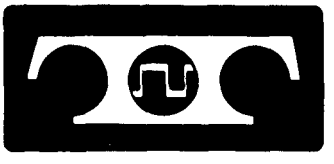
BULLETIN 310B
VOL 2

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



TELETYPE®
CORPORATION
5555 TOUHY AVENUE, SKOKIE, ILLINOIS

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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.

The sections comprising this bulletin are now stocked separately and may be individually ordered if the entire bulletin is not needed.

TABLE OF CONTENTS

FILING INSTRUCTIONS

1. The following filing instructions apply to changes sent to the field.
2. Asterisks (*) in the table of contents indicate changes.
3. When the issue of a section changes, replace the old issue with the attached new one.
4. In the case of addendums, turn to the affected section and follow the instructions on the first page of the attached addendum.
5. Replace the old table of contents with this new one.

33 KEYBOARD

ADJUSTMENTS

CONTENTS PAGE

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 2.16 and 2.17. It is reissued to provide specific references to related sections and to make a few minor changes. Marginal arrows indicate the changes.

Note: Adjustment information for solenoid reset keyboards is found in Section 574-121-703TC.

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.

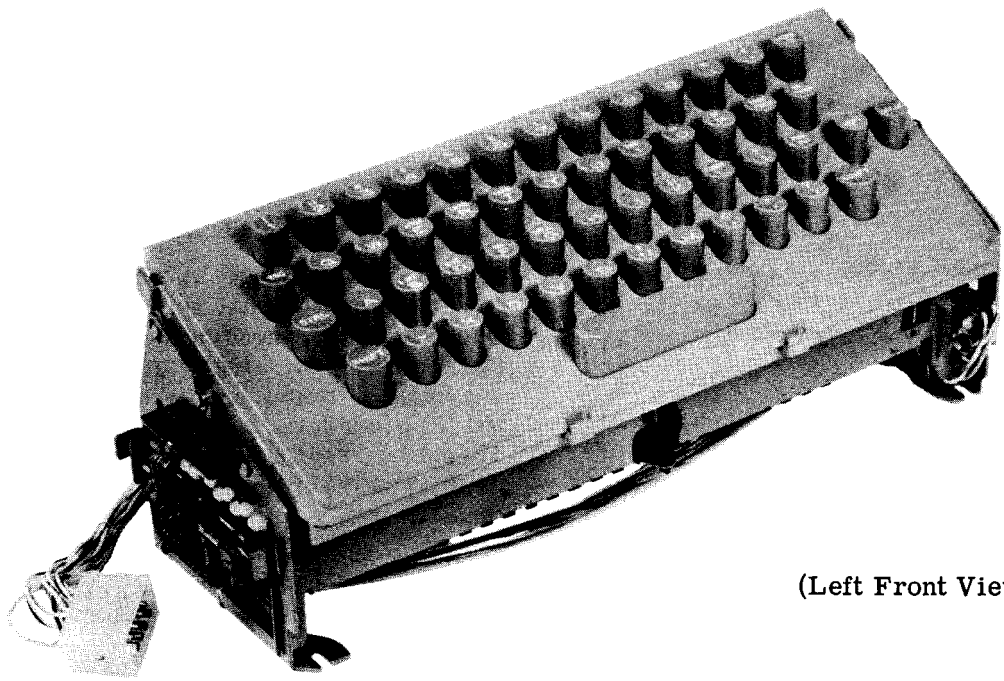
Note: Disconnect the keyboard from any voltage source prior to inspection, minor repair, extensive maintenance, or a complete readjustment.

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)

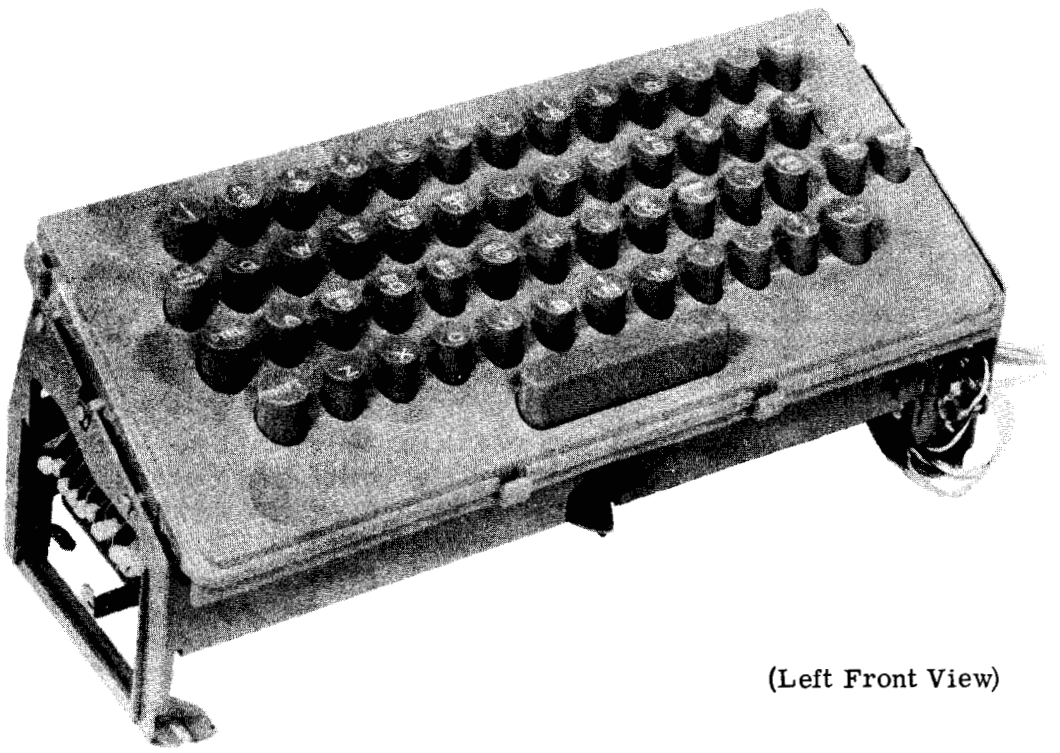
Figure 1 - 33 Keyboard (Parity)

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 Section 574-122-700TC.) 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 latchlever.

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.

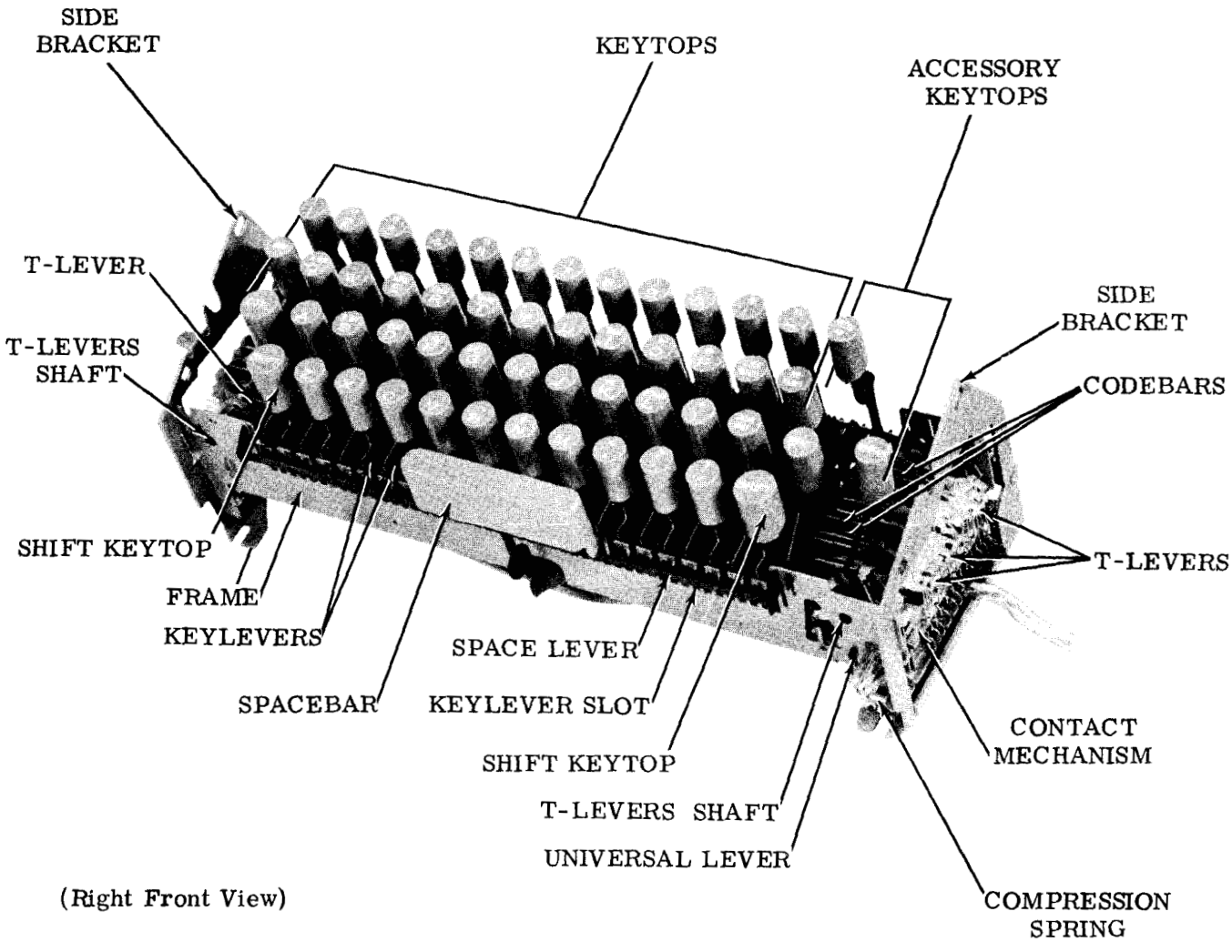


Figure 3 - Keyboard (Cover Removed)

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

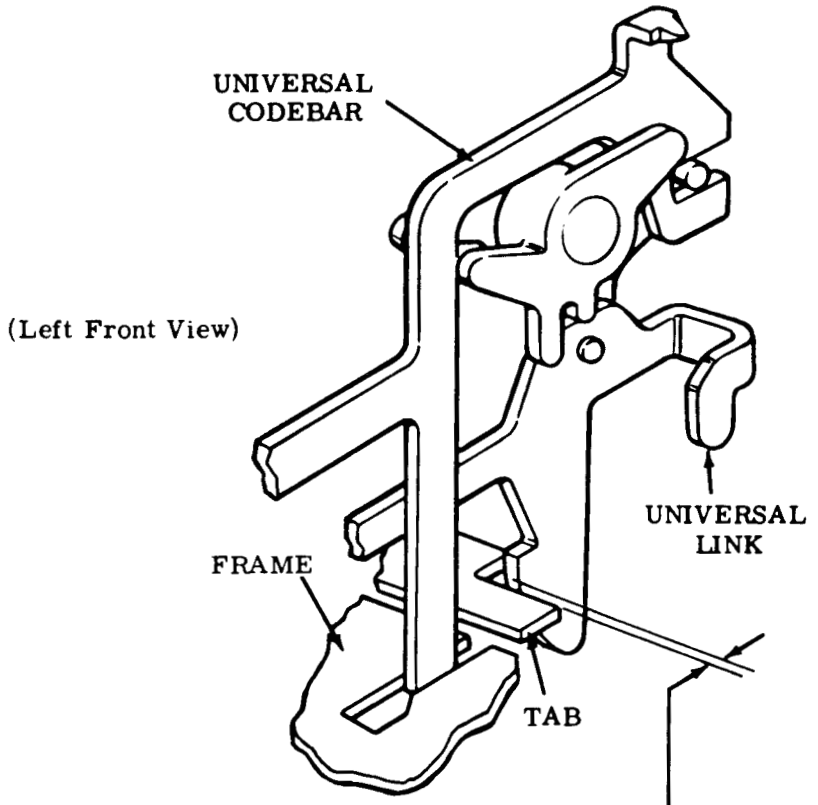
Note 2: The distributor clutch will not disengage unless the keyboard is latched and the answer-back drum is in its home position. The answer-back home position is the position where the control lever is fully detented into the indent on the answer-back drum.

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.

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, refer to Section 574-121-702TC.



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 (contact block slots B through O). Part (2) applies to contact wires which have two camming surfaces and are operated by a T-lever and the reset bail.

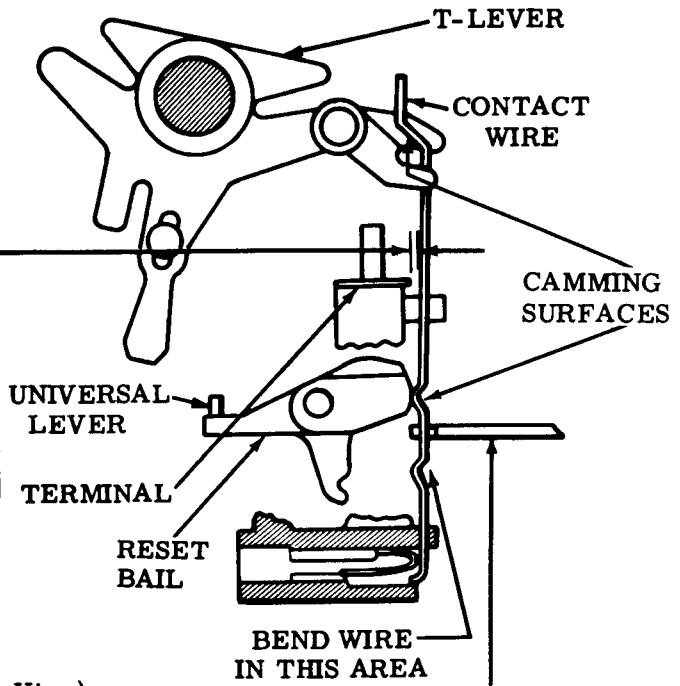
(1) To Check

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 an upward direction.

Requirement

Min 0.012 inch --- Max 0.027 inch between the first reset bail actuated contact wire located towards the front of the keyboard and its associated terminal.

Min 0.018 inch---Max 0.032 inch between the remaining marking contact wires and their associated terminals.



(Front View)

To Adjust

Bend contact wire with TP185829 bending tool.

Note: Contact bounce is not permissible during distributor readout of the nos. 1 through 8 code bits. If necessary, the no. 1 contact gap should be refined to the low end of its adjustment range to eliminate bounce.

(2) To Check

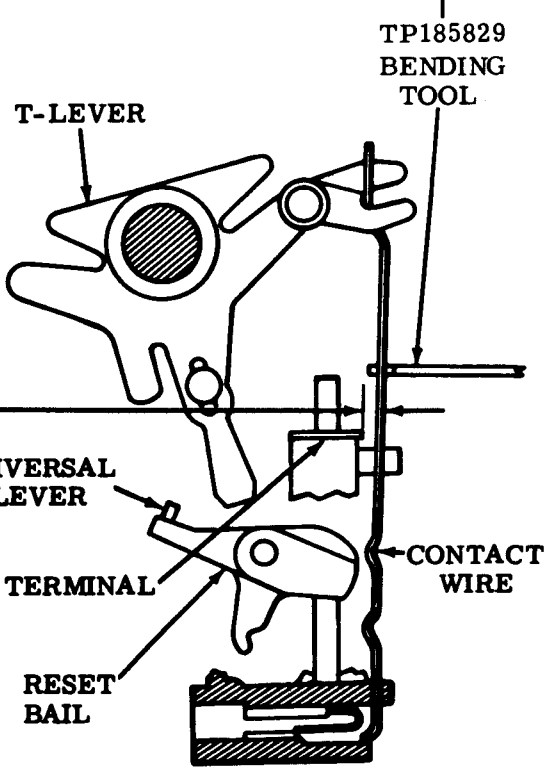
Push universal lever down until latched by latchlever. Place T-levers up in spacing position. Trip keyboard by depressing universal codebar. As each contact wire is checked, take up its play in an upward direction.

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.



(Front View)

Related Adjustment Affected by

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

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.

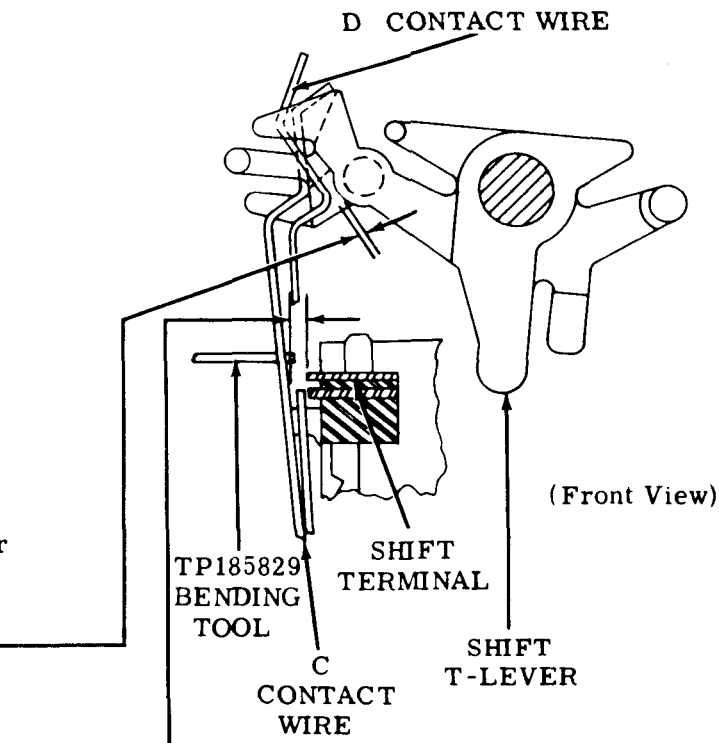
(1) To Check

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

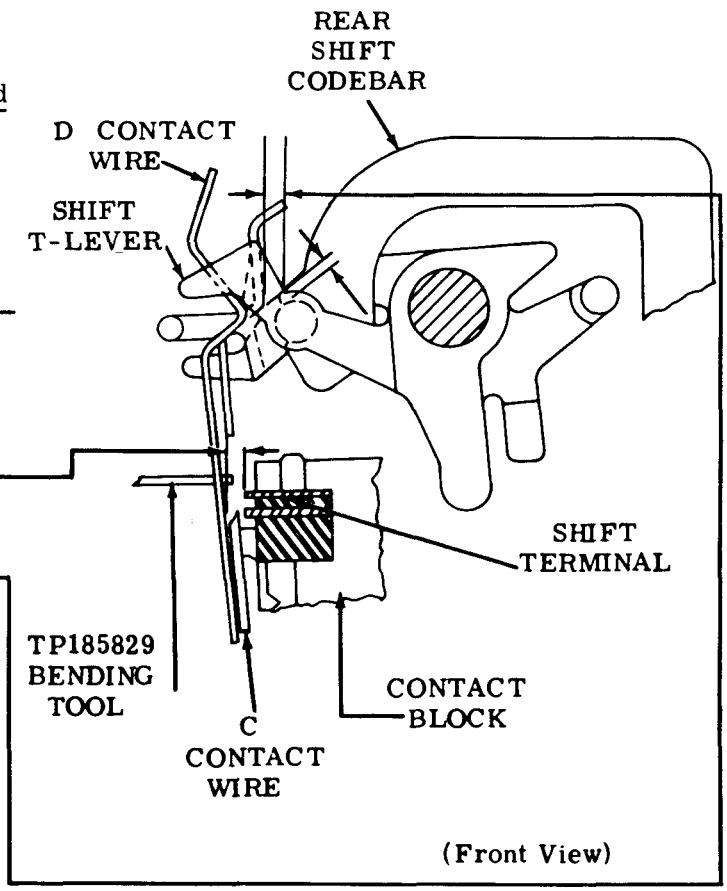
Push universal lever down until latched by latchlever. Hold right SHIFT keylever fully depressed. Trip keyboard by depressing universal codebar. Release SHIFT keylever. Lightly take up play in contact block towards right.

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).

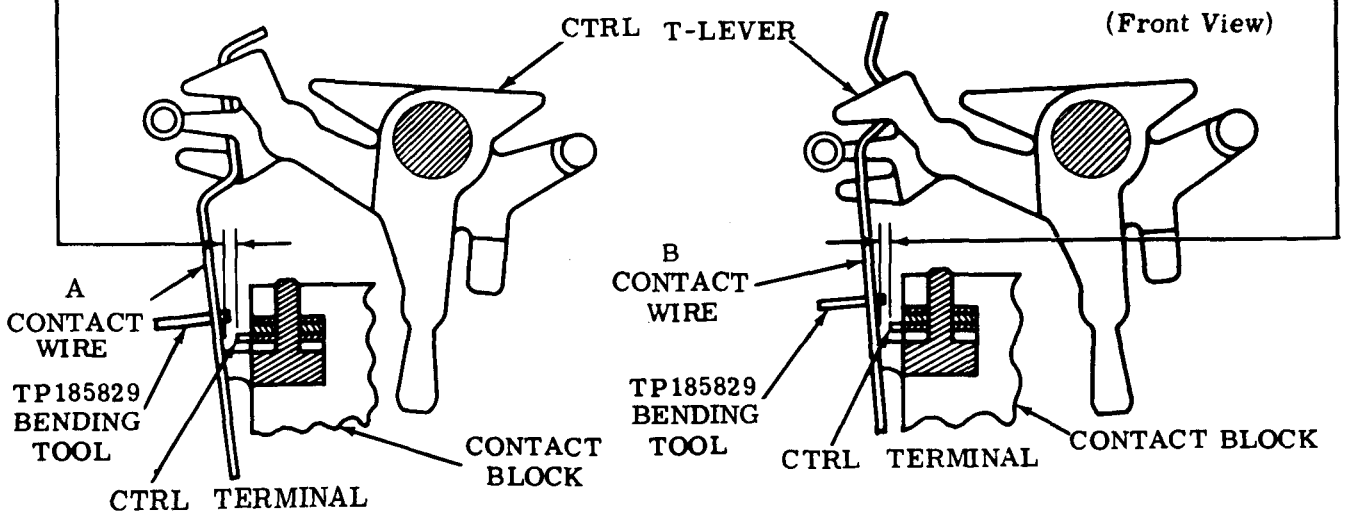
Requirement
(a) Min 0.008 inch between B contact wire and CTRL terminal.

(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.

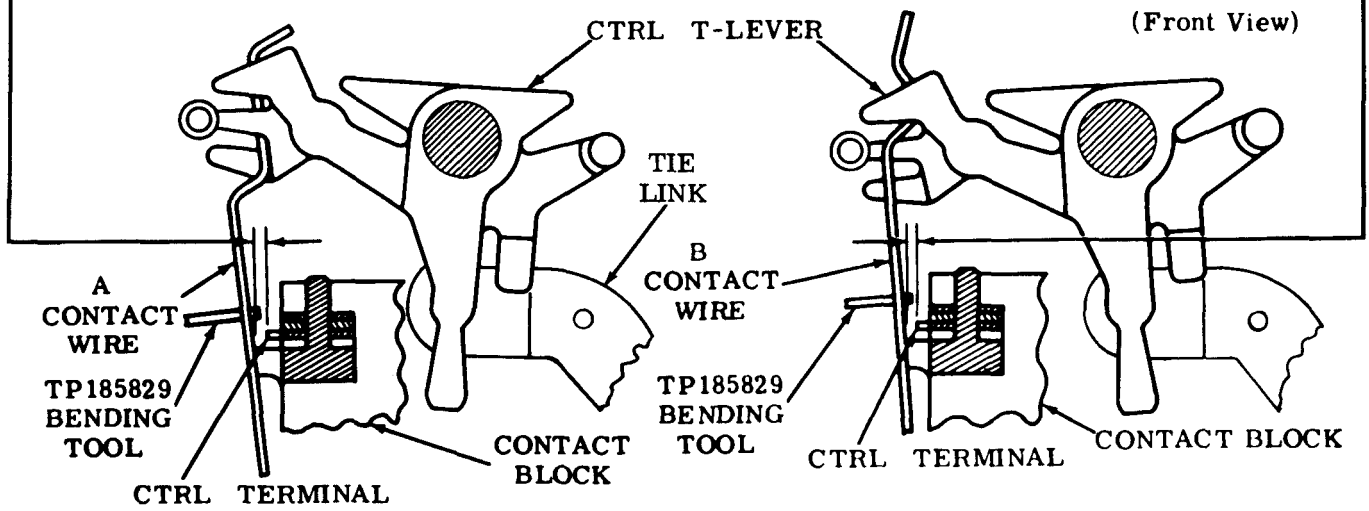
(1) To Check
Fully depress the CTRL keytop and hold it depressed. Trip keyboard by depressing the "Q" keytop. Release both keytops and manually reset the keyboard. Lightly take up all play in contact block towards the left.

Requirement
Min 0.023 inch---Max 0.035 inch between B contact wire and CTRL terminal.

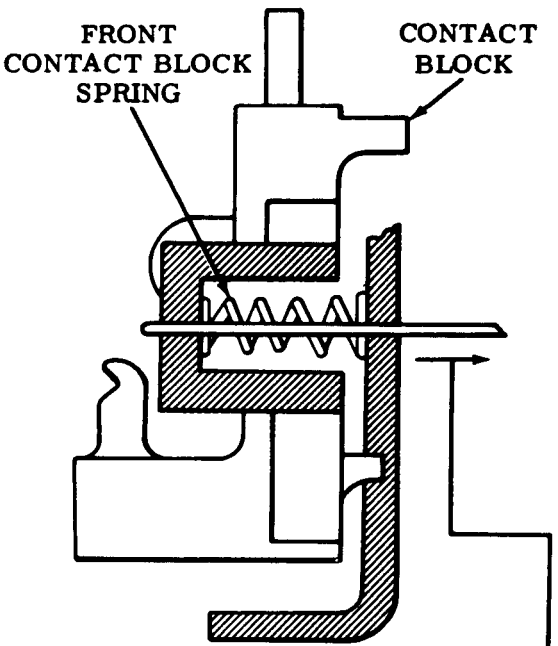
(2) To Check
Fully depress the CTRL keytop and then trip the keyboard. Release the CTRL keytop. Lightly take up all play in contact block towards the left.

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

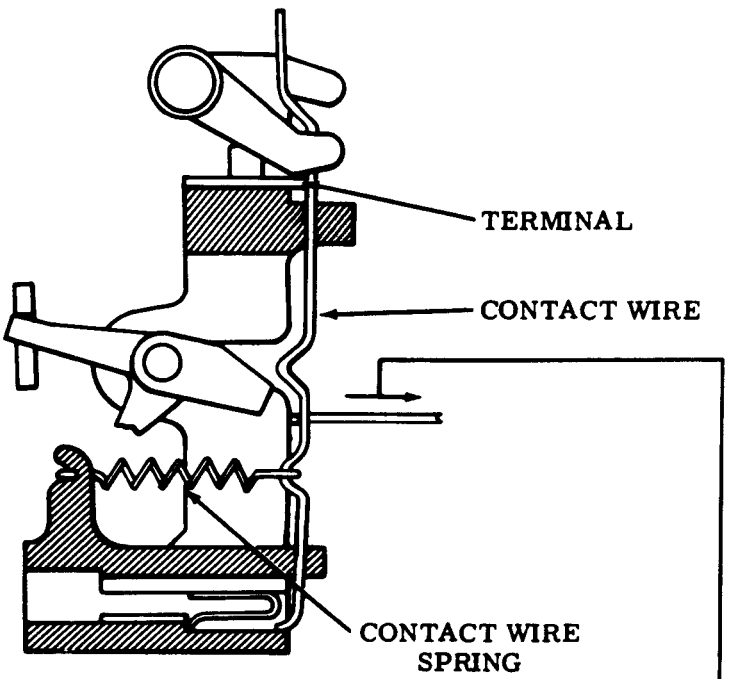


(Front View)

CONTACT BLOCK SPRING

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

Note: Check both front and rear contact block springs.



(Front View)

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.

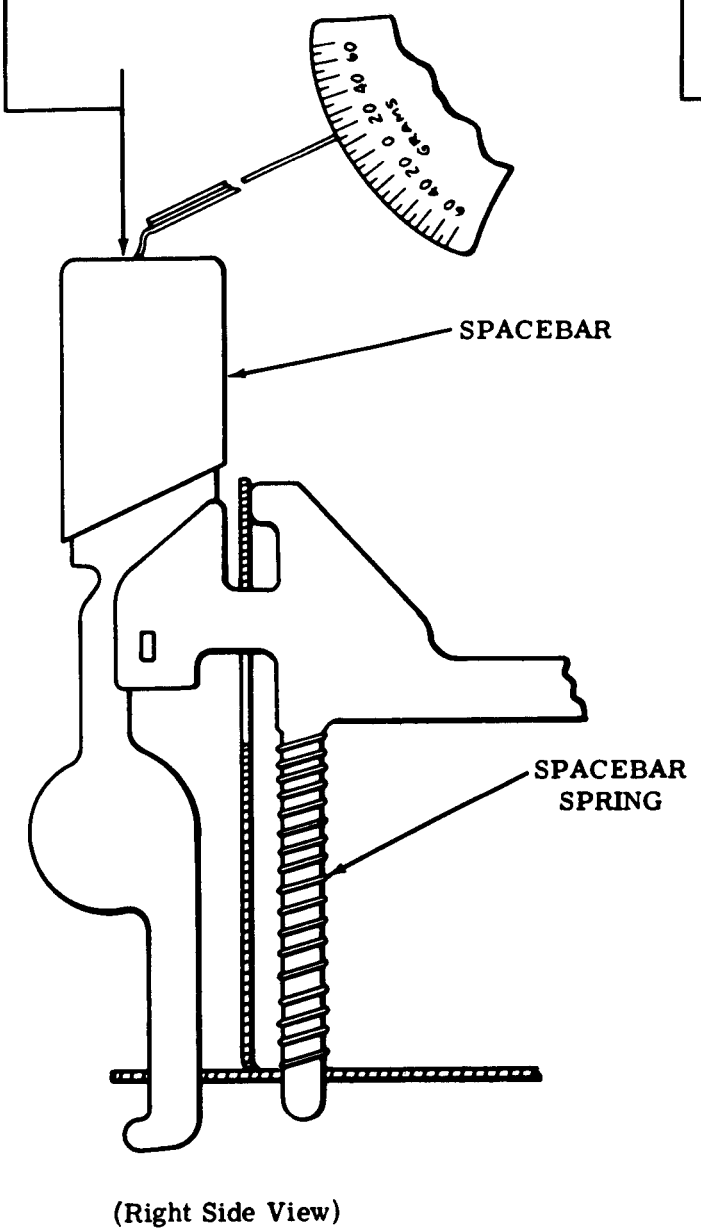
2.07 Spacebar Spring and Keylever Spring

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.



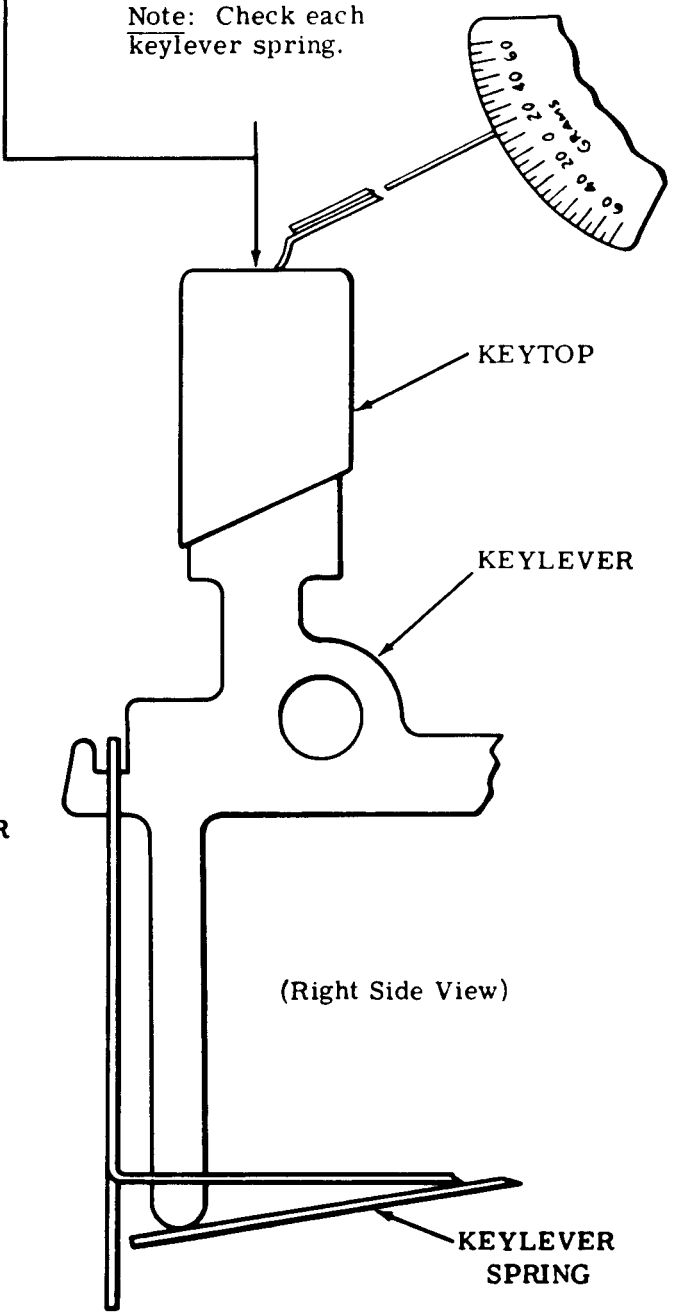
(Right Side View)

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.

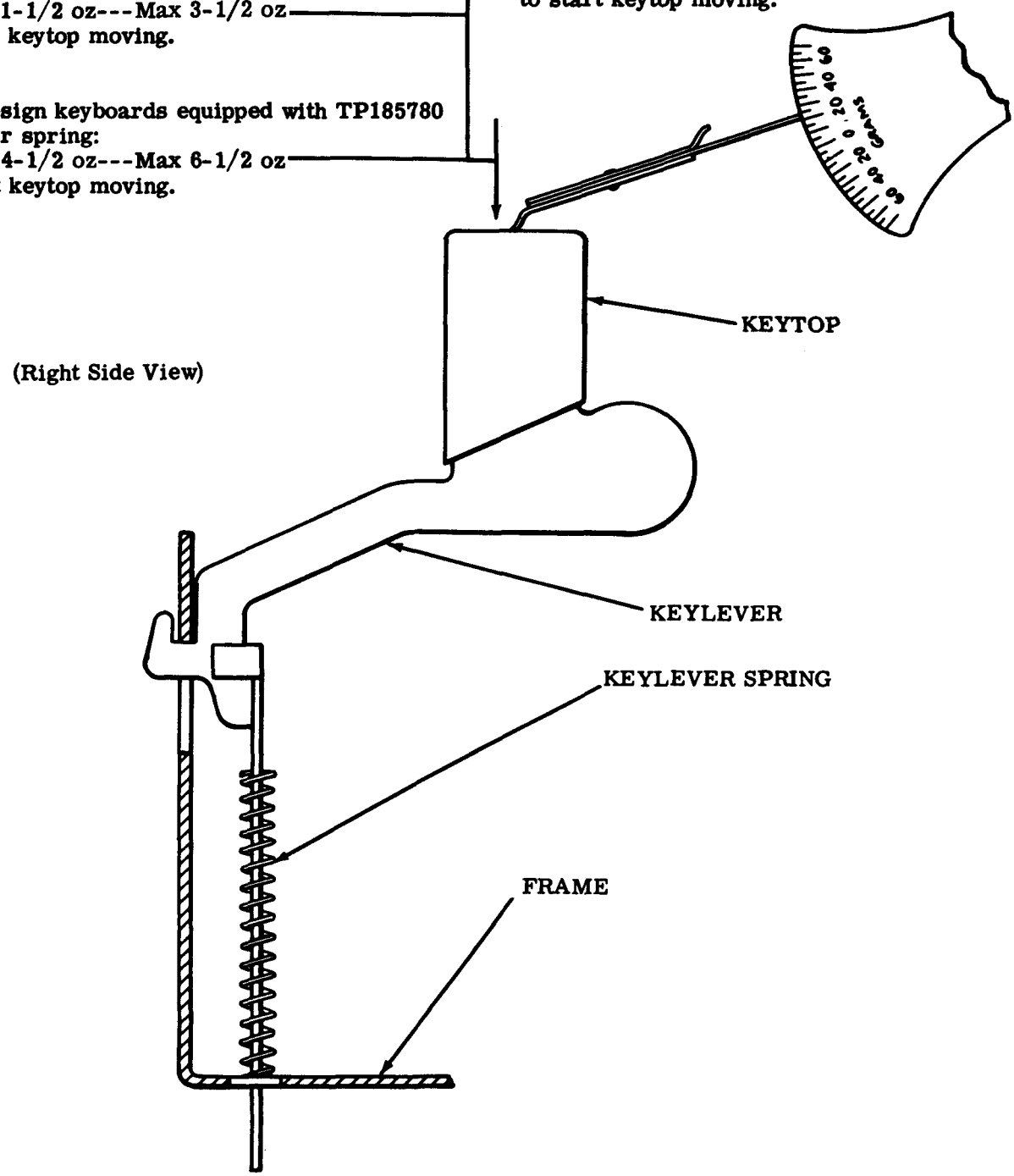
"CTRL" KEYLEVER SPRING

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.

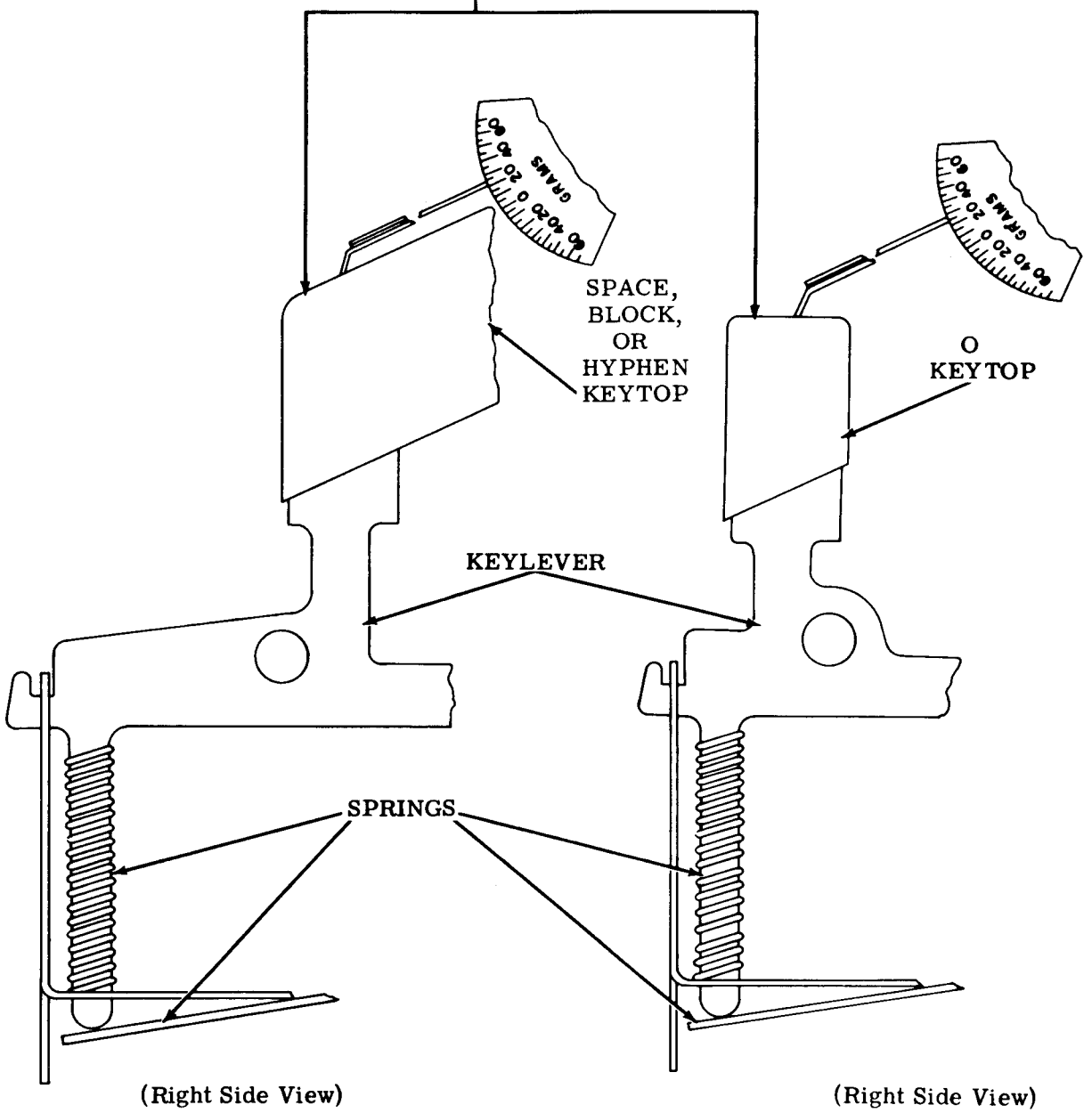
To Check

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.



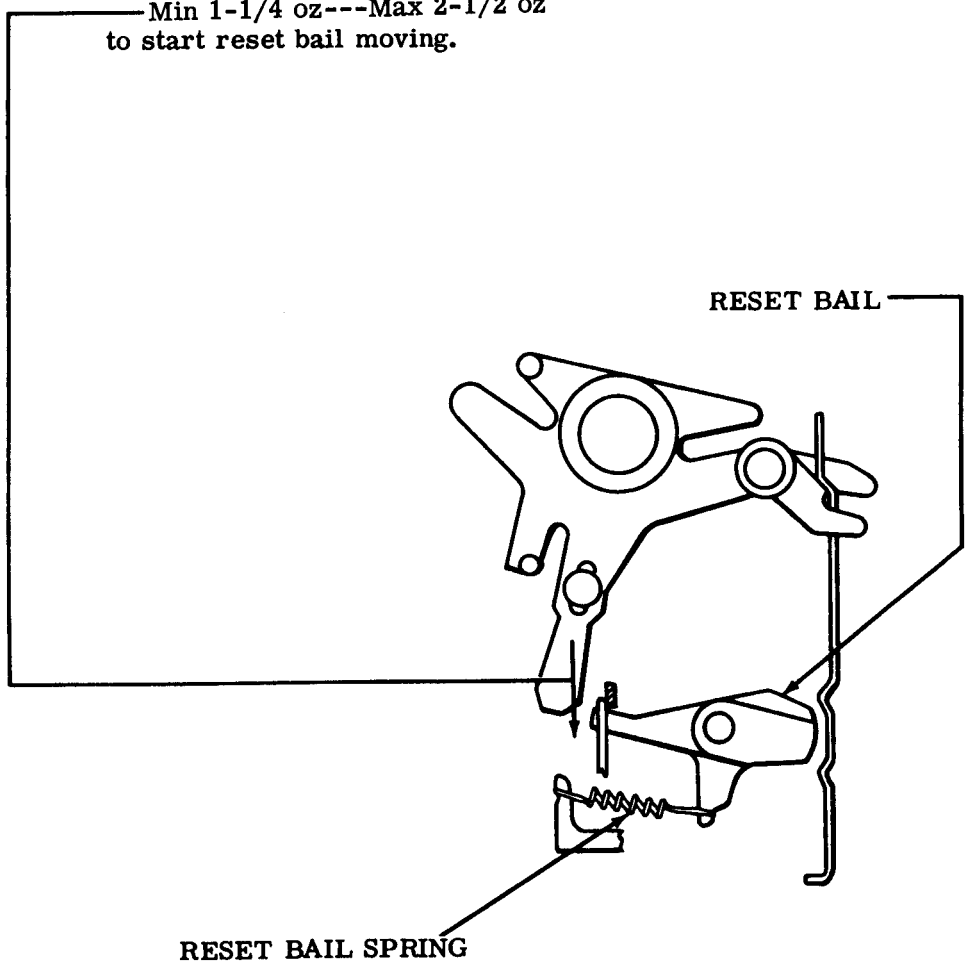
(Right Side View) (Right Side View)

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 1-1/4 oz---Max 2-1/2 oz to start reset bail moving.



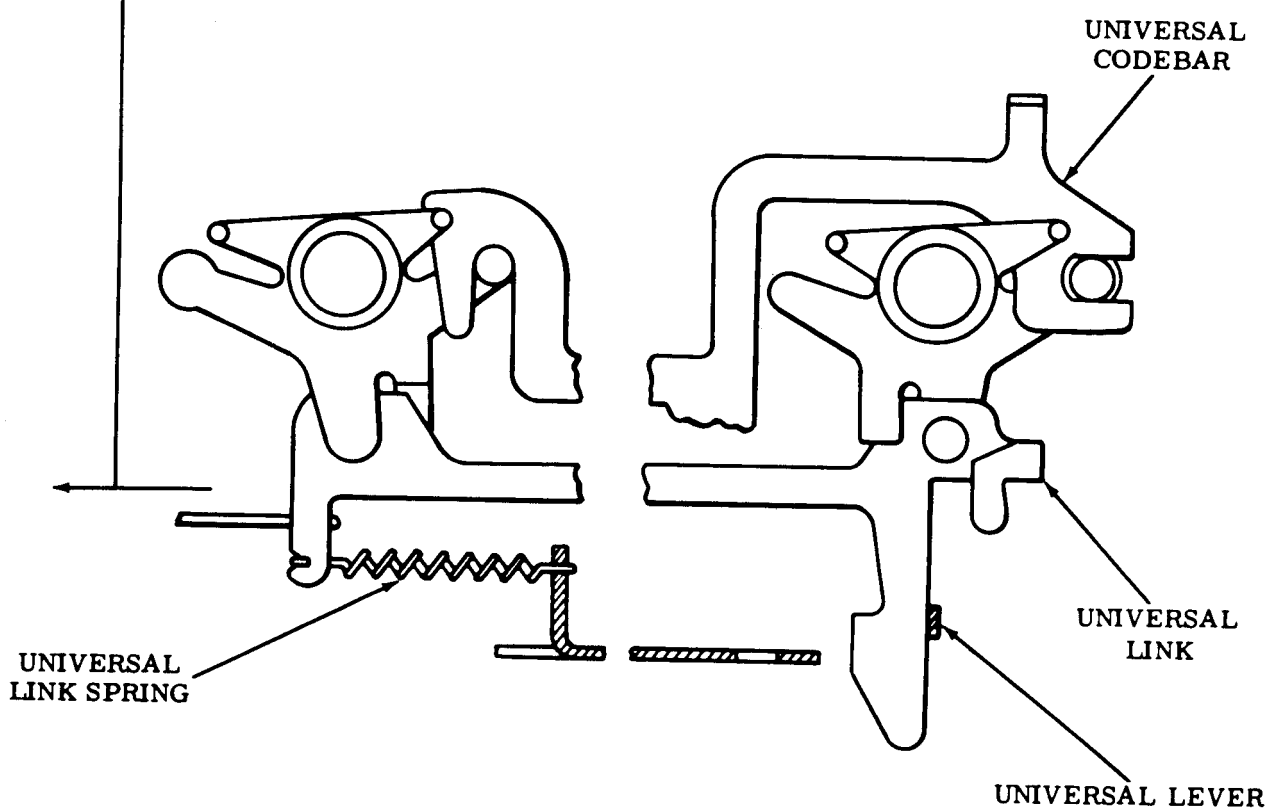
(Front View)

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)

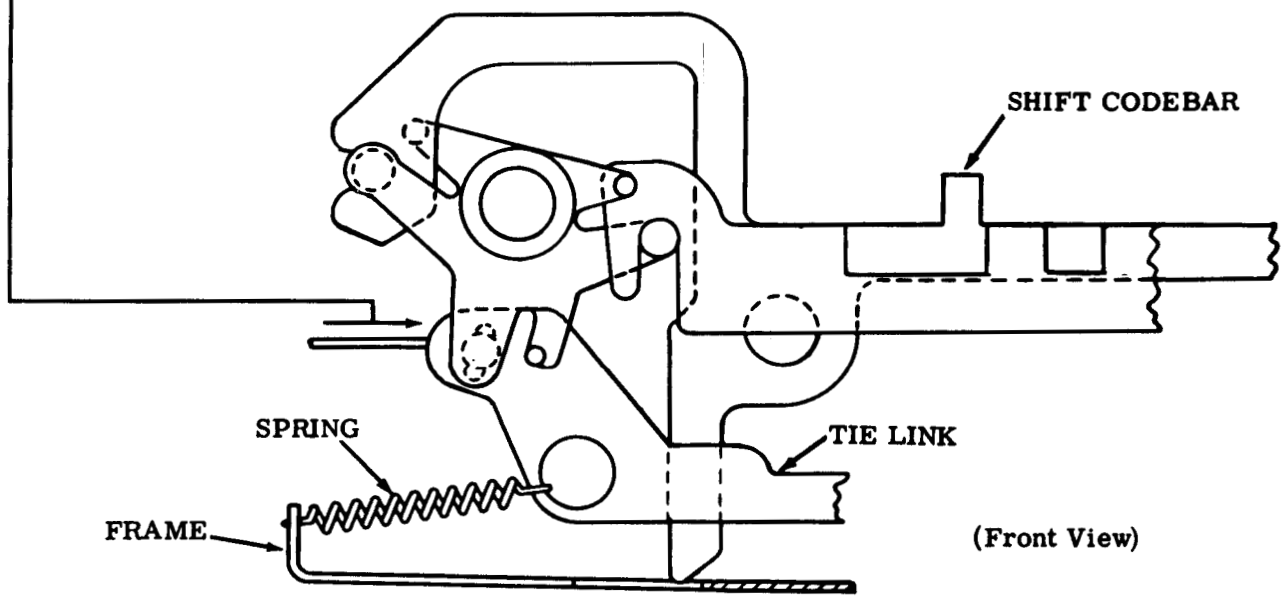
2. 12 Shift Codebar Spring

SHIFT CODEBAR SPRING

Requirement

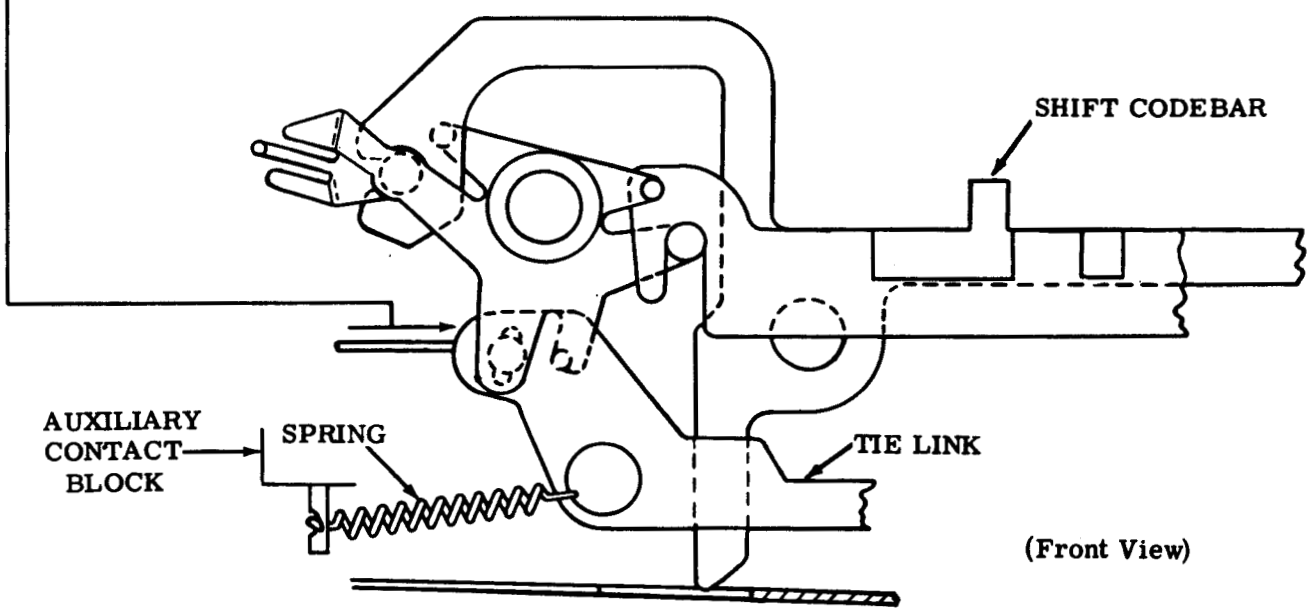
Nonparity keyboards.

