28 TYPING REPERFORATOR AND TAPE PRINTER

ADJUSTMENTS

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1. GENERAL

1.01 This section contains the specific requirements and adjustments for the 28 typing reperforators and tape printers.

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

Note: Remove power from set or unit before making adjustment.

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

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

1.05 After a few weeks (300 to 500 hours) of operation of a new unit, the unit should be relubricated to make sure all operating points have been properly lubricated.

1.06 Recheck all clutch gaps to insure that the parts, after seating themselves, have not caused the clutch gaps to open up. Reset if necessary. Standard readjustment periods are to be maintained thereafter.

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

1.08 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch lever so that the clutch shoes release their tension on the clutch drum. When engaged, the clutch shoe lever is unlatched and the clutch shoes are wedged firmly against the clutch drum.

Note: When the main shaft is rotated by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve, drag and permit the main shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latch lever and fully disengage the clutch.

1.09 To manually operate the typing reperforator or tape printer proceed as follows:

(1) Attach the TP312709 armature clip to the selector magnet armature by carefully placing the spring loop over the magnet terminal insulator and pressing down to engage the hook of the clip on the underside of the armature and releasing. The spring tension of the armature clip will hold the selector armature in the marking (attracted) position.

(2) While holding the selector magnet armature operated by means of the armature clip, use the handwheel, included with the special tools for servicing 28 teletypewriter apparatus, to manually rotate the main shaft in a counterclockwise direction until all the clutches are brought to their disengaged position.

(3) Fully disengage all clutches in accordance with 1.08, Note.

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

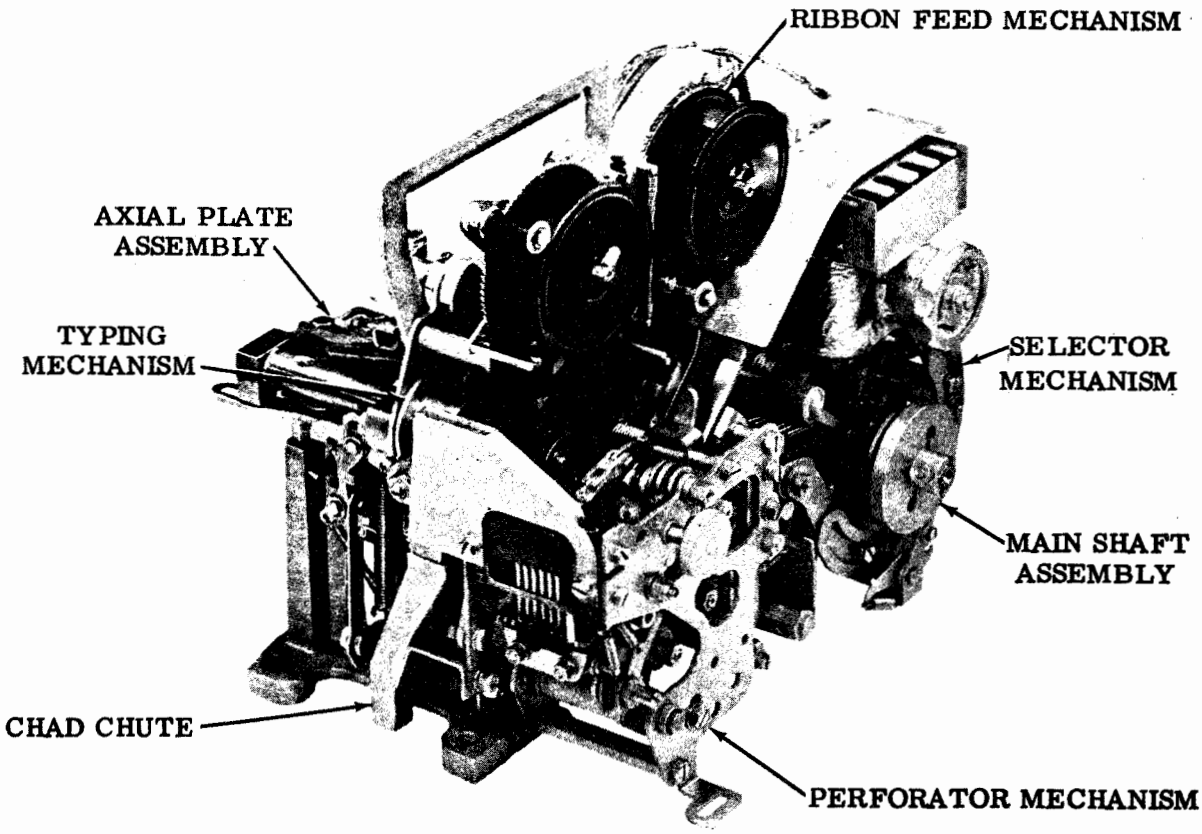


Figure 1 - 28 Typing Reperforator Unit
(Fully Perforated Tape)

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

(6) Strip the pushlevers from their selector levers, which are spacing in the code combination of the character function that is being selected, and allow the pushlevers to move to the right.

(7) The pushlevers and the selector levers move in succession starting with the inner lever no. 1 to the outer lever no. 5.

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

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

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

1.11 Where a typing reperforator is used as a component of the 28 reperforator transmitter unit or the 28 perforator transmitter base

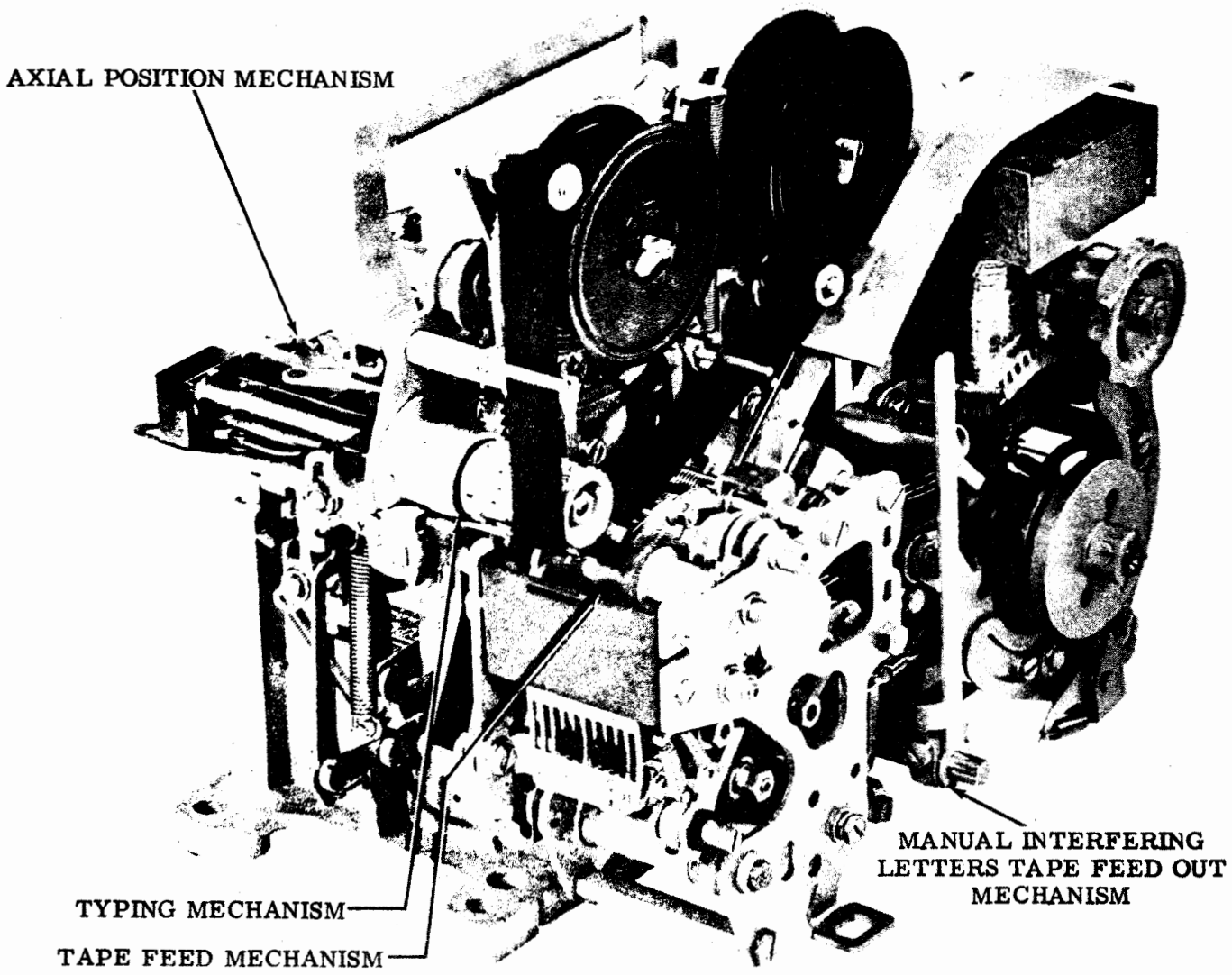


Figure 2 - 28 Tape Printer Unit With Manual Interfering LTRS Tape Feed Out Mechanism

or the multiple reperforator base, refer to the applicable sections for the additional adjustments.

1.12 To facilitate adjustments, remove typing reperforator from base. For typing reperforator equipped with one-shaft mechanism, refer to Section 573-118-702TC for disassembly and reassembly routines for the 28 typing reperforator. For typing reperforator equipped with two-shaft mechanism, refer to Section 573-117-702TC for disassembly and reassembly routines for the 28 perforator transmitter base.

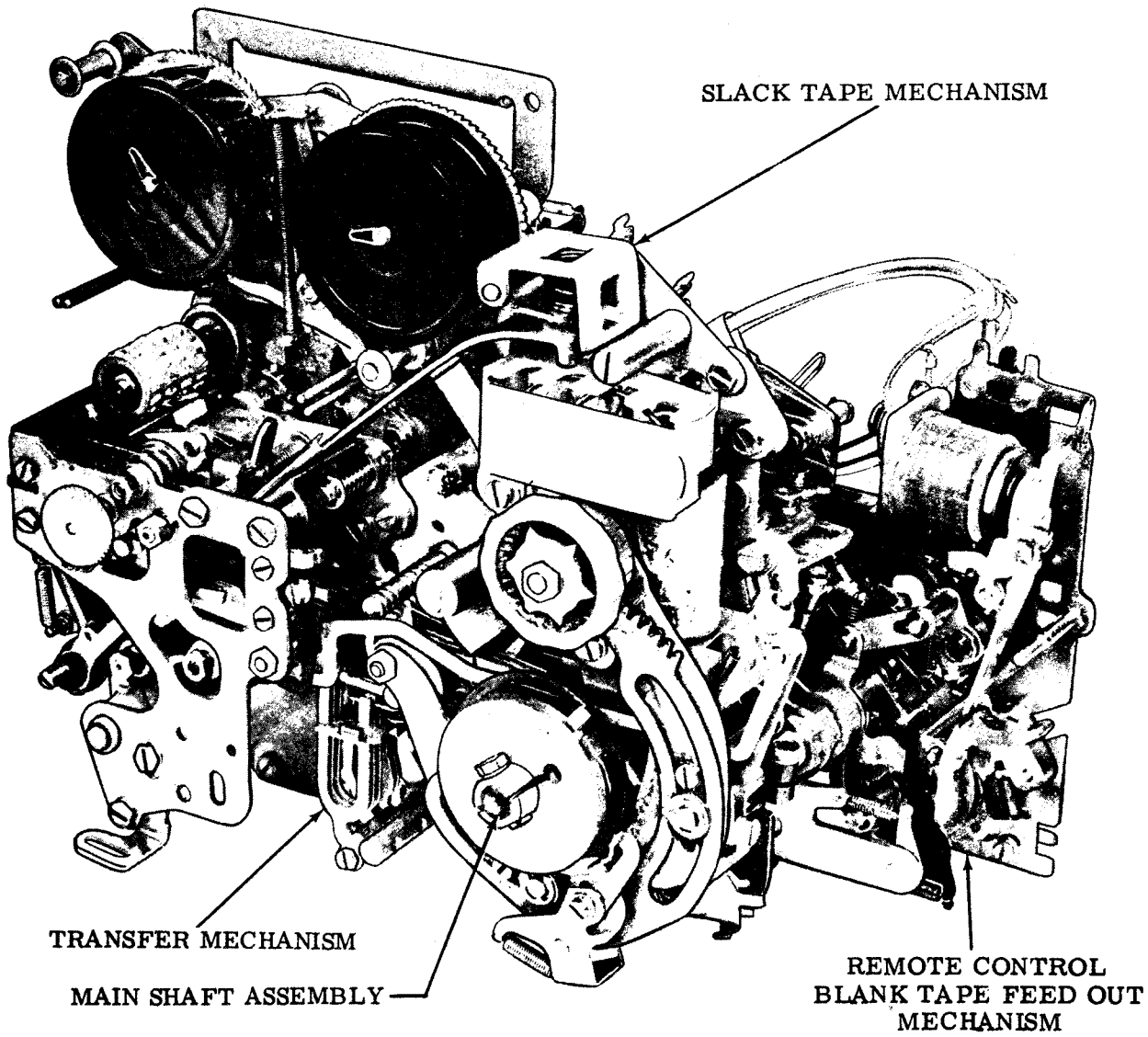


Figure 3 - 28 Typing Reperforator Unit With Remote Control BLANK Tape Feed Out Mechanism (Fully Perforated Tape)

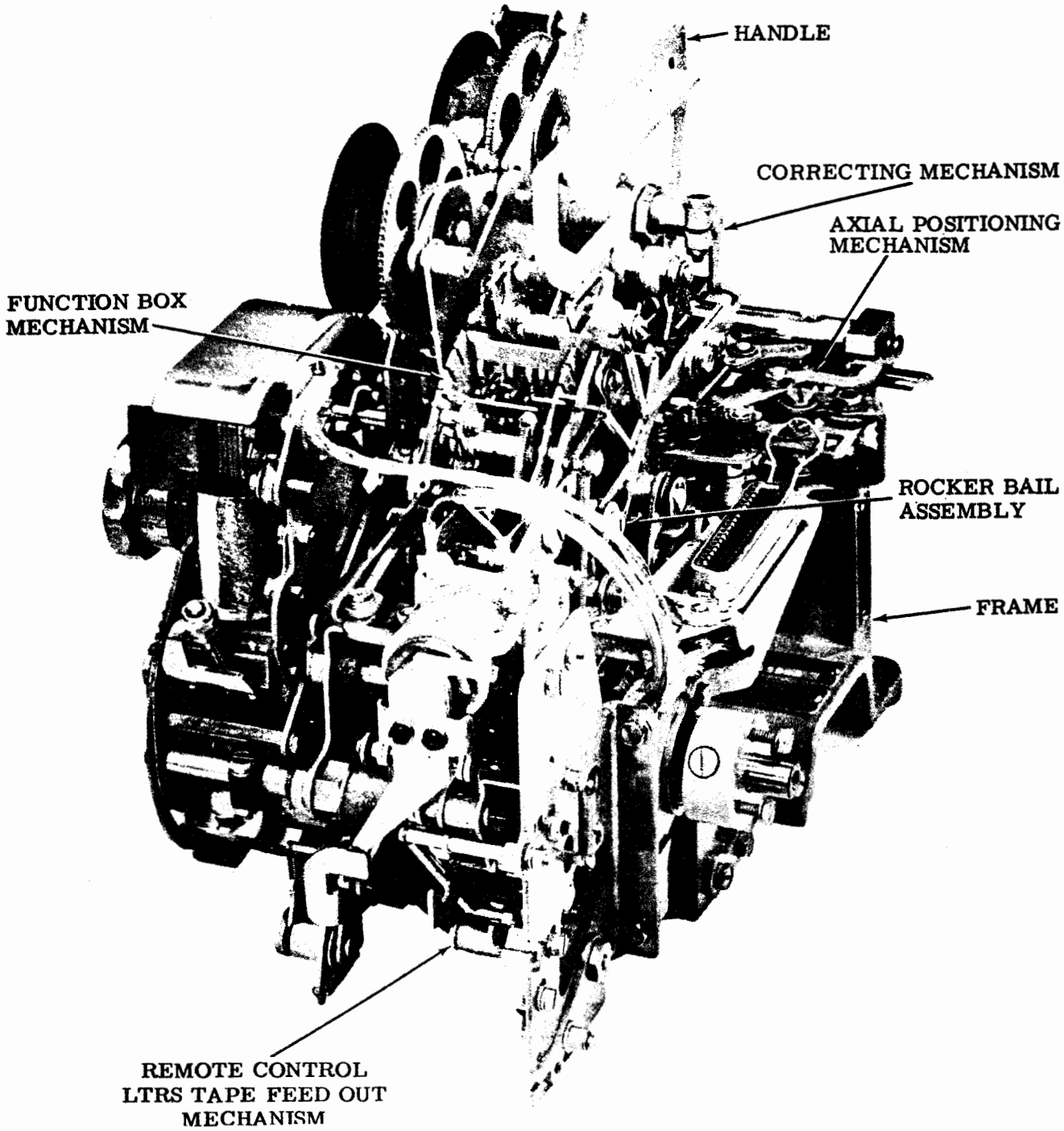


Figure 4 - 28 Typing Reperforator Unit With Remote Control LTRS Tape Feed Out Mechanism (Rear View)

2. BASIC UNITS

2.01 Selector and Function Clutch Mechanisms

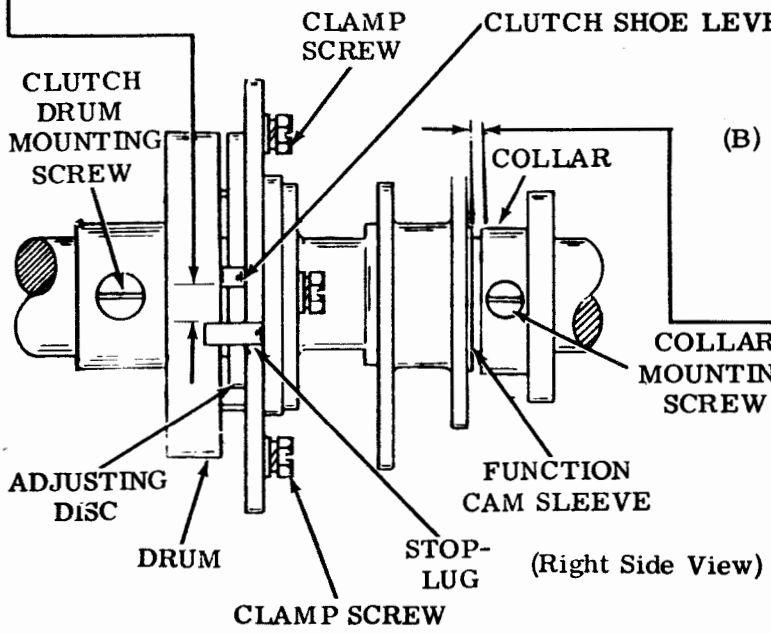
(A) CLUTCH SHOE LEVER

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

(1) Requirement
Disengage clutch. Measure clearance.

(2) Requirement
Align head of clutch drum mounting screw with stop-lug. Engage clutch. Manually press shoe lever and stop-lug together and allow to snap apart. Measure clearance. Clearance between shoe lever and stop-lug
Min 0.055 inch---Max 0.085 inch
greater when clutch engaged than when disengaged.

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

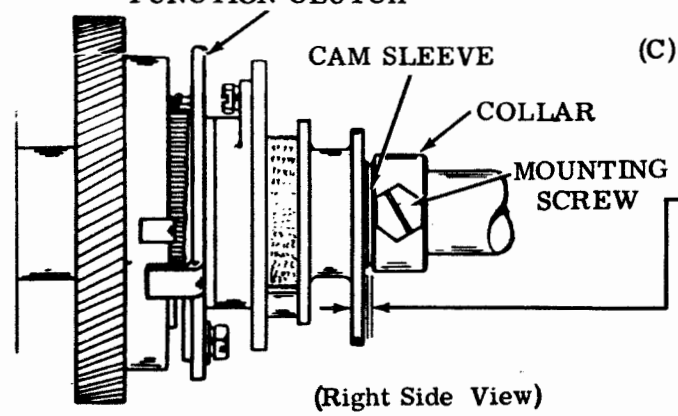


(Right Side View)

(B) FUNCTION CLUTCH DRUM ENDPLAY
(For One-Shaft Unit)

Requirement
With clutch shoe lever held in disengaged position
Min some---Max 0.015 inch
when play is taken up to make clearance maximum.

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



(Right Side View)

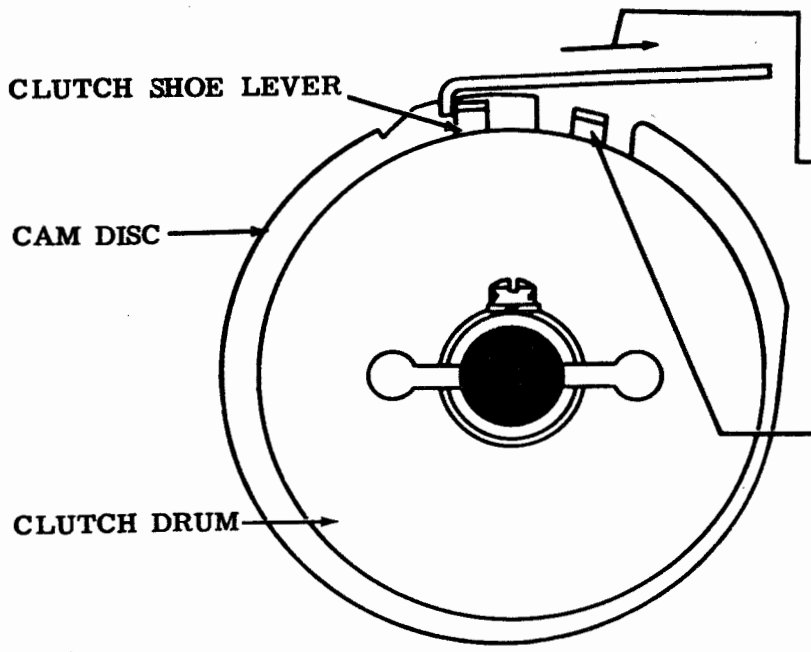
(C) FUNCTION CLUTCH DRUM ENDPLAY
(For Two-Shaft Unit)

Requirement
With function clutch disengaged
Min some---Max 0.015 inch
between cam sleeve and collar when play is taken up to make clearance maximum.

To Adjust
Position collar with mounting screw loosened. Tighten screw.

2.02 Selector and Function Clutch Mechanism (continued)

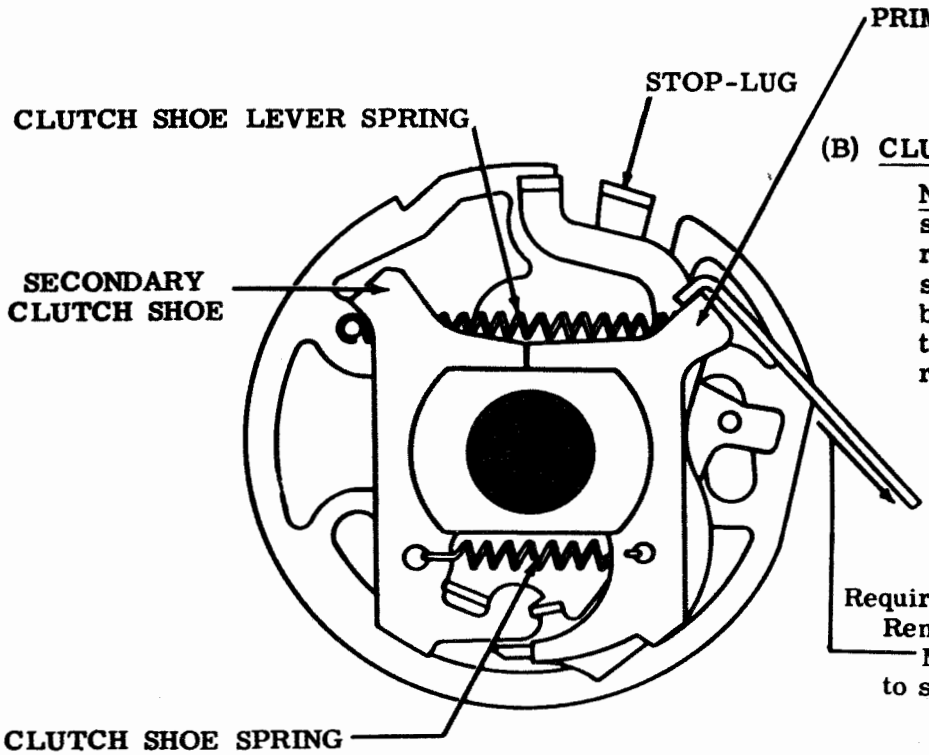
Note: These spring tensions apply to both clutches.



(Front View)

(A) CLUTCH SHOE LEVER SPRING

Requirement
Engage clutch. Hold cam disc to prevent its turning.
Min 15 oz---Max 20 oz
to pull shoe lever in contact with stop-lug.



(Front View)

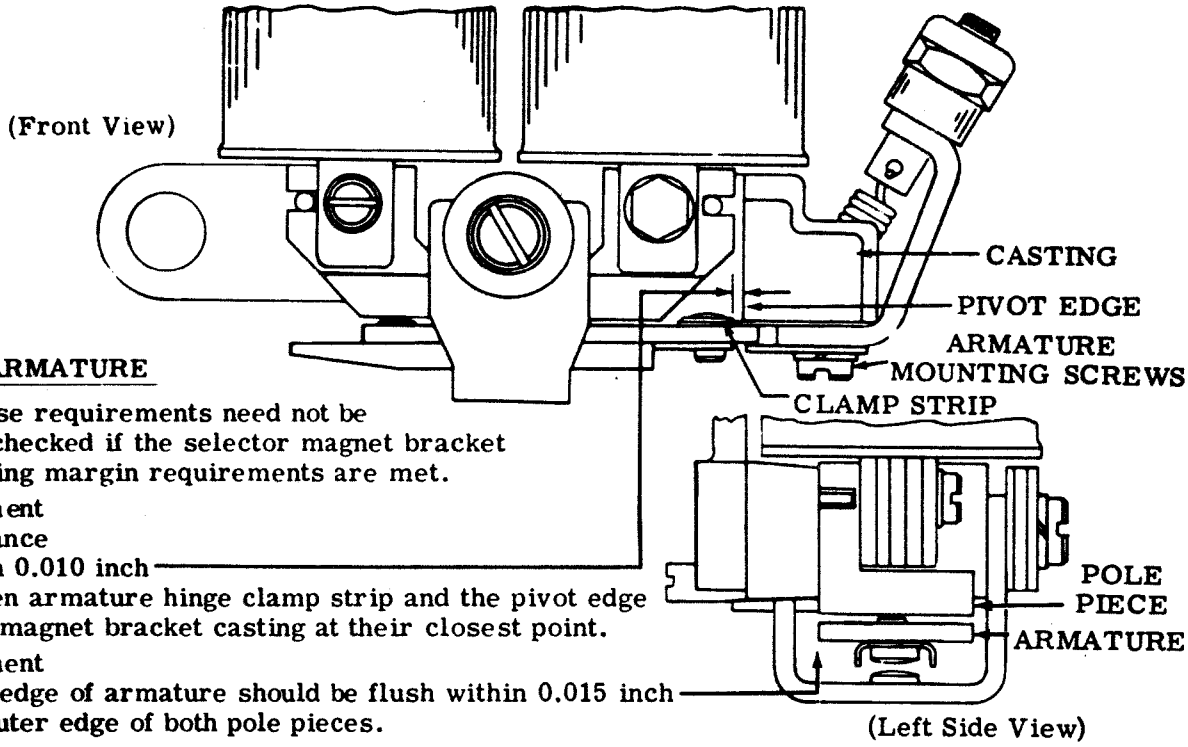
(B) CLUTCH SHOE SPRING

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

Requirement
Remove clutch from drum.
Min 3 oz---Max 5 oz
to start primary shoe moving.

2.03 Selector Mechanism

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



SELECTOR ARMATURE

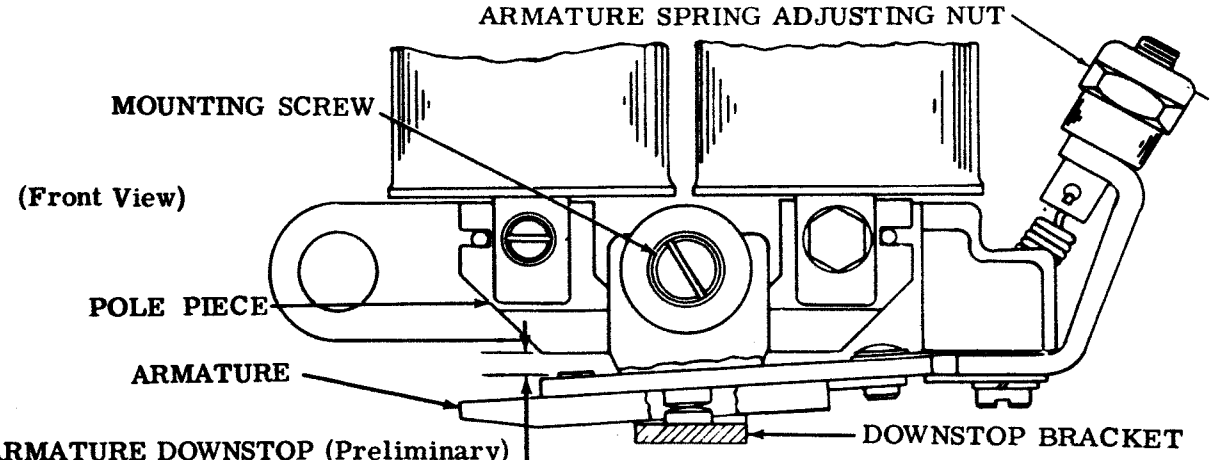
Note: These requirements need not be made nor checked if the selector magnet bracket and receiving margin requirements are met.

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

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

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

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



SELECTOR ARMATURE DOWNSTOP (Preliminary)

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

To Adjust
Position downstop bracket with mounting screw loosened. Tighten screw.

2.04 Selector Mechanism (continued)

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

(1) Requirement

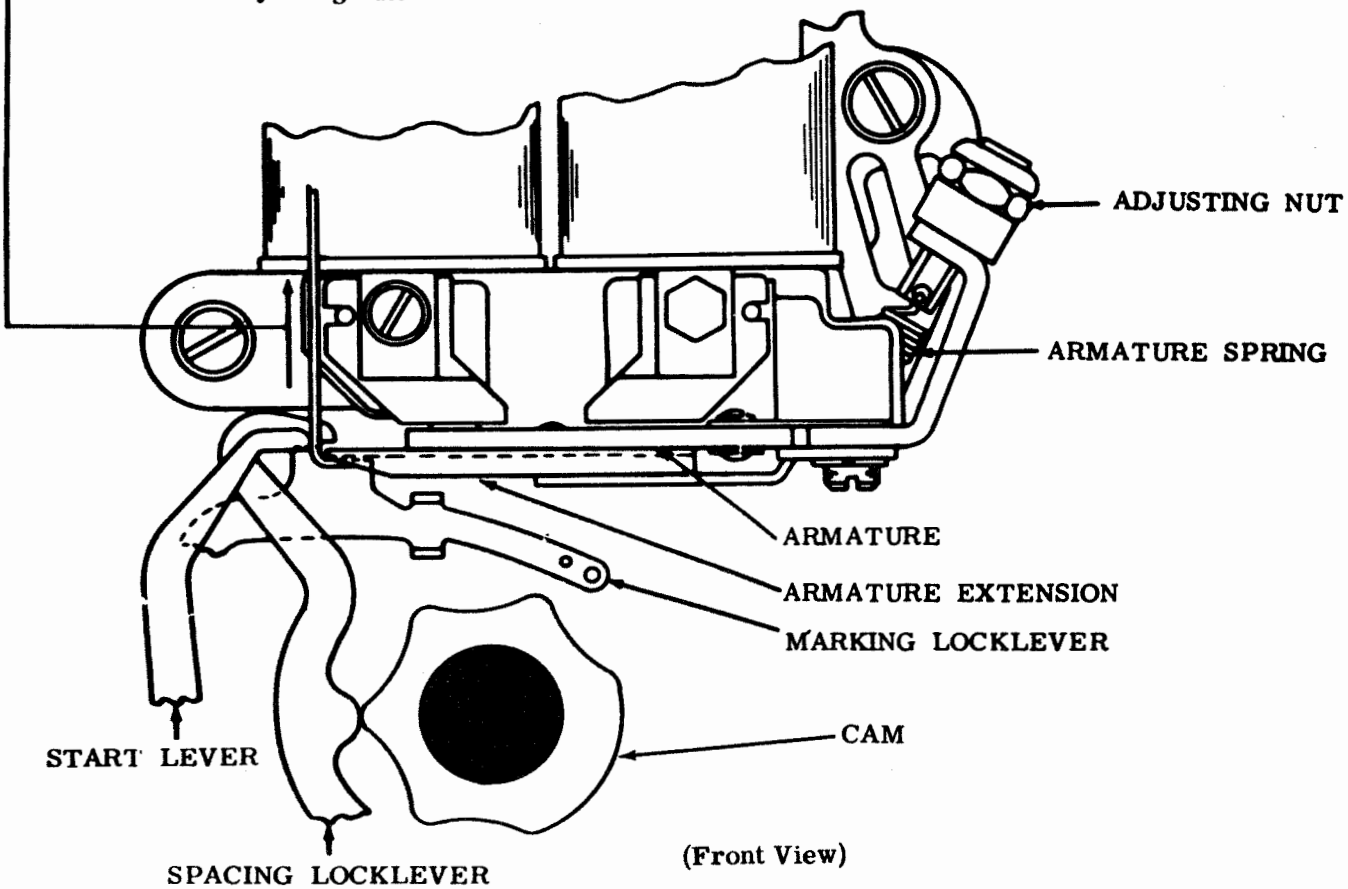
With locking levers and start lever on high part of their cams, scale applied as nearly vertical as possible under end of armature extension, it should require the following tensions to move armature to marking position:

0.020 and 0.035 Ampere - Min 1-1/2 oz---Max 2 oz
0.060 Ampere - Min 2-1/2 oz---Max 3 oz

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

To Adjust

Position adjusting nut.



(2) Requirement

See SELECTOR RECEIVING MARGIN (2.12) for final adjustment.

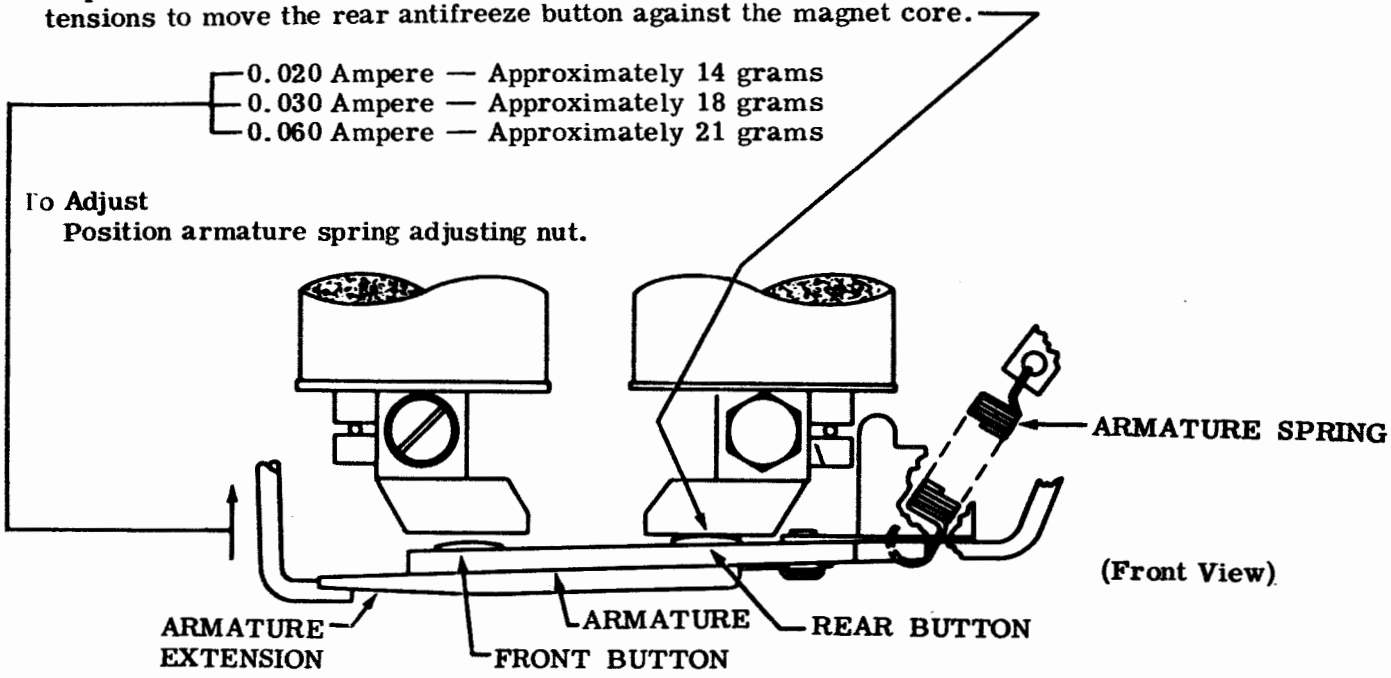
2.05 Selector Mechanism (continued)

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

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

0.020 Ampere — Approximately 14 grams
0.030 Ampere — Approximately 18 grams
0.060 Ampere — Approximately 21 grams

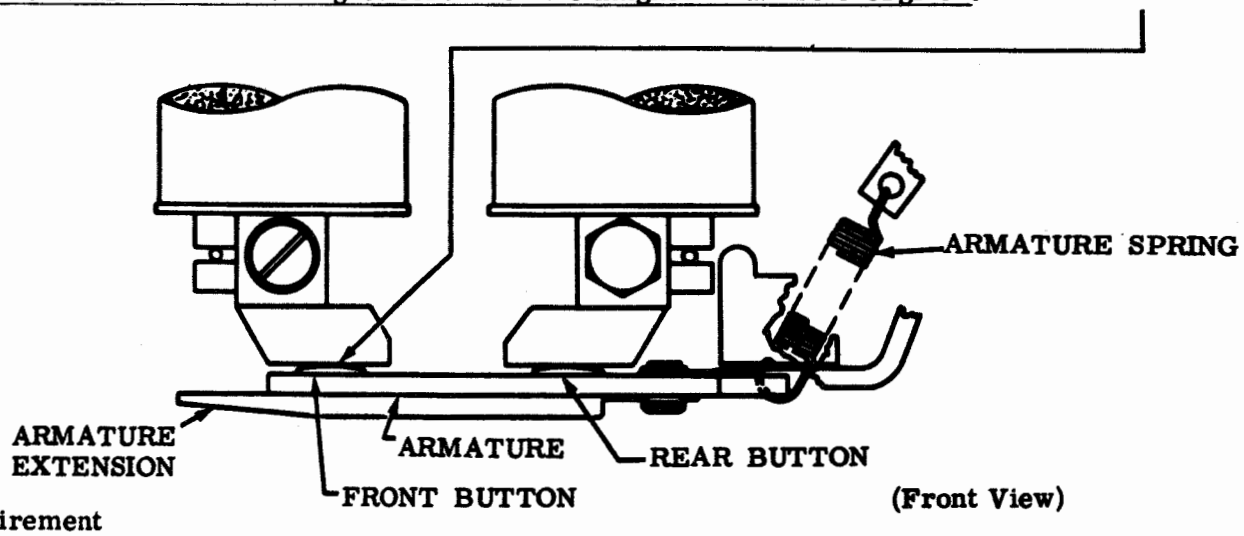
To Adjust
Position armature spring adjusting nut.



Note: See SELECTOR RECEIVING MARGIN (2.12) adjustment

SELECTOR ARMATURE SPRING (Final)

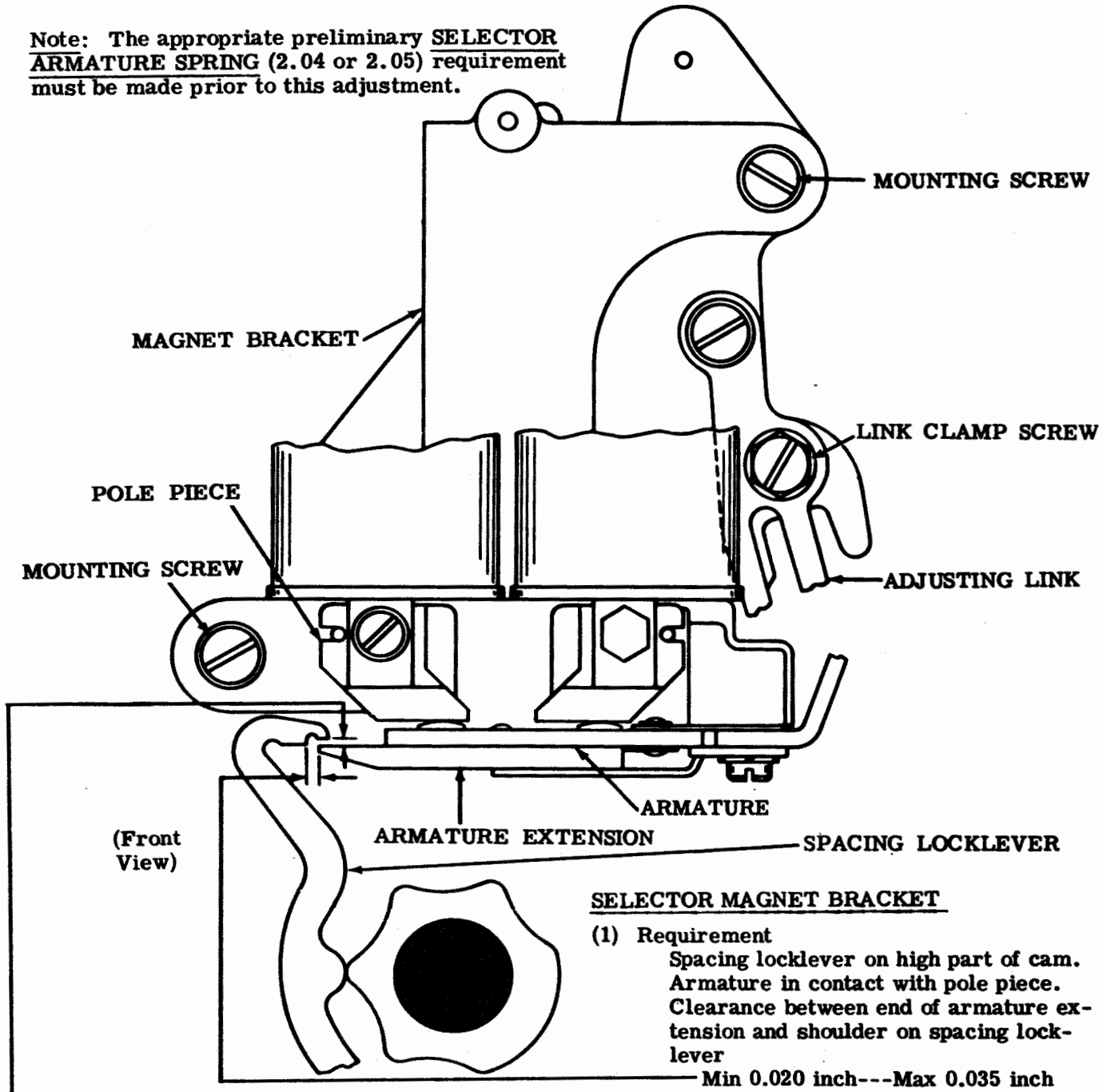
(1) Requirement
When a distortion test set is available, the selector armature spring tension should be refined, if necessary, to obtain satisfactory receiving margins. The front antifreeze button must contact the magnet core when the magnet coils are energized.



(2) Requirement
See SELECTOR RECEIVING MARGIN (2.12) adjustment.

2.06 Selector Mechanism (continued)

Note: The appropriate preliminary SELECTOR ARMATURE SPRING (2.04 or 2.05) requirement must be made prior to this adjustment.



SELECTOR MAGNET BRACKET

(1) Requirement
Spacing locklever on high part of cam.
Armature in contact with pole piece.
Clearance between end of armature extension and shoulder on spacing locklever
Min 0.020 inch---Max 0.035 inch

(2) Requirement
Spacing locklever on high part of cam.
Armature in contact with pole piece.
Min some---Max 0.003 inch
clearance between upper surface of the upper step of the spacing locklever when locklever is held downward.

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

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

Note: See following page for requirement (3).

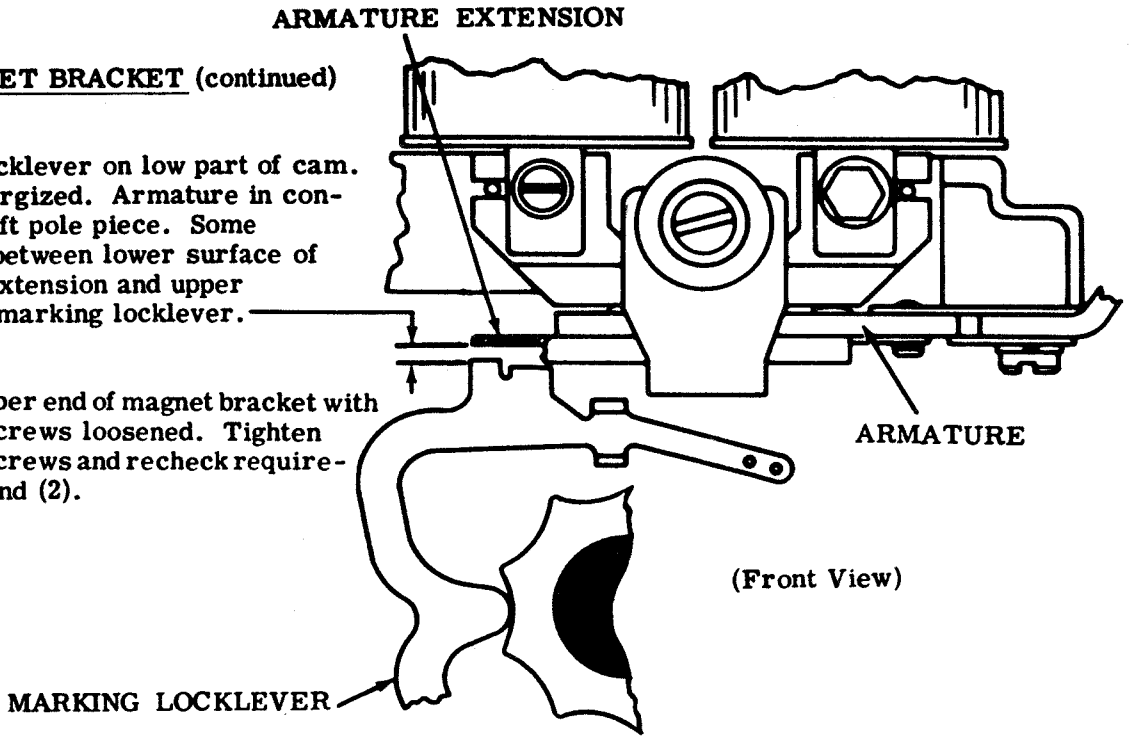
2.07 Selector Mechanism (continued)

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

SELECTOR MAGNET BRACKET (continued)

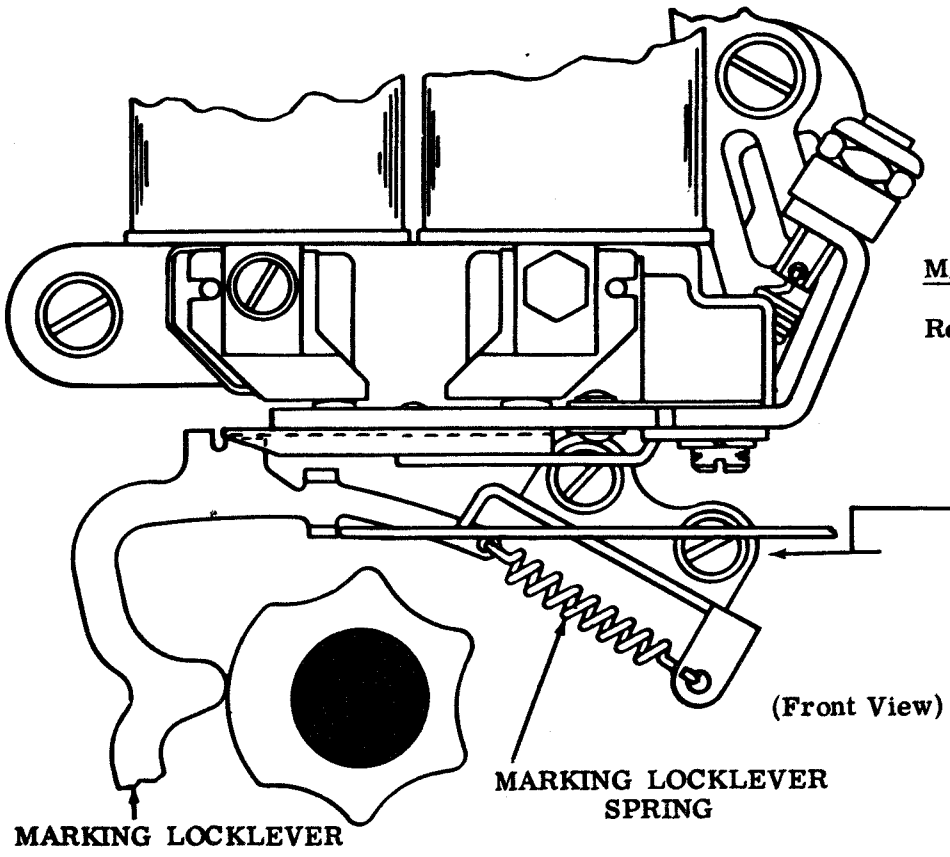
(3) Requirement
Marking locklever on low part of cam. Magnet energized. Armature in contact with left pole piece. Some clearance between lower surface of armature extension and upper surface of marking locklever.

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



MARKING LOCKLEVER SPRING

Requirement
LETTERS combination. Main shaft rotated until selector clutch is disengaged. Push scale applied to lower extension of locklever
Min 1-1/2 oz---Max 3 oz
to start lever moving.



2.08 Selector Mechanism (continued)

SELECTOR ARMATURE DOWNSTOP (Final)

Requirement

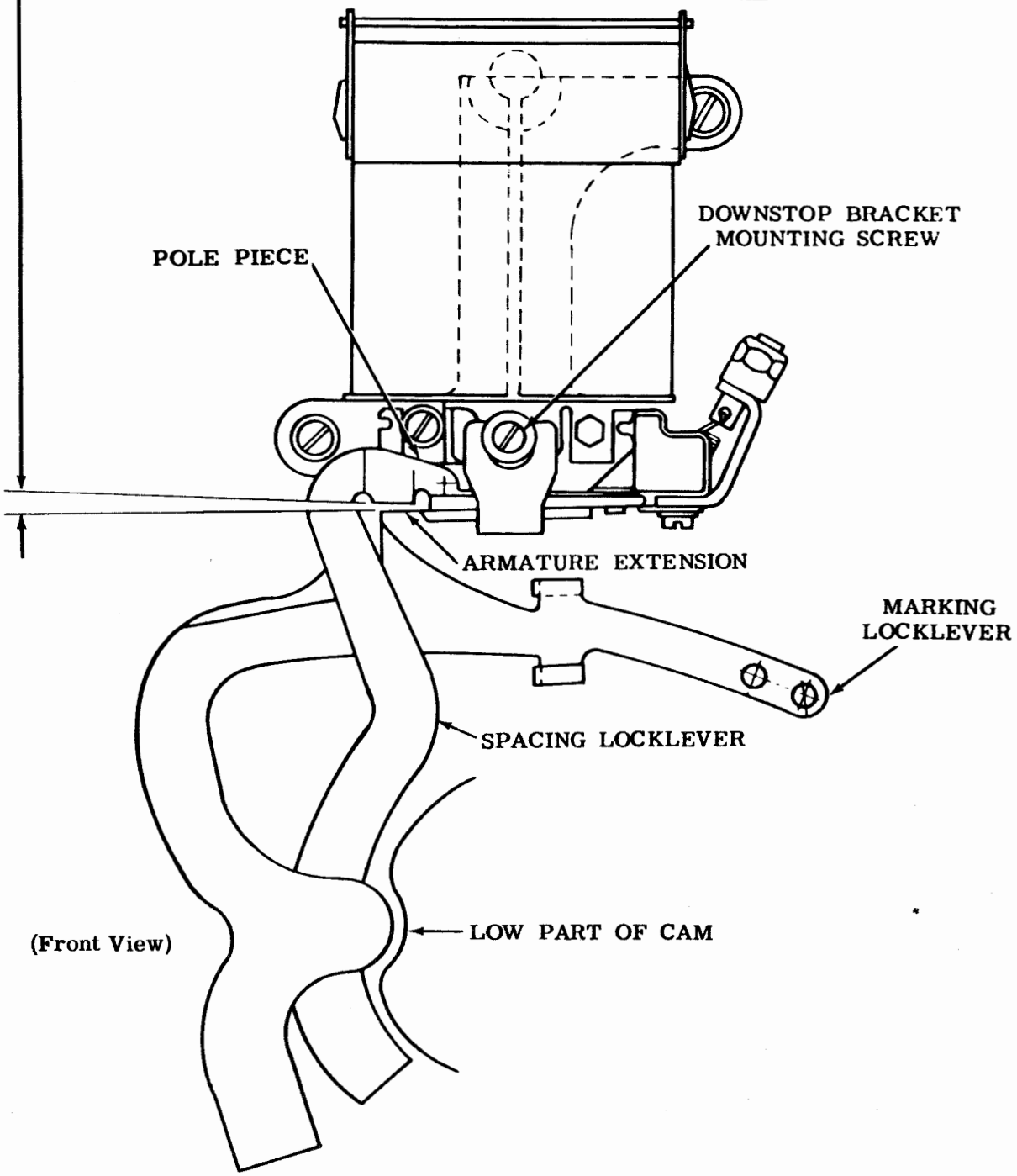
With the selector magnet de-energized and the spacing locklever on the low part of its cam, there should be

Min 0.005 inch---Max 0.015 inch

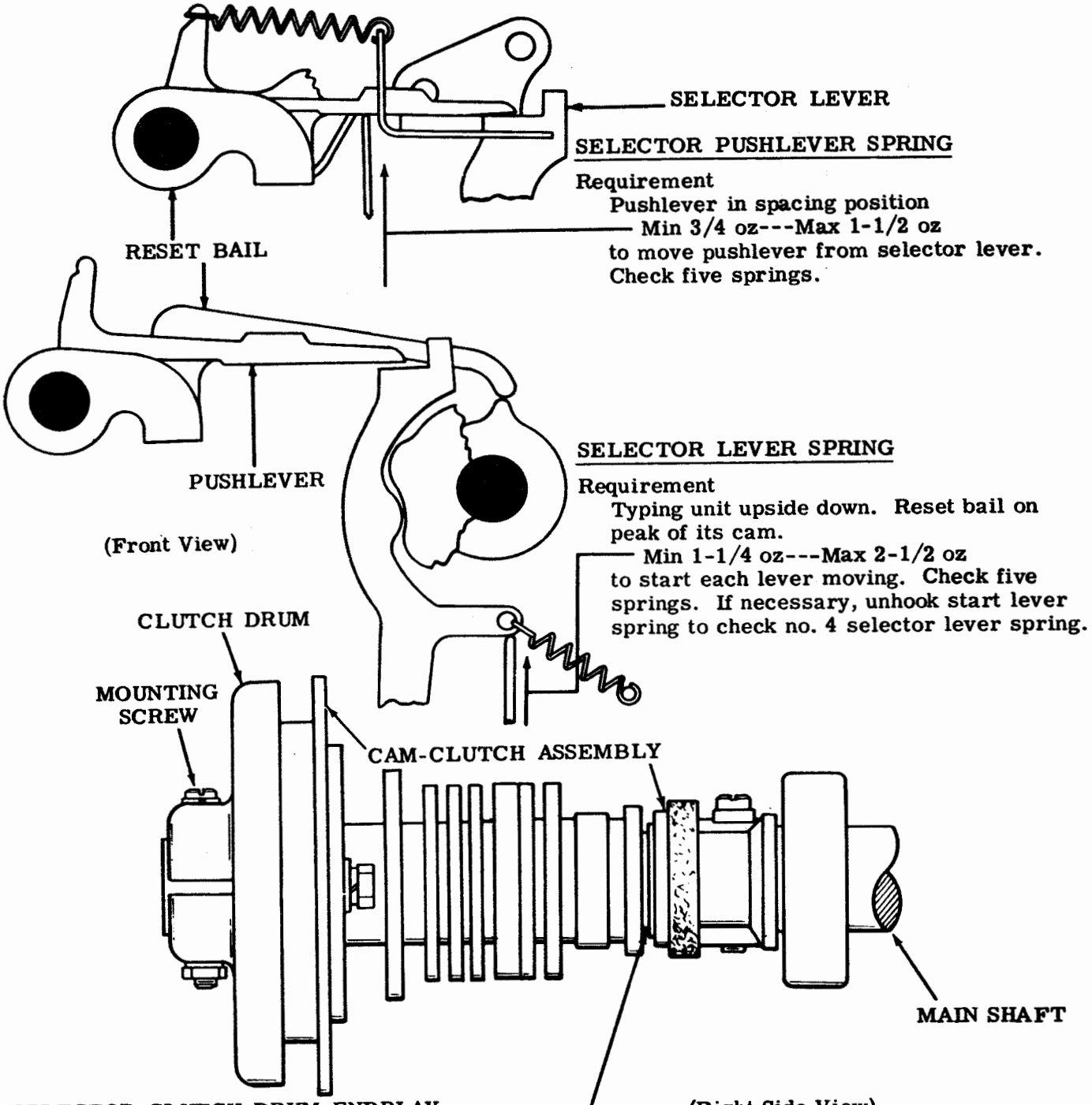
clearance between the top of the armature extension and the bottom of the lower step of the spacing locklever.

To Adjust

Refine the SELECTOR ARMATURE DOWNSTOP (Preliminary) (2.03) adjustment.



2.09 Selector Mechanism (continued)



SELECTOR PUSHLEVER SPRING

Requirement
Pushlever in spacing position
Min 3/4 oz---Max 1-1/2 oz
to move pushlever from selector lever.
Check five springs.

SELECTOR LEVER SPRING

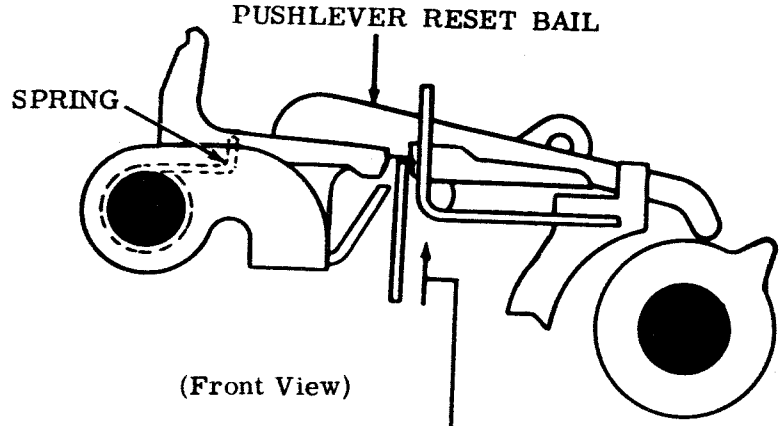
Requirement
Typing unit upside down. Reset bail on peak of its cam.
Min 1-1/4 oz---Max 2-1/2 oz
to start each lever moving. Check five springs. If necessary, unhook start lever spring to check no. 4 selector lever spring.

SELECTOR CLUTCH DRUM ENDPLAY

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

To Adjust
Position clutch drum on main shaft with mounting screw loosened. Tighten screw.

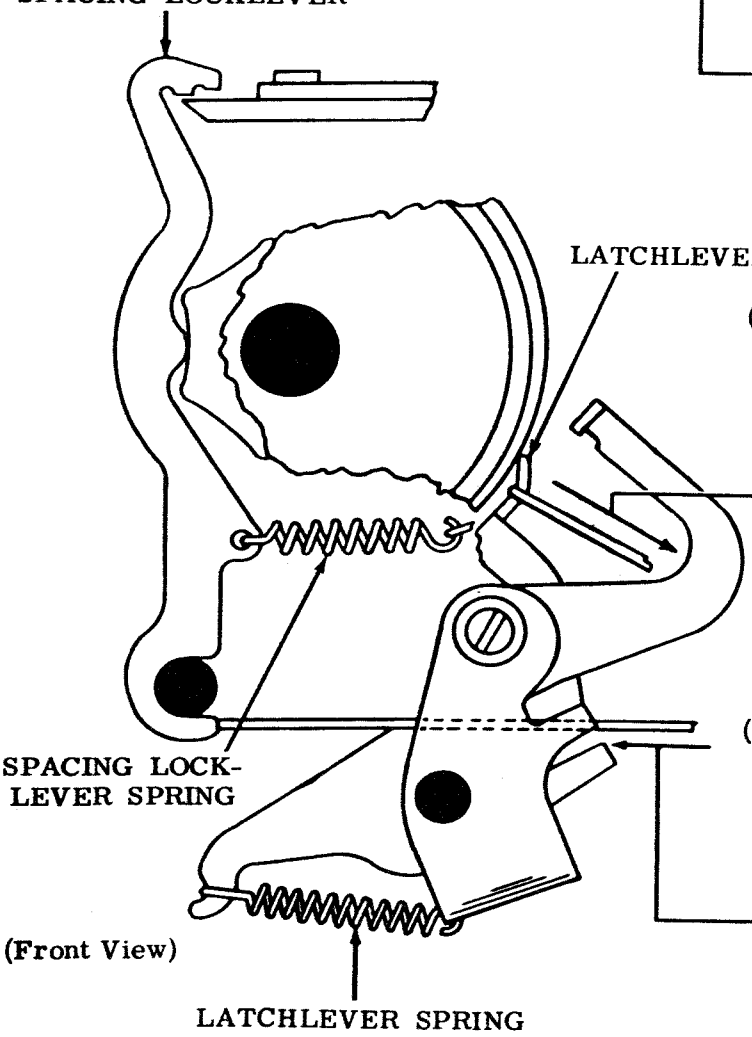
2.10 Selector Mechanism (continued)



(Front View)

(A) PUSHLEVER RESET BAIL SPRING

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



(Front View)

(B) SELECTOR CLUTCH LATCHLEVER SPRING

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

(C) SPACING LOCKLEVER SPRING

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

2.11 Selector Mechanism (continued)

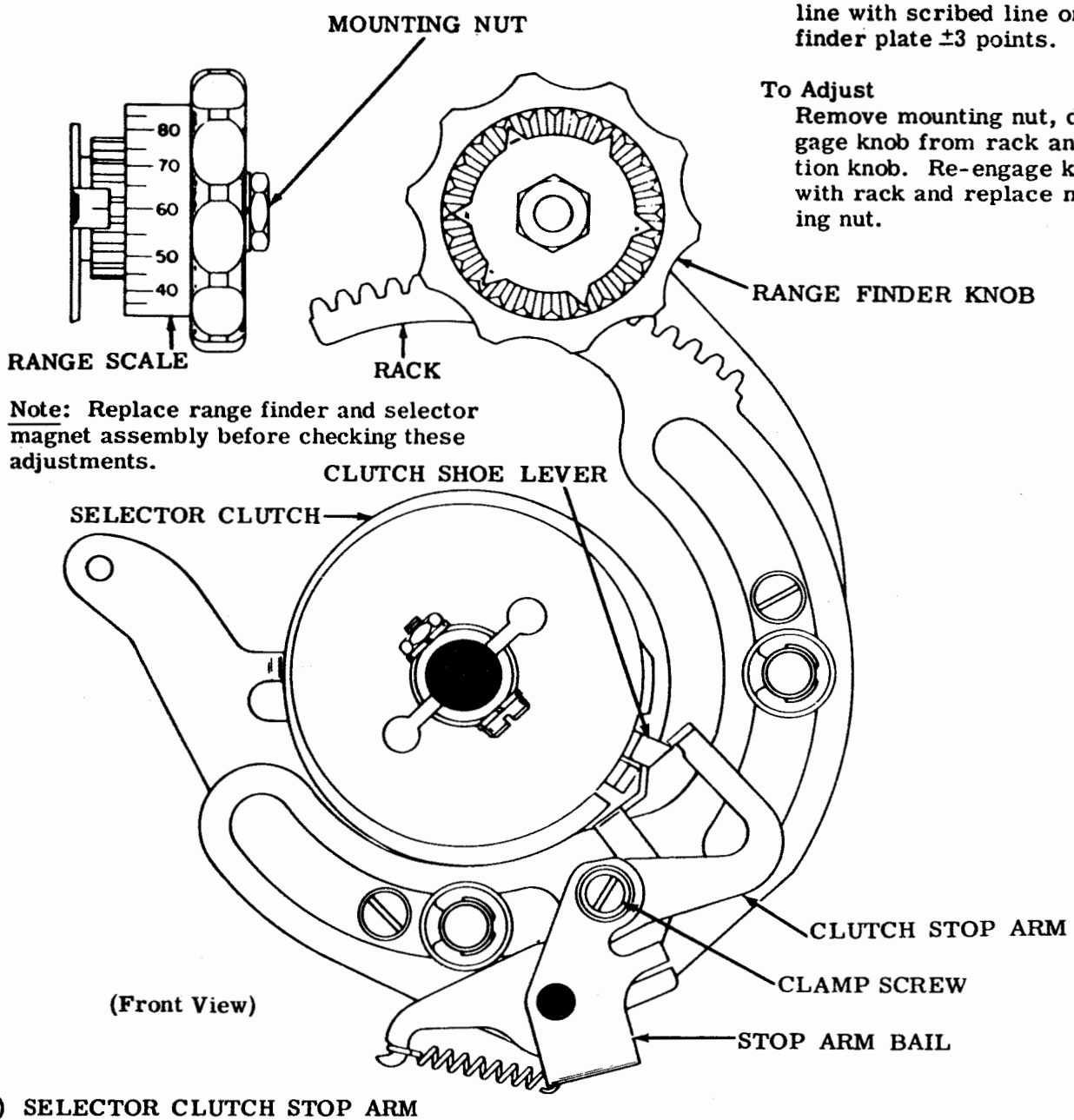
(A) RANGE FINDER KNOB PHASING

Requirement

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

To Adjust

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



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

(B) SELECTOR CLUTCH STOP ARM

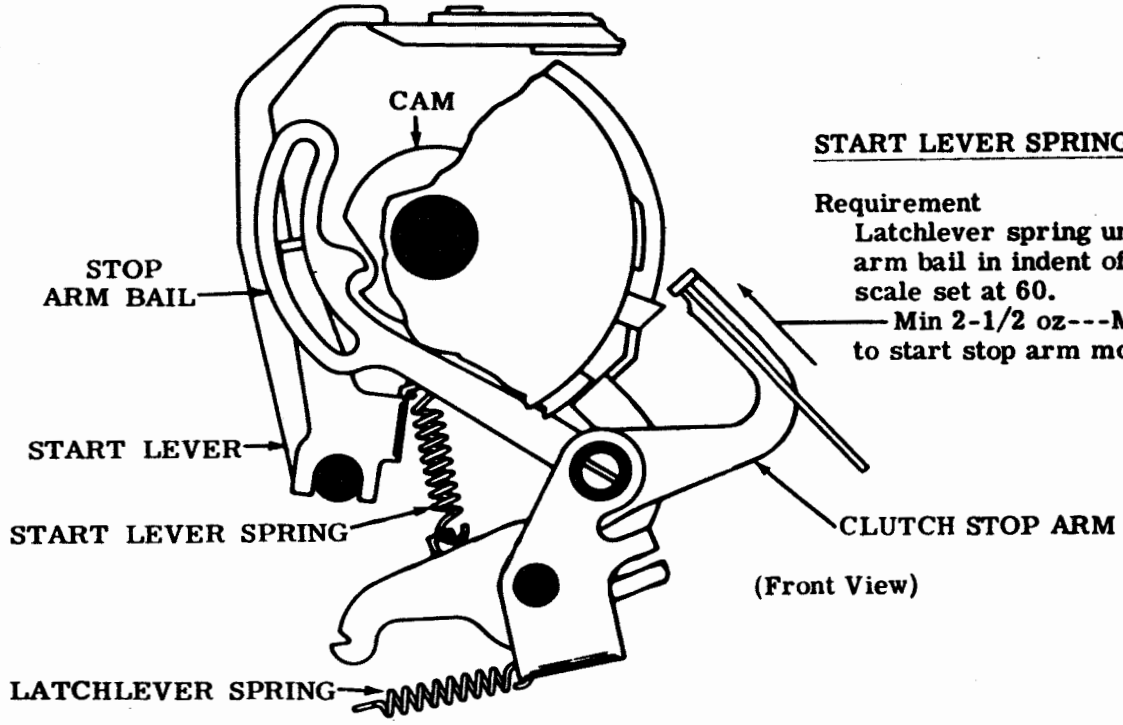
Requirement

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

To Adjust

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

2.12 Selector Mechanism (continued)



SELECTOR RECEIVING MARGIN

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

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

To Adjust
Refine the SELECTOR ARMATURE SPRING (2.04 or 2.05) adjustment.

SELECTOR RECEIVING MARGIN MINIMUM REQUIREMENTS

Current	Speed in WPM	Points Range With Zero Distortion	Percentage of Marking and Spacing Bias Tolerated	End Distortion Tolerated With Scale at Bias Optimum Setting
0.060 Amp (windings parallel)	60 75 100	72	40	35
0.020 Amp (windings series)	60 75	72	40	35
0.035 Amp (windings series)	65 (45.5 baud) 106 (75.0 baud)	72	40	35

2.13 Selector Mechanism (continued)

SELECTOR RECEIVING MARGIN (continued)

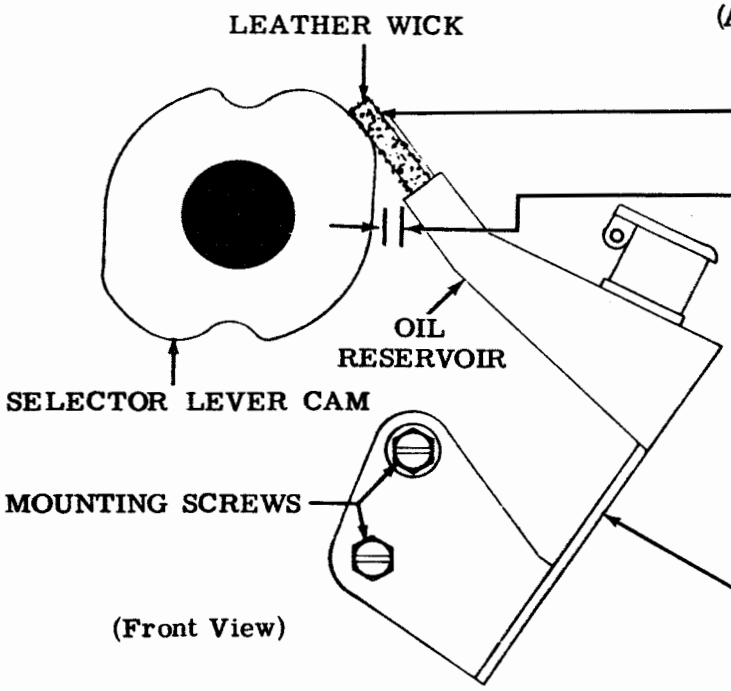
Note 1: Typing reperforators operating with 30 milliampere selector coil current with coils in series should have receiving margin tests run at, and meet the requirements for 100 wpm speed, 60 milliampere selector coils in parallel. Testing at 30 milliampere is not required.

Note 2: Units employing TP319204 and TP327383 selector assemblies should have receiving margins performed with the selector under test being driven by a TP323810 selector magnet driver (SMD). The distortion test set must interface with the SMD, ie, rectangular waveform with +6 volts corresponding to the marking state and -6 volts corresponding to the spacing state. The specified distortion limits apply to the signal driving the SMD rather than the selector coils. The receiving margin of the selector should conform to the minimum requirements listed below:

Speed in WPM	Points Range With Zero Distortion	Overall Bias	End Distortion Tolerated With Scale at Bias Optimum Setting
100	70	35	30

To adjust, refine the SELECTOR ARMATURE SPRING (2.04 or 2.05) adjustment.

2.14 Selector and Function Mechanism



(A) SELECTOR CAM LUBRICATOR

Requirement

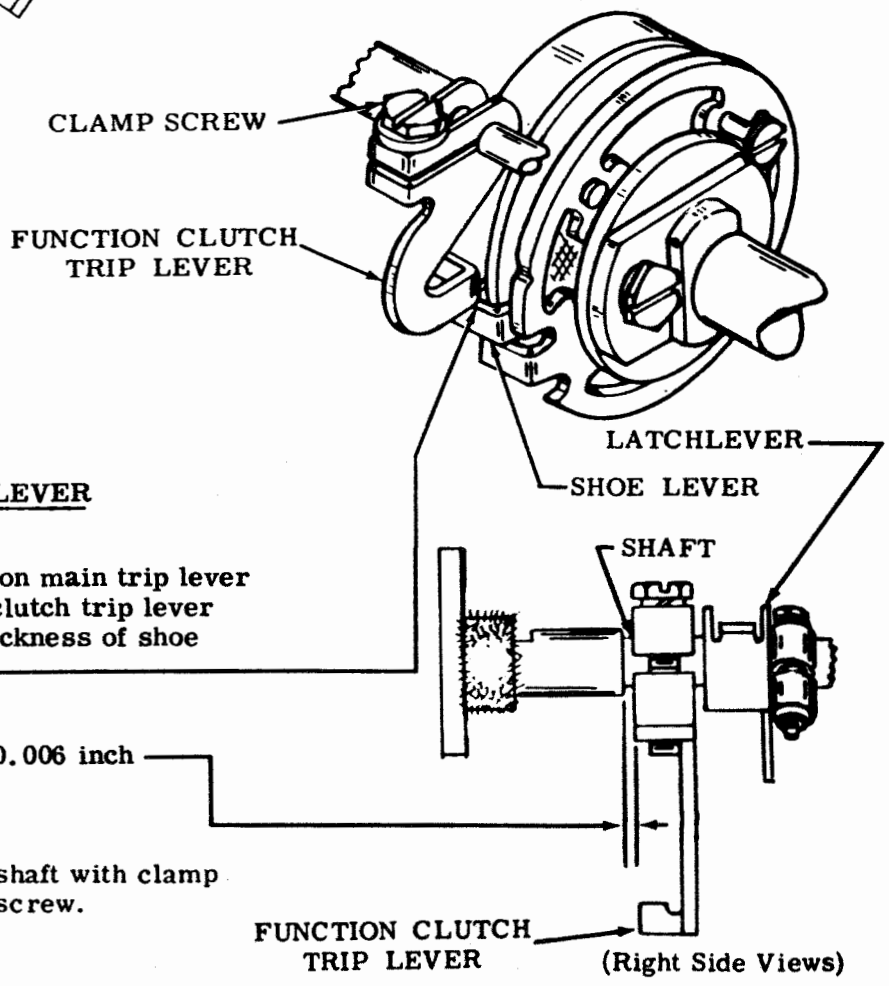
High part of selector lever cams should contact leather wick but should not deflect wick more than 1/32 inch gauged visually.

Min 0.020 clearance between the high surface of lock lever cam and edge of reservoir.

To Adjust

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

Note: There should be some clearance between the marking lock lever spring and oil reservoir.



(B) FUNCTION CLUTCH TRIP LEVER

(1) Requirement

With release resting on main trip lever (see 2.15), function clutch trip lever should engage full thickness of shoe lever.

(2) Requirement

Min some---Max 0.006 inch endplay in trip lever.

To Adjust

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

2.15 Function Mechanism

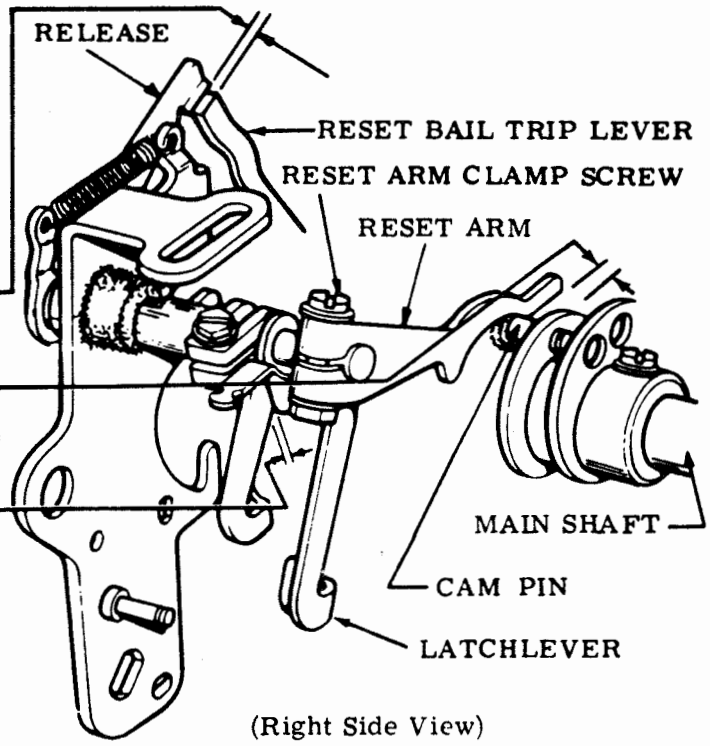
(A) RESET ARM

(1) Requirement
Trip function clutch and position main shaft so that reset arm is held in its highest position by cam pin. Clearance between release and reset bail trip lever
Min 0.005 inch---Max 0.030 inch

(2) Requirement
With reset lever resting fully on cam pin.
Min some clearance between the reset lever and function cam.

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

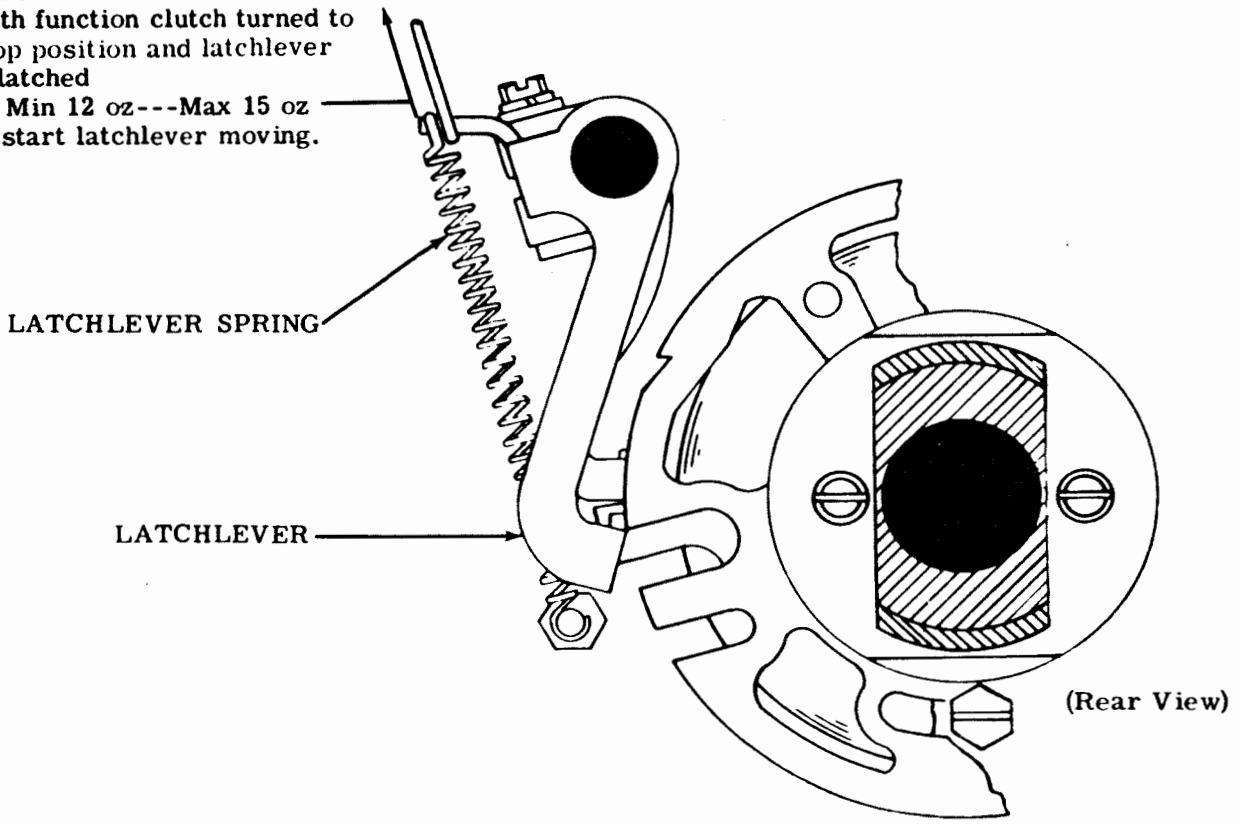
To Adjust
Position reset arm with clamp screw loosened. Tighten screw.



(Right Side View)

(B) FUNCTION CLUTCH LATCHLEVER SPRING

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



(Rear View)

2.16 Function Mechanism (continued)

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

(A) TRIP CAM FOLLOWER LEVER (Preliminary)

(1) Requirement

With trip cam follower lever on high part of cam, clearance between clutch release lever and reset bail trip lever should be

Min 0.010 inch---Max 0.030 inch

(2) Requirement

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

To Adjust

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

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

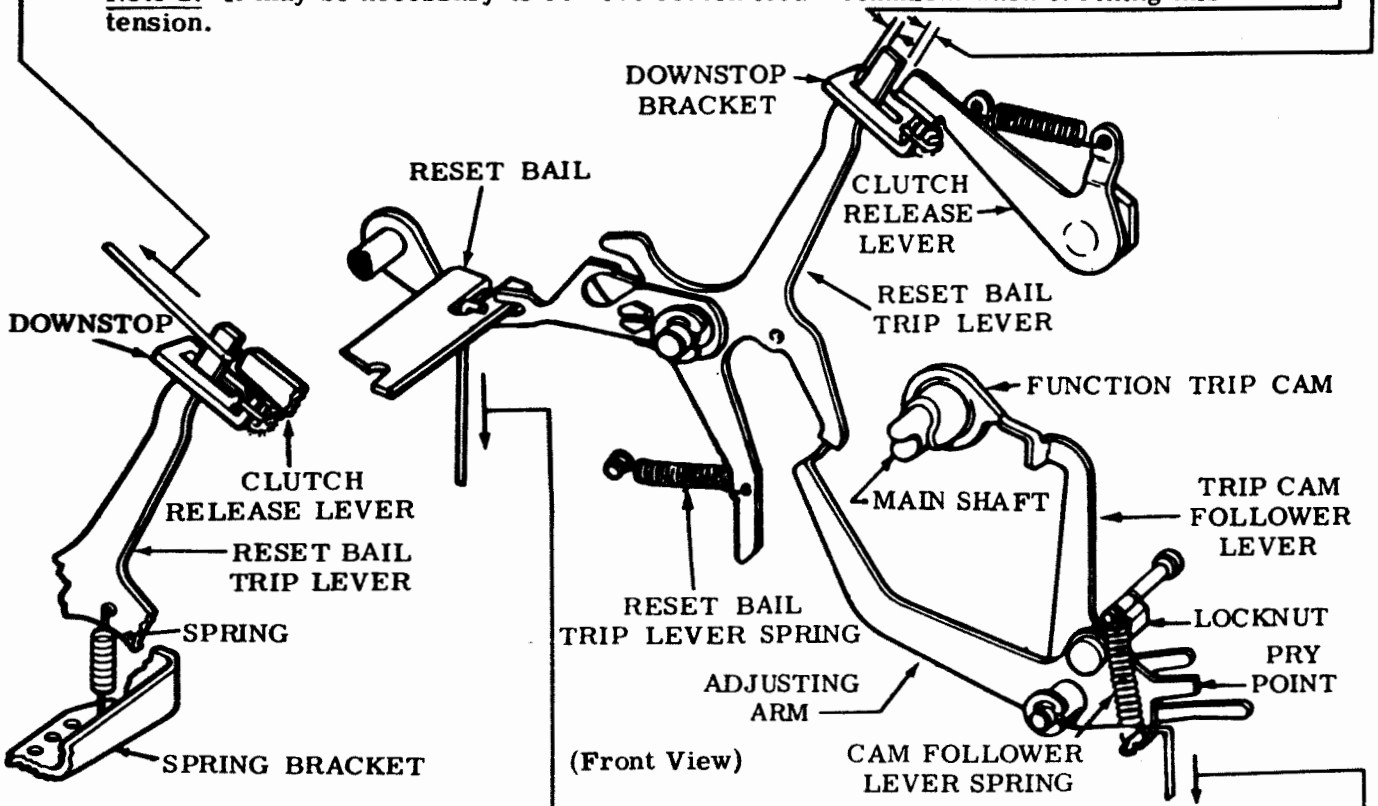
Requirement

Trip reset bail trip lever. With scale pulling at top of reset bail trip lever

Min 1 oz---Max 4 oz

to start lever moving.

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



RESET BAIL TRIP LEVER SPRING (Early Design)

Requirement

With follower lever on high part of trip cam

Min 2-1/2 oz---Max 4-1/2 oz

to start trip lever moving.

(B) CAM FOLLOWER LEVER SPRING (Early Design) (For Latest Design see 2.17)

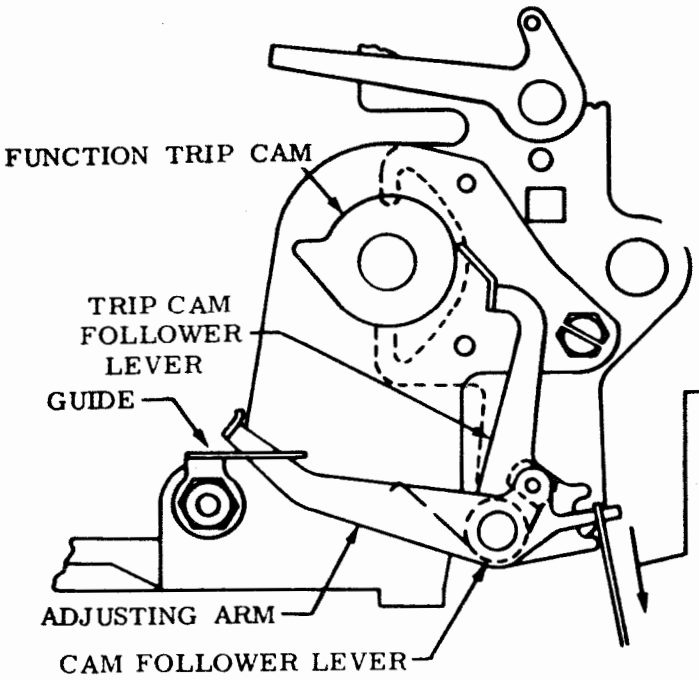
Requirement

With follower lever on high part of trip cam and main trip lever held away from adjusting arm

Min 2-1/2 oz---Max 4 oz

to start adjusting lever moving.

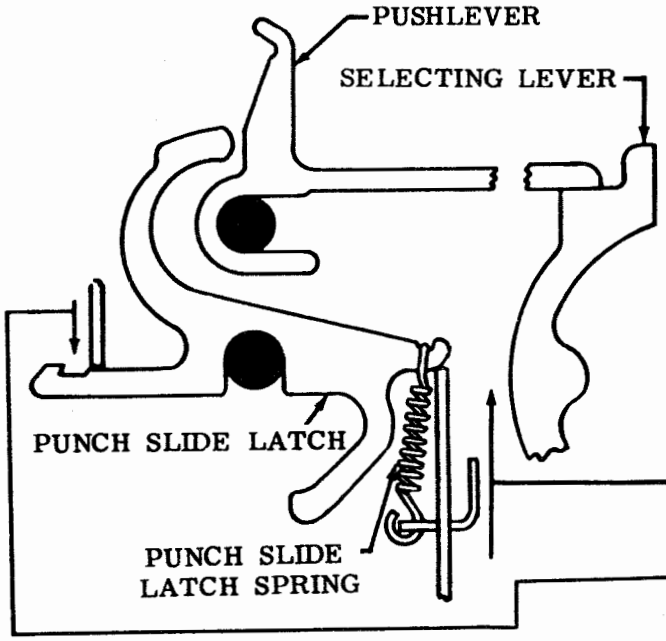
2.17 Function Mechanism (continued)



(Front View)

CAM FOLLOWER LEVER SPRING (Latest Design) (For Early Design see 2.16)

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



(Front View)

PUNCH SLIDE LATCH SPRING

To Check
Select LETTERS code combination (12345). Position rocker bail to extreme left. Strip pushlevers from selecting levers.

