37 TYPING REPERFORATOR

ADJUSTMENTS

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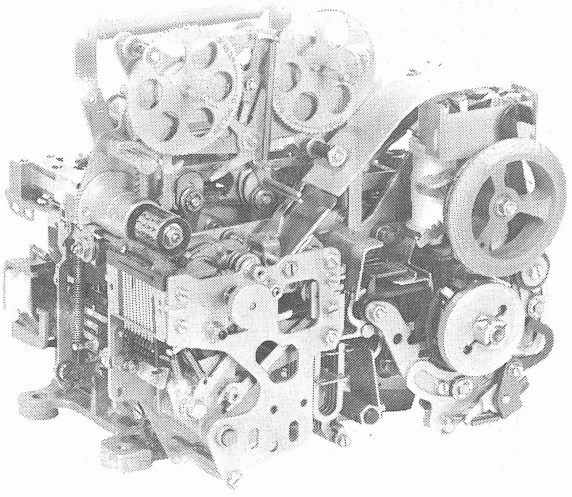

(Front View)

Figure 1 - 37 Typing Reperforator

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 Model 37 Typing Reperforator (Figure 1). Since this is a general revision, marginal arrows ordinarily used to indicate changes and additions have been omitted.

1.02 The basic mechanism includes the selector, transfer, level fully perforating punch, and typing mechanisms. The printing mechanism may include print suppression, remote control rubout tape feed-out, two-color ribbon, 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 shown 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.

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).

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 (tripped), 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 Model 37 Typing Reperforator, proceed as follows.

(a) Attach the armature clip to the selector magnet armature by carefully putting the flat formed end of the armature clip over the top of the armature between the pole pieces and then hooking the projection under the edge of the armature. 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 note in 1.06.

(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 number 1 to the outer lever number 8.

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

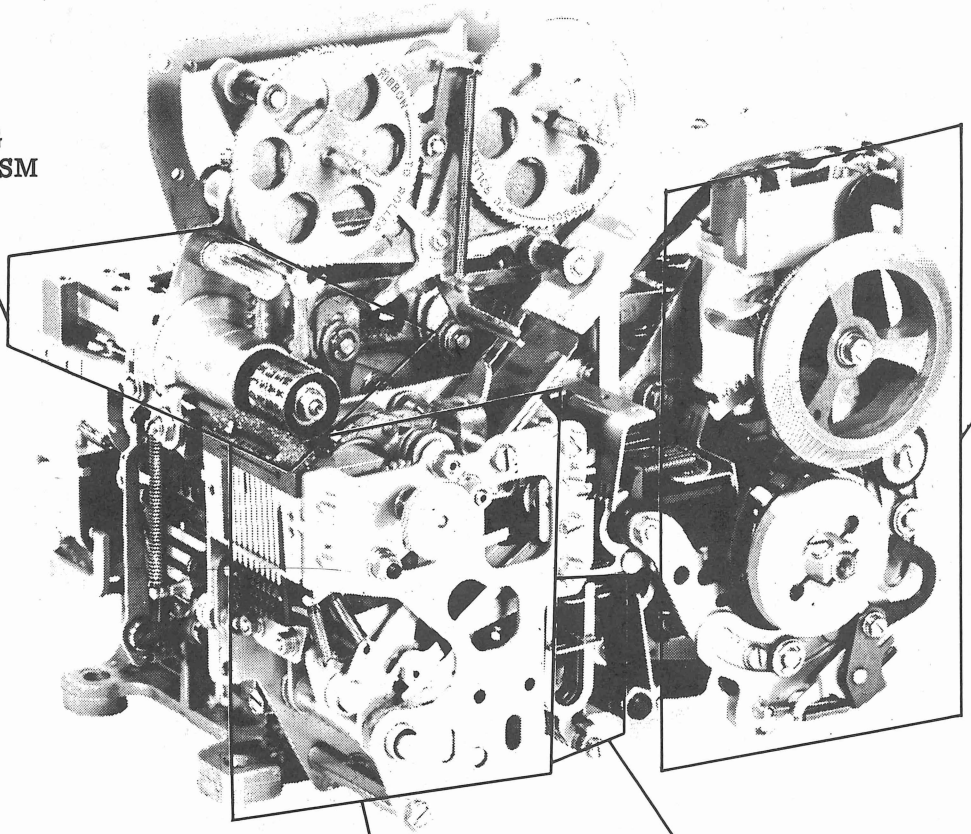
1.08 Parts dismantled to facilitate checking or readjustment should be reassembled after the operation is complete. If a part mounted on shims is to be dismantled, the number of shims used at each mounting screw should be noted so that the same shim pile-ups can be replaced when the part is remounted. 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 any 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 Model 37 Typing Reperforator is used as a component of a receive-only or a send-receive set, it is mounted on a base in its appropriate cabinet. For the gear mesh and additional adjustment requirements, see Section 574-327-700 for the ASR RT cabinet and Section 574-323-706 for the receive-only typing reperforator.



(Left Front View)

Figure 2 - 37 Typing Reperforator

2. BASIC UNIT

2.01 Selector and Function Mechanisms

CLUTCH SHOE LEVER

Note 1: This adjustment is for both the selector and function clutches.

Note 2: Check requirements with stop-lug adjacent to form on clutch adjusting plate, for consistent measurements.

To Check

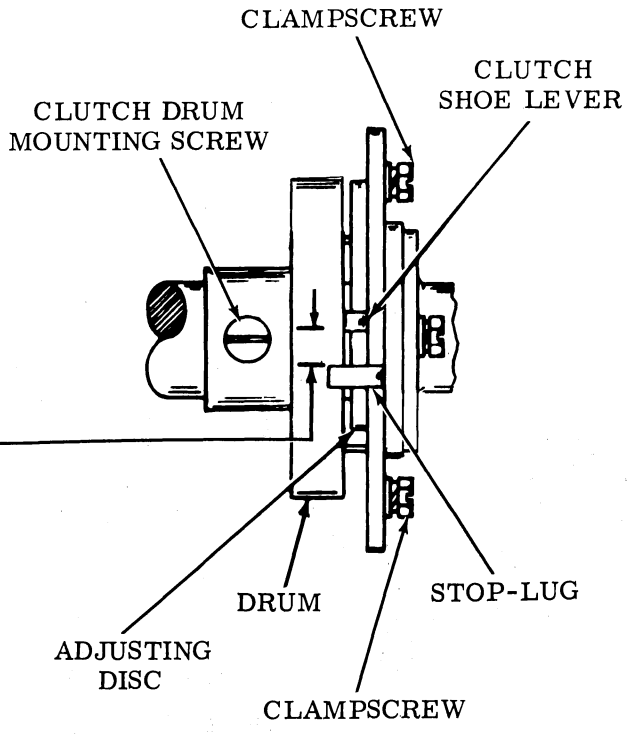
Disengage clutch. Measure and record gap between shoe lever and stop-lug. Engage clutch. Maximize gap by momentarily applying approximately 32 oz against shoe lever. Again, measure gap.

Requirement

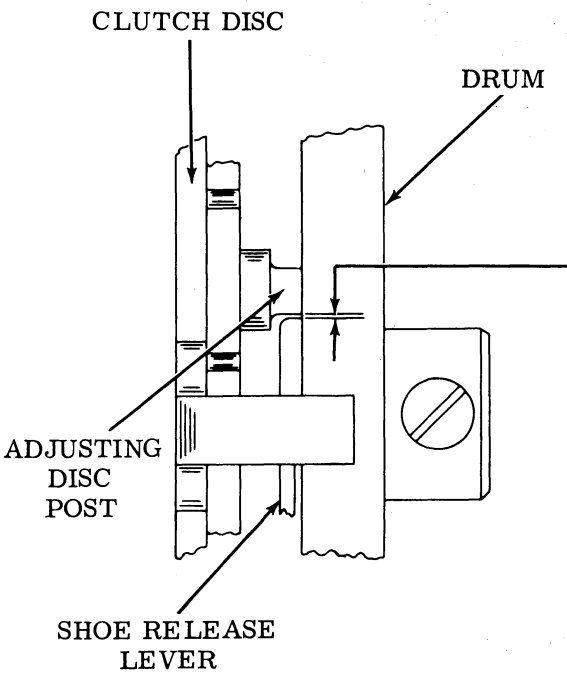
Gap between shoe lever and stop-lug
Min 0.055 inch---Max 0.085 inch
greater when clutch is engaged.

To Adjust

Loosen two clampscrews. With wrench or screwdriver against adjusting disc extension, position adjusting disc. Tighten the two clampscrews.



(Right Side View)



CLUTCH "BIDREC" GAP

Requirement

With clutch engaged
Min 0.002 inch---Max 0.015 inch
(for units operated less than 100 hours)
Min 0.002 inch---Max 0.025 inch
(for units operated more than 100 hours)
between adjusting disc post and the shoe release lever.

To Adjust

Replace clutch shoes and/or clutch drum.

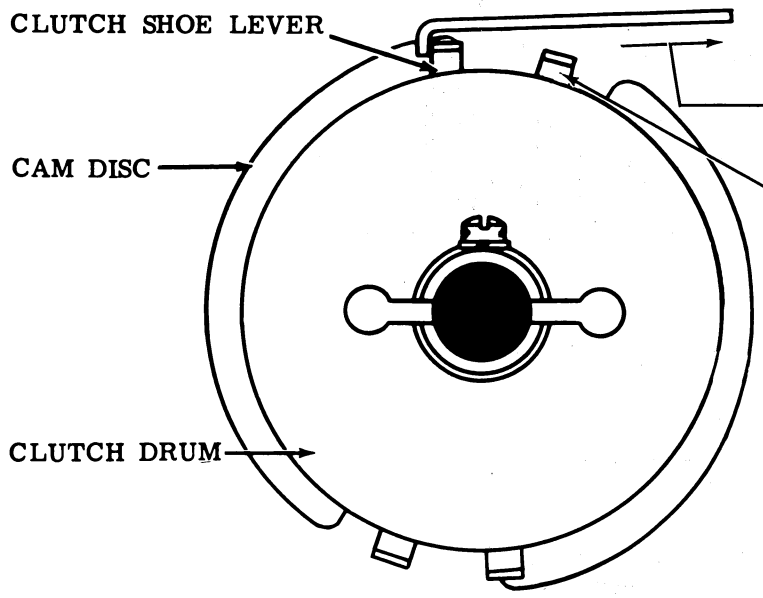
2.02 Selector and Function Mechanisms (continued)

Note: These spring tensions apply to both the selector and function clutches.

CLUTCH SHOE LEVER SPRING

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

Requirement
Min [illegible] z---Max 22 oz
to pull shoe lever in contact with stop-lug.



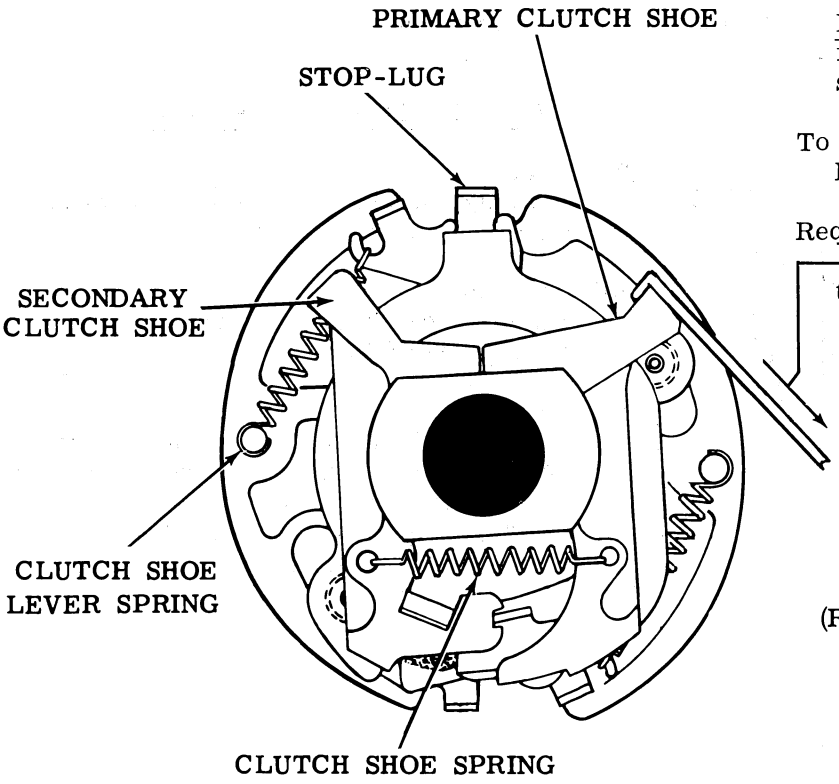
(Right Side View)

CLUTCH SHOE SPRING

Note: Check this spring tension only if there is reason to believe the spring will not meet its requirement.

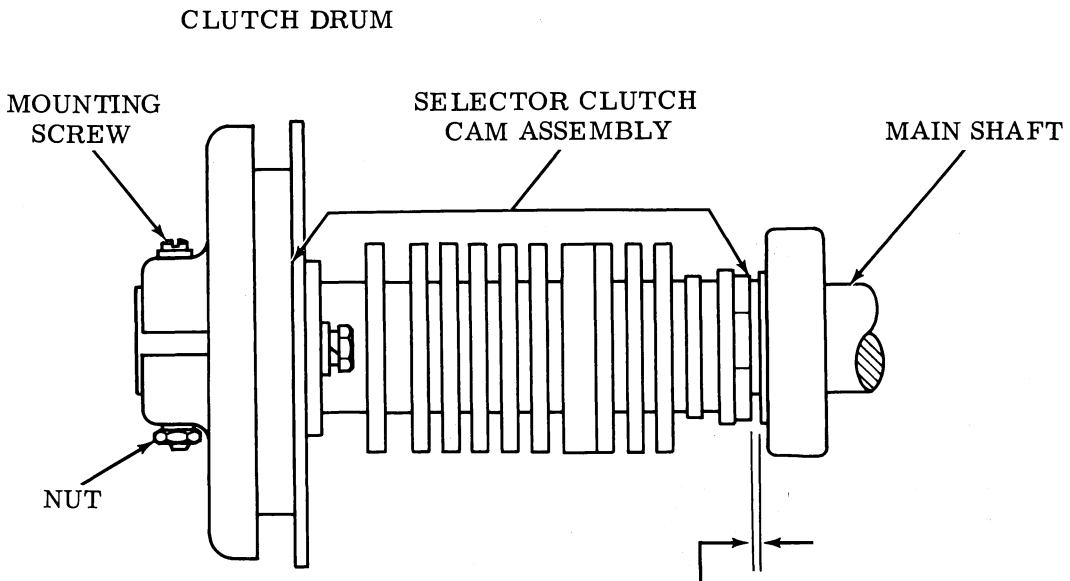
To Check
Remove clutch from drum.

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



(Right Side View)

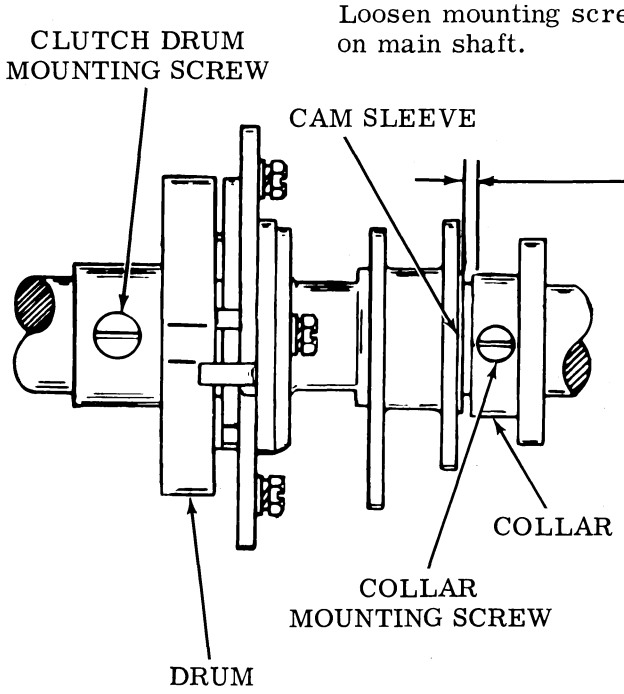
2.03 Selector and Function Mechanisms (continued)



SELECTOR CLUTCH DRUM ENDPLAY

Requirement
With selector clutch in stop position,
Min some---Max 0.010 inch
selector cam endplay.

To Adjust
Loosen mounting screw and nut. Position clutch drum on main shaft.



(Right Side View)

FUNCTION CLUTCH DRUM ENDPLAY

To Check
Disengage the function clutch and take up play to maximize clearance.

Requirement
Min some---Max 0.015 inch
cam sleeve endplay.

To Adjust
Loosen clutch drum mounting screw and move drum to its extreme forward position. Tighten mounting screw. Loosen collar mounting screw and position collar. Tighten mounting screw.

2.04 Function Mechanism

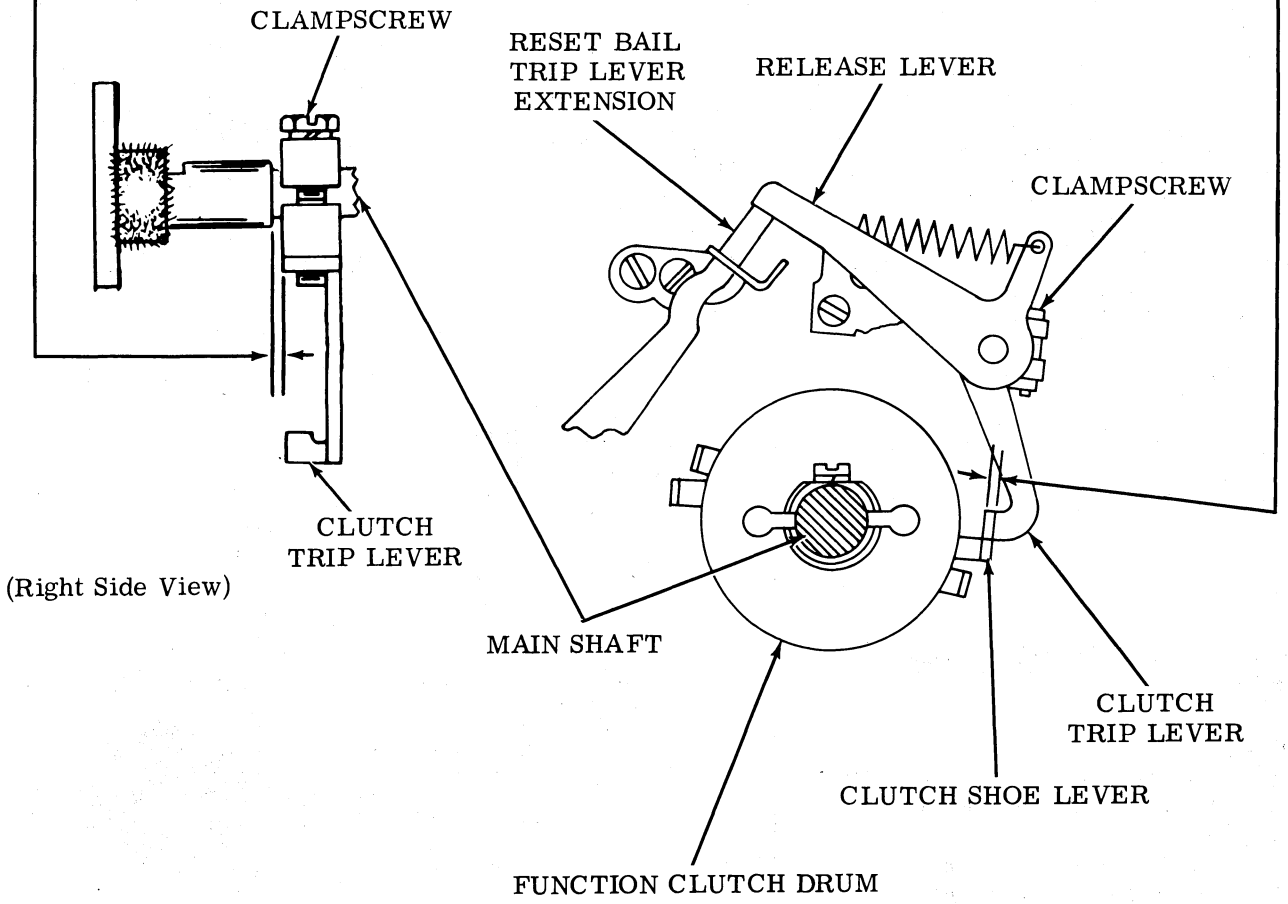
FUNCTION CLUTCH TRIP LEVER

To Check
Place release lever against reset bail trip lever extension.

(1) Requirement
Clutch trip lever should engage full thickness of clutch shoe lever.

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

To Adjust
Loosen clampscrew and position clutch trip lever on main shaft.



2.05 Function Mechanism (continued)

FUNCTION CLUTCH RESET AND LATCHLEVERS

To Check

Trip function clutch and rotate main shaft until reset lever is placed in its uppermost position by the reset pin.

(1) Requirement

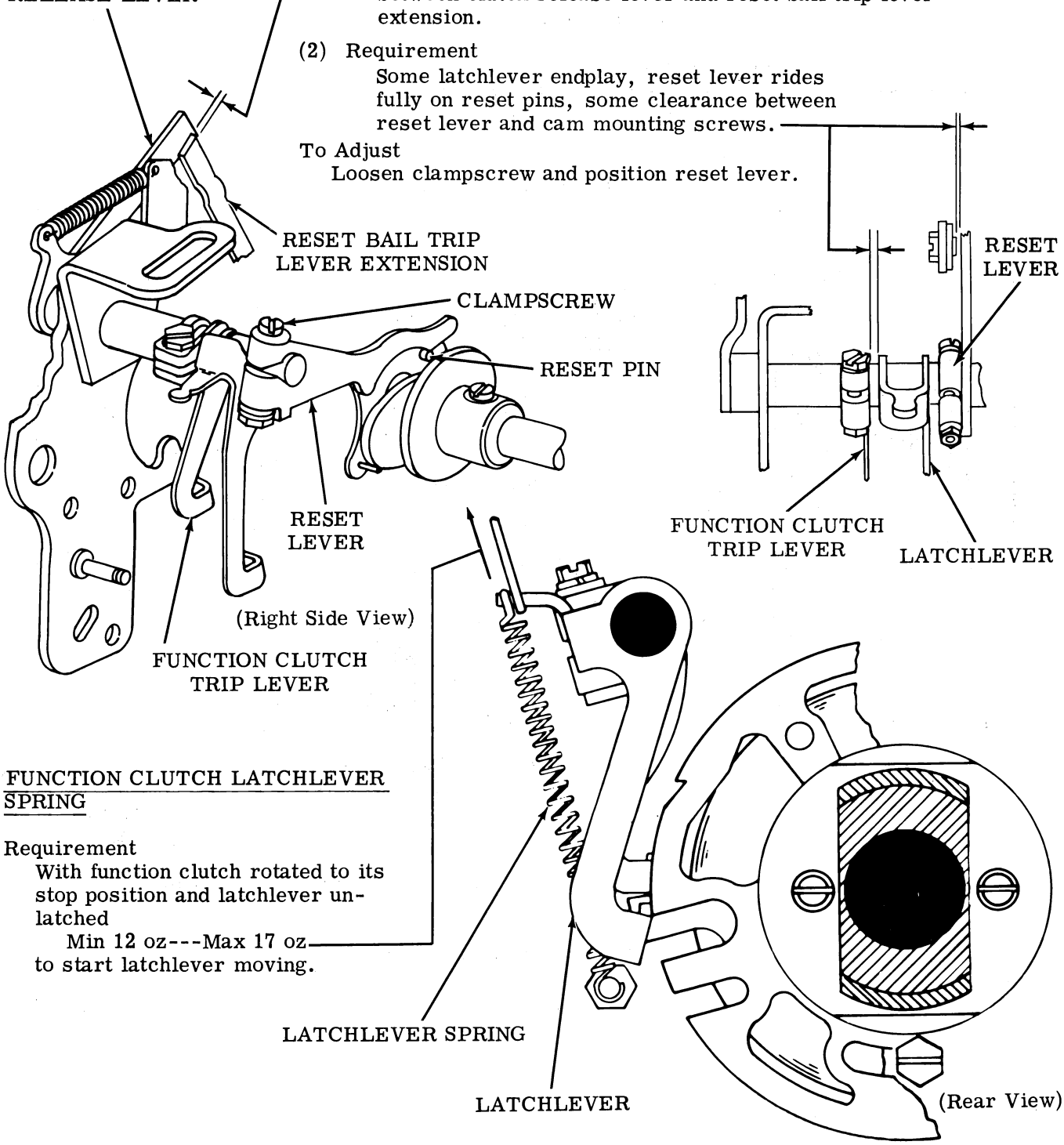
Min 0.010 inch---Max 0.030 inch between clutch release lever and reset bail trip lever extension.

(2) Requirement

Some latchlever endplay, reset lever rides fully on reset pins, some clearance between reset lever and cam mounting screws.

To Adjust

Loosen clampscrew and position reset lever.



FUNCTION CLUTCH LATCHLEVER SPRING

Requirement

With function clutch rotated to its stop position and latchlever unlatched

Min 12 oz---Max 17 oz to start latchlever moving.

2.06 Function Mechanism (continued)

TRIP CAM FOLLOWER LEVER

To Check

Disengage selector and function clutches. Engage selector clutch and rotate main shaft to place cam follower arm on its cam high.

(1) Requirement

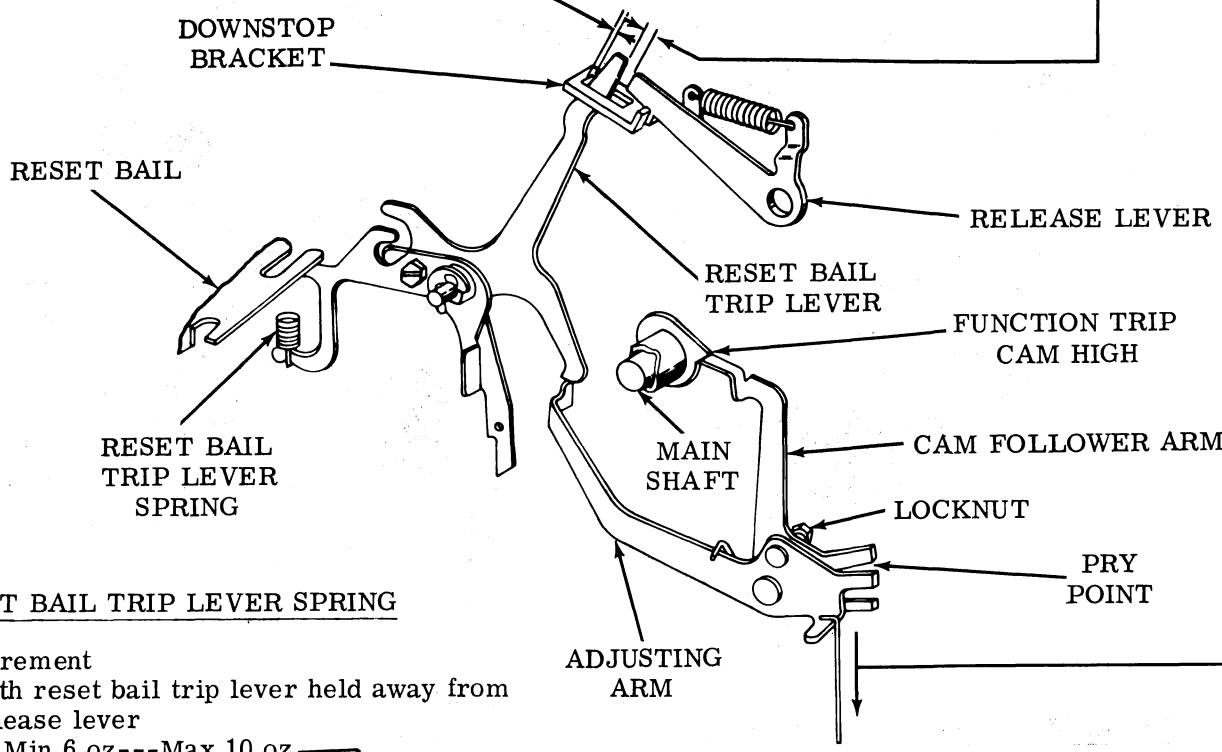
Min 0.030 inch---Max 0.045 inch between reset bail trip lever and release lever.

(2) Requirement

Some clearance between reset bail trip lever and downstop bracket.

To Adjust

Loosen locknut and use pry point to position adjusting arm.

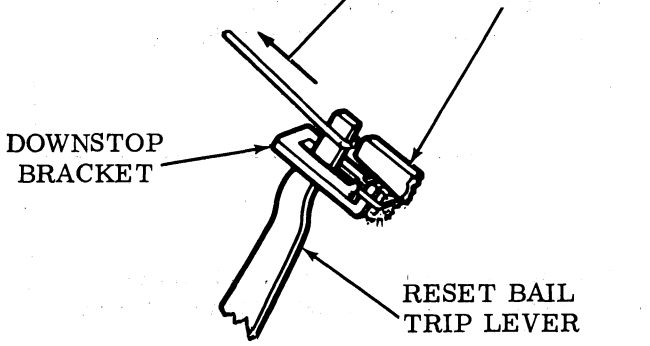


RESET BAIL TRIP LEVER SPRING

Requirement

With reset bail trip lever held away from release lever

Min 6 oz---Max 10 oz to start trip lever moving.



CAM FOLLOWER ARM SPRING

To Check

Disengage function and selector clutch. Manually trip function clutch. Hold reset bail trip lever away from adjusting arm.

Requirement

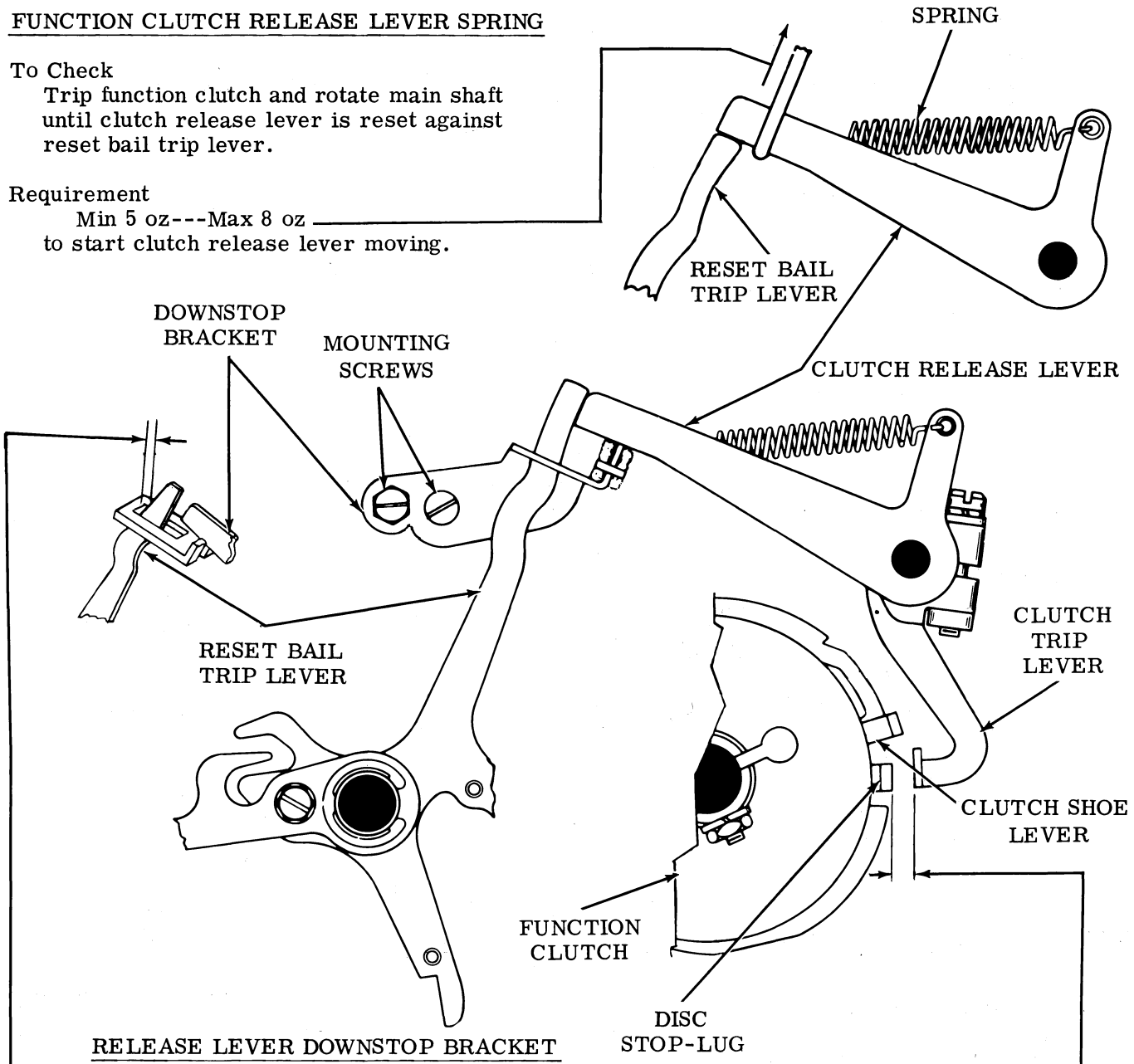
Min 2-1/2 oz---Max 4 oz to start adjusting arm moving.

2.07 Function Mechanism (continued)

FUNCTION CLUTCH RELEASE LEVER SPRING

To Check
Trip function clutch and rotate main shaft until clutch release lever is reset against reset bail trip lever.

Requirement
Min 5 oz---Max 8 oz to start clutch release lever moving.



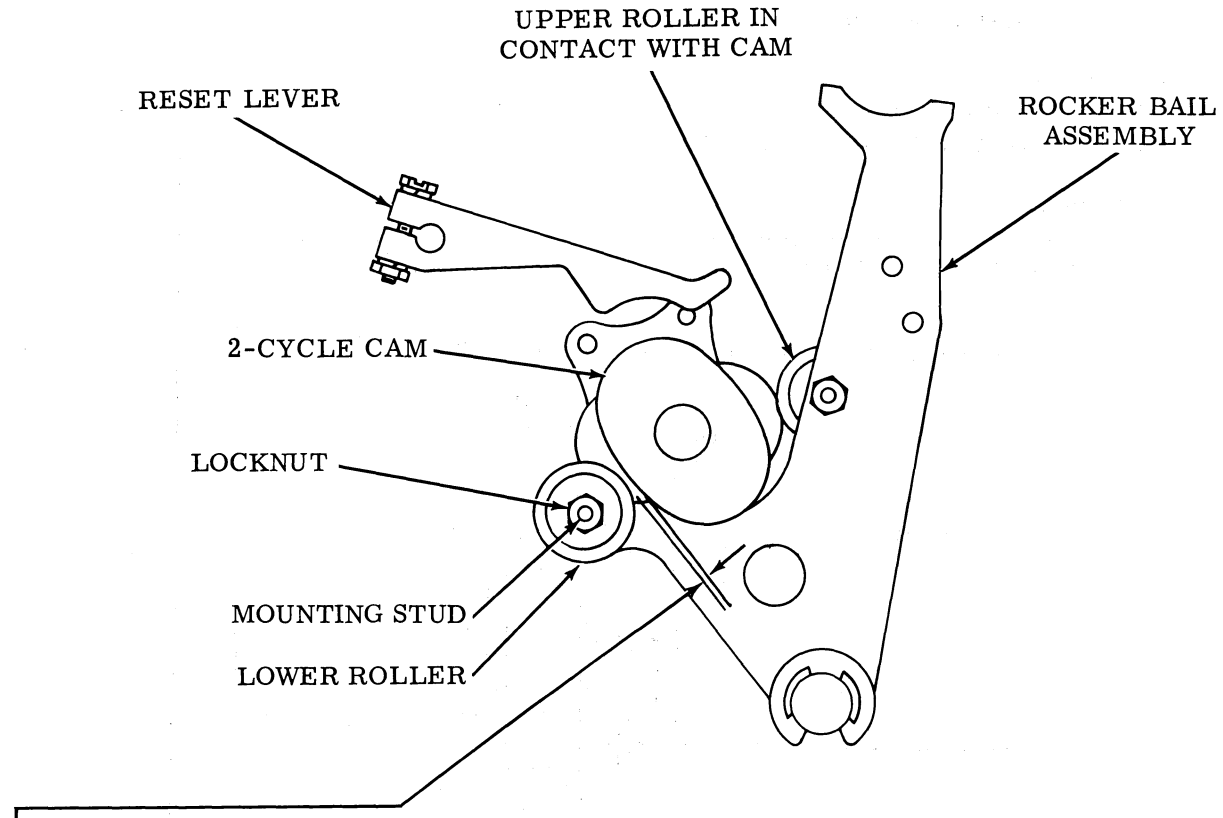
RELEASE LEVER DOWNSTOP BRACKET

To Check
Trip function clutch and rotate main shaft until clearance between clutch trip lever and disc stop-lug is at a minimum. Place clutch release lever against downstop bracket.