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



Parity keyboards:

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



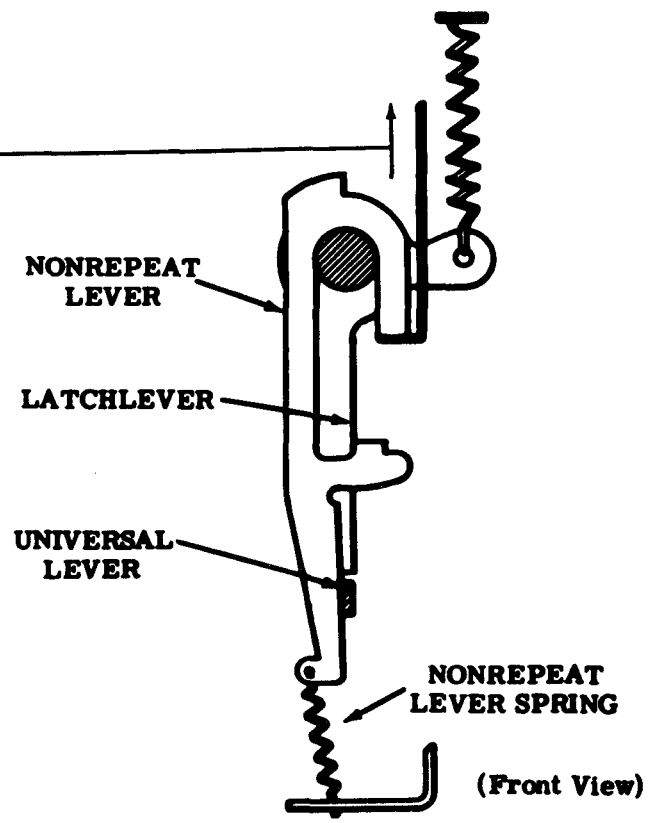
2. 13 Nonrepeat Lever Spring

Note: Remove keyboard cover. For disassembly instructions, see Section 574-121-702TC.

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.

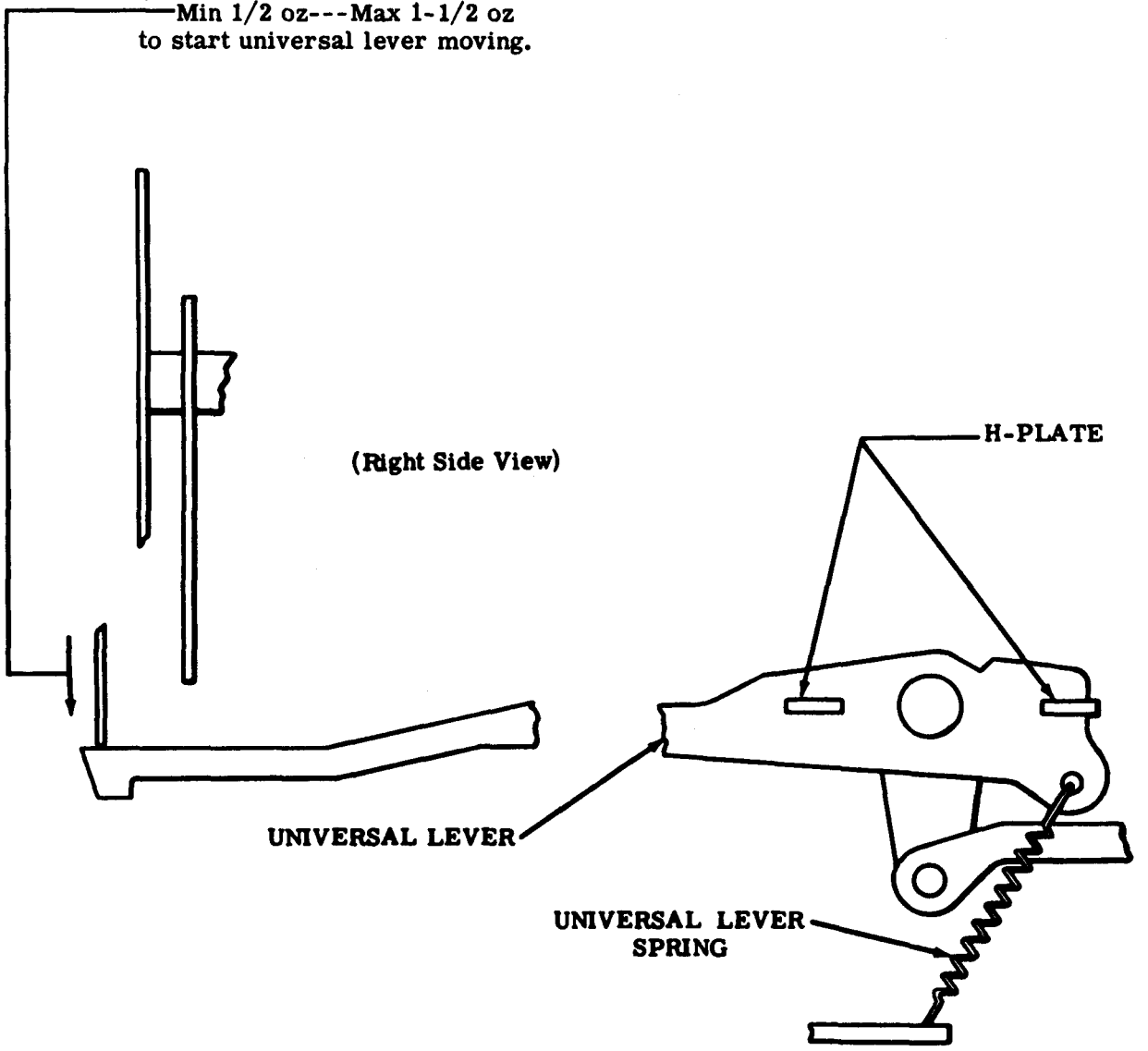


2. 14 Universal Lever Spring

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 Section 574-100-702TC.

2.15 Latchlever Spring

LATCHLEVER SPRING

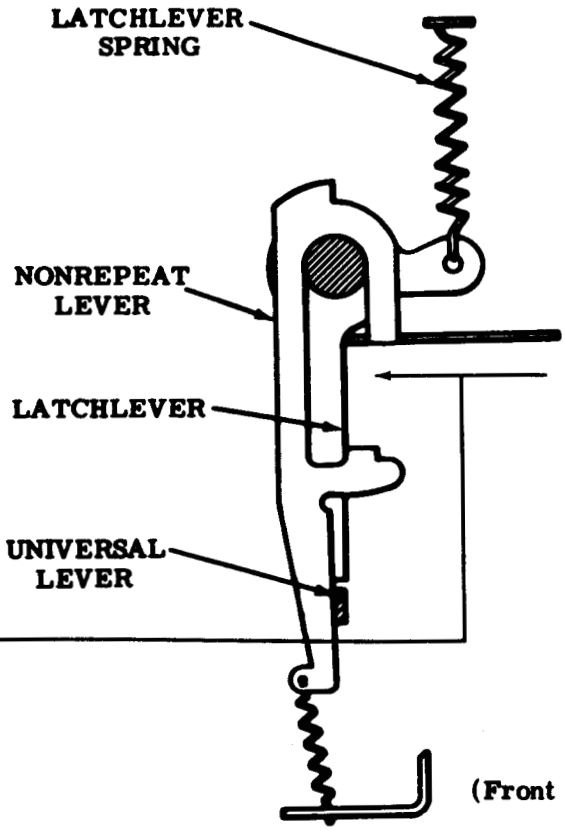
To Check

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 Section 574-100-702TC.



(Front View)

2.16 Distributor Trip Linkage

Note: When making or checking this adjustment use either Method 1 or Method 2 (2.17). Do not intermix methods.

DISTRIBUTOR TRIP LINKAGE - Method 1
(Using the TP186308 keyboard adjusting gauge)

To Check

Place the typing unit in stop condition. Depress DELETE key to trip distributor clutch. From the front of the keyboard, manually push the universal lever down to its latched position. Place the TP186308 gauge on front of keyboard frame. Rotate distributor shaft until its cam post (LATE DESIGN) or cam roller (EARLY DESIGN) is on the high part of the cam follower lever camming surface.

Requirement

The top edge of the universal lever, which is now in the lowest position, should be within the thickness of the gauge's lower tab as gauged by eye.

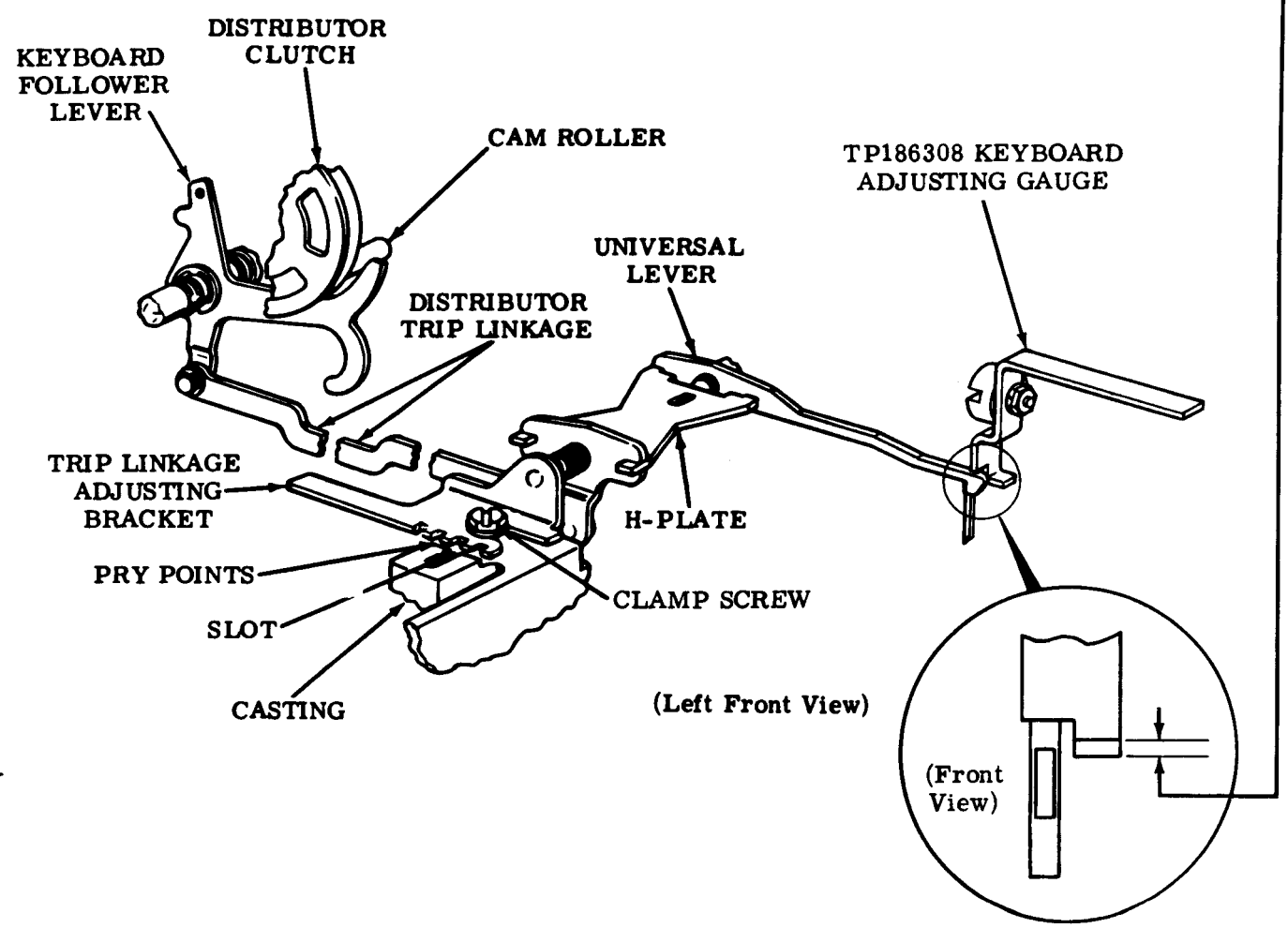
To Adjust

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

Related Adjustment

Affects

TRIP LEVER ENGAGEMENT (See Section 574-122-700TC)



2.17 Distributor Trip Linkage (continued)

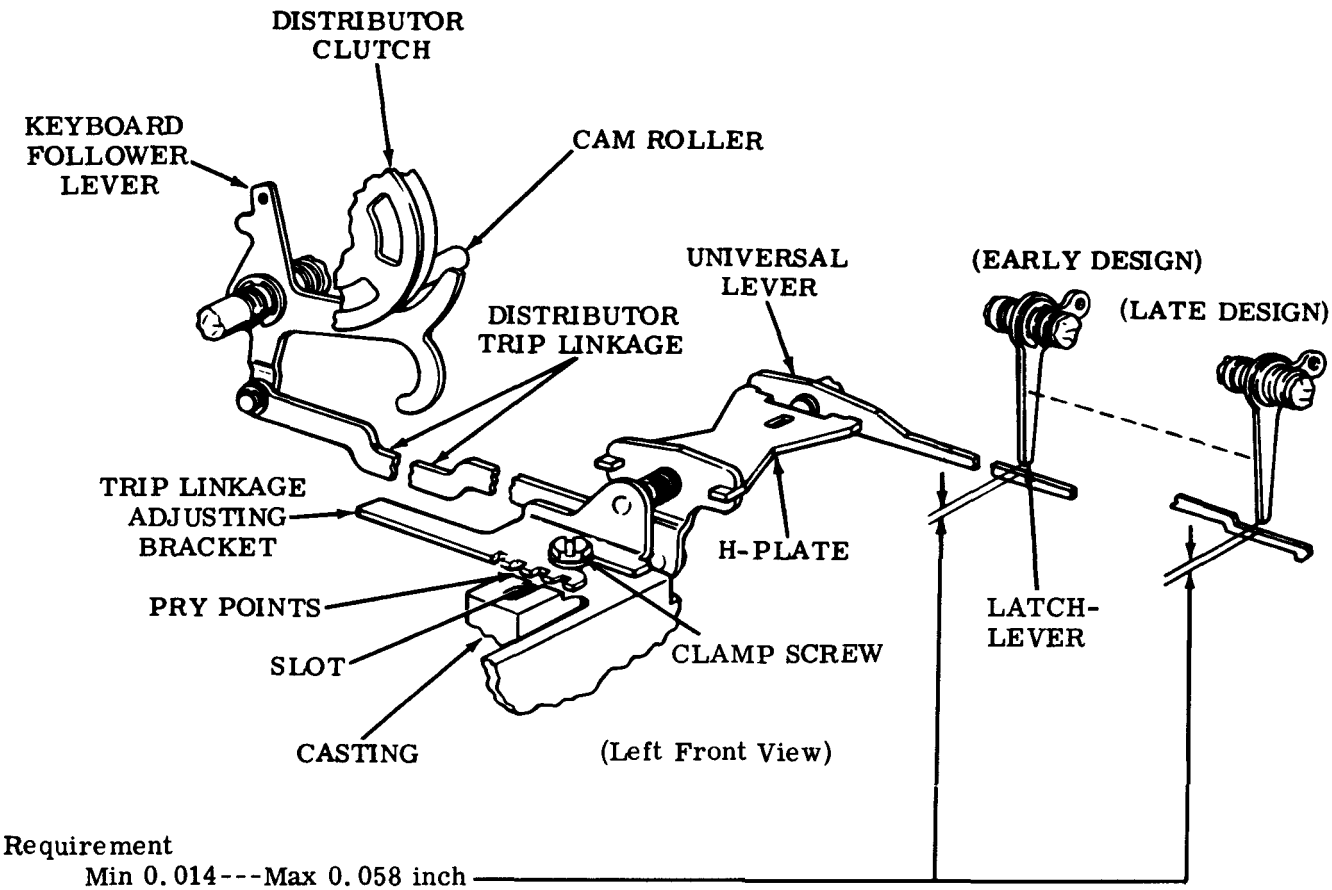
Note 1: When making or checking this adjustment use either Method 1 (2.16) or Method 2. Do not intermix methods.

DISTRIBUTOR TRIP LINKAGE - Method 2
(Not using the TP186308 keyboard adjusting gauge)

Note 2: The requirement applies to early and late design keyboards having the TP180086, TP182240, or TP185766 universal lever.

To Check

Place the typing unit in stop condition. Depress the DELETE key to trip the distrubutor clutch. Rotate the distributor shaft until the keyboard follower lever is on the high part of its cam. Push against reset bail spring anchor with just enough force to slightly move the reset bail, then release.



Requirement

Min 0.014---Max 0.058 inch between latchlever and universal lever.

To Adjust

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

Related Adjustment

Affects

TRIP LEVER ENGAGEMENT (See Section 574-122-700TC)

33 TYPING UNIT

ADJUSTMENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

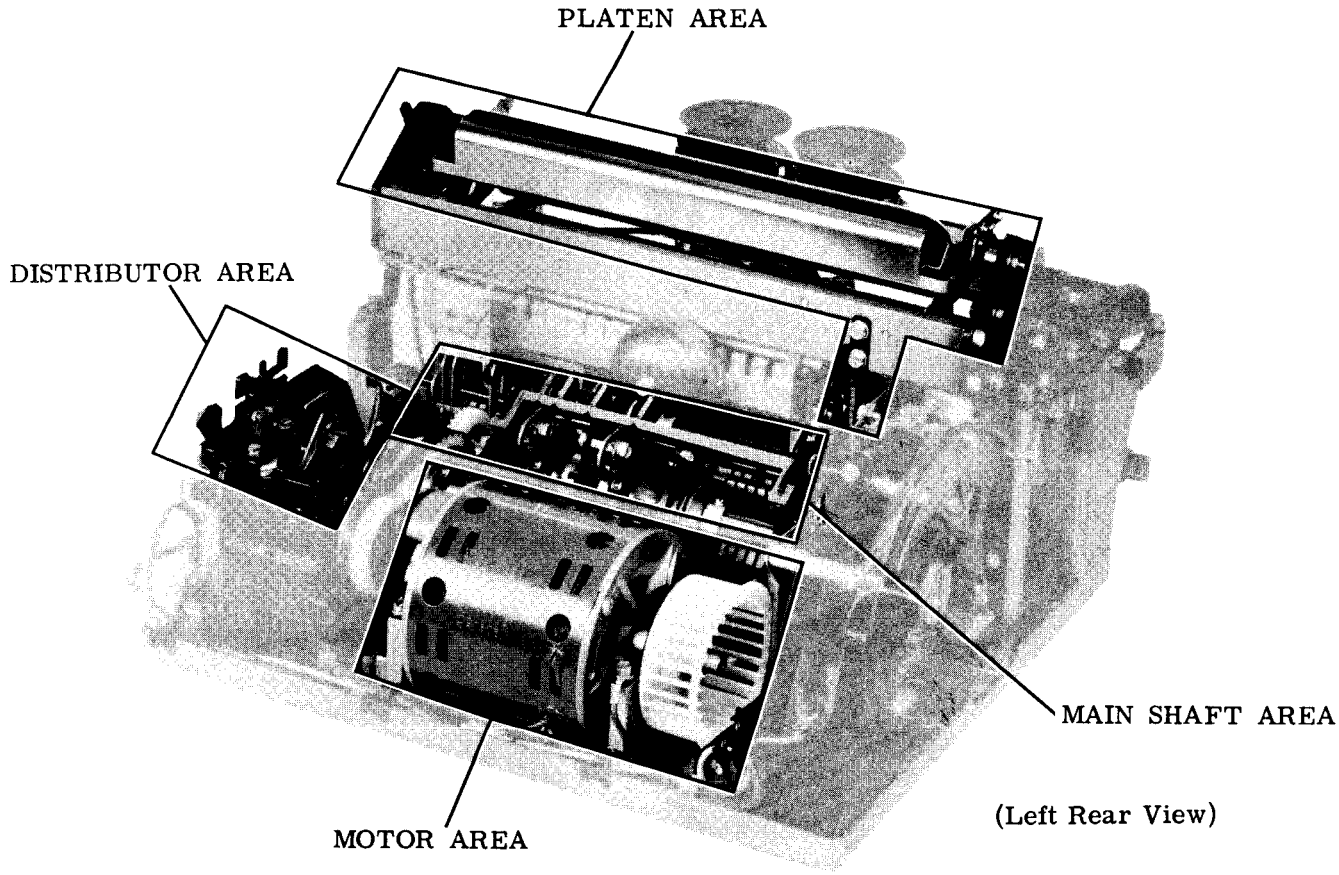


Figure 1 - Distributor, Main Shaft, Motor, and Platen Areas

1. GENERAL

1.01 This section provides adjustment information for the 33 typing unit. It is reissued to include the latest changes. Marginal arrows indicate the changes.

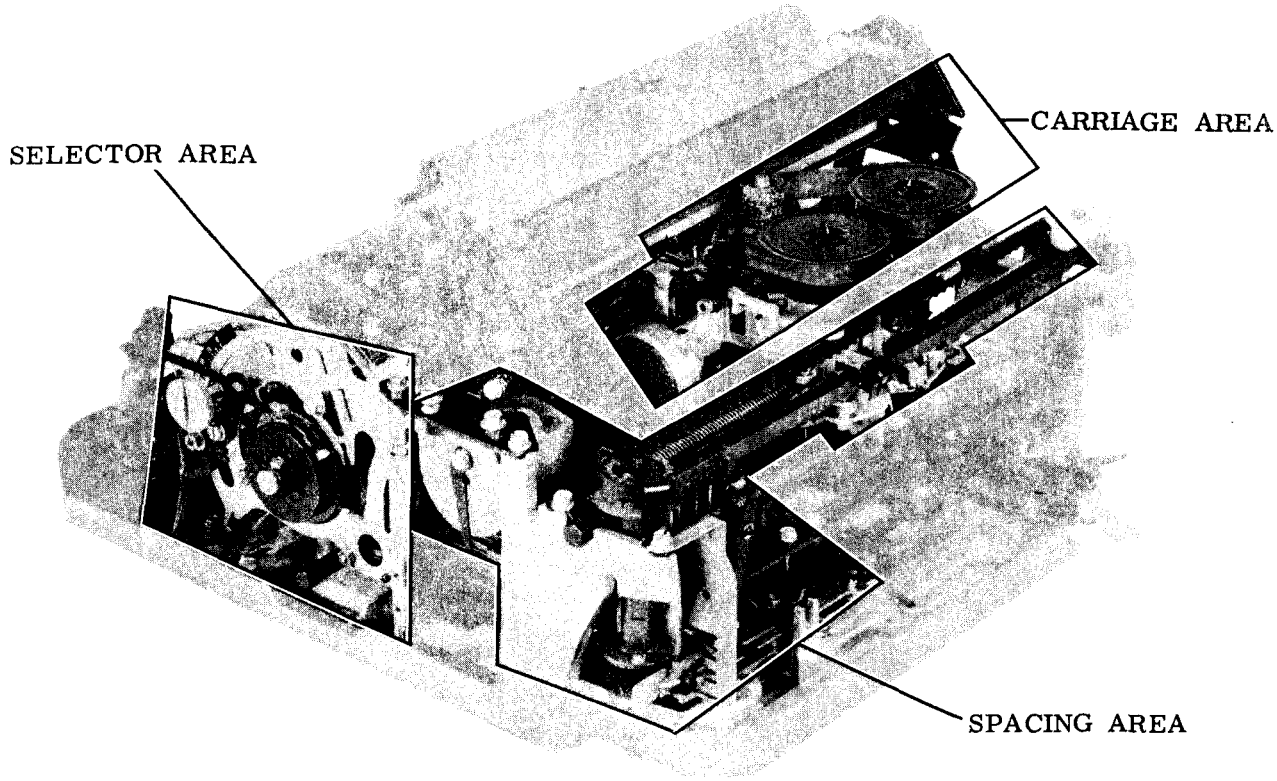
1.02 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Requirements and procedures are set forth in the several texts that accompany the line drawings. Required tools are included in TP185830 maintenance tool kit and are listed in Section 570-005-800TC. 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

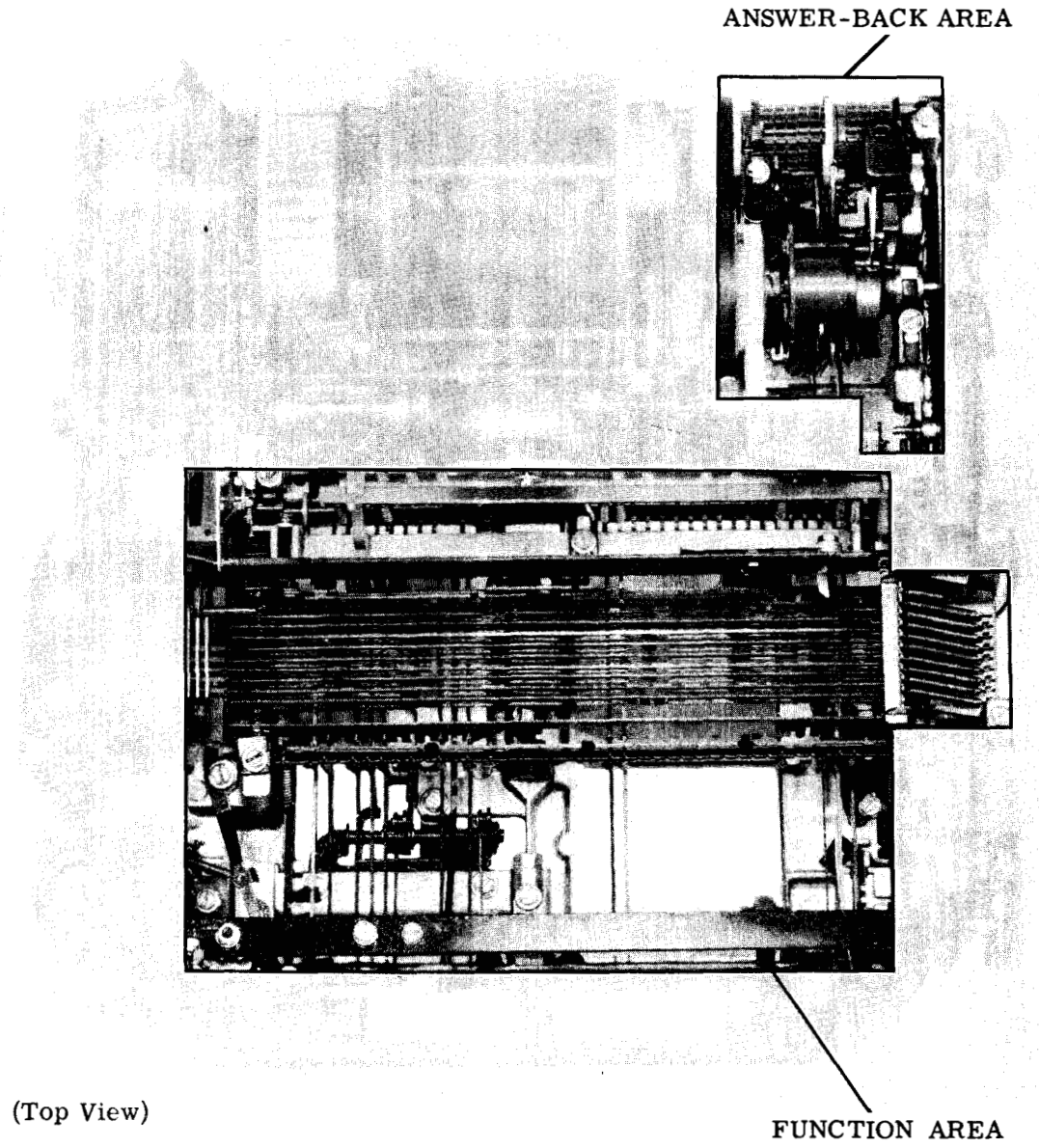


Figure 3 - Answer-Back and Function Areas

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

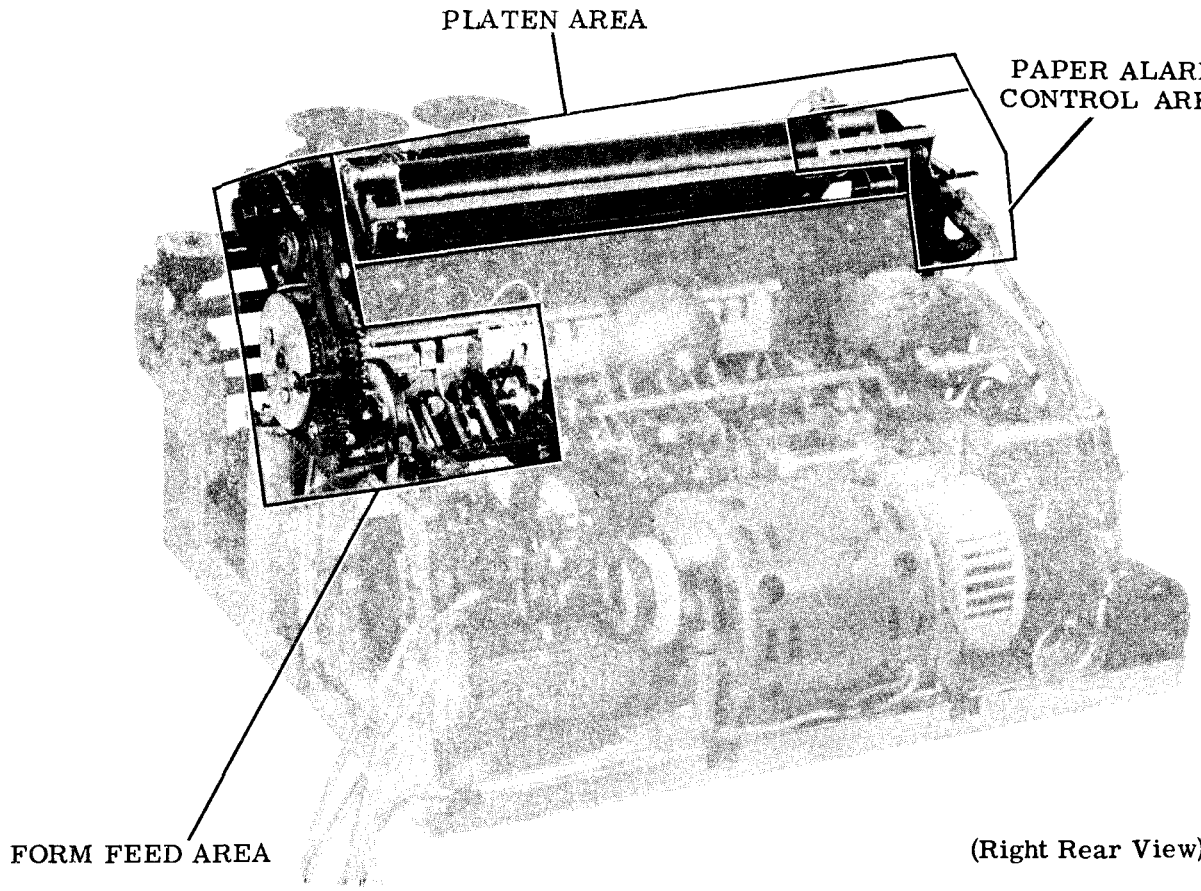


Figure 4 - Paper Alarm Control, Form Feed, and Platen Areas

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 if the typing unit is removed from a set unless the keyboard adjusting bracket is adjusted per 3.17. Adjustment must be remade to set requirements when the typing unit is replaced in an ASR or KSR set.

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.

1.13 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

1.19 To facilitate making the adjustments remove the typing unit from the subbase. For instruction, see the appropriate disassembly and reassembly section.

1.20 Carriage Drive Bail and Function Bail Positioning: The following procedures may be used to locate the carriage drive bail and the function bail positions on units having indicator marks on the function cam and carriage drive link:

(a) The carriage drive bail is in its most rearward position when the indicator mark on the carriage drive link is centrally located within the second notch on the function cam and the hole in the cam is toward the rear.

(b) The function bail is in its uppermost position when the mark on the carriage drive link is centrally located within the first notch on the function cam and the hole in the cam is down.

(c) The function bail is in its lowermost position when the mark on the carriage drive link is centrally located within the third notch on the function cam and the hole in the cam is up.

2. BASIC UNIT

2.01 Motor Area

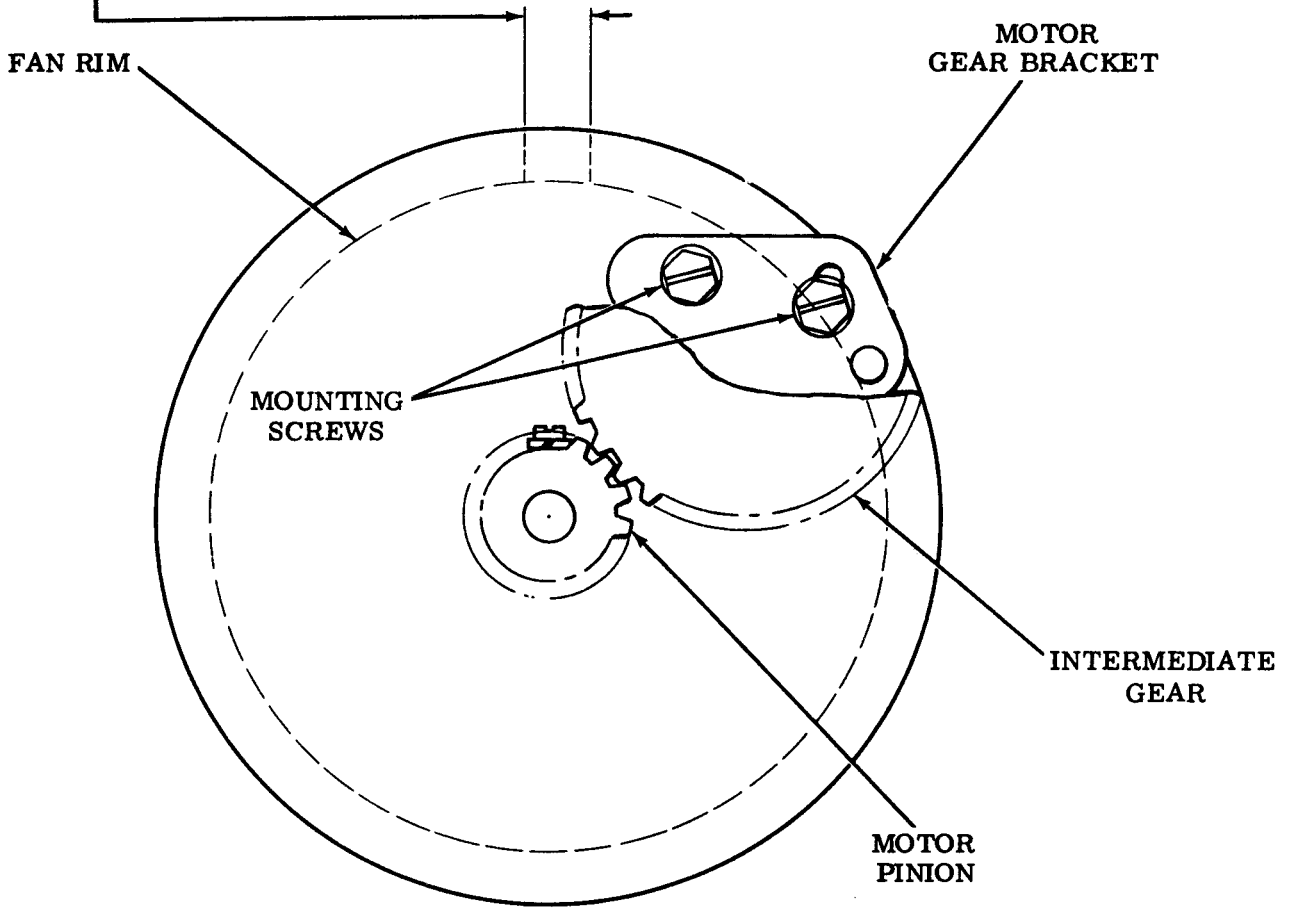
GEAR BACKLASH

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 (2.02)



(Right Side View)

2.02 Motor Area (continued)

BELT TENSION (Preliminary)

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

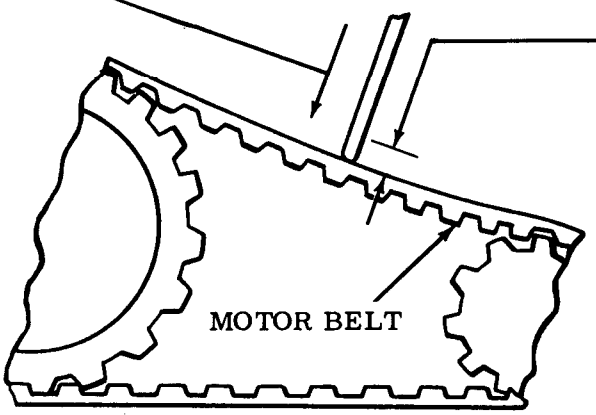
Min 0.100 inch---Max 0.135 inch deflection at center of motor belt.

To Adjust

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

Related Adjustments Affected By

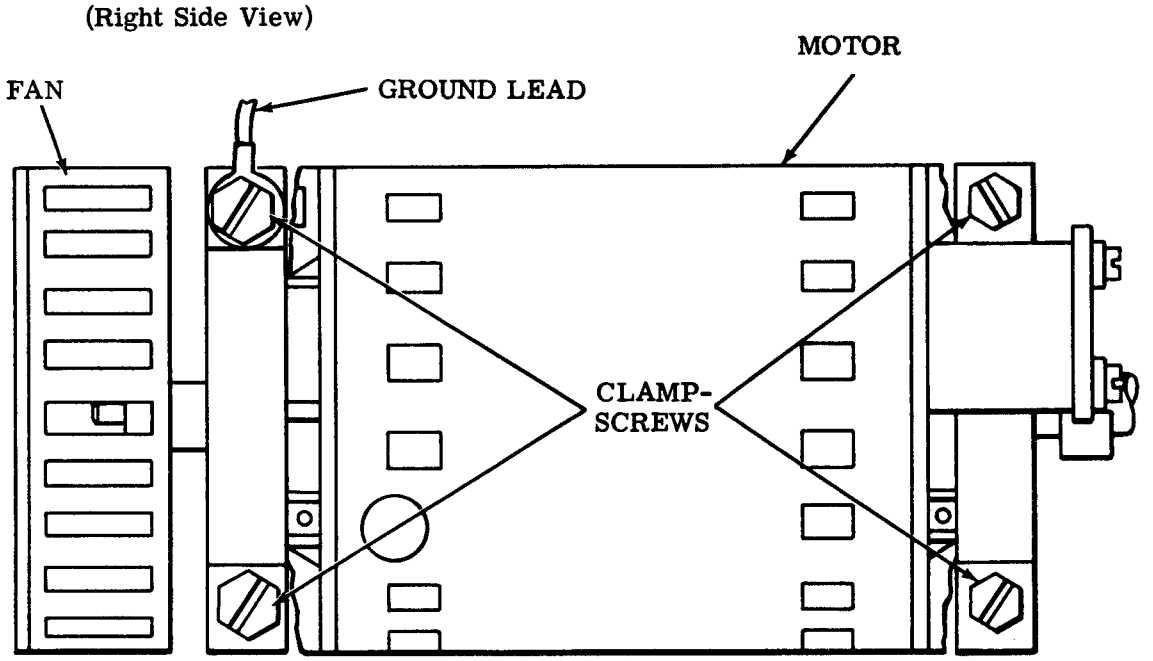
GEAR BACKLASH (2.01)



(Right Side View)

BELT TENSION (Final)

Preliminary requirements should be considered final if RECEIVING MARGIN requirements (2.124) can be obtained. If RECEIVING MARGIN requirements cannot be obtained, refine BELT TENSION (Preliminary) requirement.



(Top View)

2.03 Distributor Area

(A) BRUSH HOLDER GAP

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

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

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

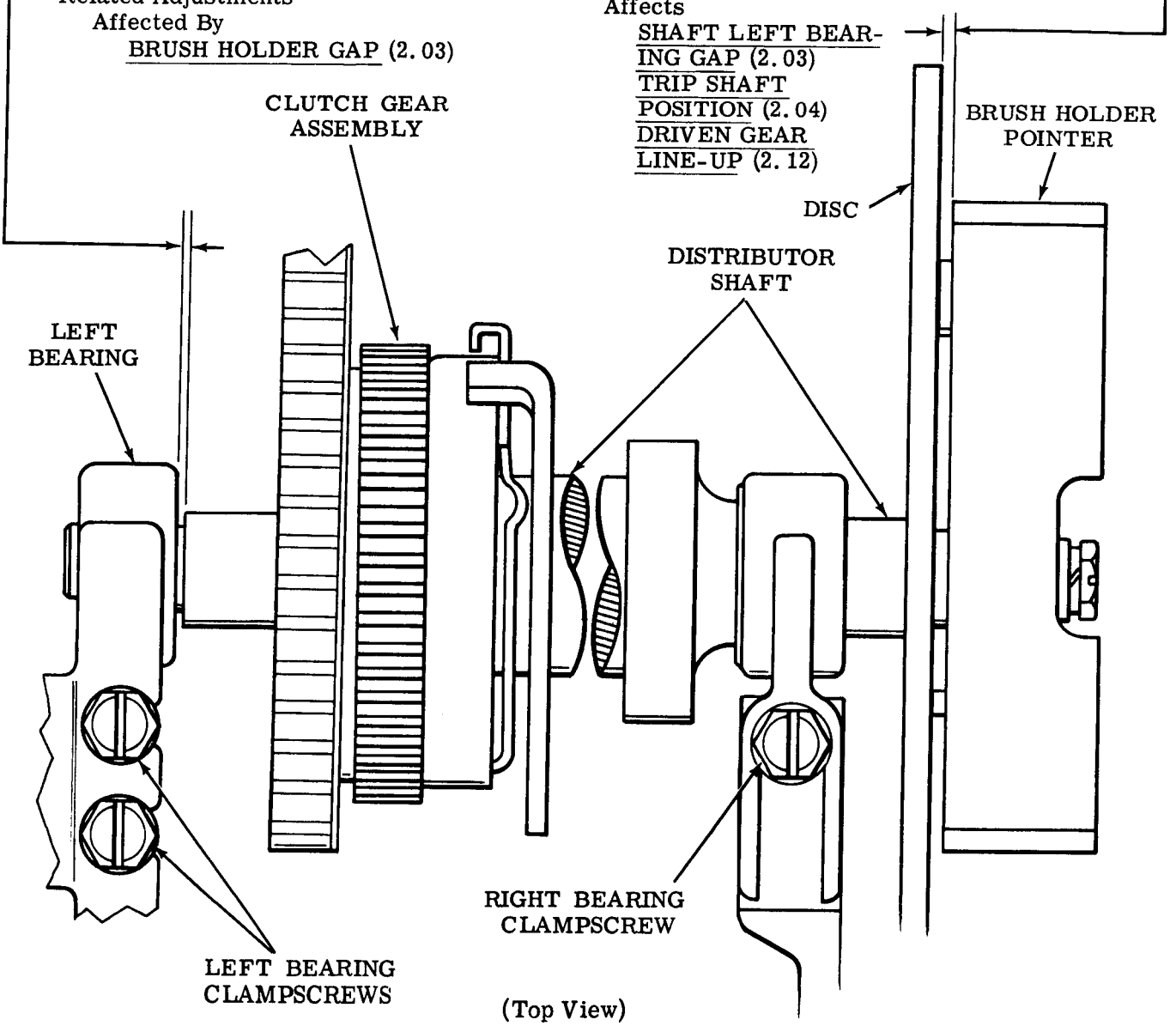
Related Adjustments
Affects
SHAFT LEFT BEARING GAP (2.03)
TRIP SHAFT POSITION (2.04)
DRIVEN GEAR LINE-UP (2.12)

(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.

Related Adjustments
Affected By
BRUSH HOLDER GAP (2.03)



(Top View)

2.04 Distributor Area (continued)

TRIP SHAFT POSITION

To Check
Place distributor clutch in the stop position.

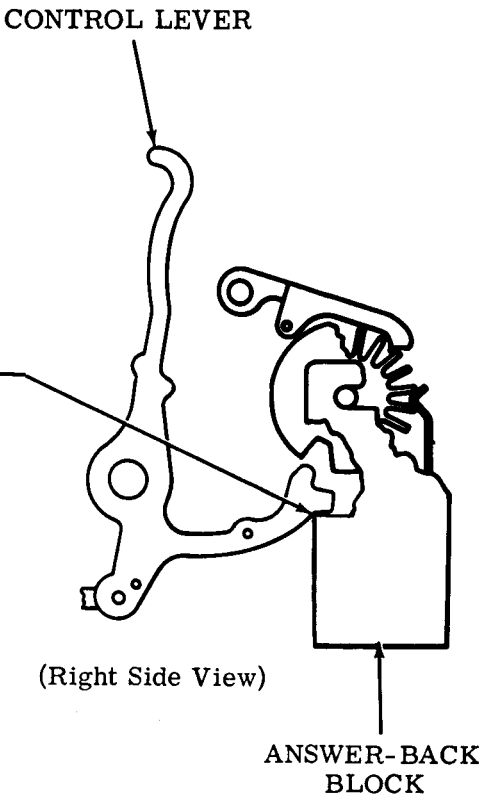
(1) Requirement
With play taken up to minimize all clearances, the trip lever should engage Min two-thirds width of formed end of shoe lever.

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

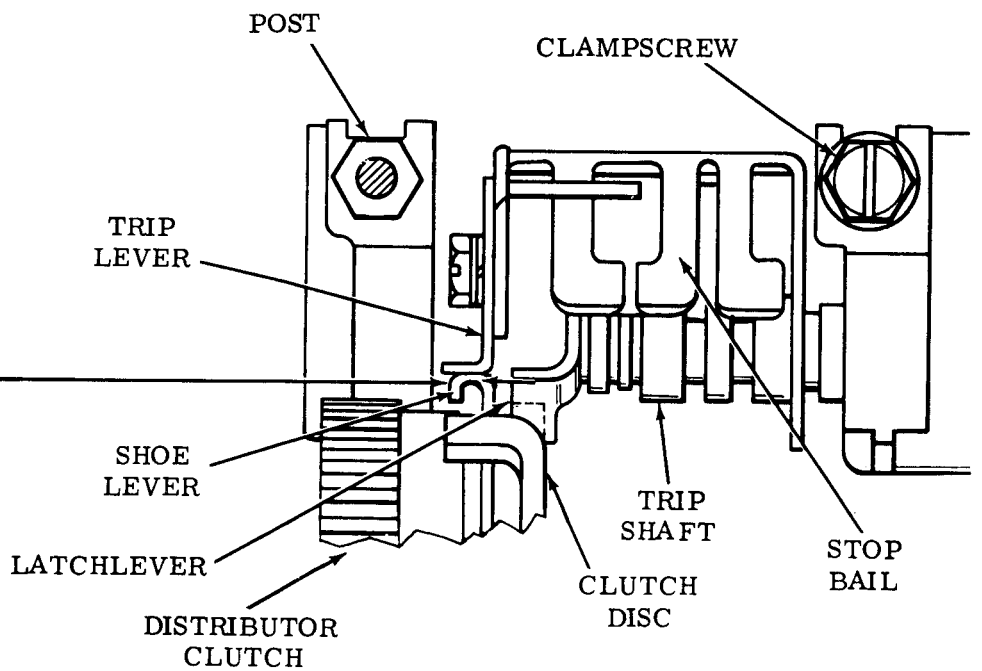
To Adjust
Loosen clampscrew and post friction tight. Move trip shaft right or left to meet requirements and bias trip shaft towards the front. Tighten clampscrew and post.

Related Adjustments
Affects
FEED PAWL POSITION (3.06)

Affected By
BRUSH HOLDER GAP (2.03)



(Right Side View)



(Top View)

2.05 Distributor Area (continued)

CLUTCH SHOE LEVER GAP

To Check

With distributor clutch disengaged and latched, 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.

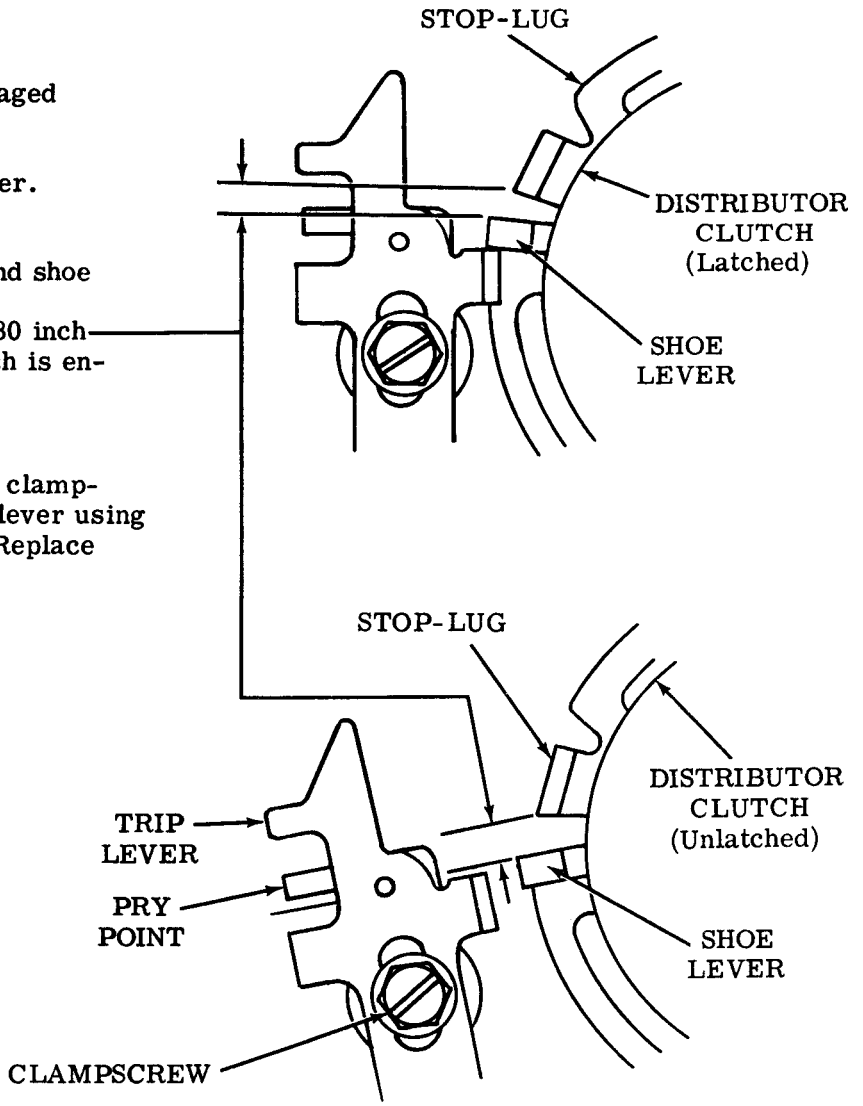
(2) Requirement

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

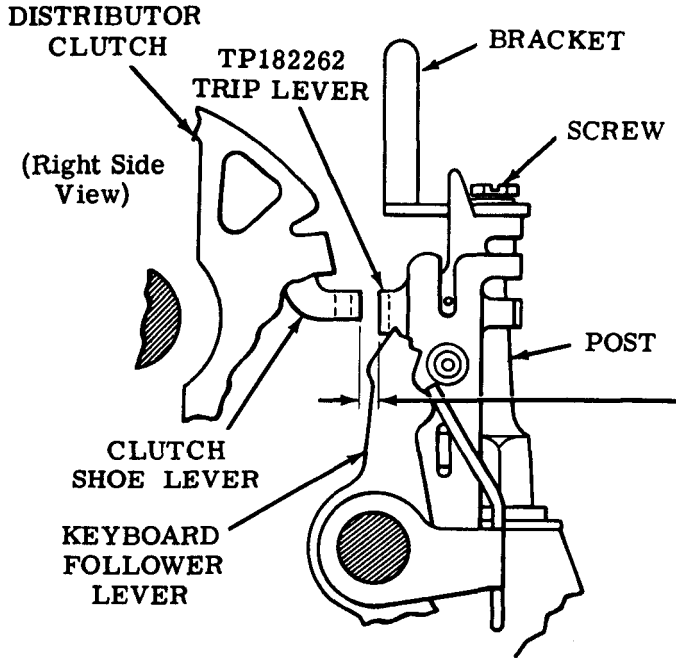
Remove answer-back drum. With clampscrew friction tight, position trip lever using pry point. Tighten clampscrew. Replace answer-back drum.