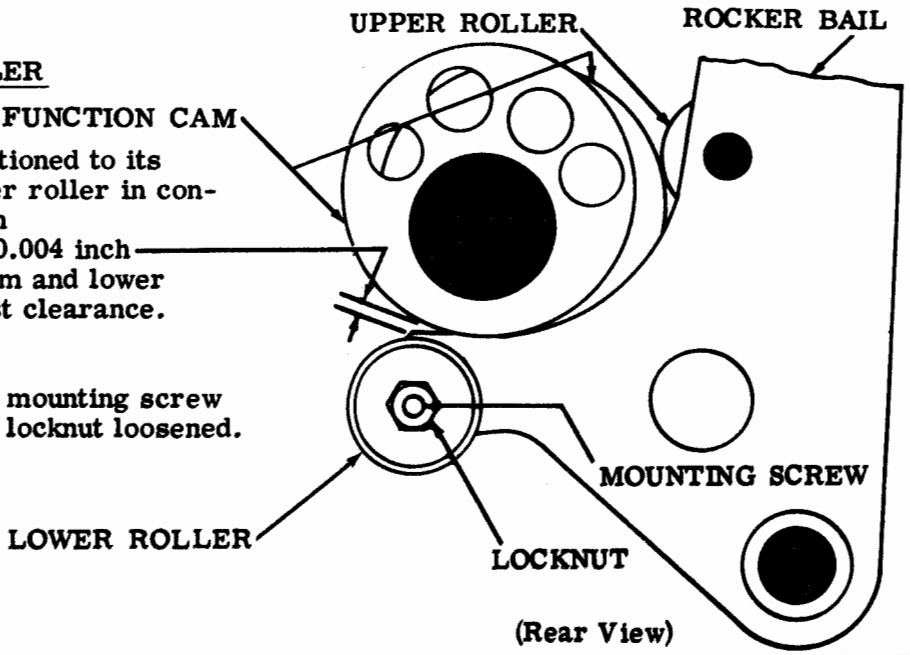
Requirement
For one-shaft unit
Min 1 oz---Max 3 oz
to start latch moving.
For two-shaft unit
Min 3/4 oz---Max 2 oz
to start latch moving.

2.18 Function Mechanism (continued)

(A) CAM FOLLOWER ROLLER

Requirement
With rocker bail positioned to its extreme left and upper roller in contact with function cam
Min some---Max 0.004 inch clearance between cam and lower roller at point of least clearance.

To Adjust
Position lower roller mounting screw in elongated slot with locknut loosened. Tighten nut.

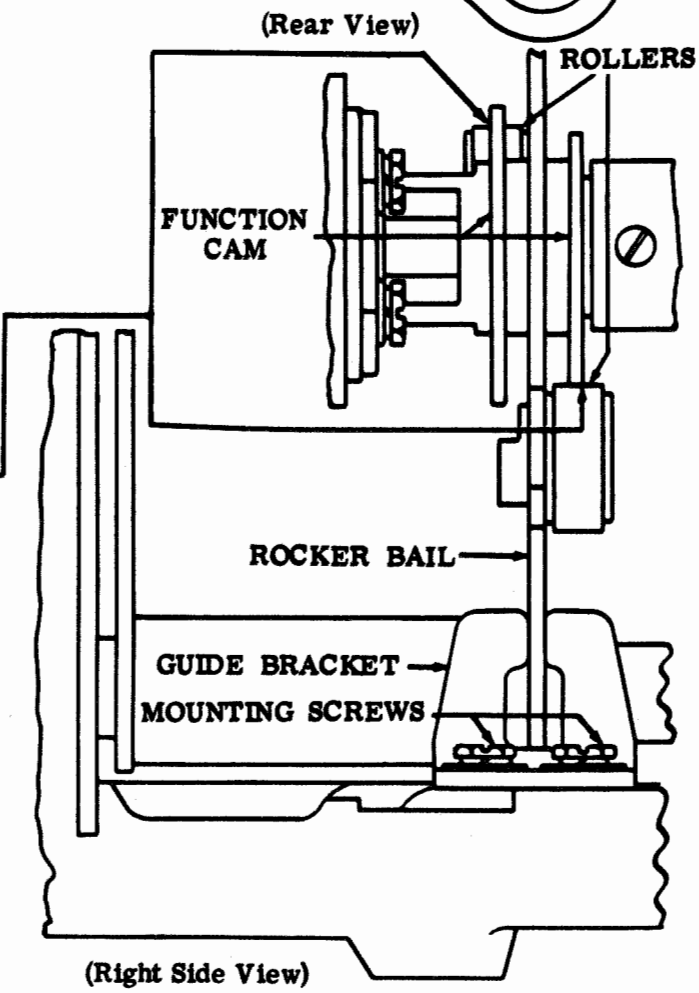


(B) CAM FOLLOWER ROLLER ALIGNMENT

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

(2) Requirement
Lifter roller in full engagement with rocker bail camming surface.

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



2.19 Punch Mechanism

PUNCH MOUNTING PLATE (Preliminary)

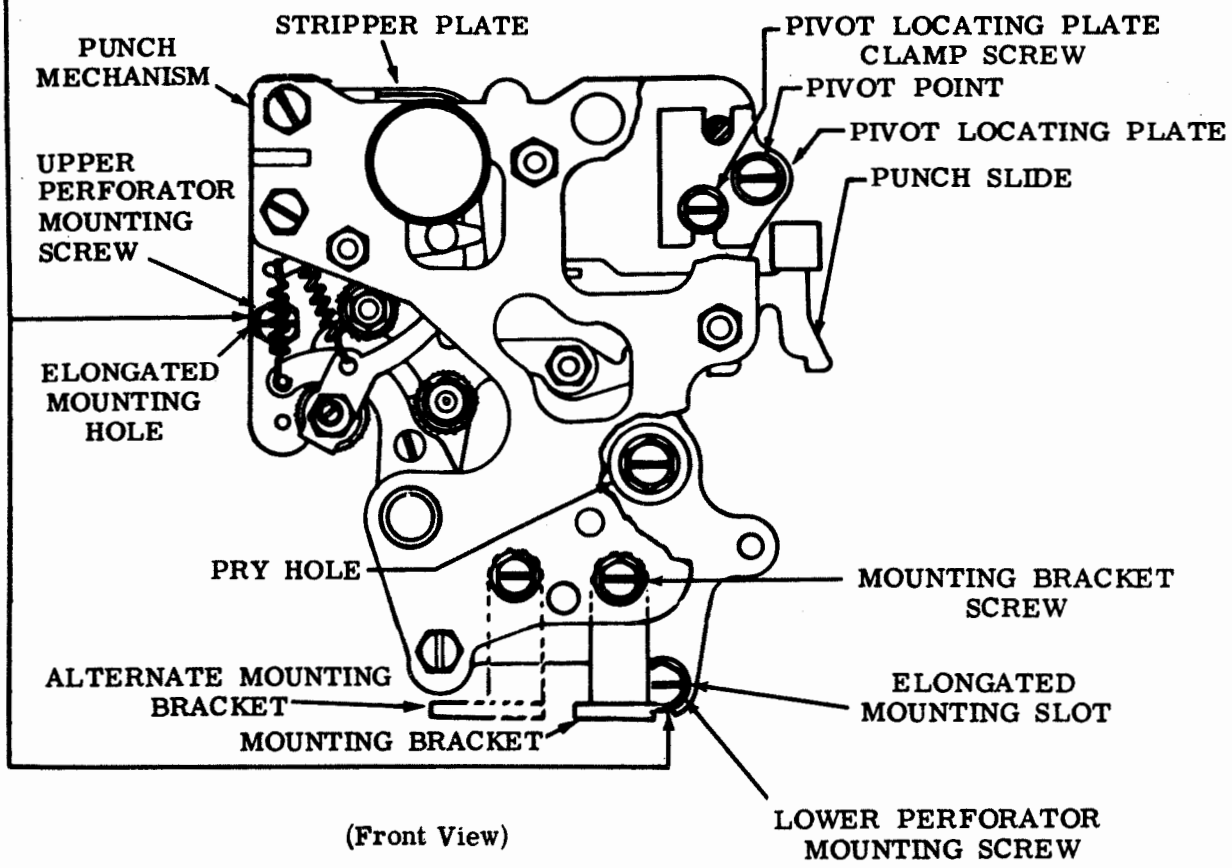
Requirement

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

Note: The mounting holes are oversize to facilitate use of punch mechanism on the typing reperforator.

To Adjust

Remove mounting screw at the lower edge of punch mechanism backplate. With the two remaining backplate mounting screws and mounting bracket screw friction tight, position punch mechanism so that the tapped hole of the frame is centrally located (as gauged by eye) within large body hole of punch mechanism backplate. Tighten the two backplate mounting screws and recheck to see that requirement is met. Replace and tighten the lower backplate mounting screw. Tighten the bracket mounting screw.



(Front View)

2.20 Punch Mechanism (continued)

PUNCH MOUNTING PLATE (Final)

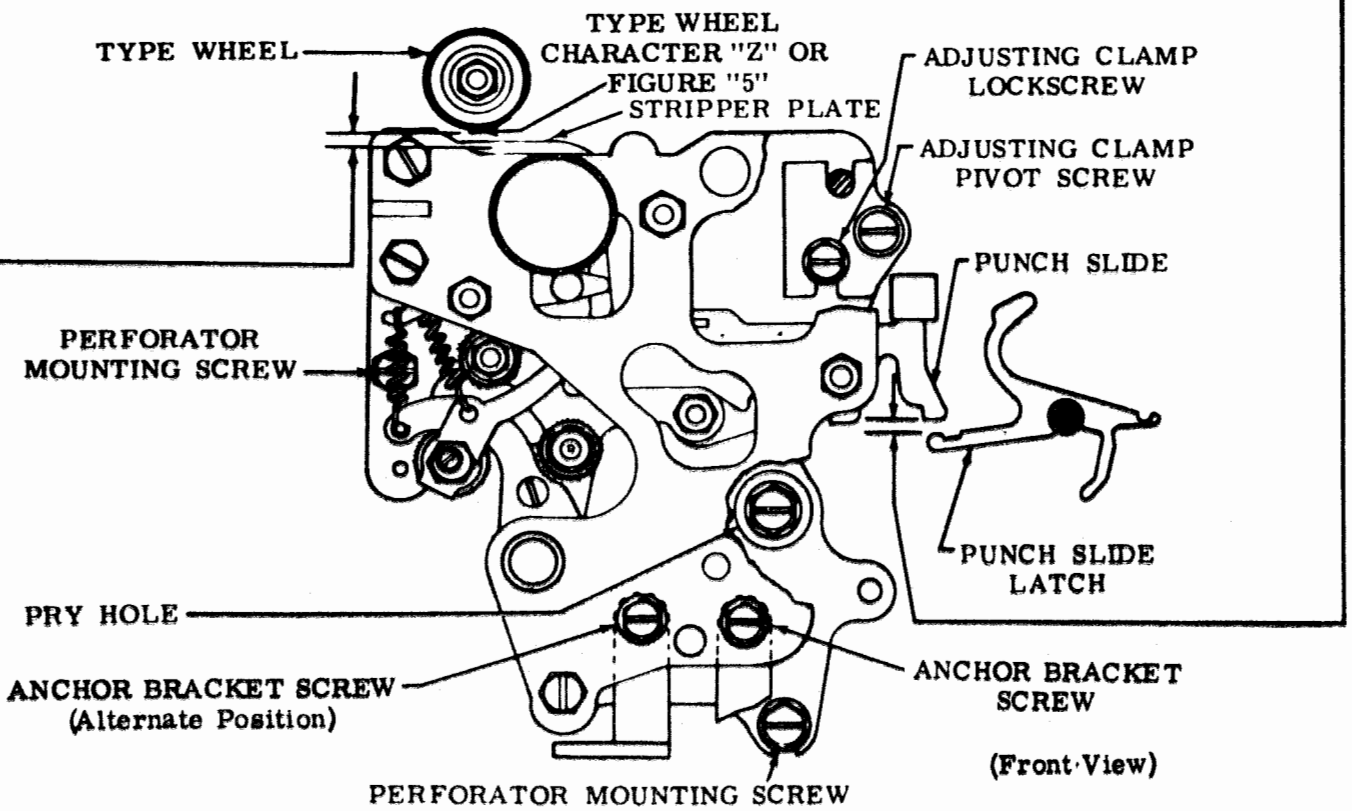
(1) Requirement
Select LETTERS code combination (12345). Rotate until function clutch trips with punch levers in extreme left-hand position. Clearance between punch slide and punch slide latch
Min 0.015 inch---Max 0.045 inch
at slide where clearance is least.

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

(2) Requirement (For typing reperforator with spring retracted punch unit)
With unit in stop position and type wheel in letters field, clearance between letter "Z" on type wheel and top of stripper platform
Min 0.090 inch---Max 0.110 inch

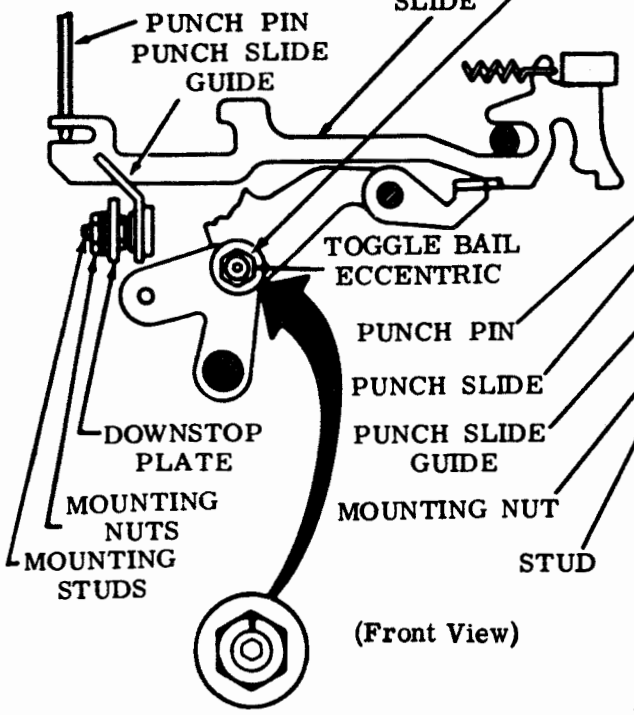
(3) Requirement (For typing reperforator with power retracted punch unit)
With unit in stop position and type wheel in figures field, clearance between figure "5" on type wheel and top of stripper platform
Min 0.075 inch---Max 0.095 inch

To Adjust
Remove ribbon from carrier. Position perforator with two mounting screws, adjusting clamp pivot screw, and anchor bracket screw loosened. Tighten screws. Check RESET BAIL TRIP LEVER (2.24) adjustment for some clearance and adjust if necessary.



2.21 Punch Mechanism (continued)

Note: Before proceeding with the punch mechanism adjustments, check the CAM FOLLOWER ROLLER (2.18) adjustment and loosen the punch slide downstop mounting nut and guide mounting stud.



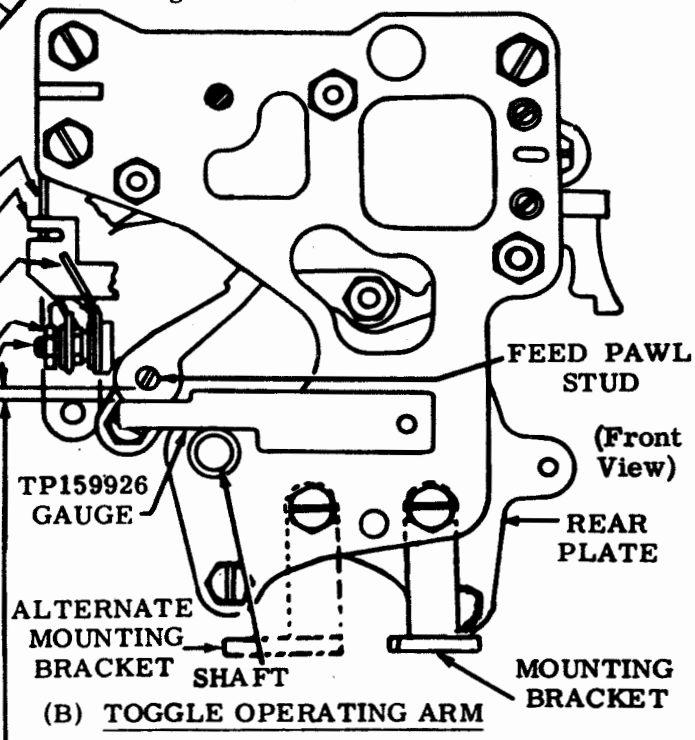
(A) TOGGLE BAIL ECCENTRIC (Preliminary)

Requirement

The indent (high side of eccentric) should be in its uppermost position.

To Adjust

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

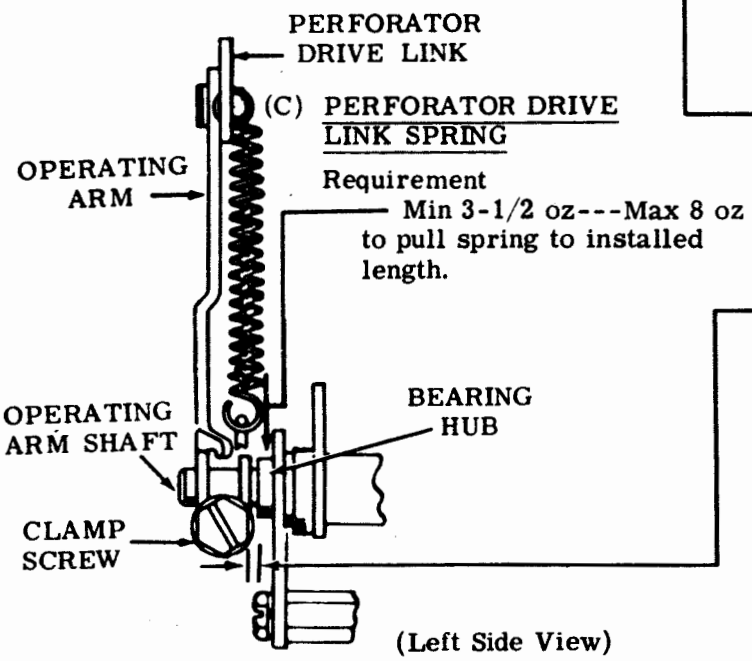


(B) TOGGLE OPERATING ARM

(1) Requirement

Trip function clutch and rotate mainshaft until the upper rocker bail roller is on high part of its cam.

Min 0.002 inch---Max 0.005 inch clearance between feed pawl stud and the TP159926 gauge.



(C) PERFORATOR DRIVE LINK SPRING

Requirement

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

(2) Requirement

Clearance between arm and oscillating shaft bearing hub.

Min 0.002 inch---Max 0.015 inch with play taken up in direction to make clearance minimum.

To Adjust

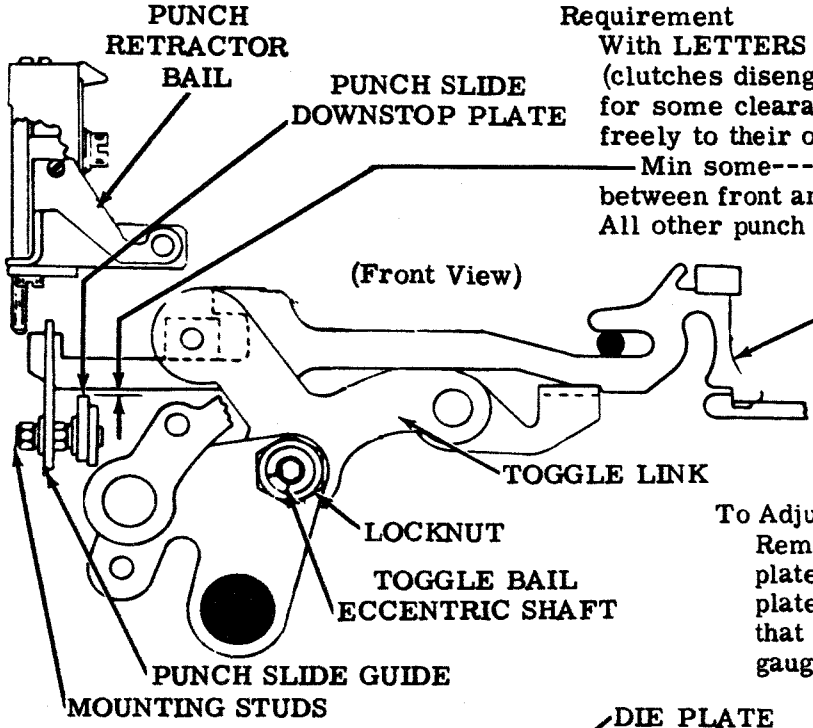
With clamp screw friction tight, position toggle bail and operating arm. Tighten screw.

Note: After FEED PAWL (2.25) adjustment has been made and PUNCH PIN PENETRATION (2.23) and FEED PAWL requirements are met, this requirement should be considered fulfilled.

2.22 Punch Mechanism for Chadless Tape

Note: Adjustments on this page do not apply to tape printer.

(B) PUNCH SLIDE DOWNSTOP PLATE POSITION



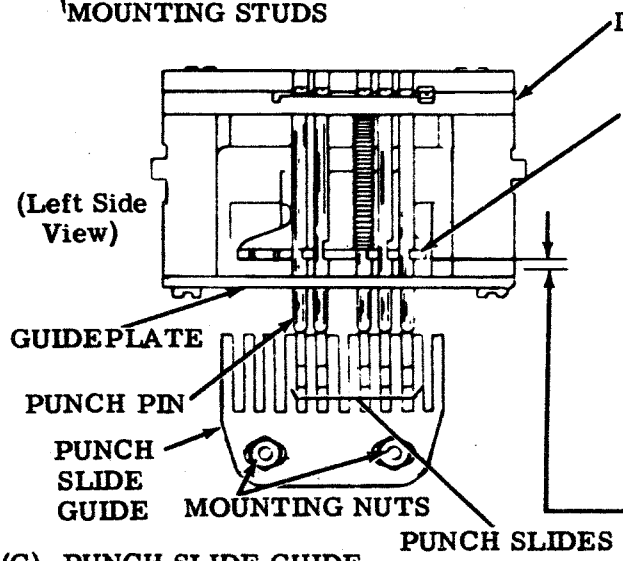
Requirement

With LETTERS selected and unit in stop position (clutches disengaged), trip function reset trip mechanism for some clearance. The punch slides should move freely to their operated position.

Min some---Max 0.008 inch between front and rear punch slides and downstop plate. All other punch slides should have some clearance.

To Adjust

Remove punch slide guide, loosen downstop plate mounting studs, and position downstop plate. Tighten studs and replace guide so that punch slides align with punch pins (as gauged by eye).



(A) PUNCH PIN PENETRATION

Requirement

LETTERS selected. Function clutch engaged and rotated until punch pins have traveled maximum distance into die plate. Clearance between lower edge of punch retractor bail and upper side of guideplate (measured adjacent to No. 1 and No. 5 punch pins where clearance is least)

Min 0.060 inch---Max 0.075 inch

To Adjust

Rotate toggle bail eccentric shaft with its locknut loosened. Keep indentation in eccentric shaft to left of a vertical centerline through shaft. Tighten nut.

Note: Code punches should punch a full tape lid with slight amount of tear. The tear should be restricted to a minimum. Refine PUNCH PIN PENETRATION adjustment, if necessary.

(C) PUNCH SLIDE GUIDE

Requirement

LETTERS selected. Function clutch engaged and rotated until punch slides just touch punch pins. Punch slides should align centrally with their respective punch pins (gauge by eye).

To Adjust

Position punch slide guide with its mounting nuts loosened. Tighten nuts.

2.23 Punch Mechanism for Fully Perforated Tape

Note: Adjustments on this page do not apply to tape printer.

(A) PUNCH PIN PENETRATION.

(1) Requirement

With the LETTERS combination (12345) selected, function clutch engaged, rotate main shaft until all punch pins are into or above the tape aperture in punch block. With the TP159926 gauge in position

Min 0.050 inch

clearance between feed pawl stud and the gauge.

(2) Requirement

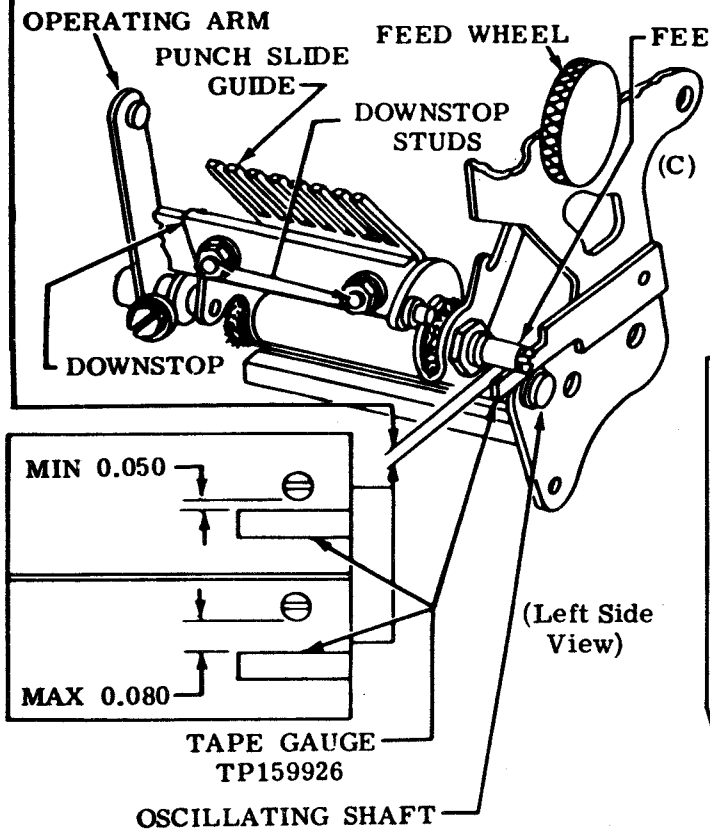
With LETTERS combination selected, function clutch engaged, rotate main shaft until all punch pins have cleared the punch block. With the TP159926 gauge in position

Min some---Max 0.080 inch

clearance between feed pawl stud and gauge.

To Adjust

Refine the TOGGLE BAIL ECCENTRIC (2.21) adjustment keeping the indent to the right of a vertical centerline through the shaft. Tighten nut.



(B) PUNCH SLIDE GUIDE (Final)

Requirement

The punch slides should align with their corresponding punch pins and be free of binds after tightening the guide mounting studs. Each punch slide should return freely after being pushed in not more than 1/16 inch.

To Adjust

Position the guide with its mounting studs friction tight. Tighten studs.

(C) PUNCH SLIDE DOWNSTOP POSITION

Requirement

With function clutch disengaged and latched, play taken up toward the top, clearance between both the front and rear punch slides and the downstop plate

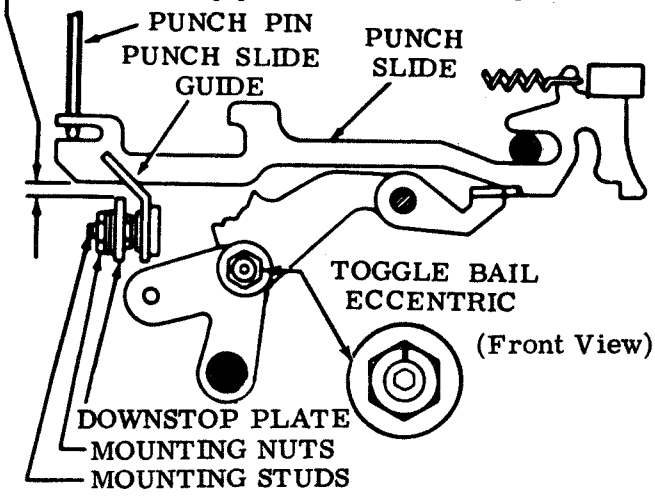
Min some---Max 0.008 inch

All other punch slides should have some clearance.

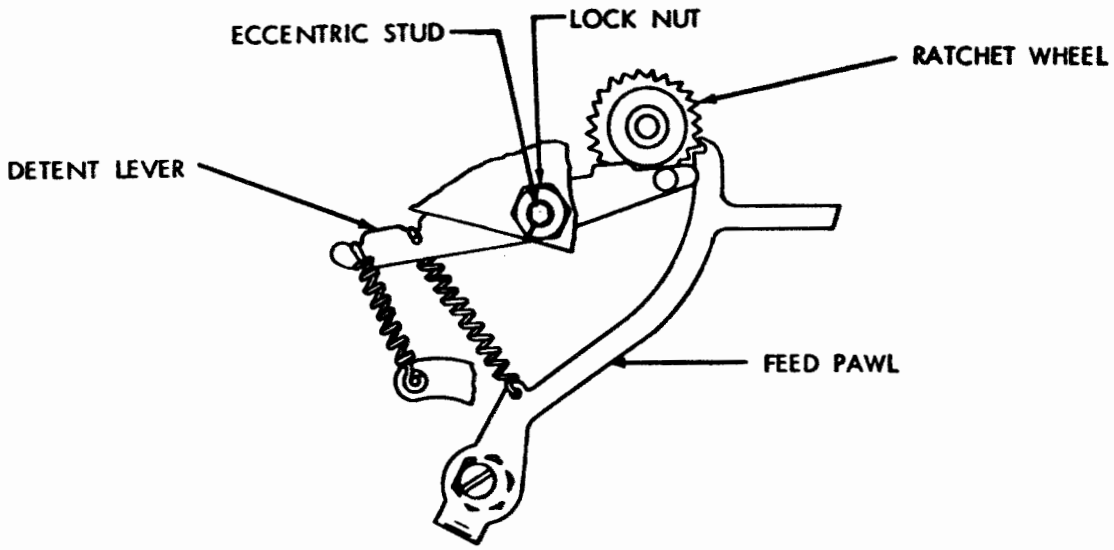
Note: To check for some clearance, place unit in stop position, trip function trip mechanism and latches. The punch slides should move fully to their operated position.

To Adjust

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



2.24 Punch Mechanism for Chadless Tape continued



DETENT LEVER

REQUIREMENT

A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION PERFORATED ON THE PERFORATOR MUST CONFORM TO THE TP156011 TAPE GAUGE.

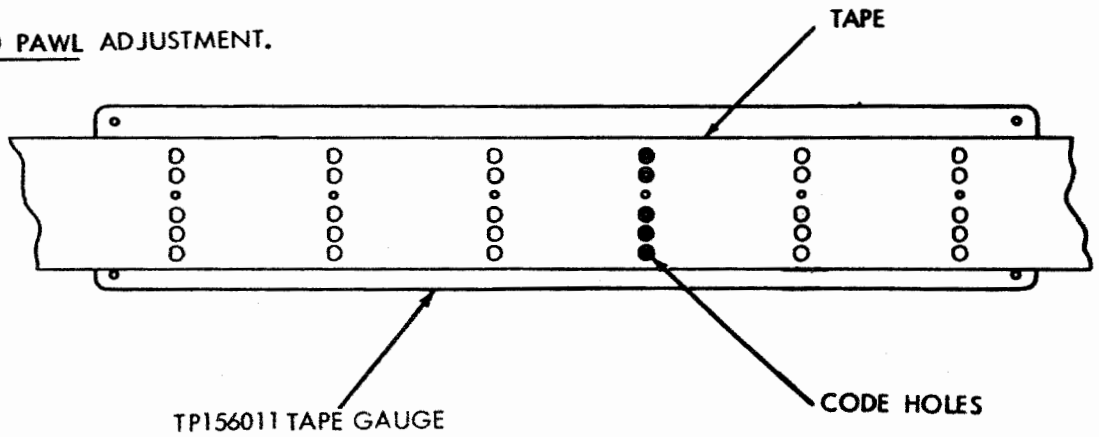
THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHOULD COINCIDE WITH A LATERAL CENTERLINE THROUGH THE HOLES IN THE GAUGE.

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

TO ADJUST

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

RECHECK FEED PAWL ADJUSTMENT.



2.25 Punch Mechanism (continued)

(A) LATCHLEVER CLEARANCE

Requirement

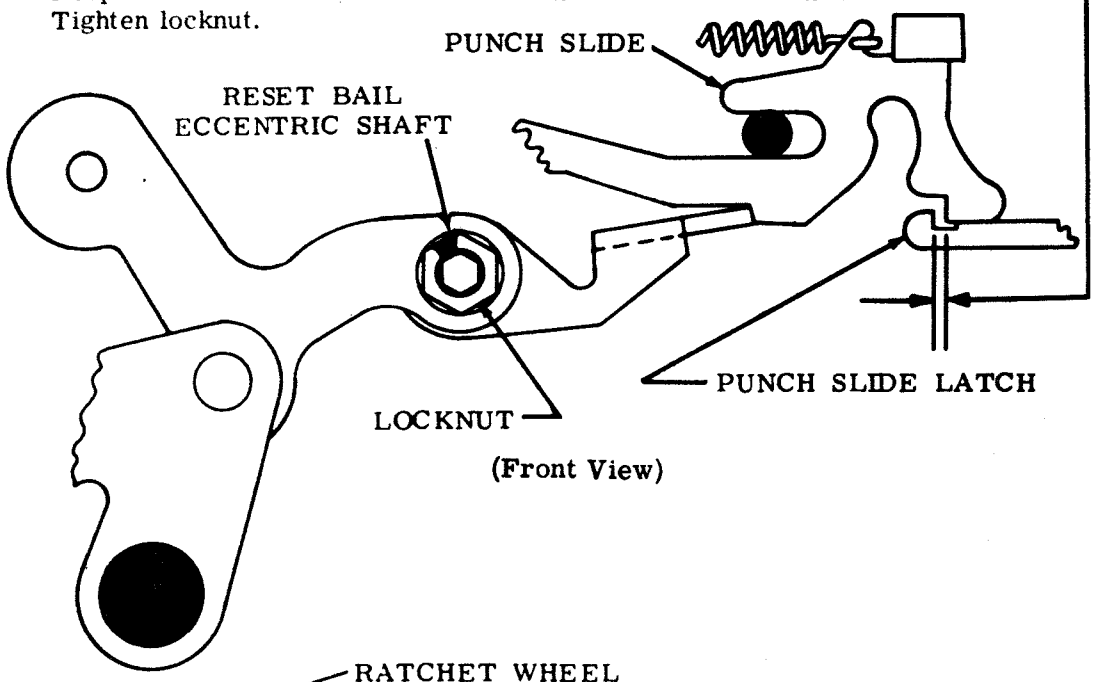
With BLANK combination selected, the function clutch disengaged and latched, clearance between the punch slide and its associated latchlever should be

Min 0.008 inch---Max 0.020 inch

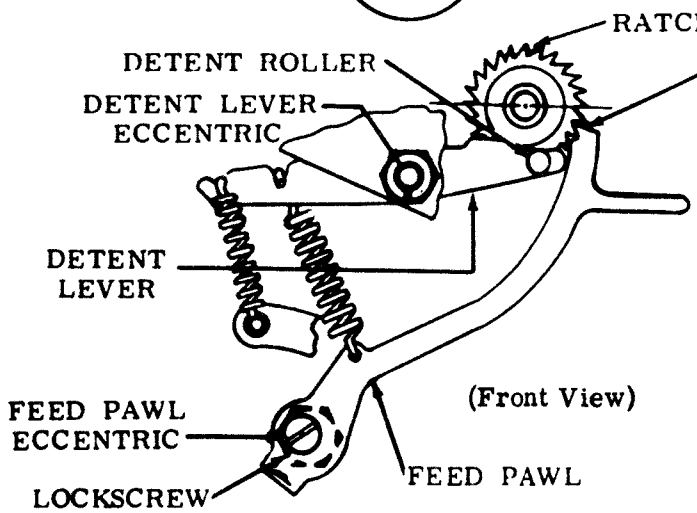
for the slide having the least clearance.

To Adjust

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



(Front View)



(Front View)

(B) FEED PAWL

Requirement

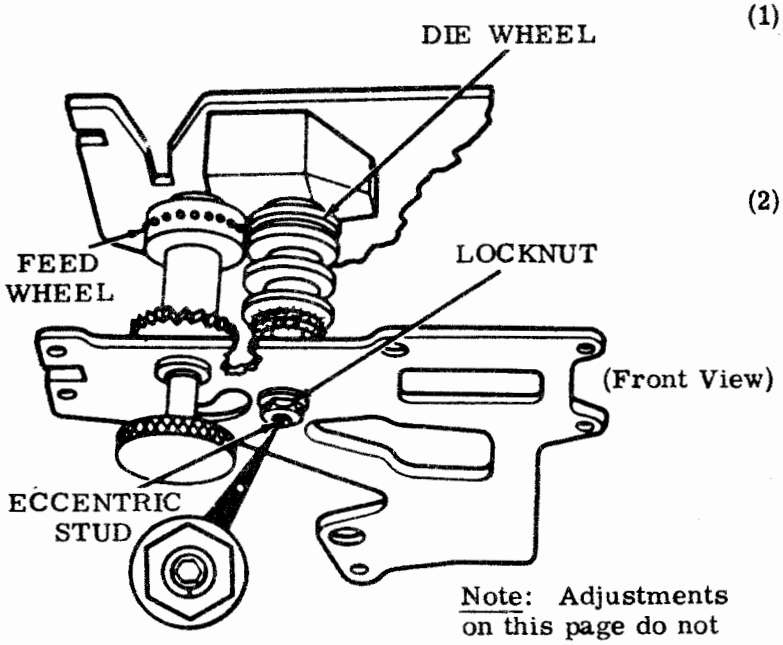
Function clutch disengaged, indentation in detent lever eccentric at right angle to lever, detent roller in contact with ratchet wheel, high part of feed pawl eccentric to the right of its lockscrew. The feed pawl should engage the first tooth below a horizontal centerline through the ratchet wheel with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

To Adjust

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

Note: This adjustment is related to TEN CHARACTERS PER INCH (2.26), and the two adjustments should be made at the same time.

2.26 Punch Mechanism for Chadless Tape (continued)



Note: Adjustments on this page do not apply to tape printer.

REPERFORATOR MOUNTING

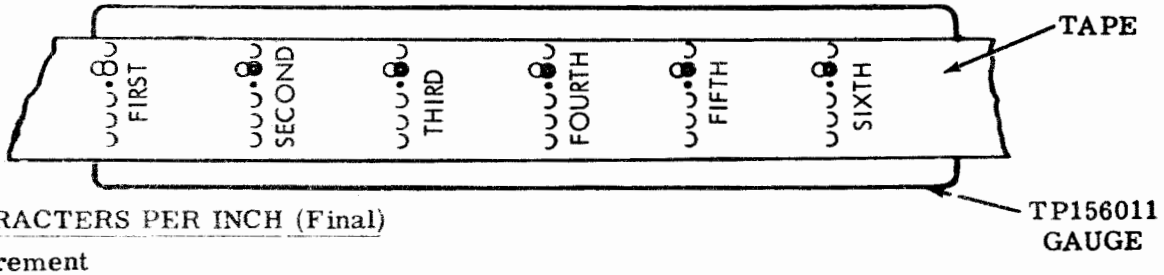
Requirement
Mount the reperforator to the base and adjust in accordance with the associated base section.

TEN CHARACTERS PER INCH (Preliminary)

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

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

Note: Before proceeding with the following adjustment check both BIAS SPRING (2.30) tensions, and if unit is equipped with a slack tape mechanism having a clamp plate with an adjustable wear disc, loosen the mounting nut and turn a new edge of the disc toward the tape. Tighten nut.



TEN CHARACTERS PER INCH (Final)

(1) Requirement
With a piece of tape perforated with six series of 9 BLANK code combinations followed by a LETTERS combination placed over the TP95960 gauge or the smooth side of the TP156011 tape gauge so that the circular portion of the first number 2 code hole in the tape is concentric with the first hole of the tape gauge, the next four holes in the tape gauge should be visible through the number 2 code holes in the tape and the circular portion of the last (sixth) number 2 code hole in the tape should be entirely within the 0.086 diameter hole of the tape gauge.

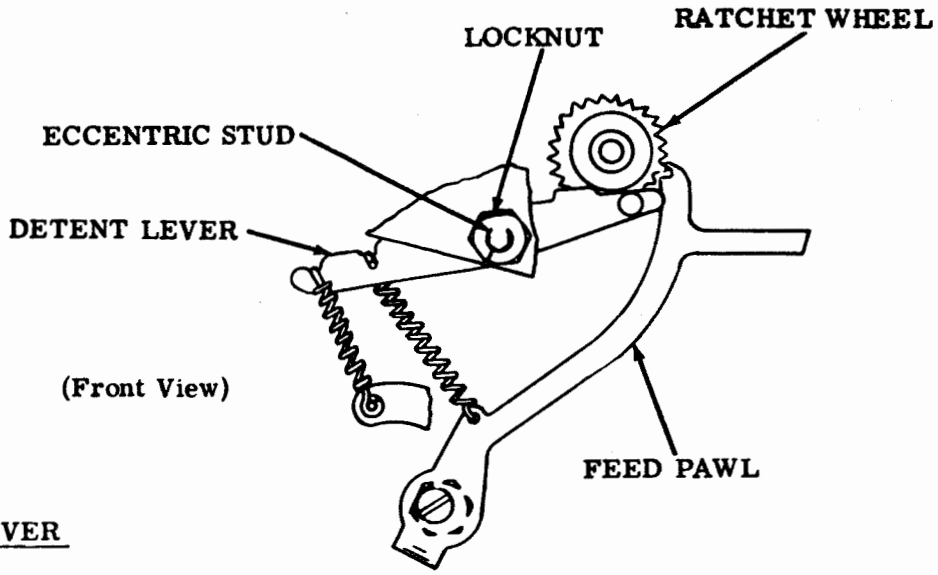
(2) Requirement
With tape shoe held away from feed wheel, feed pawl and detent disengaged and tape removed, feed wheel should rotate freely.

To Adjust
With tape removed from punch mechanism, loosen eccentric locknut and rotate die wheel eccentric shaft until it binds against feed wheel. Back off eccentric until die wheel is just free. Check through 3 or 4 rotations. Keep the indent of eccentric below the horizontal centerline of the stud. Refine adjustment for requirement (1), if necessary, by moving the die wheel toward the feed wheel to decrease the character spacing and away from the feed wheel to increase the character spacing. Tighten nut. Refine FEED PAWL (2.25) adjustment, if necessary.
CAUTION: WITH TAPE REMOVED. MAKE SURE FEED WHEEL AND DIE WHEEL DO NOT BIND. RECHECK REQUIREMENT (1). IF NECESSARY, REFINE.

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

2.27 Punch Mechanism for Chadless Tape (continued)

Note: Adjustments on this page do not apply to tape printer.



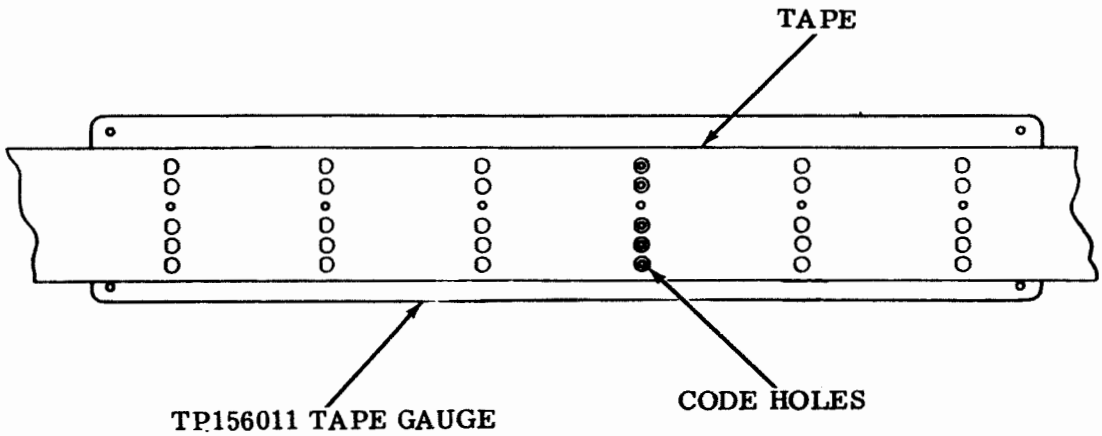
DETENT LEVER

Requirement

A piece of tape containing 9 BLANK combinations followed by a LETTERS combination must conform to the TP156011 tape gauge. Lateral centerline through code holes in tape should coincide with a lateral centerline through holes in gauge.

To Adjust

Rotate detent eccentric clockwise to move feed holes toward hinged edge of code holes and counterclockwise to move feed holes toward trailing edge of code holes. Tighten the eccentric locknut and refine FEED PAWL adjustment (2.25).



2.28 Punch Mechanism for Chadless Tape (continued)

Note 1: Adjustments on this page do not apply to tape printer.

Note 2: If unit is equipped with tape guide (Early Design), locknut must be loosened before FEED HOLE LATERAL ALIGNMENT adjustment is made.

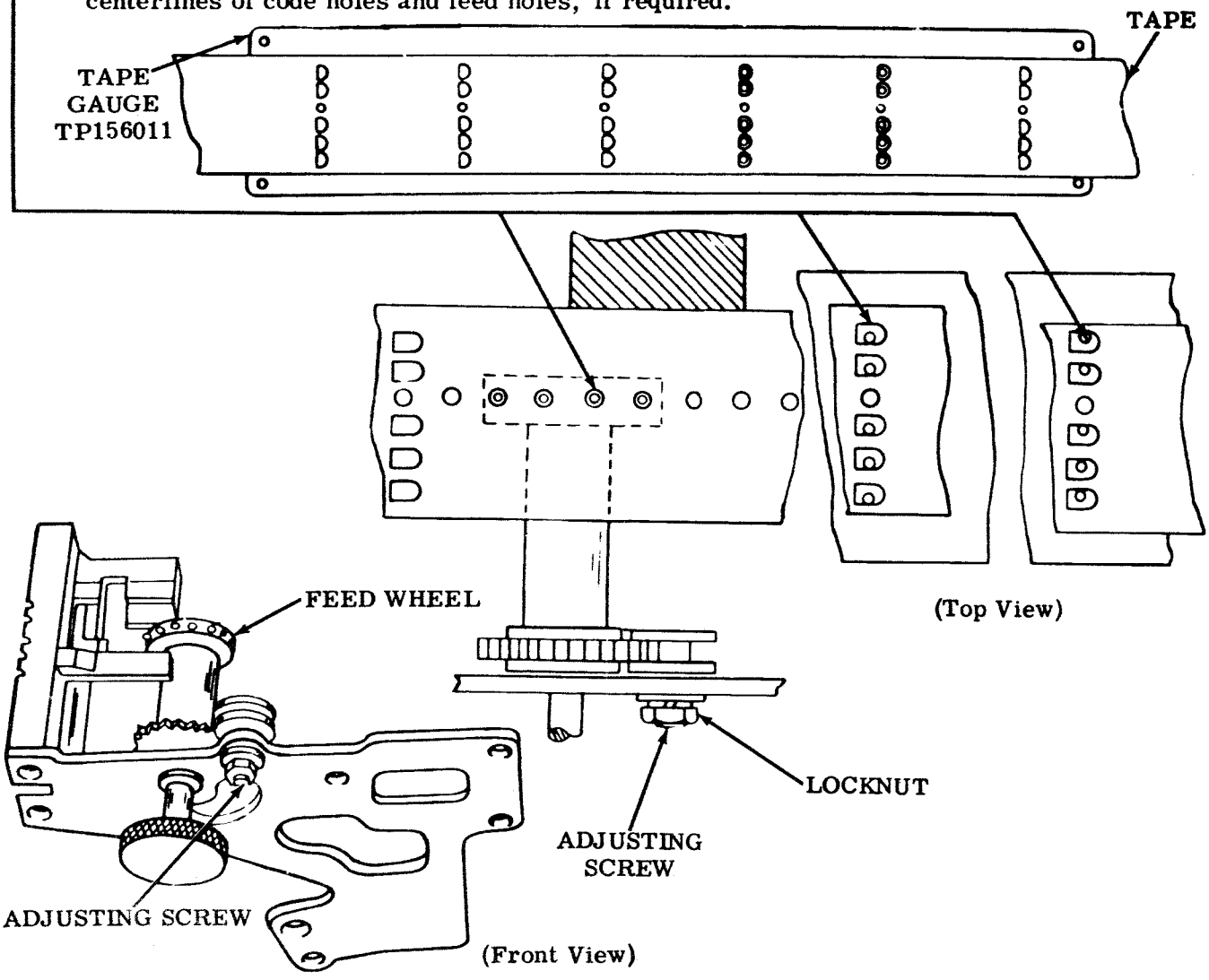
FEED HOLE LATERAL ALIGNMENT

Requirement

With reperforator operating under power, obtain a piece of tape containing a series of 9 BLANK code combinations followed by a LETTERS combination. Open chads so code holes are visible and place tape over TP156011 tape gauge with LETTERS combination feed holes engaging feed pins. Large holes in gauge are same diameter as circular portion of code holes in tape. Small holes in gauge serve as guide for gauging. Circular portion of code holes in tape should be concentric with holes in tape gauge.

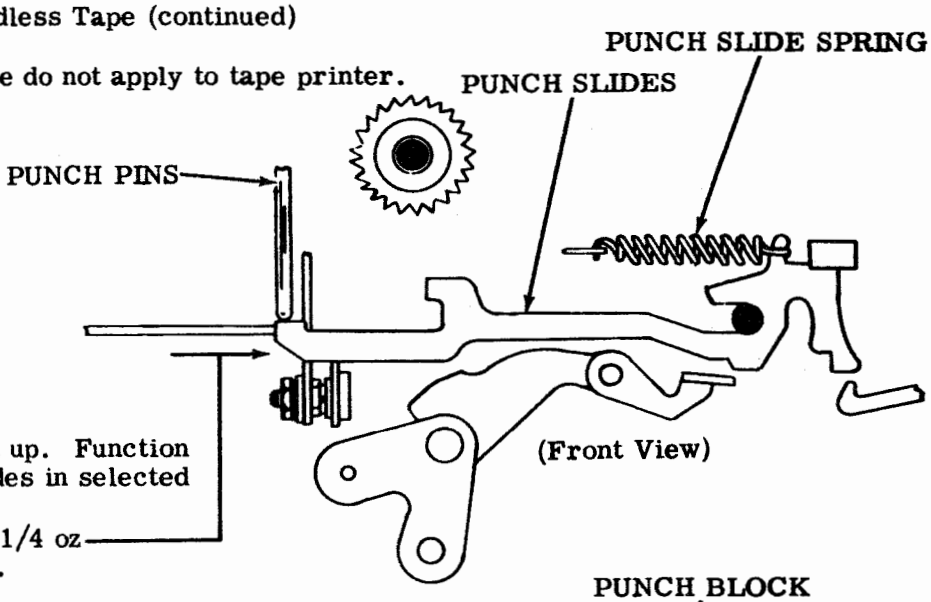
To Adjust

Loosen adjusting screw locknut and position adjusting screw. To move holes of gauge away from reference edge of tape, move feed wheel toward front plate of punch mechanism by rotating adjusting screw counterclockwise. To move holes of gauge toward reference edge of tape, move feed wheel towards backplate of punch mechanism by rotating adjusting screw clockwise. Tighten locknut. Refine DETENT LEVER (2.27) adjustment to align lateral centerlines of code holes and feed holes, if required.



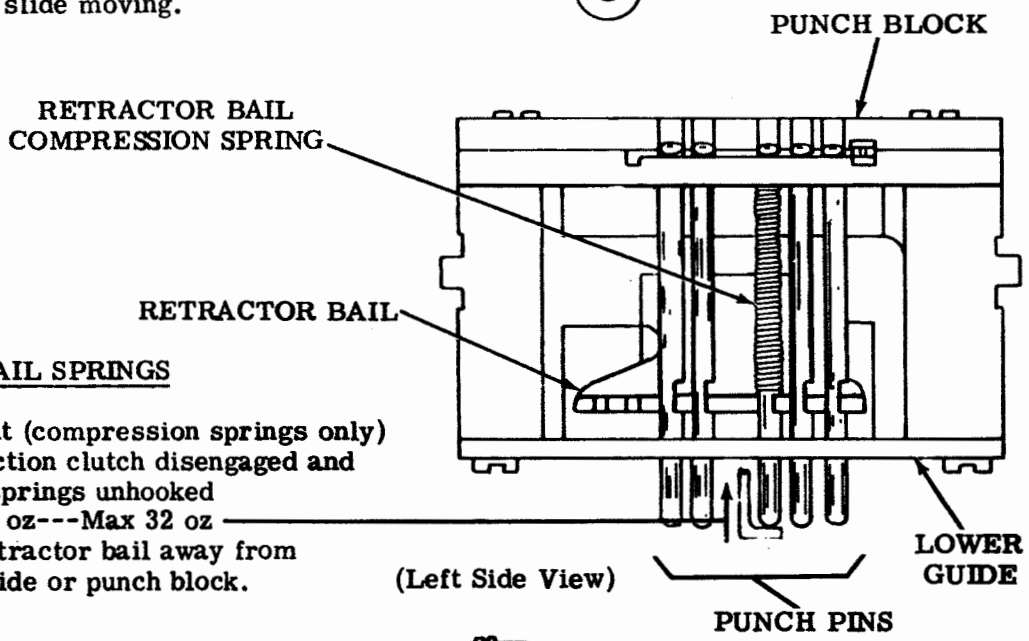
2.29 Punch Mechanism for Chadless Tape (continued)

Note: Adjustments on this page do not apply to tape printer.



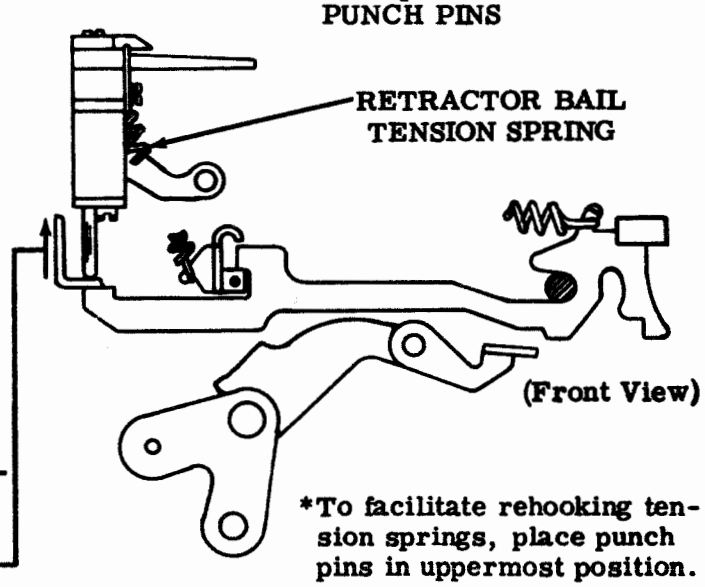
(A) PUNCH SLIDE SPRING

Requirement
LETTERS combination set up. Function clutch tripped. Punch slides in selected position under punch pins.
Min 2-1/4 oz---Max 3-1/4 oz
to start each slide moving.



(B) RETRACTOR BAIL SPRINGS

(1) Requirement (compression springs only)
With function clutch disengaged and tension springs unhooked
Min 8 oz---Max 32 oz
to lift retractor bail away from lower guide or punch block.



(2) Requirement (combined compression and tension springs)
Under the same conditions as requirement (1) above, except with tension springs hooked*
Min 4 lbs---Max 5 lbs

*To facilitate rehooking tension springs, place punch pins in uppermost position.

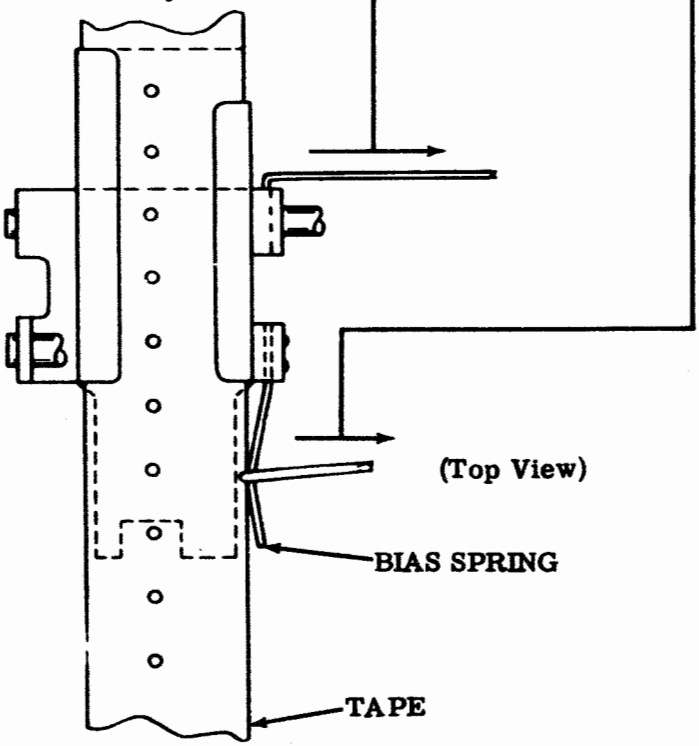
2.30 Punch Mechanism for Chadless Tape (continued)

Note: Adjustments on this page do not apply to tape printer.

(B) TAPE GUIDE ASSEMBLY SPRING

Requirement
Tape guide assembly should be free to return to rest against tape guide block after a
Min 16 oz
is used to pull tape guide assembly away from block.

To Adjust
Replace spring if requirement is not met. If tape guide assembly is not free to return, reposition tape guide assembly mounting post to free tape guide assembly.

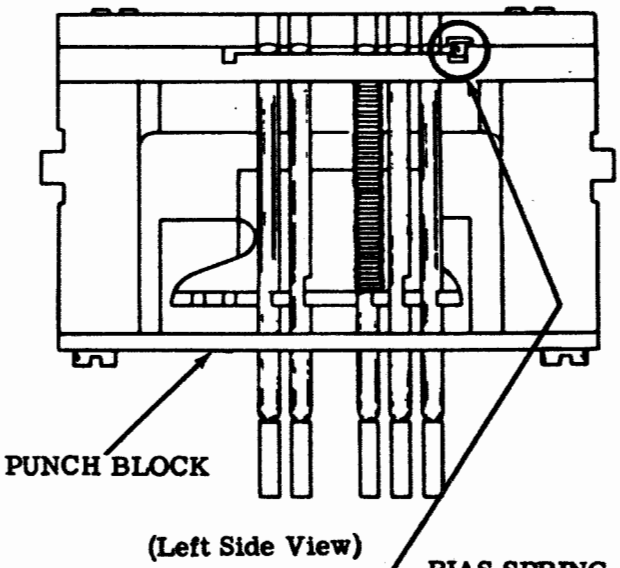


(A) BIAS SPRING (TAPE CHUTE)

Requirement
Clutch disengaged and tape threaded through punch assembly, it should require
Min 1-1/4 oz---Max 2-1/4 oz
to just move spring away from tape.

To Adjust
Bend spring.

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

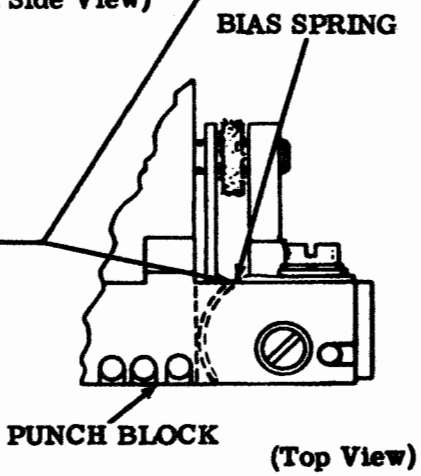


(C) BIAS SPRING (PUNCH BLOCK)

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

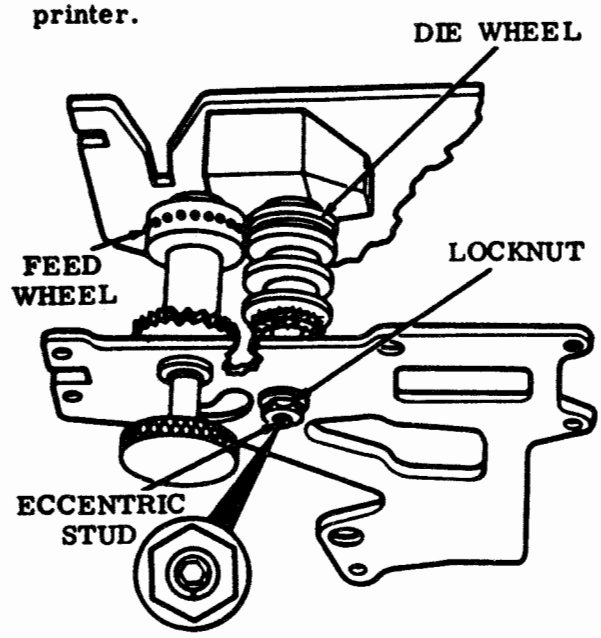
(2) Requirement
With tape in punch block and perforator operating under power, spring should not distort edge of tape.

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



2.31 Punch Mechanism for Fully Perforated Tape (Indentations of Feed Wheel Fully Punched Out)

Note: Adjustments on this page do not apply to tape printer.



(Front View)

TEN CHARACTERS PER INCH (Preliminary)

(1) Requirement

Indent of die wheel eccentric stud pointing downward.

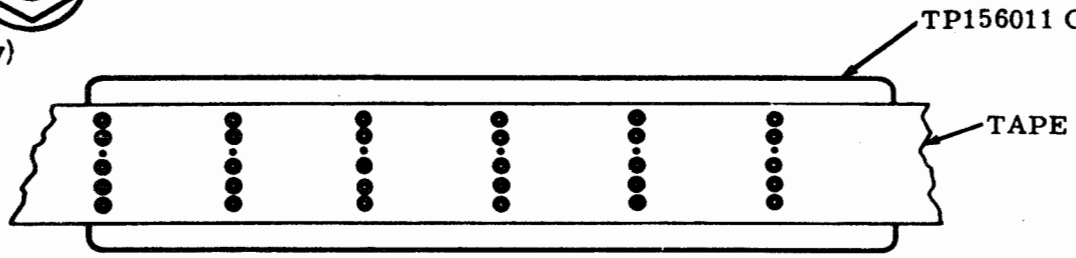
To Adjust

Position die wheel eccentric stud with locknut loosened. Tighten nut.

(2) Requirement

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

Note: Before proceeding with the following adjustment check both BIAS SPRING (2.35) tensions, and if unit is equipped with a slack tape mechanism having a clamp plate with an adjustable wear disc, loosen the mounting nut and turn a new edge of the disc toward the tape. Tighten nut.



TEN CHARACTERS PER INCH (Final) (Early Design) (For Latest Design See 2.33)

(1) Requirement

With a piece of tape perforated with six series of 9 BLANK code combinations followed by a LETTERS combination placed over the TP95960 gauge or the smooth side of the TP156011 tape gauge so that the circular portion of the first number 2 code hole in the tape is concentric with the first hole of the tape gauge, the next four holes in the tape gauge should be visible through the number 2 code holes in the tape and the circular portion of the last (sixth) number 2 code hole in the tape should be entirely within the 0.086 diameter hole of the tape gauge.

(2) Requirement

With tape shoe held away from feed wheel, feed pawl and detent disengaged and tape removed, feed wheel should rotate freely.

To Adjust

With tape removed from punch mechanism, loosen eccentric locknut and rotate die wheel eccentric shaft until it binds against feed wheel. Back off eccentric until die wheel is just free. Check through 3 or 4 rotations. Keep the indent of eccentric below the horizontal centerline of the stud. Refine adjustment for requirement (1), if necessary, by moving the die wheel toward the feed wheel to decrease the character spacing and away from the feed wheel to increase the character spacing. Tighten nut. Refine FEED PAWL (2.25) adjustment, if necessary.

CAUTION: WITH TAPE REMOVED. MAKE SURE FEED WHEEL AND DIE WHEEL DO NOT BIND. RECHECK REQUIREMENT (1). IF NECESSARY, REFINE.

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

2.32 Punch Mechanism for Fully Perforated Tape
(Indentations of Feed Wheel Fully Punched Out) (continued)

Note: Adjustments on this page do not apply to tape printer.

LATERAL AND FRONT TO REAR FEED WHEEL POSITION DETENT (Early Design)
(For Latest Design See 2.34)

Requirement

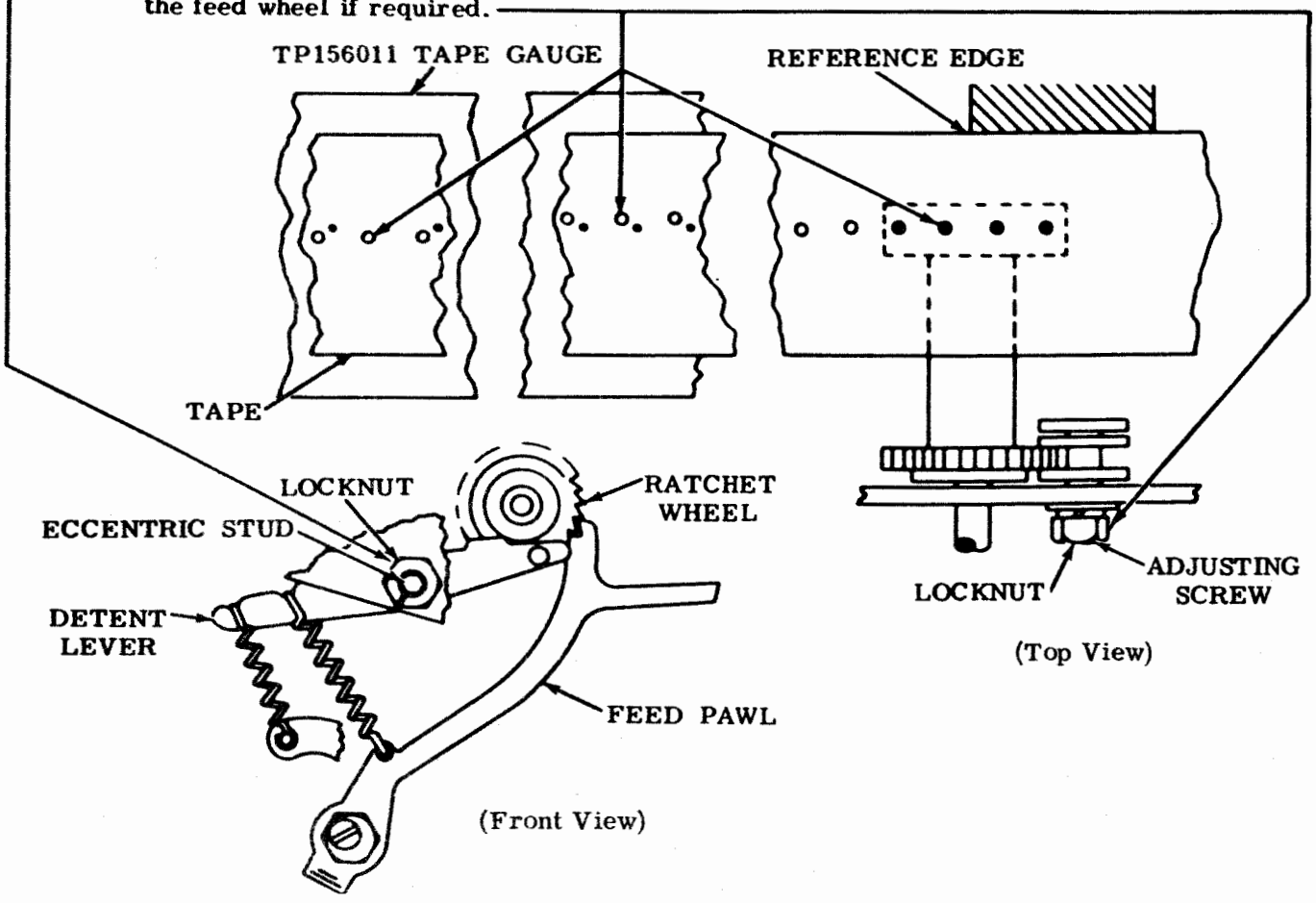
With the reperforator operating under power, obtain a tape sample consisting of a series of BLANK code perforations, by a visual inspection of the perforated feed holes, laterally and front to rear, the indentations of the feed wheel should be fully punched out.

(1) To Adjust (laterally)

To meet the lateral requirement, loosen the detent eccentric stud locknut and rotate the detent eccentric clockwise to move the feed wheel perforations toward the leading edge of the feed hole. Rotate the detent eccentric counterclockwise to move the feed wheel perforation towards the trailing edge of the feed hole. Tighten nut. Refine the FEED PAWL adjustment (2.25).

(2) To Adjust (front to rear)

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



2.33 Punch Mechanism for Fully Perforated Tape (Indentation of Feed Wheel Between Feed Holes)

Note 1: Adjustments on this page do not apply to tape printer.

Note 2: Before proceeding with the following adjustments, check both tape guide spring tensions (2.35).

TEN CHARACTERS PER INCH (Final) (Latest Design) (For Early Design See 2.31) *(See Note 4)

(1) Requirement

With tape shoe blocked away from feed wheel, feed pawl and detent disengaged, and tape removed from punch mechanism, feed wheel should rotate freely (check through 3 or 4 rotations).

(2) Requirement

Perforate six series of 9 BLANK combinations followed by a LETTERS combination. Place tape over smooth side of TP156011 gauge so circular portion of first number two code hole in tape is concentric with first 0.072 hole of gauge (see note). The next four 0.072 holes in tape gauge should be visible through the number 2 code holes in tape and circular portion of the last (sixth) number 2 code hole in tape should be entirely within the 0.086 diameter hole of tape gauge.

Note 3: The first five holes in gauge are the same size as code holes in tape (0.072 inch diameter) but the sixth hole in gauge is larger than the first five (0.086 inch diameter). This arrangement allows ±0.007 inch variation in five (5) inches.

To Adjust

(1) With tape removed from punch mechanism, loosen die wheel eccentric stud locknut and adjust die wheel so that it just binds on feed wheel, back off eccentric so die wheel is just free (check freeness through 3 or 4 rotations). Keep indent off eccentric stud below the horizontal center line of stud.

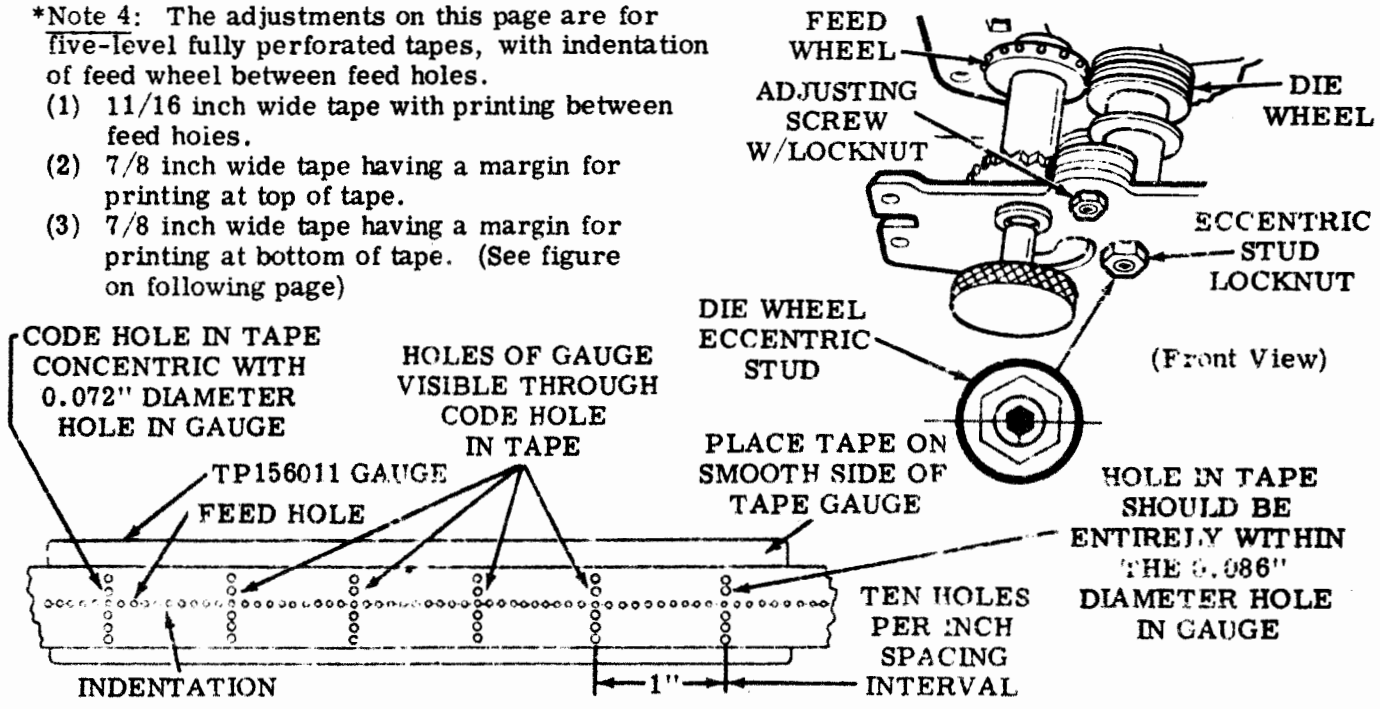
(2) Check ten characters per inch requirement and refine feed wheel die wheel clearance adjustment to meet the requirement by moving indent of die wheel eccentric stud toward feed wheel to decrease character spacing and away from feed wheel to increase the character spacing.

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

(3) With tape shoe away from feed wheel, feed pawl and detent disengaged, and tape removed from punch mechanism, feed wheel should rotate freely. Failure to meet this requirement indicates die wheel eccentric has been overadjusted. To meet this requirement, refine the adjustment.

*Note 4: The adjustments on this page are for five-level fully perforated tapes, with indentation of feed wheel between feed holes.

(1) 11/16 inch wide tape with printing between feed holes.
(2) 7/8 inch wide tape having a margin for printing at top of tape.
(3) 7/8 inch wide tape having a margin for printing at bottom of tape. (See figure on following page)



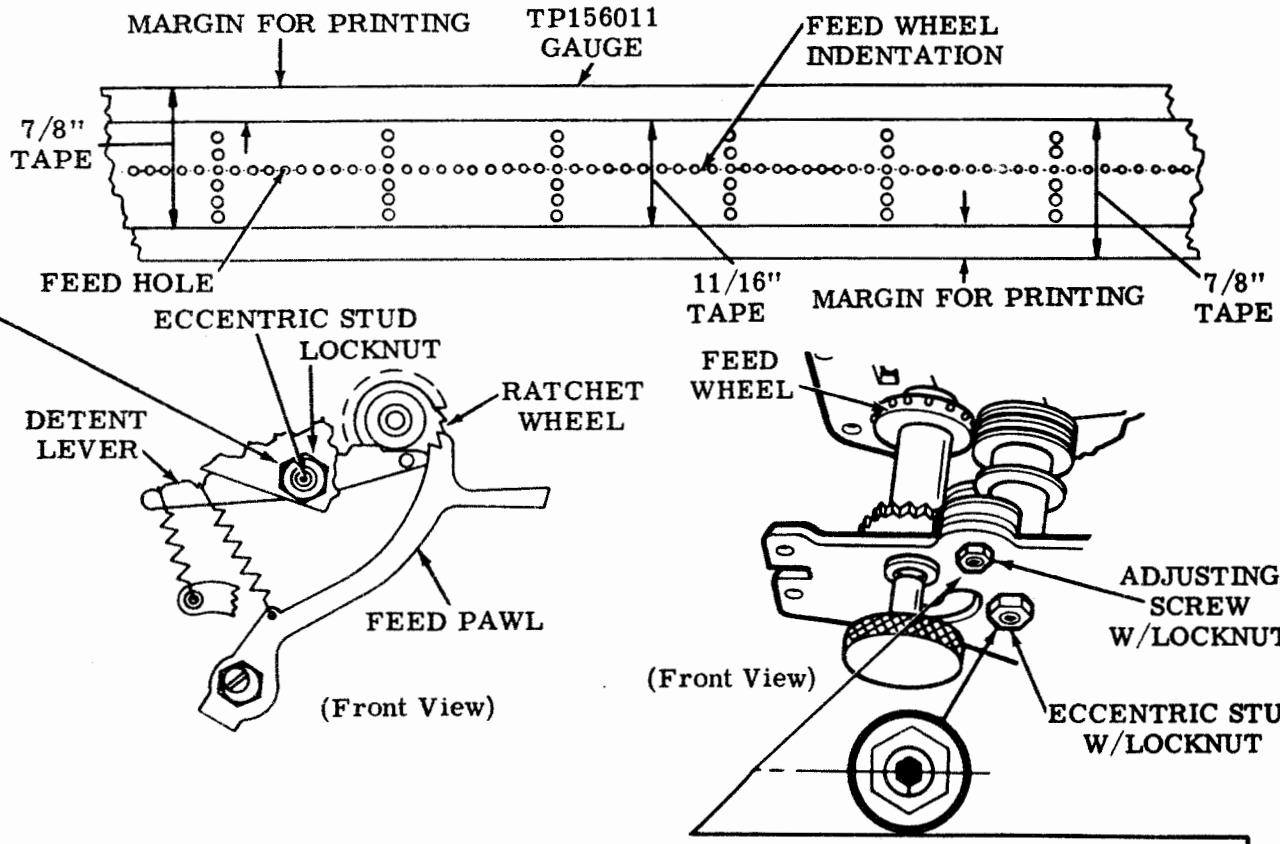
2.34 Punch Mechanism for Fully Perforated Tape (Indentation of Feed Wheel Between Feed Holes) (continued)

Note: Adjustments on this page do not apply to tape printer.

LATERAL AND FRONT TO REAR FEED WHEEL POSITION DETENT (Latest Design)
(For Early Design See 2.32)

(1) Requirement *(see note below)
With unit operating under power, indentations of feed wheel should be centrally located between two fully perforated feed holes, as gauged by eye.

To Adjust
Loosen detent lever eccentric stud locknut and turn eccentric stud clockwise to move indentation toward leading edge of feed hole and counterclockwise to move indentation toward trailing edge. Tighten locknut and recheck FEED PAWL (2.25) adjustment.



(2) Requirement
With unit operating under power, indentations of feed wheel should be on a centerline between fully perforated feed holes, as gauged by eye.

To Adjust
With adjusting screw locknut loose, turn adjusting screw clockwise to move indentation toward rear and counterclockwise to move indentations toward front. Tighten locknut.

*Note: The adjustments on this page are for five-level fully perforated tapes, with indentation of feed wheel between feed holes.
(1) 11/16 inch wide tape with printing between feed holes.
(2) 7/8 inch wide tape having a margin for printing at top of tape.
(3) 7/8 inch wide tape having a margin for printing at bottom of tape.

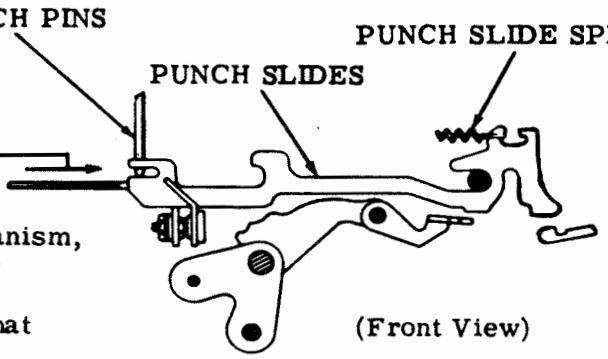
2.35 Punch Mechanism for Fully Perforated Tape (continued)

Note 1: Adjustments (B), (C) and (D) on this page do not apply to tape printer.

(A) PUNCH SLIDE SPRING

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

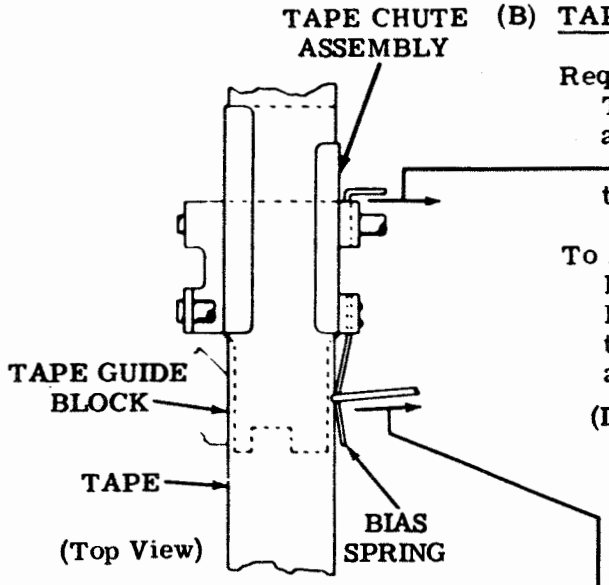
Note 2: On units equipped with backspace mechanism, it is necessary to remove several parts in order to check this spring tension. It should not be checked unless there is good reason to believe that it does not meet its requirements.



(B) TAPE GUIDE ASSEMBLY SPRING

Requirement
Tape guide assembly should be free to return to rest against tape guide block.
Min 16 oz
to pull tape guide assembly away from block.

To Adjust
If spring does not meet requirement, replace spring. If tape guide assembly is not free to return, reposition tape guide assembly mounting post to free tape guide assembly.



(C) BIAS SPRING (Tape Chute)

Requirement
Clutch disengaged and tape threaded through punch assembly, it should require
Min 1-1/4 oz---Max 2-1/4 oz
to just move spring away from tape.

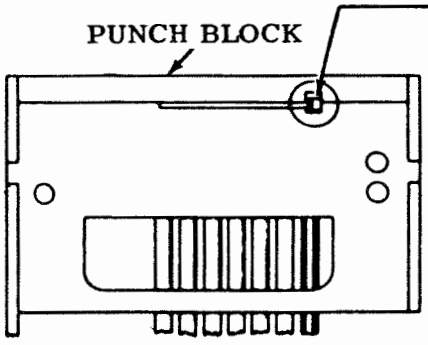
To Adjust
Bend spring.

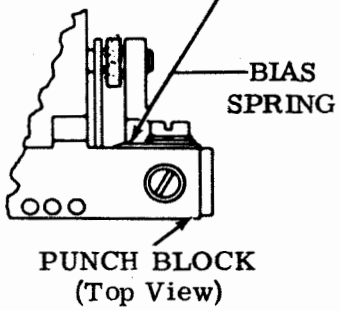
(D) BIAS SPRING (Punch Block)

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

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

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

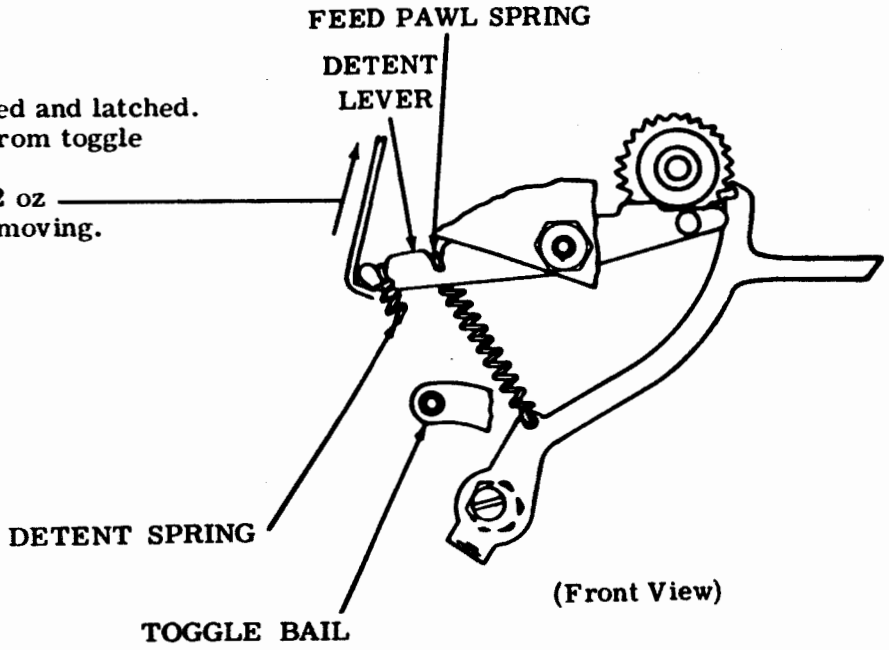




2.36 Punch Mechanism (continued)

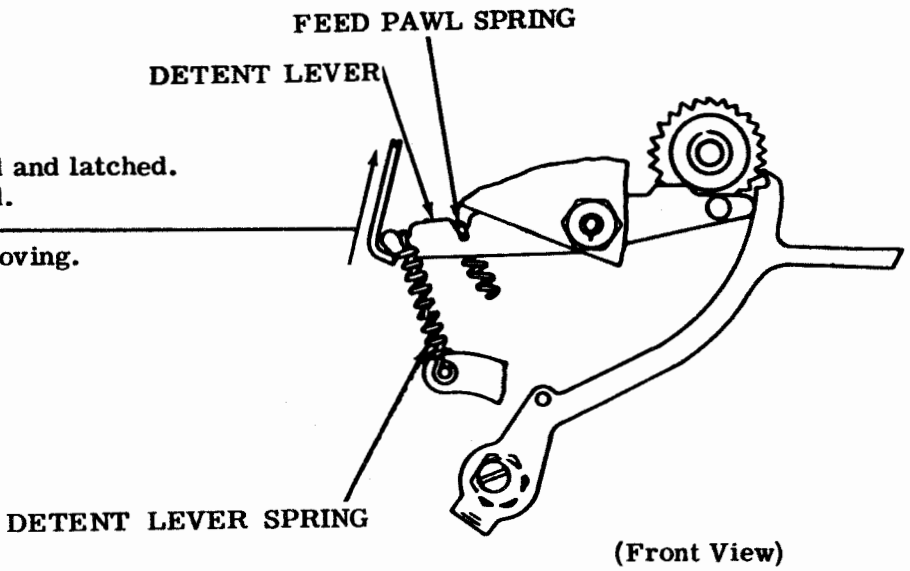
FEED PAWL SPRING

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



DETENT LEVER SPRING

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

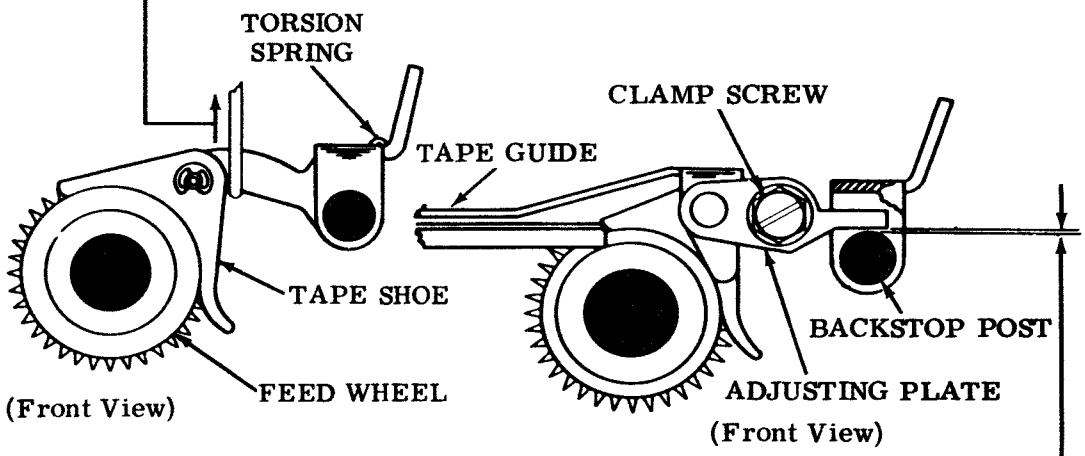


2.37 Punch Mechanism (continued)

Note: Adjustments on this page do not apply to tape printer.

(A) TAPE SHOE TORSION SPRING

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



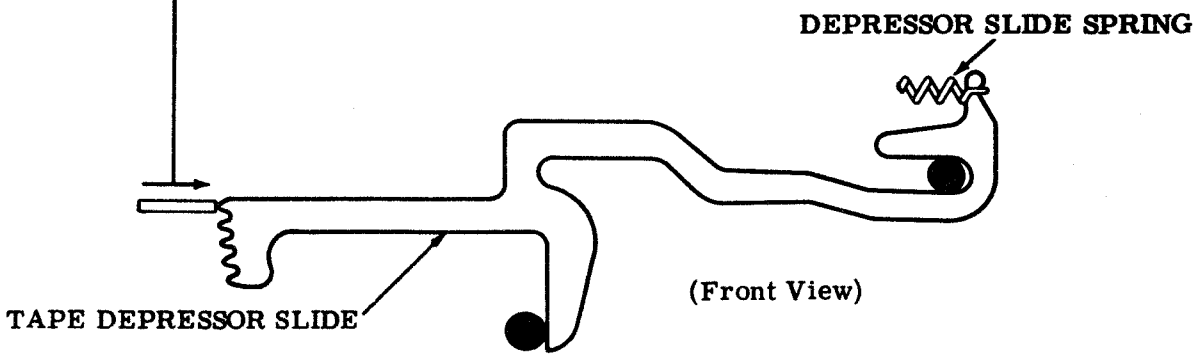
(B) TAPE GUIDE (Early Design)

Requirement
Rotate feed wheel until oil hole is upward. Center tape shoe and tape guide. Hold tape guide downward. Clearance between adjusting plate and backstop post
Min 0.002 inch---Max 0.008 inch

To Adjust
Position adjusting plate with its clamp screw loosened. Tighten screw.

(C) TAPE DEPRESSOR SLIDE SPRING

Requirement
Rocker bail in its extreme left position.
Min 1-1/2 oz---Max 2-1/2 oz
to start depressor slide moving.

