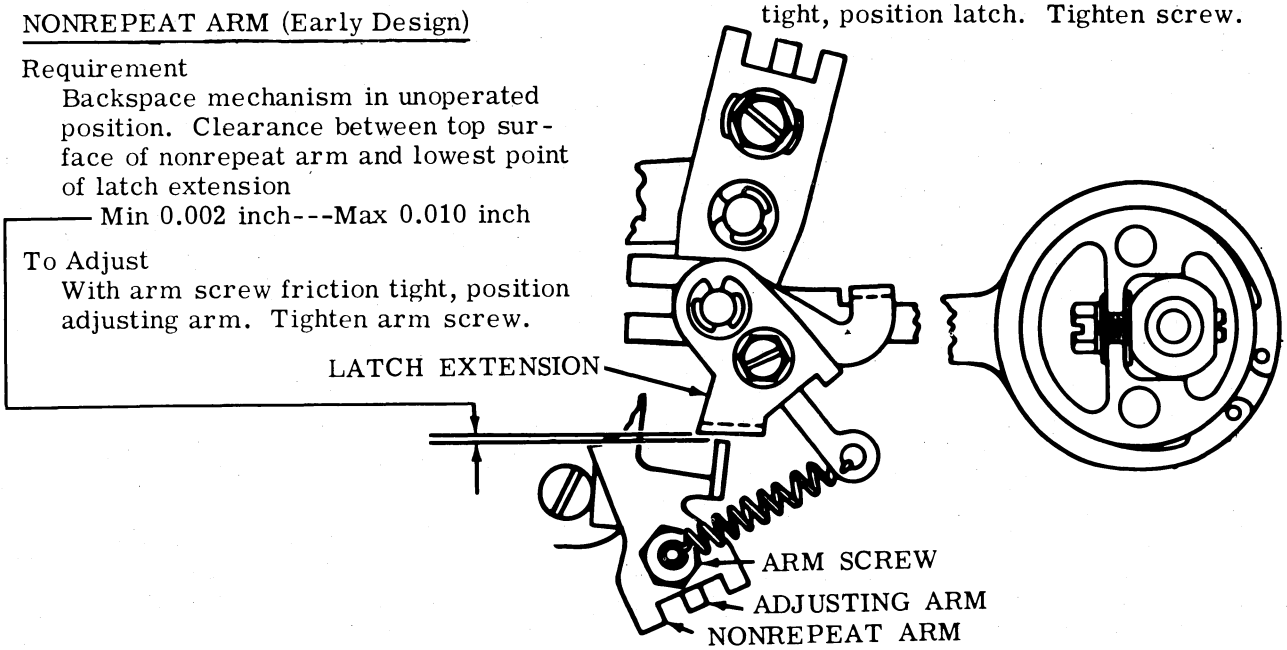
Requirement

Backspace mechanism in unoperated position. Clearance between top surface of nonrepeat arm and lowest point of latch extension

Min 0.002 inch---Max 0.010 inch

To Adjust

With arm screw friction tight, position adjusting arm. Tighten arm screw.



3.19 Power Drive Backspace Mechanism (continued)
(Nonadjustable Backspace Magnet Assembly)

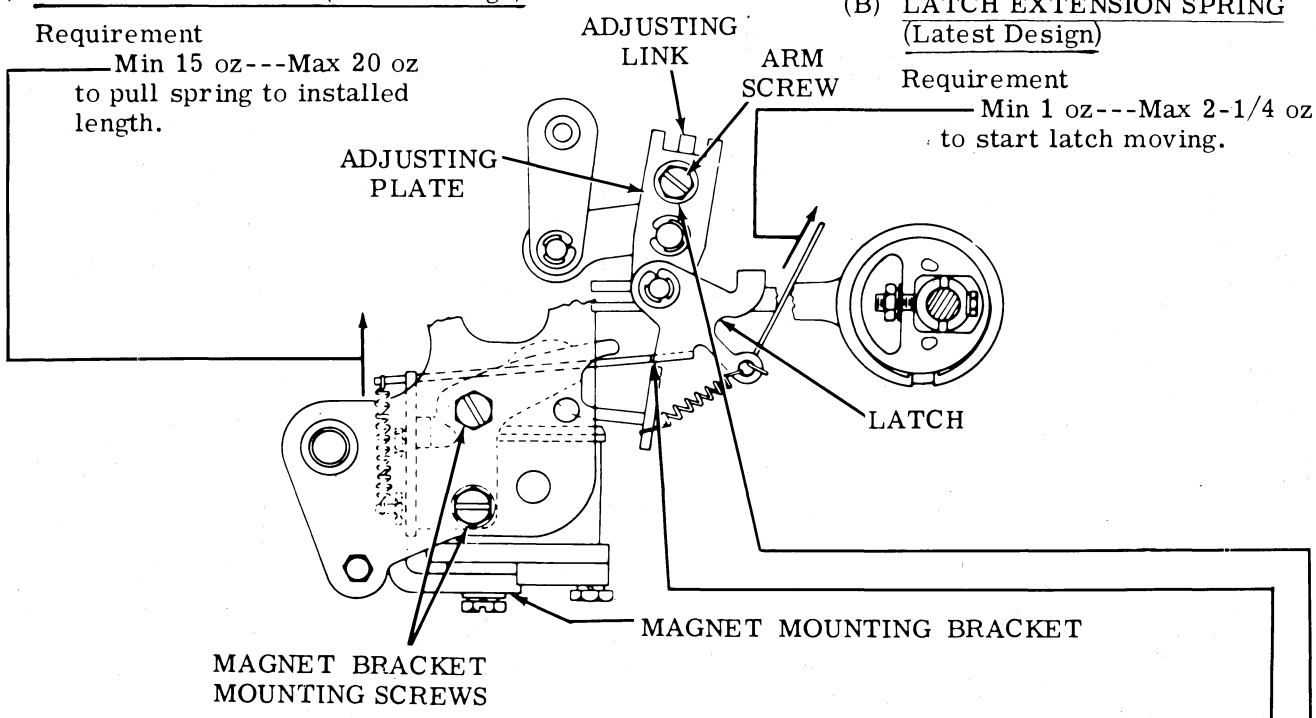
Note 1: For early design adjustable magnet assembly see 3.16.