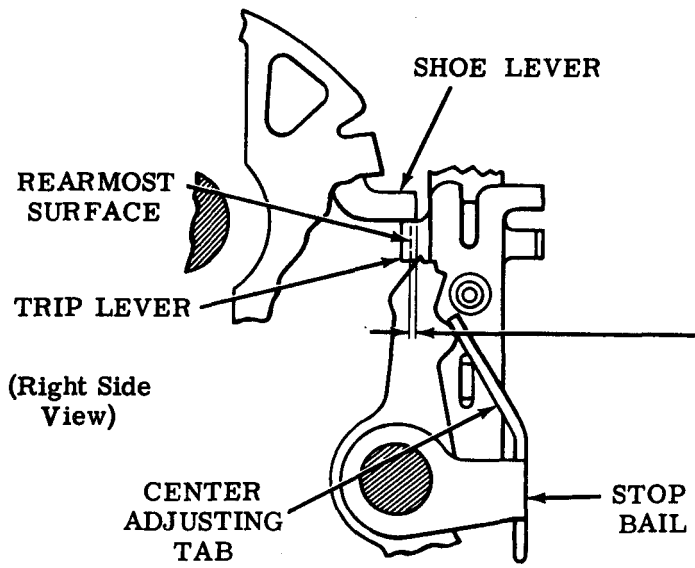


(Left Side View)

2.06 Distributor Area (continued)

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

2.07 Distributor Area (continued)

BRUSH HOLDER POSITION

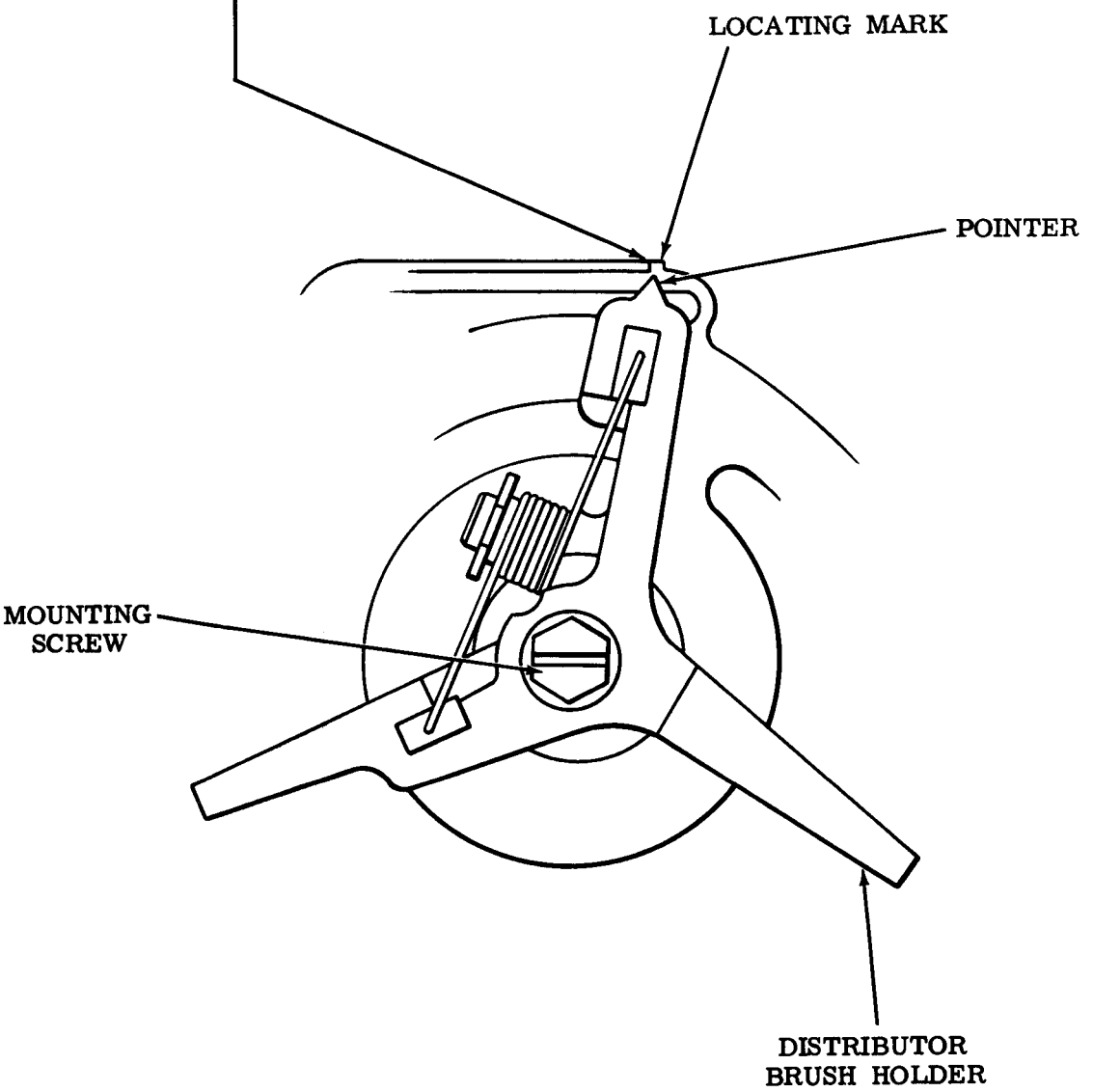
Requirement

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

To Adjust

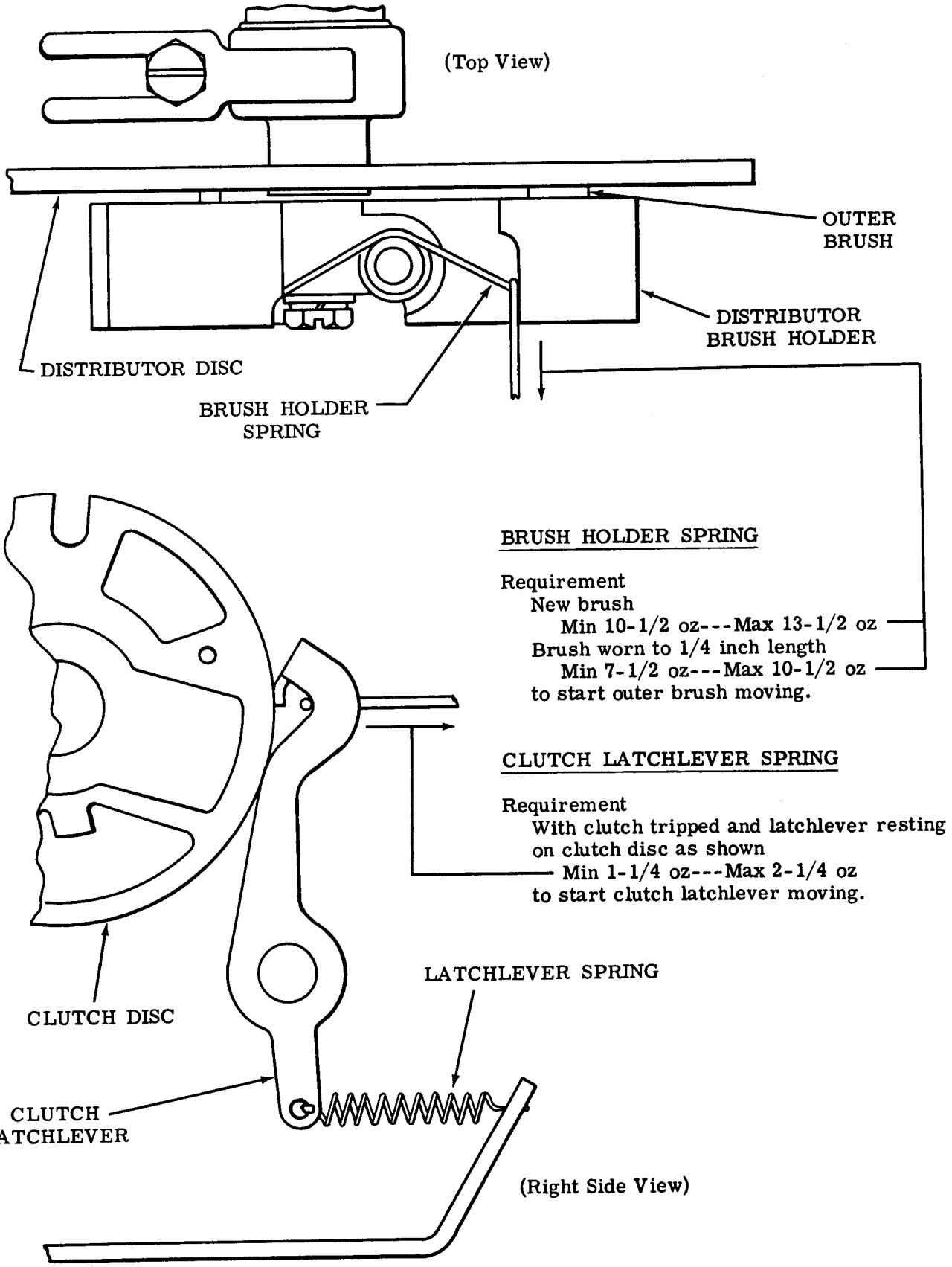
Loosen mounting screw and position distributor brush holder. Tighten mounting screw.

Note: Rotate the brush holder in a clockwise direction only.

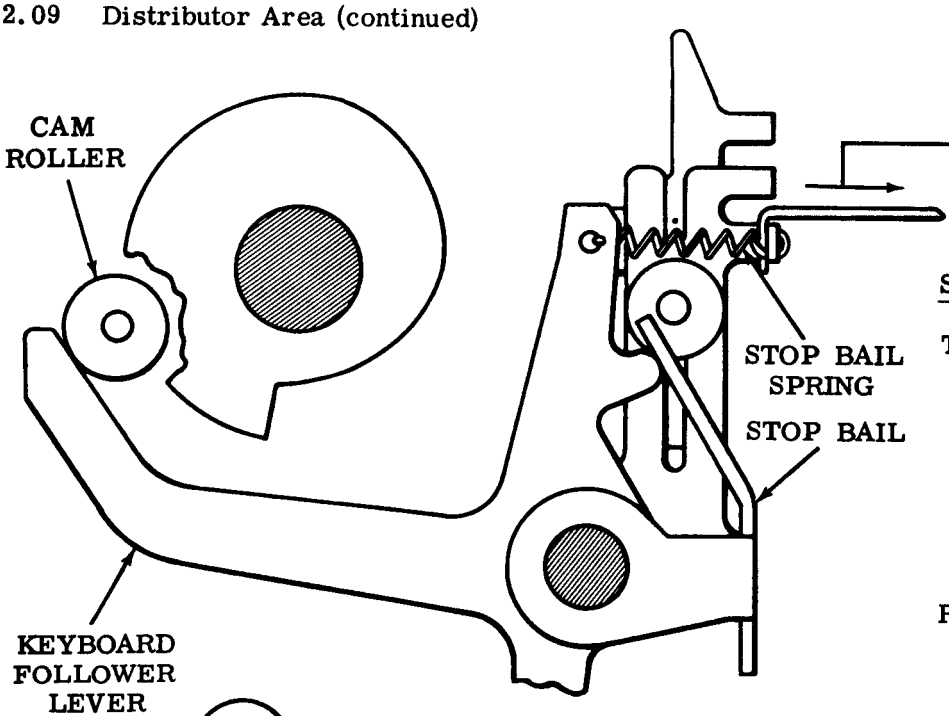


(Right Side View)

2.08 Distributor Area (continued)



2.09 Distributor Area (continued)

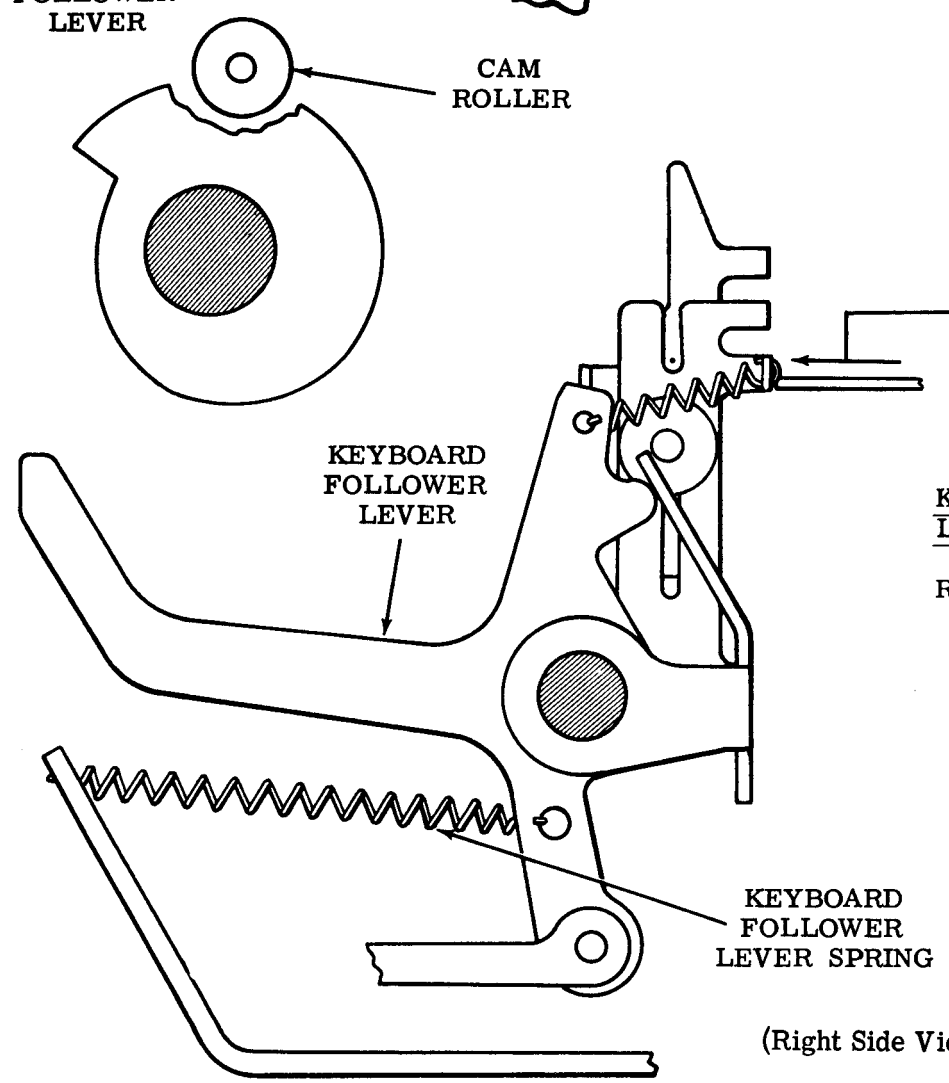


(Right Side View)

STOP BAIL SPRING

To Check
Place answer-back drum in home position. Trip distributor clutch and rotate main shaft until keyboard follower lever is moved by cam roller to its lowest point.

Requirement
Min 3 oz---Max 5 oz to start stop bail moving.



KEYBOARD FOLLOWER LEVER SPRING

Requirement
With H-plate removed and keyboard follower lever not in contact with cam roller
Min 2 oz---Max 3 oz to start keyboard follower lever moving.

(Right Side View)

2.10 Main Shaft Area

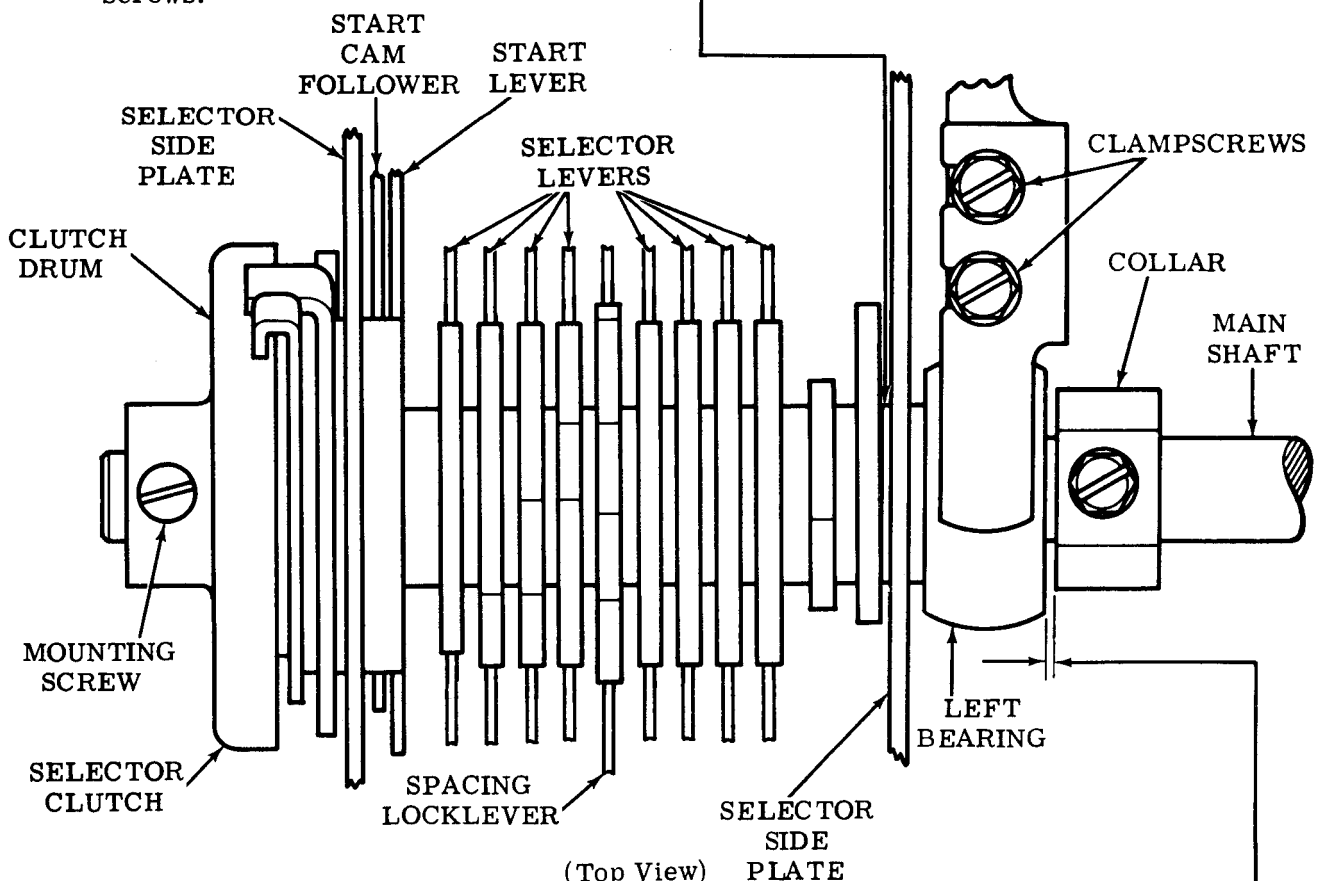
Note: If a complete readjustment of the typing unit is to be performed, loosen all screws on main shaft except collar screw immediately to the right of the left main shaft bearing.

(A) LEFT BEARING POSITION

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.

Related Adjustments
Affects
FUNCTION SHAFT AND CASTING POSITION (2.40)
DRIVEN GEAR LINE-UP (2.12)
CODEBAR CLUTCH TRIP LEVER LINE-UP (2.13)



(Top View)

(B) SELECTOR CAM ENDPLAY

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

Requirement
Min some---Max 0.015 inch endplay between left bearing and collar.

To Adjust
With the selector clutch drum mounting screw friction tight, position the clutch drum. Tighten mounting screw.

Related Adjustments
Affects
DRIVEN GEAR LINE-UP (2.12)
CODEBAR CLUTCH TRIP LEVER LINE-UP (2.13)

2.11 Main Shaft Area (continued)

Note: Adjustment (A) is to be done only when completely readjusting the typing unit.

(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
Loosen collar clampscrew and position function clutch to meet requirement. Tighten clampscrew.

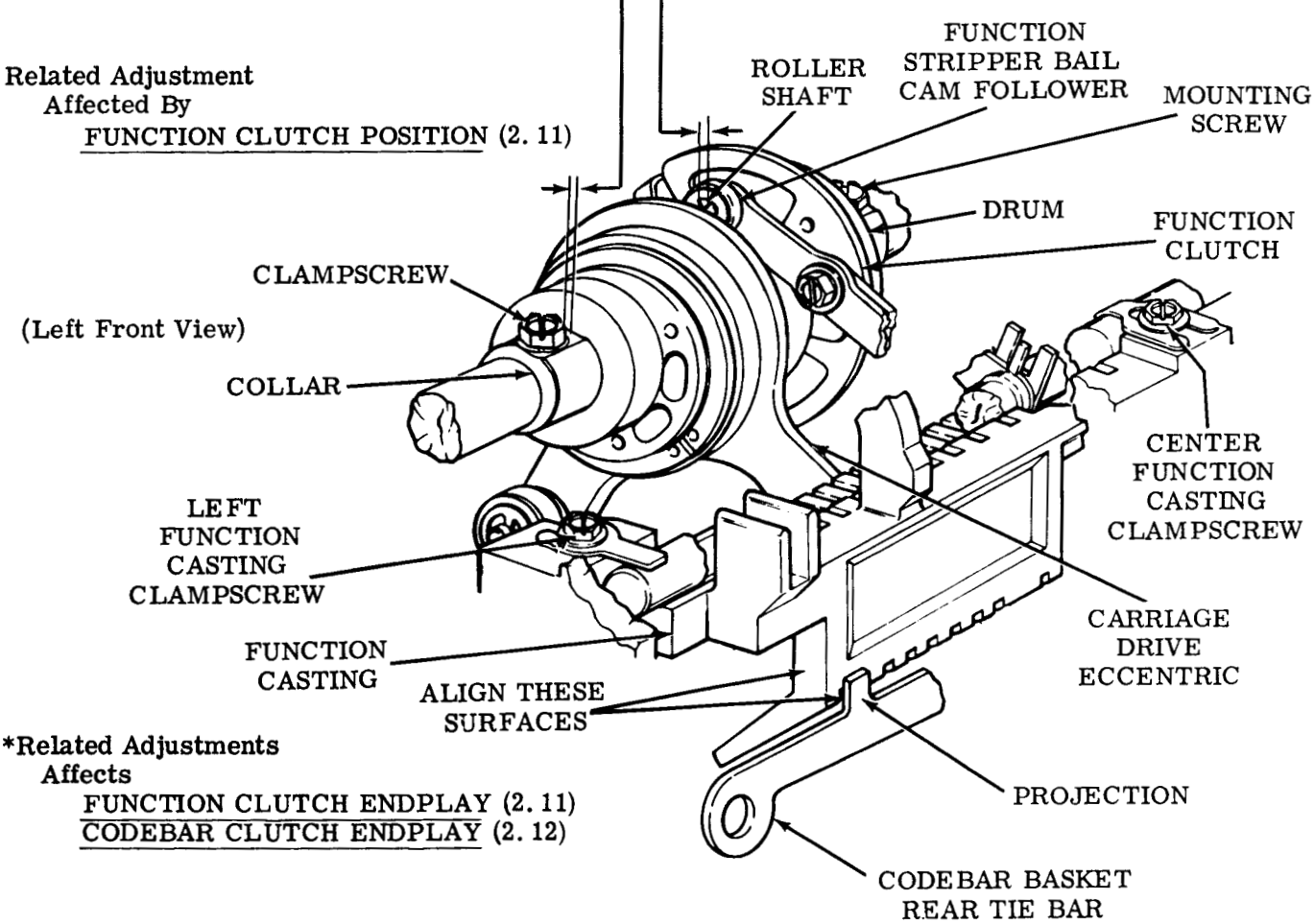
Related Adjustment
Affected By
FUNCTION CLUTCH POSITION (2.11)

(A) FUNCTION CLUTCH POSITION (Preliminary)

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 the left and right function casting clampscrews (do not loosen the center clampscrew) friction tight and align the left side of lower portion of function casting with left side of lower projection of codebar basket rear tie bar by moving function casting.
Loosen drum mounting screw and position function clutch to meet requirement. Tighten drum mounting screw.*



*Related Adjustments
Affects
FUNCTION CLUTCH ENDPLAY (2.11)
CODEBAR CLUTCH ENDPLAY (2.12)

2.12 Main Shaft Area (continued)

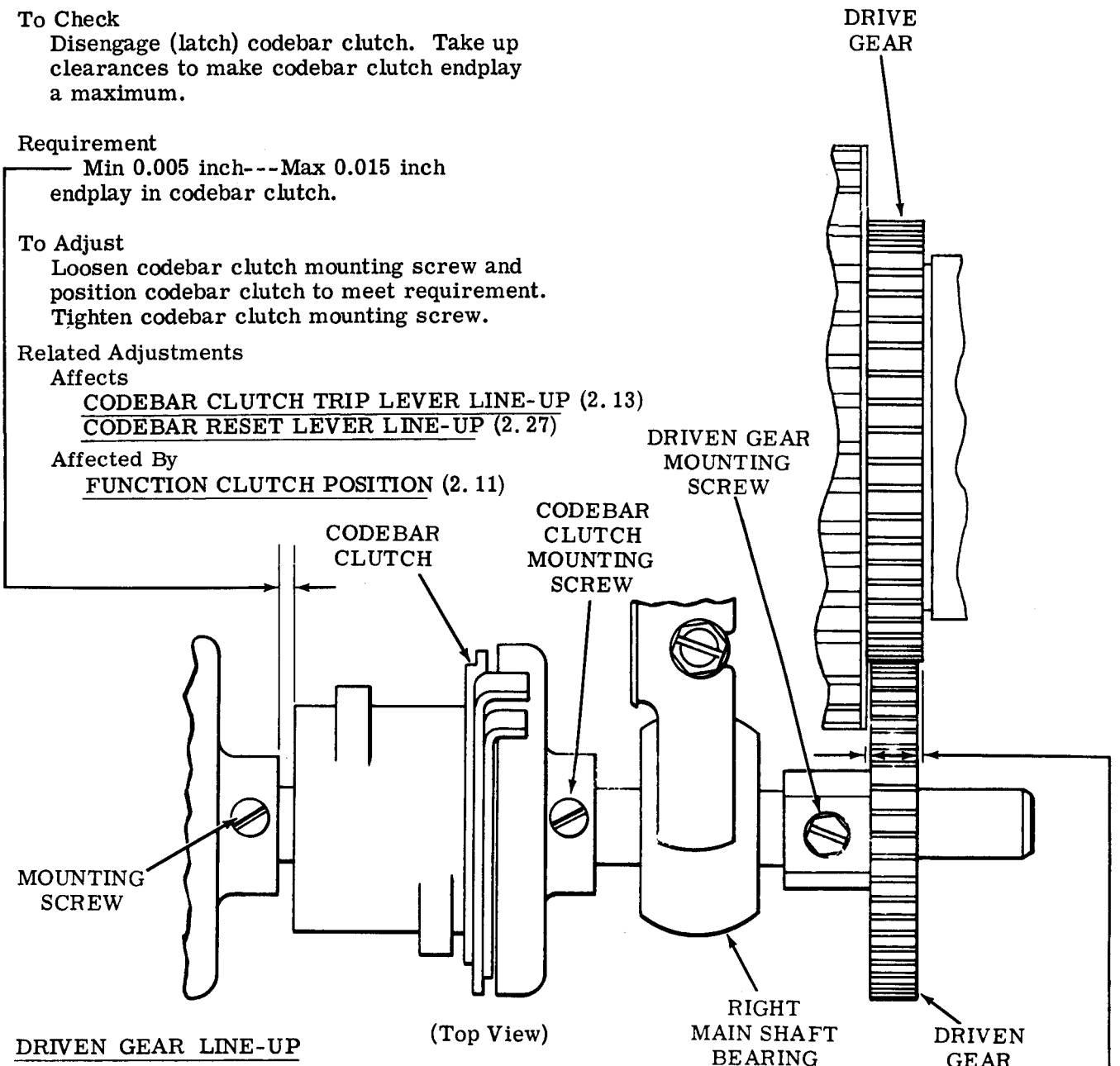
CODEBAR CLUTCH ENDPLAY

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 Adjustments
Affects
CODEBAR CLUTCH TRIP LEVER LINE-UP (2.13)
CODEBAR RESET LEVER LINE-UP (2.27)
Affected By
FUNCTION CLUTCH POSITION (2.11)



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.

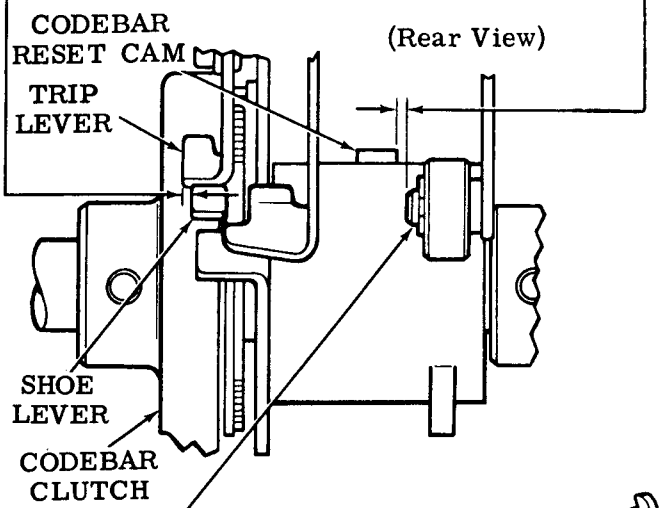
Related Adjustments
Affected By
LEFT BEARING POSITION (2.10)
BRUSH HOLDER GAP (2.03)
SELECTOR CAM ENDPLAY (2.10)

2.13 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.

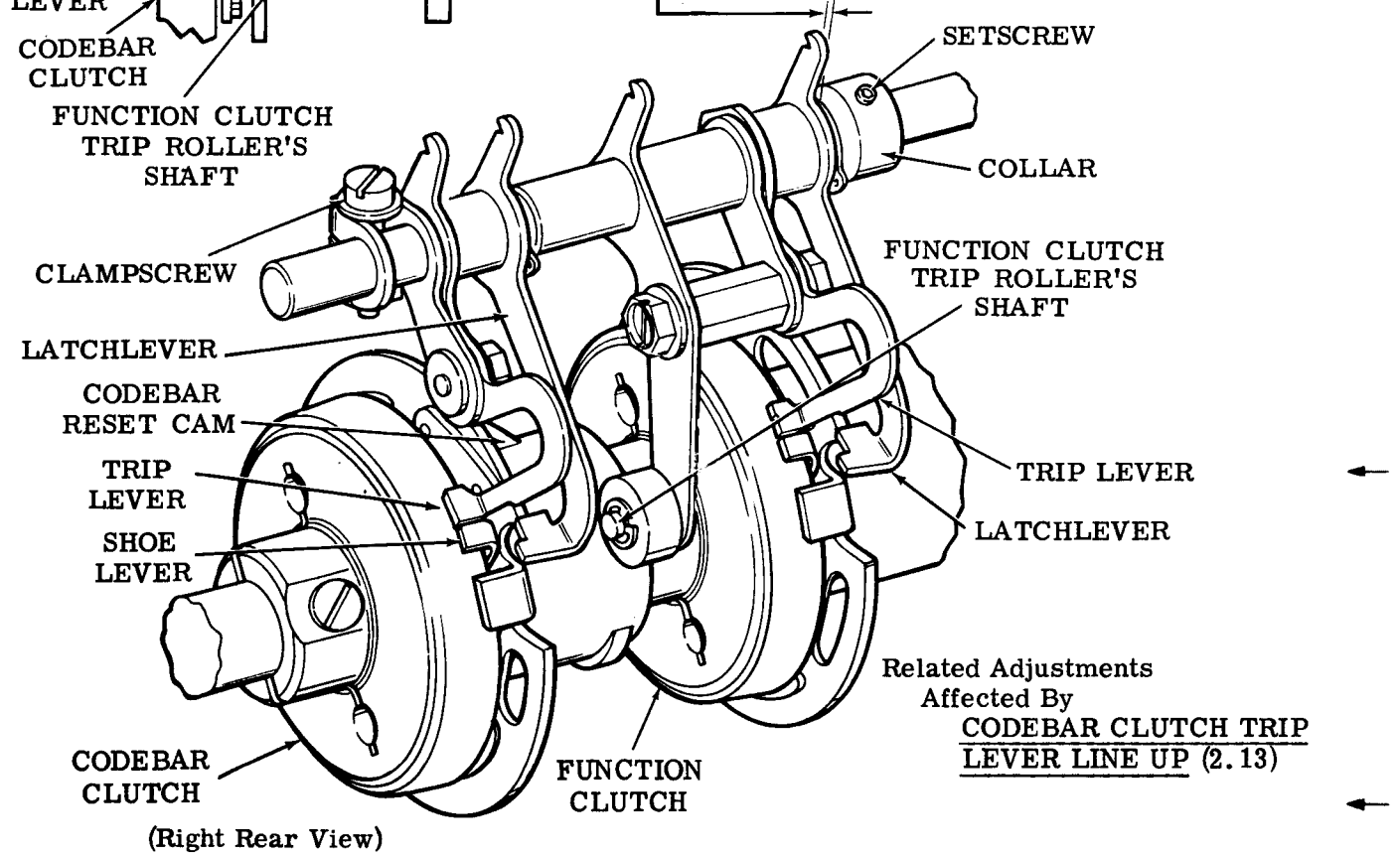
Related Adjustments
Affects
TRIP SHAFT LATCHLEVER ENDPLAY (2.13)
CODEBAR CLUTCH TRIP LEVER ENGAGEMENT (2.14)

Affected By
LEFT BEARING POSITION (2.10)
SELECTOR CAM ENDPLAY (2.10)
CODEBAR CLUTCH ENDPLAY (2.12)

TRIP SHAFT LATCHLEVER ENDPLAY

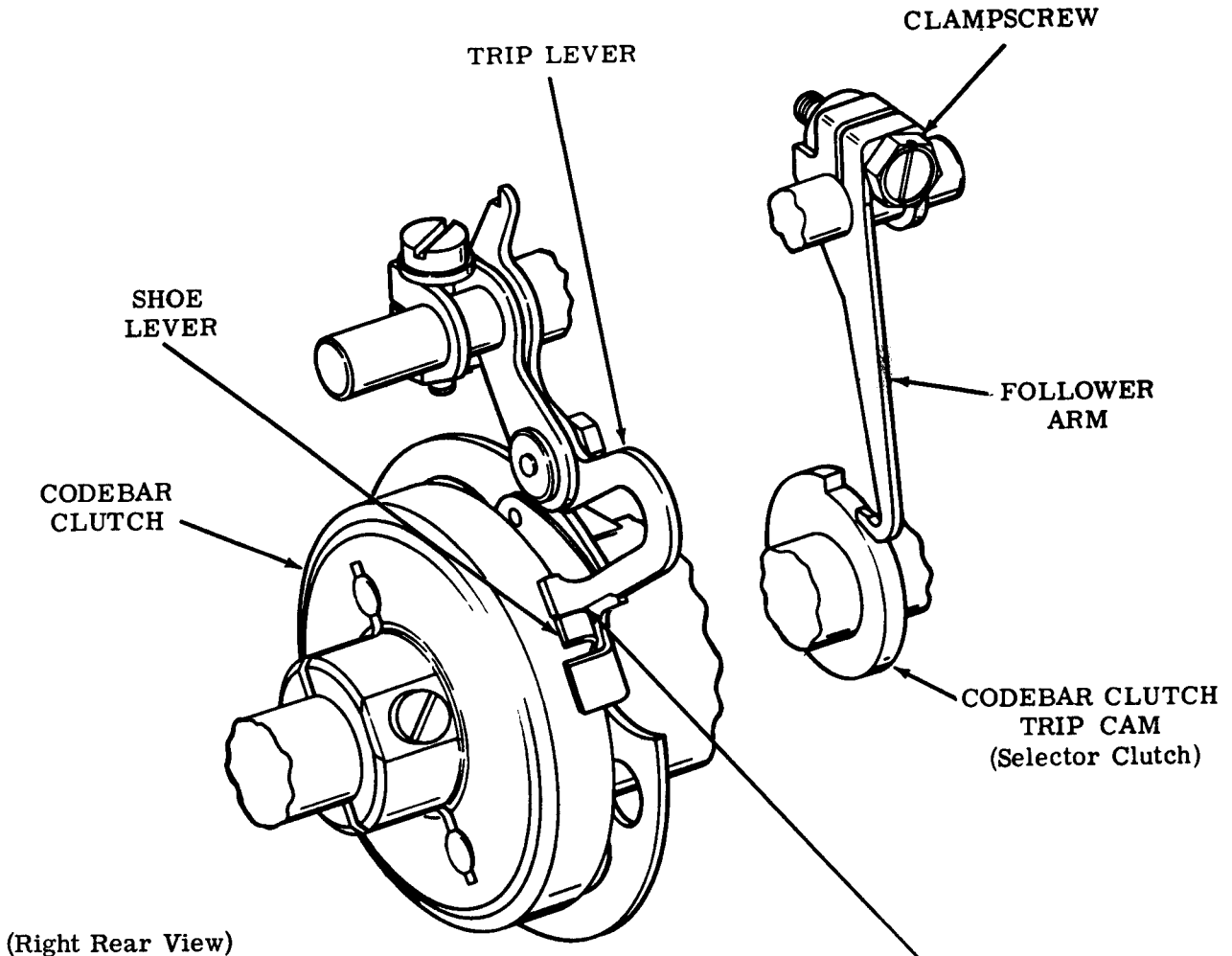
Requirement
Min some---Max 0.012 inch endplay in latchlevers, as gauged by eye.

To Adjust
Loosen setscrew and position collar. Tighten setscrew. On units with TP186731 compression ring, compress ring tabs and position ring. Clearance to be measured between function clutch latchlever and trip lever.



Related Adjustments
Affected By
CODEBAR CLUTCH TRIP LEVER LINE UP (2.13)

2.14 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.

Related Adjustments

Affected By

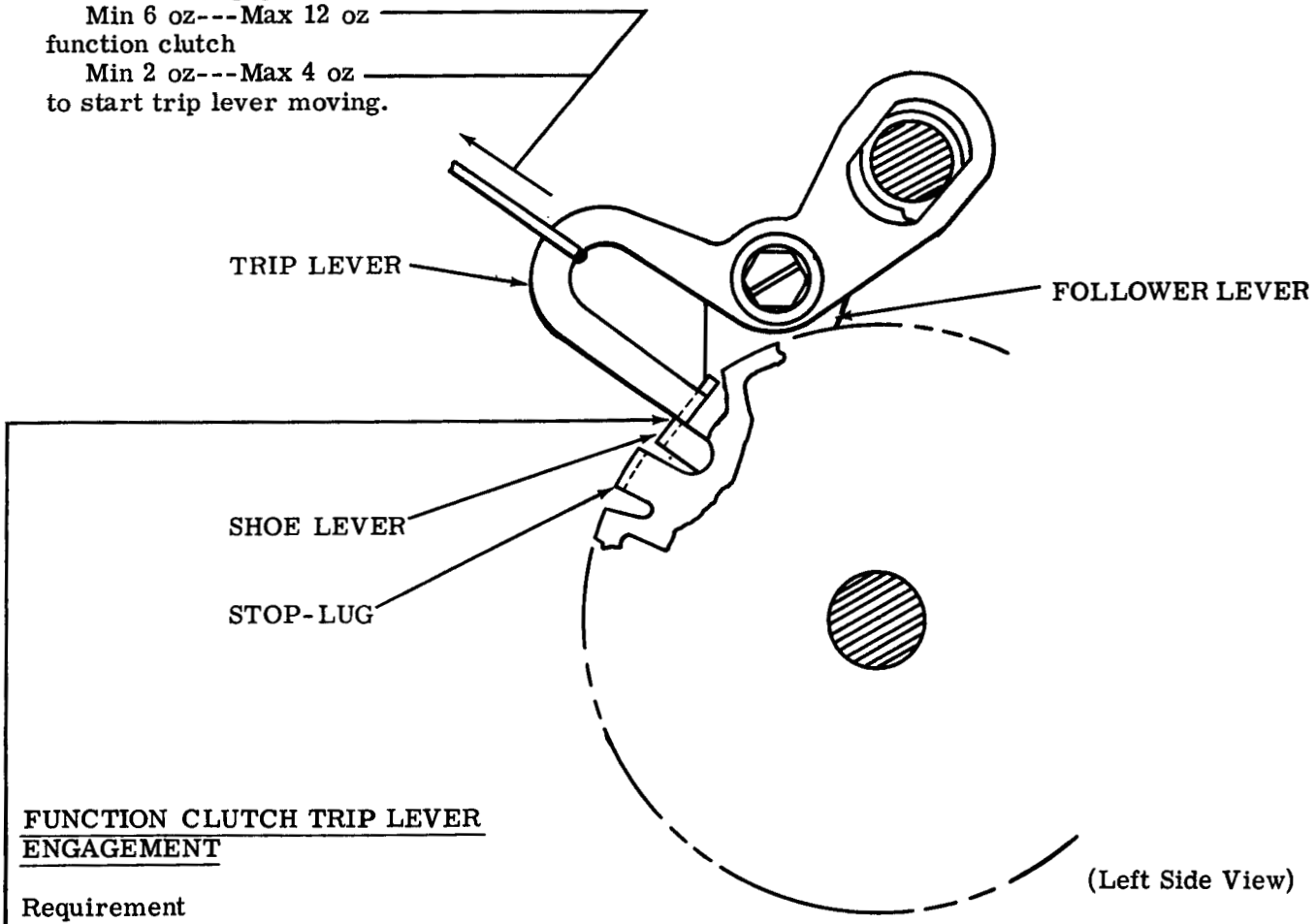
CODEBAR CLUTCH TRIP LEVER LINE-UP (2.13)

2.15 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.

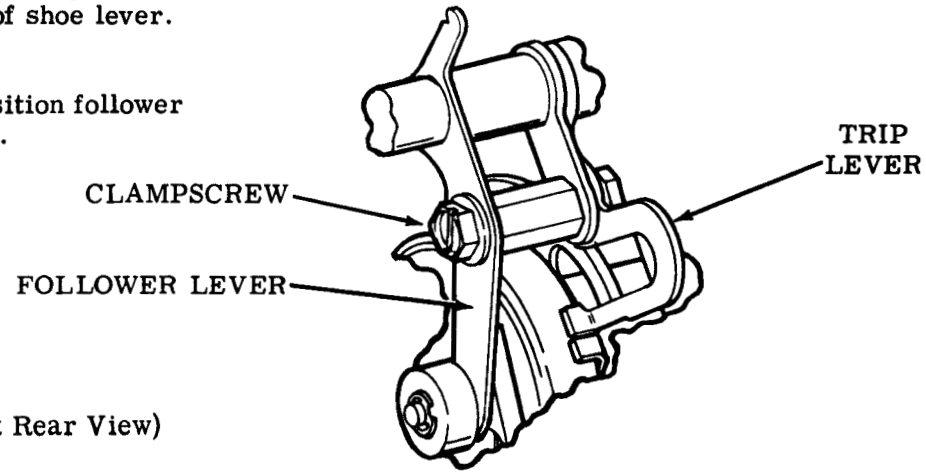


(Left Side View)

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)

2.16 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.

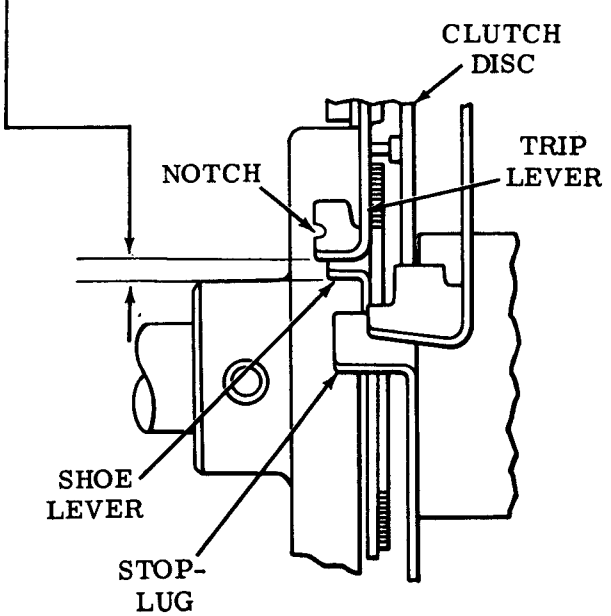
Requirement
Min 0.055 inch---Max 0.085 inch between edge of trip lever and edge of shoe lever.

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.

(2) To Check
Disengage (latch) clutch.

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

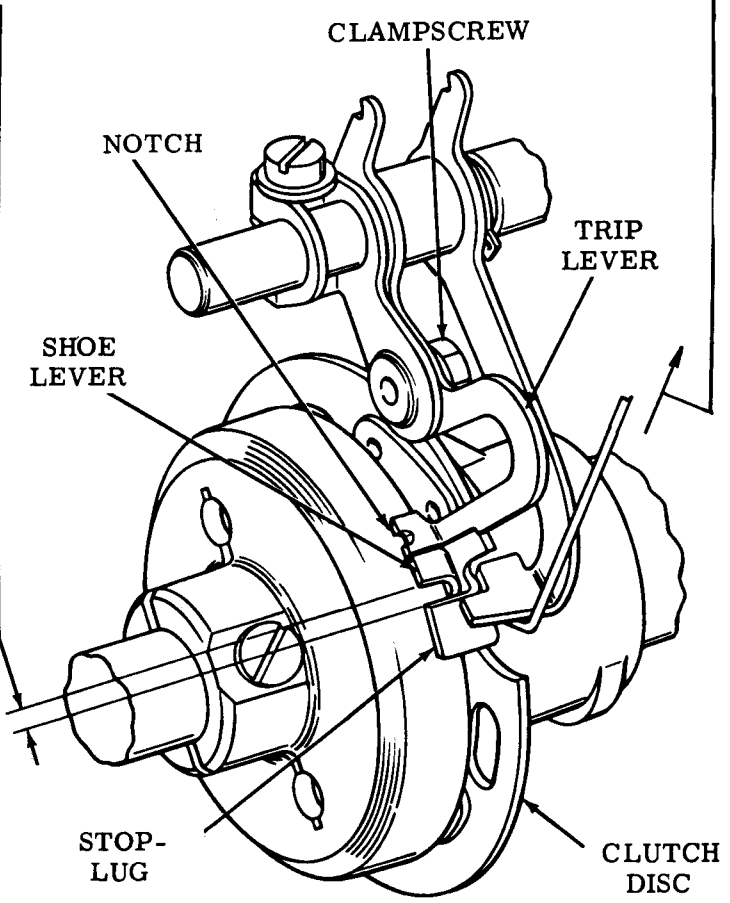
To Adjust
Loosen clampscrew. Lengthen or shorten trip lever clearance to meet requirement. Tighten clampscrew.



(Rear View)

CODEBAR AND FUNCTION CLUTCH LATCHLEVER SPRINGS

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



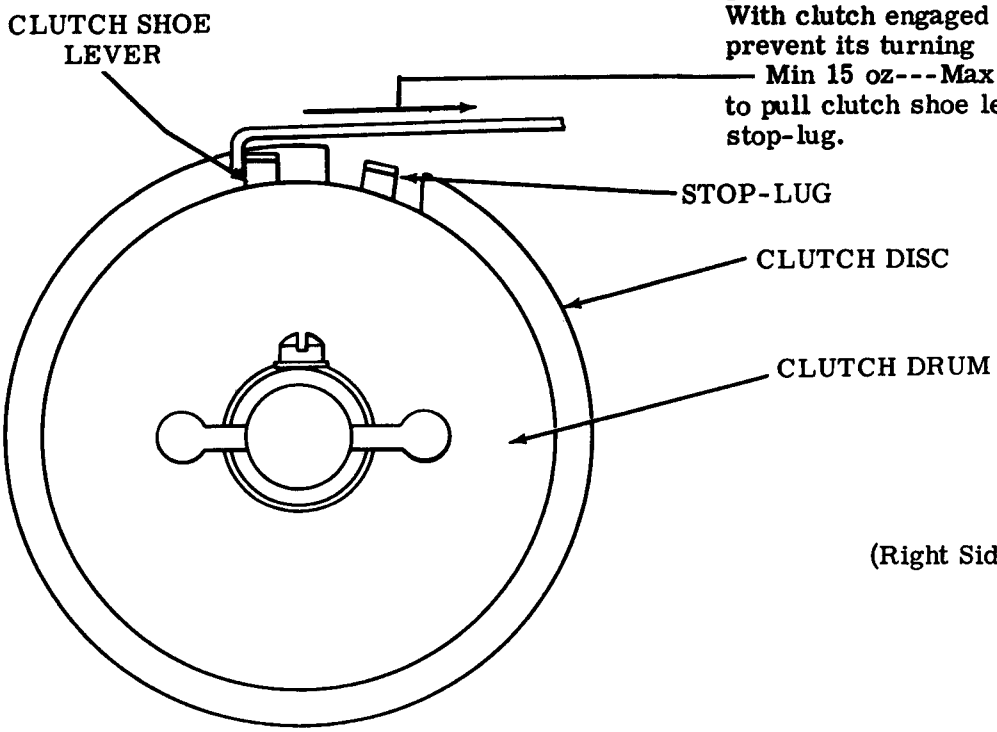
(Right Rear View)

2.17 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.



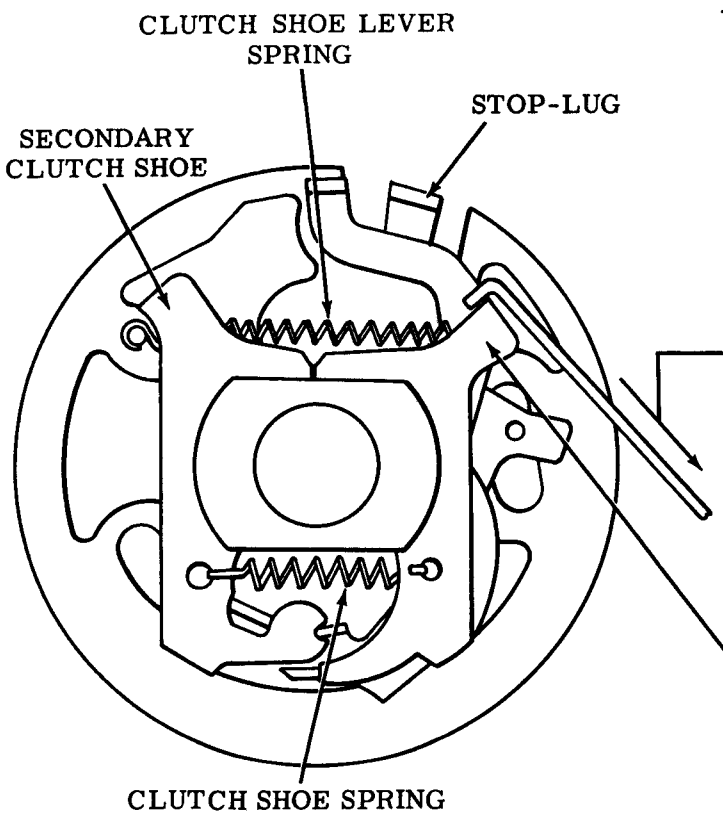
(Right Side View)

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.

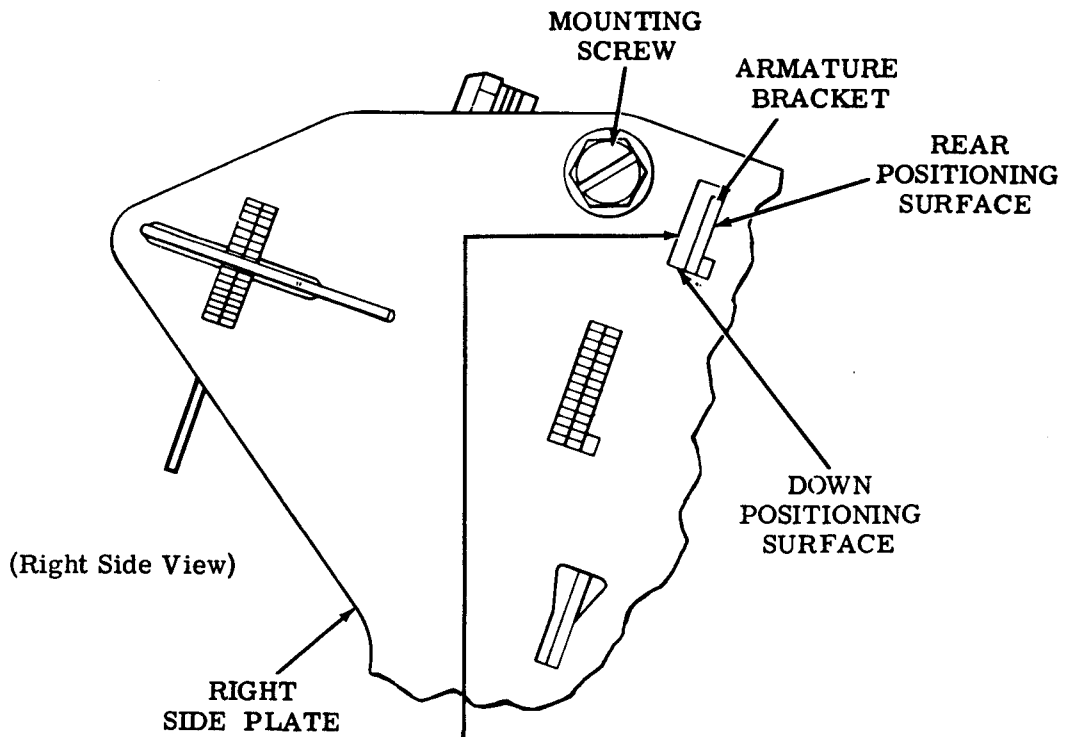
To Check
Remove clutch drum.