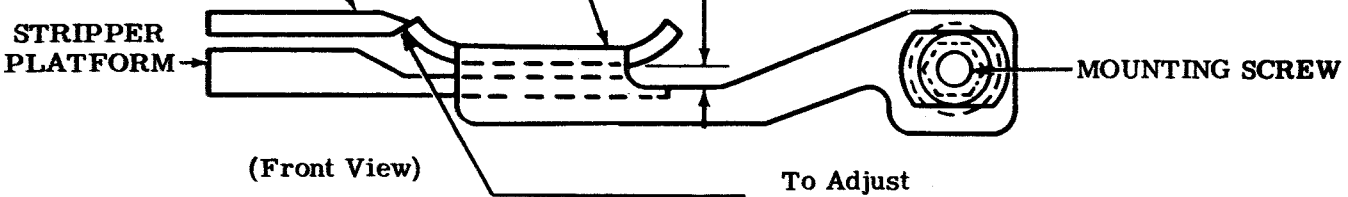


2.38 Punch Mechanism (continued)

Note: Adjustments on this page do not apply to tape printer.

TAPE GUIDE (Early Design)

Requirement
With tape guide under and in contact with V shaped projection of die plate* — Min 0.008 inch---Max 0.015 inch clearance between guide and tape platform.



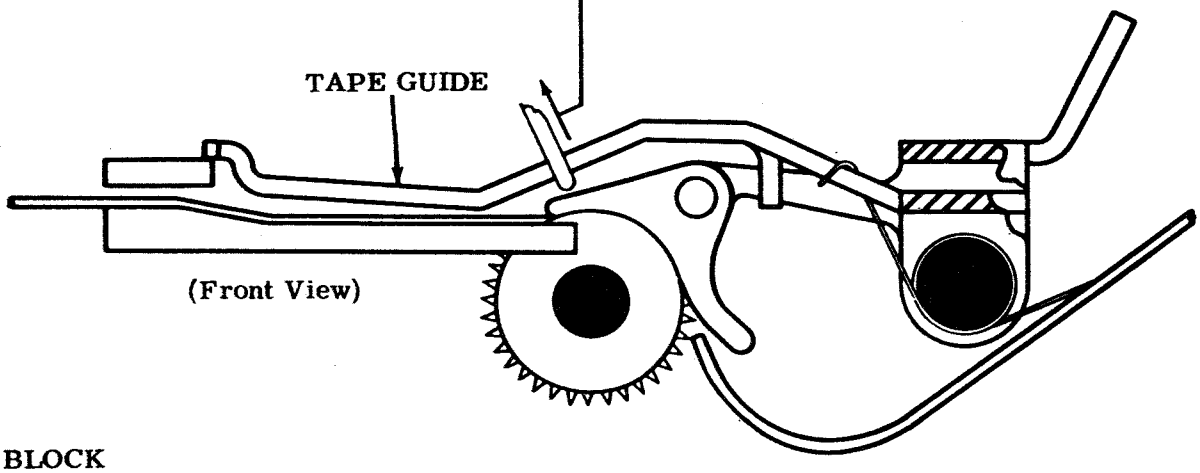
(Front View)

To Adjust
With mounting screw friction tight, place 0.010 inch flat gauge between guide and tape platform. Press guide down and to left. Tighten mounting screw while holding feed wheel adjusting screw stationary by means of a hex wrench.

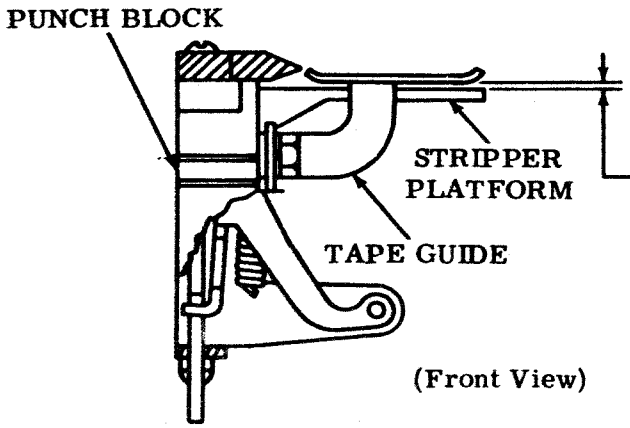
*Guide is considered "in contact" with projection when 0.0015 inch gauge cannot be inserted between them.

TAPE GUIDE SPRING (On Units Not Equipped With Tape Guide Adjusting Plate)

Requirement
Min 8 oz to start tape guide bail moving upward.



(Front View)



(Front View)

TAPE GUIDE (Latest Design)

Requirement
Clearance under tape guide — Min 0.008 inch---Max 0.015 inch

To Adjust
With mounting screw friction tight, position tape guide. Keep guide against front plate of punch. Tighten screw.

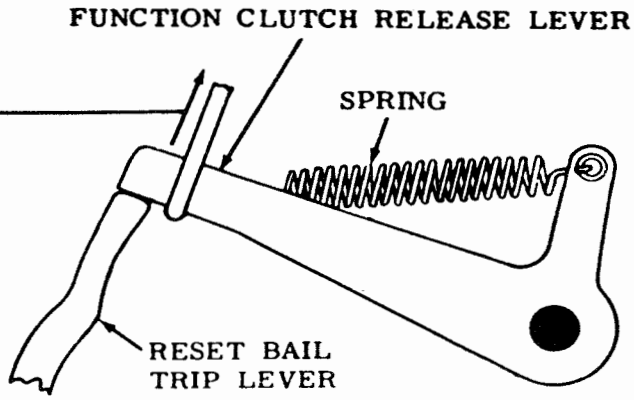
2.39 Function Mechanism (continued)

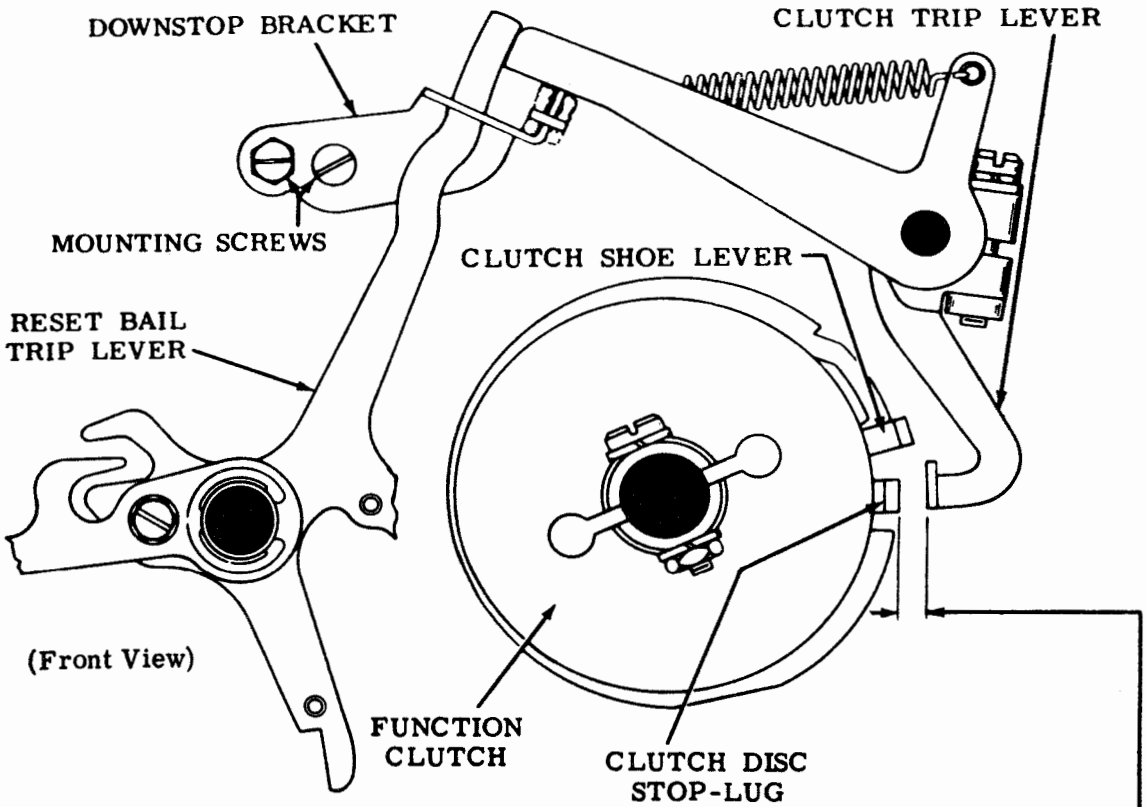
(A) FUNCTION CLUTCH RELEASE LEVER SPRING

Requirement

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

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





(B) RELEASE LEVER DOWNSTOP BRACKET.

Requirement

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

Min 0.002 inch---Max 0.045 inch

To Adjust

Remove tape guide. With downstop bracket mounting screws friction tight position bracket. Tighten screws. Recheck for some clearance between trip lever extension and left end of slot in release lever downstop bracket.

2.40 Typing Mechanism

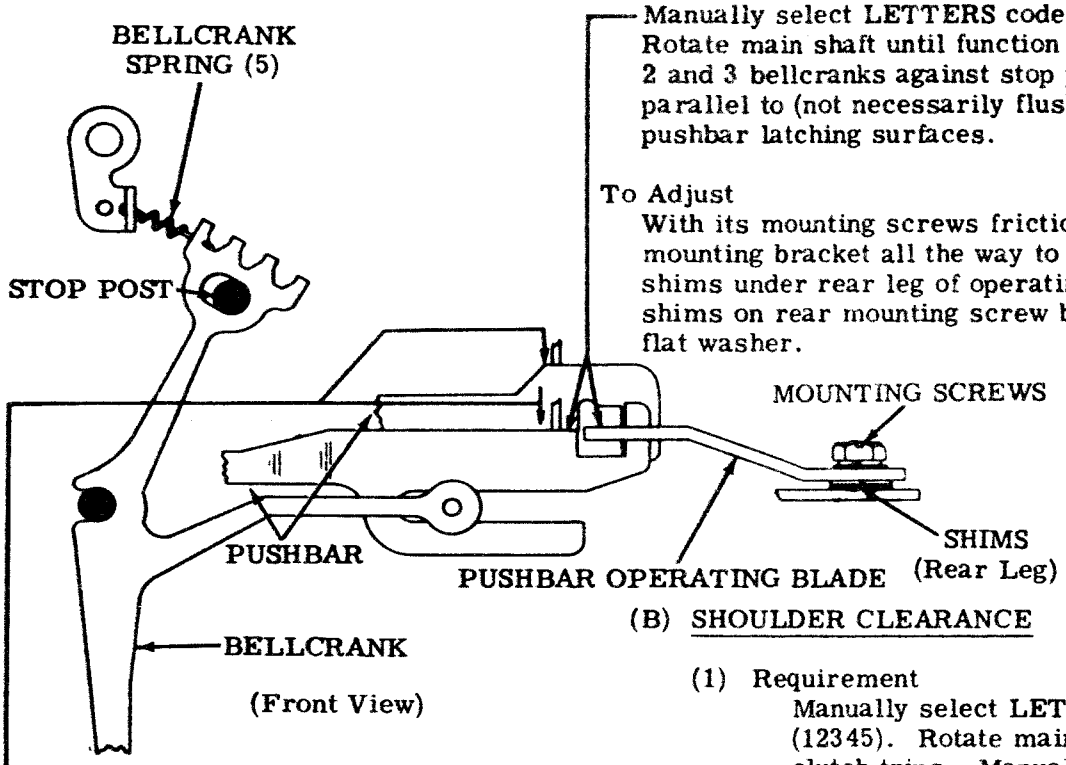
(A) PUSHBAR OPERATING BLADE (Preliminary)

Requirement

Manually select LETTERS code combination (12345). Rotate main shaft until function clutch trips. Hold no. 2 and 3 bellcranks against stop post. Operating blade parallel to (not necessarily flush) top of no. 2 and 3 pushbar latching surfaces.

To Adjust

With its mounting screws friction tight, pry transfer mounting bracket all the way to right. Add or remove shims under rear leg of operating blade. Place extra shims on rear mounting screw between blade and flat washer.



(B) SHOULDER CLEARANCE

(1) Requirement

Manually select LETTERS code combination (12345). Rotate main shaft until function clutch trips. Manually seat pushbars in detented position. In bar which is nearest left edge of blade, take up play to left and rear, and then release. Clearance between bar and left edge of blade

Min 0.015 inch---Max 0.030 inch

(2) Requirement

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

(3) Requirement

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

(C) BELLCRANK SPRINGS (5)

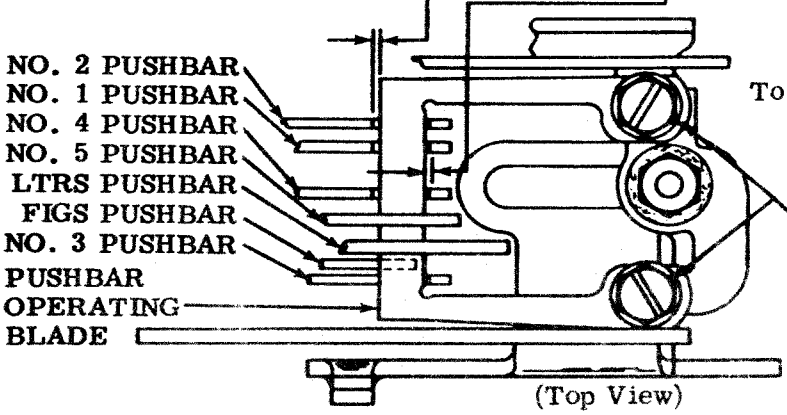
To Check

Select LETTERS code combination (12345). Rotate main shaft until function clutch trips.

Requirement

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

Note: Check all five springs.



To Adjust

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

MOUNTING SCREWS

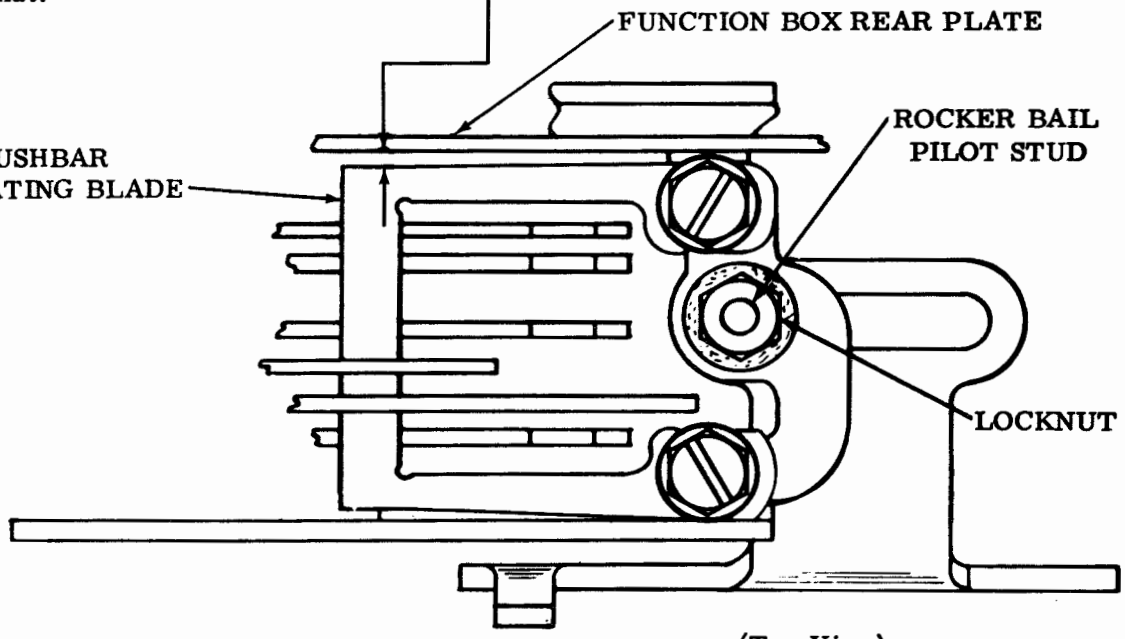
Note: It may be necessary to refine this adjustment after CENTERING CLEARANCE (2.41) adjustment.

2.41 Typing Mechanism (continued)

CENTERING CLEARANCE

Requirement
Select BLANK code combination. Position rocker bail through a complete cycle to insure the clearance is a minimum. Clearance between function box rear plate and pushbar operating blade
Min 0.005 inch---Max 0.020 inch
at a point in the cycle where play is taken up to make clearance a minimum.

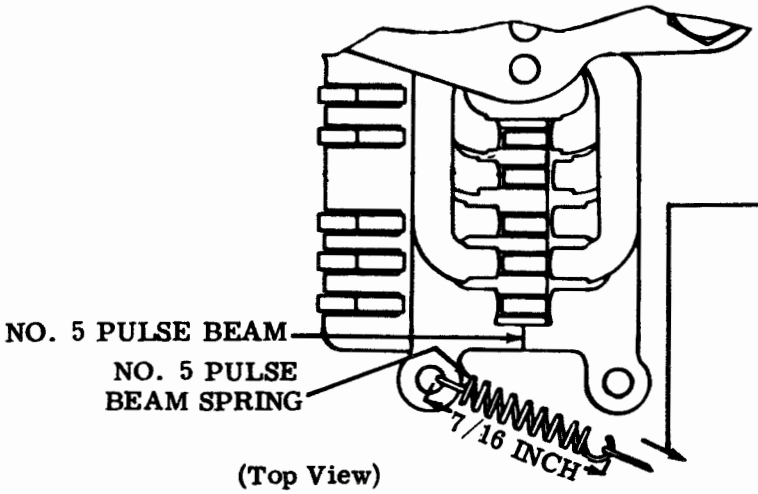
To Adjust
Position rocker bail pilot stud in elongated hole with locknut loosened. Tighten nut.



(Top View)

NO. 5 PULSE BEAM SPRING

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



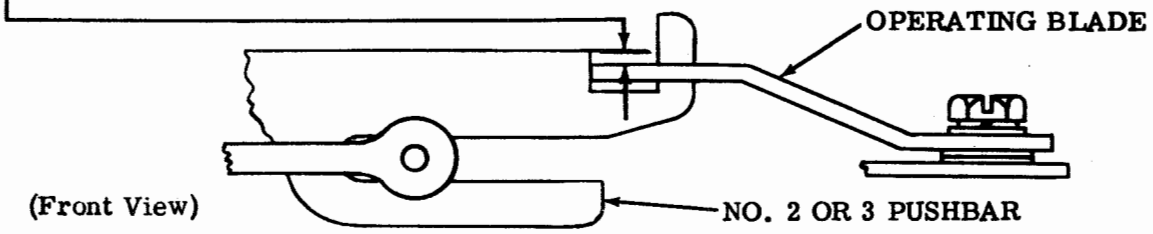
(Top View)

2.42 Typing Mechanism (continued)

FUNCTION BOX

Requirement

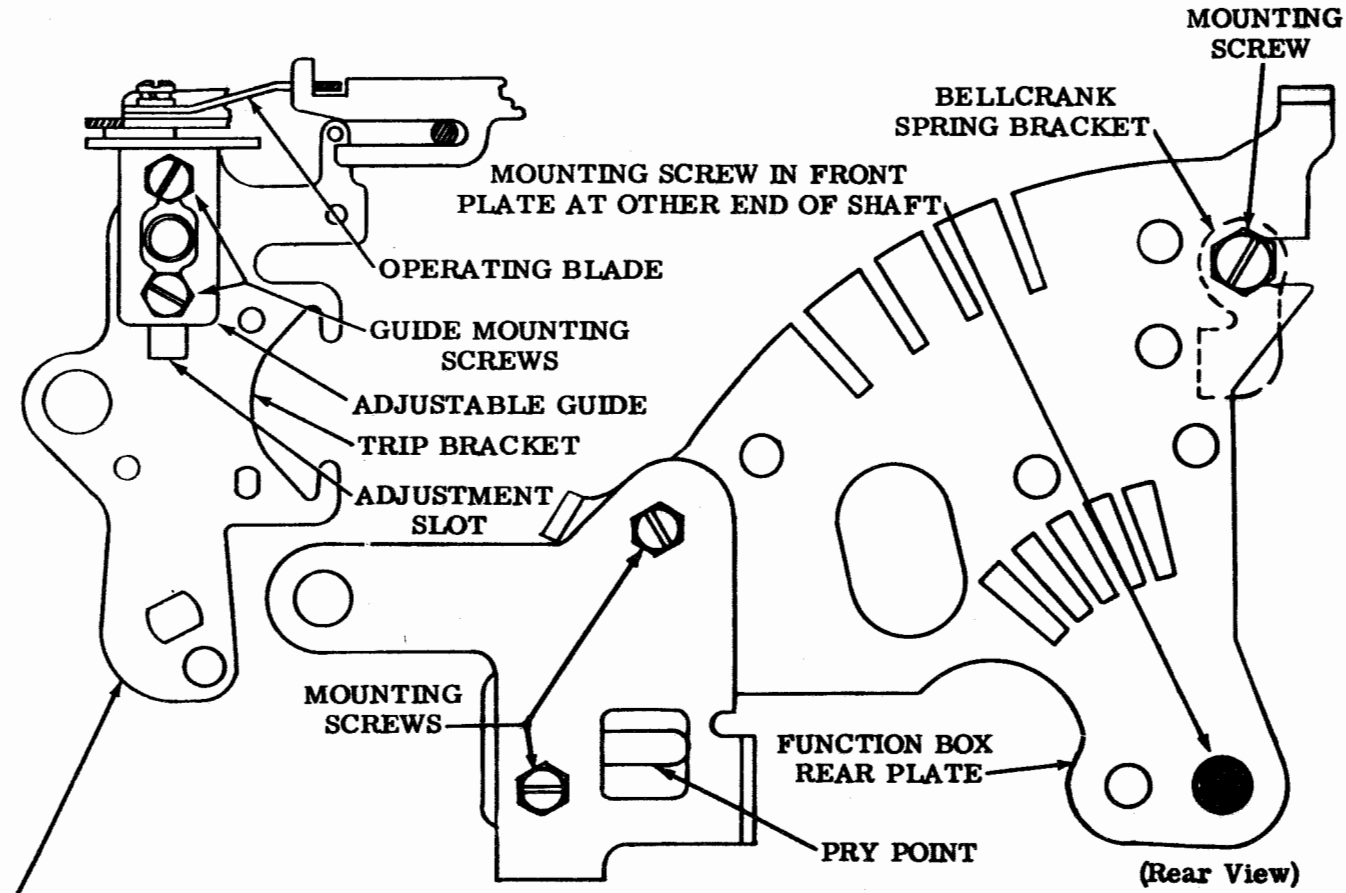
Manually select LETTERS code combination (12345). Rotate main shaft until function clutch trips, and punch slides are disengaged from latches. Top of operating blade should be Flush---Max 0.020 inch below tops of no. 2 and 3 pushbars. Take up play in pushbars in a downward direction then release.



Note 1: When unit is mounted as part of keyboard perforator transmitter, it may be necessary to refine adjustment within its limits to increase operating margins of unit.

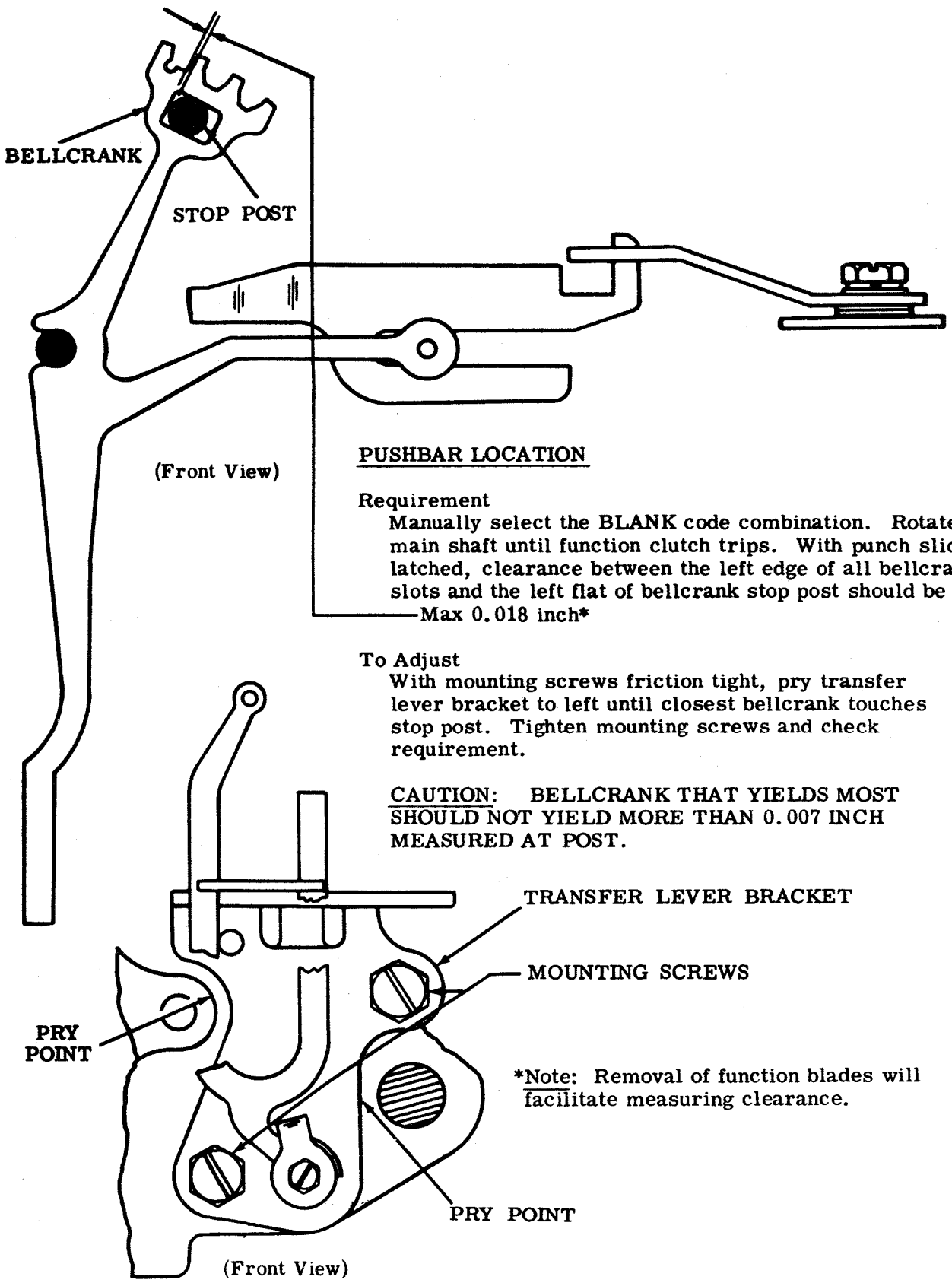
To Adjust

With three mounting screws in rear plate and one mounting screw in front plate loosened, position function box by means of pry point. Check position of bellcrank. Tighten screws.



Note 2: On units equipped with two-piece trip bracket, set above adjustment in center of its range and tighten screws. Loosen two screws which mount guide to bracket and position guide to meet above requirement. Tighten screws.

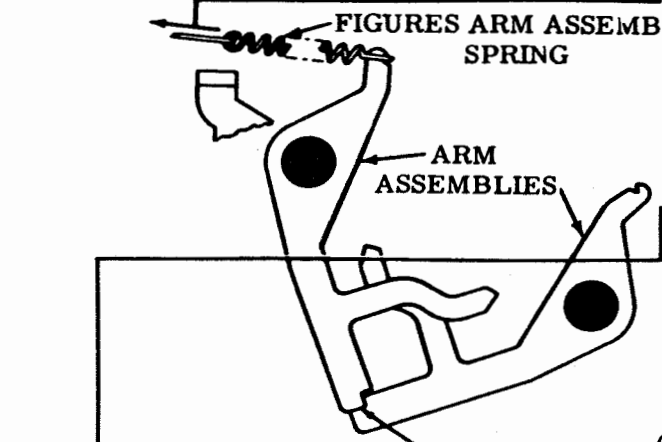
2.43 Typing Mechanism (continued)



2.44 Typing Mechanism (continued)

(B) FIGURES ARM ASSEMBLY SPRING

Requirement
With arm assemblies in letters position
—Min 1-1/2 oz---Max 3-1/2 oz
to pull spring to installed length.



(C) FIGURES EXTENSION ARM SPRING

Requirement
With arm assemblies in letters position and letters extension arm manually held in position
—Min 5 oz---Max 8 oz
to pull spring to installed length.

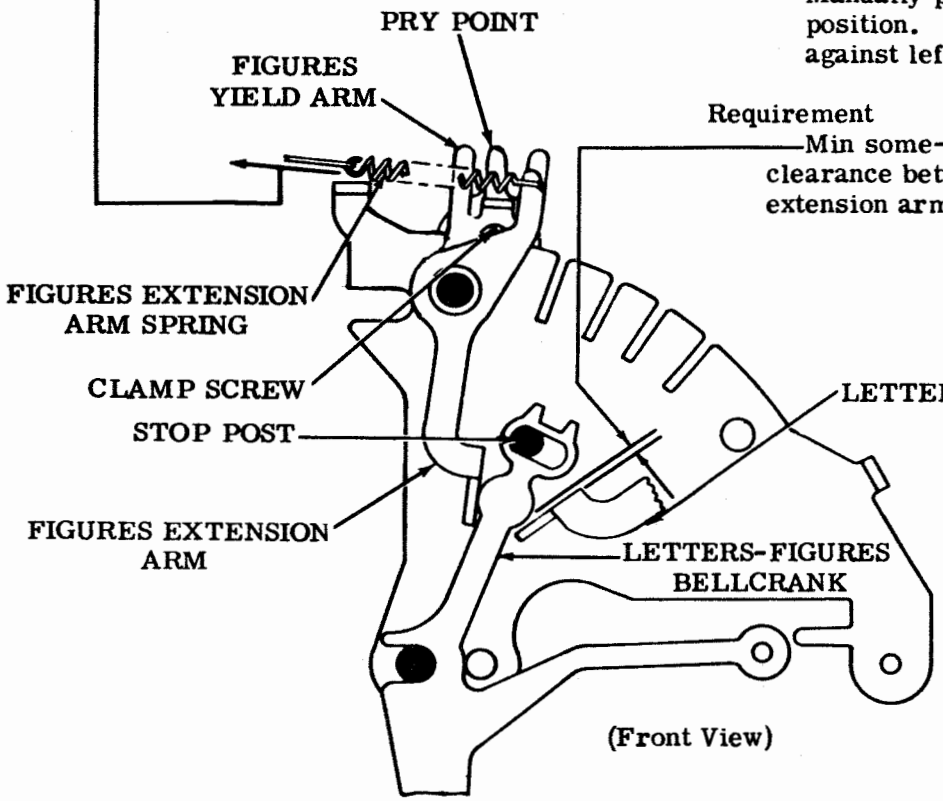
(Front View)

(A) LETTERS-FIGURES YIELD ARMS

(1) To Check
Trip function clutch and rotate main shaft until rocker bail is to extreme left. Manually place arm assemblies in letters position. Hold letters-figures bellcrank against left edge of stop post.

Requirement
—Min some---Max 0.006 inch*
clearance between bellcrank and letters extension arm.

(Adjustment is continued on the following page)



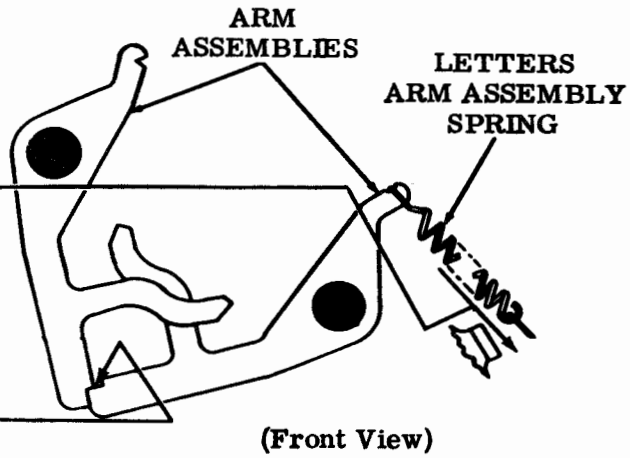
(Front View)

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

2.45 Typing Mechanism (continued)

(D) LETTERS ARM ASSEMBLY SPRING

Requirement
With arm assemblies in figures position
Min 1-1/2 oz---Max 3-1/2 oz
to pull spring to installed length.



(Front View)

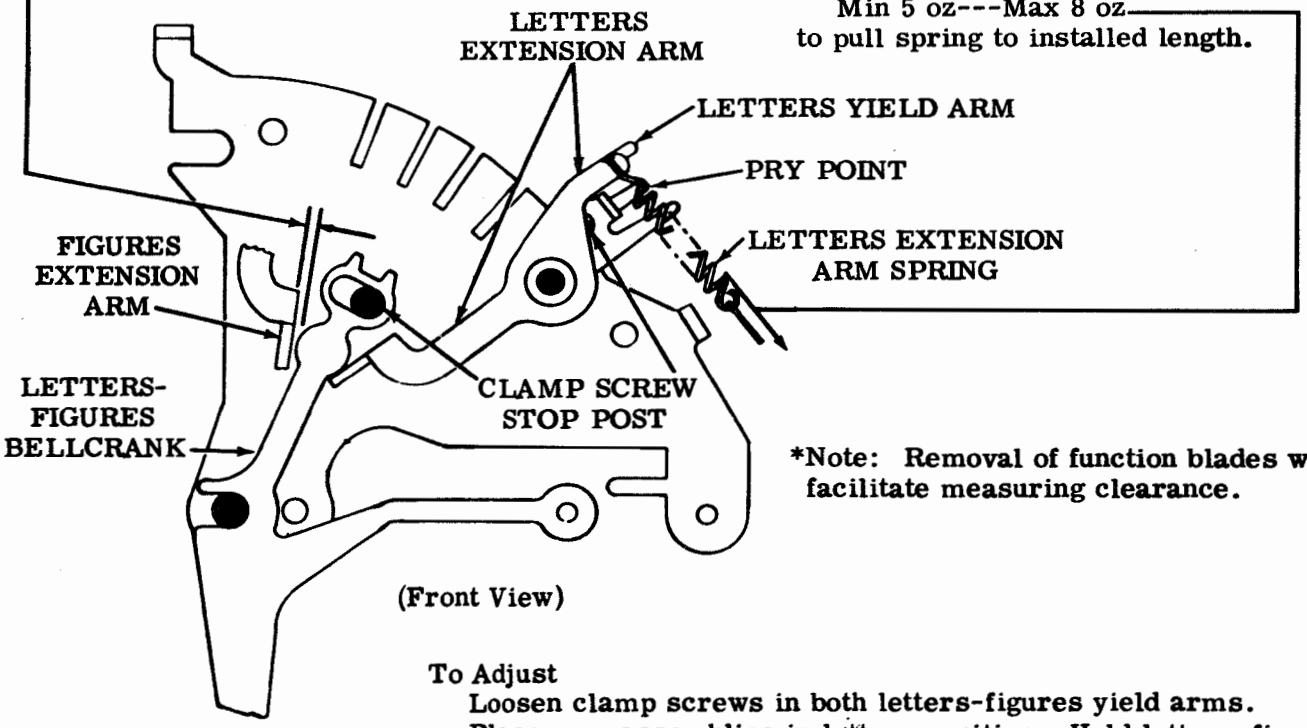
(A) LETTERS-FIGURES YIELD ARMS
(Continued from previous page)

(2) To Check
Manually place arm assemblies in figures position. Hold letters-figures bellcrank against right edge of stop post.

Requirement
Min some---Max 0.006 inch* clearance between bellcrank and figures extension arm.

(E) LETTERS EXTENSION ARM SPRING

Requirement
With arm assemblies in figures position and letters extension arm manually held in position
Min 5 oz---Max 8 oz
to pull spring to installed length.



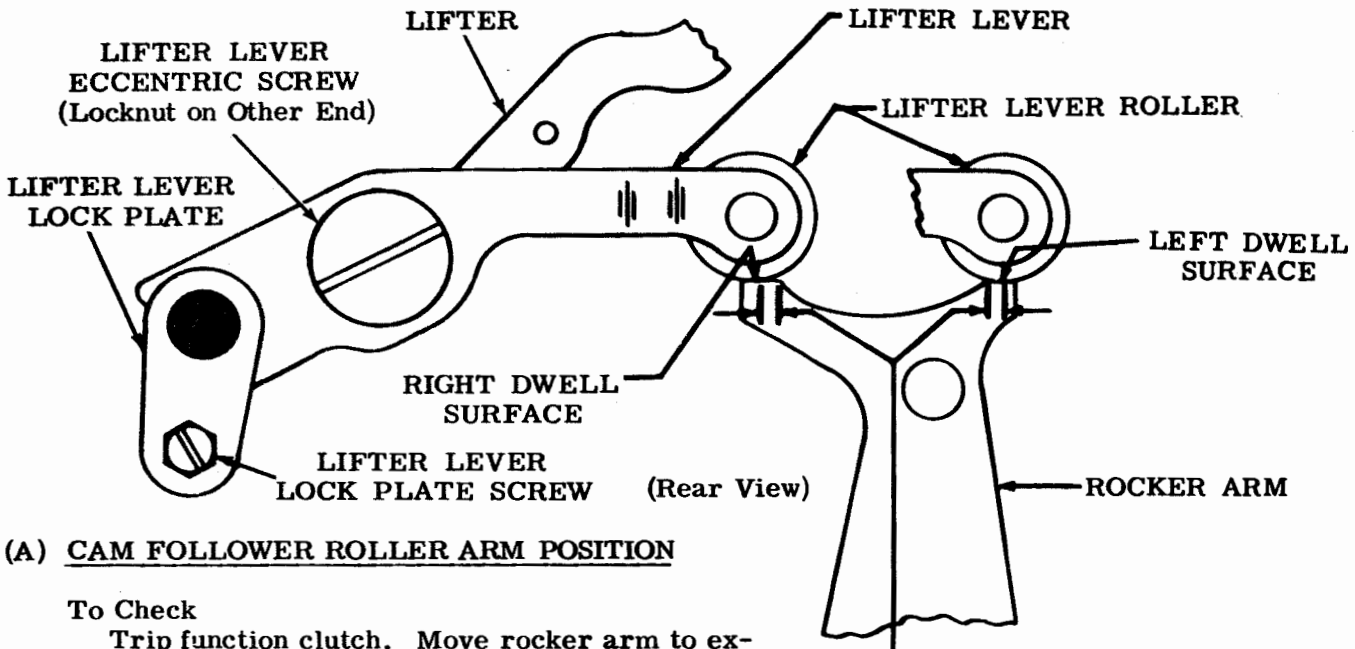
(Front View)

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

To Adjust
Loosen clamp screws in both letters-figures yield arms. Place arm assemblies in letters position. Hold letters-figures bellcrank against left side of stop post, and by means of pry point, position letters yield arm to meet clearance requirement under (A) (1) figure on previous page). Tighten letters yield arm clamp screw. Place arm assemblies in figures position and by means of pry point position figures yield arm to meet requirement under (2) above. Tighten figures yield arm clamp screw.

CAUTION: ARM ASSEMBLIES MAY CHANGE POSITION DURING ADJUSTMENT. AS TIGHTENING OF SCREWS MAY AFFECT ADJUSTMENT, RECHECK REQUIREMENTS.

2.46 Typing Mechanism (continued)



(A) CAM FOLLOWER ROLLER ARM POSITION

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

*Note: Remove timing contacts if unit is so equipped.

Requirement
Approximately equal travel on each dwell surface.

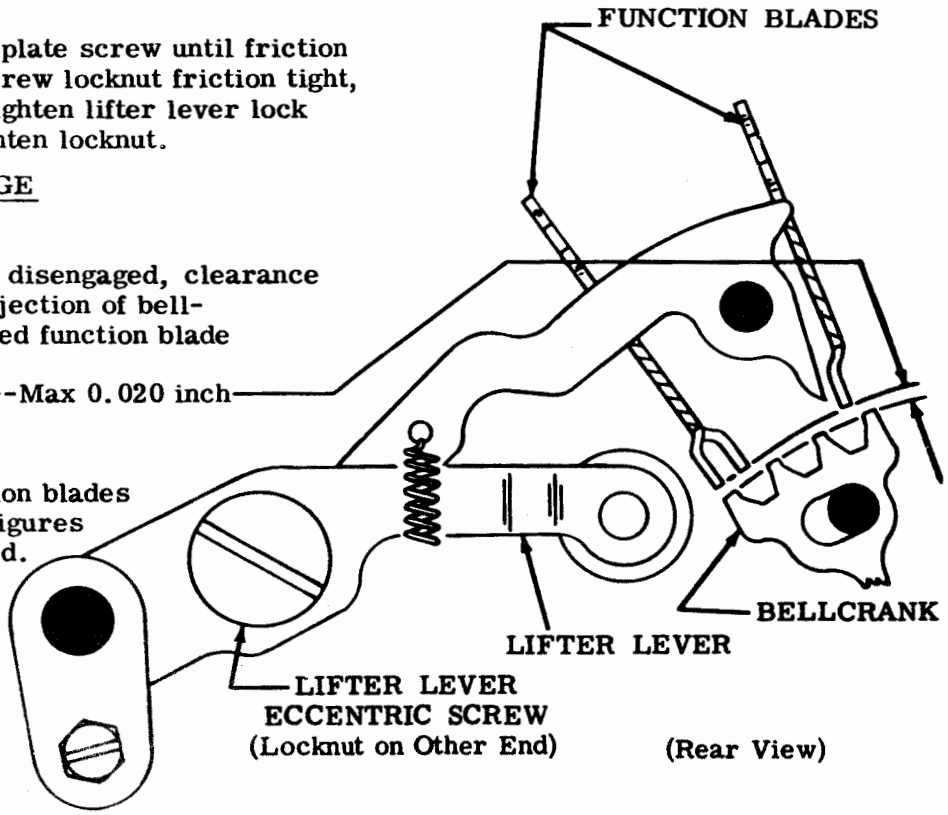
To Adjust*
Loosen lifter lever lock plate screw until friction tight. With eccentric screw locknut friction tight, position lifter lever. Tighten lifter lever lock plate screw. Do not tighten locknut.

(B) LIFTER OPERATING RANGE

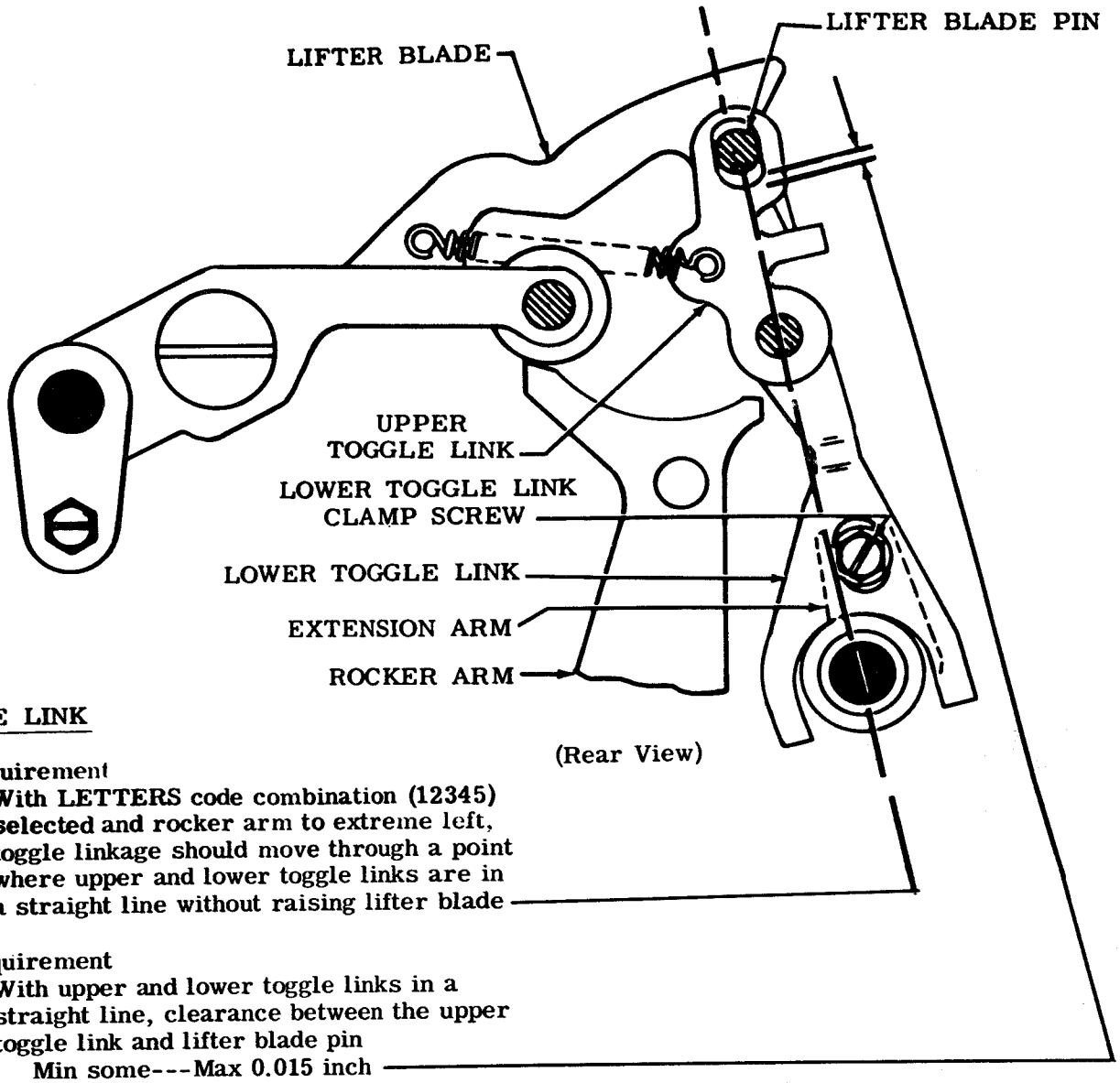
(1) Requirement
With function clutch disengaged, clearance between closest projection of bell-cranks and associated function blade projection
Min 0.008 inch---Max 0.020 inch

(2) Requirement
Min 0.005 inch clearance for function blades other than letters-figures if unit is so equipped.

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



2.47 Typing Mechanism (continued)



TOGGLE LINK

(1) Requirement
With LETTERS code combination (12345) selected and rocker arm to extreme left, toggle linkage should move through a point where upper and lower toggle links are in a straight line without raising lifter blade

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

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

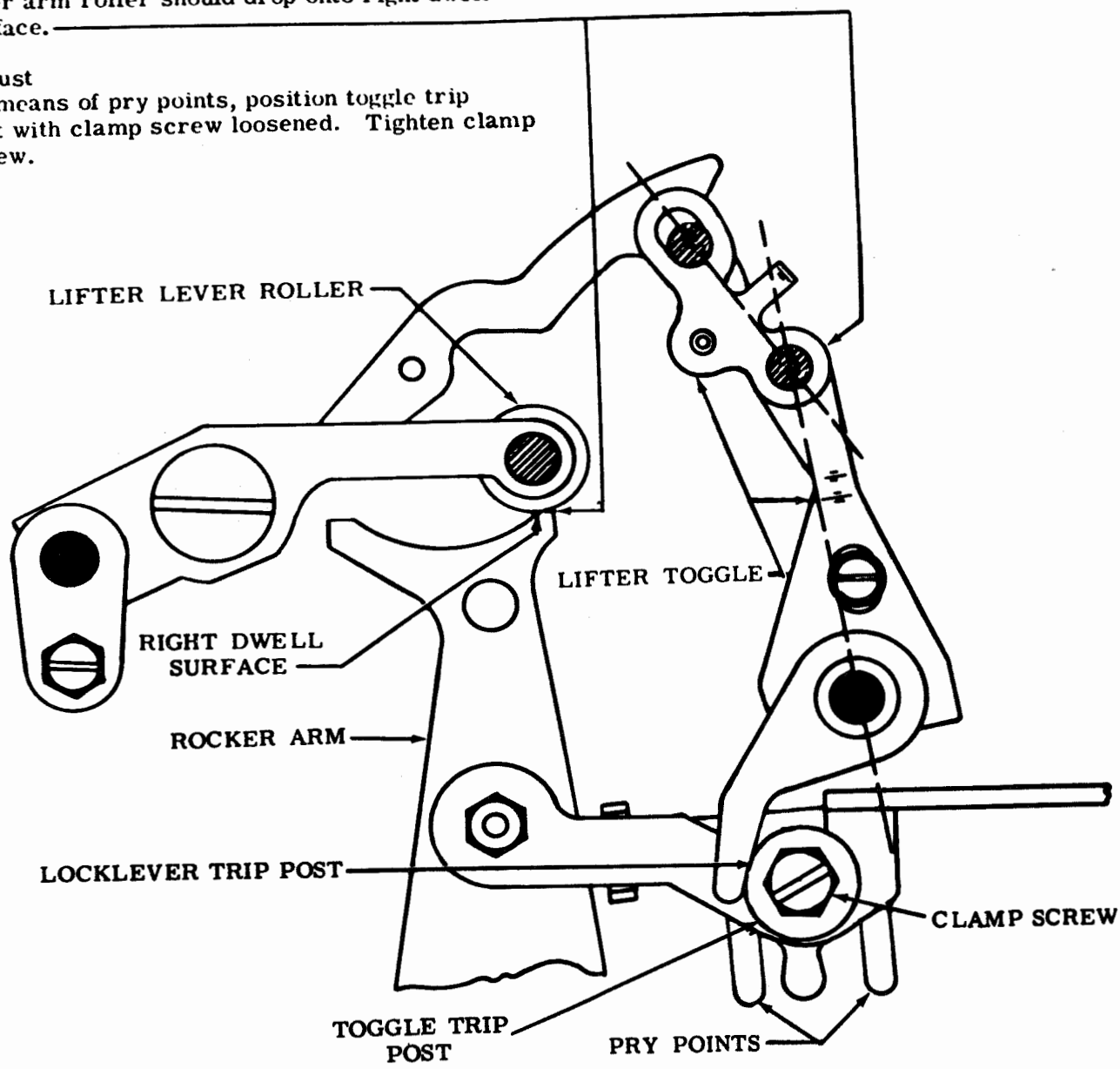
Note: To avoid interference with the lower toggle link clamp screw and the axial corrector link, it may be necessary to move the high part of the corrector bushing above its horizontal center line.

2.48 Typing Mechanism (continued)

TOGGLE TRIP ARM

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

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



(Rear View)

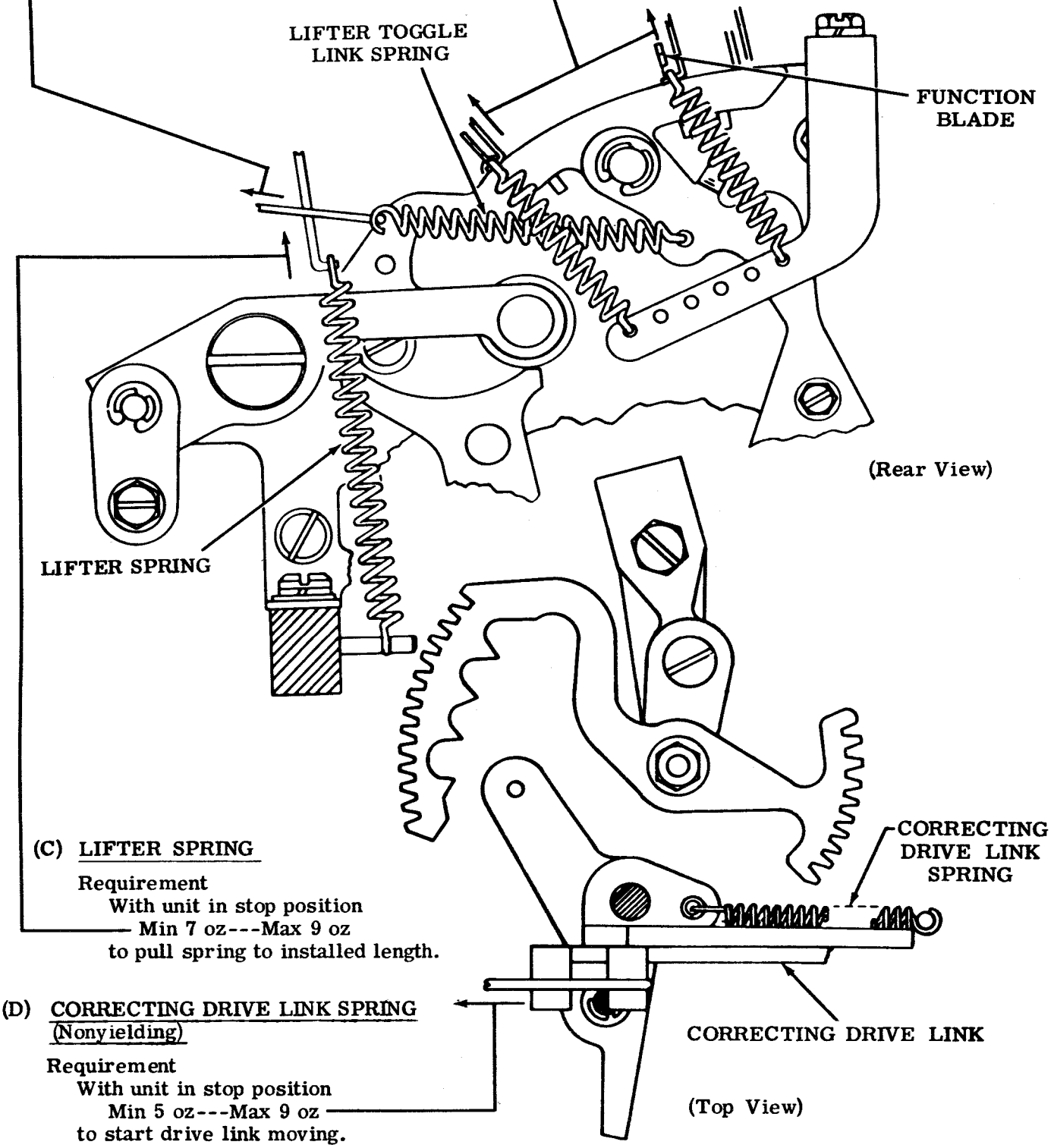
2.49 Typing Mechanism (continued)

(A) LIFTER TOGGLE LINK SPRING

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

(B) FUNCTION BLADE SPRINGS (Two or More)

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



(C) LIFTER SPRING

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

(D) CORRECTING DRIVE LINK SPRING
(Nonyielding)

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

2.50 Typing Mechanism (continued)

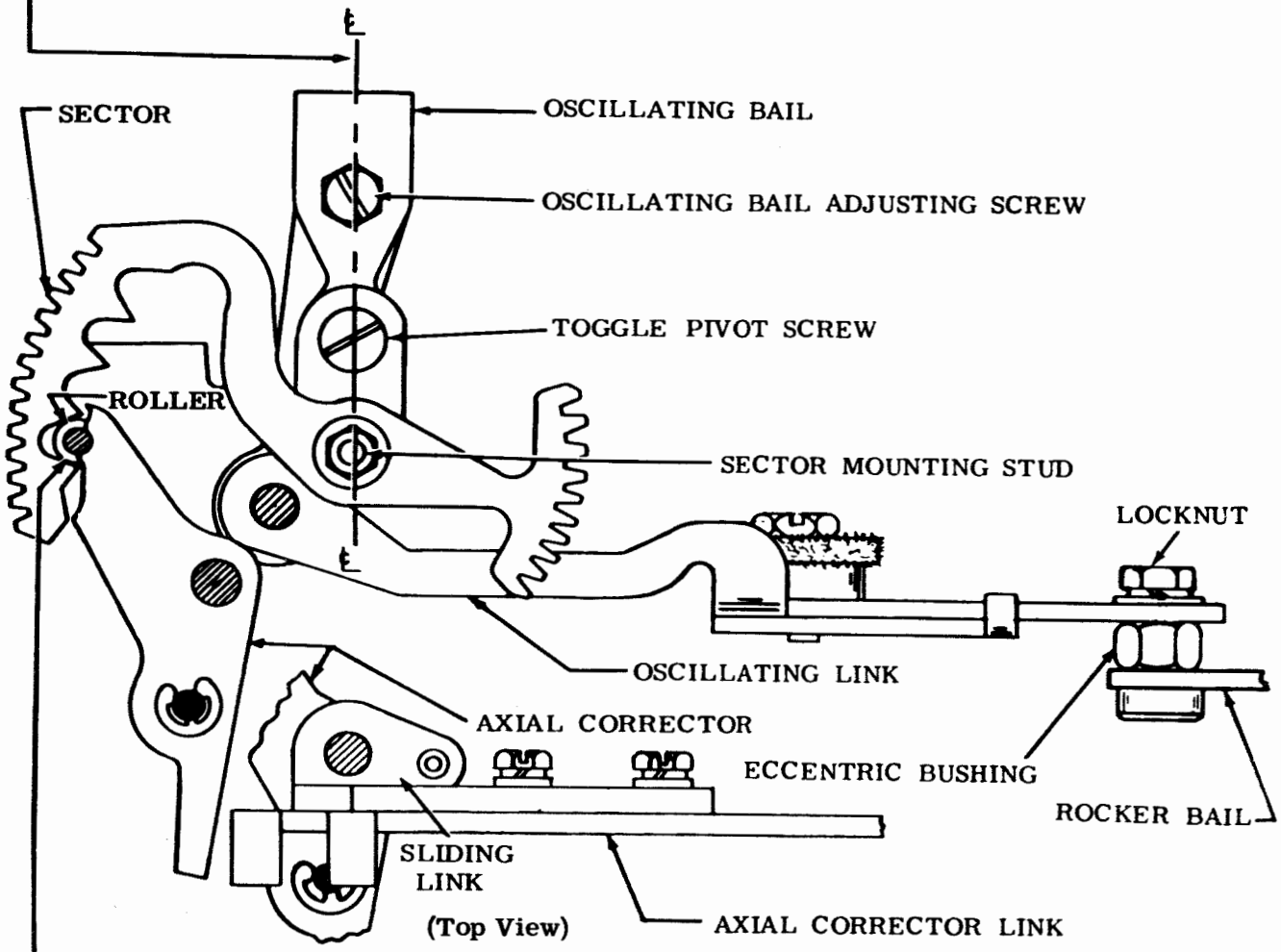
(A) OSCILLATING BAIL DRIVE LINK

Requirement

Position rocker bail to its extreme left. Sector mounting stud, toggle pivot screw and oscillating bail adjusting screw should approximately line up.

To Adjust

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



(B) OSCILLATING BAIL PIVOT

Requirement

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

To Adjust

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

2.51 Typing Mechanism (continued)

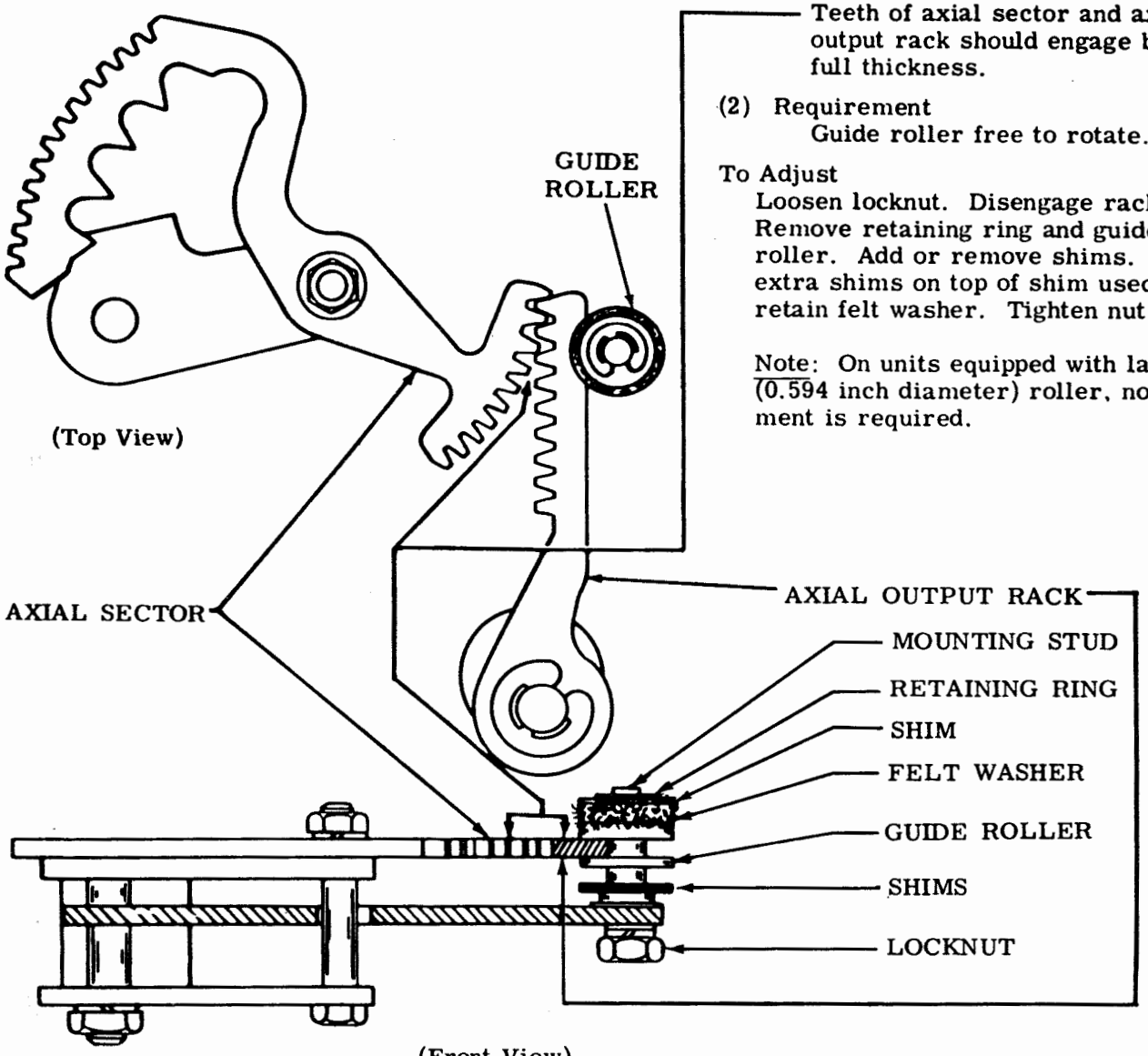
(A) AXIAL SECTOR ALIGNMENT

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

(2) Requirement
Guide roller free to rotate.

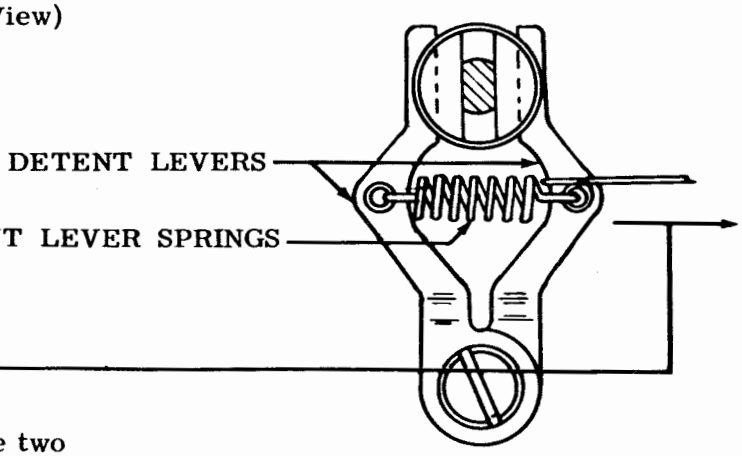
To Adjust
Loosen locknut. Disengage rack. Remove retaining ring and guide roller. Add or remove shims. Place extra shims on top of shim used to retain felt washer. Tighten nut.

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



(Top View)

(Front View)



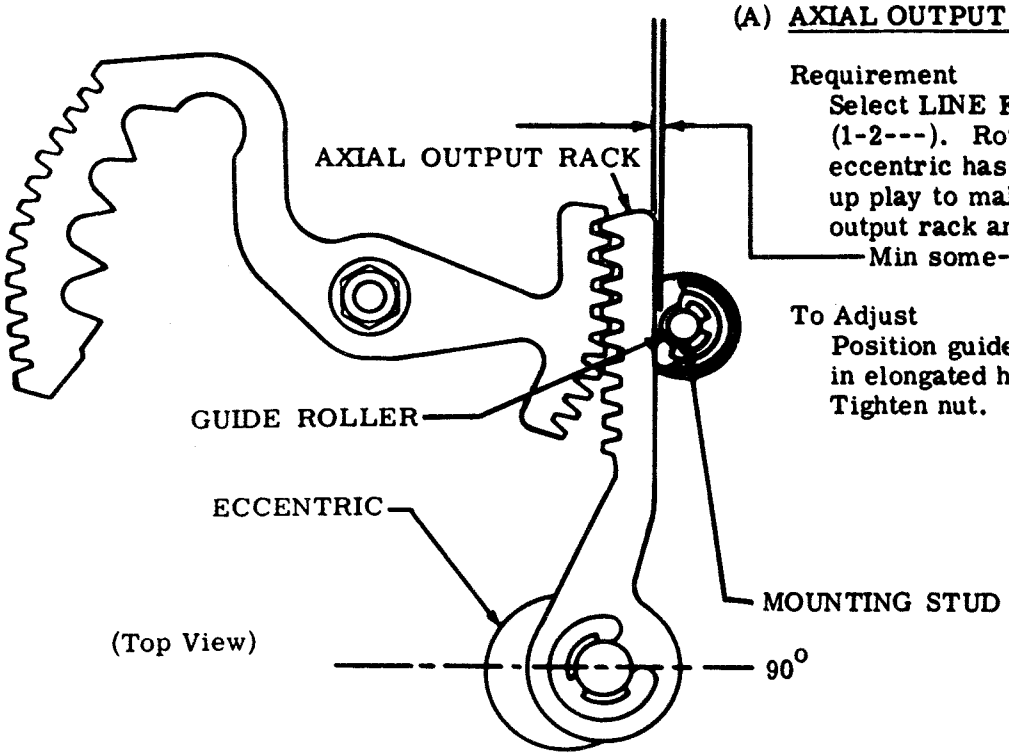
(Top View of Springs on Axial Positioning Mechanism)

(B) ECCENTRIC SHAFT DETENT LEVER SPRING (6)

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

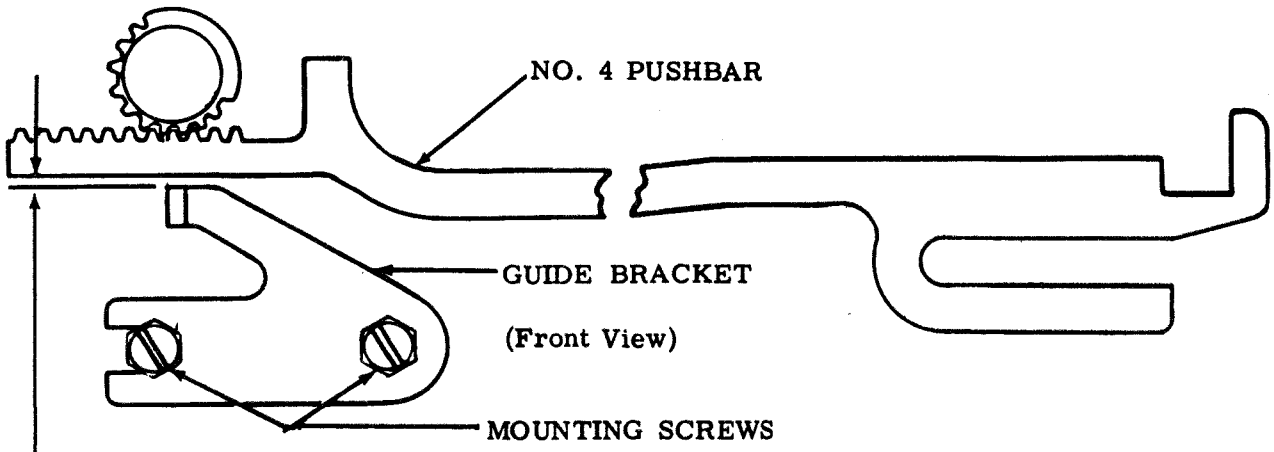
Note: Check all 6 springs. There are two on the axial positioning mechanism and four on the rotary positioning mechanism.

(A) AXIAL OUTPUT RACK GUIDE ROLLER



Requirement
Select LINE FEED code combination (1-2---). Rotate main shaft until eccentric has rotated 90 degrees. Take up play to make clearance between output rack and guide roller maximum.
—Min some---Max 0.008 inch

To Adjust
Position guide roller mounting stud in elongated hole with locknut loosened. Tighten nut.



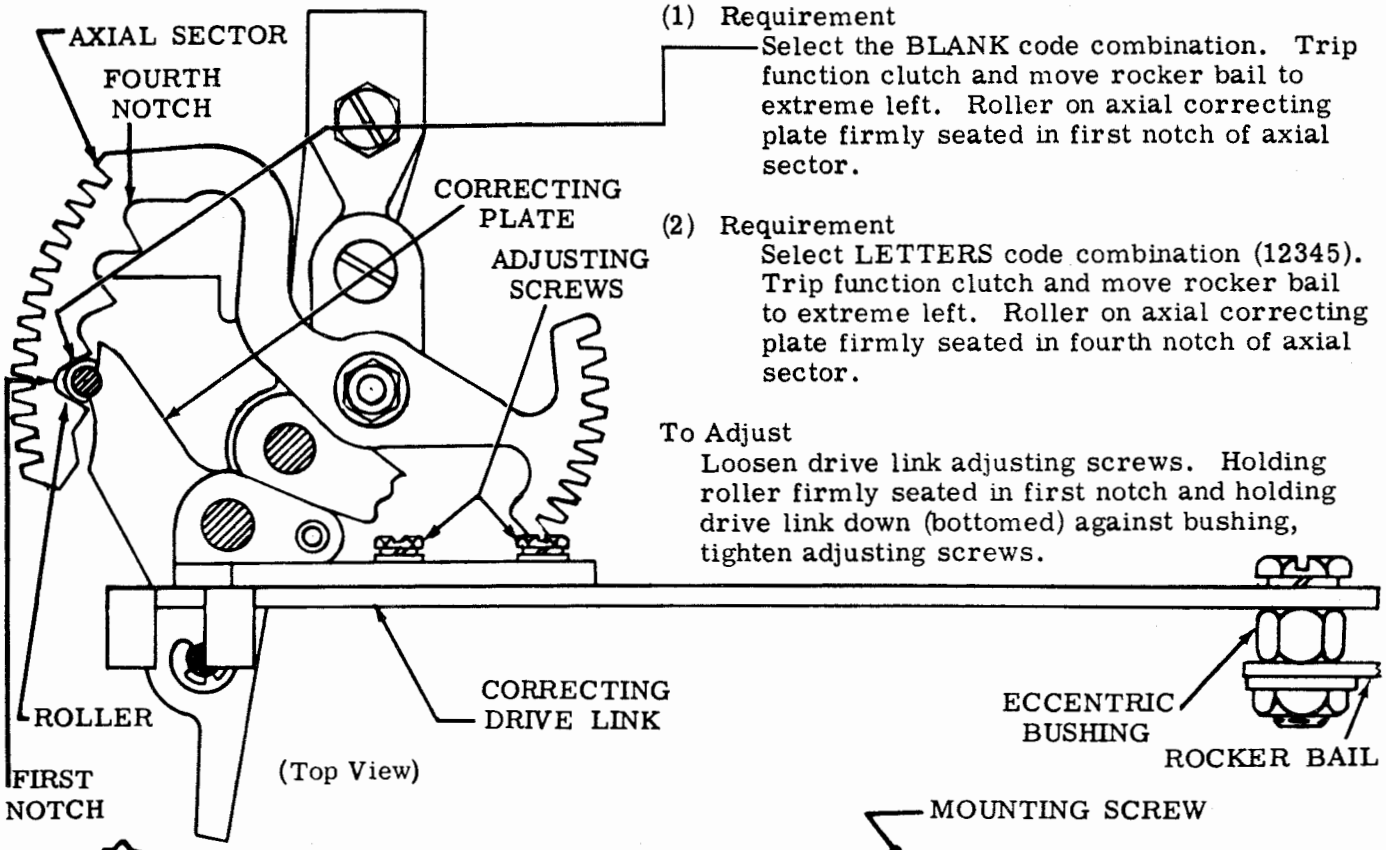
(B) PUSHBAR GUIDE BRACKET

Requirement
Manually select CARRIAGE RETURN code combination (---4-). Rotate main shaft so that no. 4 pushbar moves through complete range of travel. When play is taken up to make clearance maximum
—Min some---Max 0.008 inch
between no. 4 pushbar and guide bracket throughout complete travel of bar.

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

2.53 Typing Mechanism (continued)

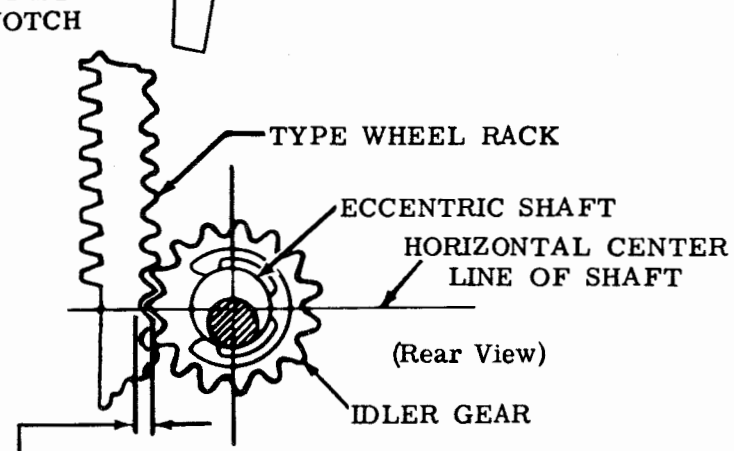
(A) CORRECTING DRIVE LINK (Nonyielding)

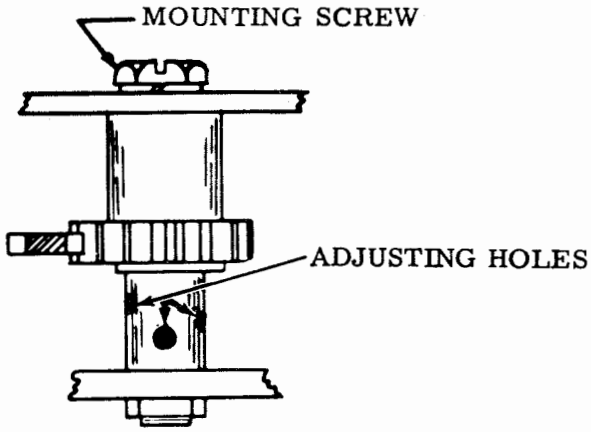


(1) Requirement
Select the BLANK code combination. Trip function clutch and move rocker bail to extreme left. Roller on axial correcting plate firmly seated in first notch of axial sector.

(2) Requirement
Select LETTERS code combination (12345). Trip function clutch and move rocker bail to extreme left. Roller on axial correcting plate firmly seated in fourth notch of axial sector.

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





(B) TYPE WHEEL RACK CLEARANCE

Requirement
With unit in the letters field, function clutch disengaged
Min some---Max 0.015 inch
clearance between idler gear and rack at the closest point when all play is taken up in a direction to make clearance a maximum. There should be some clearance throughout travel of the rack.

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

2.54 Typing Mechanism (continued)

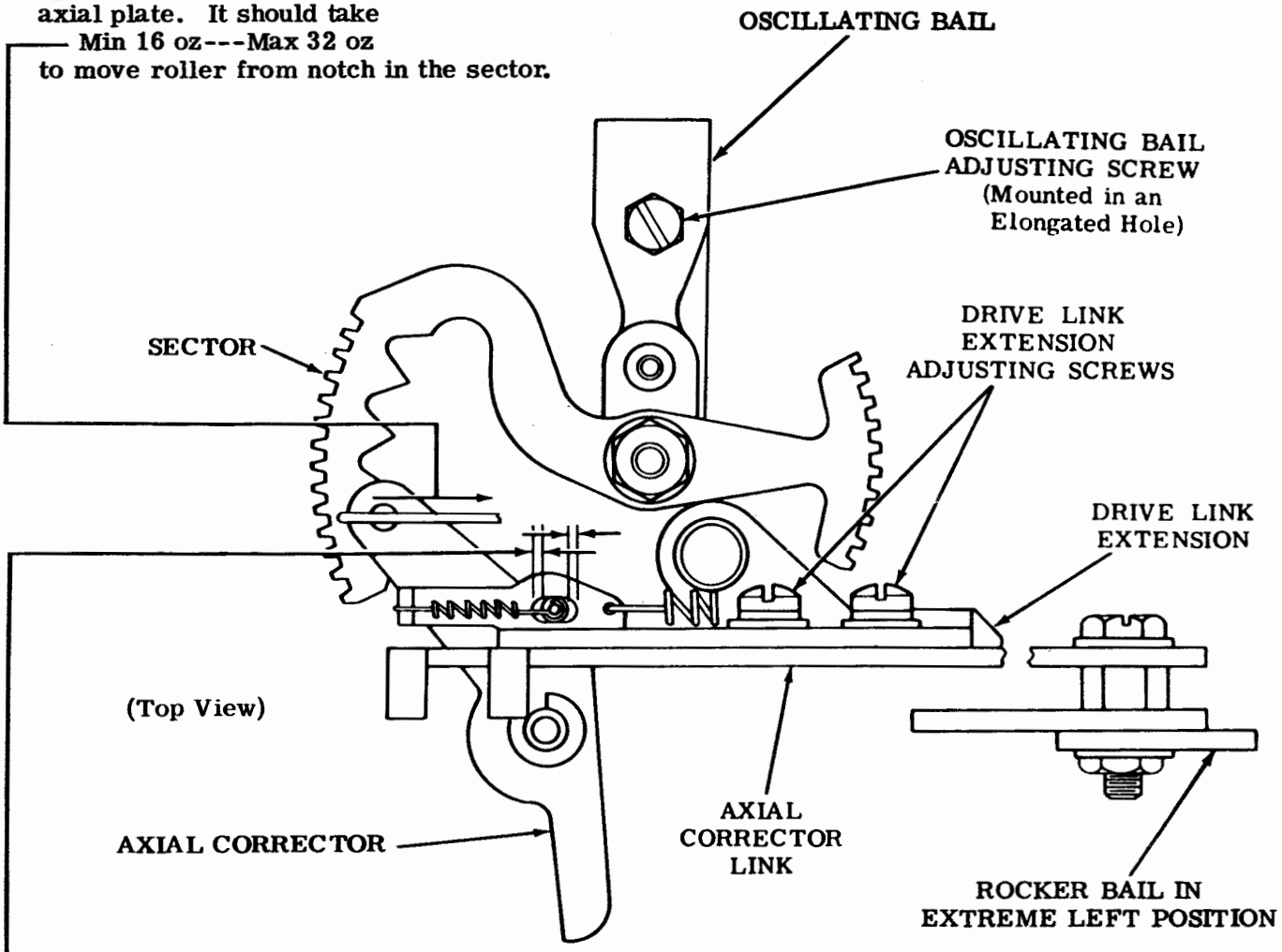
CORRECTOR DRIVE LINK EXTENSION SPRING (Yielding)

Requirement

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

— Min 16 oz---Max 32 oz

to move roller from notch in the sector.



AXIAL CORRECTOR (Yielding)

Requirement

With the BLANK code combination selected, function clutch tripped and rocker bail in its extreme left position, the axial corrector roller should seat in the first sector notch and there should be

— Min 0.005 inch

between the ends of the slot and the spring post. Check both sides and check seating in fourth notch (letters selection). Turn the retaining ring that fastens drive link extension to corrector plate to check the minimum requirement.

To Adjust

Loosen two drive link adjusting screws. Position drive link to meet the requirement and retighten the screws.

2.55 Typing Mechanism (continued)

ROTARY CORRECTOR MESH

(1) Requirement

With clamp arm loosened, FIGURE 9 combination selected (no. 4 and no. 5 pulse marking in the figures position) and the rocker bail in its extreme left position. The second tooth from the top of the rotary output rack (with the push-bars manually detented) should seat firmly between the lobes of the rotary corrector arm.

To Adjust

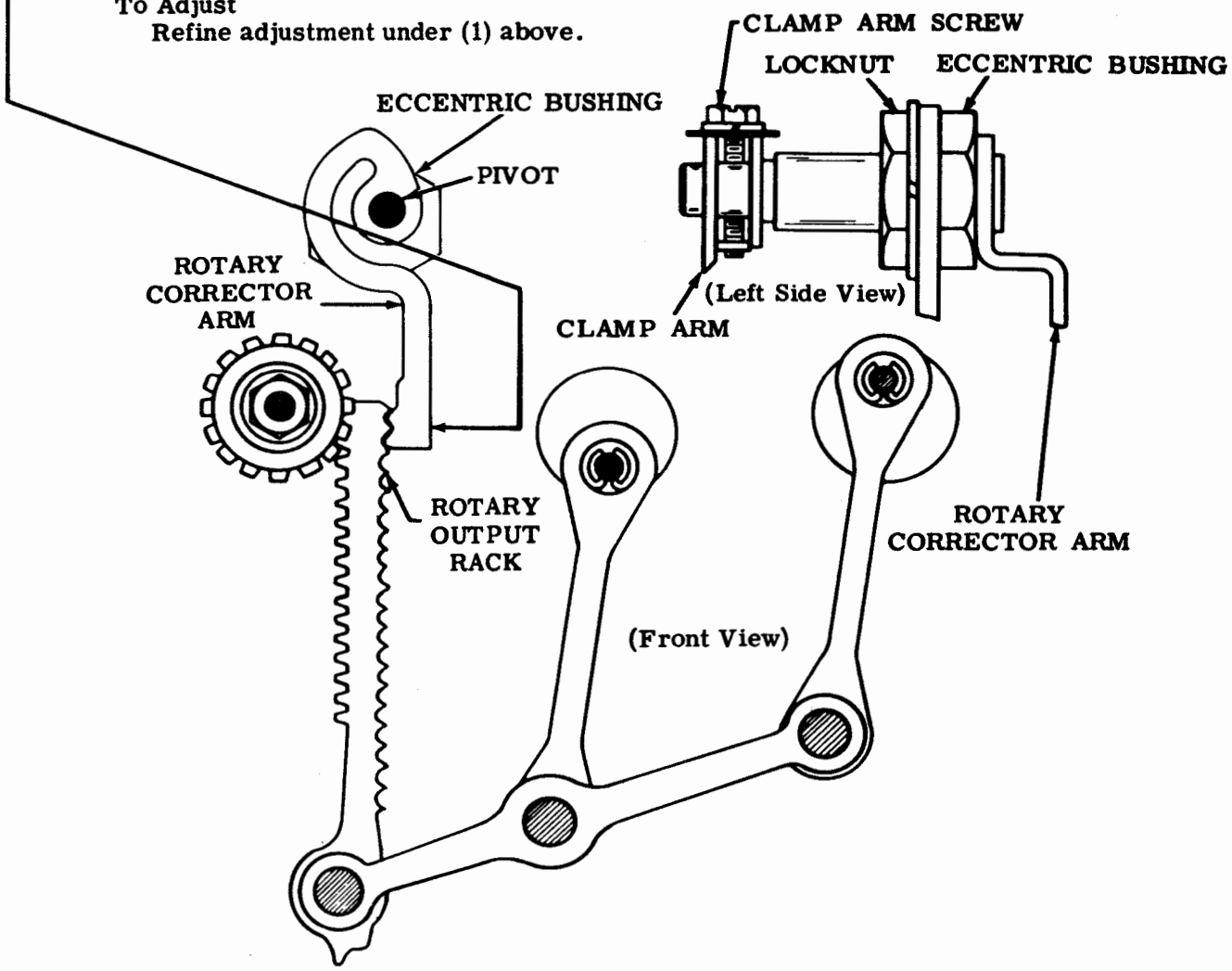
Loosen clamp arm screw and eccentric bushing locknut. With the pivot of the corrector arm to the right of the center of the bushing, position the rotary corrector. Tighten bushing locknut. Do not tighten clamp arm screw at this point.

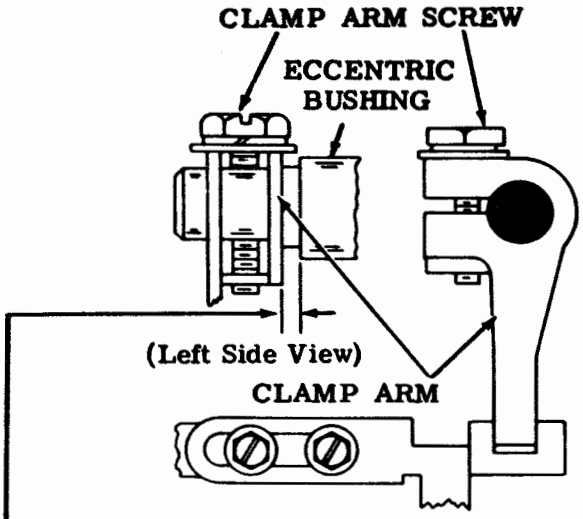
(2) Requirement

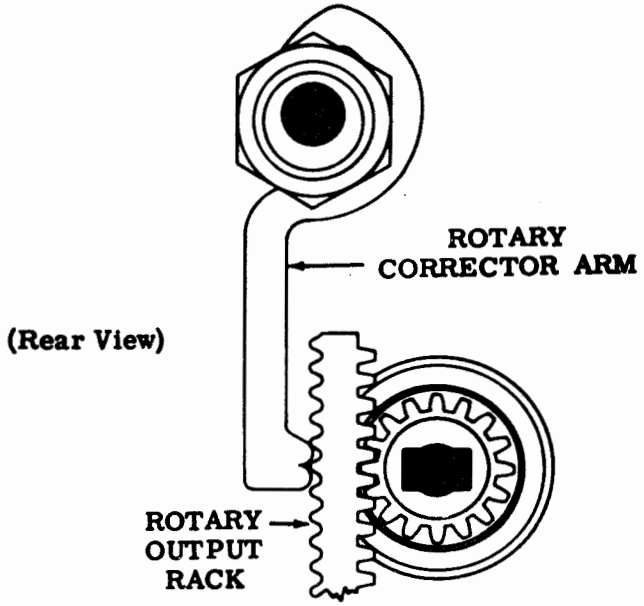
Check engagement in a similar manner as in (1) above with the fifth tooth (no. 3 and no. 4 marking in figures position), ninth tooth (no. 4 pulse marking in the letters position), sixteenth tooth (no. 3 and no. 5 pulse marking in the letters field).

To Adjust

Refine adjustment under (1) above.







ROTARY CORRECTOR ARM

To Check

With the LETTERS combination selected in letters field and rocker bail to extreme left, manually seat corrector arm in rack.

Requirement

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

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

To Adjust (units equipped with a yielding axial corrector)

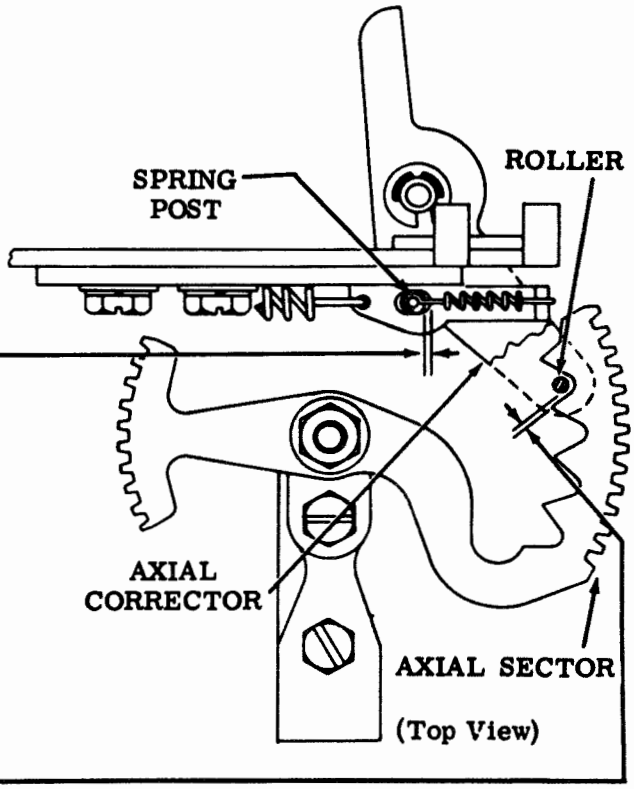
As the rocker bail approaches the extreme left and the spring post of the axial corrector starts to leave the end of its slot, take up play of drive arm in its operating fork towards main bail and position the rotary corrector arm finger tight against rotary output rack and tighten clamp arm screw.

