BULLETIN 310B
VOL 2

TECHNICAL MANUAL
33 TELETYPEWRITER SETS
KEYBOARD SEND-RECEIVE (KSR)
RECEIVE-ONLY (RO)
AUTOMATIC SEND-RECEIVE (ASR)

TELETYPE®
CORPORATION
5555 TOUHY AVENUE, SKOKIE, ILLINOIS

PRINTED IN U.S.A.

310B
Volume 2

INTRODUCTION

Bulletin 310B is a technical manual that provides general and specific information about the 33 Keyboard Send-Receive (KSR), Receive-Only (RO), and Automatic Send-Receive (ASR) Teletypewriter Sets and their component units. It consists of two volumes.

Volume 1 contains a description of the 33 Teletypewriter Sets and gives installation instructions. Also included in Volume 1 is information on the disassembly and reassembly, lubrication, and principles of operation of the component units of the Teletypewriter Sets. Volume 2 includes adjustment information on all component units of 33 Teletypewriter Sets.

Each volume is made up of a group of appropriate independent sections. Each independent section is complete within itself—it is separately identified by a title and section number, and the pages are numbered consecutively.

Each individual section is identified by a 9-digit section number which appears at the top of each page of a section. The section number appears on the left corner of left-hand pages and on the right corner of right-hand pages. In addition, the section number on each page contains the suffix TC which identifies it as a Teletype Corporation section. All sections are placed in the technical manual in ascending numerical order.

To locate specific information, refer to the table of contents on the following page. In the first column, under "Equipment," find the name of the component unit or set in question. Move across the page to the second column and locate the title being sought. The applicable 9-digit section number can then be found in the third column. Turn to Page 1 of the applicable section, and the contents of that section will be found.

TABLE OF CONTENTS

33 KEYBOARD

ADJUSTMENTS

CONTENTS

1. GENERAL

1.01 This section provides adjustment information for 33 keyboards which are mechanically reset by an H-plate and the distributor trip linkage shown in 2.14. It is reissued to include information only on 33 keyboards. Also, this issue updates information and adds new information on the auxiliary contact mechanism used on parity keyboards and keylever springs used on numeric-type keyboards. Since this is a general revision, marginal arrows ordinarily used to indicate changes and additions are omitted.

Note: Adjustment information for solenoid-reset keyboards is found in another section.

1.02 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Requirements and procedures are set forth in the several texts that accompany the line drawings. Tools necessary to maintain 33 Teletypewriter Sets are shown in Maintenance Tools Section 570-005-800TC.

1.03 The sequence in which the adjustments appear is that which should be followed when a complete readjustment of the keyboard is undertaken. No single adjustment should be undertaken without first completely understanding the procedure and knowing the requirements. Therefore, read a procedure all the way through before making an adjustment or checking a spring tension.

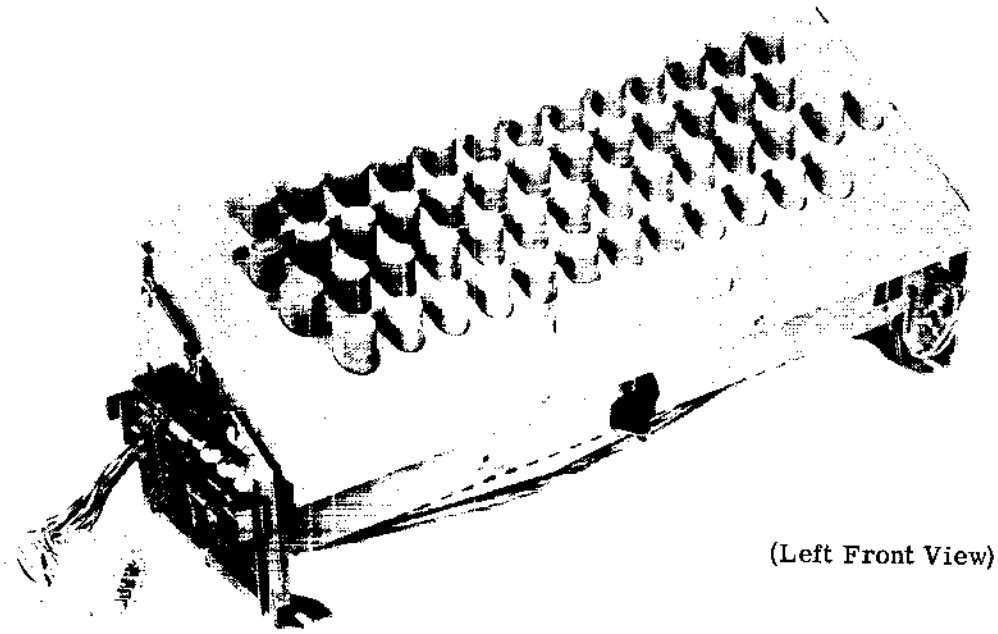
Note: Disconnect the keyboard from any voltage source prior to inspection, minor repair, extensive maintenance, or a complete readjustment.

1.04 References to left, right, front, rear, etc consider the keyboard to be viewed from a position where the spacebar (Figure 3) faces up and the contact mechanism is located to the viewer's right.

1.05 When a procedure calls for using pry points or slots to make an adjustment, place a screwdriver between the points or in the slots and pry parts in the proper direction.

1.06 When the keyboard is removed from the subbase to facilitate the making of an adjustment and subsequently replaced, recheck any adjustments that may have been affected. Also, if parts are removed from the keyboard to facilitate the making of an adjustment, be sure that they are subsequently replaced. Recheck any adjustment that may have been affected by the removal of parts.

1.07 Related adjustments are listed with some of the adjustment texts and are primarily intended to aid in troubleshooting the equipment. As an example, suppose that in searching for a trouble it is discovered that Part (2) of CONTACT WIRES adjustment does not meet its requirement. Under Related Adjustment it is indicated that Part (2) of this adjustment is affected by Part (1). Check Part (1) to see if it is the basic



(Left Front View)

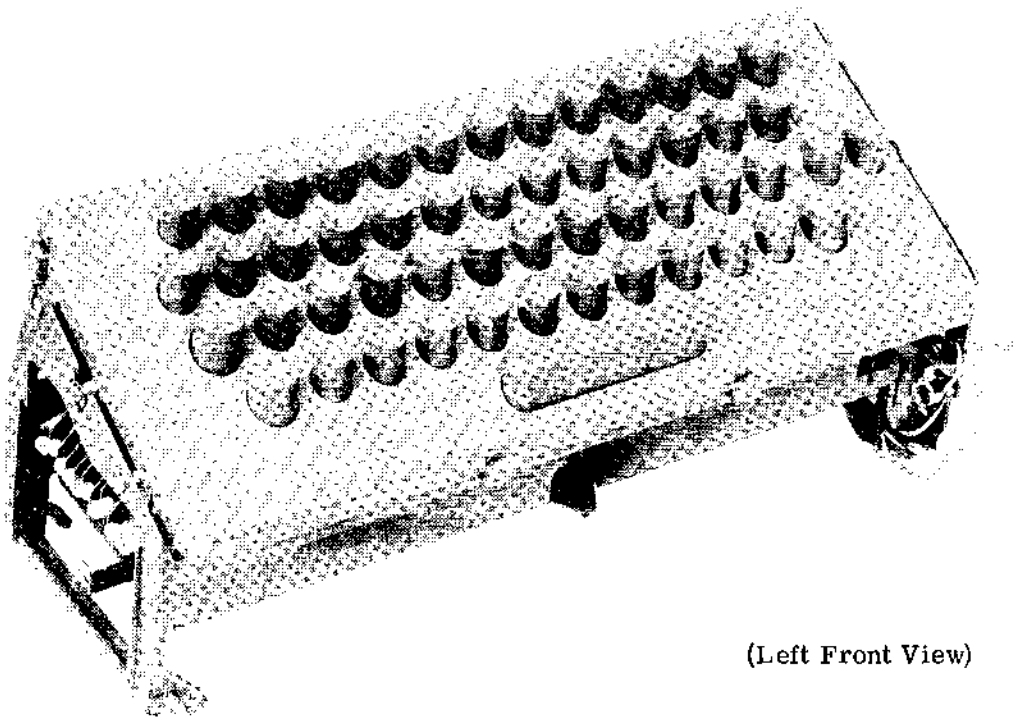
Figure 1 - 33 Keyboard (Parity)

cause of the trouble. Also, note that certain adjustments affect other adjustments. For example, see the DISTRIBUTOR TRIP LINKAGE adjustment. Note that this adjustment affects the TRIP LEVER ENGAGEMENT adjustment. (See the appropriate typing unit section.) If the former adjustment is changed, check the latter adjustment.

1.08 The spring tensions specified in this section are indications, not exact values. Therefore, to obtain reliable readings, it is important that spring tensions be measured by spring scales placed in the positions shown on pertinent line drawings. Springs that do not meet their requirements should be replaced by new ones. Only those springs that directly affect the operation of the keyboard are measured, however, others may be measured indirectly in the process. If, at first, the spring tension requirement cannot be met, replace the indicated spring being directly measured. Then, if the requirement is not met, any springs that are indirectly measured in the procedure should be replaced, one at a time, with the performance of requirement checks each time a spring is replaced.

Note 1: Use only spring scales which are recommended by the manufacturer. These spring scales are listed in Maintenance Tools Section 570-005-800TC.

Note 2: The spring tensions may be checked in any sequence.



(Left Front View)

Figure 2 - 33 Keyboard (Nonparity)

1.09 With the keyboard and typing unit assembled together on the subbase, adjustment procedures may specify that the typing unit be placed in the stop condition. It is in the stop condition when the selector armature is in its attracted (frontward) position and all clutches are disengaged. Furthermore, when the typing unit is in the stop condition the keyboard will be latched — universal lever down and blocked from upward movement by an associated latch-lever.

Note: The keyboard is tripped when the universal lever is in its up position.

1.10 To place the typing unit in the stop condition, hold the selector armature in its attracted (frontward) position. Manually rotate the main shaft clockwise (as viewed from the left) until all clutches are in a stop position. Fully disengage all of the clutches by positioning a screwdriver to the associated stop-lug. Push the clutch disc in the normal direction of main shaft rotation until the corresponding latchlever seats in its clutch disc notch. This permits the clutch shoes to release their tensions on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any dragging of the clutch shoes.

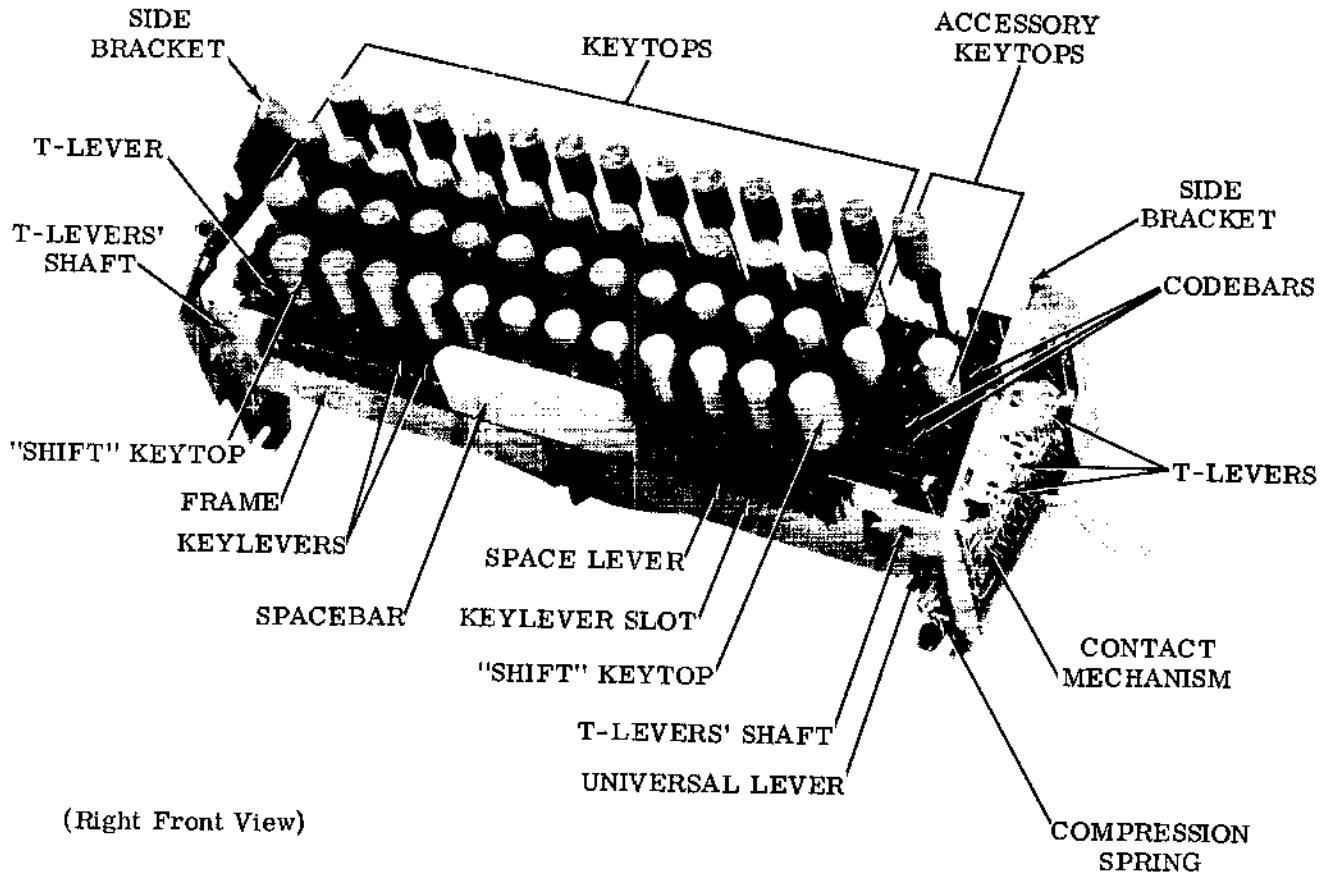


Figure 3 - Keyboard (Cover Removed)

Note 1: A stop position is that position where a shoe lever contacts a trip lever.

Note 2: The distributor clutch will not disengage unless the keyboard is latched and the answer-back drum is in its home position. The answer-back home position is the position where the control lever is fully detented into the indent on the answer-back drum.

1.11 A clutch is tripped by moving a trip lever up and away from contact with a shoe lever. When moved up, a trip lever no longer holds a shoe lever in its stop position. When the clutch is tripped, the shoe lever and a stop-lug on the clutch disc move apart, and the clutch becomes engaged. The clutch shoes wedge against the drum so that when the shaft is turned the clutch assembly will turn in unison with it.

1.12 General Maintenance Principles

(a) Lubrication instructions and intervals are given in the appropriate lubrication sections.

(b) To maintain the operational effectiveness of the equipment, it is recommended that certain parts be replaced at intervals based upon the speed and operating hours, as indicated below:

Operating Speed (Words per Minute)	Recommended Overhaul Interval (Hours*)	Estimated Service Life (Hours*)
100	1500	4500

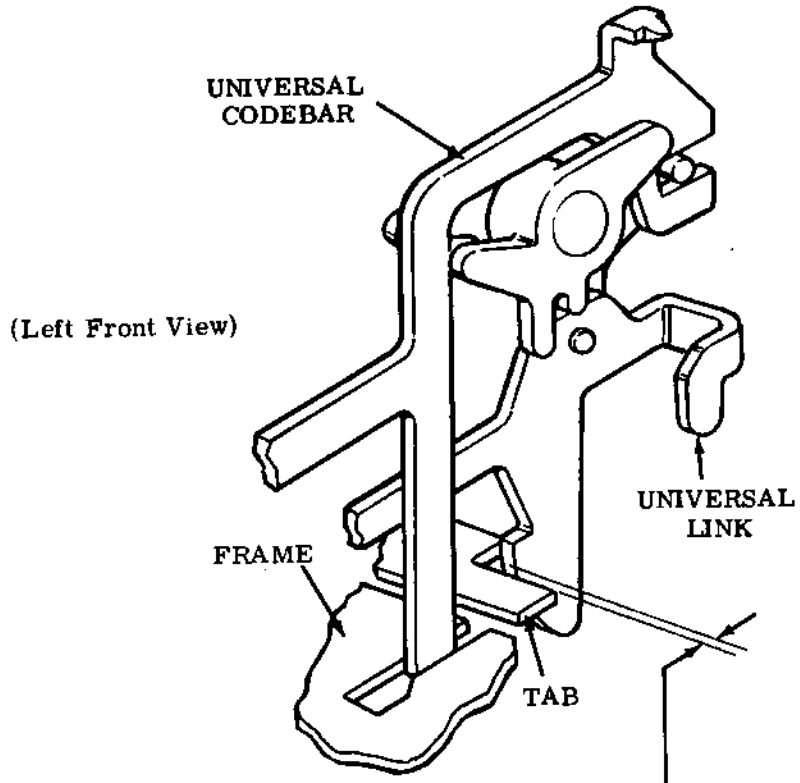
*Typing unit operating hours

Replacement parts are available in overhaul kits.

2. BASIC UNIT

2.01 Universal Link

Note: Remove keyboard and call control unit from subbase to facilitate the making of the following adjustments. For disassembly instructions, see the appropriate keyboard section.



UNIVERSAL LINK

To Check
Push universal lever down until latched by latchlever.

Requirement
Min 0.089 inch---Max 0.103 inch between universal link and frame.

To Adjust
Place screwdriver through opening in front of frame and bend tab.

2.02 Contact Wires

CONTACT WIRES

Note: Part (1) of this adjustment applies to contact wires actuated by the reset bail. Part (2) applies to contact wires which have two camming surfaces and are operated by a T-lever and the reset bail.

(1) To Check

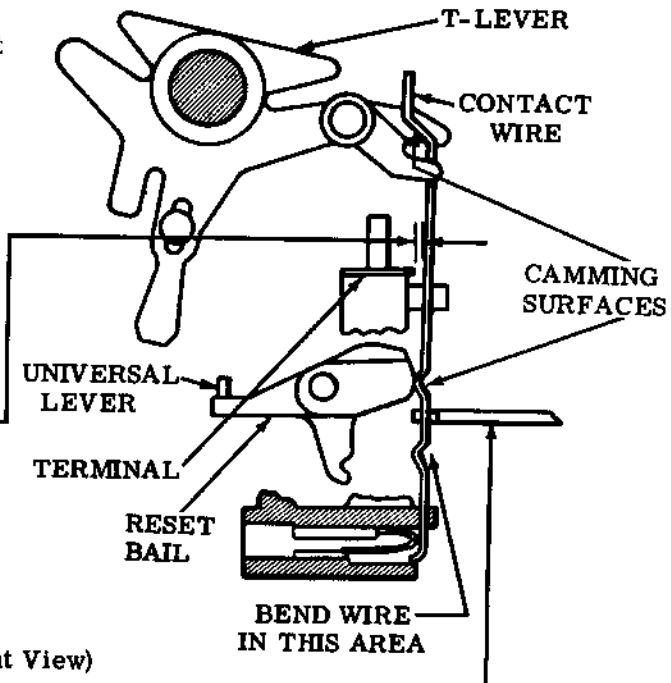
Push universal lever down until latched by latchlever. Place T-levers down in marking position. As each contact wire is checked, take up its play in a upward direction.

Requirement

Min 0.012 inch---Max 0.027 inch between terminal and each contact wire.

To Adjust

Bend contact wire with TP185829 bending tool as shown.



(Front View)

(2) To Check

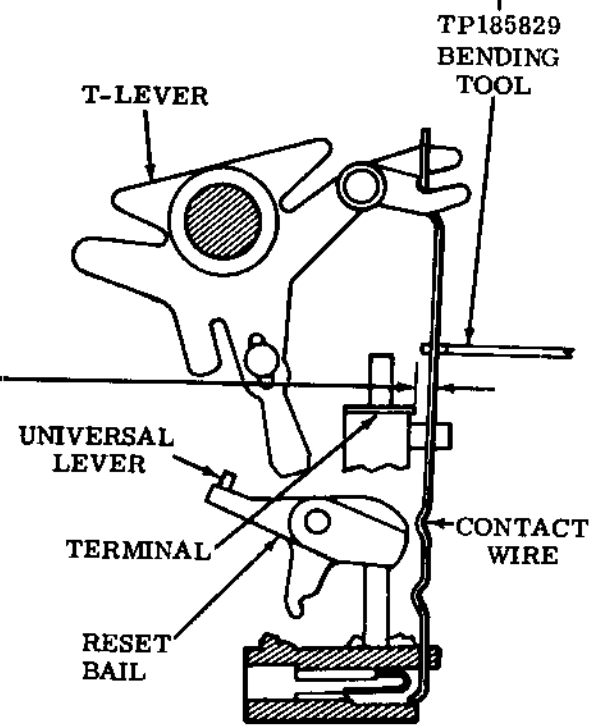
Push universal lever down until latched by latchlever. Place T-levers up in spacing position. Trip keyboard by depressing universal codebar. As each contact wire is checked, take up its play in an upward direction.

Requirement

Min 0.020 inch---Max 0.040 inch between terminal and each contact wire.

To Adjust

Bend contact wire with TP185829 bending tool as shown.



Related Adjustment

Affected by

Part (2) of this adjustment is affected by Part (1).

(Front View)

2.03 Contact Wires (continued)

LEFT SHIFT CONTACT WIRE

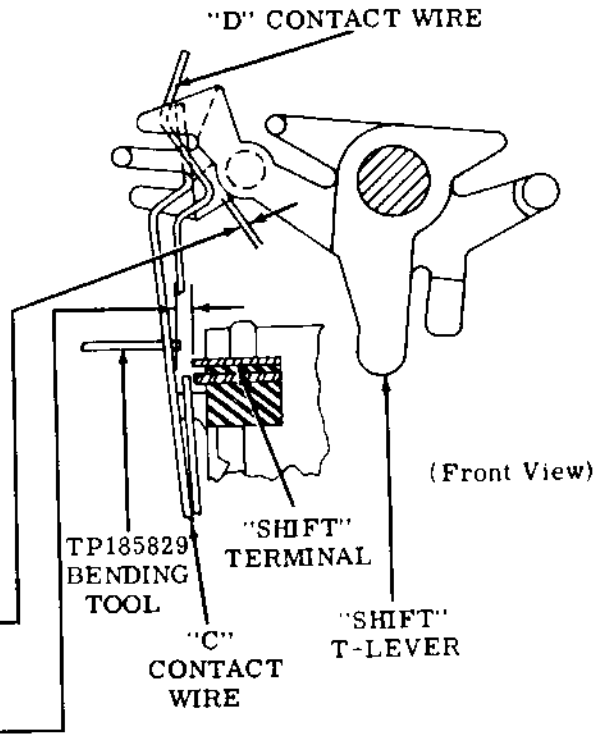
Note 1: This adjustment applies only to parity keyboards equipped with a TP180076 T-lever at right side of SHIFT codebar mechanism.

Note 2: Contact wires on auxiliary contact block on left side of parity keyboards are designated A, B, C, and D from rear to front.

(1) To Check
Push universal lever down, until latched by latchlever. Trip keyboard by depressing universal codebar. Insert a 0.090 inch gauge diagonally into third keylever (SHIFT) slot in frame from left. Depress left SHIFT keylever until it bottoms on top of gauge.

Requirement
(a) Min some clearance between D contact wire and camming surface of its associated T-lever.

(b) Min 0.020 inch---Max 0.055 inch between C contact wire and SHIFT terminal.



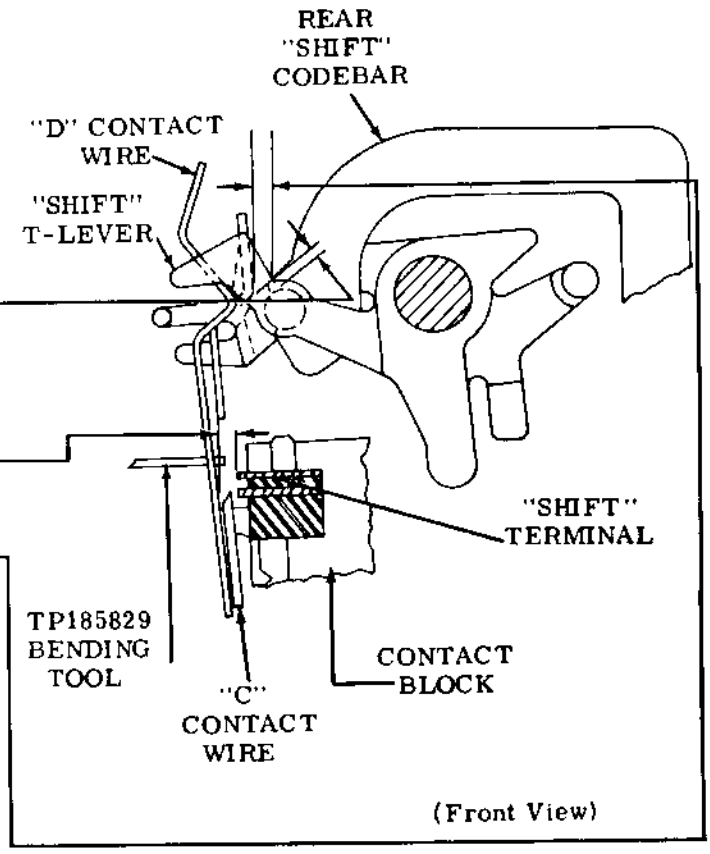
(2) To Check
Push universal lever down until latched by latchlever. Hold right SHIFT keylever fully depressed. Trip keyboard by depressing universal codebar. Release SHIFT keylever. Lightly take up play in contact block towards right.

Requirement
(a) Min 0.004 inch between C contact wire and camming surface of SHIFT T-lever with all contact block play lightly taken up toward right.

(b) Min 0.015 inch between D contact wire and SHIFT terminal.

(c) Min 0.025 inch between C contact wire and rear SHIFT codebar at closest point of travel.

To Adjust
Bend contact wire(s) using TP185829 bending tool.



2.04 Contact Wires (continued)

"CTRL" CONTACT WIRE

Note 1: This adjustment applies only to parity keyboards equipped with TP185780 CTRL keylever spring but without TP186049 blocking lever and TP186051 tie link.

Note 2: Contact wires on auxiliary contact block on left side of parity keyboards are designated A, B, C, and D from rear to front.

(1) To Check
With the CTRL keytop unoperated, lightly take up play in contact block towards left to make clearance between the B contact wire and CTRL terminal a minimum. Check Requirement (a). Lightly take up play in contact block towards right to make clearance between B contact wire and CTRL terminal a maximum. Check Requirement (b).

(2) To Check
Fully depress the CTRL keytop and hold it depressed. Lightly take up play in contact block towards left to make clearance between the A contact wire and CTRL terminal a minimum. Check Requirement (c). Lightly take up play in contact block towards right to make clearance between A contact wire and CTRL terminal a maximum. Check Requirement (d).

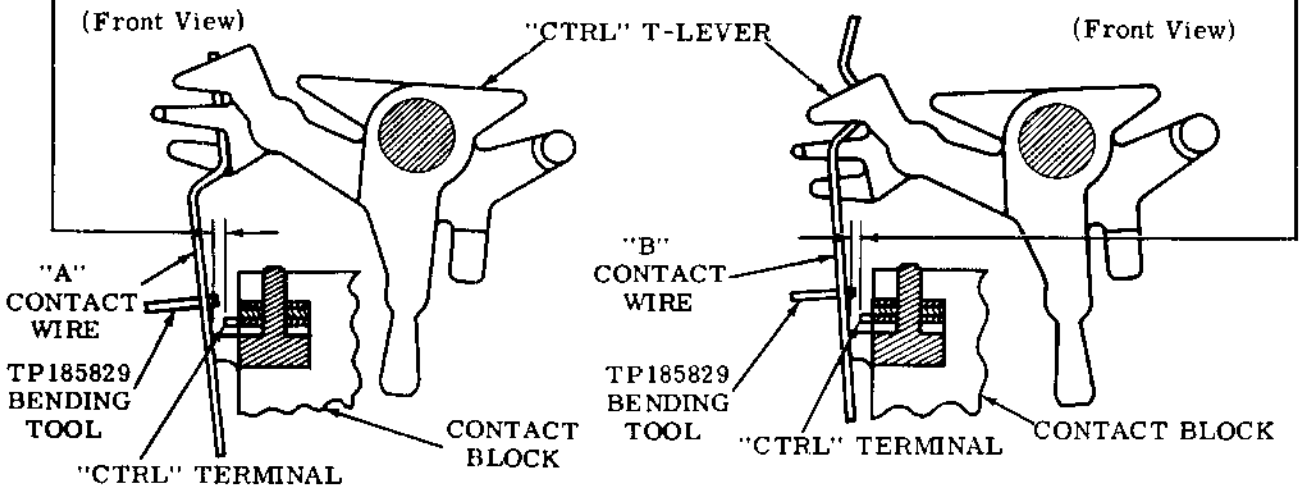
Requirement
(a) Min 0.008 inch between B contact wire and CTRL terminal.

(b) Max 0.050 inch between B contact wire and CTRL terminal.

(c) Min 0.008 inch between A contact wire and CTRL terminal.

(d) Max 0.050 inch between A contact wire and CTRL terminal.

To Adjust
Bend contact wire(s) with TP185829 bending tool as shown.



2.05 Contact Wires (continued)

"CTRL" CONTACT WIRE

Note 1: This adjustment applies only to parity keyboards equipped with TP185780 CTRL key-lever spring and with TP186049 blocking lever and TP186051 tie link.

Note 2: Contact wires on auxiliary contact block on left side of parity keyboards are designated A, B, C, and D from rear to front.

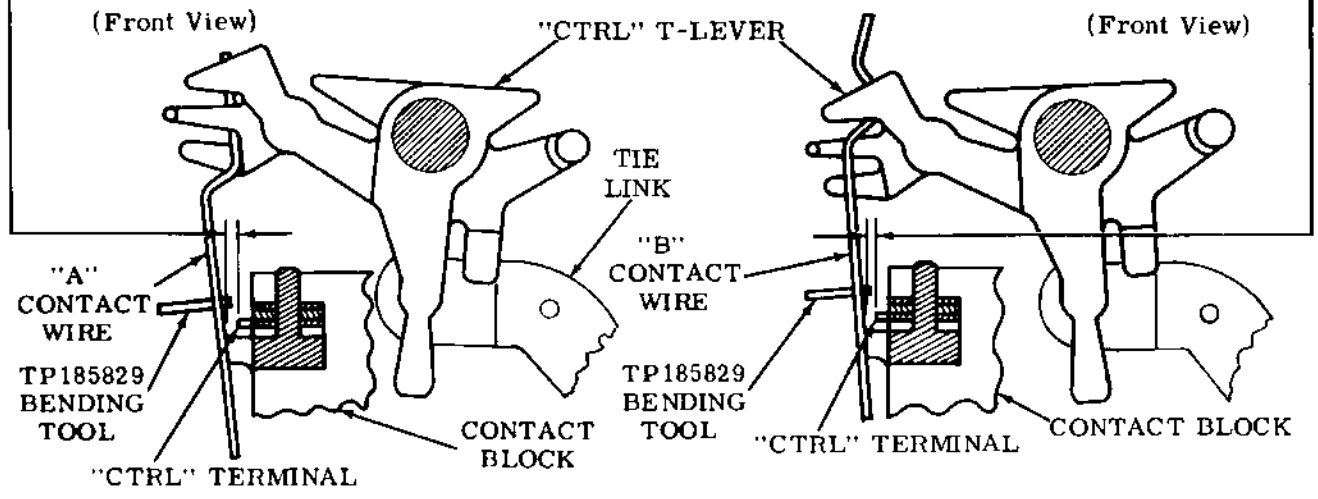
(1) To Check
With the CTRL keytop unoperated, lightly take up all play in contact block towards the left.

Requirement
Min 0.025 inch---Max 0.035 inch
between B contact wire and CTRL terminal.

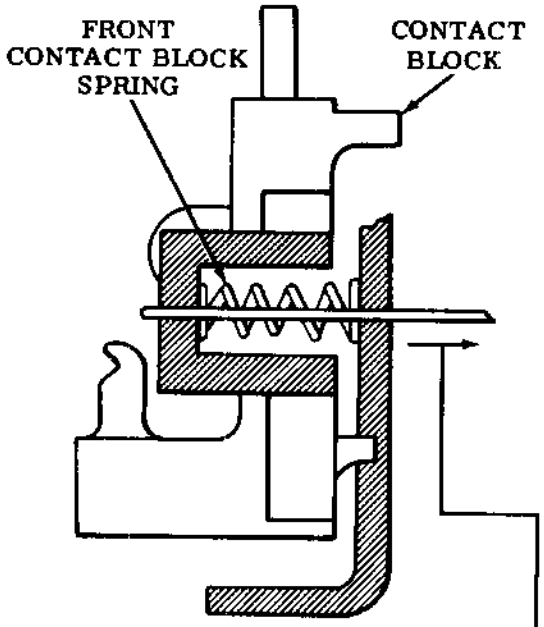
(2) To Check
Fully depress the CTRL keytop and then trip the keyboard. Release the CTRL keytop. Lightly take up all play in contact block towards the left.

Requirement
Min 0.015 inch---Max 0.030 inch
between A contact wire and CTRL terminal.

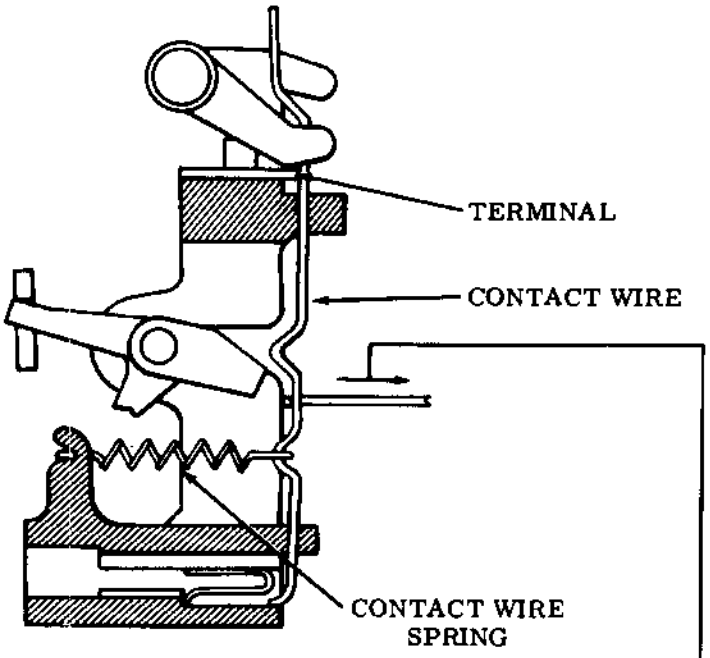
To Adjust
Bend contact wire(s) with TP185829 bending tool as shown.



2.06 Contact Block Spring and Contact Wire Spring



(Front View)



(Front View)

CONTACT BLOCK SPRING

Requirement
Min 18 oz---Max 42 oz
to start contact block moving.

Note: Check both front and rear contact block springs.

CONTACT WIRE SPRING

To Check
Push universal lever down until latched by latchlever. Place T-levers down in marking position. Trip keyboard by depressing universal codebar.

Requirement
Min 3/4 oz---Max 1-1/4 oz
to start each contact wire moving away from terminal.

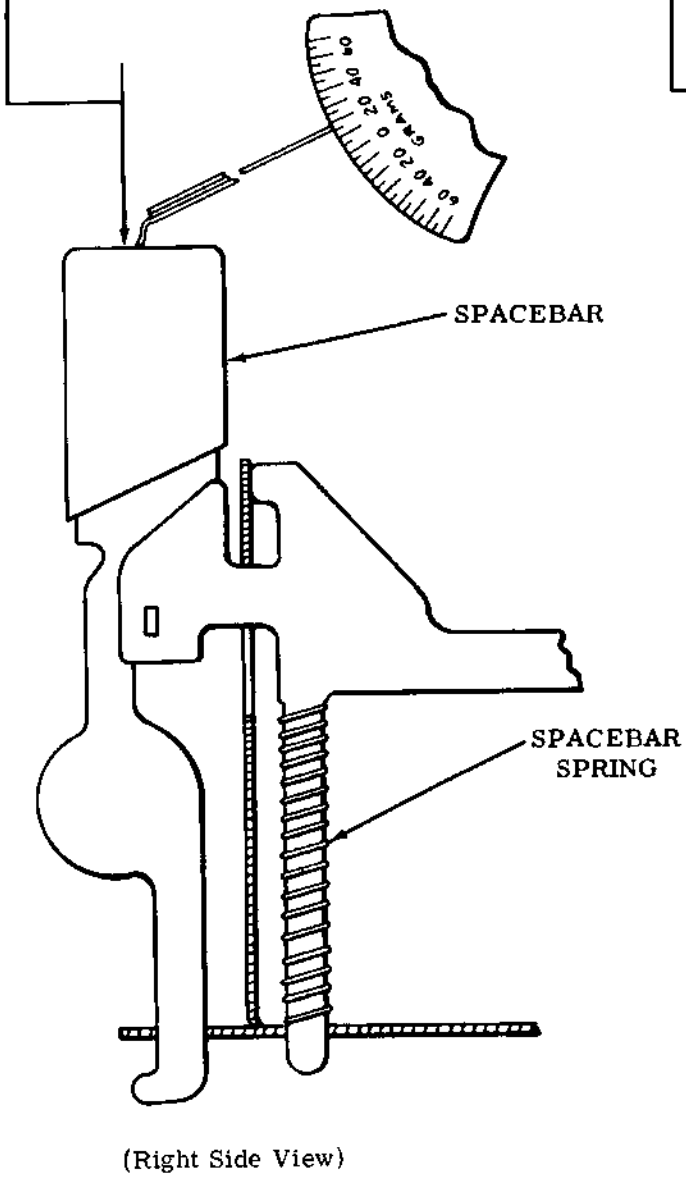
2.07 Spacebar Spring and Keylever Spring

Note: The SPACEBAR SPRING and KEYLEVER SPRING adjustments do not apply to keylever springs associated with the SPACE, BLOCK, hyphen, or O keytops found on numeric-type keyboards.

SPACEBAR SPRING

To Check
Push universal lever down until latched by latchlever. Depress spacebar and then release.

Requirement
—Min 5 grams---Max 25 grams to start spacebar moving.



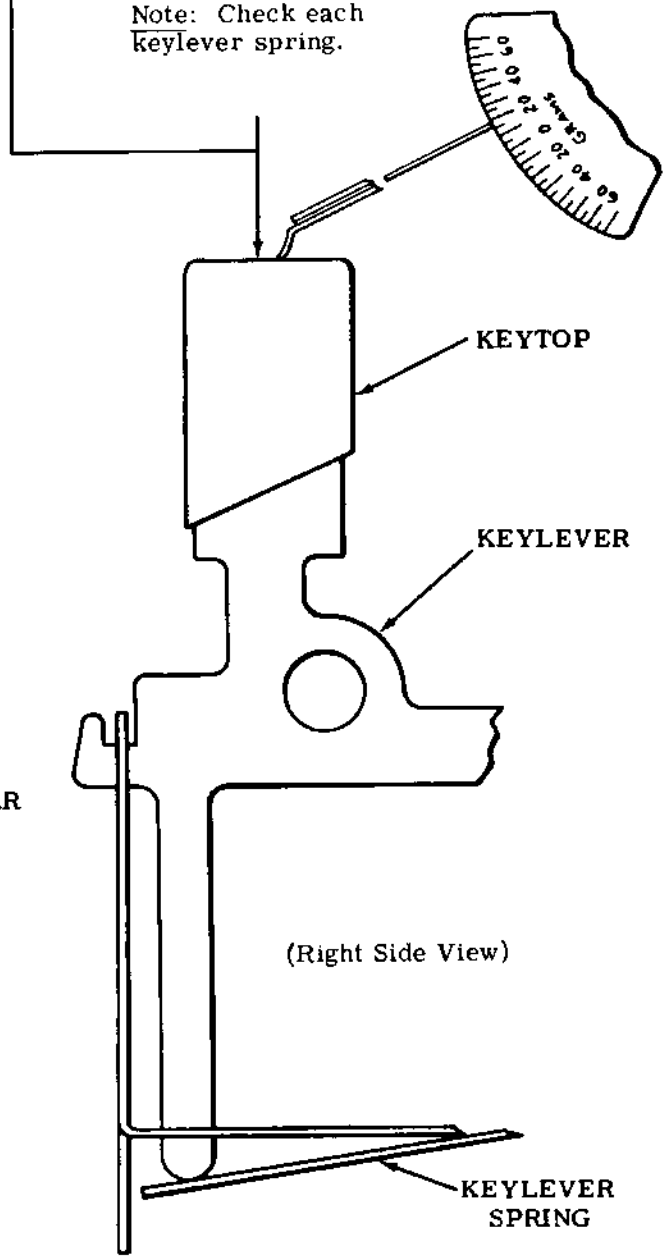
(Right Side View)

KEYLEVER SPRING

To Check
Push universal lever down until latched by latchlever. Select any keytop and depress. Release keytop.

Requirement
—Min 5 grams---Max 30 grams to start selected keytop moving.

Note: Check each keylever spring.



(Right Side View)

2.08 HERE IS, BREAK, CTRL, and REPT Keylever Springs

"BREAK" KEYLEVER SPRING

Requirement
Min 4-1/2 oz---Max 10 oz
to start keytop moving.

"HERE IS" KEYLEVER SPRING

Requirement
Min 18 grams---Max 35 grams
to start keytop moving.

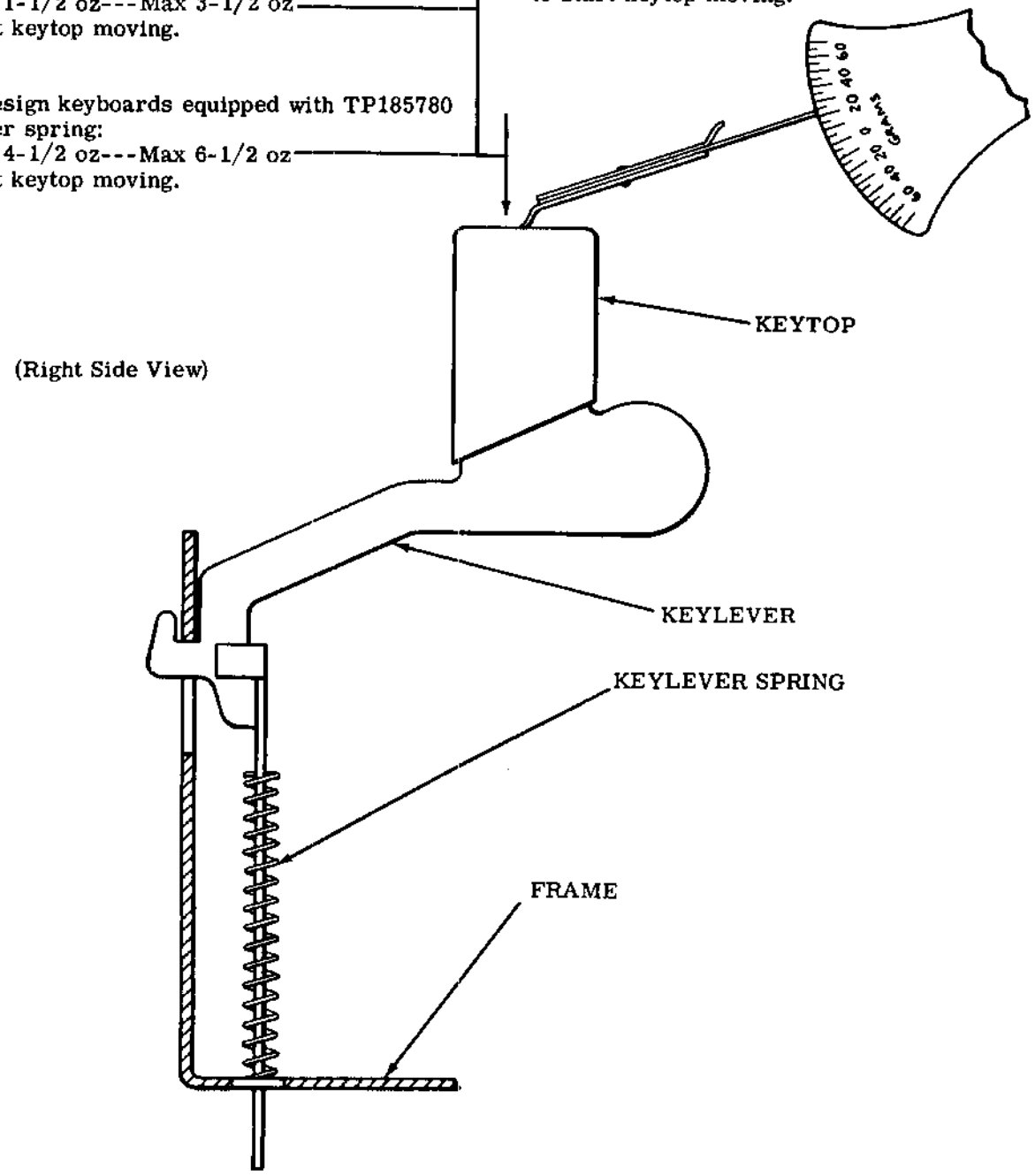
"CTRL" KEYLEVER SPRING

Requirement
Early design keyboards equipped with TP180102 keylever spring:
Min 1-1/2 oz---Max 3-1/2 oz
to start keytop moving.

Late design keyboards equipped with TP185780 keylever spring:
Min 4-1/2 oz---Max 6-1/2 oz
to start keytop moving.

"REPT" KEYLEVER SPRING

Requirement
Min 15 grams---Max 30 grams
to start keytop moving.



(Right Side View)

2.09 SPACE, BLOCK, Hyphen, or O Keylever Springs

KEYLEVER SPRINGS ("SPACE," "BLOCK," HYPHEN, "O" KEYTOPS)

Note 1: This adjustment applies only to keylever springs associated with SPACE, BLOCK, hyphen, or O keytops found on numeric-type keyboards.

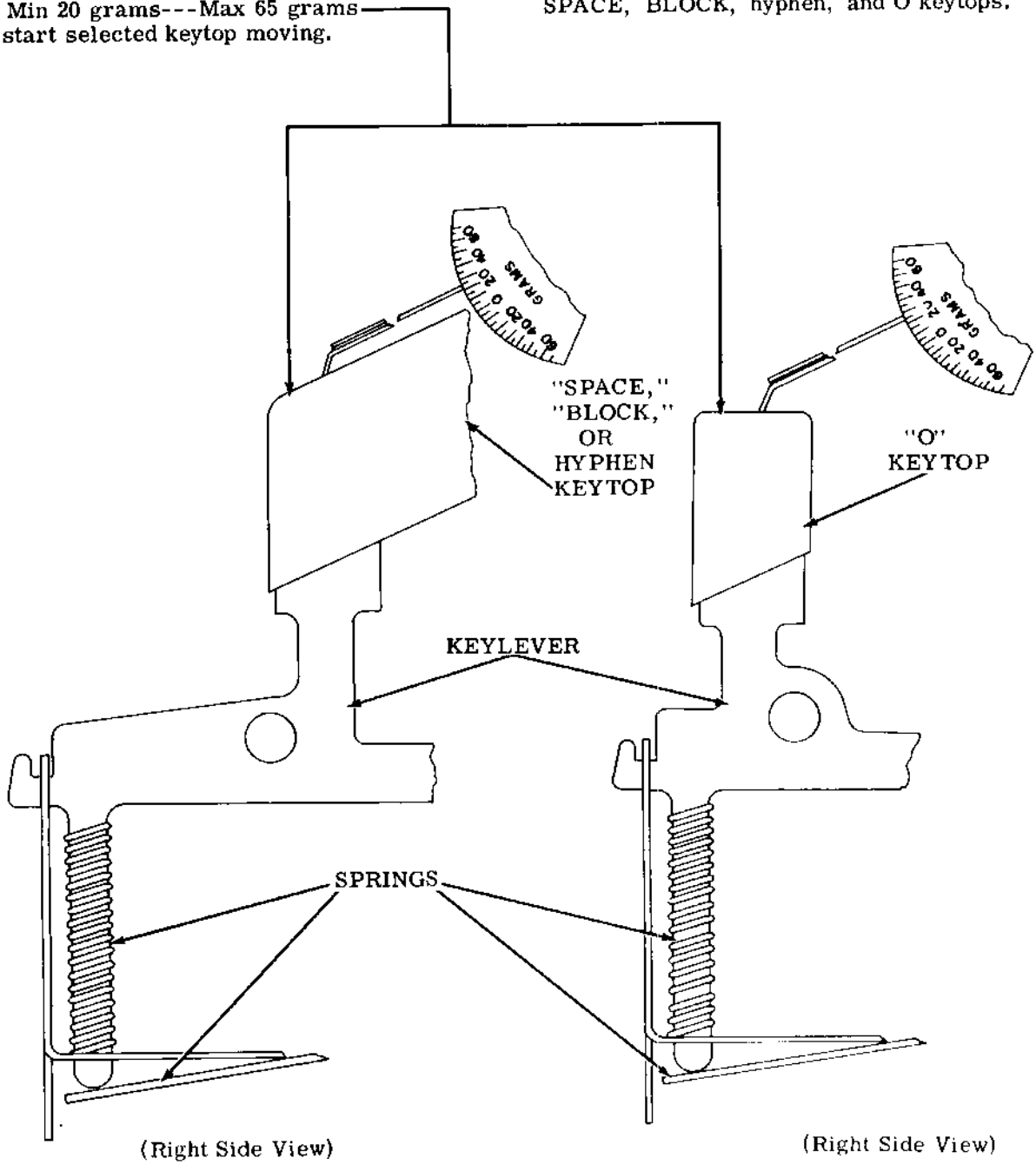
To Check

Push universal lever down until latched by latchlever. Depress either the SPACE, BLOCK, hyphen, or O keytop. Release selected keytop.

Requirement

Min 20 grams---Max 65 grams to start selected keytop moving.

Note 2: Repeat above procedure for each of the SPACE, BLOCK, hyphen, and O keytops.

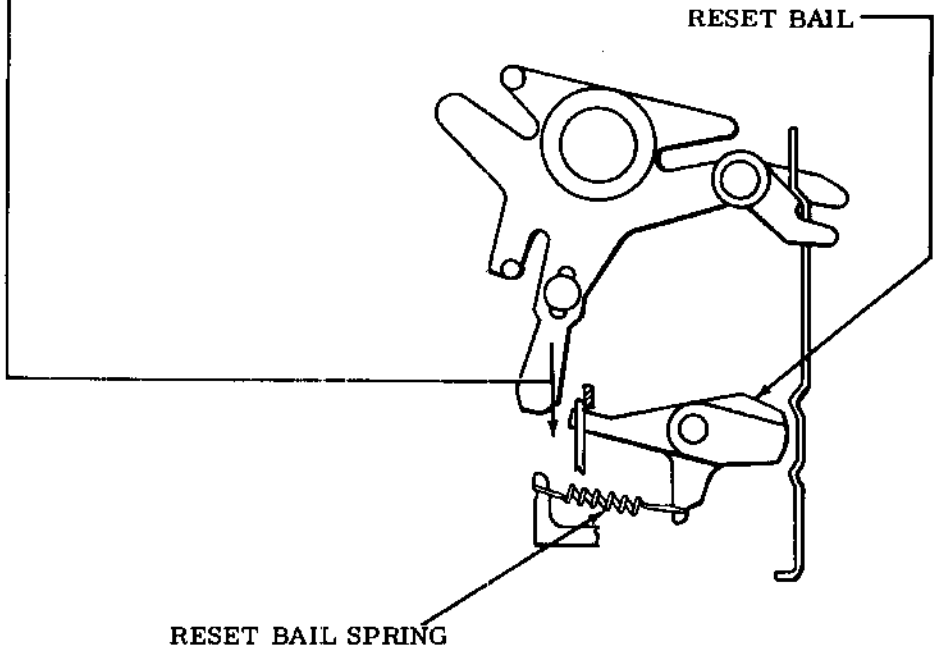


2. 10 Reset Bail Spring

RESET BAIL SPRING

To Check
Push universal lever down until latched by latchlever. Trip keyboard by depressing RUB-OUT keytop.

Requirement
——Min 1-1/2 oz---Max 2 oz to start reset bail moving.



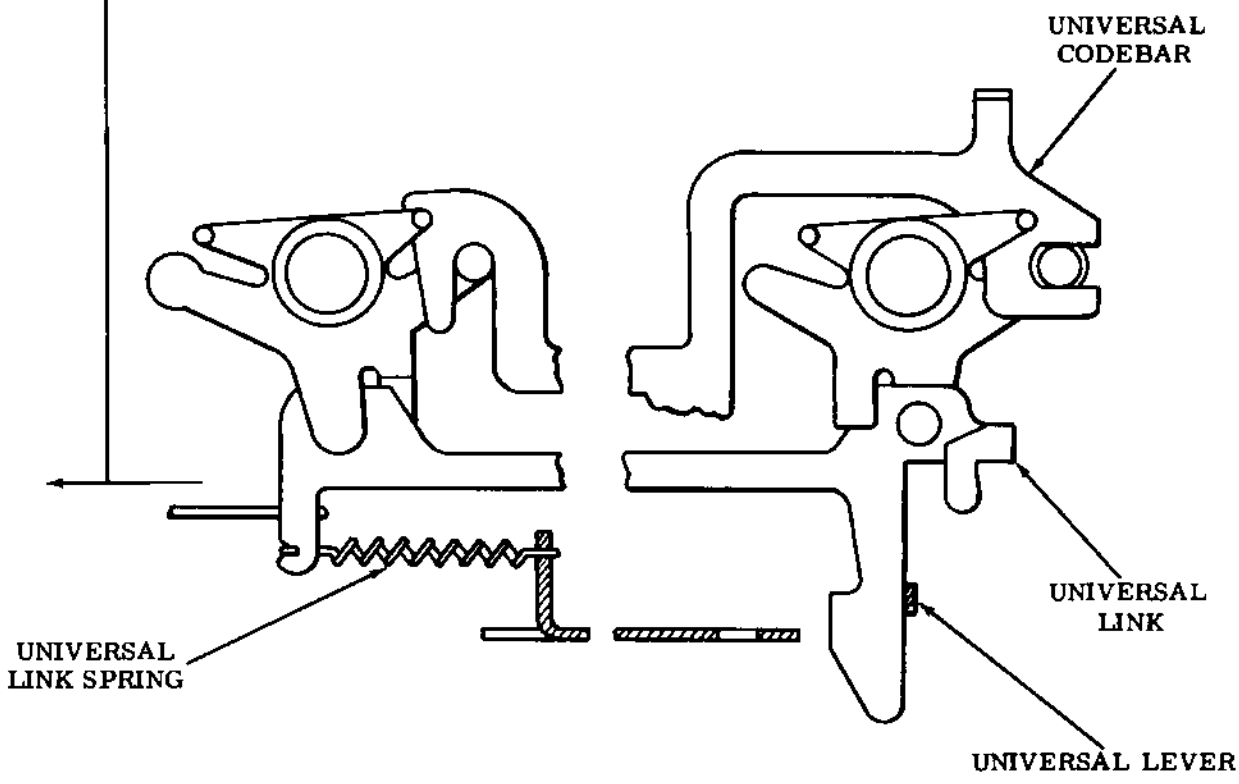
(Front View)

2.11 Universal Link Spring

UNIVERSAL LINK SPRING

To Check
Push universal lever down until latched by latchlever. Trip keyboard by depressing universal codebar.

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



(Front View)

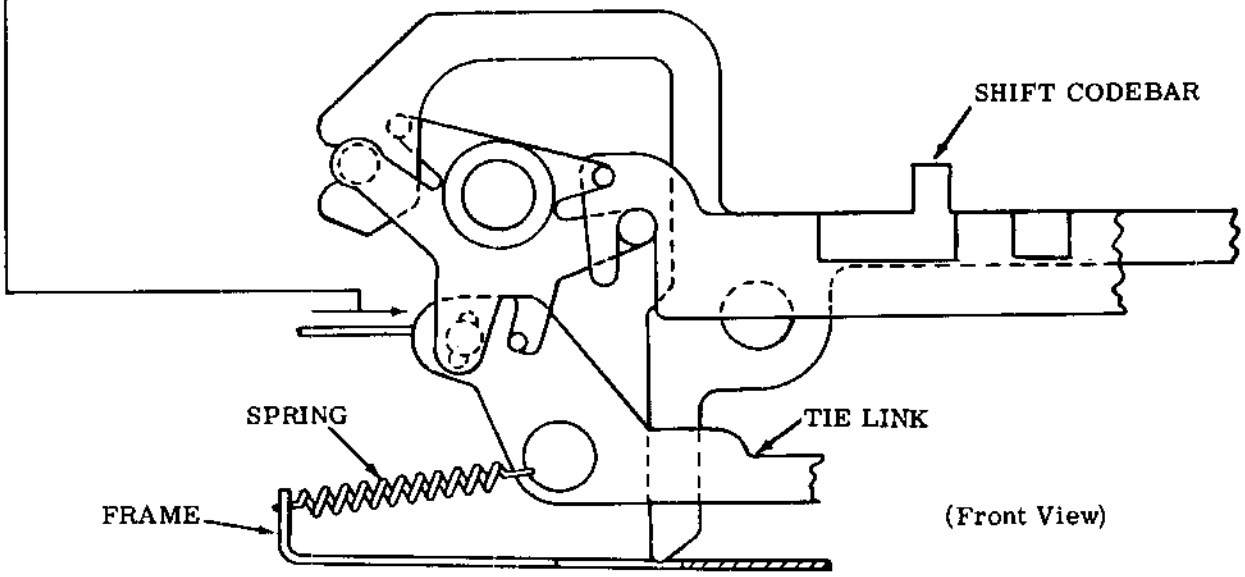
2. 12 Shift Codebar Spring

SHIFT CODEBAR SPRING

Requirement

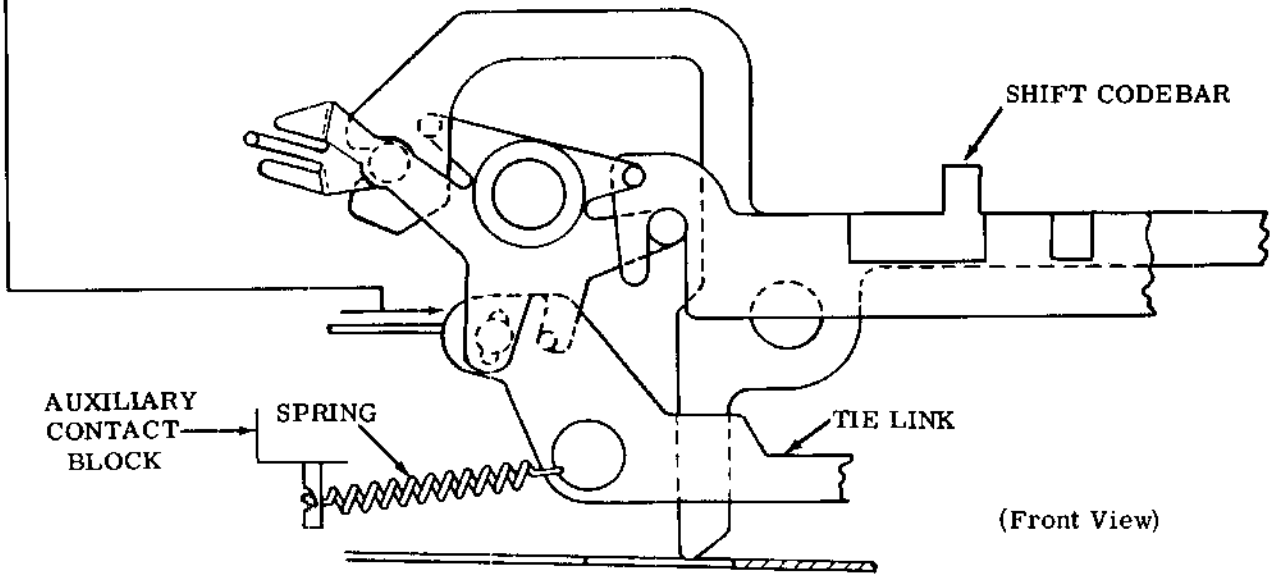
Nonparity keyboards:

—Min 1-1/4 oz---Max 2-1/2 oz
to start shift codebar tie link moving.



Parity keyboards:

—Min 2 oz---Max 3-1/4 oz
to start shift codebar tie link moving.



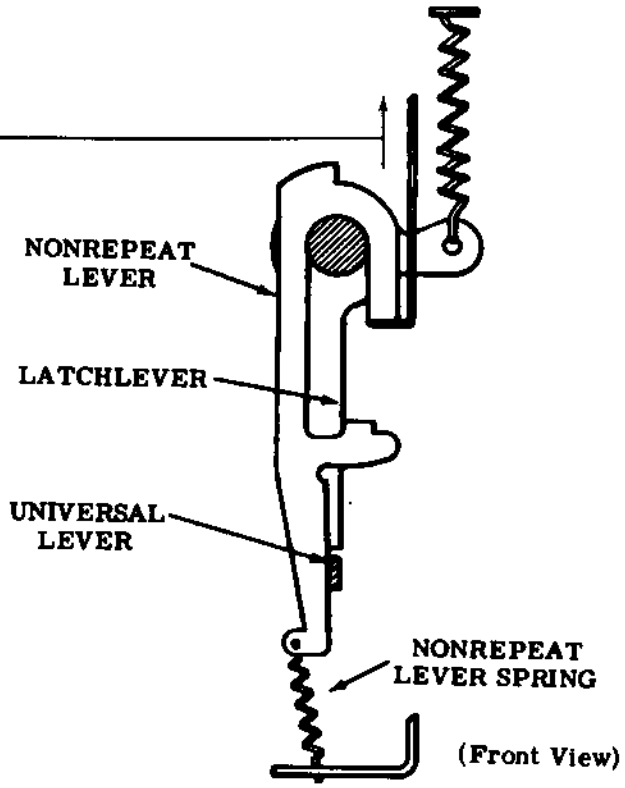
2.13 Nonrepeat Lever Spring

Note: Remove keyboard cover. For disassembly instructions, see appropriate keyboard section.

NONREPEAT LEVER SPRING

To Check
Push universal lever down until latched by latchlever.

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

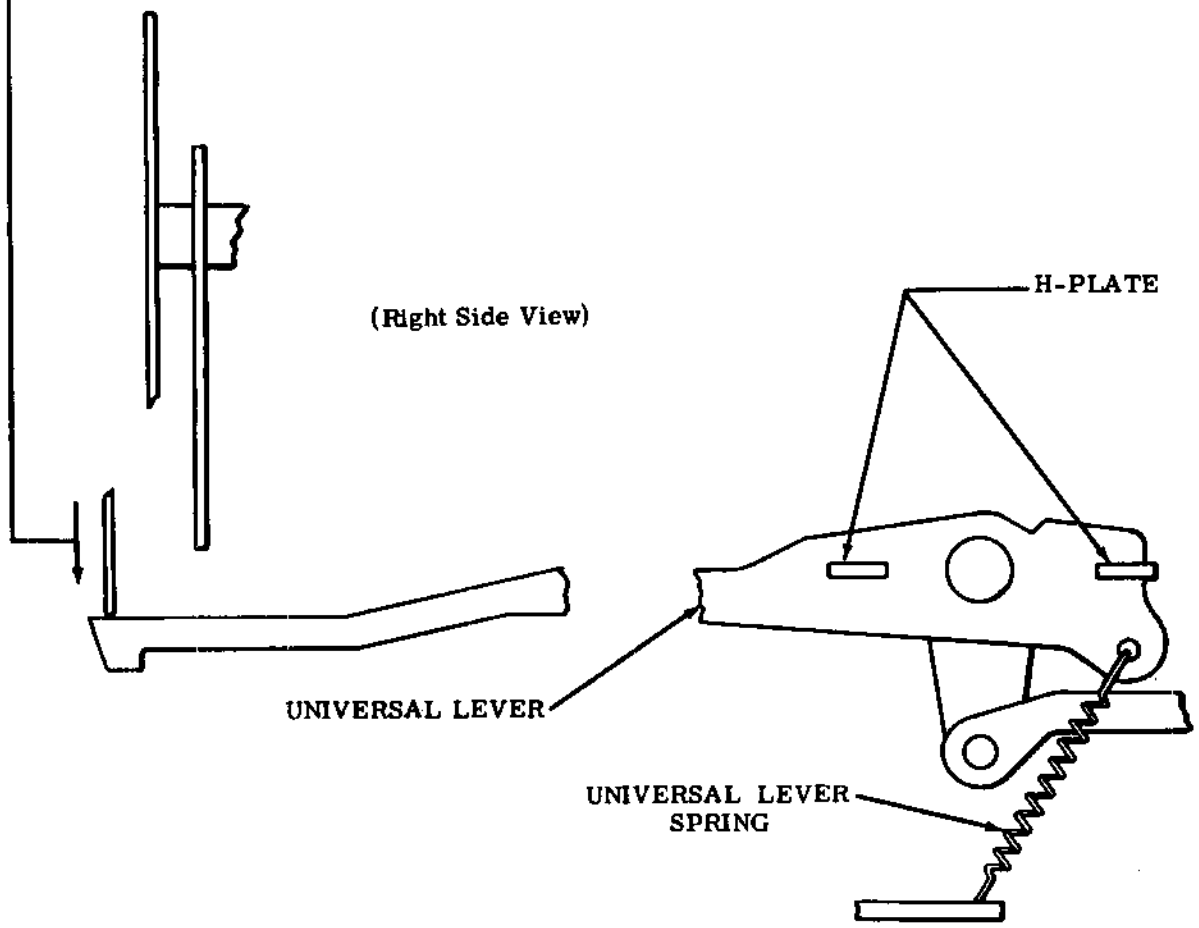


2.14 Universal Lever Spring

UNIVERSAL LEVER SPRING

To Check
Push universal lever down until latched by by latchlever. Hold reset bail away from universal lever.

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



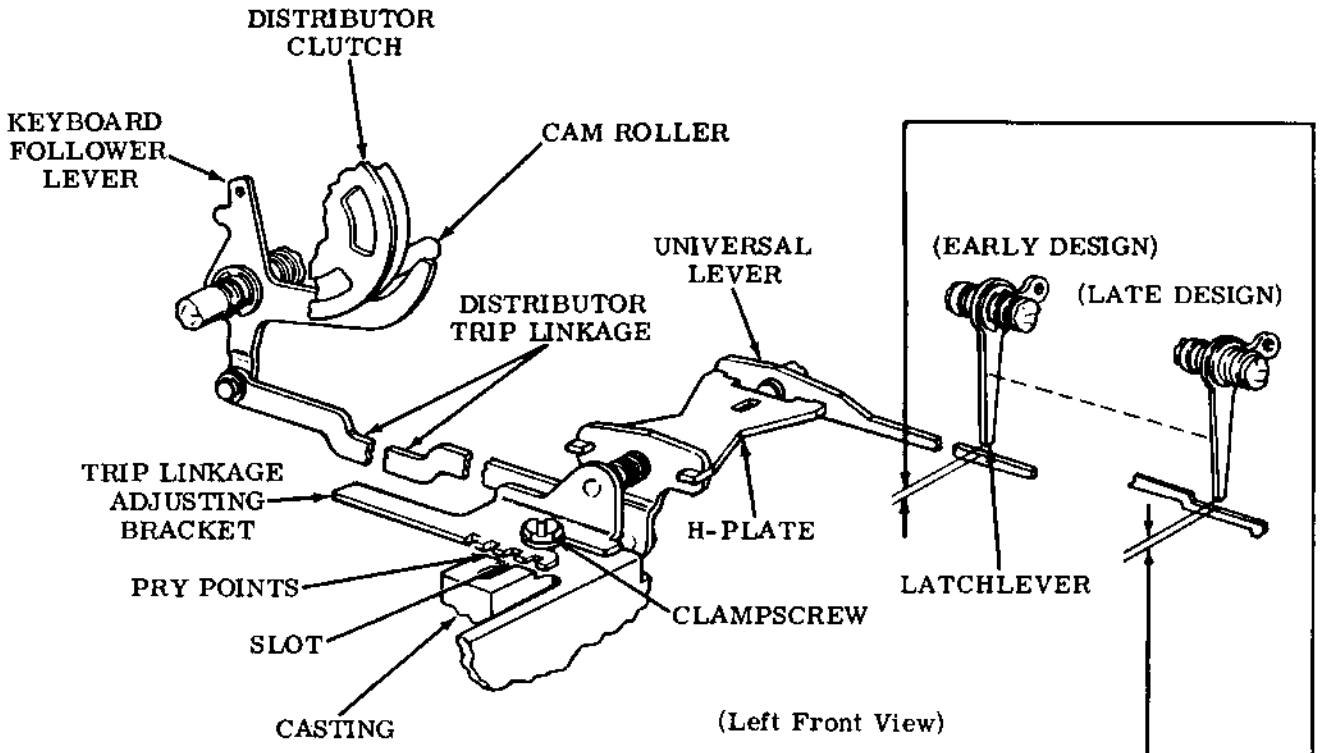
Note: Replace keyboard cover and reassemble keyboard (including H-plate) onto subbase. For reassembly instructions, see the appropriate keyboard section.

2.15 Distributor Trip Linkage

DISTRIBUTOR TRIP LINKAGE

To Check

Place typing unit in stop condition. Depress RUB-OUT key to trip distributor clutch. Rotate main shaft until keyboard follower lever is moved to its lowest point by cam roller. Push against reset bail spring anchor with just enough force to slightly move reset bail up.



Requirement

Early design keyboards equipped with TP180086 universal lever:

Min 0.010 inch---Max 0.035 inch between latchlever and universal lever.

Late design keyboards equipped with TP182240 or TP185766 universal lever:

Min 0.010 inch---Max 0.040 inch between latchlever and universal lever.

To Adjust

Loosen clampscrew friction tight. Using pry points and slot in casting, position trip linkage adjusting bracket until requirement is met. Tighten clampscrew.

Related Adjustment

Affects

TRIP LEVER ENGAGEMENT (See appropriate typing unit section.)

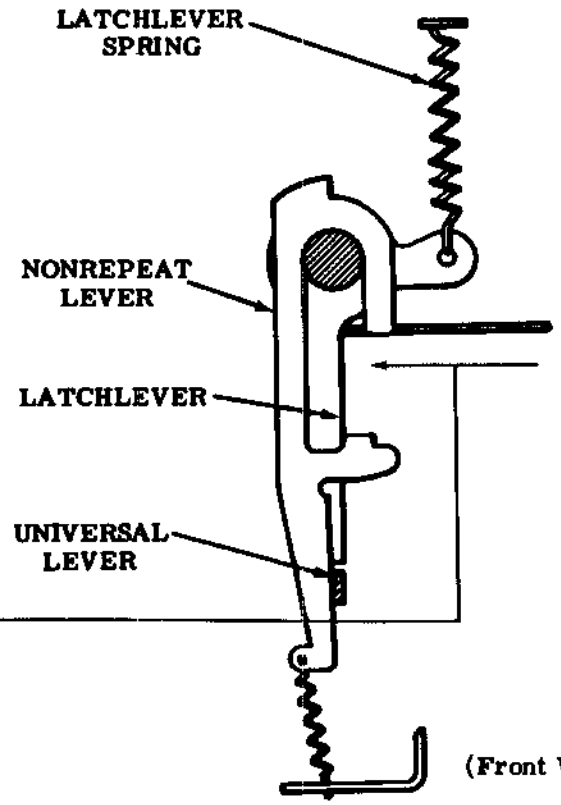
2.16 Latchlever Spring

LATCHLEVER SPRING

To Check
Place typing unit in stop condition. Trip distributor clutch and rotate main shaft until keyboard follower lever is moved by cam roller to its lowest point.

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

Note: Replace call control unit onto subbase. For reassembly instructions, see appropriate keyboard section.



(Front View)

33 TYPING UNIT

ADJUSTMENTS

CONTENTS

CONTENTS PAGE

Main Shaft Area

CONTENTS PAGE

Motor Area

Platen Area

Selector Area

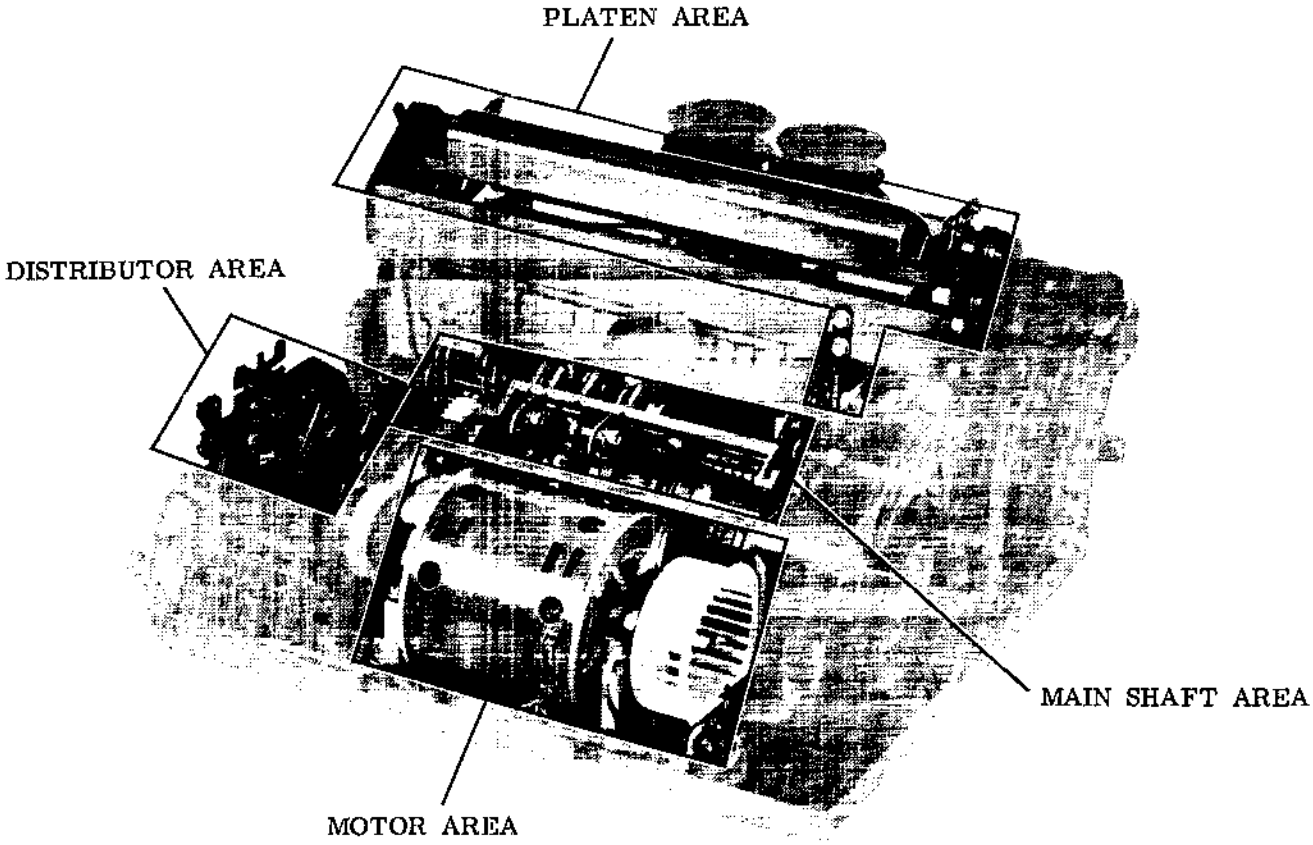
CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section provides adjustment information for the 33 typing unit. New within this issue is (a) exclusive coverage of 33 typing unit, (b) engineering changes, (c) two-color printing and typing unit suppression features, (d) revised order of adjustments, (e) title changes (which now provide a functional description of the associated area). Marginal arrows indicating changes are omitted.

1.02 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications



(Left Rear View)

Figure 1 - Distributor, Main Shaft, Motor, and Platen Areas

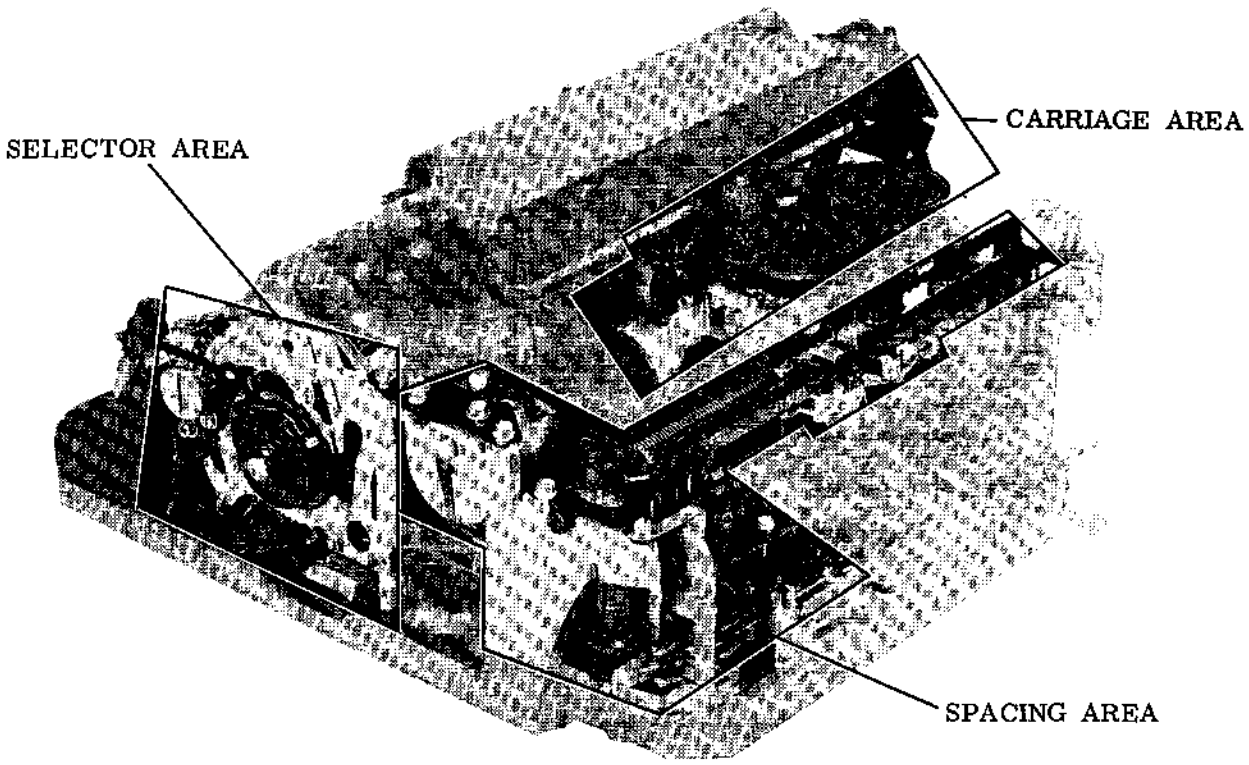
are illustrated by line drawings. Requirements and procedures are set forth in the several texts that accompany the line drawings. Required tools are included in TP185830 maintenance tool kit and are listed in Section 570-005-800. A DXD800 Signal Distortion Test Set was used to determine the requirements for the selector receiving margins.

1.03 Adjustments are divided into two categories — basic and variations. Basic adjustments apply to all friction feed and/or sprocket feed typing units. Adjustments found under variations apply only to typing units which have the particular feature(s) under consideration. The F and S following an adjustment title mean that the adjustment applies only to friction feed (F) or sprocket feed (S) typing units. No letter designation indicates that the adjustment applies to both types of equipment.

1.04 Adjustments are presented in a definite order which is considered the best to follow when completely readjusting the equipment. Certain interrelated adjustments, which appear on the same page, should be checked and adjusted in a definite sequence. The sequence is indicated by the letters (A), (B), etc. No single adjustment should be undertaken without first completely understanding the procedure and knowing the requirements. Therefore, read a procedure all the way through before making an adjustment or checking a spring tension.

Note: Disconnect the typing unit from any ac or dc potential prior to inspection, minor repair, extensive maintenance, or a complete readjustment.

1.05 References to left, right, front, rear, etc consider the typing unit to be viewed from a position where the carriage area faces



(Left Front View)

Figure 2 - Carriage, Selector, and Spacing Areas

up and the selector area is located to the viewer's left.

1.06 Unless specifically stated otherwise, make screws or nuts friction tight to make an adjustment and tighten them securely once the adjustment has been made.

1.07 When a procedure calls for using pry points or slots to make an adjustment, place a screwdriver between the points or in the slots and pry parts in the proper direction.

1.08 Due to a high degree of congestion within certain areas of some typing units, some disassembly will be required prior to making certain adjustments. If parts or subassemblies are removed from the typing unit to facilitate the making of an adjustment, be sure that they are subsequently replaced. Recheck any adjustments that may have been affected by the removal of parts or subassemblies.

Note 1: Do not remove parts and/or subassemblies unless it is considered absolutely necessary to perform an adjustment.

Note 2: Instructions for the disassembly and reassembly of parts and/or subassemblies are given in the appropriate disassembly and reassembly section and/or appropriate illustrated parts section.

Note 3: Do not lift typing unit while holding any part of the selector mechanism. Excessive strain on the selector mechanism, due to the weight of the typing unit, may cause selector malfunctioning. See appropriate disassembly and reassembly section for the proper method of lifting typing unit from its subbase.

1.09 Related adjustments are listed with some of the adjustment texts and are primarily intended to aid in troubleshooting the equipment. As an example, suppose that in searching for a

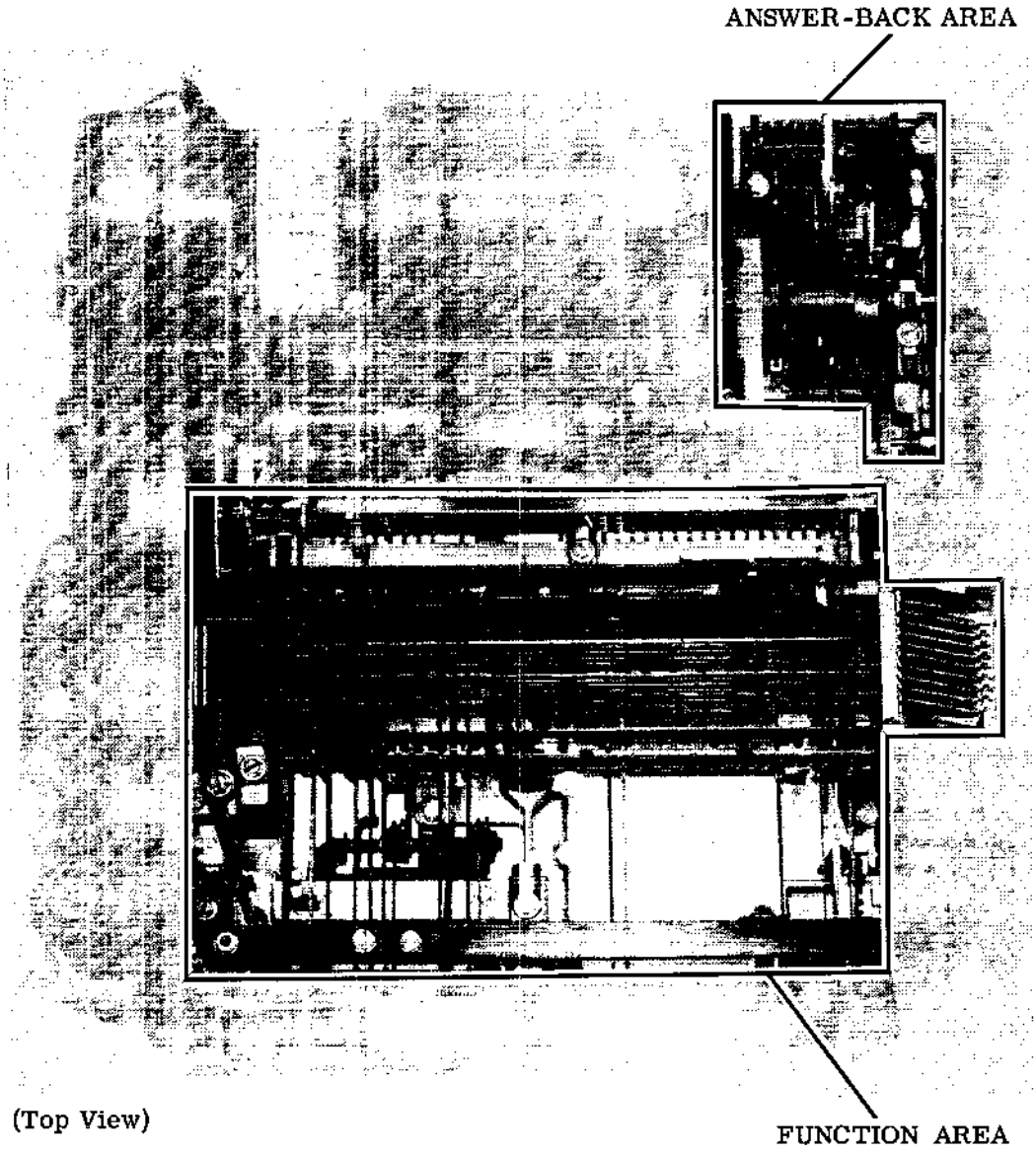


Figure 3 - Answer-Back and Function Areas

trouble it is discovered that the FUNCTION CLUTCH POSITION adjustment does not meet its requirement. Under Related Adjustments it is indicated that this adjustment is affected by the LEFT BEARING POSITION adjustment. First, check it to see if it is the cause of the trouble. Also, it is indicated that the FUNCTION CLUTCH POSITION adjustment affects FUNCTION CLUTCH ENDPLAY, CODEBAR CLUTCH ENDPLAY, and CODEBAR CLUTCH TRIP LEVER LINE-UP adjustments. If the former adjustment is changed, check the latter adjustments.

Note: Information in parentheses ( ) following any related adjustment gives the associated paragraph number and area, if different from the paragraph number at the top of the page.

1.10 The spring tensions specified in this section are indications, not exact values. Therefore, to obtain reliable readings, it is important that spring tensions be measured by spring scales placed in the positions shown on pertinent line drawings. Springs that do not meet their requirements should be replaced by

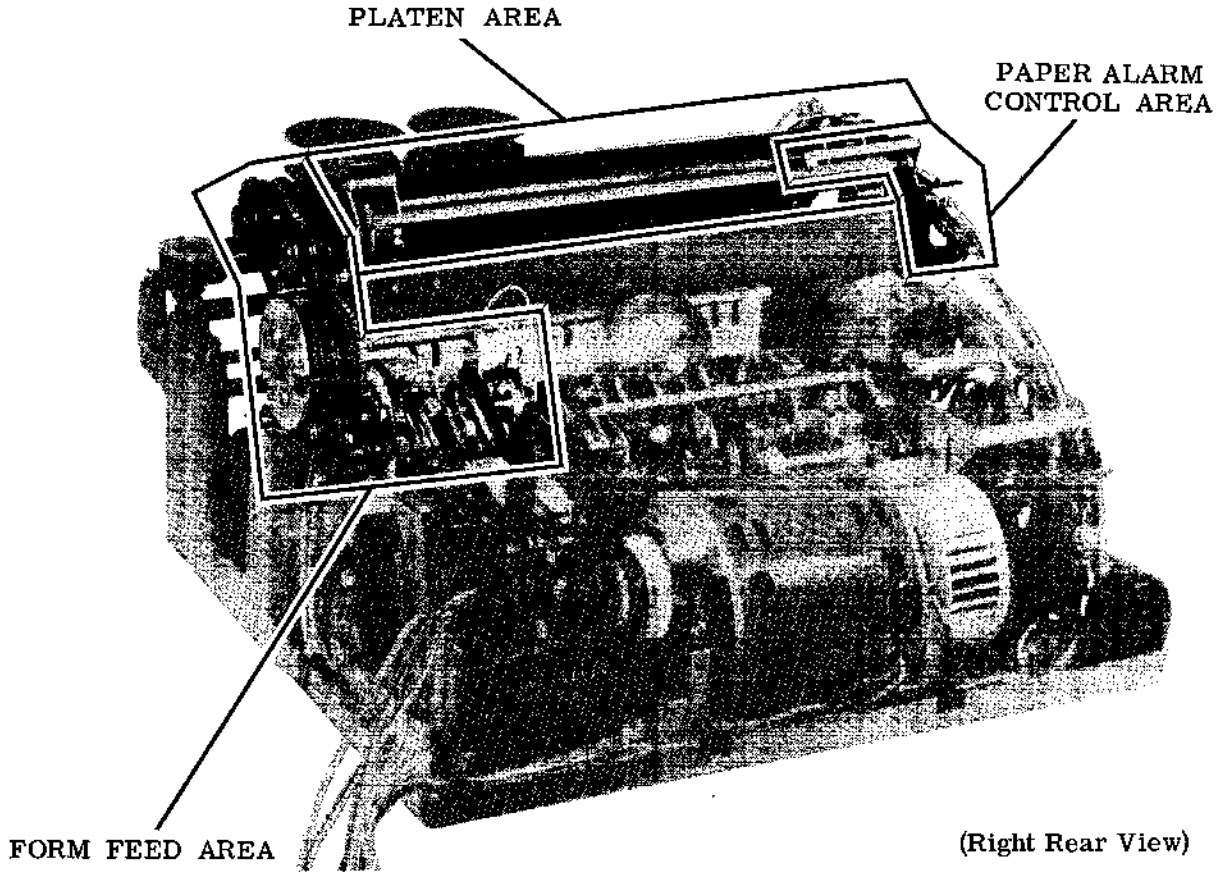


Figure 4 - Paper Alarm Control, Form Feed, and Platen Areas

new ones. Only those springs that directly affect the operation of the typing unit are measured, however, others may be measured indirectly in the process. If, at first, the spring tension requirement cannot be met, replace the indicated spring being directly measured. Then if the requirement is not met, any springs that are indirectly measured in the procedure should be replaced, one at a time, with the performance of requirement checks each time a spring is replaced.

Note 1: Use only spring scales which are recommended by the manufacturer and found in Maintenance Tools Section 570-005-800.

Note 2: The spring tensions may be checked in any sequence.

1.11 All adjustment procedures should be started with the typing unit in the stop condition. It is in the stop condition when the selector armature is in its attracted (frontward) position and all clutches are disengaged.

1.12 To place the typing unit in the stop condition, use TP185832 armature clip to hold the selector armature in its attracted (frontward) position. Rotate the main shaft clockwise (as viewed from the left) until all clutches are in a stop position. Fully disengage all of the clutches as instructed in 1.13 following.

Note 1: A stop position is that position where a shoe lever contacts a trip lever.

Note 2: The distributor clutch will not disengage unless the answer-back drum is in its home position, which is the position where the control lever is fully detented into the indent on the answer-back drum.

1.13 When disengaged, a clutch is latched so that a shoe lever is held in its stop position by a trip lever while a corresponding

latchlever is seated in a notch of the clutch disc. This allows the clutch shoes to release their tension on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any clutch shoes dragging.

Note: If the shaft is turned by hand, a clutch will not fully disengage upon reaching a stop position. Where an adjustment procedure calls for disengagement, rotate the clutch to a stop position, apply a screwdriver to the associated stop-lug, and push the clutch disc in the normal direction of main shaft rotation until the corresponding latchlever seats in its clutch disc notch. As a reminder, the word "latched" follows instructions to disengage the clutches.

1.14 A clutch is engaged when a trip lever is moved up so that it no longer holds a shoe lever in its stop position. When this action occurs, the shoe lever and a stop-lug on the clutch disc move apart, and the clutch shoes wedge against the drum, so that when the shaft is turned, the clutch will turn in unison with it.

1.15 Manual Operation: To manually operate the typing unit, place it in the stop condition as instructed in 1.12 and 1.13. Momentarily permit the armature to move to its unattracted (rearward) position to trip the selector clutch. Slowly rotate the main shaft clockwise (as viewed from the left) until all push levers have moved under their respective selector levers. Using a spring hook, strip the push levers from under the selector levers corresponding to the spacing elements of the code combination to be set up. Then continue to rotate the main shaft until the proper condition is set up or the character is cleared through the typing unit.

1.16 The selector levers are numbered 1, 2, 3, 4, 5, 7, 6, and 8 from left to right. To set up the character Y, for example, whose 8-level code combination is 1--45-78, strip the push levers from the 2, 3, and 6 selector levers.

1.17 Code combinations within this section are not always given as parity codes. Parity codes are obtained by proper transformation of the eighth code level as explained in the typing unit principles of operation section.

1.18 To aid in physically locating the adjustments and spring tensions, the typing unit is divided into eleven areas. These areas are indicated in Figures 1 through 4 as follows:

Area	Figure
Carriage	2
Distributor	1
Function	3
Main Shaft	1
Motor	1
Selector	2
Spacing	2
Platen	1, 4
Form Feed	4
Answer-Back	3
Paper Alarm Control	4

2. BASIC UNIT

2.01 Distributor Area

(B) SHAFT LEFT BEARING GAP

Requirement
Min some---Max 0.012 inch between left bearing and clutch gear assembly as gauged by eye.

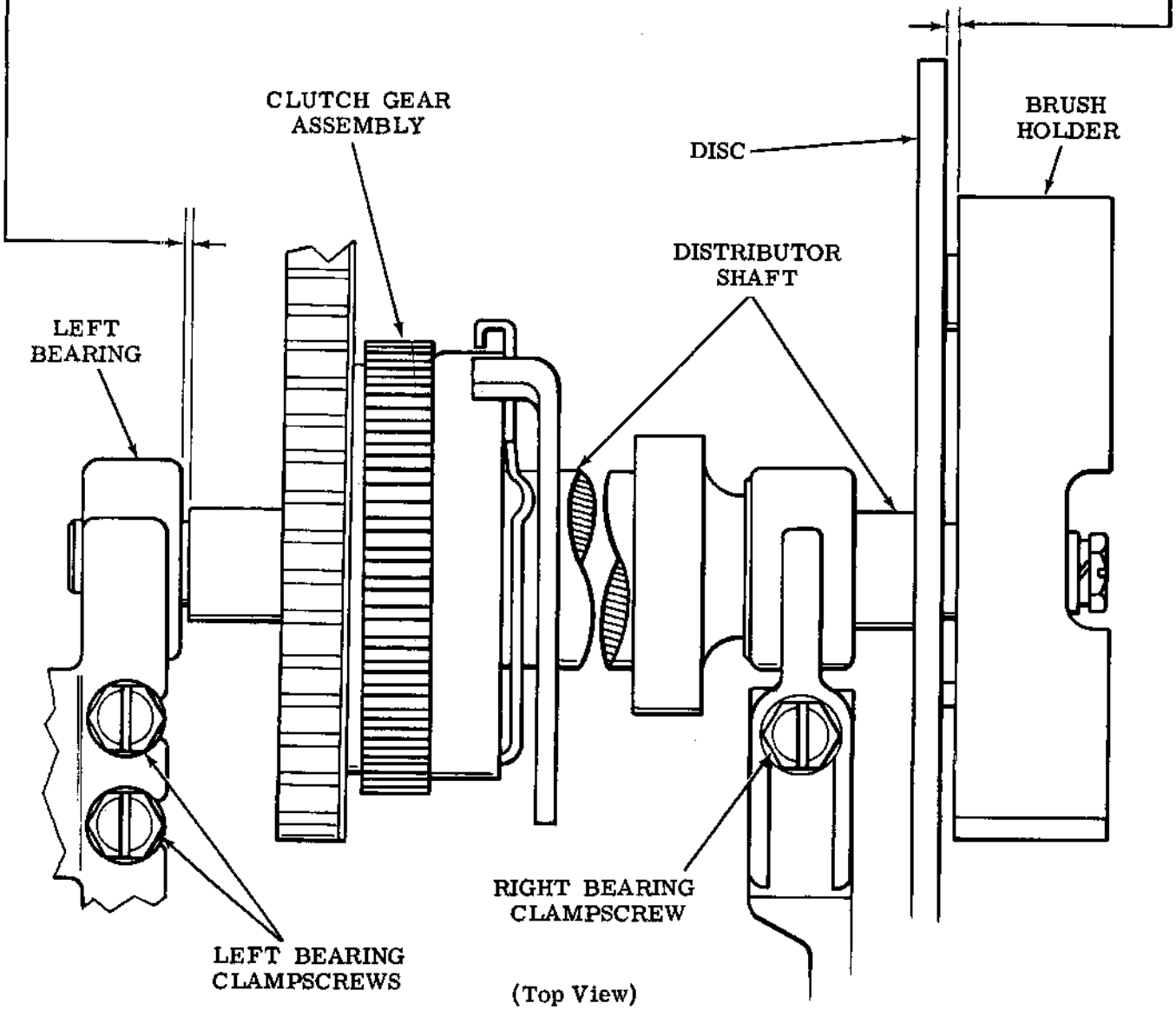
To Adjust
Disengage (latch) distributor clutch. Hold clutch gear assembly firmly to right. Position left bearing with clampscrews loosened. Tighten left bearing clampscrews.

(A) BRUSH HOLDER GAP

(1) Requirement
With distributor clutch disengaged (latched)
Min 0.010 inch---Max 0.060 inch between brush holder and disc.

(2) Requirement
During entire brush holder rotation
Min 0.002 inch between brush holder and disc.

To Adjust
With three bearing clampscrews, position distributor shaft. Tighten right, but not left, bearing clampscrew.



(Top View)

2.02 Distributor Area (continued)

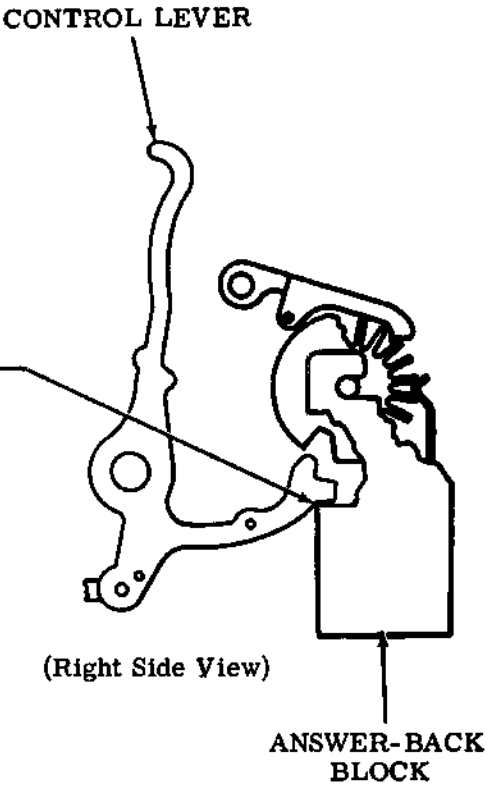
TRIP SHAFT POSITION

To Check
Place distributor clutch in the stop position.

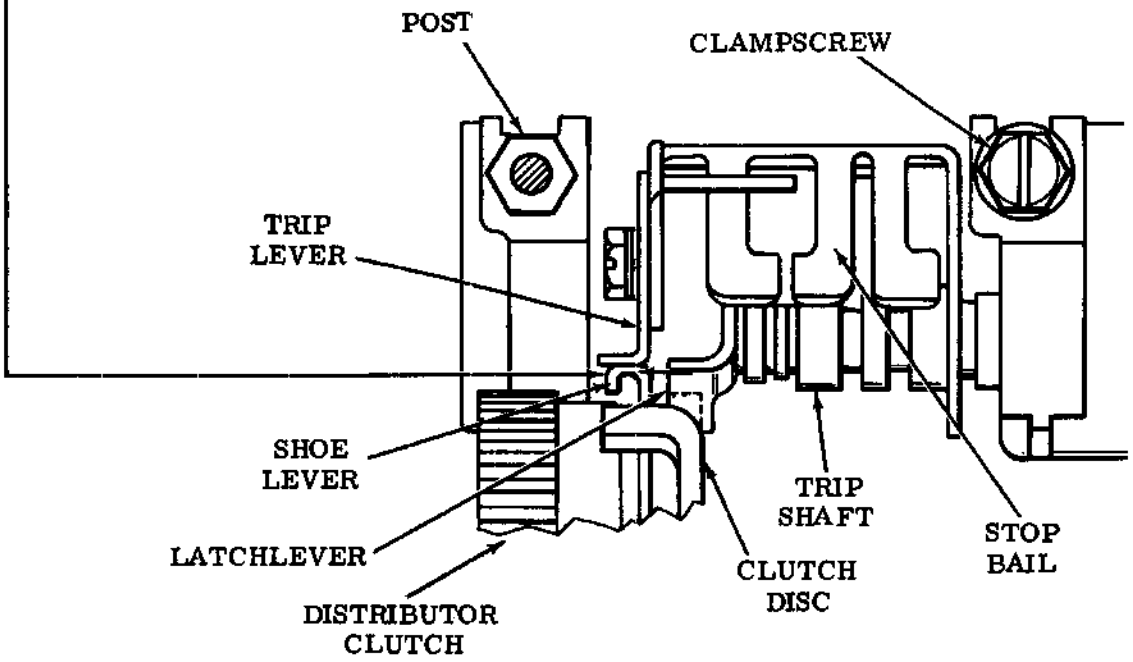
(1) Requirement
With play taken up to minimize all clearances, the trip lever should engage Min two-thirds width of formed end of shoe lever.

(2) Requirement
Rear extension of control lever should not bind in its slot in answer-back block.

To Adjust
Loosen clampscrews friction tight and position trip shaft. Tighten clampscrews.



(Right Side View)



(Top View)

2.03 Distributor Area (continued)

CLUTCH SHOE LEVER GAP

To Check

Push universal lever down until latched by latchlever. Disengage (latch) distributor clutch. Measure and record clearance between shoe lever and stop-lug. Trip distributor clutch by moving trip lever rearward. Fully seat the clutch shoes by applying slight pressure against the shoe lever along its normal path of forward travel. Measure and record same clearance as above.

(1) Requirement

With distributor clutch disengaged (latched)

Min 0.015 inch

between stop-lug and shoe lever.

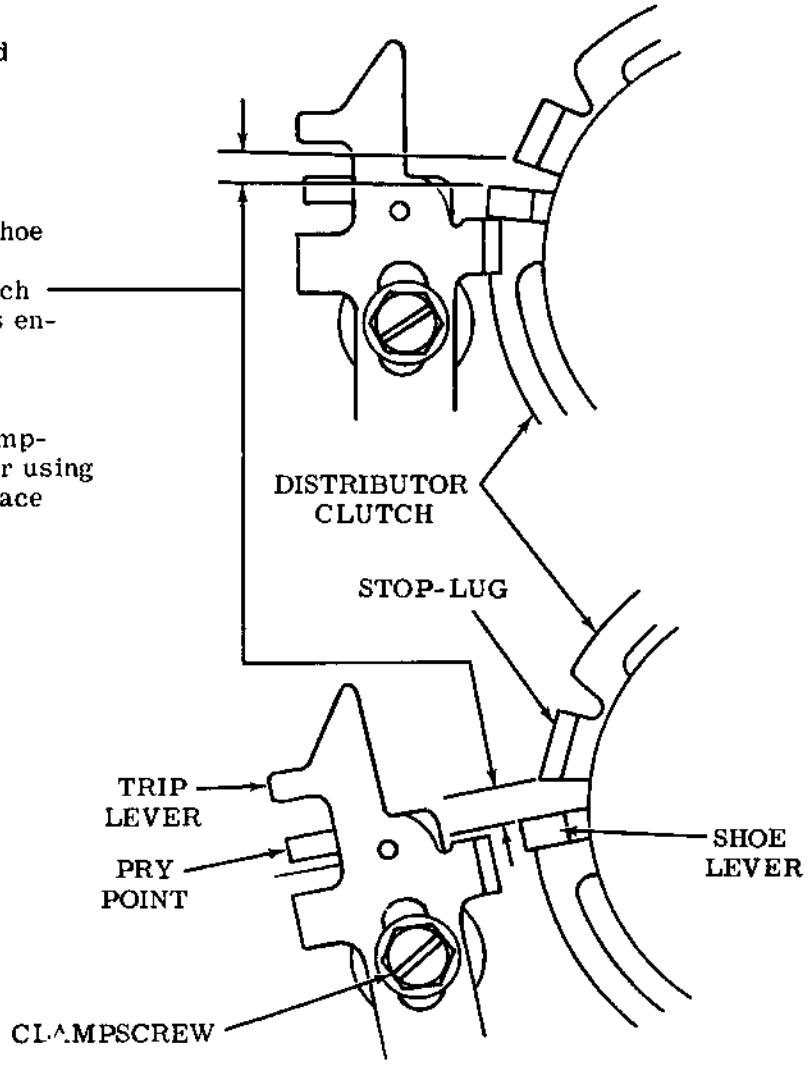
(2) Requirement

Clearance between stop-lug and shoe lever

Min 0.050 inch---Max 0.080 inch greater when distributor clutch is engaged than when disengaged.

To Adjust

Remove answer-back drum. With clampscrew friction tight, position trip lever using pry point. Tighten clampscrew. Replace answer-back drum.



(Left Side View)

2.04 Distributor Area (continued)

Note 1: Remove typing unit from subbase to facilitate making succeeding adjustments. For instructions, see the appropriate disassembly and reassembly section.

Note 2: Do not lift typing unit while holding any part of the selector mechanism. Excessive strain on the selector mechanism, due to the weight of the typing unit, may cause selector malfunctioning. See the appropriate disassembly and reassembly section for the proper method of lifting the typing unit from its subbase.

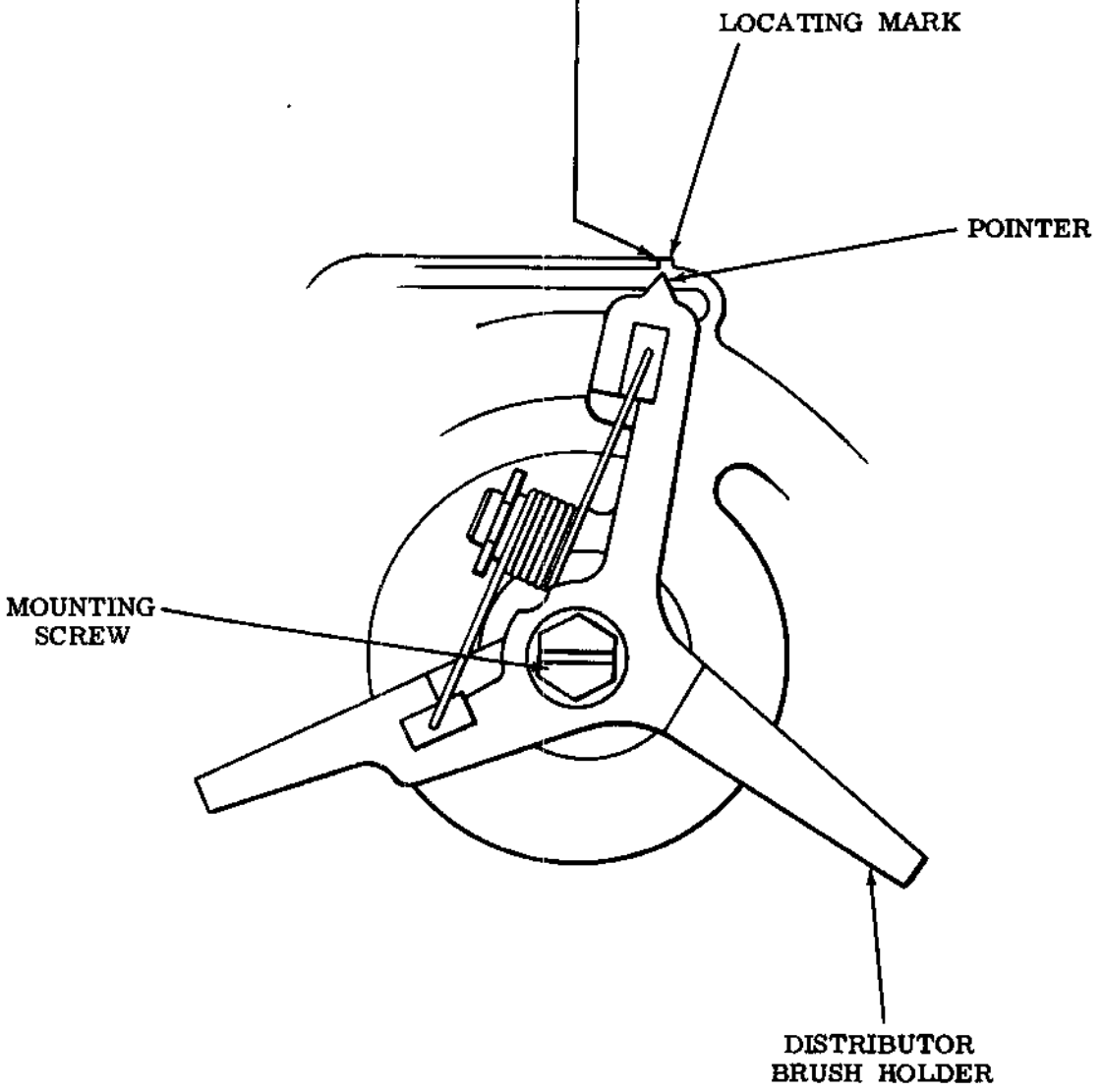
BRUSH HOLDER POSITION

Requirement

With distributor clutch disengaged (latched), pointer should be within locating mark.

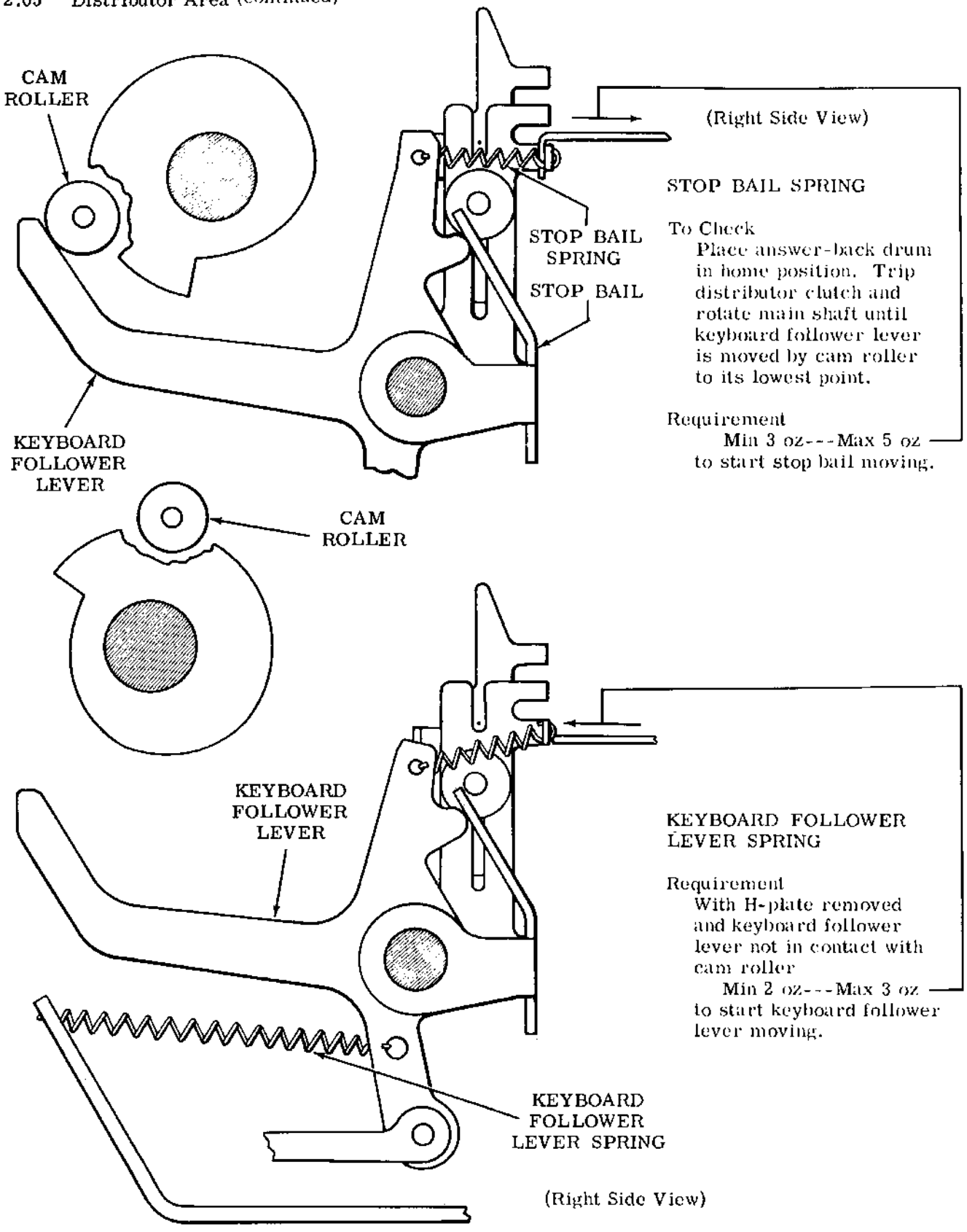
To Adjust

Loosen mounting screws and position distributor brush holder. Tighten mounting screws.