(A) ARMATURE SPRING (Latest Design)

Requirement
Min 15 oz---Max 20 oz to pull spring to installed length.

(B) LATCH EXTENSION SPRING (Latest Design)

Requirement
Min 1 oz---Max 2-1/4 oz to start latch moving.



(C) MAGNET POSITION (Latest Design)

Requirement
The armature extension should 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. Tighten screws.

(D) FINAL MANUAL OR POWER ADJUSTMENT (Latest Design)

Note 2: This is the final adjustment for all backspace mechanisms, manual or power drive, regardless of the type of unit.

(1) Requirement
With tape in the unit, place the feed wheel shaft oil hole in its uppermost position; operate the backspace mechanism once. The ratchet wheel should be backed one space into a fully detented position.

Note 3: A fully detented position is defined as: With the detent roller in contact with the ratchet wheel the punch unit feed pawl should engage the first tooth below the horizontal centerline of the feed wheel ratchet with no perceptible clearance.

(2) Requirement
With the unit operating under power, perforate approximately two inches of tape with the RUBOUT combination selected. Backspace twelve characters in succession with the unit still under power. Again perforate approximately two inches of tape with the RUBOUT combination selected. Clipping of the code holes should be held to a minimum and should not exceed more than 0.005 inch, as gauged by eye.

To Adjust
On manual operated backspace mechanisms refine the FEED PAWL ECCENTRIC (Preliminary) (3.16) adjustment. On backspace mechanisms equipped with power drive, loosen the arm adjusting screw and position the adjusting plate. Tighten the arm adjusting screw.

3.20 Power Drive Backspace Mechanism (continued)

(A) FEED PAWL SPRING

Requirement
Backspace mechanism in unoperated position.
Min 4 oz---Max 6 oz
to start feed pawl moving.

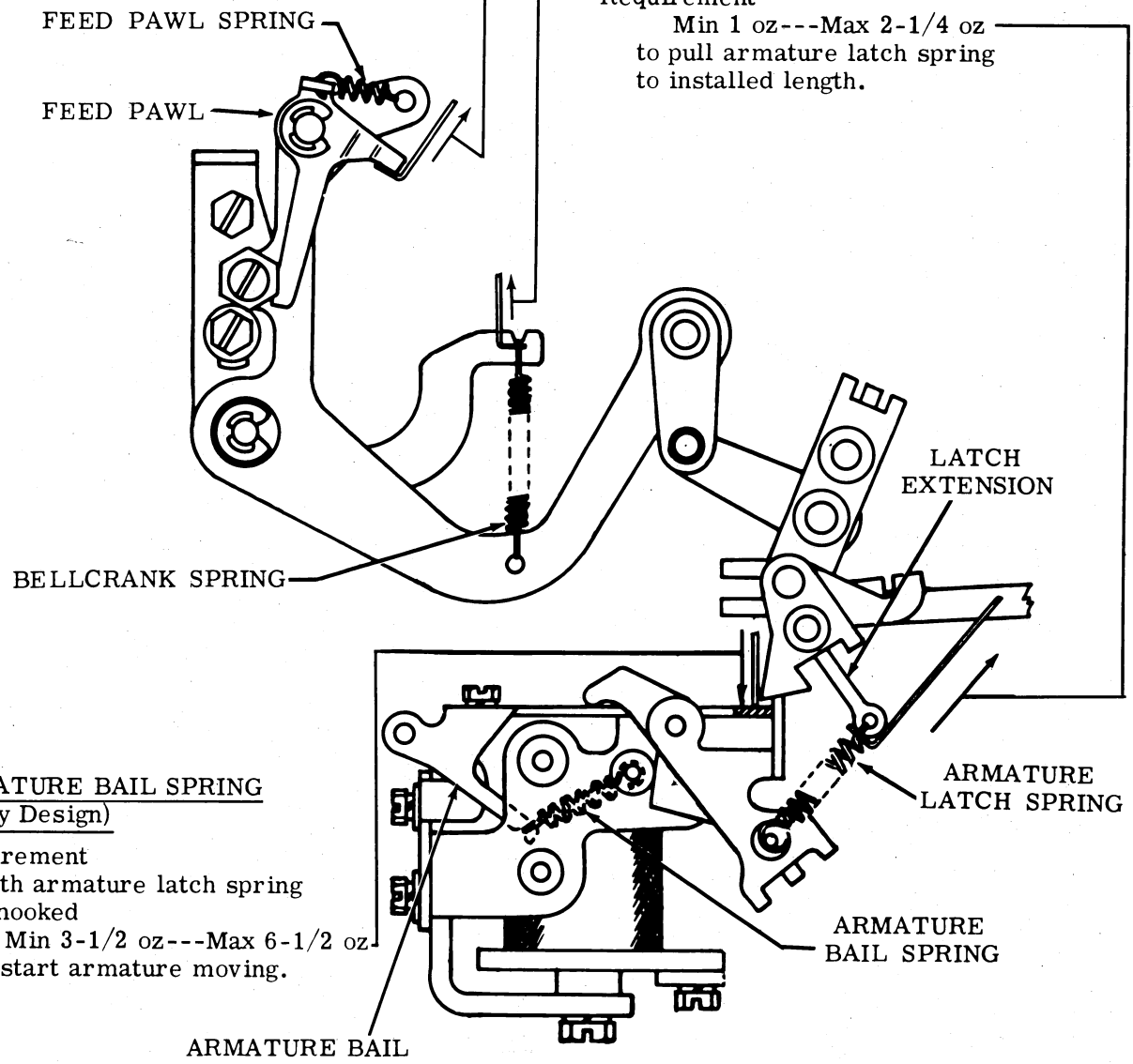
Note: All spring tensions should be taken with the mechanism in unoperated position.