To Adjust (units equipped with nonyielding axial corrector)

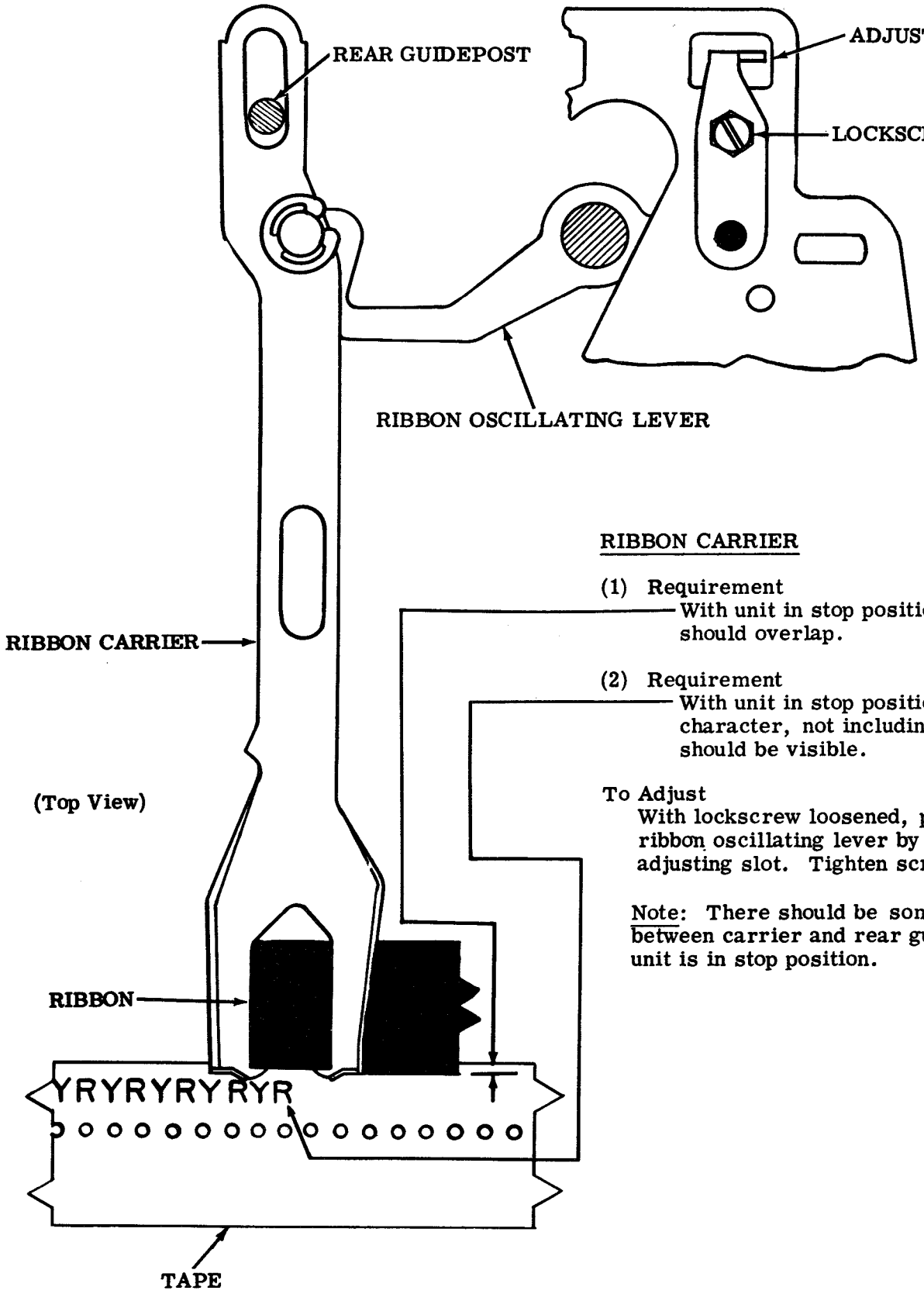
As the rocker bail approaches the extreme left, measure clearance between the axial corrector roller and the sector notch. When clearance is

Min some---Max 0.005 inch

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



2.57 Typing Mechanism for Chadless Tape



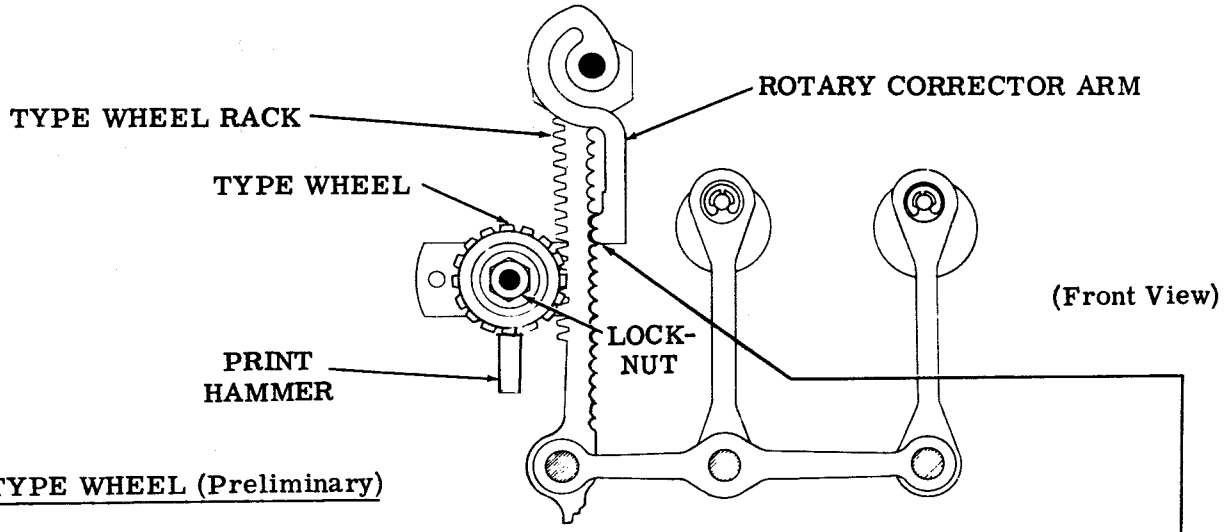
RIBBON CARRIER

(1) Requirement
With unit in stop position, ribbon should overlap.

(2) Requirement
With unit in stop position, last printed character, not including fractions, should be visible.

To Adjust
With lockscrew loosened, position ribbon oscillating lever by means of adjusting slot. Tighten screw.

Note: There should be some endplay between carrier and rear guidepost when unit is in stop position.



(A) TYPE WHEEL (Preliminary)

Requirement
Select H code combination (--3-5). Place rocker bail to extreme left. Rotary corrector arm firmly engaged. Type wheel should be aligned so that full character is printed uniformly and 6 ± 1/4 code hole spaces behind its perforated code holes.

To Adjust
Position type wheel with locknut loosened. Check printing by manually lifting accelerator to latched position and releasing it. Tighten locknut.

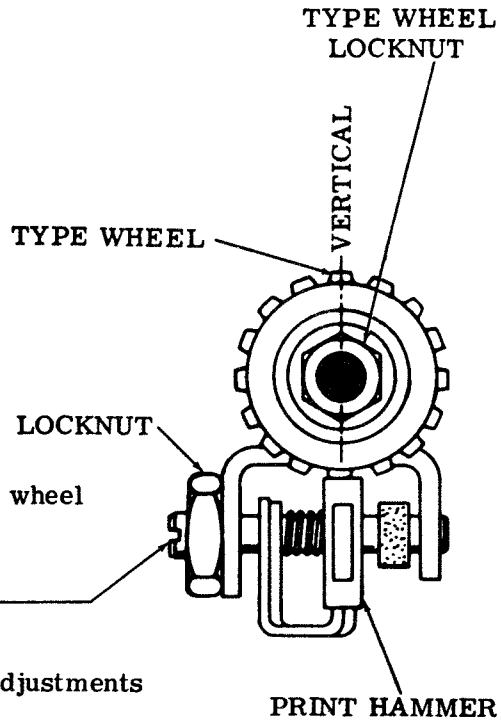
Note 1: For best results it may be necessary to proceed to the next adjustment then come back and refine the above.

(B) TYPE WHEEL (Final)

Requirement
All characters should be legible and 6 ± 1/4 code hole spaces behind the perforated code holes with unit operating under power.

To Adjust
Refine the type wheel position with its locknut loosened. Tighten locknut.

Note 2: For best results it may be necessary to make the PRINT HAMMER adjustment and then refine this adjustment.



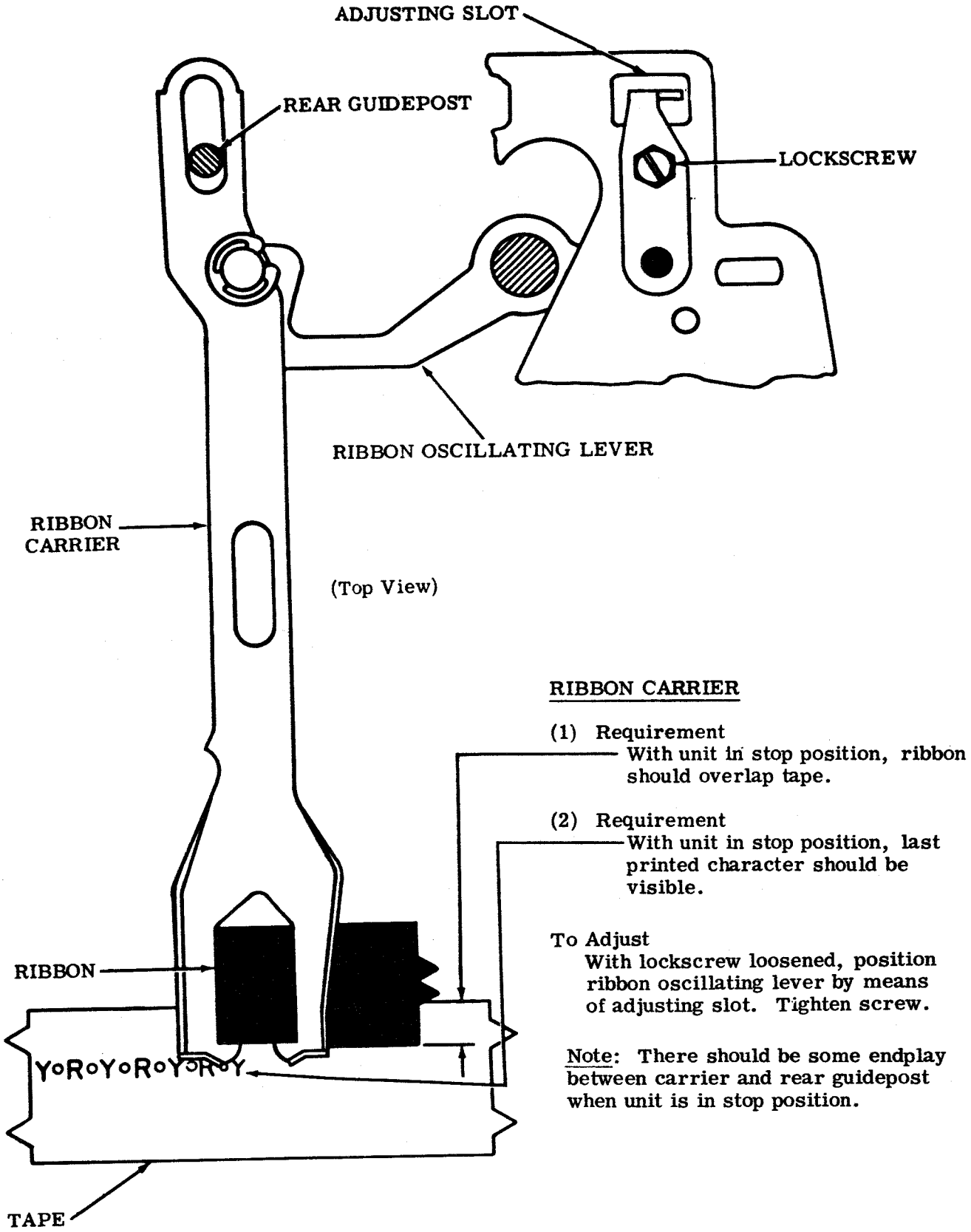
(C) PRINT HAMMER

Requirement
When operating under power, print hammer and type wheel aligned so as to obtain best quality of printing.

To Adjust
Position print hammer shaft with locknut loosened. Tighten locknut.

Note 3: It may be necessary to remake TYPE WHEEL adjustments (above) and then refine this adjustment.

2.59 Typing Mechanism for Fully Perforated Tape



RIBBON CARRIER

(1) Requirement
With unit in stop position, ribbon should overlap tape.

(2) Requirement
With unit in stop position, last printed character should be visible.

To Adjust
With lockscrew loosened, position ribbon oscillating lever by means of adjusting slot. Tighten screw.

Note: There should be some endplay between carrier and rear guidepost when unit is in stop position.

PRINTING LATCH

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

(1) Requirement

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

Min some---Max 0.015 inch

(2) Requirement

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

To Adjust

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

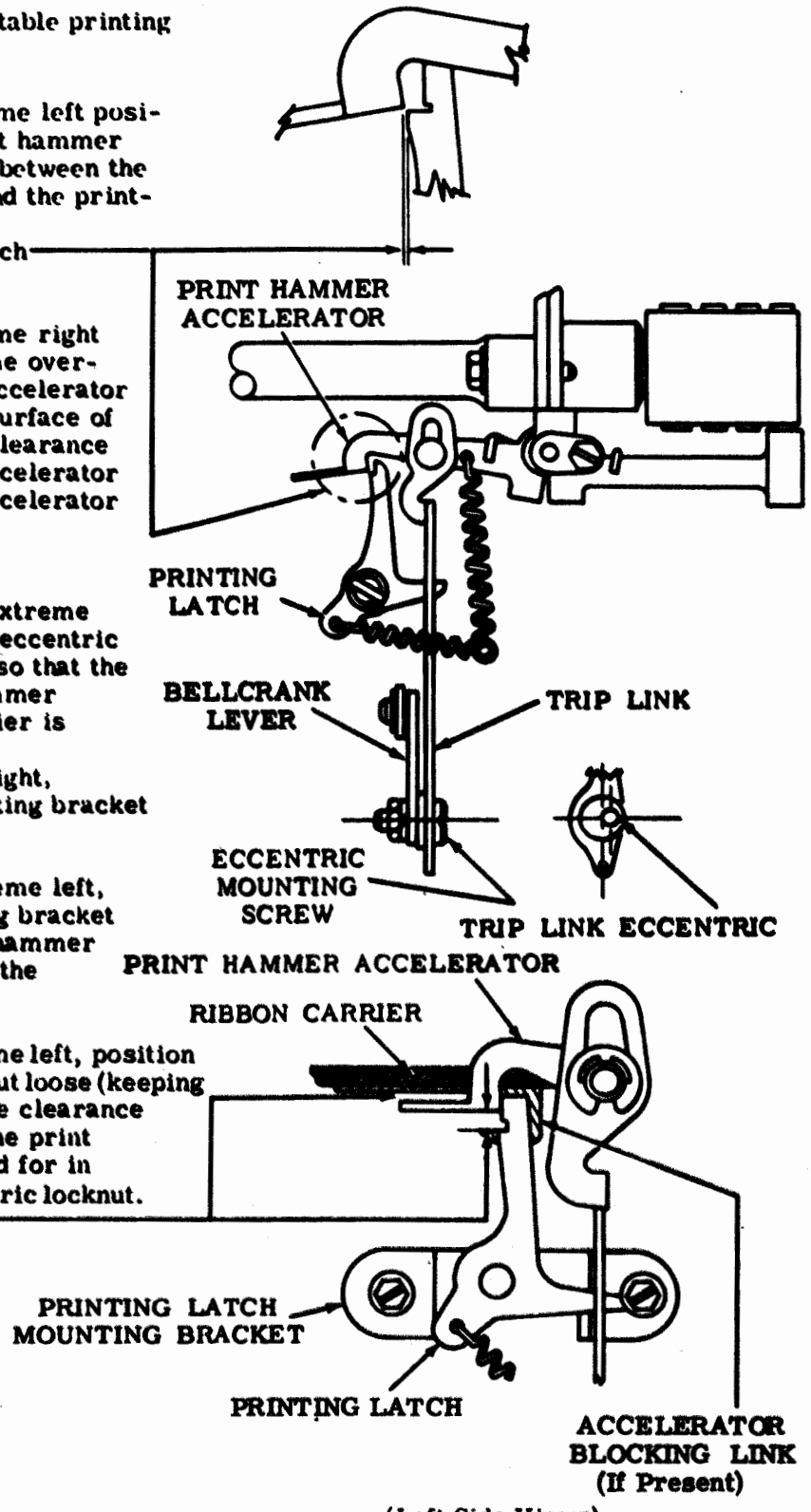
Approximately 0.065 inch

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

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

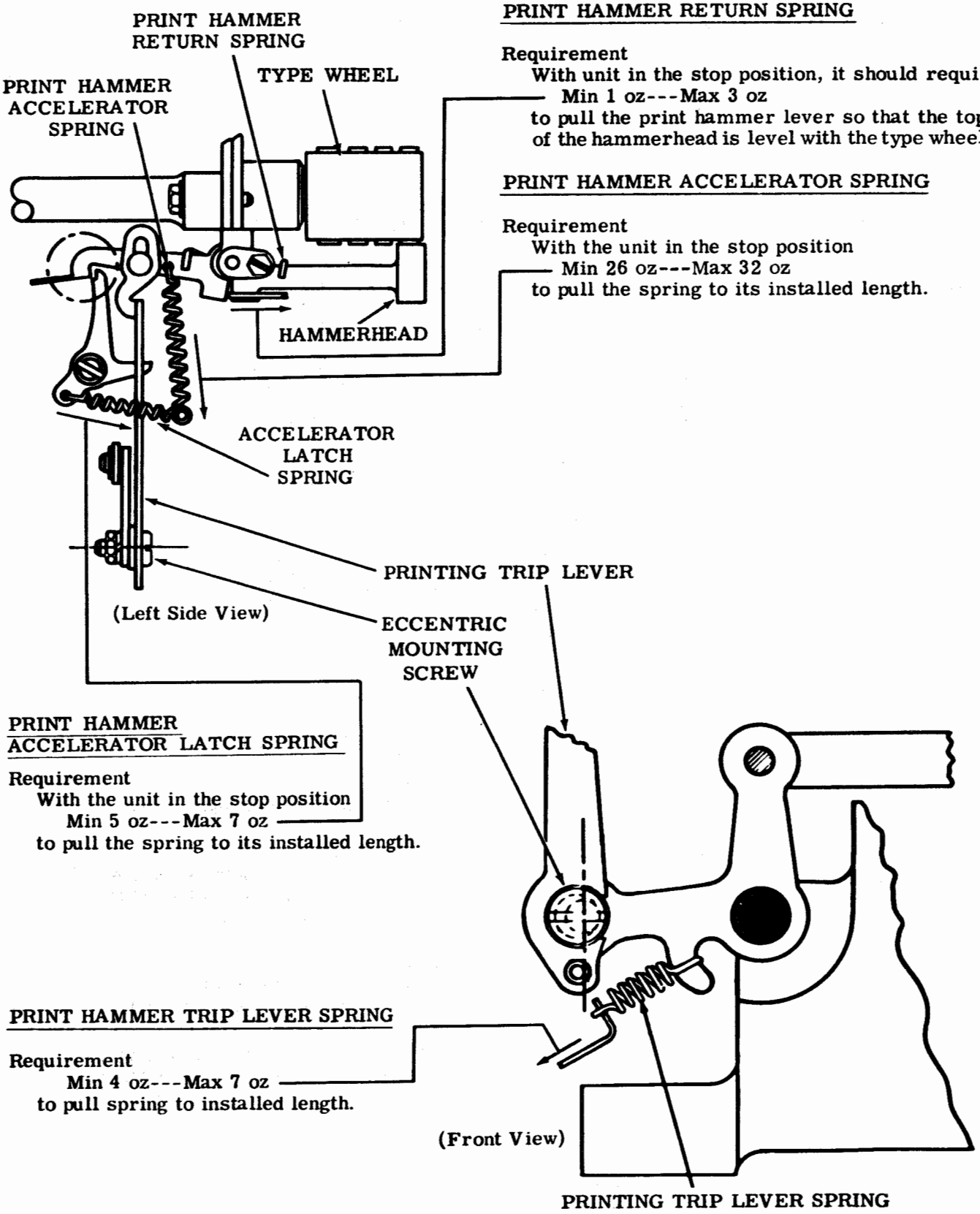
(3) With the rocker bail to the extreme left, position the trip link eccentric with locknut loose (keeping the high part to the left) until the clearance between the printing latch and the print hammer accelerator is as called for in requirement (1). Tighten eccentric locknut.

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



(Left Side Views)

2.61 Typing Mechanism (continued)



PRINT HAMMER RETURN SPRING

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

PRINT HAMMER ACCELERATOR SPRING

Requirement
With the unit in the stop position
Min 26 oz---Max 32 oz
to pull the spring to its installed length.

PRINT HAMMER ACCELERATOR LATCH SPRING

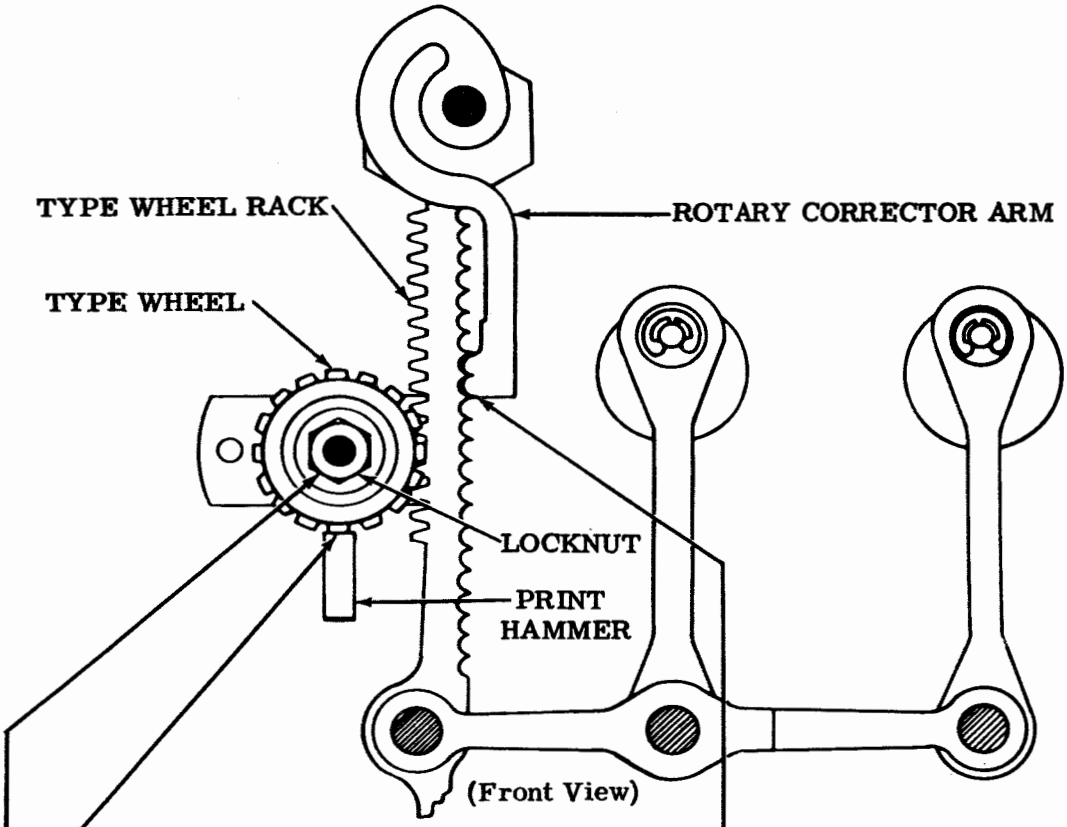
Requirement
With the unit in the stop position
Min 5 oz---Max 7 oz
to pull the spring to its installed length.

PRINT HAMMER TRIP LEVER SPRING

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

2.62 Typing Mechanism for Fully Perforated Tape (continued)

Note: Adjustments on this page do not apply to tape printer.



TYPE WHEEL (Preliminary)

To Check
Select H code combination (--3-5). Place rocker bail to extreme left. Corrector arm should be firmly seated in type wheel rack.

Requirement
Type wheel aligned so that full character is printed uniformly and 6-1/2 code hole spaces behind its perforated code hole.

To Adjust
Position type wheel with locknut loosened. Check printing by manually lifting accelerator to latched position and releasing it.

Note: For best results, it may be necessary to make PRINT HAMMER (2.63) adjustment and then refine this adjustment.

TYPE WHEEL (Final)

To Check
With unit operating under power.

Requirement
All characters should be legible and 6-1/2 code hole spaces behind the perforated code holes.

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

Note: For best results, it may be necessary to make PRINT HAMMER (2.63) adjustment and then refine this adjustment.

2.63 Typing Mechanism for Fully Perforated Tape (continued)

Note: Adjustments on this page do not apply to tape printer.

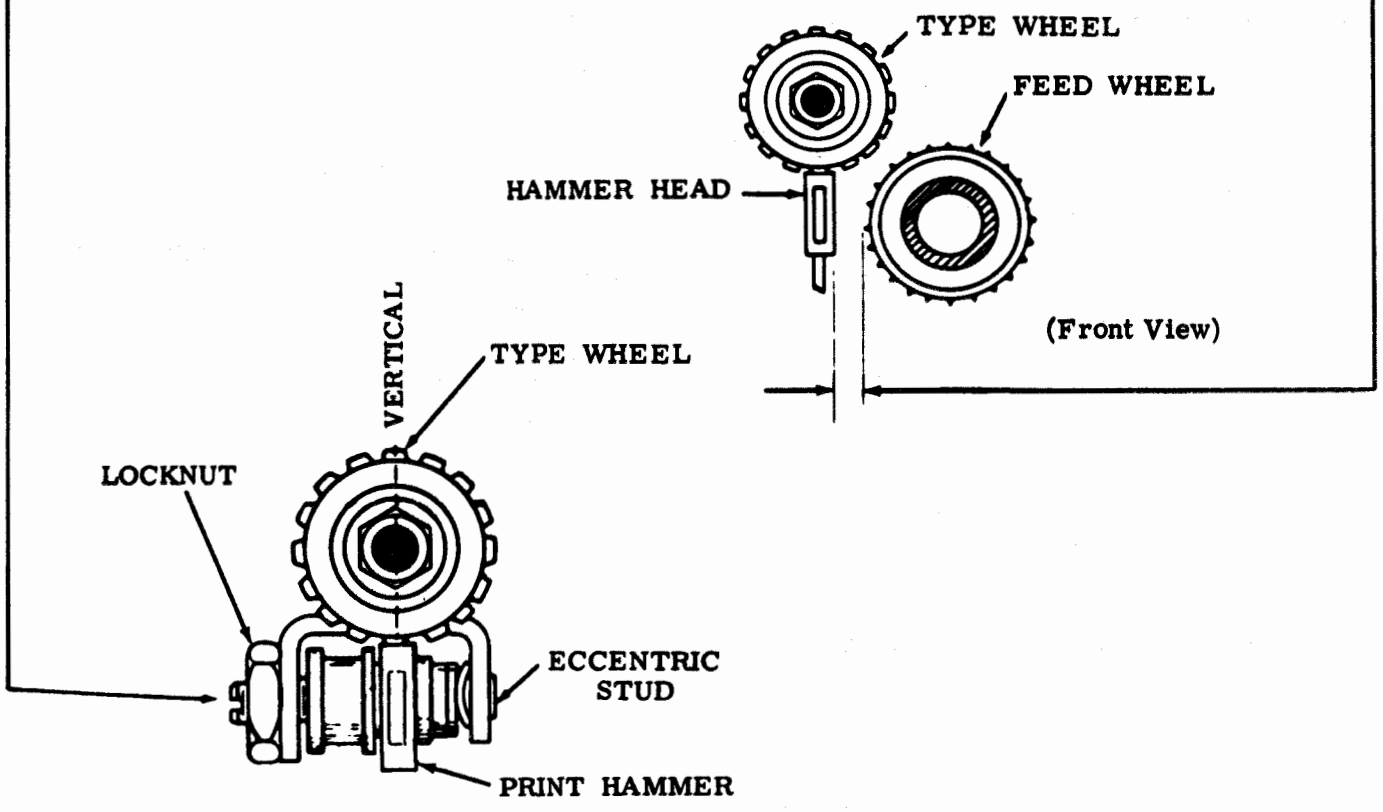
PRINT HAMMER

To Check
With unit operating under power.

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

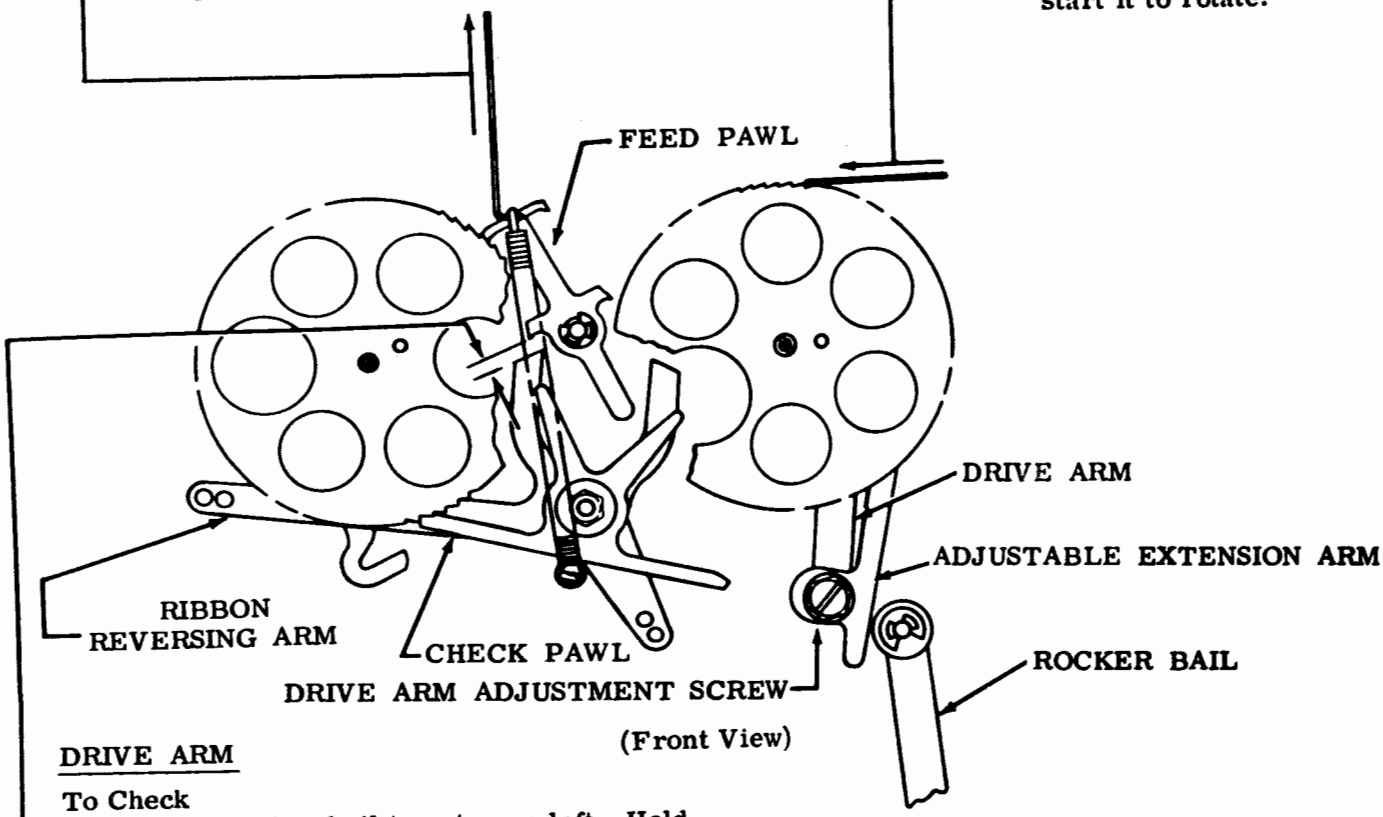
To Adjust
Position print hammer shaft with its locknut friction tight. Tighten locknut.

Note: It may be necessary to make the TYPE WHEEL (Final) (2.62) adjustment and then refine this adjustment.



(Front View)

2.64 Ribbon Mechanism (Latest Design) (For Early Design see 4.01 through 4.03)



DRIVE ARM

To Check

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

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

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

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

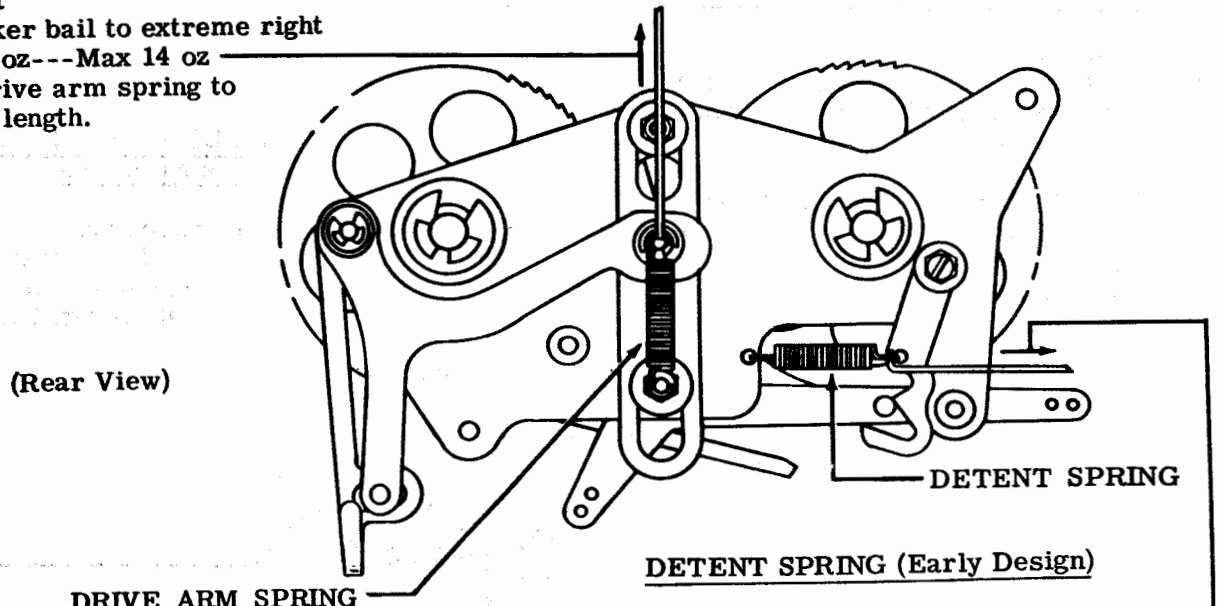
To Adjust

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

2.65 Ribbon and Slack Tape Mechanisms

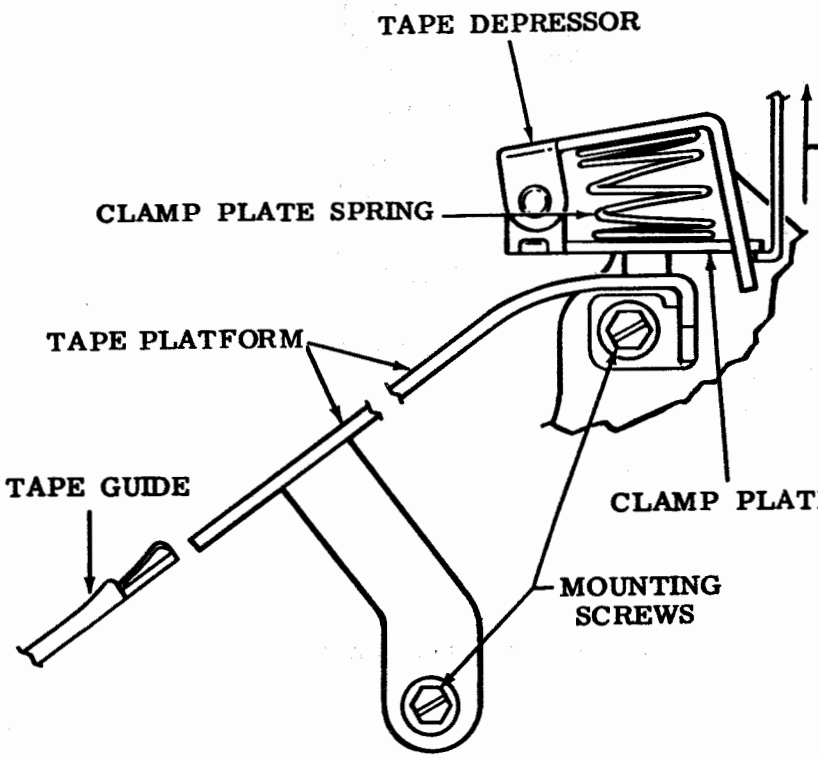
DRIVE ARM SPRING (Early Design)

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



DETENT SPRING (Early Design)

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



TAPE PLATFORM (Early Design)

Requirement
Top surface of tape platform should be flush with top surface of tape guide.

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

CLAMP PLATE SPRING (Early Design)

Requirement
Function clutch disengaged and latched. Clamp plate spring bowed to the right.
Min 18 oz---Max 24 oz
to move clamp plate from bottom of slot in tape depressor.

2.66 Slack Tape Mechanism (continued)

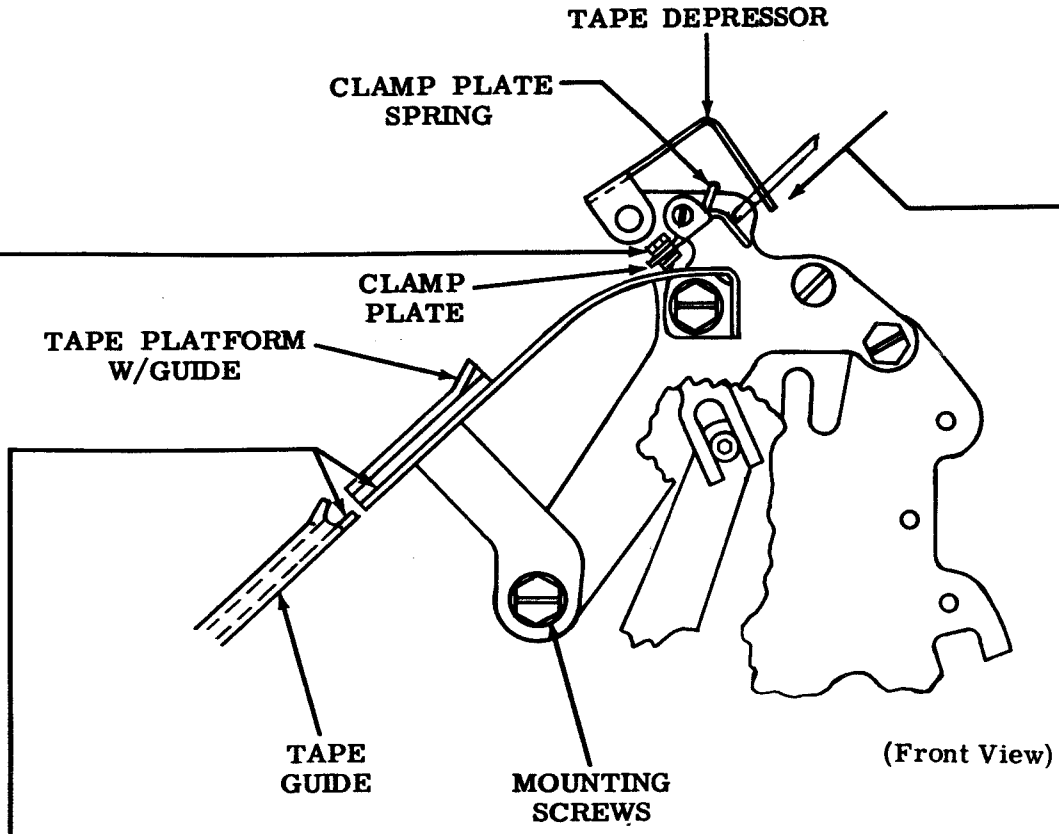
CLAMP PLATE SCREW WITH DISC (Latest Design)

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

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

CLAMP PLATE SPRING (Latest Design)

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



TAPE PLATFORM (Latest Design)

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

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

2.67 Tape Printer Unit

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

FEED WHEEL

(1) Requirement (preliminary)
Clearance between feed wheel ratchet and front plate
Min 0.085 inch---Max 0.095 inch

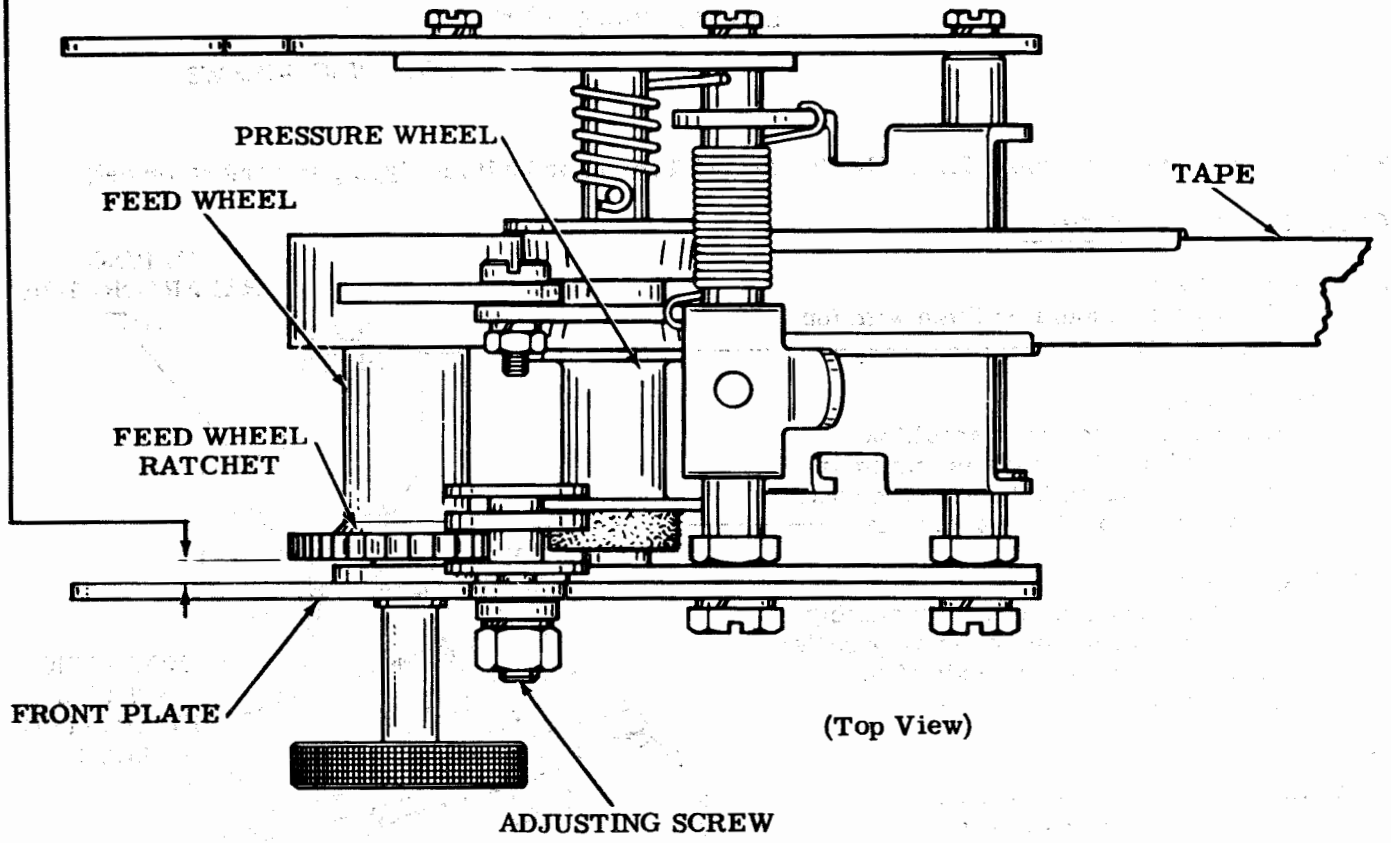
(2) Requirement (final)
Printing centrally located on tape.

To Adjust
Turn adjusting screw with locknut loosened. Tighten locknut.

TAPE GUIDE

Requirement
Tape should "run" in the center of tape guide (gauge by eye).

To Adjust
With mounting nuts friction tight, position tape guide with roller up or down to meet requirement. Tighten nuts.



(Top View)

SPECIAL REQUIREMENT

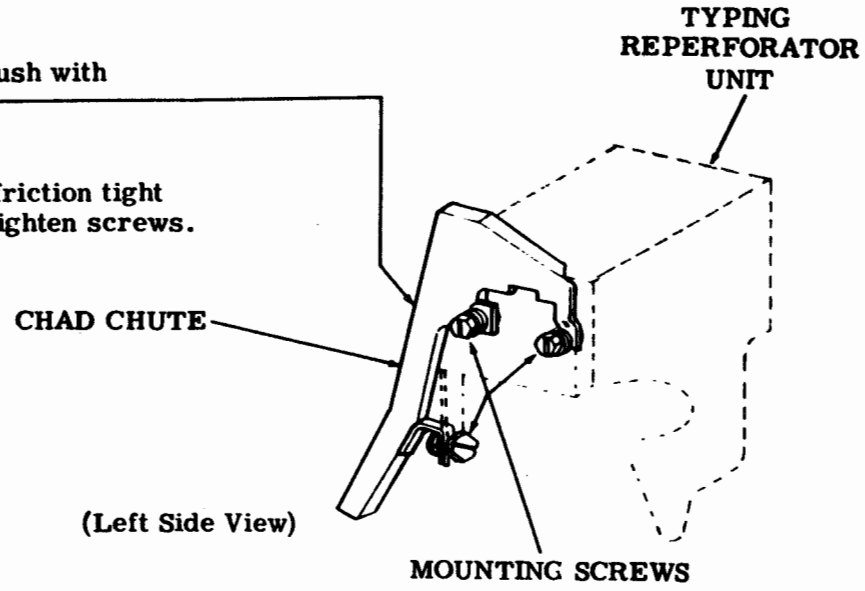
If the 28 tape printer is used on a 28 typing reperforator single or double plate base, a tape reel will have to be used to accommodate the 3/8 inch tape. This tape reel consists of a disc w/hub and a disc w/nut.

2.68 Chad Chute Assembly for Fully Perforated Tape (For Self-Contained Typing Reperforator Set)

CHAD CHUTE

Requirement
Chad chute should be flush with top of punch block.

To Adjust
With mounting screws friction tight position chad chute. Tighten screws.



2.69 Chad Chute Assembly for Fully Perforated Tape (For Multiple Typing Reperforator Set)

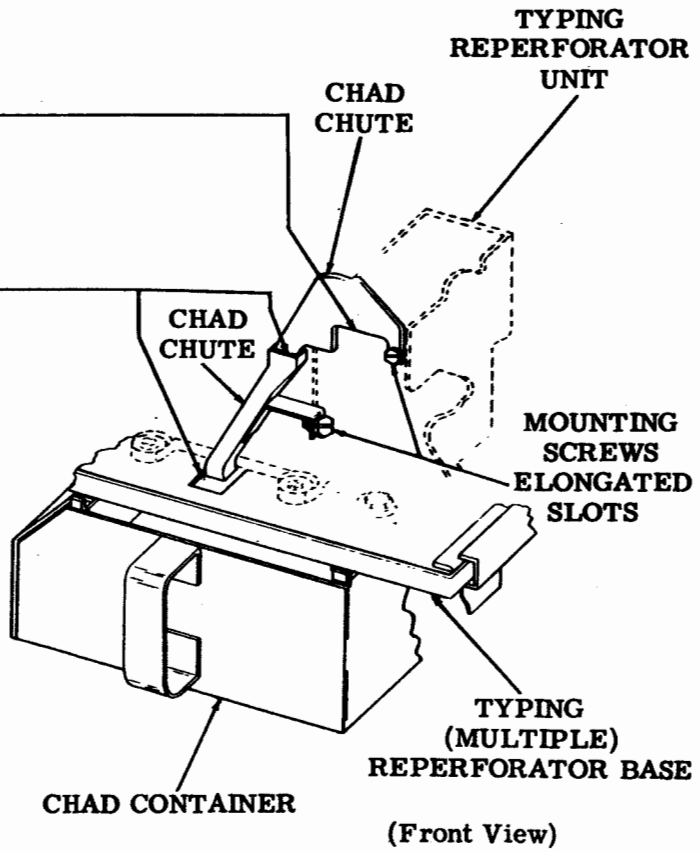
CHAD CHUTE ASSEMBLY

(1) Requirement
Chad chute should be flush with top of punch block.

(2) Requirement
Chad chute assembly should be adjusted so clearance is maximum in all directions between each chad chute and reperforator casting.

(3) Requirement
Position tape guide in its mounting slots so that top of roller is parallel to and above the tape exit of the punch block.

To Adjust
With mounting screws friction tight position chad chute and chad chute assembly by means of elongated slots. Tighten screws.

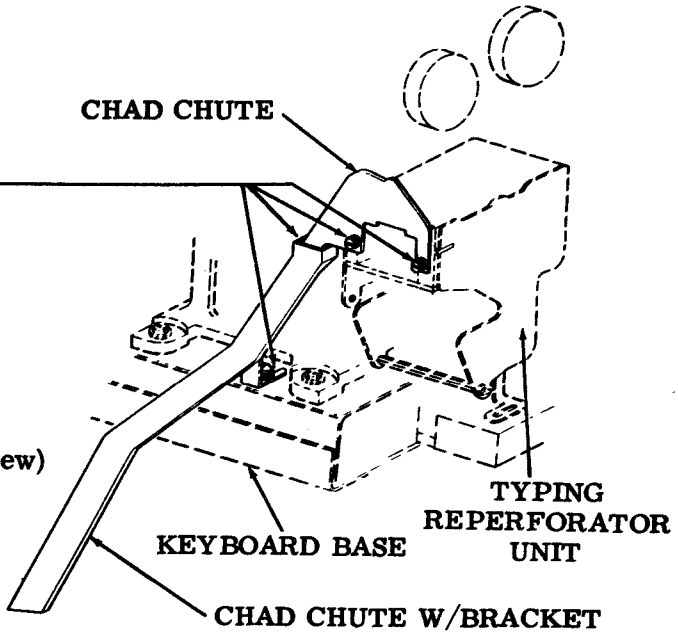


2.70 Chad Chute Assembly for Fully Perforated Tape (For Keyboard Typing Reperforator on Automatic Send-Receive)

CHAD CHUTE ASSEMBLY

Requirement
Clearance between each chad chute and adjacent units should be equal in all directions.

To Adjust
With mounting screws friction tight, position each chute by means of their elongated slots. Tighten screws.

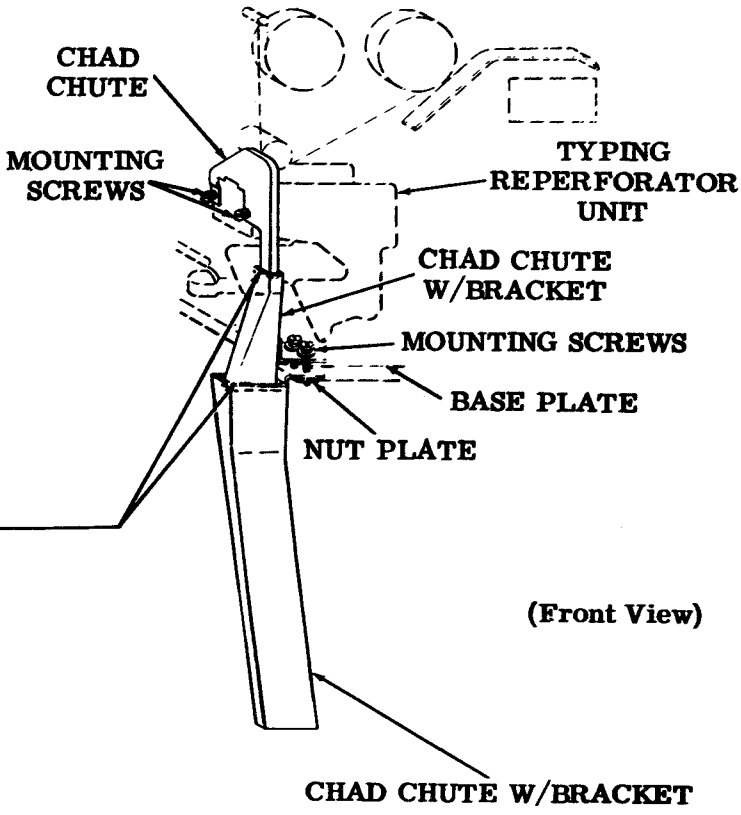


2.71 Chad Chute Assembly for Fully Perforated Tape (For Auxiliary Typing Reperforator on Automatic Send-Receive)

CHAD CHUTE ASSEMBLY

Requirement
Clearance between each chad chute and adjacent units should be equal in all directions.

To Adjust
With mounting screws friction tight, position chad chute and chad chute w/bracket by means of their elongated slots. Tighten screws.



2.72 Tape Guide Chute Mechanism (For Auxiliary Typing Reperforator on Automatic Send-Receive)

TAPE GUIDE CHUTE

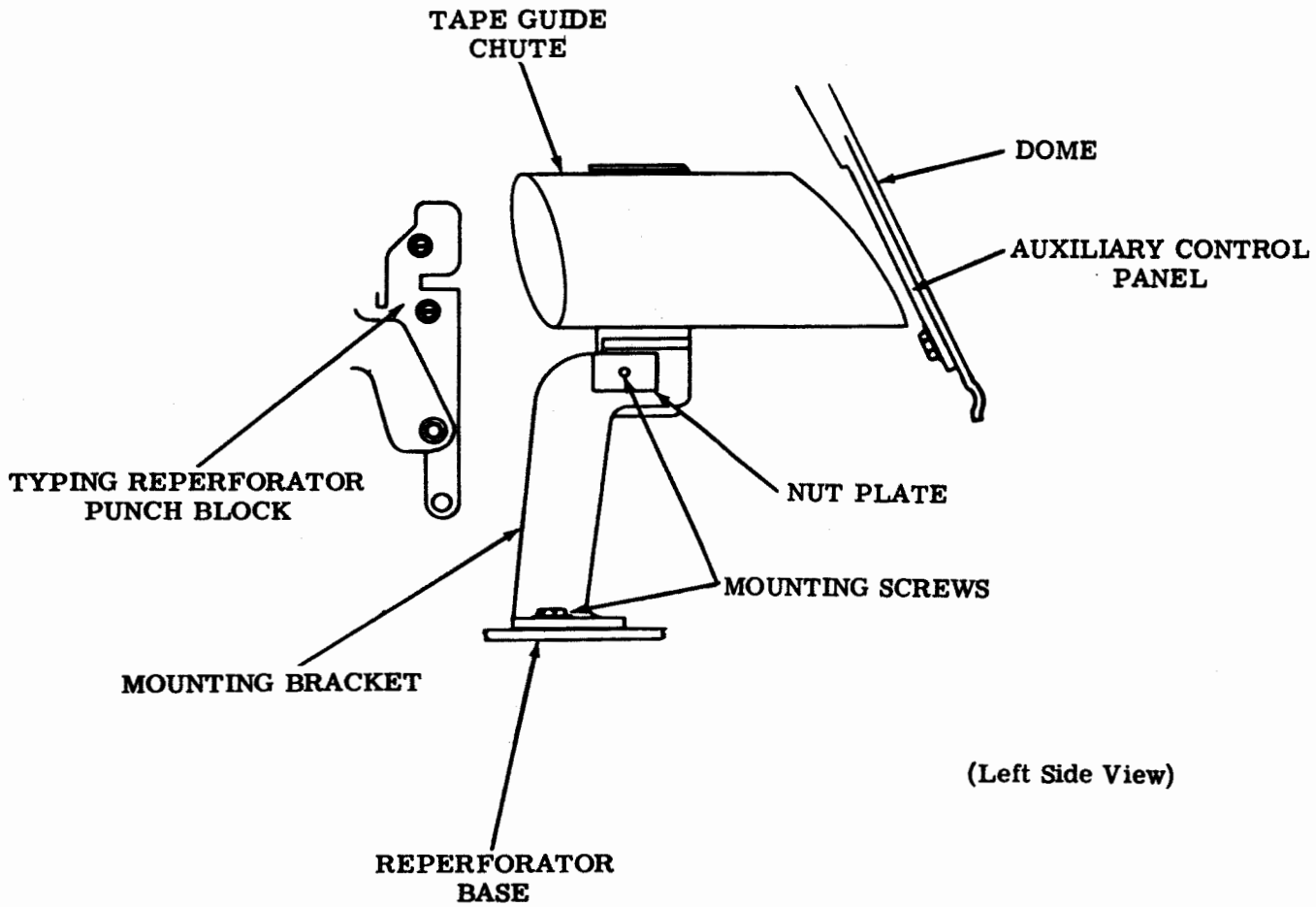
Requirement

With left top and middle dome doors open, front and rear ends of chute align with punch block tape aperature and with hole in auxiliary control panel.

To Adjust

Position mounting bracket with mounting screws friction tight until chute is positioned horizontally. With upper adjusting screw friction tight in its nut plate, position chute vertically. Tighten screws.

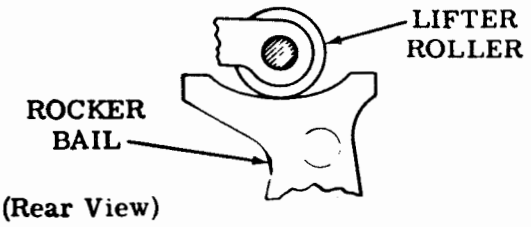
Note: Tape guide chute should not touch typing reperforator or cabinet. Tape should feed without binding or twisting.



(Left Side View)

3. VARIABLE FEATURES

3.01 Unshift-On-Space Mechanism



(A) UNSHIFT-ON-SPACE FUNCTION BLADE

(1) To Check

Remove signal bell contact assembly with bracket and signal bell function blade. Select FIGURES code combination (12-45). Rotate main shaft until lifter roller is on low part of rocker bail's camming surface and unshift-on-space function blade rests on bell-cranks.

Requirement

Min some---Max 0.015 inch between stripper blade and letters extension arm.

(2) To Check

Select SPACE code combination (--3--). Rotate main shaft until stripper blade touches letters extension arm.

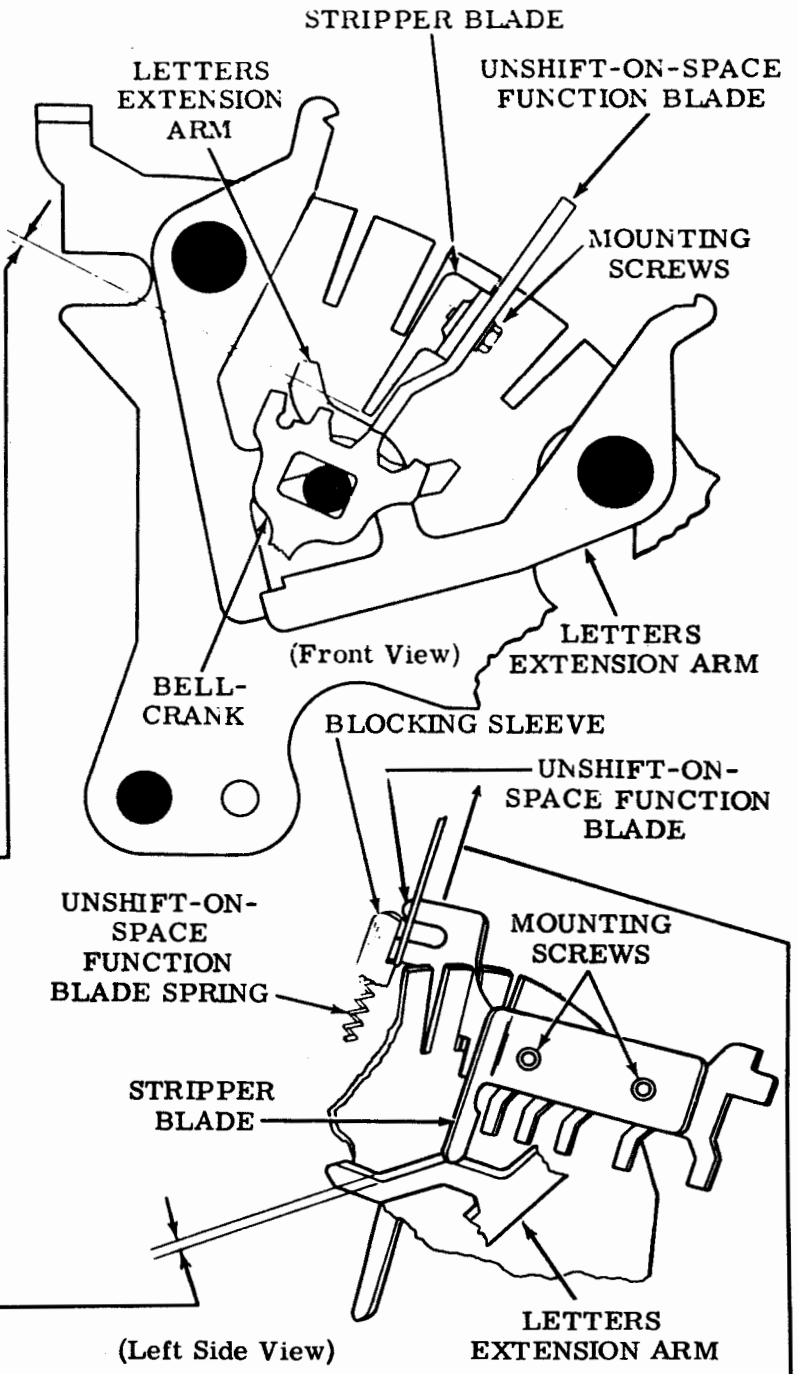
Requirement

When play is taken up in either direction, stripper blade should engage an equal thickness of letters extension arm.

To Adjust

Position stripper blade on function blade with two mounting screws loosened, tighten screws. Reinstall signal bell contact assembly with bracket and signal bell function blade.

Note: Make signal bell CONTACT MOUNTING BRACKET (3.03) adjustment.



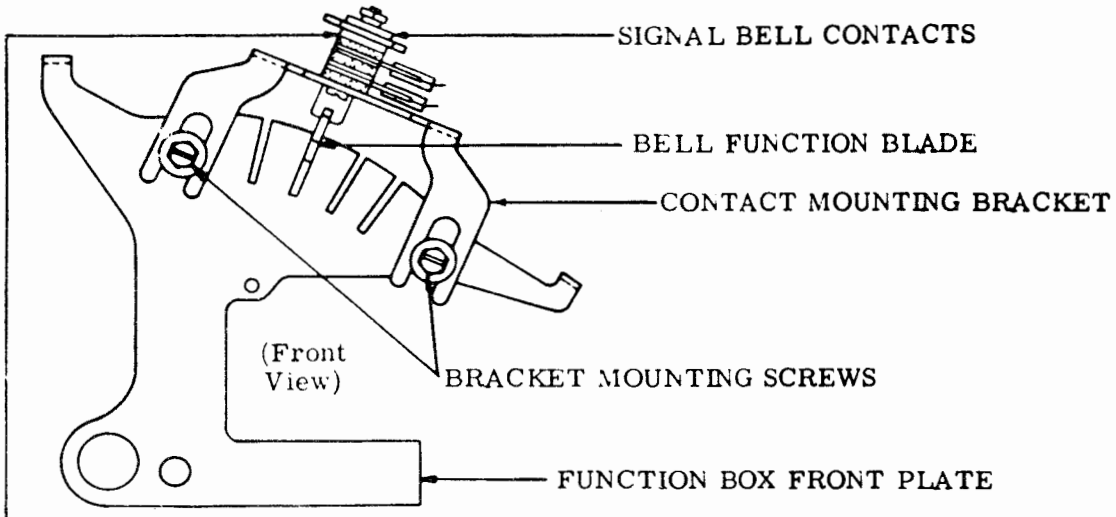
(B) UNSHIFT-ON-SPACE FUNCTION BLADE SPRING

Requirement

With unit in stop position and long slot in blocking sleeve engaging function blade

Min 10 oz---Max 13 oz to start blade moving.

3.02 Signal Bell Contact Mechanism (Later Design)
(For Earlier Design see 4.04)



(B) CONTACT BRACKET ASSEMBLY

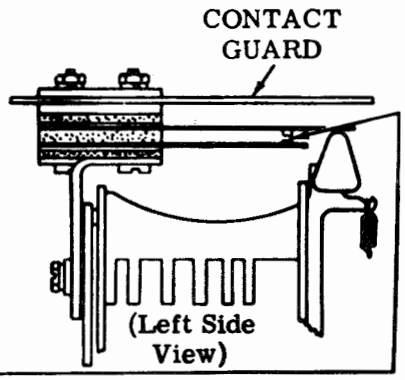
Note: See FUNCTION BLADE SPRING adjustment (2.49) for tension.

(1) Requirement
The contact assembly should be centrally located over the bell function blade insulator.

(2) Requirement
With LETTERS code combination (12345) selected, rotate main shaft until bell function blade is in its lowest position (resting on bellcranks). Gap between contacts
Min 0.015 inch---Max 0.025 inch

(3) Requirement
With bell function blade in its selected position, the contacts should be closed.

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



(A) SIGNAL BELL CONTACT

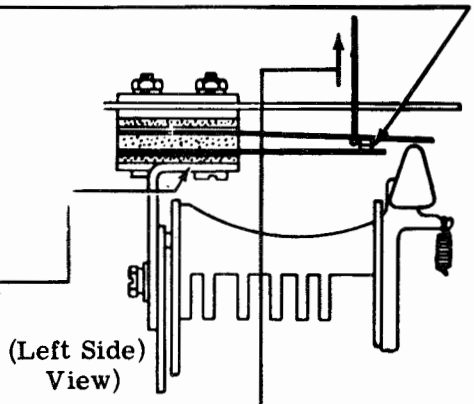
Note: Complete the following adjustments with the signal bell contact assembly removed from the function box front plate.

(1) Requirement
Contact springs should be approximately parallel to top of bracket.

To Adjust
Bend contact spring.

(2) Requirement
Min 1-1/2 oz---Max 2-1/2 oz with pull applied at contact point to open contacts.

To Adjust
Bend upper contact spring.



3.03 Tape Absence Contact Assembly

(A) TAPE ABSENCE LONG CONTACT SPRING

Requirement
Tape sensing finger in its extreme counterclockwise position.
Min 35 grams---Max 45 grams

To Adjust
Remove guard. Bend long contact spring.

(B) TAPE ABSENCE CONTACT ASSEMBLY POSITION

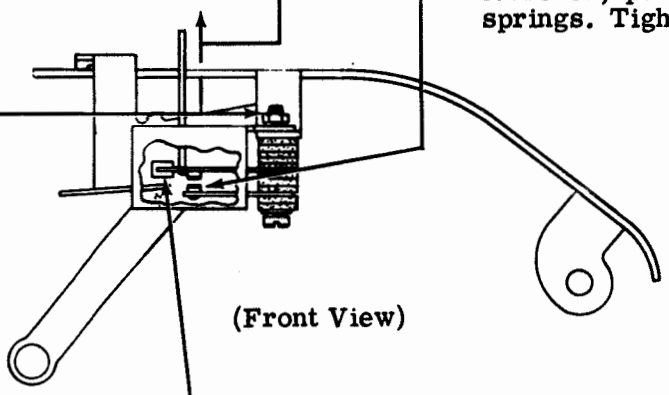
Requirement
Contact points aligned, insulator on long contact spring centrally located with sensing finger extension.

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

(D) TAPE ABSENCE CONTACT ASSEMBLY GUARD POSITION

Requirement
The guard should not interfere with movement of sensing finger.

To Adjust
With mounting nut loosened, position the guard.



(Front View)

(C) TAPE ABSENCE SHORT CONTACT SPRING POSITION

Requirement
Tape sensing finger in its extreme counterclockwise position.
Min 0.010 inch---Max 0.020 inch clearance between sensing finger extension and closest point on bakelite insulator of long contact spring.

To Adjust
With guard removed, bend the short contact spring.

(F) TAPE ABSENCE CONTACTS CABLE ASSEMBLY POSITION

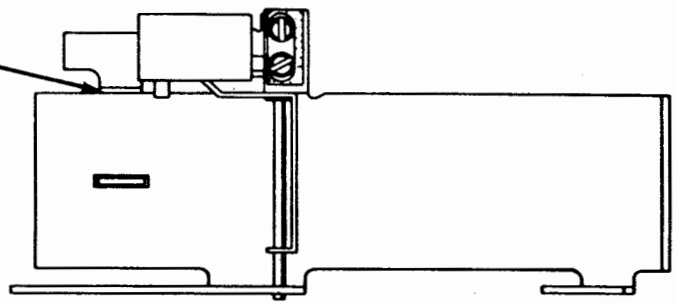
Requirement
The cable assembly for the tape absence contacts should be routed together with the selector magnet cable assembly and, if present, the code reading contacts cable assembly. Form the cables so that they do not interfere with the movement of the tape sensing finger.

To Adjust
Secure the position of the cable assemblies by means of an appropriate cable clamp located behind the selector magnets.

(E) TAPE ABSENCE CONTACTS SENSING FINGER ENDPLAY

Requirement
The endplay between tape sensing finger and tape guard should be
Min 0.006 inch---Max 0.035 inch

To Adjust
Bend the tape sensing finger.



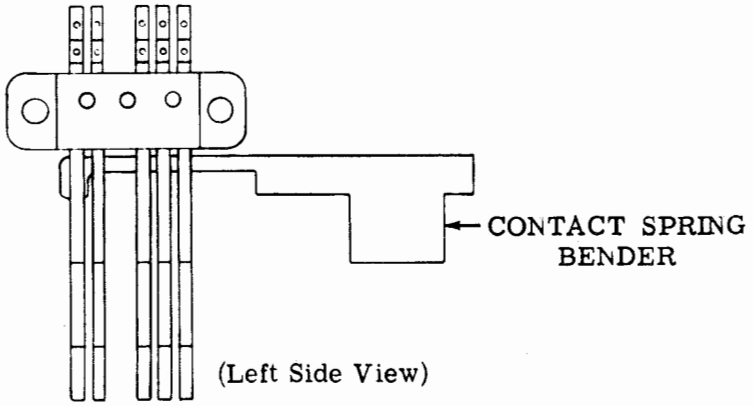
(Top View)

3.04 Code Reading Contact Mechanisms (Make-Only and Transfer Types)

Note 1: Unless specifically stated otherwise, the following code reading contact adjustments apply to both the transfer (break before make) type and make type contacts. When an adjustment is applicable to both types, the transfer type contacts are used in the illustrations. When testing these contacts on ASR sets the control knob should be in the K-T position.

Note 2: It is recommended that the following adjustments be made with the code reading contact assembly removed from the unit.

Note 3: When using the contact spring bender, start with the contact pile-up farthest from the handle of the tool and work toward the handle so as not to disturb adjustments already made.

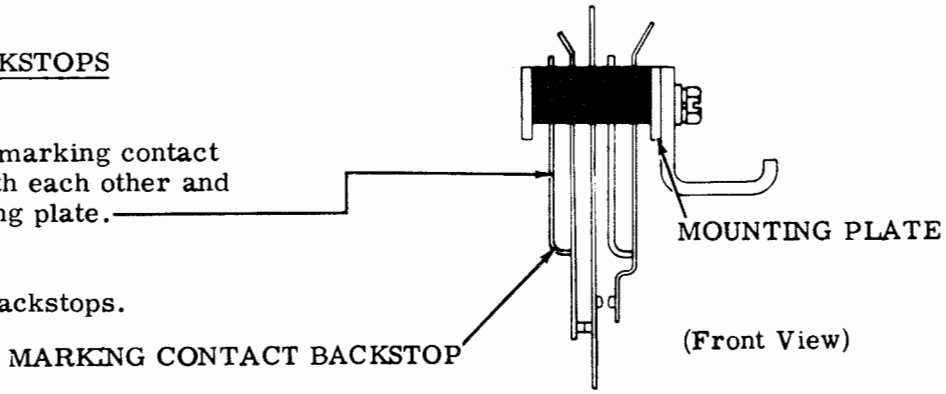


(Left Side View)

(A) MARKING CONTACT BACKSTOPS

Requirement
As gauged by eye, five marking contact springs should align with each other and be parallel with mounting plate.

To Adjust
Bend marking contact backstops.



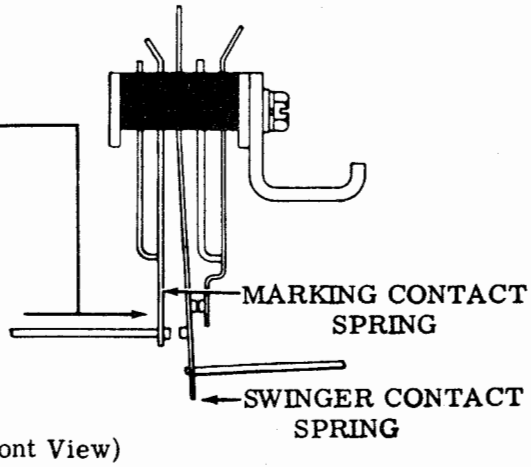
(Front View)

(B) MARKING CONTACT SPRINGS (Preliminary)

Requirement
With swinger contact spring held away
Min 2 oz---Max 6 oz
to move each spring away from backstop.

To Adjust
Bend marking contact springs.

Note 4: To increase tension of marking contact spring, it may be necessary to bend backstop away from spring, bend spring and then rebend backstop to meet requirement of MARKING CONTACT BACKSTOPS adjustment (above).



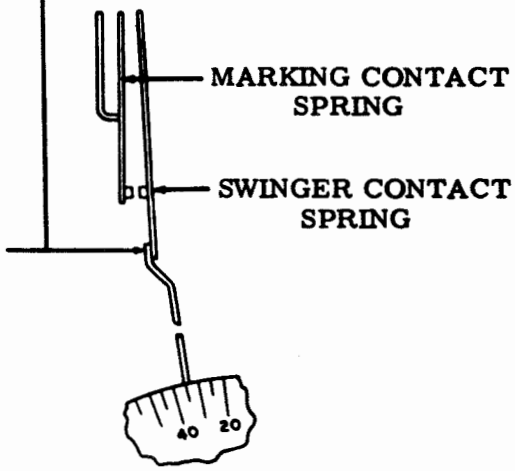
(Front View)

3.05 Code Reading Contact Mechanisms (Make-Only and Transfer Types) (continued)

(A) SWINGER CONTACT SPRINGS (Preliminary)

Requirement
Min 30 grams---Max 40 grams
to open marking contacts.

To Adjust
Bend swinger contact springs.



(Front View)

Note 1: Spacing contacts (on transfer type contact assemblies only) are normally open when contact assembly is removed from unit.

(B) SPACING CONTACT BACKSTOPS (Preliminary)
(Applies to Transfer Type Contacts Only)

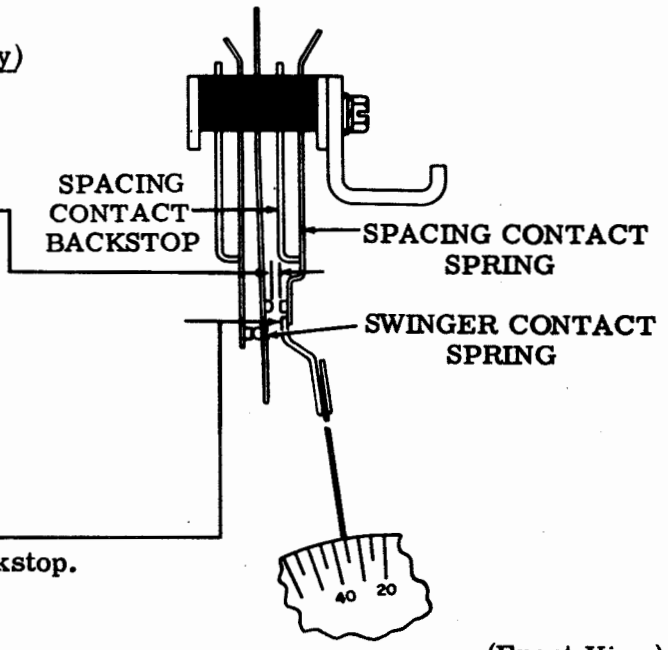
Requirement
Gap between spacing contacts
Min 0.018 inch---Max 0.025 inch

To Adjust
Bend spacing contact backstops.

(C) SPACING CONTACT SPRINGS (Preliminary)
(Applies to Transfer Type Contacts Only)

Requirement
Min 35 grams---Max 50 grams
to move each contact spring away from backstop.

To Adjust
Bend spacing contact springs.

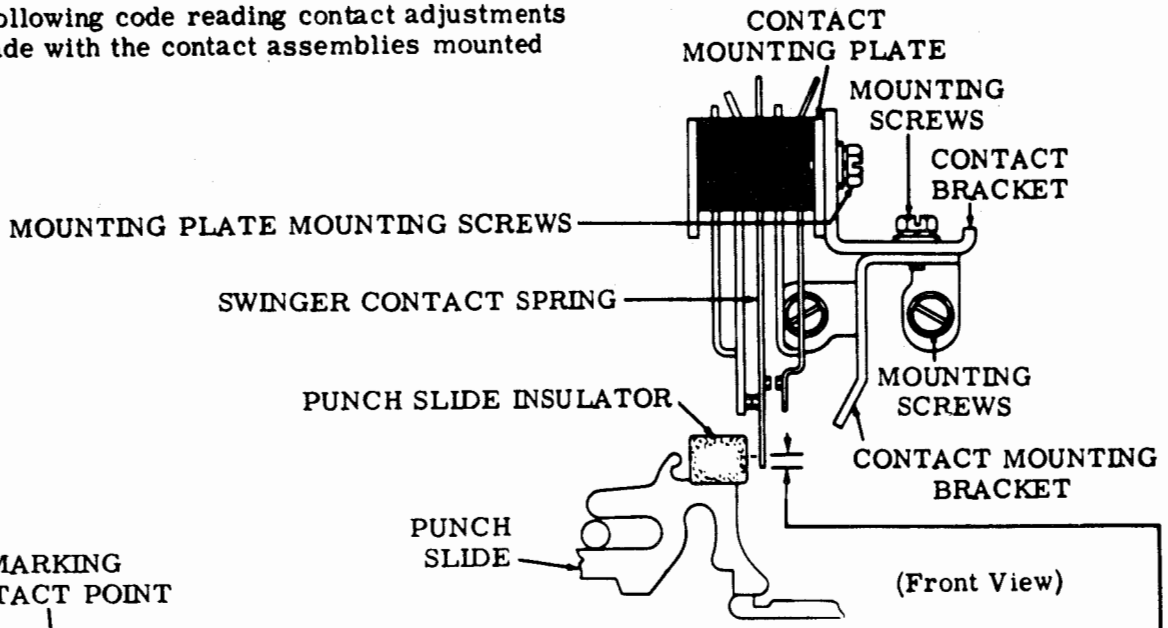


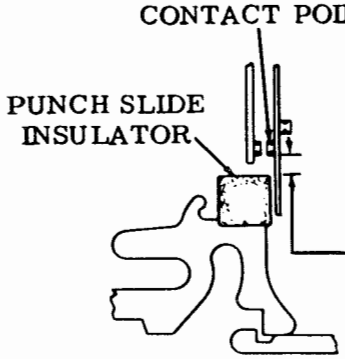
(Front View)

Note 2: To increase tension of spring, it may be necessary to bend backstop away from spring, bend spring, and then rebend backstop to meet requirement of SPACING CONTACT BACKSTOPS adjustment above.

3.06 Code Reading Contact Mechanisms (Make-Only and Transfer Types) (continued)

Note: The following code reading contact adjustments should be made with the contact assemblies mounted on the unit.





(A) CONTACT MOUNTING BRACKET

(1) Requirement
With function clutch disengaged and latched, there should be
Min 0.015 inch
clearance between closest normally closed contact spring (marking contact) and punch slide insulator.

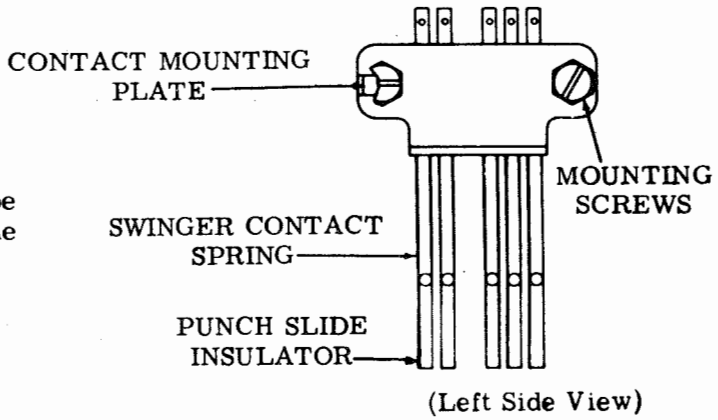
(2) Requirement
With LETTERS combination selected and punch pins in their uppermost position, swinger should be parallel to right end of punch slide and extend below its center, as gauged by eye.

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

(B) CONTACT MOUNTING PLATE

Requirement
Each swinger contact spring should be aligned with its associated punch slide insulator as gauged by eye.

To Adjust
Position contact mounting plate with mounting screws loosened. Tighten screws.



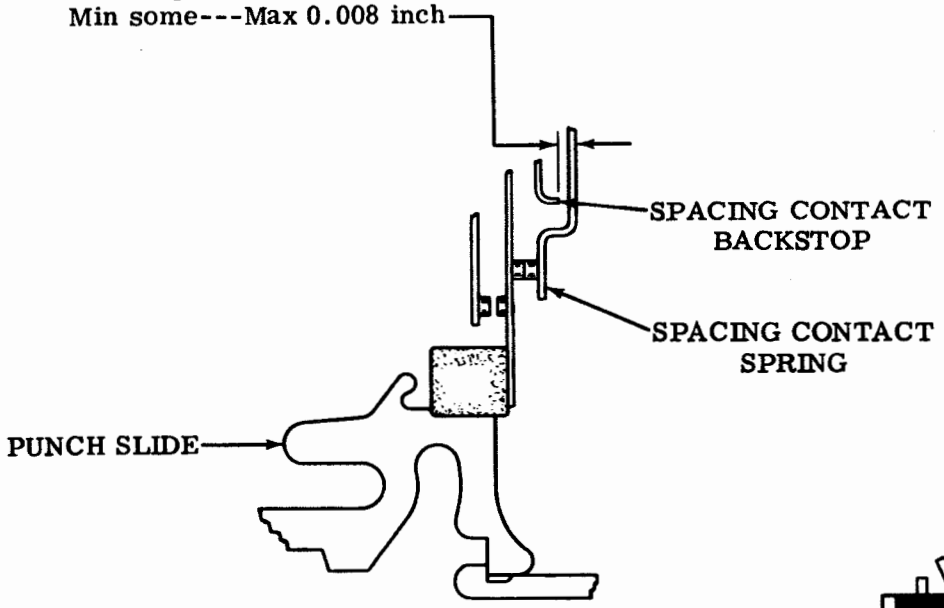
3.07 Code Reading Contact Mechanism (Transfer Type) (continued)

CONTACT BRACKET (Preliminary) (Applies to Transfer Type Contacts Only)

(1) Requirement

Manually select BLANK code combination. Rotate main shaft until function clutch trips. Clearance between spacing contact spring and its backstop

Min some---Max 0.008 inch

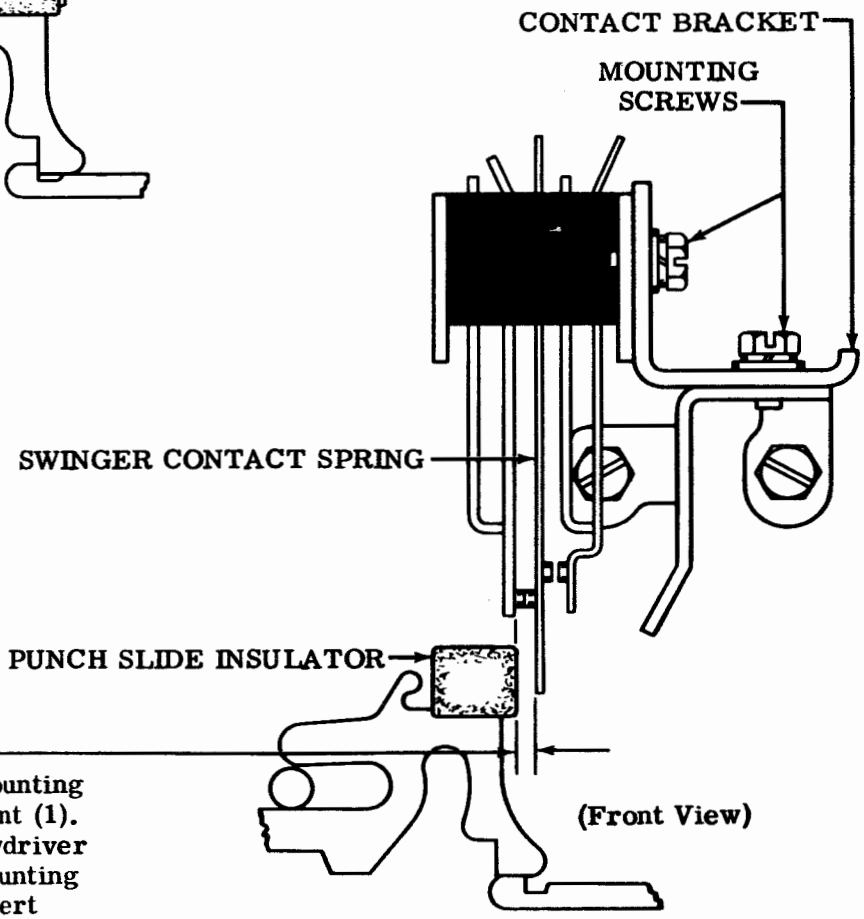


(Front View)

(2) Requirement

With the selector and function clutches disengaged and latched, manually select LETTERS code combination and trip function clutch. Clearance between punch slide insulator and swinger contact spring

Min 0.028 inch



(Front View)

To Adjust

Position contact bracket with its mounting screws loosened to meet requirement (1). To pry bracket to left, insert screwdriver between bracket and left edge of mounting screws; to pry bracket to right, insert screwdriver between bracket and right edge of mounting screws. Check requirement (2). If not met, refine adjustment. Tighten screws.

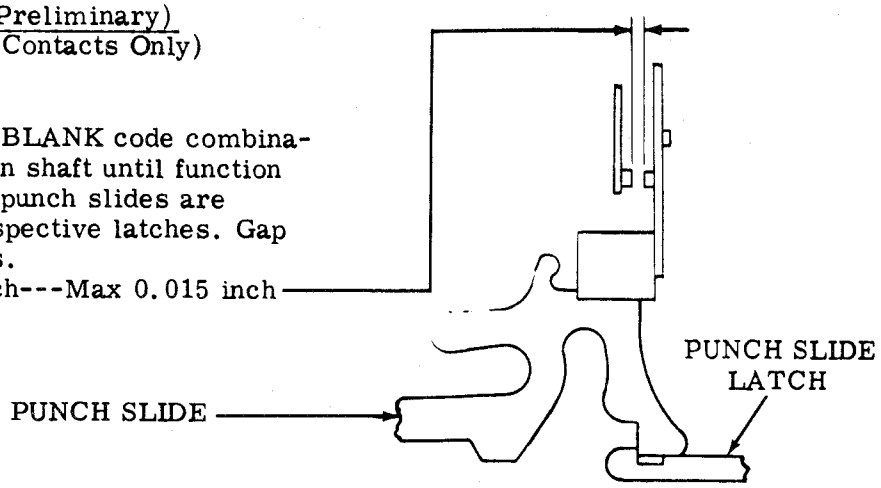
3.08 Code Reading Contact Mechanism (Make-Only Type) (continued)

CONTACT BRACKET (Preliminary)
(Applies To Make Type Contacts Only)

(1) Requirement

Manually select BLANK code combination. Rotate main shaft until function clutch trips and punch slides are against their respective latches. Gap between contacts.