Requirement
Min 0.025 inch---Max 0.050 inch between disc stop-lug and clutch trip lever.

To Adjust
Loosen mounting screws friction tight and position downstop bracket. Maintain some clearance between reset bail trip lever and downstop bracket. Tighten mounting screws.

2.08 Function Mechanism (continued)



CAM FOLLOWER ROLLER

To Check

Place rocker bail to extreme left and upper roller in contact with its cam. Check requirement at point of least clearance on both sides of the 2-cycle cam.

Requirement

Min some---Max 0.003 inch between lower roller and its cam.

To Adjust

Disconnect perforator drive link (2.10) from operating arm. Loosen lower roller locknut and position mounting stud in its elongated slot. Tighten locknut and connect drive link. Check for binds through one full revolution. If necessary, refine adjustment.

2.09 Function Mechanism (continued)

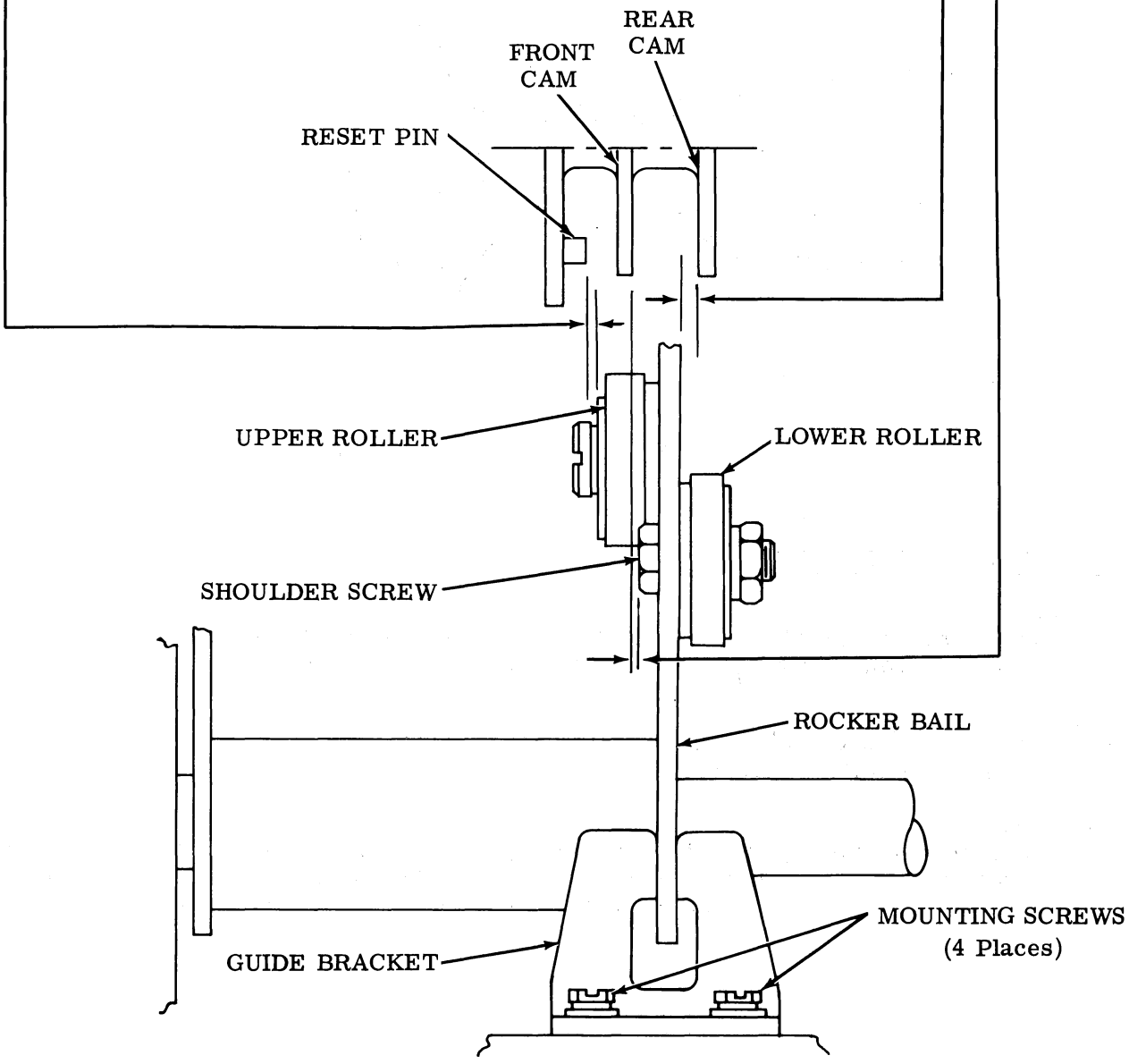
CAM FOLLOWER ROLLER ALIGNMENT

(1) Requirement
Min 0.010 inch
between upper roller and reset pins.

(2) Requirement
Min 0.010 inch
between lower roller screw head and front cam.

(3) Requirement
Min 0.010 inch
between rocker bail and rear cam.

To Adjust
Loosen four mounting screws and position rocker bail. Tighten screws.



2.10 Punch Mechanism

Note: Before checking punch mechanism, check CAM FOLLOWER ROLLER (2.08) adjustment.

PUNCH PIN PENETRATION

To Check

Loosen downstop mounting nuts (2.11). With DELETE code (all code levels marking) set up in mechanism, trip function clutch and rotate main shaft until rocker bail is in its extreme left position.

(1) Requirement

With play taken up to maximize gap

Min 0.015 inch---Max 0.030 inch

between punch slides and punch block.

(2) Requirement

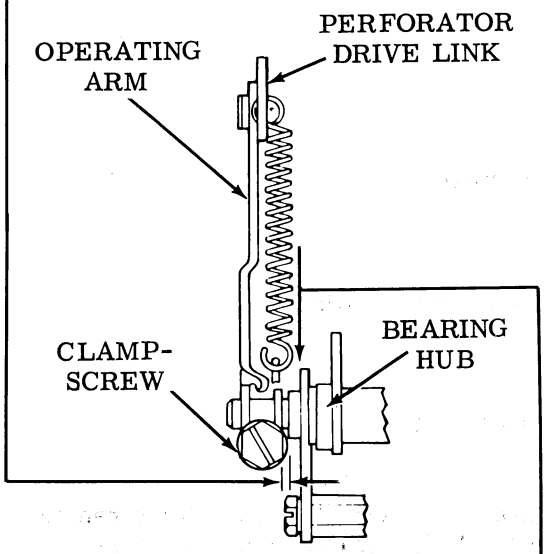
With play taken up to minimize gap

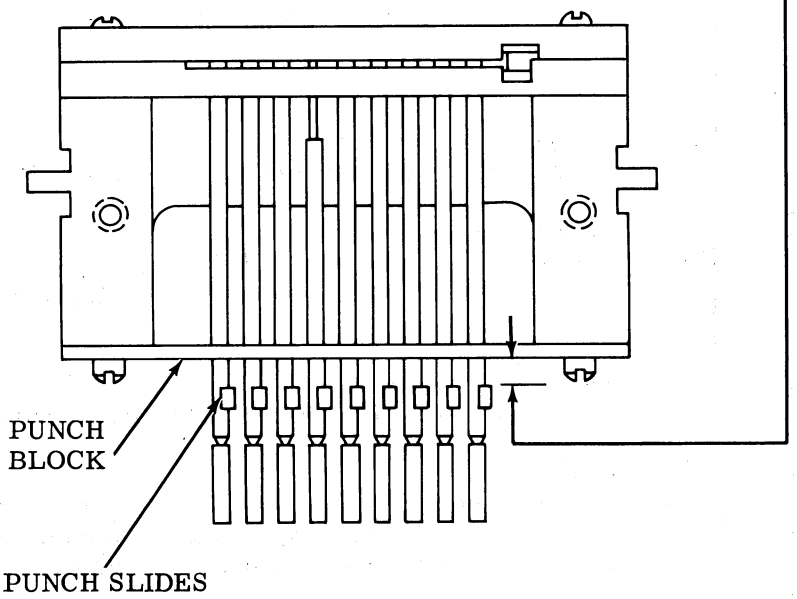
Min 0.002 inch---Max 0.015 inch

between operating arm and bearing hub.

To Adjust

Loosen clampscrew friction tight, position operating arm. Tighten clampscrew. Before tightening downstop mounting nuts, check associated PUNCH SLIDE DOWNSTOP POSITION (2.11) adjustment.





PERFORATOR DRIVE LINK SPRING

To Check

Disengage selector and function clutches and unhook the springs lower loop.

Requirement

Min 3-1/2 oz---Max 8 oz

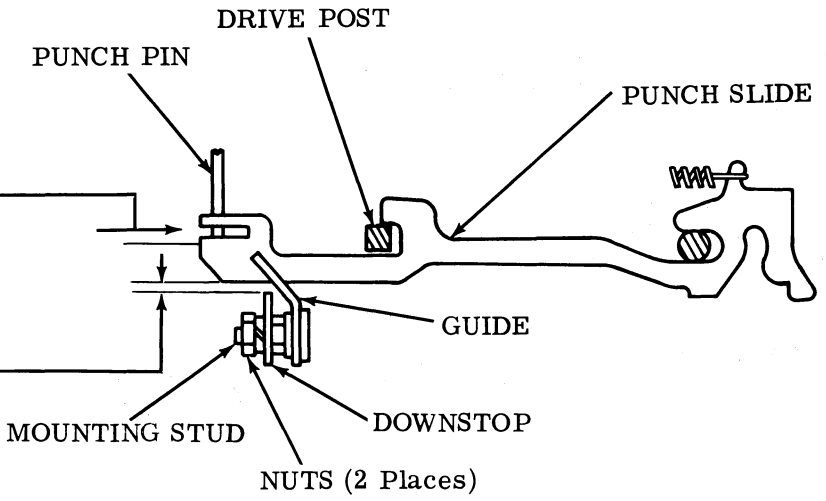
to pull spring to its installed length.

2.11 Punch Mechanism (continued)

PUNCH SLIDE DOWNSTOP POSITION

(1) To Check
Push each punch slide slightly inward (less than 1/16 inch).

Requirement
Slide should return free of binds and should align with its associated punch pin.



(2) To Check
Disengage function clutch. Take-up play to maximize gap.

(1) Requirement
Min some---Max 0.008 inch
between downstop and both the first and the last punch slide.

(2) Requirement
Min some
clearance between downstop and remaining punch slides.

To Adjust
Loosen downstop nuts and mounting studs friction tight. For (1) To Check Requirement; position guide. For (2) To Check (1) Requirement and (2) Requirement; position downstop. Tighten downstop nuts after guide and/or downstop have been repositioned.

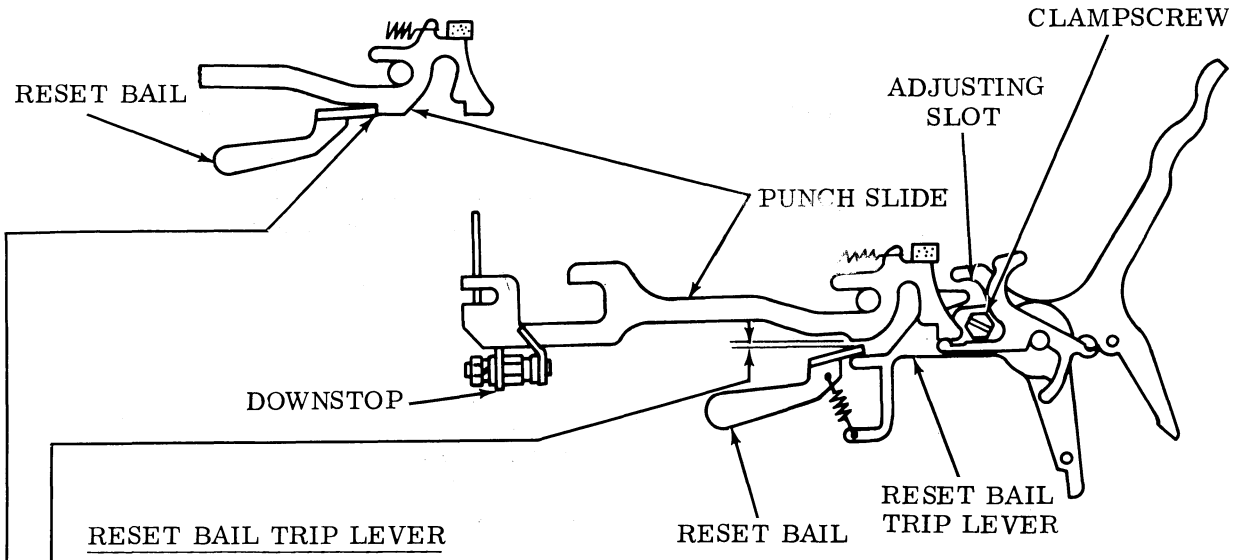
PUNCH SLIDE SPRING

To Check
Disengage selector and function clutches. Place RUBOUT (all code levels marking) code in selector. Trip function clutch and position punch slides in their selected position.

Note: When checking no. 6 and 7 slides, depress no. 6 and 7 bellcranks.

Requirement
Min 2-1/4 oz---Max 3-3/4 oz
to start each punch slide moving.

2.12 Punch Mechanism (continued)



RESET BAIL TRIP LEVER

To Check

Disengage the selector and function clutches and place the DELETE (all code levels marking) code in the selector mechanism. Manually trip the function clutch and rotate the main shaft until the reset bail trip lever (2.07) is positioned against the clutch release lever. Position punch slides against the downstop.

(1) Requirement

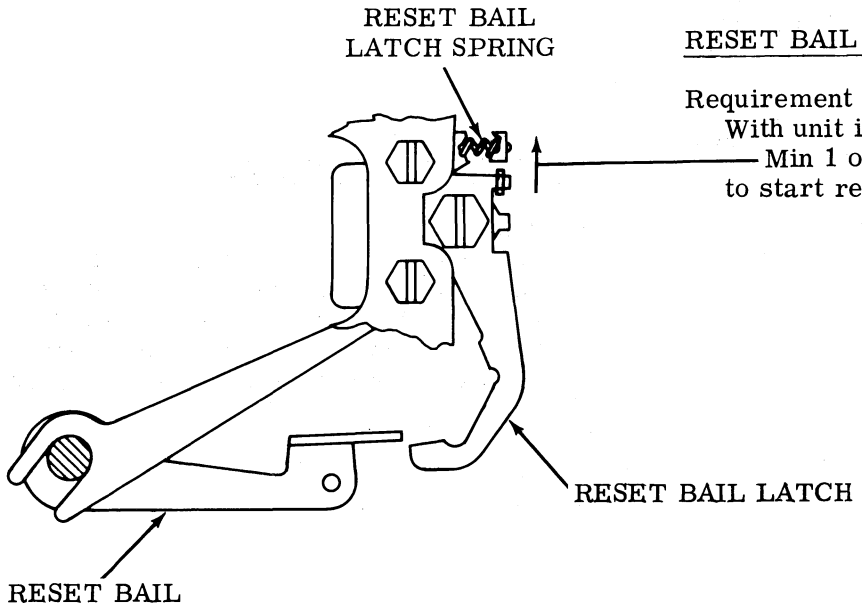
Min 0.008 inch---Max 0.020 inch between punch slides and reset bail.

(2) Requirement

With both selector and function clutches latched, the reset bail should fully engage the punch slide notches.

To Adjust

Loosen clampscrew friction tight. Use adjusting slot to position reset bail trip lever.



RESET BAIL LATCH SPRING

Requirement

With unit in stop condition

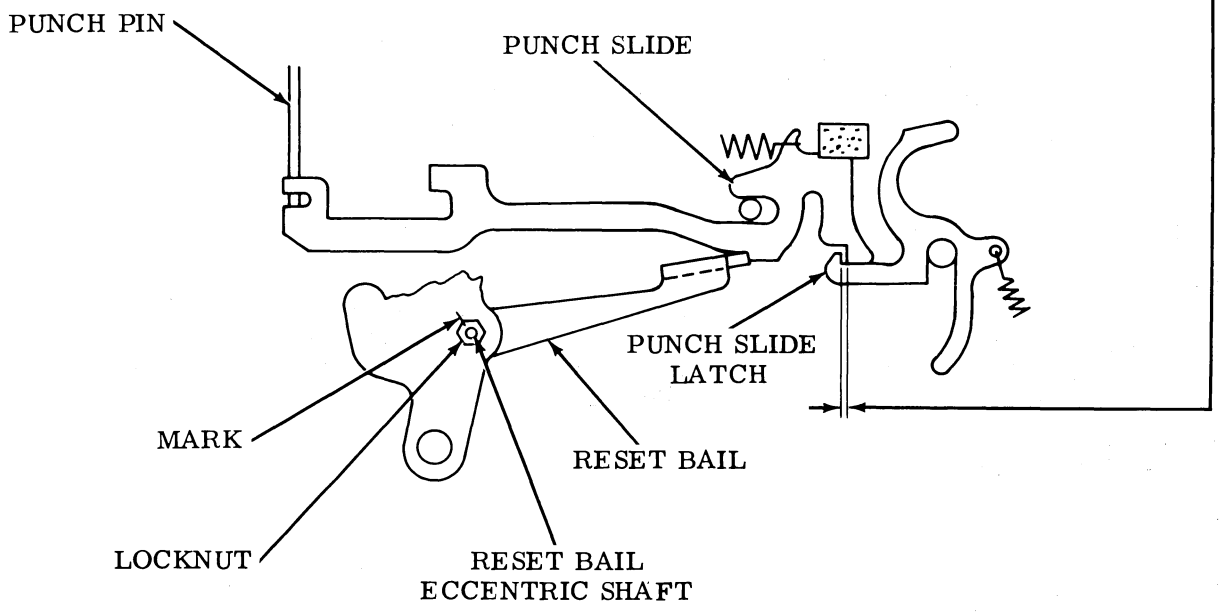
Min 1 oz---Max 3 oz to start reset bail latch moving.

2.13 Punch Mechanism (continued)

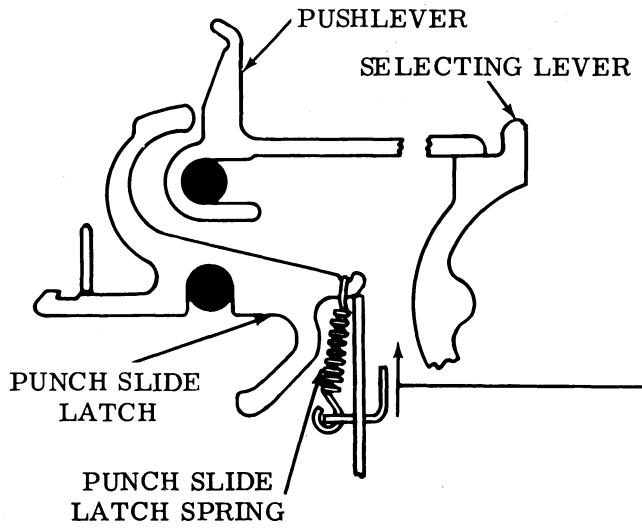
LATCHLEVER CLEARANCE

To Check
Place NULL code (all code levels spacing) in selector and disengage function clutch.

Requirement
Min 0.010 inch---Max 0.020 inch between the punch slide and associated punch slide latch with the least clearance.



To Adjust
Loosen locknut and rotate reset bail eccentric shaft. Keep mark positioned within upper-half segment of eccentric shaft. Tighten locknut.



PUNCH SLIDE LATCH SPRING

To Check
With DELETE (all code levels marking) code in mechanism, rotate main shaft to position rocker bail to its extreme left position. Position pushlevers on upper-step surface of associated selecting levers.

Requirement
Min 1 oz---Max 3 oz to start punch slide latch moving.

2.14 Punch Mechanism (continued)

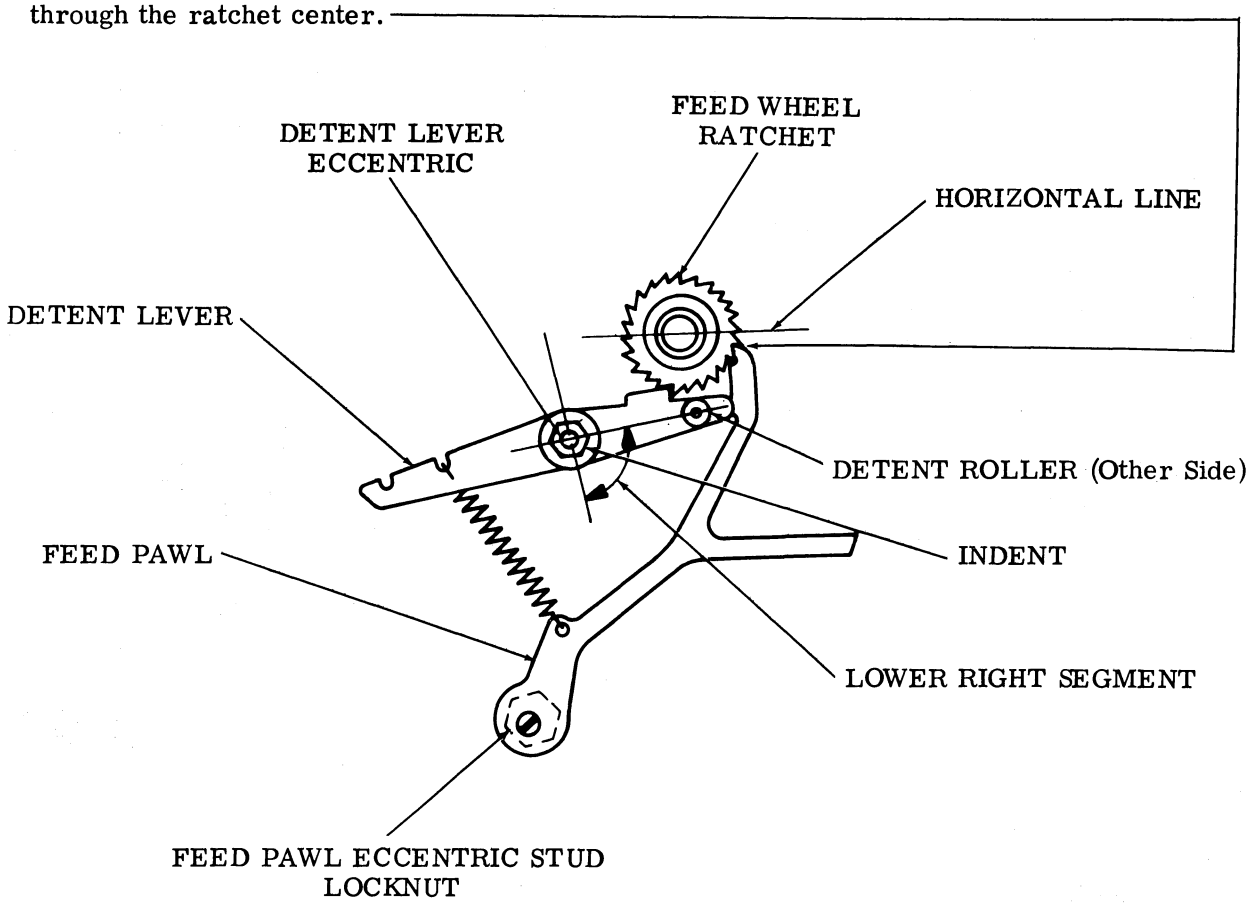
DETENT LEVER AND FEED PAWL

(1) To Check
Disengage function clutch.

Requirement
Detent lever eccentric indent should be positioned within the lower right segment.

(2) To Check
Position feed wheel with its shaft oil hole up. Position detent roller against feed wheel ratchet and high of feed pawl eccentric stud locknut toward the right.

Requirement
Feed pawl should fully engage the first feed wheel ratchet tooth below a horizontal line through the ratchet center.



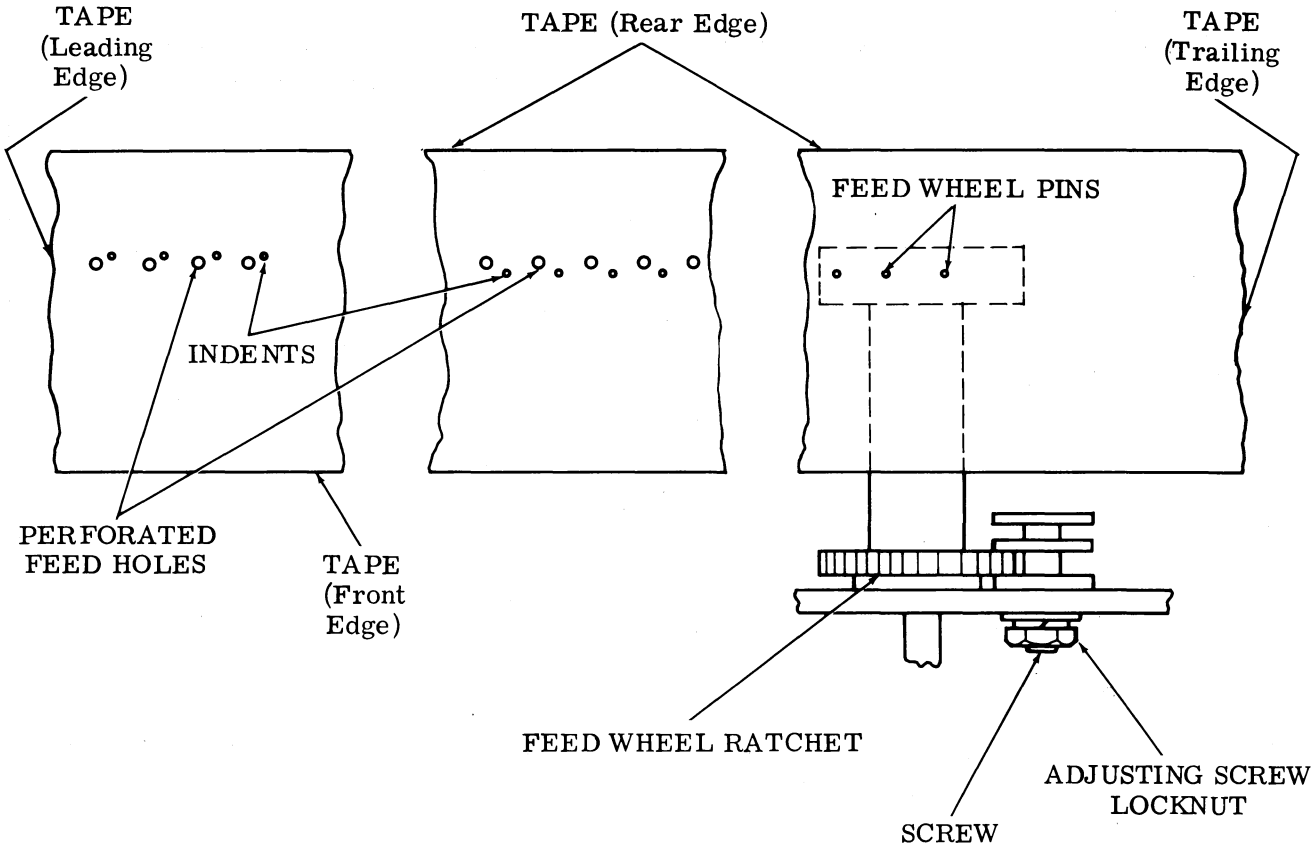
To Adjust
Loosen locknut and position feed pawl eccentric stud locknut. Tighten locknut. Check LATERAL AND FRONT TO REAR FEED WHEEL POSITION DETENT adjustment (2.15).

2.15 Punch Mechanism (continued)

LATERAL AND FRONT TO REAR FEED WHEEL POSITION DETENT

To Check
With the unit operating under power, prepare length of blank (no code perforations) tape.

Requirement
As tape advances through the punch block, indents formed by feed wheel pins should be completely punched out of tape by the feed hole punch pin.



To Adjust
For misaligned indents:
Loosen adjusting screw locknut. To move indent toward tape's rear edge, turn screw clockwise; to move indent toward front edge, turn screw counterclockwise.

For indents between feed holes:
Loosen detent eccentric locknut (2.14). To move indent toward tape's leading edge, rotate eccentric counterclockwise; to move indent toward tape's trailing edge, rotate eccentric clockwise.

Note: Check, and if necessary refine, DETENT LEVER AND FEED PAWL adjustment (2.14).

2.16 Punch Mechanism (continued)

TEN CHARACTERS PER INCH

To Check

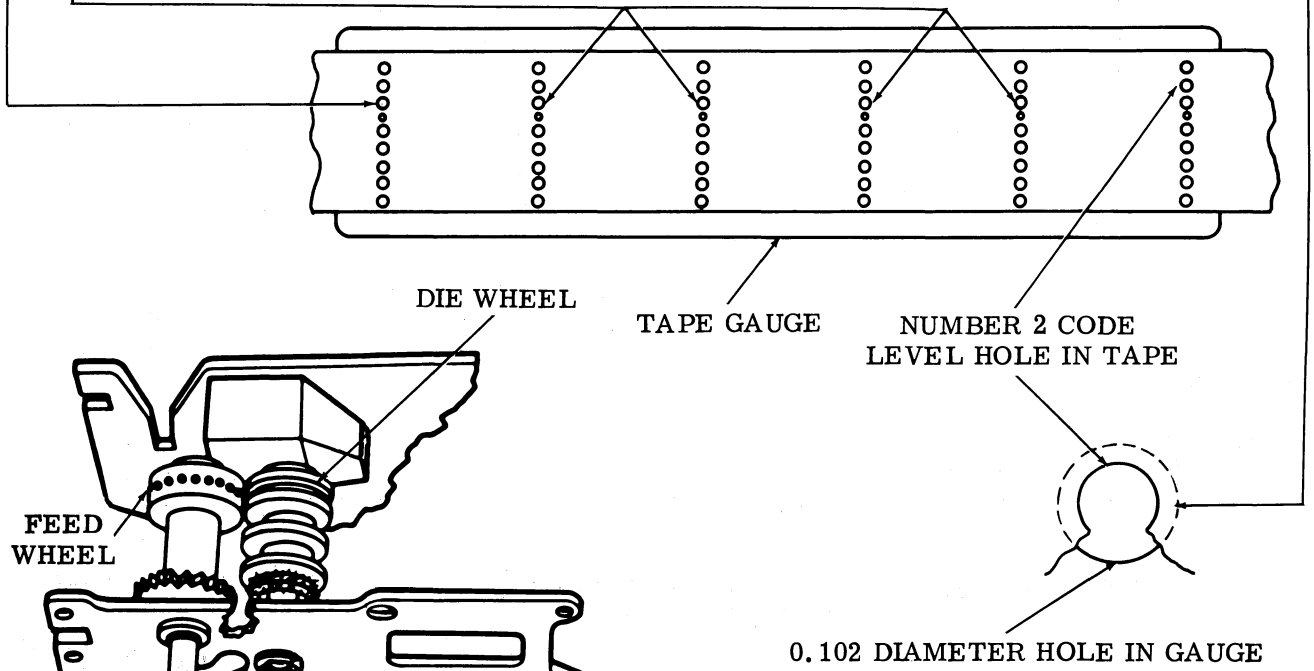
With unit operated under power, prepare a sample tape consisting of six consecutive sets of 9 NULL (no perforations) codes followed by 1 DELETE (all code holes punched) code. Place sample tape on a TP302990 tape gauge with the tape's number 3 code level hole (in first DELETE code) directly over the first 0.072 diameter tape gauge hole.

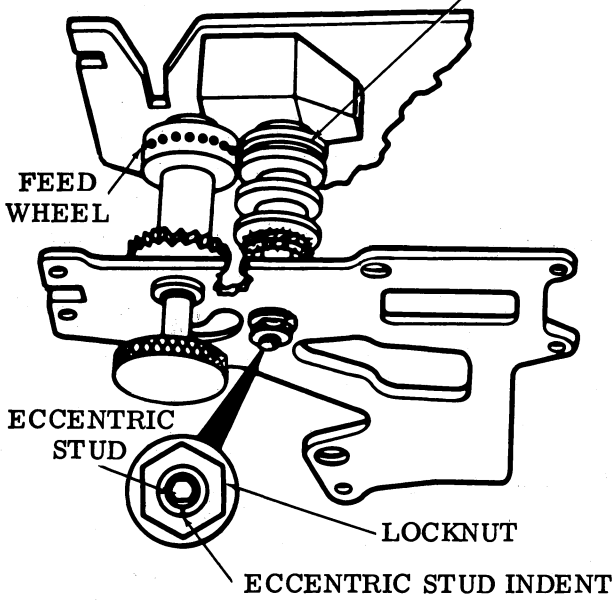
(1) Requirement

The entire number 2 code level hole (in sixth DELETE code) should be directly over the 0.102 diameter gauge hole.

(2) Requirement

Associated tape gauge holes should be visible through the number 3 code level hole of the remaining 4 DELETE codes.





To Adjust

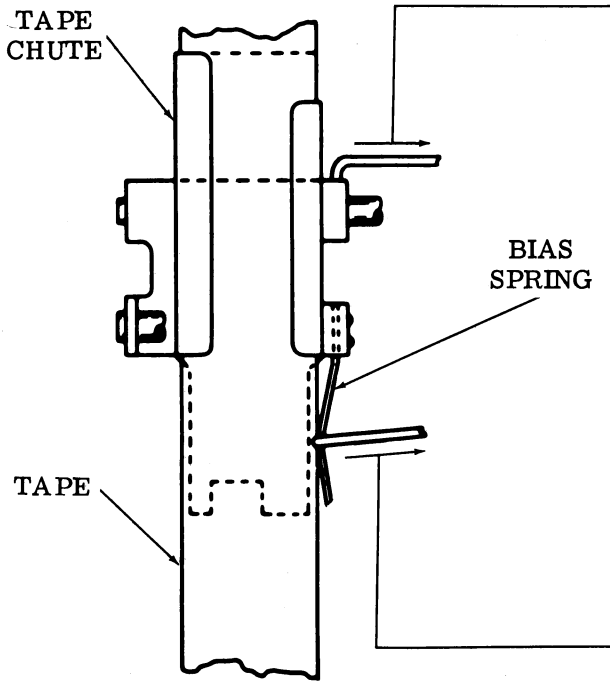
Loosen locknut and position eccentric stud indent downward. Tighten locknut and perform to check again. If requirement is not met, loosen locknut. To shorten DELETE code spacing, turn eccentric stud clockwise. To increase spacing turn eccentric stud counterclockwise. Tighten locknut.

Note 1: Before adjusting, check TAPE GUIDE ASSEMBLY SPRING (2.17), BIAS SPRING (PUNCH BLOCK) (2.17). Recheck requirement.

Note 2: After adjusting remove tape, hold tape shoe (2.18) away from feed wheel and disengage feed pawl from ratchet wheel. Feed wheel should rotate freely — if not, refine above adjustment.

2.17 Punch Mechanism (continued)

TAPE GUIDE ASSEMBLY SPRING



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

(2) Requirement
Tape guide assembly should freely return to contact tape guide block.

To Adjust
Requirement (1): replace spring; requirement (2): reposition tape guide assembly mounting post.

Note: On units with backspace mechanism, check bias spring (tape chute), only if it is suspected out of requirement.

To Check
Disengage selector and function clutches. Place tape in mechanism. Check at point where spring touches tape.

Requirement
Min 1-1/4 oz---Max 2-1/4 oz
to move spring from tape.

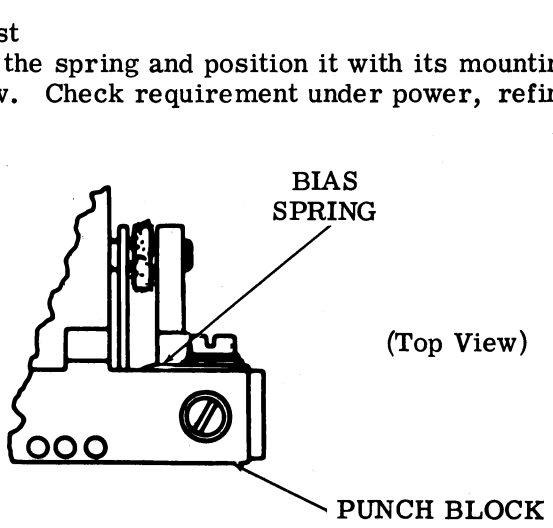
To Adjust
Bend spring.

BIAS SPRING (PUNCH BLOCK)

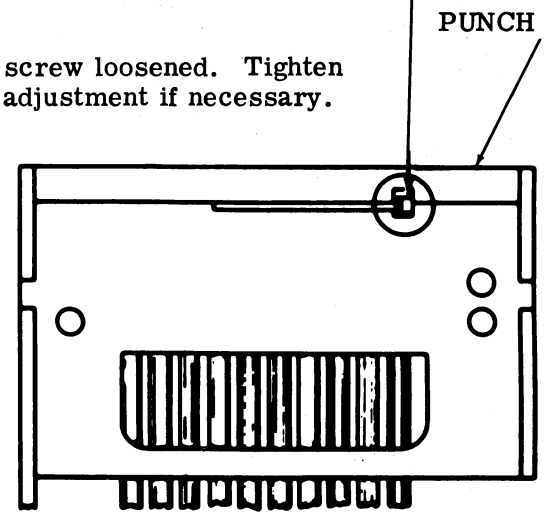
(1) Requirement
With tape removed from the punch block, the tape guide spring should rest against the clearance slot in the block in a symetrical manner.

