

32 AND 33 TYPING UNIT

ADJUSTMENTS

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1. GENERAL

1.01 This section, which provides adjustment and maintenance information, has been revised to update the adjustments for sprocket feed mechanisms and to reorganize the section's contents. All information included in this section applies equally well to 5- and 8-level typing units except where noted. Changes are indicated by arrows placed in the margins.

1.02 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Requirements and procedures are set forth in the several texts that accompany the line drawings. Required tools, not supplied with 32 or 33 Teletypewriter Sets, are listed in the appropriate maintenance tools publication.

Note: The configuration of an illustration or line drawing does not necessarily indicate that it and its associated text are exclusively applicable to a particular typing unit.

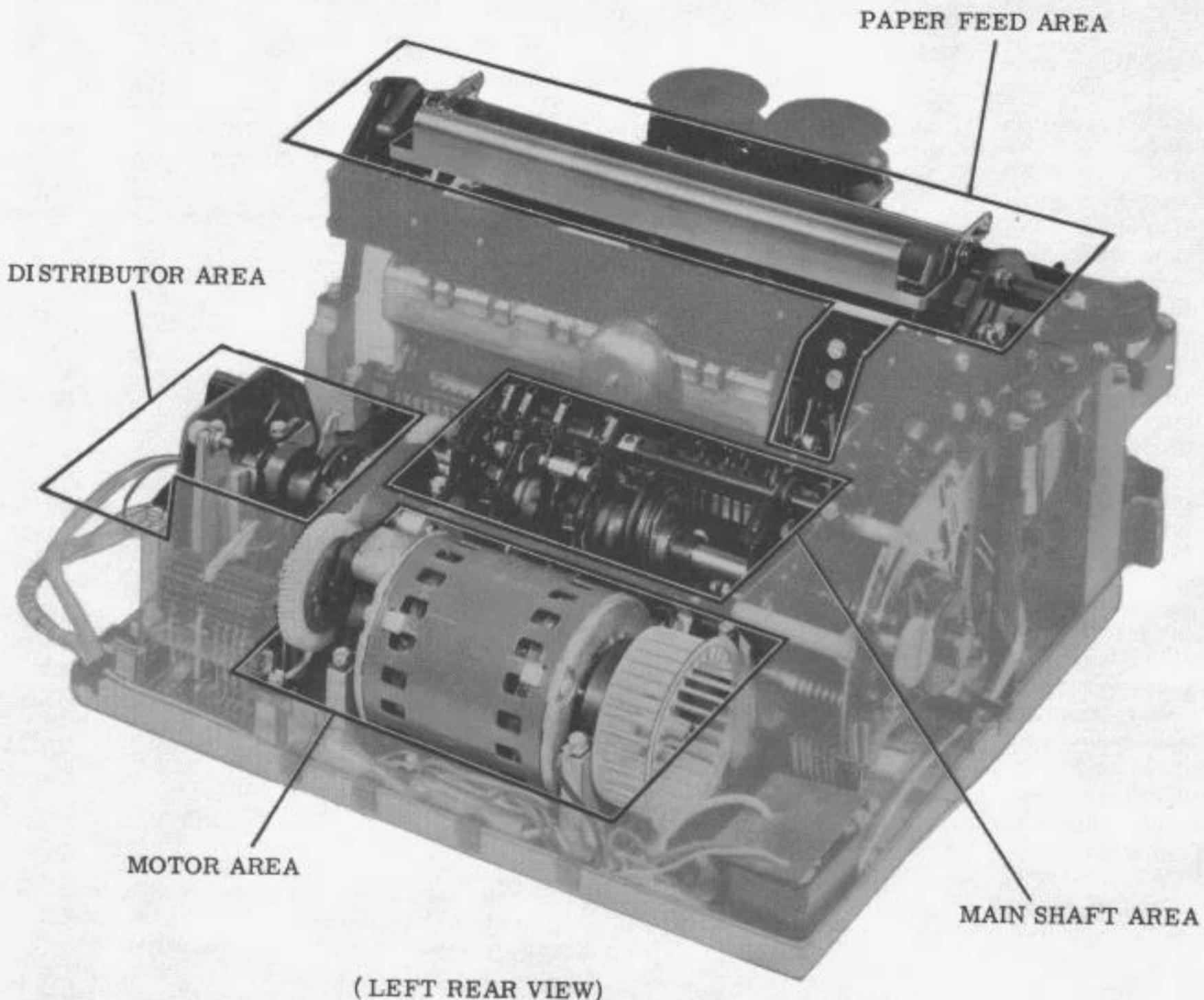


Figure 1 — Distributor, Main Shaft, Motor, and Paper Feed Areas

1.03 The sequence in which the adjustments appear is that which should be followed when a complete readjustment of the typing unit is undertaken. Certain interrelated adjustments, which appear on the same page, should be checked and adjusted in a definite sequence. The sequence is indicated by the letters "(A)," "(B)," etc. No single adjustment should be undertaken without first completely understanding the procedure and knowing the requirements. Therefore, read a procedure all the way through before making an adjustment or checking a spring tension.

1.04 References to "left," "right," "front," "rear," etc consider the typing unit to be viewed from a position where the carriage

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

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

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

1.07 If parts or subassemblies are removed from the typing unit to facilitate the making of an adjustment, be sure that they

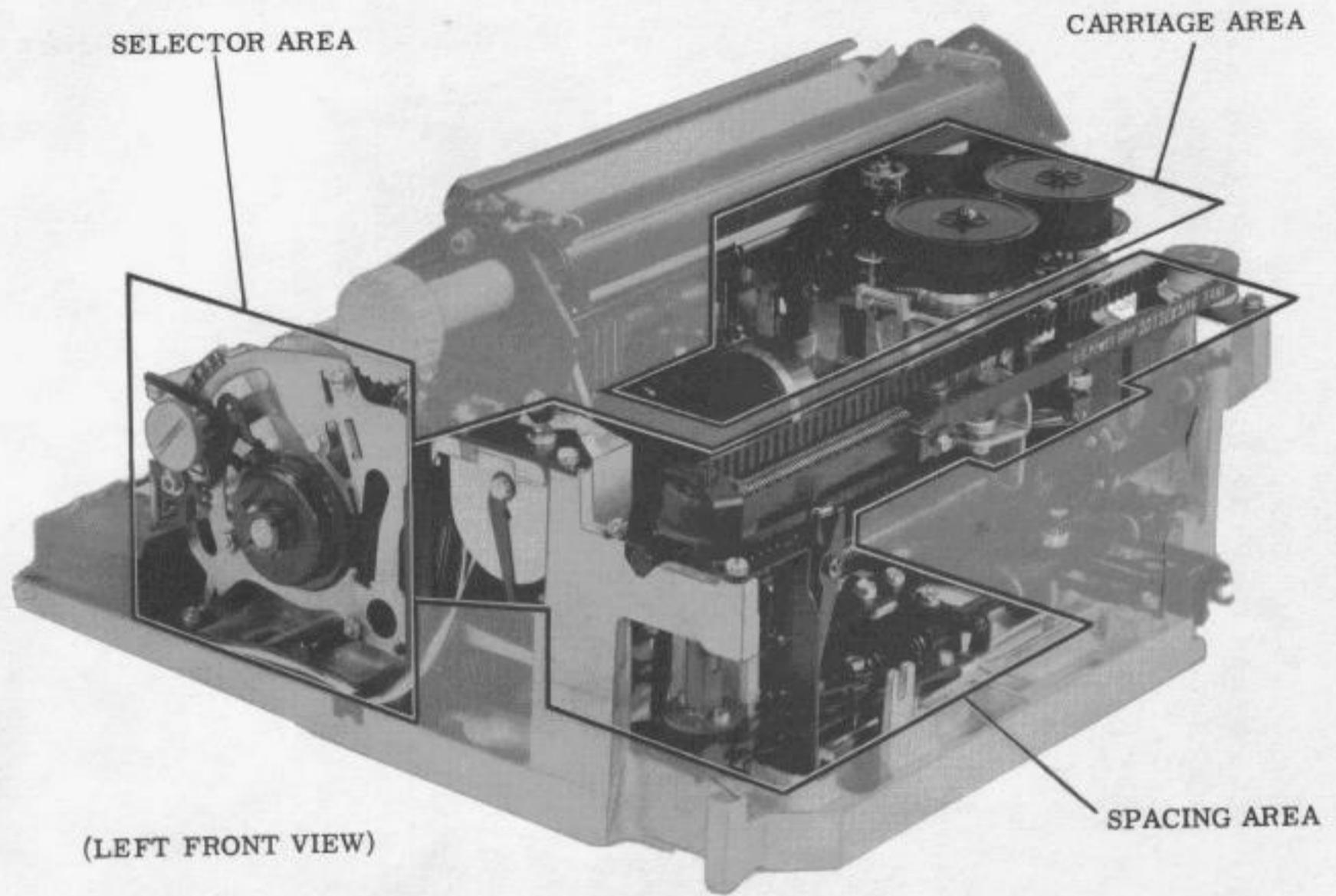


Figure 2 — Carriage, Selector, and Spacing Areas

are subsequently replaced. Recheck any adjustments that may have been affected by the removal of parts or subassemblies.

1.08 Related adjustments are listed with some of the adjustment texts and are primarily intended to aid in trouble shooting the equipment. As an example, suppose that in searching for a trouble it is discovered that the FUNCTION CLUTCH—PRELIMINARY (Main Shaft Area) adjustment does not meet its requirement. Under "Related Adjustments" it is indicated that this adjustment is "Affected By" the LEFT BEARING (Main Shaft Area) and CASTING (Function Area) adjustments. Check these to see if either is the cause of the trouble. Also, it is indicated that the FUNCTION CLUTCH—PRELIMINARY (Main Shaft Area) adjustment affects the FUNCTION CLUTCH ENDPLAY (Main Shaft Area) adjustment. If the former adjustment is changed, check the latter adjustment.

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

Note 1: Use spring scales which are recommended by the manufacturer of 32 and 33 Teletypewriter Sets found in the appropriate maintenance tools publication.

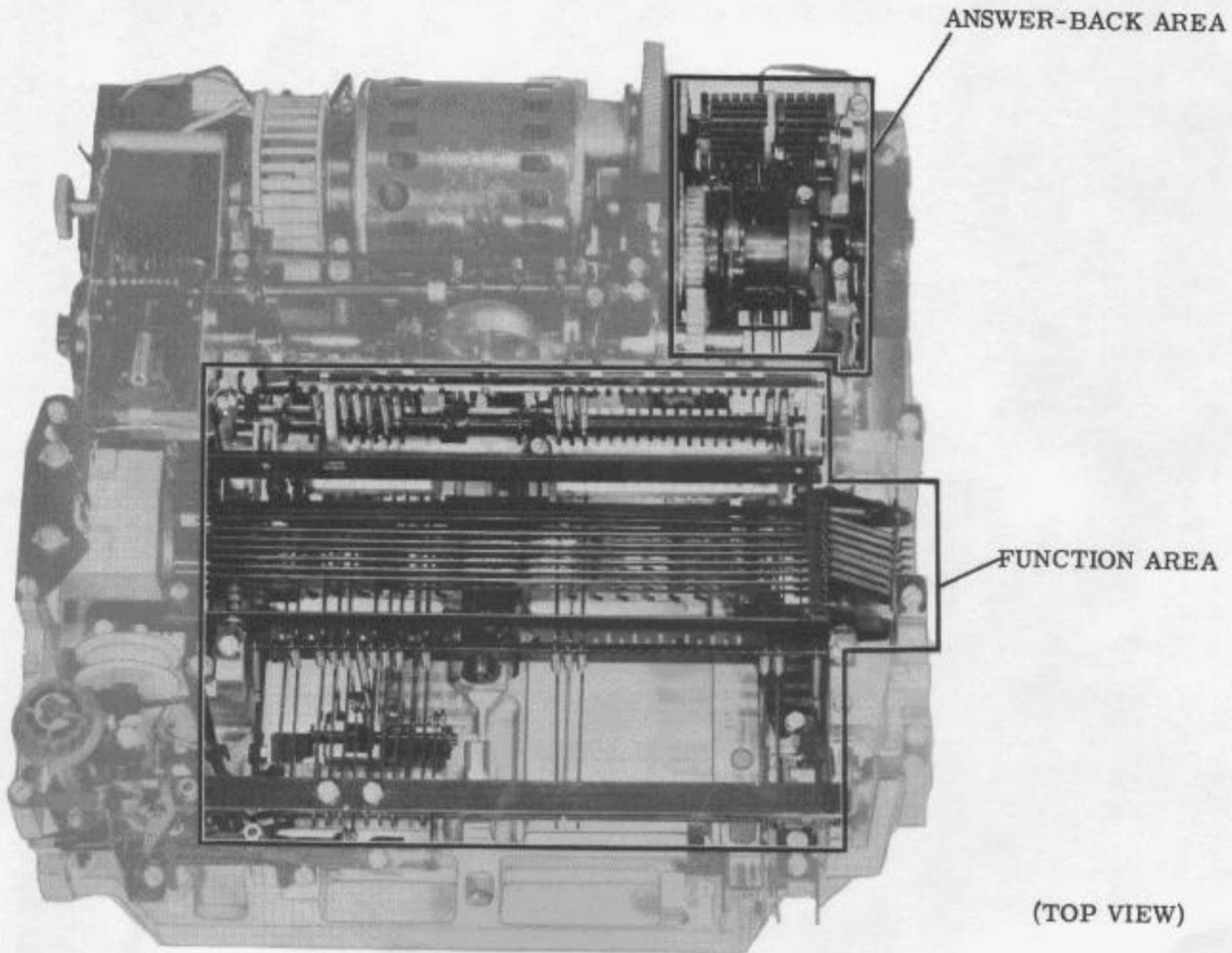


Figure 3 — Answer-Back and Function Areas

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

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

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

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

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

1.12 When disengaged, a clutch is latched so that a shoe lever is held in its stop position by a trip lever while a corresponding latchlever is seated in a notch of the clutch disc. This allows the clutch shoes to release their tension on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any clutch shoes dragging.

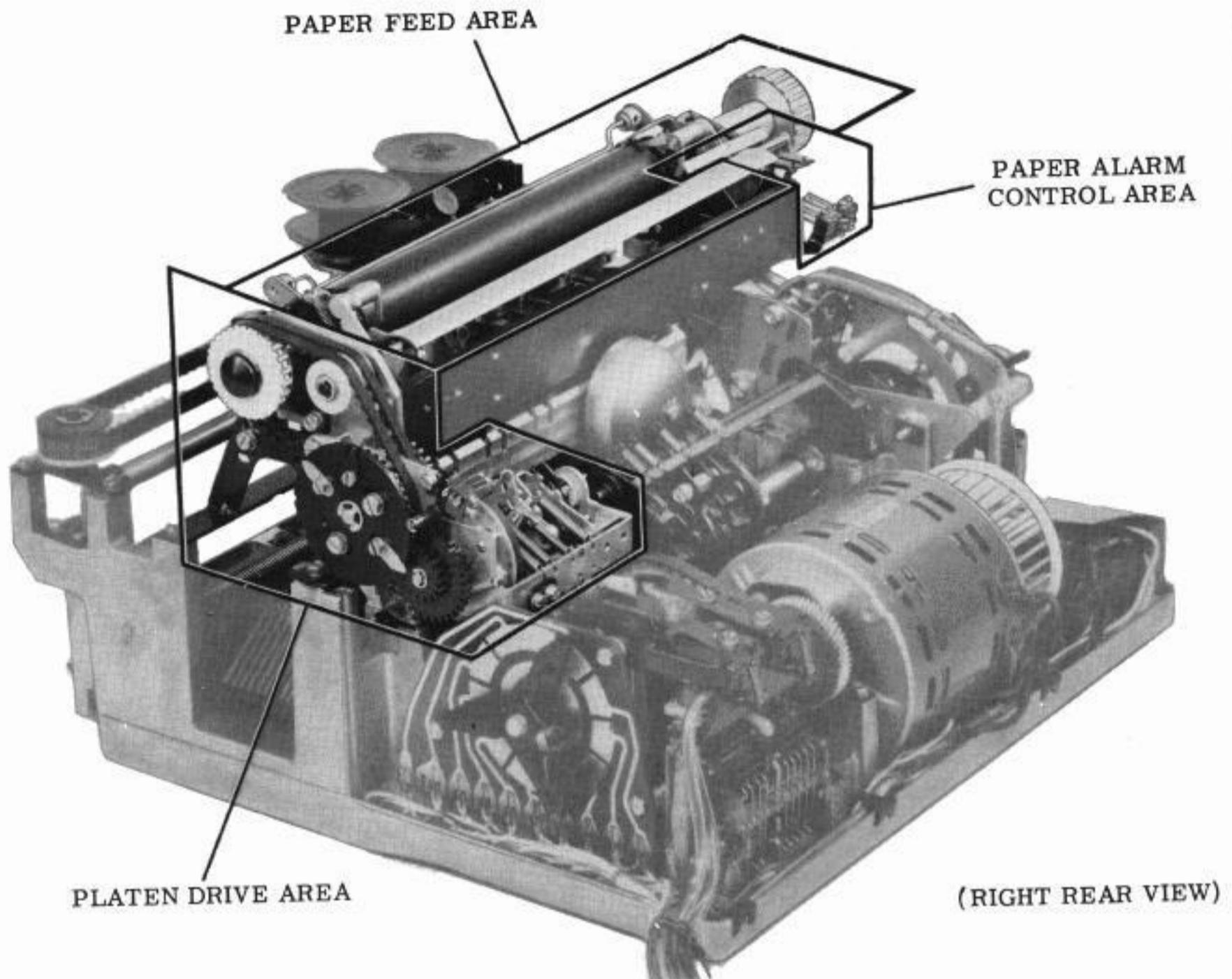


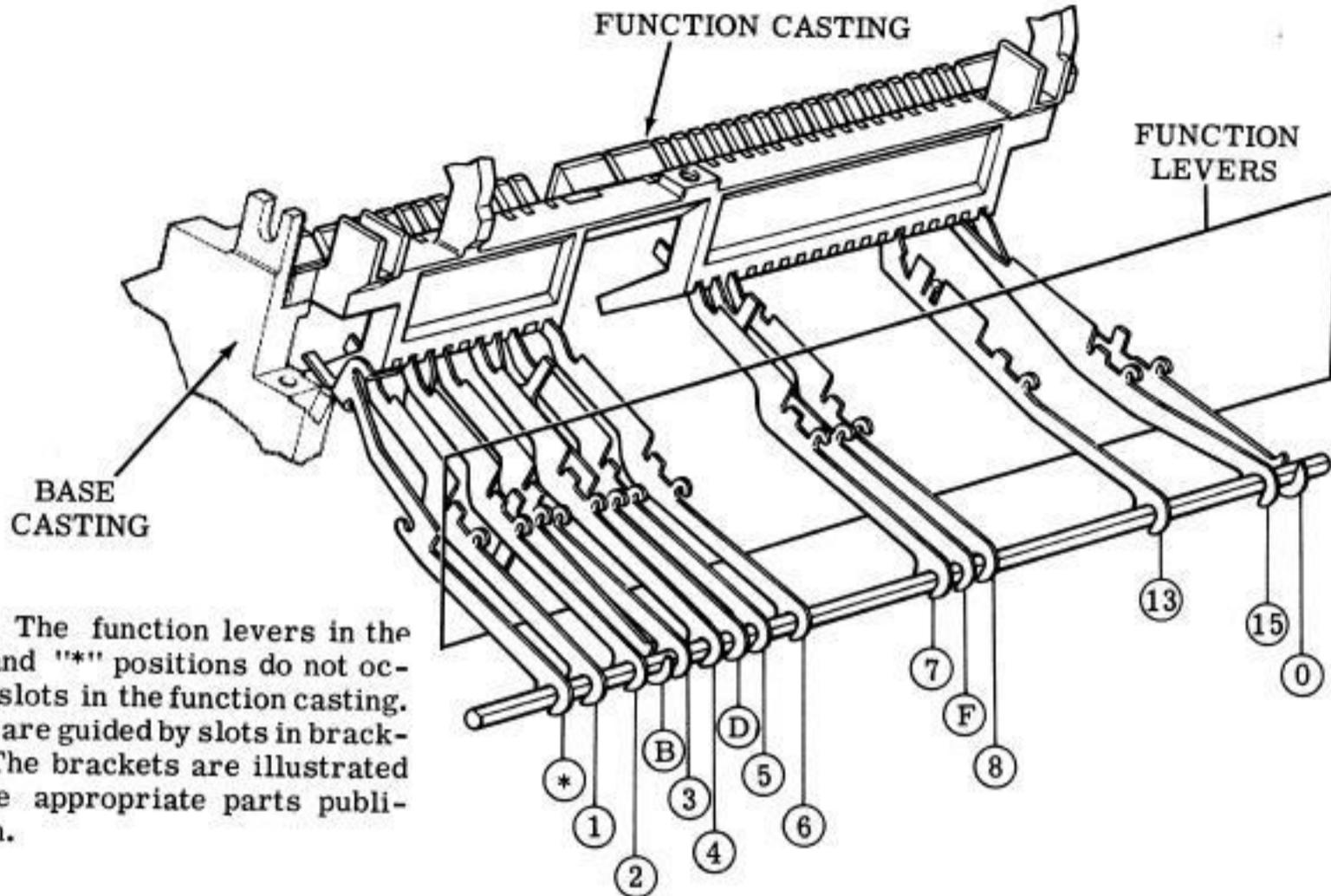
Figure 4 — Paper Alarm Control, Paper Feed, and Platen Drive Areas

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

1.13 A clutch is engaged when a trip lever is moved up so that it no longer holds a shoe lever in its stop position. When this action occurs, the shoe lever and a stop-lug on the clutch disc move apart, and the clutch shoes

wedge against the drum, so that when the shaft is turned, the clutch will turn in unison with it.