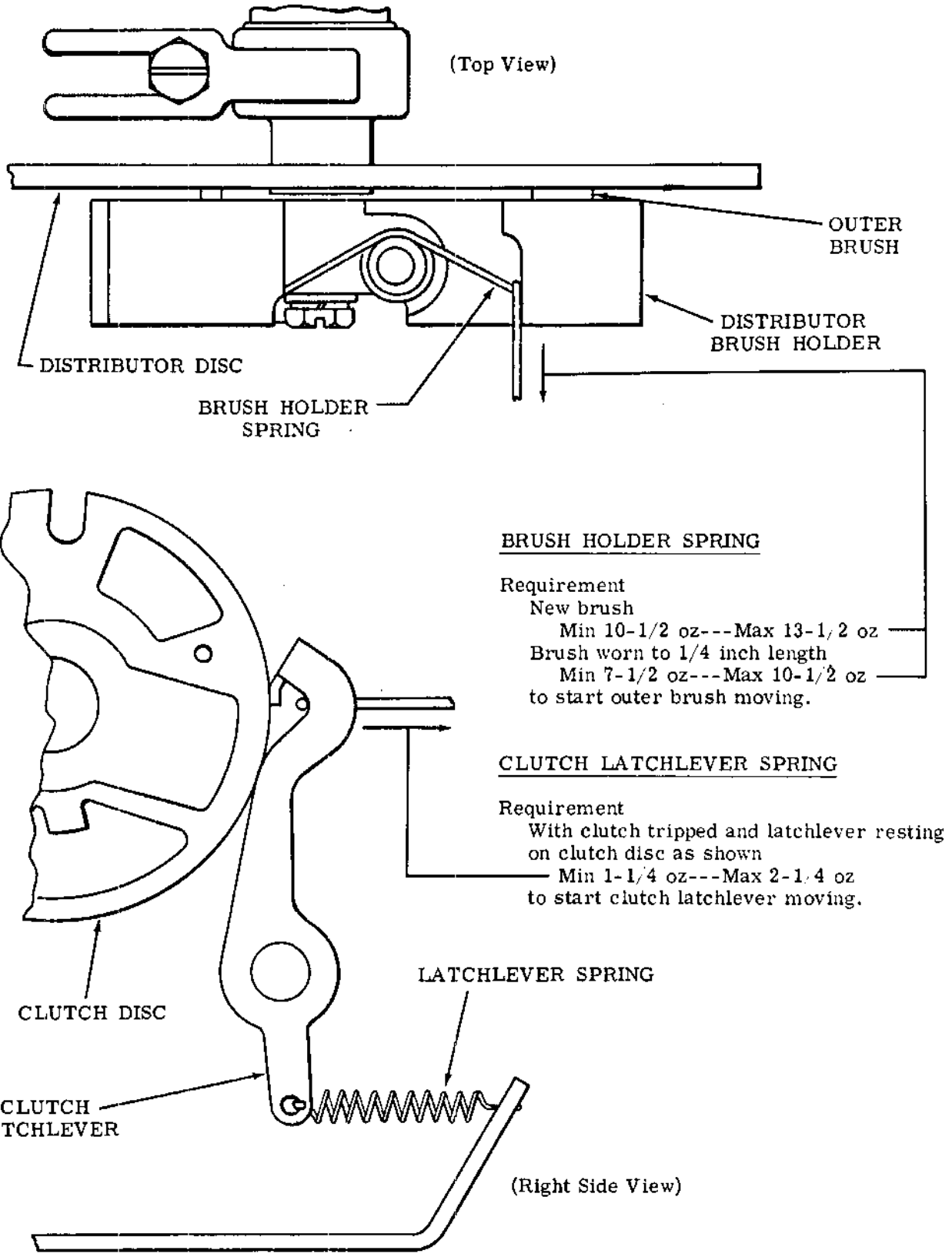


(Right Side View)

2.05 Distributor Area (continued)



2.06 Distributor Area (continued)



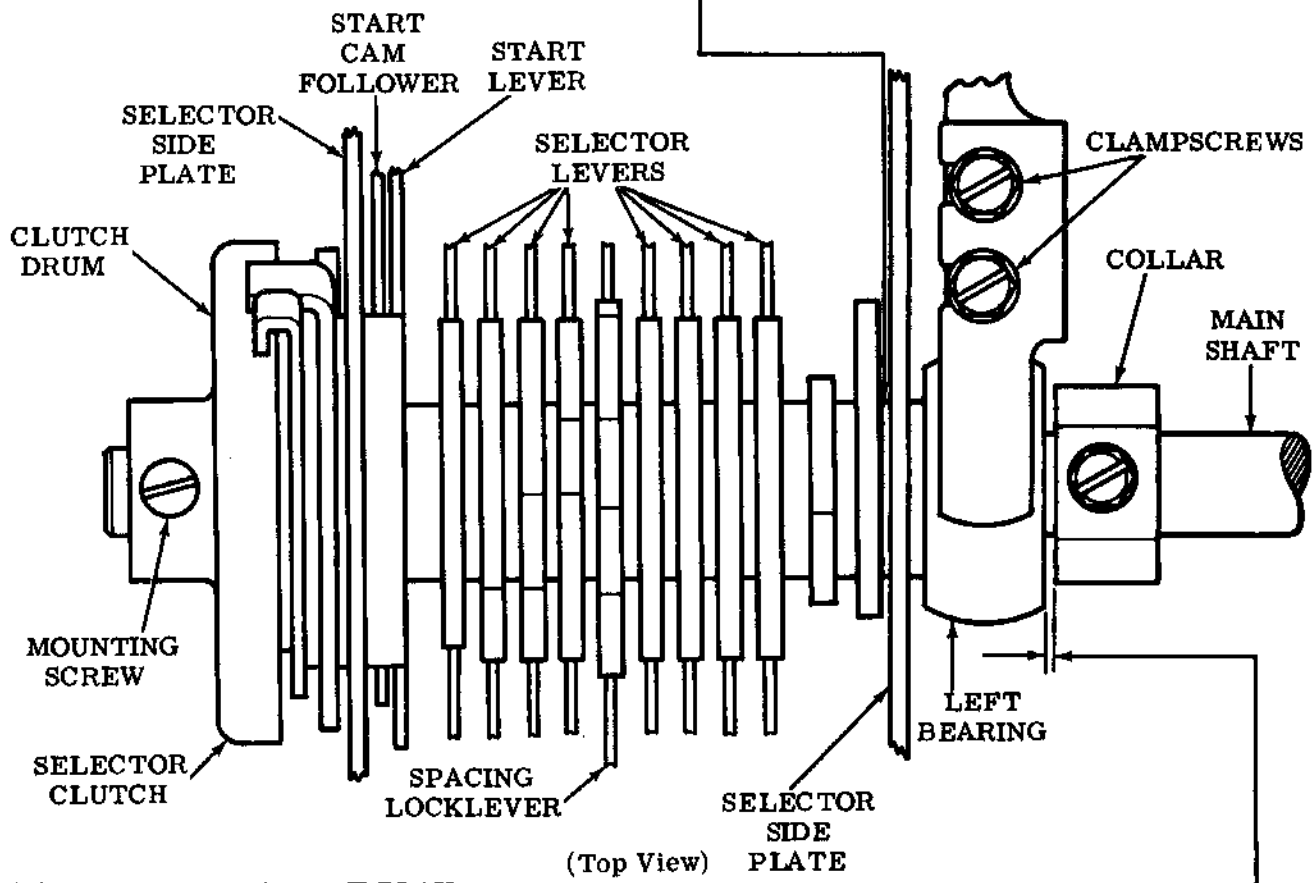
2.07 Main Shaft Area

(A) LEFT BEARING POSITION

Related Adjustments
Affects
FUNCTION CLUTCH POSITION (Par. 2.08)
DRIVEN GEAR LINE-UP (Par. 2.09)
CODEBAR CLUTCH TRIP LEVER LINE-UP (Par. 2.11)

Requirement
The start cam follower, selector levers, and spacing locklever should fully engage their cams when cam sleeve is in contact with the left bearing, and the left side of the left bearing should protrude beyond selector side plate.

To Adjust
Loosen left bearing clampscrews and position left bearing. Tighten clampscrews.



(Top View)

(B) SELECTOR CAM ENDPLAY

To Check
Disengage (latch) selector clutch. Take up play in main shaft toward right.

Requirement
Min 0.002 inch---Max 0.012 inch endplay between left bearing and collar.

To Adjust
With the selector clutch drum mounting screw friction tight, position the clutch drum. (If a complete readjustment of the typing unit is to be performed, loosen all screws on main shaft except collar screw immediately to the right of the left main shaft bearing.) Tighten mounting screw.

2.08 Main Shaft Area (continued)

Note: Make this adjustment only when a complete adjustment of the typing unit is being undertaken.

(B) FUNCTION CLUTCH ENDPLAY

To Check
Disengage (latch) function clutch. Take up clearances to make function clutch endplay a maximum.

Requirement
Min 0.005 inch---Max 0.015 inch endplay in function clutch.

To Adjust
With three function casting clampscrews loosened friction tight, loosen collar clampscrew and position function clutch to meet requirement. Tighten all clampscrews.

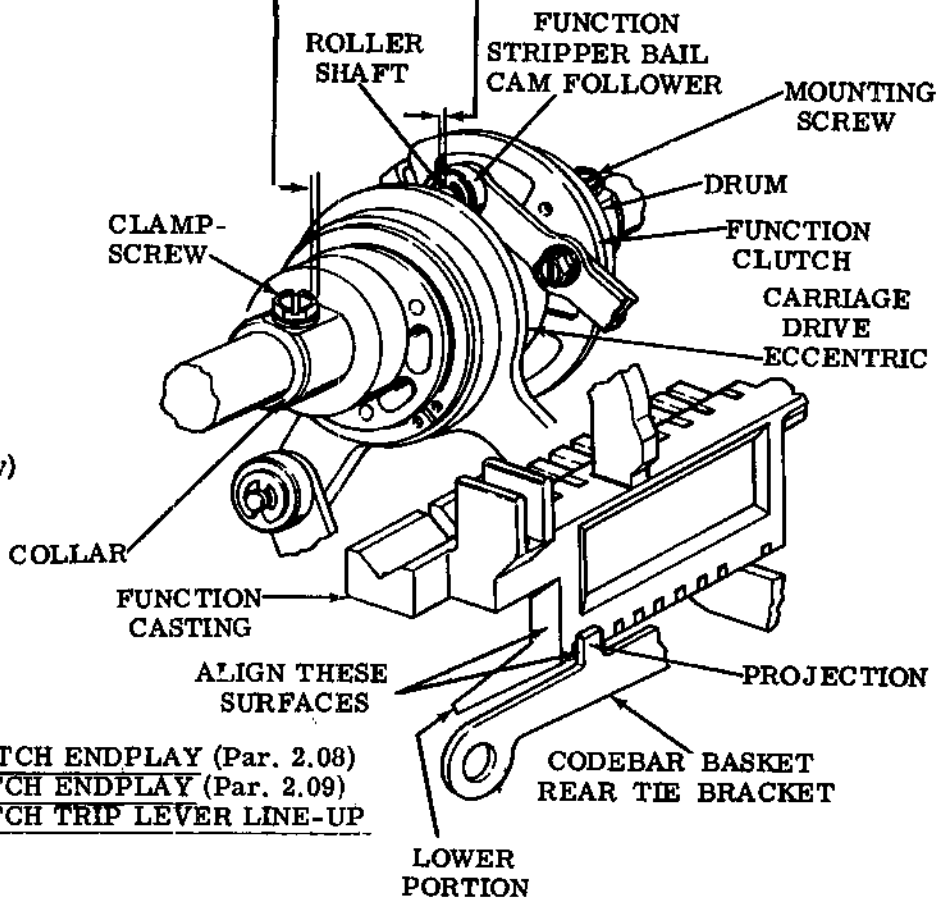
Related Adjustment
Affected By
FUNCTION CLUTCH POSITION (Par. 2.08)

(A) FUNCTION CLUTCH POSITION

To Check
Take up play to minimize clearance between carriage drive eccentric and end of roller shaft.

Requirement
Min 0.020 inch---Max 0.040 inch clearance between carriage drive eccentric and end of roller shaft as gauged by eye.

To Adjust
Loosen three function casting clampscrews friction tight and line up left side of lower portion of function casting with left side of lower projection from codebar basket rear tie bracket by moving the function casting. Loosen drum mounting screw and position function clutch to meet requirement. Tighten drum mounting screw.*



(Left Front View)

*Related Adjustments
Affects
FUNCTION CLUTCH ENDPLAY (Par. 2.08)
CODEBAR CLUTCH ENDPLAY (Par. 2.09)
CODEBAR CLUTCH TRIP LEVER LINE-UP (Par. 2.11)

Affected By
LEFT BEARING POSITION (Par. 2.07)

2.09 **Main Shaft Area** (continued)

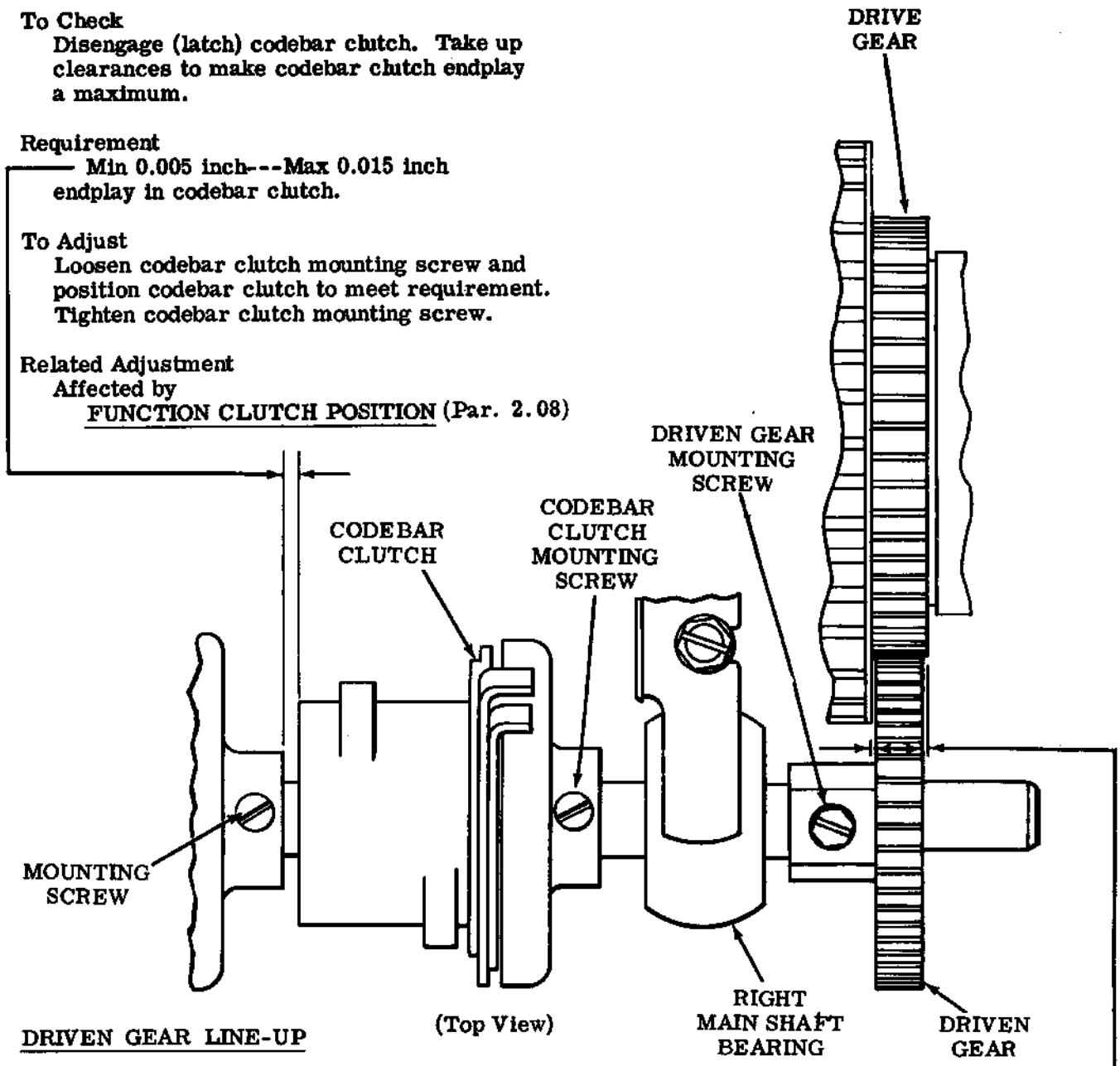
CODEBAR CLUTCH ENDPLAY

To Check
Disengage (latch) codebar clutch. Take up clearances to make codebar clutch endplay a maximum.

Requirement
Min 0.005 inch---Max 0.015 inch endplay in codebar clutch.

To Adjust
Loosen codebar clutch mounting screw and position codebar clutch to meet requirement. Tighten codebar clutch mounting screw.

Related Adjustment
Affected by
FUNCTION CLUTCH POSITION (Par. 2.08)



DRIVEN GEAR LINE-UP

Requirement
Driven gear centered on drive gear as gauged by eye.

To Adjust
Loosen driven gear mounting screw, and position driven gear to meet requirement. Tighten driven gear mounting screw.

Related Adjustment
Affected By
LEFT BEARING POSITION (Par. 2.07)

2.10 Main Shaft Area (continued)

(A) FORM FEED CLUTCH ENDPLAY - S

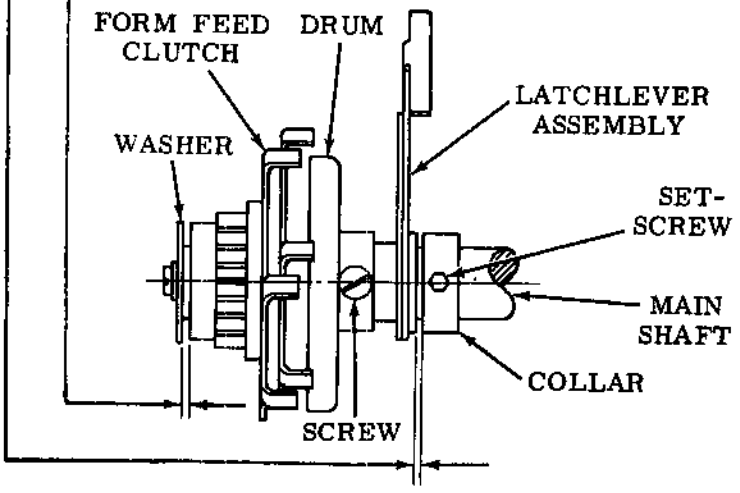
Requirement
Min some---Max 0.012 inch endplay between washer and form feed clutch.

To Adjust
Loosen drum screw and position drum.

(B) LATCHLEVER ENDPLAY - S

Requirement
Min some---Max 0.012 inch endplay between latchlever assembly and collar.

To Adjust
Loosen setscrew and position collar.
Tighten screw.



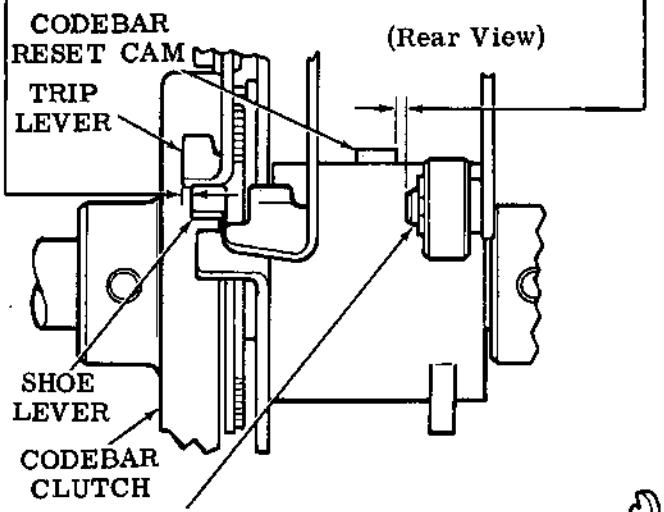
(Top View)

2.11 Main Shaft Area (continued)

CODEBAR CLUTCH TRIP LEVER LINE-UP

(1) Requirement
As gauged by eye, codebar clutch trip lever approximately aligned with shoe lever within 0.030 inch.

(2) Requirement
Min 0.005 inch between function clutch trip roller's shaft and codebar reset cam when all play is taken up to make clearance minimum.



To Adjust
Loosen clampscrew and position trip lever.

Note: It may also be necessary to loosen setscrew in collar.

Related Adjustments
Affects
TRIP SHAFT LATCHLEVER ENDPLAY (Par. 2.11)

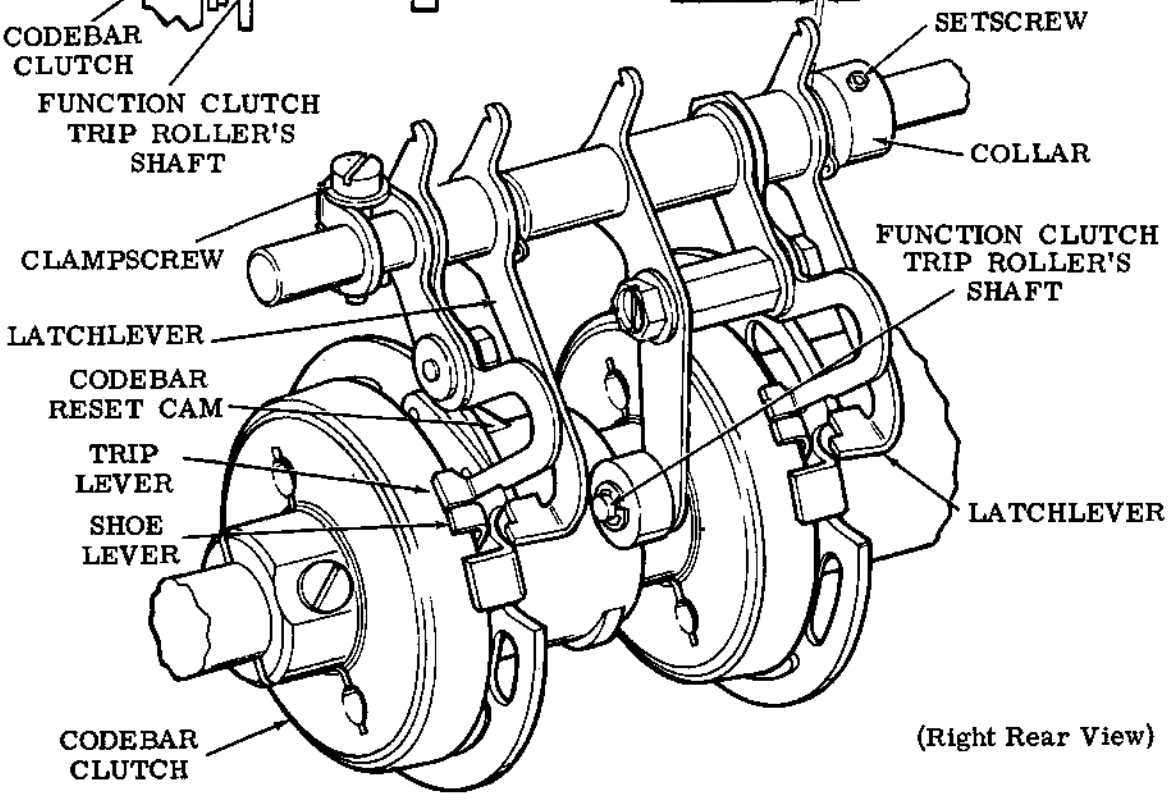
Affected By
LEFT BEARING POSITION (Par. 2.07)
FUNCTION CLUTCH POSITION (Par. 2.08)

TRIP SHAFT LATCHLEVER ENDPLAY

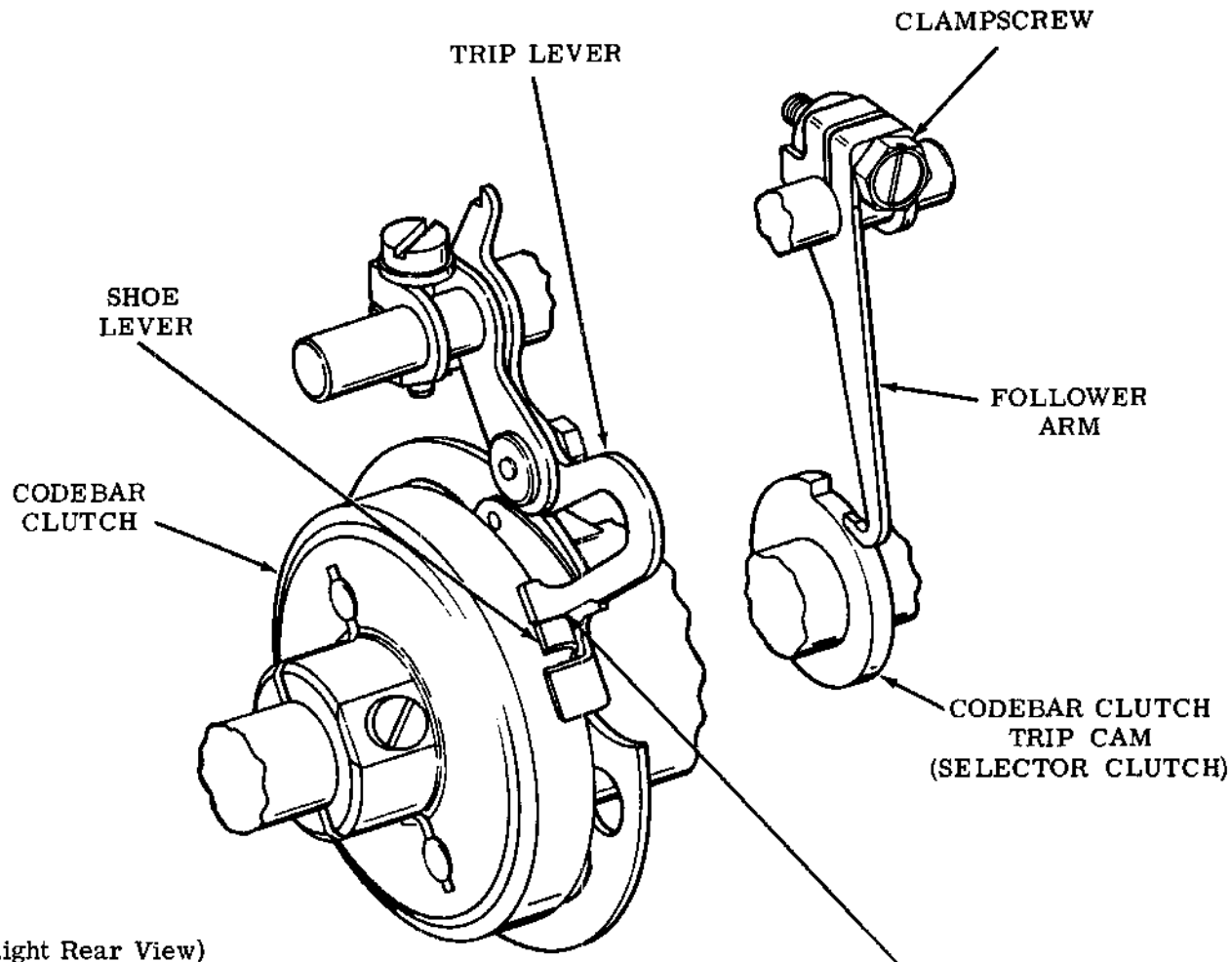
Requirement
Min some---Max 0.012 inch endplay in latchlevers, as gauged by eye.

To Adjust
Loosen setscrew and position collar.
Tighten setscrew.

Related Adjustment
Affected By
CODEBAR CLUTCH TRIP LEVER LINE-UP (Par. 2.11)



2.12 Main Shaft Area (continued)



(Right Rear View)

CODEBAR CLUTCH TRIP LEVER ENGAGEMENT

Requirement
With typing unit in stop condition, trip lever should engage shoe lever by approximately full thickness of shoe lever.

To Adjust
Loosen clampscrew and position codebar clutch trip cam follower arm. Tighten clampscrew.

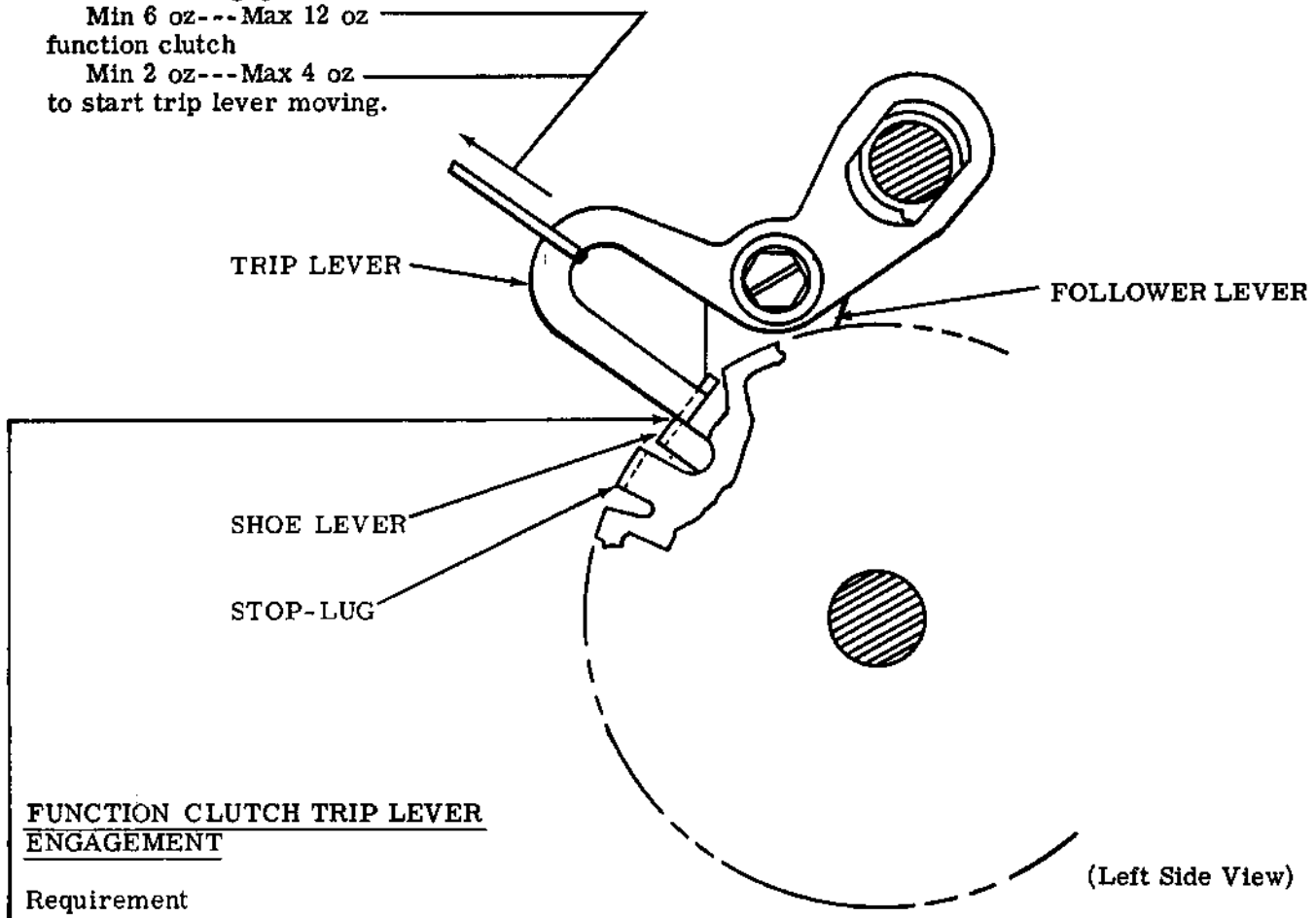
Note: Make sure follower arm is at center of codebar clutch trip cam.

2.13 Main Shaft Area (continued)

TRIP LEVER SPRINGS

Note: Check for both codebar and function clutches.

Requirement
With clutch engaged, codebar clutch
Min 6 oz---Max 12 oz
function clutch
Min 2 oz---Max 4 oz
to start trip lever moving.

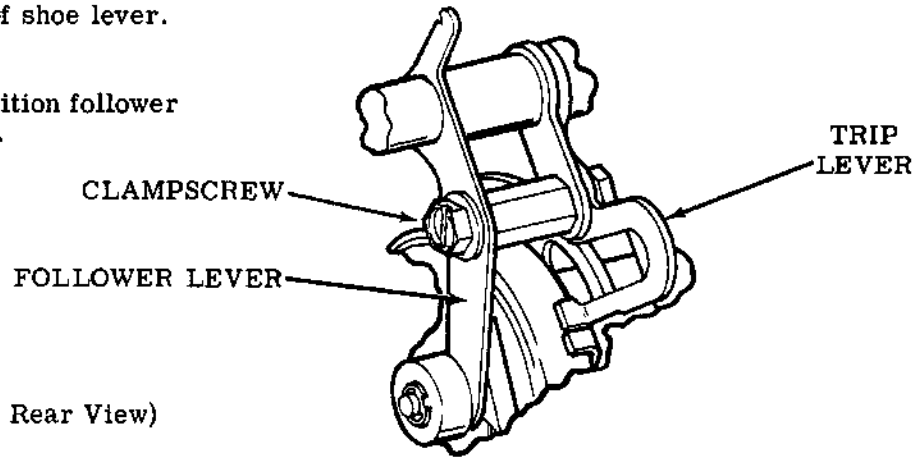


(Left Side View)

FUNCTION CLUTCH TRIP LEVER ENGAGEMENT

Requirement
With typing unit in stop condition, trip lever should engage shoe lever by approximately full thickness of shoe lever.

To Adjust
Loosen clampscrew and position follower lever. Tighten clampscrew.



(Right Rear View)

2.14 Main Shaft Area (continued)

CODEBAR AND FUNCTION CLUTCH SHOE LEVER GAPS

(1) To Check
Disengage (latch) clutch. Trip clutch by lifting trip lever. Permit trip lever to come to rest on shoe lever. Fully seat clutch shoes by applying slight pressure against shoe lever along its normal path of forward travel.

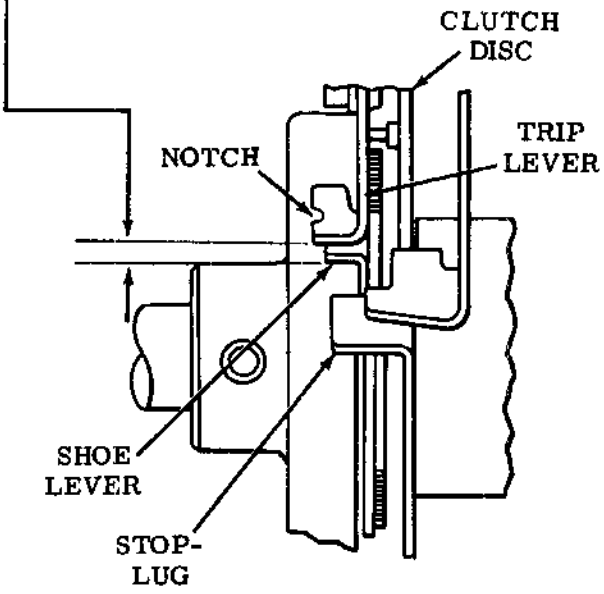
Requirement
Min 0.055 inch---Max 0.085 inch between edge of trip lever and edge of shoe lever.

(2) To Check
Disengage (latch) clutch.

Requirement
Min 0.015 inch between shoe lever and stop-lug.

To Adjust
Loosen clampscrew. Lengthen or shorten trip lever clearance to meet requirement. Tighten clampscrew.

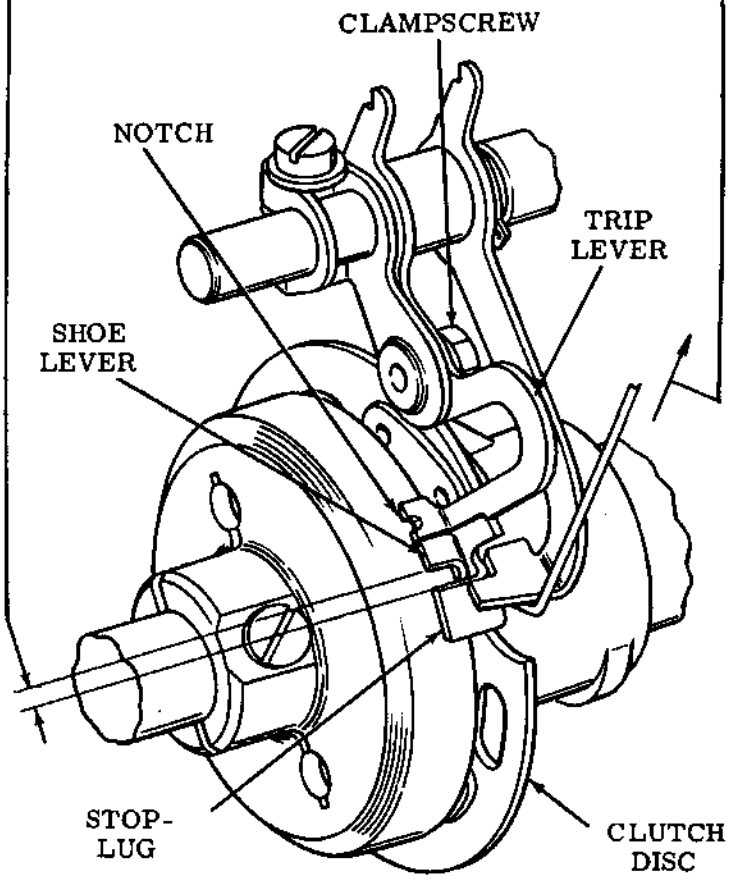
Note: On typing units with either a scribed line or a notch on the trip lever, gauge by eye the alignment of the scribed line or notch and the front edge of the shoe lever. They are to line up.



(Rear View)

LATCHLEVER SPRINGS

Requirement
With latchlever resting on high portion of clutch disc
Min 2 oz---Max 3 oz
to start latchlever moving.



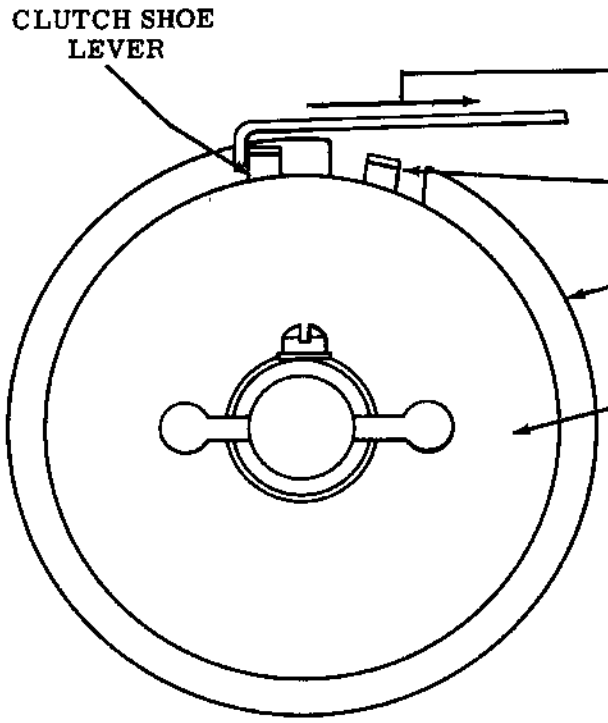
(Right Rear View)

2.15 Main Shaft Area (continued)

Note 1: These tensions apply to all clutches.

CLUTCH SHOE LEVER SPRING

Requirement
With clutch engaged and clutch disc held to prevent its turning
Min 15 oz---Max 20 oz
to pull clutch shoe lever into contact with stop-lug.



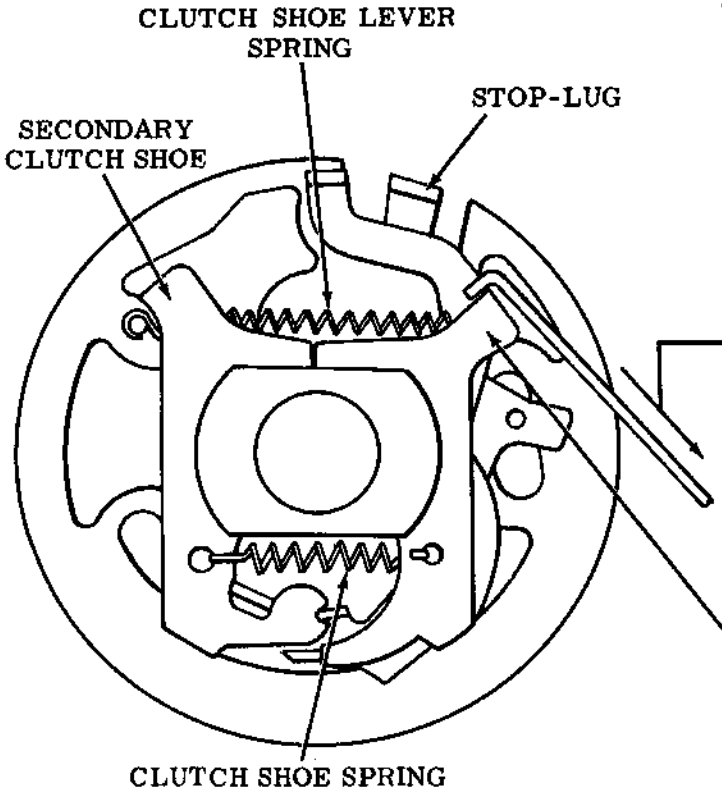
(Right Side View)

CLUTCH SHOE SPRING

Note 2: In order to check this spring tension, it is necessary to remove the clutch from the main shaft. Therefore, it should not be checked unless there is reason to believe it will not meet its requirement.

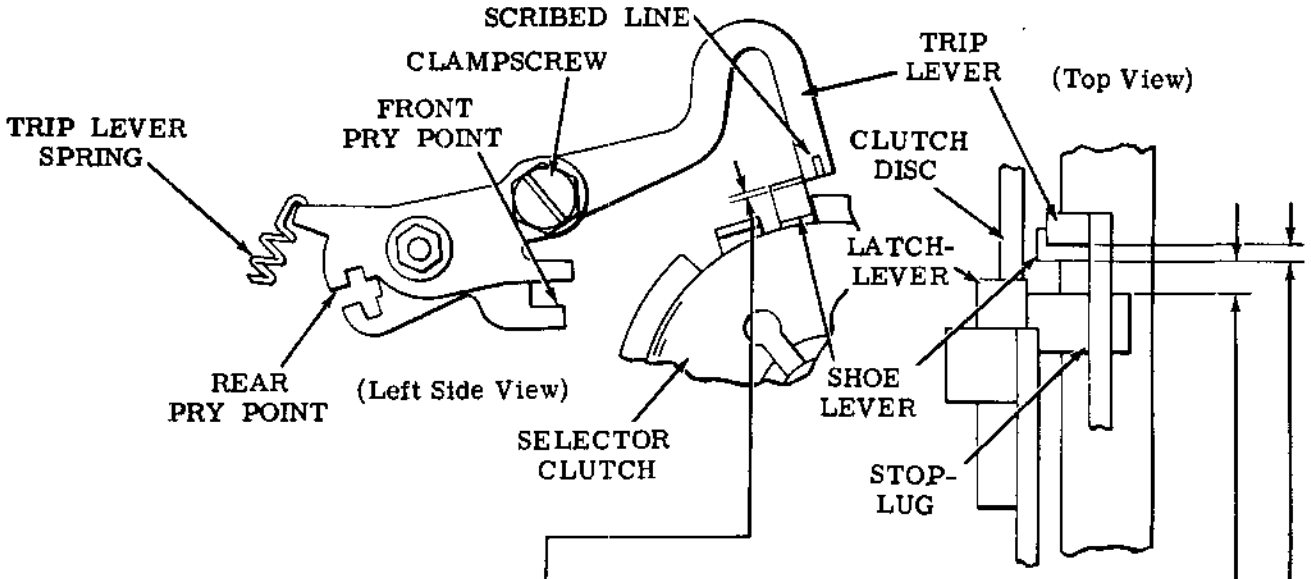
To Check
Remove clutch drum.

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



(Left Side View)

2.16 Selector Area



TRIP LEVER SPRING

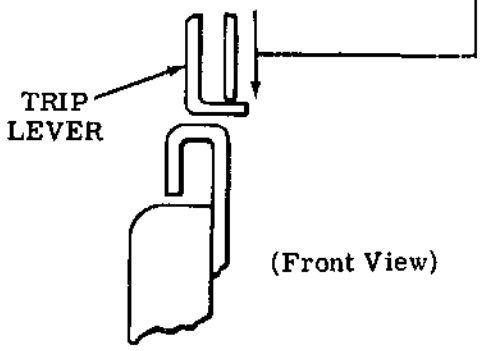
Requirement

With typing unit in stop condition and shoe lever held away from trip lever

Min 6 oz---Max 7-3/4 oz

to start trip lever moving.

Note 1: Start lever and latchlever springs also influence this spring tension. Check them individually if above requirement is not met. If they meet requirements, replace trip lever spring.



SHOE LEVER GAP AND TRIP LEVER ENGAGEMENT

(1) To Check

Disengage (latch) selector clutch. Trip selector clutch by momentarily permitting the armature to move to its unattracted (rearward) position. Fully seat clutch shoes by applying slight pressure against shoe lever along its normal path of forward travel.

Requirement

Min 0.055 inch---Max 0.085 inch between edge of trip lever and edge of shoe lever.

(2) To Check

Disengage (latch) selector clutch.

Requirement

Min 0.015 inch between shoe lever and stop-lug.

(3) To Check

Disengage (latch) selector clutch.

Requirement

Trip lever should engage shoe lever Min 2/3 thickness of shoe lever.

To Adjust

Loosen clampscrew friction tight and position trip lever using front and/or rear pry points. Tighten clampscrew.

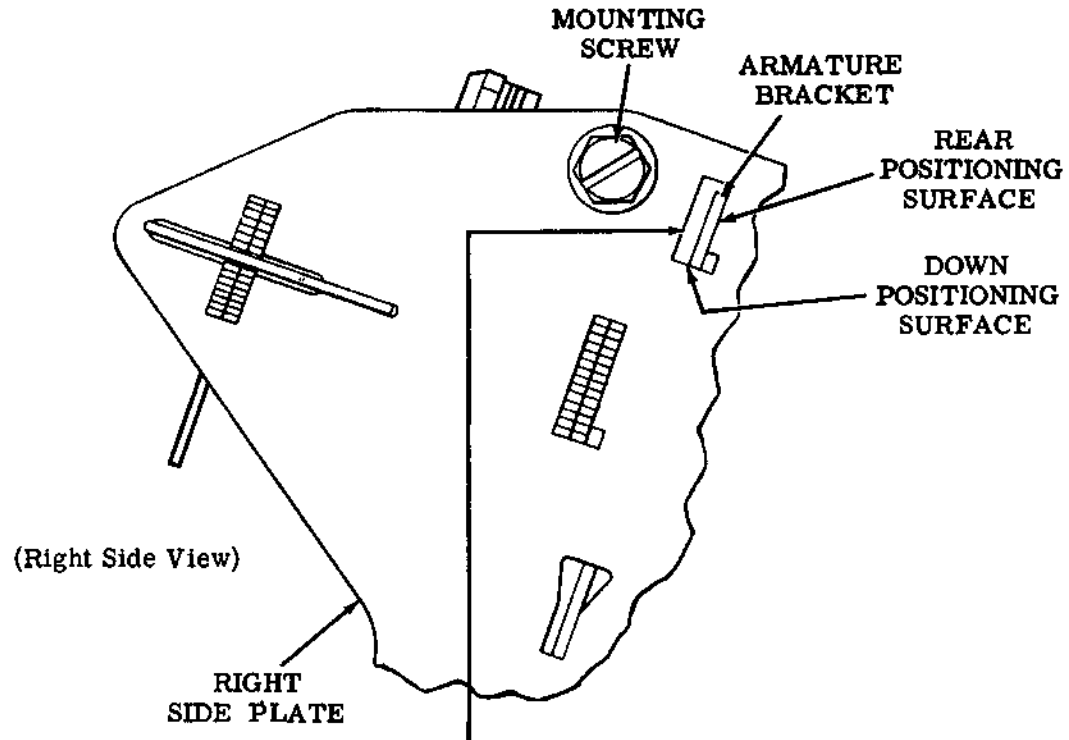
Related Adjustment

Affects

ARMATURE BRACKET POSITION (Par. 2.17)

Note 2: On typing units with either a scribed line or a notch on the trip lever, gauge by eye the alignment of the scribed line or notch and the front edge of the shoe lever. They are to line up.

2.17 Selector Area (continued)



ARMATURE BRACKET POSITION

Requirement

Armature bracket should be positioned against its down and rear positioning surfaces on right and left side plates so that it is parallel within 0.002 inch with rear surfaces measured at ends.

To Adjust

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

Related Adjustments

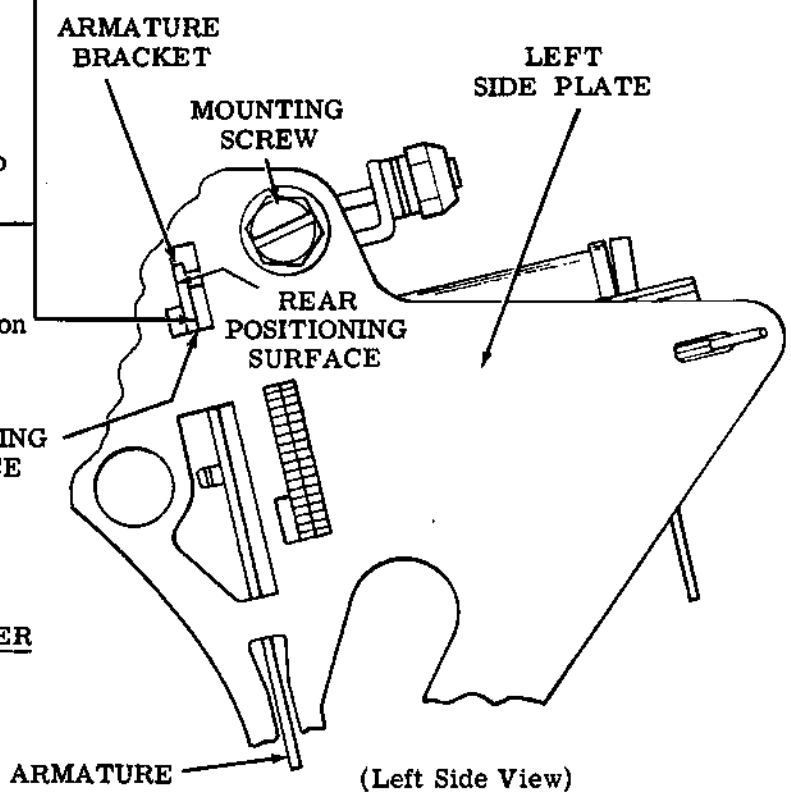
Affects

ARMATURE SPRING (Par. 2.18)

RECEIVING MARGINS (Par. 2.120)

Affected By

SHOE LEVER GAP AND TRIP LEVER ENGAGEMENT (Par. 2.16)



2.18 Selector Area (continued)

ARMATURE SPRING

Note: This is a preliminary adjustment. It should not be considered final until RECEIVING MARGINS (Par. 2. 120) adjustment is completed, and, as finally adjusted, it could fall outside limits specified below.

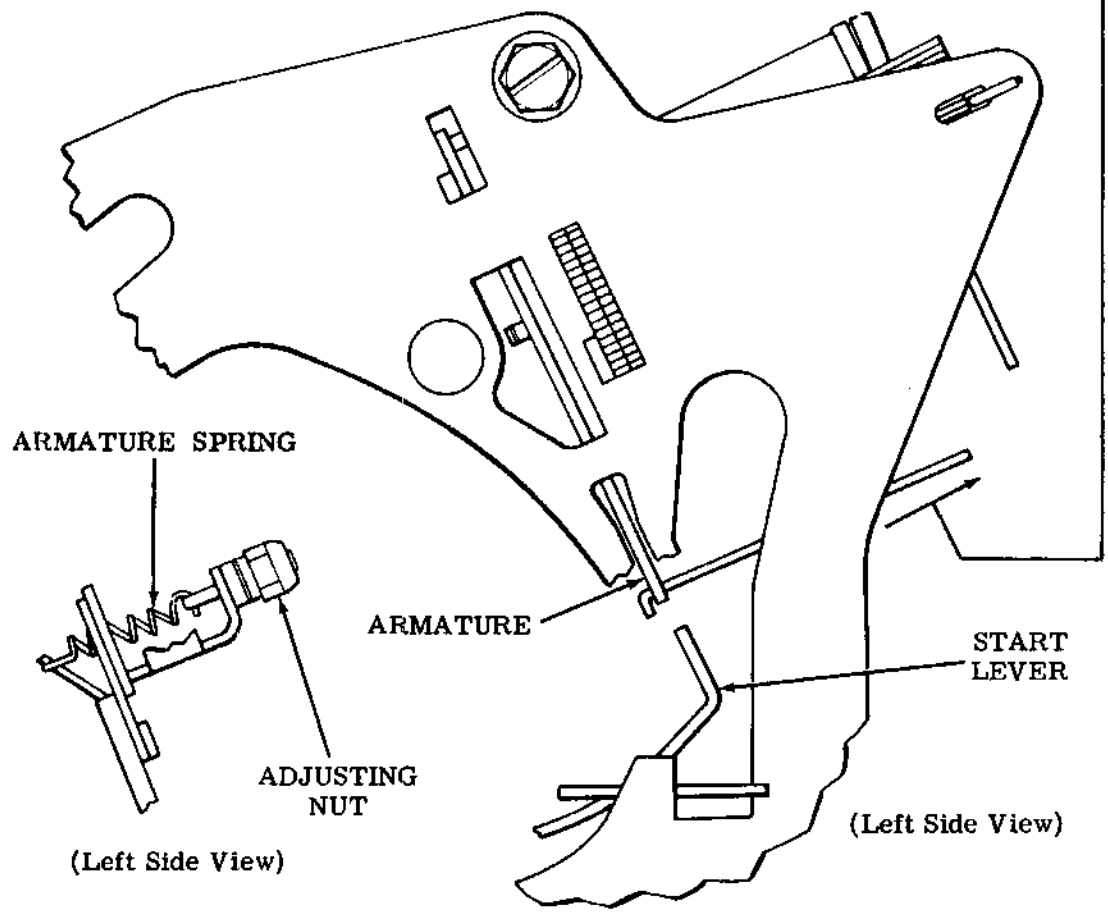
To Check
Place typing unit in stop condition and carriage near right margin. Hold start lever away from armature.

Requirement
Min 2-1/4 oz---Max 4-3/4 oz
to pull armature to midpoint of travel.

To Adjust
Rotate adjusting nut clockwise to increase armature spring tension and counter-clockwise to decrease it.

Related Adjustments
Affects
RECEIVING MARGINS (Par. 2. 120)

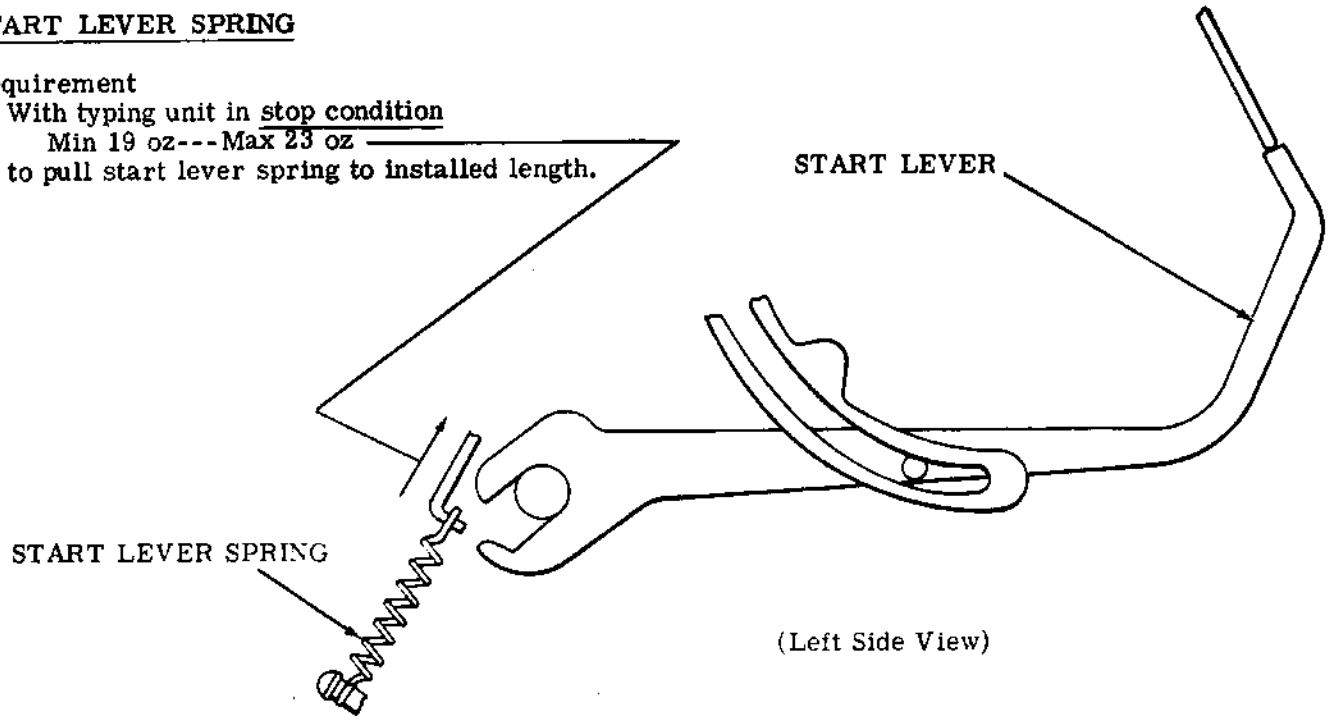
Affected By
ARMATURE BRACKET POSITION (Par. 2. 17)



2.19 Selector Area (continued)

START LEVER SPRING

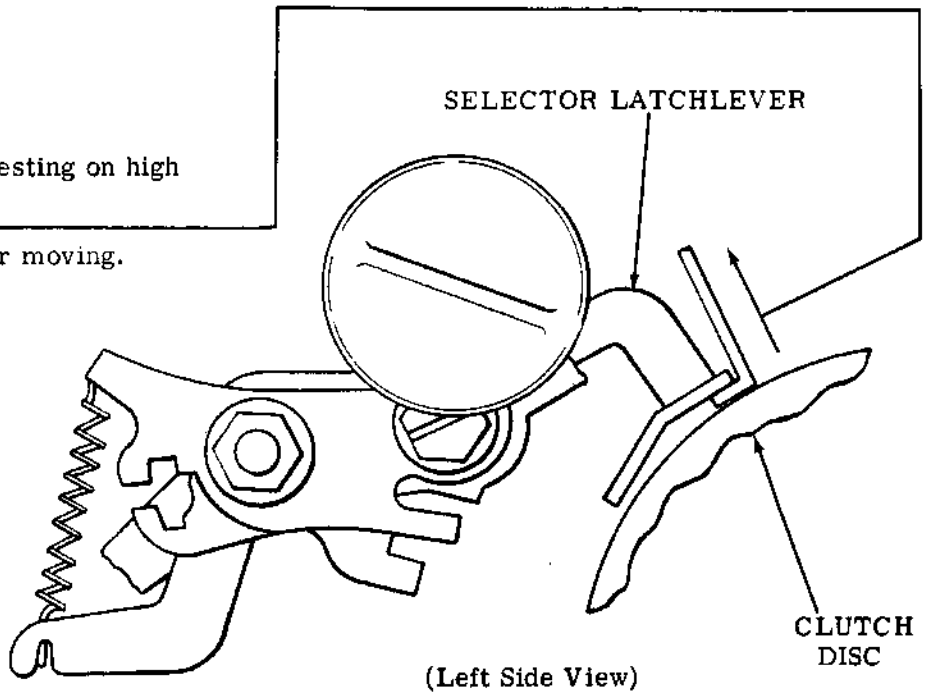
Requirement
With typing unit in stop condition
Min 19 oz---Max 23 oz
to pull start lever spring to installed length.



(Left Side View)

LATCHLEVER SPRING

Requirement
With selector latchlever resting on high part of clutch disc
Min 2 oz---Max 3 oz
to start selector latchlever moving.



(Left Side View)

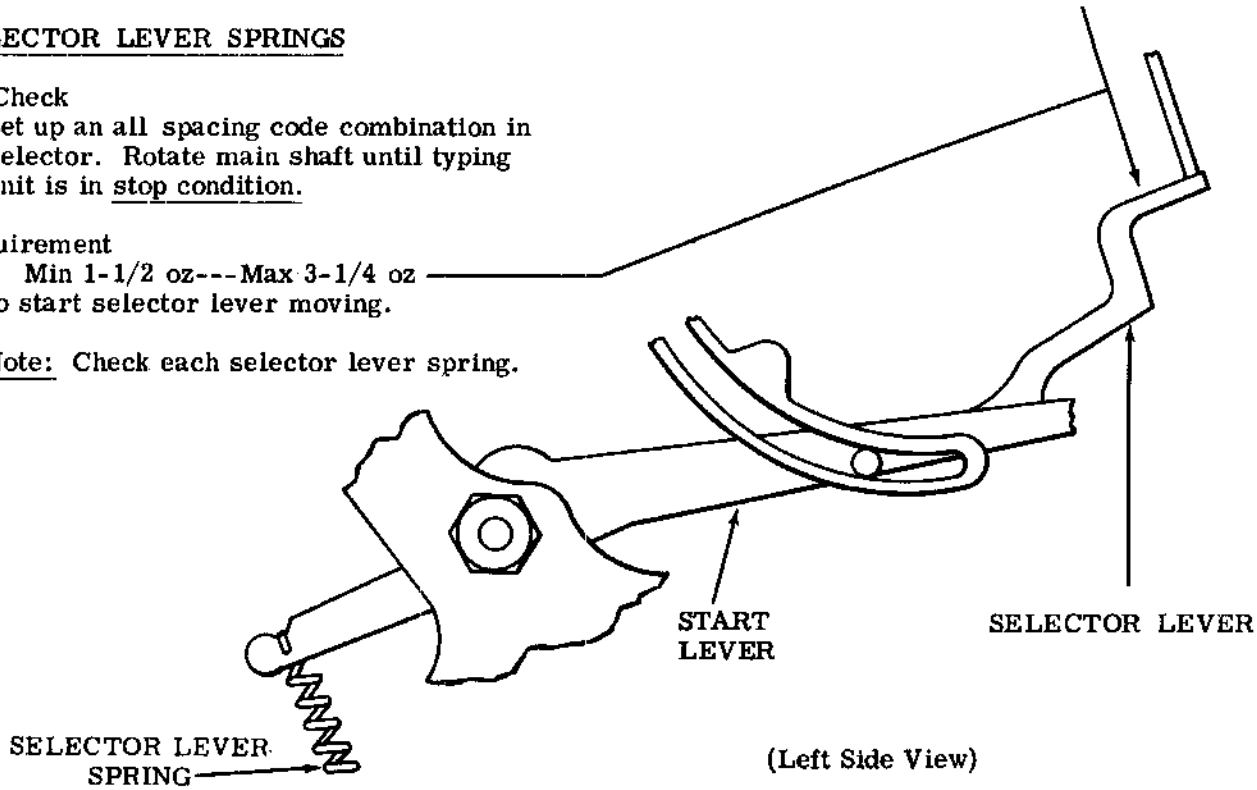
2.20 Selector Area (continued)

SELECTOR LEVER SPRINGS

To Check
Set up an all spacing code combination in selector. Rotate main shaft until typing unit is in stop condition.

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

Note: Check each selector lever spring.

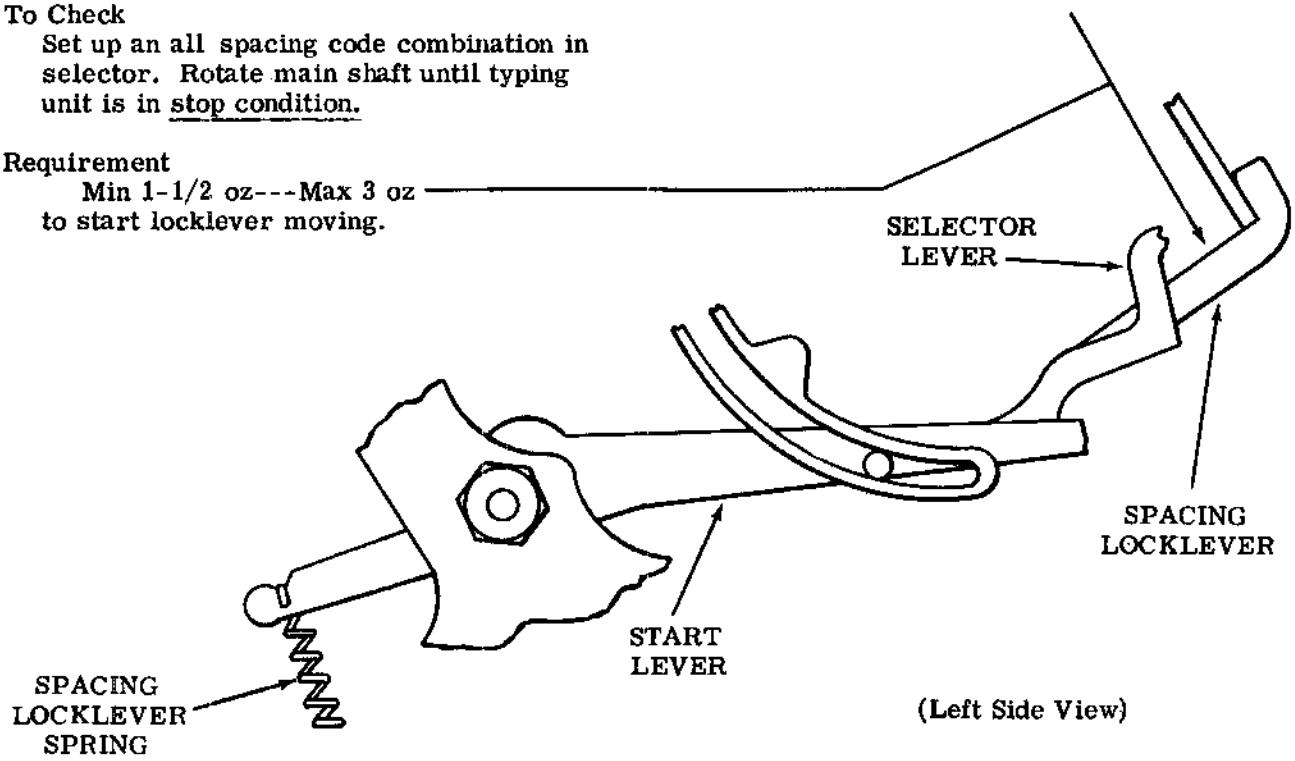


(Left Side View)

SPACING LOCKLEVER SPRING

To Check
Set up an all spacing code combination in selector. Rotate main shaft until typing unit is in stop condition.

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



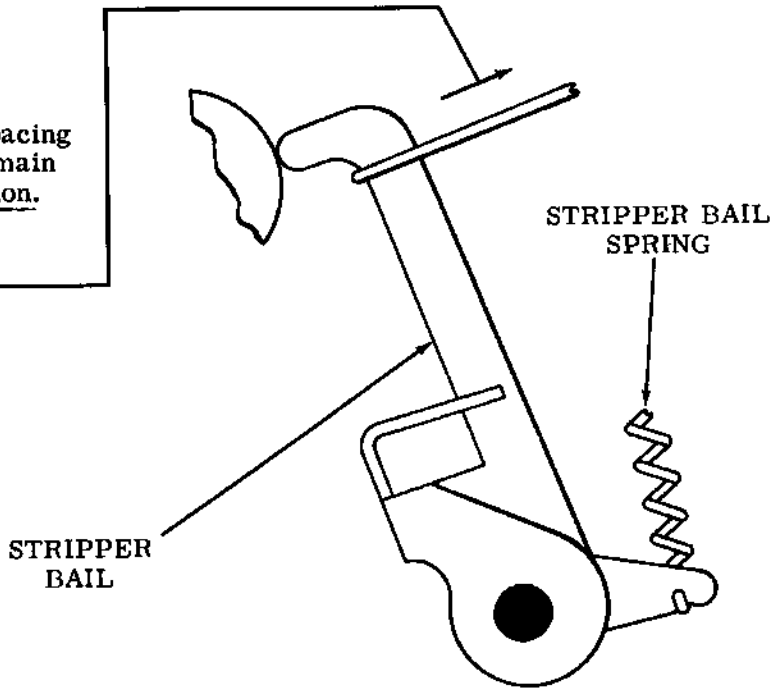
(Left Side View)

2.21 Selector Area (continued)

STRIPPER BAIL SPRING

To Check
Set rangefinder at 60. Set up an all spacing code combination in selector. Rotate main shaft until typing unit is in stop condition.

Requirement
Min 1/4 oz---Max 1 oz
to start stripper bail moving.



(Left Side View)

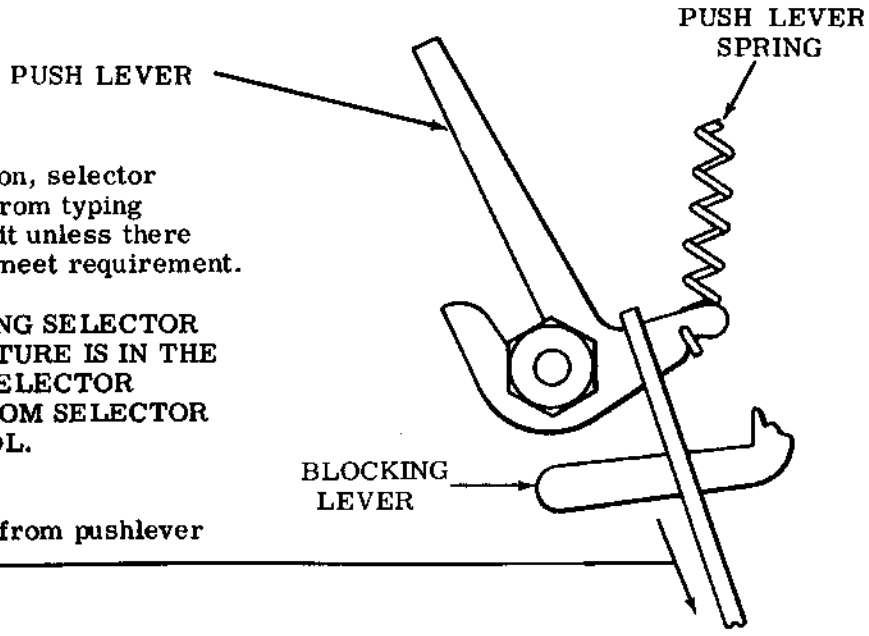
PUSHLEVER SPRINGS

Note 1: To measure this tension, selector mechanism must be removed from typing unit. Therefore, do not check it unless there is cause to suspect it will not meet requirement.

CAUTION: BEFORE REMOVING SELECTOR CLUTCH, MAKE SURE ARMATURE IS IN THE SPACING POSITION. HOLD SELECTOR LEVERS IN PLACE AWAY FROM SELECTOR CLUTCH WITH TP184098 TOOL.

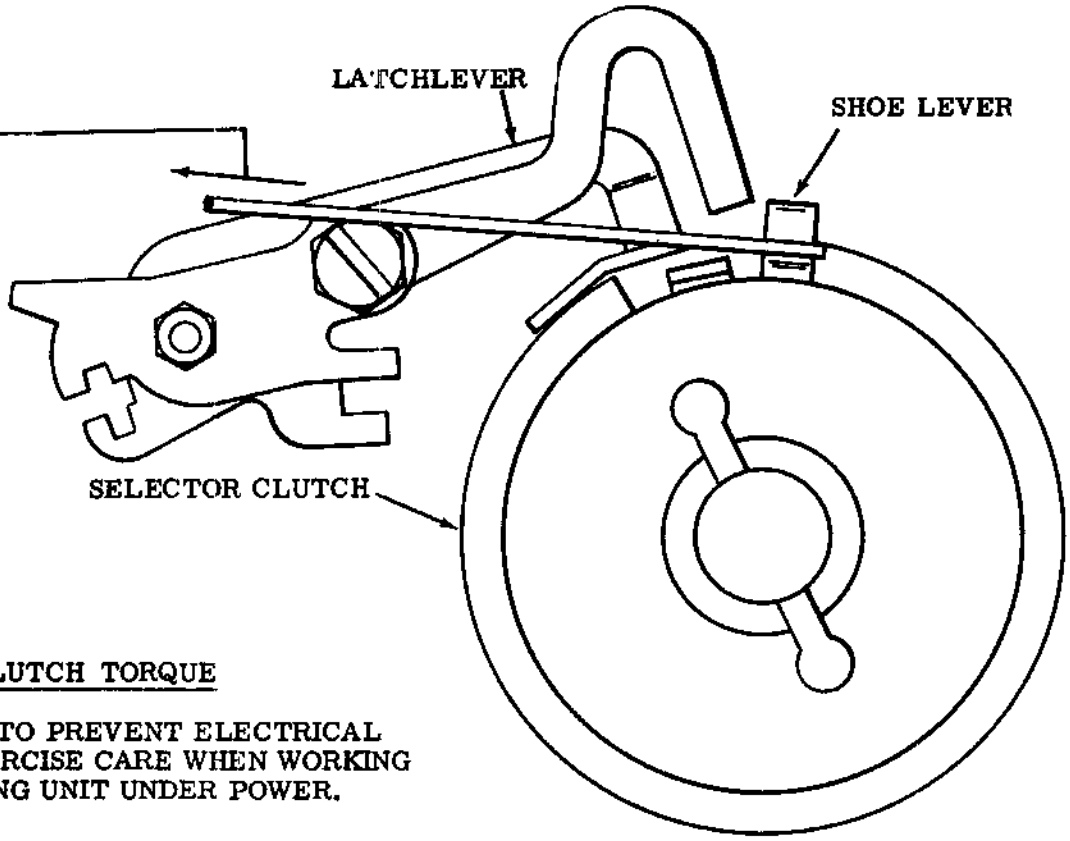
Requirement
With blocking lever held away from pushlever
Min 1-1/2 oz---Max 3 oz
to start pushlever moving.

Note 2: Check each pushlever spring.



(Left Side View)

2.22 Selector Area (continued)



(Left Side View)

SELECTOR CLUTCH TORQUE

CAUTION: TO PREVENT ELECTRICAL SHOCK EXERCISE CARE WHEN WORKING WITH TYPING UNIT UNDER POWER.

To Check

Place TP185832 armature clip so as to hold armature attracted. Plug typing unit plugs into proper call control unit receptacle and apply power to typing unit. Hold shoe lever with spring scale as shown. Trip selector clutch by moving armature rearward. Allow selector clutch to advance until latchlever is disengaged. Check requirement. Remove all power connections.

Requirement

Min 13 oz---Max 16 oz to hold shoe lever.

2.23 Function Area

ROCKER SHAFT POSITION AND ENDPLAY

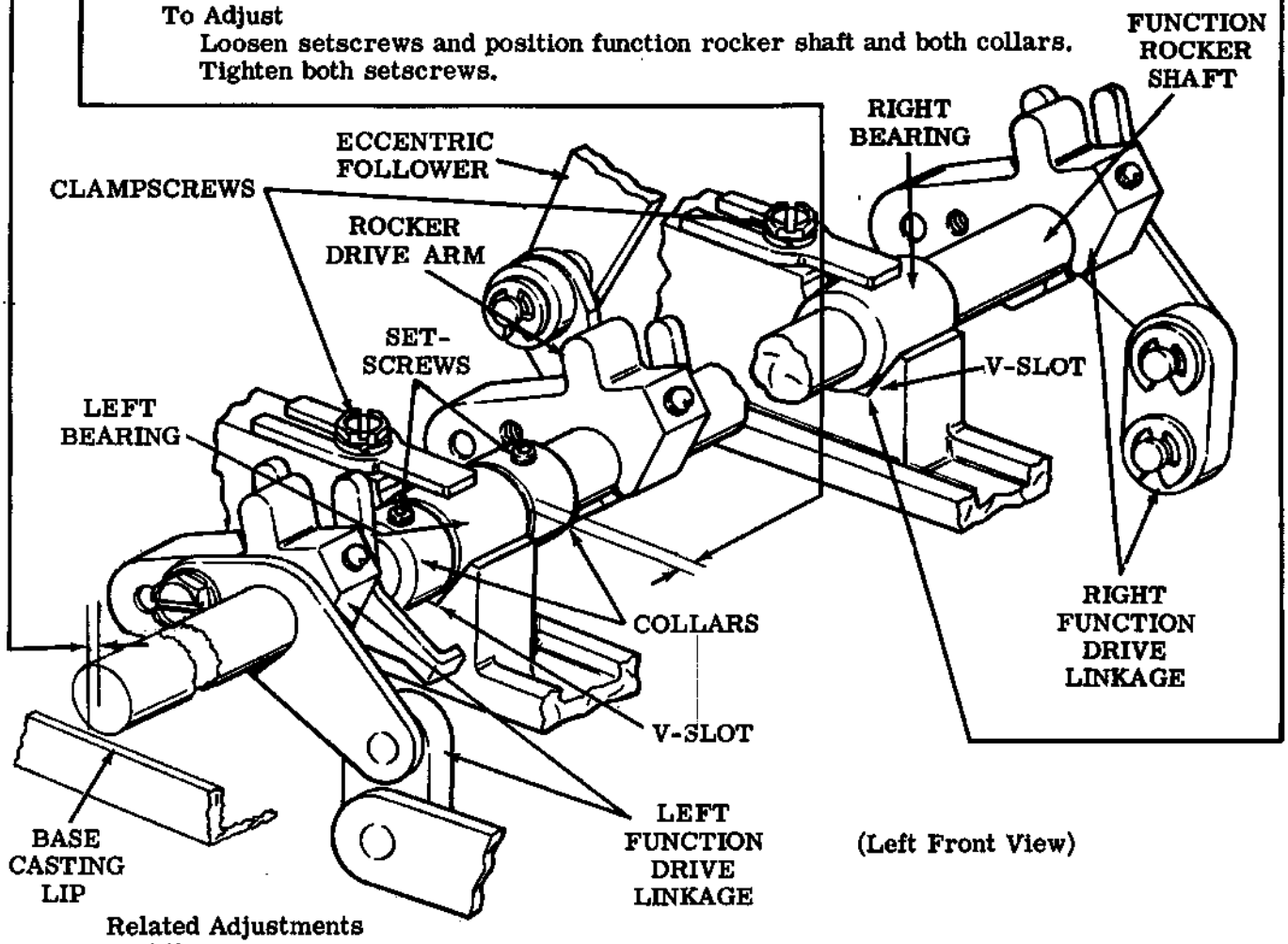
(1) Requirement
Both bearings should be centered on base casting, as gauged by eye.

To Adjust
Loosen collar setscrews and bearing clampscrews and position bearings.
Tighten bearing clampscrews.

(2) Requirement
The left end of function rocker shaft should line up with inside top edge of base casting lip, however:
0.030 inch misalignment is permissible to the left.
0.060 inch misalignment is permissible to the right.

(3) Requirement
Min some---Max 0.010 inch endplay in function rocker shaft.

To Adjust
Loosen setscrews and position function rocker shaft and both collars.
Tighten both setscrews.



(Left Front View)

Related Adjustments
Affects
CODEBAR RESET LEVER LINE-UP (Par. 2.27)
CODEBAR RESET LEVER POSITION (Par. 2.28)
PRINT SUPPRESSION LATCH — HORIZONTAL CLEARANCE (Par. 2.29)

2.24 Function Area (continued)

BEARING ALIGNMENT

Note 1: This adjustment applies to main shaft bearings, distributor shaft bearings, function rocker shaft bearings, and codebar reset bail bearings. It should only be made if bearing clamps have been loosened, or if a bind is detected in associated shafts.

Requirement
Bearings should be aligned with their respective shaft.

To Adjust
(a) With bearing clamps loosened, position bearing using finger pressure while rotating associated shaft. Tighten clampscrews.

(b) If bind still exists, keep bearing clamp tightened and apply a light blow vertically to top of bearing clamp.

MAIN SHAFT ROTATION

Note 2: This adjustment should be checked when adjustments affecting the typing unit drive system have been disturbed.

(1) To Check
With motor drive belt removed and all clutches disengaged (latched), manually rotate main shaft.

Requirement
No excessive drag or binding should be detected.

(2) To Check
With motor belt installed and all clutches disengaged (latched), manually rotate main shaft.

Requirement
No excessive drag or binding should be detected.

Note 3: Excessive drag or binding when the main shaft is rotated will cause insufficient receiving margins.

To Adjust
If requirements are not met, check following adjustments:
GEAR BACKLASH (Motor Area) (Par. 2.25)
BELT TENSION (Motor Area) (Par. 2.26)
LEFT BEARING POSITION (Main Shaft Area) (Par. 2.07)
SELECTOR CAM ENDPLAY (Main Shaft Area) (Par. 2.07)
FUNCTION CLUTCH ENDPLAY (Main Shaft Area) (Par. 2.08)
CODEBAR CLUTCH ENDPLAY (Main Shaft Area) (Par. 2.09)
DRIVEN GEAR LINE-UP (Main Shaft Area) (Par. 2.09)
FORM FEED CLUTCH ENDPLAY (Main Shaft Area) - S (Par. 2.10)
SHOE LEVER GAP AND TRIP LEVER ENGAGEMENT (Selector Area) (Par. 2.16)
BEARING ALIGNMENT (Par. 2.24)

2.25 Motor Area

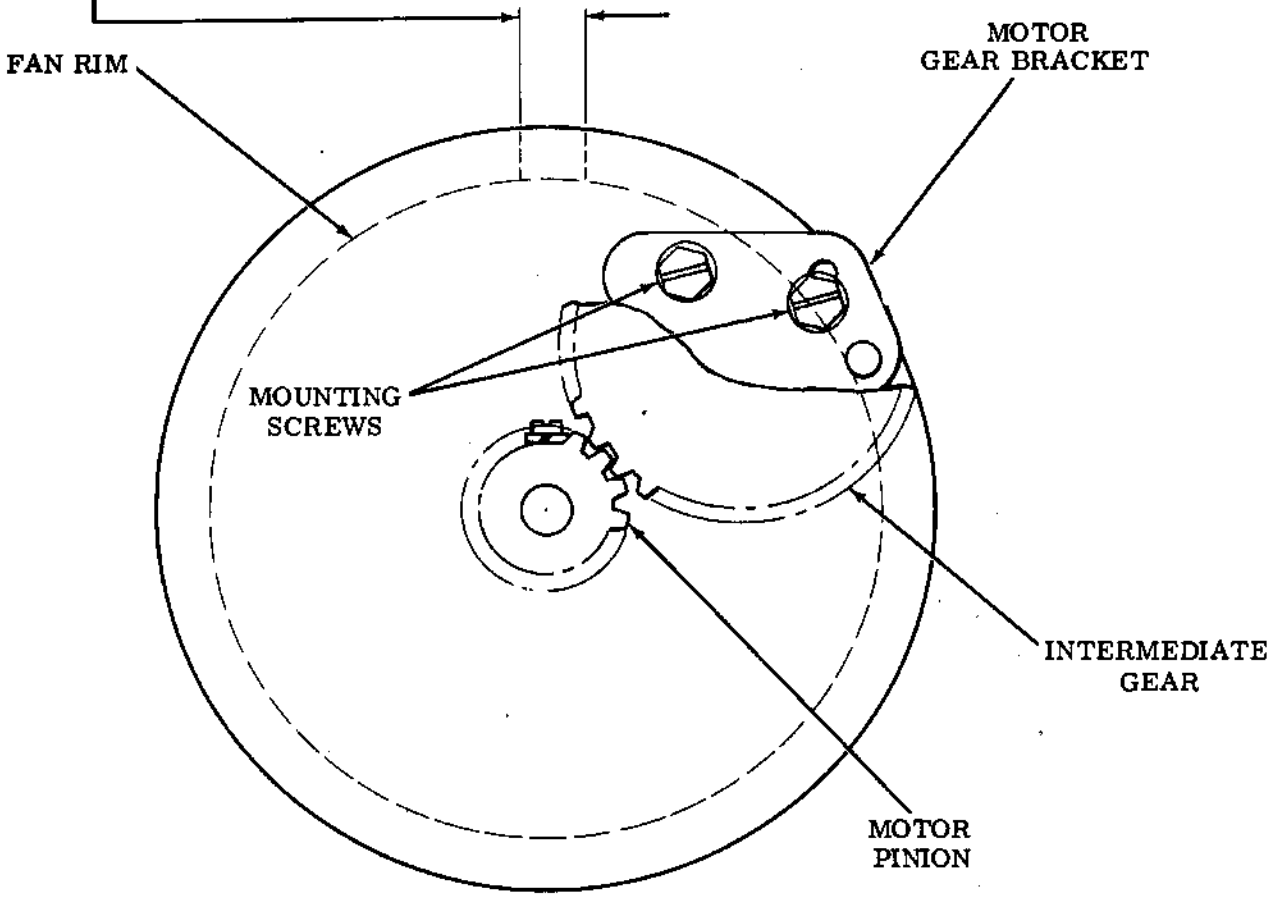
GEAR BACKLASH

To Check
Find position of tightest pinion and intermediate gear engagement. Hold intermediate gear stationary. Observe fan rim radial motion.

Requirement
Min 0.010 inch---Max 0.032 inch play at fan rim.

To Adjust
Loosen mounting screws and position motor gear bracket. Tighten screws.

Related Adjustment
Affects
BELT TENSION (Par. 2.26)



(Right Side View)

2.26 Motor Area (continued)

BELT TENSION

To Check

Rotate fan clockwise (viewed from left) until upper level of motor belt becomes taut. Using a spring scale, apply 16 oz force at center of belt.

Requirement

Min 0.100 inch---Max 0.135 inch deflection at center of motor belt.

To Adjust

Loosen four clampscrews and rotate motor in cradle. Tighten clampscrews.

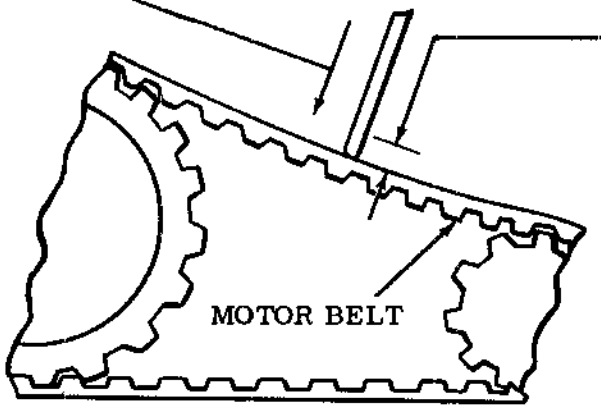
Related Adjustments

Affects

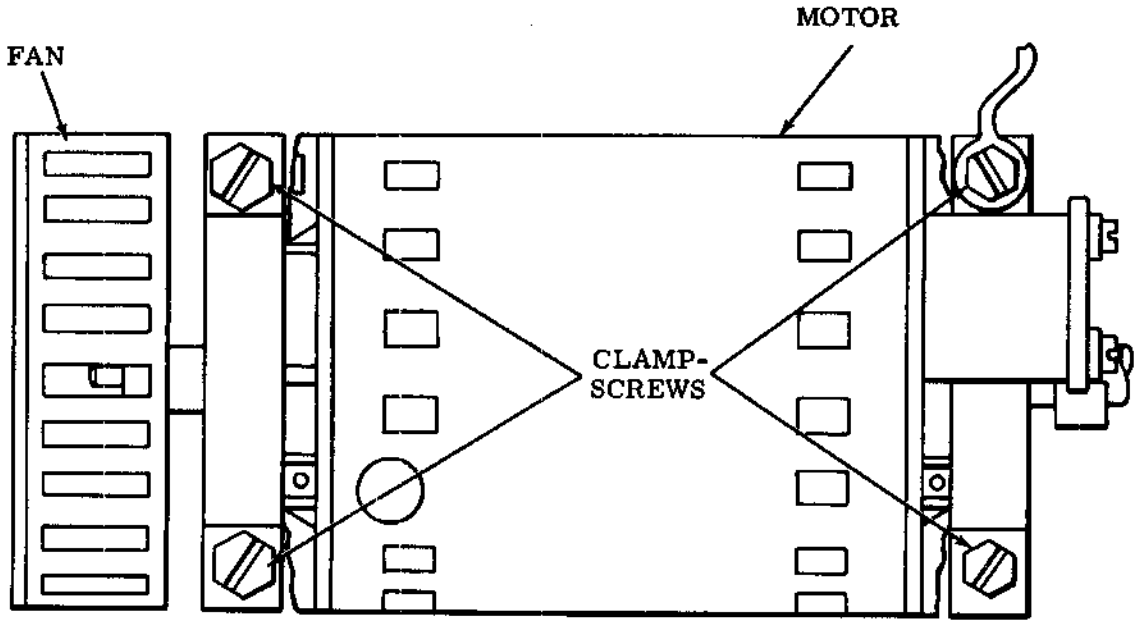
RECEIVING MARGINS (Selector Area) (Par. 2.120)

Affected by

GEAR BACKLASH (Par. 2.25)

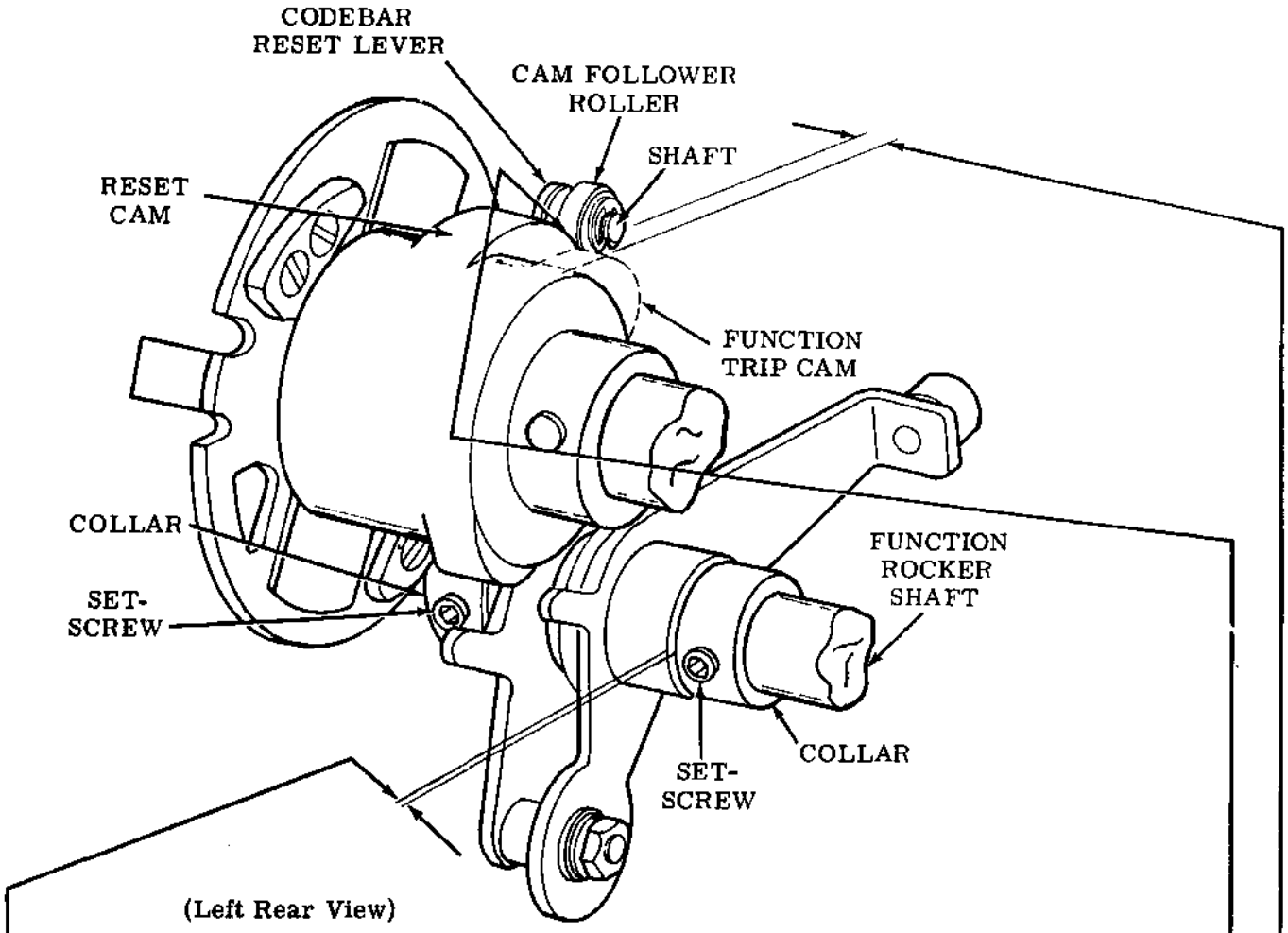


(Right Side View)



(Top View)

2.27 Function Area (continued)



CODEBAR RESET LEVER LINE-UP

Requirement

With typing unit in stop condition

(1) Cam follower roller approximately centered on reset cam, as gauged by eye, overhang permitted on right side only. Max 0.020 inch

(2) endplay in codebar reset lever. Min some---Max 0.010 inch

(3) between cam follower roller's shaft and function trip cam. Min 0.005 inch

To Adjust

Loosen setscrews and position two collars.

Related Adjustments

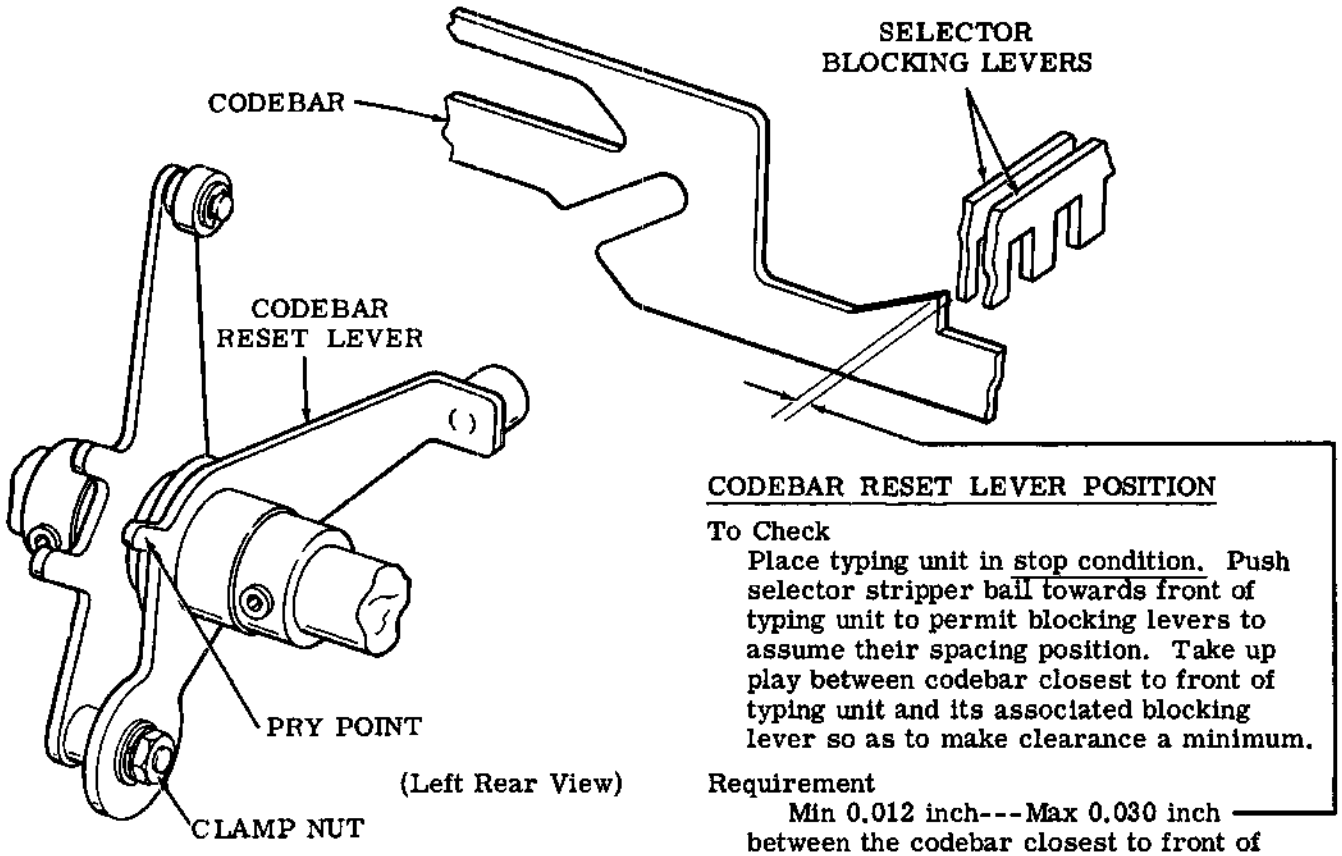
Affects

CODEBAR RESET LEVER POSITION (Par. 2.28)

Affected By

ROCKER SHAFT POSITION AND ENDPLAY (Par. 2.23)

2.28 Function Area (continued)



CODEBAR RESET LEVER POSITION

To Check

Place typing unit in stop condition. Push selector stripper bail towards front of typing unit to permit blocking levers to assume their spacing position. Take up play between codebar closest to front of typing unit and its associated blocking lever so as to make clearance a minimum.

Requirement

Min 0.012 inch---Max 0.030 inch between the codebar closest to front of typing unit and its selector blocking lever.

To Adjust

With clamp nut loosened, use pry point to adjust codebar reset lever. Tighten clamp nut.

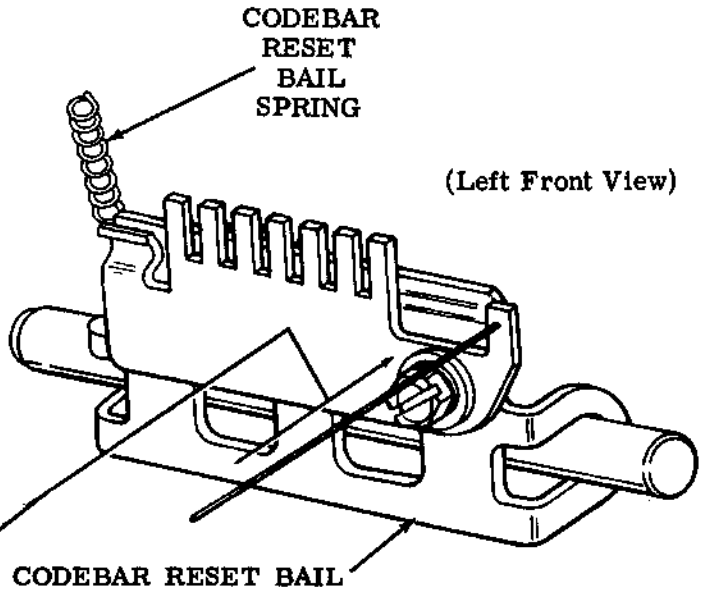
Related Adjustments

Affects

PRINT SUPPRESSION LATCH — HORIZONTAL CLEARANCE (Par. 2.29)
FUNCTION SHAFT AND CASTING POSITION (Par. 2.38)
REAR RAIL POSITION (Carriage Area) (Par. 2.46)
FOURTH PULSE LINKAGE POSITIONING (Carriage Area) (Par. 2.51)
PRINT SUPPRESSION LATCHLEVER RELEASE (Carriage Area) (Par. 2.55)
SPACE SUPPRESSION LEVER CLEARANCE — PRINTING (Spacing Area) (Par. 2.116)

Affected By

ROCKER SHAFT POSITION AND END-PLAY (Par. 2.23)
CODEBAR RESET LEVER LINE-UP (Par. 2.27)



CODEBAR RESET BAIL SPRING

To Check

Set up "blank" code combination in the selector and rotate main shaft until codebar reset bail is in highest position.

Requirement

Min 5-3/4 oz---Max 8-3/4 oz to start codebar reset bail moving.

2.29 Function Area (continued)

PRINT SUPPRESSION LATCH — HORIZONTAL CLEARANCE

(1) Requirement
With typing unit in the stop condition
Min 0.010 inch---Max 0.025 inch
between print suppression latch and print suppression codebar.

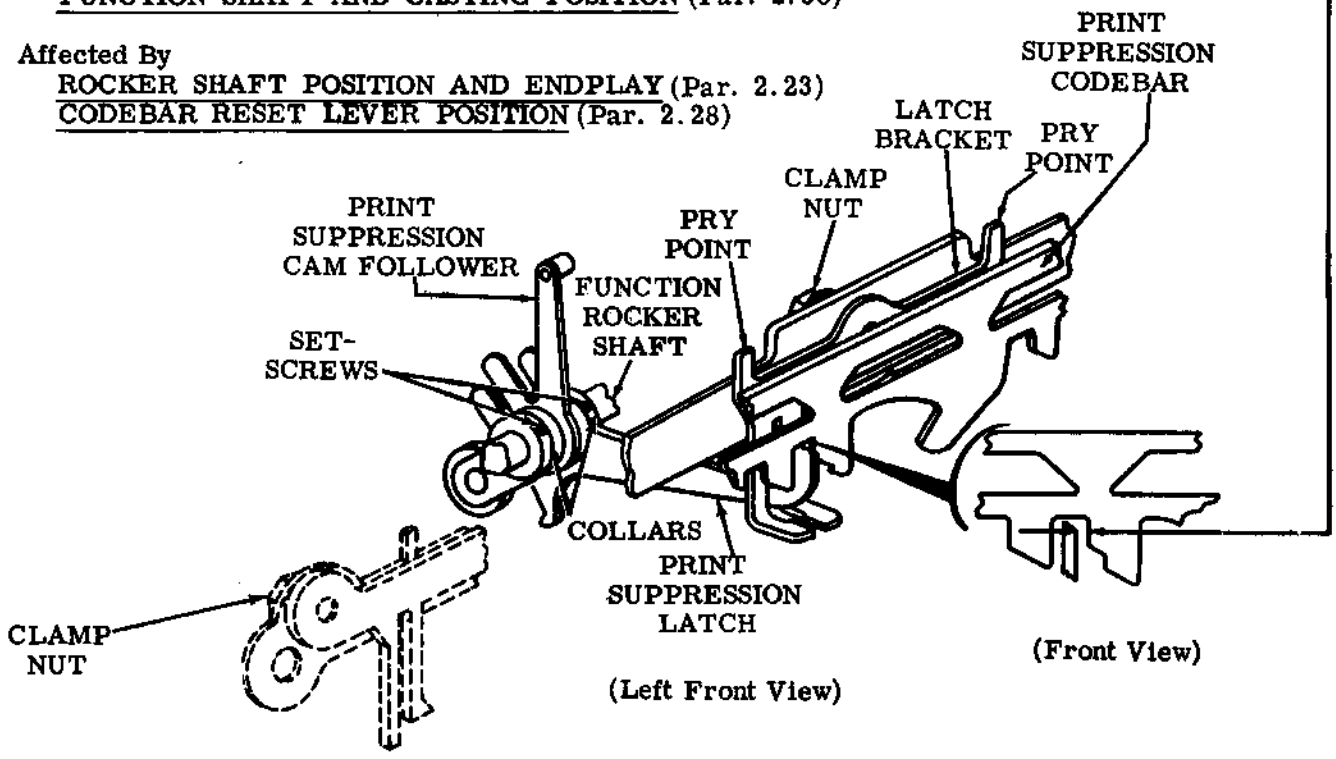
(2) Requirement
Print suppression cam follower and latch should move freely.

To Adjust
Loosen clamp nut(s)** and setscrews in collars*. Position latch bracket using pry point to meet (1) Requirement. Tighten clamp nuts. Position collars to meet (2) Requirement. Tighten setscrews.

Related Adjustments
Affects
FUNCTION SHAFT AND CASTING POSITION (Par. 2.38)

Affected By
ROCKER SHAFT POSITION AND ENDPLAY (Par. 2.23)
CODEBAR RESET LEVER POSITION (Par. 2.28)

*Note 1: Disregard (2) Requirement for typing units which are not equipped with TP180744 collars.



**Note 2: Some typing units have one clamp nut to loosen, others two, depending upon the configuration of the latch bracket used.

2.30 Function Area (continued)

CODEBAR RESET GUIDE POSITION

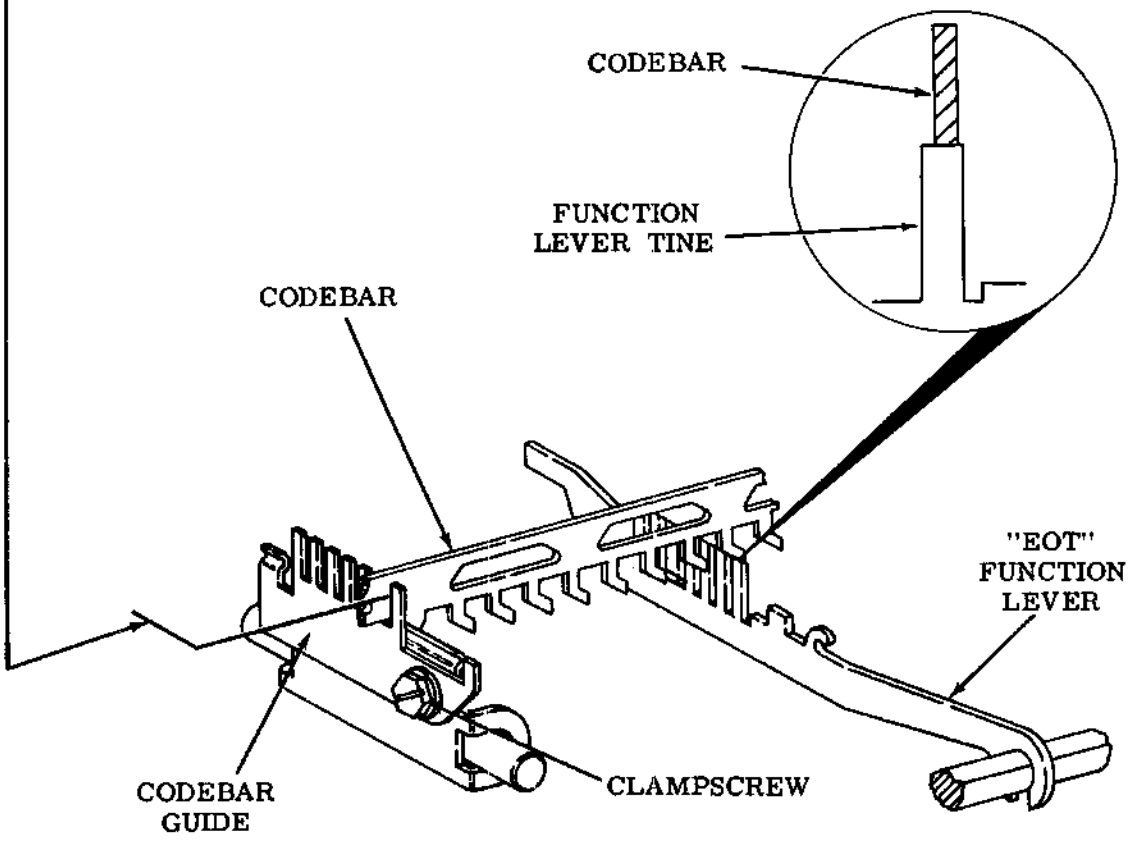
(1) Requirement
Codebars should have no noticeable curvature when viewed from their ends.

Note: The following To Check is for units equipped with TP181574 $\overline{\text{EOT}}$ function lever, TP180801 universal function lever, or similar function levers.

To Check
Manually set up an all marking code combination in the selector. Rotate main shaft until the function lever reaches its highest point of travel. Lightly take up any play between the function lever and codebars.

(2) Requirement
The codebars should fully engage the function lever tines.

To Adjust
Loosen clampscrew and position codebar guide using pry point. Tighten clampscrew.



(Left Front View)

2.31 Function Area (continued)

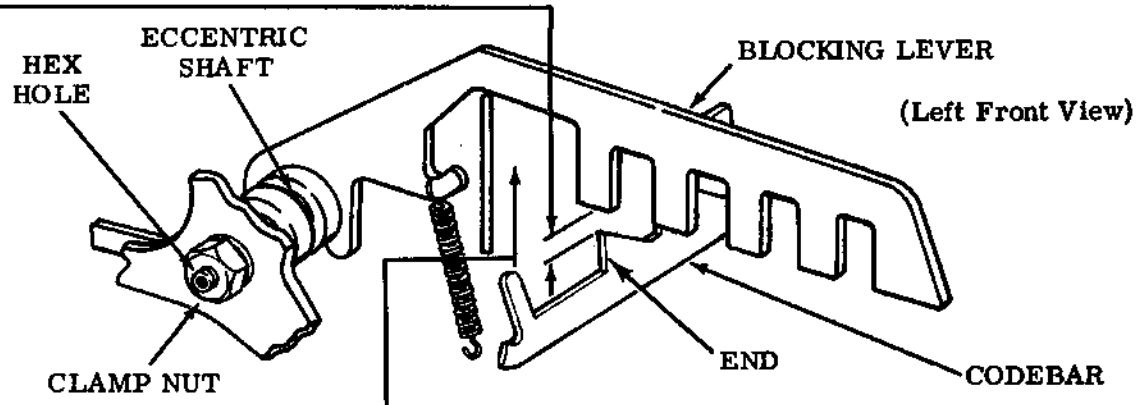
SELECTOR BLOCKING LEVERS POSITIONING

Note: Set rangefinder to 80 on scale for both (1) and (2) To Check.

(1) To Check
Manually operate typing unit and set up an all marking code combination in selector. Continue rotating main shaft until selector levers are on peak of their respective cams and codebar ends are approximately flush with left edge of their associated blocking levers.

(1) Requirement
Min 0.006 inch---Max 0.050 inch
between the no. 1 blocking lever and its associated codebar.

(2) Requirement
Min 0.003 inch
between all remaining blocking levers and their associated codebars.



(2) To Check
Manually rotate mainshaft. Hold armature forward in its marking position and rotate main shaft until selector clutch shoe lever is in vertical (12 o'clock) position. Continue rotating main shaft until shoe lever reaches 3 o'clock position as viewed from left, and note any vertical motion of no. 1 or no. 2 blocking levers.

Requirement
No visible vertical motion of no. 1 or no. 2 blocking levers while selector clutch shoe lever is moving from 12 o'clock to 3 o'clock position.

To Adjust
Loosen clamp nut and position eccentric with hex key wrench. Keep high part of eccentric toward rear of typing unit. Tighten clamp nut.

BLOCKING LEVER SPRINGS

To Check
Set up an all spacing code combination in the selector. Rotate main shaft until typing unit is in stop condition.

