

**BULLETIN 316B
VOL 2**

**TECHNICAL MANUAL
MODEL 37
RECEIVE-ONLY (RO)
TELETYPEWRITER SET
FOR SWITCHED NETWORK SERVICE**

CONTENTS

MAINTENANCE



**TELETYPE[®]
CORPORATION**

5555 TOUHY AVENUE, SKOKIE, ILLINOIS



316B
Volume 2

INTRODUCTION

Bulletin 316B is a technical manual that provides general and specific technical information about the Model 37 Receive-Only (RO) Teletypewriter Set and its component units. This bulletin contains adjustment and lubrication sections for the late design typing unit. The bulletin consists of two volumes.

Volume 1 contains sections for description, installation, and principles of operation. Volume 2 provides sections for the adjustments, lubrication, and disassembly and reassembly information for the components, and removal and replacements of components for the set.

Each volume is made up of a group of appropriate independent sections. Each 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 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 content 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, and sections on earlier units not included, are stocked separately and may be ordered individually if the entire bulletin is not required.

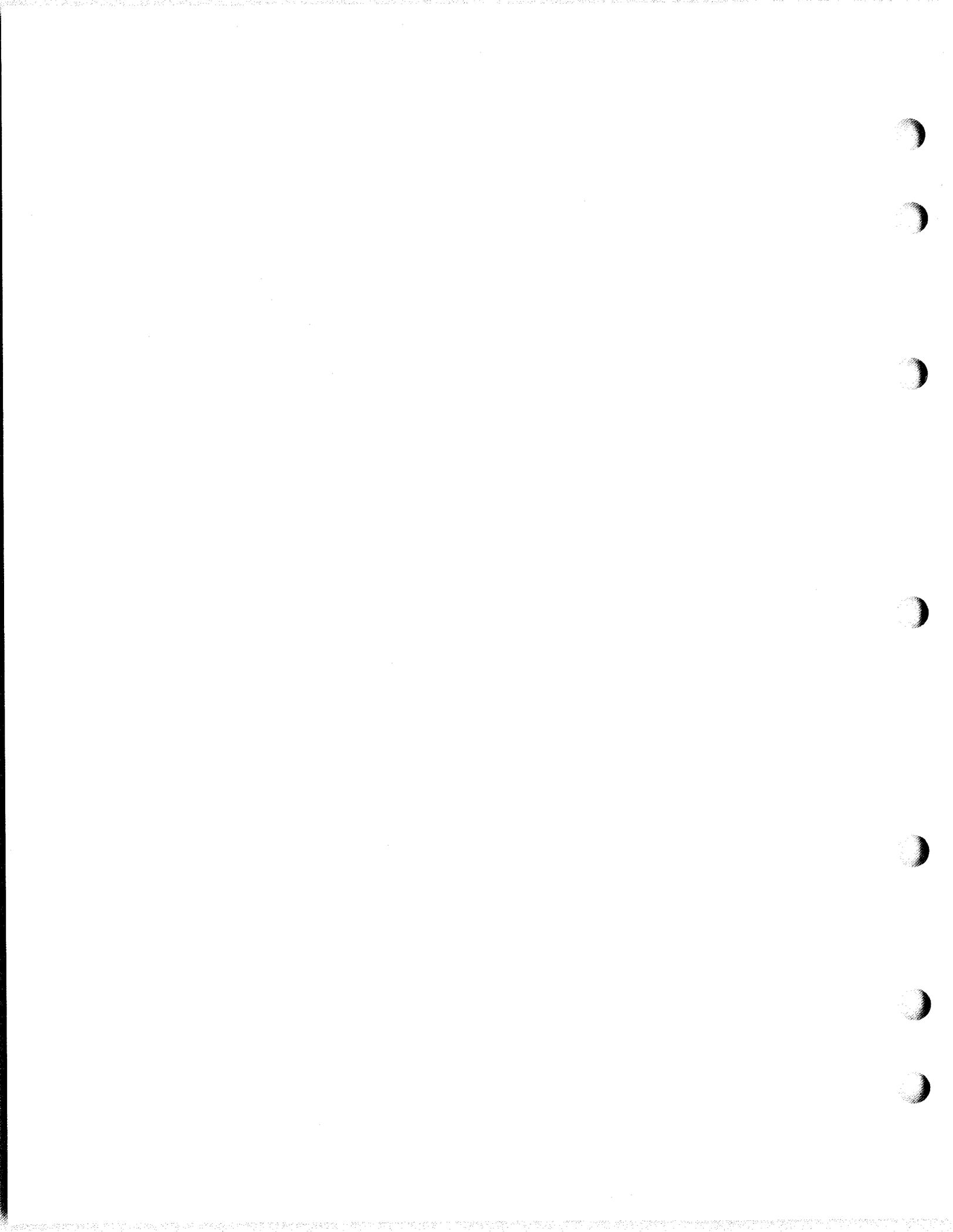
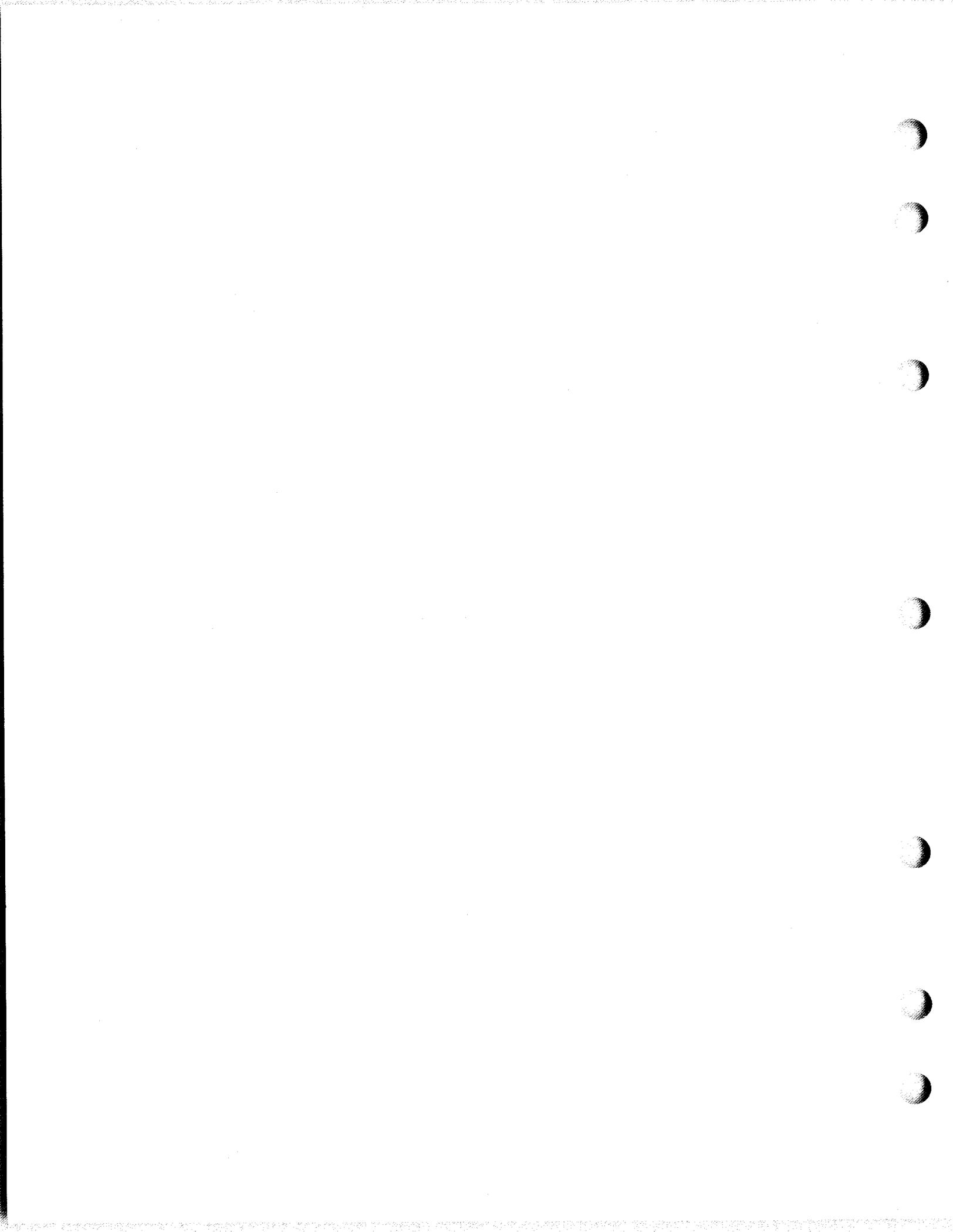


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Note: Motor unit information is contained in Bulletin 295B.



37 RECEIVE-ONLY (RO) TELETYPEWRITER SET
REMOVAL AND REPLACEMENT OF COMPONENTS

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1.05 Use maintenance pad TP124828 to protect furniture and floor coverings from oil, grease, and dirt during the removal and replacement of component parts.

1.06 Most maintenance, lubrication, and adjustments can be accomplished after a component has been removed with no further disassembly. If possible, disassembly should be confined to subassemblies which do not require adjustment, or which can be removed without disturbing adjustments. When reassembling the subassemblies, all requirements for adjustments, clearances, and spring tensions must be observed.

1. GENERAL

1.01 This section provides removal and replacement of component information for the 37 Receive-Only (RO) Teletypewriter Set (Figure 1).

1.02 Photographs and line drawings are used to identify the mechanisms and specific parts mentioned in the procedures. Refer to the appropriate parts section for illustrations and part numbers of parts and assemblies.

1.03 References in the procedures to left or right, up or down, top or bottom, etc, refer to the unit as viewed facing the control panel (Figure 1).

1.04 Refer to maintenance tools Section 570-005-800TC for information on tools necessary to perform the removal and replacement of component parts.

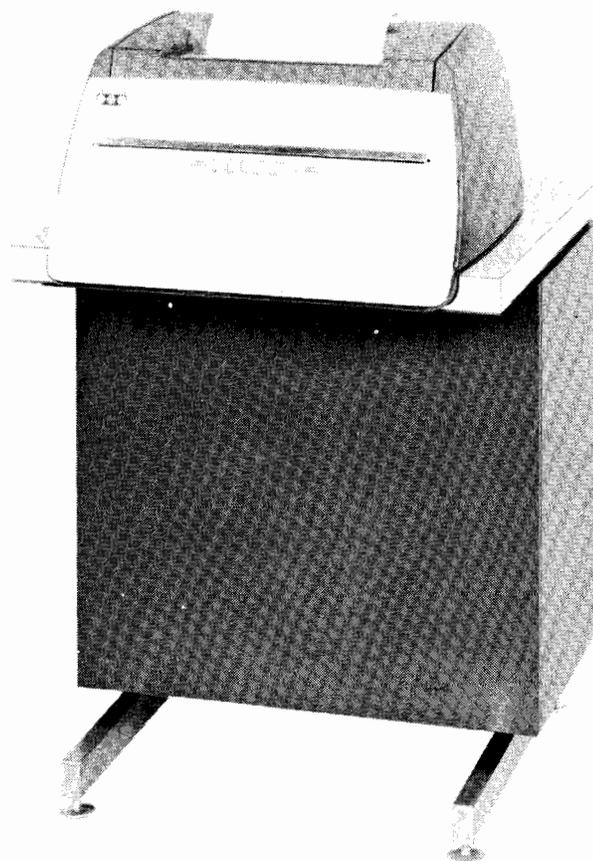


Figure 1 - 37 RO Teletypewriter Set

1.07 The loss of retaining rings and springs should be avoided during disassembly by holding the items with one hand while it is released with the other. Springs should not be stretched or distorted more than is necessary for removal or their effective spring tension may be altered.

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE SET.

2. REMOVAL AND REPLACEMENT OF COMPONENTS

TYPING UNIT

2.01 To remove the typing unit from the base, proceed as follows (Figures 2 through 4).

(1) Depress the cover latches on both sides of the typing unit cover and tilt the cover back until it rests on the table.

(2) Remove the paper roll from the typing unit.

(3) Disconnect electrical cable plugs P306 and P308 from the selector and function box connectors at the upper right rear corner of the typing unit.

(4) Remove four typing unit mounting screws from the feet at the bottom front and rear corners of the left and right sides of the typing unit.

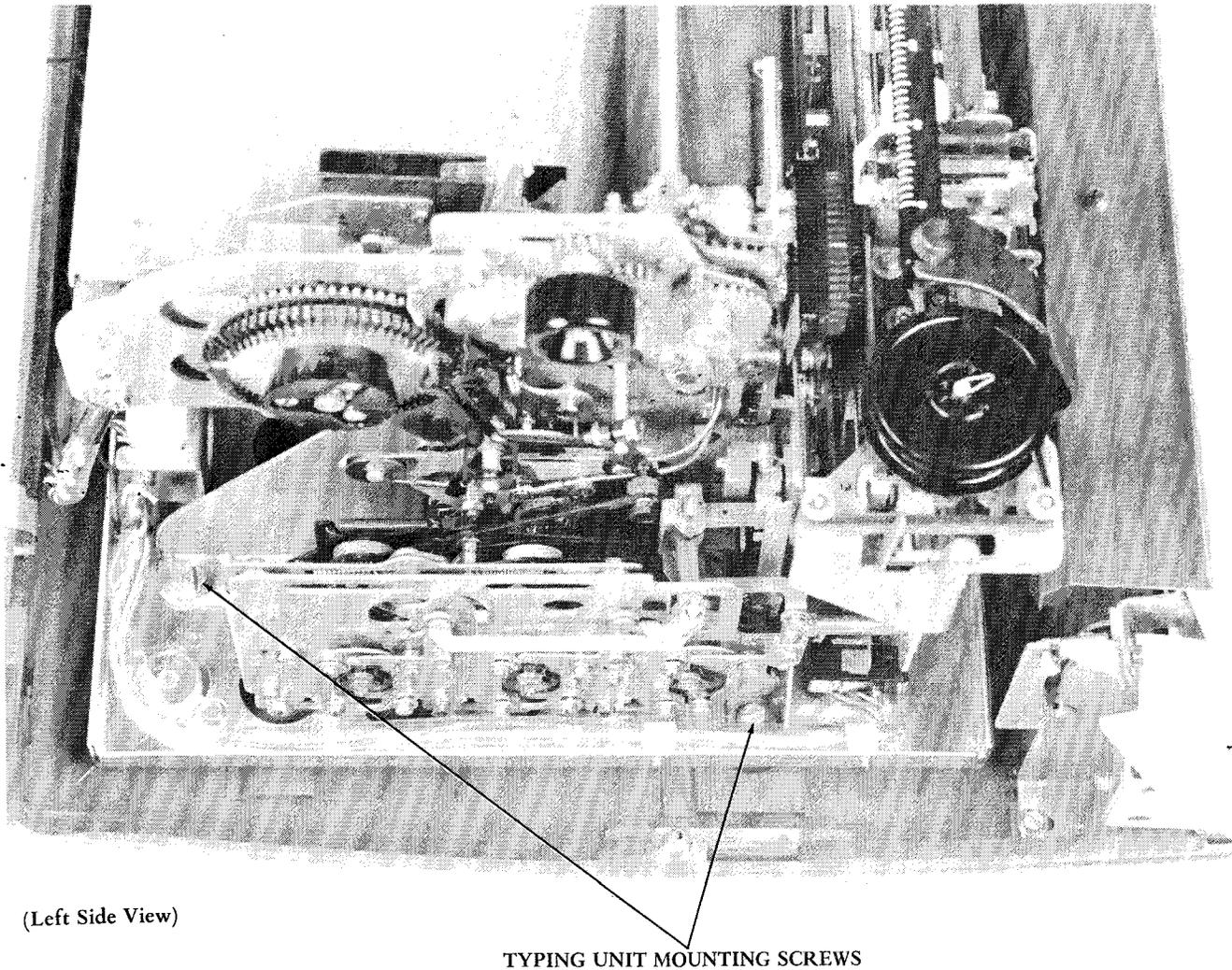


Figure 2 - Typing Unit

Note: Steps (5) and (6) may be omitted unless the control panel is to be replaced.

- (5) Remove two screws securing the control panel trim plate to the top of the control panel and remove the plate. Be careful not to drop the screws into the base.
- (6) Remove the control panel retaining screws at the right and left upper rear corners of the control panel. Raise the control panel upward and forward and then remove the cable B plug from the control panel (Figure 9).
- (7) Pivot the control panel forward to provide more space for removal of the typing unit. Grasp the typing unit under the curve at the top rear of the left

side frame, and at the same time grasp the right side print position scale support (Figures 4 and 7). Lift the typing unit straight up away from the base. Set the typing unit aside in a protected area.

CAUTION: REMOVE THE TYPING UNIT ONLY IN THE MANNER DESCRIBED IN 2.01(7).

2.02 To replace the typing unit, proceed as follows (Figures 2 through 4).

- (1) Remove the control panel retaining screws at the right and left upper rear corners of the control panel. Raise the control panel upward and forward.

Note: When typing unit was removed, the control panel was pivoted forward. Do not adjust control panel if it is now in the proper position.

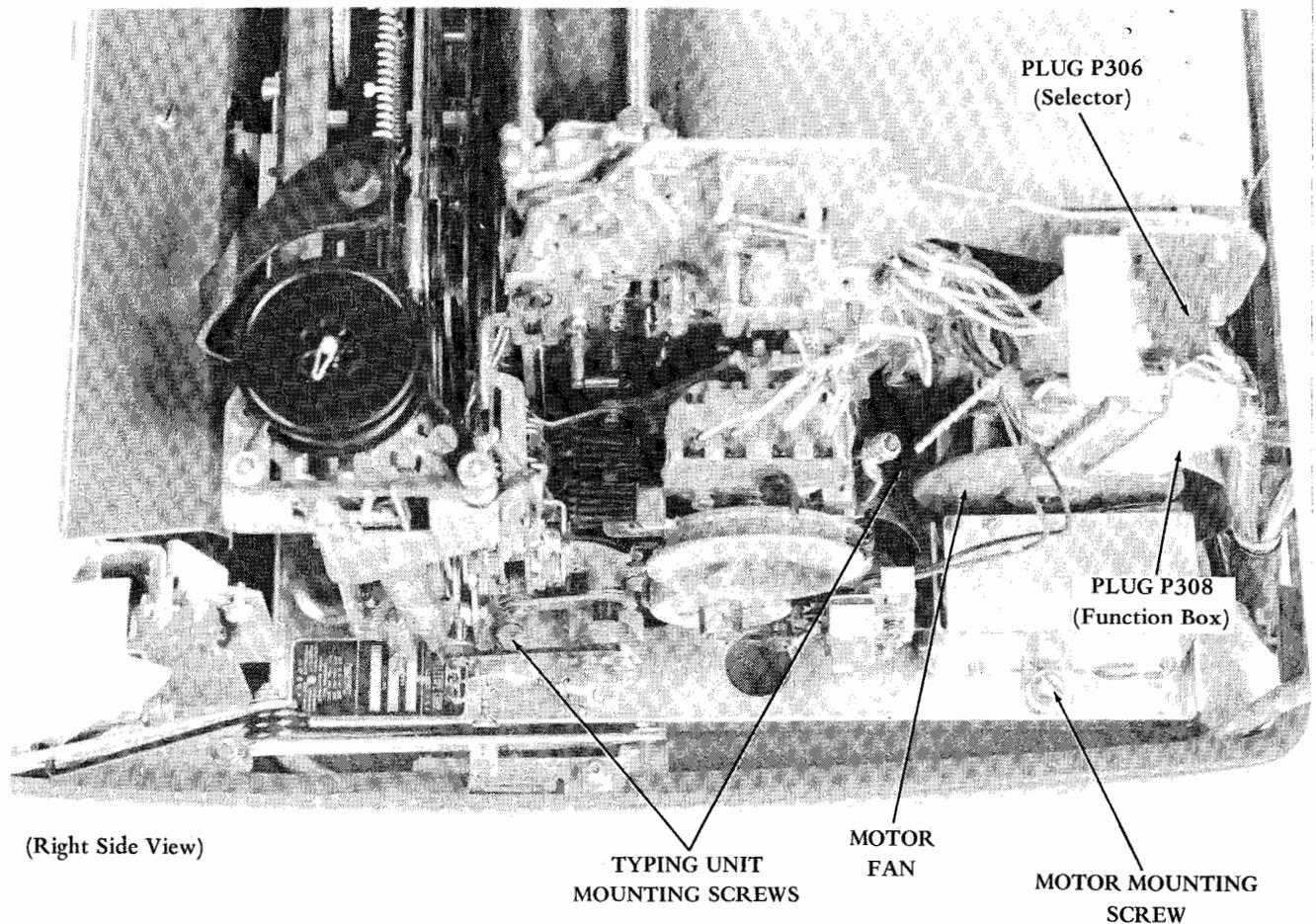


Figure 3 - Typing Unit

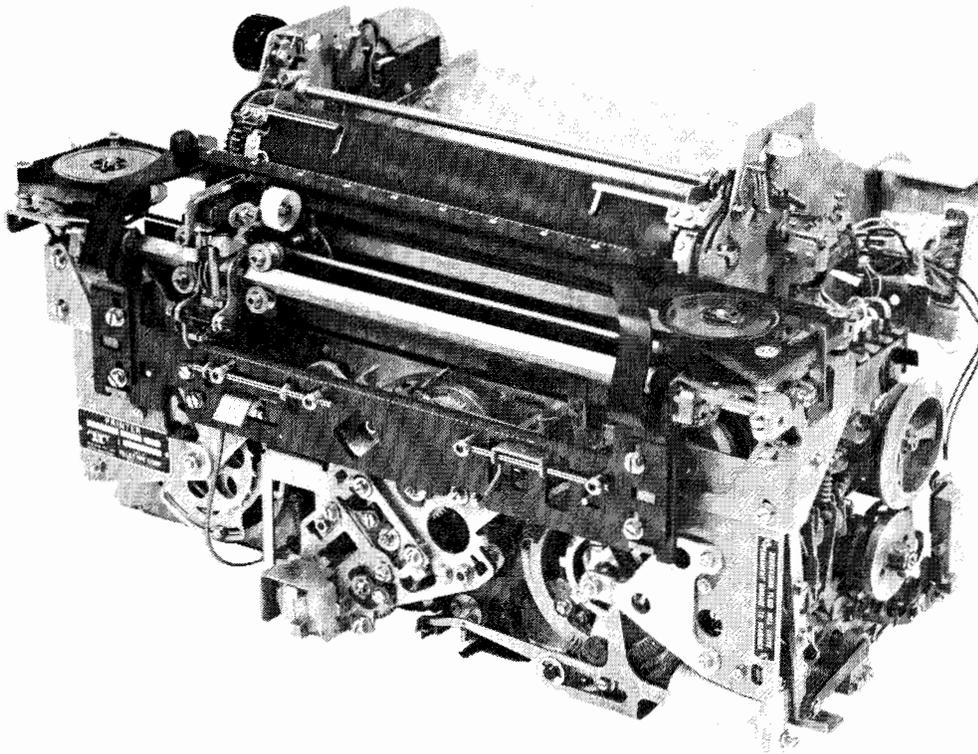


Figure 4 - Typing Unit

(2) Pivot the control panel forward to provide more space for replacing the typing unit. Grasp the typing unit under the curve at the top rear of the left side frame, and at the same time grasp the right side print position scale support (Figures 4 and 7). Raise the typing unit and position it directly over the base. Tilt the typing unit slightly forward from a normal level. Carefully lower the typing unit onto the locating studs and tilt back to engage the intermediate gear assembly. Make certain that the main shaft driven gear and the intermediate gear mesh properly. Pivot the control panel back into its regular position; lock and secure in place.

(3) Secure the typing unit to the base with the four typing unit mounting screws, beginning with the left rear screw.

Note: If a replacement typing unit (other than the original) is installed the following adjustments are required.

(4) Remove the two screws and lockwashers holding the intermediate gear guard to the typing unit base and remove the guard. Loosen the five motor mounting

screws and move the motor away from engagement with the intermediate gear assembly.

(5) Using the pry points at the rear of the intermediate gear assembly, adjust the intermediate gear assembly from front to rear until there is a barely perceptible backlash between the main shaft driven gear and the intermediate drive gear. This backlash can be from 0.004 inch to 0.008 inch. Tighten the three intermediate gear assembly mounting screws.

(6) Using the back left edge of the motor cradle and the rear flange of the base as a pry point, move the motor forward to fully engage the motor pinion and the intermediate driven gear. Then using the pry point located forward of the left rear mounting screw, ease the motor unit back to establish a barely perceptible backlash. Tighten the five motor mounting screws. Make sure the fan guard does not interfere with free rotation of fan.

(7) Install the gear guard over the intermediate gear assembly with the two screws and lockwashers taken out during the removal procedures. Align guard to clear gears and motor unit. Tighten screws.

- (8) The remaining replacement procedures are the reverse of the removal procedures.

CONTROL PANEL

2.03 To remove the control panel, proceed as follows (Figures 7 and 9).

- (1) Remove trim strip by removing the two top screws.
- (2) Disconnect the control panel cable plug from the control panel by pulling it straight out, using care to avoid bending the connector pins. Wrap the plug with a protective covering and tape it securely to protect the plug.
- (3) Detach the control panel cable clamp from the control panel assembly by taking out the screw, lockwasher, and flat washer used to secure the clamp.

- (4) Lift the control panel free from the mounting bracket and store it in a closed container to protect the switch and connector contacts.

2.04 To replace the control panel, reverse the procedures used for removal.

MOTOR UNIT

2.05 To remove the motor unit from the base, proceed as follows (Figure 5).

- (1) Remove typing unit as described in 2.01.
- (2) Disconnect the two motor leads from the two leads originating from the bottom of connector J304 mounted on the left rear of the base.

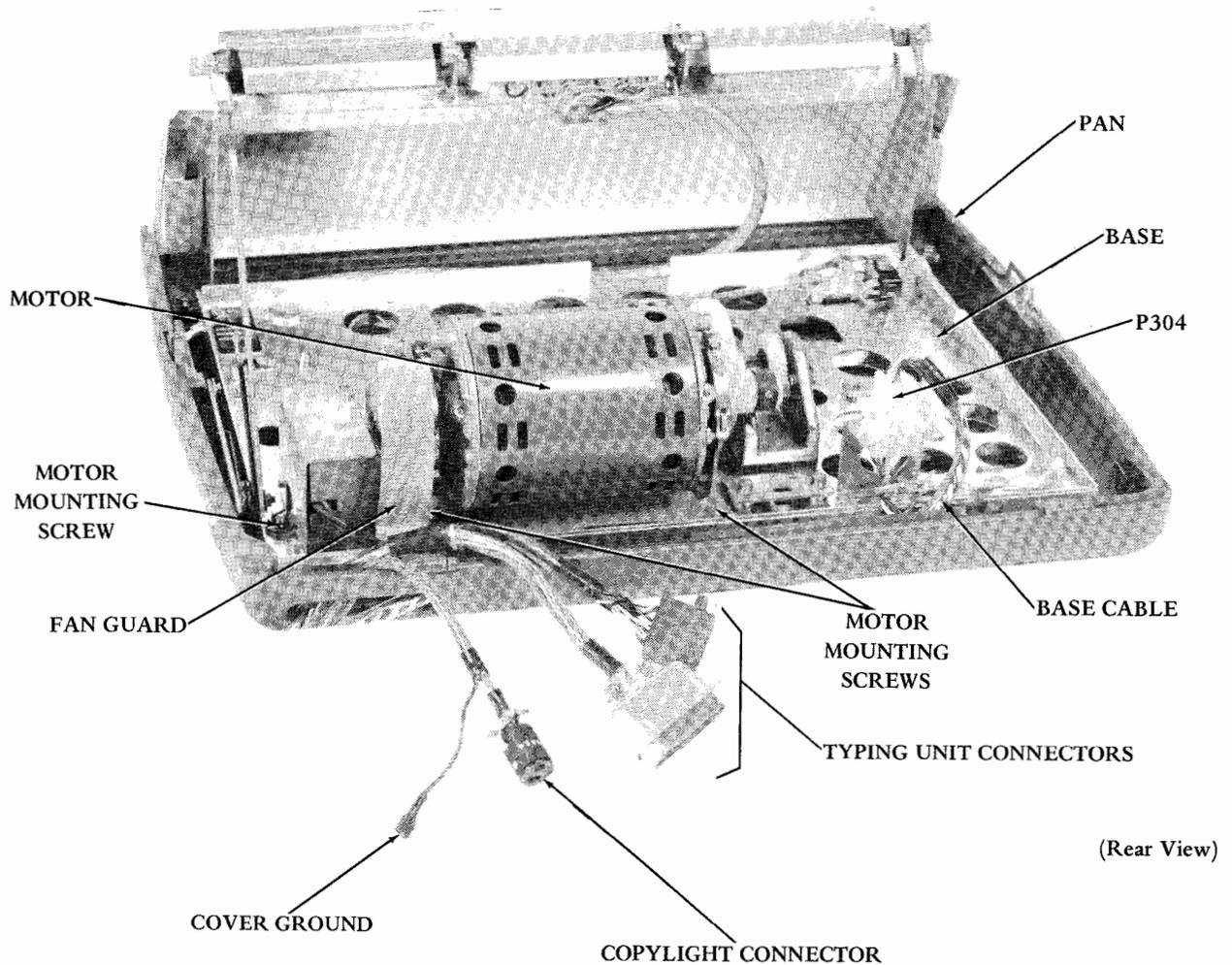


Figure 5 - Base, Pan, and Motor Unit

(3) Remove the fan guard by taking out the motor mounting screws securing it in the right rear corner of the base.

(4) Take out the remaining four motor mounting screws and lift the motor unit from the base. Set motor unit aside.

2.06 To replace the motor unit, reverse the procedures used for removal. Adjust the motor to the intermediate gear assembly as described in 2.02(6).

INTERMEDIATE GEAR ASSEMBLY

2.07 To remove the intermediate gear assembly from the base, proceed as follows (Figures 5 and 6).

- (1) Remove typing unit as described in 2.01.
- (2) Remove two screws and lockwashers securing the gear guard to the base.
- (3) Remove the gear guard.
- (4) Remove the three intermediate gear assembly mounting screws TP104898, lockwashers, and flat washers securing the intermediate gear assembly to the base.

(5) Lift the intermediate gear assembly from the base and set aside.

2.08 To replace the intermediate gear assembly, reverse the procedure used during removal. If original intermediate gear assembly is installed, make sure there is a barely perceptible amount of backlash between the motor and intermediate gear assembly before tightening screws. If other than original intermediate gear assembly is installed, replace the typing unit and follow the adjustment information described in 2.02(5) and 2.02(6). Replace the gear guard.

BASE

2.09 To remove the base from the typing unit cover and pan, proceed as follows (Figure 6).

Note: In the RO set, the two leads usually connected to the mechanical reset mechanism are insulated with shrinkable tubing and inserted within the channel of the printer base.

- (1) Remove the typing unit (2.01), and control panel cables (2.03)(2), (3), and (4).
- (2) Remove the two base retainers by taking out the retainer screws and lockwashers securing each to the pan.

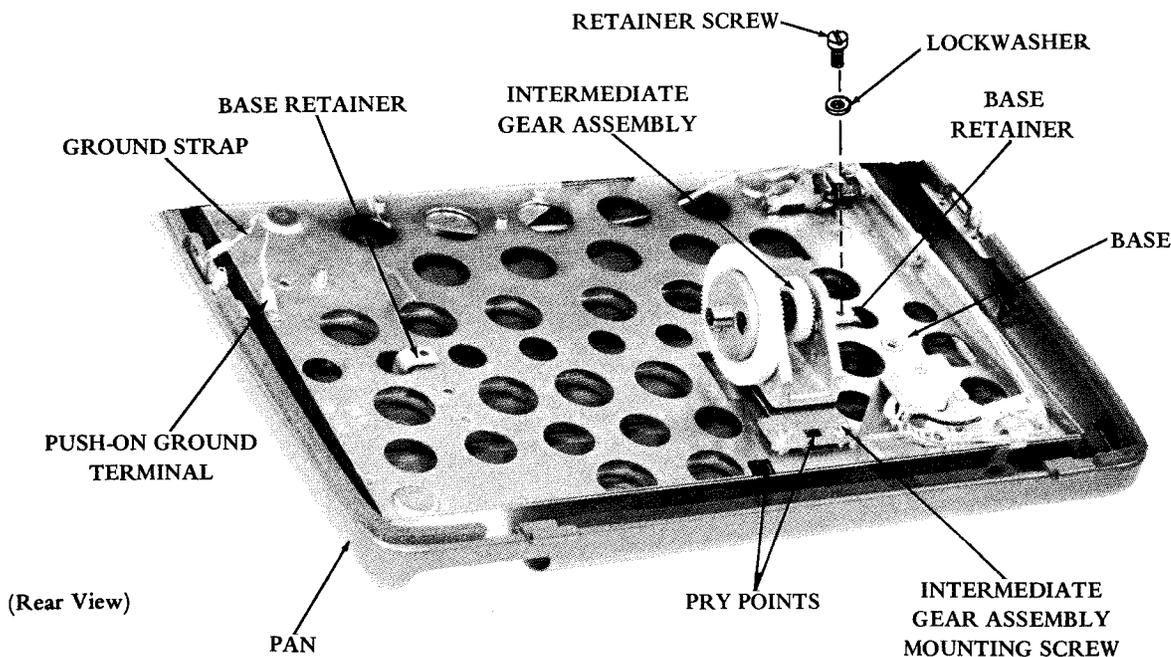


Figure 6 - Base and Intermediate Gear Assembly

Note: If the screw and lockwasher attaching each base retainer to the base for immobility during shipment are still in place, they should be removed and discarded at this time.

- (3) Lift base retainers from the pan through holes in base.
- (4) Remove the ground strap from the base by pulling the push-on ground terminal straight off from the terminal tab mounted on the right side of the base.
- (5) Lift the base free from the pan one corner at a time. The shock mounts may hold the base firmly due to a suction formed in the cup in the base. A little force will break the base loose.

Note: No further disassembly of the base is recommended unless parts require replacement.

- 2.10 To replace the base, reverse the procedures used during removal.

TYPING UNIT COVER AND PAN

- 2.11 To remove the typing unit cover and pan, from the table, proceed as follows (Figures 7, 8, and 9):
 - (1) Remove the typing unit pan (2.09).
 - (2) Disconnect the copylight cable plug P302 from the 2-pin connector in the cover.
 - (3) Pull the push-on ground terminal free from the ground terminal tab in the cover.
 - (4) Use a screwdriver blade or needle nose pliers to spring the upper speed clip at the rear of the pan inward, and pull the base cable free. In a similar manner release the control panel cable from the lower speed clip.

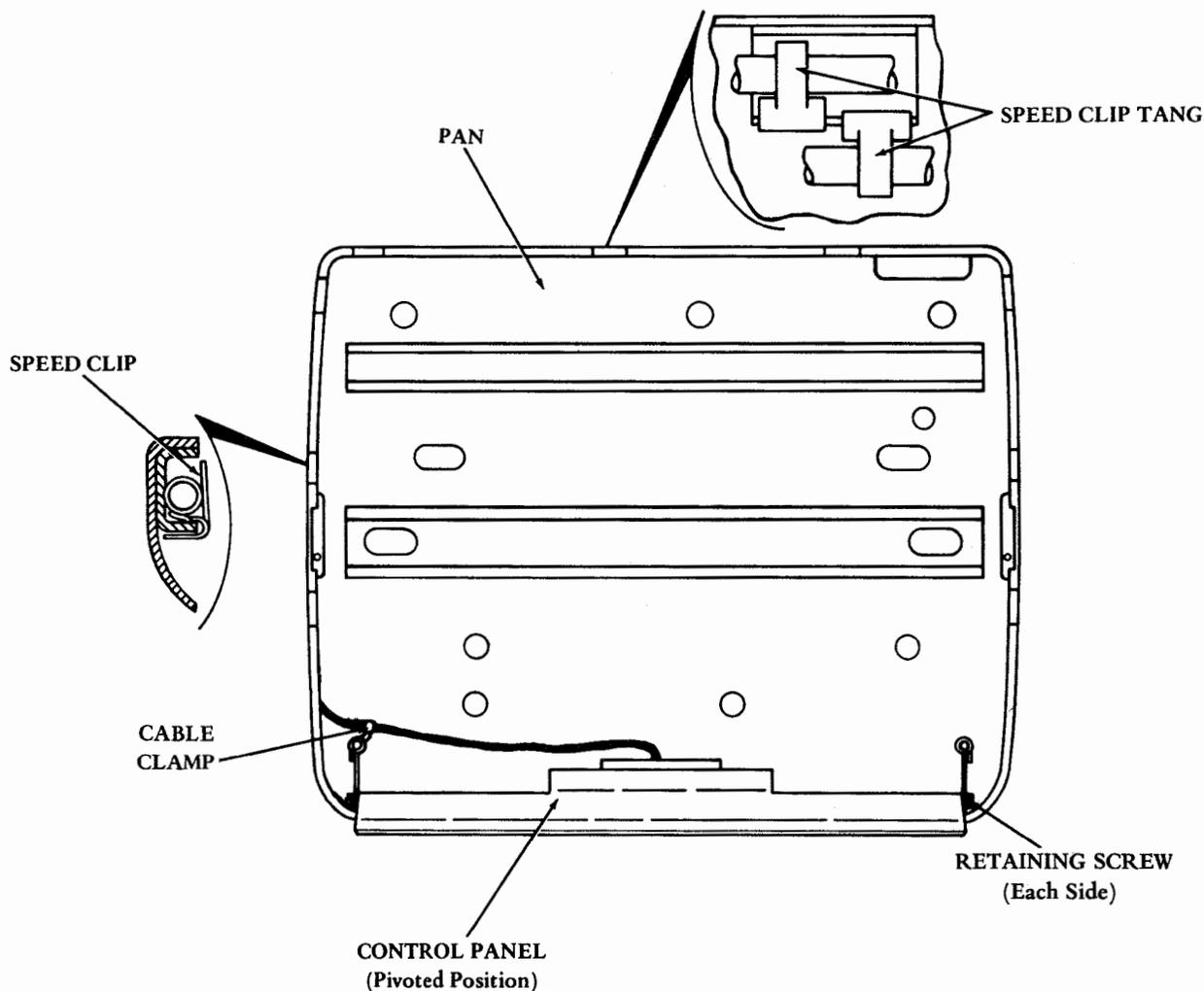


Figure 7 - Control Panel Cable Routing

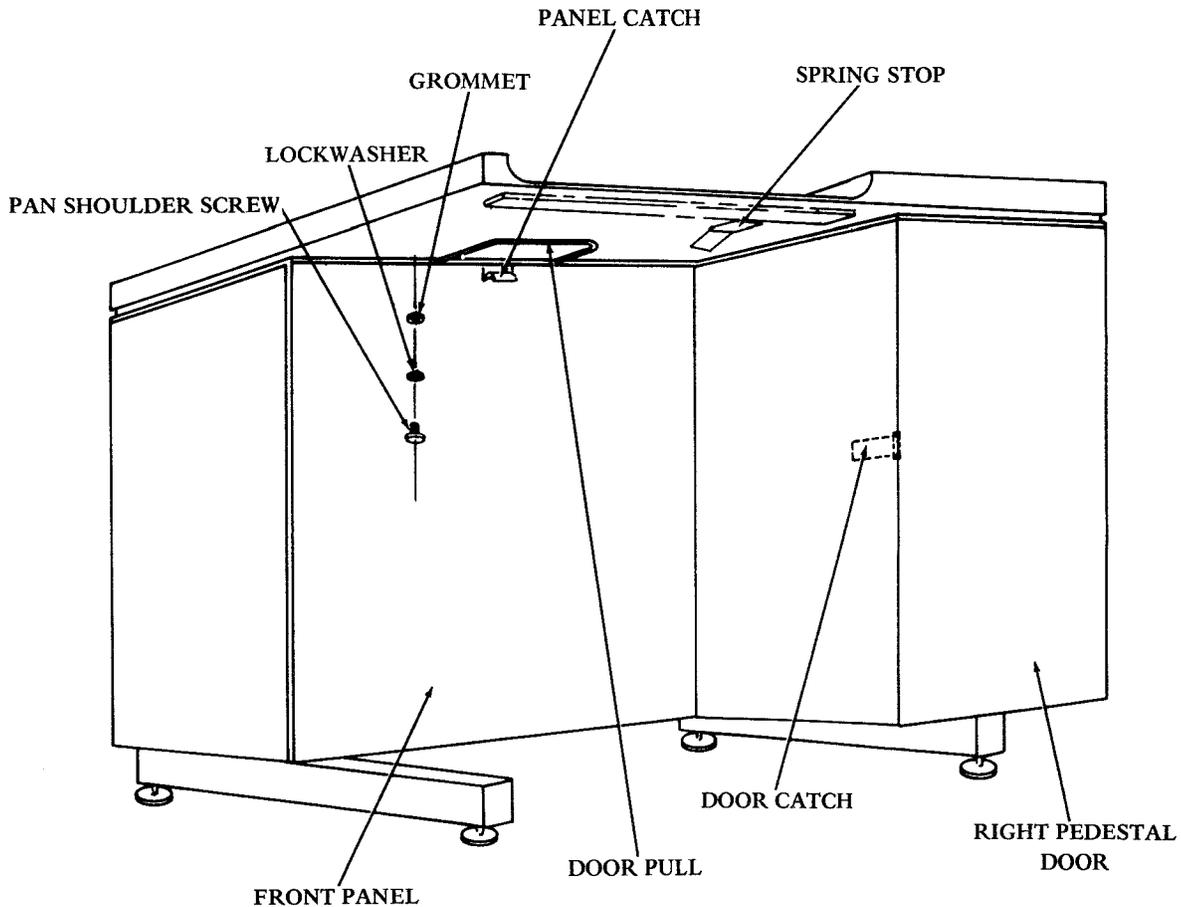
- (5) Open the front panel of the table by pressing upward on the panel catch while pulling outward on the door pull. The panel will be stopped by the spring stop, but can be released by pressing upward on the strip. Lower the panel until the door pull rests on the floor.
- (6) Locate the copyright cable under the table. Draw the cable down and carefully feed the plug P302 and ground terminal through the oblong slots in the pan and table.
- (7) Draw the base cable down and feed its plug P304 through the slots.
- (8) Draw the selector cable and its plug P306, and the function box cable and its plug P308 down through the hole.

- (9) Very carefully work the control panel cables and connector plugs down through the slot.
- (10) Remove the four pane shoulder screws and lockwashers from the grommets in the lower side of the table to release the typing unit pan and cover.
- (11) Lift the typing unit pan and cover out of the recess in the table and set aside.

2.12 To replace the typing unit pan and cover, reverse the procedures used during removal.

ELECTRICAL SERVICE UNIT

2.13 To remove the electrical service unit from the left compartment in the base of the table proceed as follows (Figures 8 through 11).



(Left Oblique Front View)

Figure 8 - Table

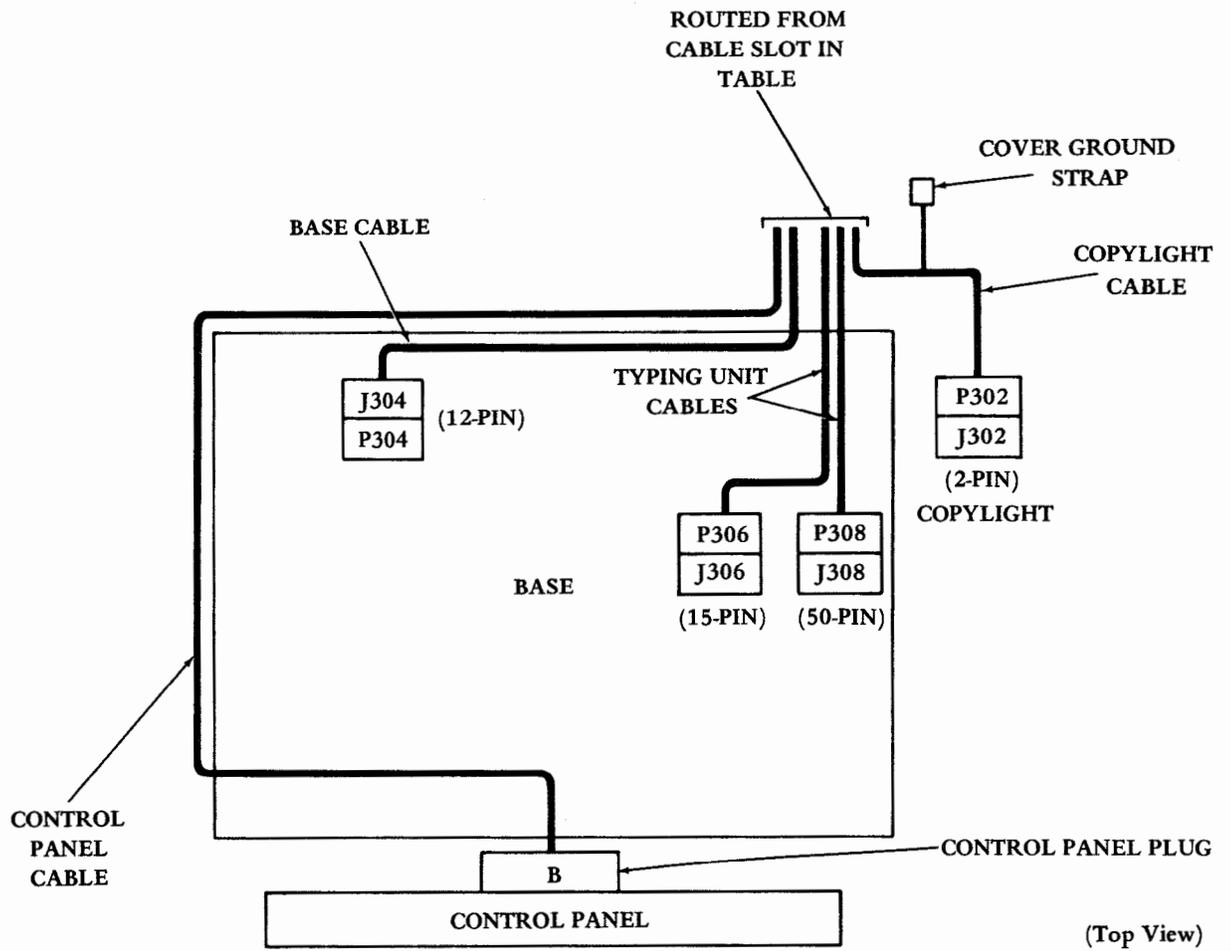
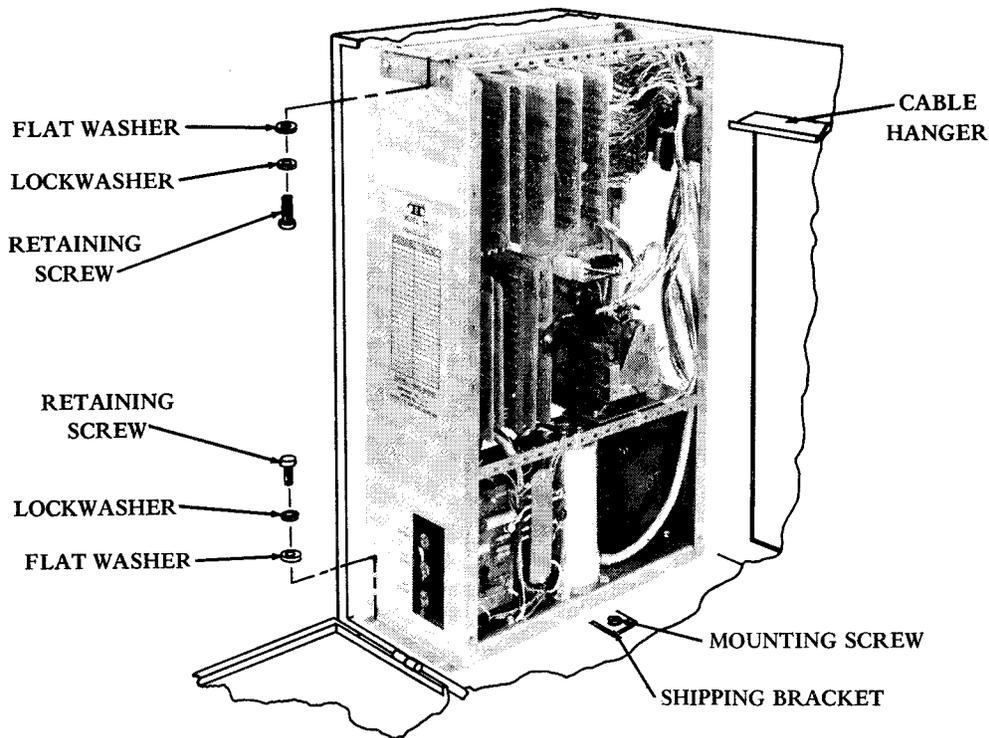


Figure 9 - Typing Unit Cable Routing



(Right Oblique Cut-Away View of Table)

Figure 10 - Electrical Service Unit

- (1) Open the front panel of the table and draw all electrical service unit cables back through the oblong slot in the table as directed in 2.11.
- (2) Disconnect the power cord plug from the utility strip.
- (3) Remove three service unit retaining screws, lockwashers, and flat washers from the retaining flanges at the front top and bottom of the unit.
- (4) If the shipping bracket secured to the floor of the left table compartment for shipment has not been removed, take out the mounting screw and lockwasher holding it in place and discard this hardware.
- (5) Lift the electrical cables out of the cable hanger at the top rear wall of the compartment.
- (6) Pull the electrical service unit straight forward out of the table.

- 2.14 To replace the electrical service unit, reverse the removal procedures.

ANSWER-BACK ASSEMBLY

- 2.15 To remove the answer-back assembly from the electrical service unit, proceed as follows (Figure 11).

- (1) Carefully pull plug connectors P402 and P401 from the top of the printed circuit card on the answer-back assembly.
- (2) Remove four answer-back mounting screws, lockwashers, and flat washers from the corners of the answer-back mounting plate.
- (3) Lift the answer-back assembly out of the electrical unit, and set aside.

- 2.16 To replace the answer-back assembly, reverse the removal procedures.

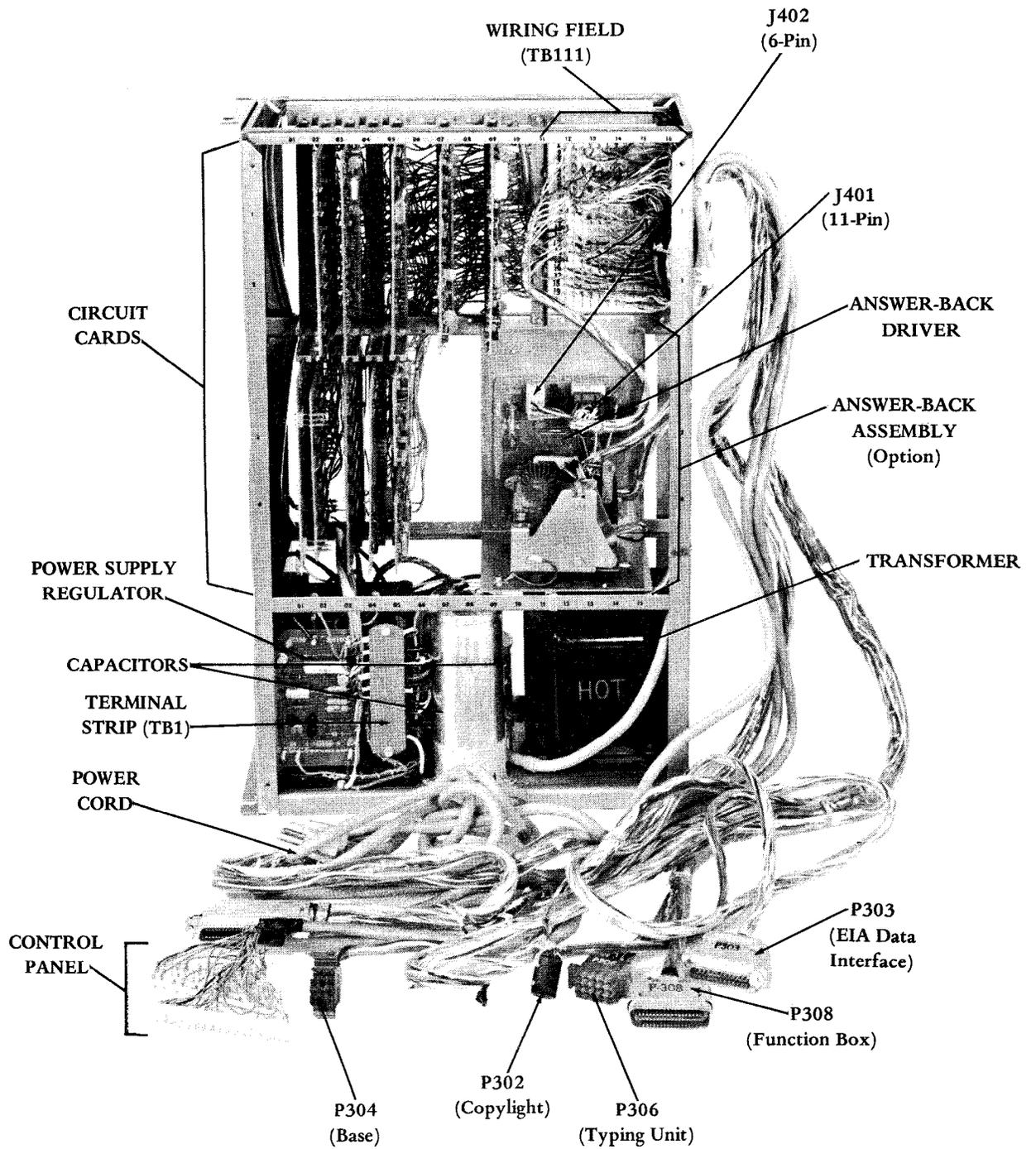
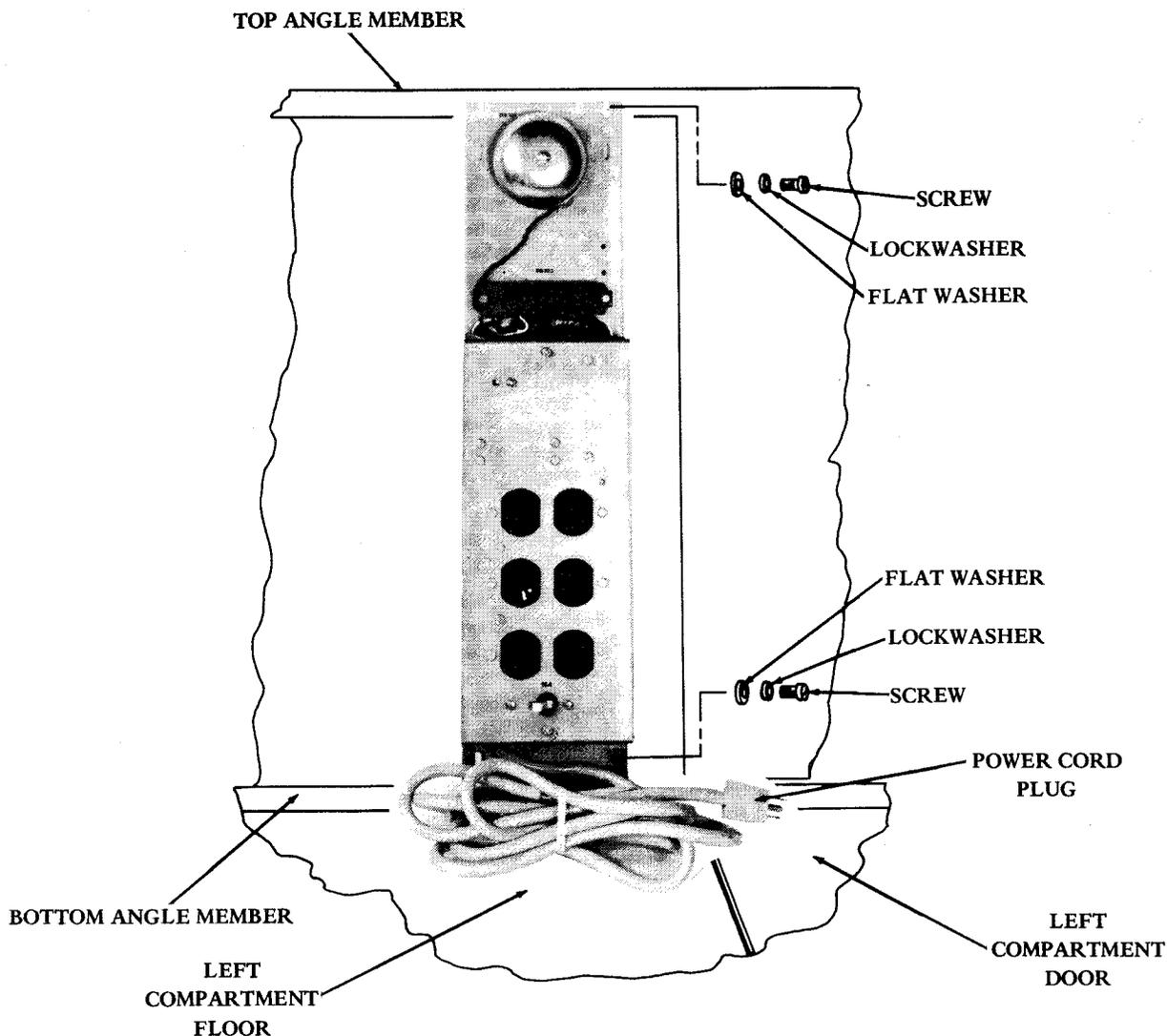


Figure 11 - Electrical Service Unit



(Left Cut-Away View of Table)

Figure 12 - Utility Strip

UTILITY STRIP

2.17 To remove the utility strip from the left compartment in the base of the table, proceed as follows (Figures 8 and 12).

- (1) Open the front panel of the table by pressing upward on the panel catch, and pull forward on the door pull.
- (2) Press upward on the spring stop, and continue to swing the panel outward and downward until the door pull rests on the floor.
- (3) Disconnect the utility strip power cord plug and any other power cord plugs connected to the utility strip.

- (4) Remove four utility strip mounting screws, lockwashers, and flat washers securing the utility strip to the top and bottom angle members of the table on the right side of the left compartment.
- (5) Remove the utility strip from the table and store.

2.18 To replace the utility strip, reverse the removal procedures.

TABLE

2.19 No removal or replacement procedures are required for the tables, since all areas are accessible through the front panel and the right pedestal door.

Note: Both tables shown in Figures 1 and 8 have the same mountings.

37 TYPING UNIT
ADJUSTMENTS

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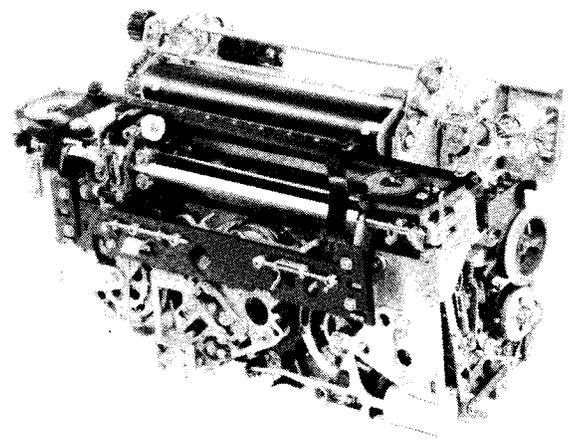


Figure 1 - 37 Typing Unit With Variations

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Latch spring	133
Mounting plate	130
Tab arm spring	130
Tab clear arm cable	132
Tab set arm cable	131

1. GENERAL

1.01 This section provides adjustment procedures for the late design 37 typing unit (Figure 1). For similar information about the early design 37 typing unit, refer to Section 574-320-700TC.

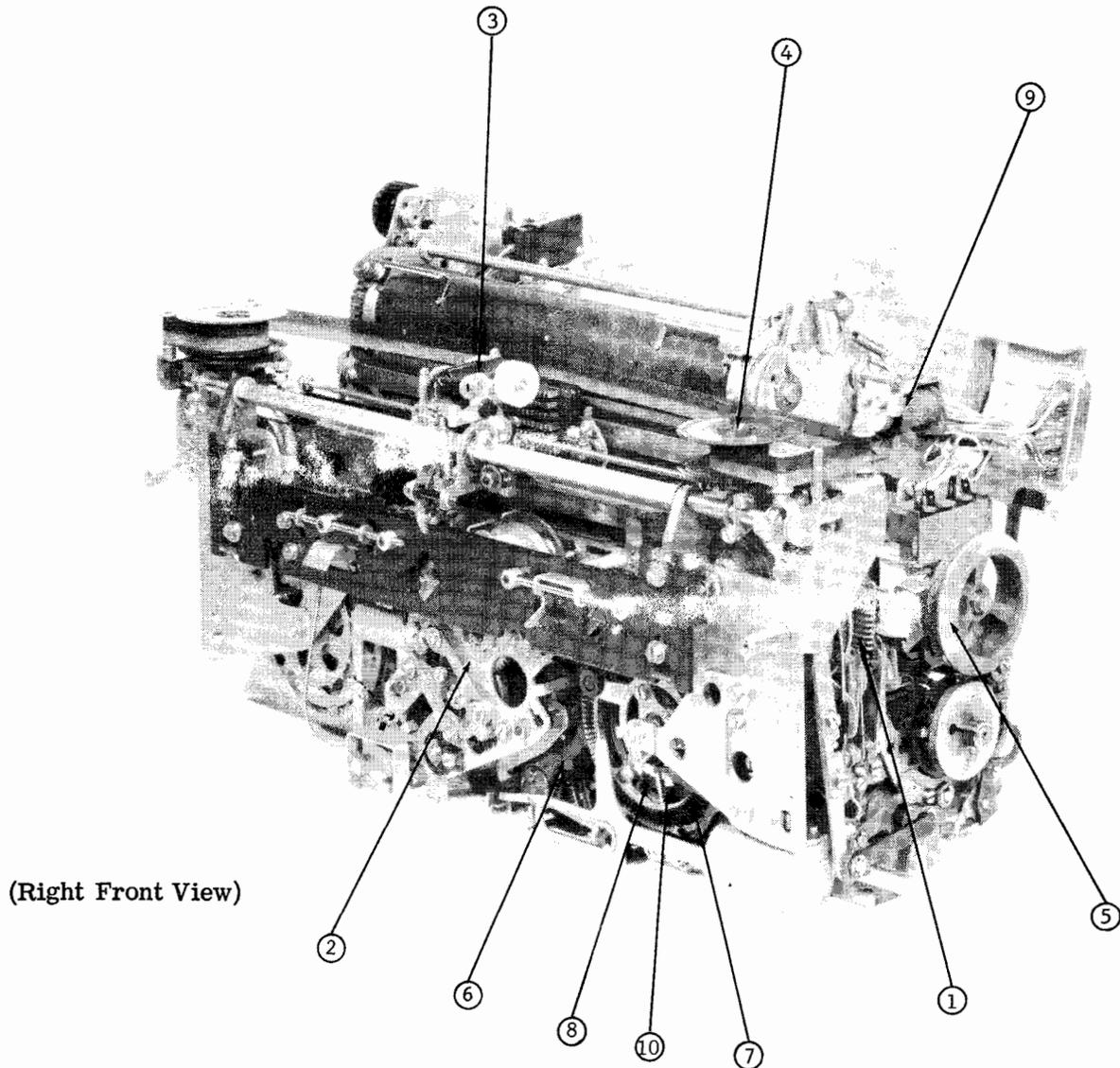
1.02 The adjustments in this section are divided into the basic unit and variable features. The basic unit is subdivided into major mechanisms.

1.03 Each adjustment is associated with a major mechanism. Both the major mechanisms and the subordinated adjustments are indexed in the table of contents. The major mechanisms and variable features are identified in Figures 2, 3, and 4.

1.04 Tools required to make the adjustments and check the spring tensions are not supplied with the equipment, but are listed separately in Section 570-005-800TC.

Note: Use maintenance pad TP124828 to protect furniture and floor coverings from oil and grease while adjusting the unit.

1.05 References made to left or right, up or down, and front or rear apply to the typing unit in its normal operating position as viewed by the operator facing the unit.



(Right Front View)

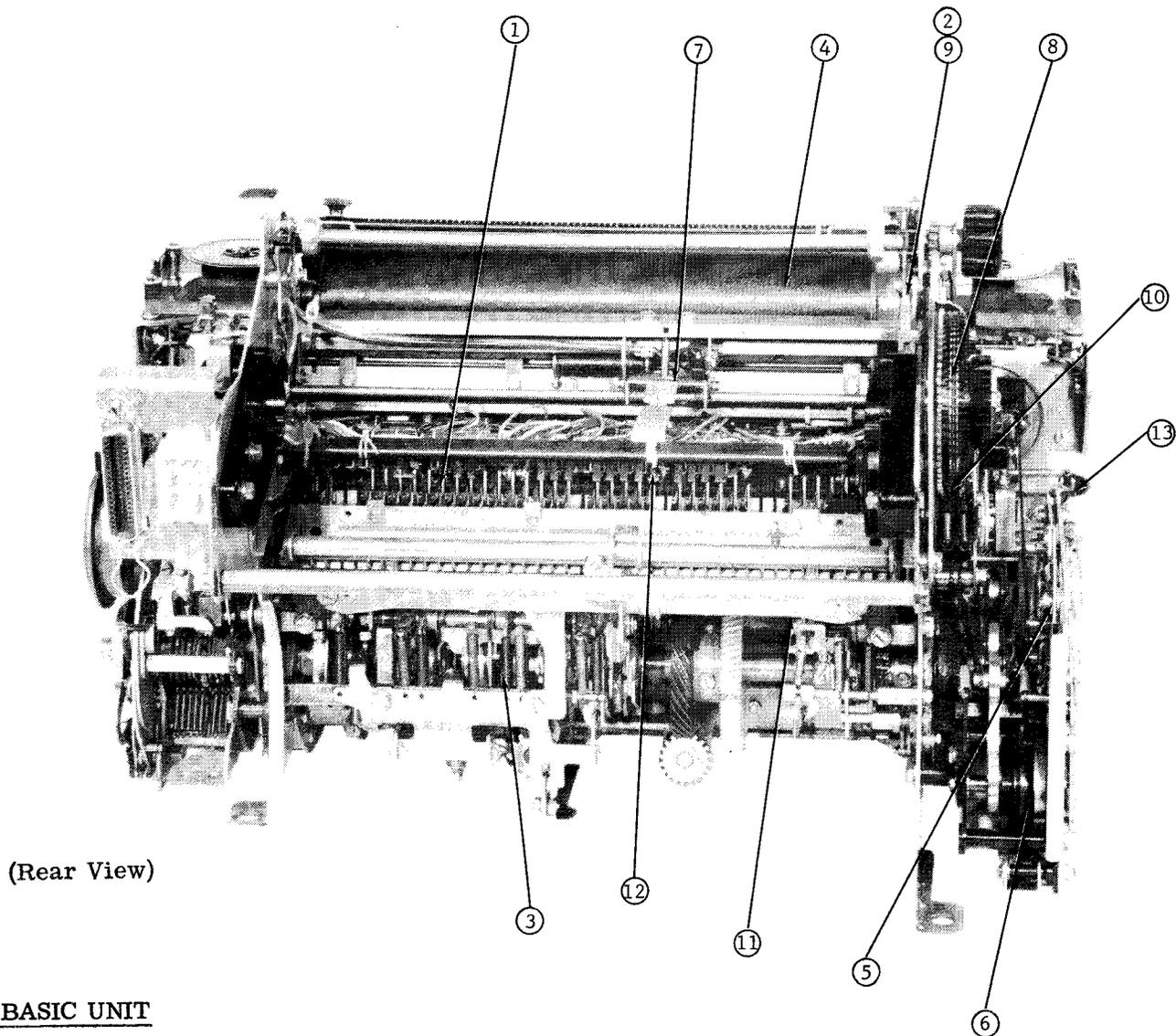
BASIC UNIT

- ① CODE BAR MECHANISM
- ② HORIZONTAL POSITIONING MECHANISM
- ③ PRINTING MECHANISM
- ④ RIBBON FEED MECHANISM
- ⑤ SELECTOR MECHANISM
- ⑥ SPACING AND CARRIAGE RETURN MECHANISM

VARIATIONS

- ⑦ HORIZONTAL TABULATION MECHANISM
- ⑧ HORIZONTAL TAB STOP CONTROL MECHANISM
- ⑨ TWO-COLOR RIBBON MECHANISM
- ⑩ AUTOMATIC CARRIAGE RETURN — LINE FEED MECHANISM

Figure 2 - Major Mechanisms of 37 Typing Unit



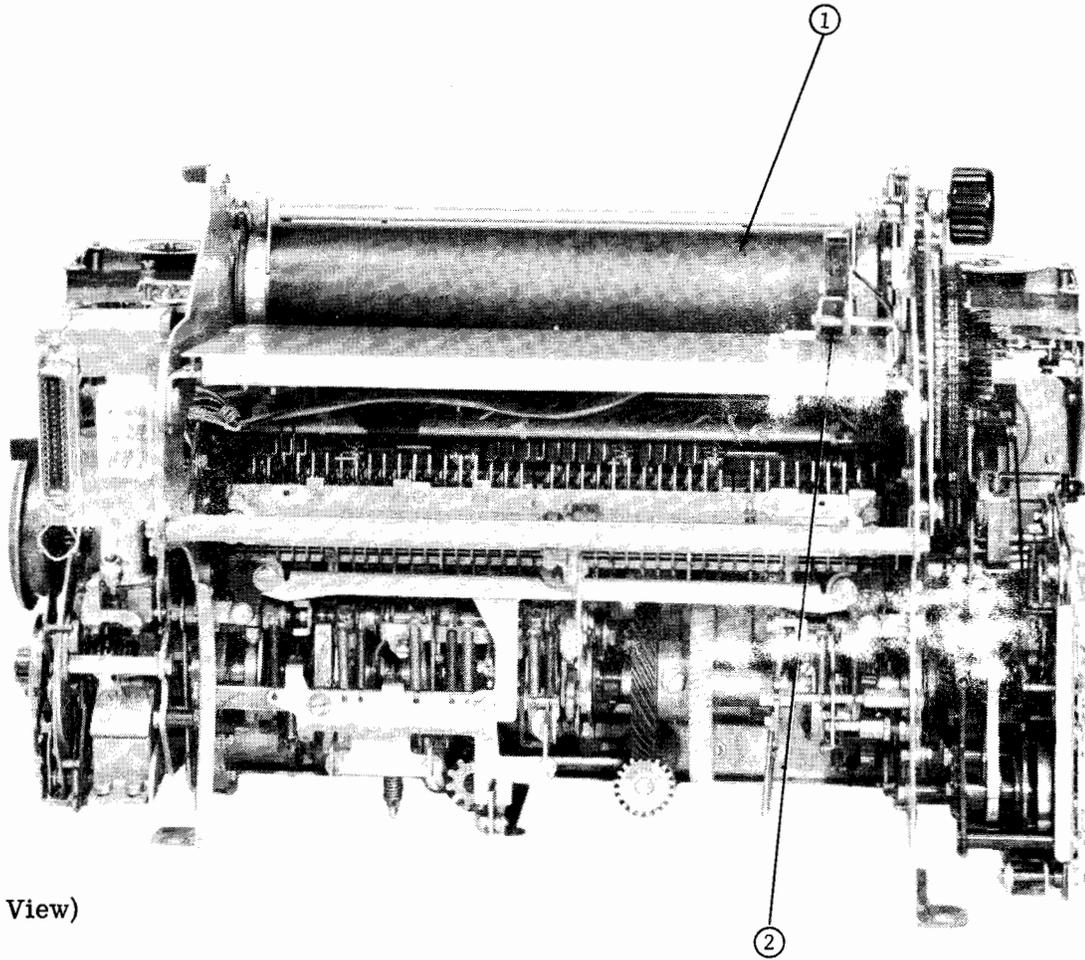
BASIC UNIT

- ① FUNCTION MECHANISM
- ② LINE FEED MECHANISM
- ③ MAIN SHAFT AND TRIP SHAFT MECHANISMS
- ④ PLATEN MECHANISM (FRICTION FEED)
- ⑤ RETRACTION MECHANISM
- ⑥ VERTICAL POSITIONING MECHANISM

VARIATIONS

- ⑦ LOW-PAPER ALARM (FRICTION FEED)
- ⑧ VERTICAL TABULATION MECHANISM
- ⑨ HALF FORWARD AND REVERSE LINE FEED MECHANISM
- ⑩ VERTICAL TAB STOP CONTROL MECHANISM
- ⑪ LINE FEED CLUTCH TRIPBAIL MECHANISM
- ⑫ ESCAPE SEQUENCE MECHANISM
- ⑬ SHIFT-IN — SHIFT-OUT MECHANISM

Figure 3 - Major Mechanisms of 37 Typing Unit



(Rear View)

BASIC UNIT

- ① PLATEN MECHANISM (SPROCKET FEED)

VARIATIONS

- ② PAPER-OUT ALARM (SPROCKET FEED)

Figure 4 - Major Mechanisms of 37 Typing Unit

1.06 The adjustments for the basic unit and variations are arranged in a sequence that should be followed if a complete readjustment of the typing unit is undertaken. A complete adjusting procedure should be read before attempting to make the adjustment. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened to facilitate the adjustment, unless otherwise instructed. If a part mounted on shims is to be removed, the number of shims at each mounting screw should be noted so that the same pile-up can be replaced when the part is remounted.

CAUTION: UNLESS OTHERWISE SPECIFIED, REMOVE ALL POWER FROM THE UNIT WHEN PERFORMING ADJUSTMENTS.

1.07 Some adjustments require that the lost motion (play) between operating elements be removed (taken up) before checking the requirement. Under these circumstances, play is considered taken up whenever a 4-ounce force is applied to the operating elements to create the condition specified in the adjustment.

1.08 If an adjustment is changed, be sure to check all affected adjustments. Affected adjustments are listed below pertinent adjustment titles and text. As an example, suppose the TRIP SHAFT CAM FOLLOWER (2.20) adjustment is changed. Under Affected Adjustments the FUNCTION CLUTCH TRIP ARM (2.22) and PRINT HAMMER CLUTCH TRIP ARM (2.23) adjustments are listed. Check these adjustments before considering the TRIP SHAFT CAM FOLLOWER (2.20) adjustment complete.

1.09 The spring tensions given in the section are indicated values and should be checked with proper spring scales. The adjusting illustrations, in addition to indicating adjustment tolerances, show the angle at which the scale should be applied when measuring spring tensions. Springs which do not meet the requirements, and for which there are no adjusting procedures, should be discarded and replaced with new springs.

1.10 All electrical contacts should meet squarely. Contacts with the same diameter should not be out of alignment by more than 25 percent of the contact diameter. Avoid sharp kinks or bends in the leaf springs.

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

OPERATING CONDITION OF CLUTCHES

1.11 When a requirement specifies a disengaged clutch, the clutch must be fully latched so that the clutch shoes are completely disengaged from the clutch drum. To become fully latched, the trip lever (or stop arm) must engage the clutch shoe lever, and the clutch disc must rotate far enough to permit the latch lever to fall into the notch in the clutch disc.

Note: When rotating the main shaft of the typing unit by hand, the clutches do not fully disengage upon reaching their stop positions. In order to relieve the drag on the clutch drums and permit the main shaft to rotate freely, apply pressure to the stop-lug on each clutch disc with a screwdriver until each latch lever falls into its notch on its clutch disc. Thus, each internal expansion clutch becomes fully disengaged. This procedure should be followed before placing the typing unit on the base and switching on the power.

When engaged, the clutch shoe lever is unlatched (tripped), and the clutch shoes are wedged against the clutch drum.

MANUAL INSERTION OF CHARACTERS

1.12 When a procedure specifies a particular codebar arrangement or character, it must be manually inserted in the selector and codebar mechanisms. To manually insert the particular arrangement, attach armature clip TP312709 on the selector mechanism to simulate a marking condition. Prevent the retraction mechanism from working by stripping the blocking and feed pawls from the ratchet wheel and tying in place. Attach handwheel TP161430 to drum of selector clutch and rotate main shaft until clutch is disengaged. Momentarily move armature down to simulate a start pulse and then rotate main shaft until all push levers are marking and clutch is again disengaged. Set up desired character in selector by moving the push levers, associated with spacing bits, on top of selector levers to simulate a spacing condition (there is no change in the transfer levers).

1.13 Place spring hook TP142554 through the hole located in the selector mechanism frame and just to the front of the selector clutch. Rotate the intermediate arm latch bail toward the rear of the unit to permit the transfer levers to be repositioned.

1.14 To place the character in the codebar mechanism so as to accomplish desired function, engage the codebar clutch and rotate the main shaft until codebar clutch disengages.

Note: Do not release armature in selector mechanism once the desired character is set up. Releasing the armature will result in a new code combination being placed in typing unit.

1.15 Occasionally a procedure will specify that a function be fully selected. A function is considered fully selected whenever

the function clutch is engaged (tripped) and the main shaft rotated, until just prior to the time the stripper blade removes the function pawl from its function bar.

CAUTION: AFTER THE TYPING UNIT HAS BEEN IN OPERATION 200 HOURS:

(1) RELUBRICATE ACCORDING TO SECTION 574-320-704TC.

(2) READJUST MAIN SHAFT CLUTCHES PER MAIN SHAFT CLUTCH SHOE LEVERS (2.15) ADJUSTMENT.

2. BASIC UNIT

2.01 Selector Mechanism

SELECTOR ARMATURE

Note 1: Requirement (1) need not be made (nor checked) if SELECTOR MAGNET BRACKET (2.05) and SELECTOR RECEIVING MARGIN (2.10) adjustments are met.

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

(1) Requirement

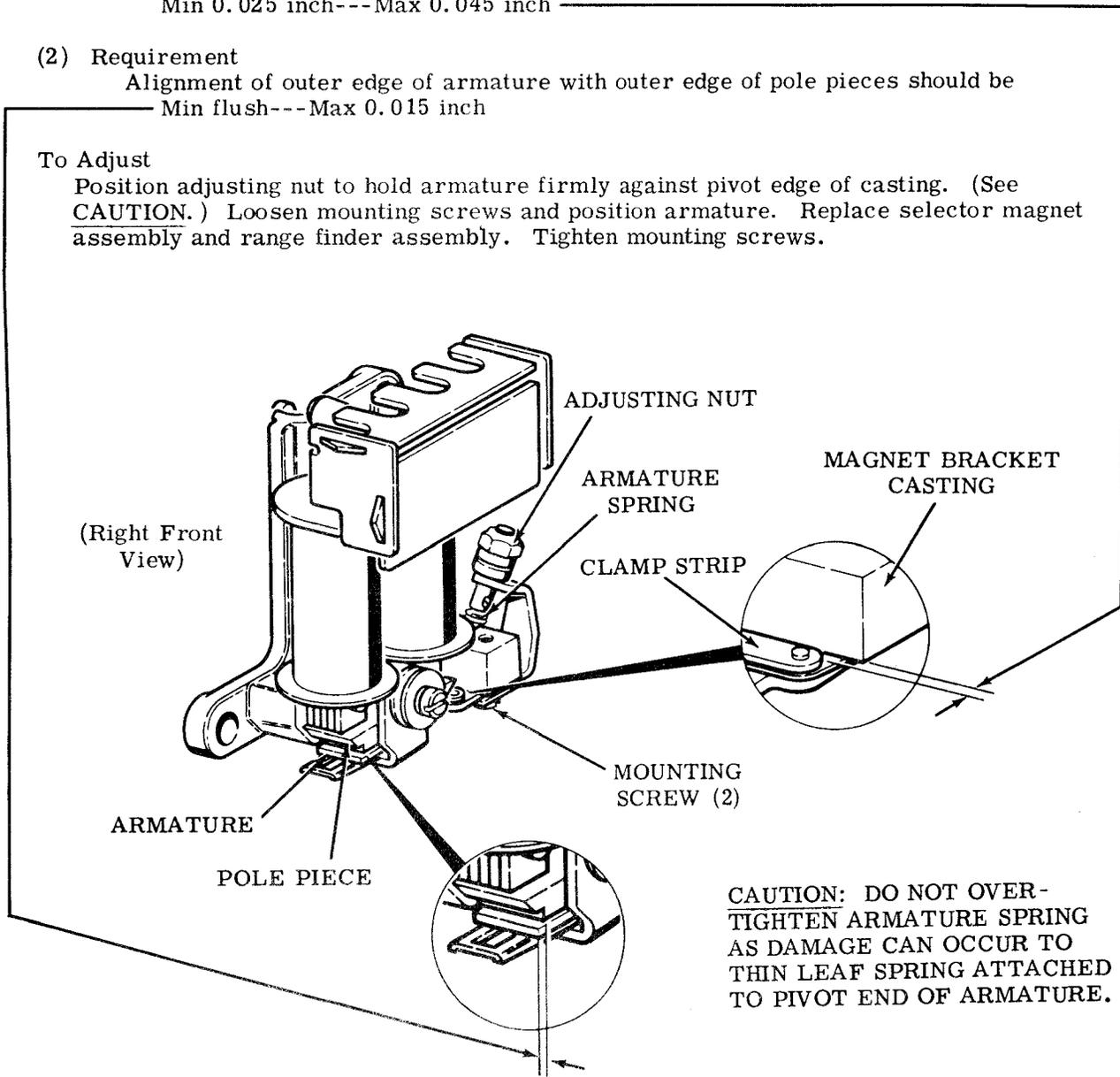
Clearance between clamp strip and magnet bracket casting should be
Min 0.025 inch---Max 0.045 inch

(2) Requirement

Alignment of outer edge of armature with outer edge of pole pieces should be
Min flush---Max 0.015 inch

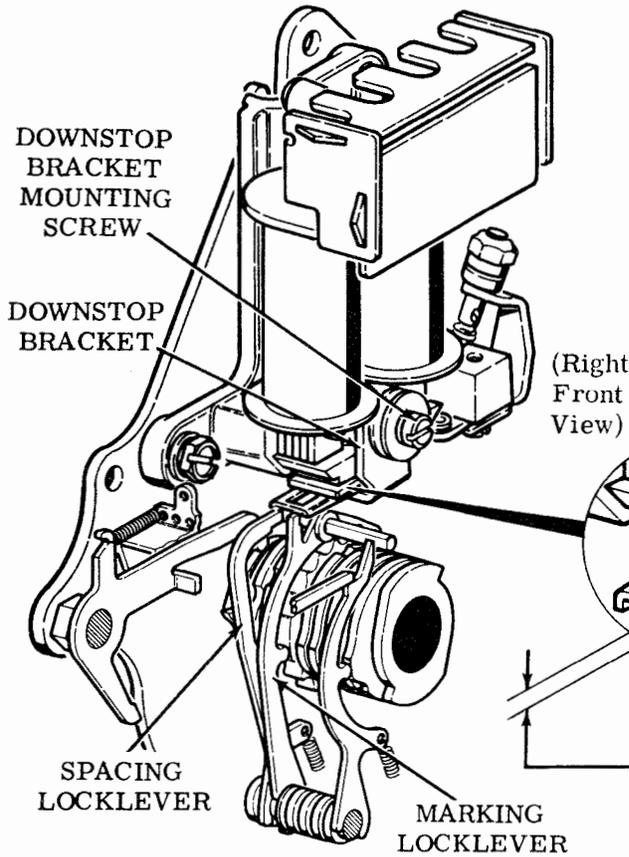
To Adjust

Position adjusting nut to hold armature firmly against pivot edge of casting. (See CAUTION.) Loosen mounting screws and position armature. Replace selector magnet assembly and range finder assembly. Tighten mounting screws.



2.02 Selector Mechanism (continued)

SELECTOR ARMATURE DOWNSTOP



To Check

Magnet de-energized. Locklevers on high part of cam.

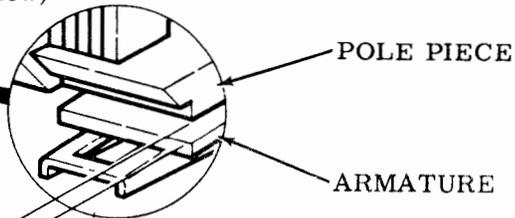
Requirement

With armature resting on downstop, clearance between end of armature and pole piece should be

Min 0.020 inch---Max 0.025 inch

To Adjust

Loosen bracket mounting screw friction tight and position downstop bracket. Tighten mounting screw.



SELECTOR CAM LUBRICATOR

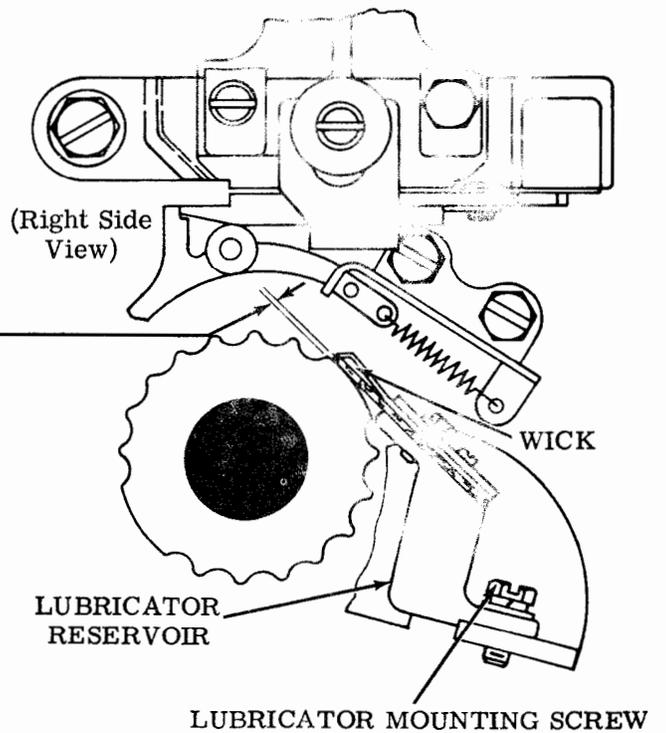
Requirement

Wick should be in contact with high part of selector lever cams but should not be deflected more than

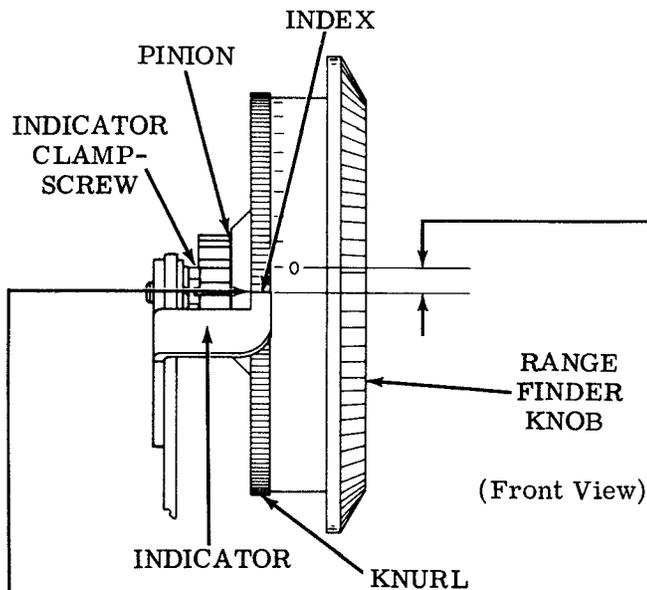
Max 1/32 inch
as gauged by eye.

To Adjust

Loosen lubricator mounting screw friction tight. Slide lubricator to correct position. Tighten mounting screws.



2.03 Selector Mechanism (continued)



INDICATOR POSITION

Requirement

Indicator should permit range finder knob to rest against its flat washer stop and engage knurl so scale setting will not change.

To Adjust

Loosen indicator clampscrew. Make sure range finder knob is against its flat washer stop. Press indicator into bottom of knurl and hold it there. Tighten clampscrew.

SELECTOR CLUTCH STOP ARM

To Check

All codebars spacing and the selector clutch in stop position. Do not latch the clutch. Rotate the range scale to position the no. 8 selector lever to the high part of its cam. Set the selector armature to marking and latch the selector clutch.

Requirement

Inner surface of stop arm should be Min flush---Max 0.010 inch over flush on the inner surface of the clutch shoe lever as gauged by eye.

To Adjust

Loosen clampscrew friction tight. Position stop arm. Recycle and recheck the requirement on both sides of the clutch. Tighten clampscrew.

RANGE FINDER KNOB PHASING

To Check

Range finder knob turned to maximum clockwise position.

(1) Requirement

Zero should be aligned with index within 10 divisions.

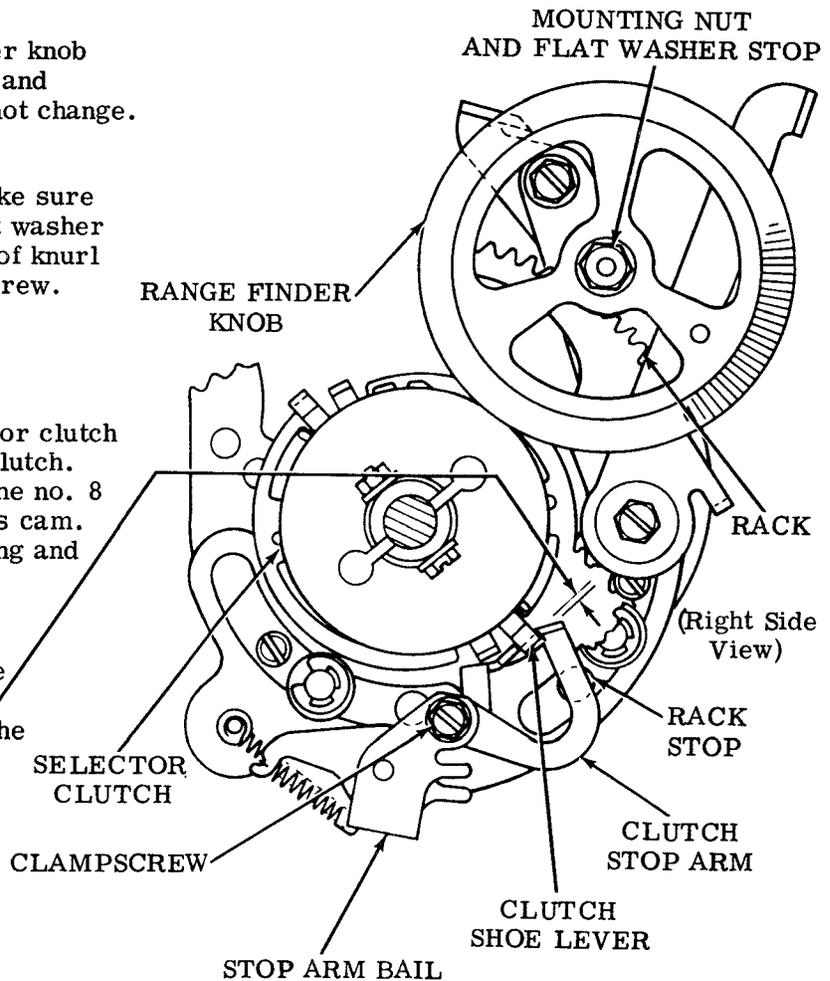
(2) Requirement

Rack should be pivoted against rack stop.

To Adjust

Pivot rack counterclockwise against rack stop. Loosen mounting nut and position range finder knob.

Note: Insure adequate motion of range finder knob prior to rack reaching upper and lower limits of travel.



2.04 Selector Mechanism (continued)

SELECTOR ARMATURE SPRING

To Check

Marking locklever, spacing locklever, and start lever on high part of their cams.

Requirement (Preliminary)

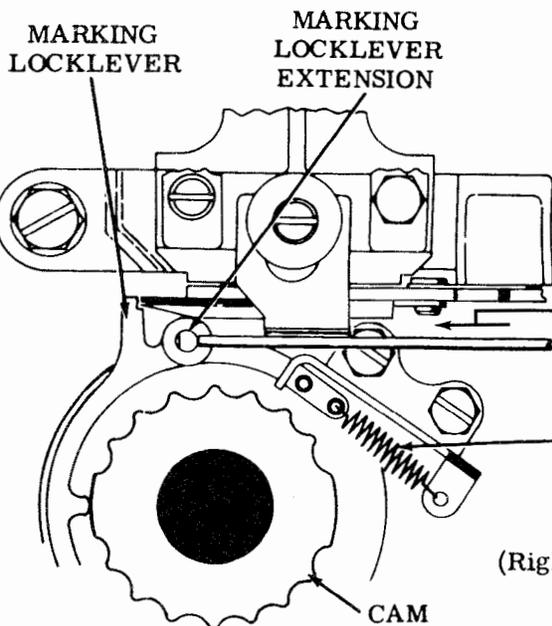
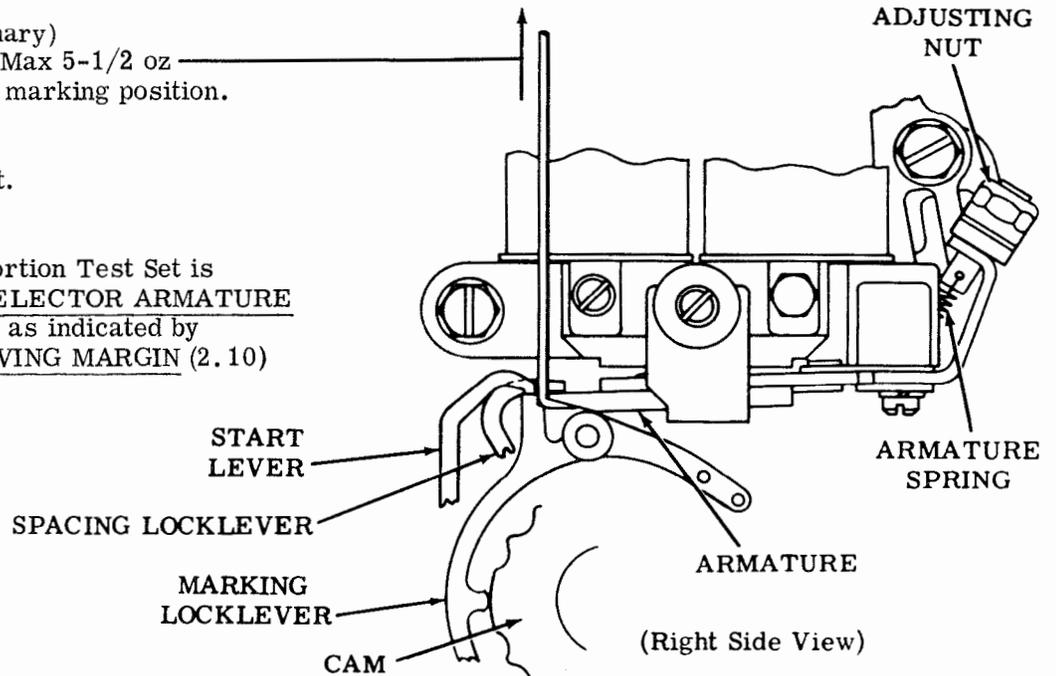
Min 4-1/2 oz---Max 5-1/2 oz to pull armature to marking position.

To Adjust

Rotate adjusting nut.

Requirement (Final)

When a Signal Distortion Test Set is available, refine SELECTOR ARMATURE SPRING adjustment as indicated by SELECTOR RECEIVING MARGIN (2.10) adjustment.



MARKING LOCKLEVER SPRING

To Check

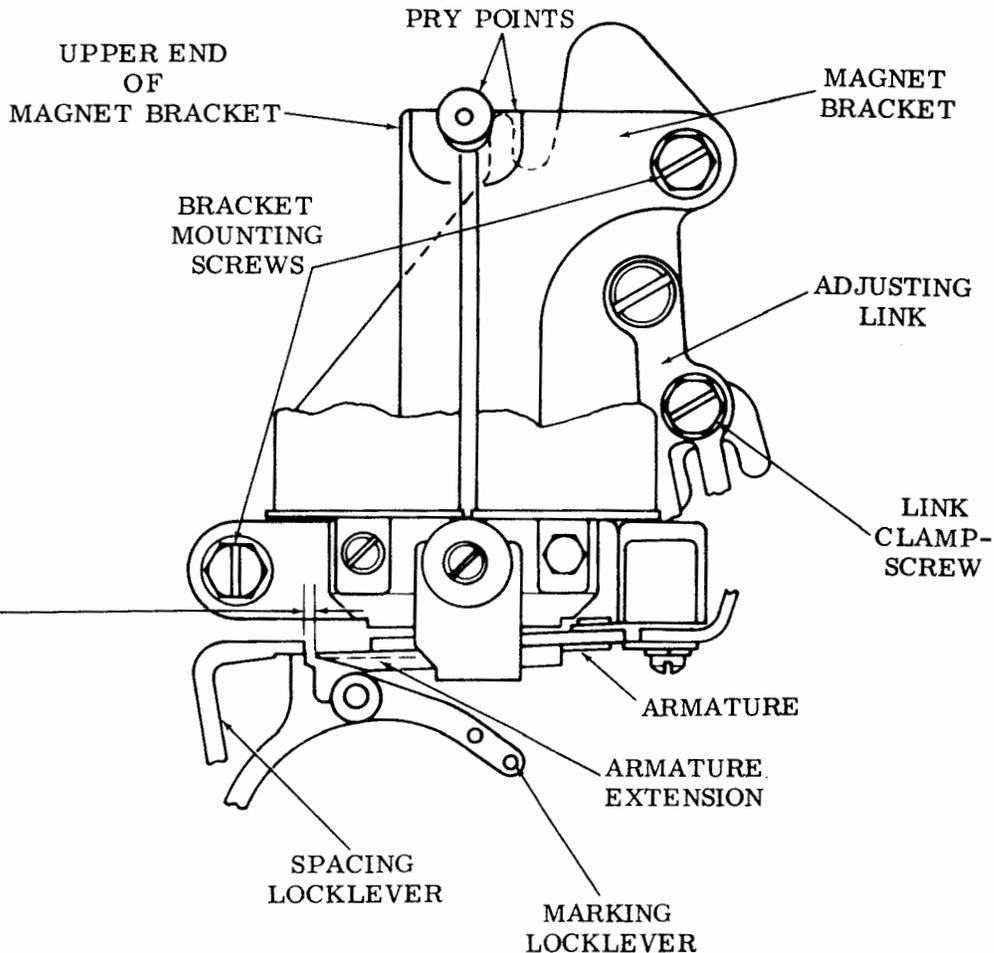
Magnet energized. All push levers latched behind selector levers. Selector clutch disengaged (latched).

Requirement

Min 4 oz---Max 9 oz to start lever moving.

2.05 Selector Mechanism (continued)

(Right Side View)

SELECTOR MAGNET BRACKET

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

(1) To Check

"Delete" (all marking) code combination selected. Main shaft rotated until marking and spacing locklevers are on high part of cam (stop position). Permit armature to assume its spacing (down) position.

Note: Check requirement at both high parts of selector cam.

Requirement

—Min 0.009 inch---Max 0.016 inch
clearance between end of armature extension and shoulder of marking locklever and tip of spacing locklever.

To Adjust

Loosen two bracket mounting screws and link clampscrew friction tight. Position magnet bracket by means of adjusting link. Tighten link clampscrew only.

2.06 Selector Mechanism (continued)

SELECTOR MAGNET BRACKET (continued)

(2) To Check

Hold armature in marking (up) position. Rotate main shaft and observe marking locklever movement. If the marking locklever passes freely under armature extension, the "some" part of requirement (1) is met. With armature held in marking position, disengage (latch) all main shaft clutches. Engage (trip) selector clutch and rotate main shaft until no. 8 push lever just falls marking. Check "0.003" part of requirement (1). Permit armature to assume its spacing (down) position. Check requirement (2).

(1) Requirement

Min some---Max 0.003 inch clearance between lower surface of armature and upper surface of marking locklever.

(2) Requirement

Max 0.010 inch between magnet pole face and front edge of armature when armature is resting on marking locklever.

To Adjust

With bracket mounting screws friction tight, position upper end of magnet bracket using pry points. Tighten mounting screws. Recheck all requirements for the selector magnet bracket.

(3) To Check

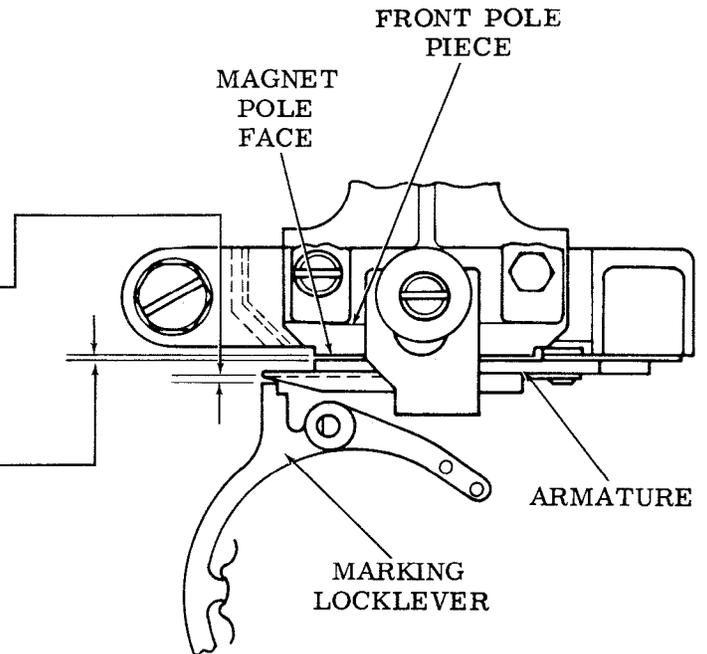
Engage (trip) selector clutch and rotate shaft. Check operation of start lever on armature.

Requirement

Smooth operation of start lever on armature.

To Adjust

Refine adjustments for all requirements for the selector magnet bracket.



(Right Side View)

2.07 Selector Mechanism (continued)

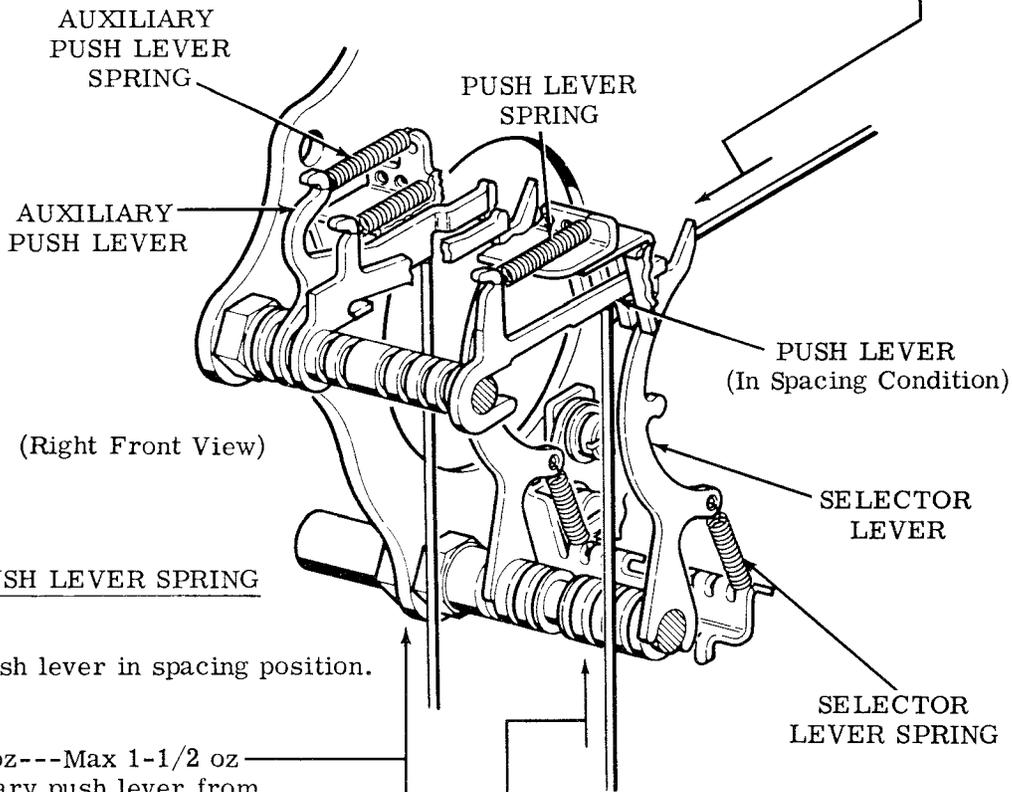
SELECTOR LEVER SPRING

To Check

Selector levers on high part of their cams. Push lever reset bail latched on lever guide.

Requirement

Min 1-1/2 oz---Max 2-1/2 oz to start each selector lever moving. Check eight springs.



(Right Front View)

AUXILIARY PUSH LEVER SPRING

To Check

Auxiliary push lever in spacing position.

Requirement

Min 1/2 oz---Max 1-1/2 oz to lift auxiliary push lever from selector lever.

SELECTOR PUSH LEVER SPRING

To Check

Push lever in spacing position.

Requirement

Min 1 oz---Max 2-1/2 oz to lift push lever from selector lever. Check eight springs.

2.08 Selector Mechanism (continued)

START LEVER CAM FOLLOWER SPRING

To Check
Cam follower on high part of cam.

Requirement
Min 3 oz---Max 5 oz
To pull lift lever spring to installed length.

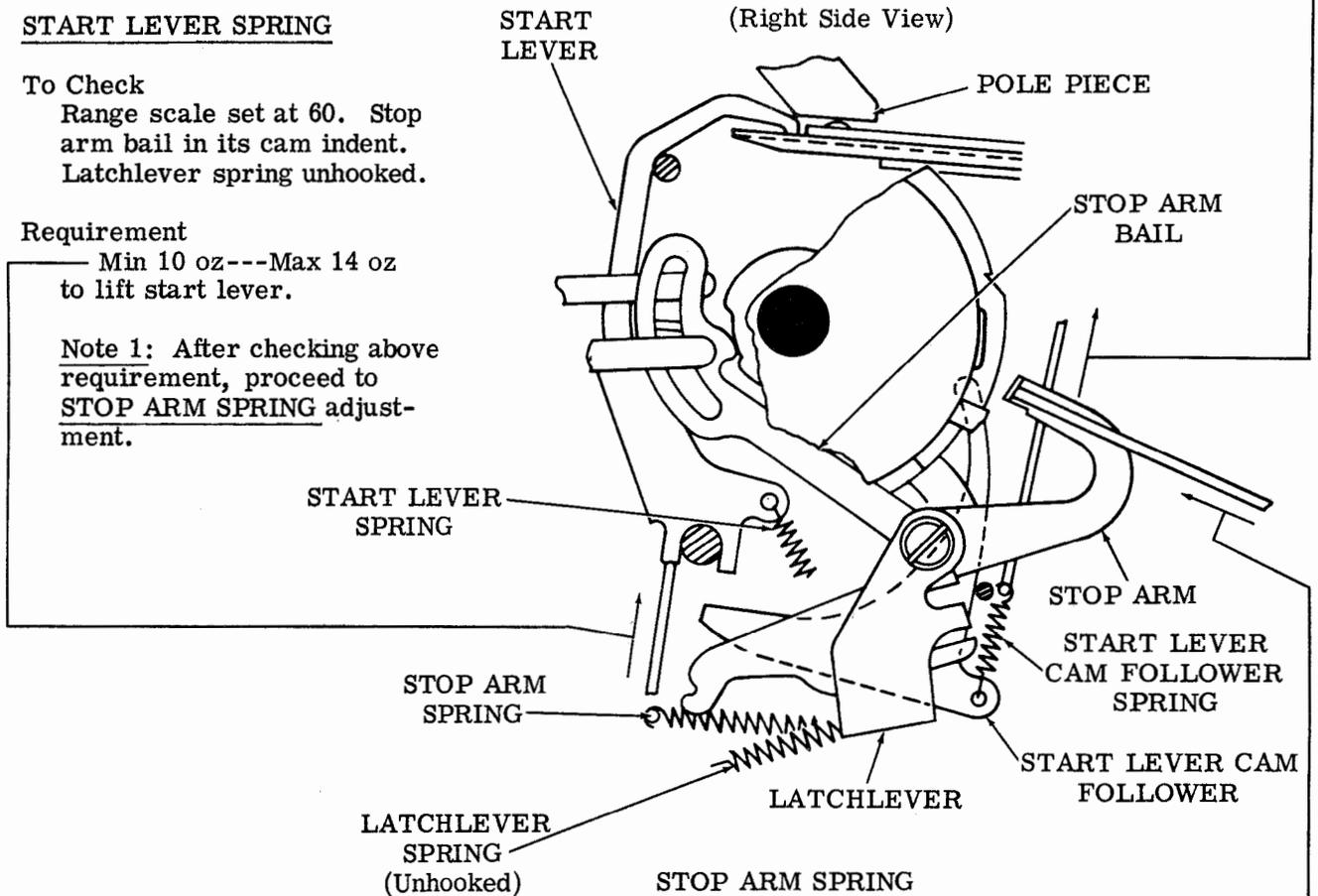
START LEVER SPRING

To Check
Range scale set at 60. Stop arm bail in its cam indent. Latchlever spring unhooked.

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

Note 1: After checking above requirement, proceed to STOP ARM SPRING adjustment.

(Right Side View)

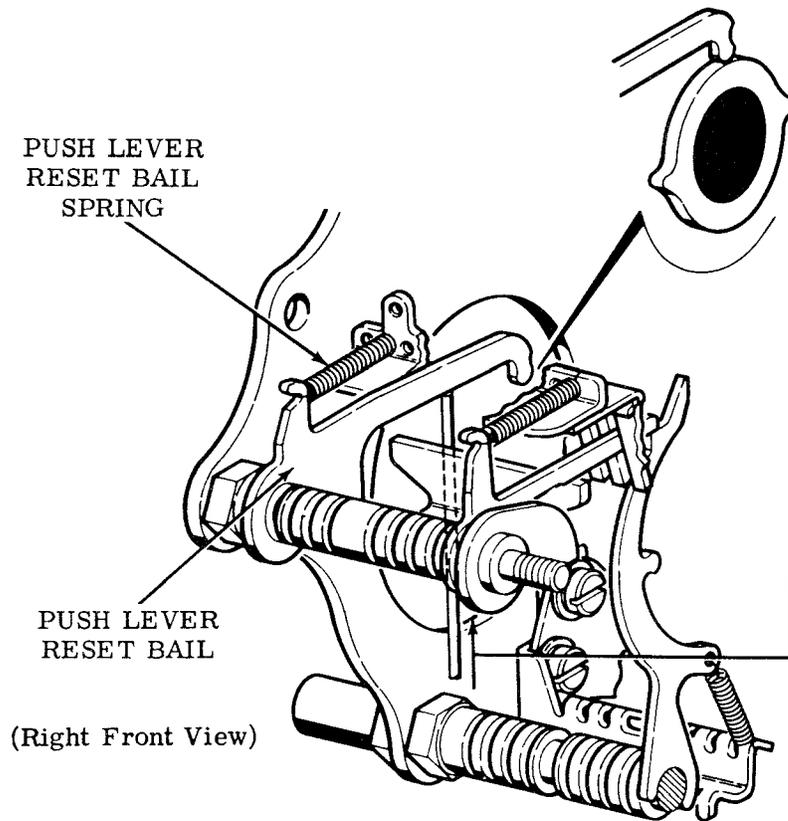


STOP ARM SPRING

Note 2: START LEVER SPRING must be checked and meet its requirement before checking this requirement.

Requirement
Range scale set at 60. Stop arm bail in its cam indent. Latchlever spring unhooked.
Min 9-1/2 oz---Max 13 oz
to start the stop arm moving.

2.09 Selector Mechanism (continued)



PUSH LEVER RESET BAIL SPRING

To Check

Push levers in spacing position. Push lever reset bail on low part of cam.

Requirement

Min 1-1/2 oz---Max 2-1/2 oz to move push lever reset bail from cam.

SELECTOR CLUTCH LATCHLEVER SPRING

To Check

Latchlever resting on low part of cam disc.

Requirement

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

SPACING LOCKLEVER SPRING

To Check

Magnet energized. Selector clutch disengaged (latched).

Requirement

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

SPACING LOCKLEVER

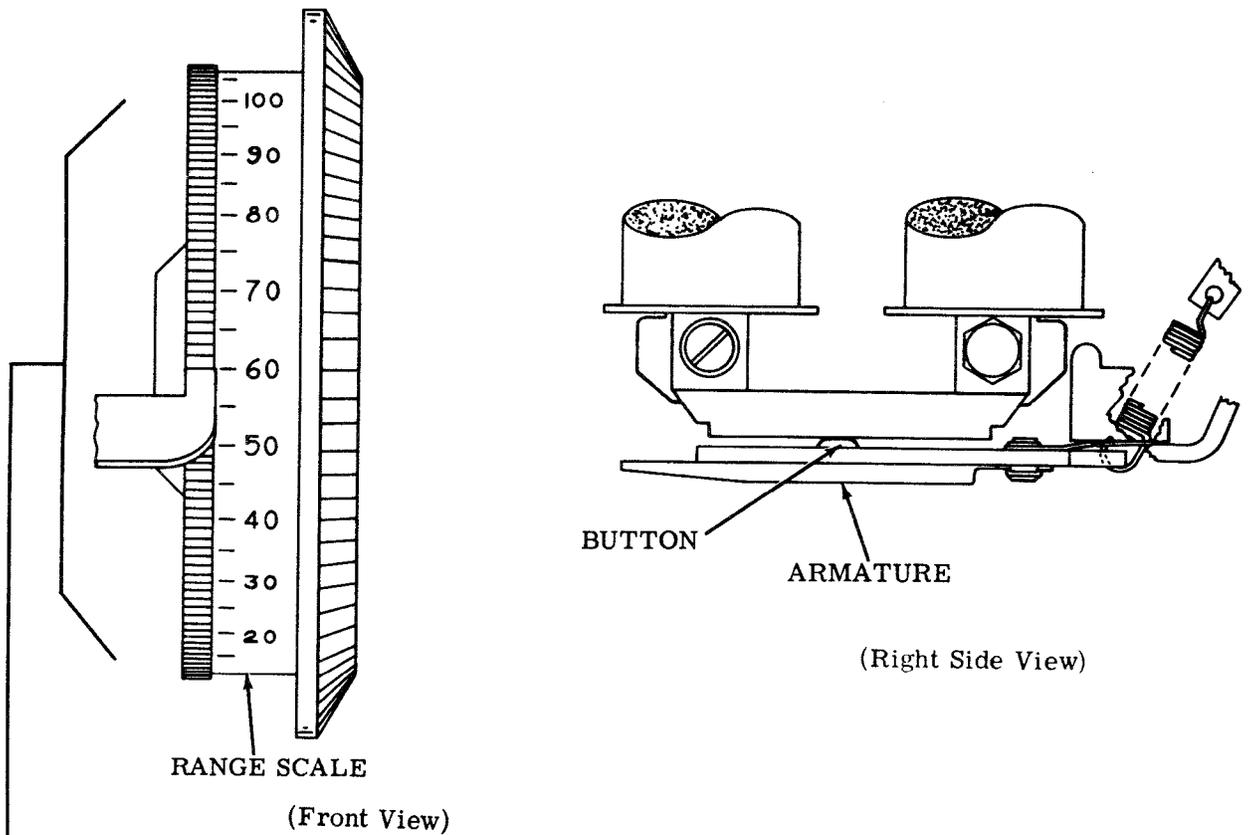
(Right Side View)

SPACING LOCKLEVER SPRING

LATCHLEVER

LATCHLEVER SPRING

2.10 Selector Mechanism (continued)



SELECTOR RECEIVING MARGIN

Requirement

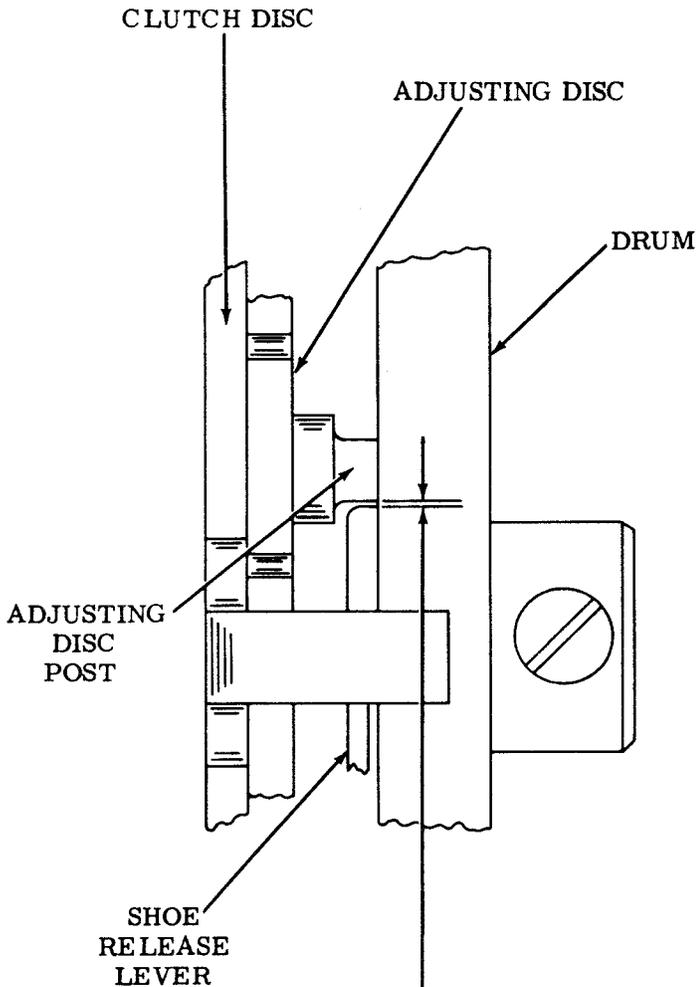
When a Signal Distortion Test Set is available, selector armature spring tension should be refined, if necessary, to meet the following selector receiving margin.

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

To Adjust

Refine the SELECTOR ARMATURE SPRING (2.04) adjustment.
Adjust spring tension for maximum of 5 percent internal bias.

2.11 Main Shaft and Trip Shaft Mechanisms and Vertical and Horizontal Positioning Mechanisms



Note 1: "BIDREC" means bidirectional regenerative clutch.

(Bottom View - Main Shaft Clutches)

(Left Side View - Horizontal Positioning Clutches)

(Rear View - Vertical Positioning Clutches)

CLUTCH "BIDREC" GAP

Note 2: The following requirement applies to all typing unit clutches.

To Check

Engage clutch. Check gap between adjusting disc post and shoe lever.

Requirement

Less than 100 typing unit operational hours

Min 0.002 inch---Max 0.015 inch
between adjusting disc post and shoe lever.

More than 100 typing unit operational hours

Min 0.002 inch---Max 0.025 inch
between adjusting disc post and shoe lever.

To Adjust

Replace clutch shoes and/or drum.

2.12 Main Shaft and Trip Shaft Mechanisms (continued)

MAIN SHAFT CLUTCH ENDPLAY

(1) Requirement

Min some---Max 0.006 inch clearance between:

- Codebar and print hammer clutch assemblies.
- Print hammer and spacing clutch assemblies.
- Function clutch assembly and collar.

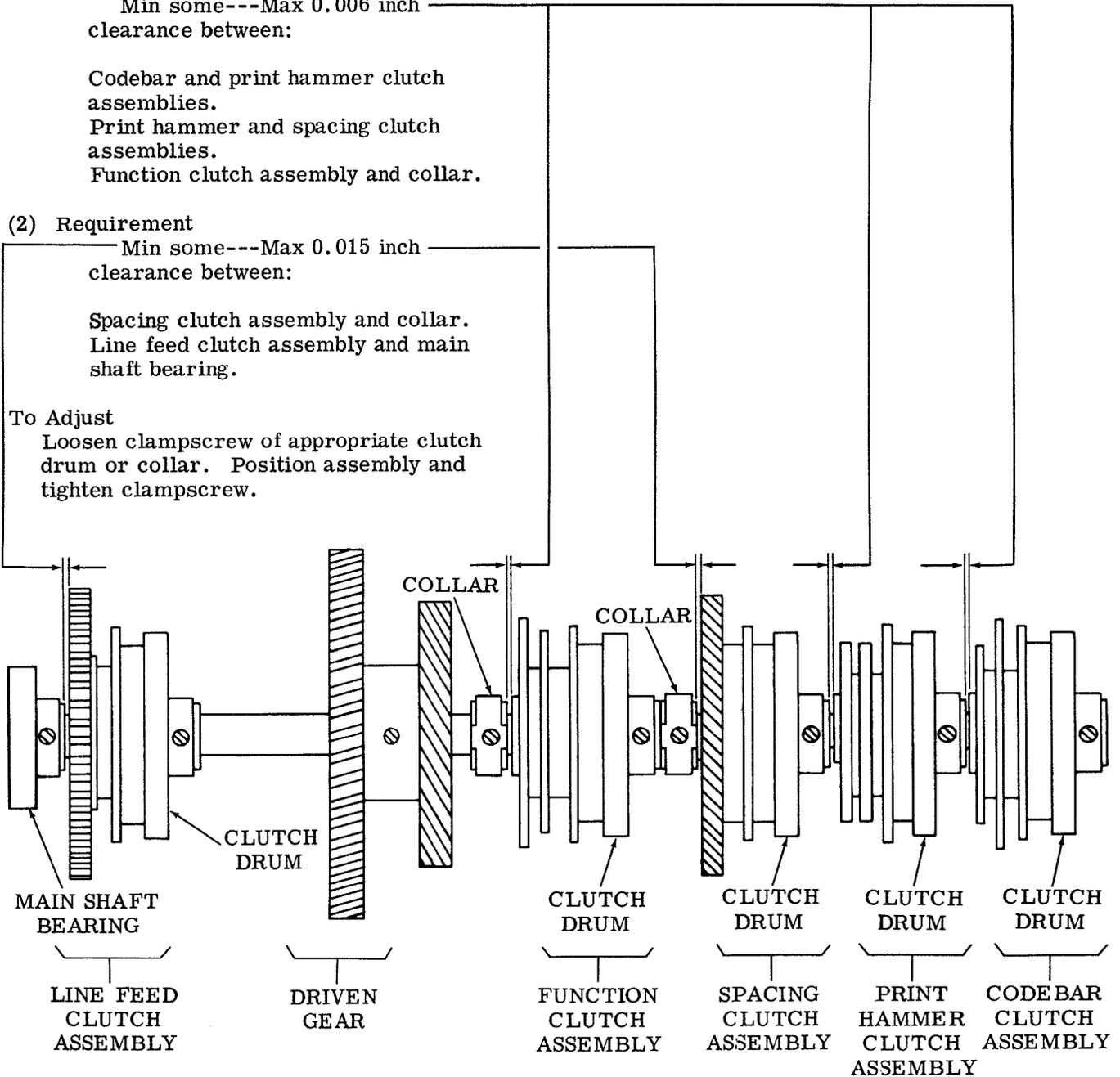
(2) Requirement

Min some---Max 0.015 inch clearance between:

- Spacing clutch assembly and collar.
- Line feed clutch assembly and main shaft bearing.

To Adjust

Loosen clampscrew of appropriate clutch drum or collar. Position assembly and tighten clampscrew.



(Bottom View)

Note: When the typing unit is mated with the keyboard, refer to Section 574-321-703TC for the required information concerning the adjustment between the main shaft driven gear and the intermediate gear assembly.

2.13 Main Shaft and Trip Shaft Mechanisms (continued)

SELECTOR CLUTCH ENDPLAY

To Check

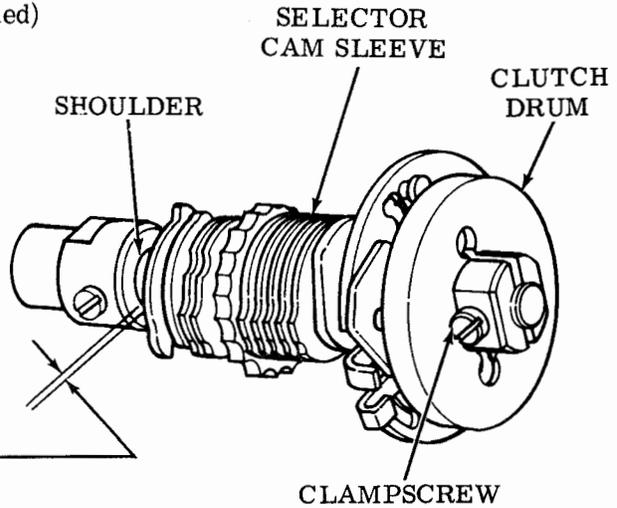
Selector clutch disengaged (latched). Move selector cam sleeve to left (shoulder) and then to right.

Requirement

Selector clutch should have
Min some---Max 0.012 inch
endplay.

To Adjust

Loosen clampscrew and position clutch drum. Tighten clampscrew.



2.14 Vertical and Horizontal Positioning Mechanisms (continued)

CLUTCH SHOE LEVER SPRING

To Check

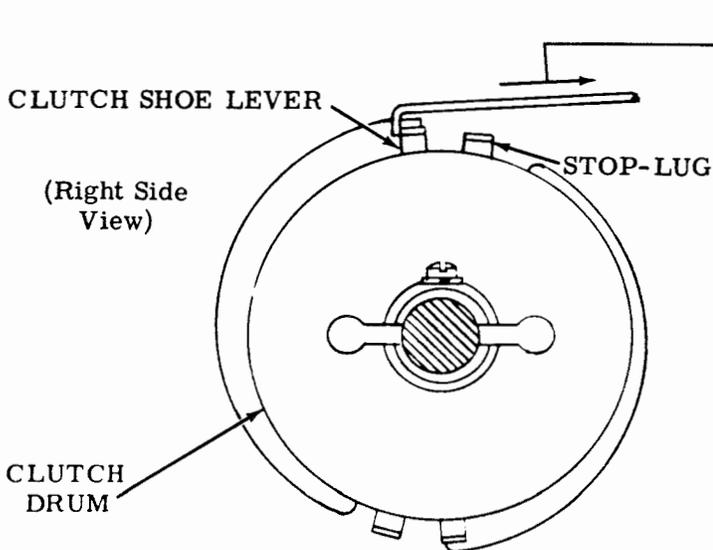
Engage (trip) clutch. Hold the disc. Hook a scale to shoe lever, and pull at a tangent to the clutch.

Requirement

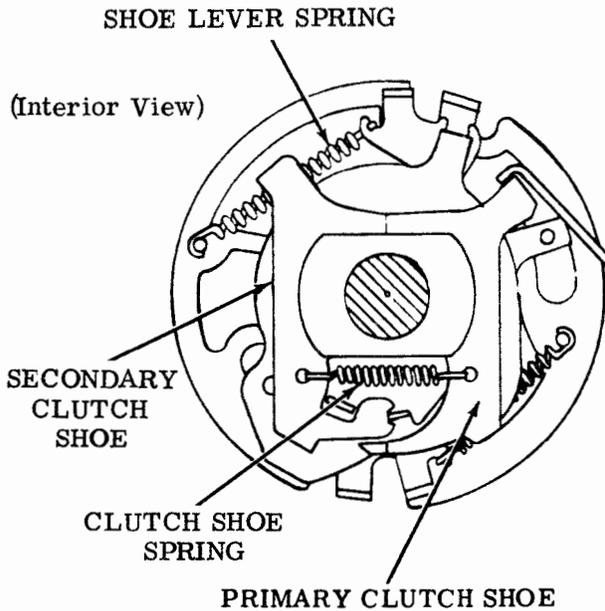
Min 8 oz---Max 12 oz
to move the shoe lever into contact with the stop-lug.

Note 1: Line feed and spacing clutches have six stop-lugs and clutch shoe levers equally spaced around the periphery.

Note 2: Offset loop at spring should be hooked over pin on clutch disc.



2.15 Main Shaft and Trip Shaft Mechanisms and Vertical and Horizontal Positioning Mechanisms (continued)



CLUTCH SHOE SPRING

Note 1: In order to check this spring tension, it is necessary to remove the clutch drum. It therefore should not be checked unless there is good reason to believe that it does not meet requirements.

Requirement

Min 8 oz---Max 12 oz
to start primary shoe moving away from secondary shoe at their point of contact.

MAIN SHAFT CLUTCH SHOE LEVERS

Note 2: Check on side of clutch where shoe lever engages shoe.

To Check

Disengage (latch) clutch. Measure gap between shoe lever and stop-lug. Engage (trip) clutch and momentarily place 16 ounces of tension on shoe lever to give maximum gap. Remove tension and measure gap while applying 32 ounces to stop-lug to give minimum gap.

Requirement

New Shoes and Drums:

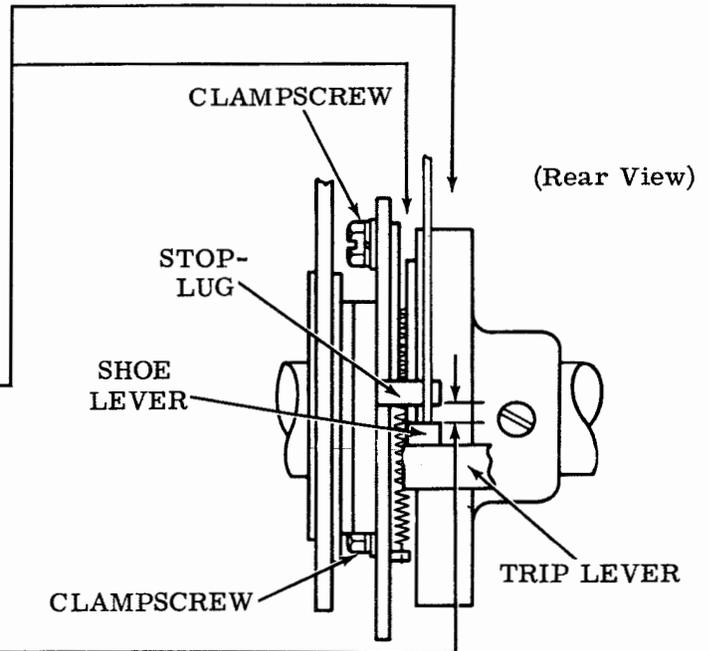
Min 0.075 inch---Max 0.085 inch

After 200 Hours of Operation:

Min 0.055 inch---Max 0.085 inch
greater gap when clutch is engaged (tripped) than when clutch is disengaged (latched).

To Adjust

Loosen plate clampscrews friction tight. Rotate adjusting plate by means of screwdriver or wrench. Tighten clampscrews.



2.16 Horizontal Positioning Mechanism (continued)

AGGREGATE MOTION SPRING (HORIZONTAL POSITIONING)

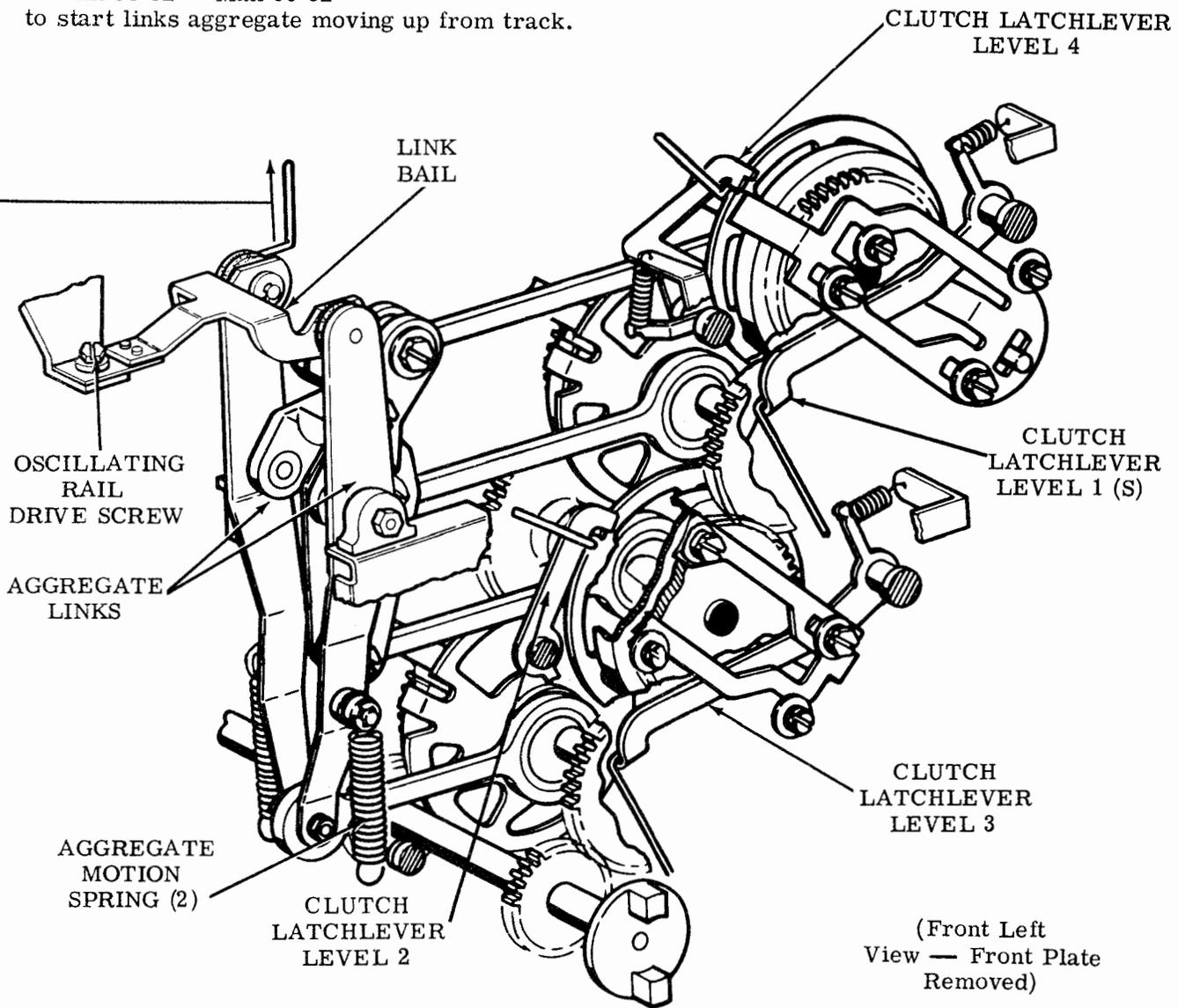
Note: Do not check this adjustment unless there is reason to believe that these springs are causing operating failure.

To Check

All clutches disengaged (latched). All code-bars spacing. Oscillating rail drive screw removed.

Requirement

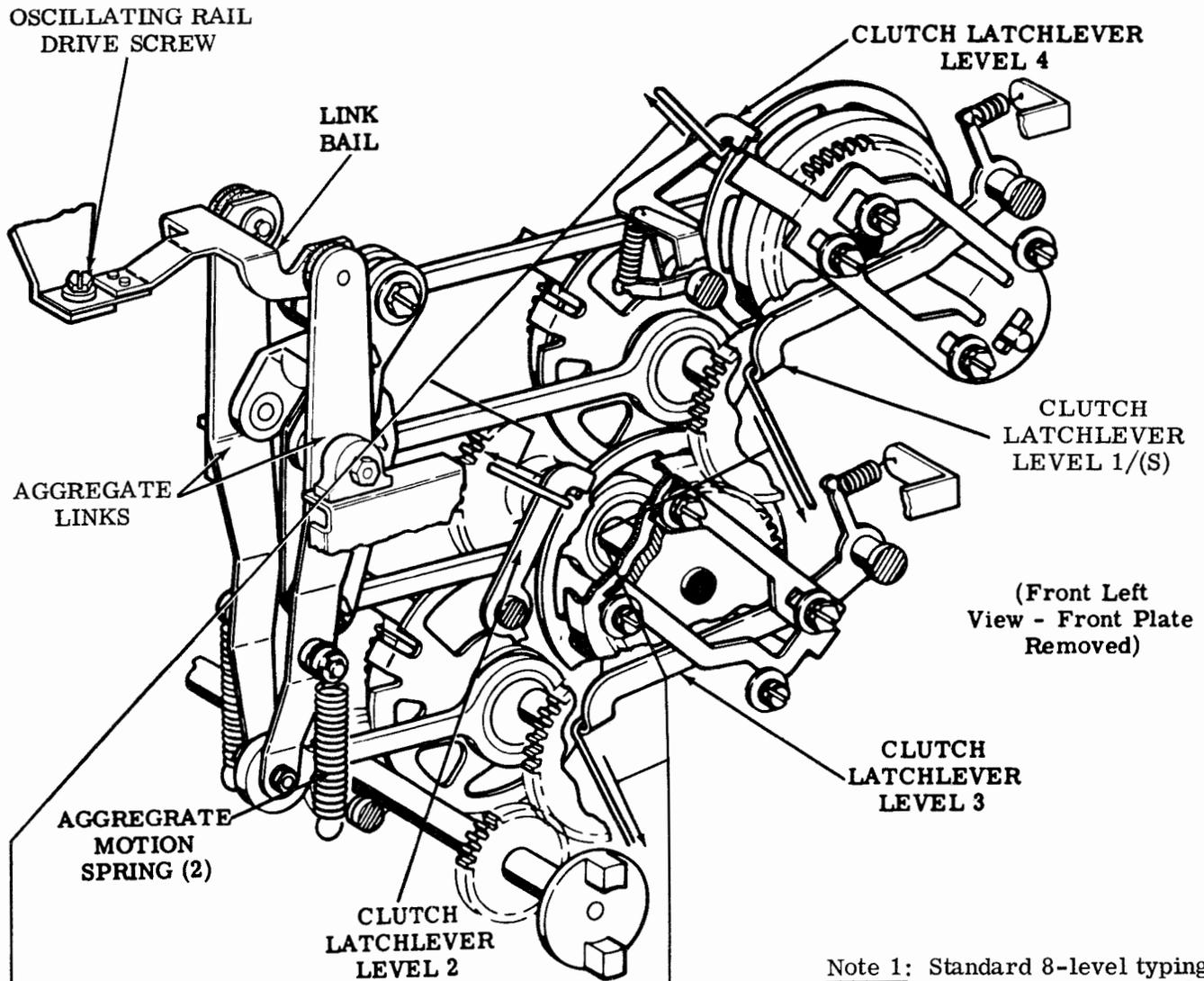
Min 38 oz---Max 50 oz
to start links aggregate moving up from track.