1.14 **Manual Operation:** To manually operate the typing unit, place it in the stop condition as instructed in 1.11 and 1.12 above. Momentarily permit the armature to move to its unattracted (rearward) position to trip the selector clutch. Slowly rotate the main shaft clockwise (as viewed from the left) until all push levers have moved under their respective selector levers. Using a spring hook, strip the push levers from under the selector levers corresponding to the spacing elements of the code combination to be set up. Then continue to rotate the main shaft until the proper condition is set up or the character is cleared through the typing unit.



Note: The function levers in the "1" and "*" positions do not occupy slots in the function casting. They are guided by slots in brackets. The brackets are illustrated in the appropriate parts publication.

FUNCTION LEVER CHART			
SLOT	FUNCTION LEVER	FOUND ON	
		32	33
*	LINE FEED BLOCKING	X	X
1	LINE FEED	X	X
2	CARRIAGE RETURN	X	X
B	CARRIAGE RETURN ACTUATING	X	X
3	SPACE	X	X
4	LETTERS SHIFT	X	
D	"LTRS"-"FIGS" SHIFT BLOCKING	X	
5	FIGURES SHIFT OR PRINT SUPPRESS	X	
6	PRINT SUPPRESS	"TA" ONLY a	X ^c
7	SIGNAL BELL	X	X ^b
F	END-OF-LINE BELL	X	X
8	PRINT SUPPRESS	"A" ONLY a	
13	END-OF-TRANSMISSION		X
15	ANSWER-BACK	X	X
0	ANSWER-BACK BLOCKING	X	X

- a - Suppresses printing upon receipt, by selector, of the blank code combination.
 b - Suppresses printing upon receipt, by selector, of any code combination in which the "6" and "7" levels are spacing.
 c - Suppresses printing upon receipt, by selector, of any code combination in which the "3," "4," "5," "6," and "7" levels are marking.

Figure 5 — Function Lever Positions

1.15 On 32 typing units, the selector levers are numbered "1" through "5" from left to right. To set up the character "Y," for example, whose 5-level code combination is 1-3-5, strip the push levers from the "2" and "4" selector levers. On 33 typing units, the selector levers are numbered "1," "2," "3," "4," "5," "7," "6," and "8" from left to right. To set up the character "Y," for example, whose 8-level code combination is 1--45-78, strip the push levers from the "2," "3," and "6" selector levers.

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

<u>Area</u>	<u>Figure</u>
Carriage	2
Distributor	1
Function	3
Main Shaft	1
Motor	1
Selector	2
Spacing	2
Paper Feed (Friction Feed)	1
Paper Feed (Sprocket Feed)	4
Platen Drive	4
Answer-Back	3
Paper Alarm Control	4

1.17 **Function Lever Positions:** The function casting has two different types of slots—alpha and numeric—in which function levers may be positioned. In the numeric slots, function levers sense codebars and may be selected or blocked. If they are selected, they perform some mechanical function or operate an electrical contact. The alpha slots differ from the

numeric slots in that the codebars are not sensed by any function levers placed in these slots. Blocking levers or arms and drive levers are placed in alpha slots.

Note: Function levers for sensing codebars shall not be placed in any of the alpha slots.

The positions and functions of the more commonly used function levers and their slots are shown in Figure 5. Function levers found in slots other than those shown in Figure 5 merely indicate that additional features and functions are provided by the typing unit being viewed.

1.18 **General Maintenance Principles:**

- (a) Lubrication instructions and intervals are given in the appropriate lubrication sections.
- (b) To maintain the operational effectiveness of the equipment, it is recommended that certain parts be replaced at intervals based upon the speed and operating hours as indicated below:

Operating Speed (Words per Minute)	Recommended Maintenance Overhaul Interval (Operating Hours*)	Estimated Service Life (Operating Hours*)
60 or 66	2500	7500
100	1500	4500

*Typing Unit Operating Hours

The parts are available in overhaul maintenance kits listed in the appropriate parts publications.

2. BASIC UNITS

COMMON MECHANISMS

2.01 Motor Area

GEAR BRACKET—PRELIMINARY

Requirement

With head of motor pinion screw pointing upward and intermediate gear held stationary.

Min Some---Max 0.032 inch play at rim of fan.

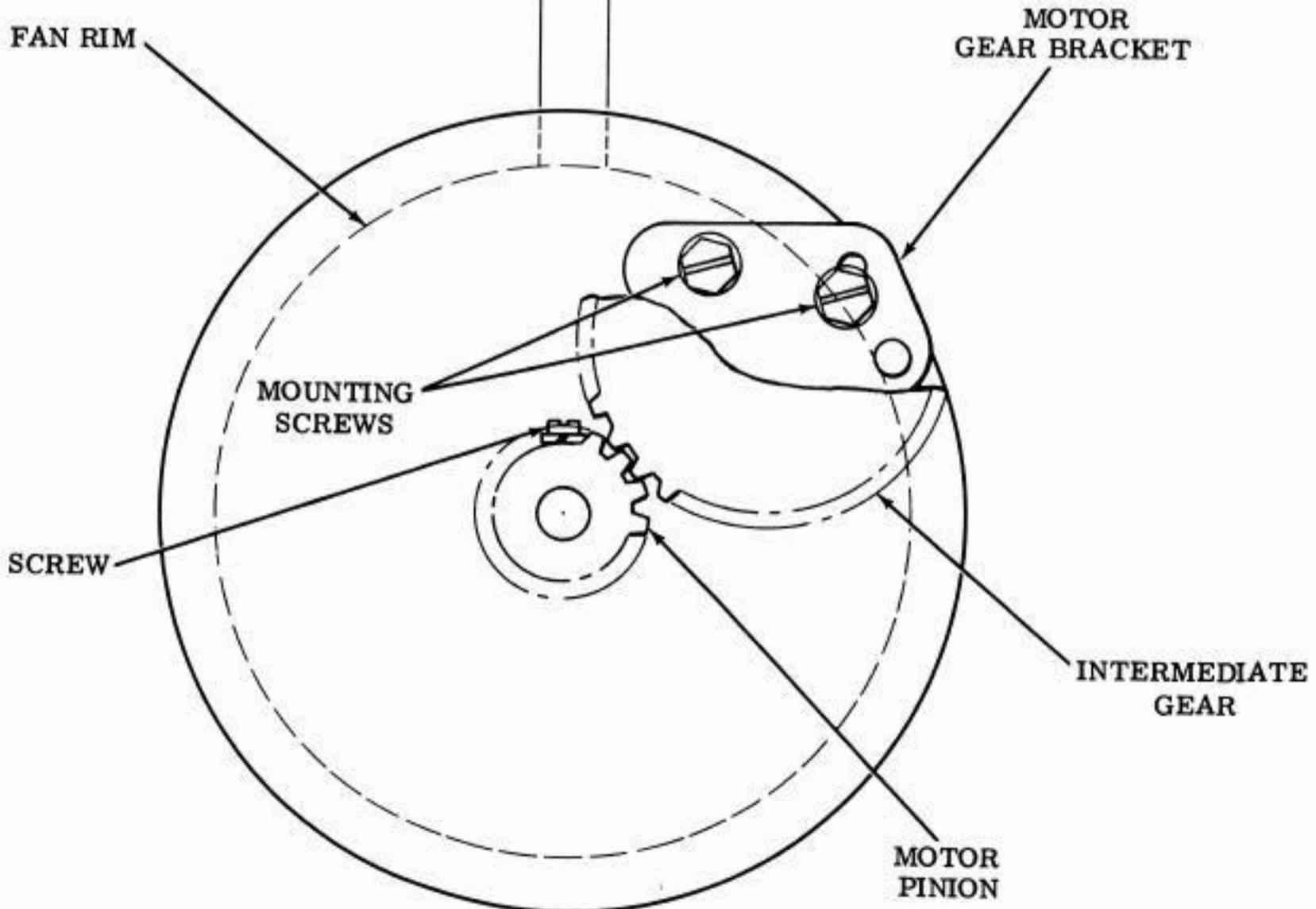
To adjust

Position motor gear bracket with mounting screws loosened.

Related Adjustment

Affects

BELT TENSION—PRELIMINARY (Motor Area)



(RIGHT SIDE VIEW)

2.02 Motor Area (continued)

BELT TENSION—PRELIMINARY

Requirement

Min 0.100 inch---Max 0.135 inch
deflection at center of motor belt when
16 oz pressure is applied at center of belt.

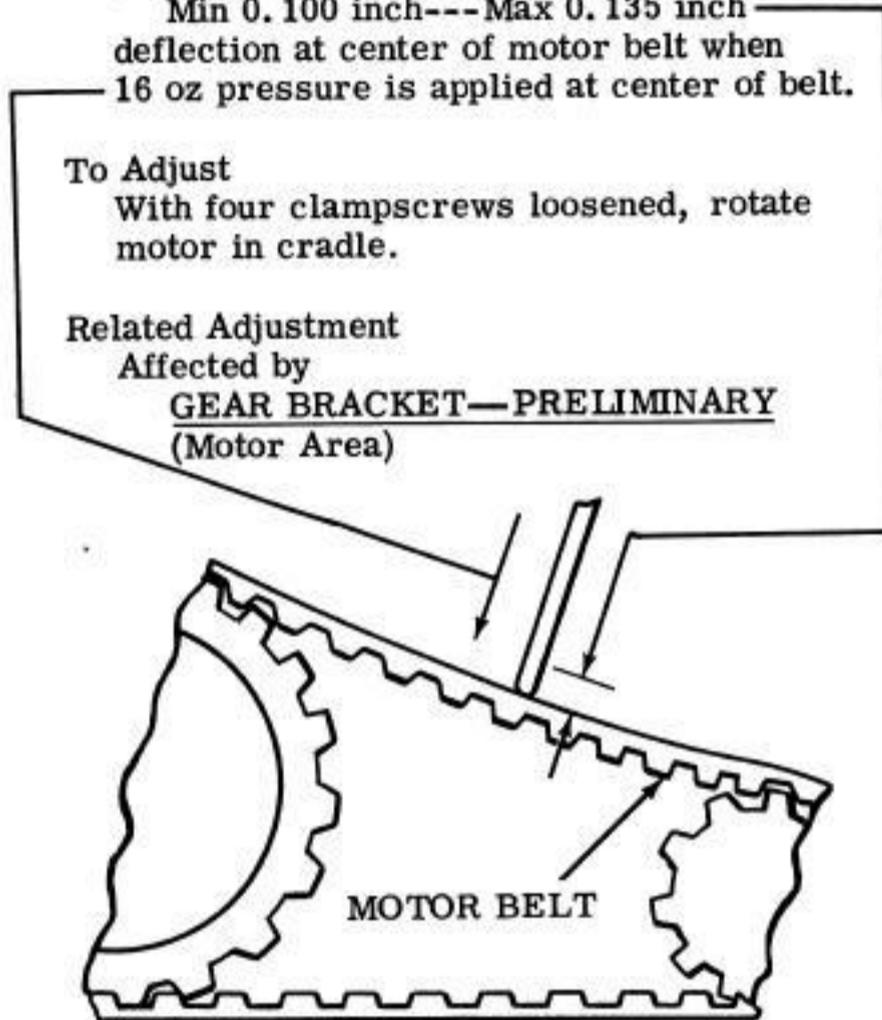
To Adjust

With four clampscrews loosened, rotate
motor in cradle.

Related Adjustment

Affected by

GEAR BRACKET—PRELIMINARY
(Motor Area)



(RIGHT SIDE VIEW)

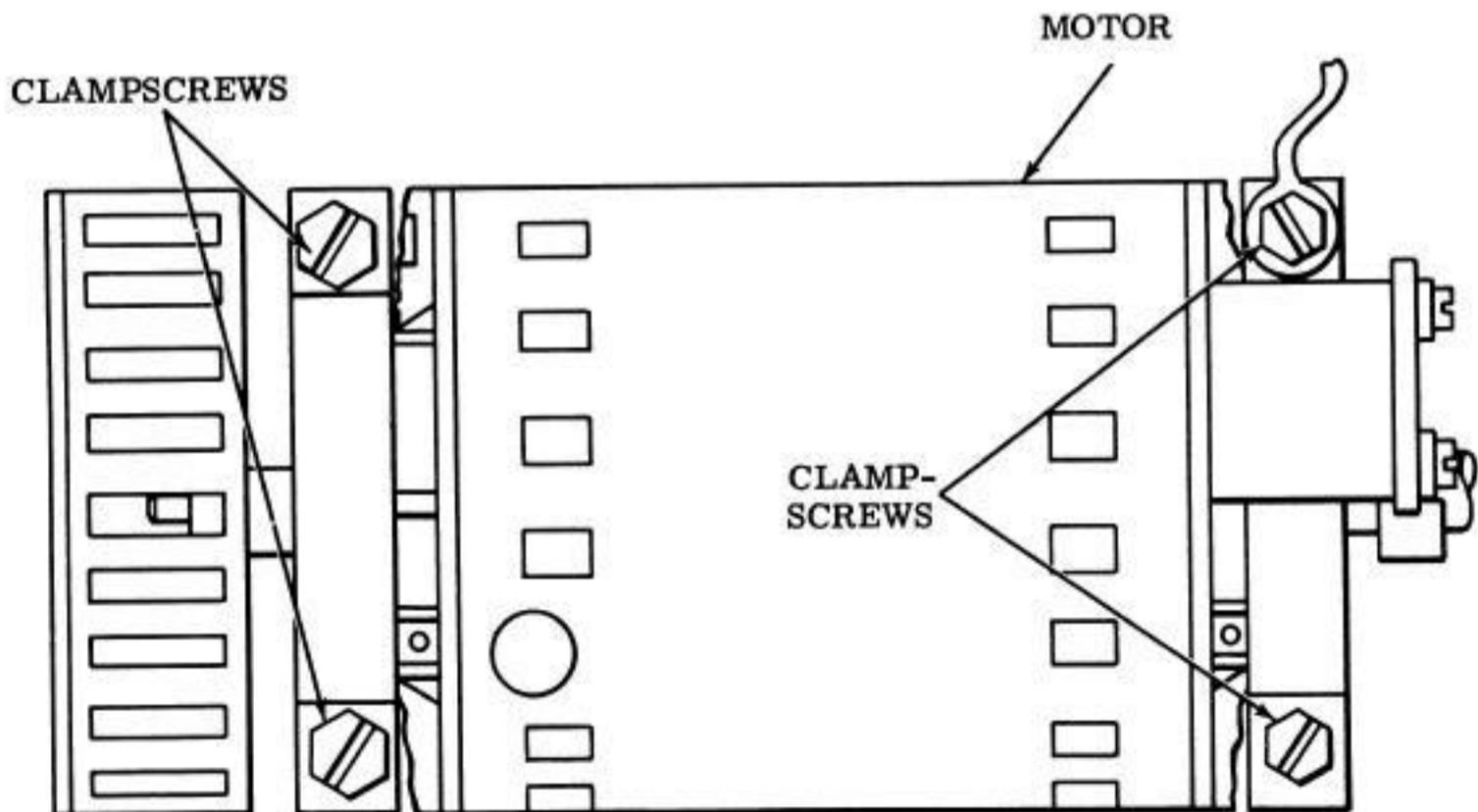
GEAR BRACKET AND BELT TENSION—FINAL

Requirement

The requirements specified in the GEAR BRACKET—PRELIMINARY (Motor Area) and the BELT TENSION—PRELIMINARY (Motor Area) adjustments shall be considered final if the RECEIVING MARGINS (Selector Area) adjustment requirements can be met.

To Adjust

If necessary, refine GEAR BRACKET—PRELIMINARY (Motor Area) and BELT TENSION—PRELIMINARY (Motor Area) adjustments.



(TOP VIEW)

2.03 Distributor Area

(B) LEFT BEARING

Requirement

As gauged by eye
 Min Some---Max 0.012 inch
 between left bearing and clutch
 gear assembly.

To Adjust

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

Related Adjustments

Affected By
SHAFT (Distributor Area)

(A) SHAFT

Requirement

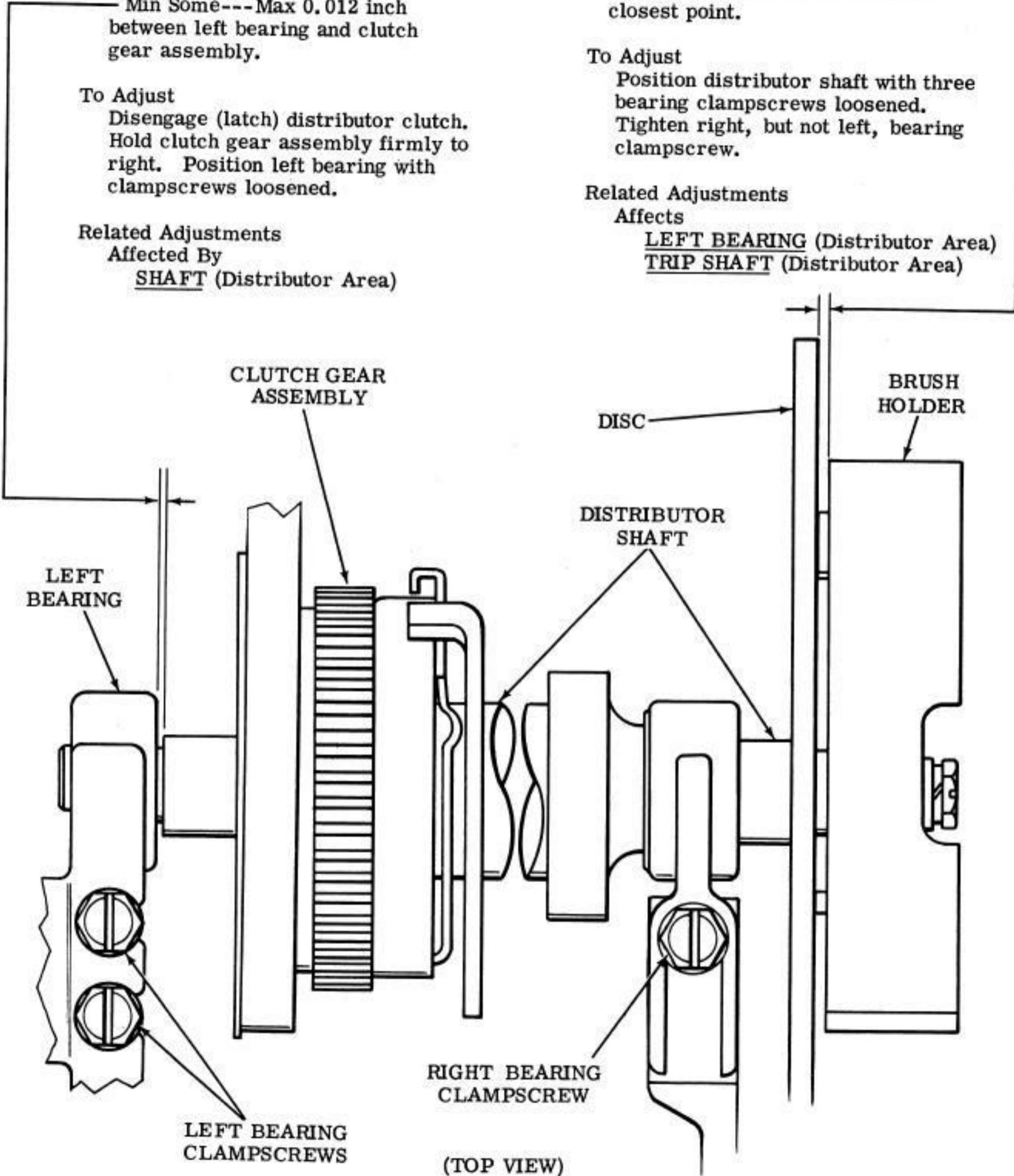
As gauged by eye
 Min 0.010 inch---Max 0.060 inch
 between brush holder and disc at
 closest point.

To Adjust

Position distributor shaft with three
 bearing clampscrews loosened.
 Tighten right, but not left, bearing
 clampscrew.

Related Adjustments

Affects
LEFT BEARING (Distributor Area)
TRIP SHAFT (Distributor Area)



2.04 Distributor Area (continued)

TRIP SHAFT

(1) To Check

With distributor clutch in the stop position, take up and hold the play of the distributor shaft toward the left side of the typing unit. Take up play of latchlever toward right side of the typing unit and release.

Requirement

The latchlever shall engage the clutch disc
Min Full thickness _____
of clutch disc.

(2) To Check

With distributor clutch in the stop position, take up and hold the play of the distributor shaft toward the left side of the typing unit. Take up play of shoe lever toward the left side of the typing unit and release. Take up the play of the trip lever toward the right side of the typing unit and release.

Requirement

Trip lever shall engage shoe lever
Min Two-thirds width _____
of formed end of shoe lever.