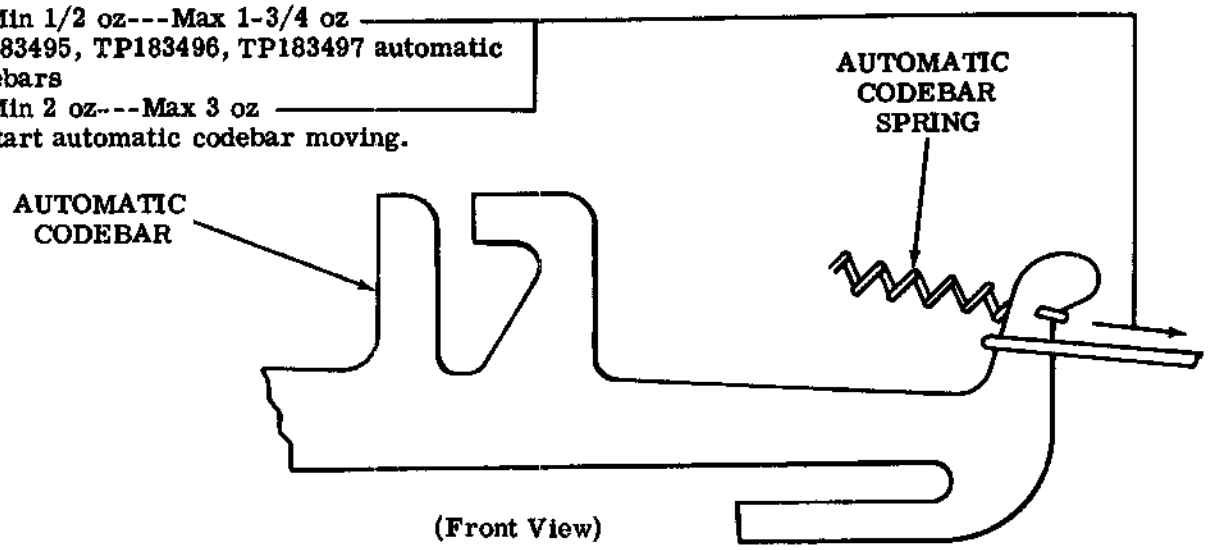
Requirement
Min 1/2 oz---Max 1-1/4 oz
to start blocking lever moving.

Note: Check each blocking lever spring.

2.32 Function Area (continued)

AUTOMATIC CODEBAR SPRING

Requirement
With carriage at left margin TP180948 automatic codebar
Min 1/2 oz---Max 1-3/4 oz
TP183495, TP183496, TP183497 automatic codebars
Min 2 oz---Max 3 oz
to start automatic codebar moving.



PRINT SUPPRESSION AND NO. 4 CODEBAR SPRING

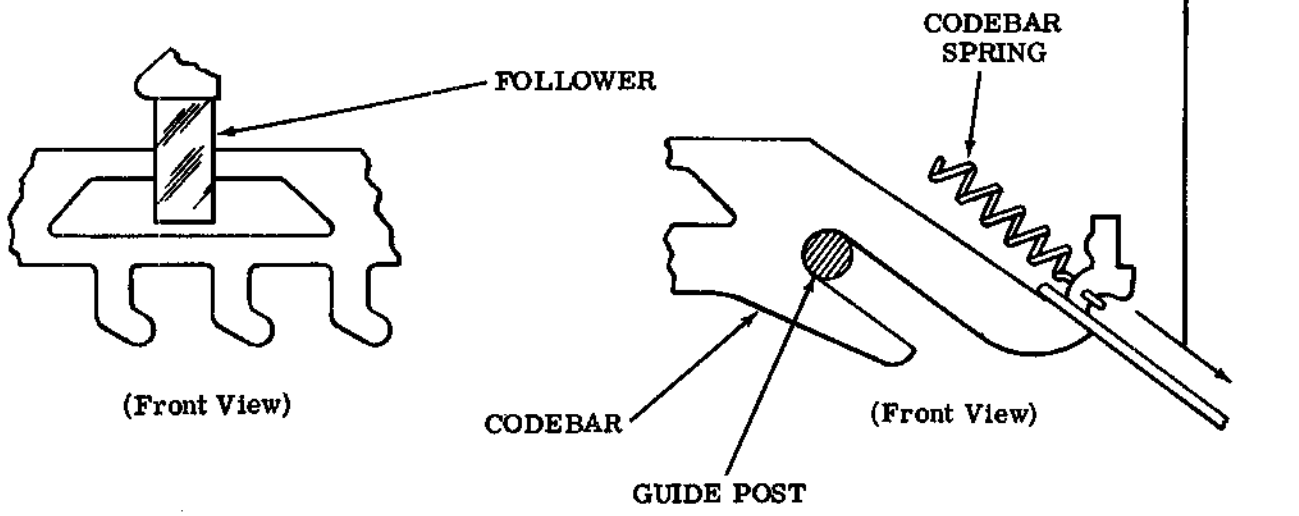
Requirement
With typing unit in stop condition and no. 4 codebar's follower on carriage lifted
Min 12 oz---Max 14 oz
to start codebar moving.

Note 1: Check the print suppression and no. 4 codebar spring.

CODEBAR SPRINGS

Note 2: Check each codebar spring other than automatic, print suppression and no. 4.

Requirement
With typing unit in stop condition and codebar's follower lifted
Min 5-1/2 oz---Max 7-1/2 oz
to start codebar moving.



2.33 Function Area (continued)

FUNCTION PAWL SPRING

Requirement

With typing unit in stop condition and all external loads which would influence the requirement removed

Pawl Spring	TP49420 (26 Turns)	TP86283 (38 Turns)	TP180863 (33 Turns)
Min	9 oz	1-1/4 oz	3 oz
Max	13 oz	2-1/2 oz	5-1/2 oz

to start each function pawl moving.

Note: Check each pawl spring. TP180863 pawl spring is used with the carriage return function pawl. TP86283 pawl spring is used with the answer-back blocking function pawl. TP49420 pawl spring is used with BELL and EOT function pawls. All others may be either the TP49420 or TP86283 pawl springs.

LEFT ROCKER DRIVE

To Check

Set up carriage return code combination (1-34---8) in selector. Rotate main shaft until function bail is at highest point of travel. Take up carriage return function lever play in an upward direction at the pivot clearance.

Requirement

Min 0.015 inch---Max 0.050 inch between carriage return function lever and its function pawl.

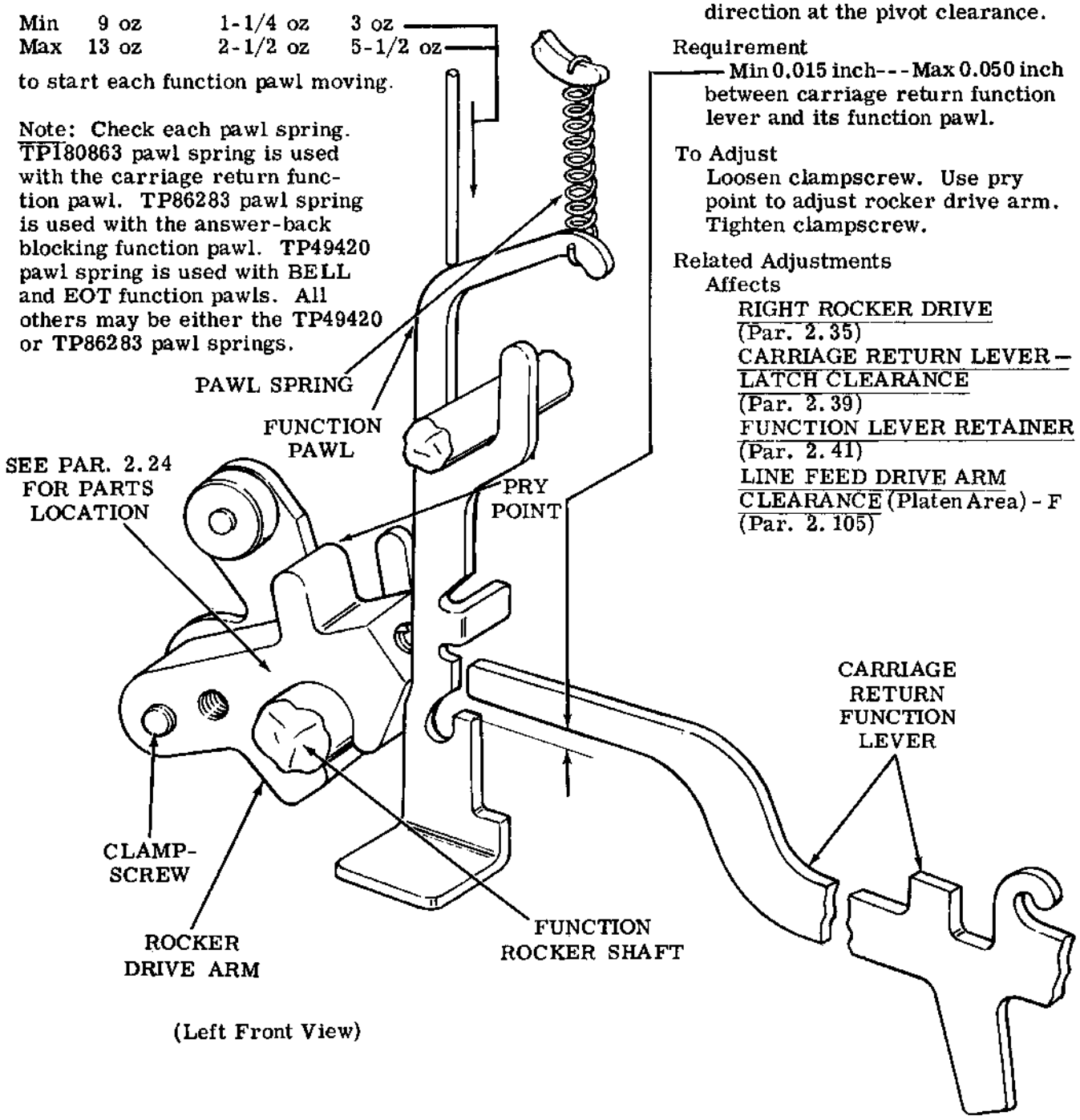
To Adjust

Loosen clampscrew. Use pry point to adjust rocker drive arm. Tighten clampscrew.

Related Adjustments

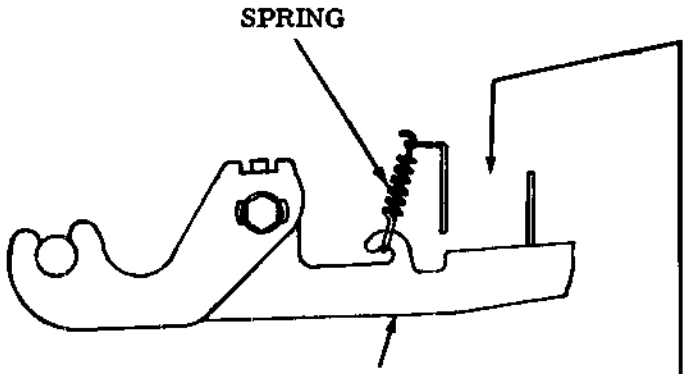
Affects

RIGHT ROCKER DRIVE (Par. 2.35)
CARRIAGE RETURN LEVER—LATCH CLEARANCE (Par. 2.39)
FUNCTION LEVER RETAINER (Par. 2.41)
LINE FEED DRIVE ARM CLEARANCE (Platen Area) - F (Par. 2.105)



(Left Front View)

2.34 Function Area (continued)



(Right Side View)

LINE FEED FUNCTION STRIP LEVER SPRING - S

Requirement
With a spring scale positioned on the line feed function strip lever
Min 23 oz---Max 30 oz
to start the line feed function strip lever moving.

FUNCTION LEVER SPRINGS

Requirement
With typing unit in stop condition, the spring scale requirements to start each function lever moving are

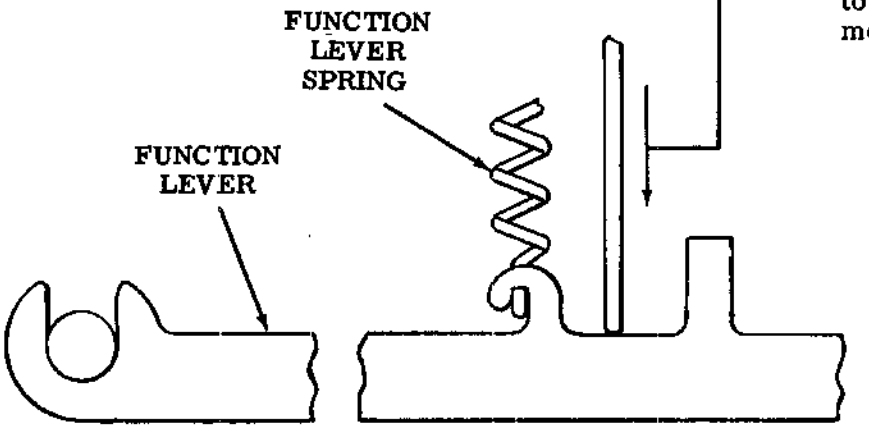
(1) Min 19 oz---Max 24 oz to start LF and AUTO LF function levers moving.

Note 1: Hold the blocking pawl up when checking this requirement.

(2) Min 3-1/2 oz---Max 5-1/2 oz to start carriage return function lever moving.

Note 2: Hold carriage return lever in frontward position.

(3) Min 3-1/2 oz---Max 5-1/2 oz to start remaining function levers moving.



(Right Side View)

2.35 Function Area (continued)

RIGHT ROCKER DRIVE

To Check

Disengage (latch) distributor clutch. Set up answer-back character WRU code combination (1-3----8) in selector. Rotate main shaft until function bail is at its highest point. Make sure that distributor clutch has not been tripped. Take up answer-back function lever play in an upward direction at the pivot to minimize clearance.

Requirement

Min 0.015 inch---Max 0.050 inch between answer-back function lever and its function pawl.

To Adjust

Loosen clampscrew. Use pry point to adjust right rocker arm. Tighten clampscrew.

Related Adjustments

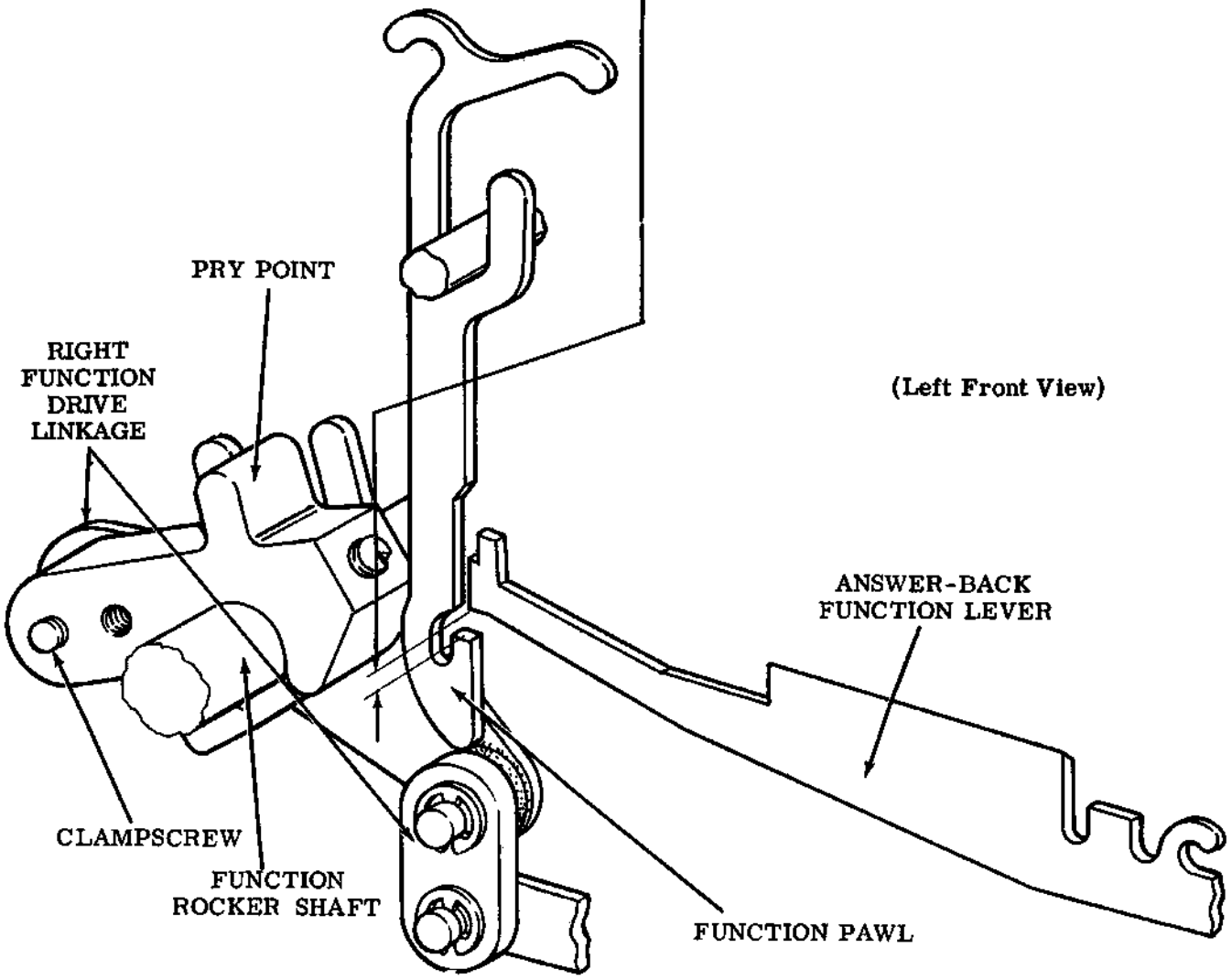
Affects

FORM-OUT LEVER OVERTRAVEL (Form Feed Area) - S (Par. 2.65)
LINE FEED PAWL STRIPPING (Form Feed Area) - S (Par. 2.75)
SPACE SUPPRESSION LEVER CLEARANCE — SPACING (Spacing Area) (Par. 2.117)

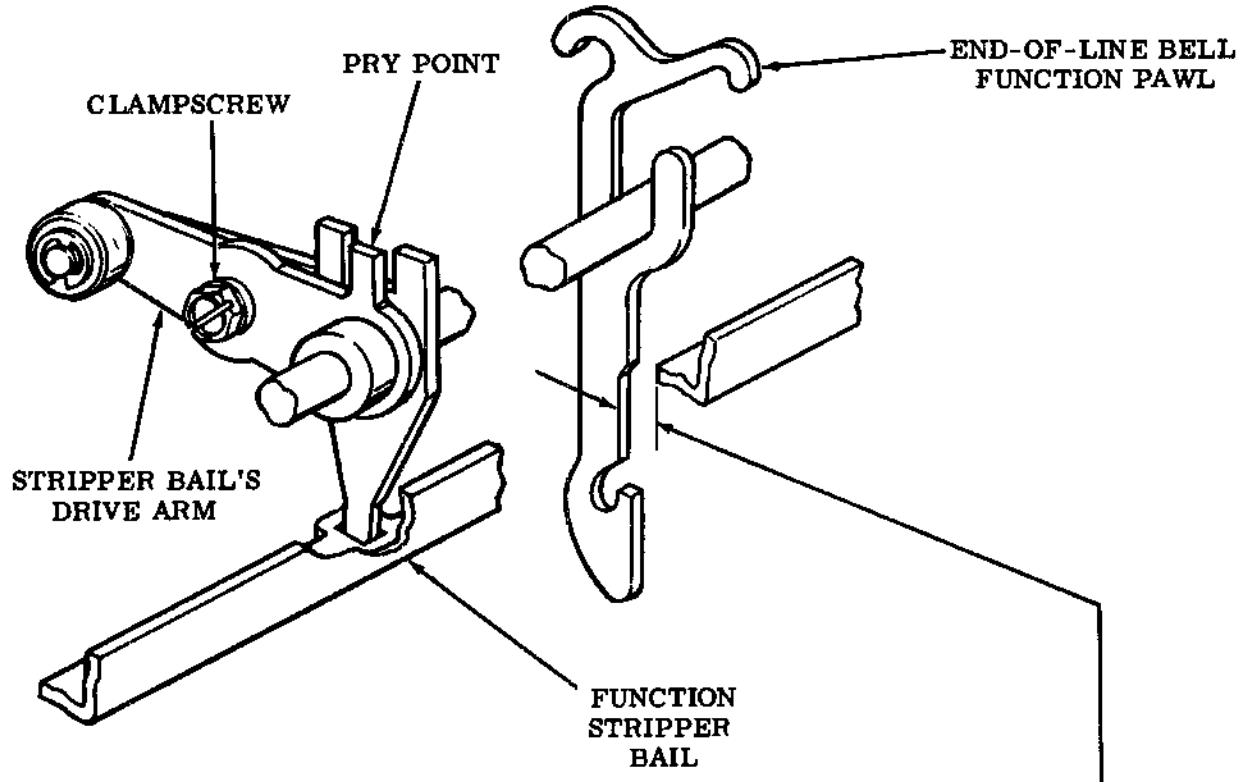
Affected By

LEFT ROCKER DRIVE (Par. 2.33)

Note: If typing unit is not equipped with the answer-back feature, select a code combination which will permit the rightmost function lever to be selected.



2.36 Function Area (continued)



(Left Front View)

STRIPPER BAIL CLEARANCE

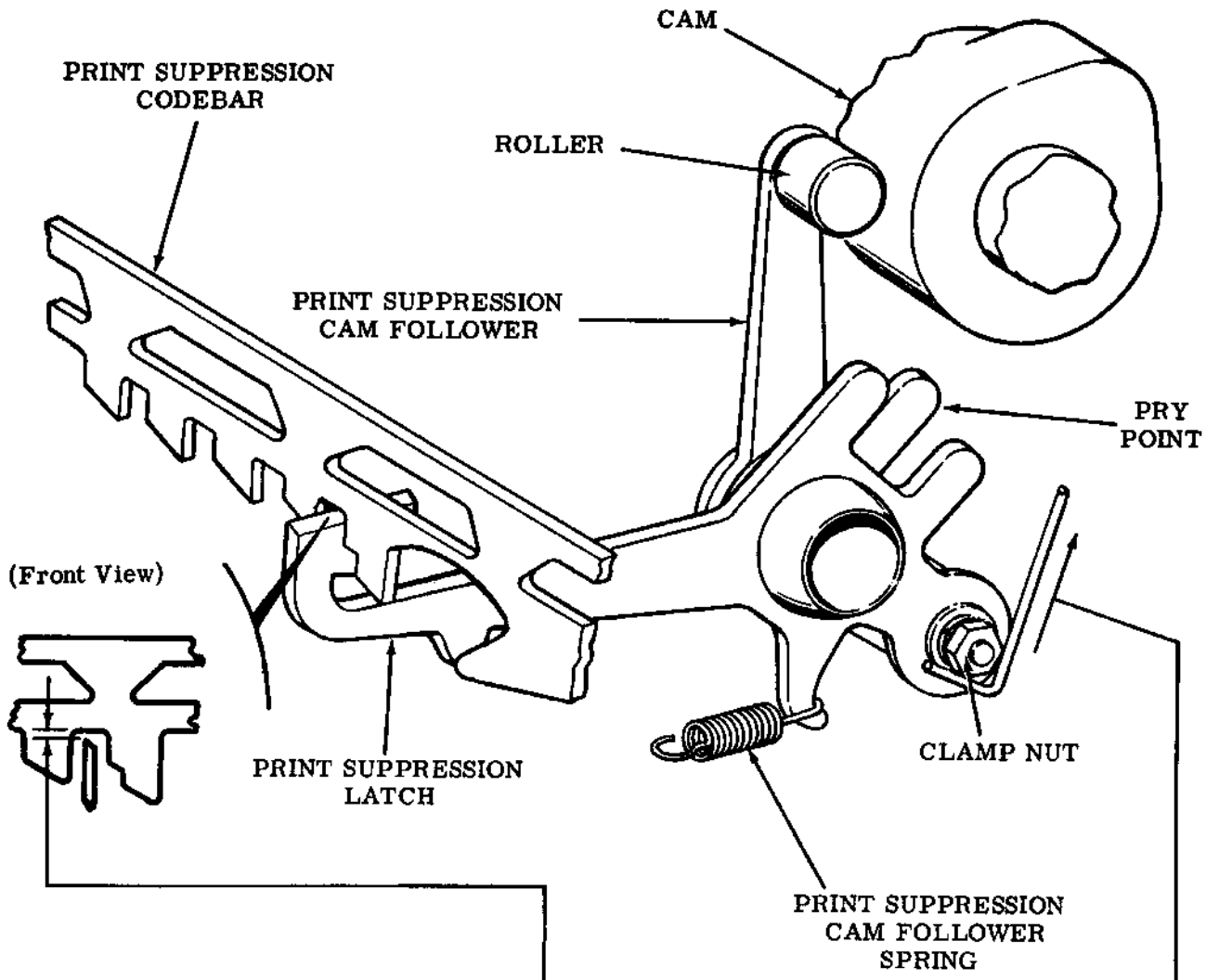
Requirement
With typing unit in stop condition
Min 0.015 inch---Max 0.025 inch
between function stripper bail and edge of stripped end-of-line bell function.

Note: For typing units which are not equipped with the end-of-line bell function pawl, check requirement at the TP180792 function pawl closest to slot F in function casting.

To Adjust
Loosen clampscrew. Use pry point to position stripper bail's drive arm. Tighten clampscrew.

Related Adjustment
Affects
LINE FEED STRIPPER PLATE CLEARANCE (Platen Area) - F (Par. 2.109)

2.37 Function Area (continued)



PRINT SUPPRESSION LATCH — VERTICAL CLEARANCE

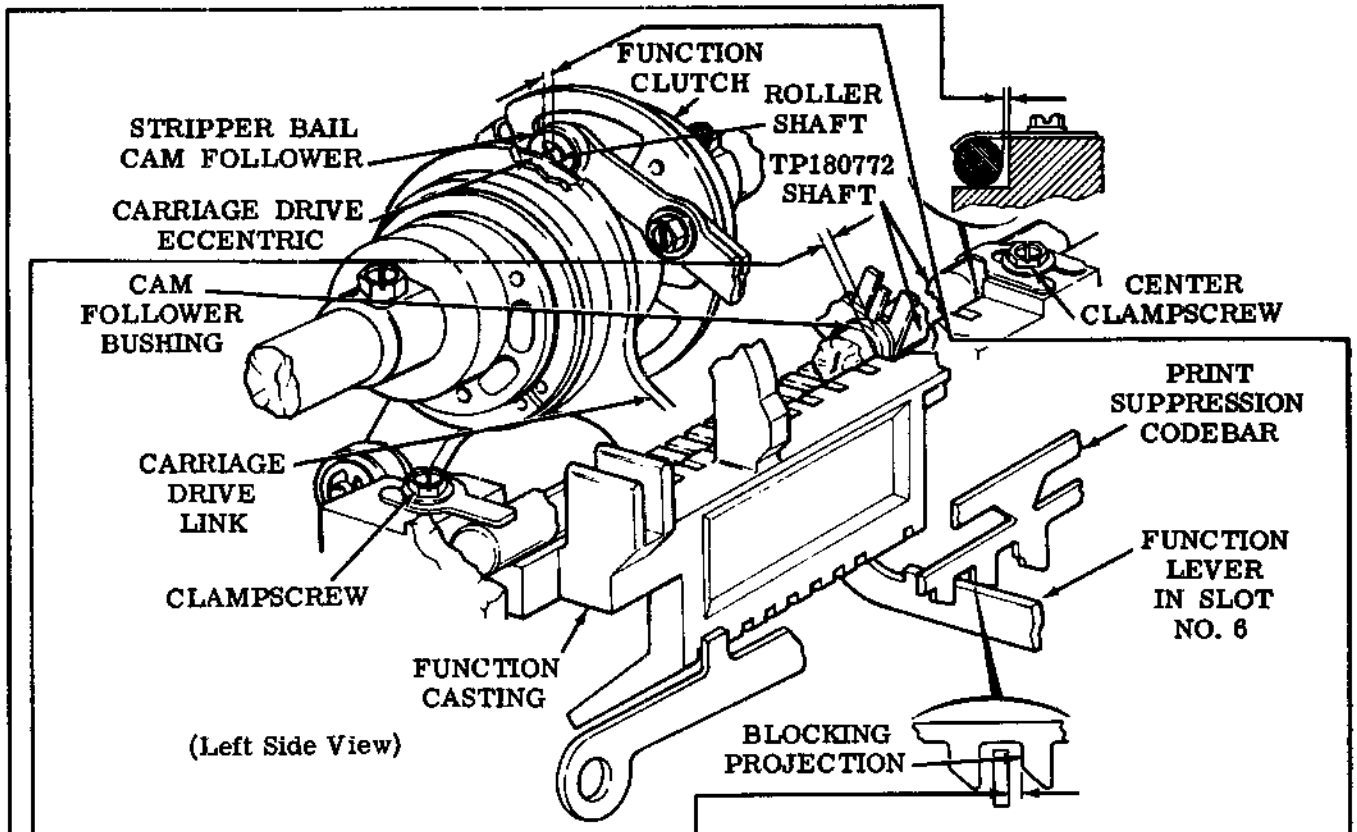
Requirement
With typing unit in stop condition and print suppression cam follower roller resting on its cam
Min 0.015 inch---Max 0.050 inch between print suppression latch and print suppression codebar.

To Adjust
Loosen clamp nut. Using pry point, position print suppression cam follower. Tighten clamp nut.

PRINT SUPPRESSION CAM FOLLOWER SPRING

Requirement
With typing unit in stop condition
Min 4-1/2 oz---Max 7-1/4 oz to start print suppression cam follower moving.

2.38 Function Area (continued)



FUNCTION SHAFT AND CASTING POSITION

Note: The (1) Requirement applies only to TP180772 shafts which have raised rings which serve to locate the stripper bail cam follower.

(1) Requirement
Min some---Max 0.010 inch between stripper bail cam follower and left side of slot in function casting.

To Adjust
Loosen clampscrews and position TP180772 shaft.

(2) Requirement
The shaft should be in contact with, or not more than
Max 0.003 inch
away from the vertical surface at the center of the function casting.

To Adjust
With the center and two end clampscrews loosened, position to meet Requirements (1) and (2).

To Check
Manually set up an all spacing code combination in selector. Rotate main shaft until suppression cam follower begins to rise on its cam.

(3) Requirement
Min 0.030 inch---Max 0.050 inch between blocking projections on print suppression codebar and the function lever in slot no. 6.

(4) Requirement
Min 0.005 inch
between carriage drive eccentric and roller shaft on stripper bail cam follower with play taken up to make clearance a minimum.

To Adjust
With the two end clampscrews loosened, position casting to meet Requirements (3) and (4). Tighten clampscrews.

Related Adjustments
Affected By
CODEBAR RESET LEVER POSITION (Par. 2.28)
PRINT SUPPRESSION LATCH — HORIZONTAL CLEARANCE (Par. 2.29)

2.39 Function Area (continued)

CARRIAGE RETURN LEVER — LATCH CLEARANCE

To Check

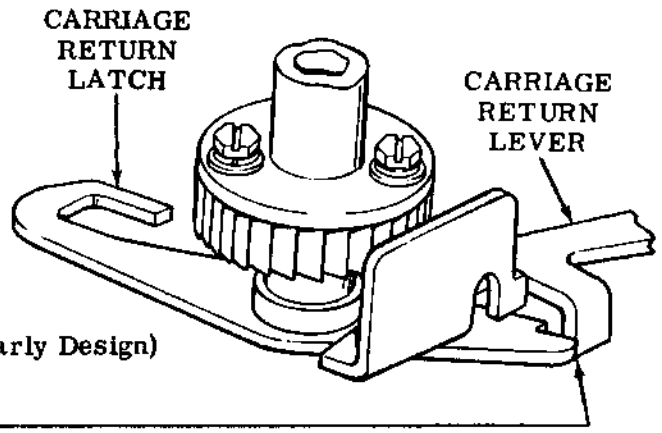
Position carriage to center of typing unit and carefully remove carriage return spring. Set up carriage return code combination (1-34---8) in selector. Rotate main shaft until function bail reaches lowest point of travel. Position left end of carriage return lever rearward to eliminate its play.

(1) Requirement

Early design

carriage return lever flush with carriage return latch

Within 0.005 inch



(2) Requirement

Late design

Min some---Max 0.030 inch between carriage return lever and carriage return latch.

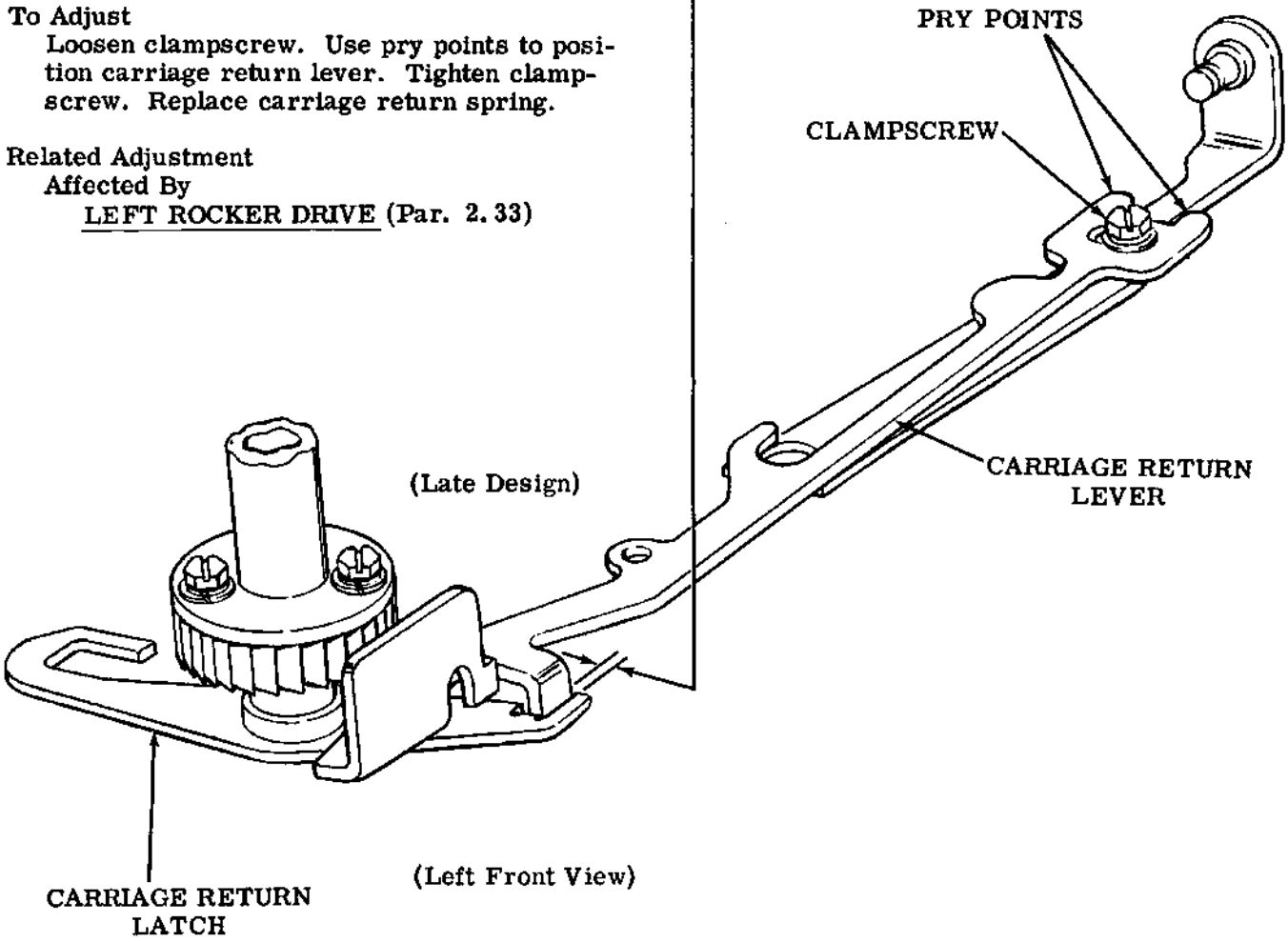
To Adjust

Loosen clampscrew. Use pry points to position carriage return lever. Tighten clampscrew. Replace carriage return spring.

Related Adjustment

Affected By

LEFT ROCKER DRIVE (Par. 2.33)



2.40 Function Area (continued)

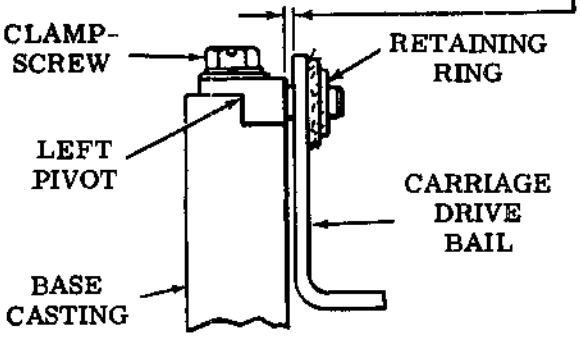
CARRIAGE DRIVE BAIL ENDPLAY

Note: This adjustment applies only to typing units which have a retaining ring at the left pivot.

To Check
Rotate main shaft until carriage drive bail is parallel to the base casting.

Requirement
Min some---Max 0.015 inch endplay in carriage drive bail.

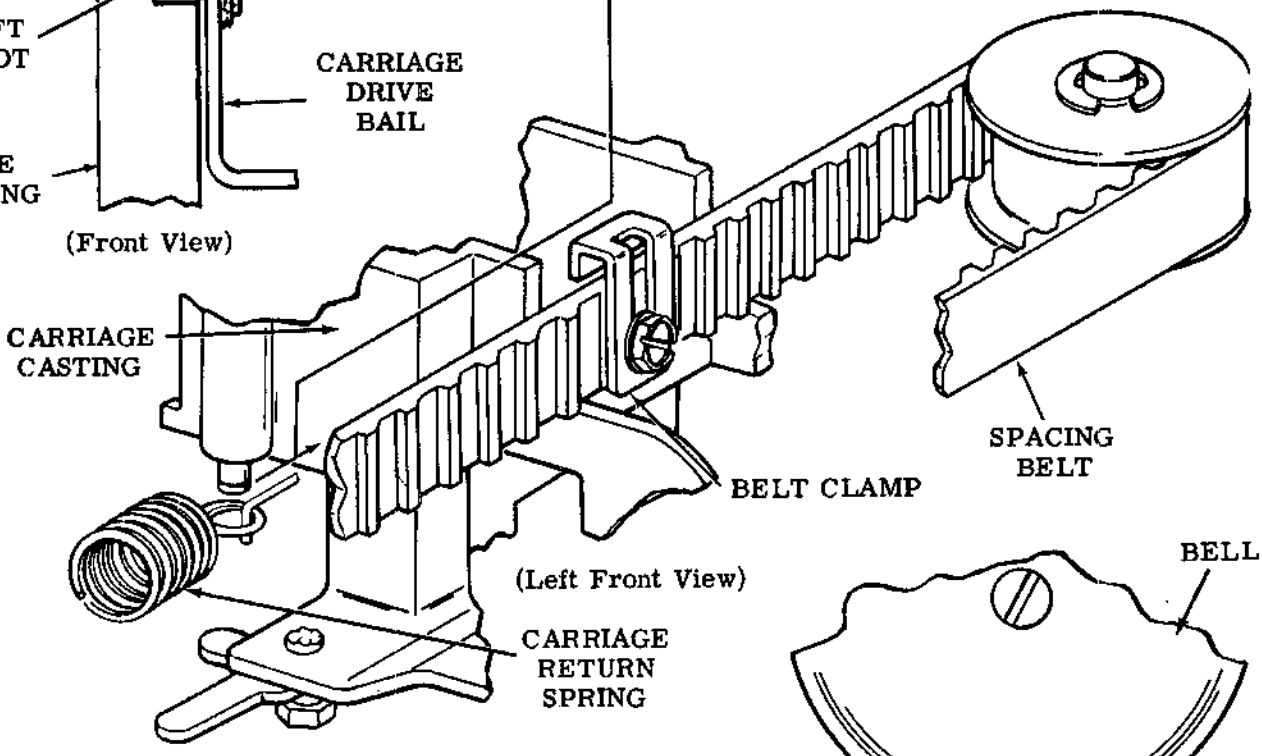
To Adjust
Loosen clampscrew and position carriage drive bail's left pivot. Tighten clampscrew.



(Front View)

CARRIAGE RETURN SPRING

Requirement
With typing unit in stop condition and carriage at right margin
Min 56 oz---Max 64 oz
to pull carriage return spring to installed length.



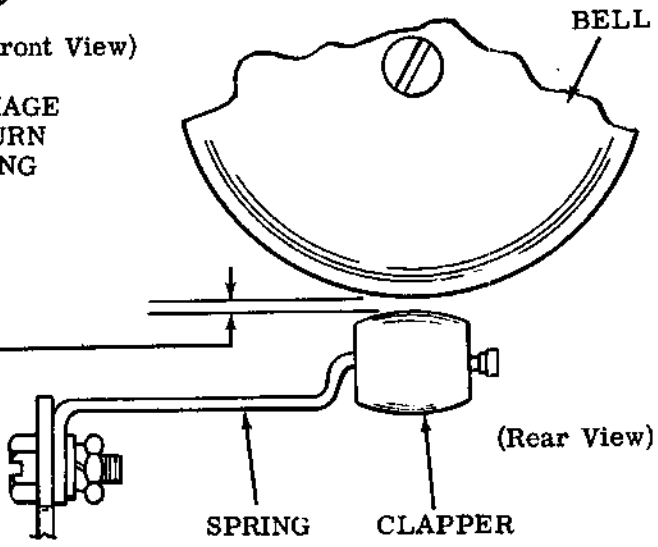
(Left Front View)

BELL CLAPPER GAP

(1) Requirement
With typing unit in stop condition
Min 0.030 inch---Max 0.070 inch between clapper and bell.

To Adjust
Using pliers, bend clapper spring.

(2) Requirement
The bell must be audible when operated.

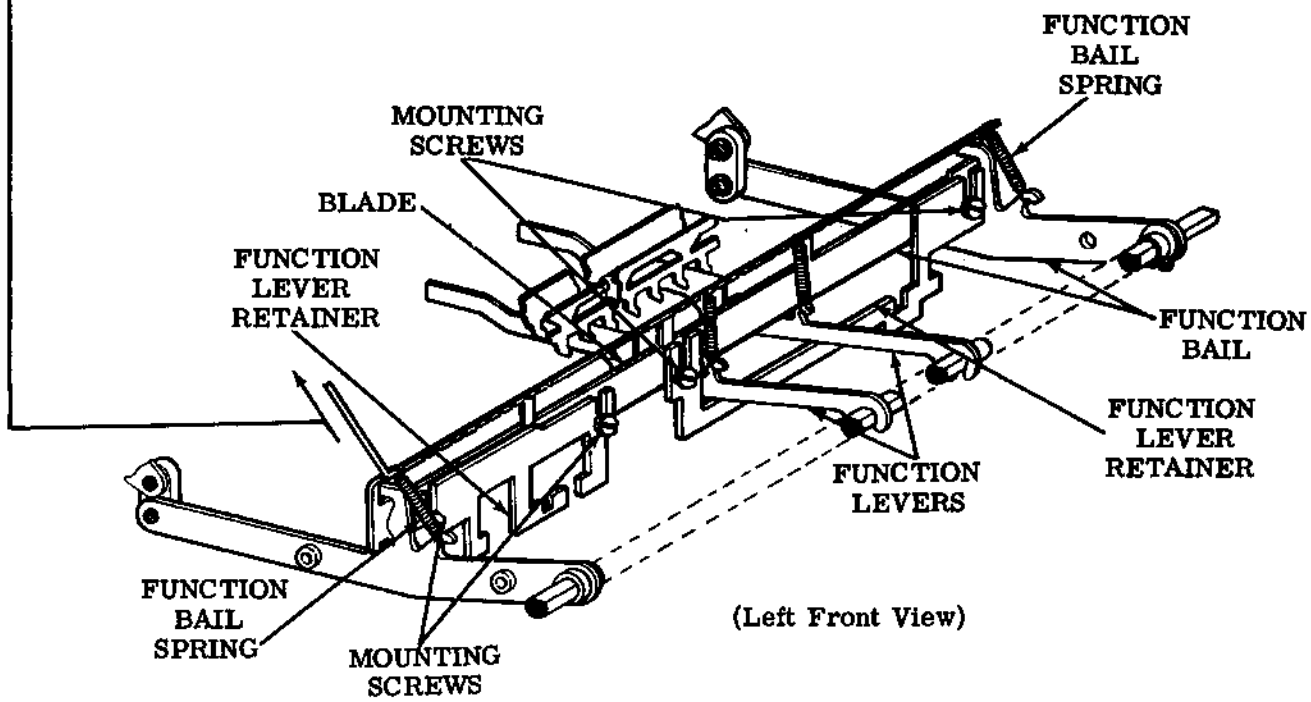


(Rear View)

2.41 Function Area (continued)

FUNCTION BAIL SPRING

Requirement
With typing unit in stop condition
Min 72 oz---Max 104 oz
to pull each function bail spring to installed length.



FUNCTION LEVER RETAINER

Note: Perform (1) To Check, on units containing function lever retainers TP183851 and TP183853. For typing units equipped with the print-nonprint feature and TP185980 function lever retainers, perform (2) To Check.

(1) To Check
With an all marking code combination in the selector, manually operate the typing unit until the blade is at its highest point of travel.

(2) To Check
With an all marking code combination in the selector, manually operate the typing unit until the blade is at its lowest point of travel.

Requirement
Min some---Max 0.020 inch
at the point of least clearance between the function lever retainer and its associated function levers.

To Adjust
Loosen mounting screws and position retainers. Tighten screws.

Related Adjustment
Affected By
LEFT ROCKER DRIVE (Par. 2.33)

2.42 Carriage Area

FRONT ROLLERS CLEARANCE

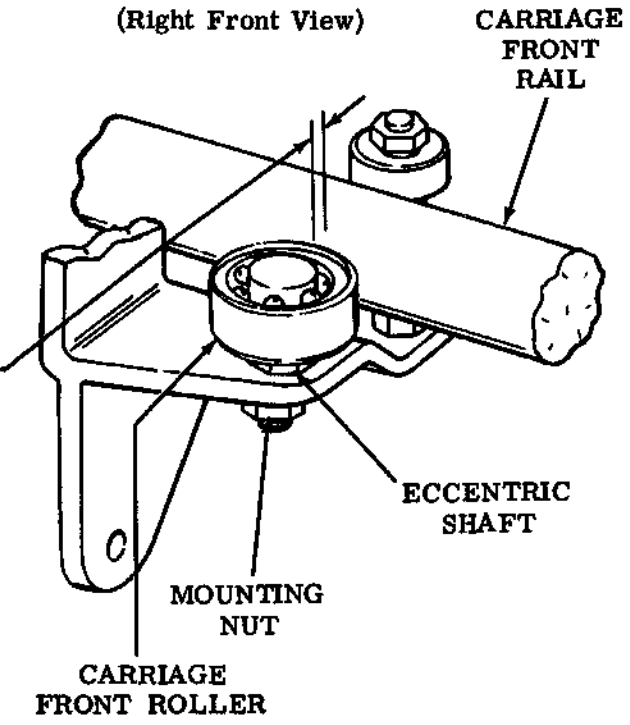
Note 1: This adjustment does not apply to typing units equipped with nonadjustable parts such as TP183503 bearing housing and TP183504 bearing retainer.

To Check
Place typing unit in stop condition. Remove the carriage return spring. Take up roller play toward the front of the typing unit.

Requirement
Min some---Max 0.005 inch between carriage front roller and carriage front rail.

To Adjust
Loosen mounting nut and position each roller against rail by means of eccentric shaft. Slowly back off eccentric shaft to meet requirement. Tighten mounting nut.

Note 2: Some positions of carriage front roller may show a slight drag condition. This is acceptable providing there is no perceptible increase in carriage friction due to condition.



2.43 Carriage Area (continued)

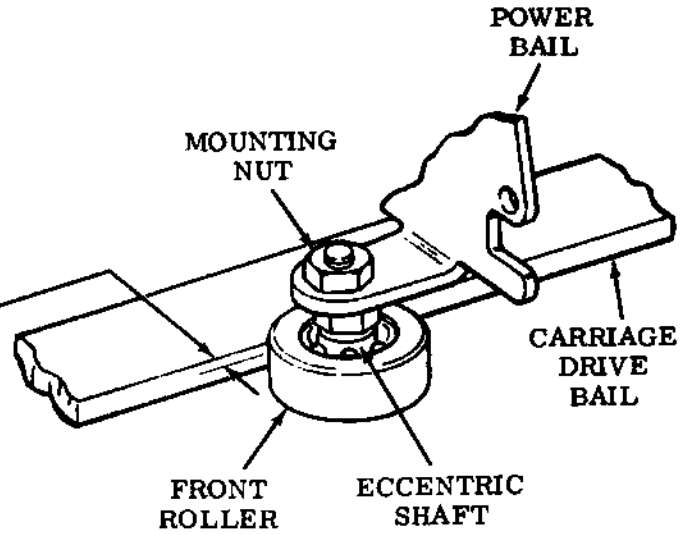
POWER BAIL ROLLER CLEARANCE

To Check
Trip function clutch and rotate main shaft until carriage drive bail is at lowest point of travel.

Requirement
Min some---Max 0.005 inch between front roller and carriage drive bail.

To Adjust
Loosen mounting nut and position front roller by means of eccentric shaft. Tighten mounting nut.

Related Adjustments
Affects
PRINT DRIVE LEVER POSITIONING (Par. 2.47)
RESET LEVER POSITIONING (Par. 2.52)



(Left Front View)

RACK AND PINION BACKLASH

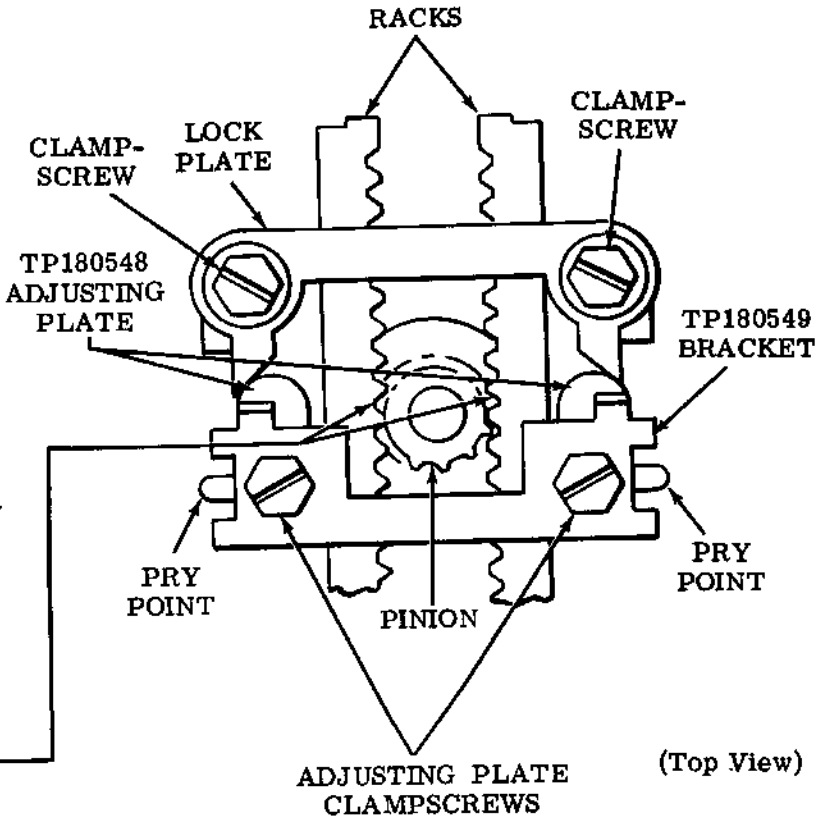
To Check
Place typing unit in stop condition.

Requirement
Each rack should have
Min some---Max 0.010 inch backlash.

To Adjust
Loosen lock plate clampscrews and move lock plate towards the rear. Loosen one adjusting plate clampscrew friction tight and place a 0.006-inch feeler gauge between the rack and adjusting plate. Position adjusting plate for no play between the rack and pinion using pry point. Tighten adjusting plate clampscrew and remove feeler gauge. Repeat procedure for adjusting plate on other side. Position lock plate against adjusting plates. Tighten lock plate clampscrews.

Note 2: Do not loosen both adjusting plate clampscrews at the same time.

Note 1: This adjustment is to be performed only on typing unit carriages containing the TP180548 adjusting plate and TP180549 bracket.



(Top View)

2.44 Carriage Area (continued)

ROTARY DRIVE BAIL SPRING

To Check
Set up an all marking code combination in selector and rotate main shaft until the carriage drive bail is in its rear-most position.

Requirement
Min 17 oz---Max 21-1/2 oz to start rotary drive bail moving.

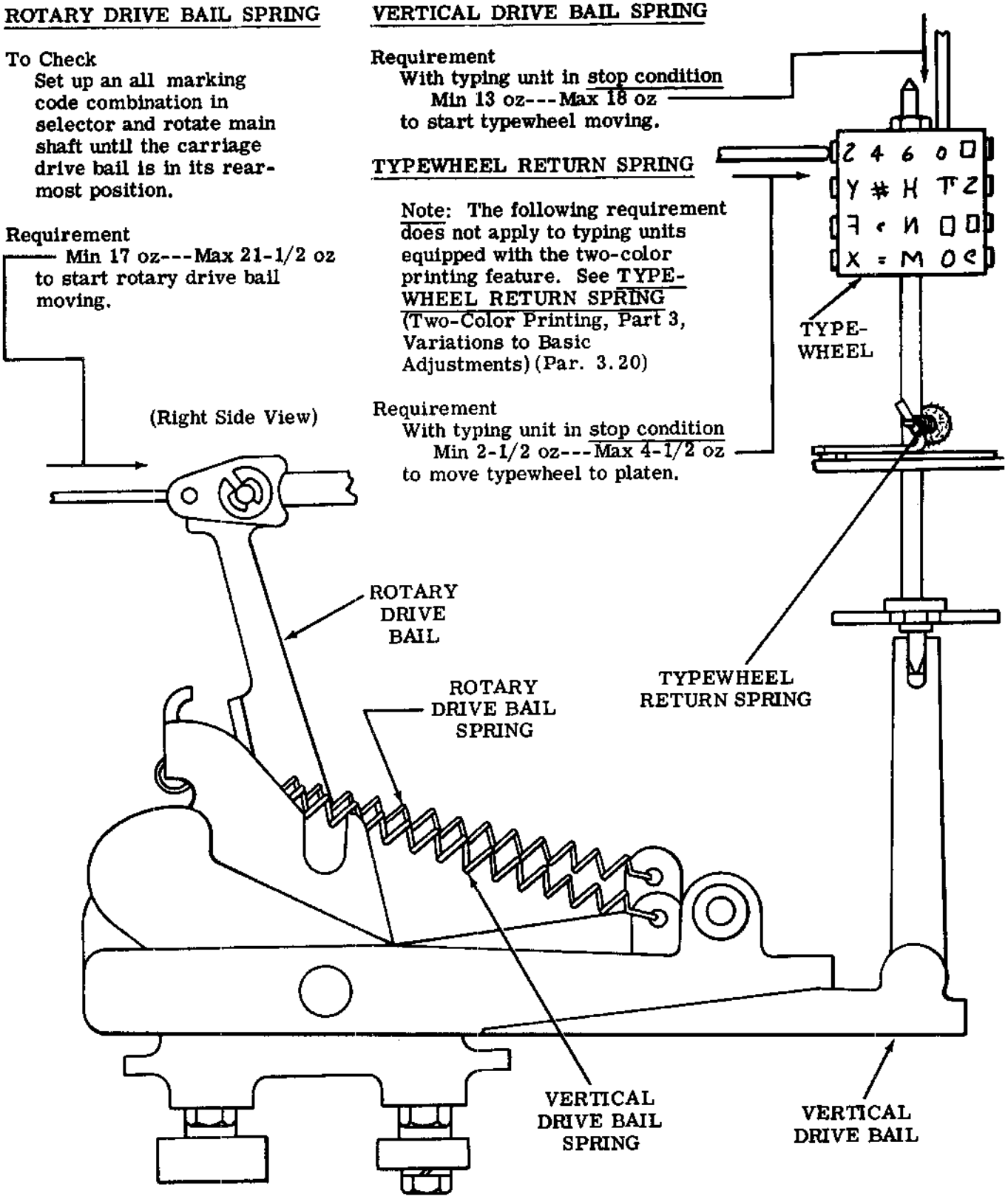
VERTICAL DRIVE BAIL SPRING

Requirement
With typing unit in stop condition
Min 13 oz---Max 18 oz
to start typewheel moving.

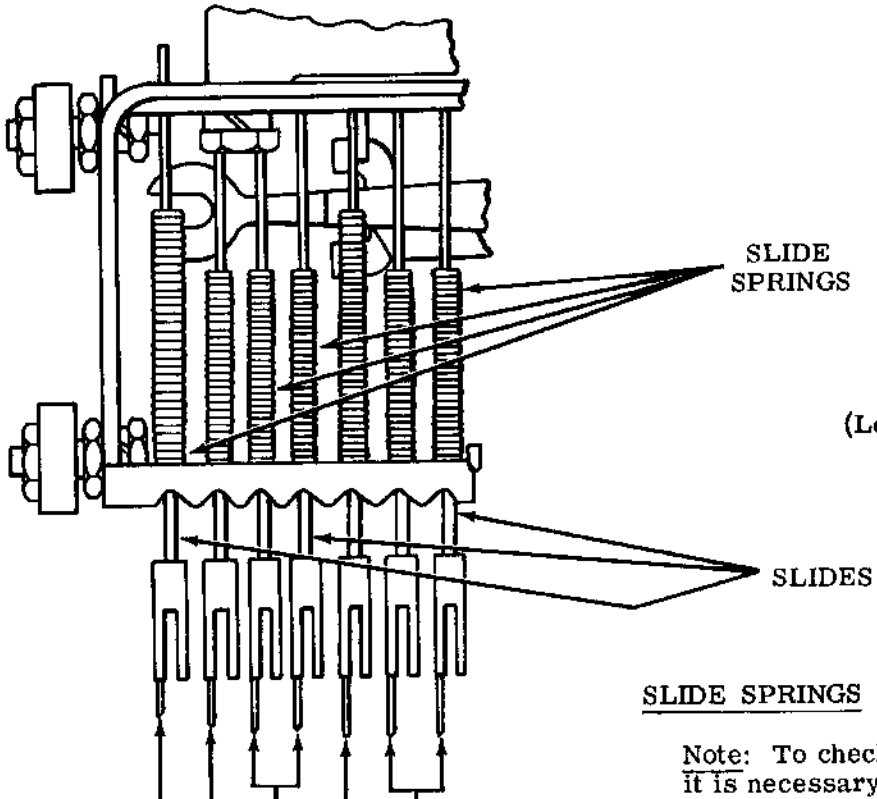
TYPEWHEEL RETURN SPRING

Note: The following requirement does not apply to typing units equipped with the two-color printing feature. See TYPEWHEEL RETURN SPRING (Two-Color Printing, Part 3, Variations to Basic Adjustments) (Par. 3.20)

Requirement
With typing unit in stop condition
Min 2-1/2 oz---Max 4-1/2 oz
to move typewheel to platen.



2.45 Carriage Area (continued)



(Left Side View)

SLIDE SPRINGS

Note: To check tensions of the slide springs, it is necessary to remove the carriage mechanism from typing unit. For instructions see appropriate disassembly and reassembly section. Do not check unless there is reason to believe that the slide springs do not meet their requirements.

Requirement

With carriage power bail in its stop position, towards the front, it should require values as shown in chart, to start slides moving.

* Print Suppression

SLIDE NO.	5 AND 7	4	2 AND 3	1	PS*
Min	1/4 oz	3-3/4 oz	2 oz	1/4 oz	3-3/4 oz
Max	1-1/4 oz	4-1/2 oz	3 oz	1 oz	4-1/2 oz

2.46 Carriage Area (continued)

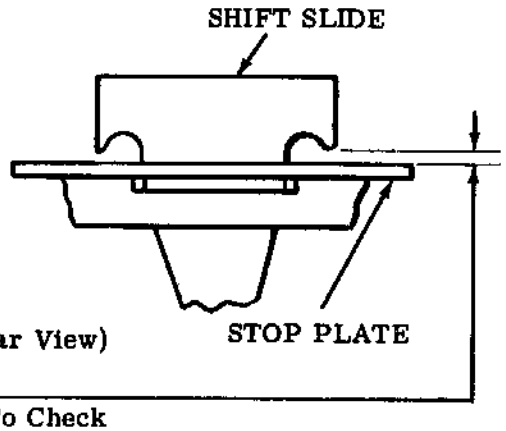
REAR RAIL POSITION

(1) To Check
Position the dashpot plunger just outside the dashpot cylinder. With the selector no. 1 code level in the marking condition, rotate the main shaft until the shift slide barely contacts rear stop surface of stop plate. Take up all play to minimize the required clearance.

Requirement
Min 0.025 inch---Max 0.040 inch between bottom edge of shift slide and top edge of stop plate.

(2) To Check
Condition the typing unit as in (1) To Check above except place carriage to the right with center of the typewheel 1/2 inch from the right hand margin.

Requirement
Min 0.025 inch---Max 0.040 inch between bottom edge of shift slide and top edge of stop plate.



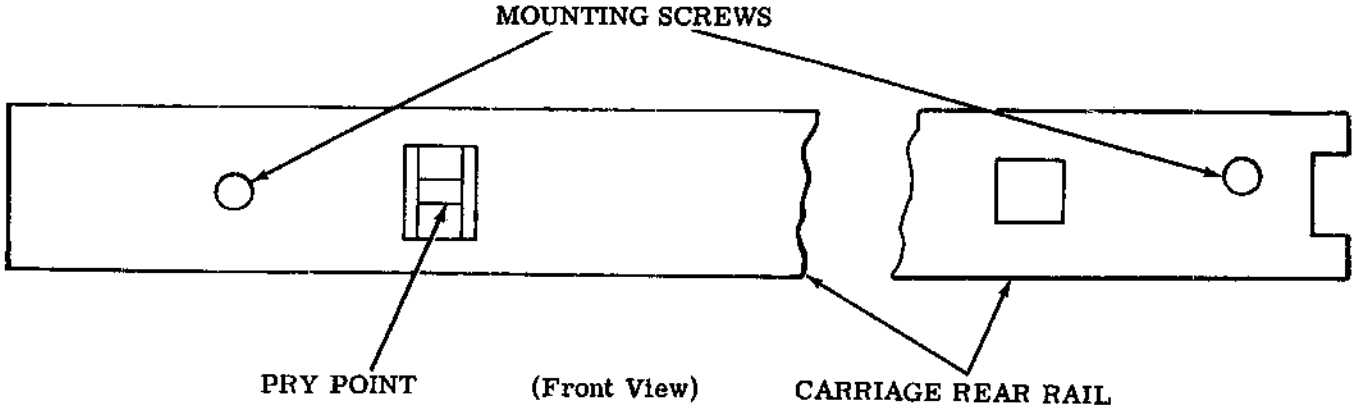
(3) To Check
Calculate the difference between the recorded measurements in (1) To Check and (2) To Check above.

Requirement
Max 0.010 inch
difference between recorded measurements.

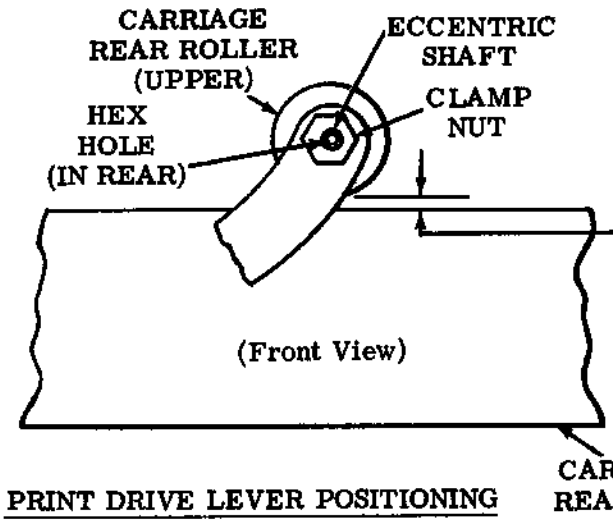
To Adjust
Loosen two carriage rear rail mounting screws friction tight, and position carriage rear rail using pry point. Tighten mounting screws.

Related Adjustments
Affects
PRINT DRIVE LEVER POSITIONING (Par. 2.47)
FOURTH PULSE LINKAGE POSITIONING (Par. 2.51)
RESET LEVER POSITIONING (Par. 2.52)
PRINT SUPPRESSION LATCHLEVER RELEASE (Par. 2.55)
PRESSURE ROLLER CLEARANCE (Platen Area) - F (Par. 2.110)

Affected By
CODEBAR RESET LEVER POSITION (Function Area) (Par. 2.28)



2.47 Carriage Area (continued)



(A) REAR ROLLER CLEARANCE

To Check
Rotate main shaft until carriage drive bail is in rearmost position.

Requirement
Min some---Max 0.008 inch between carriage rear rail and carriage rear roller (upper).

To Adjust
Loosen clamp nut and position eccentric shaft with hex wrench in hex hole. Tighten clamp nut.

(B) PRINT DRIVE LEVER POSITIONING

To Check
Place typing unit in stop condition and move carriage until its power bail rollers are positioned directly above the carriage drive link. Take up play in vertical drive bail in a downward direction, and take up play in common stop arm toward the left.

Requirement
Late design typing units equipped with TP183993 cam sleeve
Min 0.065 inch---Max 0.090 inch between vertical drive bail and common stop arm.

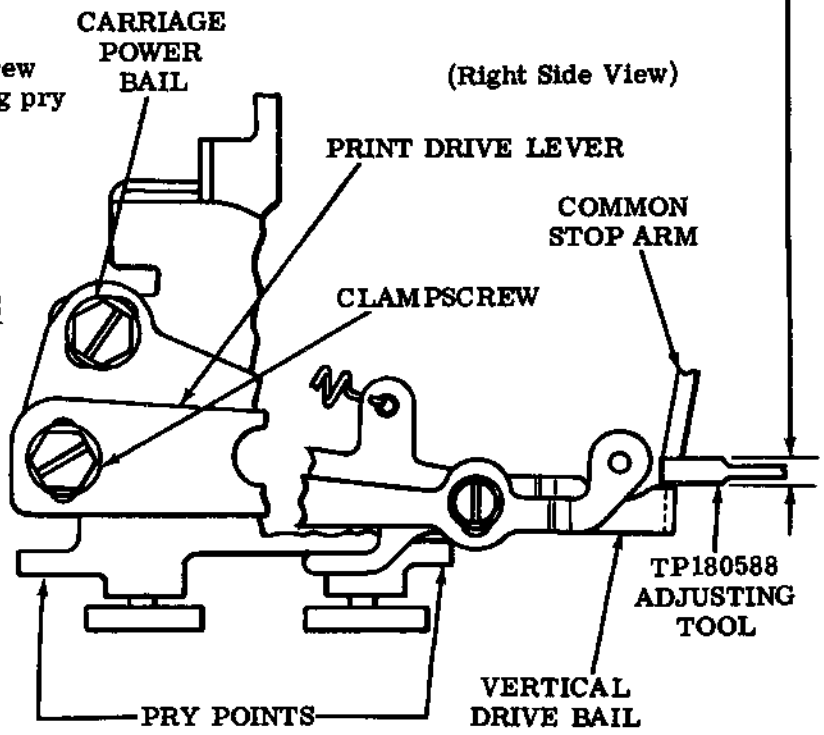
Early design typing units equipped with TP180806 cam sleeve
Min 0.229 inch---Max 0.239 inch between vertical drive bail and common stop arm as gauged with a TP180588 adjusting tool.

Note: The TP180588 adjusting tool has a nominal dimension of 0.234 inch.

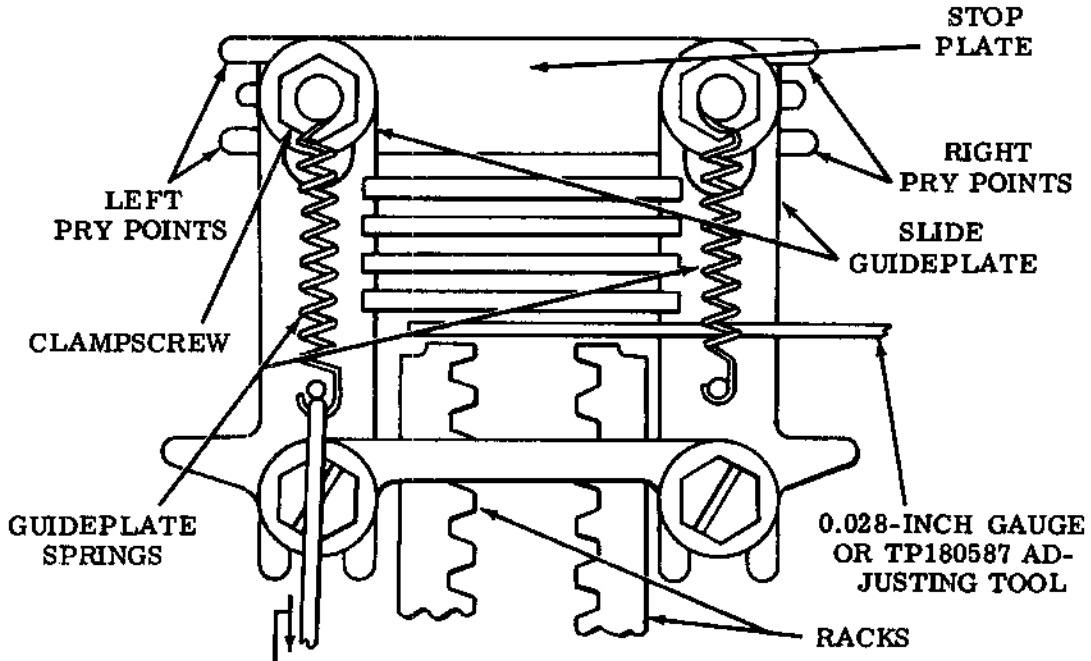
To Adjust
Loosen print drive lever clampscrew and position print drive lever using pry points. Tighten clampscrew.

Related Adjustments
Affects
RIGHT SLIDE GUIDE PLATE RESET (Par. 2.58)
PRINT TRIP LEVER RELEASE (Par. 2.50)
PRINT TRIP LEVER RESET (Par. 2.53)

Affected By
POWER BAIL ROLLER CLEARANCE (Par. 2.43)
REAR RAIL POSITION (Par. 2.46)



2.48 Carriage Area (continued)



SLIDE GUIDEPLATE SPRINGS

Note 1: To check slide guideplate springs, it is necessary to remove the carriage mechanism from the typing unit. See appropriate disassembly and reassembly section. Do not check unless there is reason to believe that the slide guideplate springs will not meet their requirement.

Requirement

Min 1 oz---Max 3 oz to pull each spring to installed length.

Note 2: Check right and left springs.

TYPEWHEEL POSITIONING

Note: Make the following adjustment only if typing unit is to be completely readjusted.

To Check

Set up code combination in selector of a character in counterclockwise field of typewheel. Rotate main shaft until carriage drive bail is in rearmost position. Check to see if vertical row containing character is properly selected. Repeat for a character in clockwise field.

Requirement

Typewheel positioning correct in both clockwise and counterclockwise directions.

To Adjust

Place typing unit in stop condition. Open up LEFT SLIDE GUIDEPLATE RESET (Par. 2.59) and RIGHT SLIDE GUIDEPLATE RESET (Par. 2.58) adjustments. Loosen two clampscrews friction tight. Place either 0.028-inch gauge or TP180587 adjusting tool across end of racks. Hold reset lever in place and position stop plate so that entire slide assembly is tight against racks and tool.

Related Adjustments

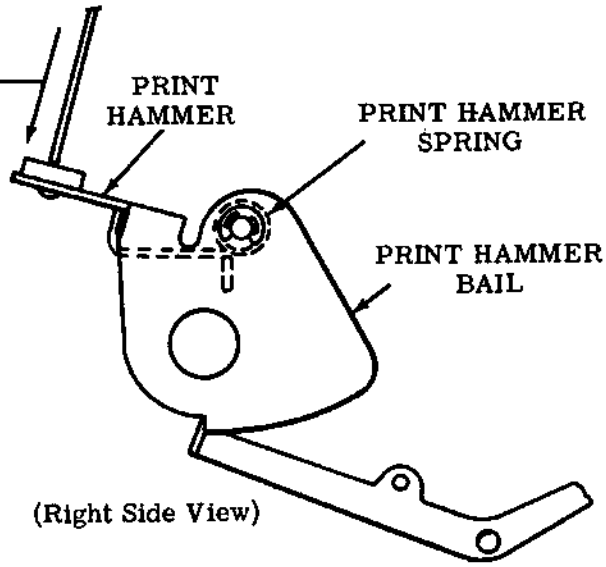
Affects

PRINT TRIP LEVER RELEASE (Par. 2.50)
LEFT SLIDE GUIDEPLATE RESET (Par. 2.59)
RIBBON POSITIONING (Par. 2.60)

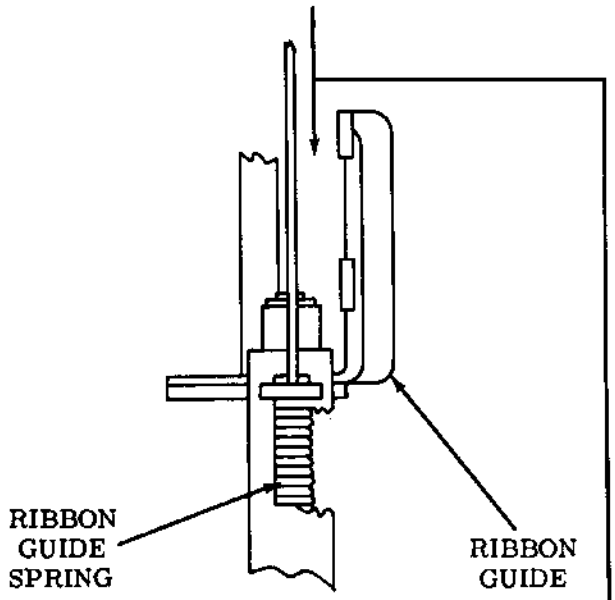
2.49 Carriage Area (continued)

PRINT HAMMER BAIL SPRING

Requirement
With typing unit in stop condition
Min 3 oz---Max 4-1/2 oz
to start print hammer moving.



(Right Side View)

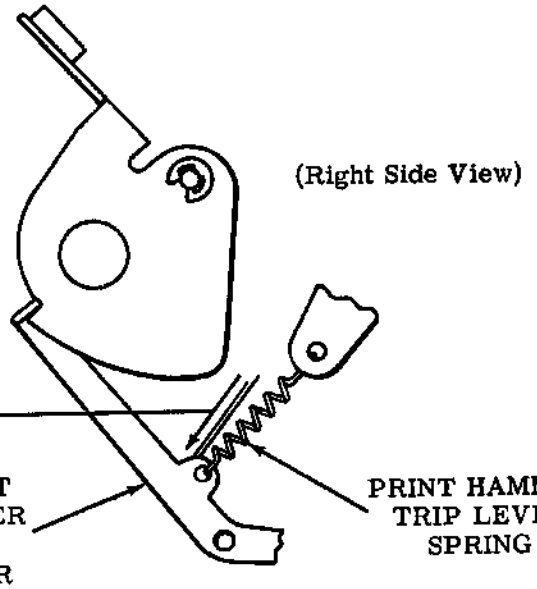


(Right Side View)

RIBBON GUIDE SPRING

To Check
Remove ribbon from ribbon guide. Trip selector clutch and rotate main shaft until carriage drive bail is in rearmost position.

Requirement
Min 6 oz---Max 9 oz
to start ribbon guide moving.



(Right Side View)

PRINT HAMMER TRIP LEVER SPRING

Requirement
With typing unit in stop condition
Min 1 oz---Max 2-1/2 oz
to start print hammer trip lever moving.

2.50 Carriage Area (continued)

PRINT TRIP LEVER RELEASE

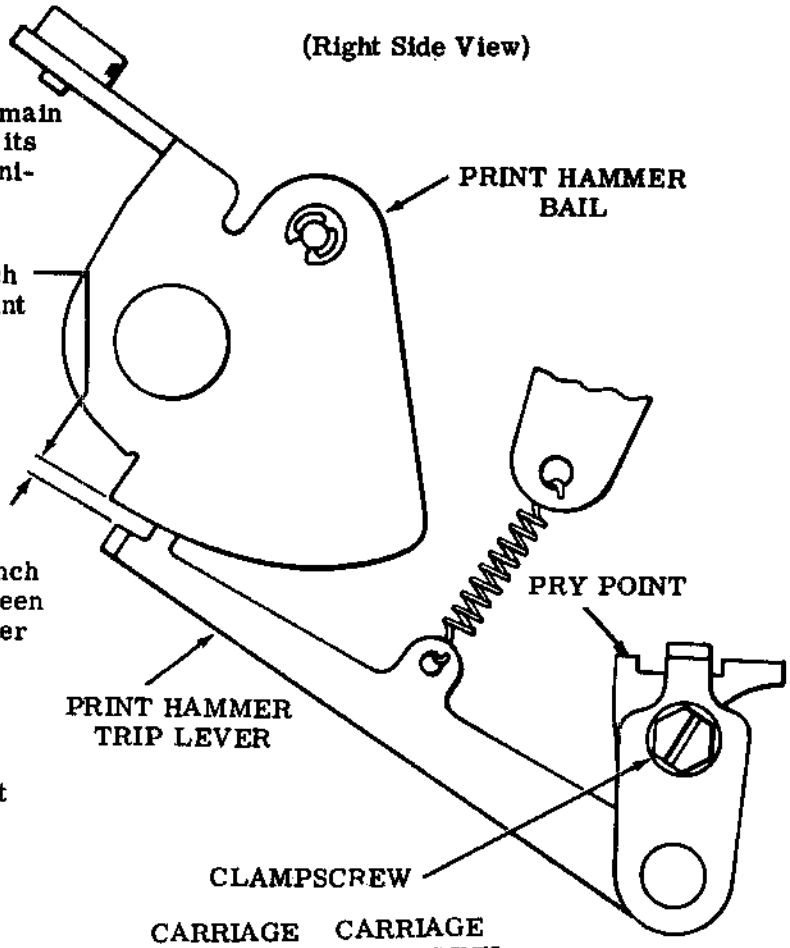
To Check
Place carriage at left margin. Rotate main shaft until carriage drive bail reaches its rearmost position. Take up play to minimize required clearance.

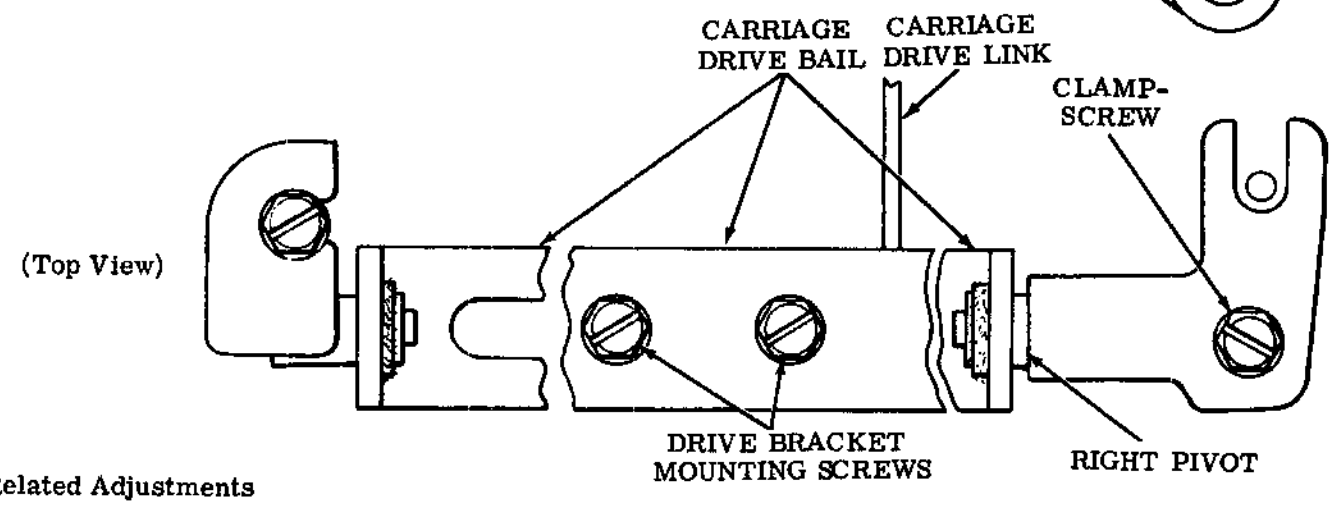
(1) Requirement
Min 0.040 inch---Max 0.110 inch between print hammer bail and print hammer trip lever.

To Adjust
Loosen print hammer trip lever clampscrew and position print hammer trip lever using pry point. Tighten clampscrew.

(2) Requirement
With carriage approximately 1/2 inch from right margin, clearance between print hammer bail and print hammer trip lever to be within 0.020 inch of (1) Requirement above.

To Adjust
With carriage drive bail right pivot clampscrew friction tight, position right pivot. Tighten clampscrew.





Related Adjustments

Affects

RESET LEVER POSITIONING (Par. 2.52)
FEED PAWL STOP POSITION (Spacing Area) (Par. 2.114)
FEED PAWL TRAVEL (Spacing Area) (Par. 2.118)

Affected By

PRINT DRIVE LEVER POSITIONING (Par. 2.47)
RIGHT SLIDE GUIDEPLATE RESET (Par. 2.58)
TYPEWHEEL POSITIONING (Par. 2.48)

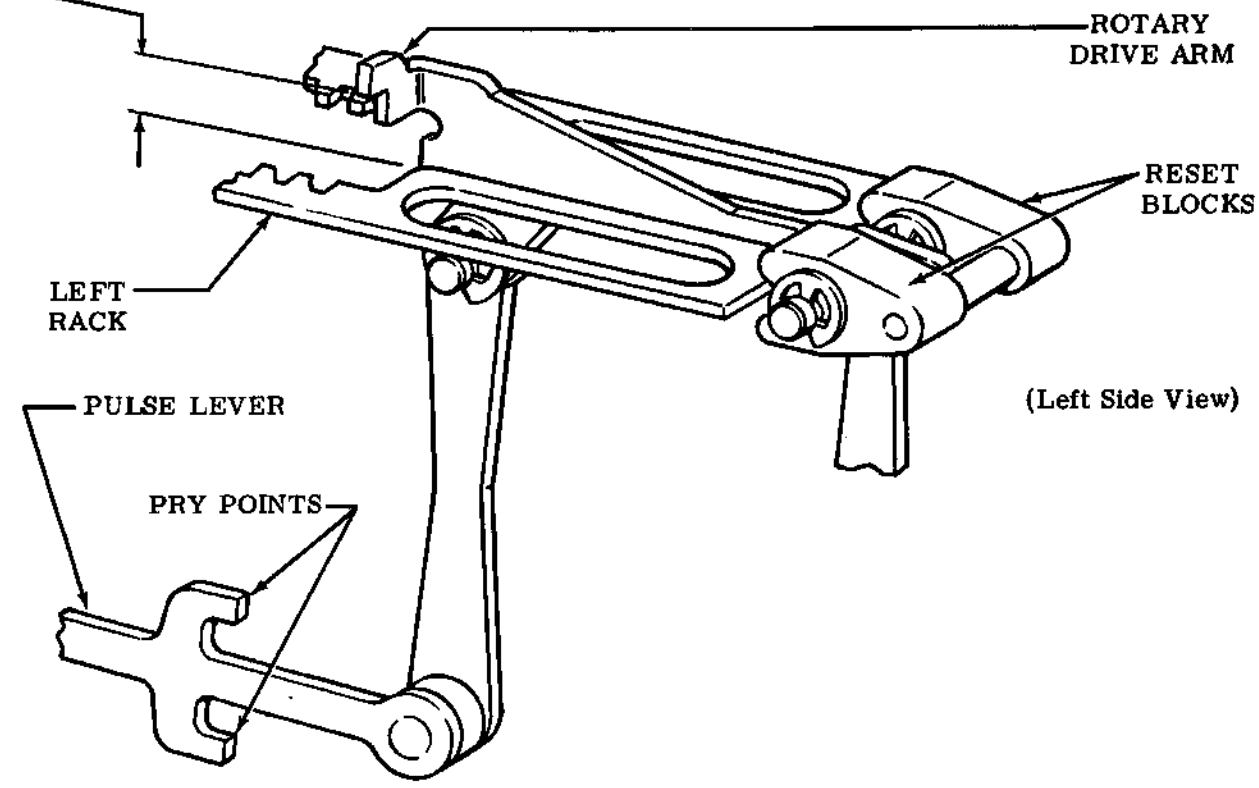
2.51 Carriage Area (continued)

FOURTH PULSE LINKAGE POSITIONING

To Check
Place carriage to left margin. With an all marking code combination set up in selector, manually operate the typing unit until the function clutch just trips. Take up play in left rack in a downward direction. Check requirement, then repeat requirement check with carriage at the right margin.

Requirement
Min 0.005 inch---Max 0.055 inch between rotary drive arm and left rack.

To Adjust
Bend pulse lever using pry points.



Related Adjustments
Affected By
CODEBAR RESET LEVER POSITION (Function Area) (Par. 2.28)
REAR RAIL POSITION (Par. 2.46)

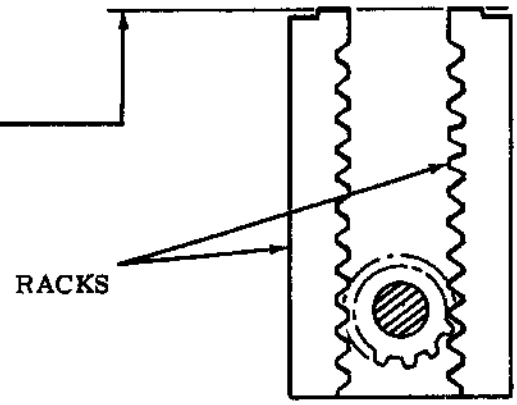
2.52 Carriage Area (continued)

RESET LEVER POSITIONING

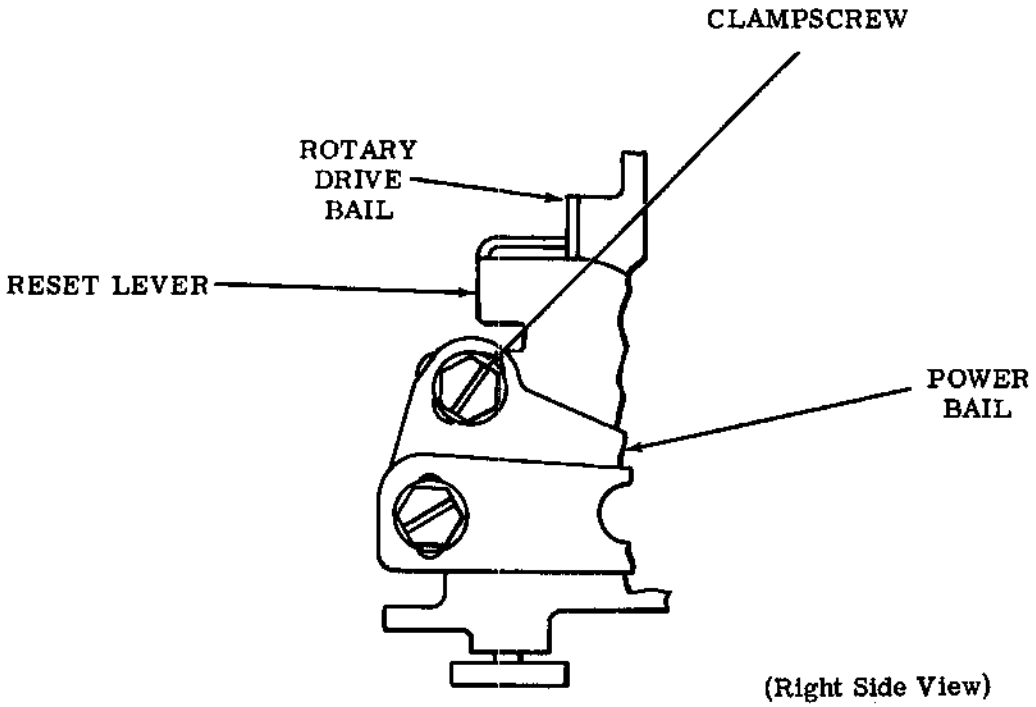
Requirement
When typing unit returns to stop condition, racks should be completely reset.

To Adjust
Place carriage in center of typing unit. Loosen clampscrew and allow positioning spring to fully reset racks. Tighten clampscrew.

Related Adjustments
Affected By
POWER BAIL ROLLER CLEARANCE (Par. 2.43)
REAR RAIL POSITION (Par. 2.46)
PRINT TRIP LEVER RELEASE (Par. 2.50)



(Top View)



(Right Side View)

2.53 Carriage Area (continued)

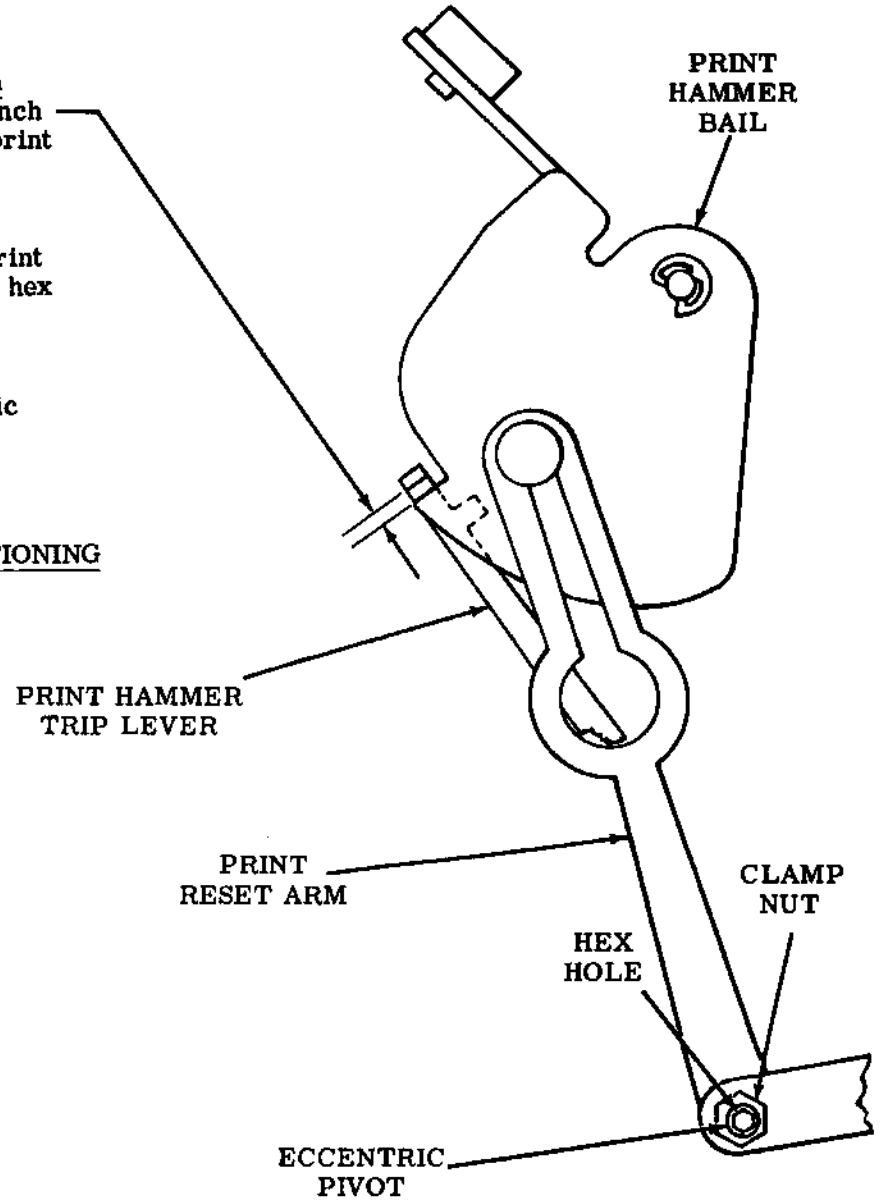
PRINT TRIP LEVER RESET

Requirement
With typing unit in stop condition
Min 0.010 inch---Max 0.050 inch between print hammer bail and print hammer trip lever.

To Adjust
Loosen clamp nut and position print reset arm's eccentric pivot with hex key wrench in hex hole. Tighten clamp nut.

Note: Keep high part of eccentric pivot toward front of typing unit.

Related Adjustment
Affected By
PRINT DRIVE LEVER POSITIONING (Par. 2.47)



(Right Side View)

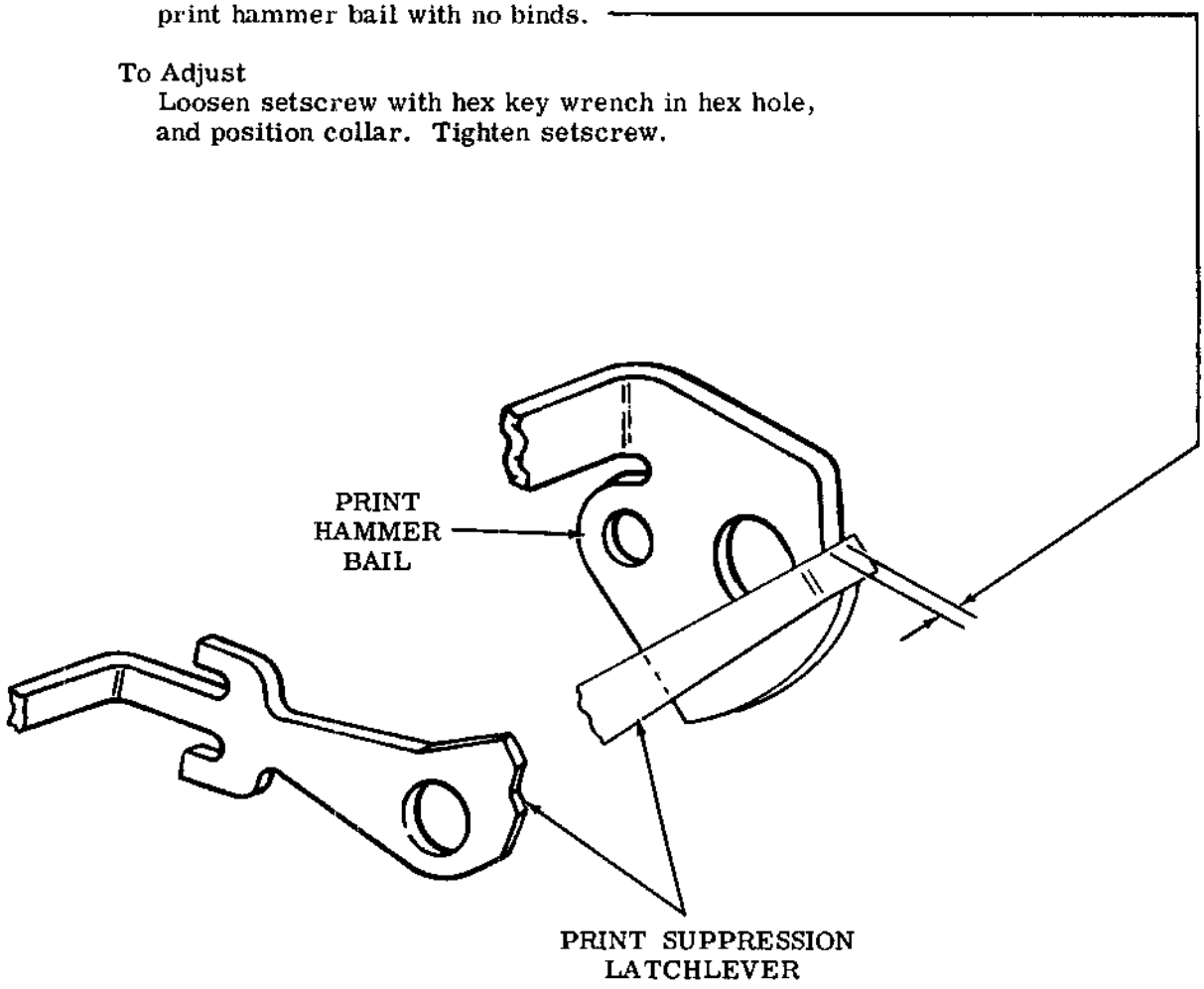
2.54 Carriage Area (continued)

PRINT SUPPRESSION LATCHLEVER ENDPLAY

To Check
Take up play in print suppression latchlever towards carriage casting.

Requirement
Print suppression latchlever should fully engage print hammer bail with no binds.

To Adjust
Loosen setscrew with hex key wrench in hex hole, and position collar. Tighten setscrew.



(Left Side View)

2.55 Carriage Area (continued)

PRINT SUPPRESSION LATCHLEVER RELEASE

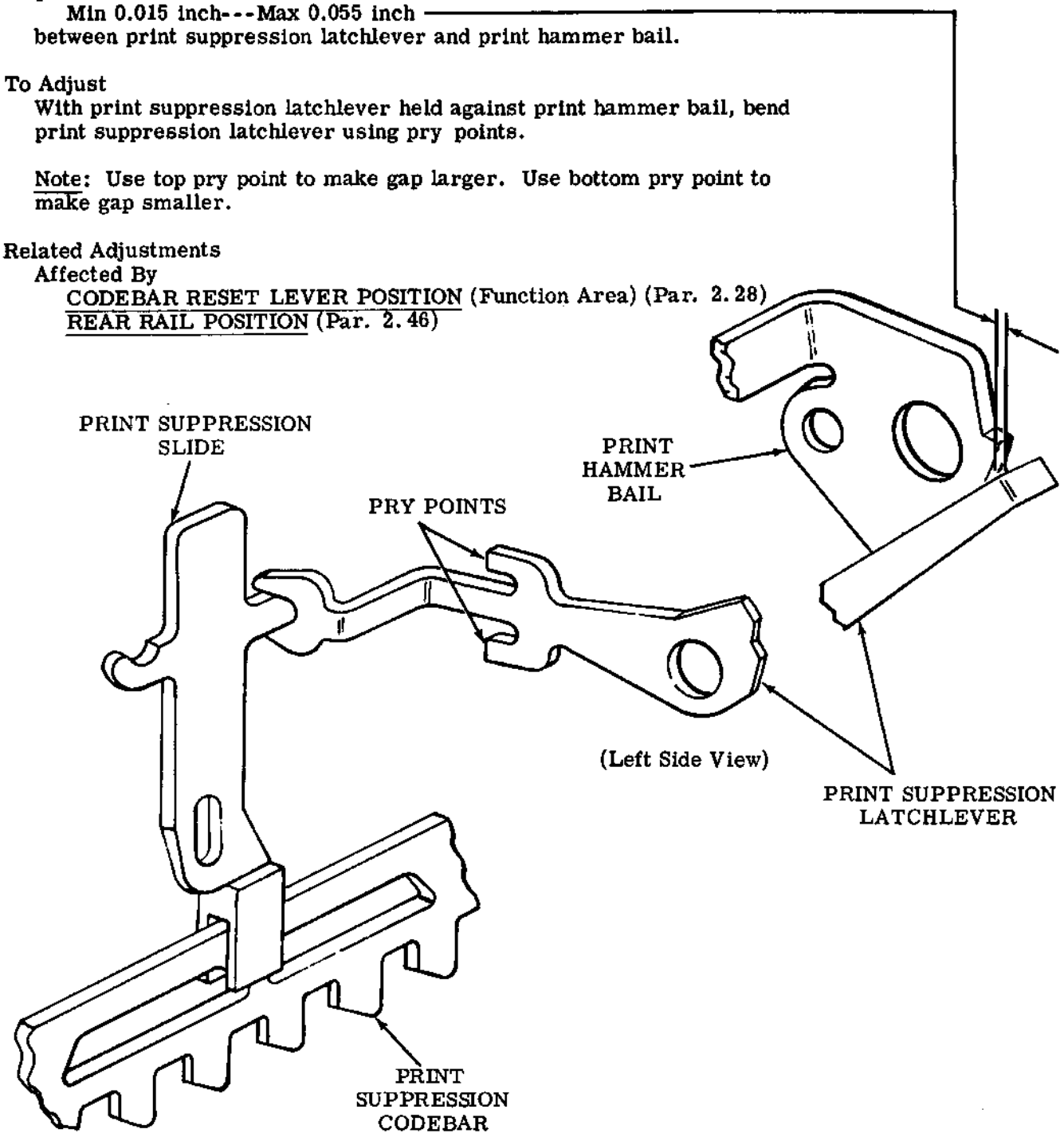
To Check
Place print suppression codebar fully up and take up play to minimize required clearance.

Requirement
Min 0.015 inch---Max 0.055 inch between print suppression latchlever and print hammer bail.

To Adjust
With print suppression latchlever held against print hammer bail, bend print suppression latchlever using pry points.

Note: Use top pry point to make gap larger. Use bottom pry point to make gap smaller.

Related Adjustments
Affected By
CODEBAR RESET LEVER POSITION (Function Area) (Par. 2.28)
REAR RAIL POSITION (Par. 2.46)



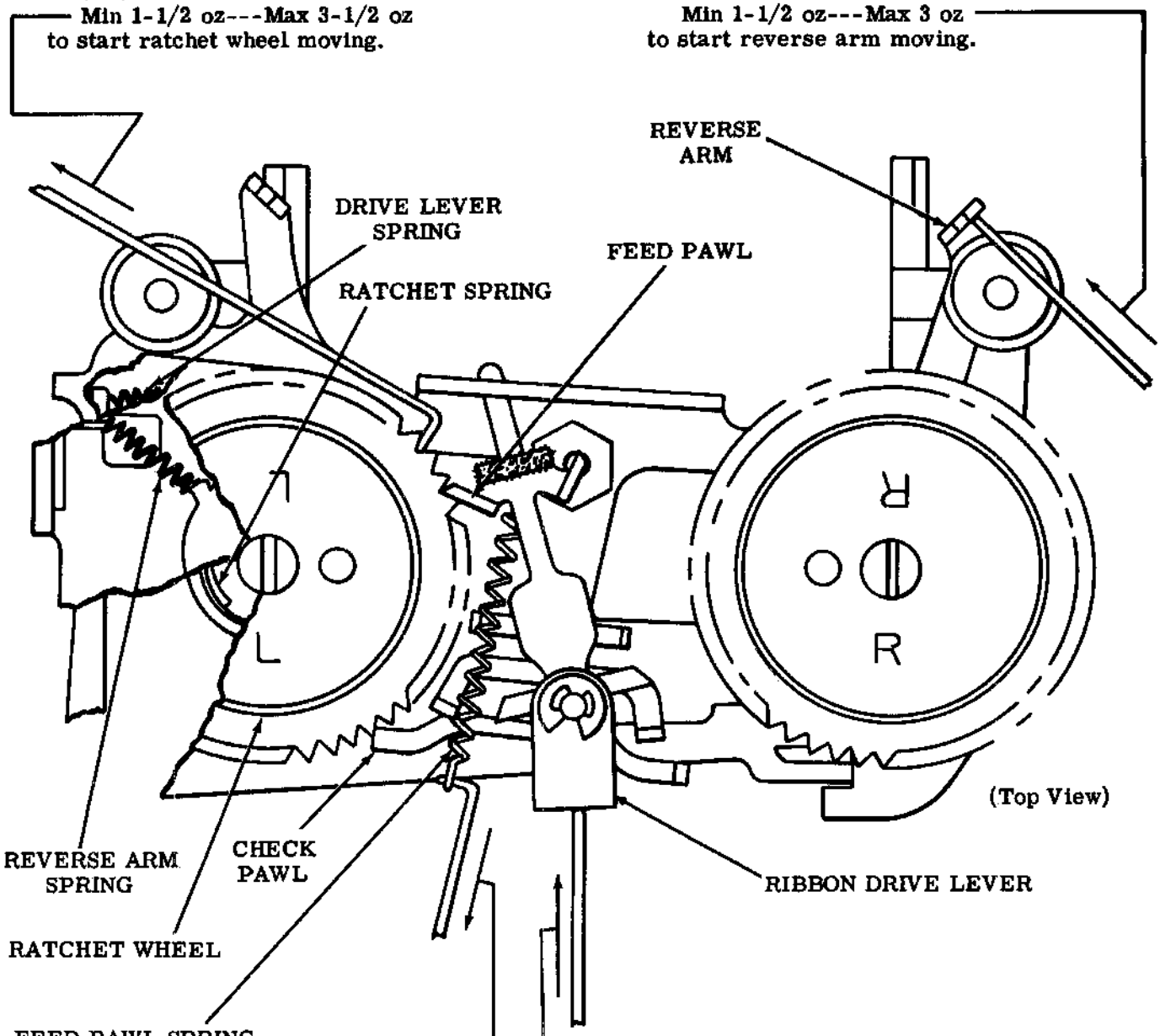
2.56 Carriage Area (continued)

RIBBON RATCHET SPRING

Requirement
With feed and check pawls disengaged from ratchet wheel.
Min 1-1/2 oz---Max 3-1/2 oz
to start ratchet wheel moving.

RIBBON REVERSE ARM SPRING

Requirement
With typing unit in stop condition and ribbon removed
Min 1-1/2 oz---Max 3 oz
to start reverse arm moving.



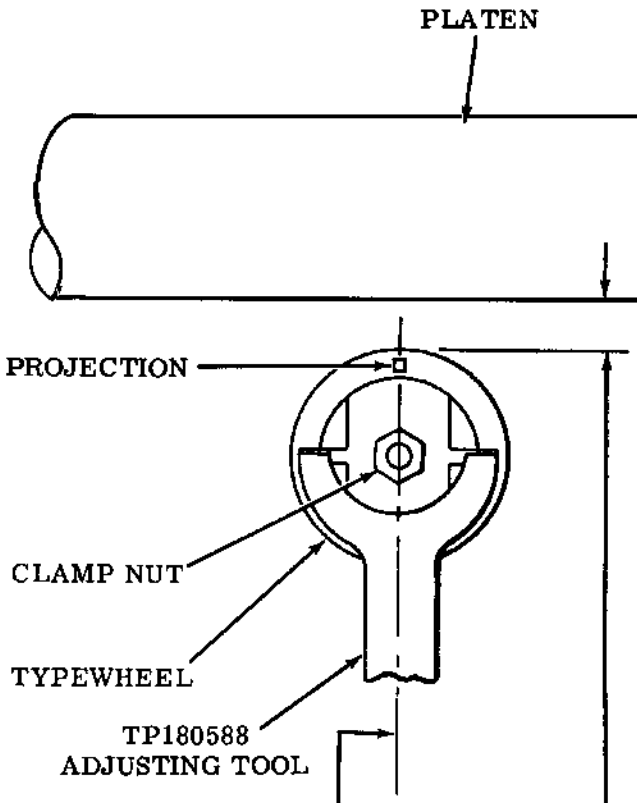
RIBBON FEED PAWL SPRING

Requirement
With typing unit in stop condition
Min 2-1/2 oz---Max 4 oz
to pull feed pawl spring to installed length.

RIBBON DRIVE LEVER SPRING

Requirement
With typing unit in stop condition
Min 5-1/2 oz---Max 9 oz
to start ribbon drive lever moving.

2.57 Carriage Area (continued)



TYPEWHEEL "HOME" POSITION

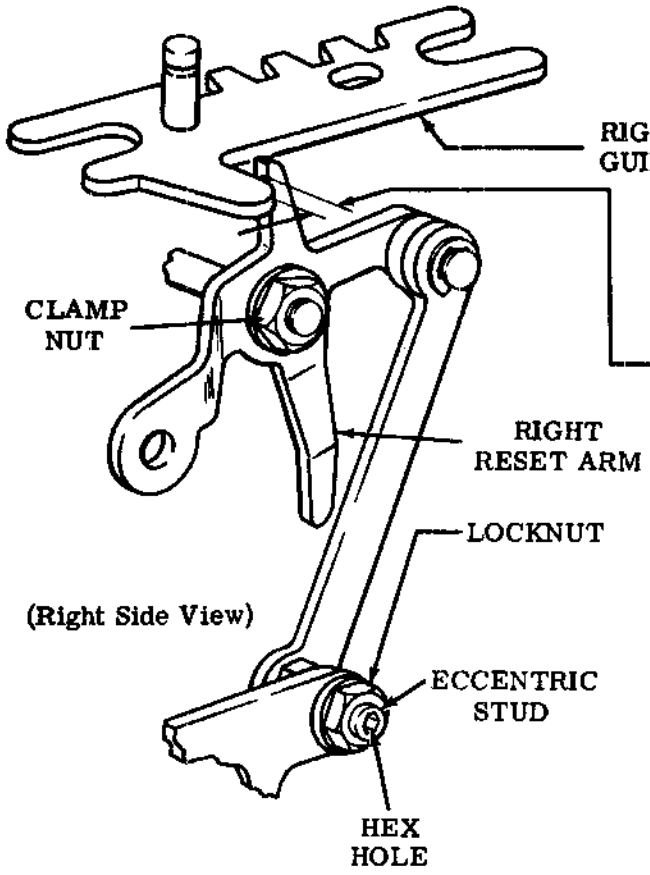
To Check
Place typing unit in the stop condition.

(1) Requirement
The typewheel top surface projection should be at its closest position to the platen.

(2) Requirement
The typewheel top surface projection and the clamp nut should be aligned perpendicular to the platen, as gauged by eye.

To Adjust
Loosen clamp nut and position typewheel using TP180588 adjusting tool. Tighten clamp nut.

2. 58 Carriage Area (continued)



RIGHT SLIDE GUIDEPLATE RESET

Requirement
With typing unit in stop condition
Min some---Max 0.015 inch
between right slide guideplate and the right reset arm when right and left slide guideplates are held toward front to make clearance a maximum.

To Adjust
Loosen eccentric stud locknut. Rotate eccentric stud with hex wrench in hex hole. Tighten locknut.

Related Adjustments
Affects
PRINT TRIP LEVER RELEASE
(Par. 2. 50)

Affected By
PRINT DRIVE LEVER POSITIONING
(Par. 2. 47)

2.60 Carriage Area (continued)

Note: Do not perform the following adjustment on typing units equipped with the two-color printing feature. Instead, perform COLOR SELECTION LATCH OVERTRAVEL (Par. 3.21) and RIBBON GUIDE POSITIONING (Two-Color Printing, Part 3, Variations to Basic Adjustments) (Par. 3.22).

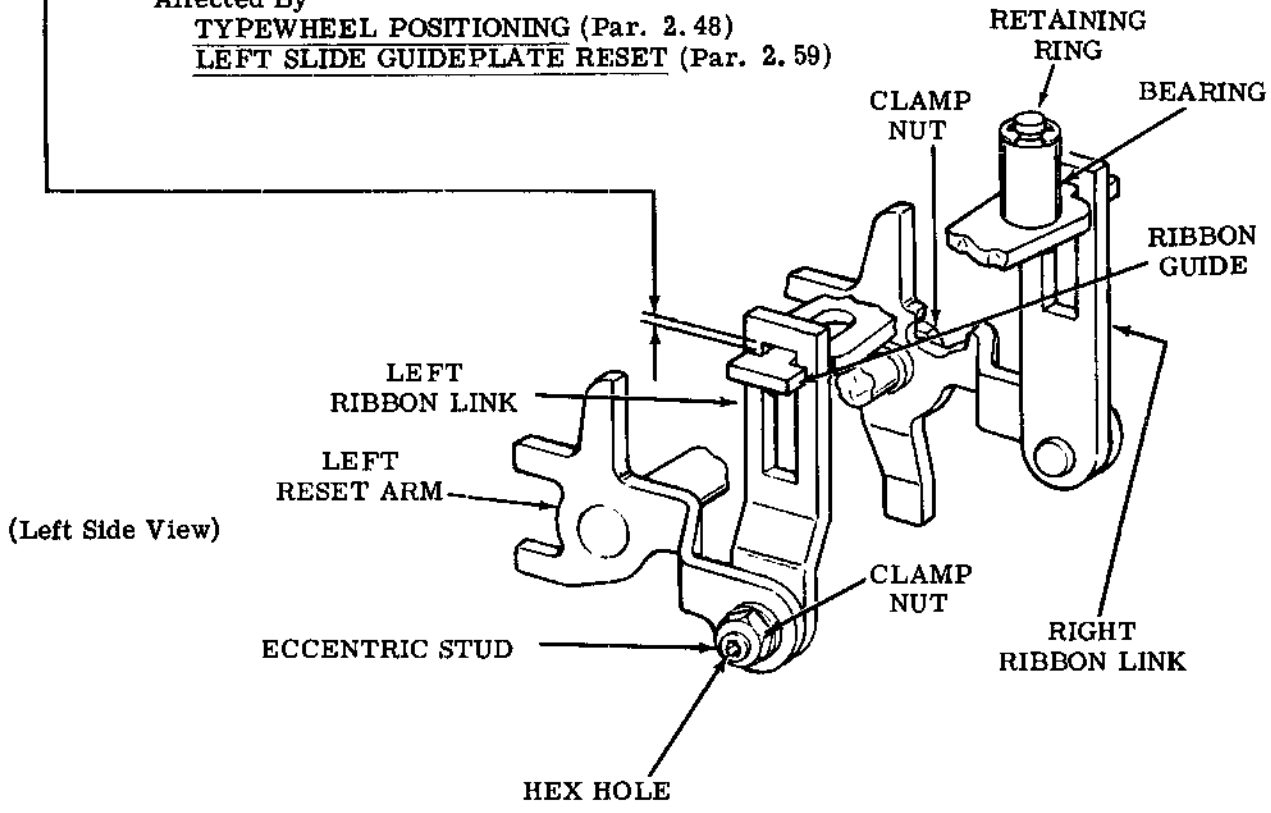
RIBBON POSITIONING

To Check
Trip function clutch and rotate main shaft until carriage drive bail is in its rearmost position. Continue rotating main shaft until the right ribbon link, during its downward travel, just contacts the top surface of the ribbon guide.