(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. Check requirement under power, refine adjustment if necessary.



(Top View)



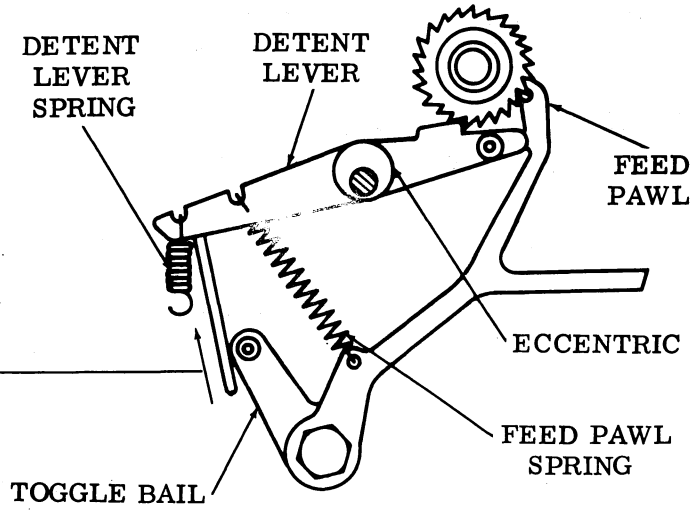
2.18 Punch Mechanism (continued)

Note: Before checking feed pawl and detent spring tensions, check that the detent lever eccentric is located in its lower right segment (2.14).

FEED PAWL SPRING

To Check
Disengage selector and function clutches.
Unhook detent lever spring.

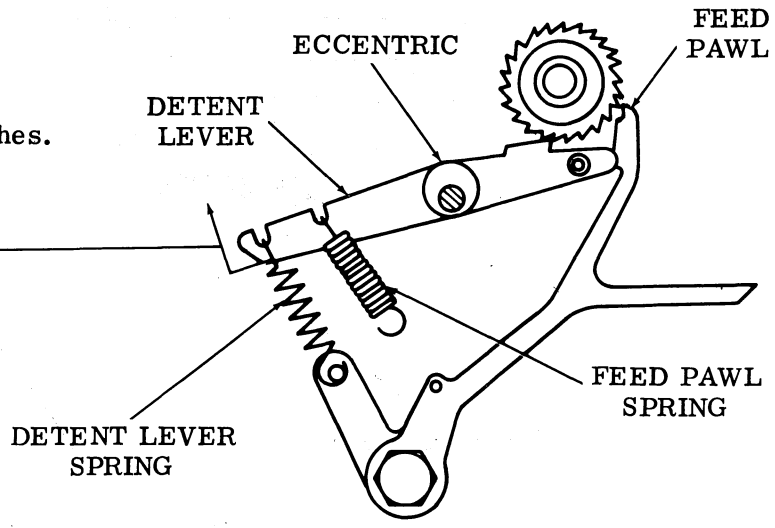
Requirement
Min 3 oz---Max 4-1/2 oz
to start detent lever moving.



DETENT LEVER SPRING

To Check
Disengage selector and function clutches.
Unhook feed pawl spring.

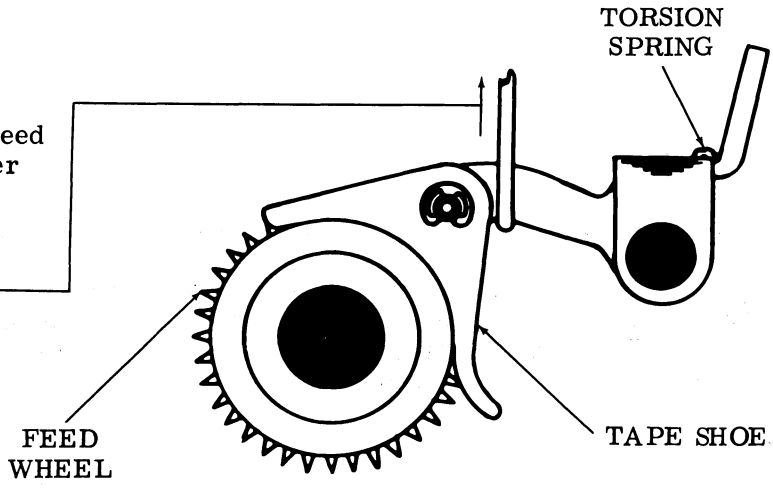
Requirement
Min 7 oz---Max 10 oz
to start detent lever moving.



TAPE SHOE TORSION SPRING

To Check
With unit off and if present, position feed pawl extension out of tape feed disabler lever path.

Requirement
Min 13 oz---Max 18 oz
to start tape shoe moving.

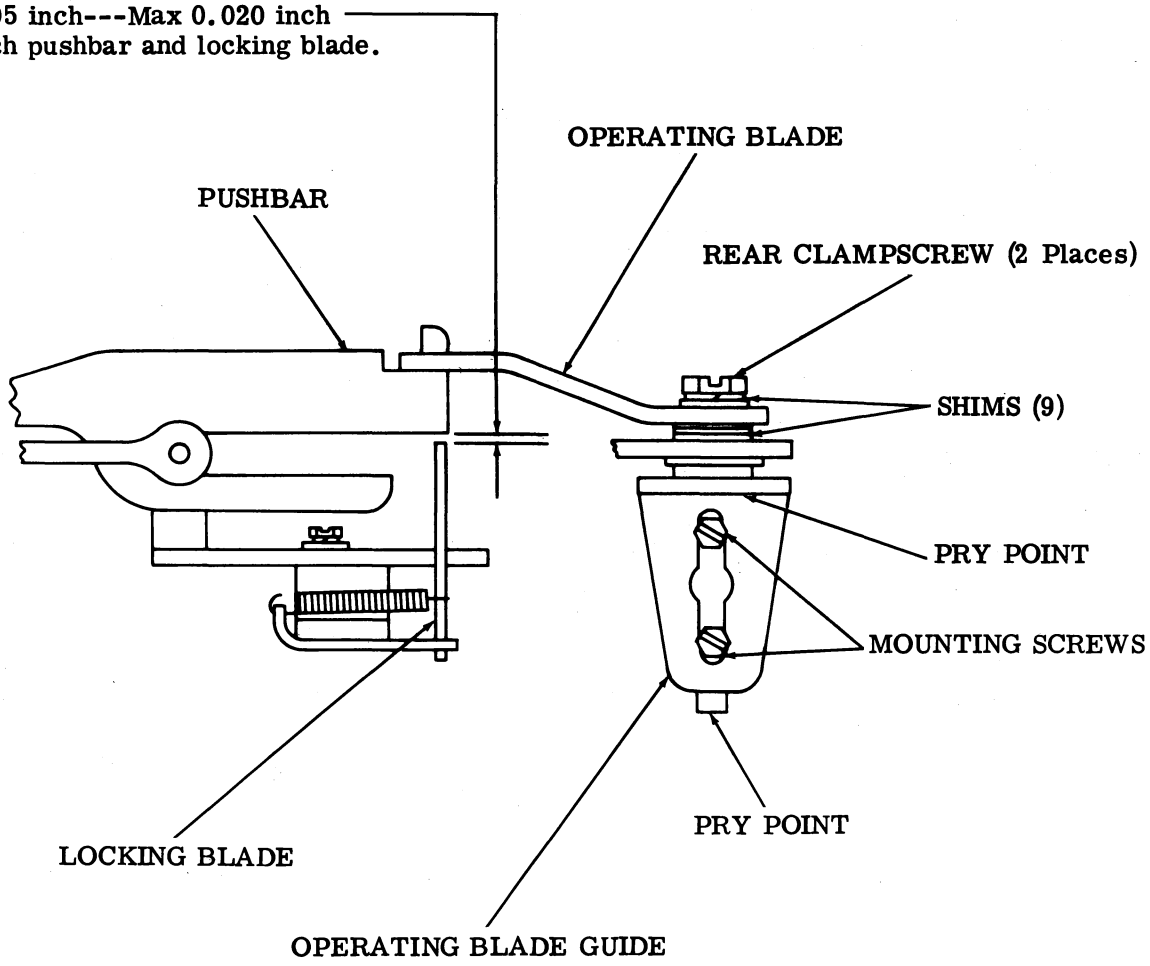


2.19 Typing Mechanism

PUSHBAR LOCKING BLADE

To Check
With DELETE (all code levels marking) code in the selector, trip selector clutch and rotate main shaft until function clutch trips.

Requirement
Min 0.005 inch---Max 0.020 inch between each pushbar and locking blade.



To Adjust
Loosen mounting screws friction tight and position operating blade guide. Tighten screws.

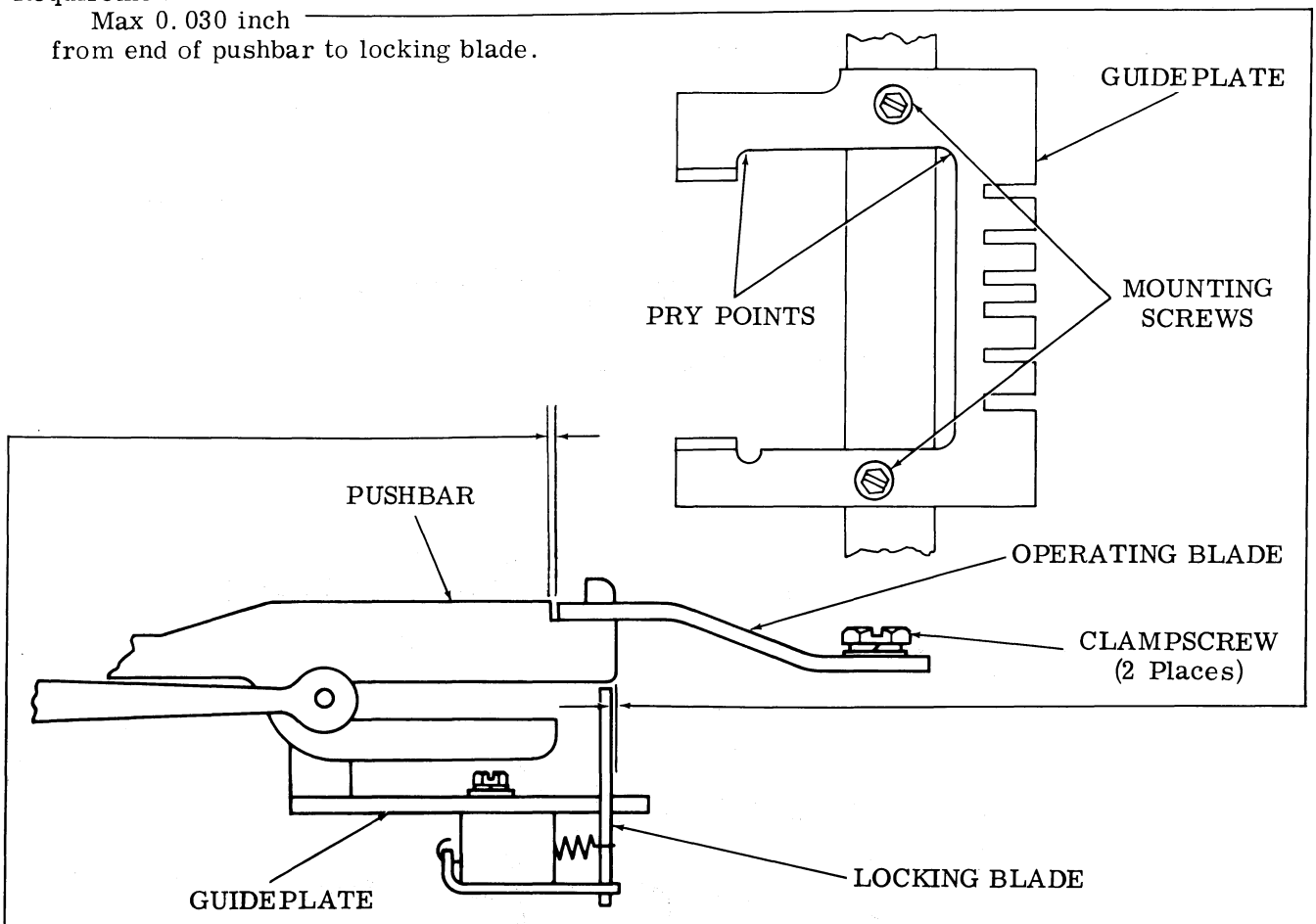
Note: If requirement cannot be met for all pushbars, remove associated rear clampscrew. To decrease required clearance, remove shims from under operating blade and place them on top. To increase clearance, remove shims from above operating blade and place them below. Replace clampscrews.

2.20 Typing Mechanism (continued)

GUIDEPLATE

To Check
With DELETE (all code levels marking) code in the mechanism, rotate main shaft until function clutch trips. Gauge gap by eye.

Requirement
Max 0.030 inch from end of pushbar to locking blade.



To Adjust
Loosen mounting screws friction tight. Use pry points to position guideplate. Tighten screws. Check for binds, readjust if necessary.

PUSHBAR OPERATING BLADE ALIGNMENT

To Check
With DELETE (all code levels marking) code in mechanism, rotate main shaft until function clutch trips.

(1) Requirement
Min 0.018 inch---Max 0.030 inch between operating blade and closest pushbar.

(2) Requirement
The first and last pushbars within 0.010 inch of each other from the operating blade.

To Adjust
Loosen clampscrews (2) and position operating blade. Tighten clampscrews.

2.21 Typing Mechanism (continued)

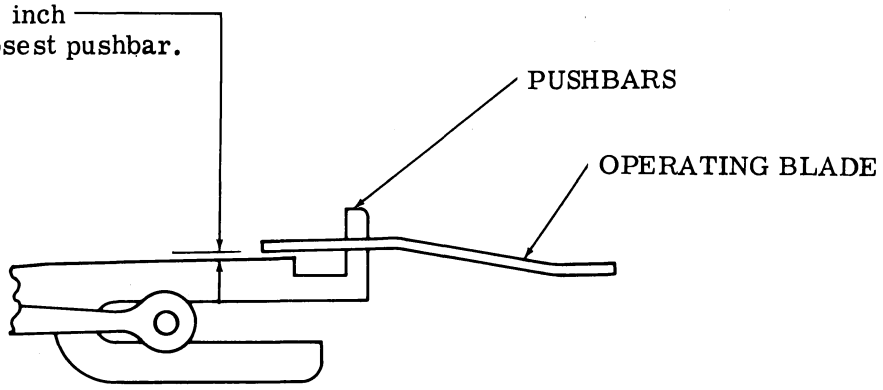
TRANSFER LEVER BRACKET

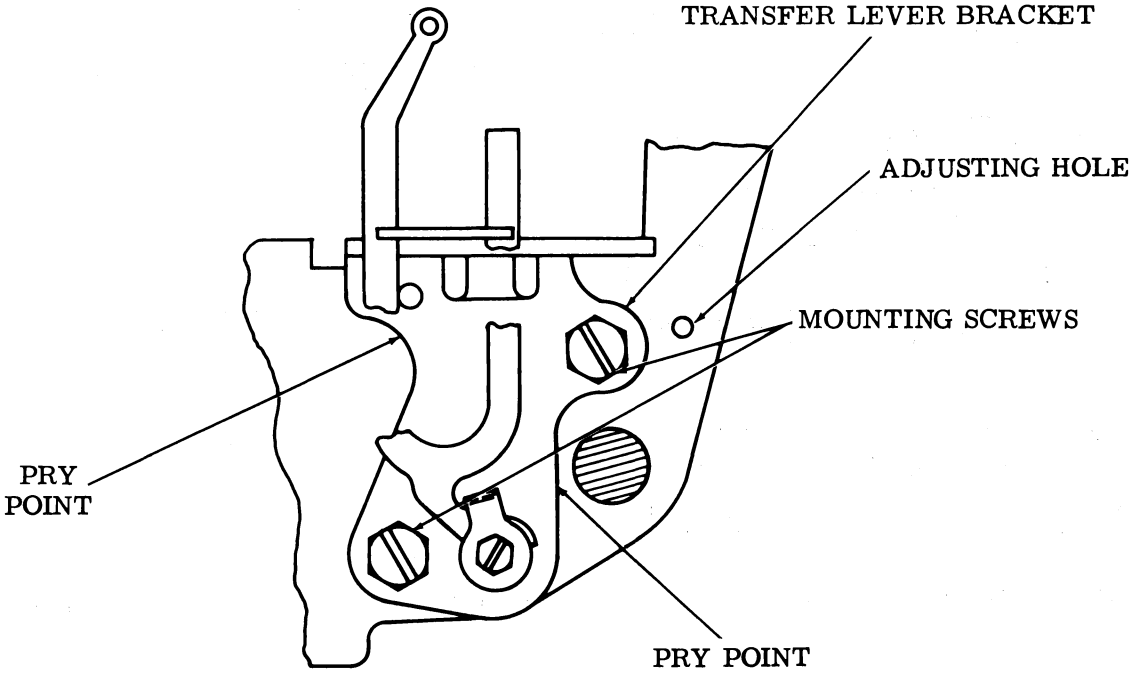
To Check

Trip function clutch and latch all punch slides. Rotate main shaft until right edge of operating blade is approximately even with left edge of pushbar notches.

Requirement

Min 0.020 inch---Max 0.035 inch between operating blade and closest pushbar.





To Adjust

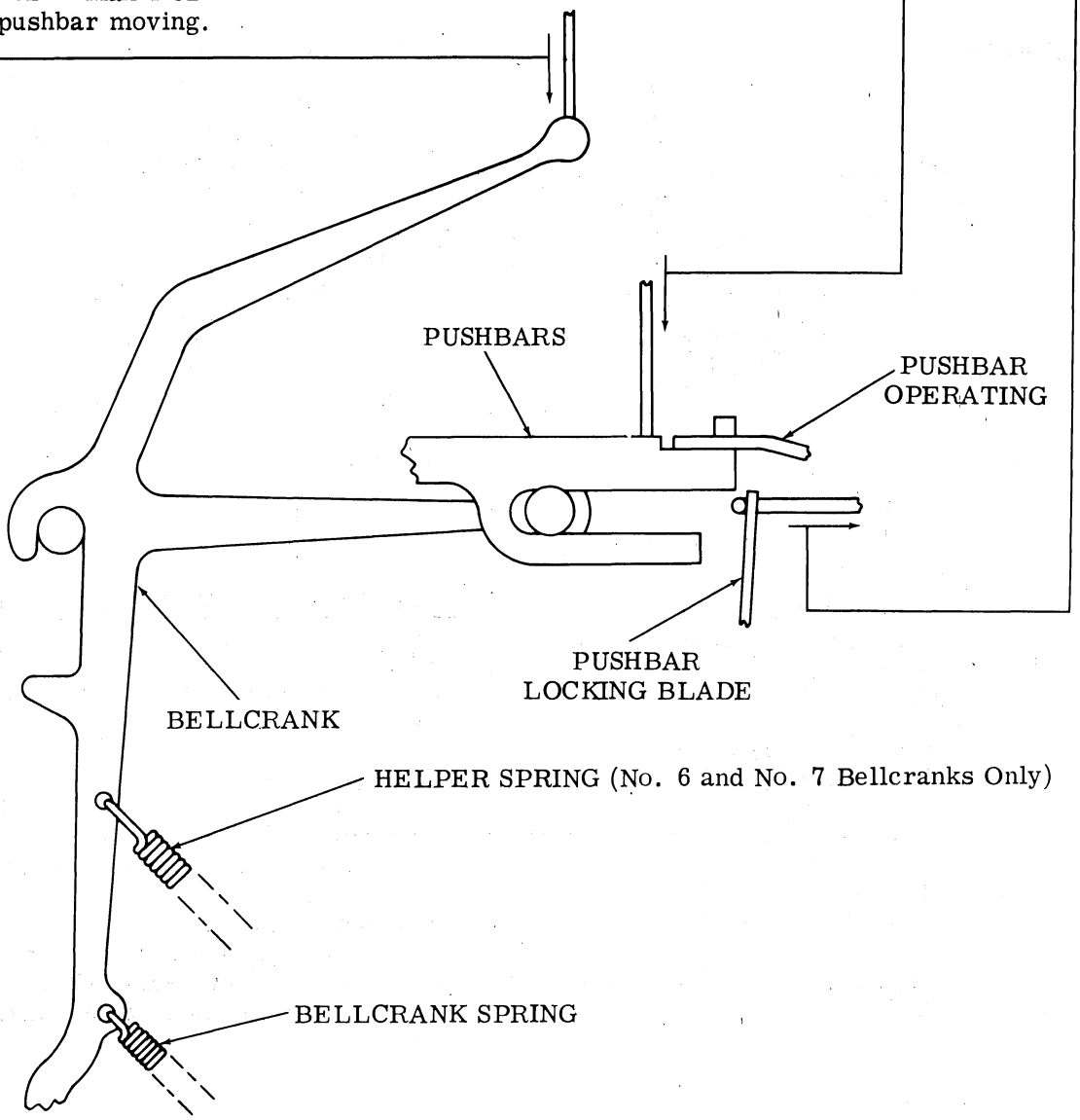
Loosen mounting screws friction tight. To raise pushbars, use pry point to position transfer lever bracket to the right. To lower pushbars, use adjusting hole and TP135680 adjusting tool to position bracket to the left. Tighten screws.

2.22 Typing Mechanism (continued)

BELLCRANK SPRINGS — NO. 1 THROUGH NO. 5

To Check
With DELETE (all code levels marking) code in the mechanism, trip function clutch.
Hold pushbar locking blade away from pushbar.

Requirement
Min 2 oz---Max 4 oz
to start pushbar moving.

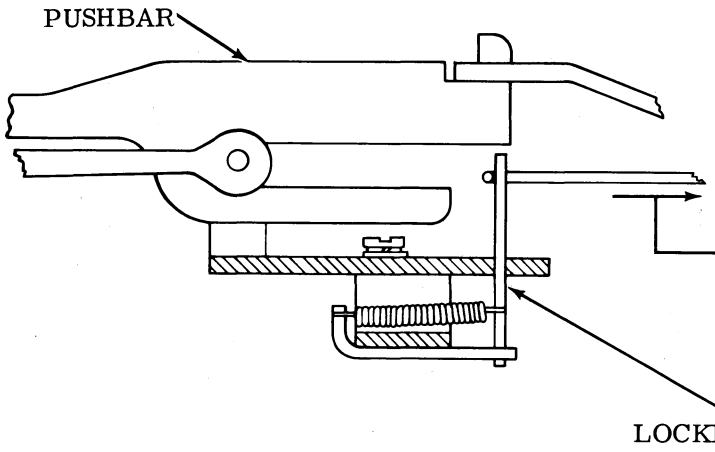


BELLCRANK SPRINGS — NO. 6 AND NO. 7

To Check
With DELETE (all code levels marking) code in the mechanism, trip function clutch.

Requirement
Min 3 oz---Max 6 oz
to start bellcrank moving.

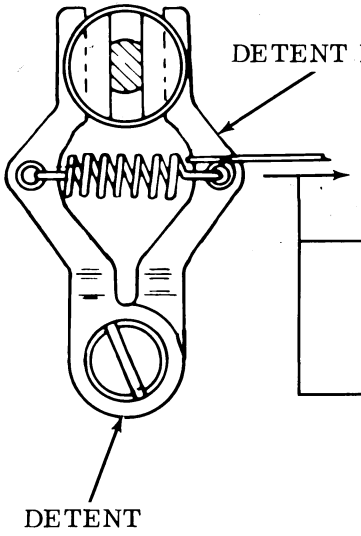
2.23 Typing Mechanism (continued)



LOCKING BLADE SPRING

To Check
With DELETE (all code levels marking) code in the mechanism, trip function clutch.

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



ECCENTRIC SHAFT DETENT LEVER SPRING

To Check
Position detent flat surface in full contact with detent lever.

(1) Requirement
For number 1, 2, 4, and 5 detents
Min 7 oz---Max 10 oz to start detent lever moving.

(2) Requirement
For number 3 and 7 detents
Min 12 oz---Max 15 oz to start detent lever moving.

2.24 Typing Mechanism (continued)

OSCILLATING BAIL PIVOT

To Check

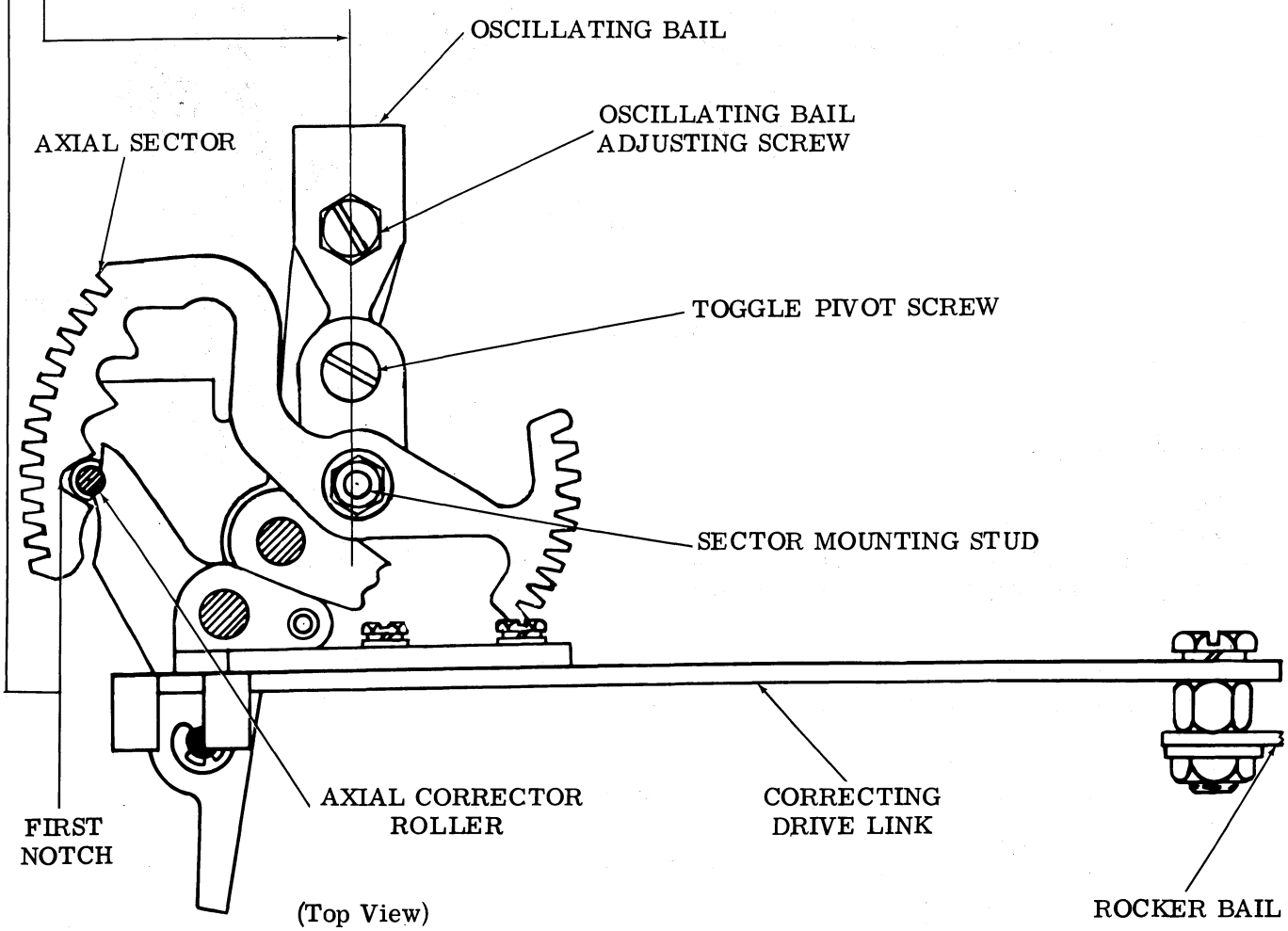
With NULL (all code levels spacing) code in the mechanism, rotate main shaft to take up typewheel shaft axial play toward front of unit.

(1) Requirement

Axial corrector roller should centrally enter first notch of sector.

(2) Requirement

Sector mounting stud, toggle pivot screw, and oscillating bail adjusting screw should be aligned.



(Top View)

To Adjust

Loosen oscillating bail adjusting screw. With NULL code selected, rotate main shaft. 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 toward the rear of the unit. Tighten oscillating bail adjusting screw.

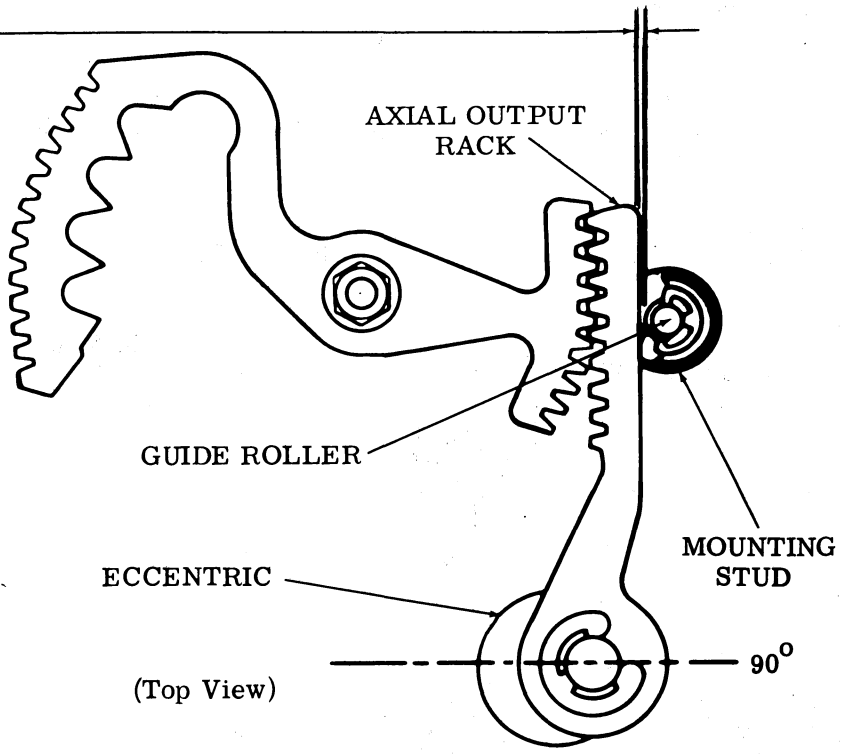
2.25 Typing Mechanism (continued)

AXIAL OUTPUT RACK GUIDE ROLLER

To Check
Select number two pulse marking and rotate main shaft until eccentric is positioned at 90° as shown. Take up play to maximize required clearance.

Requirement
Min some---Max 0.008 inch between guide roller and axial output rack.

To Adjust
Loosen guide roller mounting stud locknut and position mounting stud. Tighten locknut.

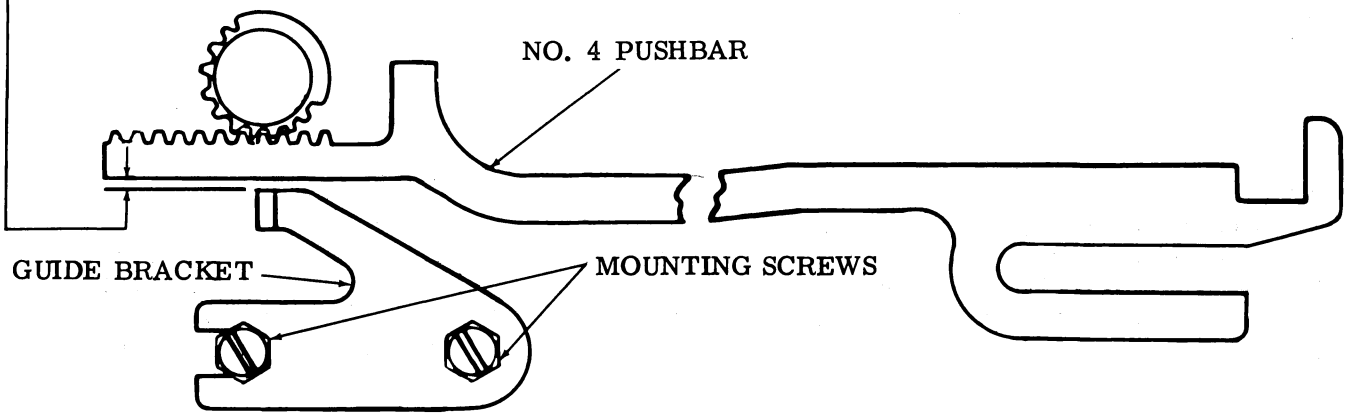


PUSHBAR GUIDE BRACKET

To Check
Select CARRIAGE RETURN code (1, 3, 4, and 8 code levels marking).
Rotate main shaft and check requirement through full travel of number 4 pushbar.
Take up pushbar play to maximize clearance.

Requirement
Min some---Max 0.008 inch between Number 4 pushbar and its guide bracket.

To Adjust
Loosen mounting screws and position guide bracket. Tighten screws.



2.26 Typing Mechanism (continued)

AXIAL CORRECTOR

(1) To Check
With NULL (all code levels spacing) code in the mechanism, trip function clutch and rotate main shaft to position rocker bail in its extreme left position. Check requirement. If necessary, rotate retaining ring to gauge required clearance.

(1) Requirement
Min 0.005 inch---Max 0.025 inch between spring post and drive link extension.

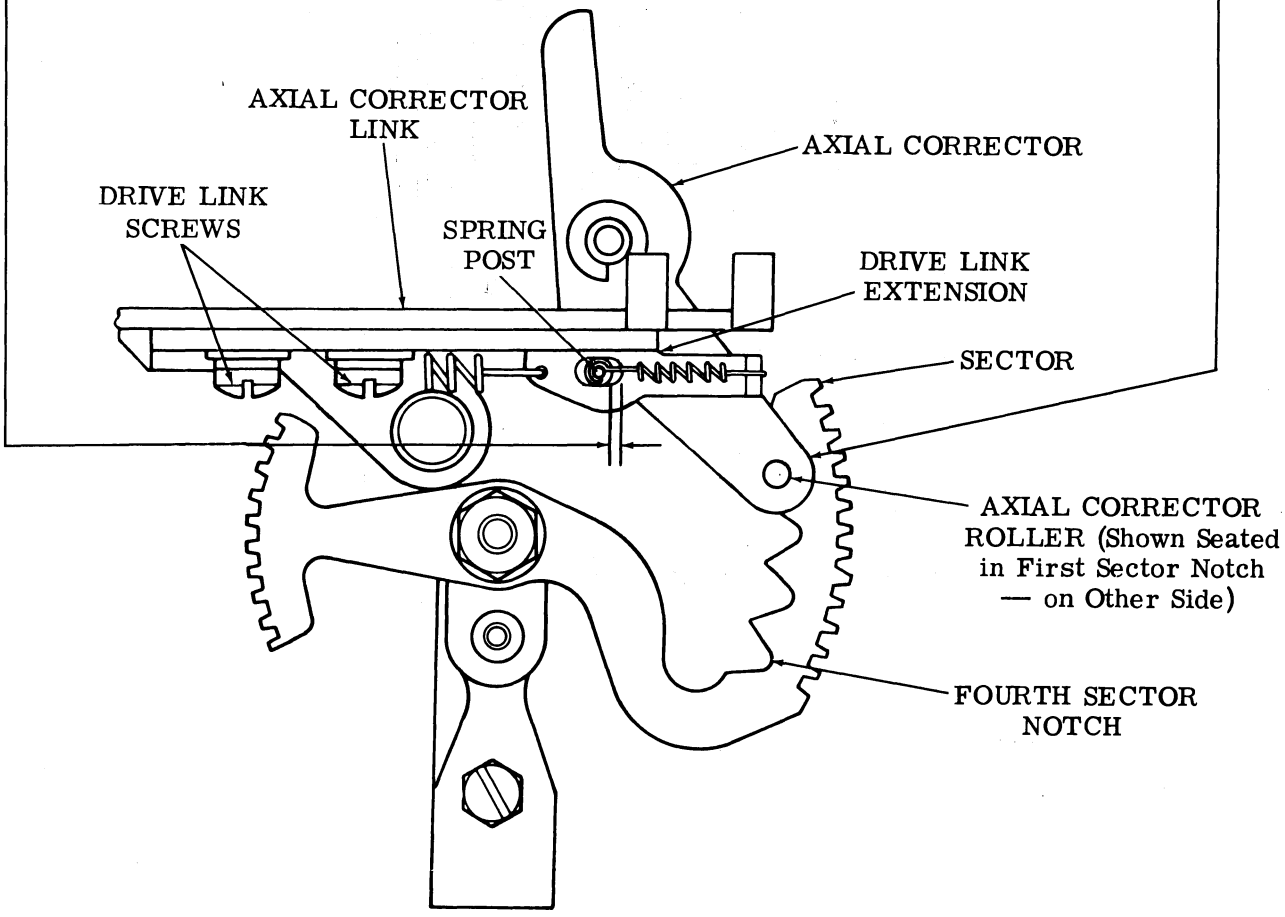
(2) Requirement
Axial corrector roller seated in sectors first notch.