Related Adjustment

Affected By
SHAFT (Distributor Area)

(3) To Check

Take up play on distributor shaft toward the right side of the typing unit and release. Take up play of shoe lever toward the right side of the typing unit and release. Take up play of trip lever toward the left side of the typing unit and release.

Requirement

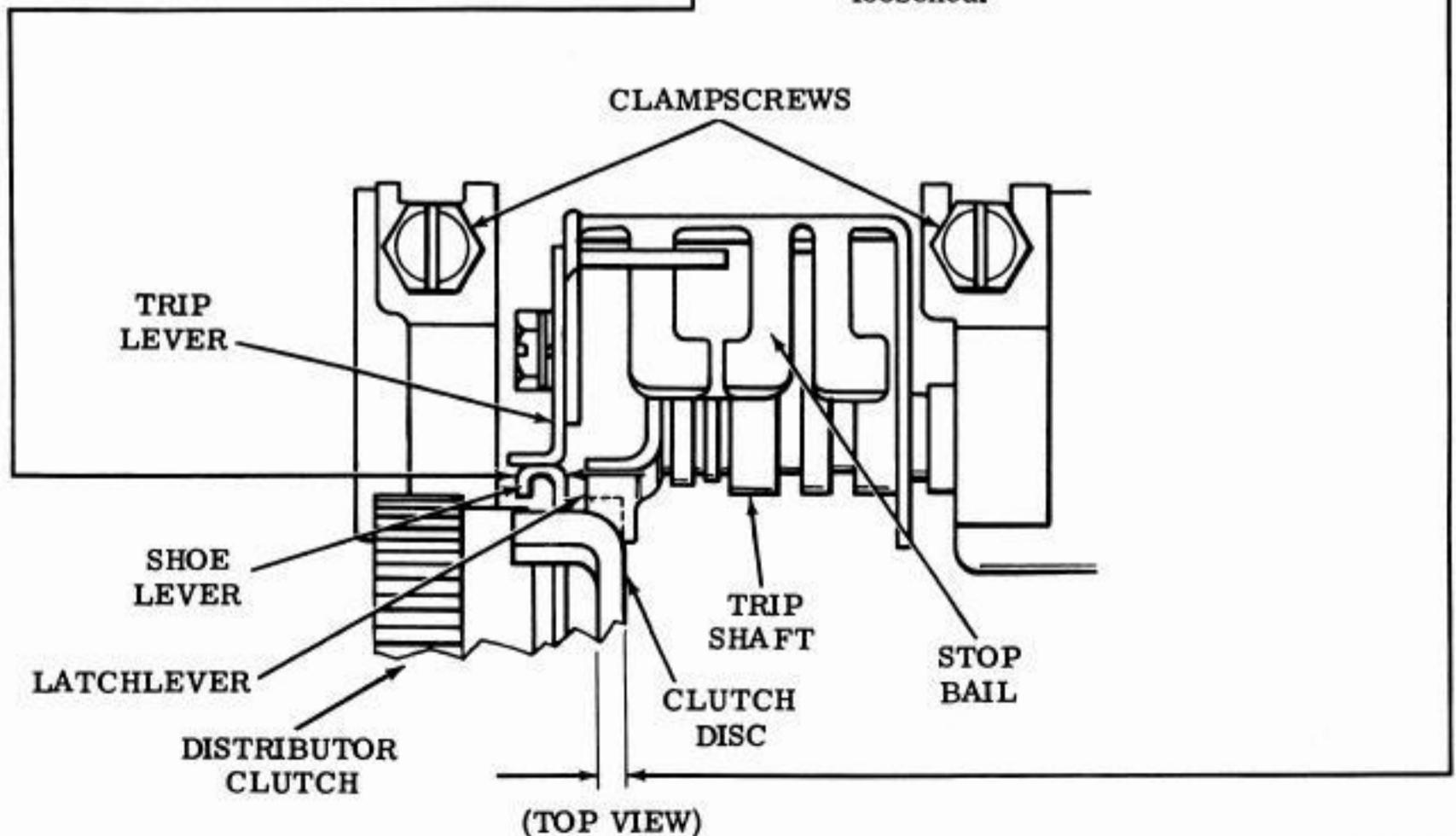
Trip lever shall engage shoe lever
Min Two-thirds width _____
of formed end of shoe lever.

(4) Requirement

Rear extension of control lever shall not bind in its slot in answer-back block.

To Adjust

Position trip shaft with clampscrews loosened.



2.05 Distributor Area (continued)

TRIP LEVER

To Check

Disengage (latch) distributor clutch. Make sure keyboard universal lever is in its down position. Measure and record clearance between shoe lever and stop-lug. Trip distributor clutch by moving trip lever rearward. Measure and record same clearance.

Requirement

- (1) With distributor clutch disengaged (latched)
Min 0.015 inch
between stop-lug and shoe lever.
- (2) Clearance between stop-lug and shoe lever
Min 0.050 inch---Max 0.080 inch
greater when distributor clutch is engaged than when disengaged.

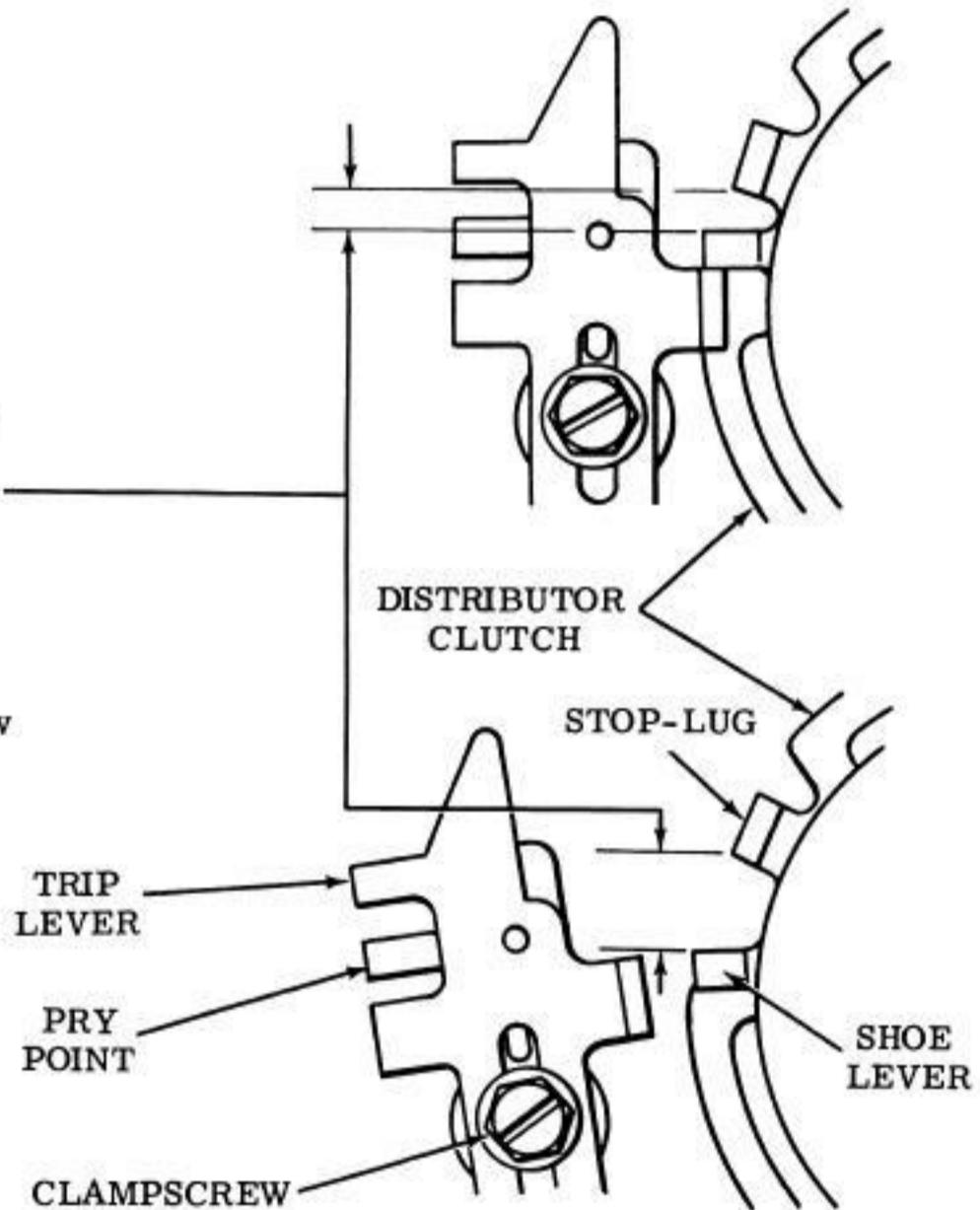
To Adjust

Remove answer-back drum. Using pry point, position trip lever with clampscrew loosened. Replace answer-back drum.

Related Adjustment

Affects

BRUSH HOLDER (Distributor Area)



(LEFT SIDE VIEW)

2.06 Distributor Area (continued)

BRUSH HOLDER

Requirement

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

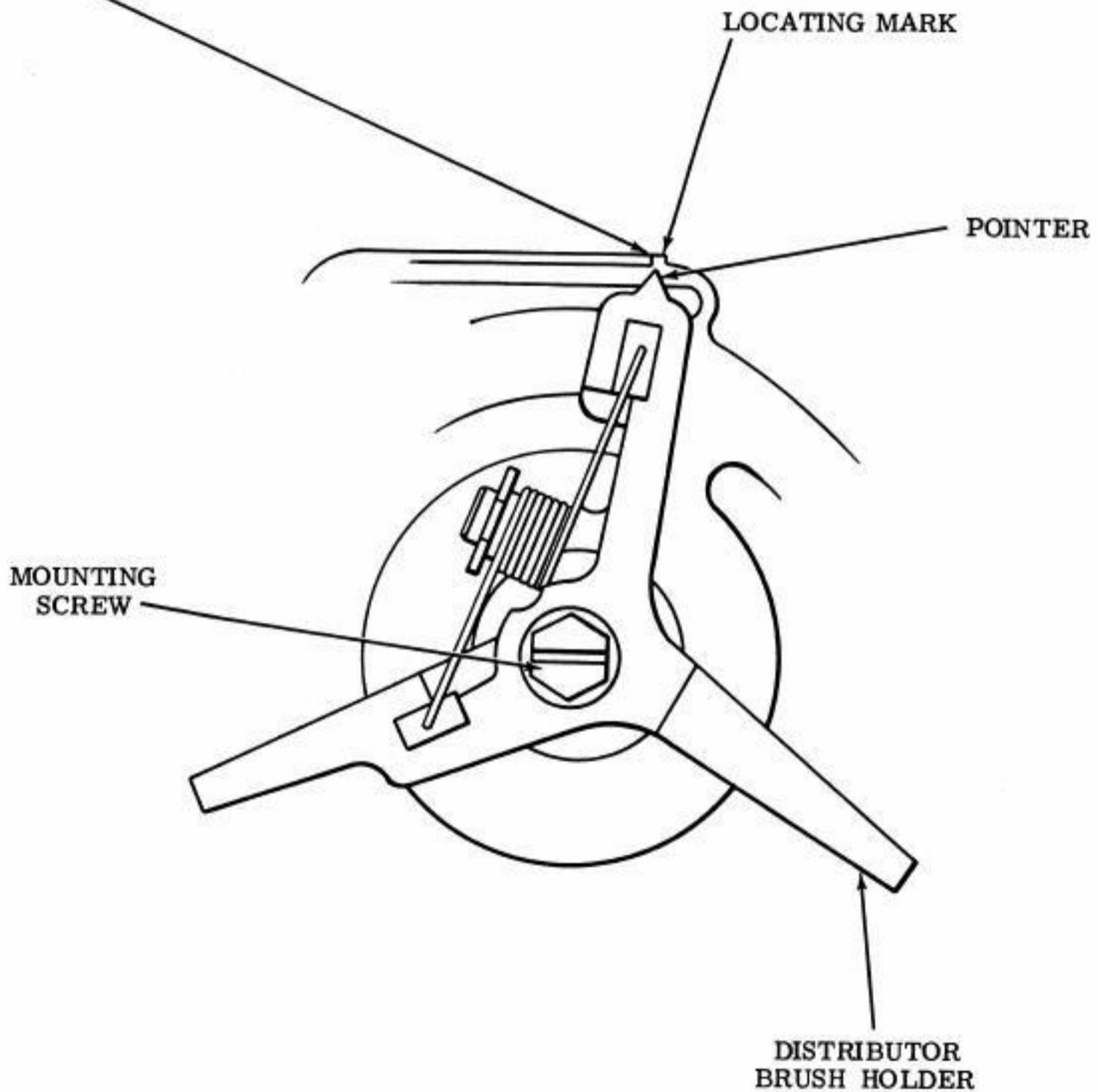
To Adjust

Position distributor brush holder with mounting screws loosened.

Related Adjustment

Affected By

TRIP LEVER (Distributor Area)



(RIGHT SIDE VIEW)

2.07 Main Shaft Area and Selector Area

LEFT BEARING

Requirement

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

To Adjust

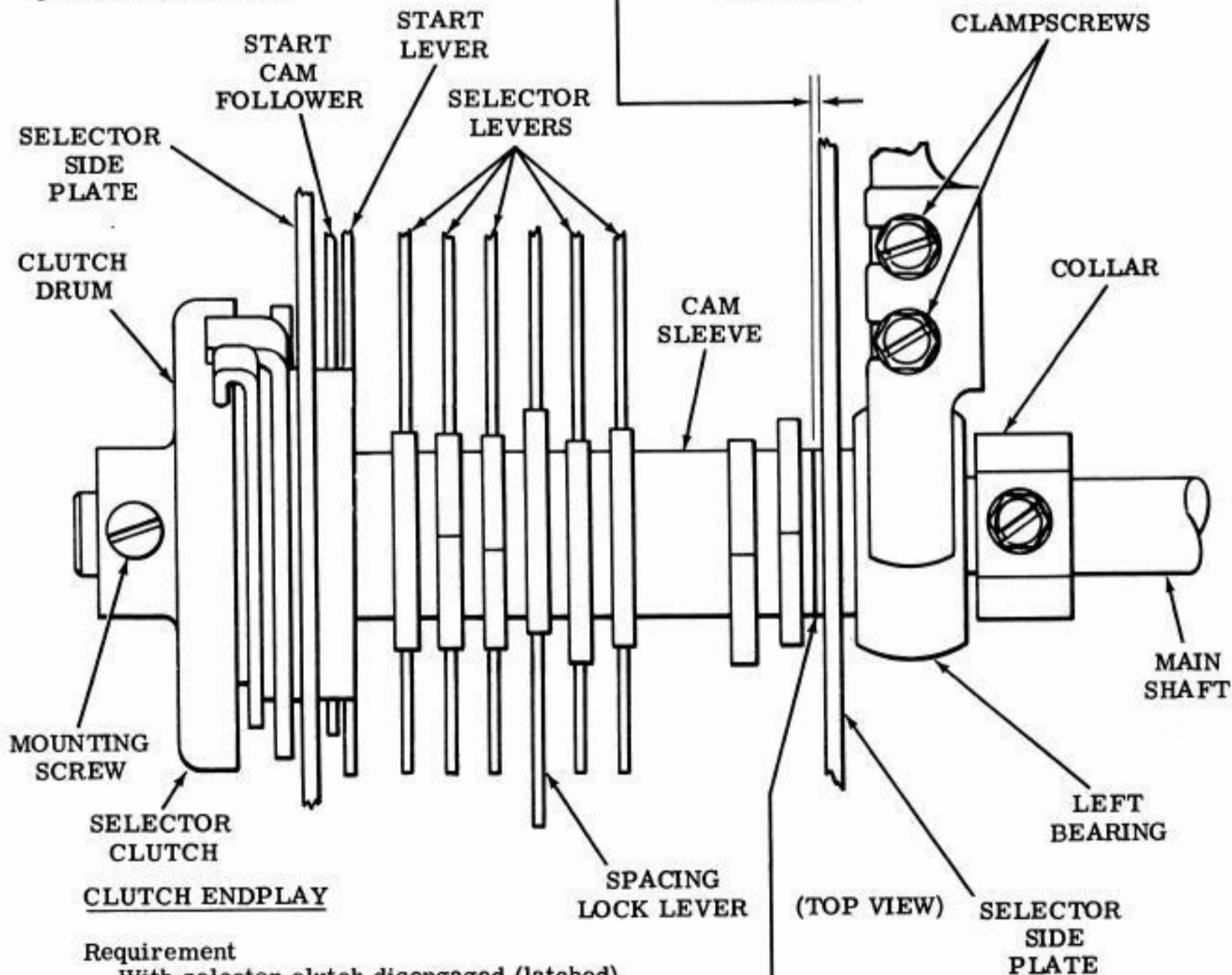
With left bearing clampscrews loosened, position left bearing.

Note: If a complete readjustment of typing unit is undertaken, loosen all set screws on main shaft except for one in collar to right of left bearing.

Related Adjustments

Affects

- FUNCTION CLUTCH—PRELIMINARY (Main Shaft Area)
- DRIVEN GEAR (Main Shaft Area)
- CODEBAR CLUTCH TRIP LEVER (Main Shaft Area)



Requirement

With selector clutch disengaged (latched), there shall be
 Min 0.002 inch---Max 0.012 inch
 endplay in the selector clutch.

To Adjust

With the selector clutch drum mounting screw friction tight, position the clutch drum in its oversize hole.

2.08 Main Shaft Area

FUNCTION CLUTCH ENDPLAY

Requirement

With function clutch disengaged (latched)

Min Some---Max 0.015 inch endplay in function clutch, as gauged by eye, when all play is taken up to make it maximum.

To Adjust

Position function clutch with mounting screw loosened.

Related Adjustments

Affects

CODEBAR CLUTCH
(Main Shaft Area)

Affected By

FUNCTION CLUTCH — PRELIMINARY (Main Shaft Area)

** Common Mechanisms

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

FUNCTION CLUTCH—PRELIMINARY *

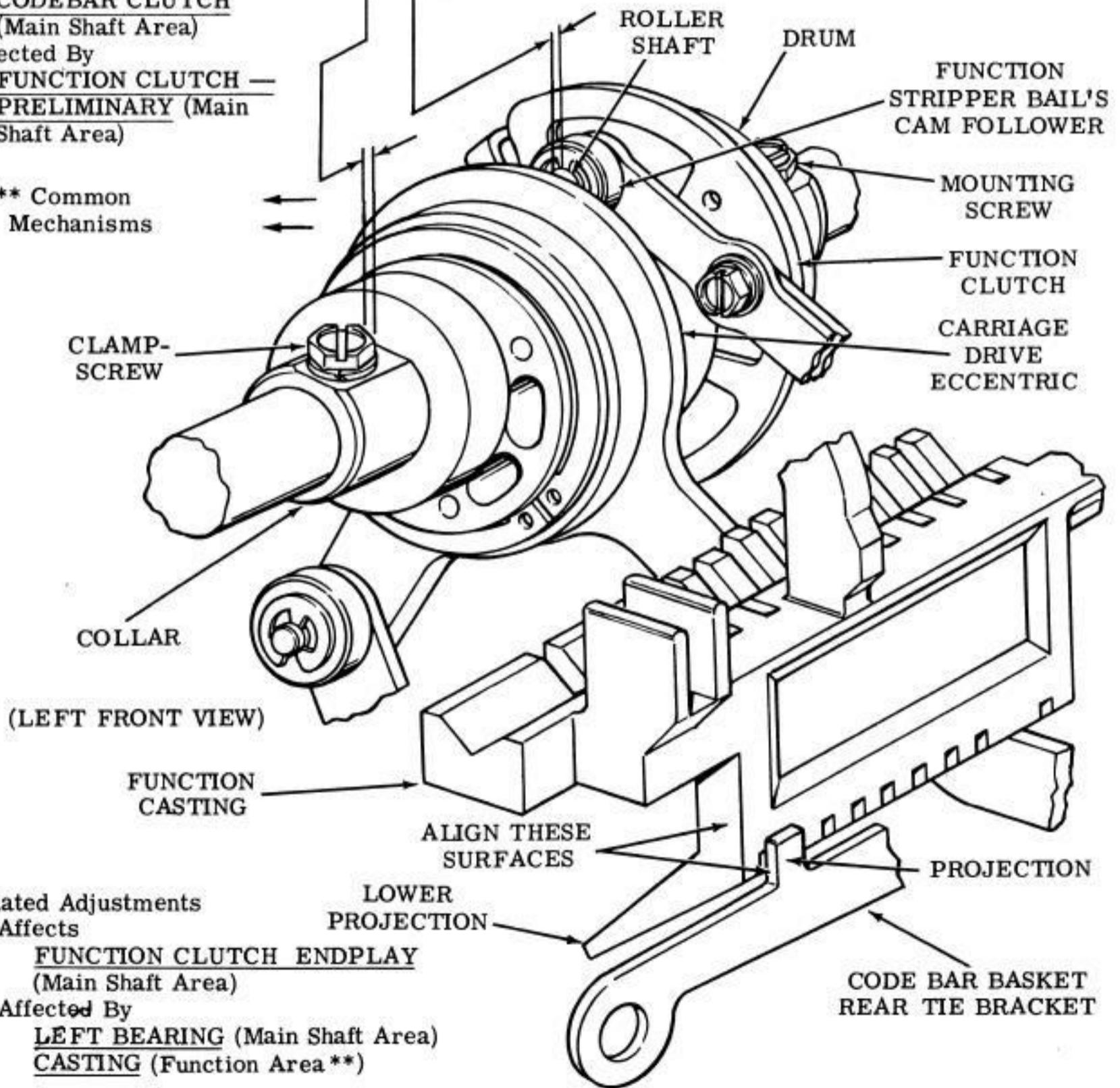
Requirement

As gauged by eye, clearance between carriage drive eccentric and the end of function stripper bail cam follower roller shaft

Min 0.020 inch---Max 0.040 inch when all play is taken up to make clearance minimum.