Affected Adjustment

AGGREGATE-DAMPENER SYNCHRONIZATION (2.50)

2.17 Horizontal Positioning Mechanism (continued)



Note 1: Standard 8-level typing unit operation uses levels 1, 2, 3, and 4 for horizontal position; 6-level machines use levels 2, 3, 4, and Shift (S).

CLUTCH LATCHLEVER SPRING
(HORIZONTAL POSITIONING
LEVELS 2 AND 4)

To Check

Clutch engaged (tripped). Rotate 1/4 turn from stop.

Requirement

Min 4-1/2 oz---Max 6 oz
to start latchlever moving.

CLUTCH LATCHLEVER SPRING
(HORIZONTAL POSITIONING
LEVELS 1, (S), AND 3)

To Check

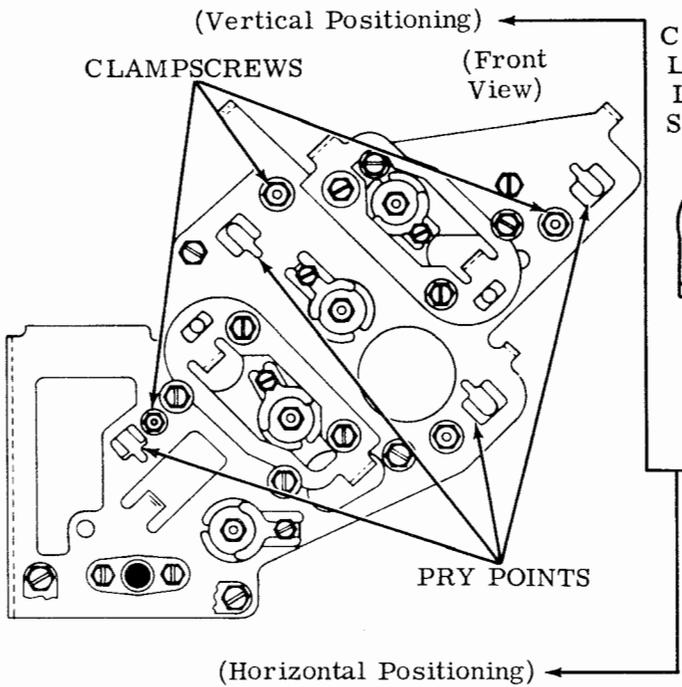
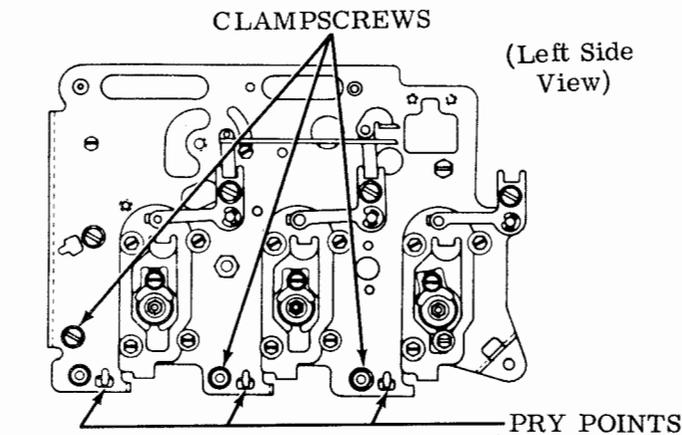
Clutch engaged (tripped). Rotate 1/4 turn from stop.

Requirement

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

Note 2: Check level 7 or the shift clutch, when equipped.

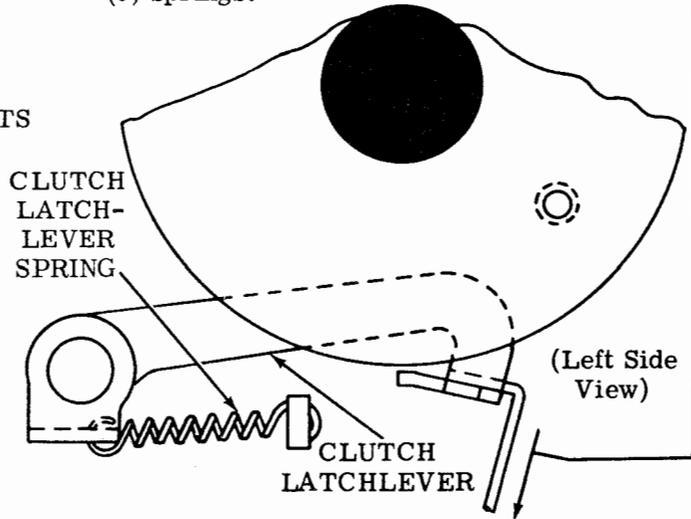
2.18 Vertical and Horizontal Positioning Mechanisms (continued)



CLUTCH LATCHLEVER SPRING (VERTICAL POSITIONING)

To Check
Clutch engaged (tripped). Latchlever on high part of disc.

Requirement
Min 3/4 oz---Max 1-3/4 oz to pull latchlever from disc. Check three (3) springs.



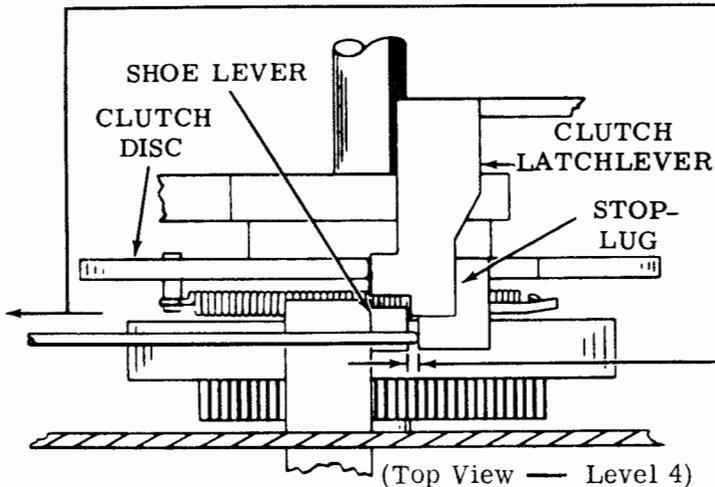
CLUTCH SHOE LEVERS

Note: This adjustment applies to the three vertical positioning clutches and the four horizontal positioning clutches.

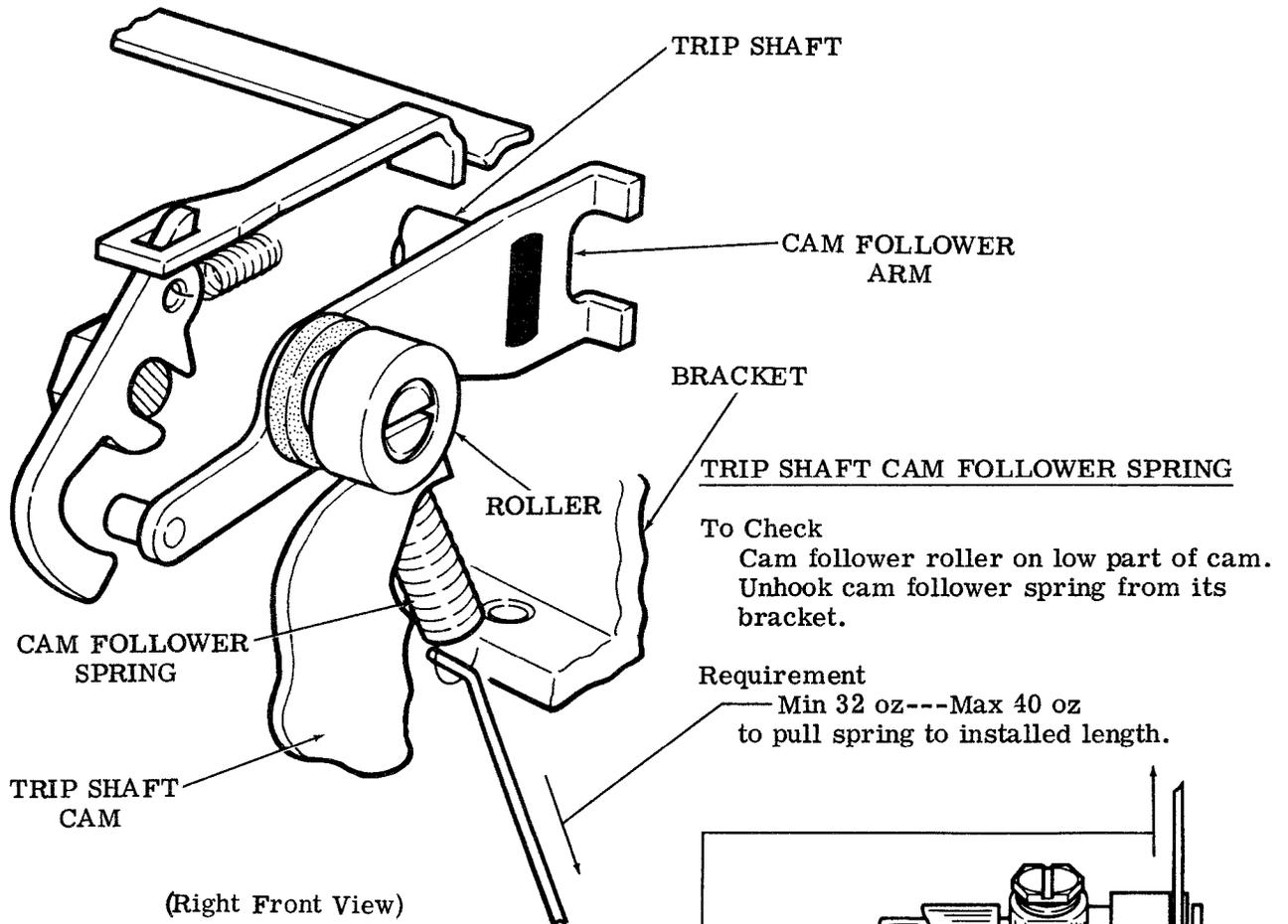
To Check
Engage (trip) clutch and momentarily place 32 ounces of tension on shoe lever. Measure gap between clutch shoe lever and stop-lug. Disengage (latch) clutch and remeasure.

Requirement
Min 0.040 inch---Max 0.070 inch greater gap when clutch is engaged (unlatched) than when clutch is disengaged (latched). A disengaged (latched) gap of not less than 0.015 inch must be maintained.

To Adjust
Loosen clampscrew friction tight. Position latchlever, while latched, by means of pry point. Tighten clampscrew.



2.19 Main Shaft and Trip Shaft Mechanisms (continued)

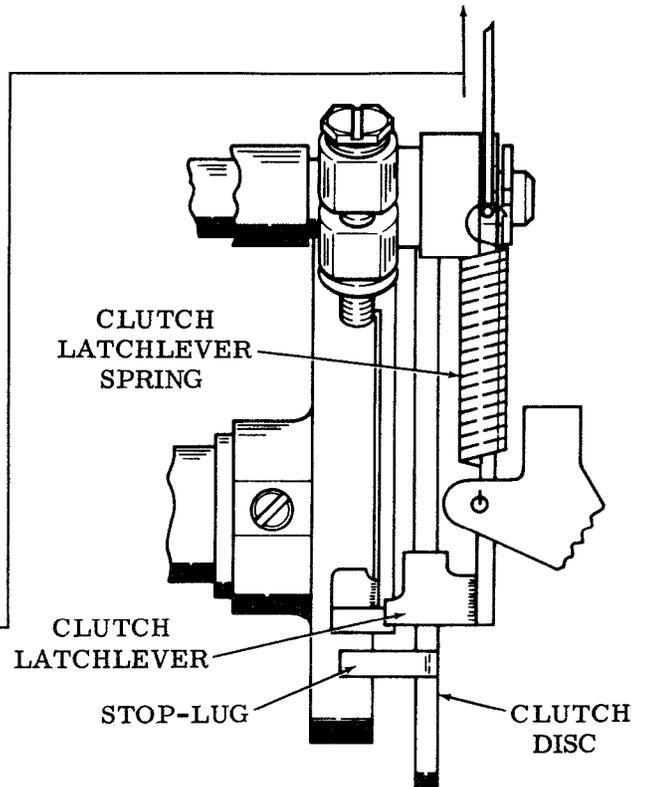


CLUTCH LATCHLEVER SPRING
(EXCEPT SELECTOR)

Note: This requirement applies to codebar clutch, print hammer clutch, spacing clutch, function clutch, and line feed clutch.

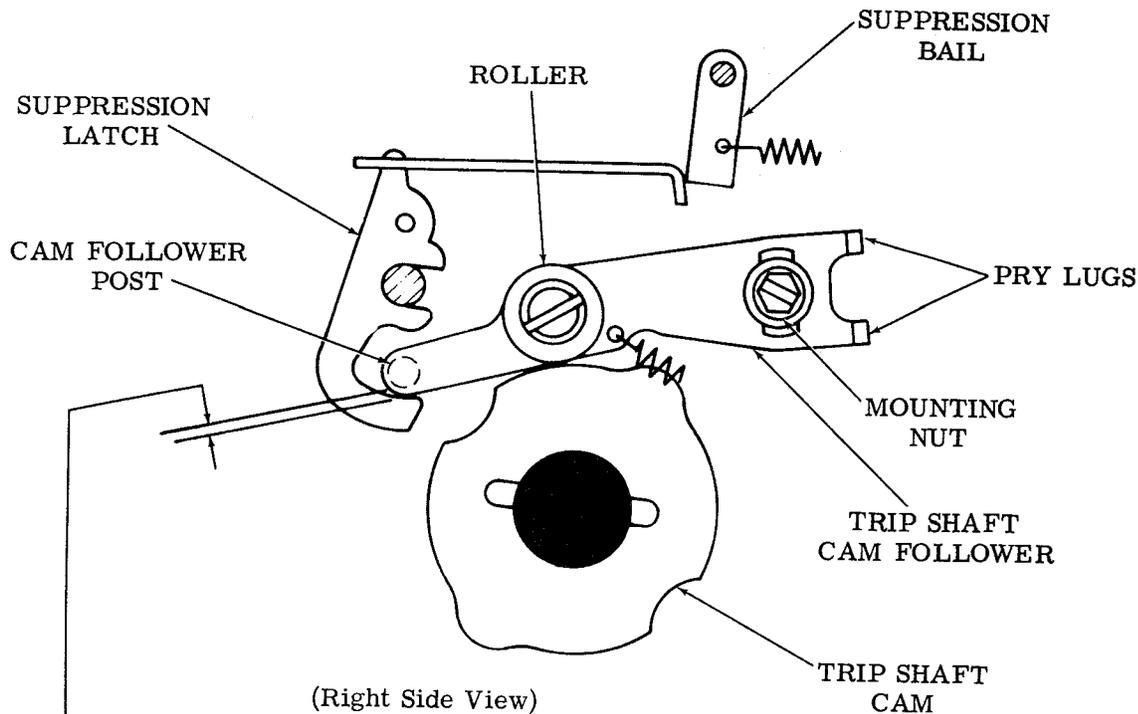
To Check
Clutch latchlever on high part of clutch disc.

Requirement
Min 5 oz---Max 8 oz
to pull clutch latchlever spring to installed length.



(Rear View)

2.20 Main Shaft and Trip Shaft Mechanisms (continued)



TRIP SHAFT CAM FOLLOWER

To Check

All clutches disengaged (latched). Push suppression latch under cam follower post.

Requirement

Min 0.010 inch---Max 0.025 inch clearance between cam follower post and suppression latch.

To Adjust

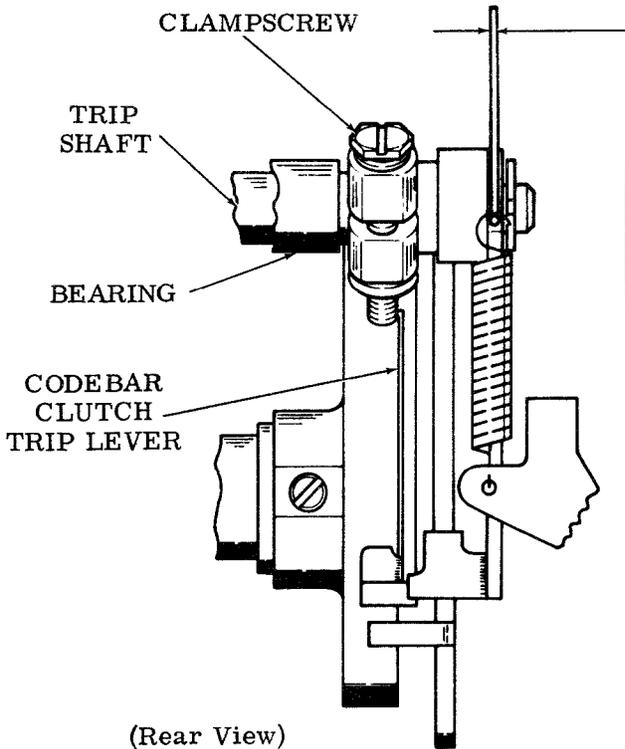
Loosen mounting nut friction tight. Adjust for clearance by prying with a screwdriver between pry lugs and mounting nut. Tighten mounting nut and recheck adjustment. Also check adjustment of second cycle of trip shaft cam.

Affected Adjustments

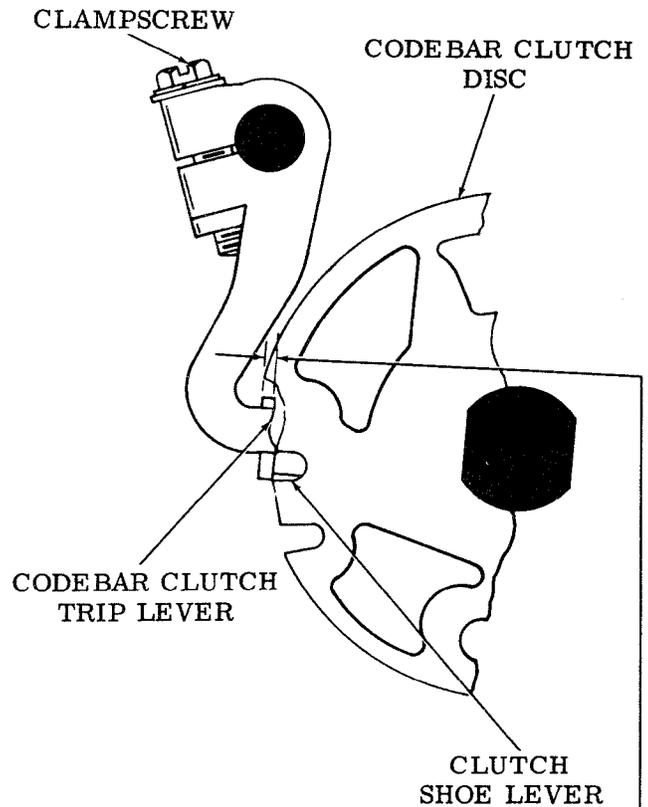
FUNCTION CLUTCH TRIP ARM (2.22)

PRINT HAMMER CLUTCH TRIP ARM (2.23)

2.21 Main Shaft and Trip Shaft Mechanisms (continued)



(Rear View)



(Left Side View)

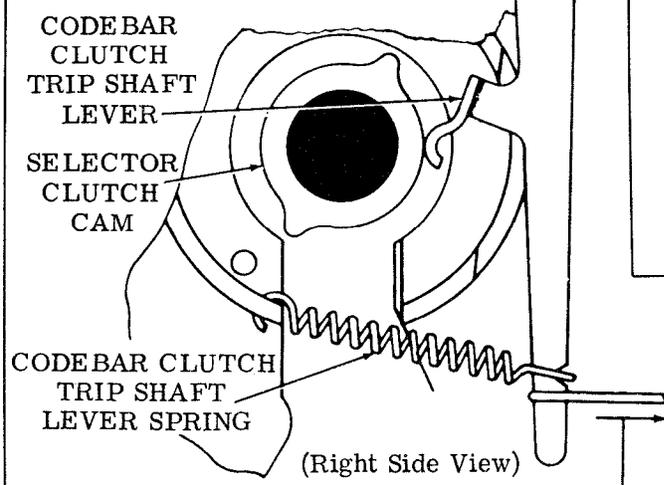
CODEBAR CLUTCH TRIP SHAFT LEVER SPRING

To Check

Trip shaft lever on low part of cam; codebar clutch engaged (tripped). Rotate 1/4 turn.

Requirement

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



(Right Side View)

CODEBAR CLUTCH TRIP LEVER

To Check

Selector clutch and codebar clutch disengaged (latched). Check requirement (1) at clutch shoe lever with least bite.

(1) Requirement

Inner surface of trip lever should be Min flush---Max 0.010 inch over flush with inner surface of clutch shoe lever.

(2) Requirement

Endplay between bearing and codebar clutch trip lever should be Min some---Max 0.006 inch

To Adjust

Loosen clampscrew friction tight and position trip lever shaft. Tighten clampscrew.

2.22 Main Shaft and Trip Shaft Mechanisms (continued)

Note 1: Remove the trip shaft brace and replace its mounting screw when making FUNCTION CLUTCH TRIP ARM and PRINT HAMMER CLUTCH TRIP ARM (2.23) adjustments.

FUNCTION CLUTCH TRIP ARM

- (1) To Check
All clutches disengaged (latched). Play between function clutch trip arm and intermediate lever post taken up to make a maximum clearance.

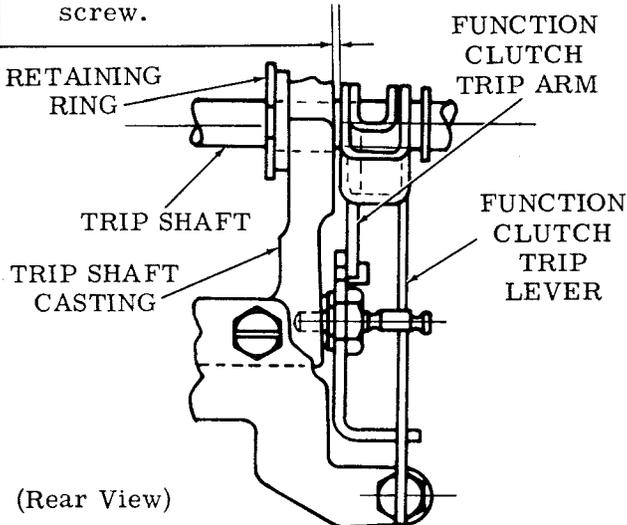
Requirement
Min some---Max 0.005 inch clearance between function clutch trip arm and intermediate lever post.

Note 2: The minimum requirement is considered met when there is no gap between clutch trip lever and backstop screw.

- (2) To Check
All clutches disengaged (latched). Play between tip shaft casting and function clutch trip lever taken up to make a maximum clearance.

Requirement
Min some---Max 0.010 inch clearance between trip shaft casting and function clutch trip lever.

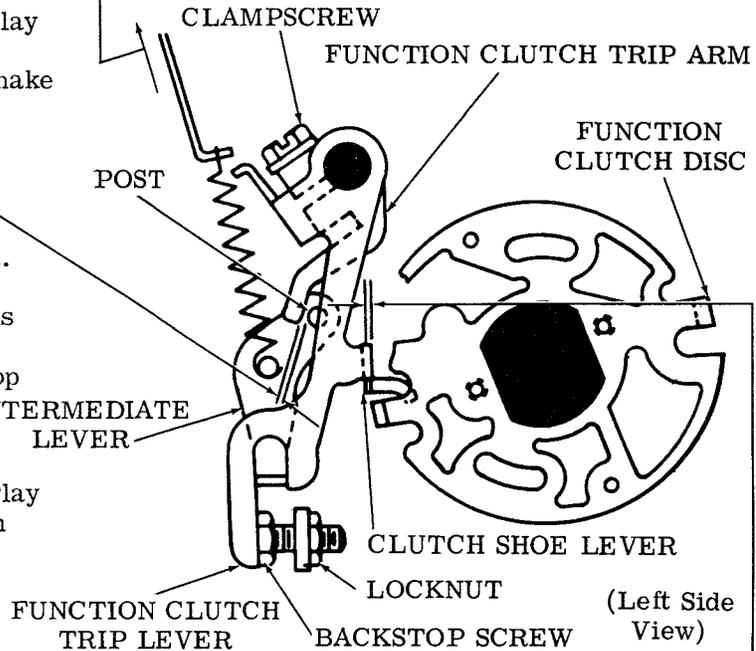
To Adjust
Loosen clampscrew and position function clutch trip arm on shaft. Tighten clampscrew.



FUNCTION CLUTCH TRIP LEVER SPRING

To Check
Function clutch disengaged (latched).

Requirement
Min 9-1/2 oz---Max 12-1/2 oz to pull spring to installed length.



FUNCTION CLUTCH TRIP LEVER

To Check
All clutches disengaged (latched). Check requirement at clutch shoe lever with least bite.

Requirement
Inner surface of function clutch trip lever should be
Min flush---Max 0.010 inch over flush with inner surface of clutch shoe lever.

To Adjust
Loosen locknut. Position function clutch trip lever using backstop screw. Tighten locknut.

Affected Adjustment
FUNCTION CLUTCH TRIP ARM

2.23 Main Shaft and Trip Shaft Mechanisms (continued)

Note: Remove the trip shaft brace and replace its mounting screw when making FUNCTION CLUTCH TRIP ARM (2.22) and PRINT HAMMER CLUTCH TRIP ARM adjustments.

PRINT HAMMER CLUTCH TRIP ARM

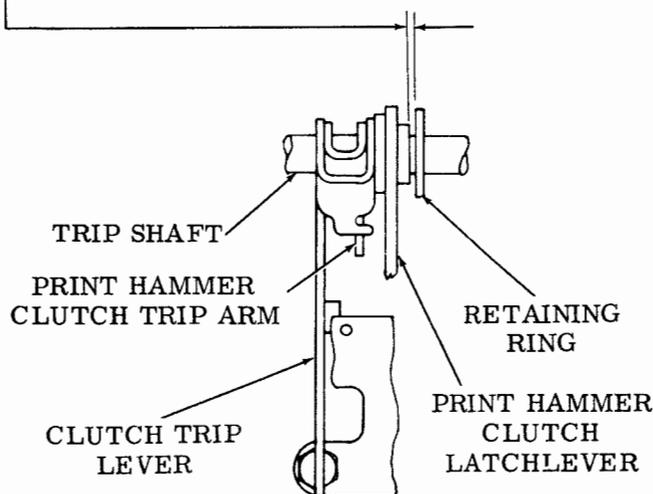
- (1) To Check
All clutches disengaged (latched).

Requirement
Min 0.010 inch---Max 0.020 inch clearance between print hammer clutch trip arm and print hammer clutch trip lever.

- (2) To Check
All clutches disengaged (latched).
Play between print hammer clutch latchlever and retaining ring taken up to make a maximum clearance.

Requirement
Min some---Max 0.010 inch clearance between print hammer clutch latchlever and retaining ring.

To Adjust
Loosen clampscrew and position print hammer clutch trip arm on shaft. Tighten clampscrew. Replace trip shaft brace with its mounting screw. See note above.

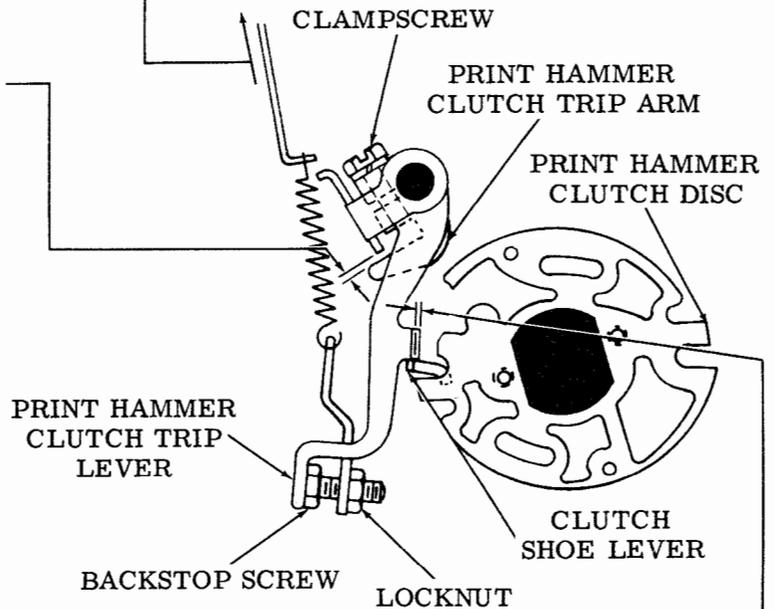


(Rear View)

PRINT HAMMER CLUTCH TRIP LEVER SPRING

To Check
Print hammer clutch disengaged (latched).

Requirement
Min 9-1/2 oz---Max 12-1/2 oz to pull spring to installed length.



(Left Side View)

PRINT HAMMER CLUTCH TRIP LEVER

To Check
All clutches disengaged (latched). Check requirement at clutch shoe lever with least bite.

Requirement
Inner surface at print hammer clutch trip lever should be
Min flush---Max 0.010 inch over flush with inner surface of clutch shoe lever.

To Adjust
Loosen locknut. Position print hammer clutch trip lever using backstop screw. Tighten locknut.

Affected Adjustment
PRINT HAMMER CLUTCH TRIP ARM

2.24 Main Shaft and Trip Shaft Mechanisms (continued)

SPACING CLUTCH TRIP LEVER

To Check

All clutches disengaged (latched). Check spacing clutch at stop (of the six-stop clutch disc) with least bite.

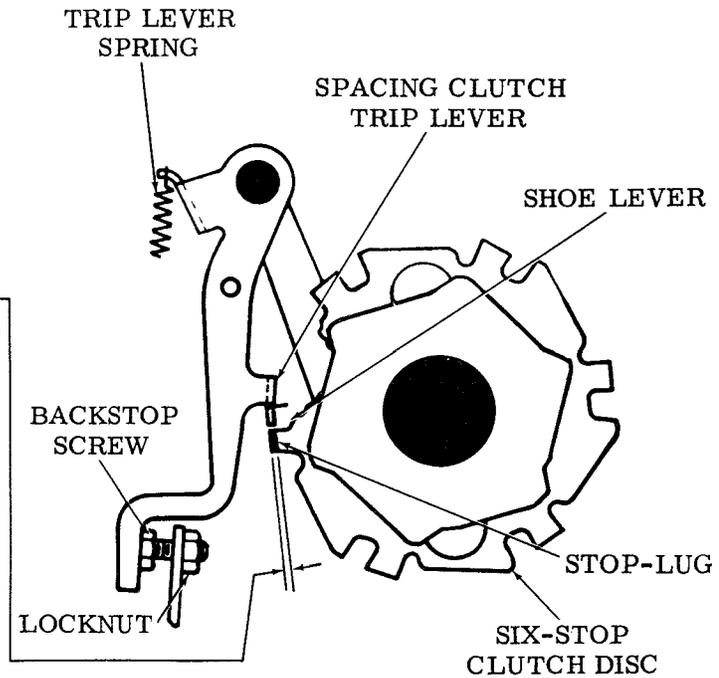
Requirement

Inner surface of spacing clutch trip lever should be

Min flush---Max 0.010 inch
over flush with inner surface of shoe lever.

To Adjust

Loosen locknut. Position spacing clutch trip lever using backstop screw. Tighten locknut.



(Left Side View)

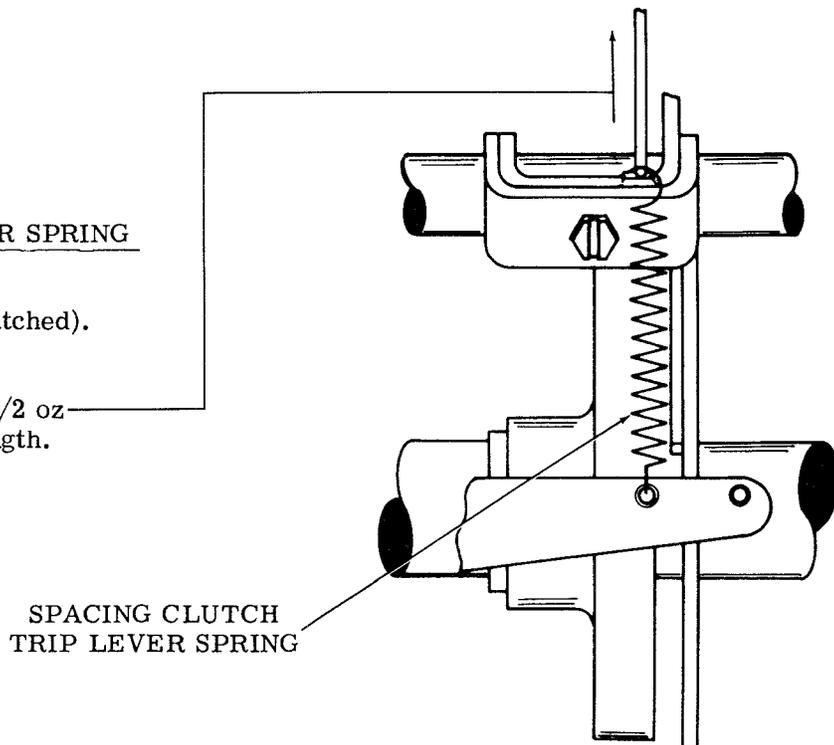
SPACING CLUTCH TRIP LEVER SPRING

To Check

Spacing clutch disengaged (latched).

Requirement

Min 9-1/2 oz---Max 12-1/2 oz
to pull spring to installed length.



(Rear View)

2.25 Main Shaft and Trip Shaft Mechanisms (continued)

LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST**To Check**

All clutches disengaged (latched). Check line feed clutch at stop (of six-stop clutch disc) with least bite.

Requirement

Inner surface of line feed clutch trip lever should be
 Min flush---Max 0.010 inch
 over flush with inner surface of clutch shoe lever.

To Adjust

Rotate trip lever eccentric post.

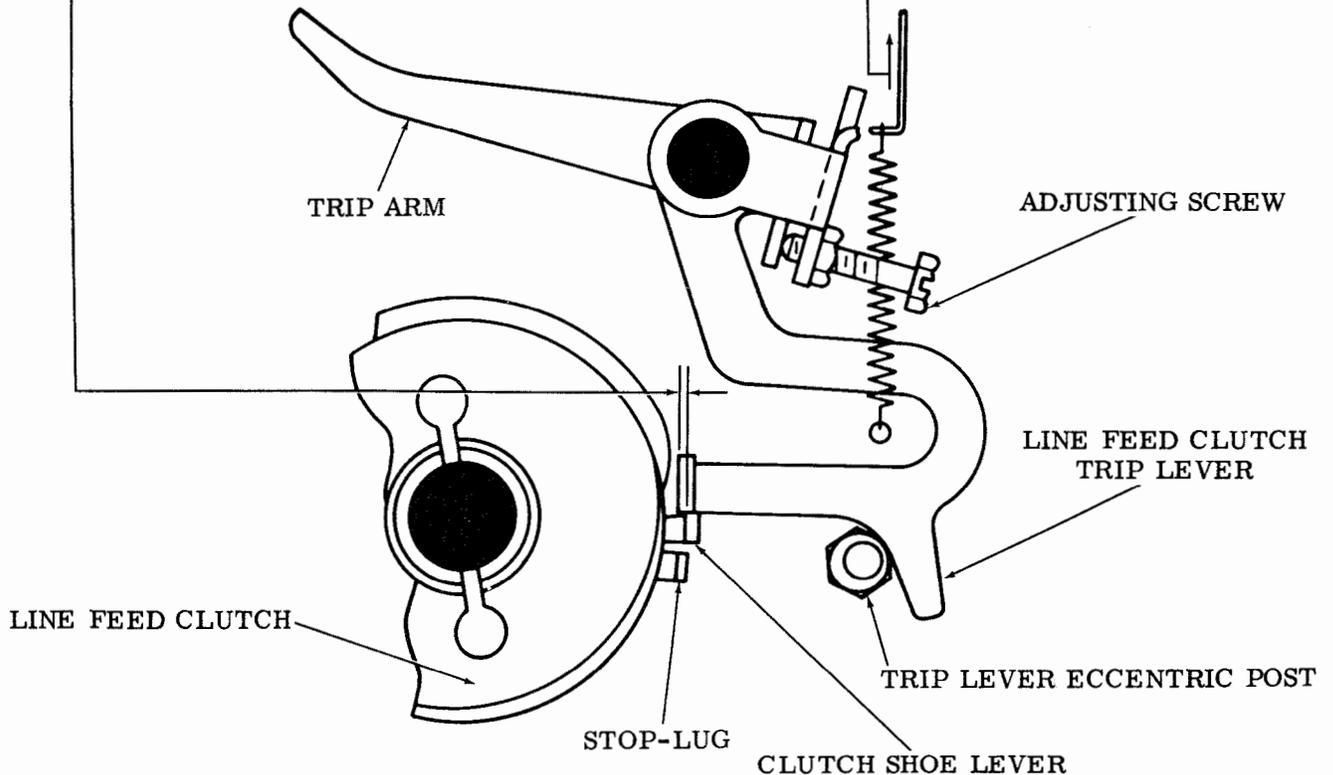
Note: If requirement cannot be met, reposition local line feed cable or back out adjusting screw. Do one or the other depending upon which is limiting the travel of the line feed clutch trip lever.

LINE FEED CLUTCH TRIP LEVER SPRING**To Check**

Line feed clutch disengaged (latched).

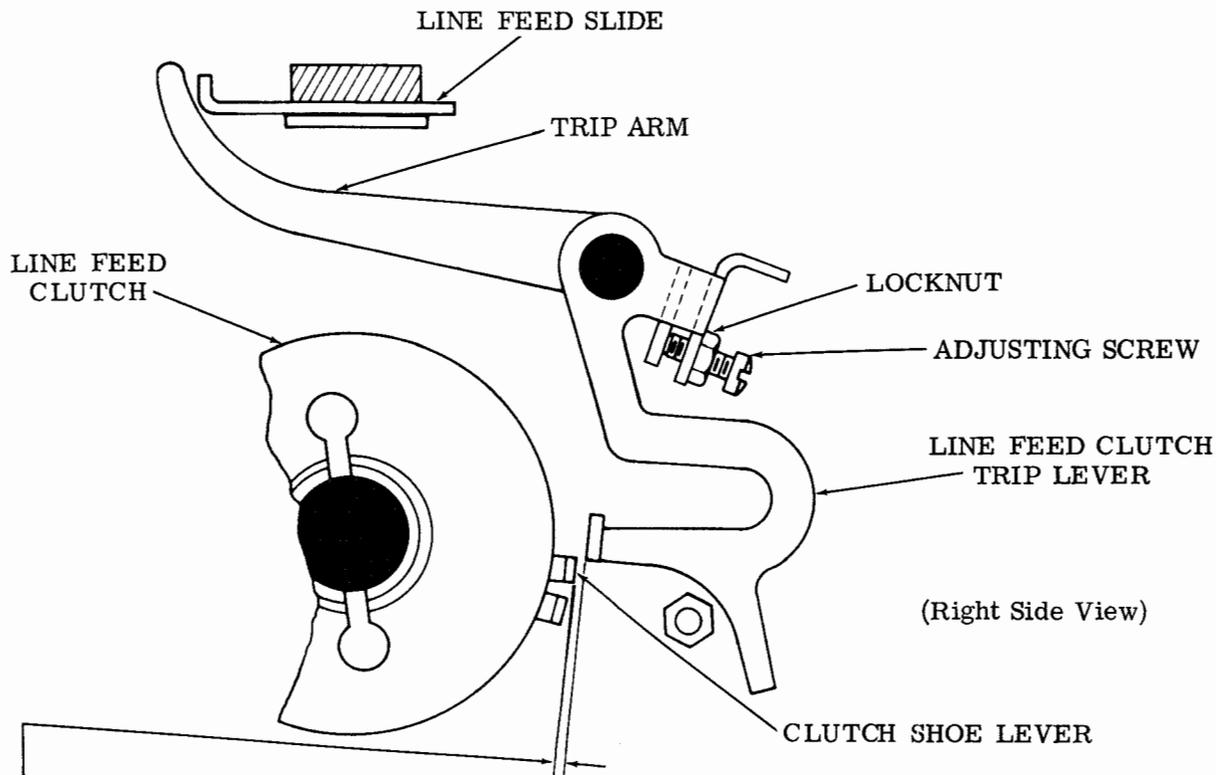
Requirement

Min 9-1/2 oz---Max 12-1/2 oz
 to pull spring to installed length.



(Right Side View)

2.26 Main Shaft and Trip Shaft Mechanisms (continued)

LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW

Note: If typing unit is equipped with a line feed clutch trip bail mechanism, perform LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW (3.13) instead of this adjustment.

To Check

Single-double line feed lever in double line feed position. All clutches disengaged (latched). Manually trip function clutch and rotate main shaft until stripper blade moves to midpoint of its downward travel. Pull line feed function pawl back to latch on function bar. Continue rotating main shaft until function bar moves to its rearmost position.

Requirement

Min 0.055 inch---Max 0.070 inch
clearance between line feed clutch trip lever and clutch shoe lever with least bite.

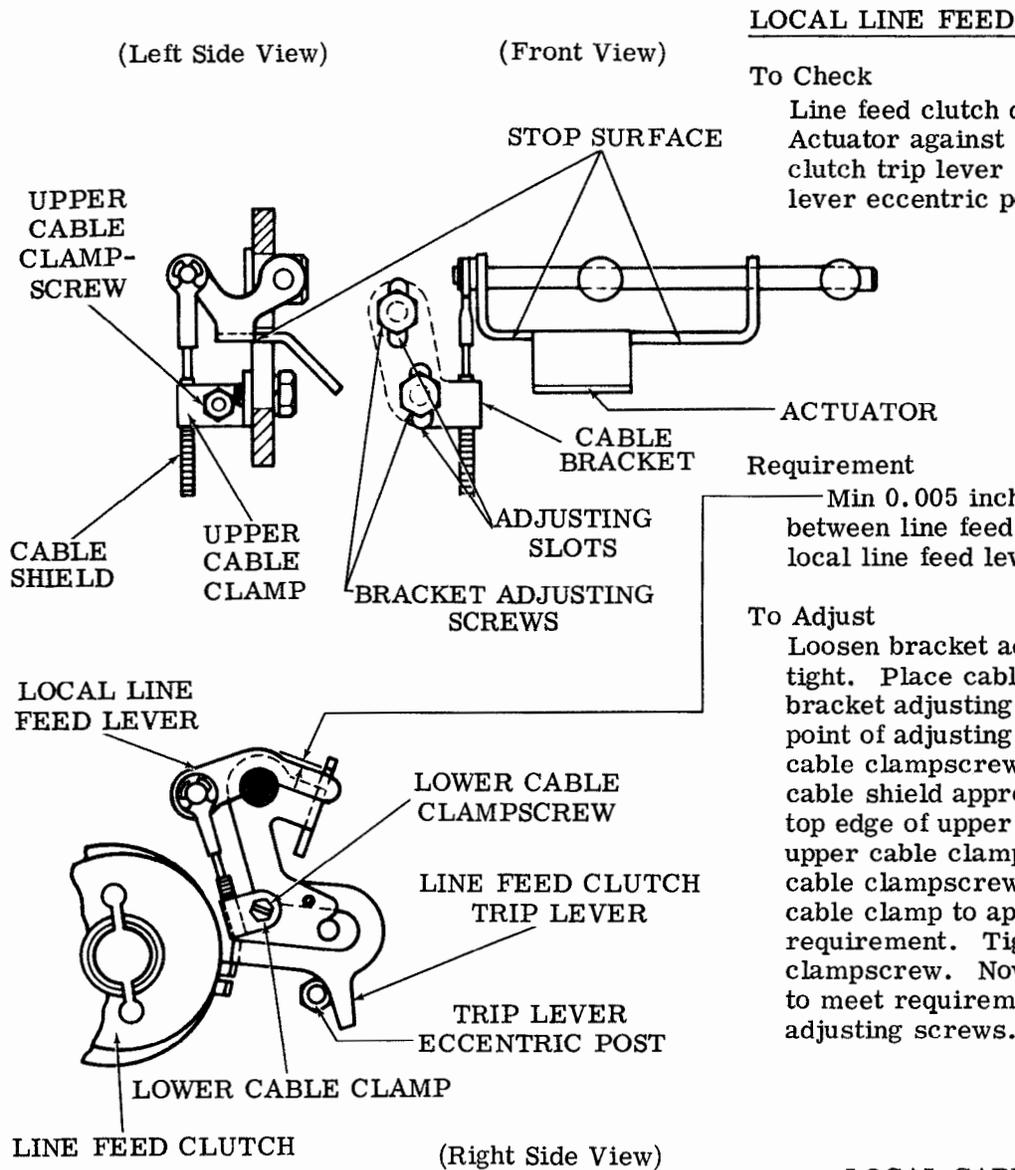
To Adjust

Loosen locknut. Rotate adjusting screw. Tighten locknut.

Affected Adjustment

LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST (2.25)

2.27 Line Feed and Carriage Return Mechanisms



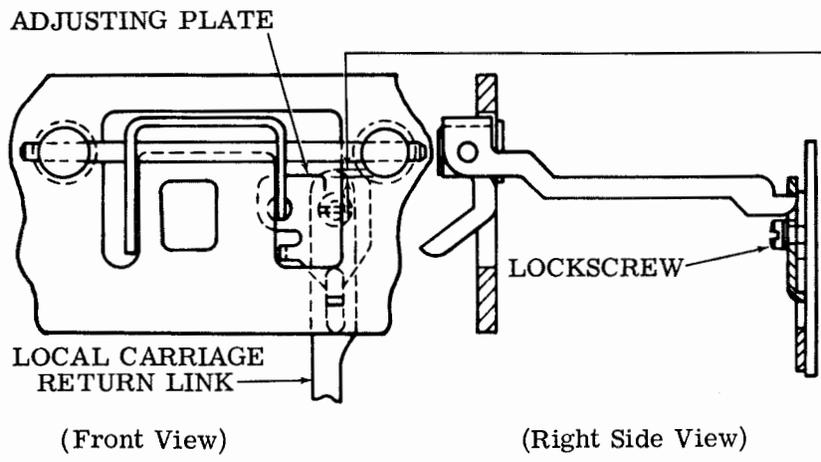
LOCAL LINE FEED

To Check
 Line feed clutch disengaged (latched). Actuator against its stop. Line feed clutch trip lever resting against trip lever eccentric post.

Requirement
 Min 0.005 inch---Max 0.020 inch between line feed clutch trip lever and local line feed lever.

To Adjust
 Loosen bracket adjusting screws friction tight. Place cable bracket so that bracket adjusting screws are at mid-point of adjusting slots. Loosen upper cable clampscrew and position end of cable shield approximately even with top edge of upper cable clamp. Tighten upper cable clampscrew. Loosen lower cable clampscrew and position lower cable clamp to approximately meet requirement. Tighten upper cable clampscrew. Now move cable bracket to meet requirement and tighten bracket adjusting screws.

LOCAL CARRIAGE RETURN

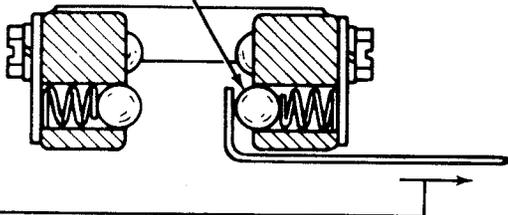


Requirement
 The outline of the top of the local carriage return link and the top of the adjusting plate should be approximately even.

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

2.28 Codebar Mechanism

DETENT BALL



(Top Cross Section)

CODEBAR DETENT SPRING

Note: Unless there is reason to believe that these springs are causing operating failures, do not check this requirement.

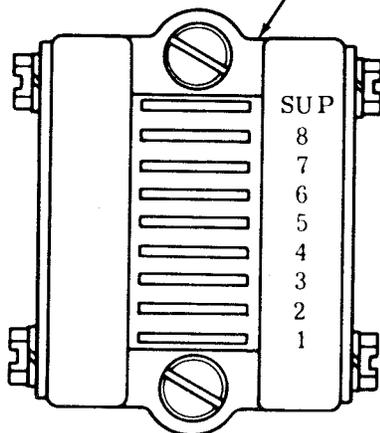
To Check

Codebar detent bracket carefully removed. Codebars removed from detent bracket. Scale applied to detent ball and pulled in direction of ball travel.

Requirement

Min 1-1/2 oz---Max 3-1/2 oz to start ball moving against compression of spring. Check each ball.

CODEBAR
DETENT
BRACKET



(Left Side View)

CODEBAR DETENT

To Check

All main shaft clutches disengaged (latched). All codebars spacing. All position clutches (vertical and horizontal) rotated 1/4 turn from stop position.

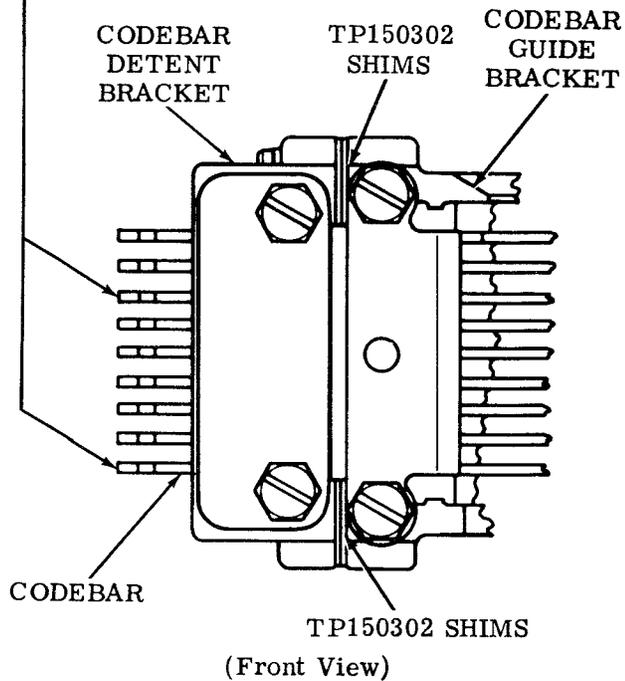
Requirement

Codebars 1 and 7 (S) should detent equally as gauged by eye.

Note: Check codebars 1 and 7 for 8-level typing units; 1 and Shift (S) for 6-level machines.

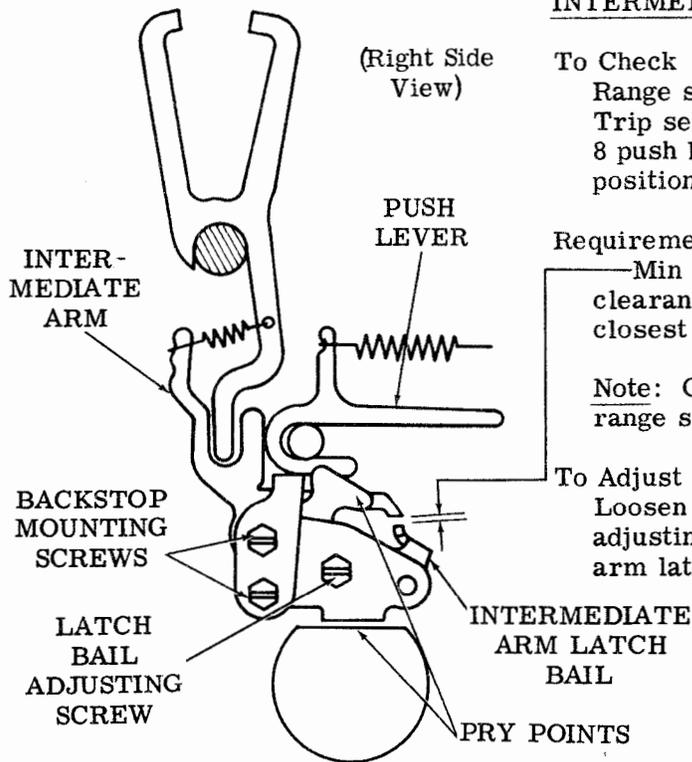
To Adjust

Equalize detenting of codebars by adding or removing TP150302 shims between codebar detent bracket and codebar guide bracket.



(Front View)

2.29 Codebar Mechanism (continued)



INTERMEDIATE ARM LATCH BAIL

To Check

Range scale set to 0. All clutches disengaged (latched). Trip selector clutch and rotate main shaft until number 8 push lever is fully selected (maximum forward position).

Requirement

Min 0.008 inch---Max 0.015 inch clearance between intermediate arm latching surface closest to the outside frame and the latch bail.

Note: Gap can be viewed through hole in selector range scale plate.

To Adjust

Loosen two backstop mounting screws and latch bail adjusting screw friction tight. Position intermediate arm latch bail by means of pry points. Tighten screws.

Affected Adjustment

INTERMEDIATE ARM BACKSTOP BRACKET (2.31)

CODEBAR POSITIONING CAM FOLLOWER SPRING

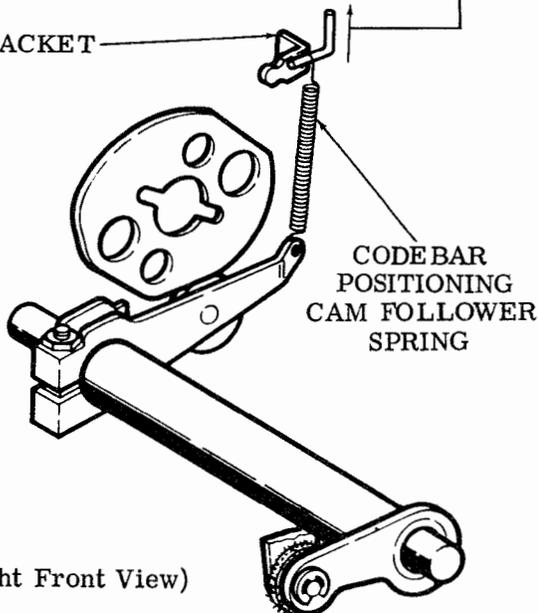
To Check

All clutches disengaged (latched). Unhook spring from bracket.

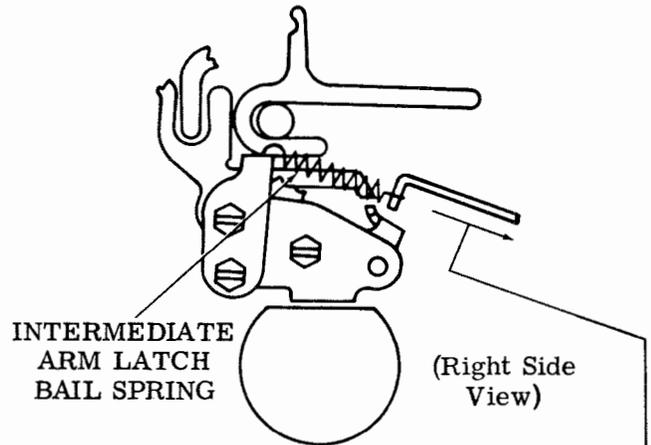
Requirement

Min 9 oz---Max 13 oz to pull spring to installed length.

BRACKET



(Right Front View)



INTERMEDIATE ARM LATCH BAIL SPRING

Note: Since removal of selector is necessary to check spring tension, do not check unless there is reason to believe it is causing malfunction.

To Check

All clutches disengaged (latched). All selector push levers marking.

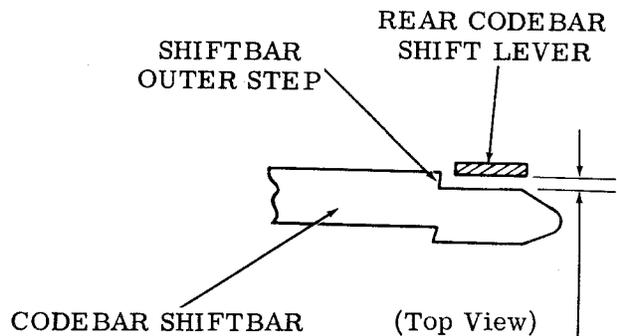
(1) Requirement

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

(2) Requirement

With the small bail held away from large bail
Min 1 oz---Max 2 oz to start large bail moving.

2.30 Codebar Mechanism (continued)



TRANSFER LEVER ECCENTRIC

To Check

Push levers selected and then stripped so the intermediate arms rest on the latch bail. Selector clutch disengaged (latched). Codebar shift lever link in uppermost position. Play in codebar shiftbar taken up for maximum clearance.

Requirement

Min 0.010 inch---Max 0.025 inch clearance between rear codebar shift lever and codebar shiftbar farthest from rear codebar shift lever.

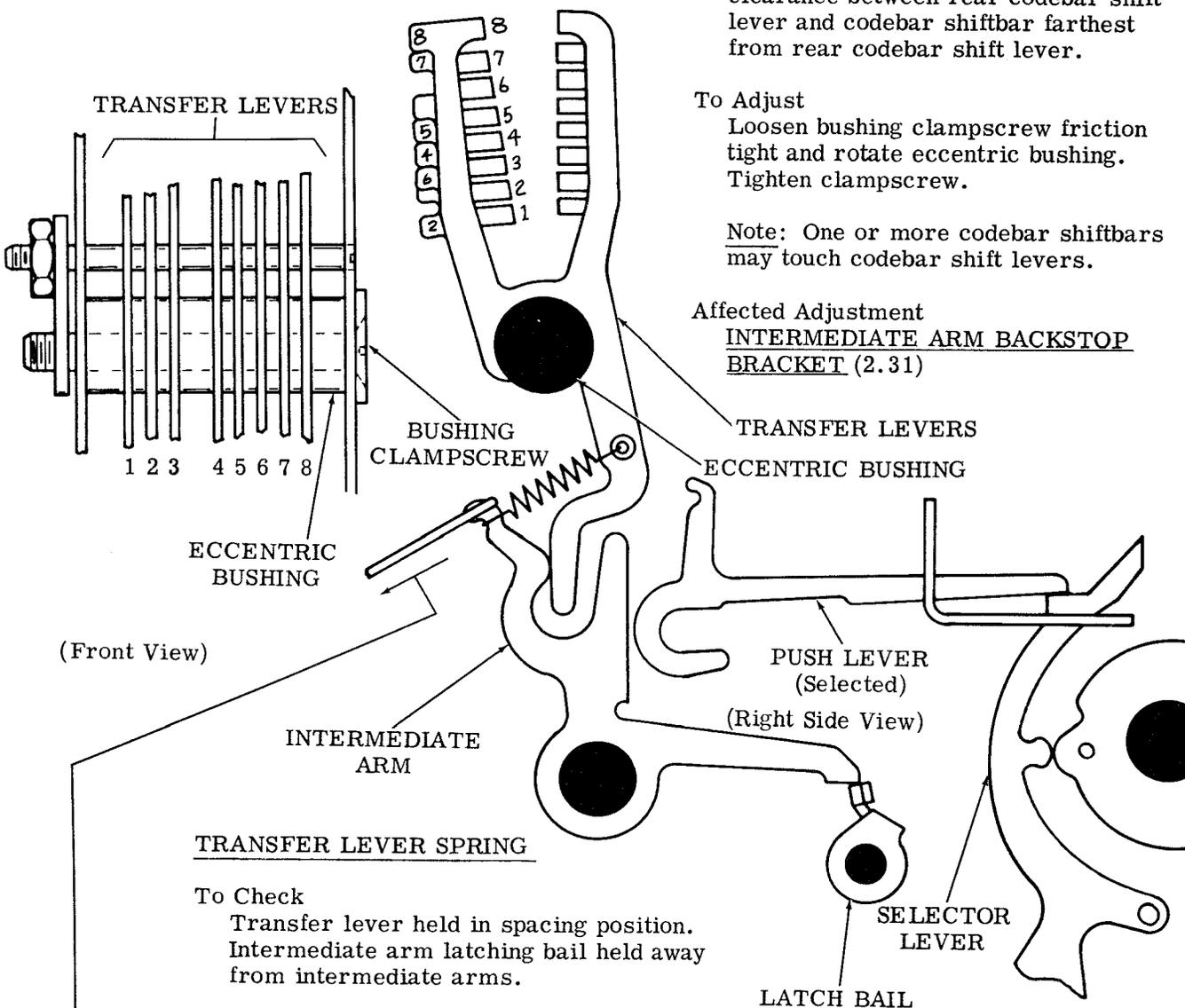
To Adjust

Loosen bushing clampscrew friction tight and rotate eccentric bushing. Tighten clampscrew.

Note: One or more codebar shiftbars may touch codebar shift levers.

Affected Adjustment

INTERMEDIATE ARM BACKSTOP BRACKET (2.31)



TRANSFER LEVER SPRING

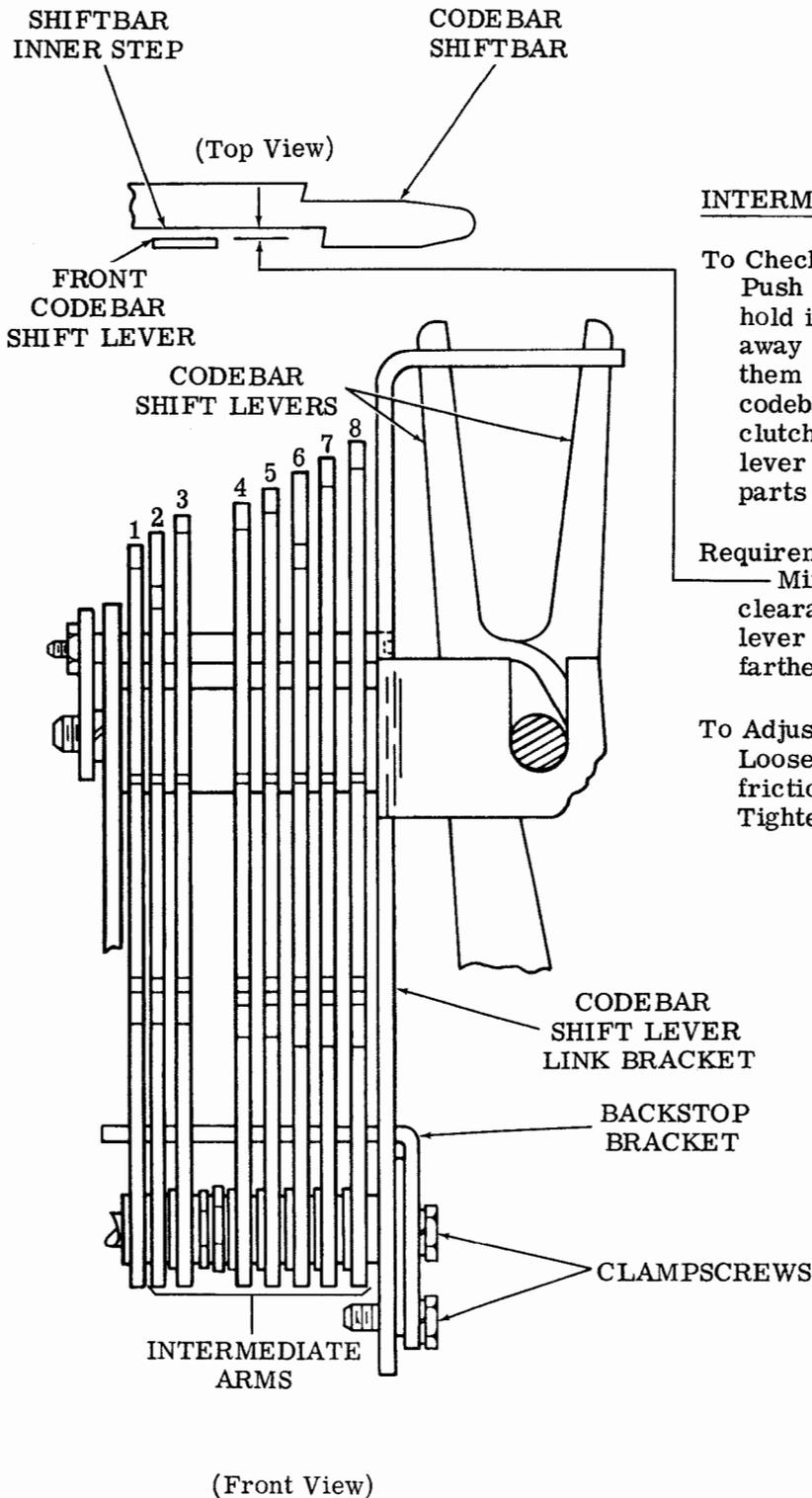
To Check

Transfer lever held in spacing position. Intermediate arm latching bail held away from intermediate arms.

Requirement

Min 2-1/2 oz---Max 3-1/2 oz to start intermediate arm moving.

2.31 Codebar Mechanism (continued)



INTERMEDIATE ARM BACKSTOP BRACKET

To Check

Push levers not selected. Momentarily hold intermediate arm latch bail (2.29) away from intermediate arms to allow them to go to unselected positions. All codebar shiftbars to right. Selector clutch disengaged (latched). Codebar shift lever link in lowermost position. Play in parts taken up for maximum clearance.

Requirement

Min 0.010 inch---Max 0.025 inch clearance between front codebar shift lever and inner step of codebar shiftbar farthest from front codebar shift lever.

To Adjust

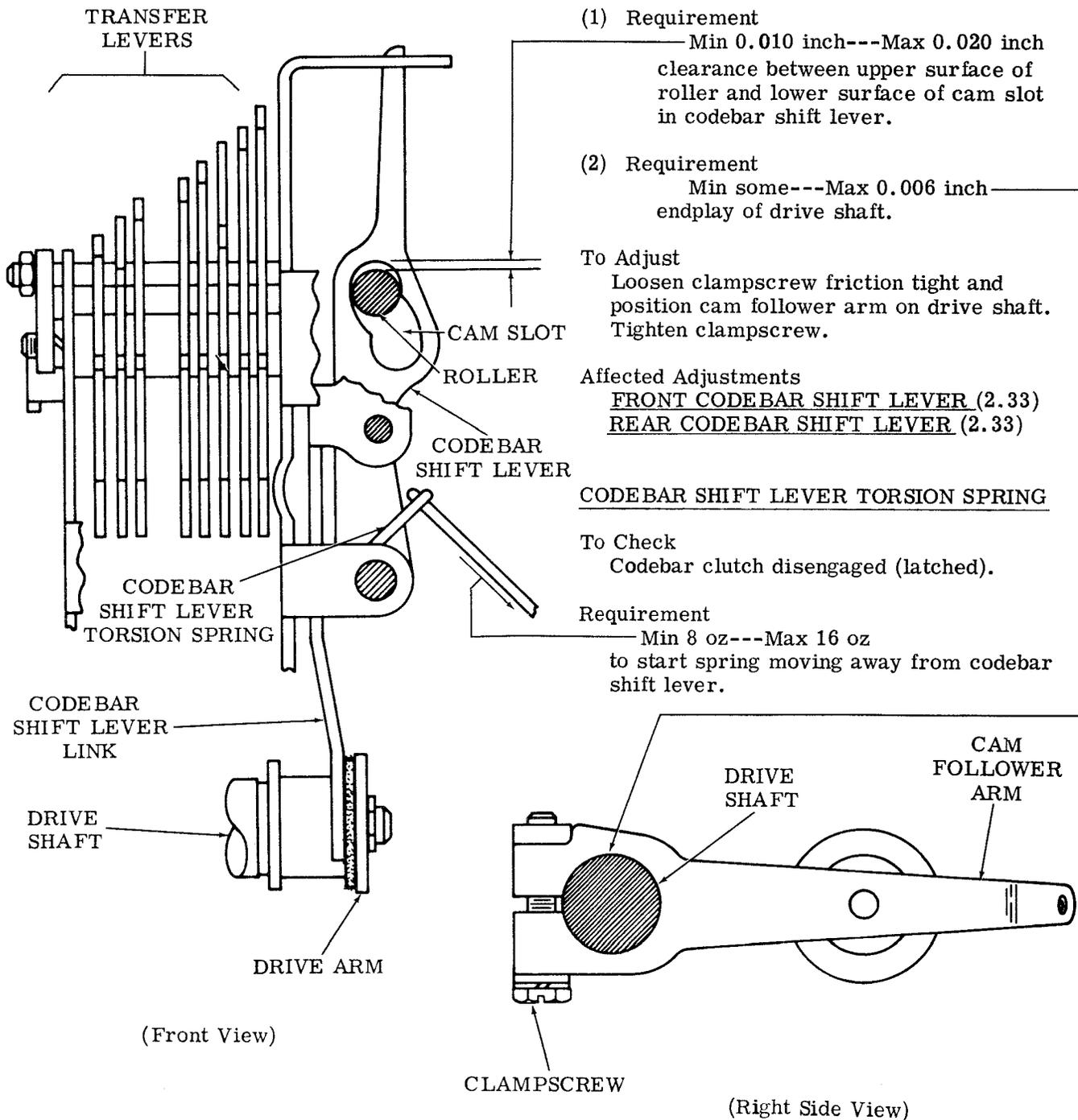
Loosen backstop bracket clampscrews friction tight. Position backstop bracket. Tighten clampscrews.

2.32 Codebar Mechanism (continued)

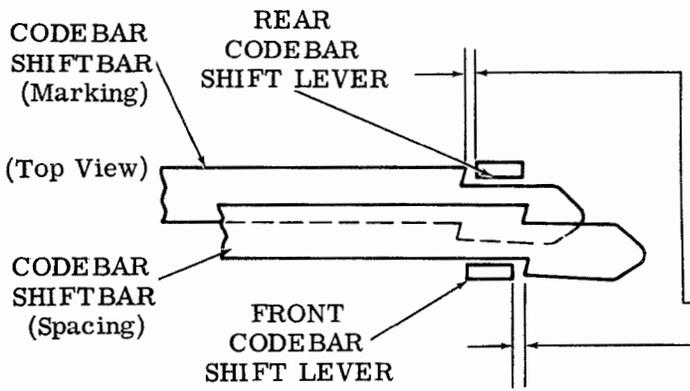
CODEBAR SHIFT LEVER AND CAM FOLLOWER ARM

To Check

Codebar shift lever link in uppermost position. Play in codebar shift lever and codebar shift lever link taken up toward top of typing unit. Check cam slot which gives least clearance.



2.33 Codebar Mechanism (continued)

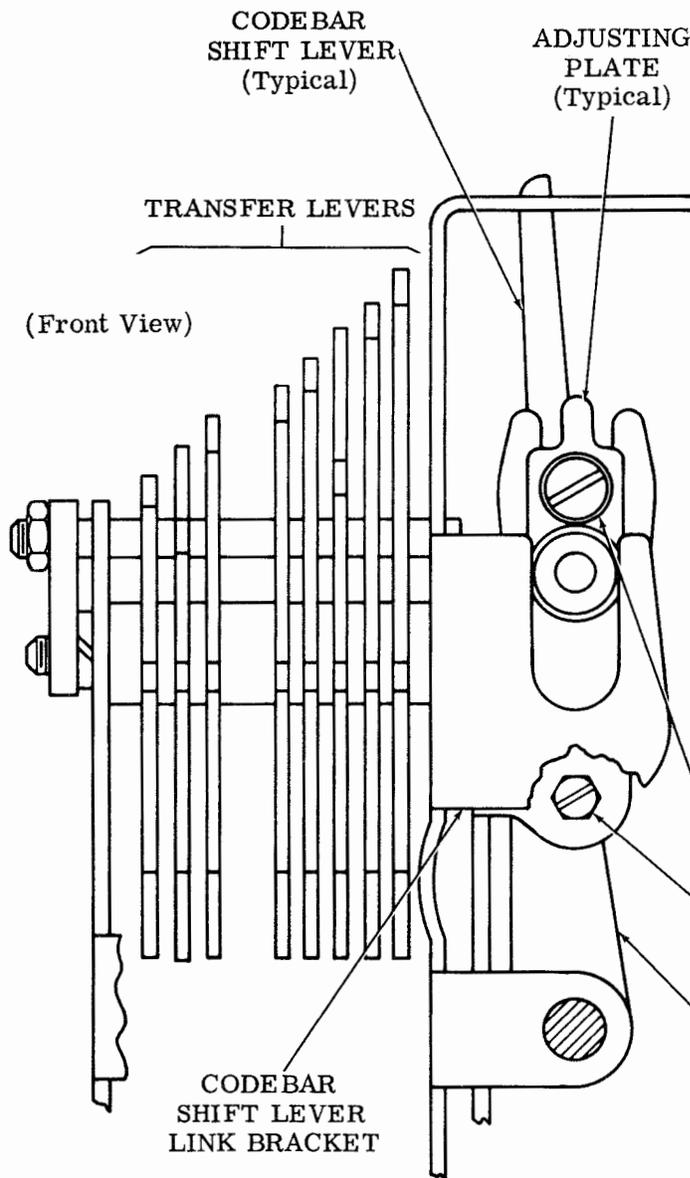


REAR CODEBAR SHIFT LEVER

To Check
 Selector push levers marking. Codebar shift lever link in uppermost position. Play in parts taken up to make maximum clearance.

Requirement
 Min some---Max 0.012 inch clearance between rear codebar shift lever and shoulder of nearest codebar shiftbar (marking).

To Adjust
 Loosen adjusting plate clampscrews friction tight. Position adjusting plate. Tighten clampscrews.



FRONT CODEBAR SHIFT LEVER

To Check
 Selector push levers spacing. Codebar shift lever link in uppermost position. Play in parts taken up to make maximum clearance.

Requirement
 Min some---Max 0.012 inch clearance between front codebar shift lever and shoulder of nearest codebar shiftbar (spacing).

To Adjust
 Loosen adjusting plate clampscrews friction tight. Position adjusting plate. Tighten clampscrews.

2.34 Vertical Positioning Mechanism (continued)

RACK AND PINION PHASING

To Check

Codebars 5, 6, and 7 (1, 5, and 6) marking.
All clutches disengaged (latched).

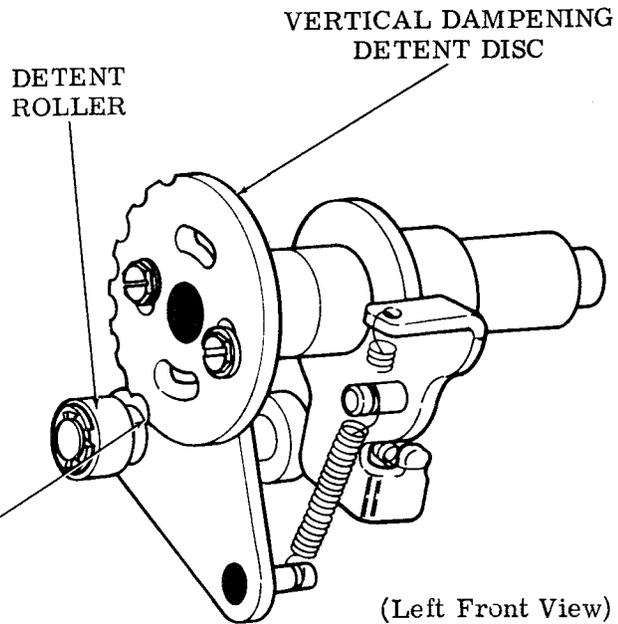
Note: Use codebars 5, 6, and 7 for 8-level typing units; 1, 5, and 6 for 6-level machines.

(1) Requirement

Detent roller should be centered above eighth notch of vertical dampening detent disc (last notch of disc in clockwise direction when viewed from the right).

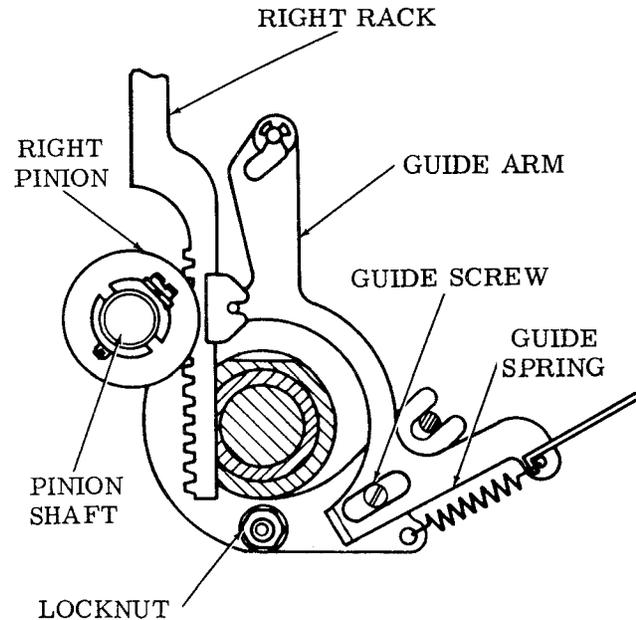
(2) Requirement

Left and right pinion should engage corresponding tooth in respective racks.



To Adjust

Loosen locknut on left stop plate. Remove guide screw from right stop plate. Remove both left and right guide springs. Disengage left rack from left pinion (push toward rear). Disengage right rack from right pinion (push guide arm upward and toward front). Rotate pinion shaft until vertical dampening detent disc is in required position. See requirement (1). Re-engage left rack and reinstall guide spring. Re-engage right rack in corresponding tooth. Reinstall guide spring and guide screw. Tighten guide screw and locknut.



(Right Side View)

2.35 Vertical Positioning Mechanism (continued)

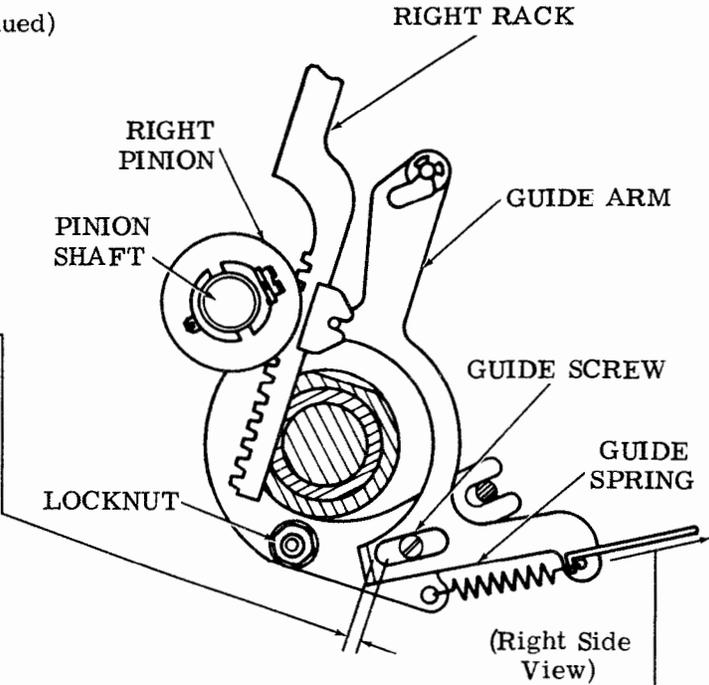
RIGHT RACK GUIDE

Requirement

Min some---Max 0.012 inch
clearance between guide screw and guide
arm.

To Adjust

Loosen locknut. Pry stop plate until re-
quirement is met. Tighten locknut.



RACK GUIDE SPRING

Requirement

Min 22 oz---Max 40 oz
Min 26 oz---Max 46 oz
to pull spring to installed length.

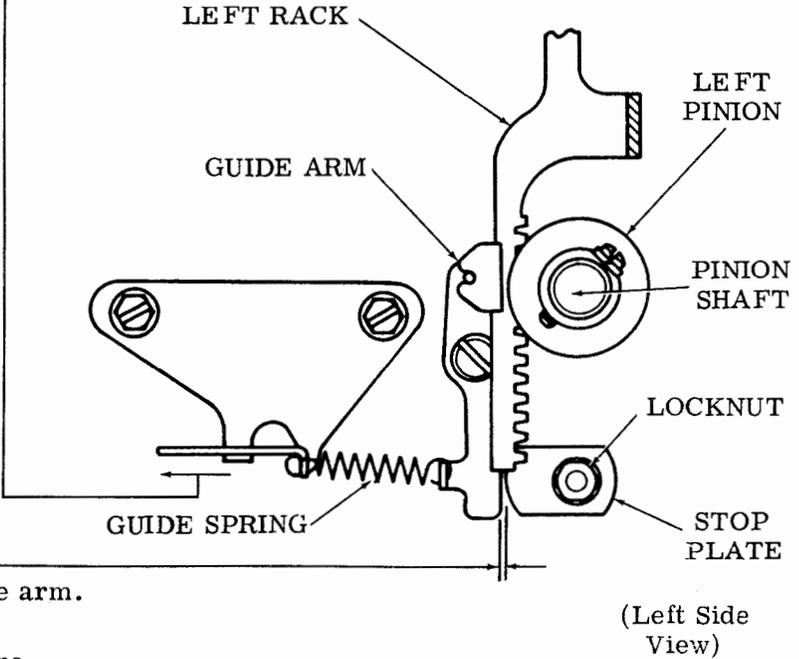
LEFT RACK GUIDE

Requirement

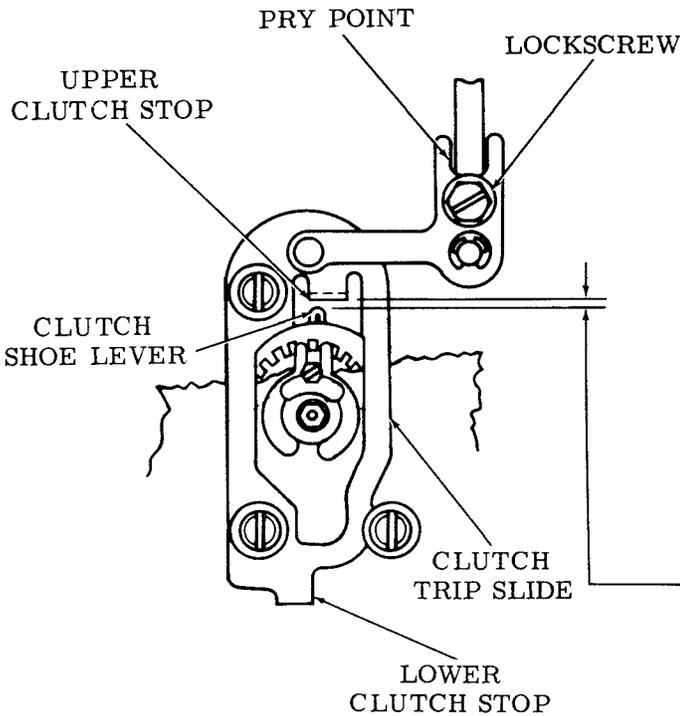
Min some---Max 0.012 inch
clearance between stop plate and guide arm.

To Adjust

Loosen locknut. Pry stop plate until re-
quirement is met. Tighten locknut.



2.36 Vertical Positioning Mechanism (continued)



(Left Side View)

CLUTCH BITE

Note 1: The following procedure applies to the three vertical positioning clutches.

To Check

All clutches disengaged (latched). Engage (trip) one vertical positioning clutch and view clearance between clutch shoe lever and clutch stop. Rotate main shaft and disengage (latch) same clutch on opposite side. Engage (trip) same clutch again and view clearance between clutch shoe lever and clutch stop. Repeat this procedure while checking the remaining vertical positioning clutches.

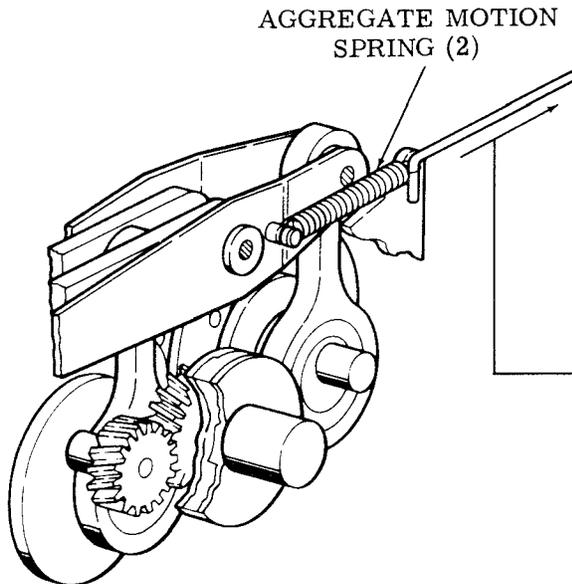
Note 2: When checking, take up play in the parts to make clearance a minimum.

Requirement

Clearances of upper clutch stop and lower clutch stop should be equal as gauged by eye.

To Adjust

Loosen lock screw friction tight. Move clutch trip slide up or down using pry point. Tighten lock screw.



(Right Front View)

AGGREGATE MOTION SPRING (VERTICAL POSITIONING)

To Check

Unhook aggregate motion springs one at a time and check (2 springs total).

Requirement

Min 18 oz---Max 22 oz to extend spring to installed length.

2.37 Retraction Mechanism

RATCHET RETURN SPRING

To Check

Ratchet wheel at maximum feed position (on last tooth). Ratchet return spring unhooked.

Requirement

Min 2 oz---Max 5 oz to extend spring to installed length.

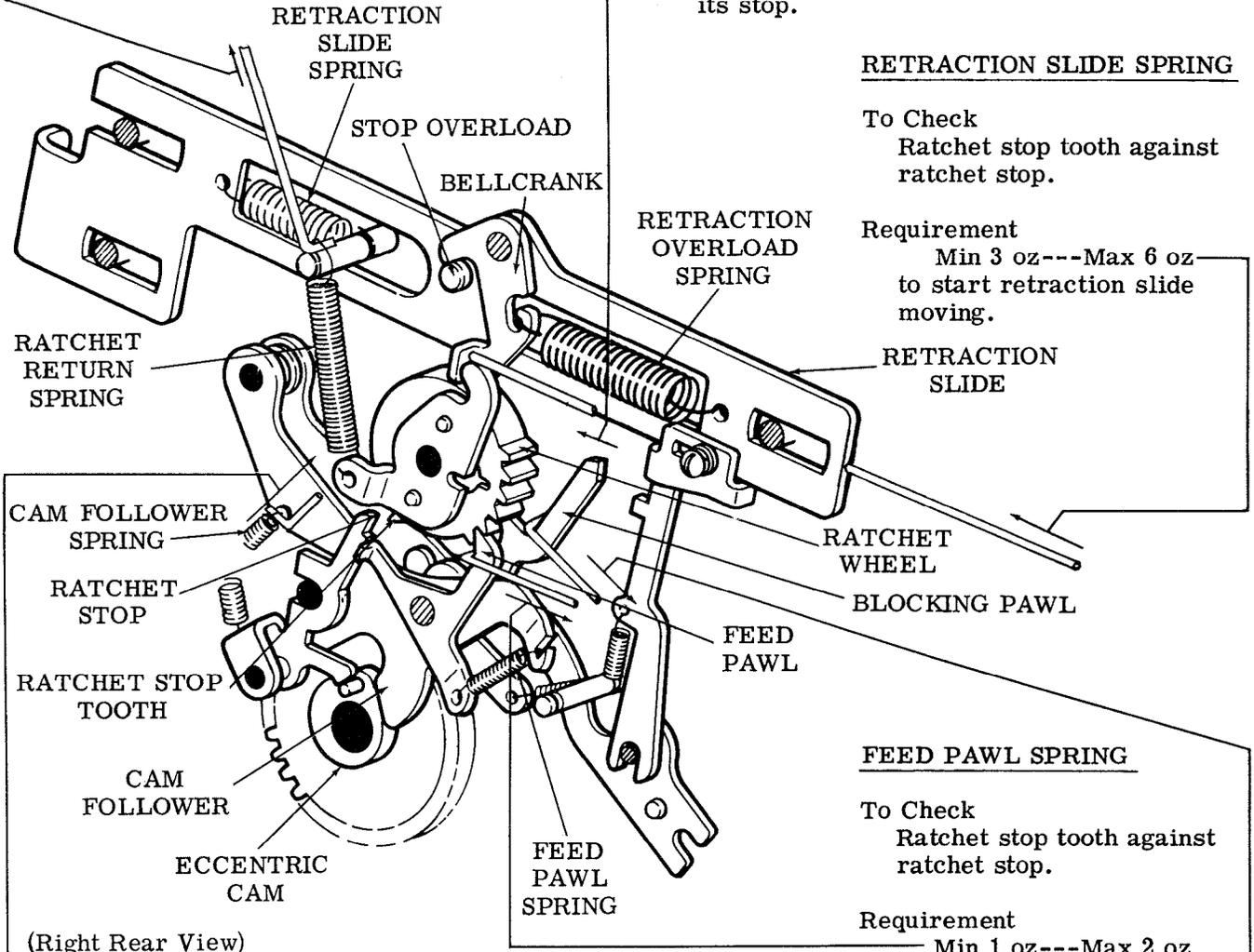
RETRACTION OVERLOAD SPRING

To Check

Ratchet stop tooth against ratchet stop. Retraction slide held manually toward rear of typing unit.

Requirement

Min 5-1/2 lb---Max 7-1/2 lb to start overload bellcrank moving from its stop.



RETRACTION SLIDE SPRING

To Check

Ratchet stop tooth against ratchet stop.

Requirement

Min 3 oz---Max 6 oz to start retraction slide moving.

CAM FOLLOWER SPRING

To Check

Eccentric cam in maximum feed position. Cam follower spring unhooked.

Requirement

Min 14 oz---Max 20 oz to extend spring to installed length.

FEED PAWL SPRING

To Check

Ratchet stop tooth against ratchet stop.

Requirement

Min 1 oz---Max 2 oz to start feed pawl moving from ratchet wheel.

BLOCKING PAWL SPRING

To Check

Ratchet stop tooth against ratchet stop.

Requirement

Min 1 oz---Max 2 oz to start blocking pawl moving from ratchet wheel.

2.38 Retraction Mechanism (continued)

RETRACTION RESET SLIDE

To Check

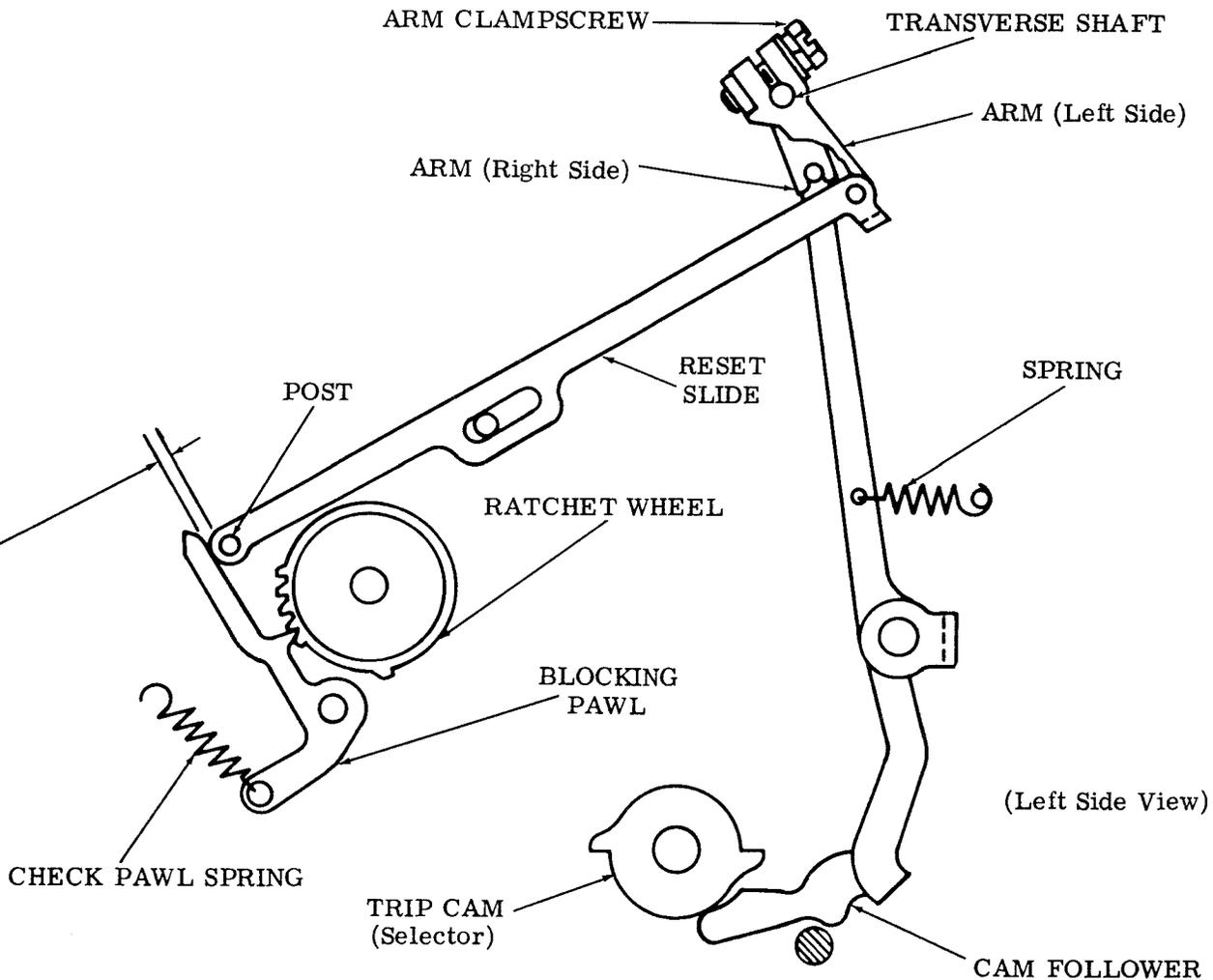
Selector clutch disengaged (latched). Blocking pawl fully engaging ratchet wheel. Take up play in reset slide linkage to make a maximum clearance. Be sure that cam follower is resting on selector trip cam.

Requirement

Min some---Max 0.020 inch
clearance between reset slide post and blocking pawl.

To Adjust

Disengage (latch) selector clutch and rotate main shaft at least two complete revolutions. Loosen arm clampscrew and position arm (left side).



2.39 Retraction Mechanism (continued)

RETRACTION SLIDE**To Check**

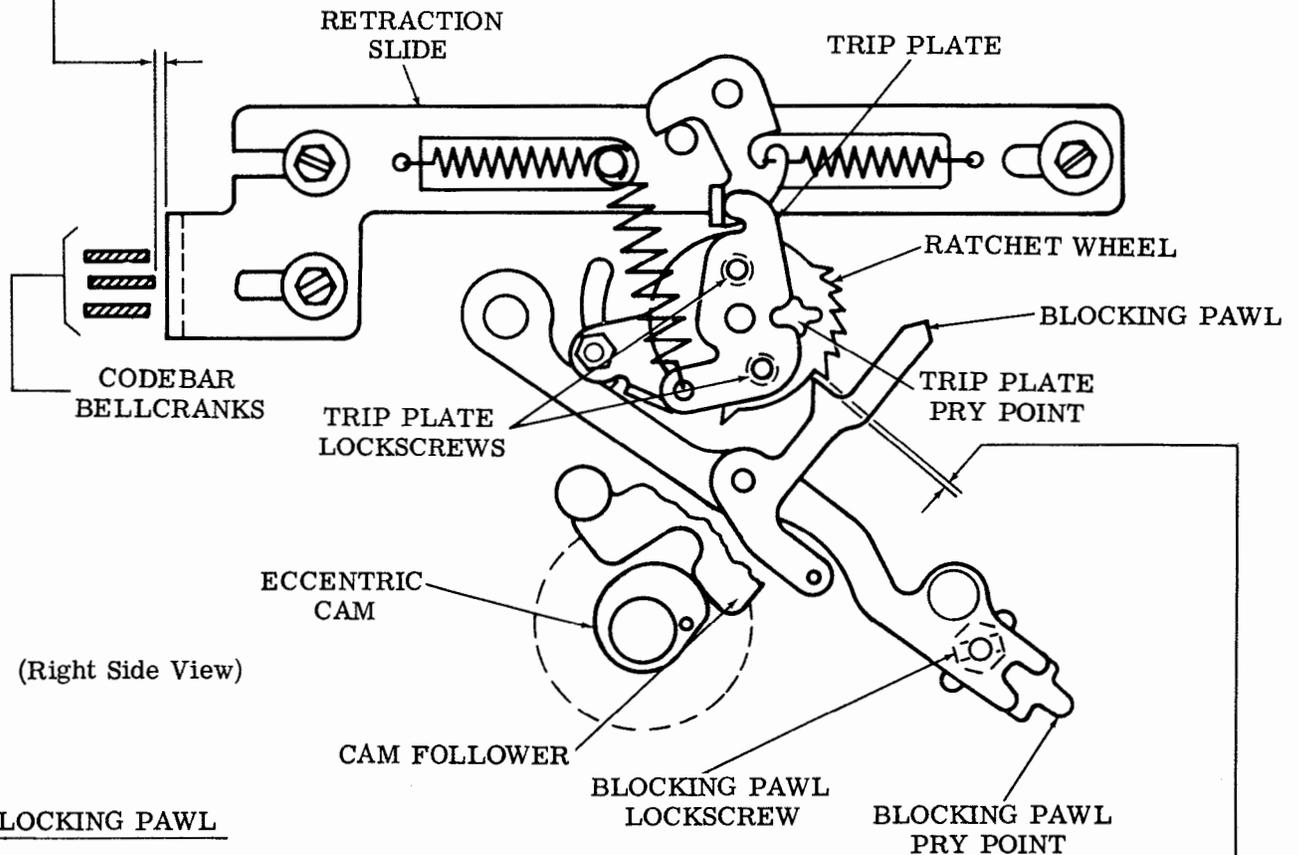
All codebars in spacing position. Feed pawl engaged with last tooth of ratchet wheel. Eccentric cam in maximum feed position. All clutches disengaged (latched). Play in bellcranks taken up toward front.

Requirement

Min some---Max 0.015 inch
clearance between retraction slide and closest codebar bellcrank.

To Adjust

Loosen trip plate lock screws. Rotate trip plate by means of its pry point. Tighten lock screws.

BLOCKING PAWL**To Check**

All clutches disengaged (latched). Feed pawl engaged with the last tooth of ratchet wheel. Eccentric cam in maximum feed position.

Requirement

Min 0.005 inch---Max 0.010 inch
clearance between blocking pawl and ratchet wheel tooth.

To Adjust

Loosen blocking pawl lock screw friction tight. Position blocking pawl using its pry point. Tighten lock screw.

2.40 Retraction Mechanism (continued)

RATCHET STOP

To Check

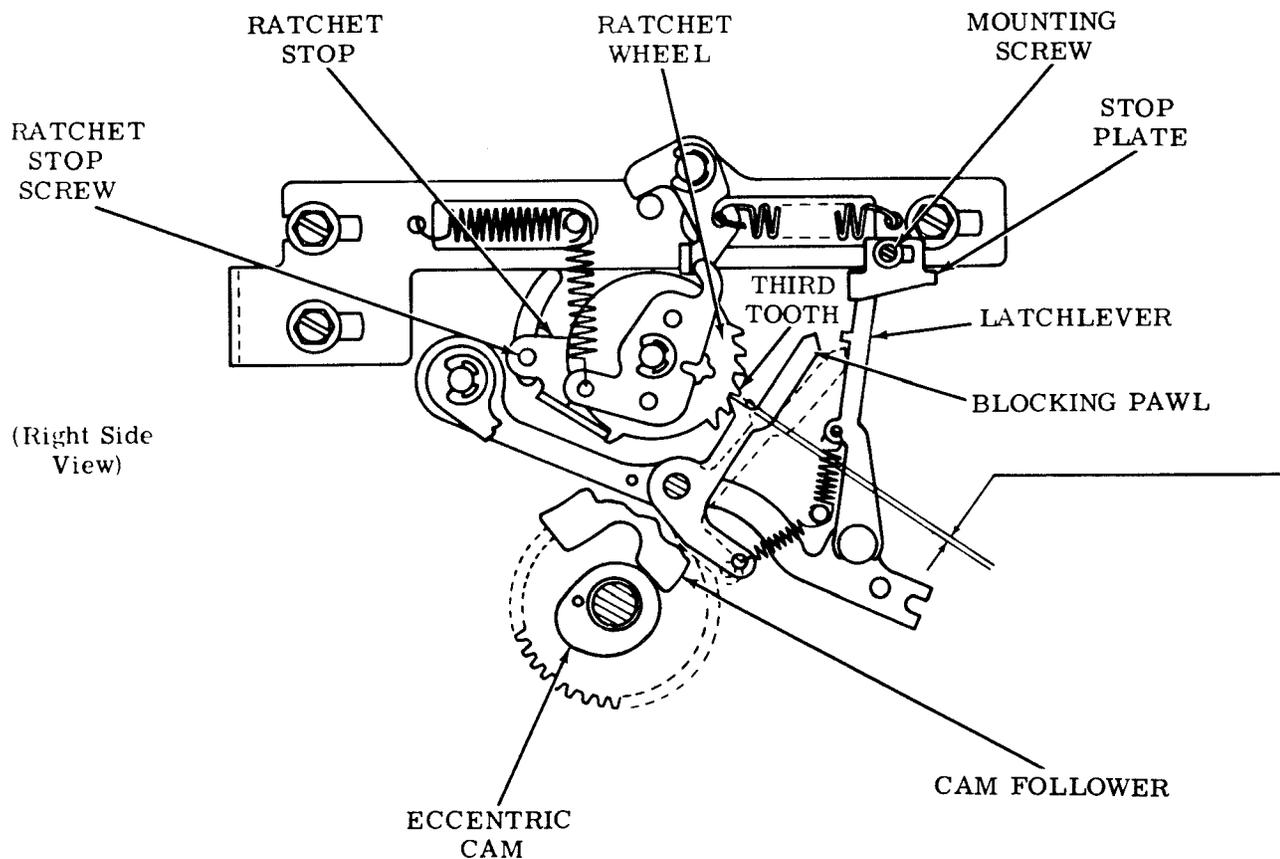
All clutches disengaged (latched). Eccentric cam in minimum feed position. Feed pawl disengaged from ratchet wheel teeth.

Requirement

Min 0.005 inch---Max 0.015 inch
clearance between blocking pawl and flank of third tooth on ratchet wheel.

To Adjust

Loosen ratchet stop screw friction tight. Position ratchet stop. Tighten ratchet stop screw.



2.41 Retraction Mechanism (continued)

STOP PLATE

To Check

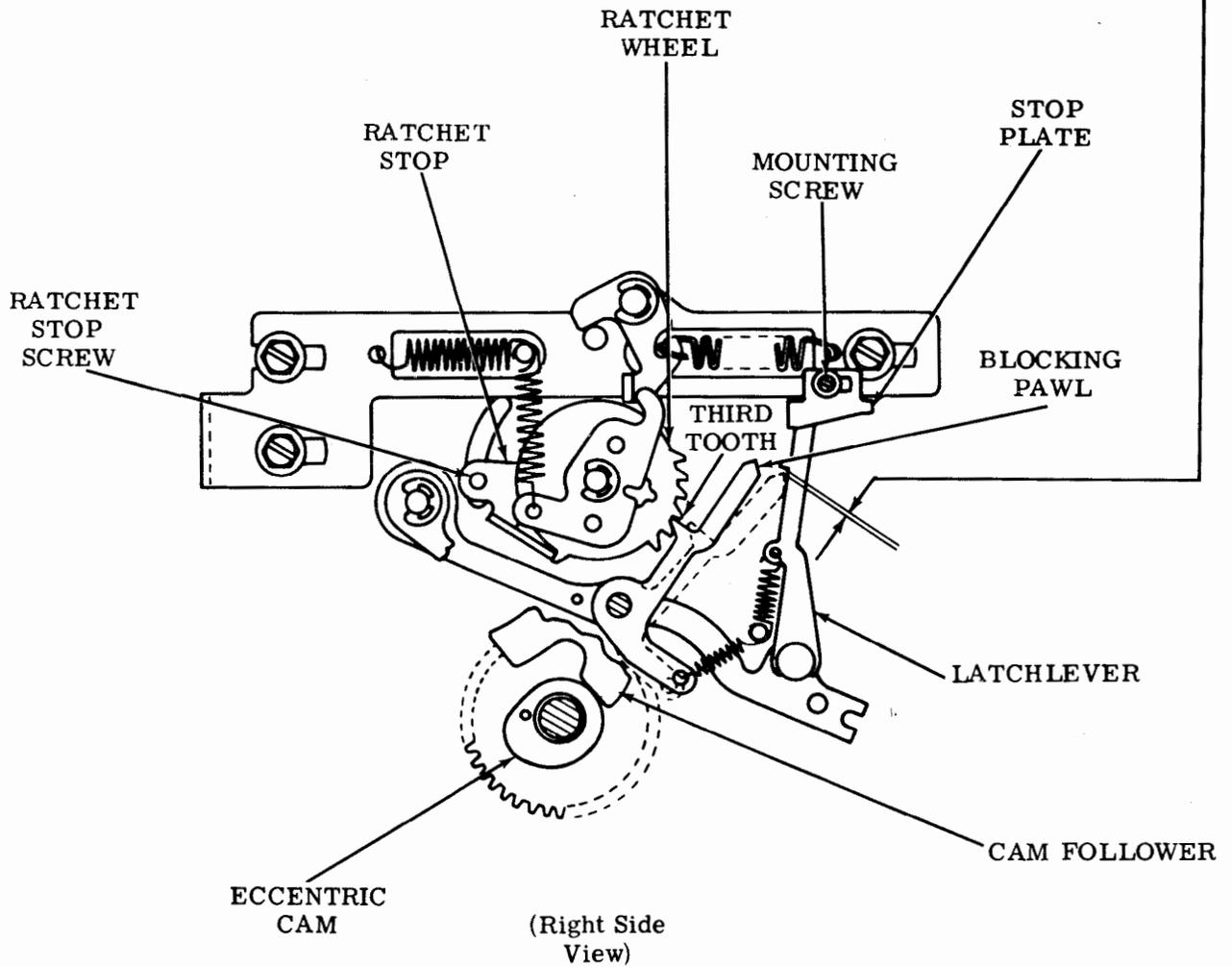
All clutches disengaged (latched). Feed pawl disengaged from ratchet wheel teeth.
Manually bring blocking pawl into position.

Requirement

Min some---Max 0.010 inch
clearance between corners of latchlever and blocking pawl.

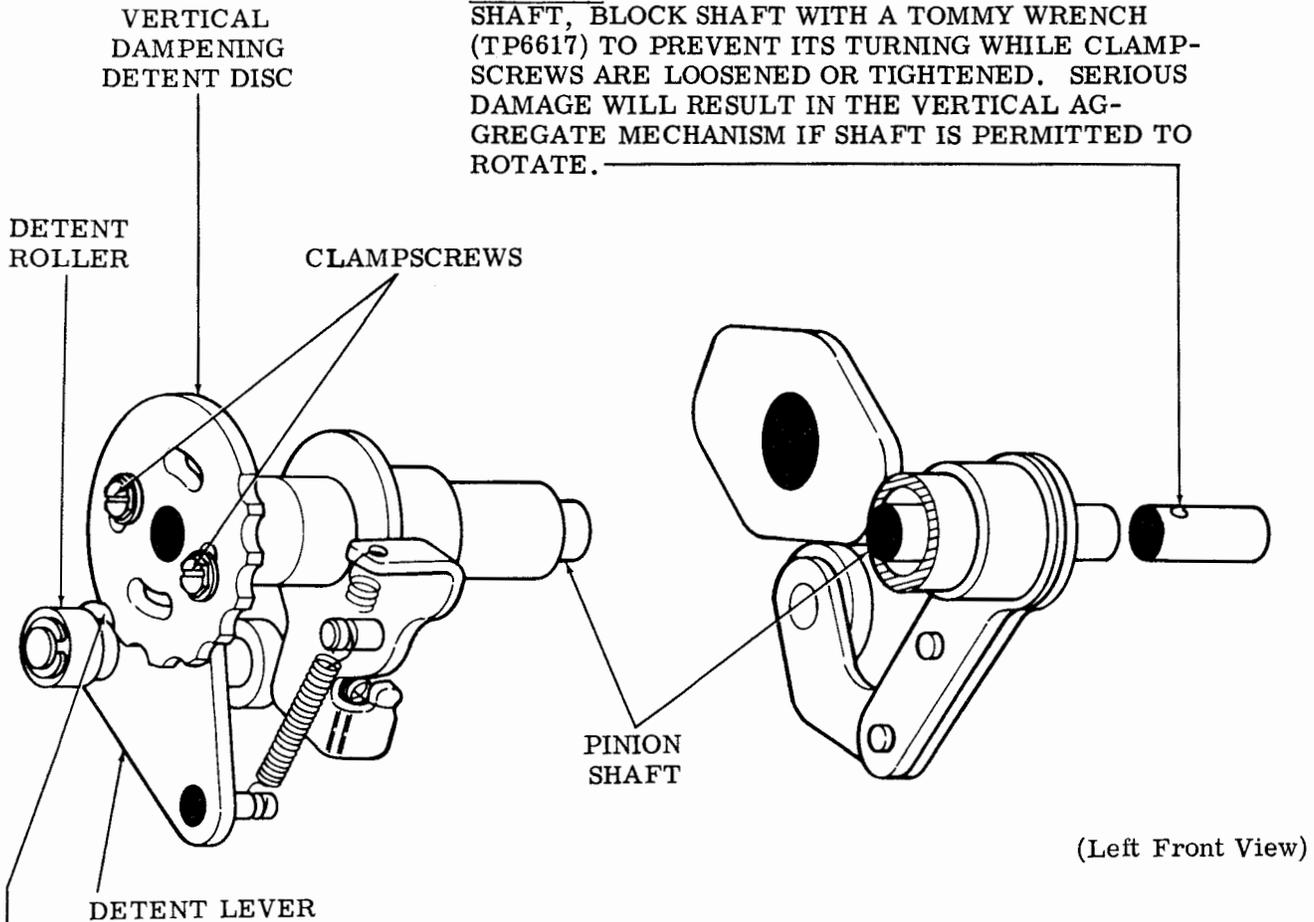
To Adjust

Loosen stop plate mounting screw friction tight. Position stop plate.
Tighten stop plate mounting screw.



2.42 Vertical Positioning Mechanism (continued)

CAUTION: USING HOLE NEAR RIGHT END OF PINION SHAFT, BLOCK SHAFT WITH A TOMMY WRENCH (TP6617) TO PREVENT ITS TURNING WHILE CLAMPSCREWS ARE LOOSENED OR TIGHTENED. SERIOUS DAMAGE WILL RESULT IN THE VERTICAL AGGREGATE MECHANISM IF SHAFT IS PERMITTED TO ROTATE.



(Left Front View)

VERTICAL AGGREGATE - DAMPENER SYNCHRONIZATION

To Check

All codebars spacing. All clutches disengaged (latched). Engage (trip) print hammer clutch. Slowly rotate main shaft.

Requirement

Detent roller should drop squarely into first notch on vertical dampening detent disc (end notch above a web of vertical dampening detent disc).

To Adjust

Loosen clampscrews on vertical dampening detent disc. Rotate disc until detent roller is squarely seated in first notch. Without disturbing unit, tighten one clampscrew. Turn typing unit to a convenient position and tighten other clampscrew.

Note: If this adjustment cannot be met, due to lack of motion in adjusting slots, reset vertical dampening detent disc to center of adjustment and check the RACK AND PINION PHASING (2.34).

2.43 Vertical and Horizontal Positioning Mechanism (continued)

VERTICAL DAMPENING
DETENT DISC

VERTICAL
DETENT
SPRING

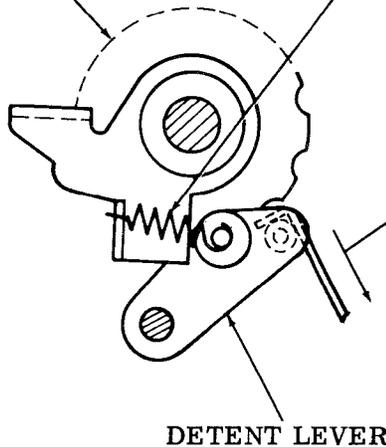
VERTICAL DETENT SPRING

To Check

Print hammer clutch disengaged (latched).
Dampener cam follower on low part of
dampener cam.

Requirement

Min 24 oz---Max 32 oz
to start detent lever moving.



(Right Side View)

HORIZONTAL DAMPENING
DETENT DISC

DETENT LEVER

HORIZONTAL DETENT SPRING

To Check

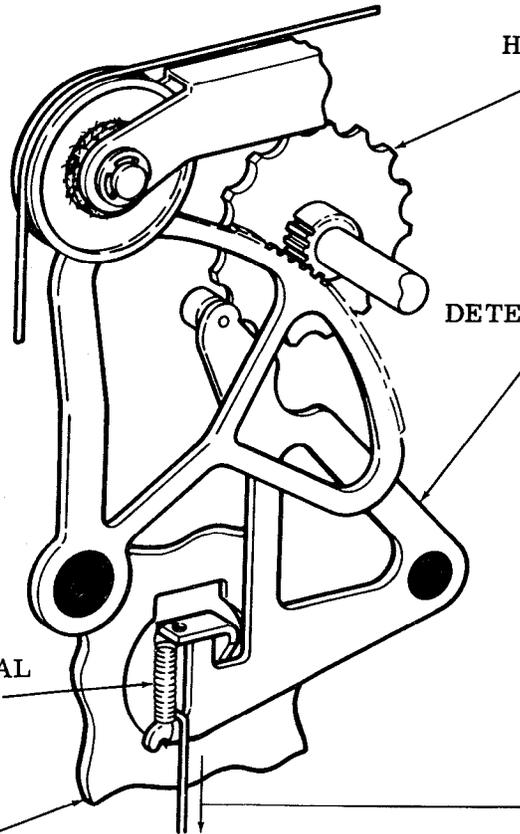
Print hammer clutch disengaged (latched).
Dampener cam follower on low part of
dampener cam.

Requirement

Min 48 oz---Max 64 oz
to start detent lever moving.

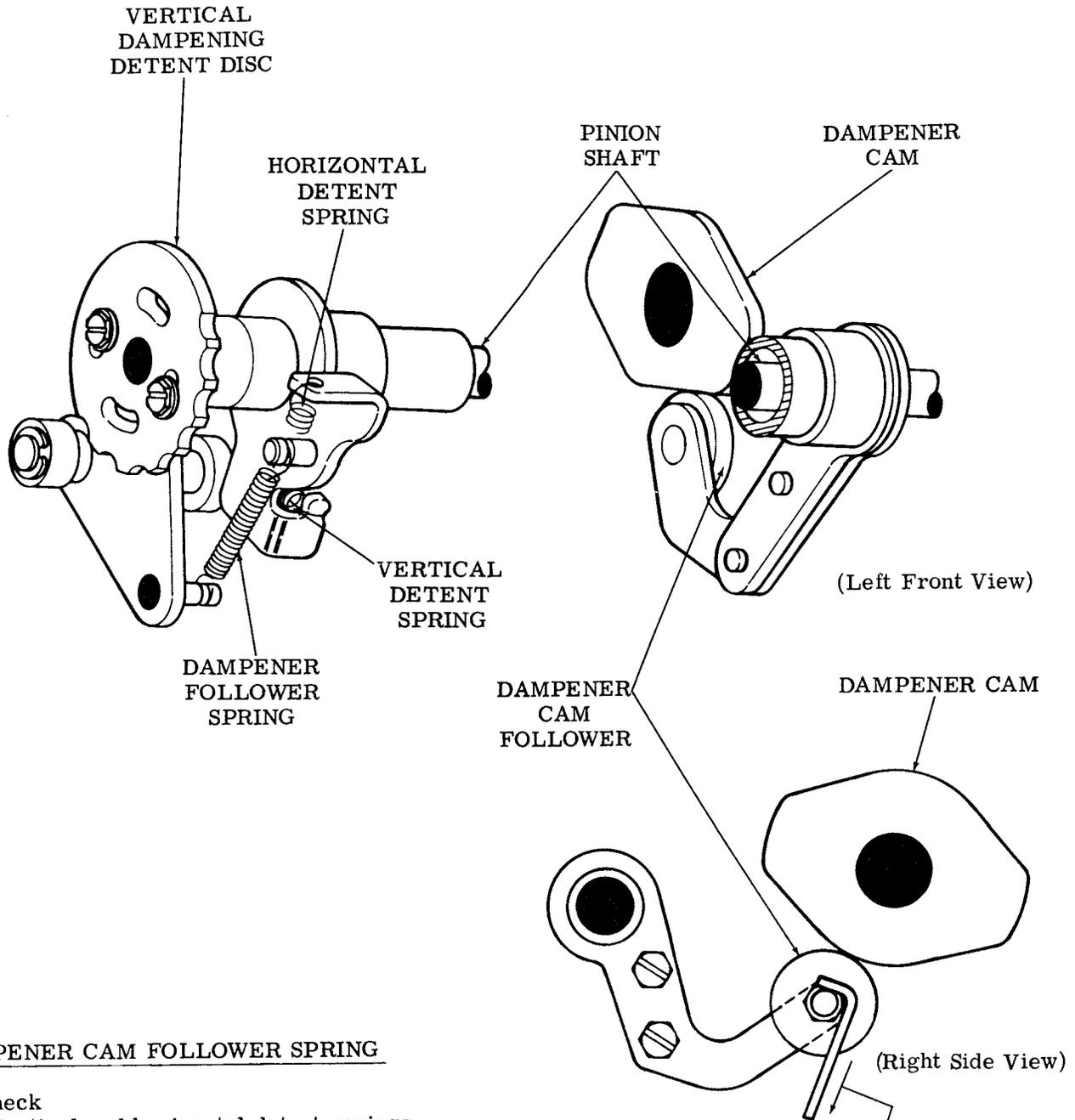
HORIZONTAL
DETENT
SPRING

FRONT
PLATE



(Left Front View)

2.44 Vertical and Horizontal Positioning Mechanisms (continued)



DAMPENER CAM FOLLOWER SPRING

To Check

Vertical and horizontal detent springs installed. Print hammer clutch disengaged (latched). Dampener cam follower on low part of dampener cam.

Requirement

Min 5 oz---Max 8 oz
to start dampener cam follower moving.

2.45 Horizontal Positioning Mechanism (continued)

SLED SLIDE CLEARANCE**To Check**

Inner and outer slides assembled to oscillating rail with spacer and at least one TP332266 shim between the two.

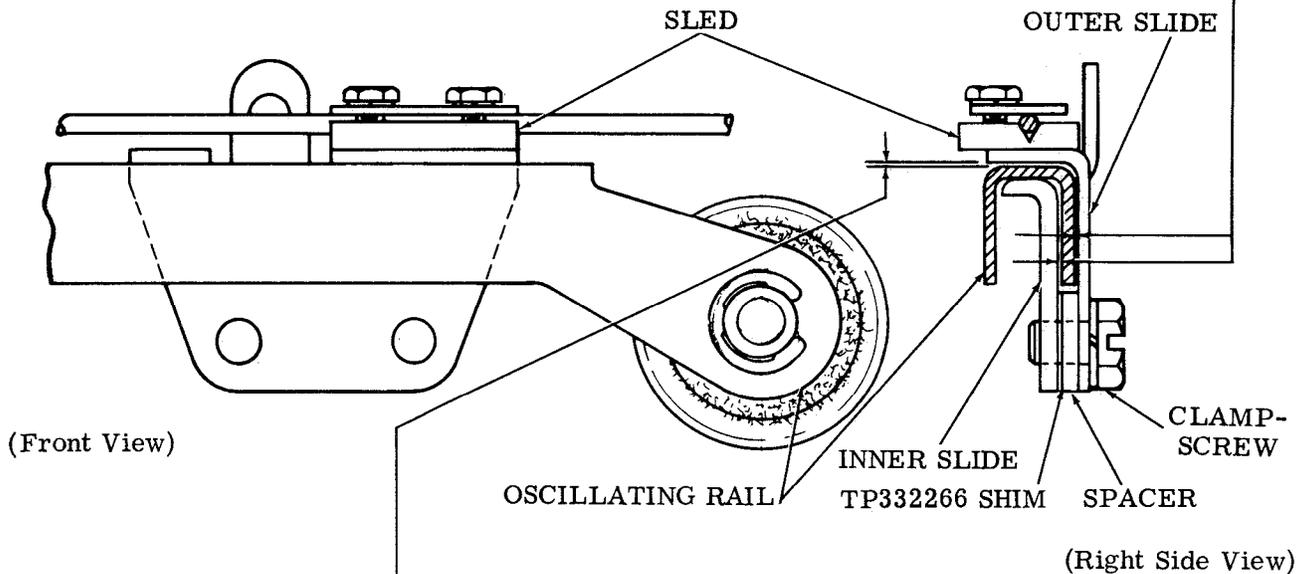
Requirement

Min some---Max 0.003 inch
clearance between oscillating rail and vertical slides.

To Adjust

Remove inner slide and add or remove TP332266 shims to make sled slide freely along the oscillating rail. Replace inner slide and position it and outer slide to obtain maximum top clearance between oscillating rail and outer slide. See SLED TOP CLEARANCE.

Note: Use a minimum number of TP332266 shims.

Affected AdjustmentSLED TOP CLEARANCESLED TOP CLEARANCE**Requirement**

Min some---Max 0.002 inch
clearance between top of oscillating rail
and upper sliding surface of outer slide.

To Adjust

Loosen clampscrews friction tight.
Position inner and outer slides.
Tighten clampscrews.

2.46 Vertical and Horizontal Positioning Mechanisms (continued)

TYPEBOX RAIL ALIGNMENT (PRELIMINARY)

Note 1: This adjustment need not be made unless the typebox rail clampscrews are loosened. If this adjustment is changed, check TYPEBOX RAIL ALIGNMENT (Final) (2.102)

To Check

Codebars 1 and 7 spacing. All other codebars marking. All clutches disengaged (latched). Remove shoulder screw and disconnect typebox link from sled. Reassemble shoulder screw to sled. Position sled and typebox carriage to far left side with shoulder screw directly below shoulder rivet on typebox carriage. Take up play between shoulder screw and mounting hole in sled in a downward direction. Check requirement (1). Position sled and typebox carriage to far right side with shoulder screw directly below shoulder rivet on typebox carriage. Take up play between shoulder screw and mounting hole in sled in a downward direction. Again check requirement (1).

Note 2: If necessary, remove indicator bracket of ribbon mechanism to facilitate shoulder screw removal.

(1) Requirement

Min some---Max 0.002 inch
clearance between head of shoulder screw and head of shoulder rivet at tooth far left and far right positions.

(2) Requirement

Min 0.002 inch
must be maintained between left-hand rack and upper rack guide in both upper and lower rack positions.

Note 3: Before checking, play should be taken up to make a maximum clearance and slowly released.

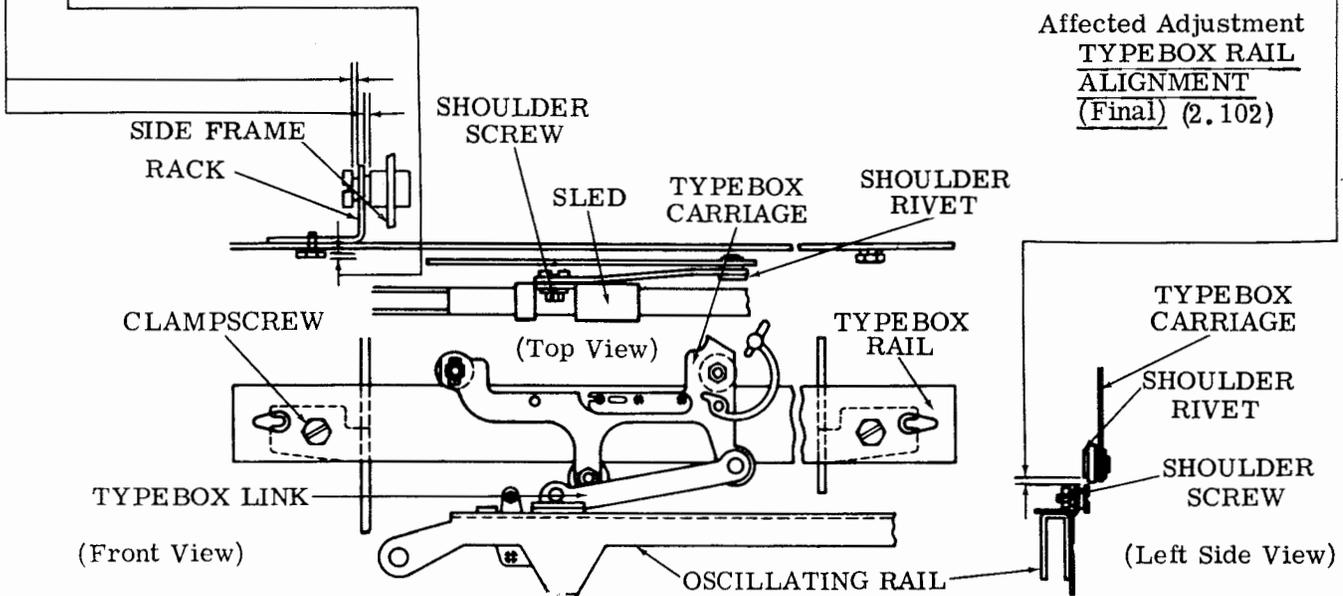
(3) Requirement

With typebox rail clampscrews tightened
Min 0.010 inch
clearance between clampscrew head and backside of typebox carriage at both sides.

To Adjust

Loosen clampscrews friction tight. Raise or lower typebox rail to meet requirement (1). Move typebox rail with respect to rack to meet requirement (2). Tighten clampscrews to meet requirement (3).

Affected Adjustment
TYPEBOX RAIL ALIGNMENT
(Final) (2.102)



2.47 Horizontal Positioning Mechanism (continued)

OSCILLATING ARM - DETENT DISC PHASING

To Check

Codebar 1 spacing. All other codebars marking. All clutches disengaged (latched). Spring drum rotated to permit viewing of detent roller and horizontal dampening detent disc through hole provided in front bearing plate.

(1) Requirement

Oscillating arm gear tooth marked with O (third tooth) should be meshed with pinion gear on horizontal dampening detent disc.

(2) Requirement

No. 1 notch on horizontal dampening detent disc (notch below small hole) should be centered above detent roller.

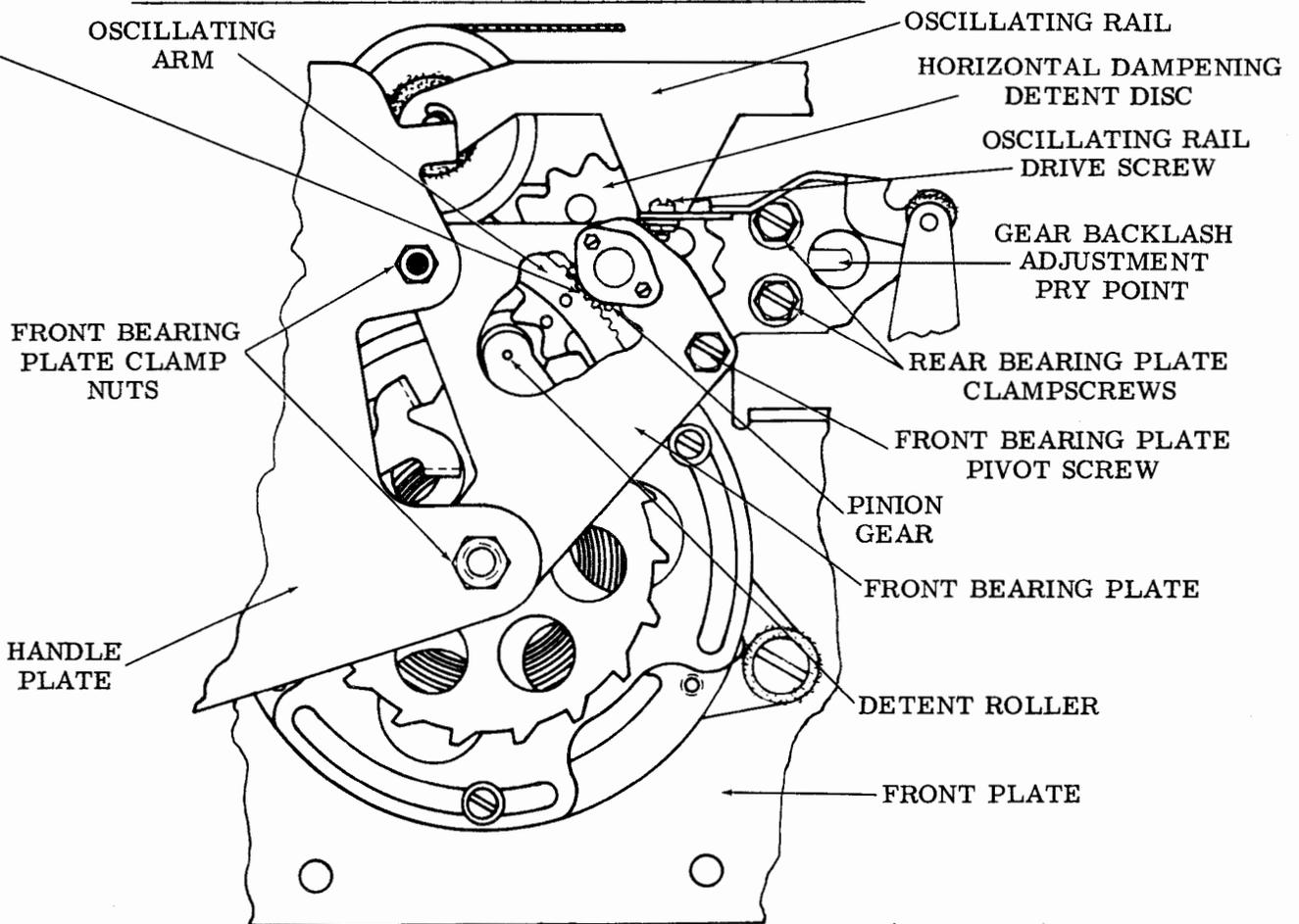
To Adjust

Loosen two rear bearing plate clampscrews and two front bearing plate clamp nuts. Separate oscillating arm from pinion gear using gear backlash adjustment pry point. Rephase oscillating arm and pinion gear. Tighten clampscrews and clamp nuts.

Affected Adjustments

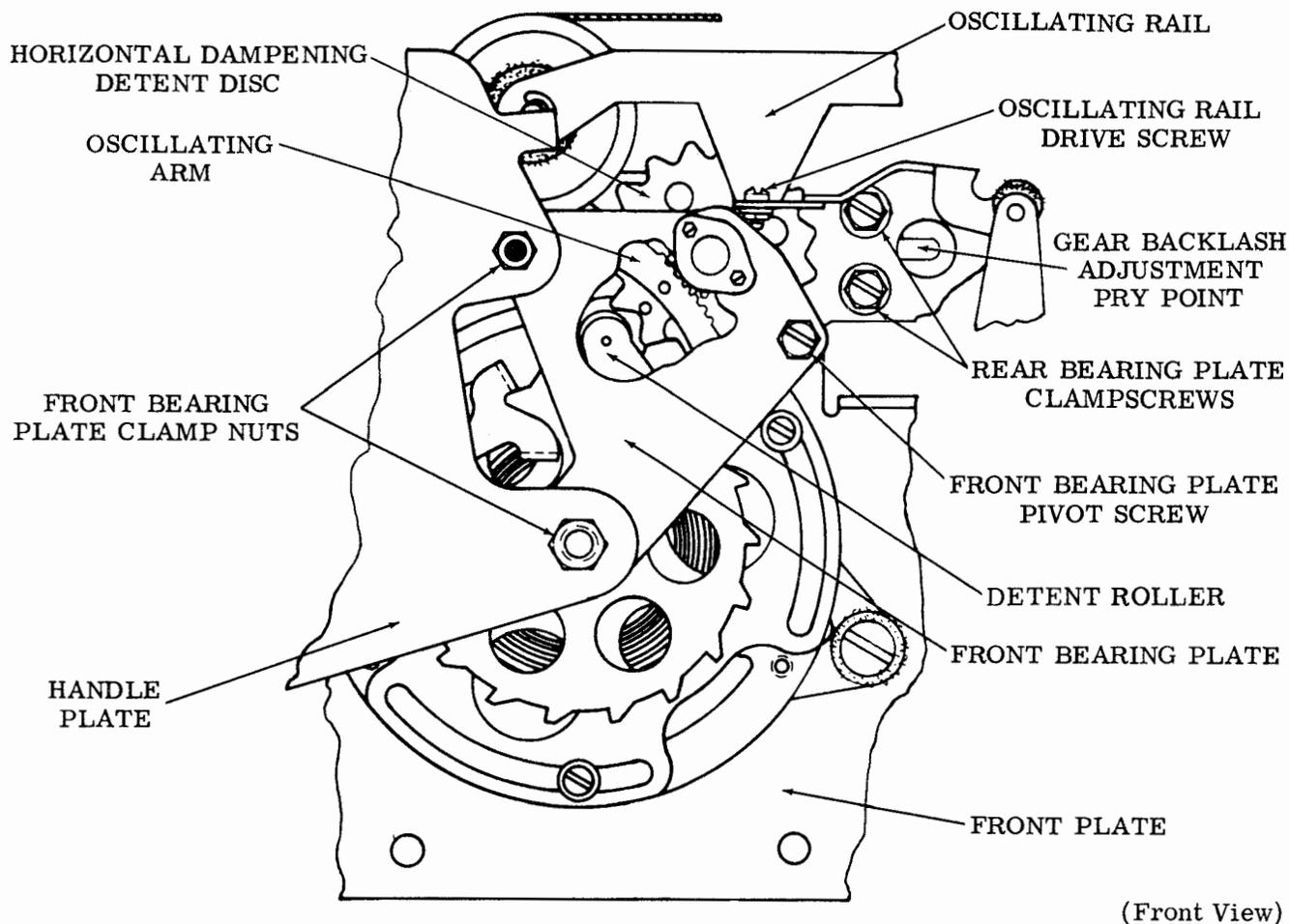
FRONT BEARING PLATE ALIGNMENT (2.48)

OSCILLATING ARM - DETENT DISC GEAR BACKLASH (2.49)



(Front View)

2.48 Horizontal Positioning Mechanism (continued)



(Front View)

FRONT BEARING PLATE ALIGNMENT**To Check**

Codebar 1 spacing. All other codebars marking. All clutches disengaged (latched).
Oscillating rail drive screw removed.

Requirement

Oscillating rail should move smoothly through its full range of travel without binding.

To Adjust

Loosen rear bearing plate clampscrews. Loosen front bearing plate clamp nuts. Loosen front bearing plate pivot screw. Obtain some backlash in horizontal dampening detent disc - oscillating arm gear set using gear backlash adjustment pry point. Rotate front bearing plate downward about its pivot screw while manually moving oscillating rail back and forth until horizontal dampening detent disc binds slightly on front bearing plate. Rotate front bearing plate upward until horizontal dampening detent disc turns freely. Tighten front bearing plate pivot screw, front bearing plate clamp nuts, and rear bearing plate clampscrews. Do not replace oscillating rail drive screw until OSCILLATING ARM-DETENT DISC GEAR BACKLASH (2.49) adjustment is checked.

Affected Adjustment

OSCILLATING ARM - DETENT DISC GEAR BACKLASH (2.49)

2.49 Horizontal Positioning Mechanism (continued)

OSCILLATING ARM - DETENT DISC GEAR BACKLASH**To Check**

Codebar 1 spacing. All other codebars marking. All clutches disengaged (latched). Oscillating rail drive screw removed. Engage (trip) print hammer clutch. Rotate main shaft until detent roller fully seats into a notch of horizontal dampening detent disc.