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



(Left Side View)

2.18 Selector Area



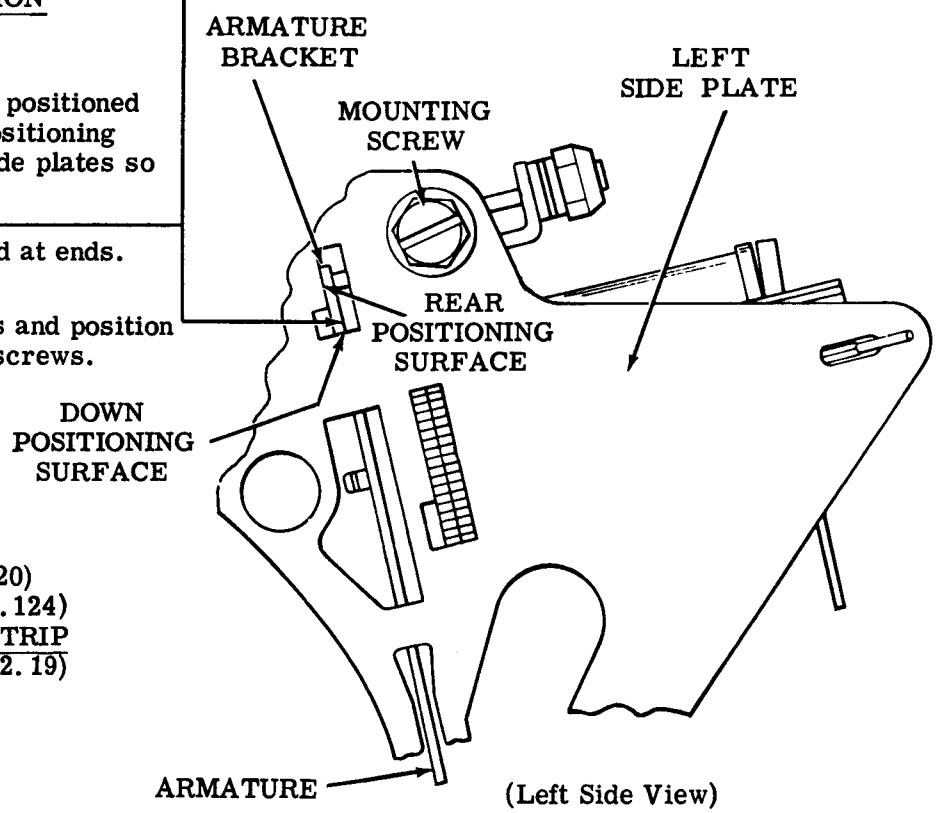
ARMATURE BRACKET POSITION
(Preliminary)

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.

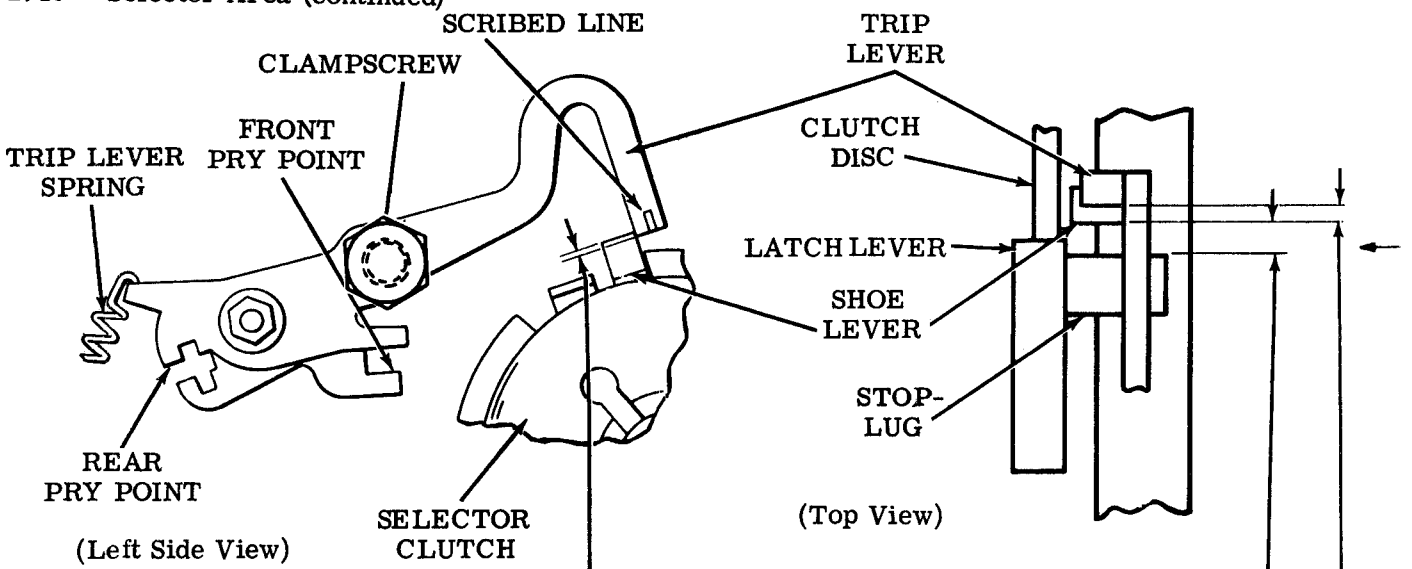


Related Adjustments

Affects

ARMATURE SPRING (2.20)
RECEIVING MARGINS (2.124)
SHOE LEVER GAP AND TRIP LEVER ENGAGEMENT (2.19)

2.19 Selector Area (continued)



TRIP LEVER SPRING

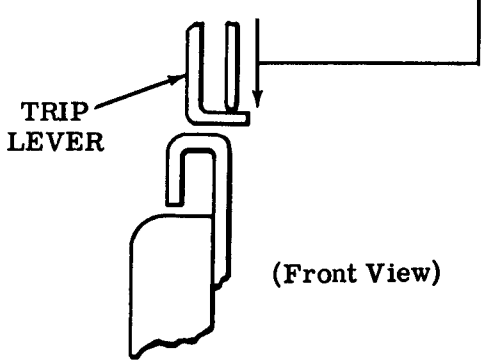
Requirement

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.



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.

SHOE LEVER GAP AND TRIP LEVER ENGAGEMENT

(1) To Check

Set up an all-spacing code in selector. Manually latch selector clutch by rotating clutch disc counter clockwise. Trip selector clutch. Apply slight pressure on trip lever to fully seat clutch shoes.

Requirement

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

(2) To Check

Manually seat selector clutch by rotating clutch disc counterclockwise against latchlever.

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 Adjustments

Affects

RECEIVING MARGINS (2.124)

Affected By

ARMATURE BRACKET POSITION (2.18)

2.20 Selector Area (continued)

ARMATURE SPRING

Note: This is a preliminary adjustment. It should not be considered final until RECEIVING MARGINS (2.124) adjustment is completed, and, as finally adjusted, it could fall outside limits specified below.

To Check

Place typing unit in stop condition and move carriage near right margin. Remove armature clip. Rotate selector clutch until start lever, selector levers, and spacing locklever do not contact 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.

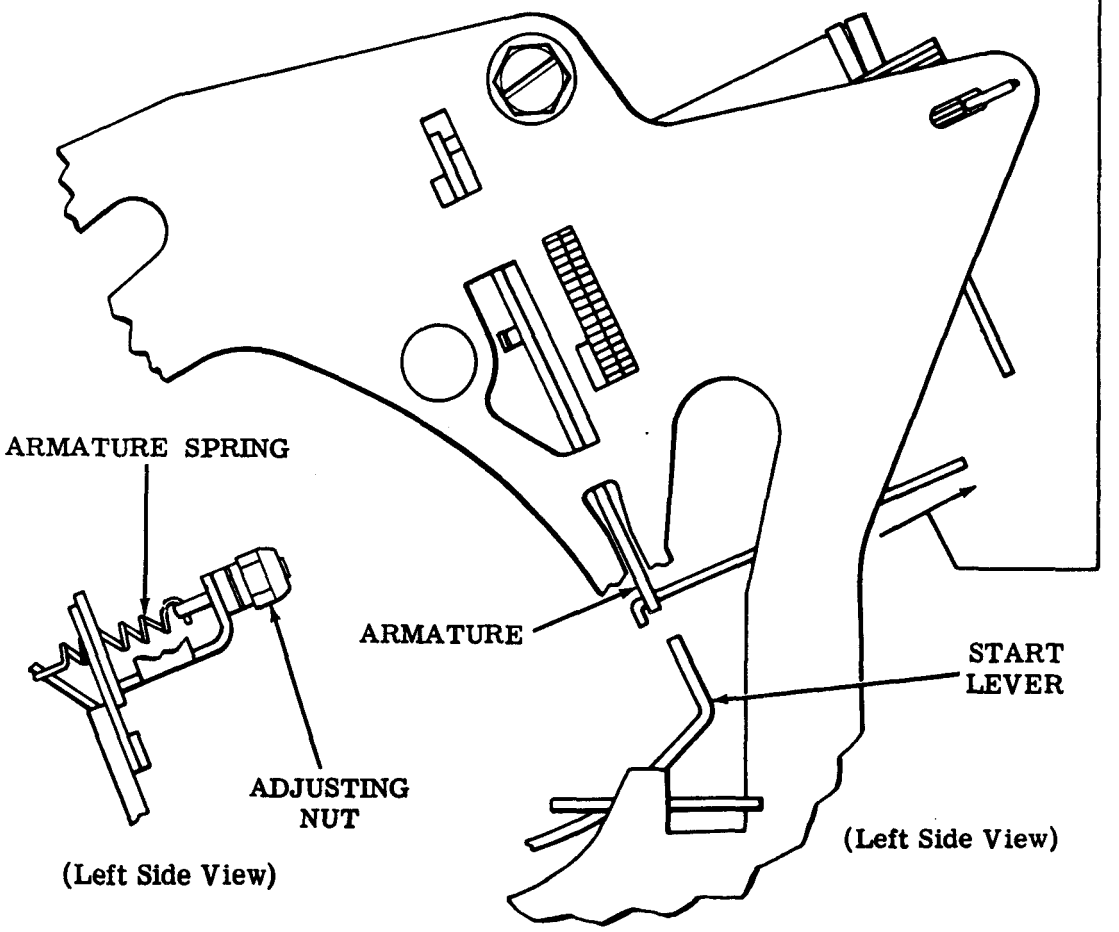
Related Adjustments

Affects

RECEIVING MARGINS (2.124)

Affected By

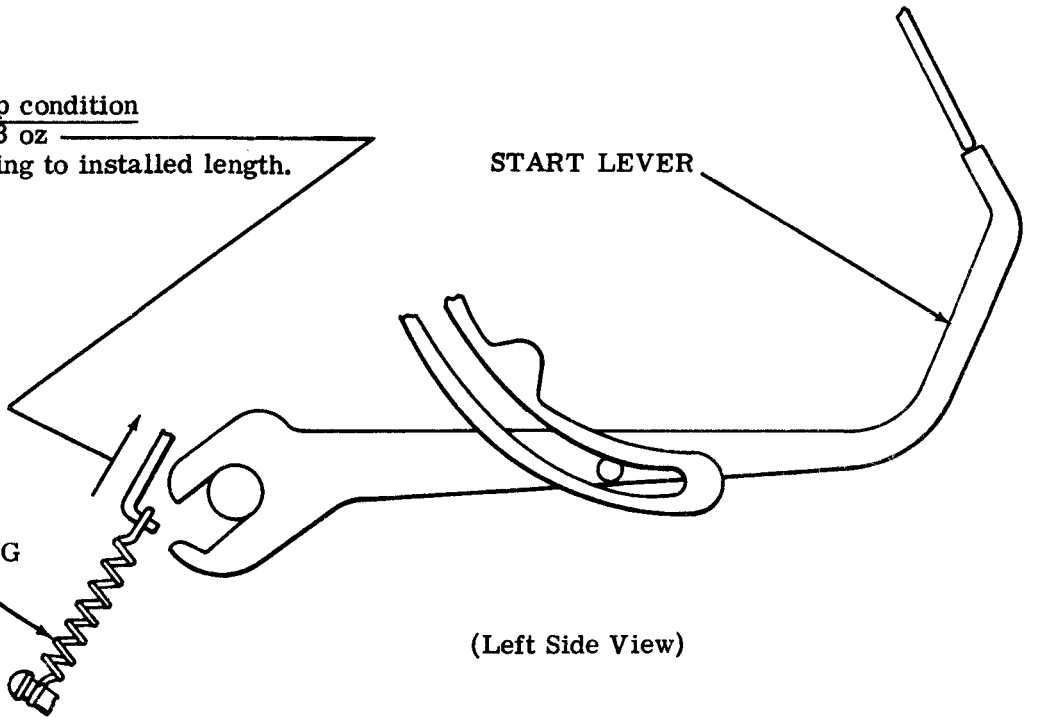
ARMATURE BRACKET POSITION (2.18)



2.21 Selector Area (continued)

START LEVER SPRING

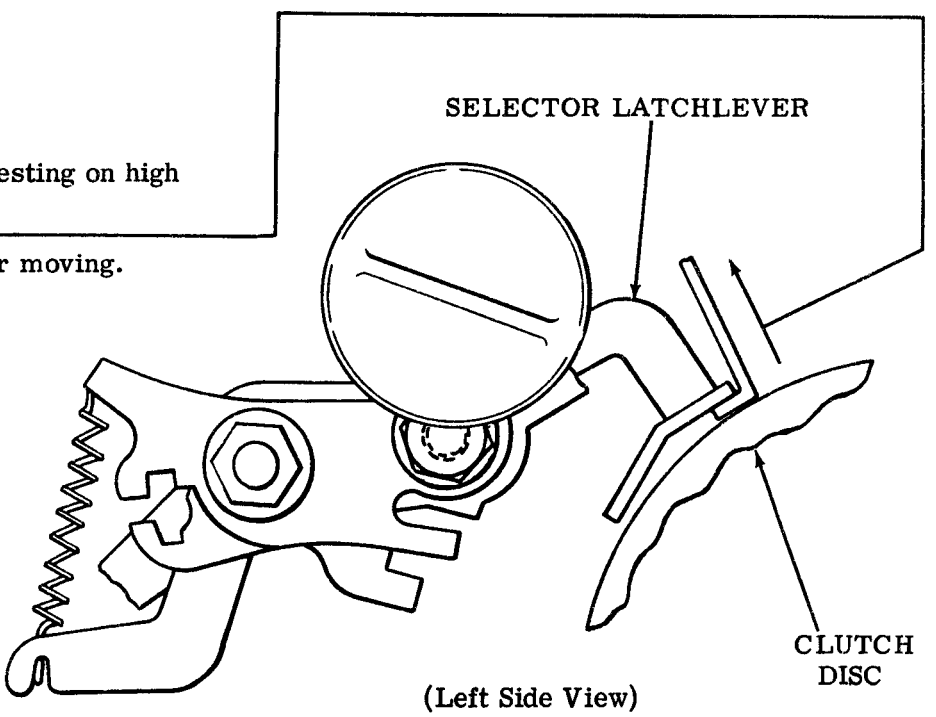
Requirement
With typing unit in stop condition
Min 19 oz---Max 23 oz
to pull start lever spring to installed length.



(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)

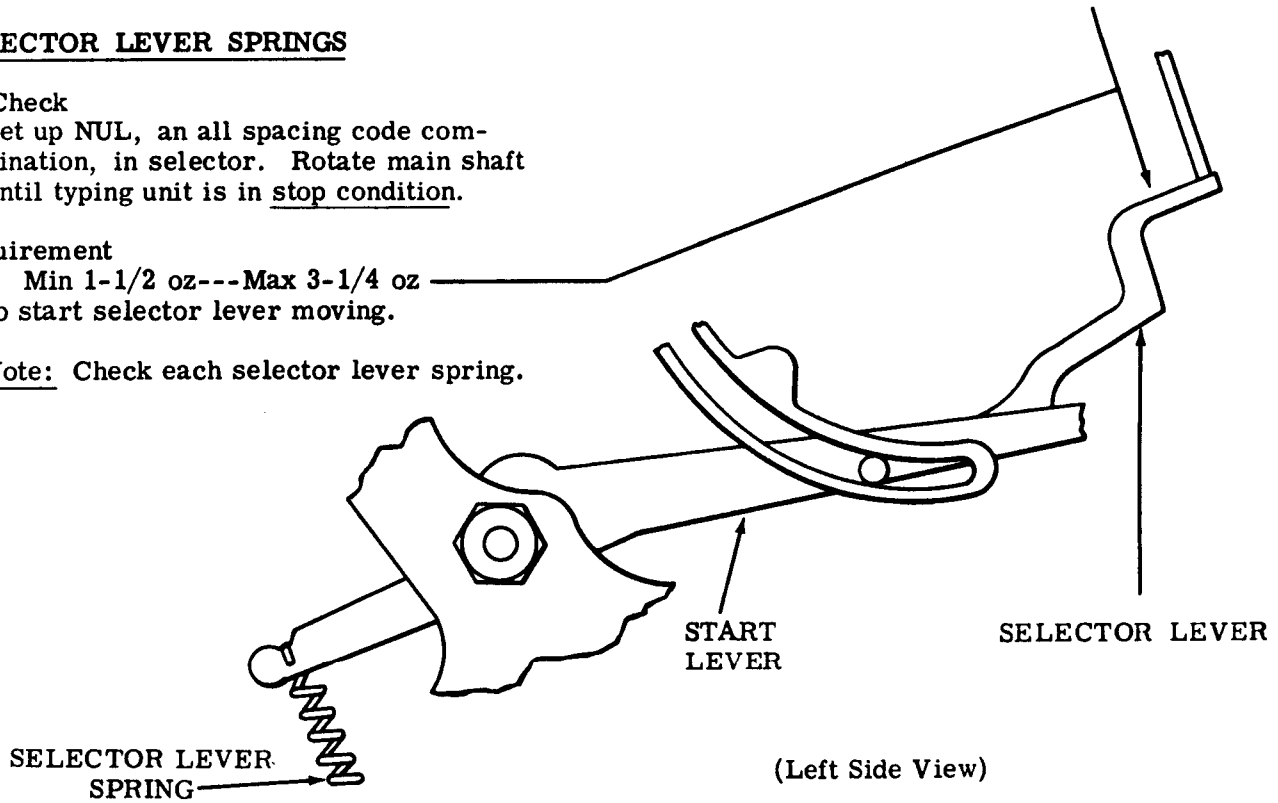
2.22 Selector Area (continued)

SELECTOR LEVER SPRINGS

To Check
Set up NUL, 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.

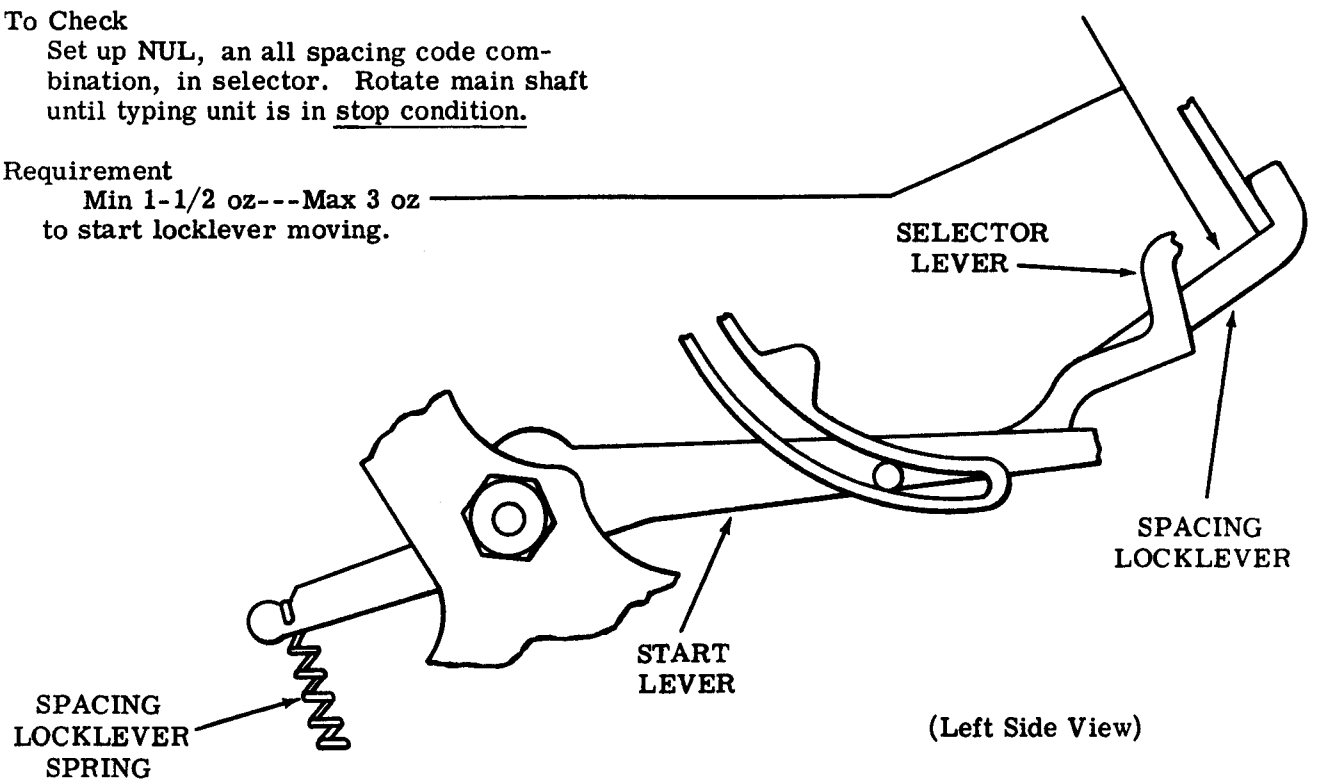


(Left Side View)

SPACING LOCKLEVER SPRING

To Check
Set up NUL, 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.



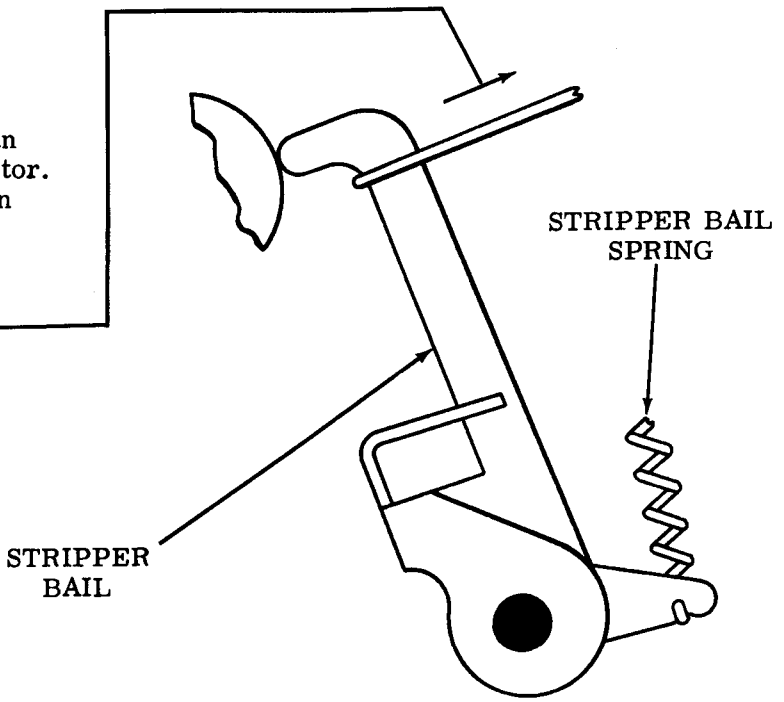
(Left Side View)

2.23 Selector Area (continued)

STRIPPER BAIL SPRING

To Check
Set range finder at 60. Set up NUL, 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)

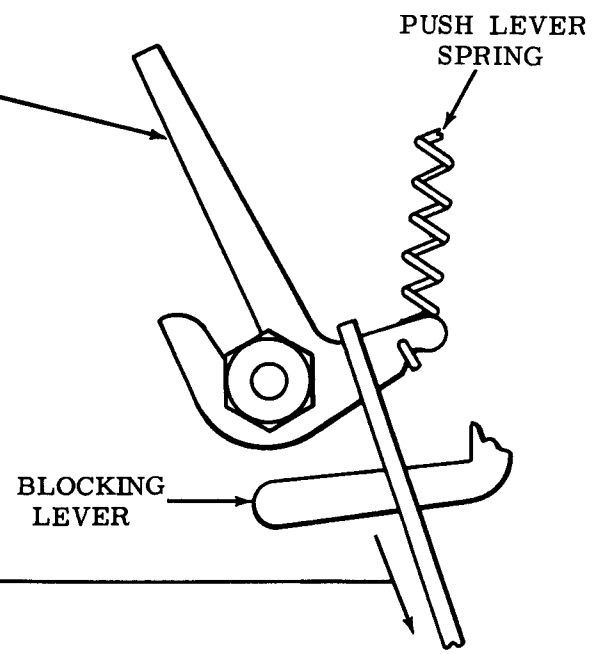
PUSH LEVER SPRINGS

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.

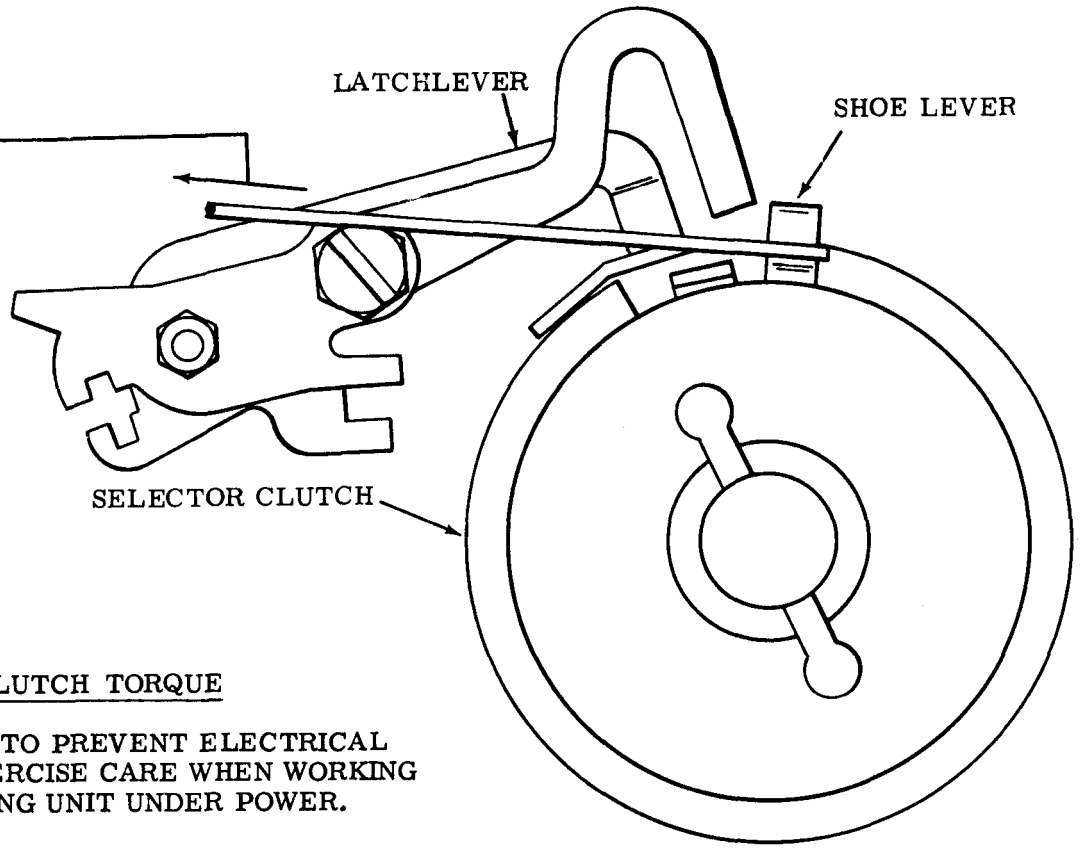
Requirement
With blocking lever held away from push lever
Min 1-1/2 oz---Max 3 oz
to start push lever moving.

Note 2: Check each push lever spring.



(Left Side View)

2.24 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.

2.25 Function Area

(A) MAIN SHAFT ROTATION

Note 1: 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 2: 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) (2.01)
BELT TENSION (Motor Area) (2.02)
LEFT BEARING POSITION (Main Shaft Area) (2.10)
SELECTOR CAM ENDPLAY (Main Shaft Area) (2.10)
FUNCTION CLUTCH ENDPLAY (Main Shaft Area) (2.11)
CODEBAR CLUTCH ENDPLAY (Main Shaft Area) (2.12)
DRIVEN GEAR LINE-UP (Main Shaft Area) (2.12)
FORM FEED CLUTCH ENDPLAY - S (Main Shaft Area) (2.93)
SHOE LEVER GAP AND TRIP LEVER ENGAGEMENT (Selector Area) (2.19)
BEARING ALIGNMENT (2.25)

(B) BEARING ALIGNMENT

Note 3: 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.

2.26 Function Area (continued)

ROCKER SHAFT POSITION AND ENDPLAY

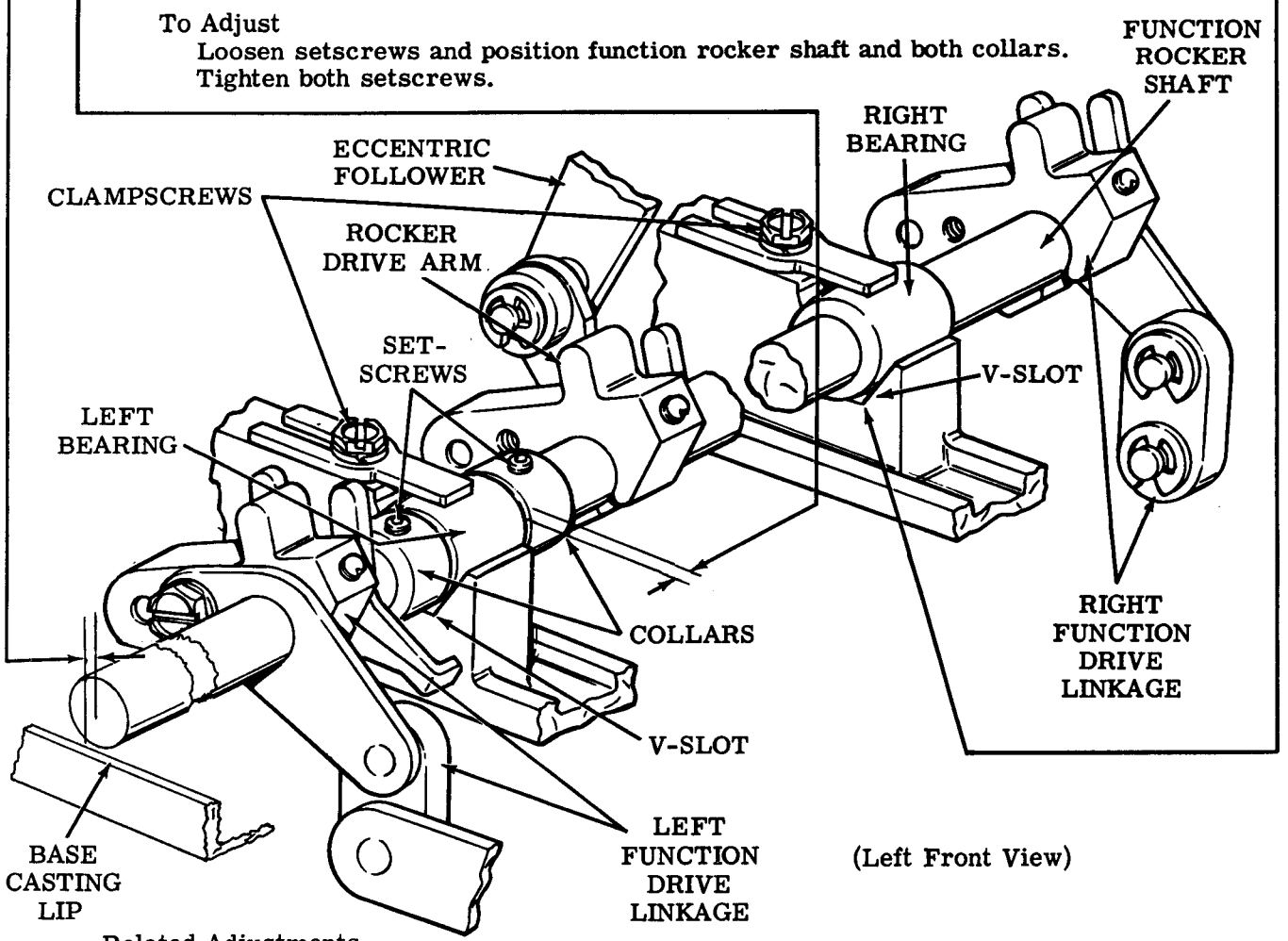
(1) Requirement
Both bearings should be centered on base casting, as gauged by eye.

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.

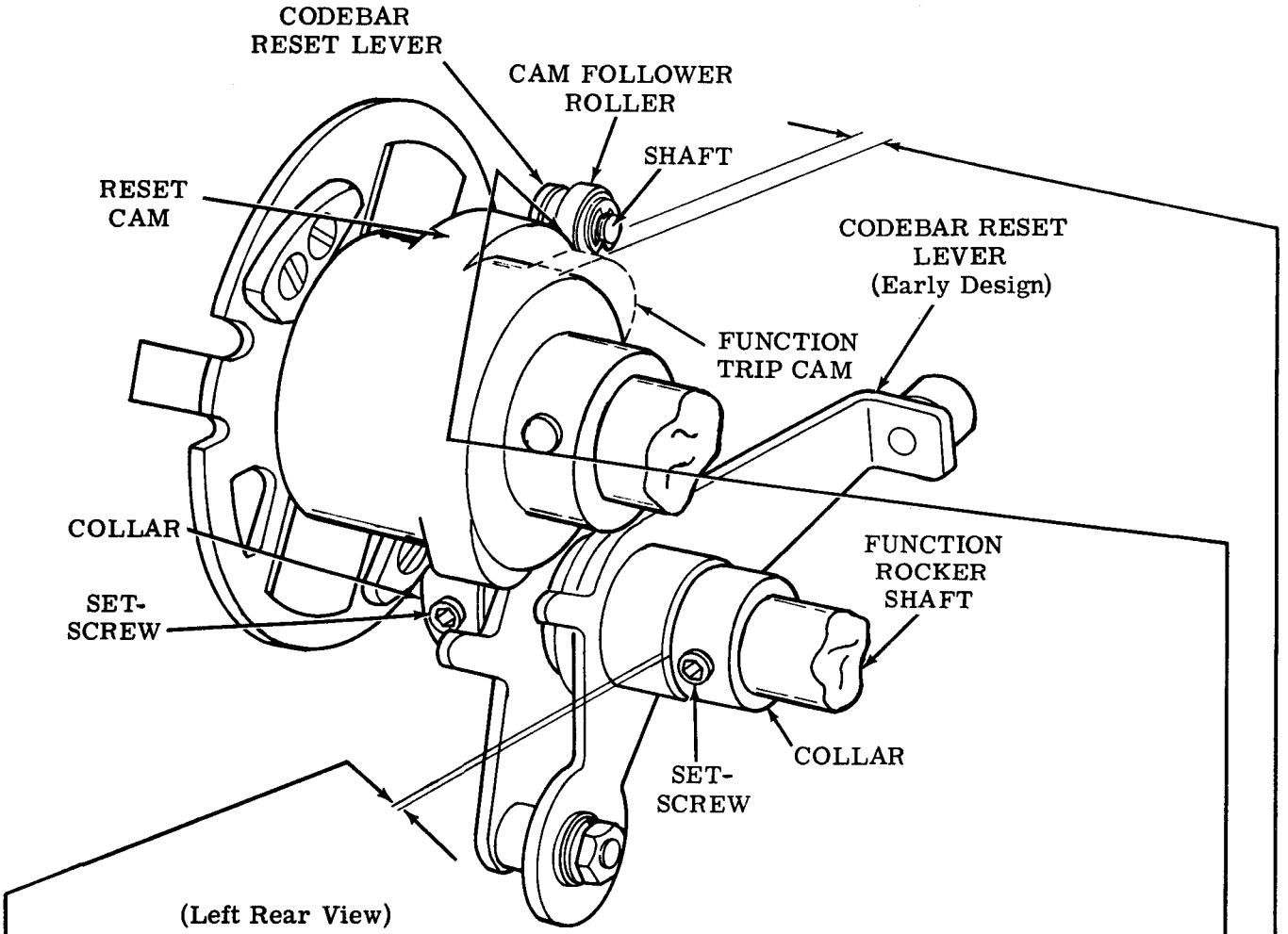
(3) Requirement
Min some---Max 0.010 inch endplay in function rocker shaft.

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



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

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, Max 0.020 inch overhang permitted on right side only.

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

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

To Adjust

Loosen setscrews and position two collars.

Related Adjustments

Affects

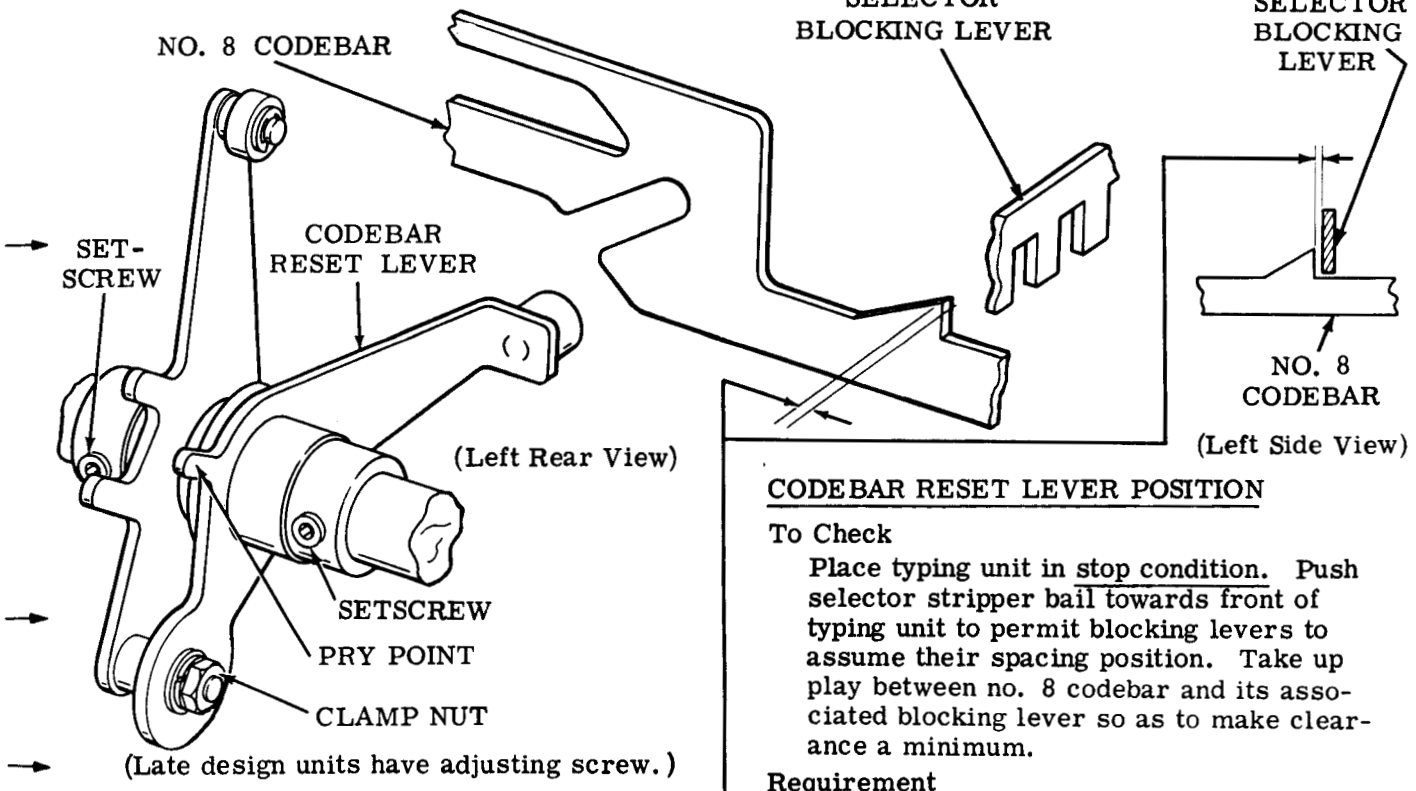
CODEBAR RESET LEVER POSITION (2.28)

Affected By

ROCKER SHAFT POSITION AND ENDPLAY (2.26)

CODEBAR CLUTCH ENDPLAY (2.12)

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 no. 8 codebar 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

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

Late Design (With adjusting screw): Loosen two setscrews and adjust by turning adjusting screw. Tighten setscrews.

Related Adjustments

Affects

PRINT SUPPRESSION LATCH — HORIZONTAL CLEARANCE (2.29); PRINT SUPPRESSION LATCH — VERTICAL CLEARANCE (2.39); FUNCTION SHAFT AND CASTING POSITION (2.40); REAR RAIL POSITION (Carriage Area) (2.45); FOURTH PULSE LINKAGE POSITIONING (Carriage Area) (2.47); PRINT SUPPRESSION LATCH-LEVER RELEASE (Carriage Area) (2.57); SPACE SUPPRESSION LEVER CLEARANCE — PRINTING (Spacing Area) (2.65);

Affected By

ROCKER SHAFT POSITION AND END-PLAY (2.26); CODEBAR RESET LEVER LINE-UP (2.27)

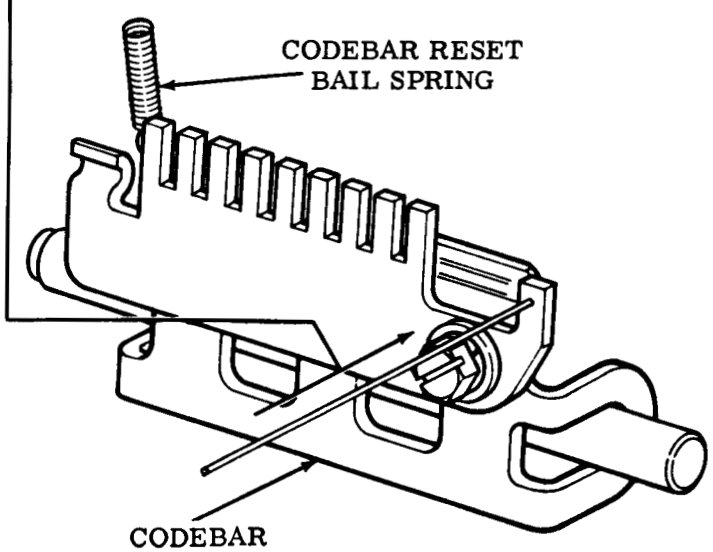
CODEBAR RESET BAIL SPRING

To Check

Set up NUL, an all spacing 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.

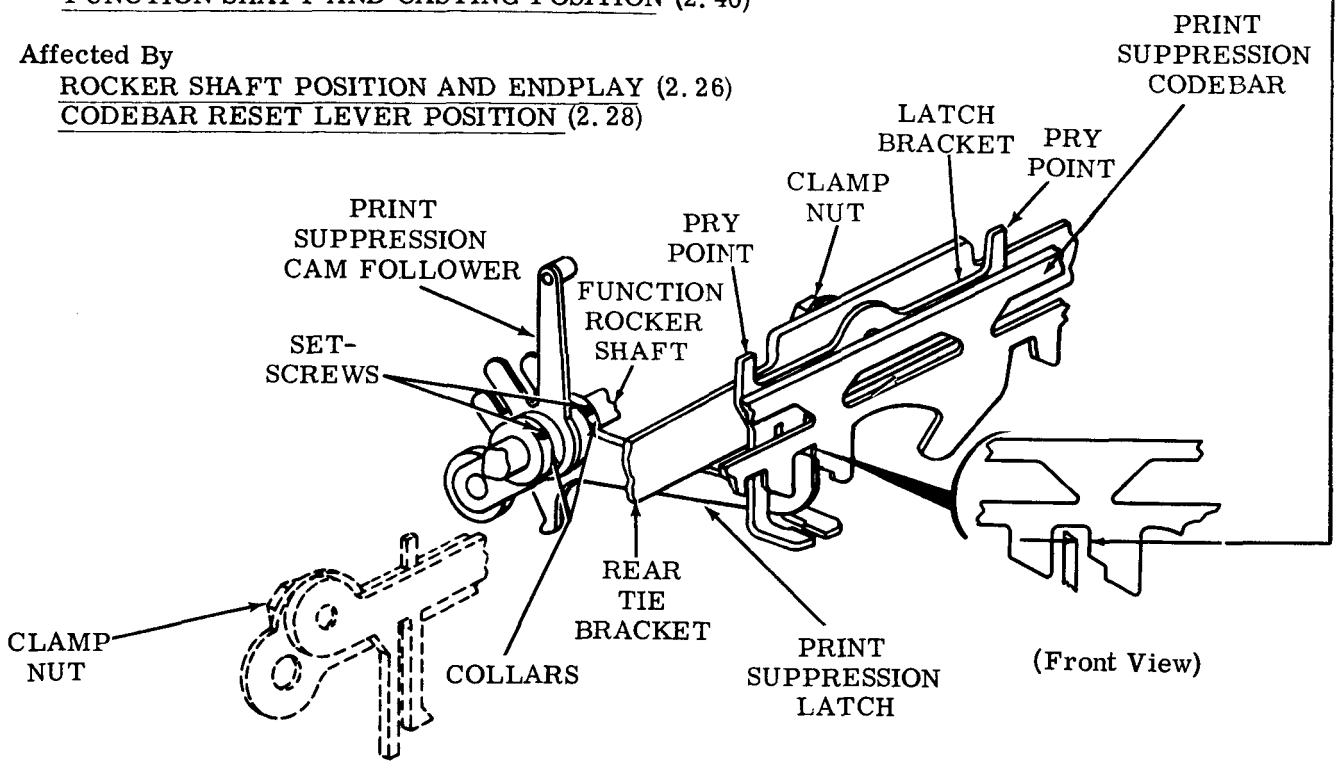
To Adjust
Loosen clamp nut(s) and setscrews in collars (see Note 1 and Note 2). Position latch bracket using pry point to meet Requirement (1). Tighten clamp nuts. Position collars to meet Requirement (2). Tighten setscrews.

Related Adjustments
Affects
FUNCTION SHAFT AND CASTING POSITION (2.40)

Affected By
ROCKER SHAFT POSITION AND ENDPLAY (2.26)
CODEBAR RESET LEVER POSITION (2.28)

Note 1: Disregard Requirement (2) 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.



(Left Front View)

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 EOT function lever, TP180801 universal function lever, or similar function levers.

To Check

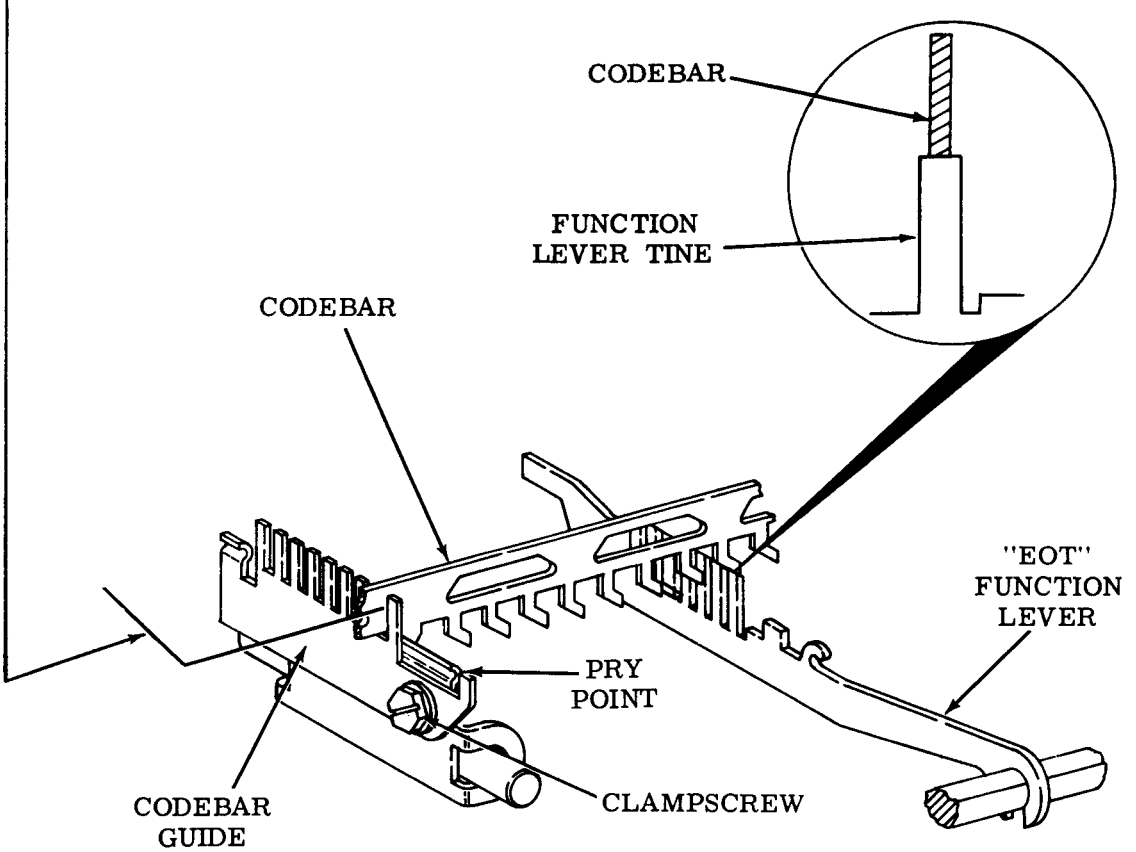
Manually set up RUBOUT, an all marking code combination, in the selector. Rotate main shaft until the function lever reaches its highest point of travel. Lightly take up any play between the function lever and codebars.

(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)

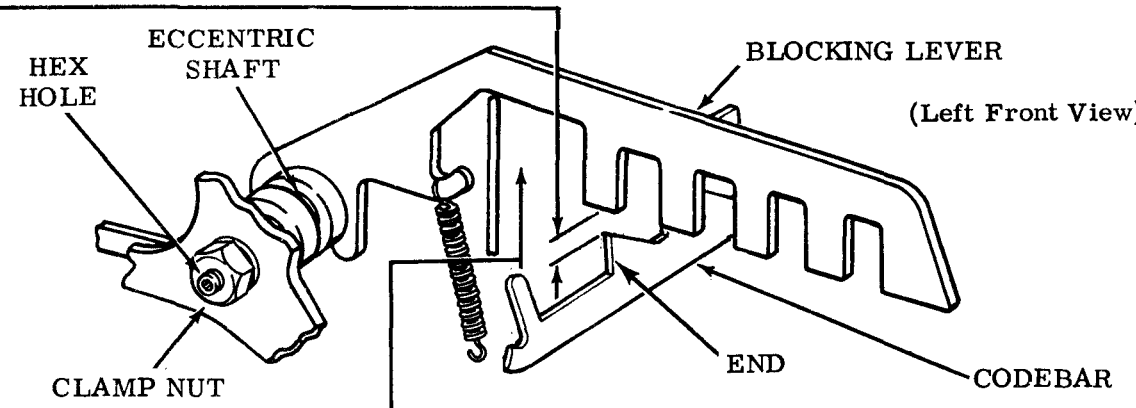
SELECTOR BLOCKING LEVERS POSITIONING

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

(1) To Check
Manually operate typing unit and set up RUBOUT, 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 main shaft. 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.