(2) To Check
Repeat (1) To Check procedure except, use DELETE (all code levels marking) code instead of NULL code.

(1) Requirement
Min 0.005 inch between spring post and drive link extension.

(2) Requirement
Axial corrector roller seated in sectors fourth notch.

To Adjust
Loosen drive link screws and position link. Tighten screws.

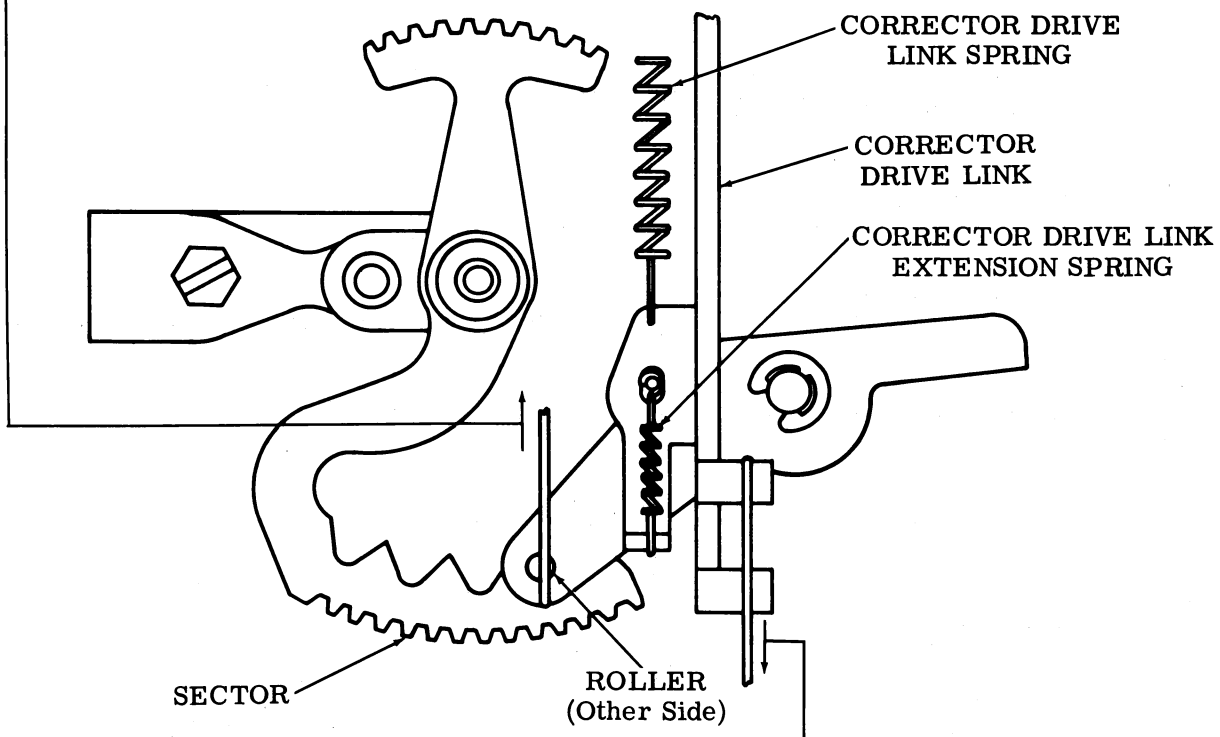


2.27 Typing Mechanism (continued)

CORRECTOR DRIVE LINK EXTENSION SPRING

To Check
With DELETE (all code levels marking) code in the mechanism, trip function clutch and rotate main shaft to position rocker bail in its extreme left position.

Requirement
Min 22 oz---Max 30 oz
to move roller from sector notch.



CORRECTOR LINK SPRING

To Check
Place unit in stop condition.

Requirement
Min 5 oz---Max 9 oz
to start corrector drive link moving.

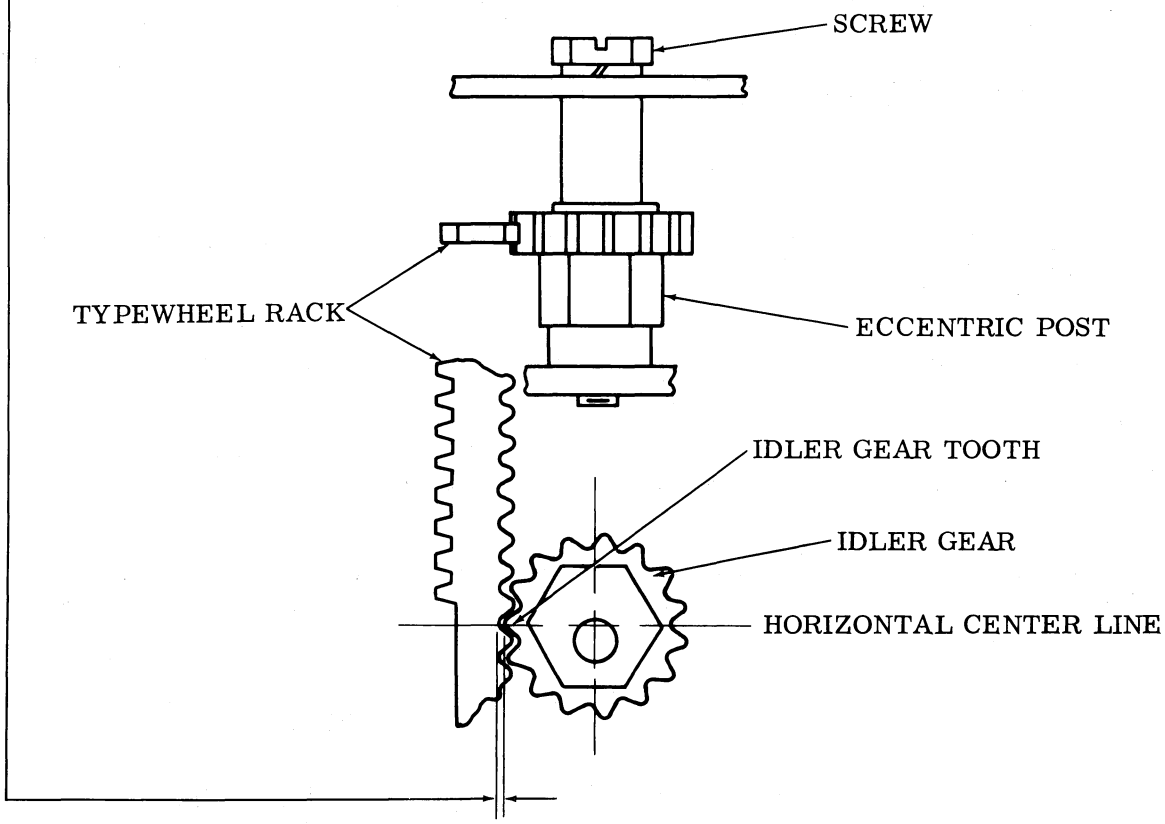
2.28 Typing Mechanism (continued)

TYPEWHEEL RACK CLEARANCE

(1) To Check
With number 7 pushbar selected (7 code level marking), rotate main shaft to place rocker bail at its extreme left position. Check requirement at idler gear tooth which is on the horizontal center line through the idler gear.

(2) To Check
Repeat above procedure except, select the number 3, 4, and 5 pushbars.

Requirement
Min some---Max 0.015 inch
between tip of idler gear tooth and inner surface of typewheel rack.



To Adjust
Loosen screw and position eccentric post. Tighten screw. Check for binds through full travel of typewheel rack. If necessary, refine adjustment.

2.29 Typing Mechanism (continued)

ROTARY CORRECTOR MESH

(1) To Check
Loosen clamp arm screw. With number 3, 4, and 5 pushbars selected (in marking position) rotate main shaft to place rocker bail in its extreme left position. Check that the pushbars are fully detented and rotate rotary connector arm against rotary output rack.

Requirement
Rotary corrector arm should fully engage second tooth of rotary output rack.

To Adjust
With clamp arm screw loose, loosen locknut. Keep rotary corrector arm pivot positioned to right of a center line through the eccentric bushing. Position rotary corrector arm. Tighten locknut only.

(2) To Check
Repeat (1) To Check procedure except, select: (a) number 3 pushbar (arm should fully engage fourth tooth on rack), (b) number 3, 4, 5 and 7 pushbars (arm should fully engage the ninth tooth on rack), (c) number 7 pushbar (arm should fully engage sixteenth tooth on rack). If any of these requirements are not met, refine To Adjust above. Perform the following ROTARY CORRECTOR ARM adjustment.

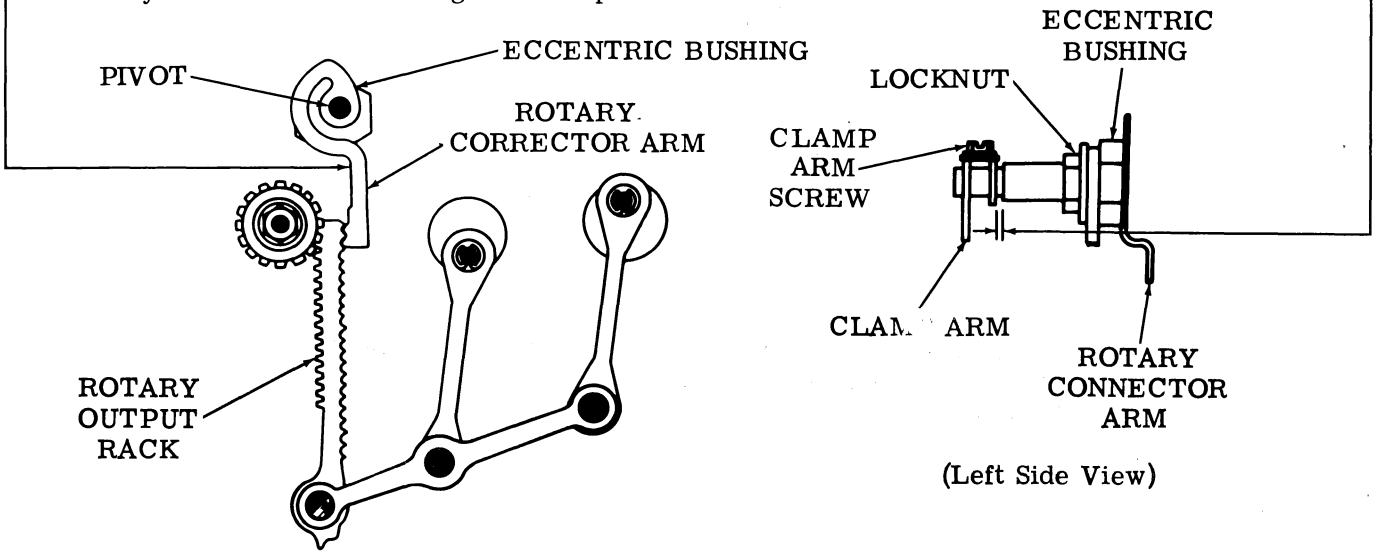
ROTARY CORRECTOR ARM

To Check
With number 3, 4, and 5 pushbars selected, rotate main shaft to place rocker bail in its extreme left position.

(1) Requirement
Rotary corrector arm should be firmly seated against rotary output rack.

(2) Requirement
Min some---Max 0.006 inch endplay between clamp arm screw and eccentric bushing.

To Adjust
Loosen clamp arm screw. Rotate main shaft until axial corrector spring post starts to move from drive link extension (2.26). Take up play in drive link towards main bail. Position rotary corrector arm and tighten clamp arm screw.



2.30 Typing Mechanism (continued)

PRINTING LATCH

(1) To Check
Position rocker bail in its extreme right position and latch function clutch.

Requirement (Preliminary)
Min 0.045 inch---Max 0.060 inch between printing latch and print hammer accelerator.

To Adjust
Loosen nut. Keeping high of trip link eccentric to the left, position eccentric. Tighten nut.

(2) To Check
Position rocker bail in its extreme left position. Manually raise print hammer accelerator and gauge gap at point of least clearance.

Requirement (Preliminary)
Some clearance between printing latch and print hammer accelerator.

To Adjust
Loosen mounting screws friction tight. Position printing latch mounting bracket in its extreme rear position. With rocker bail in its extreme left position, reposition bracket forward until print hammer accelerator just trips. Tighten screws.

(3) To Check
Repeat (2) To Check.

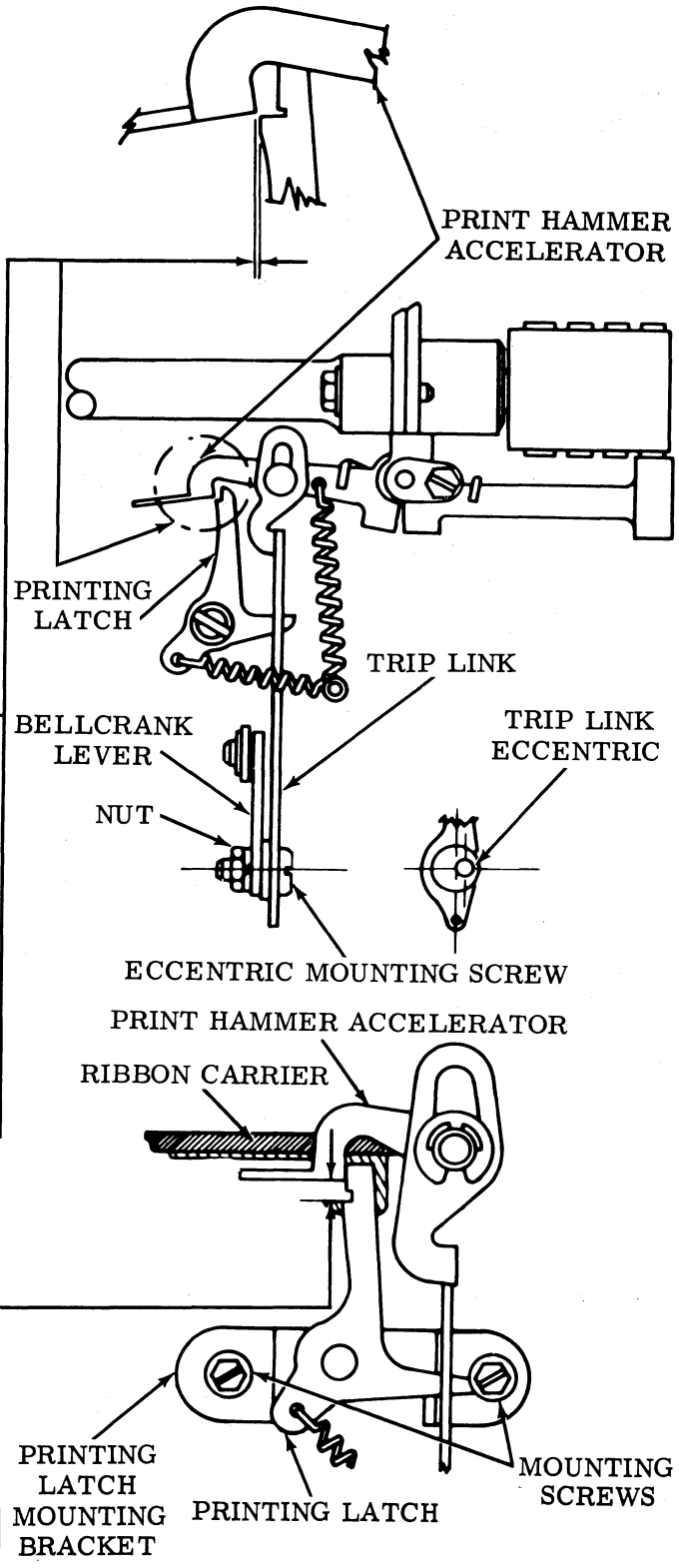
Requirement (Final)
Min 0.002 inch---Max 0.015 inch between printing latch and print hammer accelerator.

(4) To Check
Repeat (1) To Check.

(1) Requirement (Final)
Some clearance between ribbon carrier and print hammer accelerator.

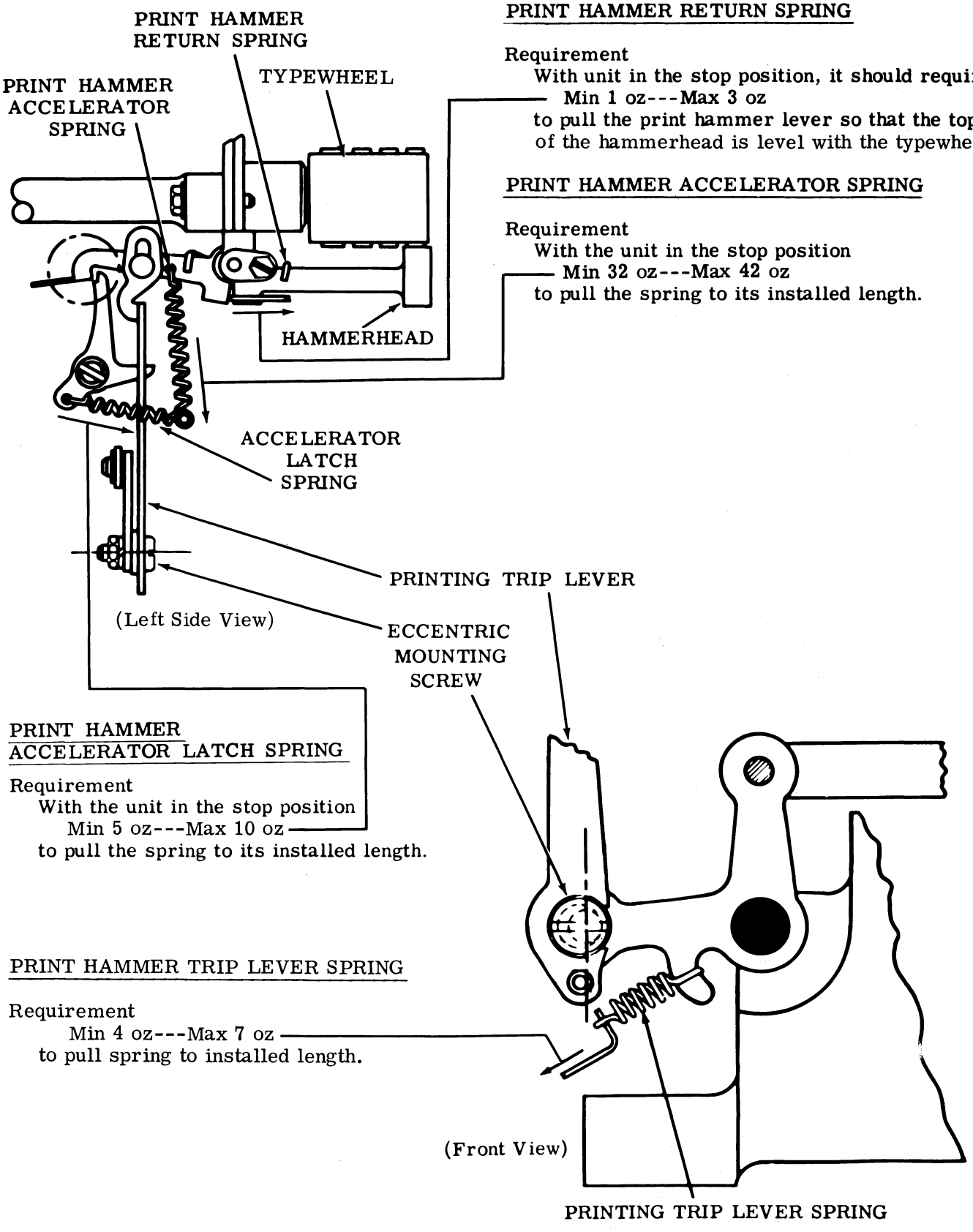
(2) Requirement
Some clearance between printing latch and print hammer accelerator.

To Adjust
Loosen nut. Keeping high of trip link eccentric to the left, position eccentric. Tighten nut.



(Left Side Views)

2.31 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 typewheel.

PRINT HAMMER ACCELERATOR SPRING

Requirement
With the unit in the stop position
Min 32 oz---Max 42 oz
to pull the spring to its installed length.

PRINT HAMMER ACCELERATOR LATCH SPRING

Requirement
With the unit in the stop position
Min 5 oz---Max 10 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.

2.32 Typing Mechanism (continued)

TYPEWHEEL POSITIONING

To Check

Preliminary:

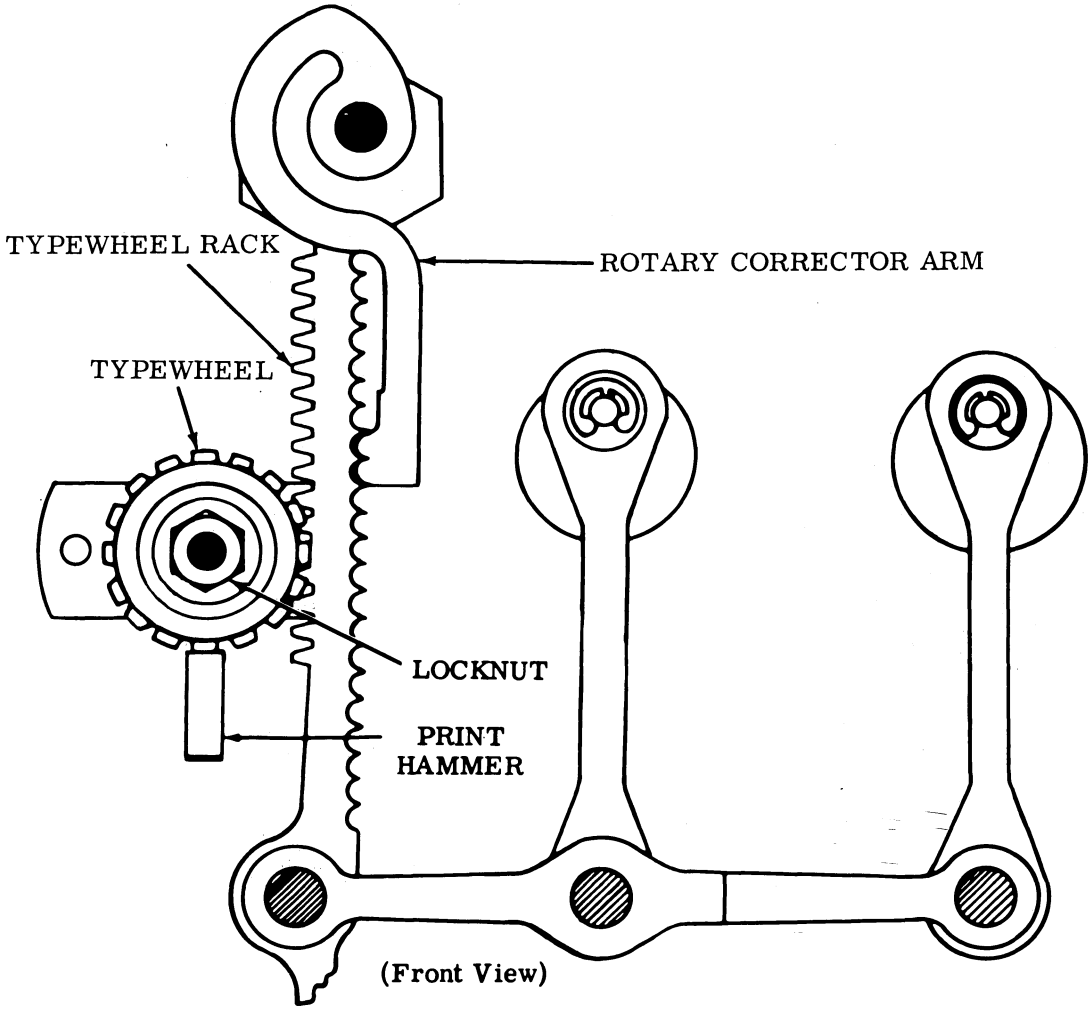
Select H code (4 and 7 code levels selected). Position rocker bail in extreme left position and rotary correction arm firmly against typewheel rack. Manually latch and then release print hammer accelerator. Check requirement, adjust if necessary.

Final:

With unit operating under power, print a series of characters. Check requirement and if necessary, refine to adjust.

Requirement

Character uniformly printed on paper tape, 6-1/2 code hole spaces behind its perforated code hole.



To Adjust

Loosen locknut and position typewheel. If necessary, refine with PRINT HAMMER adjustment (2.33). Tighten locknut.

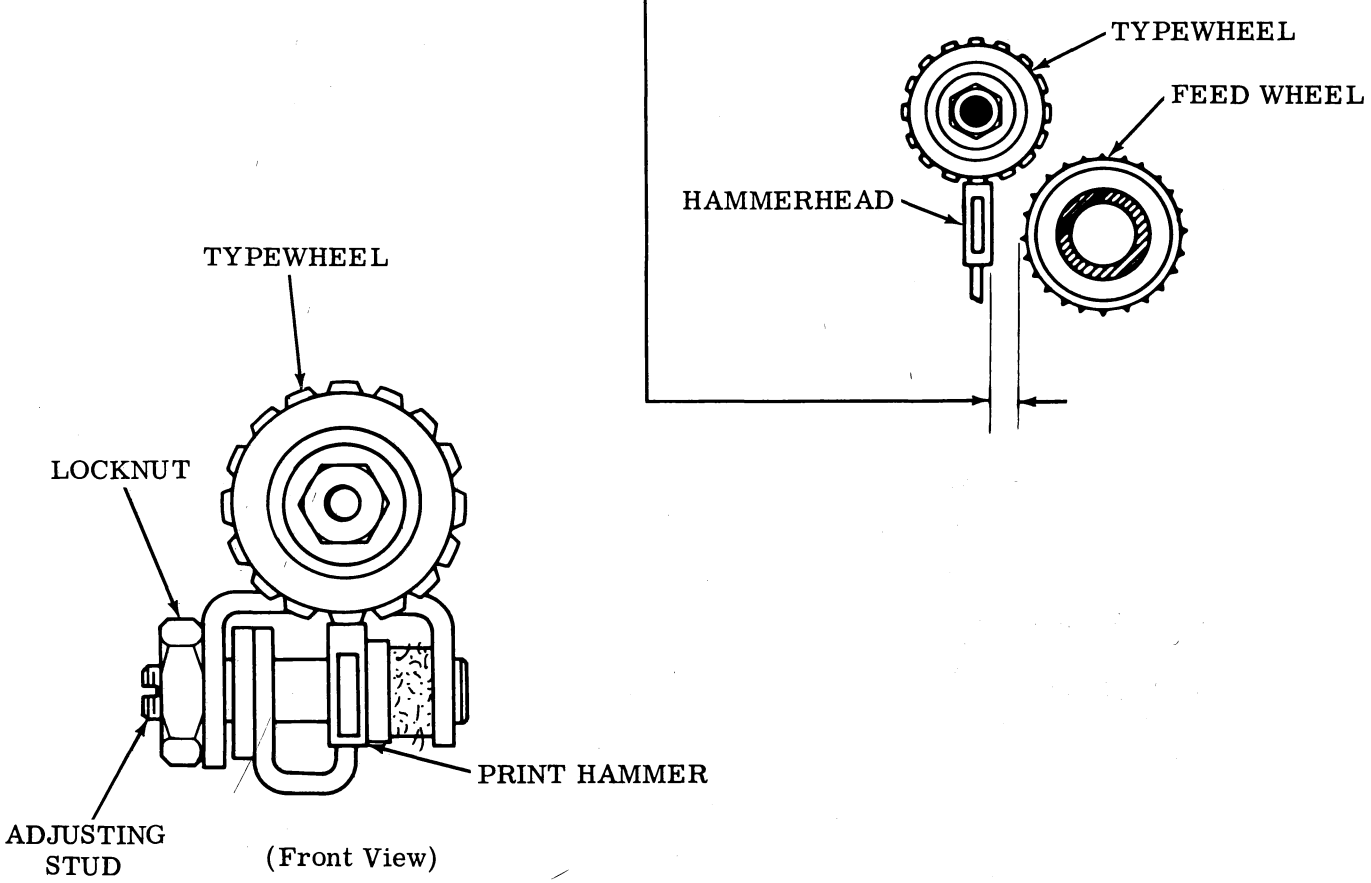
2.33 Typing Mechanism (continued)

PRINT HAMMER

To Check
With unit operating under power, print a series of characters.

(1) Requirement
Print hammer aligned with typewheel to produce quality printing.

(2) Requirement
Some clearance between hammerhead and feed wheel.



(Front View)

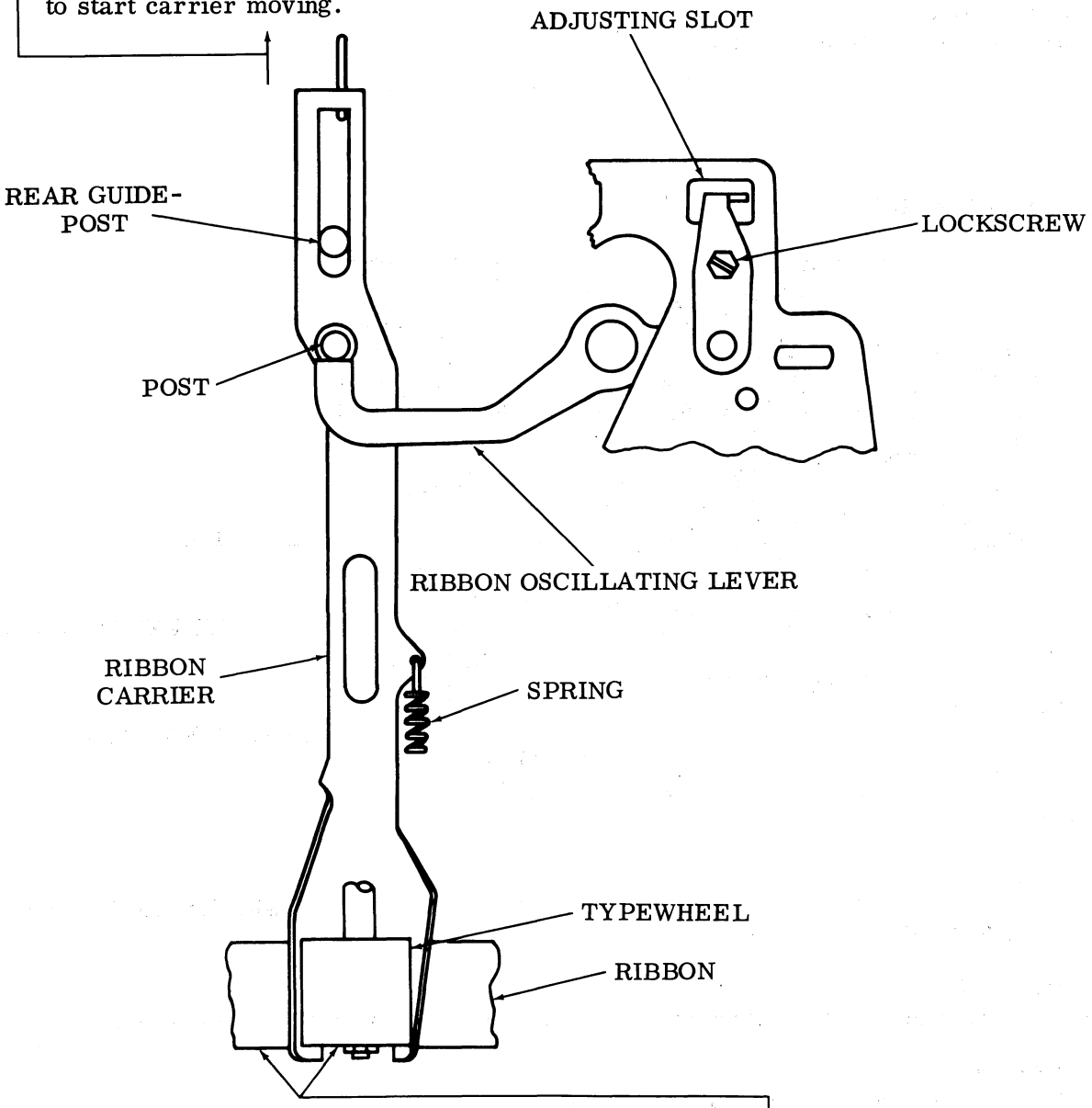
To Adjust
Loosen locknut and rotate adjusting stud. Tighten locknut. If necessary, refine with TYPEWHEEL POSITIONING adjustment (2.32).

2.34 Typing Mechanism

RIBBON CARRIER SPRING

(1) To Check
Place unit in stop position.

Requirement
Min 3-1/2 oz---Max 5 oz to start carrier moving.



(2) To Check
Place unit in stop condition. Gauge by eye.

Requirement
Front edge of typewheel even with front edge of ribbon.

To Adjust
Loosen lockscrew. Use adjusting slot to position ribbon carrier.
Tighten lockscrew.

2.35 Typing Mechanism (continued)

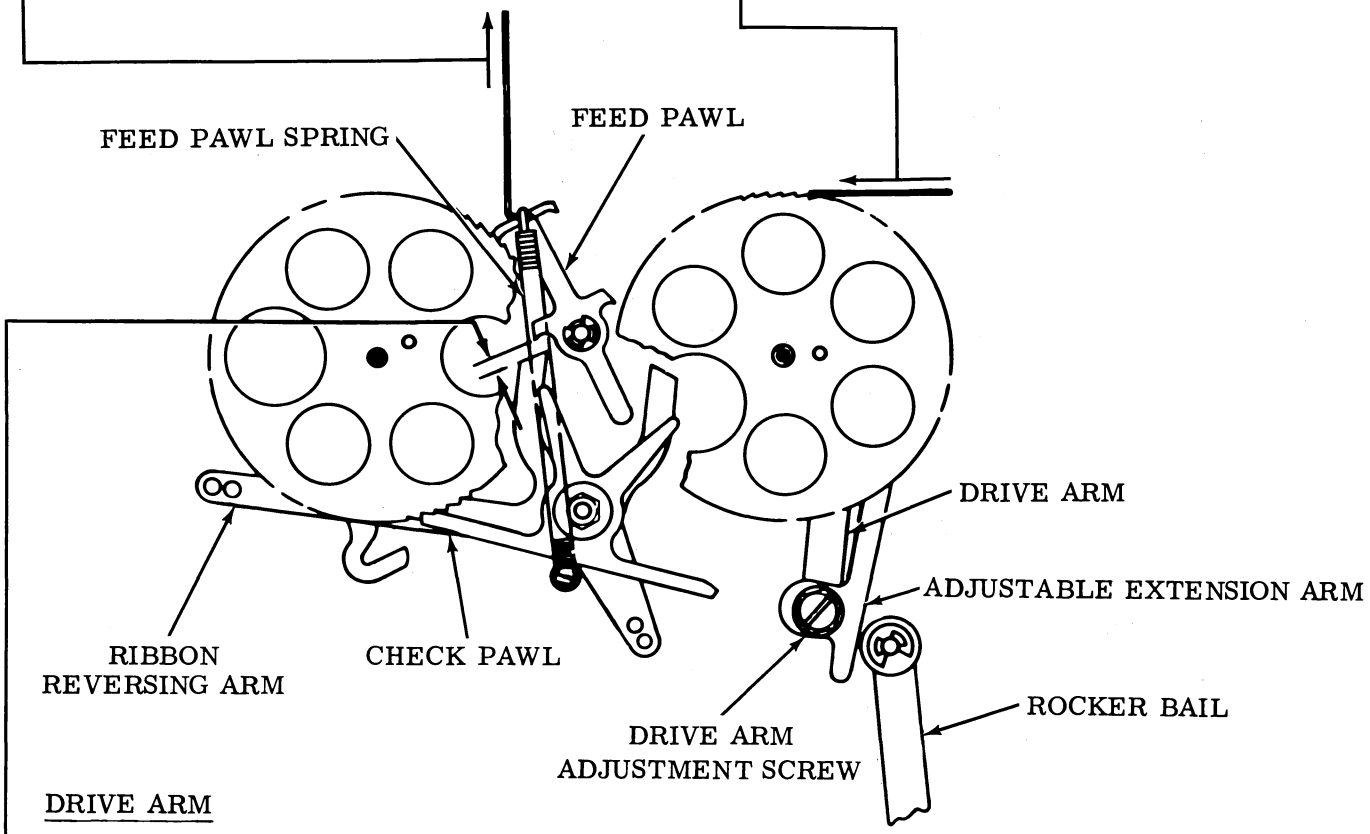
FEED PAWL SPRING

To Check
Place rocker bail in its extreme right position.

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

RATCHET WHEEL TORQUE SPRING

Requirement
Min 1 oz---Max 3 oz
applied tangent to ratchet wheel to start wheel moving.



DRIVE ARM

To Check
Place rocker bail in its extreme right position. Check requirement with feed pawl detent in both the left and the right positions.

(1) Requirement
Some clearance between blocking edge of ribbon reversing arm and feed pawl.

(2) Requirement
Feed pawl should feed one tooth at a time.