Min 0.010 inch---Max 0.015 inch (see note)



(Front View)

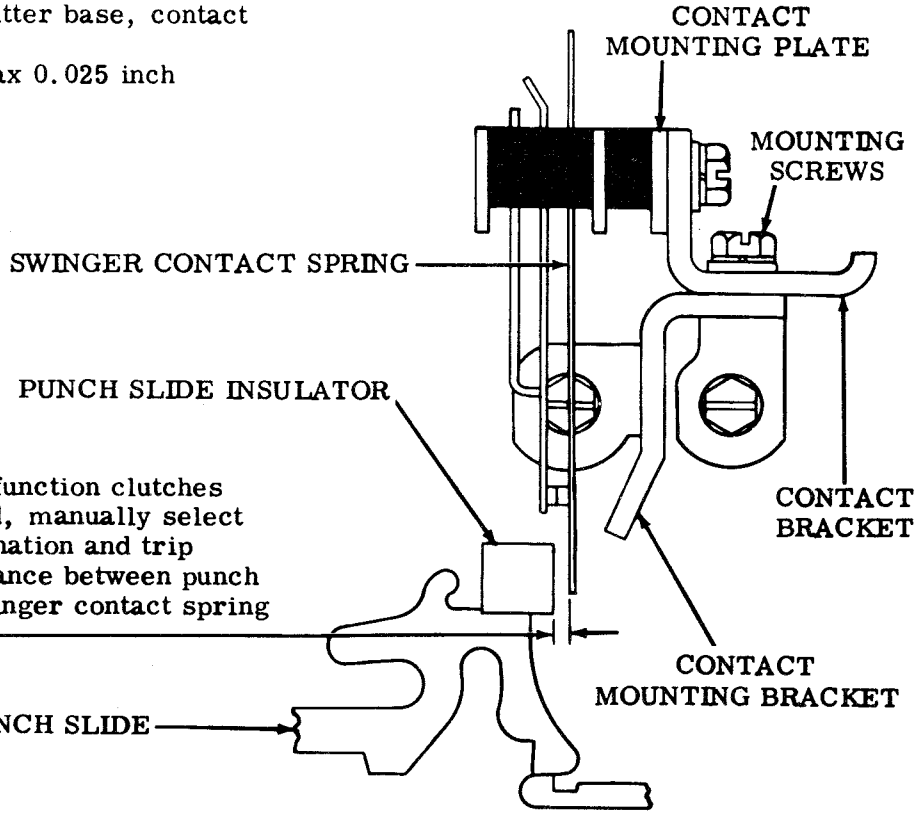
Note: Where a typing reperforator is part of a 28 perforator-transmitter base, contact gap should be

Min 0.020 inch---Max 0.025 inch

(2) Requirement

With the selector and function clutches disengaged and latched, manually select LETTERS code combination and trip function clutch. Clearance between punch slide insulator and swinger contact spring

Min 0.028 inch



(Front View)

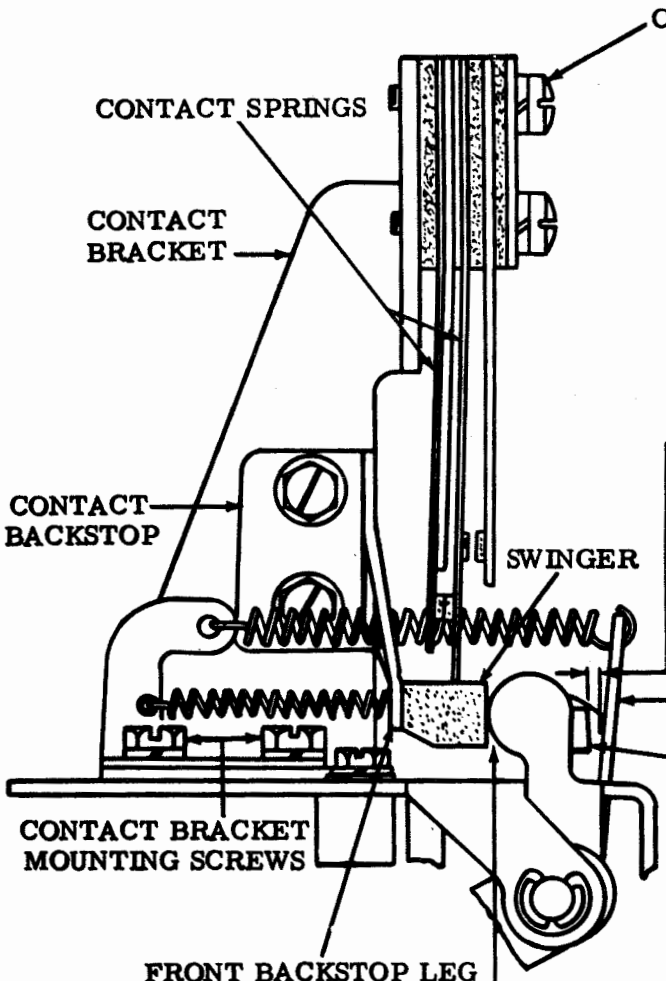
To Adjust

Position contact bracket with mounting screws friction tight. To pry bracket to left, insert screwdriver between bracket and left edge of mounting screw; to pry bracket to right, insert screwdriver between bracket and right edge of mounting screw. Tighten screws.

3.09 Auxiliary Timing Contact Mechanisms (Single Contact and Double Contact Types)

Note 1: There are two types of timing contact assemblies, single and double. Single contact assemblies have a front contact only, no rear contact. If unit is equipped with a double contact assembly, the following adjustments apply to both front and rear contacts.

Note 2: In case of single contact assembly, make certain contact bracket mounting screws are centrally located in elongated slots, and proceed to next adjustment.



(A) CONTACT BACKSTOP (Double Contact Assembly)

Requirement
Swinger of each contact held against its backstop by its operating bail and spring, and contact bracket mounting screws centrally located in elongated slots, clearance between operating bails
—Min 0.040 inch---Max 0.045 inch (on units equipped with one-cycle cams) at point of least clearance.

To Adjust
Bend front backstop leg.

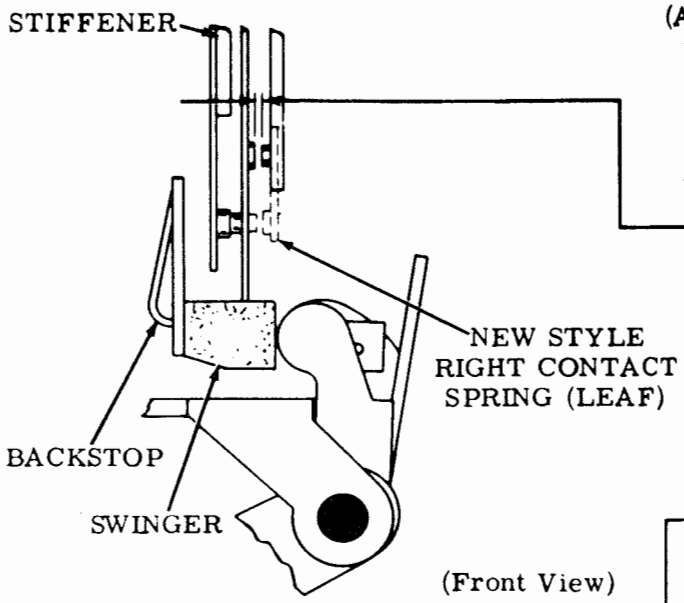
(B) CONTACT ALIGNMENT

(1) Requirement
—When parts are in engagement operating bail centrally located with respect to swinger.

(2) Requirement
—Mating contact points aligned.

To Adjust
Position contact springs with contact mounting screws loosened. Tighten screws.

3.10 Auxiliary Timing Contact Mechanisms (Single Contact and Double Contact Types) (continued)



(Front View)

(A) RIGHT CONTACT GAP (Normally Closed When Contact Assembly Is Removed From Unit)

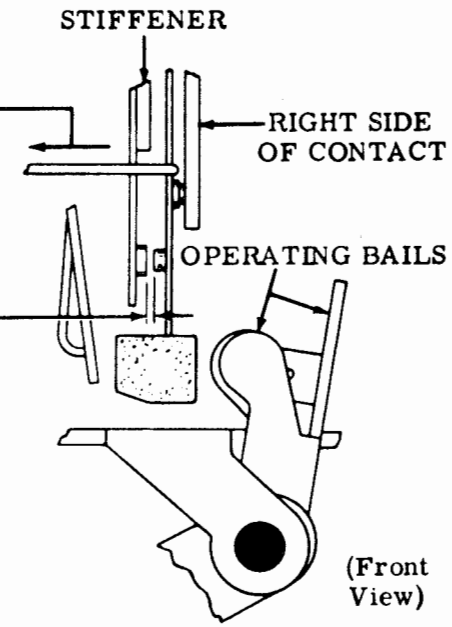
Requirement
Swinger held against its backstop. Gap between contacts
Min 0.020 inch---Max 0.025 inch

To Adjust
Bend right contact spring.

(B) SWINGER CONTACT SPRING (Preliminary)

Requirement
Operating bail held away from swinger
Min 4-1/2 oz---Max 5-1/2 oz
to open right side of contact.

To Adjust
Bend swinger contact spring. Recheck RIGHT CONTACT GAP and readjust if necessary.



(Front View)

(C) LEFT CONTACT GAP (Normally Open When Contact Assembly Is Removed From Unit)

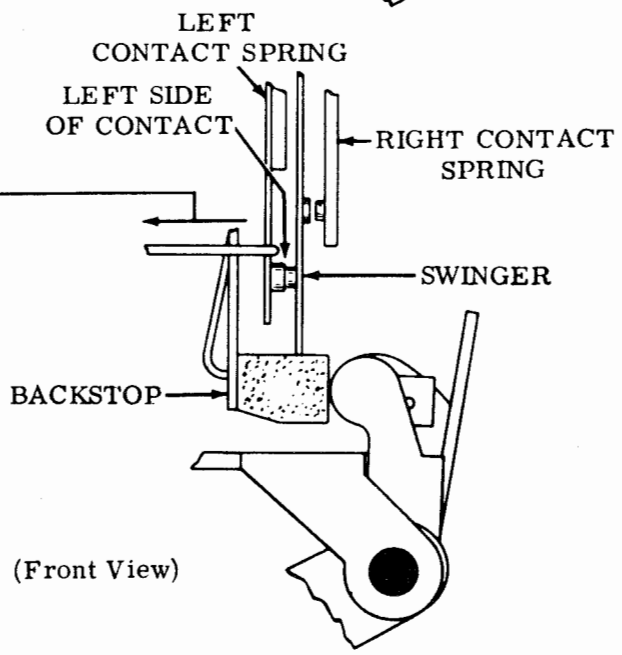
Requirement
Operating bail held away from swinger.
Gap between contacts
Min 0.020 inch---Max 0.025 inch

To Adjust
Bend stiffener.

(D) LEFT CONTACT SPRING (Preliminary)

Requirement
Swinger held against backstop by its operating bail and spring.
Min 4-1/2 oz---Max 5-1/2 oz
to open left side of contact.

To Adjust
Bend left contact spring. Recheck RIGHT CONTACT GAP and LEFT CONTACT GAP, and readjust if necessary.



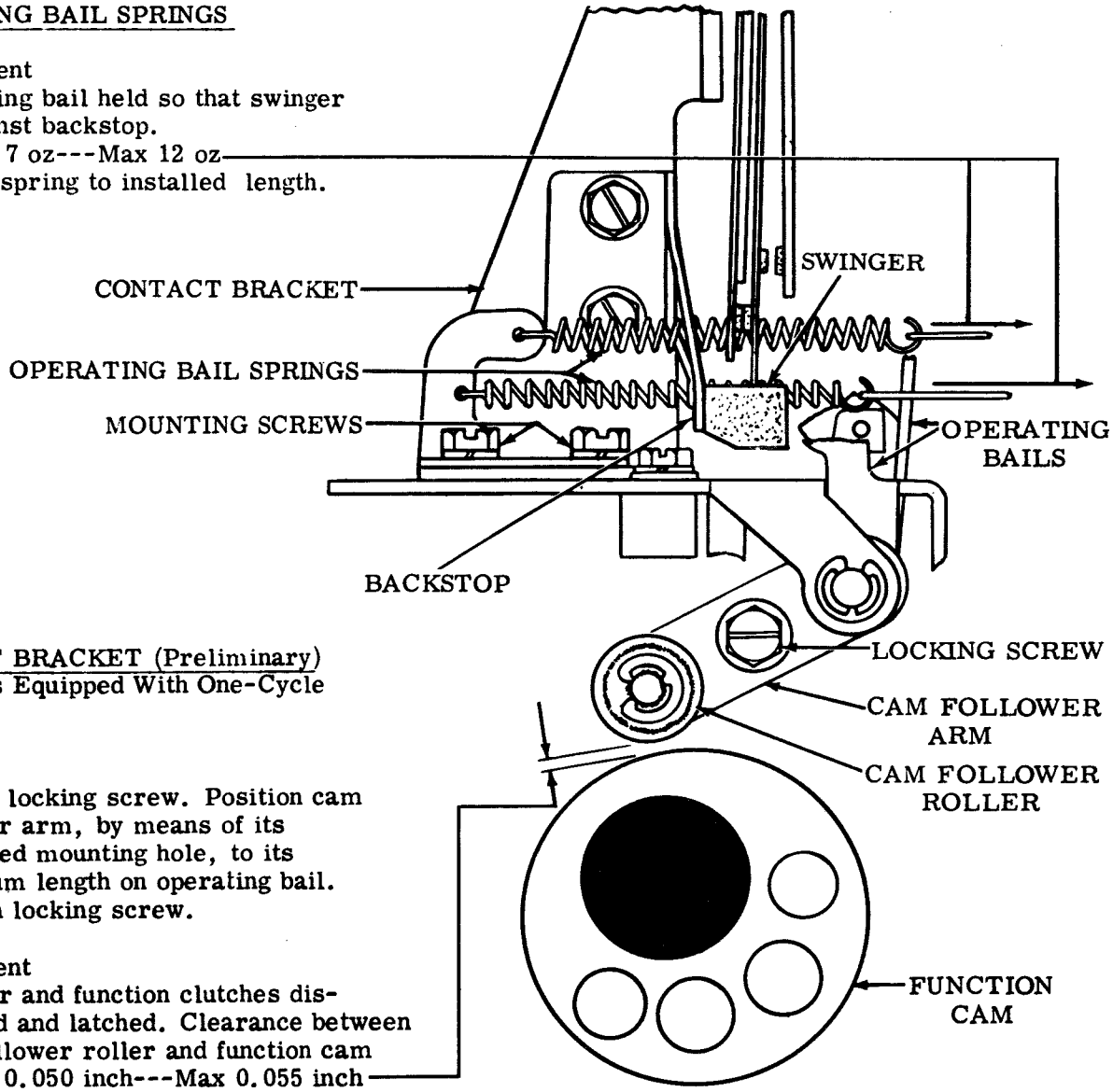
(Front View)

3.11 Auxiliary Timing Contact Mechanisms (Single Contact and Double Contact Types) (continued)

Note 1: The following timing contact adjustments should be made with contact assembly mounted on unit.

(A) OPERATING BAIL SPRINGS

Requirement
Operating bail held so that swinger is against backstop.
Min 7 oz---Max 12 oz to pull spring to installed length.



(B) CONTACT BRACKET (Preliminary)
(For Units Equipped With One-Cycle Cams)

To Check
Loosen locking screw. Position cam follower arm, by means of its elongated mounting hole, to its minimum length on operating bail. Tighten locking screw.

Requirement
Selector and function clutches disengaged and latched. Clearance between cam follower roller and function cam
Min 0.050 inch---Max 0.055 inch

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

(Front View)

Note 2: On units equipped with double contact assemblies, recheck CONTACT BACKSTOP (3.09) adjustment. If requirement is not met, refine CONTACT BRACKET adjustment.

3.12 LTRS-FIGS Contact Mechanism (Later Design) (For Earlier Design see 4.05)

Note: To facilitate contact spring adjustment, remove contact assembly from unit.

(A) MIDDLE CONTACT SPRING

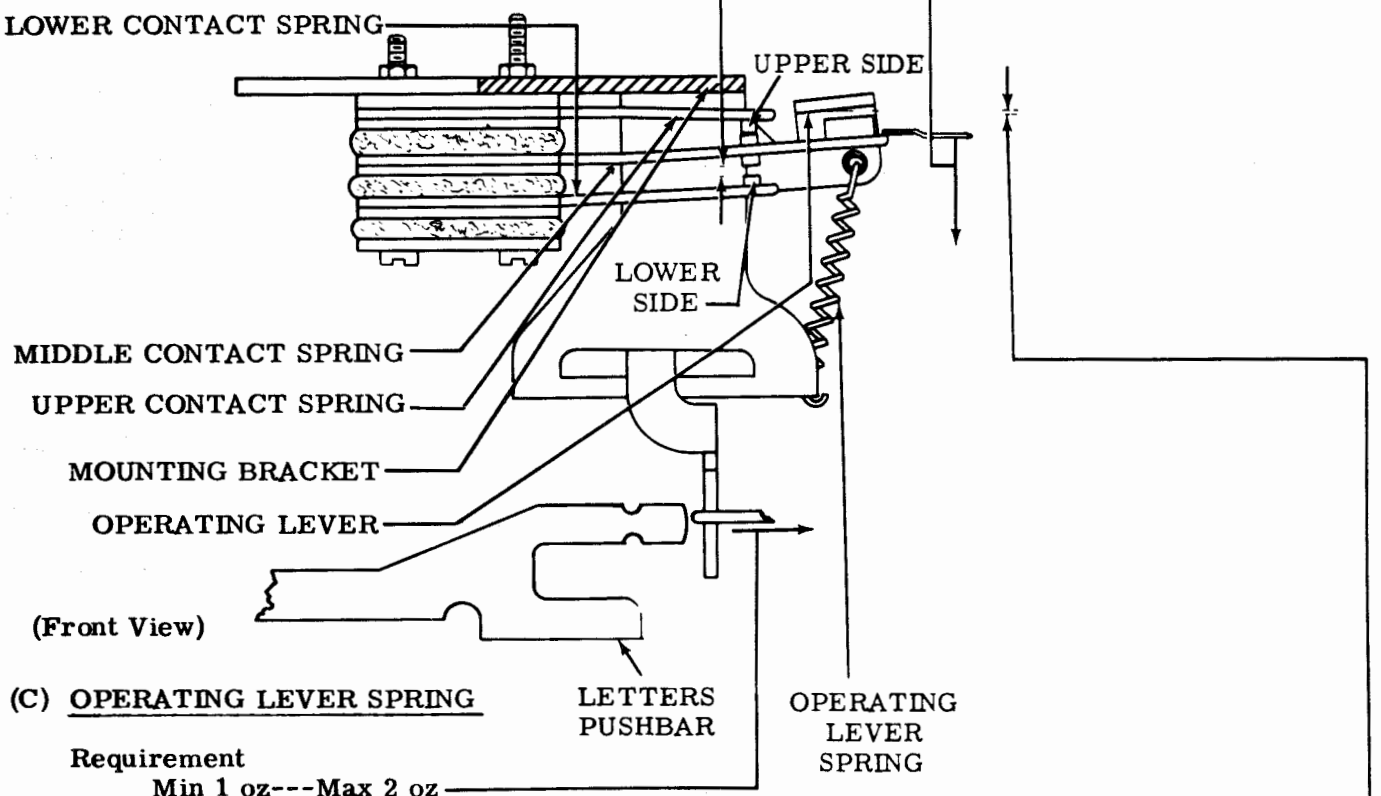
Requirement
Min 25 grams---Max 40 grams to open upper side of contact.

To Adjust
Bend middle contact spring.

(B) LOWER CONTACT SPRING

Requirement
With upper side of contact closed
Min 0.012 inch---Max 0.020 inch gap at lower side of contact.

To Adjust
Bend lower contact spring.



(C) OPERATING LEVER SPRING

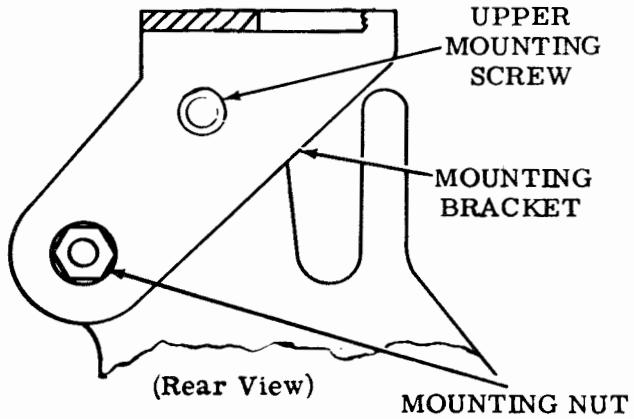
Requirement
Min 1 oz---Max 2 oz to start operating lever moving.

(D) MOUNTING BRACKET

Note: Contact assembly should be mounted on unit before this adjustment is made.

Requirement
With unit in LETTERS condition and function clutch disengaged
Min 0.005 inch---Max 0.015 inch between operating lever and insulator on middle contact spring.

To Adjust
With mounting nut and upper mounting screw loosened, position mounting bracket: Tighten nut and screw.

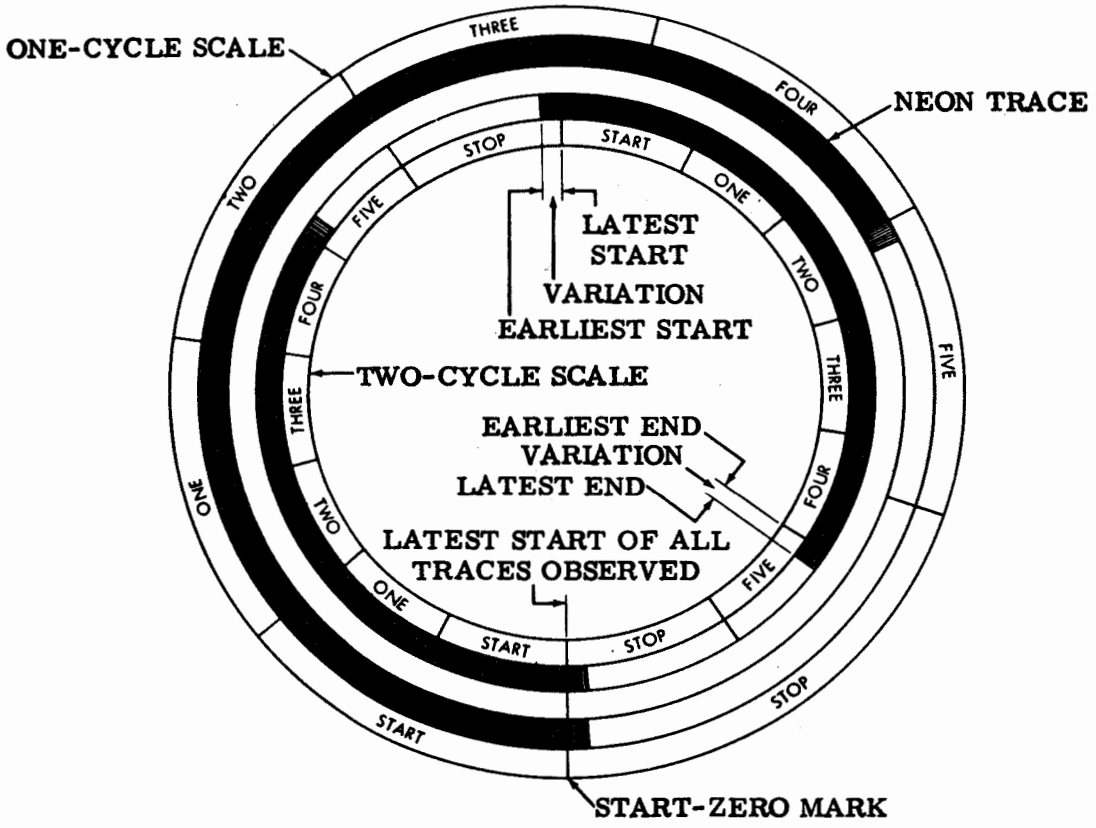


3.13 Contact Timing Measurements (To Zero Test Set)

The following tests require the use of a Teletype signal distortion test set. They should be made after the contact assemblies have been adjusted as instructed on the preceding pages. Where requirements are not met, designated adjustments must be refined, and/or related lengths may have to be changed to meet timing requirements.

Tests on 600 operation per minute units or lower should be made with the perforator or reperforator and the test set operating at 600 opm. Tests on 900 opm units used on the automatic send-receive (ASR) set should be made with the test set operating at 600 opm and using keyboard transmission. Tests on 1200 opm units should be made with the reperforator operating at 1200 opm and the test set equipped with a two-cycle scale and operating at 600 opm.

Observations are to be made of a neon trace on the graduated disc of a test set. Trace will have tendency to "jump"; that is, it will not be steady enough to be accurately measured. Variation may be as high as ten divisions on scale. Minimum signal length is measured between latest start and earliest end of all traces. Maximum signal length is measured between earliest start and latest end of all traces.

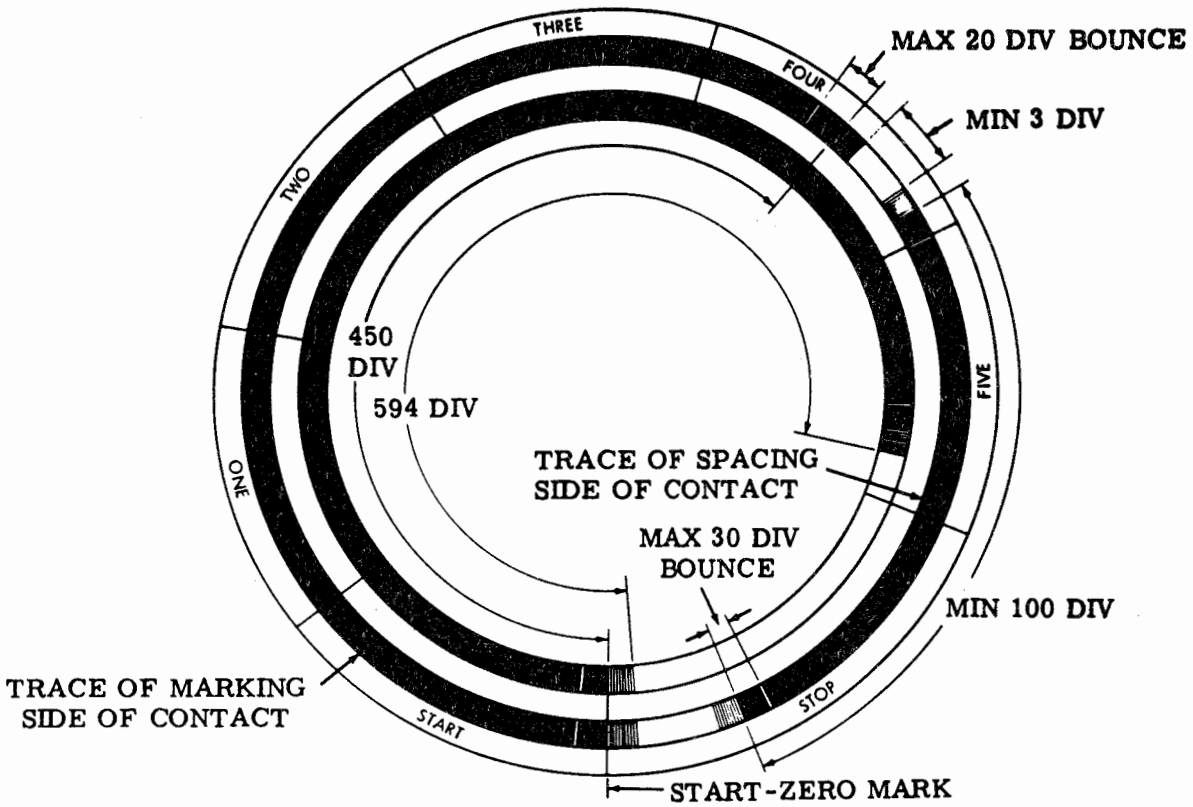


To Zero Test Set

Connect neon trace to no. 1 code reading contact (rearmost). With unit receiving LETTERS code combination, observe and note point at which trace ends. Traces will jump as described above; note earliest end of traces. Repeat for remaining contacts. Of all traces observed, choose one that starts the latest. Set "start-zero" mark of scale at latest start of chosen trace. Record earliest end of chosen trace for future adjustment references.

3.14 Contact Timing Measurements for Code Reading Contacts

Note: Test procedures on this page apply to 600 opm units or lower only.



CODE READING CONTACTS

Zero test set as previously instructed. Connect neon trace to marking side of a code reading contact (normally open when unit is in idle condition). With unit receiving continuous LETTERS code combinations, observe trace. Repeat for all five contacts.

(1) Requirement
   (a) Signal length for each contact trace and combined contact traces
      Min 450 divisions---Max 594 divisions

   (b) Bounce should end within maximum of 20 divisions of earliest start and latest end of all traces.

(2) Requirement (applies to transfer contacts only)
   Connect neon trace to both sides of contact. With unit receiving LETTERS code combinations, observe trace.

   (a) Break in trace indicating break before make
      Min 3 divisions

   (b) Signal length of spacing side of contact
      Min 100 divisions

(Test continued on next page.)

3.15 Contact Timing Measurements for Code Reading Contacts (continued)

(c) Bounce should end within 30 divisions of earliest start and latest end of trace.

To Adjust

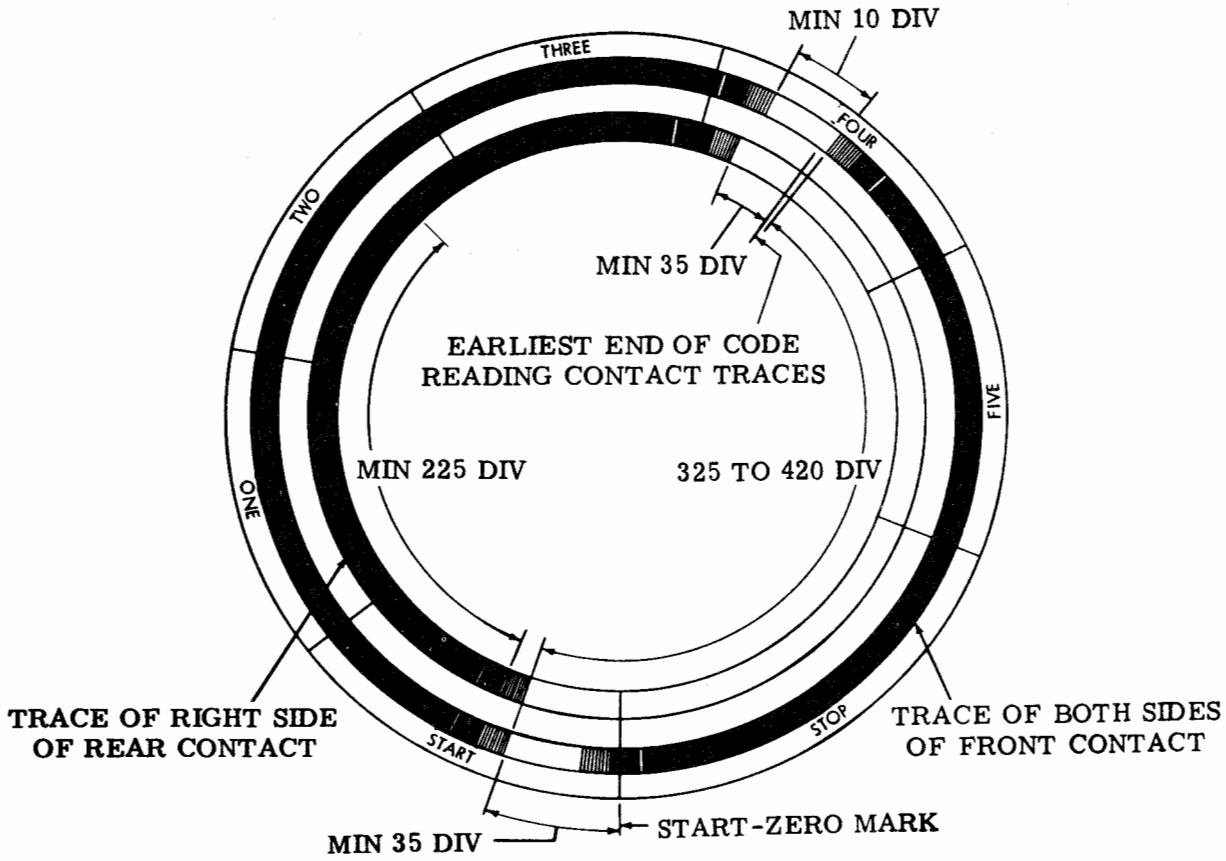
(a) If requirements under (1) (a), (2) (a), or (2) (b), are not met, refine CONTACT BRACKET (3.07) adjustment. When refining (1) (a), attempt to adjust toward maximum signal length.

(b) If bounce requirements under (1) (b), and (2) (c) are not met, refine MARKING CONTACT SPRING (3.04), SWINGER CONTACT SPRING, (3.05) and SPACING CONTACT SPRING (3.05) tensions.

(c) If any refinements are necessary, repeat complete test procedure.

3.16 Contact Timing Measurements for Auxiliary Timing Contacts

Note: Test procedures on this page apply only to 600 opm units (Bell 82B1 System) units using one-cycle cams.



TIMING CONTACTS

Zero test set as previously described.

(1) Requirement (rear contact)
Connect neon trace to right side of rear contact (normally open when unit is in idle condition). With unit receiving LETTERS code combinations, observe trace.

(a) Earliest start minimum of 35 divisions after start zero mark.

(b) Latest end minimum of 35 divisions before earliest end of code reading contact traces recorded when zeroing test set.

(c) Minimum trace length 225 divisions.

(d) Bounce should end within maximum 5 divisions of start and end of any trace.

(Test continued on next page.)

3.17 Contact Timing Measurements for Auxiliary Timing Contacts (continued)

(2) Requirement (front contact)
Connect neon trace to both sides of front contact. With unit receiving LETTERS code combinations, observe trace.

(a) Break in trace to indicate break before make
Min 10 divisions

(b) Between earliest starts of traces of right and left (normally open and normally closed) sides of contact
Min 325 divisions---Max 420 divisions

(c) Bounce should end within maximum 5 divisions of earliest start and latest end of any trace.

To Adjust

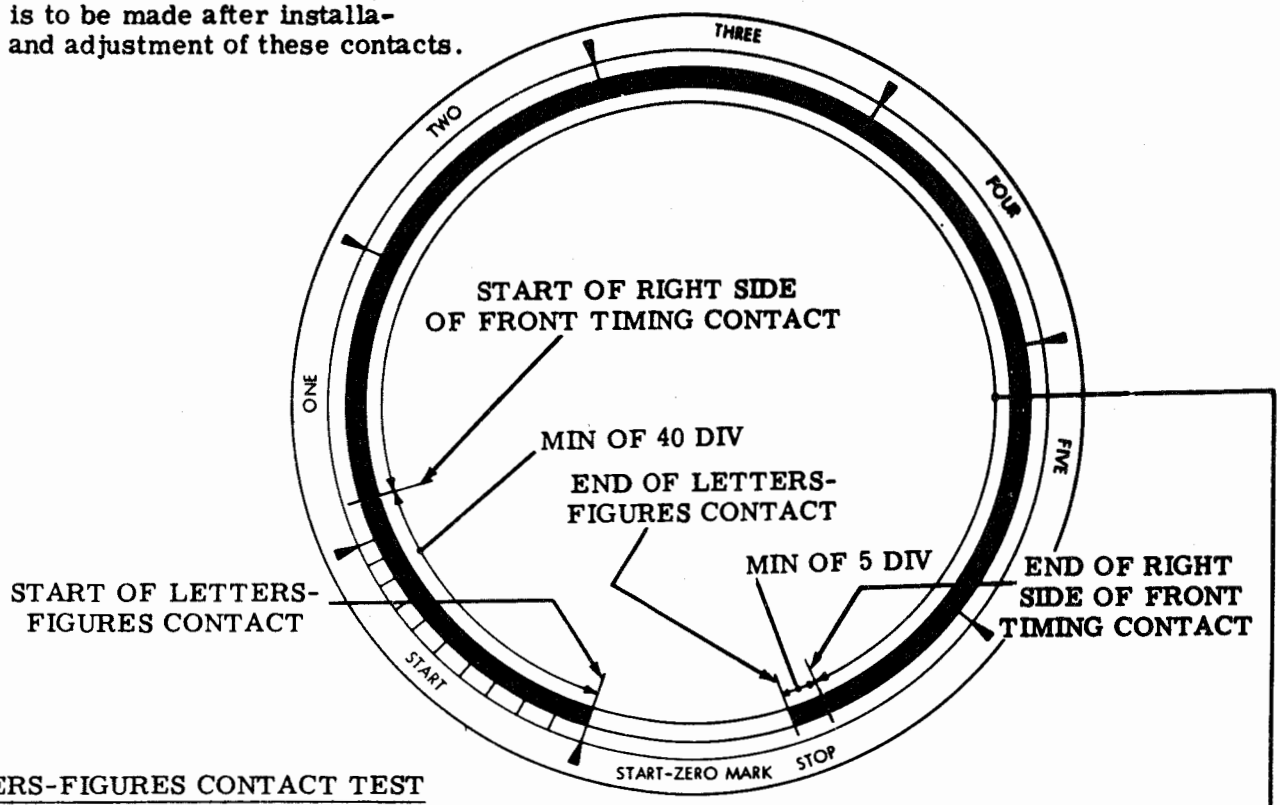
(a) If timing requirements under (1) (a), (b), (c), and (2) (a), and (b) are not met, refine CONTACT BRACKET (3.08) adjustment and/or RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, and LEFT CONTACT SPRING (3.10) adjustments.

(b) If bounce requirements under (1) (d) and (2) (c) are not met, refine SWINGER CONTACT SPRING and LEFT CONTACT SPRING tensions (3.10).

(c) If any refinements are necessary, repeat complete test procedure.

3.18 Contact Timing Measurements for LTRS-FIGS Contact (Later Design) (For Earlier Design see 4.05)

Note: If unit is equipped with code reading and/or timing contacts, test is to be made after installation and adjustment of these contacts.



LETTERS-FIGURES CONTACT TEST

To Check

Connect cable leads of letters-figures contact to neon trace lamp of signal distortion test set. Set control switches of test set to following positions: (1) VIEW-TRANSMIT switch to VIEW; (2) LINE-DIST. switch to LINE; and (3) MOTOR switch to ON. Alternately select LETTERS (12345) and FIGURES (12-45). Set START-ZERO MARK of test set scale at start of contact trace. Connect right side of front timing contact (probe) to neon trace lamp; record start and end of trace. Reconnect letters-figures contact to trace lamp and alternately select LETTERS and FIGURES.

(1) Requirement

No chatter or bounce of letters-figures contact during time when timing contact is closed.

To Adjust

If requirement is not met, refine MIDDLE CONTACT SPRING and LOWER CONTACT SPRING (3.12) adjustments.

(2) Requirement

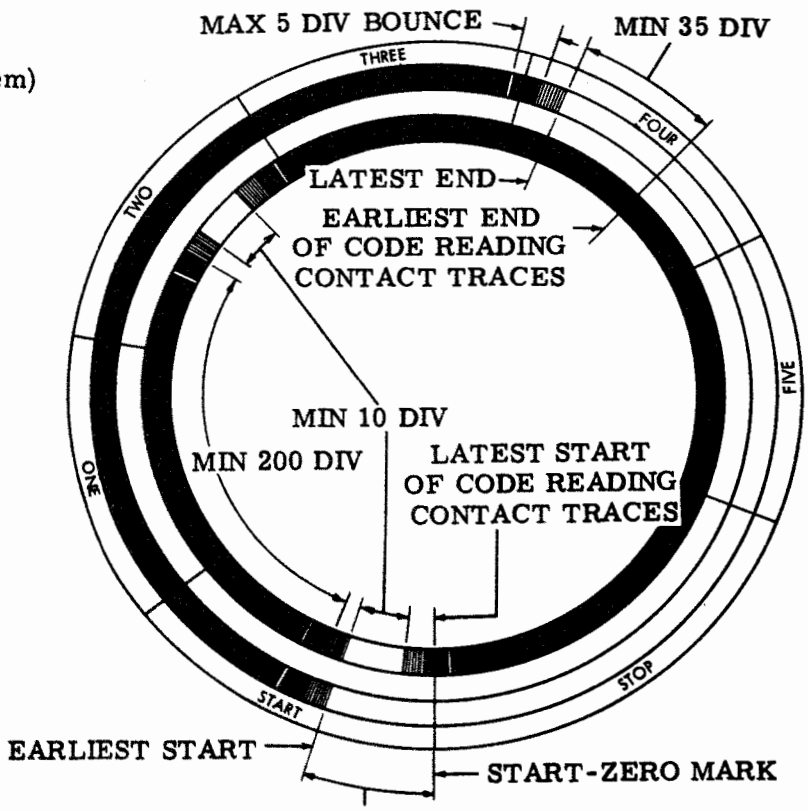
Trace of letters-figures contact start minimum of 40 divisions before start of trace of timing contact and end minimum of 5 divisions after end of timing contact.

To Adjust

If requirement is not met, refine MOUNTING BRACKET (3.12) adjustment.

3.19 Contact Timing Measurements (To Zero Test Set)

Note: Test procedures on this page and the following page apply only to 600 opm units (Western Union Plan 55 System) using one-cycle cams.



TIMING CONTACTS

Zero test set as previously described.

(1) Requirement (front contact)
Connect neon trace to right side of front contact (normally open when unit is in idle condition). With unit receiving continuous LETTERS code combinations, observe trace.

(a) Latest end minimum of 35 divisions before earliest end of code reading contact traces.

(b) Earliest start minimum of 35 divisions after latest start of code reading contact traces.

(c) Minimum trace length 200 divisions.

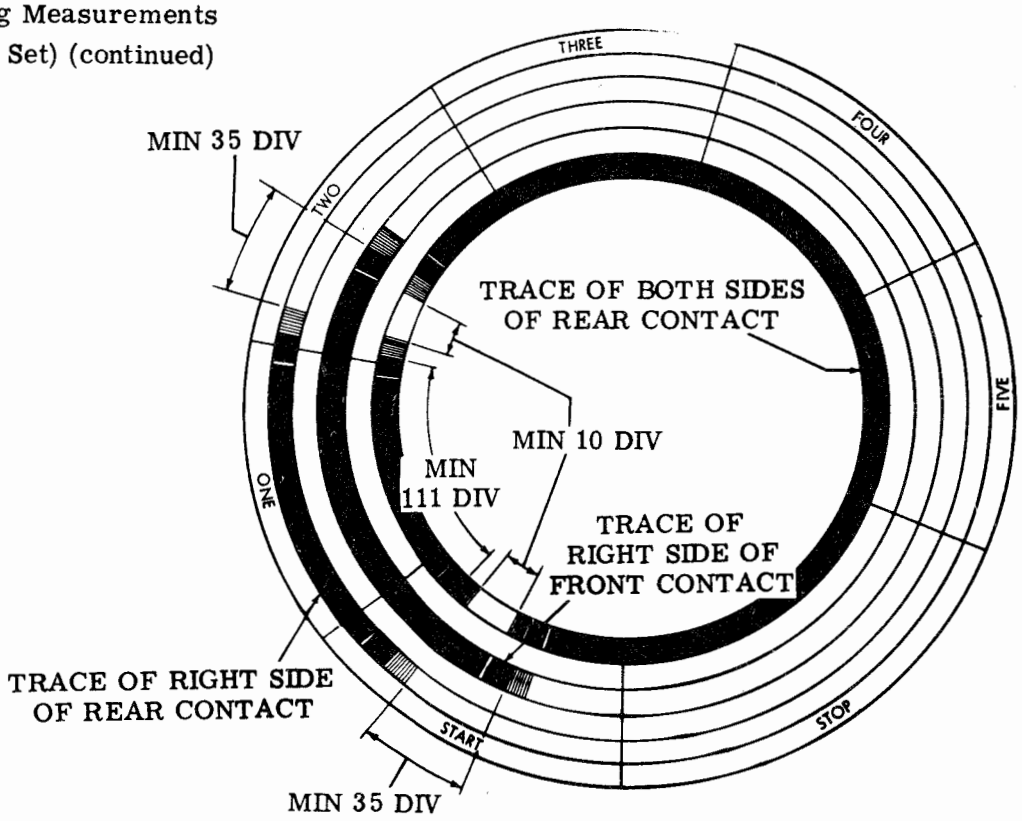
(d) Bounce should end within maximum 5 divisions of earliest start and latest end of any trace.

Record latest start and earliest end of trace.

(2) Requirement (applies only if complete transfer contact is used)
Connect neon trace to both sides of front contact. Observe trace. Break in trace at two places to indicate break before make
Min 10 divisions

(Test continued on next page.)

3.20 Contact Timing Measurements
(To Zero Test Set) (continued)



(3) Requirement (rear contact)
Connect neon trace to right side of rear contact (normally open when unit is in idle condition). With unit receiving LETTERS code combinations, observe trace.

(a) Latest end of trace minimum of 35 divisions before earliest end of trace of right side of front contact recorded in requirement (1).

(b) Minimum trace length 111 divisions.

(c) Earliest start of trace minimum of 35 divisions after latest start of trace of right side of front contact recorded in requirement (1).

(d) Bounce should end within maximum 5 divisions of earliest start and latest end of any trace.

(4) Requirement (applies only if complete transfer contact is used)
Connect neon trace to both sides of rear contact. Observe trace. Break in trace at two places to indicate break before make
Min 10 divisions

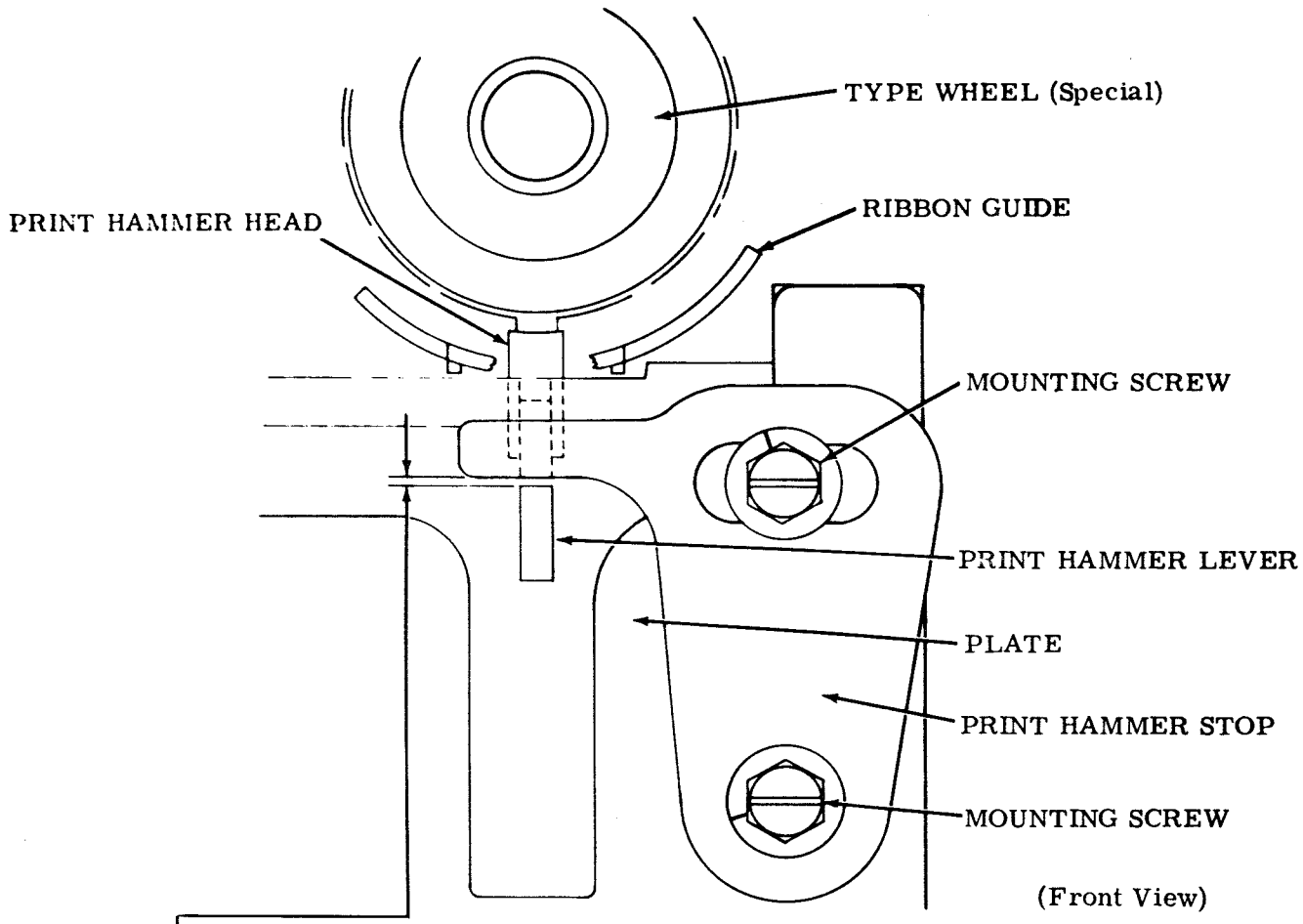
To Adjust

(1) If trace lengths under (1) (c) and (3) (b) are both short, refine CONTACT BRACKET (3.08) adjustment. If only one trace is short, refine CONTACT BACKSTOP (3.09) adjustment and check RIGHT CONTACT GAP (3.10), LEFT CONTACT GAP (3.10), SWINGER CONTACT SPRING (3.10), and LEFT CONTACT SPRING (3.10) adjustments.

(2) If break before make requirements under (2) and (4) are not met, refine RIGHT CONTACT GAP (3.10), LEFT CONTACT GAP (3.10), SWINGER CONTACT SPRING (3.10), and LEFT CONTACT SPRING (3.10) adjustments.

(3) If any refinements are necessary, repeat complete test procedure.

3.21 Print Suppression on Function Mechanism



(A) PRINT HAMMER STOP (Preliminary)

Requirement
With head of print hammer against character on type wheel
— Min some---Max 0.010 inch
clearance between print hammer lever and print hammer stop.

To Adjust
With mounting screws loosened, position print hammer stop by means of its elongated upper hole. Tighten screws.

(B) PRINT HAMMER STOP (Final)

Requirement
With unit operating under power, the amount of smudge should be held to a minimum where print suppression is required.

To Adjust
Refine PRINT HAMMER STOP (Preliminary) adjustment.

Note: Unless otherwise specified, the following backspace adjustments apply to both the chadless and fully perforated tape mechanisms.

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

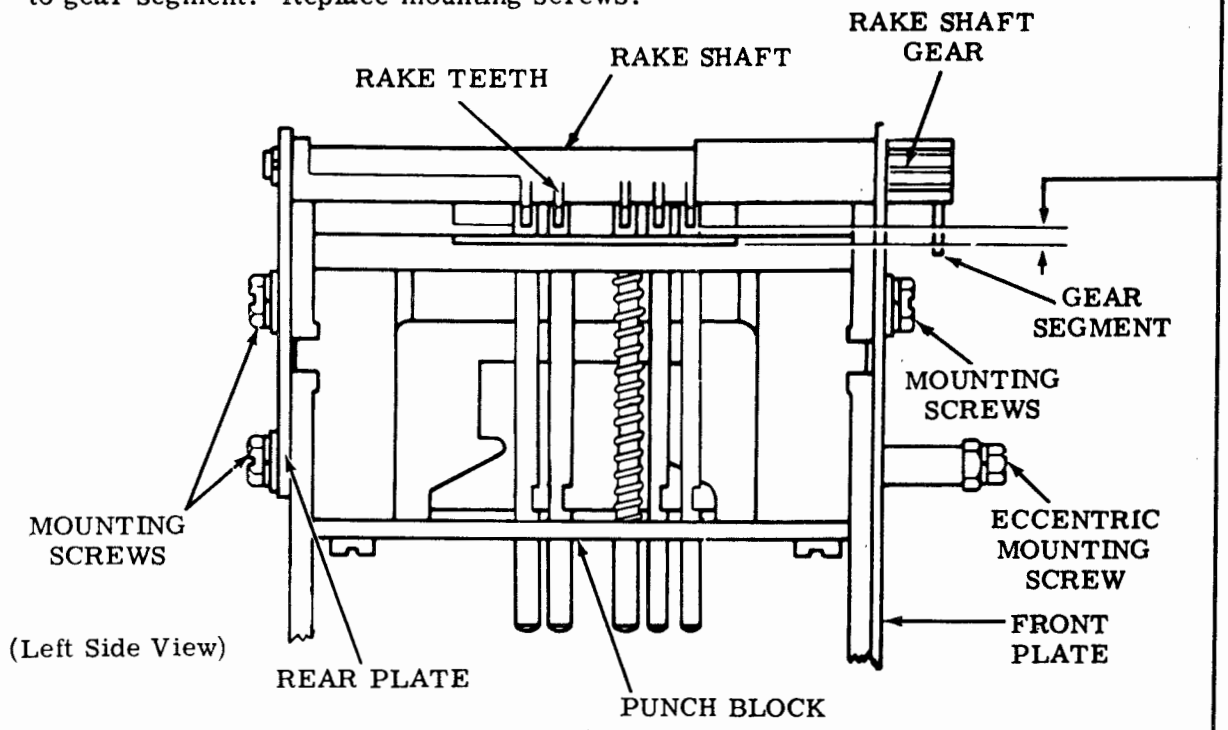
RAKE

(1) Requirement

With rotational play in rake taken up to left, bottom surface of rake teeth should be within 0.040 inch of the same vertical plane as left side of punch block or slightly to the right.

To Adjust

Remove two mounting screws from rear plate. Postion rake shaft gear in relation to gear segment. Replace mounting screws.



(2) Requirement

With bellcrank spring unhooked and rake in operated position, clearance between bottom of rake teeth and lower surface of tape slot

Min 0.007 inch---Max 0.011 inch

(check at no. 1 and 5 pins)

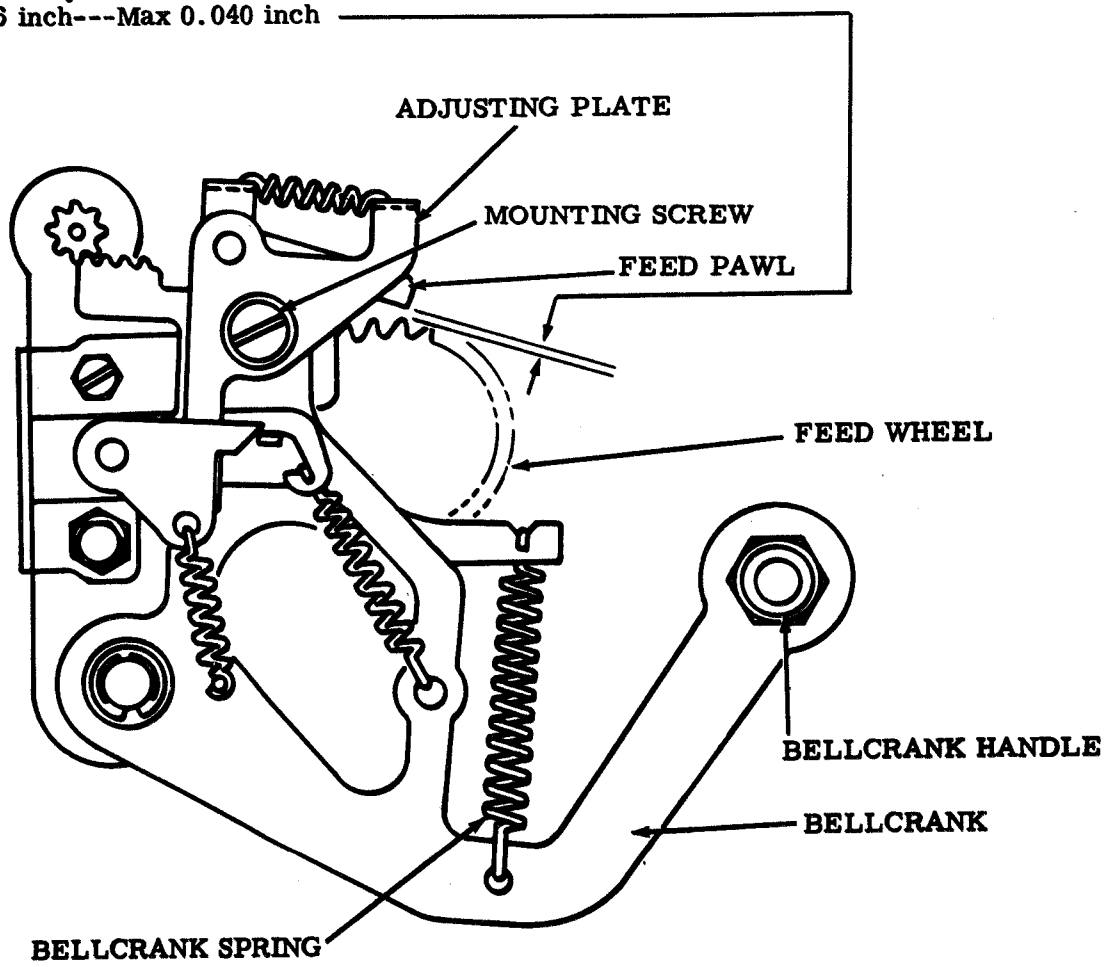
To Adjust

Loosen three mounting screws and eccentric mounting screw until friction tight. Position front and rear plates, with bellcrank handle fully depressed, until left edges of both plates are approximately in line with vertical plane of punch block and clearance meets the requirement. Tighten mounting screws and replace bellcrank spring.

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

FEED PAWL ADJUSTING PLATE

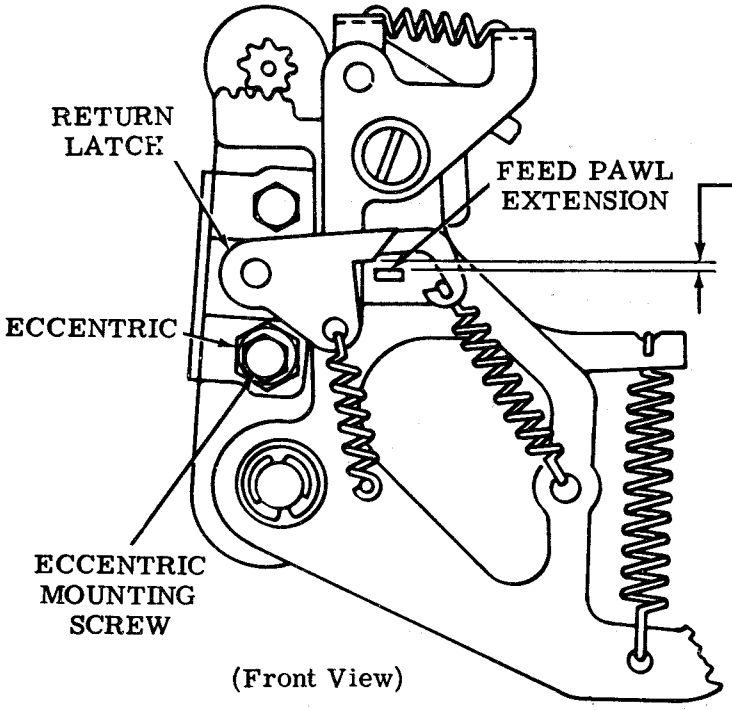
(1) Requirement (preliminary)
With bellcrank rotated clockwise, feed pawl should miss first tooth at point of least clearance by
Min 0.006 inch---Max 0.040 inch



(2) Requirement (final)
Feed pawl should miss first tooth and engage second tooth by at least 1/2 of right engaging surface of feed pawl (as gauged by eye when feed pawl first contacts ratchet tooth).

To Adjust
Position adjusting plate with mounting screw friction tight.

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

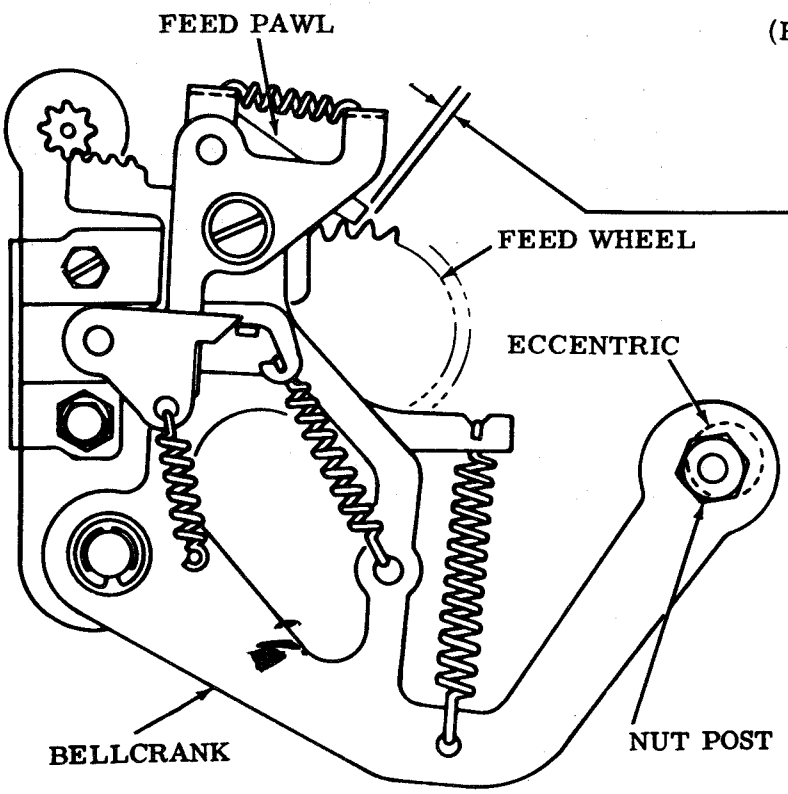


(Front View)

(A) RETURN LATCH

Requirement
Backspace mechanism in unoperatec position. Clearance between return latch and feed pawl extension
Min 0.004 inch---Max 0.020 incl

To Adjust
Adjust eccentric with mounting screw friction tight. Tighten screw



(Front View)

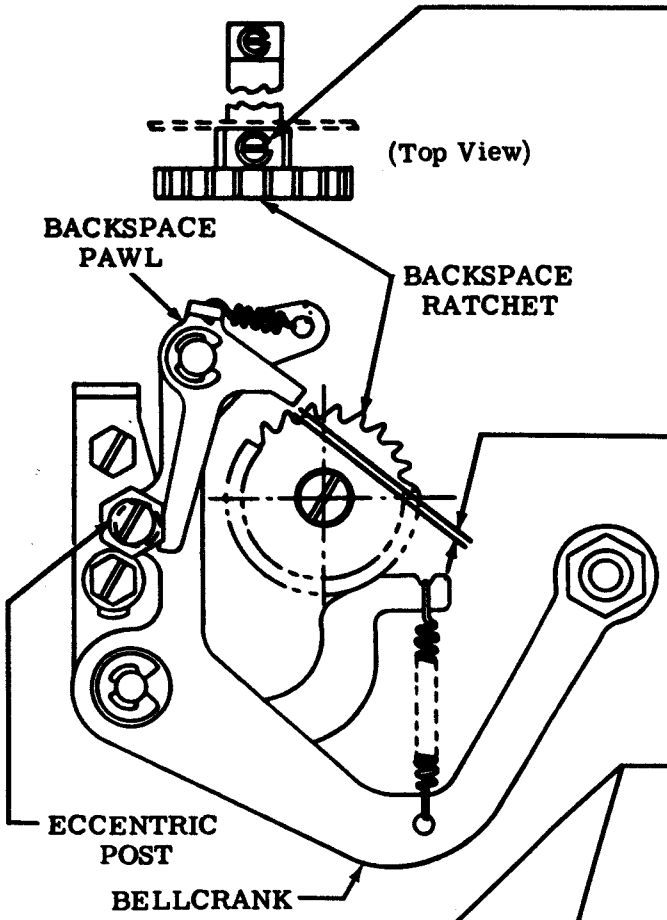
(B) FEED PAWL ECCENTRIC (Preliminary)

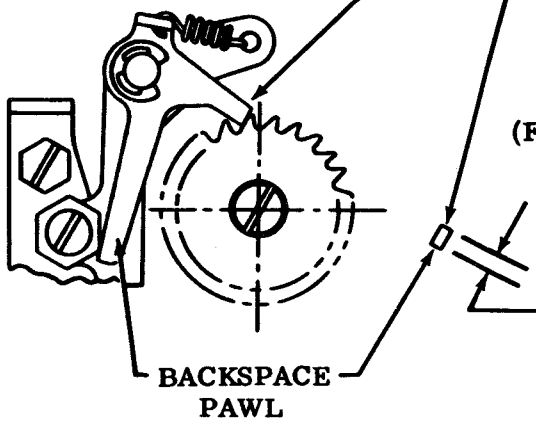
Requirement (Manual Backspace)
With the backspace bellcrank in its operated position and the feed wheel detented back one space
Min some---Max 0.003 inch clearance between the feed wheel ratchet tooth and the backspace feed pawl.

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

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

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





(A) BACKSPACE RATCHET

Requirement

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

To Adjust

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

(B) BACKSPACE PAWL CLEARANCE

(1) Requirement (Preliminary)

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

(2) Requirement (Final)

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

To Adjust

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

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

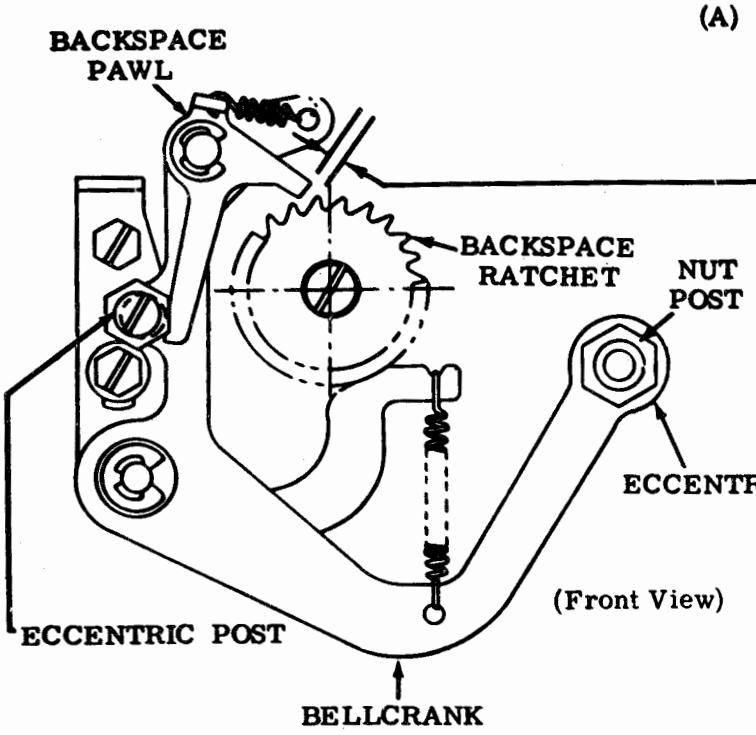
3.26 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) (continued)

(A) FEED PAWL ECCENTRIC (Preliminary)

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

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

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



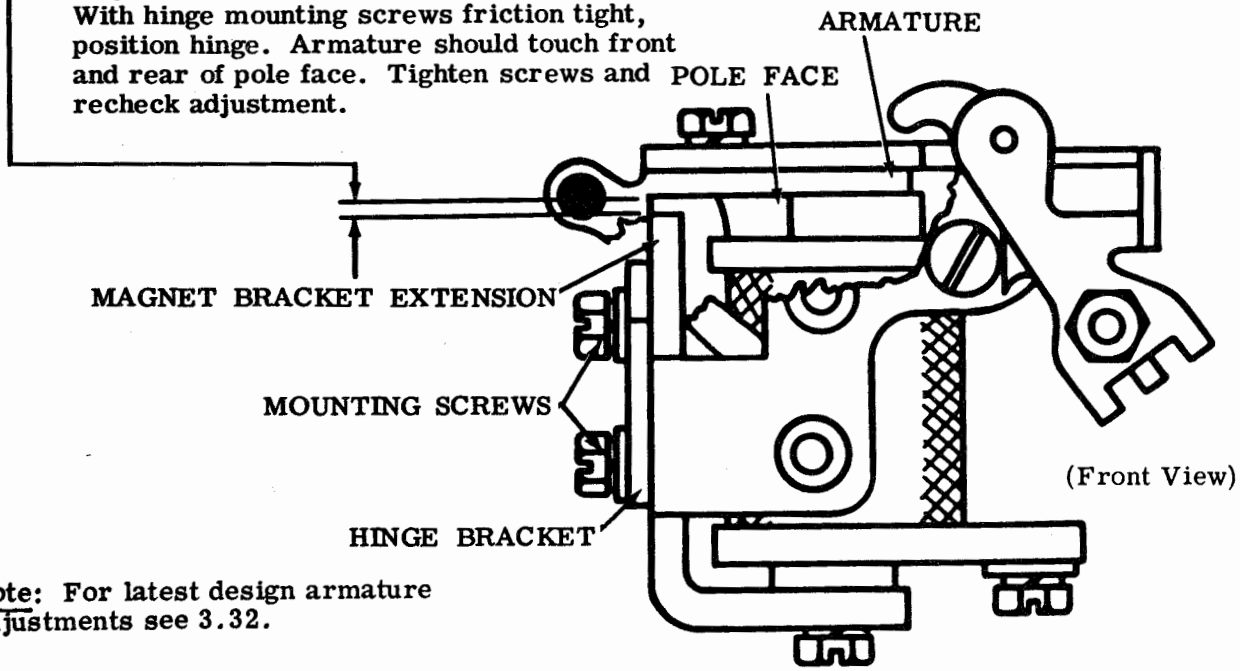
(Front View)

(B) ARMATURE HINGE (Early Design)

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

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

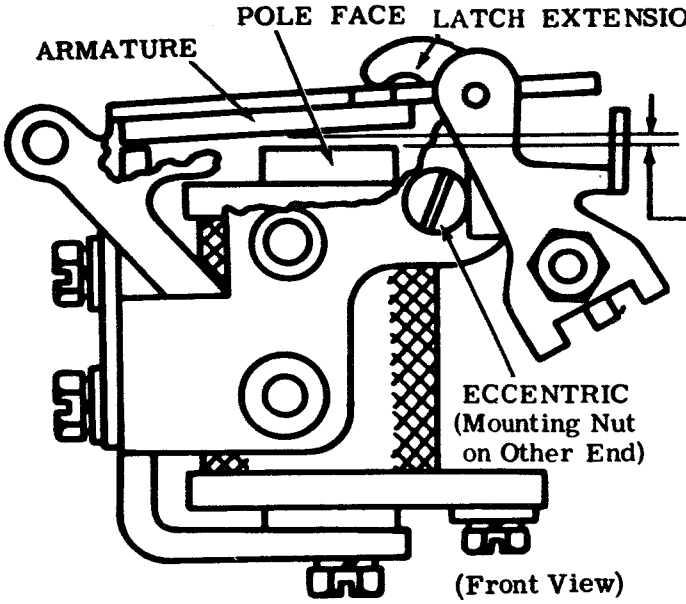
Note: For dc operation, the armature should be positioned so that the side marked "C" faces pole face of magnet core. For ac operation, unmarked side faces pole face of magnet core.



(Front View)

Note: For latest design armature adjustments see 3.32.

3.27 Power Drive Backspace Mechanism (For Fully Perforated Tape) (continued)



(A) ARMATURE UPSTOP (Early Design)

Requirement

Armature in unoperated position. Gap between armature and pole face Min 0.025 inch---Max 0.030 inch at closest point.

To Adjust

Rotate eccentric with mounting nut loosened. Keep high part of eccentric to left. Tighten nut.

Note: Adjustments (A) and (C) should not be disturbed unless a reassembly of the unit is undertaken. If necessary to make these adjustments the punch unit must be removed. See Disassembly and Reassembly Section 573-118-702TC.

(B) DRIVE LINK (Early Design)

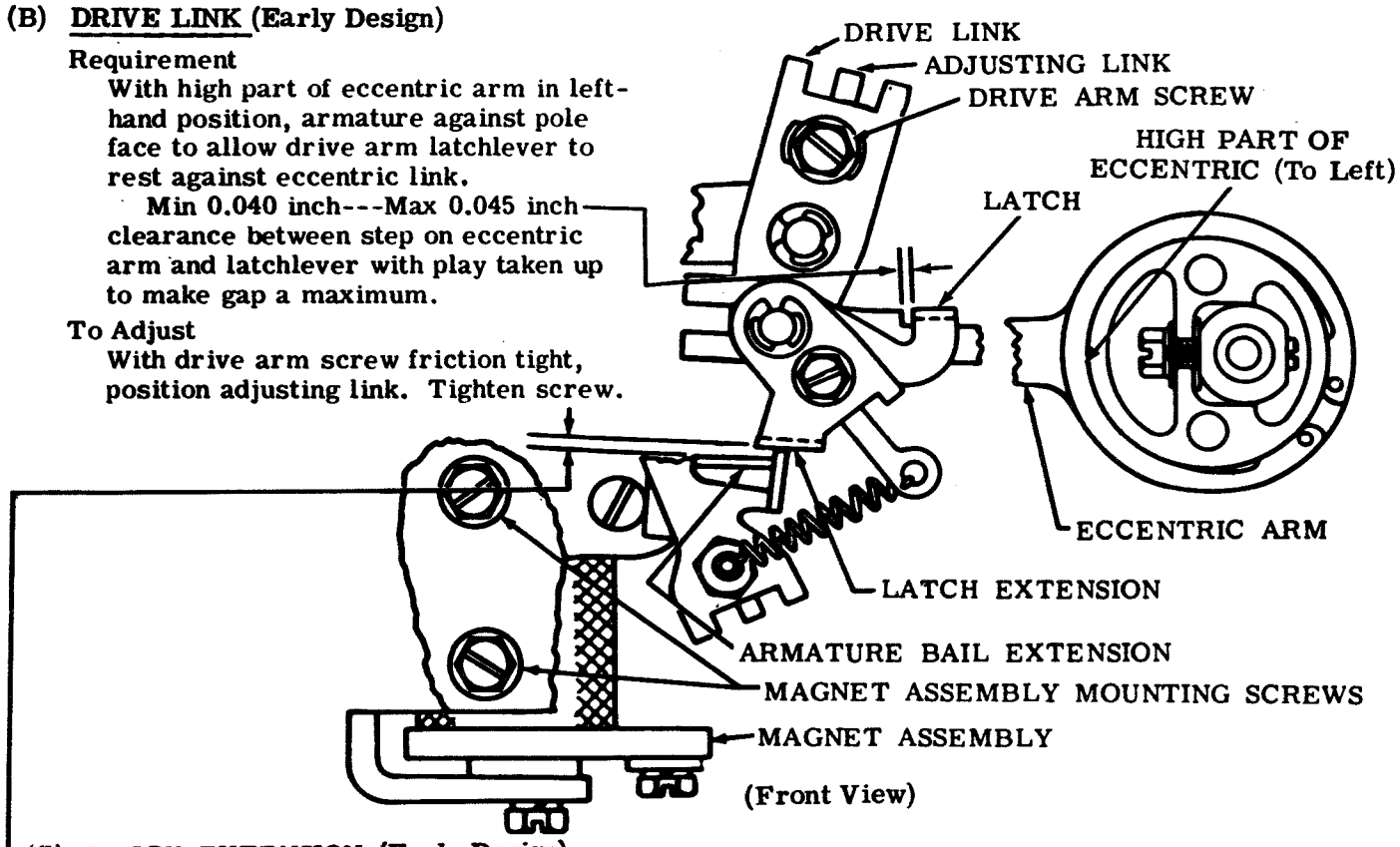
Requirement

With high part of eccentric arm in left-hand position, armature against pole face to allow drive arm latchlever to rest against eccentric link.

Min 0.040 inch---Max 0.045 inch clearance between step on eccentric arm and latchlever with play taken up to make gap a maximum.

To Adjust

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



(C) LATCH EXTENSION (Early Design)

Requirement

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

To Adjust

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

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

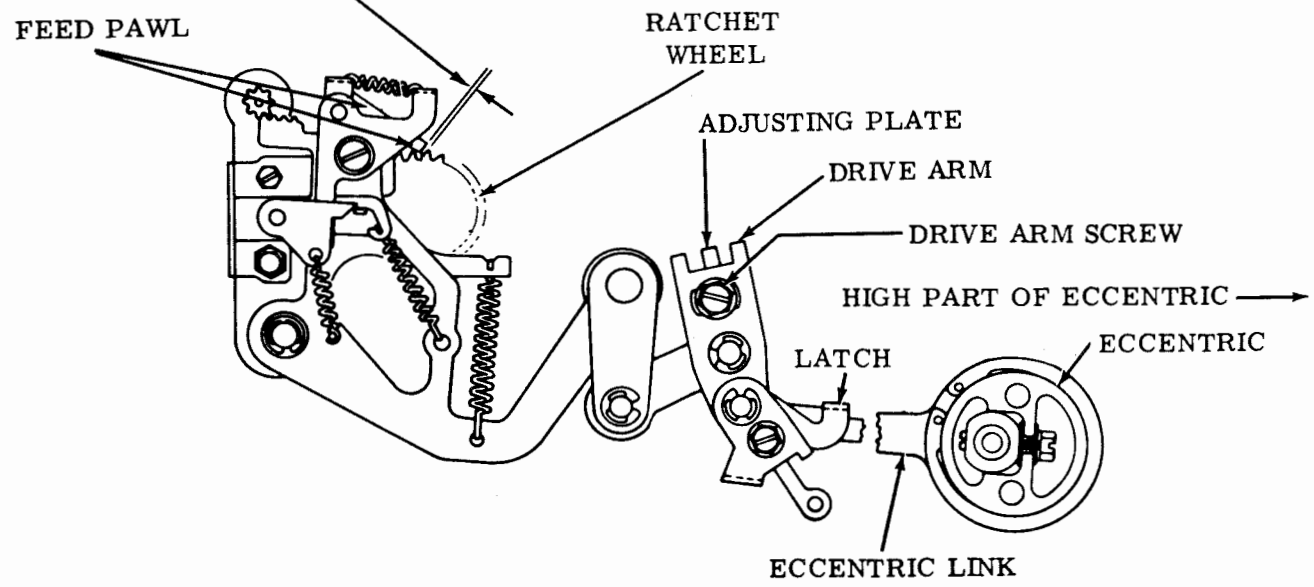
DRIVE ARM (Preliminary)

Requirement

With drive arm latchlever engaged with eccentric link, main shaft rotated to place eccentric in its extreme right-hand position and feed wheel detented back one space Min some---Max 0.003 inch clearance between the backspace feed pawl and the ratchet tooth. Check with feed wheel shaft oil hole in the uppermost position and recheck each 90 degrees about the periphery of the feed wheel.

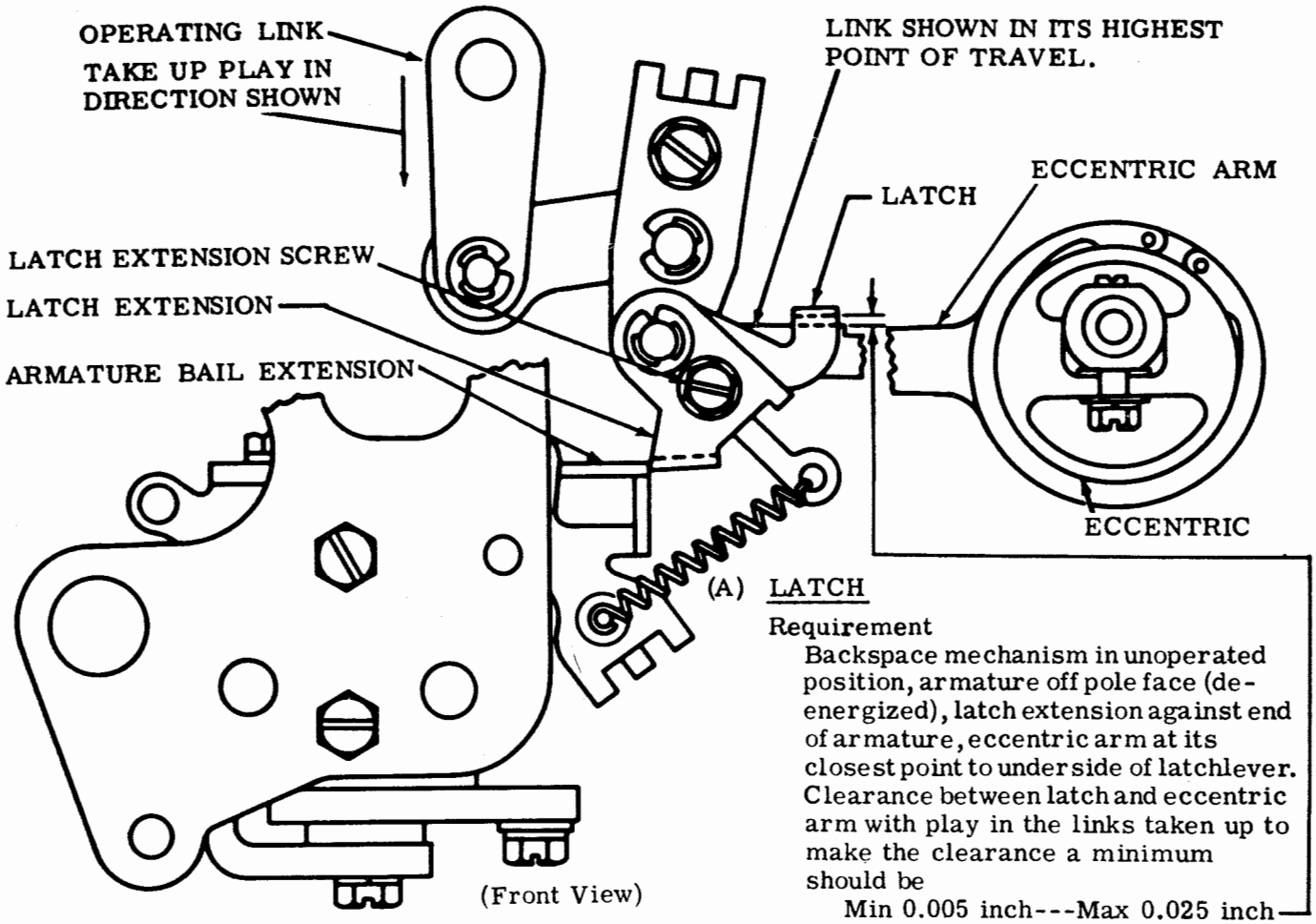
To Adjust

Loosen drive arm screw friction tight, and move adjusting plate.



(Front View)

3.29 Power Drive Backspace Mechanism (Early Design) (continued)



(A) LATCH

Requirement

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

Min 0.005 inch---Max 0.025 inch

To Adjust

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

(B) NONREPEAT ARM

Requirement

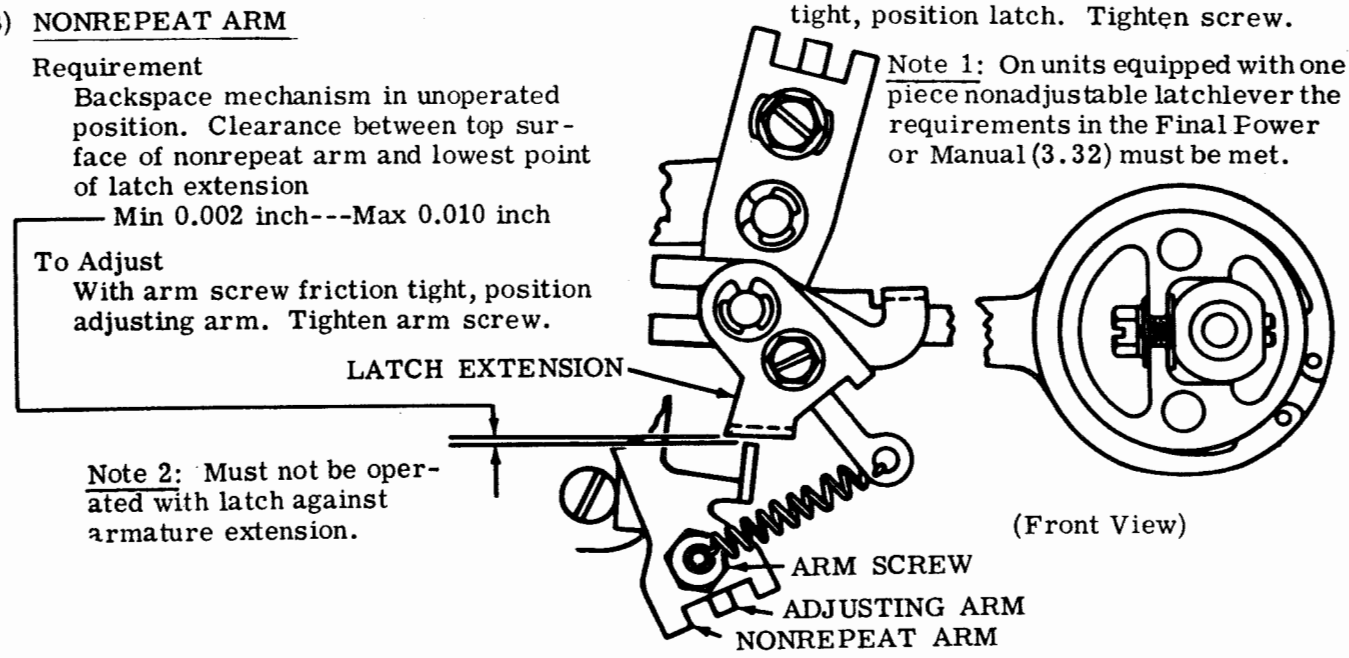
Backspace mechanism in unoperated position. Clearance between top surface of nonrepeat arm and lowest point of latch extension

Min 0.002 inch---Max 0.010 inch

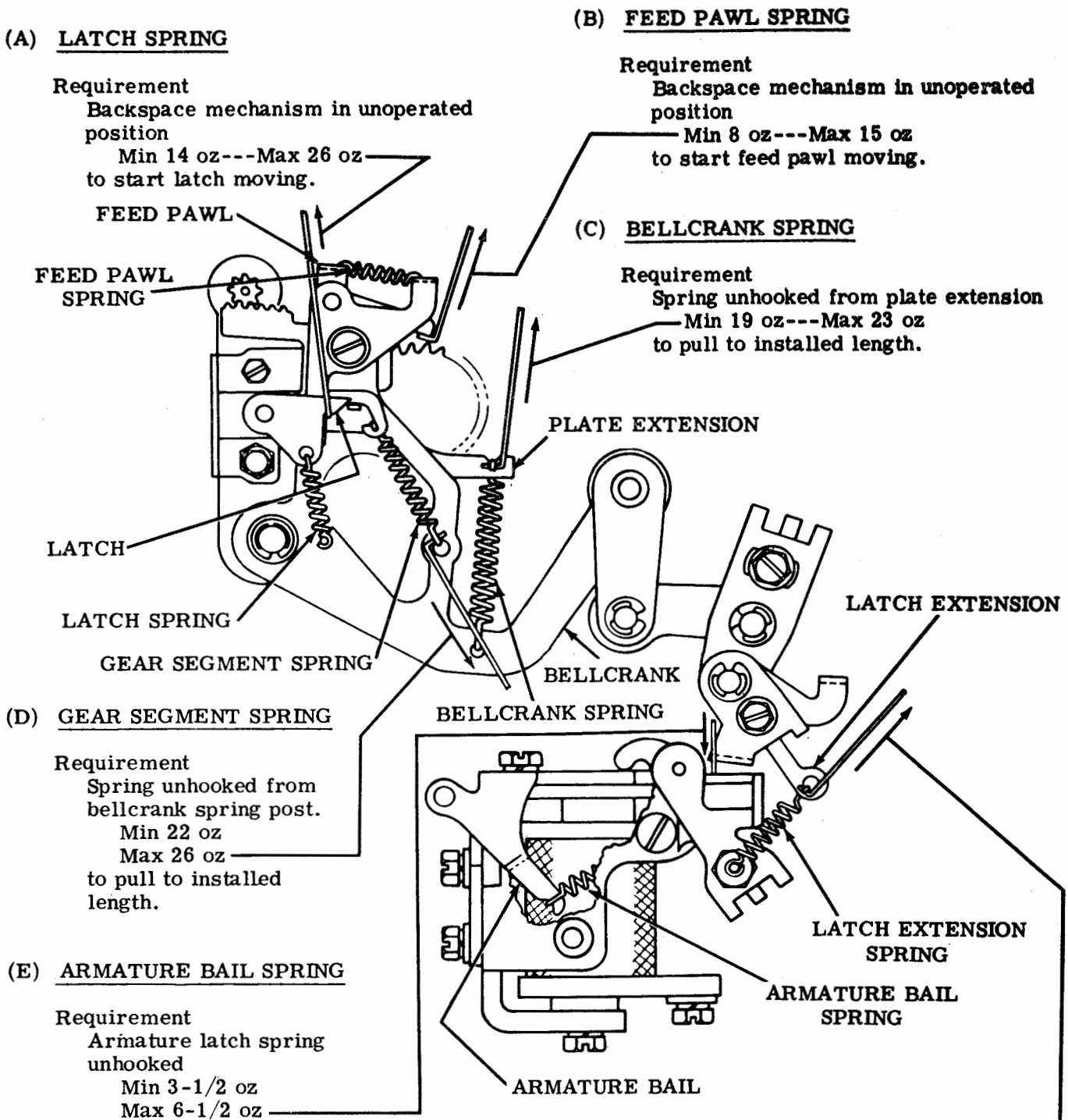
To Adjust

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

Note 1: On units equipped with one piece nonadjustable latchlever the requirements in the Final Power or Manual (3.32) must be met.