(B) BELLCRANK SPRING

Requirement
Min 9 oz---Max 12 oz
to pull spring to installed length.

(C) ARMATURE LATCH SPRING
(Early Design)

Requirement
Min 1 oz---Max 2-1/4 oz
to pull armature latch spring
to installed length.

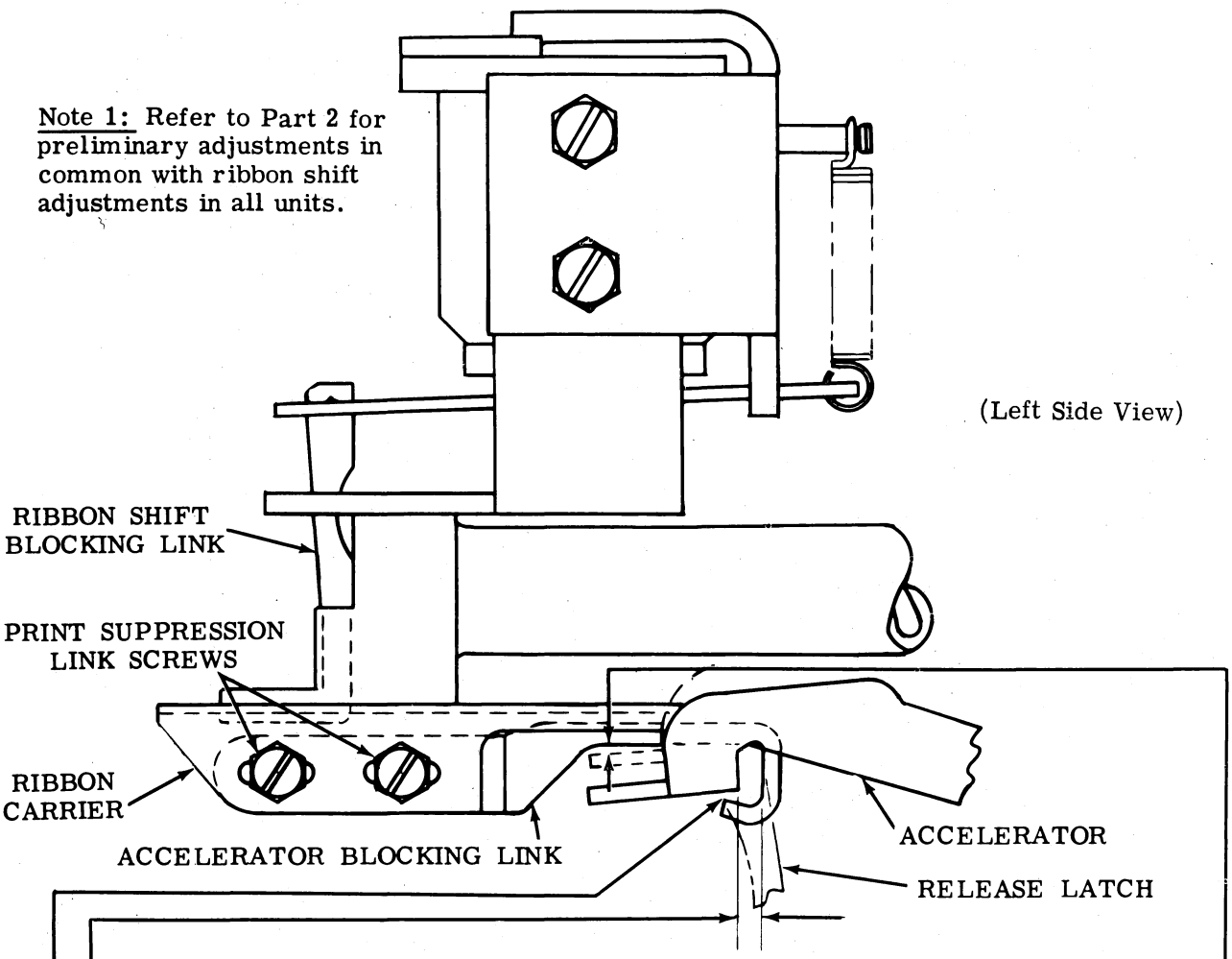


(D) ARMATURE BAIL SPRING
(Early Design)

Requirement
With armature latch spring unhooked
Min 3-1/2 oz---Max 6-1/2 oz
to start armature moving.

3.21 Print Suppression Mechanism