To Adjust

With function casting clampscrews friction tight, line up left side of lower portion of function casting with left side of lower projection from codebar basket rear tie bracket by moving the function casting. Loosen clamp-screw in the collar and position function clutch.



* Related Adjustments

Affects

FUNCTION CLUTCH ENDPLAY
(Main Shaft Area)

Affected By

LEFT BEARING (Main Shaft Area)
CASTING (Function Area **)

2.09 Main Shaft Area (continued)

CODEBAR CLUTCH

Requirement

With codebar clutch disengaged (latched)

Min Some --- Max 0.015 inch
endplay in codebar clutch, as gauged by eye, when play
is taken up to make clearance maximum.

To Adjust

Position codebar clutch with codebar clutch mounting
screw loosened.

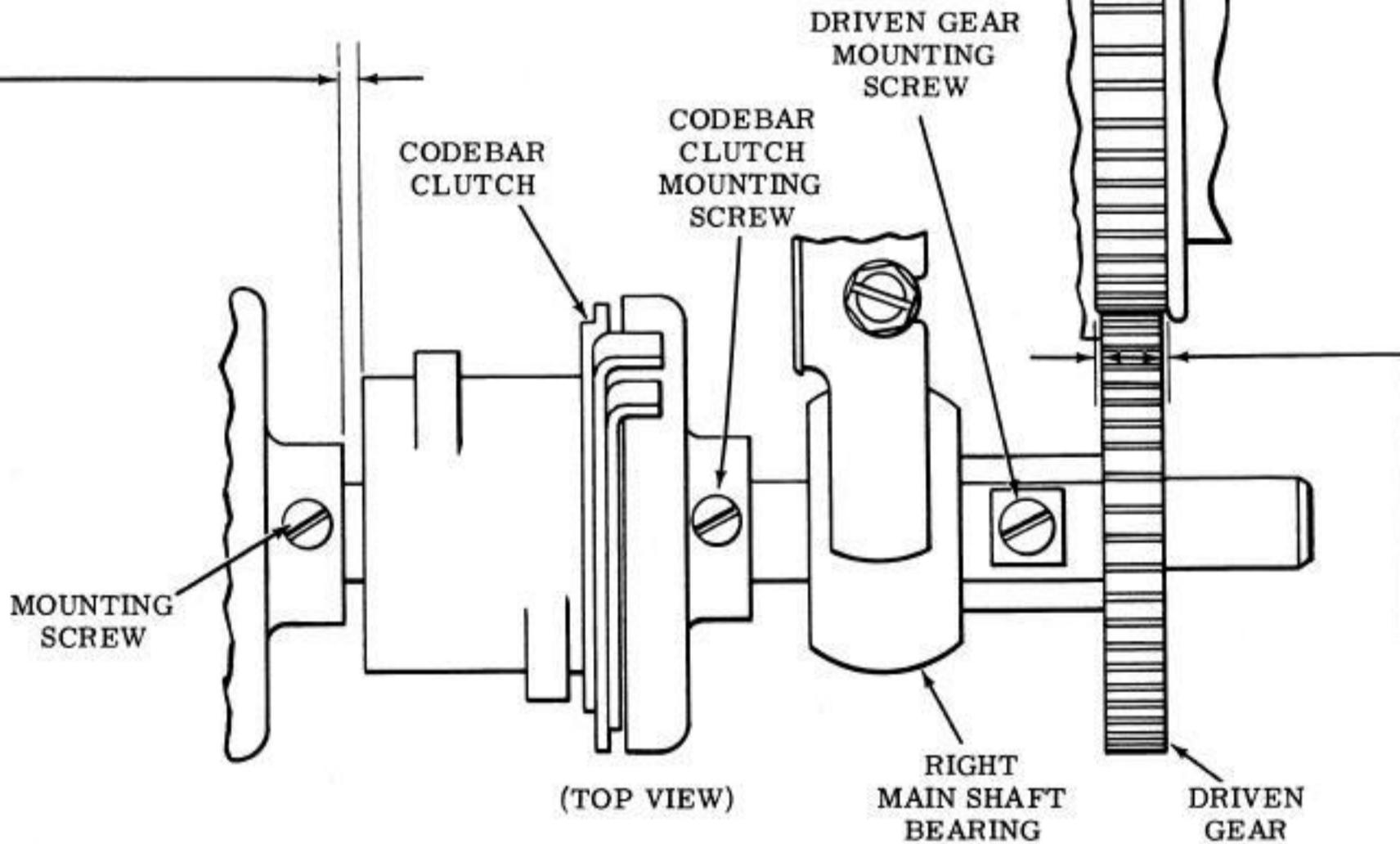
Related Adjustments

Affects

CODEBAR CLUTCH TRIP LEVER (Main Shaft Area)

Affected By

FUNCTION CLUTCH ENDPLAY (Main Shaft Area)



DRIVEN GEAR

Requirement

As gauged by eye, driven gear centered on drive gear.

To Adjust

Position driven gear with driven gear mounting
screw loosened.

Related Adjustments

Affected By

SHAFT (Distributor Area)

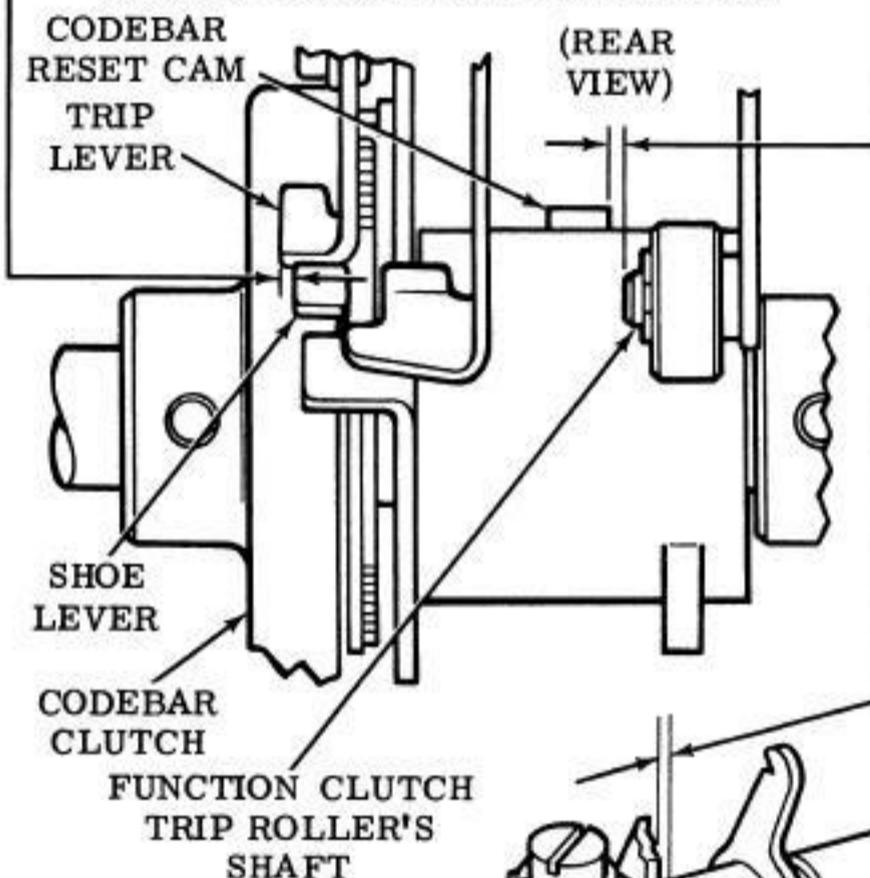
LEFT BEARING (Distributor Area)

2.10 Main Shaft Area (continued)

CODEBAR CLUTCH TRIP LEVER

Requirement

- (1) As gauged by eye, codebar clutch trip lever approximately aligned with shoe lever within 0.030 inch.
- (2) Min 0.005 inch between function clutch trip roller's shaft and codebar reset cam when all play is taken up to make clearance minimum.



To Adjust

Position trip lever with clampscrew loosened.

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

Related Adjustments

Affects

- LATCHLEVERS (Main Shaft Area)
- CODEBAR CLUTCH FOLLOWER ARM (Main Shaft Area)

Affected By

- LEFT BEARING (Main Shaft Area)
- CODEBAR CLUTCH (Main Shaft Area)

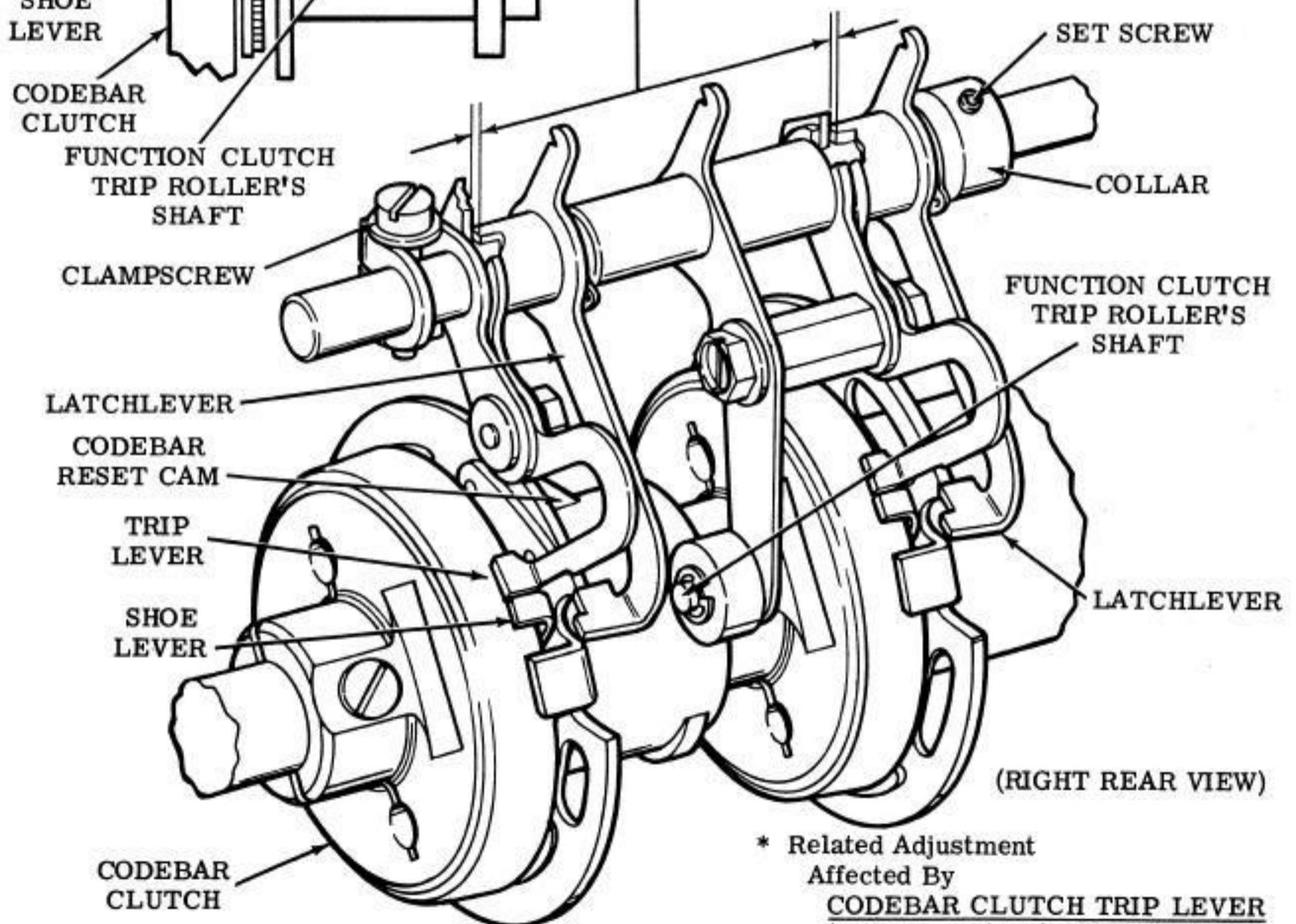
LATCHLEVERS *

Requirement

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

To Adjust

Position collar with set screw loosened.

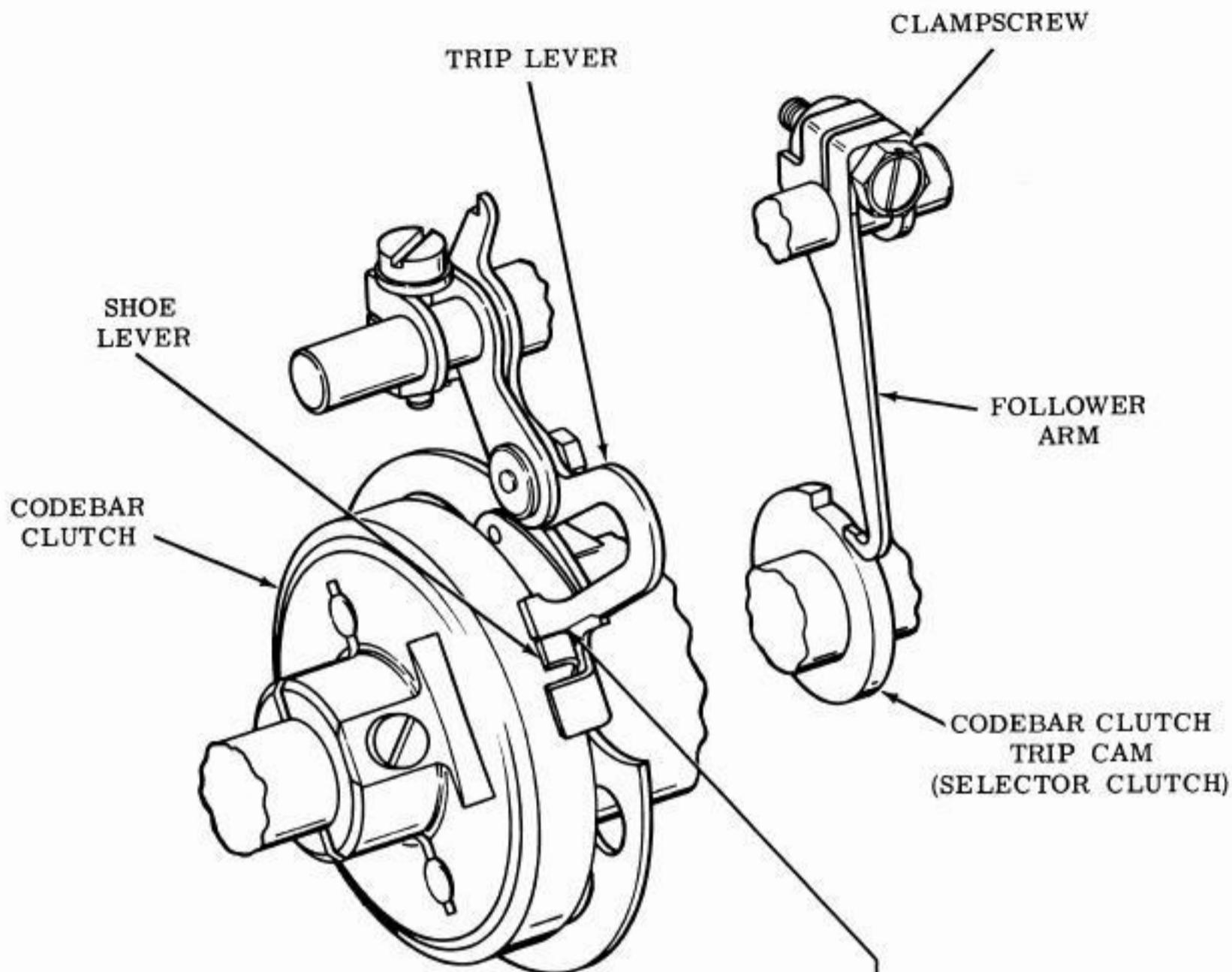


* Related Adjustment

Affected By

- CODEBAR CLUTCH TRIP LEVER (Main Shaft Area)

2.11 Main Shaft Area (continued)



(RIGHT REAR VIEW)

CODEBAR CLUTCH FOLLOWER ARM

Requirement

With typing unit in stop condition, trip lever shall engage shoe lever by approximately full thickness of shoe lever, as gauged by eye.

To Adjust

Position codebar clutch trip cam follower arm with its clampscrew loosened.

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

Related Adjustment

Affected By

CODEBAR CLUTCH TRIP LEVER (Main Shaft Area)

2.12 Main Shaft Area (continued)

TRIP LEVER SPRINGS

Note: Check for both codebar and function clutches.

Requirement

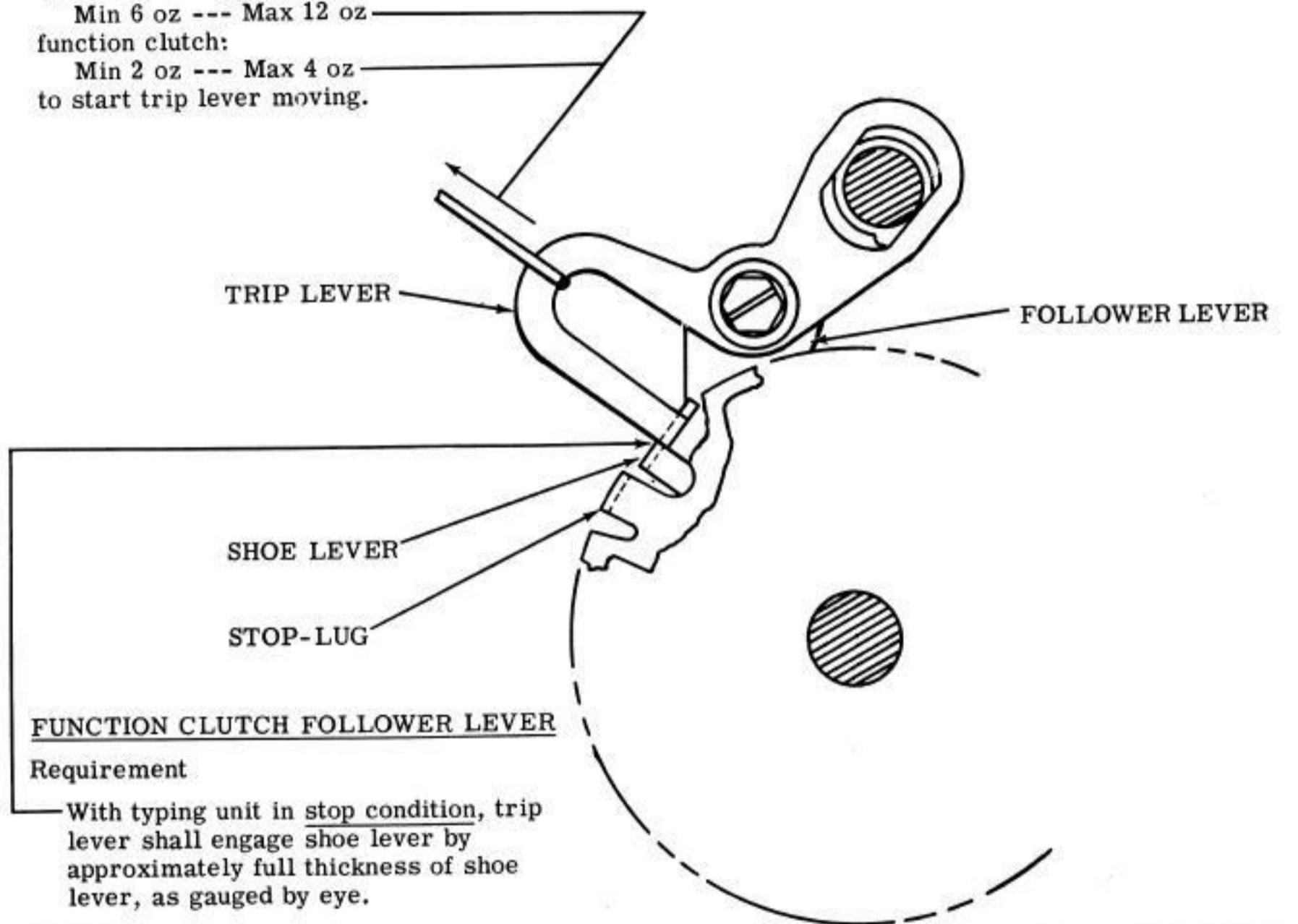
With clutch engaged, codebar clutch:

Min 6 oz --- Max 12 oz

function clutch:

Min 2 oz --- Max 4 oz

to start trip lever moving.