Requirement

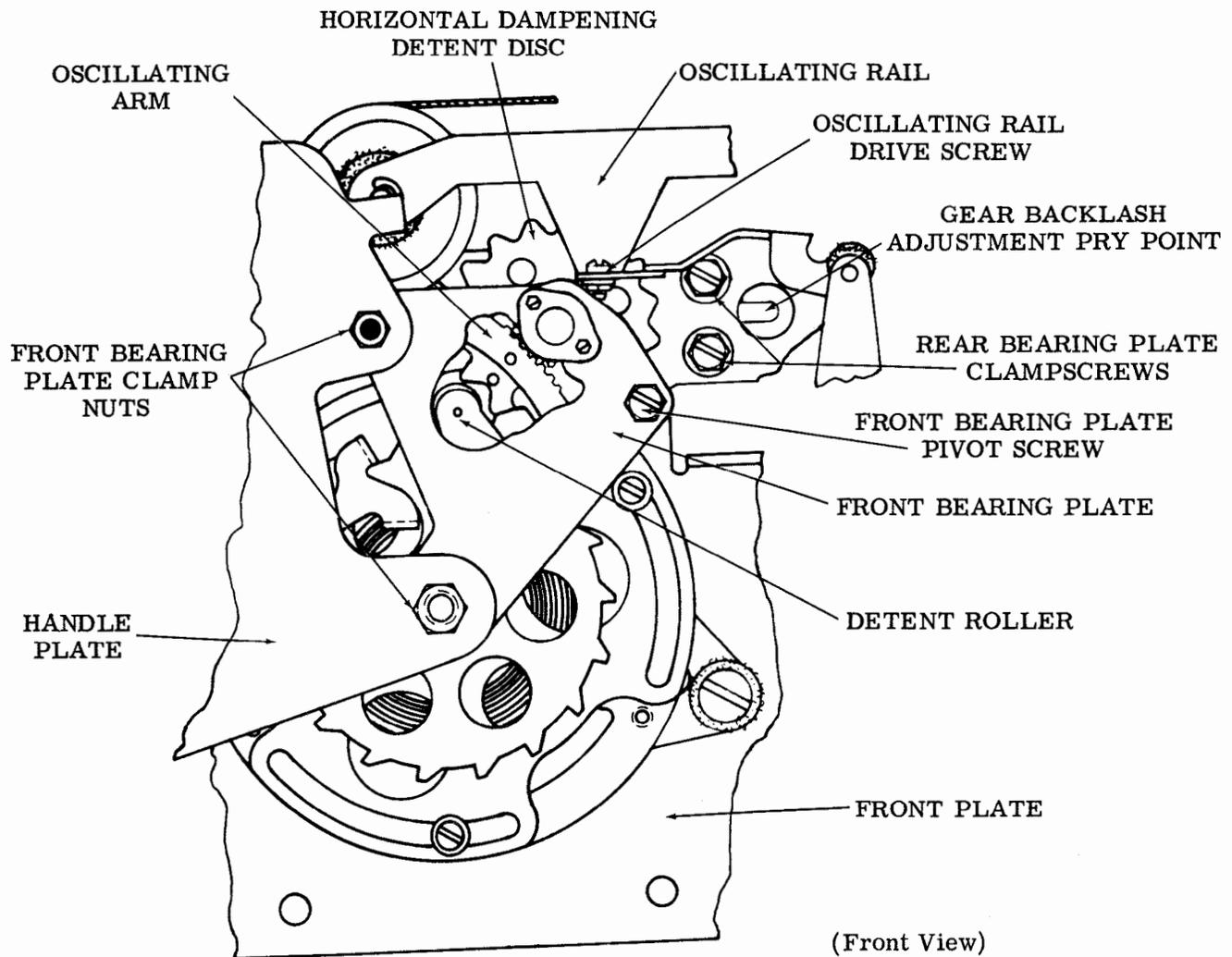
There should be no noticeable backlash in the horizontal dampening detent disc - oscillating arm gear set when pressure is manually applied to oscillating rail. Oscillating rail should move freely when detent roller is retracted.

To Adjust

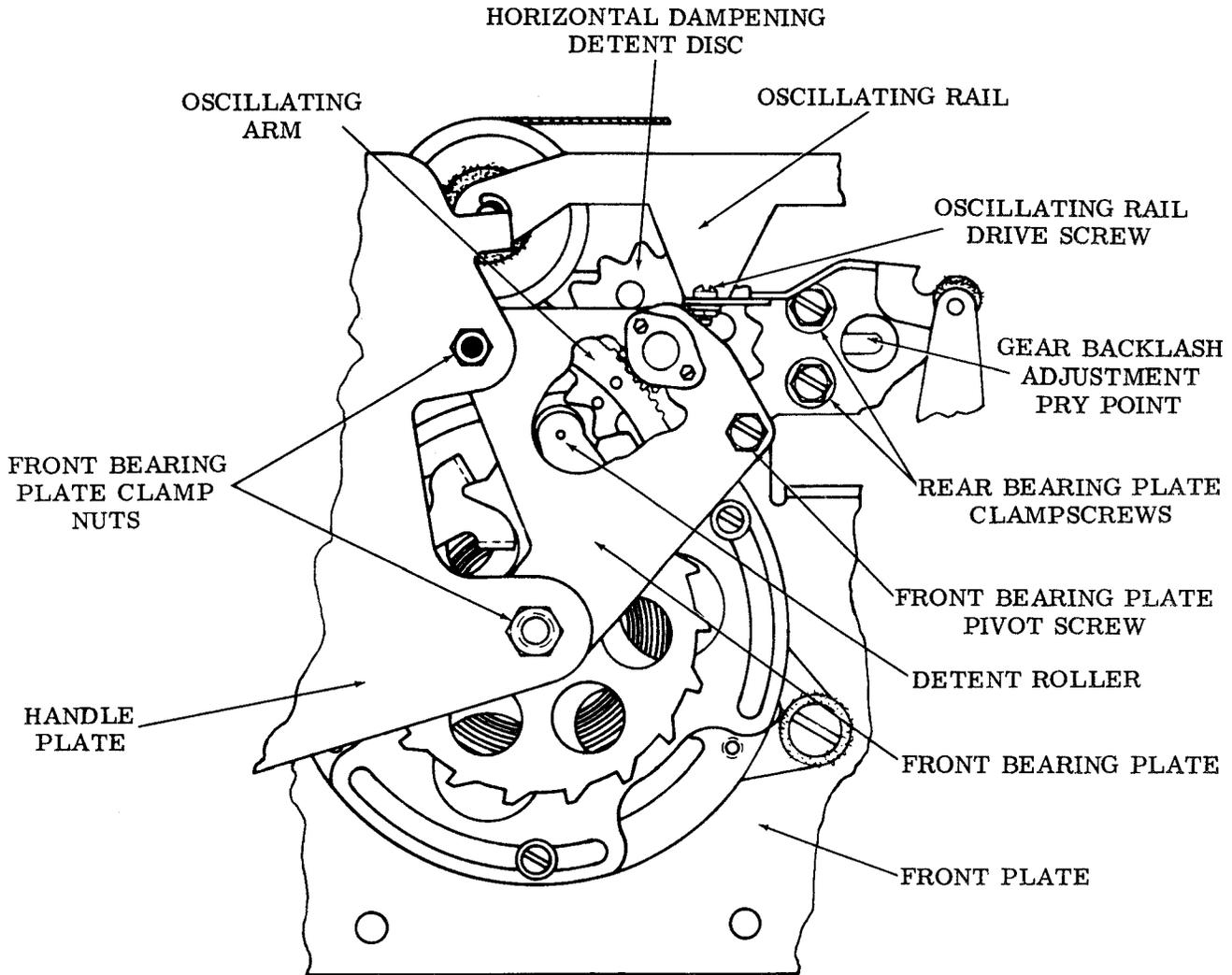
Loosen rear bearing plate clampscrews. Loosen front bearing plate clamp nuts. Close backlash using gear backlash adjustment pry point until slight tooth contact is felt while manually moving oscillating rail back and forth. Tighten rear bearing plate clampscrews and front bearing plate clamp nuts. Replace oscillating rail drive screw.

Affected Adjustment

FRONT BEARING PLATE ALIGNMENT (2.48)



2.50 Horizontal Positioning Mechanism (continued)



(Front View)

AGGREGATE - DAMPENER SYNCHRONIZATION**To Check**

Codebar 1 spacing. All other codebars marking. All clutches disengaged (latched). Engage (trip) print hammer clutch and slowly rotate main shaft until detent roller drops into notch of horizontal dampening detent disc.

Requirement

Detent roller should drop squarely into the notch of horizontal dampening detent disc with no deflection or barely perceptible deflection of the detent disc.

To Adjust

Loosen oscillating rail drive screw. Engage (trip) print hammer clutch and rotate main shaft until detent roller is fully down. Without disturbing the setting, tighten oscillating rail drive screw.

2.51 Line Feed Mechanism (continued)

LINE FEED CLUTCH PHASING

To Check

Line feed clutch disengaged (latched).

Requirement

Both line feed bars should engage teeth of spur gear.

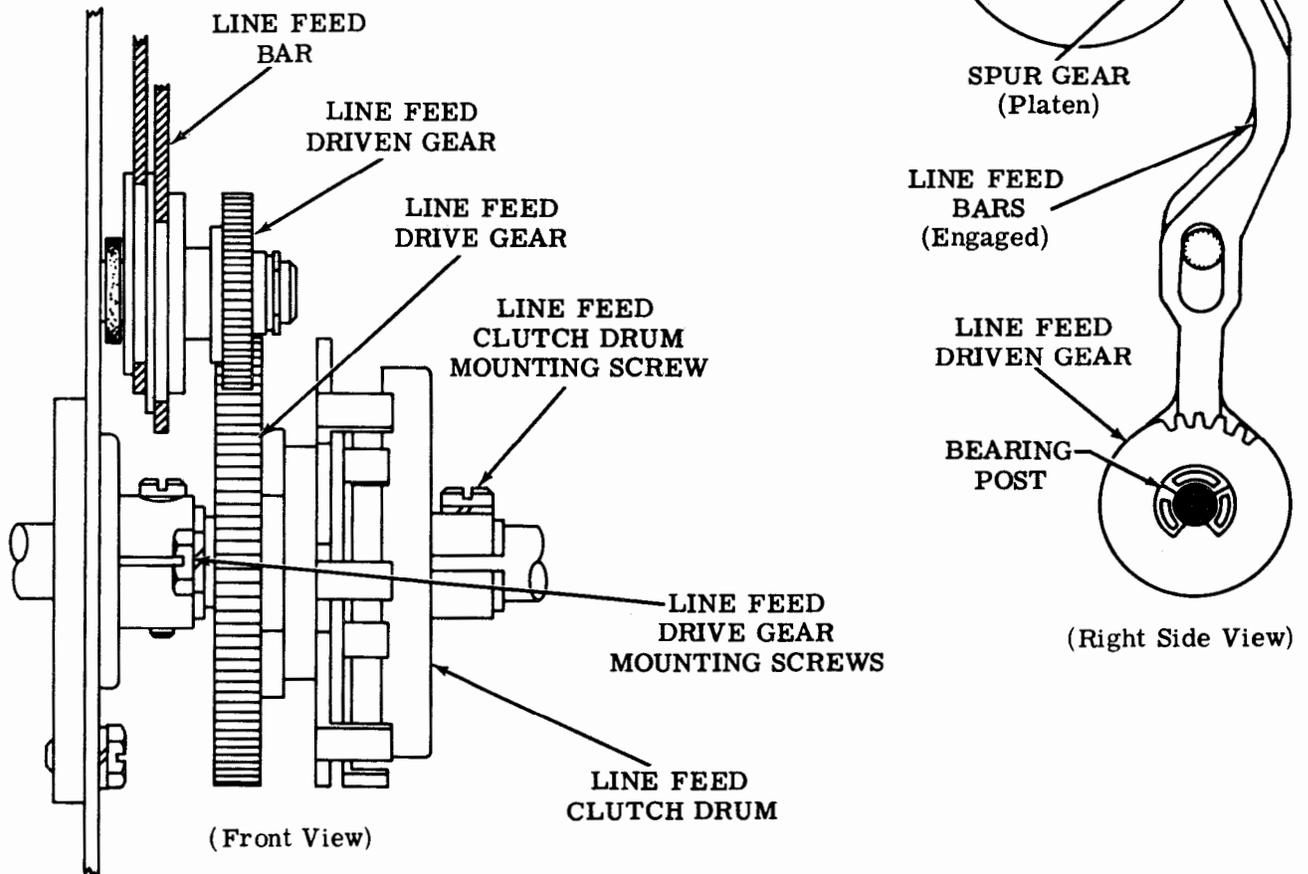
To Adjust

Remove line feed clutch drum mounting screw. Disengage the line feed drive gear from the line feed driven gear. Advance the line feed driven gear until requirement is met. Move line feed drive gear and line feed clutch to left as a unit and remesh the line feed drive and driven gears. Use line feed clutch drum mounting screw and remount line feed clutch drum.

Note: When moving the line feed clutch be careful not to disengage the clutch and separate the clutch shoe lever assembly from the drum.

Affected Adjustment

SPUR GEAR DETENT ECCENTRIC (2.52)



2.52 Line Feed Mechanism (continued)

PLATEN DETENT BAIL SPRING

To Check

Detent seated between two teeth on line feed spur gear.

Requirement

Min 19 oz---Max 22 oz
to start detent bail moving.

LINE FEED BAR RELEASE LEVER SPRING

Requirement

Min 3 oz---Max 6 oz
to start line feed bar release lever moving.

SPUR GEAR DETENT ECCENTRIC

To Check

Line feed clutch disengaged (latched). Platen rotated until detent stud is seated between two teeth on spur gear. When handwheel is released, manually set teeth of line feed bars into engagement with teeth of spur gear.

Requirement

Detent stud should contact one gear tooth and be
Max 0.010 inch
from other gear tooth.

To Adjust

Loosen detent eccentric mounting screw and rotate detent eccentric until requirement is met. Keep high part of eccentric upward. Tighten mounting screw.

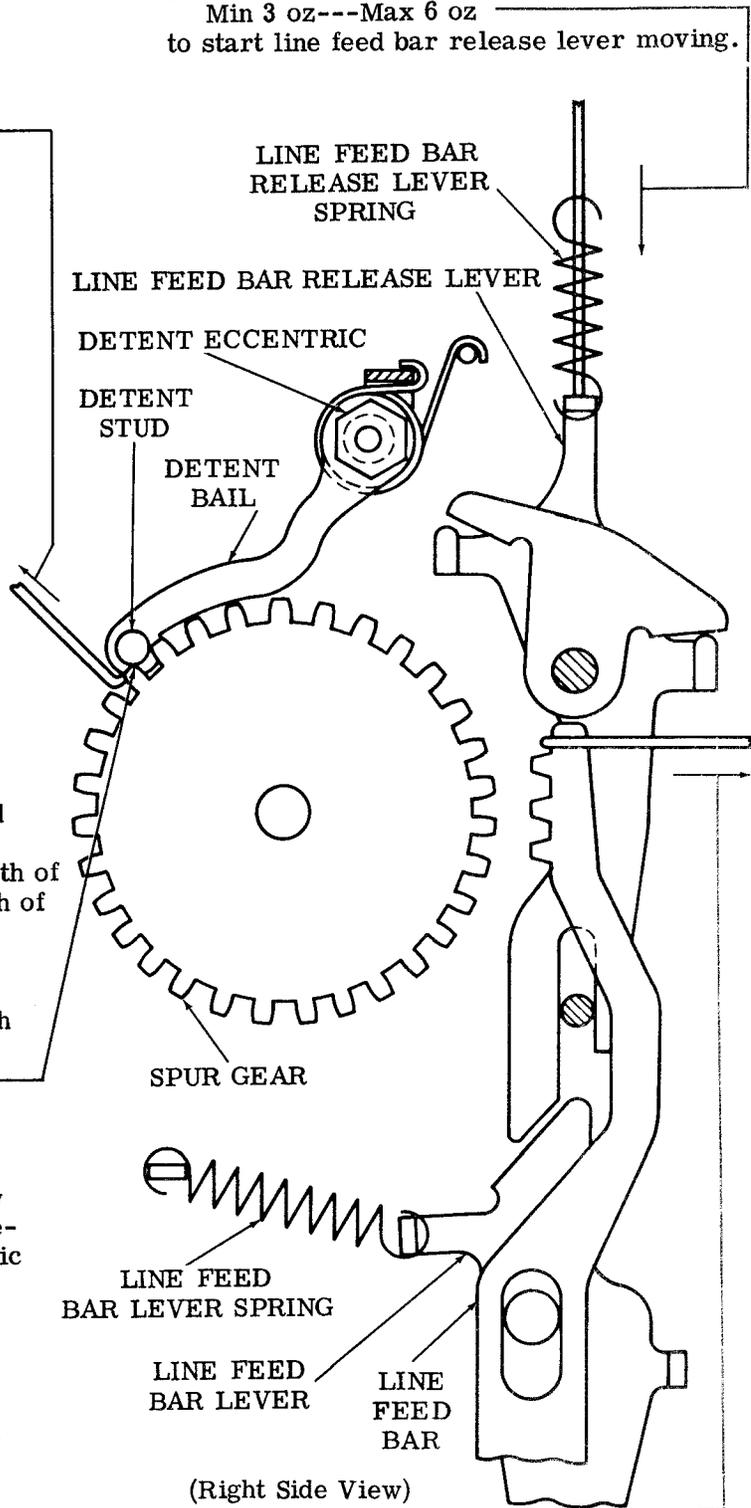
LINE FEED BAR LEVER SPRING

To Check

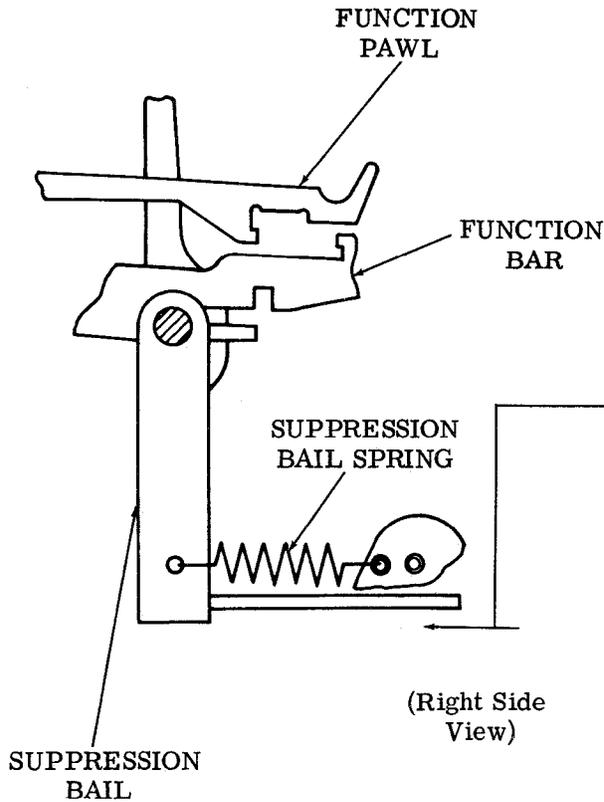
Left hand line feed bar in rear position.

Requirement

Min 20 oz---Max 26 oz
to start line feed bar moving.



2.53 Function Mechanism



SUPPRESSION BAIL SPRING

To Check

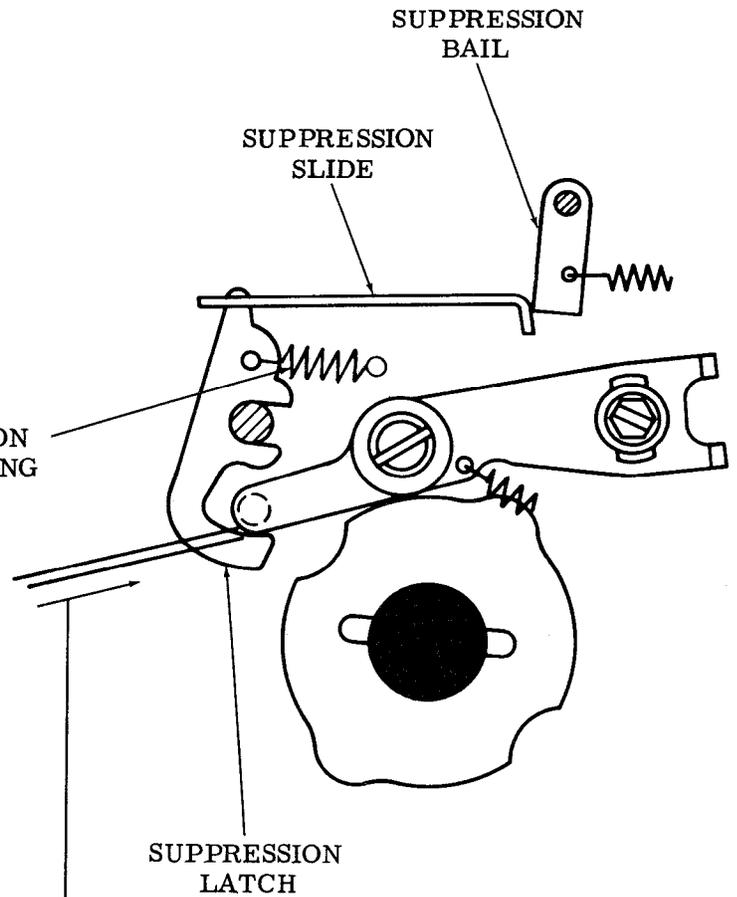
All clutches disengaged (latched). Suppression slide held toward front of unit and all function pawls stripped. Unit in normal operating position. Apply scale near middle of suppression bail.

Requirement

Min 1-1/2 oz---Max 3 oz to start suppression bail moving.

(Right Side View)

SUPPRESSION LATCH SPRING



(Right Side View)

SUPPRESSION LATCH SPRING

To Check

All clutches disengaged (latched) and all function pawls stripped.

Requirement

Min 3 oz---Max 5 oz to start suppression slide moving toward front of unit.

2.54 Function Mechanism (continued)

CAUTION: SEVERE WEAR TO THE POINT OF OPERATIONAL FAILURE WILL RESULT IF THE TYPING UNIT IS OPERATED WITHOUT EACH FUNCTION PAWL HAVING EITHER A RELATED FUNCTION BAR OR, WHERE A FUNCTION BAR IS MISSING, A RELATED FUNCTION PAWL CLIP TO HOLD THE FUNCTION PAWL AWAY FROM THE STRIPPER BLADE.

FUNCTION LEVER SPRING

Note: If a function lever operates either a contact or a slide, hold the contact or slide away from the function lever when checking the spring tension.

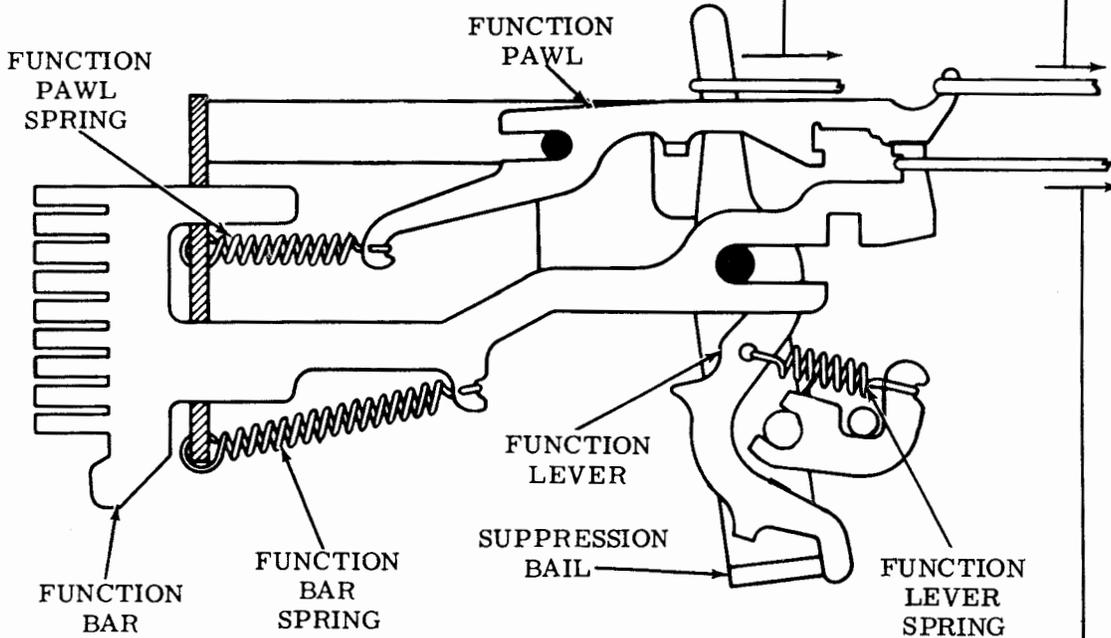
To Check
Function lever in unoperated position.
Suppression bail held forward. Check each function lever spring.

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

FUNCTION PAWL SPRING

To Check
Rear end of function pawl resting on function bar. Check each function pawl spring.

Requirement
Min 3 oz---Max 5 oz
to start pawl moving.



(Right Side View)

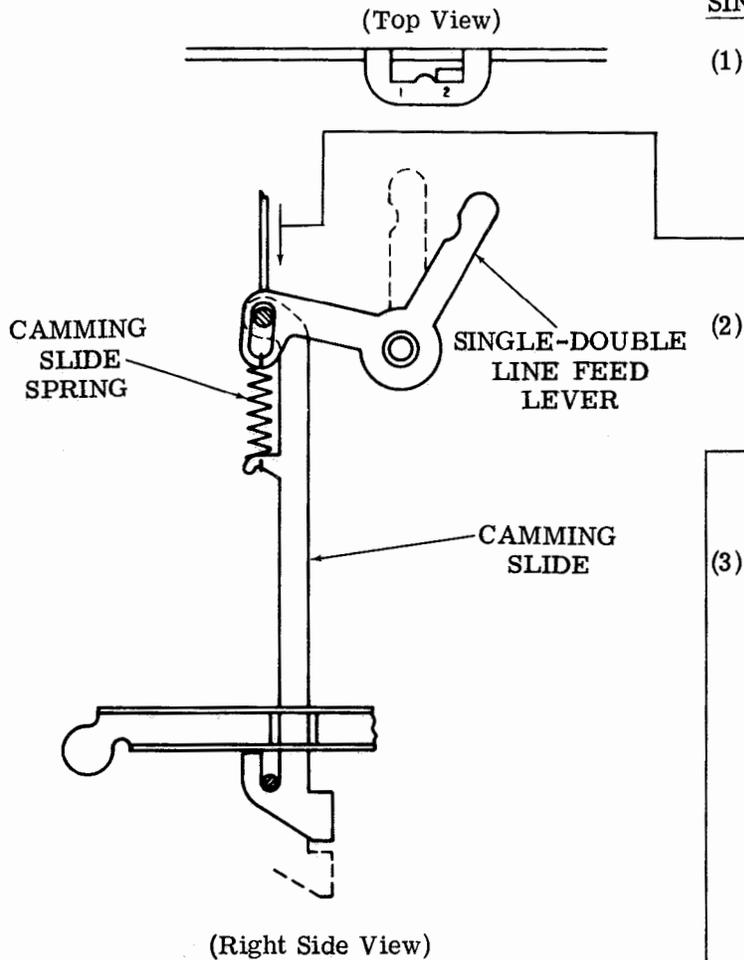
FUNCTION BAR SPRING

To Check
Function clutch disengaged (latched).
Function pawl held away.

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

2.55 Function Mechanism (continued)

SINGLE-DOUBLE LINE FEED SPRINGS



- (1) To Check
Line feed clutch disengaged (latched).
Single-double line feed lever in double
line feed position.

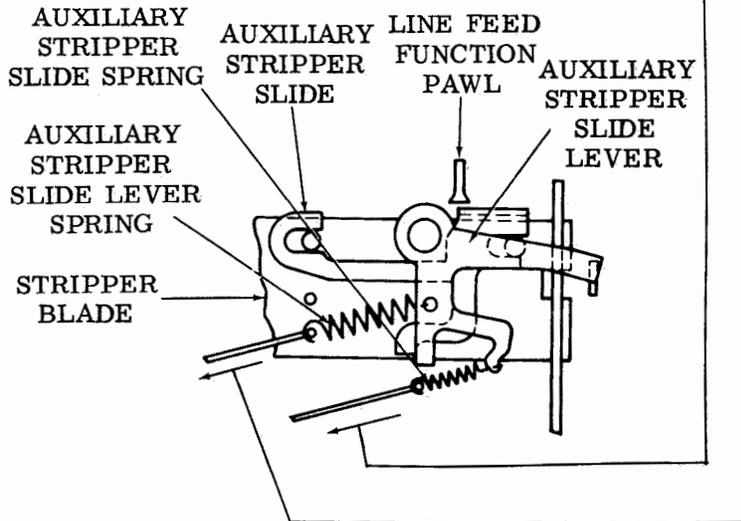
Requirement
Min 9 oz---Max 12 oz
to start camming slide moving down.

- (2) To Check
Line feed clutch disengaged (latched).

Requirement
Min 3/4 oz---Max 1-1/2 oz
to extend auxiliary stripper slide
spring to installed length.

- (3) To Check
Line feed clutch disengaged (latched).

Requirement
Min 3 oz---Max 4 oz
to extend auxiliary stripper slide lever
spring to installed length.



(Rear View)

2.56 Function Mechanism (continued)

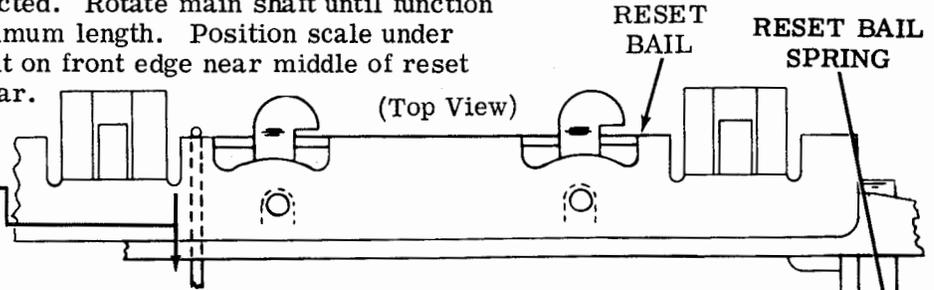
FUNCTION RESET BAIL SPRING

To Check

With typing unit upside down, hold suppression codebar marking so that no function bar is selected. Rotate main shaft until function reset bail springs are minimum length. Position scale under suppression bail and hook it on front edge near middle of reset bail. Pull scale toward rear.

Requirement

Min 7 oz---Max 20 oz to start reset bail moving.



FUNCTION RESET BAIL BLADE

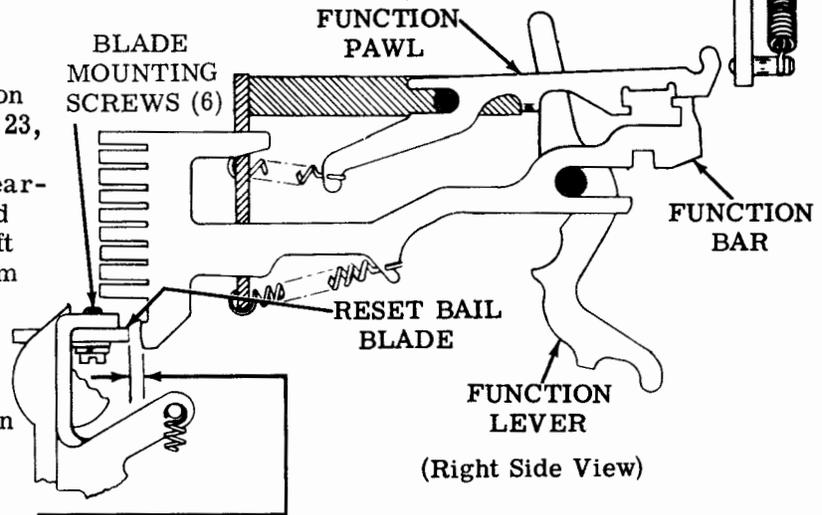
Note: Measure clearance of function bars located in slots 1, 4, 11, 18, 23, 33, and 41. If there is no function bar in a designated slot, use the nearest function bar in higher numbered slot. (Slots are numbered from left to right when facing typing unit from rear).

To Check

All clutches disengaged (latched). Function pawls unlatched. Function bar held in maximum rearward position.

Requirement

Min 0.015 inch---Max 0.025 inch clearance between function bar and reset bail blade.



To Adjust

Loosen reset bail blade mounting screws friction tight and position blade on reset bail. Tighten mounting screws.

To Check

Position function clutch so that stop-lug on clutch disc is toward bottom of typing unit. Function pawls unlatched. Hold function lever in maximum rearward position (do not apply more than 2 pounds of tension on lever) and hold function pawl toward rear with a tension of 32 ounces. Repeat for each function bar in function box.

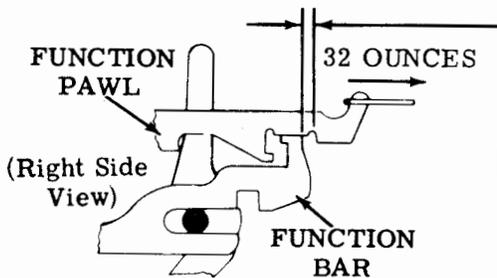
Note: As function bar load on reset bail affects overtravel, do not latch more than one pawl at a time.

Requirement

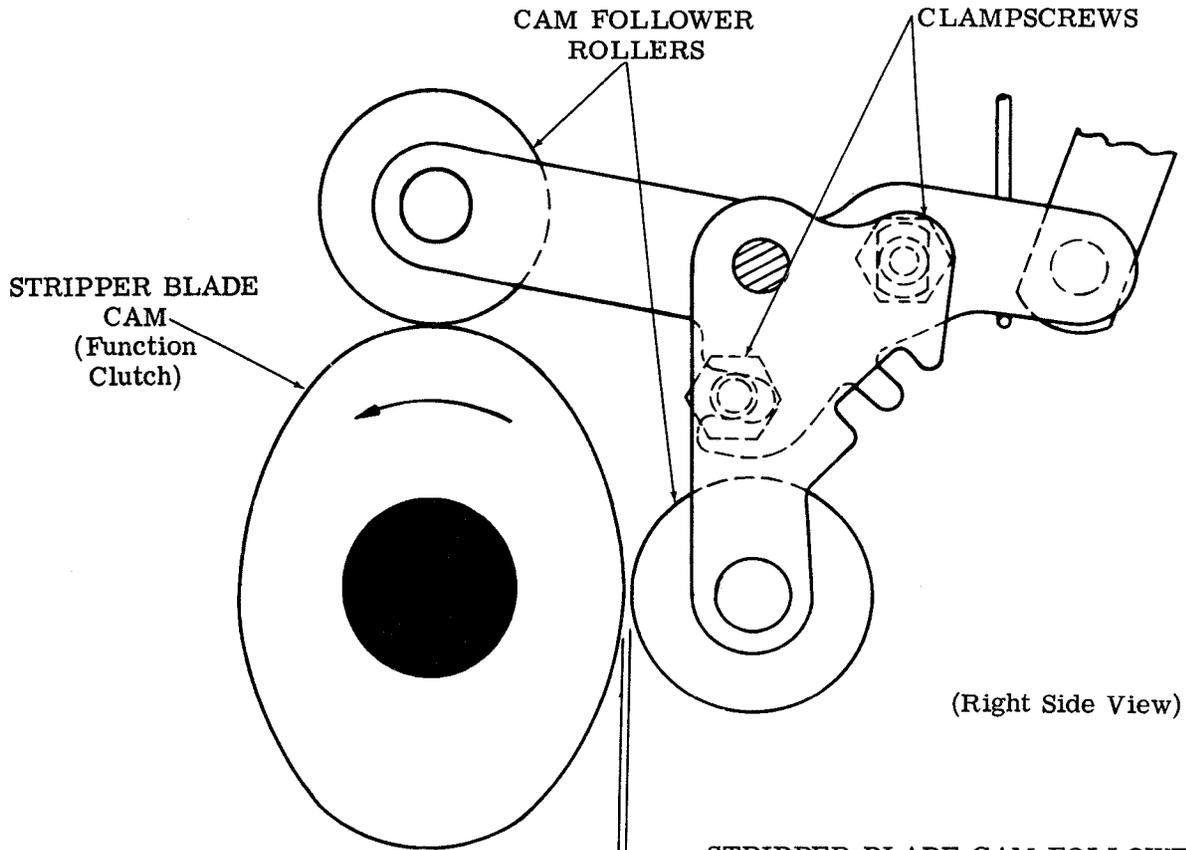
Function pawl should overtravel function bar by Min 0.002 inch

To Adjust

Refine FUNCTION RESET BAIL BLADE adjustment.



2.57 Function Mechanism (continued)



(Right Side View)

STRIPPER BLADE CAM FOLLOWER

To Check

Hold one cam follower roller against stripper blade cam. Check requirement. Repeat for other cam follower roller.

Requirement

Min some---Max 0.002 inch clearance between second cam follower roller and stripper blade cam.

Note: The "some" requirement is considered met when cam follower roller being checked turns freely while a 16-ounce force is applied upwards at end of lever.

To Adjust

Loosen clampscrews friction tight. Position cam followers. Tighten clampscrews.

Affected Adjustment

STRIPPER BLADE (2.58)

2.58 Function Mechanism (continued)

STRIPPER BLADE

To Check

Single-double line feed lever positioned in single line feed position.
Function clutch disengaged (latched). A function pawl pulled back and held down against stripper blade.

Requirement

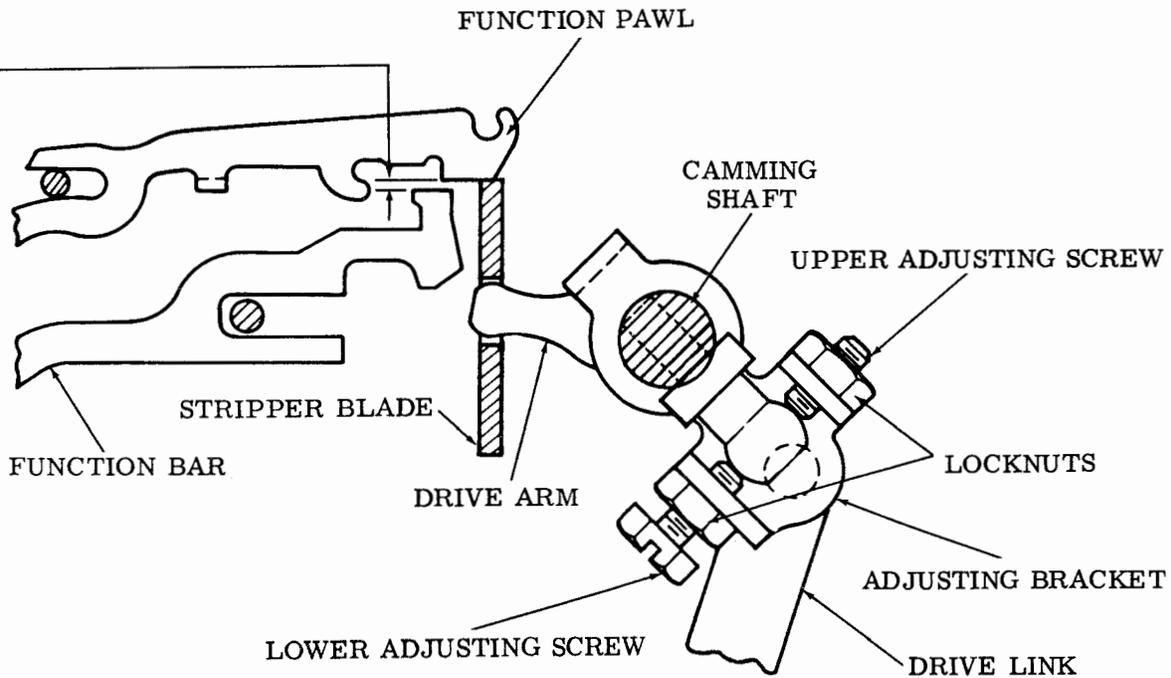
Min some---Max 0.015 inch clearance between function pawl and function bar when the play is taken up to make clearance a maximum.

Note: The some condition is considered met when the function pawl is resting against the stripper blade and allowed to move forward without catching on the function bar.

To Adjust

Loosen locknuts. Rotate adjusting screws. Tighten adjusting screws and locknuts.

CAUTION: DO NOT TIGHTEN ADJUSTING SCREW SO HARD AS TO DEFORM ADJUSTING BRACKET. CHECK CLEARANCE AT BOTH ENDS OF FUNCTION (STUNT) BOX.



(Right Side View)

2.59 Function Mechanism (continued)

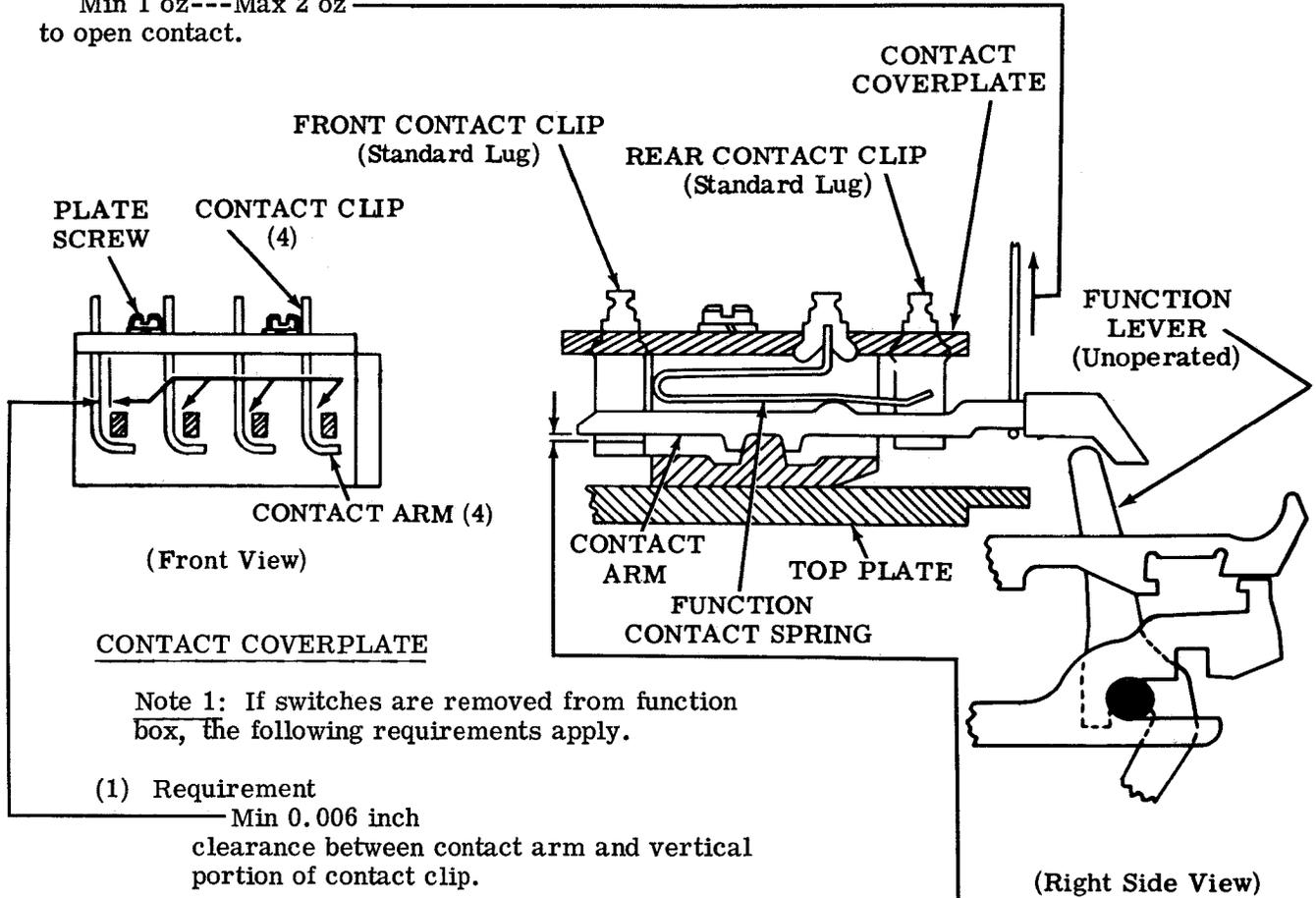
FUNCTION CONTACT SPRING

To Check

Function lever in position shown to close contact.

Requirement

Min 1 oz---Max 2 oz
to open contact.



Note 1: If switches are removed from function box, the following requirements apply.

(1) Requirement

Min 0.006 inch
clearance between contact arm and vertical
portion of contact clip.

Note 2: If switch has front and rear contact clips,
clearance applies to both front and rear.

(2) Requirement (for switches with front and rear contacts)

Min 0.008 inch
gap between formed-over end of front contact clip and
bottom of contact arm when rear contact is closed.

To Adjust

Loosen plate screws and position contact coverplate.
Tighten screws.

Note 3: If requirement (2) cannot be met, replace switch.

2.60 Spacing Mechanism

SPACING GEAR PHASING

To Check

Spacing clutch disengaged (latched).

Requirement

Index line should be as near as possible to center of two lines on pawl retaining washer.

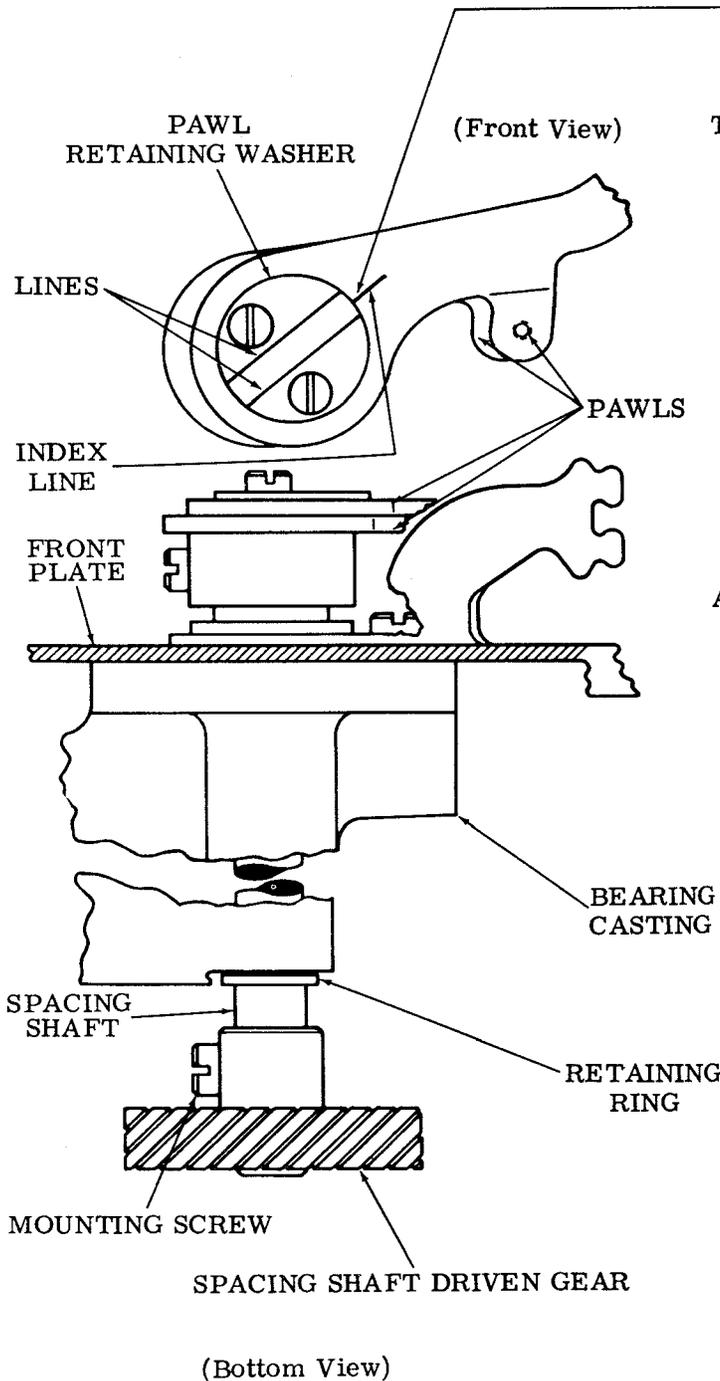
To Adjust

Remove mounting screw from spacing shaft driven gear. Hold pawls in alignment and engage spacing shaft driven gear with spacing drive gear at a point where spacing shaft driven gear mounting screw hole is in line with tapped hole in spacing shaft. Start, run down, and tighten mounting screw.

Note: If requirement cannot be met, engage (trip) spacing clutch and rotate main shaft to next stop. Disengage (latch) spacing clutch and repeat adjusting procedure.

Affected Adjustment

LEFT HAND MARGIN (2.73 and 2.74)

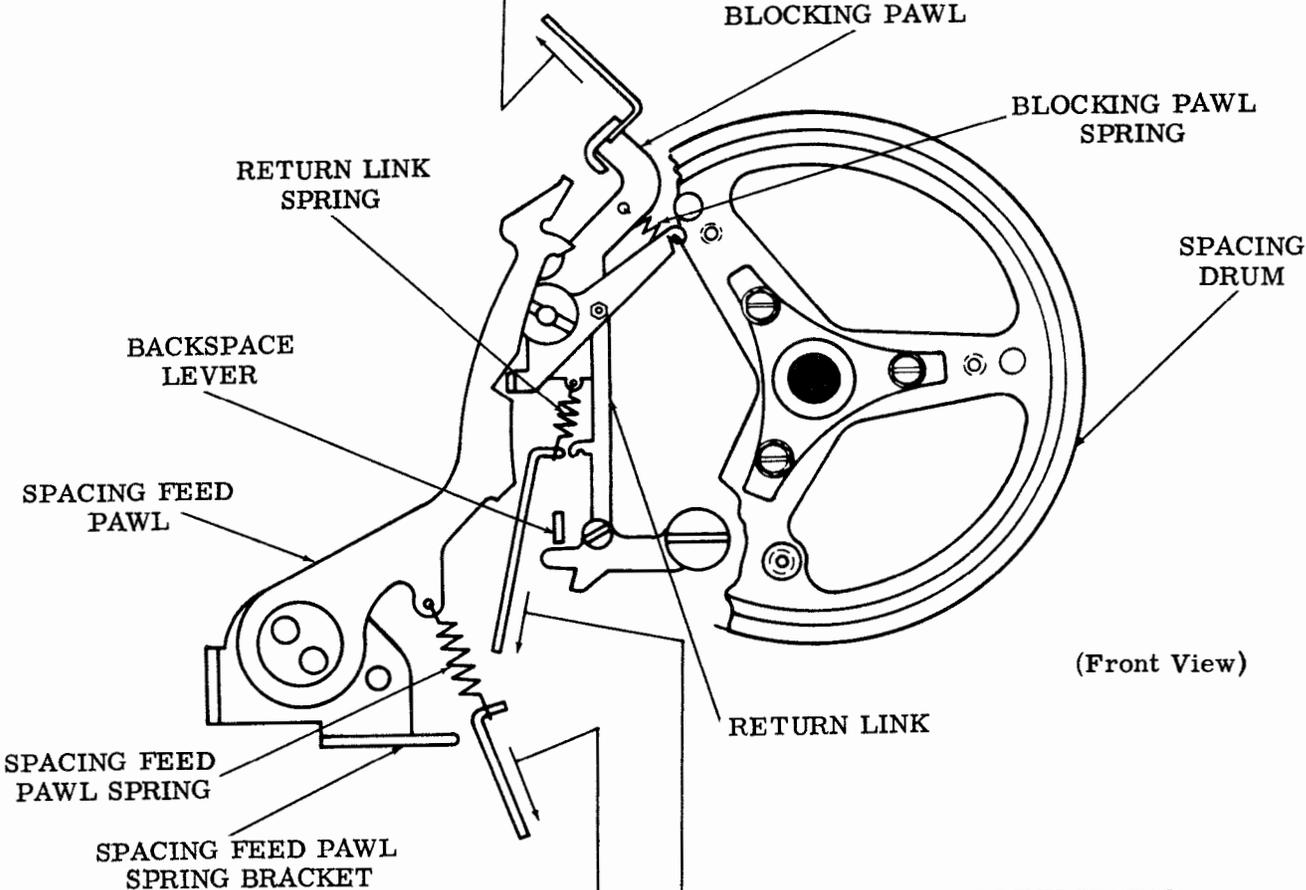


2.61 Spacing Mechanism (continued)

BLOCKING PAWL SPRING

Requirement

Min 8 oz---Max 10 oz
to start blocking pawl moving.



(Front View)

RETURN LINK SPRING

Requirement

Min 4 oz---Max 6 oz
to pull return link spring to
installed length.

SPACING FEED PAWL SPRING

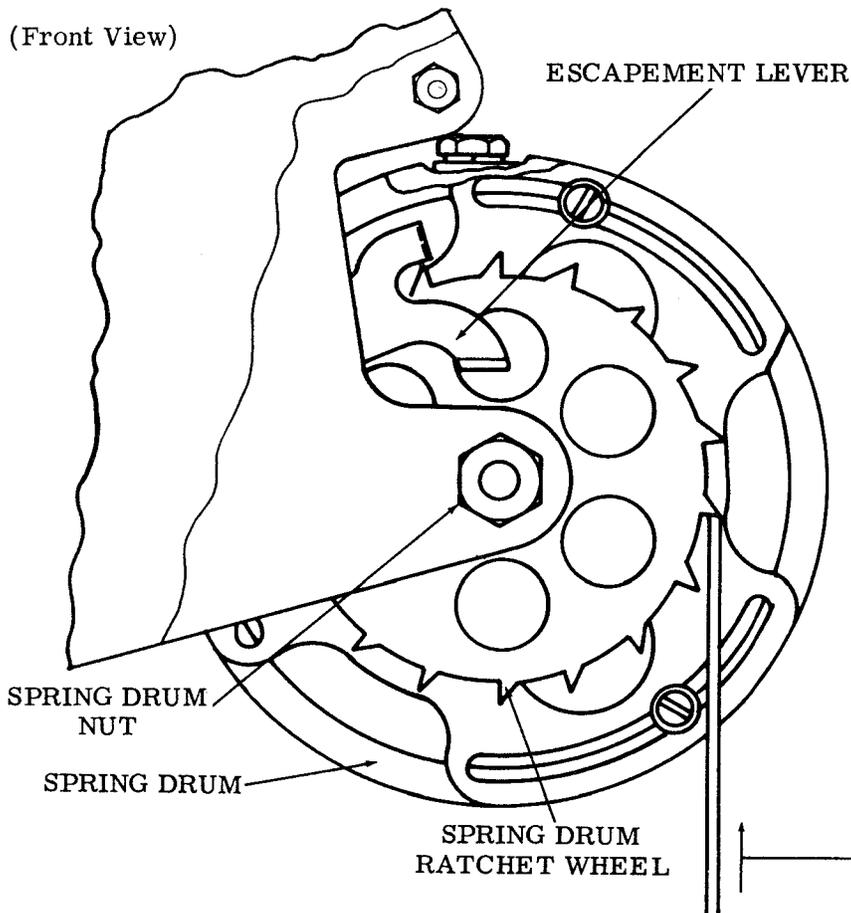
Requirement

Min 6 oz---Max 7-1/2 oz
to pull spacing feed pawl spring.

Note: Check two springs.

2.62 Spacing Mechanism (continued)

(Front View)



CARRIAGE RETURN SPRING

To Check
Spacing drum fully returned.
Spring drum nut removed.

Requirement
— Min 5-1/4 lb---Max 5-3/4 lb
to start spring drum ratchet
wheel moving.

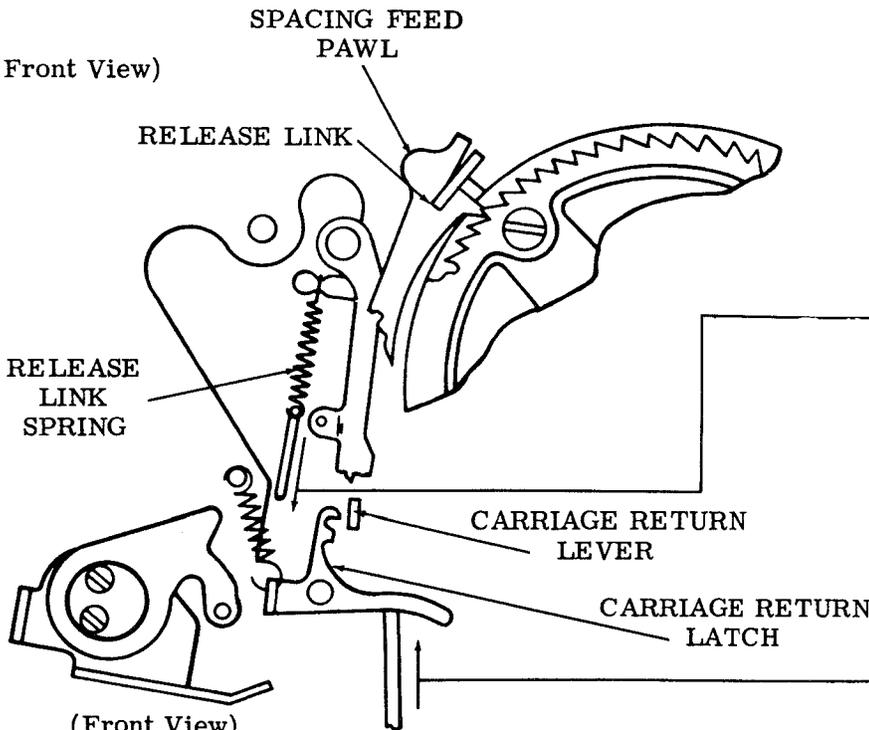
To Adjust
Rotate spring drum ratchet
wheel to increase tension.
Operate escapement lever to
decrease tension.

CARRIAGE RETURN LATCH
SPRING

To Check
Carriage fully returned.

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

(Front View)



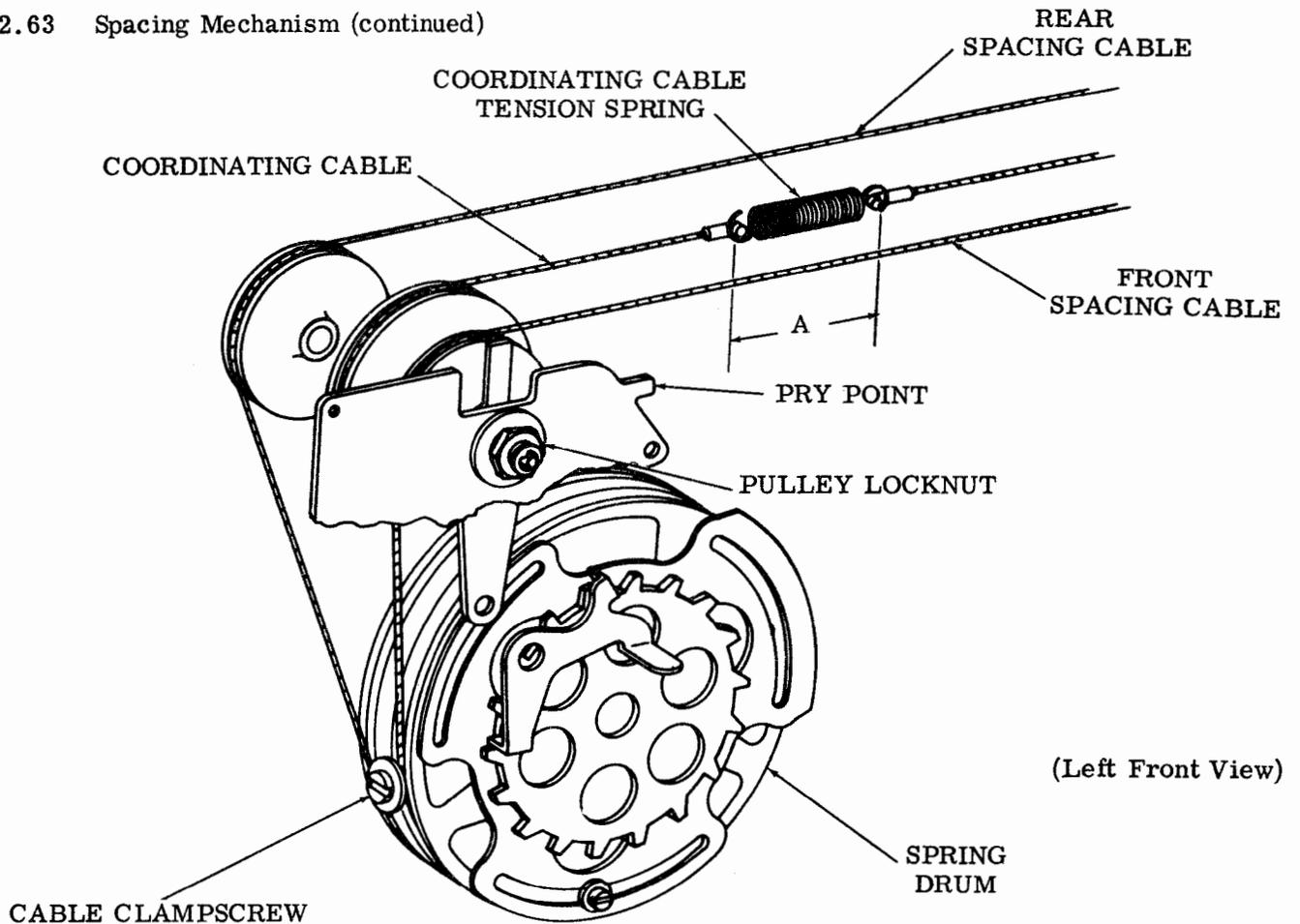
SPACING FEED PAWL RELEASE
LINK SPRING

To Check
Carriage fully returned.

Requirement
— Min 2 oz---Max 4 oz
to pull release link spring
to installed length.

(Front View)

2.63 Spacing Mechanism (continued)

COORDINATING CABLE SPRING TENSION AND EQUALIZATION**To Check**

Carriage at left hand margin.

(1) Requirement

Length "A" (see illustration) should measure $1\text{-}1/2 \pm 1/32$ inches.

(2) Requirement

Tension in front and rear spacing cables should be approximately equal.

To Adjust

Loosen cable clampscrew and pulley locknut. Using pry point, apply tension to the cables until requirement (1) is met. Equalize tension in front and rear spacing cables by lightly pulling on cable that is the tightest. Tighten pulley locknut and cable clampscrew.

Note 1: Cable spring tension should be removed before removing print hammer mounting plate.

Note 2: Coordinating cable tension spring should require $7 \pm 1/2$ pound to extend it $1\text{-}1/2$ inch.

Affected Adjustment

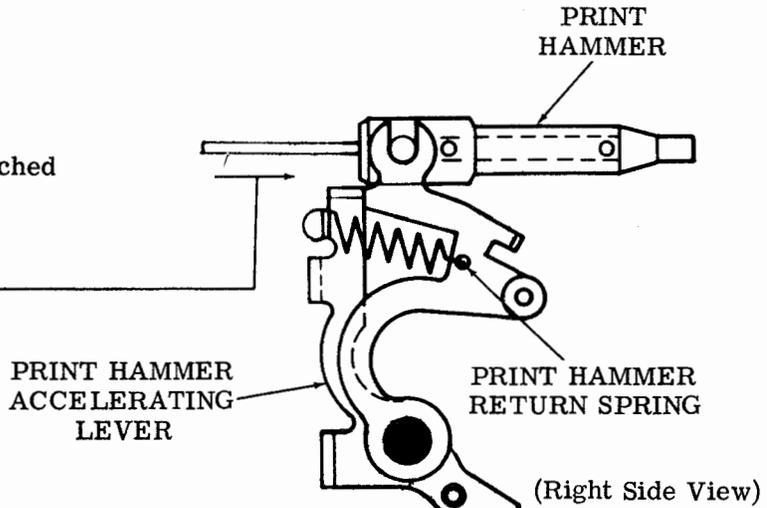
LEFT HAND MARGIN (2.73, 2.74, and 2.75)

2.64 Printing Mechanism

PRINT HAMMER RETURN SPRING

To Check
Print hammer accelerating lever in latched position.

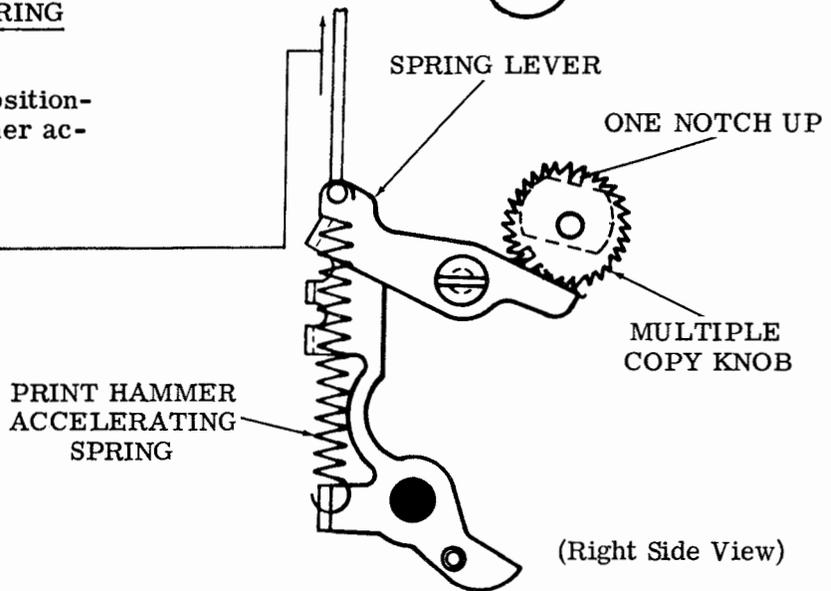
Requirement
Min 1-1/2 oz---Max 3 oz
to start print hammer moving.



PRINT HAMMER ACCELERATING SPRING

To Check
Multiple copy knob in single copy position-
on knob, one notch up. Print hammer ac-
celerating lever in latched position.

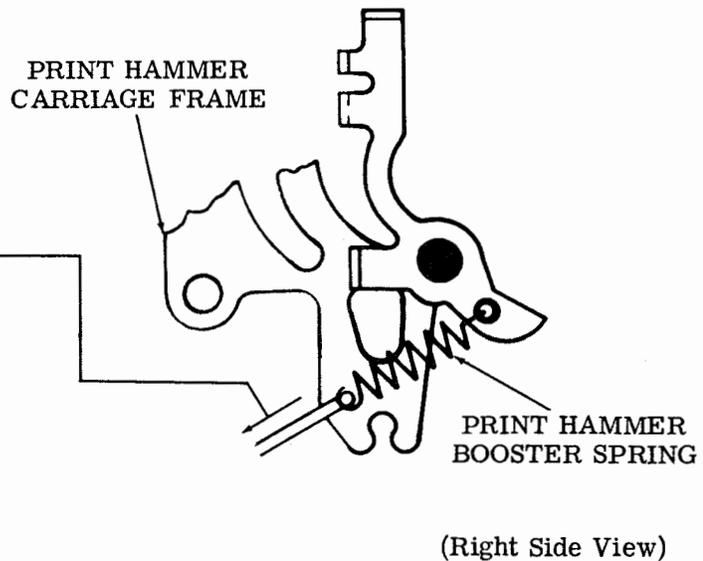
Requirement
Min 25 oz---Max 32 oz
to start spring lever moving.



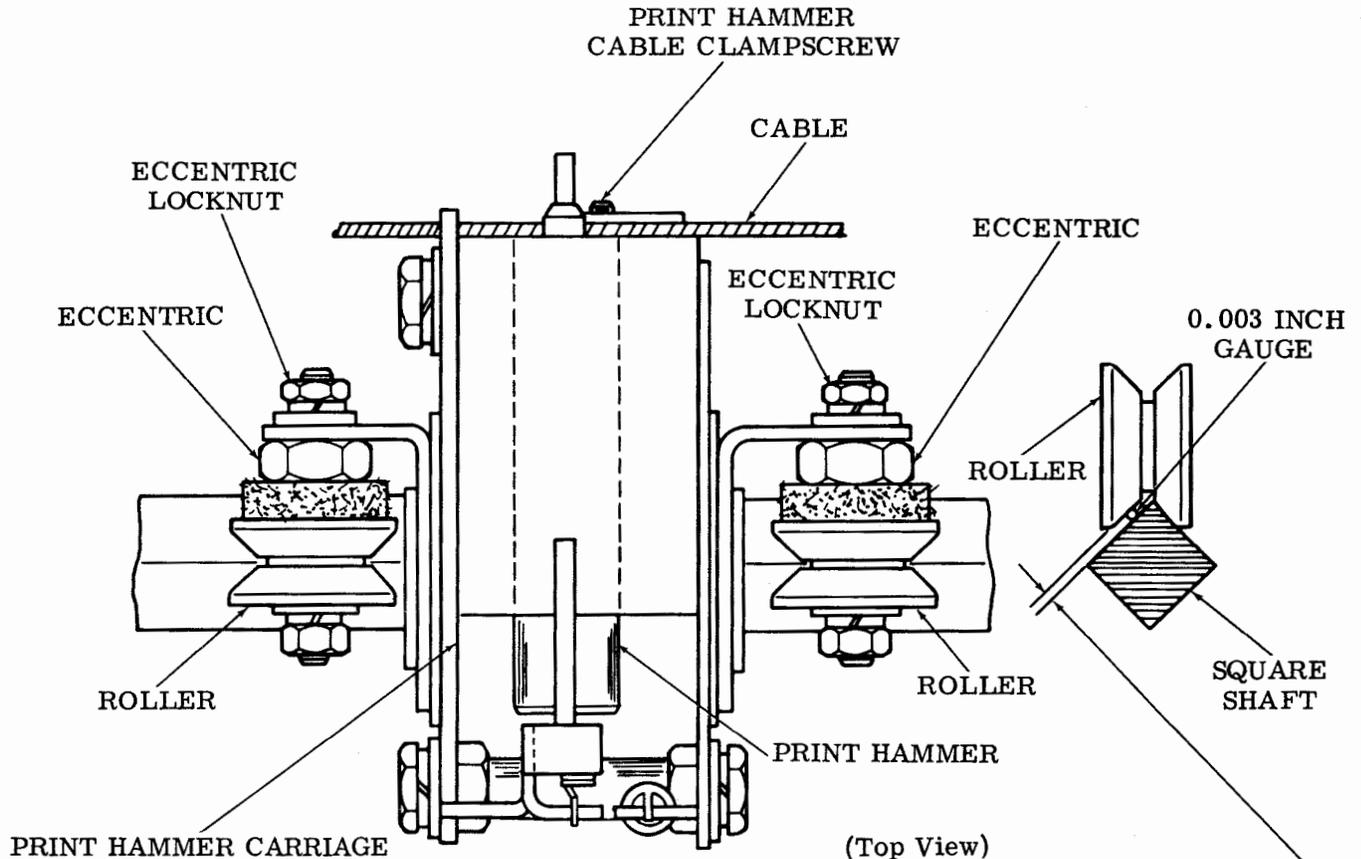
PRINT HAMMER BOOSTER SPRING

To Check
Print hammer accelerating lever in
unlatched position. Print hammer booster
spring unhooked from post.

Requirement
Min 30 oz---Max 40 oz
to extend print hammer booster spring to
installed length.



2.65 Printing Mechanism (continued)

PRINT HAMMER ROLLERS**To Check**

Print hammer clutch disengaged (latched). Loosen print hammer cable clampscrew. Move print hammer carriage over its entire square shaft travel.

(1) Requirement

Print hammer carriage should be free from all binds over entire square shaft travel.

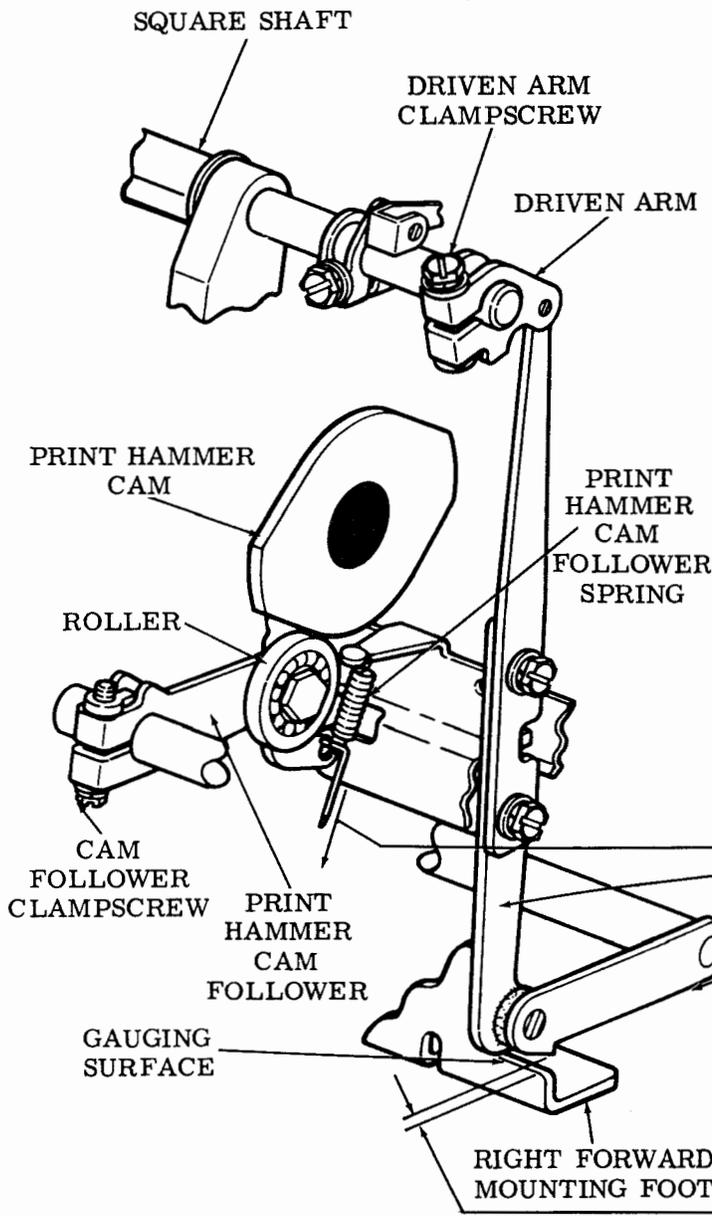
(2) Requirement

Min some---Max 0.007 inch
play between print hammer carriage rollers and any portion of square shaft.

To Adjust

Loosen tooth top eccentric locknuts. Rotate left eccentric for maximum clearance. Place 0.003 inch gauge between right roller and square shaft. Rotate right eccentric until print hammer carriage binds. Tighten right hand eccentric locknut. Move print hammer carriage over its entire square shaft travel. Refine adjustment if necessary. Place 0.003 inch gauge between left roller and square shaft. Rotate left eccentric until print hammer carriage binds. Tighten left hand eccentric locknut. Move print hammer carriage over its entire square shaft travel. Refine adjustment if necessary.

2.66 Printing Mechanism (continued)



(Right Front View)

PRINT HAMMER CAM FOLLOWER SPRING

To Check
Drive link removed. All clutches dis-
engaged (latched).

Requirement
Min 36 oz---Max 50 oz
to pull print hammer cam follower away
from print hammer cam.

SQUARE SHAFT DRIVE ARM

To Check
Print hammer cam follower on low part
of its cam.

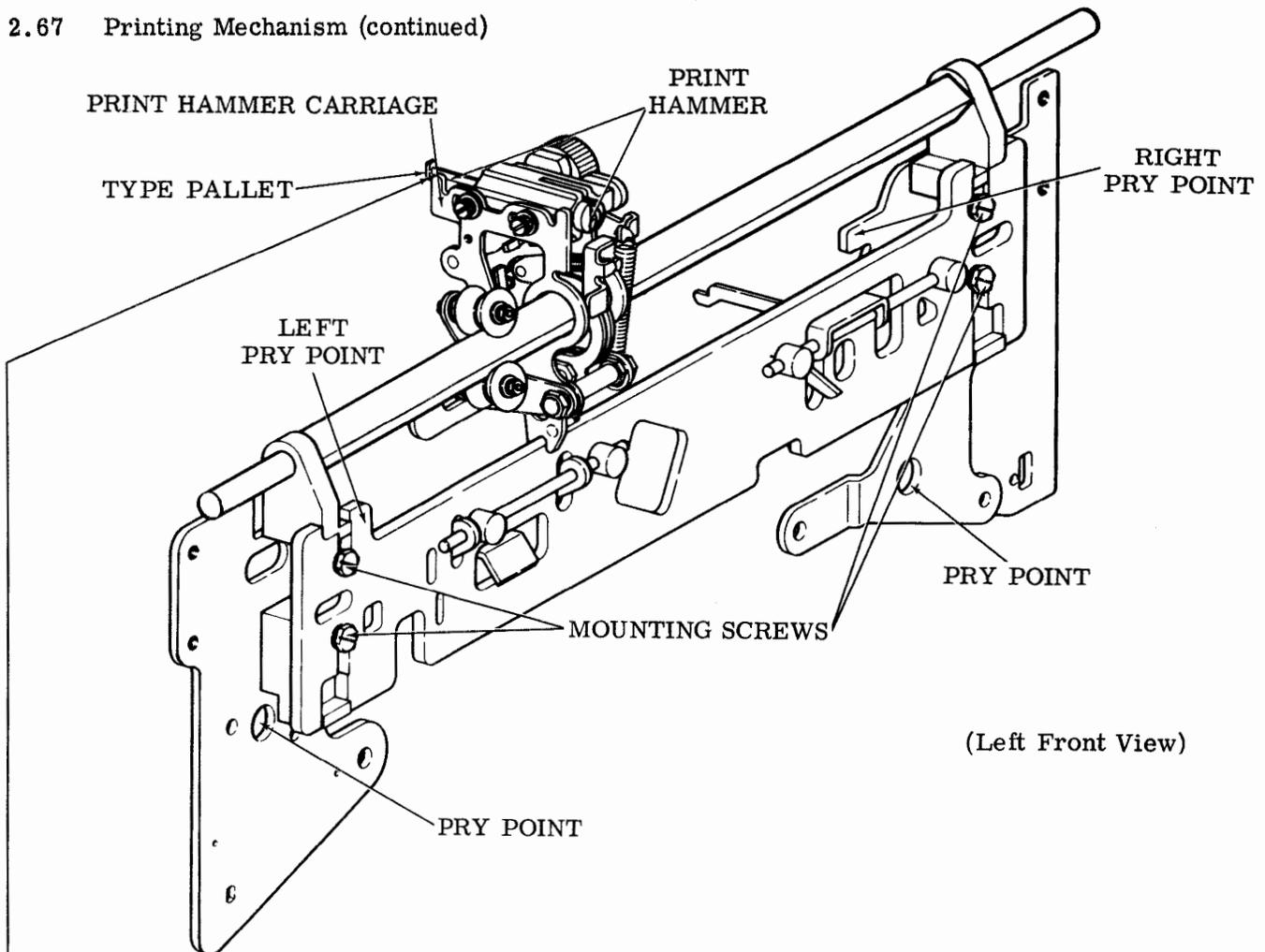
Requirement
Min 0.050 inch---Max 0.070 inch
clearance between gauging surface and
lower portion of drive arm.

To Adjust
Loosen driven arm clampscrew. Loosen
cam follower clampscrew. Rotate drive
arm to meet requirement. Tighten cam
follower clampscrew and driven arm
clampscrew.

Affected Adjustments

- CONNECTING ROD (FINAL) (2.87)
- FEED PAWL DRIVE CLAMP (RIGHT) (2.85)
- FEED PAWL DRIVE CLAMP (LEFT) (2.86)

2.67 Printing Mechanism (continued)

VERTICAL PRINT HAMMER ALIGNMENT**To Check**

Codebars 1 and 7 marking. All other codebars spacing. Horizontal and vertical positioning clutches disengaged (latched). Engage (trip) print hammer clutch and rotate main shaft until print hammer clutch stop-lug is towards bottom of typing unit.

Requirement

Print hammer should strike center of type pallet within 0.015 inch at both ends of print hammer carriage travel.

To Adjust

Loosen four mounting screws friction tight. With print hammer carriage and typebox carriage fully returned, engage (trip) print hammer clutch and rotate main shaft until print hammer cam follower is on low part of print hammer cam. Place print hammer to center of a type pallet using left pry point. Position print hammer and typebox carriage to the extreme right. Place print hammer to center of same type pallet using right pry point. Tighten four mounting screws. Return both carriages to left hand margin. Recheck requirement. Refine if necessary.

Affected Adjustments

FRONT SPACING CABLE ALIGNMENT (2.72)

PRINT HAMMER LATCH (2.68)

RIBBON FEED MAIN BRACKET (LEFT AND RIGHT) (2.80)

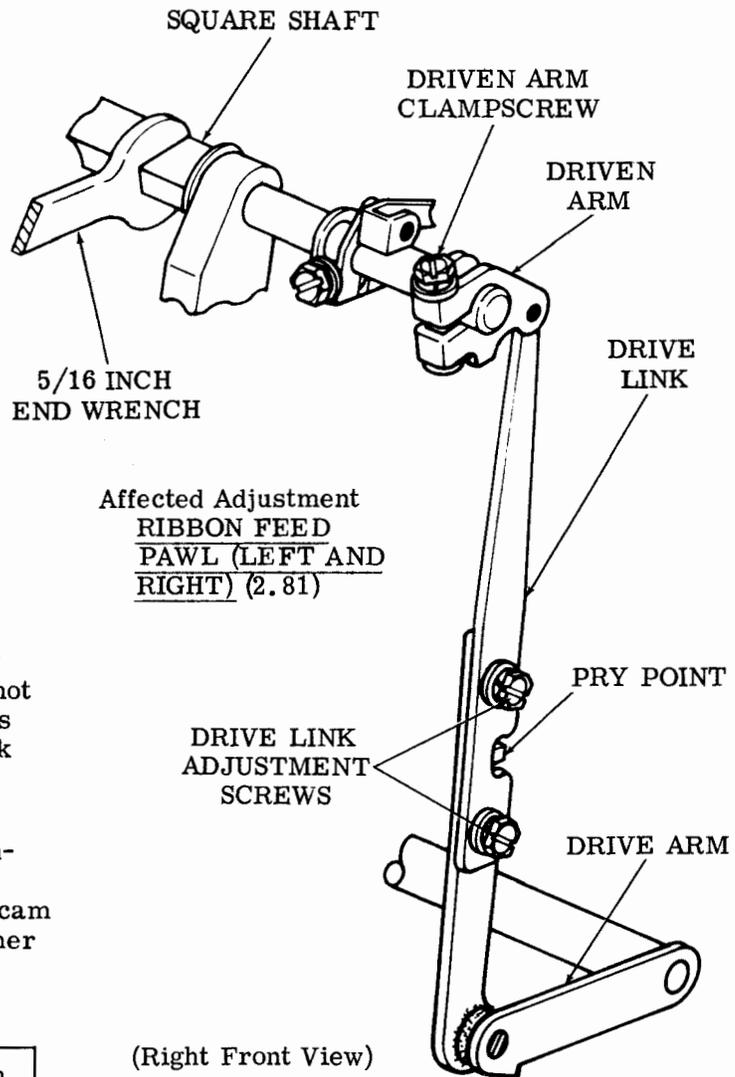
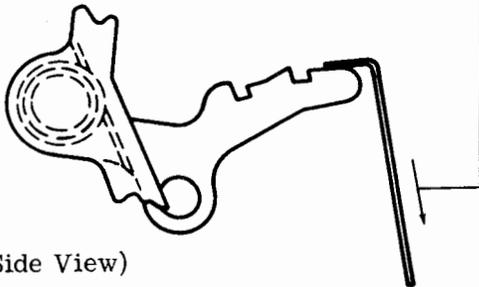
RIBBON FEED PAWL (LEFT AND RIGHT) (2.81)

2.68 Printing Mechanism (continued)

PRINT HAMMER LATCH SPRING

Requirement

Min 2 oz---Max 4 oz
to start print hammer latch moving.



PRINT HAMMER LATCH

Note: Start adjustment with drive link pry point at center of its adjustment. If it is not there, loosen drive link adjustment screws and pry it into position. Tighten drive link adjustment screws.

- (1) To Check
All clutches disengaged (latched). Engage (trip) pring hammer clutch and rotate main shaft until print hammer cam follower is on high part of print hammer cam.

Requirement

Min some---Max 0.010 inch
clearance between print hammer latch
and print hammer lever.

To Adjust

Loosen driven arm clampscrew. Rotate square shaft using 5/16 inch and wrench. Tighten driven arm clampscrew.

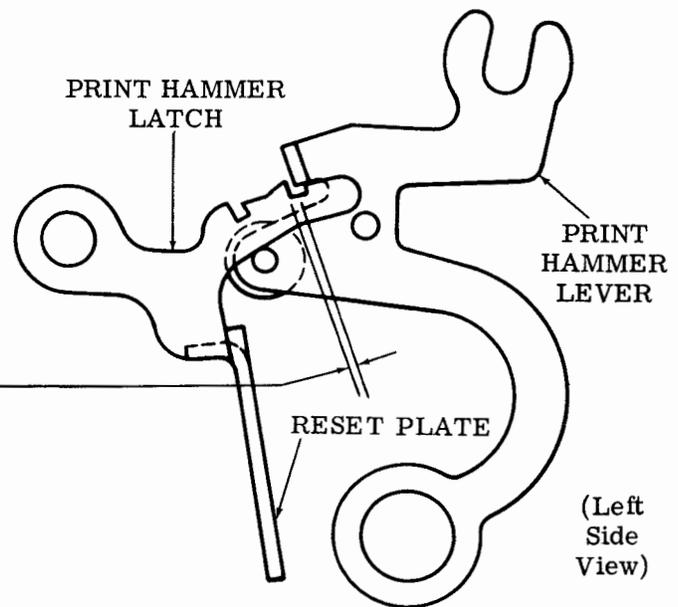
- (2) To Check
All clutches disengaged (latched). Engage (trip) print hammer clutch and rotate main shaft until print hammer cam follower is on high part of print hammer cam.

Requirement

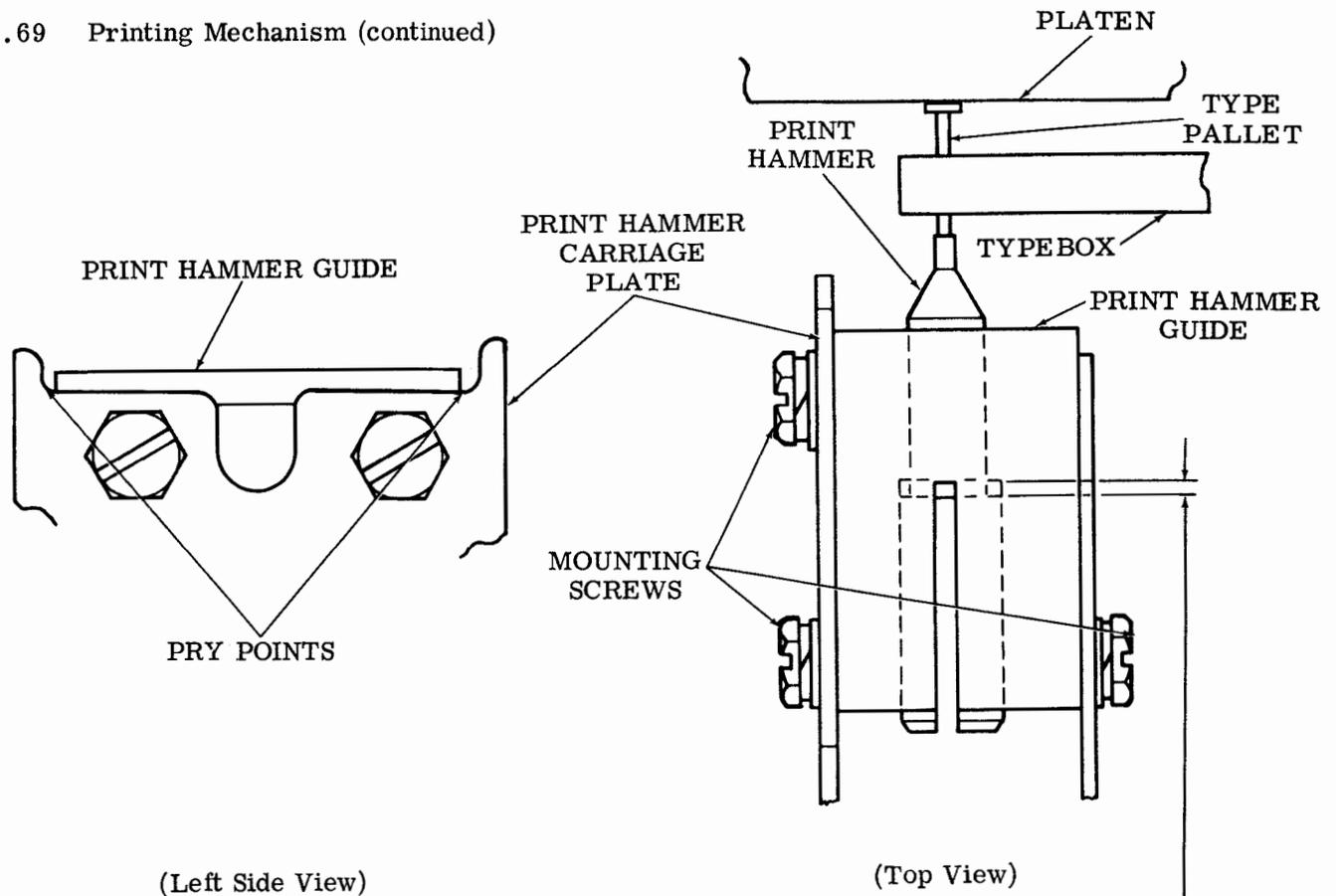
Min some---Max 0.010 inch
clearance between print hammer latch
and print hammer lever.

To Adjust

Loosen drive link adjustment screws friction tight. Position drive link using pry points. Tighten adjustment screws.



2.69 Printing Mechanism (continued)

PRINT HAMMER GUIDE**To Check**

Any type pallet selected. All clutches disengaged (latched). Engage (trip) print hammer and rotate main shaft until a print hammer clutch stop-lug is toward bottom of typing unit. Depress print hammer toward rear of typing unit so that type pallet engages platen.

Requirement

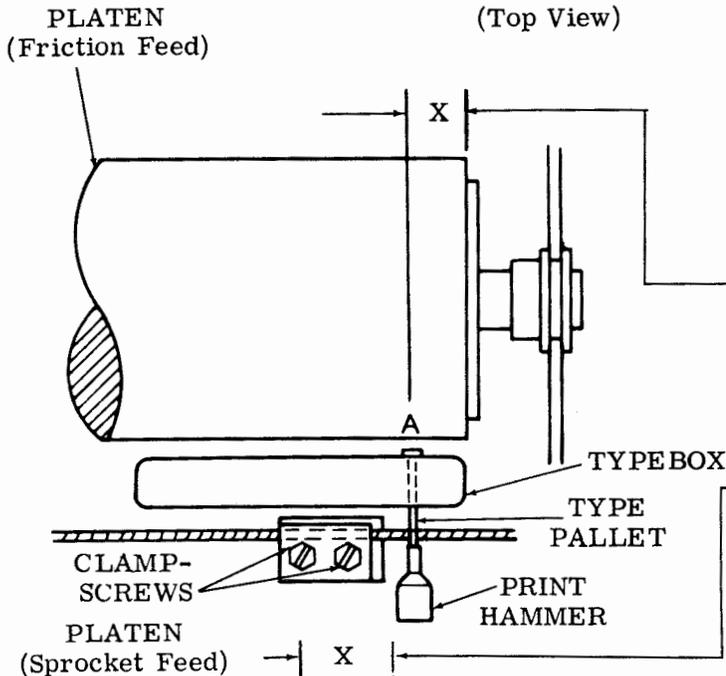
Min 0.030 inch---Max 0.050 inch
clearance between stop on print hammer and print hammer guide.

To Adjust

Loosen three print hammer guide mounting screws. Position print hammer guide using pry points. Tighten mounting screws.

2.70 Printing Mechanism (continued)

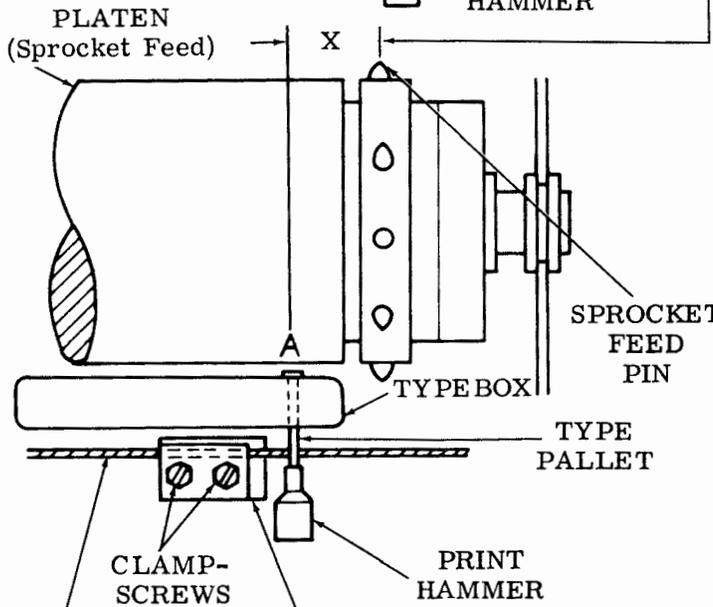
RIGHT HAND MARGIN



To Check
 Spacing clutch disengaged (latched). Spacing feed pawl furthest advanced engaging ratchet tooth immediately above cut-away section. Codebars 1 and 7 marking. All other codebars spacing.

Requirement
Friction Feed:
 The distance from the right edge of the platen to the center of type pallet located in upper right hand corner of typebox (see note 1) should be "X" +0.025 inch (see note 2). -0.050 inch

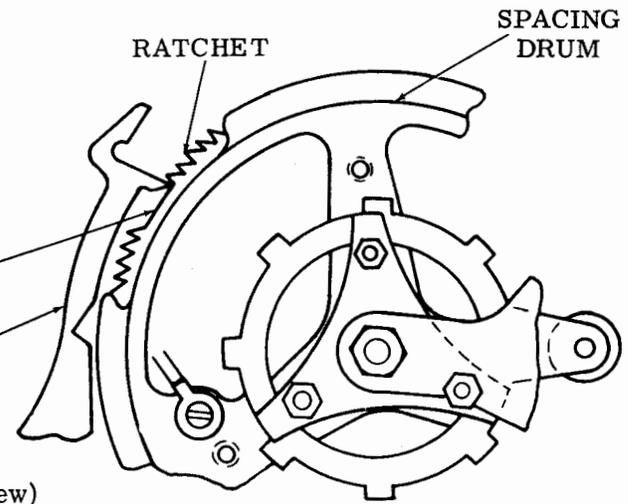
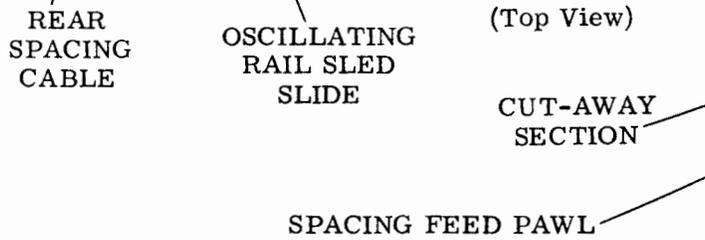
Sprocket Feed:
 The distance from the center of right sprocket feed pins to the center of type pallet located in upper right hand corner of typebox (see note 1) should be "X" +0.025 inch -0.050 inch (see note 2).



To Adjust
 Loosen clampscrews and position typebox and oscillating rail sled slide on rear spacing cable. Tighten clampscrews.

Note 1: Check requirement at type pallet located in typebox at junction of sixth horizontal row from bottom and first vertical row from right.

Note 2: See LEFT AND RIGHT HAND MARGIN (TABLE) (2.75) for "X" dimension.



2.71 Printing Mechanism (continued)

PRINT HAMMER POSITION

To Check

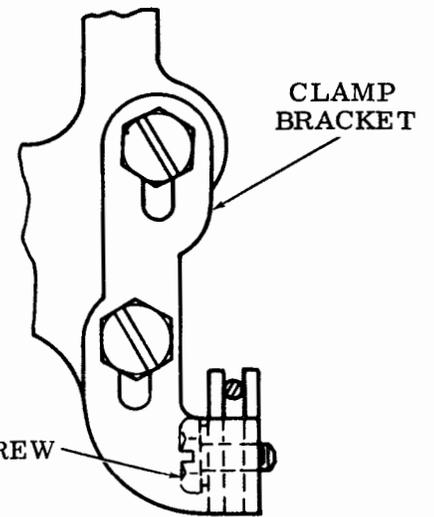
Codebars 1 and 7 marking. All other codebars spacing. All horizontal and vertical positioning clutches disengaged (latched). Engage (trip) print hammer clutch. Rotate main shaft until stop-lug is toward bottom of typing unit.

Requirement

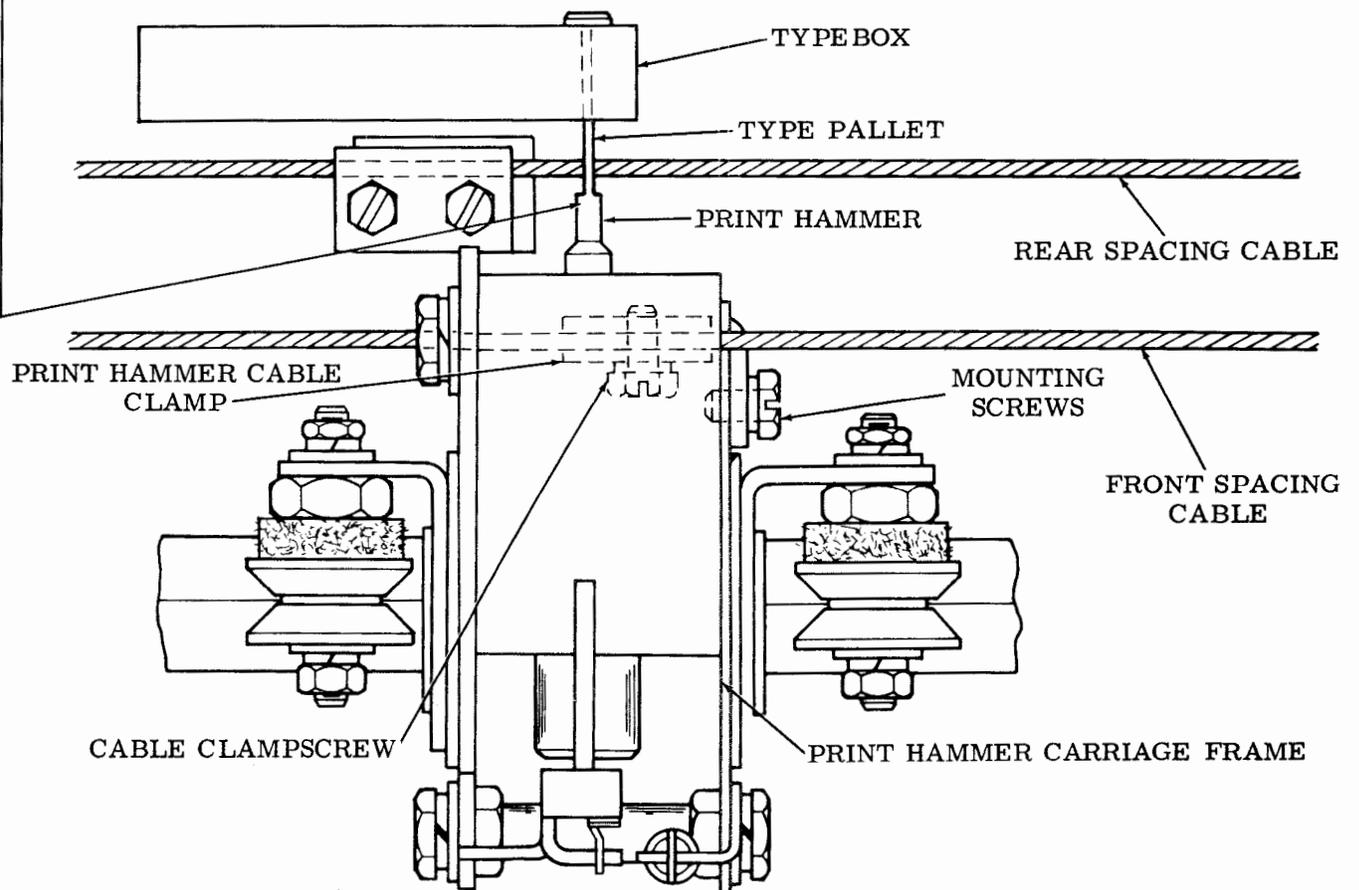
Print hammer should line up with type pallet located in typebox at junction of sixth horizontal row from bottom and first vertical row from right.

To Adjust

Loosen cable clampscrew. Position print hammer carriage on spacing cable. Tighten cable clampscrew.

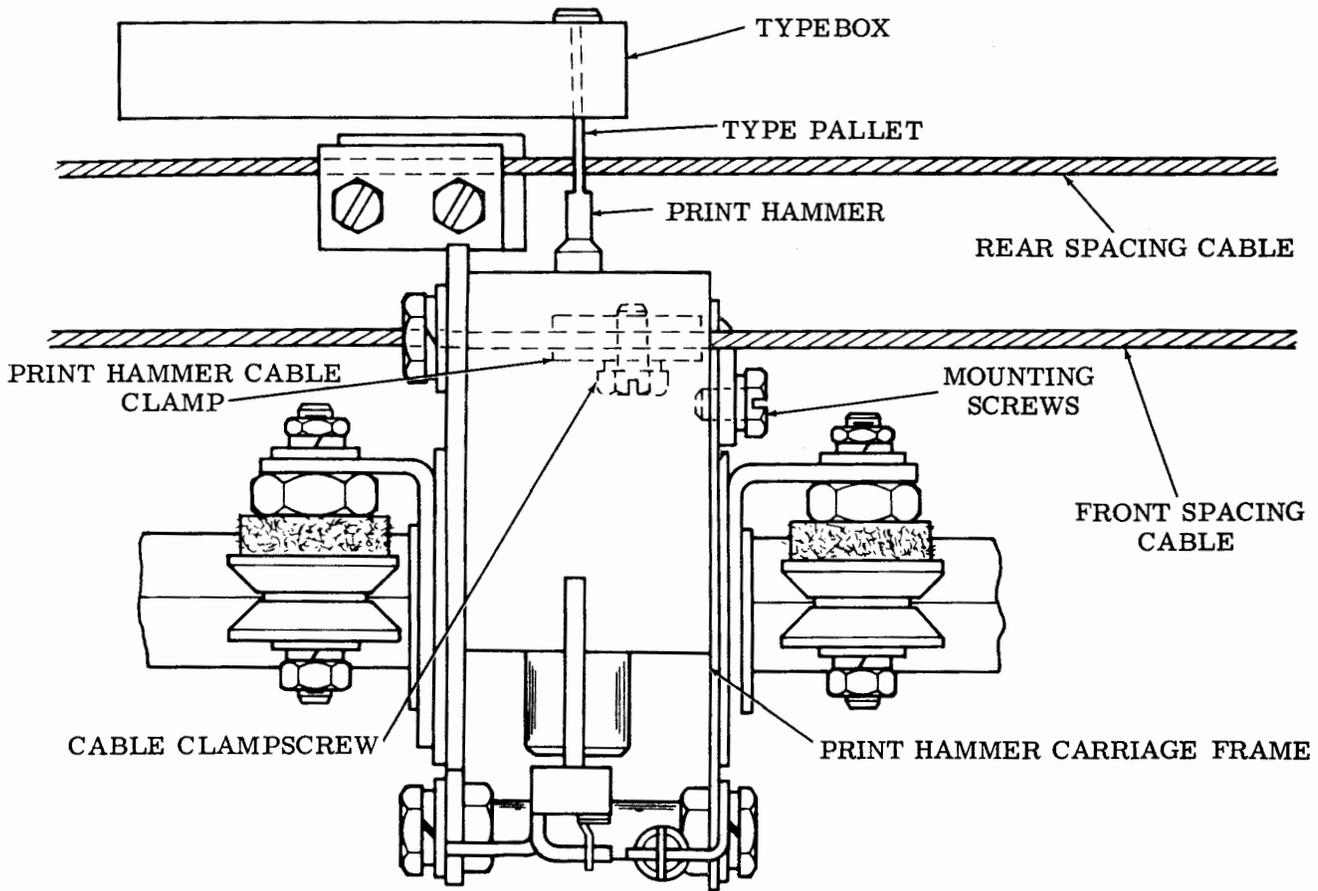


(Right Side View)



(Top View)

2.72 Printing Mechanism (continued)



(Top View)

FRONT SPACING CABLE ALIGNMENT

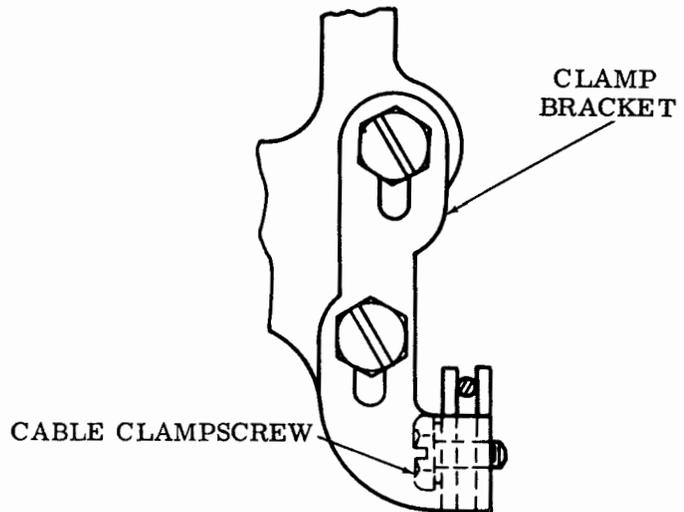
Requirement

Front spacing cable should form a straight line tangent to top of its two pulleys.

To Adjust

Loosen two mounting screws. Permit clamp bracket to seek its own height. Tighten mounting screws.

Note: Access to mounting screws can be obtained by rotating square shaft after removing retaining ring from print hammer drive link and print hammer lower drive shaft.



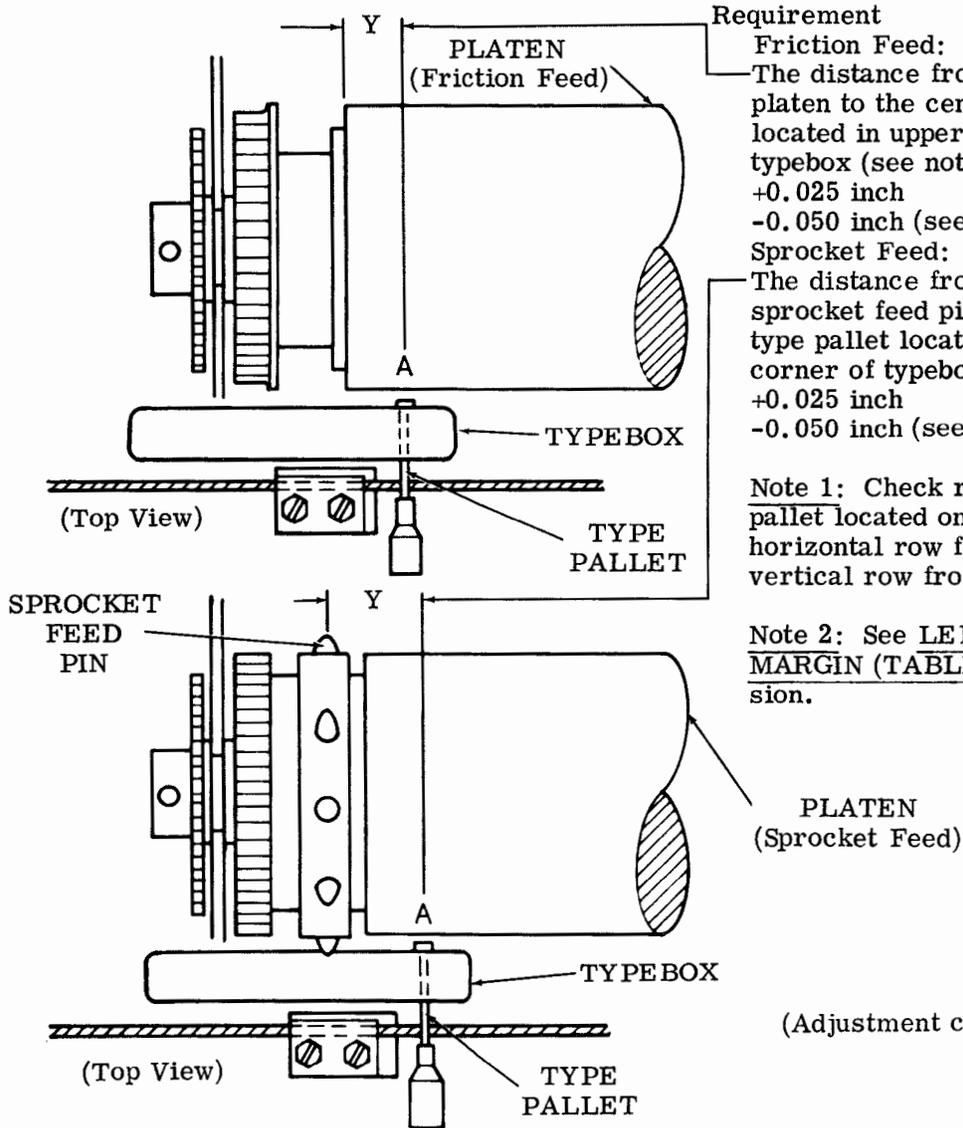
(Right Side View)

2.73 Printing Mechanism (continued)

LEFT HAND MARGIN

(1) To Check

Codebars 1 and 7 marking. All other codebars spacing. All clutches disengaged (latched). Carriage fully returned.



2.74 Printing Mechanism (continued)

LEFT HAND MARGIN (continued)

(2) To Check

Spacing clutch disengaged (latched). Front spacing feed pawl farthest advanced. Spacing drum fully returned. Play in spacing shaft gear taken up clockwise.

Requirement

Min some---Max 0.010 inch clearance between spacing feed pawl and shoulder of ratchet tooth immediately ahead.

Note 3: To Check for "some" requirement, apply a 3-pound force counterclockwise to spacing drum. The spacing pawl farthest advanced should move freely in and out of ratchet.

(3) To Check

Rear spacing feed pawl farthest advanced.

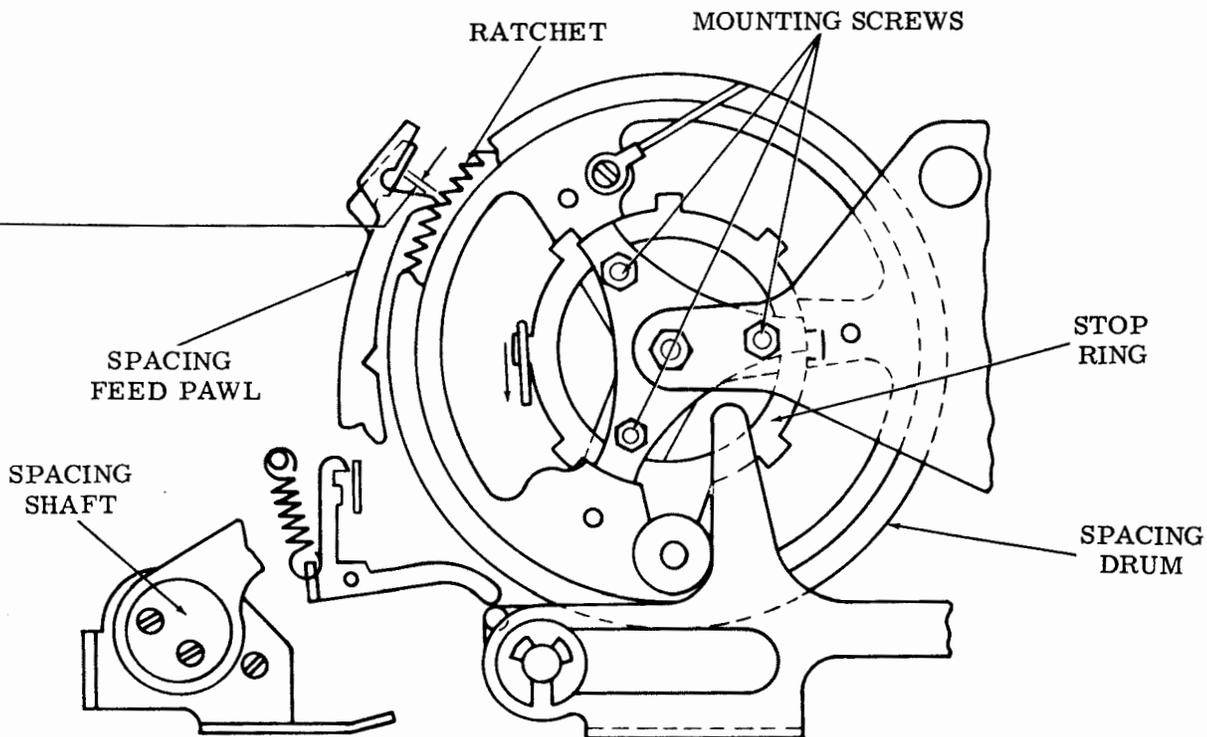
Requirement

Rear spacing feed pawl should rest at bottom of indentation between ratchet wheel teeth.

To Adjust

Return print hammer carriage to its left hand position. Loosen three stop ring mounting screws. Hold stop ring in its counterclockwise position and locate typebox per requirement (1). Tighten mounting screws.

Note 4: The number of characters in a line may vary by one more than is indicated in LEFT AND RIGHT HAND MARGIN (TABLE) (2.75).



(Front View)

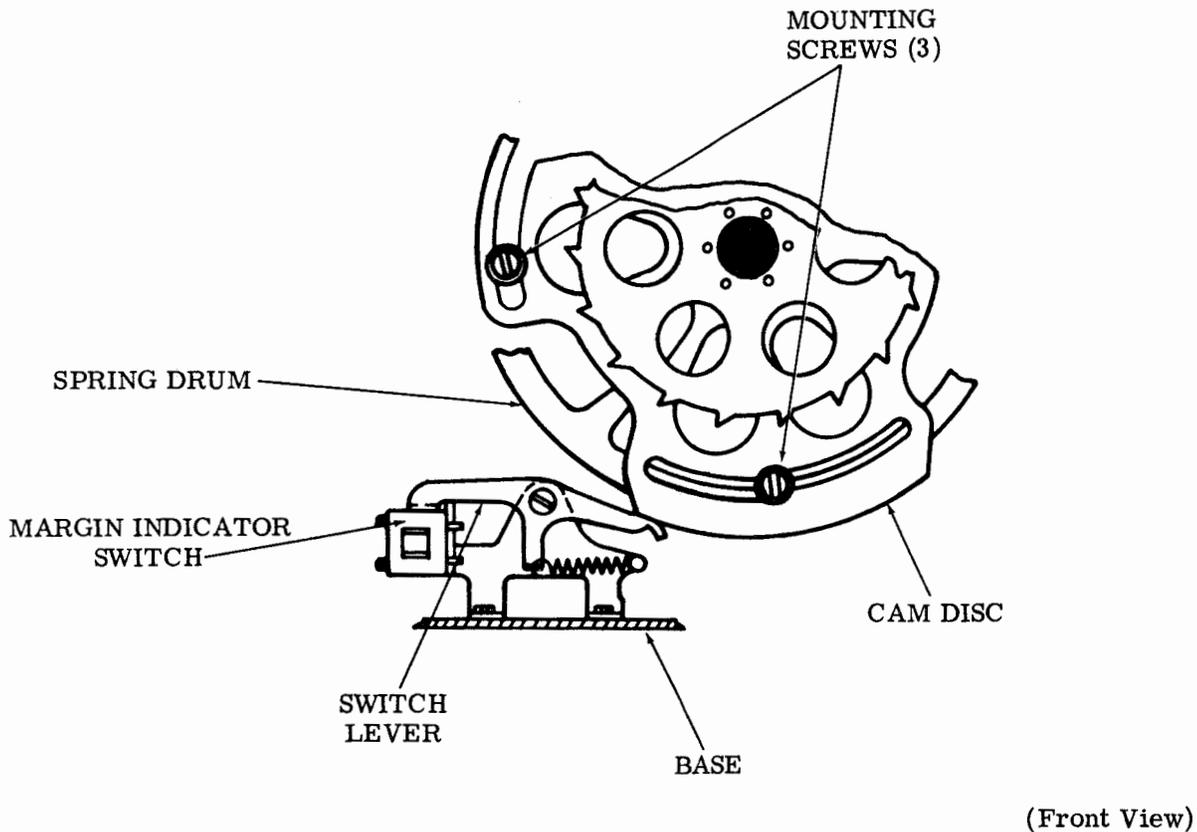
2.75 Printing Mechanism (continued)

LEFT AND RIGHT HAND MARGIN (TABLE)

Note: The following table provides requirement information for RIGHT HAND MARGIN (2.70) and LEFT HAND MARGIN (2.73 and 2.74) adjustment procedures. Dimensions are in inches.

COL CHAR LINE	10/IN	PAPER WIDTH																	
		FRICTION FEED								SPROCKET FEED									
		8 1/2"						9 1/2"		9"		8 1/2"							
		Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X
A	60	1.300	1.550					1.450	1.650			1.450	0.650						
B	69	1.000	0.950					1.150	1.050			0.600	0.600						
C	72	1.000	0.650					1.150	0.750			0.600	0.300						
D	80	0.400	0.450					0.600	0.500			----	----						
E																			
F																			
G																			
H																			
I																			
J																			
K																			
L																			
M																			
	12/IN	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X
N	80	1.000	1.150					1.000	1.400			1.000	0.400						
O	95	0.400	0.500					0.600	0.550			----	----						
P																			
Q																			
R																			
S																			
T																			
U																			

2.76 Printing Mechanism (continued)



(Front View)

MARGIN INDICATOR LAMP

Note 1: The typing unit must be placed onto its base prior to making this adjustment. For instructions on assembling the typing unit onto its base, see Section 574-301-702TC (Removal and Replacement of Components).

To Check

Print hammer carriage positioned to print eighth (+ one character) character from right hand margin.

Requirement

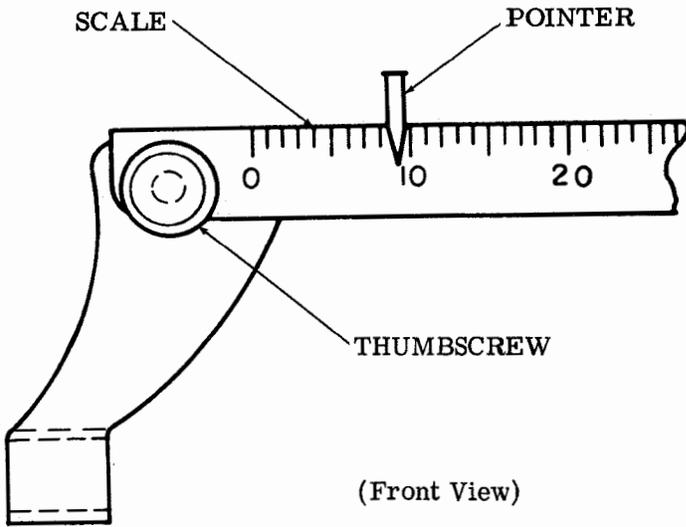
Indicator lamp should light.

To Adjust

Loosen three mounting screws. Position cam disc on spring drum so that margin indicator switch just opens. Tighten mounting screws.

Note 2: If a line shorter than 72 characters is required and the range of rotation with mounting screws in one set of tapped holes is not enough, remove through slots in cam disc into adjacent tapped holes.

2.77 Printing Mechanism (continued)



PRINT POSITION POINTER

To Check
Carriage fully returned.

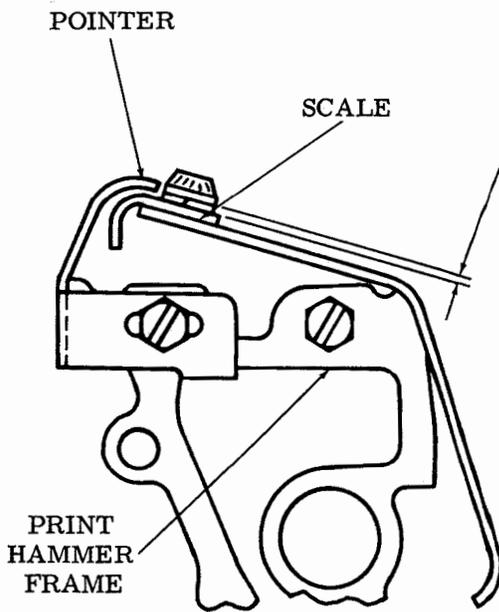
Requirement
Pointer should be approximately over line number corresponding to left hand margin as shown in table.

To Adjust
Loosen thumbscrews at both ends of scale. Position the scale left or right. Tighten thumbscrews.

POINTER CLEARANCE

Requirement
Min 0.062 inch clearance between pointer and scale. Check both end and center.

To Adjust
Bend pointer to meet requirement.



FRICTION		SPROCKET	
LEFT MARGIN ADJUST	LINE NO	LEFT MARGIN ADJUST	LINE NO
10/IN			
0.400	3	0.600	4
1.000	9	1.000	8
1.300	12	1.150	9
		1.450	12
12/IN			
0.400	4	0.600	5
1.000	11	1.150	11

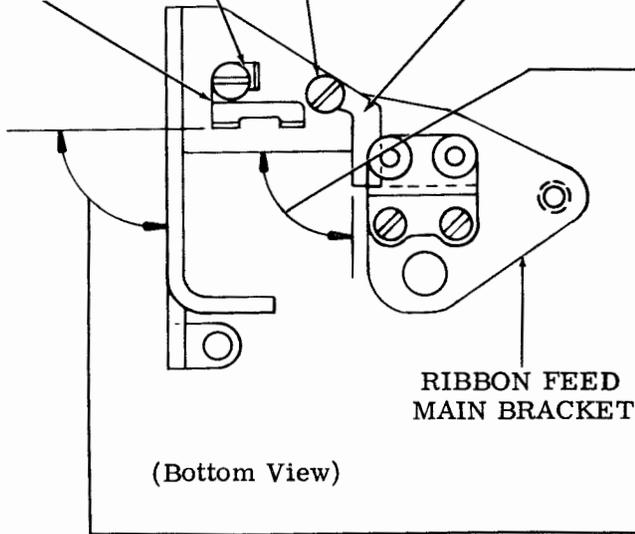
2.78 Ribbon Feed Mechanism — Early Design

REVERSING TOGGLE
STOP BRACKET
MOUNTING SCREW

FEED ARM GUIDE
MOUNTING SCREW

REVERSING
TOGGLE
STOP
BRACKET

FEED ARM GUIDE



RIBBON FEED
MAIN BRACKET

Note: Check FEED ARM GUIDE (LEFT AND RIGHT), REVERSING TOGGLE STOP BRACKET (LEFT AND RIGHT), REVERSING TOGGLE MOUNTING BRACKET (LEFT AND RIGHT), BLOCKING SLIDE GUIDE (LEFT AND RIGHT) (2.79), and BLOCKING SLIDE MOUNTING BRACKET (LEFT AND RIGHT) (2.79) adjustments only if screws mounting part concerned are loosened or if there is some reason to believe the adjustments are causing failures.

FEED ARM GUIDE (LEFT AND RIGHT)

Requirement

Feed arm guide should be square to ribbon feed main bracket as gauged by eye.

To Adjust

Loosen feed arm guide mounting screw and position feed arm guide. Tighten screw.

REVERSING TOGGLE STOP BRACKET (LEFT AND RIGHT)

Requirement

Two lugs of reversing toggle stop bracket should be square to ribbon feed main bracket as gauged by eye.

To Adjust

Loosen reversing toggle stop bracket mounting screw and position reversing toggle stop bracket. Tighten mounting screw.

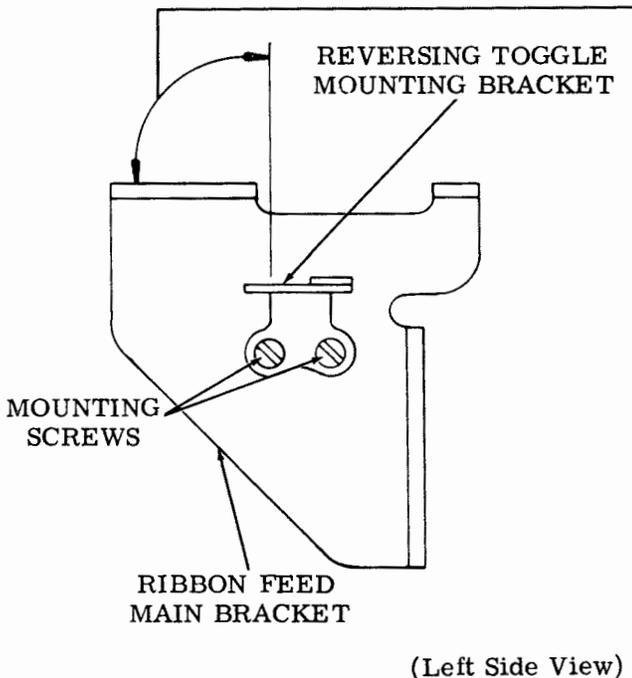
REVERSING TOGGLE MOUNTING BRACKET (LEFT AND RIGHT)

Requirement

Reversing toggle mounting bracket should be square to ribbon feed main bracket as gauged by eye.

To Adjust

Loosen the two mounting screws and position the reversing toggle mounting bracket. Tighten the mounting screws.

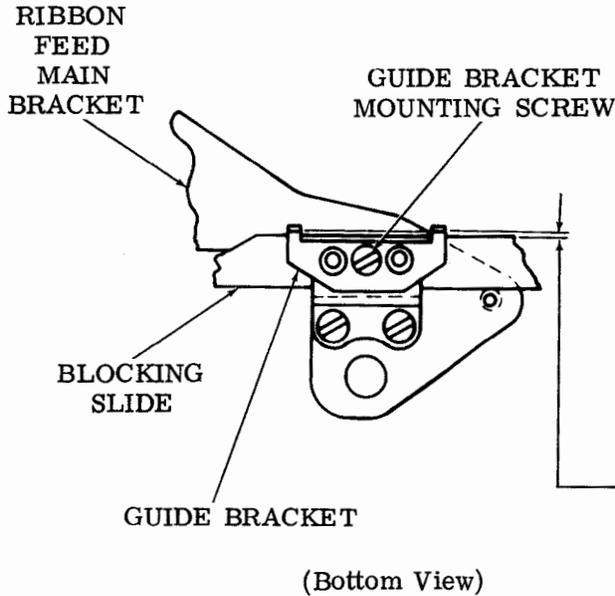


REVERSING TOGGLE
MOUNTING BRACKET

MOUNTING
SCREWS

RIBBON FEED
MAIN BRACKET

2.79 Ribbon Feed Mechanism — Early Design (continued)



Note: Check FEED ARM GUIDE (LEFT AND RIGHT) (2.78), REVERSING TOGGLE STOP BRACKET (LEFT AND RIGHT) (2.78), REVERSING TOGGLE MOUNTING BRACKET (LEFT AND RIGHT) (2.78), BLOCKING SLIDE GUIDE (LEFT AND RIGHT) and BLOCKING SLIDE MOUNTING BRACKET (LEFT AND RIGHT) adjustments only if screws mounting part concerned are loosened or if there is some reason to believe the adjustments are causing failures.

BLOCKING SLIDE GUIDE (LEFT AND RIGHT)

Requirement

Min some---Max 0.003 inch clearance between guide bracket and blocking slide.

To Adjust

Loosen guide bracket mounting screw and insert a 0.002 inch shim at two end points. Hold guide bracket against blocking slide and tighten mounting screw. Check for binds and refine if necessary.

BLOCKING SLIDE MOUNTING BRACKET (LEFT AND RIGHT)

To Check

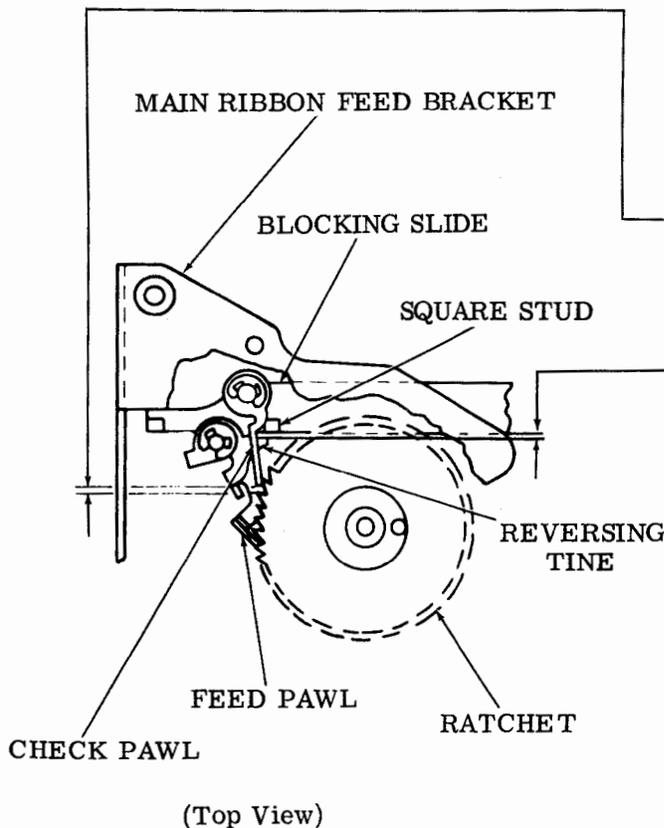
Feed pawl positioned against tooth on ratchet with
— Min 0.015 inch---Max 0.040 inch clearance between ratchet and fourth tooth back from feed pawl.

Requirement

— Min 0.005 inch---Max 0.020 inch clearance between the square stud on blocking slide and the reversing tine on feed pawl.

To Adjust

Loosen ribbon feed main bracket mounting screws (2.78) and position main bracket. Tighten tine mounting screw.



2.80 Ribbon Feed Mechanism — Early Design (continued)

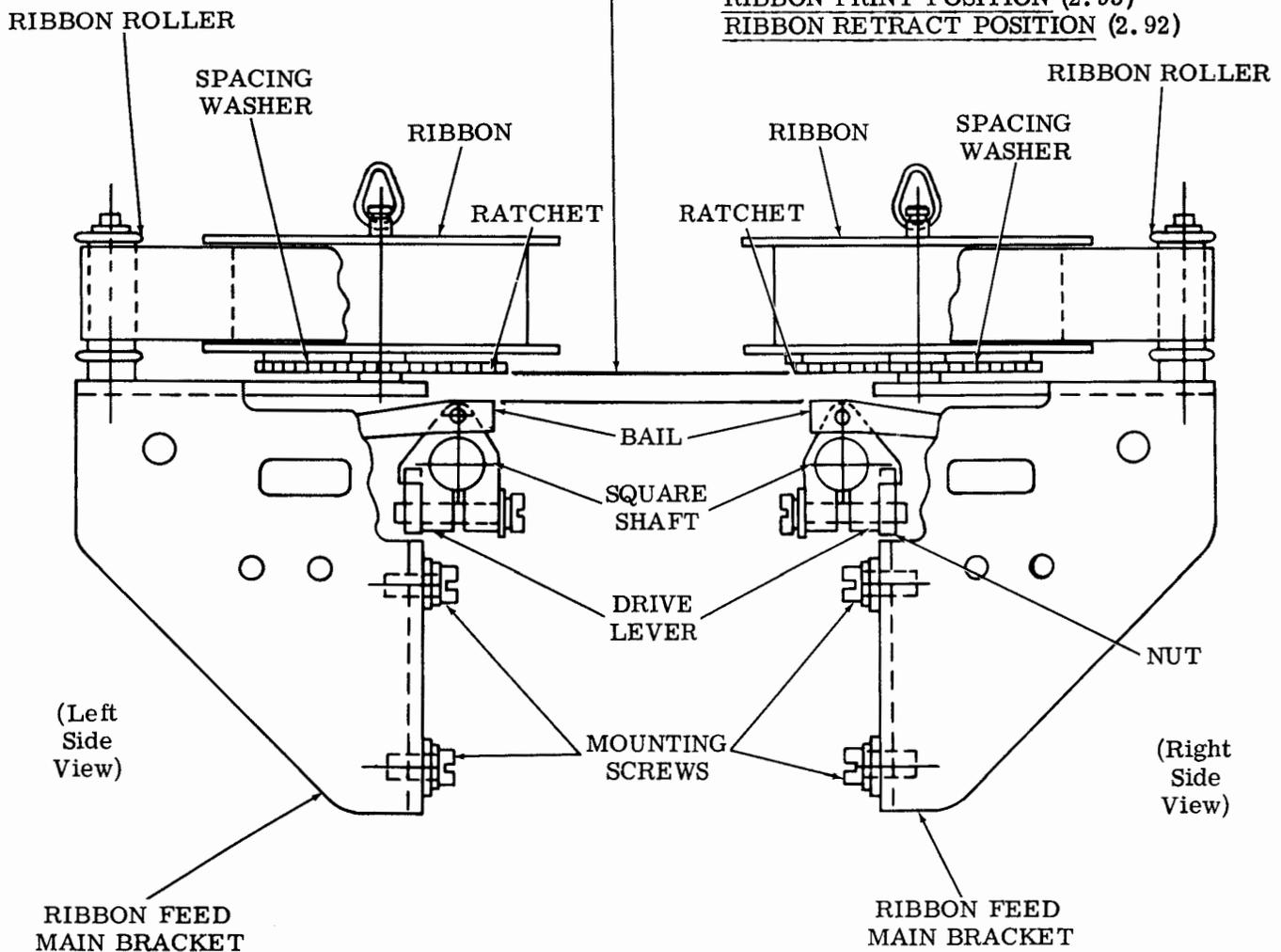
RIBBON FEED MAIN BRACKET (LEFT AND RIGHT)

(1) Requirement
 Min 0.060 inch---Max 0.075 inch
 clearance between underside of
 ratchet and top side of bail.

(2) Requirement
 Ratchet must be parallel to square
 shaft as gauged by eye from front of
 typing unit.

To Adjust
 Loosen ribbon feed main bracket mount-
 ing screws and position ribbon feed main
 bracket. Tighten mounting screws.

Affected Adjustments
RIBBON PRINT POSITION (2.93)
RIBBON RETRACT POSITION (2.92)



2.81 Ribbon Feed Mechanism — Early Design (continued)

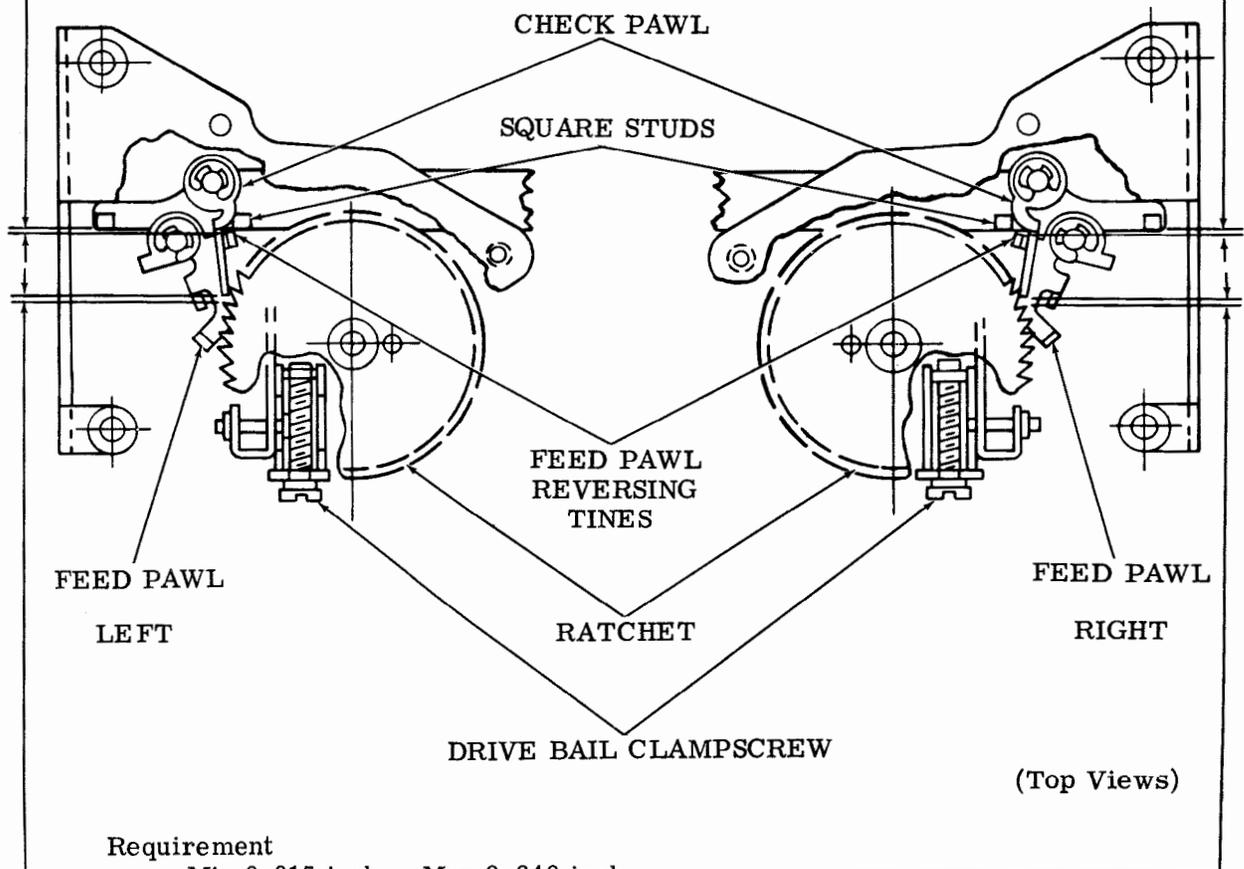
RIBBON FEED PAWL (LEFT AND RIGHT)

- (1) To Check
Feed pawl in farthest forward position.