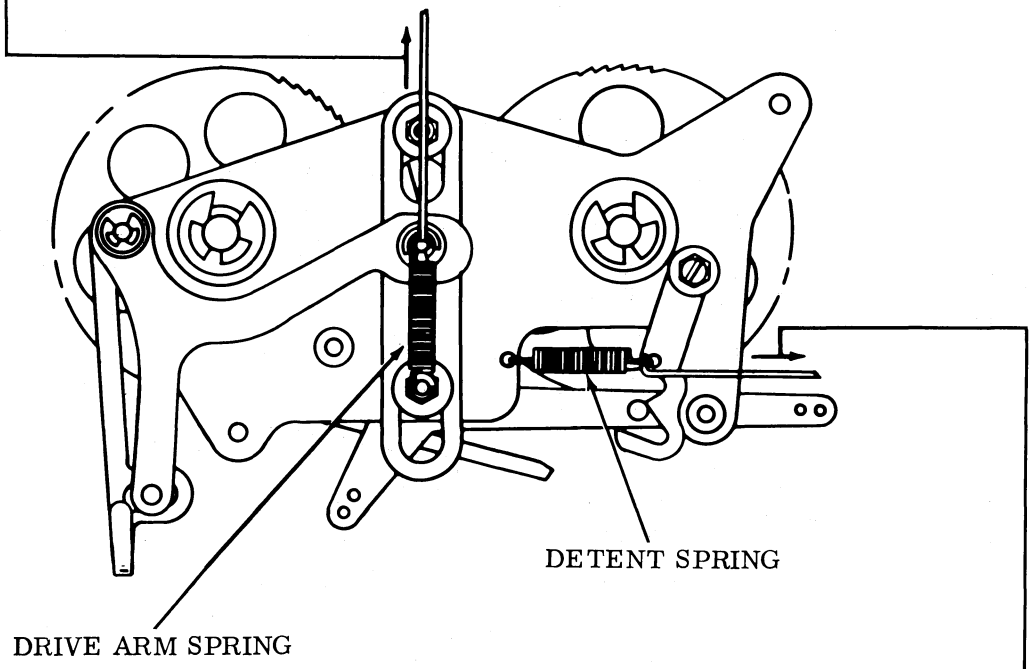
To Adjust
Loosen drive arm adjusting screw and position adjustable extension arm. Tighten screw.

2.36 Typing Mechanism (continued)

DRIVE ARM SPRING

To Check
Place rocker bail in its extreme right position.

Requirement
Min 9 oz---Max 14 oz
to pull drive arm spring to its installed length.



DETENT SPRING

To Check
Place ribbon reversing arm in its extreme left or right position.

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

2.37 Selector Mechanism

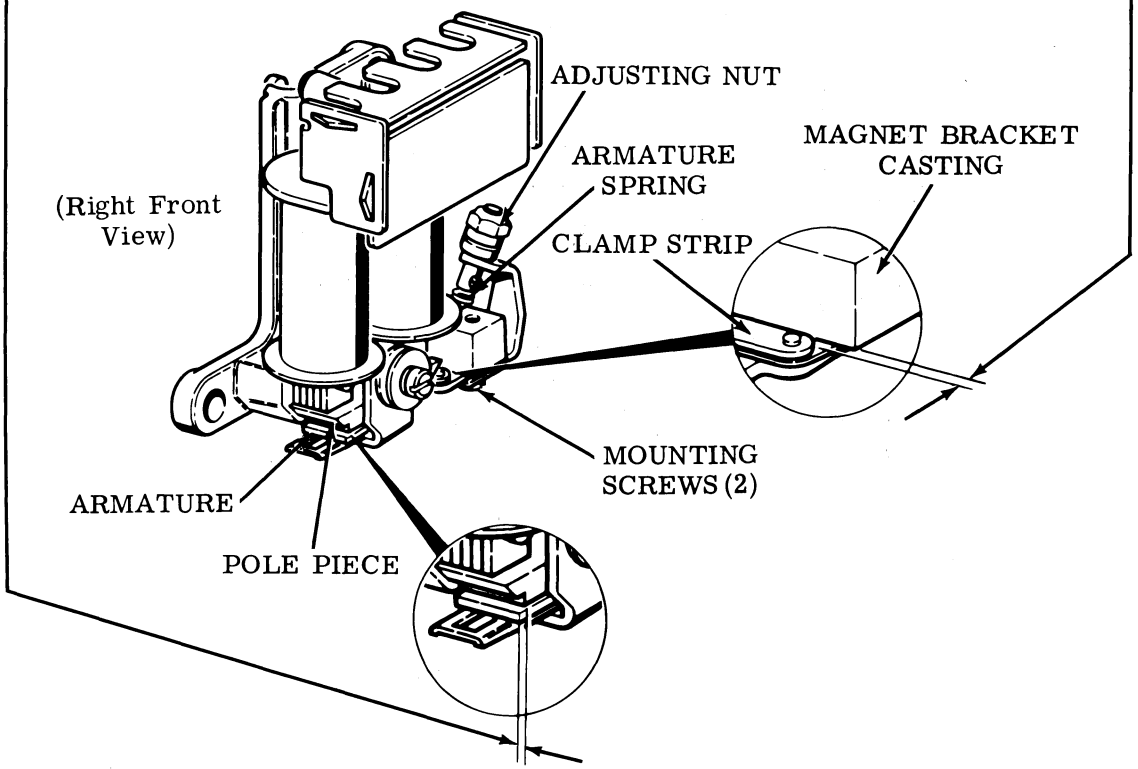
SELECTOR ARMATURE

Note 1: Do not make this adjustment if SELECTOR MAGNET BRACKET (2.42) and SELECTOR RECEIVING MARGIN (2.46) adjustments are within requirement.

Note 2: To facilitate adjustment, remove range finder assembly and selector magnet assembly.

(1) Requirement
Min 0.025 inch---Max 0.045 inch between clamp strip and magnet bracket casting.

(2) Requirement
Min flush---Max 0.015 inch alignment of outer edge of armature with outer edge of pole pieces.



To Adjust
Position adjusting nut — take extreme care not to over tighten and damage armature spring — to hold armature firmly against casting pivot edge. Loosen mounting screws (2) and position armature. Tighten screws. Reinstall assemblies. Check SELECTOR ARMATURE SPRING adjustment (2.41).

Requirement
As armature moves to its unattracted position, the start lever should move freely into the armature extension slot.

To Adjust
Refine above adjustment.

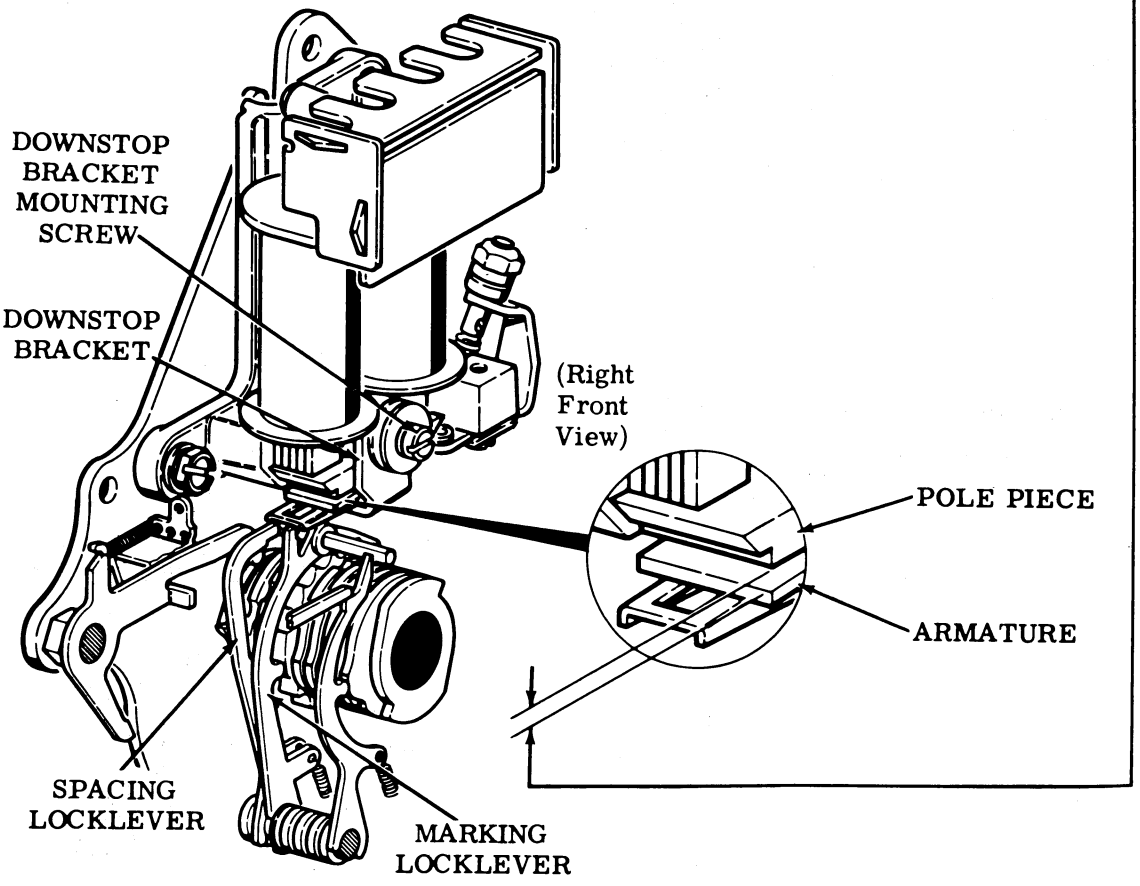
2.38 Selector Mechanism (continued)

SELECTOR ARMATURE DOWNSTOP

To Check
With magnet de-energized, position locklevers on their cam high and armature against its downstop.

Requirement
Min 0.020 inch---Max 0.025 inch between pole piece and armature end.

To Adjust
Loosen downstop bracket mounting screw and position downstop. Tighten screw.



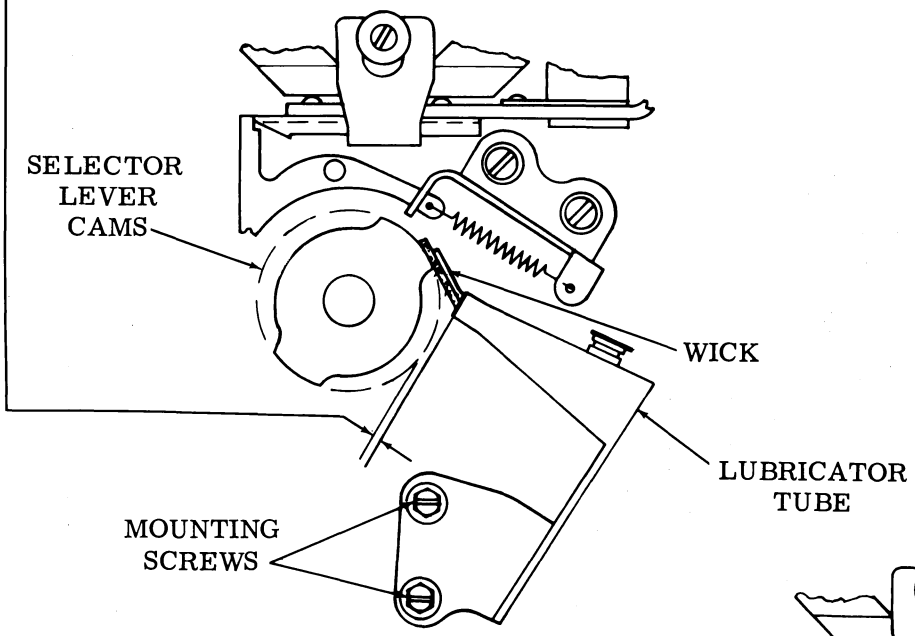
2.39 Selector Mechanism (continued)

SELECTOR CAM LUBRICATOR

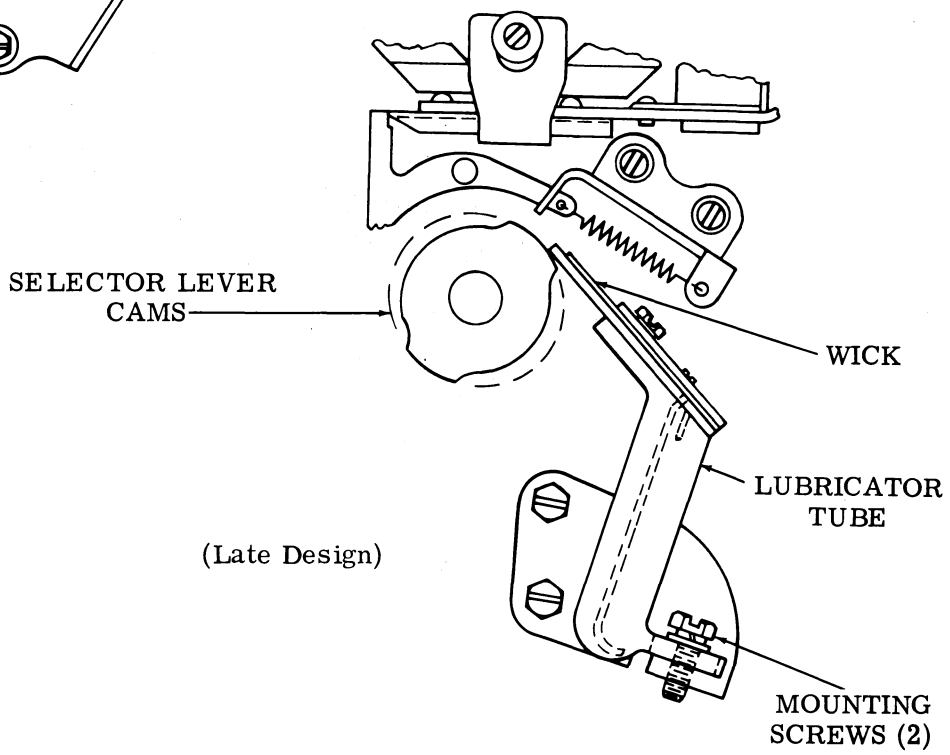
(1) Requirement
Wick should contact the high on each selector lever cam, with no more than 1/32 inch deflection. Gauge by eye.

(2) Requirement (Early Design Only)
Min 0.020 inch
between lubricator tube and high of cam.

To Adjust
Loosen mounting screws friction tight and position lubricator tube. Tighten screws.



(Early Design)



(Late Design)

2.40 Selector Mechanism (continued)

Note: For units equipped with character received contact mechanism, perform (3.30) adjustments in place of these two adjustments.

RANGE FINDER KNOB PHASING

(1) Requirement

With range finder knob placed at its extreme clockwise position, the zero mark should align (within ten marks) with indicator. Rack should be positioned against its stop.

To Adjust

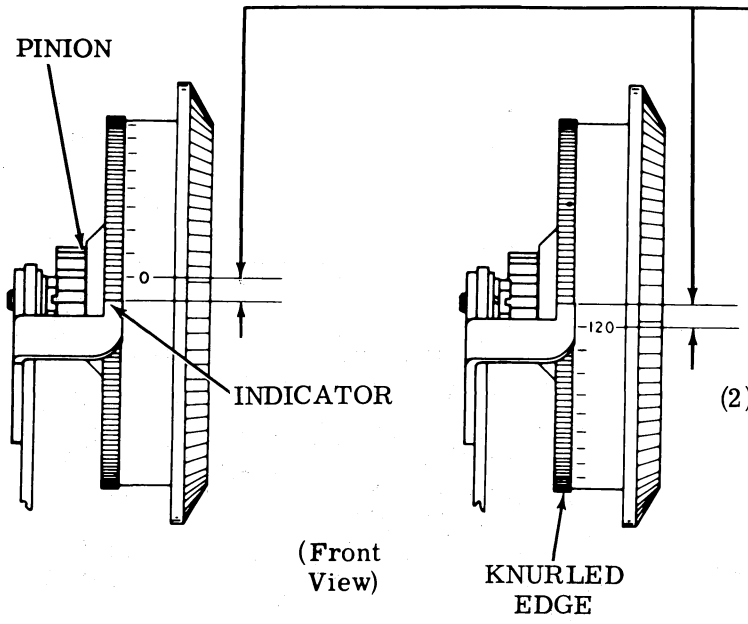
Position rack counterclockwise against its stop. Loosen mounting nut, position knob. Tighten nut. Check that knob can be positioned to both upper and lower limit markings. If necessary, refine adjustment.

(2) Requirement

Range finder knob should rest against its flat washer, with indicator engaging knurled edge to keep range finder from repositioning.

To Adjust

Loosen indicator clampscrew. With knob against its flat washer, position indicator and tighten clampscrew.



SELECTOR CLUTCH STOP ARM

To Check

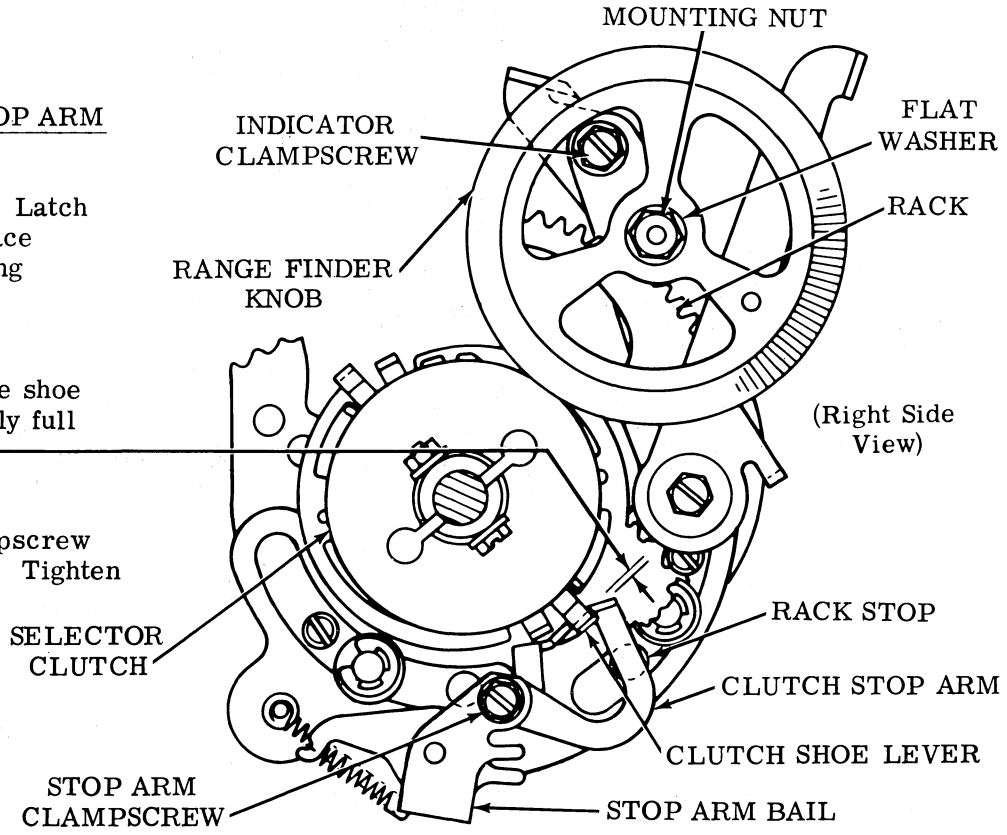
Set range scale at 60. Latch selector clutch and place armature in its marking position.

Requirement

Stop arm should engage shoe lever, by approximately full thickness.

To Adjust

Loosen stop arm clampscrew and position stop arm. Tighten clampscrew.



2.41 Selector Mechanism (continued)

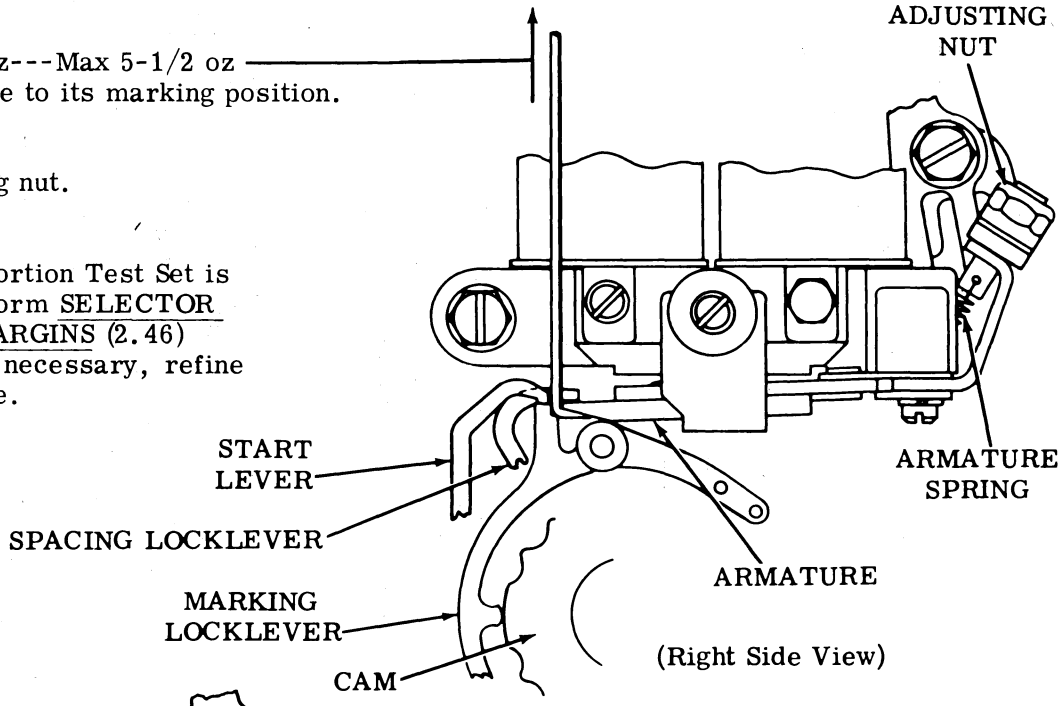
SELECTOR ARMATURE SPRING

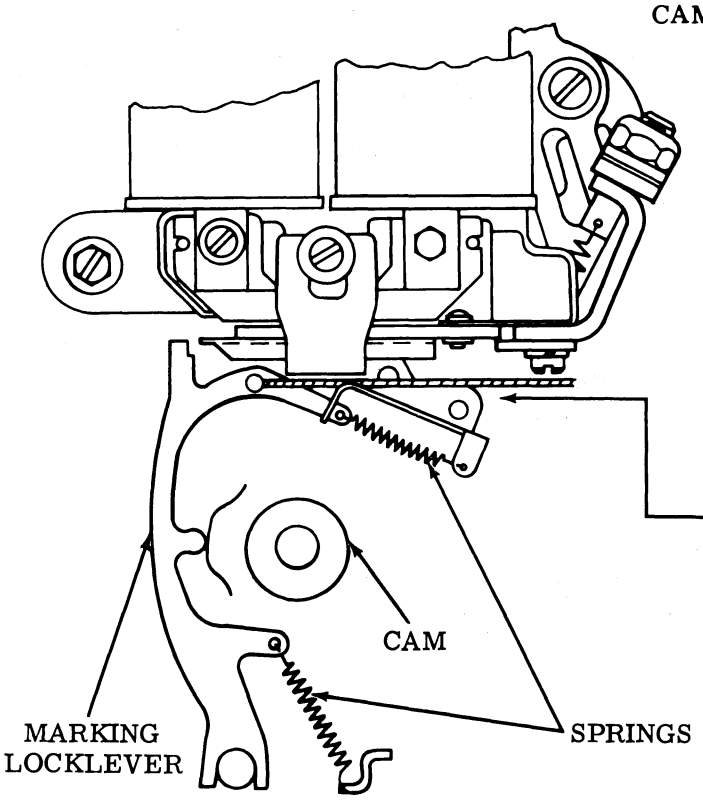
(1) To Check
Position marking locklever, spacing locklever, and start lever on their cam highs. Hold scale as vertical as possible.

Requirement
Min 4-1/2 oz---Max 5-1/2 oz
to pull armature to its marking position.

To Adjust
Rotate adjusting nut.

(2) To Check
If a Signal Distortion Test Set is available, perform SELECTOR RECEIVING MARGINS (2.46) adjustment. If necessary, refine To Adjust above.





MARKING LOCKLEVER SPRINGS

To Check
Energize magnet. Latch selector clutch and place all pushlevers in marking (selected) position. Hold scale as horizontal as possible.

Requirement
Min 4 oz---Max 9 oz
to start marking locklever extension moving.

To Adjust
Replace either, or both springs.

2.42 Selector Mechanism (continued)

SELECTOR MAGNET BRACKET

Note: Before making this adjustment, check SELECTOR ARMATURE SPRING adjustment (2.41).

(1) To Check
Position marking and spacing locklevers on their cam high. Place all pushlevers in the marking (selected) positions. De-energize magnets to place armature in its unattracted position. Check requirement for both cycles.

Requirement
Min 0.009 inch---Max 0.016 inch between armature extension and marking locklever.

To Adjust
Loosen bracket mounting screws (2) and link clampscrew friction tight. Use adjusting link to position magnet bracket. Tighten link clampscrew.

(2) To Check
Place armature in attracted position. To check minimum, rotate main shaft to position marking locklever under armature extension; to check maximum, latch main shaft clutches.

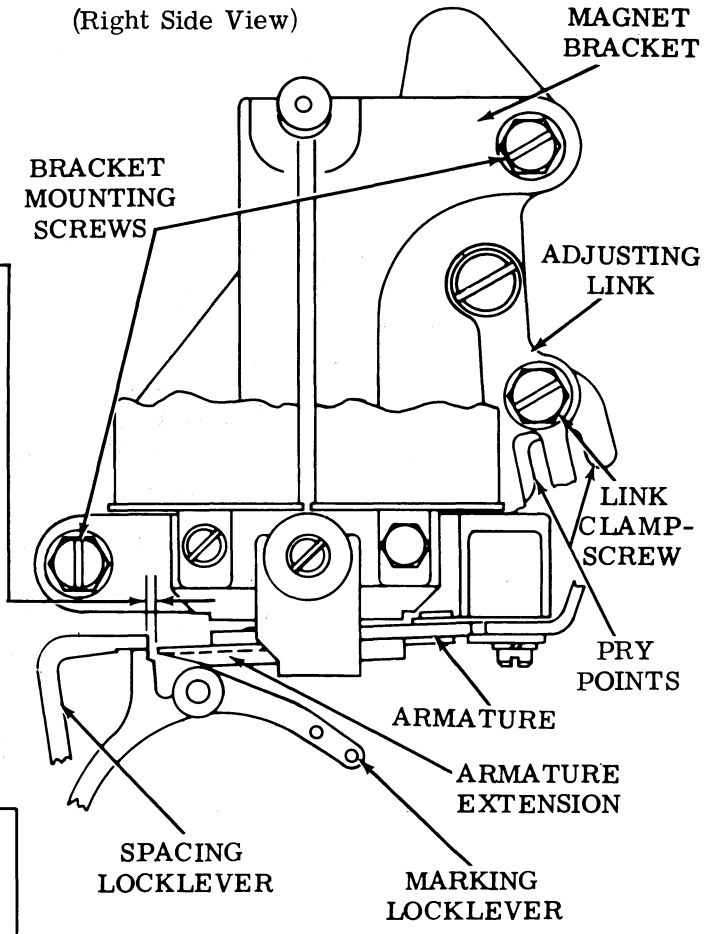
Requirement
Min some---Max 0.003 inch between armature extension under surface and marking locklever.

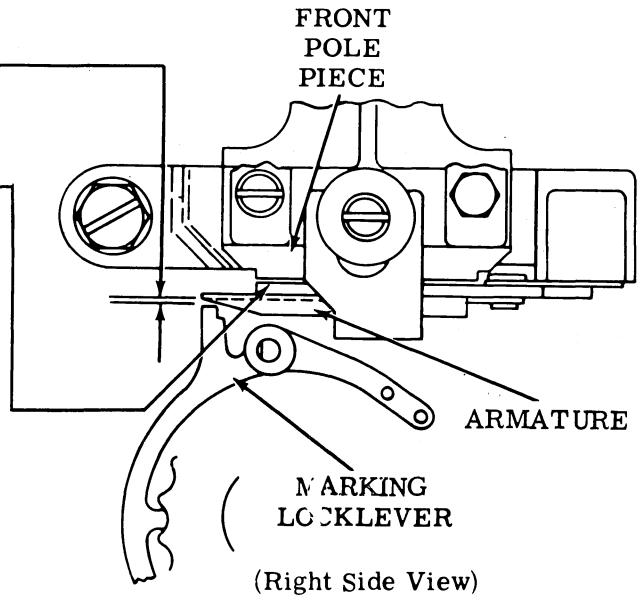
(3) To Check
With armature held in its attracted position, manually trip selector clutch. Rotate main shaft until number 8 pushlever just falls into its marking position.

Requirement
Max 0.010 inch between armature and front pole piece.

To Adjust
Use pry points to position magnet bracket. Tighten bracket mounting screws (2).

(4) To Check
Rotate main shaft, check for binds between start lever and armature extension. Recheck each above requirement. If necessary, refine with associated adjustment.



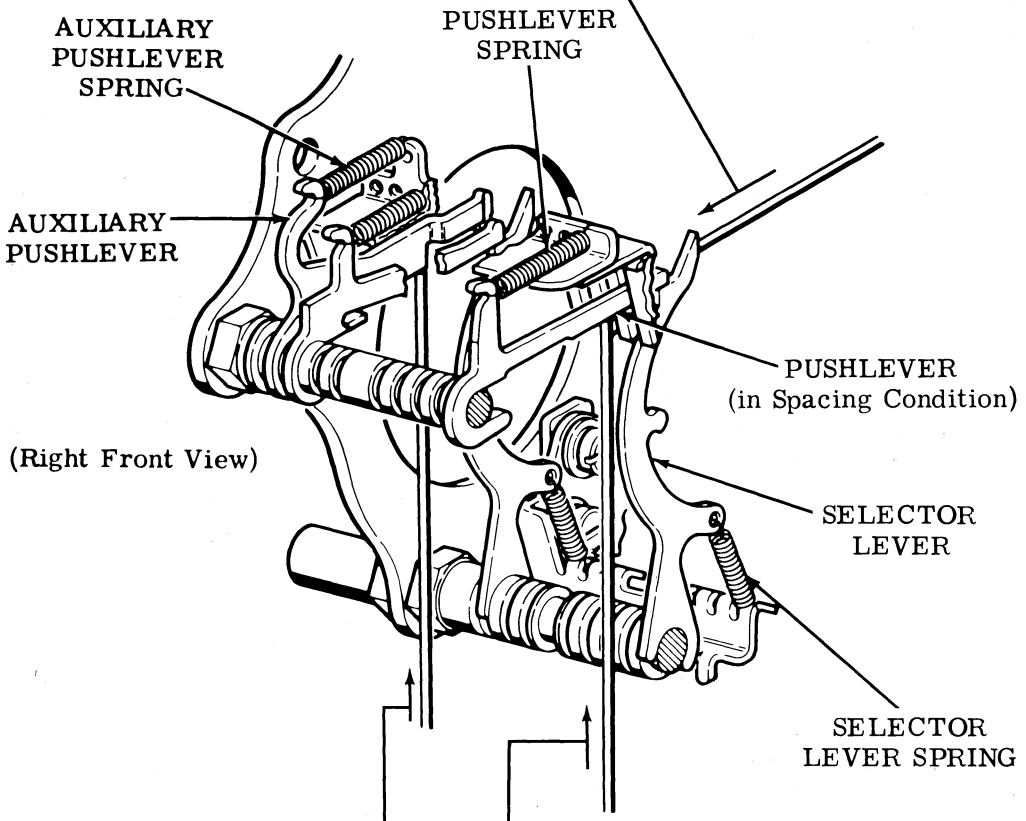


2.43 Selector Mechanism (continued)

SELECTOR LEVER SPRING

To Check
Place selectors on their cam highs and latch pushlever reset bail on the lever guide. Check each selector lever spring.

Requirement
Min 1-1/2 oz---Max 2-1/2 oz
to start each lever moving.



(Right Front View)

AUXILIARY PUSHLEVER SPRING

To Check
Place auxiliary lever in its unlatched (not selected) position.

Requirement
Min 1/2 oz---Max 1-1/2 oz
to start auxiliary pushlever moving.

SELECTOR PUSHLEVER SPRING

To Check
Place pushlevers in their unlatched (not selected) position. Check each lever.

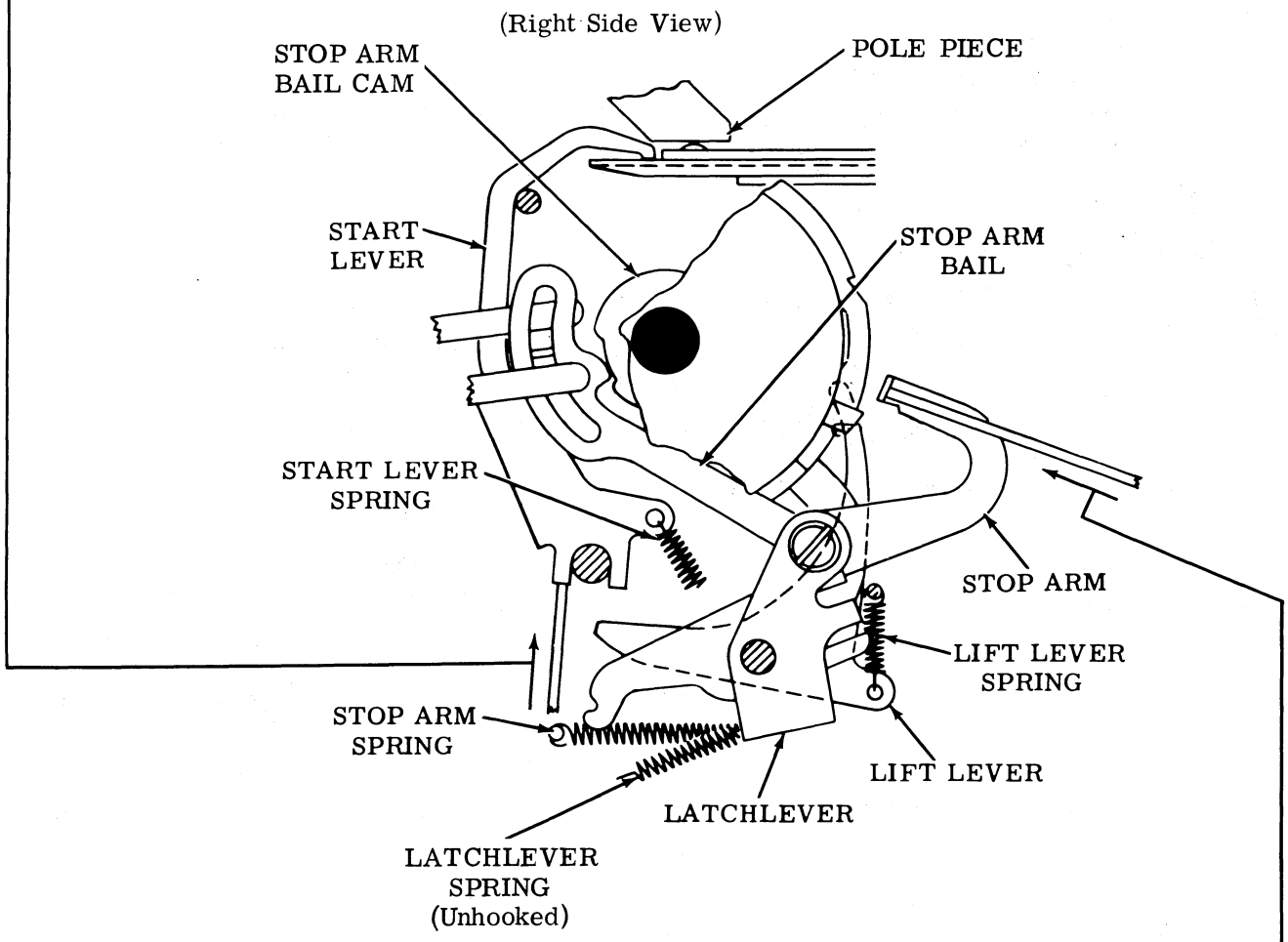
Requirement
Min 1 oz---Max 2-1/2 oz
to start pushlever moving.

2.44 Selector Mechanism (continued)

START LEVER SPRING

To Check
Unhook latchlever spring. Position stop arm bail in indent of its cam. Set range scale at 60.

Requirement
Min 10 oz---Max 14 oz
to lift start lever.



LIFT LEVER SPRING

To Check
Position lift lever on its cam high. Release and hook scale to one end of lift lever spring.