Note 1: Refer to Part 2 for preliminary adjustments in common with ribbon shift adjustments in all units.



ACCELERATOR BLOCKING LINK (Latest Design)

(1) Requirement
With the rocker bail in the extreme left position, there should be
Min 0.075 inch---Max 0.095 inch
clearance between the accelerator lever and the accelerator blocking link.

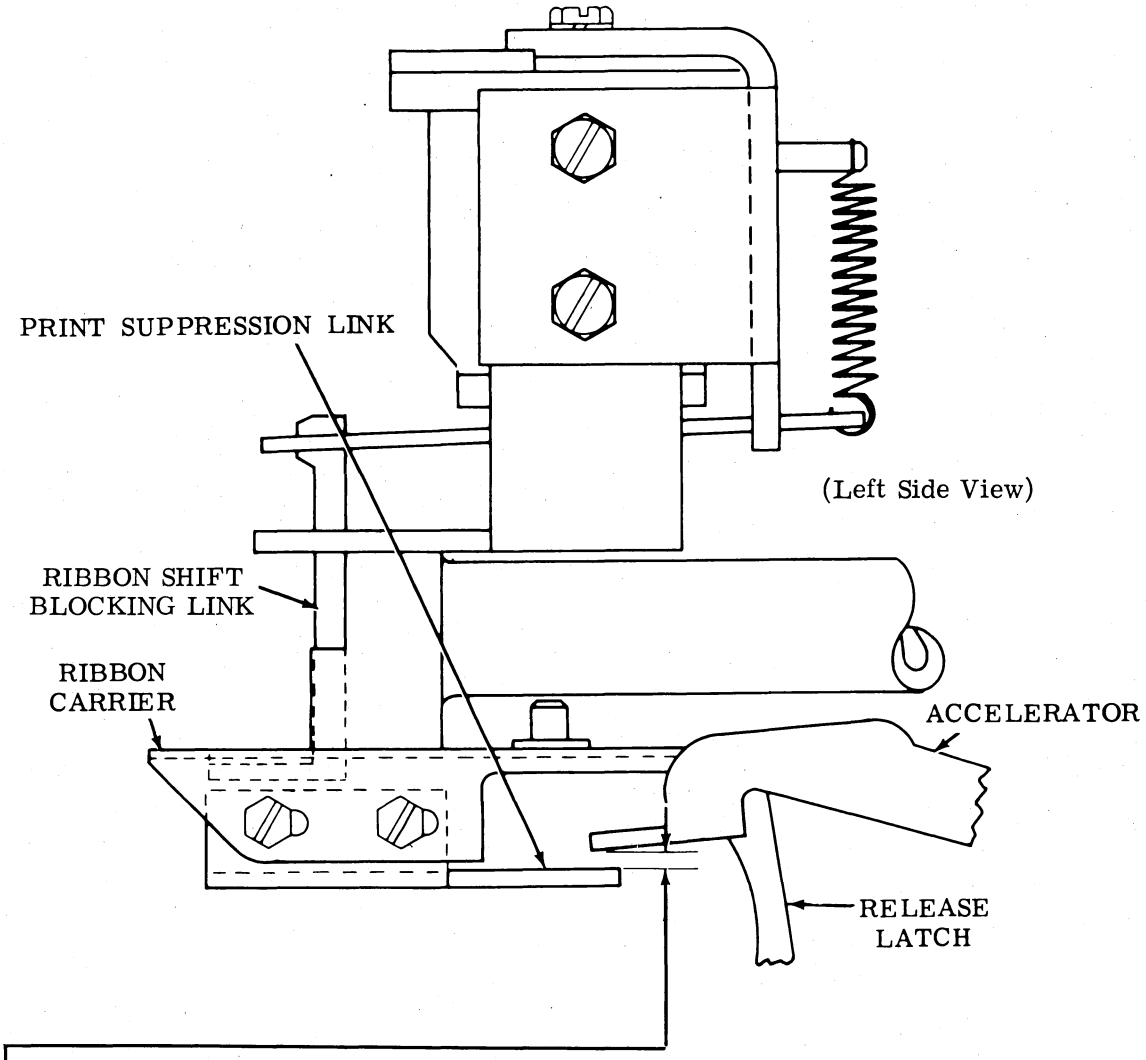
(2) Requirement
With the unit in the stop position, there should be
Min some
clearance between the top surface of the accelerator and the blocking link.