Requirement

Min 0.005 inch---Max 0.025 inch
clearance between feed pawl reversing tine closest to ratchet and its associated square stud on blocking slide.

- (2) To Check
With first requirement met, there should be four teeth between feed pawl and check pawl.



Note: If the second requirement cannot be met, refine first requirement, recheck second requirement.

To Adjust

Loosen drive bail clampscrew and rotate square shaft. Tighten clampscrew.

2.82 Ribbon Feed Mechanism — Early Design (continued)

RIBBON REVERSING CONNECTING ROD

(1) To Check

Right blocking slide positioned on ribbon reversing connecting rod so that there is
 Min 0.125 inch---Max 0.188 inch

thread to right of locking nut. Disengage (latch) all clutches. Engage (trip) print hammer clutch and rotate main shaft until feed pawls are in maximum forward position. Move right reversing slide to maximum rearward position. Back off left locking nut so as not to restrict movement of left blocking slide.

Requirement (Left Side)

Left feed pawl tine closest to ratchet should be centered with its associated square stud on left blocking slide.

To Adjust

With left locking nut backed off, position left blocking slide to meet requirement. Tighten locking nuts.

(2) To Check

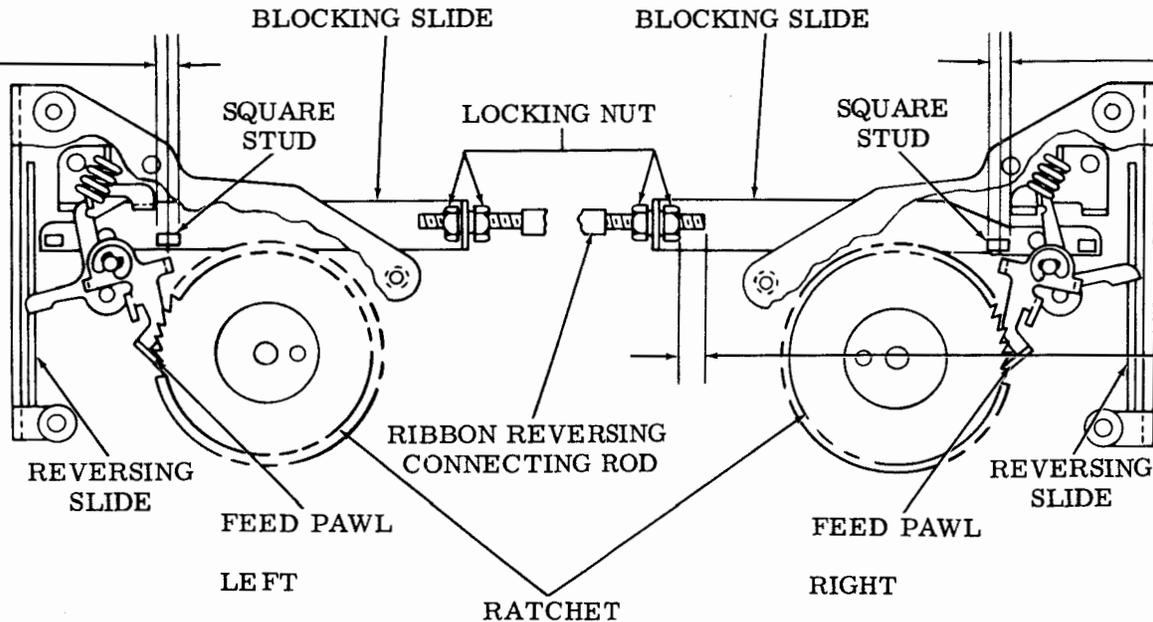
Move left reversing slide to maximum rearward position. Back off right locking nut so as not to restrict movement of right blocking slide.

Requirement (Right Side)

Right feed pawl tine closest to ratchet should be centered with its associate square stud on right blocking slide.

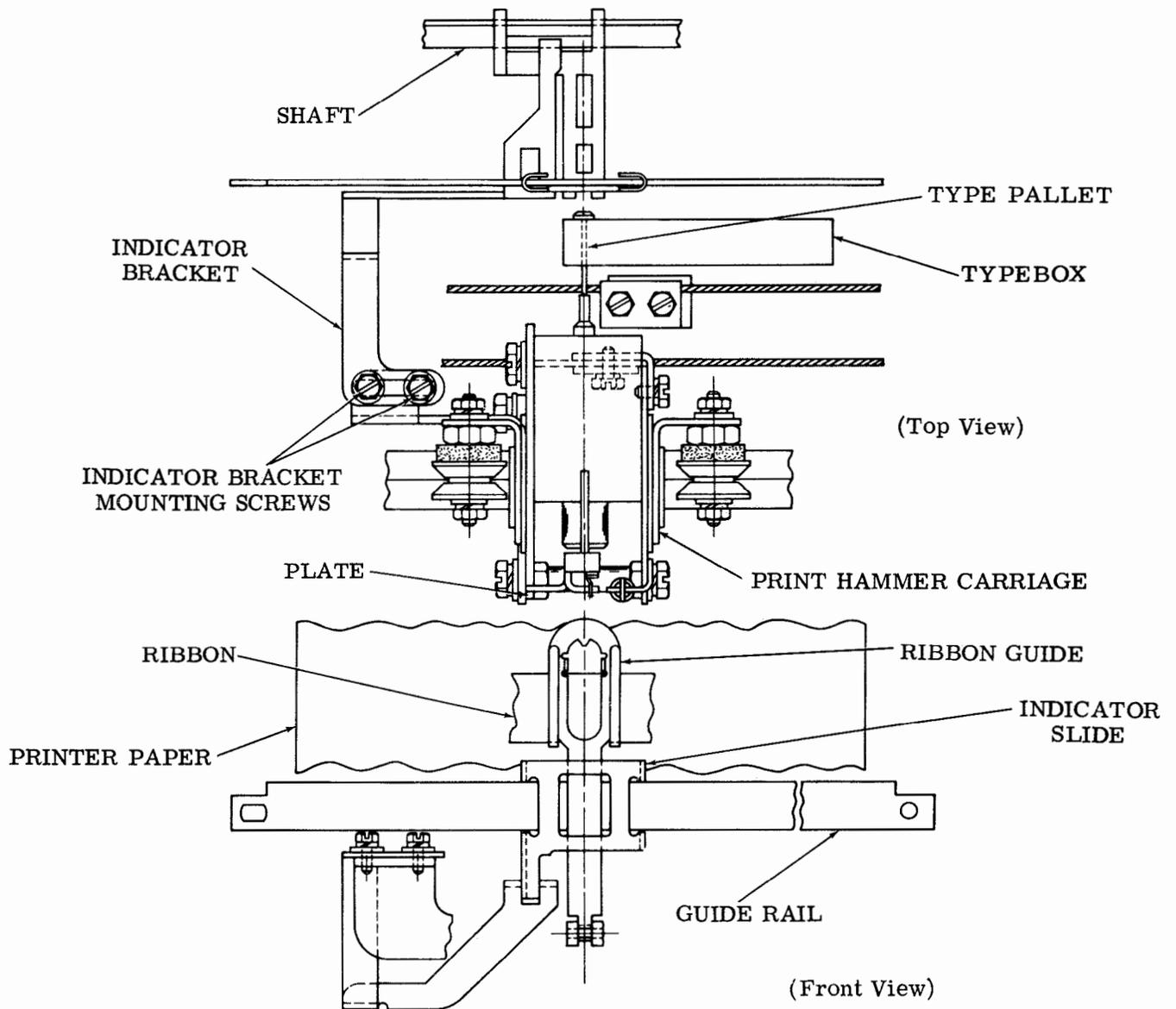
To Adjust

With right locking nut backed off position right blocking slide to meet requirement. Tighten locking nuts.



(Top View)

2.83 Ribbon Feed Mechanism — Early Design (continued)

RIBBON GUIDE ALIGNMENT**To Check**

Ribbon guide in print position.

Requirement

Selected type pallet should be horizontally centered in guide opening.

To Adjust

Loosen two indicator bracket mounting screws.
 Position indicator bracket to meet requirement.
 Be careful that lower rear portion of indicator bracket does not touch codebar tie bracket. Refine front and rear, if necessary.

2.84 Ribbon Feed Mechanism — Late Design

RIBBON FEED BRACKETS (LEFT AND RIGHT)

Requirement

The bracket extension should rest on the lower surface of the cut-out of the sintered bearing bracket. The top surface of the main bracket must be parallel to the square shaft as gauged by eye.

To Adjust

Loosen mounting screws friction tight. Position the bracket. Tighten screws.

CONNECTING ROD — (PRELIMINARY)

To Check

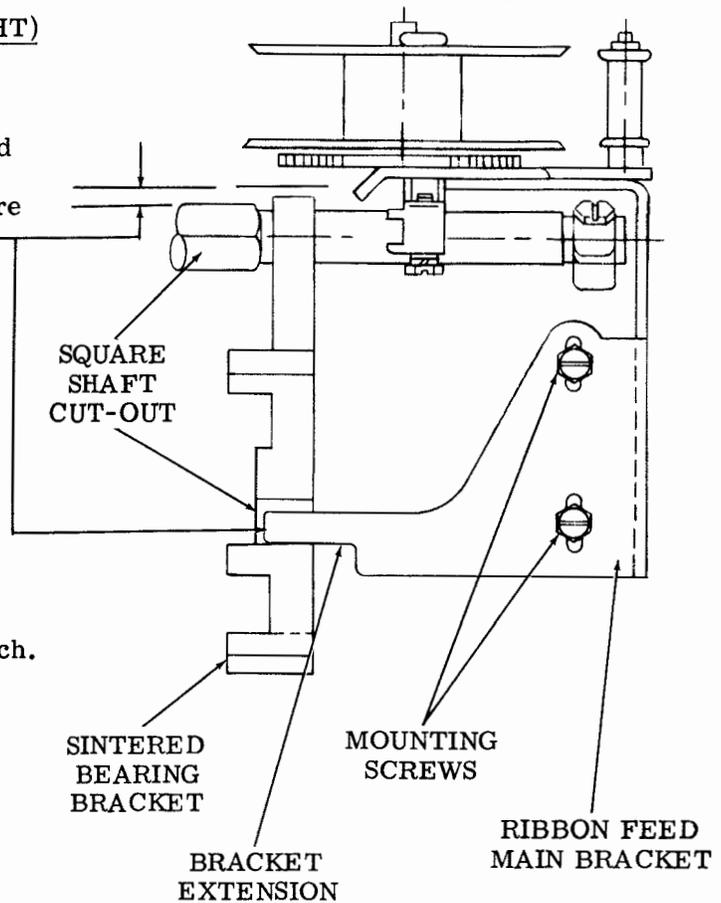
The left and right connecting rod must be assembled to the turnbuckles.

Requirement

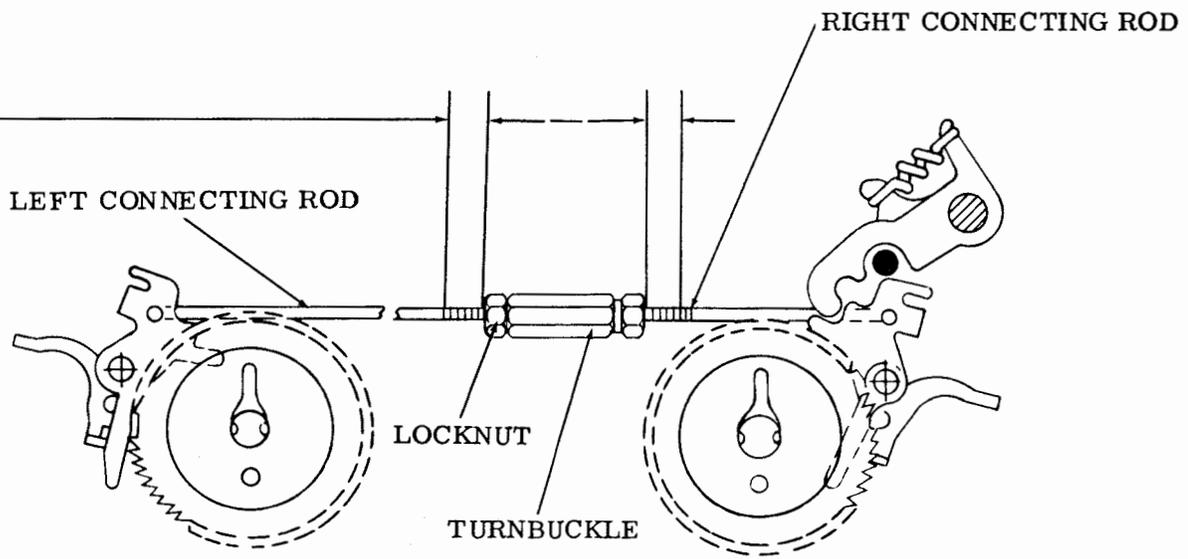
The visible thread on each side of the turnbuckle should be approximately 1/4 inch.

To Adjust

Rotate the turnbuckle.



(Front View)



(Top View)

2.85 Ribbon Feed Mechanism — Late Design (continued)

FEED PAWL DRIVE CLAMP (RIGHT)

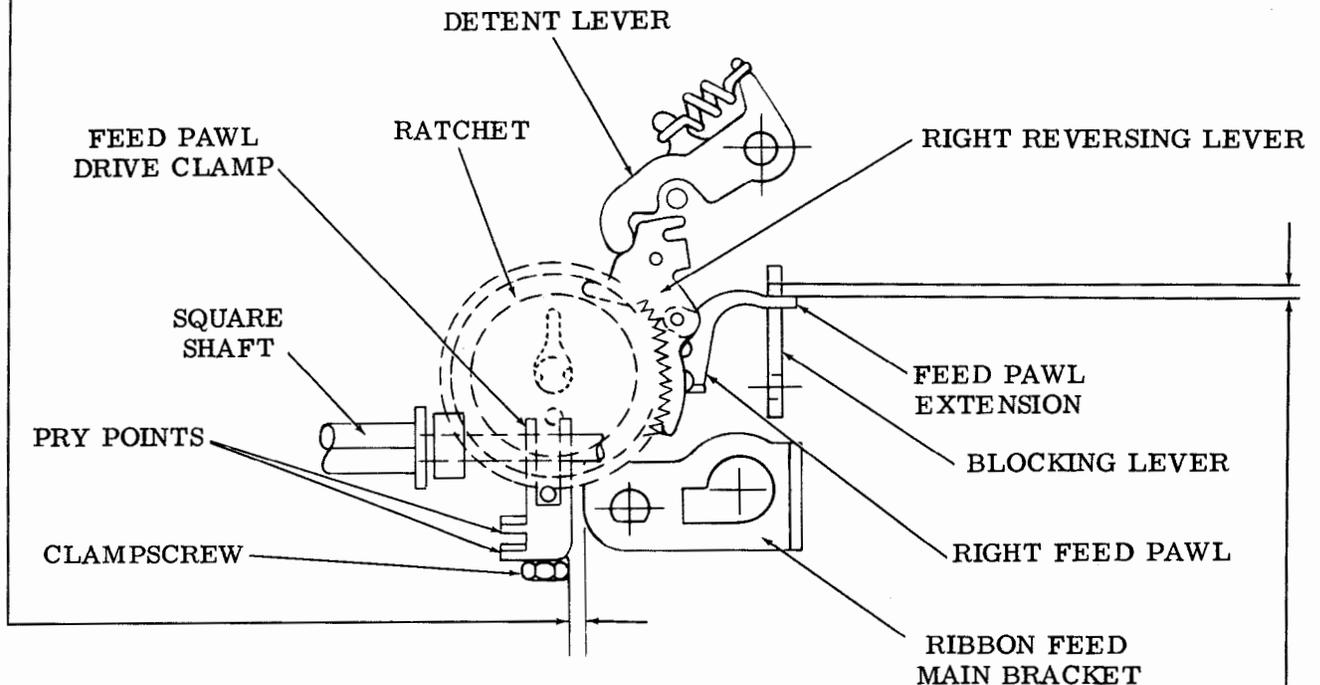
- (1) To Check
Take up the play in the square shaft to the left.

Requirement

Min 0.060 inch---Max 0.080 inch
clearance between the drive clamp and the ribbon feed main bracket.

To Adjust

ClampscREW friction tight. Move the drive clamp sideways to meet requirement.



- (2) To Check
Hold the right reversing lever in the detented position; the right feed pawl should be away from the ratchet. Trip the print hammer clutch and rotate the main shaft until the print hammer cam follower is on the high part of its cam. Move the blocking lever up to the feed pawl extension.

Requirement

Min 0.010 inch---Max 0.030 inch
clearance between the latching surface of the blocking lever and the feed pawl extension.

To Adjust

ClampscREW friction tight. Rotate the drive clamp to meet the requirement. Tighten clampscREW.

Note: The tightening of the clampscREW should not restrict the end play of the square shaft. If the end play is restricted, refine requirement.

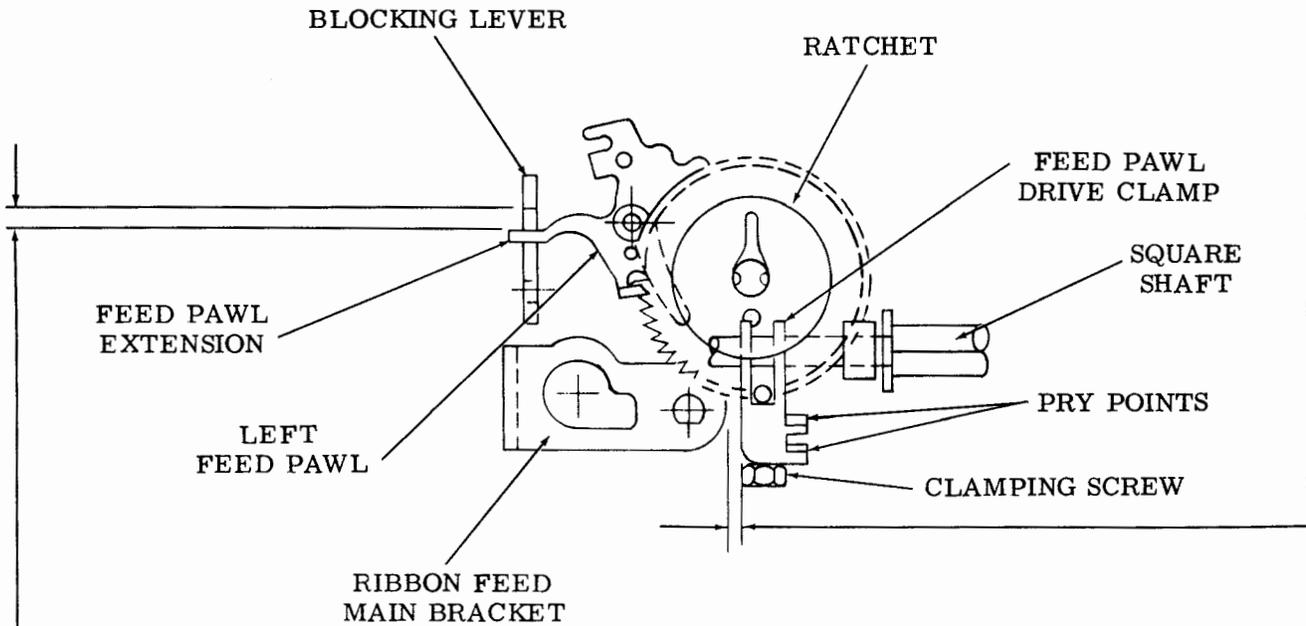
2.86 Ribbon Feed Mechanism — Late Design (continued)

FEED PAWL DRIVE CLAMP (LEFT)

- (1) To Check
Take up the play in the square shaft to the right.

Requirement
Min 0.030 inch---Max 0.050 inch
clearance between the drive clamp and ribbon feed main bracket.

To Adjust
Clampscrew friction tight. Move the drive clamp sideways to meet the requirement.



- (2) To Check
Hold the right reversing lever in the detented position; the left feed pawl should engage the ratchet. Trip the print hammer clutch and rotate the main shaft until the pivot hammer cam follower is on the low part of its cam. Move the blocking lever up to the feed pawl extension.

Requirement
Min 0.040 inch---Max 0.060 inch
clearance between the latching surface of the blocking lever and the feed pawl extension, when the feed pawl is fully engaged with the ratchet.

To Adjust
Clampscrew friction tight. Rotate the drive clamp to meet the requirement. Tighten clampscrew.

Note: The tightening of the clampscrew should not restrict the end play of the square shaft. If the end play is restricted refine requirement.

2.87 Ribbon Feed Mechanism — Late Design (continued)

CONNECTING ROD (FINAL)

To Check

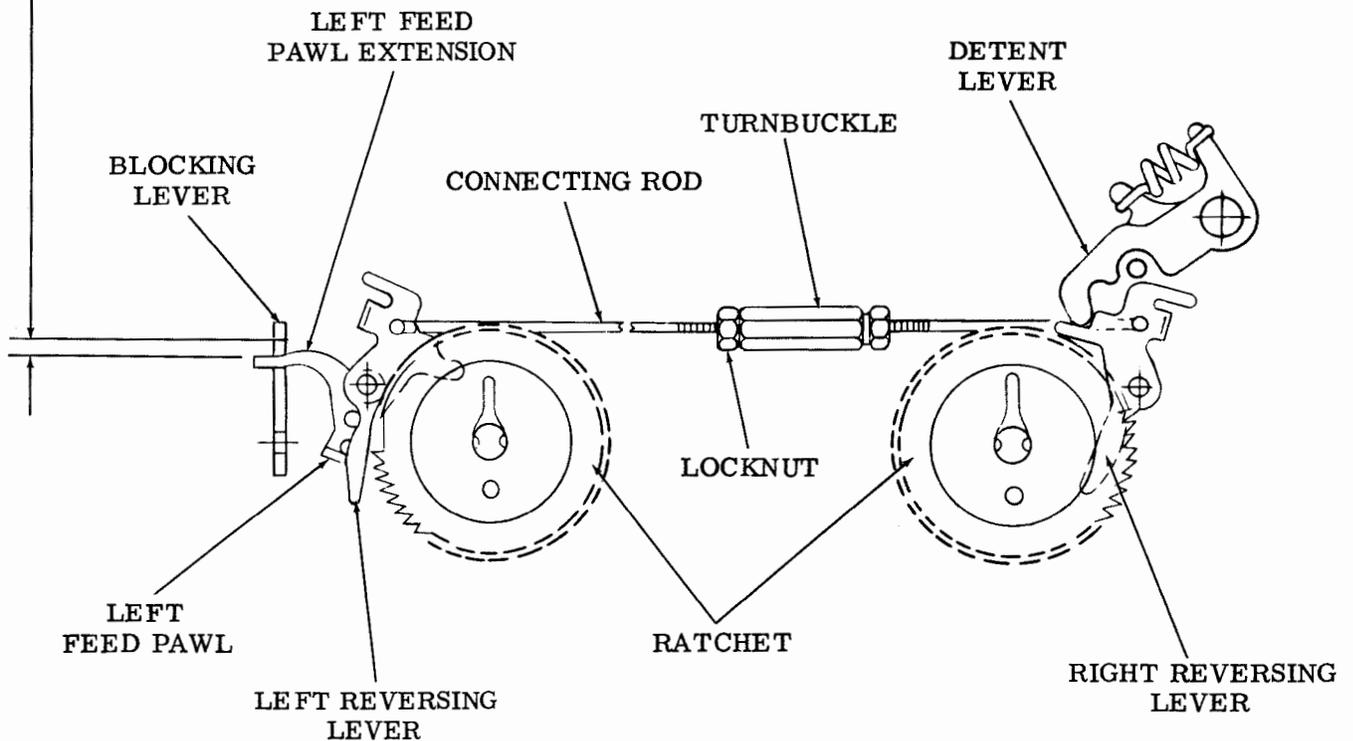
All clutches disengaged (latched). Hold the right reversing lever in the detented position; the left feed pawl should be away from the ratchet. Trip the print hammer clutch and rotate the main shaft until the print hammer cam follower is on the high part of its cam. Move the blocking lever up to the feed pawl extension.

Requirement

Min 0.010 inch---Max 0.030 inch
clearance between the latching surface of the blocking lever and the left feed pawl extension.

To Adjust

Back off locknut and rotate the turnbuckle to meet the requirement. Hold turnbuckle and tighten the locknut.



2.88 Ribbon Feed Mechanism — Late Design (continued)

CHECK PAWL (LEFT AND RIGHT)

To Check

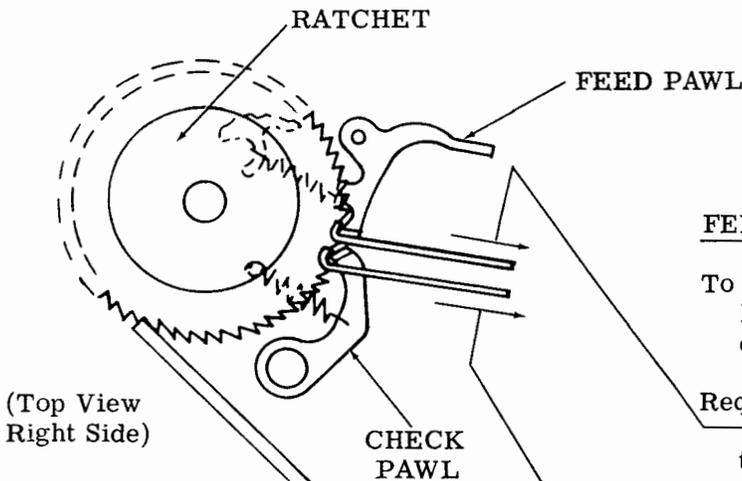
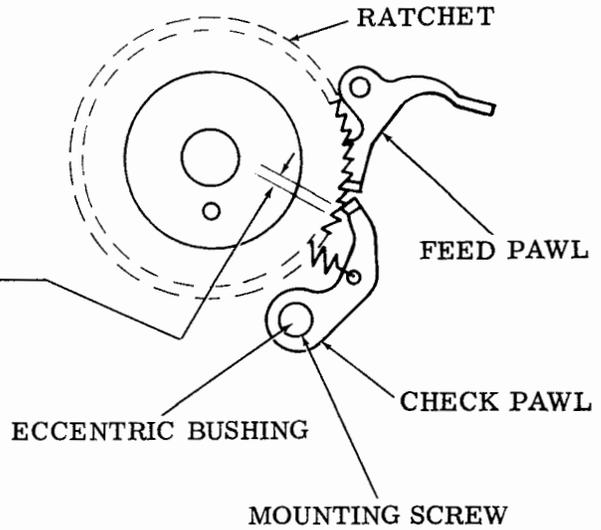
Print hammer cam follower on the high part of its cam, and the feed pawl engaging the ratchet.

Requirement

Min 0.010 inch---Max 0.030 inch clearance between the check pawl and the second tooth from the feed pawl.

To Adjust

Mounting screw friction tight. Rotate eccentric bushing to meet the requirement.



FEED PAWL SPRING (LEFT AND RIGHT)

To Check

Printing clutch disengaged, and feed pawl engaging the ratchet.

Requirement

Min 15 grams---Max 30 grams to start feed pawl moving.

CHECK PAWL SPRING (LEFT AND RIGHT)

To Check

Check pawl engaging the ratchet.

Requirement

Min 5 grams---Max 20 grams to start check pawl moving.

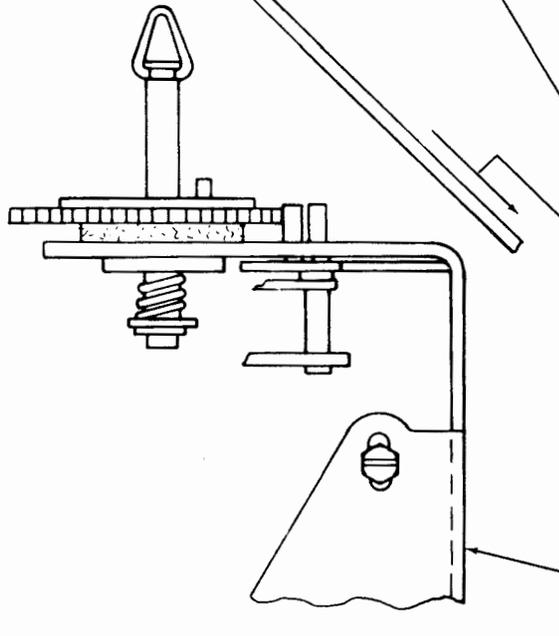
RATCHET (LEFT AND RIGHT)

To Check

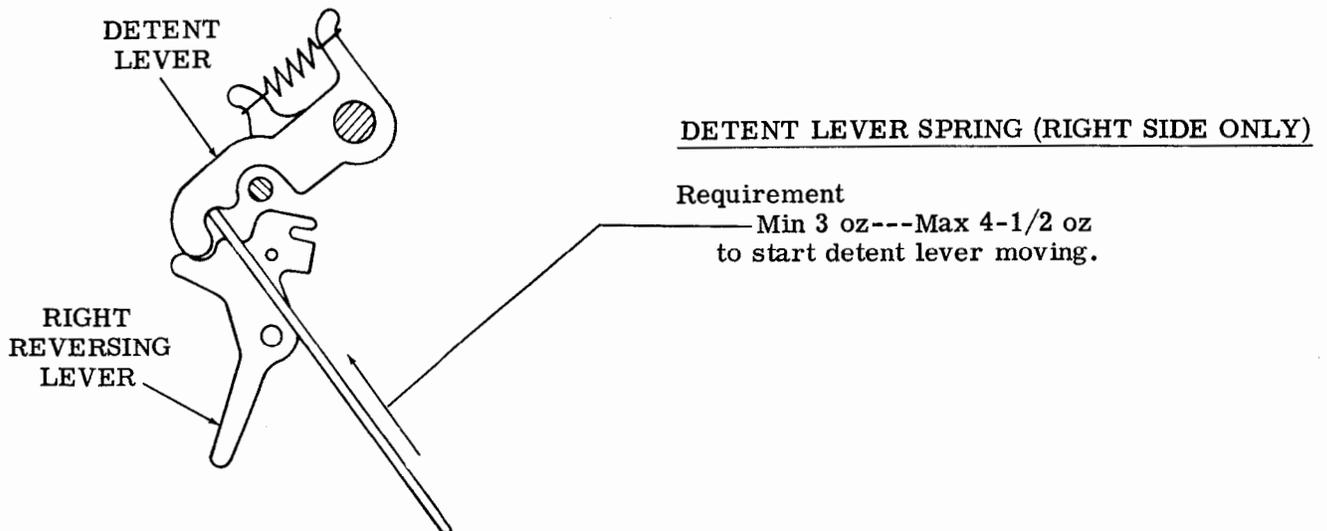
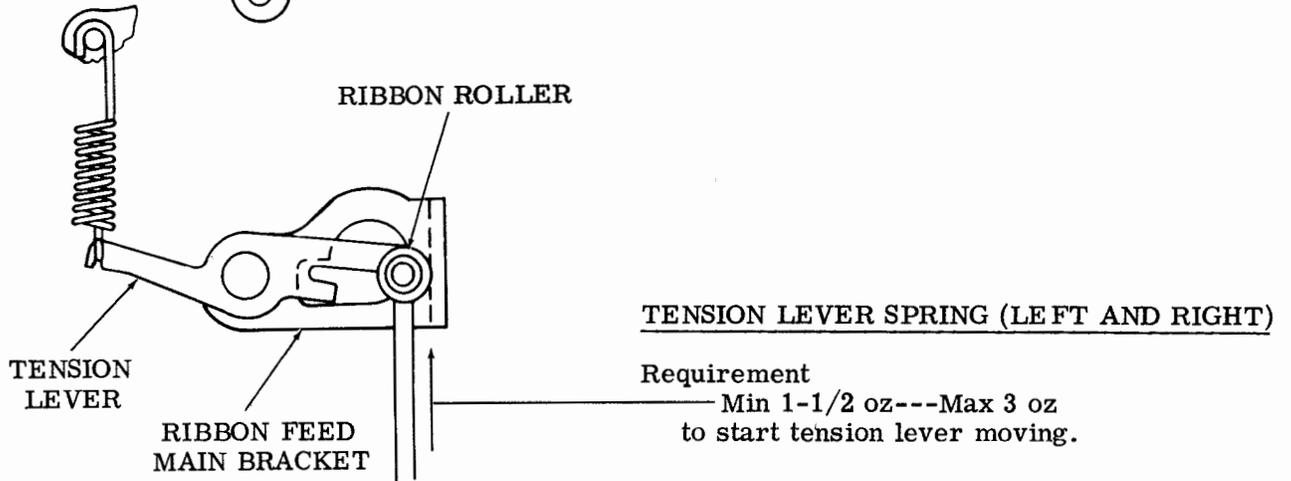
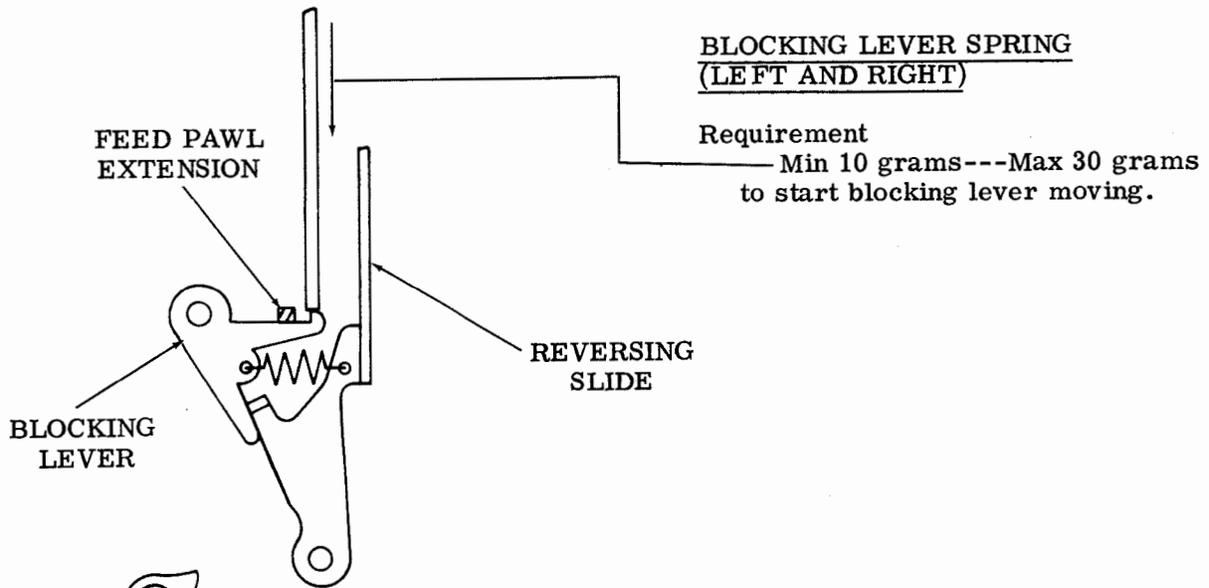
Feed pawl and check pawl disengaged.

Requirement

Min 2-1/2 oz---Max 6-1/2 oz to turn the ratchet.



2.89 Ribbon Feed Mechanism — Late Design (continued)



2.90 Ribbon Feed Mechanism — Late Design (continued)

VERTICAL POSITION OF INDICATOR BRACKET

(1) Requirement

Edge of indicator bracket should be even with the top edge of tie bracket as gauged by eye.

To Adjust

Loosen the two adjusting screws. Position the adjusting bracket up or down by the pry points (the bracket pivots about the front screw). Tighten the adjusting screws.

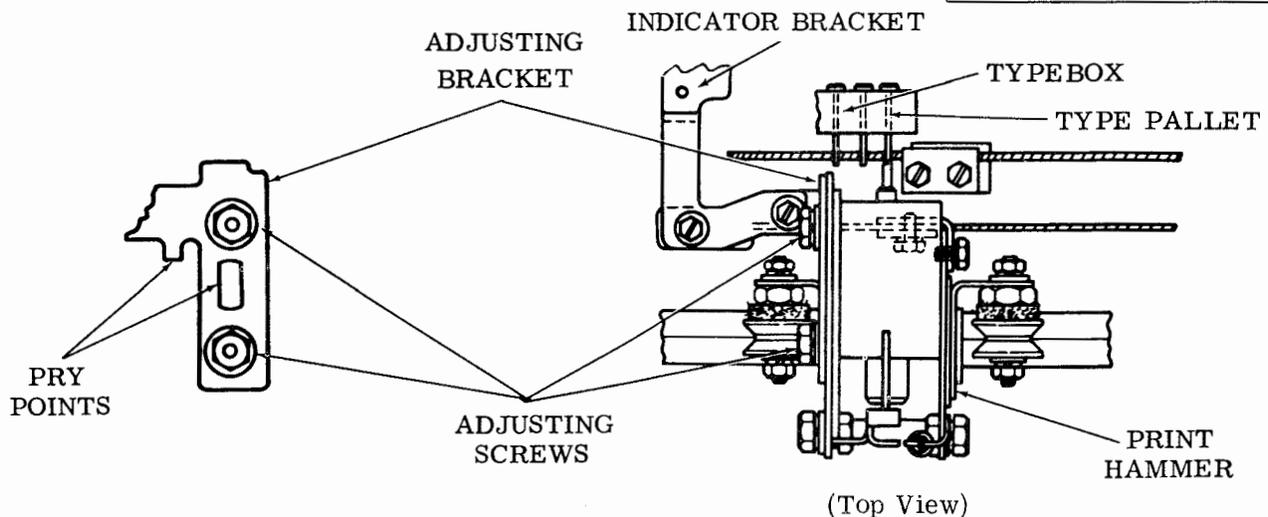
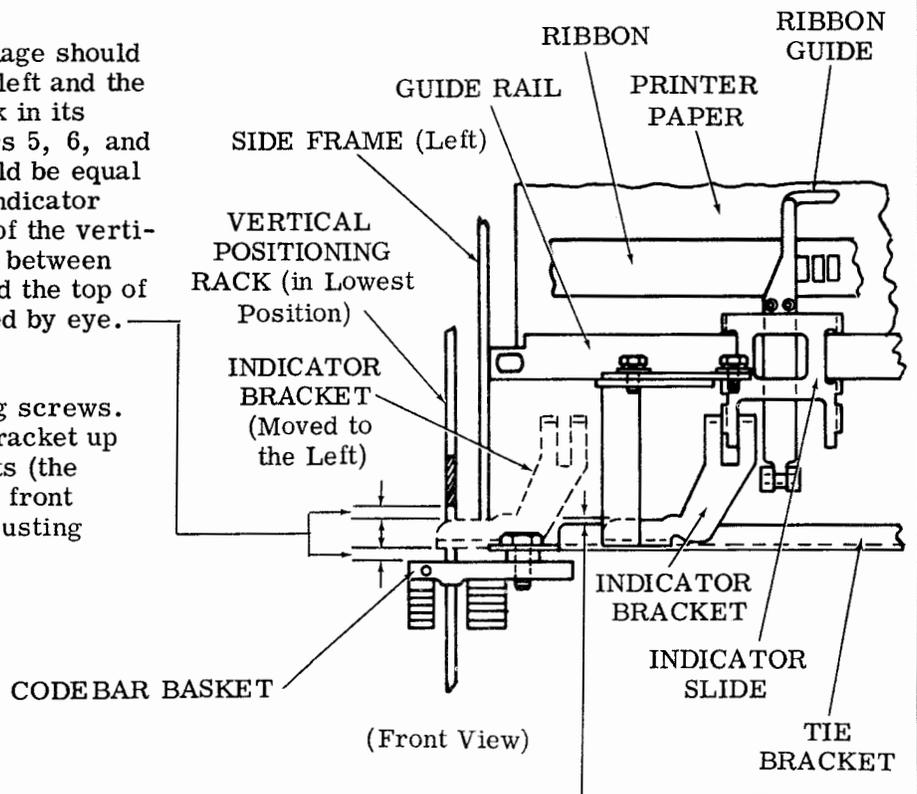
Note: Perform requirement (2) if the indicator bracket passes under the vertical positioning rack when the print hammer carriage is fully returned to the left.

(2) Requirement

The print hammer carriage should be fully returned to the left and the vertical positioning rack in its lowest position (codebars 5, 6, and 7 spacing). There should be equal clearance between the indicator bracket and the bottom of the vertical positioning rack and between the indicator bracket and the top of codebar basket as gauged by eye.

To Adjust

Loosen the two adjusting screws. Position the adjusting bracket up or down by the pry points (the bracket pivots about the front screw). Tighten the adjusting screws.



2.91 Ribbon Feed Mechanism — Late Design (continued)

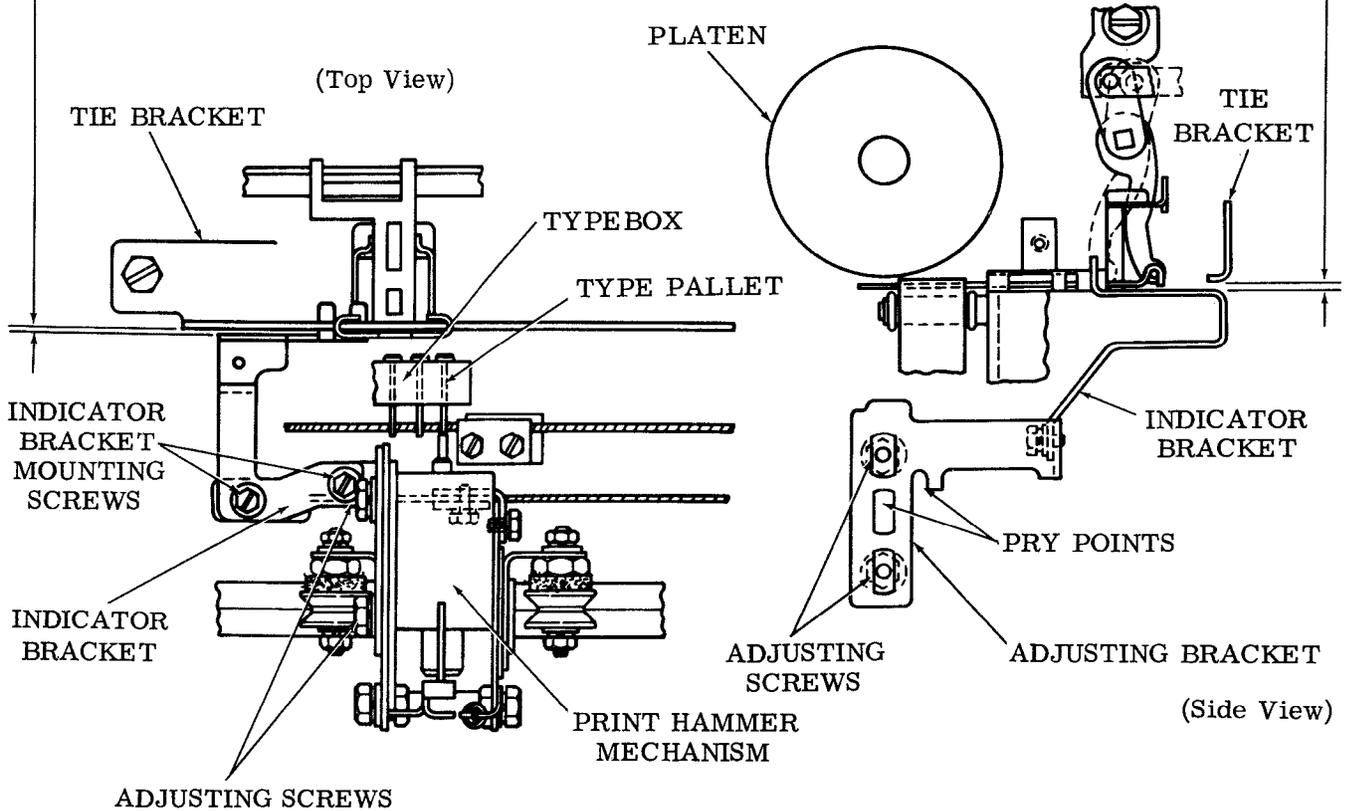
HORIZONTAL POSITION OF INDICATOR BRACKET

Requirement

—Min 0.020 inch---Max 0.045 inch—
clearance between the codebar tie bracket and the indicator bracket.

To Adjust

Loosen the two adjusting screws. Position the adjusting bracket forward or back by the pry points, to meet the requirement. Tighten adjusting screws.



RIBBON GUIDE POSITION

To Check

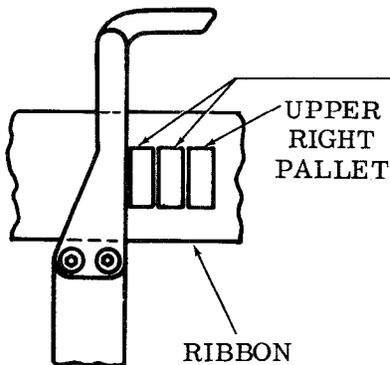
Position typebox so the upper right pallet is presented for printing.

Requirement

A space of two pallet widths between the upper right pallet and the right edge of the ribbon guide.

To Adjust

Loosen the two indicator bracket mounting screws. Position ribbon guide sideways to meet the requirement. Tighten indicator bracket mounting screws.



Note: Recheck VERTICAL POSITION OF INDICATOR BRACKET (2.90) and HORIZONTAL POSITION OF INDICATOR BRACKET adjustments.

2.92 Ribbon Feed Mechanism — Early and Late Design

RIBBON GUIDE TO PLATEN

To Check

Ribbon guide in uppermost (print) position. Ribbon in position and under tension.

Requirement

Min 0.025 inch---Max 0.040 inch clearance between ribbon guide and platen.

To Adjust

Loosen screw that secures slide block to each side frame. Pivot slide blocks until requirement is met along entire travel of ribbon guide. Maintain position of slide blocks and tighten screws.

RIBBON RETRACT POSITION

To Check

Print hammer clutch disengaged (latched). Take up play in ribbon guide in a downward direction.

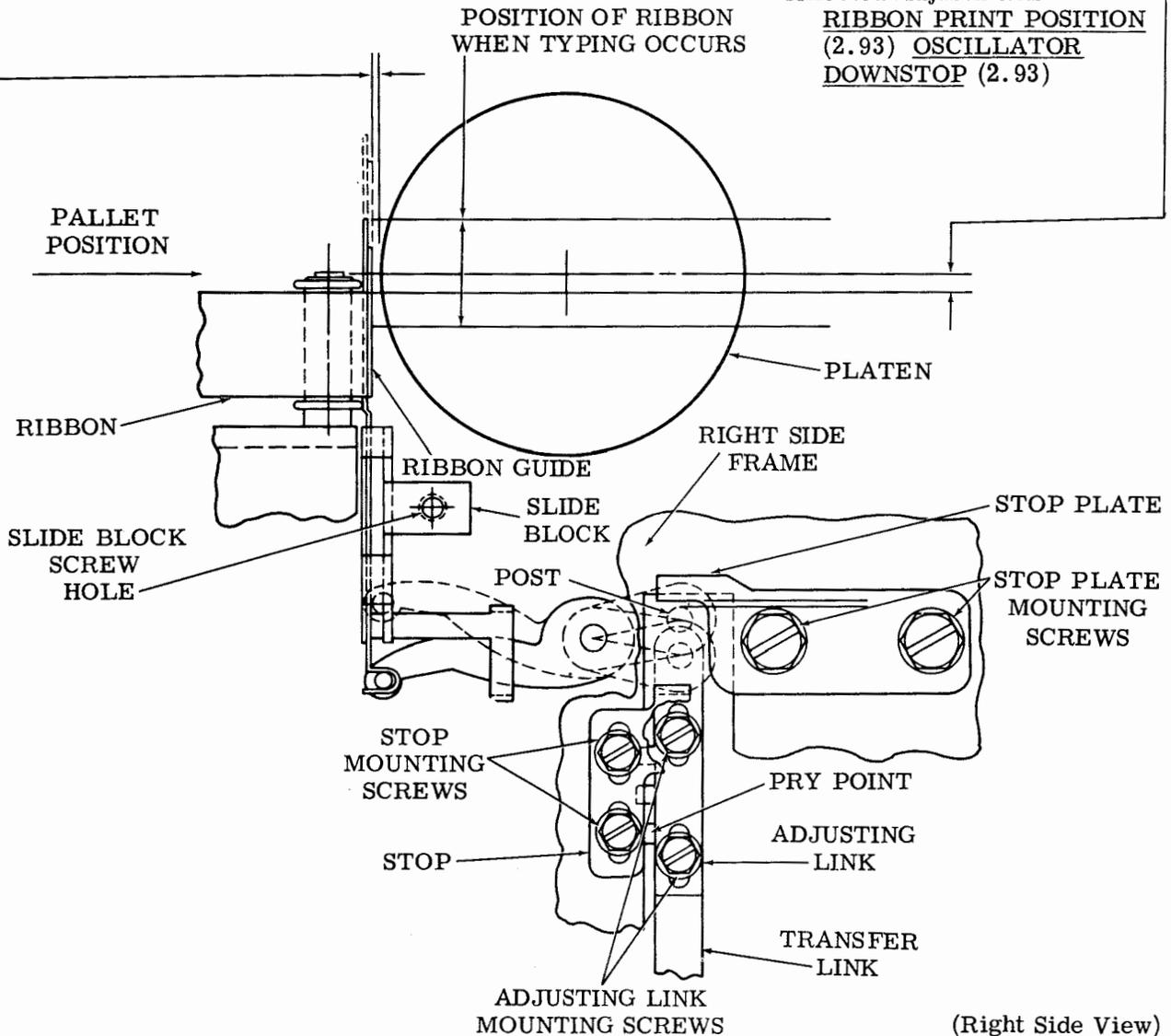
Requirement

Ribbon positioned so that top edge is in line with bottom of an upper case printed character as gauged by eye.

To Adjust

Loosen two adjusting link mounting screws. Position ribbon guide using pry point. Tighten adjusting link mounting screws.

Affected Adjustments
RIBBON PRINT POSITION
 (2.93) OSCILLATOR
DOWNSTOP (2.93)



2.93 Ribbon Feed Mechanism — Early and Late Design (continued)

RIBBON PRINT POSITION

Requirement
When typing occurs, type pallet should strike about center of ribbon.

To Adjust
Loosen two stop mounting screws. Raise or lower stop to meet requirement. Tighten stop mounting screws.

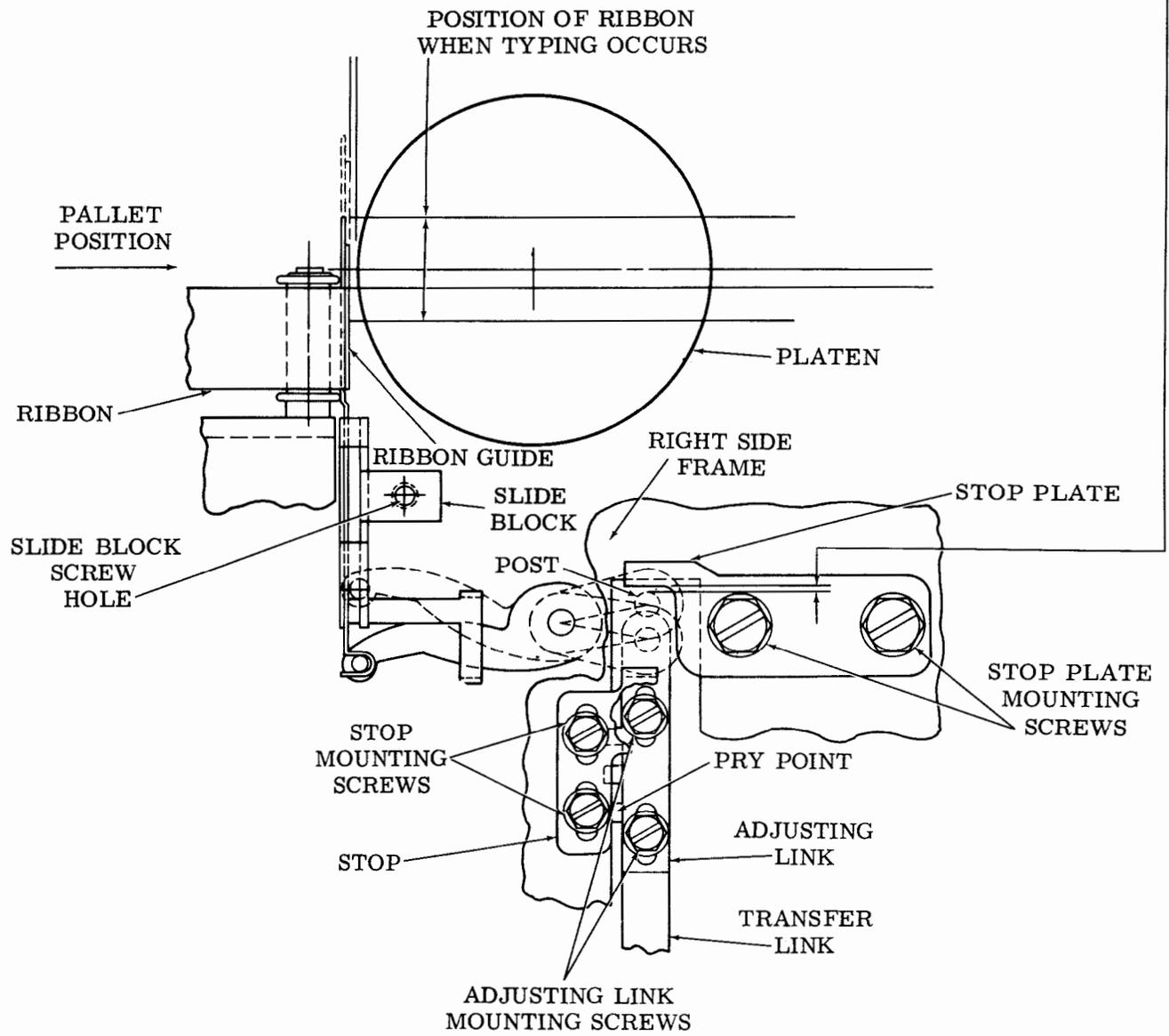
Affected Adjustment
OSCILLATOR DOWNSTOP

OSCILLATOR DOWNSTOP

To Check
Print hammer clutch disengaged (latched).

Requirement
Min some---Max 0.010 inch clearance between post and stop plate.

To Adjust
Loosen stop plate mounting screws. Position stop plate to meet requirement. Tighten stop plate mounting screws.



(Right Side View)

2.94 Printing Mechanism (continued)

TYPEBOX CARRIAGE ROLLER

(1) Requirement

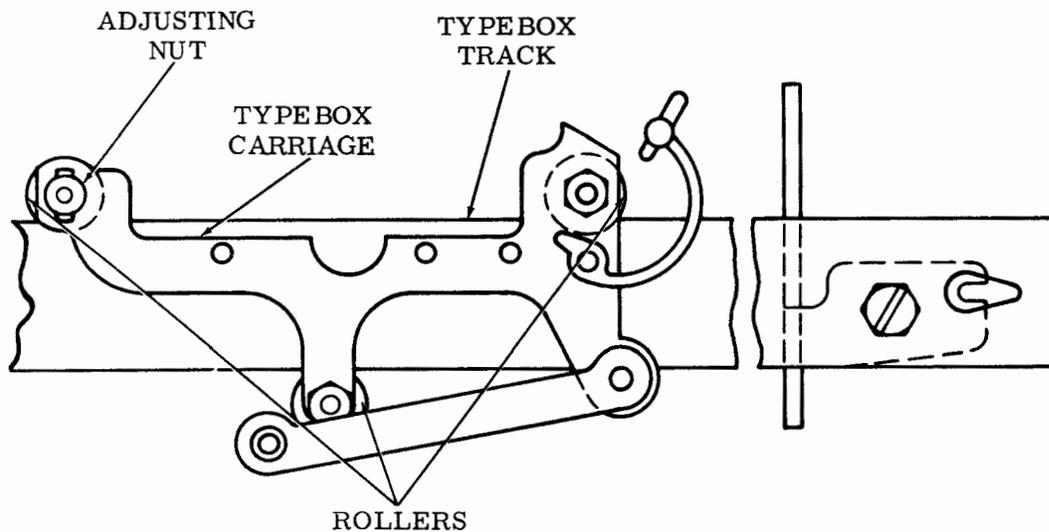
Typebox carriage should ride freely on typebox track.

(2) Requirement

Minimum play between rollers and typebox track in both vertical and front and rear directions.

To Adjust

Loosen adjusting nut and position roller in area where typebox track is widest. Tighten adjusting nut. Check for excessive play or binds along entire length of typebox track. Refine if necessary.



(Front View)

2.95 Printing Mechanism (continued)

TYPEBOX ALIGNMENT

- (1) To Check
Several characters printed.

Requirement

Printed impression of characters at top and bottom should be equal as gauged by eye.

To Adjust

Operate typing unit under power. Alternately select type pallet in top and bottom row. Turn adjusting screw in or out a quarter-turn at a time.

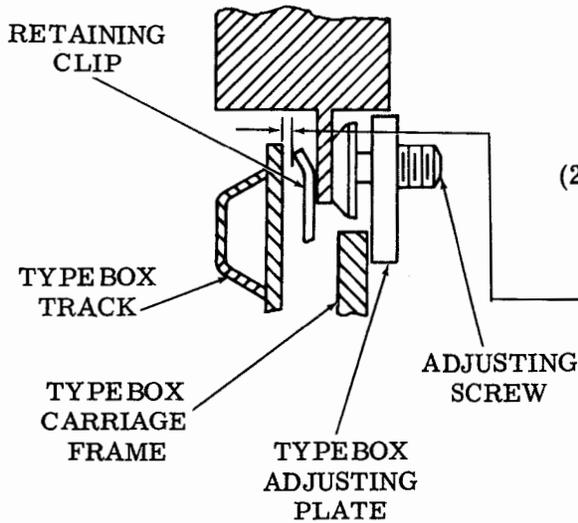
- (2) To Check
Typebox removed.

Requirement

Min 0.030 inch between typebox retaining clip and typebox track.

To Adjust

Refine (1) To Check requirement.



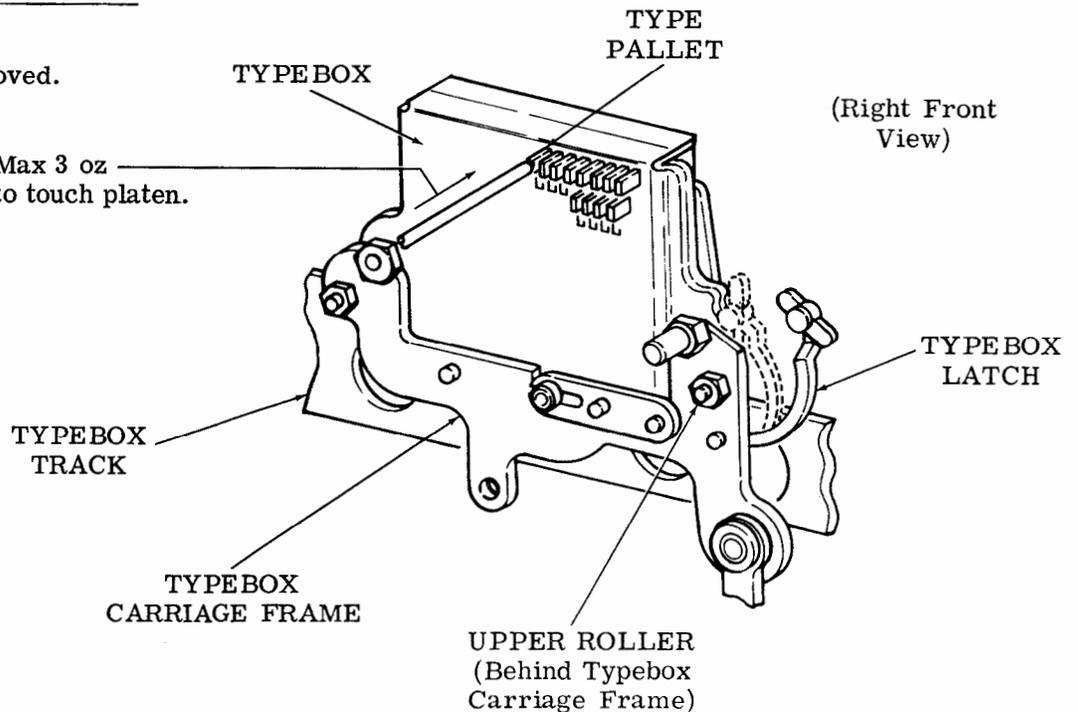
(Left Side View)

TYPEBOX PALLET SPRING

- To Check
Ink ribbon removed.

Requirement

Min 1 oz---Max 3 oz
for type pallet to touch platen.



2.96 Platen Mechanism (Friction Feed)

RIGHT PAPER STRAIGHTENER COLLAR

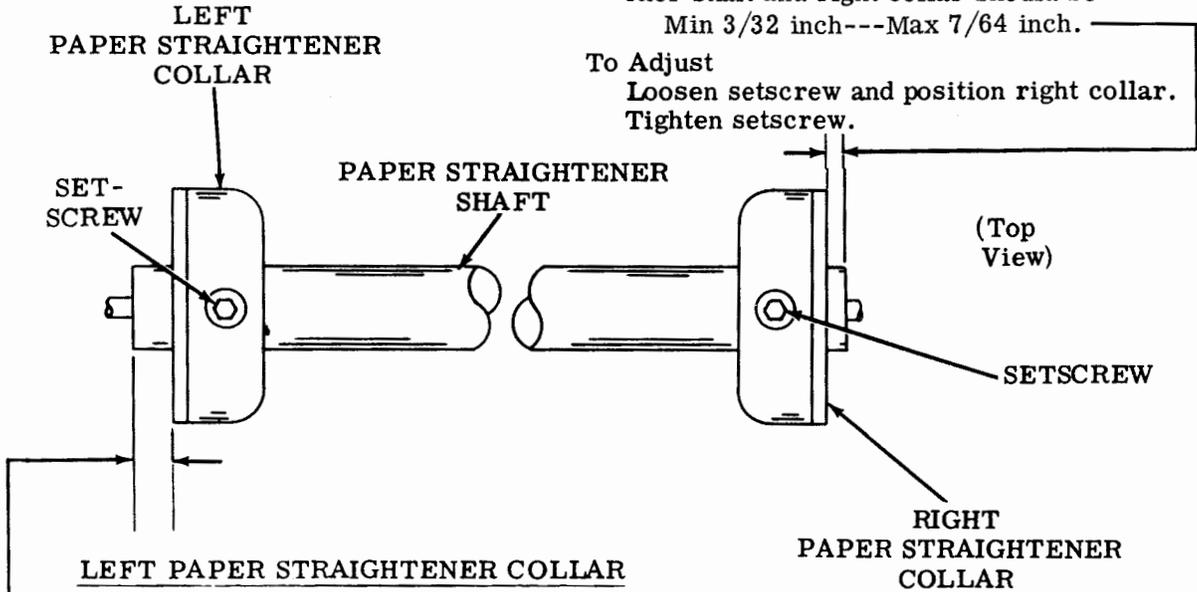
Requirement

Space between right shoulder of paper straightener shaft and right collar should be

Min $3/32$ inch---Max $7/64$ inch.

To Adjust

Loosen setscrew and position right collar. Tighten setscrew.



LEFT PAPER STRAIGHTENER COLLAR

Requirement

Space between left shoulder of paper straightener shaft and left collar should be

Min $1/4$ inch---Max $19/64$ inch.

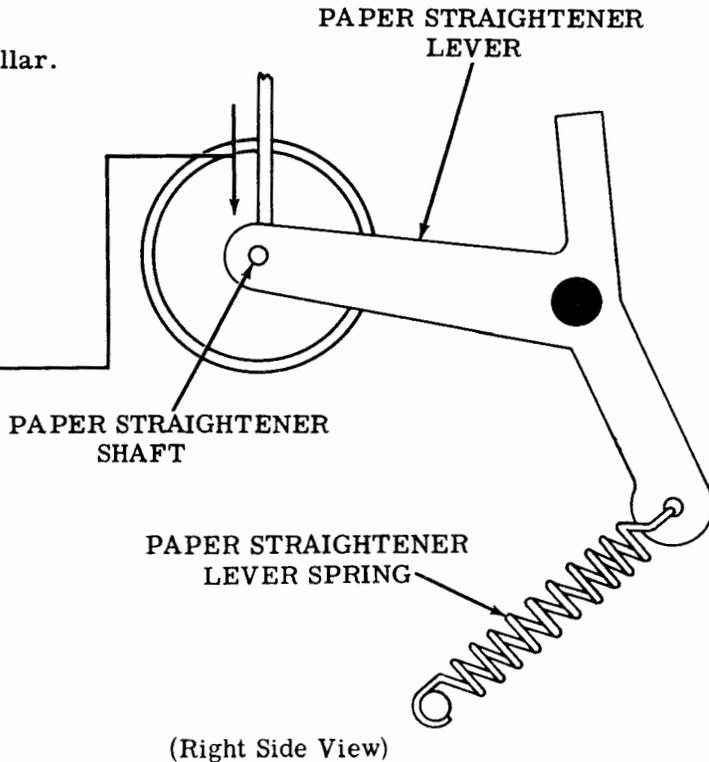
To Adjust

Loosen setscrew and position left collar. Tighten setscrew.

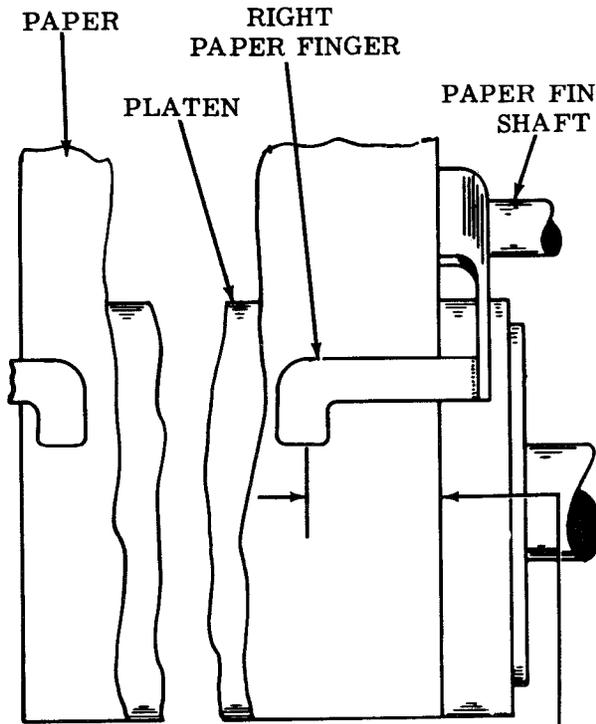
PAPER STRAIGHTENER LEVER SPRING

Requirement

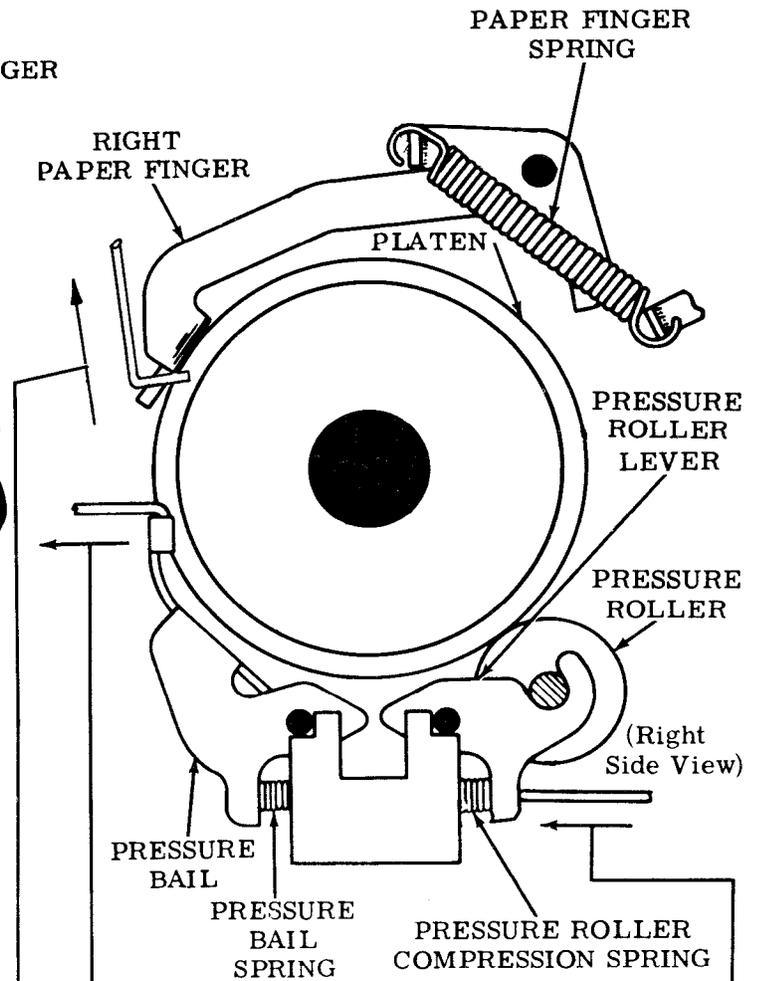
Min $3-1/2$ oz---Max $6-1/2$ oz to start lever moving.



2.97 Platen Mechanism (Friction Feed) (continued)



(Front View)



(Right Side View)

PAPER FINGER

Requirement

Pressure end of paper fingers should overlap paper by
Min 3/8 inch---Max 1/2 inch.

To Adjust

Position paper fingers by sliding them on their shaft.

PAPER FINGER SPRING

To Check

Pull upward on right paper finger.

Requirement

Min 3 oz---Max 6 oz
to start left paper finger moving from platen.

PRESSURE ROLLER LEVER SPRING

Requirement

Min 28 oz---Max 36 oz
to start each center lever moving alternately.

PAPER PRESSURE BAIL SPRING

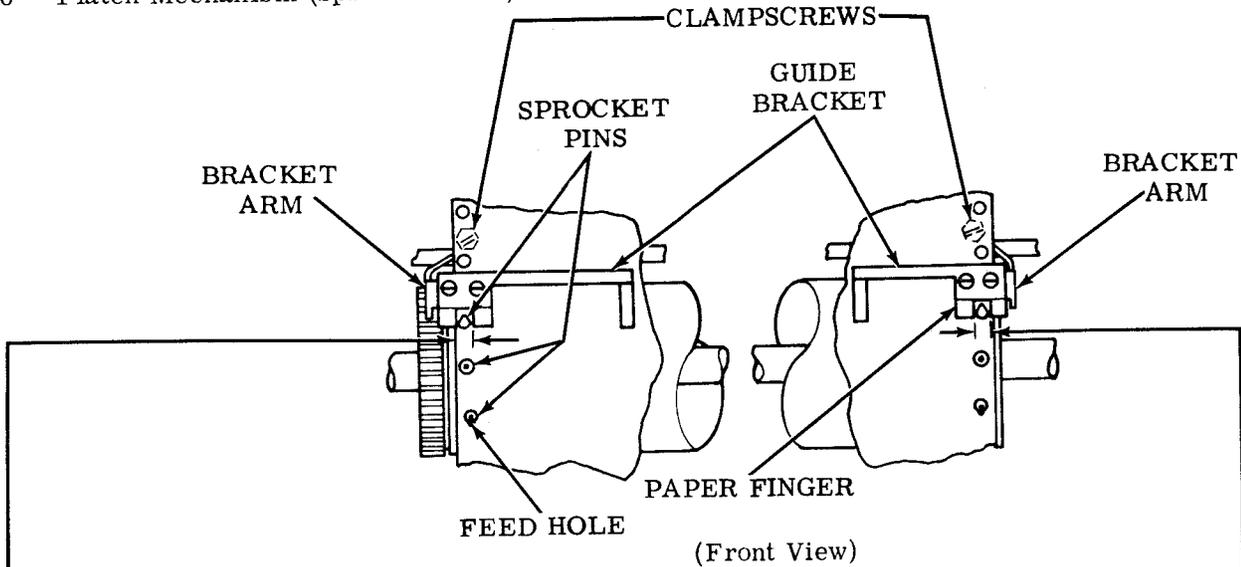
To Check

Scale hooked over pressure bail at each end of platen.

Requirement

Min 42 oz---Max 56 oz
to move pressure bail from platen.

2.98 Platen Mechanism (Sprocket Feed)



PAPER FINGER

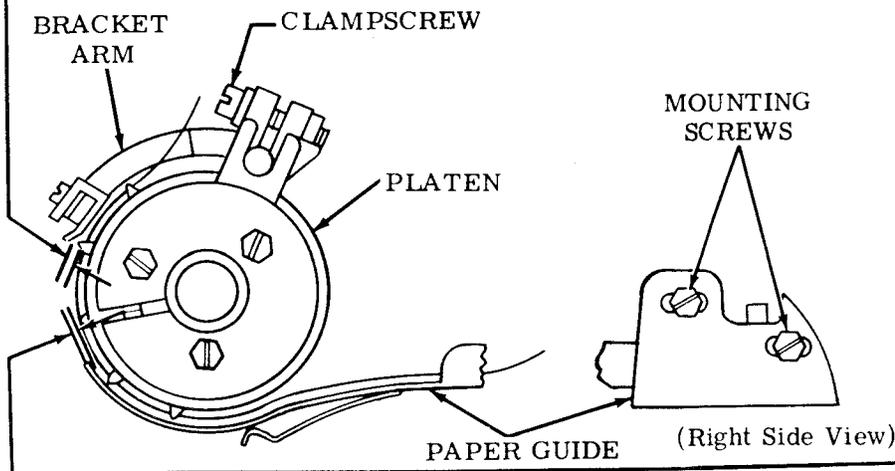
To Check
Guide bracket down in latched position.

(1) Requirement
Sprocket pins should be centrally located in guide slot.

(2) Requirement
Gap between platen and paper finger should be:
Stapled Multiple Copy;
Min 0.050 inch---Max 0.105 inch
Single and Unstapled Multiple Copy;
Min 0.020 inch---Max 0.060 inch

To Adjust
Loosen clampscrews. Position guide bracket horizontally to meet requirement (1). Rotate guide bracket to meet requirement (2). Tighten clampscrews.

Note: The desired clearance should be the minimum which will pass stationery freely.

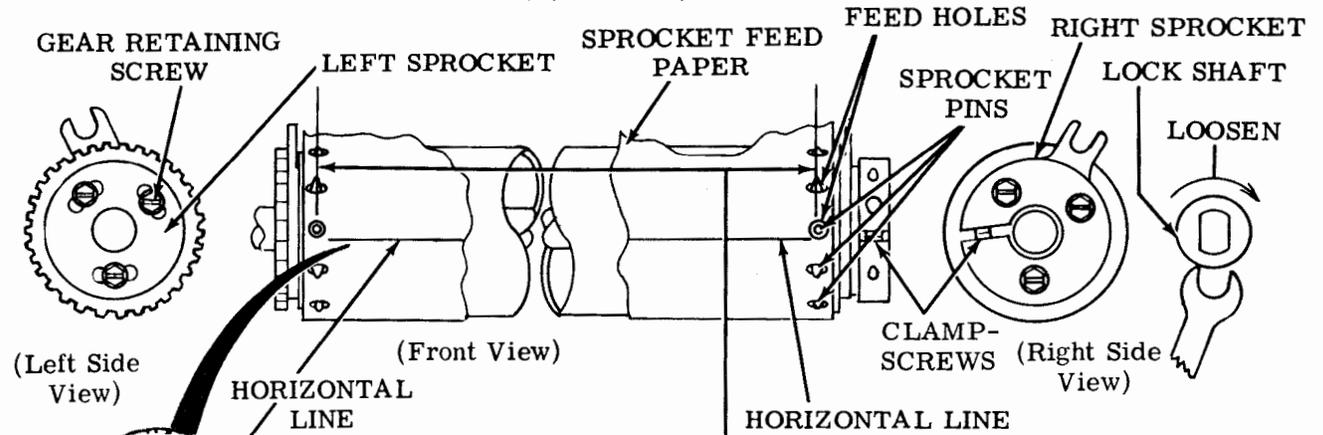


PAPER GUIDE

Requirement
Clearance between platen and front edge of paper guide should be same as requirement (2), PAPER FINGER adjustment.

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

2.99 Platen Mechanism (Sprocket Feed) (continued)



SPROCKET PIN SEPARATION

To Check

A single sheet of sprocket feed paper on platen.

(1) Requirement

Sprocket pins should be centrally located in feed holes of paper.

(2) Requirement

Printed line should be parallel to a line drawn perpendicular to edge of sprocket feed paper ($\pm 1/32$ inch).

To Adjust

All Except 9-1/2 Inch Form Width:
Loosen clampscrew and position right sprocket. Tighten clampscrew.
With 9-1/2 Inch Form Width:
Loosen lock shaft and rotate right sprocket to required position.
Hold right sprocket hub in position and tighten lock shaft.

Note: The 9-1/2 inch platens do not use a clampscrew on the right sprocket.

PRINTED LINE
To Check
A standard sheet of sprocket feed paper on platen, type a printed line. Draw a horizontal line on sprocket feed paper even with bottom edge of first feed hole below printed line.
Requirement
Bottom edge of printed line should be $1/32$ inch $\pm 1/64$ inch above horizontal line plus a multiple of $1/6$ inch if required.
To Adjust
Loosen gear retaining screws and position left sprocket. Tighten gear retaining screws.
Note: If nonstandard paper is used, a variation in requirement may be necessary.

PLATEN ENDPLAY

To Check

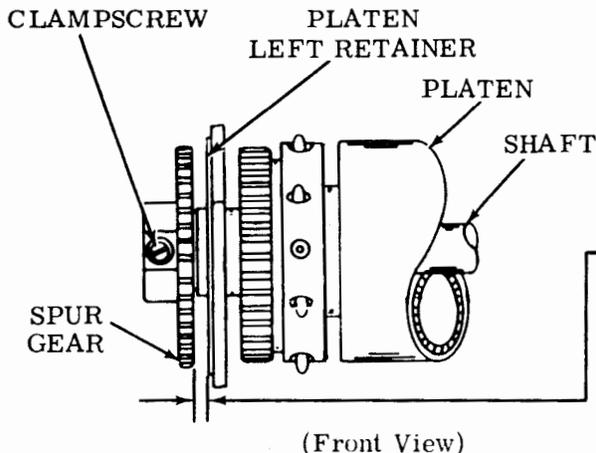
Line feed bars disengaged.

Requirement

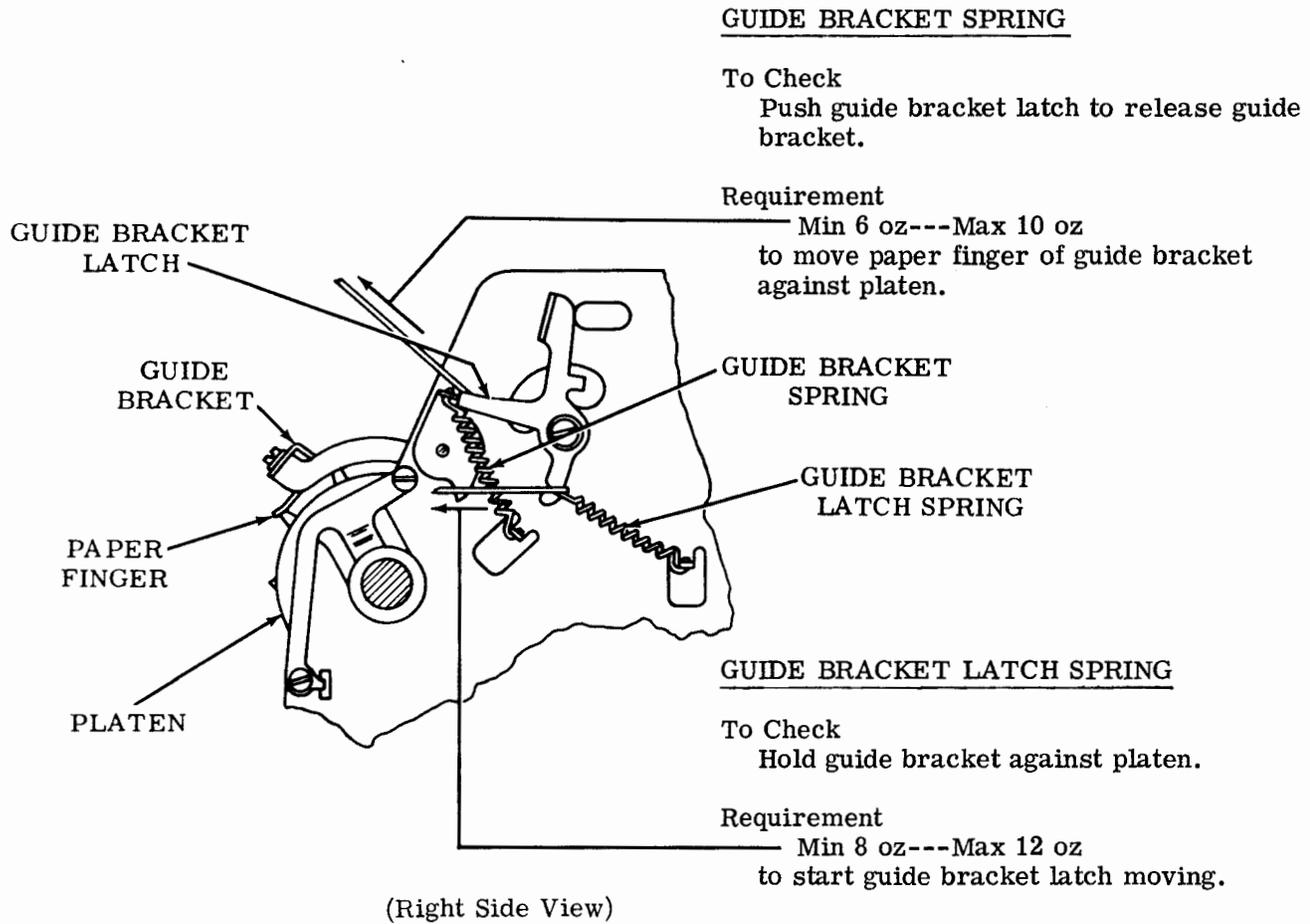
Min some---Max 0.010 inch endplay in platen shaft.

To Adjust

Loosen clampscrew and position spur gear. Tighten clampscrew.



2.100 Platen Mechanism (Sprocket Feed) (continued)



2.101 Spacing and Carriage Return Mechanisms (continued)

DASHPOT AND SIDE VENT SCREW

Note: Before checking this adjustment, see that distance from end of side vent screw to side of dashpot is 5/16 inch. Also check that dashpot vent screw is started and run down seven turns into tapped hole.

To Check

Return carriage from various points along line of travel. Note carriage bounce as carriage returns to left hand margin.

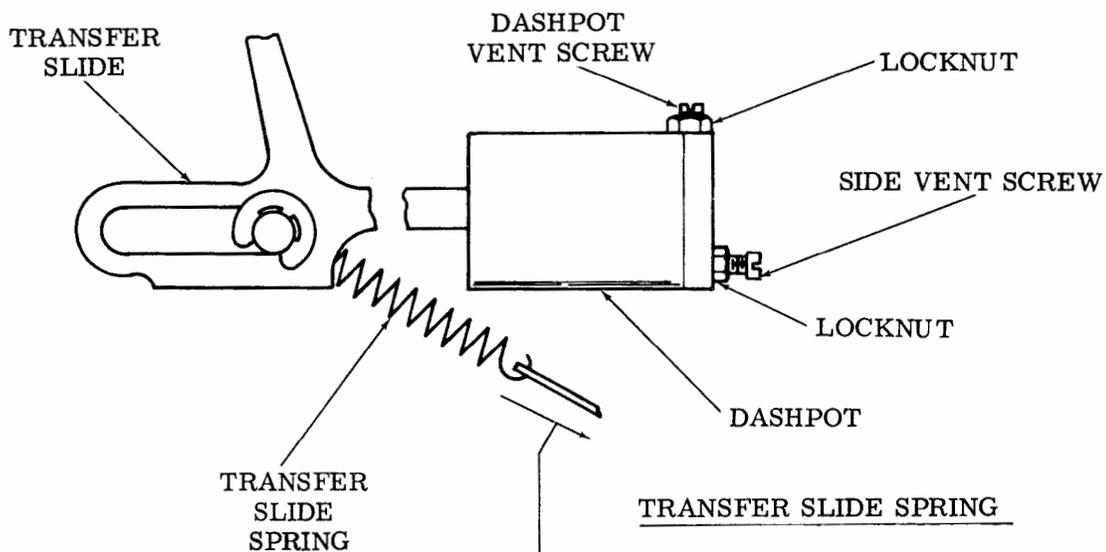
Requirement

Typebox carriage should return from any length of line without bouncing.

To Adjust

Turn dashpot vent screw until slight carriage bounce is seen. Back off screw until effect disappears. Back off screw a quarter turn more and tighten locknut. If this procedure does not fix the trouble, turn side vent screw a half turn at a time and repeat adjustment of dashpot vent screw. Tighten side vent screw locknut, but do not over tighten.

CAUTION: THE SIDE VENT SCREW SHOULD NEVER BE REMOVED UNLESS CARRIAGE IS SECURELY TIED TO PREVENT IT FROM RETURNING TO LEFT HAND MARGIN.



(Front View)

To Check

Transfer slide in extreme left and spring unhooked.

Requirement

Min 3-1/2 oz---Max 4-1/2 oz to pull spring to installed length.

2.102 Vertical and Horizontal Positioning Mechanisms (continued)

TYPEBOX RAIL ALIGNMENT (FINAL)

Note: First check TYPEBOX RAIL ALIGNMENT (PRELIMINARY) (2.46).

To Check

Hold retraction reset arm to rear of typing unit to disable typebox retraction mechanism. Print "EuEuEu" across page. Consider left and right halves of page separately.

Requirement

Printed characters should be evenly spaced as gauged by eye.

To Adjust

Loosen typebox rail clampscrews friction tight. If printed characters are offset as follows:

- (1) E uE uE uE where "u" is misplaced to right — raise typebox rail using pry points.
- (2) Eu Eu Eu Eu where "u" is misplaced to left — lower typebox rail using pry points.

Tighten clampscrews. Recheck requirement and refine if necessary.

3. VARIATIONS

3.01 Low-Paper Alarm (Friction Feed)

SWITCH POSITION

Requirement

Low-paper switch should be in lowermost position in its mounting holes and parallel with actuating lever.

To Adjust

Loosen two switch mounting screws and move switch to lowermost position. Visually align the switch parallel with actuating lever. Tighten mounting screws.

ACTUATING LEVER CLEARANCE

(1) Requirement

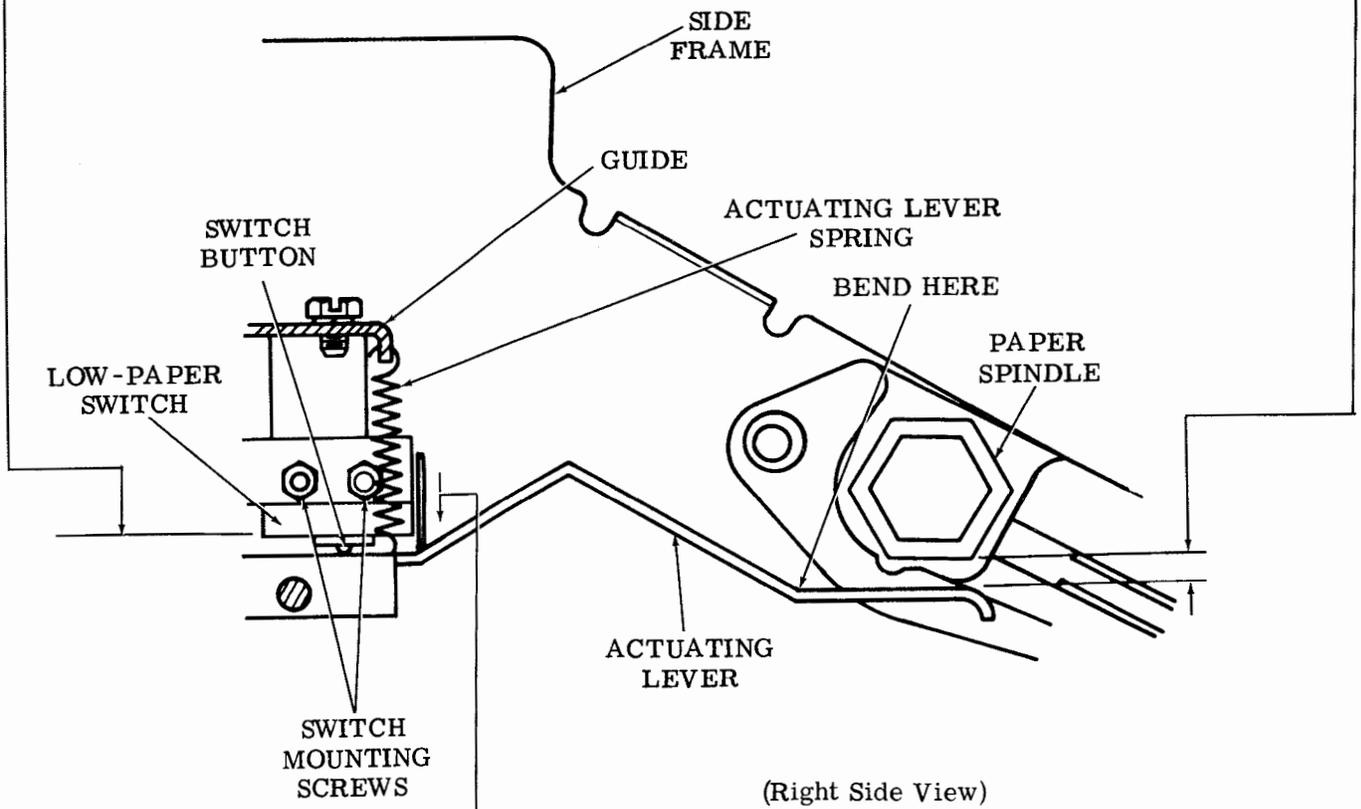
Actuating lever extension should be parallel to flat surface of empty paper spindle.

(2) Requirement

Actuating lever should be about 1/4 inch below flat surface of empty paper spindle.

To Adjust

Bend actuating lever at point indicated.



ACTUATING LEVER SPRING

Requirement

Min 2-1/2 oz---Max 4-1/2 oz to move actuating lever clear of low-paper switch button.

3.02 Paper-Out Alarm (Sprocket Feed)

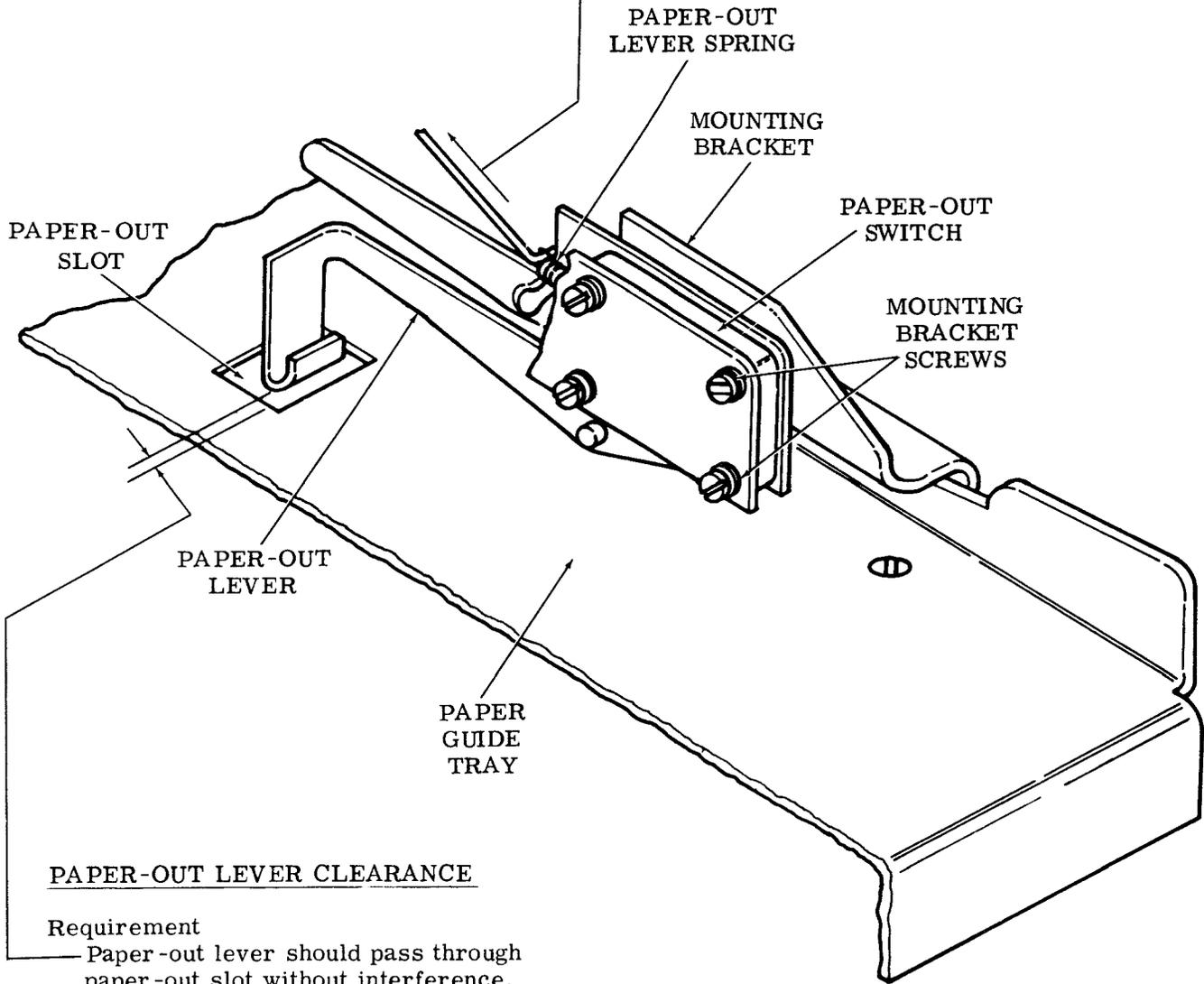
PAPER-OUT LEVER SPRING

To Check

Paper-out lever in paper-out position. Paper-out lever spring unhooked from spring post.

Requirement

Min 3/4 oz---Max 1-1/2 oz
to pull spring to installed length.



(Right Rear View)

Requirement

Paper-out lever should pass through paper-out slot without interference.

To Adjust

Loosen two nuts of mounting bracket screws. Align mounting bracket with respect to paper guide tray. Tighten mounting bracket screw nuts.

3.03 Horizontal Tabulation Mechanism

SENSING ARM

To Check

Four tabs set on tab wheel (approximately equal distance between tabs). Carriage positioned with selected tab stop just past tabulator pawl. Spacing feed pawl on high part of eccentric cam engaging ratchet. (Check by moving spacing feed pawl on low part of eccentric cam away from ratchet.) Spacing clutch disengaged (latched). Push back operating lever extension link until it is blocked by blocking lever.

(1) Requirement

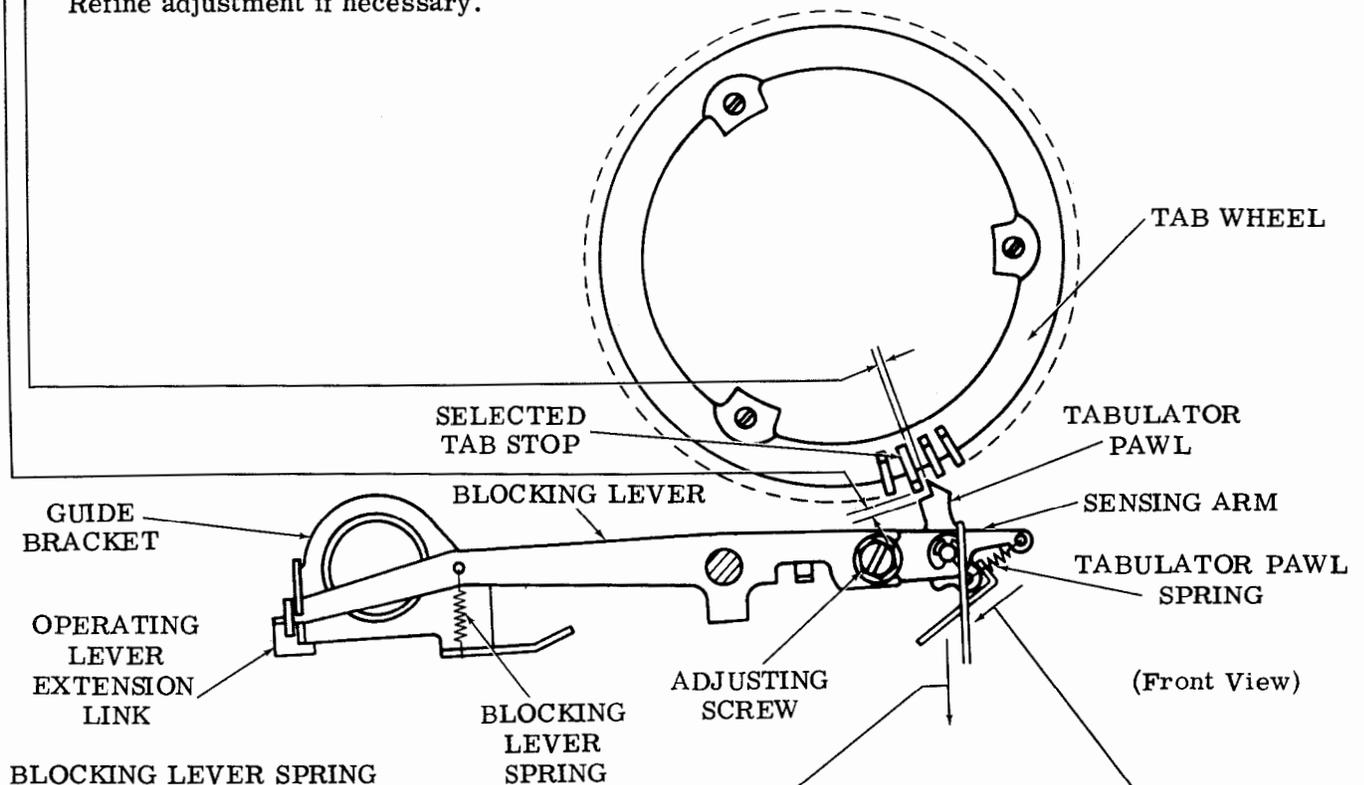
Min 0.040 inch---Max 0.050 inch
clearance between head of selected tab stop.

(2) Requirement

Min 0.005 inch---Max 0.015 inch
clearance between side of selected tab stop and tabulator pawl.

To Adjust

Loosen adjusting screw friction tight. Position sensing arm. Tighten adjusting screw and recheck requirements. Check requirements for each of the three other tab stops previously set. Refine adjustment if necessary.



BLOCKING LEVER SPRING

To Check

Operating lever extension link unblocked by blocking lever.

Requirement

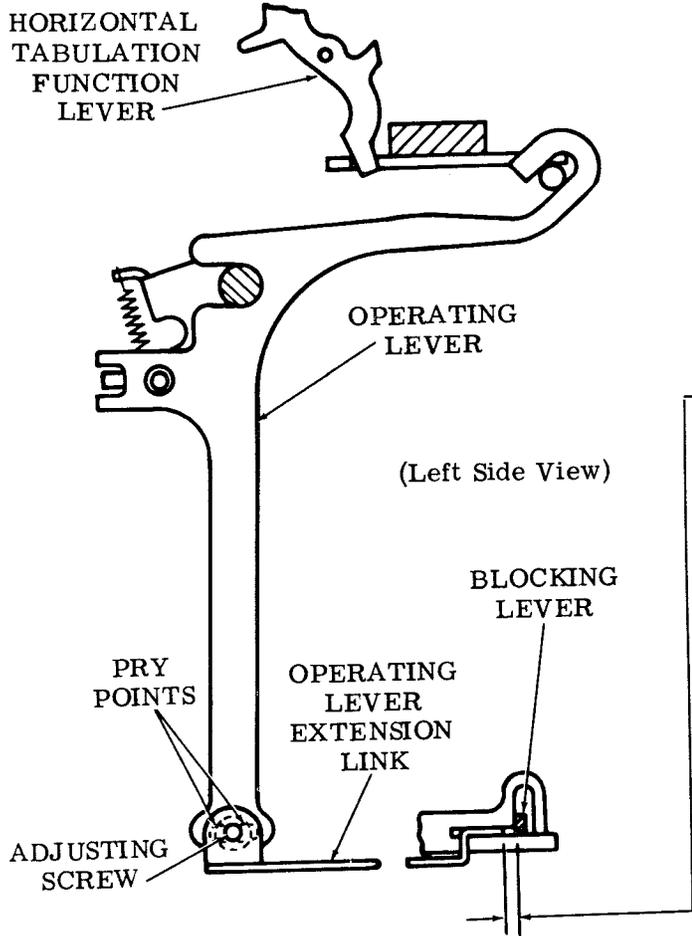
Min 2-1/2 oz---Max 4-1/2 oz
to move blocking lever away from its stop on guide bracket.

TABULATOR PAWL SPRING

Requirement

Min 3 oz---Max 5 oz
to move tabulator pawl away from its stop.

3.04 Horizontal Tabulation Mechanism (continued)



OPERATING LEVER EXTENSION LINK

To Check

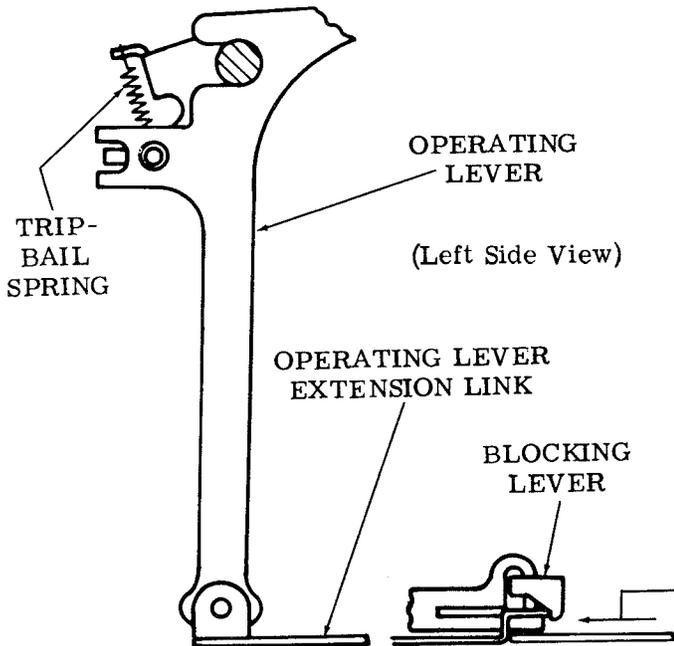
Codebars 1 and 4 marking and all other codebars spacing (HT). Engage (trip) codebar clutch and rotate main shaft until horizontal tabulation function lever is fully selected. Take up play in blocking lever to make gap between operating lever extension link and blocking lever a minimum.

Requirement

Min 0.015 inch---Max 0.025 inch gap between operating lever extension link and blocking lever.

To Adjust

Loosen adjusting screw. Position operating lever extension link using pry points. Tighten adjusting screw.



TRIPBAIL SPRING

To Check

Operating lever extension link unblocked by blocking lever.

Requirement

Min 2 oz---Max 4 oz to start operating lever extension link moving.

3.05 Horizontal and Vertical Tabulation Mechanism (continued)

TRIPBAIL

To Check
Operating lever extension link blocked by blocking lever.

Requirement
Min 0.010 inch---Max 0.025 inch gap between spacing clutch stop bail and shoe lever.

To Adjust
Loosen adjusting screw friction tight. Position stop bail by moving tripbail using pry points. Tighten adjusting screw.

PRY POINTS

ADJUSTING SCREW

STOP BAIL

HORIZONTAL TABULATION FUNCTION LEVER

OPERATING LEVER

TRIPBAIL

SPACING CLUTCH

SHOE LEVER

SLIDE RETAINER

Requirement
Min some---Max 0.010 inch clearance tab slides and retainer.

To Adjust
Loosen mounting screw. Position retainer to meet requirement. Tighten mounting screw.

Note: Tab slides should move freely through their full length of travel.

OPERATING LEVER EXTENSION LINK

BLOCKING LEVER

(Left Side View)

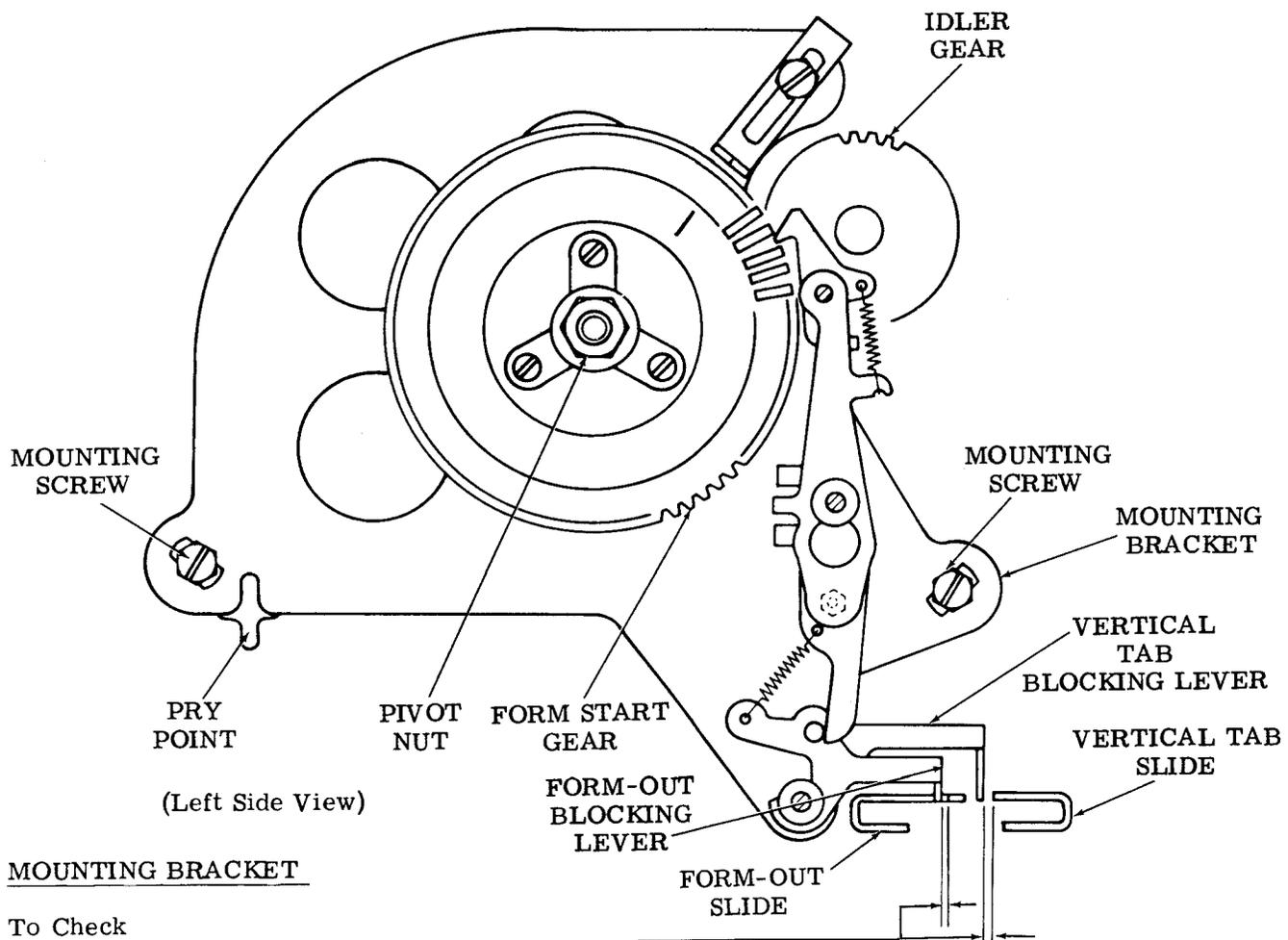
MOUNTING SCREW

RETAINER

TAB SLIDES

(Left Side View)

3.06 Vertical Tabulation Mechanism (continued)



(Left Side View)

MOUNTING BRACKET**To Check**

Vertical tab function lever fully selected. Measure clearance between vertical tab slide and vertical tab blocking lever. Then, with form-out function lever fully selected, measure clearance between form-out slide and form-out blocking lever.

Requirement

Min 0.010 inch---Max 0.015 inch
clearance between the slide and blocking lever which gives closest gap.

To Adjust

Disengage (latch) all clutches. Select code combination first for the vertical tab (1, 2, 4, 8 marking, all others spacing) and then the form-out (3 and 4 marking, all others spacing). Trip the function clutch and turn main shaft until the stripper blade just touches the selected function pawl on its way up. Loosen three mounting bracket mounting screws. Position mounting bracket to meet requirement. Tighten mounting screws.

FORM START GEAR BACKLASH

Note 1: MOUNTING BRACKET adjustment must be made prior to this adjustment.

To Check

Hold the idler gear stationary and check backlash in tab wheel. Check in four positions approximately 90° apart by turning platen knob to change positions.

Requirement

Barely perceptible backlash between idler gear and form start gear.

To Adjust

Loosen pivot nut. Position form start gear to meet requirement. Tighten pivot nut.

Note 2: The form start gear should remesh properly when checked in at least three positions (120° apart).

3.07 Vertical Tabulation Mechanism (continued)

POINTER

Note: FORM START GEAR BACKLASH (3.06) and TAB WHEEL adjustments must be made prior to this adjustment.

To Check

Line feed clutch disengaged (latched).
Detent bail fully detenting line feed spur gear. Form-out tab stop spaced just beyond sensing pawls.

(1) Requirement

Pointer should be in line with tab wheel mark.

(2) Requirement

Pointer should clear form-out tab stop about 1/16 inch.

To Adjust

Loosen pointer mounting screw. Position pointer to meet requirement. Tighten mounting screw.

TAB WHEEL

Note: MOUNTING BRACKET (3.06) and FORM START GEAR BACKLASH (3.06) adjustments must be made prior to this adjustment.

To Check

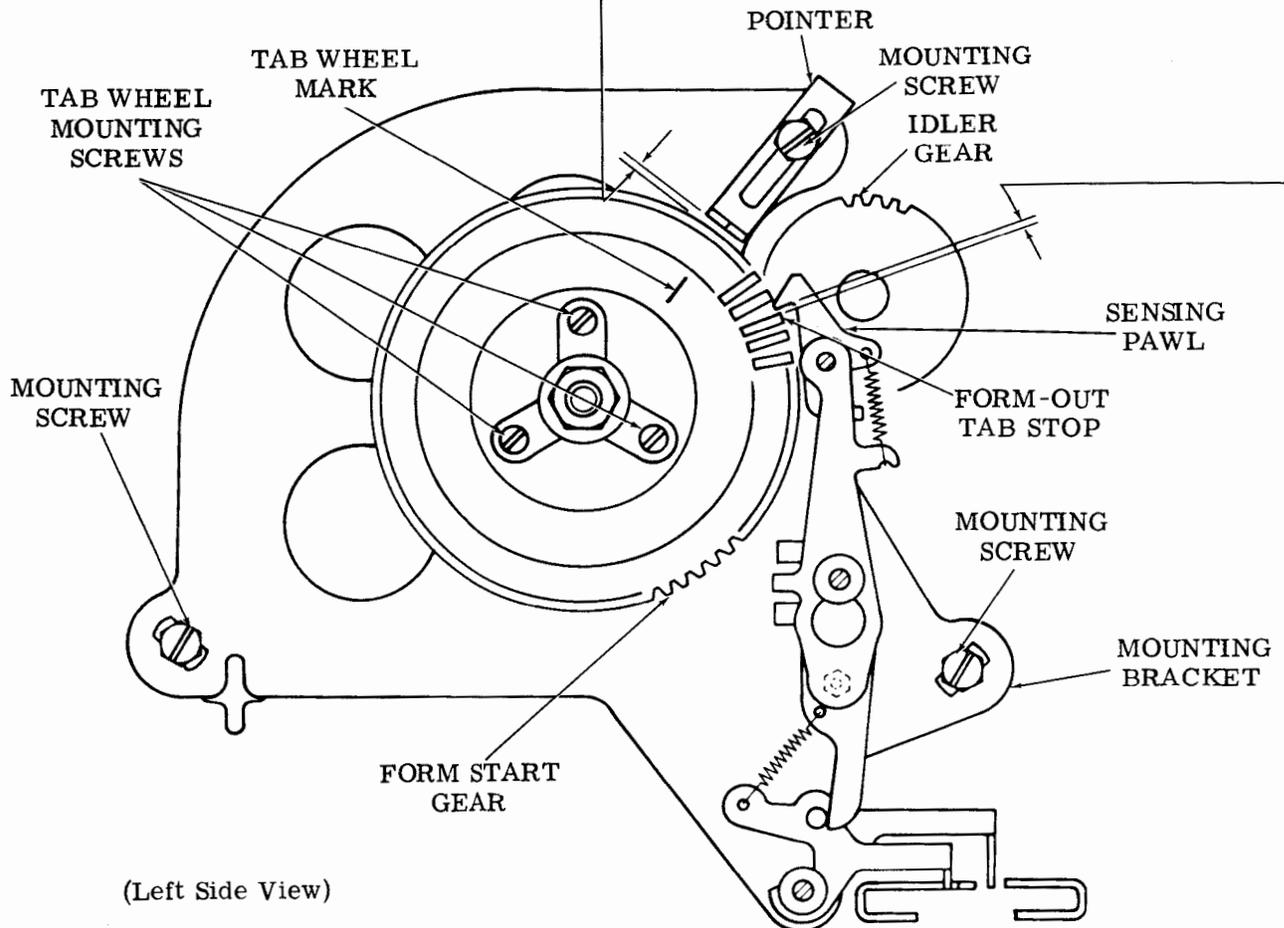
Line feed clutch disengaged (latched).
Detent bail fully detenting line feed spur gear. Gear play taken up to make clearance between form-out tab stop and sensing pawls a minimum.

Requirement

Min some---Max 0.005
clearance between form-out tab stop and sensing pawls.

To Adjust

Pull form start gear out of engagement with idler gear. Turn tab wheel clockwise and locate form-out tab stop under sensing pawls. Loosen three tab wheel mounting screws and position tab wheel to meet requirement. Tighten mounting screws.



3.08 Vertical Tabulation Mechanism (continued)

TAB WHEEL SYNCHRONIZATION

Note: SLIDE RETAINER (3.05), MOUNTING BRACKET (3.06), FORM START GEAR BACKLASH (3.06), TAB WHEEL (3.07), POINTER (3.07), and BLOCKING LEVERS (3.09) adjustments must be made prior to this adjustment.

SENSING PAWL SPRING

Requirement

Min 2 oz---Max 4 oz
to lift each sensing pawl off form-out tab stop.

Note: Check each sensing pawl spring.

Requirement

Tab wheel should be synchronized with paper form after each paper insertion.

To Adjust

Position paper form in typing unit so that it will print in first typing line of the form. The printing line is outlined by the pointer in front of platen. Disengage (latch) line feed clutch. Detent bail fully detenting line feed spur gear. Pull form start gear out of engagement with idler gear. Turn tab wheel clockwise and locate form-out tab stop under sensing pawls. Remesh form start gear with idler gear.

TAB SENSING ARM SPRING

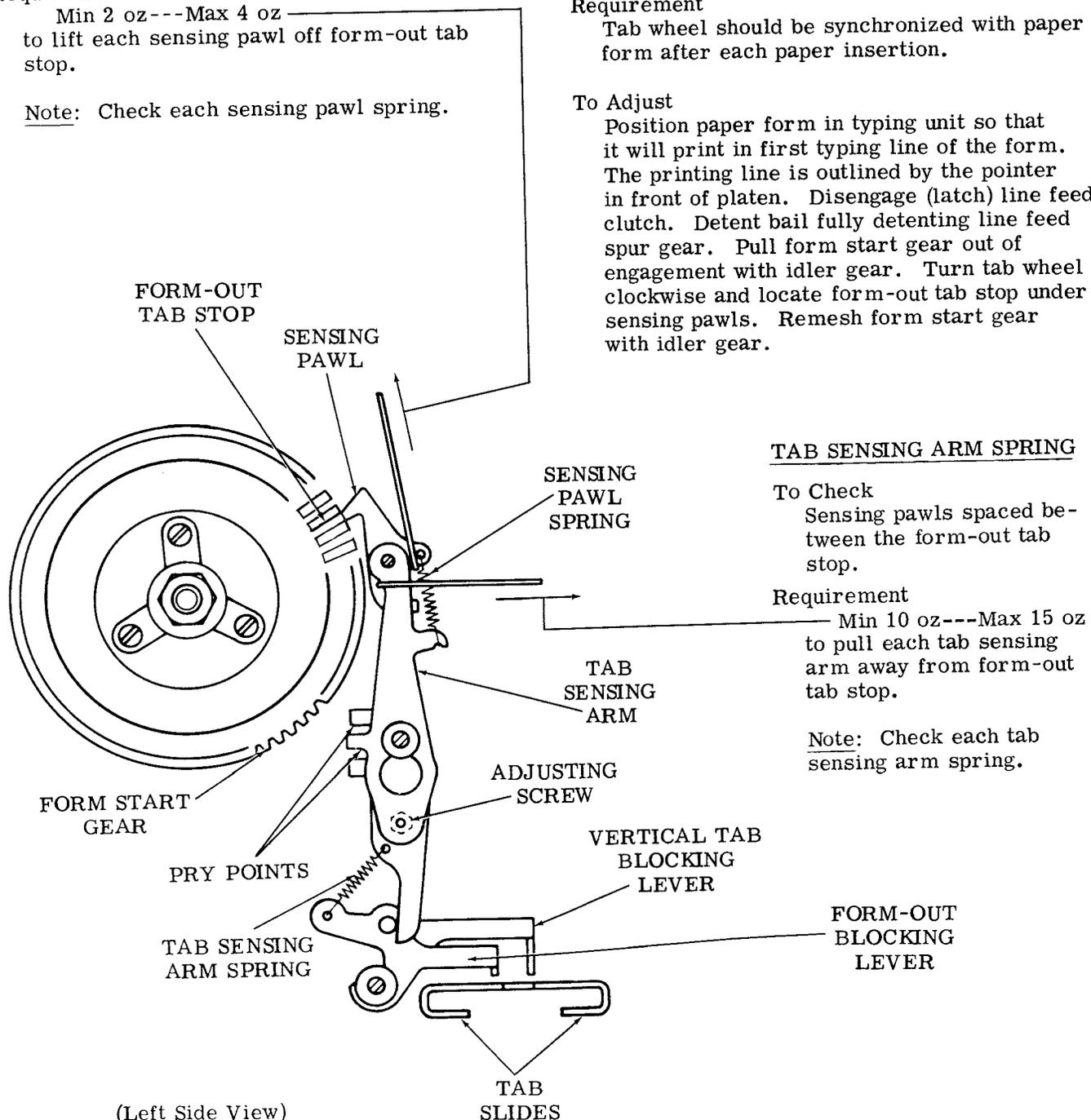
To Check

Sensing pawls spaced between the form-out tab stop.

Requirement

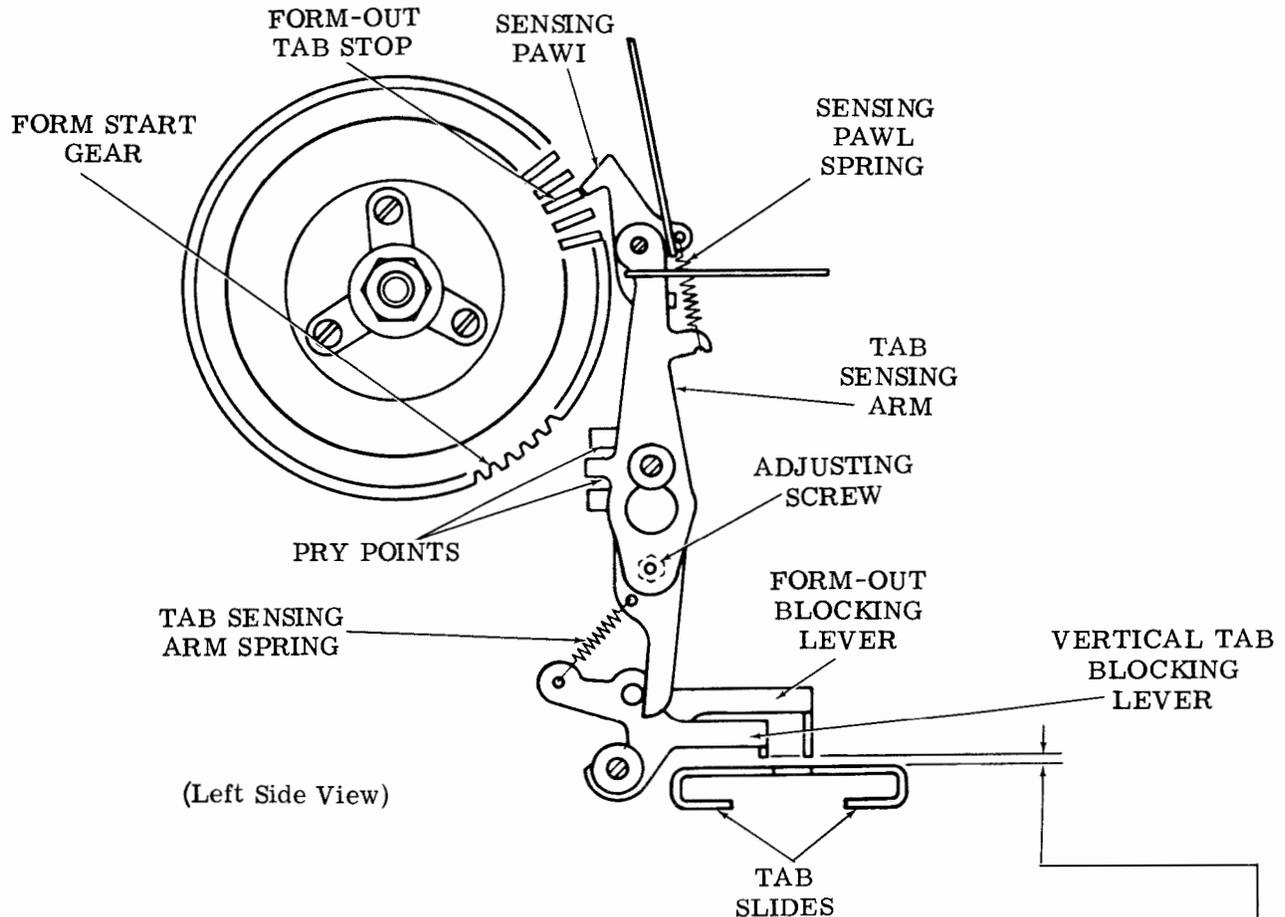
Min 10 oz---Max 15 oz
to pull each tab sensing arm away from form-out tab stop.

Note: Check each tab sensing arm spring.



(Left Side View)

3.09 Vertical Tabulation Mechanism (continued)

BLOCKING LEVERS

Note: SLIDE RETAINER (3.05), MOUNTING BRACKET (3.06), FORM START GEAR BACKLASH (3.06) adjustments must be made prior to this adjustment.

To Check

Sensing pawls resting on top of form-out tab stop. Play in tab slides taken up against retainer to make clearance between blocking levers and top of their respective tab slide a minimum.

Note: On units with only one form-out tab, check a vertical tab approximately 180° from the form-out tab.

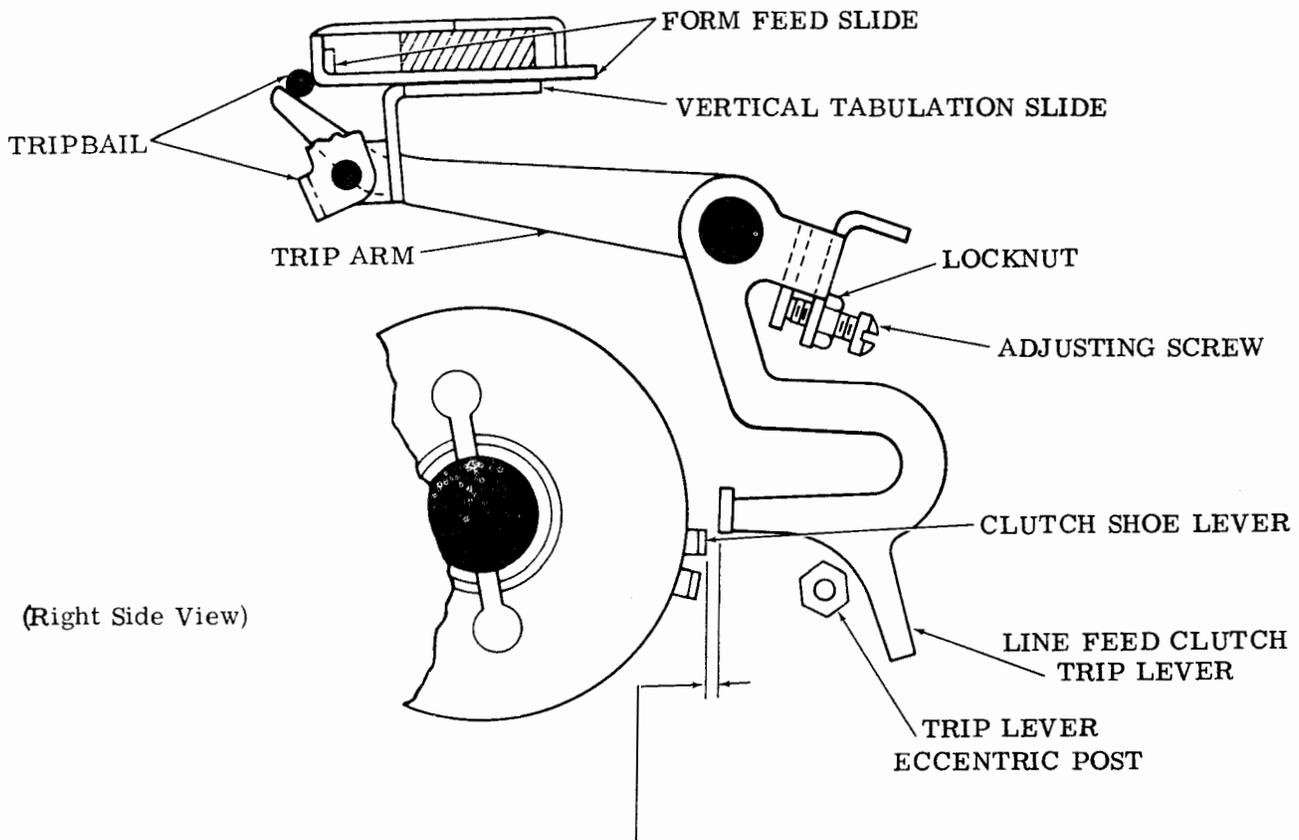
Requirement

Min 0.015 inch---Max 0.030 inch
clearance between blocking levers and top of their respective tab slides.

To Adjust

Line feed clutch engaged (tripped). Rotate main shaft until both sensing pawls come to rest on top of form-out tab stop. Loosen adjusting screw on both tab sensing arms. Position tab sensing arms using pry points. Tighten adjusting screws.

3.10 Vertical Tabulation Mechanism (continued)

LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW

(1) To Check

All clutches disengaged (latched). Codebars 1, 2, 4, and 8 marking and all others spacing (vertical tabulation). Engage (trip) codebar clutch and rotate main shaft until vertical tabulation function pawl is stripped by stripper blade.

Requirement

Min 0.005 inch---Max 0.008 inch
clearance between line feed clutch trip lever and clutch shoe lever.

(2) To Check

All clutches disengaged (latched) codebars 3 and 4 marking and all others spacing (form feed). Engage (trip) codebar clutch and rotate main shaft until form feed function pawl is stripped by stripper blade.

Requirement

Min 0.005 inch---Max 0.008 inch
clearance between line feed clutch trip lever and clutch shoe lever.

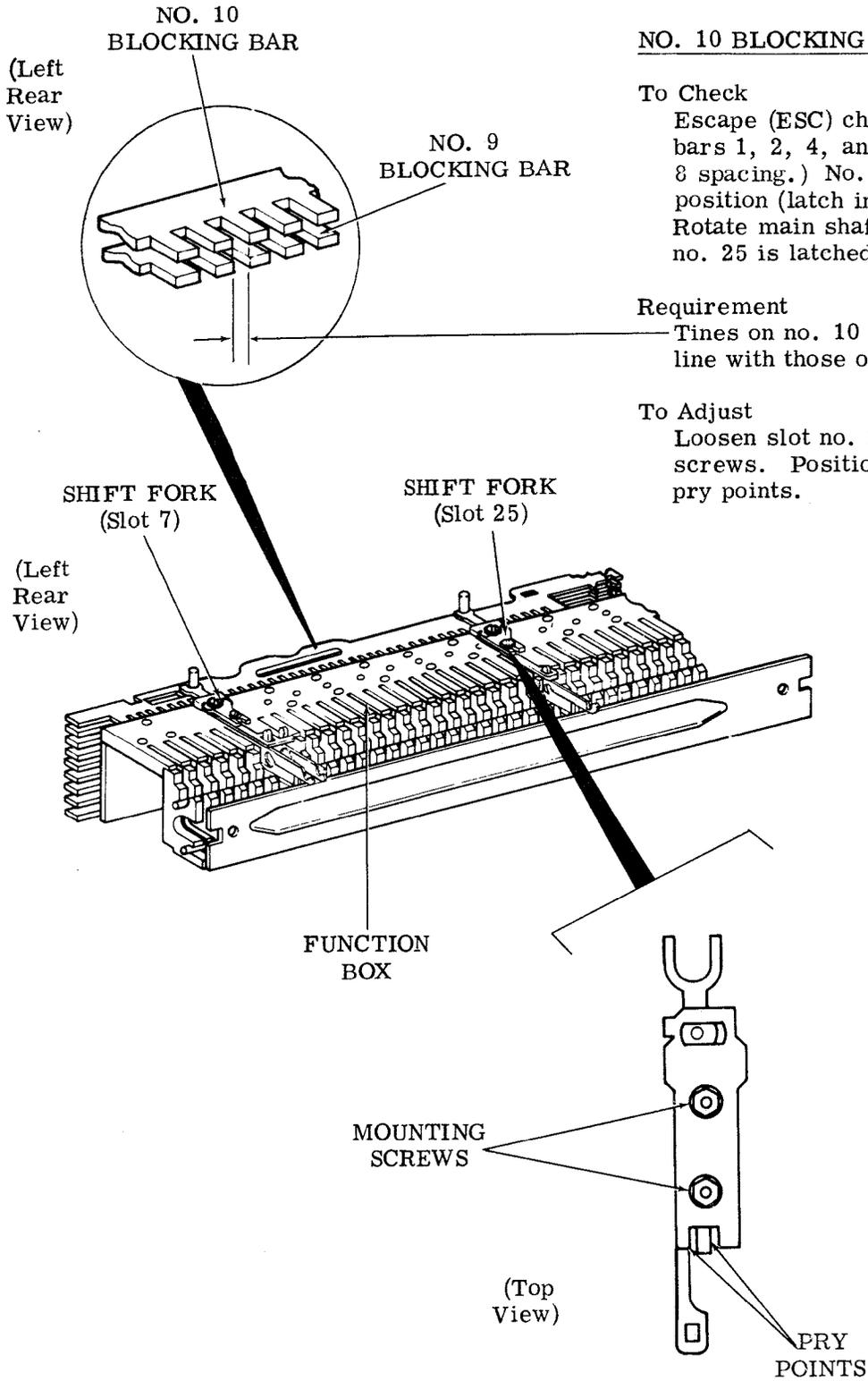
To Adjust

Loosen locknut. Rotate adjusting screw. Tighten locknut.

Affected Adjustment

LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST (2.25)

3.11 Escape Sequence Mechanism



NO. 10 BLOCKING BAR

To Check

Escape (ESC) character selected. (Code-bars 1, 2, 4, and 5 marking; 3, 6, 7, and 8 spacing.) No. 9 blocking bar in unshifted position (latch in slot no. 7 unlatched). Rotate main shaft until function bar in slot no. 25 is latched by associated latch.

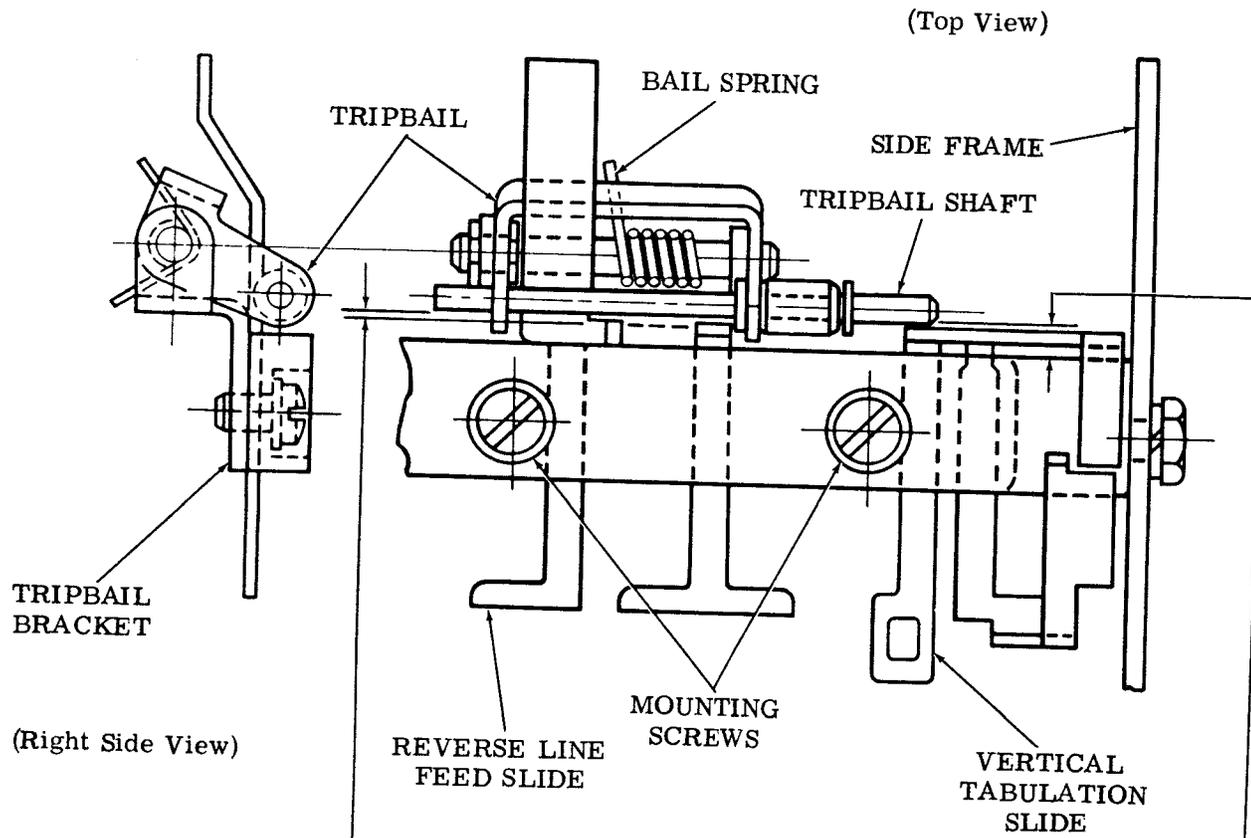
Requirement

Tines on no. 10 blocking bar should be in line with those of no. 9 blocking bar.

To Adjust

Loosen slot no. 25 shift fork mounting screws. Position no. 10 blocking bar using pry points.

3.12 Line Feed Clutch Tripbail Mechanism



TRIPBAIL BRACKET

To Check

Reverse line feed slide and vertical tabulation slide in rearmost position. Tripbail shaft against one of the two slides.