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



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

(A) FEED PAWL SPRING

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

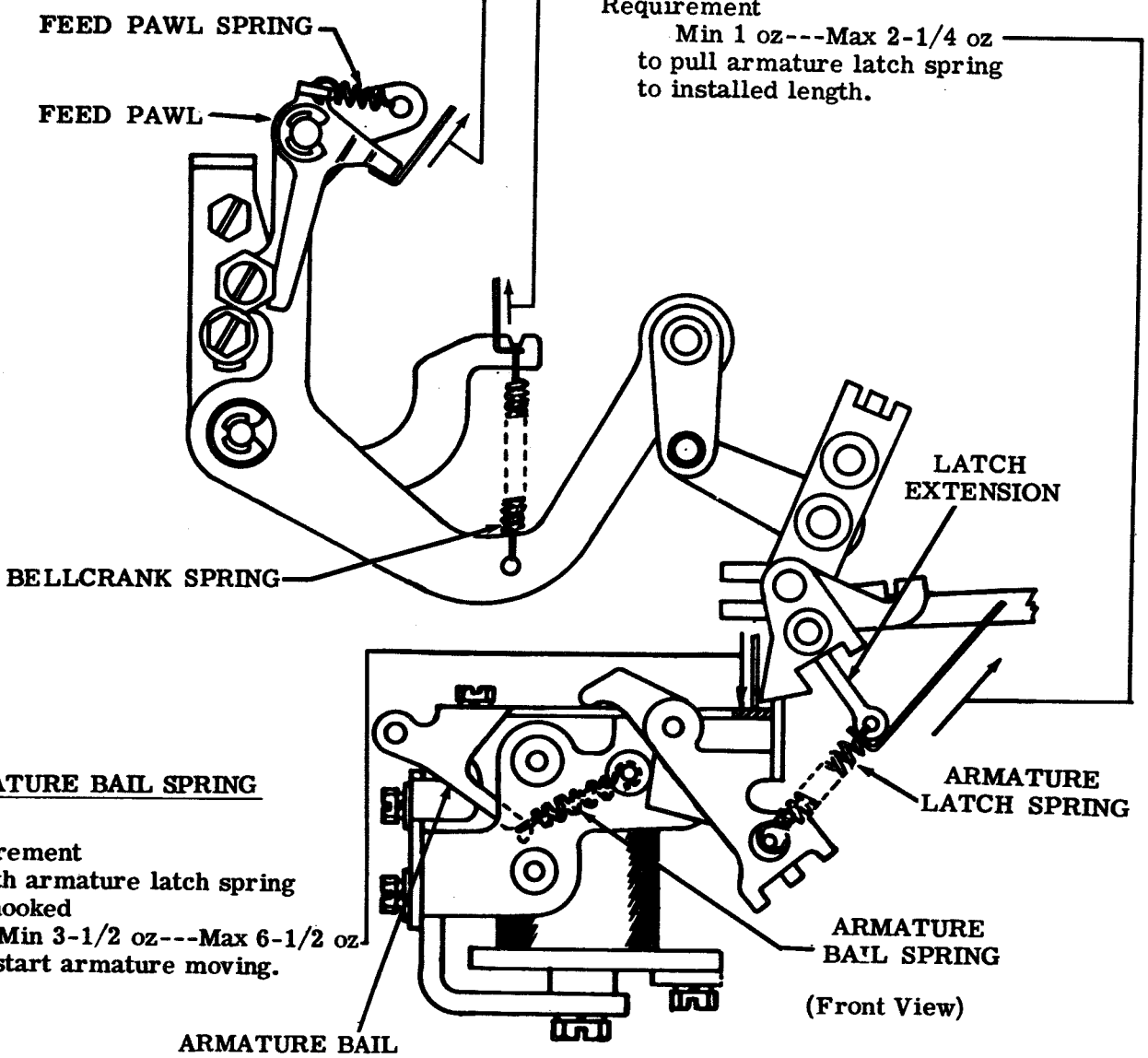
Note: All spring tensions should be taken with the mechanism in unoperated position.

(B) BELLCRANK SPRING

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

(C) ARMATURE LATCH SPRING

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



(D) ARMATURE BAIL SPRING

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

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

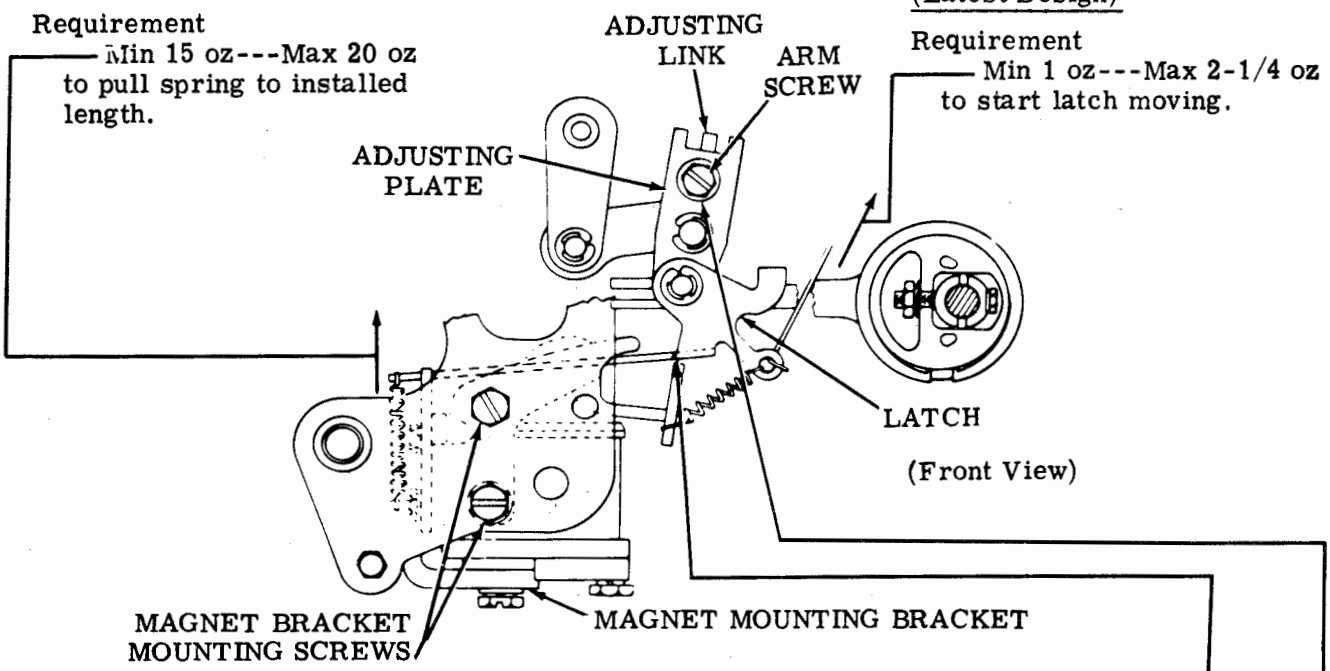
Note 1: For early design adjustable magnet assembly see 3.26.

(A) ARMATURE SPRING (Latest Design)

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

(B) LATCH EXTENSION SPRING (Latest Design)

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



(C) MAGNET POSITION (Latest Design)

Requirement
The armature extension should engage the latch by approximately its full thickness when the magnet is de-energized.

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

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

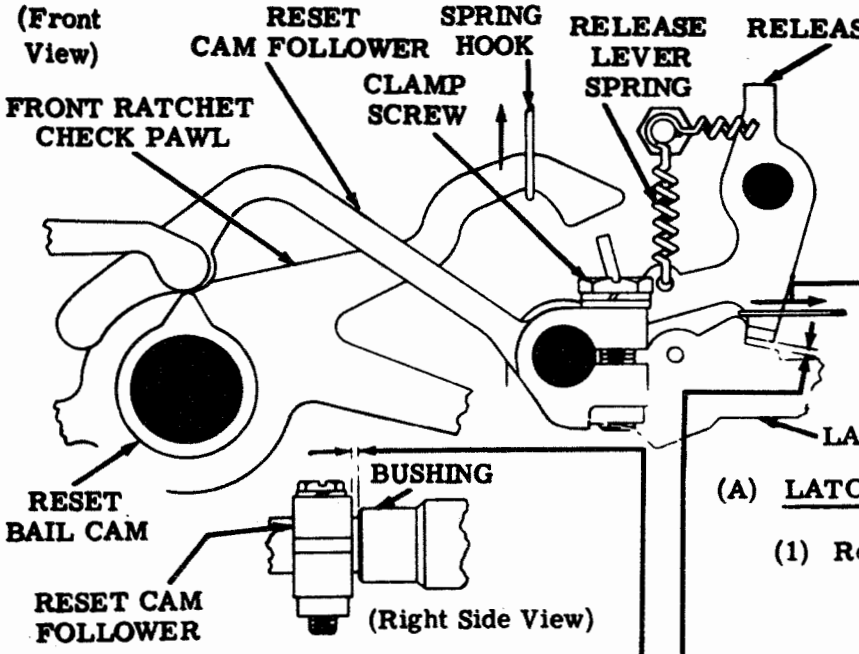
Note 2: This is the final adjustment for all backspace mechanisms, manual or power drive, regardless of the type of unit.

(1) Requirement
With tape in the unit, place the feed wheel shaft oil hole in its uppermost position; operate the backspace mechanism once. The ratchet wheel should be backed one space into a fully detented position.
Note 3: A fully detented position is defined as: With the detent roller in contact with the ratchet wheel the punch unit feed pawl should engage the first tooth below the horizontal centerline of the feed wheel ratchet with no perceptible clearance.

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

To Adjust
On manual operated backspace mechanisms refine the FEED PAWL ECCENTRIC (Preliminary) 3.26 adjustment. On backspace mechanisms equipped with power drive, loosen the arm adjusting screw and position the adjusting plate. Tighten the arm adjusting screw.

3.33 Automatic Noninterfering LTRS and BLANK Tape Feed Out Mechanisms



(C) RELEASE LEVER SPRING

Requirement
Trip selector clutch. Rotate main shaft until reset cam follower is on peak of reset bail cam. With spring hook, hold front ratchet check pawl away from release lever.
Min 5 oz---Max 7 oz to start release lever moving.

(A) LATCHLEVER

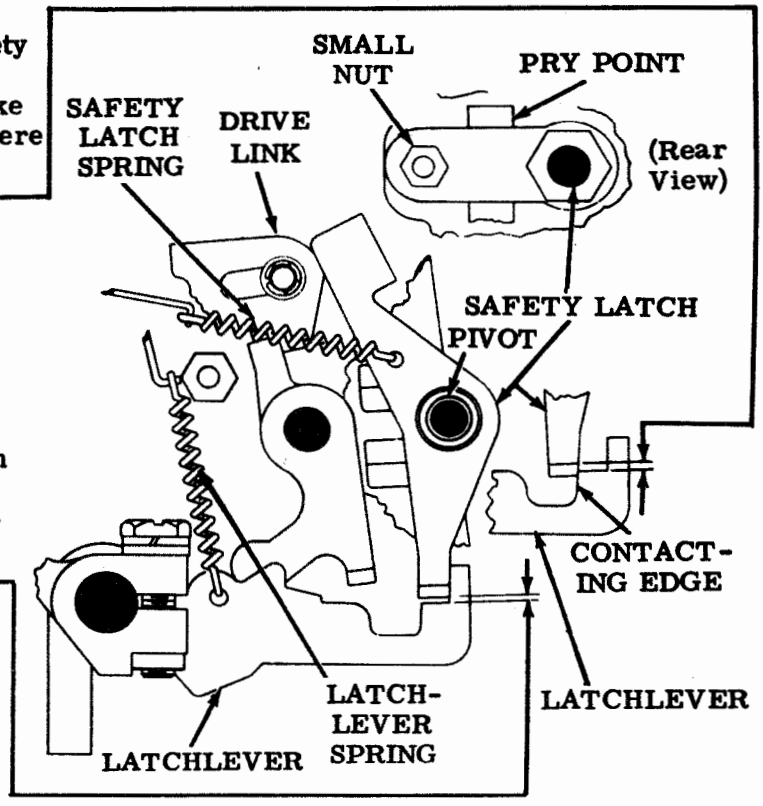
(1) Requirement
Trip selector clutch. Rotate main shaft until reset cam follower is on peak of reset bail cam, where clearance is at a minimum.
Min 0.018 inch---Max 0.028 inch between release lever and latchlever.

(2) Requirement
Min some---Max 0.008 inch endplay between cam follower and bushing

(B) SAFETY LATCH

(1) Requirement
Trip function clutch by rotating main trip lever counterclockwise. Rotate main shaft until drive link is to extreme left. Trip selector clutch and rotate main shaft until reset cam follower is on peak of cam where clearance between safety latch and latchlever is minimum. Take up play in safety latch to make clearance minimum. Measure where it is minimum.
Min some---Max 0.005 inch

To Adjust
With small nut loosened, position safety latch pivot by means of pry point.



(2) Requirement
Trip selector clutch. Rotate main shaft until right edge of safety latch and contacting edge of latch-lever are in line.
Max 0.030 inch of safety latch not engaged by latchlever.

To Adjust
Refine requirement (1) and LATCHLEVER adjustment.

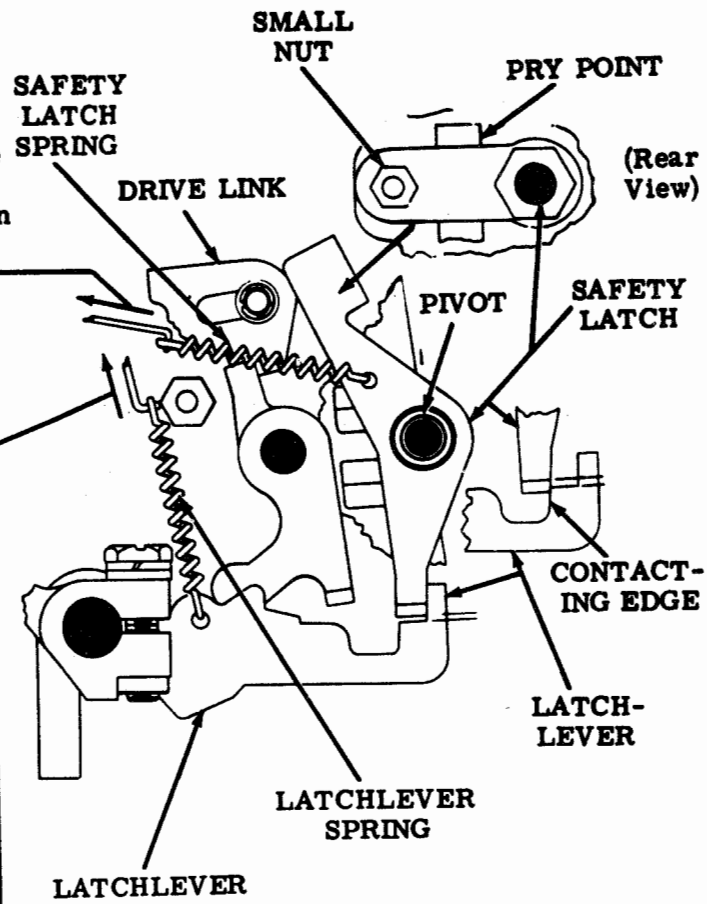
3.34 Automatic Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

(E) SAFETY LATCH SPRING

Requirement
Trip function clutch by pivoting main trip lever counterclockwise. Rotate main shaft until drive link is to extreme left. Trip selector clutch and rotate main shaft until reset cam follower is on peak of cam.
Min 1-1/2 oz---Max 3 oz
to pull spring to installed length.

(D) LATCHLEVER SPRING

Requirement
Trip selector clutch. Rotate main shaft until reset cam follower is on peak of reset bail cam.
Min 2 oz---Max 4 oz
(for automatic noninterfering LTRS tape feed out mechanism)
Min 7 oz---Max 10 oz
(for automatic noninterfering BLANK tape feed out mechanism)
to pull spring to installed length.



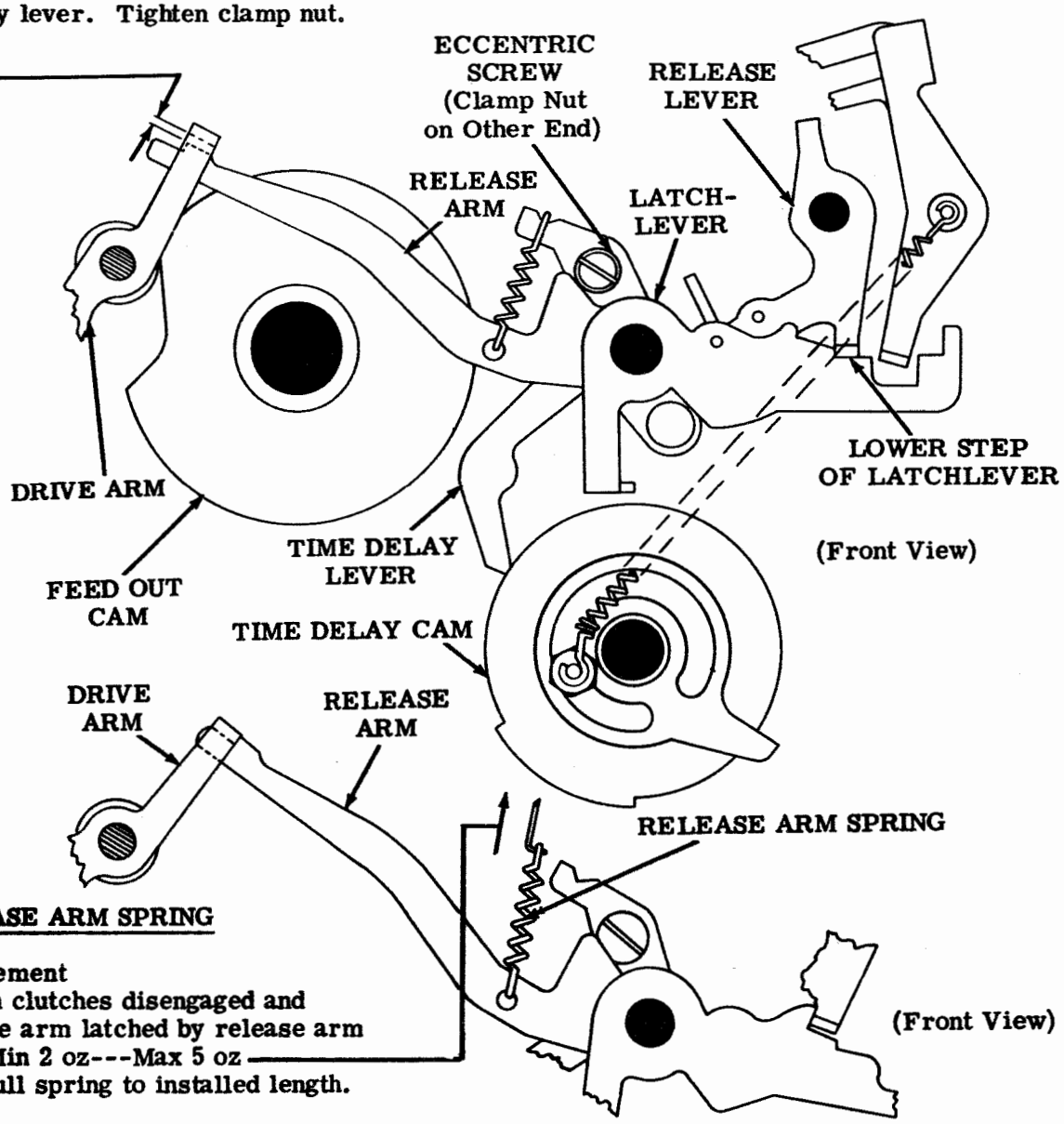
3.35 Automatic Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

(A) RELEASE ARM

(1) Requirement
Place unit in feed out cycle by positioning release lever on lower step of latch-lever. Advance ratchets beyond time delay (high part of time delay cam beyond time delay lever). Position feed out cam as shown.
Min 0.010 inch---Max 0.030 inch
between drive arm and release arm.

(2) Requirement
With unit in the stop position
Max 0.015 inch
of the drive bail unengaged by the release arm.

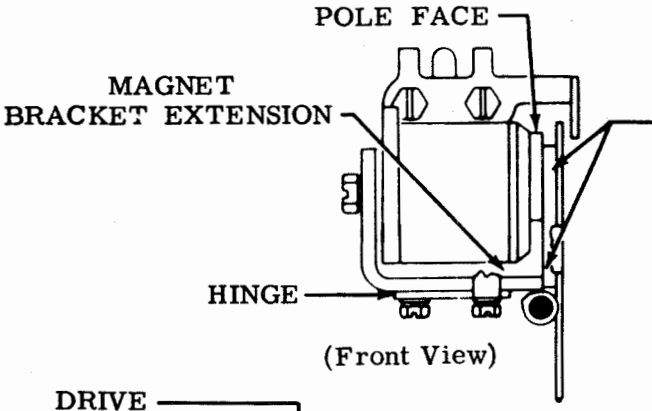
To Adjust
With clamp nut loosened, position release arm by means of eccentric screw on time delay lever. Tighten clamp nut.



(B) RELEASE ARM SPRING

Requirement
With clutches disengaged and drive arm latched by release arm
Min 2 oz---Max 5 oz
to pull spring to installed length.

3.36 Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms
(For Earlier Design Noninterfering BLANK
Tape Feed Out Mechanism see 4.06)



(Front View)

(A) ARMATURE HINGE

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

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

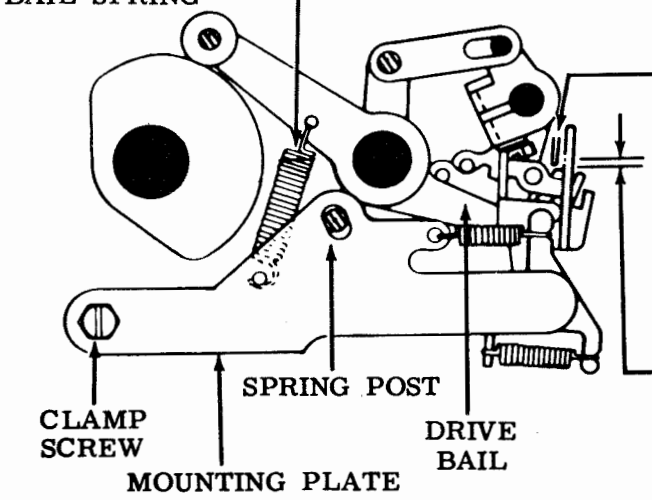
(B) DRIVE BAIL SPRING

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

(C) MOUNTING PLATE

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

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

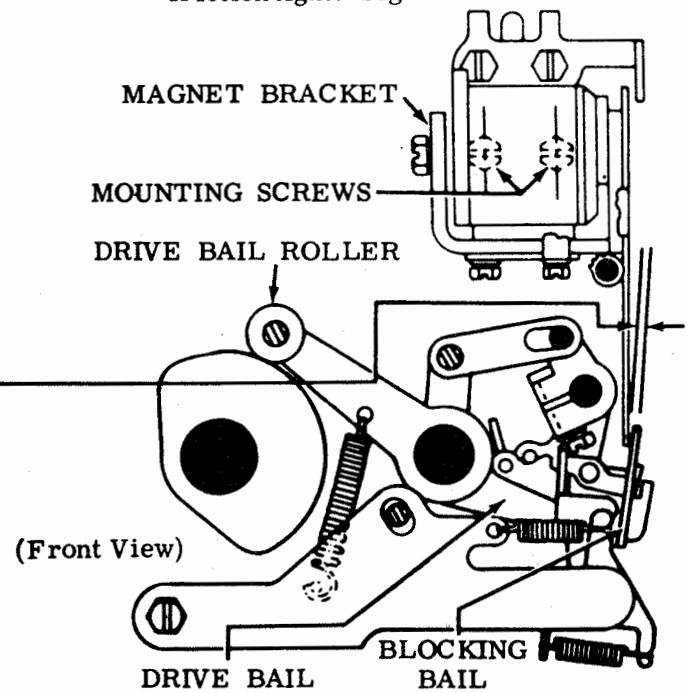


(Front View)

(D) MAGNET ASSEMBLY

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

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



(Front View)

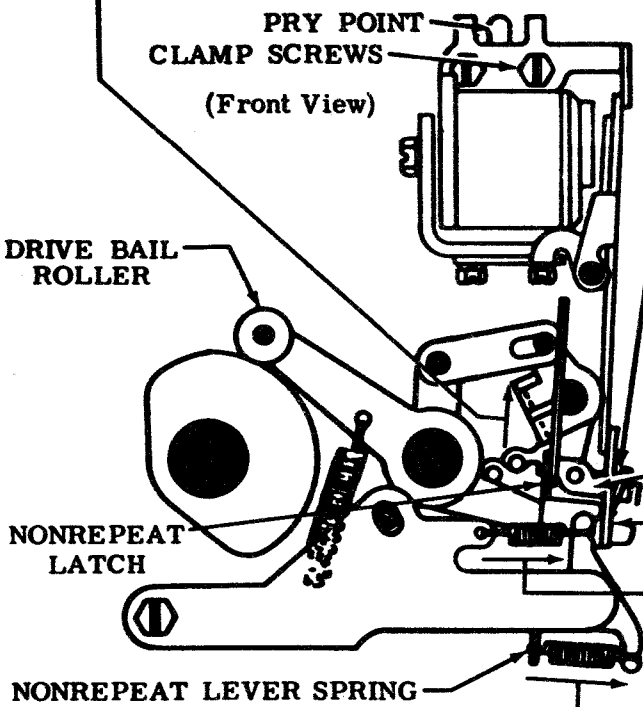
3.37 Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

(A) BLOCKING LATCH TORSION SPRING

Requirement

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

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



(B) ARMATURE BACKSTOP

(1) Requirement

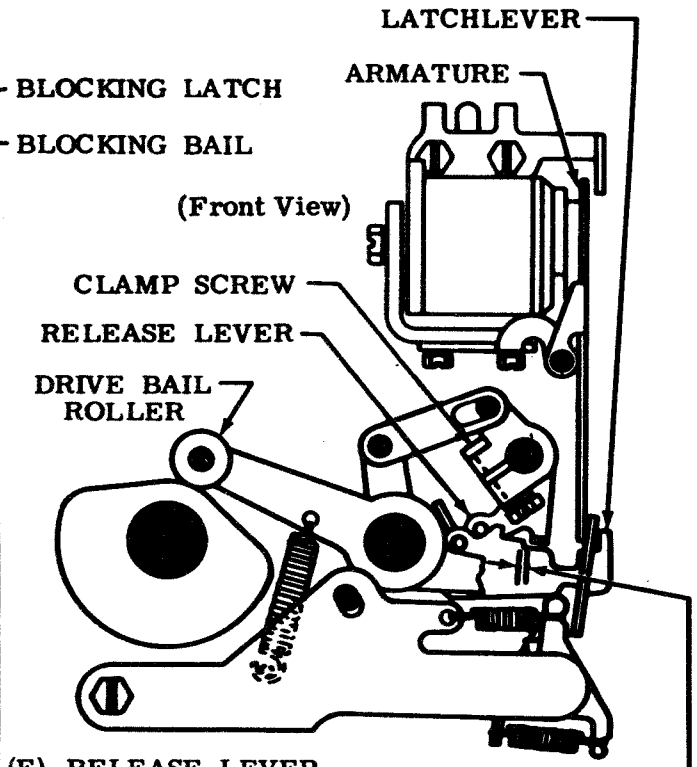
With armature in operated position, rotate main shaft until drive bail roller is on high part of its cam. The drive bail should engage the blocking bail by at least 2/3 of its thickness.

(2) Requirement

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

To Adjust

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



(C) NONREPEAT LEVER SPRING

Requirement

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

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

(D) BLOCKING BAIL SPRING

Requirement

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

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

(E) RELEASE LEVER

Requirement

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

Min 0.010 inch---Max 0.025 inch

To Adjust

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

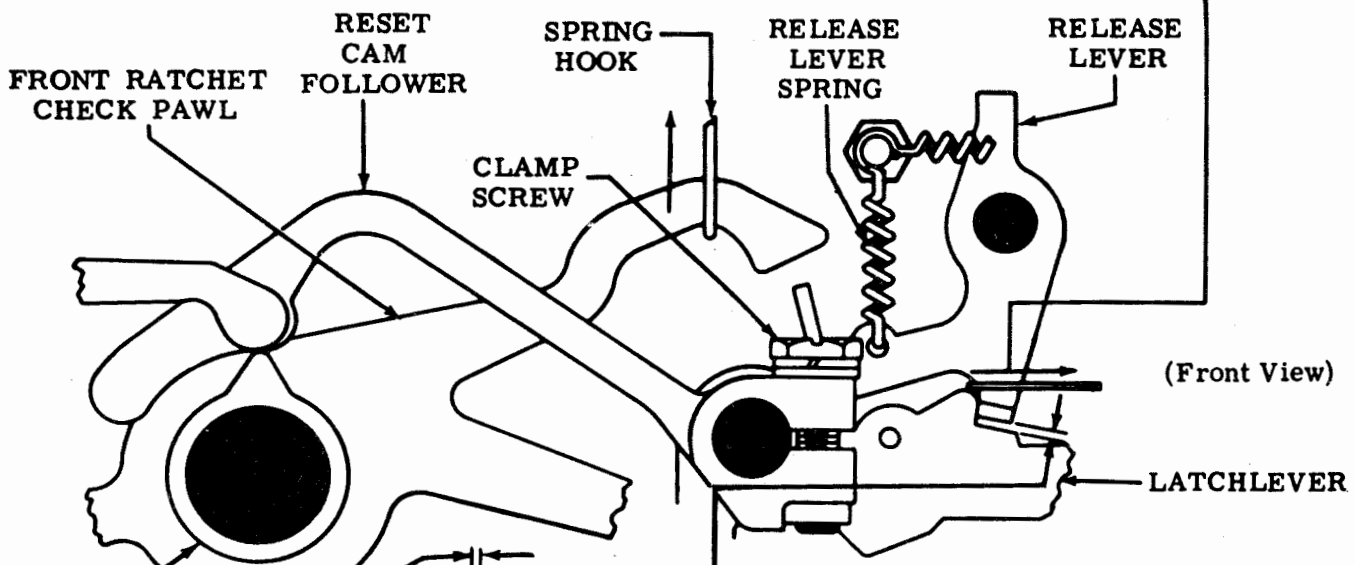
3.38 Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

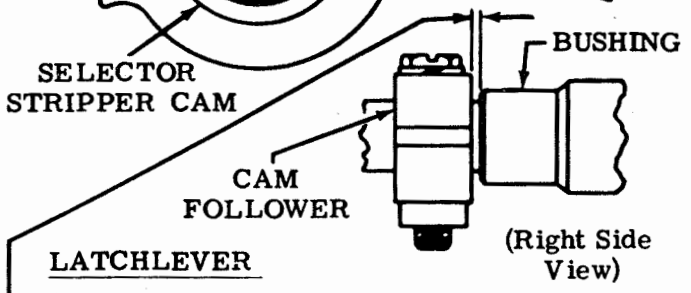
RELEASE LEVER SPRING

Requirement

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

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





LATCHLEVER

(1) Requirement

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

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

(2) Requirement

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

To Adjust

Position latchlever with clamp screw on stripper cam follower loosened.

LATCHLEVER SPRING

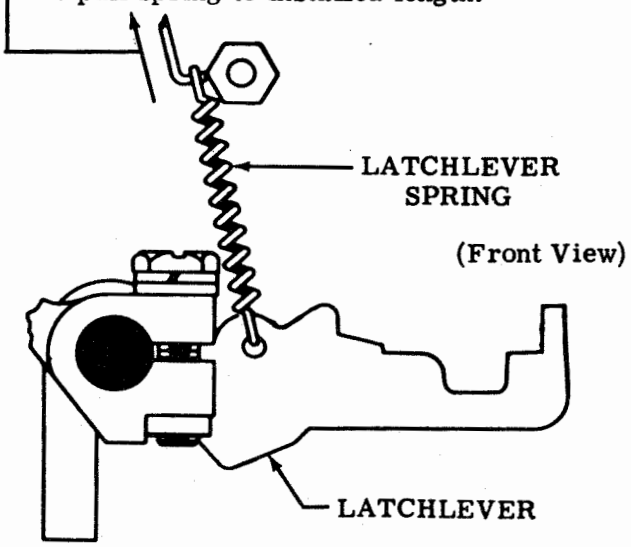
Requirement

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

Min 2 oz---Max 4 oz (for remote control noninterfering LTRS tape feed out mechanism)

Min 9 oz---Max 12 oz (for remote control noninterfering BLANK tape feed out mechanism)

to pull spring to installed length.



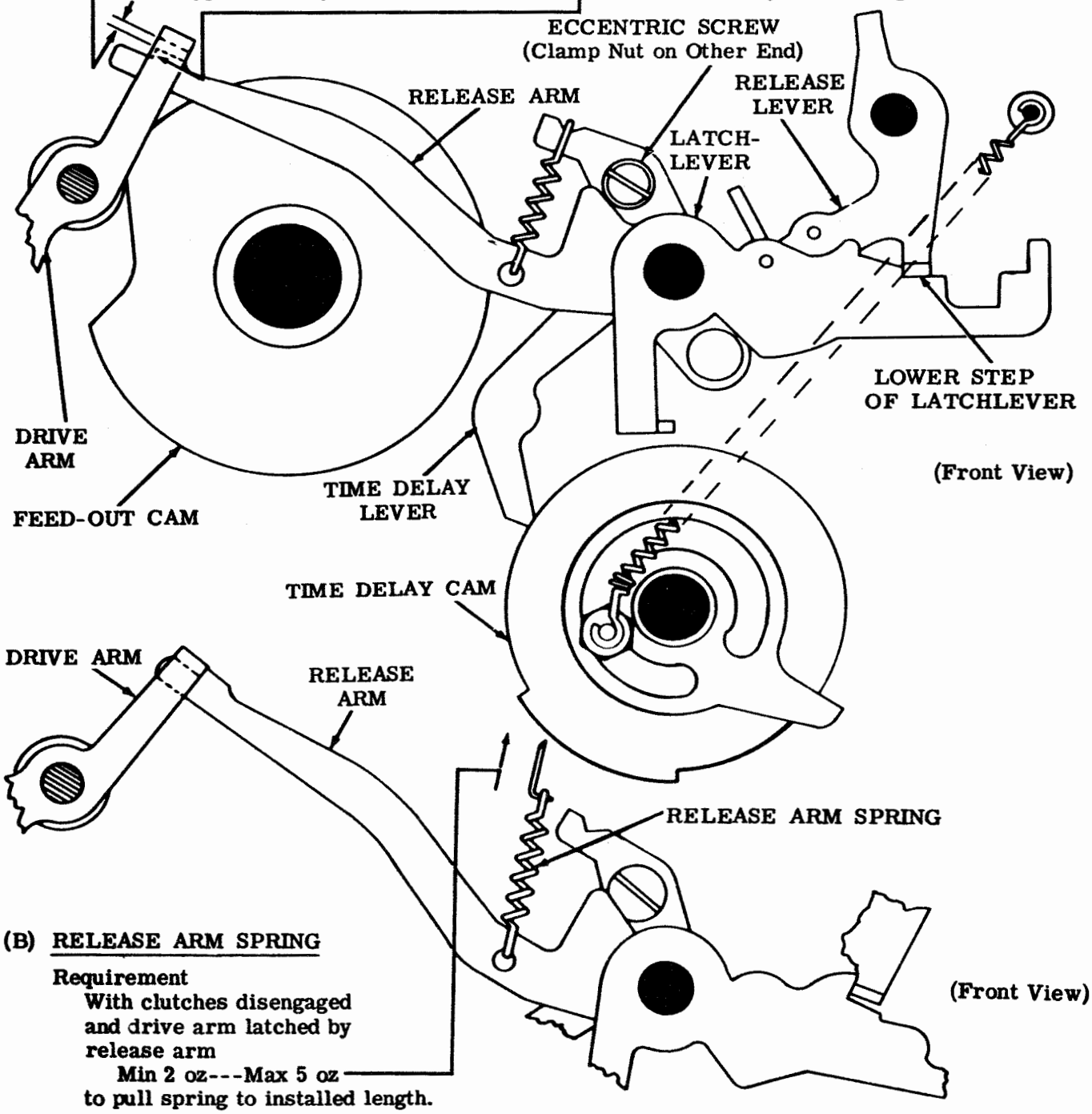
3.39 Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

(A) RELEASE ARM

(1) Requirement
With unit in the feed out cycle, ratchets advanced beyond the time delay, clearance between the drive arm and upper surface of release arm
Min 0.010 inch---Max 0.030 inch
Rotate cam so that the mating surfaces of the drive arm bail and release arm are approximately parallel.

(2) Requirement
With unit in stop position, the surface of the drive arm bail that does not engage the release arm should not exceed
Max 0.015 inch

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



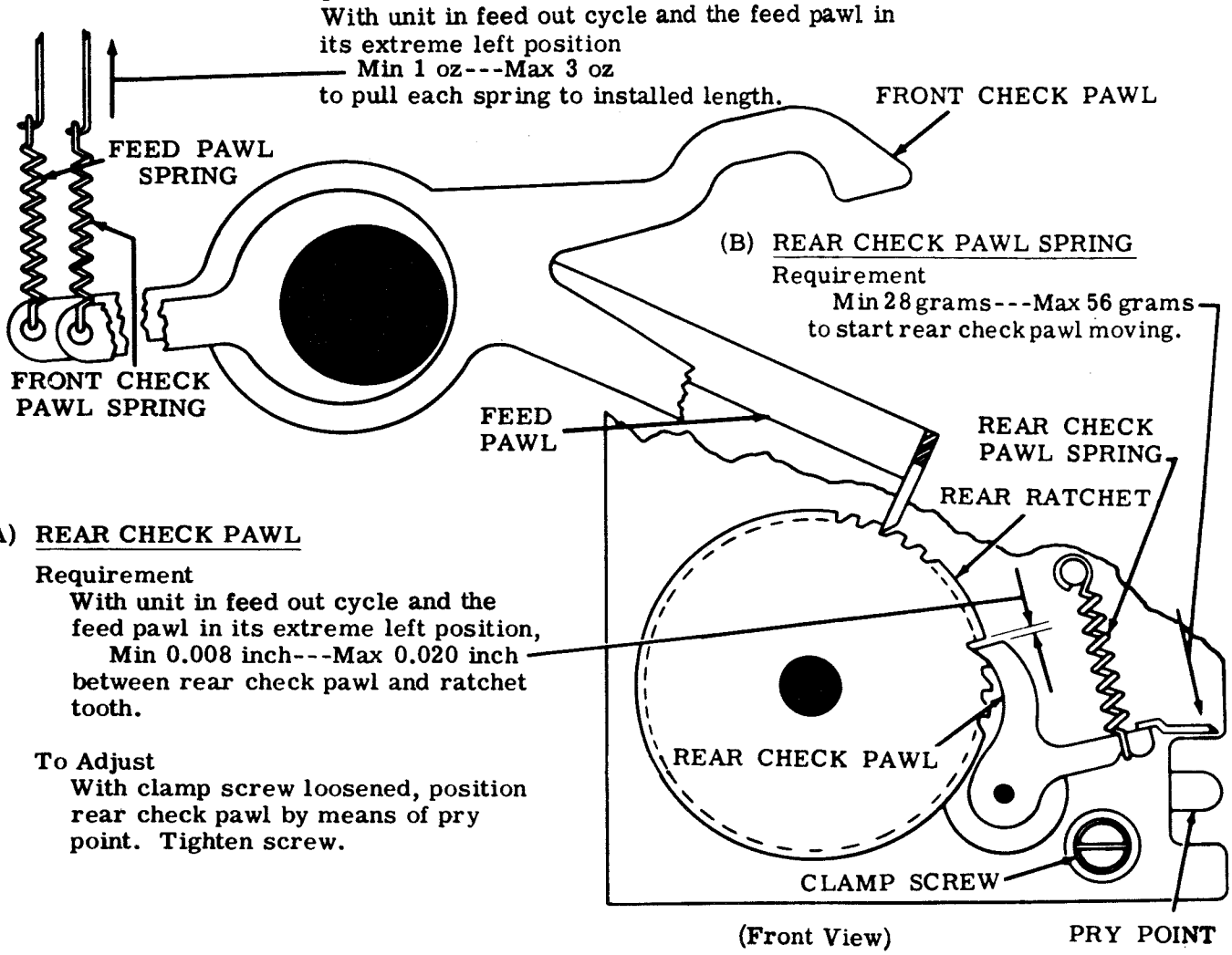
(B) RELEASE ARM SPRING

Requirement
With clutches disengaged and drive arm latched by release arm
Min 2 oz---Max 5 oz
to pull spring to installed length.

3.40 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms

(C) FEED PAWL AND FRONT CHECK PAWL SPRINGS

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



(Front View)

(A) REAR CHECK PAWL

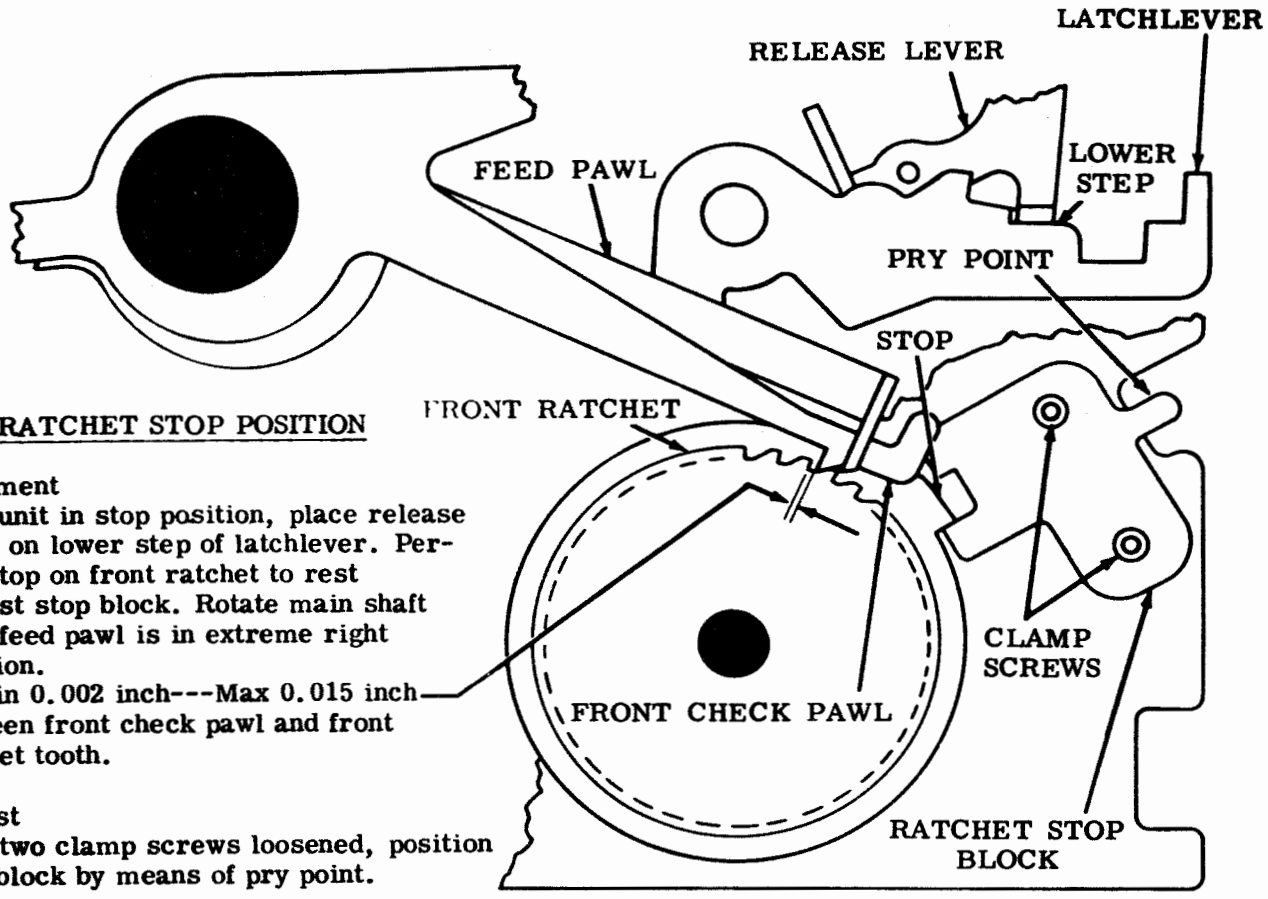
Requirement
With unit in feed out cycle and the feed pawl in its extreme left position,
Min 0.008 inch---Max 0.020 inch
between rear check pawl and ratchet tooth.

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

Note: Proceed to FRONT RATCHET STOP POSITION (3.41) adjustment.

3.41 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

Note: See REAR CHECK PAWL (3.40) adjustment before making this adjustment.



FRONT RATCHET STOP POSITION

Requirement

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

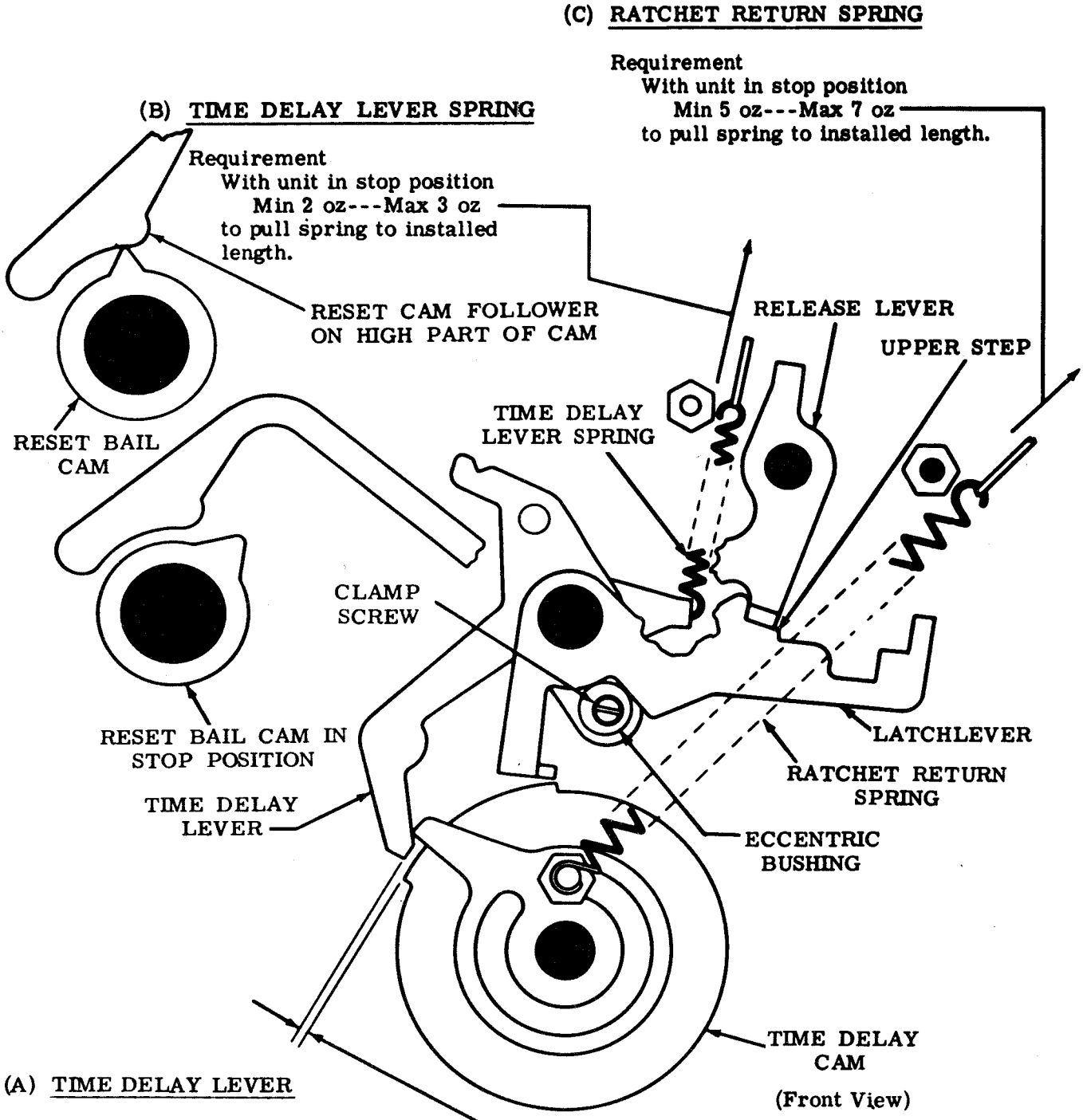
Min 0.002 inch---Max 0.015 inch between front check pawl and front ratchet tooth.

To Adjust

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

(Front View)

3.42 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)



(A) TIME DELAY LEVER

(1) Requirement
Trip selector clutch and rotate main shaft until reset cam follower is on high part of reset bail cam.
Min 0.040 inch---Max 0.060 inch clearance between time delay lever and high part of time delay cam.

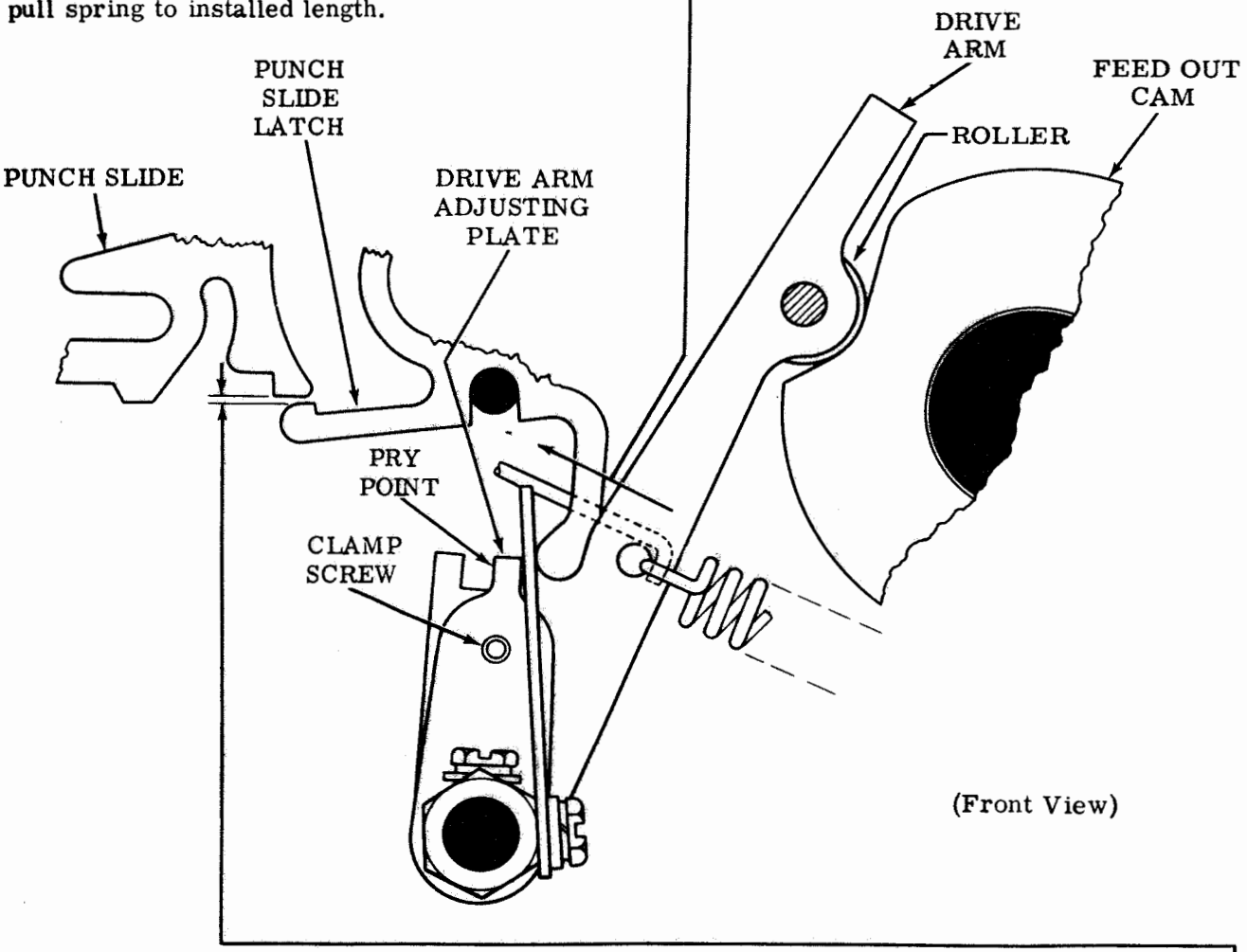
(2) Requirement
With unit in stop position
Min some clearance between time delay lever and high part of time delay cam.

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

3.43 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

DRIVE ARM SPRING

Requirement
With unit in feed out cycle and drive arm roller held firmly against its cam indent, it should require
Min 42 oz---Max 50 oz
to pull spring to installed length.



3.44 Automatic and Remote Control Noninterfering LTRS Tape Feed Out Mechanisms (continued)

PUNCH SLIDE LATCH

Requirement
Set up BLANK code combination in selector. Place unit in feed out cycle, the ratchets advanced beyond the time delay and the drive arm on the low part of its cam.
Min 0.010 inch---Max 0.030 inch
between punch slide and punch slide latch at slide where clearance is least.

Note: See that reset bail is tripped.

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

3.45 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

(B) ADJUSTING LEVER

(1) Requirement
Place unit in feed out cycle by positioning release lever on lower step of latchlever and advancing high part of time delay cam beyond time delay lever. Position main shaft so that drive arm roller is on low part of cam.
Min 0.010 inch---Max 0.030 inch between release and main trip lever.

(2) Requirement
Some clearance between main trip lever and downstop bracket.

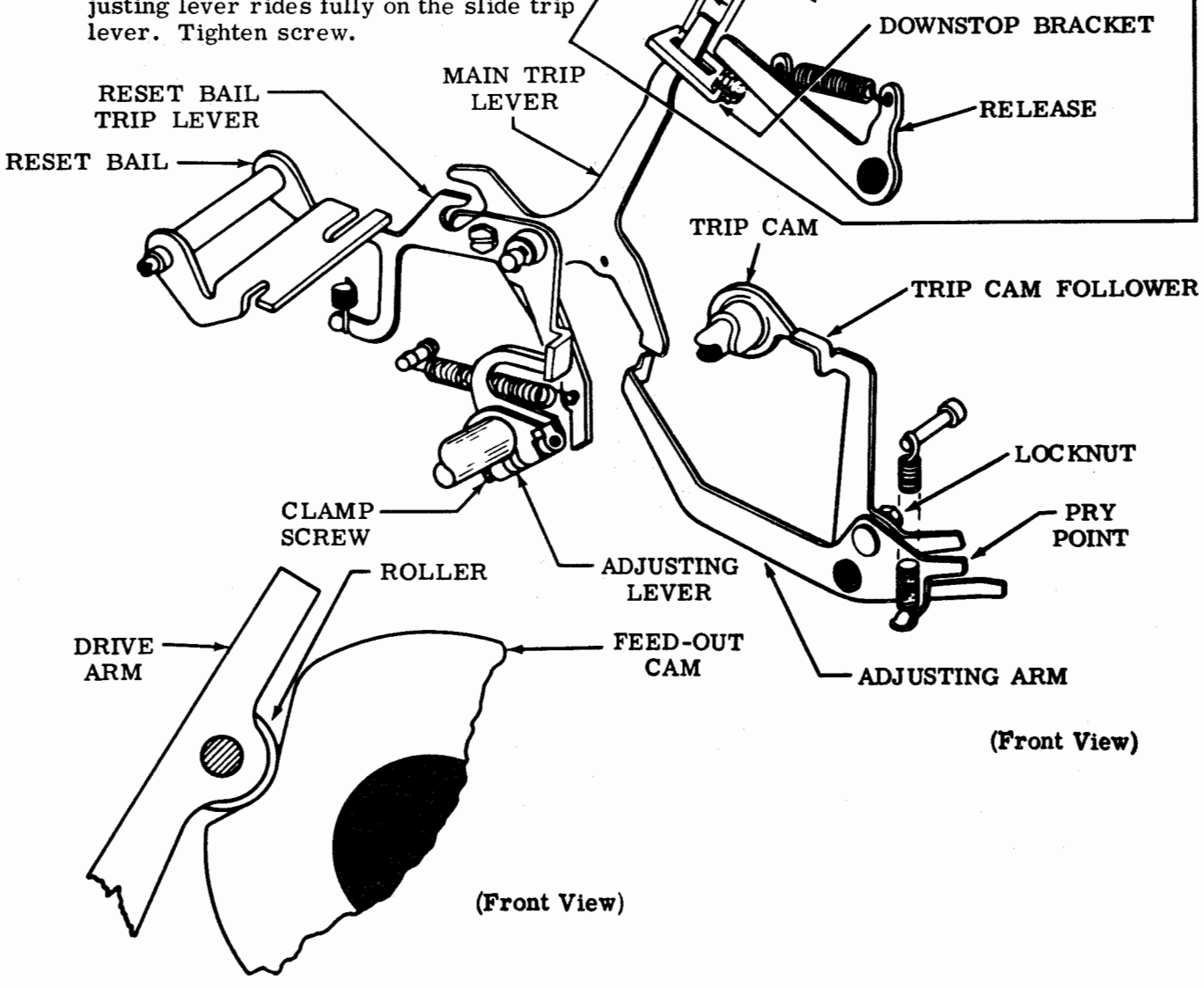
To Adjust
Loosen the clamp screw on the adjusting lever and position, making sure the adjusting lever rides fully on the slide trip lever. Tighten screw.

(A) TRIP CAM FOLLOWER

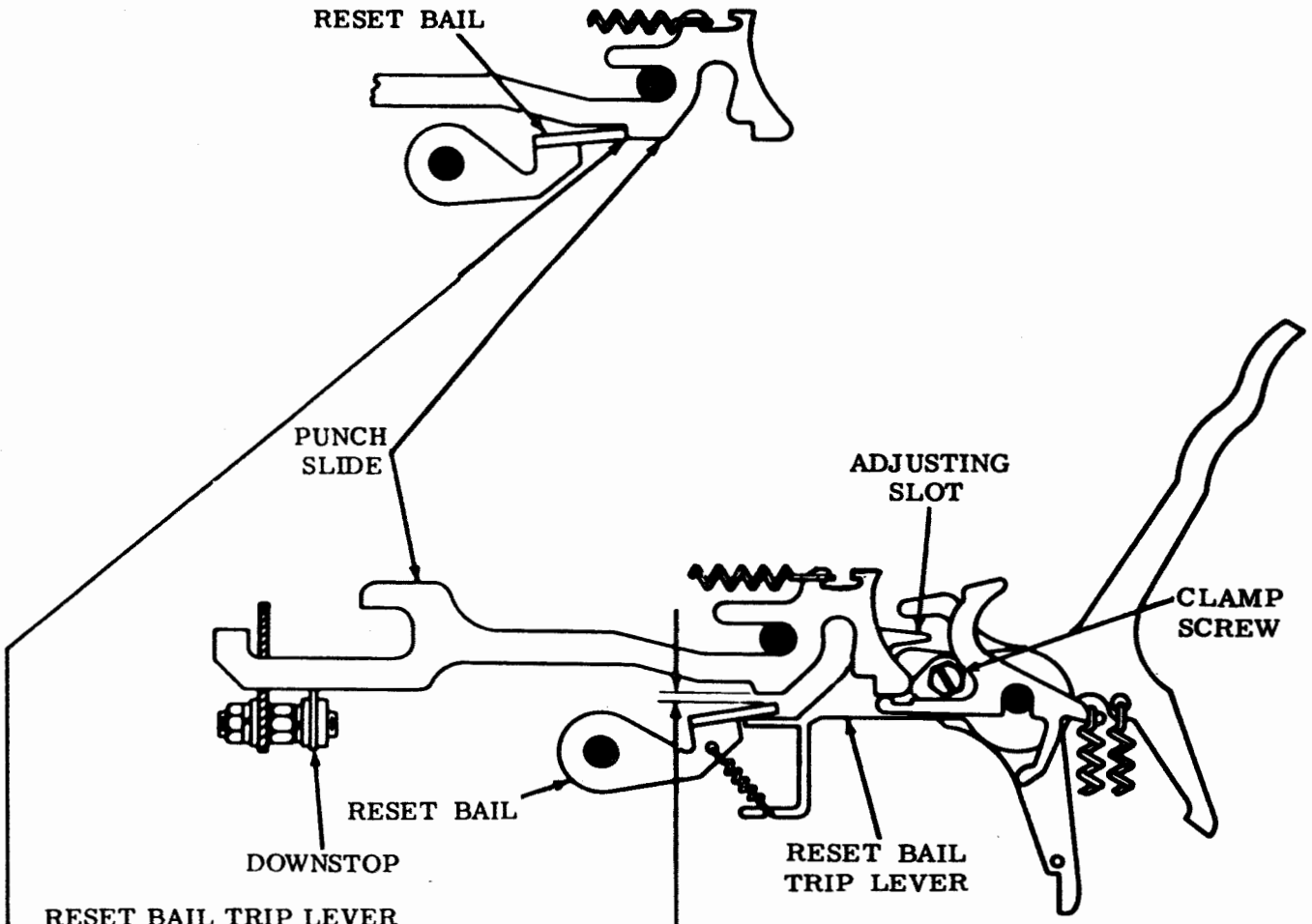
(1) Requirement
With follower lever on high part of trip cam
Min 0.010 inch---Max 0.030 inch between release and main trip lever.

(2) Requirement
Some clearance between main trip lever and downstop bracket.

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



3.46 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)



(Front View)

RESET BAIL TRIP LEVER

(1) Requirement

Select LETTERS code combination (12345). Rotate main shaft until function clutch trips. Position punch slides against downstop. Trip cam follower on high part of cam.

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

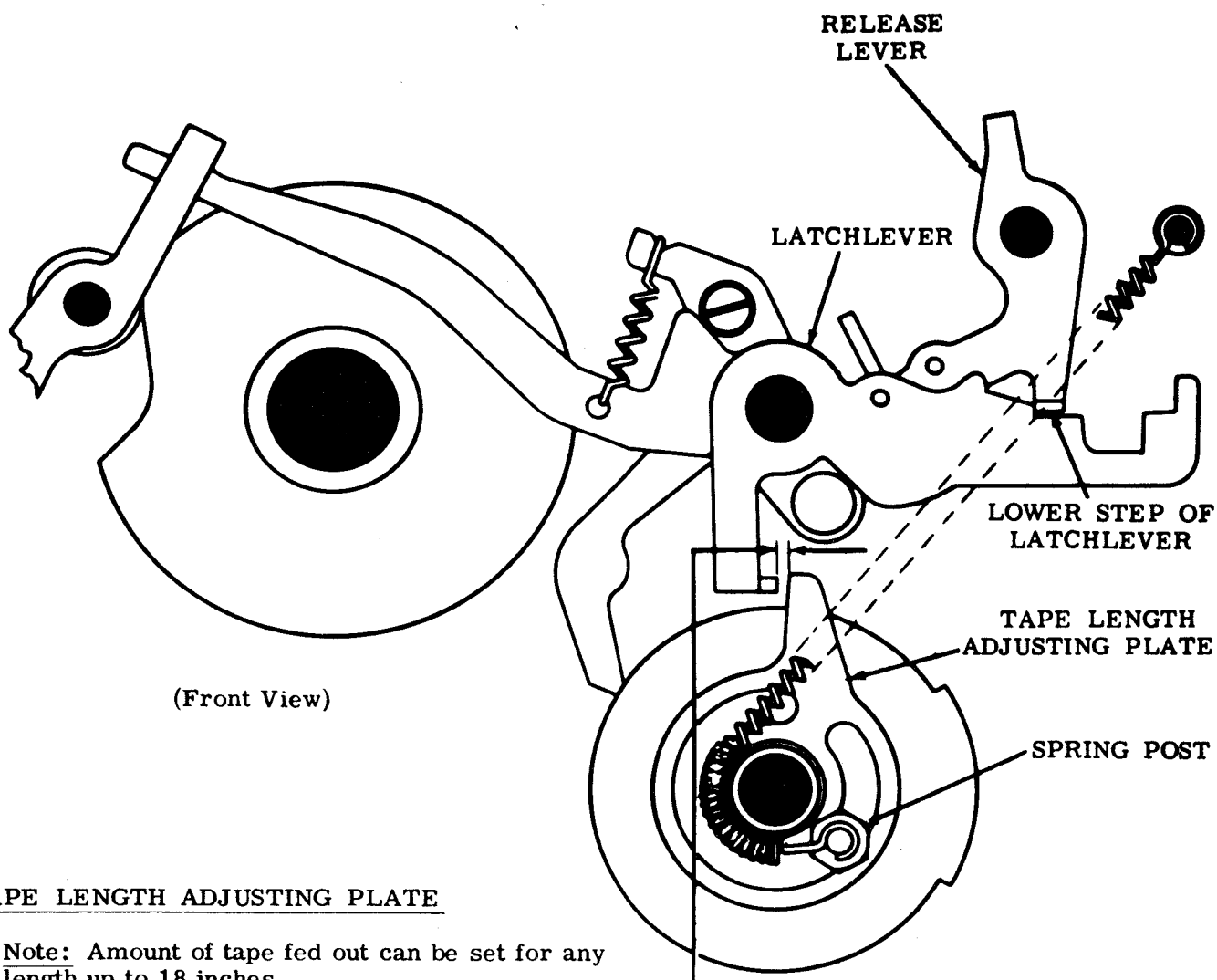
(2) Requirement

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

To Adjust

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

3.47 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)



(Front View)

TAPE LENGTH ADJUSTING PLATE

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

(1) Requirement
Place unit in feed out cycle by positioning release lever on lower step of latchlever. Manually advance ratchets so that front ratchet is in the tooth preceding trip off. Rotate main shaft until feed pawl is in the extreme left position. Clearance between adjusting plate and latchlever projection
Min 0.002 inch---Max 0.020 inch

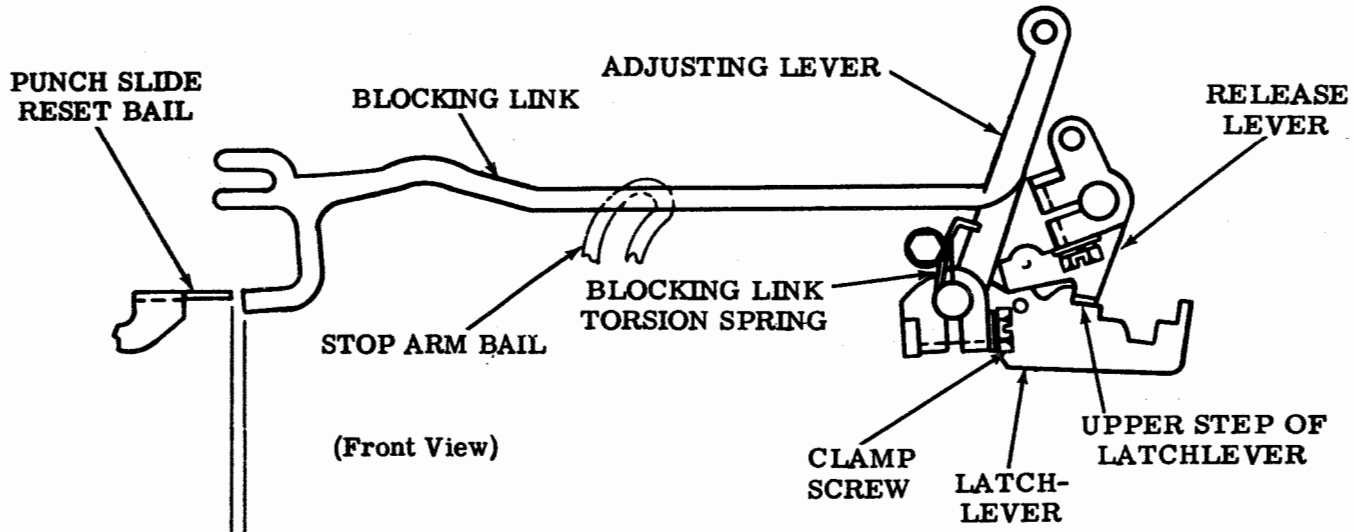
(2) Requirement
When operating under power, unit should feed out correct length of tape.

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

3.48 Automatic and Remote Control Noninterfering BLANK Tape Feed Out Mechanisms (continued)

BLOCKING LINK TORSION SPRING

Requirement
With unit in stop position and release lever on lower step of latchlever
Min 25 grams---Max 45 grams
to start the block link moving.



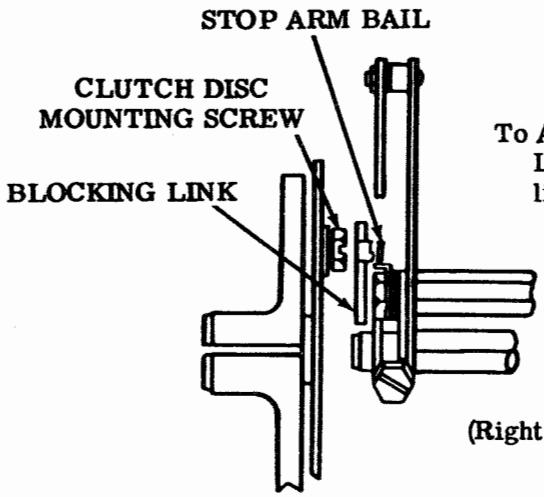
BLOCKING LINK

To Check (Horizontal Clearance)
With unit in stop position and release lever in upper step of latchlever, manually trip function clutch.

(1) Requirement
Min 0.005 inch---Max 0.018 inch between the right edge of punch slide reset bail and blocking link.

(2) Requirement
With selector range scale set at 120 the blocking link should be centered between the clutch disc mounting screws and the selector stop arm bail.

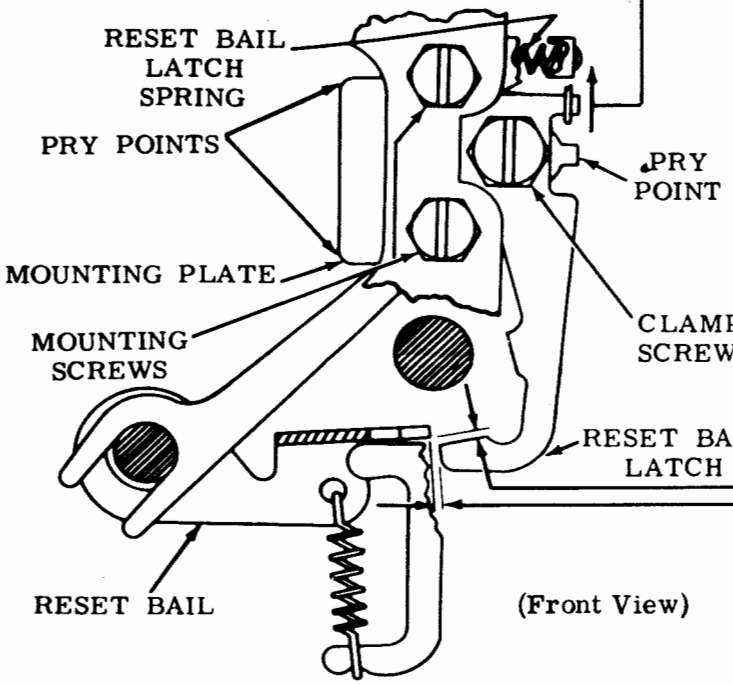
To Adjust
Loosen clamp screw on adjusting lever and position blocking link to meet requirement. Tighten screw.



3.49 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed Out Mechanisms (continued)

(B) RESET BAIL LATCH SPRING

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



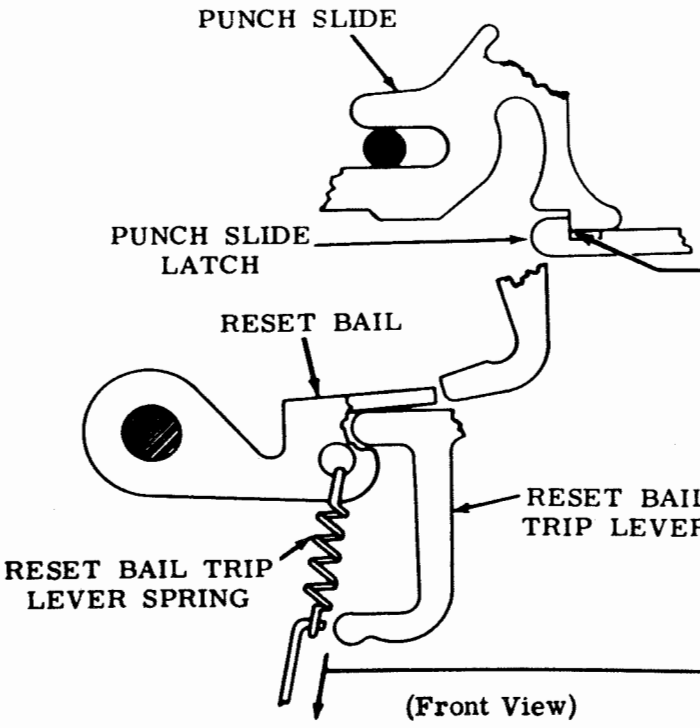
(A) RESET BAIL LATCH

(1) Requirement (Vertical Clearance)
Select LETTERS code combination (12345). Rotate main shaft until function clutch trips and punch slides are to extreme left. Manually set up the BLANK (-----) code combination in selector. Rotate main shaft until punch slides are just latched.
Min 0.008 inch---Max 0.020 inch between reset bail and reset bail latch.

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

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

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



(3) Requirement
Select LETTERS code combination (12345). Rotate main shaft until function clutch trips. Manually set up the BLANK (-----) code combination. Rotate main shaft to stop position. Punch slides latched by punch slide latches.

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

(C) RESET BAIL TRIP LEVER SPRING

Requirement
Disengage both clutches. Trip function clutch by pivoting main trip lever counterclockwise. Hold reset bail trip lever up against reset bail.
Min 18 oz---Max 24 oz
to pull spring to installed length.

3.50 End of Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms

(A) CONTACT SWINGER (PRELIMINARY)

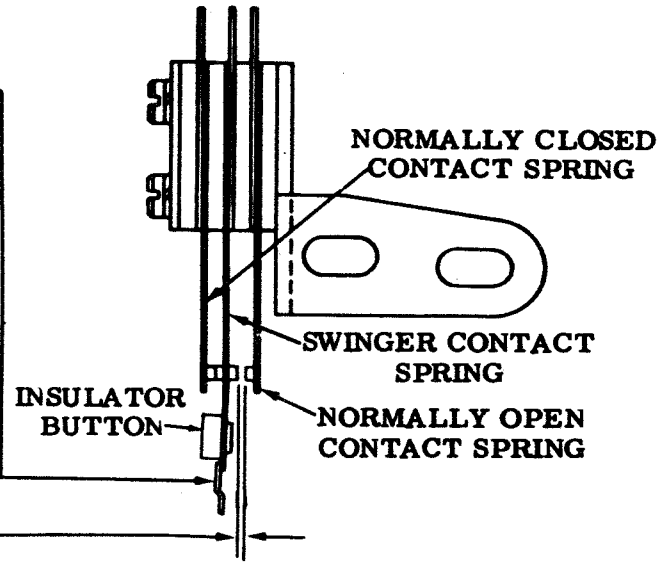
Requirement
Min 1-1/2 oz---Max 2-1/2 oz to open normally closed contact.

To Adjust
Bend swinger.

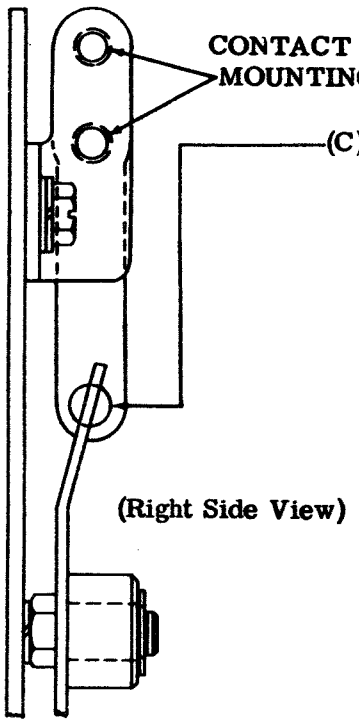
(B) CONTACT SPRING GAP (PRELIMINARY)

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

To Adjust
Bend contact spring.



(Front View)



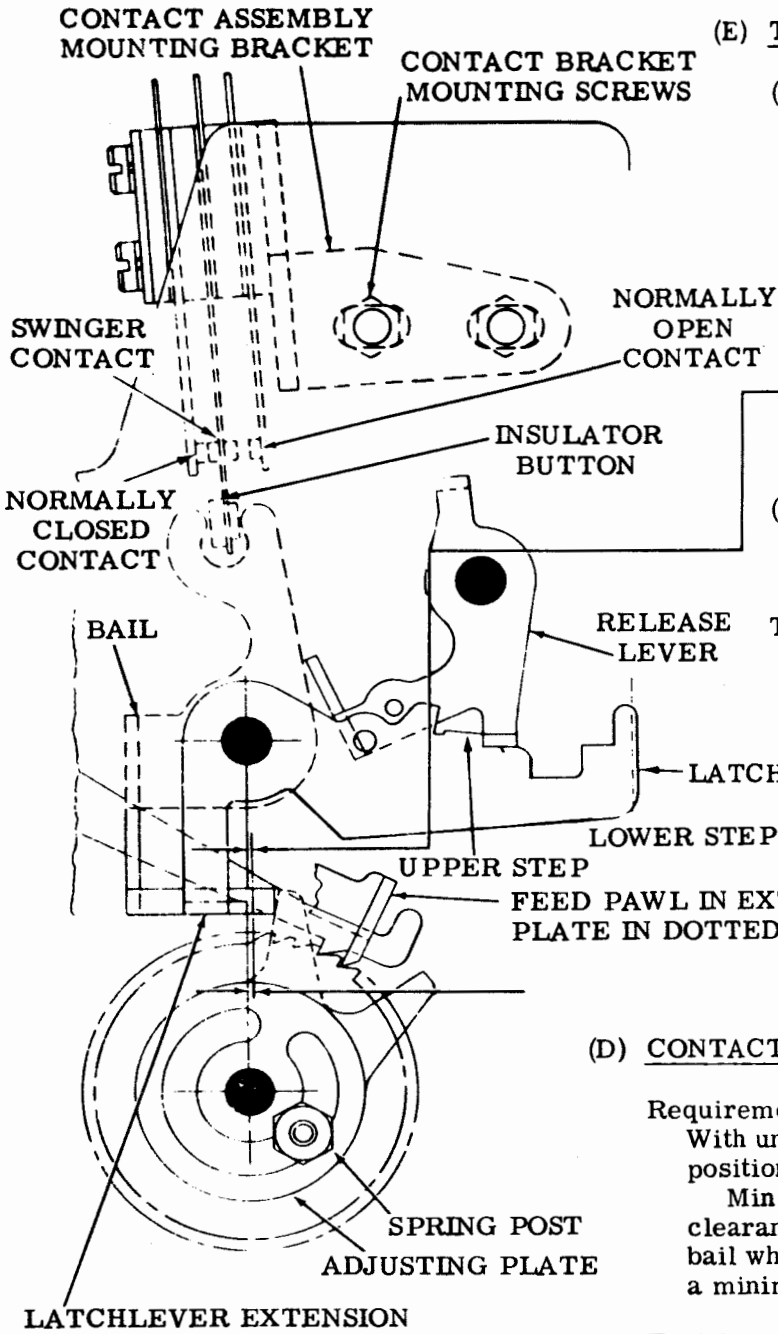
(Right Side View)

(C) CONTACT ASSEMBLY

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

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

3.51 End of Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms (continued)



(Front View)

(E) TAPE LENGTH ADJUSTING PLATE

(1) Requirement

With unit in stop position, blank combination selected, and release lever positioned on lower step of latchlever, manually advance ratchets so that feed pawl is in front ratchet tooth preceeding trip off. Turn main shaft until feed pawl is in extreme left position. Hold bail against adjusting plate lightly.

Min 0.030 inch---Max 0.040 inch clearance between bail and latchlever extension.

(2) Requirement

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

To Adjust

With spring post loosened, position adjusting plate. Tighten spring post.

(D) CONTACT ASSEMBLY MOUNTING BRACKET

Requirement

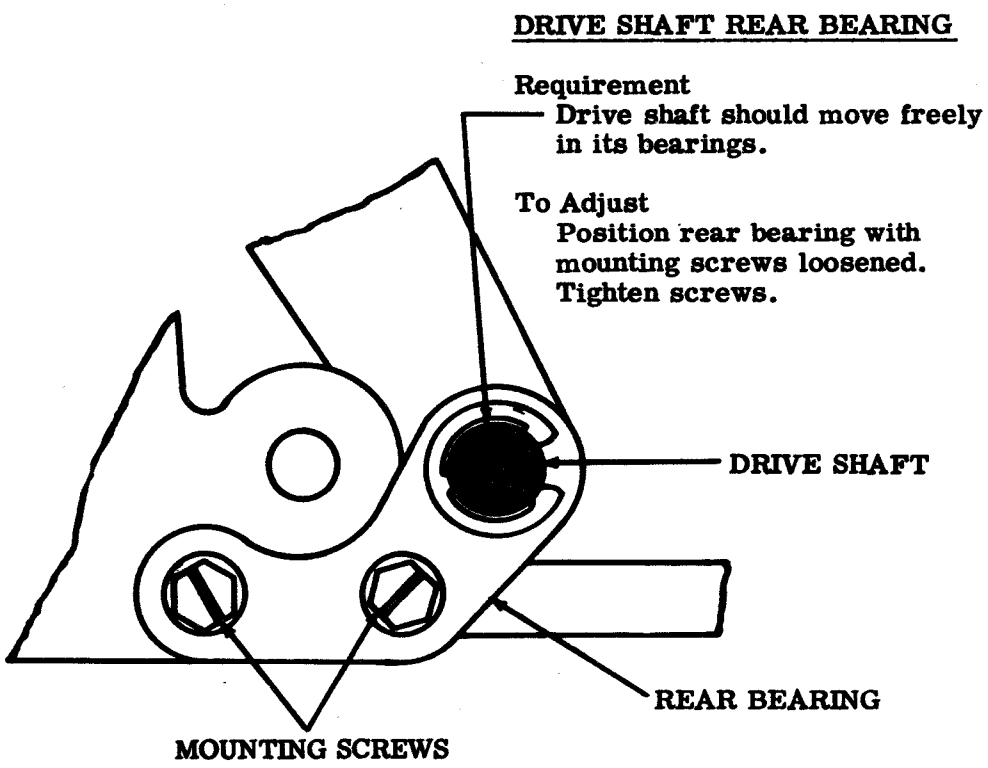
With unit in stop position and release lever positioned on lower step of latchlever

Min 0.030 inch---Max 0.040 inch clearance between latchlever extension and bail when bail is positioned so clearance is a minimum.

To Adjust

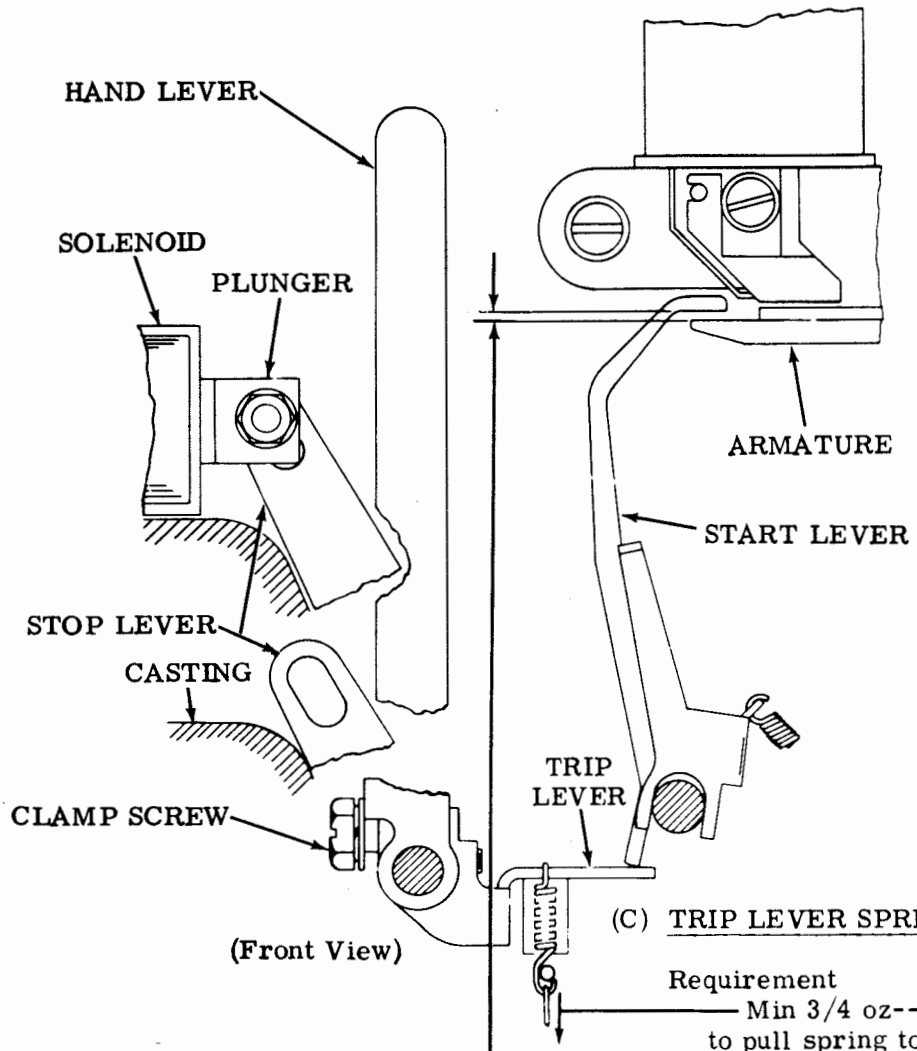
With mounting screws loosened position contact bracket. Tighten screws.

3.52 Manual and Solenoid Operated Interfering LTRS Tape Feed Out Mechanisms



(Rear View)

3.53 Manual and Solenoid Operated Interfering LTRS Tape Feed Out Mechanisms (continued)



(C) TRIP LEVER SPRING

Requirement
Min 3/4 oz---Max 2 oz to pull spring to its installed length.

(B) TRIP LEVER (MANUALLY OPERATED)

Requirement
With unit in stop position, trip selector clutch by positioning hand lever to left until stop lever rests against casting.
Min some---Max 0.015 inch between start lever and armature at point of min clearance. Start lever engaging approx center of trip lever's operating surface.

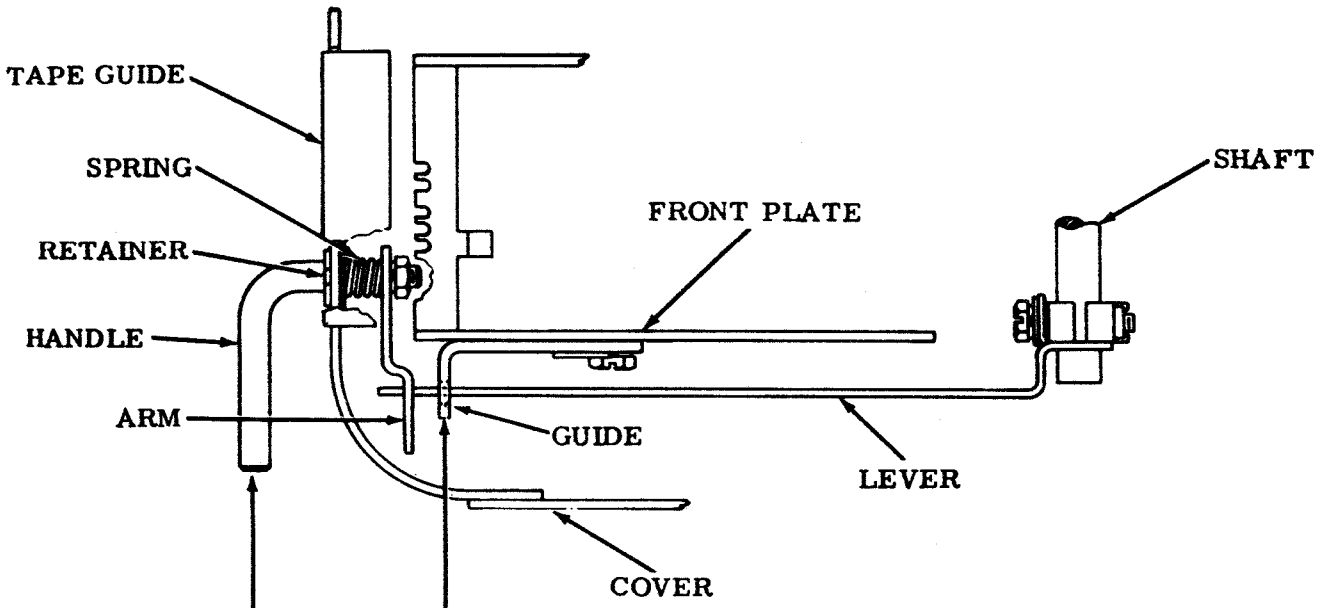
To Adjust
With clamp screw loosened, position trip lever on shaft. Tighten screw.

(A) TRIP LEVER (SOLENOID OPERATED)

Requirement
With unit in stop position, trip selector clutch by energizing solenoid. Take up play in stop lever to right (ie, play between stop lever and plunger).
Min some---Max 0.008 inch between start lever and armature at point of min clearance. Start lever engaging approx center of trip lever's operating surface.

To Adjust
With clamp screw loosened, position trip lever on shaft. Tighten screw.

3.54 External Manual Interfering LTRS Tape Feed Out Mechanism



(Top View)

(A) LEVER

Requirement
Lever should not touch sides of guide.

To Adjust
Bend lever.

Note 1: Recheck TRIP LEVER (MANUALLY OPERATED) and TRIP LEVER SPRING (3.53) adjustments.

(B) ARM

Requirement
With cover properly positioned as specified in section containing requirements and adjustments for typing reperforator cover, and arm just touching lever, the handle should be approximately horizontal.

To Adjust
With arm adjusting nut friction tight, position arm. Tighten nut.

Note 2: Remove cover to simplify tightening and loosening the adjusting nut.

3.55 Timing Contact Mechanism (Operated by Selector) (See Notes 2 and 3 below)

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

(A) "M" CONTACT SPRINGS

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

To Adjust
Bend contact spring.