Requirement
—Min some---Max 0.010 inch
between the left ribbon link and the ribbon guide as gauged by eye.

To Adjust
Loosen left reset arm clamp nut. Position eccentric stud using hex key wrench in hex hole. Tighten clamp nut.

Related Adjustment
Affected By
TYPEWHEEL POSITIONING (Par. 2.48)
LEFT SLIDE GUIDEPLATE RESET (Par. 2.59)



2.61 Carriage Area (continued)

RIBBON POWER LEVER DRIVE

(1) To Check
Manually operate the typing unit until the carriage drive bail is in the rearmost position. Rotate left ribbon ratchet until the ribbon spool shaft and ribbon spool pin are approximately aligned with the tip of the feed pawl. Seat feed pawl against left ribbon ratchet.

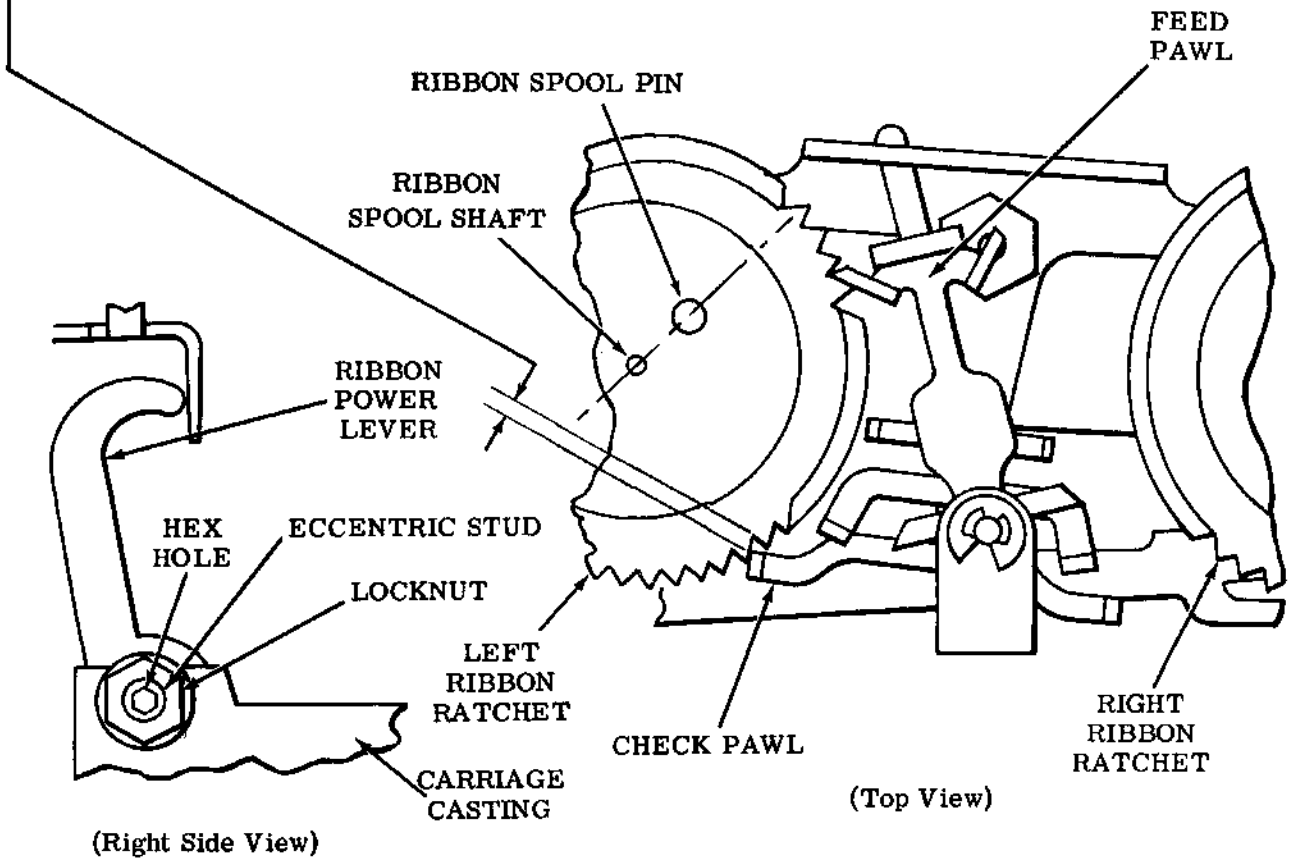
Requirement
Min 0.010 inch---Max 0.045 inch
between face of left ribbon ratchet tooth and the corner tip of check pawl.

(2) To Check
Repeat (1) To Check above, except apply all instructions to right ribbon ratchet.

Requirement
Min 0.010 inch---Max 0.045 inch
between face of right ribbon ratchet tooth and corner tip of check pawl.

To Adjust
Loosen locknut and position the eccentric stud with hex key wrench in hex hole. Tighten locknut.

Note: Position eccentric stud to the bottom of its mounting slot when tightening locknut.



2.62 Form Feed Area

FORM FEED BELT TENSION - S

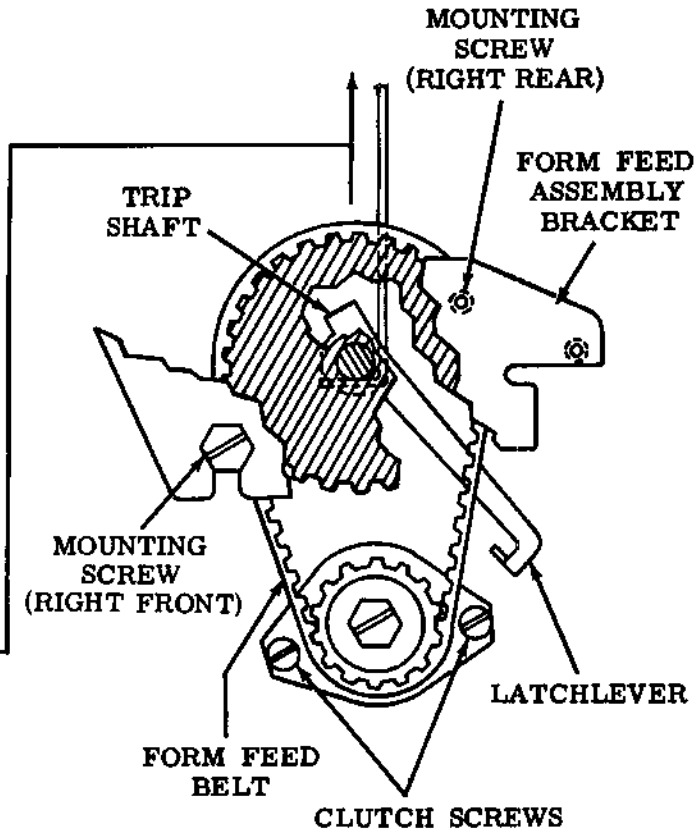
Note 1: Check tension only if the form feed belt is suspected of not meeting its requirement.

Requirement

The form feed belt tension should not be too tight or too loose.

To Adjust

Loosen three form feed assembly bracket mounting screws and hook a spring scale under the trip shaft at the latchlever. Position and pull up with a force of 7 pounds and hold. Tighten the three form feed assembly bracket mounting screws in the following order: first, the right front mounting screw; then, the right rear mounting screw, and finally, the left mounting screw.



(Right Side View)

Related Adjustments

Affects

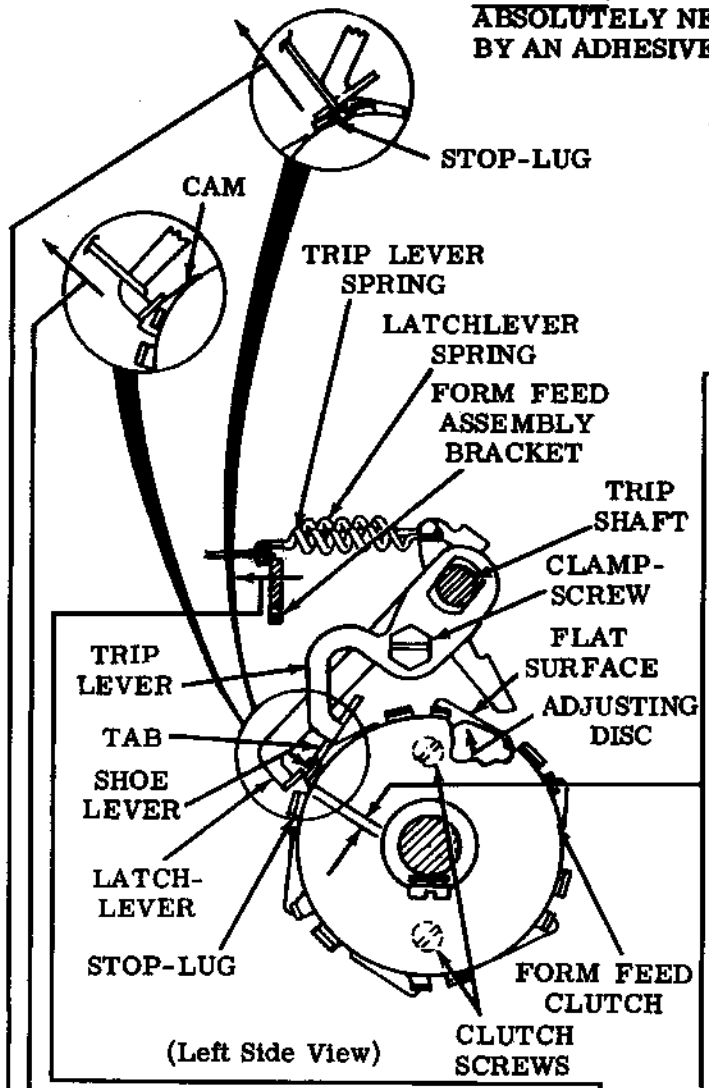
LINE FEED LEVER LINE-UP AND ENDPLAY - S (Par. 2.64)
FORM-OUT LEVER OVERTRAVEL - S (Par. 2.65)
FORM-OUT LEVER — RESET CLEARANCE - S (Par. 2.69 or 2.70)
TRIP LEVER ENGAGEMENT — LINE FEED - S (Par. 2.71)
TRIP LEVER ENGAGEMENT — FINAL - S (Par. 2.72)
TRIP LEVER UPSTOP POSITION - S (Par. 2.73)
LINE FEED SELECTION - S (Par. 2.74)
FORM-OUT CONTACT OPERATING BAIL CLEARANCE - S (Par. 2.76)
IDLER POSITION (Platen Area) - S (Par. 2.81)
DETENT POSITION (Platen Area - S (Par. 2.82)
RESET FOLLOWER LEVER — RESET POSITION (Platen Area) - S (Par. 2.88)
CAM ZERO POSITION (Platen Area) - S (Par. 2.88)

Note 2: Make certain that the shaft is free by rotating reset follower lever. If necessary, free trip shaft by repositioning the left mounting bracket of the form feed assembly bracket against the form feed assembly bracket.

Note 3: The left mounting screw is located on the left side of the form feed bracket.

2.63 Form Feed Area (continued)

CAUTION: DO NOT DISTURB THE CLUTCH SCREWS UNLESS ABSOLUTELY NECESSARY. CLUTCH SCREWS ARE SECURED BY AN ADHESIVE AT THE FACTORY.



CLUTCH SHOE LEVER GAP - S

(1) To Check

Rotate the main shaft until the form feed clutch is in that stop position which brings the flat surface of the adjusting disc to the position illustrated. Disengage (latch) the form feed clutch.

Requirement

Min 0.015 inch---Max 0.040 inch between the stop-lug and the shoe lever.

To Adjust

Loosen clampscrew and position trip lever. Tighten clampscrew.

Note: Do not make the following adjustment unless (1) Requirement cannot be met. If the clutch screws are disturbed, they must be resealed with an application of TP186171 Glyptal adhesive.

(2) To Check

With form feed clutch conditioned as in (1) To Check, measure and record clearance between shoe lever and stop-lug. Raise trip lever to trip (engage) form feed clutch. Fully seat clutch shoes by applying slight pressure against shoe lever along its normal path of forward travel. Again measure and record shoe lever, stop-lug clearance.

Requirement

Clearance between stop-lug and shoe lever

Min 0.055 inch---Max 0.085 inch greater when form feed clutch is engaged than when disengaged.

To Adjust

Loosen the two clutch screws friction tight and position adjusting disc. Apply TP186171 Glyptal adhesive to clutch screw threads. Tighten both screws before adhesive dries.

Requirement

Affects

TRIP LEVER ENGAGEMENT — LINE FEED - S (Par. 2.71)
TRIP LEVER ENGAGEMENT — FINAL - S (Par. 2.72)

LATCHLEVER SPRING - S

Requirement

With latchlever resting on the high part of the cam

Min 3 oz---Max 7 oz

to start latchlever moving.

TRIP LEVER SPRING - S

Requirement

With trip lever tab resting on top of a stop-lug

Early Design

Min 3 oz---Max 4-1/2 oz

to start lever moving.

Late Design

Min 14 oz---Max 18 oz

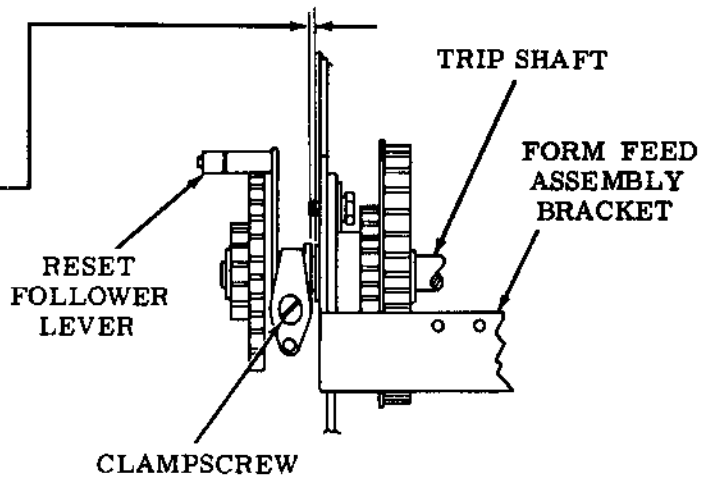
to pull trip lever spring to installed length.

2.64 Form Feed Area (continued)

TRIP SHAFT ENDPLAY - S

Requirement
Min some---Max 0.012 inch endplay of the trip shaft.

To Adjust
Loosen clampscrew and position reset follower lever on trip shaft. Tighten clampscrew.



(Rear View)

LINE FEED LEVER LINE-UP AND ENDPLAY - S

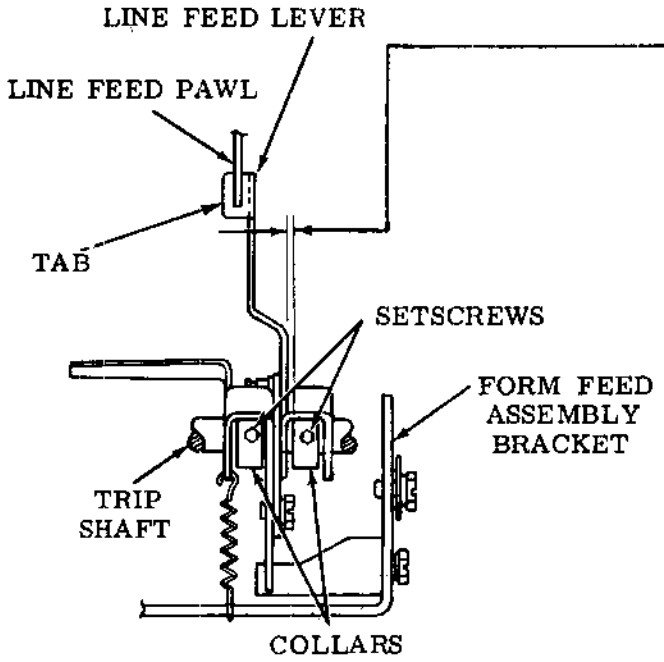
(1) Requirement
The line feed pawl should engage the flat on the tab of the line feed lever.

(2) Requirement
With all endplay taken up toward the right Min some---Max 0.012 inch between line feed lever and collar.

(3) Requirement
There must be some clearance between the line feed lever and the main shaft gear.

To Adjust
Loosen collar setscrews and position collars to meet Requirements (1) and (2). Loosen main shaft gear screw and position main shaft gear to meet Requirement (3). Tighten all screws.

Related Adjustment
Affected By
FORM FEED BELT TENSION - S
(Par. 2.62)



(Front View)

2.65 Form Feed Area (continued)

FORM-OUT LEVER OVERTRAVEL - S

To Check
With the form-out code combination (--34---8) set up in selector, rotate the main shaft until the form-out function lever is in its lowermost position.

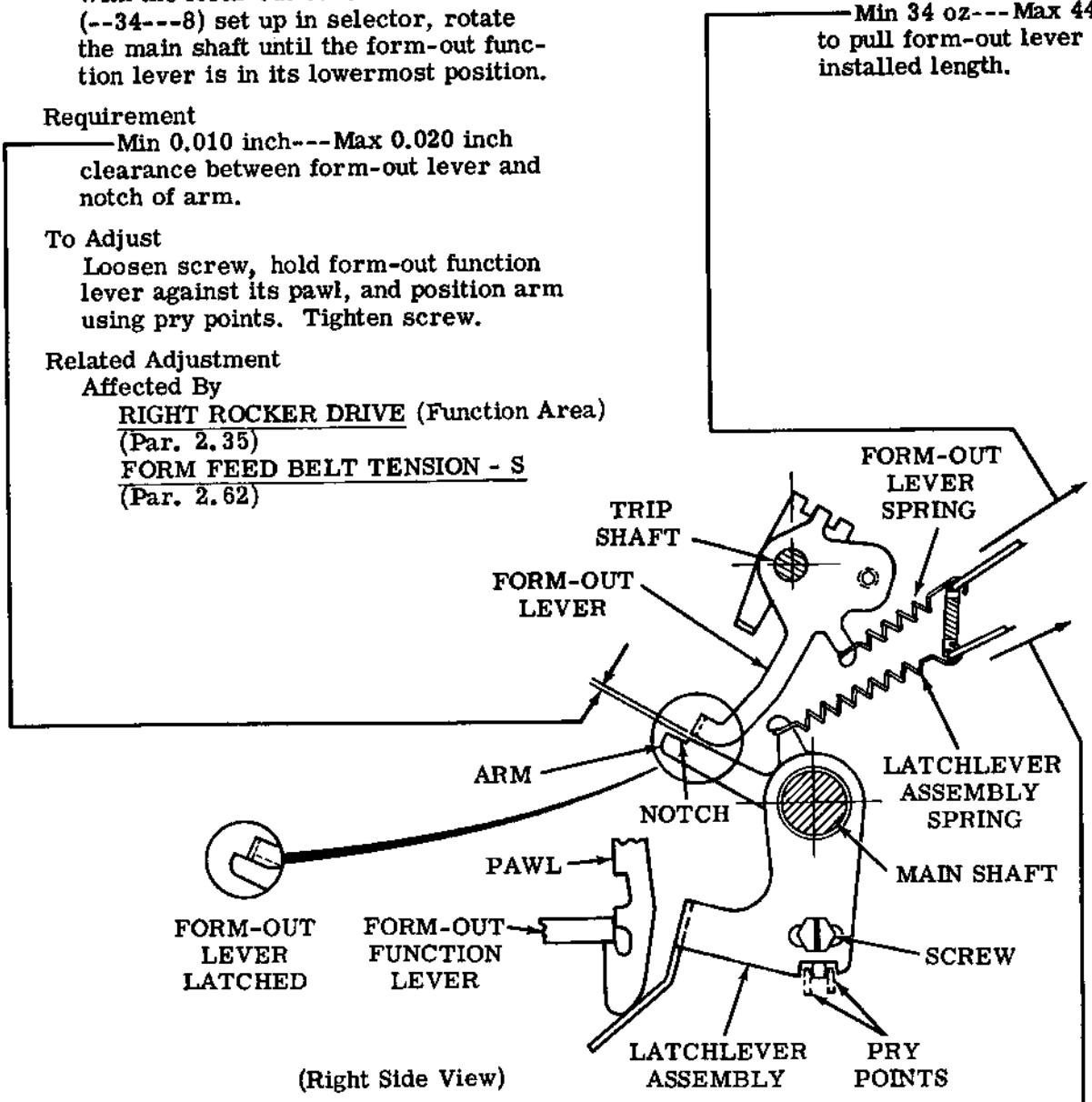
Requirement
Min 0.010 inch---Max 0.020 inch clearance between form-out lever and notch of arm.

To Adjust
Loosen screw, hold form-out function lever against its pawl, and position arm using pry points. Tighten screw.

Related Adjustment
Affected By
RIGHT ROCKER DRIVE (Function Area) (Par. 2.35)
FORM FEED BELT TENSION - S (Par. 2.62)

FORM-OUT LEVER SPRING - S

Requirement
With the form-out lever latched
Min 34 oz---Max 44 oz
to pull form-out lever spring to installed length.



(Right Side View)

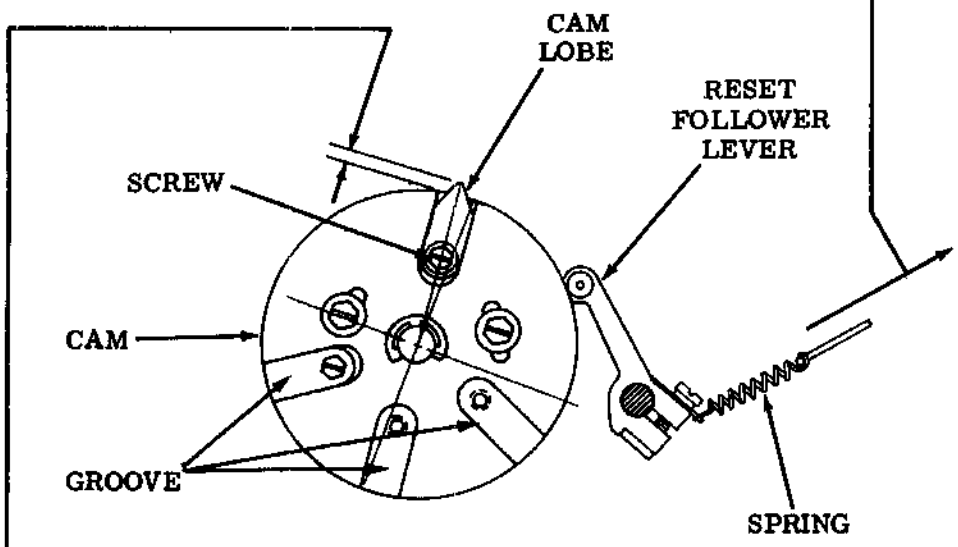
LATCHLEVER ASSEMBLY SPRING - S

Requirement
With the form-out lever latched
Min 9 oz---Max 11 oz
to pull latchlever assembly spring to installed length.

2.66 Form Feed Area (continued)

RESET FOLLOWER LEVER SPRING - S

Requirement
With reset follower lever on low part of cam
Min 12 oz---Max 16 oz
to pull reset follower lever spring to installed length.



(Right Side View)

CAM LOBE POSITION - S

Note: Cam lobes, in addition to the one opposite the three closely spaced grooves, should be adjusted according to the FORM-OUT LEVER — RESET CLEARANCE - S (Par. 2.69 or 2.70) adjustment.

Requirement
The top of the cam lobe should be
Min 0.065 inch---Max 0.070 inch
above the low point of the cam.

To Adjust
Loosen screw and position the cam lobe.
Tighten screw.

Related Adjustment
Affects
FORM-OUT LEVER — RESET CLEARANCE - S (Par. 2.69 or 2.70)

2.67 Form Feed Area (continued)

TRIP LEVER ENGAGEMENT — FORM-OUT - S

Note 1: The following adjustment applies only to early design typing units.

To Check

Rotate form feed clutch until a shoe lever just about contacts the trip lever. Hold form-out lever against latching surface of latchlever assembly.

Note 2: If the reset lever and/or line feed bail interfere when checking this adjustment,

(a) Loosen reset lever clampscrew and position reset lever so that it does not interfere.

(b) Loosen line feed downstop screw and position downstop to lowermost position. Position line feed lever so that line feed bail does not interfere.

(1) Requirement

Top surface of shoe lever should not be above top surface of trip lever.

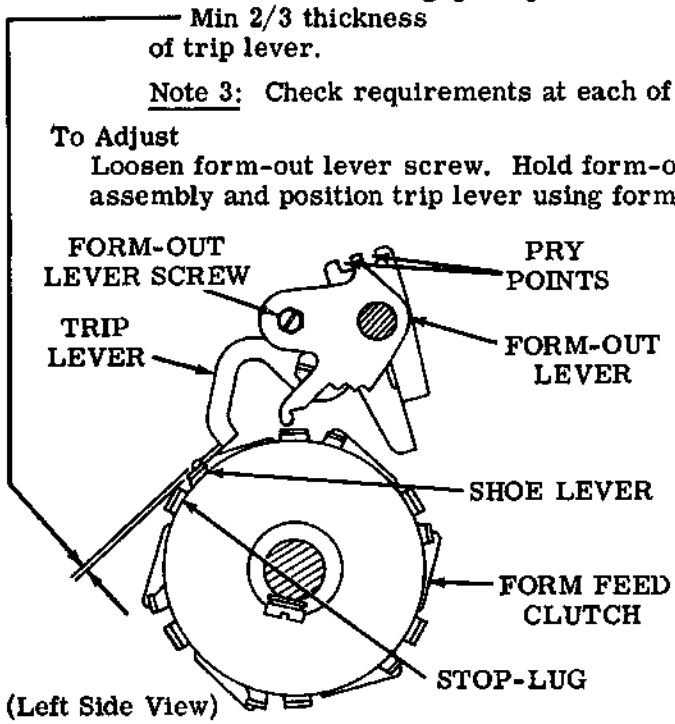
(2) Requirement

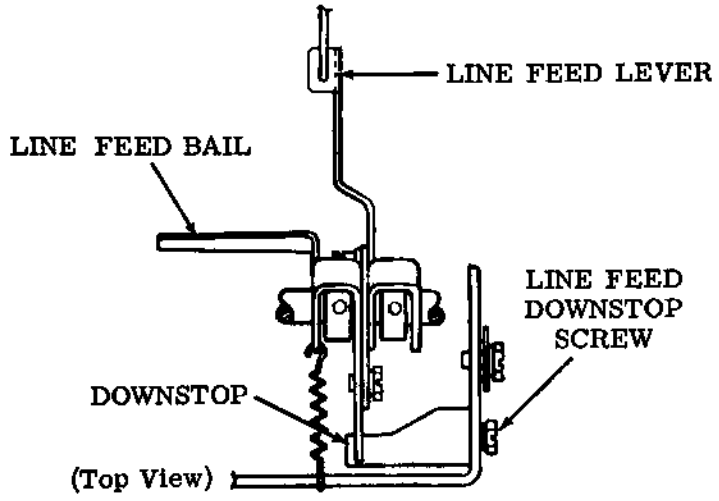
Shoe lever should engage trip lever Min 2/3 thickness of trip lever.

Note 3: Check requirements at each of the six shoe levers.

To Adjust

Loosen form-out lever screw. Hold form-out lever against latching surface of latchlever assembly and position trip lever using form-out lever pry points. Tighten all screws.





Related Adjustments

Affects

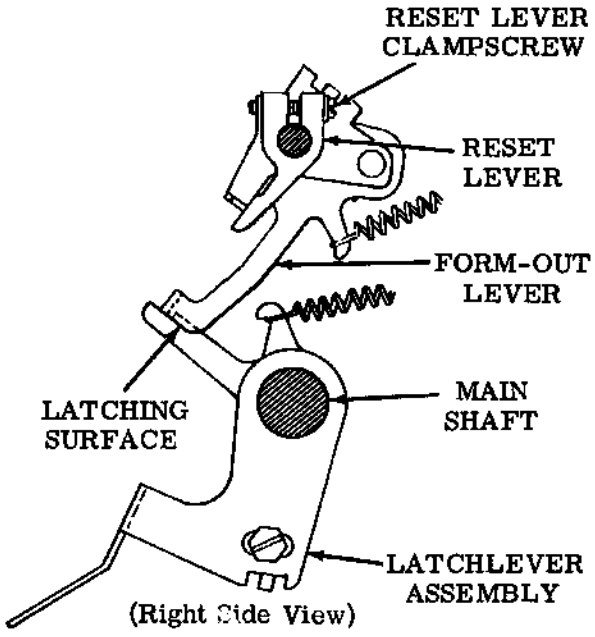
TRIP LEVER ENGAGEMENT — LINE FEED - S (Par. 2.71)

FORM-OUT CONTACT OPERATING BAIL CLEARANCE - S (Par. 2.76)

Note 4: Check the following adjustments if disturbed:

FORM-OUT LEVER — RESET CLEARANCE - S (Par. 2.69 or 2.70)

LINE FEED SELECTION - F (Par. 2.102)



2.68 Form Feed Area (continued)

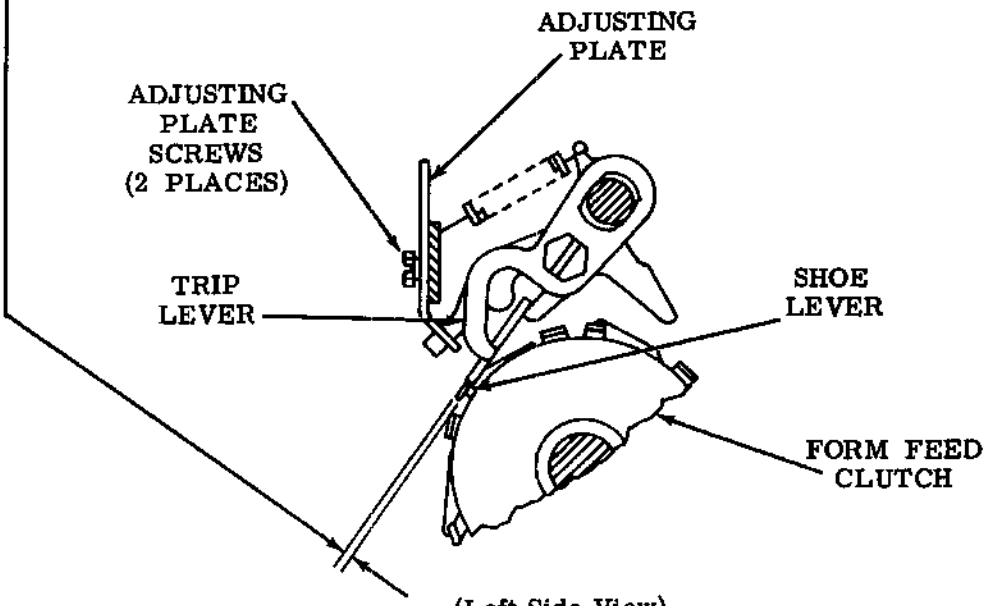
TRIP LEVER ENGAGEMENT — PRELIMINARY - S

Note: This adjustment applies to late design typing units containing the TP185998 nickel plated plate.

To Check
Rotate form feed clutch until a shoe lever is just about to contact the trip lever.

Requirement
Top surface of trip lever should be flush to 0.010 inch below top surface of shoe lever.

To Adjust
Loosen the two adjusting plate screws and position adjusting plate. Tighten both screws.



(Left Side View)

2.69 Form Feed Area (continued)

FORM-OUT LEVER — RESET CLEARANCE - S (Early Design)

To Check

With the typing unit in stop condition, rotate the main shaft until all clutch mounting screw-heads are in the vertical position. Place the reset follower lever on the high point of the cam lobe by pushing in on the zeroizing button and rotating the pulley.

(1) Requirement

Min 0.005 inch---Max 0.020 inch between the latching surface of the arm and the form-out lever.

(2) Requirement

The trip lever and latchlever should have Min some---Max 0.012 inch endplay.

To Adjust

Place reset follower lever on high point of cam lobe. Loosen clampscrew friction tight and, using pry point, position the reset lever. Tighten clampscrew.

Related Adjustments

Affects

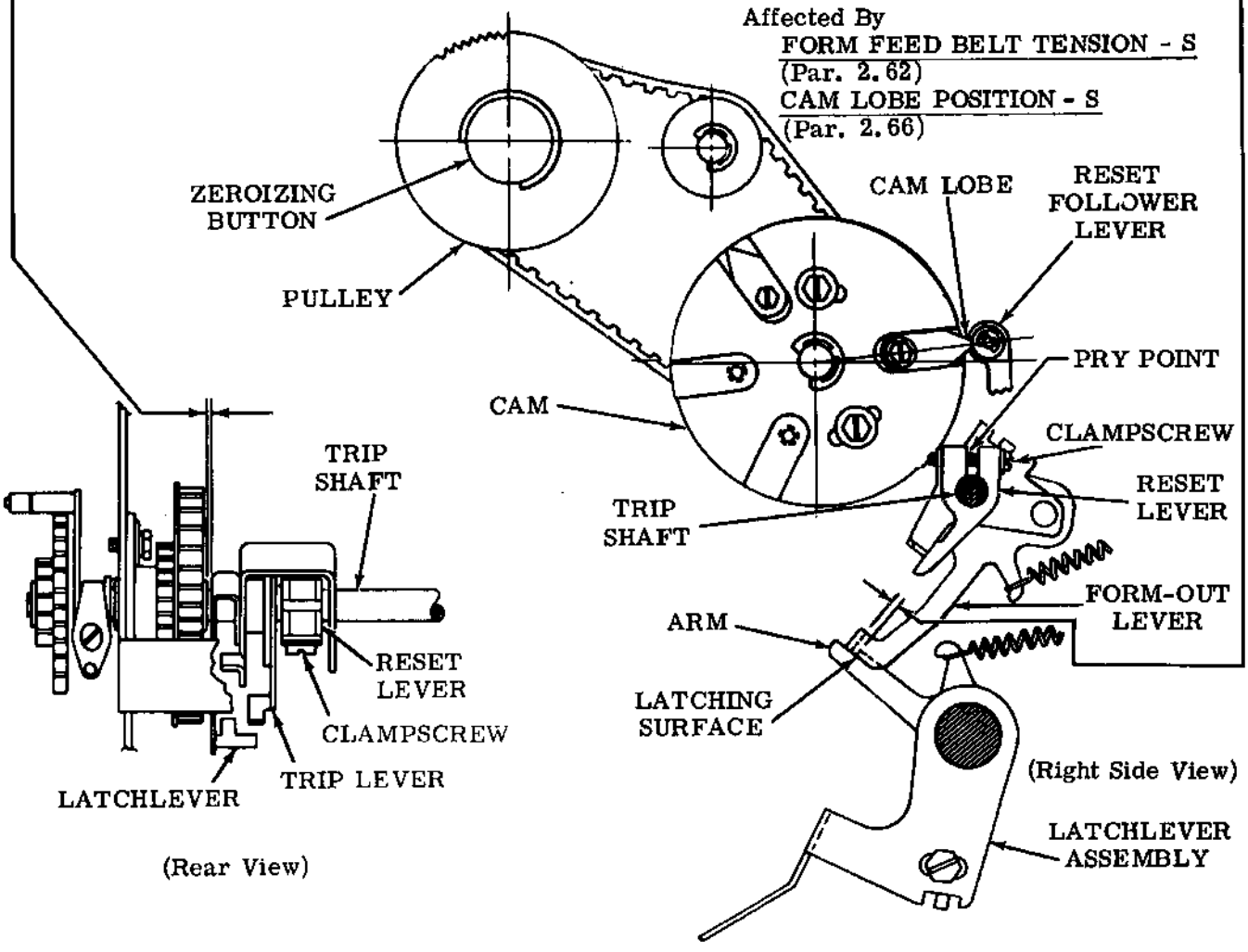
TRIP LEVER ENGAGEMENT — LINE FEED - S (Par. 2.71)

FORM OUT CONTACT OPERATING BAIL CLEARANCE - S (Par. 2.76)

Affected By

FORM FEED BELT TENSION - S (Par. 2.62)

CAM LOBE POSITION - S (Par. 2.66)



2.70 Form Feed Area (continued)

FORM-OUT LEVER — RESET CLEARANCE - S (Late Design)

Note: Check (1) To Check only when making a complete readjustment of typing unit.

(1) To Check

With typing unit in stop condition rotate main shaft until all clutch mounting screwheads are in vertical position. Place reset follower lever on low part of cam by pushing in on zeroizing button and rotating pulley. Push down on arm of latchlever assembly to unlatch form-out lever.

Requirement

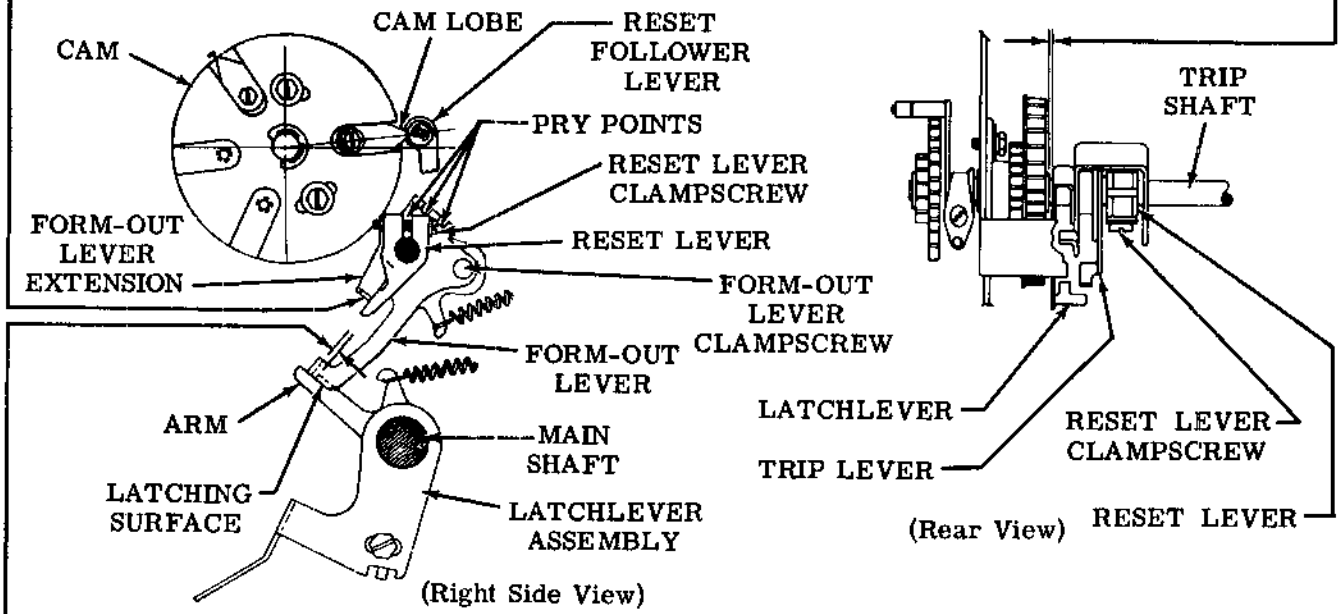
(a) Reset lever should just touch underside of form-out lever extension.

(b) The trip lever and latchlever should have

Min some---Max 0.012 inch endplay.

To Adjust

Loosen reset lever clampscrew and position reset lever using pry point. Tighten clampscrew.



(2) To Check

With typing unit in stop condition rotate main shaft until all clutch mounting screwheads are in vertical position. Place reset follower lever on high point of cam lobe by pushing in on zeroizing button and rotating pulley.

Requirement

Min 0.005 inch---Max 0.020 inch between latching surface of arm and form-out lever.

To Adjust

With form-out lever clampscrew friction tight, position form-out lever using pry points. Tighten clampscrew.

Related Adjustments

Affects

TRIP LEVER ENGAGEMENT — FINAL - S (Par. 2.72)

FORM-OUT CONTACT OPERATING BAIL CLEARANCE - S (Par. 2.76)

Affected By

FORM FEED BELT TENSION - S (Par. 2.62)

CAM LOBE POSITION - S (Par. 2.66)

2.71 Form Feed Area (continued)

Note 1: The following adjustment applies only to early design typing units.

TRIP LEVER ENGAGEMENT — LINE FEED - S

To Check
Rotate form feed clutch until a shoe lever just about contacts the trip lever. Place the reset follower lever on the high point of the cam lobe by pushing in on the zeroizing button and rotating the pulley.

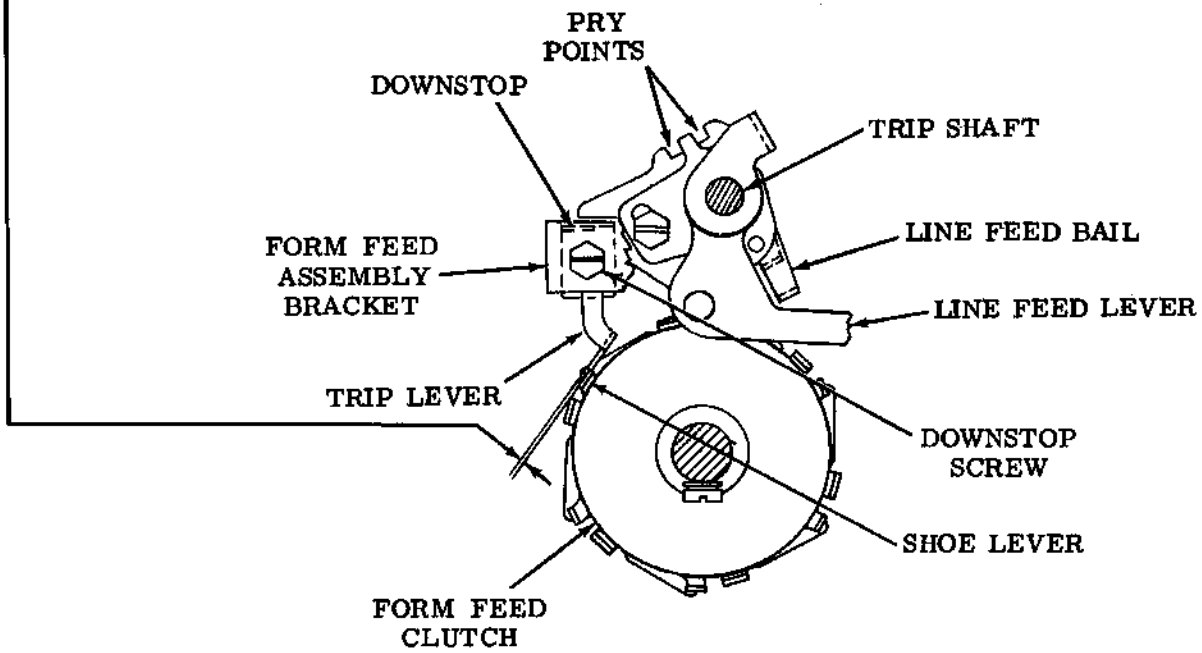
(1) Requirement
Top surface of shoe lever should never be above top surface of trip lever.

(2) Requirement
Shoe lever should engage trip lever
— Min 2/3 thickness of trip lever.

Note 2: Check (1) and (2) Requirement at each of six shoe levers.

To Adjust
Loosen downstop screw and position downstop so that line feed bail positions trip lever to meet (1) and (2) Requirements. Tighten screw.

Related Adjustments
Affects
LINE FEED SELECTION - S (Par. 2.74)
FORM FEED BELT TENSION - S (Par. 2.62)
CLUTCH SHOE LEVER GAP - S (Par. 2.63)
TRIP LEVER ENGAGEMENT — FORM-OUT - S (Par. 2.67)
FORM-OUT LEVER — RESET CLEARANCE - S (Par. 2.69 or 2.70)



(Left Side View)

2.72 Form Feed Area (continued)

TRIP LEVER ENGAGEMENT — FINAL - S

Note: This adjustment applies to late design typing units containing the TP185998 nickel plated plate.

To Check

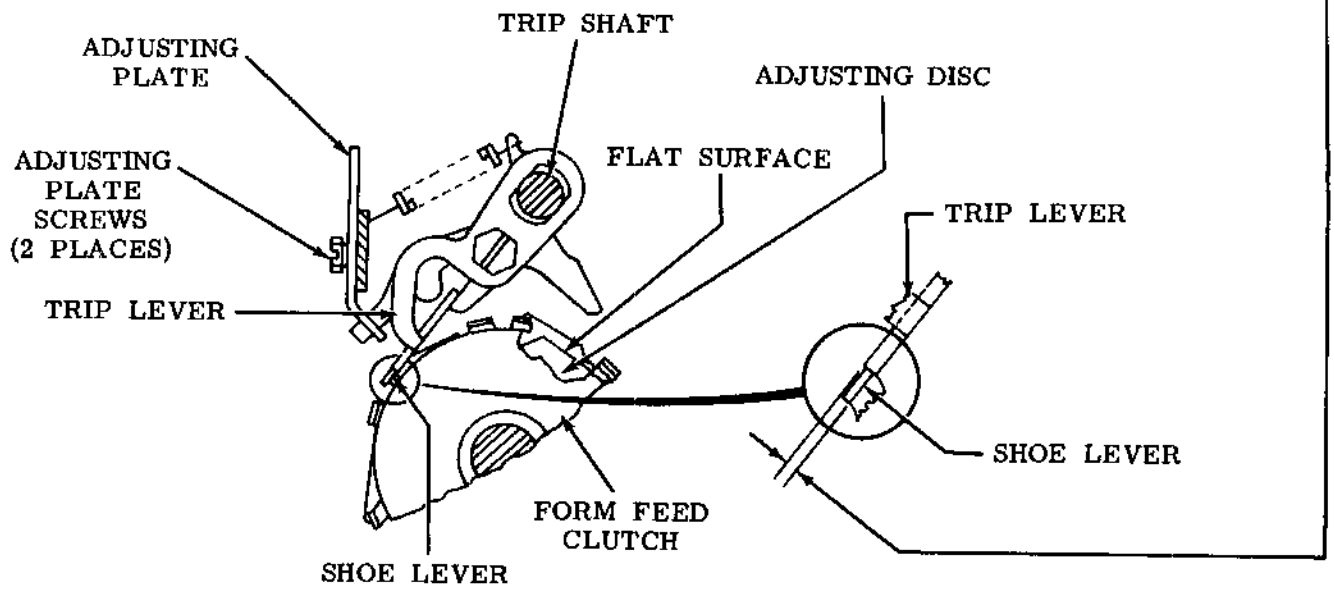
Rotate main shaft until the flat surface of the form feed clutch adjusting disc is positioned as illustrated. Disengage (latch) form feed clutch. Continue rotating main shaft until all clutch mounting screwheads are in a vertical position. Trip form feed clutch and rotate main shaft until the advancing shoe lever is just about to contact the trip lever.

Requirement

Shoe lever should be aligned with trip lever.

To Adjust

Loosen two adjusting plate screws and position adjusting plate. Tighten both screws.



(Left Side View)

Related Adjustments

Affects

FORM-OUT CONTACT OPERATING BAIL CLEARANCE - S (Par. 2.76)

Affected By

FORM FEED BELT TENSION - S (Par. 2.62)
CLUTCH SHOE LEVER GAP - S (Par. 2.63)
FORM-OUT LEVER — RESET CLEARANCE - S (Par. 2.69)

2.73 Form Feed Area (continued)

TRIP LEVER UPSTOP POSITION - S

Note: The following adjustment applies only to early design typing units.

To Check

Rotate main shaft until the flat surface of the form feed clutch adjusting disc is positioned as illustrated. Disengage (latch) the form feed clutch. Resume rotating the main shaft until all the clutch mounting screwheads are in a vertical position. Press down the line feed bail to trip clutch and rotate main shaft until stop-lug is directly under the trip lever.

Requirement

Min 0.020 inch---Max 0.035 inch between trip lever and stop-lug.

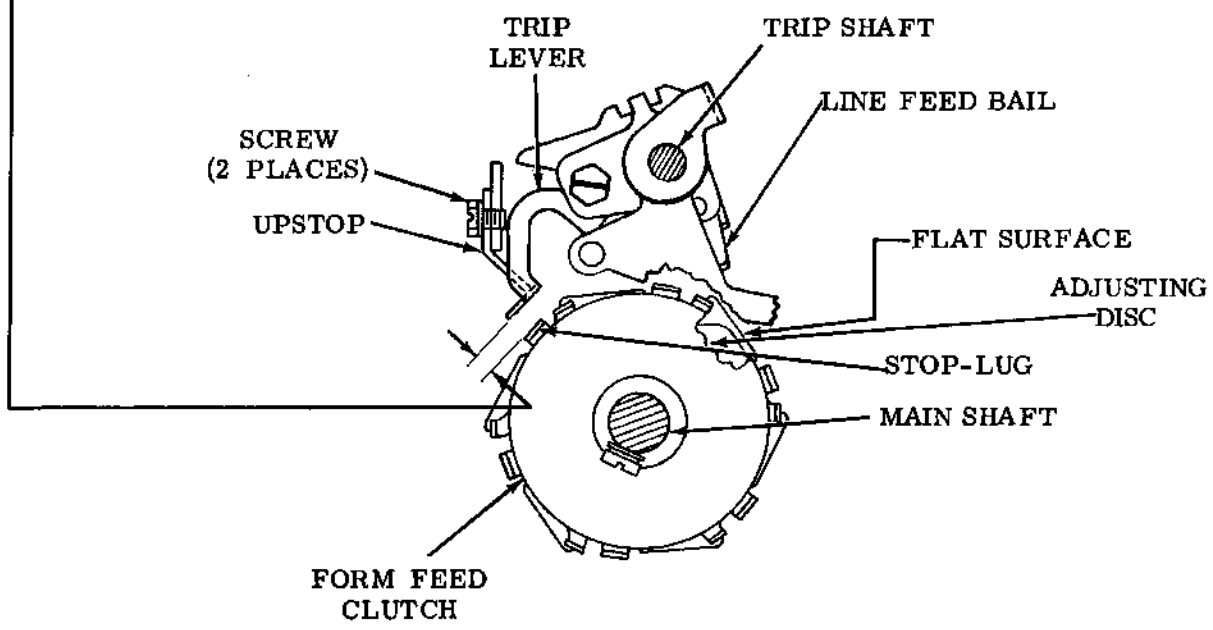
To Adjust

Loosen upstop screws and position upstop. Tighten screws.

Related Adjustment

Affected By

FORM FEED BELT TENSION - S (Par. 2.62)



(Left Side View)

2.74 Form Feed Area (continued)

LINE FEED BAIL SPRING - S

Requirement
Early Design
Min 4 oz---Max 8 oz

Late Design
Min 2 oz---Max 4 oz
to pull line feed bail spring to installed length.

LINE FEED LEVER SPRING - S

Requirement
Early Design
With arm held against downstop
Min 21 oz---Max 35 oz
to start line feed lever moving.

Late Design
Min 27 oz---Max 40 oz
to push arm down until line feed lever contacts pawl.

Note: Late design typing units are not equipped with a downstop.

LINE FEED SELECTION - S

To Check
Place typing unit in stop condition.

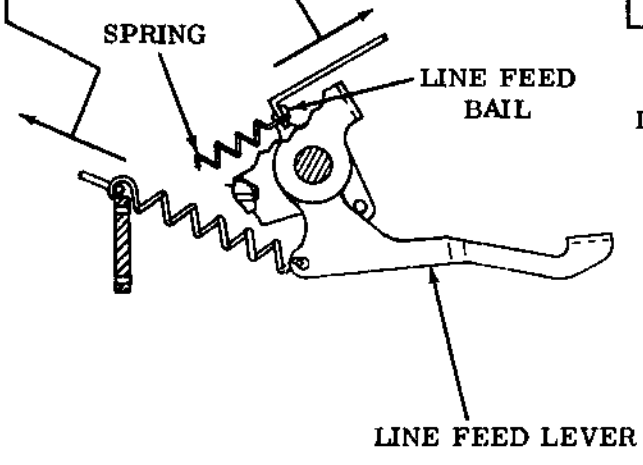
Requirement
Single line feed
Min 0.110---Max 0.130 inch
between pawl and line feed lever.

Double line feed
Min zero---Max 0.010 inch
between pawl and line feed lever.

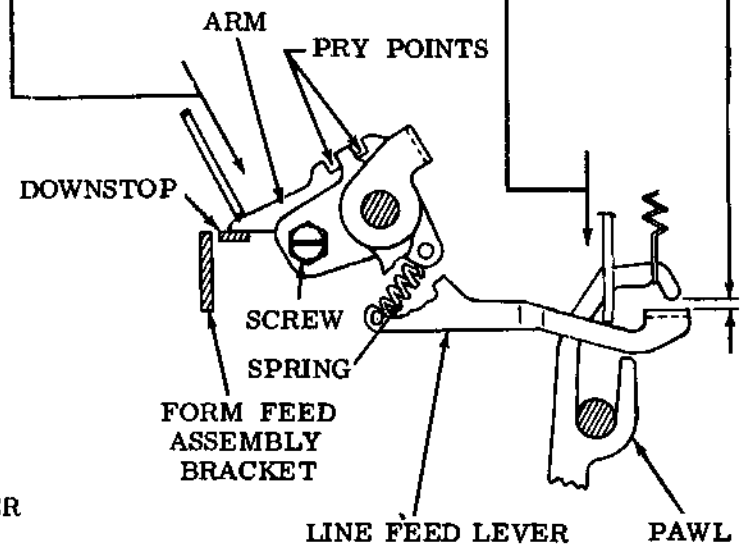
To Adjust
Early Design
While holding rear part of line feed lever against downstop, loosen screw friction tight. Position line feed lever using pry points. Tighten screw.

Late Design
With screw friction tight, position line feed lever using pry points. Tighten screw.

Related Adjustments
Affected By
FORM FEED BELT TENSION - S (Par. 2.62)
TRIP LEVER ENGAGEMENT — LINE FEED - S (Par. 2.71)
LINE FEED PAWL STRIPPING - S (Par. 2.75)



(Left Side View)



(Left Side View)

2.75 Form Feed Area (continued)

LINE FEED PAWL STRIPPING - S

To Check

Set up the typing unit for single line feed (LINE FEED SELECTION - S (Par. 2.74) adjustment). Push the line feed strip lever down and allow the line feed upstop pawl to assume its normal position against the line feed strip lever. Manually set up the line feed code combination (-2-4---8) in the selector and rotate the main shaft until the line feed pawl just strips off the line feed function lever.

Requirement

The trip lever should fall
Min on---Max 0.035 inch
before stop-lug.

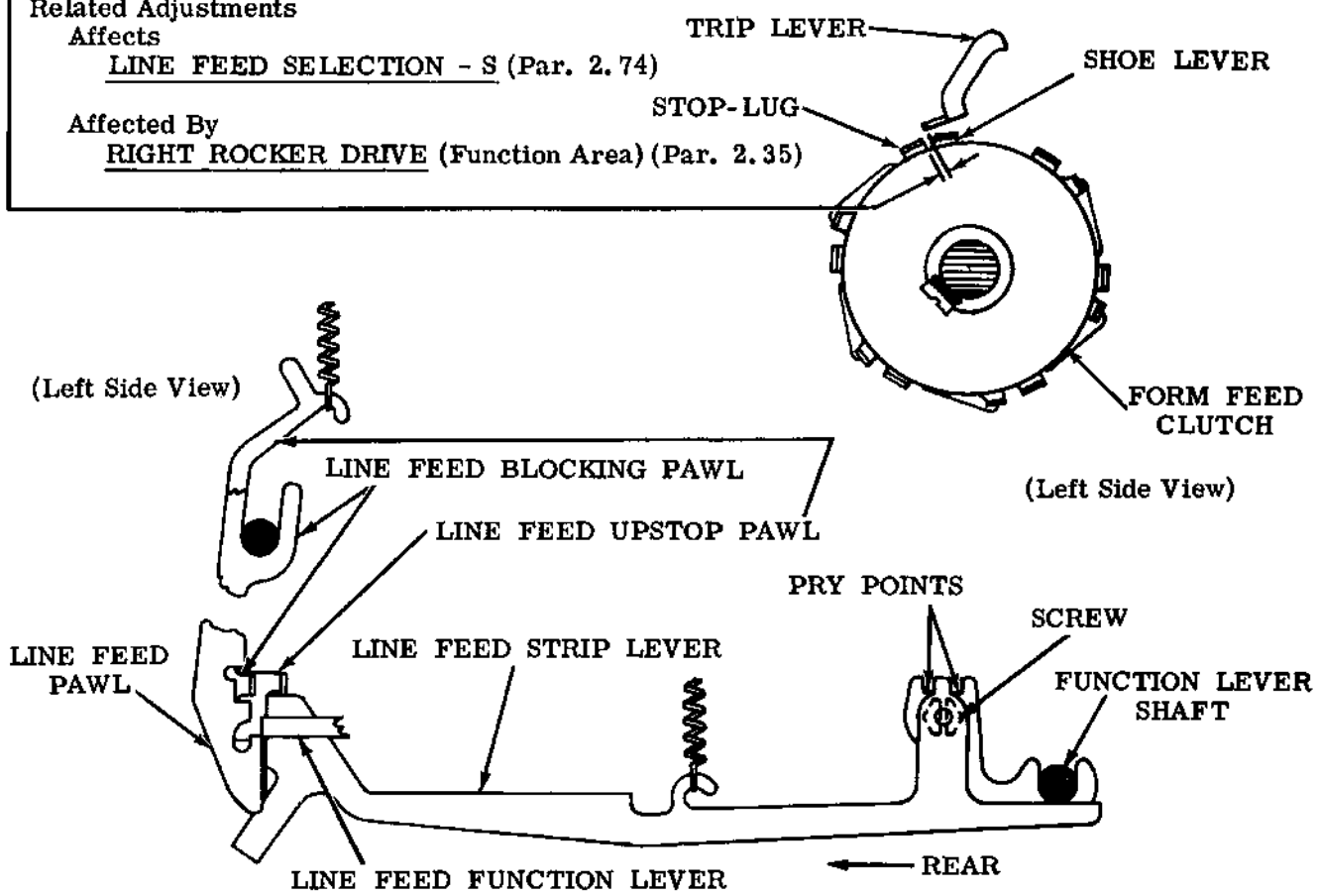
To Adjust

(a) Loosen screw friction tight. Using pry points position line feed strip lever rearward three-fourths of its full adjusting range.
(b) Check LINE FEED SELECTION - S (Par. 2.74) adjustment for single line feed.
(c) Set up line feed code combination (-2-4---8) in selector and rotate main shaft until line feed pawl just strips off line feed function lever.
(d) Check requirement and tighten screw if requirement is met.
(e) If requirement is not met, move line feed function lever slightly toward front of typing unit. Repeat steps (b), (c), and (d). Continue this procedure until requirement is met.

Related Adjustments

Affects
LINE FEED SELECTION - S (Par. 2.74)

Affected By
RIGHT ROCKER DRIVE (Function Area) (Par. 2.35)



2.76 Form Feed Area (continued)

FORM-OUT CONTACT OPERATING BAIL CLEARANCE - S

To Check
With the typing unit in stop condition, place the reset follower lever on the low part of the cam by pushing in on the zeroizing button and rotating the pulley until the required situation is obtained.

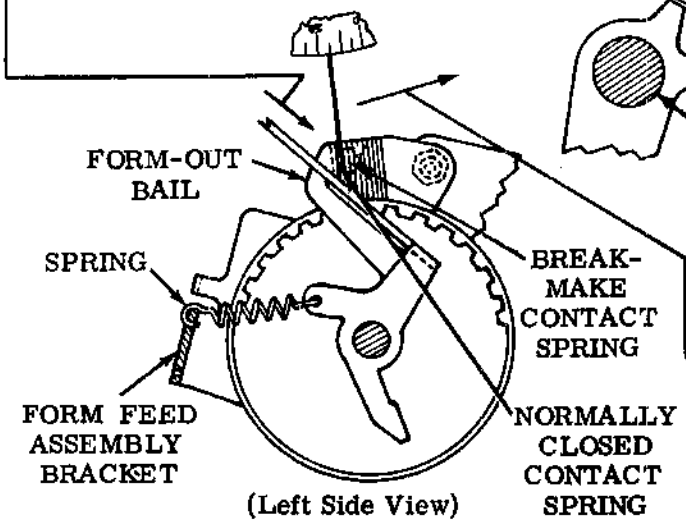
Requirement
Min 0.005 inch---Max 0.015 inch between form-out bail and insulator.

To Adjust
Loosen clampscrew and position contact bracket. Tighten clampscrew.

Related Adjustment
Affected By
FORM FEED BELT TENSION - S (Par. 2.62)
TRIP LEVER ENGAGEMENT — FORM-OUT - S (Par. 2.67)

FORM-OUT BAIL SPRING - S

Requirement
With the form-out lever latched
Min 4 oz---Max 8 oz
to start form-out bail spring moving.

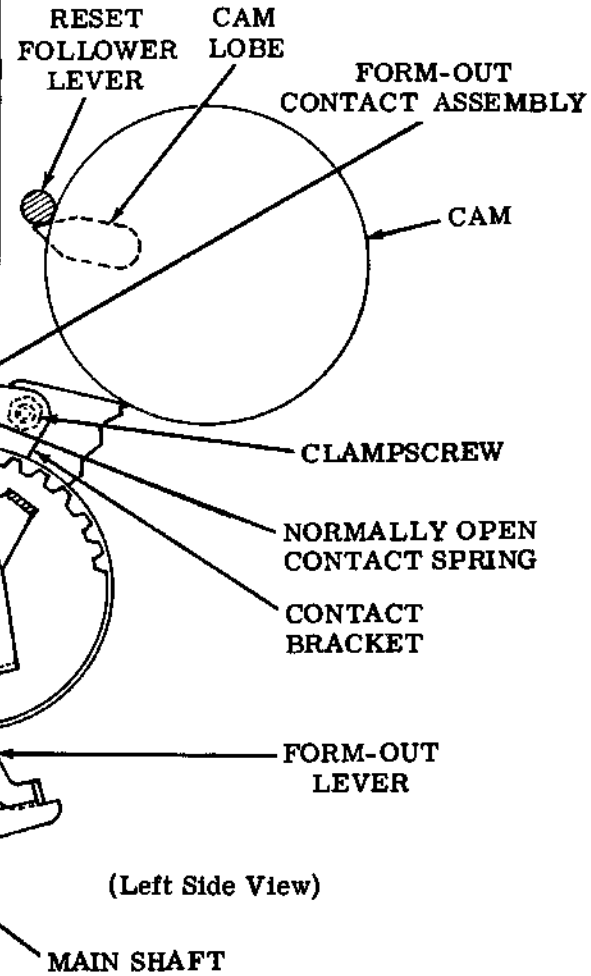


(Left Side View)

FORM-OUT CONTACT PRESSURE AND GAP - S

(1) Requirement
With the form-out bail not in contact with the insulator
Min 0.008 inch---Max 0.018 inch between a contact of the break-make contact spring and the contact of the normally open contact spring.

To Adjust
Bend the normally open contact spring.



(Left Side View)

(2) Requirement
With the form-out bail not in contact with the insulator
Min 15 grams---Max 20 grams to separate break-make contact spring and the normally closed contact spring.

To Adjust
Bend the normally closed contact spring.

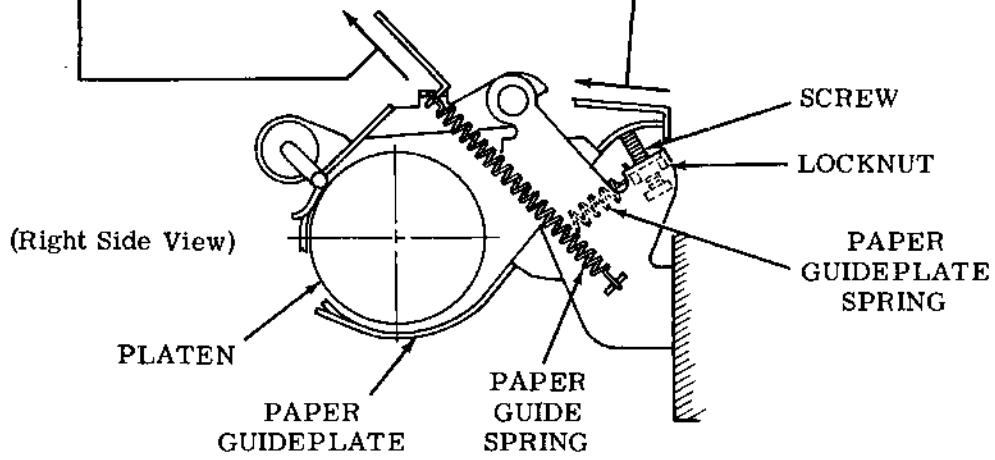
2.77 Platen Area

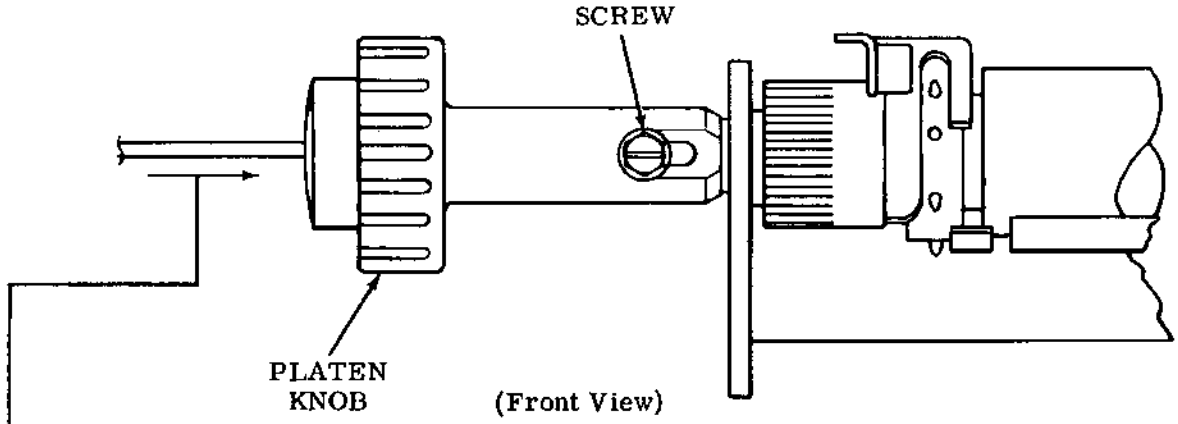
PAPER GUIDE SPRING - S

Requirement
With paper guides resting on platen
Min 16 oz---Max 18 oz
to pull each paper guide spring to installed length.

PAPER GUIDEPLATE SPRING - S

Requirement
With a spring scale positioned at middle of paper guideplate
Min 3-1/2 oz---Max 7-1/2 oz
to start paper guideplate moving.





PLATEN KNOB POSITION - S

Requirement
The platen knob should be fully seated toward the right.

To Adjust
When typing unit is on its subbase and cover is installed, loosen screw and position platen knob. Tighten screw.

PLATEN KNOB SPRING - S

Requirement
With a spring scale positioned on platen knob
Min 15 oz---Max 23 oz
to start platen knob moving.

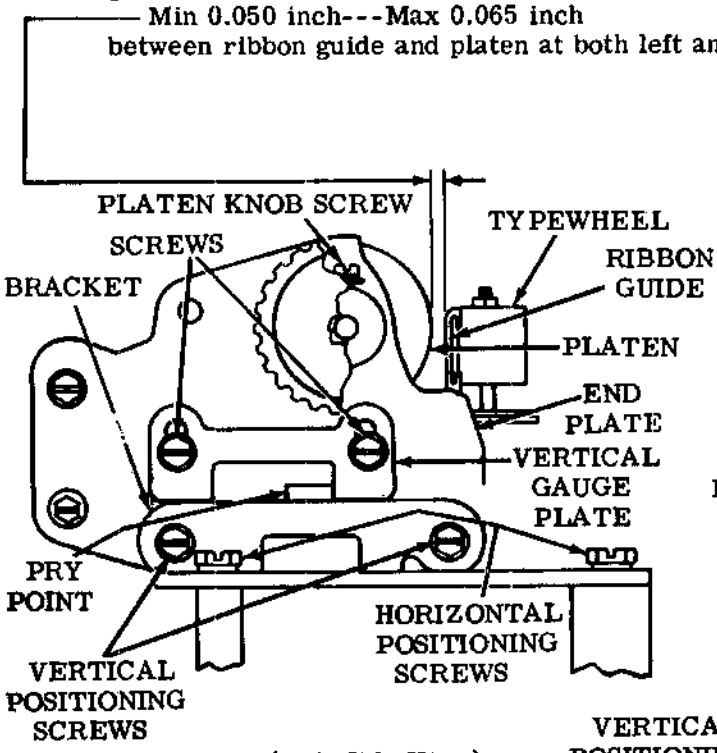
2.78 Platen Area (continued)

Note 1: If the idler has not previously been backed off, loosen the nut securing the idler post and position idler to low point in slot before making the following adjustment.

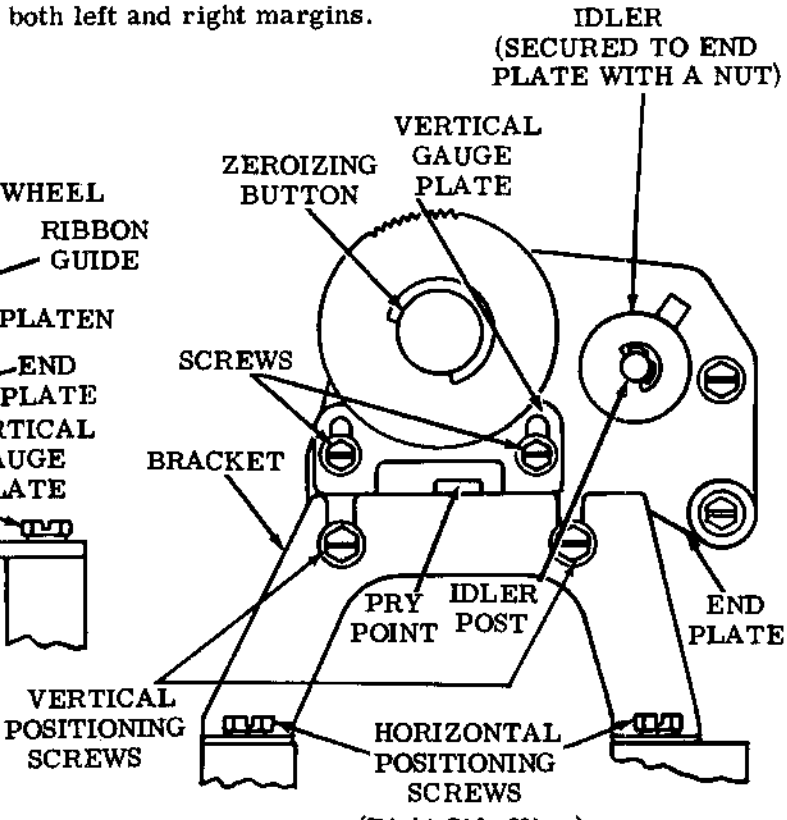
PLATEN – HORIZONTAL POSITION - S

(1) To Check
Place the platen knob screw up and permit the detent ratchet pawl to seat in a groove of the detent ratchet. Place the carriage at the left margin and check requirement. Move the carriage to the right margin and again check requirement.

Requirement
Min 0.050 inch---Max 0.065 inch between ribbon guide and platen at both left and right margins.



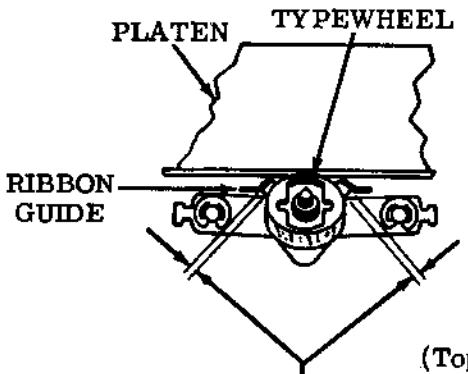
(Left Side View)



(Right Side View)

(2) To Check
Place carriage to center of platen and rotate platen until maximum clearance is obtained between platen and ribbon guide. Set up E code combination (1-3---78) in the selector. Rotate main shaft until carriage drive bail is in its rearmost position. Push typewheel to the rear until it just touches the platen.

Note 2: The typing unit should not have sprocket forms or ribbon installed.



(Top View)

Requirement
Typewheel should not touch inside of either ribbon guide.

2.79 Platen Area (continued)

PLATEN — HORIZONTAL POSITION - S (continued)

To Adjust
Loosen four horizontal positioning screws. Position platen horizontally. Tighten the four horizontal positioning screws.

Related Adjustments
Affects
VERTICAL TYPE ALIGNMENT - S (Par. 2.79)
IDLER POSITION - S (Par. 2.81)
DETENT POSITION - S (Par. 2.82)

Note: If the idler has not previously been backed off, loosen the nut securing the idler post and back off the idler before making the VERTICAL TYPE ALIGNMENT - S (Par. 2.79) adjustment.

VERTICAL TYPE ALIGNMENT - S

Typing units equipped with adjustable vertical drive bail such as TP180606:

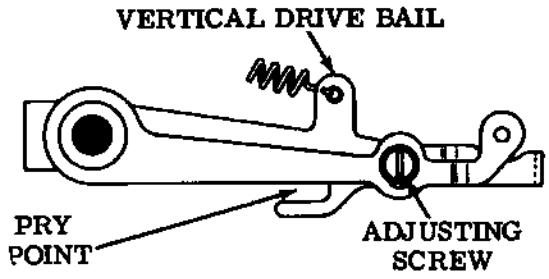
(1) To Check
Place carriage to left margin. Set up the E code combination (1-3---78) in the selector and rotate the main shaft until the character is printed.

Requirement
When the printed character is examined by eye from top to bottom, the shading should be approximately the same with no overscoring or underscoring.

To Adjust
Loosen adjusting screw on vertical drive bail and position the typewheel using pry point.

(2) To Check
Place carriage to right margin. Set up the E code combination (1-3---78) in the selector and rotate main shaft until the character is printed.

Requirement
When the printed character is examined by eye from top to bottom, the shading should be approximately the same with no overscoring or underscoring.



(Right Side View)

To Adjust
Loosen the vertical gauge plate screws on the right side of the platen mechanism and back off the vertical gauge plate. Loosen vertical positioning screws on right side. Position the right end of the platen using pry point. Do not twist the platen. After adjusting, position the vertical gauge plate on the right side so that it is resting on its associated bracket. Tighten all screws.

2.80 Platen Area (continued)

VERTICAL TYPE ALIGNMENT - S (continued)

Typing units equipped with nonadjustable vertical drive bail such as TP180526:

To Check

Place paper in typing unit. Set up the E code combination (1-3---78) in the selector and rotate the main shaft until the character is printed. Repeat several times along the length of the platen.

Requirement

When each printed character is examined by eye from top to bottom, the shading should be approximately the same with no overscoring or underscoring.

To Adjust

Loosen the vertical gauge plate screws and back off the vertical gauge plate on each side of the platen mechanism. Loosen four vertical positioning screws and position the platen using pry points. Do not twist the platen. After adjusting, position each vertical gauge plate so that it is resting on the top of its associated bracket. Tighten all screws.

Related Adjustments

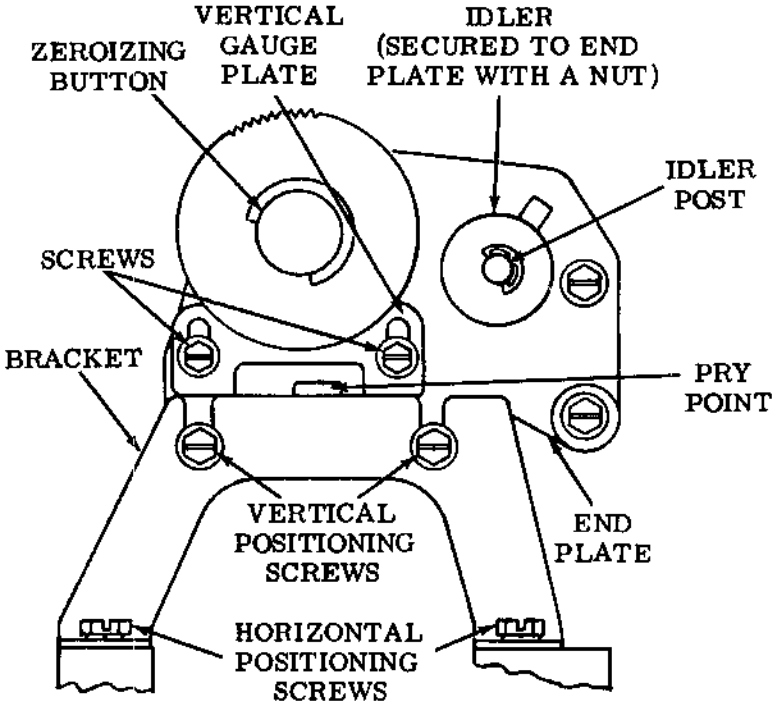
Affects

IDLER POSITION - S (Par. 2.81)

DETENT POSITION - S (Par. 2.82)

Affected By

PLATEN — HORIZONTAL POSITION - S (Par. 2.78)

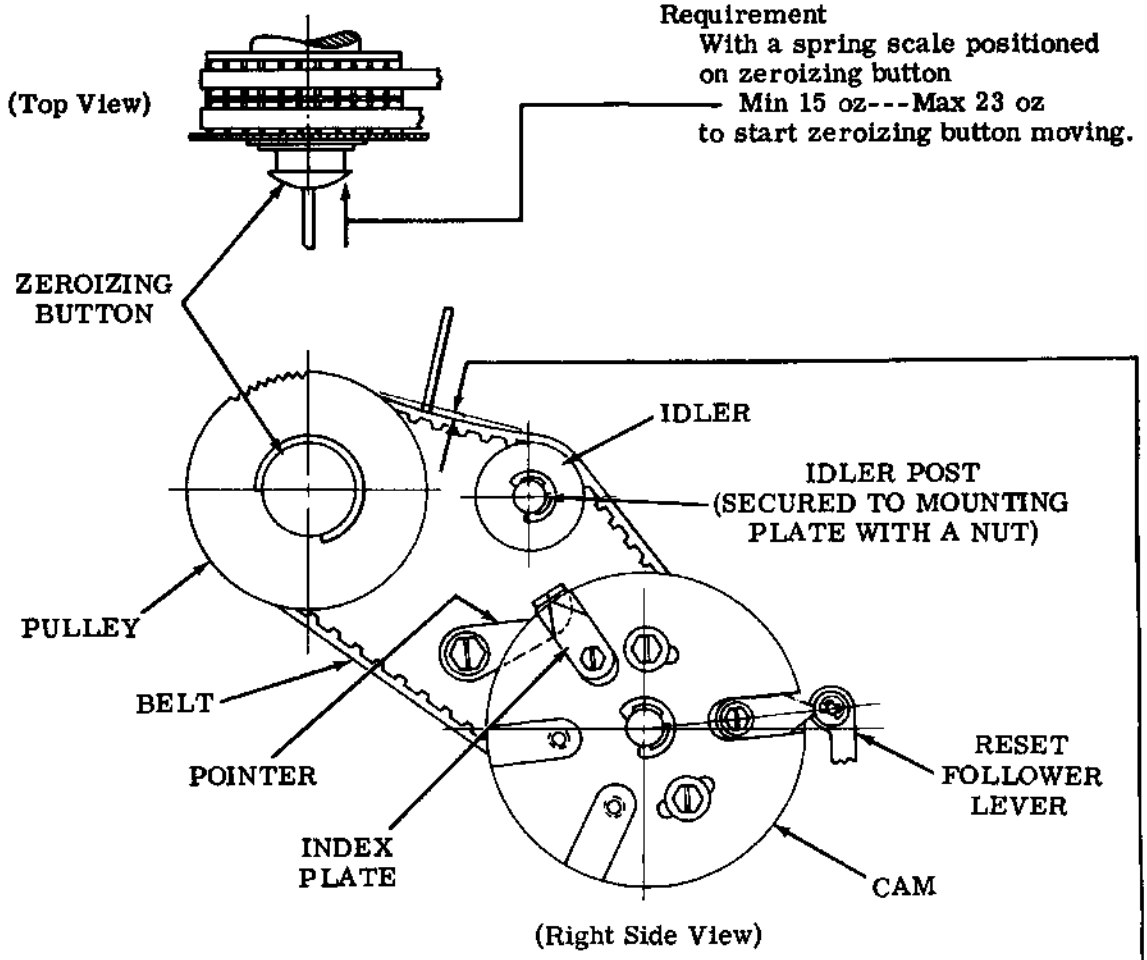


(Right Side View)

2.81 Platen Area (continued)

ZEROIZING BUTTON - S

Requirement
With a spring scale positioned on zeroizing button
Min 15 oz---Max 23 oz
to start zeroizing button moving.



Note: The following adjustment applies to the tighter of two belts. If there is little difference in tightness of the two belts, the adjustment applies to the outer belt.

IDLER POSITION - S

To Check
Place a 16 oz spring load to the belt between the idler and the pulley and note the amount of deflection.

Requirement
Min 0.062 inch---Max 0.125 inch deflection of belt.

To Adjust
Loosen idler post and position. Tighten idler post.

Related Adjustments
Affects
DETENT POSITION - S (Par. 2.82)
RESET FOLLOWER LEVER — RESET POSITION - S (Par. 2.88)
CAM ZERO POSITION - S (Par. 2.88)

Affected By
FORM FEED BELT TENSION (Form Feed Area) - S (Par. 2.62)
PLATEN — HORIZONTAL POSITION - S (Par. 2.78)
VERTICAL TYPE ALIGNMENT - S (Par. 2.79)

2.82 Platen Area (continued)

DETENT POSITION - S

CAUTION: TO PREVENT ELECTRICAL SHOCK EXERCISE CARE WHEN WORKING WITH TYPING UNIT UNDER POWER.

To Check

Set up line feed code combination (-2-4---8) in selector. Place TP185832 armature clip so as to hold armature attracted. Plug in typing unit plugs into proper call control receptacles and apply power to typing unit. Engage code-bar clutch to permit a line feed cycle to complete itself under power. Check requirement. Remove all power connections.

(1) Requirement

The pawl should be fully seated with a Max 0.005 inch between pawl and detent ratchet tooth.

(2) Requirement

Min some---Max 0.030 inch between the plate and detent ratchet.

To Adjust

Loosen both setscrews. Use finger pressure to engage and hold pawl firmly in detent ratchet. Depress line feed keytop. Tighten setscrews.

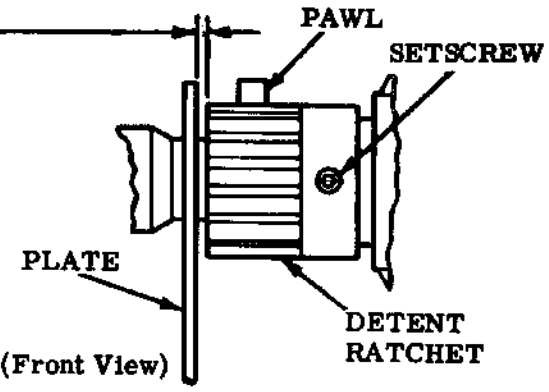
Related Adjustments

Affects

PRINTING LINE POSITION — PRELIMINARY - S (Par. 2.83)
WIRE GUIDE POSITION - S (Par. 2.87)

Affected By

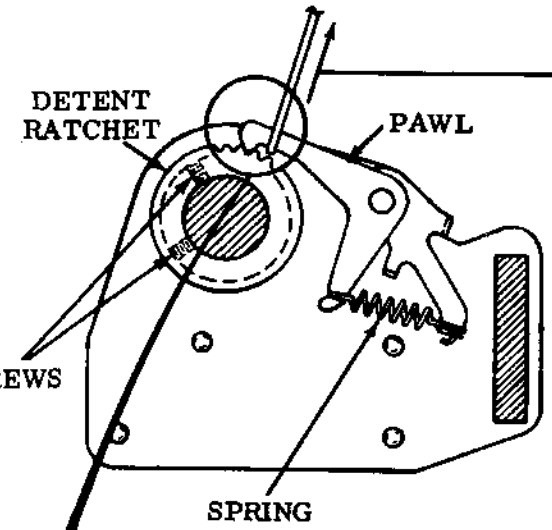
FORM FEED BELT TENSION (Form Feed Area) - S (Par. 2.62)
PLATEN — HORIZONTAL POSITION - S (Par. 2.78)
VERTICAL TYPE ALIGNMENT - S (Par. 2.79)
IDLER POSITION - S (Par. 2.81)

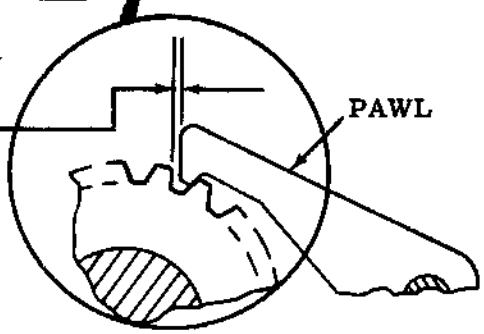


DETENT RATCHET PAWL SPRING - S

Requirement

With a spring scale positioned under detent ratchet pawl Min 24 oz---Max 30 oz to start pawl moving.





2.83 Platen Area (continued)

PRINTING LINE POSITION — PRELIMINARY - S

(1) Requirement

The left sprocket ring pins should be centrally located within the paper guide slot.

To Adjust

Loosen setscrews and position the left sprocket ring.

Note: Do not tighten setscrews until adjustment has been completed.

(2) Requirement

With the setscrews of the left and right sprocket rings in line, place a single sprocket form on the platen with the sprocket form feed holes over the left and right sprocket ring pins. The left and right sprocket ring pins should be in line and centrally located in the sprocket form feed holes.

To Adjust

Loosen setscrews and position the left and/or right sprocket rings as required. Tighten all setscrews.

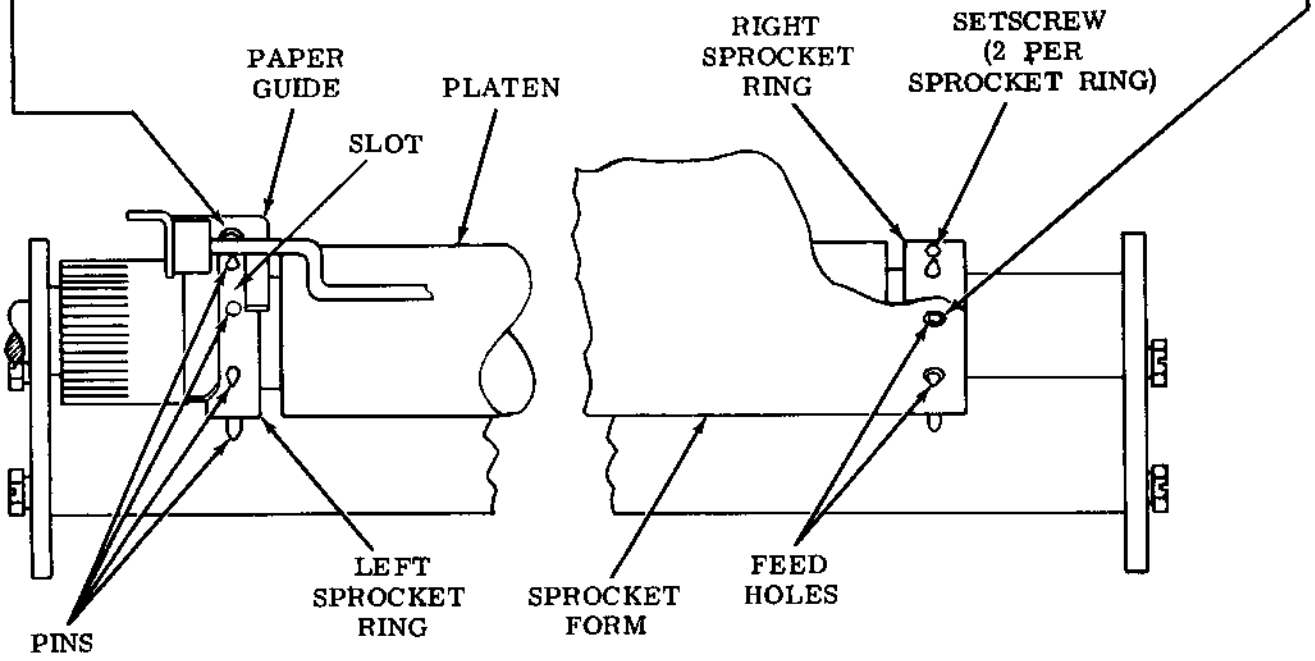
Related Adjustments

Affects

RIGHT PAPER GUIDE POSITION - S (Par. 2.85)
WIRE GUIDE POSITION - S (Par. 2.87)
LEFT MARGIN POSITION - S (Par. 2.91)
RIGHT MARGIN POSITION - S (Par. 2.91)

Affected By

DETENT POSITION - S (Par. 2.82)



(Front View)

2.84 Platen Area (continued)

PRINTING LINE POSITION – FINAL - S

To Check

Place a single sheet of sprocket form in platen mechanism. Print the character M several times to establish a printed line.

Note: On nonprinted forms, draw a horizontal line across form connecting bottom of sprocket feed holes.

Requirement

Printed Form

Printed line should be aligned with sprocket form lines.

Nonprinted Form

(a) Printed line should be aligned with drawn line.

(b) Printed line should not touch drawn line.

(c) Printed line should not be more than 1/16 inch above drawn line with no more than 1/32 inch variation along its entire length.

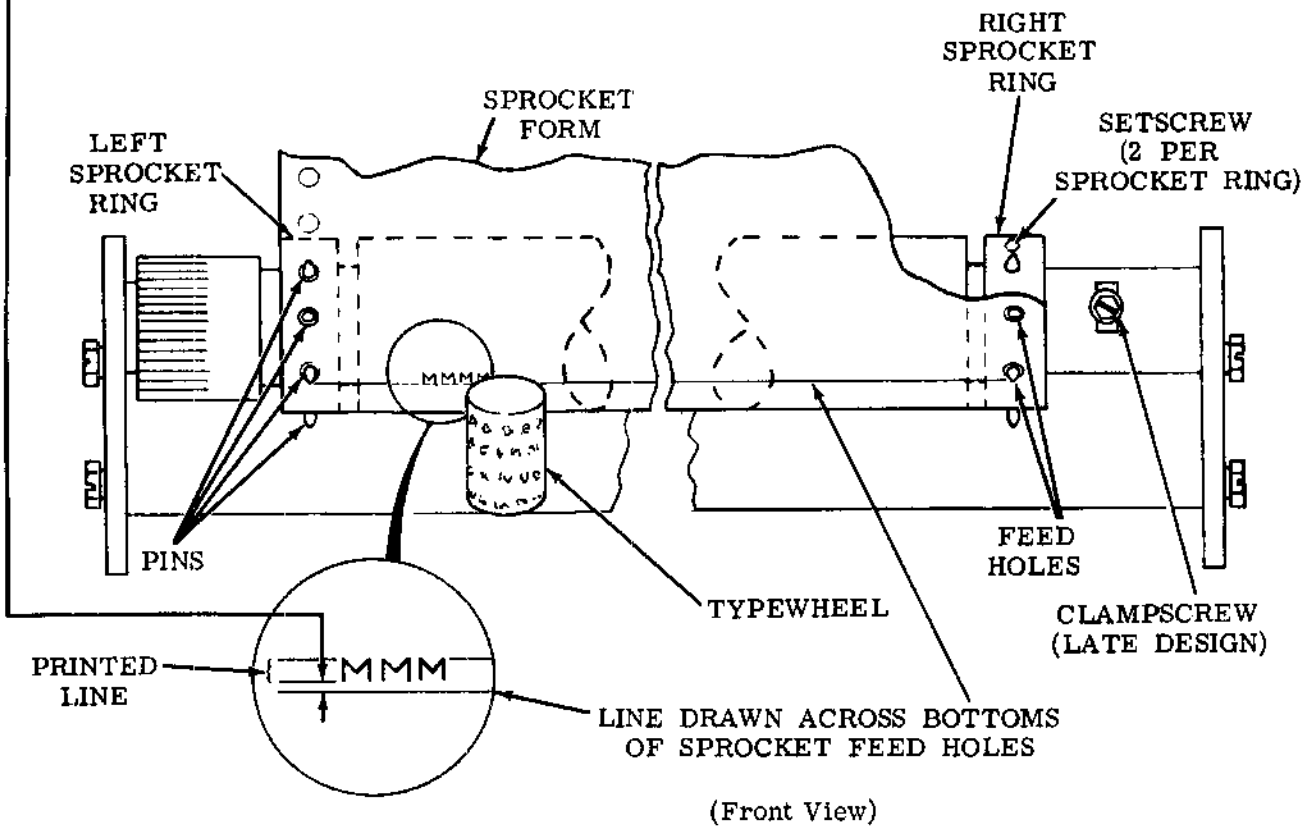
To Adjust

Early Design

Modify (2) Requirement of PRINTING LINE POSITION – PRELIMINARY - S (Par. 2.83)

Late Design (containing adjusting clampscrew)

Loosen clampscrew and position platen. Tighten clampscrew.



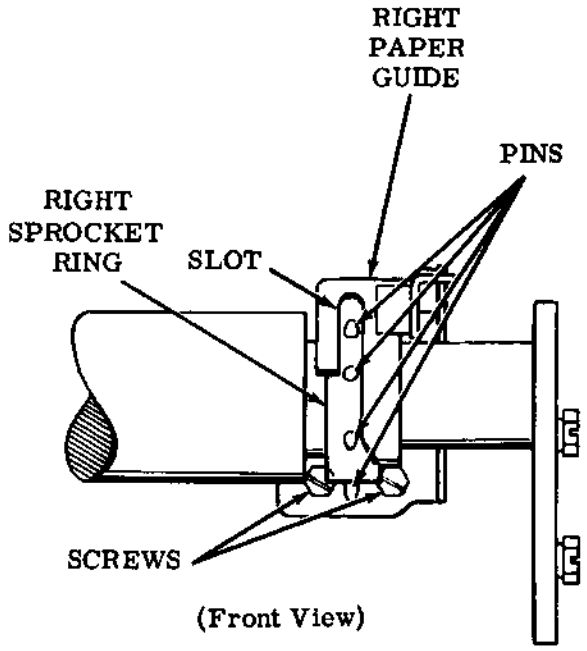
(Front View)

2.85 Platen Area (continued)

RIGHT PAPER GUIDE POSITION - S

Requirement
The right sprocket ring pins should be centrally located within the paper guide slot.

To Adjust
Loosen screws and position right paper guide. Tighten screws.



(Front View)

Related Adjustments
Affects
PAPER GUIDEPLATE CLEARANCE - S (Par. 2.86)
WIRE GUIDE POSITION - S (Par. 2.87)

Affected By
PRINTING LINE POSITION — PRELIMINARY - S (Par. 2.83)

2.86 Platen Area (continued)

PAPER GUIDEPLATE CLEARANCE - S

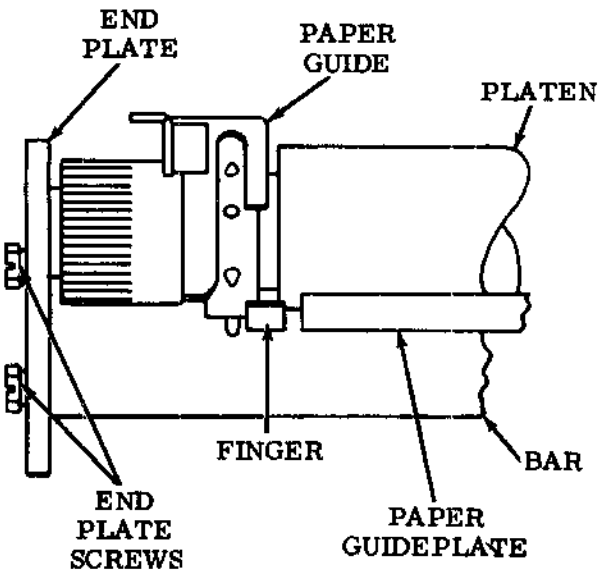
Requirement
With no sprocket forms in the platen mechanism
Min 0.008 inch---Max 0.025 inch between the platen and the left and right ends of the paper guideplate adjacent to the fingers. Record the two clearances. *

To Adjust
Loosen locknut and adjust screw. Tighten locknut.

Note 1: If the adjustment cannot be made as indicated above, remove the platen mechanism from the typing unit. For instructions, see appropriate disassembly and reassembly section. Then, preliminary adjust as follows:

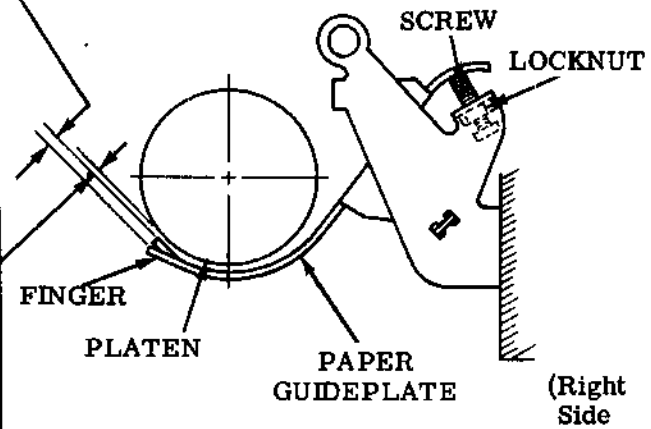
Preliminary Requirement
With the screw backed off and no sprocket forms in the platen mechanism
Min zero---Max 0.012 inch between the platen and the left and right ends of the paper guideplate — adjacent to the fingers. Record the two clearances. *

Preliminary Adjust
Loosen end plate screws friction tight and position end plates. Tighten screws.



(Front View)

*Note 2: The fingers at both the left and right ends of the platen should be
Min some---Max 0.015 inch
beyond the recorded gap between the platen and the left and right ends of the paper guideplate. Bend fingers to meet the requirement.



(Right Side View)

Note 3: Replace platen mechanism onto the typing unit. For instructions see appropriate disassembly and reassembly section. Check requirement.

Related Adjustments
Affects
PAPER ALARM CONTACT PRESSURE AND GAP (Paper Controls, Part 3, Variations to Basic Adjustments) - S (Par. 3.29)
PAPER ALARM CONTACT LEVER CLEARANCE (Paper Controls, Part 3, Variations to Basic Adjustments) - S (Par. 3.29)

Affected By
RIGHT PAPER GUIDE POSITION - S (Par. 2.85)

2.87 Platen Area (continued)

WIRE GUIDE POSITION - S

To Check

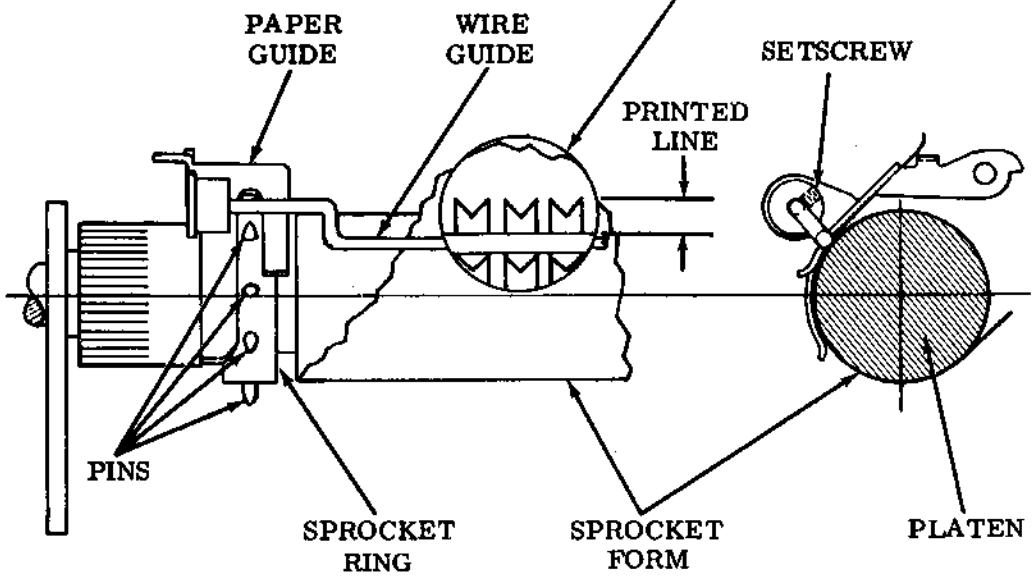
Put a sprocket form containing several lines of printed copy in the unit. Place platen in its detented position with top edge of form feed holes engaging top edge of sprocket ring pins. Place left and right paper guides in contact with their associated sprocket rings.

Requirement

The wire guide should fully contact the sprocket form and should be centrally located between the lines of printed copy with a maximum of 1/2 line overlap.

To Adjust

Loosen setscrew at each end of wire guide. Hold paper guides against their sprocket rings and position wire guide. Tighten both setscrews.



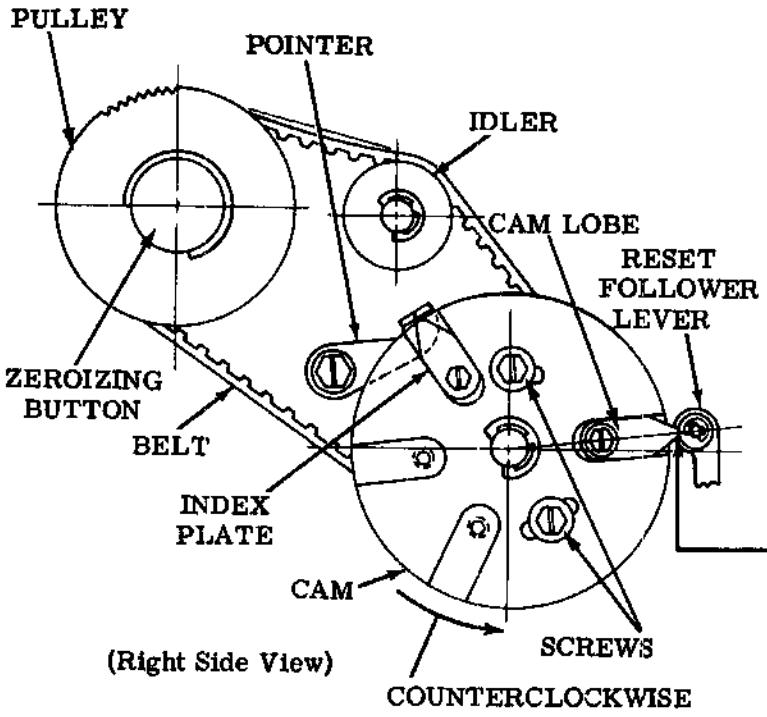
(Front View) (Right Side View)

Related Adjustments

Affected By

DETENT POSITION - S (Par. 2.82)
PRINTING LINE POSITION - PRELIMINARY - S (Par. 2.83)
RIGHT PAPER GUIDE POSITION - S (Par. 2.85)

2.88 Platen Area (continued)



(A) RESET FOLLOWER LEVER – RESET POSITION - S

CAUTION: TO PREVENT ELECTRICAL SHOCK EXERCISE CARE WHEN WORKING WITH TYPING UNIT UNDER POWER.

To Check

Set up form-out code combination (--34---8) in selector. Place TP185832 armature clip so as to hold armature attracted. Plug typing unit plugs into proper call control unit receptacles and apply power to typing unit. Engage codebar clutch to permit a form-out cycle to complete itself under power. Check requirement. Remove all power connections.

Requirement

At the end of form-out cycle, reset follower lever should come to rest on flat surface of cam lobe.

To Adjust

Loosen screws and adjust cam. Tighten screws.

Related Adjustments

Affects

CAM ZERO POSITION- S (Par. 2.88)

Affected By

FORM FEED BELT TENSION (Form Feed Area)- S (Par. 2.62)

IDLER POSITION - S (Par. 2.81)

(B) CAM ZERO POSITION - S

To Check

With cam lobes and index plates located on cam as shown on associated line drawings, place typing unit in stop condition.

Note: Reset follower lever must rest on proper cam lobe to "zero" a sprocket form. Place it in such position by depressing zeroizing button and rotating pulley until reset follower lever rests on cam lobe opposite three closely spaced grooves (on cam) facing toward the front of typing unit.

One cam lobe:

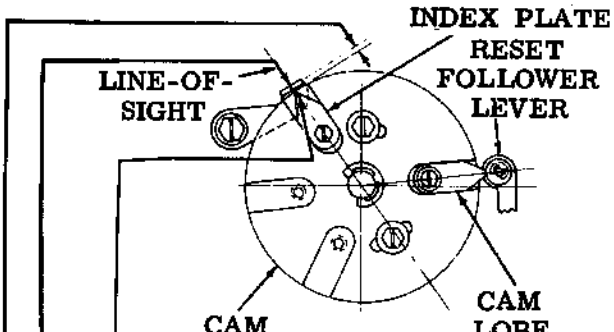
(1) Requirement

With reset follower lever on flat surface of cam lobe and zeroizing button in its right most position

Min some---Max 0.035 inch between bottom surface of pointer and low part of cam.

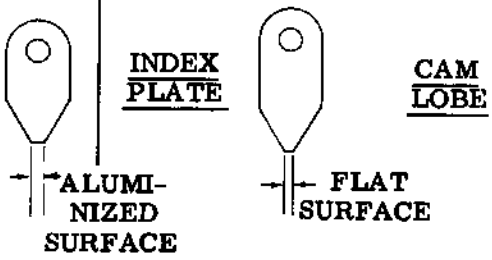
(2) Requirement

When viewed along line-of-sight shown, tip of pointer should be aligned with index plate aluminized surface, as gauged by eye.



ONE CAM LOBE

(Right Side View)



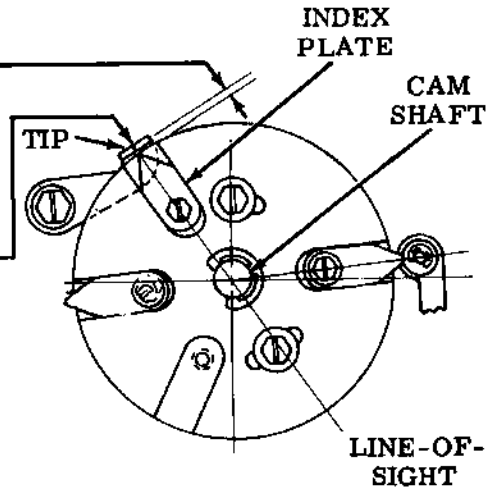
2.89 Platen Area (continued)

CAM ZERO POSITION - S (continued)

Two cam lobes:

(1) Requirement
With reset follower lever on flat surface of cam lobe and zeroizing button in its rightmost position
Min some---Max 0.035 inch between bottom surface of pointer and low part of cam.

(2) Requirement
When viewed along line-of-sight shown, tip of pointer should be aligned with index plate aluminized surface, as gauged by eye.

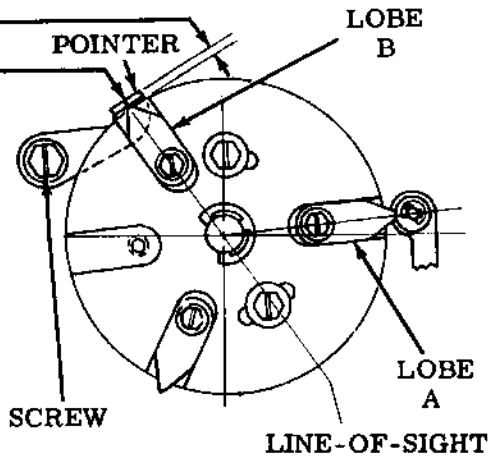


TWO CAM LOBES

Three cam lobes:

(1) Requirement
With reset follower lever on flat surface of cam lobe A and zeroizing button in its rightmost position
Min some---Max 0.035 inch between bottom surface of pointer and low part of cam.

(2) Requirement
When viewed along line-of-sight shown, tip of pointer should be aligned with flat surface of lobe B, as gauged by eye.



THREE CAM LOBES

(Right Side Views)

To Adjust
Loosen screw and position pointer. Tighten screw.

Related Adjustments
Affected By
FORM FEED BELT TENSION (Form Feed Area) - S (Par. 2.62)
IDLER POSITION - S (Par. 2.81
RESET FOLLOWER LEVER - RESET POSITION - S (Par. 2.88)

2.90 Spacing Area

SPACING BELT TENSION

Requirement

With typing unit in stop condition, carriage at left margin, and from 8 to 11 ounces of pressure applied near center of belt

Min 9/16 inch---Max 11/16 inch between outer surfaces of belt.

To Adjust

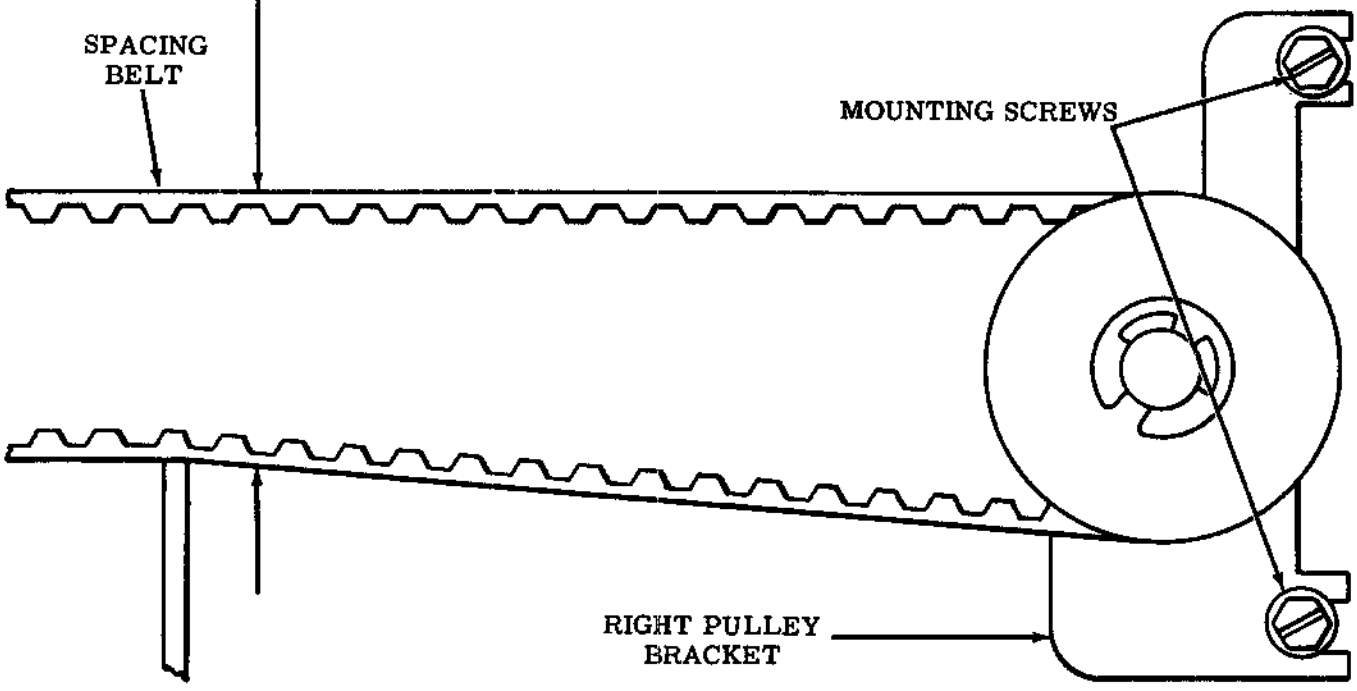
Loosen mounting screws and position right pulley bracket. Tighten screws.

Related Adjustment

Affects

LEFT MARGIN PRINTING

(Par. 2.96)



(Top View)

2.91 Platen Area (continued)

LEFT MARGIN POSITION - S

To Check
Place platen knob screw in a vertical position and carriage to the left hand margin. Fully seat piston in dashpot cylinder.

(1) Requirement
Approximately 3/8 inch between edge of sprocket ring pin and V-projection.

(2) Requirement
Min 0.030 inch between the closest sprocket ring pin and ribbon guide.

To Adjust
Loosen two dashpot cylinder mounting screws and position dashpot cylinder. Tighten screws.