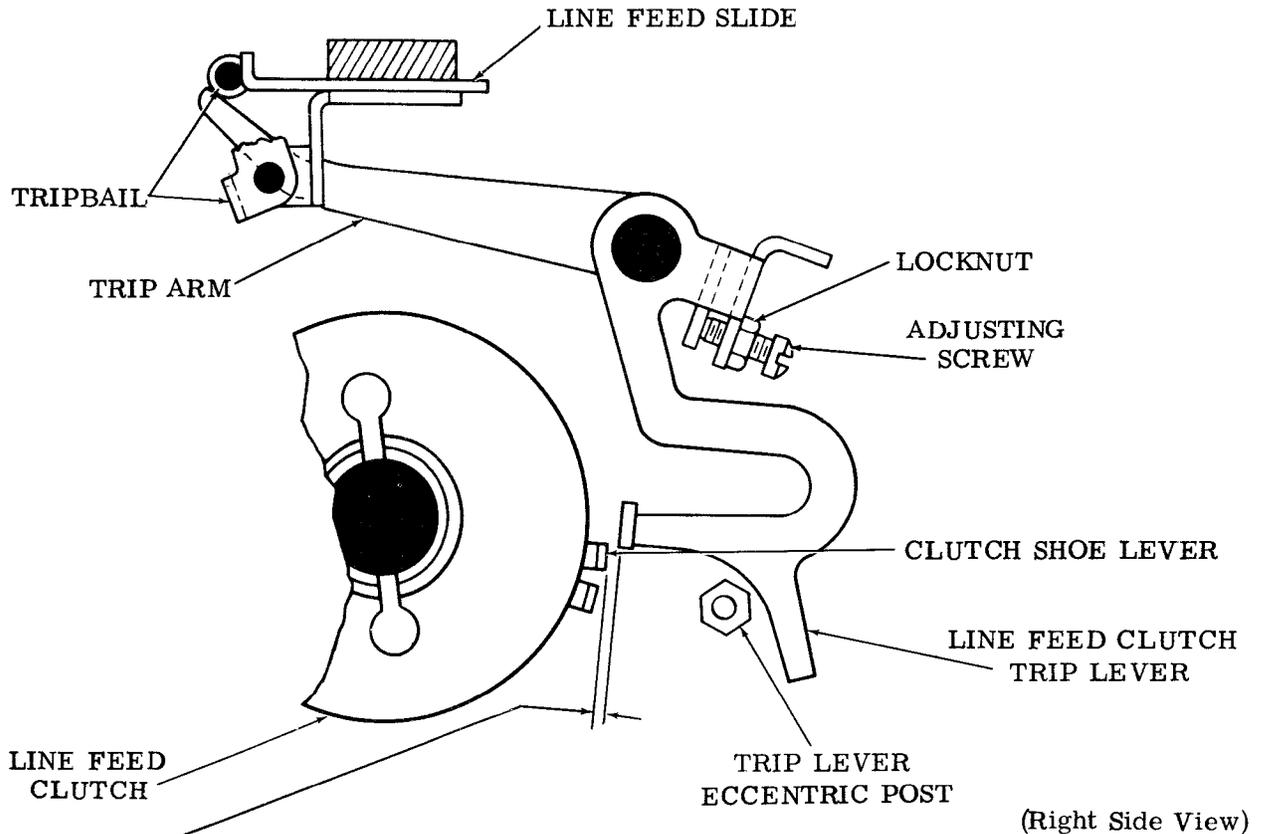
Requirement

— Max 0.005 inch —
clearance between other slide and tripbail shaft.

To Adjust

Loosen tripbail bracket mounting screws. Position tripbail bracket. Tighten mounting screws.

3.13 Line Feed Clutch Tripbail Mechanism (continued)

LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW

Note: This adjustment is preliminary when typing unit is equipped with vertical tabulation mechanism. For the final adjustment, see LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW (3.10).

To Check

Single-double line feed lever in double line feed position. All clutches disengaged (latched). Manually trip function clutch and rotate main shaft until stripper blade moves to midpoint of its downward travel. Pull line feed function pawl back to latch on function bar. Continue rotating main shaft until function bar moves to its rearmost position.

Requirement

Min 0.015 inch---Max 0.025 inch
clearance between line feed clutch trip lever and clutch shoe lever.

To Adjust

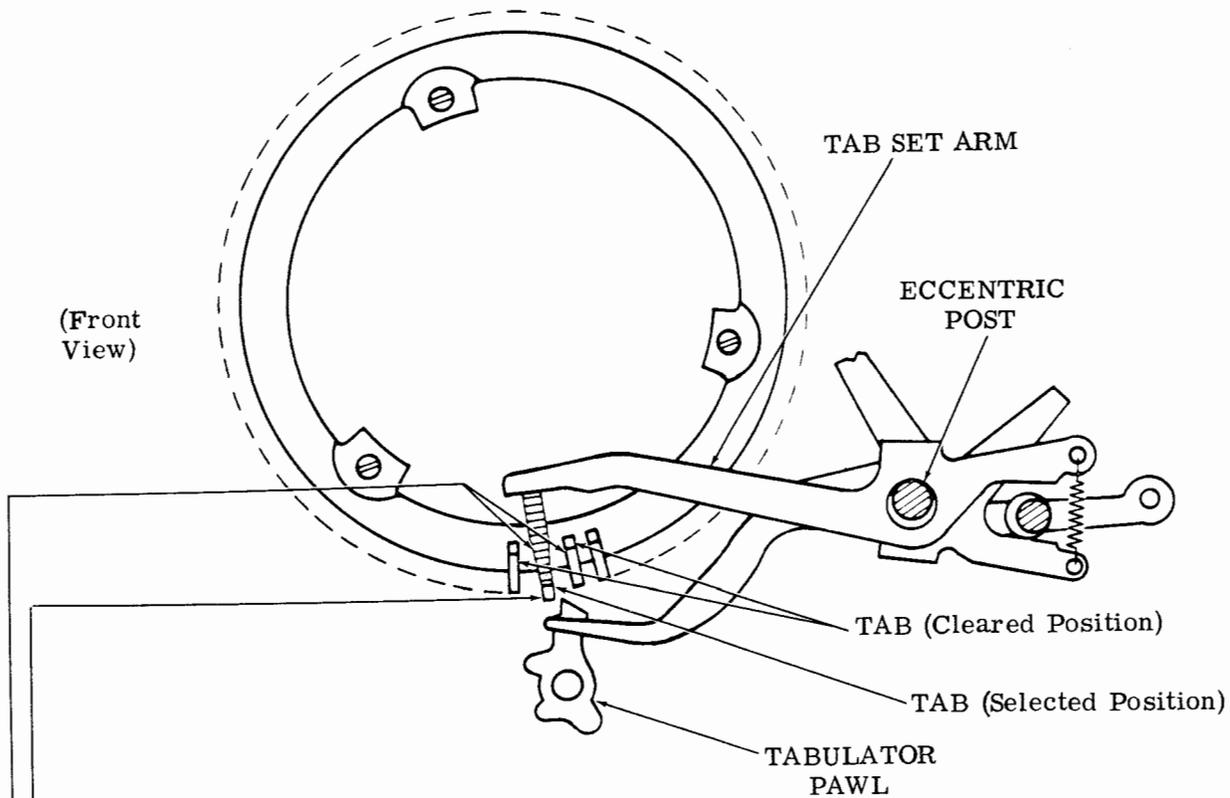
Loosen locknut. Rotate adjusting screw. Tighten locknut.

Affected Adjustment

LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST (2.25)

3.14 Horizontal Tab Stop Control Mechanism

Note: Horizontal tabulation mechanism adjustments (SENSING ARM (3.03), OPERATING LEVER EXTENSION LINK (3.04), and TRIPBAIL (3.05)) and escape sequence mechanism adjustment (NO. 10 BLOCKING BAR (3.11)) should be completed before making the following adjustments for the horizontal tab stop control mechanism

ECCENTRIC POST

(1) Requirement

Tab set arm should set tab to left of tabulator pawl.

(2) Requirement

Tab set arm should be centered between adjacent tabs.

To Adjust

Position carriage at about the center of platen. Engage (trip) spacing clutch and rotate main shaft to advance carriage at least one space. Disengage (latch) spacing clutch. Loosen nuts at both ends of eccentric post. Turn eccentric post to meet requirements. Tighten eccentric post nuts.

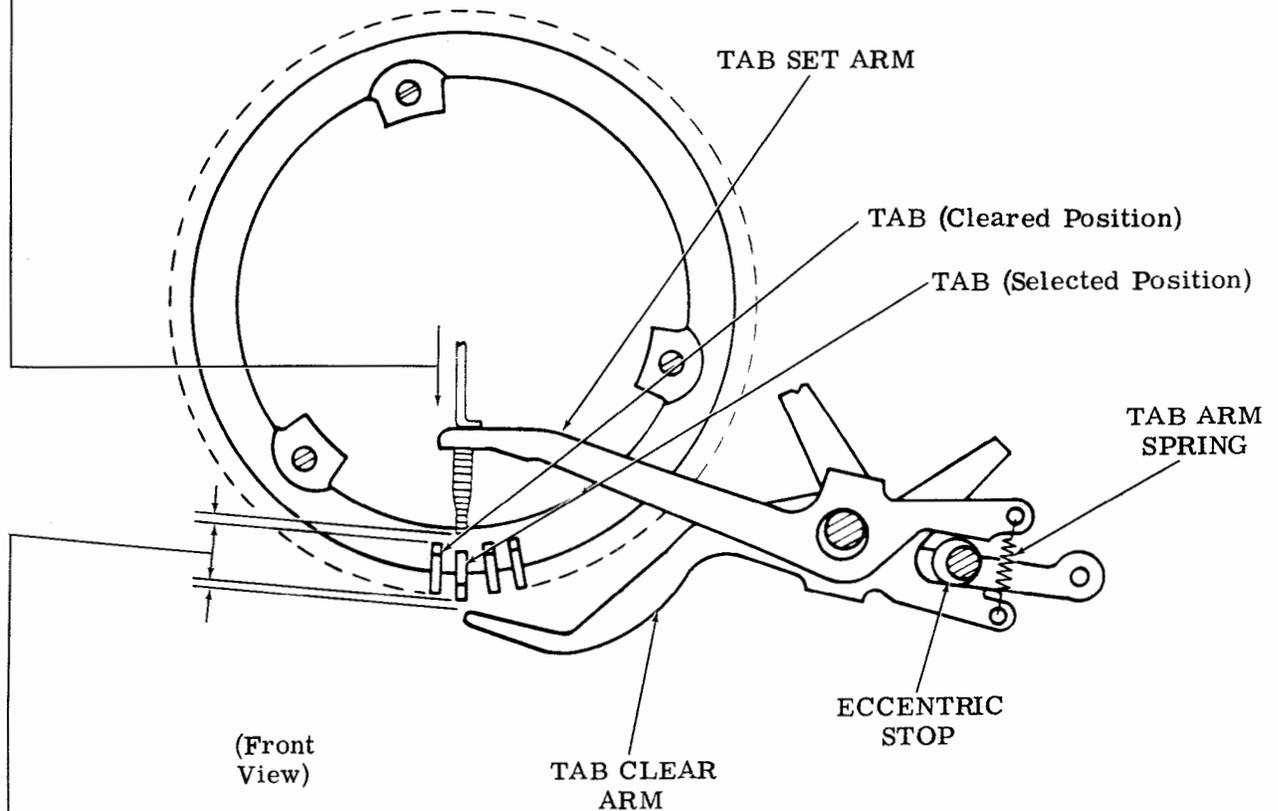
Note: The eccentricity of the eccentric post should be positioned downward.

3.15 Horizontal Tab Stop Control Mechanism (continued)

TAB ARM SPRING

Requirement

Min 1/2 oz --- Max 2 oz
to start tab set arm moving away from eccentric stop.

ECCENTRIC STOP

Requirement

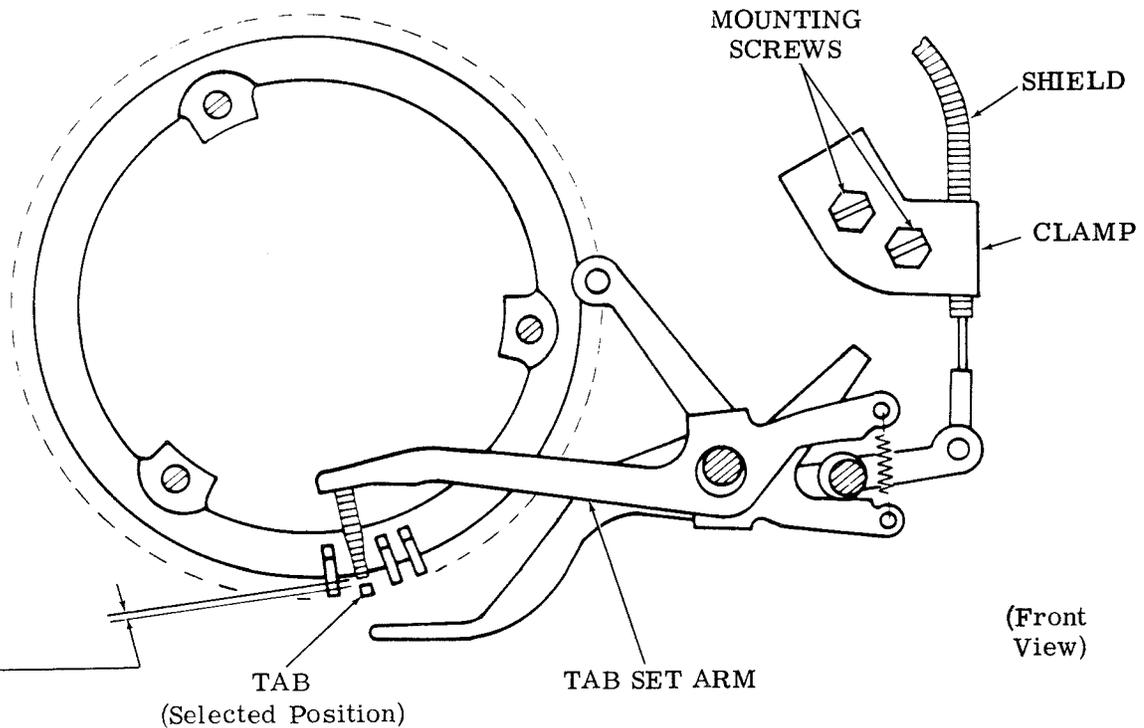
Equal clearance, as gauged by eye, between tab set arm and head of a tab in cleared position, and between tab clear arm and the lead of a tab in selected position.

To Adjust

Loosen eccentric stop mounting nut and turn eccentric stop to meet requirement.
Tighten mounting nut.

Note: The eccentricity of the eccentric stop should be positioned towards the left.

3.16 Horizontal Tab Stop Control Mechanism (continued)



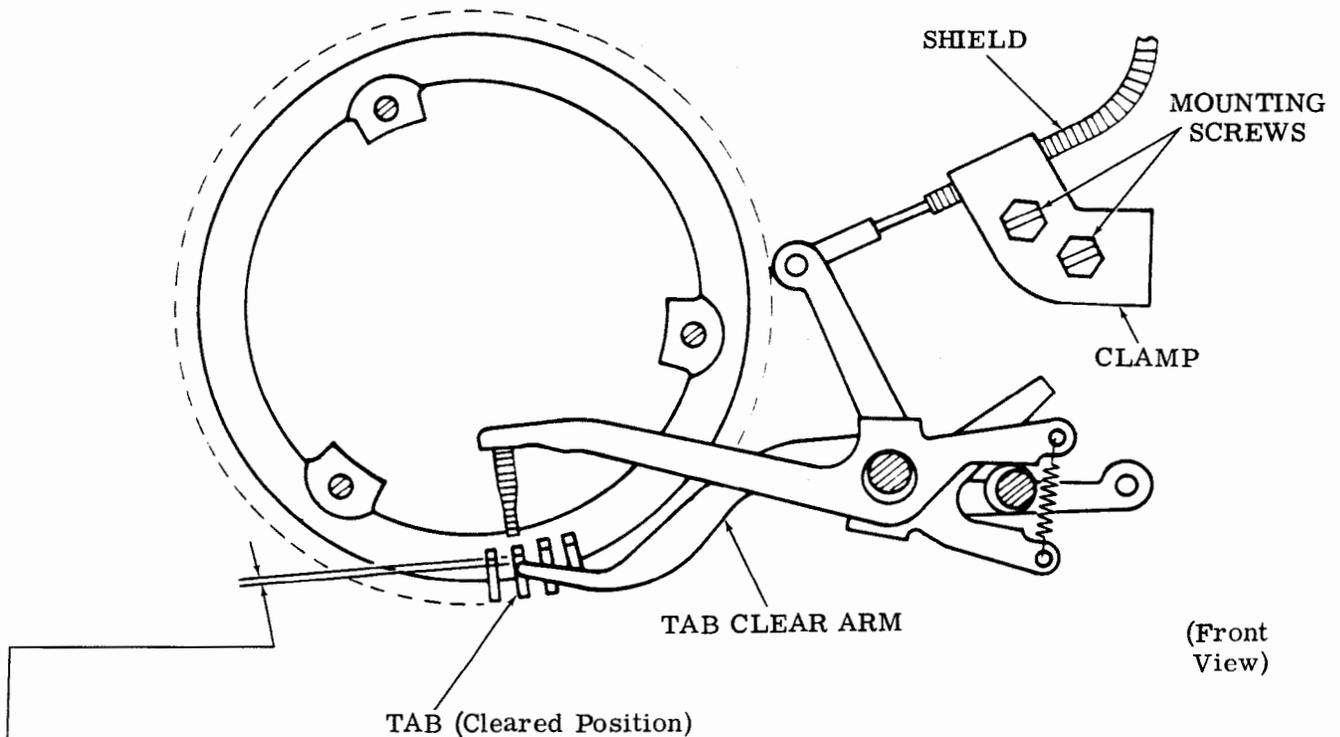
TAB SET ARM CABLE

To Check
Tab set arm fully selected from function box.

Requirement
Min some---Max 0.020 inch
clearance between tab set arm and head of the tab in selected position.

To Adjust
Disengage (latch) all clutches. Position carriage to about the center of platen. Engage (trip) spacing clutch and turn main shaft to advance carriage by at least one space. Disengage (latch) all clutches. Shift no. 9 and no. 10 blocking bars by manually selecting and latching function levers in function box slots no. 7 and 25. Set up character "1" in selector (levels 1, 5, 6, and 8 marking; levels 2, 3, 4, and 7 spacing). Engage (trip) codebar clutch and rotate main shaft until tab set function lever in function box slot no. 15 is fully selected. Loosen clamp mounting screws and position shield to meet requirement. Tighten clamp mounting screws.

3.17 Horizontal Tab Stop Control Mechanism (continued)

TAB CLEAR ARM CABLE

To Check

Tab clear arm fully selected from function box.

Requirement

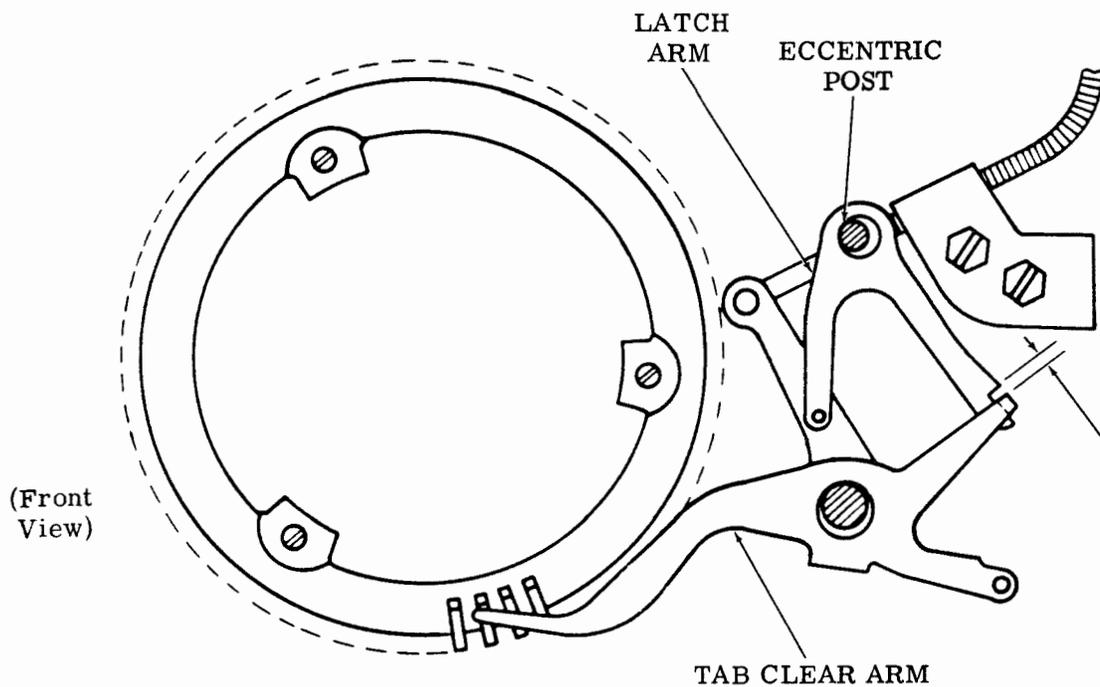
Min some---Max 0.010 inch
clearance between tab clear arm and head of tab in cleared position.

To Adjust

Disengage (latch) all clutches. Position carriage to about the center of platen. Engage (trip) spacing clutch and turn main shaft to advance carriage by at least one space. Disengage (latch) all clutches. Shift no. 9 and no. 10 blocking bars by manually selecting and latching function levers in function box slots no. 7 and 25. Set up character "2" in selector (levels 2, 5, 6, and 8 marking; levels 1, 3, 4, and 7 spacing). Engage (trip) codebar clutch and rotate main shaft until tab clear function lever in function box slot no. 16 is fully selected. Loosen clamp mounting screws friction tight and position shield to meet requirement. Tighten clamp mounting screws. Recheck TAB SET ARM CABLE (3.16) adjustment.

Note: When making above adjustment, be careful not to disturb TAB SET ARM CABLE (3.16) adjustment.

3.18 Horizontal Tab Stop Control Mechanism (continued)



LATCH ARM

To Check

Tab clear arm fully selected from function box.

Requirement

Min 0.005 inch---Max 0.010 inch
clearance between tab clear arm and latch arm.

To Adjust

Disengage (latch) all clutches. Position carriage to about the center of platen. Engage (trip) spacing clutch and turn main shaft to advance carriage by at least one space. Disengage (latch) all clutches. Shift no. 9 and no. 20 blocking bars by manually selecting and latching function levers in function box slots no. 7 and 25. Set up character "2" in selector (levels 2, 5, 6, and 8 marking; levels 1, 3, 4, and 7 spacing). Engage (trip) codebar clutch and rotate main shaft until tab clear function lever in function box slot no. 16 is fully selected. Loosen nut on eccentric post. Turn eccentric post to meet requirement. Tighten eccentric post nut.

Note: The eccentricity of the eccentric post should be positioned towards the right.

3.19 Horizontal Tab Stop Control Mechanism (continued)

LATCH RELEASE

To Check

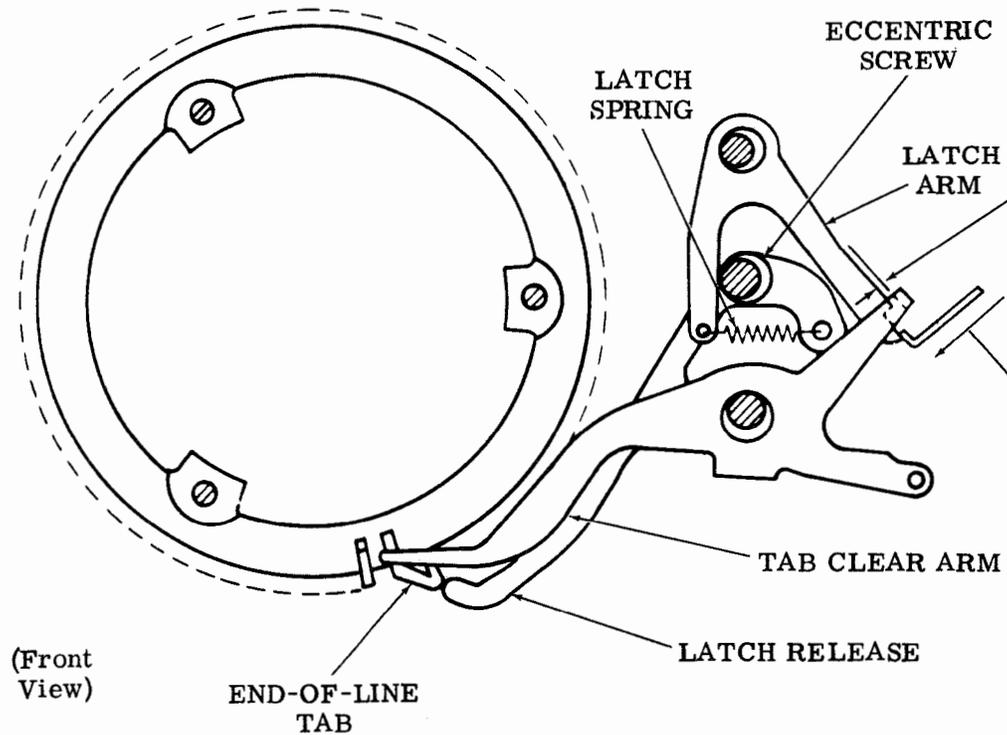
Carriage spaced fully to right hand margin. Spacing clutch disengaged (latched).

Requirement

Min 0.005 inch---Max 0.015 inch
clearance between tab clear arm and latch arm.

To Adjust

Space carriage fully to right hand margin. Disengage (latch) spacing clutch. Loosen nut on eccentric screw and turn eccentric screw until requirement is met. Tighten nut.



LATCH SPRING

Requirement

Min 1 oz---Max 3 oz
to open a gap between latch arm
and tab clear arm.

3.20 Vertical Tab Stop Control Mechanism

Note: Vertical tabulation mechanism adjustments (SLIDE RETAINER (3.05), MOUNTING BRACKET (3.06), FORM START GEAR BACKLASH (3.06), TAB WHEEL (3.07), POINTER (3.07), BLOCKING LEVERS (3.09), TAB WHEEL SYNCHRONIZATION (3.08)), escape sequence mechanism adjustment (NO. 10 BLOCKING BAR (3.11)), line feed clutch tripbail adjustments (TRIPBAIL BRACKET (3.12) and LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW (3.13)) should be completed before making the following adjustments for the vertical tab stop control mechanism.

MOUNTING PLATE

Requirement

Some clearance, within 0.025 inch between tab set arm and head of tab in cleared position and between tab clear arm and head of a tab in selected position when both levers are resting on post on mounting plate.

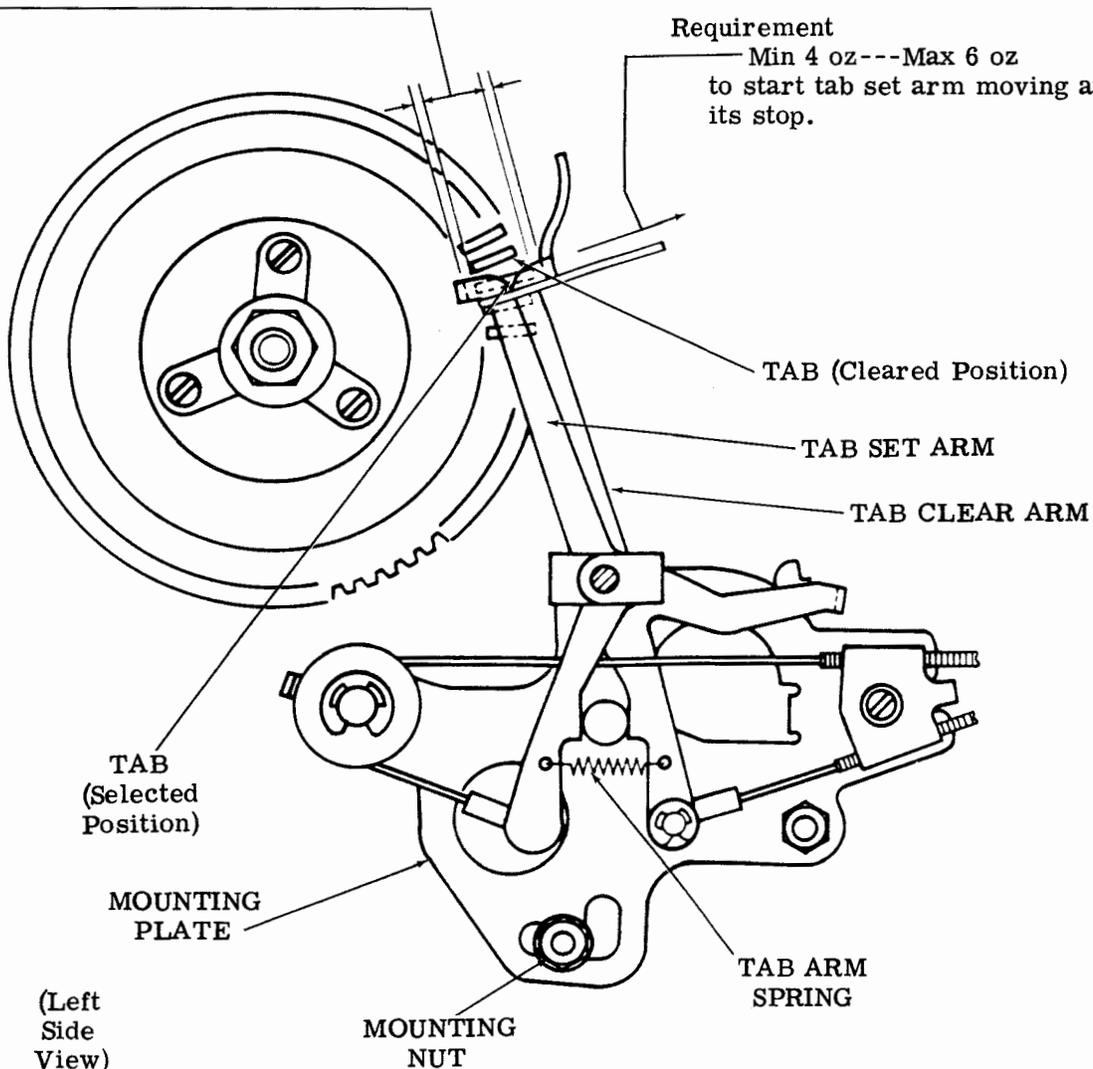
To Adjust

Loosen mounting nut and position mounting plate to meet requirement. Tighten mounting nut.

TAB ARM SPRING

Requirement

Min 4 oz---Max 6 oz
to start tab set arm moving away from its stop.



3.21 Vertical Tab Stop Control Mechanism (continued)

TAB SET ARM CABLE

Note: All tabs are in the set position before making this adjustment.

To Check

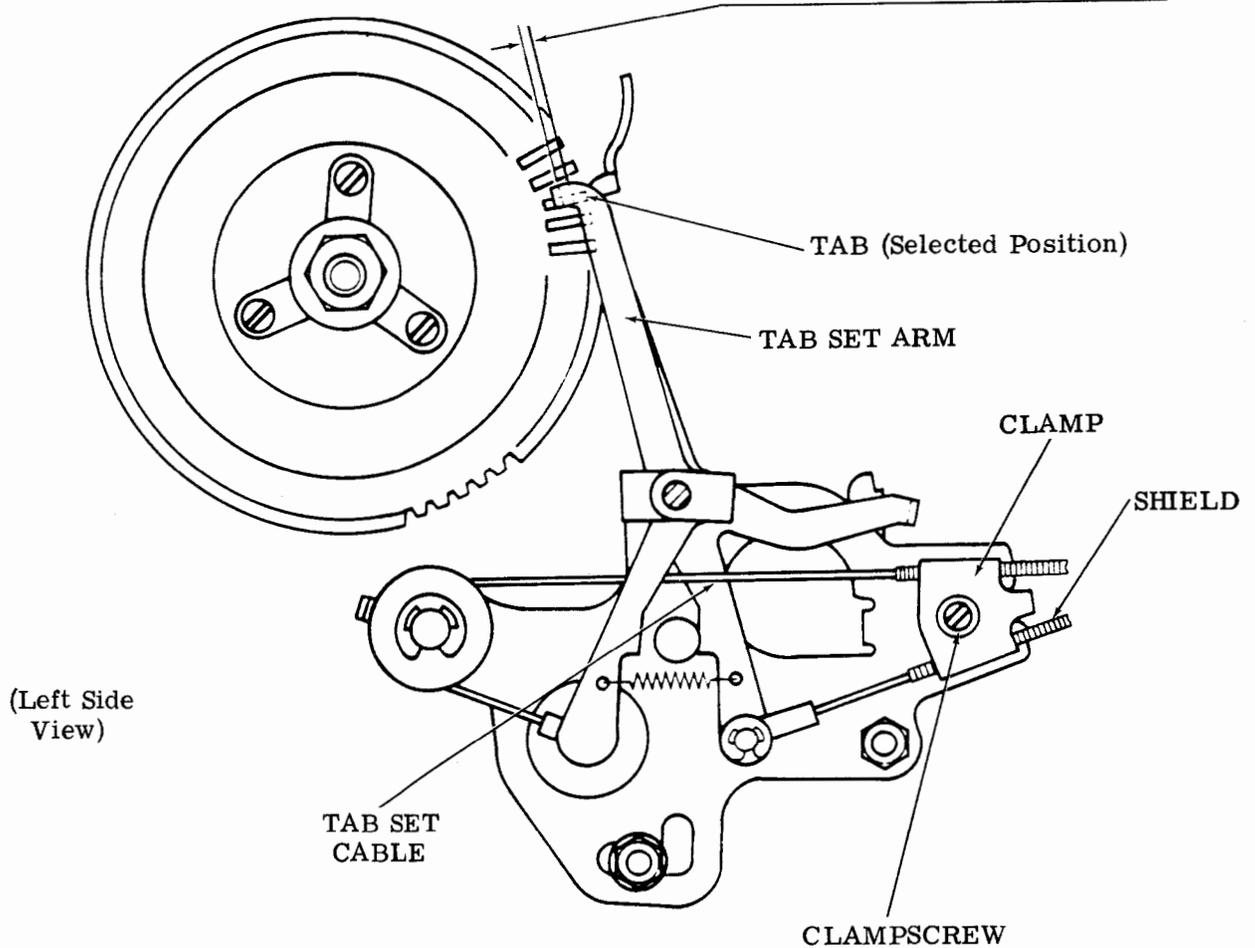
Tab set arm fully selected from function box.

Requirement

Min some---Max 0.030 inch
clearance between tab set arm and head of a tab in selected position.

To Adjust

Disengage (latch) all clutches. Set codebars 1, 3, 5, and 6 marking. Manually shift no. 9 and no. 10 blocking bars by latching the function levers in slots no. 7 and no. 25 of the function box. Manually trip the function clutch and rotate the main shaft until the stripper blade just touches the selected function pawl (slot 39). Loosen clamp-screw and shift the shield on the tab set cable to meet the requirement. Tighten clamp-screw.



3.22 Vertical Tab Stop Control Mechanism (continued)

TAB CLEAR ARM CABLE

To Check

Tab clear fully selected from function box.

Requirement

Min some---Max 0.015 inch
clearance between tab clearance and head of a tab in cleared position.

To Adjust

Disengage (latch) all clutches. Set codebars 2, 3, 5, and 6 marking. Manually shift no. 9 and no. 10 blocking bars by latching the function levers in slots no. 7 and no. 25 in the function box. Manually trip the function clutch and rotate the main shaft until the stripper blade just touches the selected function pawl (slot 40). Loosen clampscrew and shift shield on tab clear cable to meet requirement. Tighten clampscrew. Recheck TAB SET ARM CABLE (3.21) and TAB CLEAR ARM CABLE adjustments.

Note: When making above adjustment, be careful not to disturb TAB SET ARM CABLE (3.21) adjustment.

LATCH

To Check

Tab clear arm fully selected from function box.

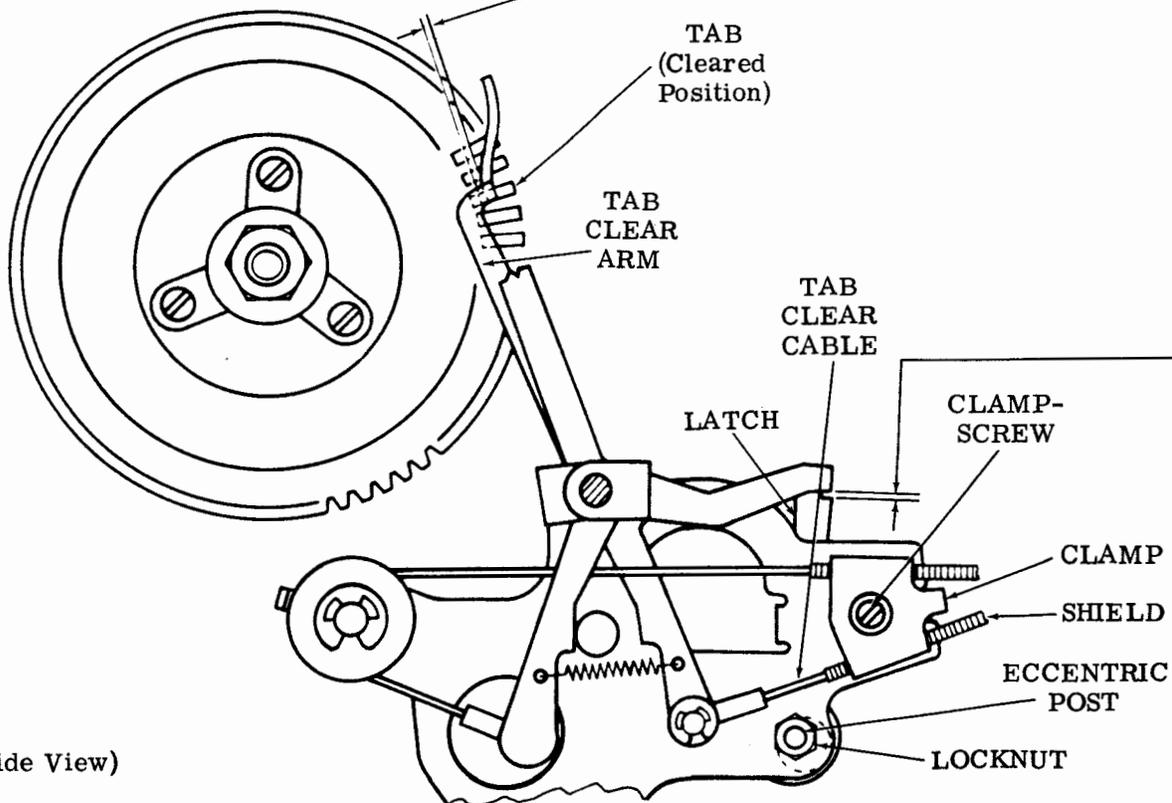
Requirement

Min 0.005 inch---Max 0.015 inch
clearance between tab clear arm and latch.

To Adjust

Disengage (latch) all clutches. Set codebars 2, 3, 5, and 6 marking. Manually shift no. 9 and no. 10 blocking bars by latching the function levers in slots no. 7 and no. 25 in the function box. Manually trip the function clutch and rotate the main shaft until the stripper blade just touches the selected function pawl (slot 40). Loosen locknut on eccentric post. Turn eccentric post with a hex key wrench to meet requirement. Tighten locknut.

Note: The eccentricity of the eccentric post should be positioned toward right.



(Left Side View)

3.23 Vertical Tab Stop Control Mechanism (continued)

LATCH RELEASE

To Check

Vertical tab sensing pawl resting on top of selected tab.

Requirement

Min 0.005 inch---Max 0.015 inch
clearance between tab clear arm and latch.

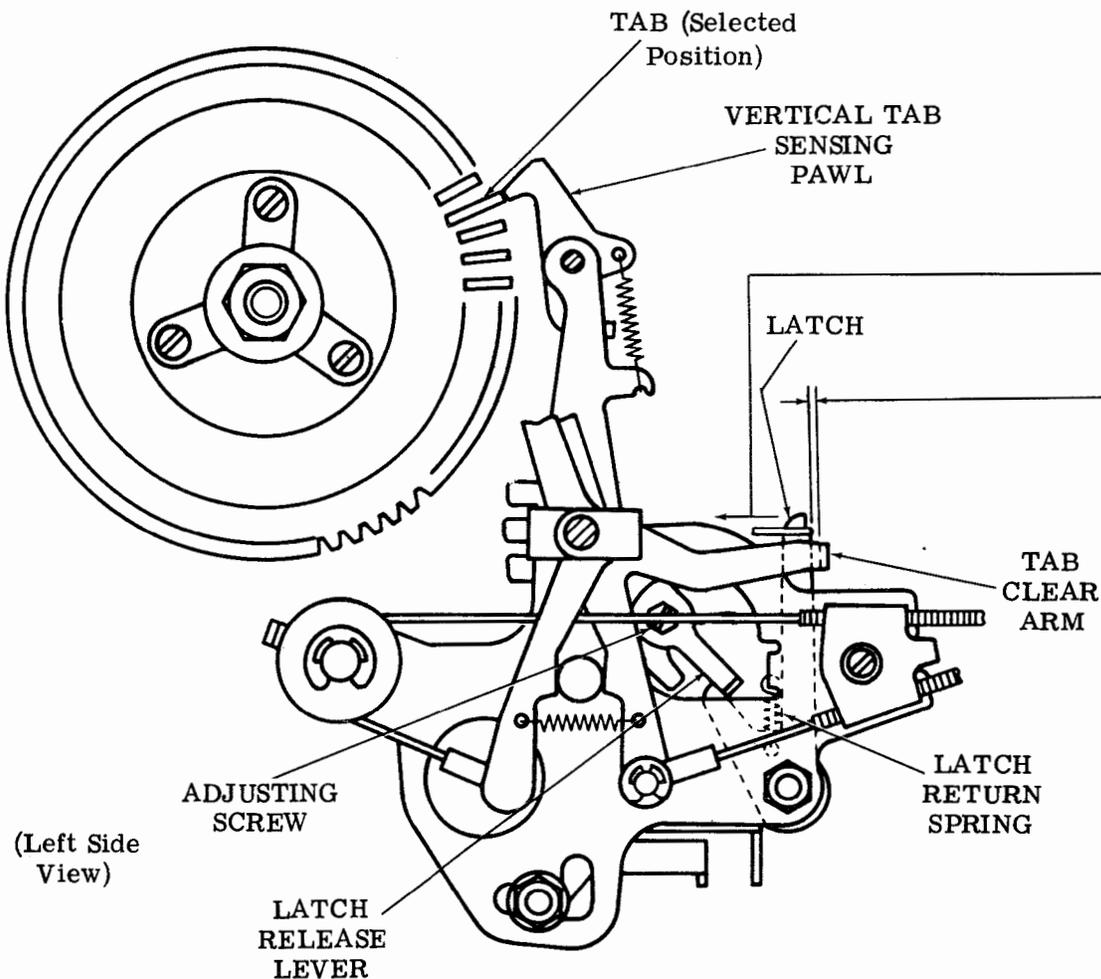
To Adjust

Turn platen knob until vertical tab sensing pawl comes to rest on top of selected tab. Loosen adjusting screw and adjust latch release lever to meet requirement. Tighten adjusting screw.

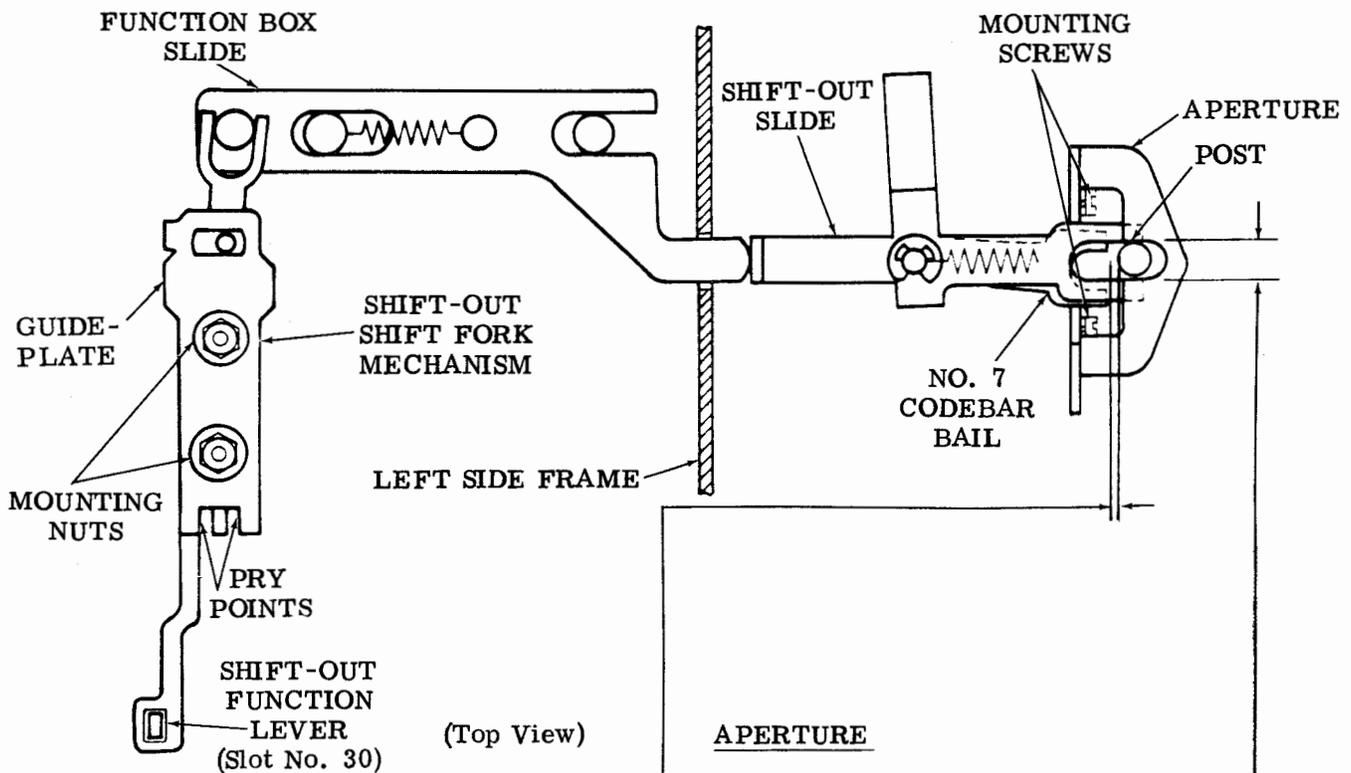
LATCH SPRING

Requirement

Min 1/4 oz---Max 1 oz
to pull latch away from tab clear arm.



3.24 Shift-In Shift-Out Mechanism



APERTURE

To Check
No. 7 codebar in spacing position.

Requirement
Post on shift-out slide should line up with slot in aperture.

To Adjust
Position no. 7 codebar spacing. Loosen mounting screws and position aperture to meet requirement. Tighten mounting screws.

SHIFT-OUT SHIFT FORK MECHANISM

To Check
Shift-out function fully selected from function box.

Requirement
Min 0.005 inch---Max 0.010 inch clearance between no. 7 codebar bail and position shift-out slide.

To Adjust
Disengage (latch) all clutches. Manually select and latch shift-out function lever in function box slot no. 30. Loosen mounting nuts and adjust guideplate using pry points. Tighten mounting nuts.

3.25 Shift-in Shift-out Mechanism (continued)

FUNCTION BOX SLIDE SPRING

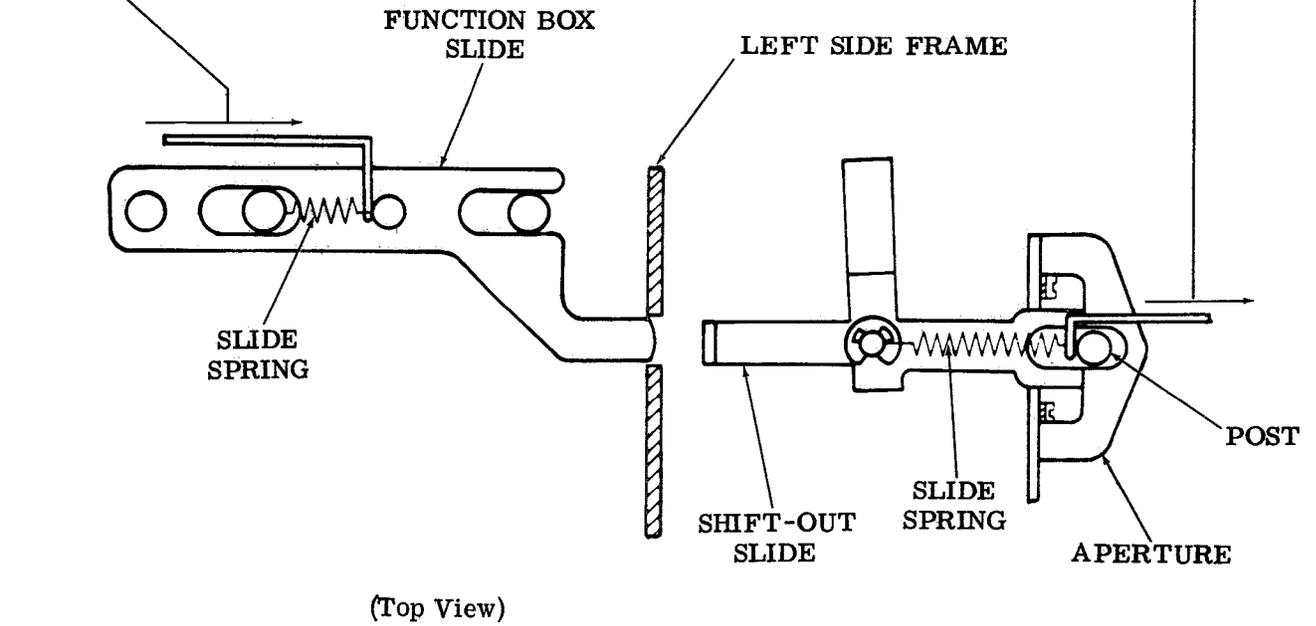
Requirement

Min 3 oz---Max 5 oz
to move function box slide.

SHIFT-OUT SLIDE SPRING

Requirement

Min 5 oz---Max 8 oz
to move shift-out slide.



3.26 Half Forward and Reverse Line Feed Mechanism

LINE FEED CLUTCH PHASING

To Check

Line feed clutch disengaged (latched) and platen detent disabled. Both line feed bars engaging teeth of platen spur gear. Line feed bar in lower position offset toward front. Manually move blocking roller into slot in lower end-of-line feed bars.

Requirement

Min some---Max 0.005 inch
clearance between blocking roller and nearest slot surfaces.

To Adjust

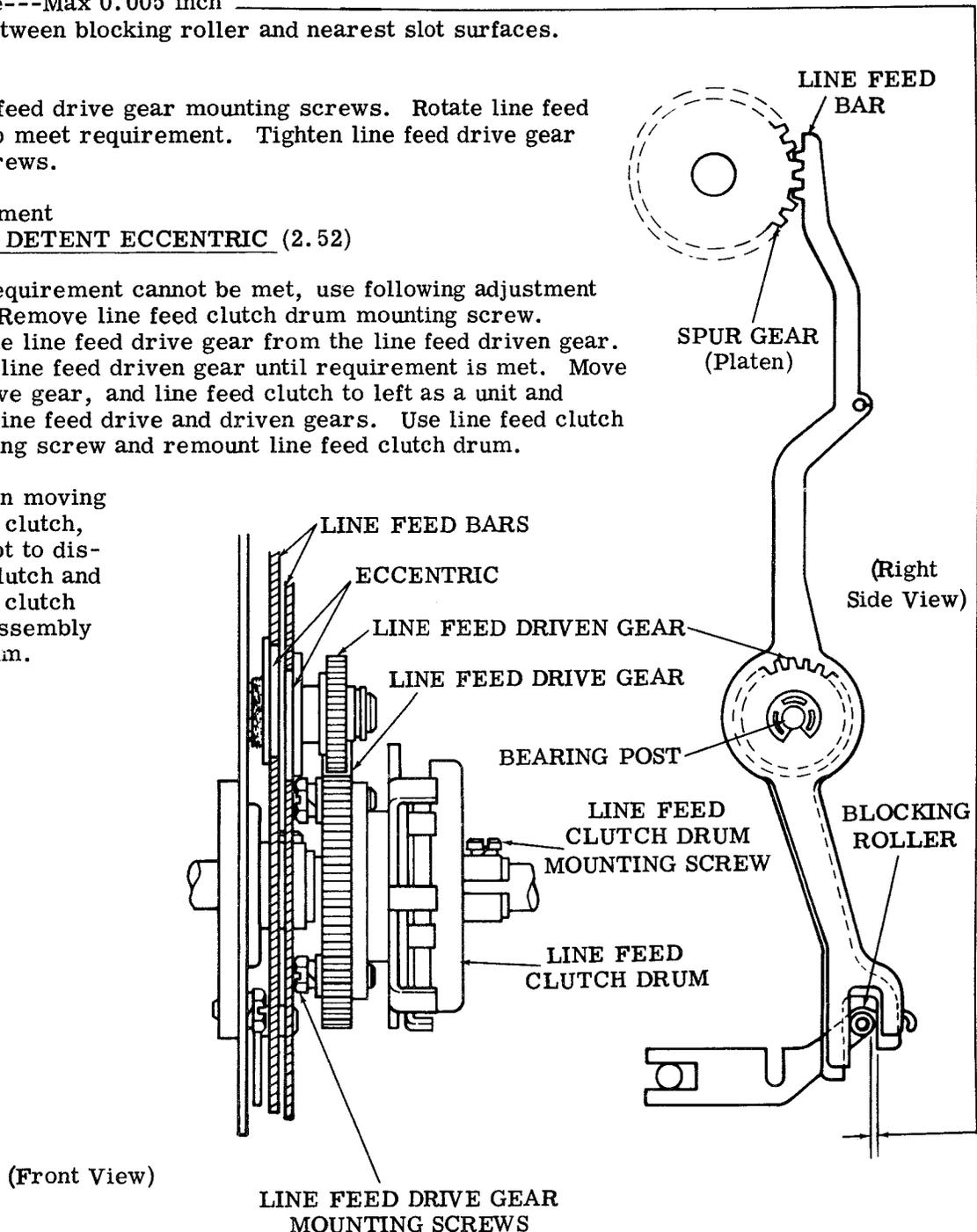
Loosen line feed drive gear mounting screws. Rotate line feed drive gear to meet requirement. Tighten line feed drive gear mounting screws.

Affected Adjustment

SPUR GEAR DETENT ECCENTRIC (2.52)

Note 1: If requirement cannot be met, use following adjustment procedure: Remove line feed clutch drum mounting screw. Disengage the line feed drive gear from the line feed driven gear. Advance the line feed driven gear until requirement is met. Move line feed drive gear, and line feed clutch to left as a unit and remesh the line feed drive and driven gears. Use line feed clutch drum mounting screw and remount line feed clutch drum.

Note 2: When moving the line feed clutch, be careful not to disengage the clutch and separate the clutch shoe lever assembly from the drum.



3.27 Half Forward and Reverse Line Feed Mechanism (continued)

PRESSURE BAIL

Note: This adjustment applies only to friction feed typing units.

To Check

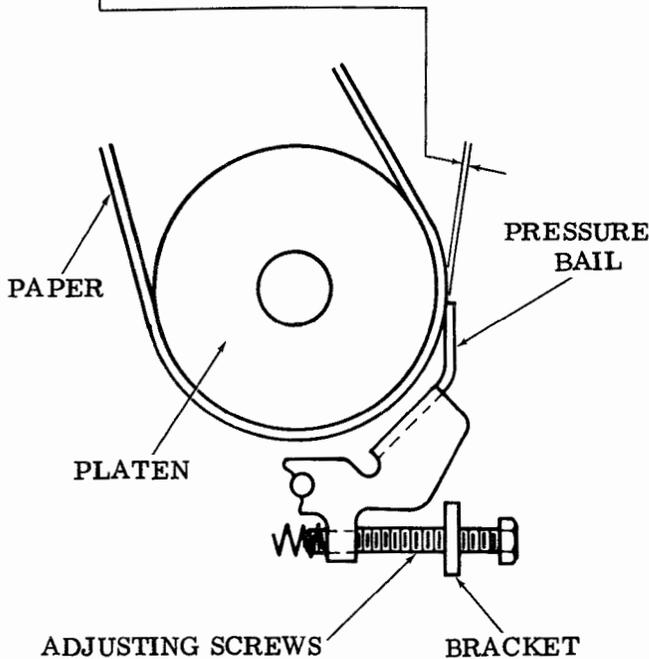
Paper inserted in platen. Paper release lever fully forward.

Requirement

Min some---Max 0.005 inch
clearance between pressure bail and paper at the point where the clearance
is the least. The clearance at both ends should be approximately equal.

To Adjust

Rotate adjusting screws to meet requirement.



(Left Side View)

BRACKET LINE-UP

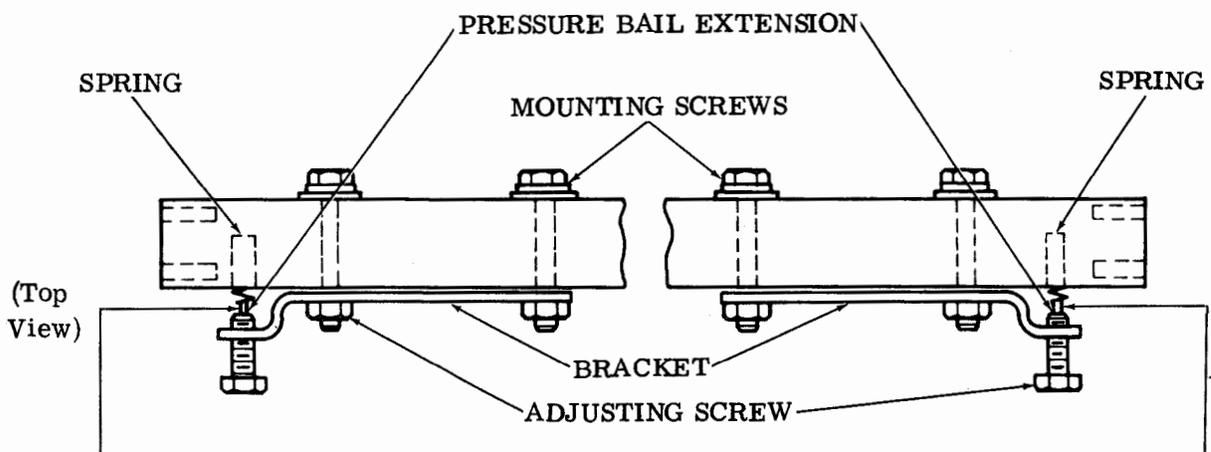
Note: This adjustment applies only to friction feed typing units.

Requirement

Adjusting screws at both ends should be in
line with pressure bail extensions as gauged
by eye.

To Adjust

Loosen mounting screws friction tight.
Position brackets to meet requirement.
Tighten mounting screws.



(Top View)

3.28 Half Forward and Reverse Line Feed Mechanism (continued)

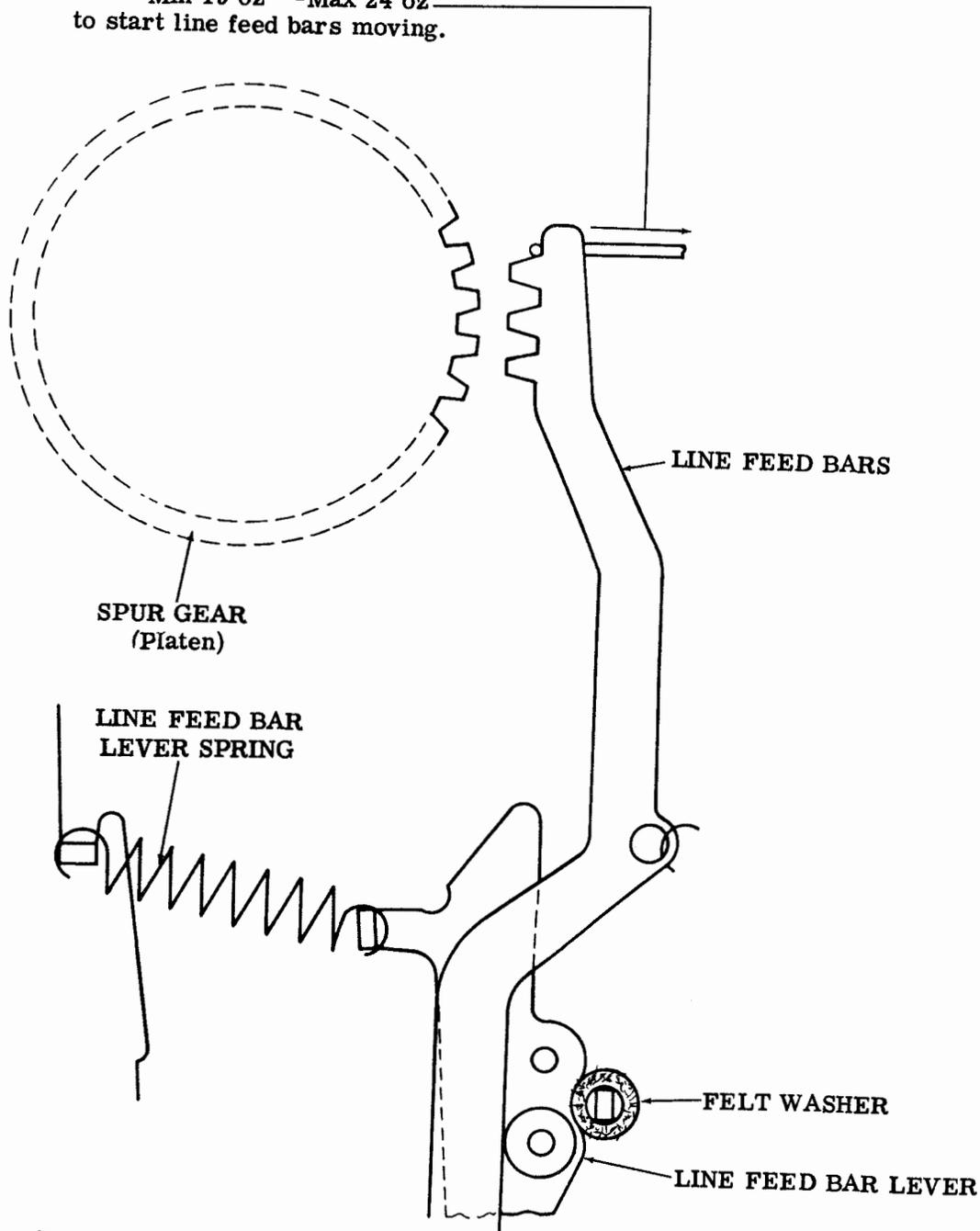
LINE FEED BAR LEVER SPRING

To Check

Line feed bar springs attached. Blocking levers unoperated.

Requirement

Min 19 oz---Max 24 oz
to start line feed bars moving.



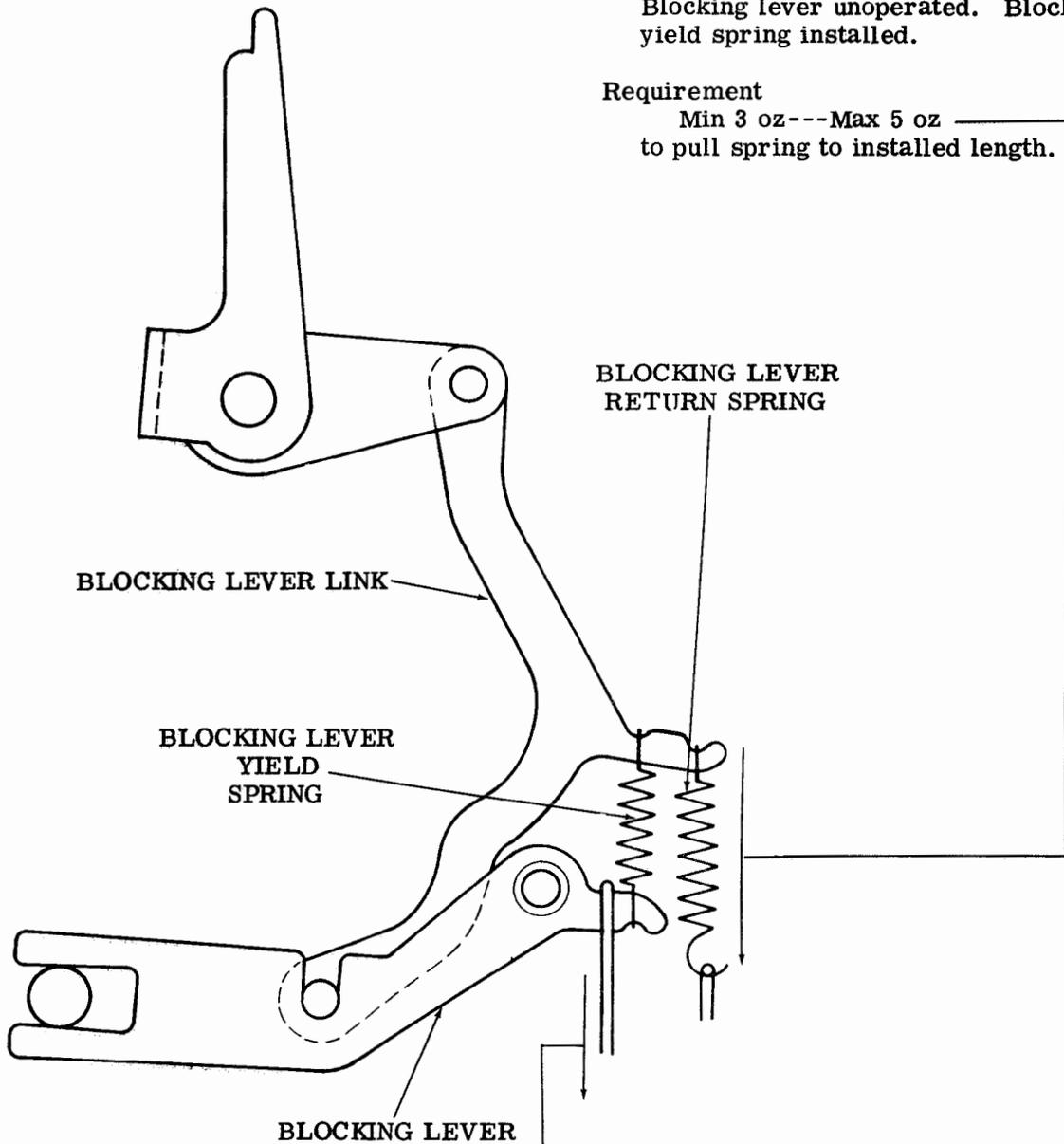
(Right Side View)

3.29 Half Forward and Reverse Line Feed Mechanism (continued)

BLOCKING LEVER RETURN SPRING

To Check
 Blocking lever unoperated. Blocking lever yield spring installed.

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



(Right Side View)

BLOCKING LEVER YIELD SPRING

To Check
 Blocking lever unoperated. Return spring unhooked.

Requirement
 Min 3 oz---Max 5 oz
 to separate blocking lever from blocking lever link.

3.30 Two-Color Ribbon Mechanism

RIBBON GUIDE TO PLATEN

To Check

Ribbon guide in uppermost (red) print position. Ribbon in position and under tension.

Requirement

Min 0.025 inch---Max 0.040 inch clearance between ribbon guide and platen.

To Adjust

Loosen slide block screws (one on each side of frame). Pivot slide blocks until requirement is met along entire travel of ribbon guide. Maintain position of slide blocks and tighten slide block screws.

RIBBON RETRACT POSITION

To Check

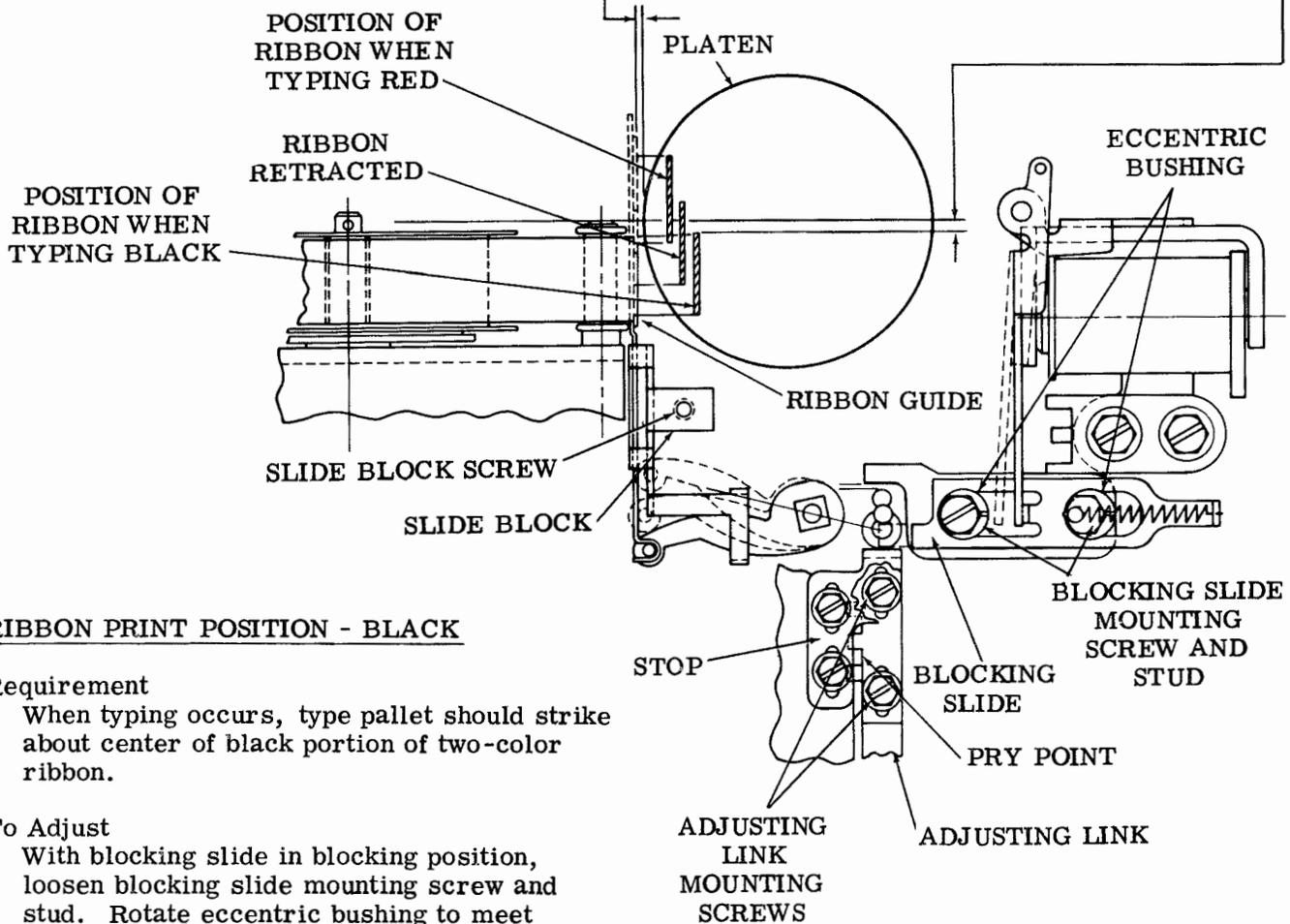
Print hammer clutch disengaged (latched). Take up play in ribbon guide in a downward direction. Ribbon positioned so that the top edge is in line with bottom of an upper case printed character as gauged by eye.

Requirement

Min 0.020 inch between the top of indicator slide and bottom of retaining tab of ribbon guide.

To Adjust

Loosen two adjusting link mounting screws. Position ribbon guide using pry points. Tighten adjusting link mounting screws.



(Right Side View)

RIBBON PRINT POSITION - BLACK

Requirement

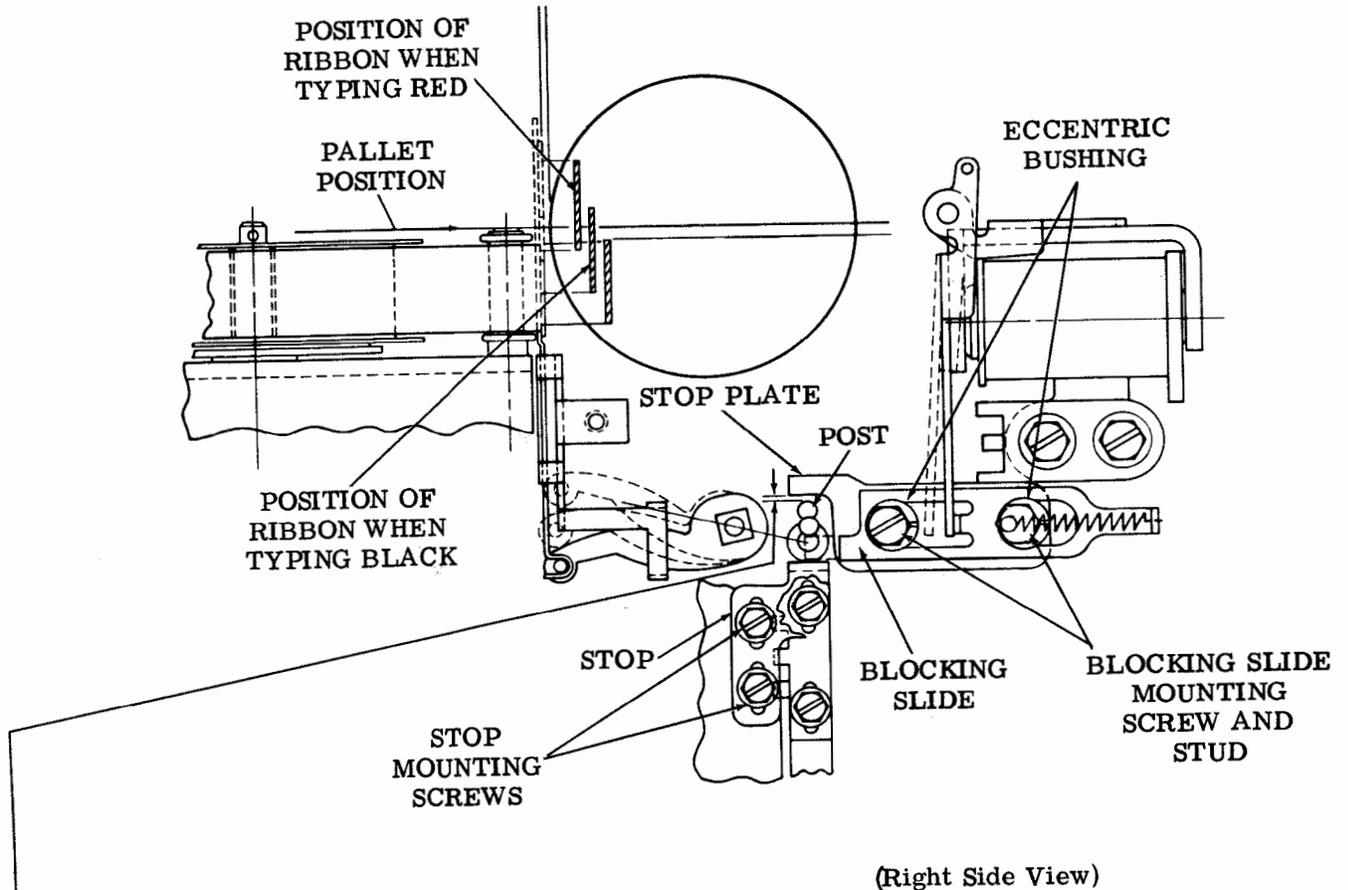
When typing occurs, type pallet should strike about center of black portion of two-color ribbon.

To Adjust

With blocking slide in blocking position, loosen blocking slide mounting screw and stud. Rotate eccentric bushing to meet requirement. Tighten blocking slide mounting screw and stud.

Note: The eccentricity of the eccentric bushings should be positioned towards the front.

3.31 Two-Color Ribbon Mechanism (continued)

OSCILLATOR DOWNSTOP

To Check
Printing clutch disengaged (latched).

Requirement
Min some---Max 0.010 inch
clearance between post and stop plate.

To Adjust
Loosen blocking slide mounting screw and stud and position stop plate to meet requirement. Tighten blocking slide mounting screw and stud. Recheck requirement.

Note: When making above adjustment, be careful not to disturb setting of eccentric bushings.

RIBBON PRINT POSITION — RED

Requirement
When typing occurs, type pallet should strike about center of red portion of two-color ribbon.

To Adjust
Place blocking slide to unblocking position. Loosen two stop mounting screws. Raise or lower stop to meet requirement. Tighten stop mounting screws.

3.32 Two-Color Ribbon Mechanism (continued)

MAGNET ASSEMBLY (ARMATURE ATTRACTED)

To Check
Armature in contact with core face.

Requirement
Armature should rest flush against core face.

To Adjust
Loosen hinge bracket mounting screws.
Position hinge bracket to meet requirement.
Tighten hinge bracket mounting screws.

MAGNET ASSEMBLY (ARMATURE NOT ATTRACTED)

To Check
Armature in disengaged position, ie, not attracted to core face.

Requirement
Min 0.030 inch---Max 0.040 inch
air gap between armature and core face
when measured at about center of core face.

To Adjust
Loosen locknut. Position stop lever adjusting screw. Tighten locknut.

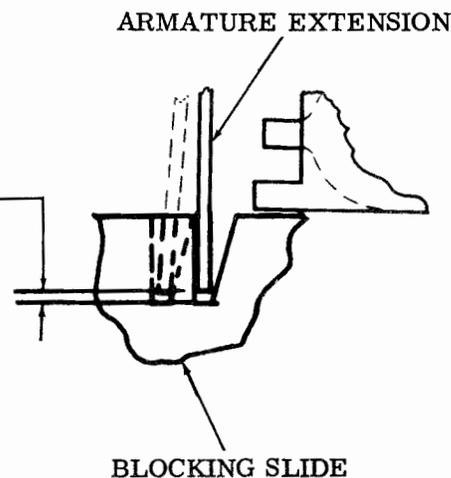
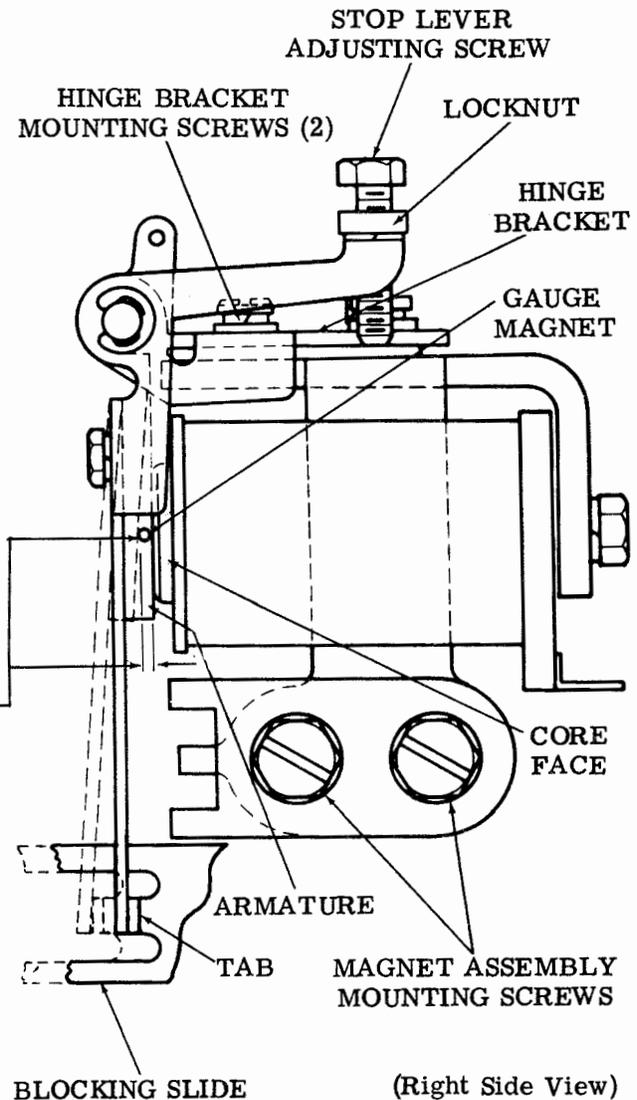
MAGNET ASSEMBLY TO BLOCKING SLIDE

To Check
Magnet assembly mounted to right side frame and armature extension against blocking slide tab. Place armature into attracted position to permit ribbon to be moved to its red position.

Requirement
Armature extension should actuate blocking slide. On some units the clearance between tip of armature extension and bottom of slide cut-out
Min 0.020 inch---Max 0.040 inch.

To Adjust
Loosen magnet assembly mounting screws.
Adjust assembly to meet requirements.

Note: If necessary, refine MAGNET ASSEMBLY TO BLOCKING SLIDE adjustment when typing unit is operated under power.



3.33 Automatic Carriage Return-Line Feed Mechanism

Note: Make the RIGHT HAND MARGIN (2.70) adjustment before making the following SPACING DRUM ACTUATING LEVER adjustment.

SPACING DRUM ACTUATING LEVER

To Check

Spacing clutch disengaged (latched). Farthest advanced spacing feed pawl resting against third tooth above cut-away section of ratchet.

Requirement

Ten-to-inch character spacing:

— Min 0.055 inch---Max 0.070 inch

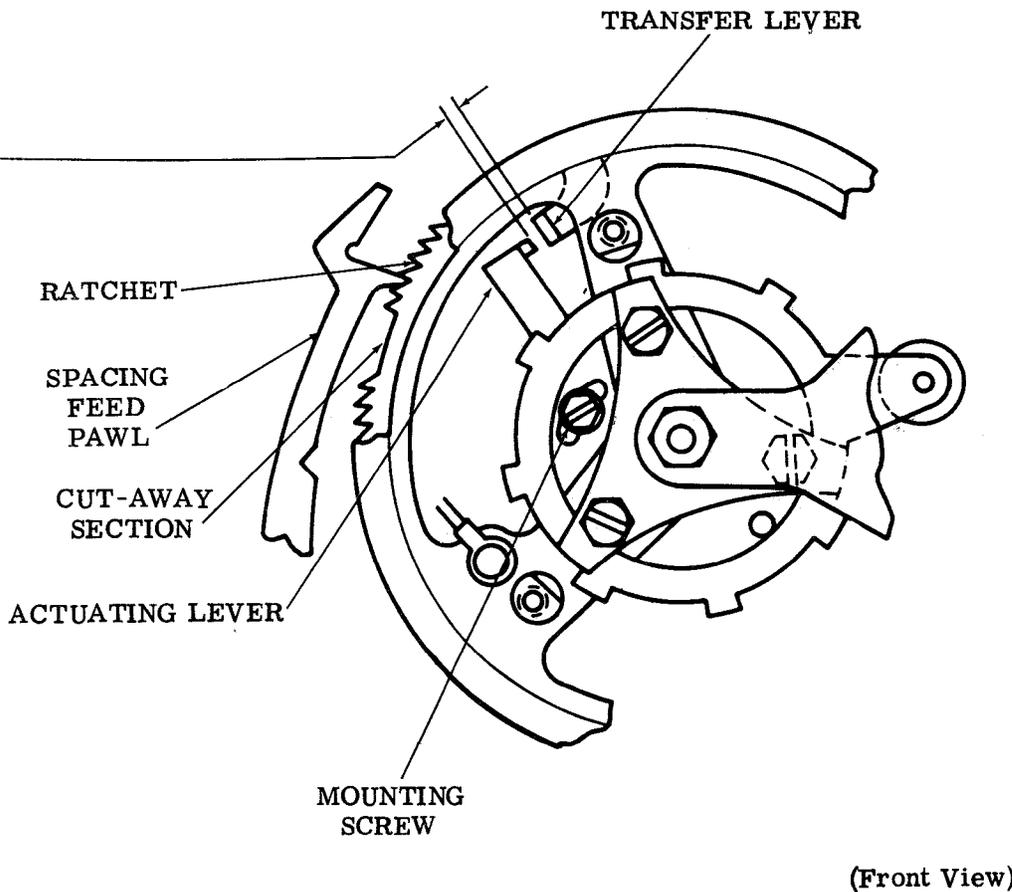
Twelve-to-inch character spacing:

— Min 0.040 inch---Max 0.050 inch

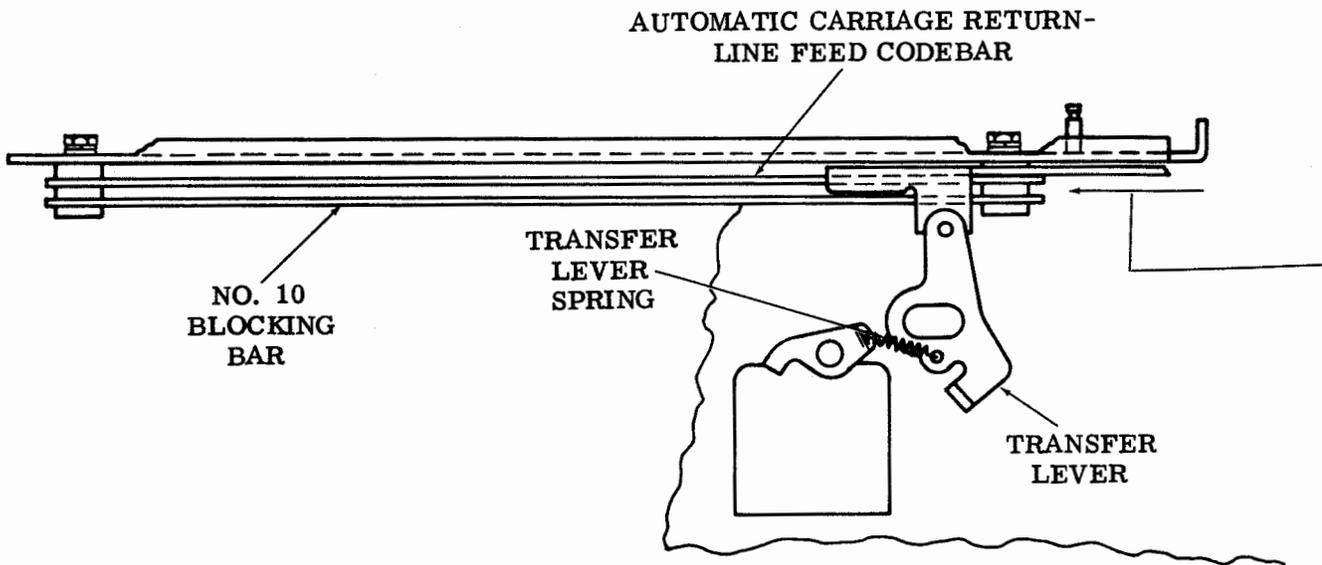
clearance between actuating lever and transfer lever.

To Adjust

Loosen mounting screw friction tight. Position actuating lever. Tighten mounting screw.



3.34 Automatic Carriage Return-Line Feed Mechanism (continued)



(Front View)

TRANSFER LEVER SPRING

Requirement

Min 2 oz --- Max 7 oz
to begin moving automatic carriage return-line feed codebar (codebar no. 11) to left.

37 TYPING UNIT
LUBRICATION

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL	2	Vertical clutches, gears, and bell cranks	26
2. BASIC UNIT	4	Vertical linkage, shafts, and slides	26
LUBRICATION AREAS —		Vertical positioning rack	27
BOTTOM	13	LUBRICATION AREAS — REAR ...	18
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Local line feed trip lever	16	Function stripper blade	21
Main shaft clutches and gears	14	Line feed bars	23
Reset bail and shaft	15	Paper guide bracket shaft and latch (sprocket feed)	20
Trip shaft cam and levers	15	Paper release (friction feed)	20
Vertical detent	16	Paper straightener (friction feed) ...	19
LUBRICATION AREAS — FRONT... ..	4	Platen hubs and pins (sprocket feed)	20
Backspace bail, lever, link, and pawl (located behind spacing drum)	11	Platen shaft and rollers (friction feed)	19
Carriage return and backspace levers	10	Single-double line feed lever	23
Codebars	7	Suppression function lever	22
Horizontal clutches, gears, levers, and links	10	Trip shaft bearings and springs	21
Horizontal detent (located behind spring drum)	9		
Local line feed lever	8		
Oscillating rail	8		
Platen pressure bail (friction feed)	4		
Print hammer and levers	6		
Print hammer carriage	6, 7		
Spacing drum	12		
Spring drum	9		
Typebox	5		
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LEFT SIDE	24		
Codebar detent	27		
Line feed gears	28		
Retraction slide and pawls	25		
Ribbon feed bracket and ratchet - (early design)	29		
Ribbon feed bracket and ratchet - (late design)	30		
Ribbon feed drive arm	28		

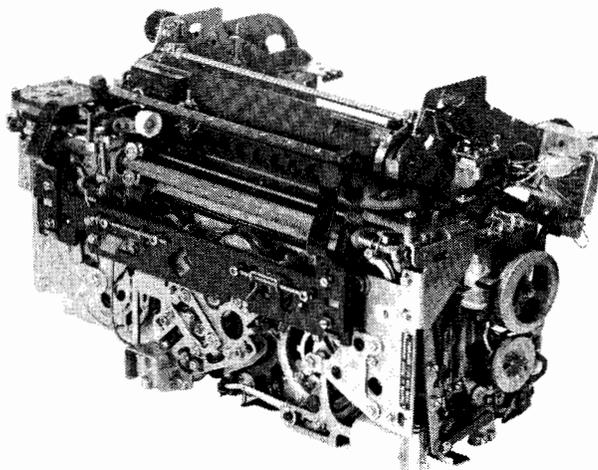


Figure 1 - 37 Typing Unit (Late Design)

CONTENTS	PAGE
LUBRICATION AREAS —	
RIGHT SIDE	31
Printing drive arm and link	35
Ribbon feed bracket and ratchet - (early design)	32
Ribbon feed bracket and ratchet - (late design)	33
Selector cam lubricator and marking locklever	40
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Selector levers	38
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LUBRICATION AREA — BOTTOM . .	40
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LEFT SIDE	43
Vertical tabulation and form-out gears and levers	43
LUBRICATION AREA — REAR	44
Paper-out alarm switch (sprocket feed)	44

1. GENERAL

1.01 This section provides lubrication procedures for the late design 37 typing unit (Figure 1). For similar information about the early design 37 typing unit, refer to Section 574-320-701TC.

1.02 Lubrication of the 37 typing unit is presented by areas with the procedures arranged counterclockwise around the typing unit. Following the procedures in this manner minimizes shifting and handling of the unit.

1.03 Figures are used to show the lubrication areas. Paragraph numbers on the figures refer to the lubrication points. References made to front, bottom, rear, left, or right apply to the typing unit in its normal position as shown in 2.01.

1.04 Lubricate the 37 typing unit before placing it in service and just prior to putting it in storage. The mechanism of the typing unit should be relubricated after 200 hours of operation or four weeks, whichever comes first. Thereafter, lubricate all mechanisms of the typing unit according to the following schedule:

- 100 wpm 2000 hours or 9 months*
- 150 wpm 1500 hours or 6 months*

*Whichever occurs first.

CAUTION: DISCONNECT ALL AC POWER CORDS BEFORE PERFORMING ANY PROCEDURE.

1.05 The general lubrication requirements consist of oil locations on hollow shafts, oil cups, felt washers, and in most locations where parts rub or move with respect to each other. Grease should be used on gears, rollers, points of heavy pressure, and some ball bearings. Lubrication areas for the typing unit are outlined as follows.

Pivot points require two or three drops of oil.

Coil springs require one drop of oil for each end and one to two drops on the coil.

Felt washers are saturated with oil.

Cams and sliding surfaces require a film of oil.

Note: Refer to the appropriate section for ordering information on lubricants. A list of maintenance tools can be found in Section 570-005-800TC.

1.06 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, a minimum amount of oil should be applied so that the oil remains on the part and does not run off. Excessive lubricants should be removed with a dry lint-free cloth. Keep all electrical contacts free of oil or grease. If the surface between the selector relay armature and magnet

pole piece have oil or foreign matter, proceed as follows.

1. Place a piece of clean paper between the armature and pole piece.
2. Energize the magnet.
3. Pull the paper through the armature and pole piece and check to insure that lint or pieces of paper do not remain.

Note: Closed ball bearings do not require lubrication. All open ball bearings should be packed with grease (KS7471).

1.07 Symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols apply to the lubrication instructions:

- | | |
|---|-----------------------------------|
| O | Oil KS7470 |
| G | Grease KS7471 |
| D | Keep dry, no lubricant permitted. |

1.08 Over lubrication which would allow oil to drip or grease to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

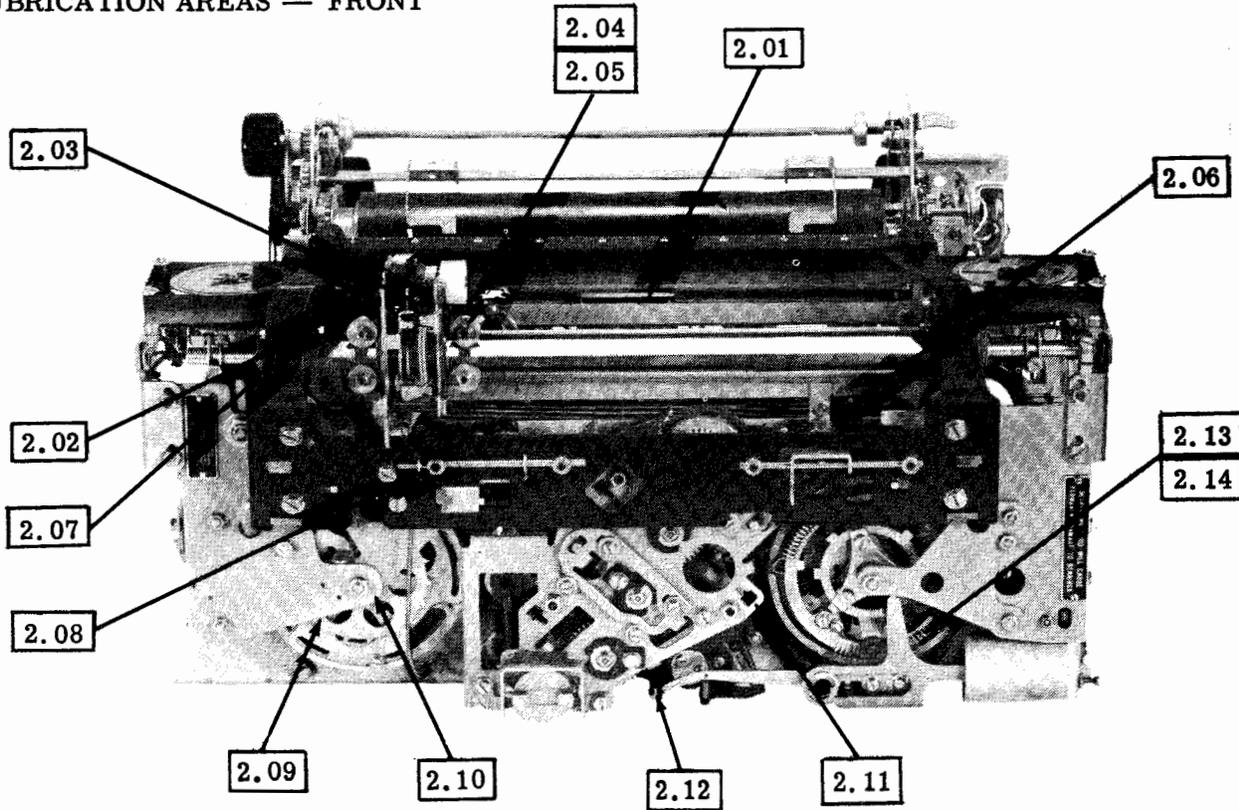
Note: Maintenance pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

1.09 When replacing lubricating wicks or felt oilers, proceed as follows.

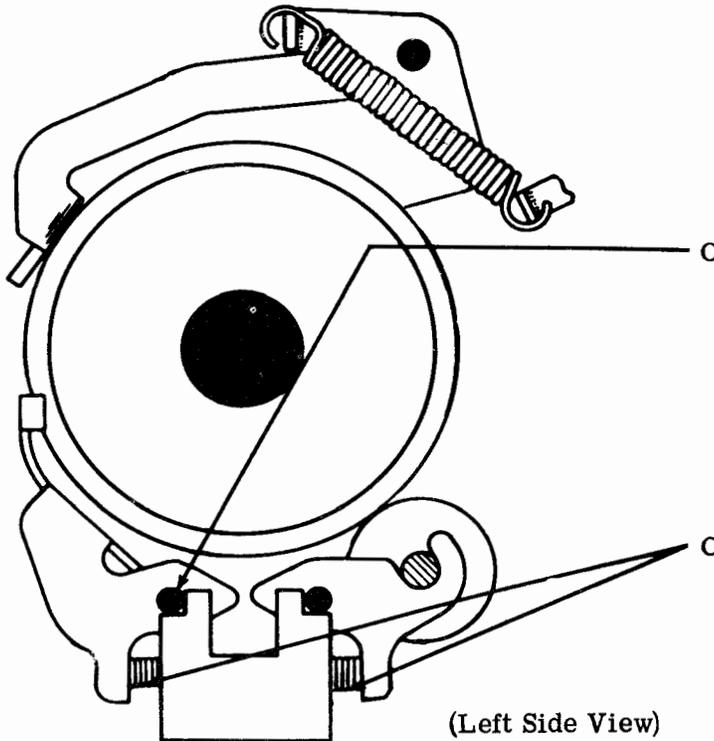
1. Thoroughly saturate with oil.
2. Remove all excess oil by pressing oiler or wick between a clean cloth.
3. Place the saturated wick or felt oiler in its proper position on the mechanism.

2. BASIC UNIT

LUBRICATION AREAS — FRONT



2.01 Platen Pressure Bail (Friction Feed)



Thin Film on Engaging Surface

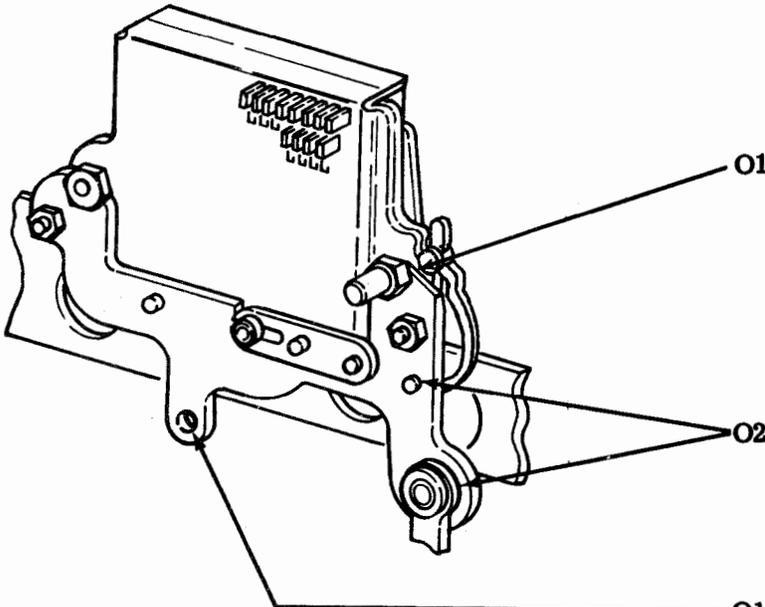
Pressure Bail

Thin Film on Engaging Surface

Compression Springs (4)

(Left Side View)

2.02 Typebox

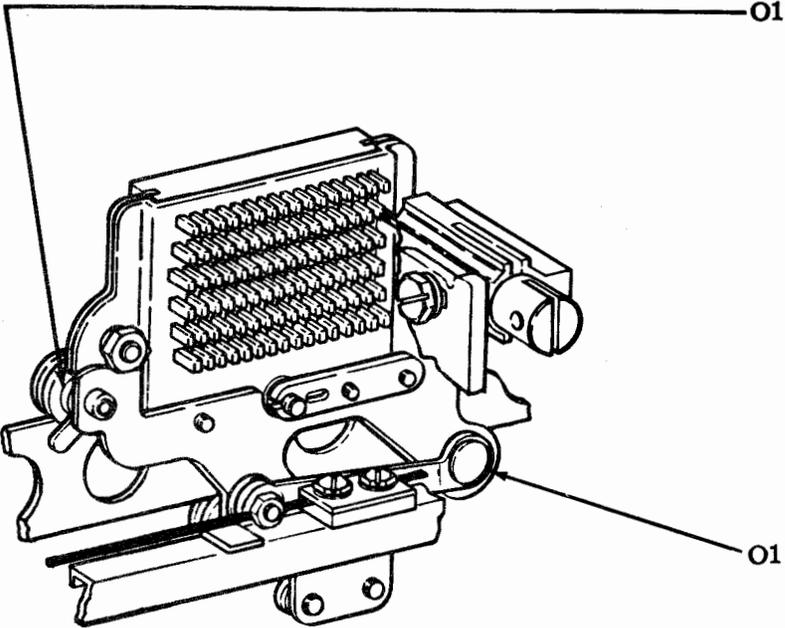


(Left Front View)

O1 Contact Surface Typebox Carriage Latch

O2 Pivot Typebox Carriage Latch

O1 Bearing Roller

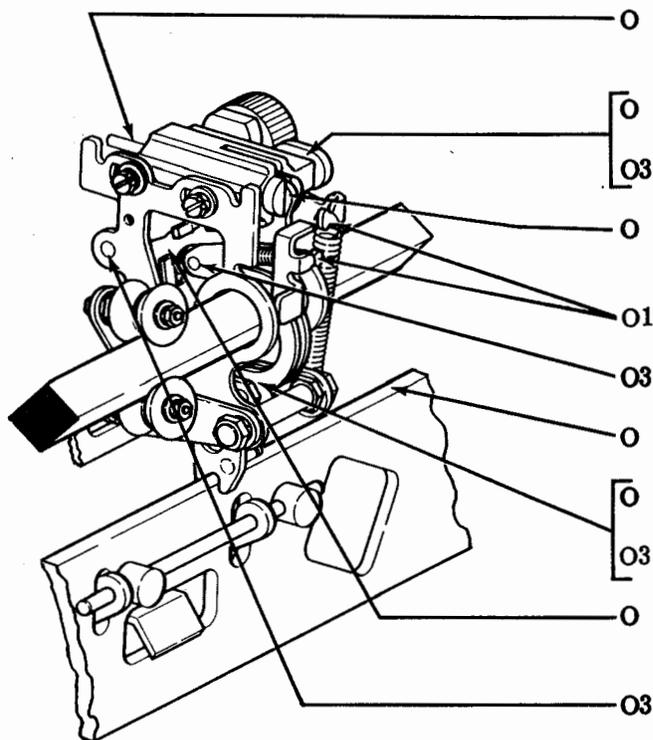


(Right Front View)

O1 Bearing Rollers (Each End)

O1 Pivot Point Typebox Carriage Link

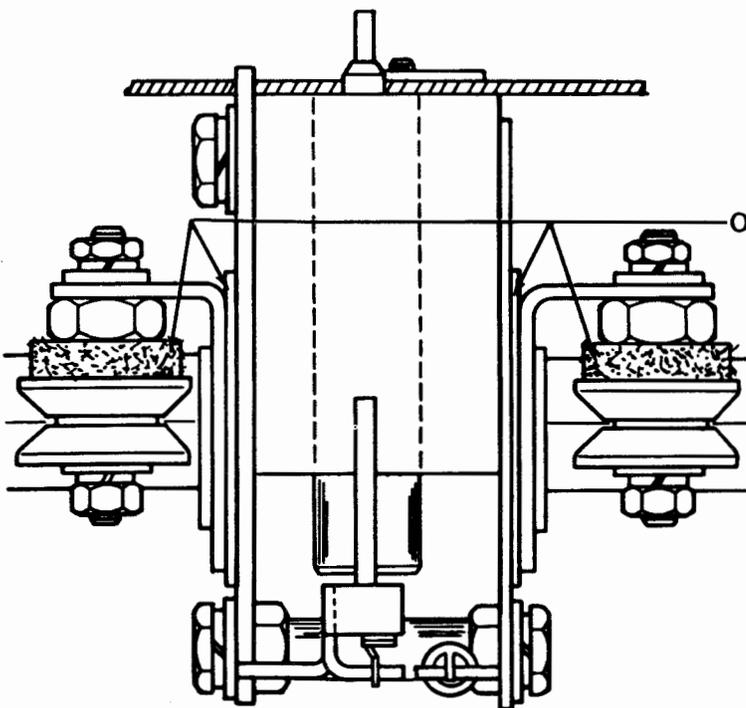
2.03 Print Hammer and Levers



(Left Front View)

- | | | |
|----|--------------------------------|--------------------|
| 0 | Thin Film on Engaging Surface | Plunger |
| 0 | Thin Film on Engaging Surface | Spring Tension |
| 03 | Pivot | Lever |
| 0 | Thin Film on Engaging Surface | Print Hammer |
| 01 | Hooks (Each End) | Springs (2) |
| 03 | Pivot | Print Hammer |
| 0 | Thin Film | Rail |
| 0 | Thin Film on Engaging Surfaces | Accelerating Lever |
| 03 | Pivot | |
| 0 | Thin Film on Engaging Surface | Latchlever |
| 03 | Pivot | Latchlever |

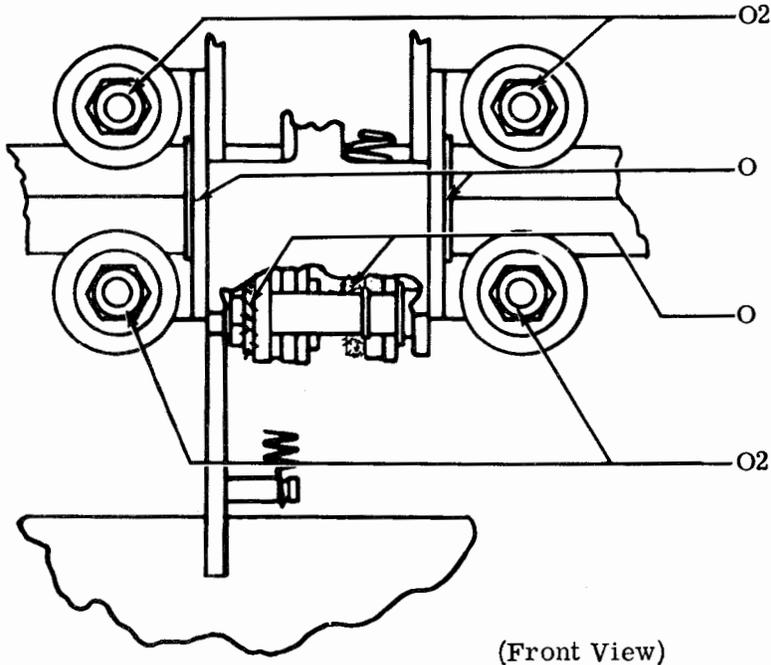
2.04 Print Hammer Carriage



(Top View)

- | | | |
|---|----------------------|--------|
| 0 | Saturate Felt Oilers | Roller |
|---|----------------------|--------|

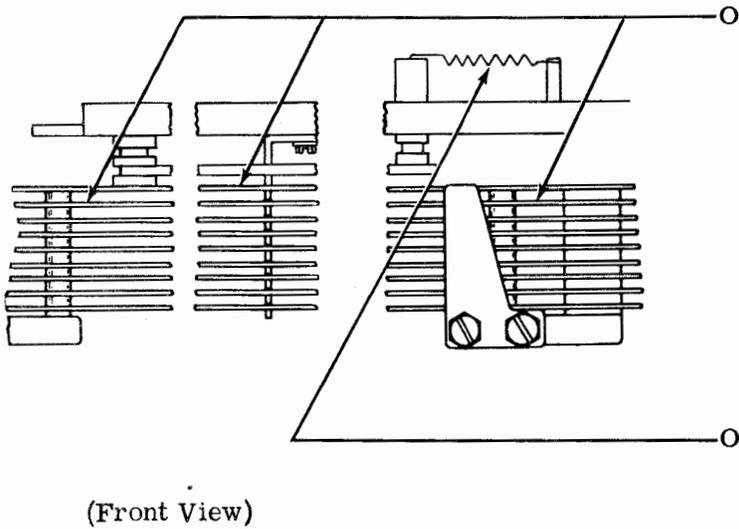
2.05 Print Hammer Carriage (continued)



- | | |
|--------------------------------|----------------------------|
| Bearings | Rollers (2) |
| Thin Film on Engaging Surfaces | Carriage Frame and Bracket |
| Saturate Felt Oilers | Print Hammer Shaft |
| Bearings | Rollers (2) |

(Front View)

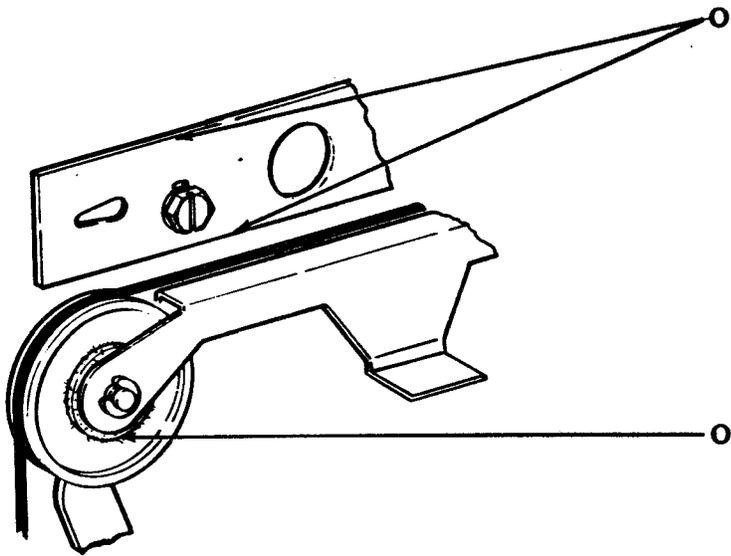
2.06 Codebars



- | | |
|---|----------|
| Thin Film on Guide Slots (Right, Center, and Left — 9 Bars) | Codebars |
| Hooks (Each End) | Spring |

(Front View)

2.07 Oscillating Rail



Thin Film on
Engaging
Surfaces

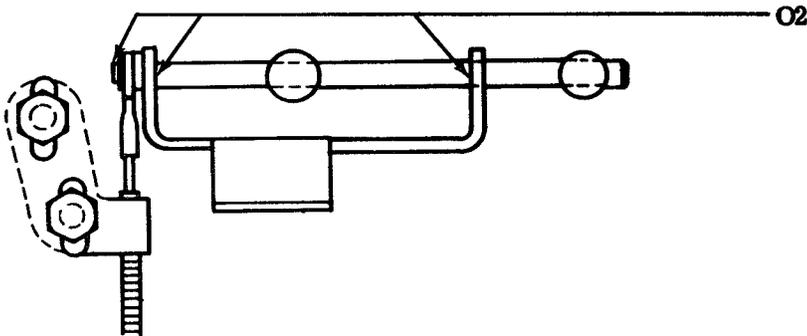
Oscillating
Rail and
Typebox Rail

Saturate
Felt
Oilers (2)

Pulleys
(Left and
Right Sides)

(Left Front View)

2.08 Local Line Feed Lever

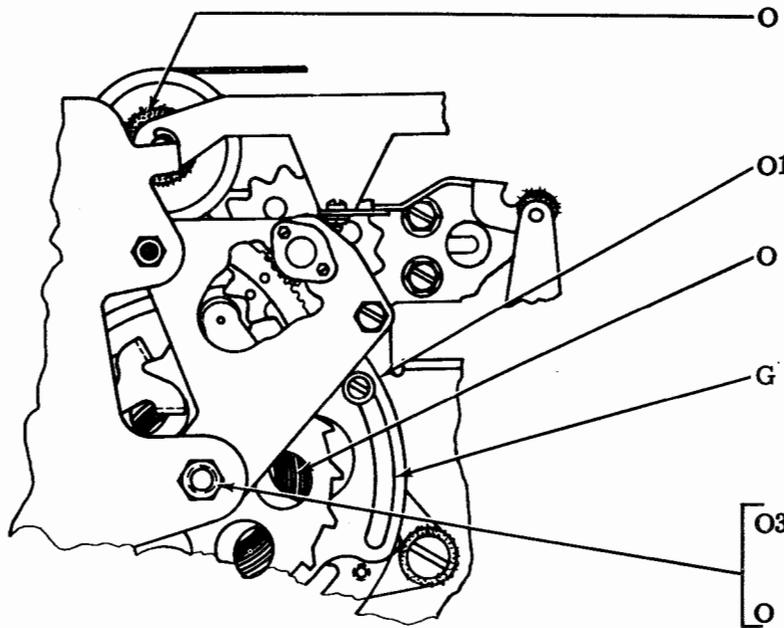


Pivot
Points

Local Line
Feed Lever

(Front View)

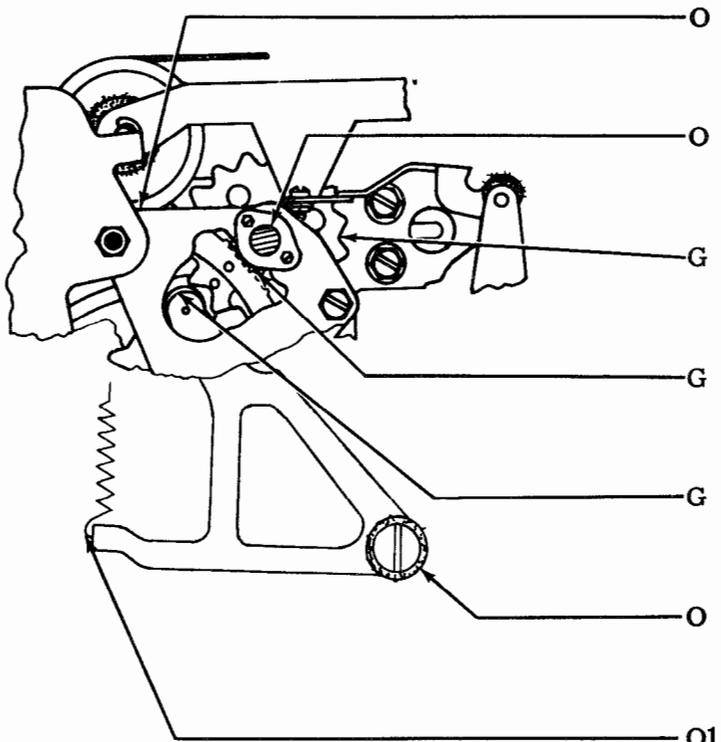
2.09 Spring Drum



(Front View)

- | | | |
|----|------------------------------------|---------------------------|
| O | Saturate Felt Oilers | Left and Right Pulleys |
| O1 | Cable Grooves | Spring Drum |
| O | Thin Film Between Layers | Carriage Return Spring |
| G | Thin Coat on Camming Surface | Margin Indicator Cam Disc |
| O3 | Bearing (Outer and Inner) | Spring Drum Shaft |
| O | Saturate Felt Oilers (Behind Drum) | |

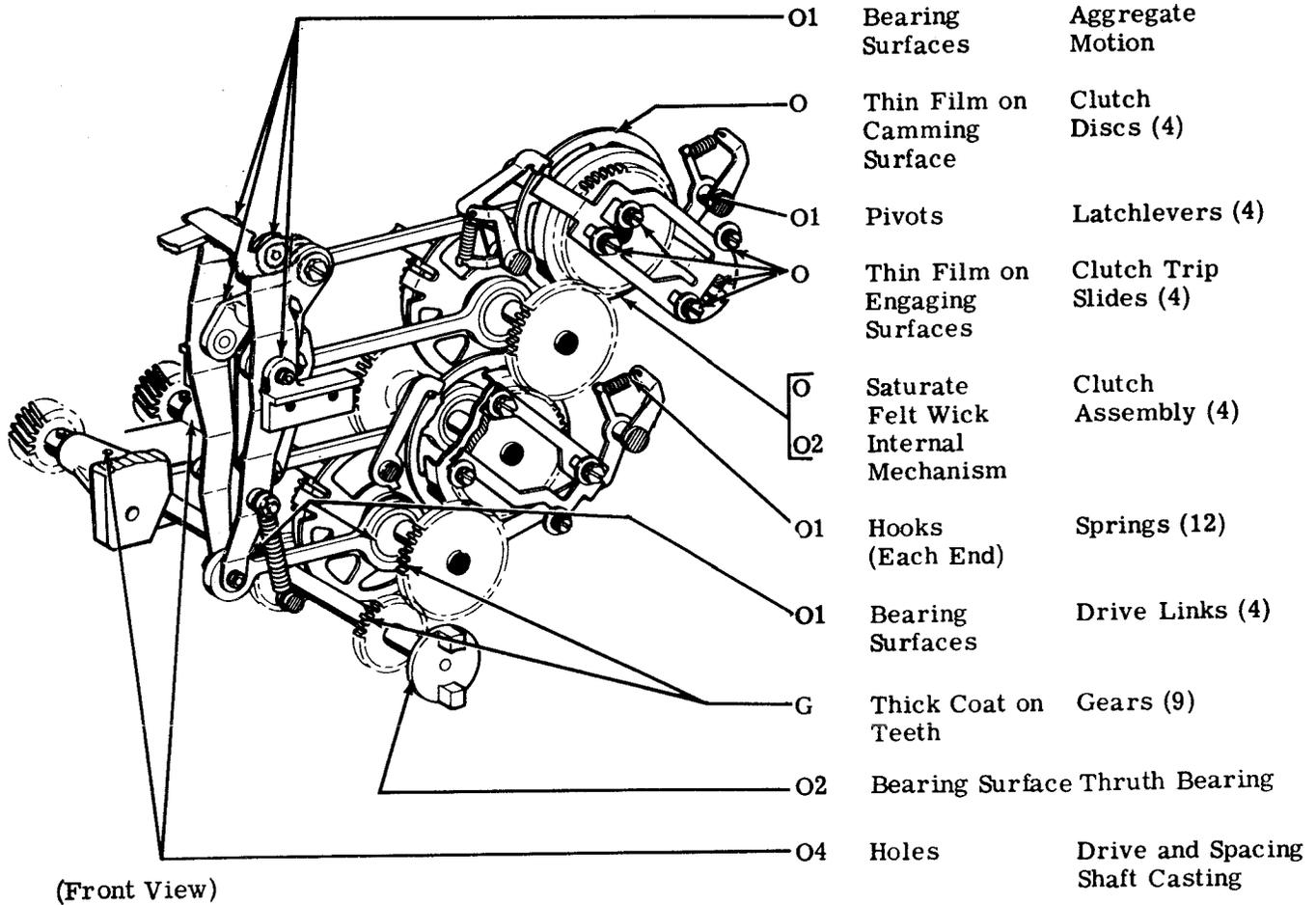
2.10 Horizontal Detent (Located Behind Spring Drum)



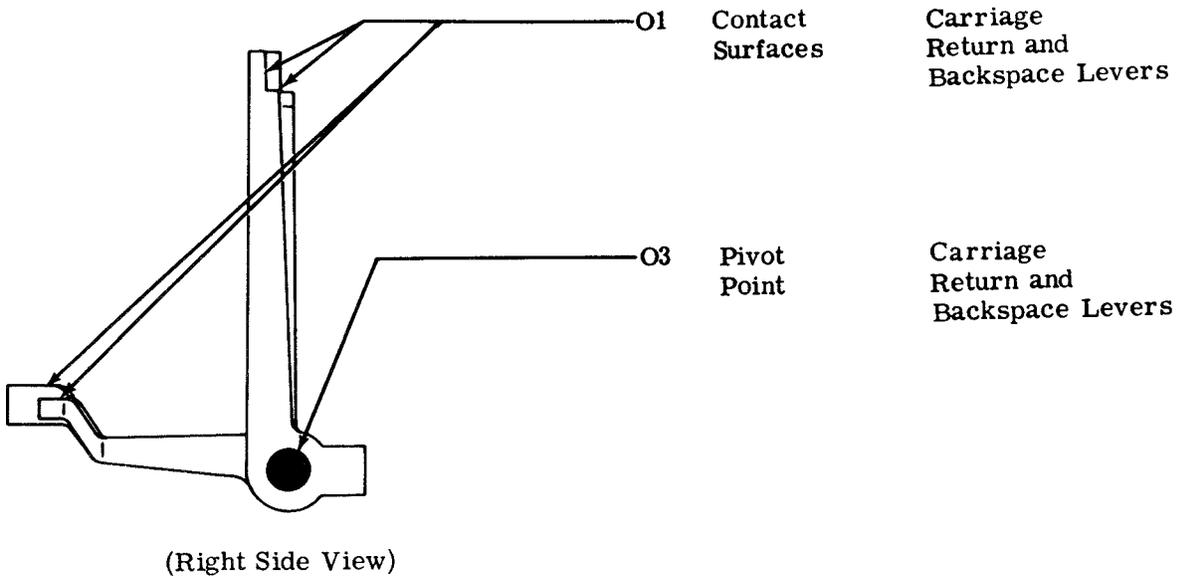
(Front View)

- | | | |
|----|-----------------------|------------------------|
| O | Saturate Felt Oilers | Oscillating Arm |
| O | Thin Film on Shaft | Pinion Gear |
| G | Thin Film on Detent | Horizontal Detent Disc |
| G | Thick Coat on Teeth | Pinion Gear |
| G | Thick Coat on Bearing | Detent Roller |
| O | Saturate Felt Oiler | Horizontal Detent Arm |
| O1 | Hooks (Each End) | Horizontal Detent Arm |

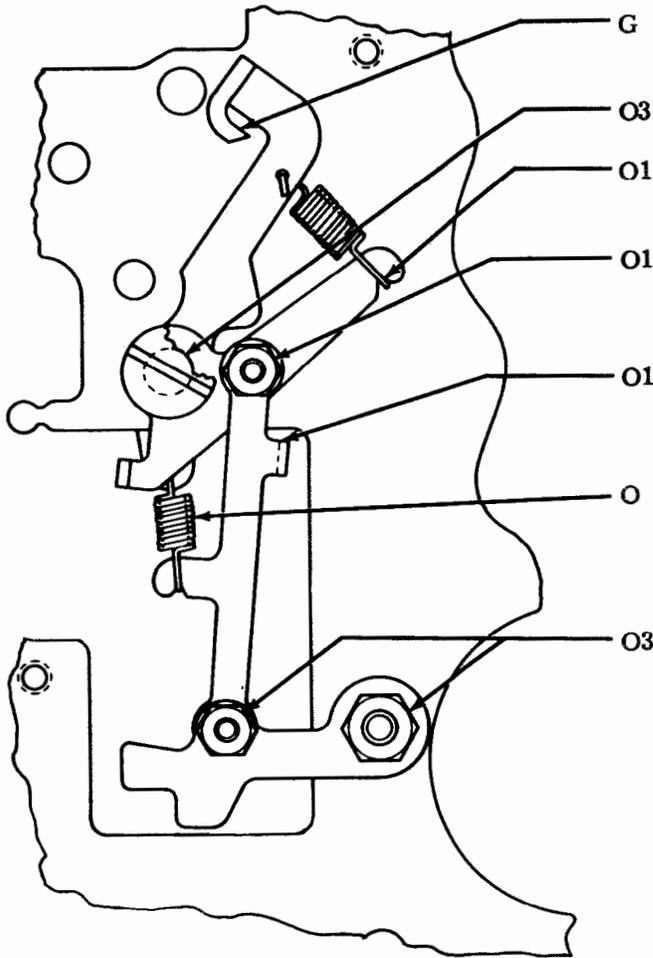
2.11 Horizontal Clutches, Gears, Levers, and Links



2.12 Carriage Return and Backspace Levers



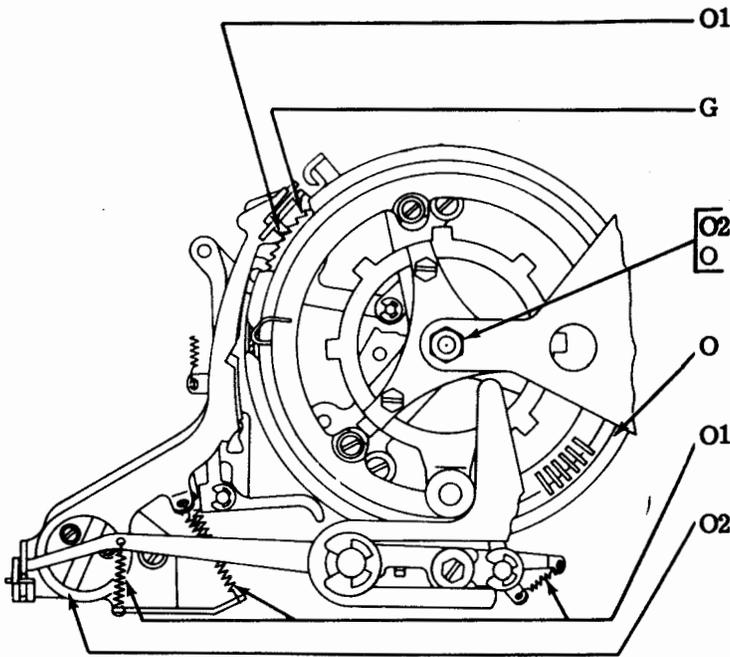
2.13 Backspace Bail, Lever, Link, and Pawl (Located Behind Spacing Drum)



(Front View)

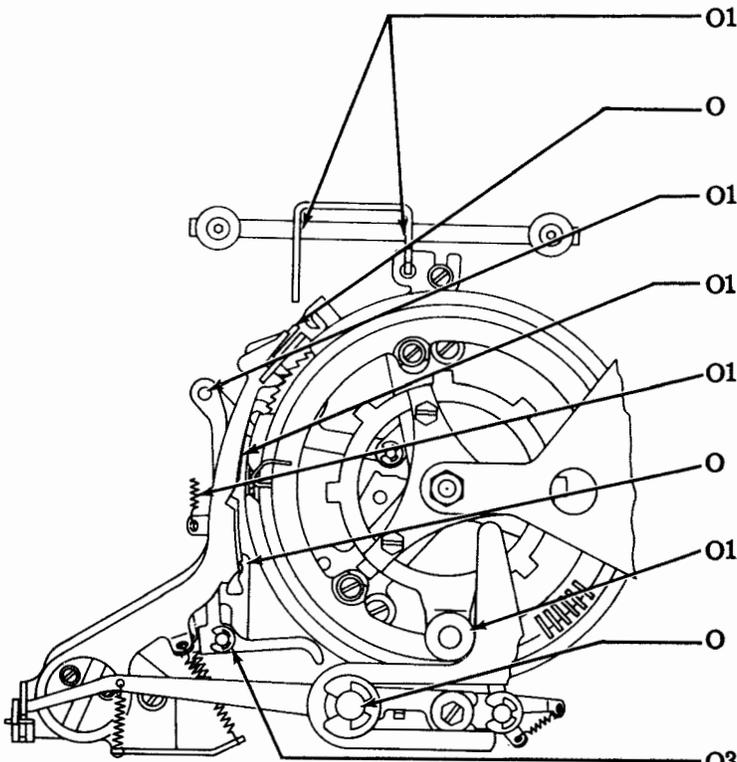
- | | | |
|----|------------------------------|-------------------------|
| G | Thin Coat on Contact Surface | Backspace Blocking Pawl |
| O3 | Pivot | Backspace Bail |
| O1 | Hooks (Each End) | Spring |
| O1 | Bearing and Engaging Surface | Backspace Bail and Link |
| O1 | Contact Surface | Link |
| O | Saturate Wick | Spring |
| O3 | Pivots | Intermediate Lever |

2.14 Spacing Drum



(Front View)

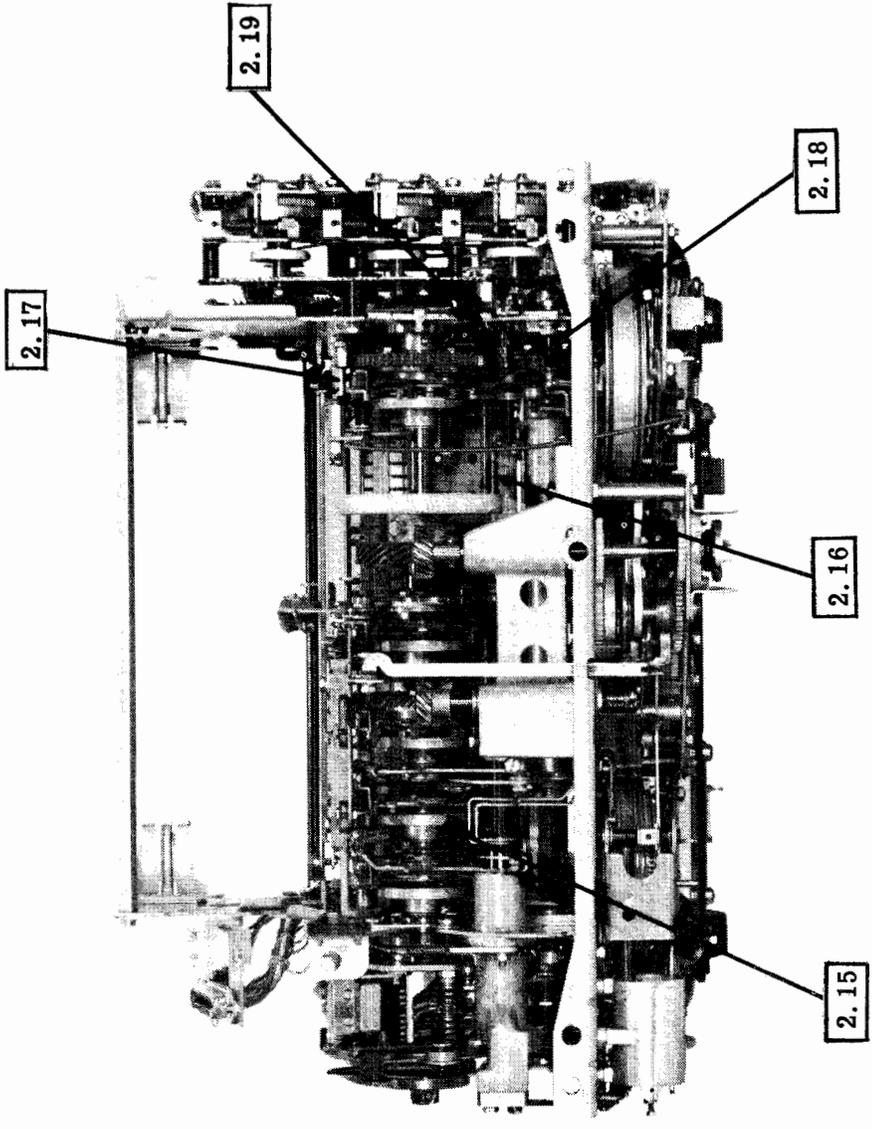
- | | | |
|----|---------------------------------|--------------------|
| 01 | Engaging Surface | Spacing Feed Pawls |
| G | Thin Coat on Teeth | Ratchet |
| 02 | Pivot Point Saturate Felt Oiler | Spacing Drum Shaft |
| 0 | Thin Film on Cable Grooves | Spacing Drum |
| 01 | Hooks (Each End) | Springs |
| 02 | Pawls | Spacing Eccentric |



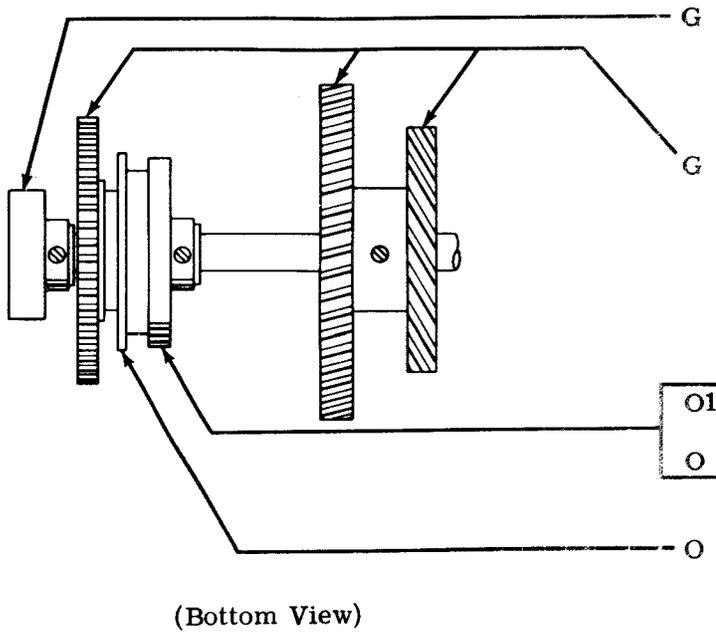
(Front View)

- | | | |
|----|---------------------------------|-----------------------------|
| 01 | Pivot Points | Local Carriage Return Lever |
| 0 | Thin Film on Contacting Surface | Feed Pawl, Release Link |
| 01 | Pivot Points | Feed Pawl, Release Link |
| 01 | Engaging Surfaces | Feed Pawl Release Link |
| 01 | Hooks (Each End) | Spring |
| 0 | Thin Film on Contacting Surface | Carriage Return Latch Bail |
| 01 | Bearing Surface | Roller |
| 0 | Thin Film on Engaging Surface | Transfer Slide |
| 03 | Pivot Point | Carriage Return Latch Bail |

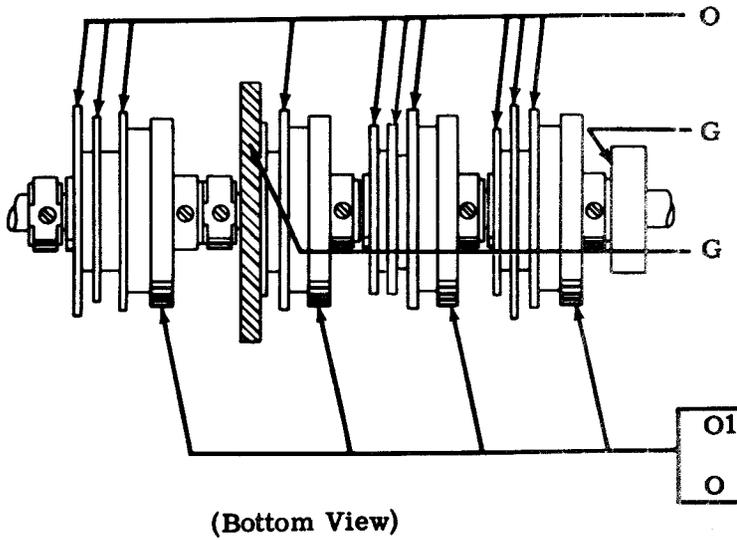
LUBRICATION AREAS — BOTTOM



2.15 Main Shaft Clutches and Gears

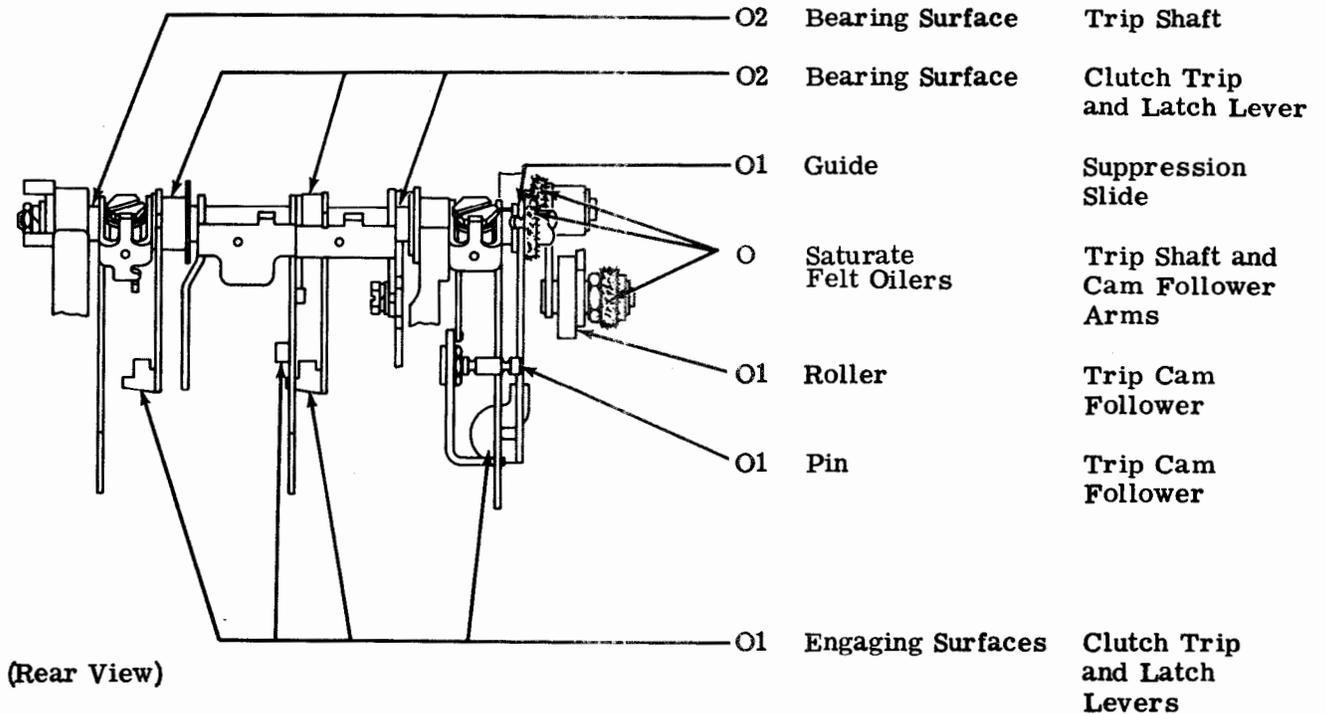


- G Pack Ball Bearing
- G Main Shaft Bearing
- G Thick Coat on Teeth
- G Main Shaft Gears (3)
- O1 Internal Mechanism Saturate Felt Wick
- O Clutch Assembly
- O Thin Film on Camming Surface
- O Clutch Disc