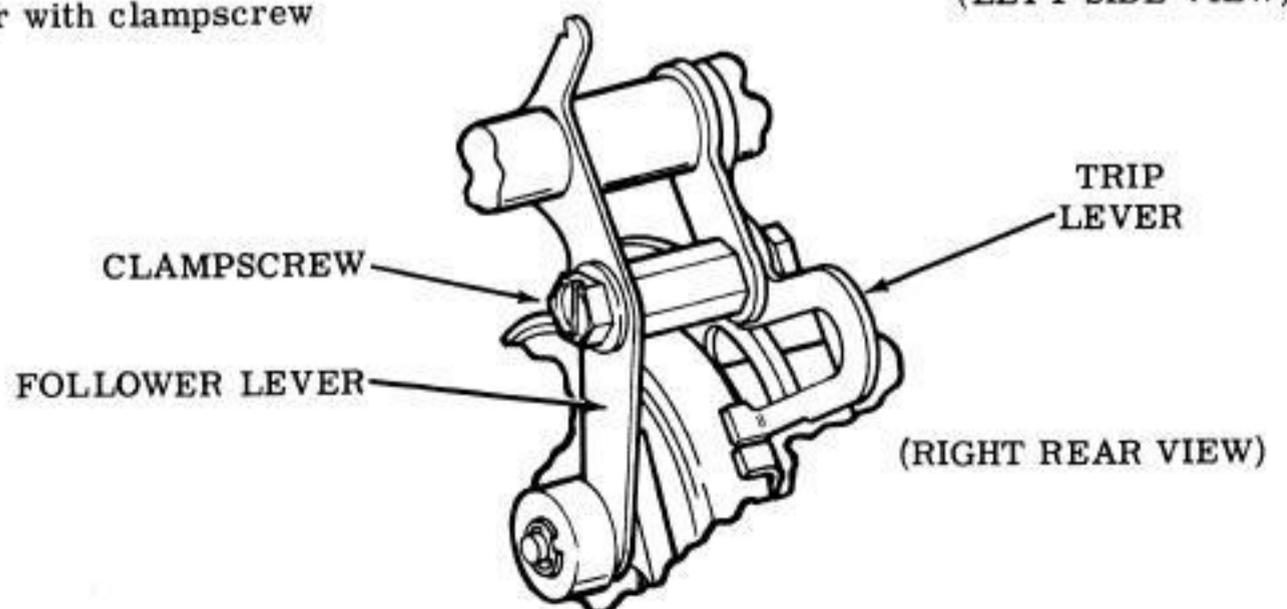
Requirement

With typing unit in stop condition, trip lever shall engage shoe lever by approximately full thickness of shoe lever, as gauged by eye.

To Adjust

Position follower lever with clampscrew loosened.

(LEFT SIDE VIEW)



(RIGHT REAR VIEW)

2.13 Main Shaft Area (continued)

Note 1: Make this adjustment for both function and codebar clutches.

CODEBAR AND FUNCTION CLUTCH TRIP LEVERS

- (1) To Check
Disengage (latch) clutch.

Requirement

Min 0.015 inch
between shoe lever and stop-lug.

- (2) To Check
With the clutch disengaged (latched), trip clutch by lifting trip lever, permitting trip lever to come to rest on shoe lever.

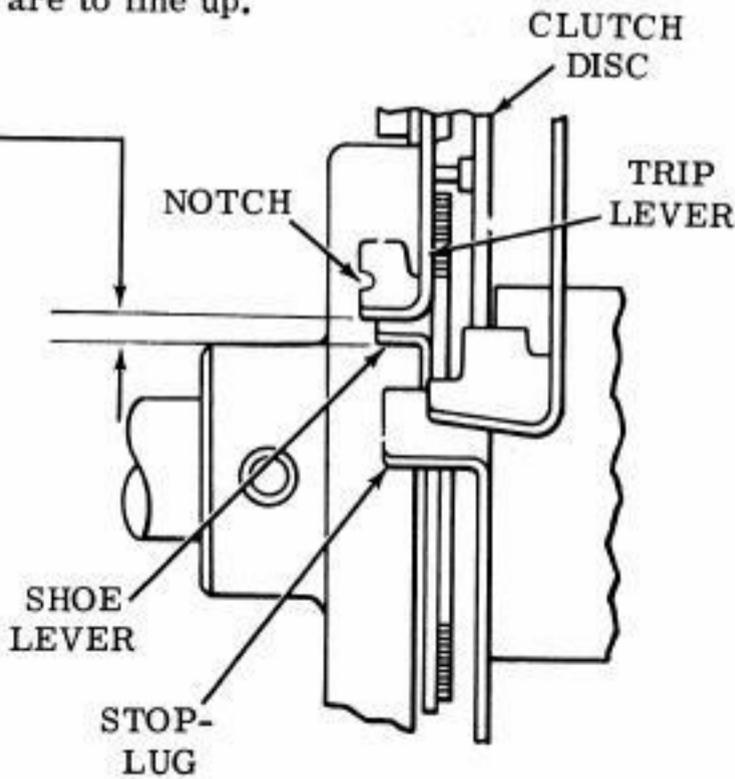
Requirement

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

To Adjust

With clampscrew loosened, lengthen or shorten trip lever clearance to meet requirement.

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

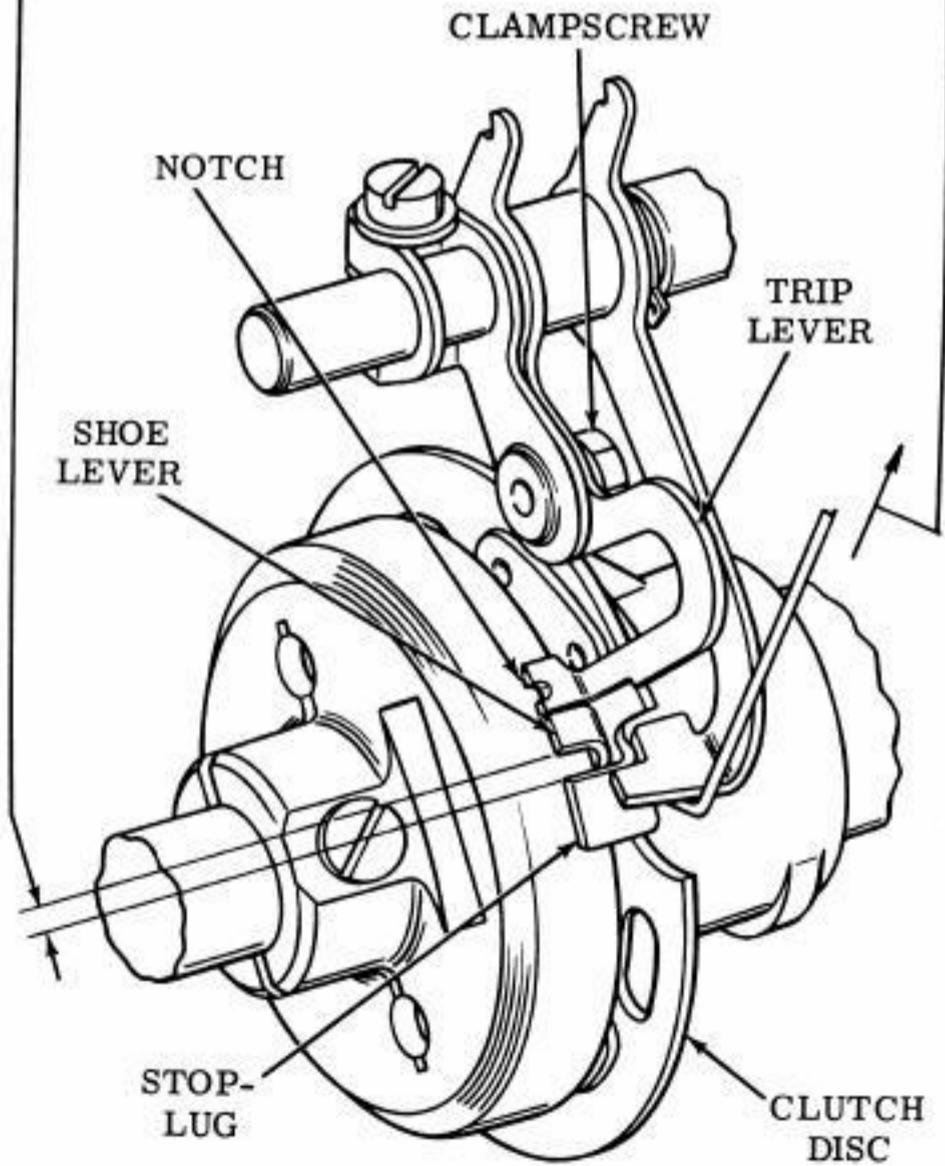


(REAR VIEW)

LATCHLEVER SPRINGS

Requirement

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



(RIGHT REAR VIEW)

2.14 Main Shaft Area (continued)

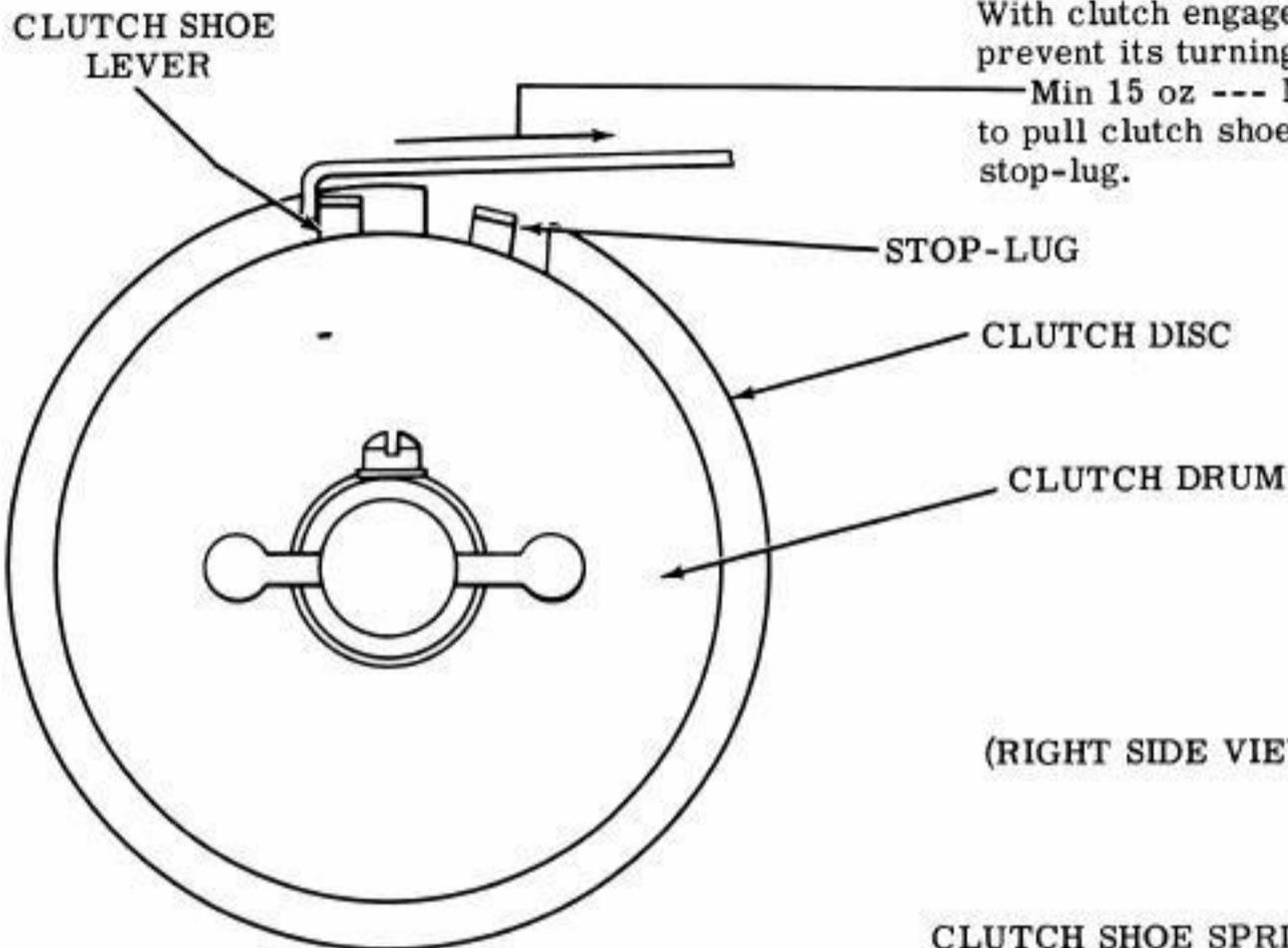
Note 1: These tensions apply to all clutches.

CLUTCH SHOE LEVER SPRING

Requirement

With clutch engaged and clutch disc held to prevent its turning

Min 15 oz --- Max 20 oz
to pull clutch shoe lever into contact with stop-lug.



(RIGHT SIDE VIEW)

CLUTCH SHOE SPRING

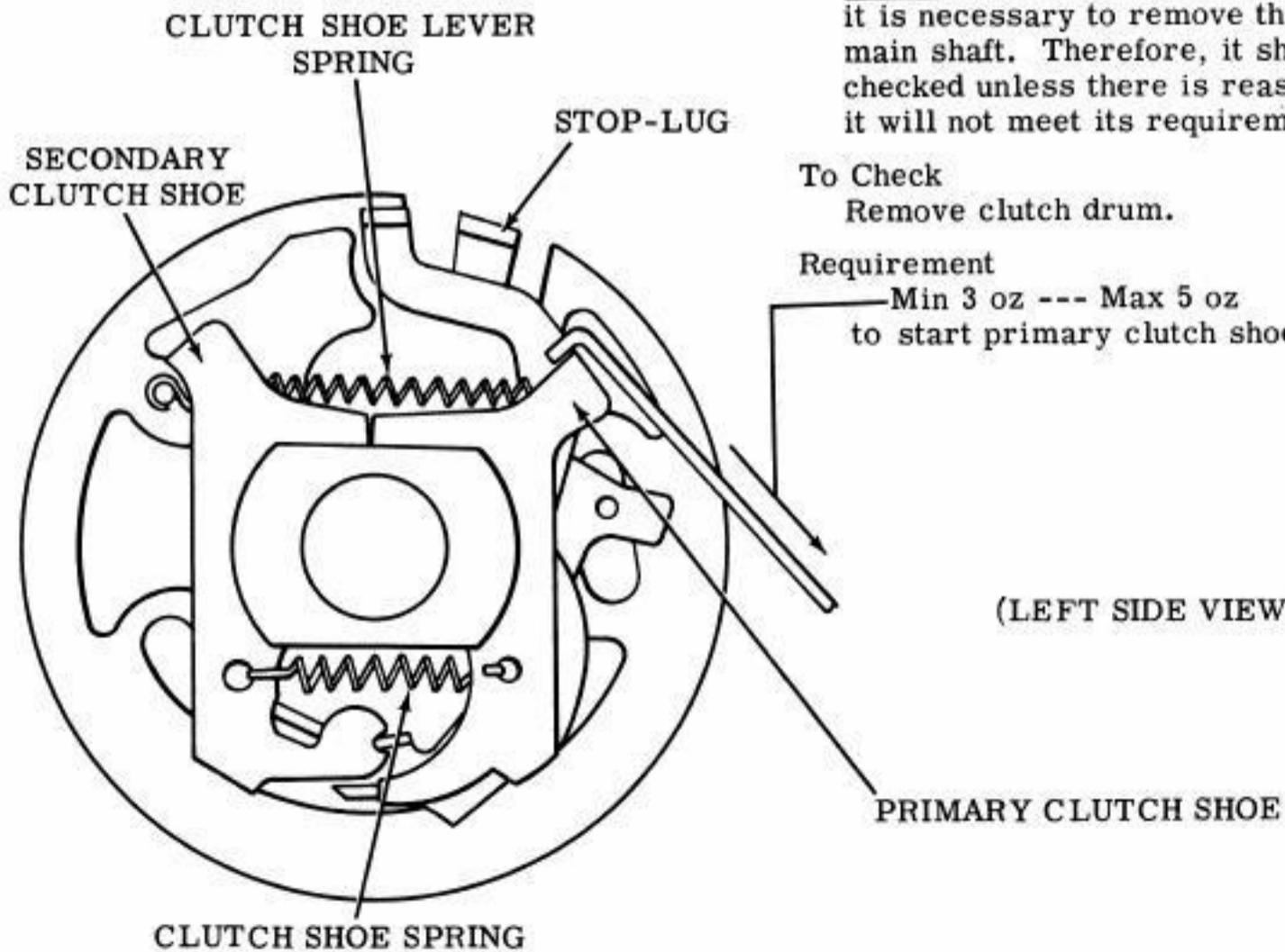
Note 2: In order to check this spring tension, it is necessary to remove the clutch from the main shaft. Therefore, it should not be checked unless there is reason to believe it will not meet its requirement.

To Check

Remove clutch drum.

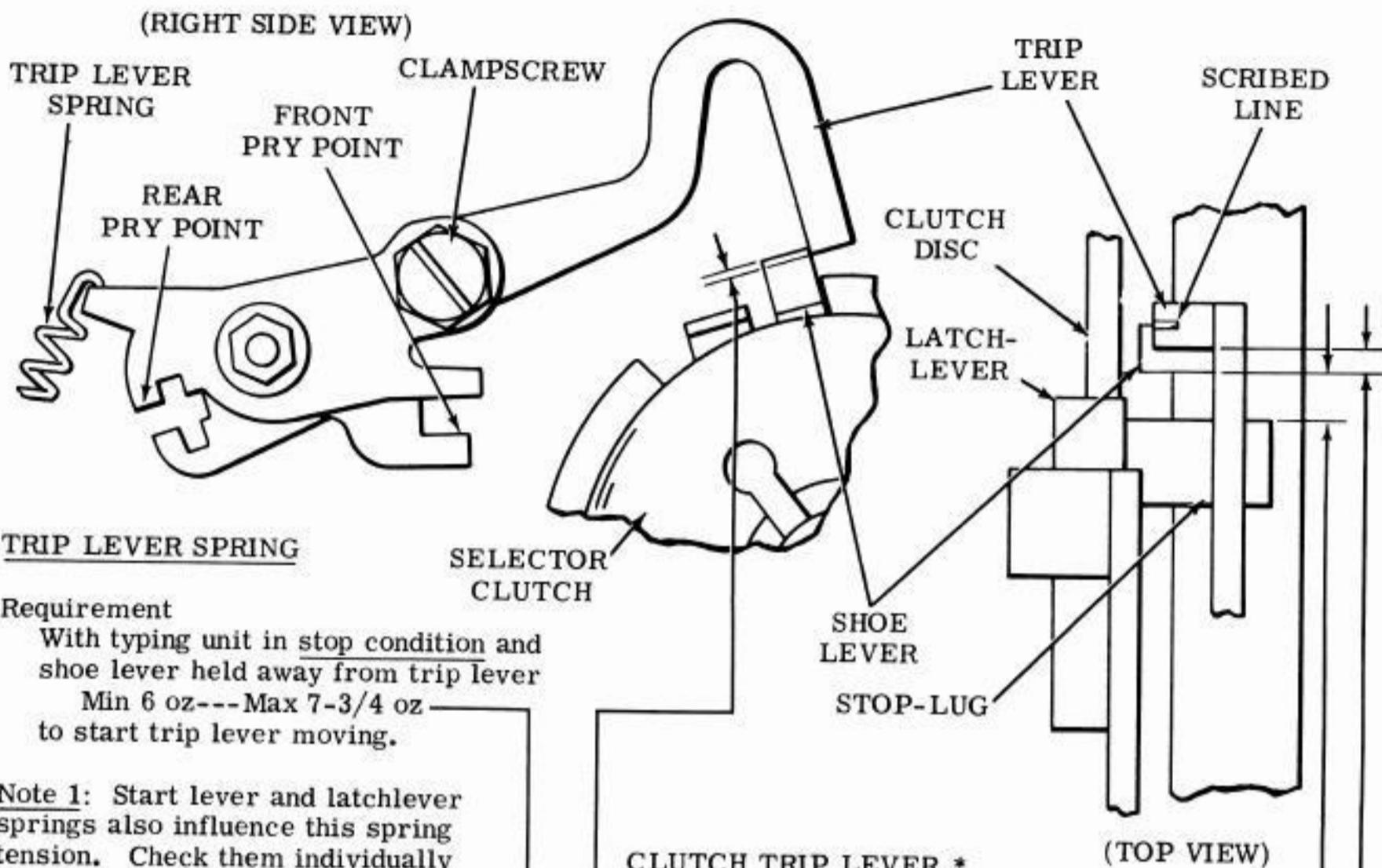
Requirement

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



(LEFT SIDE VIEW)

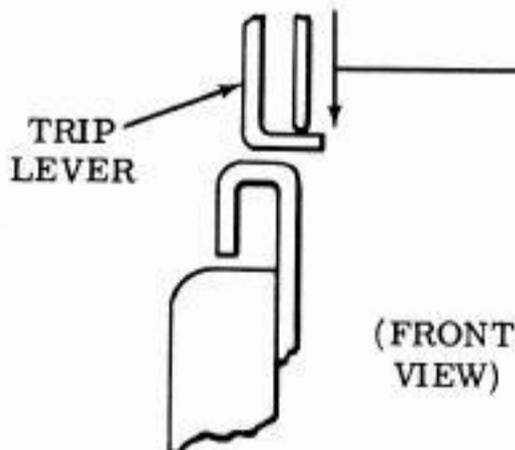
2.15 Selector Area (continued)

TRIP LEVER SPRING

Requirement

With typing unit in stop condition and shoe lever held away from trip lever
 Min 6 oz---Max 7-3/4 oz
 to start trip lever moving.