Related Adjustments
Affects
CODEBAR GUIDE POSITION (2.32)

BLOCKING LEVER SPRINGS

To Check
Set up NUL, 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)

CODEBAR GUIDE POSITION

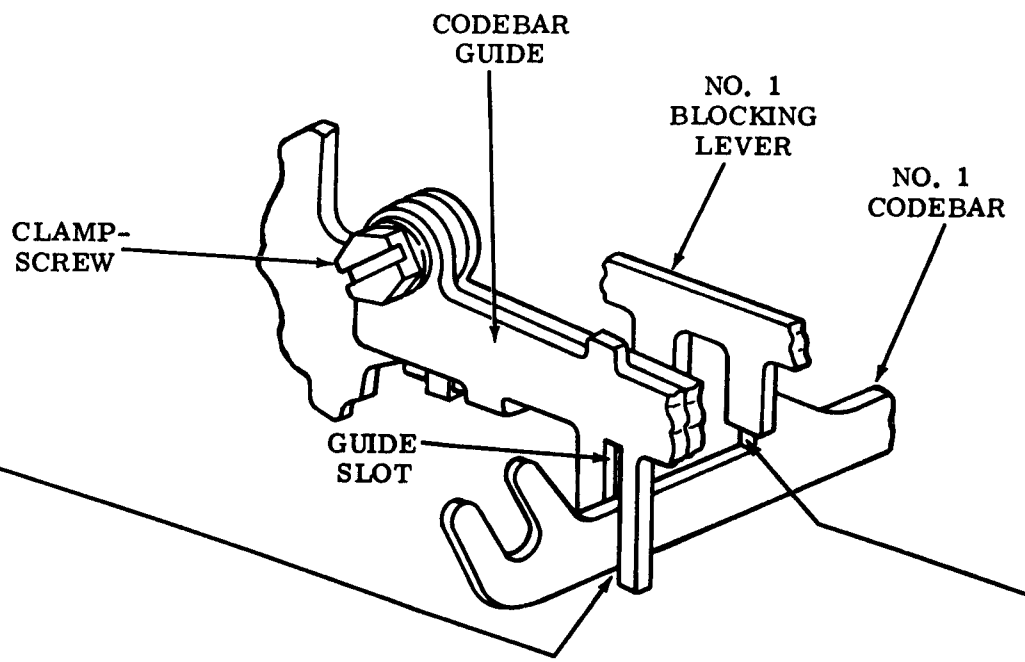
To Check
Place typing unit in stop condition and manually operate the typing unit until the no. 1 blocking lever is in its lowest position.

(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.

Related Adjustments
Affected By
SELECTOR BLOCKING LEVERS POSITIONING (2.31)

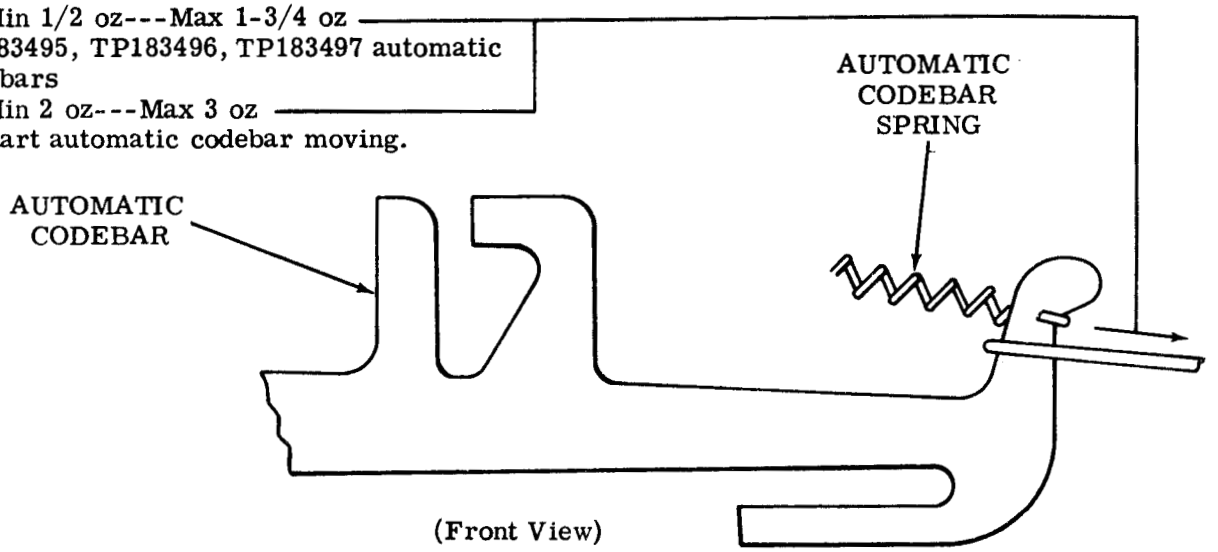


(Left Front View)

2.33 Function Area (continued)

AUTOMATIC CODEBAR SPRING

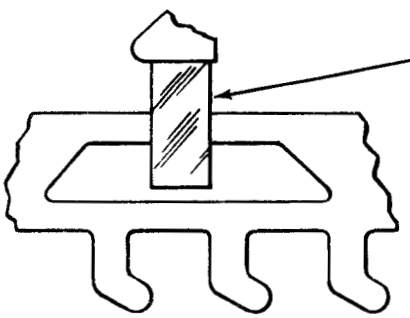
Requirement
With carriage at left margin TP180948 automatic codebar
Min 1/2 oz---Max 1-3/4 oz
TP183495, TP183496, TP183497 automatic codebars
Min 2 oz---Max 3 oz
to start automatic codebar moving.



PRINT SUPPRESSION AND NO. 4 CODEBAR SPRING

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

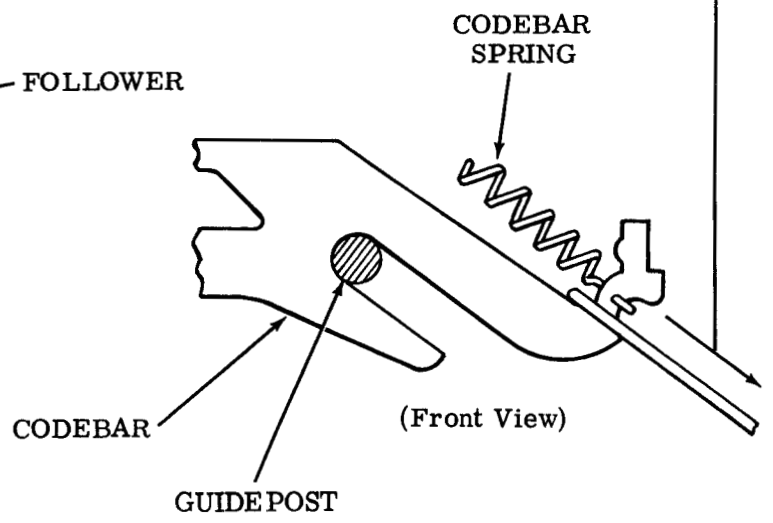
Note 1: Check the print suppression and no. 4 codebar spring.



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 follower lifted
Min 5-1/2 oz---Max 7-1/2 oz
to start codebar moving.



2.34 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 to minimum clearance.

Requirement

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

To Adjust

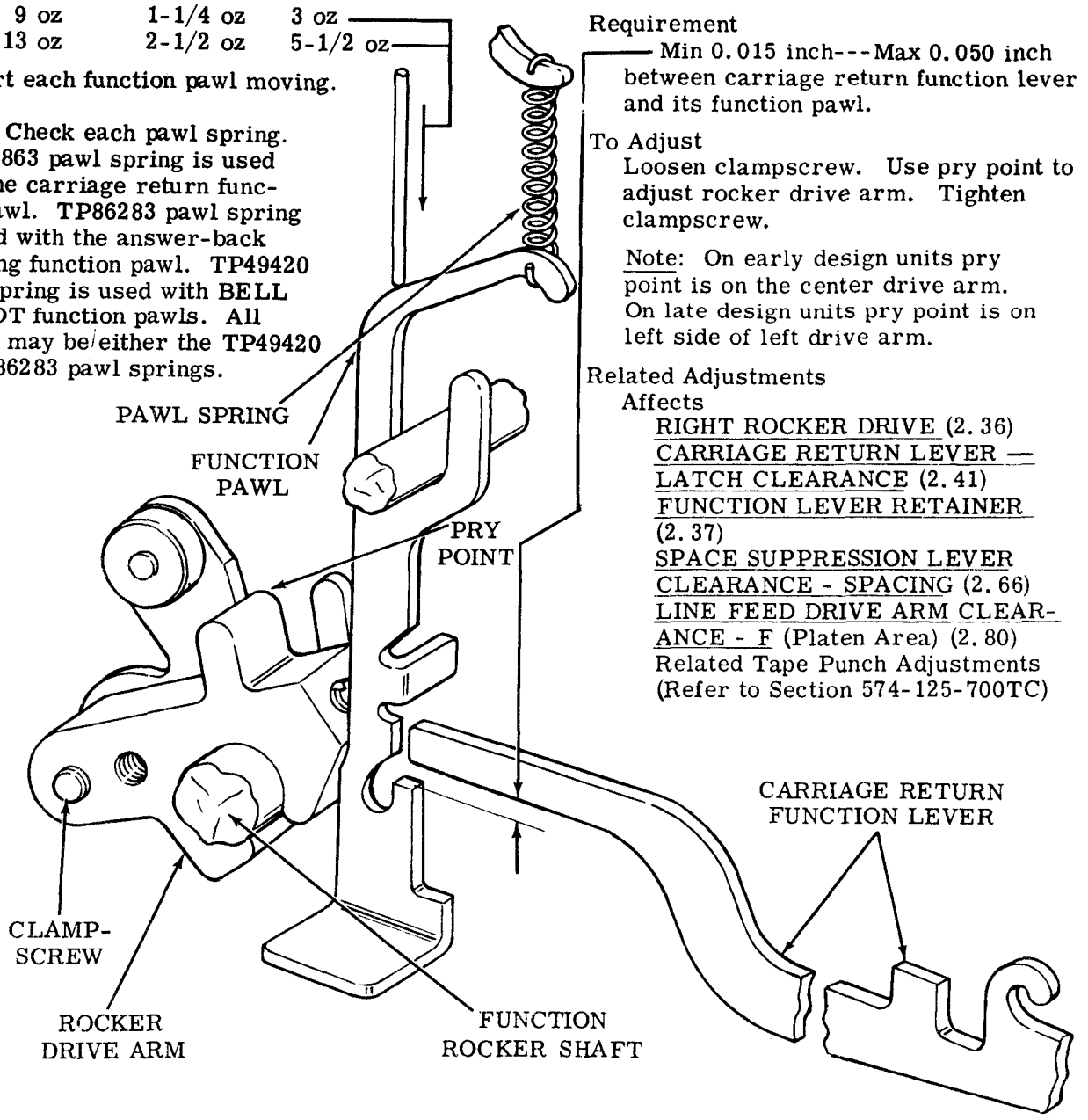
Loosen clampscrew. Use pry point to adjust rocker drive arm. Tighten clampscrew.

Note: On early design units pry point is on the center drive arm. On late design units pry point is on left side of left drive arm.

Related Adjustments

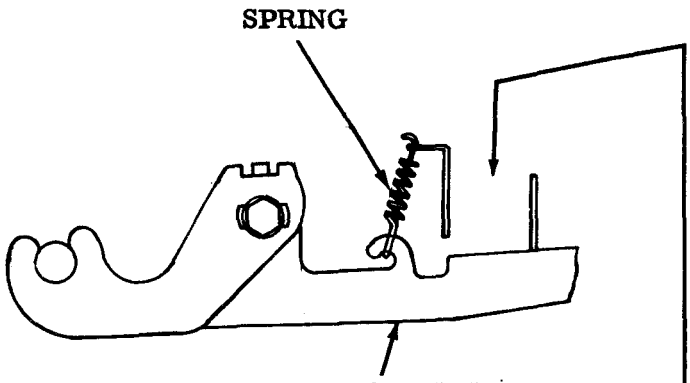
Affects

RIGHT ROCKER DRIVE (2.36)
CARRIAGE RETURN LEVER — LATCH CLEARANCE (2.41)
FUNCTION LEVER RETAINER (2.37)
SPACE SUPPRESSION LEVER CLEARANCE - SPACING (2.66)
LINE FEED DRIVE ARM CLEARANCE - F (Platen Area) (2.80)
Related Tape Punch Adjustments (Refer to Section 574-125-700TC)



(Left Front View)

2.35 Function Area (continued)



LINE FEED FUNCTION STRIP LEVER

(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

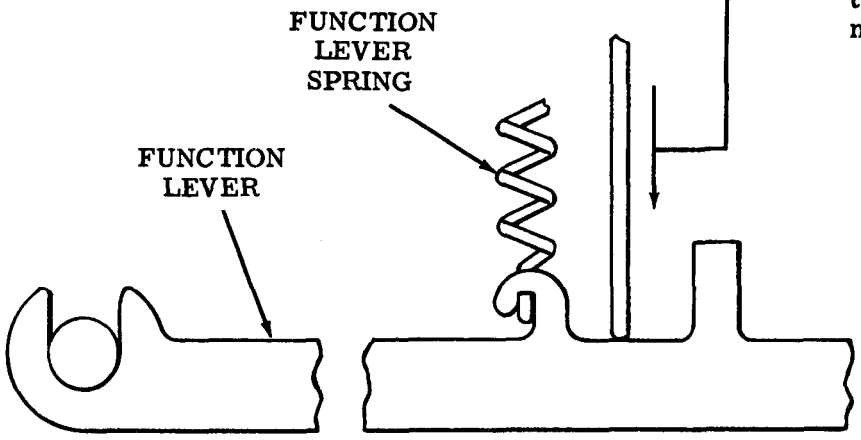
(1) Min 19 oz---Max 24 oz to start LF and AUTO LF function levers moving.

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)

2.36 Function Area (continued)

RIGHT ROCKER DRIVE

To Check

Disengage (latch) distributor clutch. Set up answer-back character ENQ code combination (1-3-----) 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 - S (Form Feed Area (2.98)

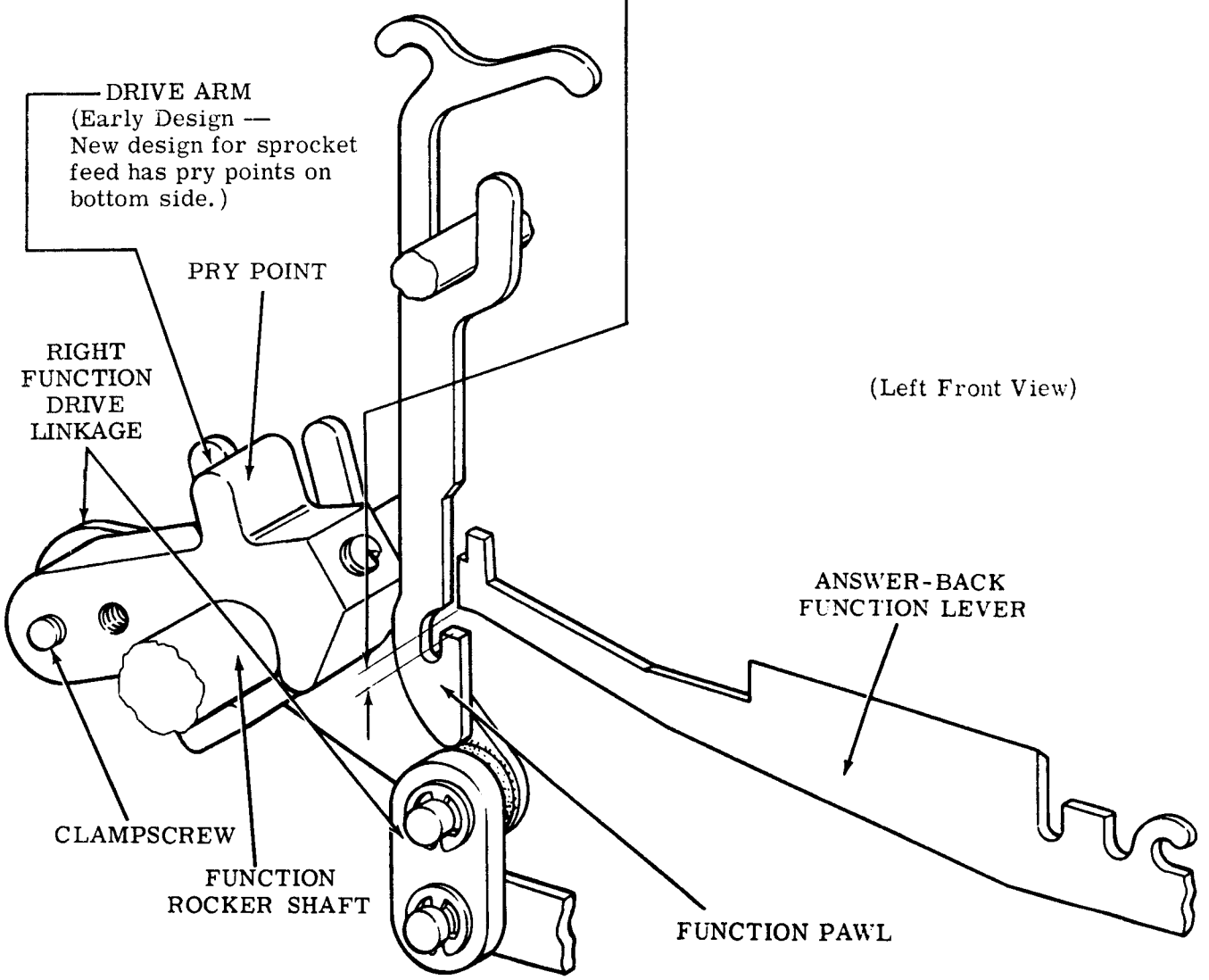
LINE FEED PAWL STRIPPING - S (Form Feed Area) (2.107)

TRIPBAIL POSITIONING (3.08)

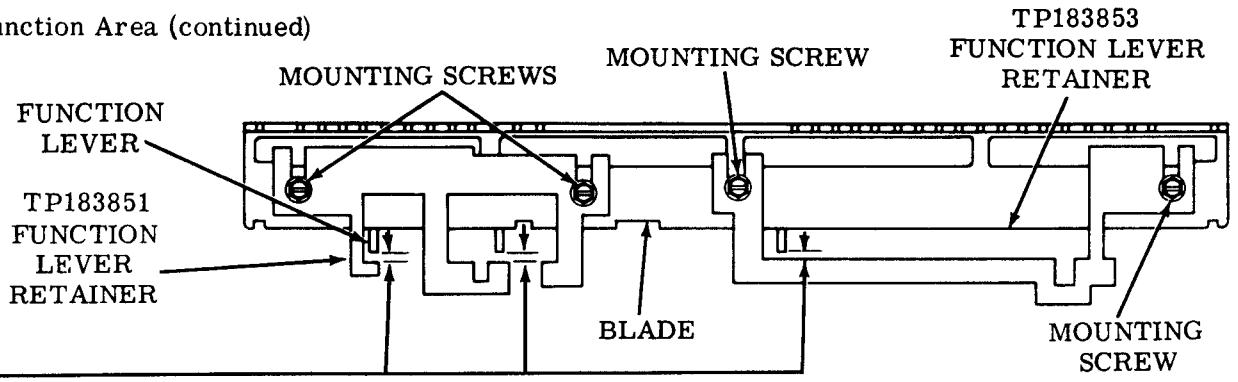
Affected By

LEFT ROCKER DRIVE (2.34)

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.



2.37 Function Area (continued)



FUNCTION LEVER RETAINER

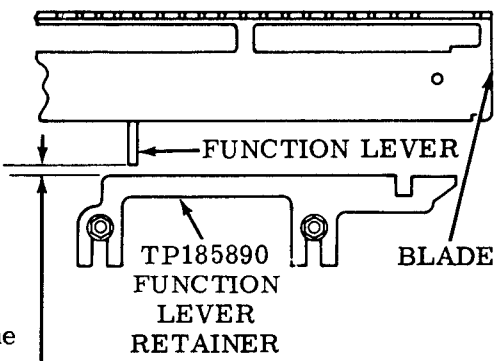
Units equipped with TP183851 (left and TP183853 (right) function lever retainers.

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.

Requirement

Min some---Max 0.040 inch between the function lever retainers and function levers at the closest point.



Note: The lower edges at the mounting portion of the retainer should not extend below the lower edge of the blade.

Units equipped with the TP185980 function lever retainers and the print-nonprint feature.

To Check

With an all marking code combination in the selector, manually operate the typing unit until the blade is at the lowest point of travel.

Requirement

Min some---Max 0.020 inch between the retainer and the function lever closest to it.

To Adjust

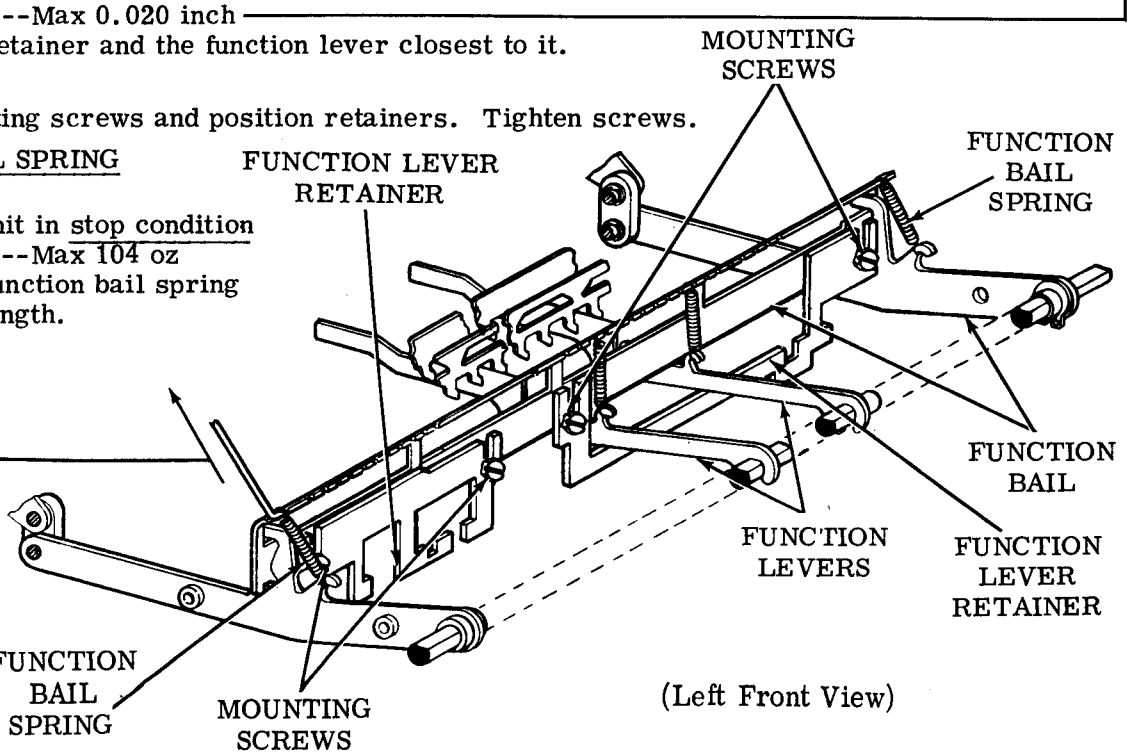
Loosen mounting screws and position retainers. Tighten screws.

FUNCTION BAIL SPRING

Requirement

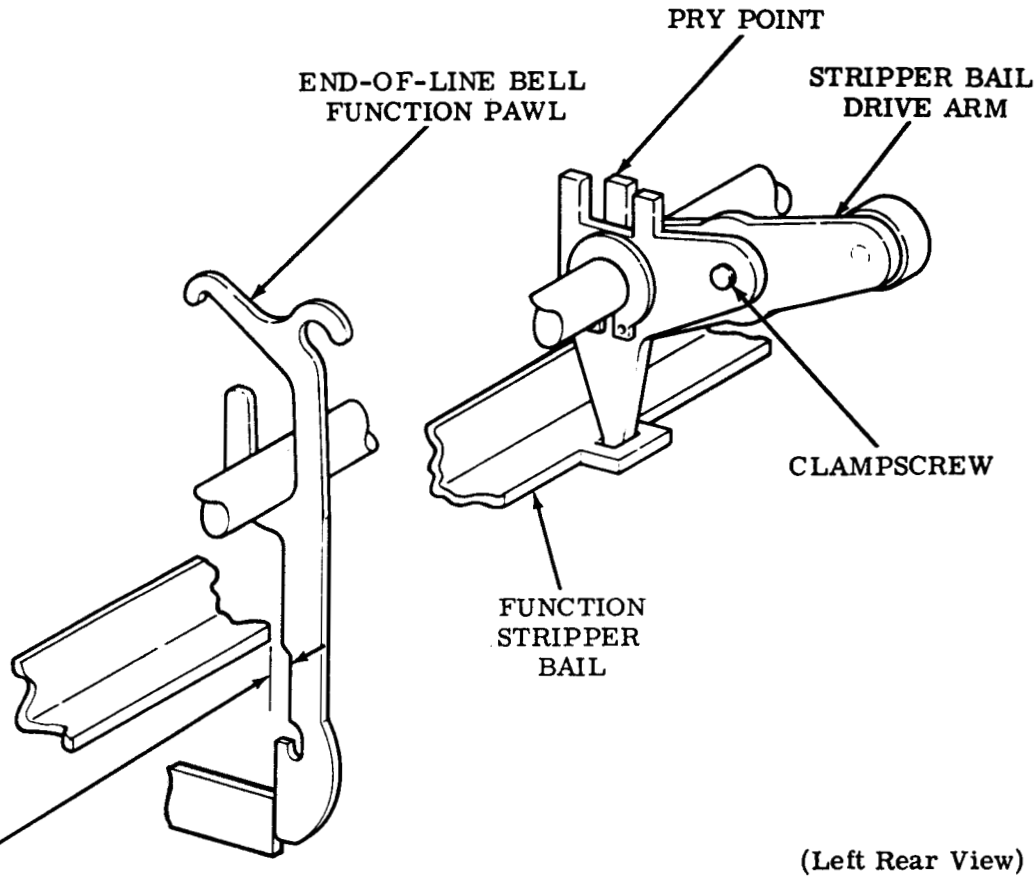
With typing unit in stop condition

Min 72 oz---Max 104 oz to pull each function bail spring to installed length.



(Left Front View)

2.38 Function Area (continued)



(Left Rear 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

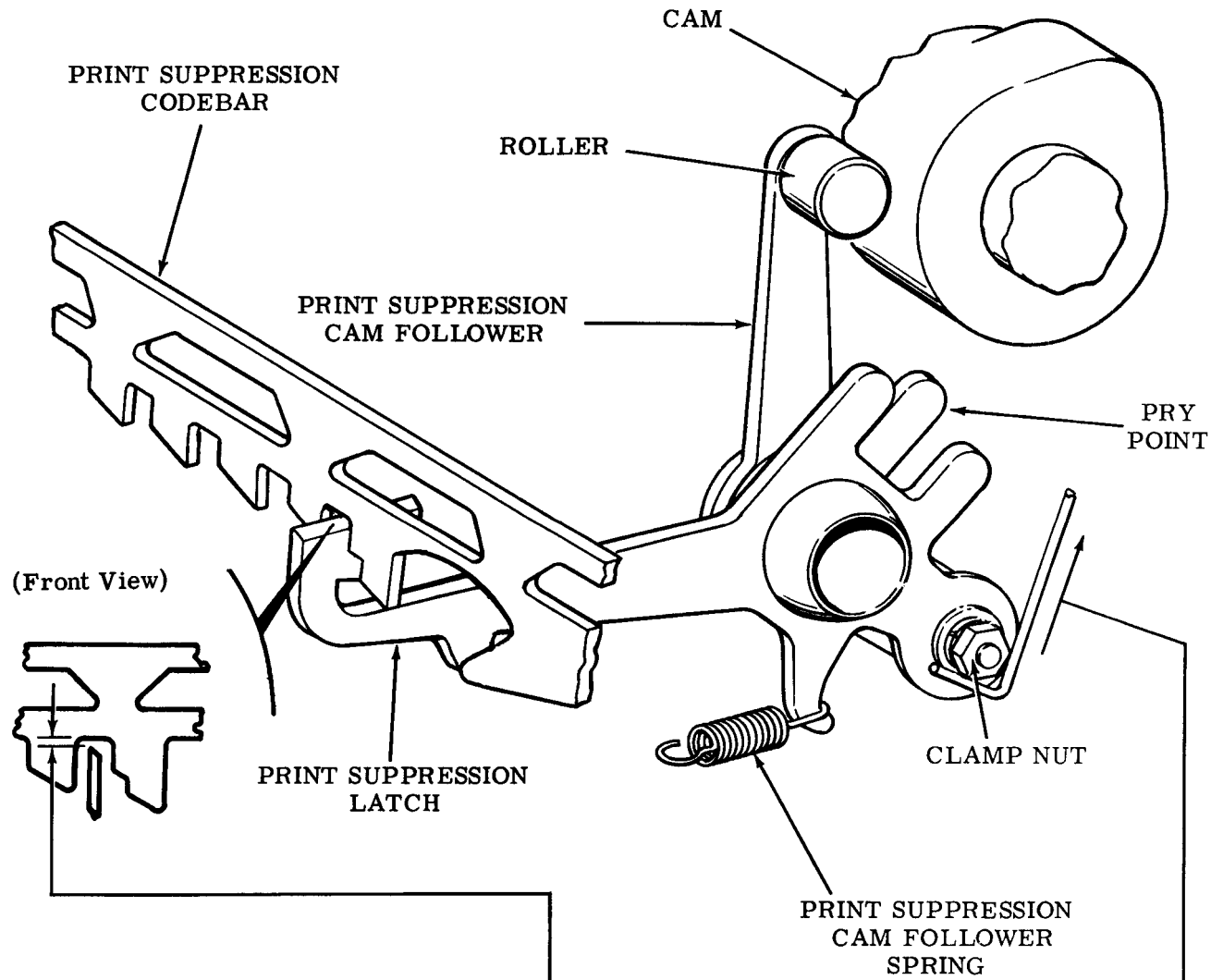
Loosen clampscrew. Use pry point to position stripper bail drive arm. Tighten clampscrew.

Related Adjustment

Affects

LINE FEED STRIPPER PLATE CLEARANCE - F (Platen Area) (2.85)

2.39 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.

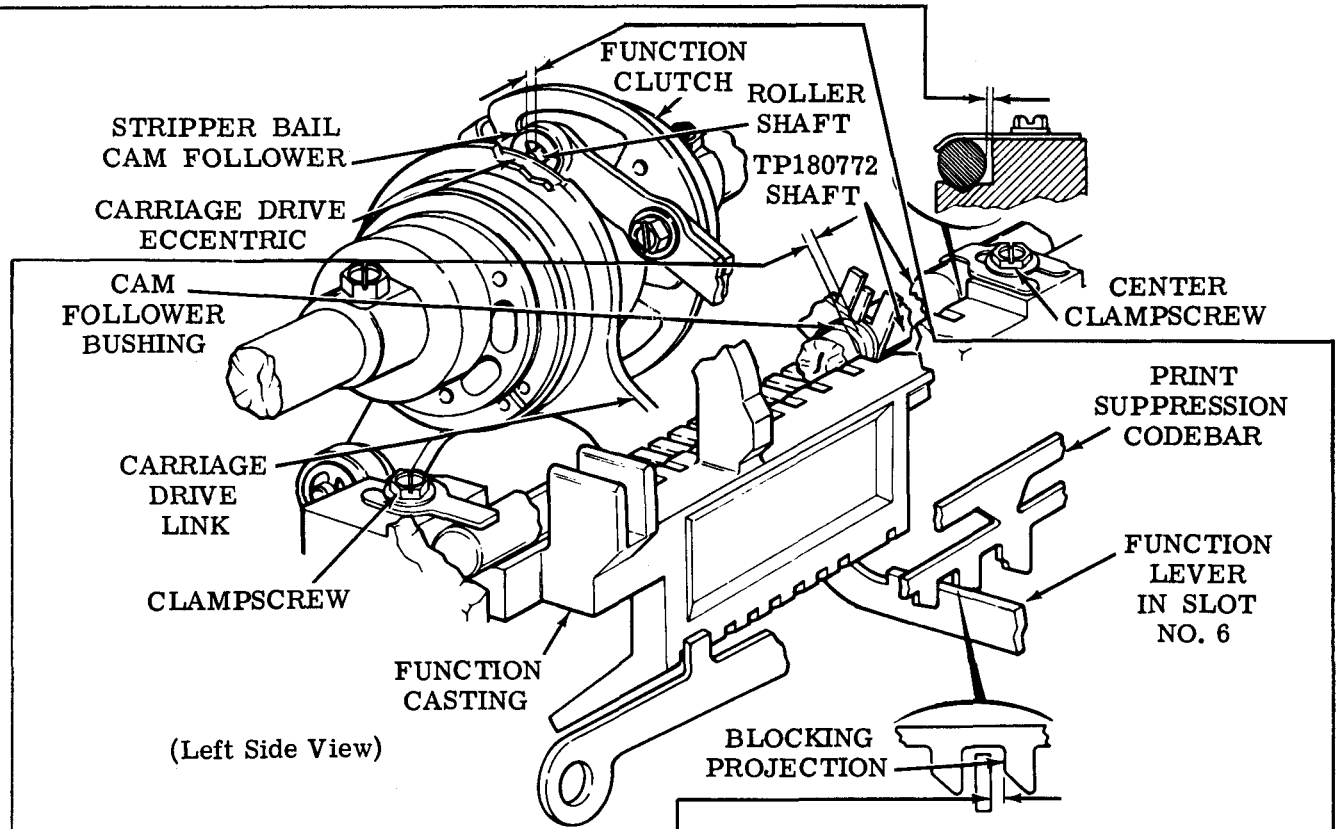
To Adjust
Loosen clamp nut. Using pry point, position print suppression cam follower. Tighten clamp nut.

Related Adjustments
Affected By
CODEBAR RESET LEVER POSITION (2.28)

PRINT SUPPRESSION CAM FOLLOWER SPRING

Requirement
With typing unit in stop condition
Min 10 oz---Max 14 oz
to start print suppression cam follower moving.

2.40 Function Area (continued)



FUNCTION SHAFT AND CASTING POSITION

Note: The Requirement (1) 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 NUL, an all spacing code combination in selector. Rotate main shaft until suppression cam follower just begins to rise on its cam.

(3) Requirement
Min 0.030 inch---Max 0.050 inch between blocking projection 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 (2.28)
PRINT SUPPRESSION LATCH — HORIZONTAL CLEARANCE (2.29)
LEFT BEARING POSITION (2.10)

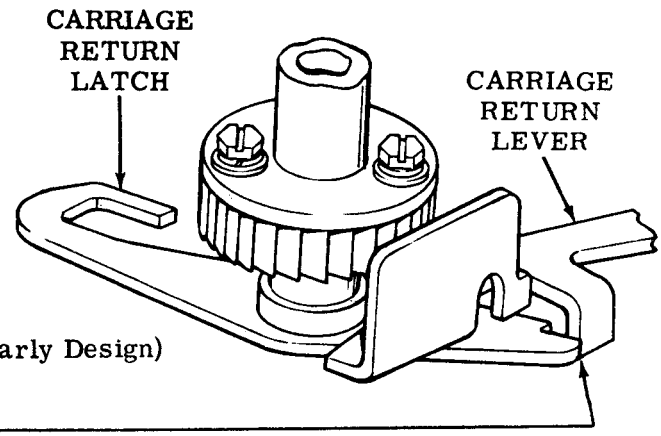
2.41 Function Area (continued)

CARRIAGE RETURN LEVER – LATCH CLEARANCE

(Left Front View)

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.

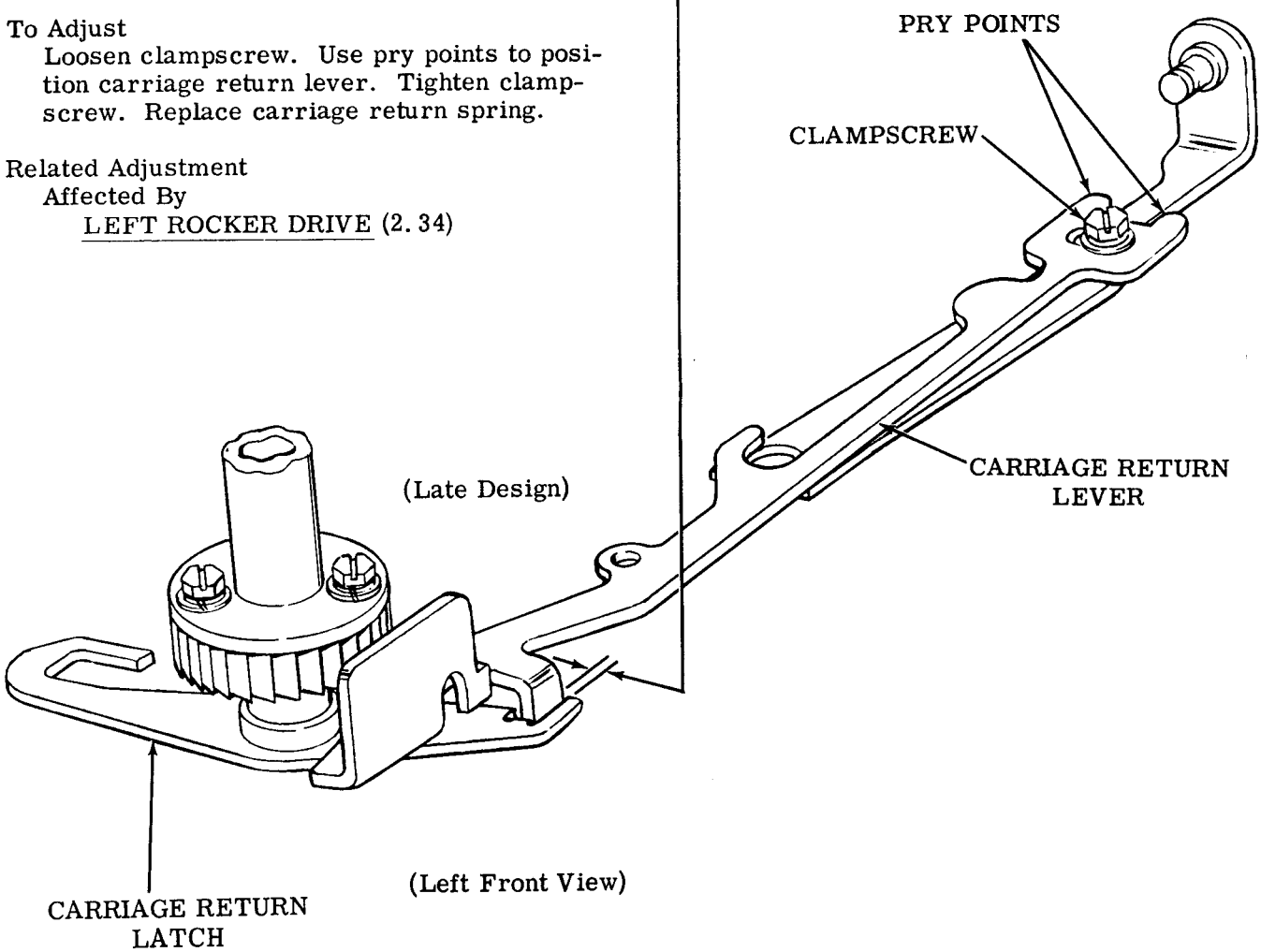
To Adjust

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

Related Adjustment

Affected By

LEFT ROCKER DRIVE (2.34)



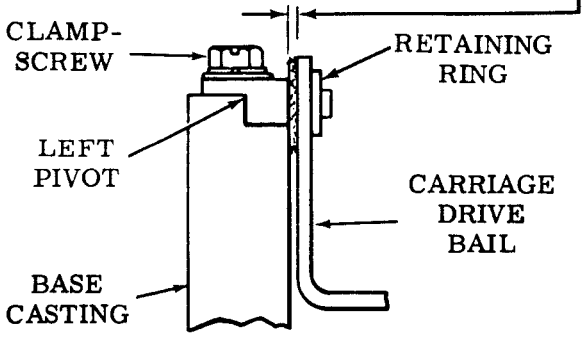
2.42 Function Area (continued)

CARRIAGE DRIVE BAIL ENDPLAY

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 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.

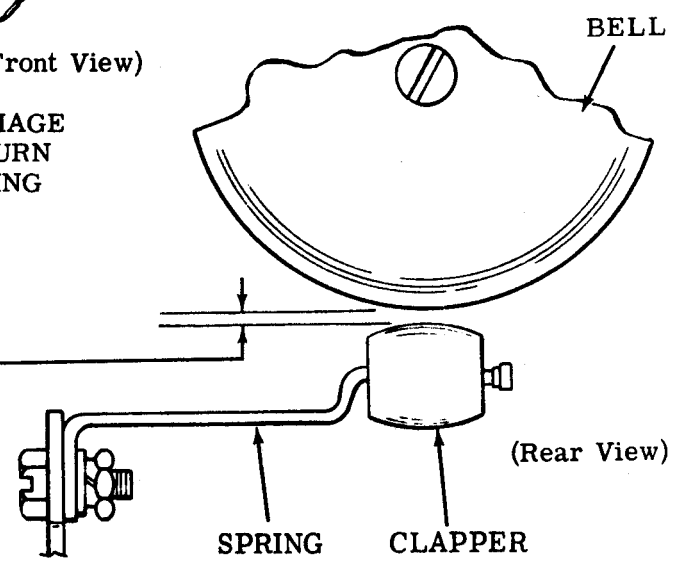
(Left Front View)

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)

2.43 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.

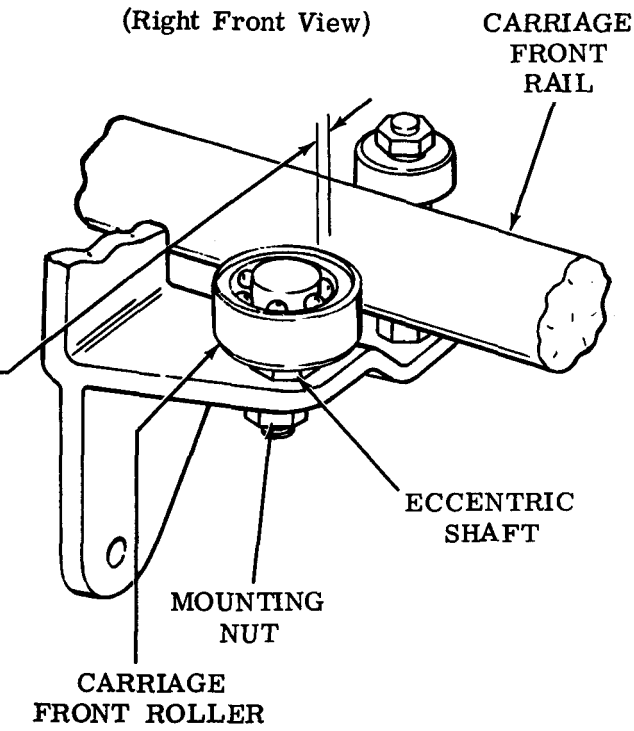
Requirement

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.



Related Adjustments

Affects

PRINT DRIVE LEVER POSITIONING (2.48)
PRINT SUPPRESSION LATCHLEVER RELEASE (2.57)
RIBBON POWER LEVER DRIVE (2.62)
PLATEN HORIZONTAL POSITION - F (2.70)
PLATEN HORIZONTAL POSITION - S (2.89)

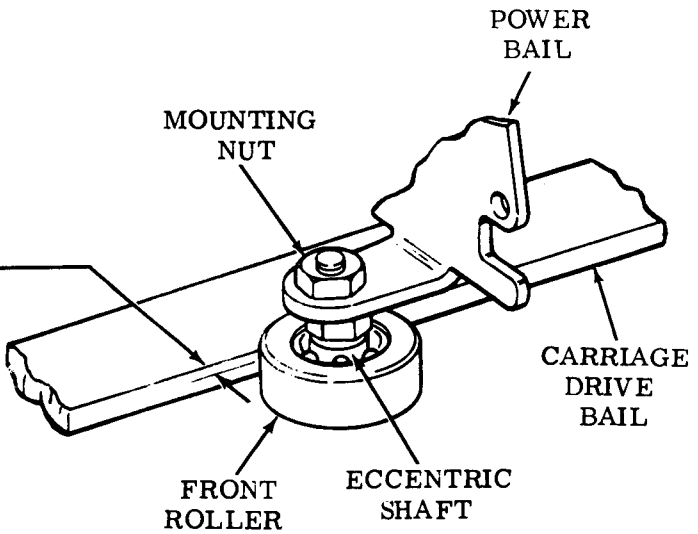
2.44 Carriage Area (continued)

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.



(Left Front View)

RACK AND PINION BACKLASH

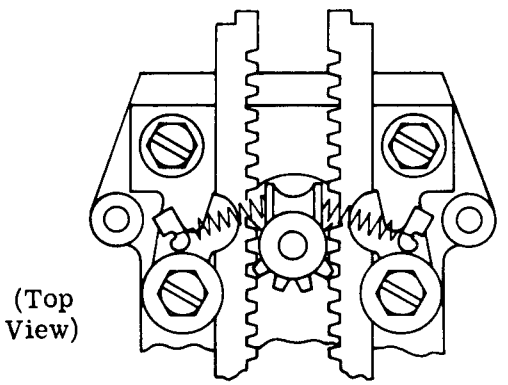
Note 1: This adjustment is to be performed only on early design carriages having the TP180548 adjusting plate and TP180549 bracket. Late design carriages do not require this adjustment.

To Check
Place typing unit in stop condition.

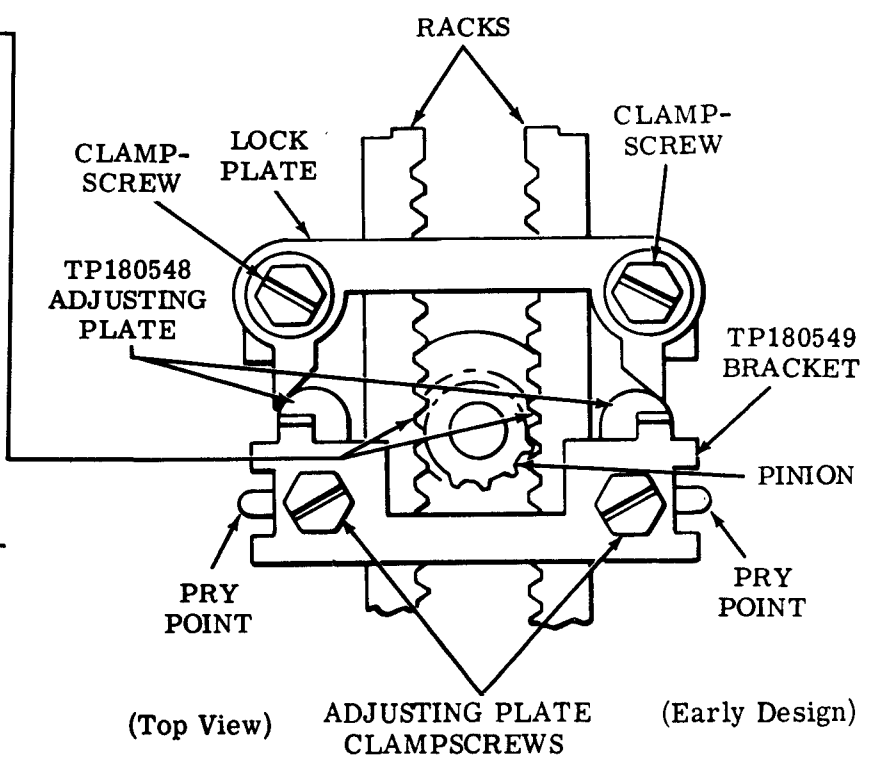
Requirement
Each rack should have
Min some---Max 0.010 inch backlash.

To Adjust
Loosen lock plate clampscrews and move lock plate towards the rear. Loosen one adjusting plate clampscrew friction tight and place a 0.010-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.



(Top View) (Late Design)



(Top View) (Early Design)

2.45 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 is in its uppermost position and contacts the 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.

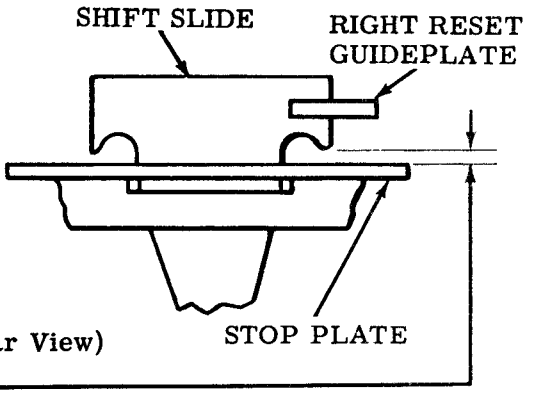
(2) To Check
Condition the typing unit as in (1) To Check above except place carriage to the right with center of the typewheel 1/2 inch from the right hand margin.

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 To Check (1) and To Check (2) above.

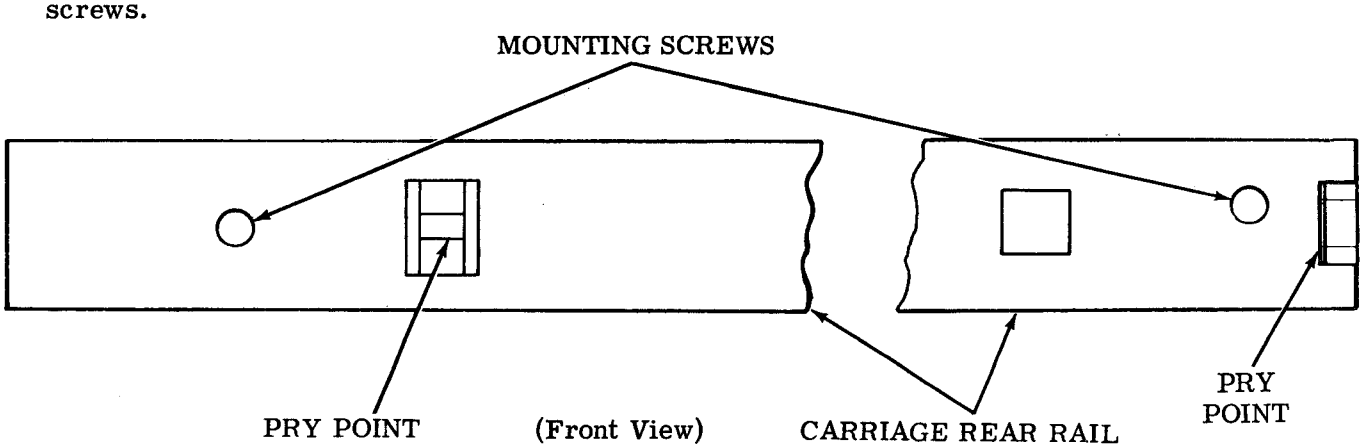
Requirement
Max 0.010 inch difference between recorded measurements.

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

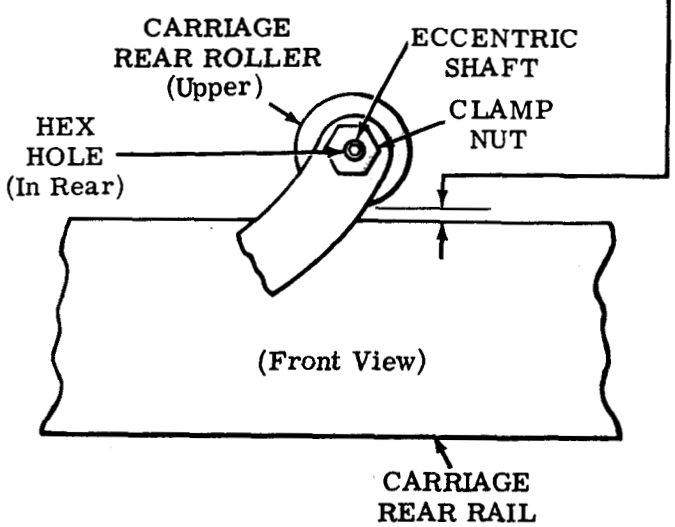


Related Adjustments
Affects
PRINT DRIVE LEVER POSITIONING (2.48)
FOURTH PULSE LINKAGE POSITIONING (2.47)
RESET LEVER POSITIONING (2.49)
PRINT SUPPRESSION LATCHLEVER RELEASE (2.57)
PRESSURE ROLLER CLEARANCE (Platen Area) (2.84)
REAR ROLLER CLEARANCE (2.46)
RIGHT SLIDE GUIDEPLATE RESET (2.52)
LEFT SLIDE GUIDEPLATE RESET (2.53)
PRINT HAMMER TRIP LEVER RELEASE (2.54)
PRINT HAMMER TRIP LEVER RESET (2.55)
RIBBON POWER LEVER DRIVE (2.62)
VERTICAL TYPE ALIGNMENT - F (2.71)
VERTICAL TYPE ALIGNMENT - S (2.90)

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



2.46 Carriage Area (continued)



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.