Related Adjustments
Affects
RIGHT MARGIN POSITION- S (Par. 2.91)
CARRIAGE RETURN LEVER — UNLATCH CLEARANCE (Spacing Area) (Par. 2.95)
LEFT MARGIN PRINTING (Spacing Area) (Par. 2.96)
Affected By
PRINTING LINE POSITION — PRELIMINARY - S (Par. 2.83)

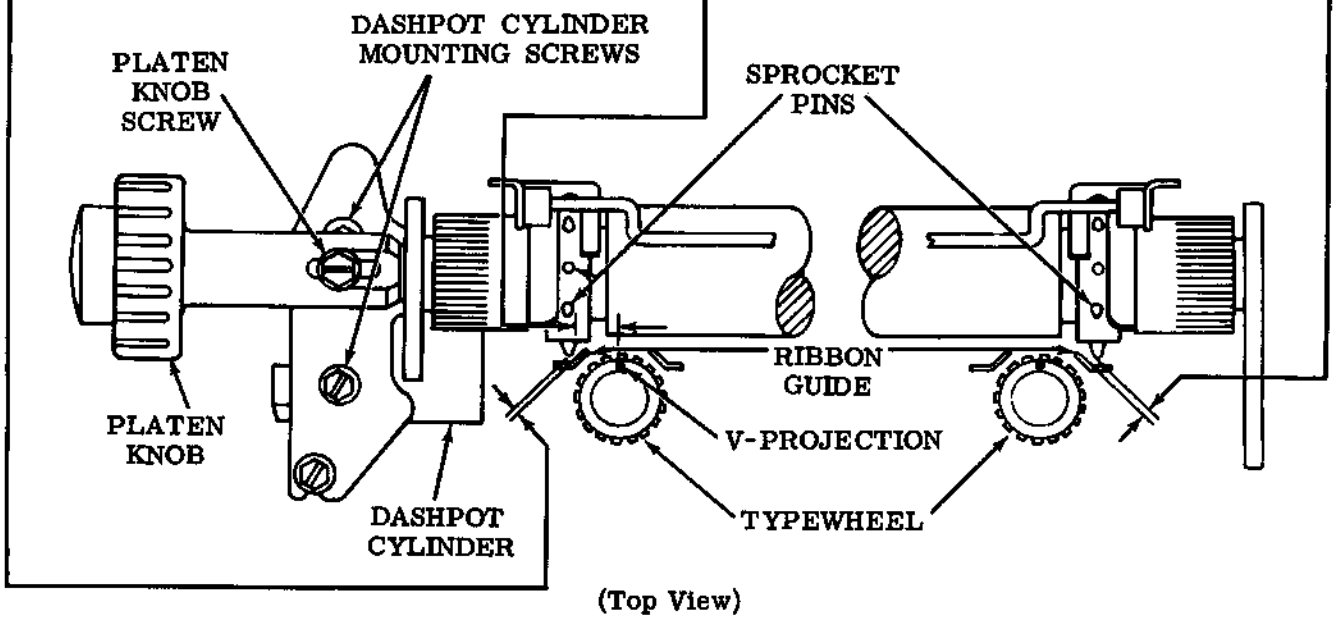
RIGHT MARGIN POSITION - S

To Check
Place carriage to the right to the 72nd character position. Hold feed pawl out of engagement with spacing ratchet, so that only check pawl is engaged.

Requirement
Min 0.030 inch between right sprocket ring pin and ribbon guide.

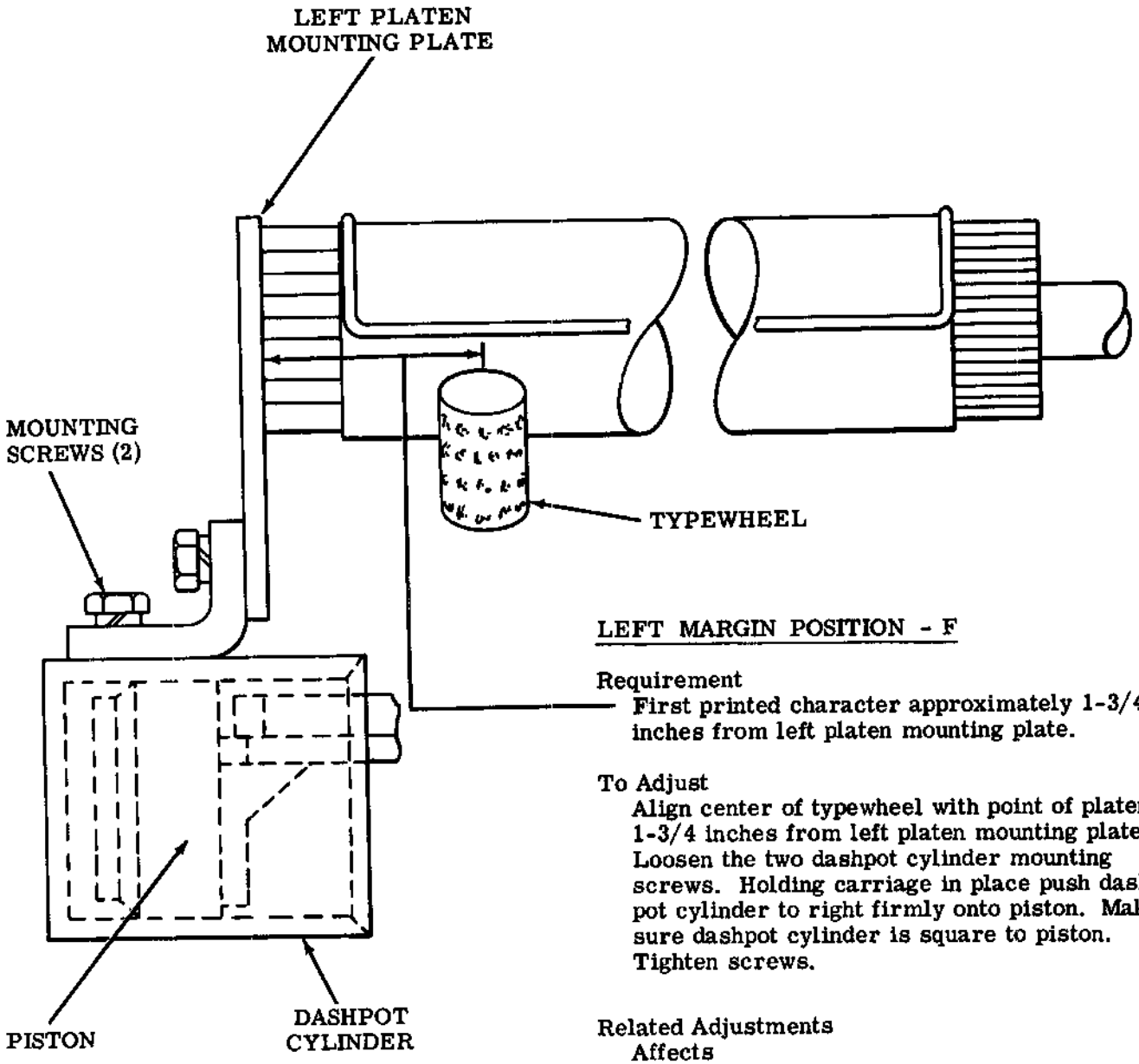
To Adjust
Refine LEFT MARGIN POSITION - S (Par. 2.91) adjustment.

Related Adjustments
Affected By
PRINTING LINE POSITION — PRELIMINARY - S (Par. 2.83)
LEFT MARGIN POSITION - S (Par. 2.91)



(Top View)

2.92 Platen Area (continued)



(Front View)

LEFT MARGIN POSITION - F

Requirement
First printed character approximately 1-3/4 inches from left platen mounting plate.

To Adjust
Align center of typewheel with point of platen 1-3/4 inches from left platen mounting plate. Loosen the two dashpot cylinder mounting screws. Holding carriage in place push dashpot cylinder to right firmly onto piston. Make sure dashpot cylinder is square to piston. Tighten screws.

Related Adjustments
Affects
CARRIAGE RETURN LEVER — UNLATCH CLEARANCE (Spacing Area) (Par. 2.95)
LEFT MARGIN PRINTING (Spacing Area) (Par. 2.96)

2.93 Function Area (continued)

END-OF-LINE LATCH SPRING

Requirement
With typing unit in stop condition, carriage return lever unlatched
Min 1-1/2 oz---Max 3 oz
to start end-of-line latch moving.

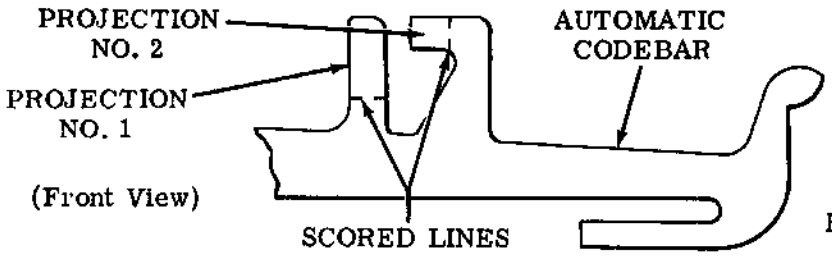
LINE LENGTH SELECTION

Automatic Carriage Return — Line Feed·

Requirement
Select either a 69, 72, or 74 character line length.

To Adjust
TP180948 Automatic Codebar: Break off projection(s) as follows:

Line Length (Characters)	Projection Removed
69	None
72	1
74	1 and 2



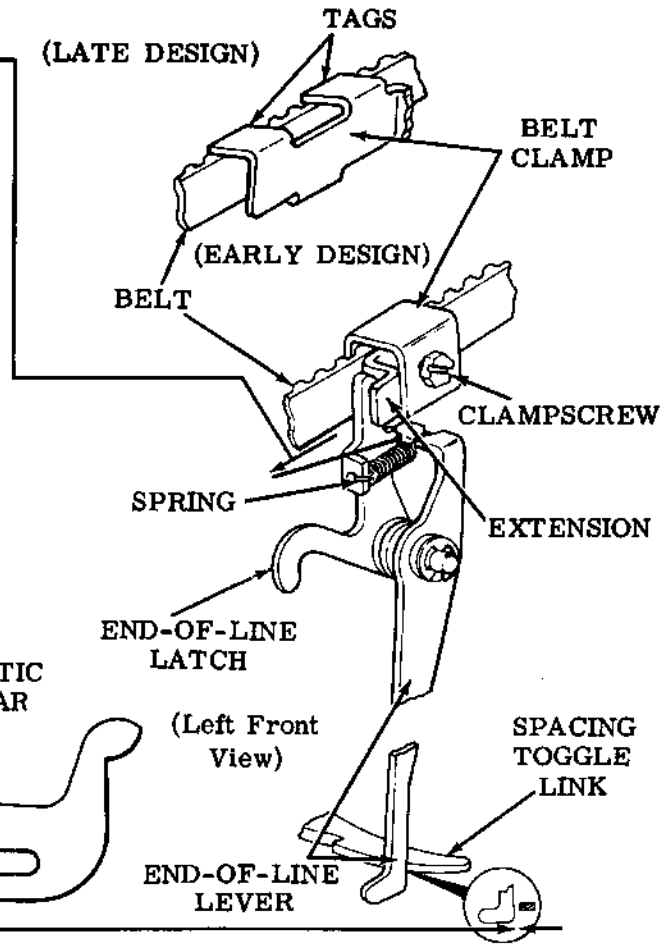
TP183495, TP183496, and TP183497 automatic codebars: Use the proper automatic codebar as follows:

Line Length (Characters)	Automatic Codebar
69	TP183495
72	TP183496
74	TP183497

Note 1: On friction feed typing units using TP180948 automatic codebar, break off projection(s) as instructed in Automatic Carriage Return — Line Feed above so that the end-of-line bell will ring at the proper time.

Note 2: On sprocket feed typing units using TP180948 automatic codebar, do not break off any projections. Leave the automatic codebar as shown on the line drawing so that the end-of-line bell will ring at the proper time.

Note 3: Use either TP180948 or TP183498 automatic codebar and no other on typing units equipped with end-of-line space suppression.



End-of-Line Space Suppression

Requirement
Select the proper line length as follows: With the carriage located one character before the end of a line (for example: character 71 on a 72 character line), rotate the main shaft until the carriage drive bail reaches its rearmost position
Min 0.025 inch---Max 0.100 inch
between end-of-line lever and spacing toggle link.

To Adjust
Early Design
Loosen clampscrew and position belt clamp and extension. Tighten clampscrew.
Late Design
Bend tabs away from belt and position belt clamp. Crimp belt clamp and tabs securely on belt.

2.94 Spacing Area (continued)

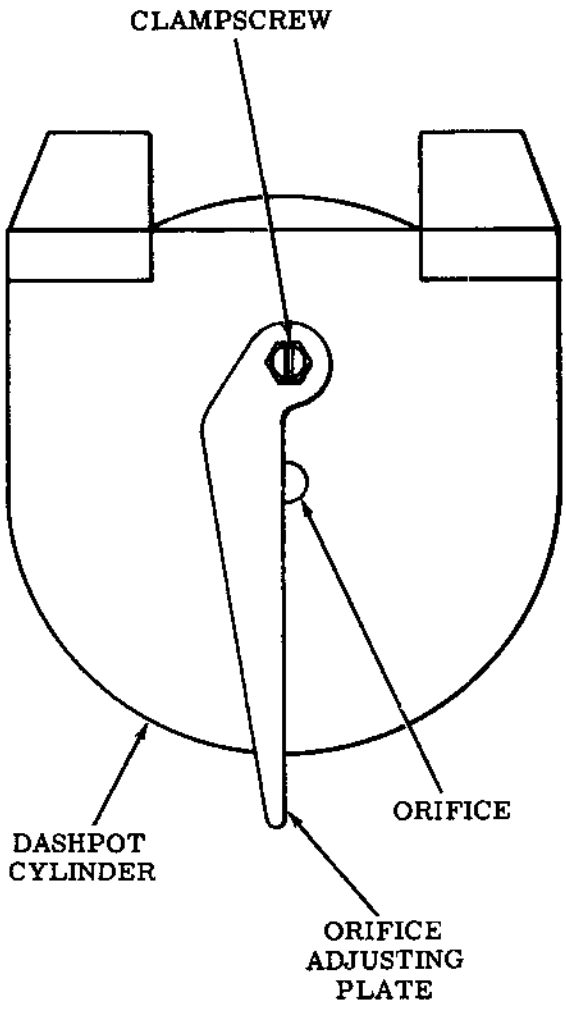
CARRIAGE BOUNCE

To Check
Place carriage at right margin, manually disengage the check pawl and feed pawl of the spacing mechanism.

Requirement
No pneumatic or mechanical bounce of carriage upon its return.

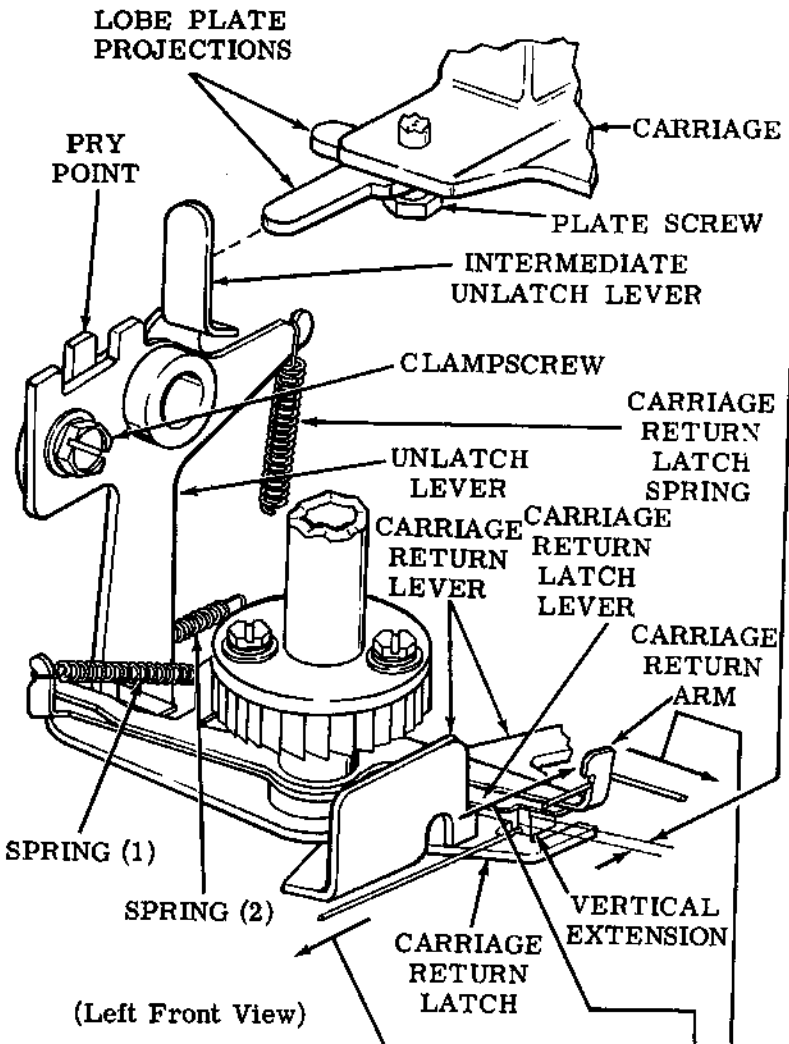
To Adjust
Loosen clampscrew and position orifice adjusting plate. Tighten clampscrew.

Note: The orifice should never become fully uncovered. If it does become fully uncovered, it is possible that the lobe plate projection may be broken.



(Left Side View)

2.95 Spacing Area (continued)



CARRIAGE RETURN LEVER — UNLATCH CLEARANCE

(1) To Check

Move carriage to left margin by placing carriage return lever in its forward latched position. Take up all play to minimize the required clearances.

Requirement

Min some---Max 0.050 inch between the carriage return latch and the vertical extension of the carriage return lever.

To Adjust

Loosen clampscrew. Use pry points to position carriage return latch. Tighten clampscrew.

Note: Perform the following check only if the typing unit is being completely readjusted.

(2) To Check

Repeat (1) To Check above.

Requirement

The intermediate unlatch lever should be aligned with the lobe plate projection which most nearly touches it.

To Adjust

Loosen plate screw. Position lobe projection plate. Tighten plate screw. Check FRONT ROLLERS CLEARANCE adjustment.

Related Adjustments

Affected By

LEFT MARGIN POSITION (Platen Area) - S (Par. 2.91)

LEFT MARGIN POSITION (Platen Area) - F (Par. 2.92)

CARRIAGE RETURN LATCH SPRING

To Check

With typing unit in stop condition and carriage return lever unlatched, place carriage away from left margin.

Requirement

Min 1-1/2 oz---Max 3 oz to start carriage return latch moving.

CARRIAGE RETURN ARM SPRINGS

To Check

Place typing unit in stop condition and engage feed pawl and check pawl with spacing ratchet.

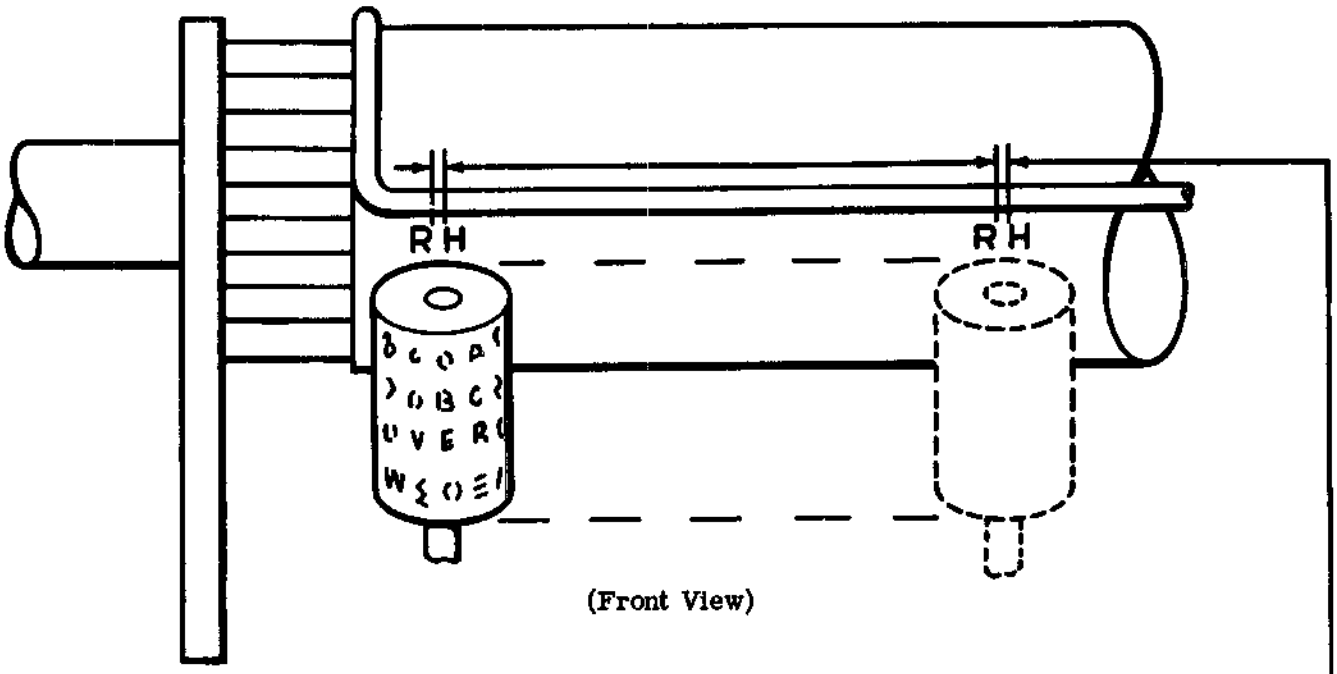
(1) Requirement

Min 1 oz---Max 2 oz to start arm moving.

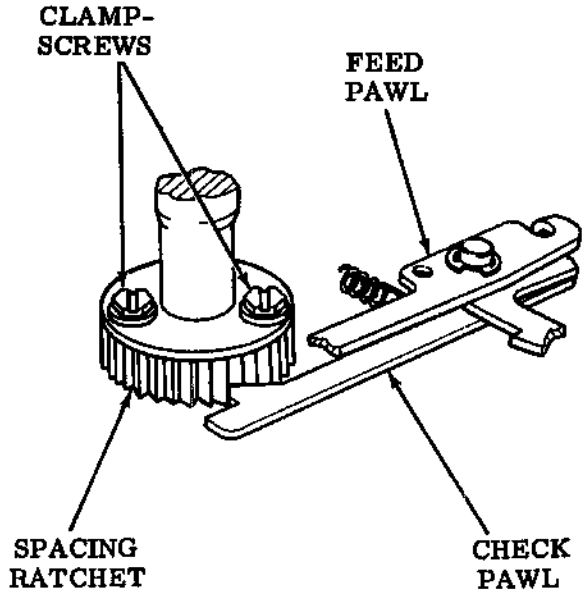
(2) Requirement

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

2.96 Spacing Area (continued)



(Front View)



(Left Front View)

LEFT MARGIN PRINTING

To Check
Print two or more characters such as RH at left margin and at center of line.

Requirement
Character to character spacing approximately same as center of line as at left margin.

To Adjust
With spacing ratchet clampscrews friction tight, seat piston firmly in the dashpot. Rotate the carriage return arm counterclockwise to permit the feed pawl and check pawl to move toward the spacing ratchet. Position the spacing ratchet so that the check pawl rests on top of a spacing ratchet tooth. Tighten spacing ratchet clampscrews. Recheck Requirement and refine adjustment if necessary.

Related Adjustments
Affects
FEED PAWL TRAVEL (Par. 2.118)

Affected By
SPACING BELT TENSION (Par. 2.90)
LEFT MARGIN POSITION (Platen Area) - S (Par. 2.91)
LEFT MARGIN POSITION (Platen Area - F (Par. 2.92)

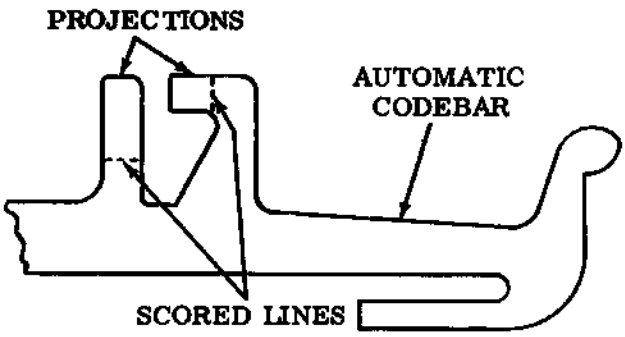
2.97 Function Area (continued)

END-OF-LINE BELL SIGNAL - S

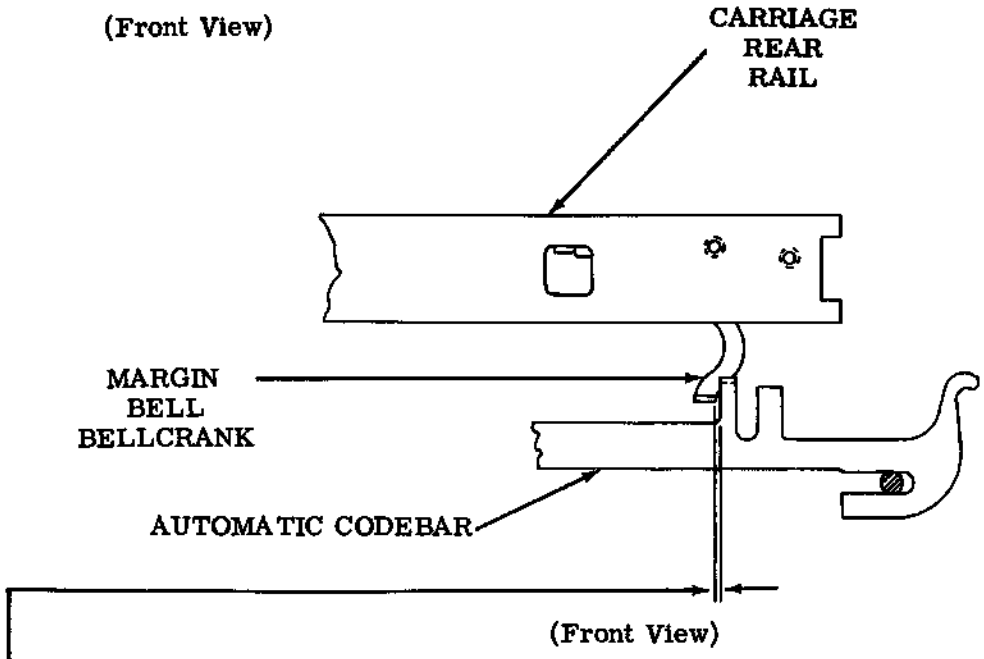
Note: This requirement applies only to sprocket feed typing units equipped with TP180948 automatic codebar.

Requirement
The automatic codebar projections must not be removed.

To Adjust
Replace codebar.



(Front View)



(Front View)

MARGIN BELL BELLCRANK CLEARANCE

Note: This adjustment applies only to typing units equipped with a margin bell bellcrank.

To Check
Place carriage to left margin. Take up play of margin bell bellcrank in a clockwise direction.

Requirement
Min some---Max 0.020 inch between the margin bell bellcrank and automatic codebar.

To Adjust
Bend margin bell bellcrank using TP180993 bending tool.

2.98 Function Area (continued)

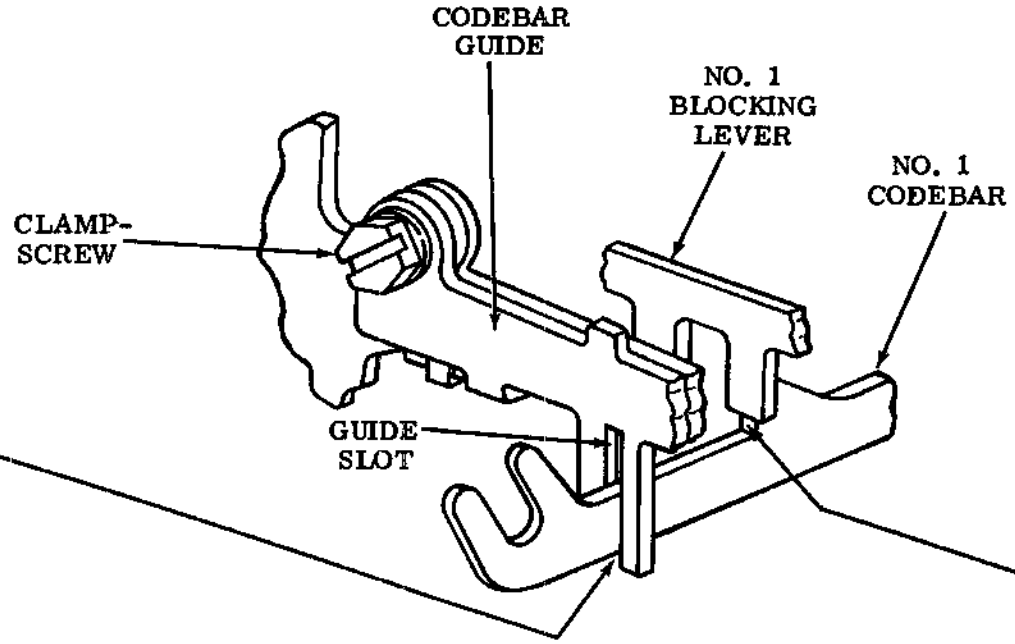
CODEBAR GUIDE POSITION

To Check
Place typing unit in stop condition and manually operate the typing unit until the no. 1 blocking lever is in its lowest position.

(1) Requirement
No. 1 codebar centrally located in guide slot, as gauged by eye.

(2) Requirement
No. 1 blocking lever should engage the full thickness of no. 1 codebar.

To Adjust
Loosen clampscrew. Position codebar guide. Tighten clampscrew.



(Left Front View)

2.99 Platen Area (continued)

FORM LENGTH SELECTION - S

To Check

The control cam of the platen drive mechanism normally will come with two cam lobes. This causes sprocket forms to feed out one-half the basic form length.

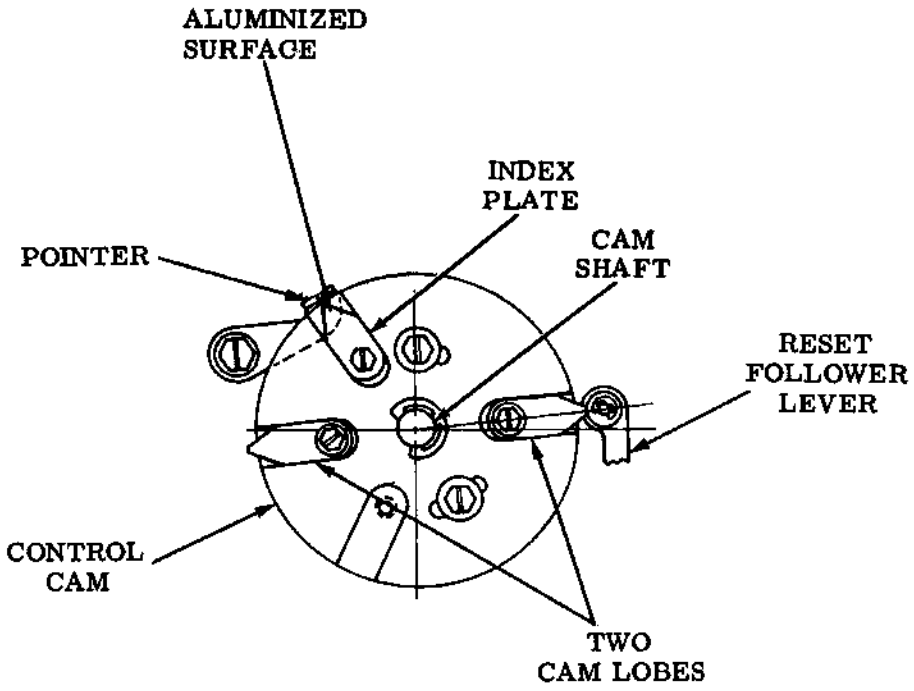
Requirement

A longer form length.

To Adjust

Line up the pointer with the aluminized surface of the index plate. Remove and discard the cam lobe which is located in the other side of the control cam opposite the reset follower lever.

Note: A listing of gears which provide various form feed lengths can be found in the appropriate parts section.



(Right Side View)

2.100 Platen Area (continued)

PLATEN — HORIZONTAL POSITION - F

(1) To Check

Place the flat on the left side of the platen up so that it is horizontal to the base casting. Place the carriage at the left margin and check requirement. Move the carriage to the right margin and again check requirement.

Requirement
Min 0.050 inch---Max 0.065 inch
between ribbon guide and platen at both left and right margins.

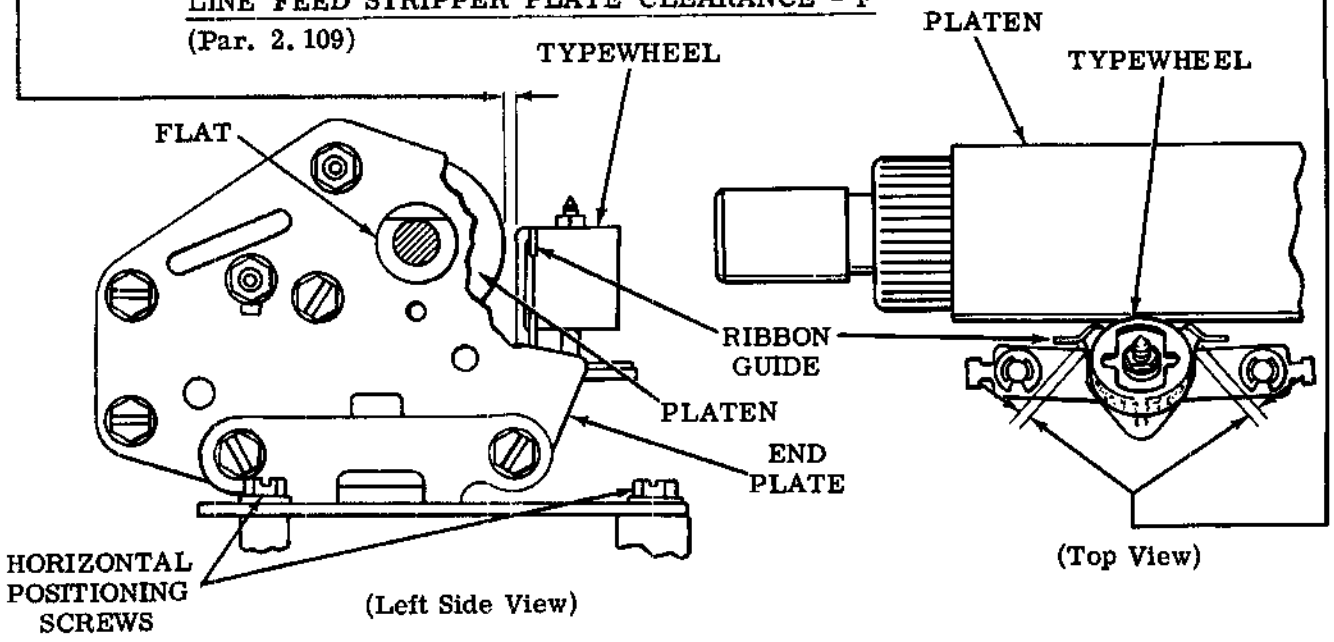
(2) To Check
Place carriage to center of platen and rotate platen until maximum clearance is obtained between platen and ribbon guide. Set up the E code combination (1-3---78) in the selector. Rotate main shaft until carriage drive bail is in its rearmost position. Push typewheel to the rear until it just touches the platen.

Note: The typing unit should not have paper or ribbon installed.

Requirement
Typewheel should not touch inside of either ribbon guide.

To Adjust
Loosen four horizontal positioning screws. Position platen horizontally. Tighten positioning screws.

Related Adjustment
Affects
LINE FEED STRIPPER PLATE CLEARANCE - F
(Par. 2.109)



2.101 Platen Area (continued)

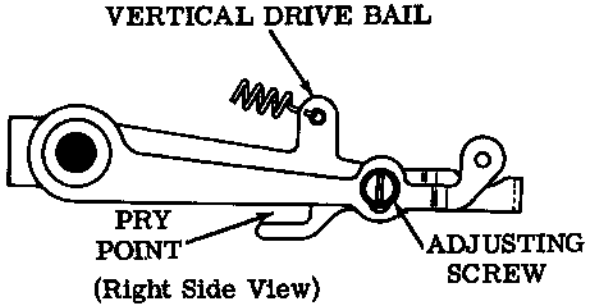
VERTICAL TYPE ALIGNMENT - F

For typing units equipped with adjustable vertical drive bail such as TP180606:

(1) To Check
Place paper and ribbon in unit. Place carriage to left margin. Set up the E code combination (1-3---78) in the selector and rotate the main shaft until the character is printed.

Requirement
When the printed character is examined by eye from top to bottom, the shading should be approximately the same with no overscoring or underscoring.

To Adjust
Loosen adjusting screw on vertical drive bail and position the typewheel using pry point. Tighten adjusting screw.



(Right Side View)

(2) To Check
Place carriage to right margin. Set up the E code combination (1-3---78) in the selector and rotate main shaft until the character is printed.

Requirement
When the printed character is examined by eye from top to bottom, the shading should be approximately the same with no overscoring or underscoring.

To Adjust
Loosen vertical positioning screws on right side. Position the right end of the platen using pry point. Do not twist the platen. Tighten positioning screws.

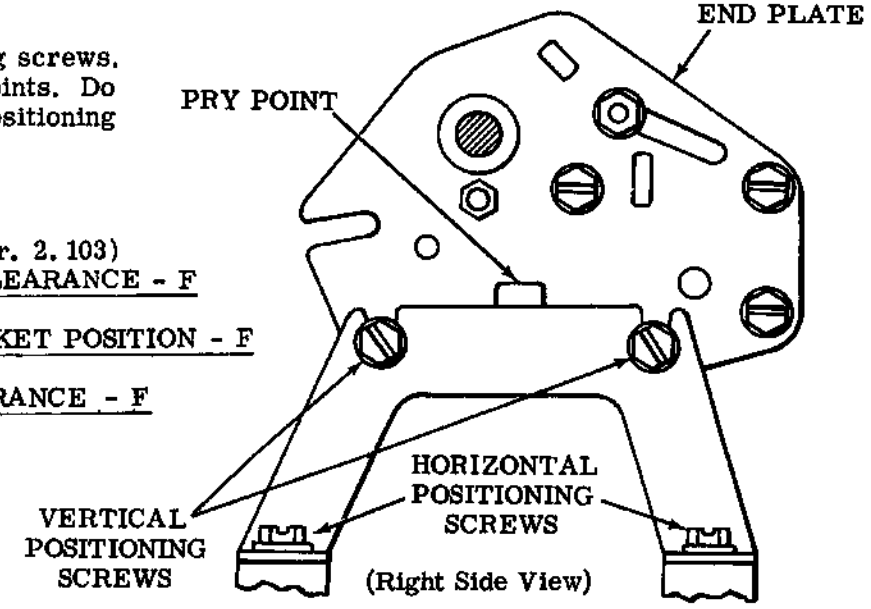
For typing units equipped with nonadjustable vertical drive bail such as TP180526:

To Check
Place paper in typing unit. Set up the E code combination (1-3---78) in the selector and rotate the main shaft until the character is printed. Repeat several times along the length of the platen.

Requirement
When each printed character is examined by eye from top to bottom, the shading should be approximately the same with no overscoring or underscoring.

To Adjust
Loosen four vertical positioning screws. Position the platen using pry points. Do not twist the platen. Tighten positioning screws.

Related Adjustments
Affects
DETENT POSITION - F (Par. 2.103)
LINE FEED DRIVE ARM CLEARANCE - F (Par. 2.105)
LINE FEED UPSTOP BRACKET POSITION - F (Par. 2.106)
PRESSURE ROLLER CLEARANCE - F (Par. 2.110)



(Right Side View)

2.102 Platen Area (continued)

LINE FEED SELECTION - F

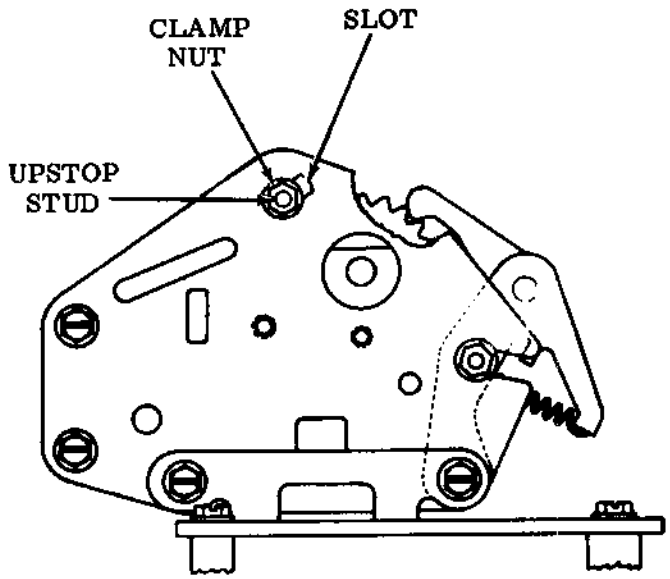
(1) Requirement
Upstop stud should be at bottom of slot for single line feed or at top for double line feed.

To Adjust
Loosen clamp nut. Position upstop stud. Tighten clamp nut.

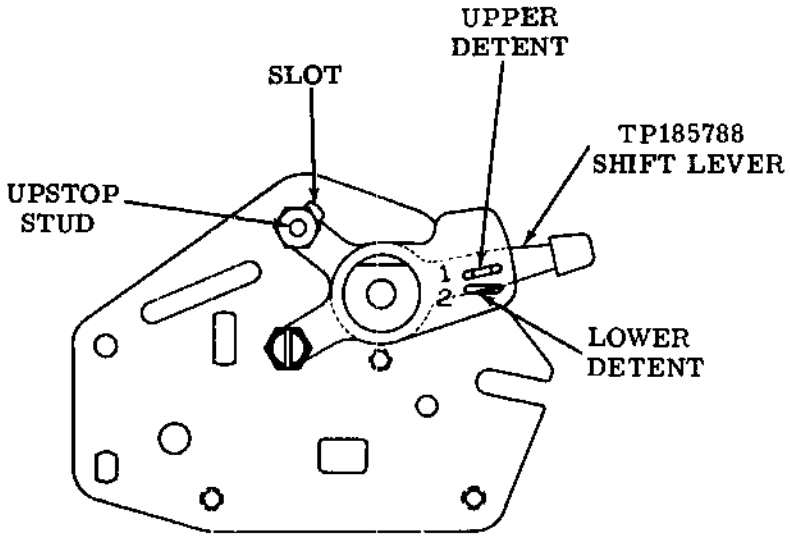
Note: The following requirement applies only to typing units equipped with operator-controlled line feed feature containing TP185788 shift lever.

(2) Requirement
Same as (1) Requirement above.

To Adjust
Place TP185788 shift lever in upper detent for single line feed or in lower detent for double line feed.

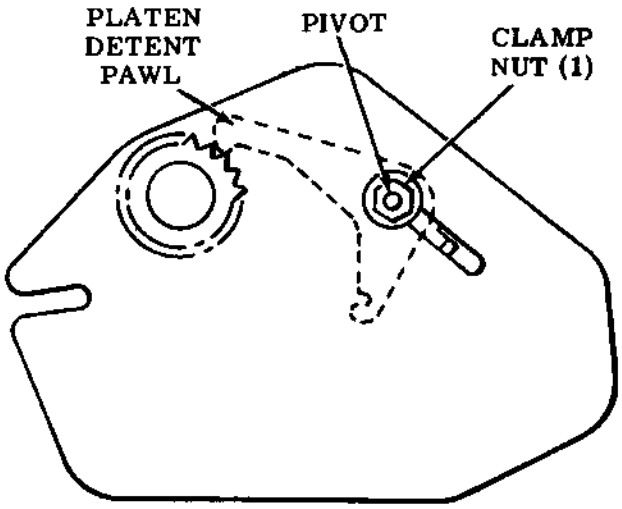


(Left Side View)



(Left Side View)

2.103 Platen Area (continued)



EARLY DESIGN
(Right Side View)

DETENT POSITION - F

To Check
Place typing unit in single line feed condition.

Requirement
When operated by finger pressure, line feed pawl should fully seat in platen ratchet without interference from teeth.

To Adjust

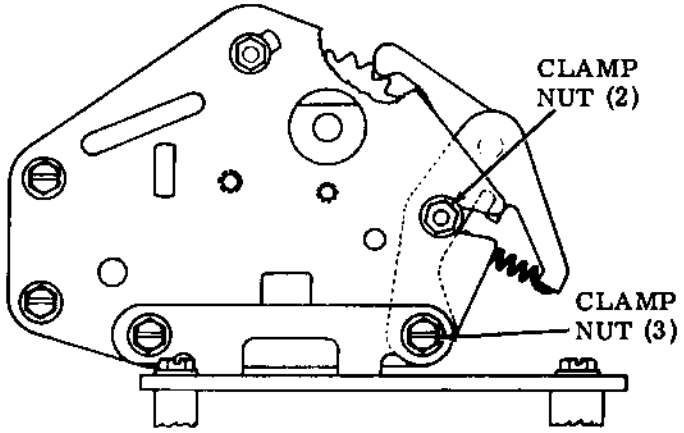
Early Design (typing units equipped with TP181030 bracket)
Loosen clamp nut (1). Position platen detent pawl pivot. Tighten clamp nut.

Late Design (typing units equipped with TP185796 bracket)
Loosen clamp nuts (2) and (3). Position platen detent pawl. Tighten clamp nuts.

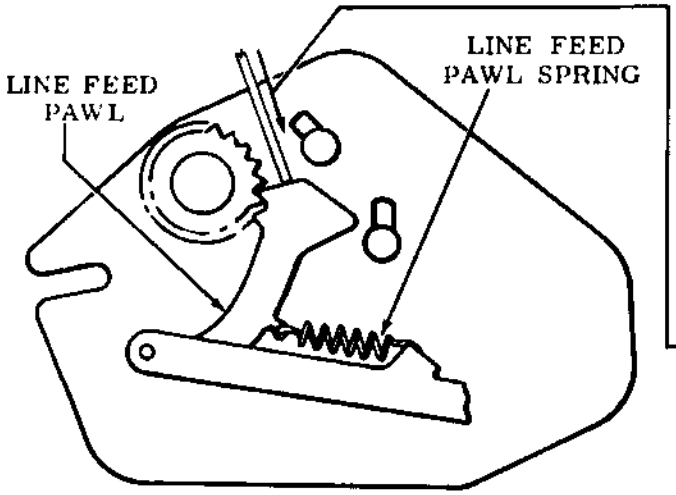
Related Adjustments
Affects
LINE FEED DRIVE LINK POSITION - F (Par. 2.107)

Affected By
VERTICAL TYPE ALIGNMENT - F (Par. 2.101)

Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT - F (Par. 2.101) only when equipped with TP180526 nonadjustable vertical drive bail.



LATE DESIGN
(Left Side View)

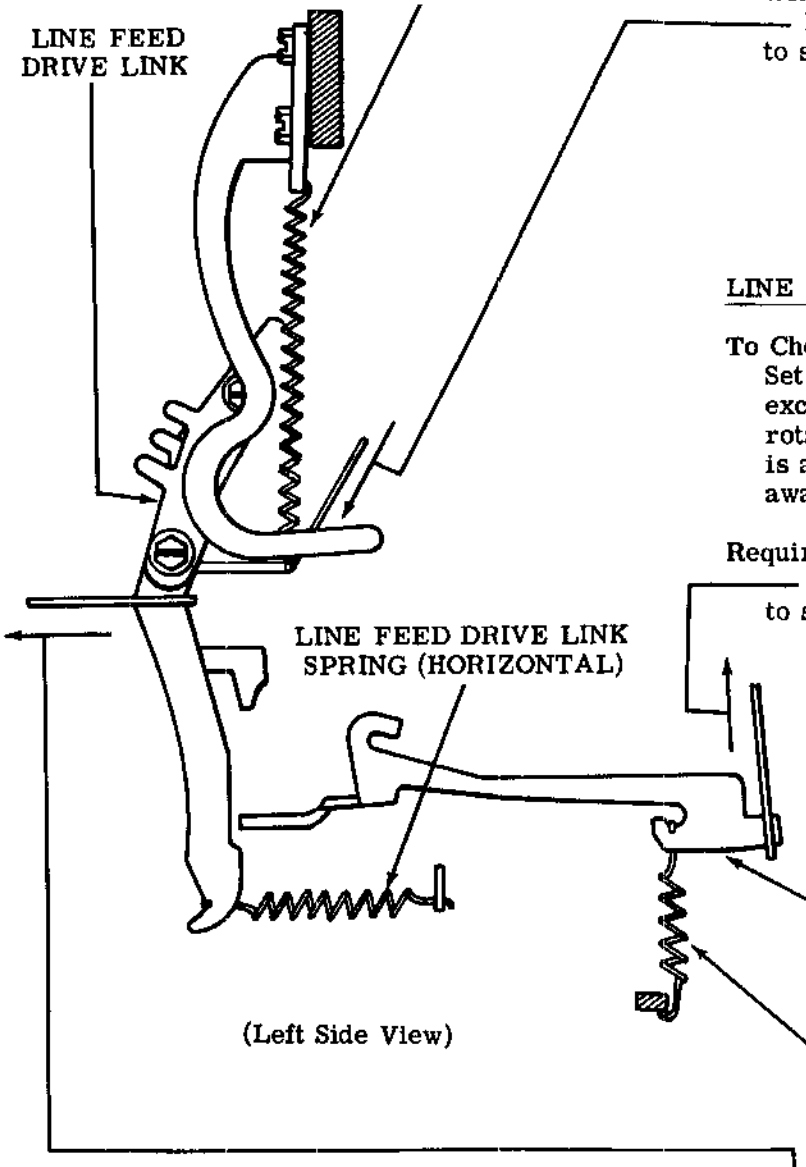


(Right Side View)

LINE FEED PAWL SPRING - F

Requirement
With typing unit in stop condition
Min 3/4 oz---Max 1-3/4 oz
to start line feed pawl moving.

2.104 Platen Area (continued)



LINE FEED DRIVE LINK SPRING — VERTICAL - F

Requirement
With typing unit in stop condition
Min 6 oz---Max 9 oz
to start line feed drive link moving.

LINE FEED BLOCKING LEVER SPRING - F

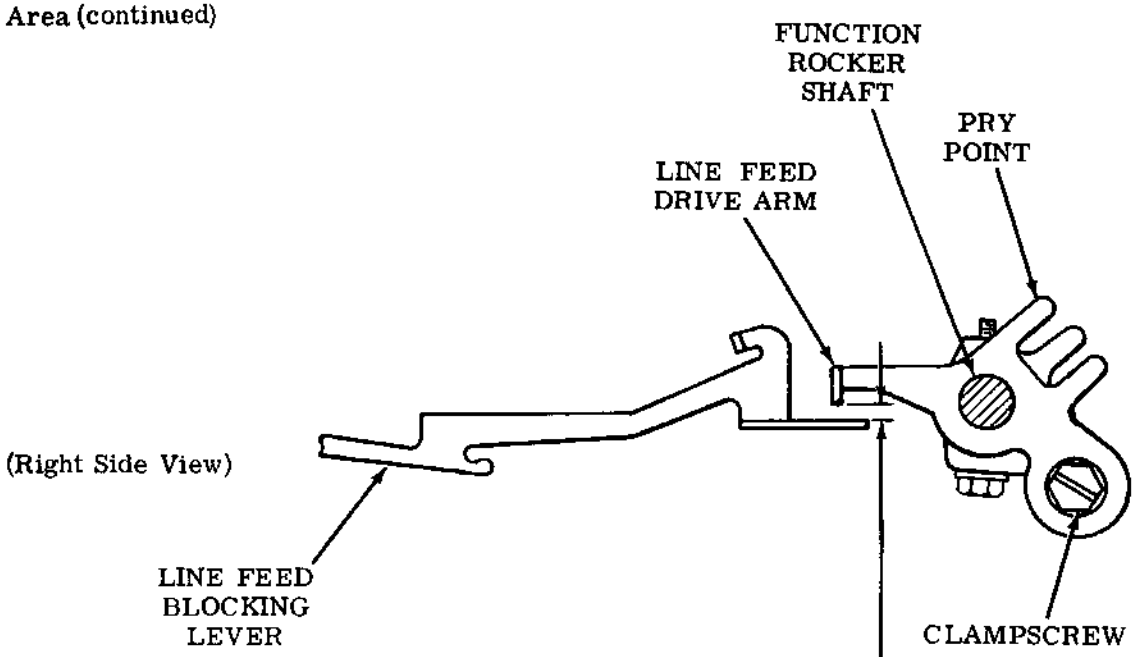
To Check
Set up any code combination in the selector except the line feed code combination and rotate the main shaft until the function bail is at highest point. Hold line feed drive link away from line feed blocking lever.

Requirement
Min 2-1/2 oz---Max 4-1/4 oz
to start line feed blocking lever moving.

LINE FEED DRIVE LINK SPRING — HORIZONTAL - F

Requirement
With typing unit in stop condition
Min 5-1/2 oz---Max 8-1/2 oz
to start line feed drive link moving.

2.105 Platen Area (continued)



LINE FEED DRIVE ARM CLEARANCE - F

To Check

Place carriage to center of platen. Manually operate typing unit and set up line feed code combination (-2-4---8) in selector. Rotate main shaft until function bail is at highest point. Take up play to make clearance between line feed blocking lever and line feed drive arm a minimum.

Requirement

Min some---Max 0.010 inch between line feed drive arm and line feed blocking lever.

To Adjust

Loosen clampscrew. Position line feed drive arm using pry point. Tighten clampscrew.

Related Adjustments

Affects

LINE FEED UPSTOP BRACKET POSITION - F (Par. 2.106)
LINE FEED DRIVE LINK POSITION - F (Par. 2.107)
LINE FEED PAWL DOWNSTOP POSITION - F (Par. 2.108)

Affected By

LEFT ROCKER DRIVE (Function Area) (Par. 2.33)
VERTICAL TYPE ALIGNMENT - F (Par. 2.101)

Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT - F (Par. 2.101) only when equipped with TP180526 nonadjustable vertical drive bail.

2.106 Platen Area (continued)

LINE FEED UPSTOP BRACKET POSITION - F

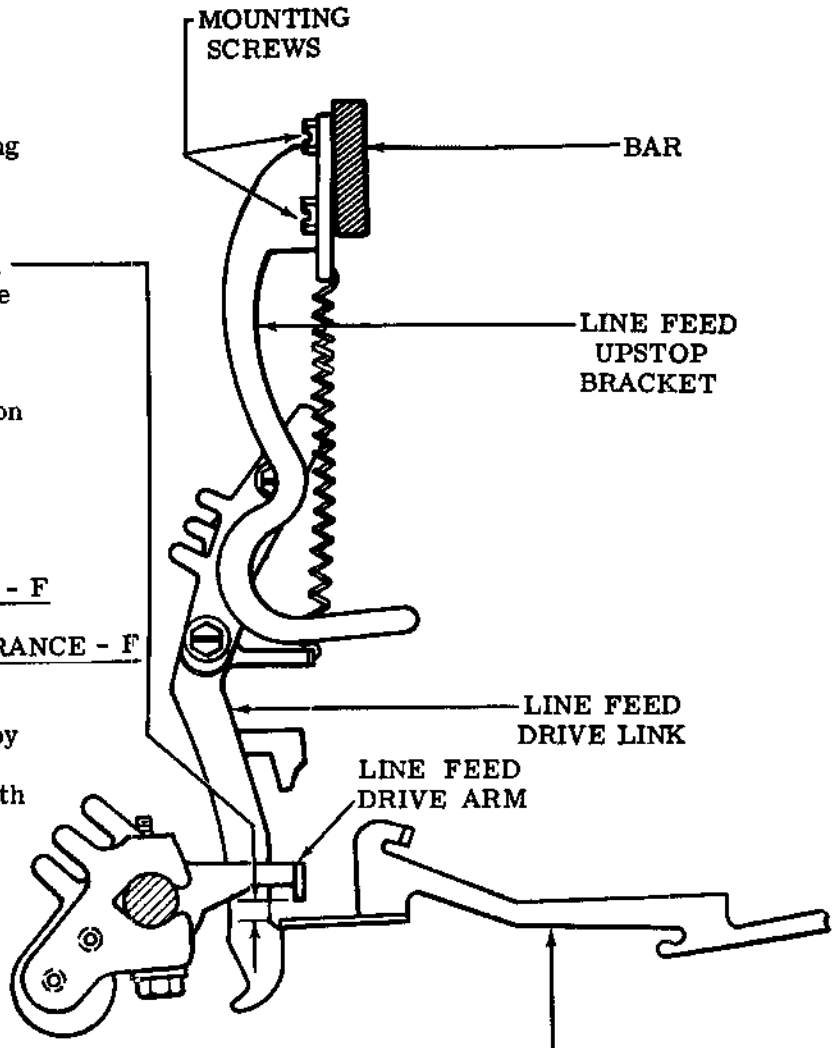
To Check
Place typing unit in stop condition. Trip function clutch by lifting its trip lever. Rotate main shaft until function bail is at highest point. Push down on line feed drive link to engage and latch line feed blocking lever.

Requirement
Min 0.020 inch---Max 0.040 inch between line feed drive arm and line feed blocking lever.

To Adjust
Loosen mounting screws and position line feed upstop bracket. Tighten mounting screws.

Related Adjustments
Affected By
VERTICAL TYPE ALIGNMENT - F (Par. 2.101)
LINE FEED DRIVE ARM CLEARANCE - F (Par. 2.105)

Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT (Par. 2.105) only when equipped with TP180526 nonadjustable vertical drive bail.



(Left Side View)

2.107 Platen Area (continued)

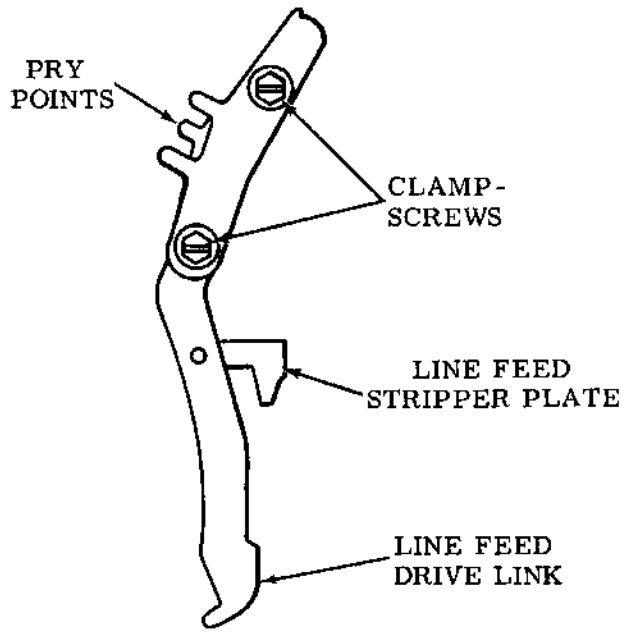
LINE FEED DRIVE LINK POSITION - F

To Check

Place the carriage to the center of the platen. Place the flat on left side of platen up and horizontally to base casting, and set up the line feed code combination (-2-4---8) in the selector. Rotate main shaft until function bail reaches its lowest point while noticing the motion supplied by the drive arm of the function rocker shaft to the line feed pawl.

(1) Requirement

The motion supplied by the drive arm of the function rocker shaft to the line feed pawl should be adequate to rotate the platen the required amount.

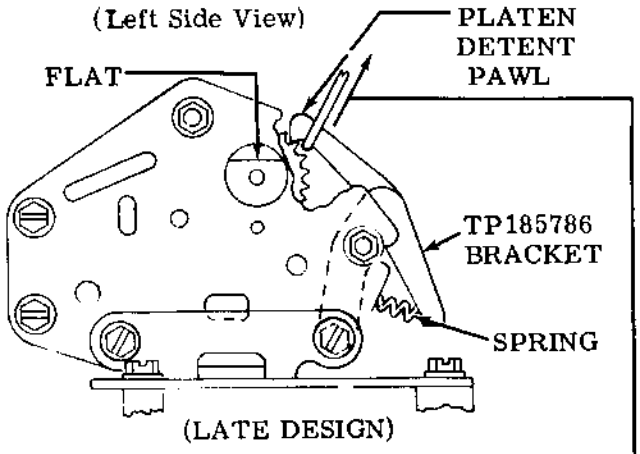


(Left Side View)

To Adjust

Loosen line feed stripper plate clampscrew and back off line feed stripper plate (see LINE FEED STRIPPER PLATE CLEARANCE adjustment). Loosen two clampscrews and use pry points to position line feed drive link so that line feed pawl indexes platen one tooth and platen detent pawl seats fully in ratchet. Tighten clampscrews.

Note: Hold platen detent pawl away from ratchet and rotate main shaft until function bail is in its lowest position. Lower platen detent pawl into its seat between two ratchet teeth. The platen should barely move.



(LATE DESIGN)

(Left Side View)

Related Adjustments

Affects

LINE FEED PAWL DOWNSTOP POSITION - F (Par. 2.108)

Affected By

DETENT POSITION - F (Par. 2.103)

LINE FEED DRIVE ARM CLEARANCE - F (Par. 2.105)

PLATEN DETENT PAWL SPRING - F

Requirement

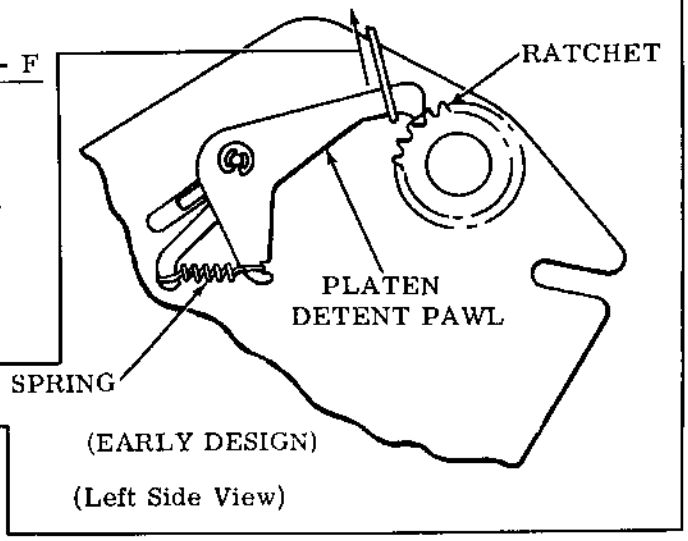
Early Design

Min 24 oz---Max 30 oz

Late Design

Min 31 oz---Max 37 oz

to start platen detent pawl moving.



(EARLY DESIGN)

(Left Side View)

2.108 Platen Area (continued)

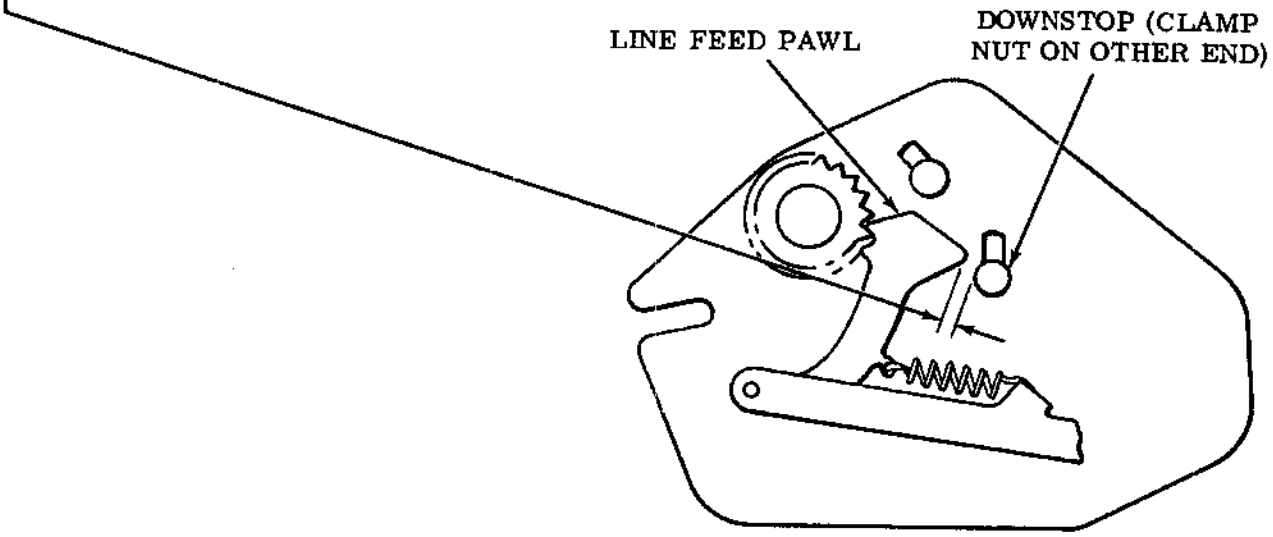
LINE FEED PAWL DOWNSTOP POSITION - F

To Check
Place the flat on left side of platen up and horizontal to base casting. Set up the line feed code combination (-2-4---8) in the selector. Rotate main shaft until function bail reaches its lowest position. Take up play of platen in left end plate toward the rear.

Requirement
With platen detent pawl fully seated in ratchet
Min some---Max 0.010 inch
Between back of line feed pawl and its downstop.

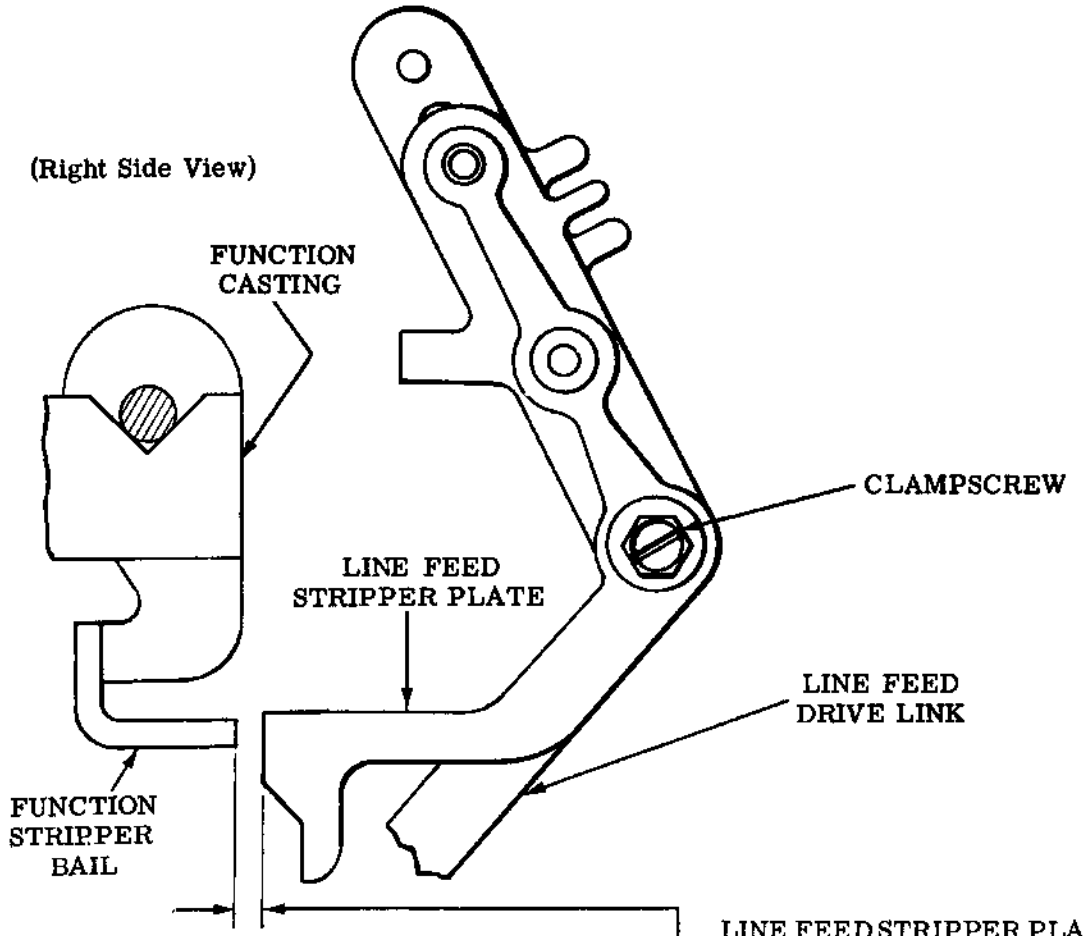
To Adjust
Loosen downstop clamp nut. Position downstop. Tighten clamp nut.

Affected By
LINE FEED DRIVE ARM CLEARANCE - F (Par. 2.105)
LINE FEED DRIVE LINK POSITION - F (Par. 2.107)



(Right Side View)

2.109 Platen Area (continued)



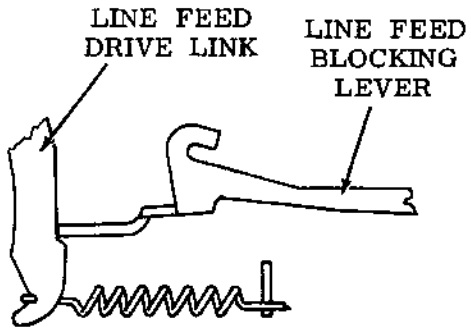
LINE FEED STRIPPER PLATE CLEARANCE - F

To Check

Set up the line feed code combination (-2-4---8) in the selector. Rotate the main shaft until function bail reaches its lowest point. Hold line feed link firmly against line feed blocking lever.

Requirement

The line feed stripper plate should be Min some---Max 0.005 inch away from function stripper bail.



To Adjust

Loosen clampscrew. Position line feed stripper plate. Tighten clampscrew.

Related Adjustments

Affected By

STRIPPER BAIL CLEARANCE (Function Area) (Par. 2.36)

PLATEN — HORIZONTAL POSITION - F (Par. 2.100)

2.110 Platen Area (continued)

PRESSURE ROLLER CLEARANCE - F

To Check
Position carriage with lock bracket left mounting screw directly under pressure roller. Release pressure roller (pressure lever placed in forward position).

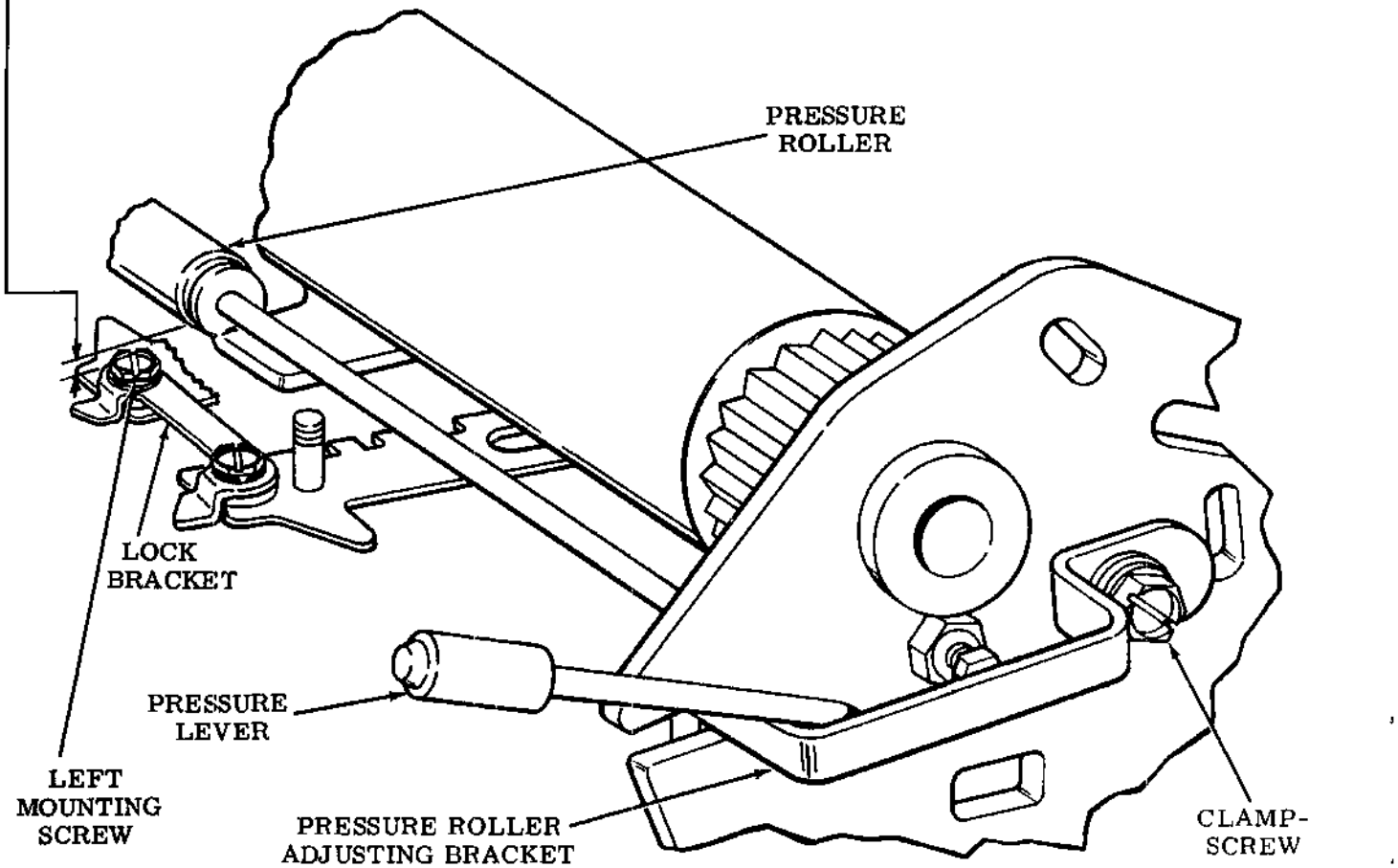
Requirement
Min 0.010 inch between pressure roller and left mounting screw.

Note: Clearance should not be so large that roller is not detented in released position.

To Adjust
Loosen clampscrew. Position pressure roller adjusting bracket. Tighten clampscrew.

Related Adjustment
Affected By
REAR RAIL POSITION (Carriage Area) (Par. 2.46)
VERTICAL TYPE ALIGNMENT - F (Par. 2.101)

Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT - F (Par. 2.101) only when equipped with TP180526 nonadjustable vertical drive bail.

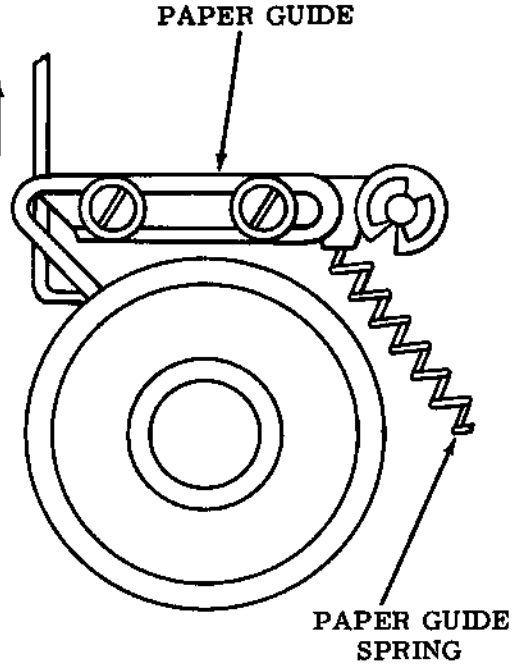


(Right Front View)

2.111 Platen Area (continued)

PAPER GUIDE SPRINGS - F

Requirement
With scale at either the left or right end of paper guide
Min 1-1/2 oz---Max 3-1/2 oz
to start paper guide moving.



(Right Side View)

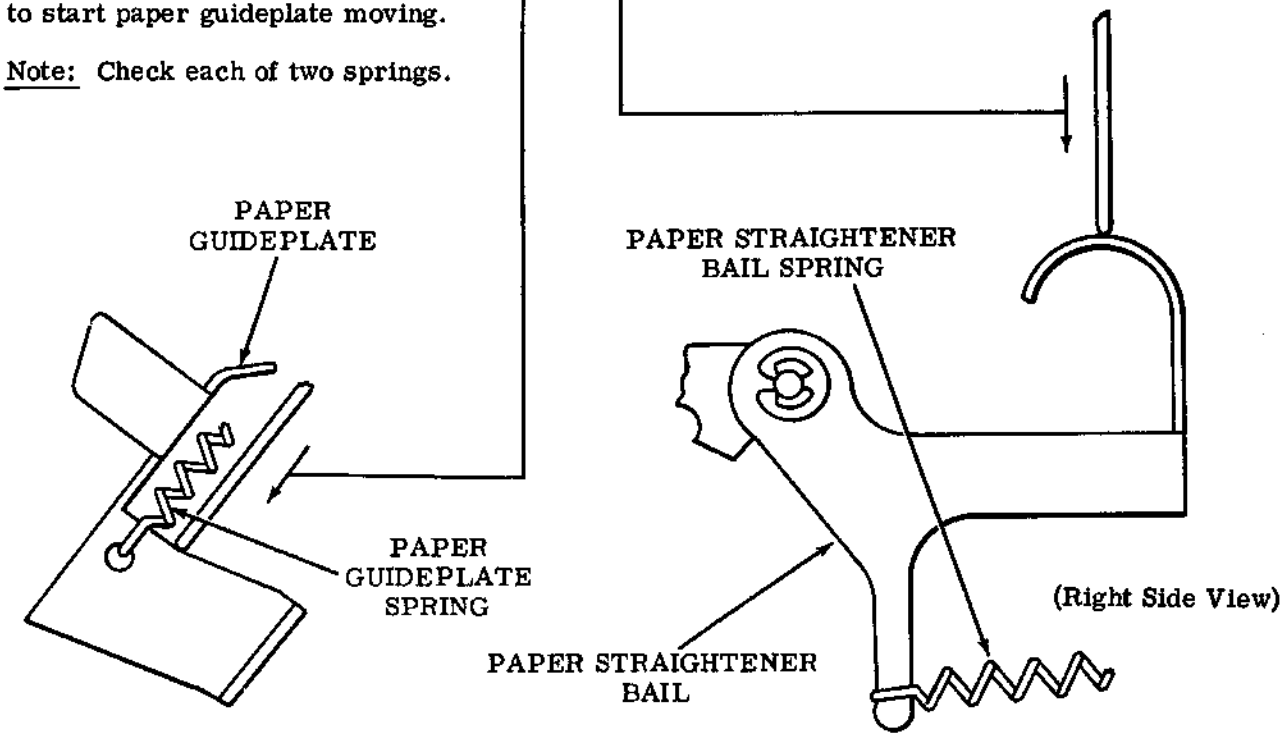
PAPER STRAIGHTENER BAIL SPRING - F

Requirement
With scale at center of paper straightener bail
Min 1 oz---Max 3 oz
to start paper straightener bail moving.

PAPER GUIDEPLATE SPRINGS - F

Requirement
With pressure lever released
Min 3/4 oz---Max 1-3/4 oz
to start paper guideplate moving.

Note: Check each of two springs.



(Right Side View)

(Right Side View)

2.112 Platen Area (continued)

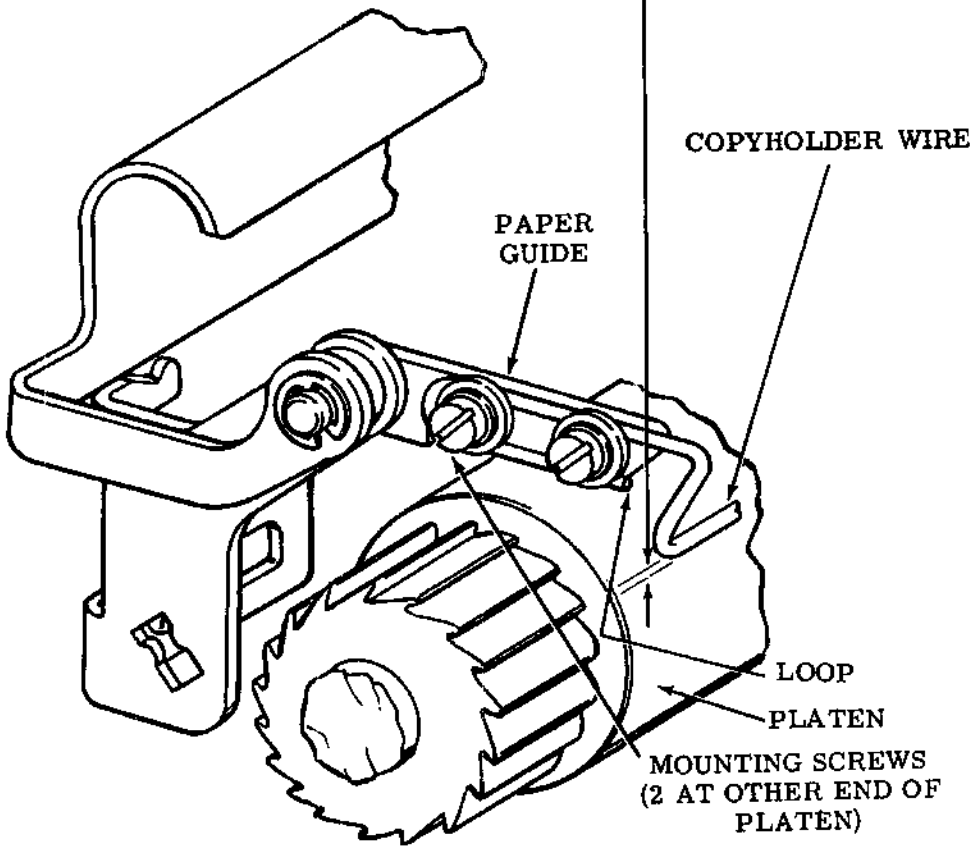
COPYHOLDER WIRE POSITION - F

(1) Requirement
The copyholder wire should fall somewhere between two lines of printed copy, not obscuring more than 1/2 the height of either line.

To Adjust
Loosen four mounting screws. Position copyholder wire. Tighten screws.

(2) Requirement
After raising and releasing, the copyholder wire should return and rest against the platen at its center with a maximum of 0.020 inch between platen and copyholder wire at both the left and right ends.

To Adjust
Bend copyholder wire.



(Left Side View)

2.113 Platen Area (continued)

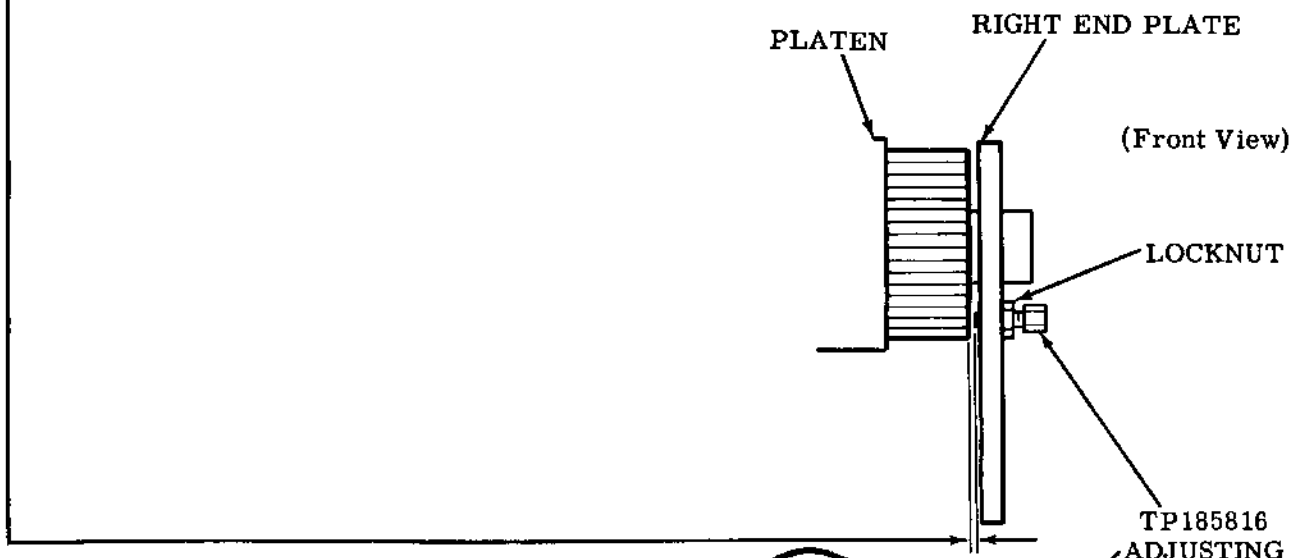
PLATEN ENDPLAY - F

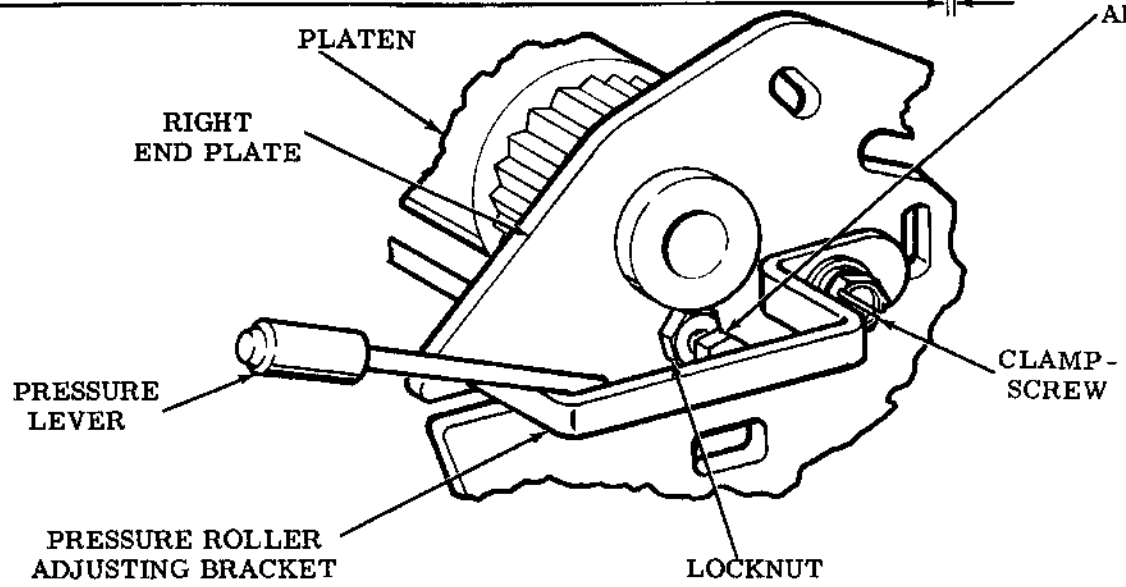
Note: This adjustment applies only to typing units equipped with TP185816 adjusting screw.

To Check
Position platen against the left end plate.

Requirement
Min 0.002 inch---Max 0.015 inch
between the TP185816 adjusting screw and the right end of the platen.

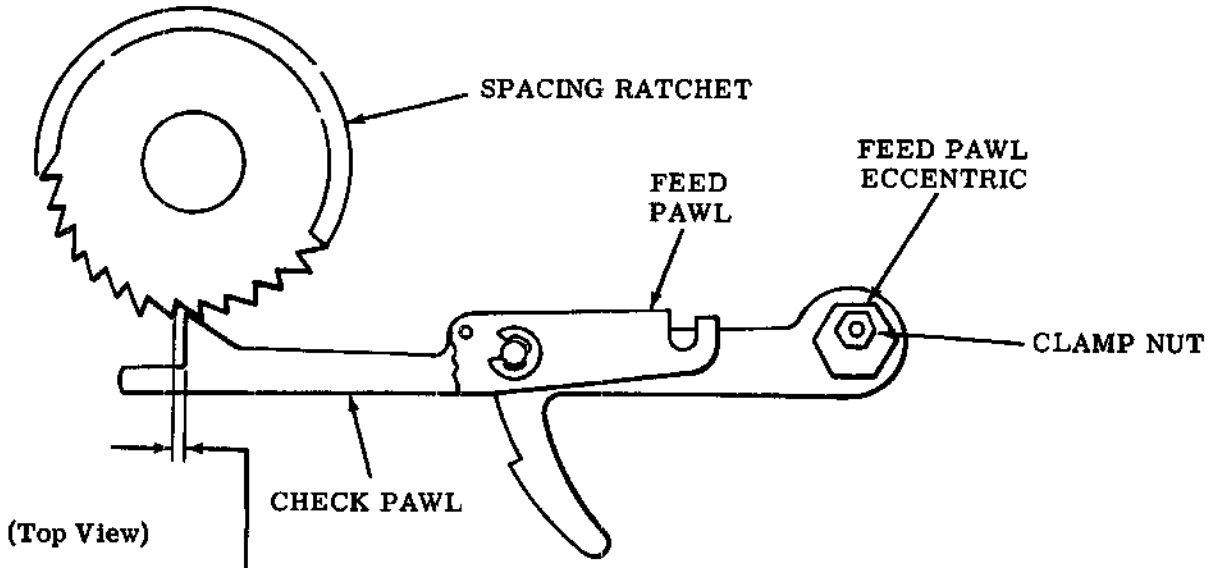
To Adjust
Loosen the locknut. Position platen against the left end plate. Position the TP185816 adjusting screw. Tighten locknut.





(Right Front View)

2.114 Spacing Area (continued)



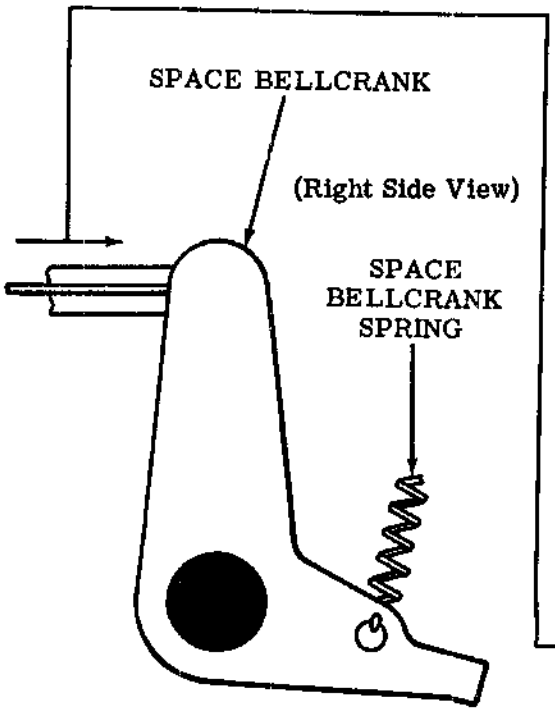
FEED PAWL STOP POSITION

To Check
Place carriage at center of platen. Place typing unit in stop condition.

Requirement
With feed pawl in full engagement with spacing ratchet
Min 0.004 inch---Max 0.018 inch between check pawl and spacing ratchet tooth.

To Adjust
Loosen clamp nut. Rotate feed pawl eccentric. Keep high part of eccentric toward front. Tighten clamp nut.

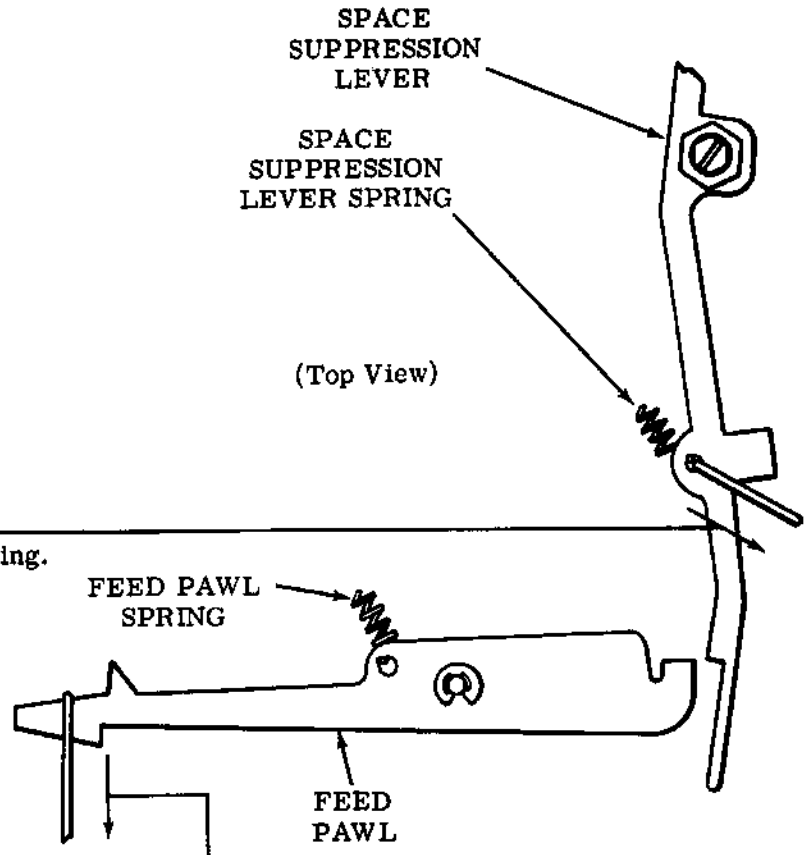
Related Adjustment
Affected By
PRINT TRIP LEVER RELEASE (Carriage Area) (Par. 2.50)



SPACE BELLCRANK SPRING

Requirement
With typing unit in stop condition
Min 3 oz---Max 5 oz to start bellcrank moving.

2.115 Spacing Area (continued)



SPACE SUPPRESSION LEVER SPRING

Requirement
With typing unit in stop condition
Min 1-1/2 oz---Max 3 oz
to start space suppression lever moving.

FEED PAWL SPRING

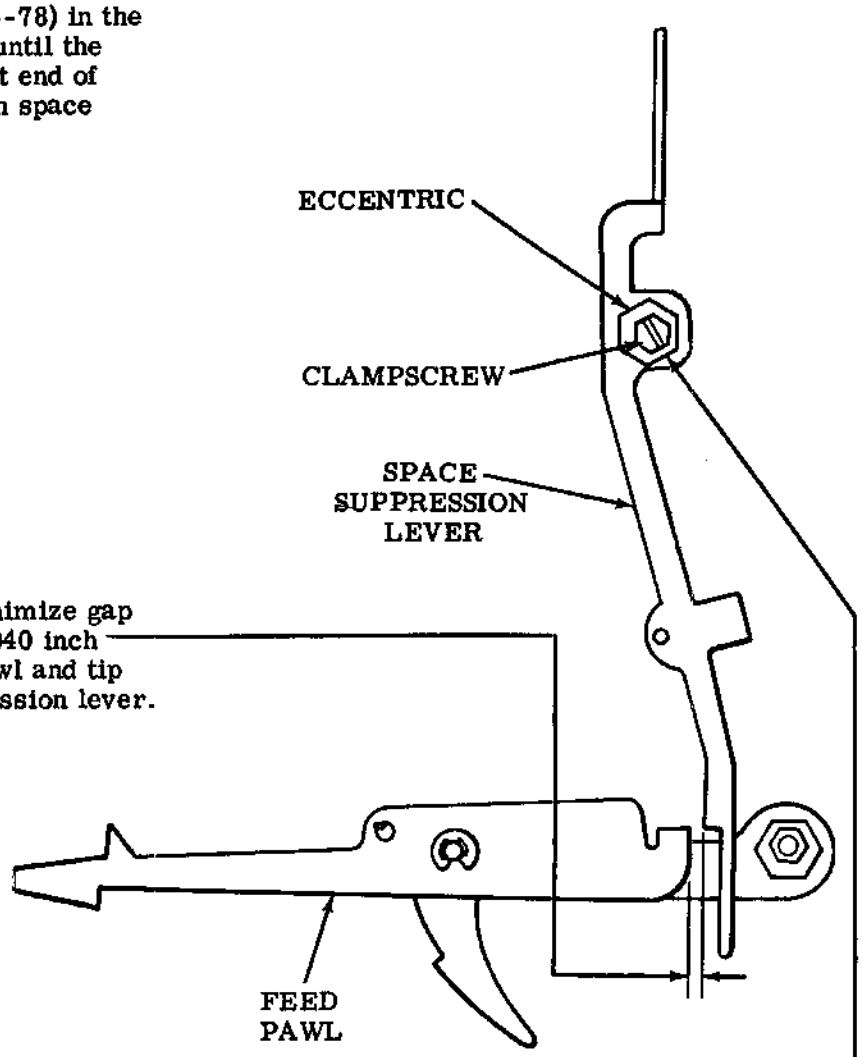
Requirement
With typing unit in stop condition
and feed pawl disengaged from
spacing ratchet
Min 2 oz---Max 4 oz
to start feed pawl moving.

2.116 Spacing Area (continued)

SPACE SUPPRESSION LEVER CLEARANCE — PRINTING

To Check

Move carriage to the center of platen. Set up the @ code combination (------78) in the selector. Rotate the main shaft until the front vertical surface of the right end of feed pawl is aligned with notch on space suppression lever.



(Top View)

(1) Requirement

With all play taken up to minimize gap Min 0.005 inch---Max 0.040 inch between right end of feed pawl and tip of notch on the space suppression lever.

(2) Requirement

The position of high part of eccentric should be toward the rear of the typing unit.

To Adjust

Loosen eccentric clampscrew friction tight. Position eccentric. Tighten eccentric clampscrew.

Related Adjustment Affected By

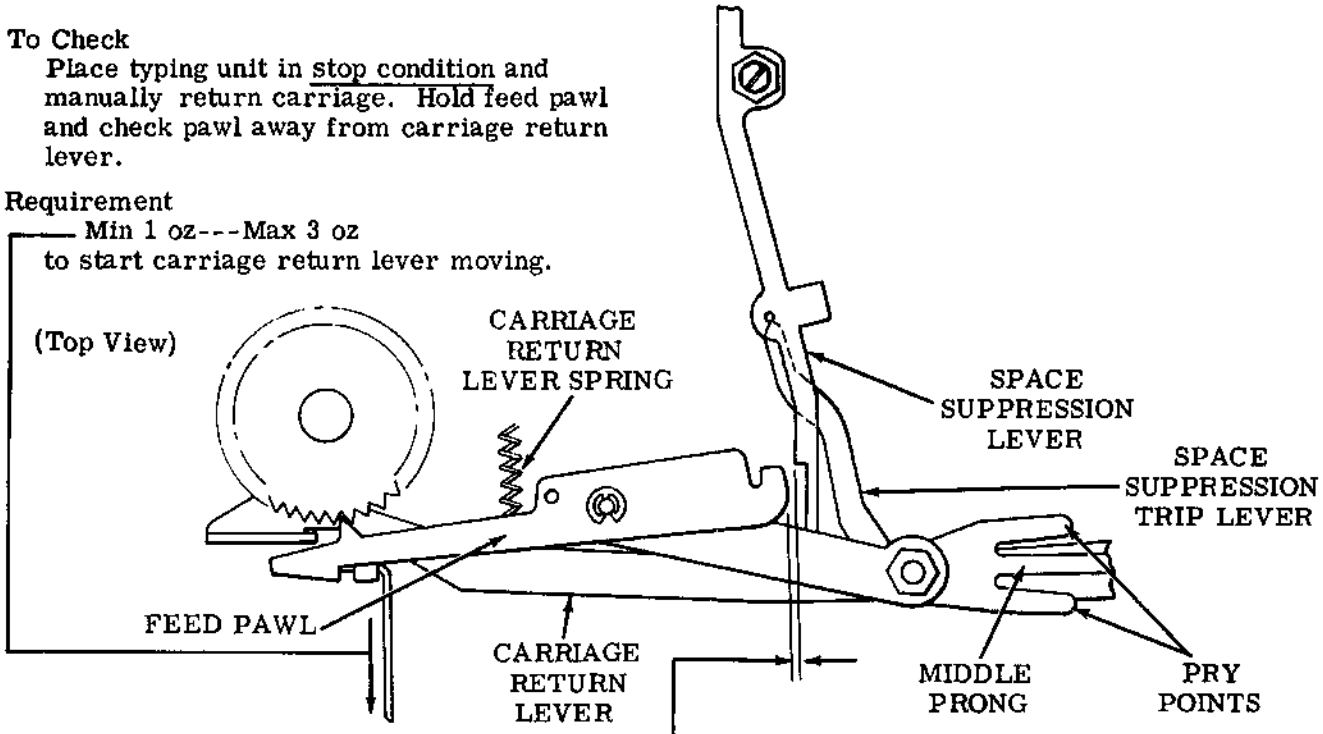
CODEBAR RESET LEVER POSITION (Function Area) (Par. 2.28)

2.117 Spacing Area (continued)

CARRIAGE RETURN LEVER SPRING

To Check
Place typing unit in stop condition and manually return carriage. Hold feed pawl and check pawl away from carriage return lever.

Requirement
Min 1 oz---Max 3 oz
to start carriage return lever moving.



SPACE SUPPRESSION LEVER CLEARANCE – SPACING

To Check
Move carriage to the center of platen. Set up space code combination (-----6-8) in the selector. Rotate main shaft until front vertical surface of right end of feed pawl is aligned with notch on space suppression lever.

Requirement
With all play taken up to minimize gap
Min 0.005 inch---Max 0.040 inch
between right end of feed pawl and tip of notch on space suppression lever.

To Adjust
Position the space suppression trip lever by bending the middle prong using the proper pry point.

Note: Use front pry point to increase clearance and rear pry point to decrease clearance between feed pawl and space suppression lever.

Related Adjustment
Affected By
RIGHT ROCKER DRIVE (Function Area) (Par. 2.35)

2.118 Spacing Area (continued)

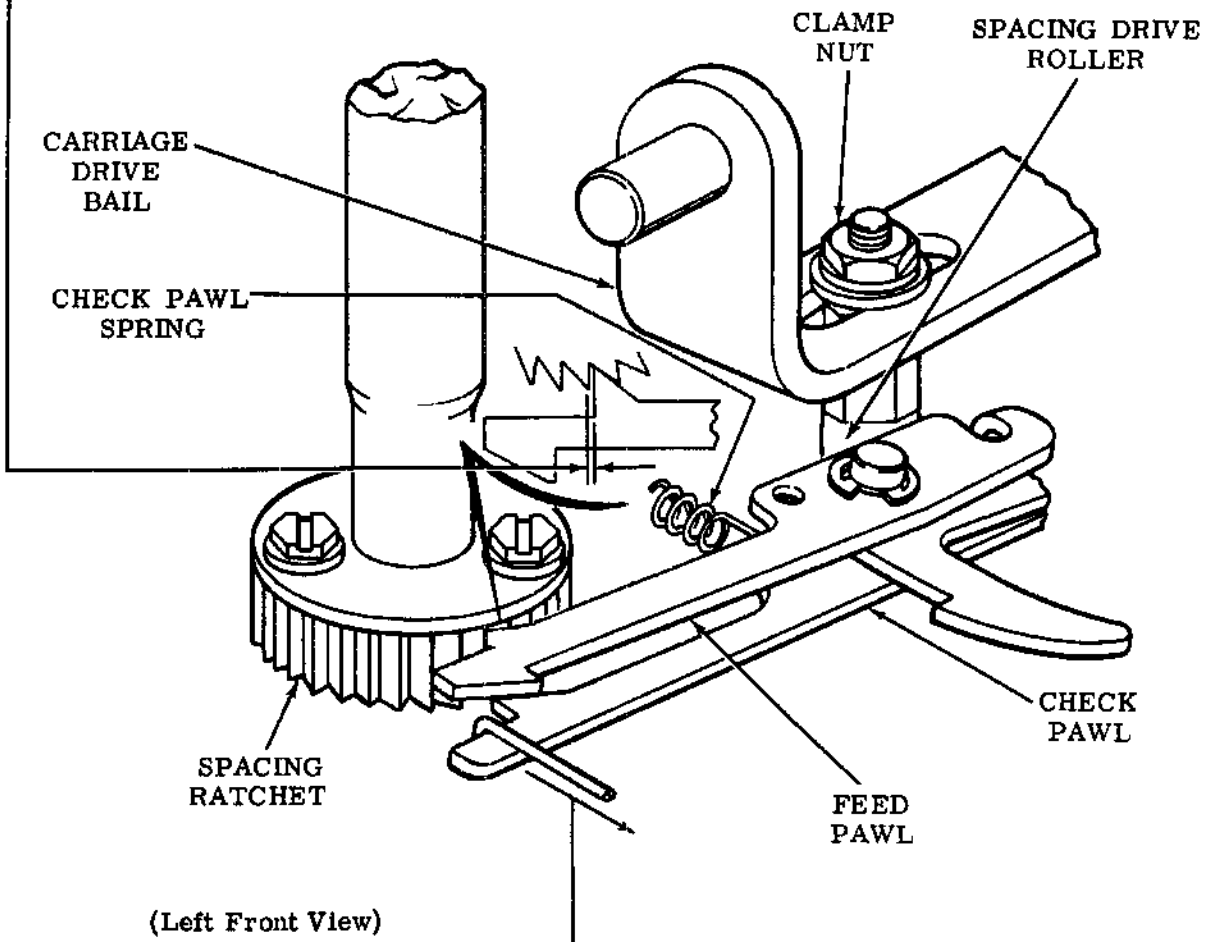
FEED PAWL TRAVEL

To Check
Place carriage to left margin and set up the character M code combination (1-34--78) in selector. Rotate main shaft until carriage drive bail reaches its rearmost position. Hold check pawl away from ratchet.

Requirement
Min 0.005 inch---Max 0.030 inch between the feeding surface of the feed pawl and the face of ratchet.

To Adjust
Loosen clamp nut. Position spacing drive roller. Tighten clamp nut.

Related Adjustments
Affected By
PRINT TRIP LEVER RELEASE (Carriage Area) (Par. 2.50)
LEFT MARGIN PRINTING (Par. 2.96)



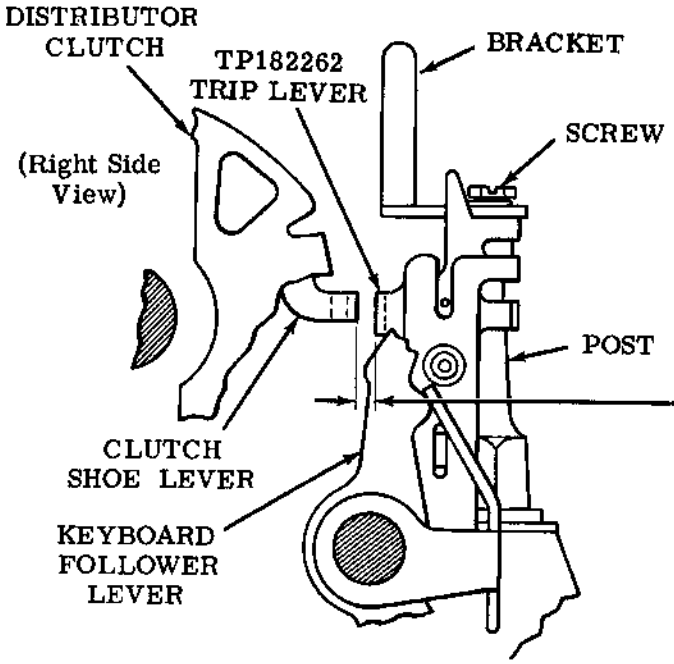
(Left Front View)

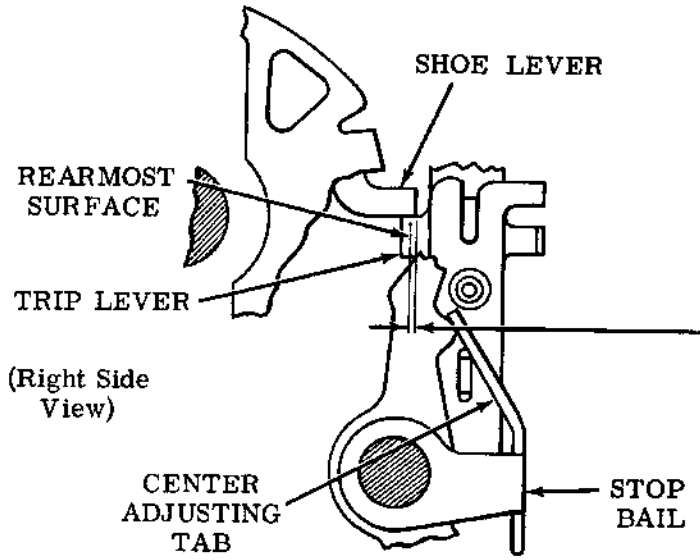
CHECK PAWL SPRING

Requirement
With typing unit in stop condition
Min 3/4 oz---Max 1-1/2 oz to start check pawl moving.

2.119 Distributor Area (continued)

Note 1: Before proceeding, replace typing unit onto subbase. For instructions, see the appropriate disassembly and reassembly section.





Related Adjustments

Affects

TRIP LEVER CLEARANCE — (Answer-Back Area) (Par. 3.08)

SHOE LEVER (Appropriate Tape Reader Section)

Affected By

DISTRIBUTOR TRIP LINKAGE (Appropriate Keyboard Section)

Note 2: Do not lift typing unit while holding any part of the selector mechanism. Note the proper method for lifting the typing unit. This method is described in the appropriate disassembly and reassembly section.

TRIP LEVER ENGAGEMENT

Note 3: The answer-back control lever and reader trip lever should not be touching their respective stop bail adjusting tabs when checking this adjustment.

Note 4: Perform (1) To Check only on late design units containing the TP182262 trip lever.

(1) To Check

Disengage (latch) distributor clutch. Depress any nonfunction keytop to unlatch distributor clutch. If necessary, loosen screw and position bracket to obtain clearance between bracket and trip lever. Tighten screw. Rotate clutch to align upper edges of shoe lever and trip lever.

Requirement

Min 0.015 inch---Max 0.035 inch between shoe lever and trip lever.

To Adjust

Remove answer-back drum. Use TP180993 bending tool to bend center adjusting tab. Replace answer-back drum.

CAUTION: TO PREVENT ELECTRICAL SHOCK EXERCISE CARE WHEN WORKING WITH TYPING UNIT UNDER POWER.

(2) To Check

Operate typing unit under power. Place keyboard universal lever in latched position.

Requirement

Shoe lever should be

Min flush---Max 0.015 inch beyond rearmost surface of trip lever.

To Adjust

Early Design (without TP182262)

Remove answer-back drum. Use TP180993 bending tool to bend center adjusting tab. Replace answer-back drum.

Late Design (with TP182262)

Loosen screw friction tight and position bracket. Tighten screw.

2.120 Selector Area (continued)

RECEIVING MARGINS

To Check
Set up test situation using typing unit and Signal Distortion Test Set to check selector receiving margins.

Requirement
Obtain minimum selector receiving margins as follows:

SPEED	RANGE ZERO DISTORTION	OVERALL BIAS	END DISTORTION
All Speeds	No Requirement	35 Percent*	33 Percent*

*At same range scale setting.

To Adjust
Refine ARMATURE SPRING (Par. 2.18) and, if necessary, refine ARMATURE BRACKET POSITION (Par. 2.17) and/or BELT TENSION (Par. 2.26) adjustments.

Note: The refinement of the ARMATURE BRACKET POSITION (Par. 2.17) or BELT TENSION (Par. 2.26) adjustment need not be performed unless the refinement of the ARMATURE SPRING (Par. 2.18) adjustment fails to bring about the minimum selector receiving margins.

Related Adjustments
Affected By
ARMATURE BRACKET POSITION (Par. 2.17)
ARMATURE SPRING (Par. 2.18)
BELT TENSION (Par. 2.26)

2.121 Carriage Area (continued)

FINAL PRINTING ALIGNMENT

Note: When typing unit is adjusted as instructed on previous pages, quality of printed copy should be good. However, minor readjustments may be necessary

To Check
Print TH at various points along length of printing line.

Requirement
Quality of printed characters should be good.

To Adjust
Use the following guide in making readjustments.

Shading of top and bottom of characters not equal and/or underscoring or overscoring of characters ---
---refine VERTICAL TYPE ALIGNMENT - FS (Platen Area) (Par. 2.101 - F and 2.79 - S) adjustment by either moving typewheel vertically (late design) or moving platen toward portion of light shading (early design).

Left character T or poor quality ---
---using left pry points, refine TYPEWHEEL POSITIONING (Par. 2.48) adjustment.

Right character H of poor quality ---
---using right pry points, refine TYPEWHEEL POSITIONING (Par. 2.48) adjustment.

Characters spread out ---
---refine TYPEWHEEL POSITIONING (Par. 2.48) adjustment by moving plate frontward.

Characters run together ---
---refine TYPEWHEEL POSITIONING (Par. 2.48) adjustment by moving plate rearward.