(3) Requirement
With the ribbon shift magnet armature resting against its upstop screw and when the mainshaft is rotated through a complete revolution, there should be
Min some
clearance between the accelerator and blocking link at its closest point.

To Adjust
Loosen the two screws which mount the accelerator blocking link and position the link both horizontally and vertically to meet the requirements. Tighten screws.

3.22 Print Suppression Mechanism (continued)

Note 1: Refer to Part 2 for preliminary adjustments in common with ribbon shift adjustments in all units.



Note 2: The following adjustment pertains to units that block the ribbon carrier when the shift magnet armature is held attracted.

ACCELERATOR BLOCKING LINK (Early Design)

Requirement

Function clutch tripped and mainshaft rotated until print hammer trip lever just touches print release latch. There should be

Min 0.020 inch---Max 0.030 inch

clearance between the upper surface of the print suppression link and the lower surface of the print hammer accelerator.

To Adjust

Position the print suppression link all the way to the rear of the slots on the ribbon carrier. Position link in vertical direction with mounting screws loosened to meet requirement. Tighten screws.

3.23 Print Suppression Mechanism (continued)

CONTROL LEVER (Manual)

(1) Requirement

There should be a clearance of

Min 0.015 inch

between the print suppress lever and the print hammer when the lever extension is in the print position (down).

(2) Requirement

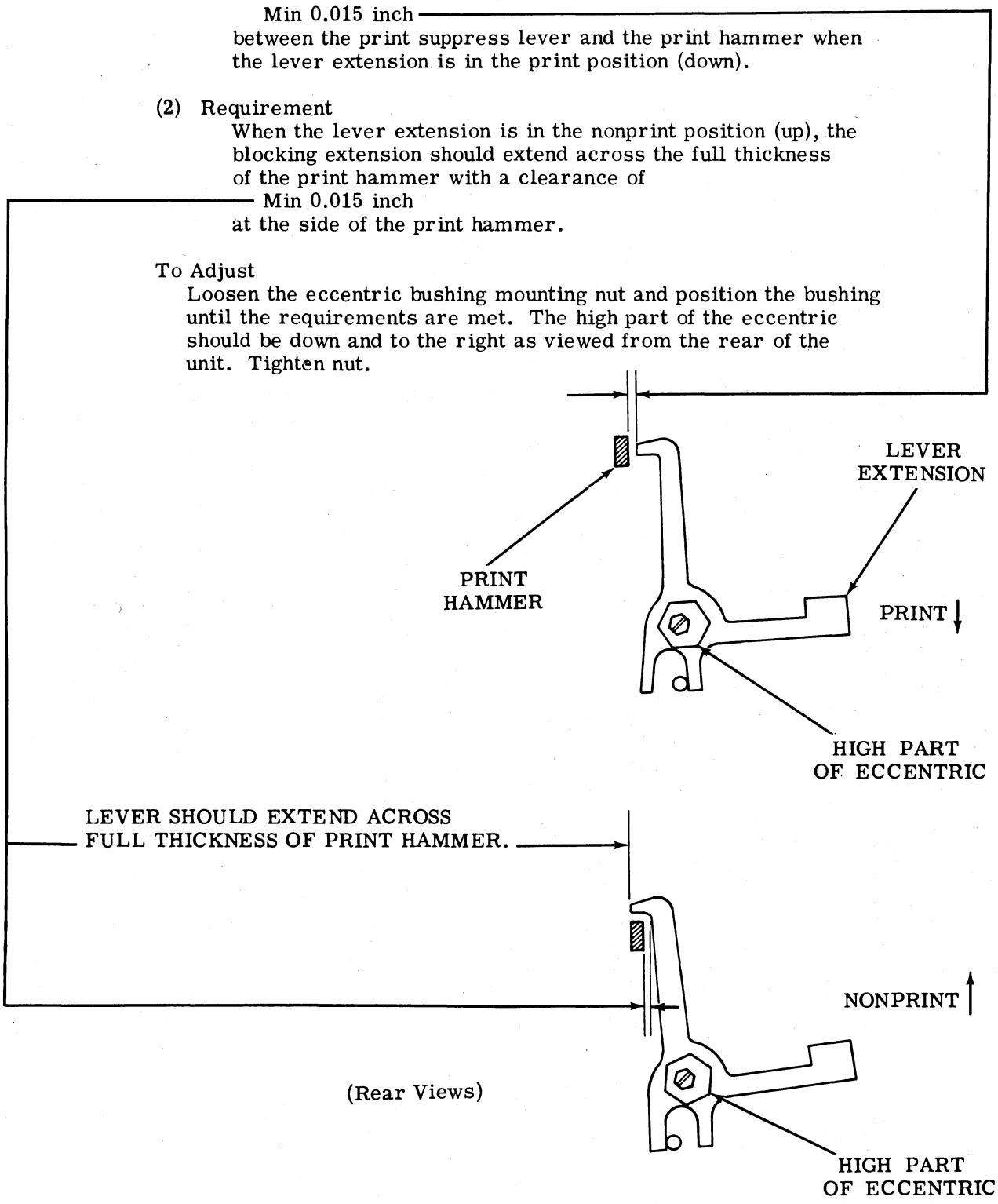
When the lever extension is in the nonprint position (up), the blocking extension should extend across the full thickness of the print hammer with a clearance of

Min 0.015 inch

at the side of the print hammer.