Related Adjustments
Affects
FOURTH PULSE LINKAGE POSITIONING (2.47)
PRINT DRIVE LEVER POSITIONING (2.48)
RESET LEVER POSITIONING (2.49)
RIGHT SLIDE GUIDEPLATE RESET (2.52)
PRINT HAMMER TRIP LEVER RELEASE (2.54)
PRINT HAMMER TRIP LEVER RESET (2.55)

Affected By
REAR RAIL POSITION (2.45)

2.47 Carriage Area (continued)

FOURTH PULSE LINKAGE POSITIONING

To Check

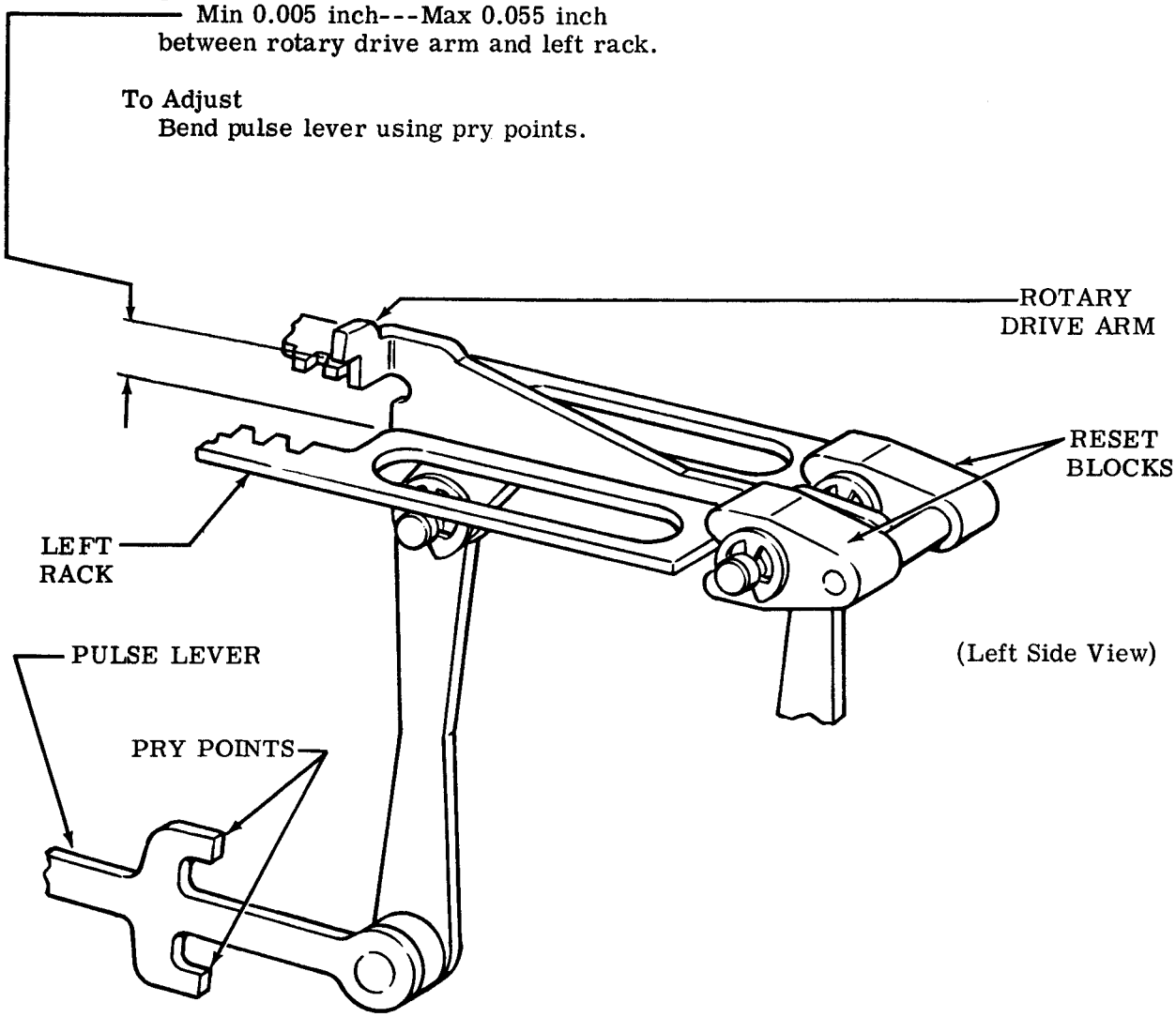
Place carriage to left margin. With an all marking code combination set up in selector, manually operate the typing unit until the function clutch just trips. Take up play in left rack in a downward direction. Check requirement, then repeat requirement check with carriage at the right margin.

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) (2.28)
REAR RAIL POSITION (2.45)
REAR ROLLER CLEARANCE (2.46)

2.48 Carriage Area (continued)

(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 function clutch 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 function clutch 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.

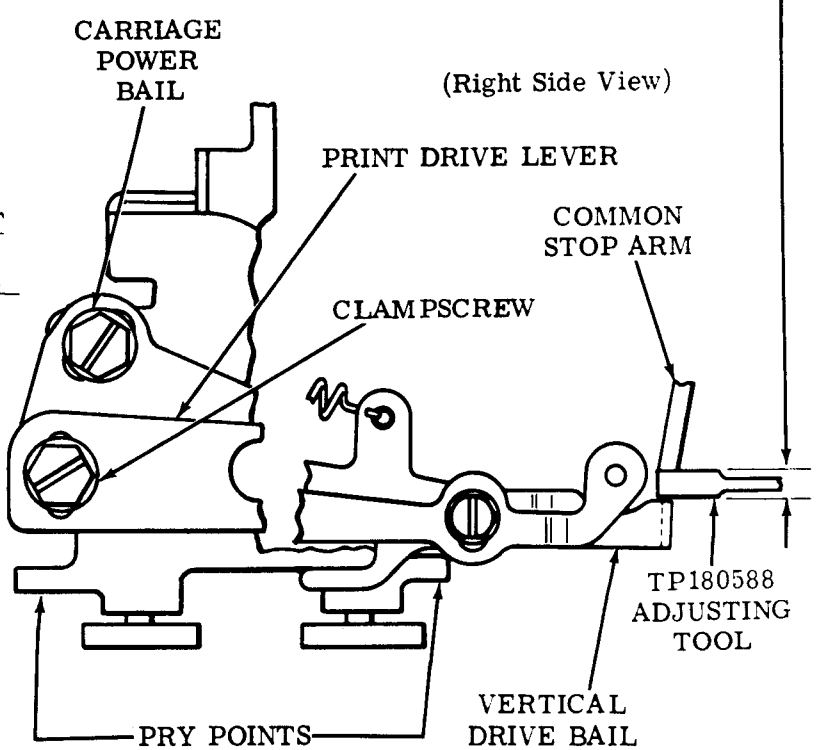
Related Adjustments

Affects

RIGHT SLIDE GUIDEPLATE RESET (2.52)
PRINT HAMMER TRIP LEVER RESET (2.55)
LEFT SLIDE GUIDEPLATE RESET (2.53)
RIBBON POSITIONING (2.56)
VERTICAL TYPE ALIGNMENT - F (2.71)
VERTICAL TYPE ALIGNMENT - S (2.90)
PRINT SUPPRESSION LATCH-LEVER ENDPLAY (2.50)

Affected By

REAR RAIL POSITION (2.45)
FRONT ROLLERS CLEARANCE (2.45)
REAR ROLLER CLEARANCE (2.46)



2.49 Carriage Area (continued)

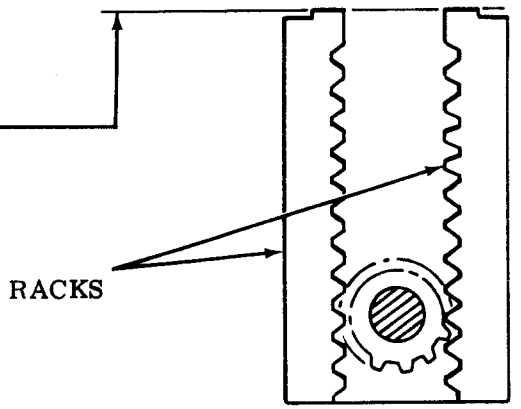
RESET LEVER POSITIONING

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

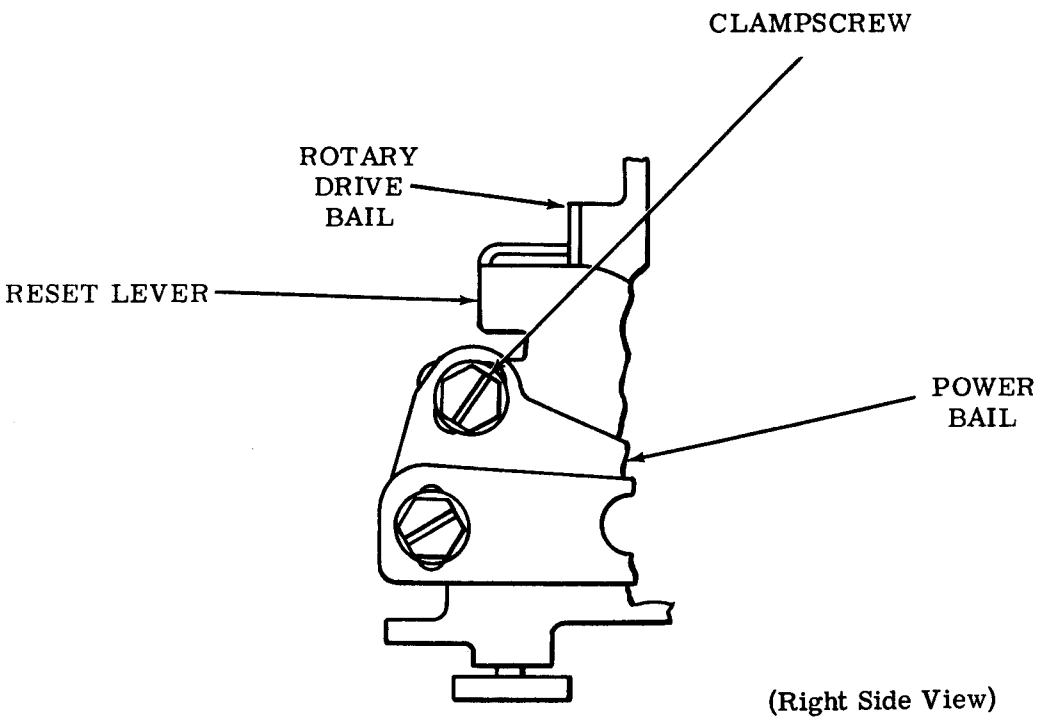
To Adjust
Place carriage in center of typing unit. Loosen clampscrew and allow positioning spring to fully reset racks. Tighten clampscrew.

Related Adjustments
Affects
RIBBON POWER LEVER DRIVE (2.62)

Affected By
REAR RAIL POSITION (2.45)
REAR ROLLER CLEARANCE (2.46)



(Top View)



(Right Side View)

2.50 Carriage Area (continued)

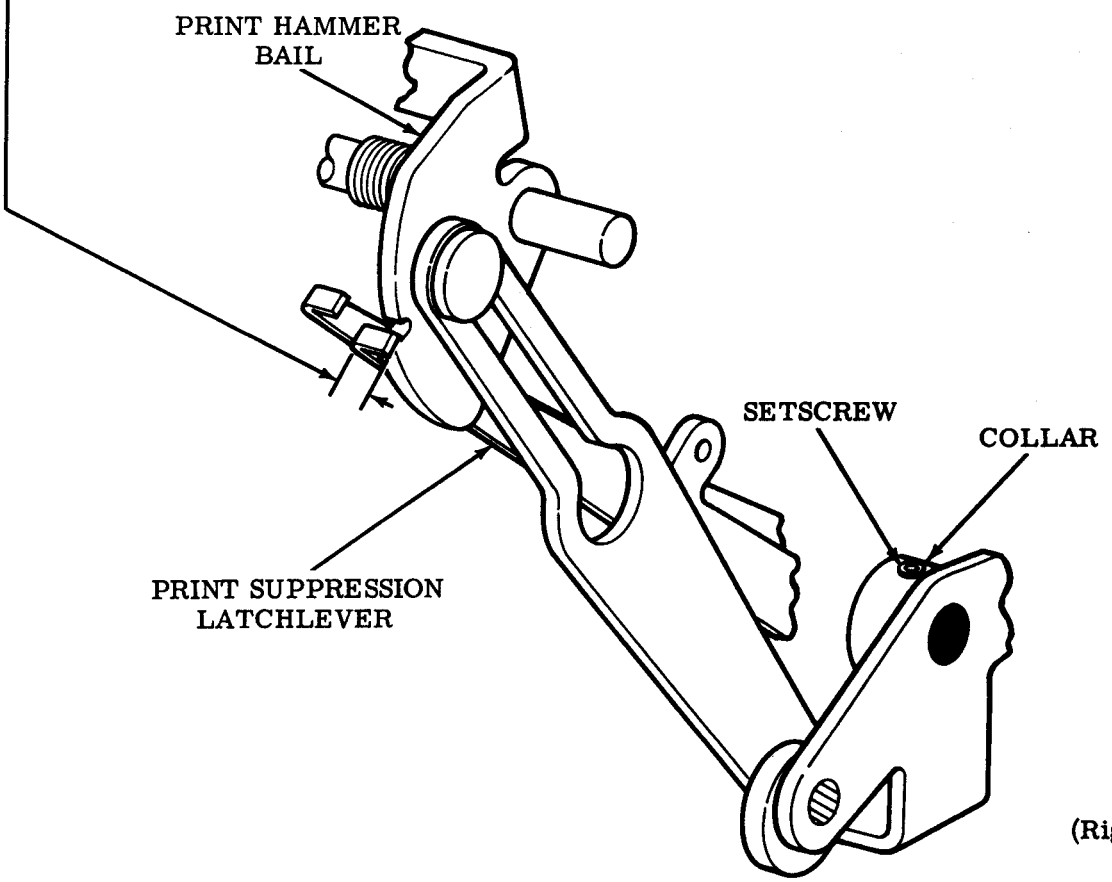
PRINT SUPPRESSION LATCHLEVER ENDPLAY

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.

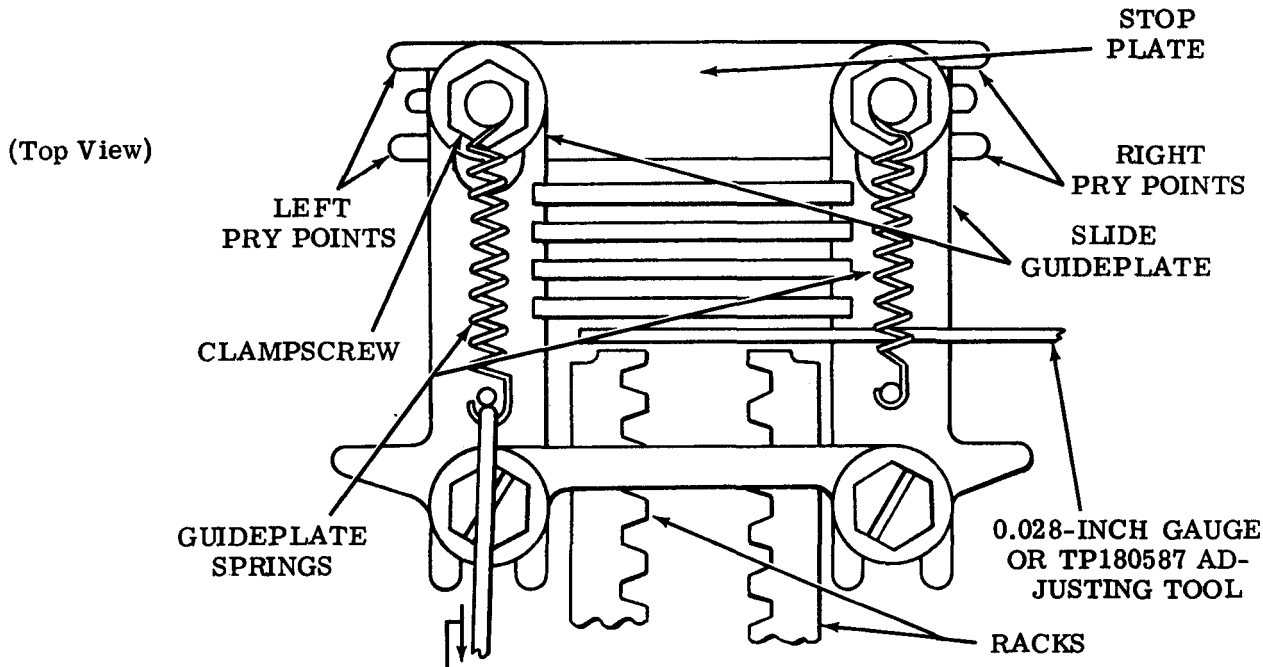
To Adjust
Loosen setscrew with hex key wrench and position collar. Tighten setscrew.

Related Adjustments
Affected By
PRINT DRIVE LEVER POSITIONING (2.48)



(Right Front View)

2.51 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 (Preliminary)

Note 1: Final print alignment is found in 2.125.

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

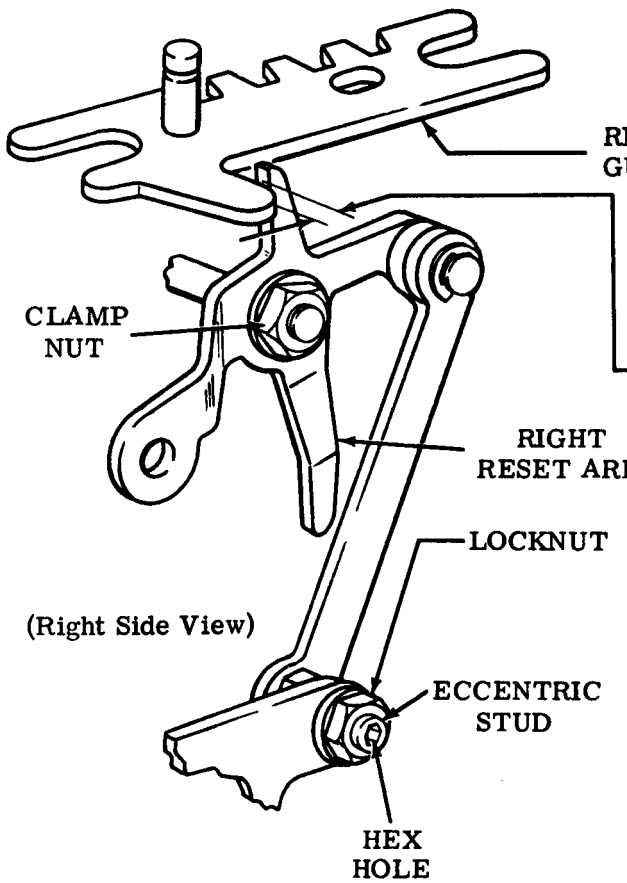
Place typing unit in stop condition. Open up LEFT SLIDE GUIDEPLATE RESET (2.53) and RIGHT SLIDE GUIDEPLATE RESET (2.52) adjustments. Loosen two clampscrews friction tight. Place either 0.028-inch guage or TP180587 adjusting tool across end of racks. Hold reset lever in place and position stop plate so that entire slide assembly is tight against racks and tool.

Related Adjustments

Affects

LEFT SLIDE GUIDEPLATE RESET (2.53)
RIGHT SLIDE GUIDEPLATE RESET (2.52)

2.52 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

LEFT SLIDE GUIDPLATE RESET (2.53)
PRINT HAMMER TRIP LEVER RELEASE (2.54)
RIBBON POSITIONING (2.56)

Affected By

REAR RAIL POSITION (2.45)
REAR ROLLER CLEARANCE (2.46)
PRINT DRIVE LEVER POSITIONING (2.48)
TYPEWHEEL POSITIONING (2.51)

2.53 Carriage Area (continued)

LEFT SLIDE GUIDEPLATE RESET

Requirement

With typing unit in stop condition

Min some---Max 0.015 inch between left slide guideplate and left reset arm when the right and left slide guideplates are held toward the front to make clearance a maximum.

To Adjust

Loosen left reset arm clamp nut. Position left reset arm using pry point. Tighten clamp nut.

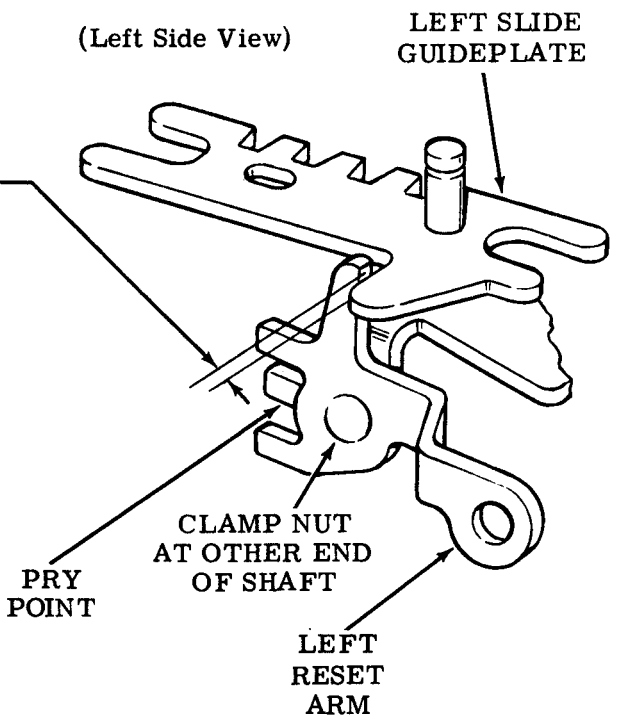
Related Adjustments

Affects

RIBBON POSITIONING (2.56)

Affected By

REAR RAIL POSITION (2.45)
PRINT DRIVE LEVER POSITIONING (2.48)
TYPEWHEEL POSITIONING (2.51)
RIGHT SLIDE GUIDEPLATE RESET (2.52)



2.54 Carriage Area (continued)

PRINT HAMMER TRIP LEVER RELEASE

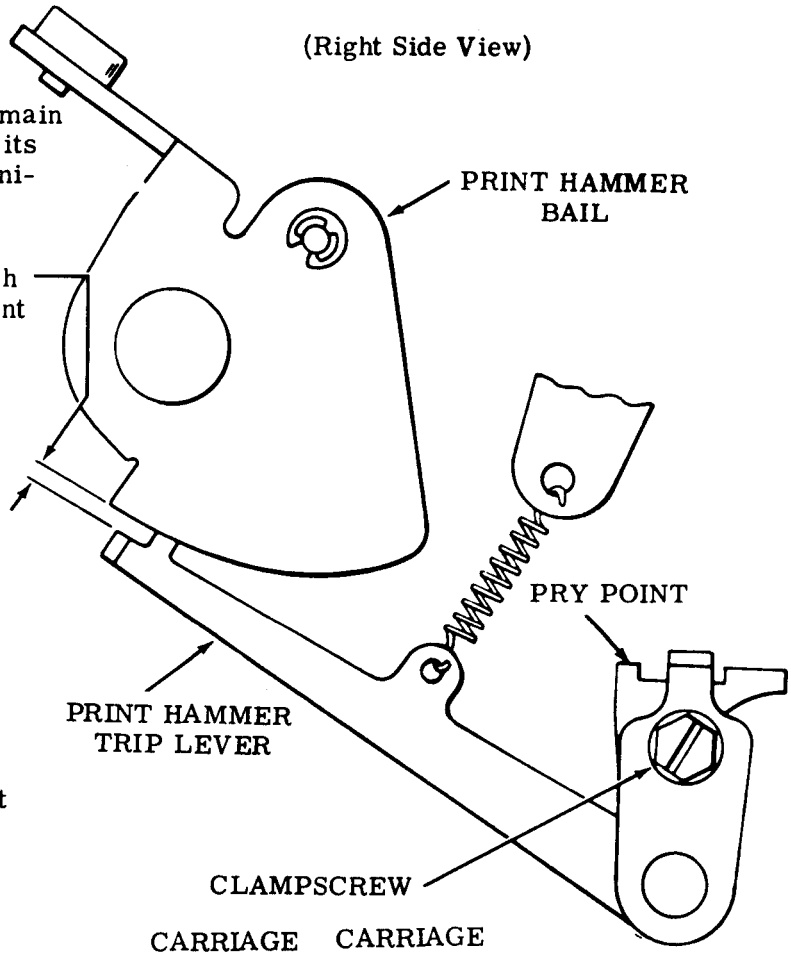
To Check
Place carriage at left margin. Rotate main shaft until carriage drive bail reaches its rearmost position. Take up play to minimize required clearance.

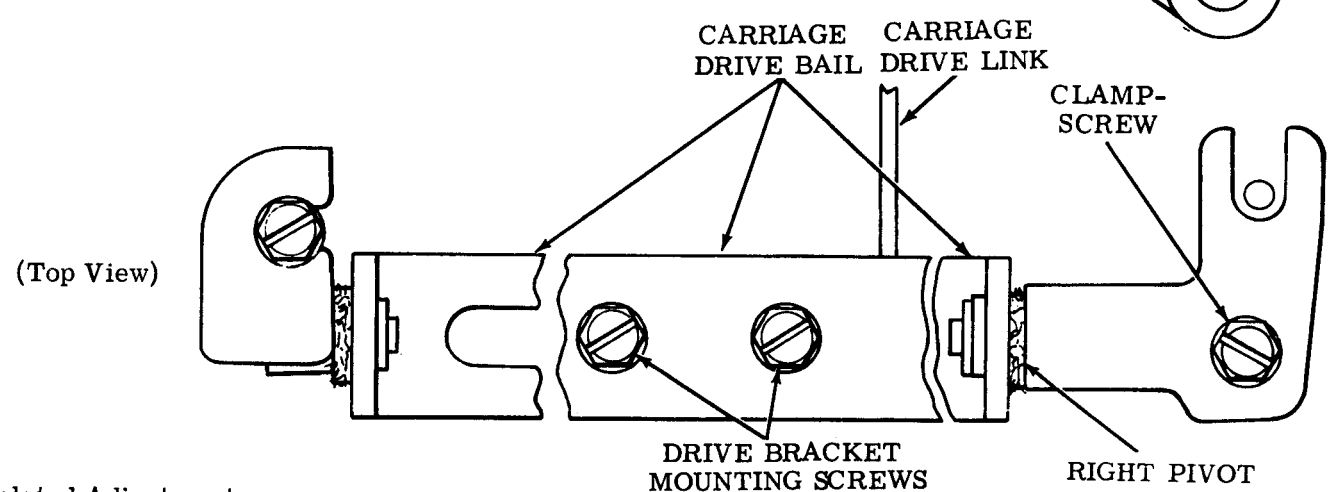
(1) Requirement
Min 0.040 inch---Max 0.110 inch between print hammer bail and print hammer trip lever.

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

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

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





Related Adjustments
Affects
FEED PAWL STOP POSITION (Spacing Area) (2.64)
PRINT HAMMER TRIP LEVER RESET (2.55)

RIGHT SLIDE GUIDEPLATE RESET (2.52)
REAR RAIL POSITION (2.45)
REAR ROLLER CLEARANCE (2.46)

2.55 Carriage Area (continued)

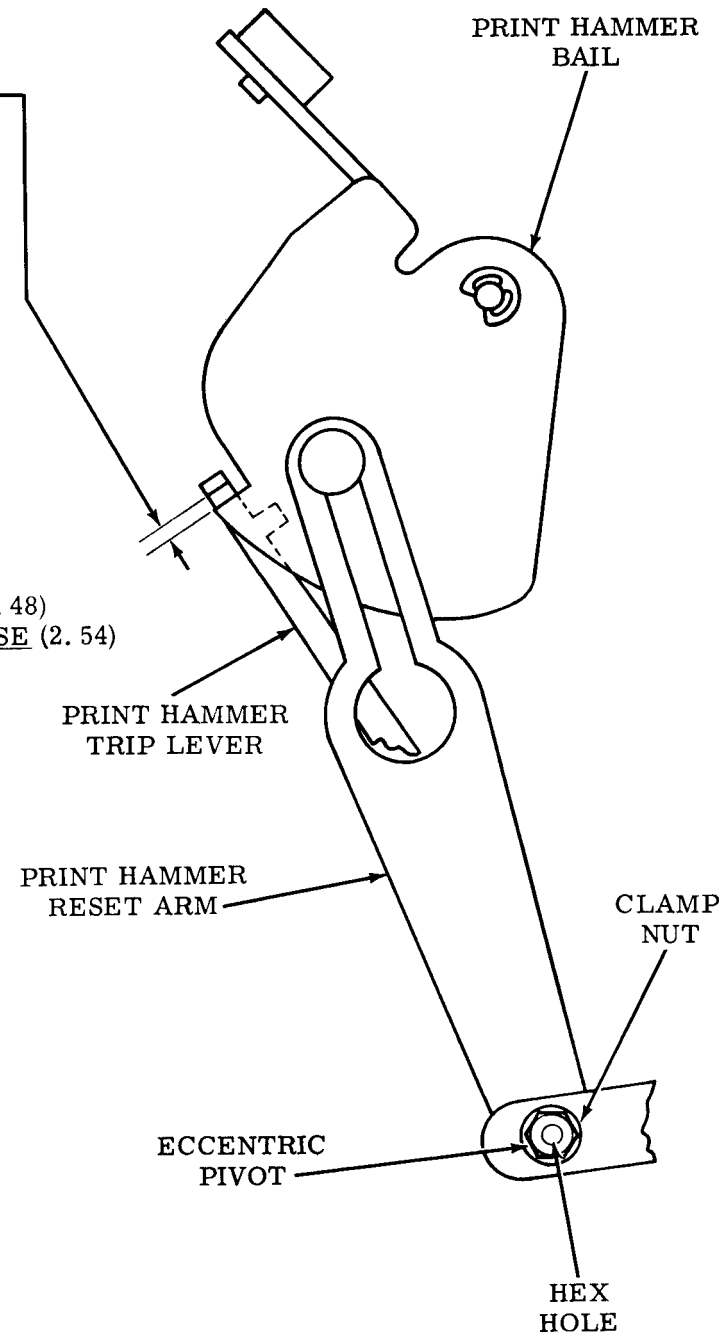
PRINT HAMMER TRIP LEVER RESET

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 hammer reset arm 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
REAR RAIL POSITION (2.45)
REAR ROLLER CLEARANCE (2.46)
PRINT DRIVE LEVER POSITIONING (2.48)
PRINT HAMMER TRIP LEVER RELEASE (2.54)



2.56 Carriage Area (continued)

Note: Do not perform the following adjustment on typing units equipped with the two-color printing feature. Typing units with TP186732 ribbon link do not require this adjustment.

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.

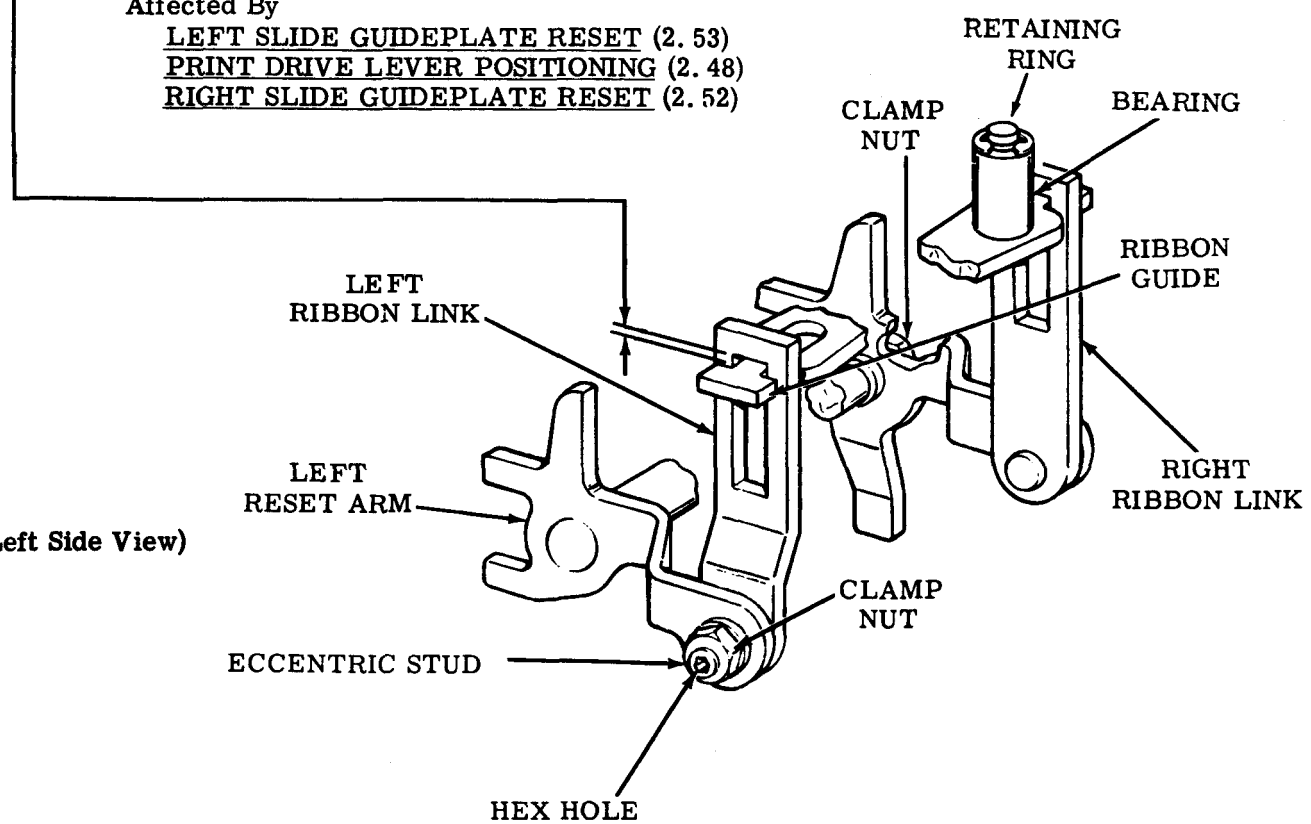
To Adjust

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

Related Adjustments

Affected By

LEFT SLIDE GUIDEPLATE RESET (2.53)
PRINT DRIVE LEVER POSITIONING (2.48)
RIGHT SLIDE GUIDEPLATE RESET (2.52)



(Left Side View)

2.57 Carriage Area (continued)

PRINT SUPPRESSION LATCHLEVER RELEASE

To Check

Place carriage approximately 1/2 inch from left margin. Set up the "T" (--3-5-78) code combination in the selector. Rotate main shaft until the carriage drive bail reaches its rearmost position. The print suppression codebar must be all the way (fully) up.

Requirement

——Min 0.015 inch---Max 0.055 inch between print suppression latchlever and print hammer bail when play in print suppression latchlever is taken up to make gap a minimum. ←←

To Adjust

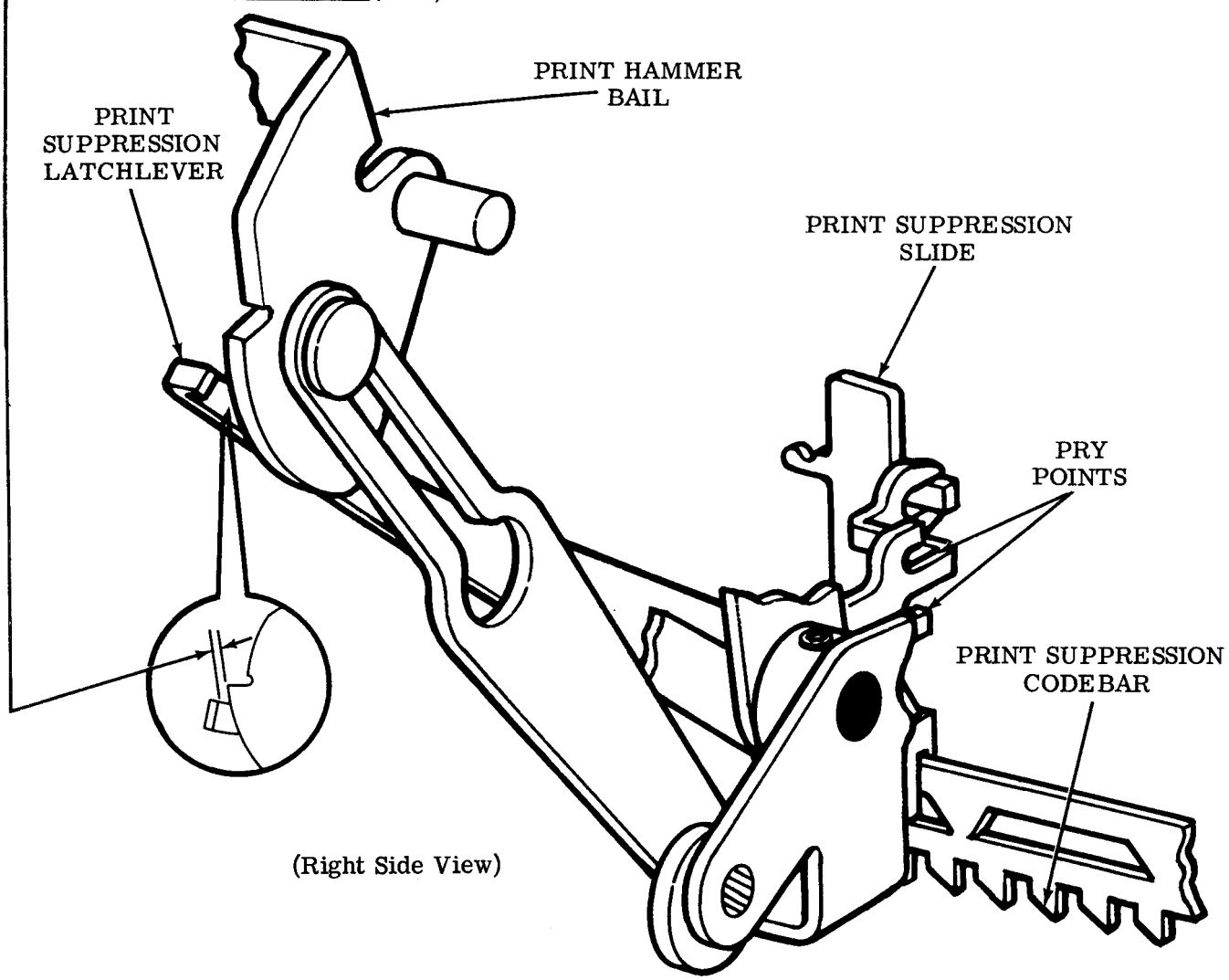
With print suppression latchlever held against print hammer bail, bend print suppression latchlever using pry points.

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

Related Adjustments

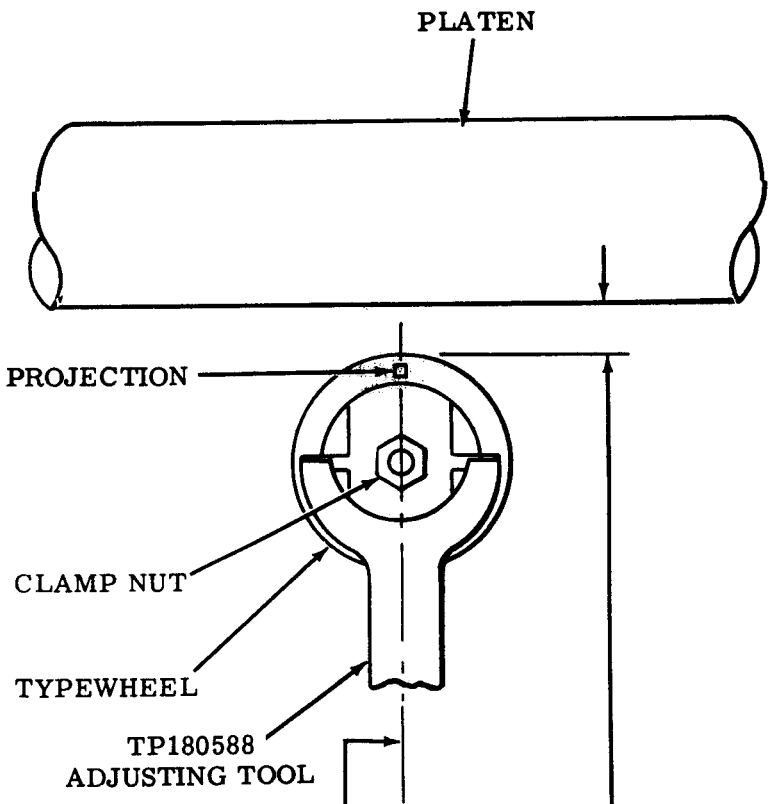
Affected By

CODEBAR RESET LEVER POSITION (Function Area) (2.28)
FRONT ROLLERS CLEARANCE (2.43)
REAR RAIL POSITION (2.45)



(Right Side View)

2.58 Carriage Area (continued)



(Top View)

TYPEWHEEL "HOME" POSITION
(Preliminary)

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.

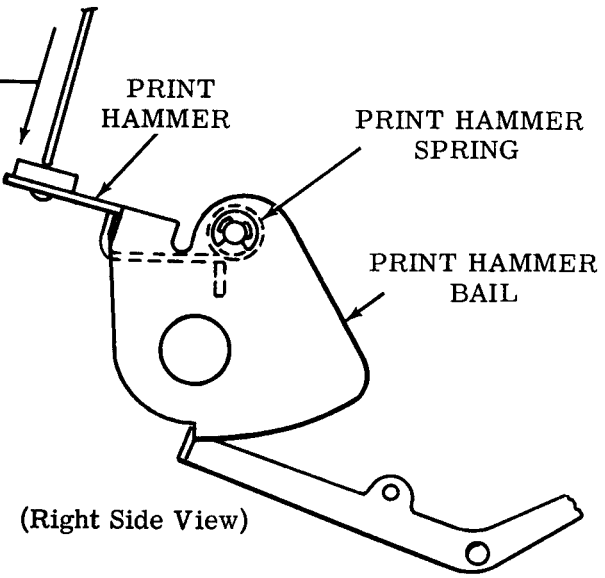
To Adjust
Loosen clamp nut and position typewheel using TP180588 adjusting tool. Tighten clamp nut.

Related Adjustments
Affects
FINAL PRINTING ALIGNMENT (2.125)

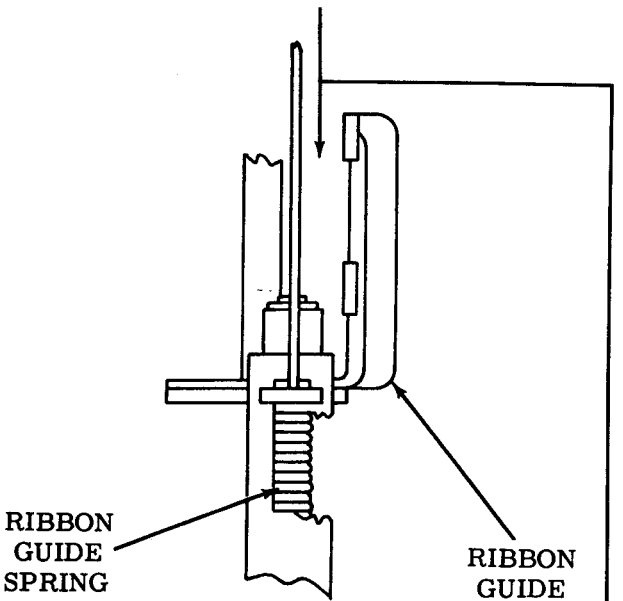
2.59 Carriage Area (continued)

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)

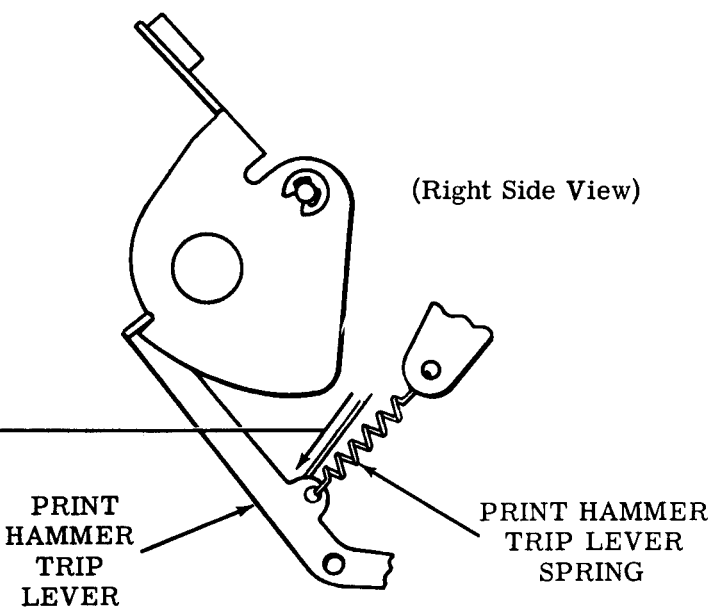
RIBBON GUIDE SPRING

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.

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.



(Right Side View)

2.60 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.

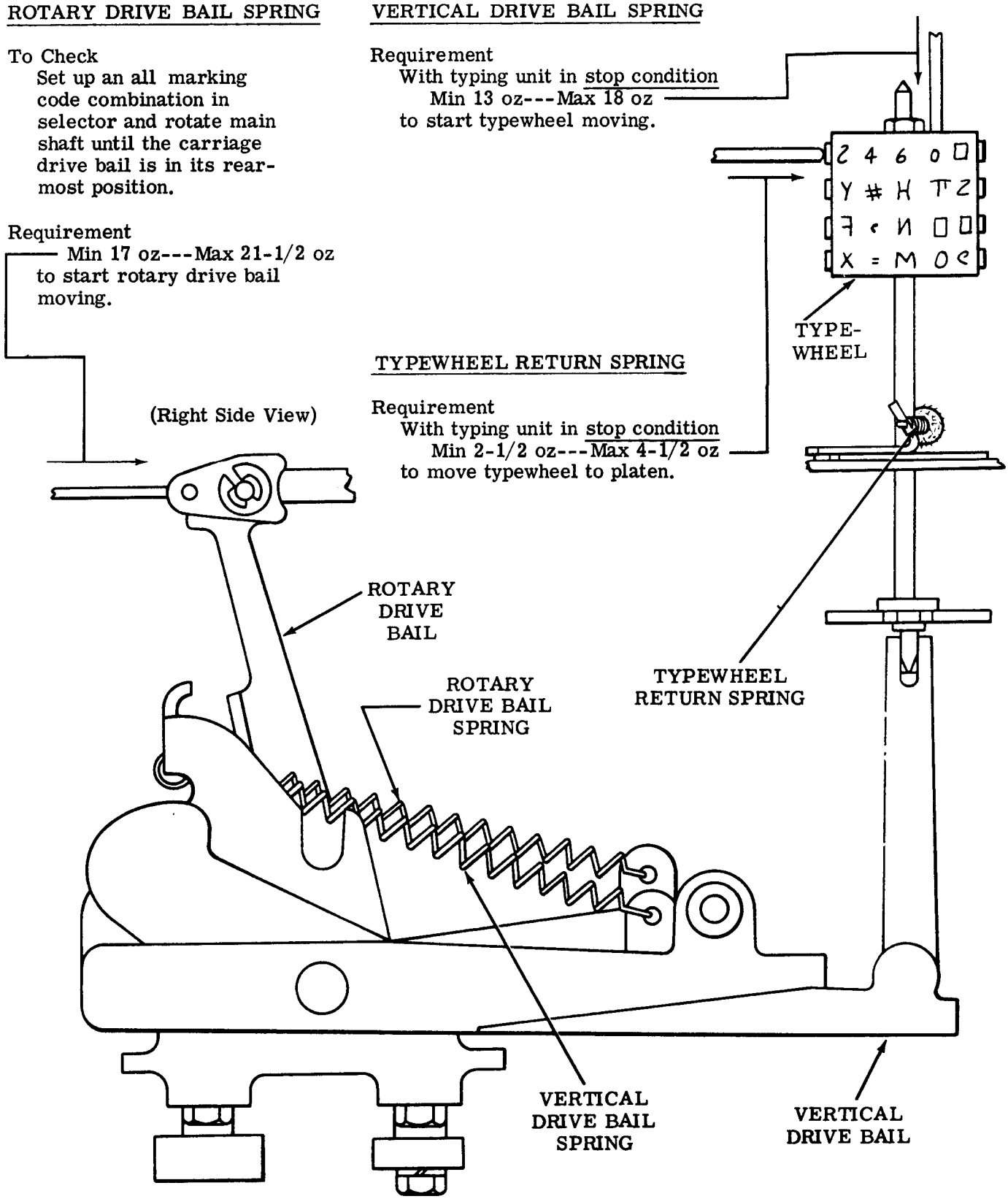
Requirement
Min 17 oz---Max 21-1/2 oz to start rotary drive bail moving.

VERTICAL DRIVE BAIL SPRING

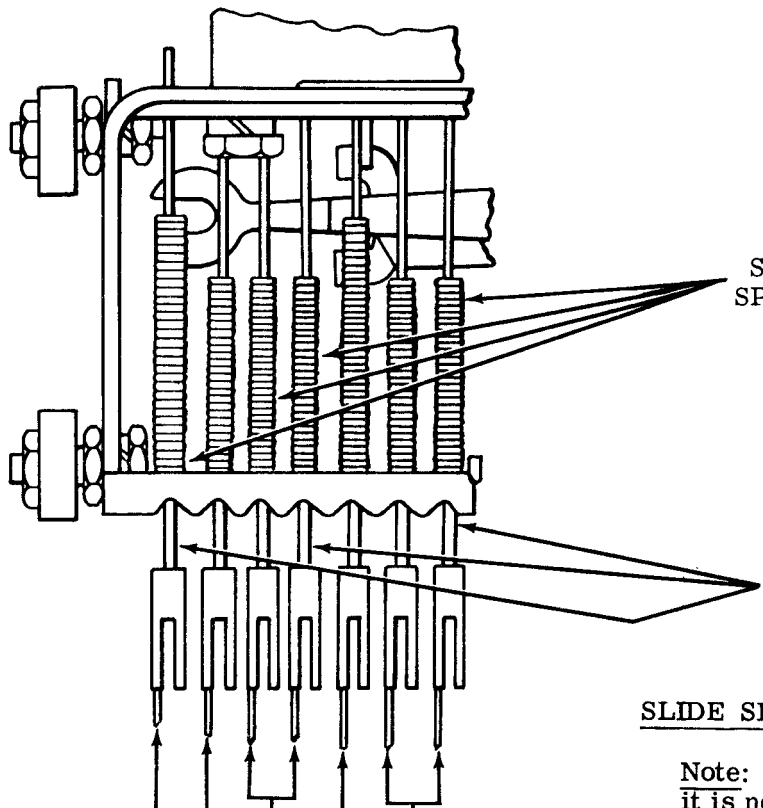
Requirement
With typing unit in stop condition
Min 13 oz---Max 18 oz
to start typewheel moving.

TYPEWHEEL RETURN SPRING

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



2.61 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

2.62 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

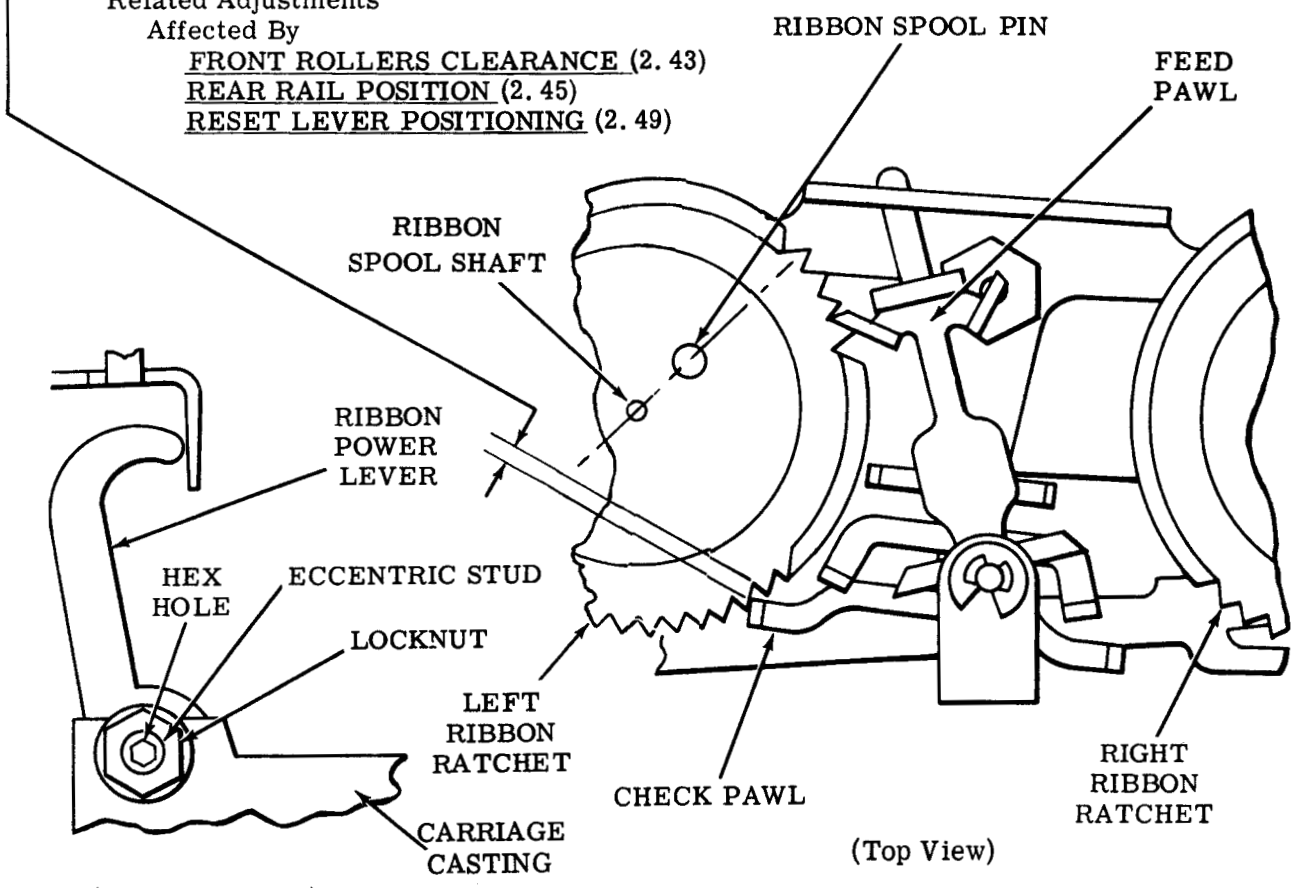
Loosen locknut and position the eccentric stud with hex key wrench in hex hole. Tighten locknut.