Both characters of light shading on left side ---
---refine TYPEWHEEL "HOME" POSITION (Par. 2.57) adjustment by rotating wheel clockwise as viewed from top.

Both characters of light shading on right side ---
---refine TYPEWHEEL "HOME" POSITION (Par. 2.57) adjustment by rotating wheel counterclockwise as viewed from top.

3. VARIATIONS TO BASIC ADJUSTMENTS

3.01 Answer-Back Area

Note 1: On typing units equipped for two-color printing, perform BLOCKING LINK CLEARANCE (Two-Color Printing Area) (Par. 3.18) in place of the following adjustment.

Note 2: The answer-back trip lever adjusting tab should clear the control lever before proceeding with the following adjustments.

BLOCKING LINK CLEARANCE

To Check

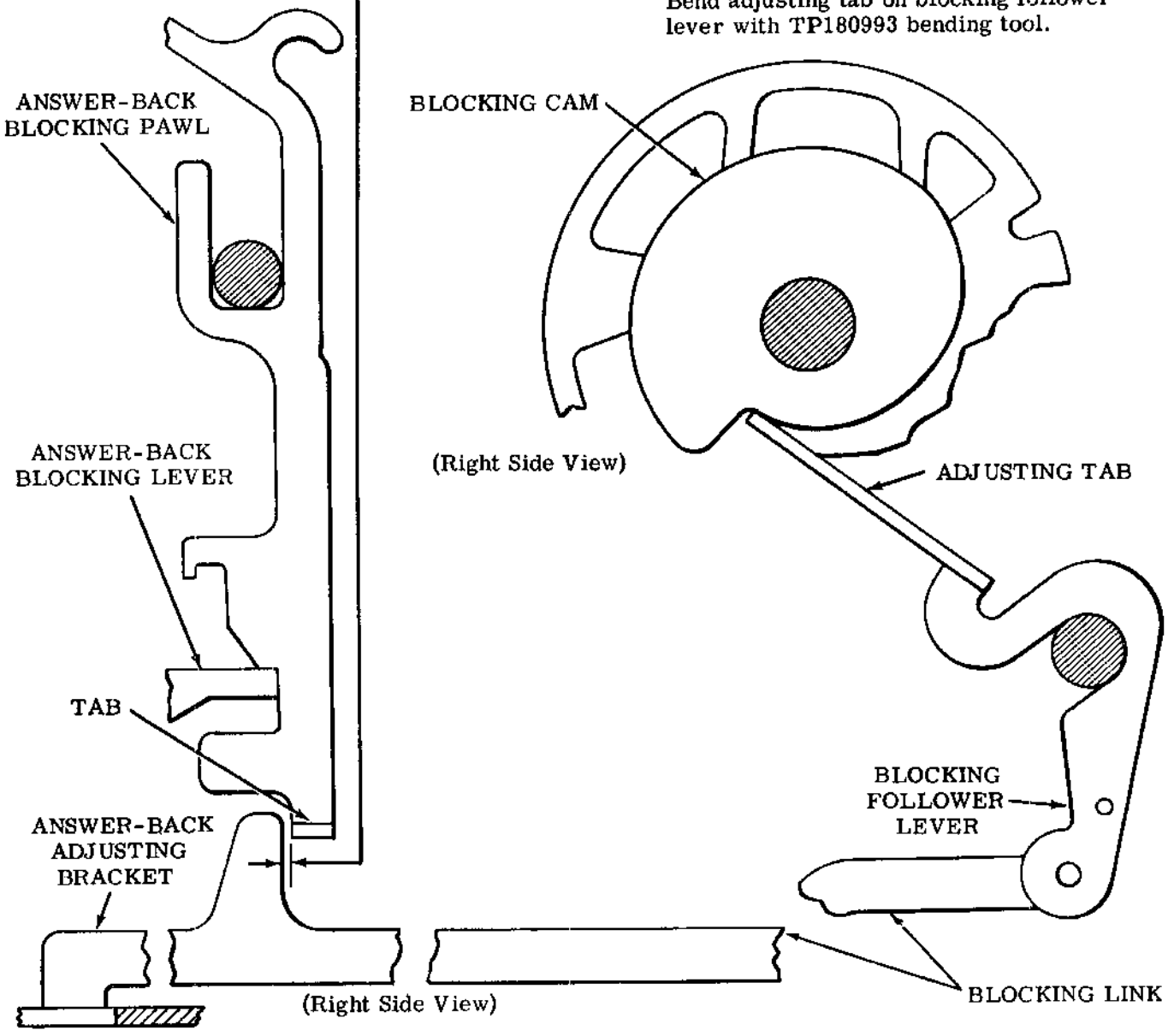
Disengage (latch) distributor and function clutches, engage the answer-back blocking lever fully in indent of answer-back blocking pawl. Take up play in the answer-back blocking pawl toward the front of the typing unit.

Requirement

Min some---Max 0.020 inch between the blocking link and tab on answer-back blocking pawl.

To Adjust

Bend adjusting tab on blocking follower lever with TP180993 bending tool.



3.02 Answer-Back Area (continued)

Note: The adjustments on this page apply only to typing units equipped with an answer-back trip magnet mechanism.

TRIP MAGNET POSITION

Requirement
Magnet bracket to be positioned as far forward and to the left on base casting post as possible.

To Adjust
Loosen three mounting screws. Position magnet bracket. Tighten screws.

Related Adjustments
Affects
TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Par. 3.02)
TRIP LEVER ADJUSTING TAB CLEARANCE (Par. 3.13)
TRIP MAGNET (Appropriate tape reader section)

TRIP LEVER OVERTRAVEL AND ARMATURE GAP

To Check
With the answer-back drum fully detented in its home position, trip distributor clutch and rotate main shaft until the pointer of the distributor brush holder is in line with the intersection of the conductor path and the stop segment. Control lever must be clear of answer-back to trip lever adjusting tab — if necessary, bend tab forward to provide clearance. Place armature in its attracted position, and take up play toward rear of typing unit.

(1) Requirement
Min 0.006 inch---Max 0.015 inch between the end of armature extension and end of answer-back blocking latch.

To Adjust
Loosen armature extension mounting screw friction tight. Position the armature extension using pry points. Tighten screw.

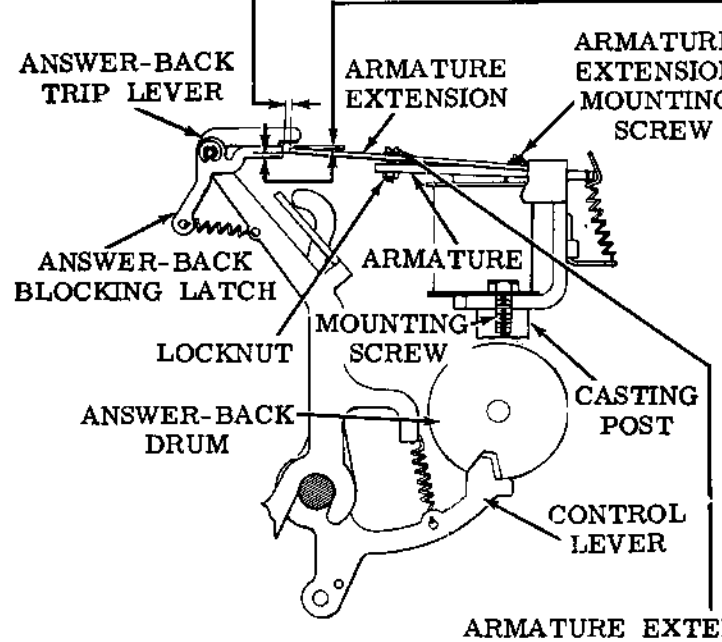
(2) Requirement
Front end of armature extension should be vertically centered between the top and bottom surfaces of the answer-back blocking latch as gauged by eye.

To Adjust
Loosen armature extension adjusting screw locknut friction tight. Position armature extension using armature extension adjusting screw. Tighten locknut.

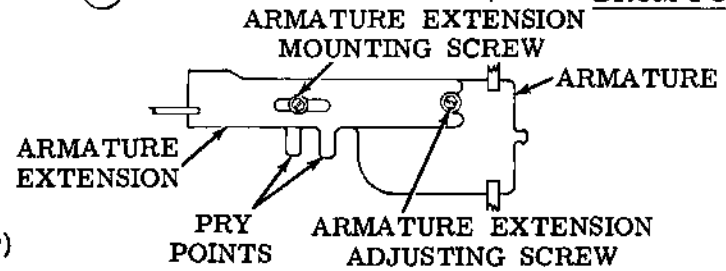
Related Adjustments
Affects
TRIP LEVER ADJUSTING TAB CLEARANCE (Par. 3.13)
CHARACTER SUPPRESSION CONTACT WIRE GAP (Par. 3.14)

Affected By
TRIP MAGNET POSITION (Par. 3.02)
DRUM POSITION (Par. 3.07)

(Right Side View)



(Top View)

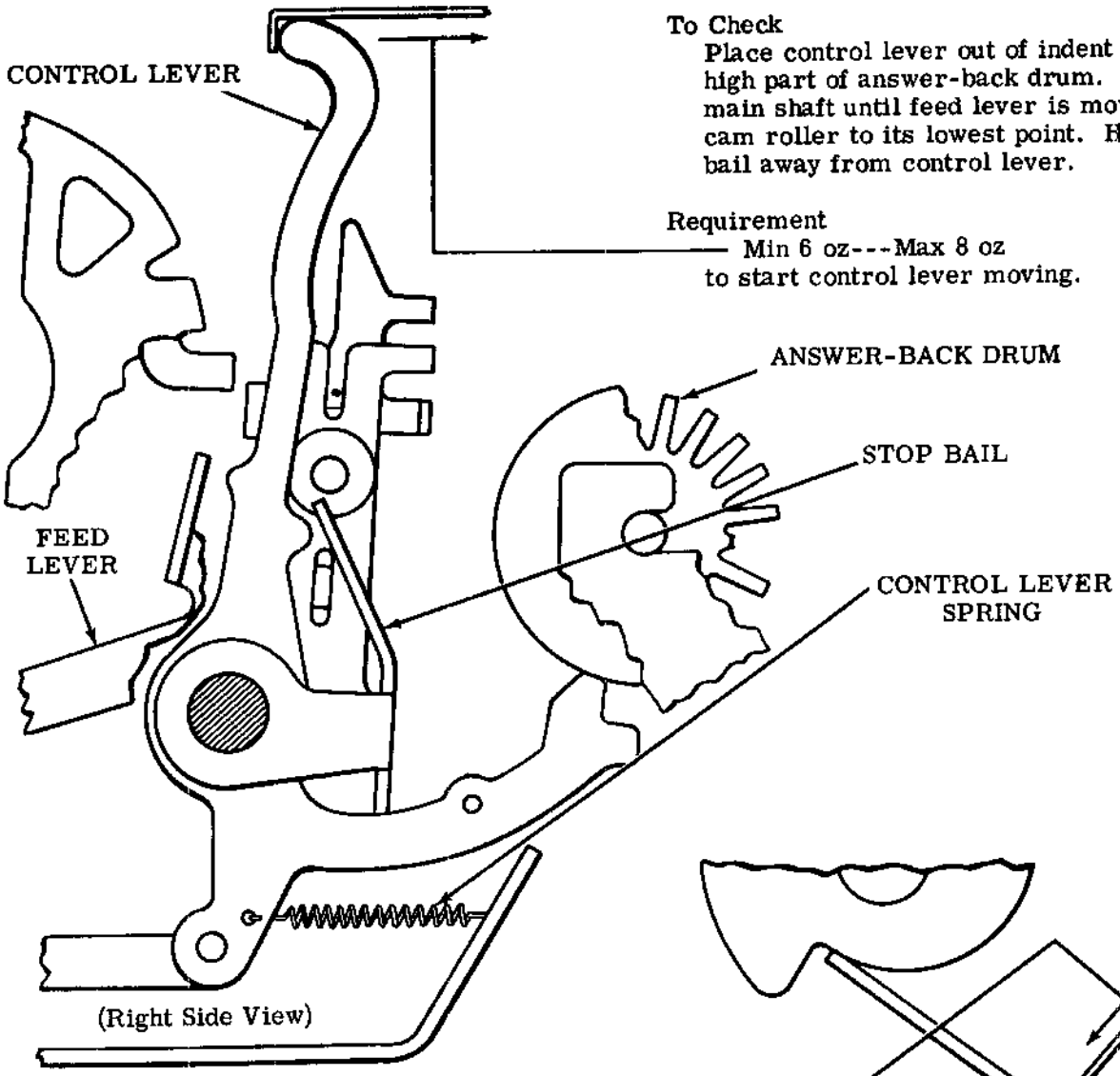


3.03 Answer-Back Area (continued)

CONTROL LEVER SPRING — HORIZONTAL

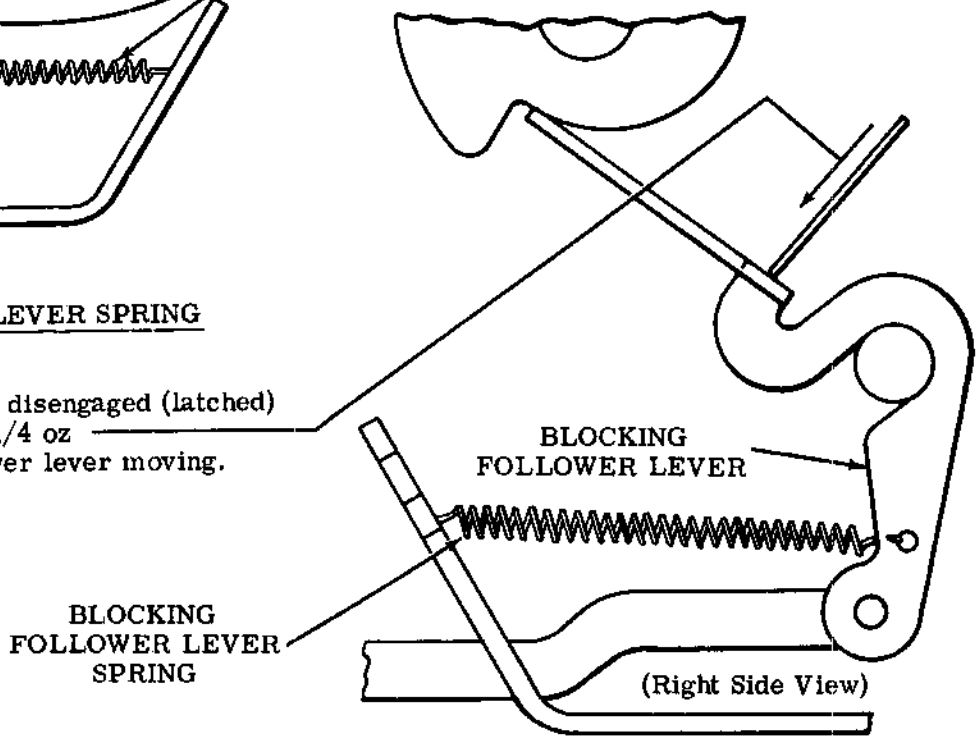
To Check
Place control lever out of indent and on high part of answer-back drum. Rotate main shaft until feed lever is moved by cam roller to its lowest point. Hold stop bail away from control lever.

Requirement
Min 6 oz---Max 8 oz
to start control lever moving.



BLOCKING FOLLOWER LEVER SPRING

Requirement
With distributor clutch disengaged (latched)
Min 1 oz---Max 2-1/4 oz
to start blocking follower lever moving.



3.04 Answer-Back Area (continued)

CONTROL LEVER SPRING — VERTICAL (Early Design)

Note: This adjustment applies to early design typing units with TP180843 trip lever.

Requirement
With distributor clutch tripped and blocking follower lever on high part of blocking cam
Min 7-1/2 oz---Max 10-1/2 oz
to start control lever moving.

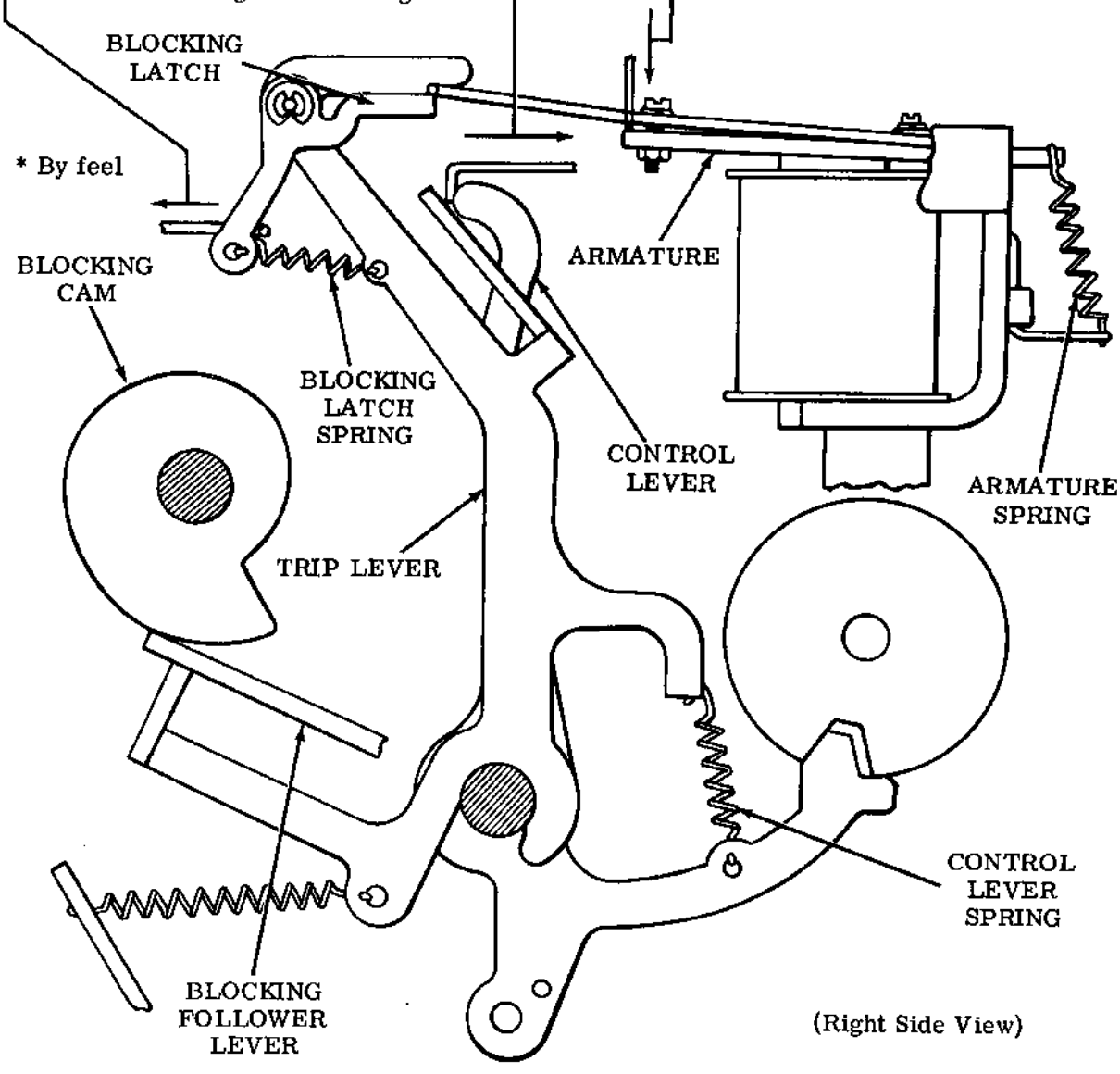
BLOCKING LATCH SPRING

Requirement
With distributor clutch disengaged (latched)
Min some*---Max 3/4 oz
to start blocking latch moving.

ARMATURE SPRING

To Check
Trip distributor clutch. Rotate main shaft until blocking follower lever is on high part of blocking cam and armature is in its unattracted position.

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



(Right Side View)

3.05 Answer-Back Area (continued)

TRIP LEVER SPRING

To Check

Disengage (latch) distributor clutch. Manually trip armature. Position stop bail so that its adjusting tab does not interfere with control lever. Hold armature in its attracted position.

Requirement

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

CONTROL LEVER SPRING — VERTICAL (Late Design)

Note: This adjustment applies to late design typing units with TP182276 trip lever.

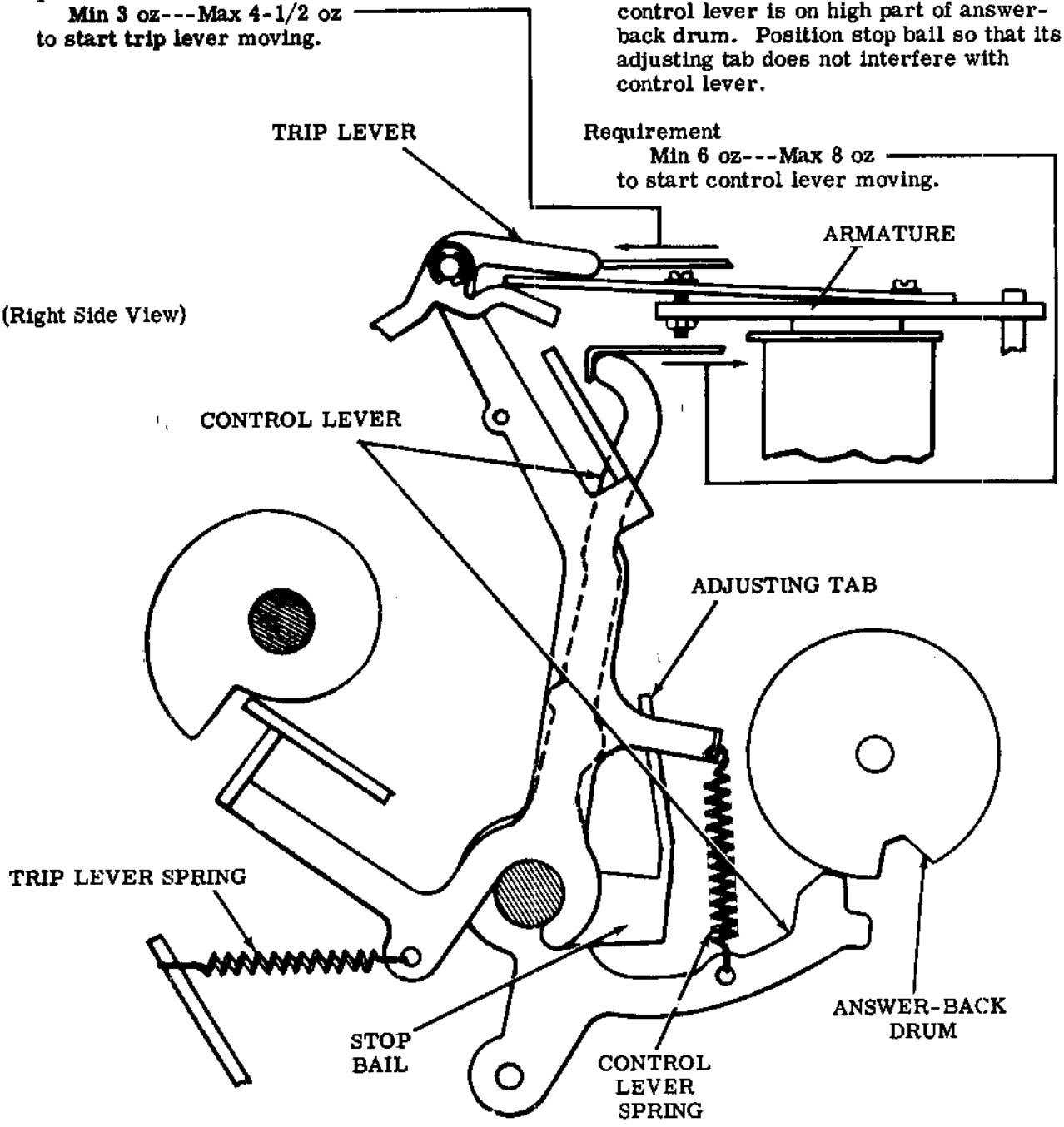
To Check

Disengage (latch) distributor clutch. Manually rotate the answer-back drum until control lever is on high part of answer-back drum. Position stop bail so that its adjusting tab does not interfere with control lever.

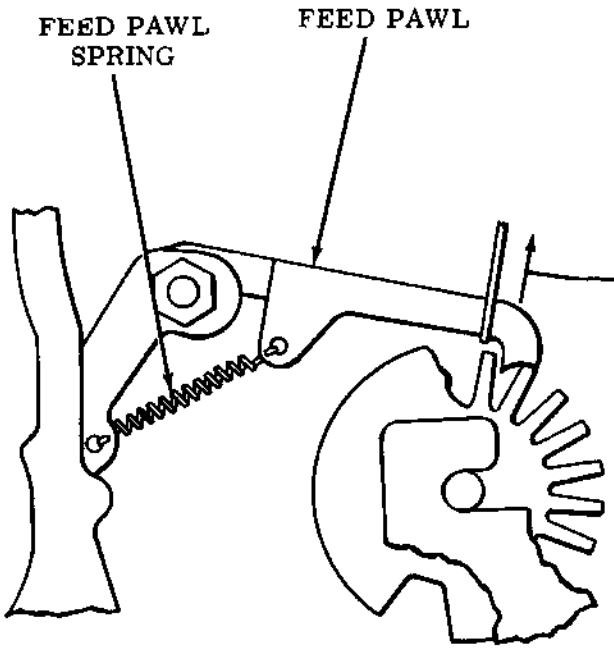
Requirement

Min 6 oz---Max 8 oz to start control lever moving.

(Right Side View)



3.06 Answer-Back Area (continued)



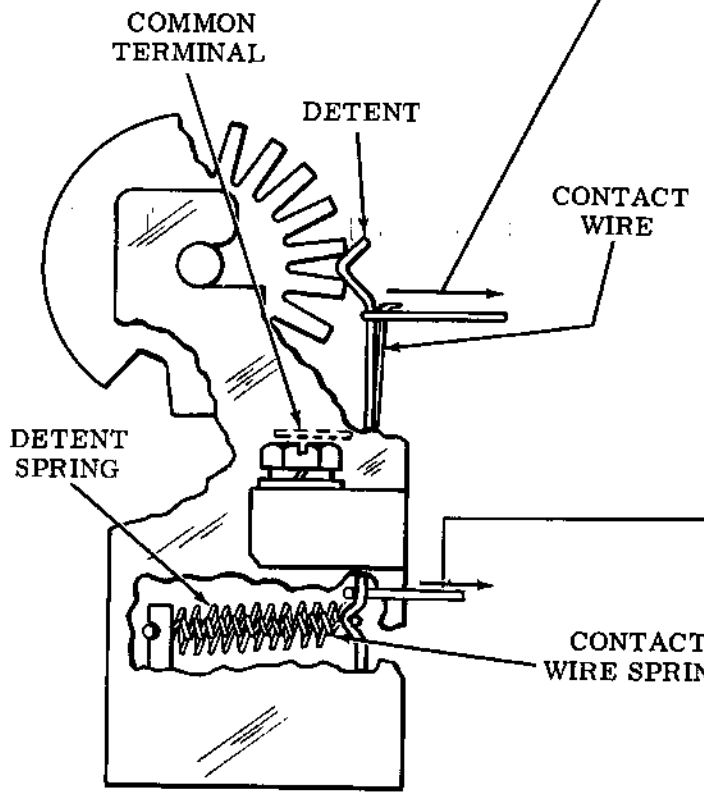
FEED PAWL SPRING

Requirement
With distributor clutch disengaged (latched)
Min 1/2 oz---Max 1-1/4 oz
to start feed pawl moving.

(Right Side View)

DETENT SPRING

Requirement
Min 8 oz---Max 12 oz
to start detent moving.



CONTACT WIRE SPRING

Requirement
Min 1 oz---Max 2 oz
to start contact wire moving away from common terminal.

(Right Side View)

3.07 Answer-Back Area (continued)

DRUM POSITION

To Check

Engage lower extension of control lever in indent of answer-back drum and locate detent lever between ST and 20 rows on answer-back drum. Disengage (latch) distributor clutch. Hold the feed pawl out of engagement with the answer-back drum and manually move the upper extension of the control lever toward the rear of the typing unit while checking to see that the answer-back drum is fully detented. Move the upper extension of the control lever toward the front of the typing unit while noticing any clockwise movement of the answer-back drum.

Note 1: For instructions on coding the answer-back drum, see the appropriate installation section.

Note 2: If necessary to insure clearance between the feed lever adjusting tab and the control lever, bend the feed lever adjusting tab toward the front of the typing unit.

(1) Requirement

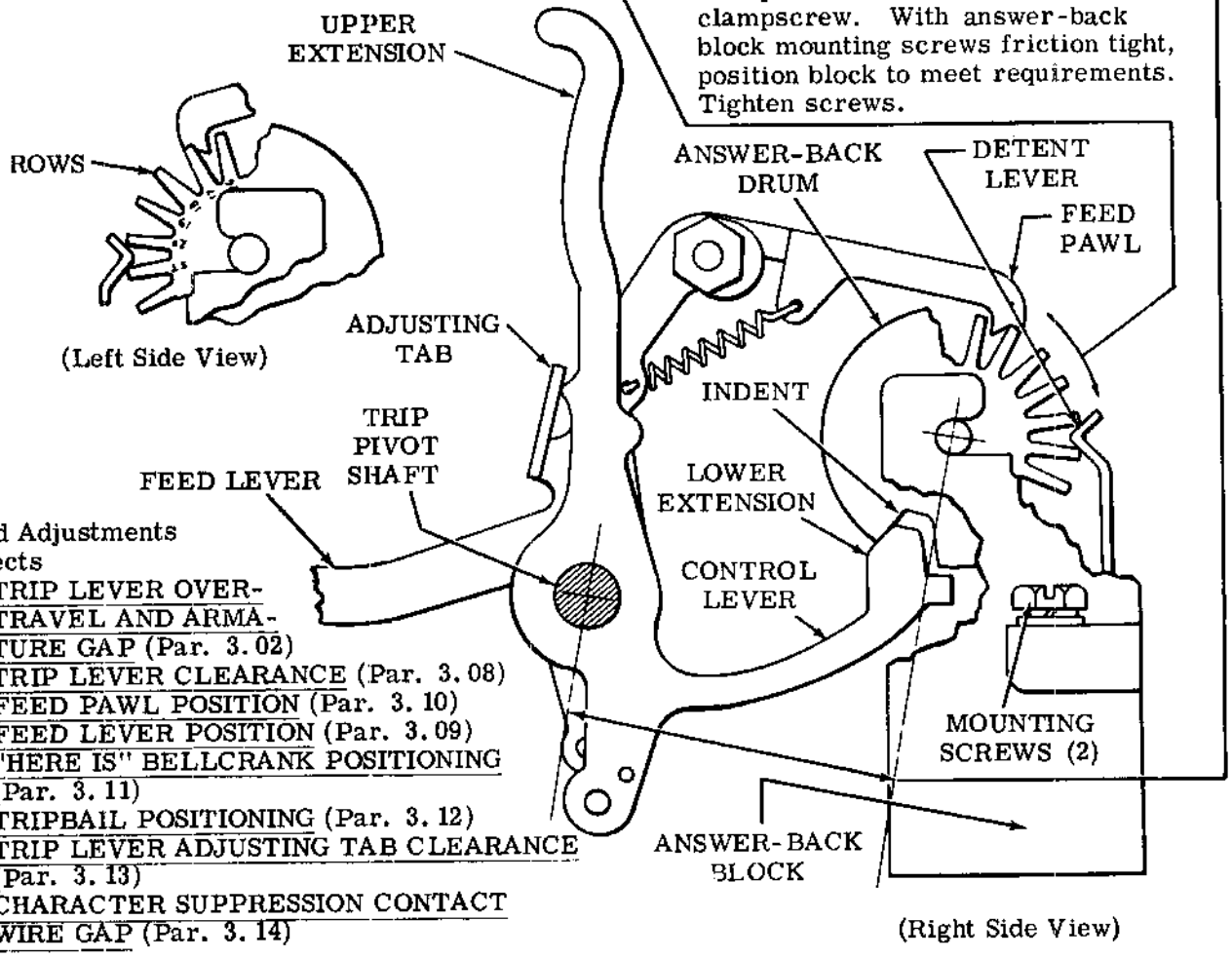
Barely perceptible clockwise movement of answer-back drum from its fully detented position when upper extension of control lever is moved toward front of typing unit.

(2) Requirement

The axis of the answer-back drum should be parallel to the trip pivot shaft as gauged by eye.

To Adjust

Loosen HERE IS adjusting bracket clampscrew and answer-back bracket clampscrew. With answer-back block mounting screws friction tight, position block to meet requirements. Tighten screws.



Related Adjustments

Affects

TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Par. 3.02)
TRIP LEVER CLEARANCE (Par. 3.08)
FEED PAWL POSITION (Par. 3.10)
FEED LEVER POSITION (Par. 3.09)
"HERE IS" BELLCRANK POSITIONING (Par. 3.11)
TRIPBAIL POSITIONING (Par. 3.12)
TRIP LEVER ADJUSTING TAB CLEARANCE (Par. 3.13)
CHARACTER SUPPRESSION CONTACT WIRE GAP (Par. 3.14)

3.08 Answer-Back Area (continued)

TRIP LEVER CLEARANCE

To Check

Trip distributor clutch and manually rotate main shaft to place upper edge of clutch shoe lever in line with upper edge of trip lever. Lift feed pawl and manually rotate answer-back drum counterclockwise until detent lever is located between row 1 and 2 on answer-back drum. Take up play in clutch shoe lever toward trip lever.

Requirement

Min 0.015 inch---Max 0.035 inch between clutch shoe lever and trip lever.

To Adjust

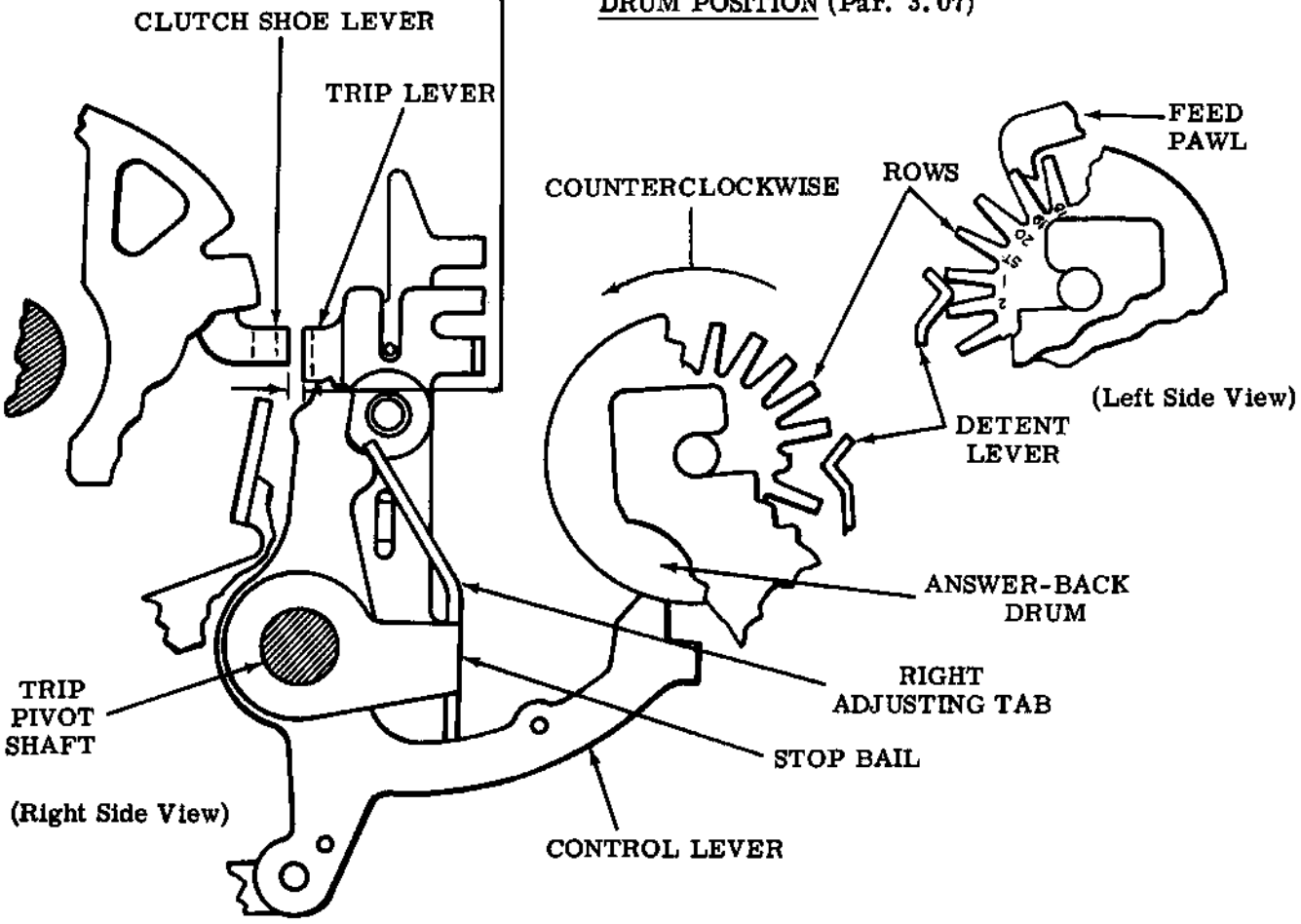
Bend right adjusting tab using TP180993 bending tool.

Note: The plane of right adjusting tab should be parallel to the axis of trip pivot shaft, as gauged by eye.

Related Adjustments

Affected By

TRIP LEVER ENGAGEMENT (Distributor Area Part 2, Basic Adjustments) (Par. 2.119)
SHOE LEVER (Appropriate tape reader section)
DRUM POSITION (Par. 3.07)



3.09 Answer-Back Area (continued)

FEED LEVER POSITION

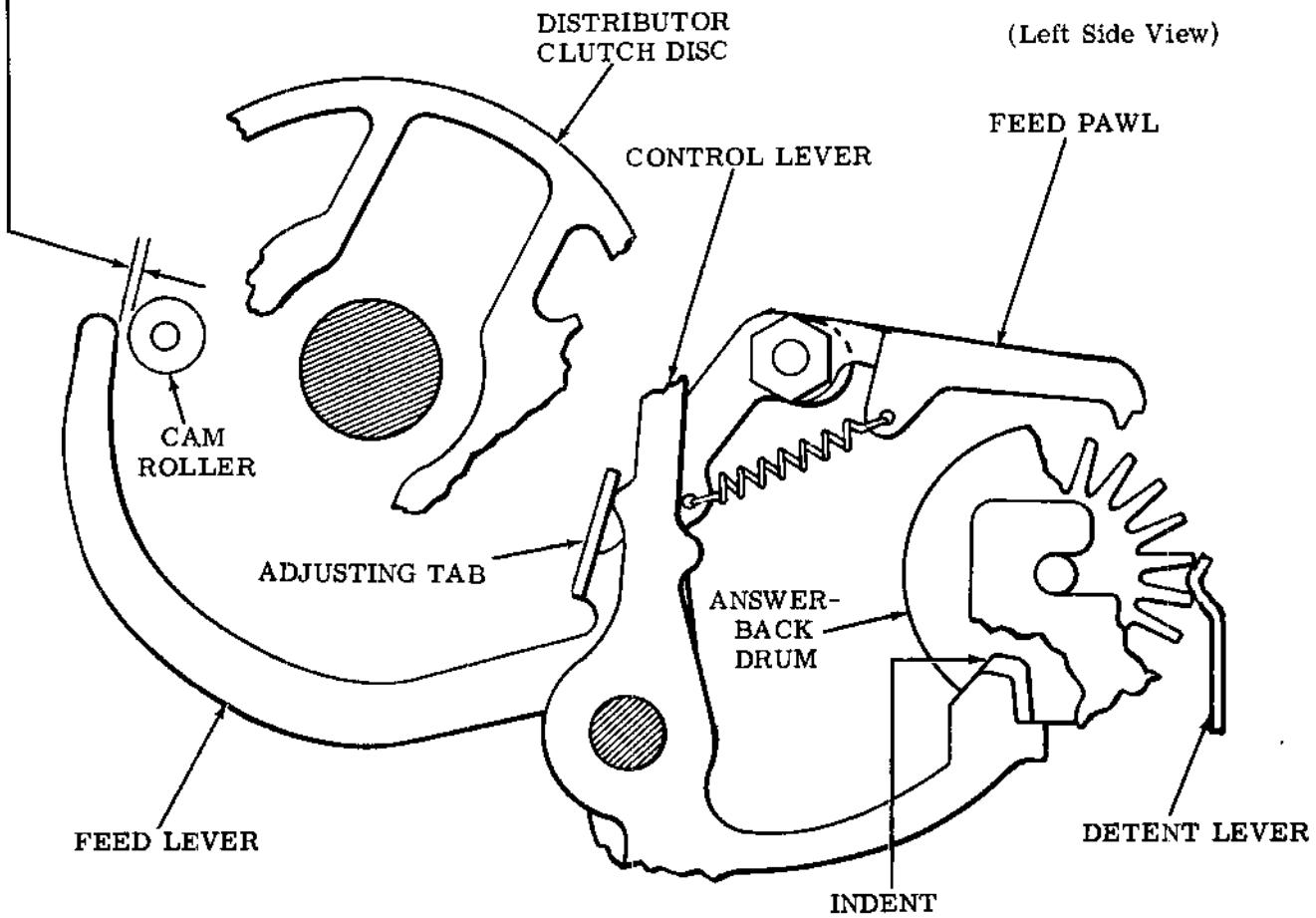
To Check
With answer-back drum fully detented in its home position, trip distributor clutch and manually rotate main shaft until cam roller is adjacent to high part of feed lever. Rotate cam roller to minimize clearance. Hold feed pawl clear of answer-back drum.

Requirement
Min some---Max 0.010 inch between feed lever and cam roller.

To Adjust
Bend feed lever adjusting tab with TP180993 bending tool.

Related Adjustments
Affects
"HERE IS" BELLCRANK POSITIONING (Par. 3.11)
TRIPBAIL POSITIONING (Par. 3.12)

Affected By
DRUM POSITION (Par. 3.07)
FEED PAWL POSITION (Par. 3.10)



(Right Side View)

3.10 Answer-Back Area (continued)

FEED PAWL POSITION

(1) To Check
With answer-back drum fully detented in its home position, disengage (latch) distributor clutch. Manually trip distributor clutch and rotate main shaft until the cam roller is adjacent to high part of feed lever. With feed pawl positioned fully within answer-back ratchet, take up all play to minimize required clearance.

Requirement
Min some---Max 0.005 inch between feed pawl and rear face of no. 16 drum tooth.

Note: The minimum requirement is met if the feed pawl spring repositions the pawl after the pawl has been raised and then released above answer-back drum.

To Adjust
With adjusting nut and screw friction tight, position feed pawl. Tighten nut and screw.

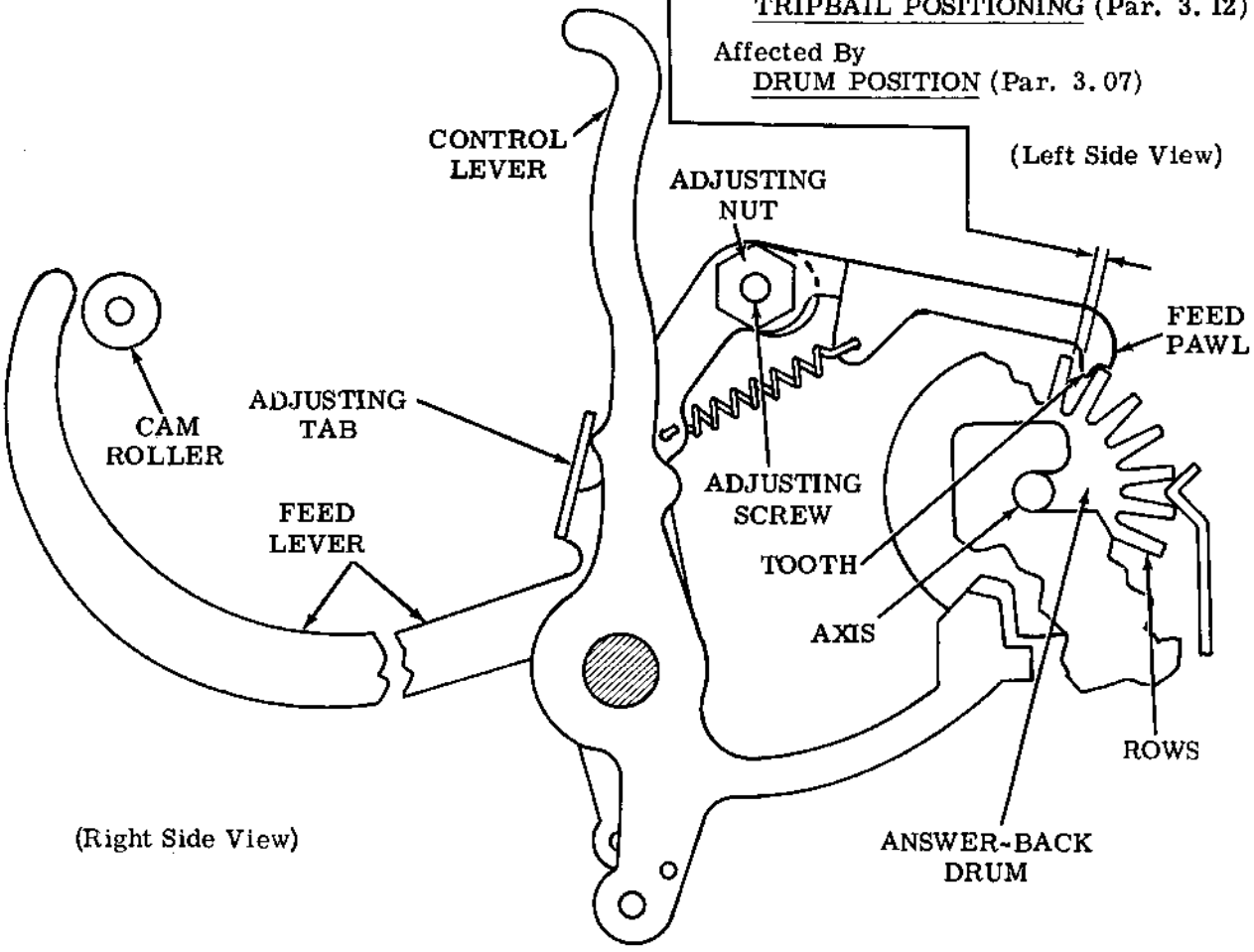
(2) To Check
Push the top of the control lever toward the rear of typing unit and simultaneously rotate the main shaft. Observe the operation of the feed pawl.

Requirement
While operating, the feed pawl should be centrally located on feed ratchet teeth.

To Adjust
Bend feed lever just below feed pawl.

Related Adjustments
Affects
FEED LEVER POSITION (Par. 3.09)
"HERE IS" BELLCRANK POSITIONING (Par. 3.11)
TRIPBAIL POSITIONING (Par. 3.12)

Affected By
DRUM POSITION (Par. 3.07)



3.11 Answer-Back Area (continued)

"HERE IS" BELLCRANK POSITIONING

(1) To Check

With answer-back drum fully detented in its home position, trip distributor clutch and manually rotate main shaft until cam roller is positioned above the top edge of feed lever. Depress HERE IS key with a force of from 20 oz to 24 oz.

Requirement

Early design typing units — HERE IS adjusting bracket does not have a stop projection:

Min 0.015 inch---Max 0.030 inch overtravel between feed pawl and face of answer-back drum feed ratchet tooth of row 17.

Late design typing units — HERE IS adjusting bracket has a stop projection:

Min 0.010 inch---Max 0.040 inch overtravel between feed pawl and face of answer-back drum feed ratchet tooth of row 17.

(2) To Check

With the answer-back drum fully detented in its home position and HERE IS key in its unoperated position, disengage (latch) distributor clutch.

Requirement

Some clearance between tip of HERE IS key and bellcrank.

To Adjust

With clampscrew friction tight, position HERE IS adjusting bracket using pry points. Tighten clampscrew.

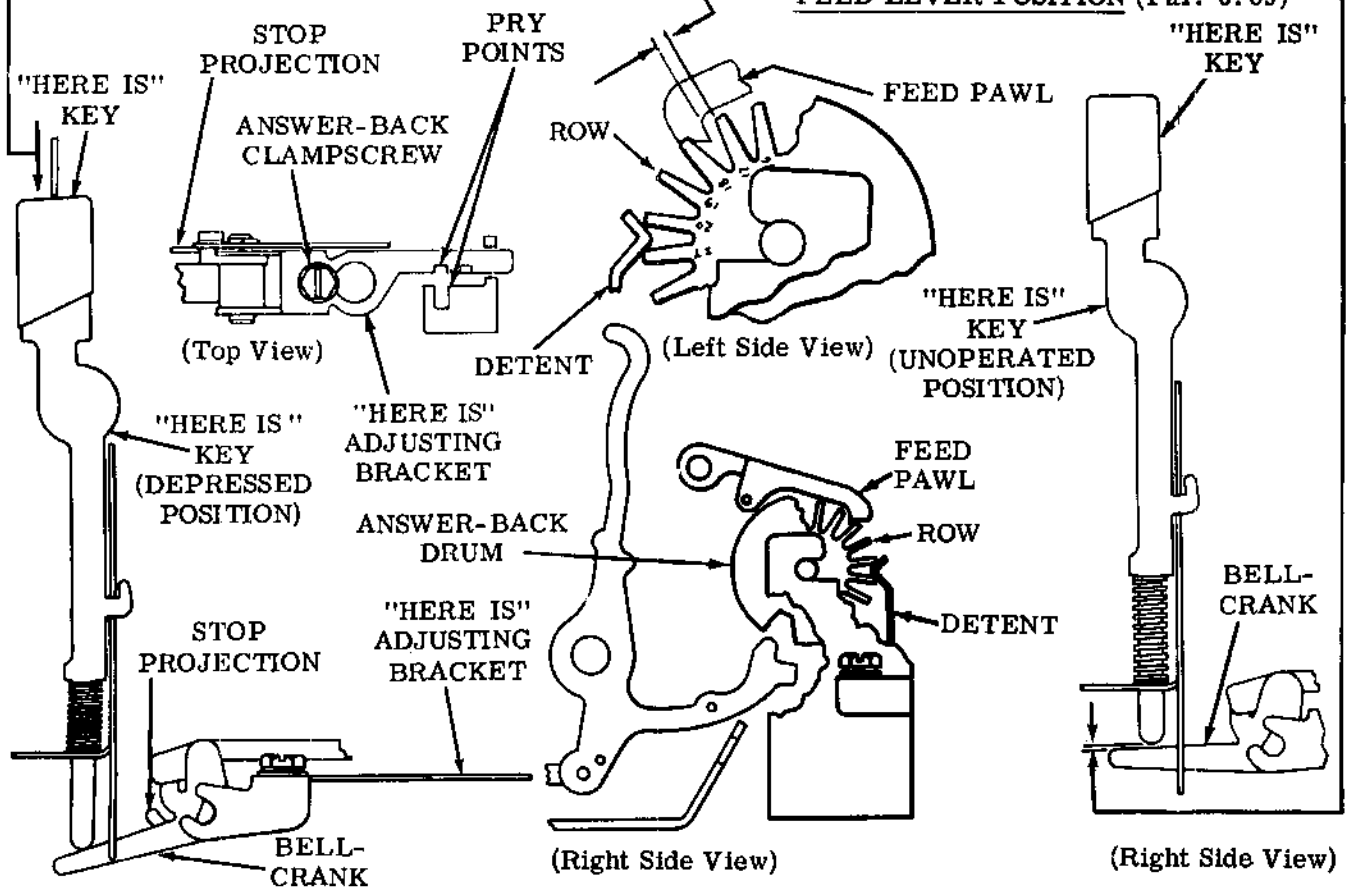
Related Adjustments

Affects

TRIPBAIL POSITIONING (Par. 3.12)
CHARACTER SUPPRESSION CONTACT WIRE GAP (Par. 3.14)

Affected By

DRUM POSITION (Par. 3.07)
FEED PAWL POSITION (Par. 3.10)
FEED LEVER POSITION (Par. 3.09)



3.12 Answer-Back Area (continued)

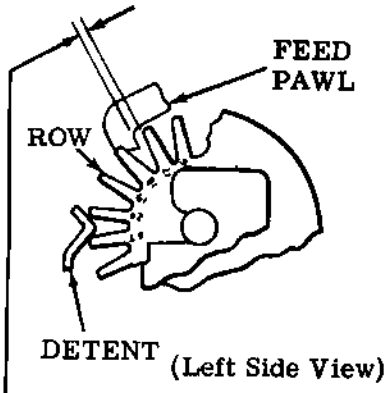
TRIPBAIL POSITIONING

(1) To Check

Place the typing unit in stop condition. Trip function clutch and rotate main shaft until the function bail is in its highest position. Push the answer-back function pawl down until its notch is engaged by its function lever. Trip the distributor clutch and continue to rotate the main shaft until the answer-back function pawl reaches its lowest point of travel.

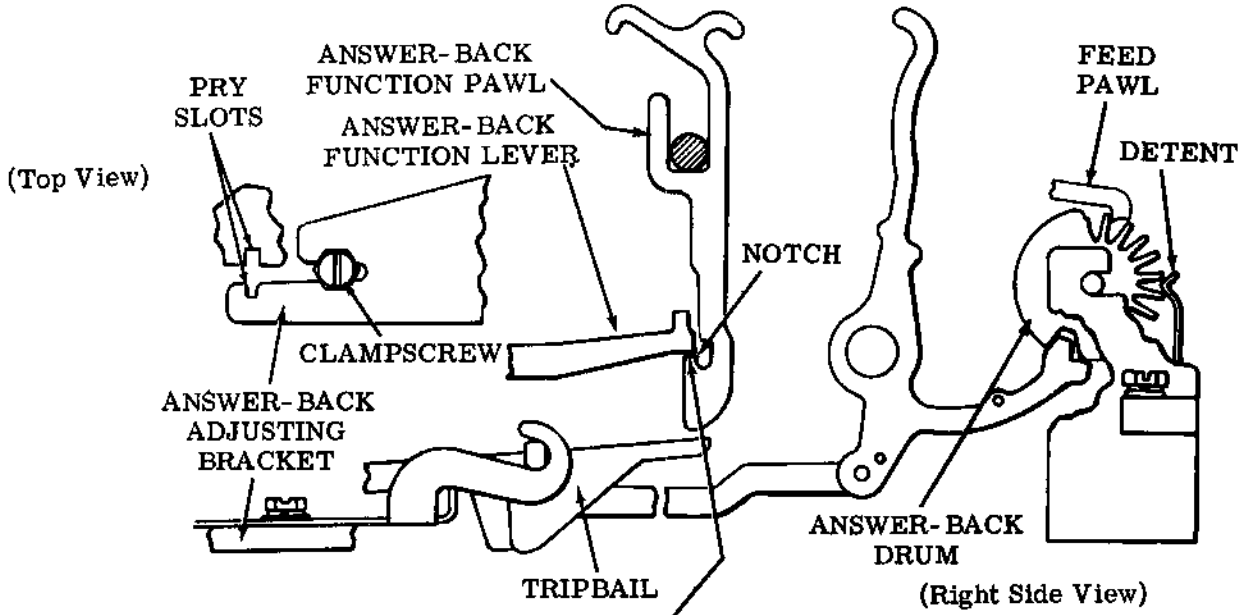
Note: The feed pawl will move back to pick up the next tooth on the answer-back drum feed ratchet.

With the feed pawl centered on the answer-back drum feed ratchet, take up play in feed pawl toward the rear.



Requirement

Min 0.010 inch---Max 0.040 inch overtravel between feed pawl and face of answer-back drum feed ratchet of row 17.



(2) To Check

With typing unit in stop condition, set up the code combination for the answer-back call character in the selector. Rotate the main shaft until the answer-back function pawl moves forward to its selected position. Observe the forward movement of the answer-back function pawl.

Requirement

Answer-back function pawl must move forward freely to its selected position without hesitation.

To Adjust

Loosen clampscrew friction tight. Position answer-back adjusting bracket using pry slots. Tighten clampscrew.

Related Adjustments Affected By

DRUM POSITION (Par. 3.07)
FEED PAWL POSITION (Par. 3.10)
FEED LEVER POSITION (Par. 3.09)
"HERE IS" BELLCRANK POSITIONING (Par. 3.11)

3.13 Answer-Back Area (continued)

Note: The following adjustment applies only to typing units equipped with an answer-back trip magnet mechanism.

TRIP LEVER ADJUSTING TAB CLEARANCE

To Check

With the answer-back drum fully detented in its home position, place the typing unit in its stop condition. With the armature in its unattracted position, take up the play in the trip lever toward the right and the play in the control lever toward the left. Take up play in the armature toward the rear.

Requirement

Min some---Max 0.020 inch between adjusting tab and tip of control lever.

To Adjust

Bend adjusting tab with TP180993 bending tool.

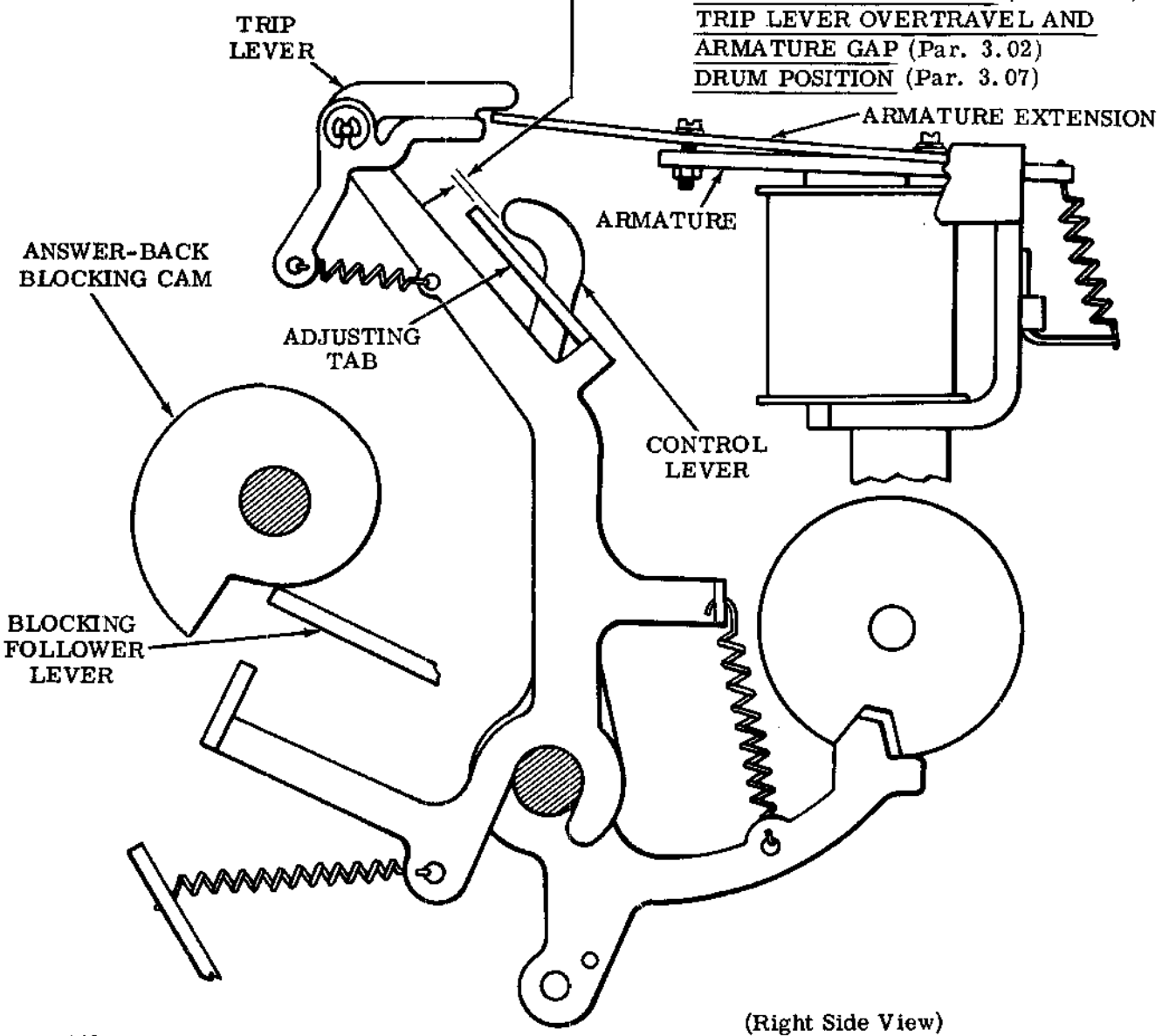
Related Adjustments

Affects

CHARACTER SUPPRESSION CONTACT WIRE GAP (Par. 3.14)

Affected By

TRIP MAGNET POSITION (Par. 3.02)
TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Par. 3.02)
DRUM POSITION (Par. 3.07)



(Right Side View)

3.14 Answer-Back Area (continued)

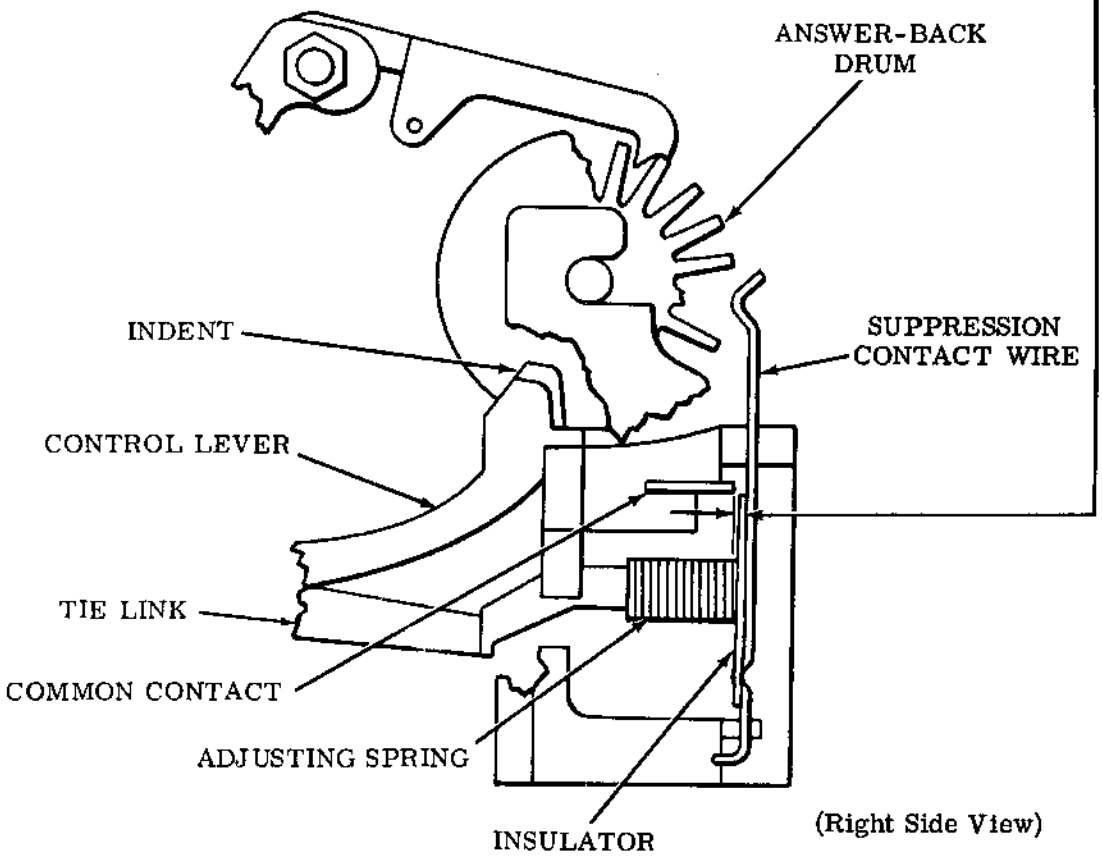
CHARACTER SUPPRESSION CONTACT WIRE GAP

To Check
With answer-back drum fully detented in its home position, disengage (latch) distributor clutch.

Requirement
Min 0.030 inch---Max 0.055 inch between suppression contact wire and common contact.

To Adjust
Position adjusting spring on the tie link.

Related Adjustments
Affected By
TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Par. 3.02)
DRUM POSITION (Par. 3.07)
"HERE IS" BELLCRANK POSITIONING (Par. 3.11)
TRIP LEVER ADJUSTING TAB CLEARANCE (Par. 3.13)

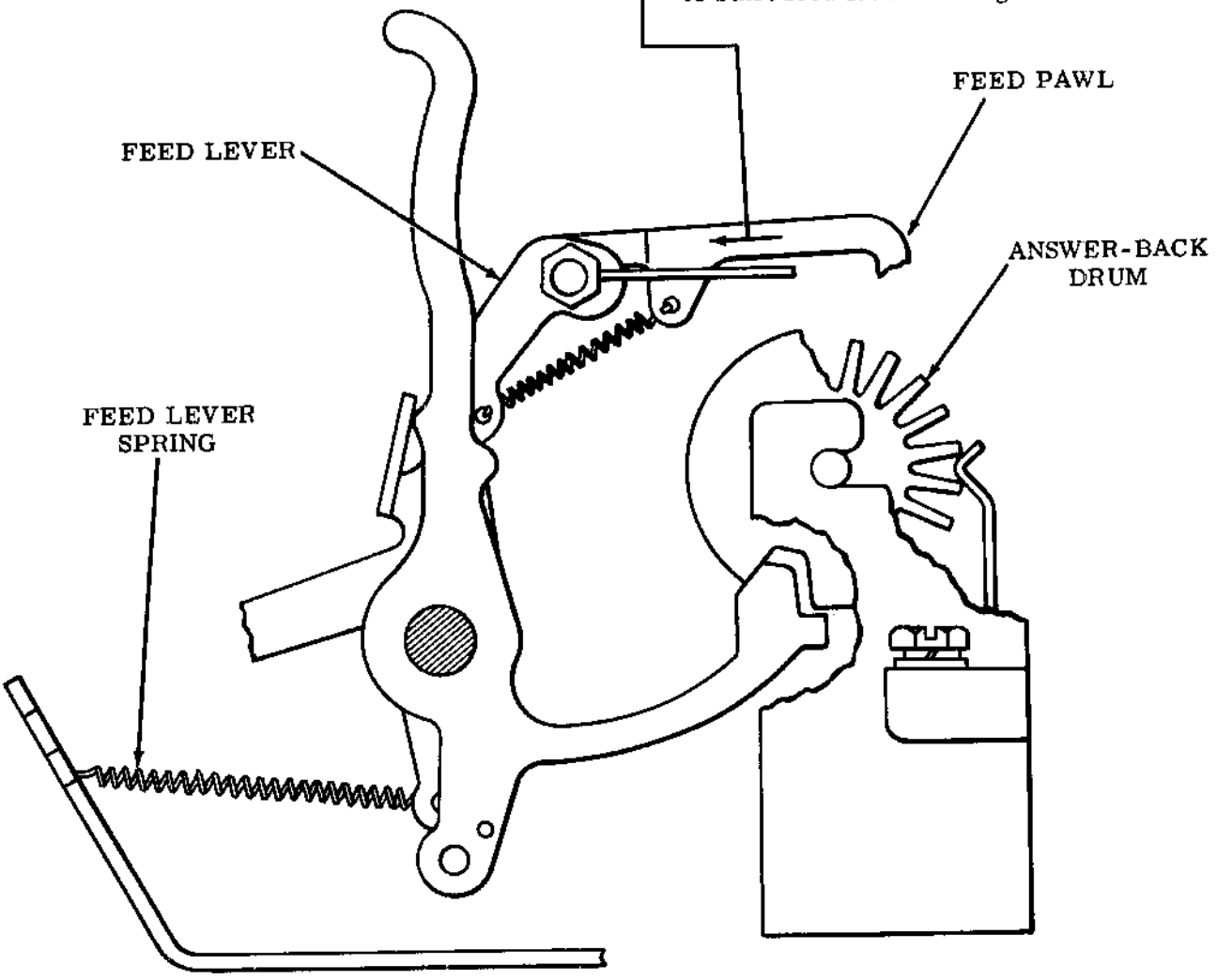


(Right Side View)

3.15 Answer-Back Area (continued)

FEED LEVER SPRING

Requirement
With distributor clutch disengaged (latched) and feed pawl held out of engagement with answer-back drum
Min 4-1/4 oz---Max 5-1/4 oz to start feed lever moving.



(Right Side View)

3.16 Function Box Switches (Function Area)

CONTACT ASSEMBLY POSITION

(1) To Check
Set up code combination in selector that is to operate the function pawl associated with a contact arm and rotate the main shaft until the function bail is in its highest position.

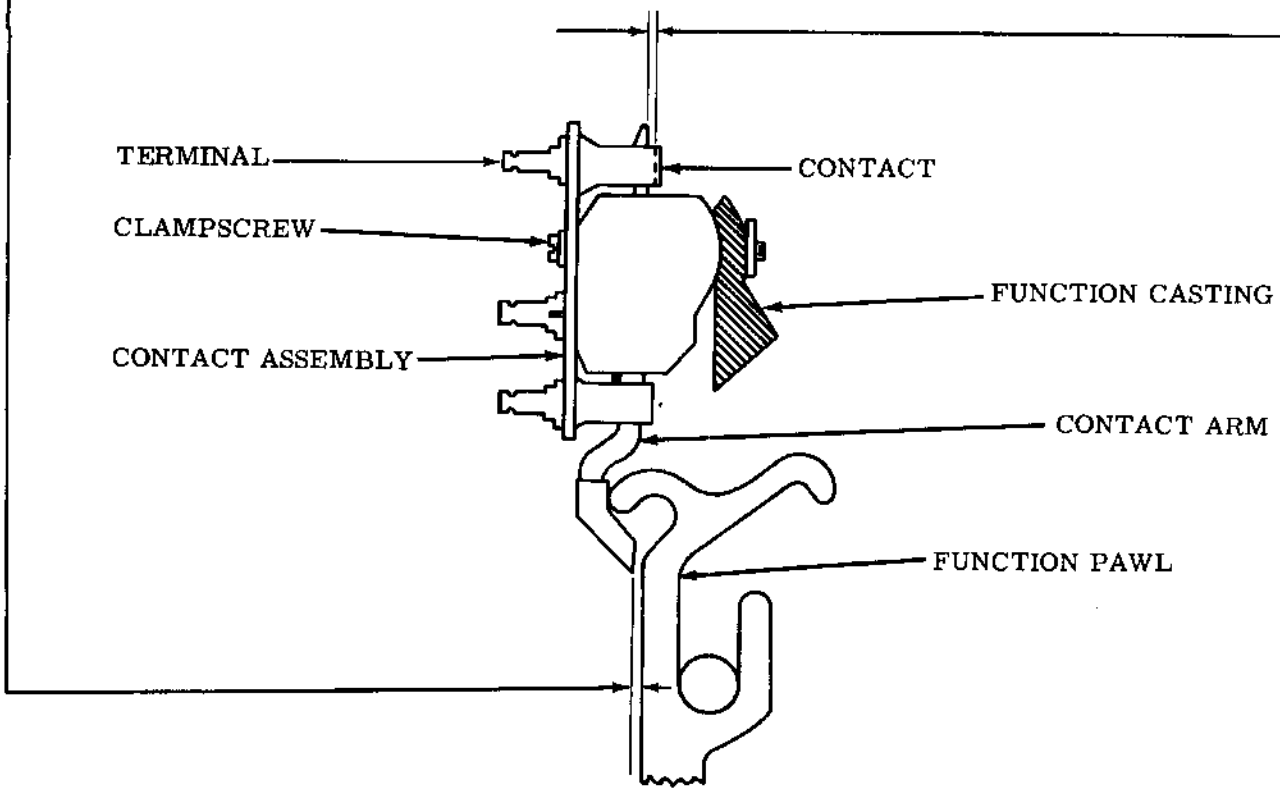
Requirement
Min 0.010 inch---Max 0.020 inch
between the contact arm and the contact at the closest point as illustrated.

(2) To Check
Place typing unit in stop condition.

Requirement
Min some
clearance between the function pawl and the tip of the contact arm.

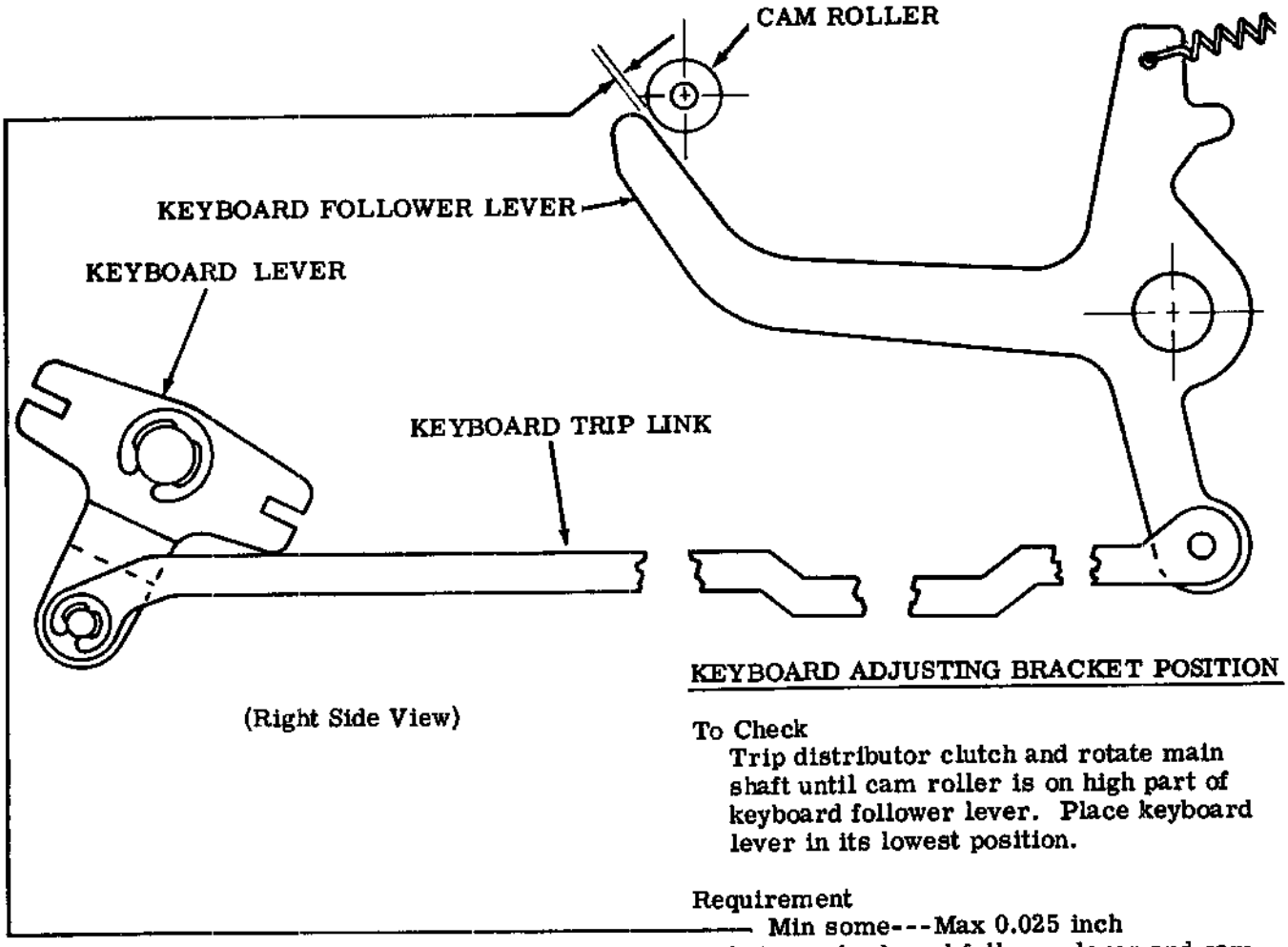
To Adjust
With two clampscrews friction tight, position the contact assembly on the function casting. If necessary, bend the upper contact. Tighten clampscrews.

Note: For (1) To Check, be sure that the contact arm lines up with and is in contact with the function pawl.



(Left Side View)

3.17 Receive-Only Sets (Distributor Area)



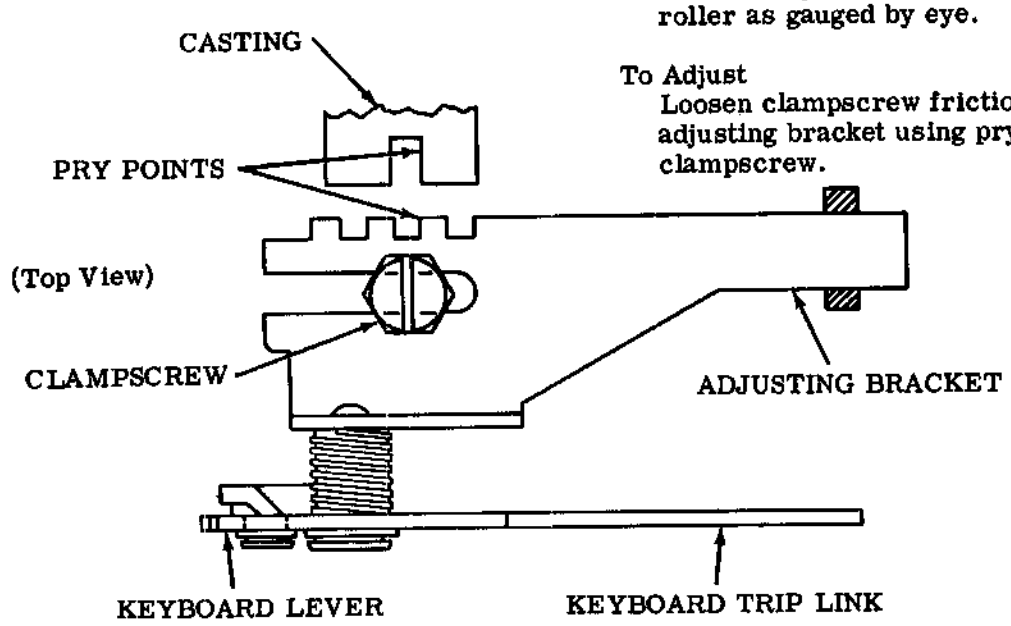
(Right Side View)

KEYBOARD ADJUSTING BRACKET POSITION

To Check
Trip distributor clutch and rotate main shaft until cam roller is on high part of keyboard follower lever. Place keyboard lever in its lowest position.

Requirement
Min some---Max 0.025 inch between keyboard follower lever and cam roller as gauged by eye.

To Adjust
Loosen clampscrew friction tight. Move adjusting bracket using pry points. Tighten clampscrew.



3.18 Two-Color Printing (Answer-Back Area)

BLOCKING LINK CLEARANCE

To Check

Place typing unit in stop condition, engage the distributor and codebar clutches. Rotate the main shaft until the adjusting tab is on the high part of the blocking cam and codebar reset bail is in its highest position. Take up all clearances to make gap between R codebar and blocking link a minimum.

Requirement

Min 0.050 inch---Max 0.070 inch between R codebar blocking extension and tine on blocking link.

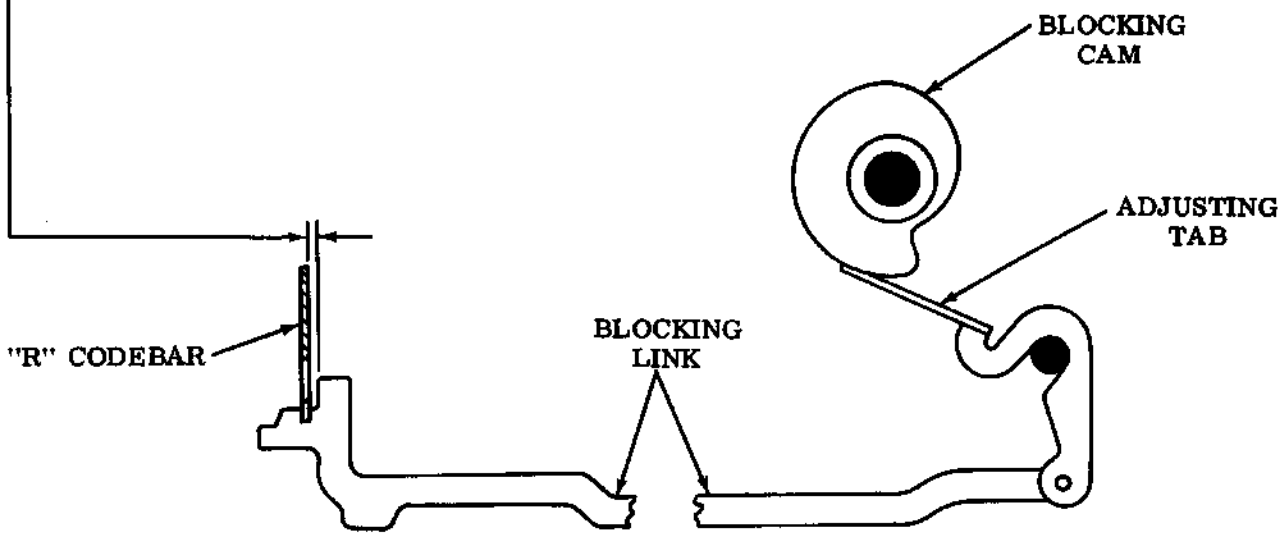
To Adjust

Bend adjusting tab with TP180993 bending tool.

Related Adjustment

Affects

COLOR SELECTION LATCH OVERTRAVEL (Par. 3.21)



(Right Side View)

Note: If the typing unit is equipped with the answer-back trip magnet mechanism (TP182045), the TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Answer-Back Area) (Par. 3.02) adjustment should be made at this time. If necessary, the answer-back trip lever adjusting tab should be bent forward to clear the control lever before proceeding with the remaining answer-back adjustments.

3.19 Two-Color Printing (Carriage Area) (continued)

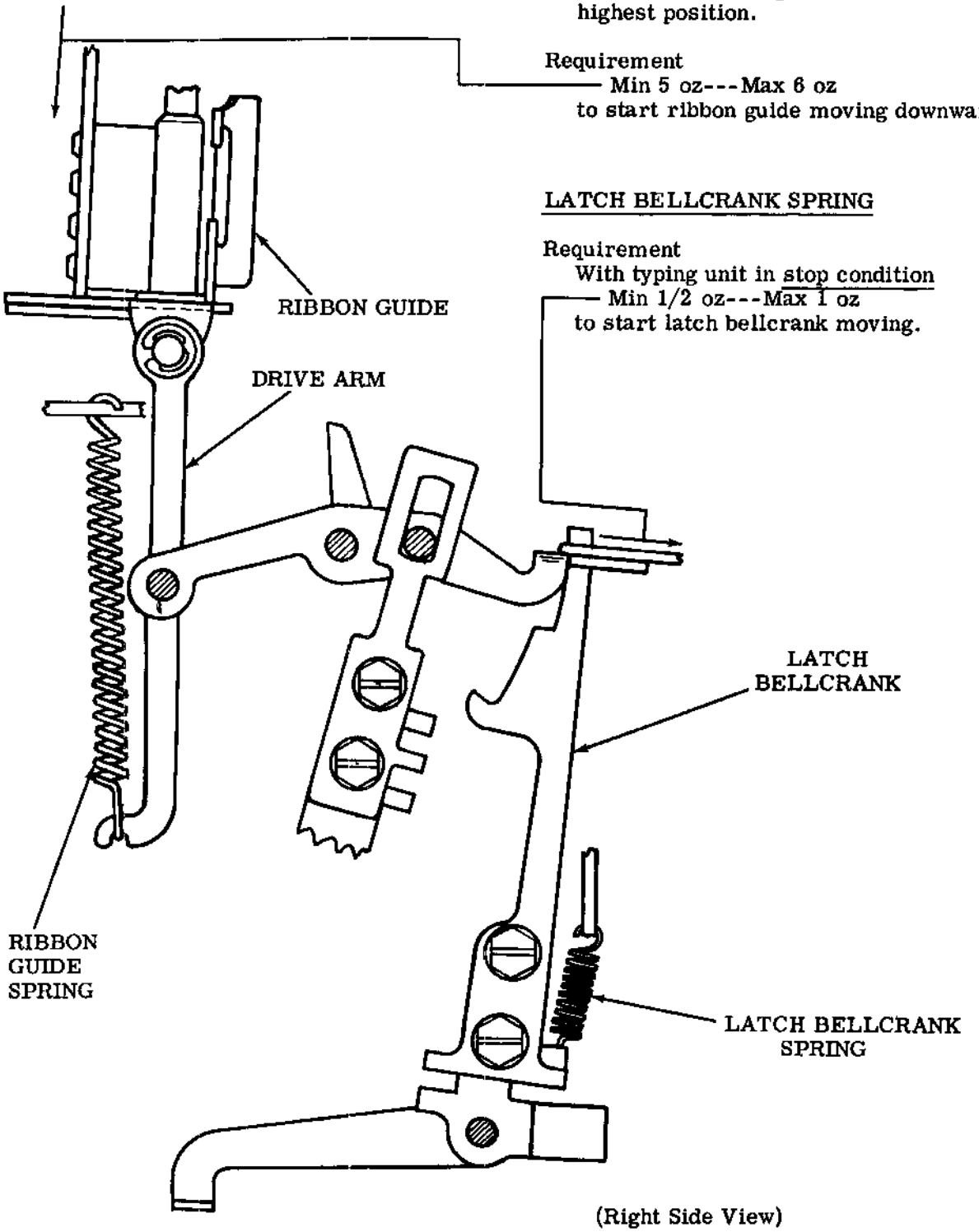
RIBBON GUIDE SPRING

To Check
Place typing unit in the stop condition, engage the function clutch. Rotate main shaft until ribbon guide rises to its highest position.

Requirement
Min 5 oz---Max 6 oz
to start ribbon guide moving downward.

LATCH BELLCRANK SPRING

Requirement
With typing unit in stop condition
Min 1/2 oz---Max 1 oz
to start latch bellcrank moving.

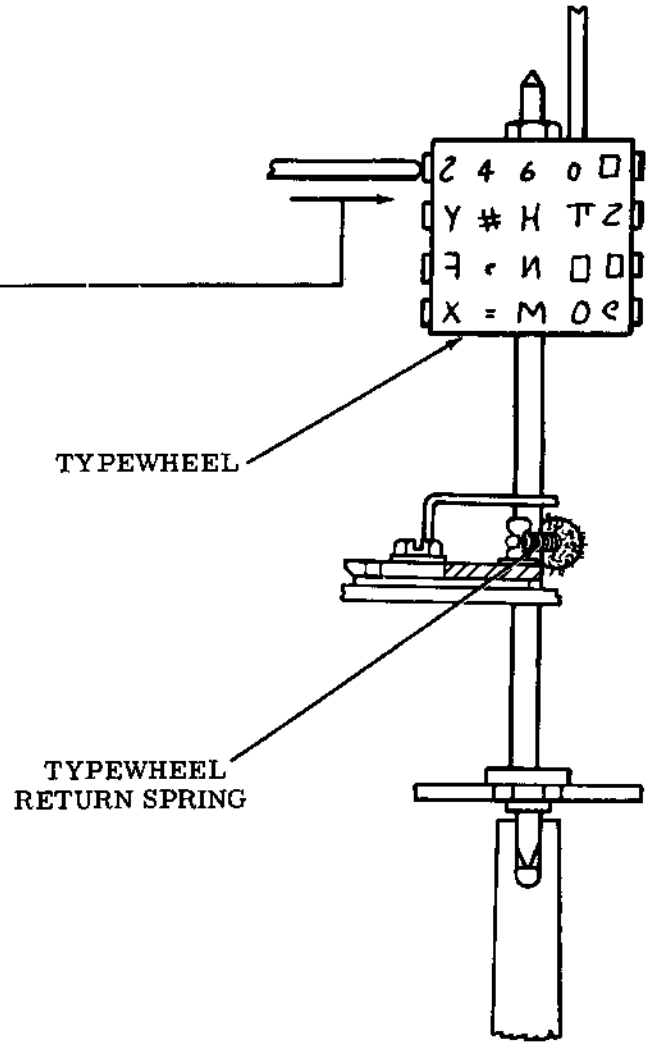


(Right Side View)

3.20 Two-Color Printing (Carriage Area) (continued)

TYPEWHEEL RETURN SPRING

Requirement
With typing unit in stop condition
Min 5 oz---Max 6 oz
to move typewheel to platen.



(Right Side View)

3.21 Two-Color Printing (Carriage Area) (continued)

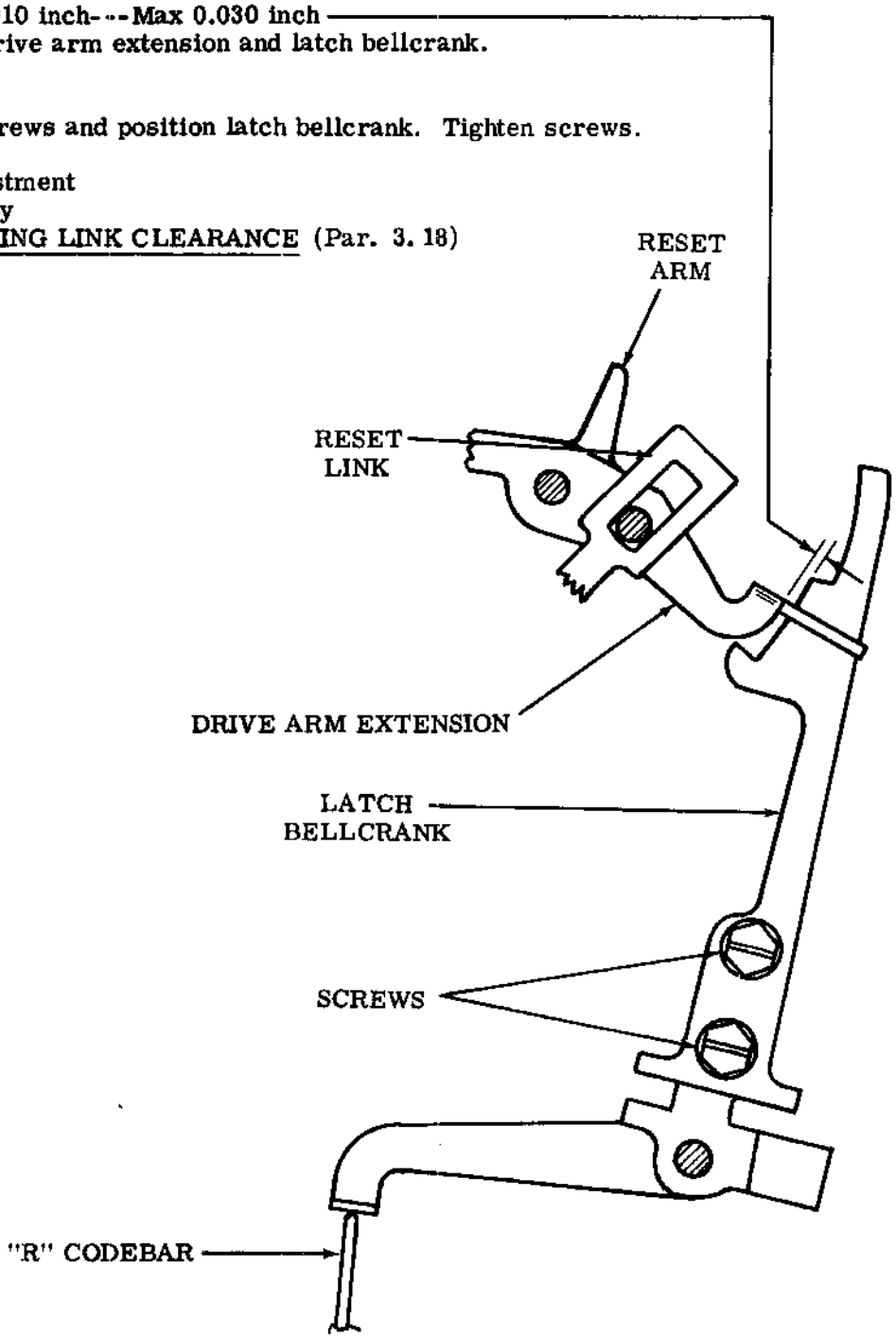
COLOR SELECTION LATCH OVERTRAVEL

To Check
Place typing unit in the stop position. Trip the distributor clutch and rotate main shaft until carriage drive bail is at its rearmost position.

Requirement
Min 0.010 inch---Max 0.030 inch between drive arm extension and latch bellcrank.

To Adjust
Loosen screws and position latch bellcrank. Tighten screws.

Related Adjustment
Affected By
BLOCKING LINK CLEARANCE (Par. 3.18)



(Right Side View)

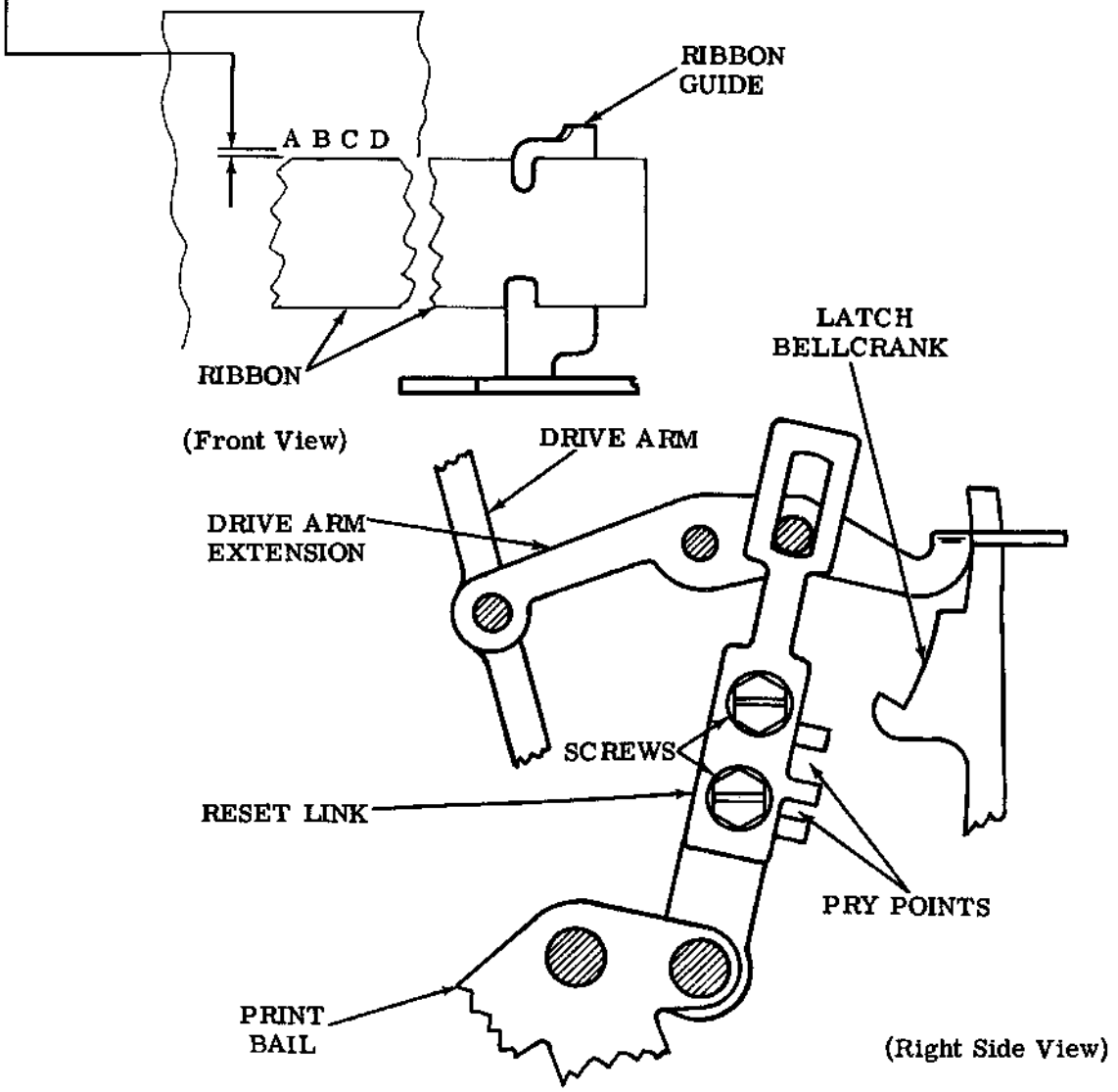
3.22 Two-Color Printing (Carriage Area) (continued)

RIBBON GUIDE POSITIONING

To Check
Print any four characters such as illustrated. Place the typing unit in stop condition.

Requirement
Min 0.010 inch---Max 0.020 inch between the top horizontal edge of the ribbon and lower edge of the printed characters as gauged by eye.

To Adjust
Loosen screws and position reset link using pry points. Tighten screws.



3.23 Auxiliary Contact Assembly — TP183594 (Main Shaft Area)

TIME DELAY CONTACT BRACKET POSITION

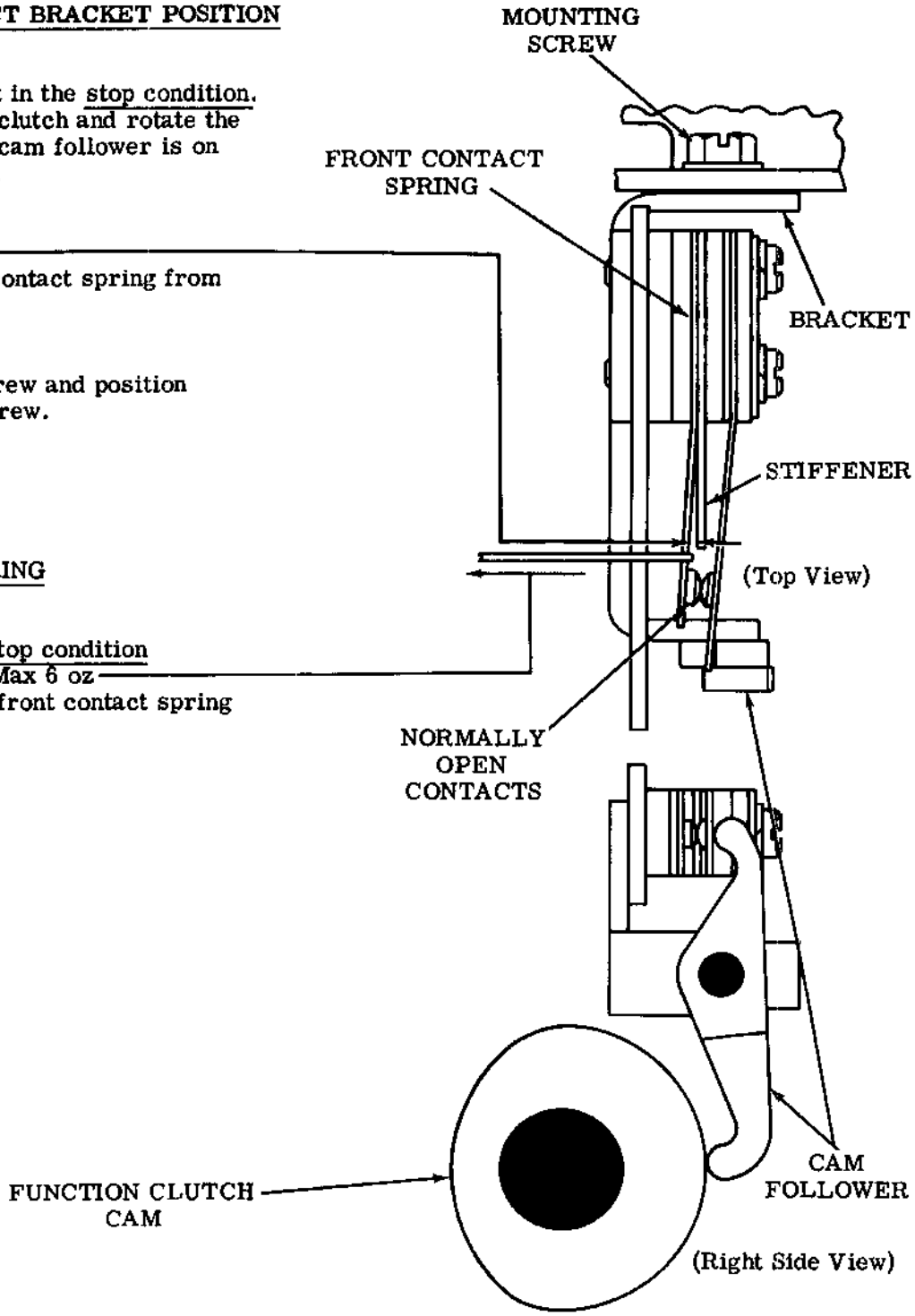
To Check
Place the typing unit in the stop condition. Engage the function clutch and rotate the main shaft until the cam follower is on high part of its cam.

Requirement
Max 0.010 inch separation of front contact spring from stiffener.

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

FRONT CONTACT SPRING

Requirement
With typing unit in stop condition
Min 4-1/2 oz---Max 6 oz
to just separate the front contact spring from the stiffener.



3.24 Print-Nonprint (Function Area)

Note: The following adjustment applies only to typing units equipped with manual print-nonprint feature.

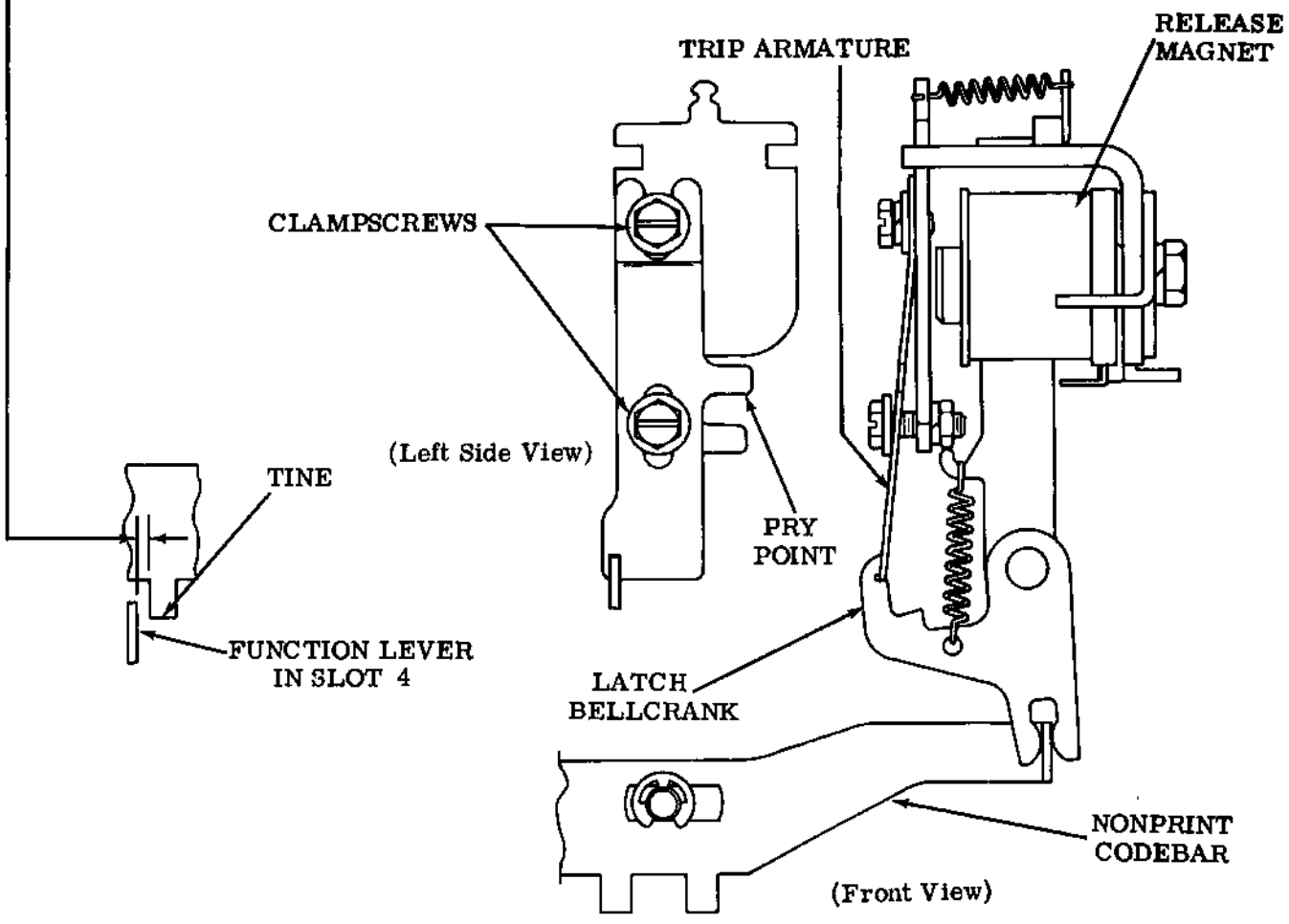
NONPRINT FUNCTION LEVER CLEARANCE

To Check
Push the nonprint codebar to the right until trip armature latches the latch bellcrank. Rotate mainshaft until function lever is at its highest point of travel. Take up all play to minimize the required clearance.

Requirement
Min 0.005 inch---Max 0.025 inch
between the function lever in slot 4 in function casting and tine of nonprint codebar.

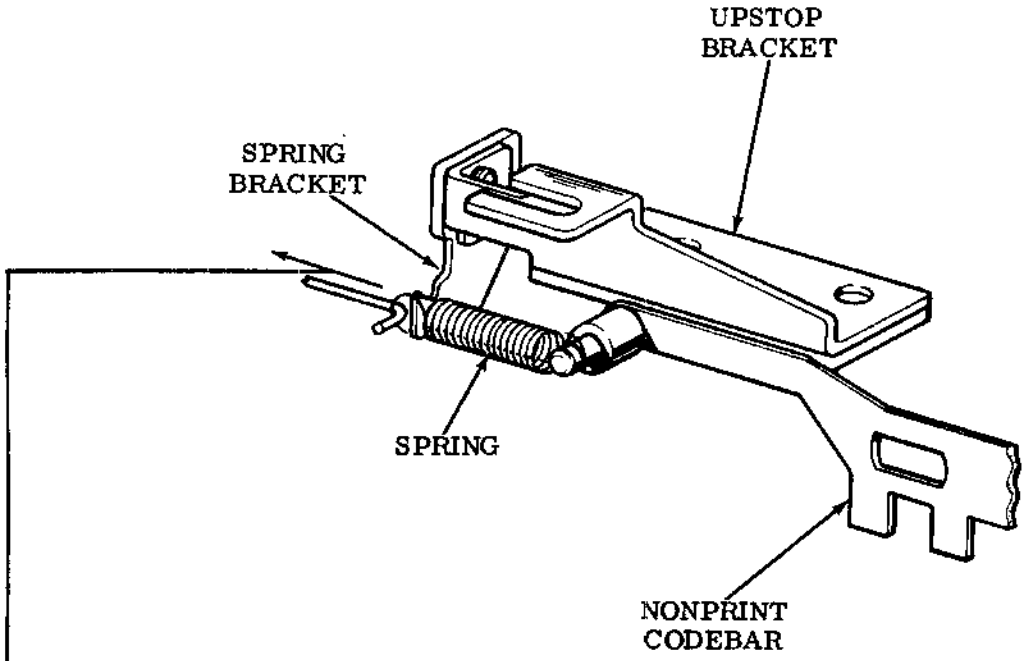
To Adjust
Loosen clampscrews and adjust length of trip armature using pry point. Tighten clampscrews.

Related Adjustments
Affects
SOLENOID BRACKET POSITION (Par. 3.26 or 3.27)
RELEASE MAGNET OVERTRAVEL (Par. 3.28)



3.25 Print-Nonprint (Function Area) (continued)

Note: The following adjustment applies only to typing units equipped with the manual print-nonprint feature.



(Right Front View)

NONPRINT CODEBAR SPRING

To Check
Place nonprint codebar in its unoperated position.

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

3.26 Print-Nonprint (Function Area) (continued)

Note: The following adjustments apply only to typing units equipped with the automatic print-nonprint feature — for units containing the manual print-nonprint feature, refer to Par. 3.27.

SOLENOID BRACKET POSITION

To Check
Place plunger to position it assumes when solenoid is energized. Hold plunger seated in that position.

Requirement
Min 0.006 inch---Max 0.012 inch between trip armature and latch bellcrank.

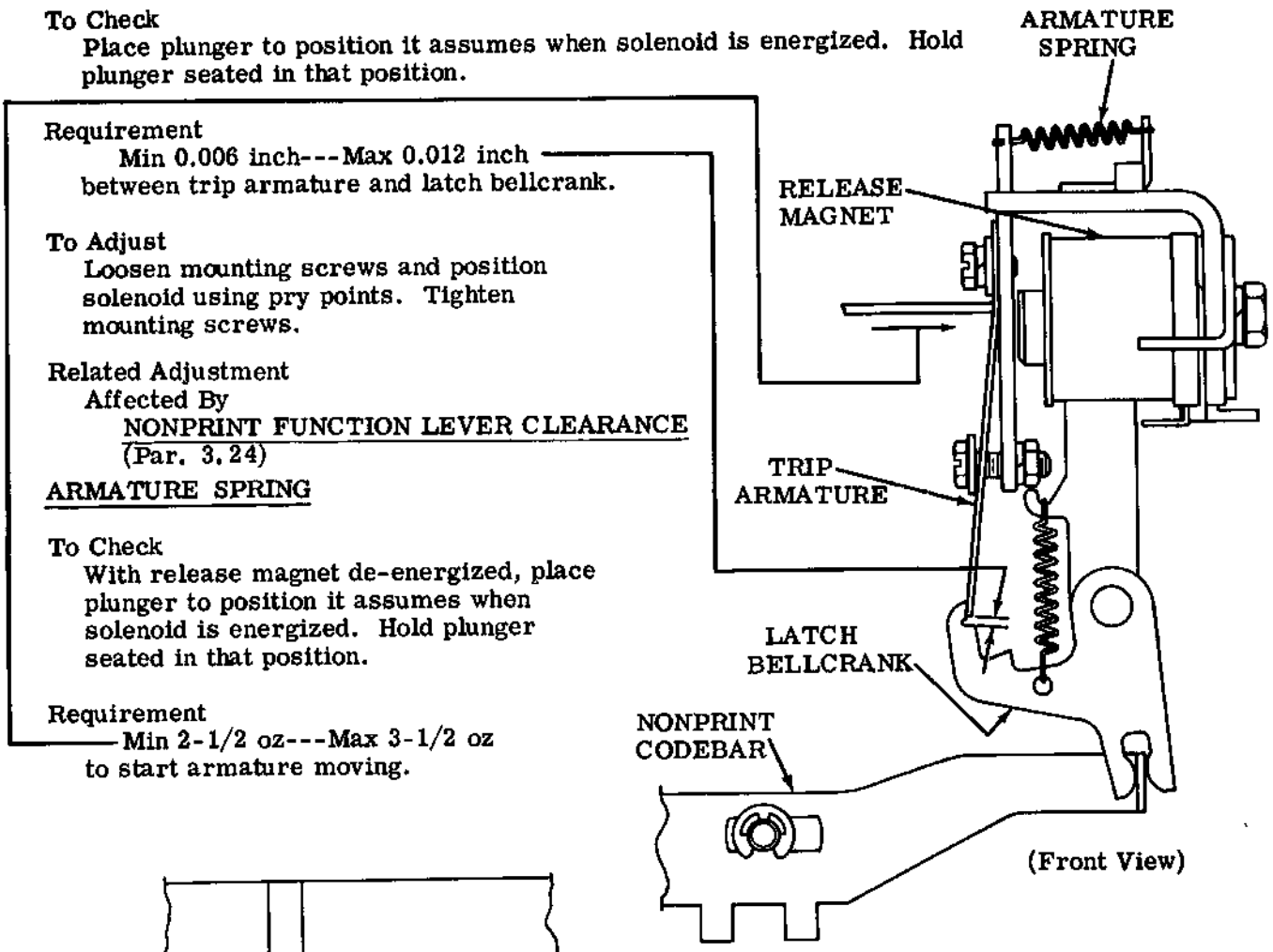
To Adjust
Loosen mounting screws and position solenoid using pry points. Tighten mounting screws.