To Adjust

Loosen the eccentric bushing mounting nut and position the bushing until the requirements are met. The high part of the eccentric should be down and to the right as viewed from the rear of the unit. Tighten nut.



(Rear Views)

3.24 Signal Bell and EOT Contacts

Note 1: The following adjustments should be made prior to installing the contact bracket assembly on unit.

(A) NORMALLY OPEN CONTACT GAP

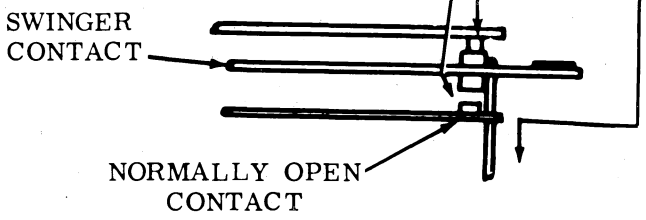
Requirement
Min 0.008 inch---Max 0.015 inch

To Adjust
Bend normally open contact spring.

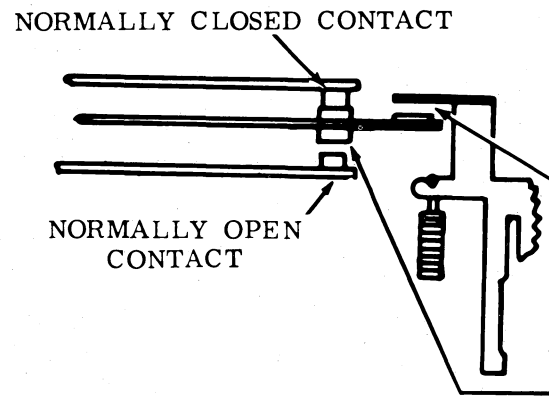
(B) NORMALLY CLOSED CONTACT

Requirement
Min 8 grams---Max 15 grams to move the swinger contact away from the normally closed contact.

To Adjust
Bend normally closed contact spring.



Note 2: The following adjustments should be made after the contact bracket assembly is mounted to the unit.

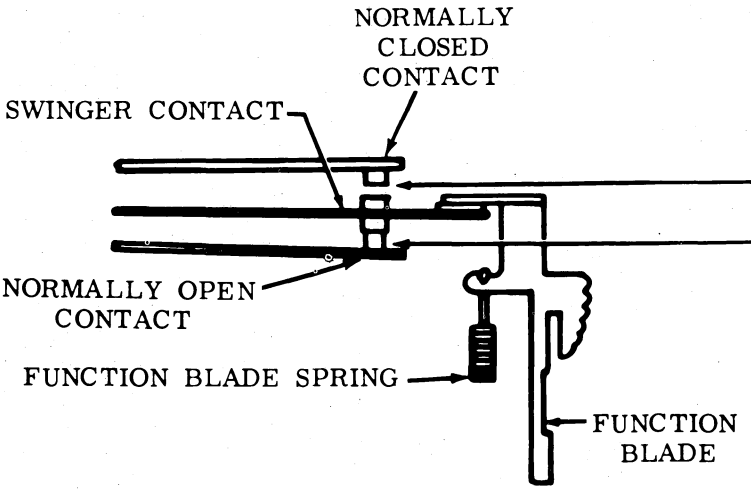


(C) NORMALLY OPEN CONTACT GAP

(1) Requirement
With the function blade in its lowest position in the nonselected condition, clearance between the contact swinger insulator button and the function blade
Min some

(2) Requirement
Contact gap
Min 0.008 inch---Max 0.015 inch

To Adjust
Bend normally closed contact spring.



(3) Requirement
With the function blade in its lowest position in the selected condition, gap between the swinger contact and normally closed (now open) contact
Min 0.015 inch
and some overtravel of the normally open contact.

To Adjust
Bend normally closed contact spring. Refine previous adjustments to maintain requirements.

3.25 Selector Timing Contact Mechanism

Note 1: In this text, the letters S, B, and M are used to denote respectively the "swinger", "break" (normally closed with lever riding cam depression), and "make" (normally open; closed only with lever riding cam peak) contact springs.

Note 2: When making adjustments (F) through (H) make certain the "S" spring insulator is clear of the operating lever.

Note 3: Parts should be well aligned and free of sharp bends. Contact points misalignment should not exceed 1/4 the diameter of points.

(A) "M" CONTACT SPRINGS

Requirement
Min 4 oz to move contact spring away from its stiffener.

To Adjust
Bend contact spring.

(B) "B" CONTACT SPRINGS

Requirement
Min 4 oz to move contact spring away from its stiffener.