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



* Related Adjustments
 Affects

MAGNET CORE (Selector Area)
ARMATURE BRACKET
 (Selector Area)

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

CLUTCH TRIP LEVER *

- (1) To Check
 Disengage (latch) selector clutch.

Requirement

— Trip lever shall engage shoe lever by approximately the full thickness of the shoe lever.

- (2) To Check
 Disengage (latch) selector clutch.

Requirement

Min 0.015 inch
 between shoe lever and stop-lug.

- (3) To Check
 With selector clutch disengaged (latched), trip clutch by lifting trip lever and permitting the trip lever to come to rest on the shoe lever.

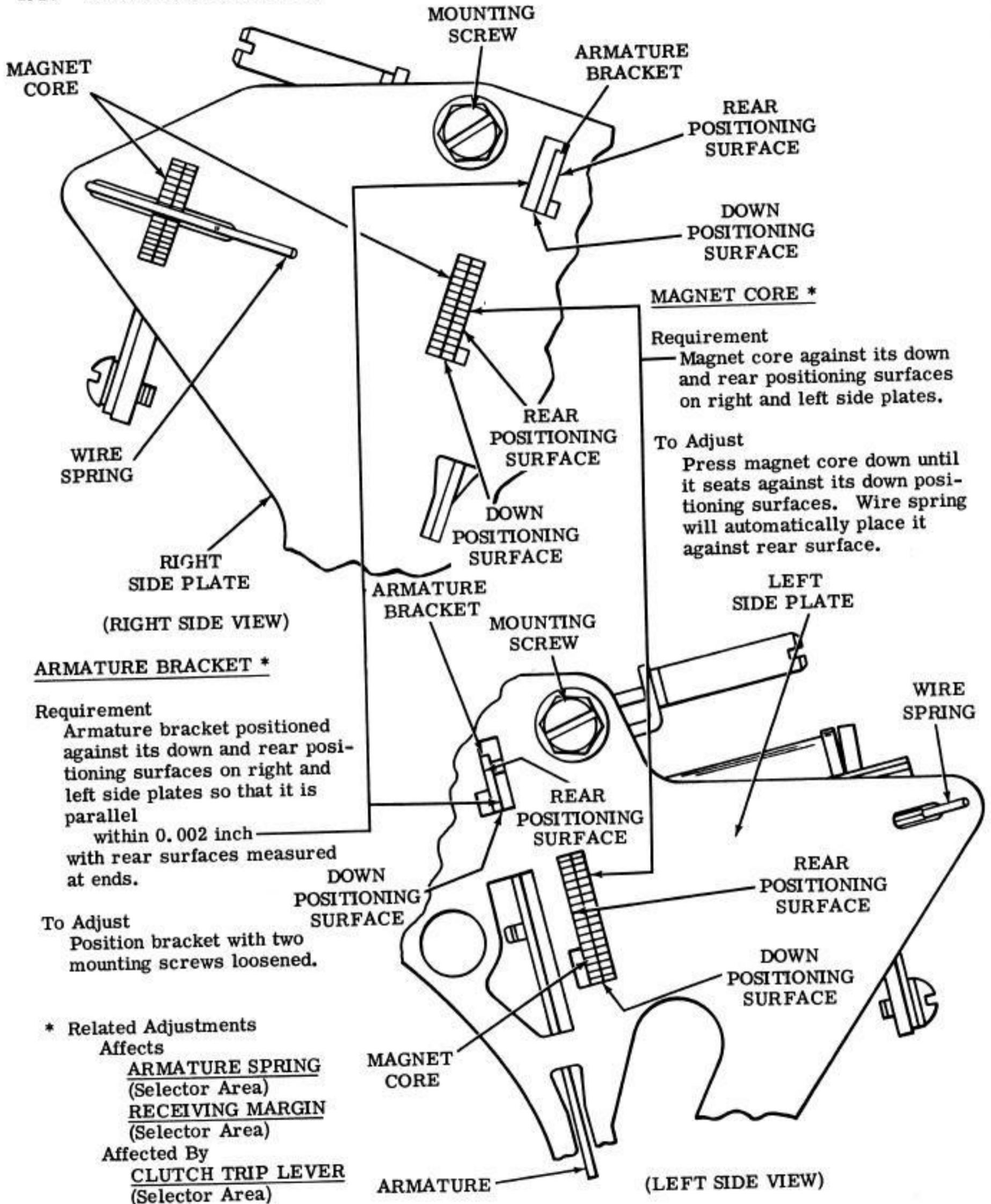
Requirement

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

To Adjust

With clampscrew friction tight, position trip lever using front and/or rear pry points.

2.16 Selector Area (continued)



2.17 Selector Area (continued)

ARMATURE SPRING

To Check

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

Requirement

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

To Adjust

Rotate adjusting nut clockwise to increase armature spring tension and
counterclockwise to decrease it.

Related Adjustments

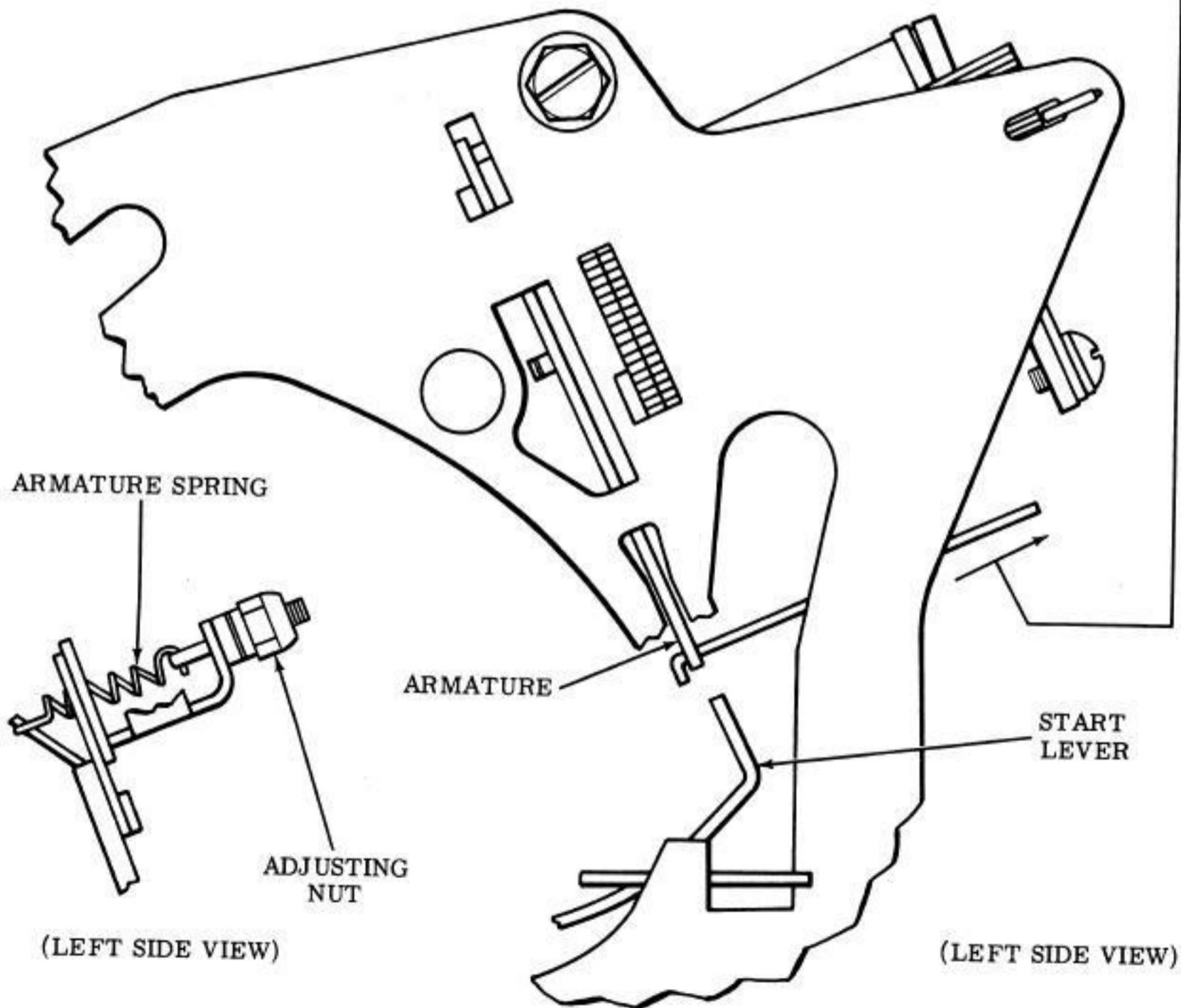
Affects

RECEIVING MARGINS (Selector Area)

Affected By

MAGNET CORE (Selector Area)

ARMATURE BRACKET (Selector Area)



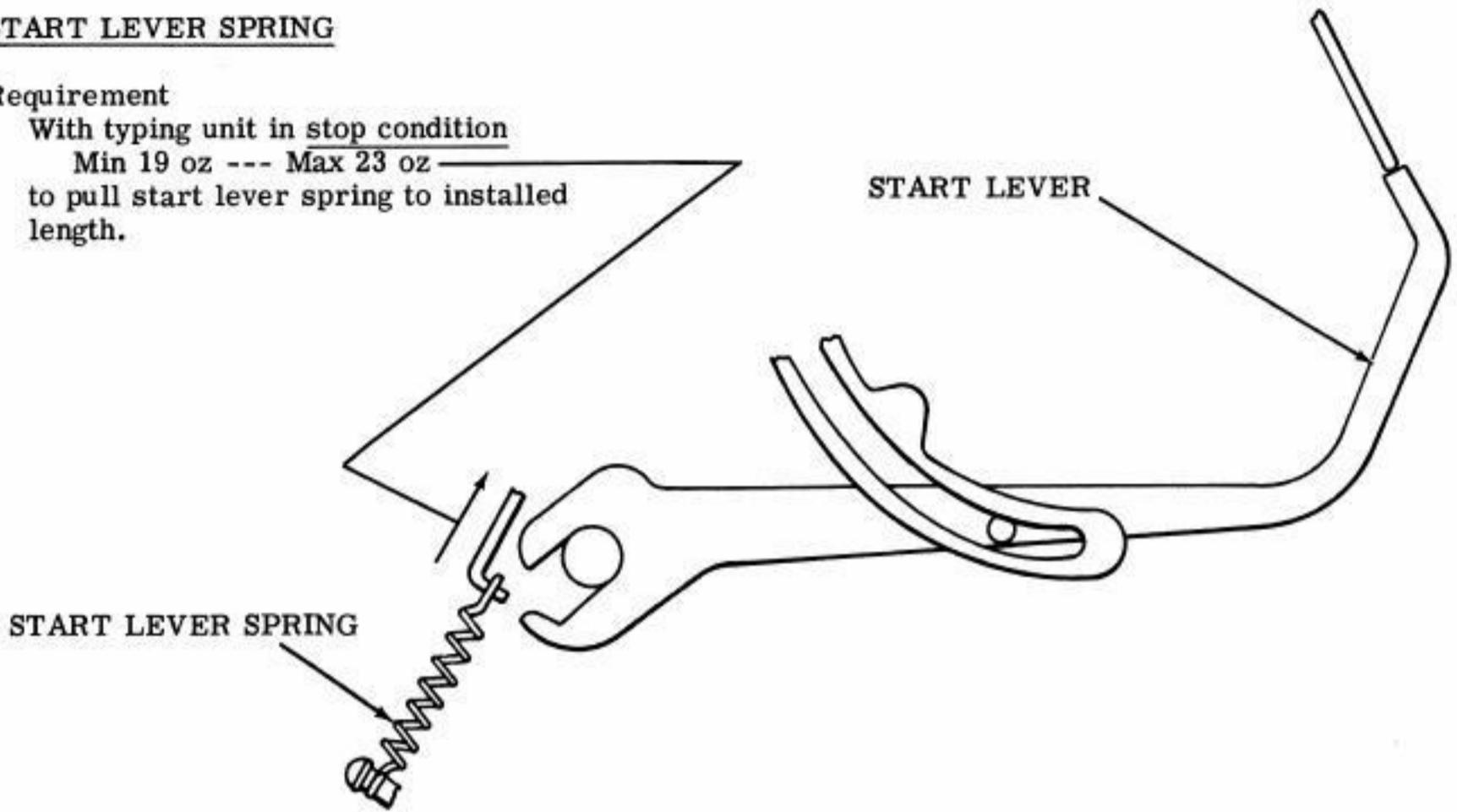
2.18 Selector Area (continued)

START LEVER SPRING

Requirement

With typing unit in stop condition

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



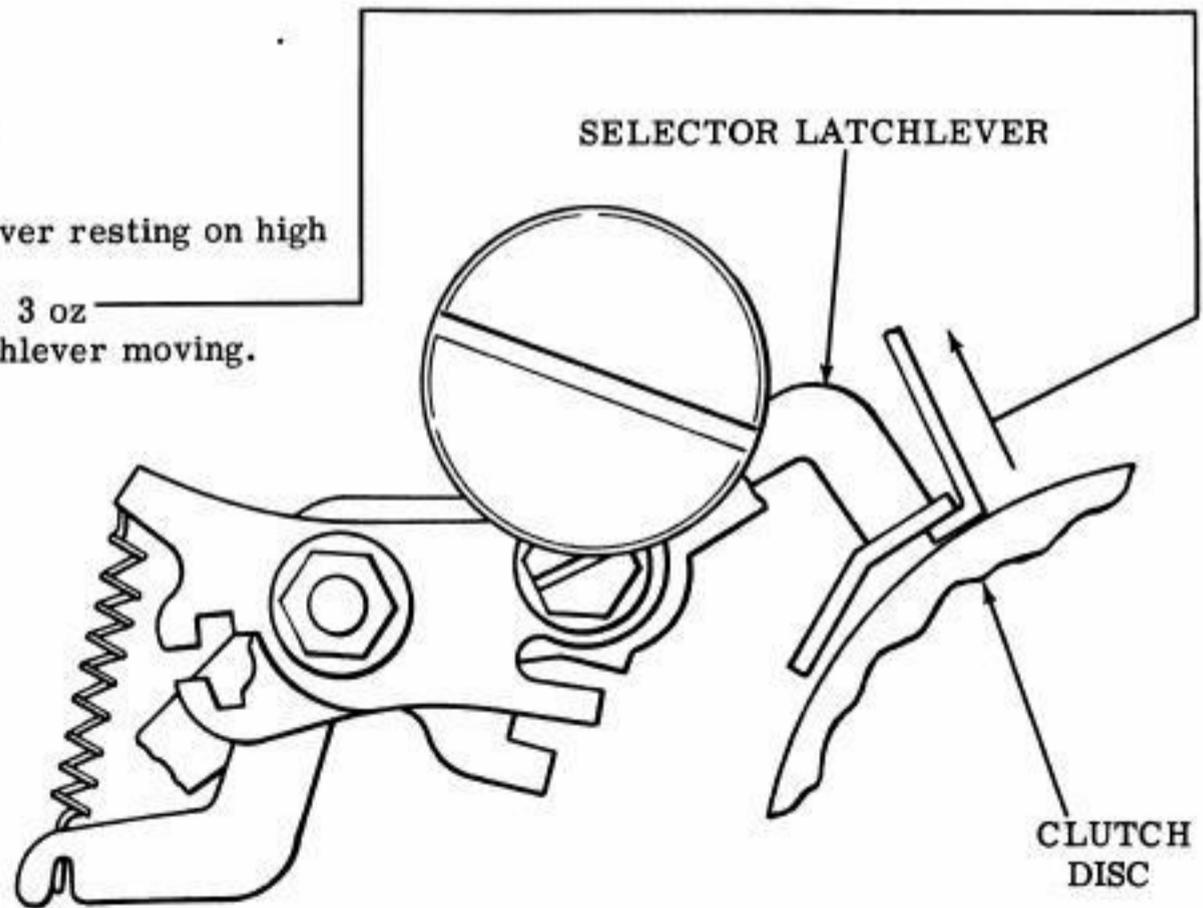
(LEFT SIDE VIEW)

LATCHLEVER SPRING

Requirement

With selector latchlever resting on high part of clutch disc

Min 2 oz --- Max 3 oz
to start selector latchlever moving.



(LEFT SIDE VIEW)

2.19 Selector Area (continued)

SELECTOR LEVER SPRINGS

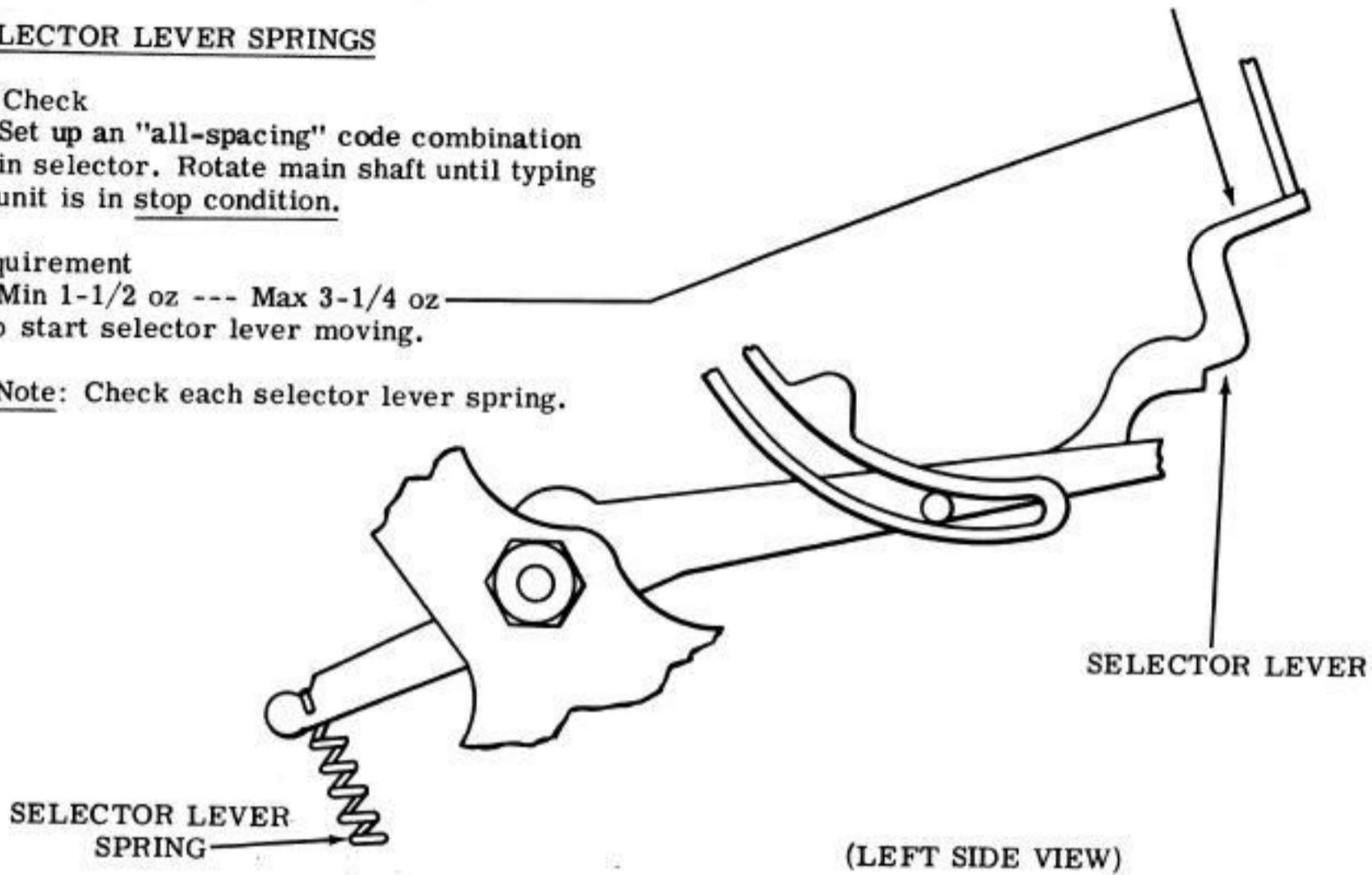
To Check

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

Requirement

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

Note: Check each selector lever spring.