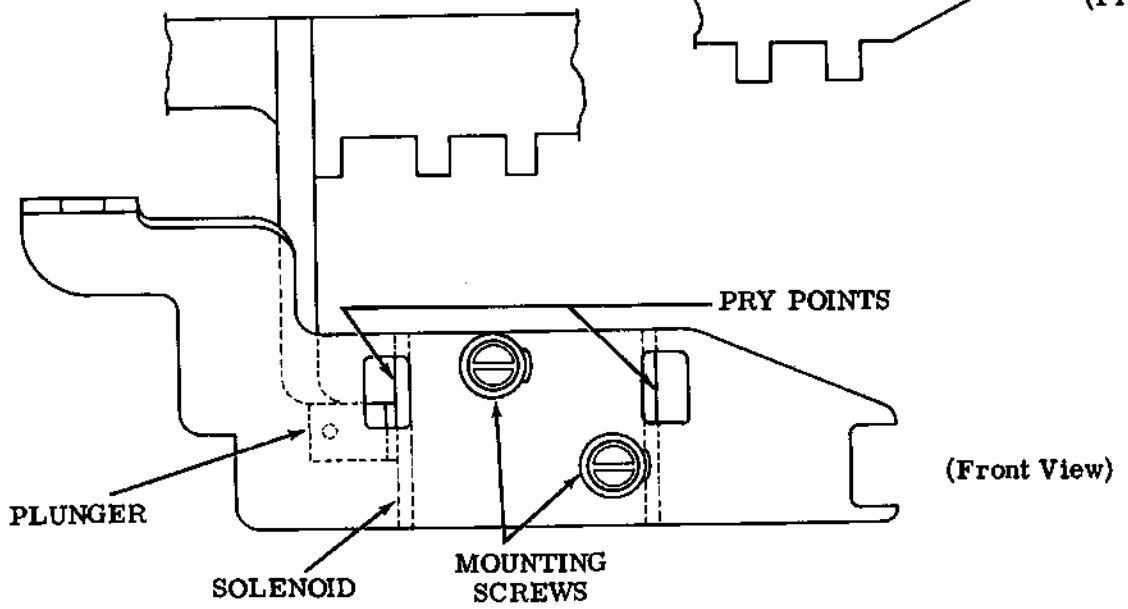
Related Adjustment
Affected By
NONPRINT FUNCTION LEVER CLEARANCE (Par. 3.24)

ARMATURE SPRING

To Check
With release magnet de-energized, place plunger to position it assumes when solenoid is energized. Hold plunger seated in that position.

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





3.27 Print-Nonprint (Function Area) (continued)

Note: The following adjustment applies only to typing units equipped with the manual print-nonprint feature — for units containing the automatic print-nonprint feature, refer to Par. 3.26.

SOLENOID BRACKET POSITION

To Check

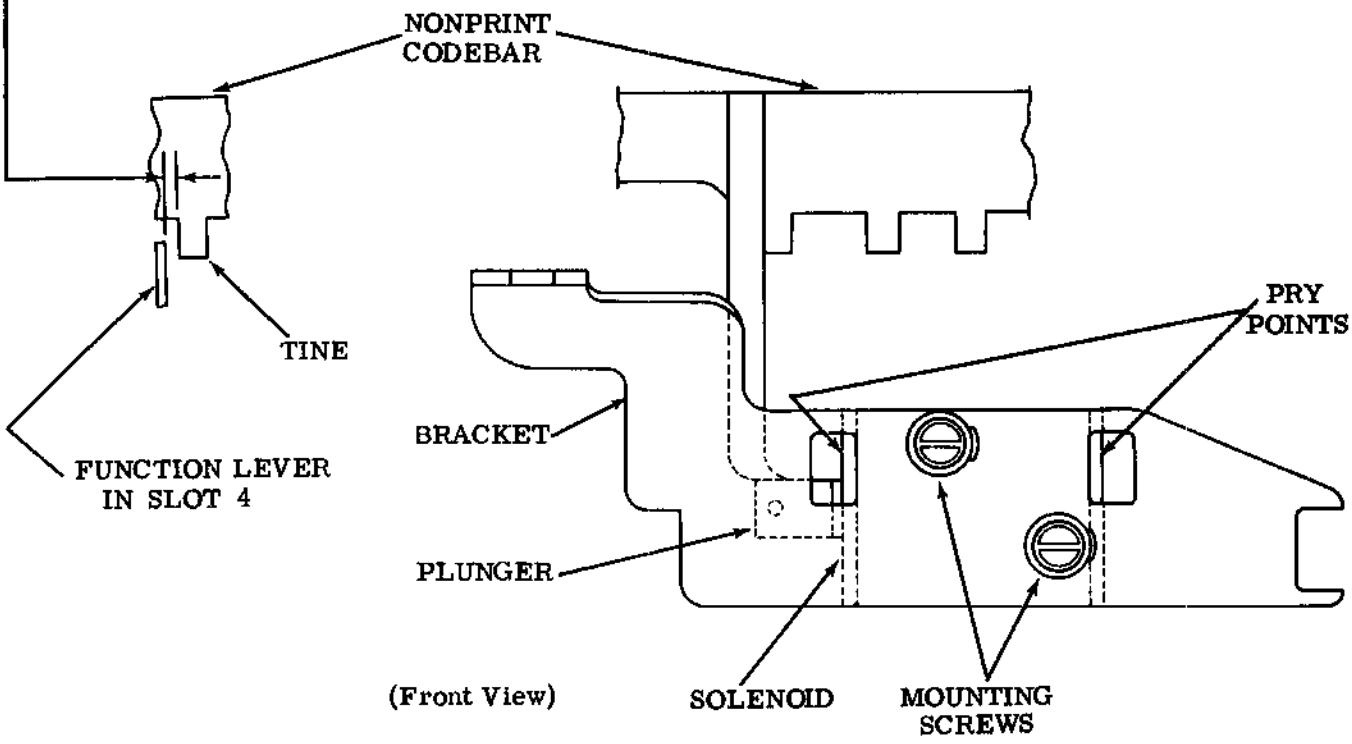
Place plunger to position it assumes when solenoid is energized. Hold plunger seated in that position.

Requirement

Min 0.010 inch---Max 0.020 inch between the function lever in slot 4 in function casting and tine of nonprint codebar.

To Adjust

Loosen mounting screws and position solenoid using pry points.



3.28 Print-Nonprint (Function Area) (continued)

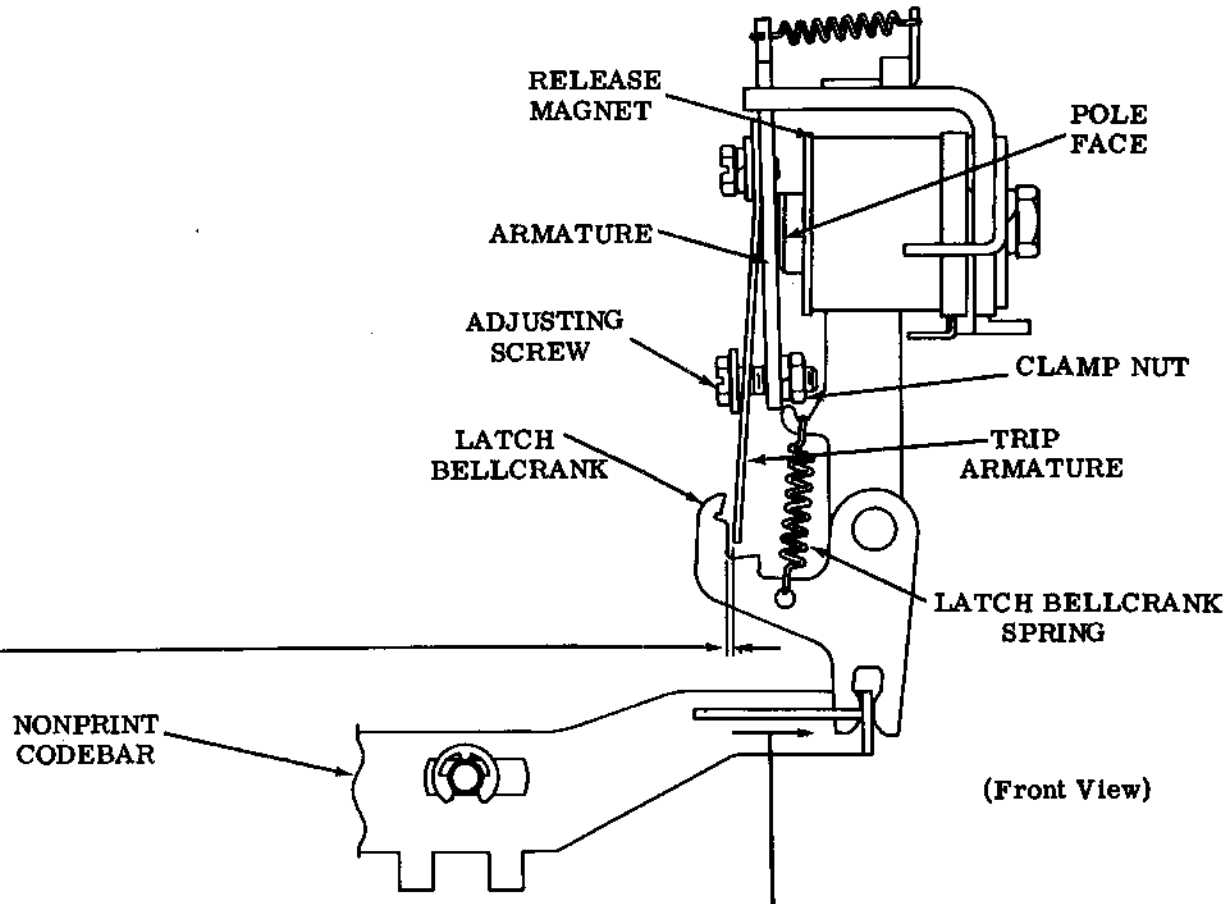
RELEASE MAGNET OVERTRAVEL

Note: The following adjustments apply only to typing units equipped with the automatic print-nonprint feature.

To Check
Hold armature against release magnet pole face.

Requirement
Min 0.010 inch---Max 0.015 inch between trip armature and latch bellcrank.

To Adjust
Loosen clamp nut and position trip armature by turning adjusting screw. Tighten clamp nut.



Related Adjustment
Affected By
NONPRINT FUNCTION LEVER CLEARANCE (Par. 3.24)

LATCH BELLCRANK SPRING

To Check
Hold armature against pole face of release magnet.

Requirement
Min 2 oz---Max 3 oz to start typing unit suppression codebar moving.

3.29 Paper Controls (Paper Alarm Control Area)

(A) PAPER ALARM CONTACT PRESSURE AND GAP - S

(1) Requirement

With the paper alarm lever not in contact with insulator

—Min 15 grams---Max 20 grams to separate the contacts of the break-make contact spring and normally closed contact spring.

(C) PAPER LEVER SPRING - S

To Check

Place a single sheet of a sprocket form between the paper alarm lever and paper guideplate. Hold the sprocket form taut over the cutout in the paper guideplate and allow the paper alarm lever to rest on the sprocket form. Position a spring scale over the paper alarm lever at the rectangular opening in the paper guideplate.

Requirement

Min 1 oz---Max 1-1/2 oz to move paper alarm lever from sprocket form.

(2) Requirement

With the paper alarm lever not in contact with insulator

—Min 0.010 inch---Max 0.020 inch between the contacts of the break-make contact spring and the normally open contact spring.

To Adjust

Bend normally closed contact spring.

Related Adjustment

Affected By

PAPER GUIDEPLATE CLEARANCE (Platen Area, Part 2, Basic Adjustments) - S (Par. 2.86)

(B) PAPER ALARM CONTACT LEVER CLEARANCE - S

To Check

Place a single sheet of a sprocket form between the paper alarm lever and paper guideplate. Hold the sprocket form taut over the cutout in the paper guideplate.

Requirement

—Min 0.005 inch---Max 0.030 inch between insulator and paper alarm lever.

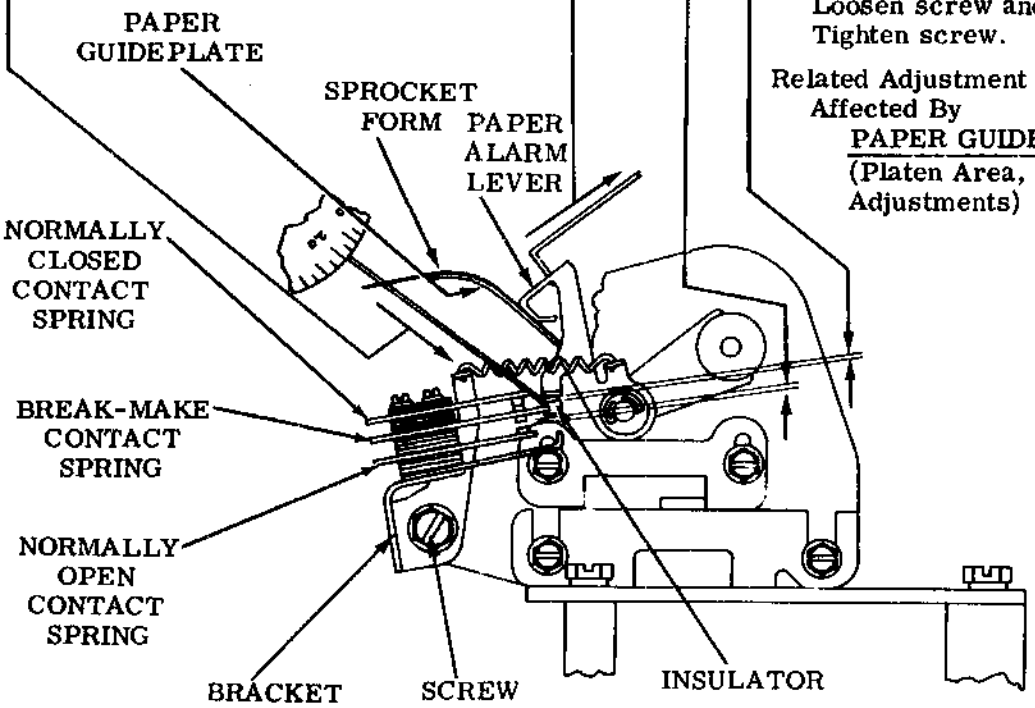
To Adjust

Loosen screw and position bracket. Tighten screw.

Related Adjustment

Affected By

PAPER GUIDEPLATE CLEARANCE (Platen Area, Part 2, Basic Adjustments) - S (Par. 2.86)



(Left Side View)

33 TAPE READER

ADJUSTMENTS

CONTENTS

1. GENERAL

1.01 This section provides adjustment and maintenance information for the 33 tape reader. It is reissued to provide exclusive coverage of the 33 tape reader and to update the section. Since this is a general revision, marginal arrows ordinarily used to indicate changes and additions are omitted.

1.02 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Tools required to perform adjustments are contained in TP185830 Tool Kit and are listed in Maintenance Tool Section 570-005-800.

Note: An adjustment must be performed even if the accompanying illustration is not an exact duplication of the adjustment area.

1.03 The sequence in which the adjustments appear should be followed when a complete readjustment of the tape reader is undertaken. No adjustment should be undertaken without completely understanding the procedure and the requirements. Read a procedure all the way through before making an adjustment or checking a spring tension.

Note 1: Be sure to check all related adjustments (Paragraph 1.07).

Note 2: Remove all electric power before checking or performing adjustments.

1.04 References to left, right, front, rear, etc consider the tape reader to be viewed from a position where the feed wheel faces up and the lid latch is located to the viewer's right. Orientation references to the clutch trip area consider the armature extension to be facing up with the contact bracket pry points located to the viewer's right.

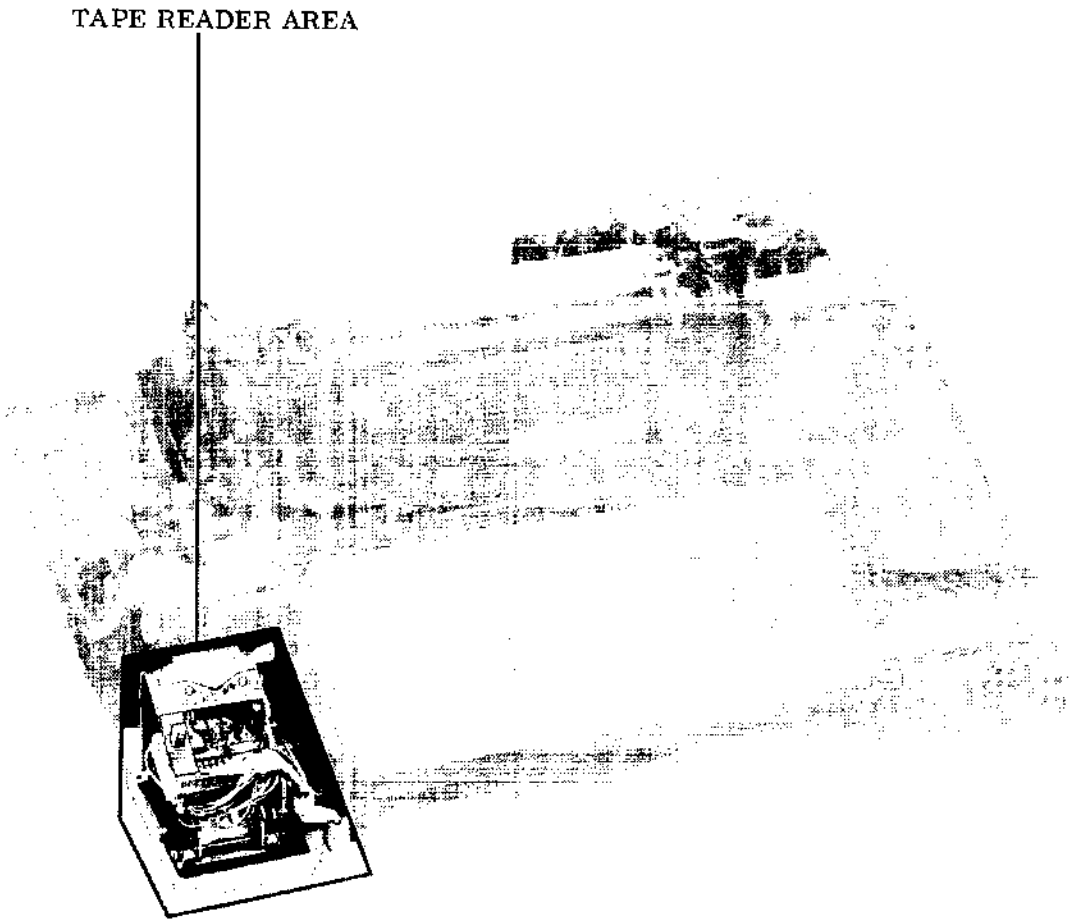


Figure 1 - Tape Reader Area

1.05 When a procedure calls for using pry points or slots to make an adjustment, place a screwdriver between the points or in the slots and pry parts in the proper direction.

1.06 If parts are removed from the tape reader to facilitate making an adjustment, be sure that they are replaced.

Note: Recheck any adjustment that may have been affected by the removal of parts.

1.07 Related adjustments are listed with some of the adjustment text and are primarily intended to aid in troubleshooting the equipment. As an example, suppose that in searching for a trouble it is discovered that the BLOCKING PAWL (Tape Reader Area) adjustment does not meet its requirement. Under "Related Adjustment," it is indicated that this adjustment is affected by the DETENT LEVER (Tape Reader Area) and FEED PAWL (Tape Reader Area) adjustments. Check these to see if either is the cause of the trouble. Also, note that certain adjustments affect other adjustments. For example, see the DETENT LEVER (Tape Reader Area) adjustment. Note that this adjustment affects the FEED PAWL (Tape Reader Area) and BLOCK PAWL (Tape Reader Area) adjustments. If the former adjustment is changed, check the latter adjustments.

1.08 The spring tensions specified in this section are indications, not exact values. Therefore, to obtain reliable readings, it is important that spring tensions be measured by spring scales placed in the positions shown on pertinent line drawings. Springs that do not meet their requirements should be replaced by new ones. Only those springs that directly affect the operation of the tape reader are measured, however, others may be measured indirectly in the

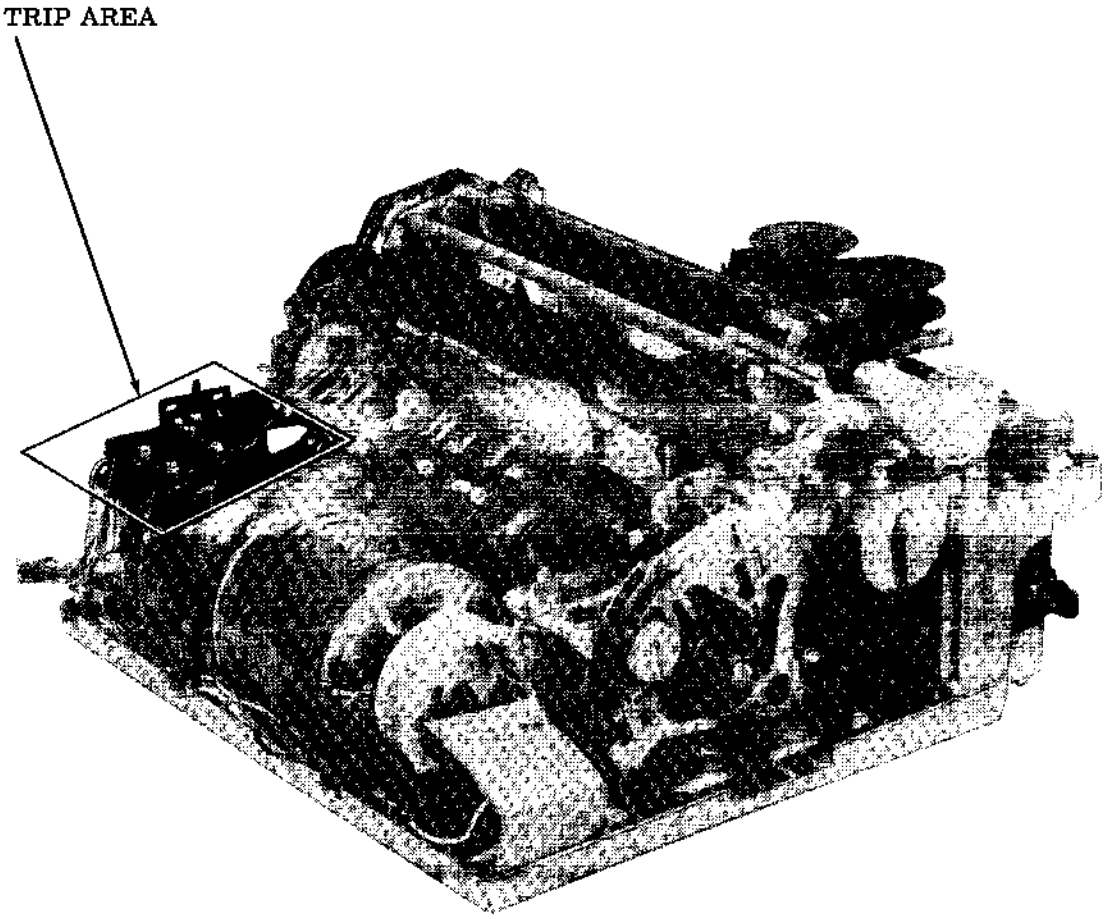


Figure 2 - Clutch Trip Area (Without Reader Feed Magnet Contact Assembly)

process. If this is the case and the requirement is not met, replace the springs one at a time, starting with the indicated spring, until the requirement is satisfied.

Note 1: Use spring scales which are listed in the Maintenance Tool Section 570-005-800.

Note 2: Spring tensions may be checked in any sequence.

1.09 Certain adjustments specify that an armature is to be in its attracted position prior to checking a requirement. This refers to an armature's position when it is magnetically attracted to its magnet core.

CAUTION: THE TAPE READER FEED MAGNET OPERATES UNDER HIGH VOLTAGE. PRECAUTIONARY MEASURES SHOULD BE TAKEN WHENEVER POWER TO THE TAPE READER IS TURNED ON. HIGH VOLTAGE WILL CONTINUE UNTIL APPROXIMATELY 10 SECONDS AFTER THE POWER PACK HAS BEEN DISCONNECTED.

1.10 When inserting a tape that has originated from the tape punch, into a tape reader, allow some slack in the tape between the punch and the reader. This is done to close the reader tape lid.

Note: Do not place the control lever directly into the FREE position while the tape reader is operating under power. Place the control lever into the STOP position and wait until after the tape reader has stopped before moving it beyond the STOP position and into the FREE position. The FREE position of the control lever is used to facilitate the insertion and/or removal of paper tape from the tape reader.

1.11 All adjustments in the "Clutch Trip Area" should be started with the typing unit in the stop condition. It is in the stop condition when the selector armature is in its attracted (frontward) position and all clutches are disengaged.

1.12 To place the typing unit in the stop condition, hold the selector armature in its attracted (frontward) position. Rotate the main shaft clockwise (as viewed from the left) until all clutches are fully disengaged as instructed in 1.13 below.

1.13 When disengaged, a clutch is latched so that a shoe lever is held in its stop position by a trip lever while a corresponding latchlever is seated in a notch of the clutch disc. This allows the clutch shoes to release their tensions on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any clutch shoes dragging.

Note 1: The clutch stop position is that position where a shoe lever contacts a trip lever.

Note 2: If the shaft is turned by hand, a clutch will not fully disengage upon reaching a stop position. Where an adjustment procedure requires disengagement, rotate the clutch to a stop position, apply a screwdriver to the associated stop-lug, and push the clutch disc in the normal direction of main shaft rotation until the corresponding latchlever seats in its clutch disc notch.

Note 3: The distributor clutch will not disengage unless the answer-back drum is in its home position, which is the position where the control lever is fully detented into the indent on the answer-back drum.

1.14 There are two areas in which tape reader adjustments and spring tensions are found. As aids in locating the areas, Figures 1 and 2 are provided. They indicate the areas as follows:

Area	Figure
Clutch trip	2
Tape reader	1

1.15 General Maintenance Principles:

(a) Lubrication instructions and intervals are given in the appropriate lubrication sections.

(b) To maintain the operational effectiveness of the equipment, it is recommended that certain parts be replaced at uniform intervals. Below is the recommended overhaul interval as recorded in typing unit operating hours.

Operating Speed (words per minute)	Overhaul Interval	Estimated Service Life
100	1500 hrs*	4500 hrs*

*Typing unit operating hours

Replacement parts are available in overhaul maintenance kits.

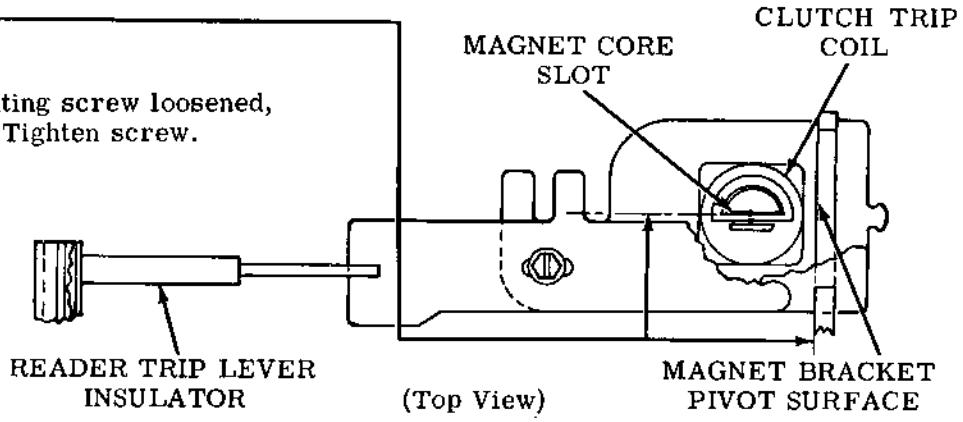
2. BASIC UNIT

2.01 Clutch Trip Area

MAGNET CORE

Requirement
Magnet core slot to be perpendicular to magnet bracket pivot surface as gauged by eye.

To Adjust
With clutch trip coil mounting screw loosened, position clutch trip coil. Tighten screw.

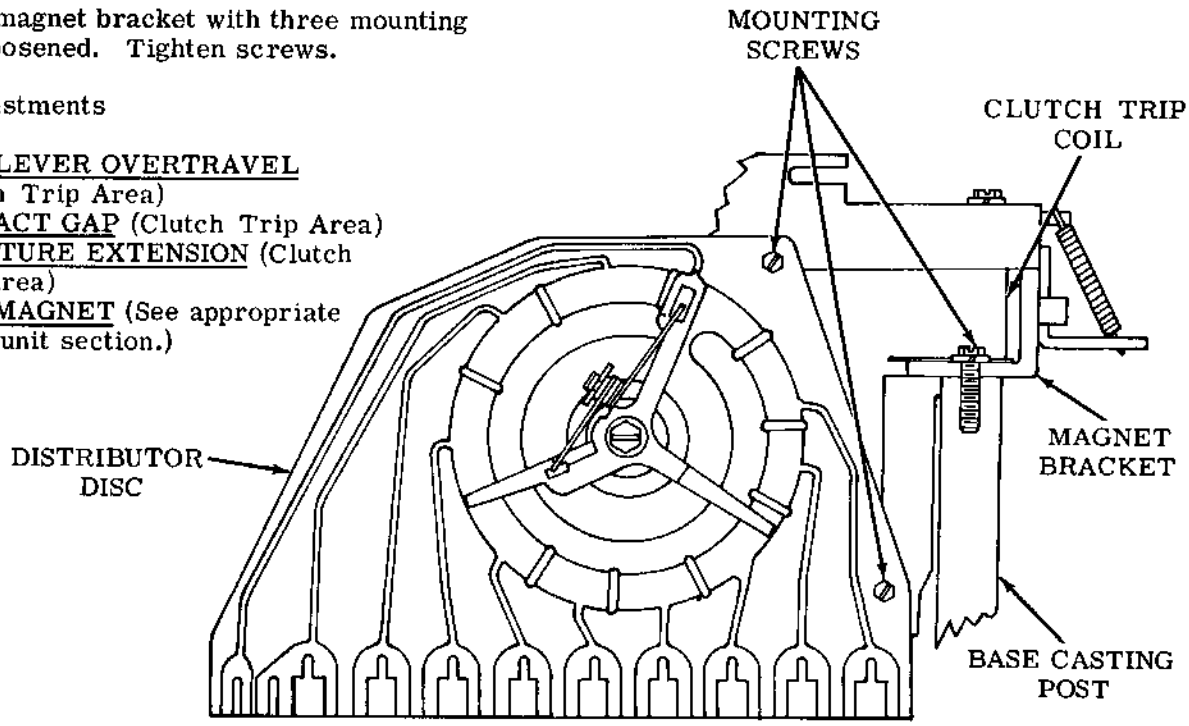


TRIP MAGNET

Requirement
Magnet bracket to be positioned on base casting post as far forward and to the left as possible.

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

Related Adjustments
Affects
TRIP LEVER OVERTRAVEL (Clutch Trip Area)
CONTACT GAP (Clutch Trip Area)
ARMATURE EXTENSION (Clutch Trip Area)
TRIP MAGNET (See appropriate typing unit section.)



(Right Side View)

2.02 Clutch Trip Area (continued)

TRIP LEVER OVERTRAVEL

To Check
Trip distributor clutch by momentarily holding armature in its attracted position. Rotate main shaft until cam roller is on high part of reader trip lever cam. Take up play in the armature toward the rear and release. Position the reader trip lever to the center of the armature extension.

Requirement
Min 0.010 inch --- Max 0.030 inch between the end of armature extension and latching surface of reader trip lever.

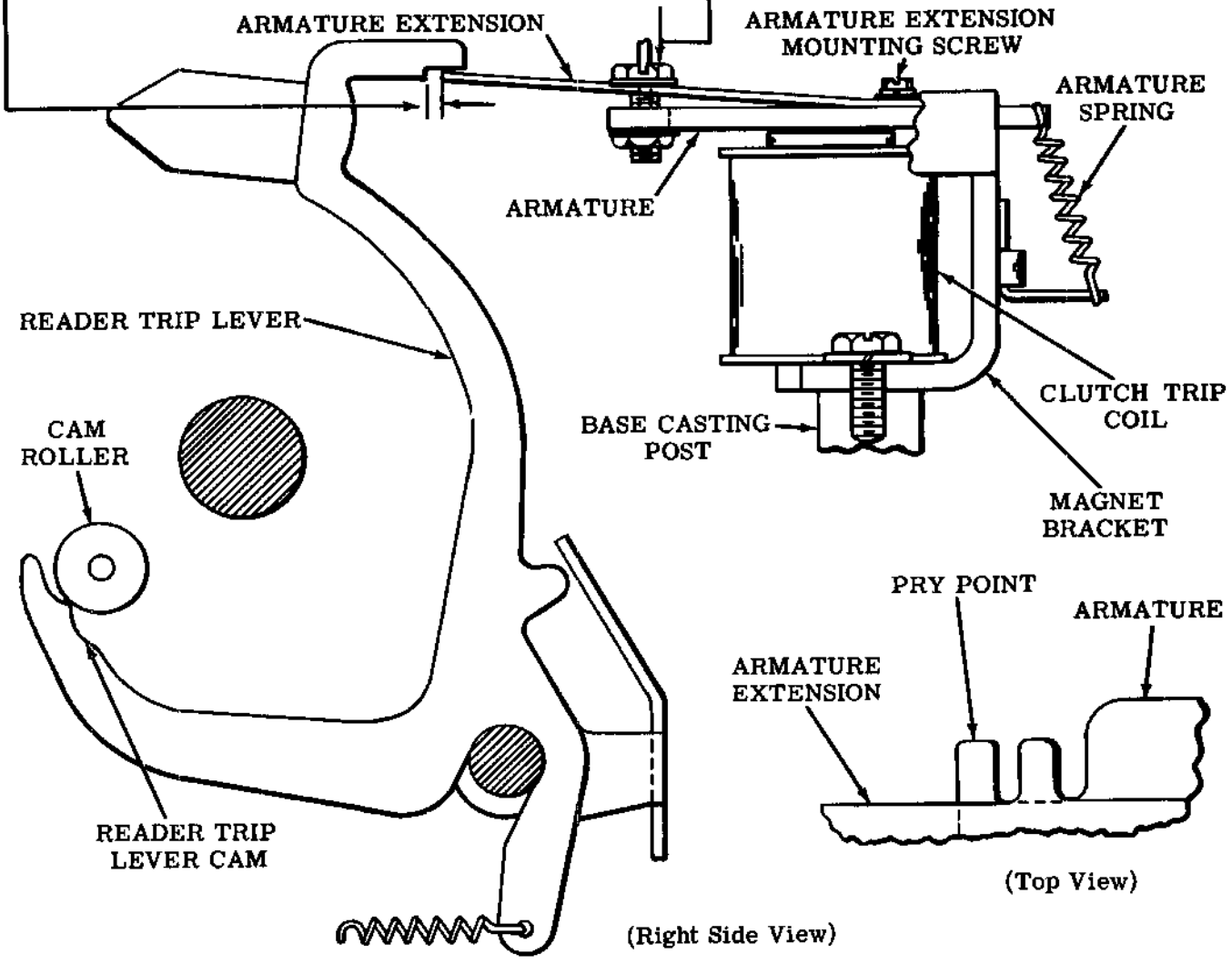
To Adjust
With armature extension mounting screw loostened friction tight, position armature extension using pry point. Tighten screw.

Related Adjustment
Affects
CONTACT GAP (Clutch Trip Area)

TRIP MAGNET ARMATURE SPRING

Requirement
With armature in its unattracted position and cam roller on high part of reader trip lever cam
Min 2 oz --- Max 4 oz
to start armature moving.

Note: The requirement for readers containing busy and reset switches is
Min 2 oz --- Max 3 oz



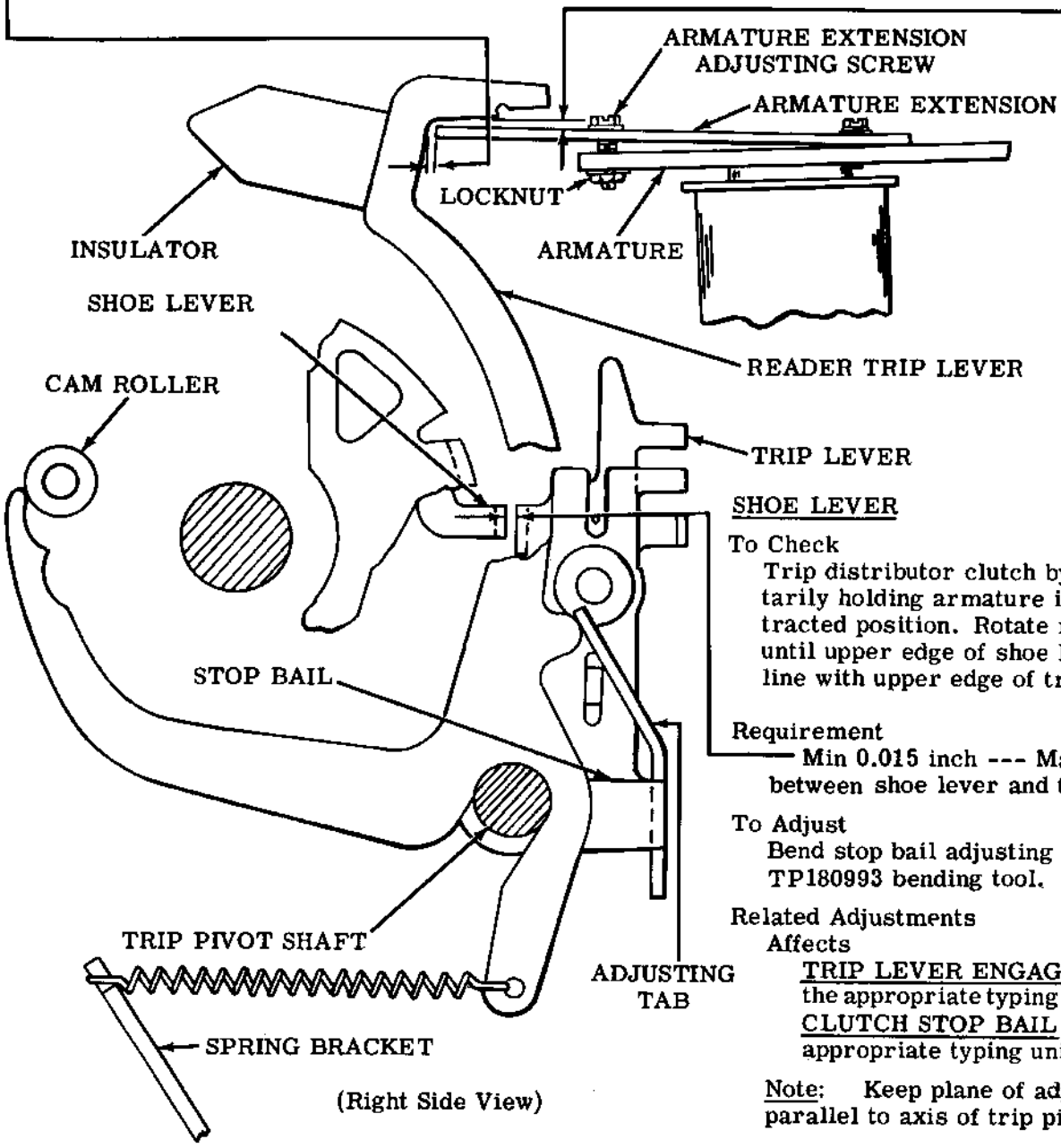
2.03 Clutch Trip Area (continued)

ARMATURE EXTENSION

To Check
Place typing unit in stop condition. Hold armature in attracted position and rotate main shaft until a clearance of
Min Some --- Max 0.040 inch
exists between end of armature extension and reader trip lever.

Requirement
Min Some --- Max 0.030 inch
between the armature extension and reader trip lever at its closest point.

To Adjust
Loosen and use armature extension adjusting screw and locknut to position armature extension. Tighten adjusting screw and locknut.



(Right Side View)

SHOE LEVER

To Check
Trip distributor clutch by momentarily holding armature in its attracted position. Rotate main shaft until upper edge of shoe lever is in line with upper edge of trip lever.

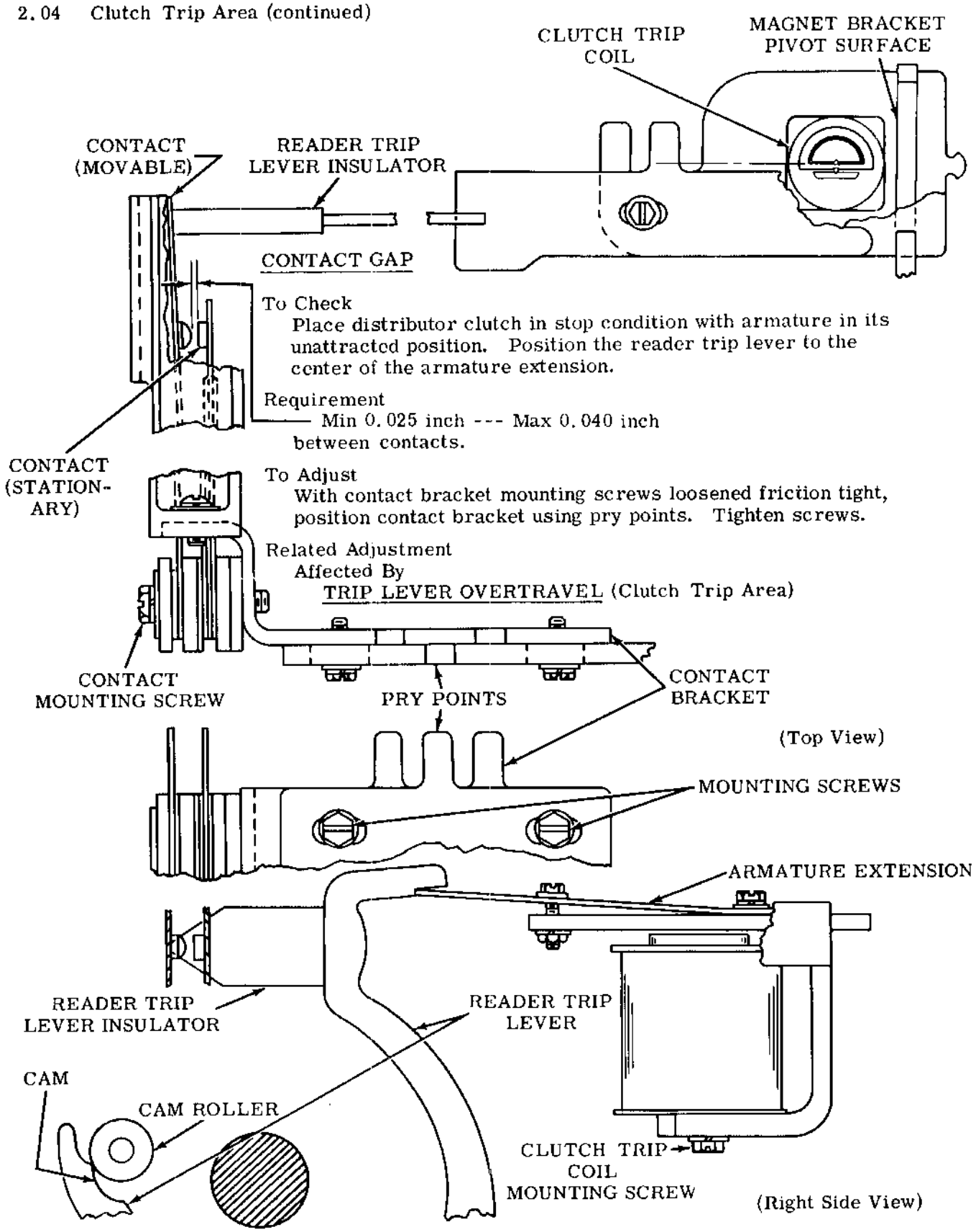
Requirement
Min 0.015 inch --- Max 0.035 inch
between shoe lever and trip lever.

To Adjust
Bend stop bail adjusting tab with TP180993 bending tool.

Related Adjustments
Affects
TRIP LEVER ENGAGEMENT (See the appropriate typing unit section.)
CLUTCH STOP BAIL (See the appropriate typing unit section.)

Note: Keep plane of adjusting tab parallel to axis of trip pivot shaft.

2.04 Clutch Trip Area (continued)

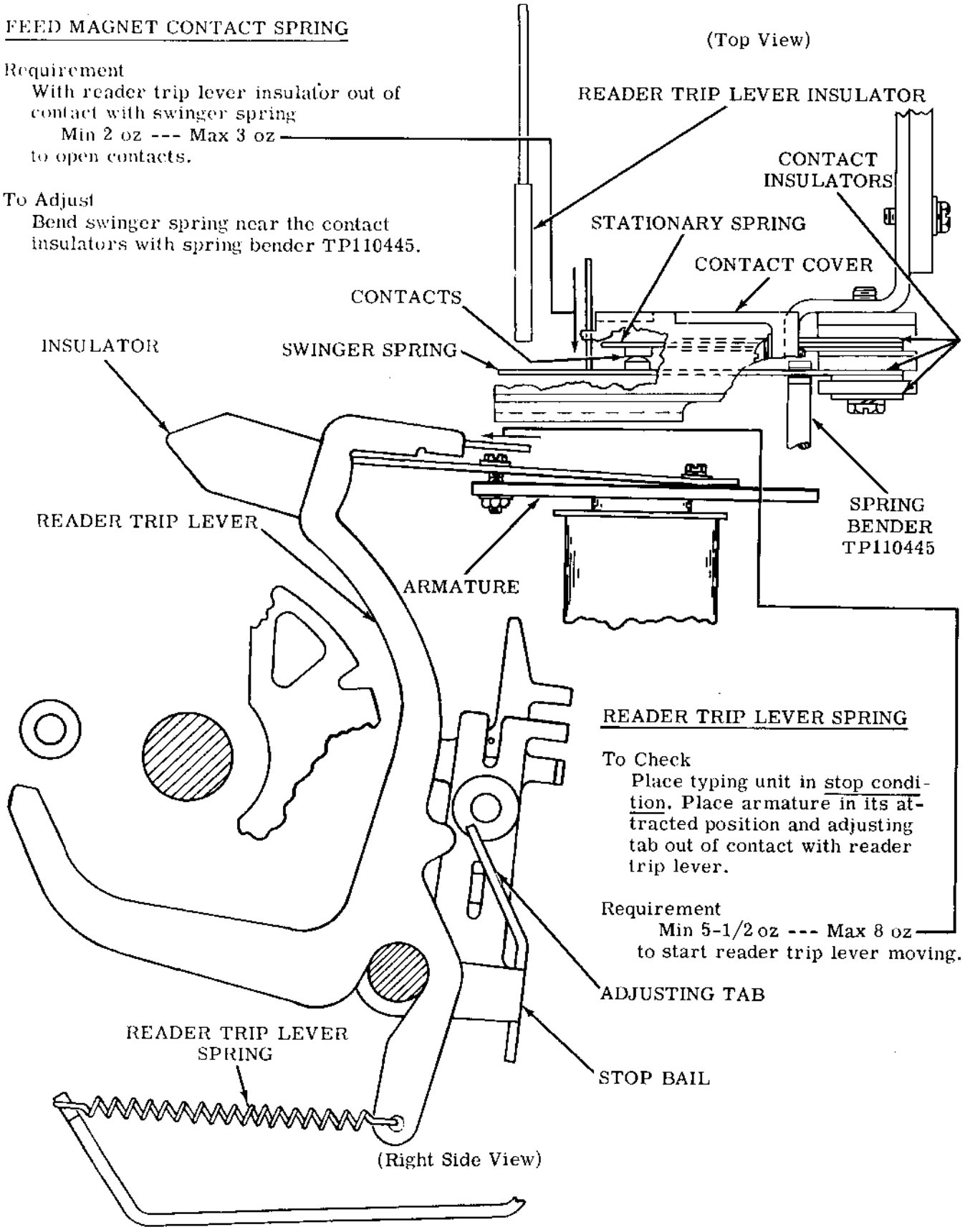


2.05 Clutch Trip Area (continued)

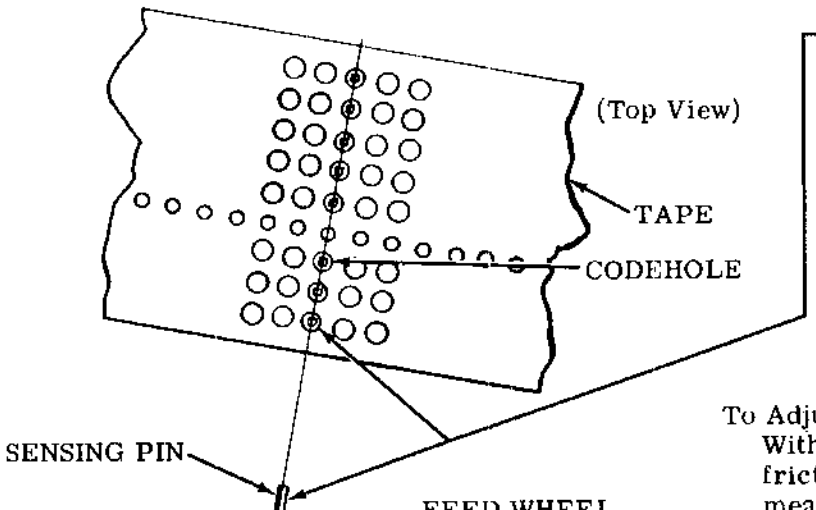
FEED MAGNET CONTACT SPRING

Requirement
With reader trip lever insulator out of contact with swinger spring
Min 2 oz --- Max 3 oz
to open contacts.

To Adjust
Bend swinger spring near the contact insulators with spring bender TP110445.



2.06 Tape Reader Area



DETENT LEVER

Requirement

With the control lever in FREE position, tips of sensing pins must be centrally located in the code holes of tape which has an all-marking code combination punched in it.

Note: If the tape reader is operating under power, do not push the control lever beyond the STOP position until the tape reader has stopped.

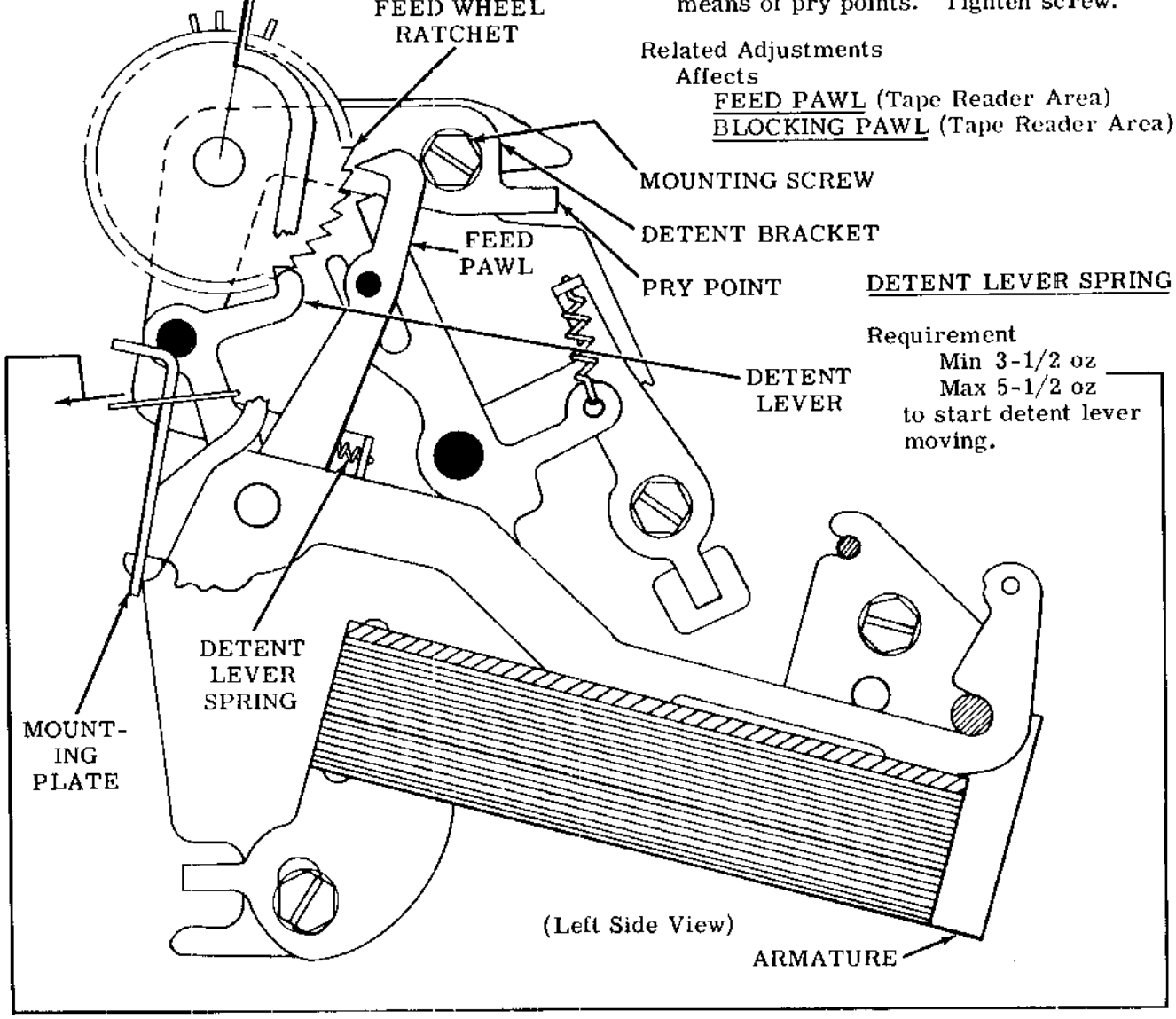
To Adjust

With detent bracket mounting screw friction tight, position detent bracket by means of pry points. Tighten screw.

Related Adjustments

Affects

FEED PAWL (Tape Reader Area)
BLOCKING PAWL (Tape Reader Area)



DETENT LEVER SPRING

Requirement

Min 3-1/2 oz
Max 5-1/2 oz
to start detent lever moving.

2.07 Tape Reader Area (continued)

FEED PAWL (Adjustment with Gauge TP183103)

To Check
Place armature in unattracted position. Visually check to see if there is some clearance between the blocking pawl and ratchet tooth. If not, provide clearance. See BLOCK PAWL (Tape Reader Area) adjustment.

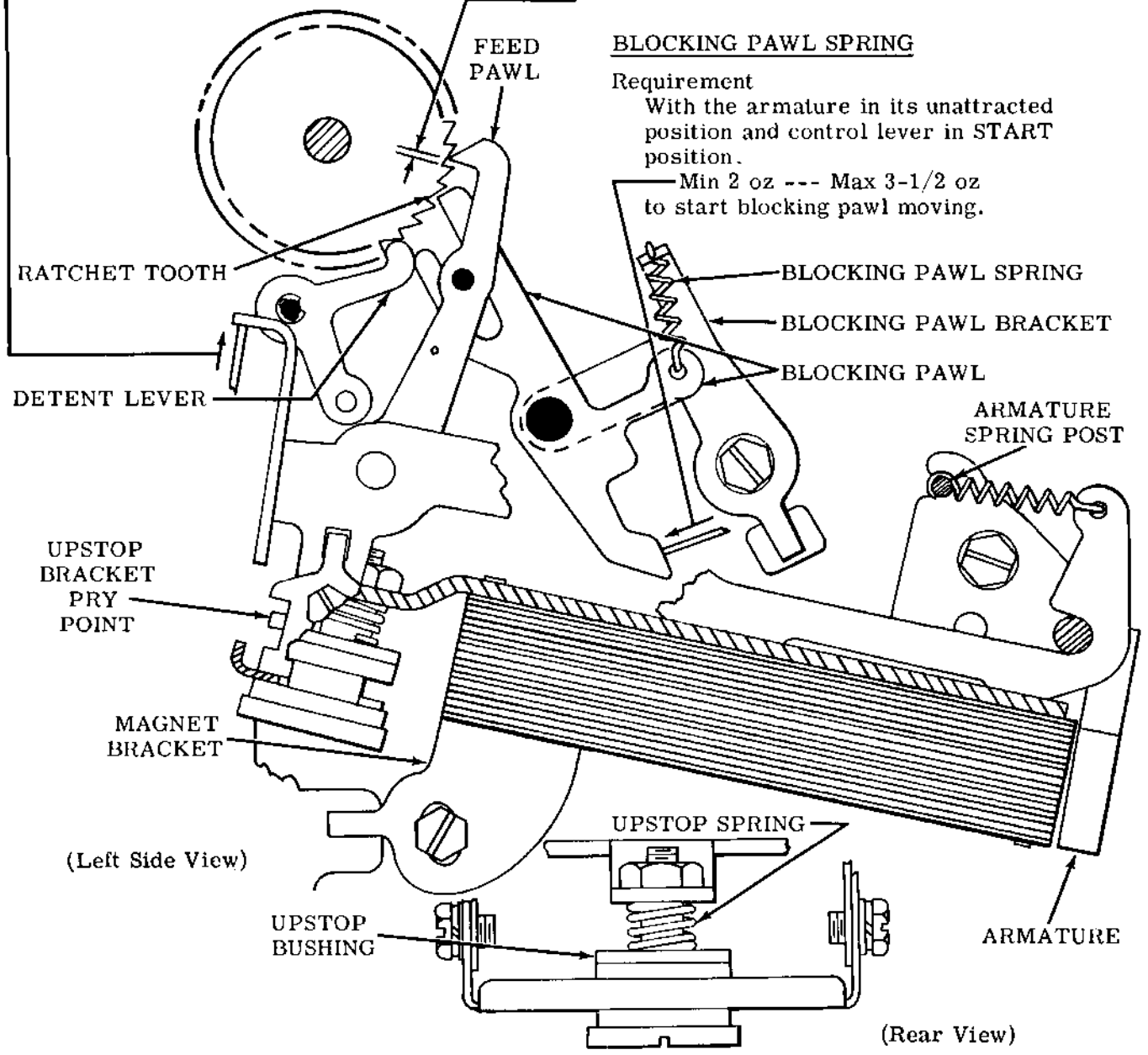
Requirement
Min Some --- Max 0.008 inch between the feed pawl and ratchet tooth with a total of five ratchet teeth between the feed pawl and detent lever. (Continued on following page.)

UPSTOP SPRING

Requirement
With armature spring post removed from its slot in magnet bracket
Min 14 oz --- Max 20 oz
to start upstop bushing moving.

BLOCKING PAWL SPRING

Requirement
With the armature in its unattracted position and control lever in START position.
Min 2 oz --- Max 3-1/2 oz
to start blocking pawl moving.



2.08 Tape Reader Area (continued)

FEED PAWL (Continued from preceding page.)

To Adjust

With armature in attracted position and two upstop bracket mounting screws friction tight, insert gauge TP183103 between upstop bracket and shoulder of upstop shoulder screw. Position upstop bracket so that it lies flat on gauge. Tighten upstop bracket mounting screws. With armature in unattracted position and three magnet bracket mounting screws friction tight, position magnet bracket by means of pry point. Tighten magnet bracket mounting screws.

Note: For tape readers with vibration damper plate TP183136, tighten magnet bracket mounting screws A and B first. Then, rotate the vibration dampener plate until the upper finger presses firmly on contact block extension. Finally, tighten magnet bracket mounting screw C.

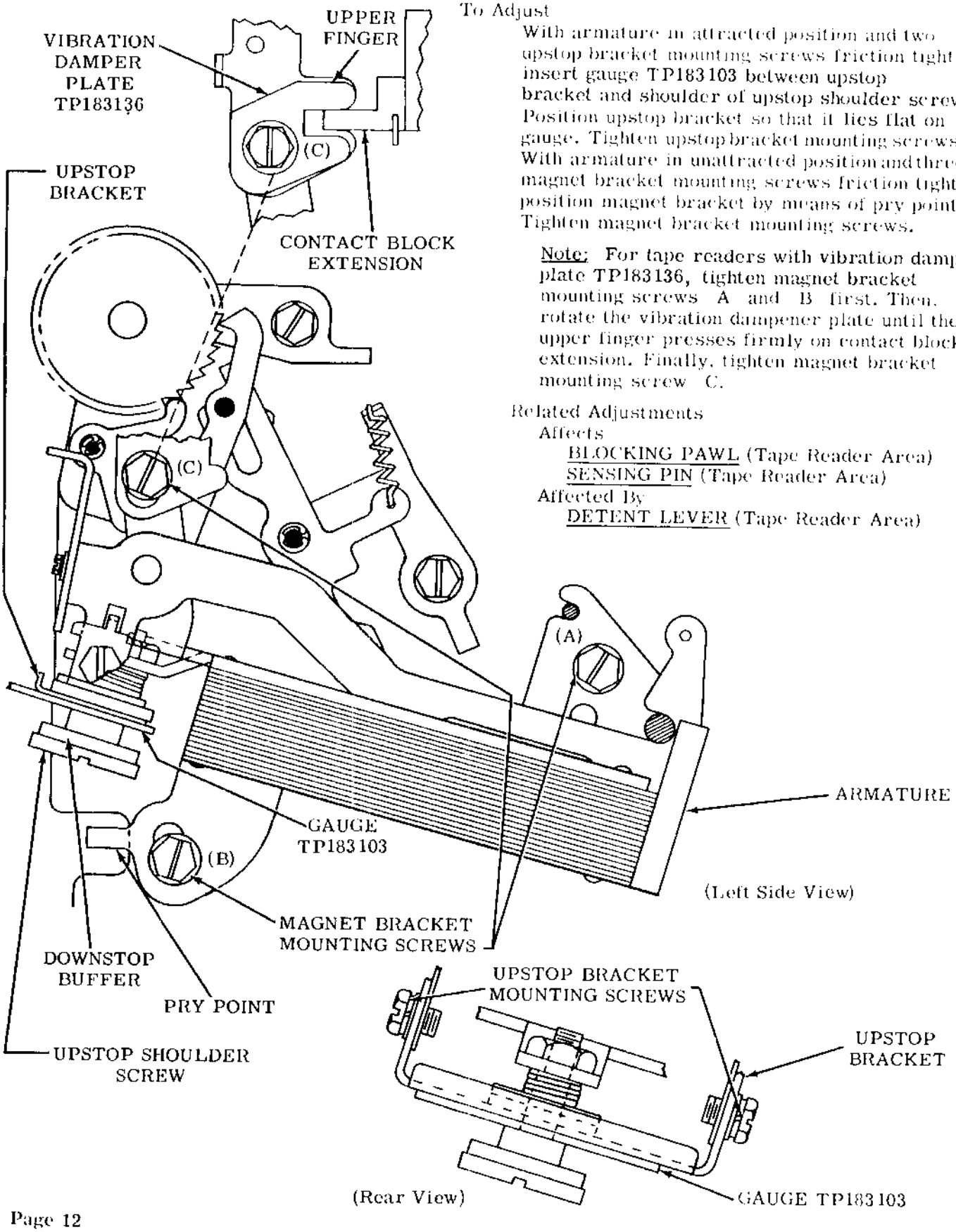
Related Adjustments

Affects

BLOCKING PAWL (Tape Reader Area)
SENSING PIN (Tape Reader Area)

Affected By

DETENT LEVER (Tape Reader Area)



2.09 The Tape Reader Area (continued)

FEED PAWL (Adjustment without Gauge TP183103)

(1) To Check

Place armature in attracted position and loosen two upstop bracket mounting screws so that the upstop bracket does not limit the feed pawl motion.

Requirement

Min 0.020 inch --- Max 0.045 inch between feed pawl and ratchet tooth and a total of six ratchet teeth between feed pawl and detent lever.

To Adjust

With three magnet bracket mounting screws friction tight, position magnet bracket using pry point.

(2) To Check

Place armature in unattracted position. Visually check to see if there is some clearance between the blocking pawl and ratchet tooth. If not, provide clearance. See BLOCKING PAWL (Tape Reader Area) adjustment. Place upstop bracket flat against downstop buffer.

Requirement

Min Some --- Max 0.008 inch between feed pawl and ratchet tooth at point of least clearance.

To Adjust

With two upstop bracket mounting screws friction tight, position upstop bracket using upstop bracket pry point. Tighten screws.

Note 1: If the some of 0.008 inch requirement cannot be met, refine requirement (1) until it is met.

Note 2: For tape readers with vibration damper plate TP183131, tighten magnet bracket mounting screws A and B first. Then, rotate the vibration damper plate until the upper finger presses firmly on contact block extension. Finally tighten magnet bracket mounting screw C.

Recheck Requirements (1) and (2) and refine, if necessary.

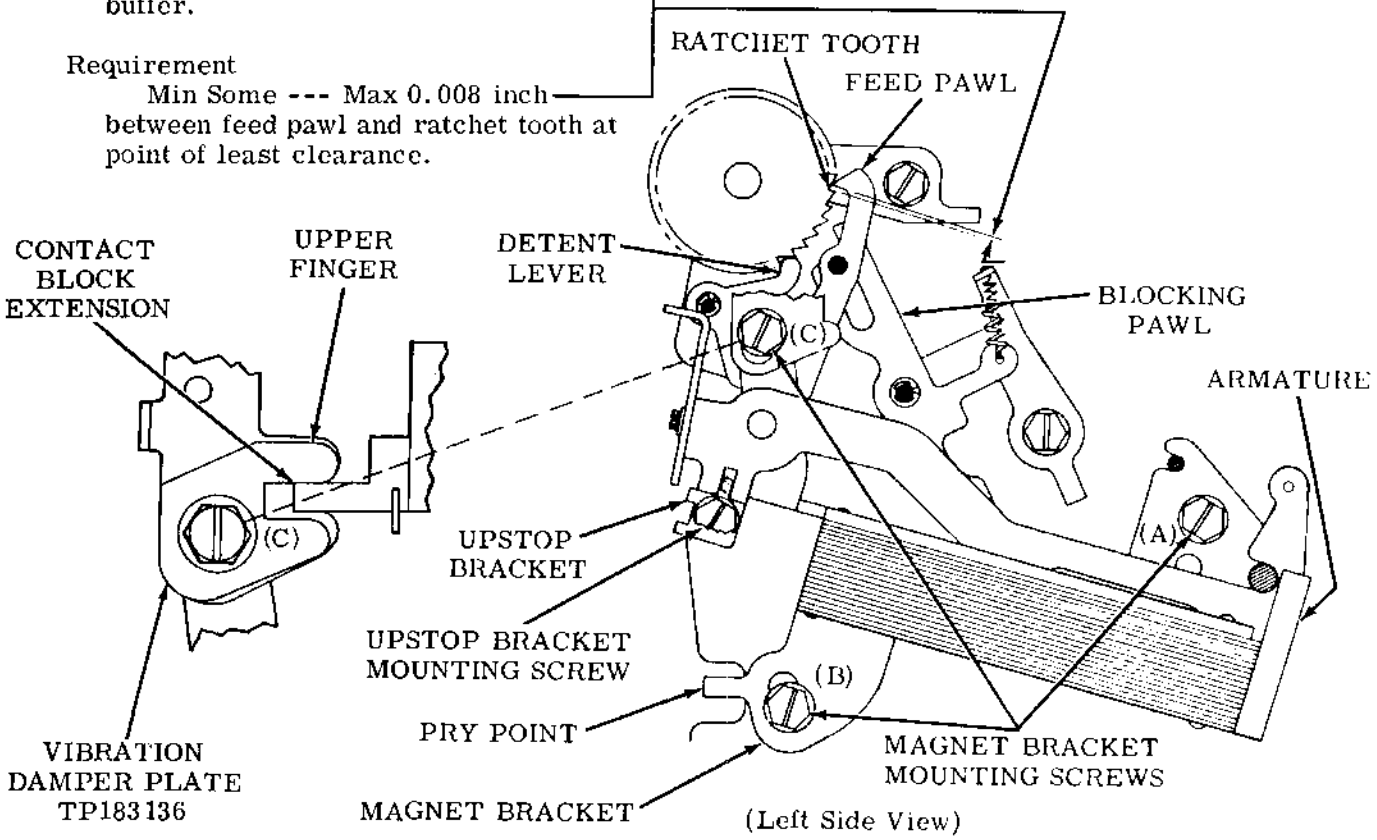
Related Adjustments

Affects

BLOCKING PAWL (Tape Reader Area)
SENSING PIN (Tape Reader Area)

Affected By

TRIP LEVER OVERTRAVEL (Tape Reader Area)



2.10 Tape Reader Area (continued)

BLOCKING PAWL

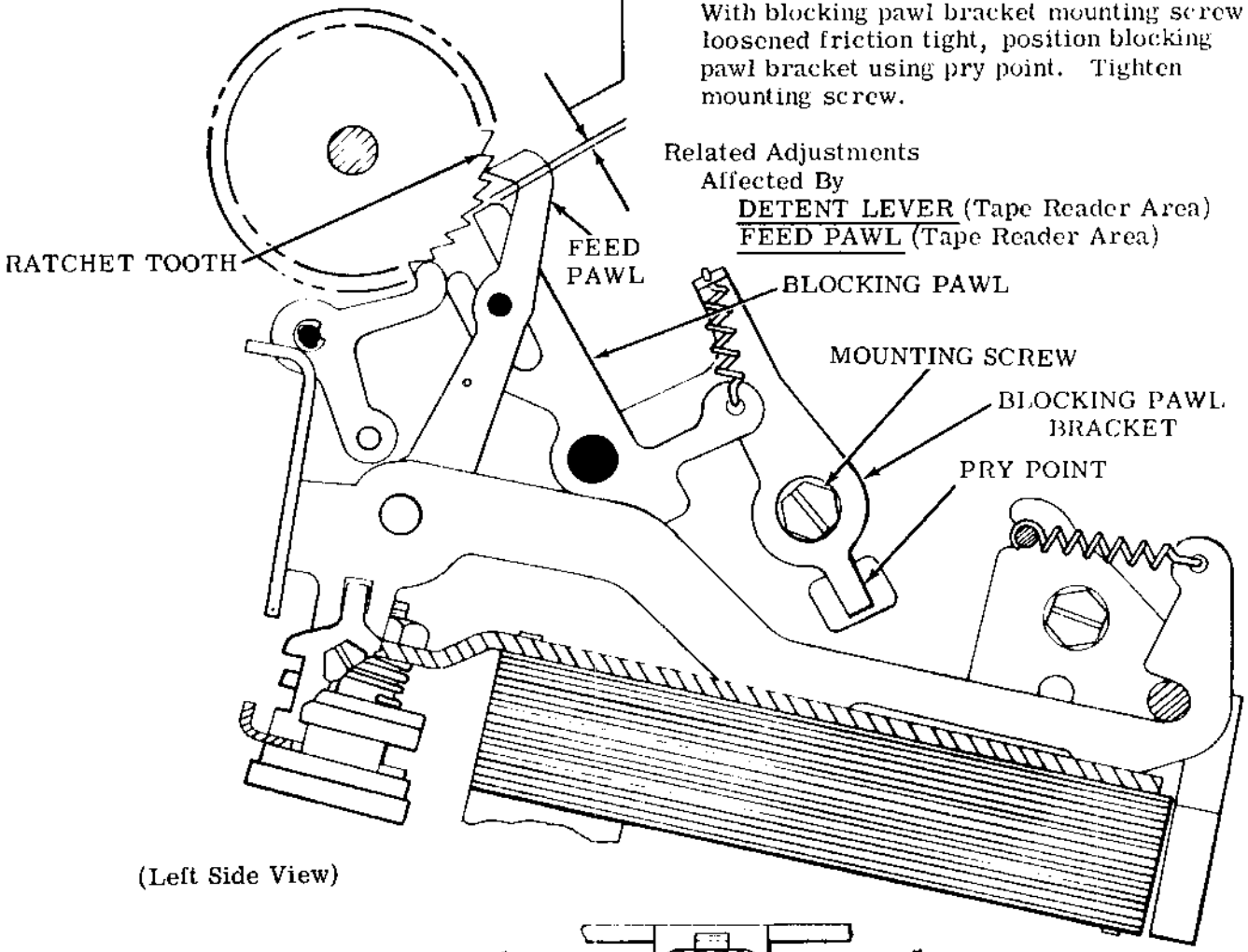
To Check
Place armature in unattracted position. Check to see that there is some clearance between feed pawl and ratchet tooth. If not, provide clearance. See FEED PAWL (Tape Reader Area) adjustment.

Requirement
Min Some --- Max 0.010 inch at point of least clearance between blocking pawl and ratchet tooth.

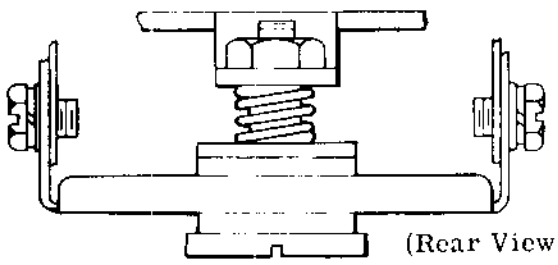
Note: When a tape winder is used
Min Some --- Max 0.003 inch at point of least clearance between blocking pawl and ratchet.

To Adjust
With blocking pawl bracket mounting screw loosened friction tight, position blocking pawl bracket using pry point. Tighten mounting screw.

Related Adjustments
Affected By
DETENT LEVER (Tape Reader Area)
FEED PAWL (Tape Reader Area)



(Left Side View)



(Rear View)

2.11 Tape Reader Area (continued)

SENSING PIN SPRING

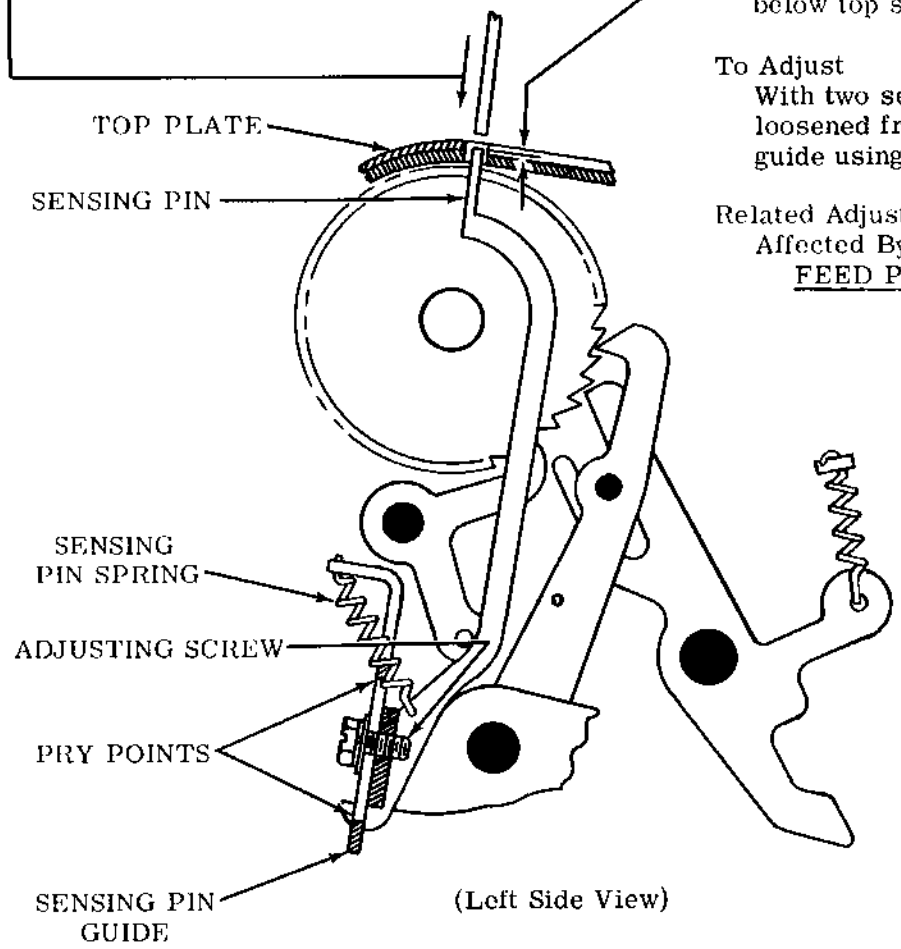
Requirement
With armature in its attracted position
Min 1-1/2 oz --- Max 2-3/4 oz
to position sensing pin flush with top plate.

SENSING PIN

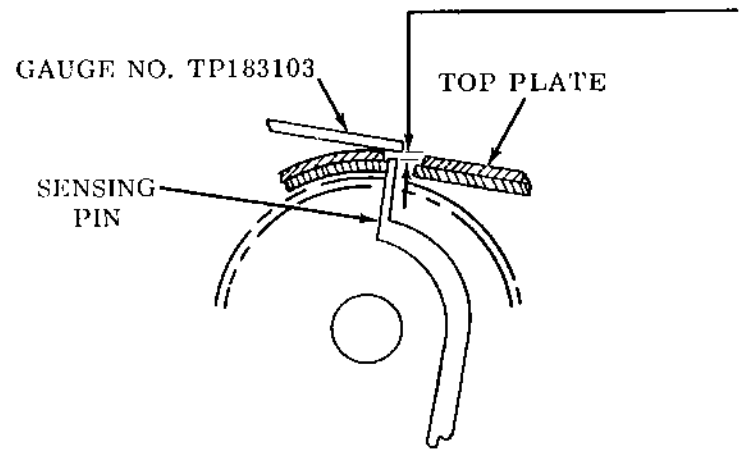
Requirement
With armature in unattracted position, the tip of all sensing pins shall be
Min Flush --- Max 0.015 inch
below top surface of top plate.

To Adjust
With two sensing pin guide adjusting screws loosened friction tight, position sensing pin guide using pry points. Tighten screws.

Related Adjustment
Affected By
FEED PAWL (Tape Reader Area)



(Left Side View)



(Left Side View)

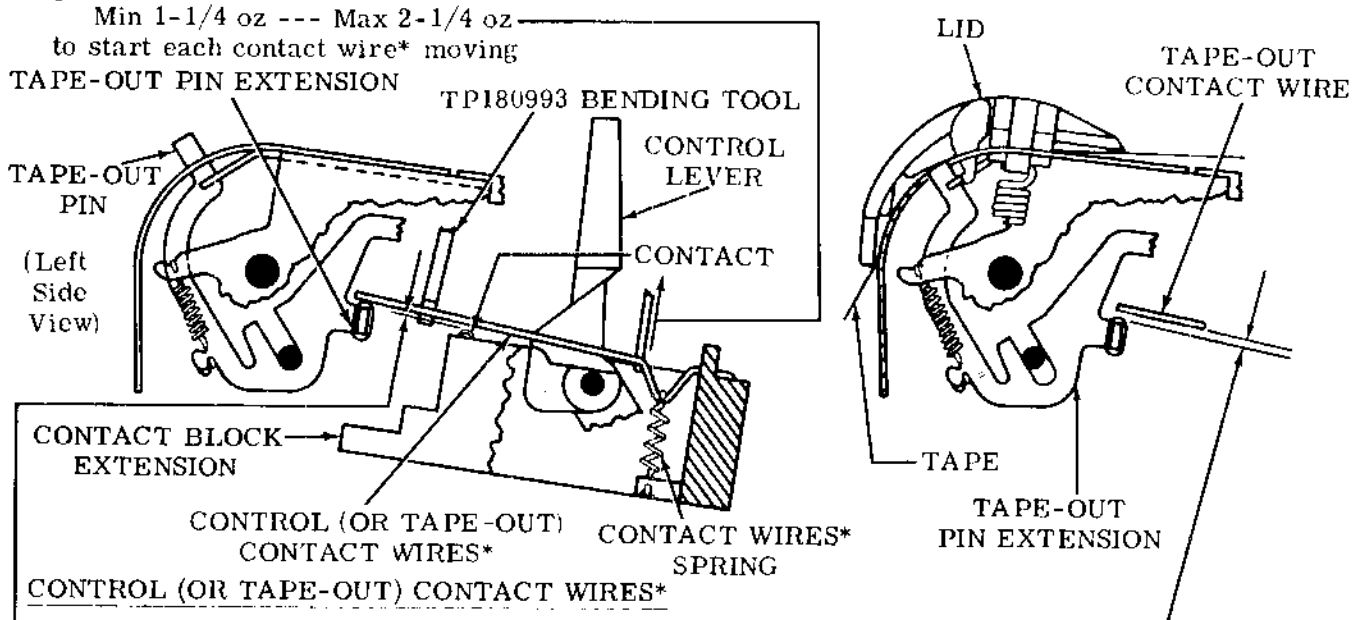
Note: This adjustment may be made by using the thin-slotted end of gauge TP183103. To check the above minimum requirement (Flush), hold the gauge flat against the top plate in back of the sensing pins and move it forward against sensing pins. If any sensing pin is deflected by the gauge, then the above minimum requirement is not met. The sensing pin pin guide must be lowered. To check the above maximum requirement (0.015 inch), hold the gauge directly above the sensing pins and measure the clearance. Adjust, if necessary, as indicated above.

2.12 Tape Reader Area (continued)

CONTACT WIRES* SPRING

To Check
Place control lever in START position and fully depress tape-out pin.

Requirement
Min 1-1/4 oz --- Max 2-1/4 oz
to start each contact wire* moving



CONTROL (OR TAPE-OUT) CONTACT WIRES*

Note 1: Tape readers without automatic reader control: Place the control lever in START position.

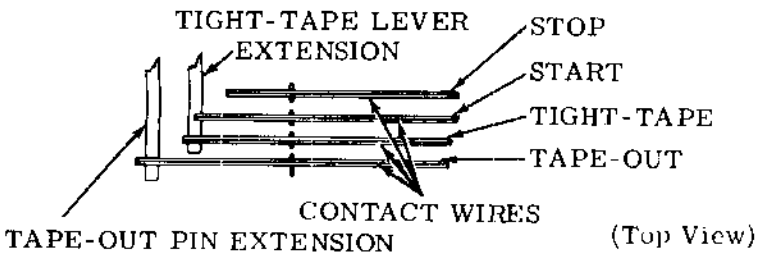
(1) Requirement
With tape-out pin in its fully up position,
Min 0.015 inch --- Max 0.025 inch
between control (or tape-out) contact wires* and contact.

(2) Requirement
With tape in reader and reader lid closed,
Min 0.005 inch
clearance between the tape-out pin extension and tape-out contact wire.

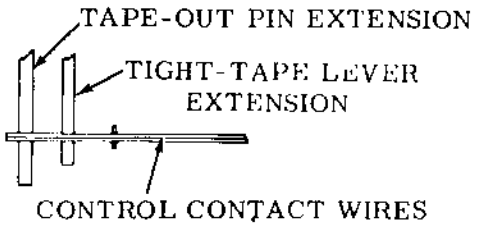
To Adjust
Bend control (or tape-out) contact wires* between the contact and the tape-out pin extension with bending tool TP180993.

*Note 2: The location of the contact wires is shown below:

TAPE READERS WITH AUTOMATIC READER CONTROL



TAPE READERS WITHOUT AUTOMATIC READER CONTROL



2.13 Tape Reader Area (continued)

Note: The following adjustment applies only to tape readers with automatic reader control.

START CONTACT WIRES

Requirement

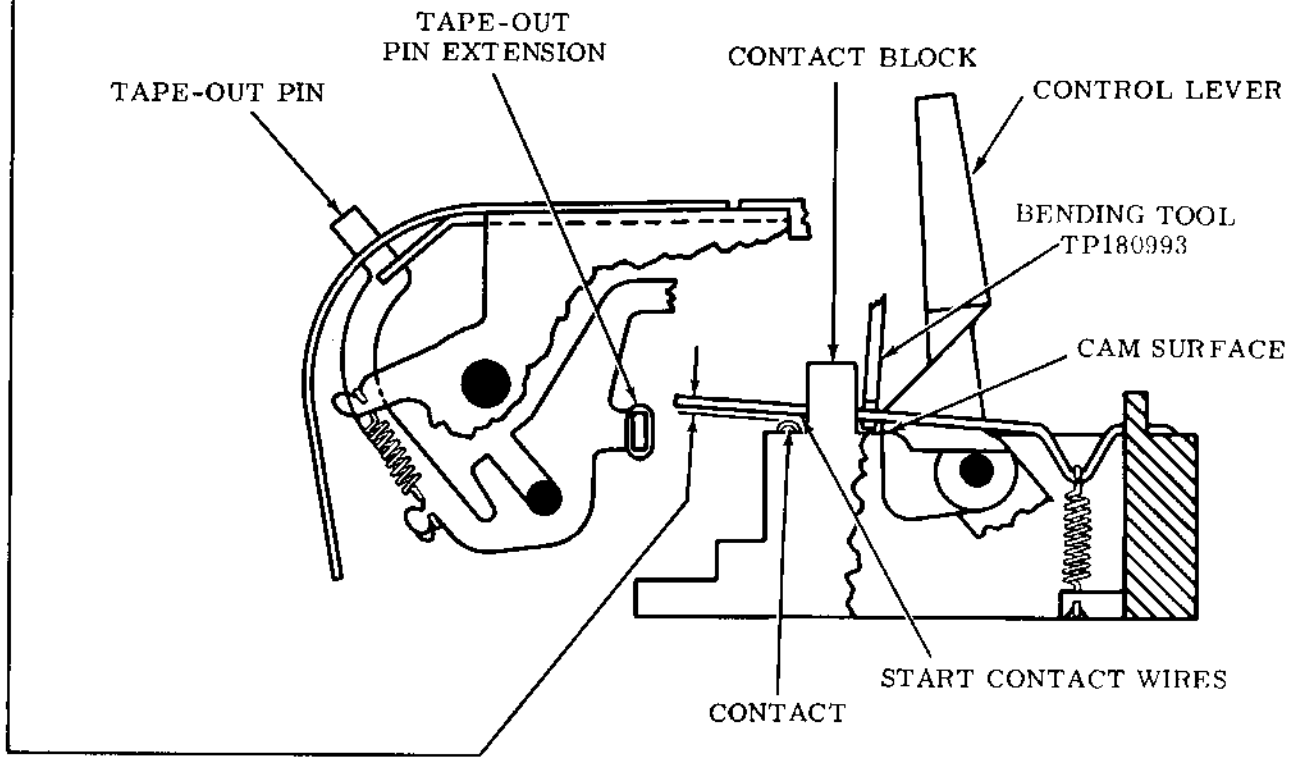
With the control lever in the neutral position (resting in a position midway between START and STOP positions)

— Min 0.035 inch --- Max 0.055 inch

between the start contact wires and their contact.

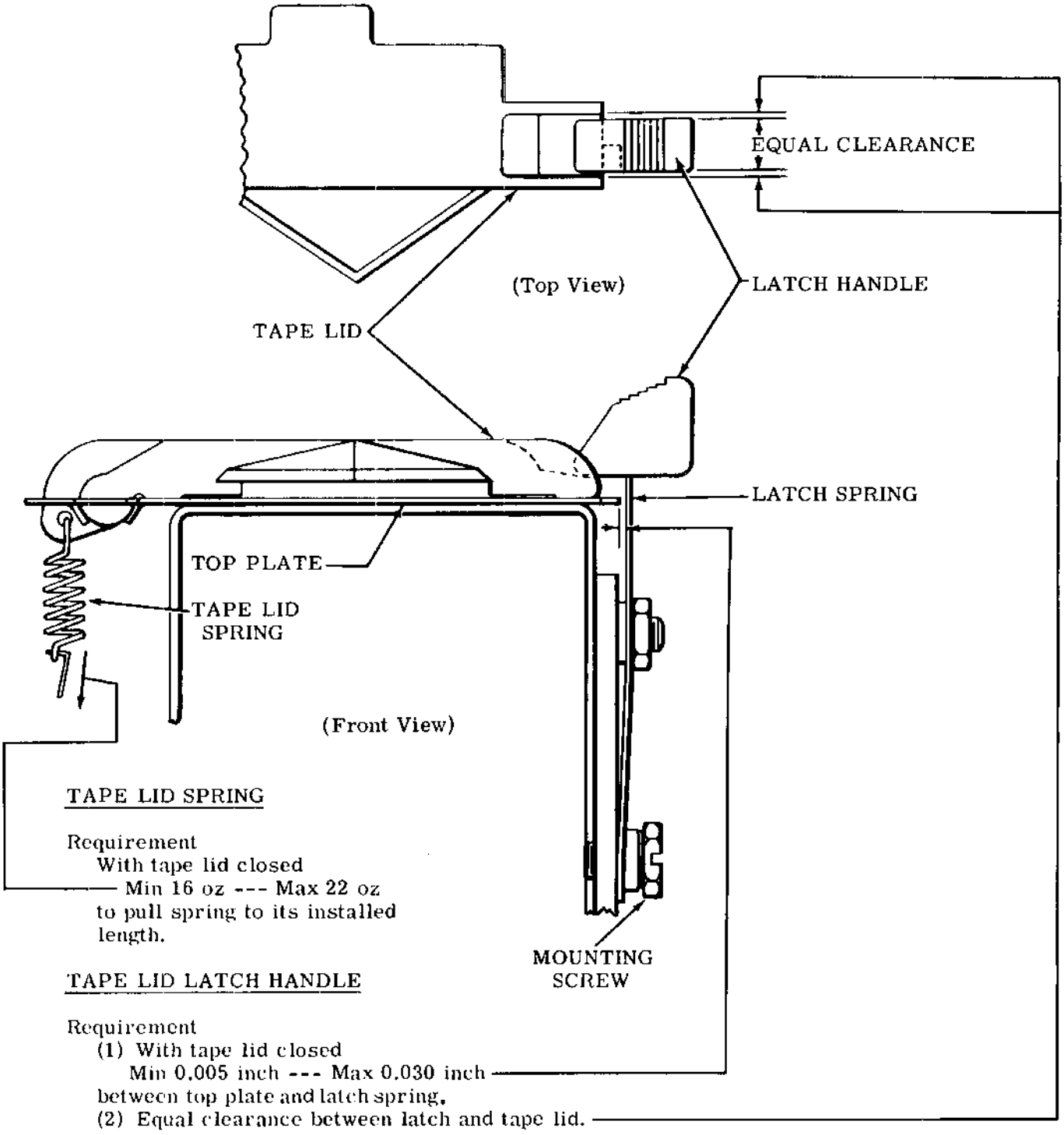
To Adjust

With the control lever in the FREE position, bend start contact wires between contact block and control lever cam surface with bending tool TP180993.



(Left Side View)

2.14 Tape Reader Area (continued)



TAPE LID SPRING

Requirement
With tape lid closed
Min 16 oz --- Max 22 oz
to pull spring to its installed
length.

TAPE LID LATCH HANDLE

Requirement
(1) With tape lid closed
Min 0.005 inch --- Max 0.030 inch
between top plate and latch spring.
(2) Equal clearance between latch and tape lid.

To Adjust
With mounting screw friction tight, position
latch handle vertically. Tighten screw.

2.15 Tape Reader Area (continued)

TIGHT-TAPE LEVER SPRING

Requirement
With the tape lid closed
Min 1 oz --- Max 2-1/4 oz
to start tight-tape lever moving.

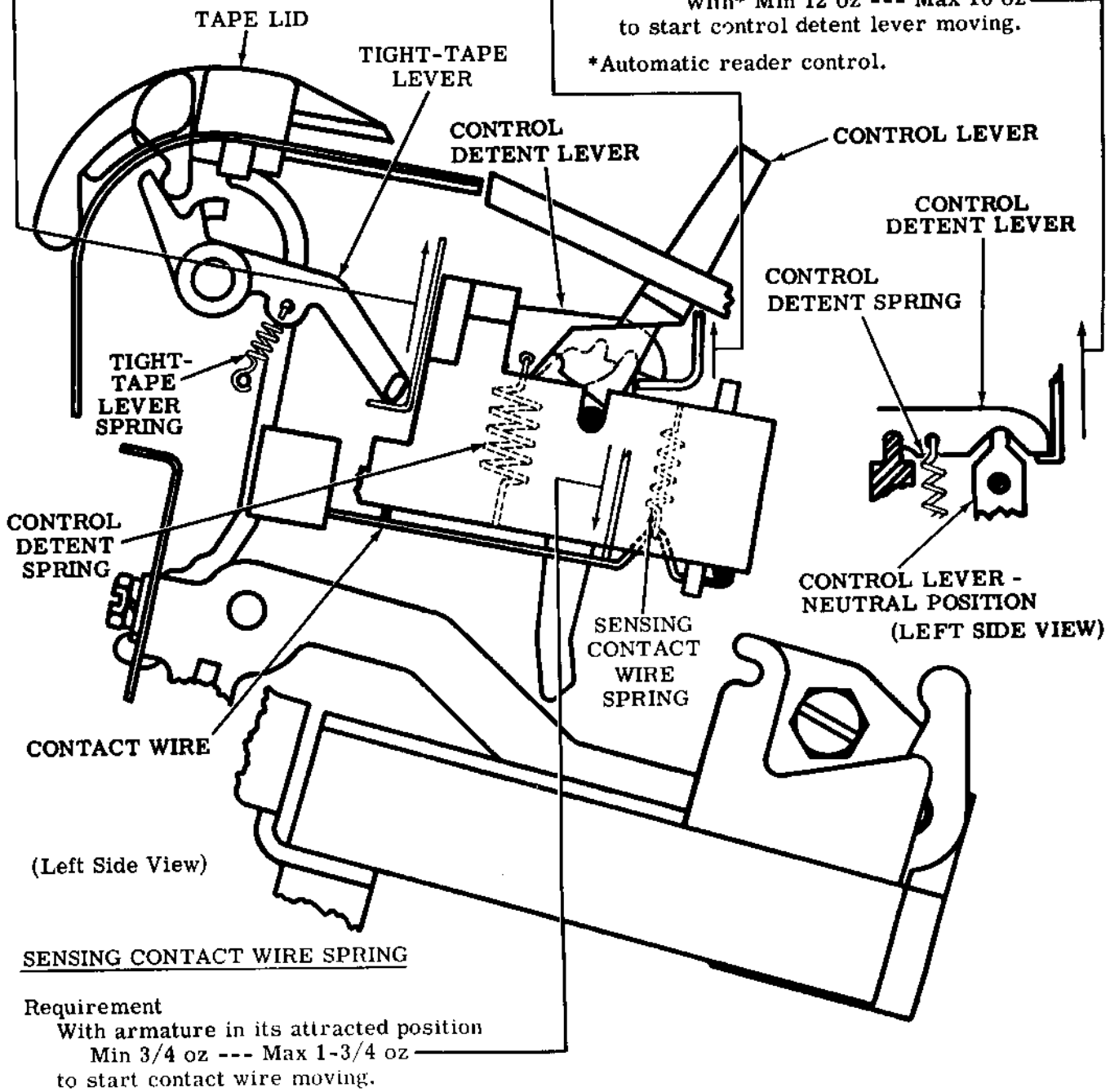
CONTROL DETENT SPRING

Requirement
Place control lever in STOP position,

Note: For tape readers with automatic reader control, place the control lever in the neutral position.

Without* Min 5 oz --- Max 9 oz
With* Min 12 oz --- Max 16 oz
to start control detent lever moving.

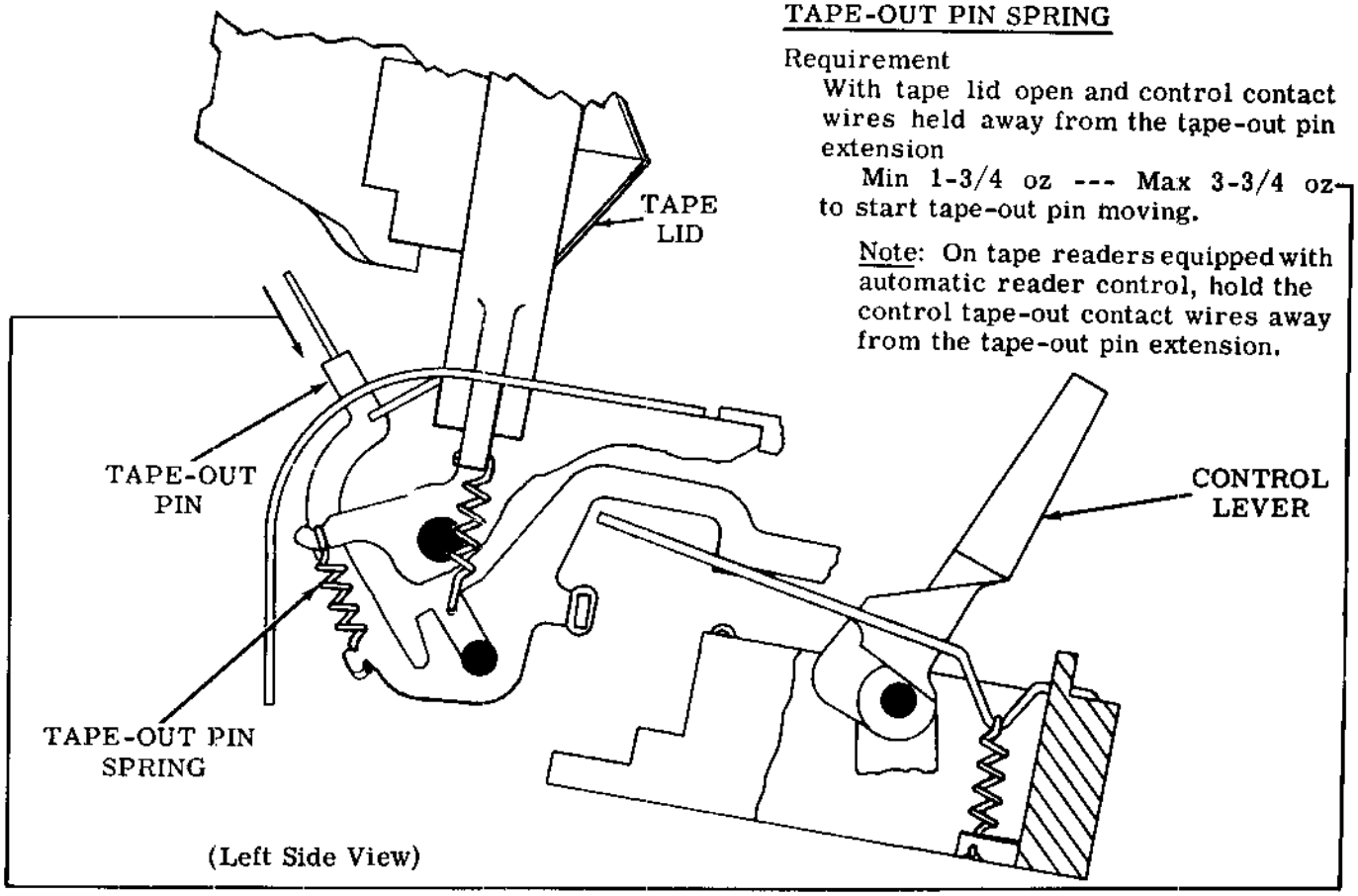
*Automatic reader control.



SENSING CONTACT WIRE SPRING

Requirement
With armature in its attracted position
Min 3/4 oz --- Max 1-3/4 oz
to start contact wire moving.

2.16 Tape Reader Area (continued)



TAPE-OUT PIN SPRING

Requirement

With tape lid open and control contact wires held away from the tape-out pin extension

Min 1-3/4 oz --- Max 3-3/4 oz to start tape-out pin moving.

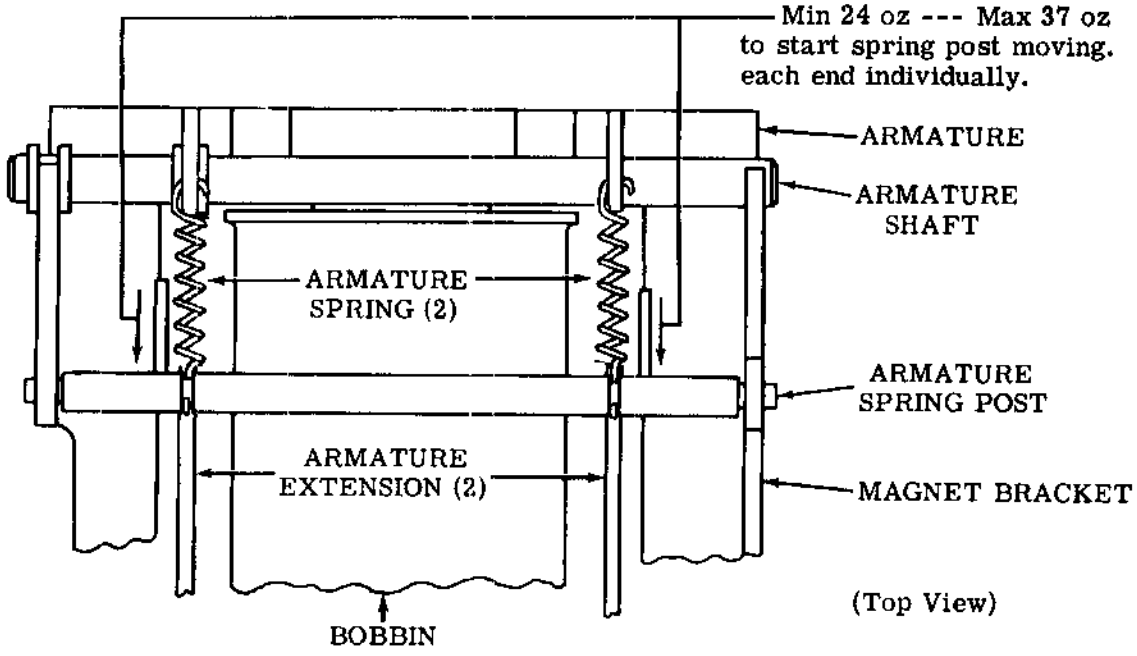
Note: On tape readers equipped with automatic reader control, hold the control tape-out contact wires away from the tape-out pin extension.

ARMATURE SPRING

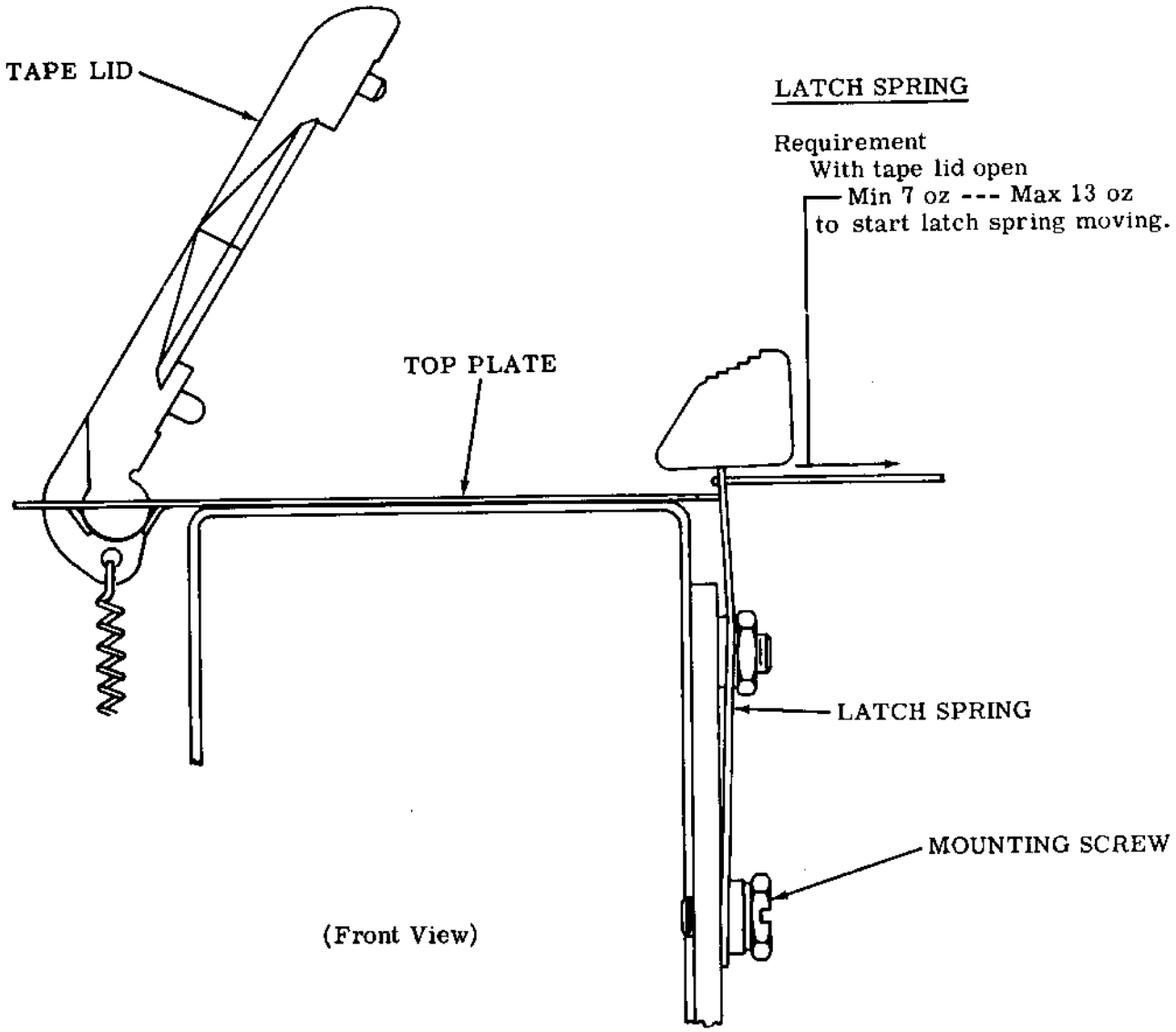
Requirement

With armature in its unattracted position

Min 24 oz --- Max 37 oz to start spring post moving. Measure each end individually.



2.17 Tape Reader Area (continued)



(Front View)

2.18 Tape Reader Area (continued)

Note: The following adjustment applies to tape readers with early design bases.

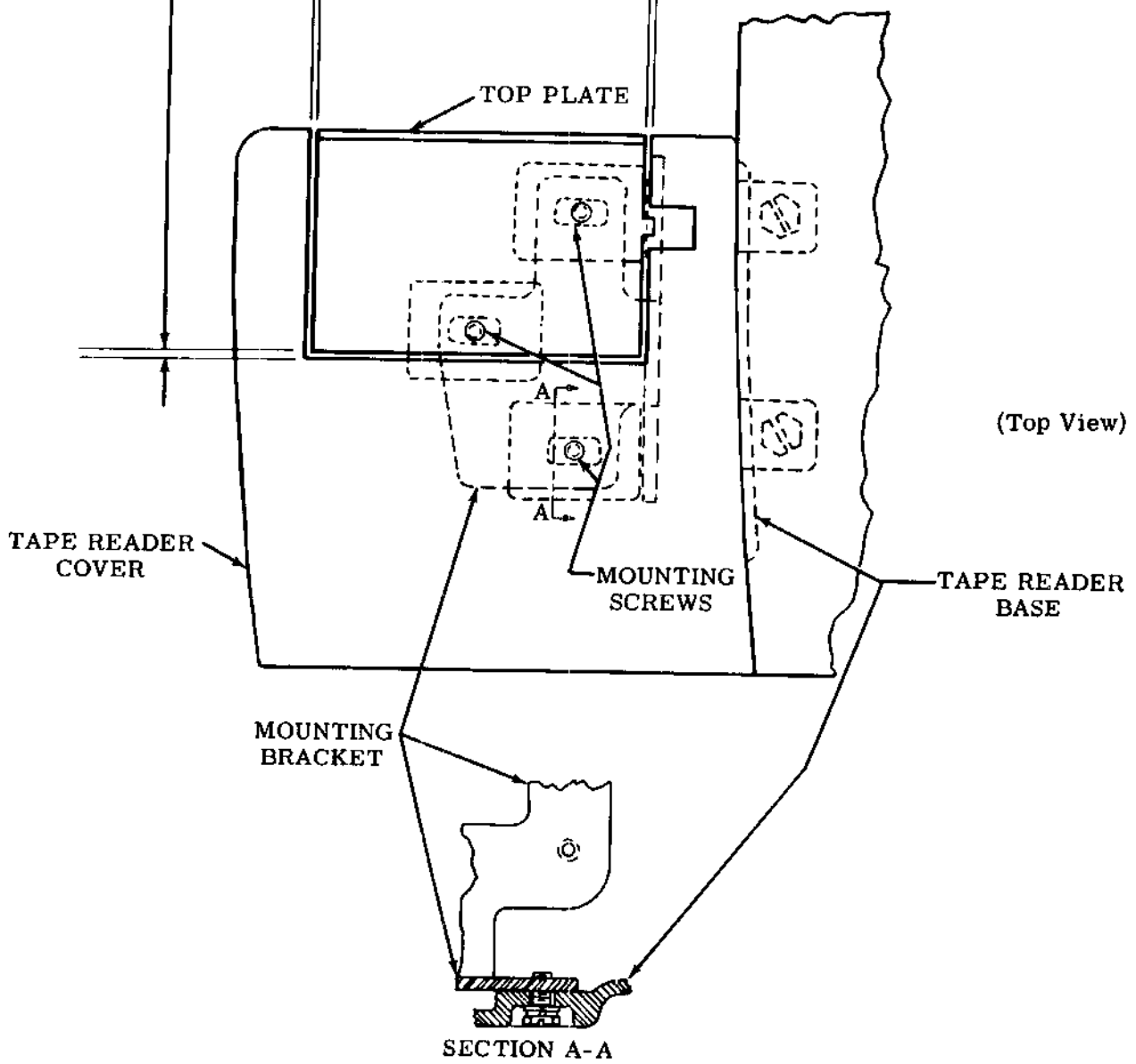
READER MOUNTING BRACKET (Early Design)

Requirement

There shall be equal clearance on three sides between top plate and tape reader cover.

To Adjust

With three mounting screws friction tight, position tape reader base. Tighten screws.



2.19 Tape Reader Area (continued)

Note: The following adjustment applies to tape readers with late design bases.

READER MOUNTING BRACKET (Late Design)

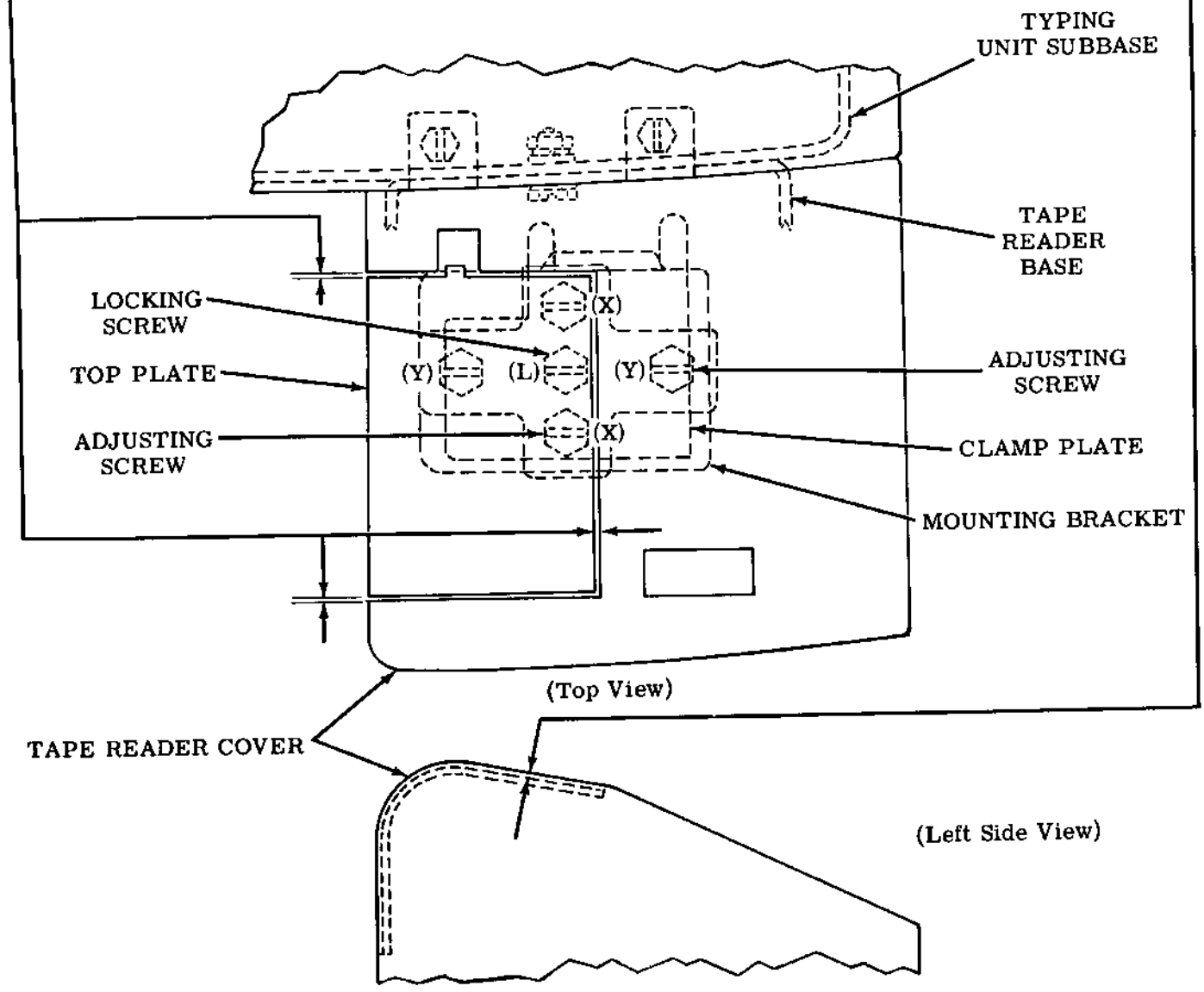
Requirement

(1) Top plate to be
Min Flush --- Max 0.030 inch
below cover.