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

Related Adjustments

Affected By

FRONT ROLLERS CLEARANCE (2.43)
REAR RAIL POSITION (2.45)
RESET LEVER POSITIONING (2.49)



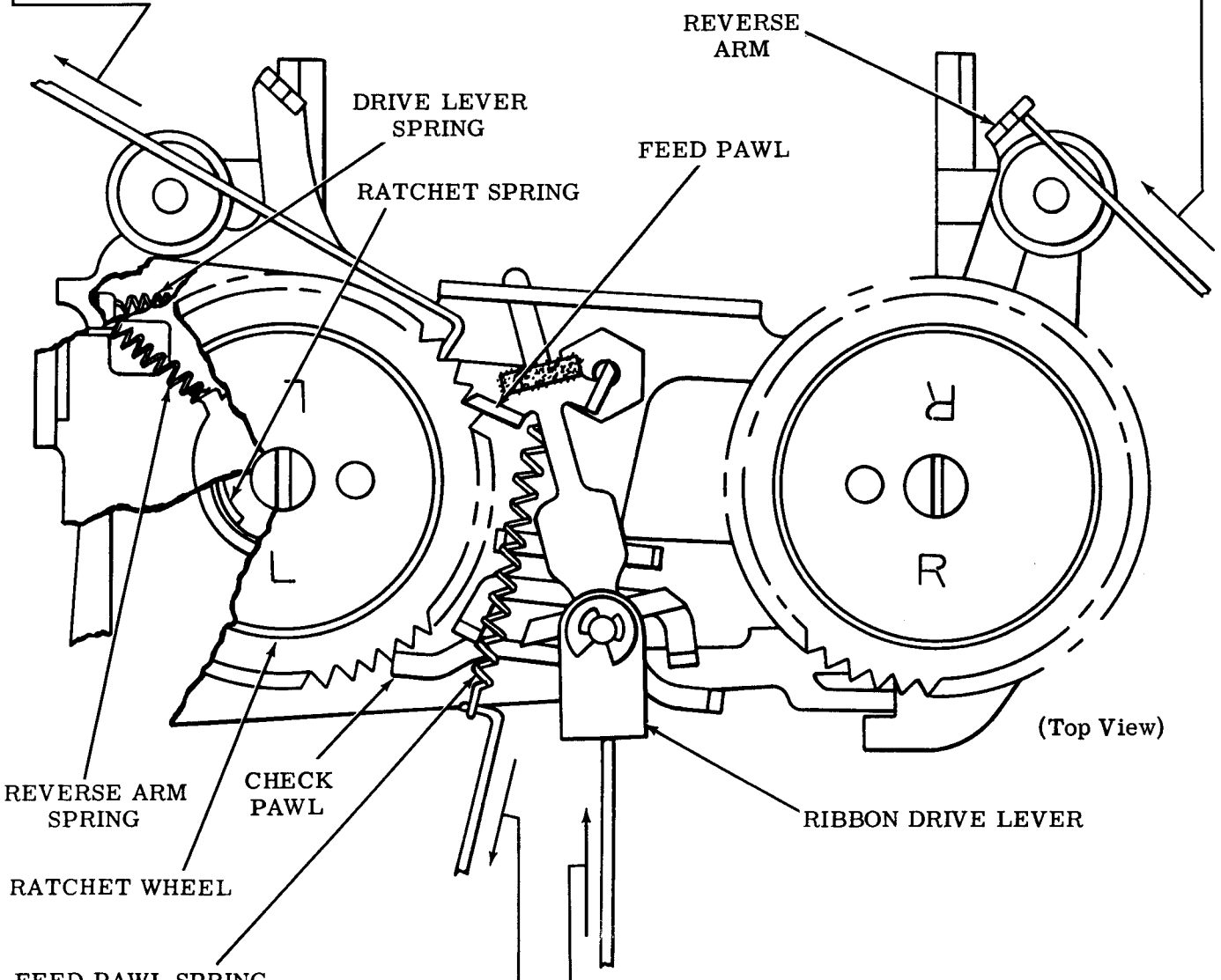
2.63 Carriage Area (continued)

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.



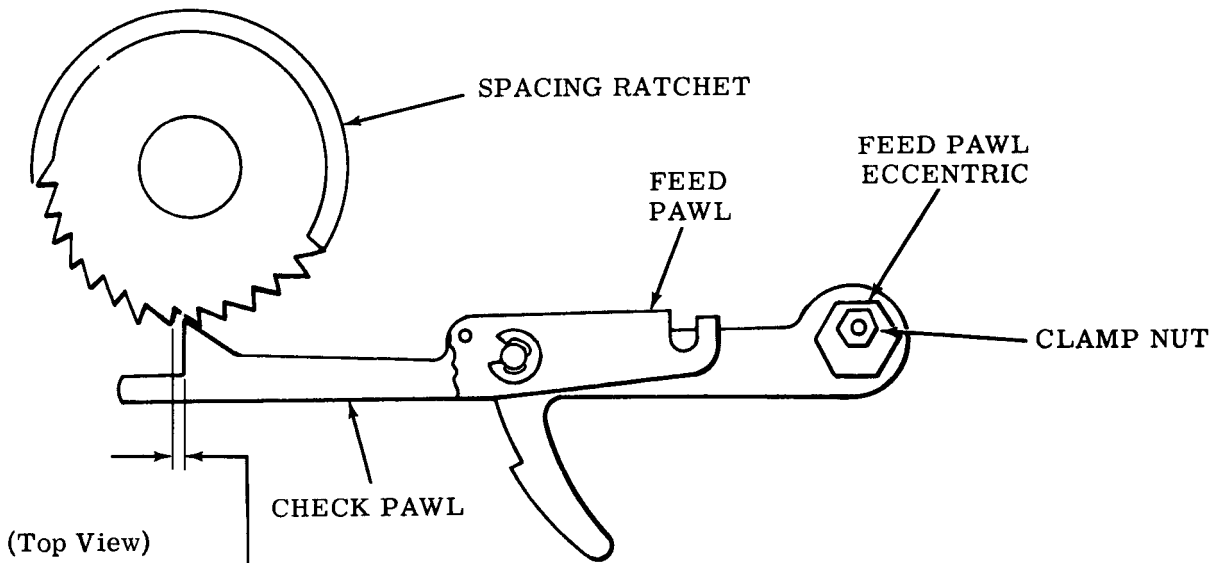
RIBBON FEED PAWL SPRING

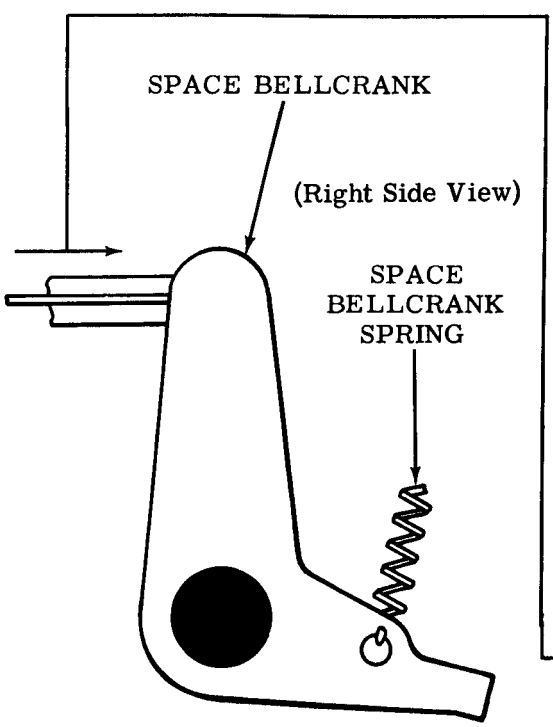
Requirement
With typing unit in stop condition
Min 2-1/2 oz---Max 4 oz
to pull feed pawl spring to installed length.

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. 64 Spacing Area





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 HAMMER TRIP LEVER RELEASE (Carriage Area) (2. 54)

SPACE BELLCRANK SPRING

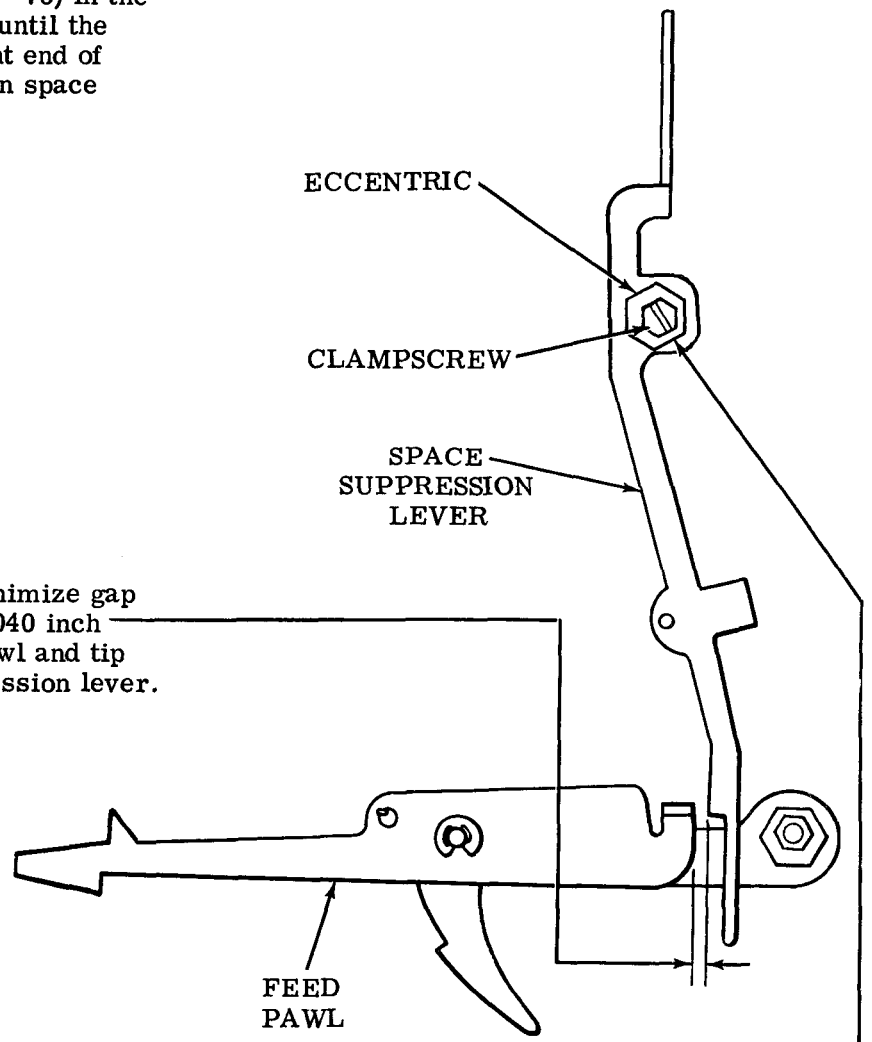
Requirement
With typing unit in stop condition
— Min 3 oz---Max 5 oz to start bellcrank moving.

2.65 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 between right end of feed pawl and tip of notch on the space suppression lever.

Min 0.005 inch---Max 0.040 inch

(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.

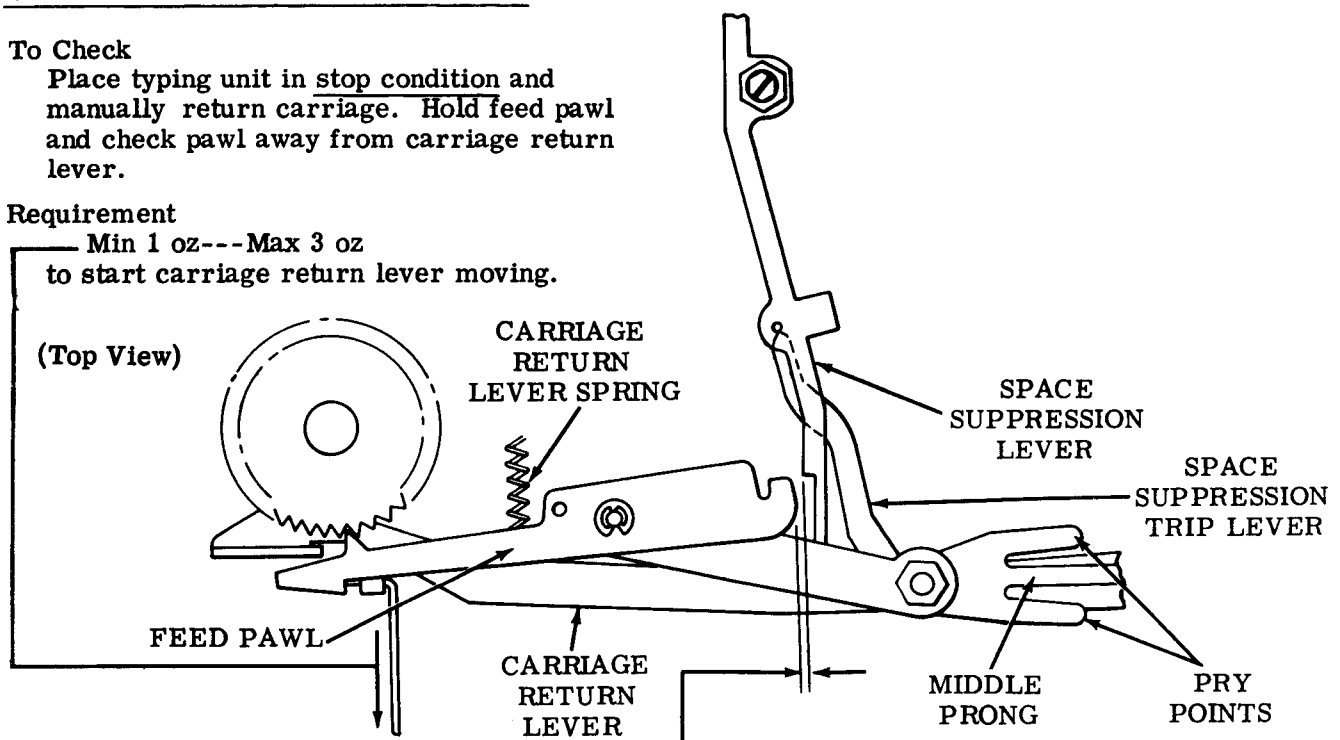
Related Adjustment
Affected By
CODEBAR RESET LEVER POSITION
(Function Area) (2.28)

2.66 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

(1) 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 some---Max 0.040 inch
between right end of feed pawl and tip of notch on space suppression lever.
Rotate main shaft through one complete revolution and check for horizontal motion of the space suppression lever. If motion occurs, refine requirement to min side and recheck.

To Adjust
Position space suppression trip lever by bending middle prong. Use front pry point.to increase clearance. Use rear pry point to decrease clearance.

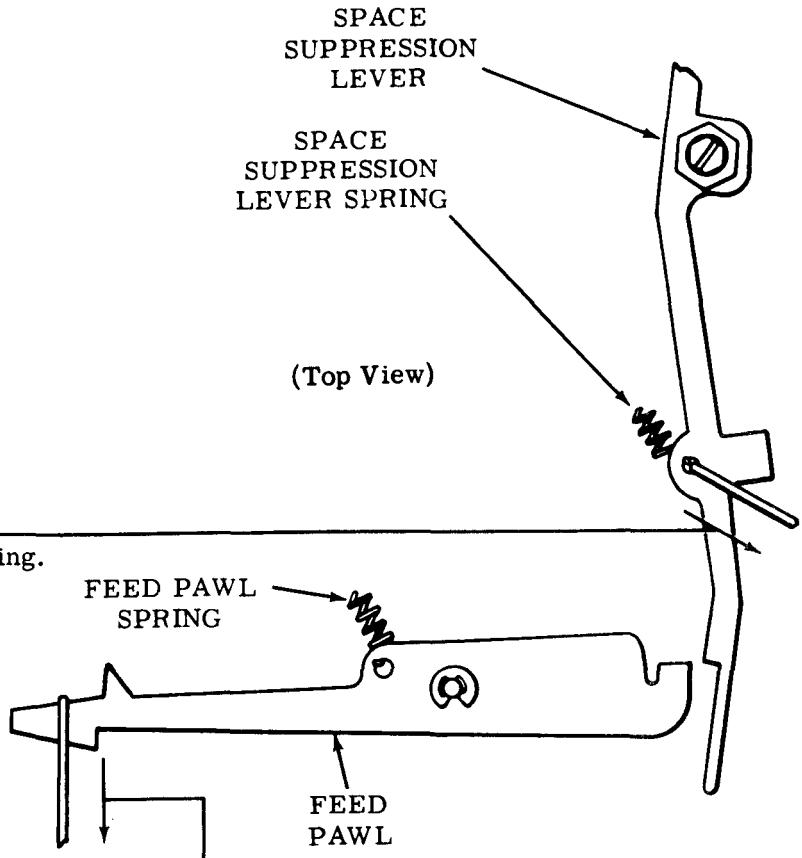
(2) To Check (Typing units with eccentric)
Move carriage to center of platen. Set up space code combination (-----6-8) in selector. Rotate main shaft until front vertical surface of right end of feed pawl is aligned with notch on space suppression lever.

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

To Adjust
Loosen clamp nut and position eccentric keeping high part of eccentric toward bottom of unit. Rotate high part of eccentric to rear to increase gap and forward to decrease gap.

Related Adjustments
Affected By
LEFT ROCKER DRIVE (2.34)

2.67 Spacing Area



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.

2.68 Spacing Area (continued)

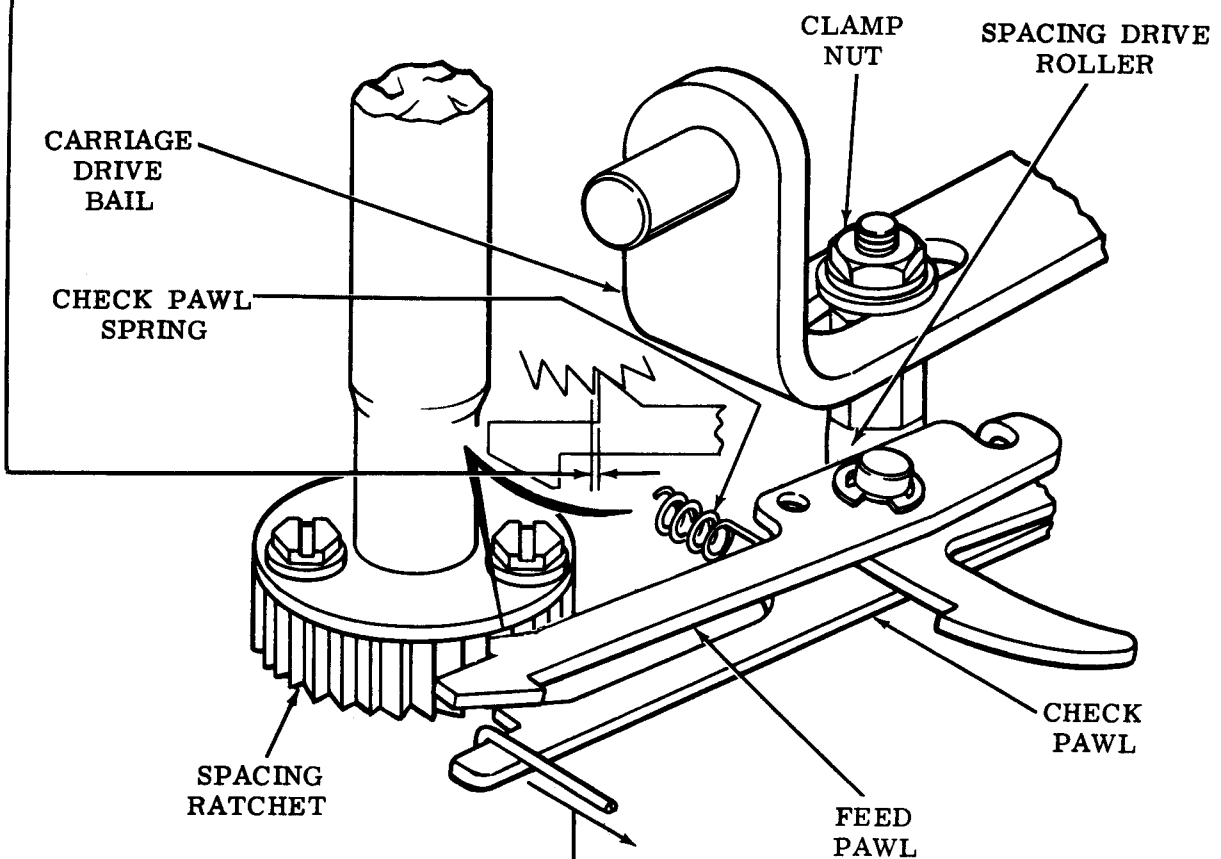
FEED PAWL TRAVEL

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 Adjustment Affected By
LEFT MARGIN POSITION - F (2.72)



(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.

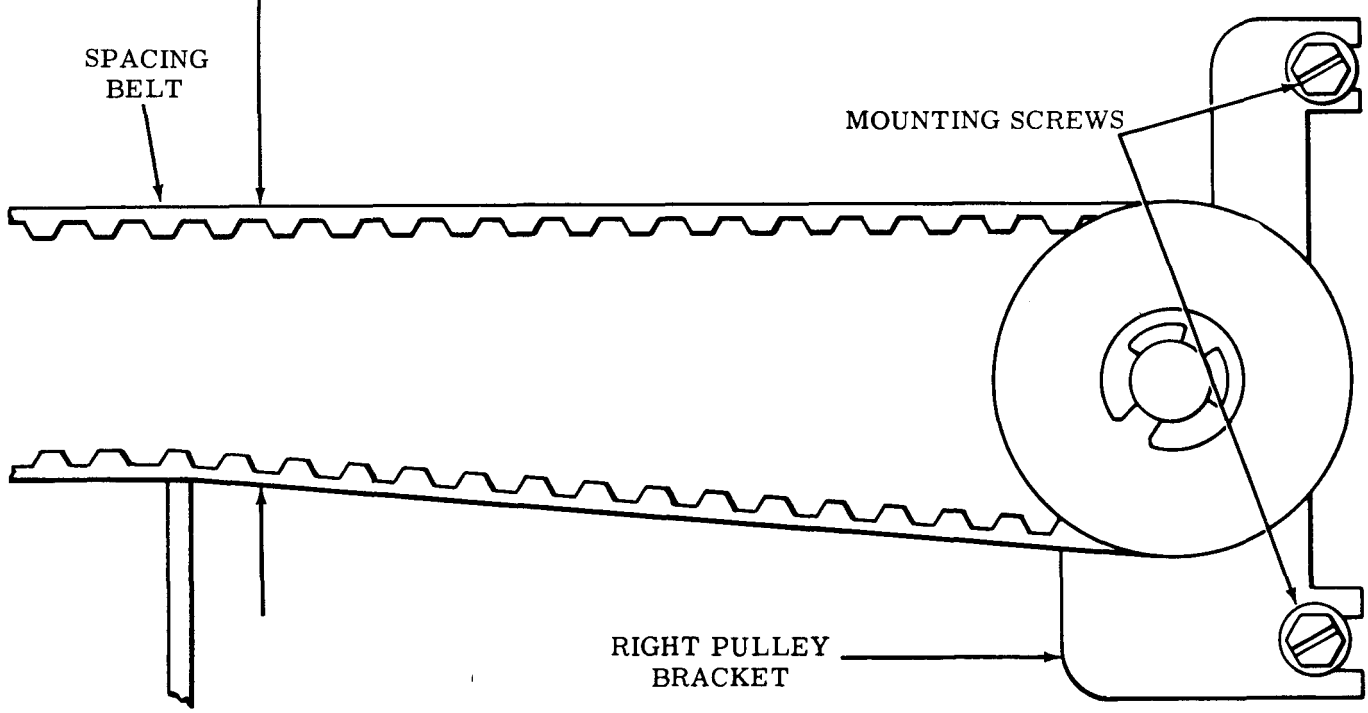
2.69 Spacing Area (continued)

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 (2.120)



(Top View)

2.70 Platen Area

PLATEN — HORIZONTAL POSITION - F

(1) To Check

Place the flat surface 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.

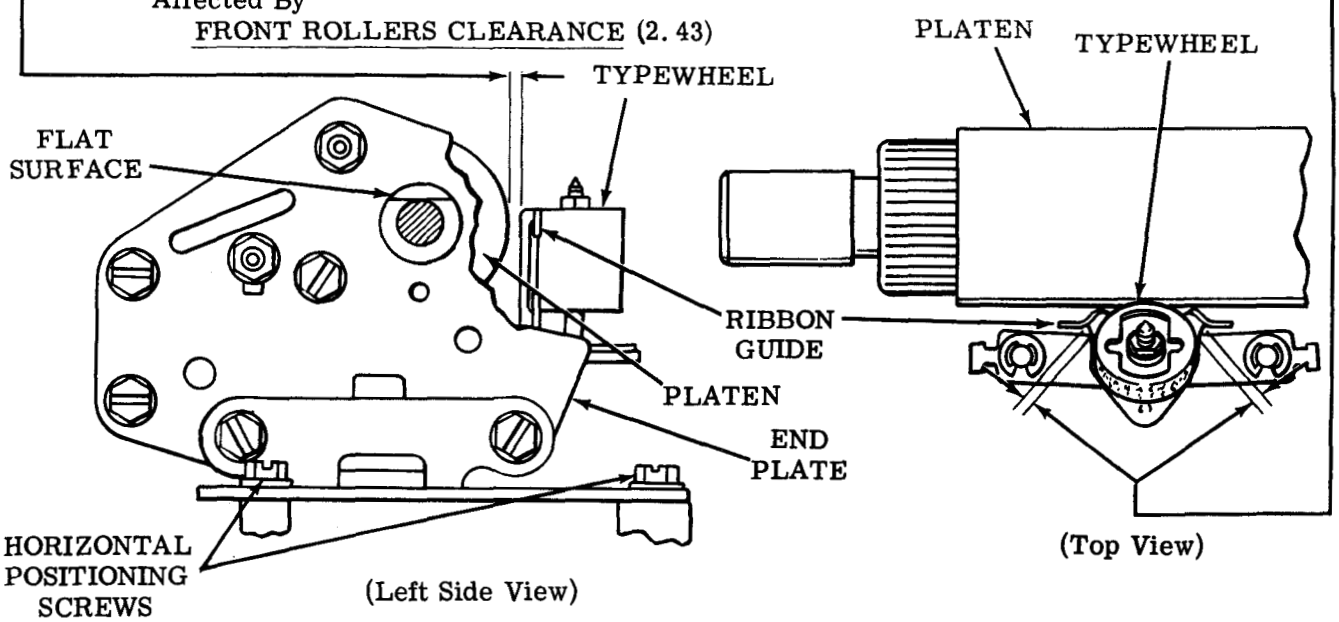
(2) To Check
Place carriage to center of platen and rotate platen until maximum clearance is obtained between platen and ribbon guide. Set up the E code combination (1-3---78) in the selector. Rotate main shaft until carriage drive bail is in its rearmost position. Push typewheel to the rear until it 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 Adjustments
Affects
LINE FEED STRIPPER PLATE CLEARANCE - F (2.85)
Affected By
FRONT ROLLERS CLEARANCE (2.43)



(Left Side View)

(Top View)

2.71 Platen Area (continued)

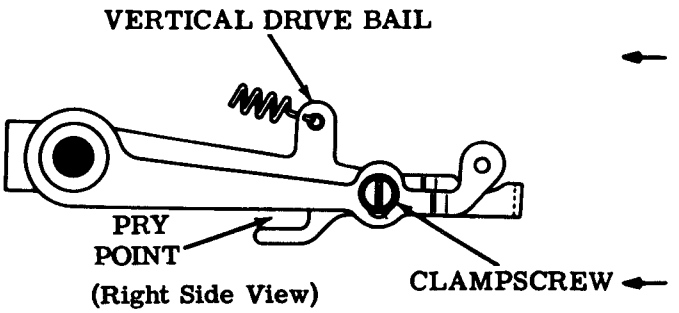
VERTICAL TYPE ALIGNMENT - F

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 clampscrew on vertical drive bail and position the typewheel using pry point. Tighten adjusting screw.



(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.

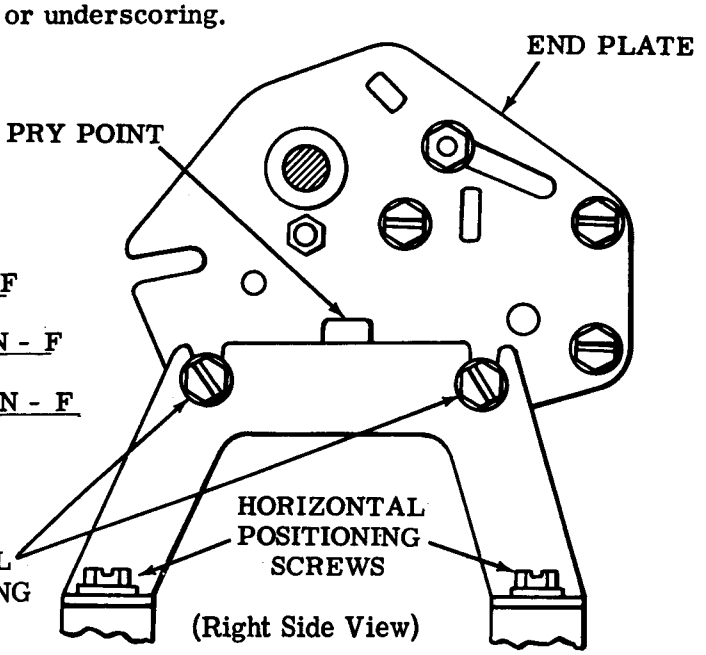
To Adjust
Loosen vertical positioning screws on right side. Position the right end of the platen using pry point. Do not twist the platen. Tighten positioning screws.

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.

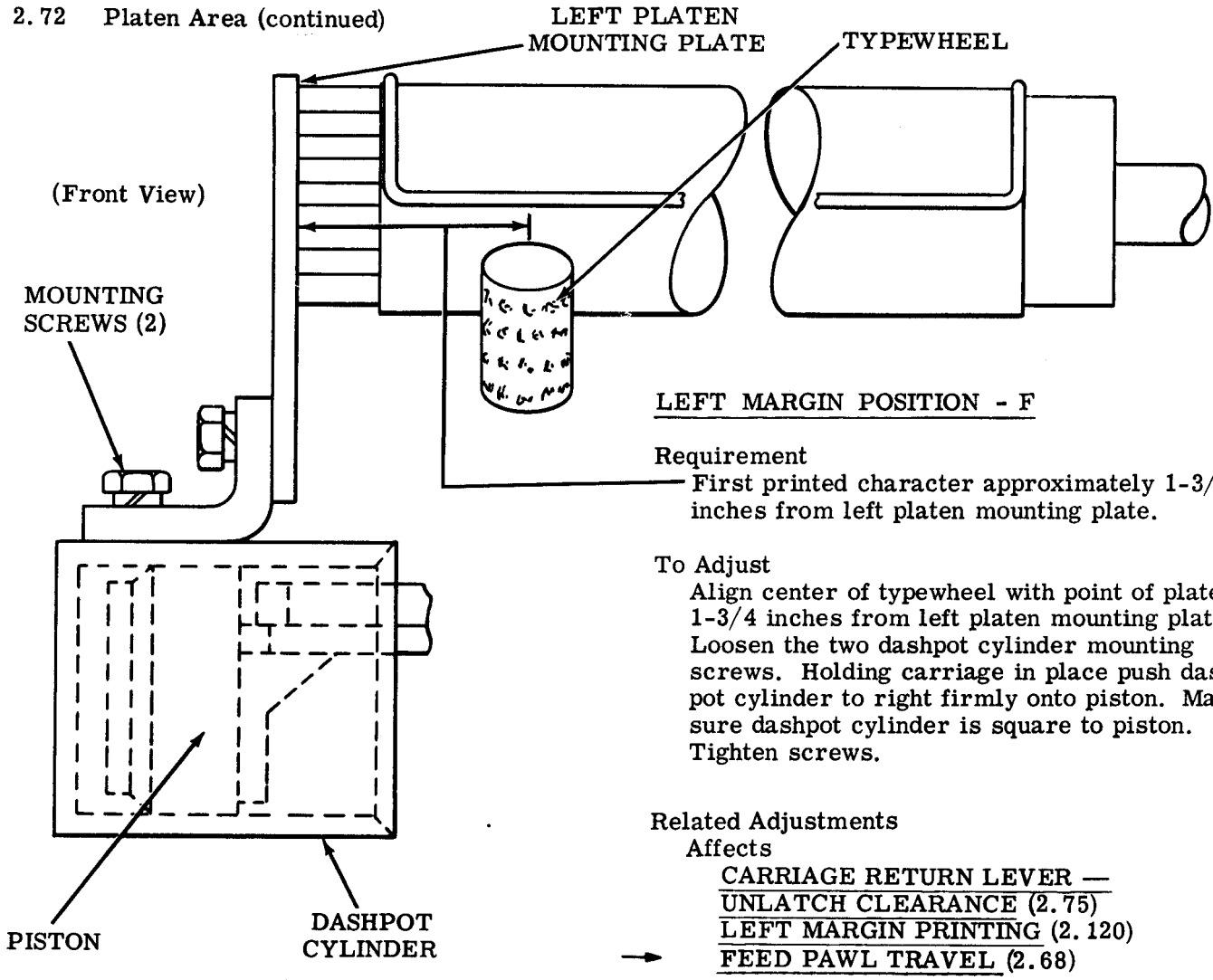


Related Adjustments

Affects
LINE FEED DRIVE ARM CLEARANCE - F (2.80)
LINE FEED PAWL DOWNSTOP POSITION - F (2.83)
LINE FEED UPSTOP BRACKET POSITION - F (2.81)
PRESSURE ROLLER CLEARANCE (2.84)
LINE FEED DRIVE LINK POSITION - F (2.82)

Affected By
REAR RAIL POSITION (2.45)
PRINT DRIVE LEVER POSITIONING (2.48)

2.72 Platen Area (continued)



LEFT MARGIN POSITION - F

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

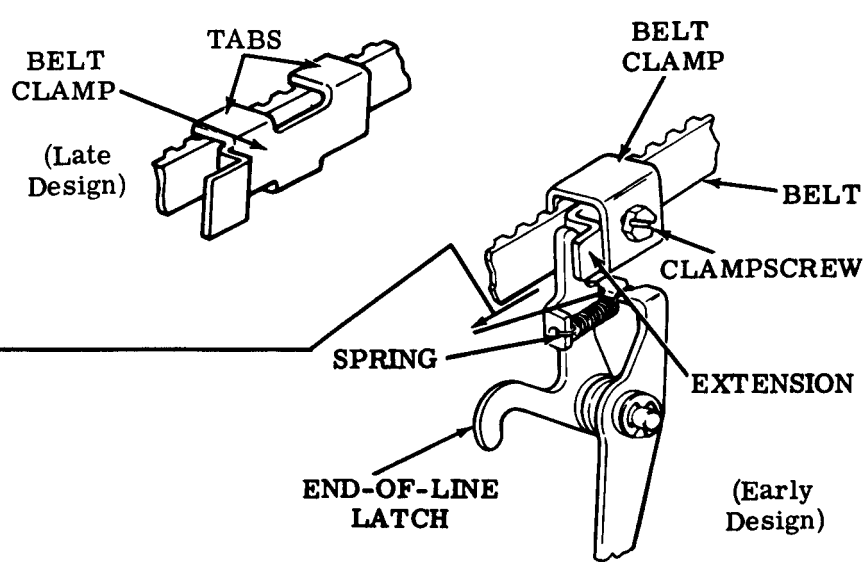
To Adjust
Align center of typewheel with point of platen 1-3/4 inches from left platen mounting plate. Loosen the two dashpot cylinder mounting screws. Holding carriage in place push dashpot cylinder to right firmly onto piston. Make sure dashpot cylinder is square to piston. Tighten screws.

Related Adjustments
Affects
CARRIAGE RETURN LEVER — UNLATCH CLEARANCE (2.75)
LEFT MARGIN PRINTING (2.120)
→ FEED PAWL TRAVEL (2.68)

2.73 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.

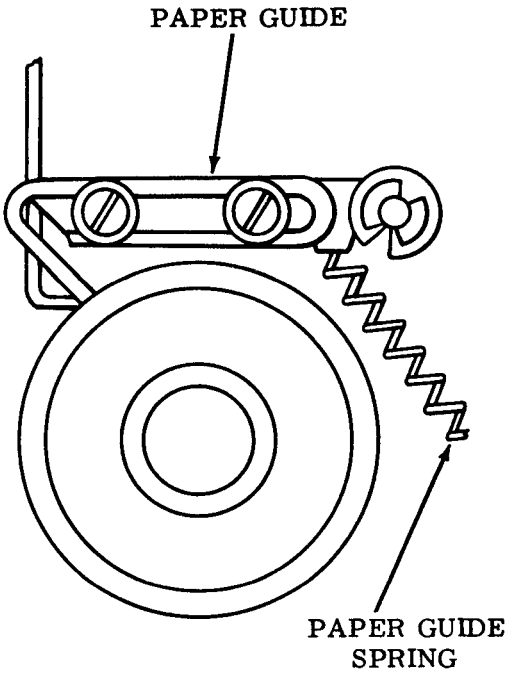


(Left Front View)

2.74 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)

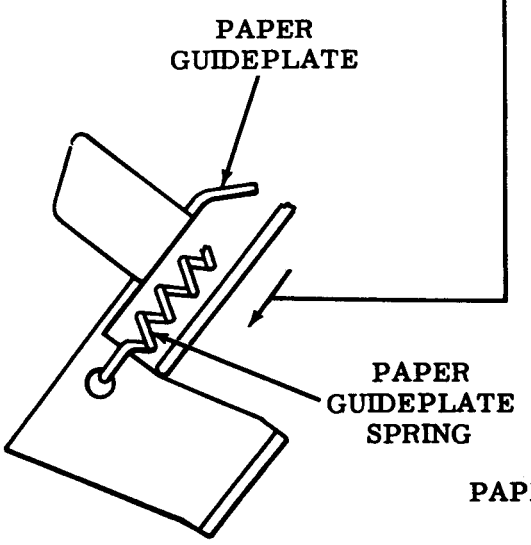
PAPER STRAIGHTENER BAIL SPRING - F

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

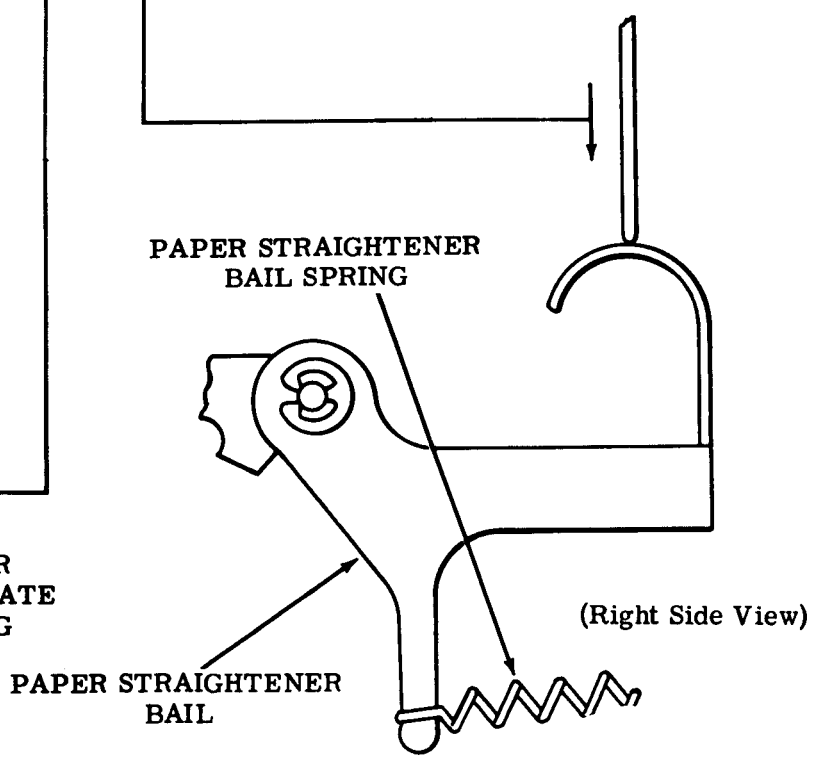
PAPER GUIDEPLATE SPRINGS - F

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.

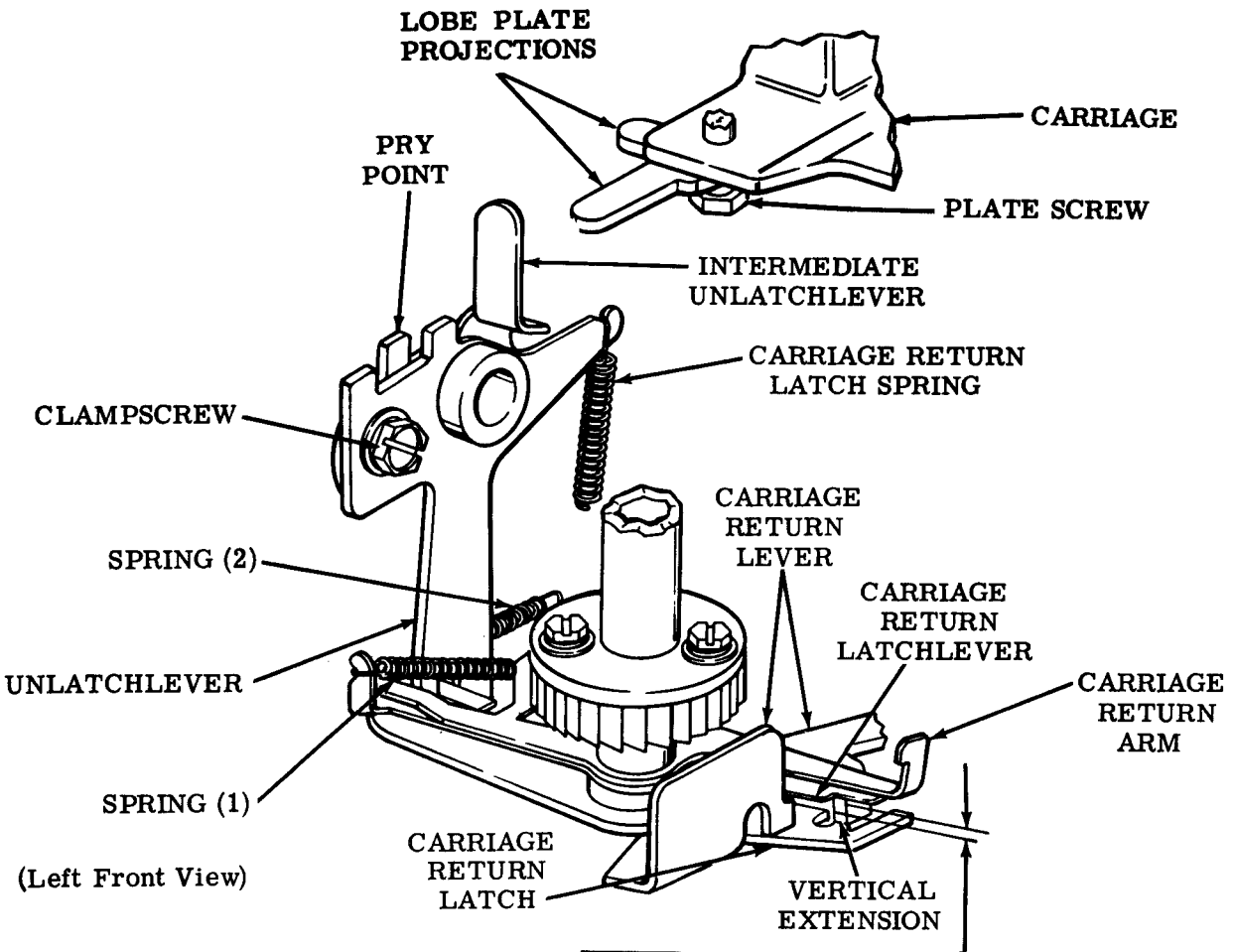


(Right Side View)



(Right Side View)

2.75 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.

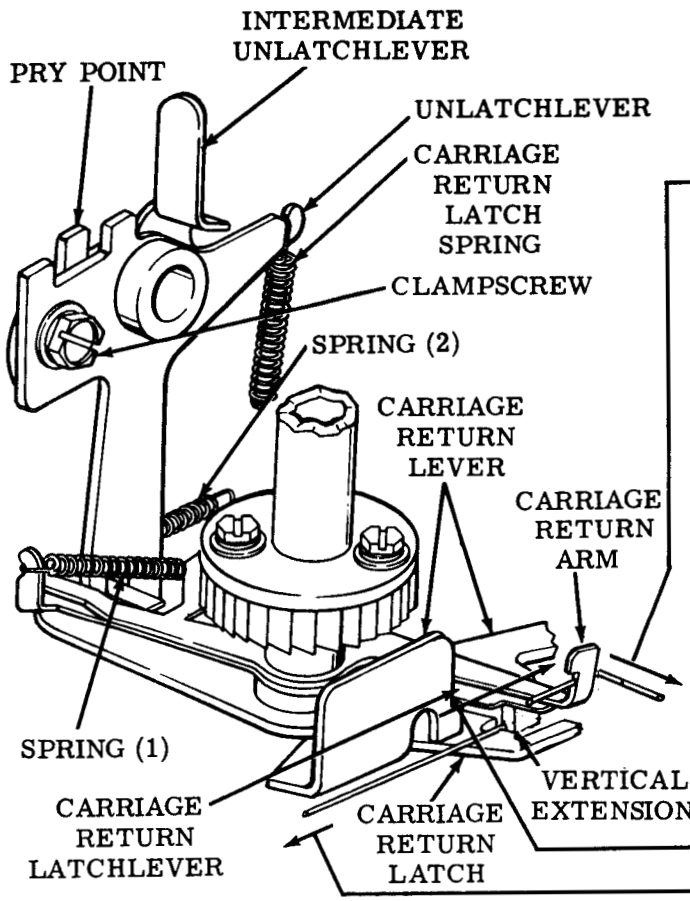
(2) To Check
Repeat To Check (1) above.

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 - S (2.118)
LEFT MARGIN POSITION - F (2.72)

2.76 Spacing Area (continued)



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.

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 BOUNCE

To Check

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

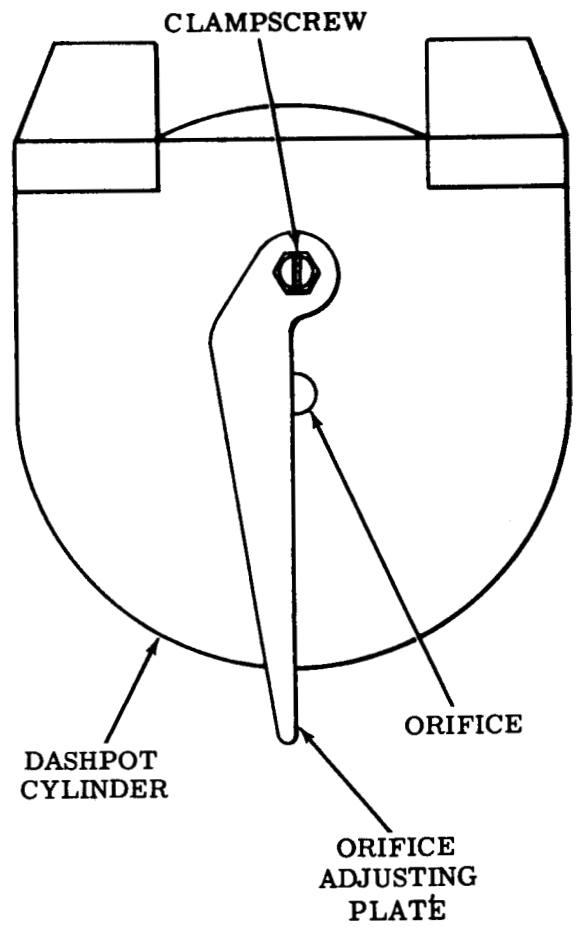
Requirement

No pneumatic or mechanical bounce of carriage upon its return.

To Adjust

Loosen orifice adjusting plate clampscrew and close the orifice completely. Then gradually open until pneumatic bounce is eliminated while operating unit. 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.



2.77 Platen Area (continued)

LINE FEED SELECTION - F

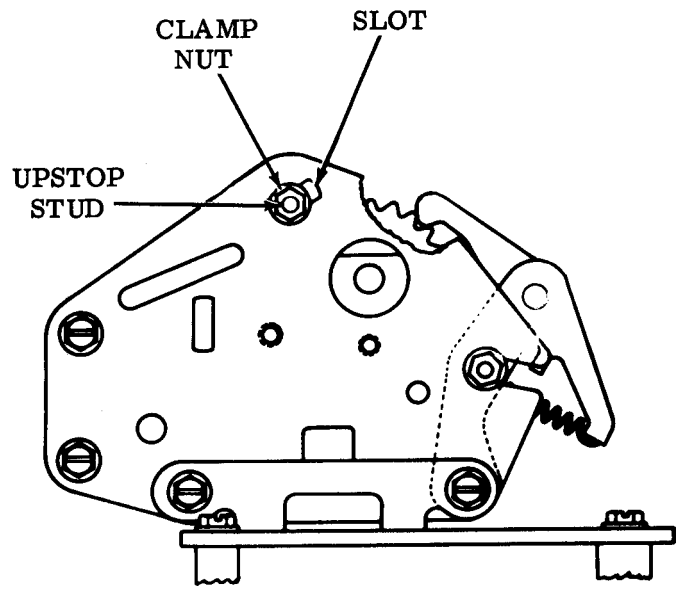
(1) Requirement
Upstop stud should be at bottom of slot for single line feed or at top for double line feed.

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.

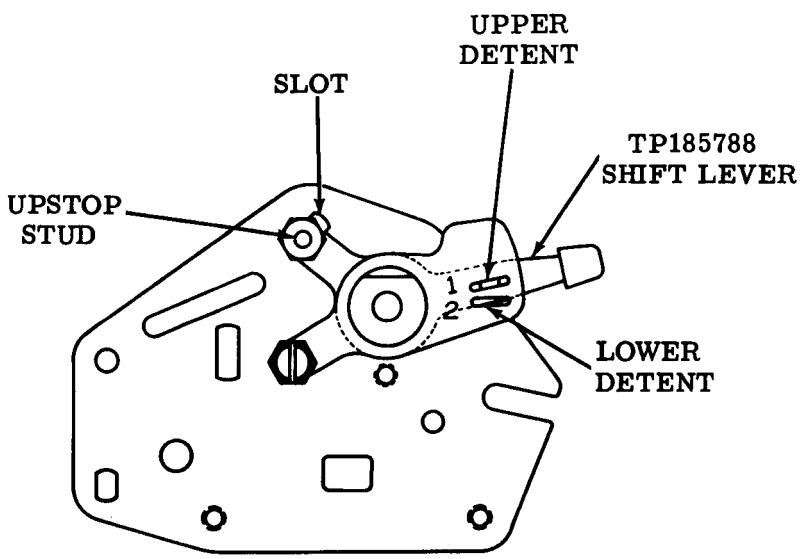
(2) Requirement
Same as Requirement (1) above.

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



(Left Side View)

Related Adjustments
Affects
DETENT POSITION - F (2.78)



(Left Side View)

2.78 Platen Area (continued)

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.