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

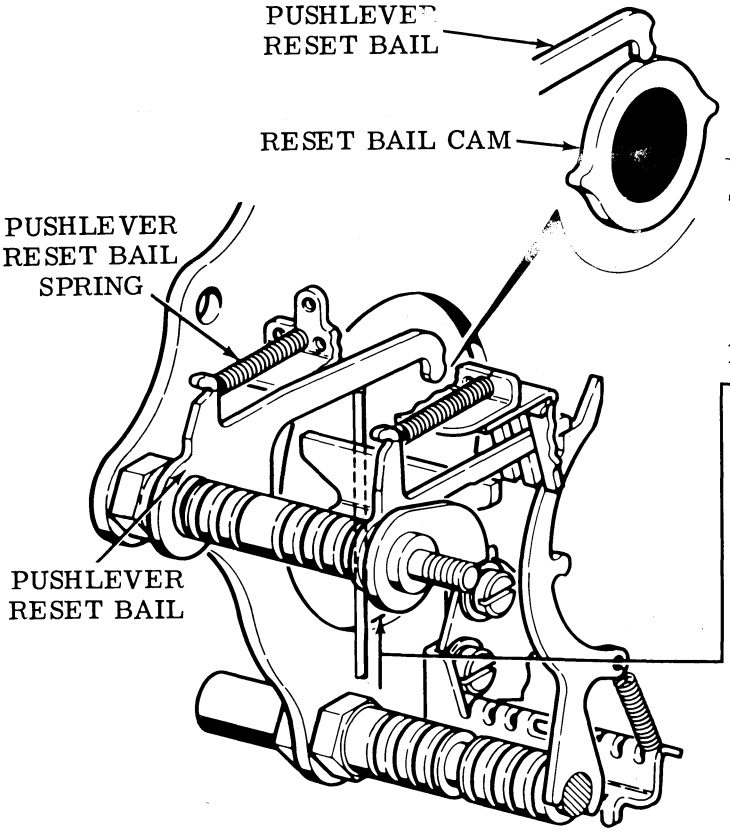
STOP ARM SPRING

To Check
Unhook latchlever spring. Position stop arm bail in indent of its cam. Set range scale at 60.

Requirement
Min 9-1/2 oz---Max 13 oz
to start the stop arm moving.

Note: Reinstall unhooked latchlever spring.

2.45 Selector Mechanism (continued)

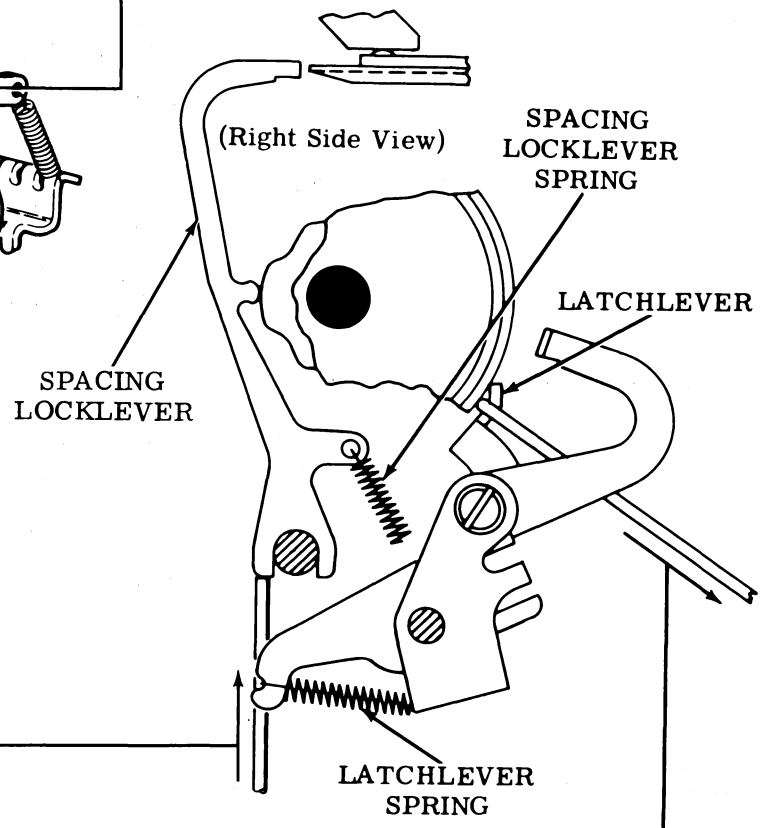


(Right Front View)

PUSHLEVER RESET BAIL SPRING

To Check
Place pushlevers in their unlatched (not selected) position and the pushlever reset bail on its cam low.

Requirement
Min 1-1/2 oz---Max 2-1/2 oz to move bail from its cam.



SPACING LOCKLEVER SPRING

To Check
Energize magnet and latch selector clutch.

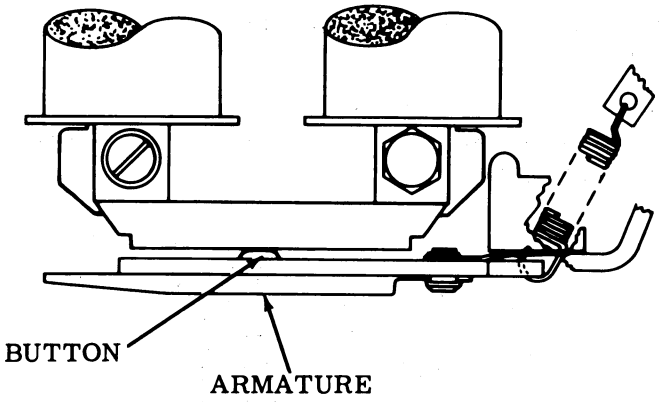
Requirement
Min 18 oz---Max 26 oz to start locklever moving.

SELECTOR CLUTCH LATCHLEVER SPRING

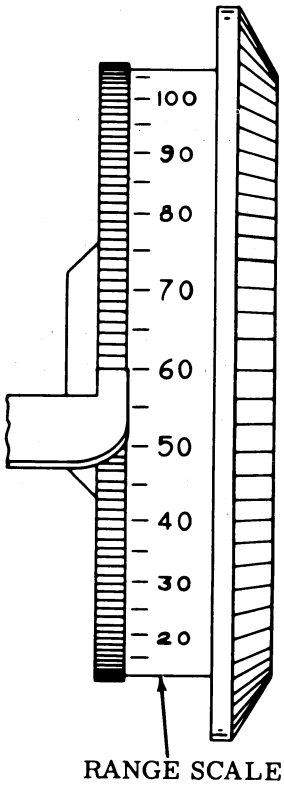
To Check
Position latchlever on the low part of its cam disc.

Requirement
Min 2 oz---Max 4 oz to start latchlever moving.

2.46 Selector Mechanism and Tape Platform



(Right Side View)



(Front View)

SELECTOR RECEIVING MARGINS

Requirement

When a Signal Distortion Test Set is available, selector armature spring tension should be refined, if necessary, to meet the following selector receiving margin.

SPEED (WPM)	PERCENT MARKING AND SPACING BIAS TOLERATED	PERCENT MARKING AND SPACING END DISTORTION TOLERATED (SCALE SET AT BIAS OPTIMUM) TOLERANCE WITHOUT RECEIVING SIGNAL REGENERATION
100	35	35
150	25	25

To Adjust

Refine the SELECTOR ARMATURE SPRING (2.41) adjustment. Adjust spring tension for maximum of 5 percent internal bias.

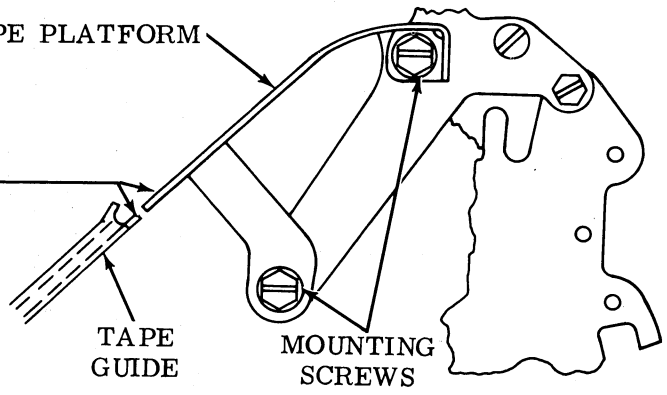
TAPE PLATFORM

Requirement

Tape platform should be aligned with tape guide.

To Adjust

Loosen mounting screws and position tape platform. Tighten screws.



3. VARIABLE FEATURES

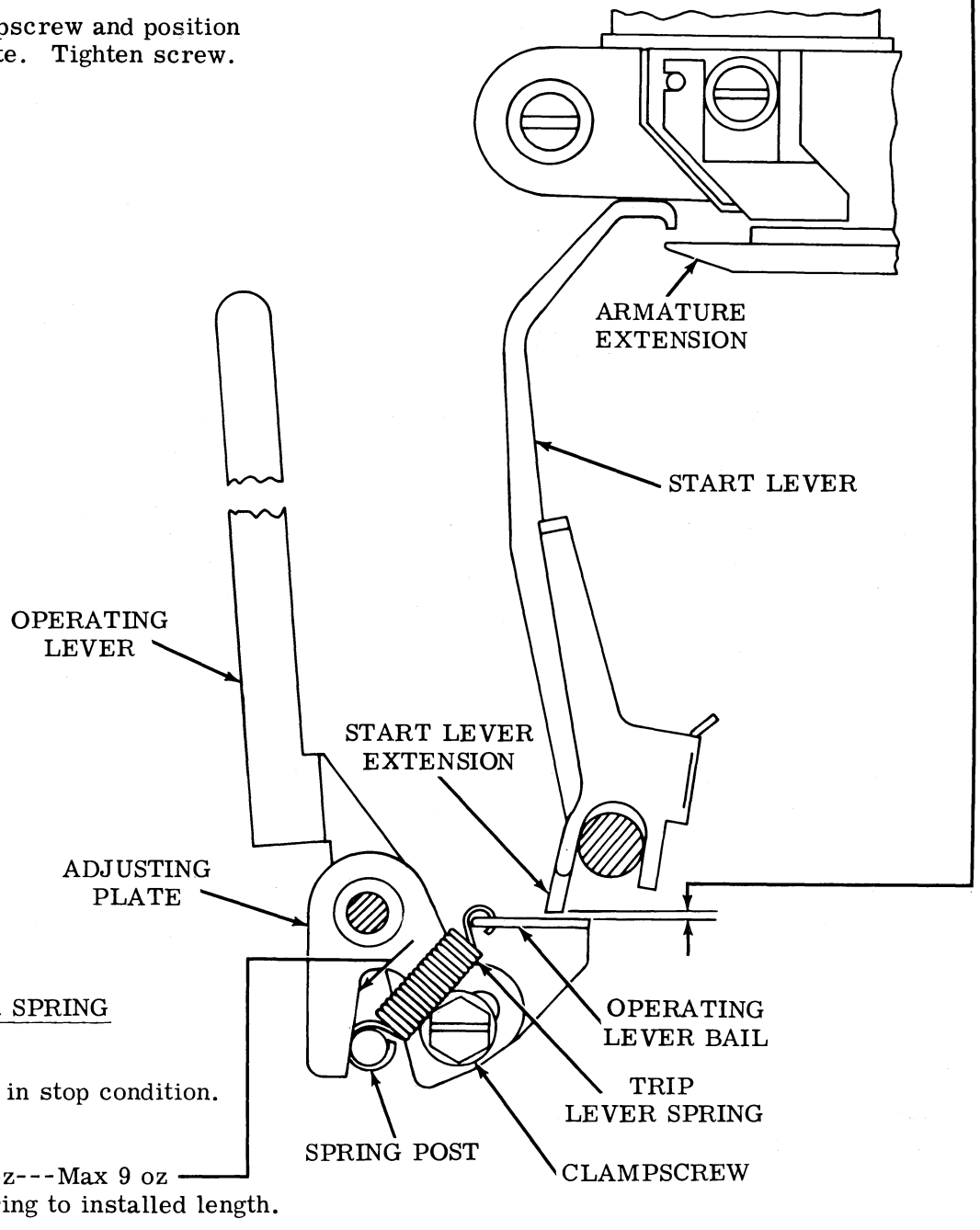
3.01 Manual Interfering Tape Feed-Out Mechanism

TRIP LEVER - MANUALLY OPERATED

To Check
With unit in stop condition, trip and rotate selector clutch to position start lever over armature extension. Hold adjusting plate against spring post.

Requirement
Min some---Max 0.010 inch between start lever extension and operating lever bail.

To Adjust
Loosen clampscrew and position adjusting plate. Tighten screw.



TRIP LEVER SPRING

To Check
Place unit in stop condition.

Requirement
Min 7 oz---Max 9 oz to pull spring to installed length.

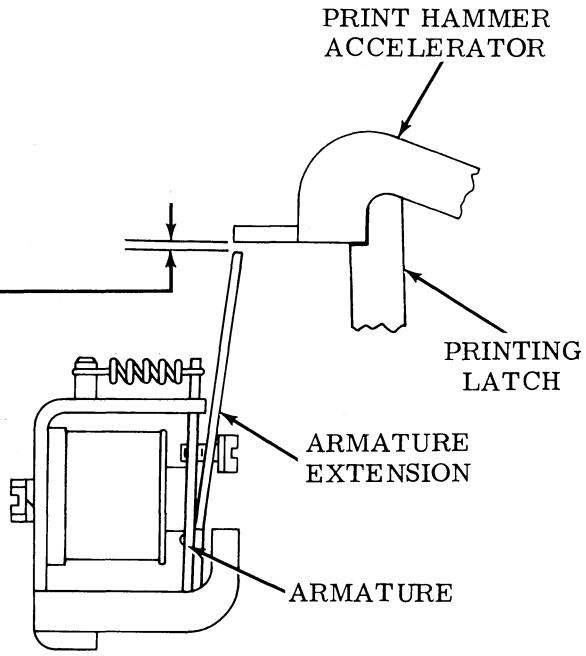
3.02 Print Suppression Mechanism

ARMATURE EXTENSION CLEARANCE

(1) To Check
Latch print hammer accelerator and printing latch. Place armature in its attracted position.

(1) Requirement
Min 0.015 inch---Max 0.030 inch between armature extension and print hammer accelerator.

(2) Requirement
Some clearance between the extension and accelerator throughout the armature travel.

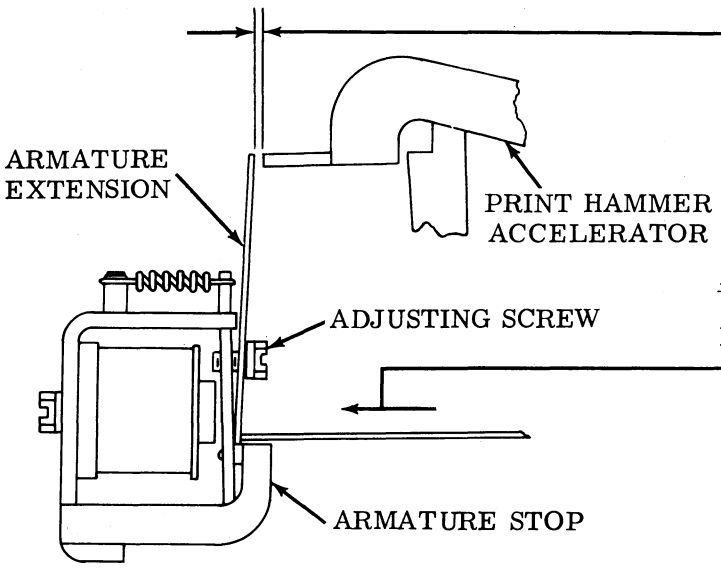


To Adjust
Loosen armature extension lower mounting screw friction tight. Use pry point to position armature extension. Tighten mounting screw.

(2) To Check
With rocker bail in its extreme left position and print suppression armature against its stop, manually lift print hammer accelerator until it is aligned with tip of armature extension.

Requirement
Min 0.005 inch---Max 0.020 inch between armature extension and print hammer accelerator.

To Adjust
Rotate adjusting screw to reposition armature extension.



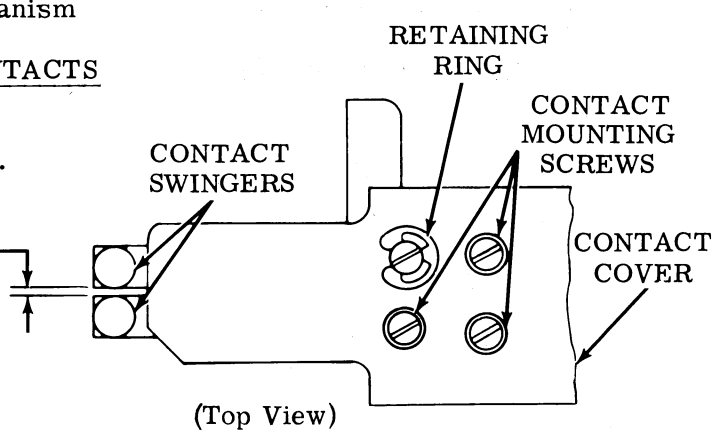
ARMATURE SPRING

Requirement
Min 1-3/4 oz---Max 3-1/4 oz to start armature moving.

3.03 Ribbon Shift and Print Suppression Mechanism

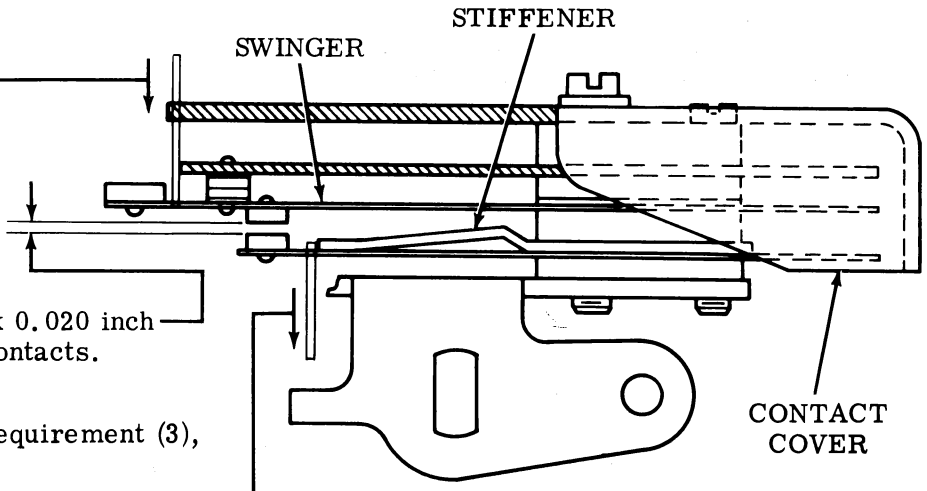
RIBBON SHIFT AND PRINT SUPPRESSION CONTACTS

Note 1: To facilitate making this adjustment, remove retaining ring and then contact cover.



(1) Requirement
Min 0.035 inch---Max 0.060 inch between aligned contact swingers.

To Adjust
Remove electrical power from unit. Remove the two assembly mounting bracket screws and then the contact assembly. Loosen (4) contact mounting screws friction tight and position contact swingers. Tighten mounting screws.



(2) Requirement
Min 0.015 inch---Max 0.020 inch between normally open contacts.

To Adjust
Bend stiffener. Check requirement (3), if necessary readjust.

(3) Requirement
Swingers plastic insulator top surfaces should be parallel in the same plane with each other (gauge by eye).

To Adjust
Bend swinger at insulator end. Check requirement (2), if necessary readjust.

(4) Requirement
Min 45 grams---Max 60 grams to start each swinger moving; also, to start the associated normally open contact moving.

To Adjust
Bend swinger (or associated normally open contact arm). Check requirements (2) and (3), if necessary readjust.

Note 2: Reinstall contact assembly. Perform RIBBON SHIFT AND PRINT SUPPRESSION CONTACT ASSEMBLY POSITION (3.04) adjustment.

3.04 Ribbon Shift and Print Suppression Mechanism (continued)

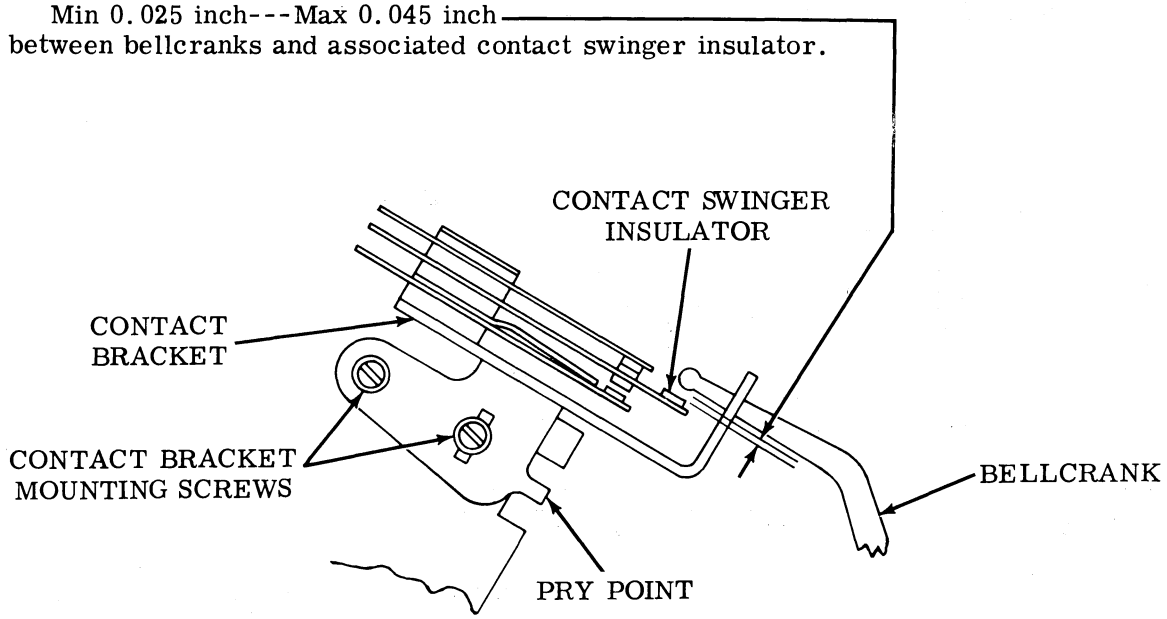
RIBBON SHIFT AND PRINT SUPPRESSION CONTACT ASSEMBLY POSITION

To Check

With **DELETE** (all code levels) code in the mechanism, trip function clutch.

Requirement

Min 0.025 inch---Max 0.045 inch between bellcranks and associated contact swinger insulator.



To Adjust

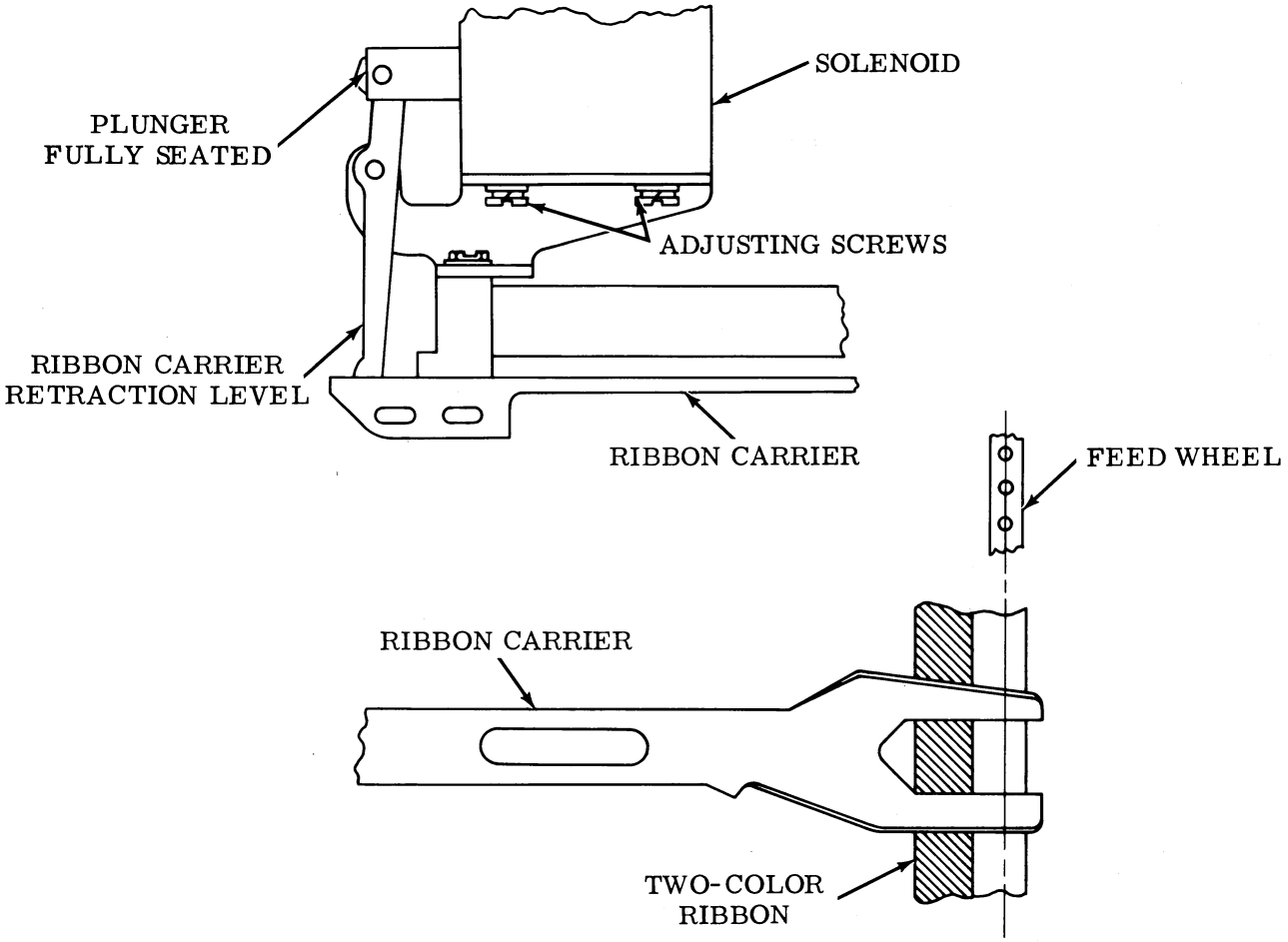
Loosen contact bracket mounting screws friction tight. Using pry point, position contact bracket to meet requirement with rear set of contacts. Tighten mounting screws. Loosen bellcrank pivot post screw (located on punch front plate) and its nut (located on punch rear plate), both friction tight. Rotate bellcrank pivot post to meet requirement with front set of contacts. Tighten screw and nut. Replace contact cover and retaining ring.

3.05 Ribbon Shift Mechanism

RIBBON SHIFT SOLENOID

To Check
Energize solenoid to fully seat plunger. Gauge requirement by eye.

Requirement
Center of secondary ribbon color aligned with feed wheel.



To Adjust
Loosen mounting screws and position solenoid. Check that plunger travel is free of binds. Tighten screws.

3.06 Remote Control Noninterfering Tape Feed-Out Mechanism

MAGNET ARMATURE HINGE

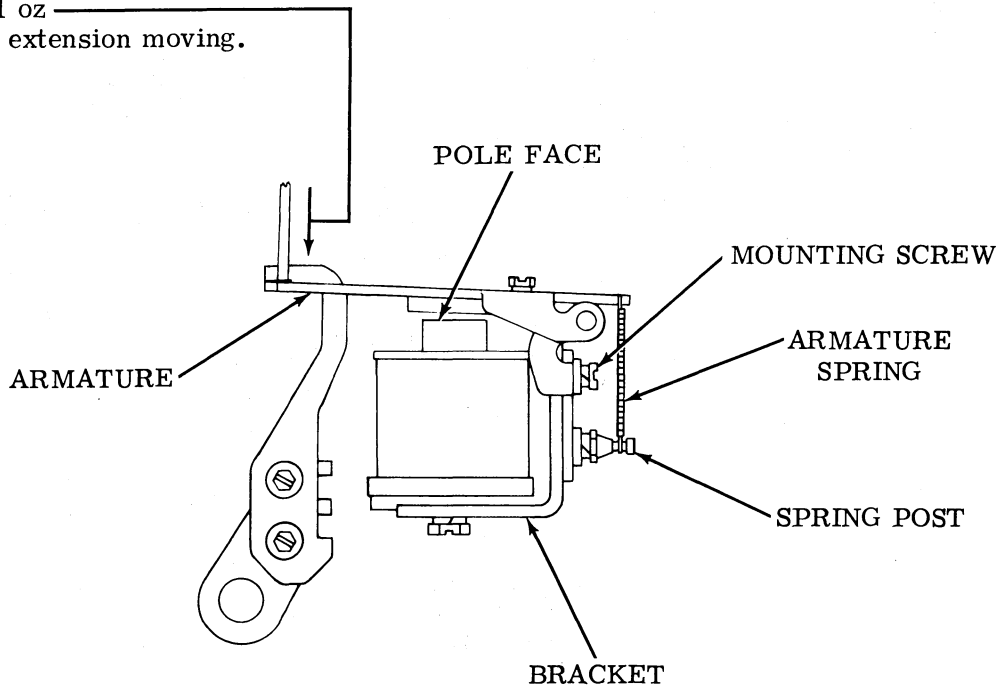
Requirement
The armature should be flush with the magnet pole face and with the bracket.

To Adjust
Loosen mounting screw and spring post. Position armature. Tighten both the mounting screw and the spring post.

ARMATURE SPRING

To Check
Place unit in stop condition. (Check requirement with armature in the unattracted position.)

Requirement
Min 9 oz---Max 11 oz to start the armature extension moving.

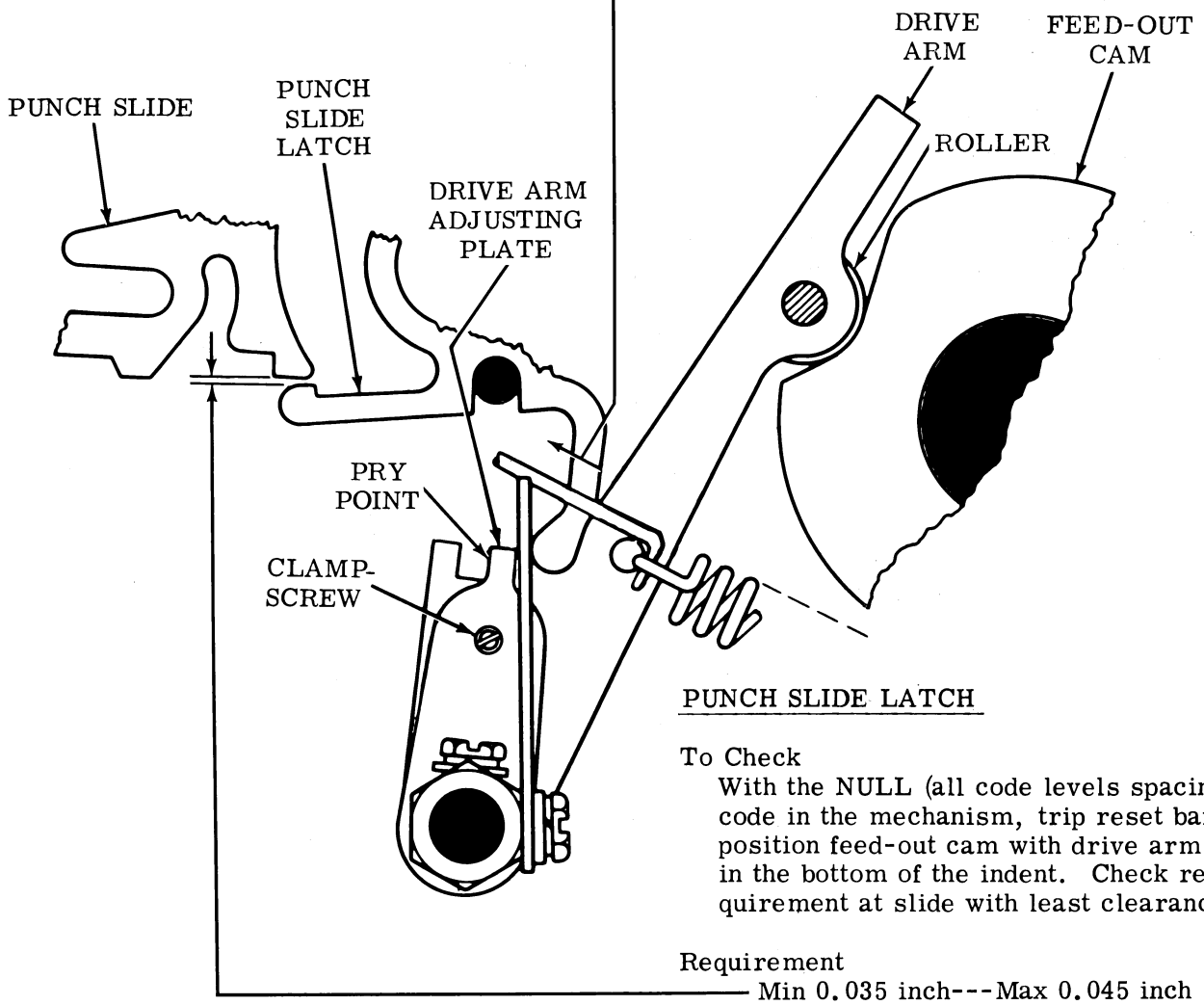


3.07 Remote Control Noninterfering Tape Feed-Out Mechanism (continued)

DRIVE ARM SPRING

To Check
Place mechanism in feed-out condition and firmly hold roller in its feed-out cam indent.

Requirement
Min 42 oz---Max 50 oz to pull spring to its installed length.



PUNCH SLIDE LATCH

To Check
With the NULL (all code levels spacing) code in the mechanism, trip reset bail and position feed-out cam with drive arm roller in the bottom of the indent. Check requirement at slide with least clearance.

Requirement
Min 0.035 inch---Max 0.045 inch between punch slide and punch slide latch.

To Adjust
Loosen clampscrew. Use pry point to position drive arm adjusting plate. Tighten clampscrew.

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

ADJUSTING LEVER

To Check

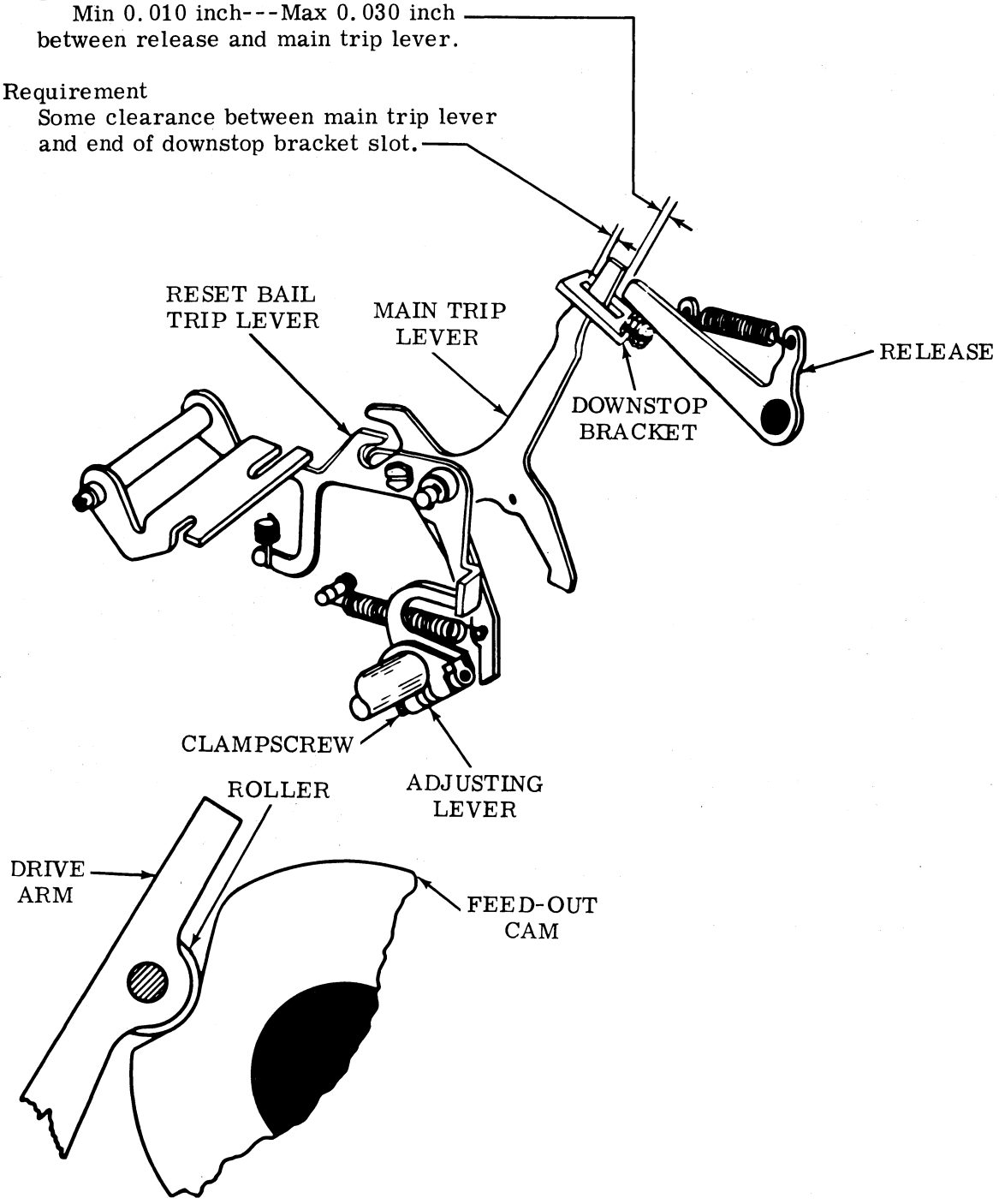
Latch selector clutch and position drive arm roller in the bottom of the feed-out cam indent.

(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 end of downstop bracket slot.



To Adjust

Loosen clampscrew and position adjusting lever. Tighten clampscrew.