(2) Equal clearance between top plate and tape reader cover on three sides.

To Adjust

With four adjusting screws and locking screw (L) loosened and mounting bracket lying flat on tape reader base, position tape reader. Run two adjusting screws (X) up until requirement is approximately met. Tighten locking screw friction tight. Run two adjusting screws (Y) up until requirement is approximately met. Refine all four adjusting screws. Tighten locking screw (L).



3. VARIATIONS TO THE BASIC UNIT

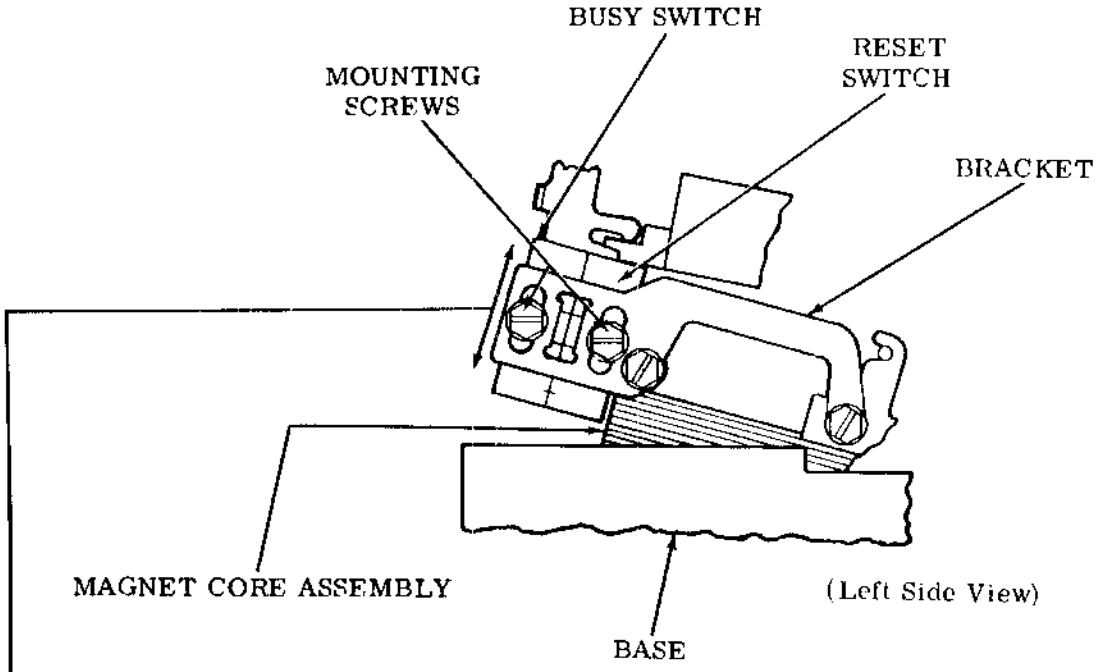
3.01 Tape Reader Area

Note: The following adjustment applies to readers equipped with timing contacts.

RESET AND BUSY SWITCH TIMING

(1) Requirement (Preliminary)
The busy and reset switches should be centered in their bracket slots.

(2) Requirement (Final)
With the sensing pins fully down, the reset switch should be closed and the busy switch should be open. With the sensing pins fully up (energized position), the reset switch should be open and the busy switch should be closed.



To Adjust
—With switch mounting screws friction tight, position switches up or down. Tighten screws.

33 TAPE PUNCH

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section provides adjustment and maintenance information for the 33 tape punch. It is reissued to provide exclusive coverage of the 33 tape punch and to update the section. Since this is a general revision, marginal arrows ordinarily used to indicate changes and additions are omitted.

1.02 Figure 1 shows the tape punch area where the punch adjustments and spring tension checks are made.

1.03 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Requirements and procedures are set forth in the several texts that accompany the line drawings. Required tools are included in TP185830 Maintenance Tool Kit and are listed in Section 570-005-800.

1.04 The sequence in which the adjustments appear should be followed when a complete readjustment of the tape punch is undertaken. No adjustment should be undertaken without completely understanding the procedure and the requirements. Read a procedure all the way through before making an adjustment or checking a spring tension.

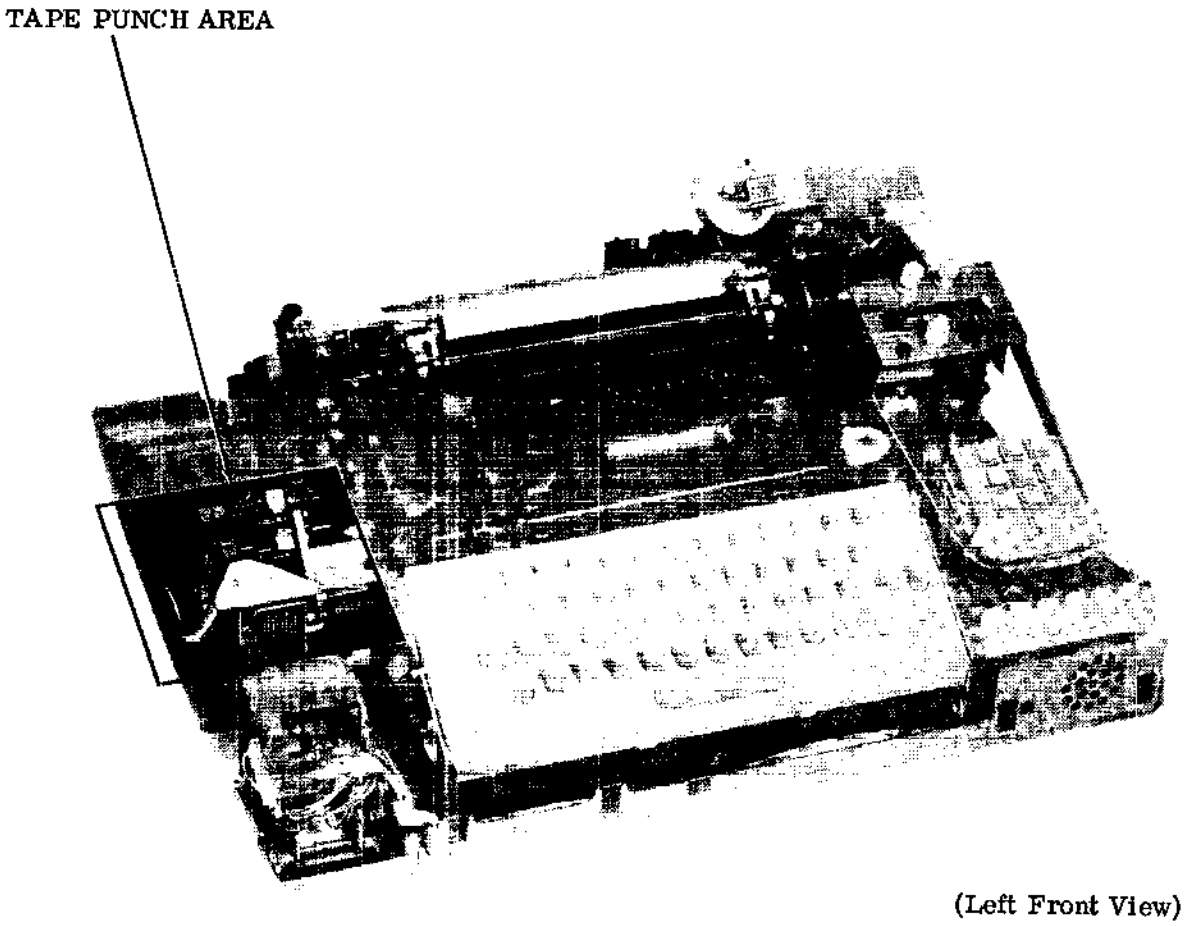


Figure 1 - Tape Punch Area

Note: Remove all electrical power sources from unit before checking or performing any adjustments.

1.05 References to left, right, front, or rear, etc consider the tape punch to be viewed from a position where the tape guide assembly faces up and the backspace lever is located to the viewer's left.

1.06 When a procedure calls for using pry points or slots to make an adjustment, place a screwdriver between the points or in the slots and pry parts in the proper direction.

1.07 If the tape punch is removed from the typing unit to facilitate making an adjustment and then replaced, recheck any adjustment that may have been affected. Also, if parts are removed from the tape punch to facilitate making an adjustment, be sure that they are replaced. Recheck any adjustment that may have been affected by the removal of the parts.

1.08 The spring tensions specified in this section are indications, not exact values. Therefore, to obtain reliable readings, it is important that spring tensions be measured by spring scales placed in the positions shown on pertinent line drawings. Springs that do not

meet their requirements should be replaced by new ones. Only springs that directly affect the operation of the tape punch are measured, however, others may be measured indirectly in the process. If this is the case and the requirement is not met, replace the springs one at a time, starting with the indicated spring, until the requirement is satisfied.

Note 1: Use spring scales which are listed in the Maintenance Tools Section 570-005-800.

Note 2: Spring tensions may be checked in any sequence.

1.09 Certain adjustments require that the tape punch be either "on" or "off." These conditions can be identified as follows:

(a) "Off" condition

(1) Manual (Punch) Controls: A tape punch is "off" when the control lever is in its clockwise detented position and fully engages the drive post.

(2) Automatic (Punch) Controls: An "automatic" tape punch is "off" when the associated typing unit is in the stop condition and the On-Off bail assembly is latched by the latch bail.

Note 1: If the automatic punch is equipped with the "On Lock" option, the "unlock" button must be depressed to enable the On-Off bail assembly to be latched.

Note 2: If the automatic punch is equipped with the interlock mechanism, the nonprint codebar must be in its unoperated position — solenoid not energized.

(b) "On" condition

(1) Manual (Punch) Controls: A tape punch is "on" when the control lever is detented in its counterclockwise position and the drive post is fully engaged by the drive link.

(2) Automatic (Punch) Controls: An automatic tape punch is "on" when the On-Off bail assembly is in its unlatched counterclockwise position.

1.10 With the tape punch and typing unit assembled together, all adjusting procedures should be started with the typing unit in the stop condition. It is in the stop condition when the selector armature is in its attracted (frontward) position and all clutches are disengaged.

Note: When the typing unit is in the stop condition and the punch is "on," the tape punch is said to be in the off position.

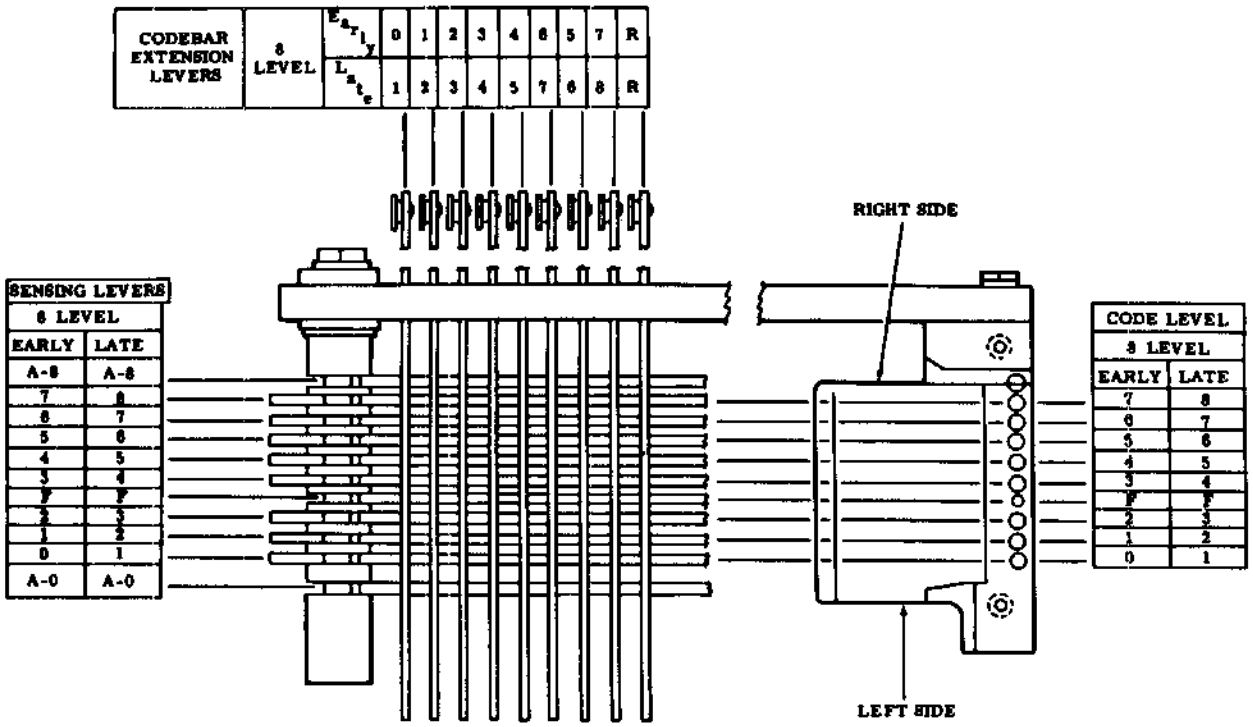
1.11 To place the typing unit in the stop condition, hold the selector armature in its attracted (frontward) position. Rotate the main shaft clockwise (as viewed from the left) until all clutches are fully disengaged as instructed in 1.12.

1.12 When disengaged, a clutch is latched so that a shoe lever is held in its stop position by a trip lever while a corresponding latchlever is seated in a notch of the clutch disc. This allows the clutch shoes to release their tension on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any clutch shoes dragging.

Note 1: The clutch stop position is that position where a shoe lever contacts a trip lever.

Note 2: If the shaft is turned by hand, a clutch will not fully disengage upon reaching a stop position. To fully disengage a clutch, rotate the clutch to a stop position, apply a screwdriver to the associated stop-lug, and push the clutch disc in the normal direction of main shaft rotation until the corresponding latchlever seats in its clutch disc notch.

Note 3: The distributor clutch will not disengage unless the answer-back drum is in its home position, which is the position where the control lever is fully detented into the indent on the answer-back drum.



(Top View)

Figure 2 - Tape Punch Code Level Cross Reference Chart

1.13 Manual Operation: To manually operate the typing unit, place it in the stop condition as instructed in 1.11. Momentarily permit the armature to move to its unattracted (rearward) position to trip the selector clutch. Slowly rotate the main shaft clockwise (as viewed from the left) until all push levers have moved under their respective selector levers. Using a spring hook, strip the push levers from under the selector levers corresponding to the spacing elements of the code combination to be set up. Then continue to rotate the main shaft until the proper condition is set up or the character is cleared through the typing unit.

1.14 The selector levers are numbered 1, 2, 3, 4, 5, 7, 6, and 8 from left to right. To set up the character Y, for example, whose code combination is 1--45-78, strip the push levers from the 2, 3, and 6, selector levers.

1.15 The relationship between code levels, sensing levers, and codebar extensions is illustrated in Figure 2.

1.16 General Maintenance Principles

(a) Lubrication instructions and intervals are given in the appropriate lubrication sections.

(b) To maintain operating effectiveness of the equipment, it is recommended that certain parts be replaced at uniform intervals. Indicated below is the recommended overhaul interval as recorded in typing unit operating hours.

Operating Speed	Overhaul Interval	Estimated Service Life
100 wpm or 75 wpm	1500 hrs*	4500 hrs*

*Typing unit operating hours

Replacement parts are available in overhaul maintenance kits.

2. BASIC UNIT

2.01 Tape Punch Area

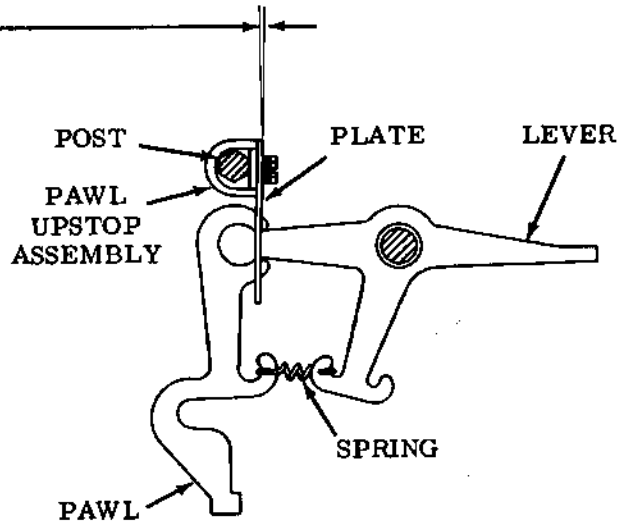
Note 1: These adjustments are to be made only if these areas have been disturbed during disassembly.

Note 2: Prior to making adjustments, remove the chad extension. Reassemble when the adjustments are completed.

PAWL UPSTOP ASSEMBLY — PRELIMINARY

Requirement
The pawl upstop assembly should be positioned so that it is vertical or within 2° clockwise from vertical, as gauged by eye.

To Adjust
Loosen the screw which secures the pawl upstop assembly post to the tape punch casting and position pawl upstop assembly. Tighten screw.



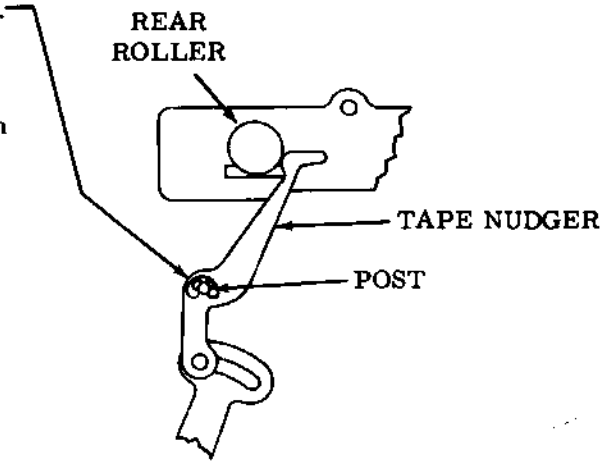
(Left Side View)

TAPE NUDGER

Note 3: This adjustment applies only to tape punch castings which have an elongated tape nudger post mounting hole.

Requirement
The post should be in its most rearward position.

To Adjust
Loosen the screw which secures the post to the tape punch casting and position the post. Tighten screw.



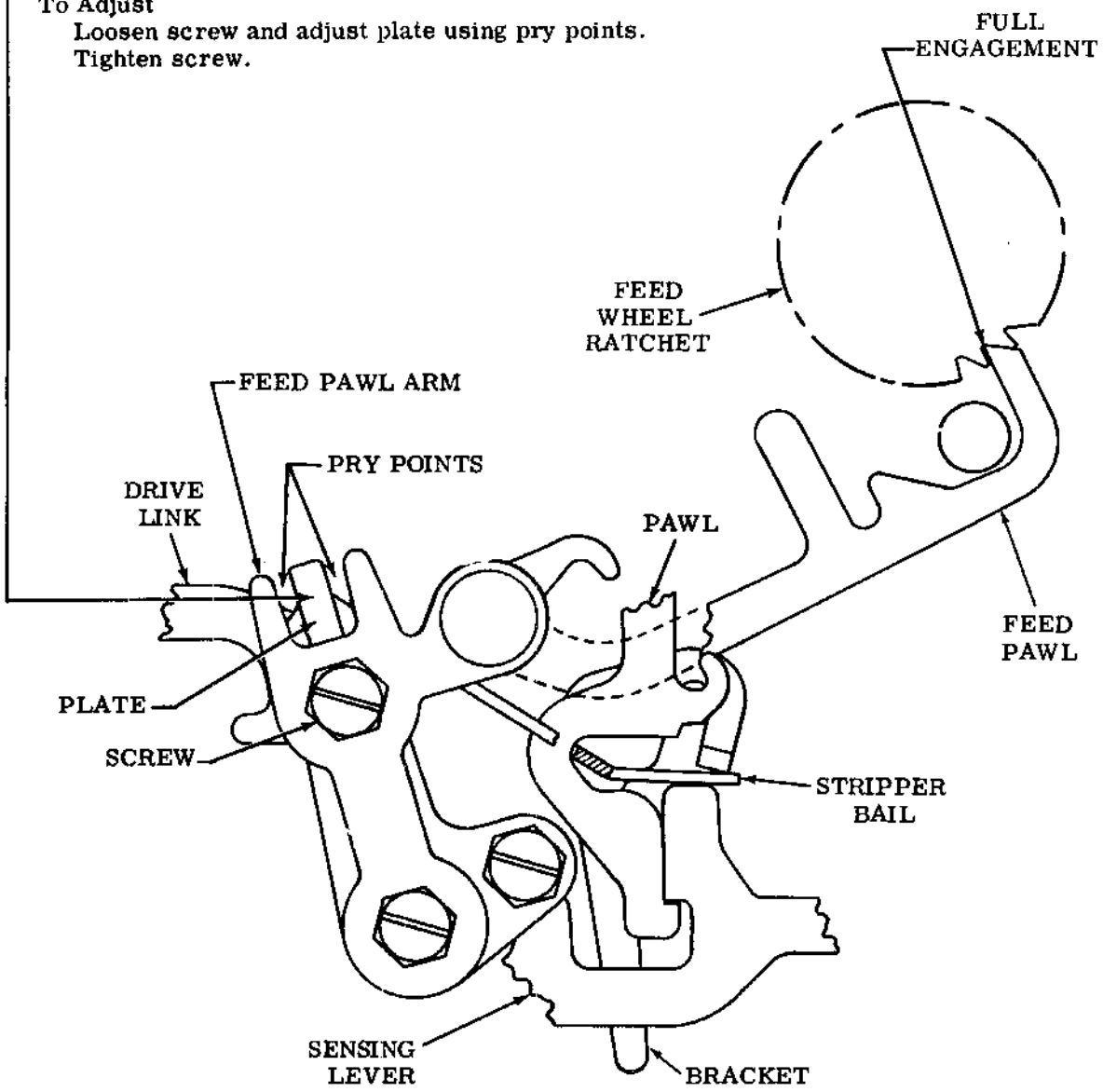
(Left Side View)

2.02 Tape Punch Area (continued)

FEED WHEEL RATCHET AND PAWL — PRELIMINARY

Requirement
The plate should be in middle of slot located in feed pawl arm, as gauged by eye.

To Adjust
Loosen screw and adjust plate using pry points. Tighten screw.



(Left Side View)

2.03 Tape Punch Area (continued)

STRIPPER BAIL UPSTOP

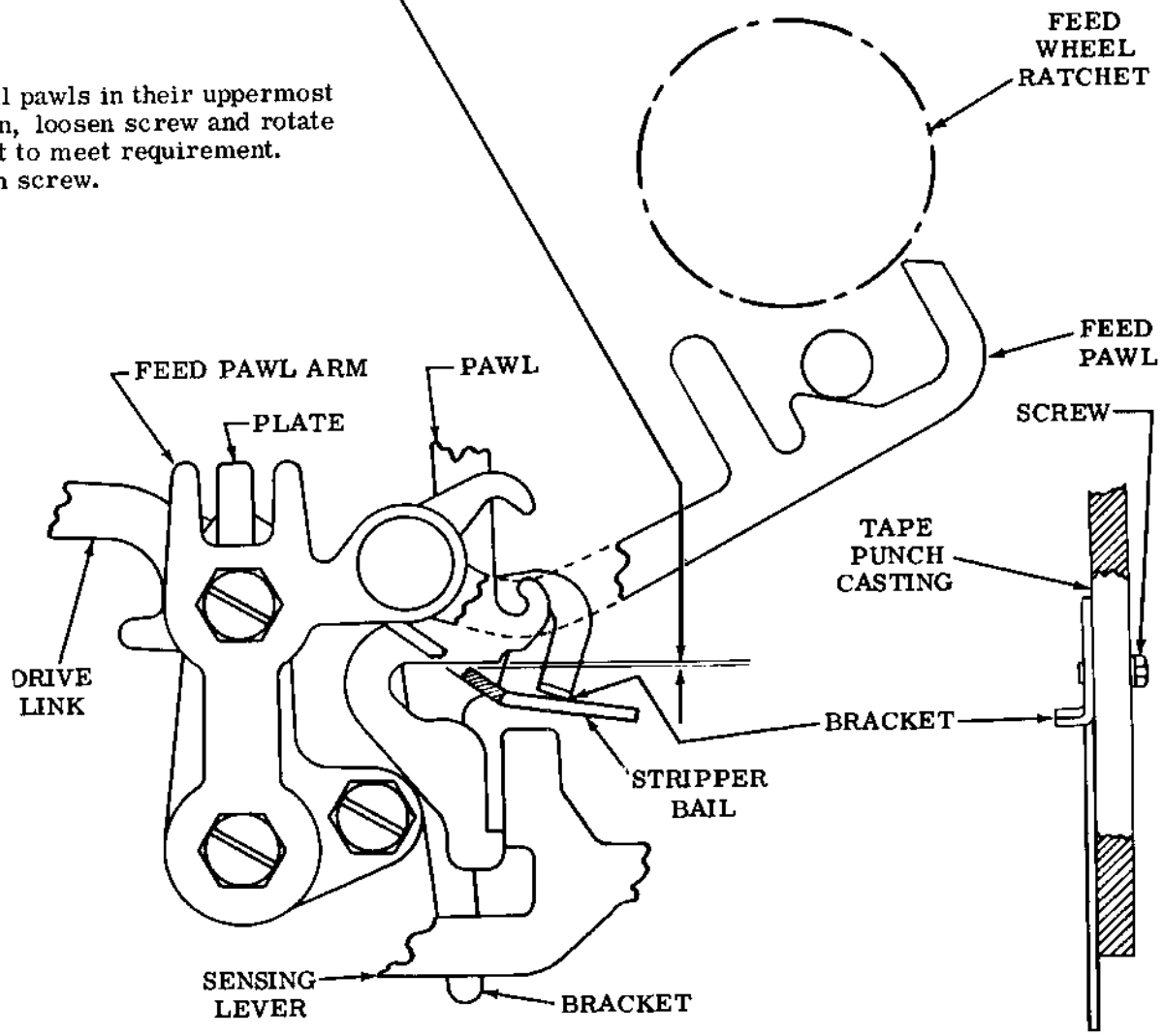
Requirement

With the tape punch "off" and all pawls in their uppermost position, the stripper bail should clear bottom corner of the stripping surface of lowermost pawl by

Min some---Max 0.012 inch

To Adjust

With all pawls in their uppermost position, loosen screw and rotate bracket to meet requirement. Tighten screw.



(Left Side View)

(Front View)

2.04 Tape Punch Area (continued)

Note 1: For the adjustments which follow, the tape punch should be mounted to the typing unit. For instructions, see section titled "33 Tape Punch, Disassembly and Reassembly."

Note 2: The following Tape Punch Area adjustments must be made in sequence: TAPE PUNCH DRIVE, PUNCH PENETRATION, PAWL UPSTOP ASSEMBLY — FINAL, and FEED WHEEL RATCHET AND PAWL — FINAL. Prior to making the above adjustments, check or make the following Tape Punch Area adjustments: PAWL UPSTOP ASSEMBLY — PRELIMINARY, TAPE NUDGER, FEED WHEEL RATCHET AND PAWL — PRELIMINARY, and STRIPPER BAIL UPSTOP.

TAPE PUNCH DRIVE

To Check

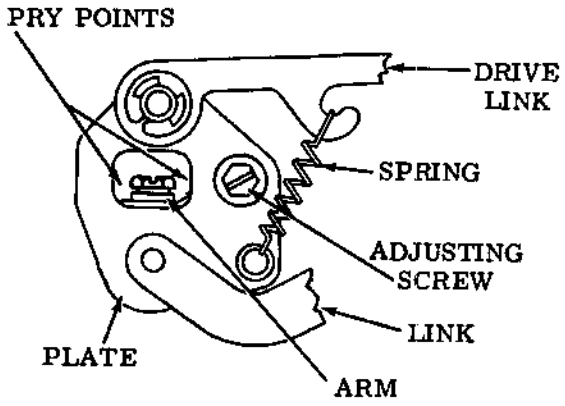
With no tape in the tape punch and with the tape punch "on," manually rotate the main shaft until the stripper bail is in its most forward position. Take up rear roller play toward rear and tape nudger play in a clockwise direction.

Requirement

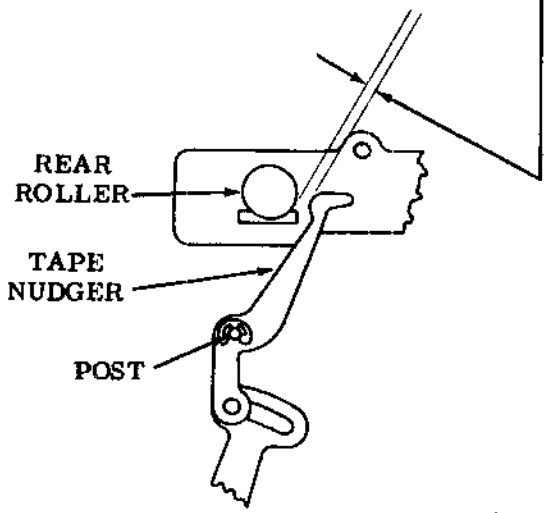
Min 0.030 inch---Max 0.080 inch at point of least clearance between rear roller and tape nudger.

To Adjust

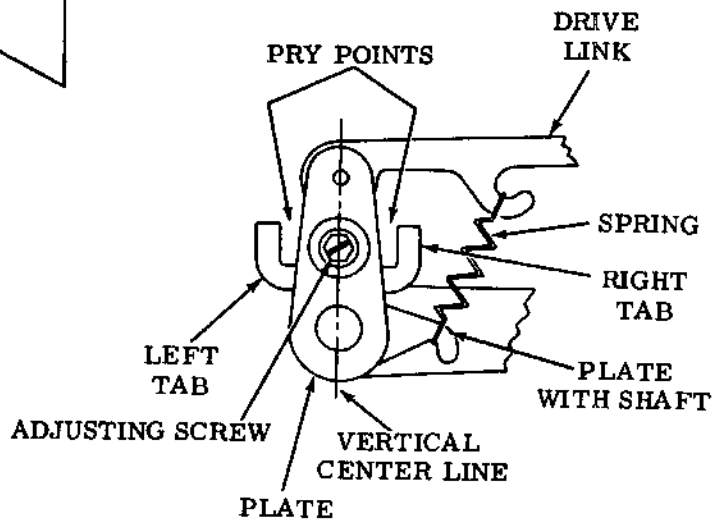
Loosen adjusting screw and use pry points to position plate. Tighten screw.



EARLY DESIGN
(Left Side View)



EARLY OR
LATE DESIGN
(Left Side View)



LATE DESIGN
(Left Side View)

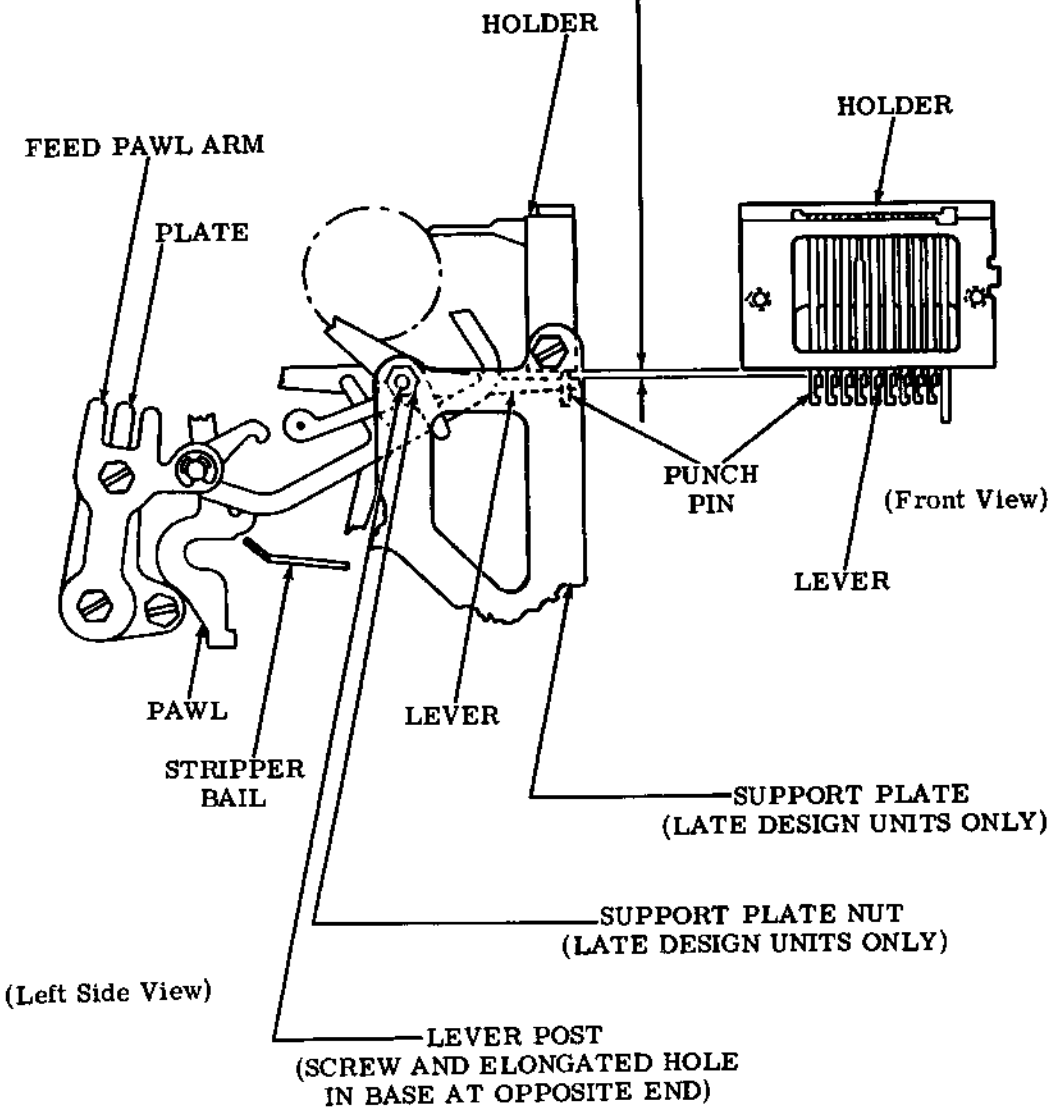
2.05 Tape Punch Area (continued)

PUNCH PENETRATION

To Check
With the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its most forward position.

Requirement
—Min 0.017 inch---Max 0.037 inch between bottom surface of holder and top surface of any lever.

To Adjust
With code lever post mounting screw (and support plate nut on late design units) friction tight, position post within the elongated base hole (and support plate hole — late design units). Tighten screw and nut.



2.06 Tape Punch Area (continued)

PAWL UPSTOP ASSEMBLY — FINAL

To Check
With the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its rearmost position.

Note 1: For tape punches equipped with the answer-back blocking option or automatic controls, use the following "To Check" procedure:

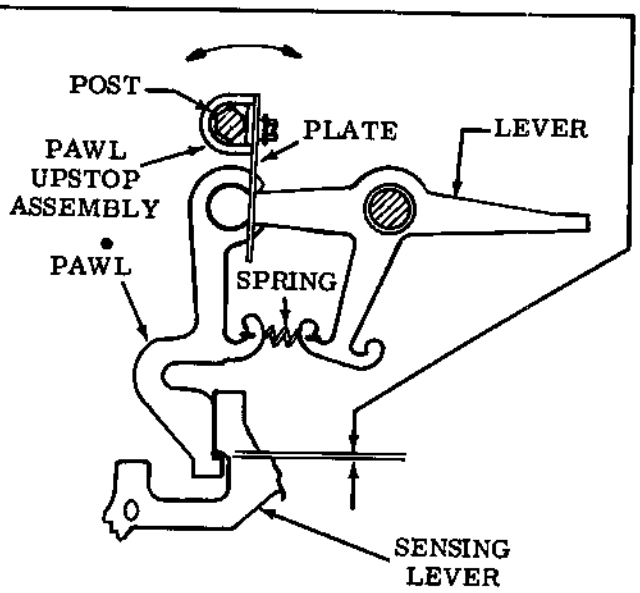
To Check
With the tape punch "on," set up the code combination in the selector that will cause the special feature to operate. Manually rotate the main shaft until the stripper bail is in its rearmost position. Check requirement (1). Then, set up an all-marking code combination in selector. Manually rotate the main shaft until the stripper bail is in its rearmost position. Check requirement (2).

(1) Requirement
Min 0.005 inch---Max 0.020 inch between the leftmost sensing lever (Figure 2) and its associated pawl.

Note 2: For tape punches equipped with automatic controls, the requirement will be checked between the second from the left sensing lever (Figure 2) and its associated pawl.

Note 3: There should also be some clearance between the rightmost sensing lever (Figure 2) and its associated pawl.

Note 4: "Some clearance" can be determined by feeling movement when pressing down on a sensing lever while holding its assembled lever in its most downward position.



(Left Side View)

(2) Requirement
Some clearance between the feed lever and its associated pawl and each sensing lever and its associated pawl.

To Adjust
Loosen the screw which secures the pawl upstop assembly post to the tape punch casting. Provide proper clearance by rotating the pawl upstop assembly. Tighten screw. Recheck requirement (1) above and refine if necessary. Remake STRIPPER BAIL UPSTOP (Tape Punch Area) adjustment.

CAUTION: EXERCISE CARE AND SEE THAT THE PLATE OF THE PAWL UPSTOP ASSEMBLY ALWAYS GUIDES THE PAWL AND LEVER SIMULTANEOUSLY. AVOID ROTATING PLATE IN A COUNTERCLOCKWISE DIRECTION FROM ITS VERTICAL POSITION IF POSSIBLE.

2.07 Tape Punch Area (continued)

FEED WHEEL RATCHET AND PAWL — FINAL

To Check

With no tape in the tape punch and with the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its rearmost position. Take up all play in stripper bail toward the front.

Requirement

With feed wheel ratchet in its fully detented position

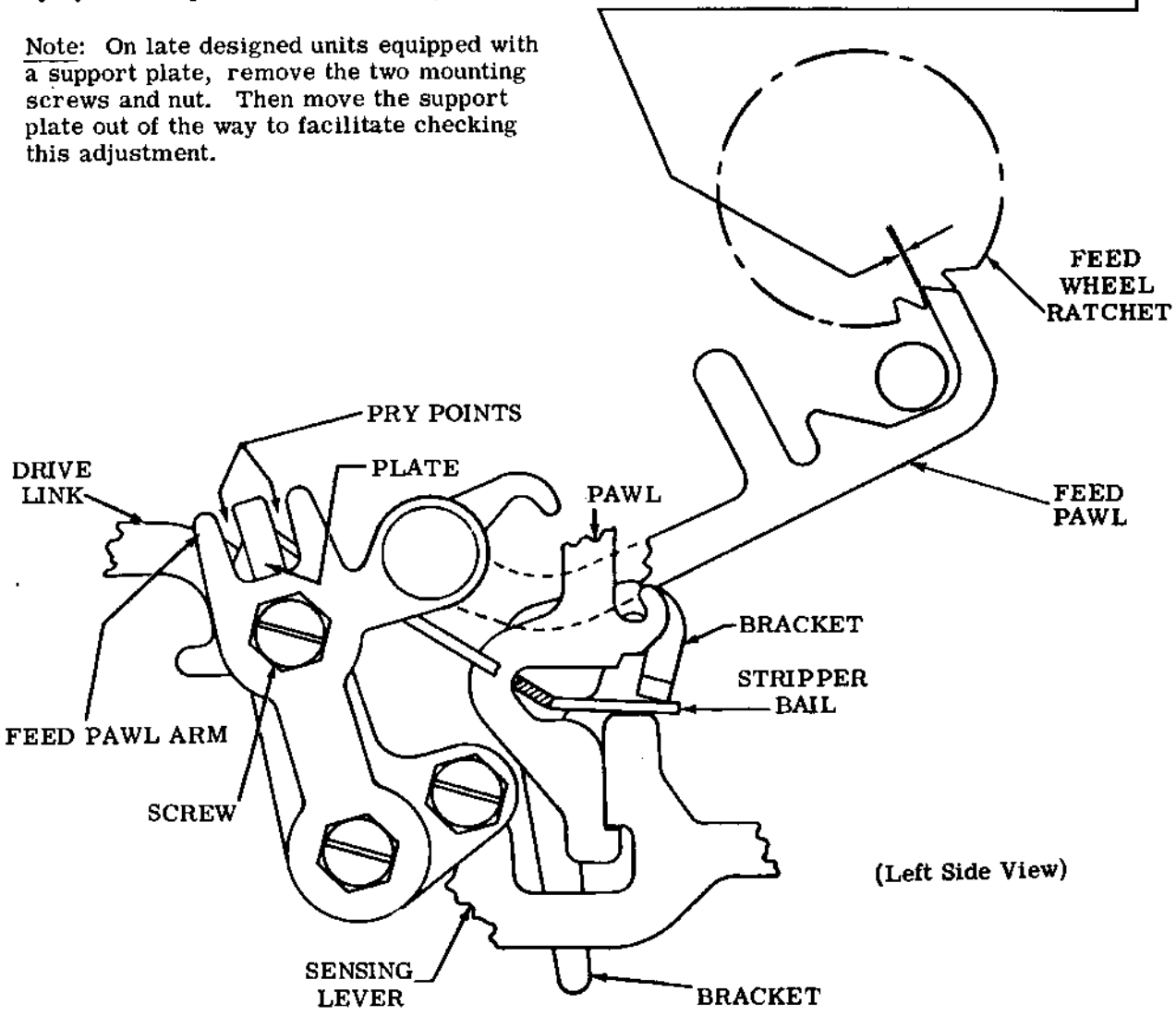
Min some---Max 0.005 inch

between the feed pawl and feed wheel ratchet tooth.

To Adjust

Loosen screw and position plate w/bushing using pry points. Tighten screw. Backspace feed wheel ratchet one full revolution, one tooth at a time, using backspace lever. Check each tooth to see if the requirement is met. Gauge by eye. Readjust where necessary.

Note: On late designed units equipped with a support plate, remove the two mounting screws and nut. Then move the support plate out of the way to facilitate checking this adjustment.



2.08 Tape Punch Area (continued)

TEN CHARACTERS PER INCH

Note: From left to right, with the smooth side of TP156011 gauge up, there are six holes in line — five holes with 0.072-inch diameters and one hole with a 0.086-inch diameter.

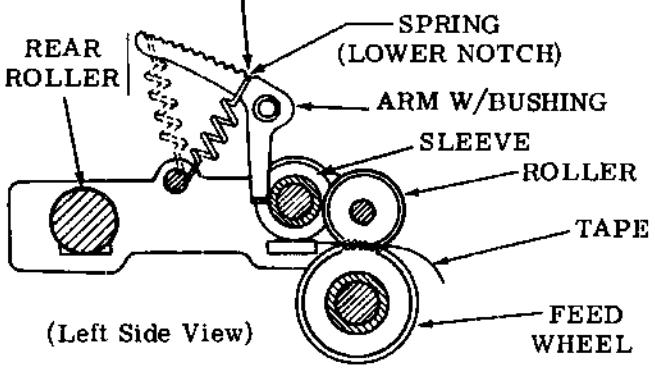
To Check

Position one end of spring to lower notch of arm w/bushing. Operate the typing unit under power and perforate an alternate R and "hyphen" code combination in approximately 8 inches of tape. Tear the 8-inch length of punched tape from the tape punch and place it to the smooth side of TP156011 gauge. Concentrically align a no. 2 code hole of the punched tape with the first 0.072-inch diameter hole of TP156011 gauge.

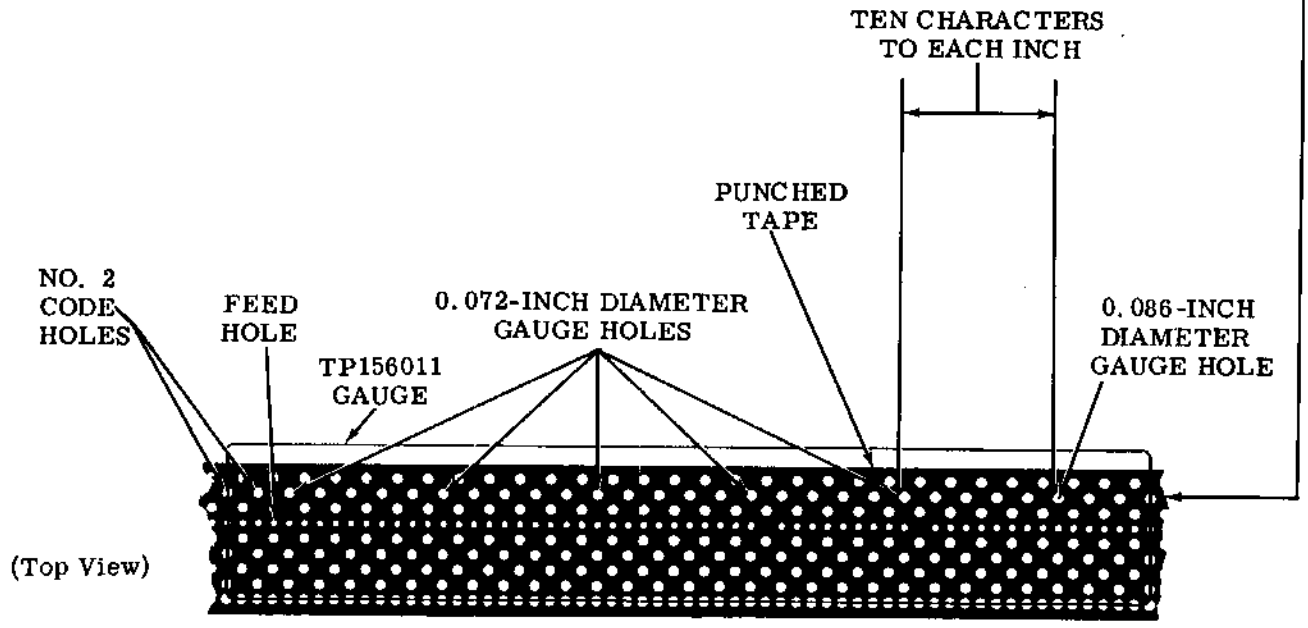
(1) Requirement
The four remaining 0.072-inch diameter gauge holes should be visible through corresponding no. 2 code holes in the punched tape.

(2) Requirement
The no. 2 code hole which corresponds with the 0.086-inch diameter gauge hole should lie entirely within the perimeter of that guage hole.

To Adjust
Position spring up arm w/bushing, notch by notch, until requirement is met.



(Left Side View)



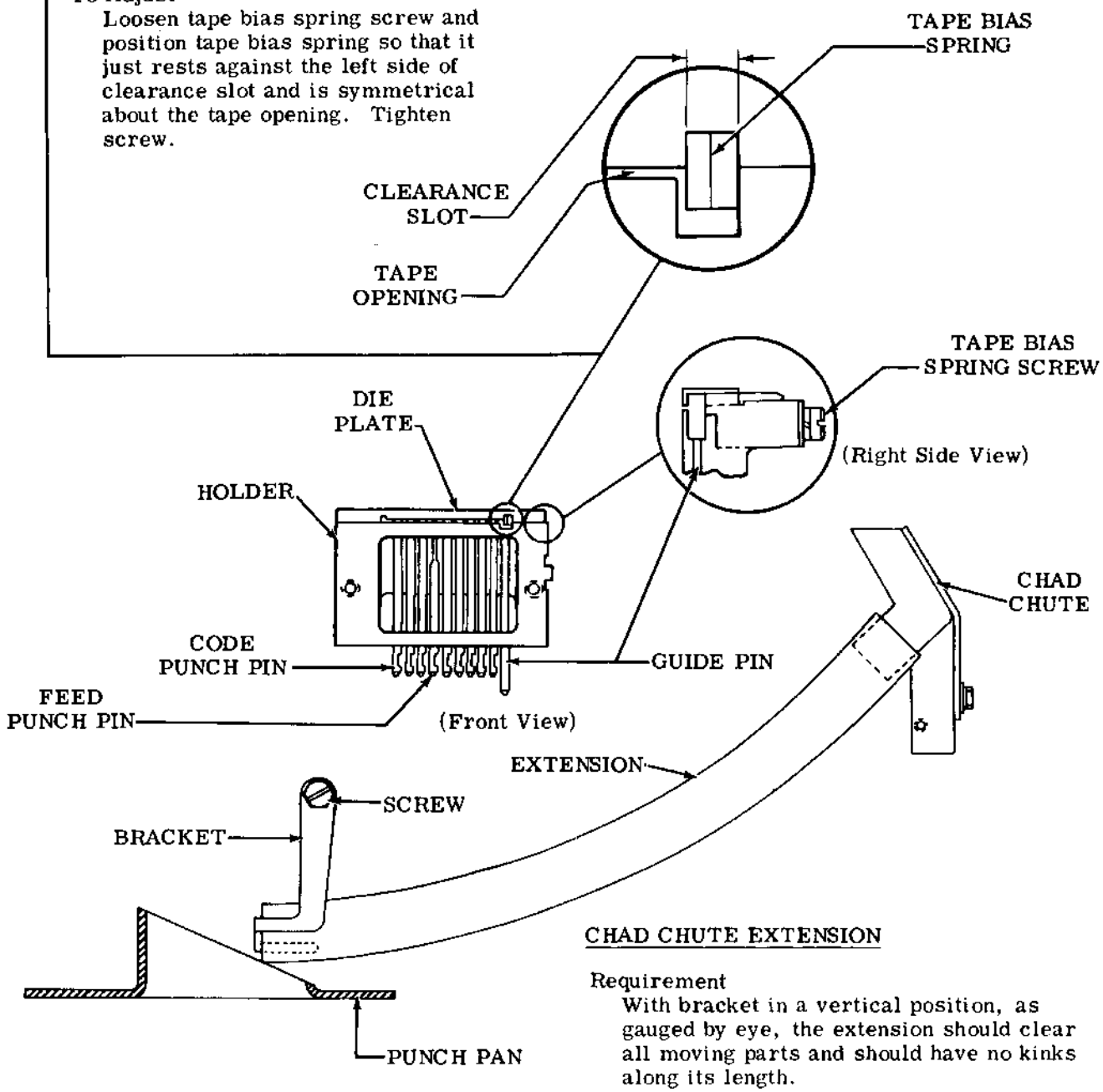
(Top View)

2.09 Tape Punch Area (continued)

TAPE BIAS SPRING

Requirement
With tape removed from the tape punch, tape bias spring should rest against side of die plate and should be symmetrical about the tape opening, as gauged by eye.

To Adjust
Loosen tape bias spring screw and position tape bias spring so that it just rests against the left side of clearance slot and is symmetrical about the tape opening. Tighten screw.



CHAD CHUTE EXTENSION

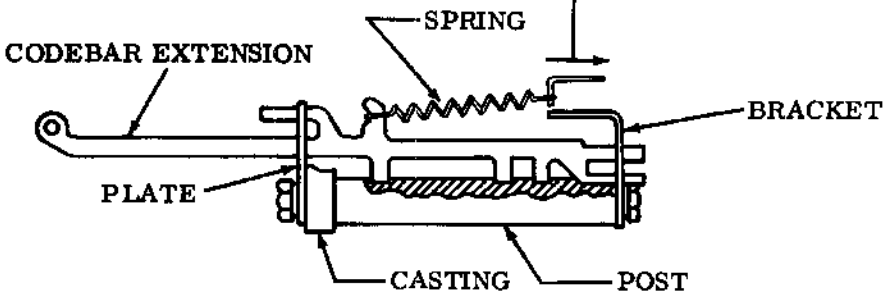
Requirement
With bracket in a vertical position, as gauged by eye, the extension should clear all moving parts and should have no kinks along its length.

To Adjust
Loosen screw and position bracket to meet requirement. Tighten screw.

2.10 Tape Punch Area (continued)

CODEBAR EXTENSION SPRINGS

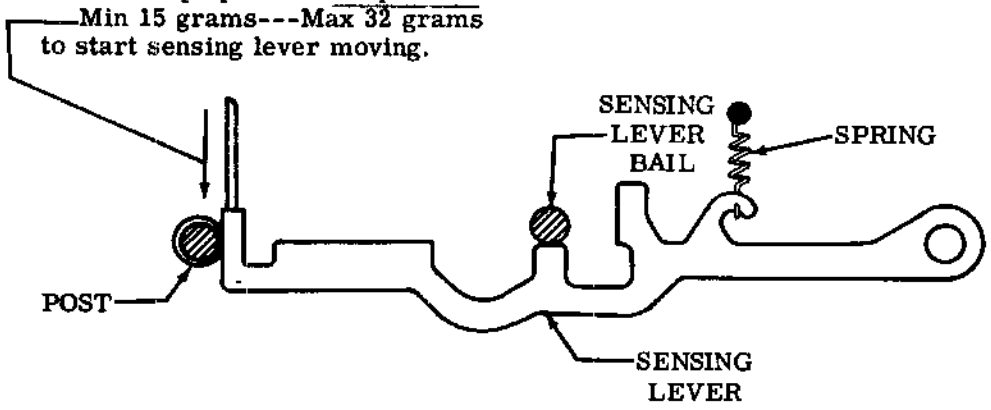
Requirement
With the typing unit in stop condition
Min 3/4 oz---Max 1-1/4 oz
to pull spring to its installed length.



(Rear View)

SENSING LEVER SPRINGS

Requirement
With the tape punch in off position
Min 15 grams---Max 32 grams
to start sensing lever moving.



(Left Side View)

2.11 Tape Punch Area (continued)

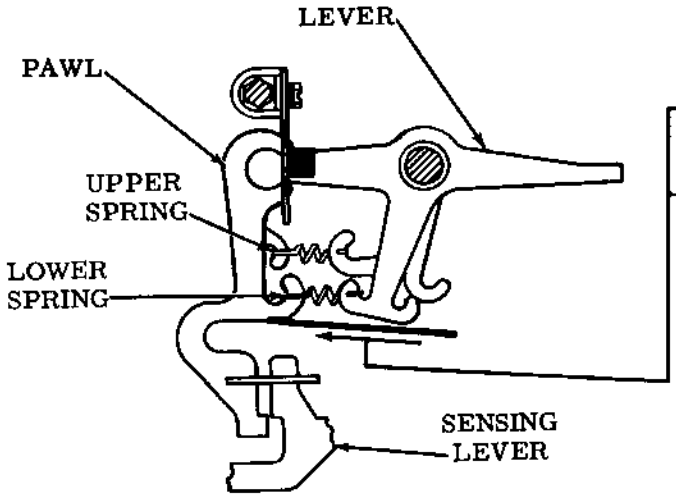
PAWL AND LEVER SPRINGS

Requirement
With the tape punch "off"

Upper spring
Min 1 oz---Max 2 oz

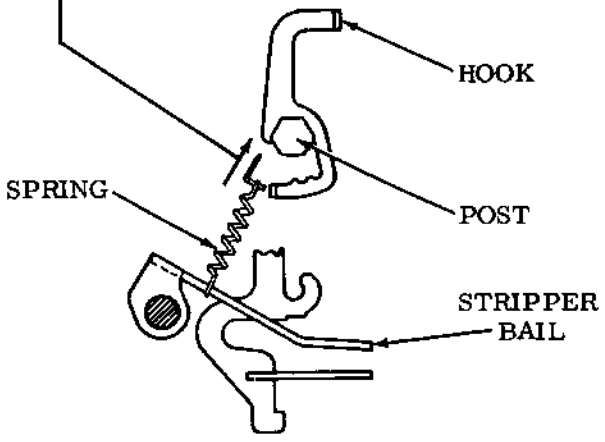
Lower spring
Min 1-1/2 oz---Max 2-1/2 oz

to start pawl moving.



STRIPPER BAIL SPRING

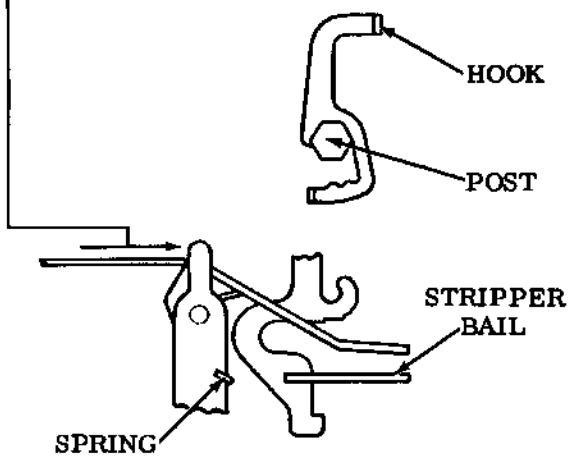
Requirement
With the tape punch in off position
Min 12 oz---Max 15 oz
to pull spring to its installed length.



EARLY DESIGN

STRIPPER BAIL SPRING

Requirement
With tape punch in off position
Min 7 oz---Max 13 oz
to start the stripper bail moving.



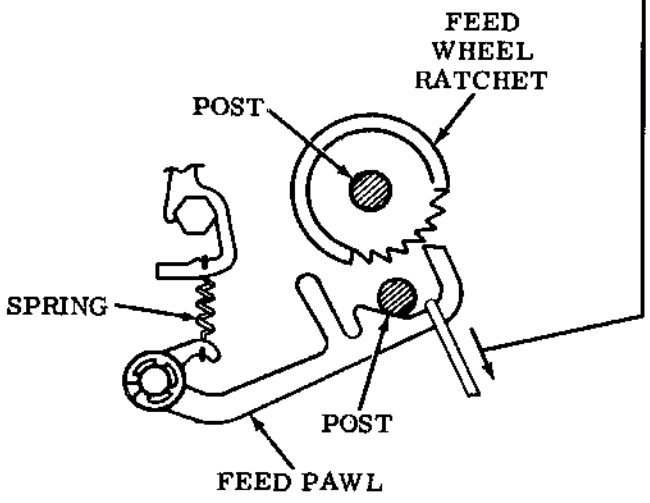
LATE DESIGN

(Left Side Views)

2.12 Tape Punch Area (continued)

FEED PAWL SPRING

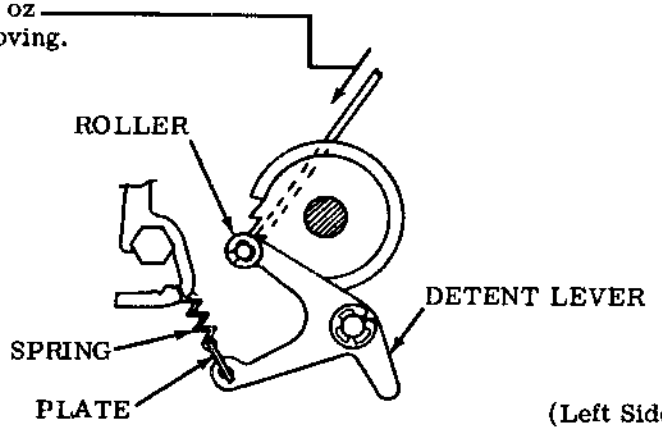
Requirement
With tape punch in off position
Min 1/2 oz---Max 1 oz
to start feed pawl moving.



(Left Side View)

DETENT LEVER SPRING

Requirement
With the tape punch "off"
Min 13 oz---Max 17 oz
to start detent lever moving.

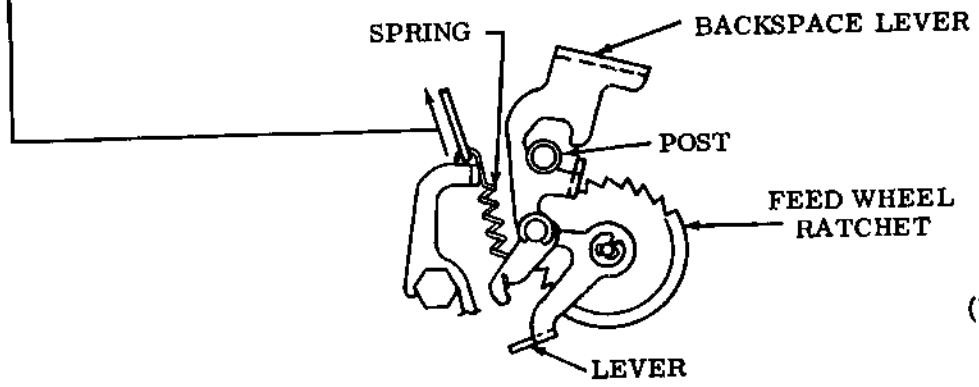


(Left Side View)

2.13 Tape Punch Area (continued)

BACKSPACE LEVER SPRING

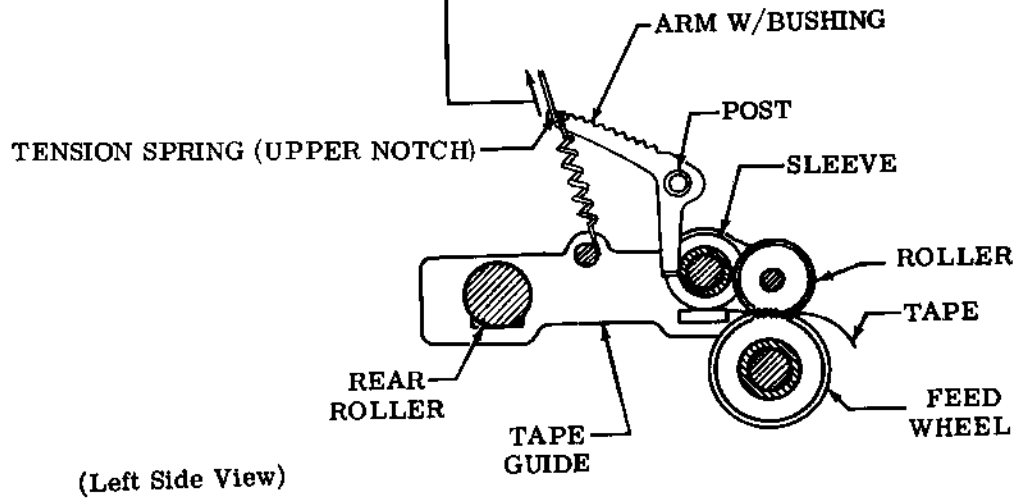
Requirement
With the tape punch in off position
—Min 3/4 oz---Max 1-1/2 oz
to pull spring to its installed length.



(Left Side View)

TAPE GUIDE TENSION SPRING

Requirement
Min 34 oz---Max 38 oz
to pull spring to its installed
(upper notch) length.



(Left Side View)

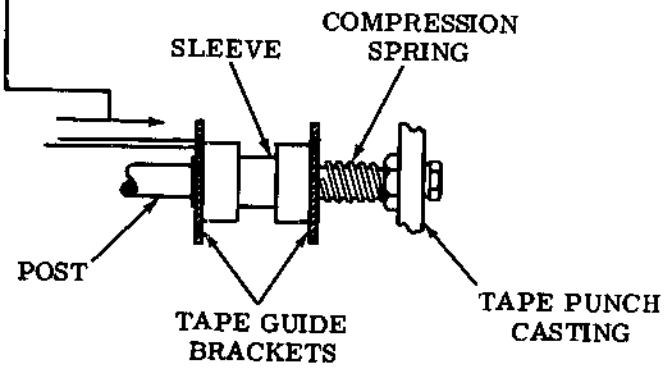
2.14 Tape Punch Area (continued)

TAPE GUIDE COMPRESSION SPRING

Requirement

Remove the tape guide tension spring. Place roller slightly above the feed wheel

Min 24 oz---Max 48 oz to start tape guide moving.



(Front View)

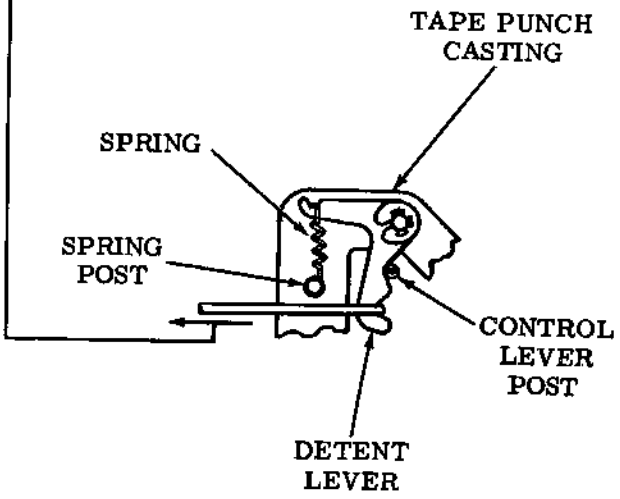
CONTROL DETENT LEVER SPRING

Note: This adjustment applies only to tape punches equipped with TP182843 detent lever.

Requirement

With the tape punch "off"

Min 10-1/2 oz---Max 14-1/2 oz to start detent lever moving.

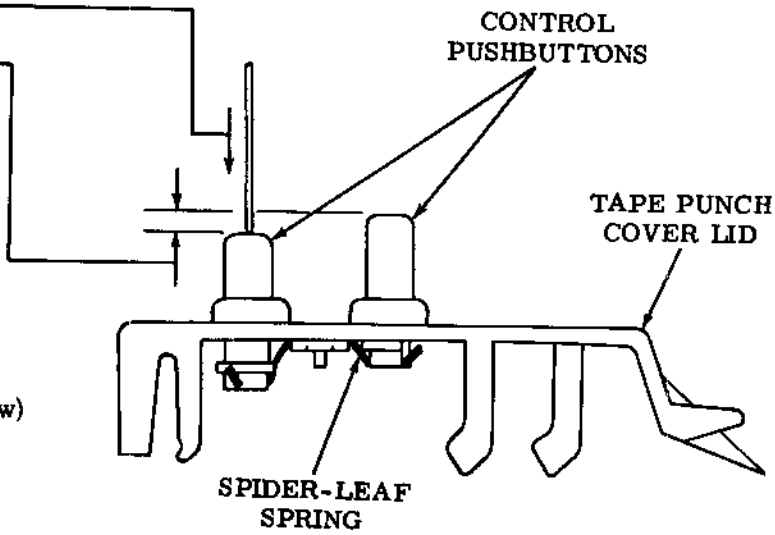


(Left Side View)

CONTROL PUSHBUTTONS

Requirement

Min 1/2 oz---Max 1-1/2 oz to push each control pushbutton down 1/8 inch as gauged by eye, while remaining control pushbuttons remain in their normal upward positions.

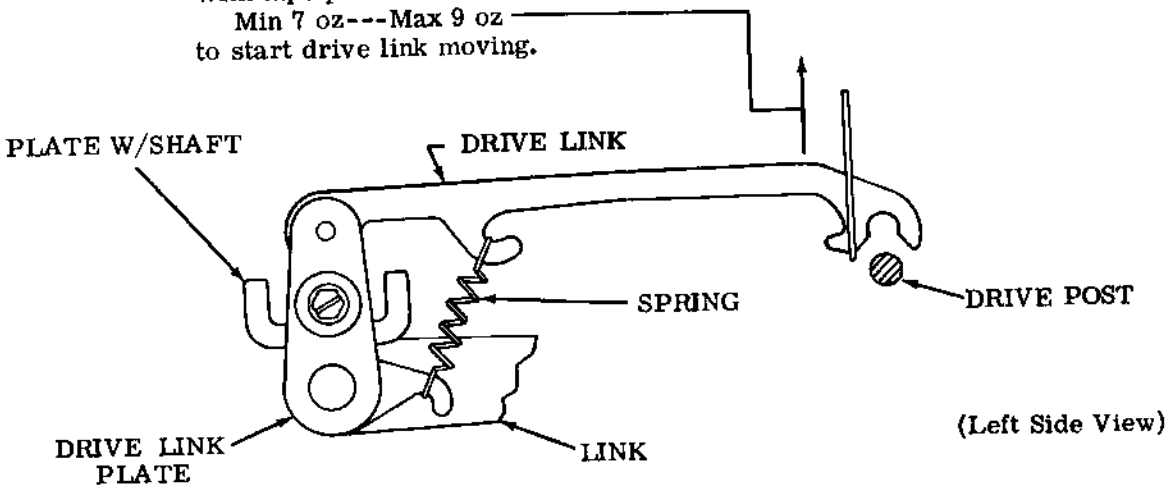


(Left Side View)

2.15 Tape Punch Area (continued)

DRIVE LINK SPRING

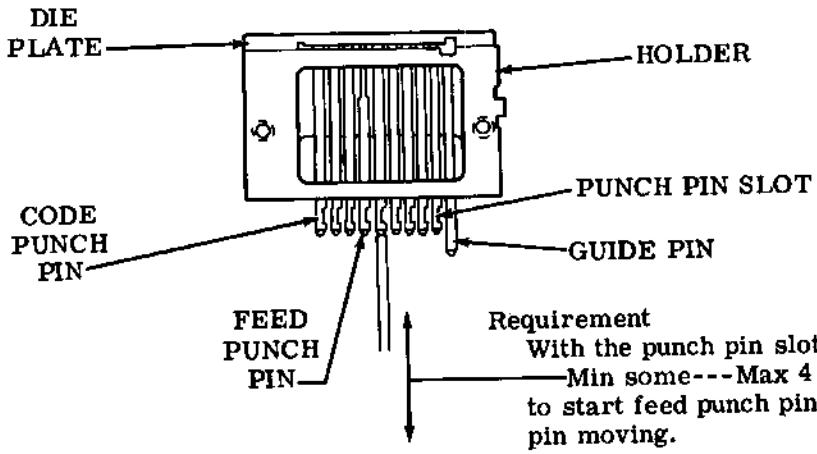
Requirement
With tape punch "off"
Min 7 oz---Max 9 oz
to start drive link moving.



(Left Side View)

PUNCH BLOCK ASSEMBLY

To Check
Remove the punch block assembly from the tape punch. Replace after performing this adjustment. (For instructions, see the appropriate tape punch section.)



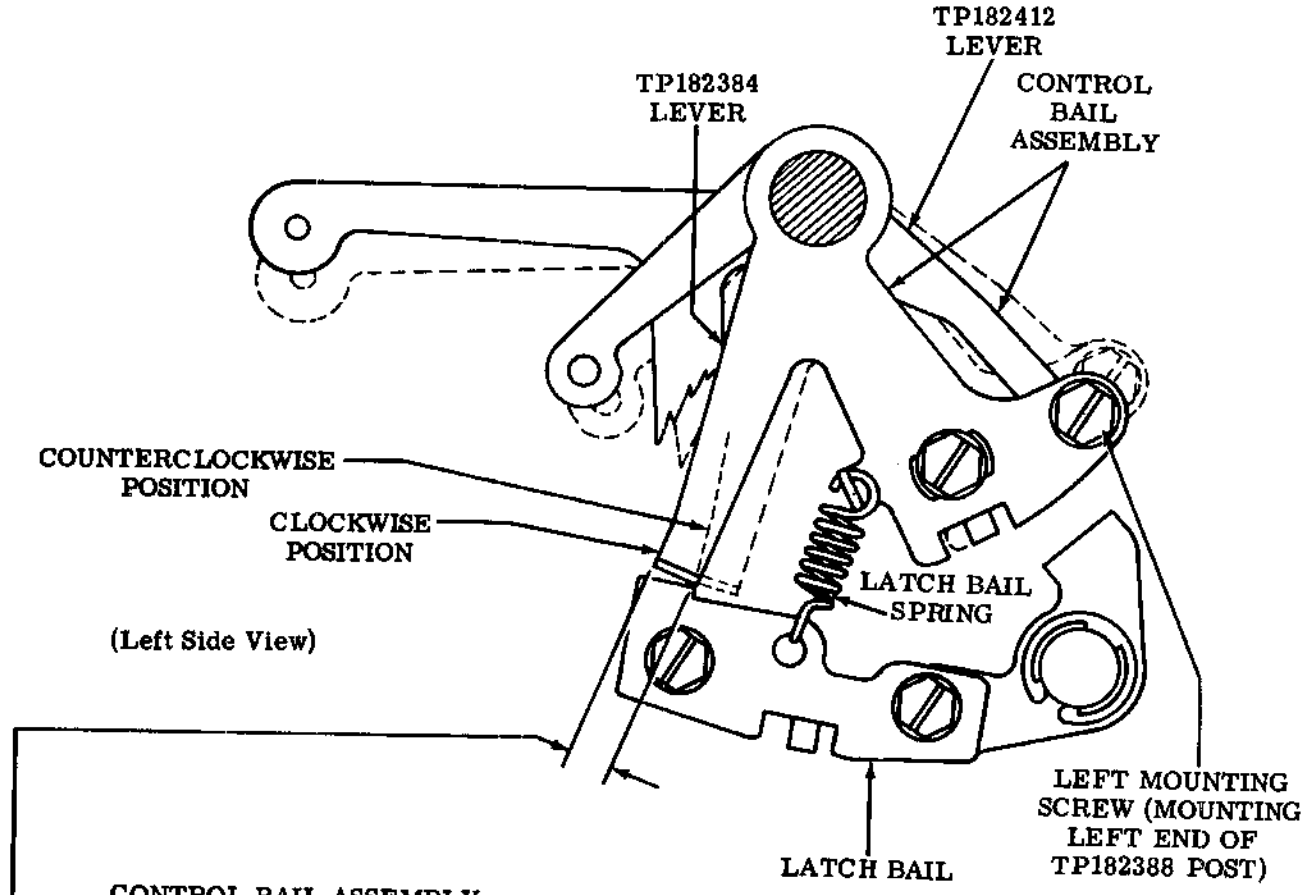
(Front View)

Requirement
With the punch pin slots facing the guide pin
Min some---Max 4 oz
to start feed punch pin and each code punch pin moving.

Note: The above requirement must be met anywhere along each punch pin's upward and downward travel in holder.

3. VARIATIONS TO THE BASIC UNIT

3.01 Automatic Control Mechanisms



CONTROL BAIL ASSEMBLY

To Check

With the typing unit in the stop condition and the tape punch "on," gently oscillate the control bail assembly from its clockwise position to its counterclockwise position and back again. Repeat this oscillating motion several times while noting requirements.

(1) Requirement

The control bail assembly should be free from binds along its normal travel.

(2) Requirement

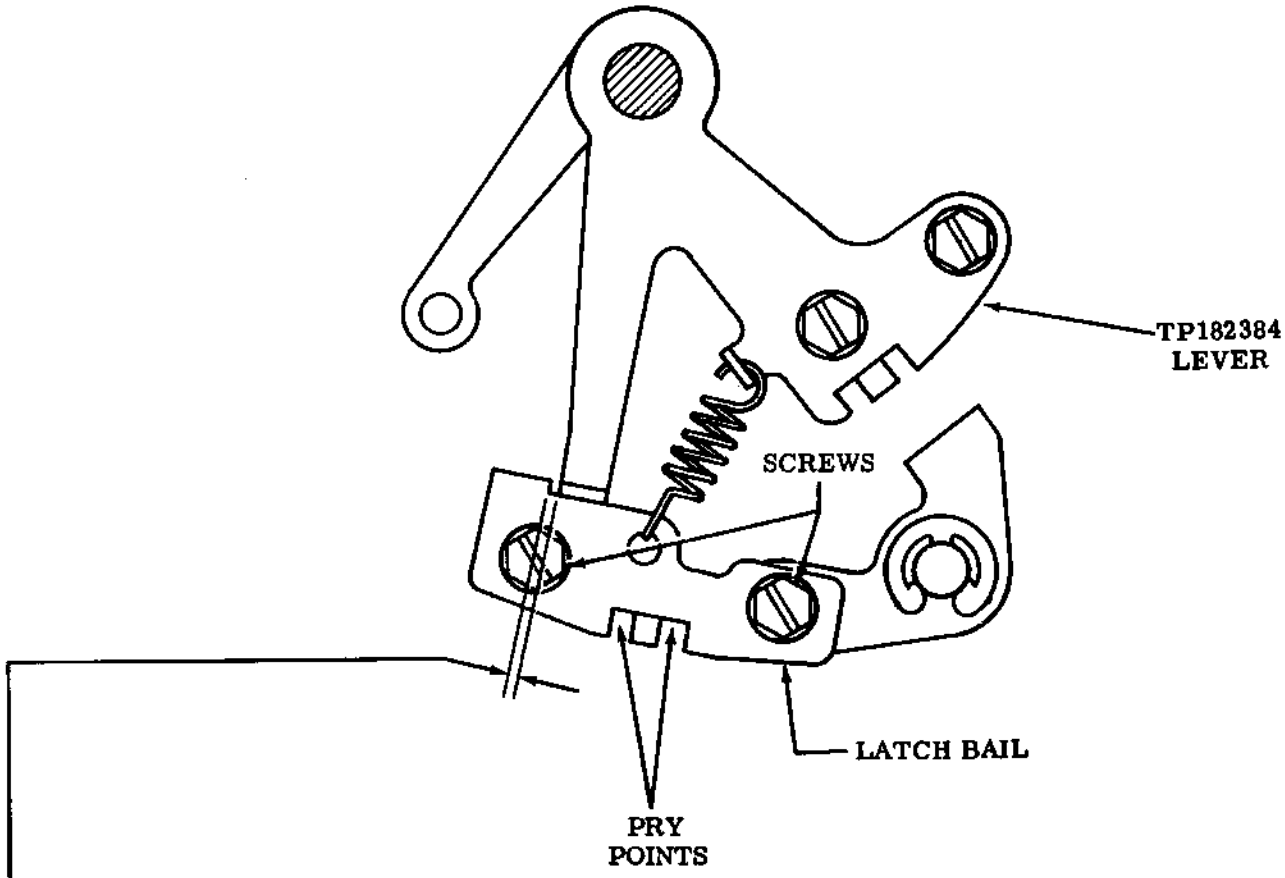
When released from its counterclockwise position, the control bail assembly should return to its clockwise position under spring tension.

To Adjust

Note: Parts should not be bent, other than specifically directed.

Remove the latch bail spring, control bail spring (not illustrated), and left mounting screw which secures the left side of TP182388 post. The TP182388 post threaded hole should be concentric to the left mounting screw hole. If necessary, bend TP182388 post about its right mounting screw (not illustrated). Reassemble left mounting screw and tighten. Replace springs. Recheck requirements and refine adjustment if necessary.

3.02 Automatic Control Mechanisms (continued)



(Left Side View)

LEVER OVERTRAVEL

To Check
With the tape punch "on," set up the ~~TAPE~~ (--3-5---) code combination in the selector. Manually rotate the main shaft until the function rocker shaft is in its most forward position.

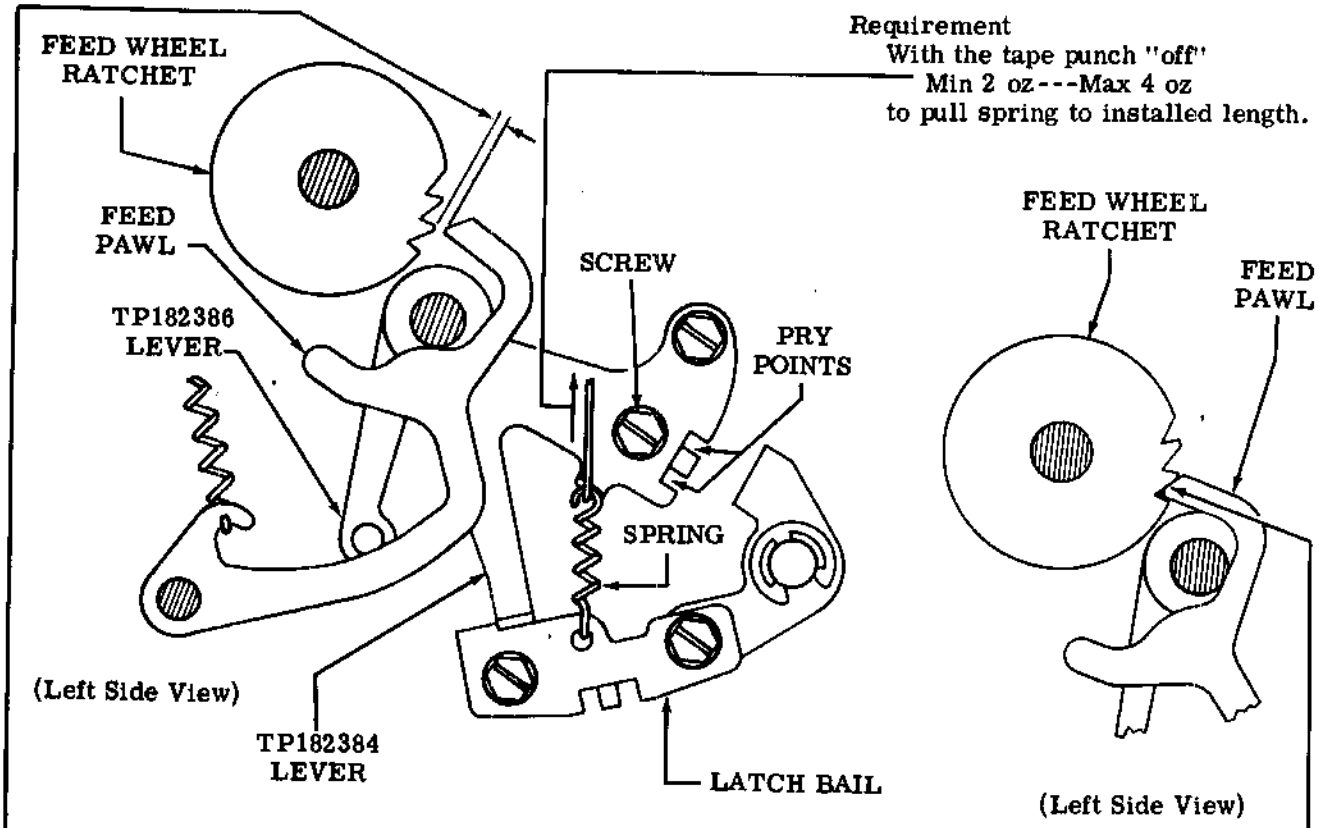
Requirement
Min 0.005 inch---Max 0.015 inch between the TP182384 lever and latch bail.

To Adjust
Loosen screws and position latch bail using pry points. Tighten screws.

3.03 Automatic Control Mechanisms (continued)

LATCH BAIL SPRING

Requirement
With the tape punch "off"
Min 2 oz---Max 4 oz
to pull spring to installed length.



FEED WHEEL RATCHET AND PAWL GAP

(1) To Check
With the tape punch "off," manually rotate the main shaft until the function rocker shaft positions the feed pawl so that there is a minimum clearance between it and a tooth of the feed wheel ratchet.

Requirement
Min 0.015 inch---Max 0.030 inch
between the feed pawl and a tooth of the feed wheel ratchet.

To Adjust
Loosen the screw and position the TP182386 lever using the pry points. Tighten screw.

(2) To Check
With the tape punch "on," manually rotate the main shaft until the function rocker shaft positions the feed pawl so that it engages a tooth of the feed wheel ratchet.

Requirement
The feed pawl should fully engage a tooth of the feed wheel ratchet.

To Adjust
Refine requirement under (1) To Check.

3.04 Automatic Control Mechanisms (continued)

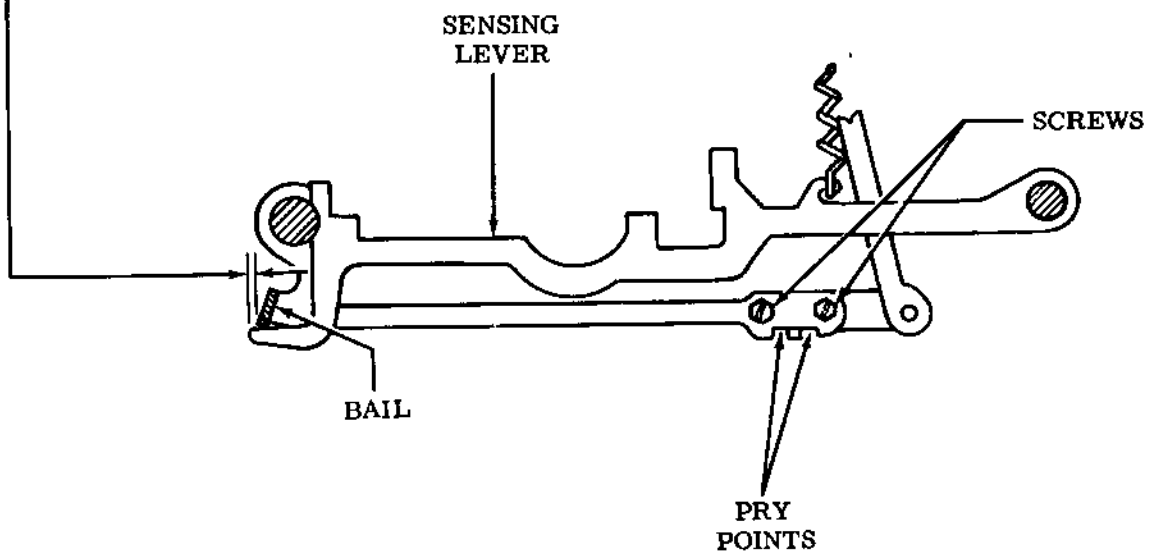
SENSING LEVER AND BAIL GAP

Note: This adjustment applies only to tape punches equipped with the sense suppression option — TP182430 bail etc.

To Check
Place the tape punch "off."

Requirement
The sensing lever associated with the leftmost code level (Figure 2) should be
—Min 0.010 inch underflush---Max 0.010 inch overflush
with the bail.

To Adjust
Loosen screws and position bail using pry points. Tighten screws.



(Left Side View)

3.05 Automatic Control Mechanisms (continued)

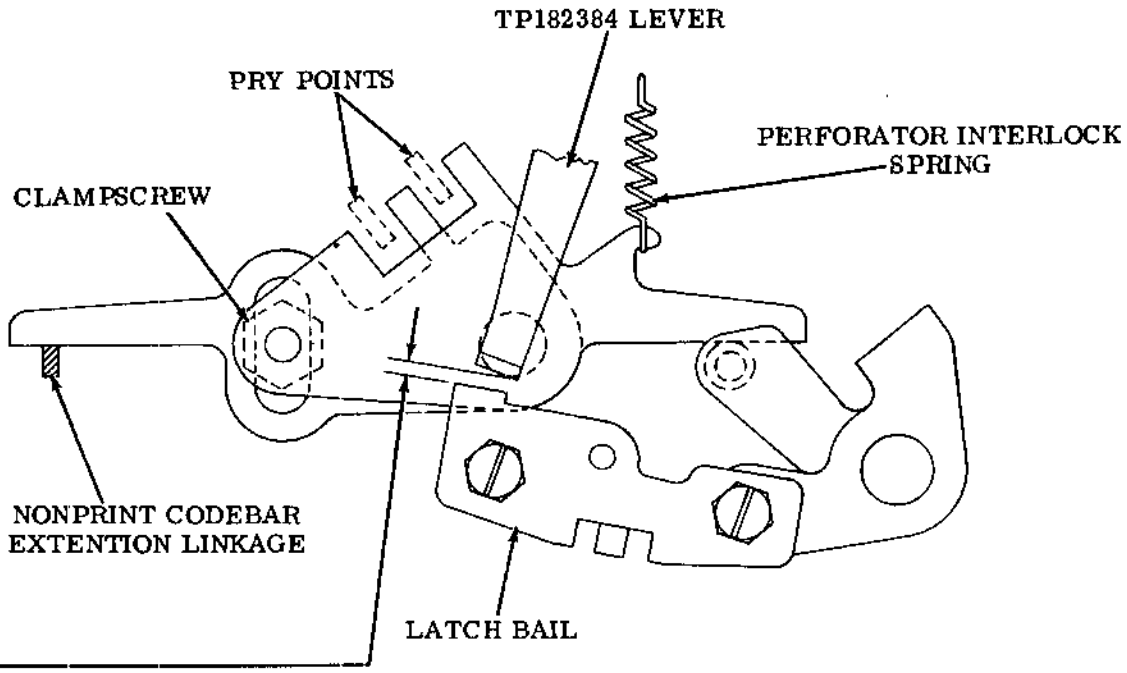
LATCH BAIL GAP

Note: This adjustment applies only to tape punches equipped with tape punch interlock mechanism.

To Check
Place the typing unit in the stop condition and the tape punch "off."
Place the nonprint codebar in its operated position (solenoid energized).

Requirement
Min 0.015 inch---Max 0.030 inch between the latch bail and TP182384 lever.

To Adjust
Remove punch interlock spring. Loosen clampscrew and position lever using pry points. Tighten screw and replace spring.



(Left Side View)

3.06 Automatic Control Mechanisms (continued)

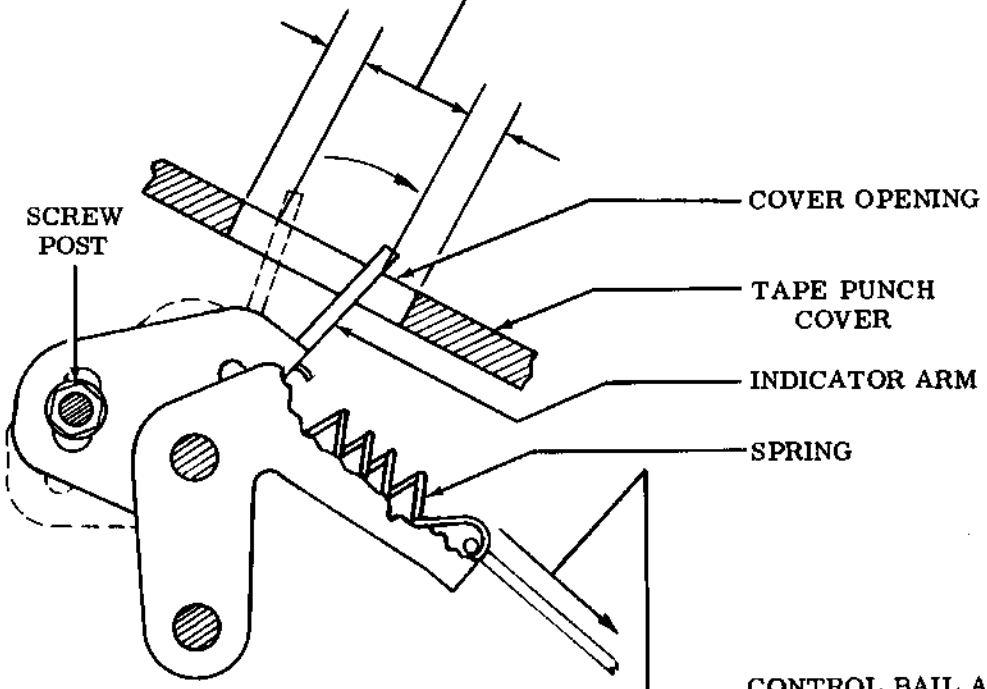
VISUAL "ON OFF" INDICATOR

Note: This adjustment applies only to tape punches equipped with the visual ON OFF indicator option.

To Check
With the tape punch cover in place over the tape punch, place the tape punch "off." Note the gap between the rear edge of the cover opening and the rear edge of the indicator arm. Place the tape punch "on." Note the gap between the front edge of the cover opening and the front edge of the indicator arm.

Requirement
The gaps should be equal, as gauged by eye.

To Adjust
With the tape punch lid removed from the tape punch cover, loosen screw post and position indicator arm. Tighten screw post.



(Left Side View)

CONTROL BAIL ASSEMBLY SPRING

Note: This adjustment applies only to tape punches equipped with the visual ON OFF indicator option.

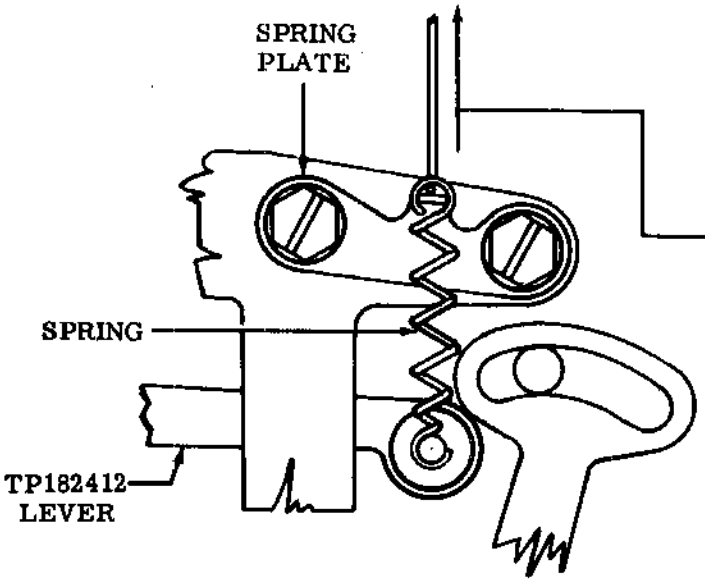
Requirement
With tape punch "off"
Min 2 oz---Max 3 oz
to pull spring to installed length.

3.07 Automatic Control Mechanisms (continued)

CONTROL BAIL ASSEMBLY SPRING

Note: This adjustment applies only to tape punches which are not equipped with visual ON OFF indicator option.

Requirement
With the tape punch "off"
—Min 2-1/2 oz---Max 3-1/4 oz
to pull the spring to installed length.



(Right Side View)

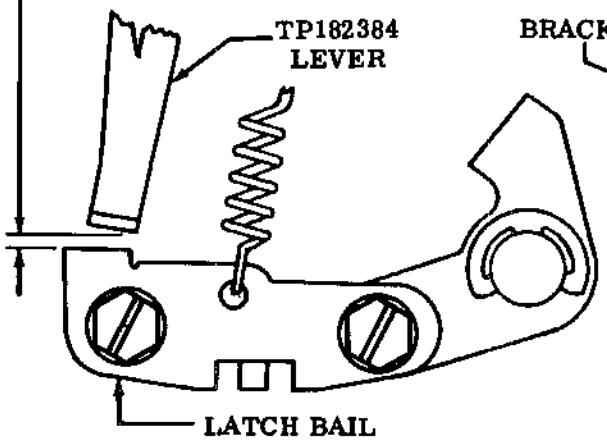
"LOCK ON"

Note: This adjustment applies only to tape punches equipped with the LOCK ON option — TP184200 lock bail, etc.

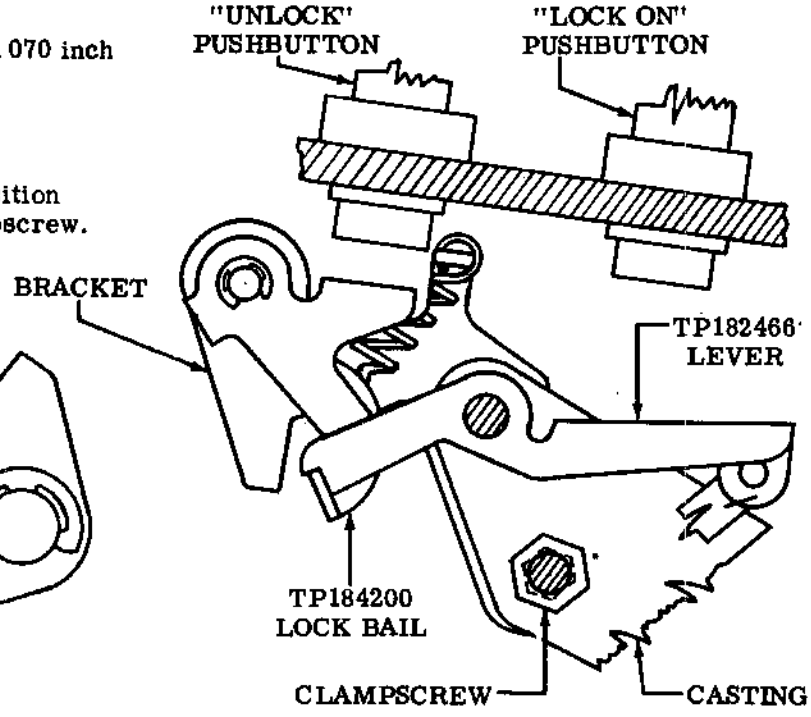
To Check
Place the tape punch in the "off" condition. Depress the LOCK ON pushbutton and allow the TP184200 lock bail to latch the TP182466 lever.

Requirement
—Min 0.050 inch---Max 0.070 inch
between the latch bail and
TP182384 lever.

To Adjust
Loosen clampscrew and position
the bracket. Tighten clampscrew.



(Left Side View)



(Left Side View)

3.08 Automatic Control Mechanisms (continued)

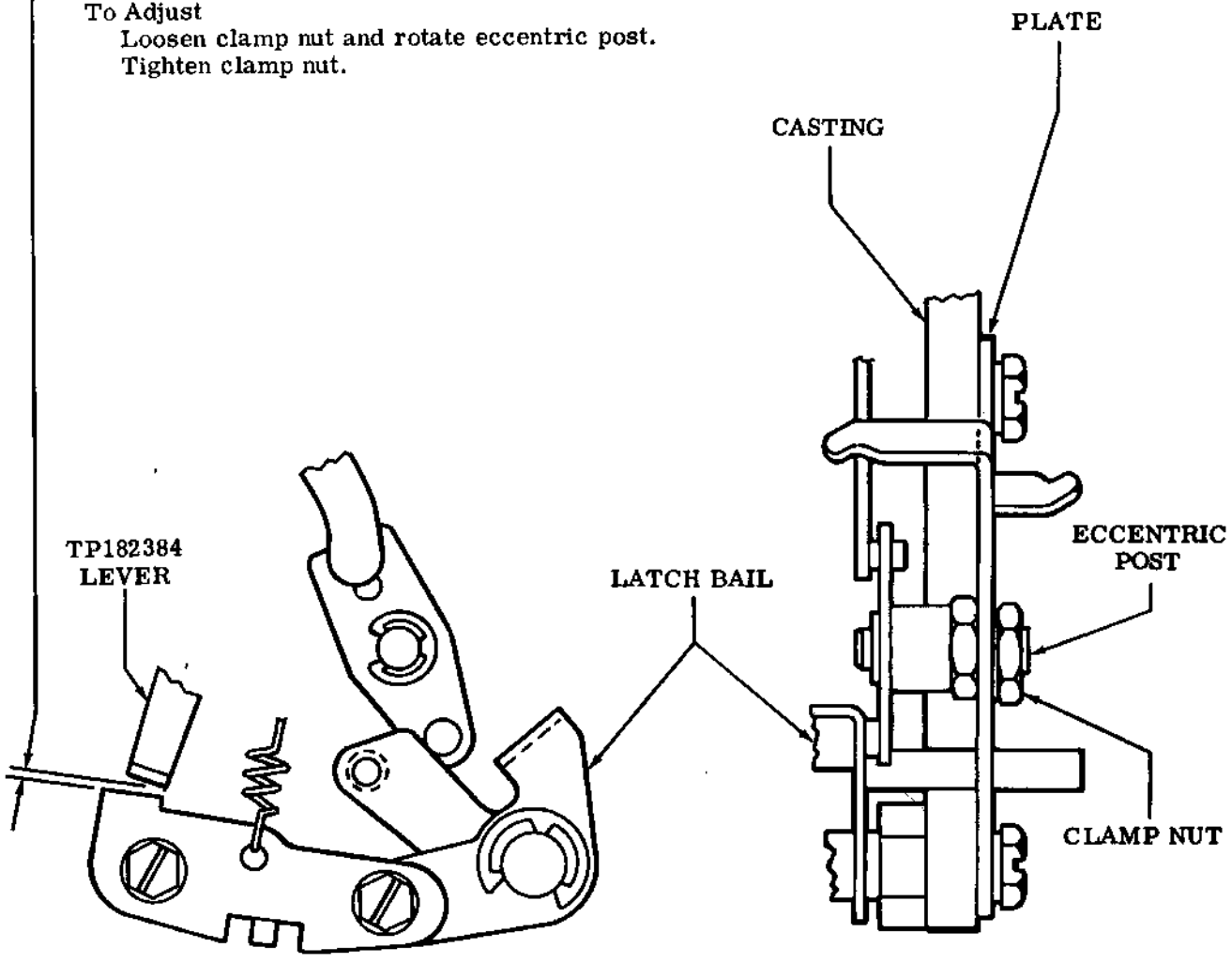
AUTOMATIC "ON"

Note: This adjustment applies only to tape punches equipped with the LOCK ON option.

To Check
With the tape punch "on," depress the UNLOCK pushbutton. Set up the TAPE (-2--5---) code combination in the selecor. Manually rotate the main shaft until the drive link is in its most forward position.

Requirement
Min 0.010 inch---Max 0.025 inch between the latch bail and TP182384 lever.

To Adjust
Loosen clamp nut and rotate eccentric post. Tighten clamp nut.

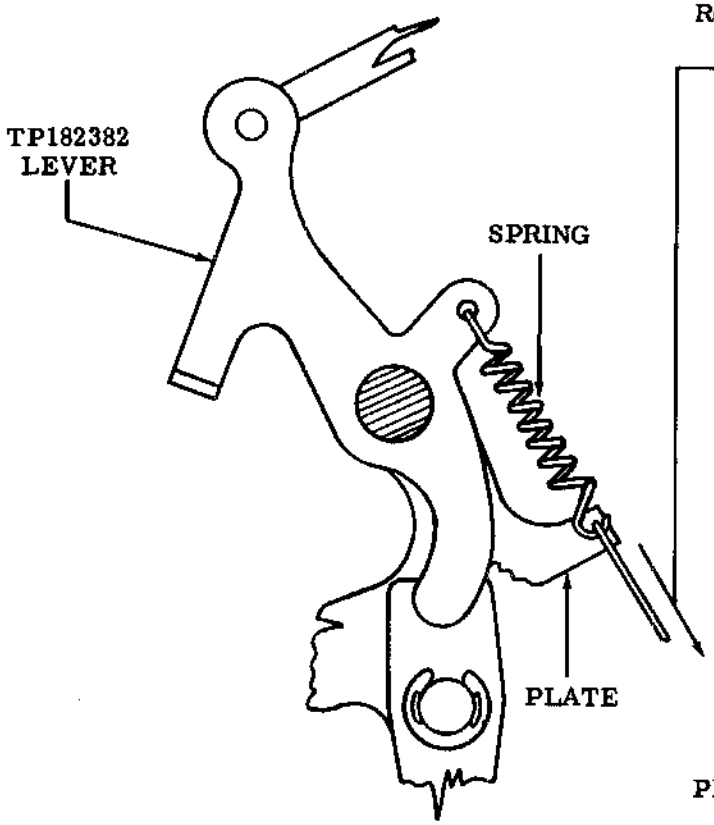


(Left Side View) (Front View)

3.09 Automatic Control Mechanisms (continued)

"ON" MECHANISM RETURN SPRING

Requirement
With the tape punch "off"
Min 1/2 oz---Max 2-1/2 oz
to pull spring to installed length.

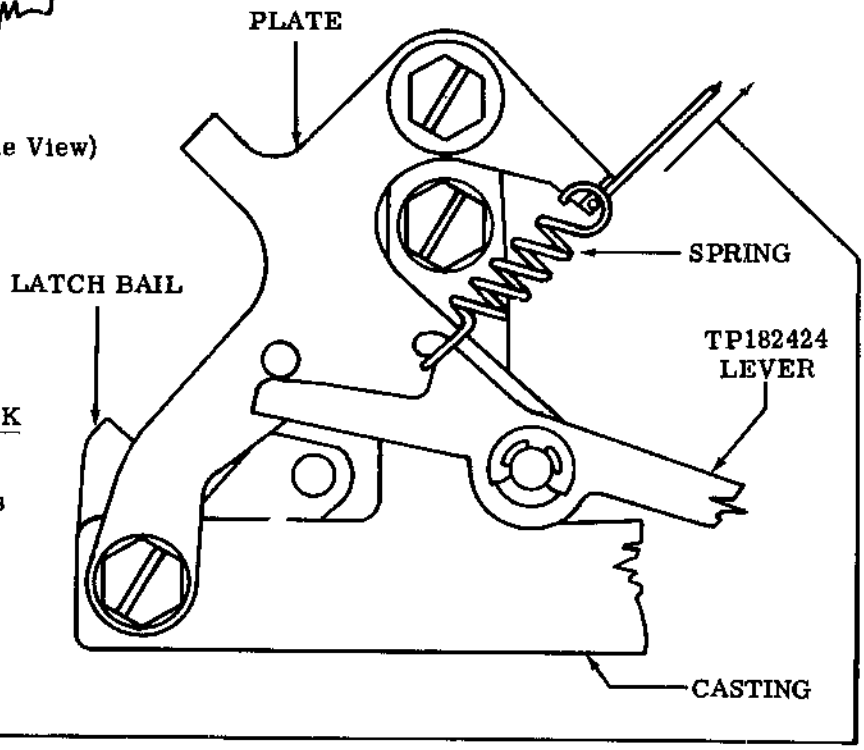


(Left Side View)

AUTOMATIC PUNCH INTERLOCK SPRING

Note: This adjustment applies only to tape punches equipped with the interlock mechanism.

Requirement
With nonprint codebar in its operated position (solenoid energized)
Min 4 oz---Max 6 oz
to pull spring to installed length.



(Right Side View)

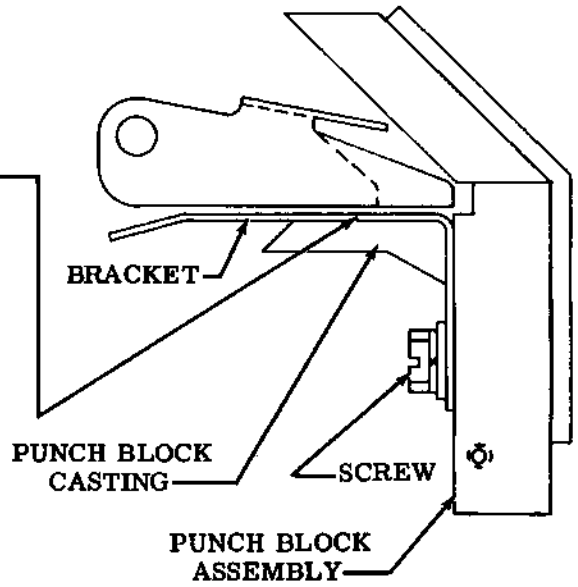
3.10 Miscellaneous

FOLDED TAPE GUIDE

(1) Requirement
With no tape in the punch, the bracket should be flush to the top surface of the punch block casting.

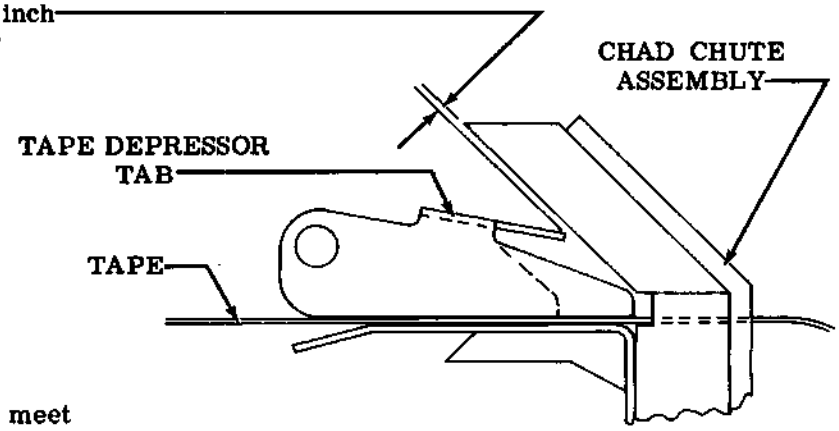
To Adjust
Loosen screw and position bracket. Tighten screw.

Note 1: This adjustment applies only to tape punches equipped with TP185705 folded tape guide modification kit.



(Left Side View)

(2) Requirement
With tape in punch
Min some---Max 0.015 inch between the tape depressor tab and underside of the chad chute.



To Adjust
Bend tape depressor tab to meet requirement.

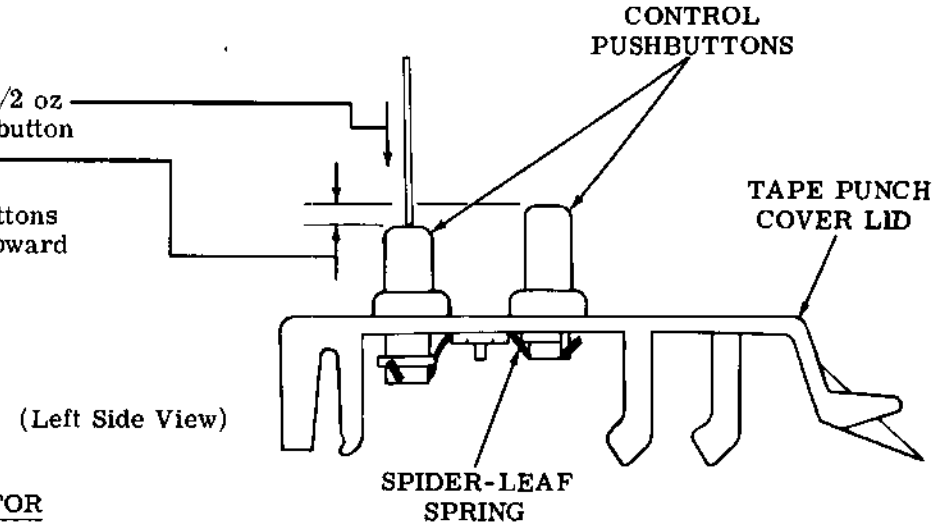
Note 2: Check TEN CHARACTERS PER INCH requirement and refine if necessary.

2.05 Tape Punch Area

CONTROL PUSHBUTTONS

Requirement

Min 1/2 oz---Max 1-1/2 oz to push each control pushbutton down 1/8 inch as gauged by eye, while remaining control pushbuttons remain in their normal upward positions.



(Left Side View)

VISUAL "ON-OFF" INDICATOR

Note: This adjustment applies only to tape punches equipped with the automatic control visual ON-OFF indicator option.

To Check

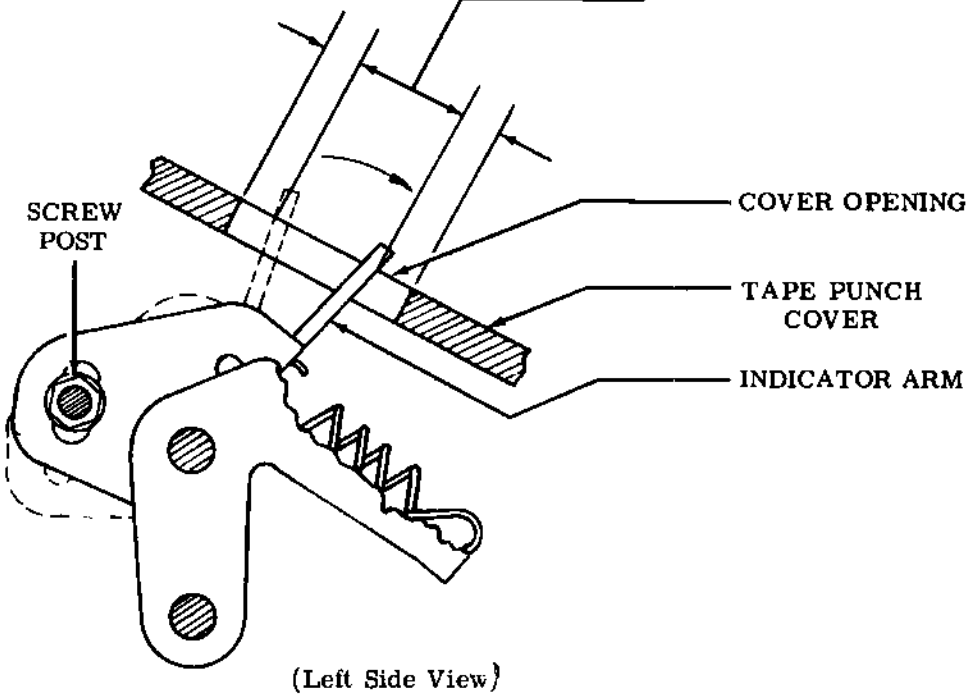
With the tape punch cover in place over the tape punch, place the tape punch "off." Note the gap between the rear edge of the cover opening and the rear edge of the indicator arm. Place the tape punch "on." Note the gap between the front edge of the cover opening and the front edge of the indicator arm.

Requirement

The gaps should be equal, as gauged by eye.

To Adjust

With the tape punch lid removed from the tape punch cover, loosen screw post and position indicator arm. Tighten screw post.



(Left Side View)