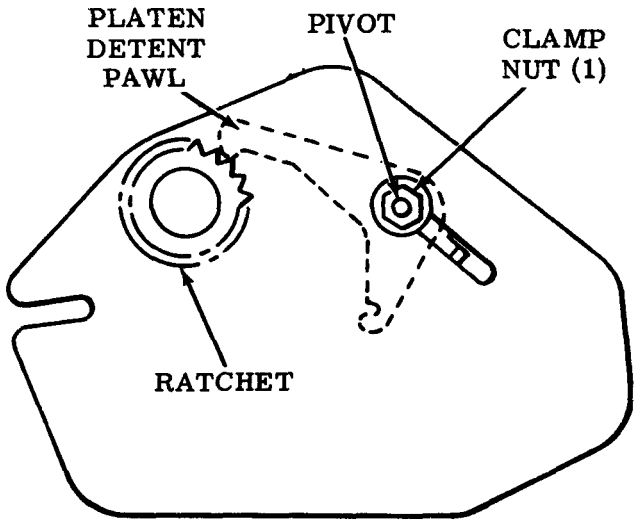
To Adjust

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

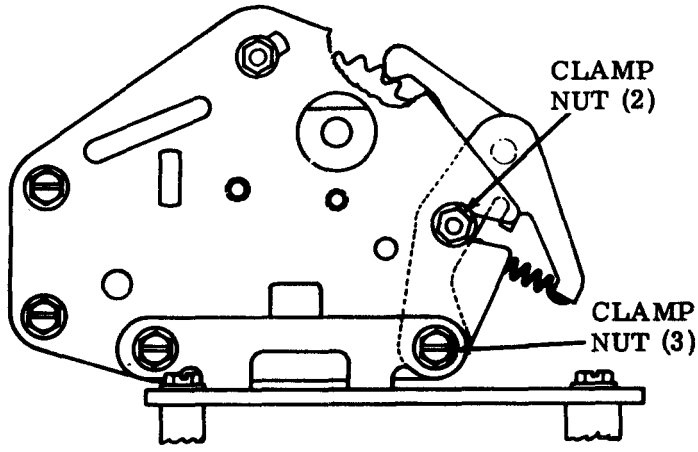
Late Design (typing units equipped with TP185796 bracket)
Loosen clamp nuts (2) and (3). Position platen detent pawl. Tighten clamp nuts.

Related Adjustments
Affects
LINE FEED DRIVE LINK POSITION - F (2.82)
Affected By
VERTICAL TYPE ALIGNMENT - F (2.71)
LINE FEED SELECTION - F (2.77)

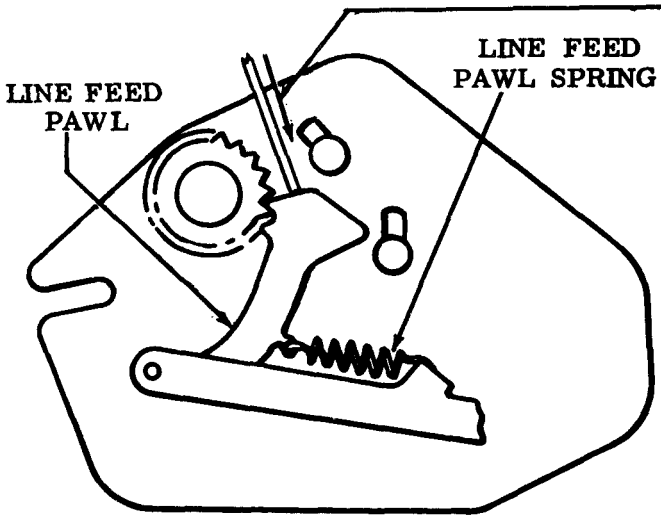
Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT - F (2.71) only when equipped with TP180526 nonadjustable vertical drive bail.



EARLY DESIGN
(Right Side View)



LATE DESIGN
(Left Side View)

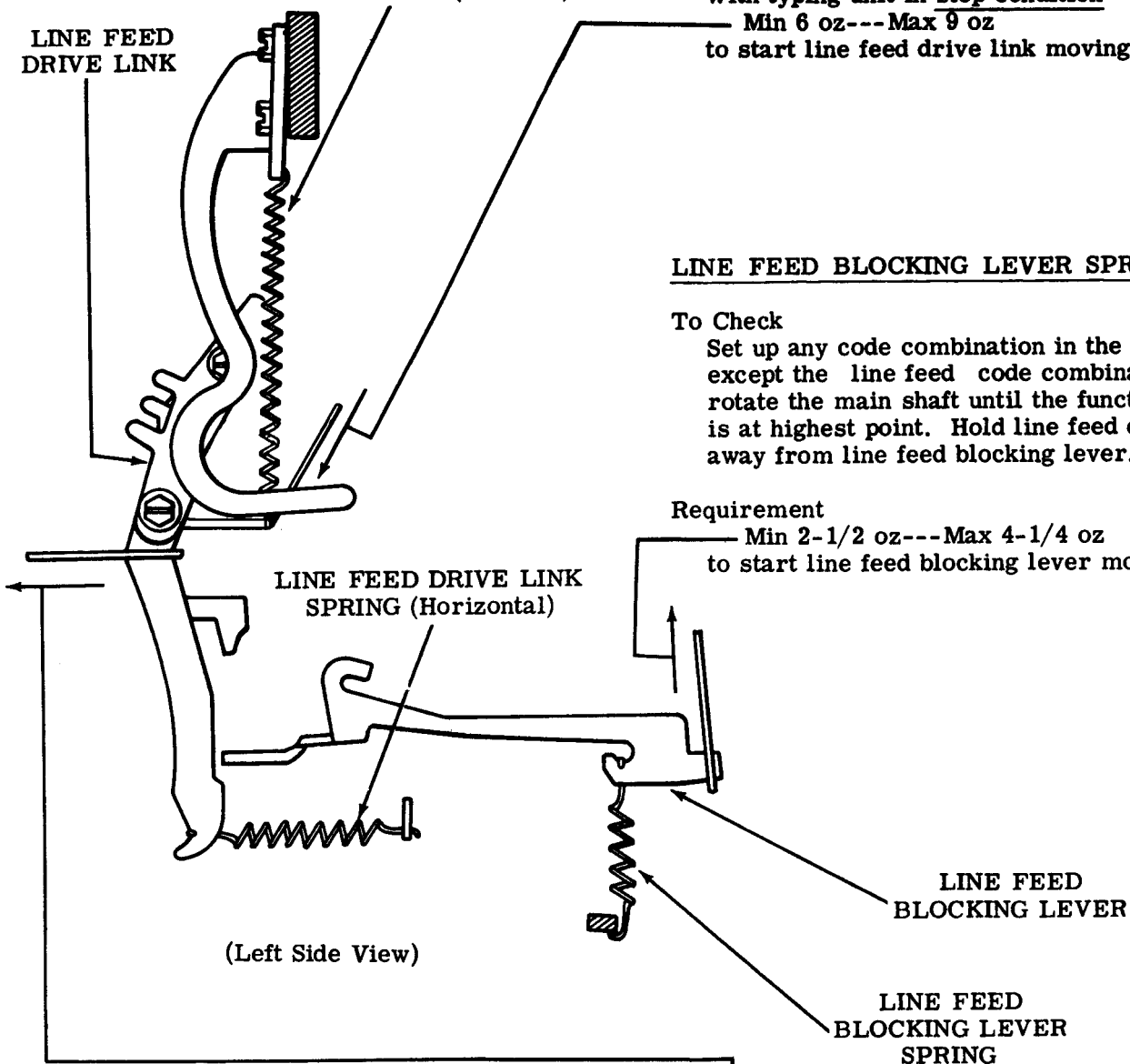


(Right Side View)

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.

2.79 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

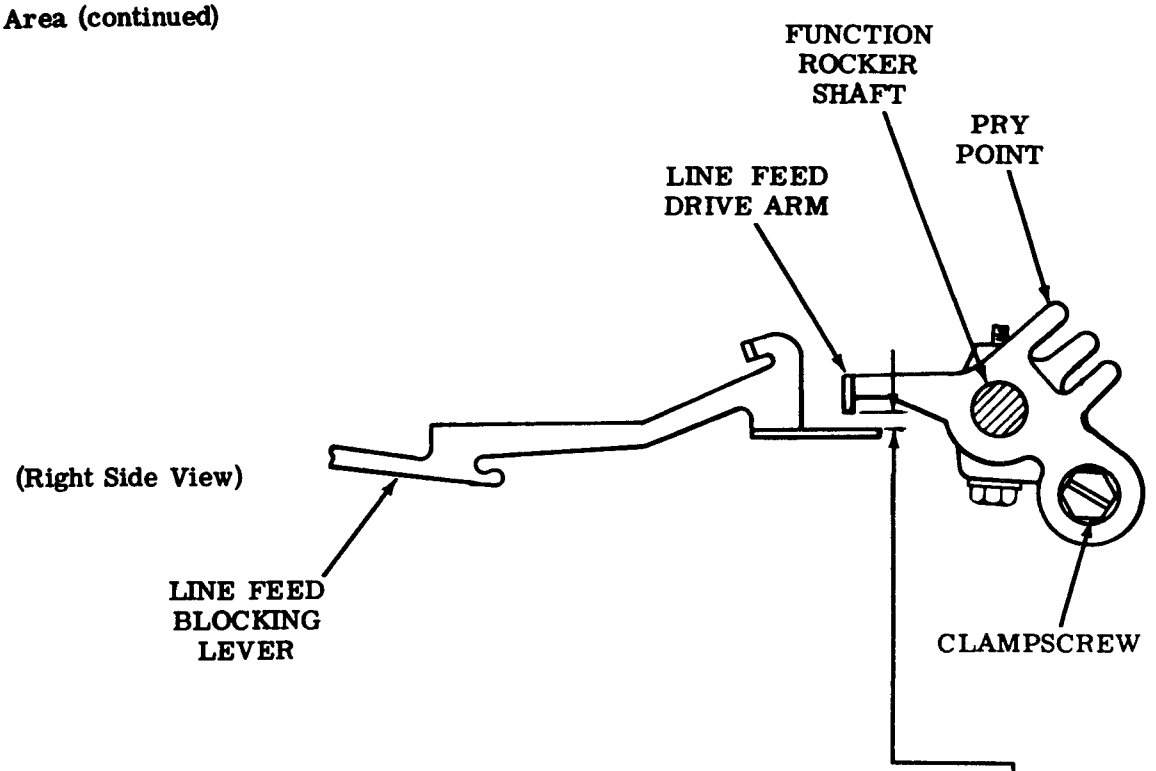
To Check
Set up any code combination in the selector except the line feed code combination and rotate the main shaft until the function bail is at highest point. Hold line feed drive link away from line feed blocking lever.

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.

2.80 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.

Note: The minimum requirement (some) will be considered met if there is no clearance between the line feed function lever and the function drive bail.

To Adjust

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

Related Adjustments

Affects

LINE FEED UPSTOP BRACKET POSITION - F (2.81)
LINE FEED PAWL DOWNSTOP POSITION - F (2.83)

Affected By

LEFT ROCKER DRIVE (Function Area) (2.34)

2.81 Platen Area (continued)

LINE FEED UPSTOP BRACKET POSITION - F

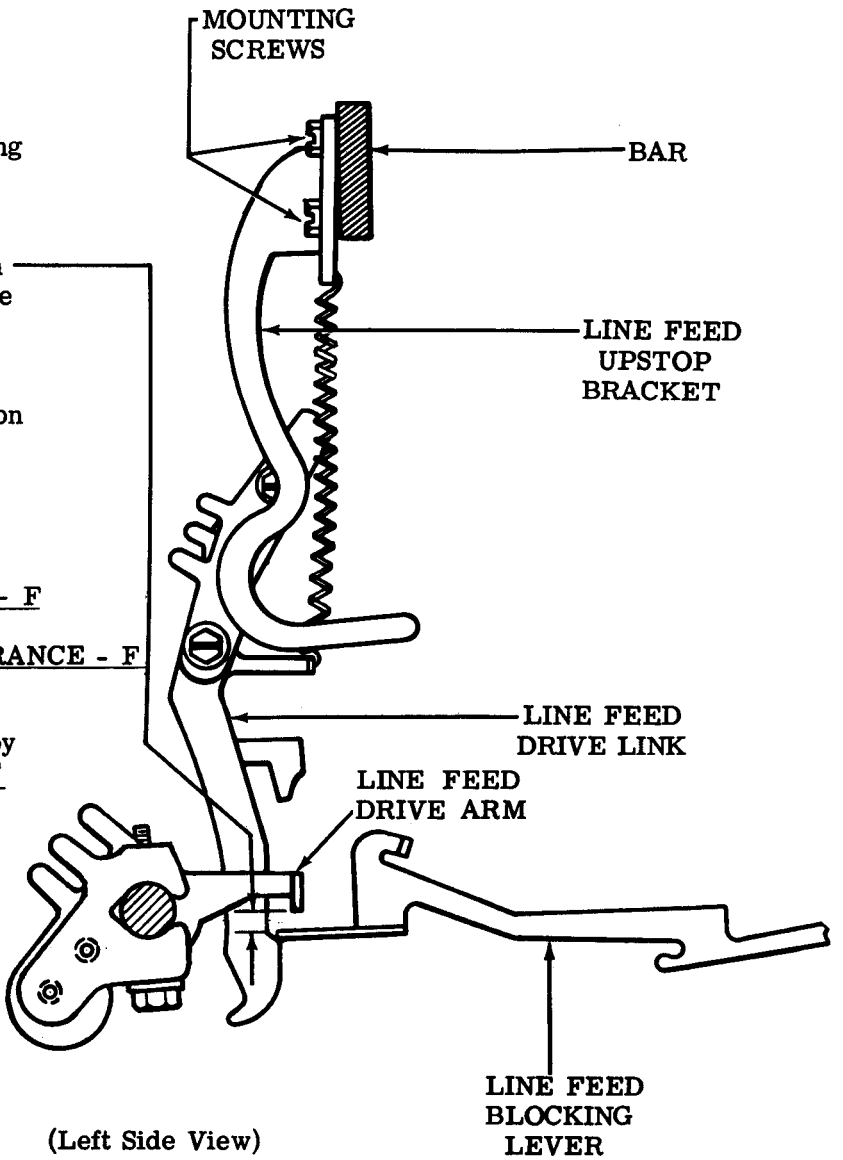
To Check
Place typing unit in stop condition. Trip function clutch by lifting its trip lever. Rotate main shaft until function bail is at highest point. Push down on line feed drive link to engage and latch line feed blocking lever.

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 (2.71)
LINE FEED DRIVE ARM CLEARANCE - F (2.80)

Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT - F (2.71) only when equipped with TP180526 nonadjustable vertical drive bail.



(Left Side View)

2.82 Platen Area (continued)

LINE FEED DRIVE LINK POSITION - F

To Check

Place the carriage to the center of the platen. Place the flat surface 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.

(2) Requirement

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.

To Adjust

Loosen line feed stripper plate clampscrew and back off line feed stripper plate (see LINE FEED STRIPPER PLATE CLEARANCE adjustment). Loosen downstop nut friction tight (2.83). 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.

Related Adjustments

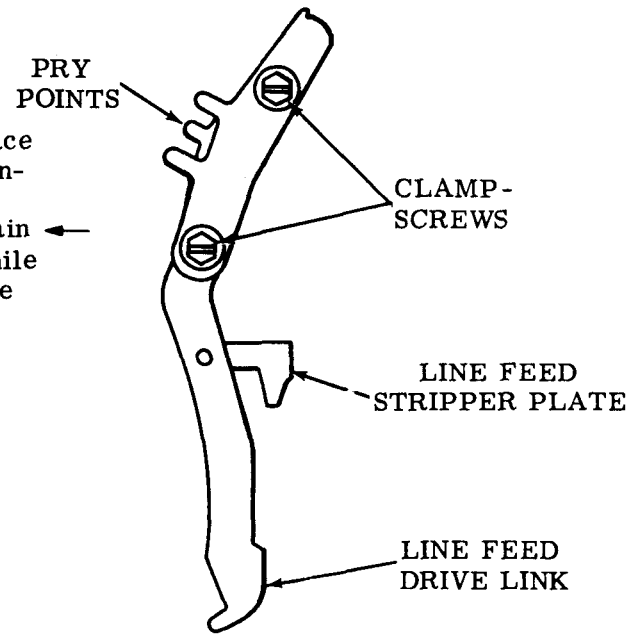
Affects

LINE FEED PAWL DOWNSTOP POSITION - F (2.83)

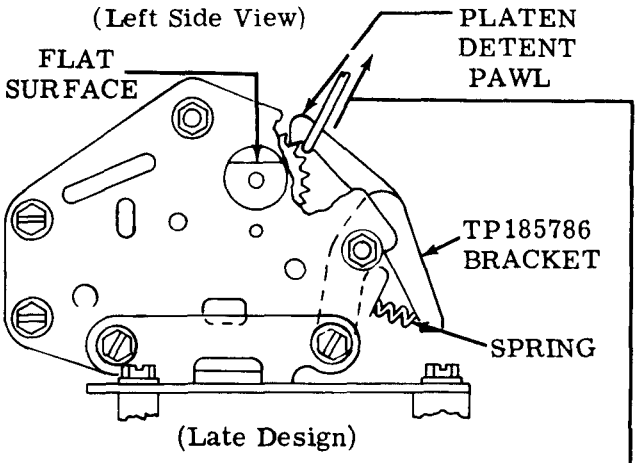
Affected By

DETENT POSITION - F (2.78)

VERTICAL TYPE ALIGNMENT - F (2.71)



(Left Side View)



(Late Design)

(Left Side View)

PLATEN DETENT PAWL SPRING - F

Requirement

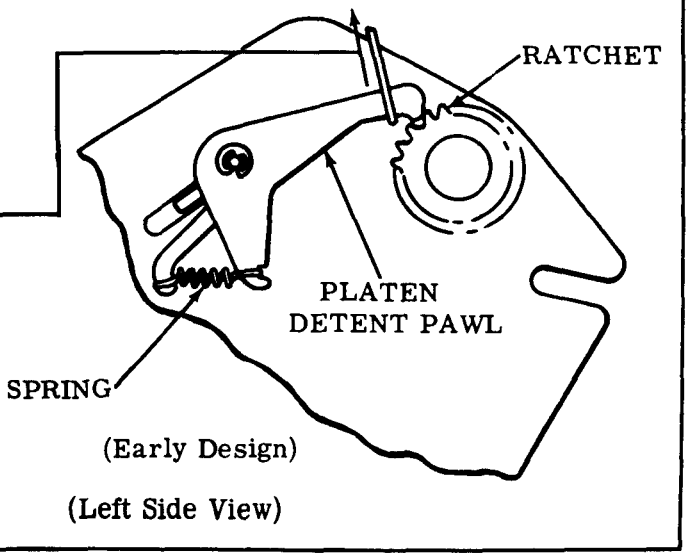
Early Design

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)

2.83 Platen Area (continued)

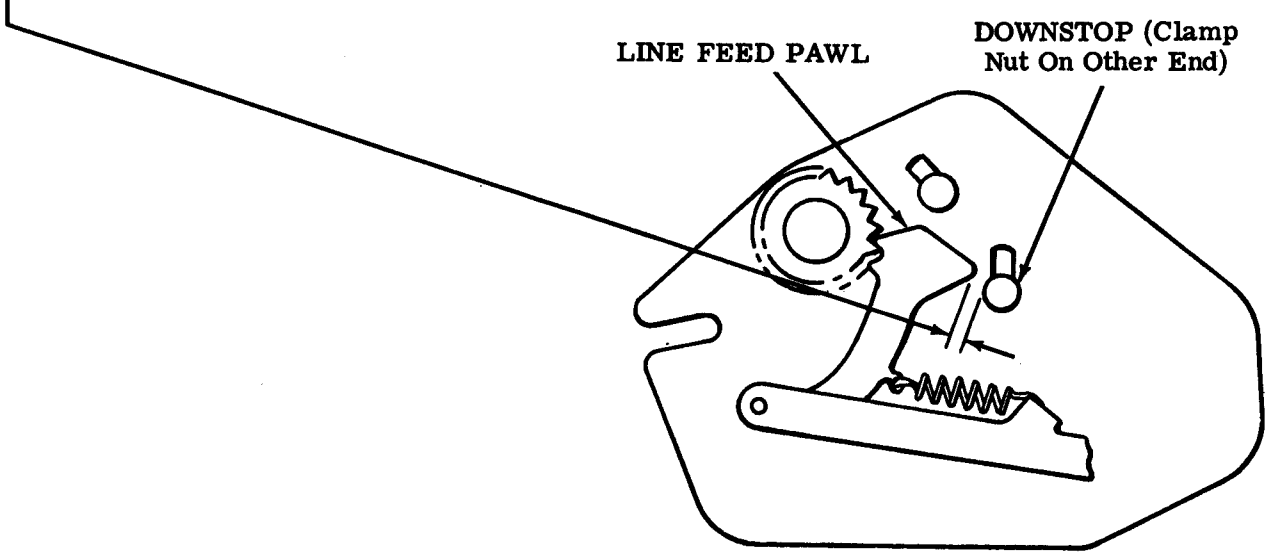
LINE FEED PAWL DOWNSTOP POSITION - F

To Check
Place the flat surface on the 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 0.005 inch---Max 0.015 inch
Between back of line feed pawl and its downstop.

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

Related Adjustments
Affected By
LINE FEED DRIVE ARM CLEARANCE - F (2.80)
LINE FEED DRIVE LINK POSITION - F (2.82)
VERTICAL TYPE ALIGNMENT - F (2.71)



(Right Side View)

2.84 Platen Area (continued)

PRESSURE ROLLER CLEARANCE

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

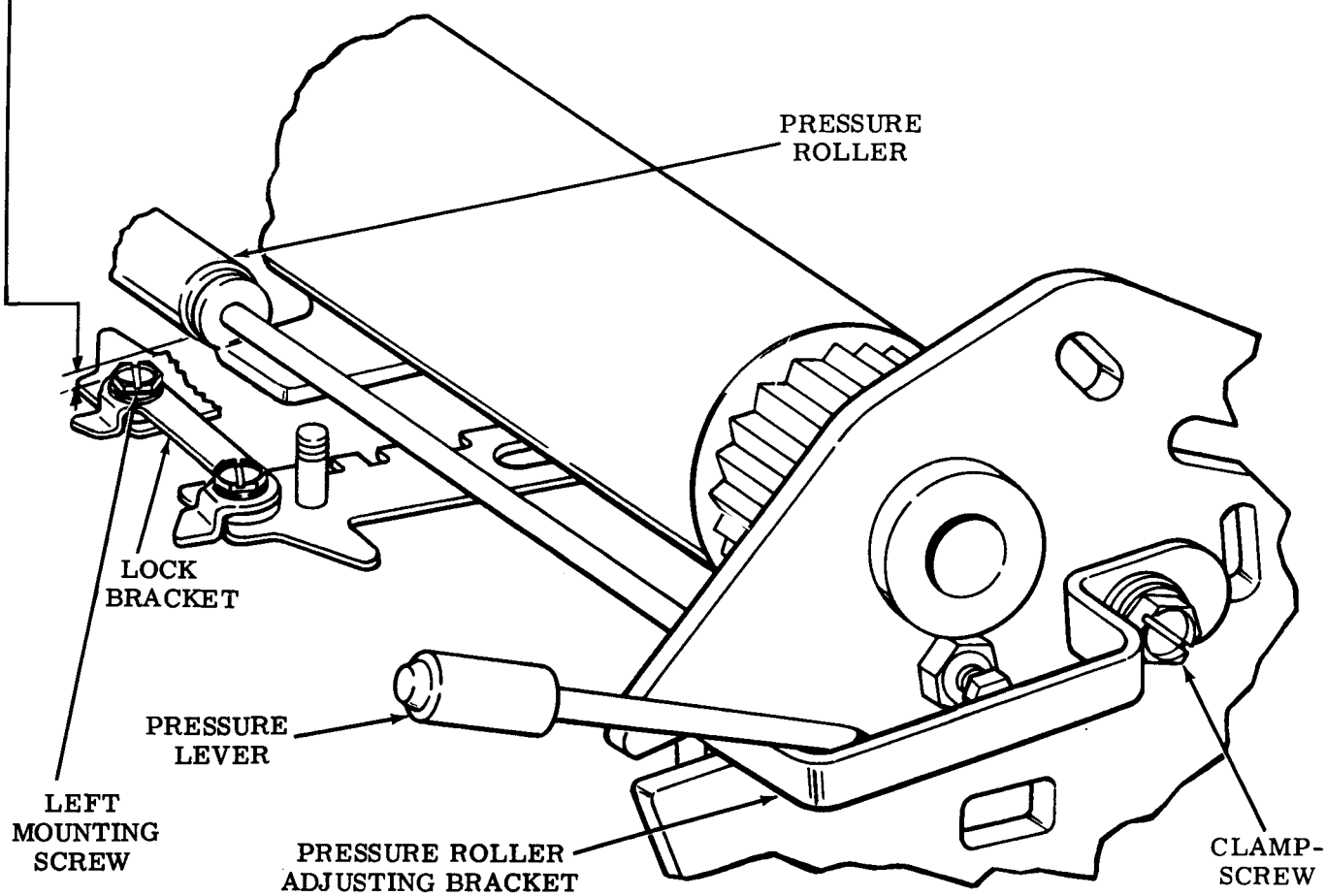
Requirement
Min 0.010 inch
between pressure roller and left mounting screw.

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.

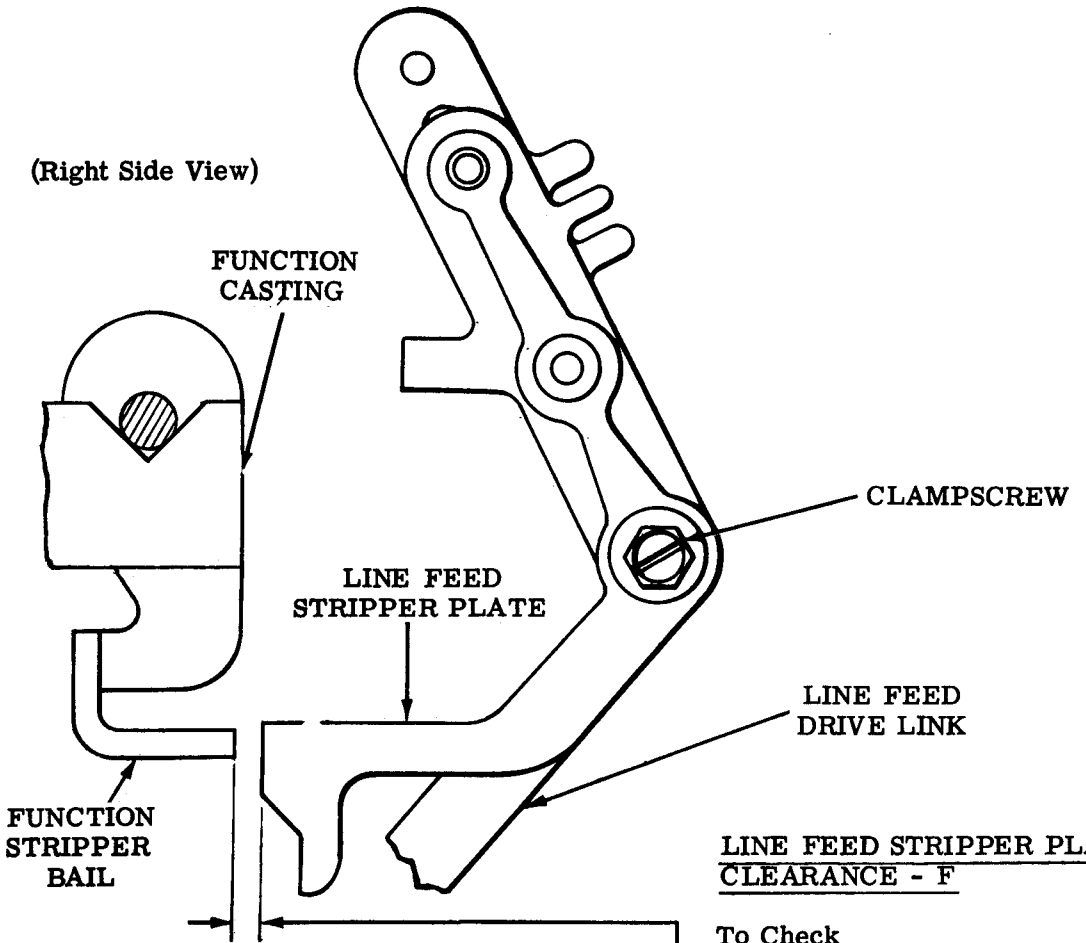
Related Adjustment
Affected By
REAR RAIL POSITION (Carriage Area)(2.45)
VERTICAL TYPE ALIGNMENT - F (2.71)

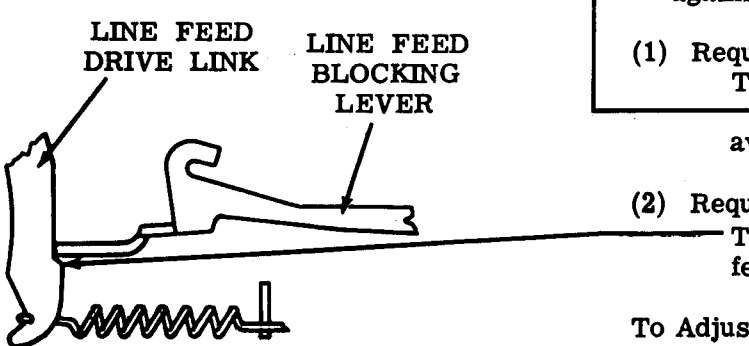
Note: This adjustment is affected by VERTICAL TYPE ALIGNMENT - F (2.71) only when equipped with TP180526 nonadjustable vertical drive bail.



(Right Front View)

2.85 Platen Area (continued)





(Left Side View)

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 drive link firmly against line feed blocking lever.

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

(2) Requirement
The line feed blocking lever and line feed drive link should fully engage.

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

Related Adjustments
Affected By
STRIPPER BAIL CLEARANCE (2.38)
PLATEN — HORIZONTAL POSITION - F (2.70)

2.86 Platen Area (continued)

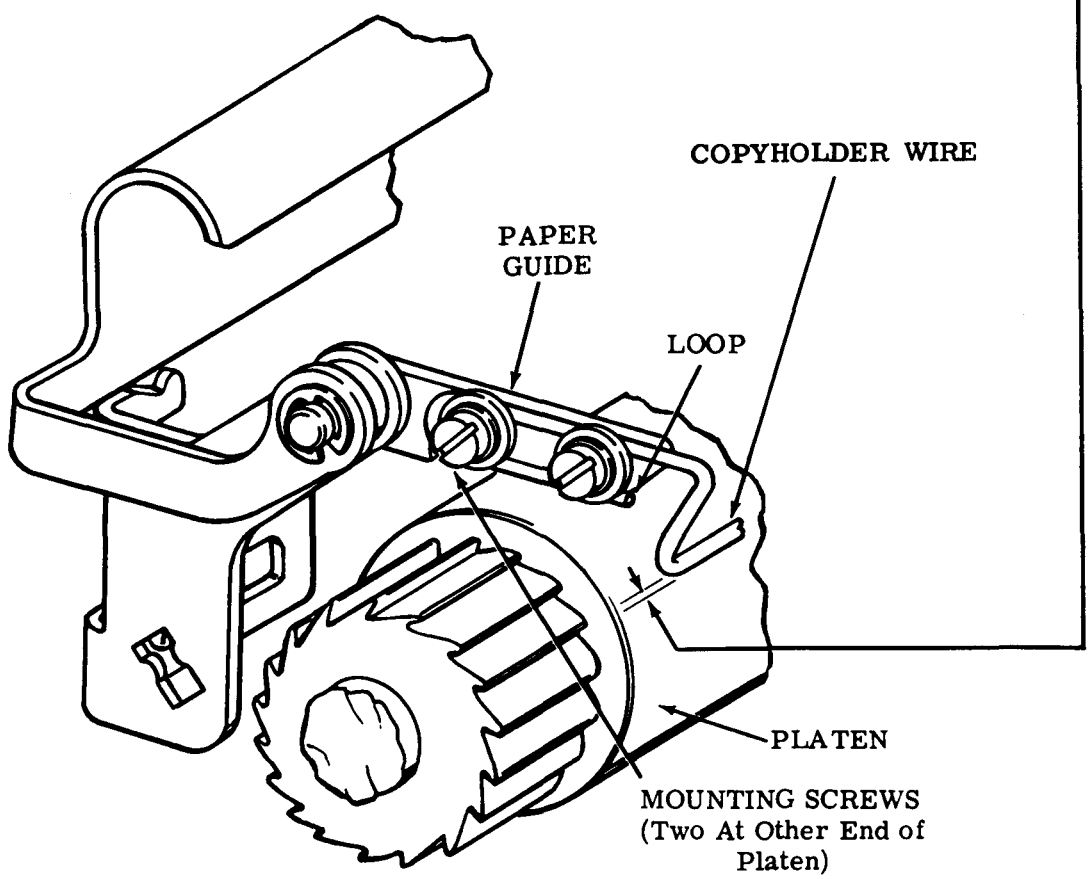
COPYHOLDER WIRE POSITION - F

(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)

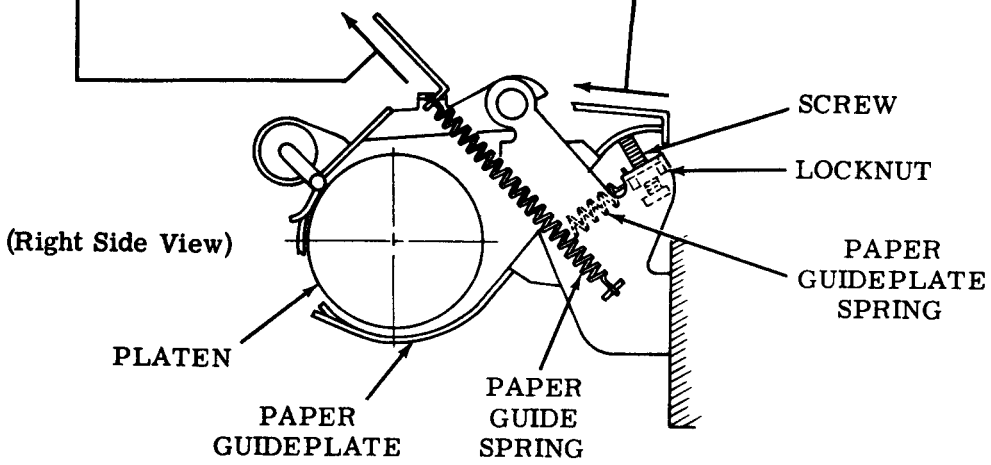
2.87 Platen Area (continued)

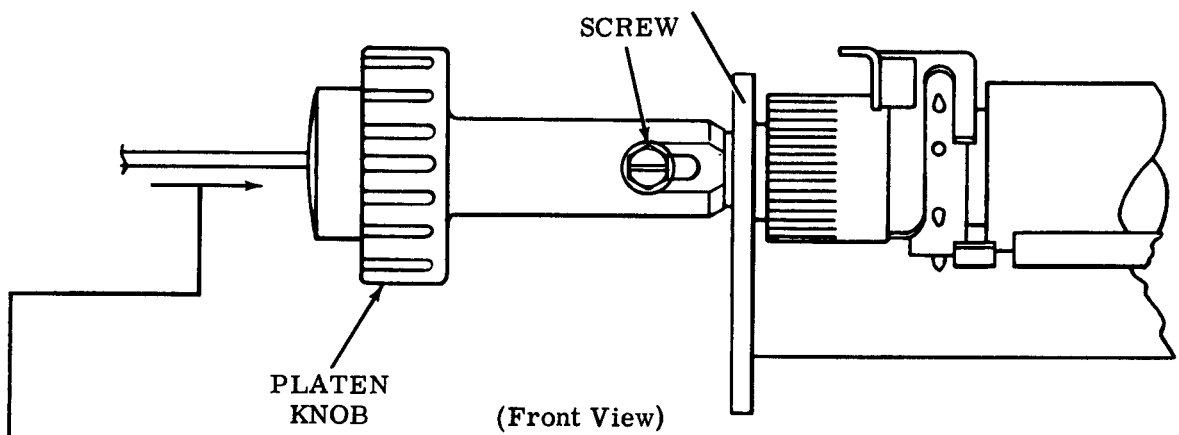
PAPER GUIDE SPRING - S

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.

2.88 Platen Area (continued)

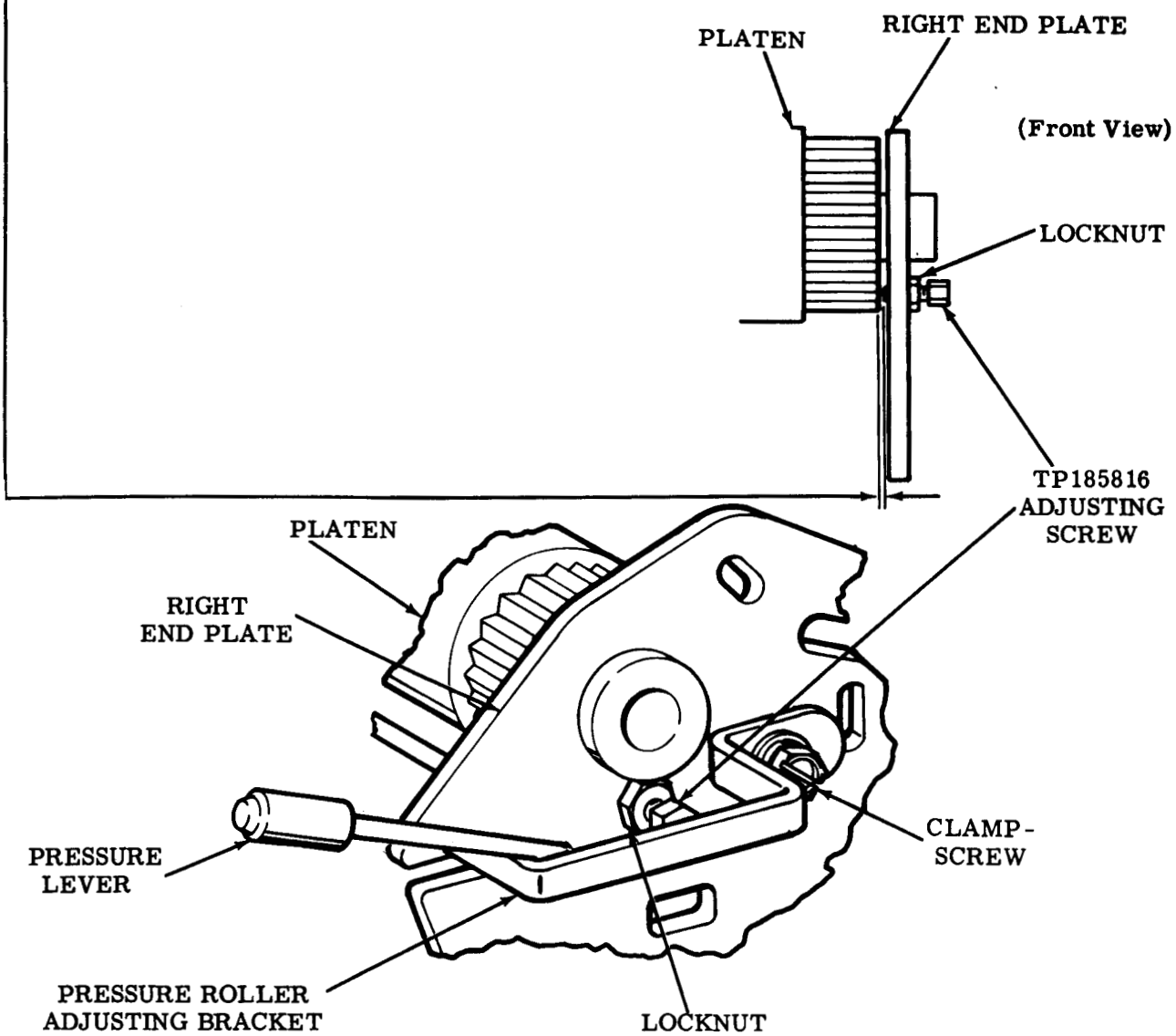
PLATEN ENDPLAY - F

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)

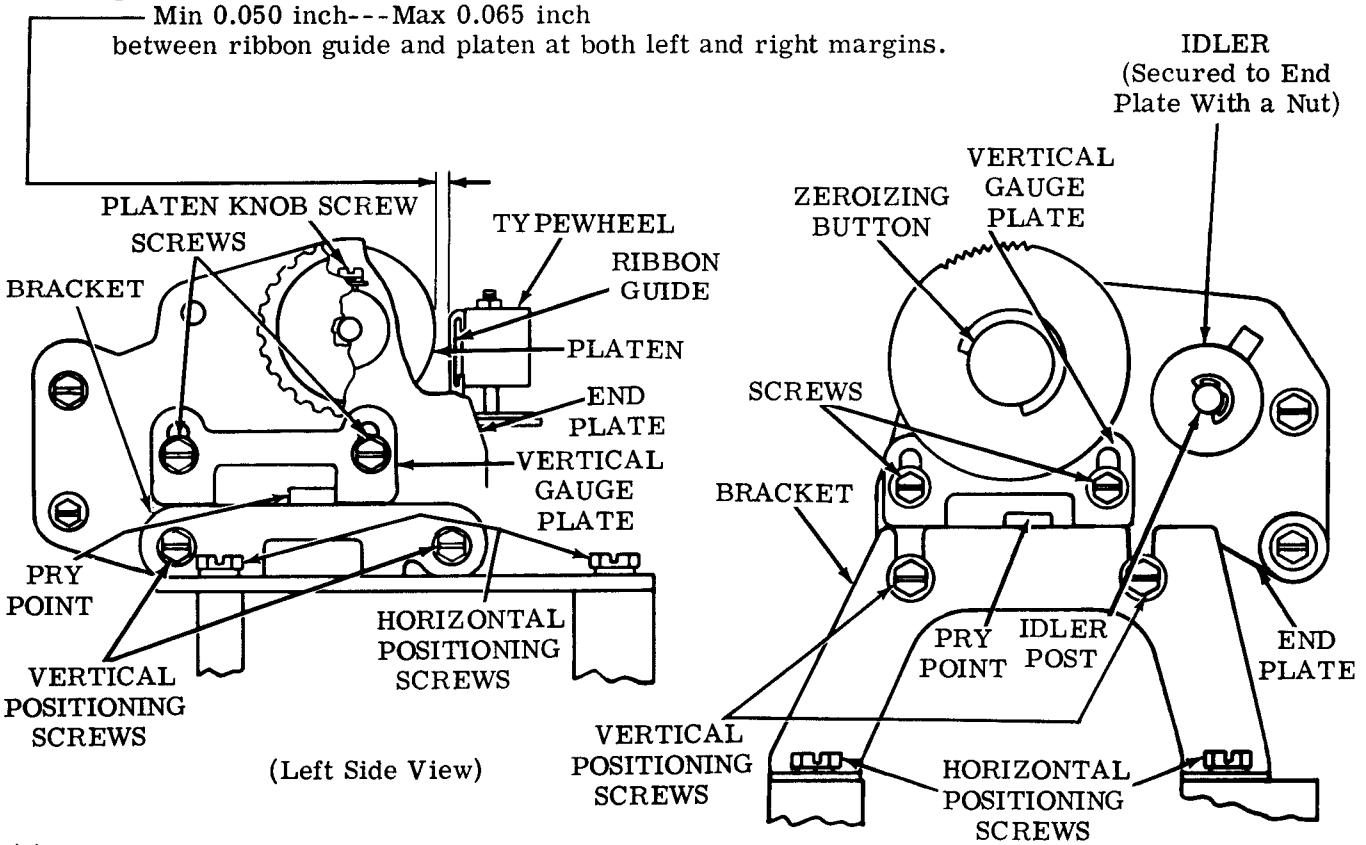
2.89 Platen Area (continued)

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

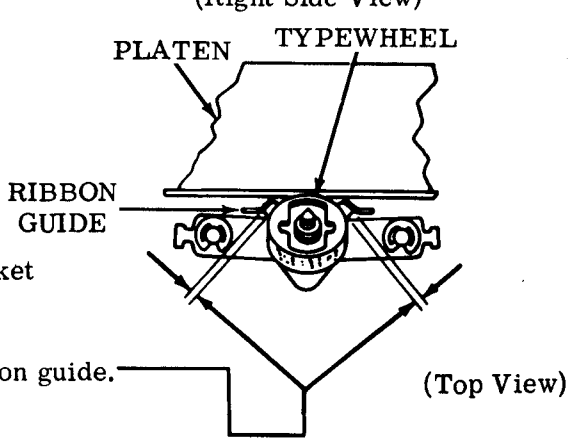
(1) To Check
Place the platen knob screw up and permit the detent ratchet pawl to seat in a groove of the detent ratchet. Place the carriage at the left margin and check requirement. Move the carriage to the right margin and again check requirement.

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



(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.



Requirement
Typewheel should not touch side of either ribbon guide.

Related Adjustments
Affected By
FRONT ROLLERS CLEARANCE (2.43)

2.90 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 (2.90)
IDLER POSITION - S (2.100)
DETENT POSITION - S (2.109)
FORM FEED BELT TENSION - S (2.94)
CAM ZERO POSITION (2.110)
WIRE GUIDE POSITION - S (2.117)

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 (2.90) adjustment.

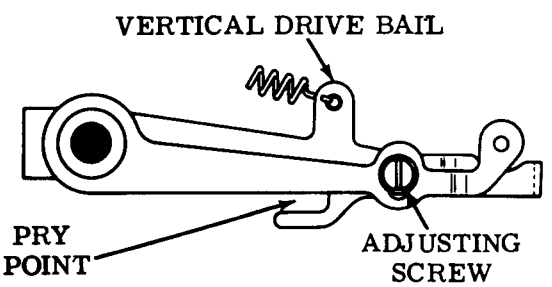
VERTICAL TYPE ALIGNMENT - S

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.



(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 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.

2.91 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.

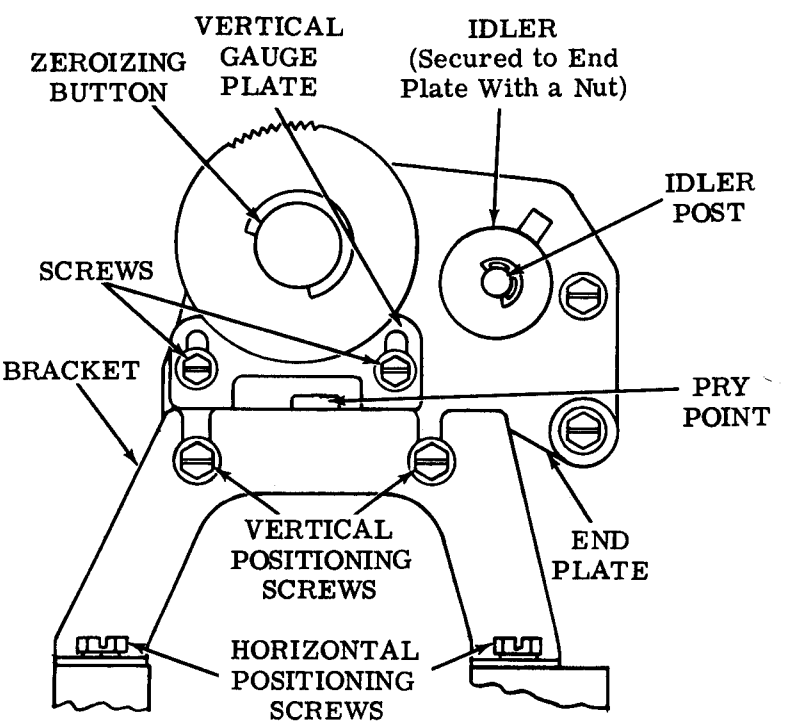
Related Adjustments

Affects

IDLER POSITION - S (2.100)
DETENT POSITION - S (2.109)
CAM ZERO POSITION (2.110)
WIRE GUIDE POSITION (2.117)

Affected By

PLATEN — HORIZONTAL POSITION - S (2.89)
REAR RAIL POSITION (2.45)
PRINT DRIVE LEVER POSITIONING (2.48)



(Right Side View)

2.92 Platen Area (continued)

PAPER GUIDEPLATE CLEARANCE - S

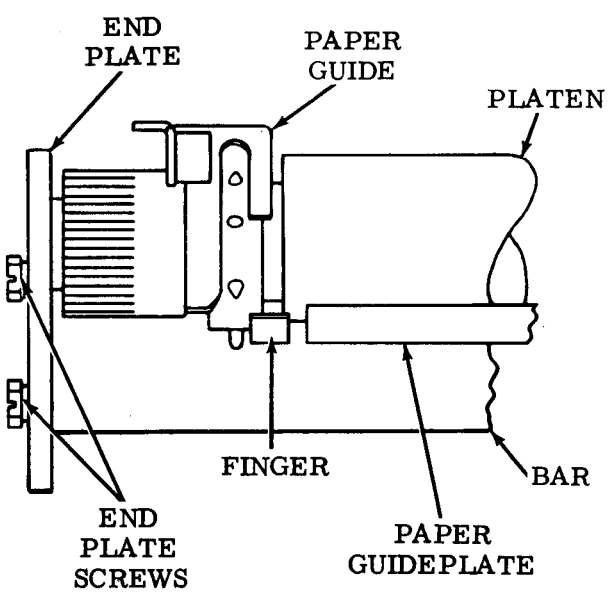
Requirement
With no sprocket forms in the platen mechanism
Min 0.008 inch---Max 0.025 inch between the platen and the left and right ends of the paper guideplate adjacent to the fingers. Record the two clearances (see Note 2).

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:

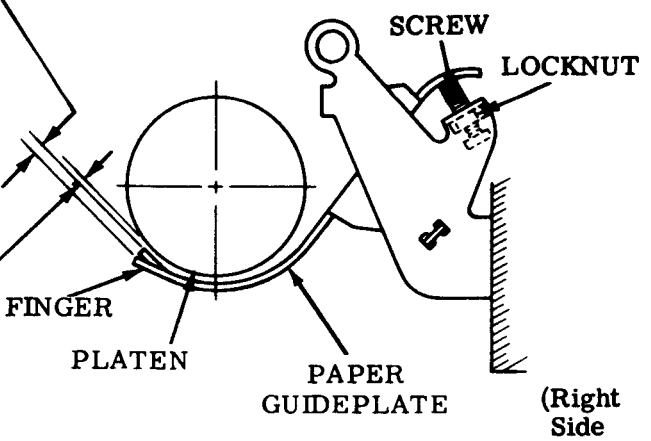
Preliminary Requirement
With the screw backed off and no sprocket forms in the platen mechanism
Min zero---Max 0.012 inch between the platen and the left and right ends of the paper guideplate — adjacent to the fingers. Record the two clearances (see Note 2).

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.

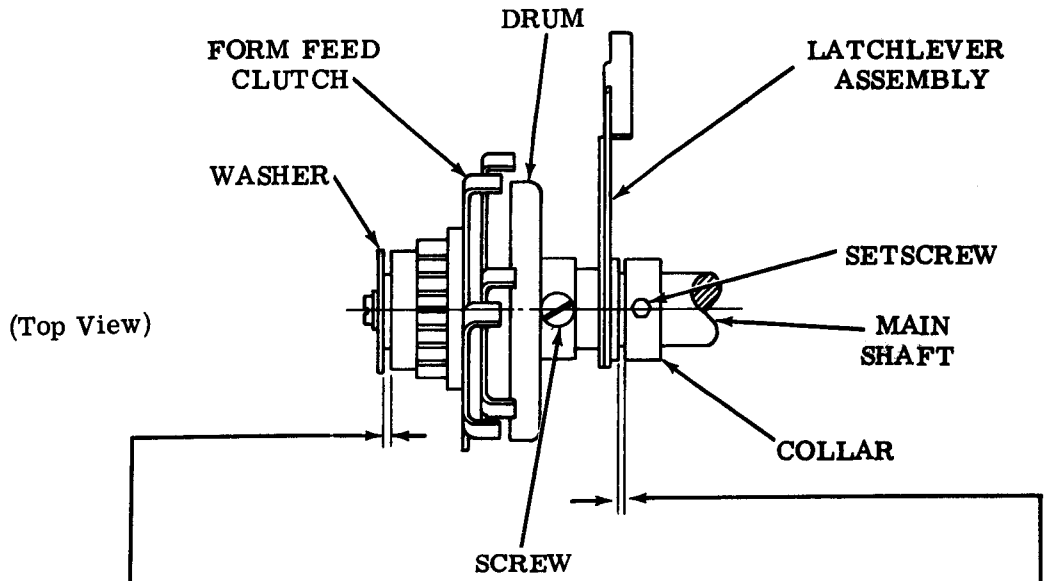


(Right Side View)

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 LEVER CLEARANCE - S (2.119)

2.93 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

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

To Adjust
Loosen setscrew and position collar.
Tighten screw.