(B) "B" CONTACT SPRINGS

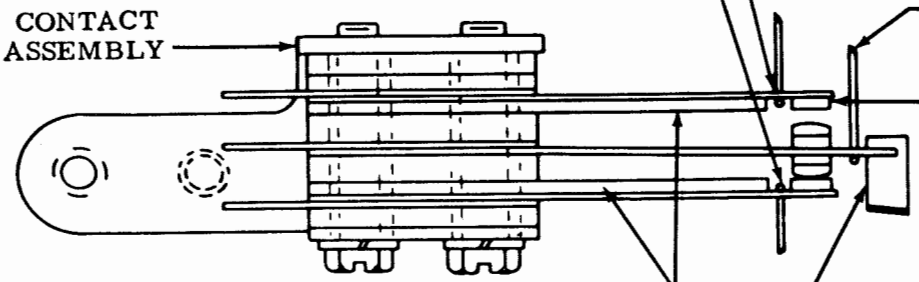
Requirement
Min 4 oz
to move contact spring away from its stiffener.

To Adjust
Bend contact spring.

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

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

To Adjust
Bend swinger contact spring.



(D) TWIN "B" CONTACT SPRINGS

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

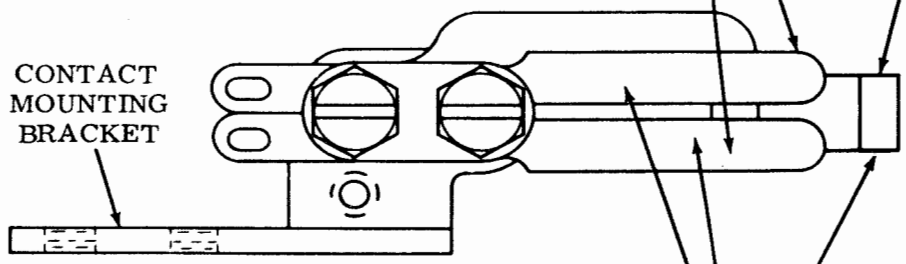
(2) Requirement
The insertion of 0.008 inch gauge between one pair of points should not cause the other pair to separate.

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

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

Requirement
Min 0.012 inch
Max 0.020 inch

To Adjust
Bend stiffener.



(F) TWIN "M" CONTACT SPRINGS

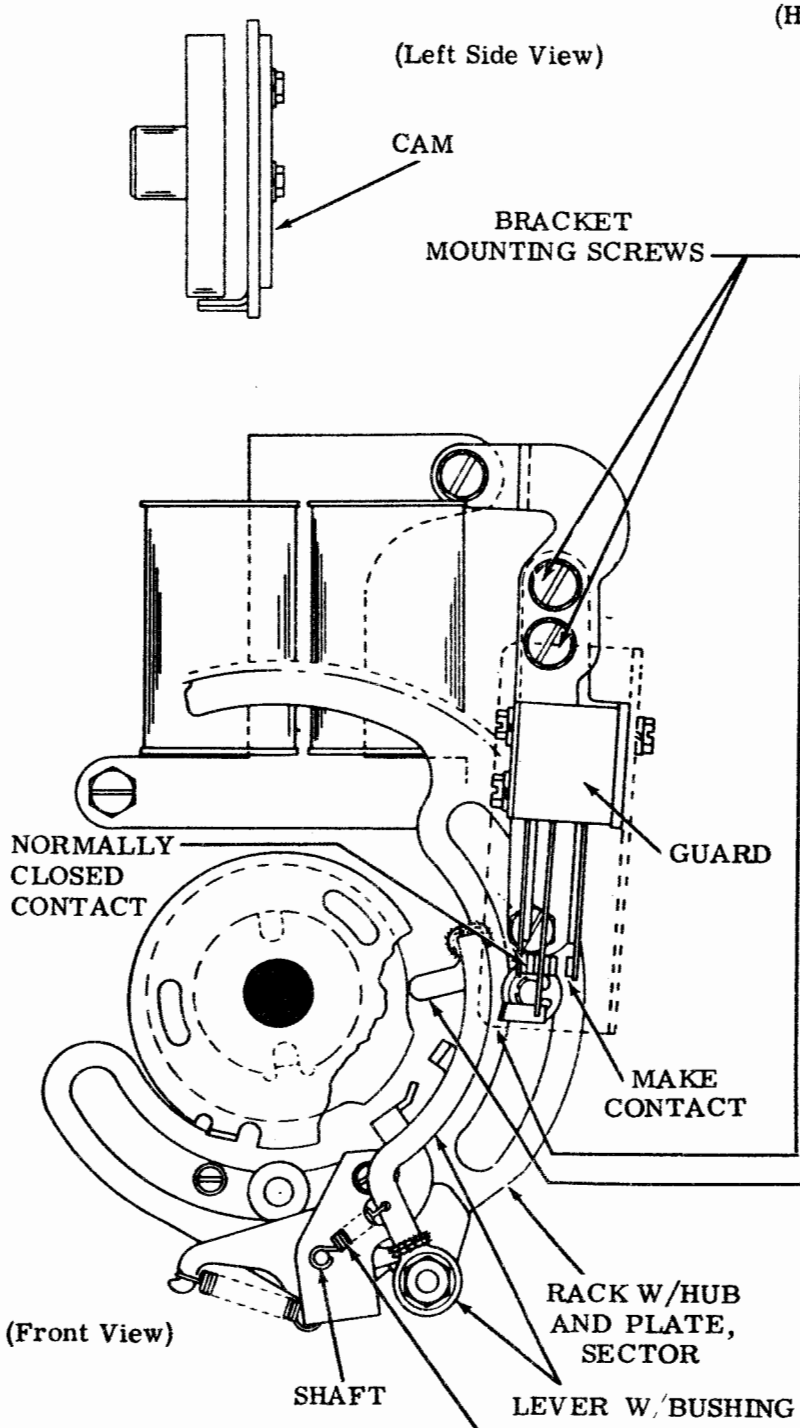
Requirement
Both break and swinger contacts should make approximately the same time.

To Adjust
Bend break contact springs or slightly twist stiffener.

Note 2: In this text, the letters S, B, and M are used to denote respectively the "swinger", "break" (normally closed with lever riding cam depression), and "make" (normally open; closed only with lever riding cam peak) contact springs.

Note 3: When making adjustments (F) through (H) make certain the S spring insulator is clear of the operating lever.

3.56 Timing Contact Mechanism (Operated by Selector) (continued)



(H) CONTACT ASSEMBLY POSITION

(1) Requirement
Set range scale at 50 (important). Rotate shaft so operating lever is on lowest part of cam.

To Adjust
With mounting screws loosened position contact assembly by means of its oversize mounting holes so lever can be moved
Min 0.002 inch
Max 0.006 inch
before it touches the swinger spring, and so first touch is on lower half of spring stud wearing plate.

(2) Requirement
(At higher settings, movement will be larger; disregard). Tighten screws and recheck. Rotate shaft and note the high part of cam causes both "M" contacts to move at least
Min 0.012 inch.
If this contact movement is not met at setting 60 and 90, check for insecure parts and refine contact gap between swinger and make contact. If still not met, replace range scale selector rack.

(G) ALIGNMENT OF OPERATING LEVER WITH CAM

(1) Requirement
Operating lever's full thickness should ride cam. Take up all cam endplay toward selector clutch drum; all operating lever endplay (at its bearing) in opposite direction. Observe lever and cam for full engagement.

(2) Requirement
Lever should not exert pressure against face of clutch disc.

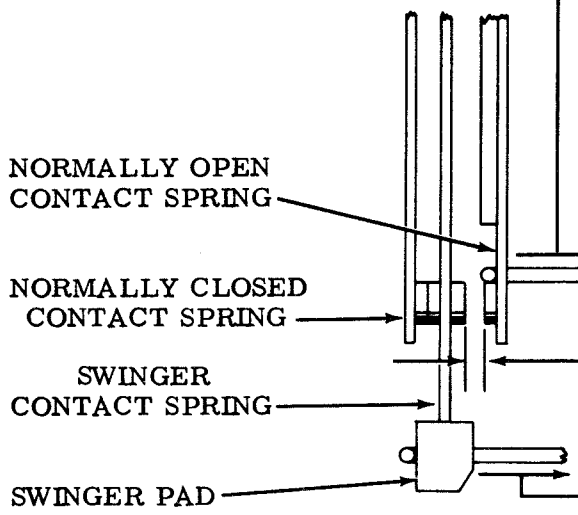
To Adjust
Refine clutch drum endplay (2.09).

(I) OPERATING LEVER SPRING

Requirement
The spring should hold operating lever against cam with light pressure. With spring removed
Min 2 oz---Max 3 oz
to stretch spring 5/8 inch length.

3.57 Auxiliary Contact Assembly

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



(Rear View)

(A) NORMALLY OPEN CONTACT SPRING

Requirement
Min 4-1/2 oz---Max 5-1/2 oz to move contact spring away from its stiffener.

To Adjust
Bend contact spring. Recheck contact gap.

(B) NORMALLY OPEN CONTACT GAP

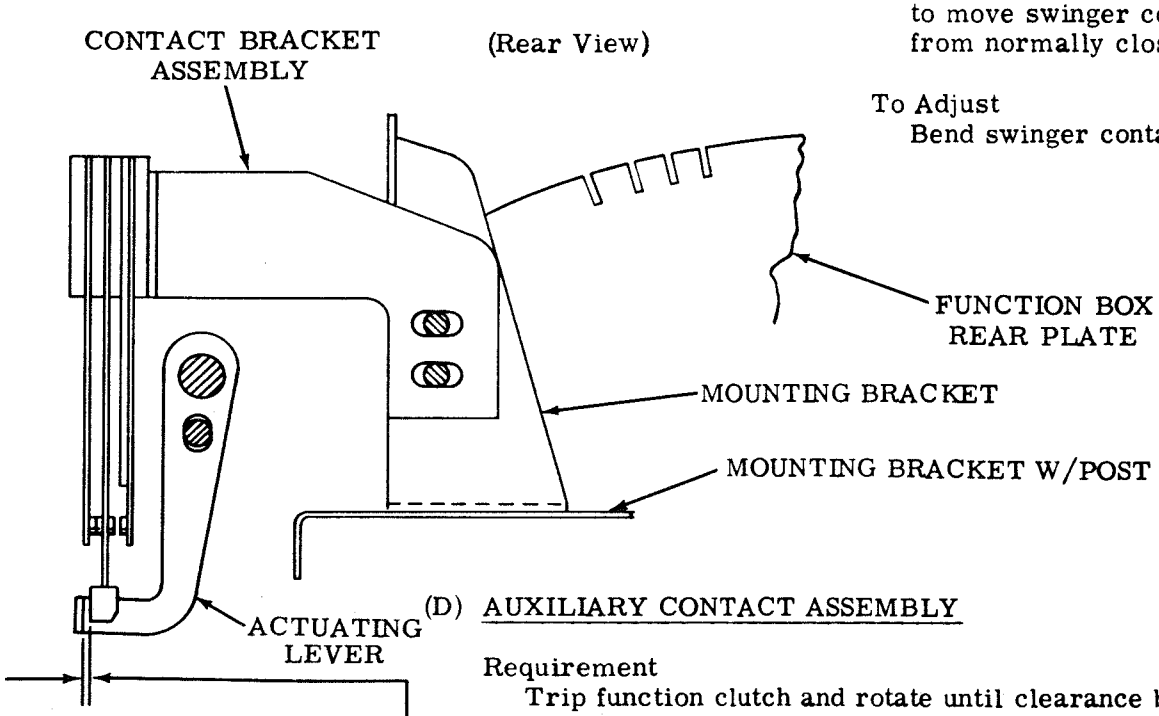
Requirement
Min 0.020 inch
Max 0.025 inch

To Adjust
Bend stiffener.

(C) NORMALLY CLOSED CONTACT

Requirement
Min 3 oz---Max 4 oz to move swinger contact away from normally closed contact.

To Adjust
Bend swinger contact.



(Rear View)

(D) AUXILIARY CONTACT ASSEMBLY

Requirement
Trip function clutch and rotate until clearance between pad and actuator is maximum.
Min some---Max 0.008 inch clearance between swinger pad and actuating lever when play is taken up to make clearance a minimum.

To Adjust
Loosen mounting screws and position contact bracket assembly on mounting bracket. It may be necessary to reposition mounting bracket to meet requirement. Tighten screws.

3.58 Multiple Mounted Function Blade Contact Mechanism

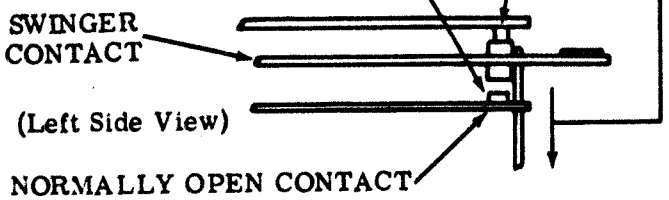
Note 1: For Early Design see 4.21.

Note 2: The following adjustments should be made prior to installing the contact bracket assembly on unit.

(A) NORMALLY OPEN CONTACT GAP

Requirement
Min 0.008 inch
Max 0.015 inch

To Adjust
Bend normally open contact spring.

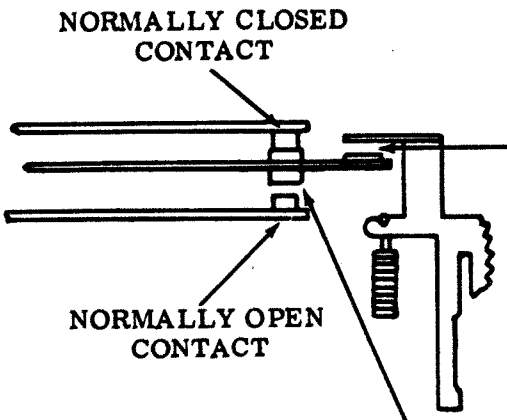


(B) NORMALLY CLOSED CONTACT

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

To Adjust
Bend normally closed contact spring.

Note 3: The following adjustments should be made after the contact bracket assembly is mounted to the unit.

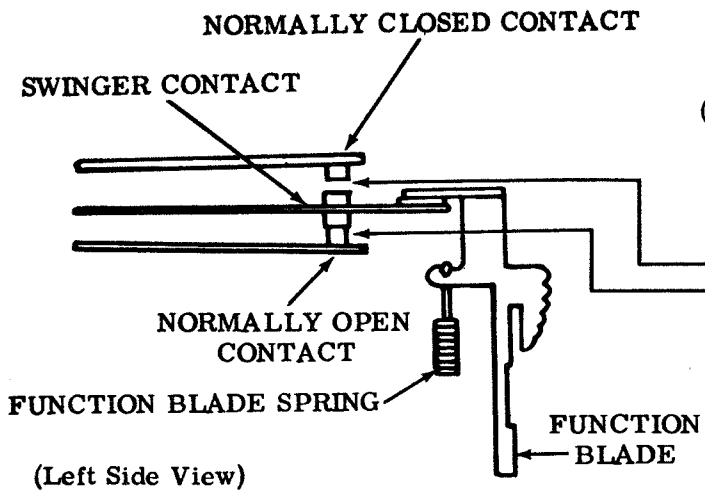


(C) NORMALLY OPEN CONTACT GAP

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

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

To Adjust
Bend normally closed contact spring.



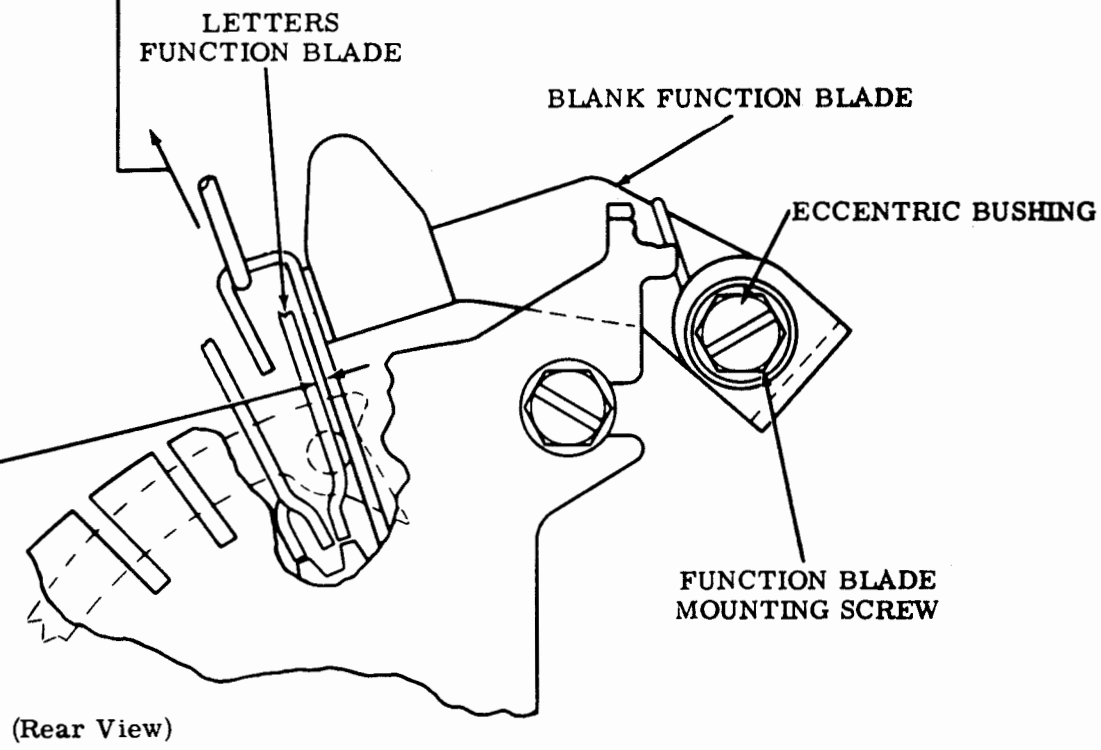
(3) Requirement
With function blade in its lowest position in the selected condition, gap between swinger contact and normally closed (now open) contact
Min 0.015 inch
and some overtravel of normally open contact.

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

3.59 Blank Delete Mechanism

(B) FUNCTION BLADE TORSION SPRING

Requirement
Min 2 oz---Max 5 oz
to start lifting blank function blade from blank sensing position without blank function blade contact interference.



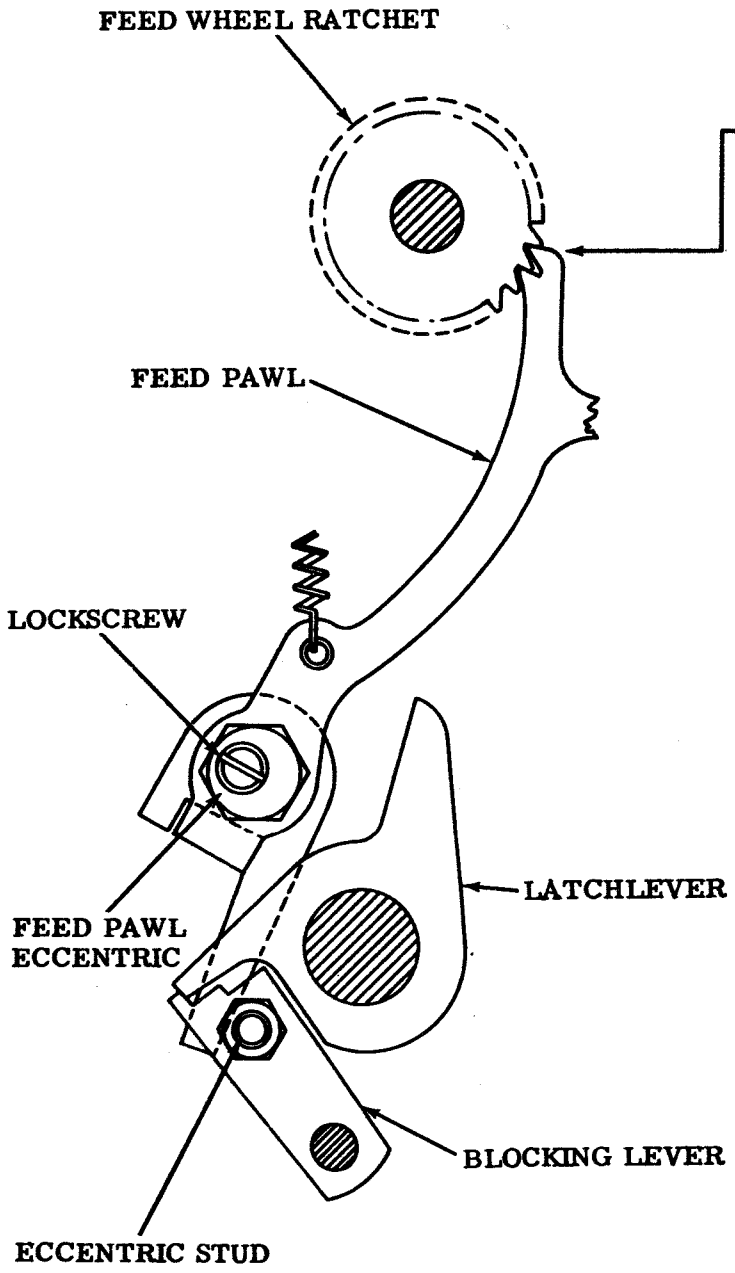
Note: Take up play in letters function blade to make the gap maximum.

(A) BLANK FUNCTION BLADE

Requirement
With BLANK code combination selected and blank function blade in its selected position, clearance between blank function blade and letters function blade
Min some---Max 0.020 inch

To Adjust
With function blade mounting screw friction tight, adjust eccentric bushing keeping high part of eccentric towards the top of unit. Tighten screw.

3.60 Blank Delete Mechanism (continued)



(Front View)

FEED PAWL READJUSTMENT

Requirement

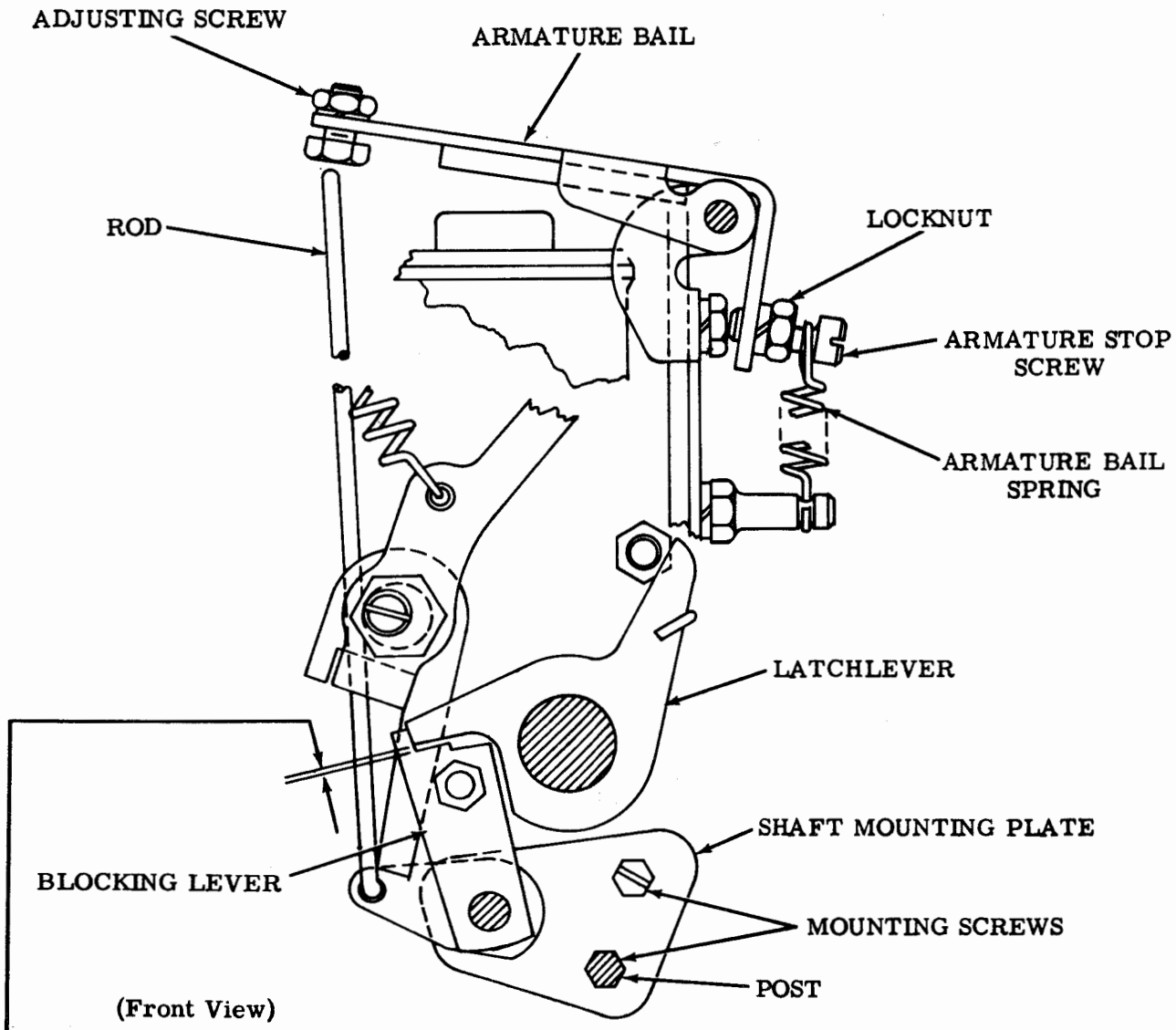
With feed wheel ratchet in its fully detented position, feed pawl in its uppermost position must just touch lower part of a tooth on ratchet.

To Adjust

With lockscrew friction tight, rotate feed pawl eccentric, keeping high part of eccentric to right of lockscrew. Tighten screw.

Note: The eccentric stud should be backed off to eliminate any interference with this adjustment.

3.61 Blank Delete Mechanism (continued)



BLOCKING LEVER WITH SHAFT MOUNTING PLATE

Requirement

With the unit in stop position (all clutches latched) Min 0.015 inch---Max 0.030 inch clearance between blocking lever and latchlever.

To Adjust

Loosen mounting screws and position blocking lever with shaft mounting plate. Tighten screws.

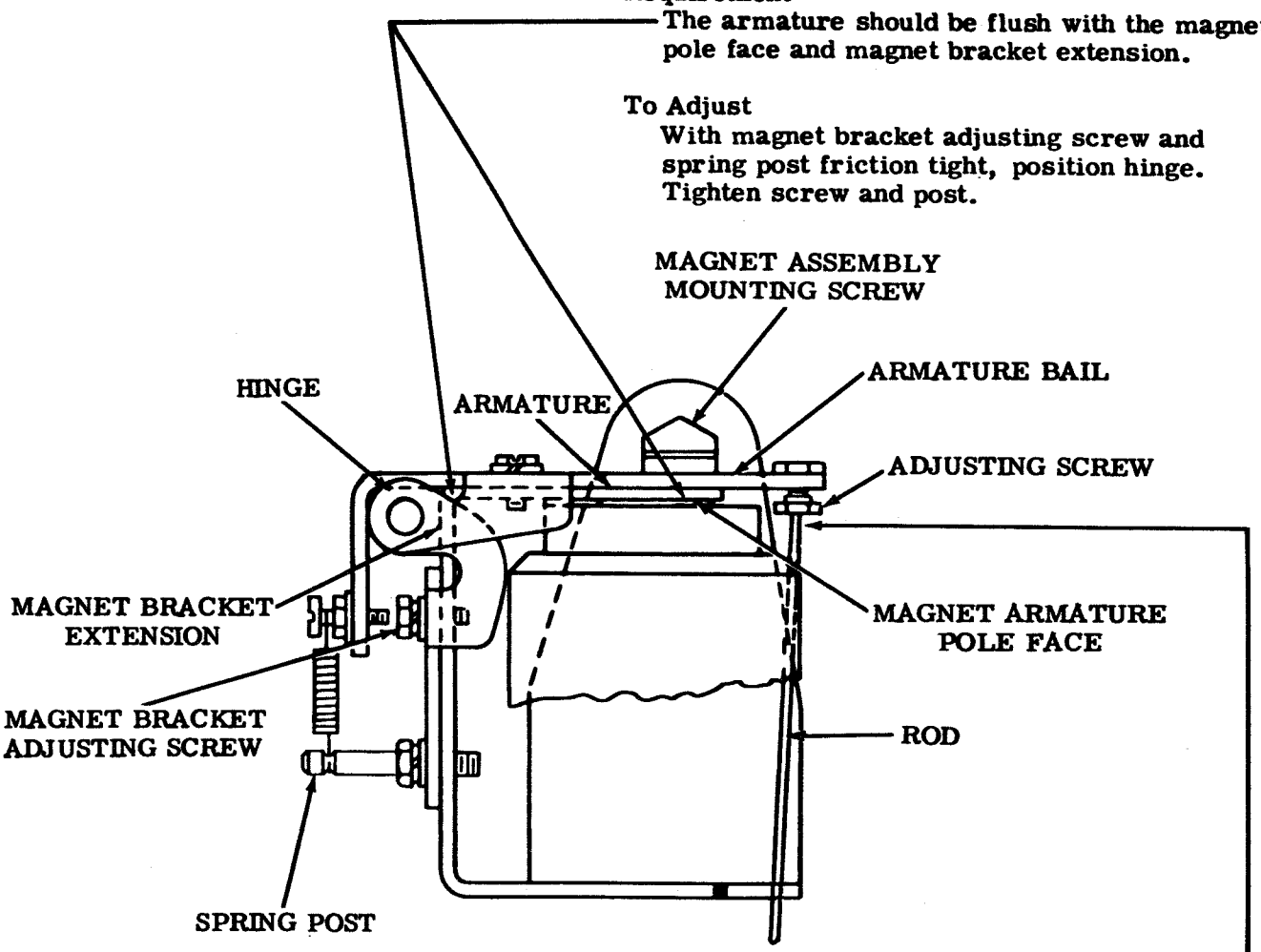
Note: Check that hub on stud with bushing does not rub against rear punch plate causing blocking lever shaft to bind.

3.62 Blank Delete Mechanism (continued)

(A) ARMATURE HINGE

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

To Adjust
With magnet bracket adjusting screw and spring post friction tight, position hinge. Tighten screw and post.



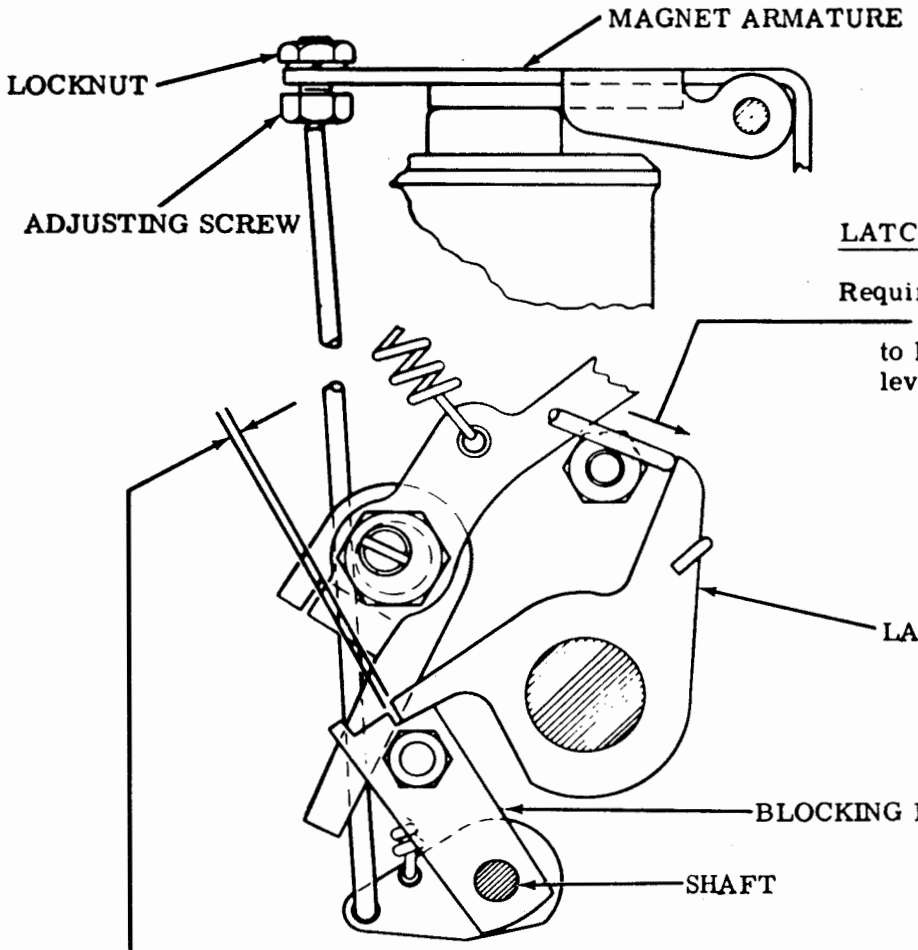
(Rear View)

(B) MAGNET ASSEMBLY

Requirement
With function blades in sensing position and armature manually held operated, rod should fully contact adjusting screw.

To Adjust
With mounting screws friction tight, position magnet assembly to meet requirement. Tighten screws.

3.63 Blank Delete Mechanism (continued)



BLOCKING LEVER

Requirement
With function blades in sensing position and magnet armature manually held operated, clearance between blocking lever and latchlever
Min some---Max 0.005 inch

To Adjust
With magnet armature manually held operated and locknut on adjusting screw loosened, rotate adjusting screw to meet requirement.

Recheck
Tighten locknut on adjusting screw and recheck adjustment.

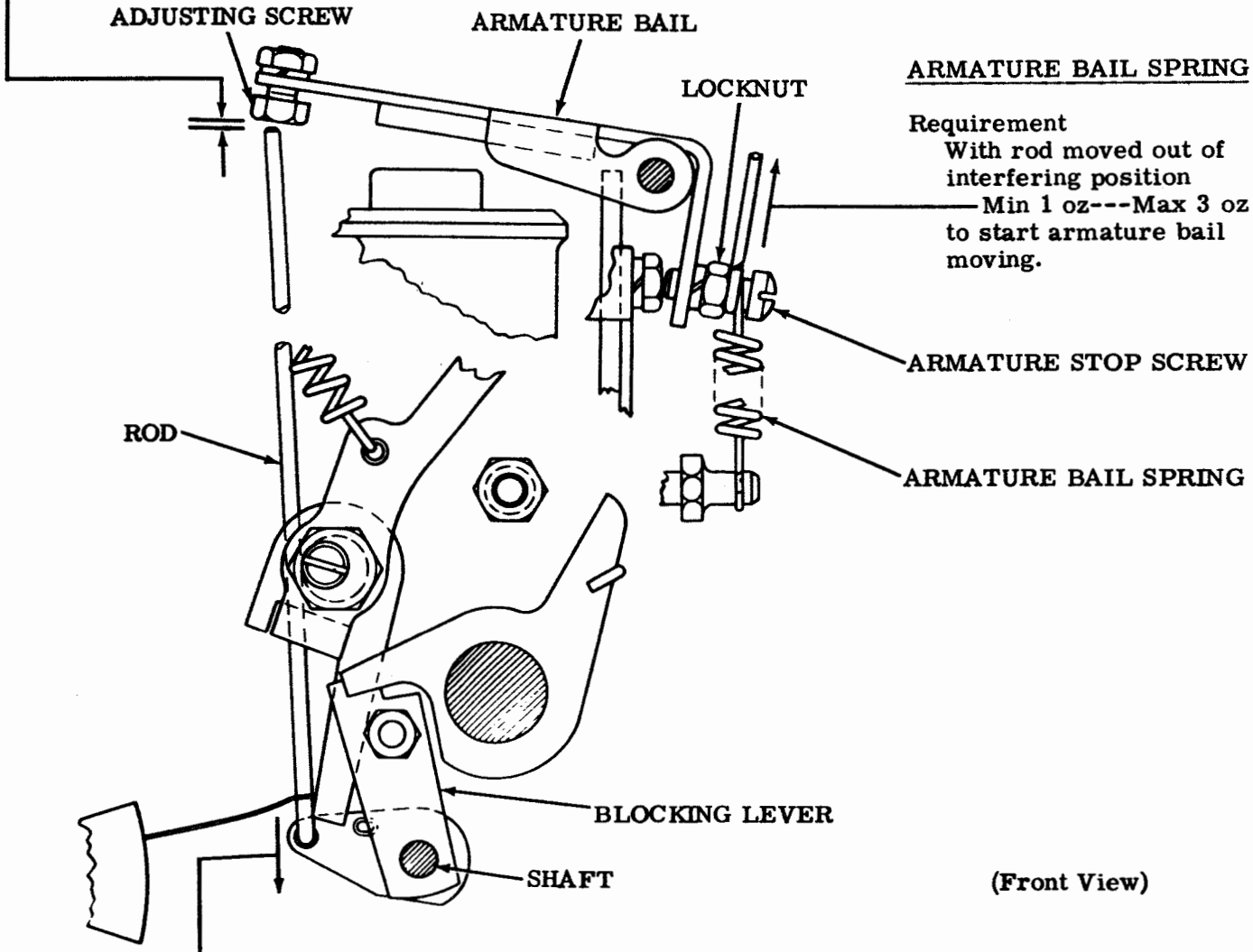
Note: If unit is equipped with feed suppression, lever on tape shoe arm should be pivoted out of position when making this adjustment.

3.64 Blank Delete Mechanism (continued)

ARMATURE STOP

Requirement
With function blades in sensing position and blocking lever unlatched, clearance between end of rod and adjusting screw
Min 0.010 inch---Max 0.020 inch

To Adjust
With locknut loosened, adjust armature stop screw.



TRANSFER SHAFT SPRING

Requirement
With unit in stop position, and feed pawl extension held away from interfering, it should require
Min 20 grams---Max 50 grams
to start shaft moving.

3.65 Blank Delete Mechanism (continued)

ECCENTRIC STUD

Requirement

With latchlever and blocking lever in latched position and feed pawl in its upward travel, clearance between tip of engaging feed wheel ratchet tooth and feed pawl tooth at its closest point

Min 0.010 inch---Max 0.020 inch

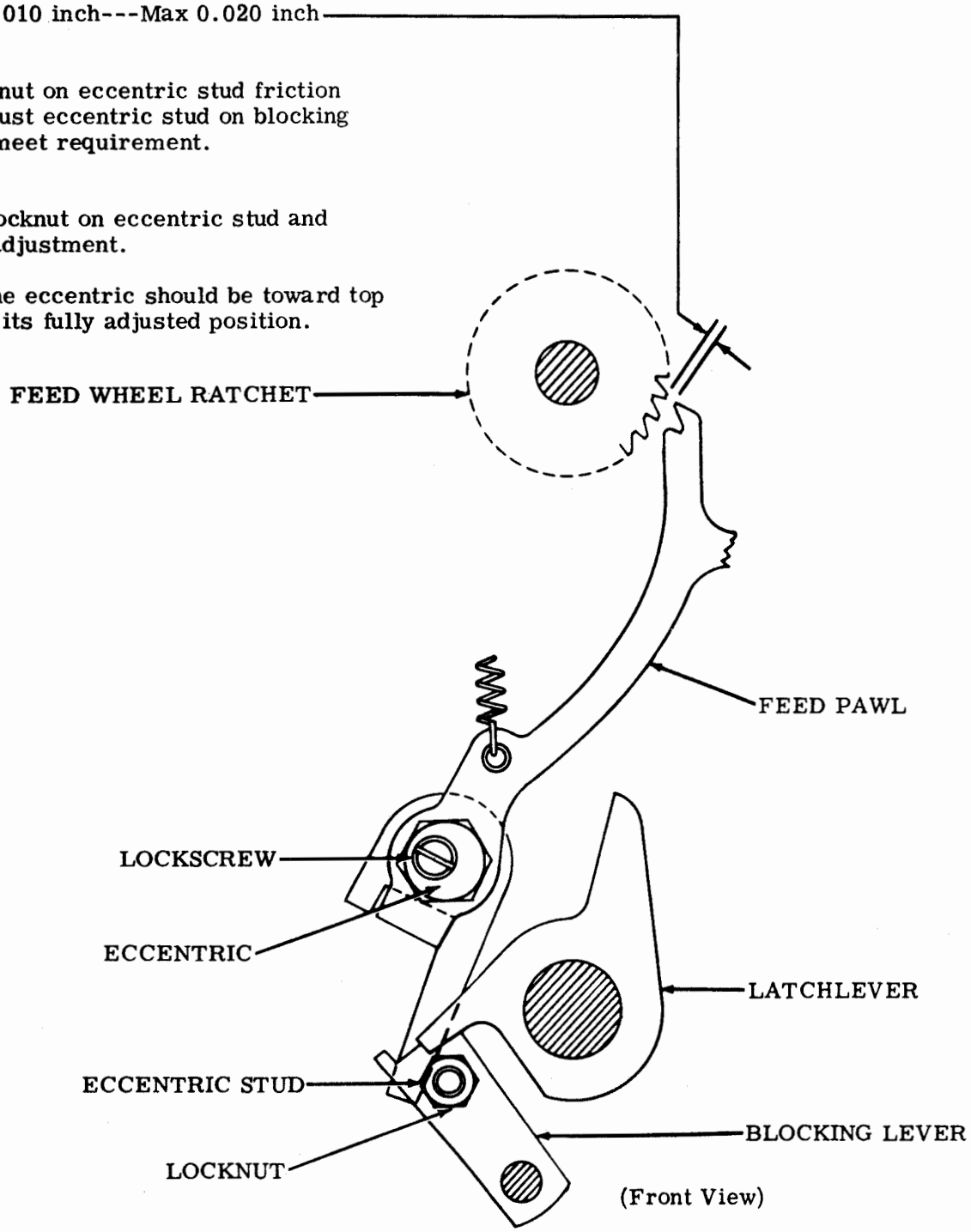
To Adjust

With locknut on eccentric stud friction tight, adjust eccentric stud on blocking lever to meet requirement.

Recheck

Tighten locknut on eccentric stud and recheck adjustment.

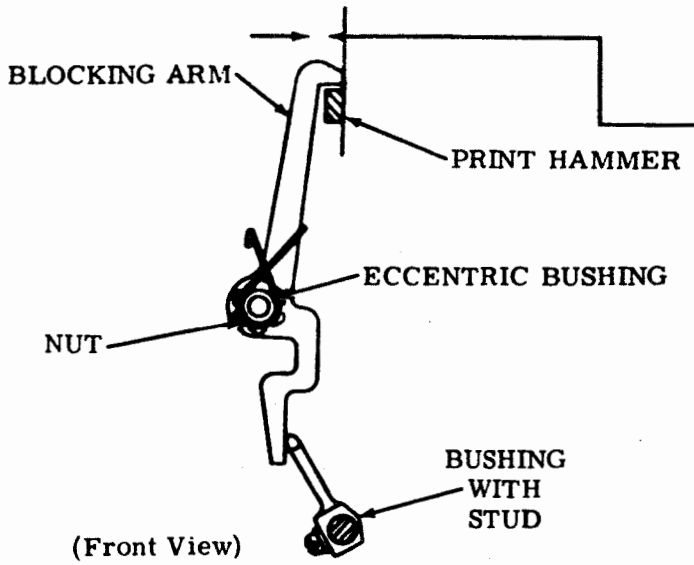
Note: The eccentric should be toward top of unit in its fully adjusted position.



(Front View)

3.66 Blank Delete Mechanism (continued)

(A) PRINT SUPPRESSOR BLOCKING ARM

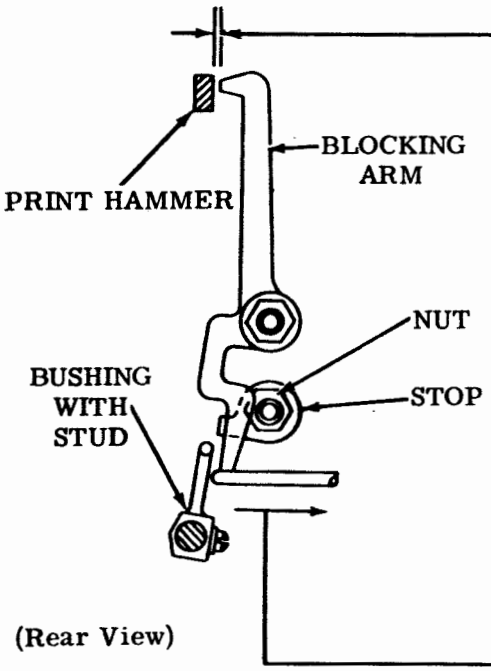


Requirement
With function blades in sensing position, blocking lever latched, at closest point there should be
Min 0.003 inch---Max 0.015 inch
clearance between left side of print hammer lever and blocking arm when all the play in print hammer lever is taken up in a direction to make clearance a minimum.

To Adjust
Loosen nut friction tight and adjust eccentric shoulder screw to meet requirement. Tighten nut.

Note: It may be necessary to favor the position of eccentric shoulder screw in its mounting hole to meet requirement.

(B) PRINT SUPPRESSOR STOP



Requirement
With blocking lever in unlatched position clearance between blocking arm and print hammer
Min some---Max 0.030 inch
when play in print hammer is taken up in a direction to make clearance a minimum.

To Adjust
With locknut friction tight, position stop to meet requirement. Tighten nut.

Recheck
PRINT SUPPRESSOR BLOCKING ARM adjustment.

(C) BLOCKING ARM SPRING

Requirement
With unit in stop position
Min 10 grams---Max 50 grams
to start moving blocking arm away from stop.

3.67 Blank Delete Mechanism (continued)

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

CONTACT SPRING

Requirement
Min 4-1/2 oz---Max 5-1/2 oz to move contact spring away from its stiffener.

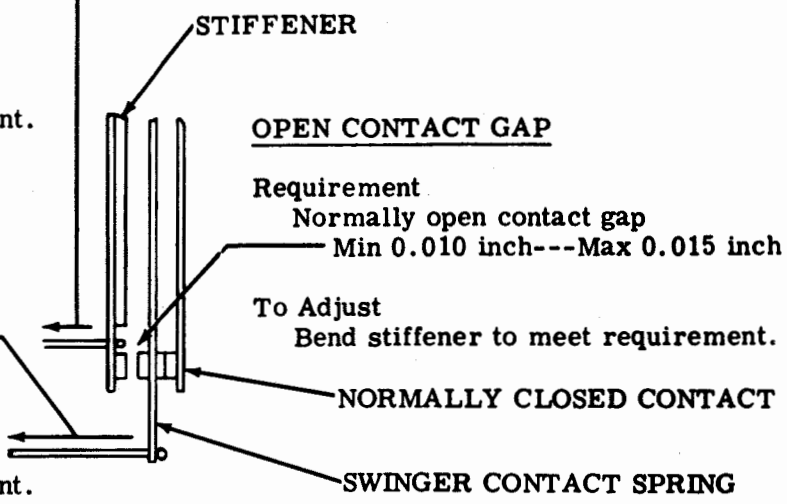
To Adjust
Bend contact spring to meet requirement.

Recheck
OPEN CONTACT GAP adjustment.

SWINGER CONTACT SPRING

Requirement
Min 2 oz---Max 3 oz to just move swinger contact spring away from normally closed contact.

To Adjust
Bend contact spring to meet requirement.



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

CONTACT ASSEMBLY (Earlier Design)

Requirement
Contact assembly should line up centrally with insulator on blank function blade.

To Adjust
With mounting screws loosened, line up contact assembly to meet requirement. Tighten screws.

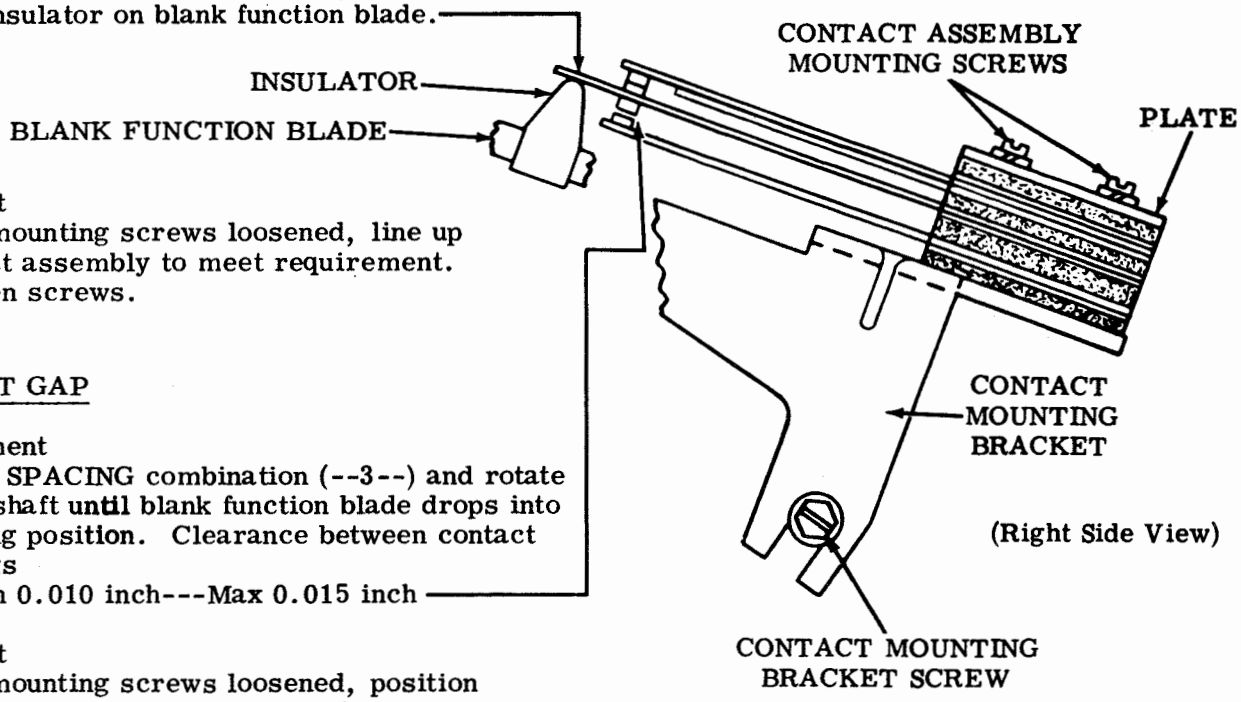
CONTACT GAP

Requirement
Select SPACING combination (--3--) and rotate main shaft until blank function blade drops into sensing position. Clearance between contact springs
Min 0.010 inch---Max 0.015 inch

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

CONTACT ASSEMBLY (Later Design)

This contact assembly should be equipped with a guard located under the plate to eliminate a shock hazard.



3.68 Manual Print Suppression Mechanism

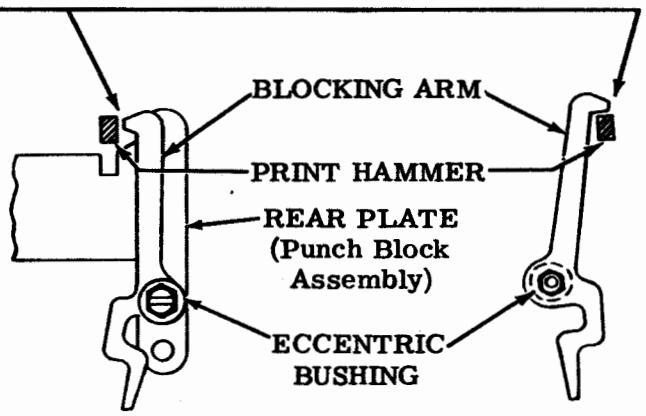
MANUAL PRINT SUPPRESSION MECHANISM

Note: The manual print suppression mechanism consists of a blocking arm which can be locked in a print or nonprint condition at the time of unit installation.

(1) Requirement
Blocking arm to be adjusted in nonprint condition to assure that print hammer arm is blocked by blocking arm.

(2) Requirement
Blocking arm should be readjusted to print condition and locked in place.

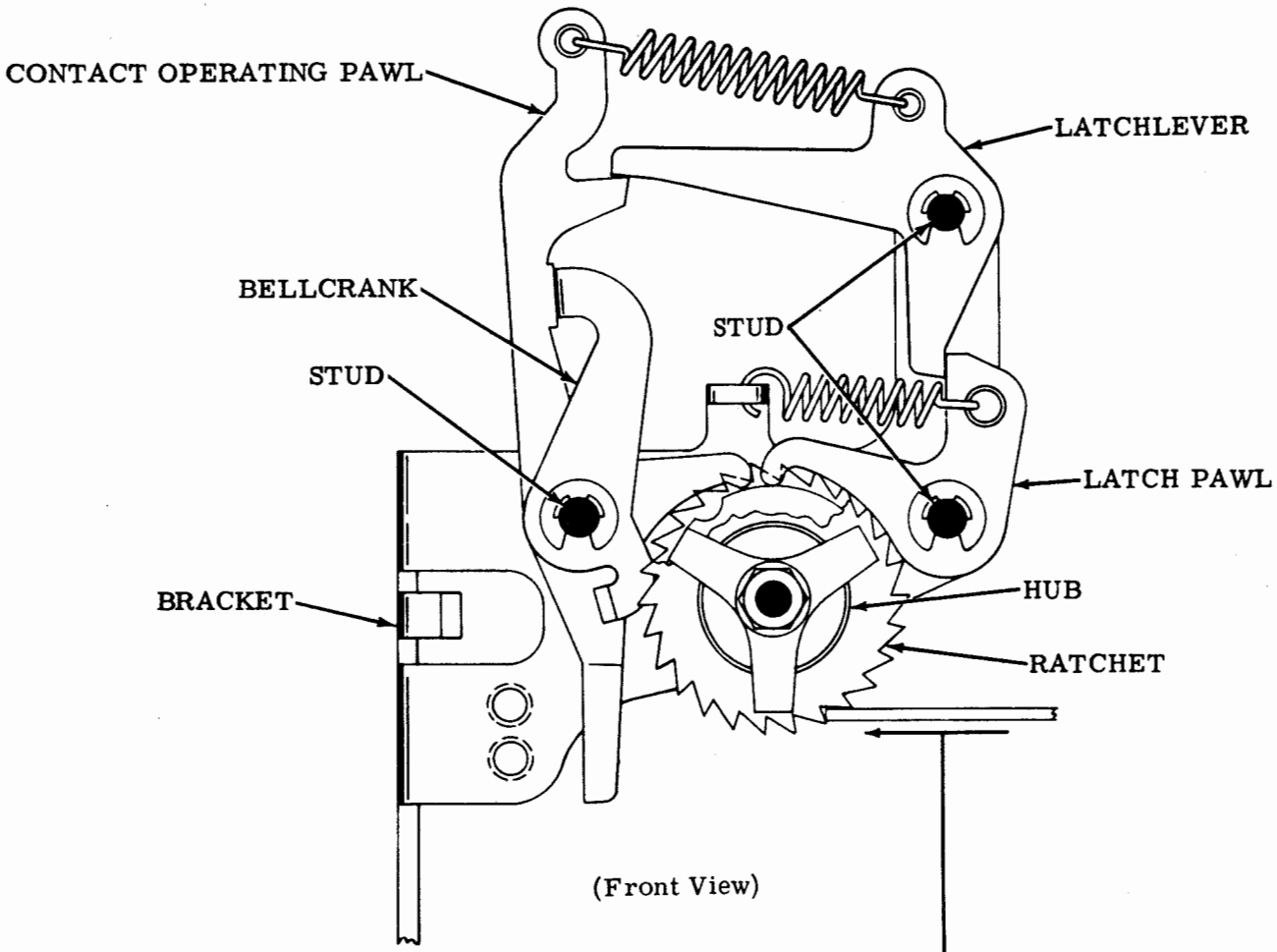
To Adjust
With mounting screw friction tight, rotate eccentric bushing and manually position blocking arm to nonprint or print condition. Tighten screw.



(Rear View)
ARM IN PRINT
POSITION

(Front View)
ARM IN NONPRINT
POSITION

3.69 Time Delay Motor Stop Mechanism



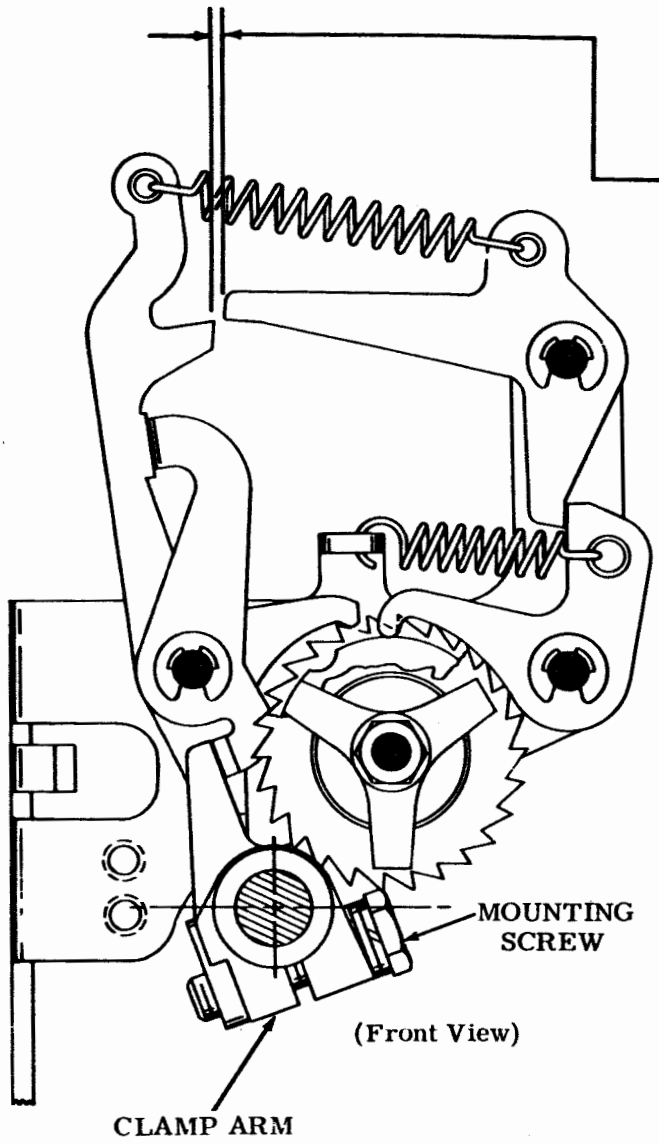
(Front View)

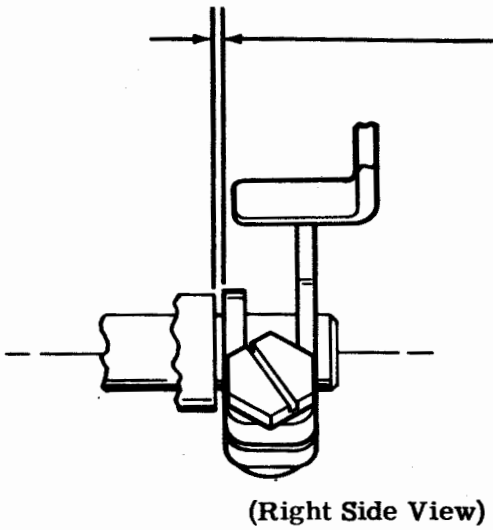
TIME DELAY RATCHET WHEEL TENSION

Requirement
Hold all pawls off ratchet wheels.
Min 2 oz---Max 8 oz
to move each ratchet wheel.

To Adjust
Remove nut and bend friction springs of ratchet wheel. Replace and tighten nut.

3.70 Time Delay Motor Stop Mechanism (continued)





TIME DELAY CLAMP ARM

(1) Requirement
Selector reset bail on high part of its cam; latch pawl resting on high part of both ratchet wheel flanges.
Min 0.010 inch---Max 0.020 inch clearance between latching surfaces of contact operating pawl and latchlever.

(2) Requirement
Endplay between clamp arm and its adjacent bushing
Min some---Max 0.006 inch

To Adjust
With mounting screw loosened position clamp arm. Tighten screw.

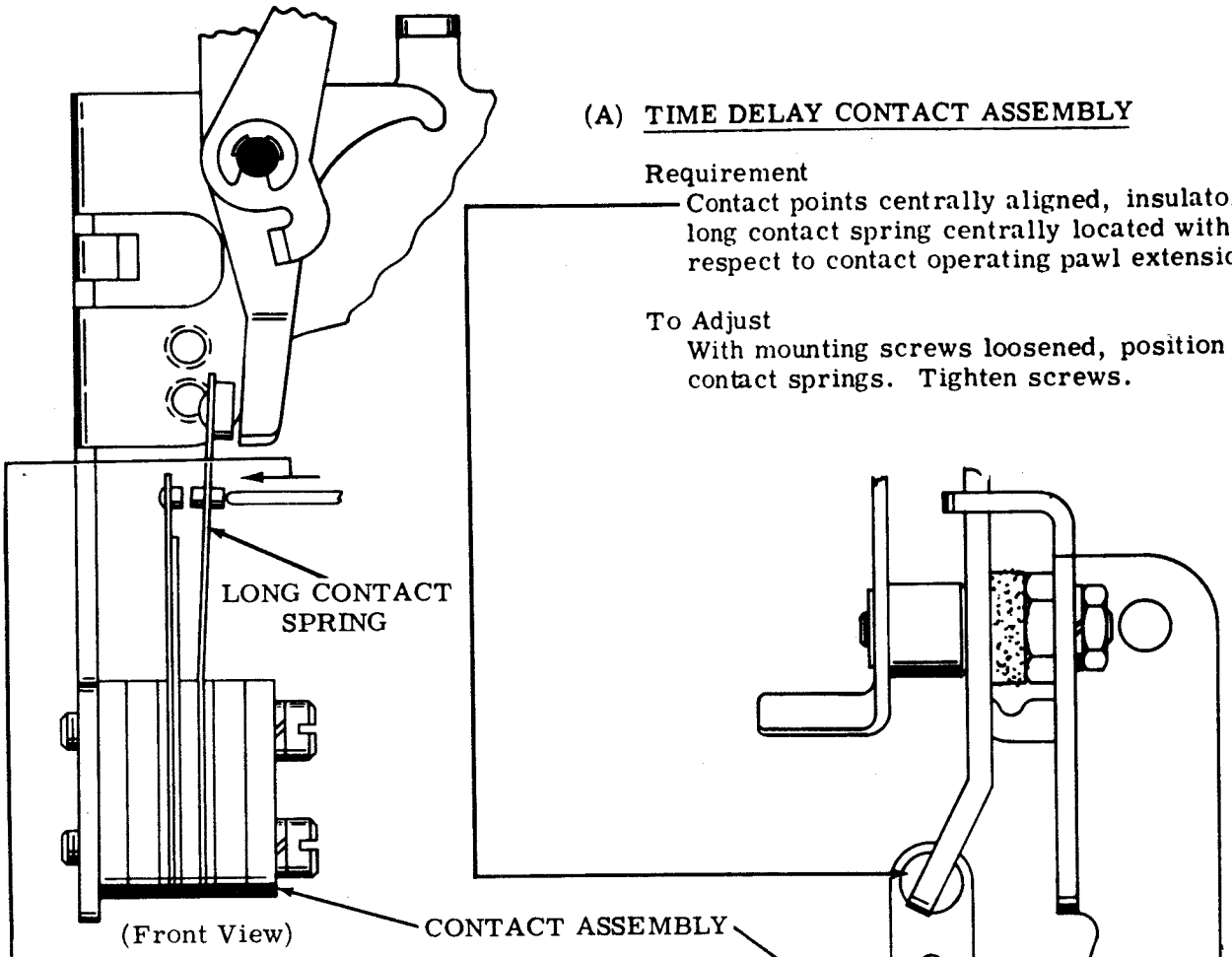
Note: If unit is equipped with a TP160182 selector armature stop bracket, check the following:

(1) Requirement
The TP156130 arm should engage selector reset bail by a minimum of 3/4 of its thickness.

(2) Requirement
There should be some clearance between TP156130 arm and armature stop bracket.

To Adjust
Position TP156130 arm towards rear by moving one or more shims from front of mounting bracket to back of mounting bracket. Position TP156130 arm towards front by moving one or more shims from rear of mounting bracket to front of mounting bracket.

3.71 Time Delay Motor Stop Mechanism (continued)



(A) TIME DELAY CONTACT ASSEMBLY

Requirement
Contact points centrally aligned, insulator on long contact spring centrally located with respect to contact operating pawl extension.

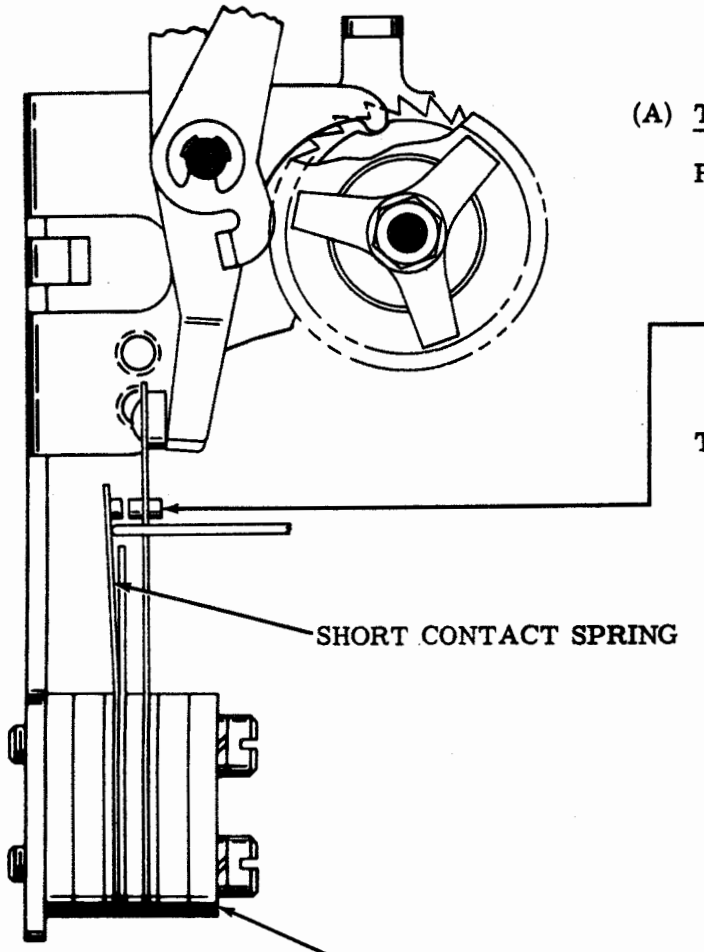
To Adjust
With mounting screws loosened, position contact springs. Tighten screws.

(B) TIME DELAY LONG CONTACT SPRING

Requirement
Selector reset bail on high part of its cam.
Min 1 oz---Max 1-1/2 oz
to just start insulator on long contact spring moving away from contact operating pawl extension.

To Adjust
Bend long contact spring.

3.72 Time Delay Motor Stop Mechanism (continued)



(Front View)

(A) TIME DELAY SHORT CONTACT SPRING

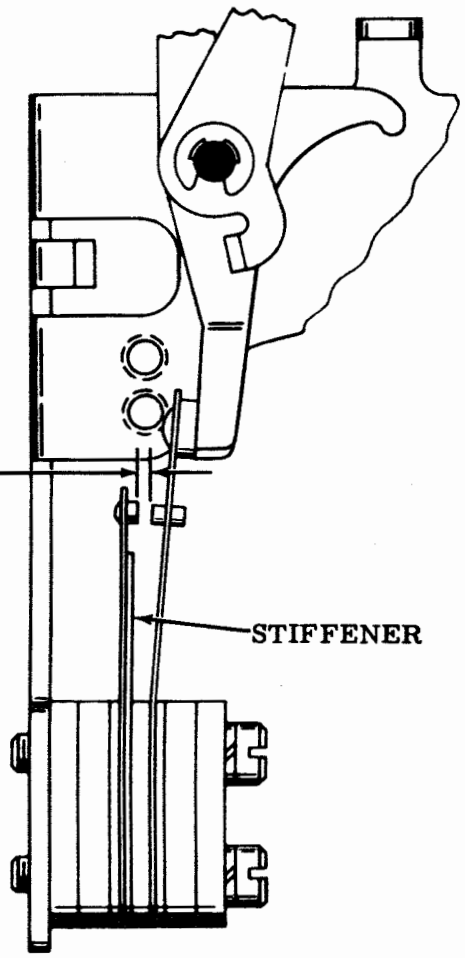
Requirement
Selector and function clutches disengaged and latched; contact operating pawl in indentations of both ratchet wheel flanges.
Min 2 oz---Max 3 oz
to just separate contact points of long and short contact springs.

To Adjust
Bend short contact spring.

(B) TIME DELAY CONTACT GAP

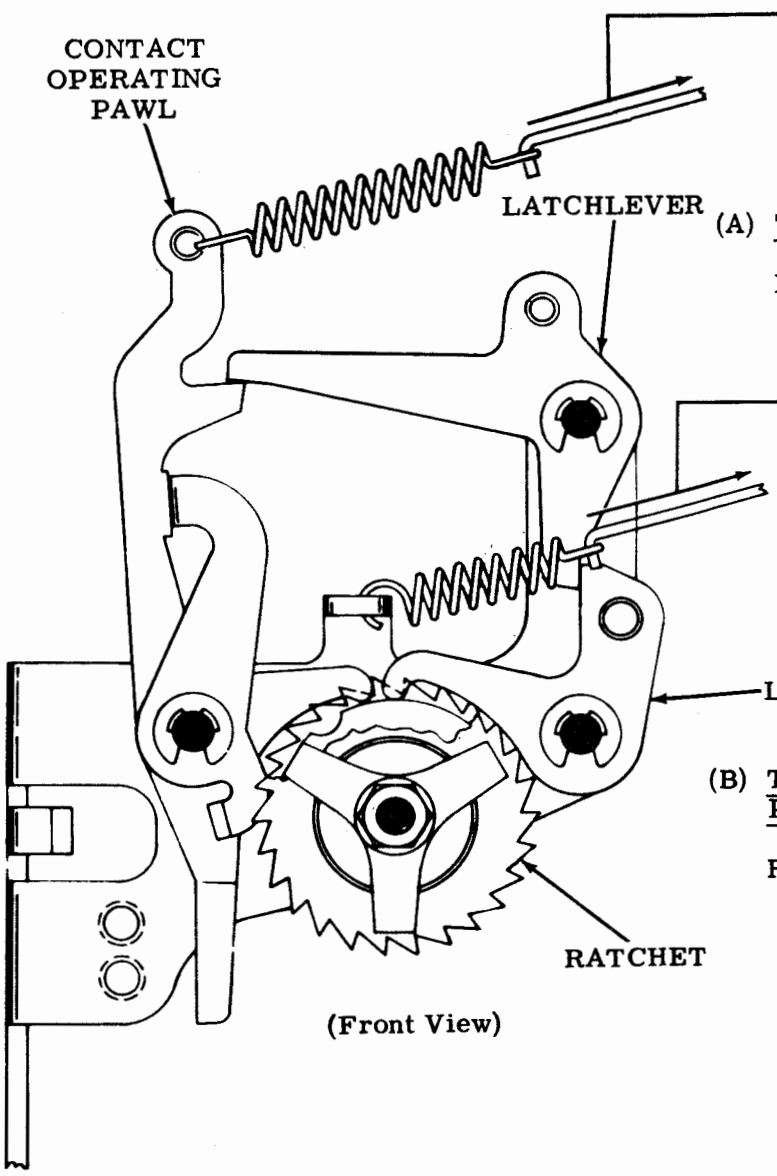
Requirement
Selector and function clutches disengaged and latched; contact operating pawl resting on high part of both ratchet wheel flanges.
Min 0.010 inch---Max 0.015 inch
clearance between contact points of long and short contact springs.

To Adjust
Bend short contact spring stiffener.



(Front View)

3.73 Time Delay Motor Stop Mechanism (continued)



(Front View)

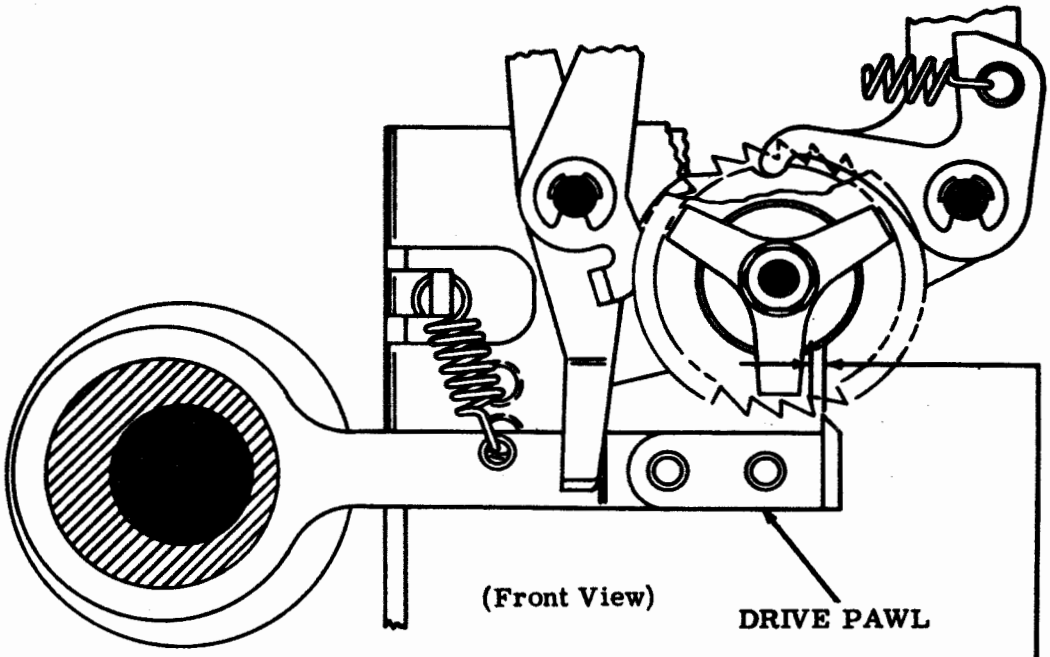
(A) TIME DELAY LATCH PAWL SPRING

Requirement
Latch pawl spring unhooked from pawl. Latch pawl held on high part of both ratchet wheel flanges.
Min 12 oz---Max 15 oz
to pull spring to installed length.

(B) TIME DELAY CONTACT OPERATING PAWL SPRING

Requirement
Contact operating pawl spring unhooked from latchlever.
Contact operating pawl held blocked by latchlever.
Min 2-1/4 oz---Max 3-1/4 oz
to pull spring to installed length.

3.74 Time Delay Motor Stop Mechanism (continued)



TIME DELAY DRIVE PAWL

Requirement

Rotate both ratchet wheels until latch pawl drops into indentations of both ratchet wheel flanges. Depress drive pawl downward out of engagement with ratchet teeth and take up play between latch pawl and ratchet wheels by moving ratchet wheels backward (counterclockwise). With eccentric follower drive arm at end of its extreme left travel, position drive pawl on drive arm so point of upper beveled edge of pawl rests on peak of first ratchet wheel tooth to right of vertical centerline through ratchet wheels or overtravels peak.

Min some---Max 0.010 inch

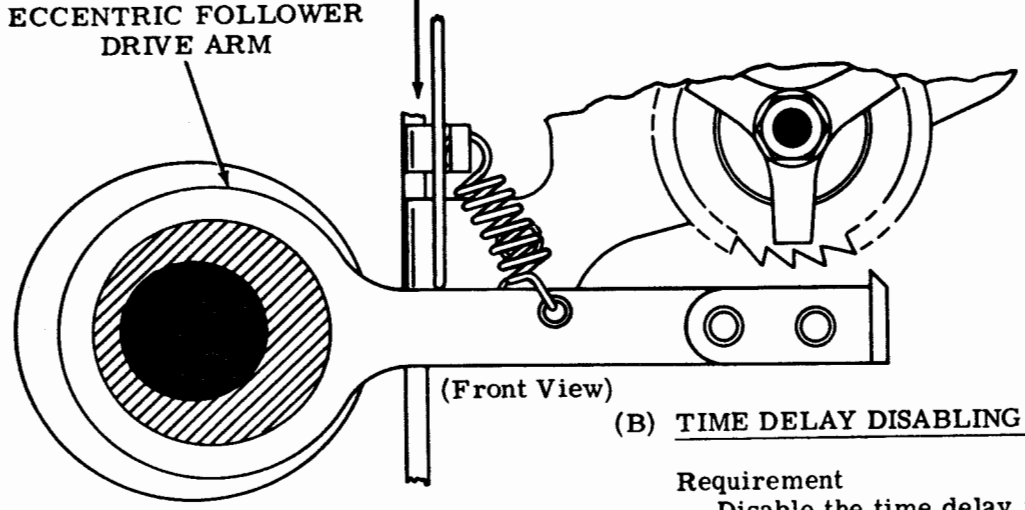
To Adjust

With mounting screws loosened, position drive pawl on its drive arm. Tighten screws.

3.75 Time Delay Motor Stop Mechanism (continued)

(A) TIME DELAY ECCENTRIC FOLLOWER DRIVE ARM SPRING

Requirement
Eccentric follower drive arm at end of its extreme right travel.
Min 3 oz---Max 4 oz
to just start drive pawl moving downward away from ratchet wheels.

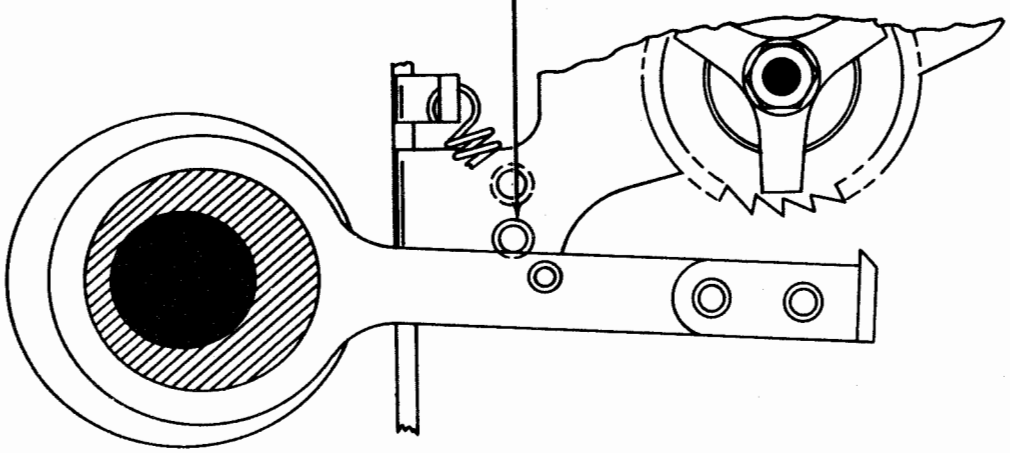


(Front View)

(B) TIME DELAY DISABLING DEVICE

Requirement
Disable the time delay motor stop contact mechanism when not required.

To Adjust
Remove pilot screw from its upper mounting hole in ratchet wheel bracket and reinstall it in its lower mounting hole so that it holds drive pawl out of engagement with ratchet wheels.



3.76 Vacuum Chad Removal (Send-Receive Typing Reperforator Set)

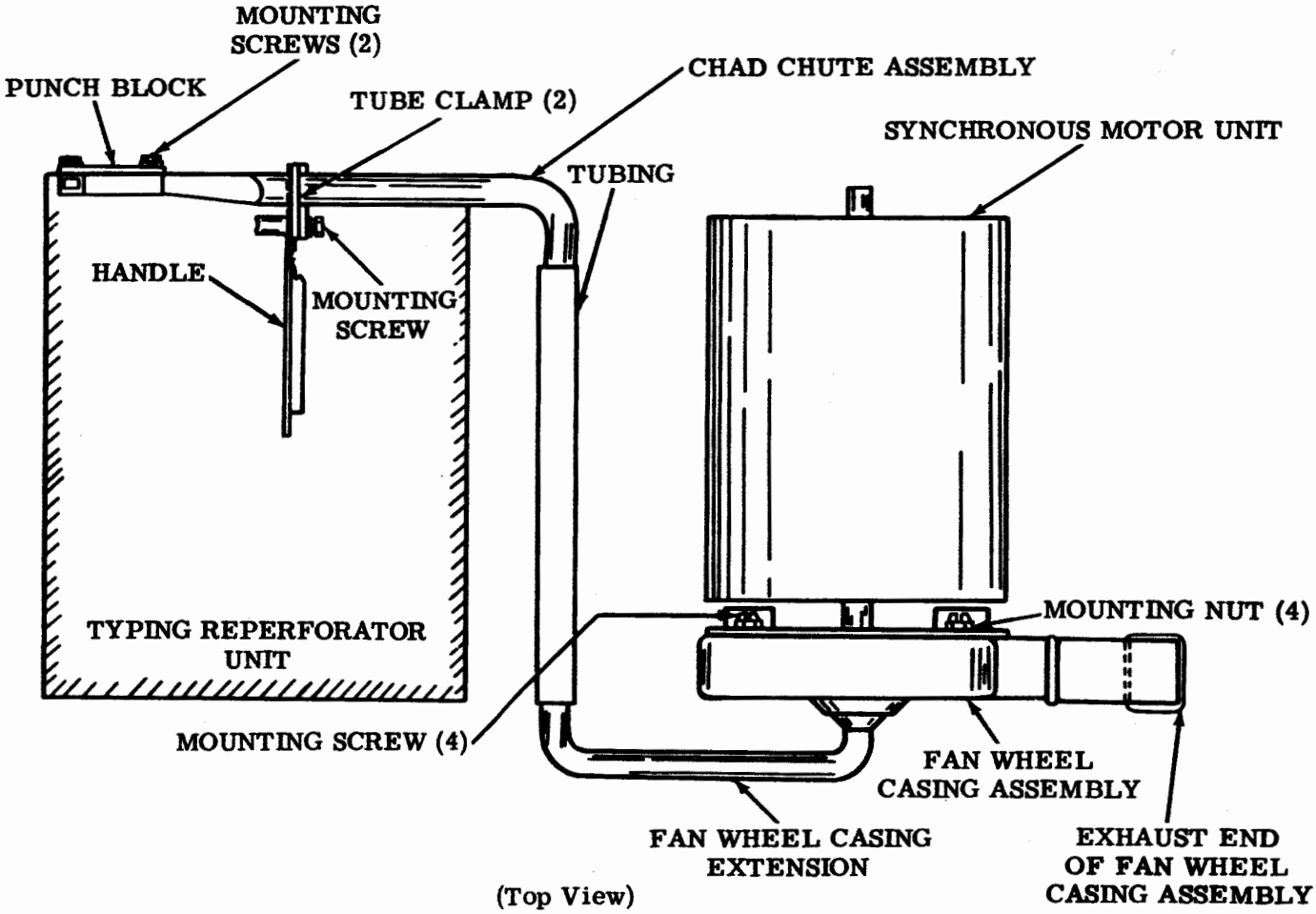
VACUUM CHAD REMOVAL

(1) Requirement
Directs punched chad to a convenient disposal outside set.

(2) Requirement
Synchronous motor with open tines of fan wheel facing away from motor provides power for chad disposal.

(3) Requirement
A nylon bag or a nylon chute attached to exhaust end of fan wheel assembly furnished as alternate means of chad disposal outside of cabinet.

To Adjust
With mounting hardware friction tight, position chad chute assembly, tubing, and fan wheel casing assembly so there is no interference with adjacent units. Tighten mounting hardware.



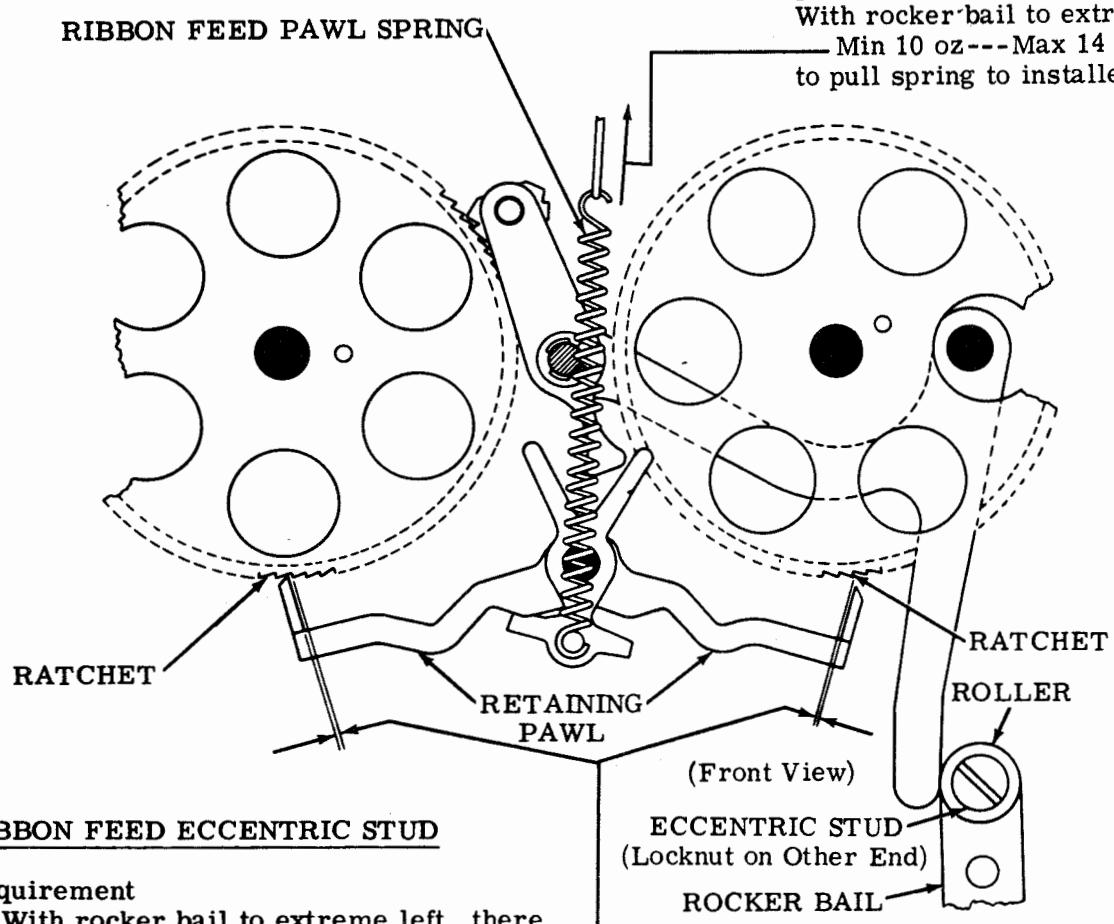
(Top View)

4. EARLIER DESIGN MECHANISMS

4.01 Ribbon Feed Mechanism for Chadless Tape and Fully Perforated Tape (For Later Design see 2.64 and 2.65)

(A) RIBBON FEED PAWL SPRING

Requirement
With rocker bail to extreme left
Min 10 oz---Max 14 oz
to pull spring to installed length.



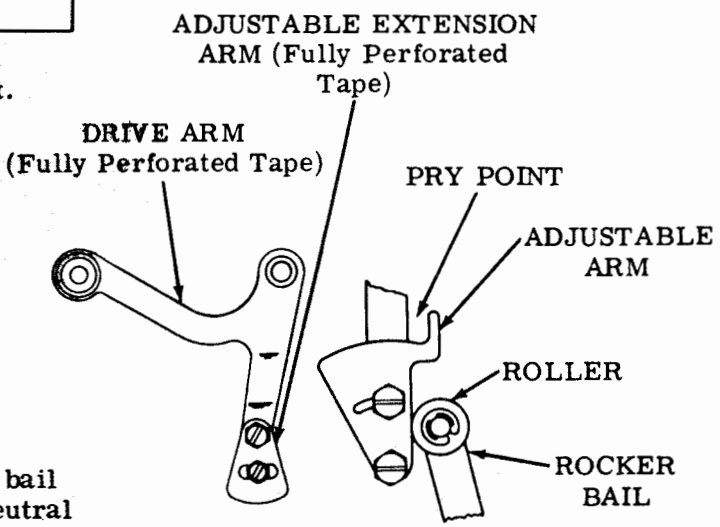
(B) RIBBON FEED ECCENTRIC STUD

Requirement
With rocker bail to extreme left, there should be
Min 0.012 inch---Max 0.028 inch
between retaining pawl and ratchet tooth on side where clearance is least.

(1) To Adjust
Units equipped with eccentric stud:
Position stud with locknut loosened.
Tighten nut.

(2) To Adjust
Units equipped with adjustable arm:
By means of pry point, position adjustable arm with mounting screws friction tight. Tighten screws.

Note: Units in which the old style rocker bail is present, position the eccentric in its neutral position and make the adjustment with the adjustable drive arm.