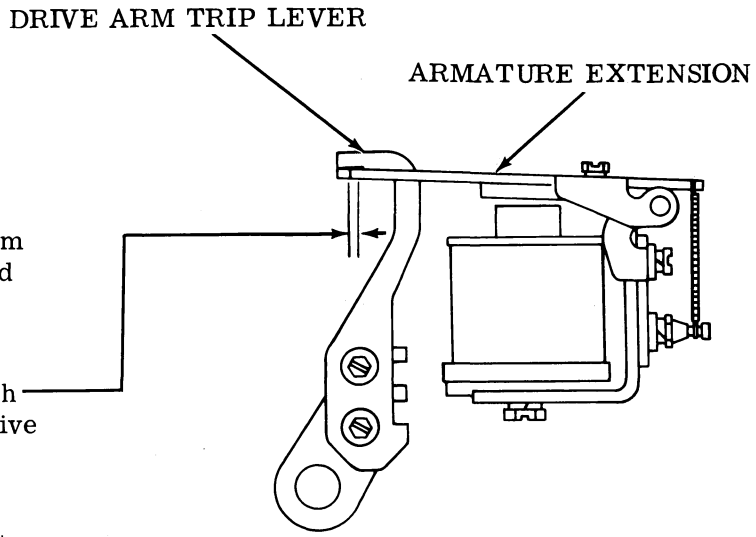
3.09 Remote Control Noninterfering Tape Feed-Out Mechanism (continued)

DRIVE ARM TRIP LEVER

(1) To Check
Position drive arm roller on its cam high and armature in its unattracted position.

Requirement
Min 0.010 inch---Max 0.020 inch between armature extension and drive arm trip lever.

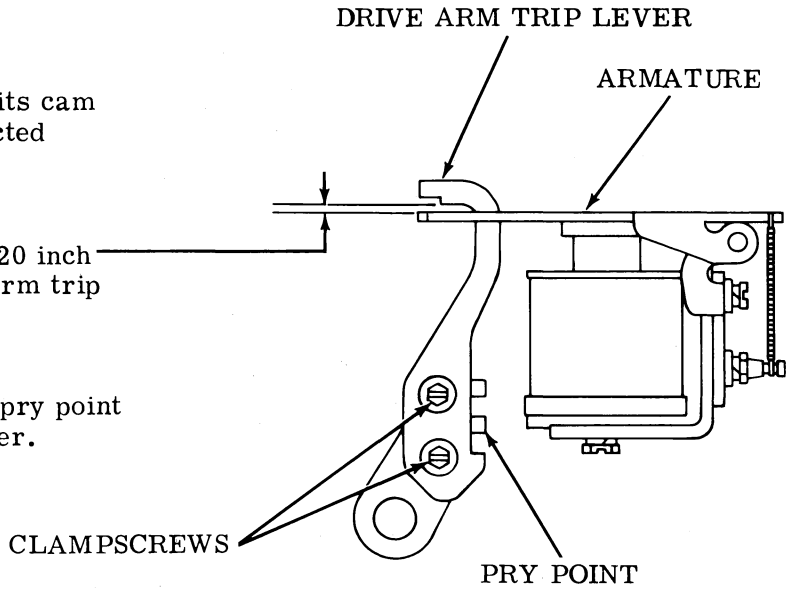
To Adjust
Loosen the two screws which mount the magnet assembly. Position assembly and tighten screws.



(2) To Check
Position drive arm roller on its cam low and armature in its attracted position.

Requirement
Min 0.010 inch---Max 0.020 inch between armature and drive arm trip lever.

To Adjust
Loosen clampscrews and use pry point to position drive arm trip lever. Tighten screws.

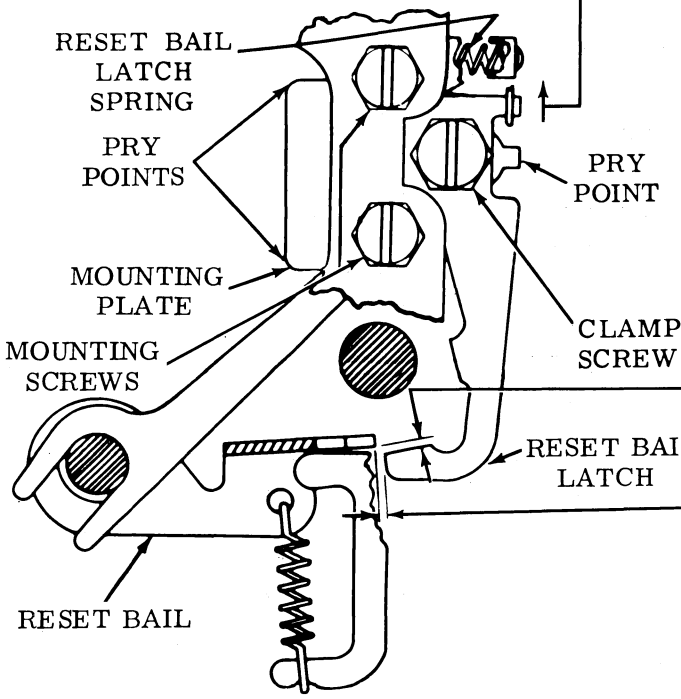


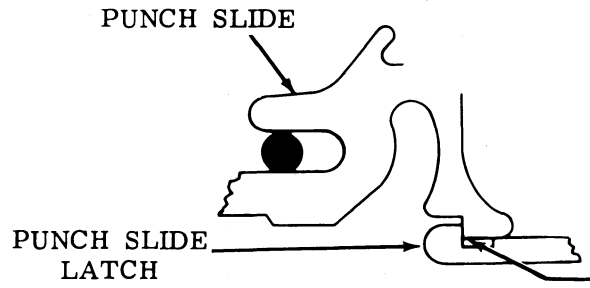
Note: There should be some clearance throughout the armature extension's full path of travel.

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

RESET BAIL LATCH SPRING

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





RESET BAIL LATCH

(1) To Check
Place DELETE code (all code levels marking) in the unit. Rotate main shaft until function clutch trips and punch slides are to extreme left. Place NULL code (all code levels spacing) in the selector. Rotate main shaft until punch slides just latch.

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

To Adjust
Loosen mounting screws and use pry point to position mounting plate. Tighten screws.

(2) Requirement (Horizontal Clearance)
With unit in stop condition
Min 0.005 inch---Max 0.020 inch between reset bail and reset bail latch.

To Adjust
Loosen clampscrew and use pry point to position bail latch. Tighten clamp-screw.

(2) To Check
Place DELETE code (all code levels marking) in the unit. Rotate main shaft until function clutch trips. Place NULL code (all code levels spacing) in the selector. Rotate main shaft to place unit in stop position.

Requirement
Punch slides latched by punch slide latches.

To Adjust
Refine above adjustments.

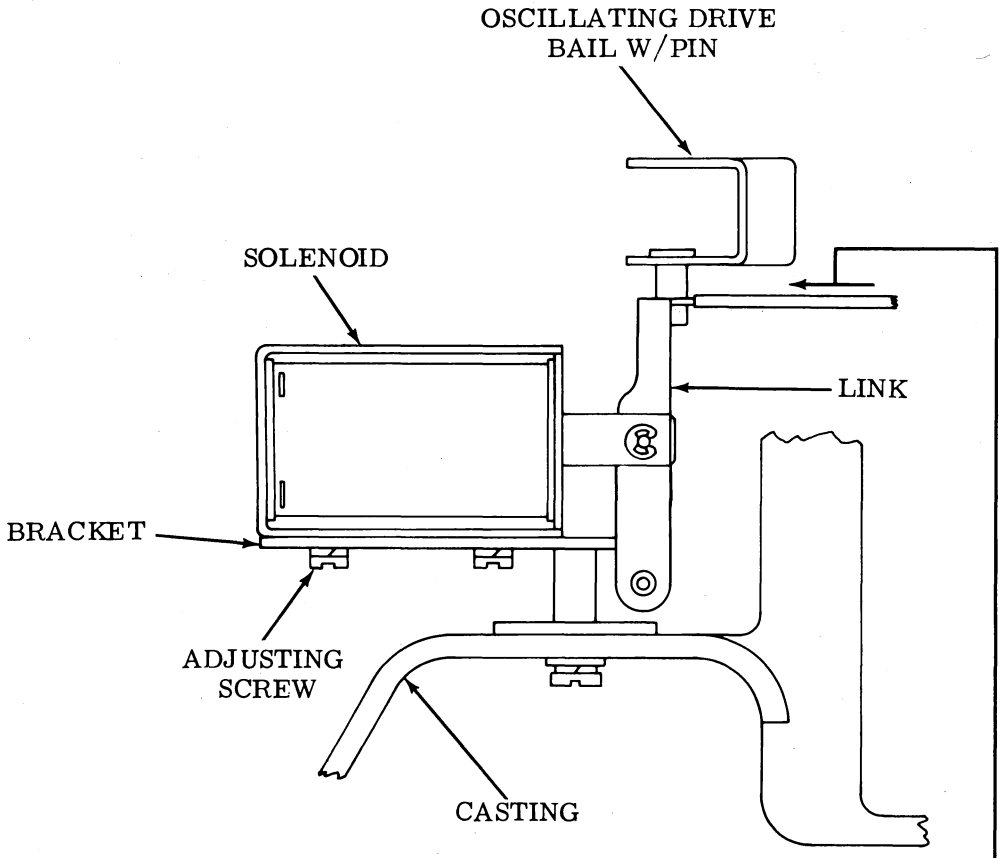
3.11 Last Character Visibility Mechanism

SOLENOID LINK POSITIONING

To Check
Print a series of characters. Place the unit in its stop condition and the solenoid plunger fully seated (energized condition). Gauge requirement by eye.

Requirement
Typewheel and ribbon retracted so that last printed character is visible.

To Adjust
Loosen adjusting screw friction tight and position solenoid. Tighten screw.



SOLENOID SPRING

Requirement
With ribbon carrier (2.34) pulled to rear
Min 4-1/2 oz---Max 7 oz
to seat the solenoid plunger.

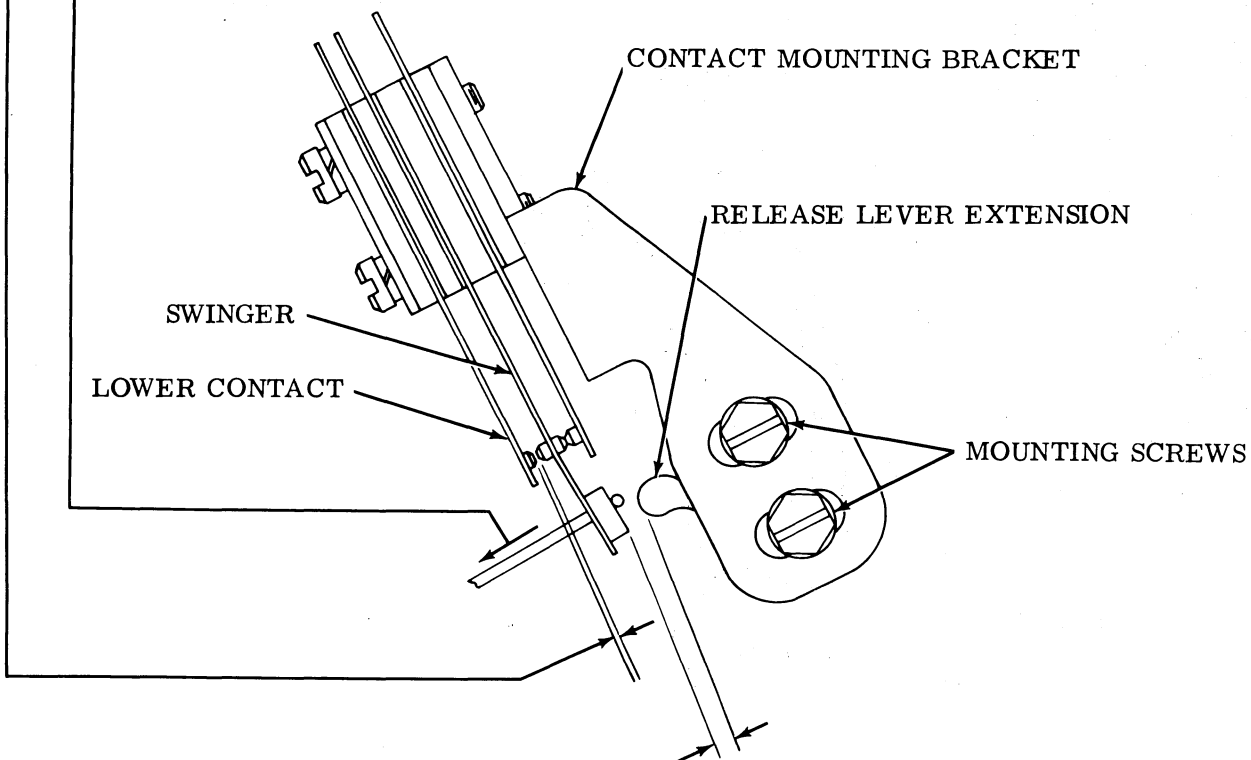
3.12 Inhibit Contact Mechanism

CONTACT GAP AND PRESSURE

To Check
Trip release lever or remove mechanism from unit.

(1) Requirement
Min 0.015 inch---Max 0.025 inch between normally open contacts.

(2) Requirement
Min 1-1/2 oz---Max 2-1/2 oz to open normally closed contacts.



To Adjust
Remove contact assembly from unit and realign the contact points. To meet gap requirement, bend lower contact. To meet pressure requirement, bend swinger. Replace contact assembly.

CONTACT BRACKET

To Check
Trip release lever.
Requirement
Min 0.040 inch---Max 0.060 inch between release lever extension and swinger contact.

To Adjust
Loosen mounting screws and position contact mounting bracket. Tighten screws.

3.13 Power Drive Backspace Mechanism

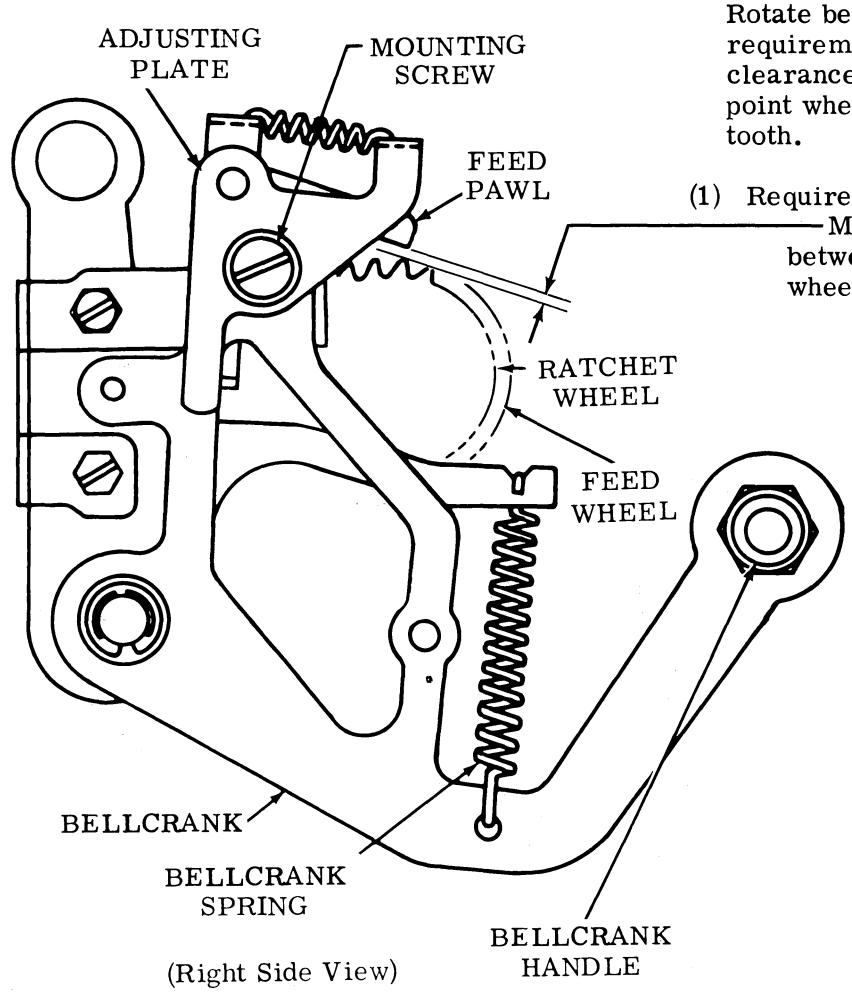
FEED PAWL CLEARANCE

To Check

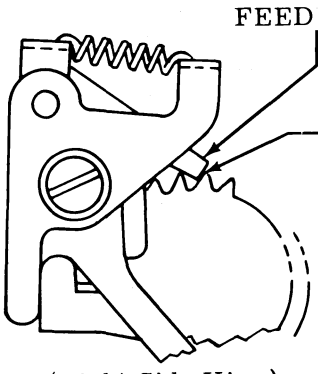
Rotate bellcrank counterclockwise. Check requirement (preliminary) at point of least clearance. Check requirement (final) at point where feed pawl first contacts ratchet tooth.

(1) Requirement

Min 0.006 inch---Max 0.040 inch between first upper tooth on ratchet wheel and the feed pawl.



(Right Side View)



(Right Side View)

(2) Requirement

The second tooth on ratchet wheel should be engaged by no less than one-half the feed pawl engaging surface.

To Adjust

Loosen mounting screw friction tight and position adjusting plate. Tighten screw.

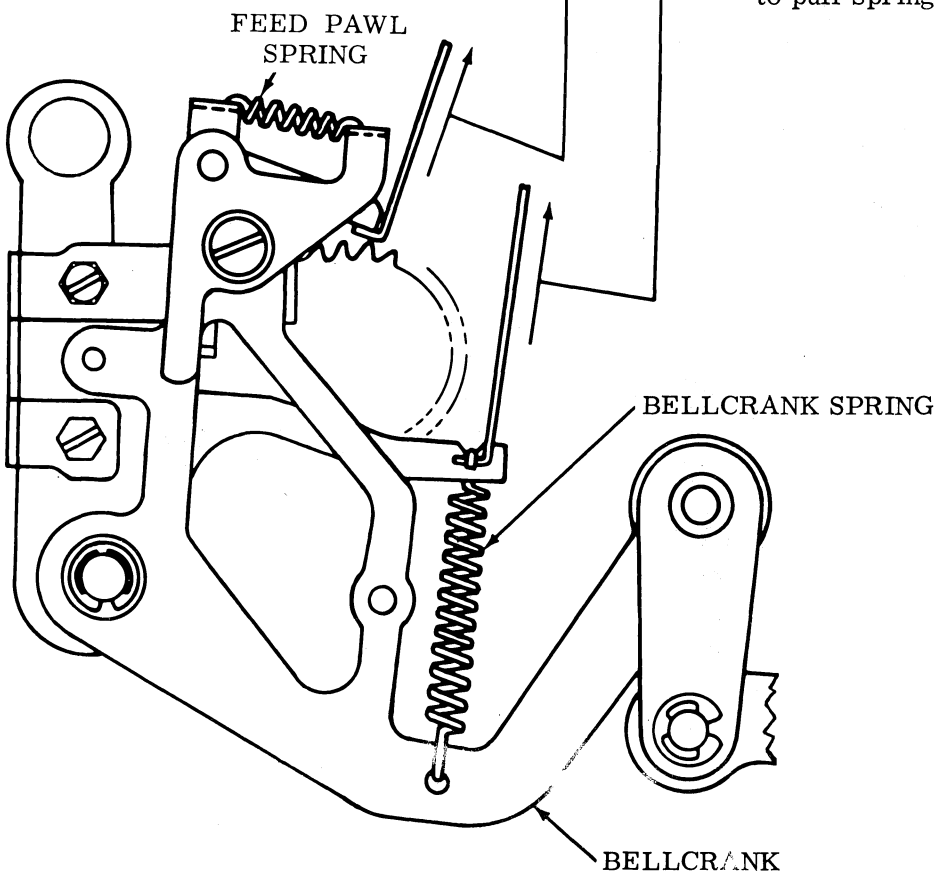
3.14 Power Drive Backspace Mechanism (continued)

FEED PAWL SPRING

Requirement
With backspace mechanism in unoperated position, it should require
Min 8 oz---Max 15 oz
to start feed pawl moving.

BELLCRANK SPRING

Requirement
Min 19 oz---Max 23 oz
to pull spring to installed length.



(Right Side View)

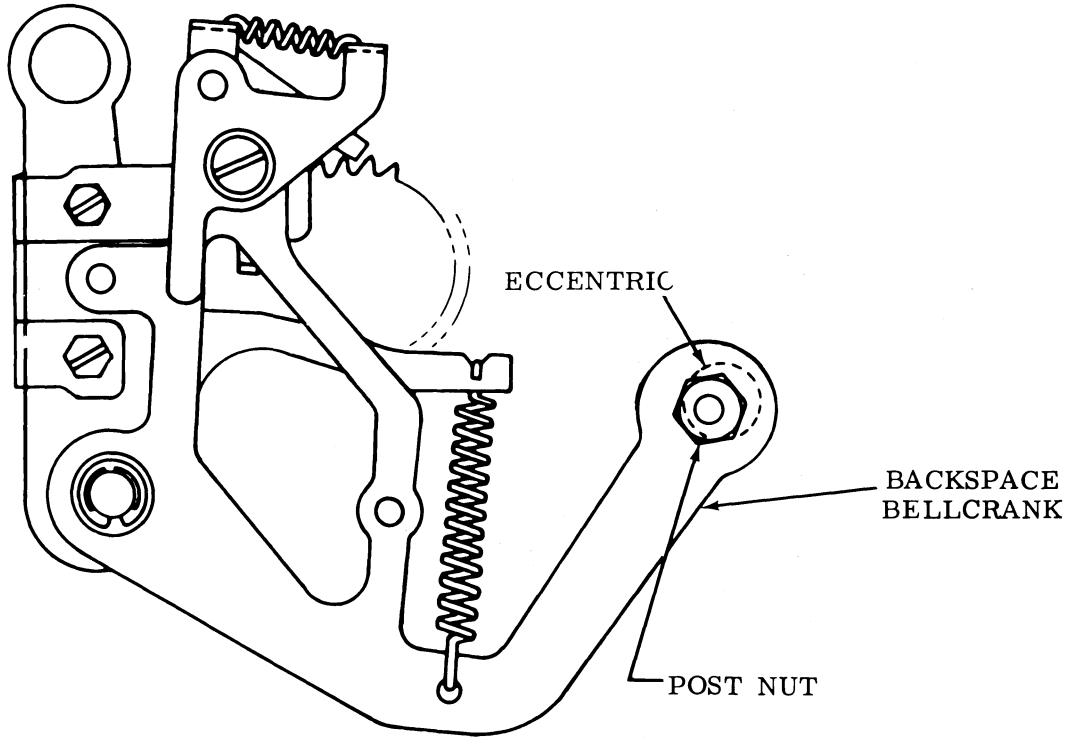
3.15 Power Drive Backspace Mechanism (continued)

FEED PAWL ECCENTRIC

To Check
Place bellcrank in its operated position.

Requirement
High side of eccentric should be in its uppermost position.

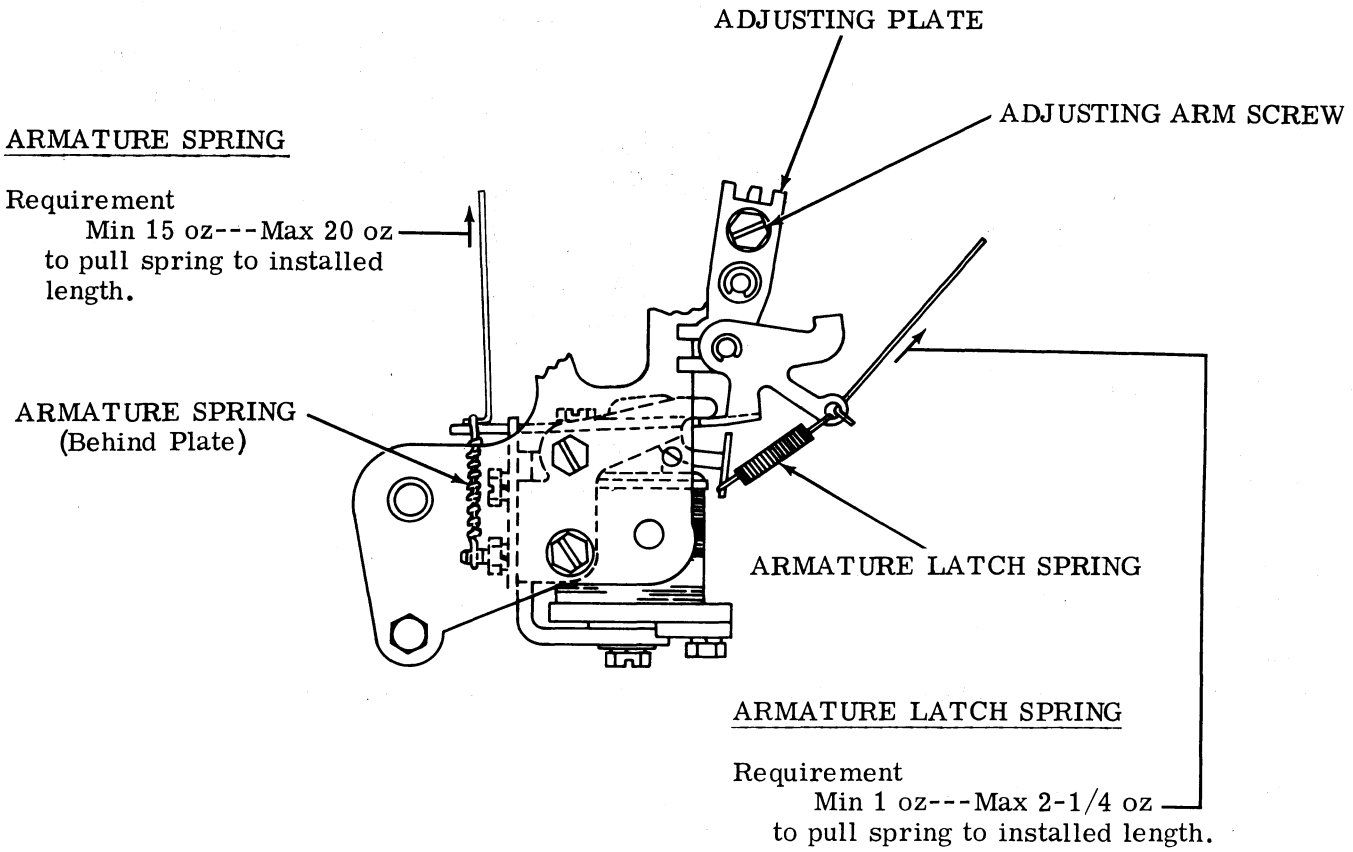
To Adjust
Loosen nut post friction tight. Use allen wrench to position eccentric. Tighten nut post.



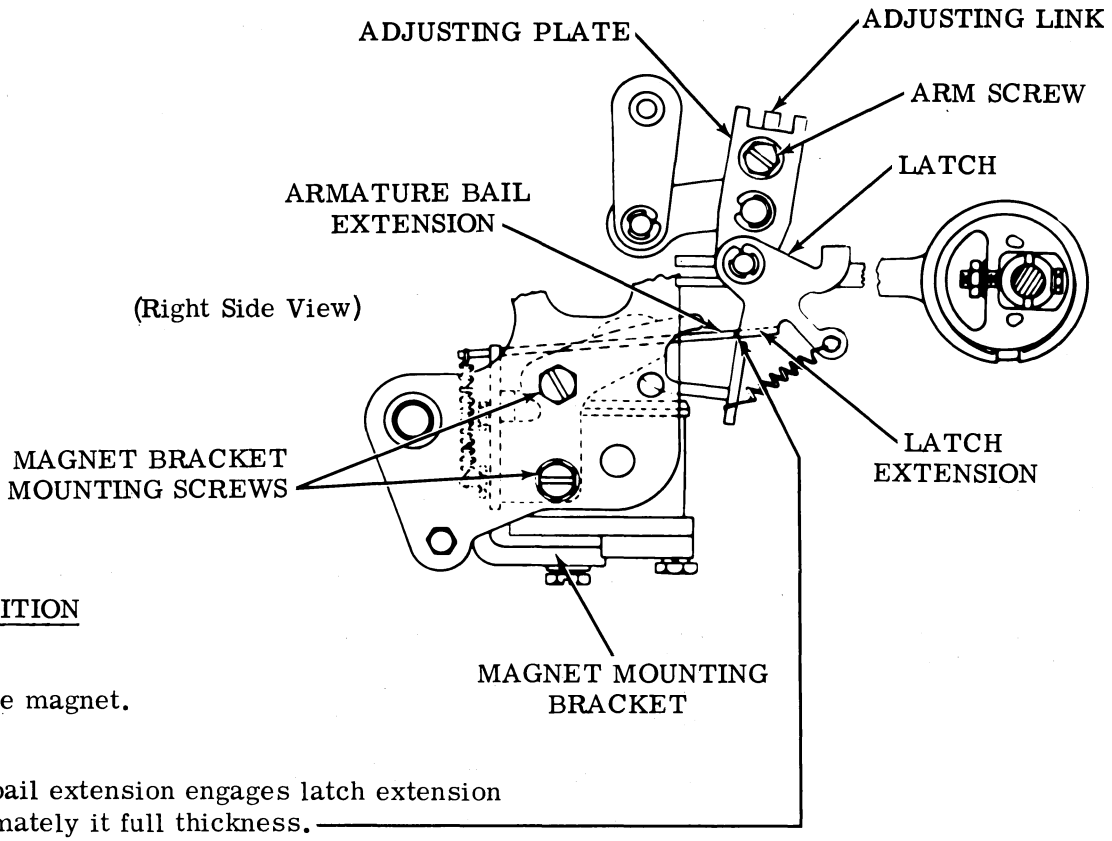
(Right Side View)

3.16 Power Drive Backspace Mechanism (continued)

Note: Place backspace mechanism in unoperated condition before checking these requirements.



3.17 Power Drive Backspace Mechanism (continued)



MAGNET POSITION

To Check
De-energize magnet.

Requirement
Armature bail extension engages latch extension by approximately it full thickness.

To Adjust
Position the magnet assembly by means of its mounting screws. Tighten screws.

POWER ADJUSTMENT (FINAL)

(1) To Check
With tape in unit place feed wheel shaft oil hole in its upper position. Operate backspace mechanism once.

(1) Requirement
Ratchet wheel back one full space.

(2) Requirement
Feed pawl (2.24) should engage the first tooth below a horizontal center line through the ratchet wheel, with no perceptible clearance.

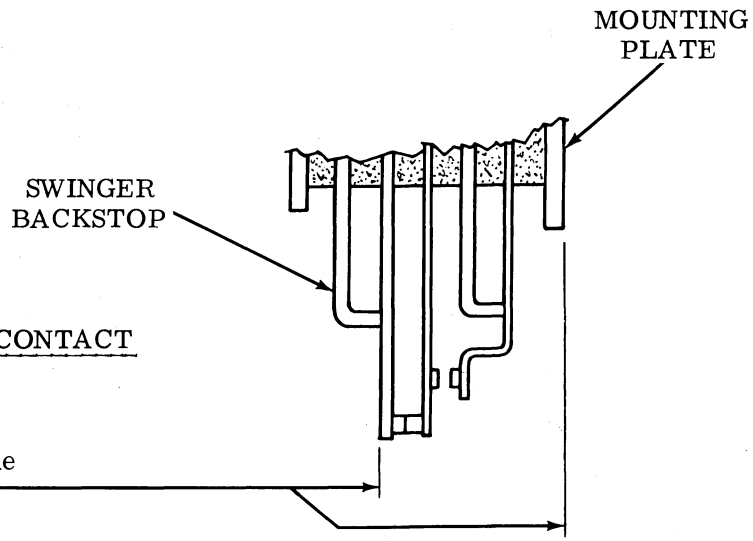
(2) To Check
With unit operating under power, perforate two inches of DELETE (all code holes punched) coded tape. Backspace 12 characters in succession. Again, perforate two inches of DELETE coded tape. Gauge requirement by eye.

Requirement
Over-perforated code holes should be concentric within 0.005 inch, with previously perforated code holes.

To Adjust
Loosen arm screw and position adjusting plate. Tighten screw.

3.18 Code Reading Contacts

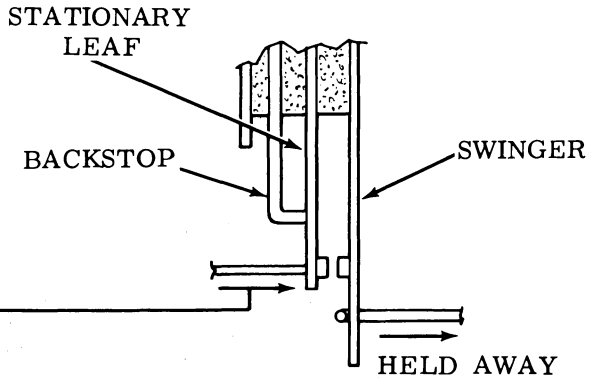
Note 1: Make the following adjustments with the code contacts removed from the reperforator unit. Refer to the appropriate disassembly section for this procedure. Start each adjustment with the contact pile-up farthest away from the bending tool so as not to disturb completed adjustments. Use bending tool TP156170 as required.



BACKSTOP — NORMALLY CLOSED CONTACT

Requirement
The eight swinger leaves should be parallel to mounting plate and in line with each other. Gauge by eye.

To Adjust
Bend swinger backstop.



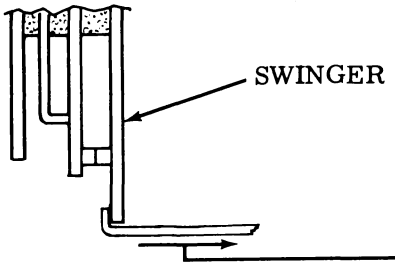
SPRING TENSION — NORMALLY CLOSED CONTACT AGAINST BACKSTOP

Requirement
With swinger held away
Min 2 oz---Max 6 oz
to move stationary leaf from its backstop.

To Adjust
Bend stationary leaf. To increase leaf tension against backstop, it may be necessary to bend backstop away from leaf and then bend leaf. Realign backstop with leaf. Check BACKSTOP — NORMALLY CLOSED CONTACT adjustment.

Note 2: Check adjustments (3.19) and, if Distortion Test Set (DXD) is available, perform Code Reading Contact testing (3.25).

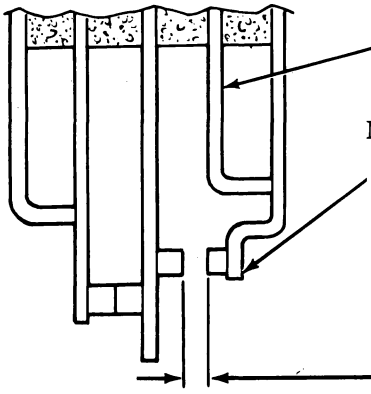
3.19 Code Reading Contacts (continued)



NORMALLY CLOSED CONTACT SPRING TENSION

Requirement
Min 30 grams---Max 40 grams to open normally closed contact.

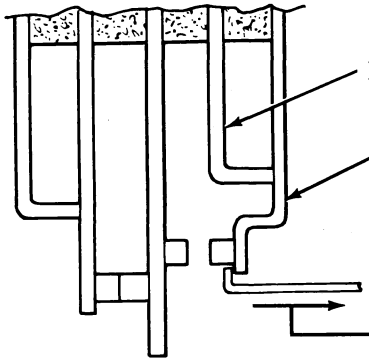
To Adjust
Bend swinger.



NORMALLY OPEN CONTACT GAP

Requirement
With contact removed from unit
Min 0.007 inch---Max 0.012 inch gap between contact surfaces.

To Adjust
Bend normally open contact backstop.



NORMALLY OPEN CONTACT SPRING TENSION

Requirement
Min 35 grams---Max 50 grams to move normally open contact from backstop.

To Adjust
Bend normally open contact leaf. To increase tension against backstop, it may be necessary to bend backstop away from leaf and then bend leaf. Realign backstop with leaf. Check NORMALLY OPEN CONTACT GAP adjustment.

Note: If Distortion Test Set (DXD) is available, perform Code Reading Contact testing (3.25).

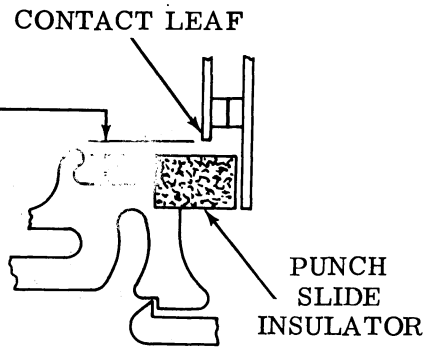
3.20 Code Reading Contacts (continued)

Note: The following adjustments are made with the code contacts installed on the unit.

MOUNTING FRAME

(1) To Check
Latch function clutch.