To Adjust
Bend contact spring.

(C) "S" - "B" CONTACT SPRINGS

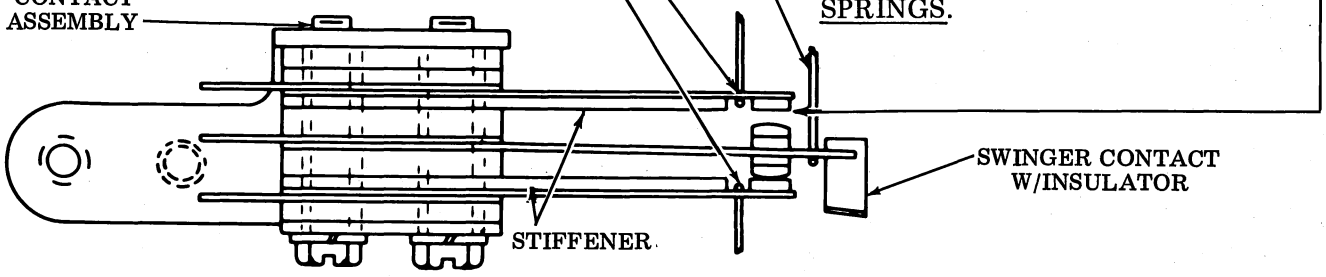
Requirement
Min 3-1/2 oz---Max 4-1/4 oz to move swinger contact away from normally break contact.

To Adjust
Bend swinger contact spring.

(E) "S" - "M" CONTACT GAP

Requirement
Min 0.012 inch---Max 0.020 inch contact gap.

To Adjust
Bend "M" stiffener — hold adjusted gap near 0.012 inch side of requirement. Recheck (A) "M" CONTACT SPRINGS.



(D) TWIN "B" CONTACT SPRINGS

(1) Requirement
Both contacts should open at the same time.

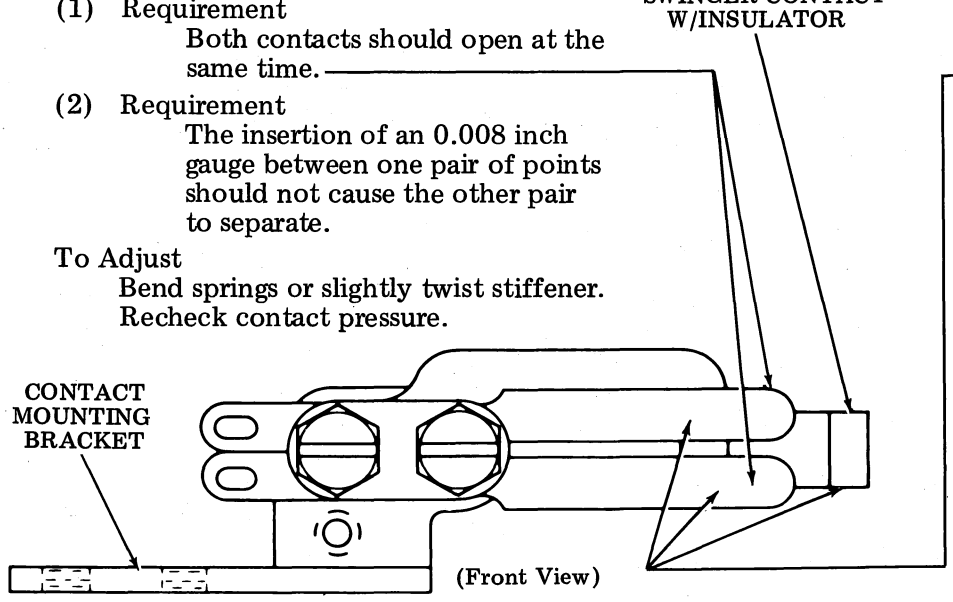
(2) Requirement
The insertion of an 0.008 inch gauge between one pair of points should not cause the other pair to separate.

To Adjust
Bend springs or slightly twist stiffener. Recheck contact pressure.

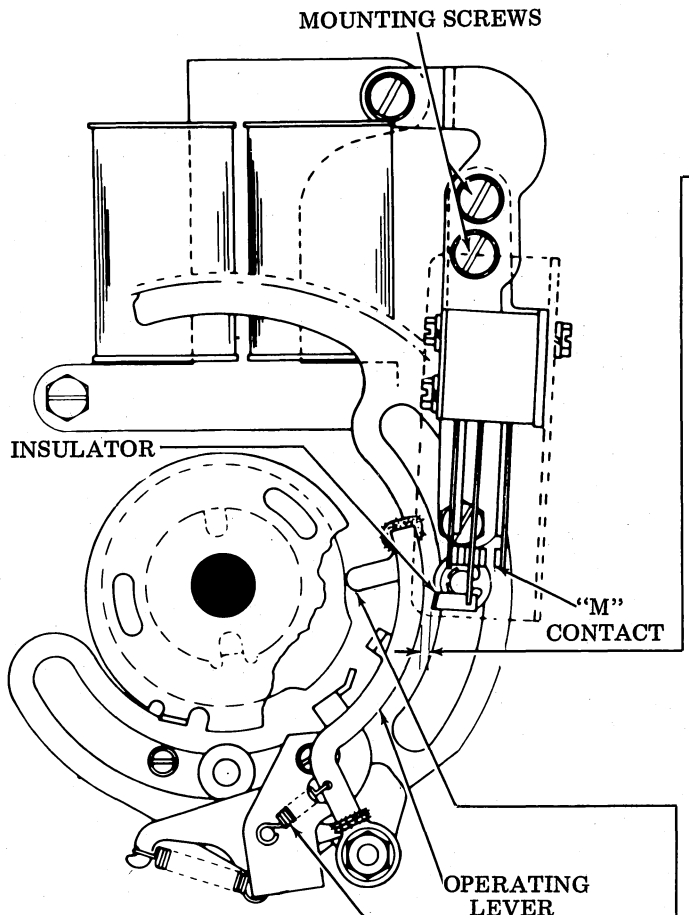
(F) TWIN SPRINGS ("M" CONTACTS)