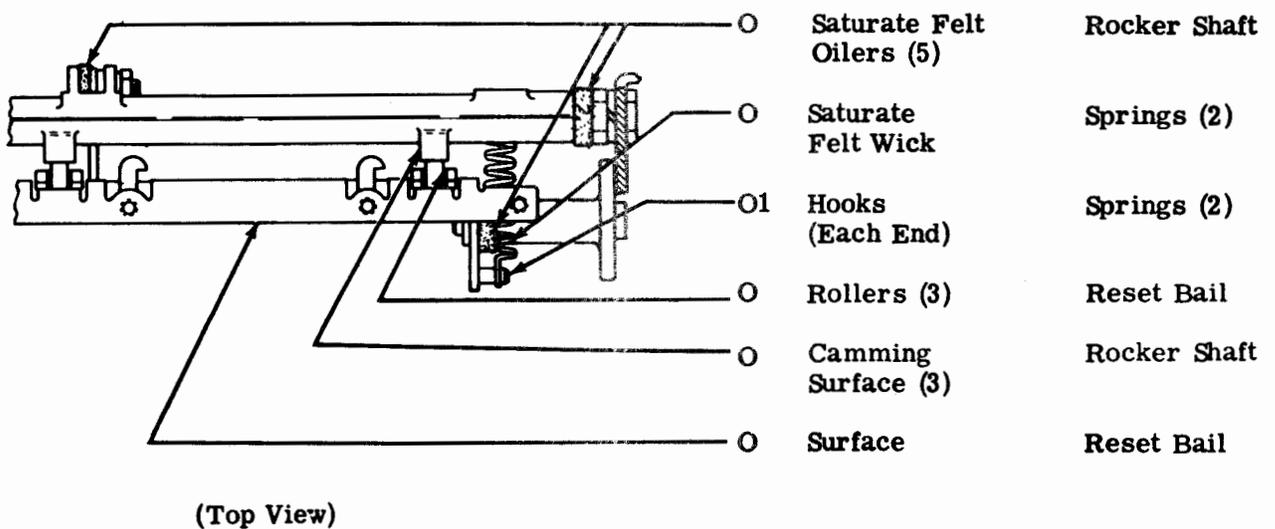


- O Thin Film on Camming Surfaces
- O Clutch Discs and Eccentric Cams
- G Pack Ball Bearing
- G Main Shaft Bearing
- G Thick Coat on Teeth
- G Main Shaft Gear
- O1 Internal Mechanism Saturate Felt Wick
- O Clutch Assemblies

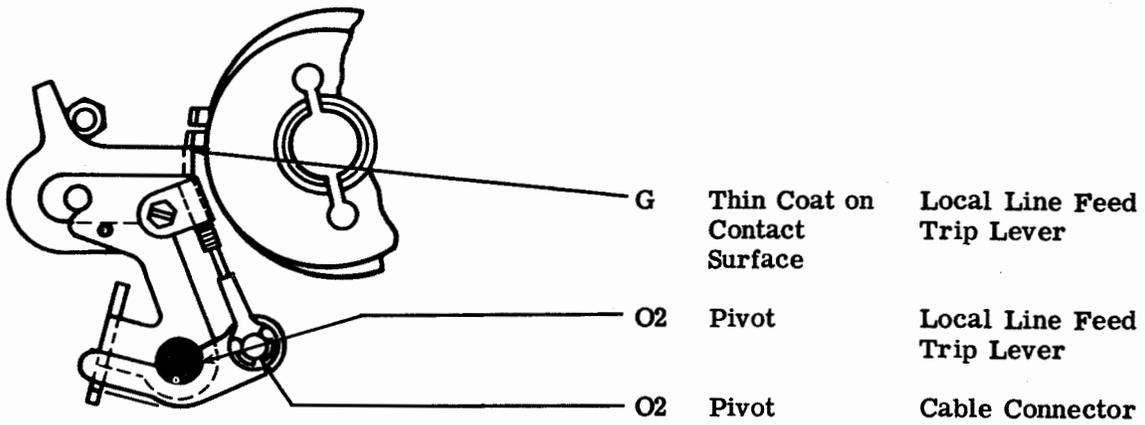
2.16 Trip Shaft Cam and Levers



2.17 Reset Bail and Shaft

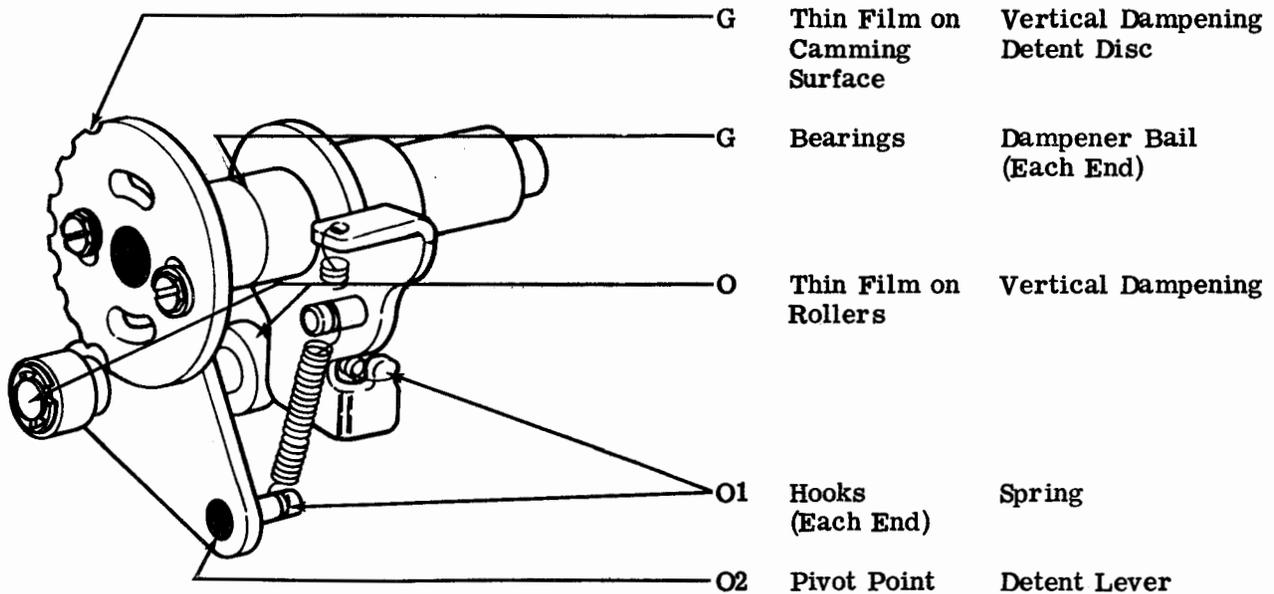


2.18 Local Line Feed Trip Lever



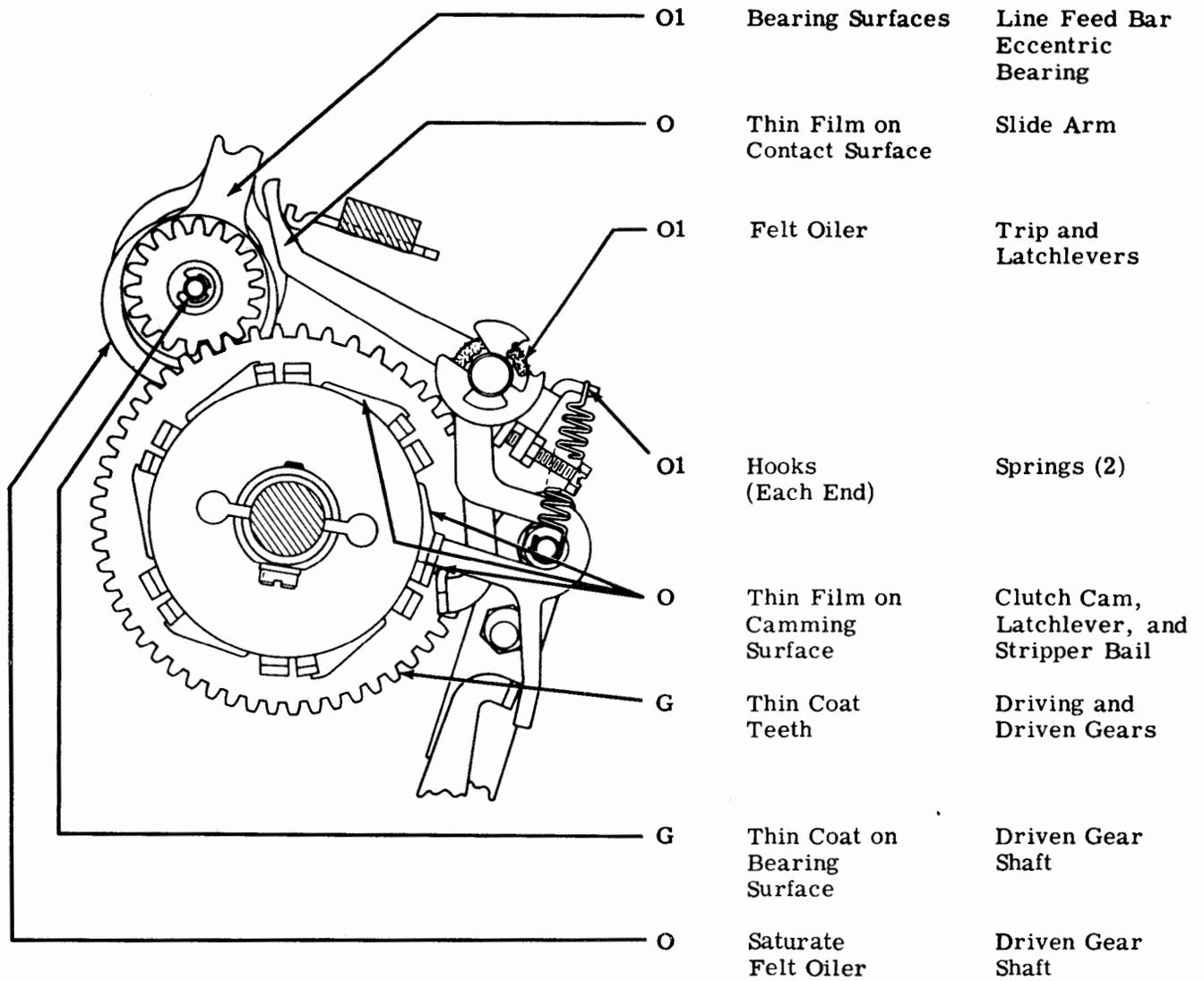
(Left Side View)

2.19 Vertical Detent



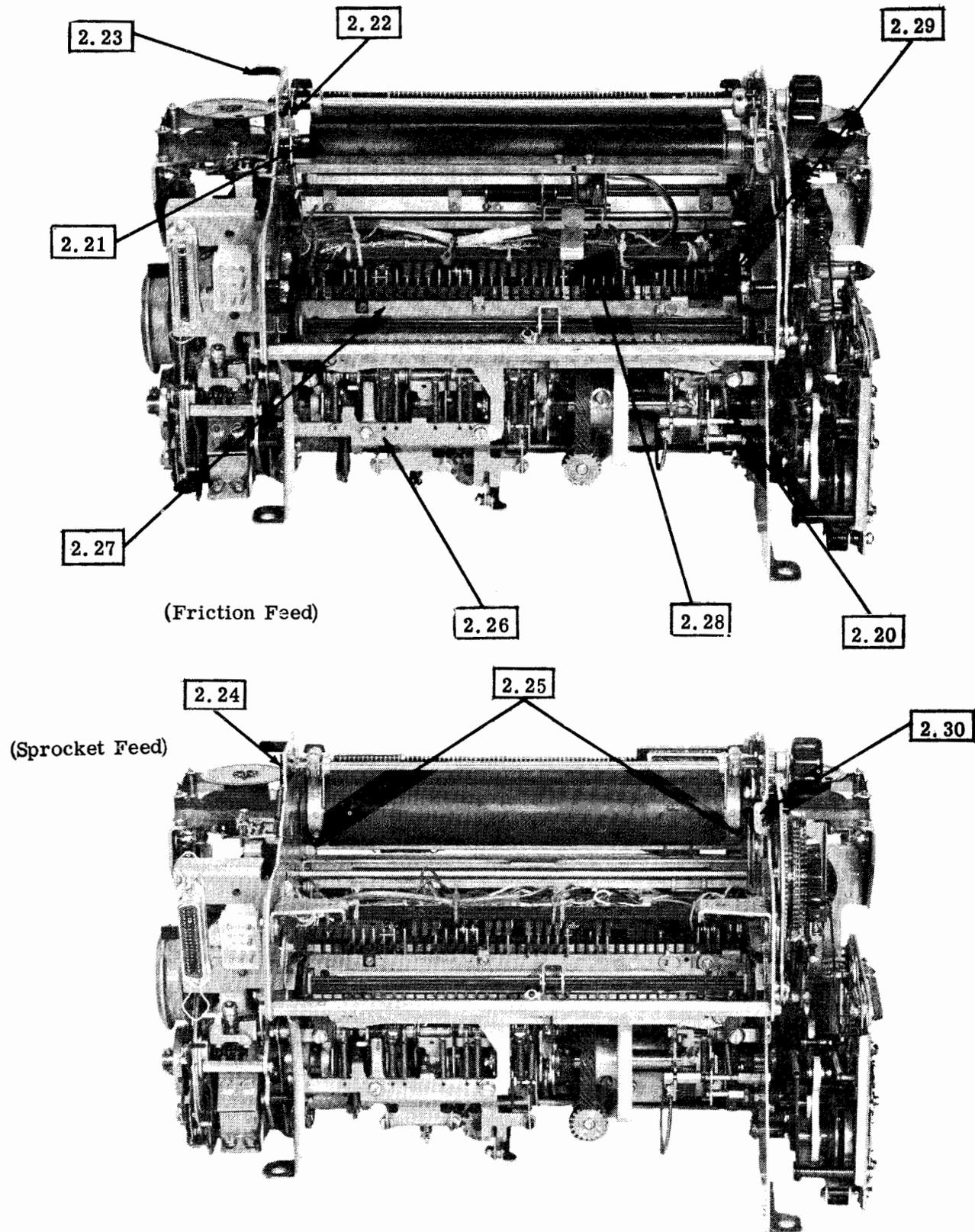
(Left Side View)

2.20 Line Feed Bail, Levers, and Gears

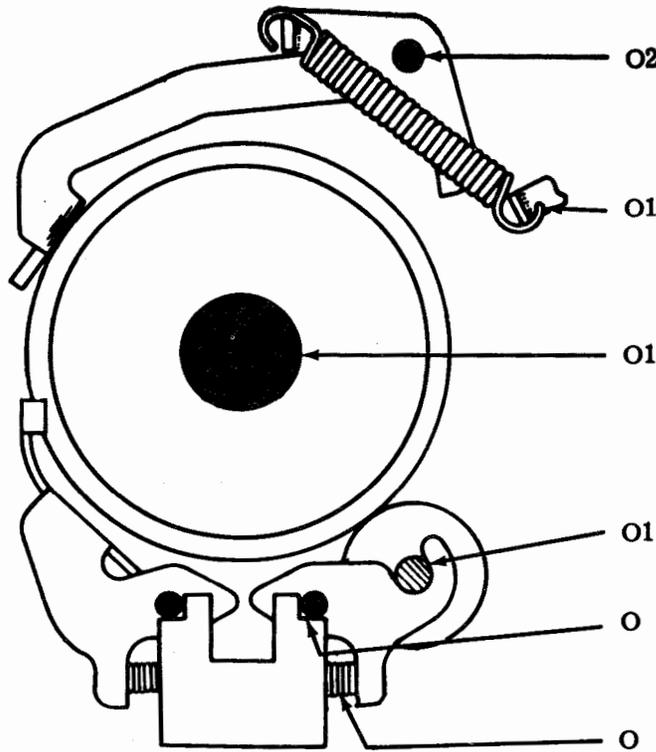


(Right Side View)

LUBRICATION AREAS — REAR



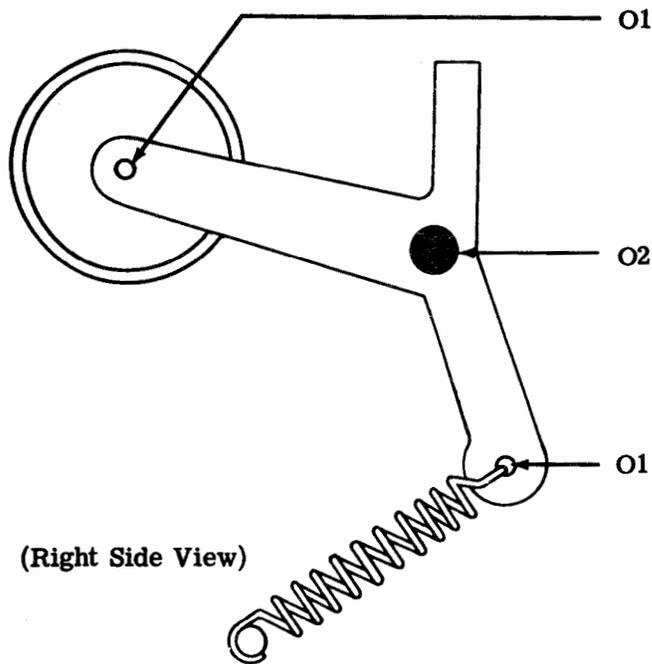
2.21 Platen Shaft and Rollers (Friction Feed)



(Right Side View)

- | | | |
|----|--------------------------------|--|
| O2 | Pivots | Paper Finger Shaft |
| O1 | Hooks (Each End) | Springs (2) |
| O1 | Bearing Surfaces (Each End) | Platen Shaft |
| O1 | Pivots | Pressure Rollers (Wipe Off Excess Oil) |
| O | Thin Film on Engaging Surfaces | Pressure Rollers |
| O | Thin Film on Engaging Surface | Compression Springs (2) |

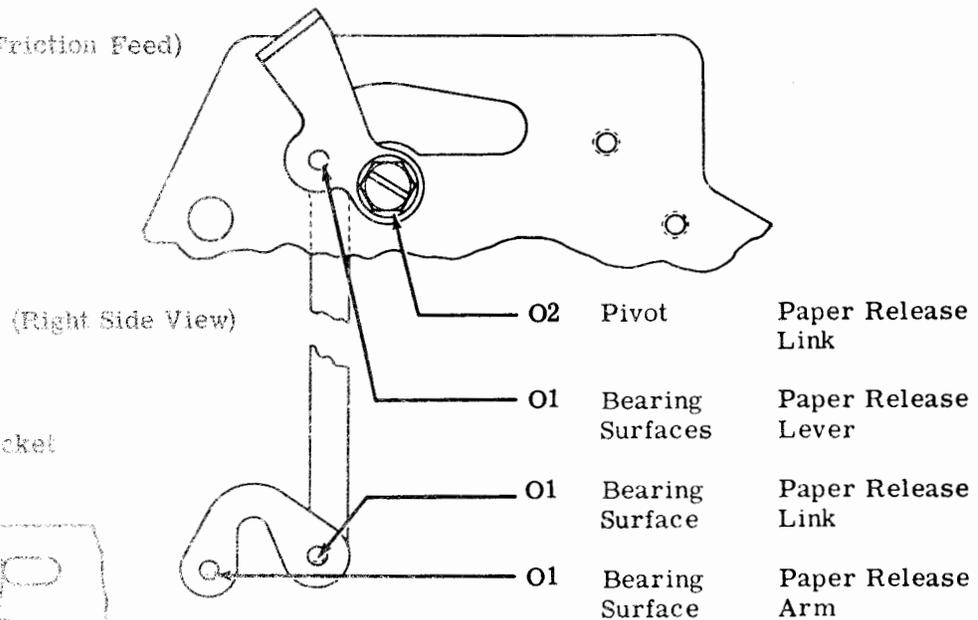
2.22 Paper Straightener (Friction Feed)



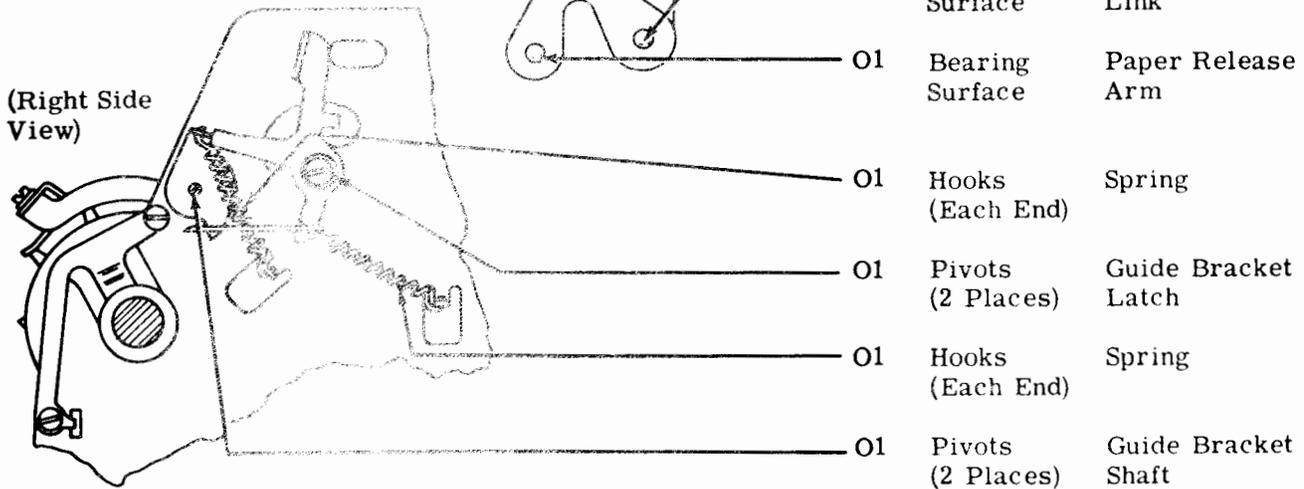
(Right Side View)

- | | | |
|----|-----------------------------|-------------------------------|
| O1 | Bearing Surfaces (Each End) | Paper Straightener Shaft (2) |
| O2 | Pivots (Each End) | Paper Straightener Levers (2) |
| O1 | Hooks (Each End) | Springs (2) |

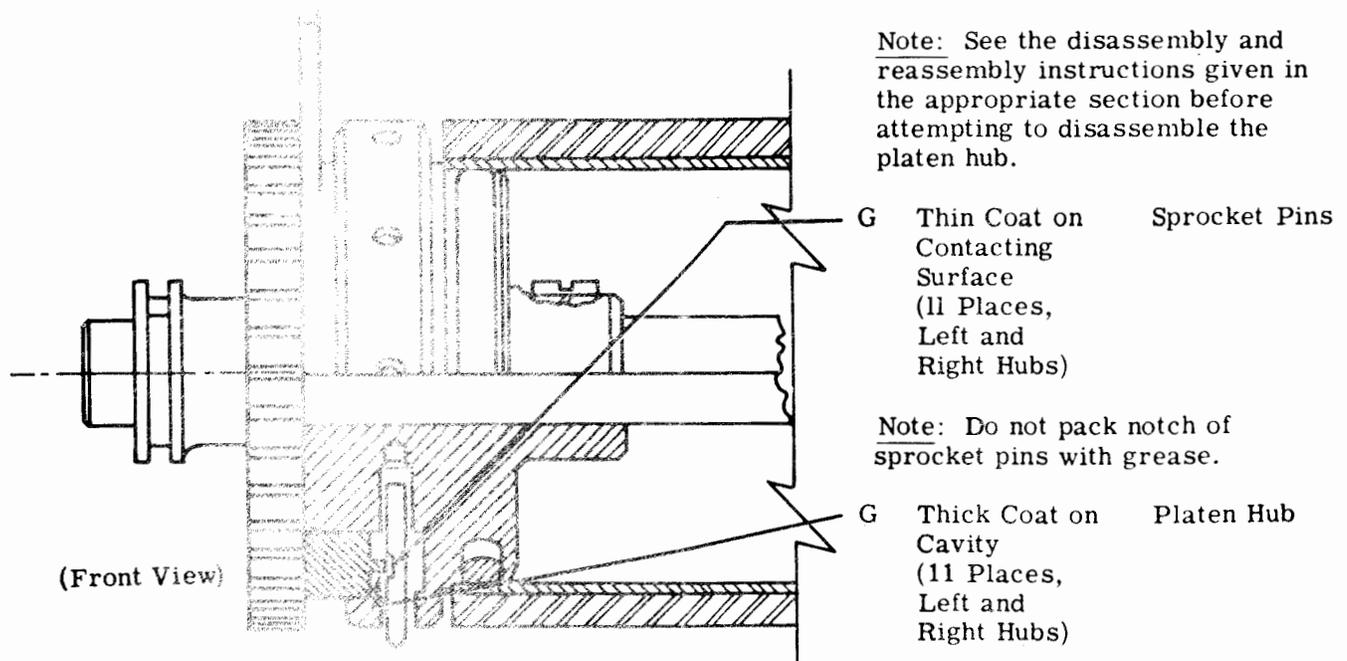
2.23 Paper Release (Friction Feed)



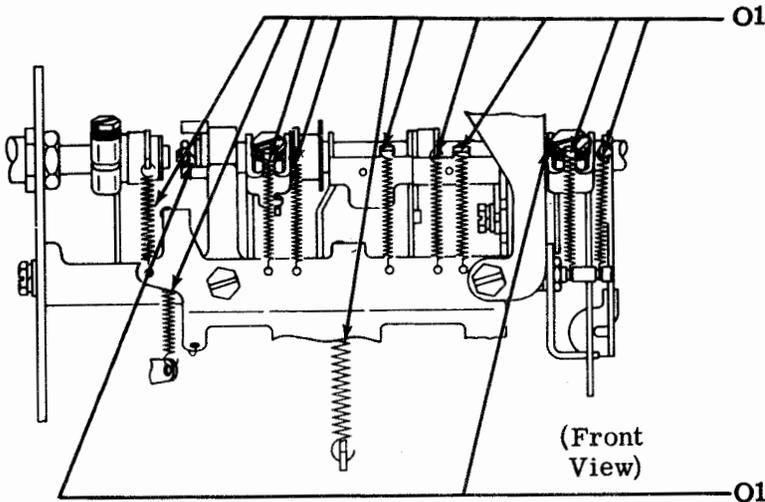
2.24 Paper Guide Bracket Shaft and Latch (Sprocket Feed)



2.25 Platen Hubs and Pins (Sprocket Feed)

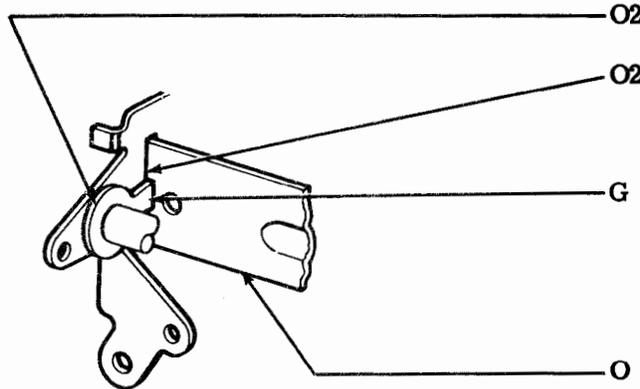


2.26 Trip Shaft Bearings and Springs



Hooks
(Each End) Springs

2.27 Function Stripper Blade



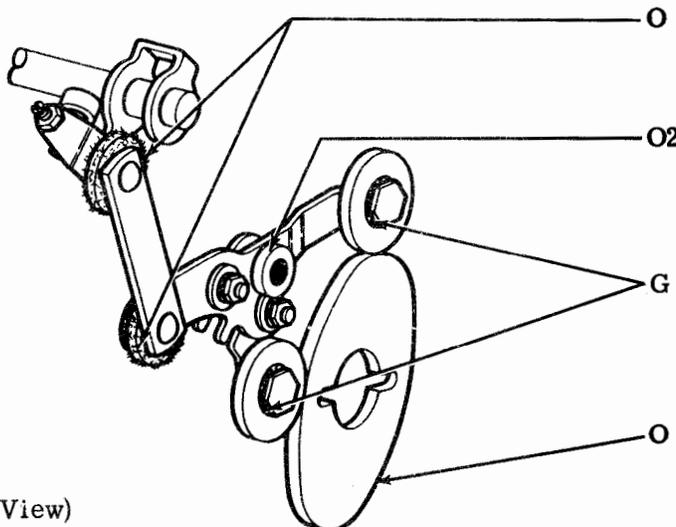
Bearings Trip Shaft

Bearings Drive Shaft

Bearing Surface (Each End) Stripper Blade Drive Arm

Thick Coat on Edge of Engaging Surfaces (Each End) Drive Arm (Each End)

Thin Film on Engaging Surfaces Stripper Blade



(Rear View)

Saturate Felt Oilers Drive Link (Each End)

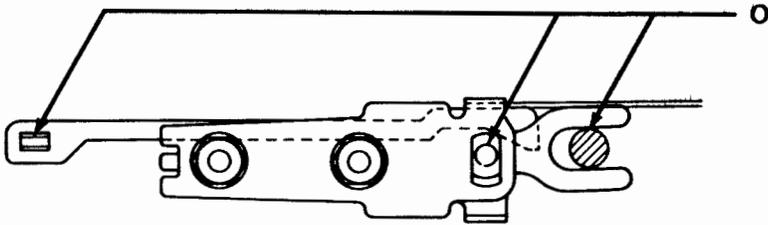
Pivot Cam Follower Arm

Pack Bearings Cam Follower

Thin Film on Engaging Surfaces Stripper Blade Cam

SECTION 574-320-704TC

2.28 Suppression Function Lever

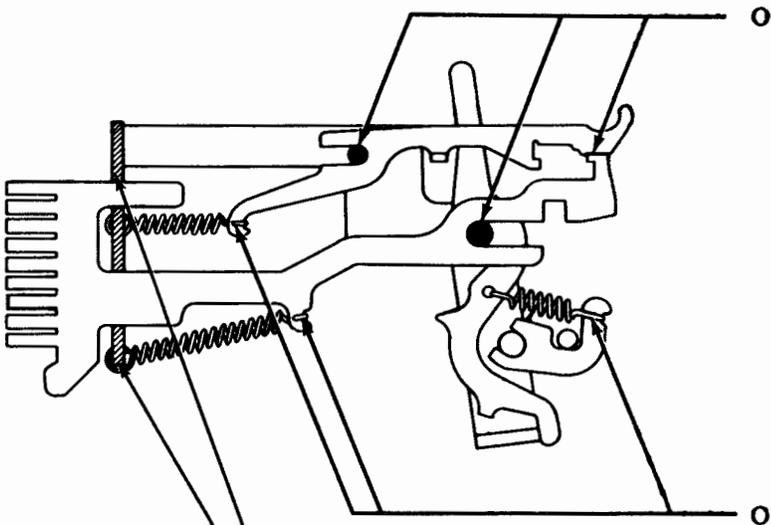


(Top View)

Thin Film on Engaging Surfaces

Suppression Function Lever

2.29 Function Bar and Pawl



(Right Side View)

Thin Film on Engaging Surfaces

Function Bar, Lever, and Pawl

Note: Contact clips and arms on function switches must be kept dry.

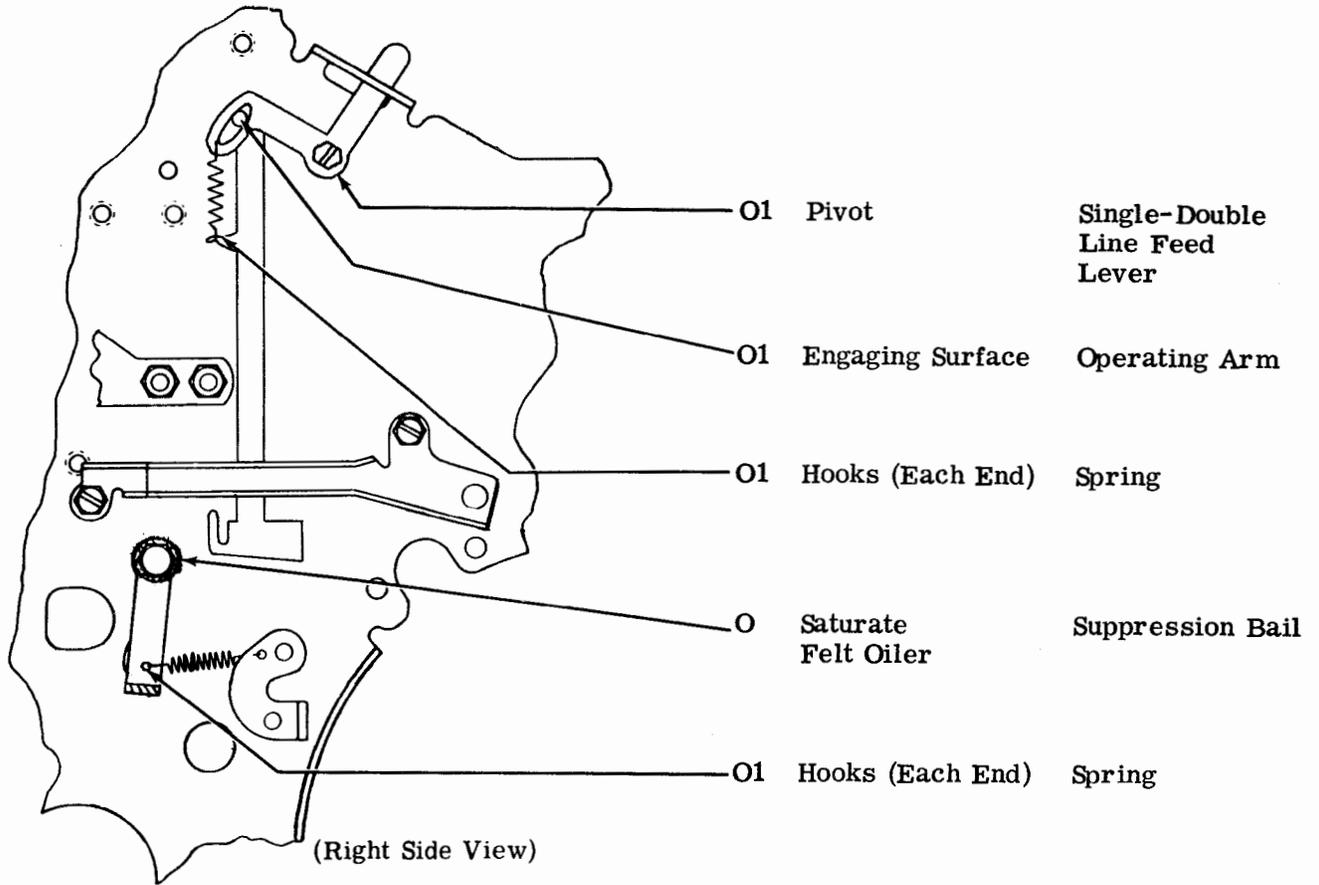
Hooks (Each End)

Springs

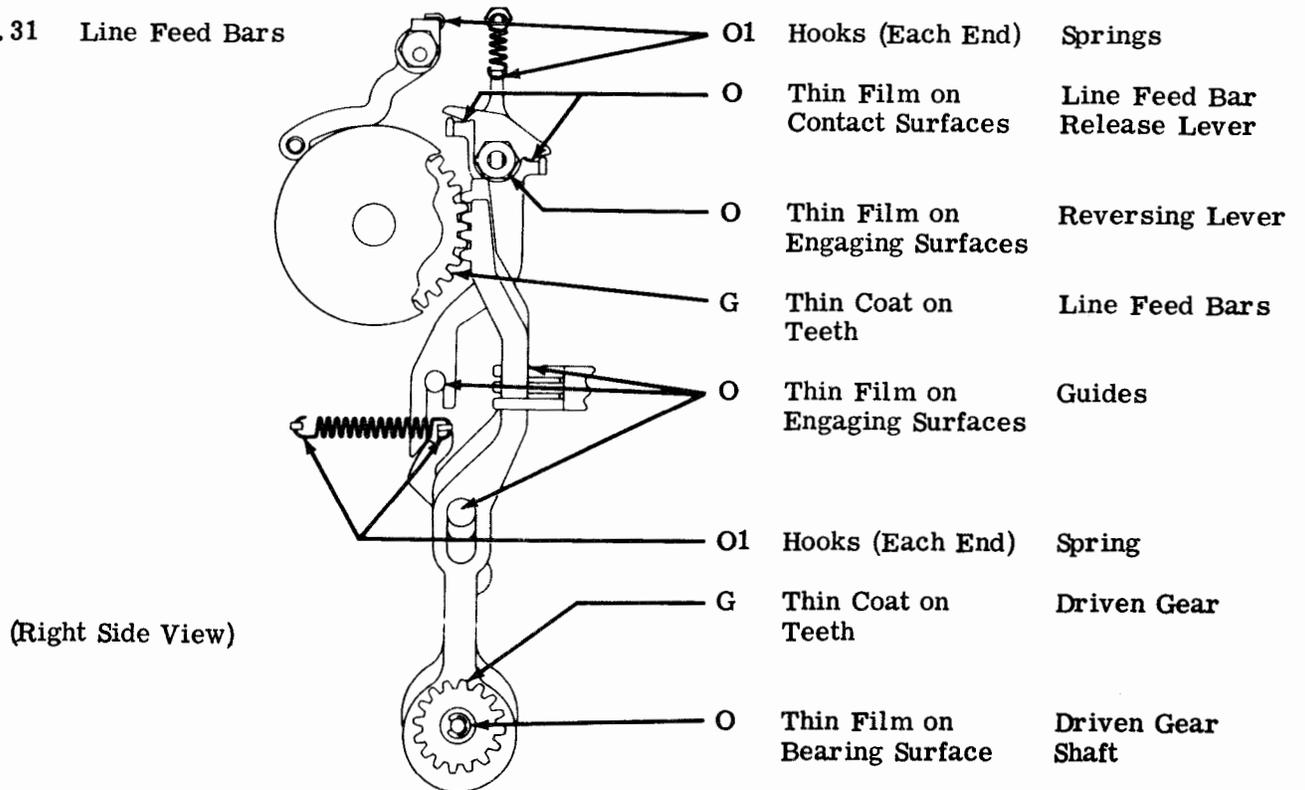
Engaging Surfaces

Function Bar

2.30 Single-Double Line Feed Lever

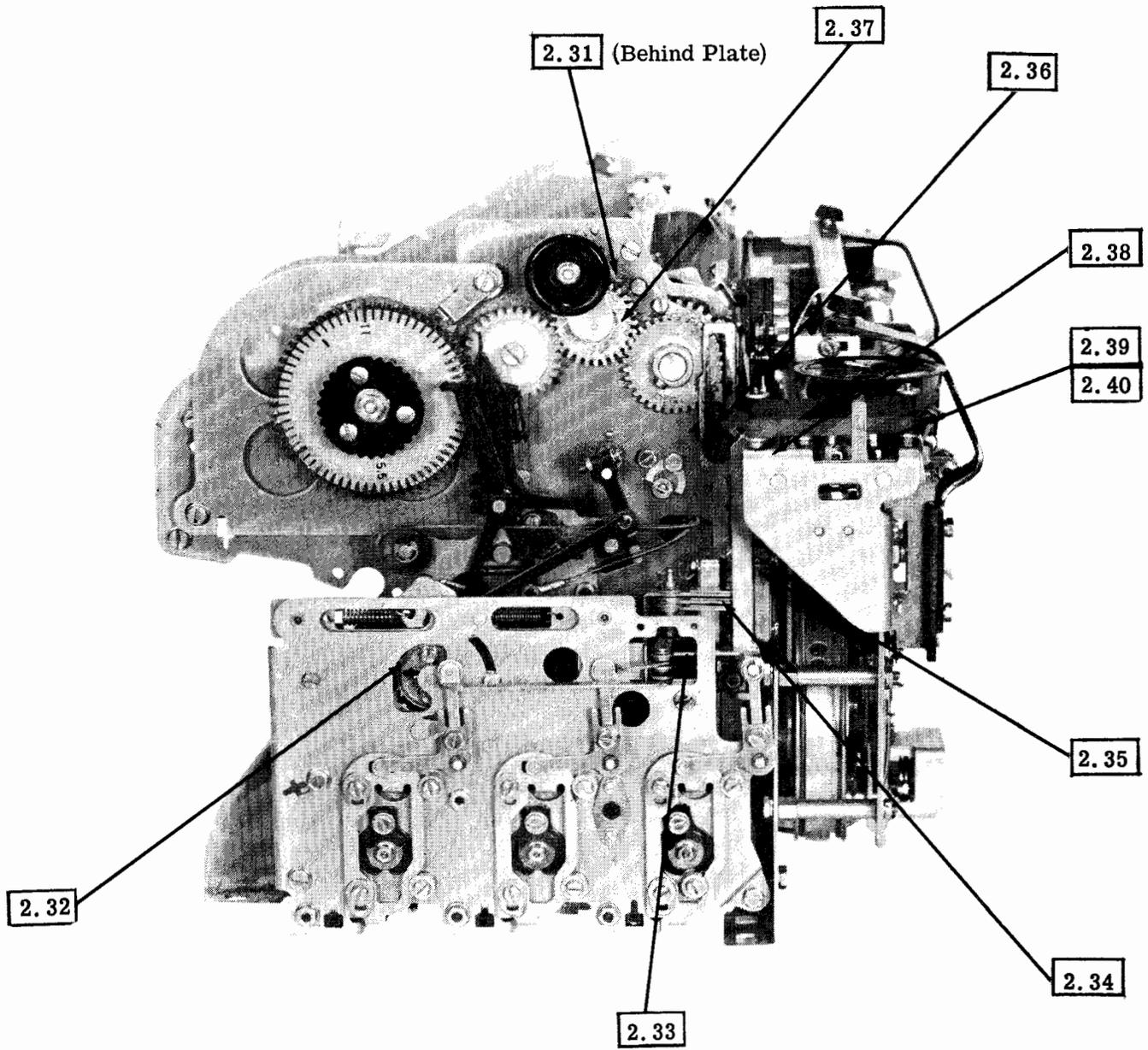


2.31 Line Feed Bars

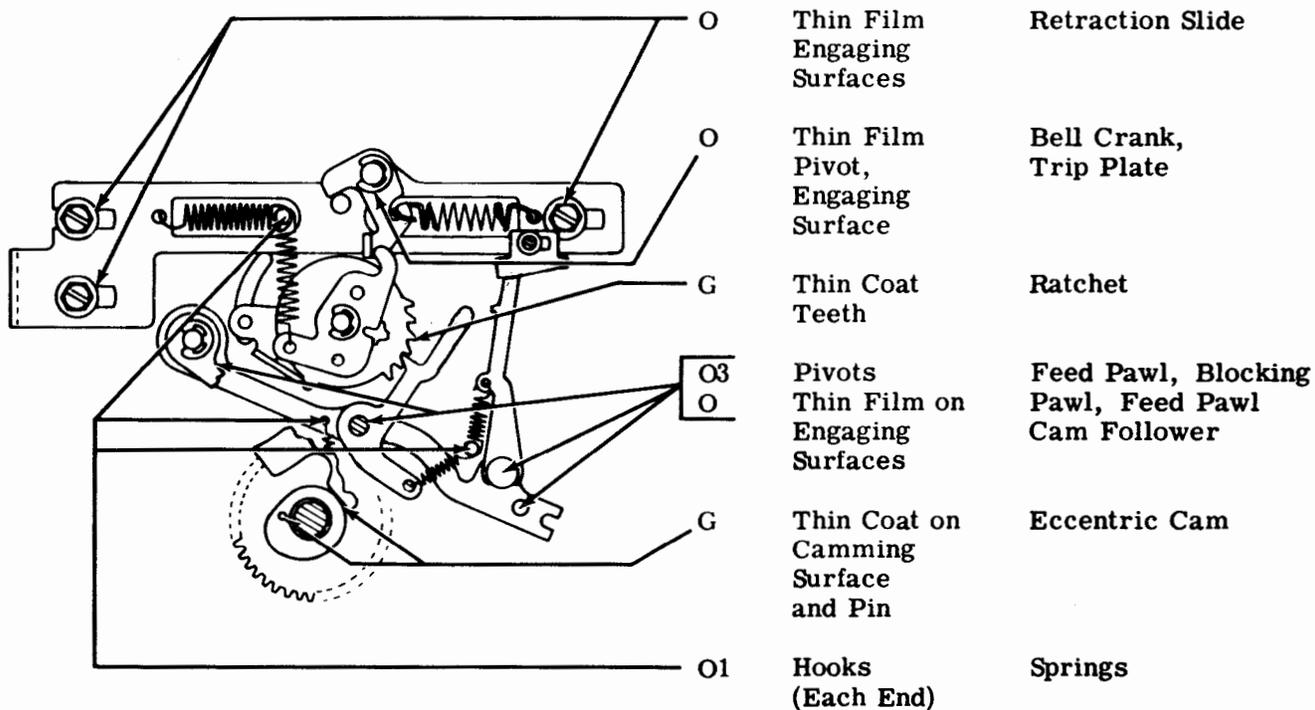


SECTION 574-320-704TC

LUBRICATION AREAS — LEFT SIDE

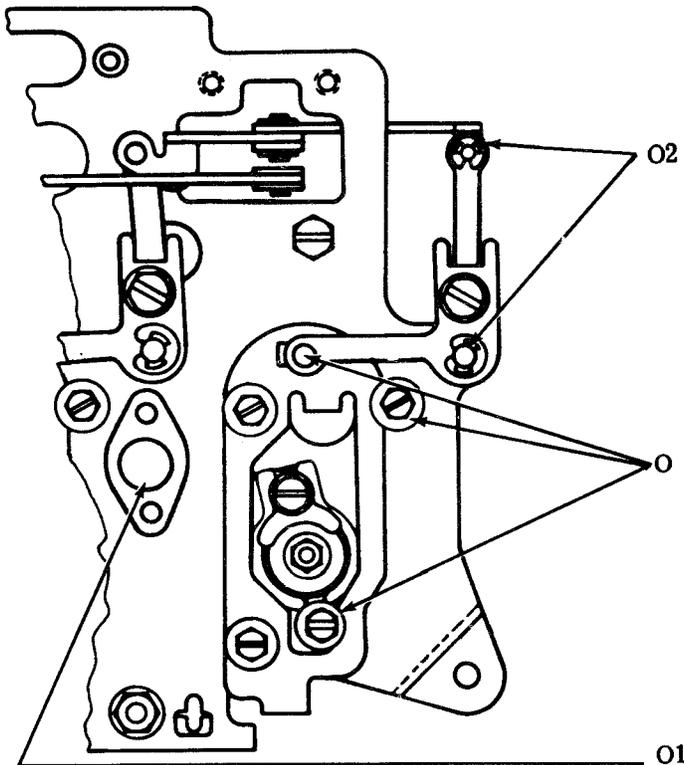


32 Retraction Slide and Pawls



(Right Side View)

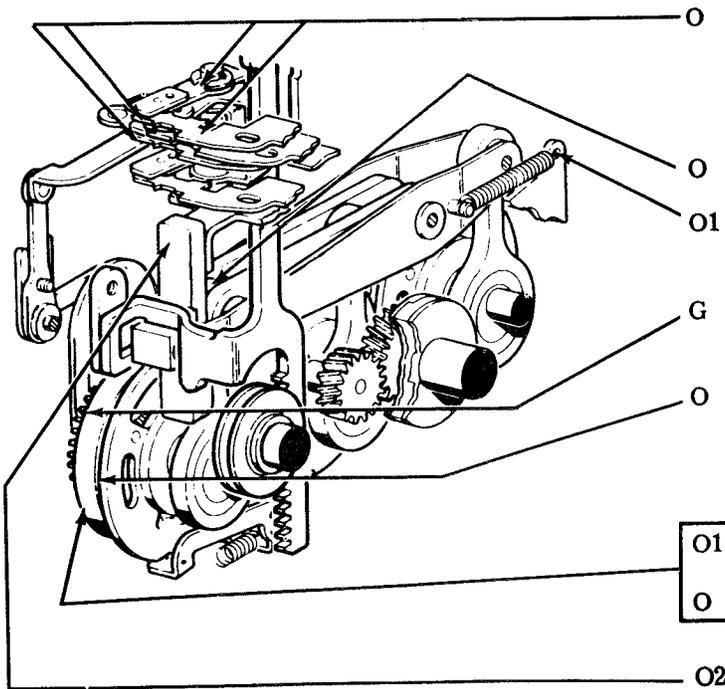
2.33 Vertical Linkage, Shafts, and Slides



(Left Side View)

- | | | |
|----|-------------------------------|------------------------|
| O2 | Bearing Surfaces | Trip Linkage |
| O | Thin Film on Sliding Surfaces | Clutch Trip Slides (3) |
| O1 | Bearing | Driven Gear Shaft |

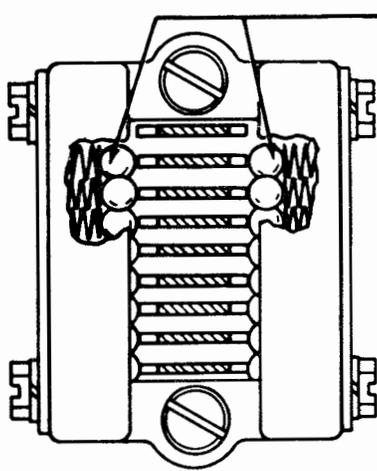
2.34 Vertical Clutches, Gears, and Bell Cranks



(Right Front View)

- | | | |
|----|---------------------------------------|--|
| O | Thin Film on Pivots Guide | Positioning Trip Levers, Codebar Bell Cranks |
| O | Bearing Surface | Output Bearing |
| O1 | Hooks (Each End) | Springs (13) |
| G | Thick Coat on Teeth | Gears (7) |
| O | Thin Film on Camming Surface | Clutch Discs (3) |
| O1 | Internal Mechanism Saturate Felt Wick | Clutch Assembly (3) |
| O | | |
| O2 | Track Surface | Track |

2.35 Codebar Detent



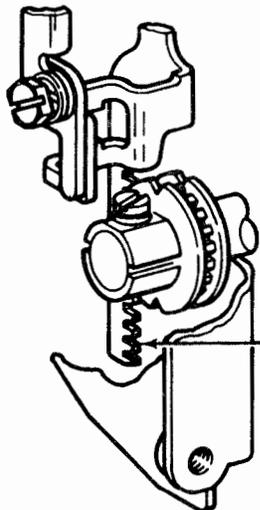
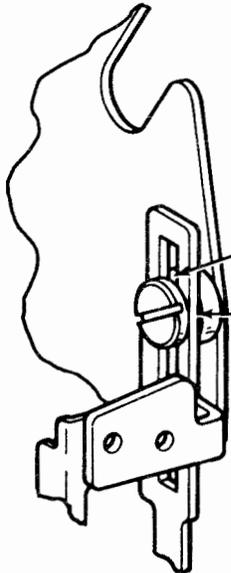
(Left Side View)

O1

Bearings and
Compression
Springs

Codebar
Detents

2.36 Vertical Positioning Rack



(Left Side View)

O

Saturate
Felt Oiler

Spacer
Guide

G

Thin Film
on Engaging
Surface

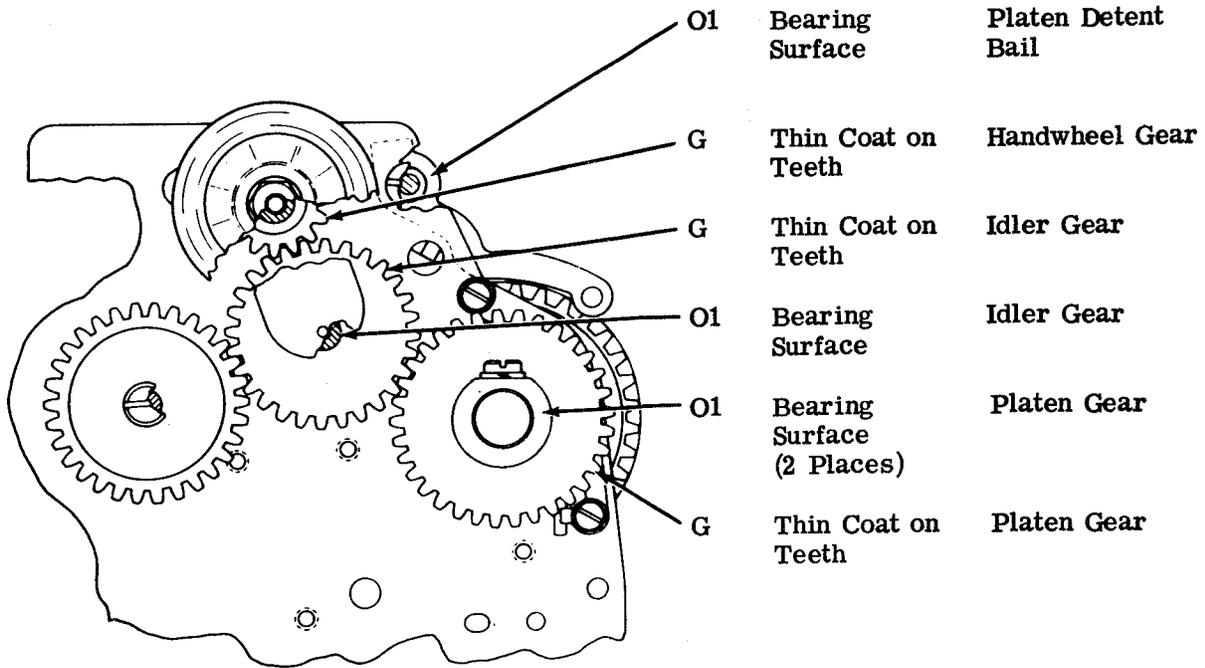
Spacer
Upper Rack
Guide

G

Thick Coat on
Teeth, Engaging
Surfaces, and
Bearings

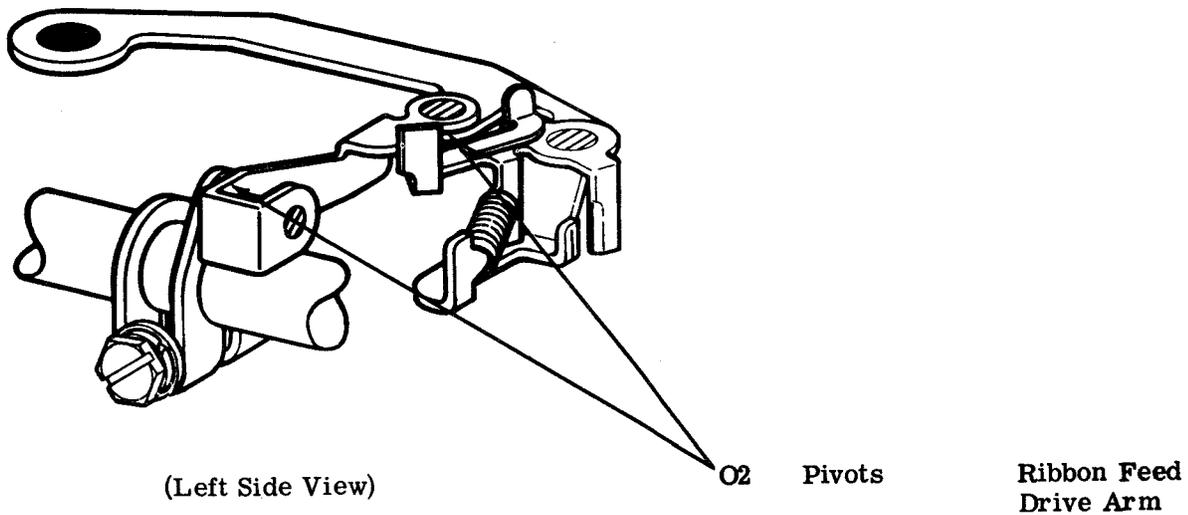
Lower Rack
Guide Arm,
Pinion, and
Drive Shaft
Bearings

2.37 Line Feed Gears



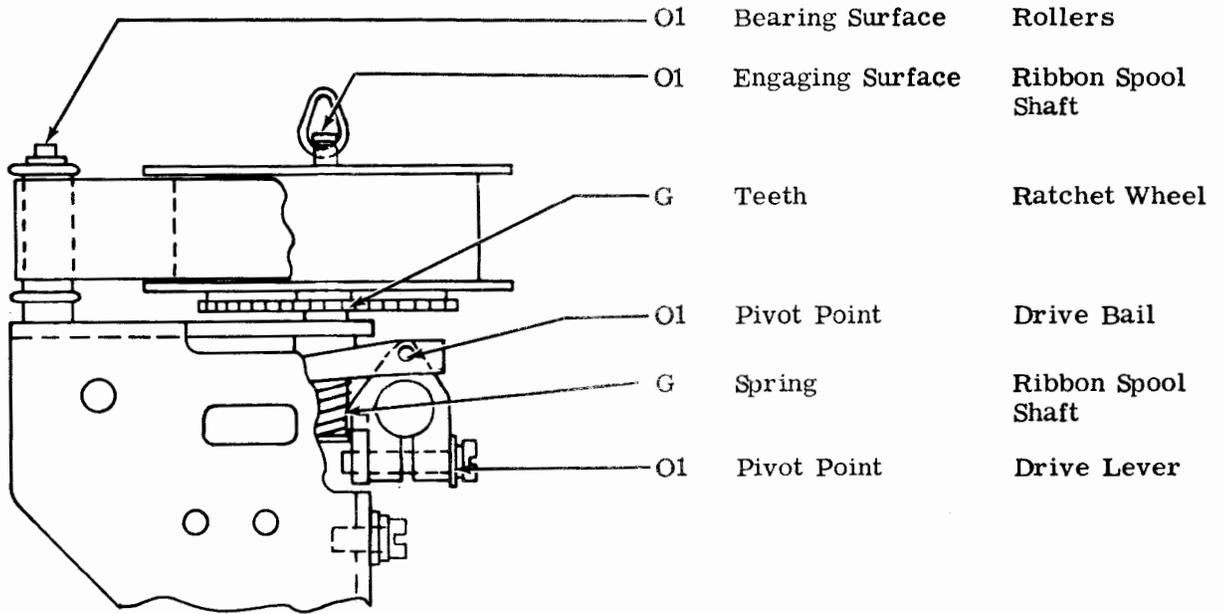
(Left Side View)

2.38 Ribbon Feed Drive Arm

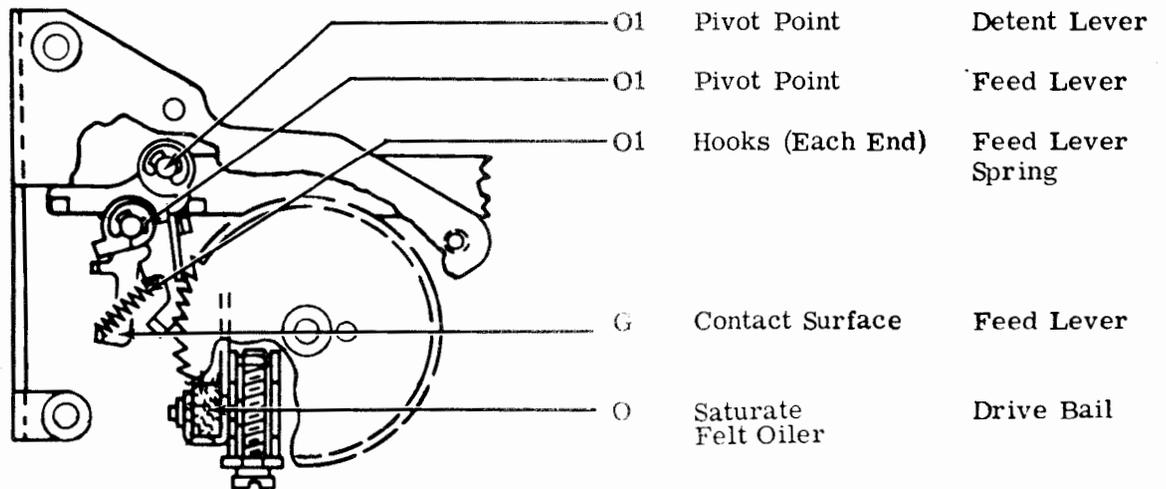


(Left Side View)

2.39 Ribbon Feed Bracket and Ratchet — Early Design

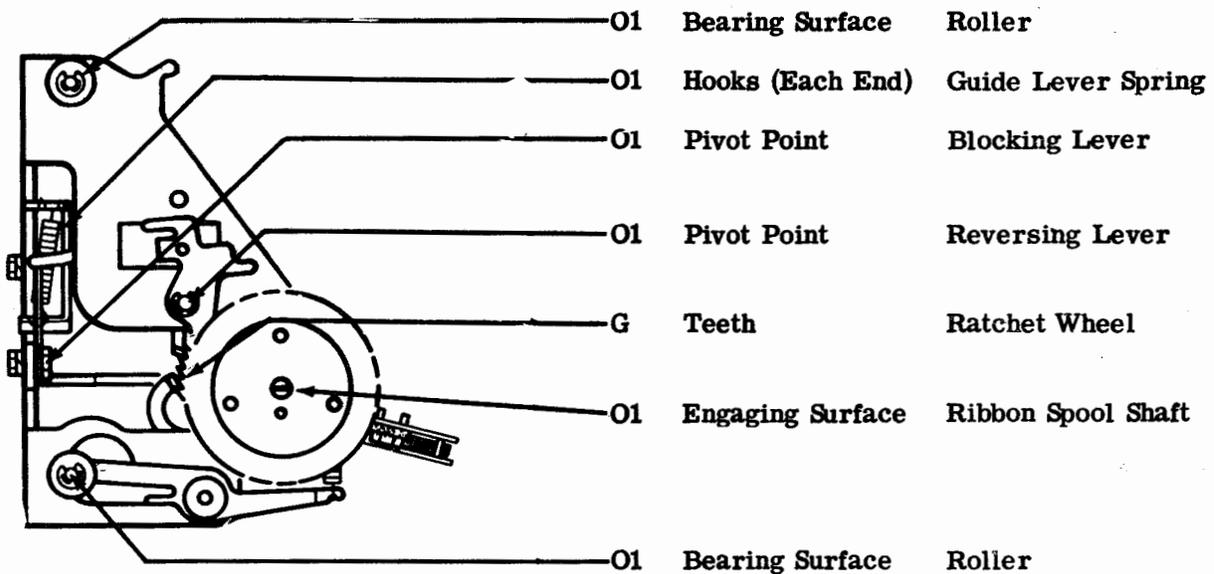


(Left Side View)

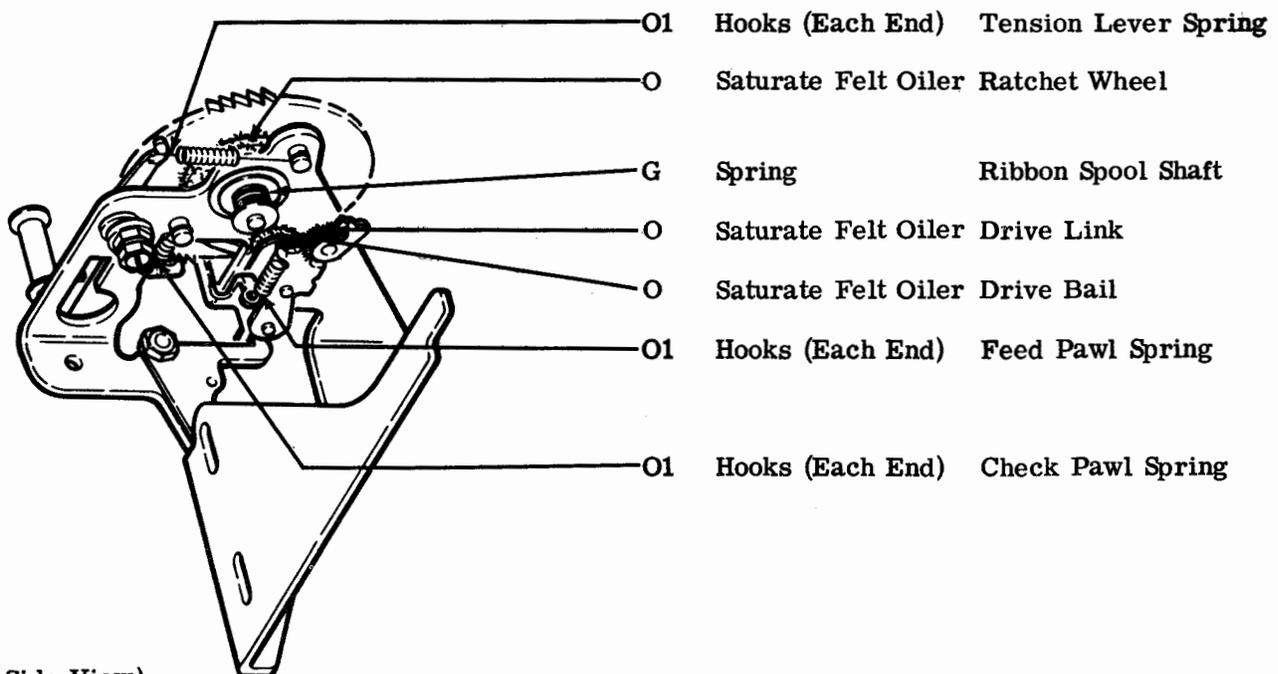


(Top View, Left Side)

2.40 Ribbon Feed Bracket and Ratchet - Late Design

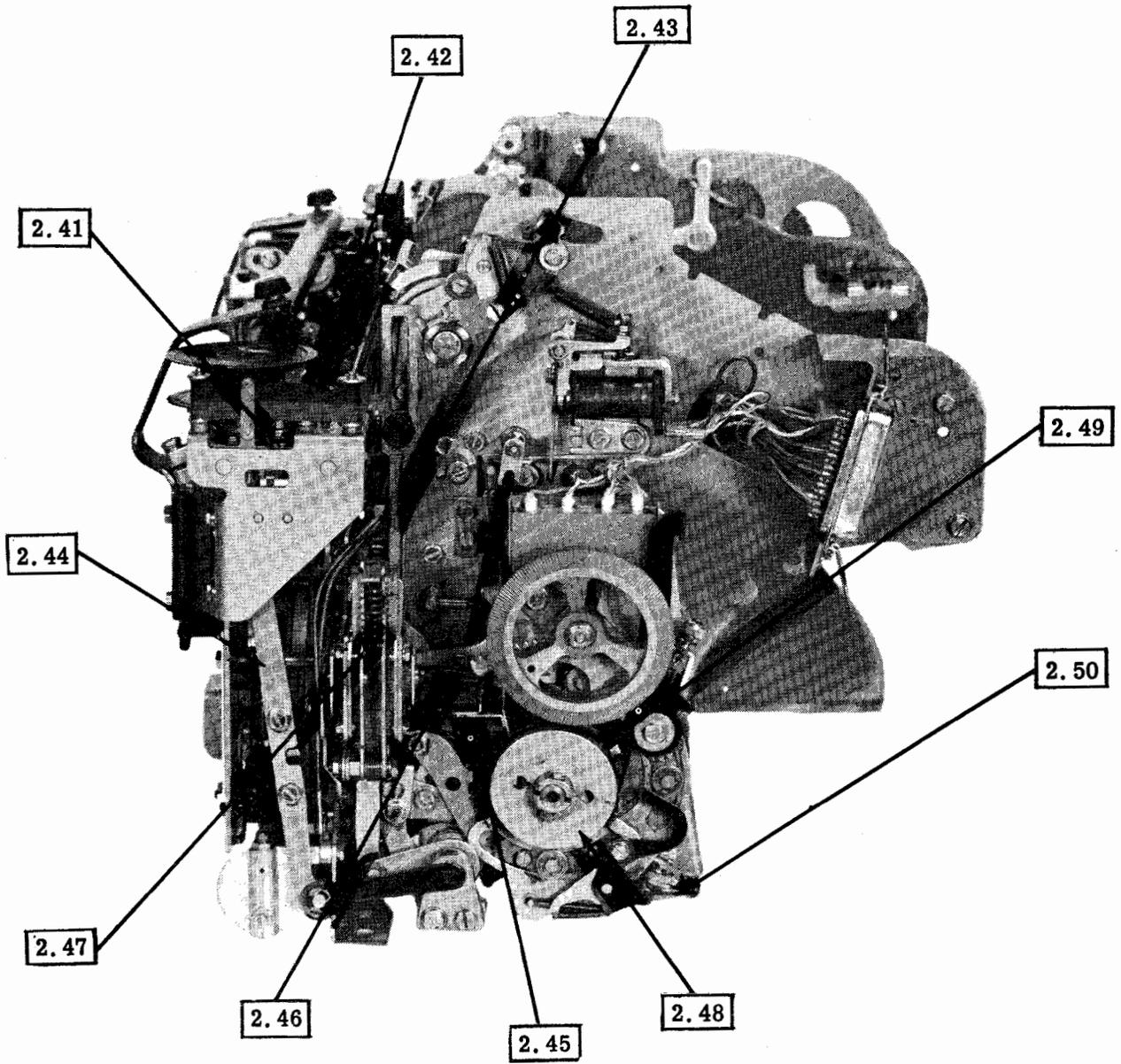


(Top Left View)

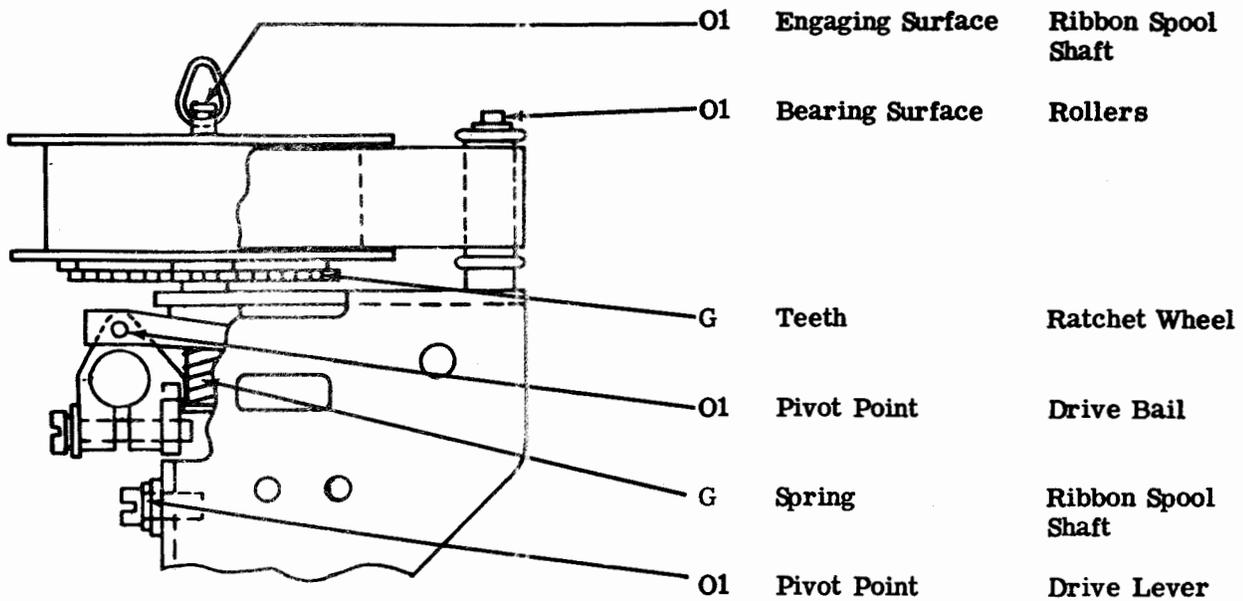


(Left Side View)

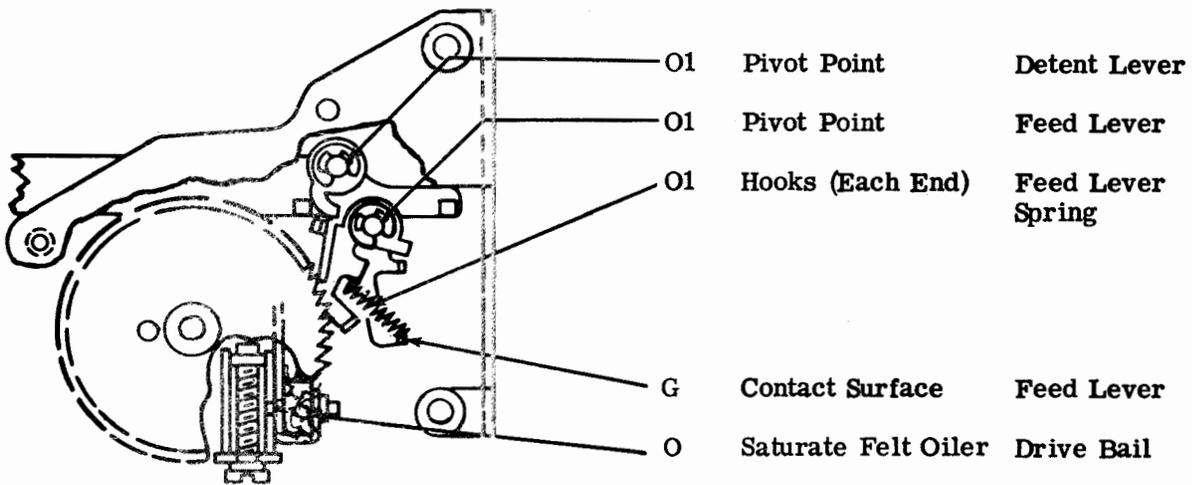
LUBRICATION AREAS — RIGHT SIDE



2.41 Ribbon Feed Bracket and Ratchet — Early Design

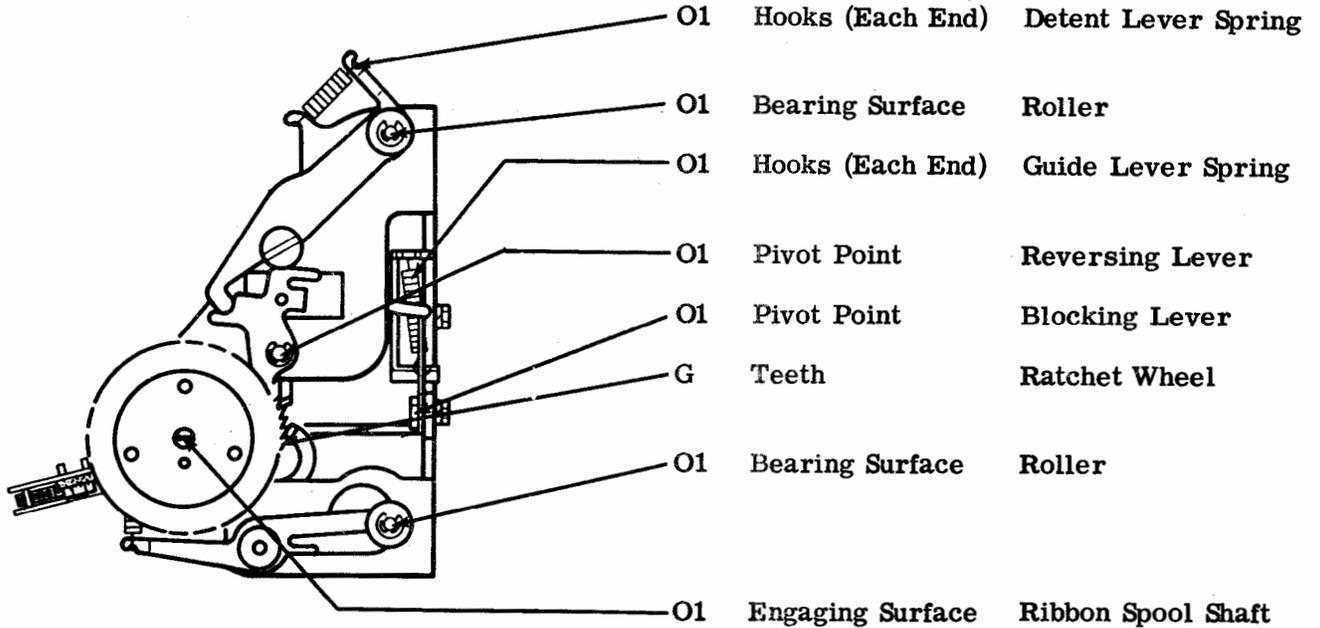


(Right Side View)

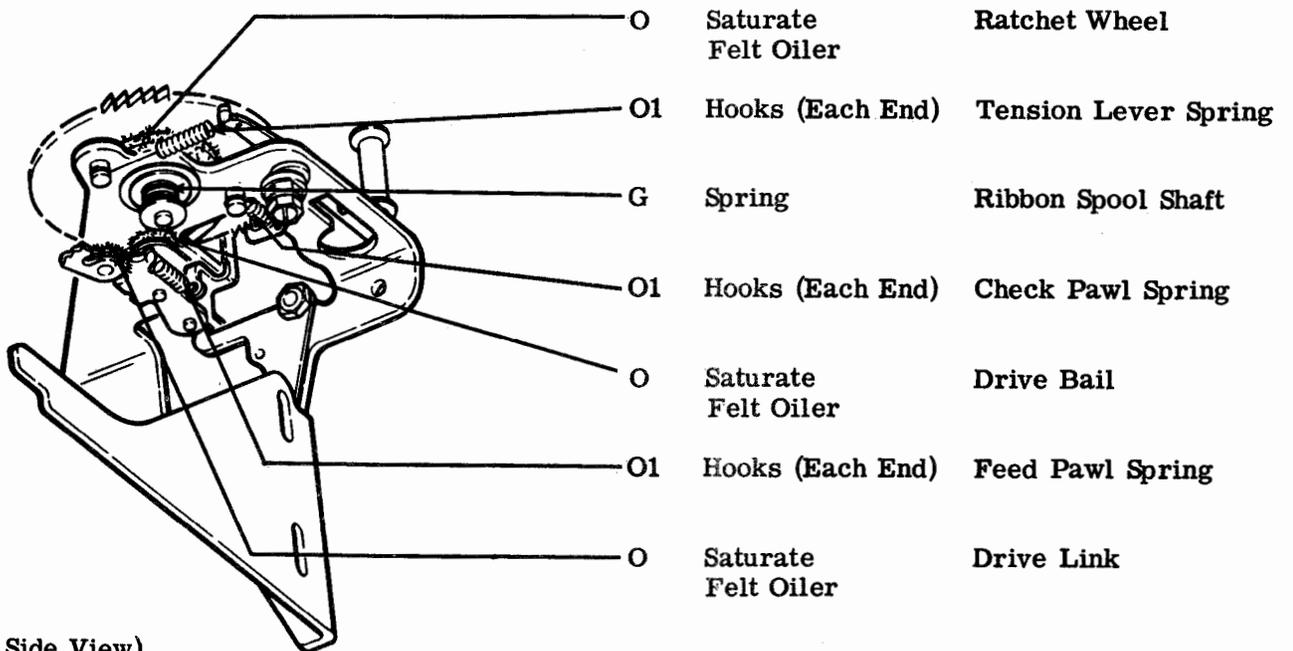


(Top Right View)

2.42 Ribbon Feed Bracket and Ratchet - Late Design

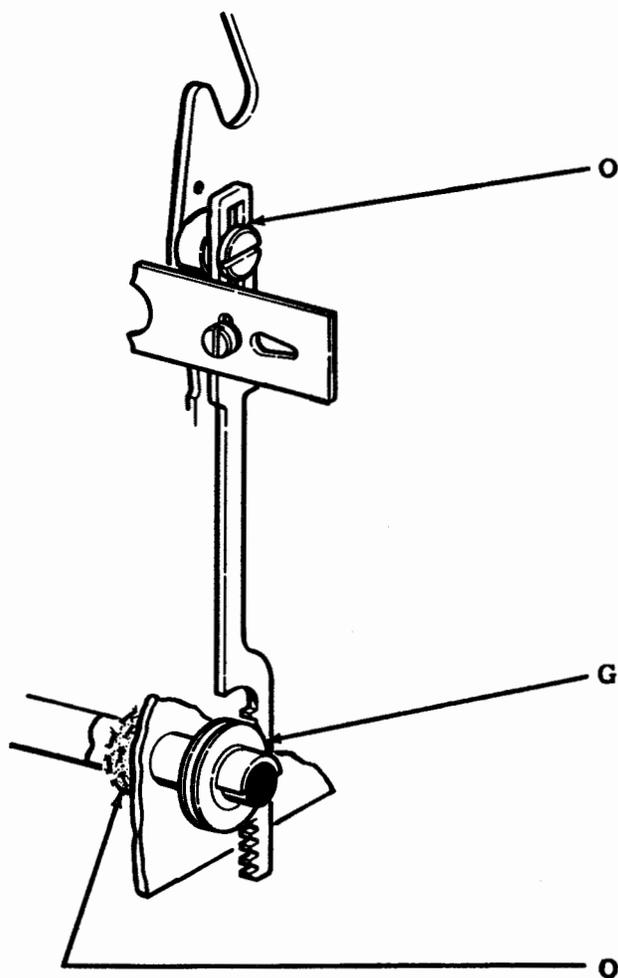


(Top Right View)



(Right Side View)

2.43 Vertical Positioning Rack



Thin Film on Engaging Surfaces

Upper Rack Guide

Thick Coat on Teeth, Engaging Surfaces, Bearings

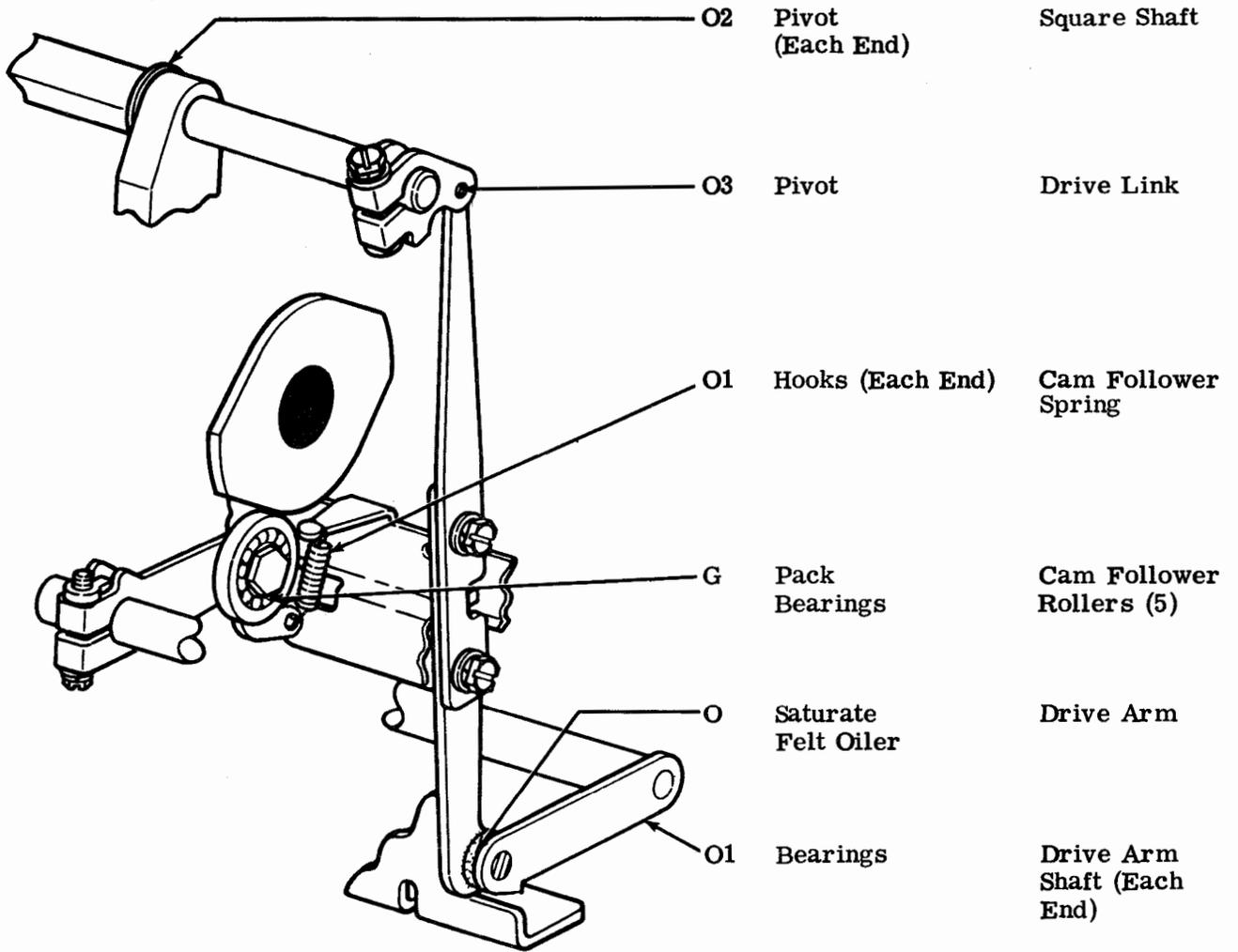
Lower Rack Guide Arm, Pinion, Drive Shaft Bearings

Saturate Felt Oiler

Drive Shaft

(Right Front View)

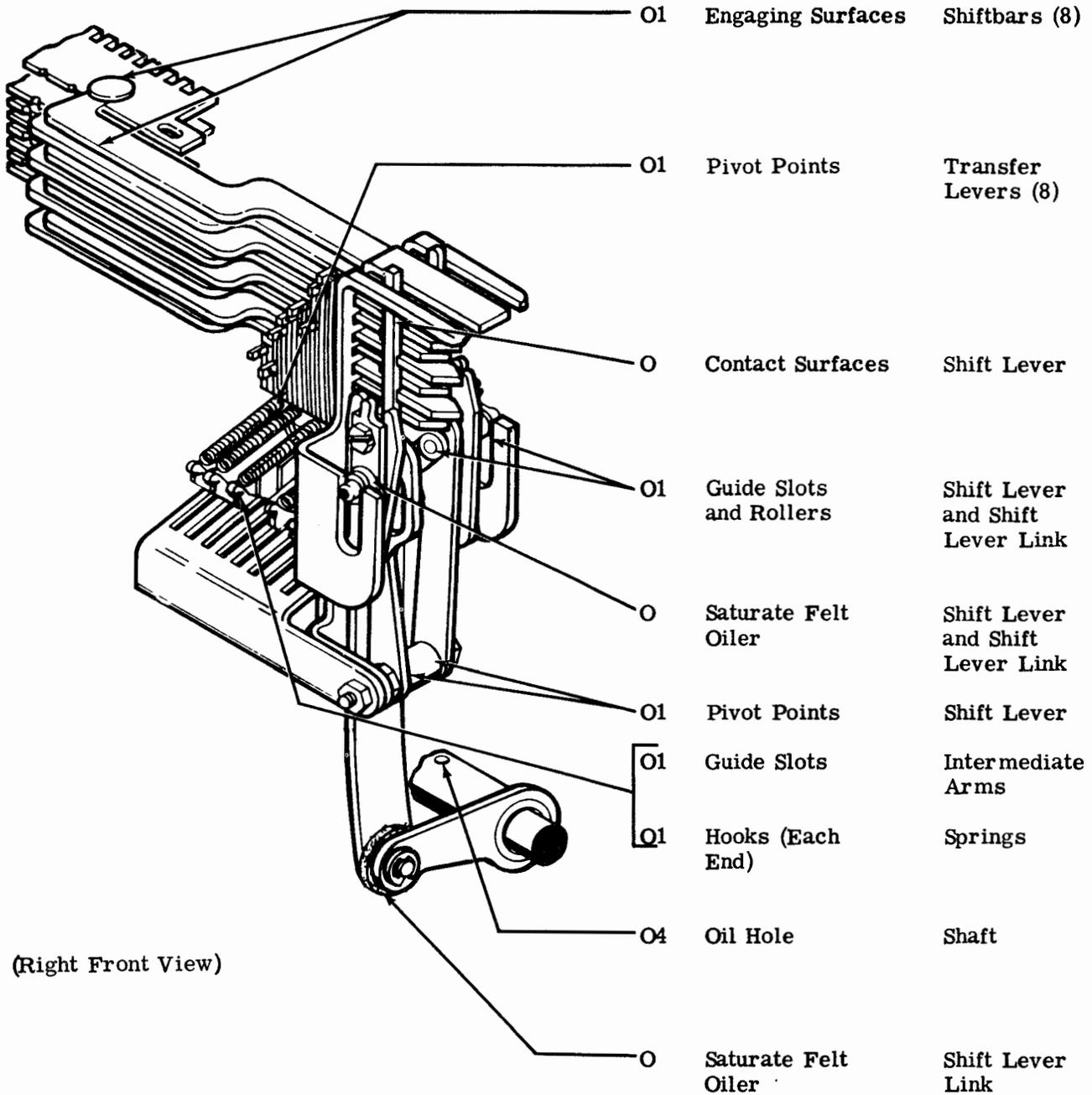
2.44 Printing Drive Arm and Link



(Right Front View)

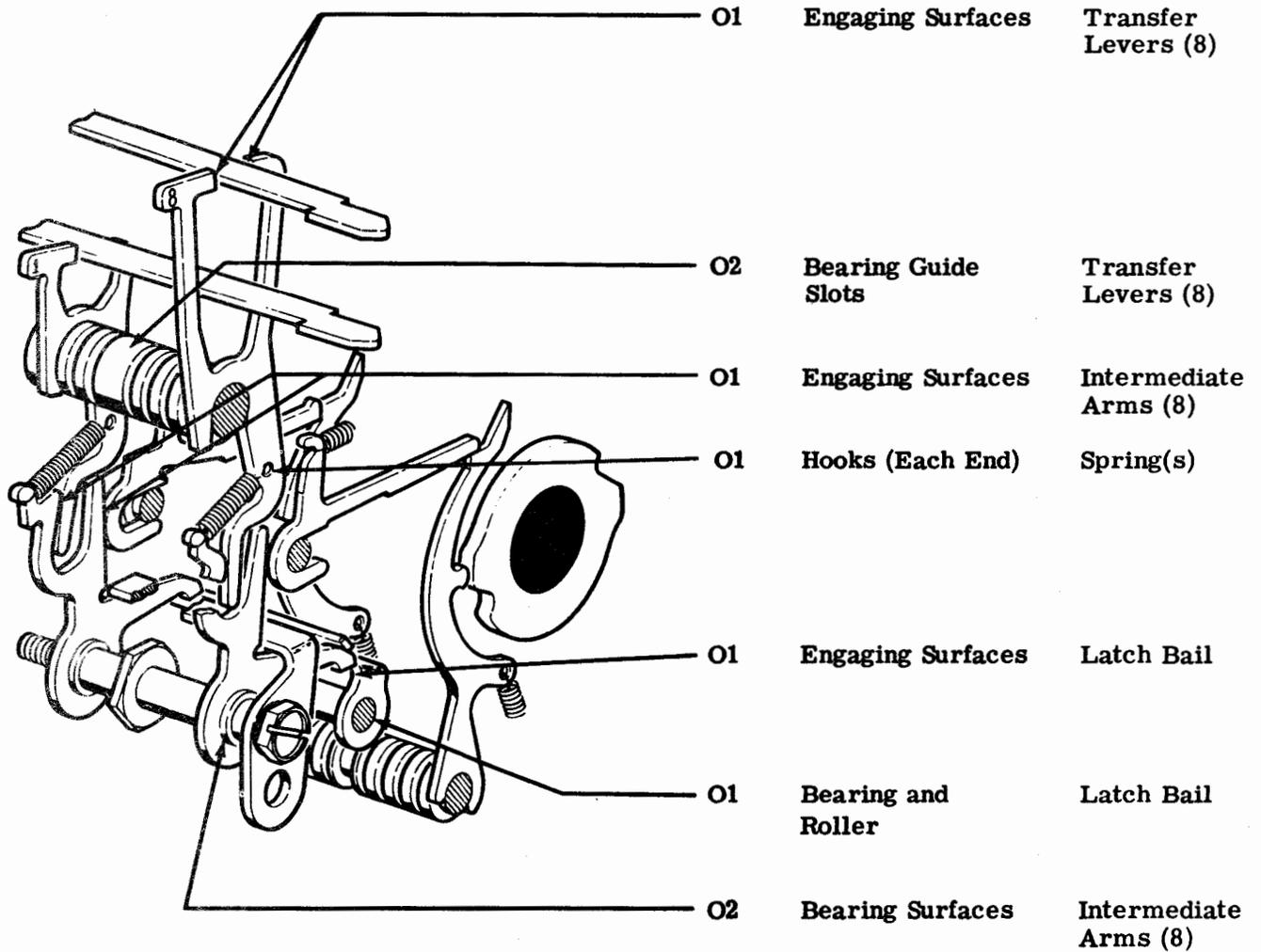
SECTION 574-320-704TC

2.45 Shiftbars and Shift Levers



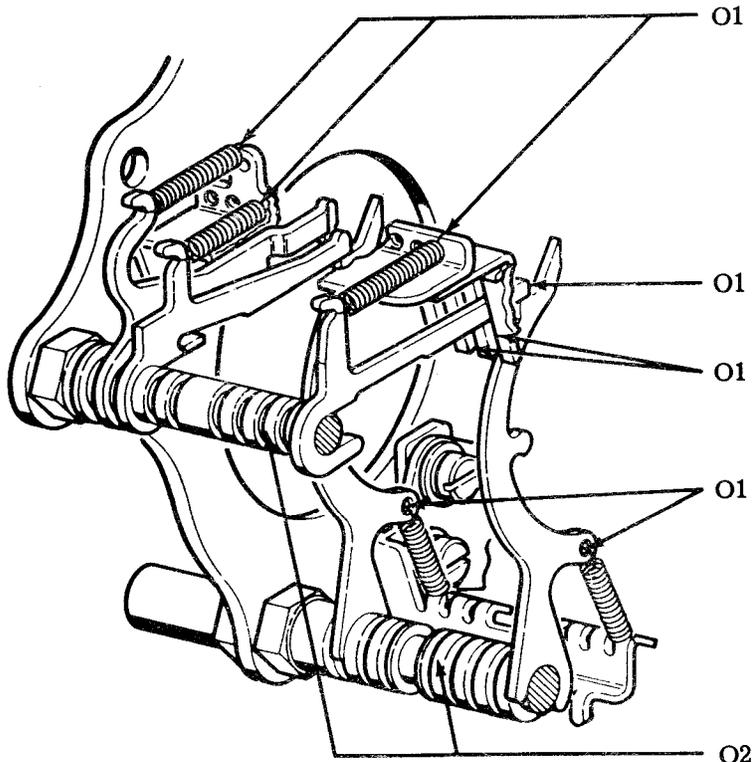
(Right Front View)

2.46 Transfer Levers



(Right Front View)

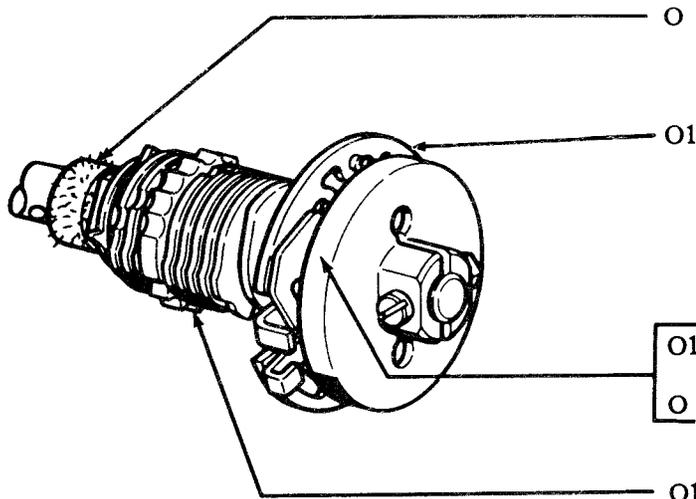
2.47 Selector Levers



(Right Front View)

- O1 Hooks (Each End) Springs (11)
- O1 Engaging Surfaces Push Levers
- O1 Guide Slots Start and Locklevers, Selector and Push Levers
- O1 Hooks (Each End) Springs (10)
- O2 Bearing Guide Slots Push and Selector Lever Guide Bearings

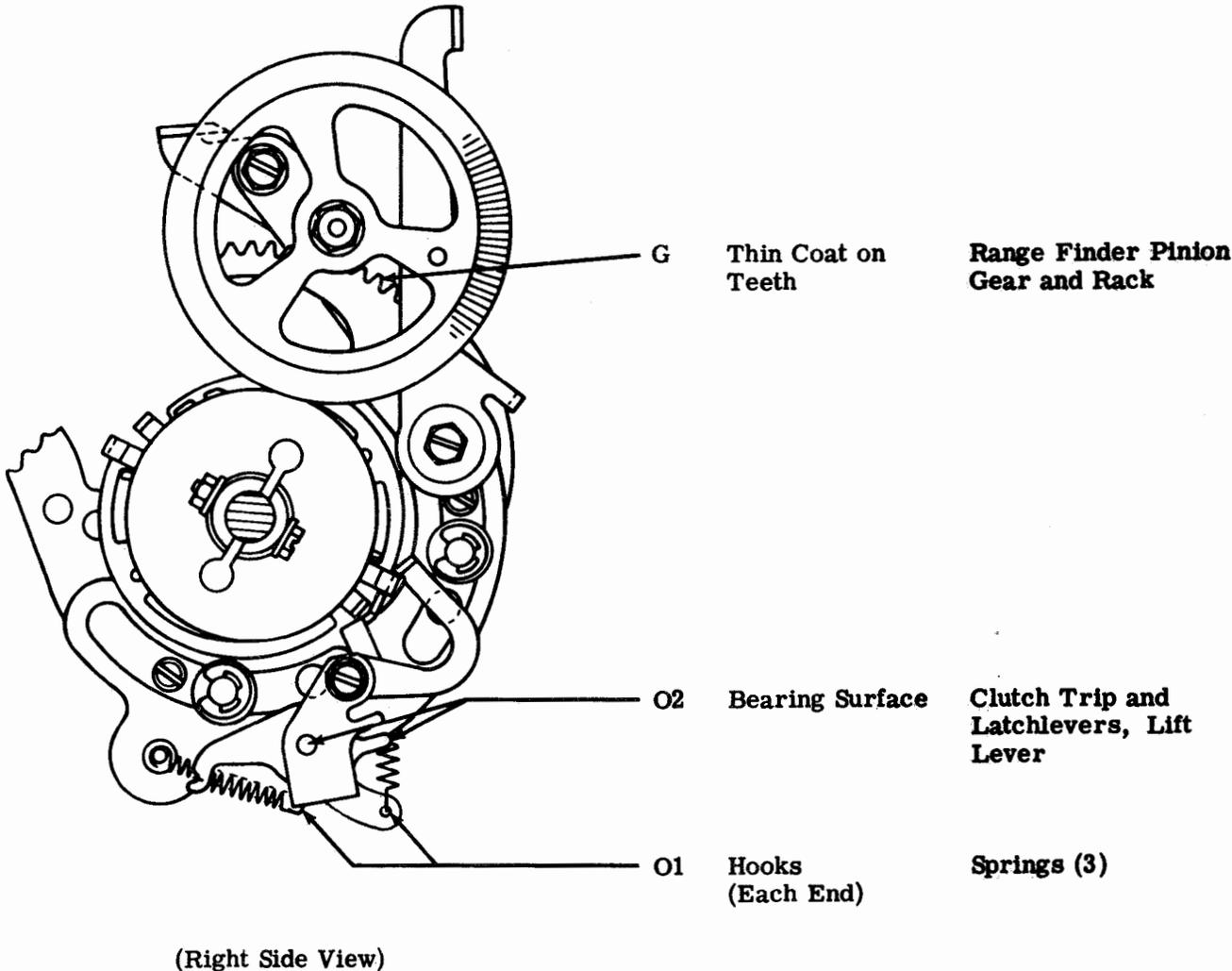
2.48 Selector Cams and Clutch



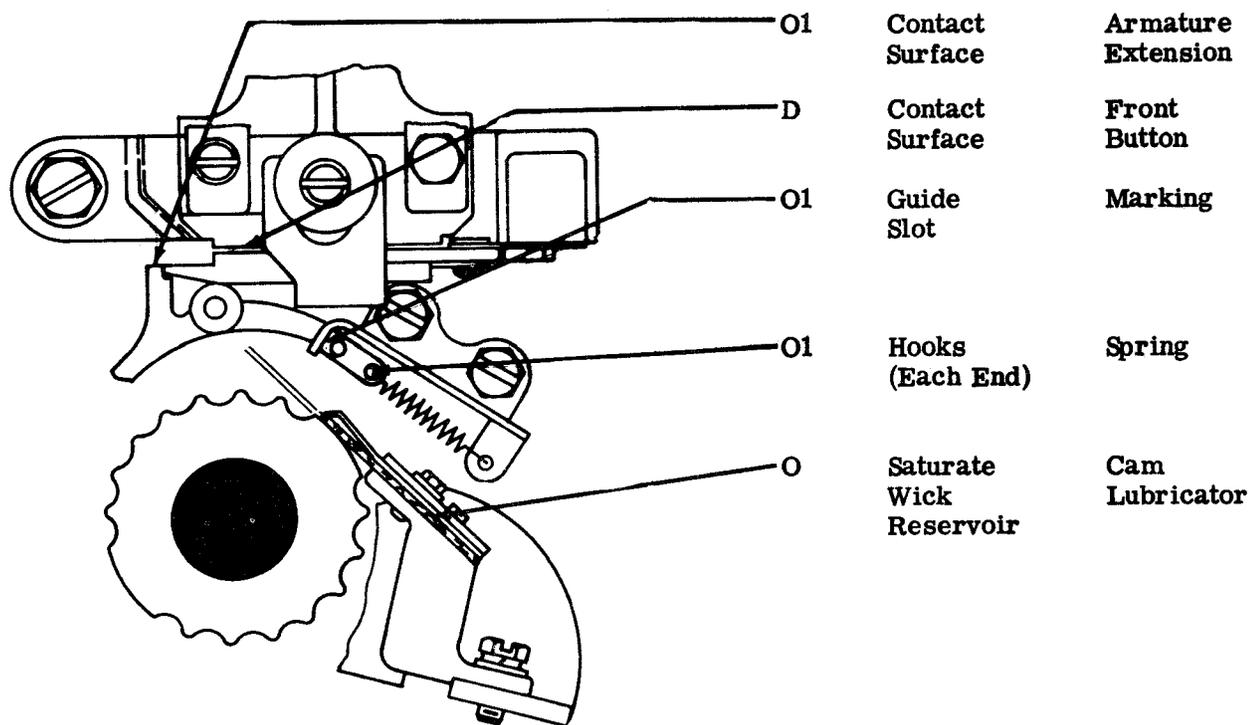
(Right Front View)

- O Saturate Felt Oiler Selector Camshaft
- O1 Camming Surface Clutch Disc
- O2 Internal Mechanism Saturate Felt Wick Selector Clutch
- O1 Camming Surface (Each Cam) Selector Cams

2.49 Selector Range Finder and Levers



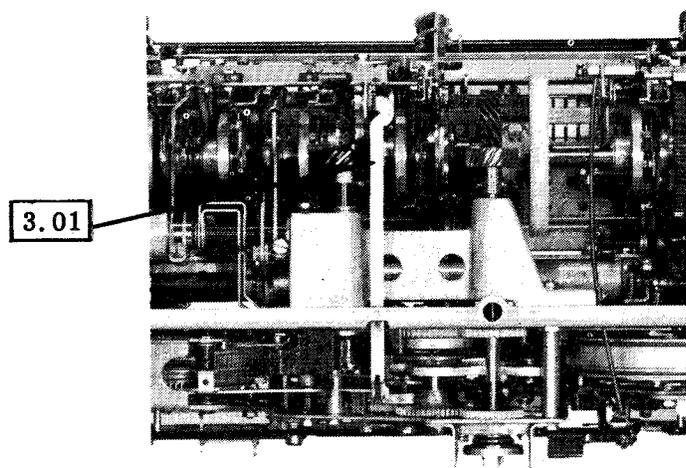
2.50 Selector Cam Lubricator and Marking Locklever



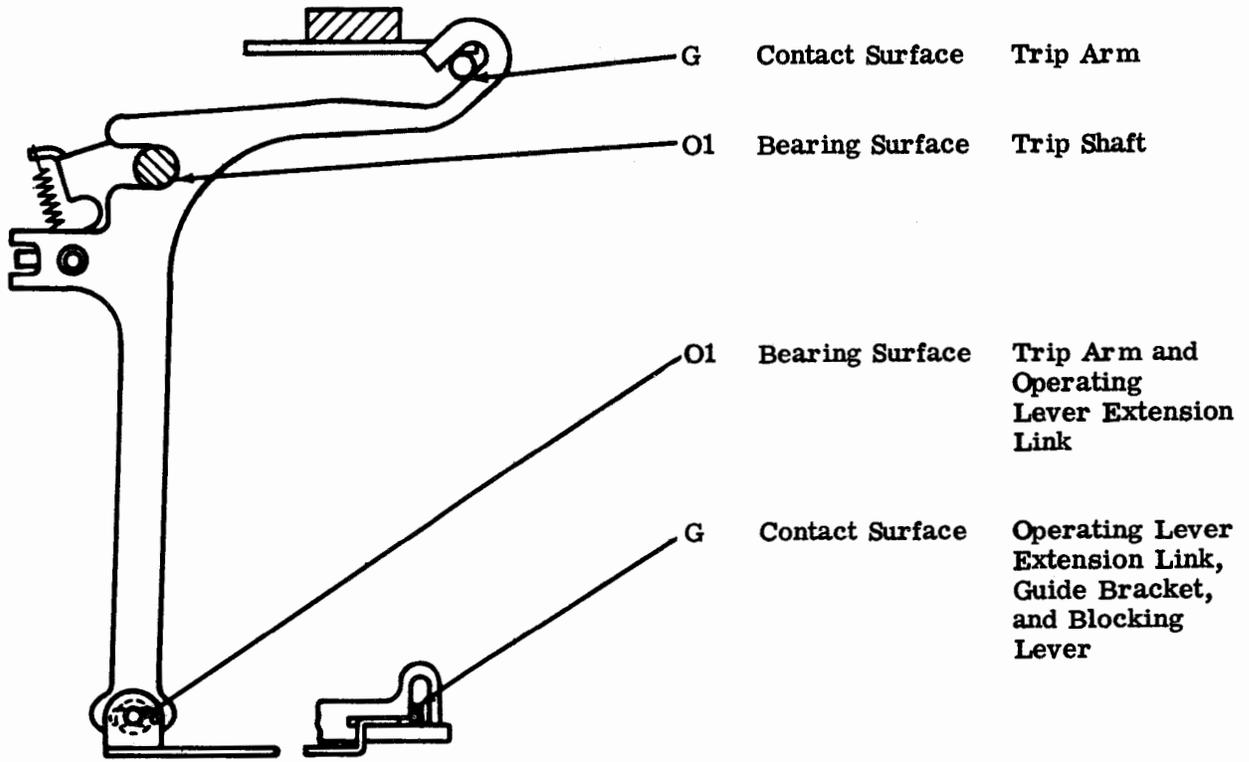
(Right Side View)

3. VARIABLE FEATURES

LUBRICATION AREA — BOTTOM

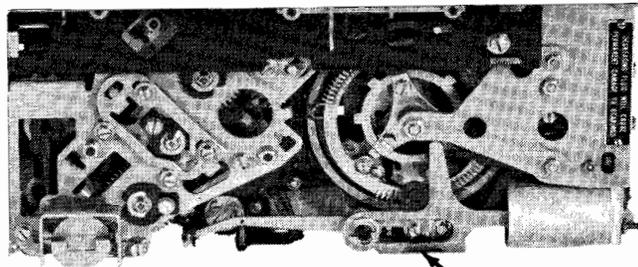


3.01 Horizontal Tabulator Cam and Levers



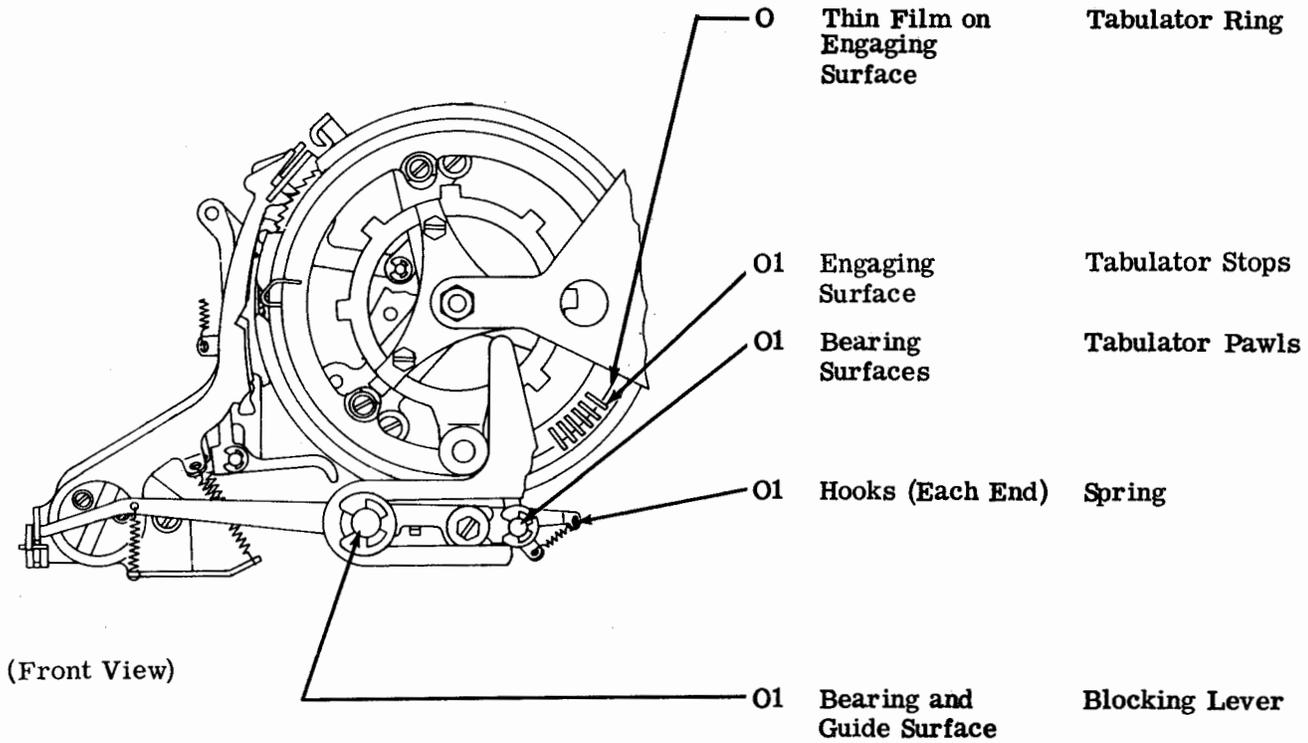
(Right Side View)

LUBRICATION AREA — FRONT

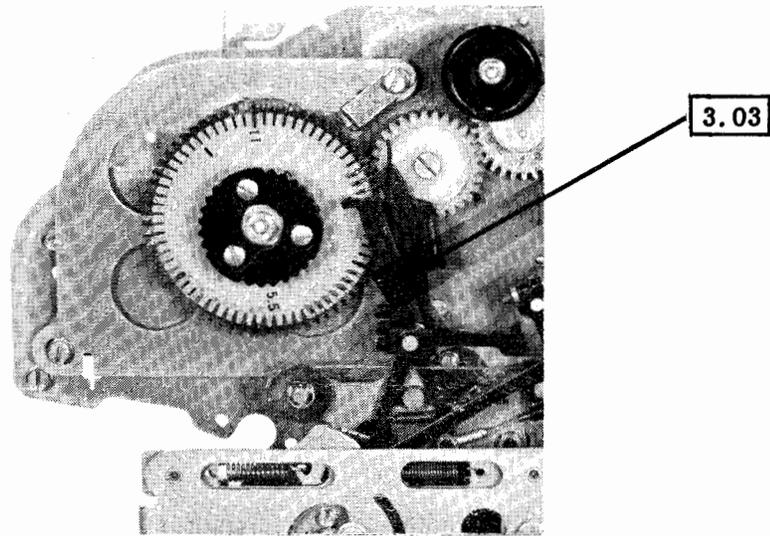


3.02

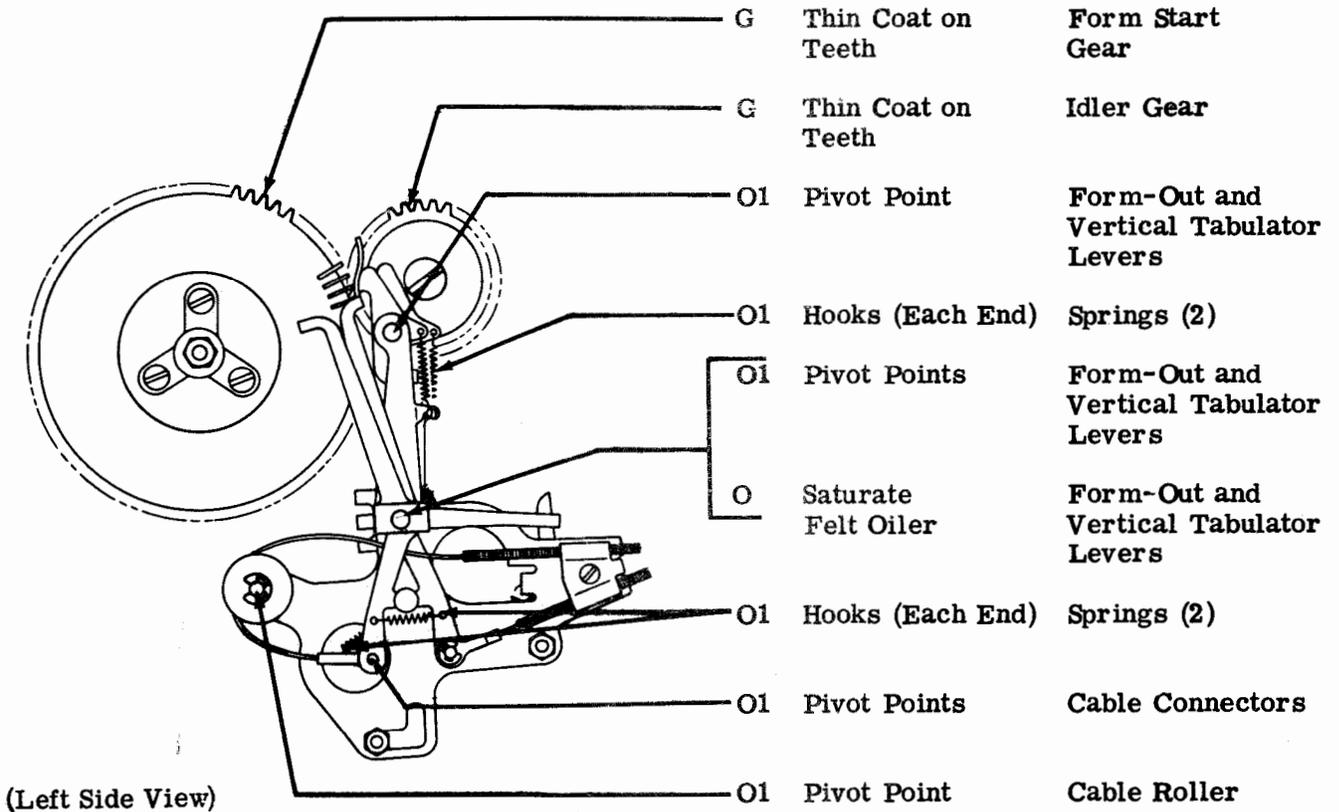
3.02 Horizontal Tabulator Stops and Pawls



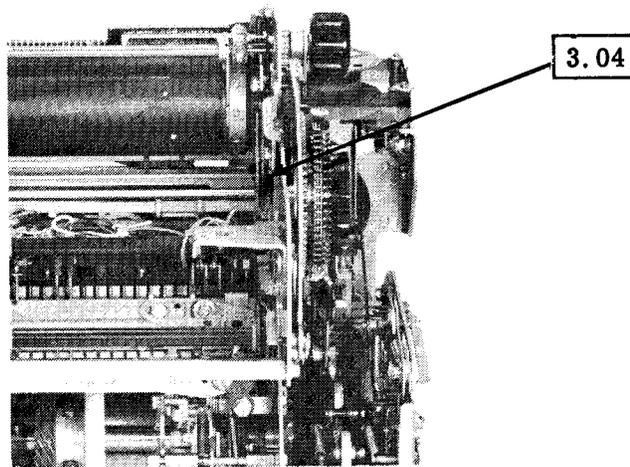
LUBRICATION AREA — LEFT SIDE



3.03 Vertical Tabulation and Form-Out Gears and Levers

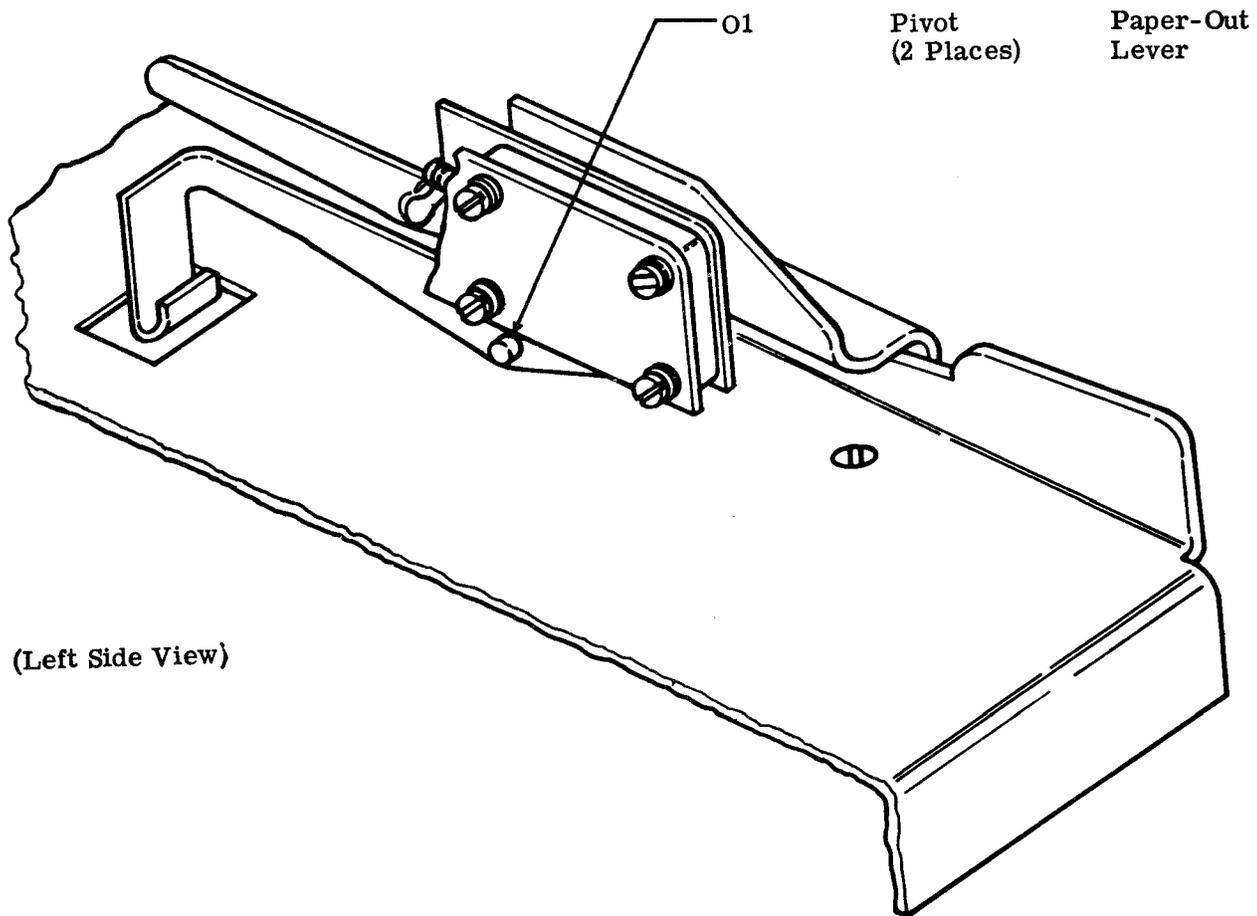


LUBRICATION AREA — REAR



(Sprocket Feed)

3.04 Paper-Out Alarm Switch (Sprocket Feed)



(Left Side View)

37 TYPING UNIT

DISASSEMBLY AND REASSEMBLY

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1. GENERAL

1.01 This section describes the procedures for the disassembly and reassembly of the principal sub-assemblies which comprise the late design Model 37 Typing Unit (Figure 1).

1.02 Photographs and line drawings are used to identify mechanisms and specific parts. Refer to parts Section 574-320-801TC for exploded views, for detailed disassembly and reassembly illustrations, and for identifying parts.

1.03 Refer to maintenance tools Section 570-005-800TC for information on tools necessary to perform the disassembly and reassembly procedures.

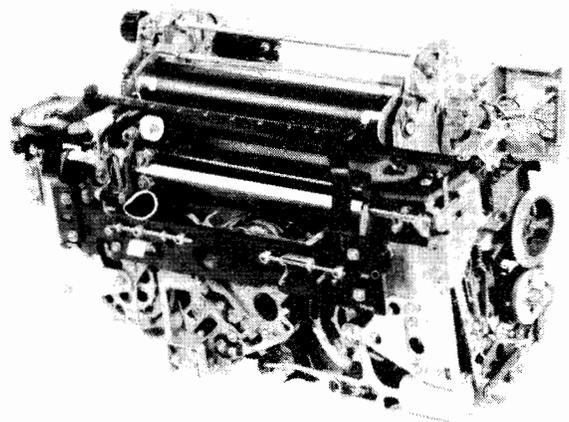


Figure 1 - 37 Typing Unit

SECTION 574-320-705TC

1.04 Use maintenance pad TP124828 to protect furniture and floor coverings from oil, grease, and dirt, during the disassembly and reassembly of the typing unit.

1.05 After disassembly and reassembly of certain mechanisms, specific adjustments must be rechecked. These adjustments are listed in appropriate paragraphs in the text. See Section 574-320-703TC for all adjustment requirements to insure that the unit is operating properly.

1.06 Lubricate the typing unit according to lubrication Section 574-320-704TC, before placing unit back in service. Make a visual inspection of the unit for general lubrication requirements. Check oil locations on felt washers, oil cups, and in locations where parts rub or move with respect to each other. Apply grease to gears, rollers, points of heavy pressure, and on some ball bearings.

1.07 If a part is mounted on shims, the number of shims used at each mounting screw must be noted; when the part is remounted, the same shim pile-up must be used.

1.08 Retaining rings are made of spring steel and have a tendency to release suddenly on removal. To minimize loss of these retainers, use the following removal procedures.

- (1) Hold the retainer in one hand to prevent it from rotating.
- (2) Place the blade of a screwdriver in one of the slots of the retainer.
- (3) Rotate the screwdriver in a direction to increase the diameter of the retainer, allowing easy removal of the retainer.

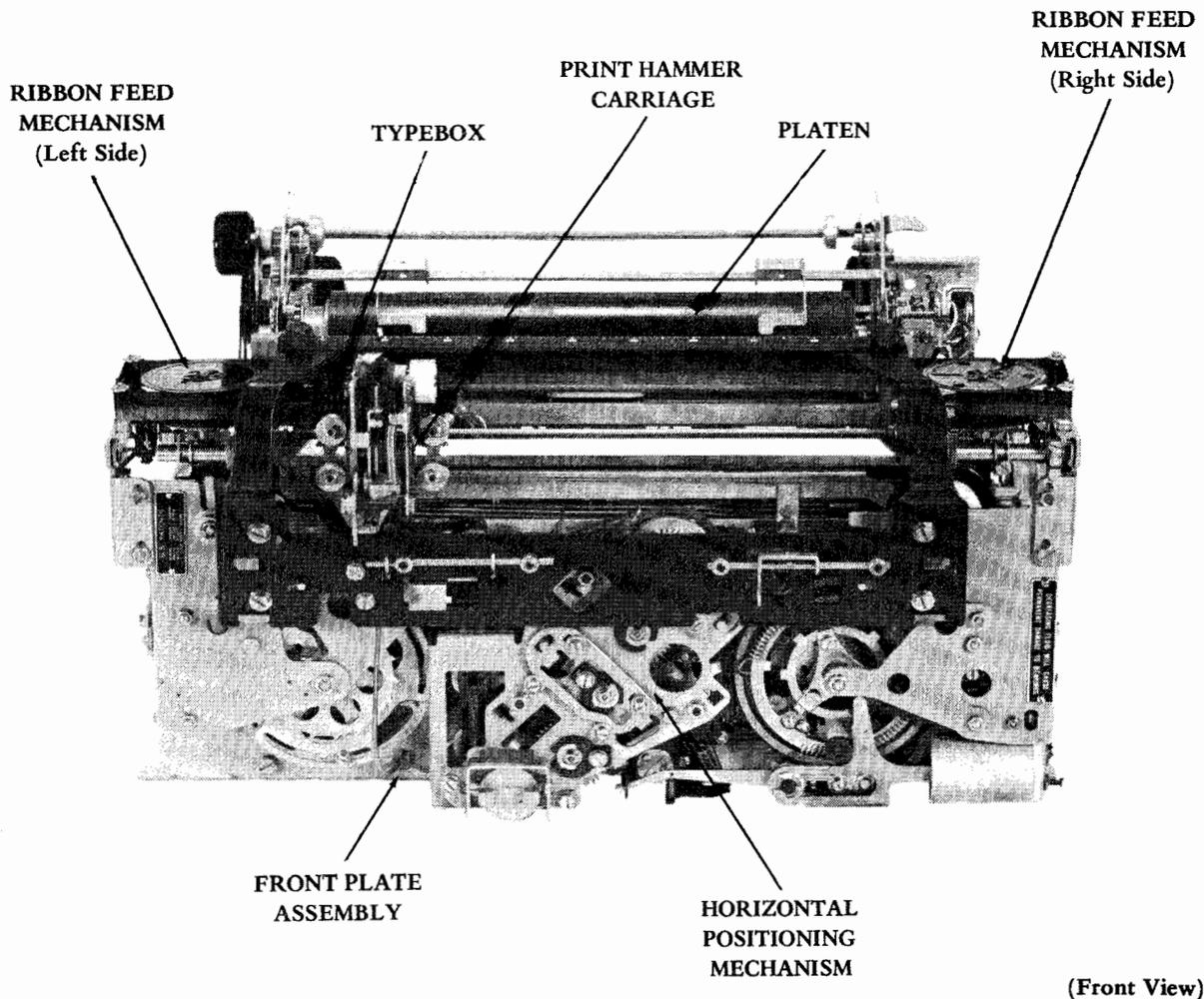


Figure 2 - 37 Typing Unit (Friction Feed)

1.09 Avoid loss of springs in disassembly by holding one spring loop with one hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs.

1.10 Reference in the procedures to left or right, up or down, top or bottom, etc, refer to the unit as viewed facing the front plate assembly (Figures 1 and 2).

CAUTION: DISCONNECT POWER BEFORE REMOVING THE TYPING UNIT FROM THE KEYBOARD AND BASE ASSEMBLY.

2. SUBASSEMBLIES

2.01 In removing a subassembly from the unit, the procedure followed and the location from where the part is removed must be carefully noted, so that proper reassembly can be accomplished. For reassembly, reverse the procedure used in removing the subassembly, except when different instructions are stated.

TYPEBOX

2.02 To remove the typebox from the carriage (Figure 3), trip the typebox latch toggle to the right. Lift the right end of the typebox up to an angle of 45 degrees, and pull the typebox toward the right to disengage it from the left hand bearing stud.

CAUTION: DO NOT OPERATE TYPING UNIT WITH TYPEBOX REMOVED, UNLESS TYPEBOX LATCH TOGGLE IS CAMMED OVER THE TYPEBOX CARRIAGE.

Typebox Disassembly

2.03 If it is necessary to replace the pallet or pallet spring TP157238, the typebox must be disassembled (Figure 3). The method used is as follows.

- (1) Remove both screws and nuts that secure the front plate to the rear plate assembly. Separate the two plates and the typebox cover TP326183.

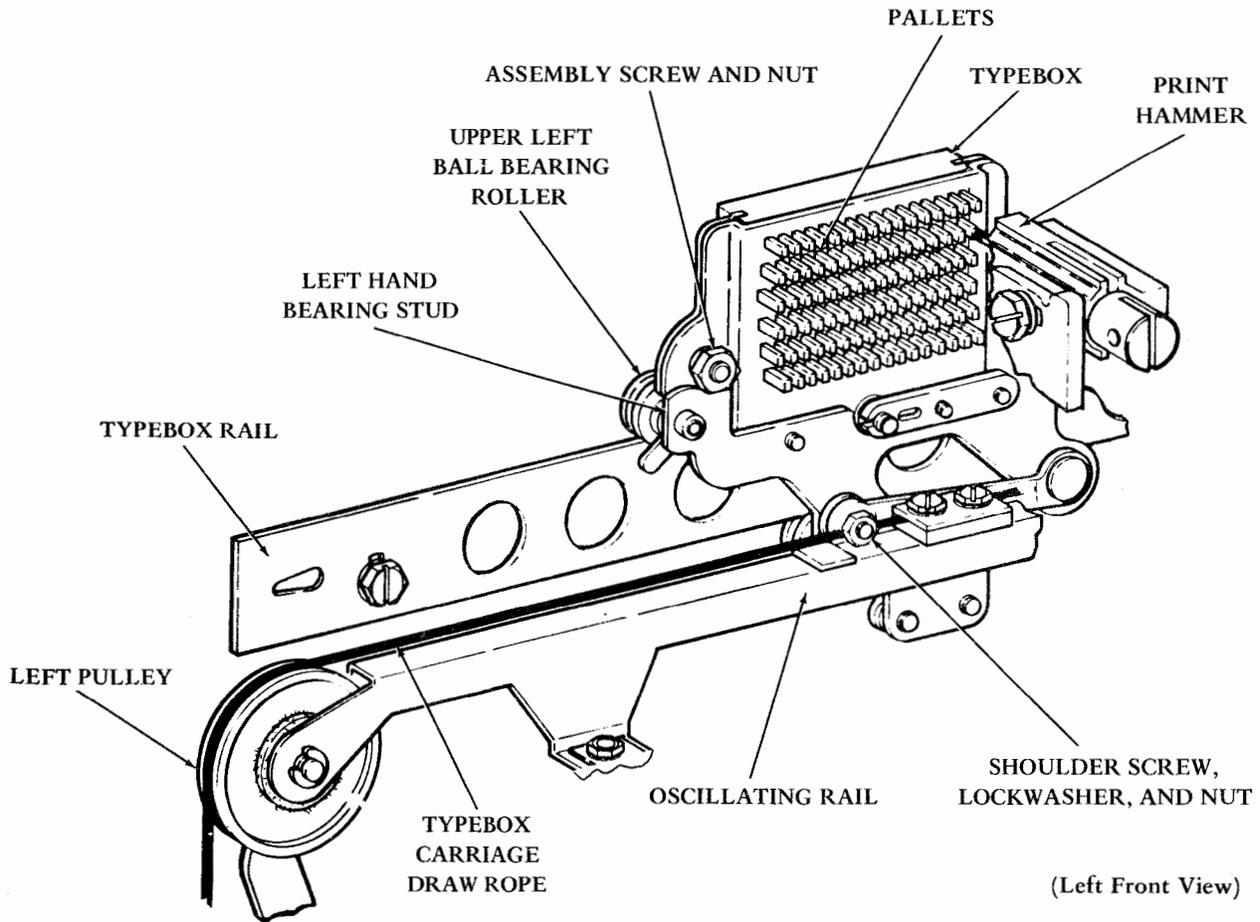


Figure 3 - Typebox, Typebox Carriage and Oscillating Rail

(2) To remove the pallet spring TP157238 from the pallet, compress the pallet spring slightly and pull the formed-end (hooked-end) out of the slot in the pallet.

(3) Remove the pallet from the typebox.

Note: Discard the pallet spring TP157238 once it has been removed.

(4) Replace the pallet (raised mark indicates top of pallet).

(5) Install a new pallet spring; make certain that the formed-end (hooked-end) of the pallet spring extends through the slot in the pallet and hooks onto the other side.

Typebox Reassembly

2.04 After replacing the pallet or pallet spring TP157238, the typebox must be reassembled (Figure 3). The method used is as follows.

(1) Line up the front plate with the rear plate assembly and draw the two plates together until the head of the pallet leaves the rear plate by 1/16 inch. Use two 6-40 screws (11/32-inch long) and nuts, in place of the two screws and nuts removed in 2.03(1) and tighten them only enough to hold the pallets as specified above. Do not clamp the plates together until all the pallets have been moved into their correct position.

(2) Manipulate the pallets until they fall into their respective openings in the front plate. Press the plates together.

(3) Replace the aligning screws and nuts used in 2.04(1) with the mounting screws and nuts removed in 2.03(1). Rebuilt typeboxes must be dipped in KS7470 oil; all excess oil must be drained before installing.

2.05 To replace the typebox (Figure 3), reverse the procedure used for removal.

CAUTION: TO AVOID SPRINGING THE TYPEBOX LATCH, THE TYPEBOX SHOULD BE FIRMLY SEATED ON THE BEARING STUDS AND THE POINT OF THE LATCH TOGGLE SHOULD BE PLACED IN THE NOTCH OF THE TYPEBOX PLATE BEFORE MOVING THE TOGGLE TO ITS LATCHED POSITION.

TYPEBOX CARRIAGE

2.06 To remove the typebox carriage from the unit proceed as follows (Figure 3).

(1) Set all codebars to the marking position and turn the main shaft until the typebox is in the uppermost position.

(2) Remove the shoulder screw, lockwasher, and nut which are used to connect the oscillating rail slide to the typebox arm.

(3) Loosen the screw, which mounts the upper left ball bearing roller, and slide it upward in its slots; then remove the carriage from the track.

2.07 To replace the typebox carriage (Figure 3), reverse the procedure used for removal. Check Carriage Roller adjustment.

RIBBON FEED MECHANISM

2.08 To remove the ribbon feed mechanism (Figure 2) from the unit – left side, proceed as follows.

(1) Remove the two ribbon spools from the ribbon feed mechanism.

(2) Loosen the ribbon feed drive arm clampscrew on the left side.

(3) Remove one locknut and sleeve from the left blocking lever and connecting rod connection.

(4) Remove the left ribbon bracket mounting screws and lift assembly.

2.09 To replace the ribbon feed mechanism – left side (Figure 2), reverse the procedure used in removal. Check the following adjustments:

(a) Ribbon Feed Main Brackets Left and Right

(b) Ribbon Feed Lever Left and Right

(c) Ribbon Reversing Connecting Rod

2.10 To remove the ribbon feed mechanism from the unit – right side (Figure 2), remove the retaining ring from the post on the drive arm. Remove one locknut and sleeve from the right blocking lever and connecting rod connection.

Note: If the left ribbon mechanism has been removed, it is not necessary to remove the locknut and sleeve from the right blocking lever and connecting rod connection.

Remove the right ribbon bracket mounting screws and lift assembly from unit.

2.11 To replace the ribbon feed mechanism – right side (Figure 2), reverse the procedure used in removal. Check Ribbon Reversing Connecting Rod adjustment.

PRINT HAMMER CARRIAGE

2.12 To remove the print hammer carriage from the unit (Figure 2), proceed as follows.

(1) Remove the two screws which mount the ribbon positioning bracket to the print hammer carriage; the bracket does not have to be removed from the unit. Loosen the print hammer carriage cable clampscrew and disconnect the cable; remove the left ribbon feed mechanism as described in 2.08.

(2) Remove the right ribbon bracket mounting screws. Take off the retaining ring from the print hammer lower drive arm and link connection. Separate the link and arm. Loosen the coordinating cable spring adjustment arm clamp nut to reduce tension on the pulleys. Also reduce carriage return spring tension to a minimum by loosening the nut on the front of the spring drum bearing post and then operating the ratchet escape lever. Remove the four print carriage guideplate mounting screws and then remove the guideplate. The left bearing bracket is now removed, and the print carriage is removed from the square shaft.

2.13 To replace the print hammer carriage (Figure 2), reverse the procedure used in removal. Check the following adjustments:

- (a) Carriage Return Spring
- (b) Coordinating Cable Spring Tension and Equalization
- (c) Vertical Print Hammer Alignment
- (d) Print Hammer Latch
- (e) Print Hammer Position
- (f) Spacing Rope Alignment
- (g) Print Point Indicator
- (h) Pointer Clearance
- (i) Ribbon Feed Main Brackets Left and Right
- (j) Ribbon Feed Lever Left and Right
- (k) Ribbon Guide Alignment.

FRONT PLATE ASSEMBLY

2.14 To remove the front plate assembly from the unit, proceed as follows (Figures 2, 4, 5, and 6).

(1) Set all codebars to the marking position and turn the main shaft until the typebox is in the upper most position. Remove the shoulder screw, lockwasher, and nut used to connect the oscillating rail slide to the typebox arm. Remove the two screws used to mount the ribbon positioning bracket to the print hammer carriage; the bracket does not have to be removed from the unit. Take off the retaining ring from the print hammer lower drive arm and link connection. Separate the link and arm. Disconnect the line feed cable at the back of the unit by loosening the screw at the end of the line feed clutch trip support post and remove bracket and lever (Figure 5).