4.02 Ribbon Feed Mechanism for Chadless Tape and Fully Perforated Tape (continued)

(A) RIBBON FEED DRIVE ARM SPRING

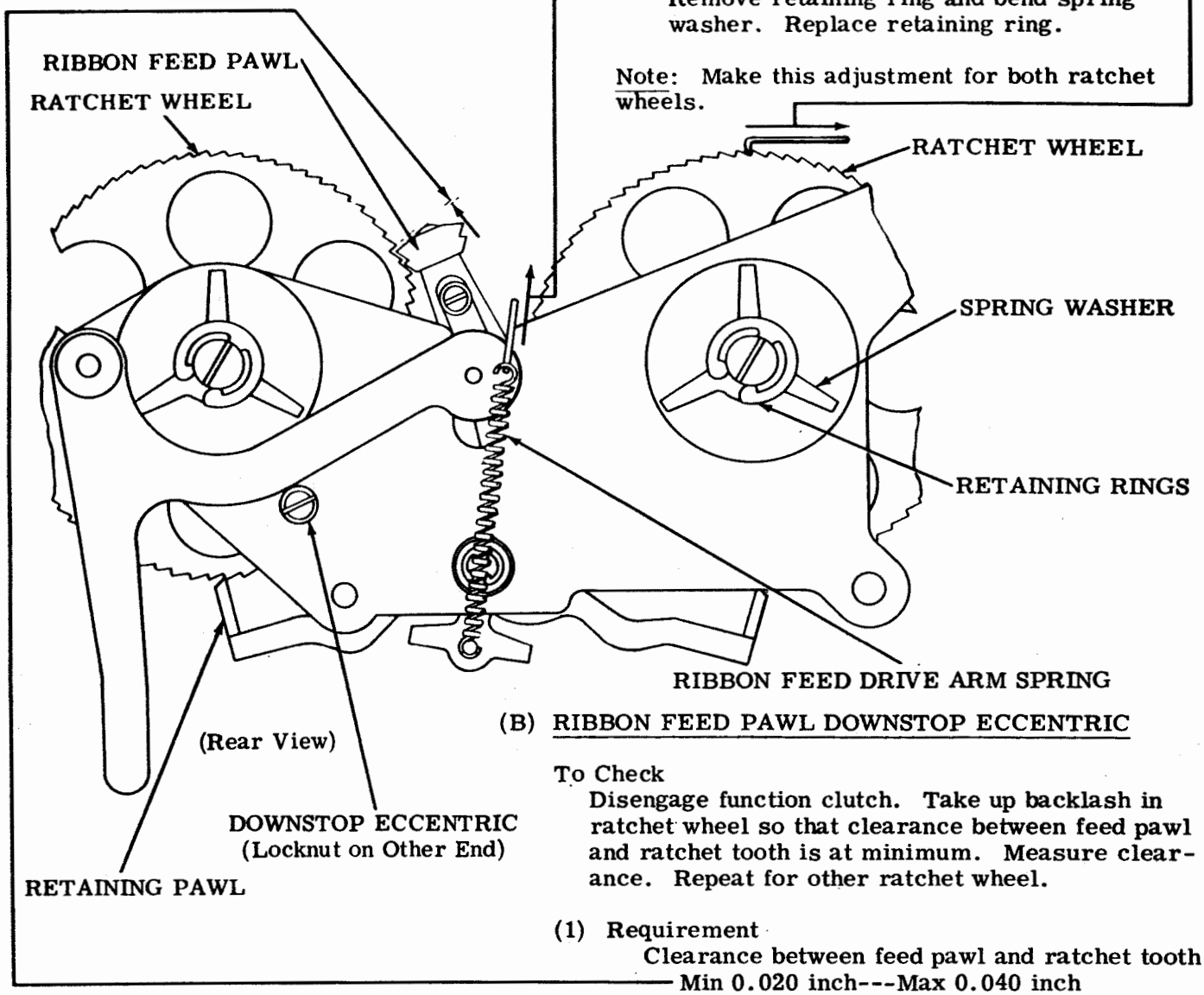
Requirement
With unit in stop position
Min 3 oz---Max 5 oz
to pull spring to installed length.

(C) RIBBON RATCHET WHEEL SPRING WASHERS

Requirement
With feed pawl and retaining pawl shifted to opposite ratchet wheel
Min 1 oz---Max 2-1/2 oz
to start wheel turning.

To Adjust
Remove retaining ring and bend spring washer. Replace retaining ring.

Note: Make this adjustment for both ratchet wheels.



(B) RIBBON FEED PAWL DOWNSTOP ECCENTRIC

To Check
Disengage function clutch. Take up backlash in ratchet wheel so that clearance between feed pawl and ratchet tooth is at minimum. Measure clearance. Repeat for other ratchet wheel.

(1) Requirement
Clearance between feed pawl and ratchet tooth
Min 0.020 inch---Max 0.040 inch
on side where clearance is least.

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

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

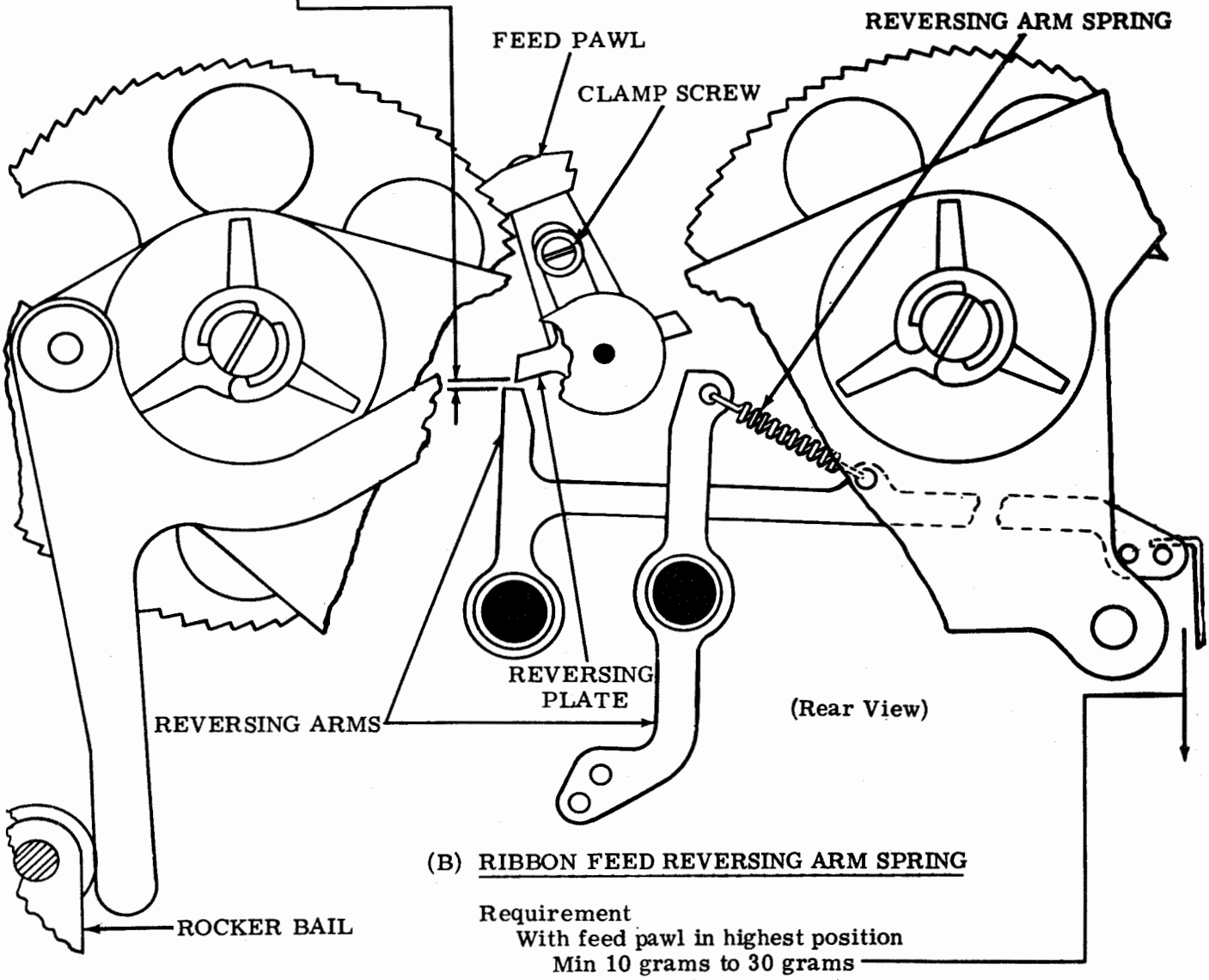
4.03 Ribbon Feed Mechanism for Chadless Tape and Fully Perforated Tape (continued)

(A) RIBBON REVERSING PLATE

To Check
Position rocker bail to extreme left. Hold reversing arm under reversing plate and measure clearance. With feed pawl against other ratchet, repeat procedure for other reversing arm.

Requirement
Clearance between reversing arm and reversing plate
Min 0.010 inch---Max 0.020 inch
at reversing arm where clearance is least.

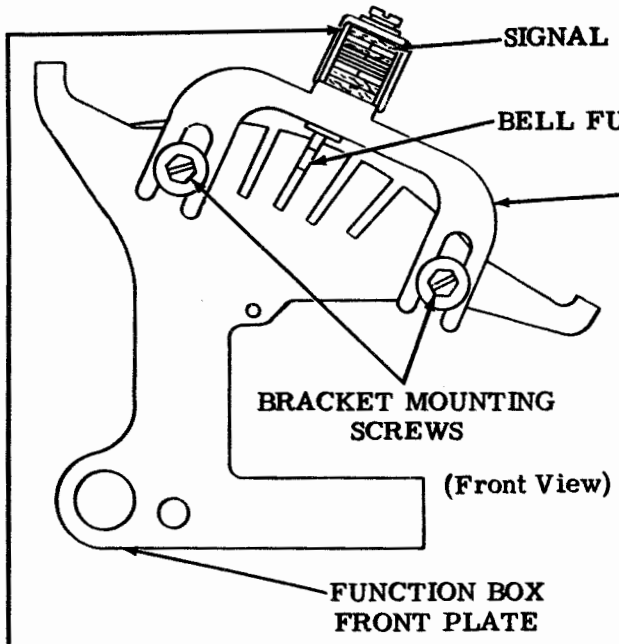
To Adjust
Position reversing plate with clamp screw loosened.
Tighten screw.



(B) RIBBON FEED REVERSING ARM SPRING

Requirement
With feed pawl in highest position
Min 10 grams to 30 grams
to start reversing arm moving.

4.04 Signal Bell Contact Mechanism (For Later Design see 3.02)



(A) CONTACT MOUNTING BRACKET

(1) To Check
Disconnect contact. Select LETTERS code combination (12345). Rotate main shaft until bell function blade is in lowest position (resting on bell-cranks).

Requirement
Normally open contact open.

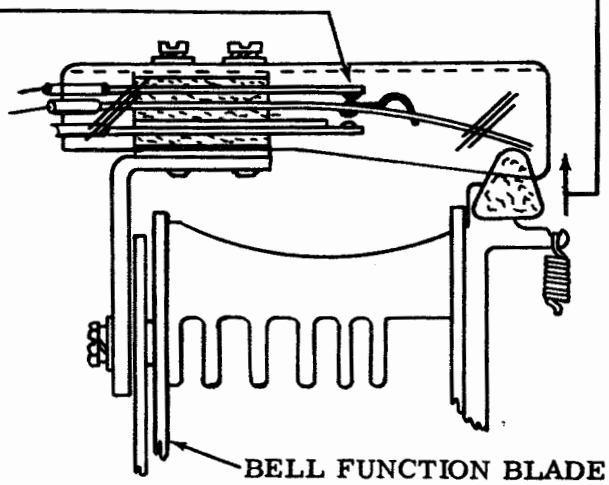
(2) To Check
Select BELL code combination and rotate main shaft until bell function blade is in lowest position.

Requirement
Bell function blade in slots of bell-cranks and normally open contact closed.

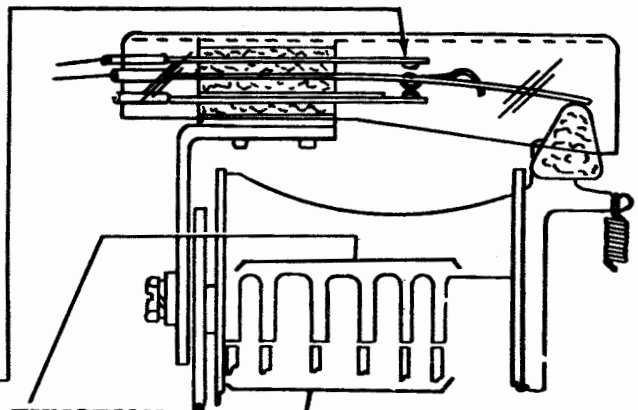
To Adjust
With mounting screws loosened, position contact mounting bracket. Tighten screws.

(B) FUNCTION BLADE SPRING

Requirement --- Refer to 2.49.



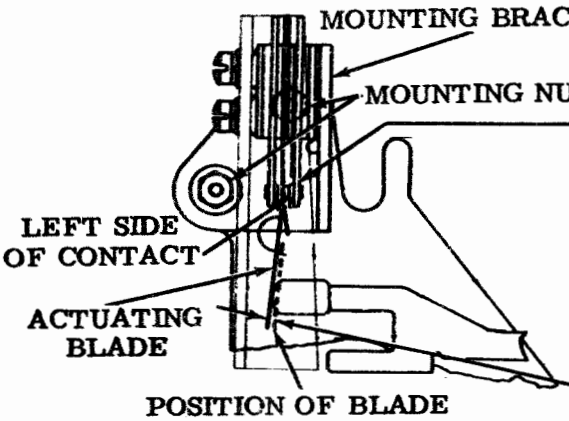
(Right Side View)



(Right Side View)

CAUTION: THERE SHOULD BE SOME CLEARANCE BETWEEN RIBBON FEED DRIVE ROLLER AND CONTACT MOUNTING BRACKET WHEN UNIT IS IN STOP POSITION. IF NECESSARY, REFINE ABOVE ADJUSTMENT.

4.05 LETTERS-FIGURES Contact Mechanism (For Later Design see 3.12 and 3.18)



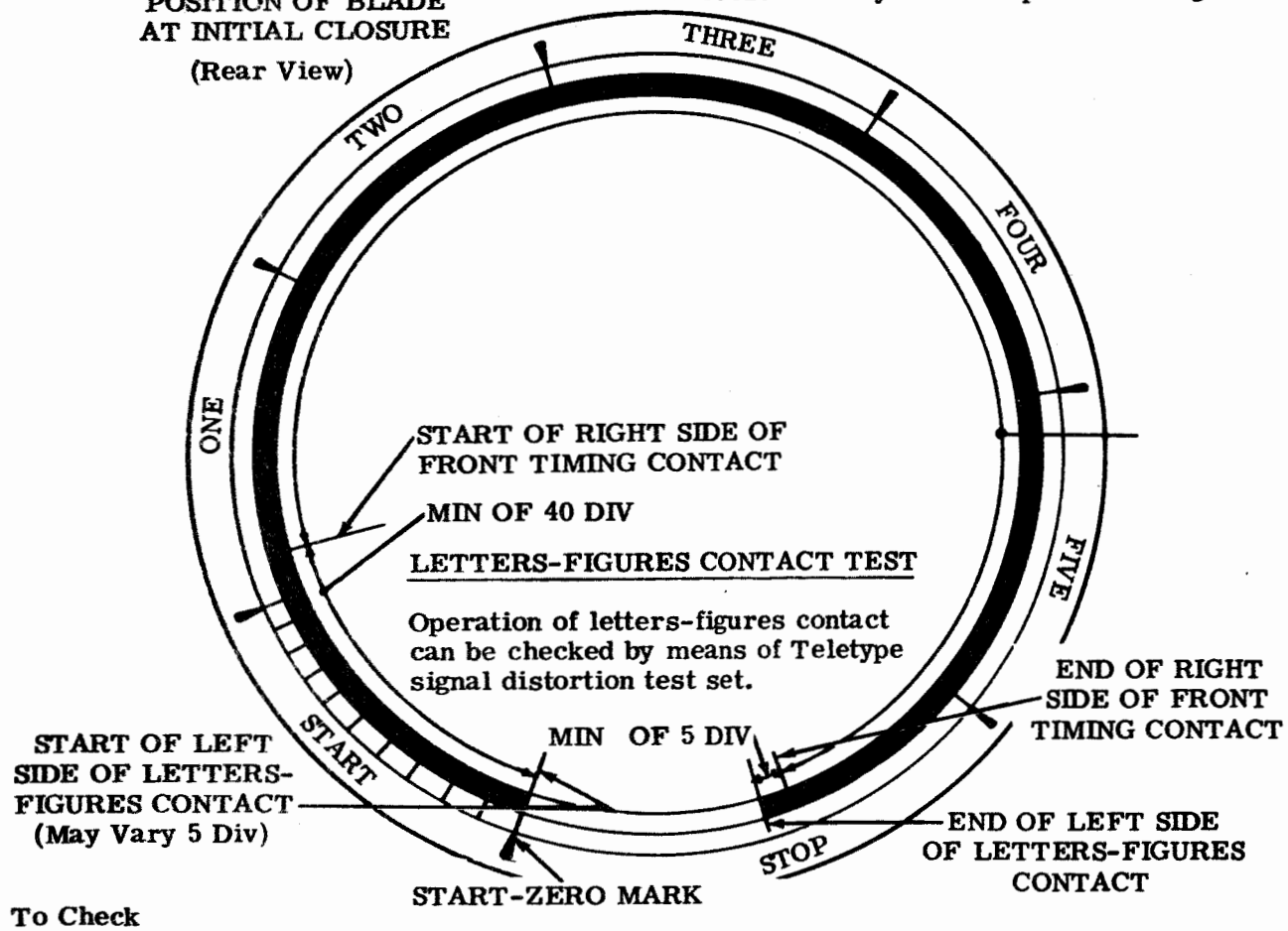
MOUNTING BRACKET

Requirement

With unit in LETTERS condition and function clutch disengaged, left side of contact should be closed.

To Adjust

With mounting nuts loosened, rotate mounting bracket until left side of contact just closes and note position of actuating blade. Rotate bracket further until actuating blade is approximately 0.020 inch beyond noted position. Tighten nuts.



To Check

Record start and end of trace of right side of front timing contact. Connect neon trace lamp across left side of letters-figures contact. Alternately select LETTERS (12345) and FIGURES (12-45) code combinations and observe trace. Set START-ZERO mark of test set scale at start of trace.

(1) Requirement

Left side of letters-figures contact should close before right side of timing contacts close and should open after right side of timing contacts open.

(2) Requirement

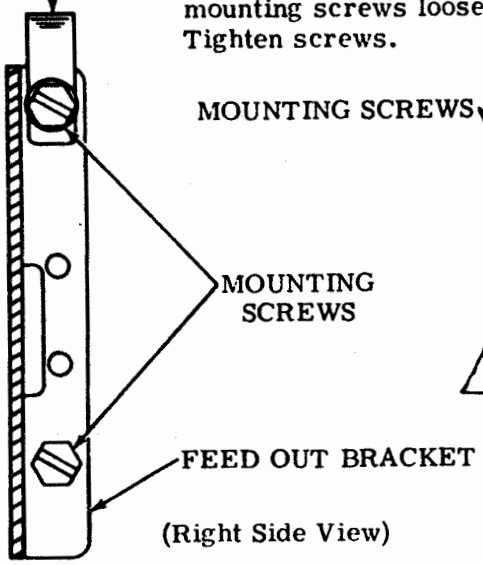
No bounce or chatter of letters-figures contact during part of function cycle when right side of timing contacts are closed.

4.06 Noninterfering BLANK Tape Feed Out Mechanism
(For Later Design see 3.36)

(A) FEED OUT BRACKET

Requirement
Outer ratchet check pawl riding fully on ratchet when play is taken up in either direction.

To Adjust
Position feed out bracket with mounting screws loosened. Tighten screws.

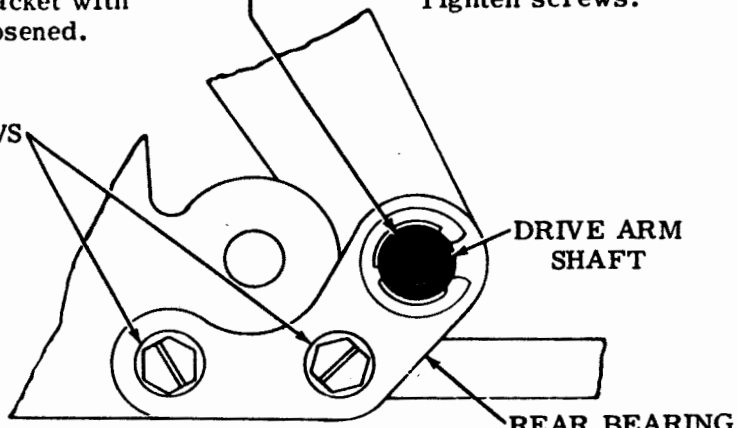


(Right Side View)

(B) DRIVE ARM SHAFT REAR BEARING

Requirement
Drive arm shaft finger free in its bearings.

To Adjust
Position rear bearing with mounting screws loosened. Tighten screws.



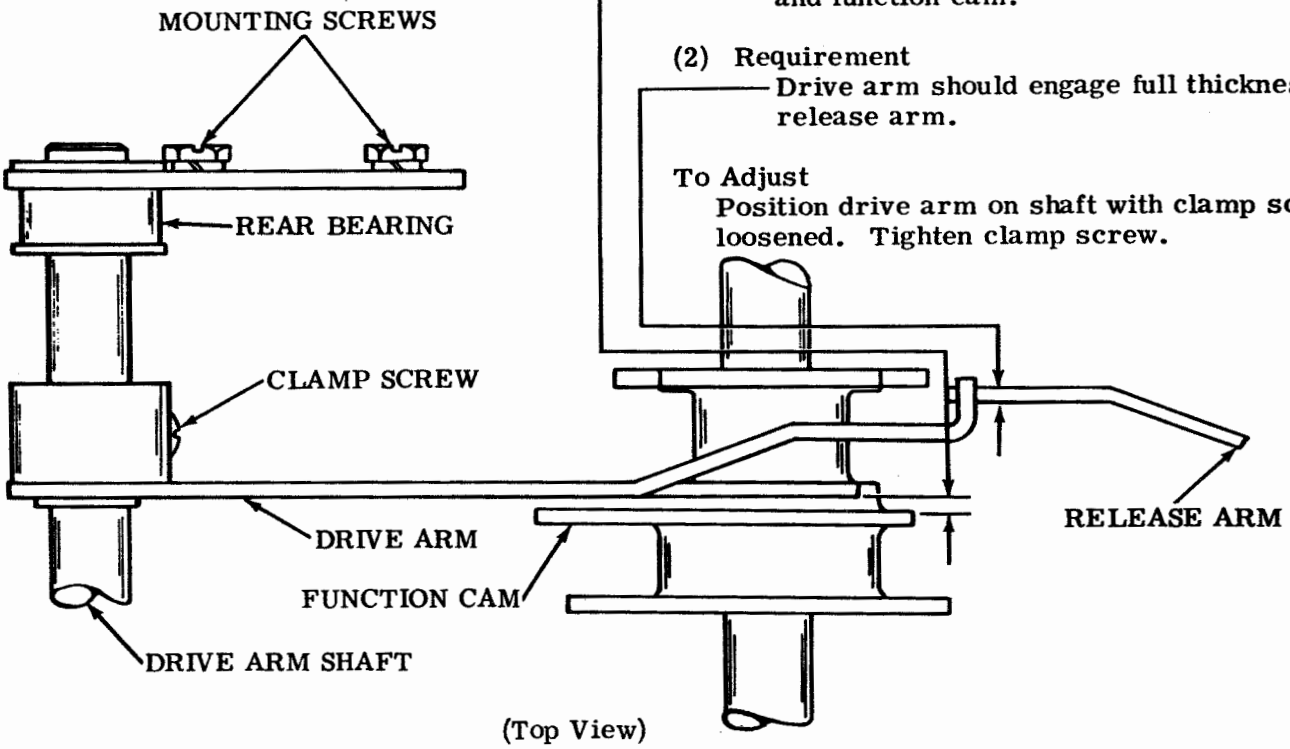
(Rear View)

(C) DRIVE ARM

(1) Requirement
When play is taken up to make it minimum, at least some clearance between drive arm and function cam.

(2) Requirement
Drive arm should engage full thickness of release arm.

To Adjust
Position drive arm on shaft with clamp screw loosened. Tighten clamp screw.



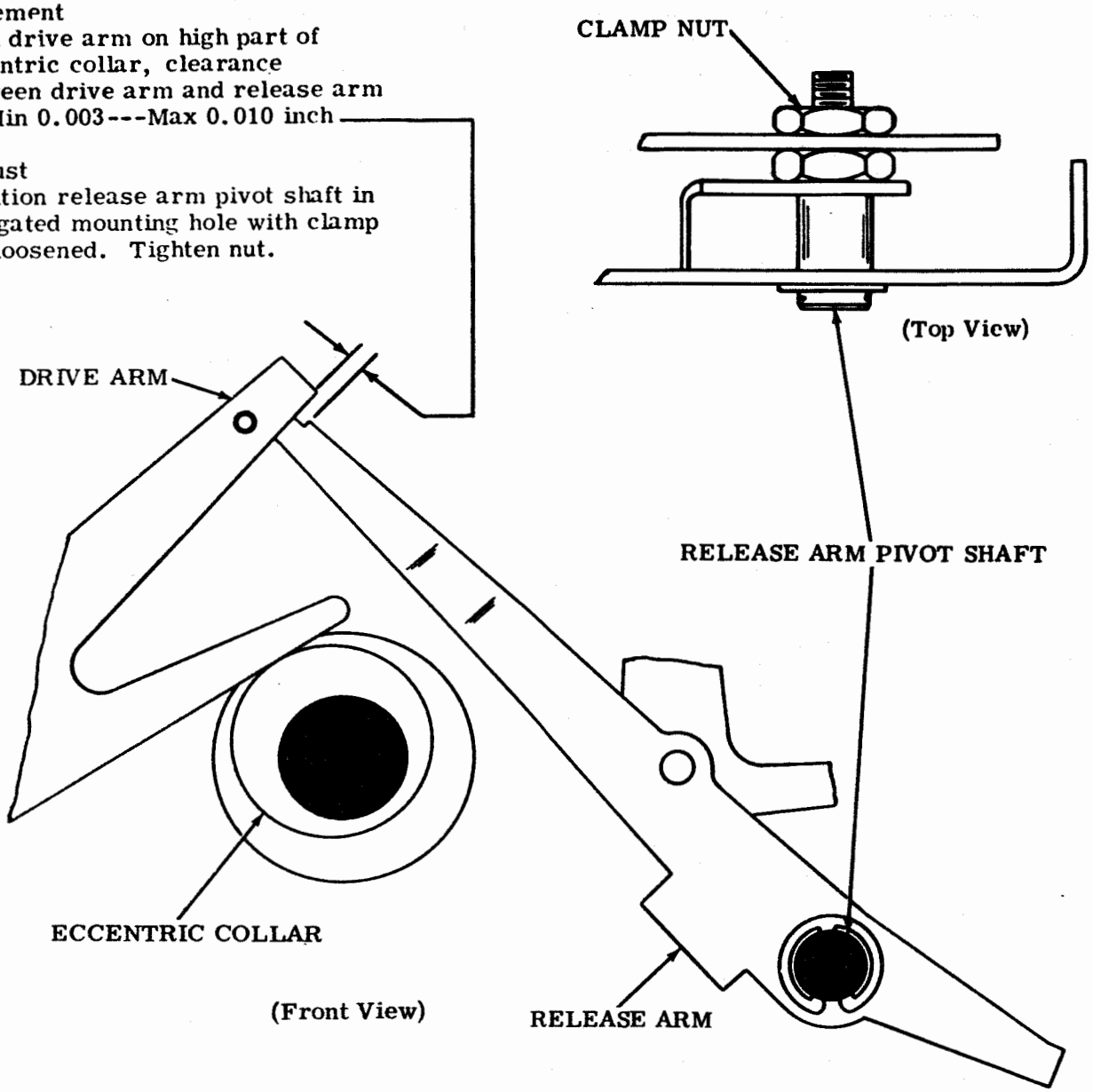
(Top View)

4.07 Noninterfering BLANK Tape Feed Out Mechanism (continued)

RELEASE ARM

Requirement
With drive arm on high part of eccentric collar, clearance between drive arm and release arm
Min 0.003---Max 0.010 inch

To Adjust
Position release arm pivot shaft in elongated mounting hole with clamp nut loosened. Tighten nut.



Note: Feed pawl must be disengaged from feed wheel ratchet.

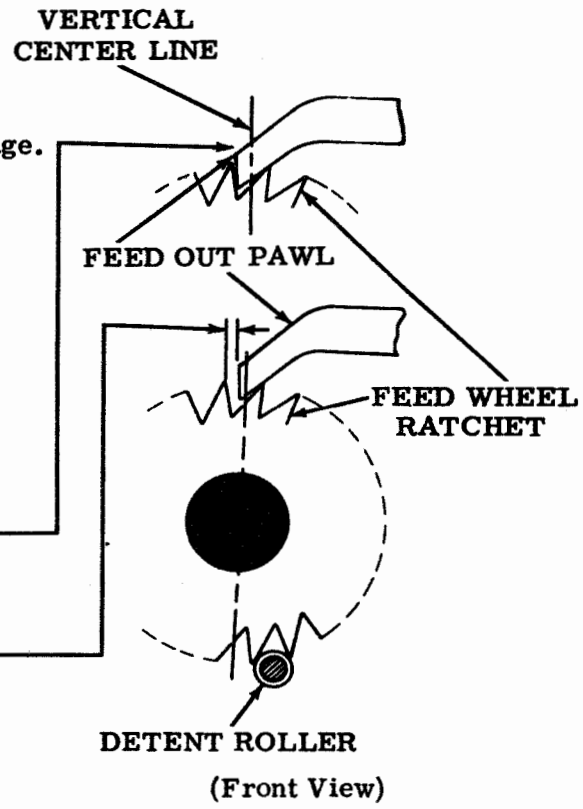
4.08 Noninterfering BLANK Tape Feed Out Mechanism (continued)

(A) FEED OUT PAWL

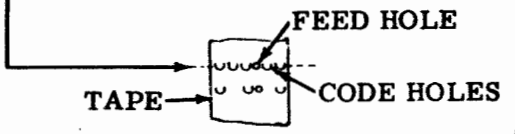
To Check
With unit operating under power, allow feed out operation to be interrupted by an incoming message.

Requirement
Feed hole and code holes of first character on same center line.

To Adjust
With power off, check detent roller for full engagement with ratchet. Latch feed out mechanism in operated position. Position main shaft so that drive arm is on high part of eccentric collar. With clamp screw loosened, position feed out pawl against first ratchet tooth to left of vertical center line. Tighten clamp screw friction tight. Rotate main shaft until feed out pawl has retracted
Min 0.020 inch---Max 0.030 inch
Reposition pawl against tooth. Tighten clamp screw. Recheck requirement.



(Front View)



(B) FEED OUT PAWL SPRING

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

Note: After completion of a message (feed out mechanism unlatched), feed out pawl should rest on upper portion of a feed wheel ratchet tooth and should not engage vertical face of any tooth. Refine adjustment if necessary.

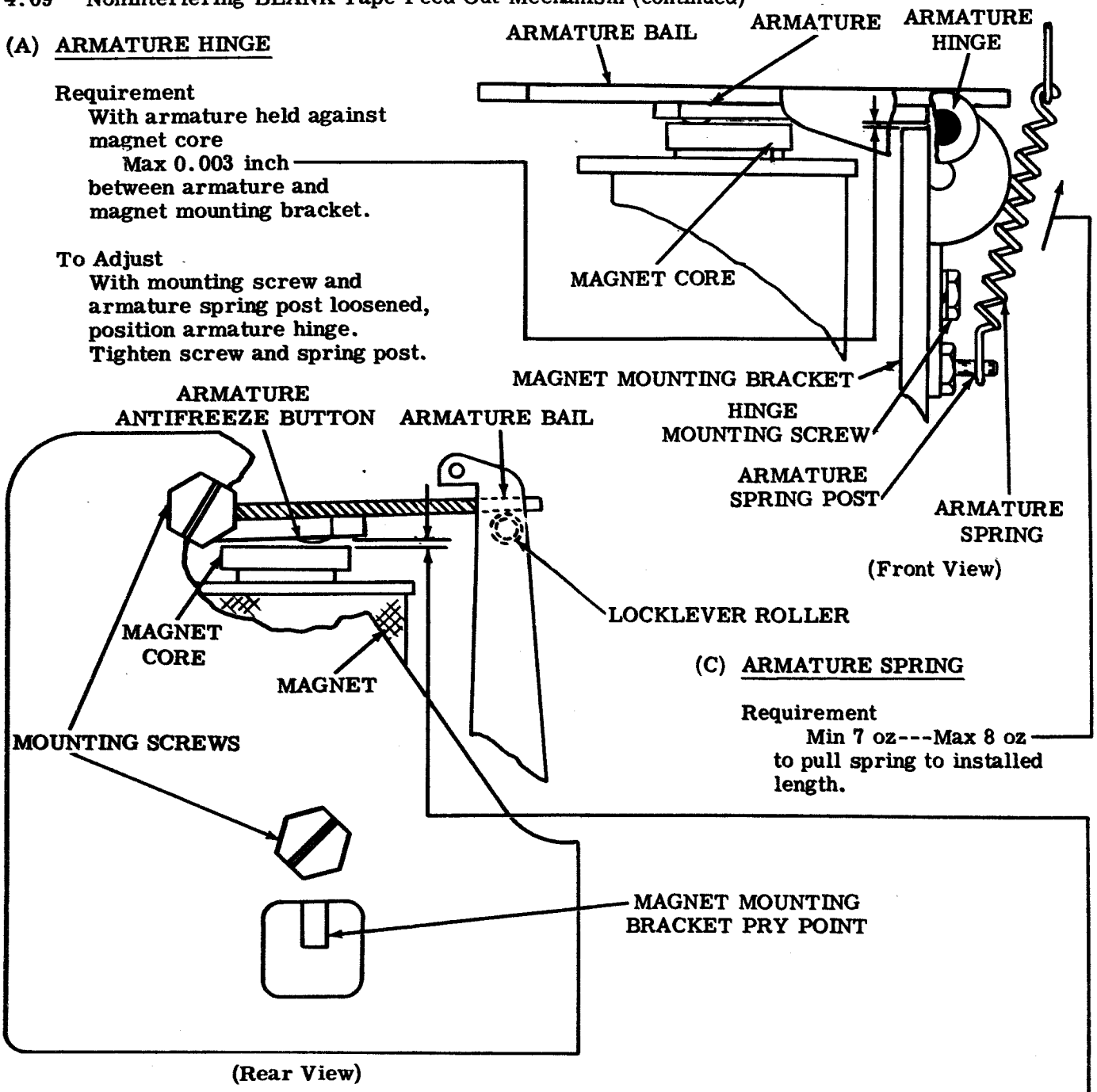
(Front View)

4.09 Noninterfering BLANK Tape Feed Out Mechanism (continued)

(A) ARMATURE HINGE

Requirement
With armature held against magnet core
Max 0.003 inch
between armature and magnet mounting bracket.

To Adjust
With mounting screw and armature spring post loosened, position armature hinge. Tighten screw and spring post.



(C) ARMATURE SPRING

Requirement
Min 7 oz---Max 8 oz
to pull spring to installed length.

(B) MAGNET MOUNTING BRACKET

Requirement
Place tape-out mechanism in unoperated condition (magnet de-energized and drive arm latched by release arm). Take up all clearance between locklever roller and armature bail. Clearance between magnet core and armature antifreeze button
Min 0.020 inch---Max 0.025 inch

To Adjust
By means of pry point, position magnet mounting bracket with mounting screws loosened. Tighten screws.

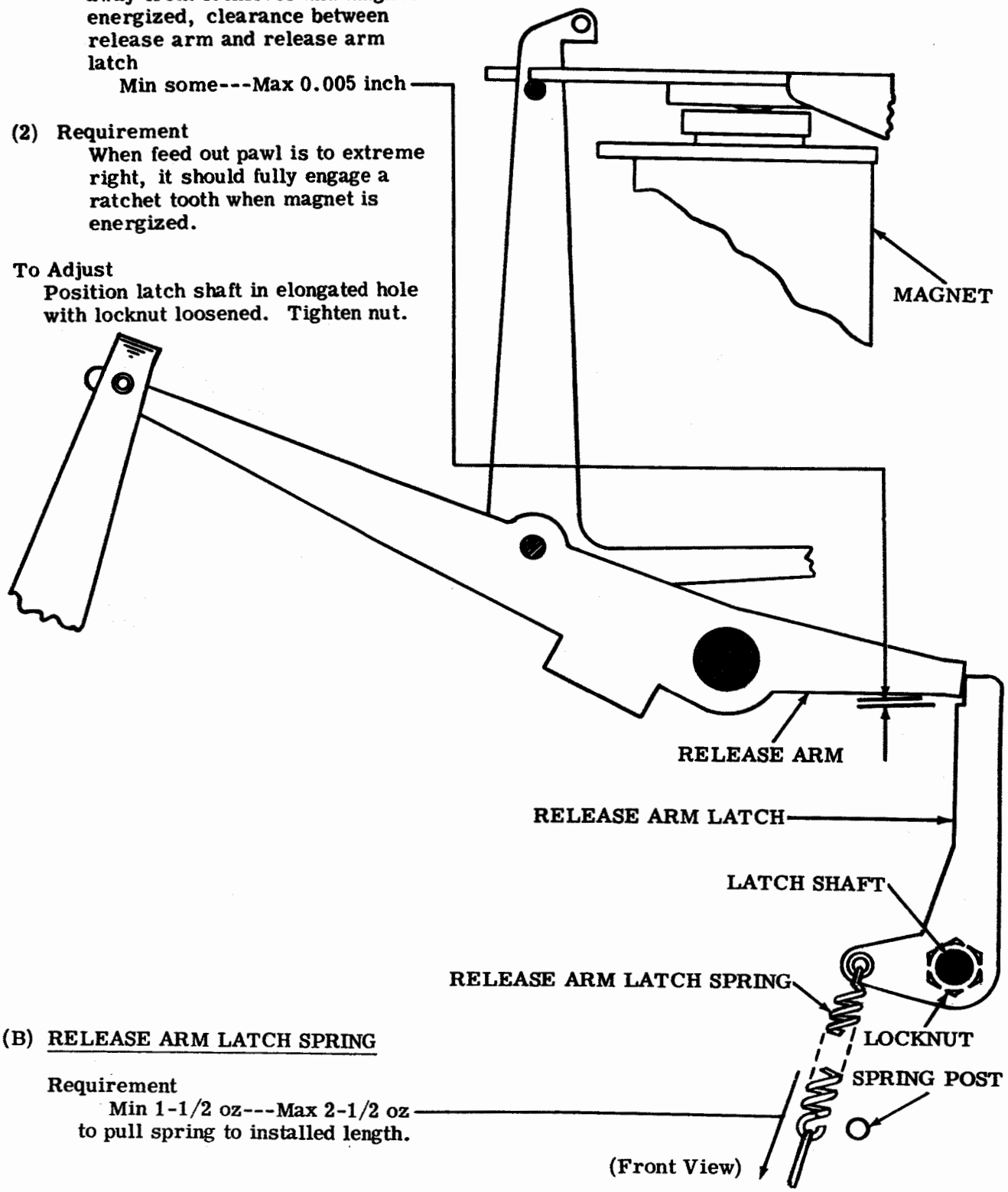
4.10 Noninterfering BLANK Tape Feed Out Mechanism (continued)

(A) RELEASE ARM LATCH

(1) Requirement
With kick-out roller positioned away from locklever and magnet energized, clearance between release arm and release arm latch
Min some---Max 0.005 inch

(2) Requirement
When feed out pawl is to extreme right, it should fully engage a ratchet tooth when magnet is energized.

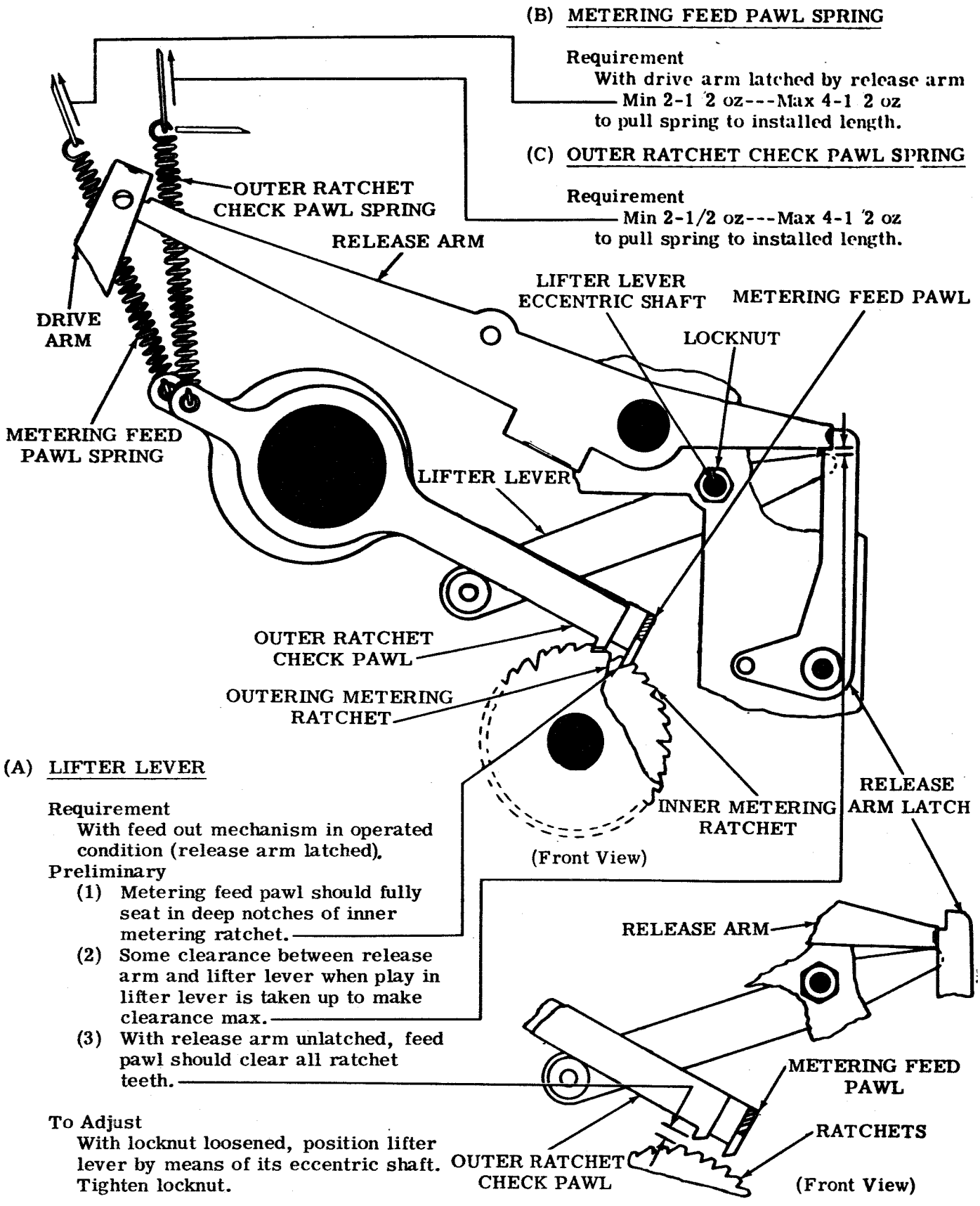
To Adjust
Position latch shaft in elongated hole with locknut loosened. Tighten nut.



(B) RELEASE ARM LATCH SPRING

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

4.11 Noninterfering BLANK Tape Feed Out Mechanism (continued)

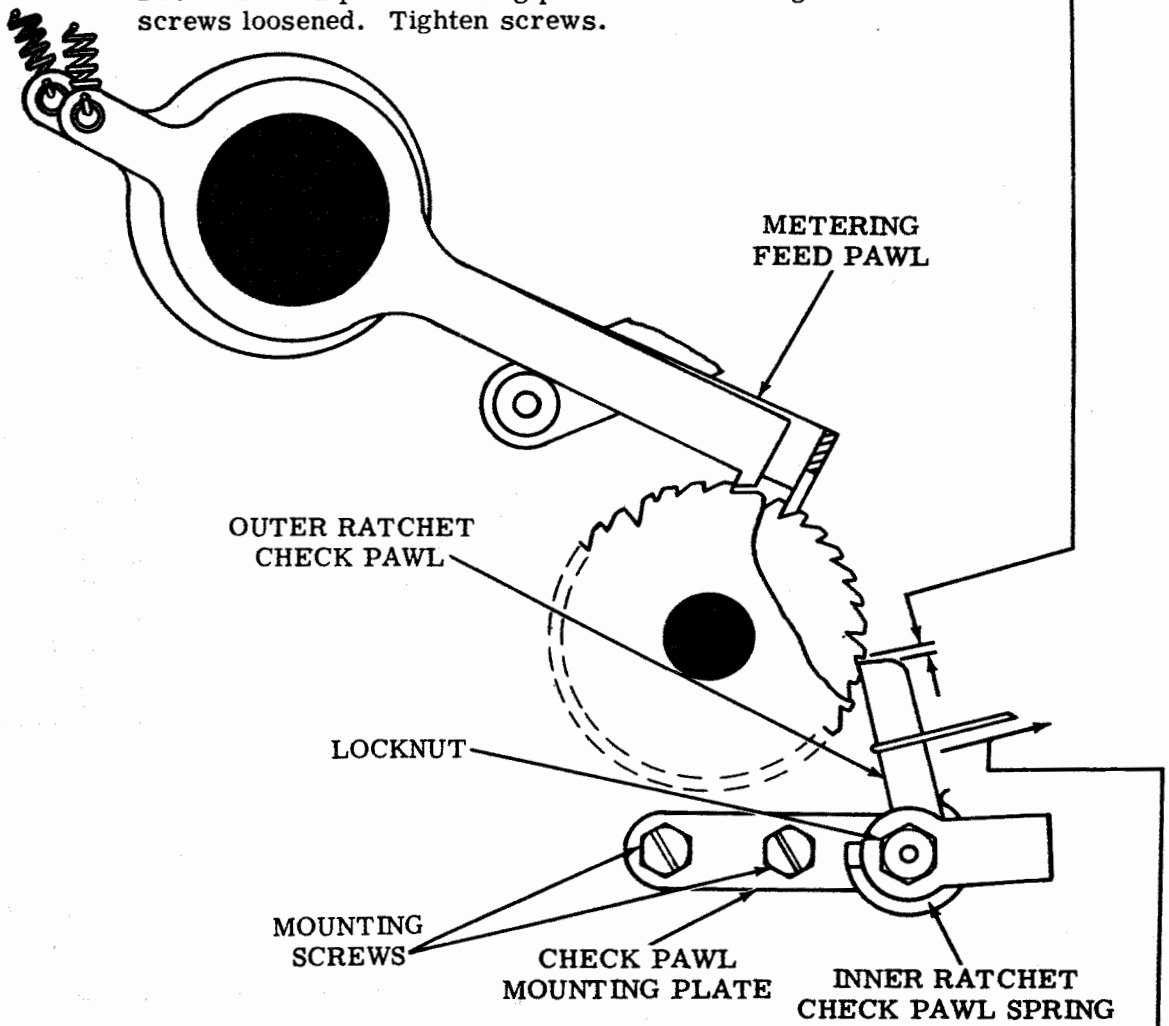


4.12 Noninterfering BLANK Tape Feed Out Mechanism (continued)

(A) INNER RATCHET CHECK PAWL

Requirement
With feed out mechanism in operated condition (drive arm unlatched), present a deep notch of both ratchets to metering feed pawl and position pawl to extreme left. Clearance between inner ratchet check pawl and ratchet tooth
Min 0.005 inch---Max 0.015 inch

To Adjust
Position check pawl mounting plate with mounting screws loosened. Tighten screws.



(Front View)

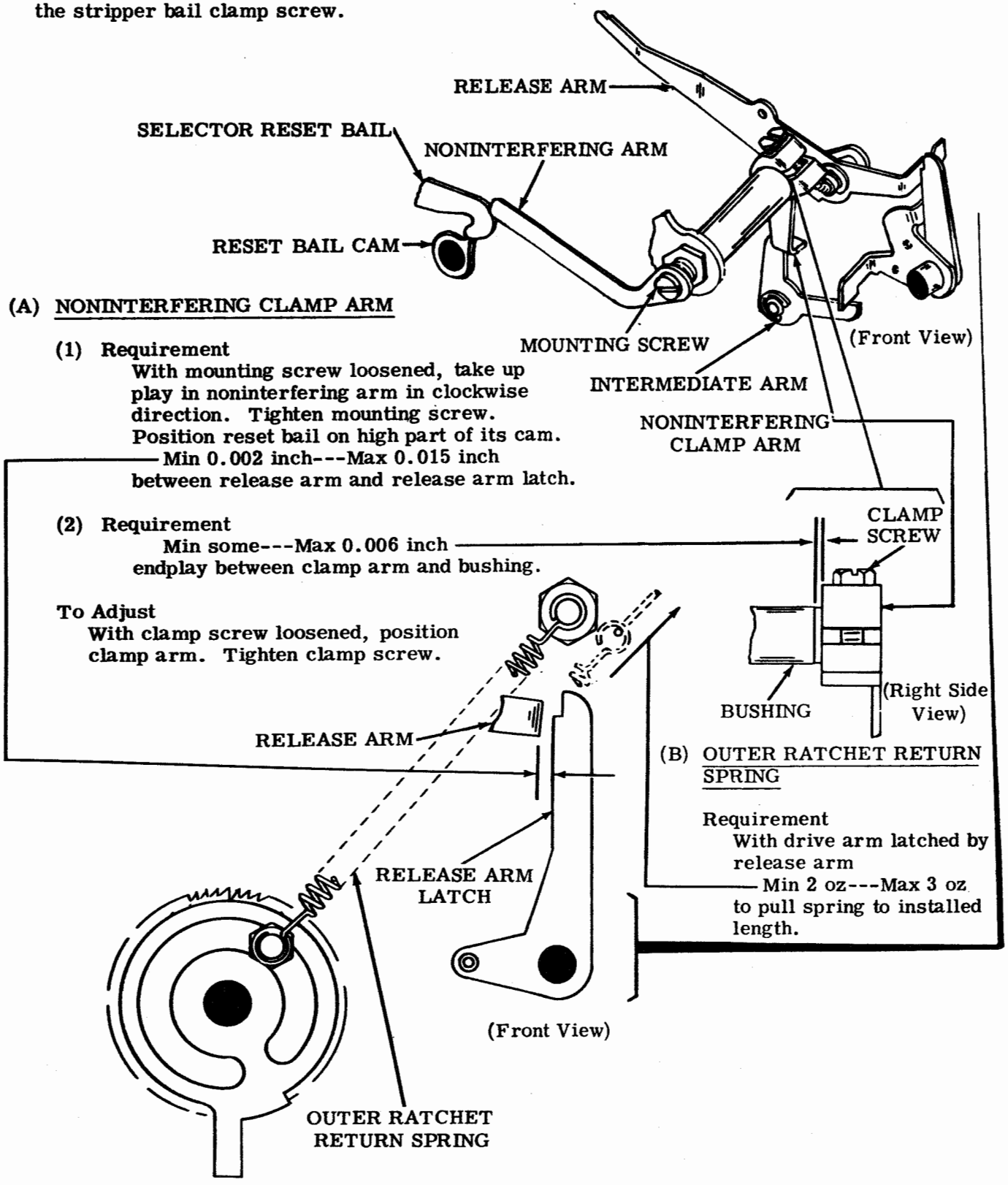
(B) INNER RATCHET CHECK PAWL SPRING

Requirement
Min 1/2 oz---Max 1-1/2 oz
to pull check pawl away from ratchet.

To Adjust
Position spring with locknut loosened. Rotating spring clockwise increases tension; rotating spring counterclockwise decreases tension. Tighten locknut.

4.13 Noninterfering BLANK Tape Feed Out Mechanism (continued)

Note: Loosen the stripper bail clamp screw and take up the play between the stripper bail and the shaft in a clockwise direction before making the following adjustment. Tighten the stripper bail clamp screw.



(A) NONINTERFERING CLAMP ARM

(1) Requirement
With mounting screw loosened, take up play in noninterfering arm in clockwise direction. Tighten mounting screw. Position reset bail on high part of its cam.
Min 0.002 inch---Max 0.015 inch between release arm and release arm latch.

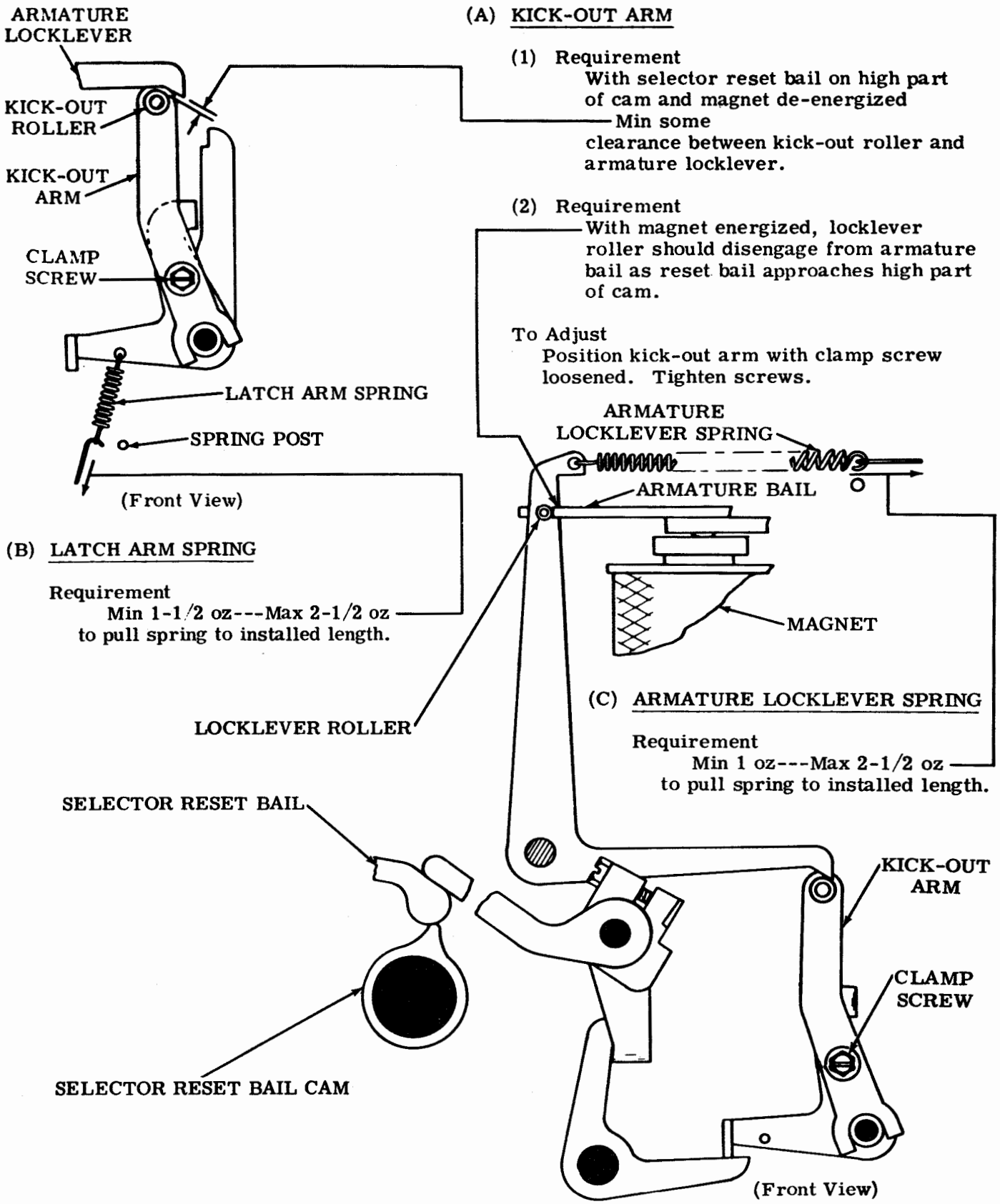
(2) Requirement
Min some---Max 0.006 inch endplay between clamp arm and bushing.

To Adjust
With clamp screw loosened, position clamp arm. Tighten clamp screw.

(B) OUTER RATCHET RETURN SPRING

Requirement
With drive arm latched by release arm
Min 2 oz---Max 3 oz to pull spring to installed length.

4.14 Noninterfering BLANK Tape Feed Out Mechanism (continued)



4.15 Noninterfering BLANK Tape Feed Out Mechanism (continued)

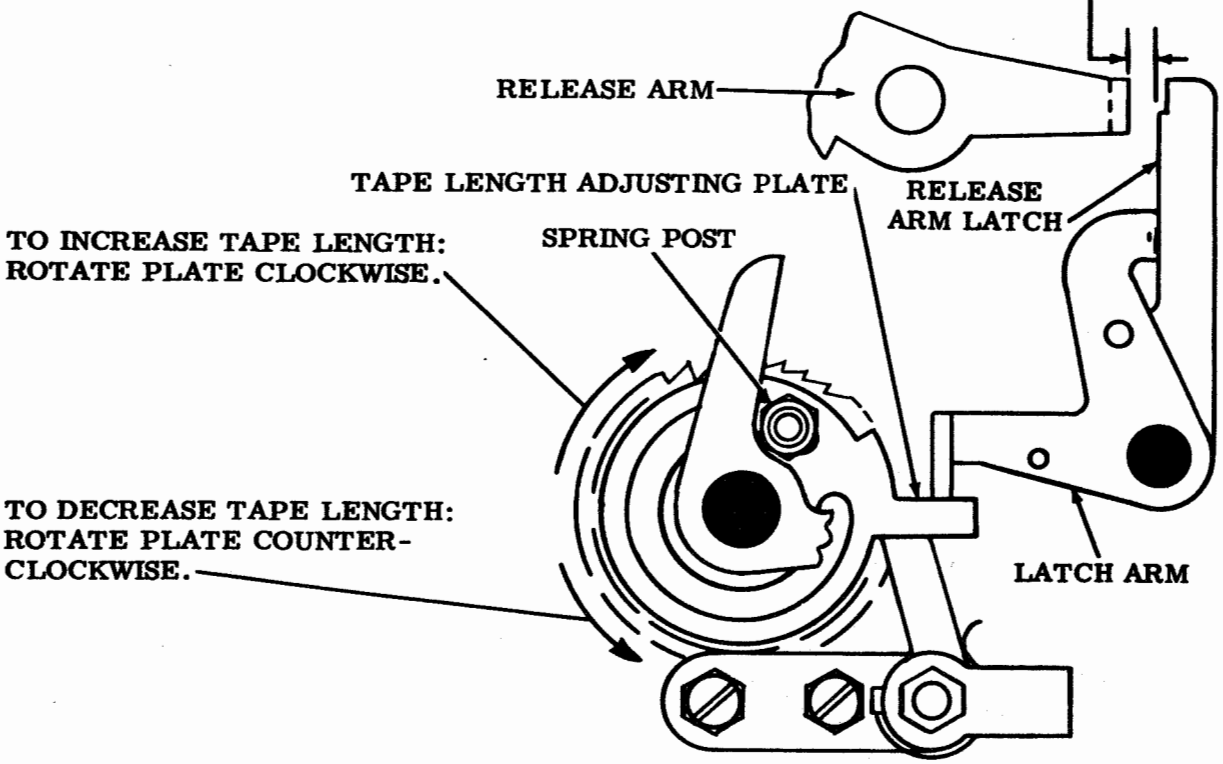
TAPE LENGTH ADJUSTING PLATE

Note: Amount of tape fed out can be set for any length up to 17 inches.

(1) Requirement
When unit is operating under power and feed out magnet is energized, correct length of tape should be fed out.

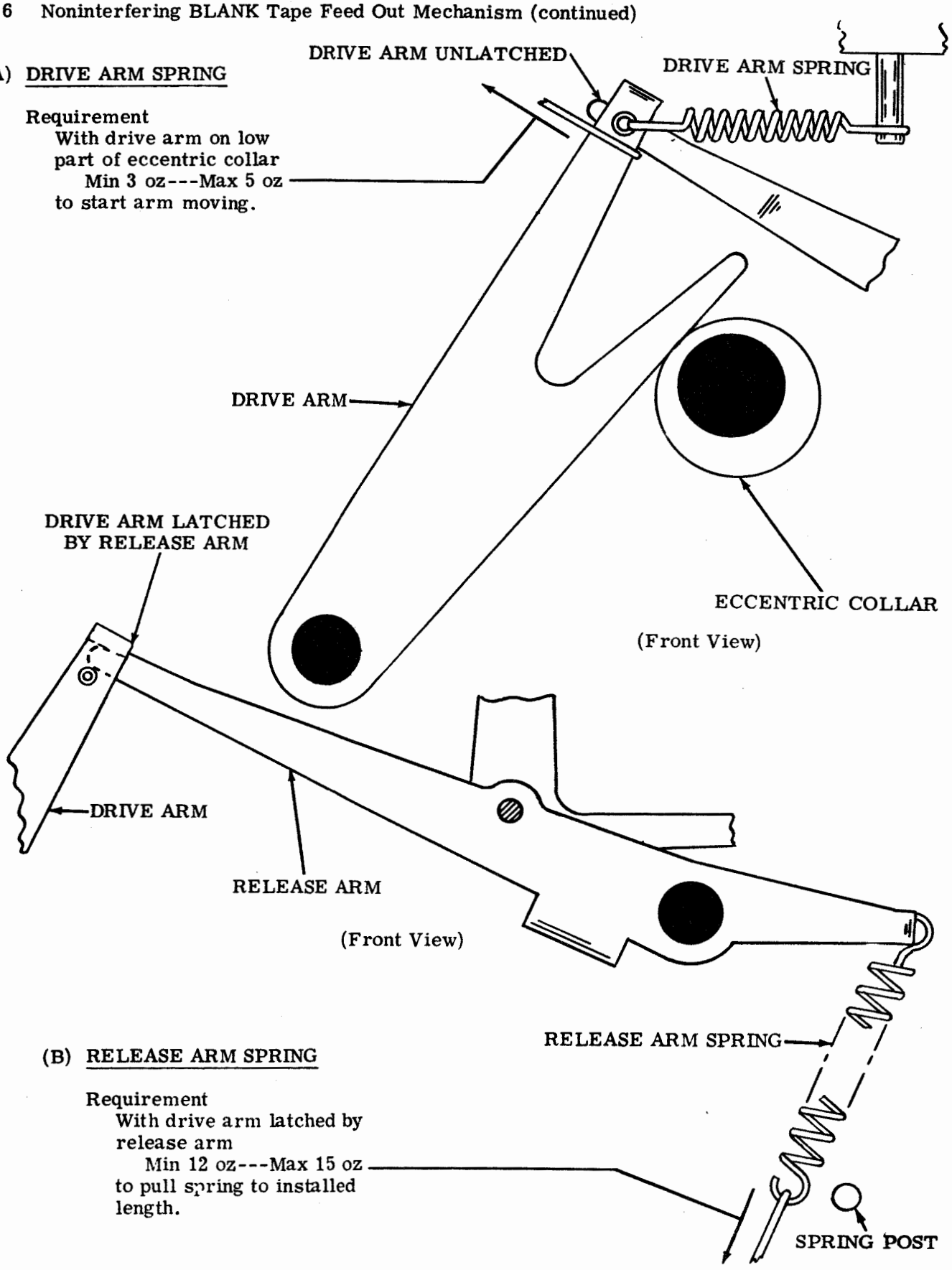
(2) Requirement
When unit is not operating under power and the feed out mechanism in its latched position, manually position ratchet so the next feed out cycle will cause feed out mechanism to stop. Manually holding feed pawl against the ratchet, rotate main shaft until release arm latch releases release arm and feed pawl is in its extreme left position. Clearance between release arm and the release arm latch
Min some---Max 0.080 inch

To Adjust
With spring post loosened, position tape length adjusting plate. Tighten spring post.



(Front View)

4.16 Noninterfering BLANK Tape Feed Out Mechanism (continued)



(A) DRIVE ARM SPRING

Requirement
With drive arm on low part of eccentric collar
Min 3 oz---Max 5 oz
to start arm moving.

(B) RELEASE ARM SPRING

Requirement
With drive arm latched by release arm
Min 12 oz---Max 15 oz
to pull spring to installed length.

4.17 Noninterfering BLANK Tape Feed Out Mechanism (continued)

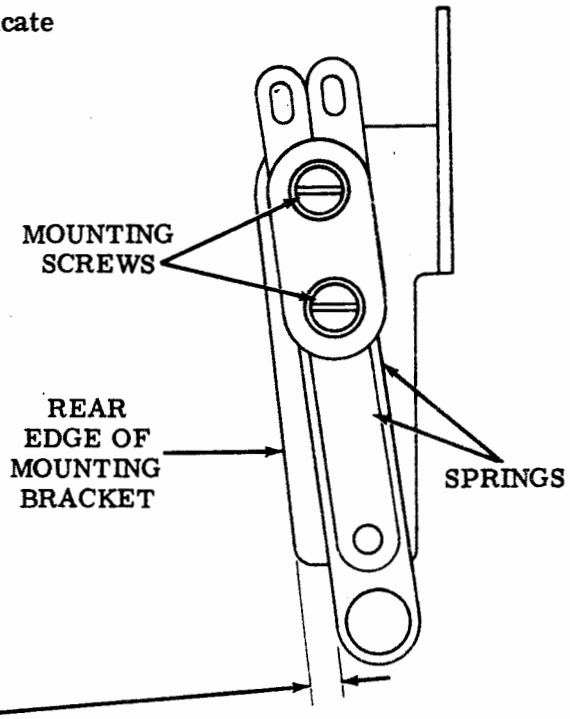
Note 1: For units equipped with switch in place of contacts see 4.19.

Note 2: In this figure, references to left or right indicate the viewers left or right as he faces the rear of the equipment.

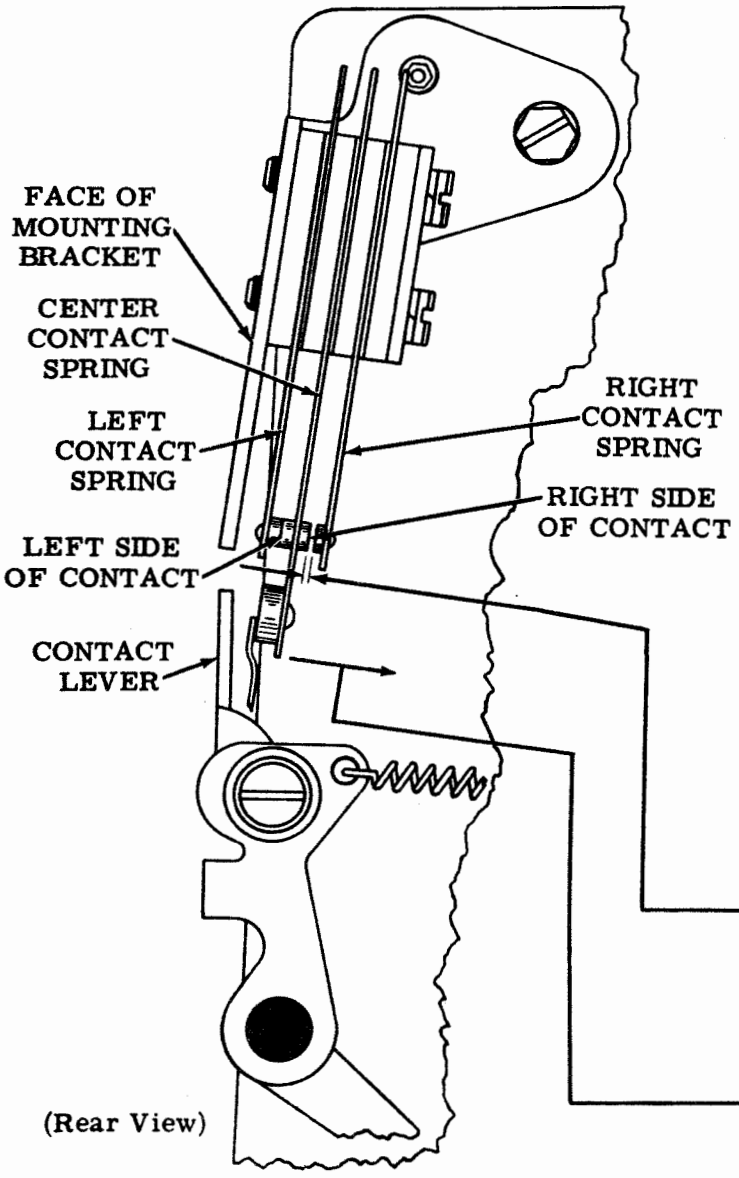
CONTACT SPRINGS

(1) Requirement
All springs parallel to rear edge of mounting bracket and contact actuating lever engage contact button by a minimum of 75% of the contact button.

To Adjust
Position springs with mounting screws loosened. Tighten screws.



(Left Side View)



(Rear View)

(2) Requirement
Left contact spring approximately parallel to face of mounting bracket.

To Adjust
Bend left contact spring.

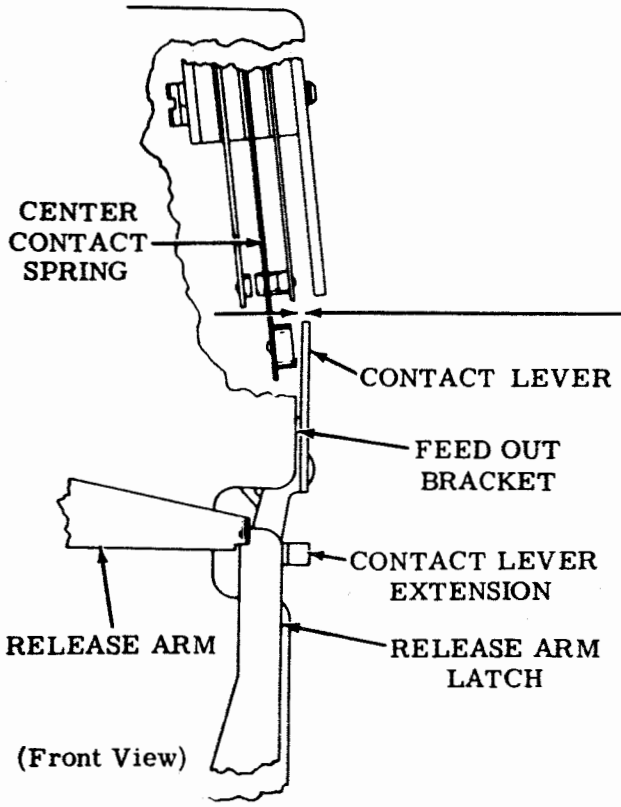
(3) Requirement
With contact lever free of center contact spring
Min 20 grams---Max 40 grams
to just open left side of contact.

To Adjust
Bend center contact spring.

(4) Requirement
With contact lever away from center contact spring
Min 0.010 inch---Max 0.018 inch
gap at right side of contact.

To Adjust
Bend contact spring.

4.18 Noninterfering BLANK Tape Feed Out Mechanism (continued)



Note: By means of test lamp, check continuity of contact with contact lever in each position.

(A) CONTACT LEVER

To Check
Fully latch release arm on release arm latch. Hold center contact spring away from contact lever. Allow contact lever extension to rest against latch. Measure clearance between feed out bracket and contact lever at top of lever.

Requirement
Min some---Max 0.020 inch

To Adjust
Position contact lever with clamp screw loosened. (For position of clamp screw see illustration below.) Tighten clamp screw.

(B) CONTACTING MOUNTING BRACKET

Requirement
With release arm unlatched
Min 0.010 inch---Max 0.040 inch between contact lever and center contact spring.

To Adjust
Position mounting bracket with mounting screw and nut loosened. Tighten screw and nut.

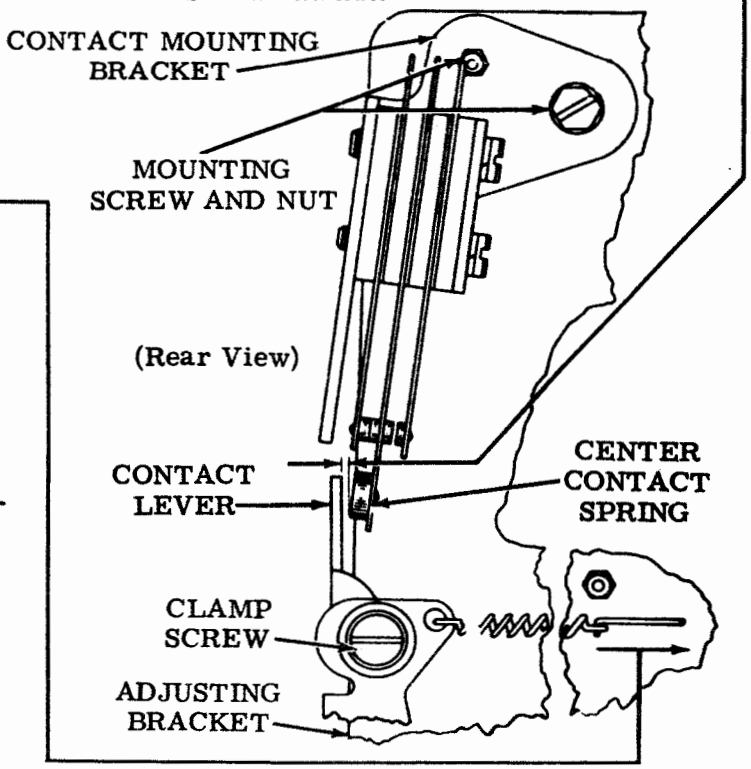
(C) CONTACT LEVER SPRING

Requirement
Min 3 oz---Max 6 oz
to pull to installed length.

(D) CONTACT PULSE CLOSURE

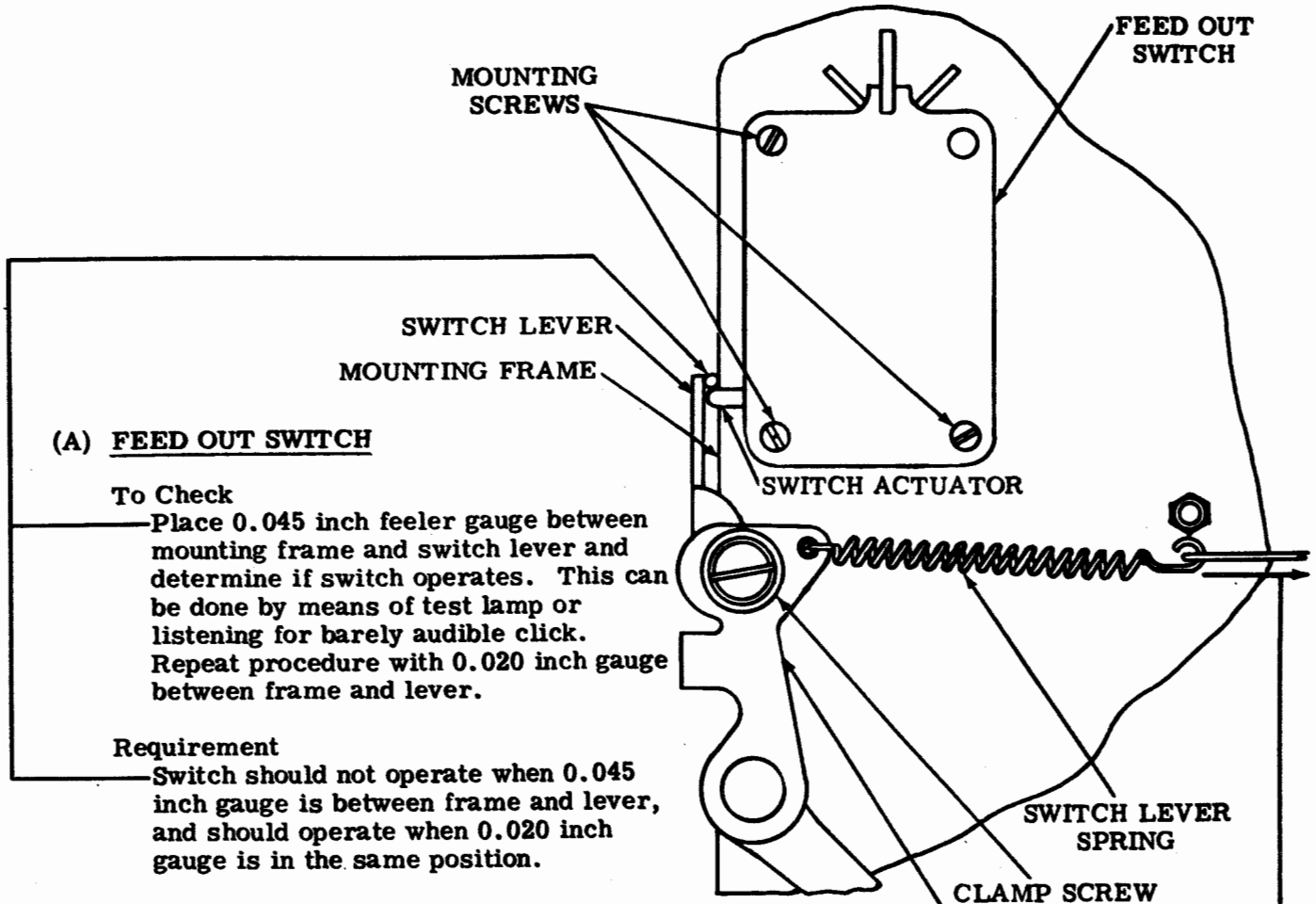
Note: Preceding adjustments should be made prior to this adjustment

External circuitry may require a pulse at end of feed out operation. To obtain this condition, remove clamp screw and adjusting bracket and hook contact lever spring in tapped hole. Contacts will then be open or closed, depending on choice of contact, except for short period at end of feed out operation.



4.19 Noninterfering BLANK Tape Feed Out Mechanism (continued)

Note: For units equipped with contacts in place of switch see 4.17.



(A) FEED OUT SWITCH

To Check

Place 0.045 inch feeler gauge between mounting frame and switch lever and determine if switch operates. This can be done by means of test lamp or listening for barely audible click. Repeat procedure with 0.020 inch gauge between frame and lever.

Requirement

Switch should not operate when 0.045 inch gauge is between frame and lever, and should operate when 0.020 inch gauge is in the same position.

To Adjust

Position switch with mounting screws loosened. Tighten screws.

(B) SWITCH LEVER SPRING

Requirement

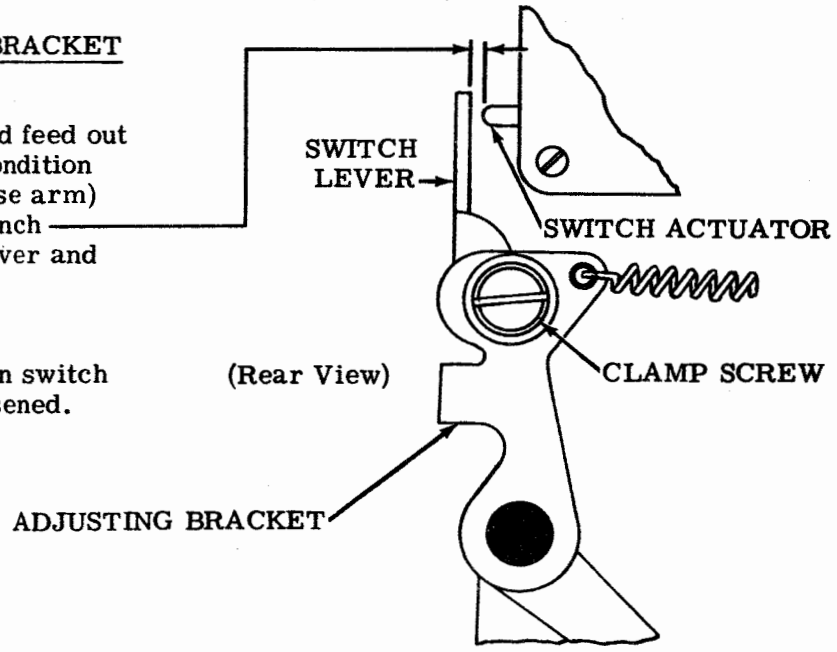
Min 3 oz---Max 6 oz to pull spring to installed length.

4.20 Noninterfering BLANK Tape Feed Out Mechanism (continued)

(A) SWITCH LEVER ADJUSTING BRACKET

Requirement
With clutches disengaged and feed out mechanism in unoperated condition (drive arm latched by release arm)
Min some---Max 0.010 inch clearance between switch lever and switch actuator.

To Adjust
Position adjusting bracket on switch lever with clamp screw loosened. Tighten screw.



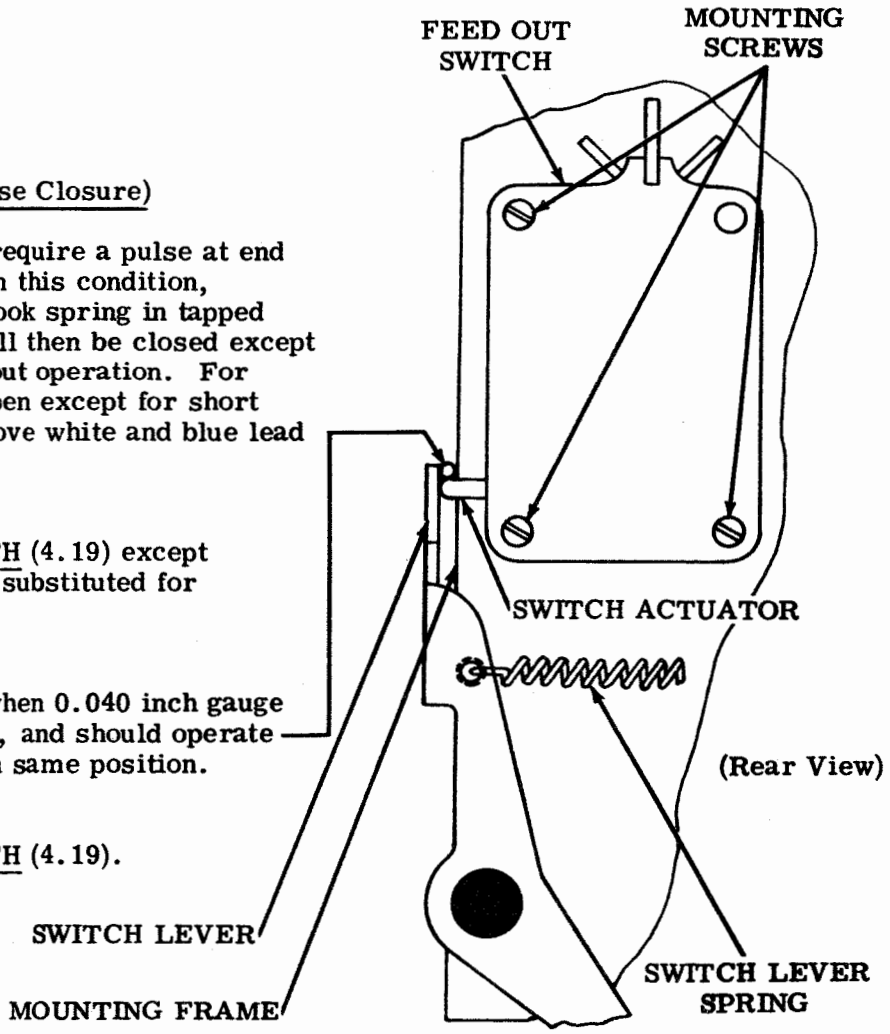
(B) FEED OUT SWITCH (With Pulse Closure)

Note: External circuitry may require a pulse at end of feed out operation. To obtain this condition, remove adjusting bracket and hook spring in tapped hole in switch lever. Switch will then be closed except for short period at end of feed out operation. For reverse condition (ie, switch open except for short period at end of operation) remove white and blue lead and solder to spare terminal.

To Check
Same as FEED OUT SWITCH (4.19) except 0.040 inch gauge should be substituted for 0.045 inch gauge.

Requirement
Switch should not operate when 0.040 inch gauge is between frame and lever, and should operate when 0.020 inch gauge is in same position.

To Adjust
Same as FEED OUT SWITCH (4.19).



4.21 Multiple Mounted Function Blade Contacts (For Later Design see 3.57)

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

(A) NORMALLY OPEN CONTACT GAP

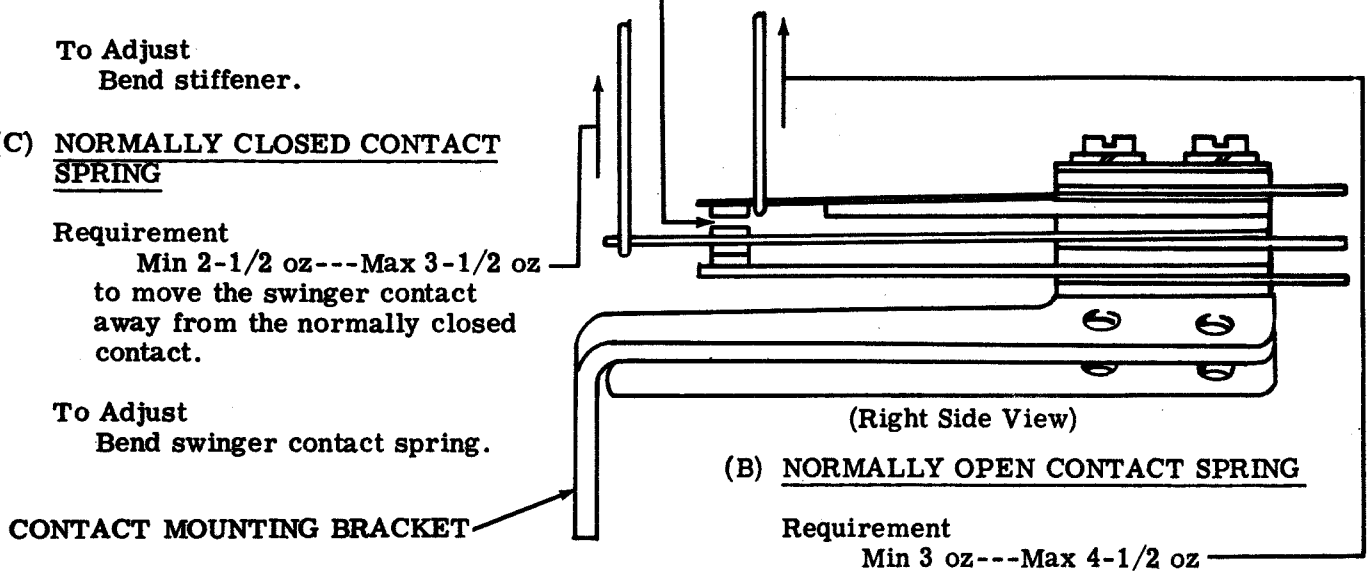
Requirement
Min 0.010 inch---Max 0.020 inch

To Adjust
Bend stiffener.

(C) NORMALLY CLOSED CONTACT SPRING

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

To Adjust
Bend swinger contact spring.



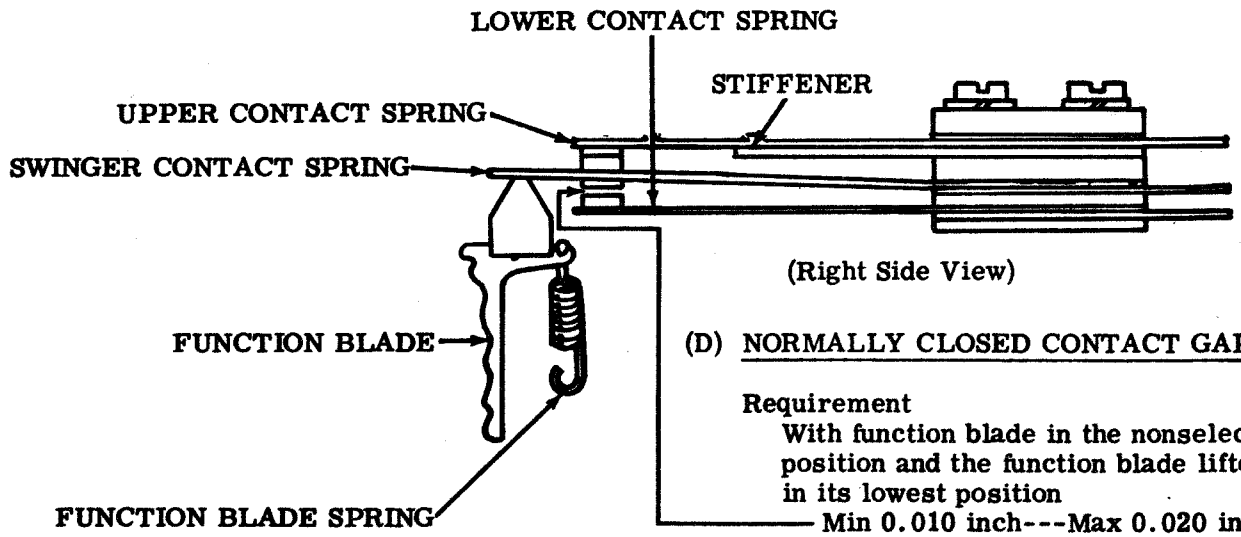
(Right Side View)

(B) NORMALLY OPEN CONTACT SPRING

Requirement
Min 3 oz---Max 4-1/2 oz to move the contact spring away from its stiffener.

To Adjust
Bend contact spring. Recheck contact gap.

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



(Right Side View)

(D) NORMALLY CLOSED CONTACT GAP

Requirement
With function blade in the nonselect position and the function blade lifter in its lowest position
Min 0.010 inch---Max 0.020 inch

To Adjust
Bend lower contact spring.

Note 3: Select each function blade in turn and determine that there is a definite transfer from make to break contacts. Refine adjustment (D).