Requirement
Both "S" and "M" contacts should make approximately the same time (within 0.006 inch as gauged by eye).

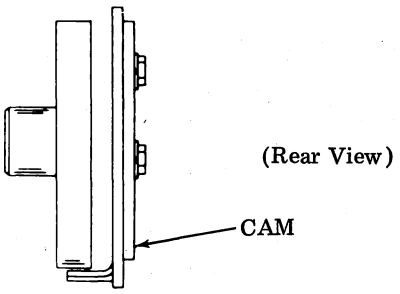
To Adjust
Bend "M" contact springs or slightly twist stiffener. Recheck (E) "S" - "M" CONTACT GAP requirement.



3.26 Selector Timing Contact Mechanism (continued)



(Right Side View)



(Rear View)

(H) CONTACT ASSEMBLY POSITION

(1) Requirement

Set range scale at 50 and rotate main shaft until operating lever is on its cam low.

Min 0.002 inch---Max 0.006 inch

between operating lever and insulator.

(2) Requirement

Pivot operating lever toward contact assembly. The initial engagement between operating lever and contact assembly should be on lower half of insulator.

To Adjust

Loosen (friction tight) mounting screws and position contact assembly. Tighten screws.

(3) Requirement

Rotate main shaft. As operating lever is positioned on its cam low, both "M" contacts should move (gauge by eye)

Min 0.012 inch.

Repeat (3) Requirement check with range scale set at 60 and then again at 90.

To Adjust

Check for loosely mounted contact assembly parts. Refine (E) "S" - "M" CONTACT GAP. If requirement still cannot be met, replace range scale selector rack.

(G) ALIGNMENT OF OPERATING LEVER WITH CAM

To Check

Take up cam endplay toward selector clutch drum and operating lever endplay (at its bearing) away from selector clutch drum.

(1) Requirement

Operating lever's full thickness should engage cam.

(2) Requirement

Lever should not exert pressure against face of clutch disc.

To Adjust

Refine clutch drum endplay.

(I) OPERATING LEVER SPRING

Requirement

The spring should hold operating lever against cam with light pressure. With spring removed

Min 2 oz---Max 3 oz

to stretch spring to 5/8 inch length.

3.27 Selector Timing Contact Mechanism (continued)

(A) TIMING VERIFICATION

Note 1: DXD means distortion test set.

Note 2: (1) Requirement check may be omitted if the (2) Requirement stroboscopic tests are to be made.

(1) Requirement

With range scale set at 50 and the clutch latched, the normally closed contact should be closed. Trip the clutch and manually rotate the main shaft. The contact should open after the locklever is in place for the number one selection and close before the locklever is in place for the number five selection.

To Check

Stroboscopic Tests: Connect the B-S or S-M terminals (as required into a 120 v dc viewing circuit of 11.00 unit DXD or similar stroboscopic test set, 600 opm. Connect the DXD test message output or a comparable signal source in a line circuit to the selector magnets. Set distortion at zero. Synchronize the viewing scale with the transmitted signals. Observe DXD stroboscopic display of signals listed below. Ignore rhythmic shifting of a signal. This shifting occurs because of slight rotational displacement of the motor armature (and of the selector cam) as it encounters loads such as line feed, etc, from one printer cycle to the next. The shifting is exhibited as lighter colored display at the beginning or end of a signal. True readings are at the observed midpoints of shifting areas. If any shift area should be excessive, say over 18 DXD divisions total, it may be indication of binds, slippages, or wear in the machine. Signals should be clear of gaps.

(2) Requirement

Contact pair "B" - "S" minimum opening of 55 divisions, beginning after start of the number one pulse and ending before the end of the number five pulse.

(B) CORRECTION OF TIMING

Check for the following:

(1) Wrong cam.

(2) Range scale knob maladjusted.

(3) Contact, lever, and bracket adjustments. Refine if required.

(4) Parts loose.

(5) Contacts dirty.

(6) Improper test connections.

(7) Improper synchronism of sending and stroboscopic portions of test set. Note that test message is to be sent direct to selector magnets. Introduction of a line relay, contact protection network, or any other condition affecting magnet release time will displace the viewed signals produced by the modification kits.