(2) Loosen the screw (under the printer) used to mount the print hammer lower drive shaft bearing clamp (Figure 4); rotate clamp to the left side. Center the bearing under the clamp when replacing the clamp. Remove the horizontal dampener spring TP78823, located at the lower left hand corner of the front plate (Figure 6).

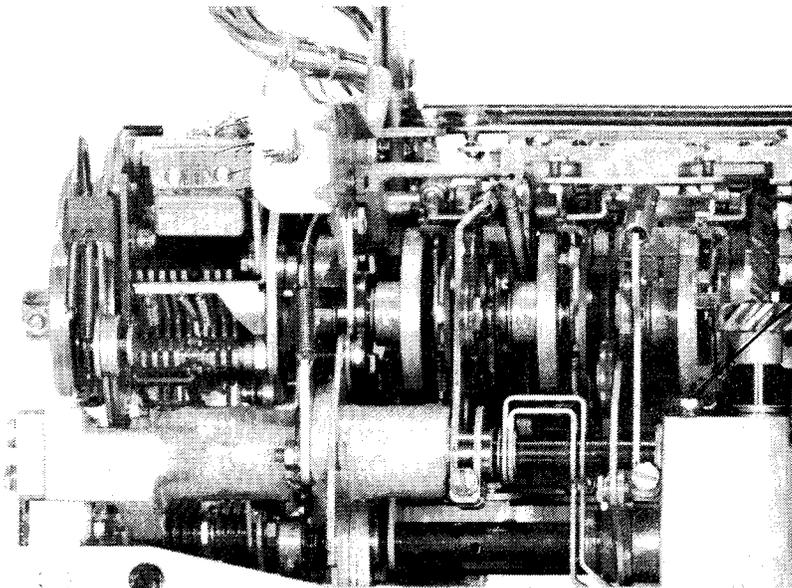
(3) If the unit has horizontal tab-stop control, disconnect the horizontal control cables from the function levers in slots 15 and 16. Loosen the cable clamp on the codebar assembly and slip the cables from under the cable clamp. When the unit is equipped with horizontal tab-stop control, remove the horizontal tab connecting link; also remove the retaining ring which connects the link to the horizontal tab arm. Remove the four front plate mounting screws and remove the front plate.

2.15 To replace the front plate assembly (Figures 2, 4, 5, and 6), reverse the procedure used in removal. The carriage return lever must be in the slot in the carriage return link assembly. The horizontal positioning slide trip levers must be connected to their respective codebars.

Note: Make sure the horizontal dampener spring TP78823 has been replaced.

Before tightening the plate mounting screws, there must be some backlash in the horizontal drive gears and in the spacing drive gears. Check the following adjustments:

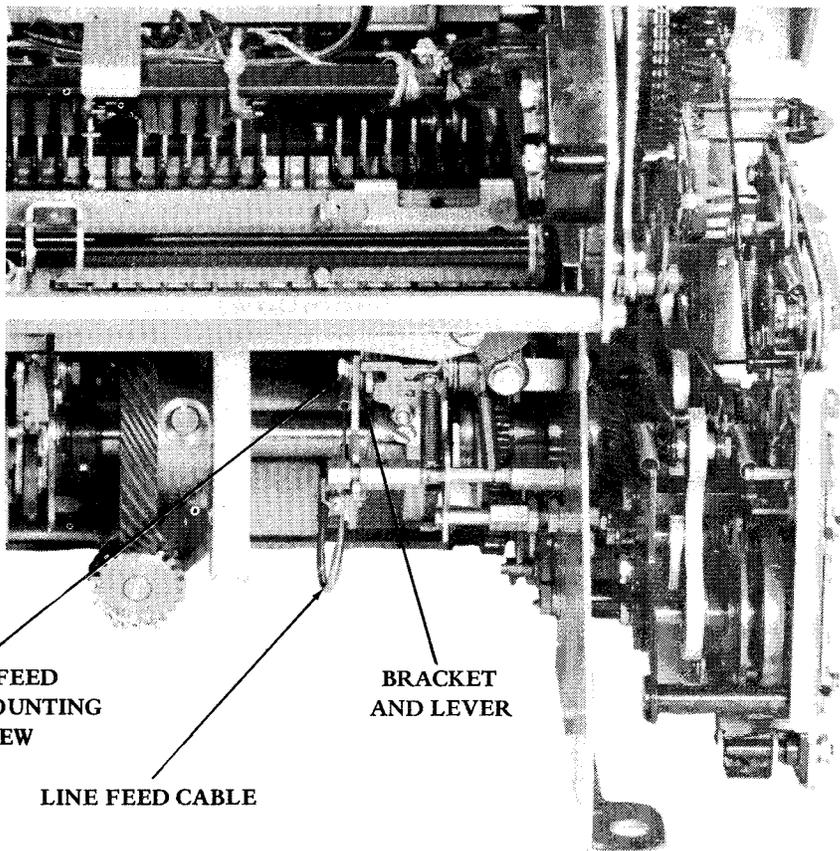
- (a) Ribbon Guide Alignment
- (b) Spacing Gear Phasing.



PRINT HAMMER LOWER
DRIVE SHAFT BEARING
SCREW AND CLAMP

(Left Bottom View)

Figure 4 - Bottom Section of Unit Used in Connection With Front Plate Assembly Removal



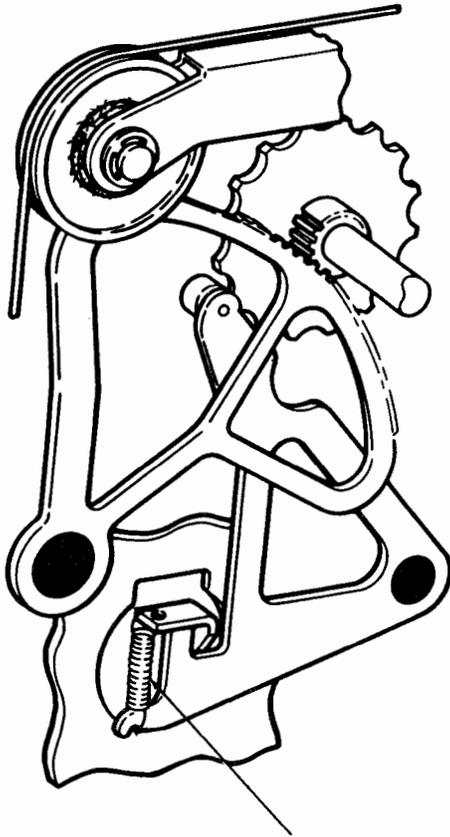
LINE FEED
CABLE MOUNTING
SCREW

LINE FEED CABLE

BRACKET
AND LEVER

(Left Rear View)

Figure 5 - Rear Section of Unit Used in Connection With Front Plate Assembly Removal



HORIZONTAL DAMPENING SPRING
(Front View)

Figure 6 - Horizontal Detent Dampening Assembly

HORIZONTAL POSITIONING MECHANISM

2.16 To remove the horizontal positioning mechanism (Figure 2) from the unit, proceed as follows.

- (1) Remove the front plate assembly as described in 2.14. Loosen the coordinating cable spring adjustment arm clamp nut to reduce tension on the pulleys. To reduce carriage return spring tension to a minimum, loosen the nut on the front of the spring drum bearing post and then operate the ratchet escape lever.
- (2) Check and RECORD Ribbon Feed Main Brackets Left and Right adjustment. Remove the four print hammer carriage guideplate screws to release the guideplate. Remove the screw used to connect the aggregate motion output bail to the oscillating rail. Remove the screws from the three aggregate motion drive shaft gears and remove the shaft.

Note: Thrust washers and bearing with sleeve can remain on the shaft.

- (3) Remove the eight nuts from the back and front ends of the clutch shafts. Unhook the clutch latch springs. Take off the two springs from the aggregate linkage. Remove the auxiliary plate by removing the four front auxiliary plate mounting screws. Remove the two idler gears from the clutch shafts. Check gears on the clutch drums. Remove the horizontal positioning mechanism from the front plate.

2.17 To replace the horizontal positioning mechanism (Figure 2), reverse the procedure used in removal. Make sure that the third idler gear is placed in position before mounting the horizontal positioning mechanism to the front plate. Remount print carriage guideplate; then set Ribbon Feed Main Brackets Left and Right adjustment to setting, recorded in 2.16(2), by moving the print carriage guide up or down. Check the following adjustments:

- (a) Aggregate - Dampener Synchronization
- (b) Carriage Return Spring
- (c) Coordinating Cable Spring Tension and Equalization
- (d) Ribbon Guide Alignment

FUNCTION BOX

2.18 To remove the function box from the unit, proceed as follows (Figures 7 and 8). (On units with sprocket feed, remove the paper tray.) Remove the connector mounting screws and feed connector through the side frame.

Note 1: Do not remove connector TP161238 if complete separation of function box from unit is not intended.

When the unit is equipped with horizontal and/or vertical tab-stop control, disconnect control cables from function levers in slots 15 and 16 and in slots 39 and 40. From the stripper blade drive mechanism, take off the two retaining rings, felt washers, and link. Remove the two mounting screws from the rear of the function box side plates. Remove one screw used to mount the function box brace to the trip shaft casting. Remove the function box from the unit.

Note 2: When removing function box, hold the line feed clutch trip lever in the tripped position to prevent the function box from catching on the trip arm.

Function Bar Removal

2.19 After removal of the function box (Figure 8), the function bar is removed by the following method.

- (1) Unhook the function bar spring from the function bar.

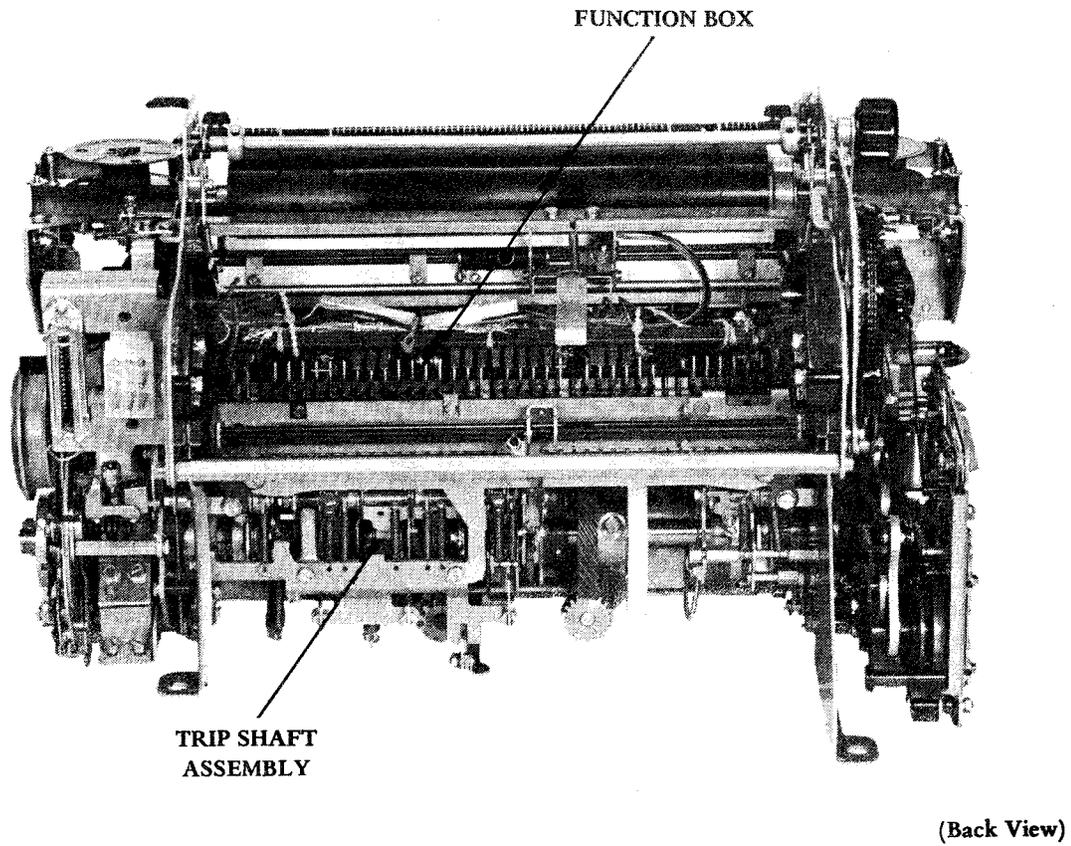


Figure 7 - Function Box and Trip Shaft Assembly Mounted in Typing Unit

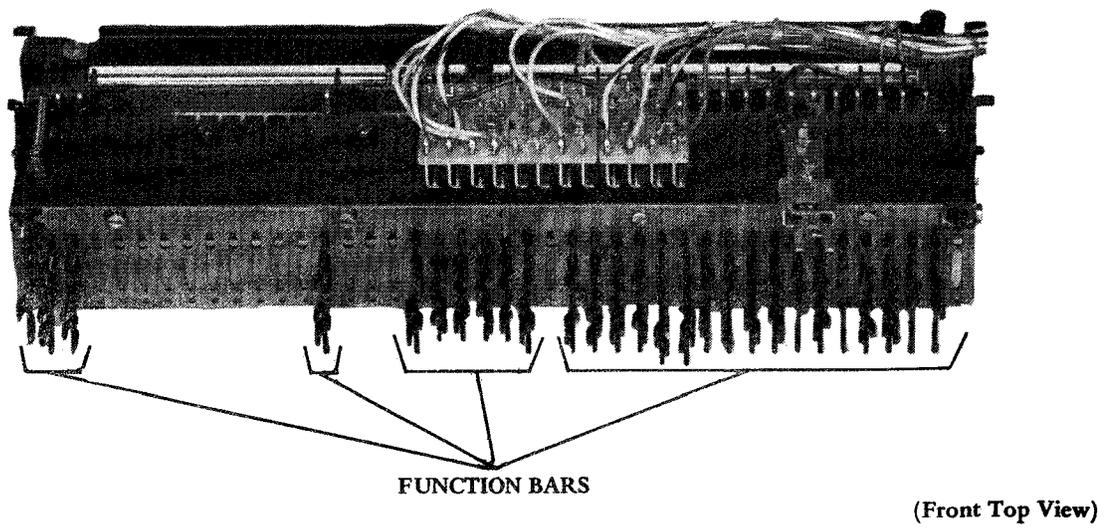


Figure 8 - Function Box

- (2) Hold the function bar toward the rear of the function box and disengage the function pawl from the function bar.
- (3) Pull the function bar toward the front to remove the function bar from the function box.

Function Bar Replacement

- 2.20 Reverse the procedure used in removal (Figure 8) in 2.19.
- 2.21 To replace the function box, reverse the procedure used in removal (Figures 7 and 8).
- (1) During installation of the function box, the function clutch should be tripped and the main shaft rotated until the reset blade is toward the front of the unit. The shift forks must be in line with their respective posts on the codebar mechanism. Push the function box forward on its guide rails to 1/8 inch of its final position. Next manually disengage the function pawls from their function bars and push the function box into its final position.
 - (2) If the unit has horizontal and/or vertical tab-stop control, the bottom of the function levers in slots 17 and 41 must be inserted into the slot in their respective slides. To do this, raise the function lever to its maximum uppermost position, and push the function lever forward until it drops into the slot in the slide.

VERTICAL POSITIONING MECHANISM

2.22 To remove the vertical positioning mechanism from the unit (Figure 9), remove the retaining ring from the retraction reset arm post. Remove the screw from the upper right hand corner of the vertical positioning rear mounting plate. Remove the nuts from the bottom two posts on the inside of the left side frame. Now remove the mechanism from the unit. Notice the position of the loose gear and coupling assembly from the rear of the mechanism.

2.23 To replace the vertical positioning mechanism (Figure 9), set all codebars in the marking position. Rotate the main shaft so that the male portion of the coupling on the end of the main shaft is in the vertical position. Check that the gear and coupling on the back of the mechanism are in place and in position to line up with the main shaft coupling. Place vertical slides in the downward position and rotate clutches until aggregate is in the uppermost position. Also check that the racks and typebox rail are in the uppermost position. Replace the mechanism.

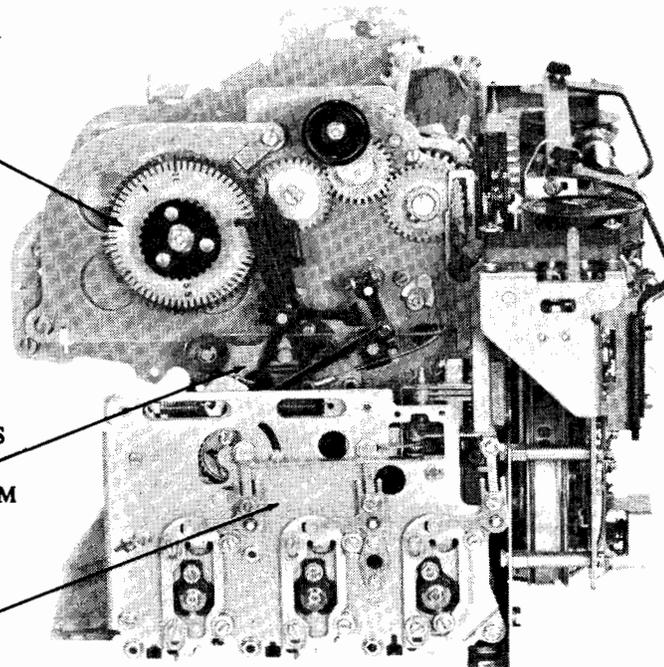
CODEBAR ASSEMBLY

- 2.24 To remove the codebar assembly from the unit, proceed as follows.
- (1) Remove the front plate assembly as in 2.14. Remove the two mounting screws from the rear of the function box side plates. Remove one screw used to

VERTICAL TABULATION
MECHANISM

ON-LINE CONTROL
OF TAB-STOP POSITIONS
FOR VERTICAL
TABULATION MECHANISM

VERTICAL
POSITIONING
MECHANISM



(Left Side View)

Figure 9 - Interrelated Positions of Three Vertical Movement Mechanisms

mount the function box brace to the trip shaft casting. Pull the function box toward the rear of the unit to take the pressure of the function bars off of the codebars.

- (2) Remove one screw and loosen the other screw that mount the codebar shiftbar guideplate. Remove the two screws on either side frame used to mount the codebar guide castings.
- (3) Pull the codebar shiftbars forward and to the right, to allow the codebar assembly to pass by the codebar shiftbars.

2.25 To replace the codebar assembly, reverse the procedure used in removal. If either tie bar mounting screw is loose, make sure both are loosened friction tight before mounting codebar assembly. Replace and tighten the four screws mounting the codebar assembly. Tighten the tie bar mounting screws. Replace the function box as described in 2.21. Replace the front plate assembly as described in 2.15.

SELECTOR CAM SLEEVE ASSEMBLY AND CLUTCH

2.26 To remove selector cam sleeve assembly and clutch from unit, remove selector clutch drum mounting nut, screw, and washers. Remove the selector clutch and cam sleeve assembly.

Note: Perform the following operations to insure easy removal of the cam sleeve assembly.

- (1) Latch the pushlever reset bail up and out of the way on the notch (maintenance step) provided in the lever guide slot.
- (2) Push the mark locklever to the left and insert a pin in the hole provided on the lever extension, so that the lever (and consequently the selecting levers) is held away from the cam by the mark locklever guide bracket.
- (3) Hold the space locklever and start lever to the left. Hold lifter lever down. Slip the selector cam sleeve assembly off the shaft, at the same time rotating the assembly counterclockwise.

2.27 To replace the selector cam sleeve assembly and clutch, reverse the procedure used in removal, but rotate the selector cam sleeve assembly counterclockwise. To insure easy replacement when the sleeve is almost in place, pull the trip lever arm and selector clutch latchlever away from their respective cams.

SELECTOR ASSEMBLY

2.28 To remove the selector assembly from the unit, proceed as follows (Figure 10).

- (1) Remove the selector cam sleeve assembly and clutch as in 2.26. Next remove the screw that secures the selector assembly to the intermediate bracket on the code positioning mechanism.
- (2) Remove the retract arm cam follower spring TP90260 from the cam follower. Disconnect the cam follower arm from the retract oscillating shaft.
- (3) Remove the three remaining selector assembly mounting nuts and lift the selector assembly from the main shaft bearing housing.

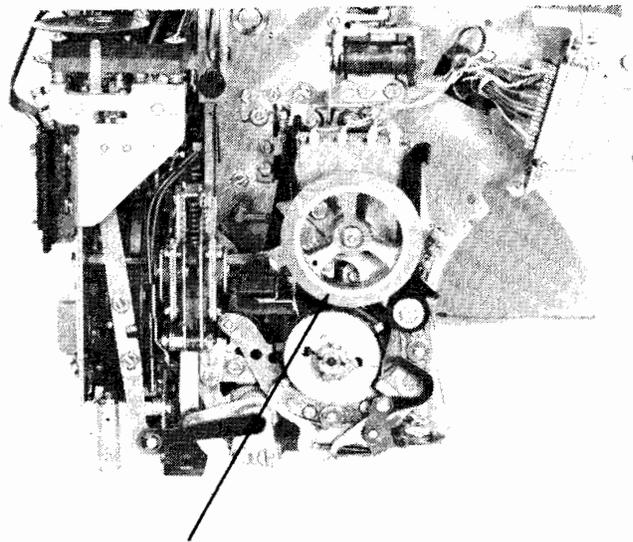
2.29 To replace the selector assembly (Figure 10), reverse the procedure used in removal. Replace the selector cam sleeve assembly and clutch as in 2.27. Check the following adjustments:

- (a) Selector Magnet Bracket
- (b) Intermediate Arm Latch Bail
- (c) Intermediate Arm Back Stop Bracket

MAIN SHAFT ASSEMBLY

2.30 To remove the main shaft assembly from the unit, proceed as follows (Figures 11 and 12).

- (1) Remove the selector cam sleeve assembly and clutch as in 2.26. Remove the vertical positioning mechanism as in 2.22.



SELECTOR ASSEMBLY

(Right Lower Side View)

Figure 10 - Selector Assembly Mounted in Typing Unit

- (2) Next engage all clutches; then remove all main shaft clutch drum mounting screws. From the selector end of the main shaft, remove screw and collar.
- (3) Remove the screws from the two collars at the center of the main shaft. Remove the main shaft drive gear mounting screw and loosen the two setscrews. Take out the screw from the bearing collar at the left end of the main shaft.
- (4) Take off the retaining ring used to connect the codebar shift lever link and separate the link and arm. Remove the retaining ring that connects the print hammer lower drive shaft arm to the square shaft drive links and separate the link and arm.
- (5) Take off the print hammer cam follower spring TP334339 and codebar positioning cam follower arms spring TP82861. Tap the right end of the shaft with the handle of a screwdriver or soft hammer, until

the shaft loosens up from the bearing in the right side frame.

- (6) Pull the shaft out of the left end of the unit, leaving the clutches in their plate. Remove all clutches that are required.

Note: When removing cams from clutches, note that the round circle stamped on the face of the cam should face toward the left end of the unit.

2.31 To replace the main shaft assembly (Figures 11 and 12), reverse the procedure used in removal. Do not disengage the clutch drum from the shoes when feeding the clutch onto the shaft. Replace the selector cam sleeve assembly and clutch as in 2.27. Replace the vertical positioning mechanism as in 2.23. Check the following adjustments:

- (a) Main Shaft Clutch Disc End Play
- (b) Line Feed Clutch Phasing

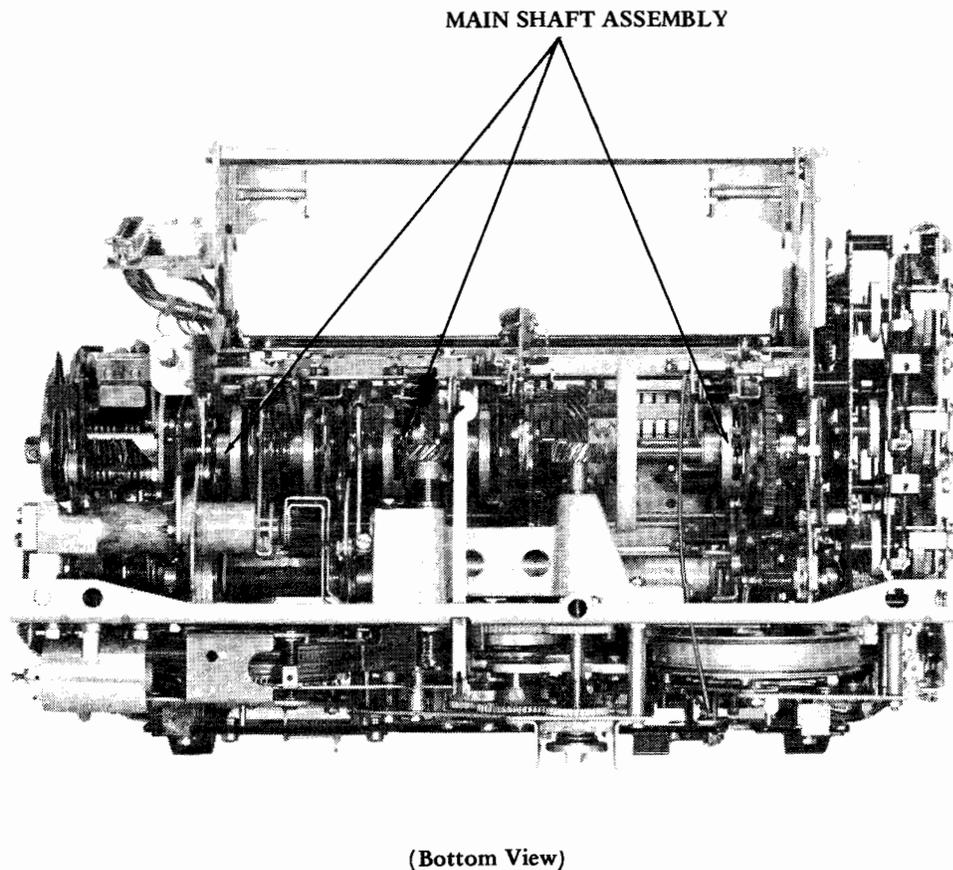


Figure 11 - Main Shaft Assembly Mounted in Typing Unit

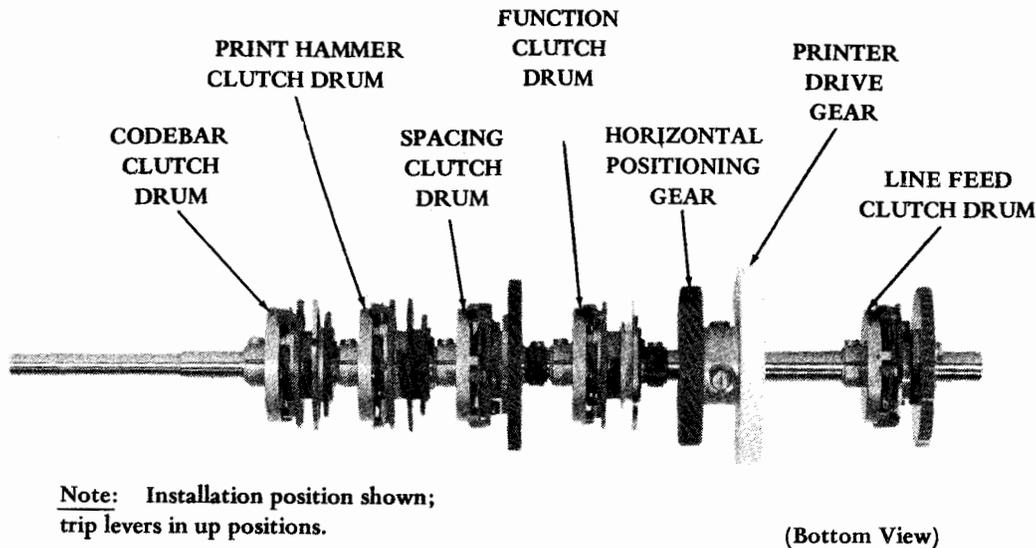


Figure 12 - Main Shaft Assembly

CODEBAR POSITIONING MECHANISM

2.32 To remove the codebar positioning mechanism from the unit, proceed as follows (Figure 13).

- (1) Remove the front plate assembly as in 2.14. Remove the two range finder plate assembly mounting screws, nut, and washers; then remove the range finder plate assembly. Remove the retaining ring from the codebar positioning drive arm and shift lever drive link connection and separate link and arm.
- (2) Remove the three mounting screws: The one on the selector, codebar positioning drive shaft casting, and side frame flange.
- (3) Manipulate the transfer levers and codebar shiftbars, while gently twisting and sliding the mechanism off of the codebar shiftbars.

2.33 Replace the codebar positioning mechanism (Figure 13) by reversing the procedure used in removal, except push the shiftbars to the marking position (left/pushed in). Manipulate the shiftbars and transfer levers so that the shiftbars line up with their respective slots in the guide bracket and slide shiftbars one at a time through the slots. Replace the front plate assembly as described in 2.15.

PLATEN

2.34 To remove the platen from the unit (Figure 2), remove the platen bearing retainers. Remove the paper finger shaft (friction feed) or the guide bracket

(sprocket feed, Figure 14). Remove driving gear. Hold off the detent and lift the platen out of the side frame.

2.35 To replace the platen (Figure 2), reverse the procedure used in removal. First put in the retainer upper screw when replacing the platen bearing retainers. Leave the retainer upper screw slightly loose. Press the lower end of the retainer down and hook it into the elongated hole in the side frame. Replace the lower screw; tighten both screws.

TRIP SHAFT ASSEMBLY

2.36 To remove the trip shaft assembly from the unit, proceed as follows (Figure 7).

- (1) Remove the function box as in 2.18. Disconnect all springs from the spring bracket which is mounted on the trip shaft casting. Remove the two screws used to mount the spring bracket and remove the spring bracket. Loosen the print hammer clutch trip clamp mounting screw.
- (2) For units equipped with horizontal tab, remove the retaining ring used to connect the horizontal tab blocking slide. Remove the screw used to mount the horizontal tab arm to the horizontal tab bail. Remove the horizontal tab arm.
- (3) Loosen the two trip shaft bearing clamp plates and remove. Lift the trip shaft assembly up and out of the unit.

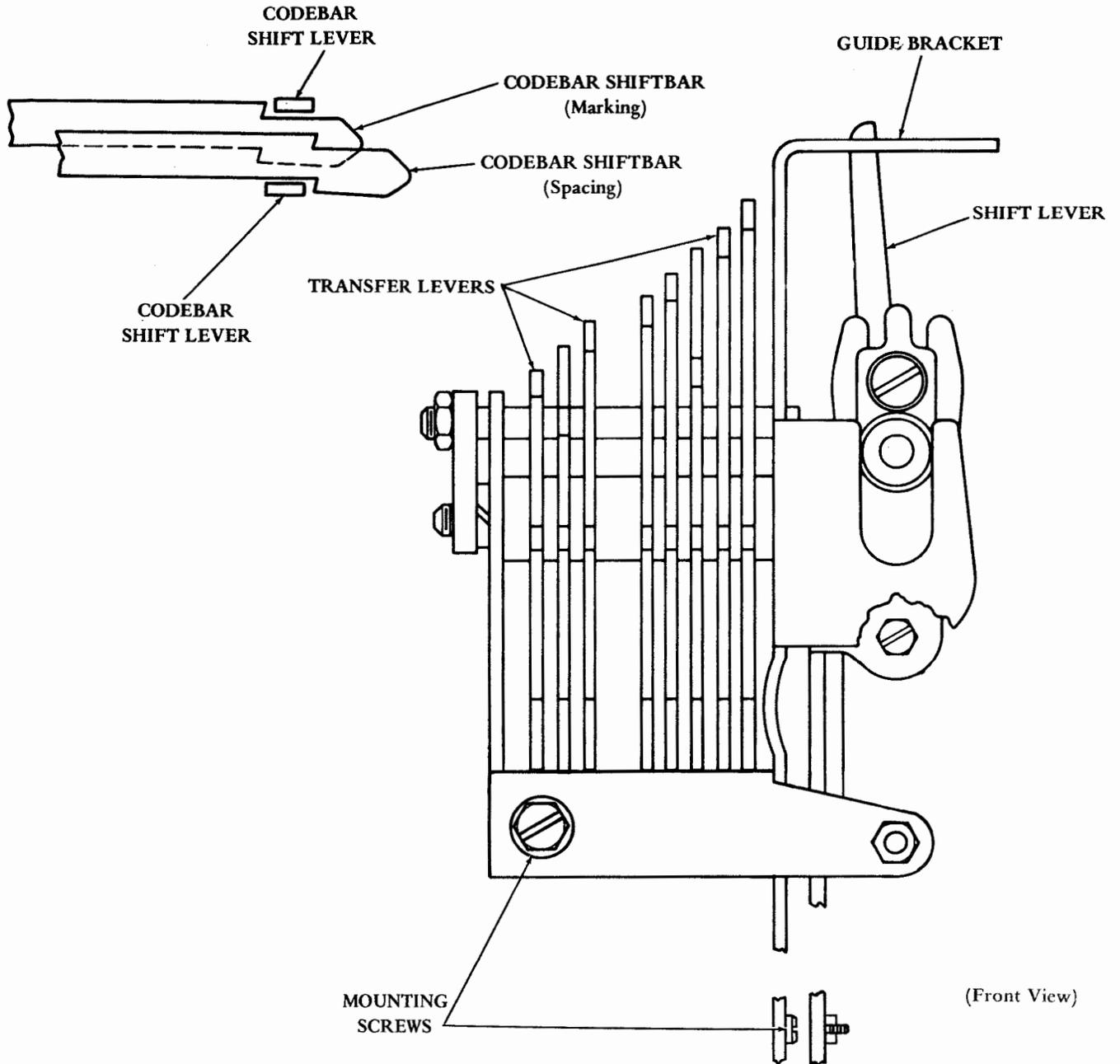


Figure 13 - Codebar Positioning Mechanism

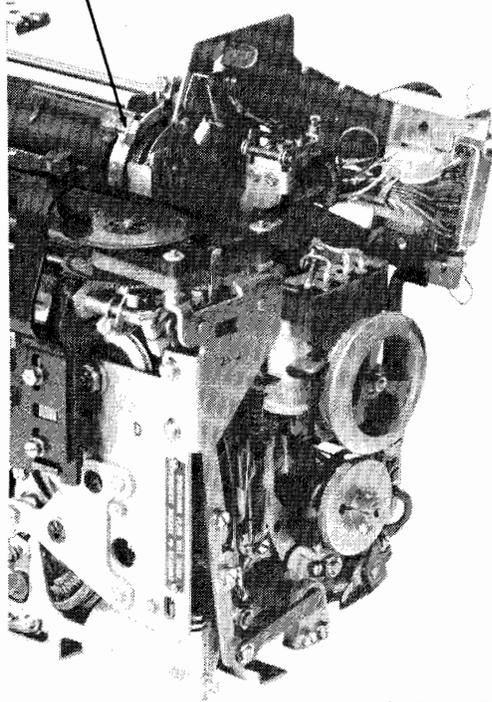
2.37 To replace the trip shaft assembly (Figure 7), proceed as follows.

- (1) Reverse the procedure used in removal. Check function clutch trip parts for their proper position.
- (2) When installing the horizontal tab arm, make sure that the "C" shaped hole is fully seated on the raised portion of the horizontal tab bail.

(3) Before tightening the screws, align the bearing clamps over the center of the bearings. Check the following adjustments:

- (a) Function Clutch Trip Arm (requirement no. 2)
- (b) Printing Clutch Trip Lever

SPROCKET
FEED
MECHANISM



(Right Front View)

Figure 14 - 37 Typing Unit (Sprocket Feed)

SPACING CABLE

2.38 To remove the spacing cable (Figures 15 and 16) from the front plate, proceed as follows.

- (1) Return the carriages to the left position. Unwind the carriage return spring by loosening the nut on the front of the spring drum bearing post and operate the ratchet escapement lever. Release the cable from the clamp on the printing carriage and also from the clamp on the oscillating rail slide. Remove the cable clamp-screw used to secure the spacing cable to the spring drum and remove the cable from the drum.
- (2) When equipped with horizontal tab, remove the three screws used to mount the horizontal tab ring on the spacing drum; position the horizontal tab ring to allow access to cable mounting screws. Remove the cable mounting screws from the spacing drum used to secure the ends of the spacing cable; remove the spacing cable from the drum.

2.39 To replace the spacing cable (Figures 15 and 16), reverse the procedure used in removal. Check the following adjustments:

- (a) Carriage Return Spring
- (b) Right Hand Margin
- (c) Print Hammer Position
- (d) Spacing Rope Alignment
- (e) Left Hand Margin

COORDINATING CABLE

2.40 To remove the coordinating cable from the front plate, proceed as follows (Figures 15 and 16).

- (1) Loosen the coordinating cable spring adjusting arm clamp unit. Unhook the coordinating cable spring from the cable eyelets.
- (2) Loosen the cam plate mounting screw on the spring drum, and rotate the cam plate to gain access to the cable clamping screw if necessary.
- (3) When equipped with horizontal tab, remove the three screws used to mount the horizontal tab ring on the spacing drum; position the horizontal tab ring to allow access to the cable mounting screw. Remove the two cable mounting screws used to secure the ends of the cable to the spacing drum. Remove the coordinating cable from the drum.

2.41 To replace the coordinating cable (Figures 15 and 16), reverse the procedure used in removal.

Note: Check that the short cable is connected to the spring drum.

Check the following adjustments:

- (a) Coordinating Cable Tension and Equalization
- (b) Margin Indicator Lamp

SPRINGS OR CONTACT ARMS IN SWITCH ASSEMBLY

2.42 To remove the springs or contact arms in the switch assembly, proceed as follows.

- (1) Remove the two screws and lockwashers used to secure the switch to the function box. Unsolder any connections to the terminal and spring. When unsoldering the cable to the contact spring and when lacing or routing cables, do not tug or pull on the

contact spring, because this will cause distortion to the spring.

- (2) Remove the top plate with spring and the contact arms. To remove the spring from the top plate, clean the solder from the spring and place the end of an orange stick on the shoulder of the spring and push downward.

2.43 To replace the contact spring, proceed as follows.

- (1) Place the loop end of the spring into the required position in the terminal plate. Hook a spring hook into the loop of the spring and pull the spring into position. Before mounting the contact plate on the switch block, check that the end of the spring is on top of the formed-over contact end.
- (2) Mount the terminal plate with spring and block-in the required location on the function box; replace screws and lockwashers. Resolder the cables to their respective locations. Insert the pointed end of the contact arm between the bent up end of the spring and

the formed end of the contact; the notch of the contact arm must be in the downward position. Push the arm into position, so that the notch is engaged. Check that the contact arm insulator is in alignment with the function lever. Loosen the screws and position the switch to meet this requirement.

- (3) Also check that there is some clearance between the contact arm and the vertical face of the clip. Check both contacts if the switch is a transfer type with contact on the front and rear.

ON-LINE CONTROL OF TAB-STOP POSITIONS FOR VERTICAL TABULATION MECHANISM

2.44 To remove the on-line control of tab-stop positions for vertical tabulation mechanism, proceed as follows (Figure 9).

- (1) Remove retaining rings from function lever in slots 39 and 40. Disconnect cable eyelets from post on function lever. Remove cables from guide brackets and

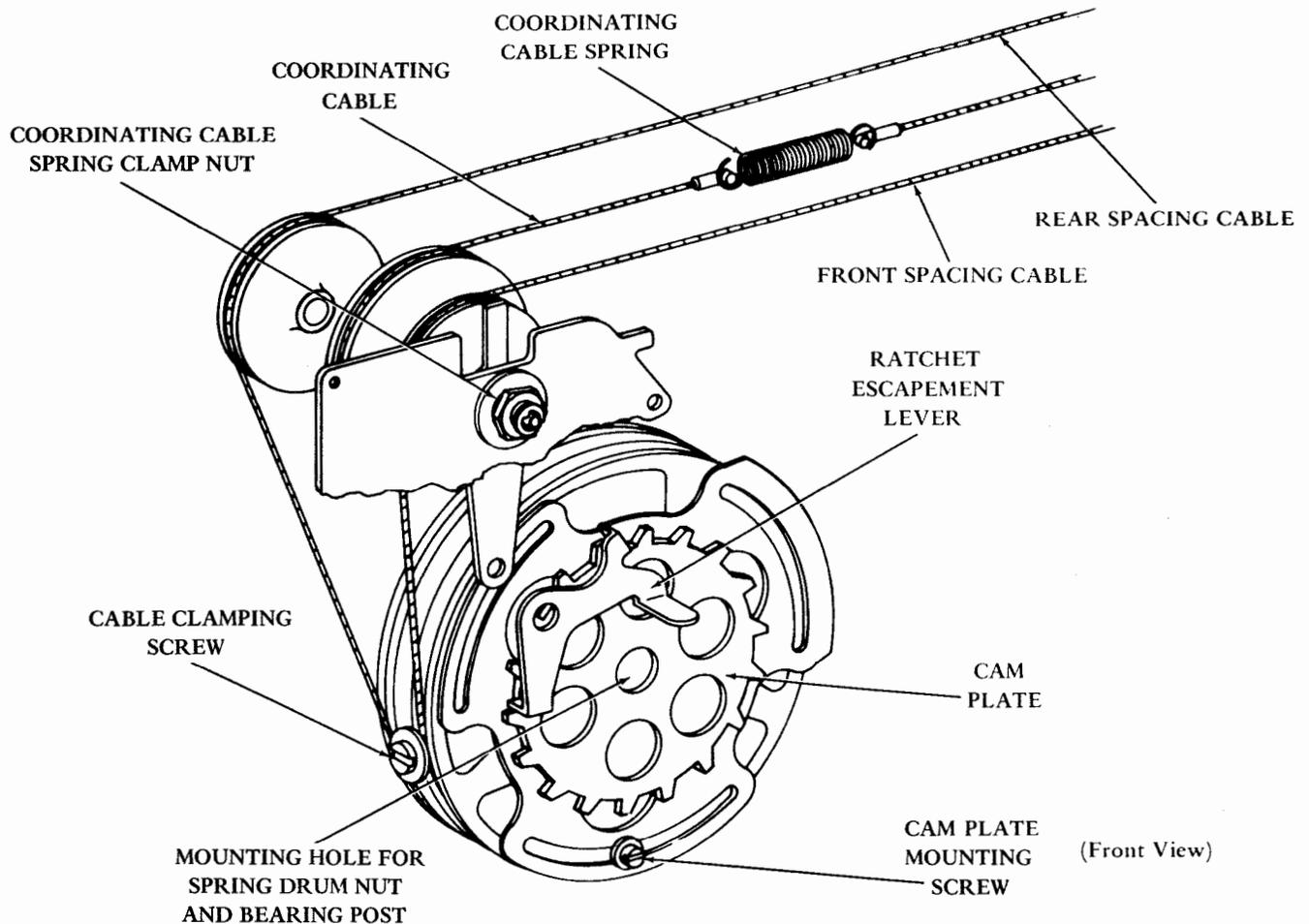


Figure 15 - Spring Drum and Cables

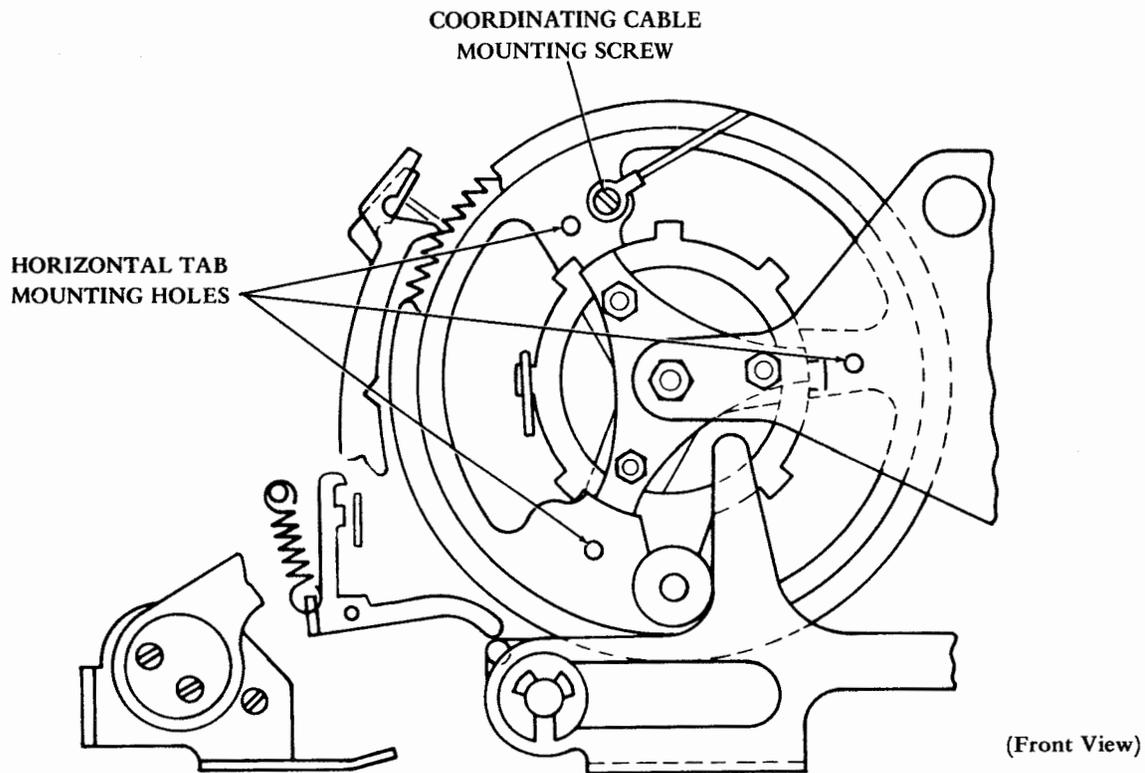


Figure 16 - Spacing Drum

feed out gradually through hole in left side frame, until inner cable can pass through small gap into large opening.

(2) Remove nut, lockwasher, and flat washer from lower post on vertical tabulator. Remove retaining ring from upper post on vertical tabulator. Remove the assembly from the unit.

2.45 To replace the on-line control of tab-stop positions for vertical tabulation mechanism (Figure 9), reverse the procedure used in removal. Check the following adjustments:

- (a) Mounting Plate
- (b) Tab Arm Spring Tension
- (c) Tab Set Arm
- (d) Tab Clear Arm
- (e) Latch
- (f) Latch Release
- (g) Latch Spring

VERTICAL TABULATION MECHANISM

2.46 To remove the vertical tabulation mechanism (Figure 9) from the unit, remove the three screws, flat washers, lockwashers, and spacers used to hold the mounting plate assembly to the left side frame. Remove the pointer which is located between the mounting plate and the flat washer on the top mounting screw. Remove the mounting plate. Take out the vertical tabulation mechanism.

2.47 To replace the vertical tabulation mechanism (Figure 9), reverse the procedure used in removal. Check the following adjustments:

- (a) Mounting Bracket
- (b) Form Gear Play
- (c) Tab Wheel
- (d) Pointer
- (e) Blocking Levers
- (f) Sensing Arm Spring Tension
- (g) Sensing Pawl Spring Tension
- (h) Tab Wheel Synchronization

37 KEYBOARD UNIT

ADJUSTMENTS

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1. GENERAL

1.01 This section provides adjustment procedures for the late design, 11-contact 37 keyboard unit (Figure 1). It is reissued to incorporate minor engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. For similar information on early design, 28-contact units, refer to Section 574-321-700TC.

1.02 Each adjustment or mechanical requirement is associated with a basic mechanism of the keyboard unit. Both the basic mechanisms and subordinate adjustments are indexed in the table of contents. The basic mechanisms are identified in Figures 2 and 3.

1.03 The adjustments of the basic mechanisms are arranged in a sequence that should be followed if a complete readjustment of a mechanism 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. If one adjustment is changed, related adjustments should be checked.

Note: Unless otherwise specified, perform adjustments with the typing unit removed. For instructions on removing typing unit, see Section 574-301-702TC.

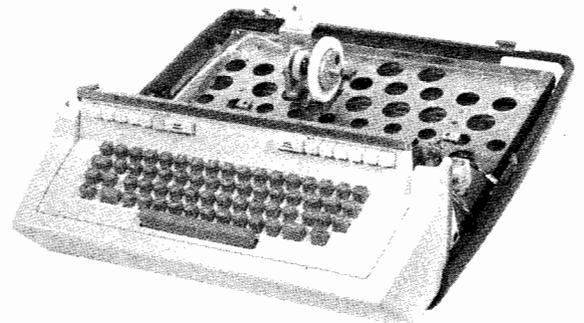


Figure 1 - Keyboard Unit

SECTION 574-321-703TC

1.04 In each adjustment the 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 this equipment are illustrated in Section 570-005-800TC.

1.05 References made to the right or left and front or rear apply to the keyboard unit in its normal operating position as viewed by the operator facing the unit (Figure 1).

1.06 When parts are removed to facilitate the making of an adjustment and subsequently replaced, check any adjustment which may have been affected by such removal and replacement of parts.

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

1.08 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.

1.09 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 shall be replaced, one at a time, with the performance of requirement checks each time a spring is replaced.

Note: Use only spring scales found in Maintenance Tool Section 570-005-800TC.

1.10 When cleaning plastic parts such as the cover of the keyboard mechanism, use soap or detergent and water. Do not use solvents containing alcohol or chlorinated ingredients.

CAUTION: WHEN THE KEYBOARD UNIT IS FUNCTIONALLY UTILIZED, REMOVE POWER FROM EQUIPMENT BEFORE MAKING ANY ADJUSTMENTS.

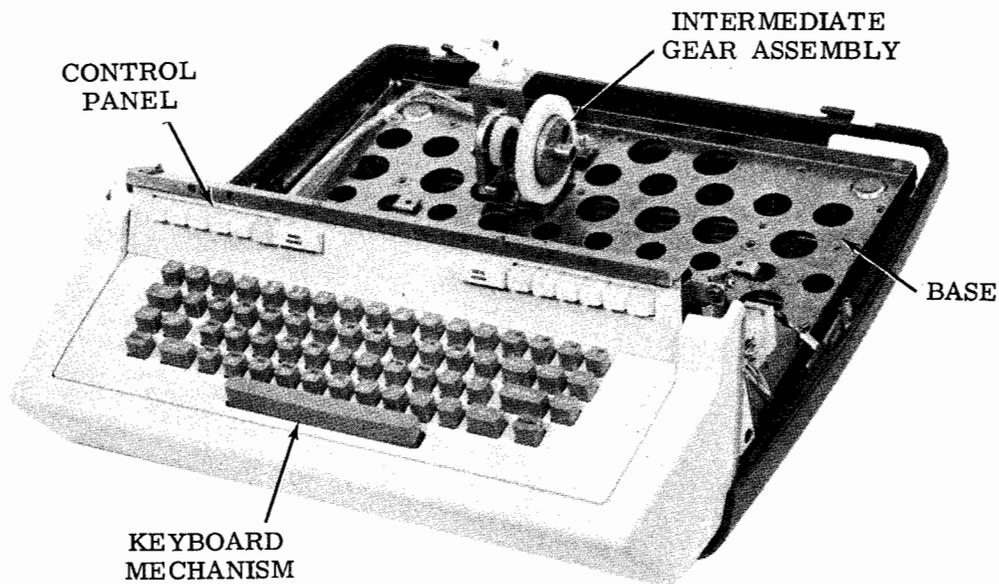


Figure 2 - Keyboard Unit, Right Front View

OPERATING CONDITION OF CLUTCHES

1.11 When a requirement specifies a disengaged clutch, the clutch must be fully latched so that the clutch shoes are completely disengaged from the clutch drum. To become fully latched, the trip lever must engage the clutch shoe lever, and the clutch disc must rotate far enough to permit the latch lever to fall into the notch in the clutch disc.

Note: When rotating the main shaft of the reset mechanism by hand, the clutch may not

fully disengage upon reaching the stop positions. In order to relieve the drag on the clutch drums and to permit the main shaft to rotate freely, apply pressure to the stop lug on the clutch disc with a screwdriver until the latch lever falls into its notch on the clutch disc. Thus, the internal expansion clutch becomes fully disengaged. This procedure should be followed before reassembling set.

When engaged, the clutch shoe lever is unlatched and the clutch shoes are wedged against the clutch drum.

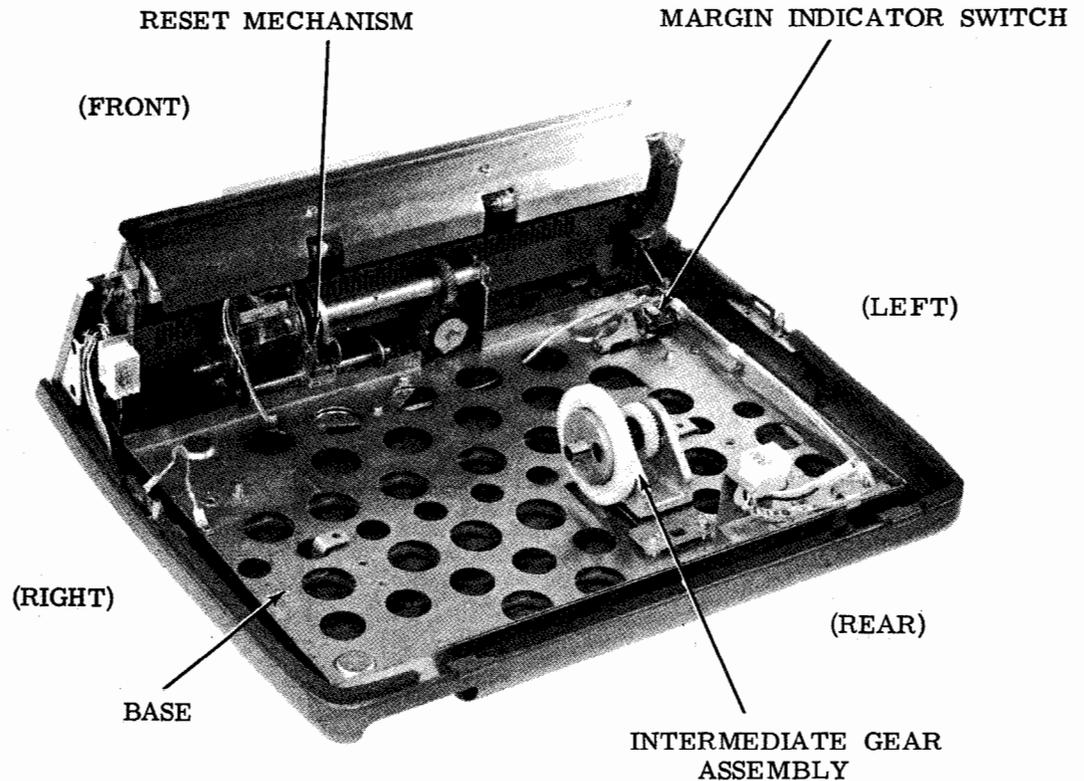


Figure 3 - Keyboard Unit, Right Rear View

2. BASIC UNIT

2.01 Keyboard Mechanism

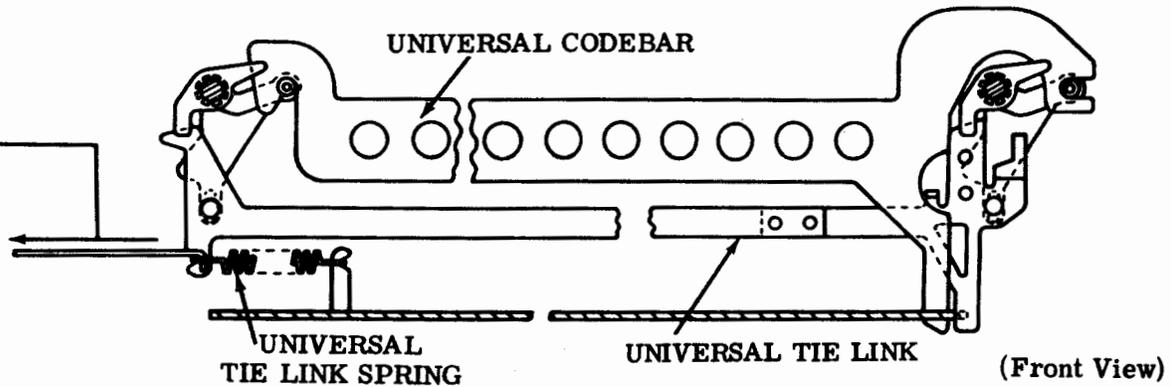
UNIVERSAL TIE LINK SPRING

To Check

Unhook spring from tie link. Depress any primary key to normal downstop position.

Requirement

Min 3/4 oz --- Max 7/8 oz
to extend spring to operating length.



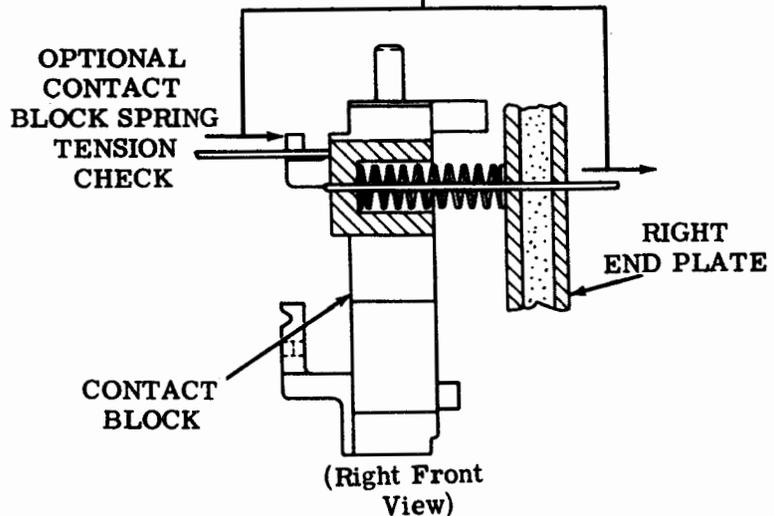
CONTACT BLOCK SPRING

To Check

Remove T-lever guide.

Requirement

Min 18 oz --- Max 64 oz
at each spring location
to start contact block moving.



2.02 Keyboard Mechanism (continued)

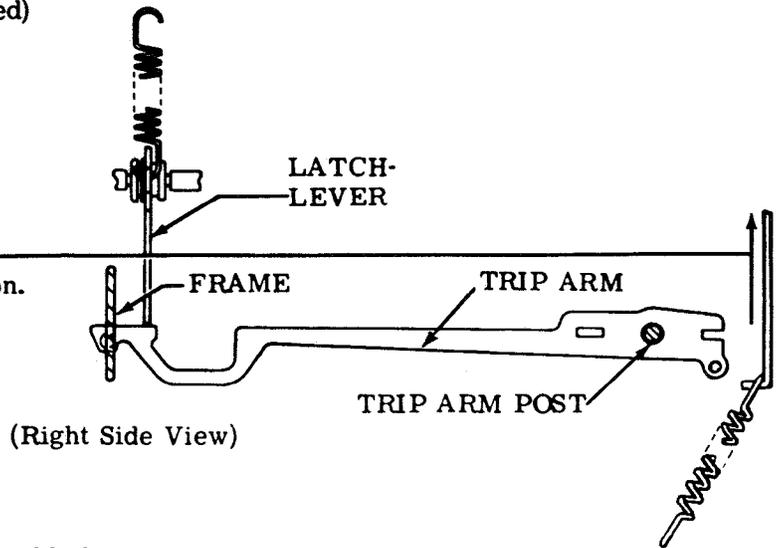
TRIP ARM SPRING

To Check

Keyboard in latched position.

Requirement

Min 7 oz---Max 8 oz
to extend spring to installed position.



(Right Side View)

TRIP ARM

Note: The typing unit must be assembled on the base to make the trip arm adjustment.

To Check

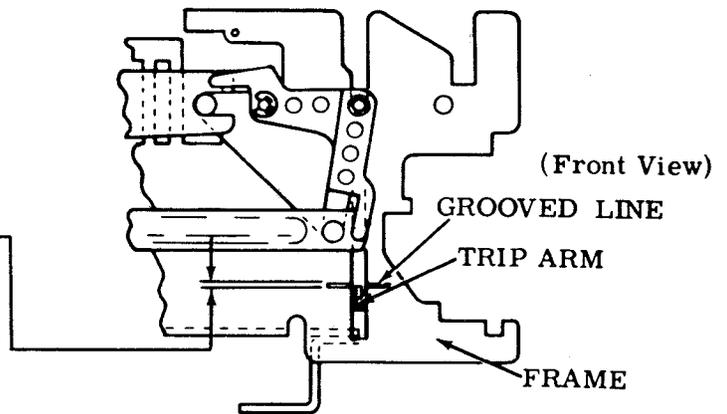
Engage clutch (trip keyboard). Rotate shaft until reset bail roller is on high part of reset cam. Check at both high parts of reset cam.

Requirement

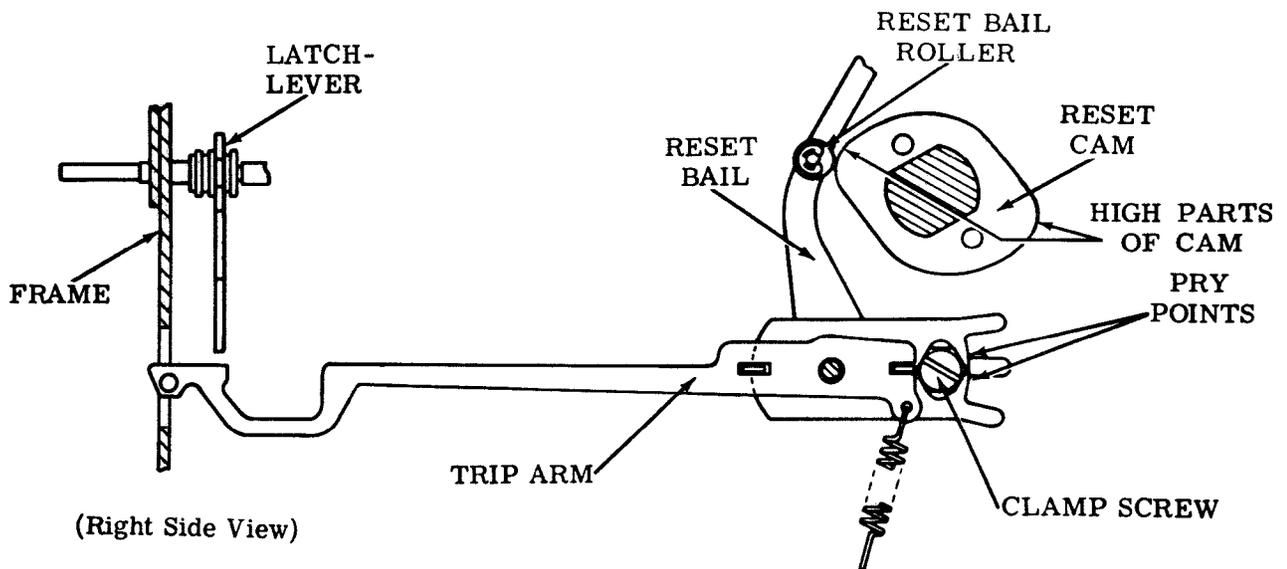
Top surface of trip arm within width of grooved line on front of keyboard frame.

To Adjust

Loosen clamp screw friction tight. Insert screwdriver between pry points and position trip arm to meet requirement. Tighten clamp screw.



(Front View)



(Right Side View)

2.03 Keyboard Mechanism (continued)

SHIFT AND CONTROL TIE LINK SPRINGS

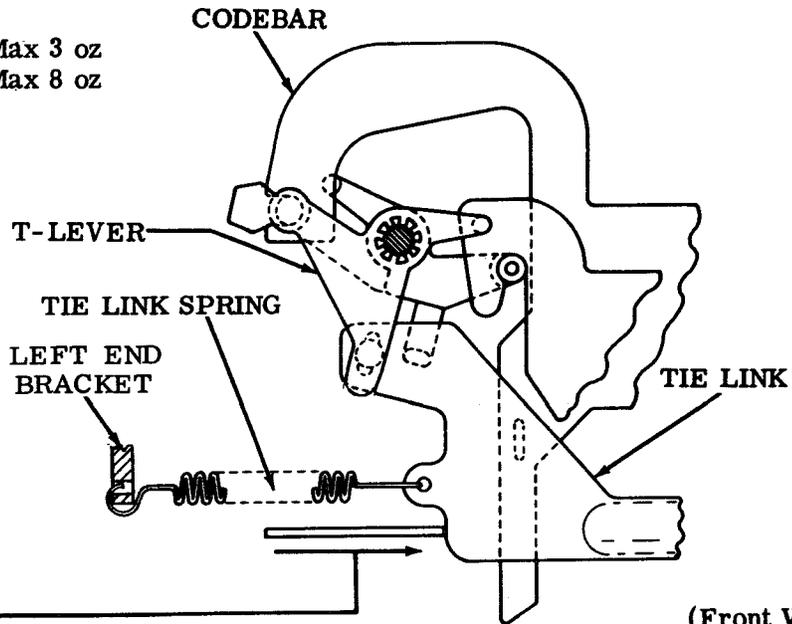
To Check

Keyboard in unshift position.

Requirement

Shift Tie Link: Min 2 oz ---Max 3 oz

Control Tie Link: Min 6 oz ---Max 8 oz
to start tie link moving.



(Front View)

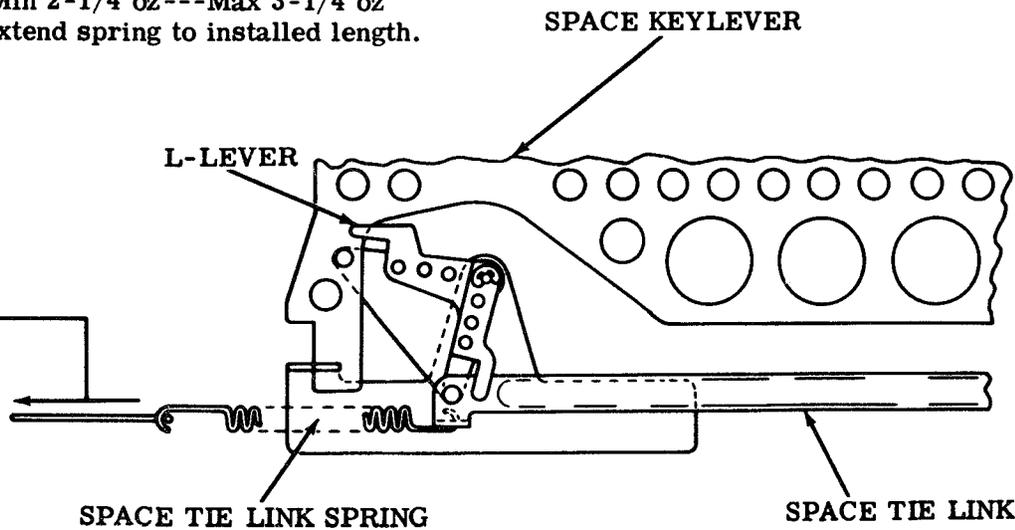
SPACE TIE LINK SPRING

To Check

Unhook spring from frame.

Requirement

Min 2-1/4 oz ---Max 3-1/4 oz
to extend spring to installed length.



(Front View)

2.04 Keyboard Mechanism (continued)

KEYLEVER LEAF SPRING

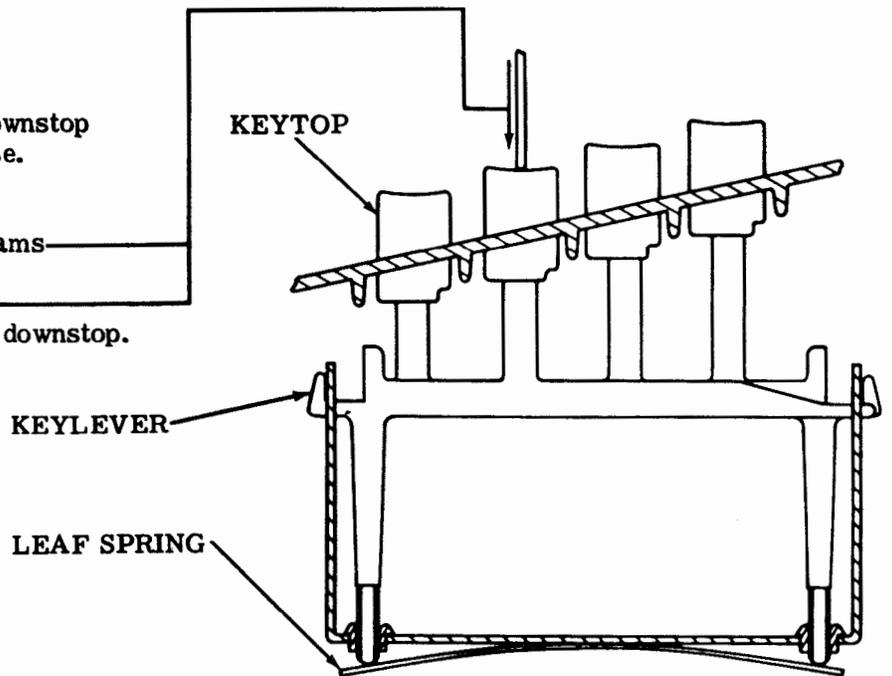
To Check

Depress keylever to normal downstop position (nonrepeat) and release.

Requirement

Min 13 grams---Max 25 grams
to start keylever moving.

Max 7 oz
to depress keylever to normal downstop.



(Right Side View)

CONTACT WIRE SPRING

To Check

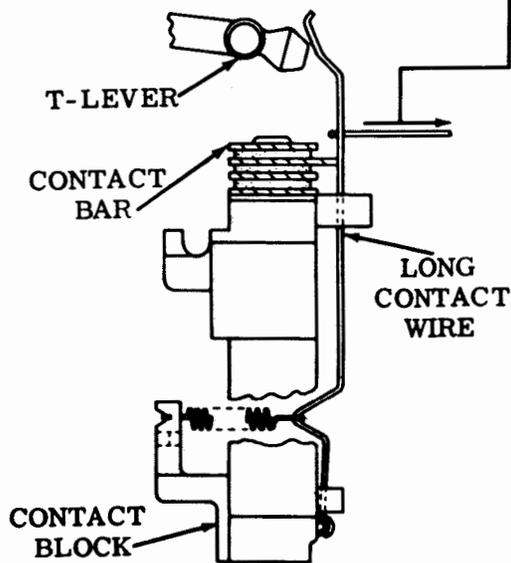
Remove T-lever guide, check contact wire when closed.

CAUTION: CONTACT WIRES ARE NOT TO BE ADJUSTED.

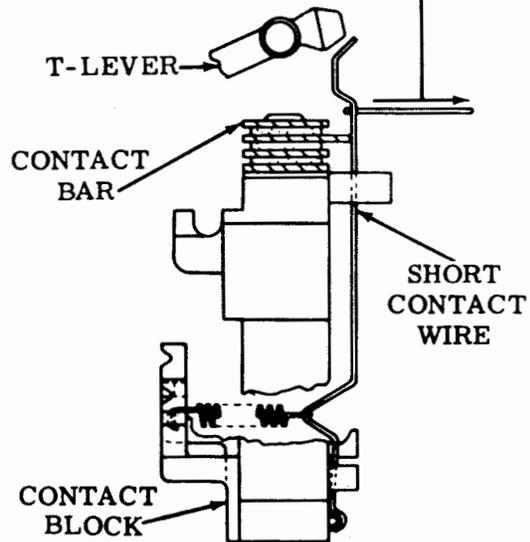
Requirement

Min 8 grams---Max 12 grams
to start short contact wire moving.

Min 10 grams---Max 14 grams
to start long contact wire moving.



(Front View)



(Front View)

SECTION 574-321-703TC

2.05 Keyboard Mechanism (continued)

LATCH LEVER SPRING

To Check

Unhook latch lever spring. Hold trip arm in overtravel position.

Requirement

Min 1/2 oz---Max 3/4 oz
to extend spring to installed length.

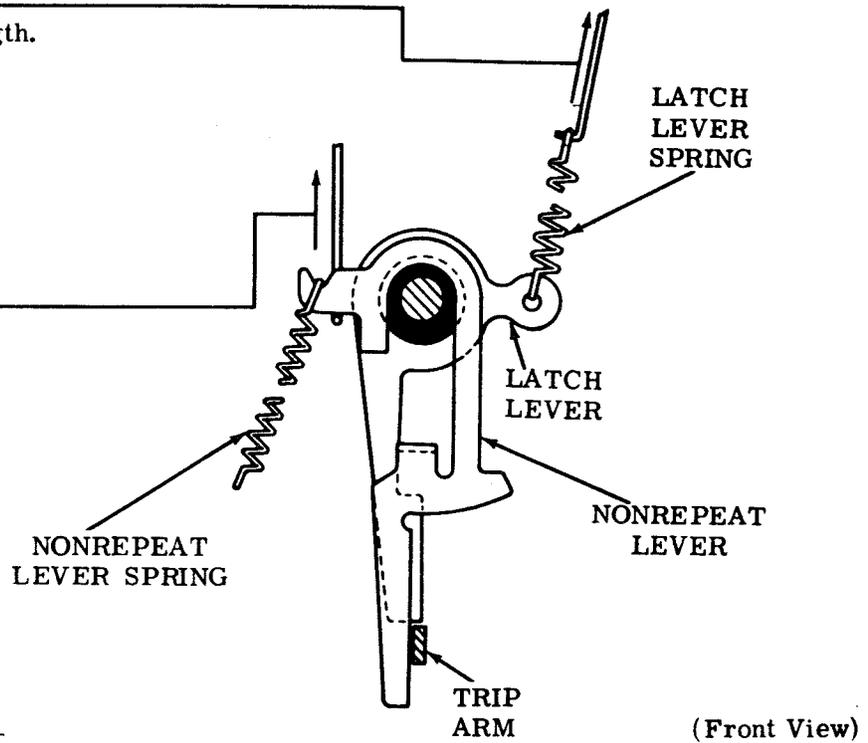
NONREPEAT LEVER SPRING

To Check

Latch lever moved away from nonrepeat lever.

Requirement

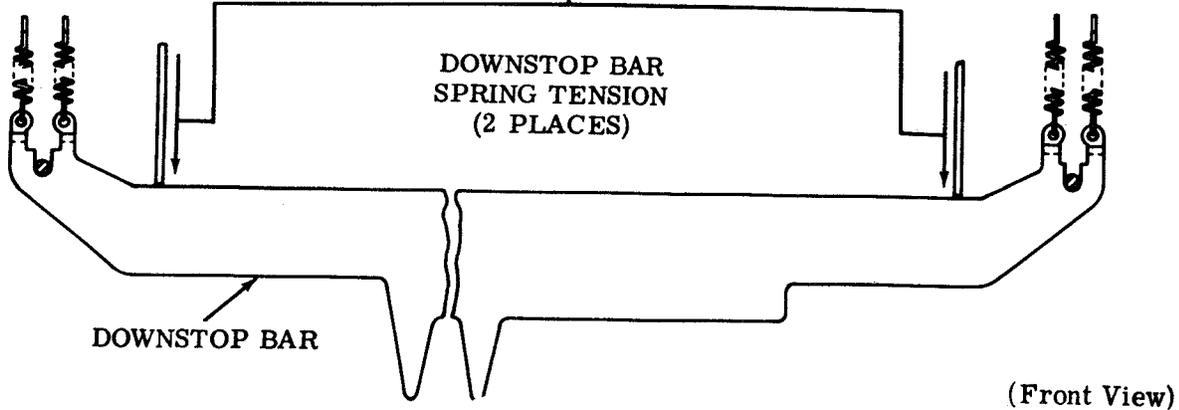
Min 1/2 oz---Max 5/8 oz
to start nonrepeat lever moving.



REPEAT DOWNSTOP BAR SPRING

Requirement

Min 12 oz---Max 17 oz
to start downstop bar moving.



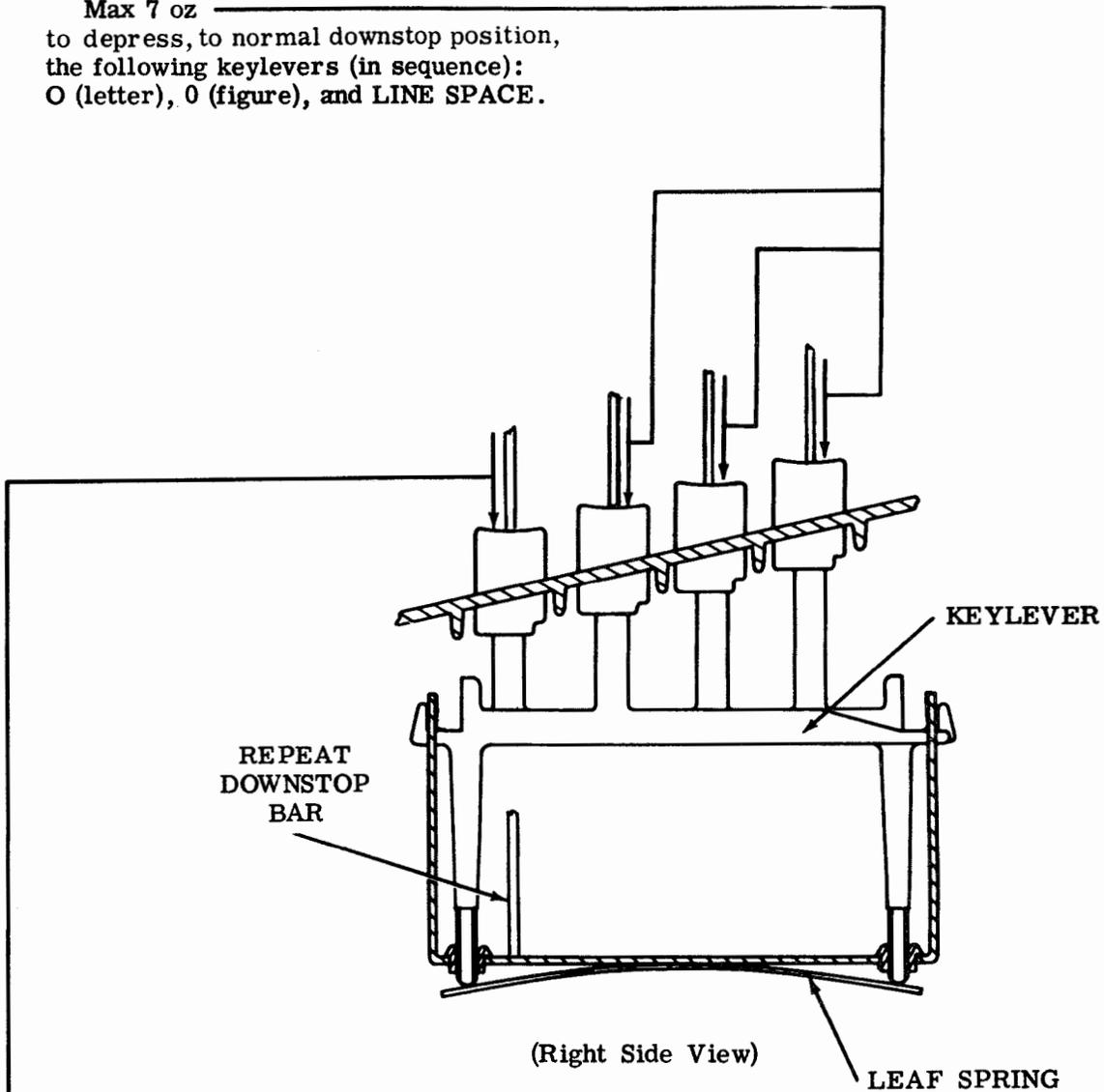
2.06 Keyboard Mechanism (continued)

CODEBAR BIND CHECK**To Check**

Hold trip arm in overtravel position.

Requirement

Max 7 oz _____
to depress, to normal downstop position,
the following keylevers (in sequence):
O (letter), 0 (figure), and LINE SPACE.

REPEAT FORCE CHECK**To Check**

Depress any repeatable key past the normal downstop position.

Requirement

Min 12-1/2---Max 54 oz
to trip keyboard.

2.07 Reset Mechanism

DRIVEN GEAR BACKLASH

To Check

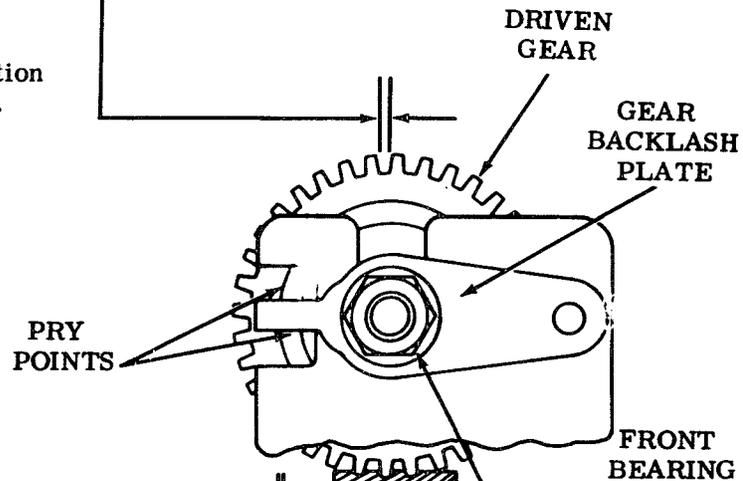
Hold driving gear stationary.

Requirement

Min some---Max 0.030 inch
play between driving gear and driven
gear (measured at periphery of driven
gear tooth where play is at a minimum).

To Adjust

Loosen shaft nut to friction tight. Insert
screwdriver between pry points and position
gear backlash plate to meet requirement.
Tighten shaft nut.



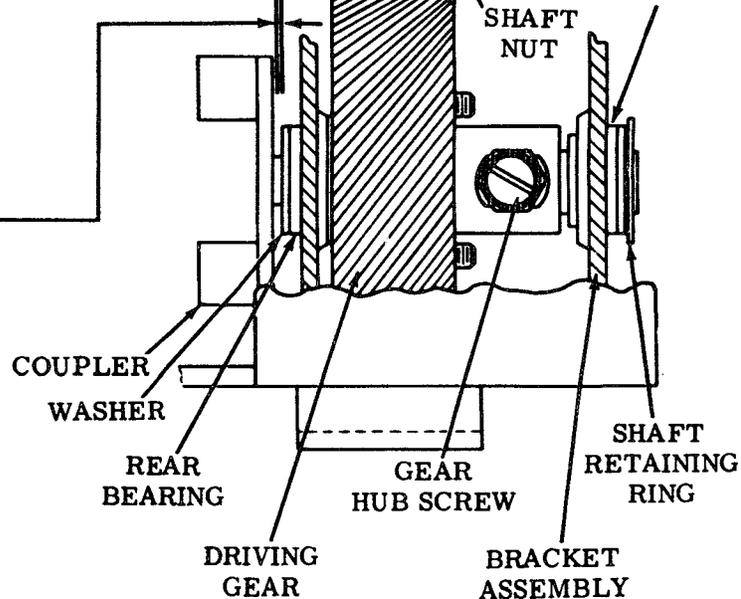
DRIVEN COUPLER ENDPLAY

Requirement

Min some---Max 0.037 inch
between driven coupler and washer.

To Adjust

Remove gear hub screw and shaft
retaining ring. Remove driven coupler
and shaft from bracket assembly and
bearings. Add or remove, as required,
washers between driven coupler and
rear bearing to meet requirement.
Reassemble, replace retaining ring,
and tighten screw.



(Left Side View)

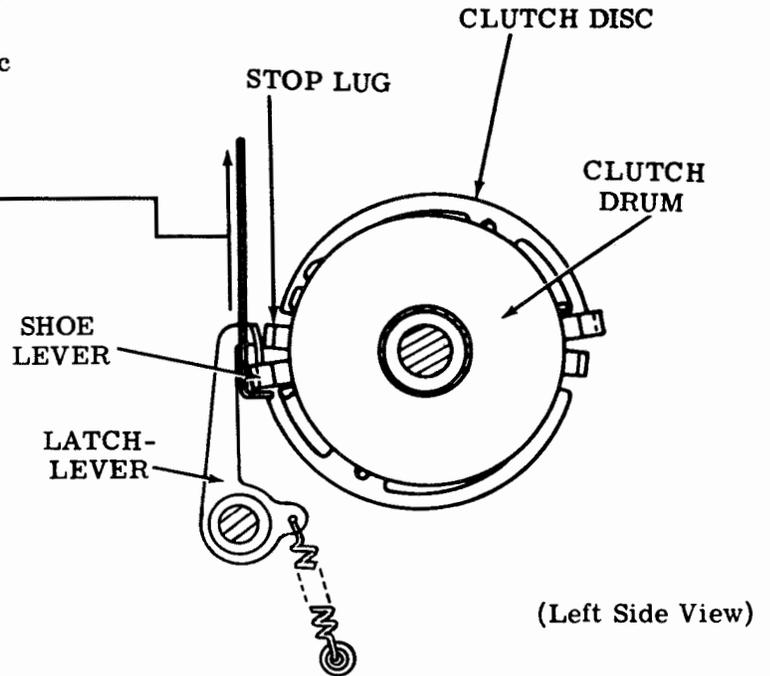
2.08 Reset Mechanism (continued)

SHOE LEVER SPRING**To Check**

Engage the clutch. Hold the trip lever away from shoe lever while checking requirement. Also hold the clutch disc to prevent its turning while checking requirement.

Requirement

Min 7 oz---Max 9 oz
to pull shoe lever into contact with stop lug.

SHOE LEVER**To Check**

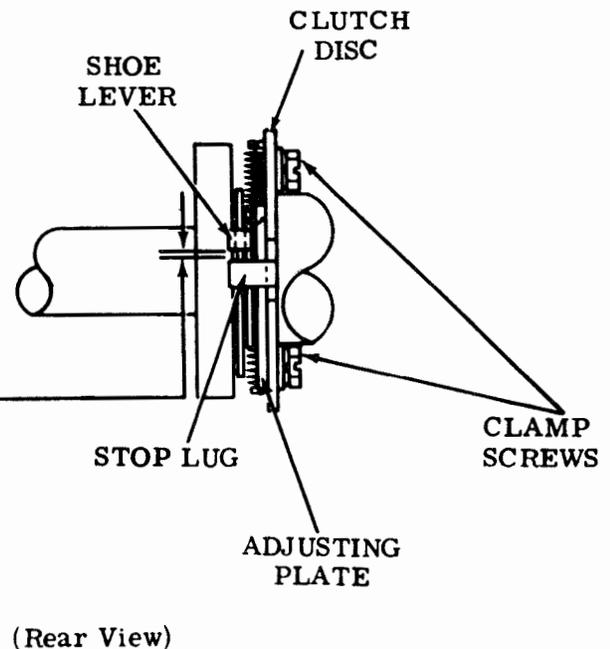
Engage clutch and momentarily place 32 ounces of tension on shoe lever. Measure gap between shoe lever and stop lug. Disengage (latch) clutch and remeasure.

Requirement

Min 0.055 inch---Max 0.085 inch
greater gap when clutch is engaged (shoe lever unlatched) than when disengaged.

To Adjust

Loosen clamp screws friction tight. Hold clutch disc and engage a screwdriver or wrench onto lug on adjusting plate. Rotate adjusting plate into position to meet requirement. Tighten clamp screws.



2.09 Reset Mechanism (continued)

SHOE SPRING

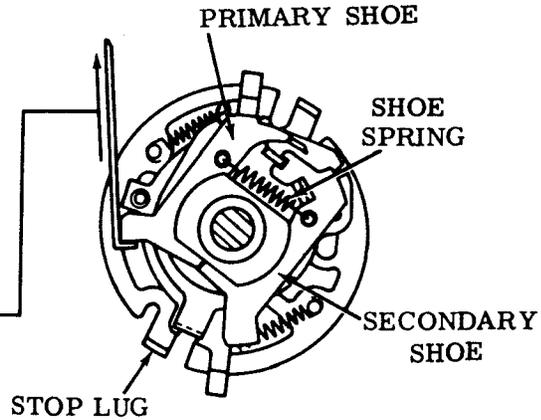
Note: To check shoe spring tension, it is necessary to remove the clutch drum. It therefore should not be checked unless there is good reason to believe that it does not meet requirements. Refer to appropriate section for disassembly and reassembly procedures.

To Check

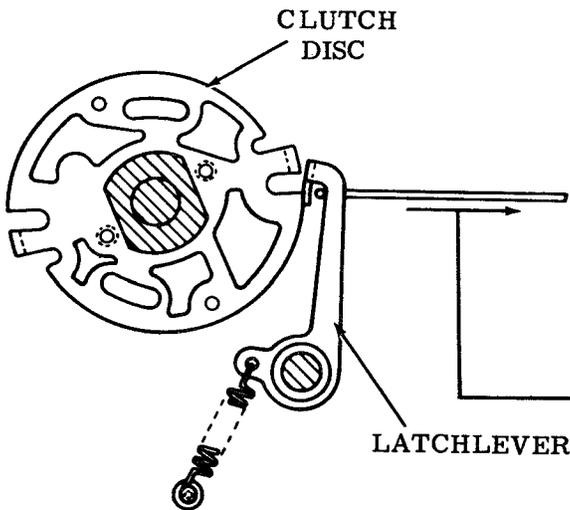
Remove clutch disc and shoe assembly from clutch drum.

Requirement

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



(Internal View
Left Side)



(Right Side
View)

LATCHLEVER SPRING

To Check

Disengage clutch. Manually unlatch latchlever from clutch disc.

Requirement

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

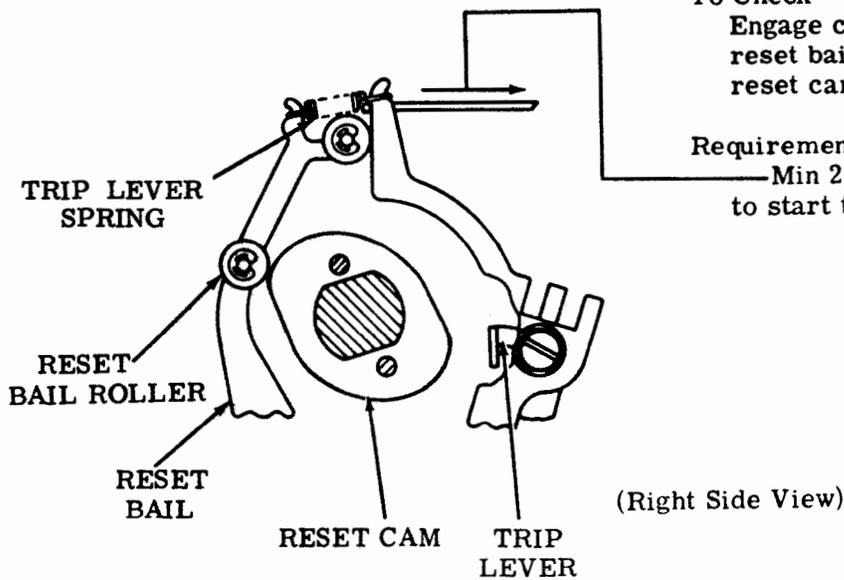
2.10 Reset Mechanism (continued)

Note: Typing unit must be removed to measure spring tensions.

TRIP LEVER SPRING

To Check
Engage clutch and rotate shaft until reset bail roller is on high part of reset cam.

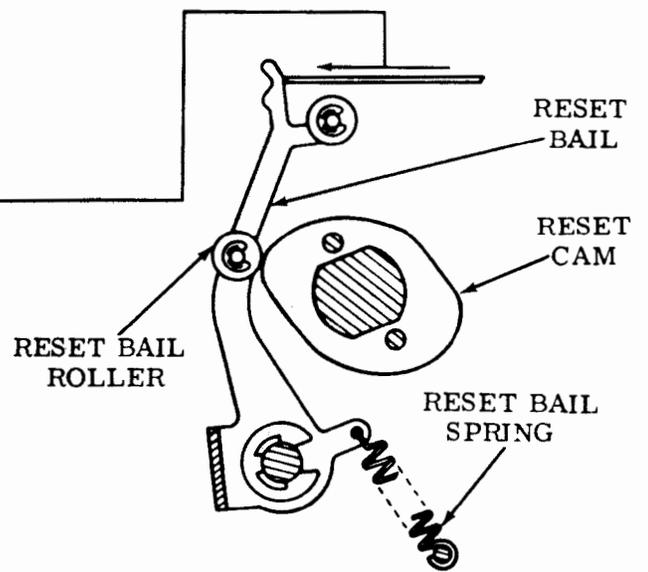
Requirement
Min 2-1/2 oz --- Max 4-3/4 oz
to start trip lever moving.



RESET BAIL SPRING

To Check
Remove H-plate. Unhook stop arm spring.
Rotate shaft until reset bail roller is on high part of cam.

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



(Right Side View)

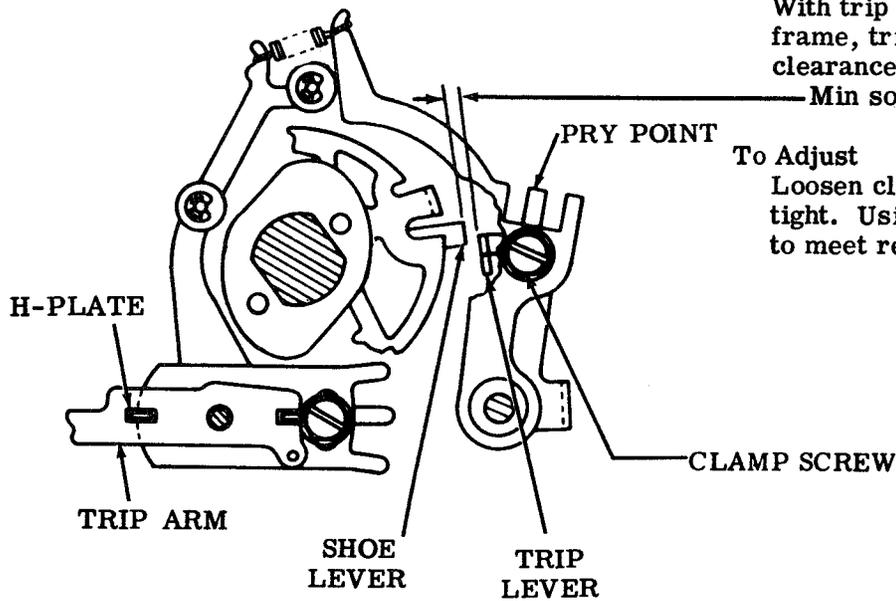
2.11 Reset Mechanism (continued)

TRIP LEVER

To Check
Trip keyboard.

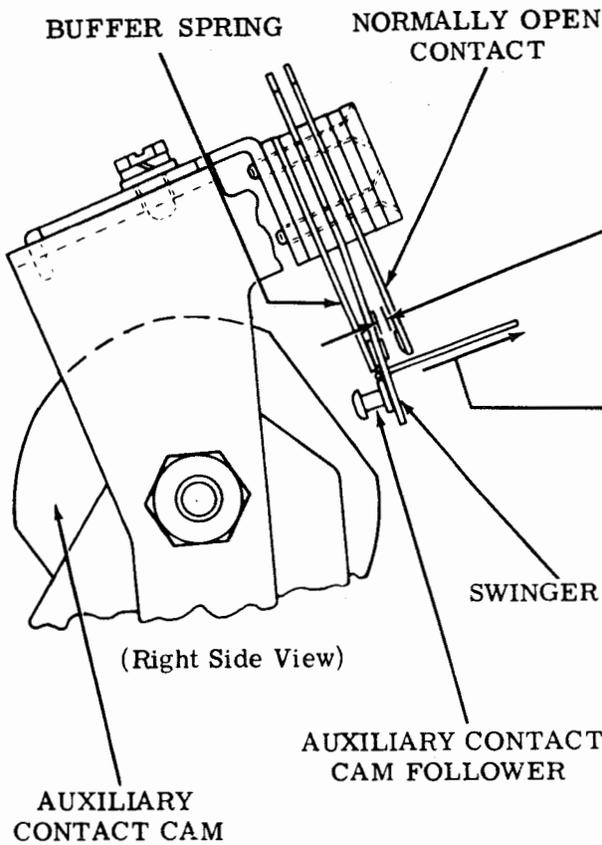
Requirement
With trip arm at top of slot in keyboard
frame, trip lever and shoe lever
clearance should be
Min some---Max 0.025 inch

To Adjust
Loosen clamp screw on trip lever friction
tight. Using pry point, position trip lever
to meet requirement. Tighten clamp screw.



(Right Side View)

2.12 Reset Mechanism (continued)



AUXILIARY CONTACT (UNOPERATED)

To Check

Auxiliary contact cam follower free from auxiliary contact cam.

(1) Requirement

Min 0.010 inch---Max 0.016 inch between swinger contact and normally open contact.

To Adjust

Bend normally open contact.

(2) Requirement

Min 20 grams---Max 35 grams to start swinger contact moving.

To Adjust

Bend swinger.

AUXILIARY CONTACT (OPERATED)

To Check

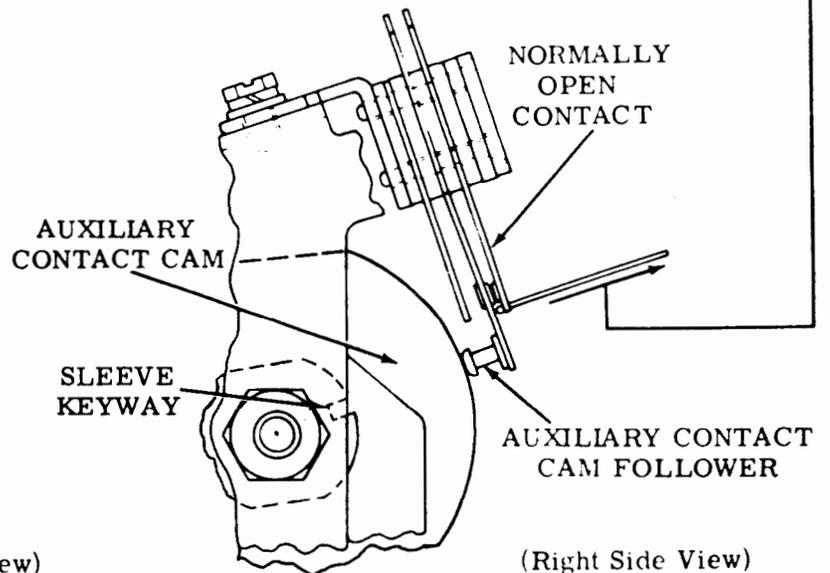
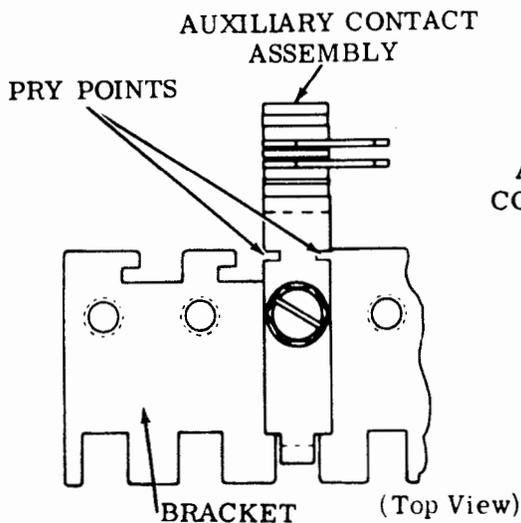
Position auxiliary contact cam follower on high part of auxiliary contact cam with sleeve keyway in line with contact cam follower.

Requirement

Min 30 grams---Max 45 grams to start normally open contact moving.

To Adjust

Loosen clamp screw friction tight. Insert screwdriver between pry points and position auxiliary contact assembly to meet requirement. Tighten clamp screw.



2.13 Control Panel Mechanism

There are no adjustments required for the control panel itself. However, some installation type adjustments are required when the typing unit cover and pan are mated with the typing unit. These adjustments are given in Section 574-326-703TC, 37 Typing Unit Cover and Pan.

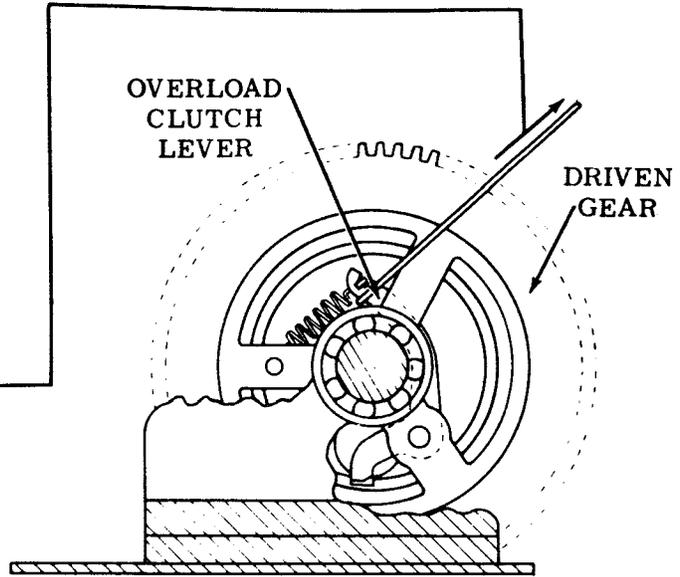
2.14 Base Mechanisms

INTERMEDIATE GEAR ASSEMBLY OVERLOAD CLUTCH SPRING

Note: Typing unit must be removed to check the overload clutch spring tension.

To Check
Overload clutch lever in notch. Manually block driven gear to prevent its rotation.

Requirement
Min 40 oz---Max 64 oz
to start overload clutch lever moving.
Lever must not jump from notch at less than 64 ounces.

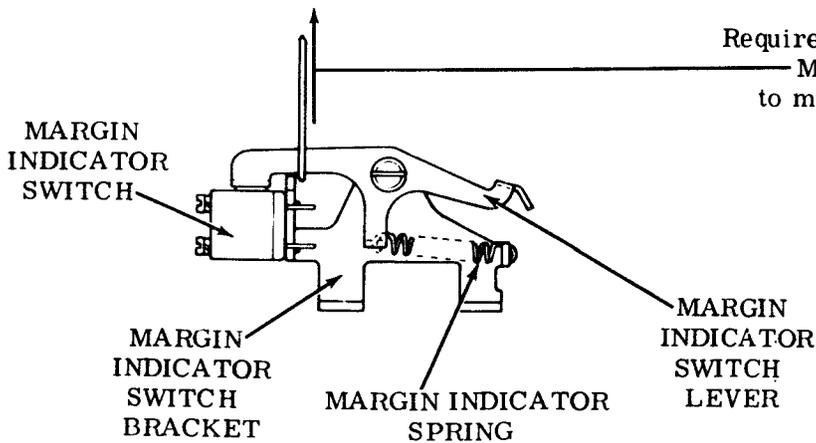


(Left Side View)

MARGIN INDICATOR SWITCH SPRING

To Check
Remove typing unit.

Requirement
Min 7 oz---Max 11 oz
to move lever free of pin.



(Front View)

2.15 Base Mechanisms (continued)

Note: These adjustments are installation or reassembly type adjustments and are required only when keyboard unit, typing unit, and motor unit are mated.

INTERMEDIATE DRIVING GEAR TO TYPING UNIT

Requirement

There should be a perceptible amount of backlash between typing unit driven gear and intermediate driving gear at the highest point of intermediate gear.

To Adjust

Loosen five motor unit mounting screws and rotate motor unit away from intermediate gear assembly. Loosen three intermediate gear bracket screws friction tight. Position entire intermediate gear assembly using adjusting slot at rear of bracket until perceptible amount of backlash exists. Tighten three intermediate gear bracket screws.

INTERMEDIATE DRIVEN GEAR TO MOTOR UNIT

To Check

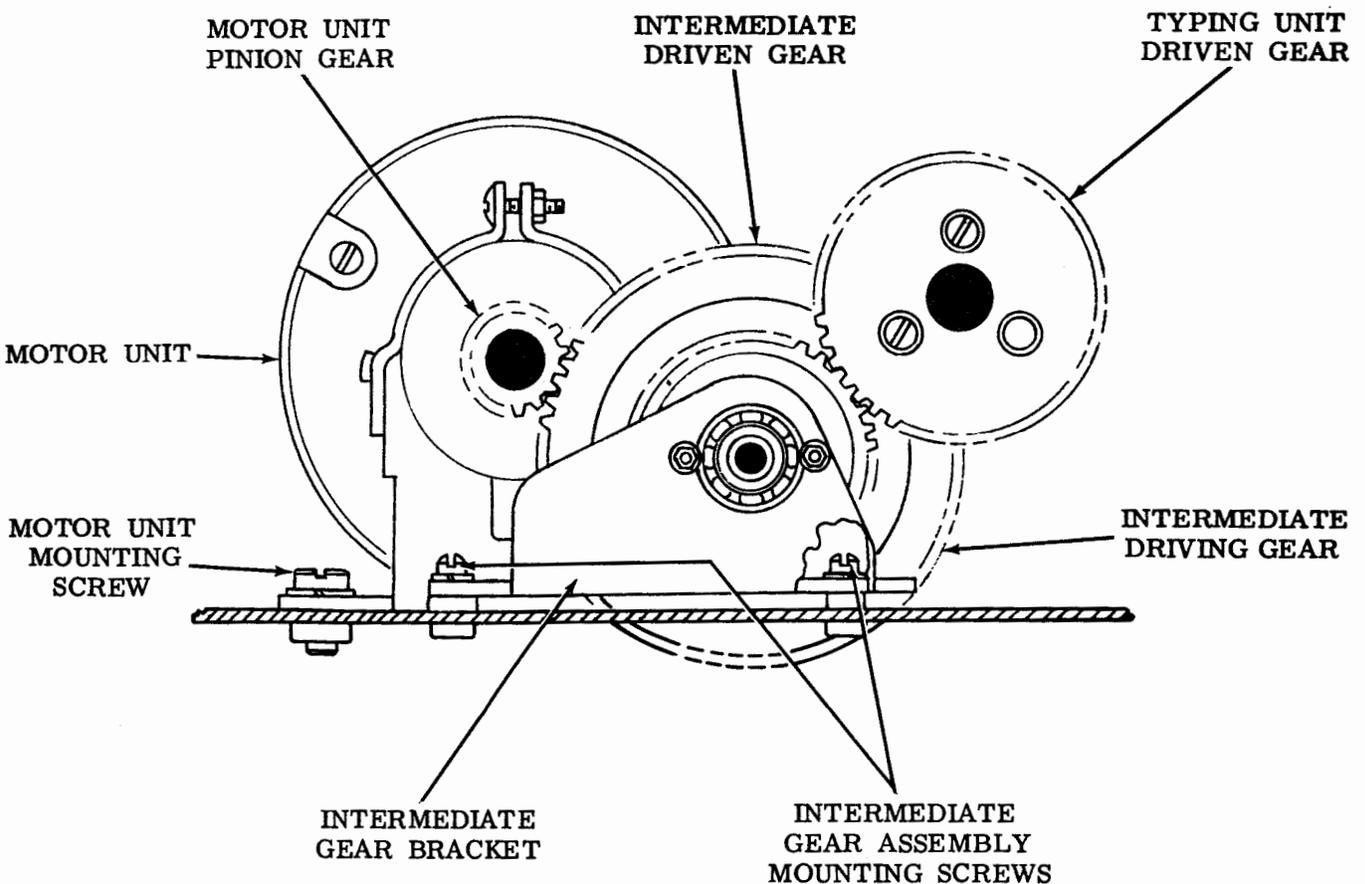
Hold intermediate driven gear and rotate motor unit fan.

Requirement

There should be a perceptible amount of backlash between motor unit pinion gear and intermediate driven gear at the highest point of intermediate gear.

To Adjust

With five motor unit mounting screws holding motor mounting plate friction tight, move motor unit away or toward intermediate gear until a perceptible amount of backlash exists. Tighten screws.





37 KEYBOARD UNIT

LUBRICATION

CONTENTS	PAGE
1. GENERAL	1
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BASE MECHANISMS	12
Intermediate gear assembly	12
Margin indicator switch	12
CONTROL PANEL MECHANISM	11
Control panel	11
KEYBOARD MECHANISM	3
Codebar sets	3
Contact wires	7
Downstop bar	4
Keylevers	4
Spacebar and space bail	5
Trip arm lever	7
Universal codebar	6
RESET MECHANISMS	8
Auxiliary contact cam	8
Clutch	10
Clutch and stop arm shaft	9
Driven coupler and driving gear shaft	10
Main shaft and gears	9
Reset bail	10

mechanism. Following the procedures in this manner minimizes shifting and handling of the mechanisms.

1.03 Figures of each mechanism are used to show the lubrication area. The paragraph numbers on the figure refer to the specific lubrication points. References made to the front, top, rear, left, or right, apply to the keyboard unit in the position normally viewed by the operator.

1.04 Lubricate the keyboard unit before placing it in service and just prior to putting it in storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first) relubricate the keyboard unit to make certain that no mechanisms have been missed. Thereafter, lubricate the mechanisms according to the following schedule:

100 wpm	2,000 hr or 9 mo*
150 wpm	1,500 hr or 6 mo*

* Whichever occurs first.

CAUTION: WHEN THE KEYBOARD UNIT IS FUNCTIONALLY UTILIZED, REMOVE POWER FROM EQUIPMENT BEFORE ANY LUBRICATION IS PERFORMED.

1. GENERAL

1.01 This section provides lubrication procedures for the late design, 11-contact 37 keyboard unit (Figure 1). It is reissued to incorporate engineering changes and comments which were received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. Refer to Section 574-321-701TC for lubrication procedures for early design, 28-contact units.

1.02 Lubrication of the keyboard unit is presented by mechanisms with the procedures arranged counterclockwise around the

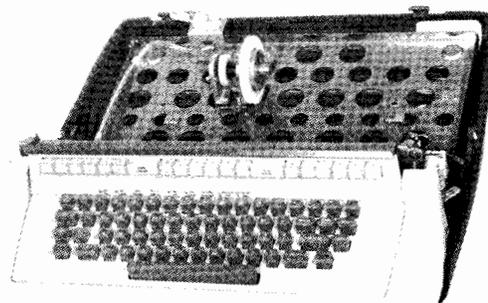


Figure 1 - 37 Keyboard Unit

SECTION 574-321-704TC

1.06 The following list of symbols applies to the specific lubrication instructions given in each paragraph:

SYMBOL

- D Keep dry, no lubricant permitted.
- O Oil with KS7470 oil as instructed.
- G Apply KS7471 grease.
- L Apply Lubriplate (TP108805).

Note: In general, the symbols indicate the type of lubricant. Quantity of lubricant is normally given with the text associated with specific lubrication instructions. An exception to this method is where the exact number of drops of oil is specified. For example, O1, O2, O3, etc refer to 1, 2, 3 etc drops of oil.

1.07 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts,

only a single drop of oil should be applied so that the oil remains on the part and does not run off.

Note: Excessive oil tends to creep onto contacts and wiring insulation where it has a harmful effect.

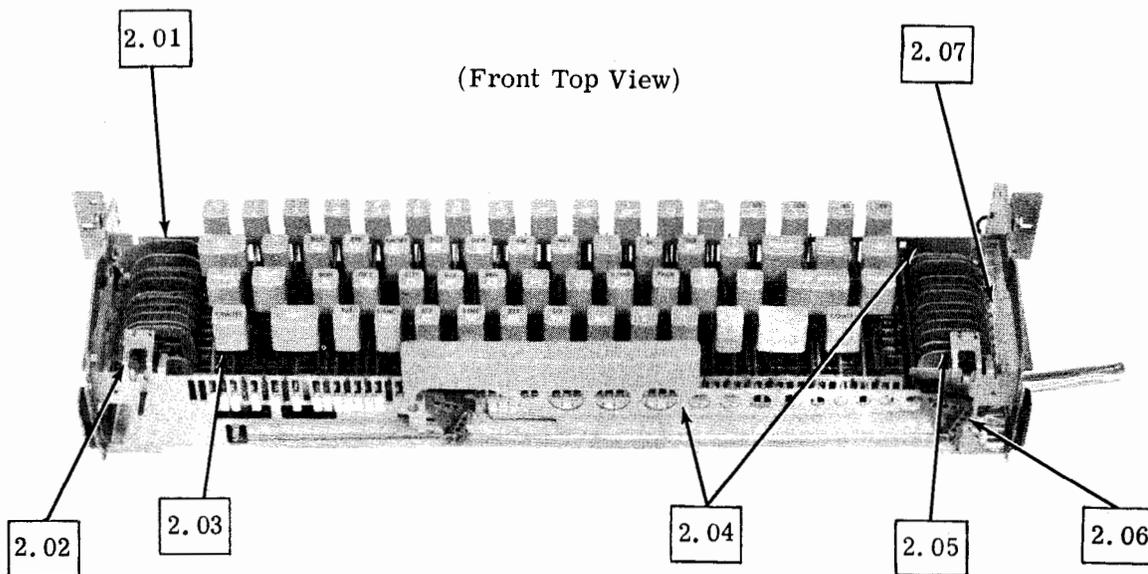
1.08 In general, oil should be used in such locations as hollow shafts, wicks, and in most locations where parts rub, slide, or move with respect to each other. Grease should be used on gear teeth and points of heavy pressure. Overlubrication which would allow oil to drip or grease to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

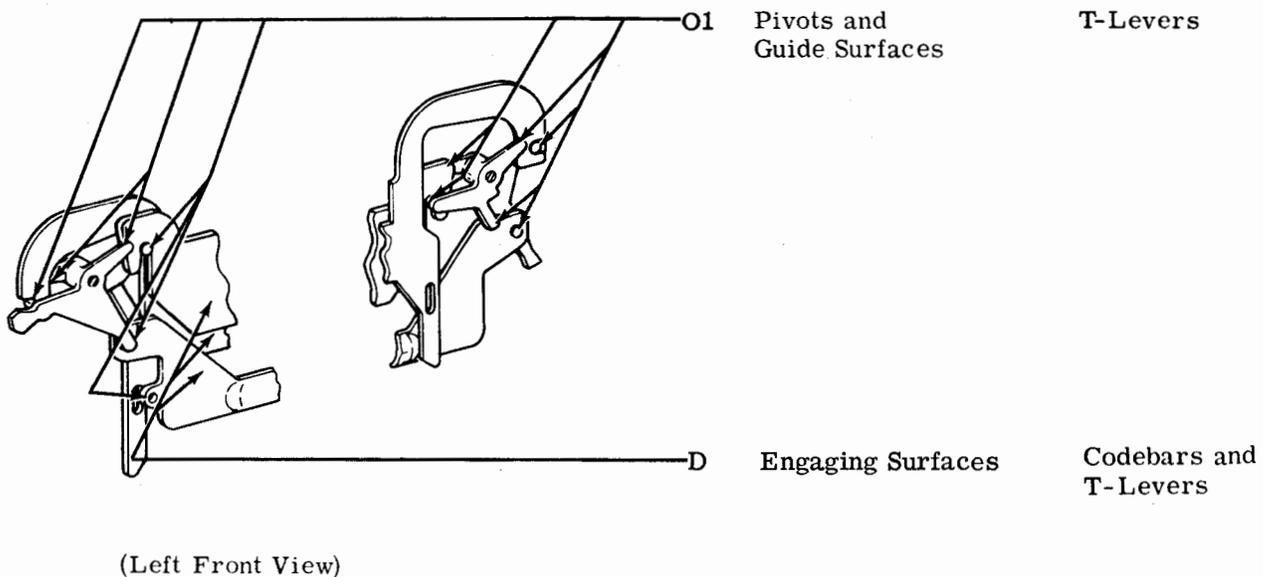
1.09 To remove the keyboard unit for lubrication, refer to Section 591-801-702TC.

2. BASIC UNIT

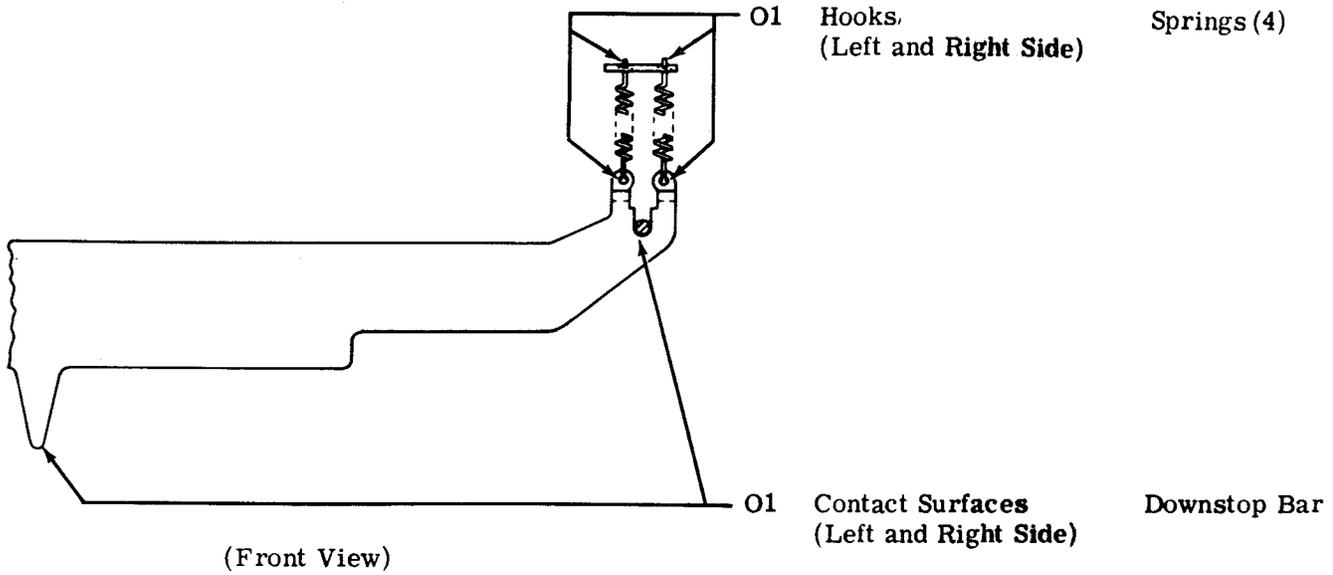
KEYBOARD MECHANISM



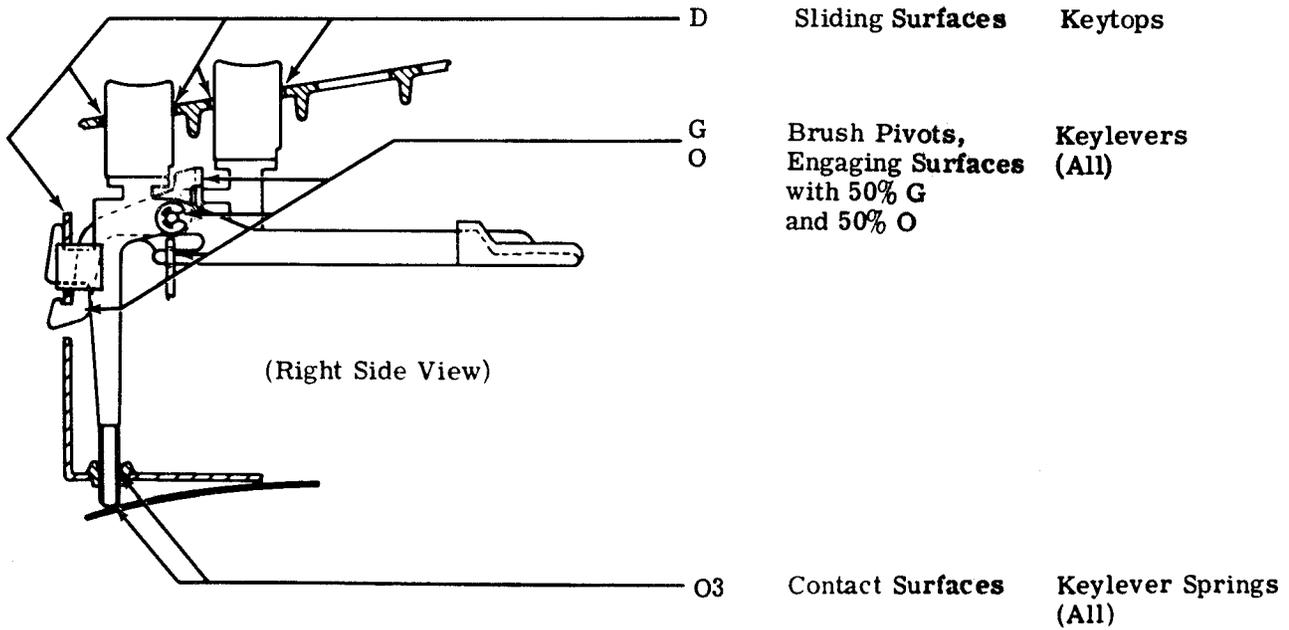
2.01 Codebar Sets



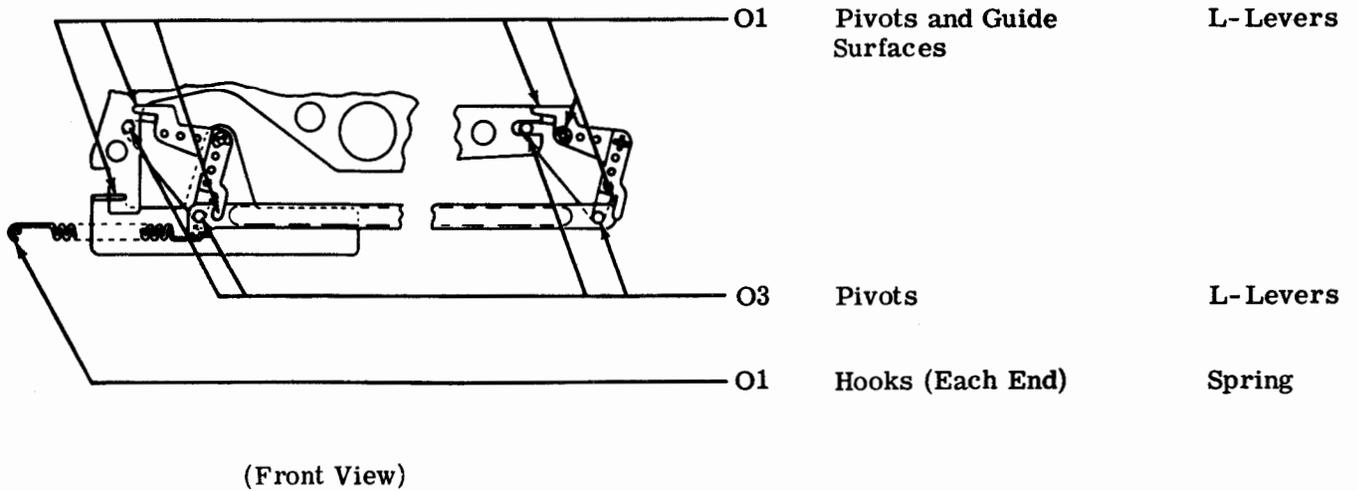
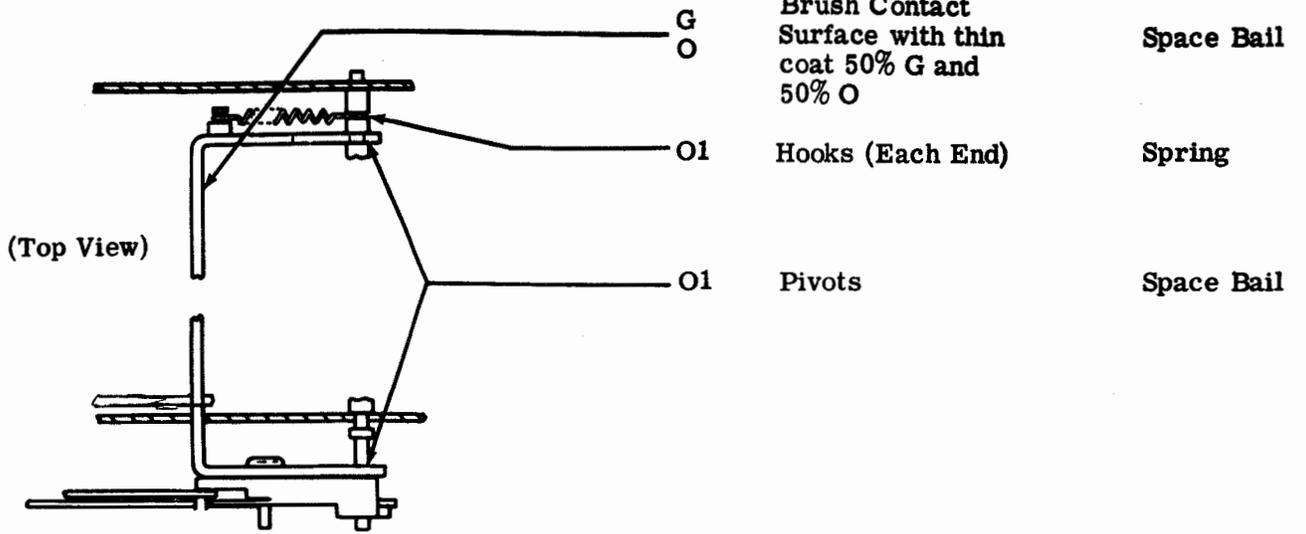
2.02 Downstop Bar



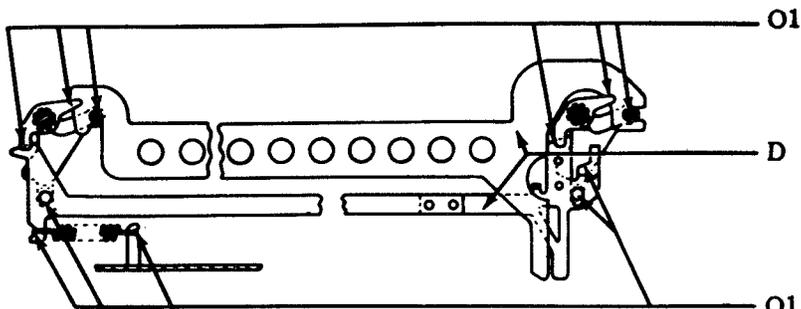
2.03 Keylevers



2.04 Spacebar and Space Bail

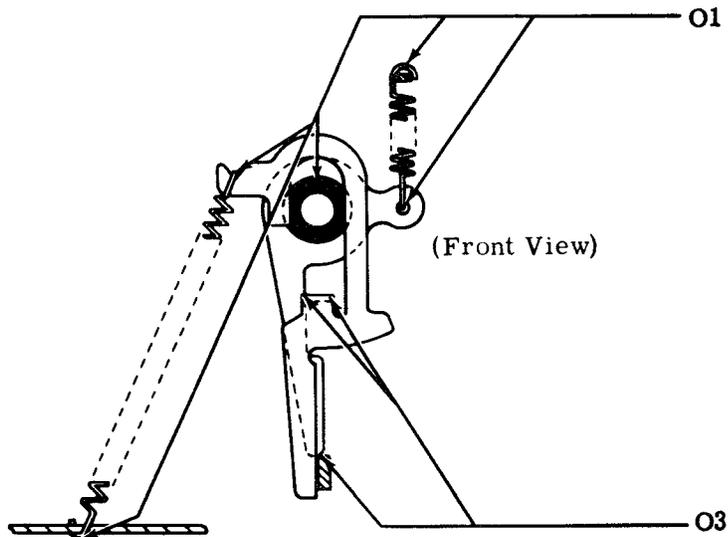


2.05 Universal Codebar



(Front View)

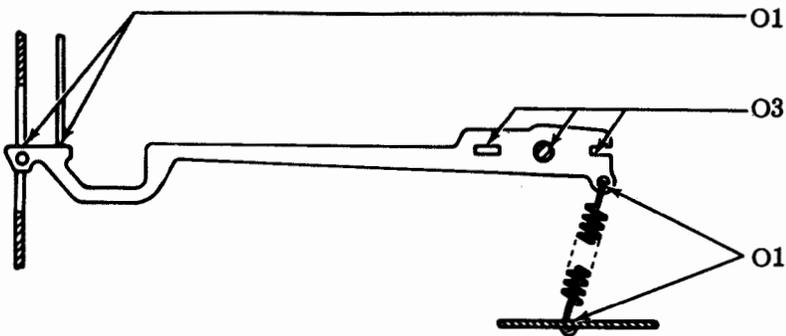
- O1 Pivots and Guide Surfaces T-Levers
- D Surfaces (Both Sides) Codebar, Tie Link
- O1 Engaging Surface, Pivots, Hooks Tie Link, T-Levers, Spring



(Front View)

- O1 Hooks, Pivots Springs, Latchlever, Nonrepeat Lever
- O3 Engaging Surfaces Latchlever, Nonrepeat Lever

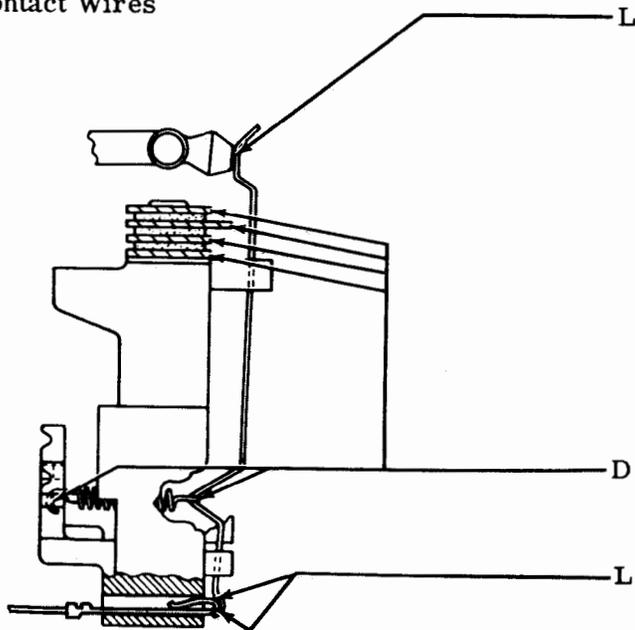
2.06 Trip Arm Lever



- O1 Engaging Surface Trip Arm
- O3 Pivot, Engaging Surfaces Trip Arm Post, H-Plate (Right Side Only)
- O1 Hooks Spring

(Right Side View)

2.07 Contact Wires



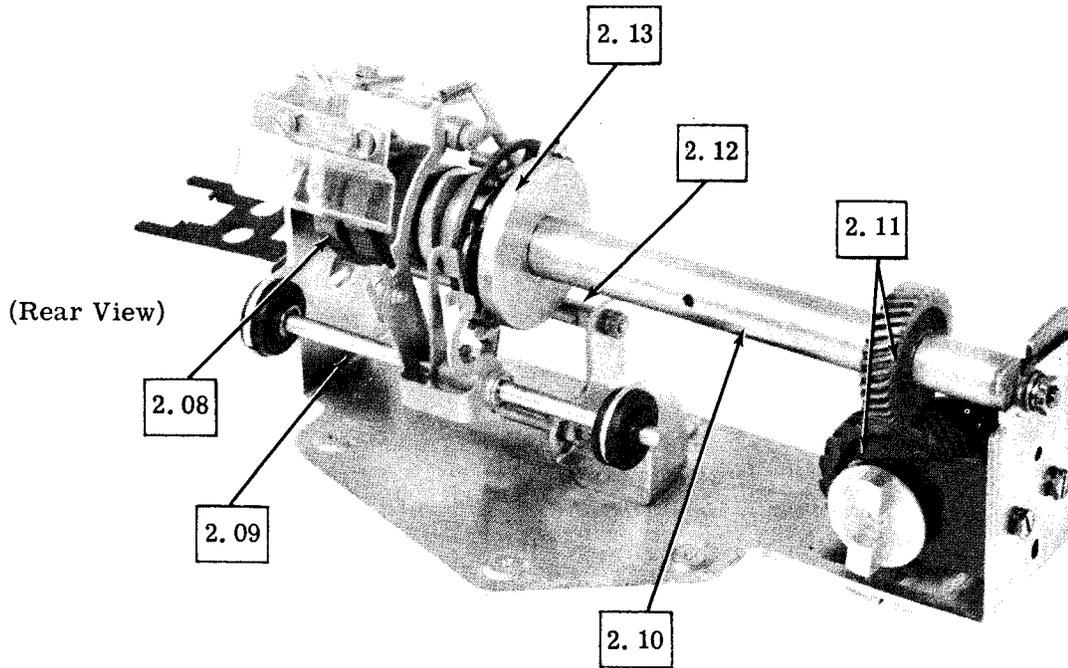
- L Thin Coat on engaging surface on disassembly and reassembly of Contact Mechanism T-Levers

CAUTION: DO NOT CLEAN CONTACT BLOCK WITH ALCOHOL, MINERAL SPIRITS, OR OTHER SOLVENTS. DO NOT USE A BURNISHING TOOL TO CLEAN CONTACTS; ALWAYS CLEAN GOLD PLATED CONTACTS USING TWILL CLOTH.