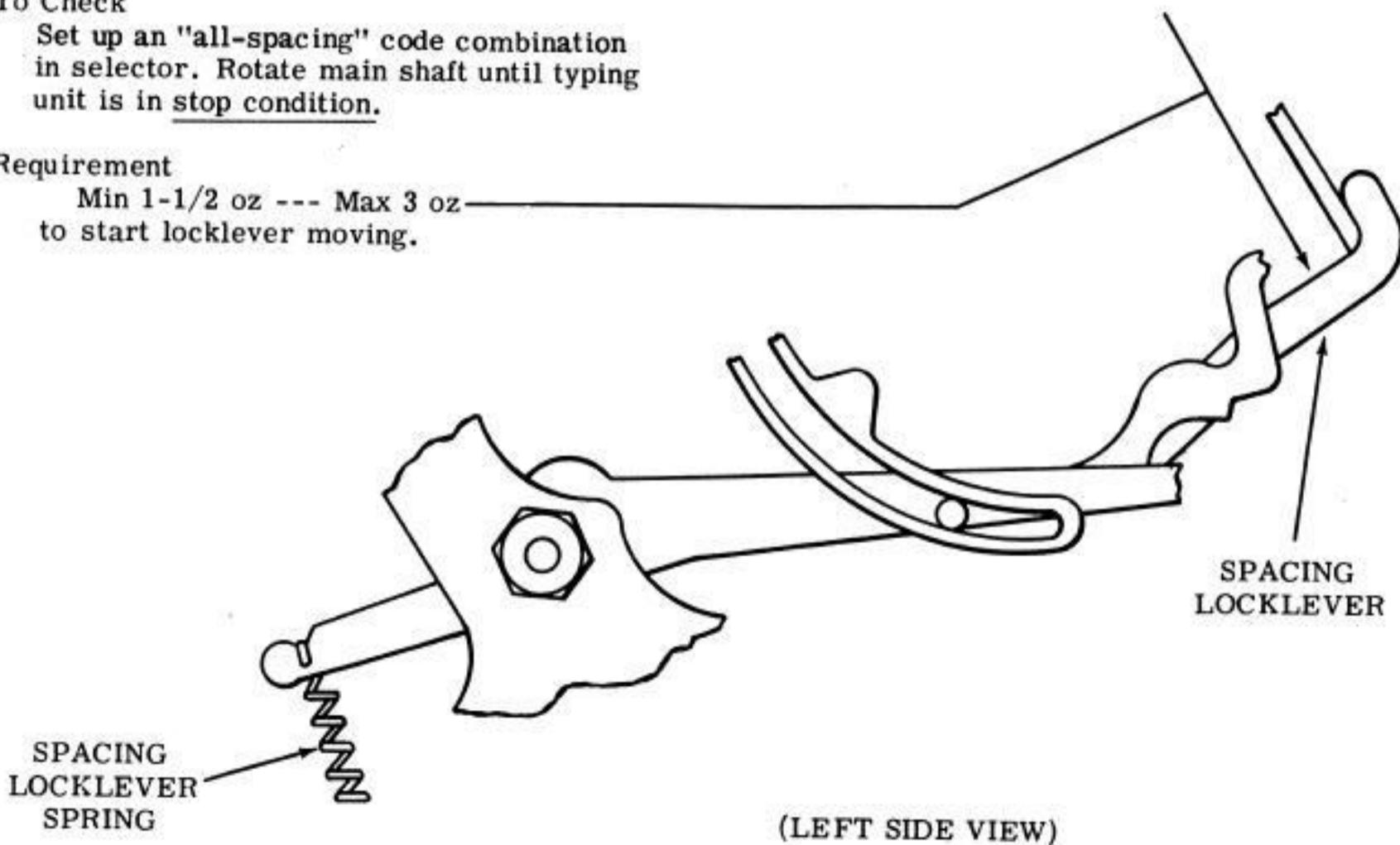
SPACING LOCKLEVER SPRING

To Check

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

Requirement

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



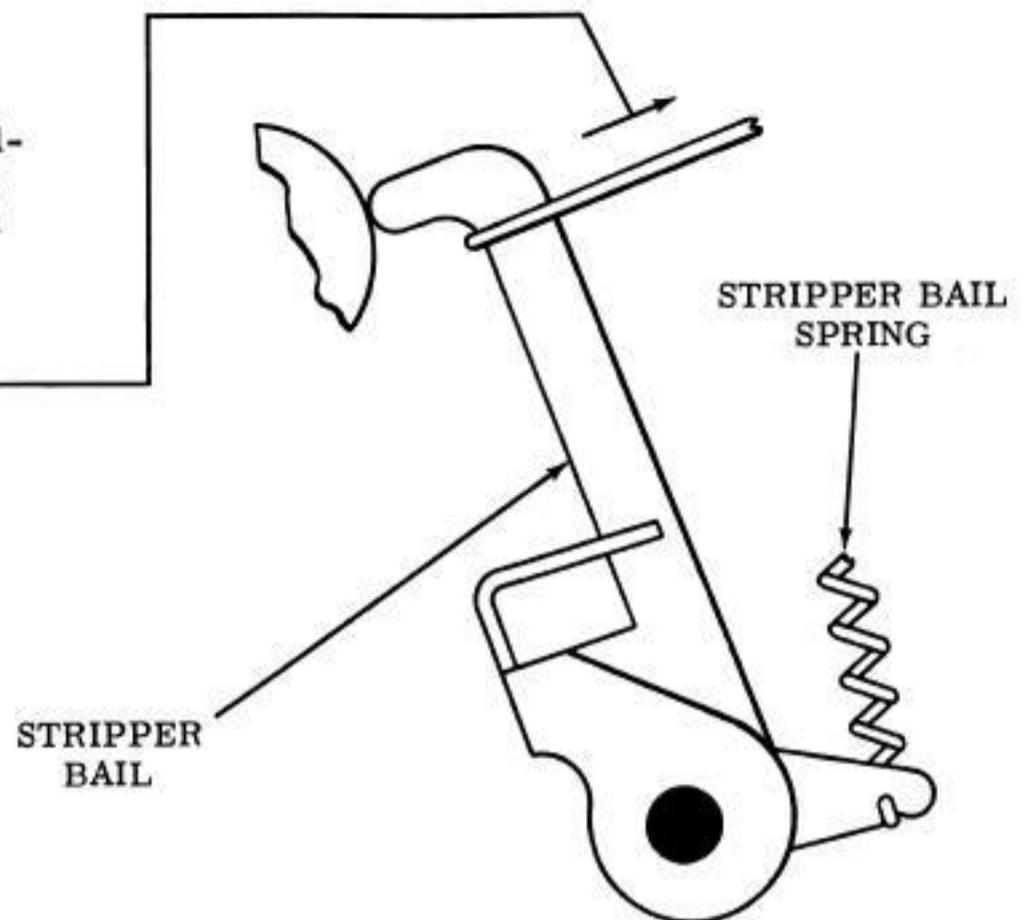
2.20 Selector Area (continued)

STRIPPER BAIL SPRINGTo Check

Set range finder at "60." Set up an "all-spacing" code combination in selector. Rotate main shaft until typing unit is in stop condition.

Requirement

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



(LEFT SIDE VIEW)

PUSH LEVER SPRINGS

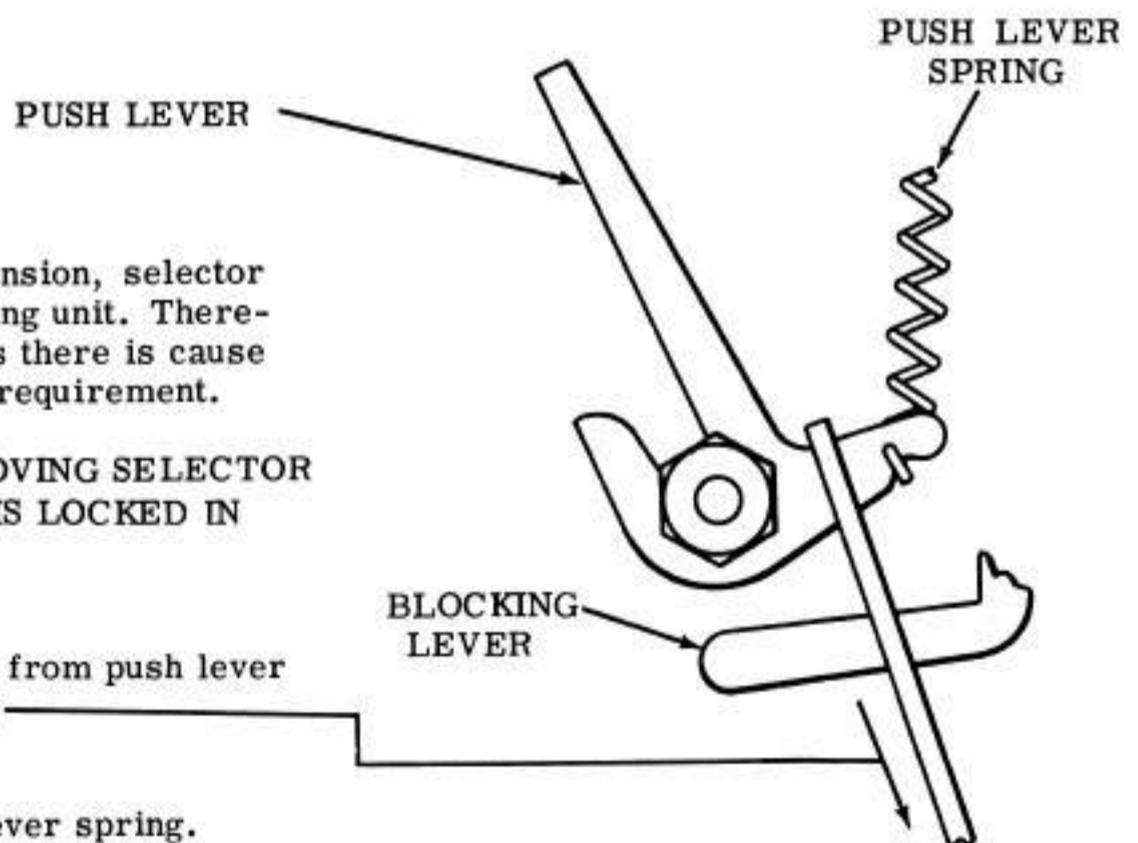
Note 1: To measure this tension, selector must be removed from typing unit. Therefore, do not check it unless there is cause to suspect it will not meet requirement.

CAUTION: BEFORE REMOVING SELECTOR MAKE SURE ARMATURE IS LOCKED IN SPACING POSITION.

Requirement

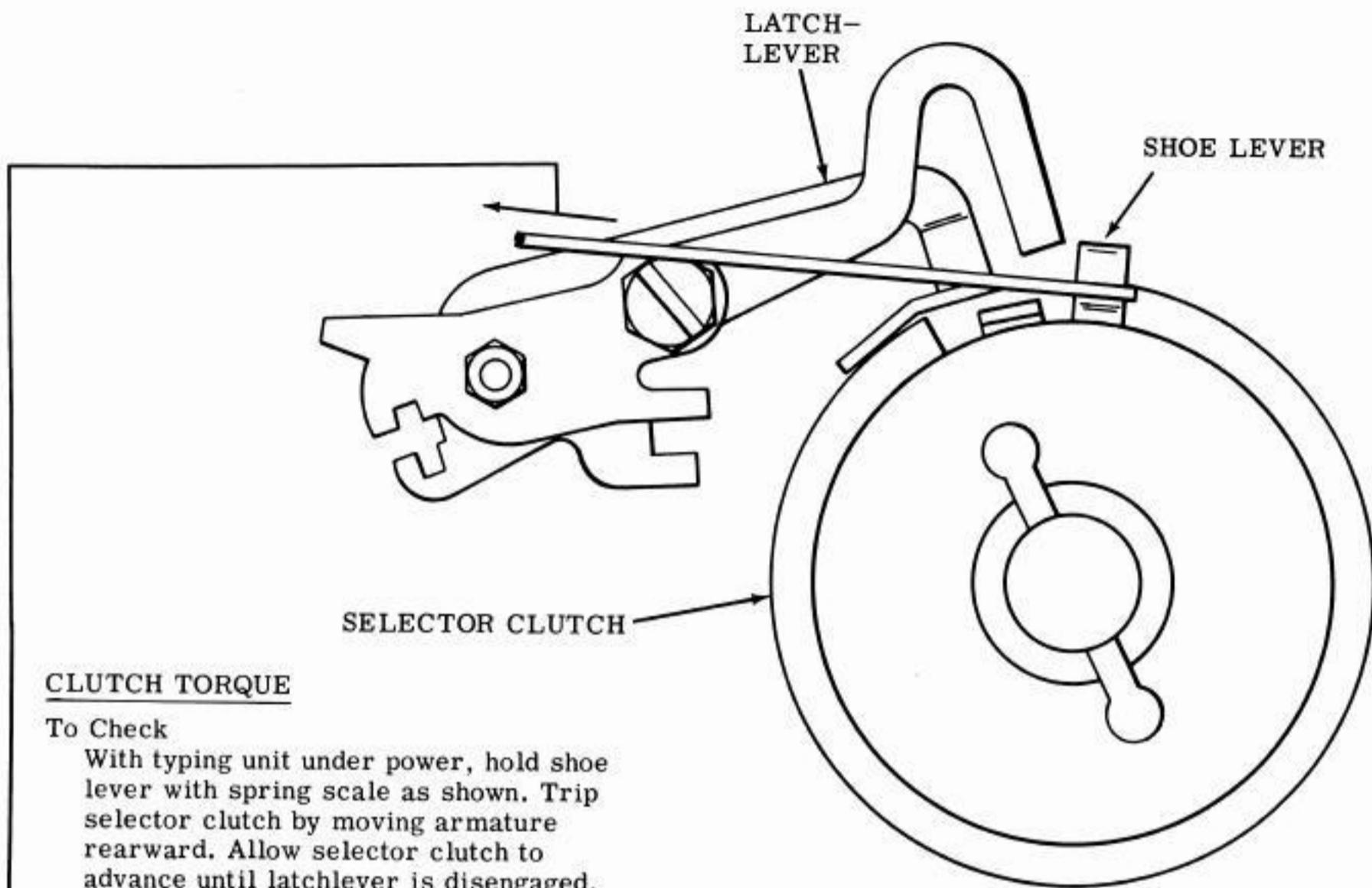
With blocking lever held away from push lever
Min 1-1/2 oz --- Max 3 oz
to start push lever moving.

Note 2: Check each push lever spring.



(LEFT SIDE VIEW)

2.21 Function and Selector Areas



CLUTCH TORQUE

To Check

With typing unit under power, hold shoe lever with spring scale as shown. Trip selector clutch by moving armature rearward. Allow selector clutch to advance until latchlever is disengaged.

Requirement

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

(LEFT SIDE VIEW)

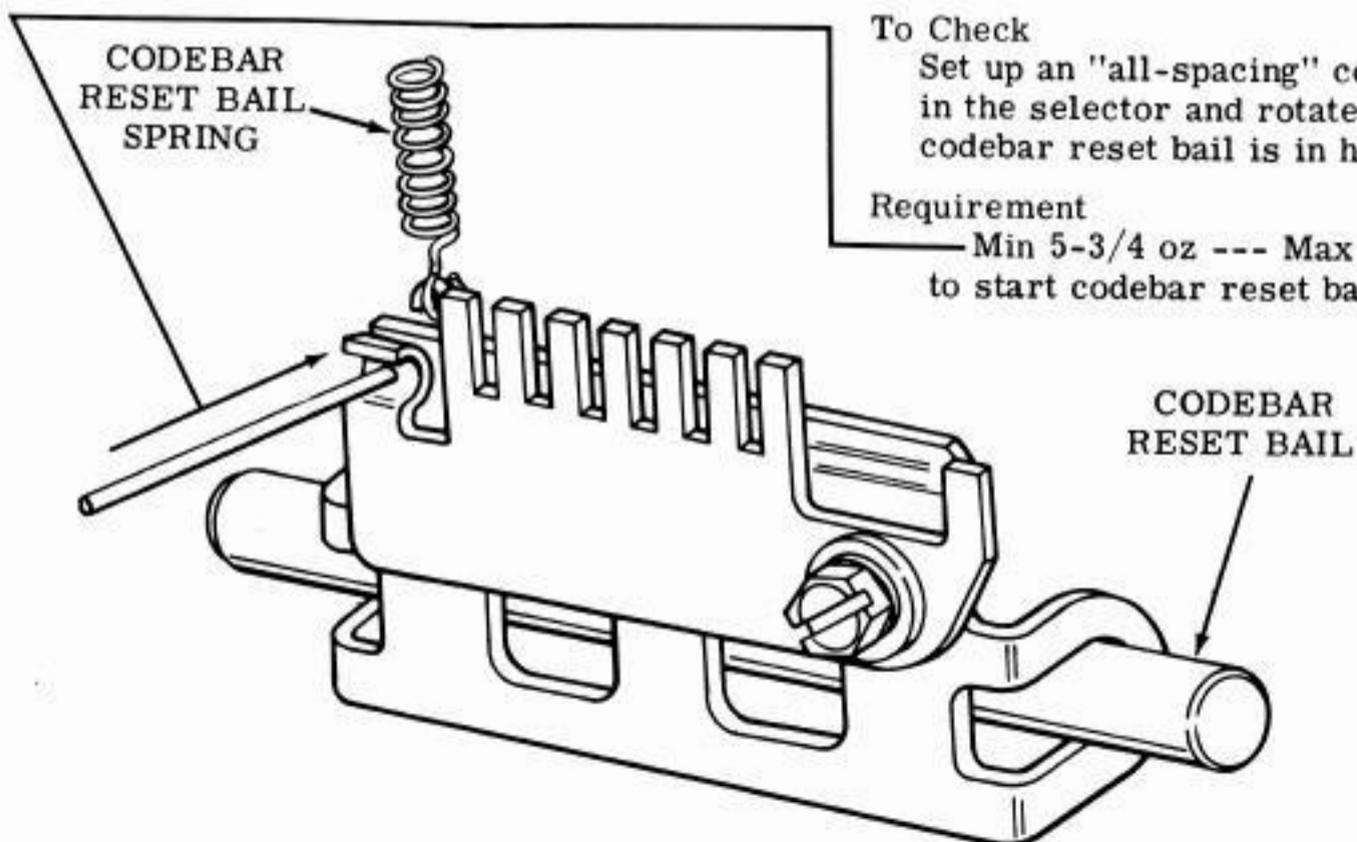
CODEBAR RESET BAIL SPRING

To Check

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

Requirement

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



(LEFT FRONT VIEW)

2.22 Miscellaneous Areas

MAIN SHAFT TORQUE

Note 1: This adjustment need not be checked unless complete readjustment is being undertaken or adjustments affecting drive system have been changed.

(1) To Check

With motor belt in place, disengage (latch) all clutches.

Requirement

With all clutches disengaged (latched), no excessive drag or binding when main shaft is rotated.

(2) To Check

With all clutches disengaged (latched), remove motor belt.

Requirement

With all clutches disengaged (latched), no excessive drag or binding when main shaft is rotated.

Note 2: Excessive drag or binding when the main shaft is rotated will cause insufficient receiving margins.

To Adjust

If requirements are not met, check following adjustments:

GEAR BRACKET—PRELIMINARY (Motor Area)

BELT TENSION—PRELIMINARY (Motor Area)

CLUTCH ENDPLAY (Selector Area)

LEFT BEARING (Main Shaft Area)

BEARING ALIGNMENT (Miscellaneous Areas)

FUNCTION CLUTCH ENDPLAY (Main Shaft Area)

CODEBAR CLUTCH (Main Shaft Area)

DRIVEN GEAR (Main Shaft Area)

CLUTCH TRIP LEVER (Selector Area)

If any of above adjustments are changed, recheck BEARING ALIGNMENT (Miscellaneous Area).

BEARING ALIGNMENT

Note 3: This adjustment applies to main shaft bearings, distributor shaft bearings, function rocker shaft bearings, and codebar reset bail bearings. It should only be made if bearing clamps have been loosened, or if a bind is detected in associated shafts.

Requirement

Bearings aligned with their respective shafts.

Note 4: When aligning main shaft bearings, loosen selector mounting screws.

To Adjust

With bearing clampscrews tight, tap shaft with screwdriver handle, piece of wood, or soft mallet in area adjacent to bearing.

CAUTION: WHEN TAPPING THE SHAFT, BE CAREFUL NOT TO SCAR OR DISTORT THE SHAFT.