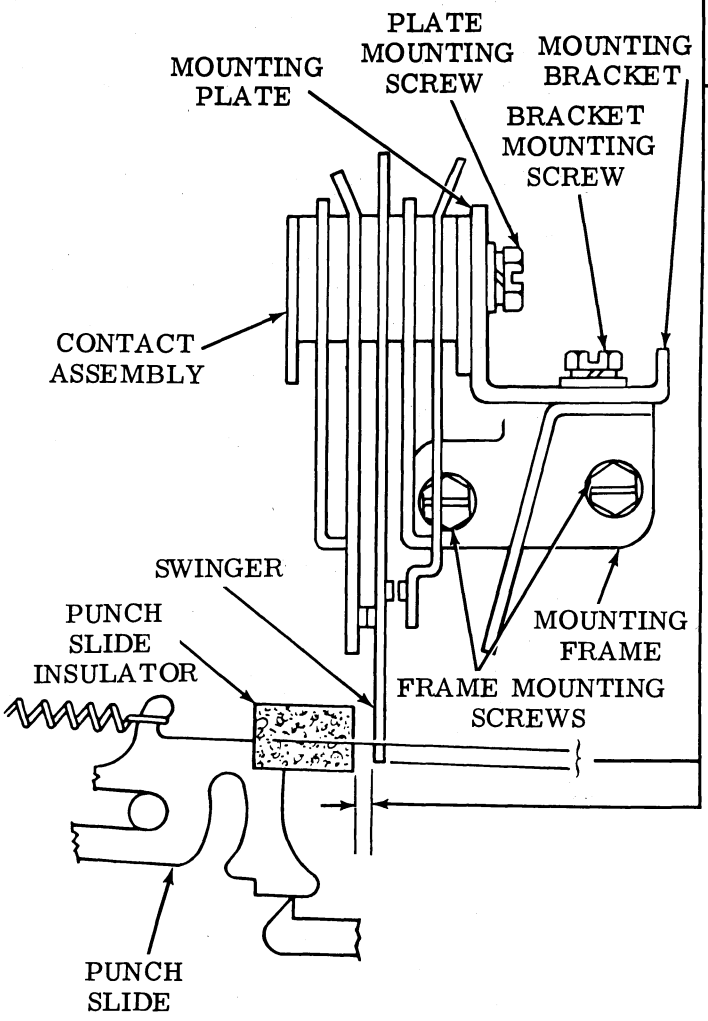
Requirement
Min 0.015 inch between the punch slide insulator and the closest normally closed contact leaf.



(2) To Check
With DELETE code (all code levels marking) in the unit, place punch pins in their uppermost position. Gauge requirement by eye.

(1) Requirement
Swinger should be parallel to end of punch slide insulator.

(2) Requirement
End of swinger should extend below center of punch slide insulator.



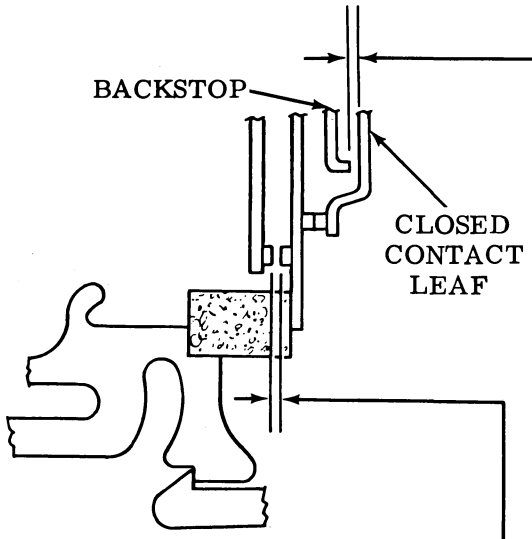
To Adjust
Remove contact assembly. Loosen frame mounting screws and position mounting frame. Tighten screws and reinstall contact assembly.

MOUNTING PLATE POSITION

Requirement
Each contact pile-up swinger should be aligned with its associated punch slide. Gauge by eye.

To Adjust
Loosen plate mounting screw and position contact assembly. Tighten screw.

3.21 Code Reading Contacts (continued)



MOUNTING BRACKET POSITION

To Check
Latch selector and function clutches. Place NULL code (all code levels spacing) in the selector mechanism. Trip function clutch.

Requirement
Min some---Max 0.005 inch between the backstop and closed contact leaf.

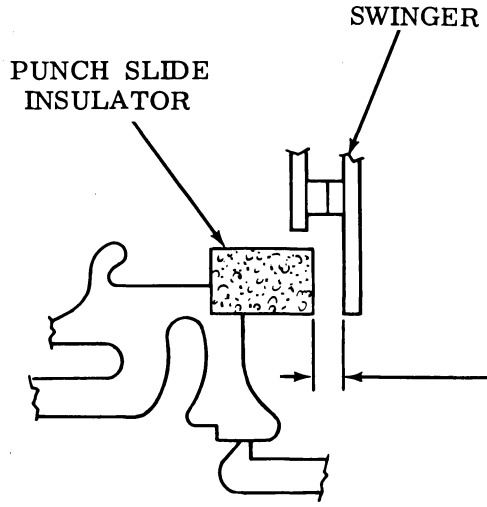
To Adjust
Loosen bracket mounting screw (3.20) friction tight. To move mounting bracket toward punch mechanism: Insert screwdriver between bracket and punch mechanism side of mounting screw. Pry bracket. To move mounting bracket away from punch mechanism: Insert screwdriver between bracket and receiving shaft side of mounting screw. Pry bracket. Tighten screw. If requirement cannot be met, refine BACKSTOP — NORMALLY CLOSED CONTACT (3.18) adjustment. Repeat this adjustment.

NORMALLY CLOSED CONTACT GAP

(1) To Check
Latch selector and function clutches. Place NULL code (all code levels spacing) in the selector mechanism. Trip function clutch.

Requirement
Min 0.025 inch---Max 0.030 inch between normally closed contacts.

To Adjust
Bend contact backstop.



(2) To Check
Latch selector and function clutches. Place DELETE code (all code levels marking) in the selector. Trip function clutch.

Requirement
Min 0.015 inch between punch slide insulator and swinger.

To Adjust
Refine MOUNTING BRACKET POSITION adjustment above if necessary, bend normally closed contact backstop.

3.22 Code Reading Timing Contacts

Note 1: Perform OPERATING BAIL POSITION adjustment, only on units equipped with both code reading and auxiliary timing contacts.

Note 2: The timing contact assembly may be removed for this adjustment.

OPERATING BAIL POSITION

To Check
With the contact bracket mounting screws centrally located in their mounting slots, and swinger of each contact held against its backstop leg by the front operating bail and spring, check requirement at point of least clearance.

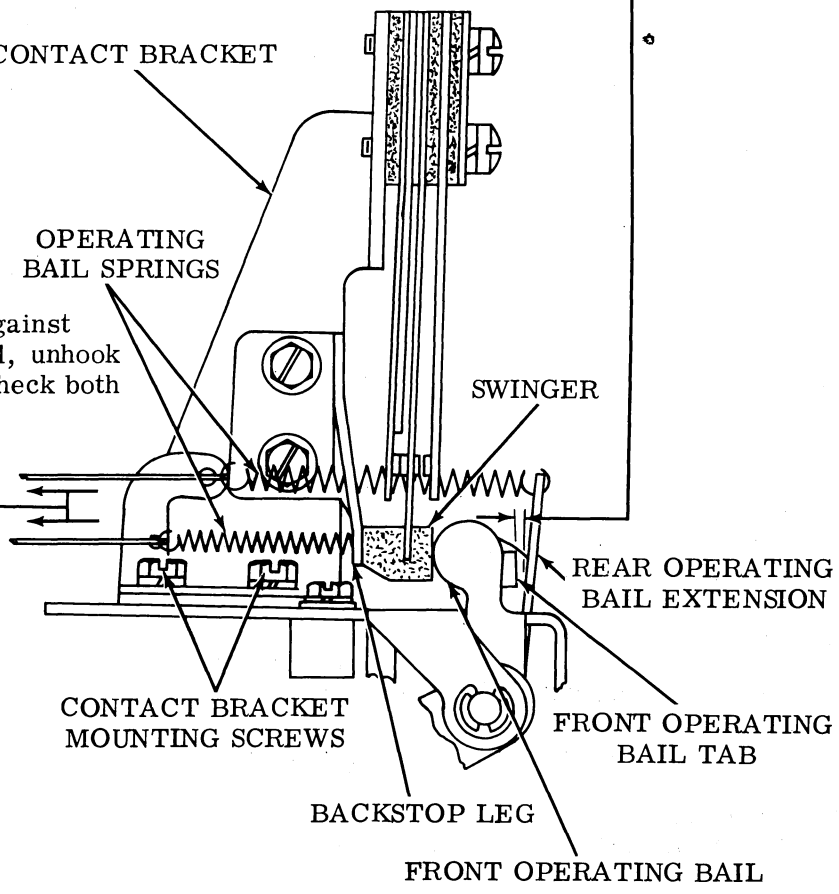
Requirement
Min 0.035 inch---Max 0.040 inch between front operating bail tab and rear operating bail extension.

To Adjust
Bend backstop leg.

OPERATING BAIL SPRINGS

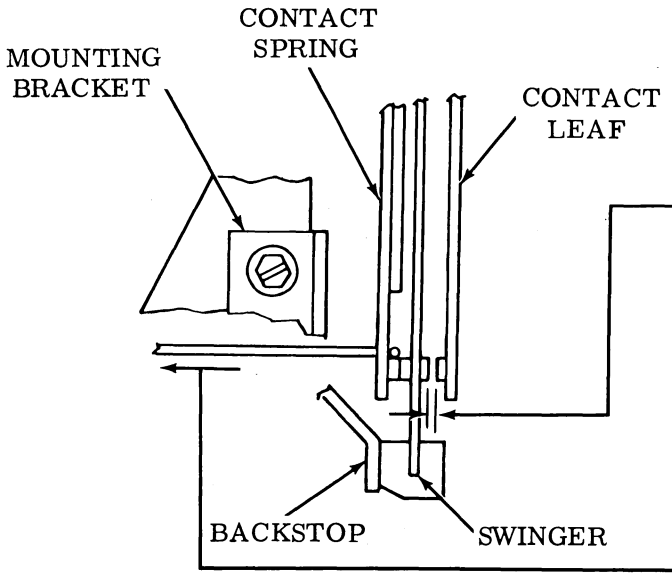
To Check
With swinger of each contact held against its backstop leg by its operating bail, unhook one end of operating bail spring. Check both springs.

Requirement
Min 7 oz---Max 12 oz to pull spring to installed length.



3.23 Code Reading Timing Contacts (continued)

Note: The timing contact assembly may be removed for these adjustments.



NORMALLY CLOSED TIMING CONTACT GAP

Requirement
With swinger held against backstop
Min 0.020 inch---Max 0.025 inch
open contact gap.

To Adjust
Bend contact leaf.

NORMALLY OPEN TIMING CONTACT PRESSURE

Requirement
With swinger held against backstop leg by its front operating bail and spring.
Min 4-1/2 oz---Max 5-1/2 oz
to open the closed contact.

To Adjust
Bend contact spring. Check NORMALLY CLOSED and NORMALLY OPEN TIMING CONTACT GAP requirements.

NORMALLY CLOSED TIMING CONTACT PRESSURE

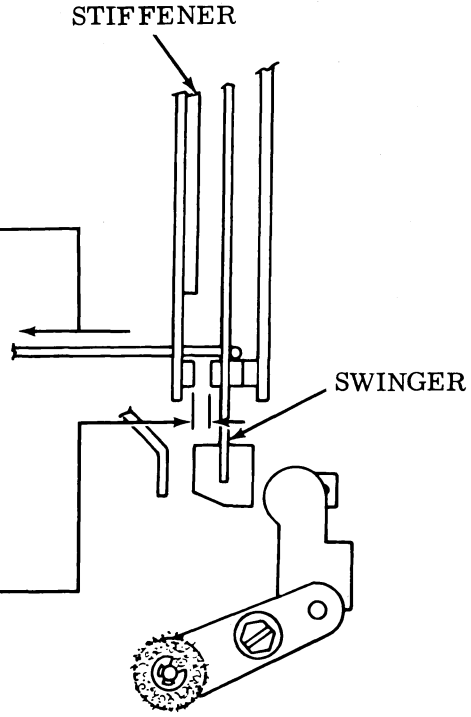
Requirement
With the operating bail held away from swinger
Min 4-1/2 oz---Max 5-1/2 oz
to open the normally closed contact.

To Adjust
Bend swinger. Check NORMALLY CLOSED TIMING CONTACT GAP adjustment.

NORMALLY OPEN TIMING CONTACT GAP

Requirement
With the operating bail held away from the swinger
Min 0.020 inch---Max 0.025 inch
gap between the normally open contacts.

To Adjust
Bend stiffener.



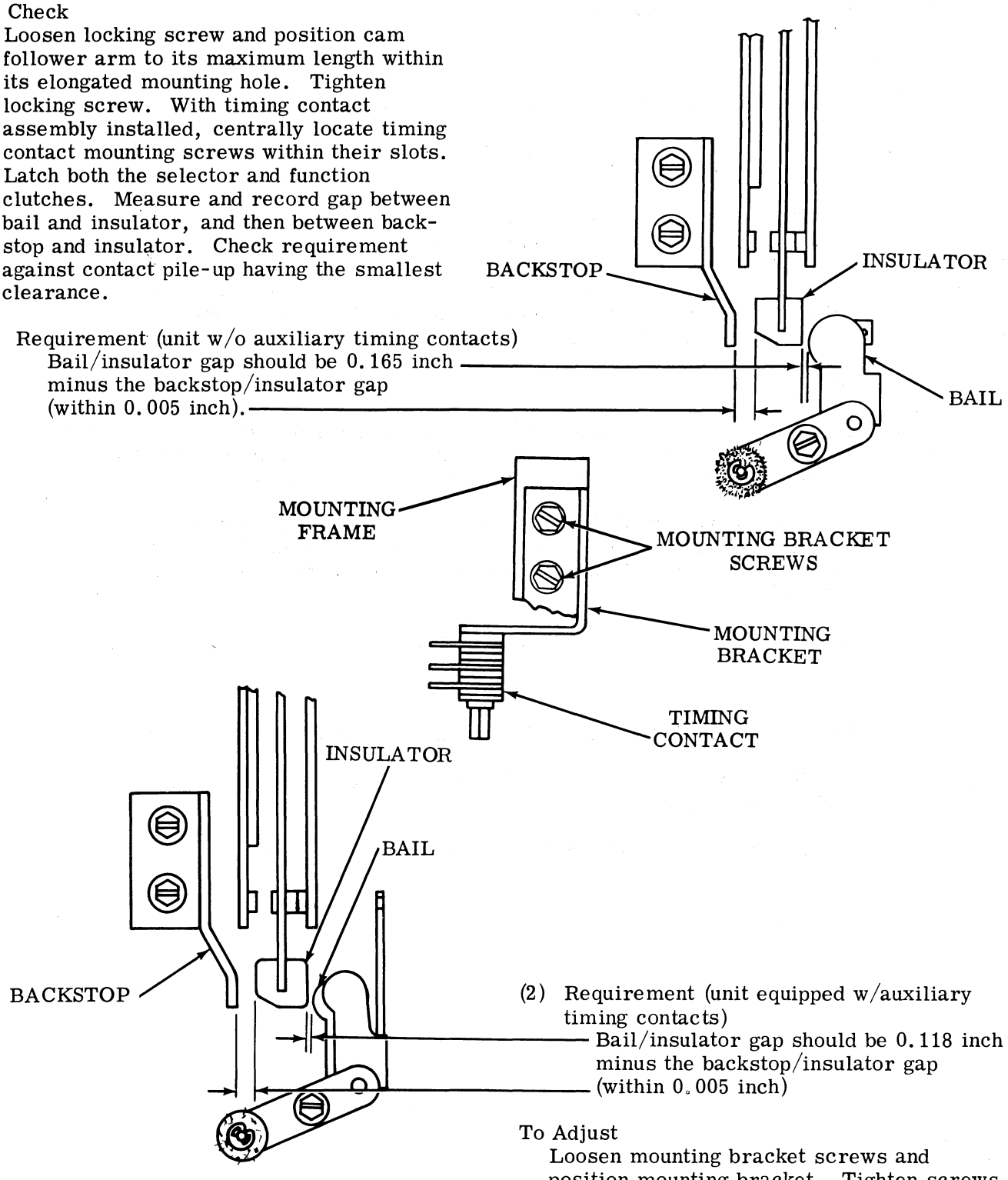
3.24 Code Reading Contacts (continued)

CONTACT MOUNTING BRACKET POSITION

To Check

Loosen locking screw and position cam follower arm to its maximum length within its elongated mounting hole. Tighten locking screw. With timing contact assembly installed, centrally locate timing contact mounting screws within their slots. Latch both the selector and function clutches. Measure and record gap between bail and insulator, and then between backstop and insulator. Check requirement against contact pile-up having the smallest clearance.

(1) Requirement (unit w/o auxiliary timing contacts)
Bail/insulator gap should be 0.165 inch minus the backstop/insulator gap (within 0.005 inch).



(2) Requirement (unit equipped w/auxiliary timing contacts)
Bail/insulator gap should be 0.118 inch minus the backstop/insulator gap (within 0.005 inch)

To Adjust

Loosen mounting bracket screws and position mounting bracket. Tighten screws.

3.25 Code Reading Contacts (continued)

Note: Refer to the appropriate section for instruction on DXD operation.

CODE AND TIMING CONTACT TESTING (Final)

General

(1) Perform these tests and installation and complete adjustment of the contacts.

(2) Tests are made at 150 wpm with a Distortion Test Set (DXD) operating at 100 wpm (with 35% marking bias).

(3) When indicated specifications in these tests cannot be made, refine adjustments or change related signal lengths to facilitate timing requirements.

(4) Minimum signal lengths apply to the interval between latest start and earliest end of all contact traces. Maximum signal length applies to interval between earliest start and latest end of all contact traces.

DXD Zero Adjustment

In the following tests, observations of a neon trace on the DXD are made. The trace has a tendency to "jump" as high as ten scale divisions and become too unstable for accurate readings to be taken. Therefore, perform these steps to zero the DXD:

(1) With reperforator operating and receiving DELETE combinations, connect the neon trace to code contact 1. Observe and note the point at which the trace begins. This point will jump, as described above. Note only the minimum reading.

(2) Repeat step (1) for all other code contacts.

(3) Select the contact trace which starts the latest.

(4) Set the START-ZERO mark of the DXD scale to this point on the trace.

(5) The DXD is now zeroed. Record the earliest end of the neon traces for future adjustment reference.

(6) Proceed to test the code and timing contacts.

3.26 Code Reading Contacts (continued)

CODE AND TIMING CONTACT TESTING (Final) — (continued)

(1) Requirement

Connect neon trace lamp to contact normally open when unit is in idle position. With unit receiving DELETE combinations, the combined code contact traces should have a minimum signal length of 33 ms (363 divisions) and a maximum signal length of 47 ms (517 divisions). See diagram below. All bounce should end within 20 divisions of the earliest start and the latest end of trace.

(2) Requirement

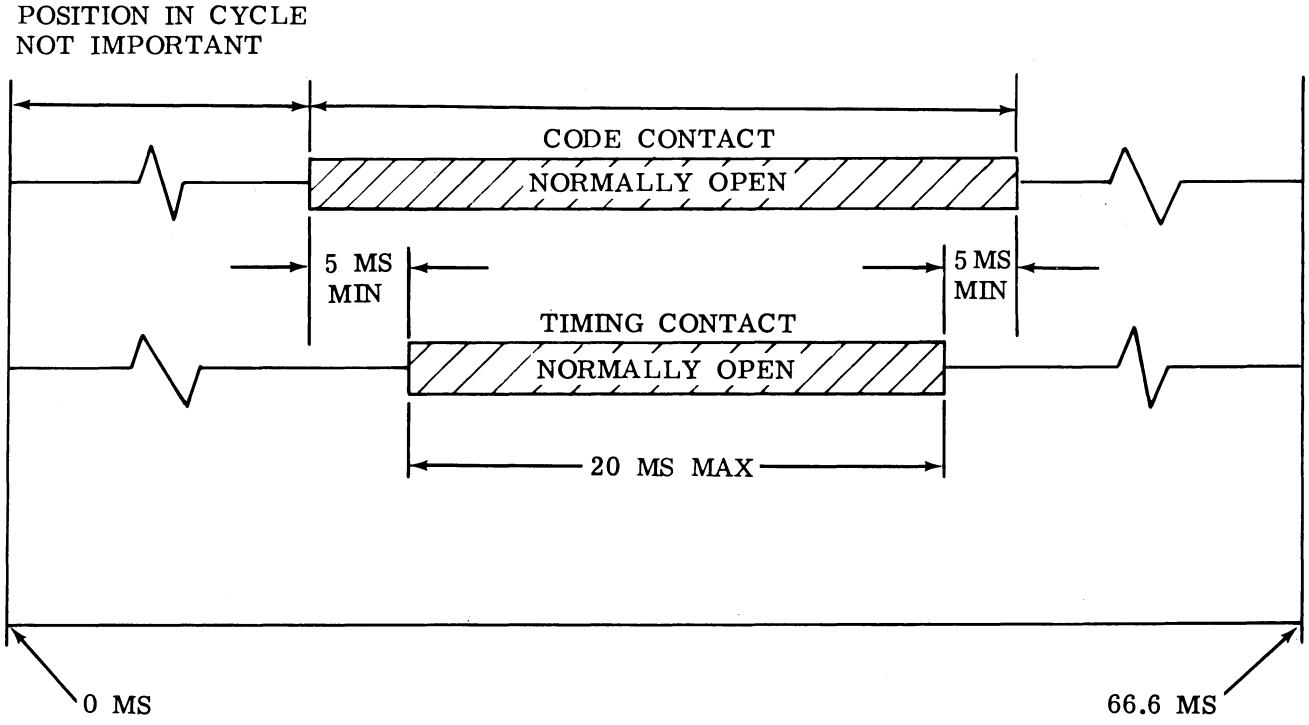
With neon trace lamp connected to both sides of this contact, there should be a minimum of 2 divisions gap in neon trace (2 places), indicating break-before-make contact action. Spacing contact should have a minimum of 440 divisions signal length and have no breaks within the minimum length requirement while the unit is receiving DELETE combinations. Repeat for each contact.

(3) Requirement

With unit receiving @ character code, connect the DXD neon trace lamp to spacing side of contacts. Trace should be on continuously and be free of breaks. Repeat for each contact.

To Adjust

Refine MOUNTING PLATE POSITION (3.20) and MOUNTING BRACKET POSITION (3.21). Refine MOUNTING PLATE POSITION (3.20) and the NORMALLY CLOSED CONTACT GAP (3.21) and adjust towards the maximum signal length. If requirements (2) and (3) cannot be met, refine MOUNTING PLATE POSITION (3.20) and MOUNTING BRACKET POSITION (3.21) adjustments. If there is excessive bounce, refine SPRING TENSION — NORMALLY CLOSED CONTACT AGAINST BACKSTOP (3.18), NORMALLY CLOSED CONTACT SPRING TENSION (3.19), and NORMALLY OPEN CONTACT SPRING TENSION (3.19). Repeat test procedure if refinements are made.



3.27 Code Reading Contacts (continued)

TIMING CONTACTS (Final)

To Check

Zero the DXD (3.26). Connect neon trace lamp to normally open contact (open when unit is in idle position).

(1) Requirement

Latest trace should end a minimum of 5 ms (55 divisions) before the earliest end of code contact trace. See diagram in 3.26.

(2) Requirement

Longest trace should be a maximum of 20 ms (220 divisions) and a minimum of 120 divisions long. All bounce should end within 10 divisions of earliest start and latest end of a trace.

(3) Requirement

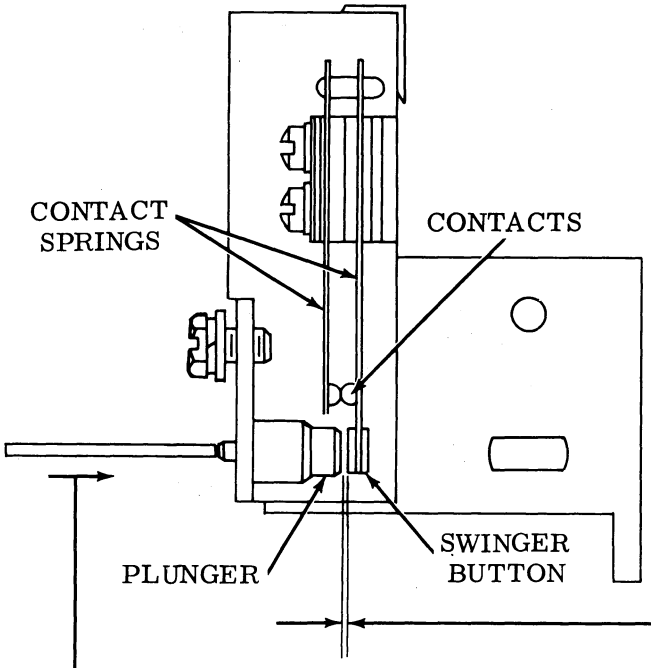
The earliest trace should start a minimum of 5 ms (55 divisions) after the DXD ZERO mark.

To Adjust

Refine CONTACT MOUNTING BRACKET POSITION (3.24) and/or NORMALLY CLOSED TIMING CONTACT GAP (3.23), NORMALLY CLOSED TIMING CONTACT PRESSURE (3.23), if requirements cannot be met. If bounce is excessive, refine NORMALLY CLOSED TIMING CONTACT PRESSURE (3.23) and/or NORMALLY OPEN TIMING CONTACT PRESSURE (3.23).

3.28 Character Received Contacts

Note: This adjustment is made with the character received contact assembly removed from the unit.

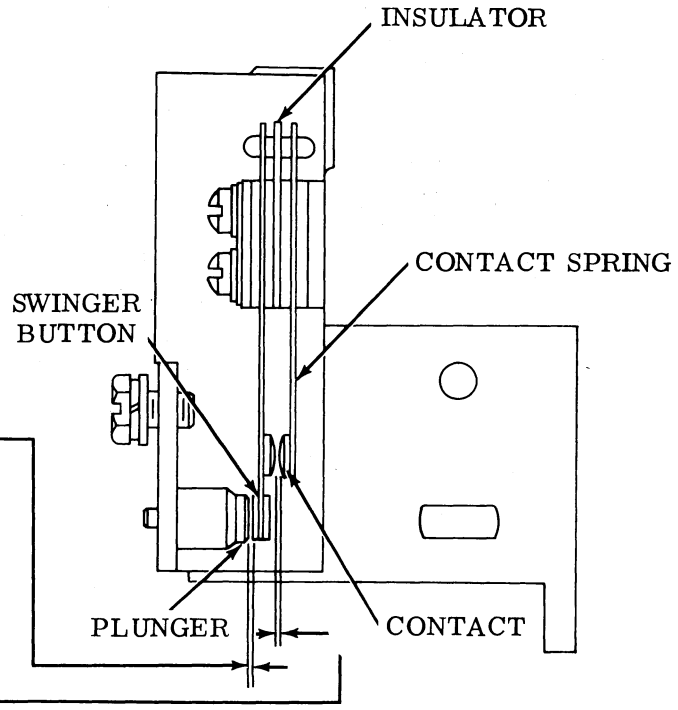


CONTACT LEAF SPRING — FOR UNITS EQUIPPED W/"NORMALLY OPEN" CONTACT MECHANISM

(1) Requirement
With contact closed
Min some---Max 0.006 inch
between plunger and swinger button.

(2) Requirement
Min 1-1/2 oz---Max 2 oz
to open the closed contacts.

To Adjust
Bend contact springs.



CONTACT LEAF SPRING — FOR UNITS EQUIPPED W/"NORMALLY CLOSED" CONTACT MECHANISM

(1) Requirement
Min some---Max 0.006 inch
between plunger and swinger button.

(2) Requirement
Min 0.005 inch---Max 0.010 inch
between cont ct surfaces.

To Adjust
Bend contact spring.

3.29 Character Received Contacts (continued)

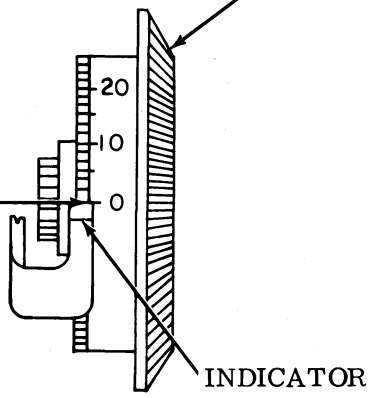
Note 1: These requirements are for units with character received contacts (either the "normally open" contact or "normally closed" contact mechanisms).

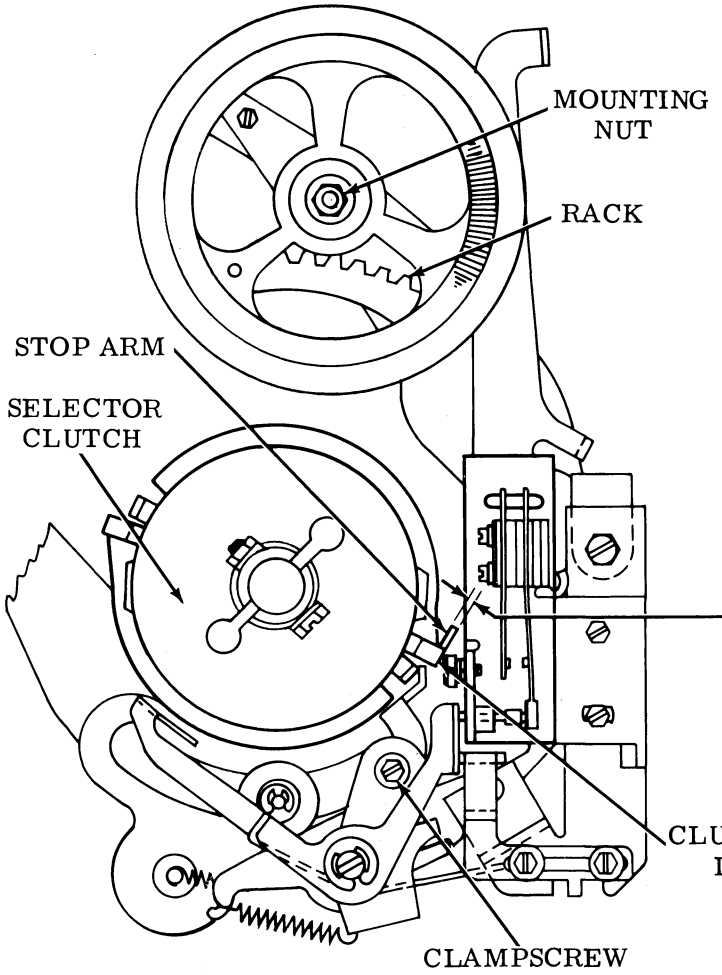
RANGE FINDER KNOB PHASING

To Check
Position the range finder knob to its extreme counterclockwise position with the rack pivoted against its stop.

Requirement
The indicator should be within one tooth of the range finder zero marking.

To Adjust
Loosen mounting nut and place rack counterclockwise against its stop. Position range finder knob and tighten nut.





SELECTOR CLUTCH STOP

To Check
Position range finder at 60. With selector magnet armature in its attracted position, disengage and rotate selector clutch.

Requirement
Shoe lever should be engaged by approximately full thickness of stop arm.

To Adjust
Loosen clampscrew and position stop arm. Tighten clampscrew.

Note 2: Illustration shows "normally open" contact mechanism.

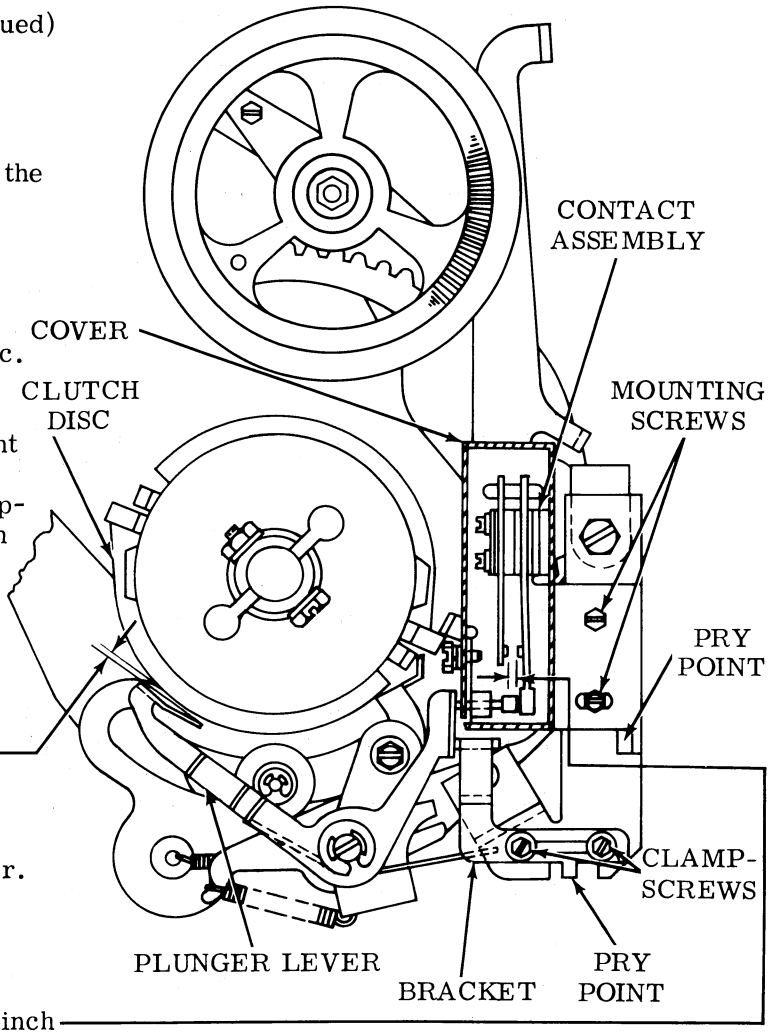
3.30 Character Received Contacts (continued)

(A) PLUNGER LEVER

To Check
Position and latch selector clutch in the cycle producing smallest required clearance.

Requirement
Min some---Max 0.005 inch between plunger lever and clutch disc.

To Adjust
Loosen mounting screws friction tight and use pry point to rotate contact assembly to the right. Loosen clamp-screws and use pry points to position bracket. Tighten clampscrews and perform CONTACT GAP adjustment below.



(B) CONTACT GAP

To Check
Latch selector clutch. Remove cover.

(1) Requirement
For units equipped w/"normally open" contact mechanism
Min 0.008 inch---Max 0.012 inch between contact surfaces.

(2) Requirement
For units equipped w/"normally closed" contact mechanism, slight overtravel of closing contacts.

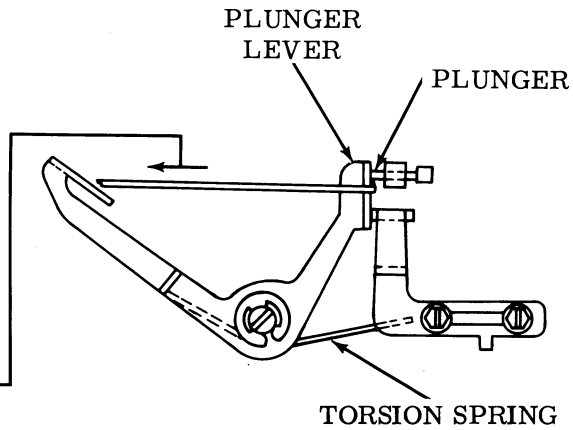
To Adjust
With mounting screws loosened, use pry point to position contact assembly. Tighten mounting screws and replace cover.

Note 1: For units equipped w/"normally closed" contact mechanisms, recheck (A) PLUNGER LEVER requirement. If gap exceeds 0.005 inch, refine above To Adjust.

Note 2: Illustration shows "normally open" contact mechanism.

PLUNGER LEVER TORSION SPRING

Requirement
Min 4 oz---Max 8-1/2 oz to move plunger lever from plunger.



3.31 Character Received Contacts (continued)

CONTACT TIMING VERIFICATION

General

(1) These tests are made at 150 wpm with an 11-unit code Distortion Test Set (DXD) operating at 100 wpm.

(2) Minimum signal lengths apply to the interval between the latest start and the earliest end of the contact trace.

To Check

(1) Observations of a neon trace on the DXD are made during the requirement check. Synchronize the DXD viewing scale with the transmitted test signal.

(2) Connect the character received contacts into the test set viewing circuit.

(3) With the reperforator receiving DELETE (all code levels marking) code, view the DXD trace indicator to determine the open or closed condition of the contact.

(1) Requirement
The contact should close (open, for units equipped with normally closed contact mechanism) after the 73rd DXD division of the START pulse and should open (close, for units w/normally closed contact mechanism) before the end of the 87th DXD division of the number 5 pulse.

(2) Requirement
Signal length should be a minimum of 55 DXD divisions.

To Adjust
To eliminate extra signal spikes and/or reduce contact bounce, refine CONTACT GAP (3.30) adjustment.

If requirements (1) and (2) are not met, and all previous character received contact adjustment requirements are met, replace character received contacts assembly.