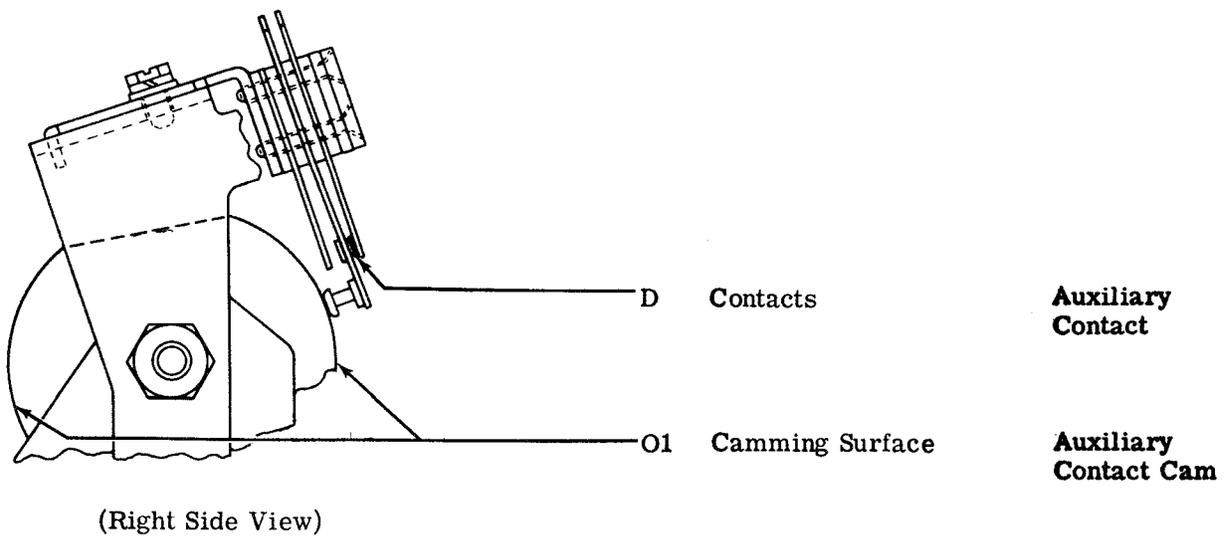
- D Contact Surfaces Contact Wires, Springs
- L Pivot Terminal Contact Wires

(Right Front View)

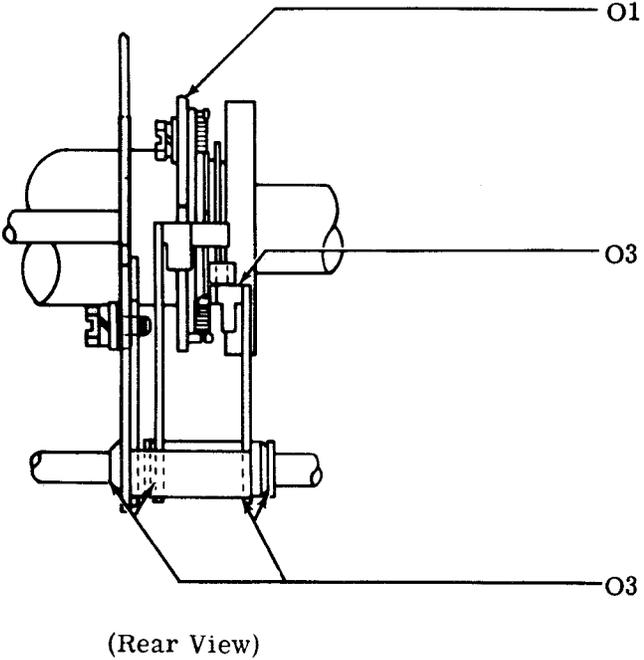
RESET MECHANISM



2.08 Auxiliary Contact Cam

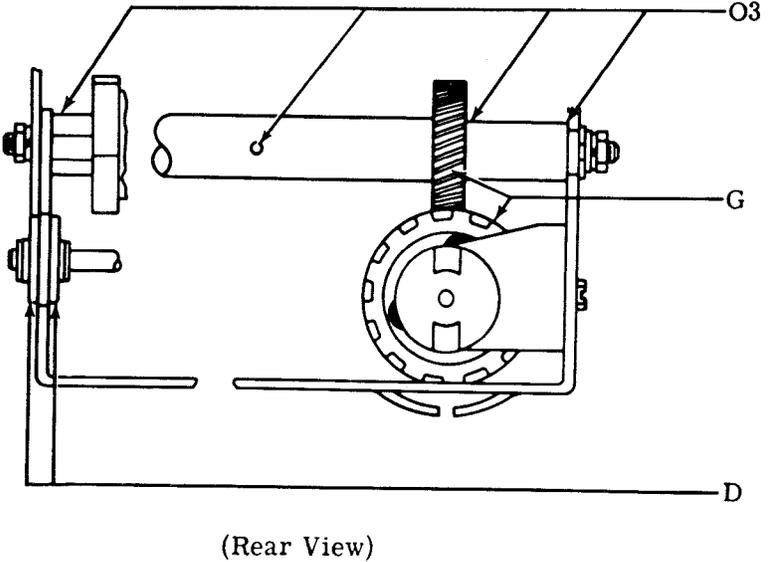


2.09 Clutch and Stop Arm Shaft



- O1 Camming Surface Clutch Disc
- O3 Engaging Surfaces Clutch Shoe and Stop Arm
- O3 Bearing Surfaces Stop Arm Shaft

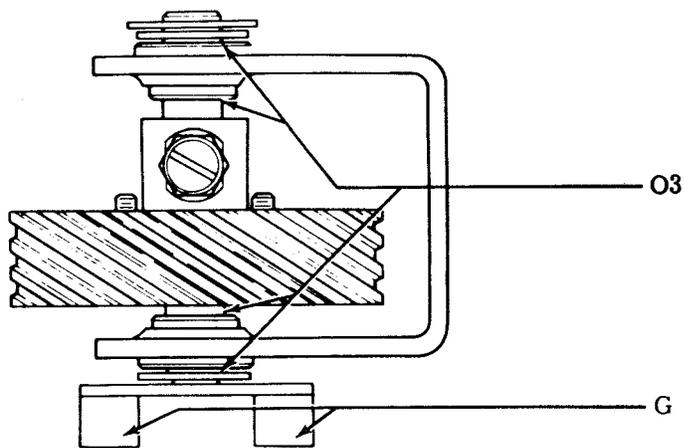
2.10 Main Shaft and Gears



- O3 Bearing Surfaces, Oil Hole Main Shaft
- G Teeth, Thin Coat Driving and Driven Gears
- D Grommets (4) Stop Arm Shaft

SECTION 574-321-704TC

2.11 Driven Coupler and Driving Gear Shaft



(Top View, Left End)

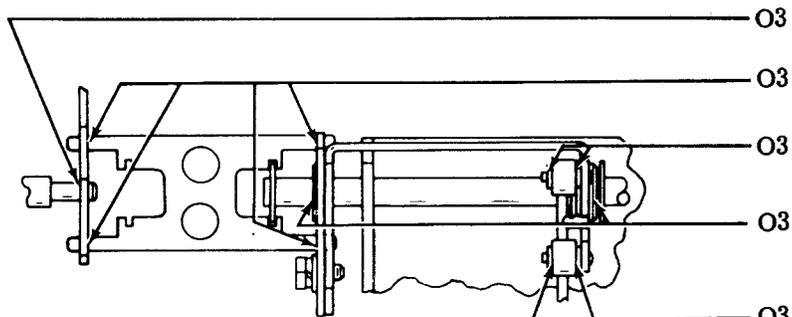
O3 Bearing Surfaces

Driving Gear Shaft

G Thin Coat on Engaging Surfaces

Driven Coupler

2.12 Reset Bail



(Top View, Right End)

O3 Bearing Surface

Trip Arm Post

O3 Engaging Surfaces

H-Plate

O3 Bearing Surfaces

Reset Bail Roller

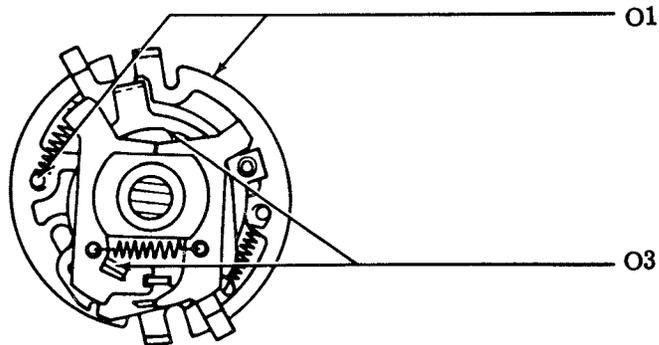
O3 Bearing Surfaces

Reset Bail Bearing Shaft

O3 Bearing Surfaces

Trip Roller

2.13 Clutch



(Internal View)

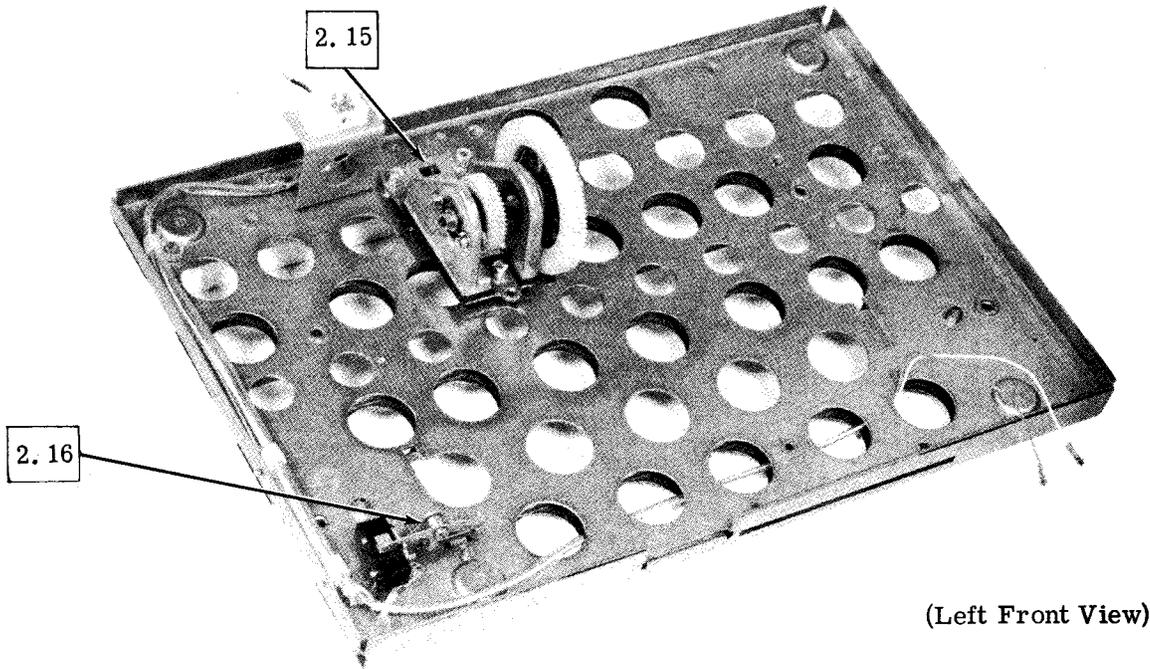
O1 Camming Surface, Hooks

Clutch Disc, Spring

O3 Surface, Wick

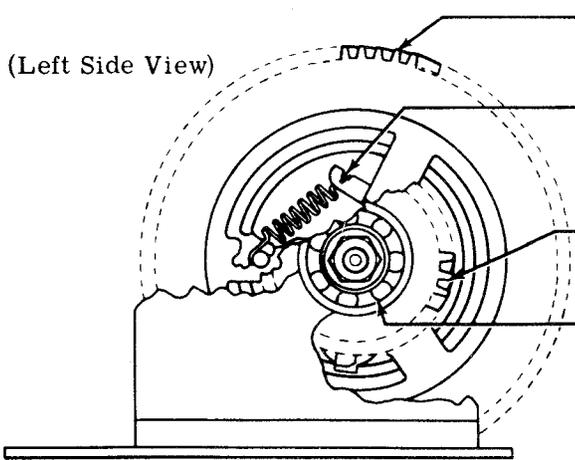
Internal Mechanism

BASE MECHANISMS



(Left Front View)

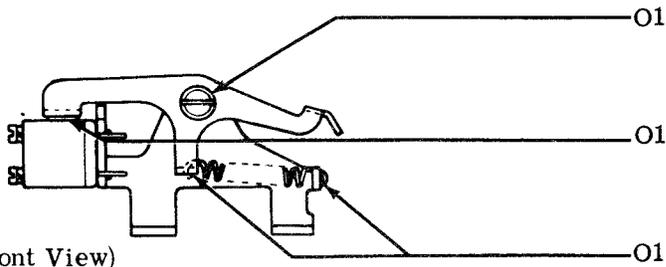
2.15 Intermediate Gear Assembly



(Left Side View)

- | | | |
|----|-------------------------------|--------------|
| G | Teeth, Thick Coat | Driven Gear |
| O1 | Hooks
(Each End) | Spring |
| G | Teeth, Thick Coat | Driving Gear |
| O1 | Ball Bearings
(2 Bearings) | Shaft |

2.16 Margin Indicator Switch



(Front View)

- | | | |
|----|------------------|-------------|
| O1 | Bearing Surface | Lever Pivot |
| O1 | Engaging Surface | Switch |
| O1 | Hooks | Spring |

37 KEYBOARD UNIT
DISASSEMBLY AND REASSEMBLY

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KEYBOARD HOUSING AND COVER ..	2
KEYBOARD	2
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INTERMEDIATE GEAR ASSEMBLY .	4

1. GENERAL

1.01 This section provides disassembly and reassembly information for the late design, 11-contact 37 keyboard unit (Figure 1). It is reissued to incorporate engineering changes and other comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted.

1.02 Photographs are used to identify the mechanisms and specific parts mentioned in the procedures. Refer to the appropriate parts section for drawings showing the location of all parts and mechanisms.

1.03 Refer to Section 570-005-800TC, Maintenance Tools, for information on the tools necessary to perform the disassembly and reassembly procedures.

1.04 References in the procedures to left or right, up or down, top or bottom, etc refer to the unit viewed with the keytops and controls facing the front (Figure 1).

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE UNIT.

1.05 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be

confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

1.06 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.07 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

2. DISASSEMBLY AND REASSEMBLY

CONTROL PANEL

2.01 To remove the control panel, remove the TP151630 screws from left and right sides and lift the panel out (Figures 2 and 4).

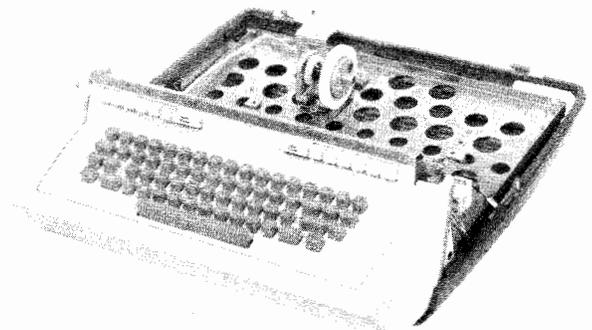


Figure 1 - 37 Keyboard Unit

SECTION 574-321-705TC

2.02 To replace the control panel, reverse the removal procedure.

KEYBOARD HOUSING AND COVER

2.03 To remove the TP324035 keyboard housing, remove the two TP151631 screws (one on each side) and slide the keyboard housing forward (Figures 2 and 4).

2.04 To remove the TP315190 cover, proceed as follows:

(1) Pull the tab on the front of the TP315190 cover forward and remove it from the post.

(2) Slide the TP315190 cover toward the front while rotating the cover up and over keytops.

2.05 To assemble the keyboard housing and cover, reverse the removal procedure.

KEYBOARD

2.06 To remove the keyboard from the base assembly, proceed as follows (Figures 2 to 5):

(1) Loosen the four keyboard mounting screws (two on each side).

Note: Support the keyboard to prevent its falling when these screws are removed.

(2) Support the keyboard and remove the screws.

(3) Slowly lift the keyboard up and to the right side to disengage the TP315296 H-plate on the reset mechanism (or remove the TP119653 retaining ring on the H-plate and move the H-plate to the left).

(4) Refer to 2.08 through 2.10 for keyboard disassembly instructions.

2.07 To replace the keyboard, proceed as follows:

(1) Mount the keyboard to the base pan.

(2) Observe that the TP315296 H-plate on the reset mechanism engages the keyboard trip lever mechanism. (Install the TP315296 retaining if it was removed.)

(3) Secure the keyboard in place with its four mounting screws.

2.08 To remove the keytops and keylevers, proceed as follows:

Note: Before removing the SHIFT or CONTROL keylevers, remove their respective springs from the end brackets.

(1) Remove TP315190 keyboard cover (2.04).

(2) Remove the keylevers as required.

(3) Remove the keytops as required.

2.09 To remove the TP315370 contact block and TP324407 cable assembly, proceed as follows:

(1) Remove TP315190 keyboard cover (2.04).

(2) Pull the tab on the front of the keytop guide forward and remove it from the post.

(3) Rotate the TP315190 cover toward the rear and remove it.

(4) Remove the TP315484 trip arm spring.

(5) Remove the TP324414 right end bracket assembly by squeezing the frame lightly in rear assembly area or by applying slight pressure with a screwdriver inserted in the frame hole.

(6) Remove the two TP180031 compression springs from the TP315370 contact block.

(7) Remove T-lever guide from right side of the unit.

(8) Remove the contact wires by detaching their springs.

(9) Remove the TP315370 contact block and TP324407 cable assembly.

2.10 If further disassembly is required, proceed as follows to completely disassemble the keyboard.

(1) With keytops, keylevers, contact block, cable assembly and left and right end brackets removed, remove the spring from the space mechanism.

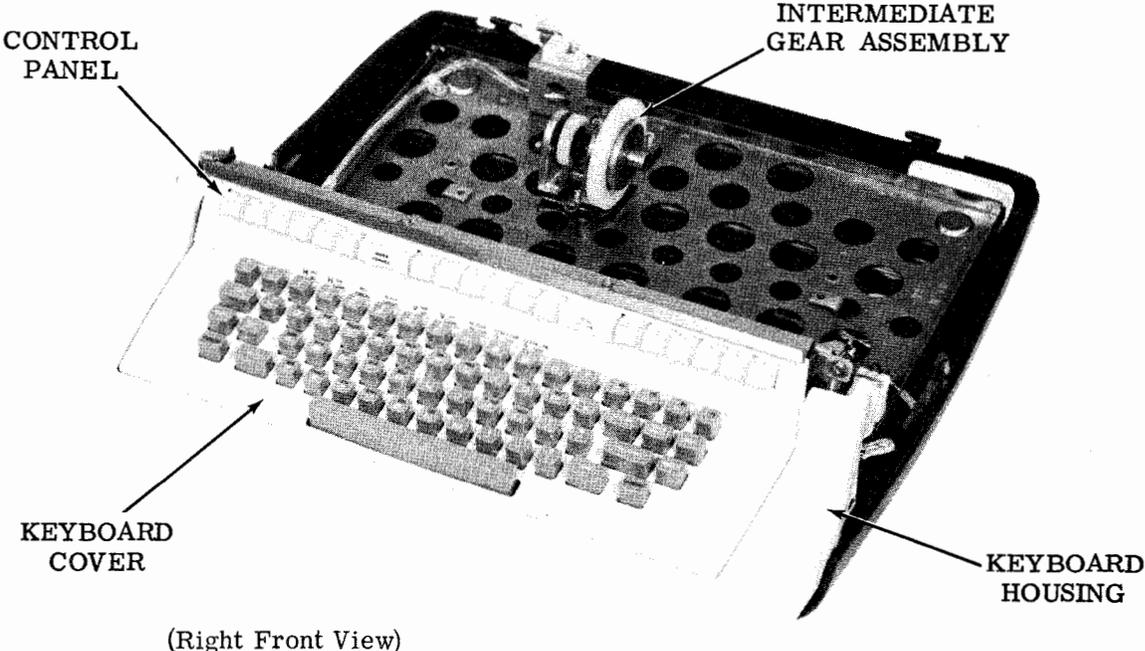


Figure 2 - 37 Keyboard Unit

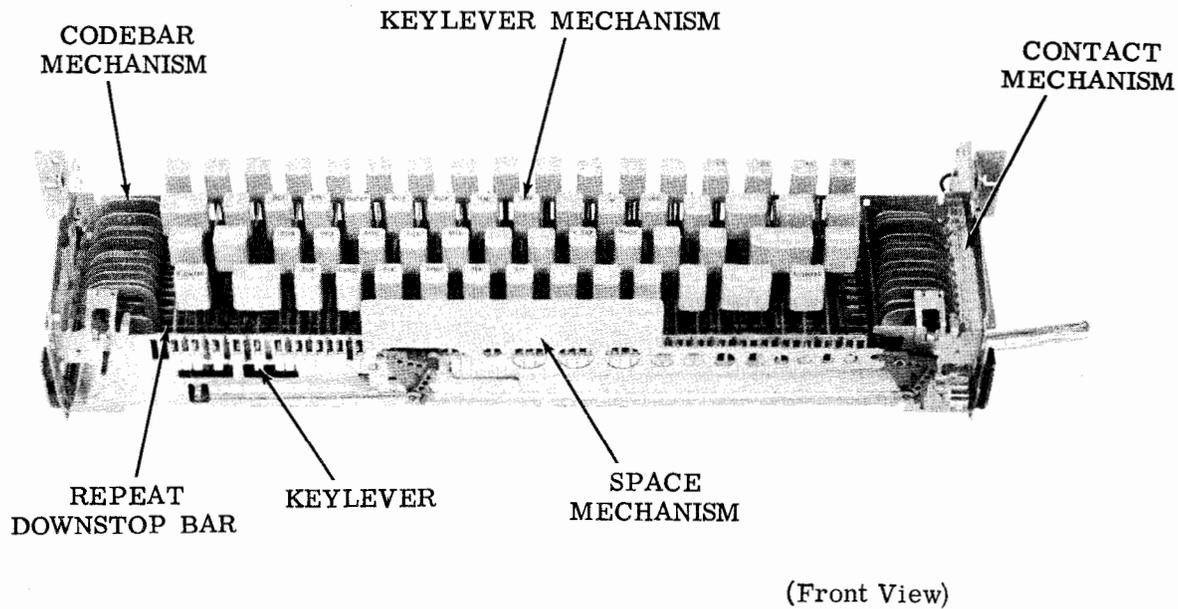


Figure 3 - Keyboard (Cover Removed)

SECTION 574-321-705TC

- (2) Remove retaining rings from the space mechanism. Remove the L-levers, space keylever and tie link as a unit by rotating the space mechanism clockwise and forward.
- (3) Rotate the L-levers until keylevers and tie link are separated.
- (4) Release and remove the TP110436 spring on the TP315487 space bail.
- (5) Remove the four TP315459 downstop springs.
- (6) Remove the TP315445 latchlever spring and TP121923 nonrepeat lever spring.
- (7) Remove the downstop spring brackets.
- (8) Remove the codebars (snap fit on small end).
- (9) Remove the universal TP315444 tie link spring from the frame.
- (10) Remove the TP315401 universal codebar (snap fit on small end).
- (11) Remove trip arm.
- (12) Remove trip arm guide (snap fit).
- (13) Remove T-lever shafts and T-lever assembly.
- (14) Remove TP324391 downstop bar.
- (15) Remove tie links, including the TP315493 universal tie link, by rotating T-levers until links are free.
- (16) Remove TP119651 retaining rings and the T-levers on the left side as required.
- (17) Remove the TP119651 retaining rings, T-levers, and trip mechanism bushing on right side as required.
- (18) Remove retaining rings, TP315398 non-repeat lever, washer, and latch from trip mechanism bushing as required.
- (19) Remove TP315199 buffer upstop in front of frame.
- (20) Remove the four TP315405 leaf springs from the underside of the frame.
- (21) Remove the two TP315273 bushing strips from the frame.

- 2.11 To assemble the keyboard, reverse the disassembly procedure.

RESET MECHANISM

- 2.12 To remove the TP315100 reset mechanism, proceed as follows (Figures 4 and 5):

- (1) Remove the TP315296 H-plate retaining ring and slide the H-plate out of the slots in the TP315399 keyboard trip arm lever and reset bail plate.
- (2) Remove the keyboard (2.06).
- (3) Disconnect the push-on cable terminals from the tabs on the auxiliary contacts.
- (4) Unscrew the three reset mechanism frame mounting screws.
- (5) Remove the reset mechanism by sliding it out.

- 2.13 Remove the TP315319 auxiliary contact bracket assembly by unscrewing the TP112626 shaft nut and removing the assembly.

- 2.14 To remove the driven gear clutch-sleeve-cam assembly, proceed as follows:

- (1) Remove the TP2605 clutch stop arm spring.
- (2) Loosen the TP112626 shaft nuts on each end of the shaft.
- (3) Dislodge the gear backlash plate and contact bracket from their locating bosses.
- (4) Lift the assembly from the frame.

- 2.15 Remove the driving gear-shaft-bracket assembly by unscrewing the two bracket mounting screws and removing the assembly.

- 2.16 To assemble the reset mechanism, reverse the disassembly procedures. Check that the H-plate is properly engaged with the keyboard trip lever mechanism.

INTERMEDIATE GEAR ASSEMBLY

- 2.17 Remove the intermediate gear assembly by removing the three TP104898 mounting screws (Figure 4).

- 2.18 Replace the intermediate gear by securing the mounting screws.

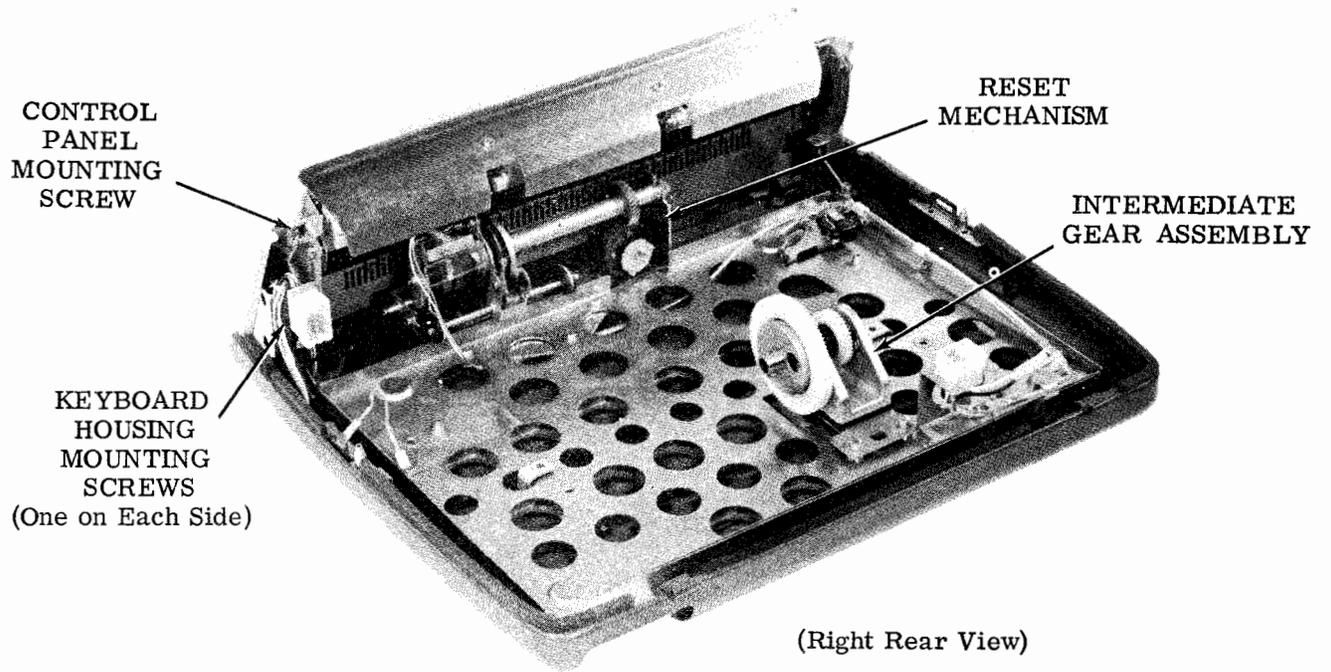


Figure 4 - Keyboard Unit

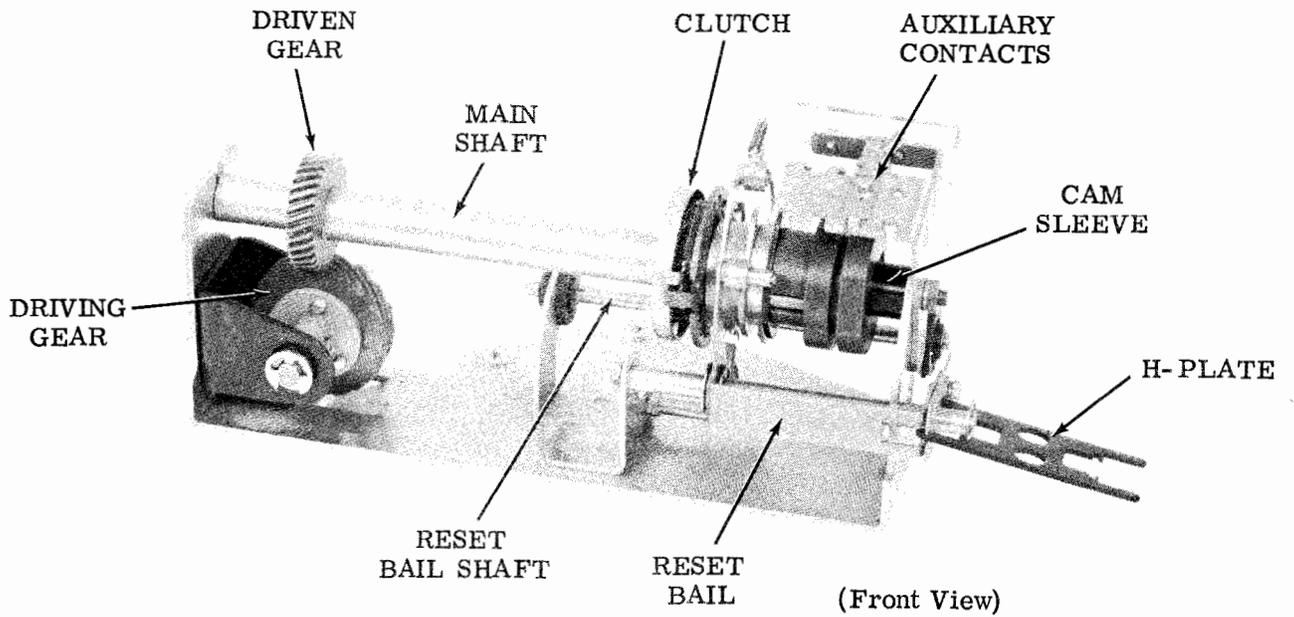


Figure 5 - Reset Mechanism



37 TELETYPEWRITER TABLES

ADJUSTMENTS

CONTENTS	PAGE
1. GENERAL.	1
2. BASIC UNIT	2
Left door latch.	3
Rear panel	3
Right door clearance.	2
Right door latch.	2

1. GENERAL

1.01 This section provides adjustment procedures for late design, front and rear loading 37 teletypewriter tables. The procedures apply to three basically similar tables having either a single or double compartment. This section is reissued to incorporate engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. Refer to Section 574-323-700TC for information on early design, rear loading tables.

1.02 The adjustment procedures are arranged in a sequence that should be followed if a complete readjustment of the table 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. If one adjustment is changed, related adjustments should be checked.

1.03 In the adjustment procedures, the location of clearances and position of parts are illustrated by line drawings. Requirements and procedures are presented in the several texts accompanying the line drawings. Tools necessary to maintain this equipment are illustrated in Section 570-005-800TC.

1.04 References to left or right, front or rear, top or bottom, etc, apply to the table in its normal position as viewed by the operator in front of the table (Figure 1).

1.05 When parts are removed to facilitate the making of an adjustment and subsequently replaced, check any adjustment which may have been affected by such removal and replacement of parts.

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.

CAUTION: WHEN THE TABLE IS FUNCTIONALLY UTILIZED WITH POWERED EQUIPMENT, REMOVE THE POWER BEFORE MAKING ANY ADJUSTMENTS.

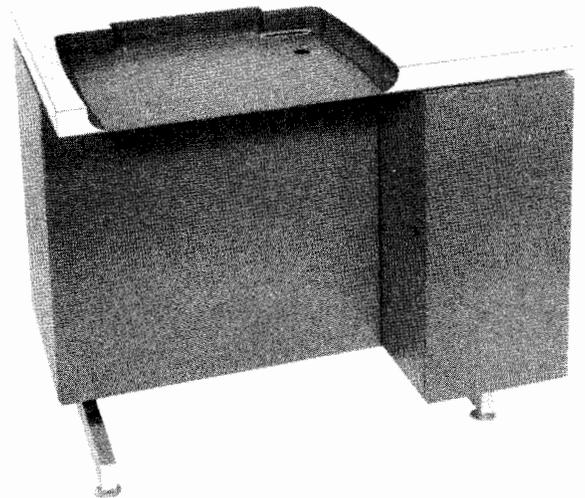
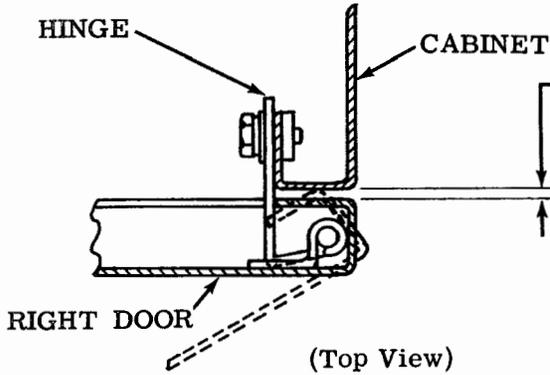


Figure 1 - Double Compartment Table

2. BASIC UNIT

2.01 Right Door

RIGHT DOOR CLEARANCE



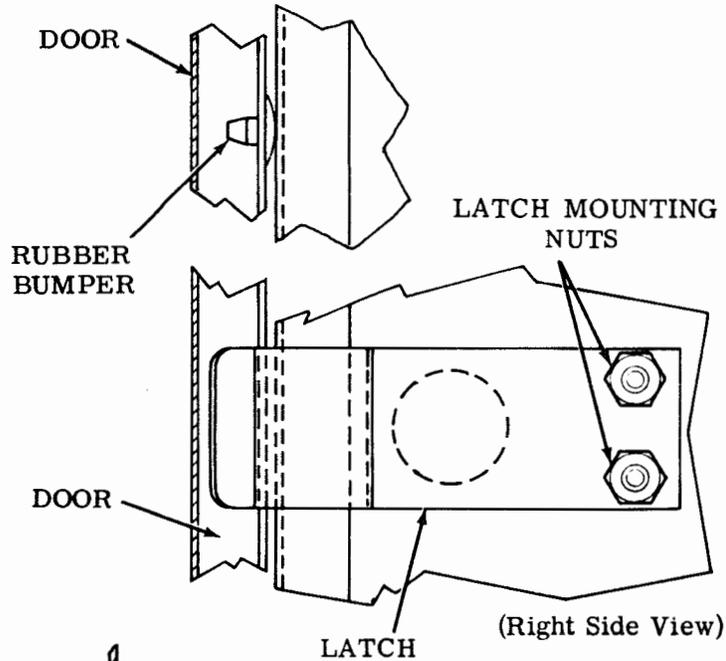
Requirement

Door should pivot freely on its hinges without binding or rubbing against nearest point of cabinet.

To Adjust

Position door with hinge mounting screws loosened friction tight. Tighten screws.

(Top View)



HINGE MOUNTING SCREWS

(Left Side View)

(Right Side View)

RIGHT DOOR LATCH

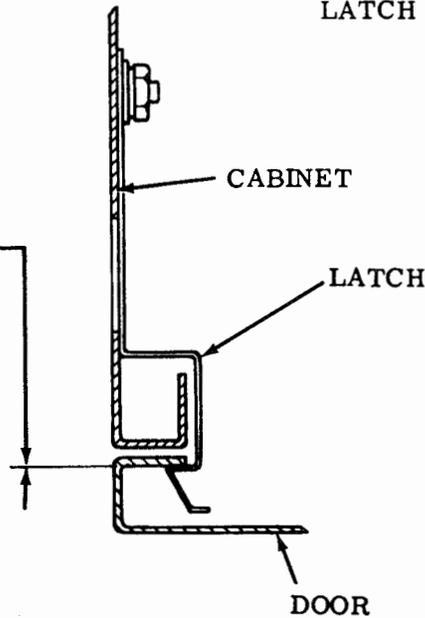
Requirement

With right door closed and both rubber bumpers contacting the cabinet, there should be

Min none clearance between latch and latching surface.

To Adjust

Position latch with latch mounting nuts loosened. Tighten nuts.



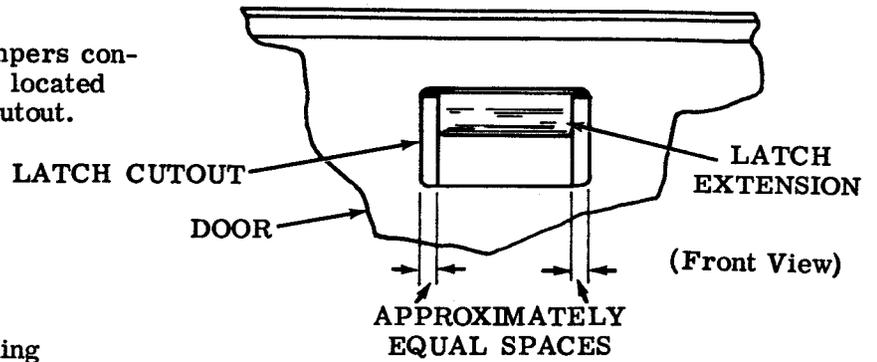
(Top View)

2.02 Left Door and Rear Panel

LEFT DOOR LATCH

To Check

Close left door so that rubber bumpers contact cabinet and latch extension is located approximately in center of latch cutout.



Requirement

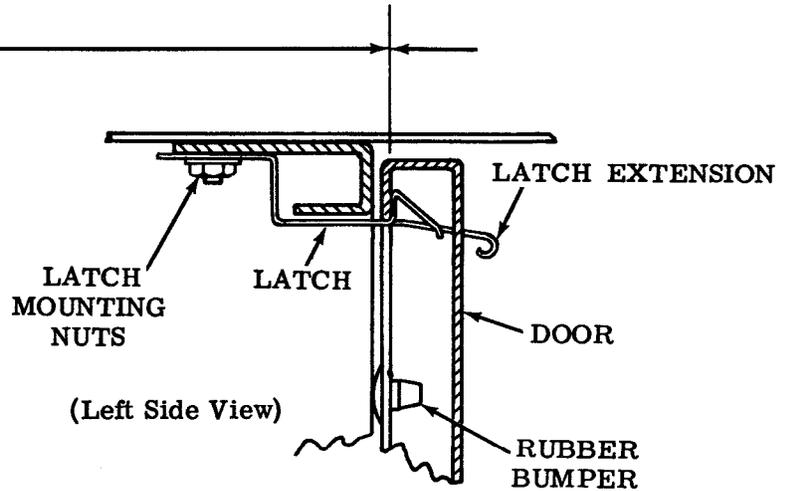
Clearance between latch and latching surface should be

Min none

Note: Slight compression of rubber bumpers is permissible.

To Adjust

Position latch with latch mounting nuts loosened. Tighten nuts.



REAR PANEL

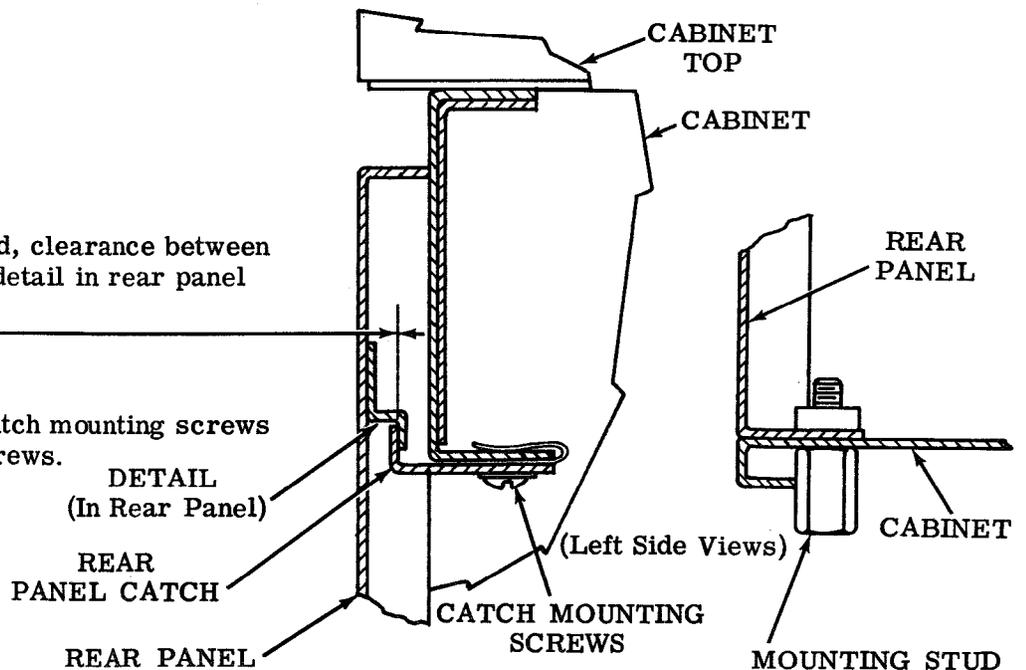
Requirement

With rear panel closed, clearance between rear panel catch and detail in rear panel should be

Min none

To Adjust

Position catch with catch mounting screws loosened. Tighten screws.





37 ANSWER-BACK UNIT

ADJUSTMENTS

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Contact Assembly	
Code drum	5
Contact block assembly spring	6
Contact gap-closed	7
Contact gap-open	6
Contact leaf tension	6
Feed Mechanism	
Armature stop	4
Check pawl spring	5
Feed bail spring	4
Feed pawl	3
Feed pawl back-stop	5
Feed pawl spring	4
Magnet assembly	3
3. ENCODING ANSWER-BACK DRUM	8

1. GENERAL

1.01 This section provides the mechanical requirements and adjustments for the late design Model 37 answer-back unit (Figure 1), which are required for field maintenance. The drum feed mechanism on the late design unit is located at the end of the code drum. The drum feed mechanism on the early design answer-back unit is located in the middle of the code drum.

1.02 The tools and test equipment required to check the clearances, spring tensions, and make the adjustments are not supplied with the equipment, but are listed separately in Section 570-005-800TC.

1.03 The adjustments are arranged in a sequence that should be followed if a complete readjustment of the unit is undertaken.

1.04 A complete adjusting procedure should be read before attempting to make the adjustments. The adjusting illustrations indicate the locations of clearances, positions of moving parts, and angles at which spring scales should be applied. After an adjustment is completed, tighten any nuts or screws that may have been loosened. Springs which do not meet requirements and for which no adjustment procedure is given should be discarded and replaced with new springs.

1.05 Reference made to front or rear, left or right, or top or bottom applies to the answer-back unit as viewed with the code drum and contacts to the front. In this position the magnet rests in the right rear corner.

1.06 For information concerning the removal of the answer-back unit from the electrical service unit, refer to removal and replacement of components Section 574-301-702TC for

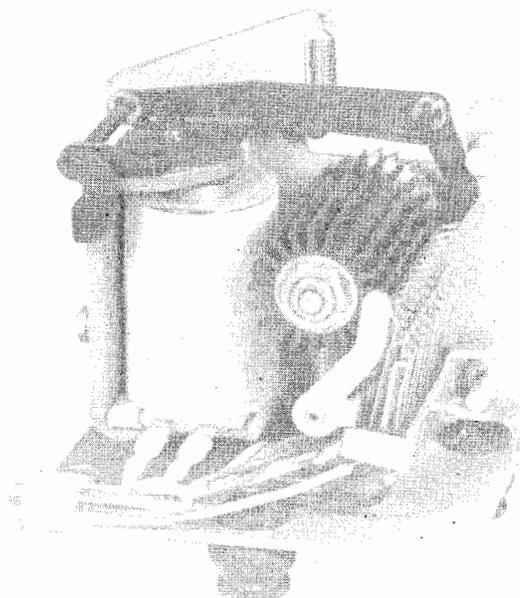


Figure 1 - 37 Answer-Back Unit

the KSR Sets and Section 574-302-702TC for the ASR Sets.

CAUTION: DISCONNECT ALL AC POWER CORDS BEFORE PERFORMING ANY PROCEDURE.

1.07 A tab is provided on the contact assembly to facilitate the removal and replacement of the code drum assembly. To remove the code drum assembly:

- (a) Deflect the tab downward to rotate the contacts away from the code drum assembly.
- (b) Slide the code drum assembly off its shaft.

To replace the code drum assembly:

- (a) Deflect the tab downward to rotate the contacts away from the code drum shaft.

(b) Slide the code drum assembly onto the shaft and rotate the code drum assembly to properly seat the key on the ratchet in the slot in the code drum assembly.

1.08 Use twill jean cloth to clean gold contacts. The code reading contacts should be cleaned after approximately 1500 hours of set operation or 6 months of service, whichever occurs first. Use the following procedure: (1) Deflect the tab on the contact assembly downward to open the contacts, (2) drop a strip of twill jean between the contacts, (3) close the contacts, (4) draw the twill jean between the contacts, and (5) reopen the contacts and withdraw the twill jean. This procedure will prevent small fibers from the edges of the twill jean strip from becoming lodged between the contacts.

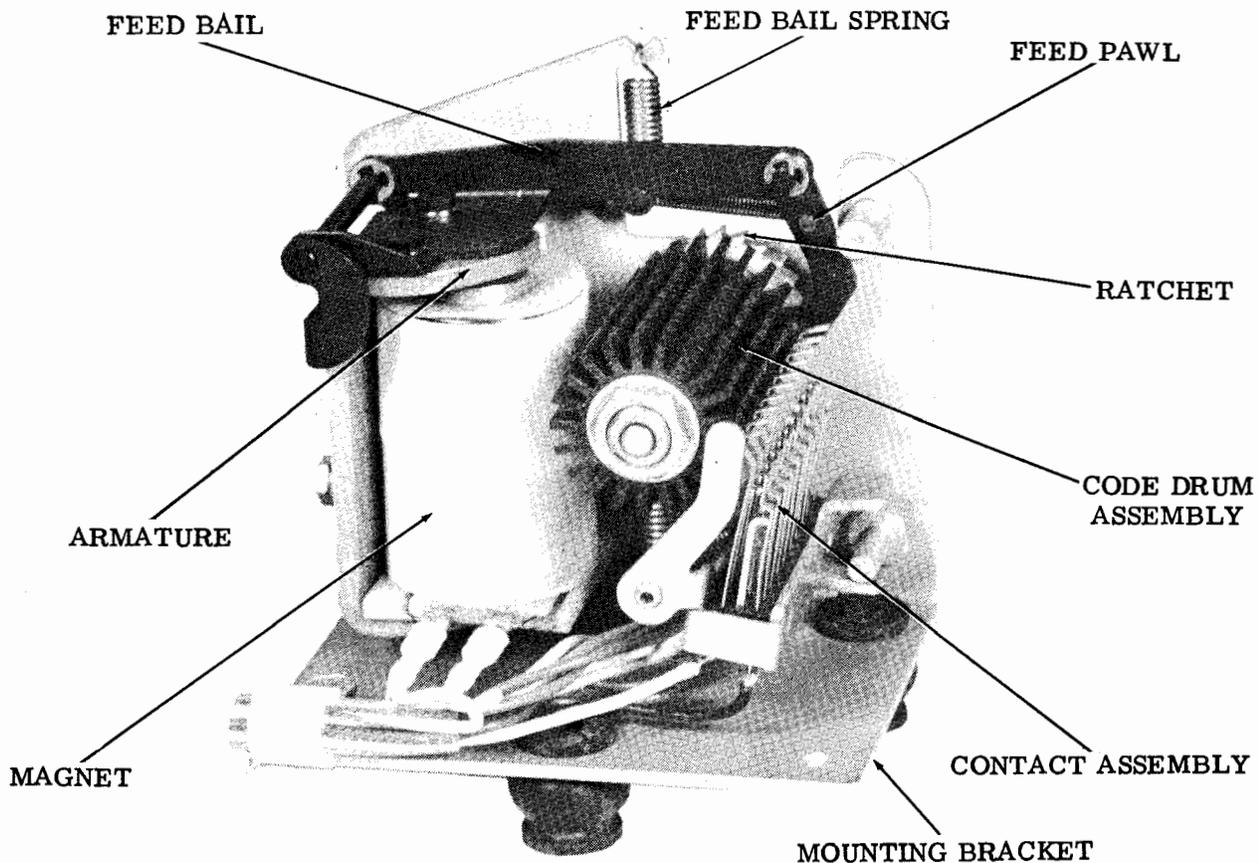
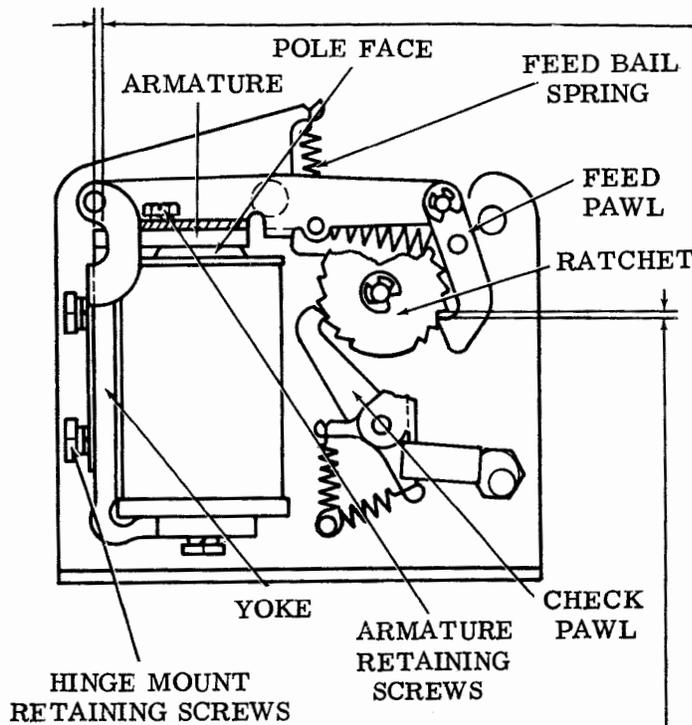


Figure 2 - 37 Answer-Back Unit

2. BASIC UNIT

2.01 Feed Mechanism



MAGNET ASSEMBLY

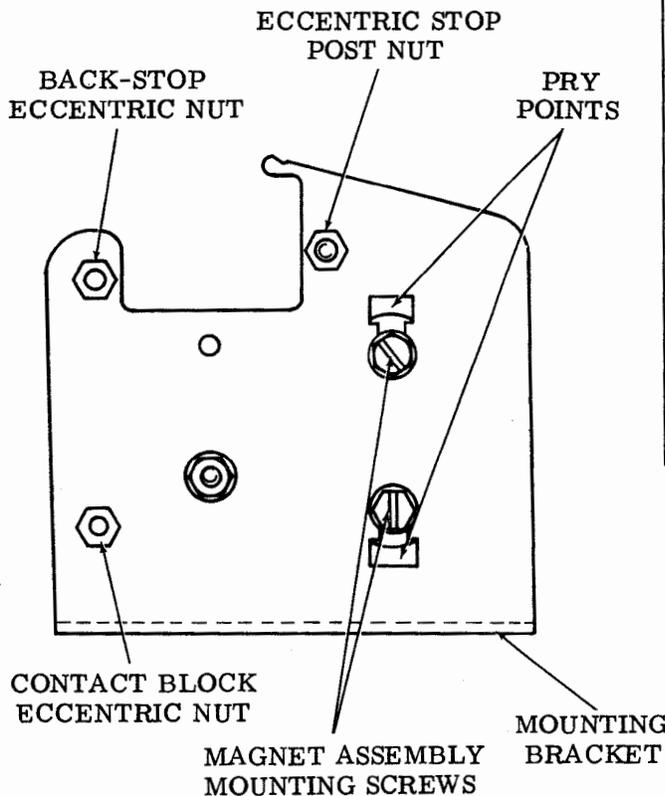
Note: This adjustment is made with the magnet assembly removed from the unit and need only be made if the assembly has been dismantled.

- (1) Requirement
Armature should be flat against the pole face when depressed as gauged by eye.

To Adjust
Loosen the two hinge mount retaining screws. Push the armature flat against the pole face and tighten the screws.

- (2) Requirement
With the armature depressed, it should be centrally positioned from left to right and flush to under flush to the rear edge of the yoke.

To Adjust
Loosen the two armature retaining screws. Position the armature so that it is centrally located and flush to under flush with rear edge of yoke. Tighten the screws. Check adjustment.



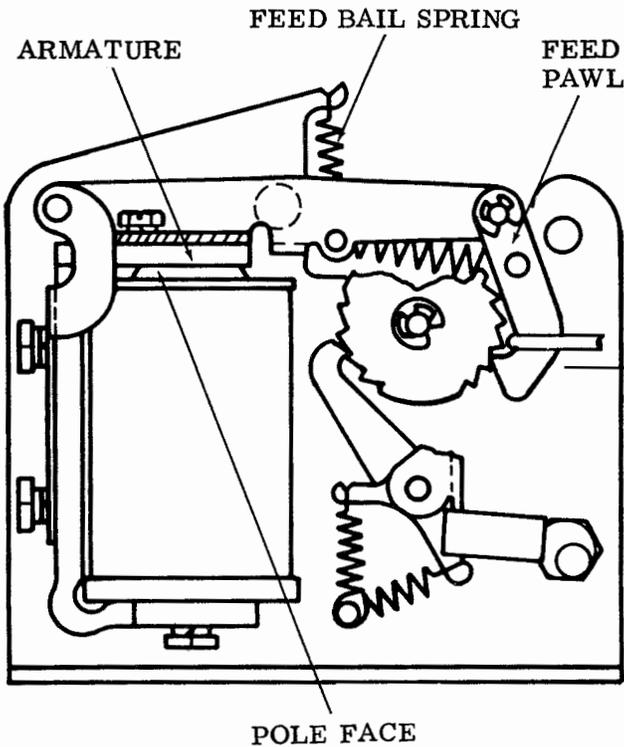
FEED PAWL

To Check
Remove feed bail spring. Hold armature flat against the pole face and take up clearance between the ratchet and check pawl.

Requirement
Clearance between feed pawl and ratchet should be
Min 0.020 inch---Max 0.030 inch.

To Adjust
With magnet assembly mounting screws friction tight and armature held flat against the pole face, position magnet assembly by use of pry points to meet requirement. Tighten mounting screws. Recheck adjustment at several points around the ratchet and refine if necessary. Replace feed bail spring.

2.02 Feed Mechanism (continued)



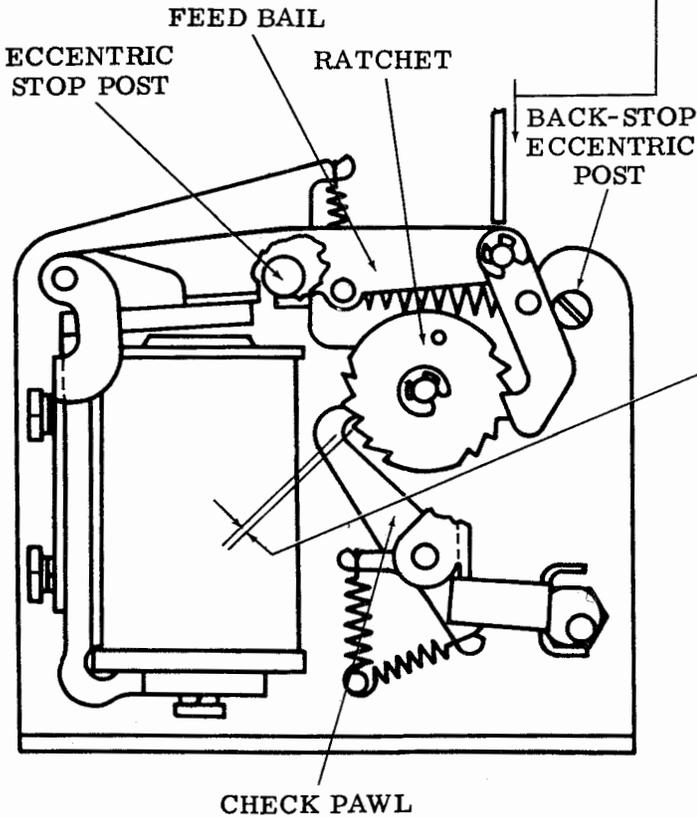
FEED PAWL SPRING

To Check
Hold armature flat against pole face.

Requirement
Min 3-1/4 oz---Max 4-1/4 oz
to start the feed pawl moving.

FEED BAIL SPRING

Requirement
Min 18 oz---Max 24 oz
to start the feed bail moving.



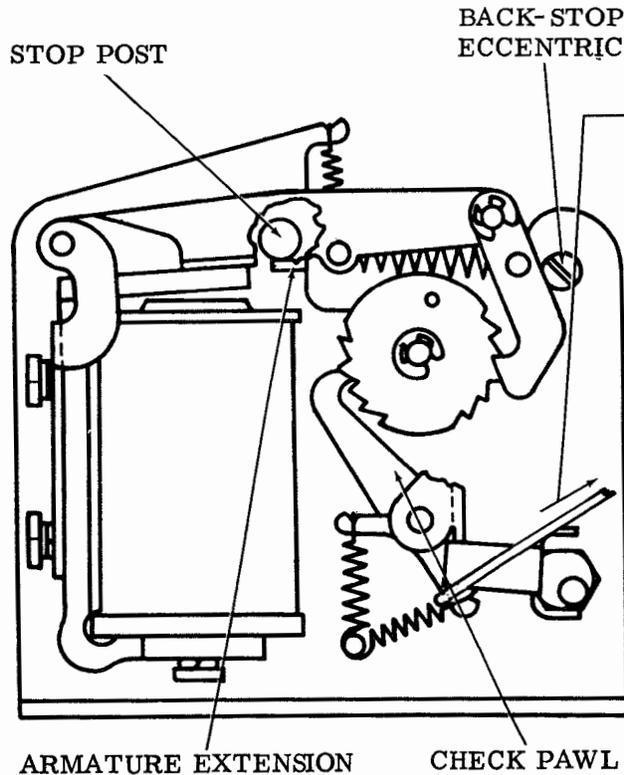
ARMATURE STOP

To Check
De-energize magnet and take up clearance
between feed pawl and ratchet.

Requirement
Clearance between check pawl and ratchet
should be
Min some---Max 0.008 inch

To Adjust
Loosen nut on back-stop eccentric post
friction tight and rotate post so that it does
not interfere with this adjustment. Then
loosen the nut on the eccentric stop post
friction tight. Take up clearance between
the feed pawl and the ratchet and rotate the
eccentric stop post to meet the requirement,
keeping the high part of the eccentric toward
the front of the unit. Tighten the nut.
Recheck adjustment at several points around
the ratchet and refine if necessary. Make
the FEED PAWL BACK-STOP adjustment.

2.03 Feed Mechanism (continued)



CHECK PAWL SPRING

Requirement

Min 2 oz--- Max 3 oz
to start the check pawl moving.

FEED PAWL BACK-STOP

To Check

De-energize magnet and hold armature extension against its stop post.

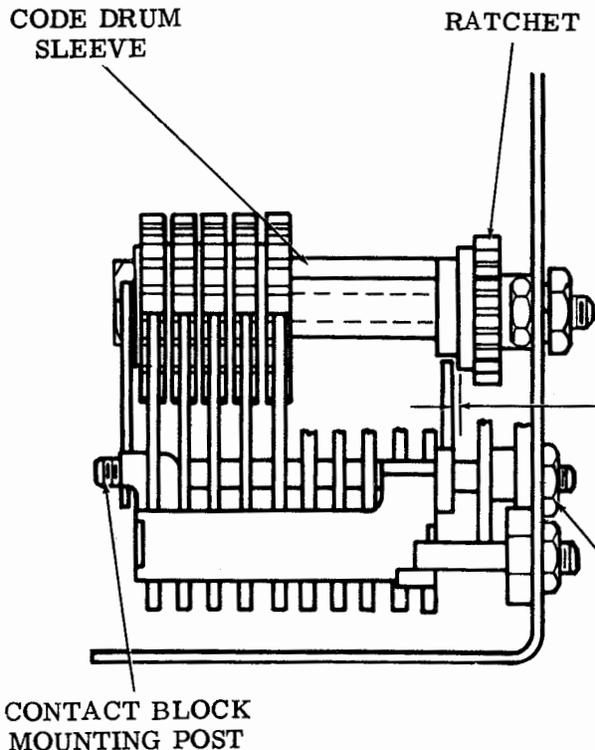
Requirement

There should be none to a barely perceptible amount of counter-clockwise rotation of the ratchet.

To Adjust

Loosen the nut on the back-stop eccentric post friction tight and rotate post to meet requirement, keeping the high part of the eccentric toward the bottom of the unit. Tighten the nut. Recheck adjustment at several points around the ratchet and refine if necessary.

2.04 Contact Assembly



CODE DRUM

To Check

Take up clearance between code drum sleeve and ratchet.

Requirement

Clearance between the contact block extension and the end flange on the code drum sleeve should be
Min 0.006 inch--- Max 0.012 inch

To Adjust

Loosen the nut on the contact block mounting post friction tight and rotate post with a hex wrench to meet requirement. Tighten the nut and recheck adjustment.

2.05 Contact Assembly (continued)

CONTACT BLOCK ASSEMBLY SPRING

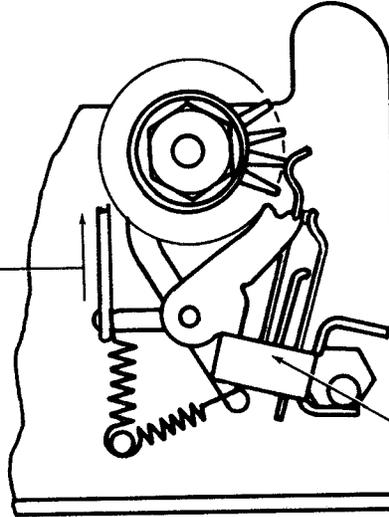
To Check

Remove the code drum.

Requirement

To start the contact block assembly moving, it should require

Min 3 lb---Max 6 lb



CONTACT BLOCK ASSEMBLY

CONTACT LEAF TENSION

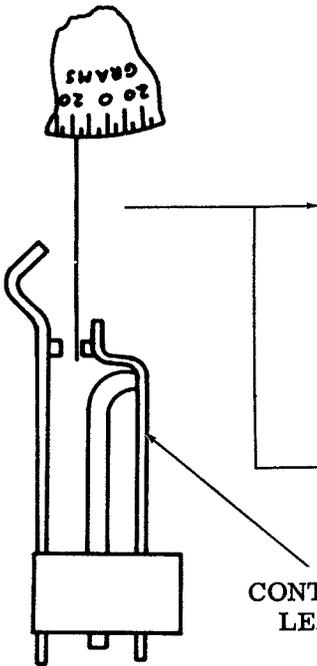
To Check

Remove the code drum.

Requirement

To just move the contact leaf it should require

Min 20 grams---Max 35 grams



CONTACT LEAF

To Adjust

Bend contact leaf with contact bending tool.

CONTACT GAP-OPEN

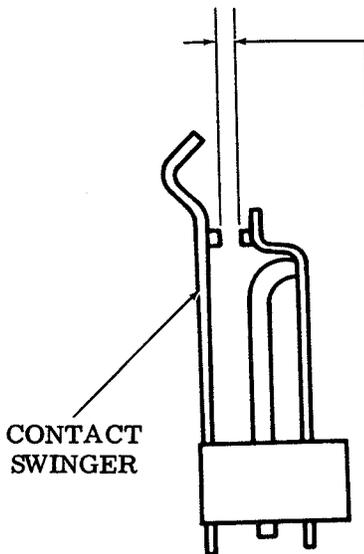
To Check

Remove code drum.

Requirement

Clearance between the contact swinger and the contact leaf should be

Min 0.035 inch---Max 0.060 inch

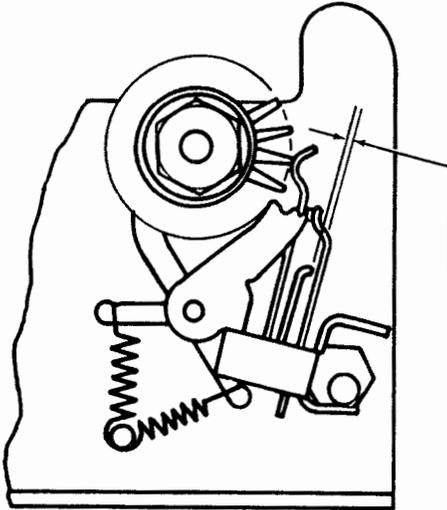


CONTACT SWINGER

To Adjust

Bend the contact swinger at its base with tool TP172060 with an X stamped on the handle.

2.06 Contact Assembly (continued)



CONTACT GAP-CLOSED

To Check

Contact swingers in mark condition or sensing a row of tines on the code drum.

Requirement

There should be a clearance of
— Min some---Max 0.020 inch
between the contact leaf and the
contact stiffener.

To Adjust

Loosen the contact block eccentric
nut friction tight. Rotate the eccentric
to meet requirement.

3. ENCODING ANSWER-BACK DRUM

3.01 The answer-back code drum assembly is contained within the answer-back unit (Figure 2).

3.02 Removal and replacement of the code drum assembly is outlined in 1.07.

3.03 Any message desired may be selected that does not contain more than 20 characters including spaces. The coding of the drum normally begins with carriage return and new line. This arrangement insures that the message will appear at the beginning of a line on the distant printer and that overprinting of the message will not occur on carriage return. Two methods are provided for coding character sequences shorter than 20 characters. One row of tines on the code drum controls a character suppression contact, which may be programmed to blind the answer-back transmission at the end of a predetermined number of characters. In this mode of operation, the unit must continue to operate through its full cycle of 21 steps (although blinded after the predetermined number of characters). Another row of tines on the code drum assembly controls the off-normal contact, and may be programmed for partial cycle. The length of the cycle is determined by the number of off-normal tines broken out. The code drum will stop in the row that has the off-normal tine remaining on the drum. It will continue stepping through any row that has the off-normal tine broken out. The row in which the code drum stops will not be read and consequently should not be coded. For example,

the coded message may contain the following numbers of characters:

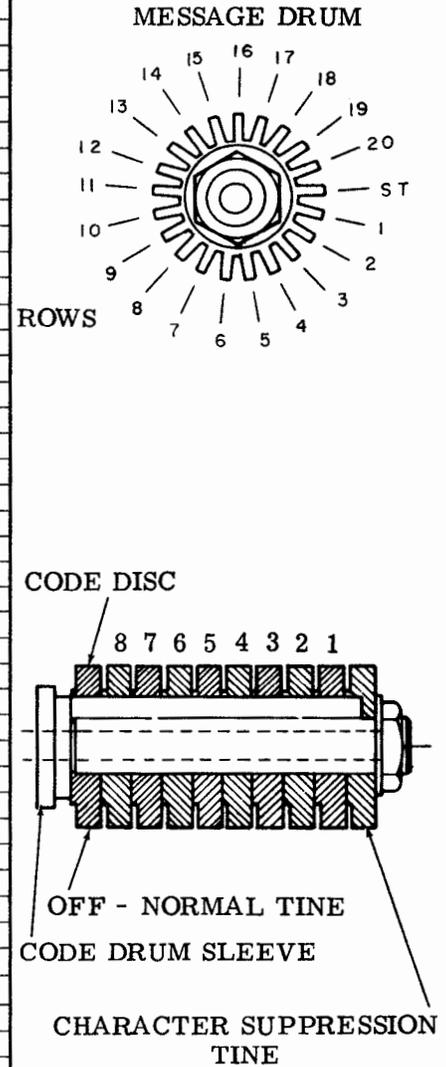
- 1-Cycle Operation — 20 Characters
- 3-Cycle Operation — 6 Characters

3.04 Code the drum in a clockwise direction (viewing from the numbered end) beginning with the row numbered 1. Each row is provided with an off-normal tine, a character suppression tine, and 8 tines for 8-level operation. A row is coded by breaking off the designated tines. The chart in Figure 3 indicates which tines are to be removed for a particular character or cycle. Leave tine for a MARK element and remove tine for a SPACE element. To remove tines, use a long-nose pliers and proceed as follows:

- (1) Grasp tine firmly with long-nose pliers, twist approximately 180° to crack, and remove tine. Tine tool TP161686 may also be used in a similar manner.

Unused character rows may be coded either for Delete, Null, or some other tolerable character, or the character suppression tine may be left in these rows. This prevents any character from being transmitted as the drum steps through these rows to the stop position. Should an encoding error be made, the character suppression tine must be left in the row with the erroneous character. The next row shall be encoded with the correct character. Nothing will be transmitted from the "erased" row. With the individual code discs used on this drum assembly, an encoding error can also be corrected by replacing a code disc or discs.

	CODE LEVELS REMOVE TINES		CODE LEVELS REMOVE TINES
NUL	1-2-3-4-5-6-7-8	@	1-2-3-4-5-6
SOH	2-3-4-5-6-7	A	2-3-4-5-6-8
STX	1-3-4-5-6-7	B	1-3-4-5-6-8
ETX	3-4-5-6-7-8	C	3-4-5-6
EOT	1-2-4-5-6-7	D	1-2-4-5-6-8
ENQ	2-4-5-6-7-8	E	2-4-5-6
ACK	1-4-5-6-7-8	F	1-4-5-6
BEL	4-5-6-7	G	4-5-6-8
BS	1-2-3-5-6-7	H	1-2-3-5-6-8
HT	2-3-5-6-7-8	I	2-3-5-6
LF	1-3-5-6-7-8	J	1-3-5-6
VT	3-5-6-7	K	3-5-6-8
FF	1-2-5-6-7-8	L	1-2-5-6
CR	2-5-6-7	M	2-5-6-8
SO	1-5-6-7	N	1-5-6-8
SI	5-6-7-8	O	5-6
DLE	1-2-3-4-6-7	P	1-2-3-4-6-8
DC1	2-3-4-6-7-8	Q	2-3-4-6
DC2	1-3-4-6-7-8	R	1-3-4-6
DC3	3-4-6-7	S	3-4-6-8
DC4	1-2-4-6-7-8	T	1-2-4-6
NAK	2-4-6-7	U	2-4-6-8
SYN	1-4-6-7	V	1-4-6-8
ETB	4-6-7-8	W	4-6
CAN	1-2-3-6-7-8	X	1-2-3-6
EM	2-3-6-7	Y	2-3-6-8
SUB	1-3-6-7	Z	1-3-6-8
ESC	3-6-7-8	[3-6
FS	1-2-6-7	\	1-2-6-8
GS	2-6-7-8]	2-6
RS	1-6-7-8	^	1-6
US	6-7	-	6-8
SPACE	1-2-3-4-5-7	~	1-2-3-4-5-8
!	2-3-4-5-7-8	a	2-3-4-5
"	1-3-4-5-7-8	b	1-3-4-5
#	3-4-5-7	c	3-4-5-8
\$	1-2-4-5-7-8	d	1-2-4-5
%	2-4-5-7	e	2-4-5-8
&	1-4-5-7	f	1-4-5-8
(APOS)	4-5-7-8	g	4-5
(1-2-3-5-7-8	h	1-2-3-5
)	2-3-5-7	i	2-3-5-8
*	1-3-5-7	j	1-3-5-8
+	3-5-7-8	k	3-5
,	1-2-5-7	l	1-2-5-8
-	2-5-7-8	m	2-5
.	1-5-7-8	n	1-5
/	5-7	o	5-8
0	1-2-3-4-7-8	p	1-2-3-4
1	2-3-4-7	q	2-3-4-8
2	1-3-4-7	r	1-3-4-8
3	3-4-7-8	s	3-4
4	1-2-4-7	t	1-2-4-8
5	2-4-7-8	u	2-4
6	1-4-7-8	v	1-4
7	4-7	w	4-8
8	1-2-3-7	x	1-2-3-8
9	2-3-7-8	y	2-3
:	1-3-7-8	z	1-3
;	3-7	{	3-8
<	1-2-7-8	:	1-2
=	2-7	}	2-8
>	1-7	~	1-8
?	7-8	DEL	NONE



Note 1: Remove tine — spacing. Leave tine — marking.

Note 2: The eighth code level must be coded as shown for even parity operation.

Figure 3 - Answer-Back Code Drum Chart



37 ANSWER-BACK UNIT

LUBRICATION

	CONTENTS	PAGE
1.	GENERAL	1
2.	BASIC UNIT	2
	Answer-Back	2
	Feed Mechanism	3

<u>Symbol</u>	<u>Meaning</u>
---------------	----------------

O	Oil KS7470
---	------------

G	Grease KS7471
---	---------------

Note: Ordering information for lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1. GENERAL

1.01 This section provides lubrication procedures for the late design 37 answer-back unit (Figure 1). The late design unit can be recognized by the location of the drum feed mechanism at the end of the code drum. The drum feed mechanism on the early design answer-back unit is located in the middle of the code drum.

1.02 A photograph of the mechanism is used to show the lubrication area. The paragraph number on the figure refers to the specific lubrication points. Reference made to front or rear, left or right, top or bottom, etc, applies to the answer-back unit in its normal operating position as viewed by the operator in front of the unit. In this position, the answer-back unit is resting on its base with the contact assembly on the right side.

1.03 Lubricate the answer-back unit before placing it in service and just prior to putting it in storage.

1.04 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the unit. Thereafter, lubricate the unit according to the following schedule:

100 wpm	2,000 hours or 9 months*
---------	--------------------------

150 wpm	1,500 hours or 6 months*
---------	--------------------------

*Whichever comes first.

1.05 The symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols apply to the lubrication instructions:

1.06 Overlubrication which would allow oil to drip or to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Maintenance pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

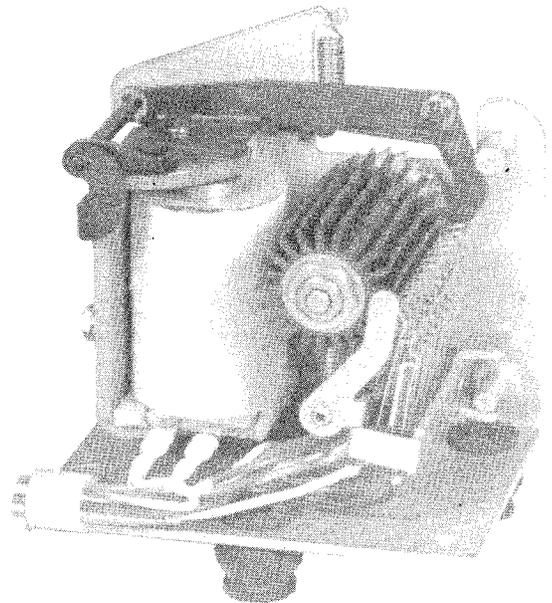


Figure 1 - Answer-Back Unit

1.07 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, a minimum amount of oil should be applied, so that the oil remains on the part and does not run off. Excessive lubricants should be removed with a dry lint-free cloth. If the surface between the relay armature and magnet pole piece has oil or foreign matter, proceed as follows.

- (1) Place a piece of clean paper between the armature and pole piece.
- (2) Energize the magnet.
- (3) Pull the paper through the armature and pole piece and check to insure that lint or pieces of paper do not remain.

1.08 Use twill jean cloth KS2423 to clean gold-plated contacts. The code reading contacts should be cleaned after approximately 1000 hours of operation or 6

months of service, whichever occurs first. Use the following procedure: (1) deflect the tab on the contact assembly downward to open the contacts, (2) drop a strip of twill jean between the contacts, (3) close the contacts, (4) draw the twill jean part way through the contacts, and (5) reopen the contacts and withdraw the twill jean. This procedure will prevent small fibers from the edges of the twill jean strip from becoming lodged between the contacts.

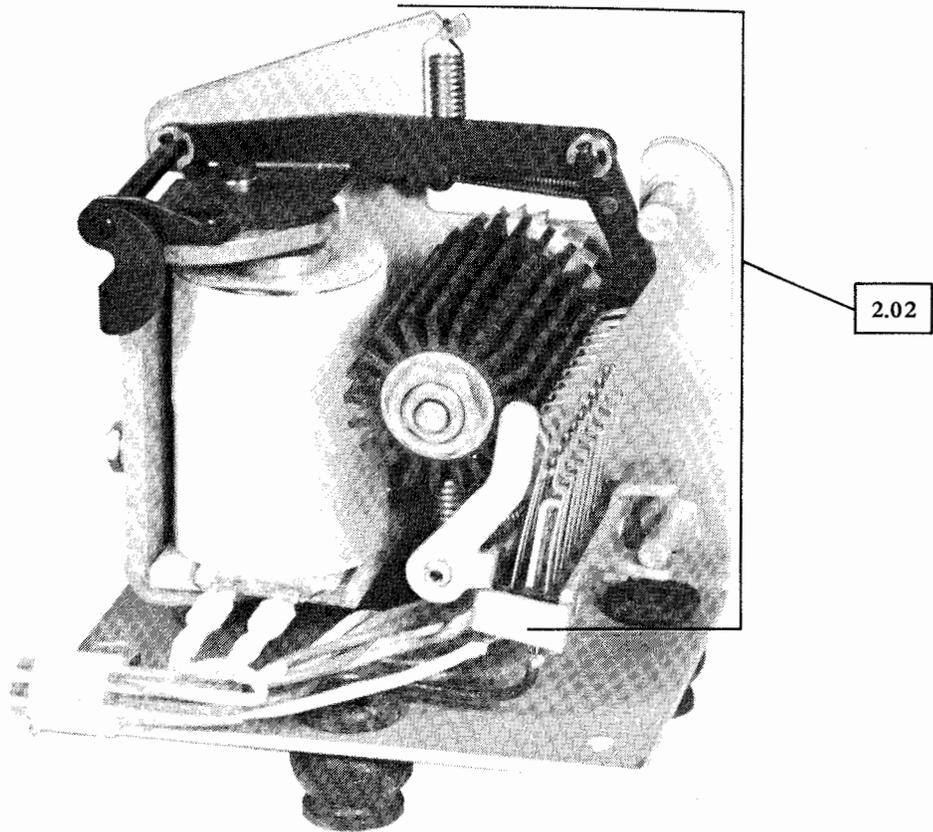
Note: Do not use burnishers, files, etc, which will remove gold plating.

CAUTION 1: DO NOT USE GOLD-PLATED CONTACTS ALTERNATELY IN HIGH- AND LOW-LEVEL CIRCUITS BECAUSE HIGH-LEVEL OPERATION MAY DAMAGE THE GOLD PLATING AND IMPAIR THE USE OF THE CONTACTS IN LOW-LEVEL CIRCUITS.

CAUTION 2: REMOVE POWER BEFORE LUBRICATING THE EQUIPMENT.

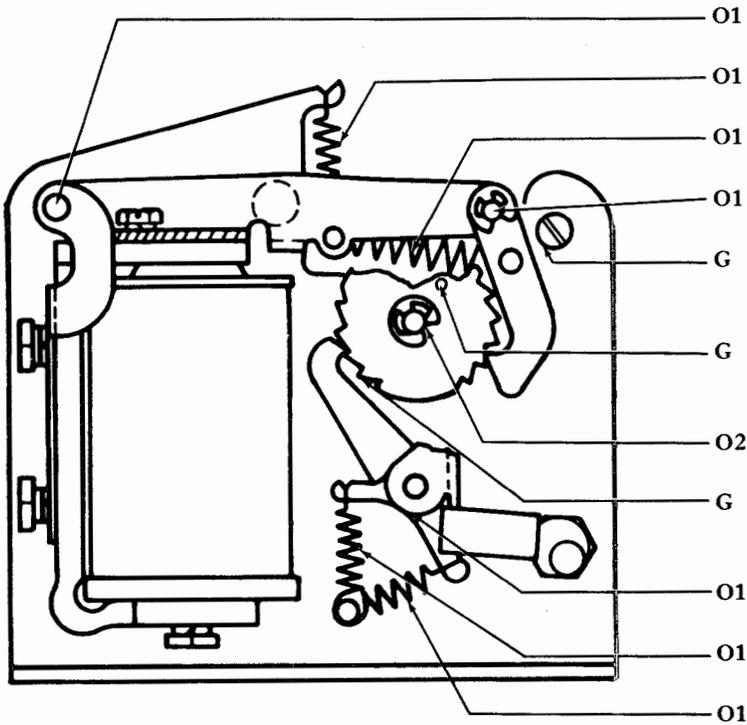
2. BASIC UNIT

2.01 Answer-Back



(Right Front View)

2.02 Feed Mechanism



- | | | |
|----|--------------------------|----------------------|
| O1 | Pivots (2) | Armature Hinge |
| O1 | Hook (Each End) | Feed Bail Spring |
| O1 | Hook (Each End) | Feed Pawl Spring |
| O1 | Pivot | Feed Pawl |
| G | Rear Surface (Thin Film) | Back Stop Eccentric |
| G | Locating Key (Thin Film) | Ratchet Wheel |
| O2 | Pivot | Ratchet Wheel |
| G | Teeth (Thin Film) | Ratchet Wheel |
| O1 | Pivot | Check Pawl |
| O1 | Hook (Each End) | Contact Block Spring |
| O1 | Hook (Each End) | Contact Pawl Spring |

(Front View)



37 TYPING UNIT COVER AND PAN

ADJUSTMENTS

CONTENTS	PAGE
1. GENERAL	1
2. BASIC UNIT	3
Control panel centering	11
Control panel position	10
Cover centering	4
Cover hinge position	4
Cover latch centering	5
Cover position	5
Front cover position	6
Front lid alignment	7
Front lid centering	7
Front lid gap	7
Front lid latch clearance	9
Front lid latch engagement	9
Front lid spring	6
Keyboard housing position	3
Latch release button centering	9
Line feed or carriage return bail	11
Rear lid centering	8
Rear lid clearance	8

1. GENERAL

1.01 This section provides adjustment procedures for the late design 37 typing unit cover and pan which has the front cover cut out for WECo 635R2 switches (Figure 1). It is re-issued to incorporate minor engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. For similar information on early design units which have the front cover cut out for Licon 76-type switches, refer to Section 574-326-700TC.

1.02 The adjustments are arranged in a sequence that should be followed if a complete readjustment of the cover and pan is undertaken. Certain adjustments appear on the same page, and the sequence in such cases 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. If one adjustment is changed, related adjustments should be checked.

1.03 Some cover and pan adjustments are installation-type adjustments and their performance depends upon the position of the associated keyboard unit. These dependent adjustments are integrated with other cover and pan adjustments and all are presented as a series of interrelated adjustments. The installation-type adjustments must be performed with an assembled and adjusted keyboard unit. For other keyboard adjustments see Section 574-321-703TC.

1.04 In each adjustment the location of clearances and position of parts are illustrated by line drawings. Requirements and procedures are presented in the several texts that accompany the line drawings. Tools necessary to maintain this equipment are illustrated in Section 570-005-800TC.

1.05 References made to left or right, front or rear, top or bottom, etc, apply to the cover and pan in the normal position as viewed by the operator in front of the unit, unless specifically stated otherwise (Figure 1).

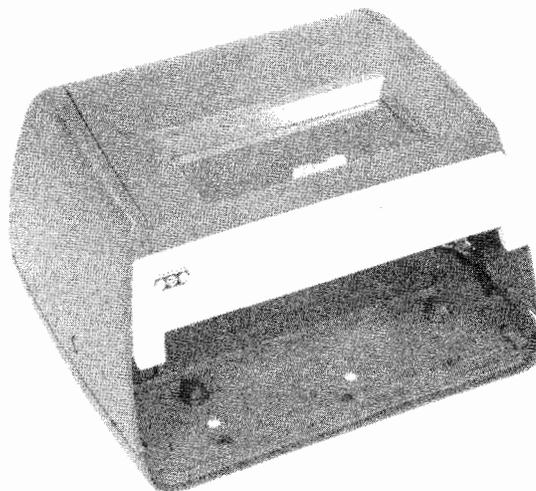


Figure 1 - Typing Unit Cover and Pan

SECTION 574-326-703TC

1.06 When parts are removed to facilitate the making of an adjustment and subsequently replaced, check any adjustments which may have been affected by such removal and replacement of parts.

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

CAUTION: WHEN THE ASSEMBLY IS FUNCTIONALLY UTILIZED WITH A TYPING UNIT ETC, REMOVE POWER FROM EQUIPMENT BEFORE MAKING ANY ADJUSTMENTS.

1.08 When cleaning plastic parts such as the plastic window, use soap or detergent and water. Do not use solvents containing alcohol or chlorinated ingredients.

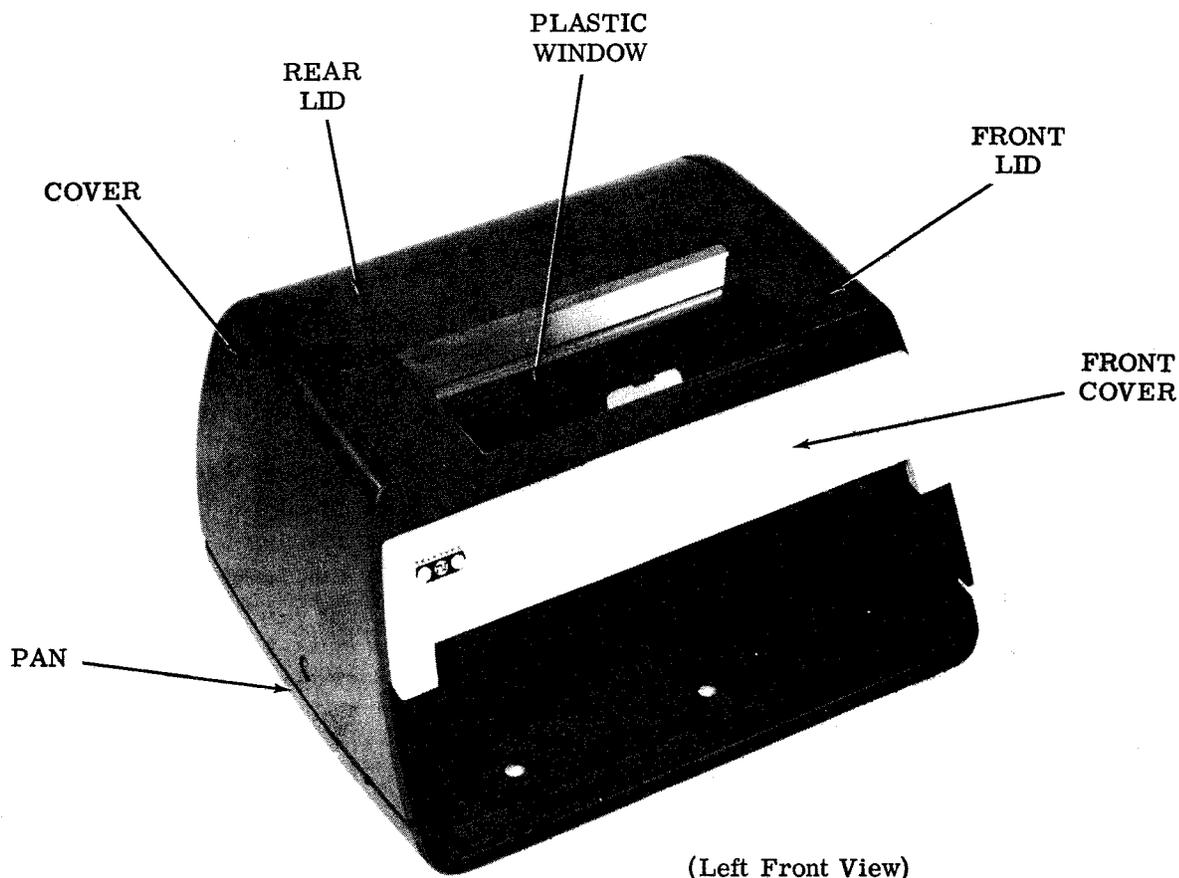
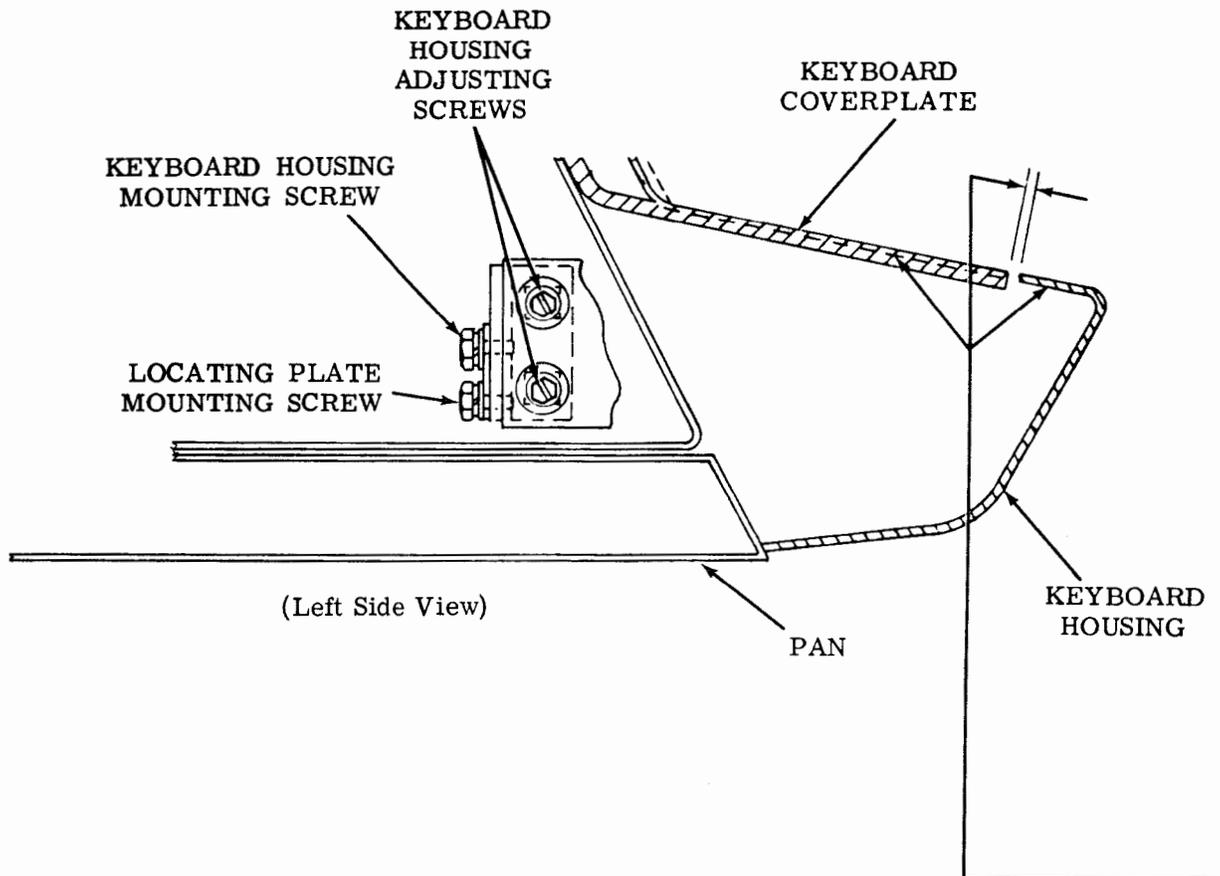


Figure 2 - Typing Unit Cover and Pan

2. BASIC UNIT

2.01 Keyboard Housing

Note: This adjustment is required only at the time of installation or on reassembly.

KEYBOARD HOUSING POSITION**Requirement**

All mating surfaces around keyboard housing and coverplate should be approximately flush and have equal spacing as gauged by eye.

To Adjust

Loosen control panel mounting screws (2.08). Loosen friction tight four keyboard housing mounting screws, and the locating plate mounting screw. Position keyboard housing to meet "flush" requirement. While maintaining "flush" requirement, position keyboard housing to left or right to meet the "equal spacing" requirement. Tighten two keyboard housing mounting screws and the locating plate mounting screw. Maintain the "flush" requirement and position keyboard housing front to rear to complete "equal spacing" requirement. Tighten four keyboard housing screws.

SECTION 574-326-703TC

2.02 Cover

(A) COVER CENTERING

(1) Requirement

Cover should be centered from left to right on pan as gauged by eye.

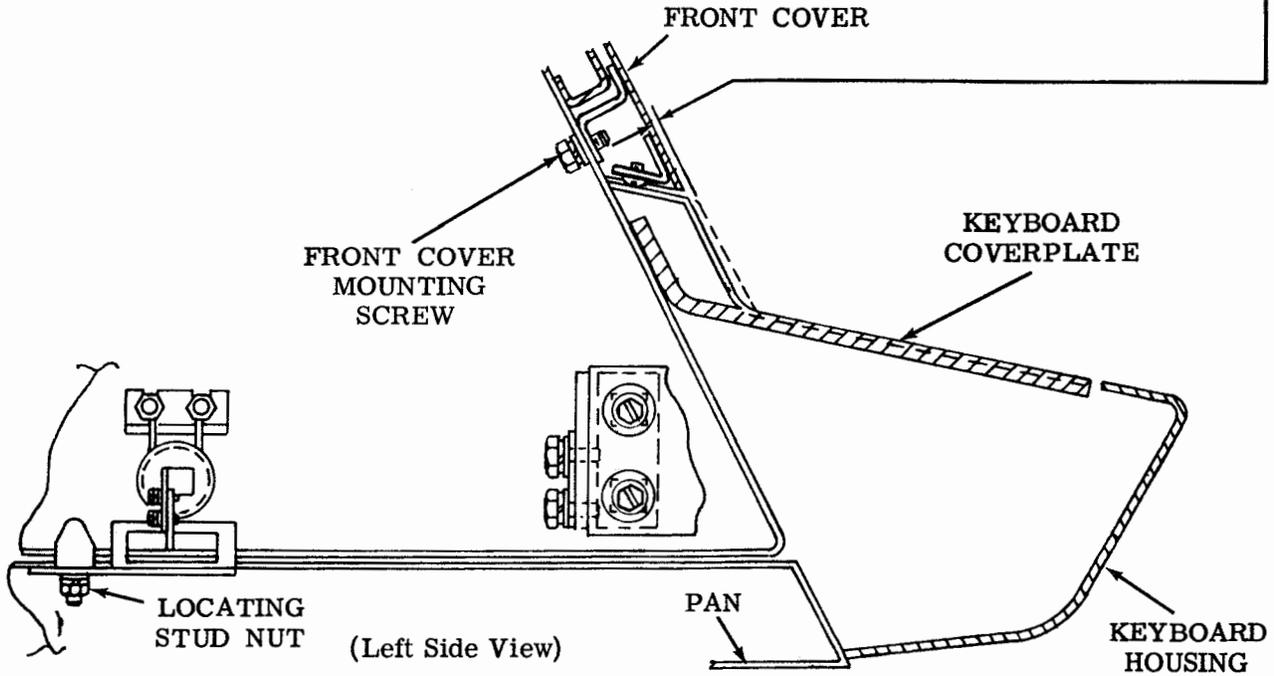
(2) Requirement

Bottom leading edge of front cover should be
Min 0.030 inch---Max 0.080 inch
under flush with leading edge of keyboard housing.

To Adjust

Loosen four hinge mounting screws and two locating stud nuts friction tight. Position cover left or right to meet requirement (1). While maintaining requirement (1), position cover front to rear to meet requirement (2). Tighten locating stud nuts and hinge mounting screws.

Note: This adjustment is required only at the time of installation or on reassembly.



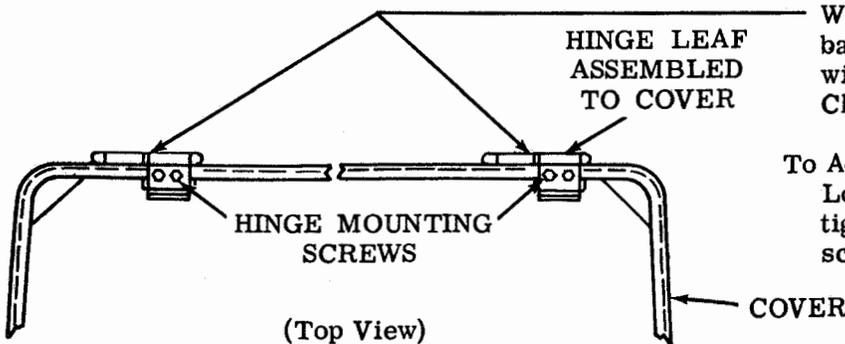
(B) COVER HINGE POSITION

Requirement

With cover closed, end of cover hinge barrel should contact and be in line with pan hinge barrel as gauged by eye. Check both sets of hinges.

To Adjust

Loosen hinge mounting screws friction tight. Position cover hinge. Tighten screws.



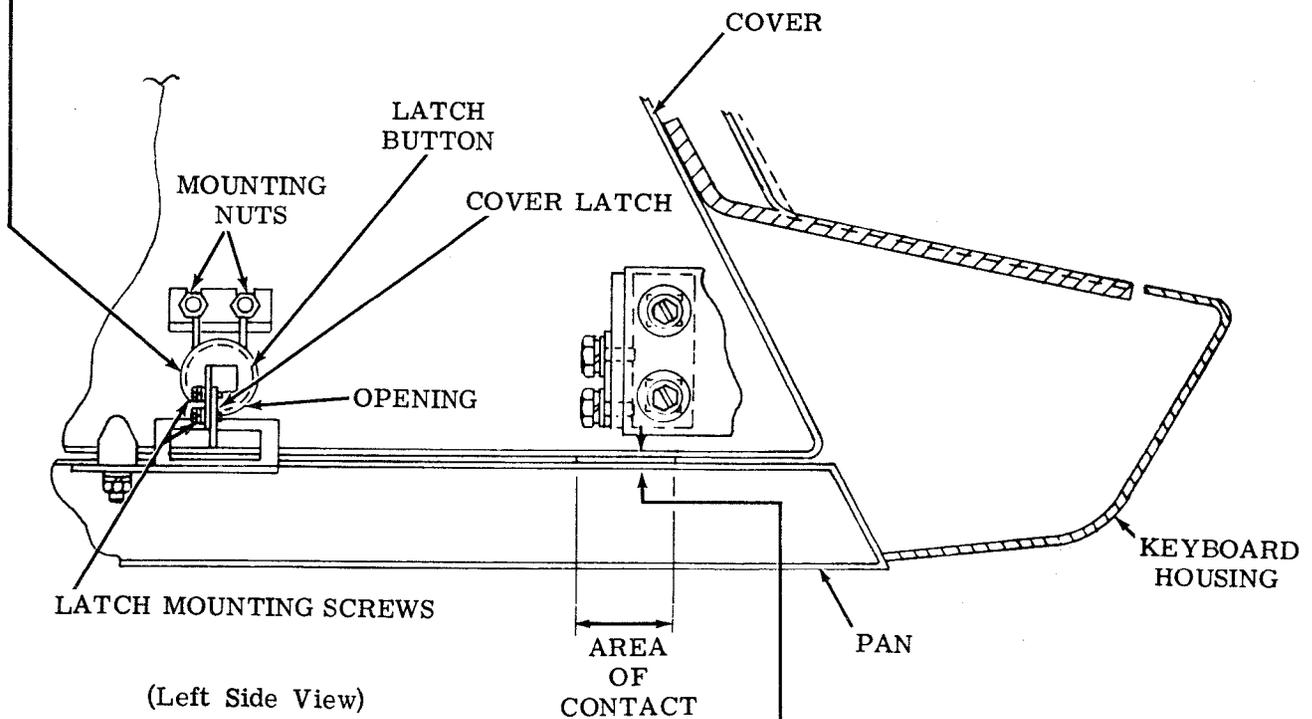
2.03 Cover (continued)

(A) COVER LATCH CENTERING**Requirement**

Latch button should be centered in opening on both sides of cover.

To Adjust

Loosen mounting nuts friction tight. Position latch button. Tighten mounting nuts.

**(B) COVER POSITION****Requirement**

Lower right corner of cover should contact gasket or bumper on pan (or a maximum of 0.010 inch gap) at a point between two and three inches from bottom corner of cover.

To Adjust

Loosen front cover mounting screws friction tight (2.04). Position front cover towards top of cover. Loosen right and left side latch mounting screws friction tight. Close cover and position latch to meet requirement. Tighten front cover and latch mounting screws.

Note: This adjustment is required only at the time of installation or on reassembly.

2.04 Front Cover and Front Lid

(B) FRONT LID SPRING

(1) Requirement

Front lid spring should contact front surface of top lid.

(2) Requirement

Front lid spring should not bind when pressed against front cover.

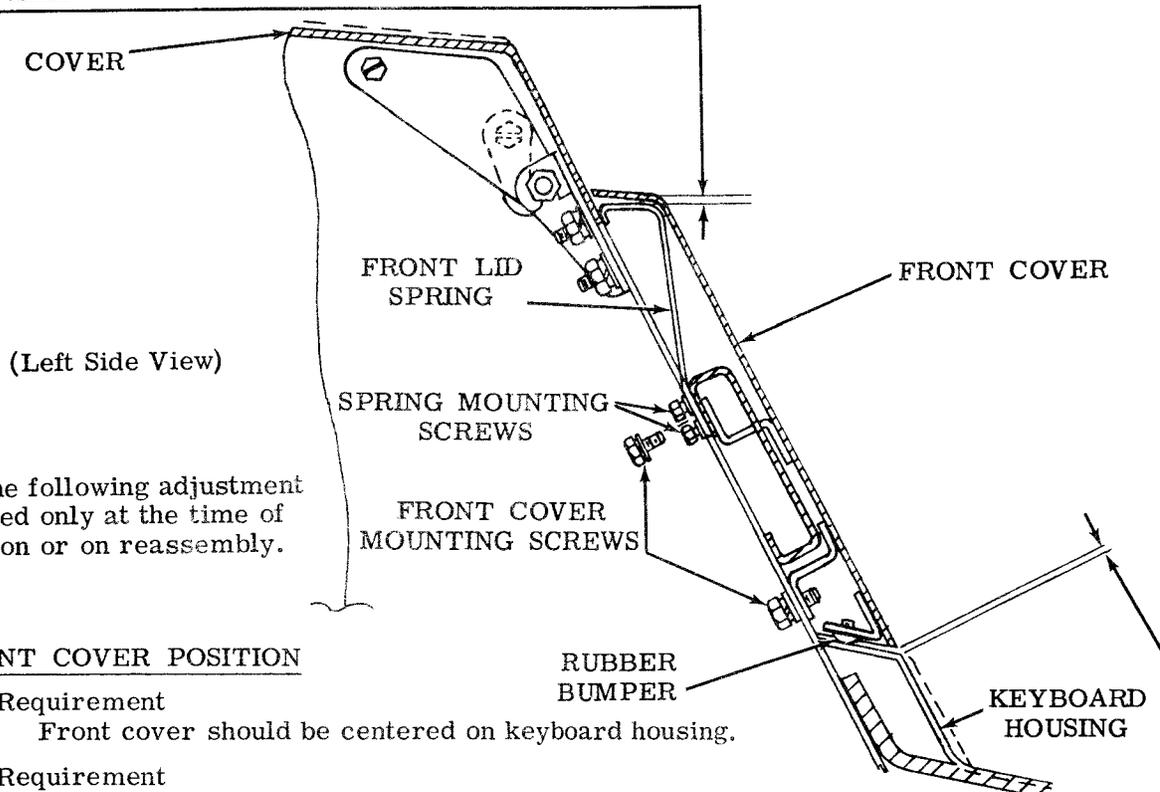
(3) Requirement

With front lid properly adjusted (2.05) and release buttons depressed, front lid spring should open the front lid.

To Adjust

With spring mounting screws friction tight, position front lid spring up or down to meet requirements (1), (2) and (3). Tighten mounting screws.

Note: Check front lid spring for binds if front lid is difficult to open or close.



(Left Side View)

Note: The following adjustment is required only at the time of installation or on reassembly.

(A) FRONT COVER POSITION

(1) Requirement

Front cover should be centered on keyboard housing.

(2) Requirement

Rubber bumper on front cover should contact keyboard housing in two places.

(3) Requirement

Clearance between front cover and keyboard housing when measured at mid-point should be

Min some---Max 0.040

(4) Requirement

Both sides should be within 0.015 inch of each other.

To Adjust

With four front cover mounting screws loosened and two spring mounting screws friction tight, position front cover to meet requirements (1) and (2). While maintaining requirements (1) and (2), position front cover to meet requirements (3) and (4). Tighten mounting screws.

2.05 Front Lid (continued)

(C) FRONT LID GAP

Requirement

With front lid latched, gap between front lid and front cover, measured at ends of front lid, should be

Min 0.005 inch---Max 0.025 inch

To Adjust

Loosen four hinge plate mounting screws friction tight. Position front lid. Tighten screws.

(A) FRONT LID ALIGNMENT

Requirement

Top surface of front lid along leading edge should be

Max 0.040 inch

above flush or

Max 0.020 inch

under flush with mating left and right surfaces of cover as gauged by eye.

To Adjust

Loosen four hinge bracket mounting nuts friction tight. Position front lid up or down. Tighten mounting nuts.

(B) FRONT LID CENTERING

(1) Requirement

Front lid should be centered in cover opening with approximately an equal gap along both sides as gauged by eye.

(2) Requirement

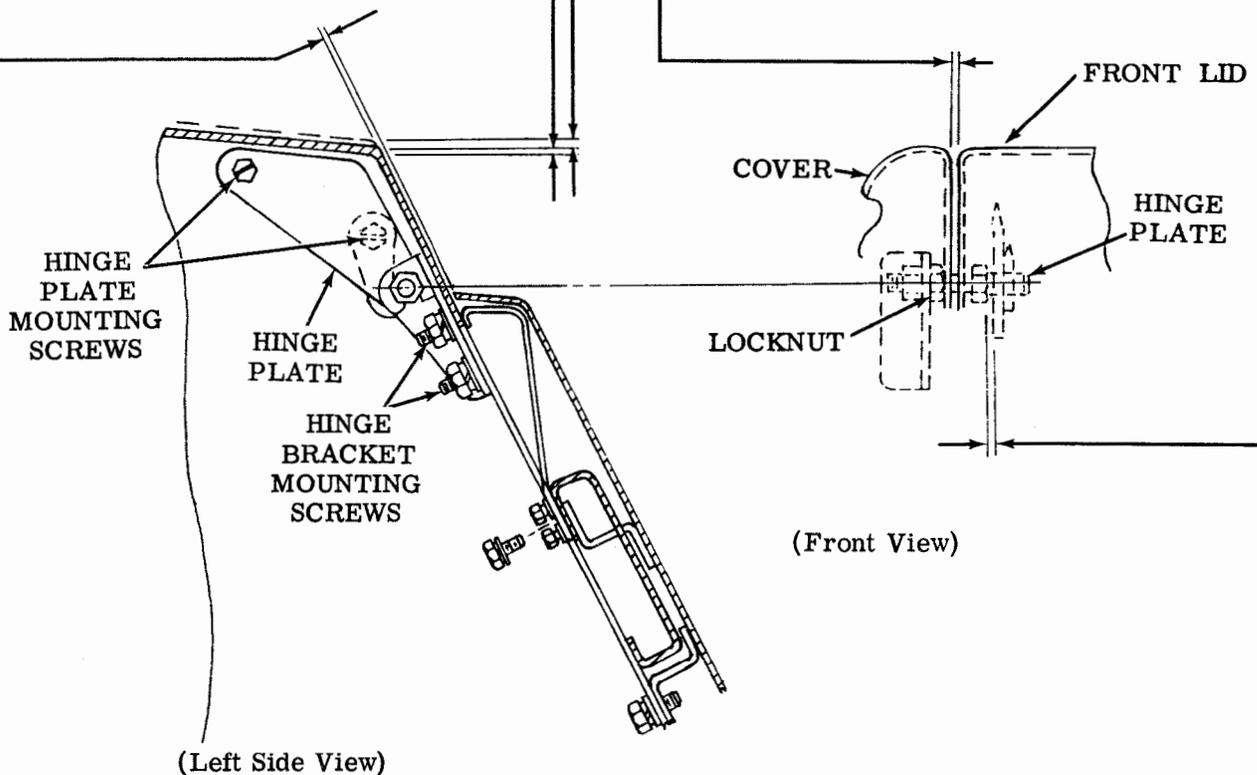
When top latches are activated, front lid should release and be free of binds.

(3) Requirement

Min some---Max 0.010 inch clearance between hinge plate and shoulder of hinge post on one side.

To Adjust

Loosen two hinge post locknuts. Position front lid either left or right by turning both hinge posts in required direction. With front lid centered and hinge plate against shoulder of either hinge post requirement (3) should be met. Tighten hinge post locknuts.



2.06 Rear Lid

(A) REAR LID CLEARANCE

Requirement

Min some---Max 0.045 inch
between front lid and rear lid with both lids latched.

To Adjust

Loosen four rear lid mounting nuts friction tight. Position rear lid from front to rear. Tighten mounting nuts.

(B) REAR LID CENTERING

(1) Requirement

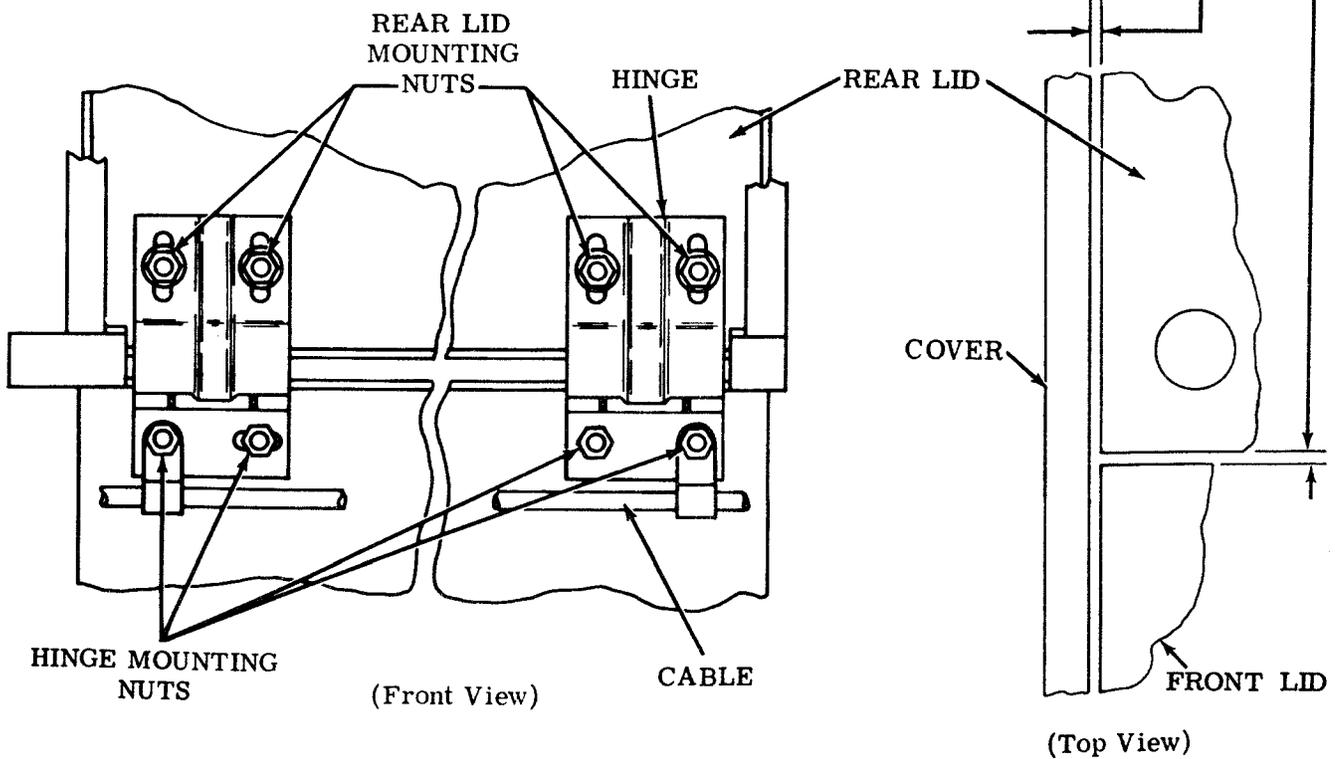
Rear lid should be centered in cover opening from left to right as gauged by eye.

(2) Requirement

Some clearance between rear lid and cover along both sides.

To Adjust

Loosen four hinge mounting nuts friction tight. Position rear lid. Tighten mounting nuts.



2.07 Front Lid and Rear Lid (continued)

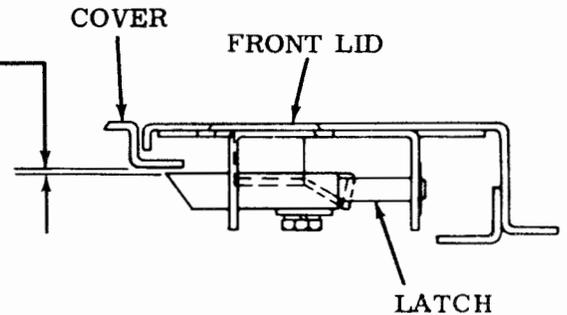
(B) FRONT LID LATCH CLEARANCE

Requirement

With front lid latched and against rear lid extension
 Min some---Max 0.015 inch
 between front lid latch and cover latching surface.

To Adjust

Loosen four lid stop mounting screws
 friction tight. Position rear lid up or
 down. Tighten four mounting screws.



(Front View)

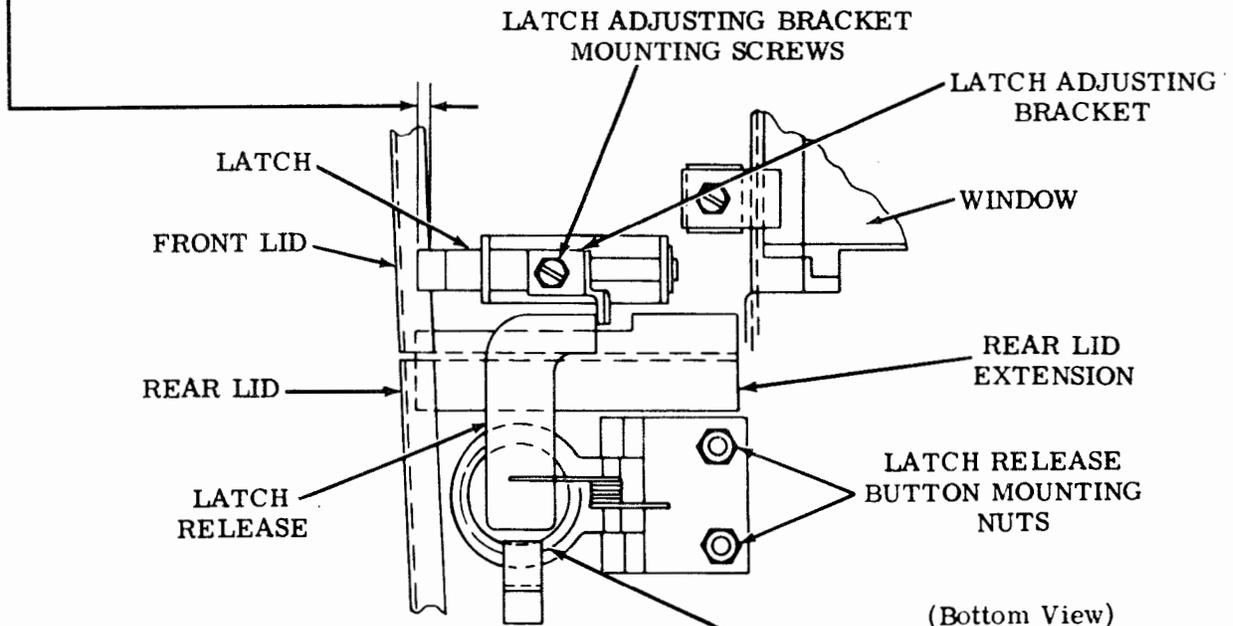
(C) FRONT LID LATCH ENGAGEMENT

Requirement

Both front lid latches should engage the return provided on cover
 Min 0.045 inch---Max 0.095 inch

To Adjust

Loosen latch adjusting bracket mounting screws friction tight. Position latch adjusting
 bracket against latch release which is mounted to rear lid. Then, position front lid
 latches. Tighten mounting screws.



(Bottom View)

(A) LATCH RELEASE BUTTON CENTERING

Requirement

Both latch release buttons should be centered in openings provided in rear lid
 as gauged by eye.

To Adjust

Loosen latch release button mounting nuts friction tight. Position latch release
 button. Tighten mounting nuts.

2.08 Control Panel

Note: The adjustments on this page are required only at the time of installation or on reassembly.

CONTROL PANEL POSITION

(1) Requirement

3/32 to 3/16 inch gap between the trim strip and front cover. This gap should be measured at both ends of the trim strip and should be within 1/32 inch of each other.

To Adjust

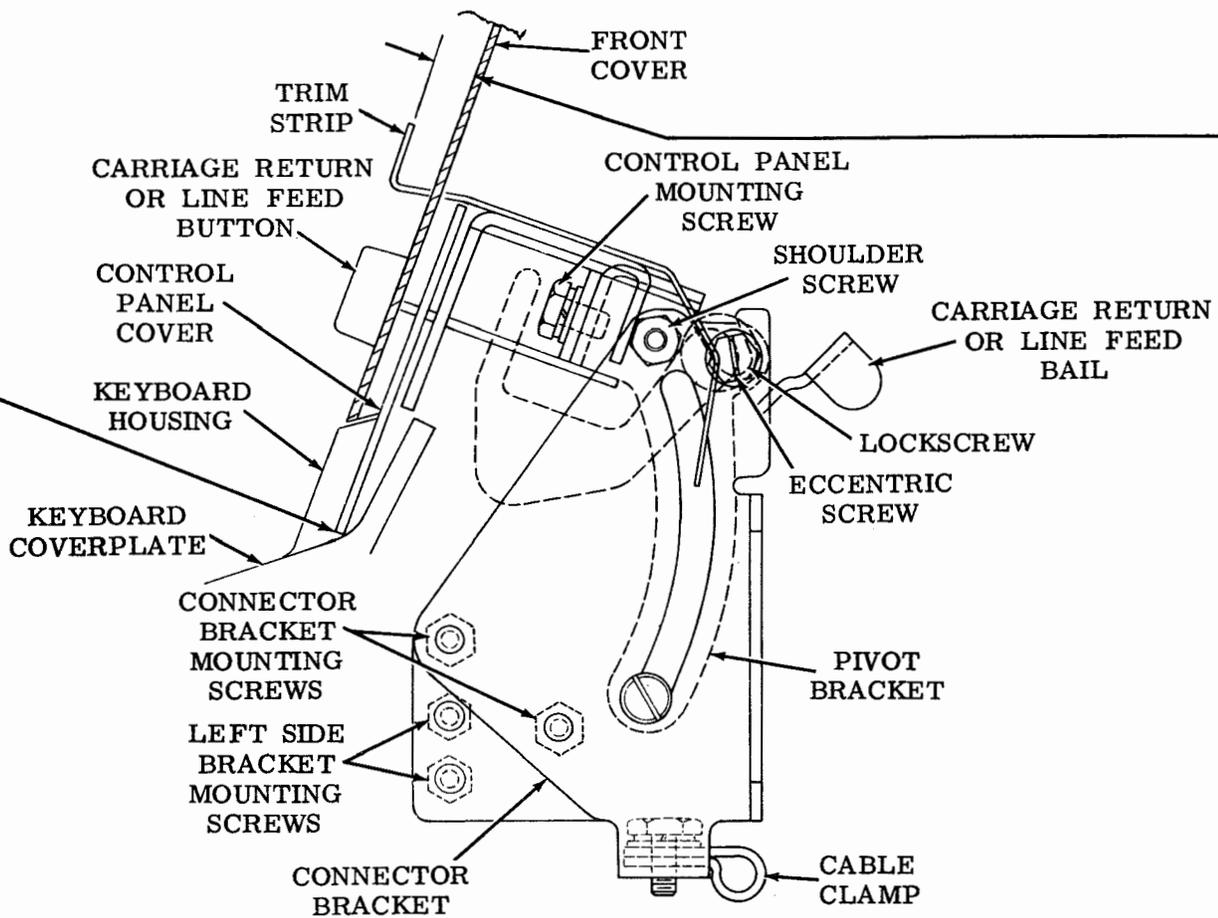
With the two connector mounting screws and left bracket mounting screws friction tight position the control panel to meet the requirement.

(2) Requirement

Bottom edge of control panel cover and top surface of keyboard coverplate should be in contact at one point along an area two inches inward on both left and right sides.

To Adjust

With left and right side control panel mounting screws loosened, position right side pivot bracket against shoulder screw on connector bracket. Then lock pivot bracket in place. Loosen left and right side control panel mounting screws friction tight. Then lock left side pivot in place. Position control panel up or down to meet requirement. Tighten control panel mounting screws after CONTROL PANEL CENTERING (2.09).



(Right Side View)

2.09 Control Panel (continued)

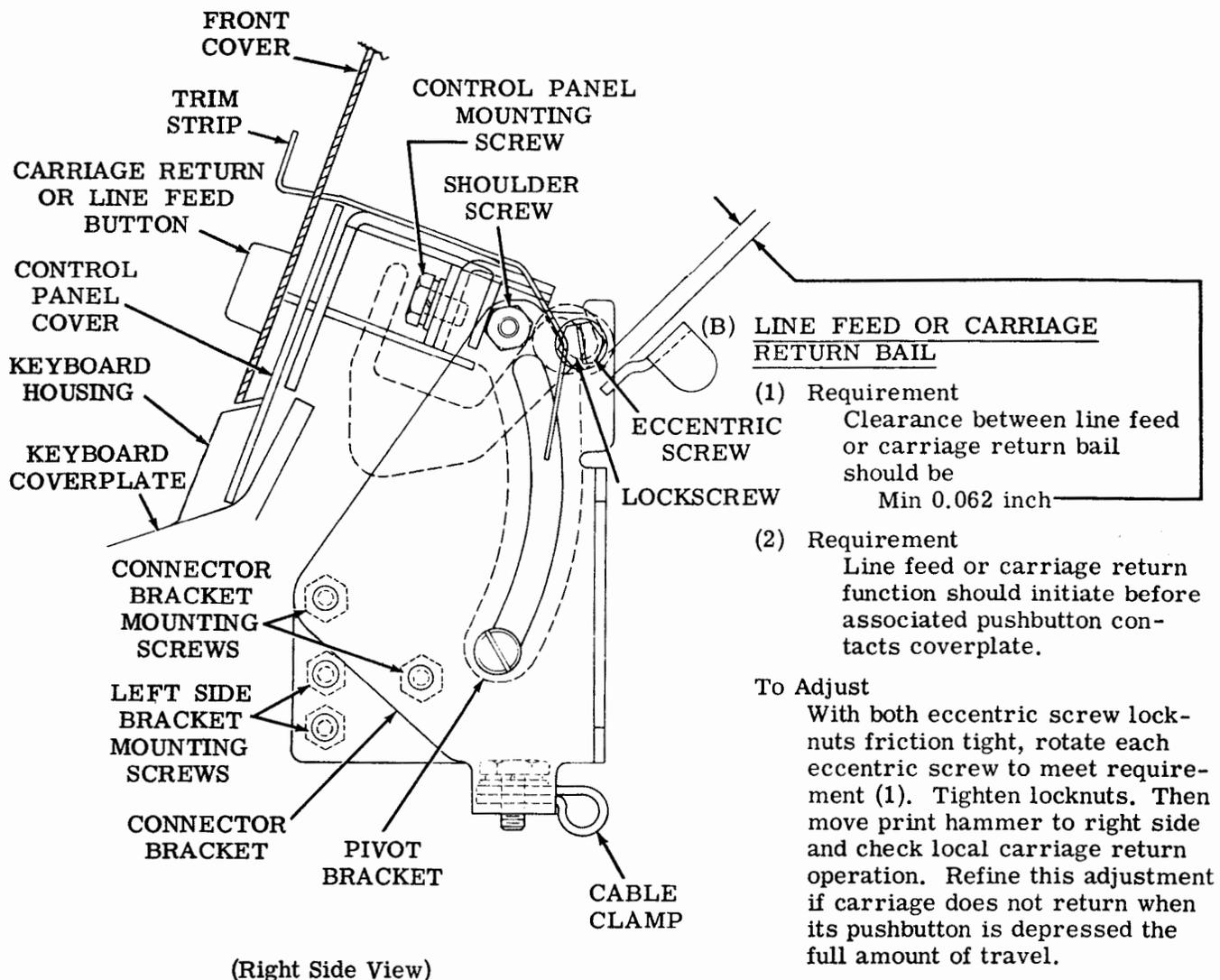
Note: The adjustments on this page are required only at the time of installation or on reassembly.

(A) CONTROL PANEL CENTERING**Requirement**

Bottom edge of control panel should be centered in keyboard housing opening as gauged by eye.

To Adjust

While maintaining CONTROL PANEL POSITION (2.08), position control panel left or right to meet requirement. Tighten control panel mounting screws.

**(B) LINE FEED OR CARRIAGE RETURN BAIL****(1) Requirement**

Clearance between line feed or carriage return bail should be
Min 0.062 inch

(2) Requirement

Line feed or carriage return function should initiate before associated pushbutton contacts coverplate.

To Adjust

With both eccentric screw locknuts friction tight, rotate each eccentric screw to meet requirement (1). Tighten locknuts. Then move print hammer to right side and check local carriage return operation. Refine this adjustment if carriage does not return when its pushbutton is depressed the full amount of travel.

Note: Check local line feed operation with typing unit under power. When PAPER ADVANCE pushbutton is depressed through its full amount of travel and paper does not feed-out, refine requirement (1).



37 TYPING UNIT COVER AND PAN

LUBRICATION

CONTENTS	PAGE
1. GENERAL.....	1
2. BASIC UNIT.....	3
Balancing arm.....	5
Cover and pan.....	3
Cover hinges.....	3
Cover latches.....	4
Front lid latches.....	5
Rear lid hinges.....	4

1. GENERAL

1.01 This section provides lubrication procedures for the late design 37 typing unit cover and pan which has the front cover cut out for WECO 635R2 switches (Figure 1). It is reissued to incorporate minor engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. For similar information on early design units which have the front cover cut out for Licon 76-type switches, see Section 574-326-701TC.

1.02 General areas of the cover and pan which require lubrication are shown by photographs. Specific points to receive lubrication are indicated by line drawings and descriptive text. The line drawings and descriptive text follow each photograph and are keyed to the photograph by paragraph numbers.

1.03 References made to the front, rear, left, or right apply to the cover in its normal operating position as viewed by the operator.

1.04 Lubricate the cover before placing it into service and just prior to putting it into storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the cover to make certain that no points have been missed. Thereafter, lubri-

cate the cover according to the following schedule:

100 wpm	2000 hr or 9 mo*
150 wpm	1500 hr or 6 mo*

* Whichever occurs first.

1.06 The following symbols apply to the specific lubrication instructions given in each paragraph:

G Apply a thin coat of KS7471 grease.

O1 Apply one drop of KS7470 oil.

Note: Ordering information for the above lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1.07 Oil should be applied by means of an oiler. Over lubrication which would allow oil to drip on other parts should be avoided. Capillary action and vaporization tend to keep a film of oil on the parts. This prevents rust and provides sufficient lubrication to many points.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the cover.

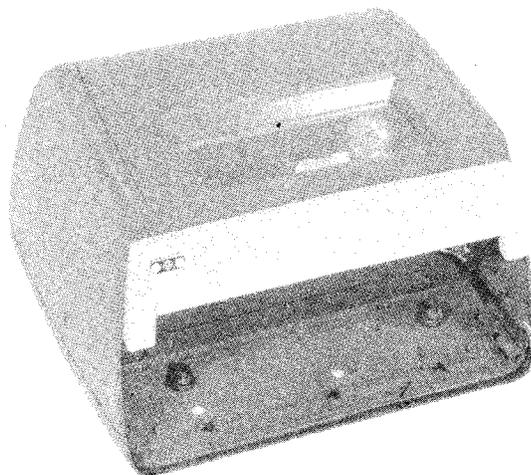


Figure 1 - Typing Unit Cover and Pan

SECTION 574-326-704TC

1.08 The cover is hinged at the rear and can be opened for access to lubrication points. For instructions on separating the cover from the pan and other disassembly information, see Section 574-301-702TC.

Note: If the cover is removed for lubrication or other purposes and then set aside temporarily, be sure to place it in a location where it will not get damaged and where it will not be a hazard to other personnel in the area.

1.09 Clean the cover and pan before and after it is lubricated. Remove excess oil and/or grease which may have run onto surfaces

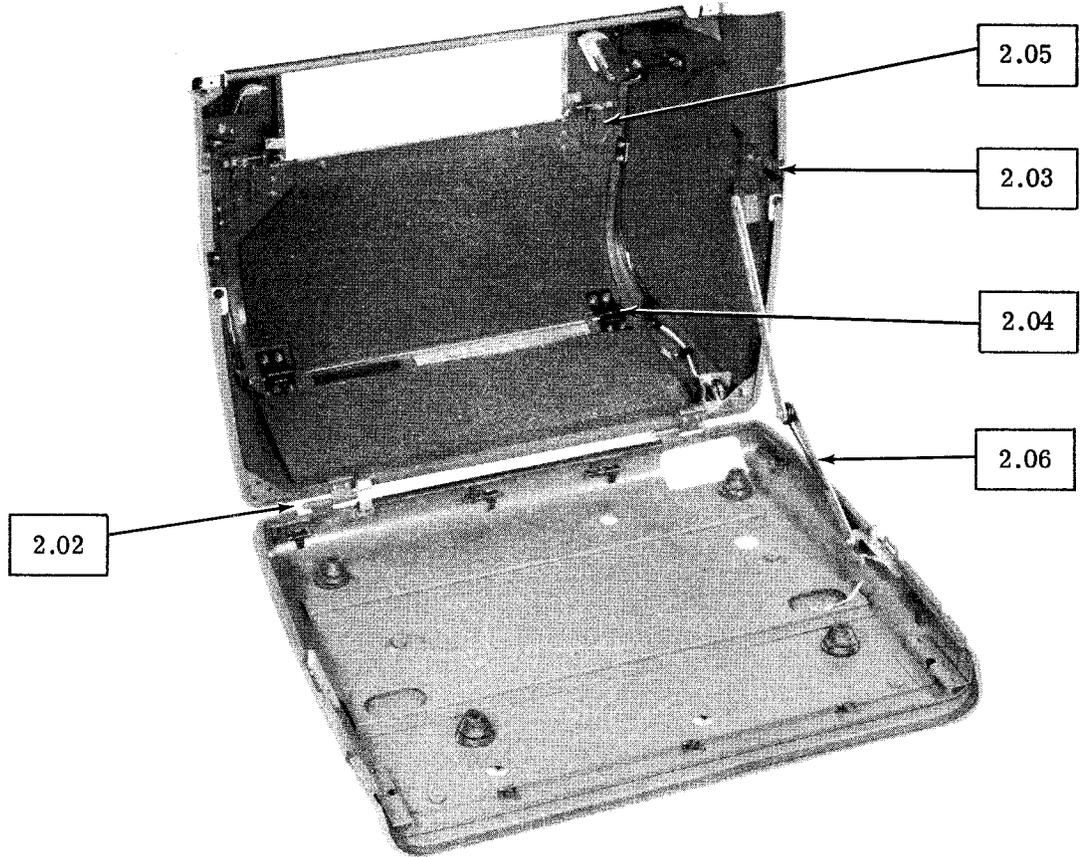
which do not require lubrication. Remove the excess lubricant with care so that old lubricant or dirt does not get between bearing surfaces.

1.10 When cleaning plastic parts such as the plastic window, use soap or detergent and water. Do not use solvents containing alcohol or chlorinated ingredients.

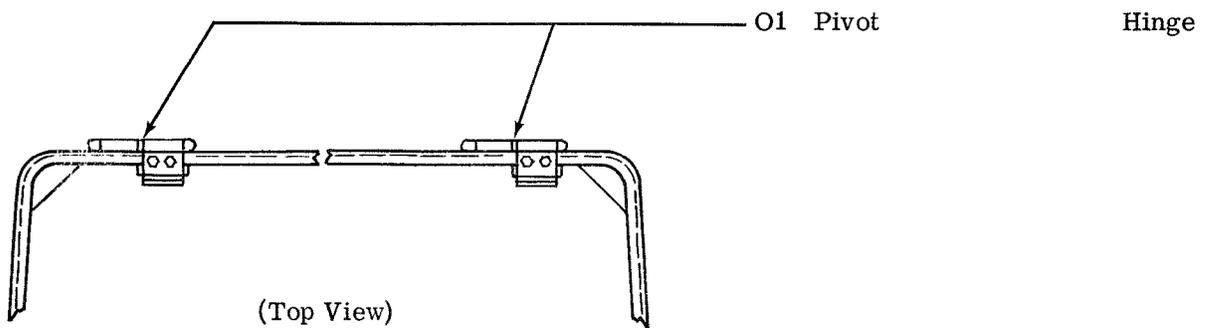
CAUTION: WHEN THE ASSEMBLY IS FUNCTIONALLY UTILIZED WITH A TYPING UNIT ETC, REMOVE POWER FROM EQUIPMENT BEFORE APPLYING ANY LUBRICANT.

2. BASIC UNIT

2.01 Cover and Pan (Cover Opened, Left Side View)

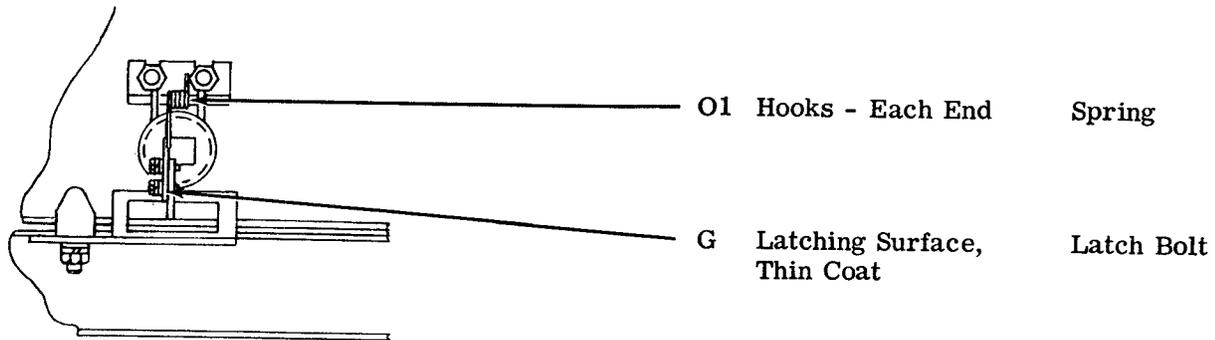


2.02 Cover Hinges (Left and Right)



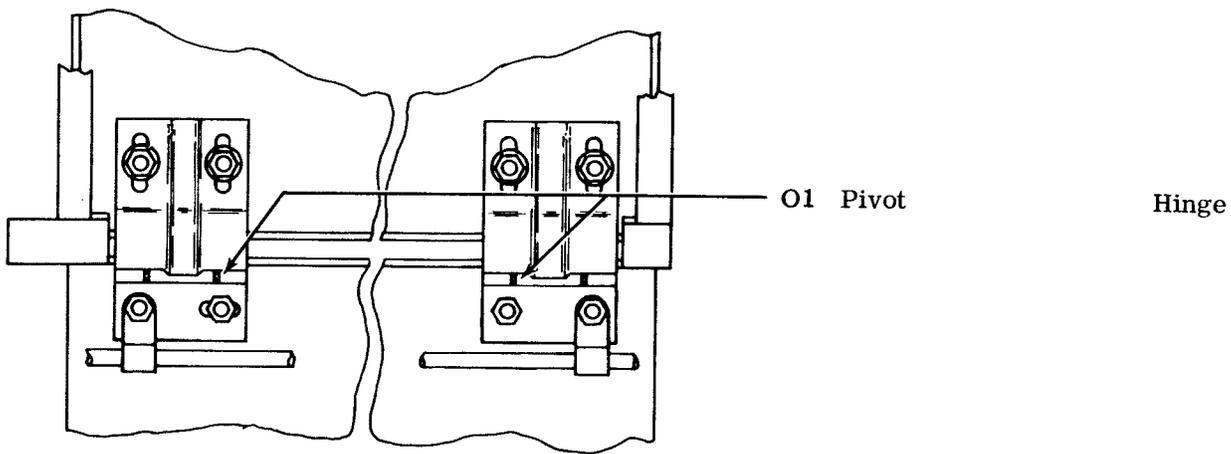
SECTION 574-326-704TC

2.03 Cover Latches (Left and Right)



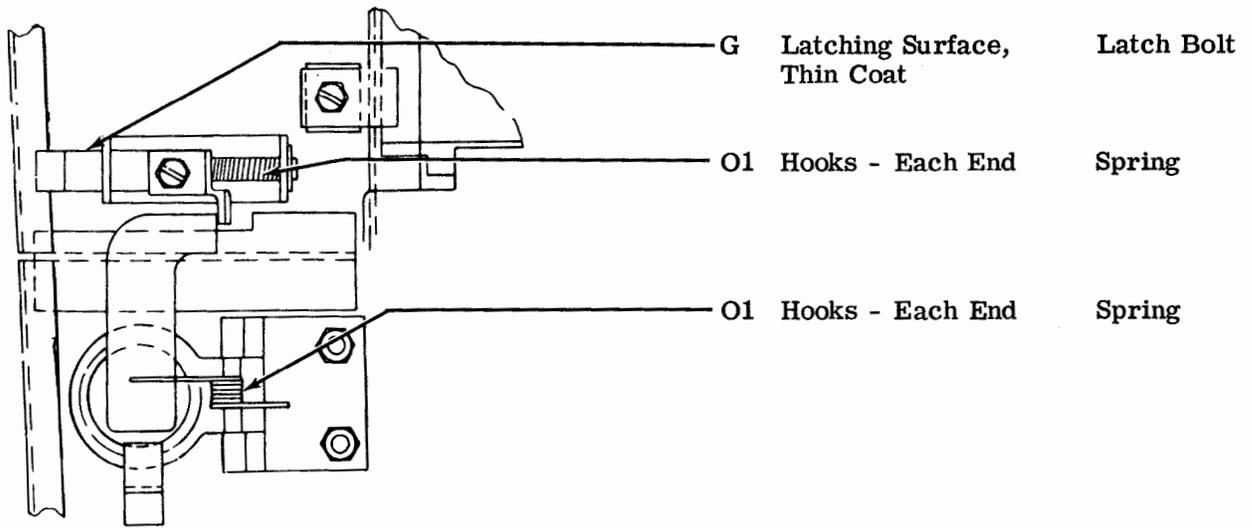
(Left Side View)

2.04 Rear Lid Hinges (Left and Right)



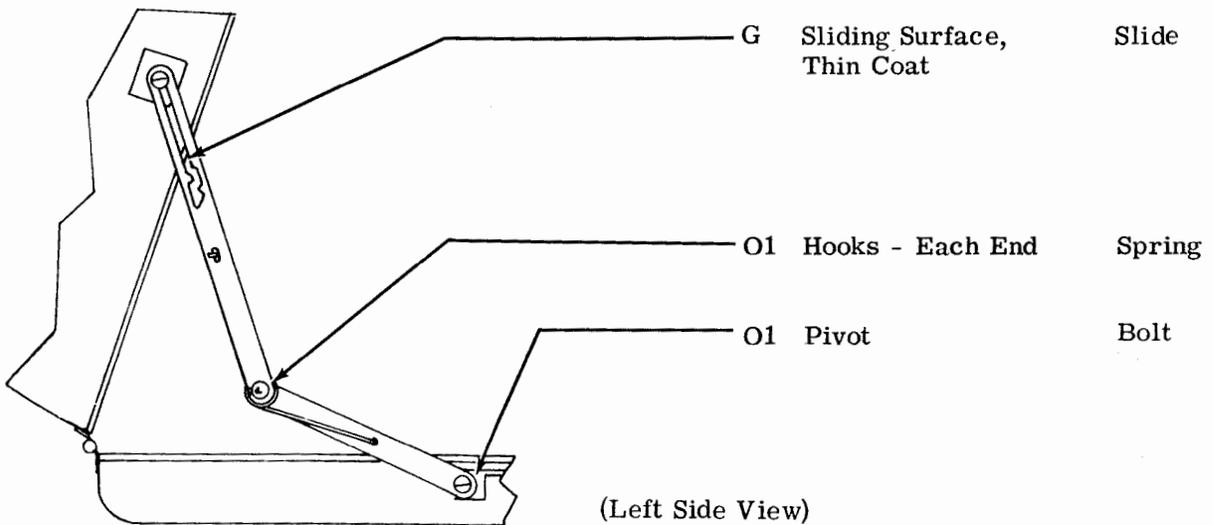
(Front View)

2.05 Front Lid Latches (Left and Right)



(Bottom View)

2.06 Balancing Arm



(Left Side View)