2.23 Function Area

(B) ROCKER SHAFT ENDPLAY

Requirement

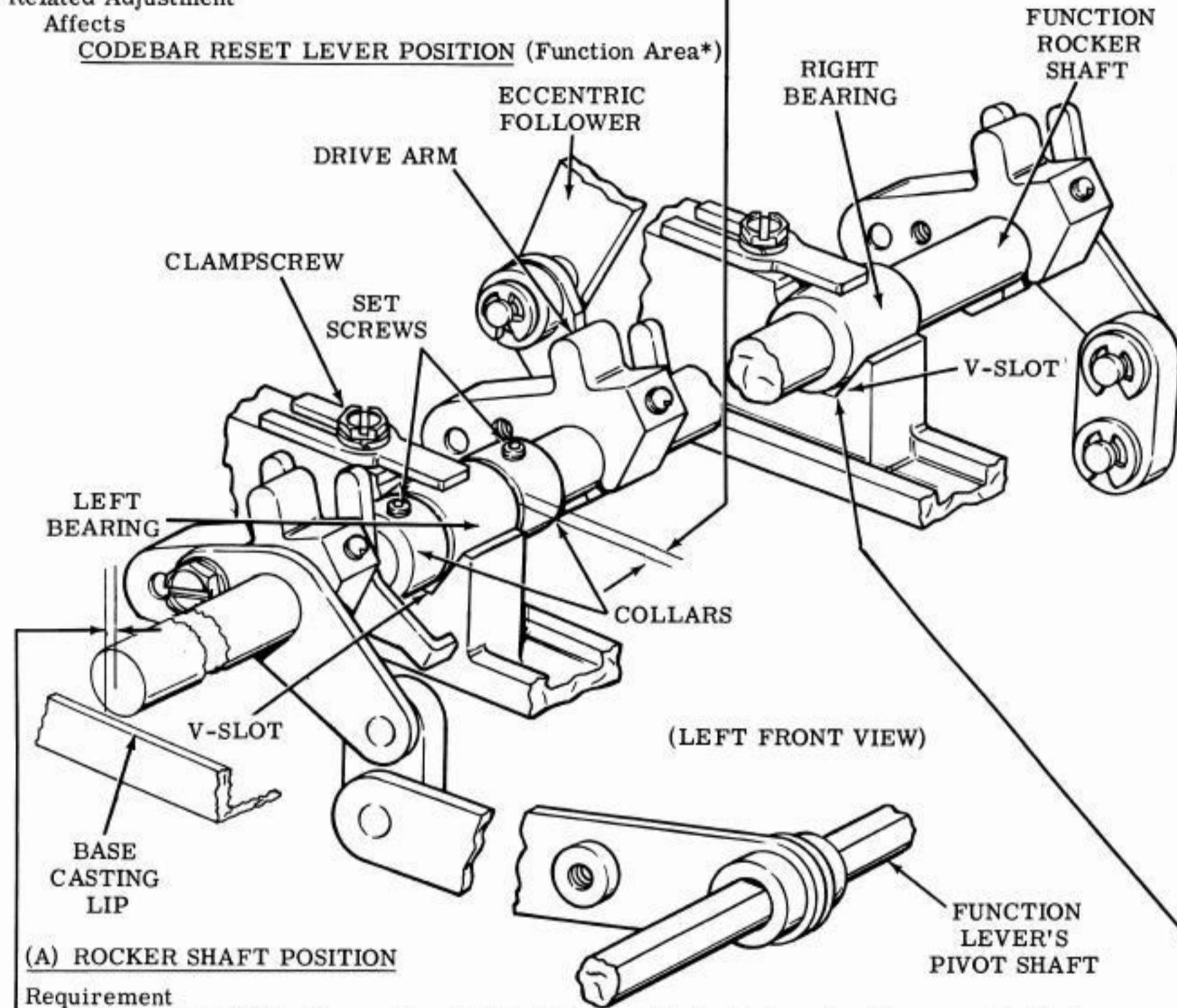
As gauged by eye
 Min Some --- Max 0.010 inch
 endplay in function rocker shaft.

To Adjust

Position two collars with set screws loosened.

Related Adjustment

Affects
CODEBAR RESET LEVER POSITION (Function Area*)



(A) ROCKER SHAFT POSITION

Requirement

- (1) The left end of function rocker shaft is to line up with inside top edge of base casting lip, however: 0.020 inch misalignment is permissible to the left. 0.030 inch misalignment is permissible to the right.
- (2) Both bearings to be centered on base casting, as gauged by eye.

To Adjust

Position function rocker shaft with left bearing clampscrew loosened.

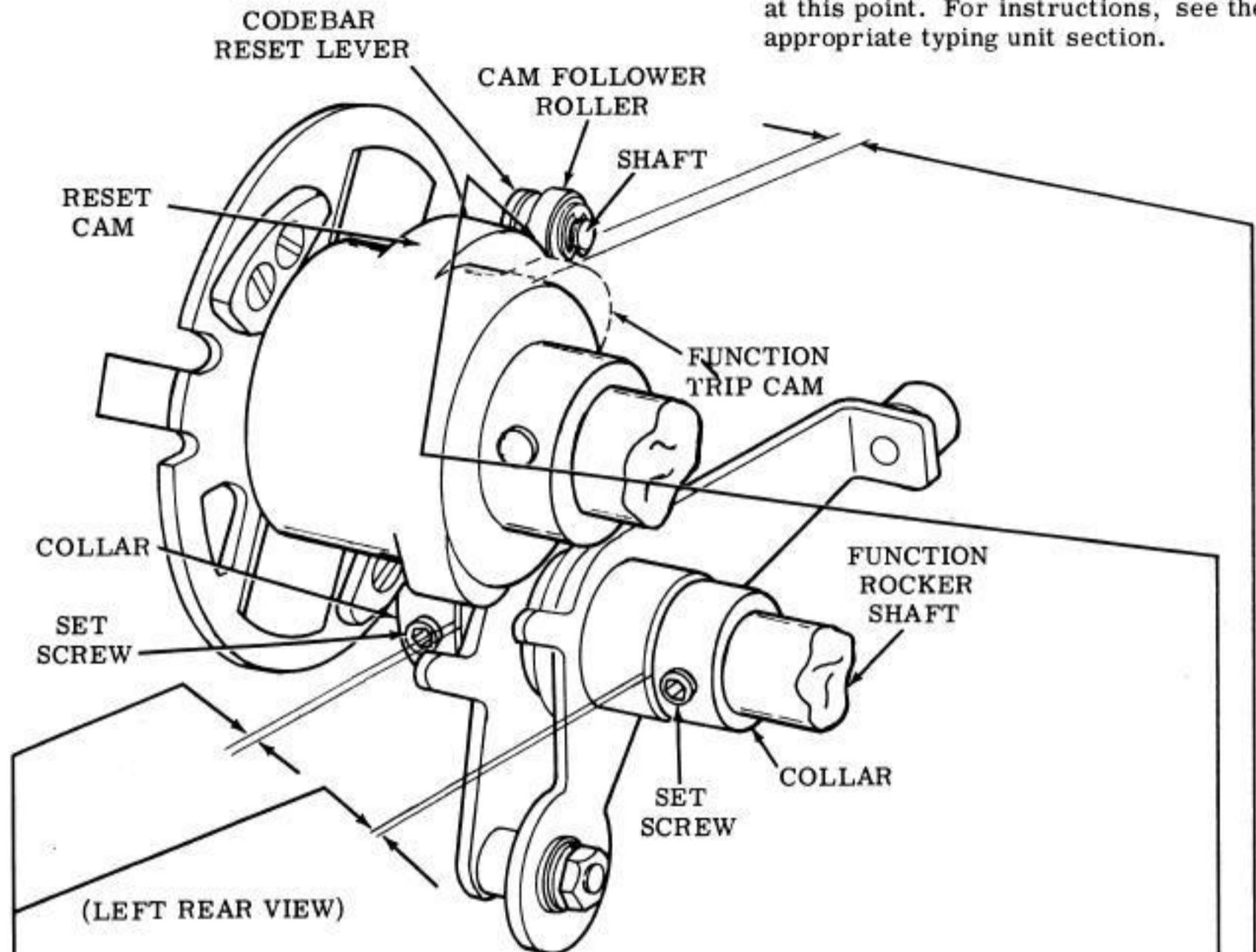
Related Adjustment

Affects
CODEBAR RESET LEVER POSITION (Function Area*)

→ * Common Mechanism

2.24 Function Area (continued)

Note: If typing unit is being completely readjusted, it is recommended that it be removed from the subbase and that the motor be removed from typing unit at this point. For instructions, see the appropriate typing unit section.



CODEBAR RESET LEVER POSITION

Requirement

With typing unit in stop condition

- (1) Cam follower roller approximately centered on reset cam, as gauged by eye,
Max 0.020 inch _____
overhang permitted on left side only.
- (2) Min _____ Max 0.010 inch
endplay in codebar reset lever.
- (3) Min 0.005 inch _____
between cam follower roller's shaft and function trip cam.

To Adjust

Position two collars with set screws loosened.

Related Adjustments

Affects

CODEBAR RESET LEVER (Function Area *)

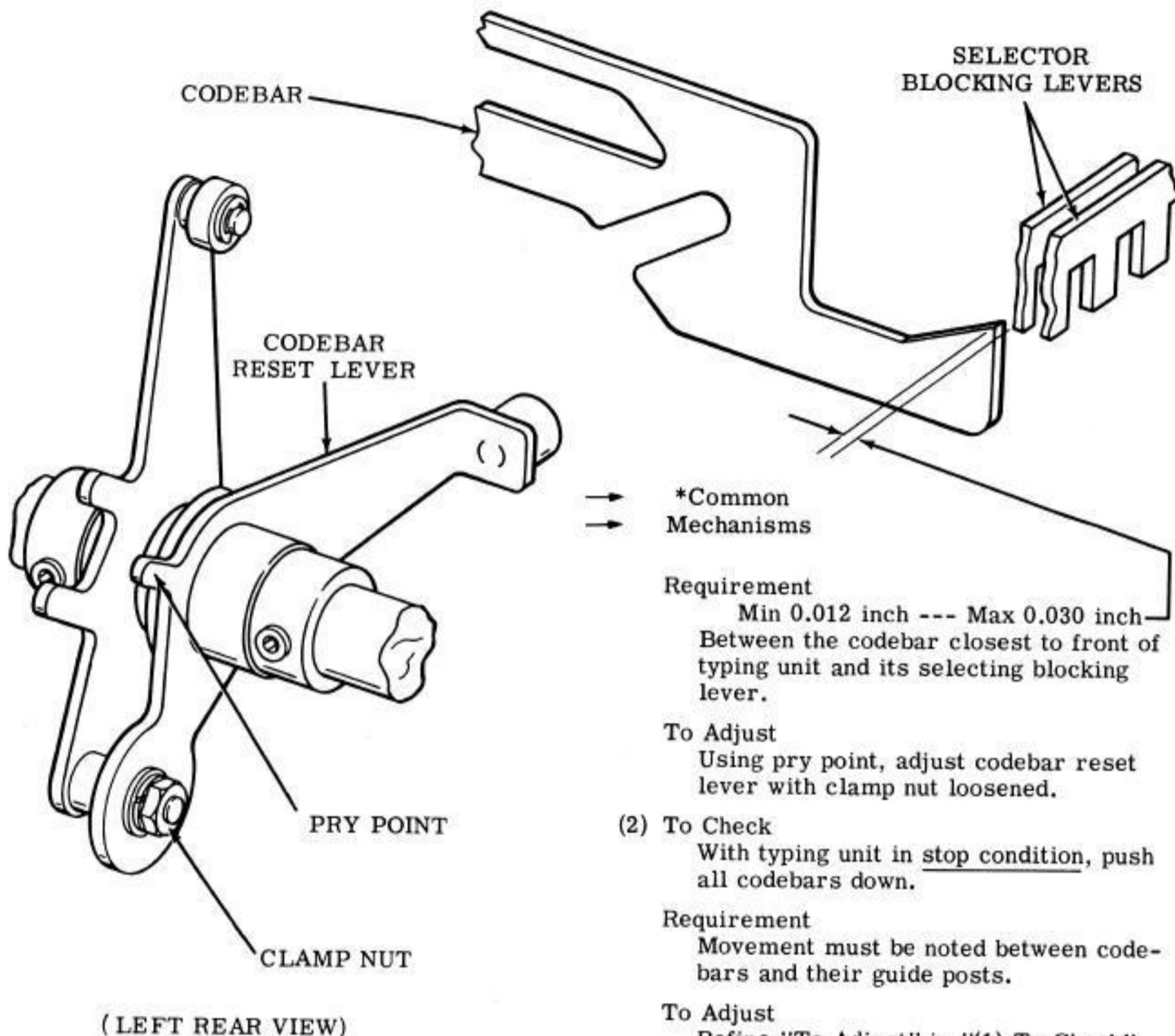
Affected By

ROCKER SHAFT POSITION (Function Area *)

ROCKER SHAFT ENDPLAY (Function Area *)

* Common Mechanisms ←

2.25 Function Area (continued)



Note 1: The following adjustments can be made easier by removing platen and dashpot cylinder. For instructions, see the appropriate typing unit section.

CODEBAR RESET LEVER

(1) To Check

With typing unit in stop condition, manually operate the typing unit and position the codebar closest to front of typing unit and its selecting blocking lever so that the clearance between them is a minimum.

Note 2: If interference is noted between the carriage drive link and codebars during the normal operating cycle and/or if it adds to the typing unit's inherent noise, refine CODEBAR RESET LEVER (Function Area *) adjustment.

2.26 Function Area (continued)

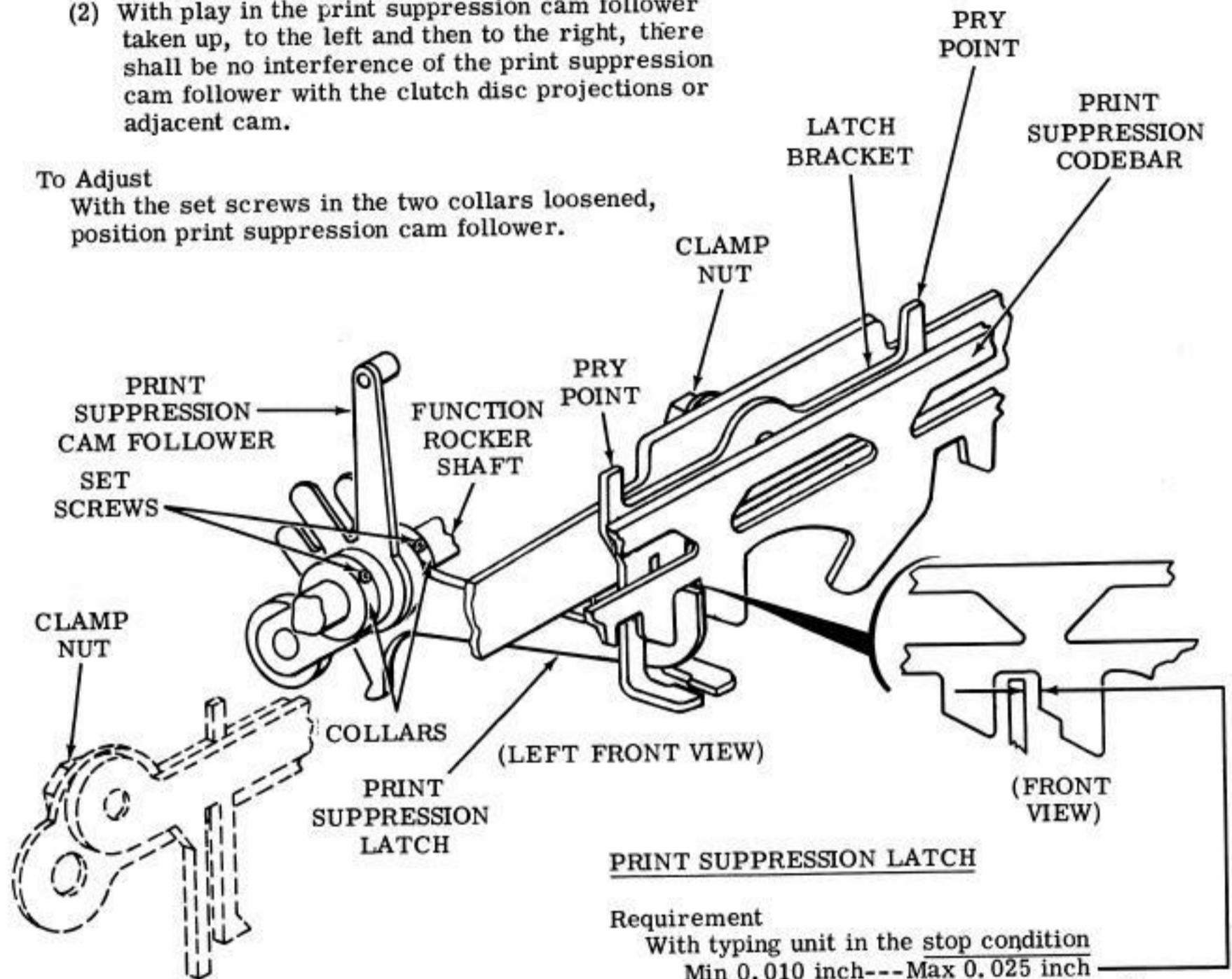
PRINT SUPPRESSION CAM FOLLOWER ROLLER

Requirement

- (1) The print suppression cam follower shaft shall move freely on the function rocker shaft with no binds or interference.
- (2) With play in the print suppression cam follower taken up, to the left and then to the right, there shall be no interference of the print suppression cam follower with the clutch disc projections or adjacent cam.

To Adjust

With the set screws in the two collars loosened, position print suppression cam follower.



**Common Mechanisms

PRINT SUPPRESSION LATCH

Requirement

With typing unit in the stop condition
Min 0.010 inch---Max 0.025 inch

between print suppression latch and print suppression codebar, as gauged by eye.

To Adjust

Using a pry point, position latch bracket with clamp nuts * loosened.

Related Adjustments

Affects

CASTING (Function Area **)

Affected By

CODEBAR RESET LEVER (Function Area **)

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

2.27 Function Area (continued)

CODEBAR GUIDE

To Check

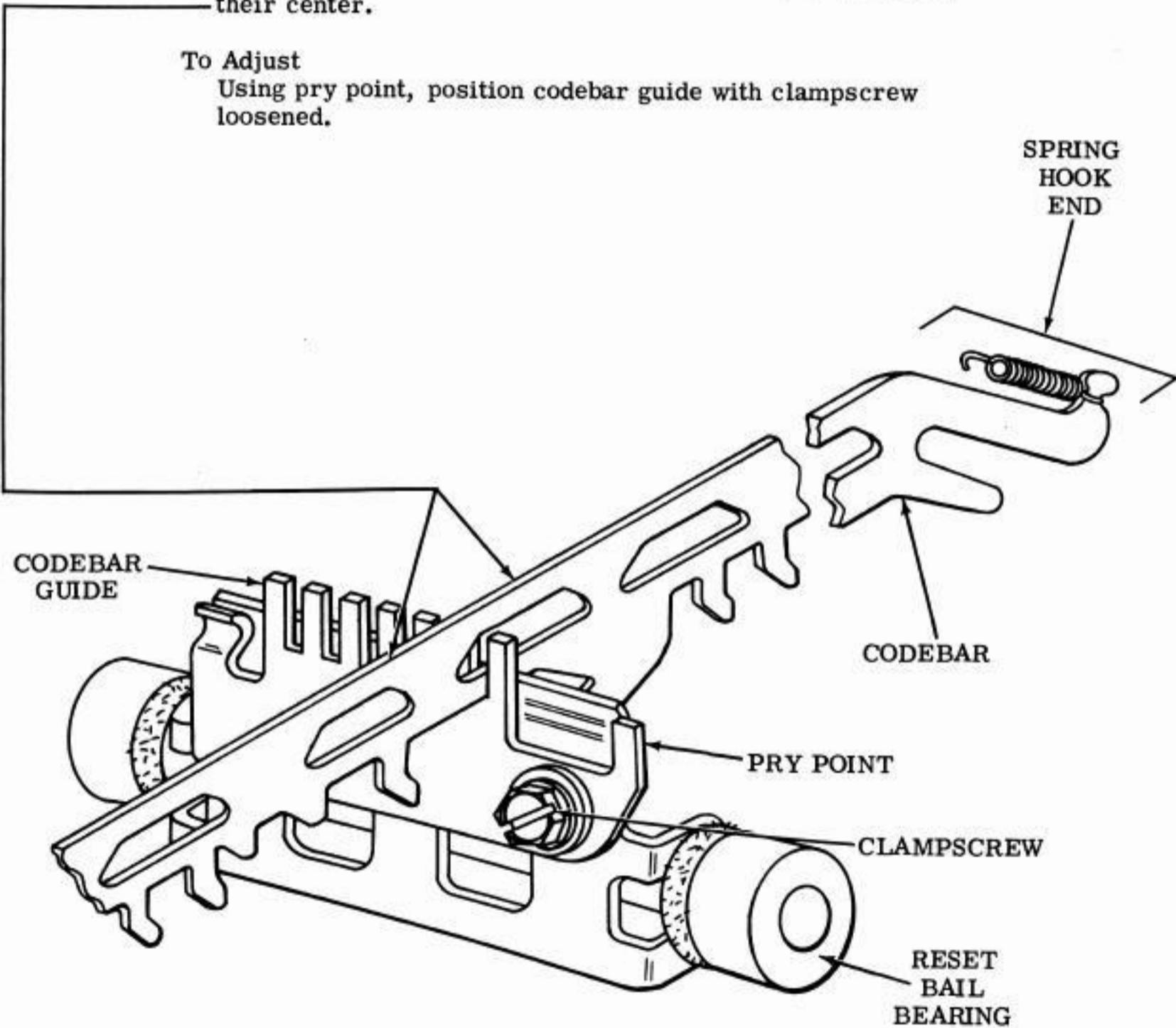
Position carriage at left side of typing unit. Push and pull codebars at spring hook end.

Requirement

No excessive deflection in either direction of codebars near their center.

To Adjust

Using pry point, position codebar guide with clampscrew loosened.



(LEFT FRONT VIEW)

2.28 Selector Area (continued)

Note 1: For the following adjustment on 8-level typing units only, set the range finder to "80" on the scale.

BLOCKING LEVERS**(1) To Check**

Manually operate the typing unit and set up an "all-marking" code combination in the selector. With the selector clutch disengaged (latched) and the selector levers on the peak of their respective cams, manually trip the codebar clutch and rotate the main shaft until the codebars are approximately flush with the left edge of blocking levers.

Requirement

(a) Min 0.003 inch between all blocking levers, except no. 1 blocking lever, and their associated codebars.

(b) Min 0.006 inch---Max 0.045 inch between the no. 1 blocking lever and its associated codebar.

To Adjust

With clamp nut loosened, position eccentric shaft with hex wrench in hex hole.

Note 2: Keep the high part of the eccentric shaft to the rear of the typing unit.

(2) To Check

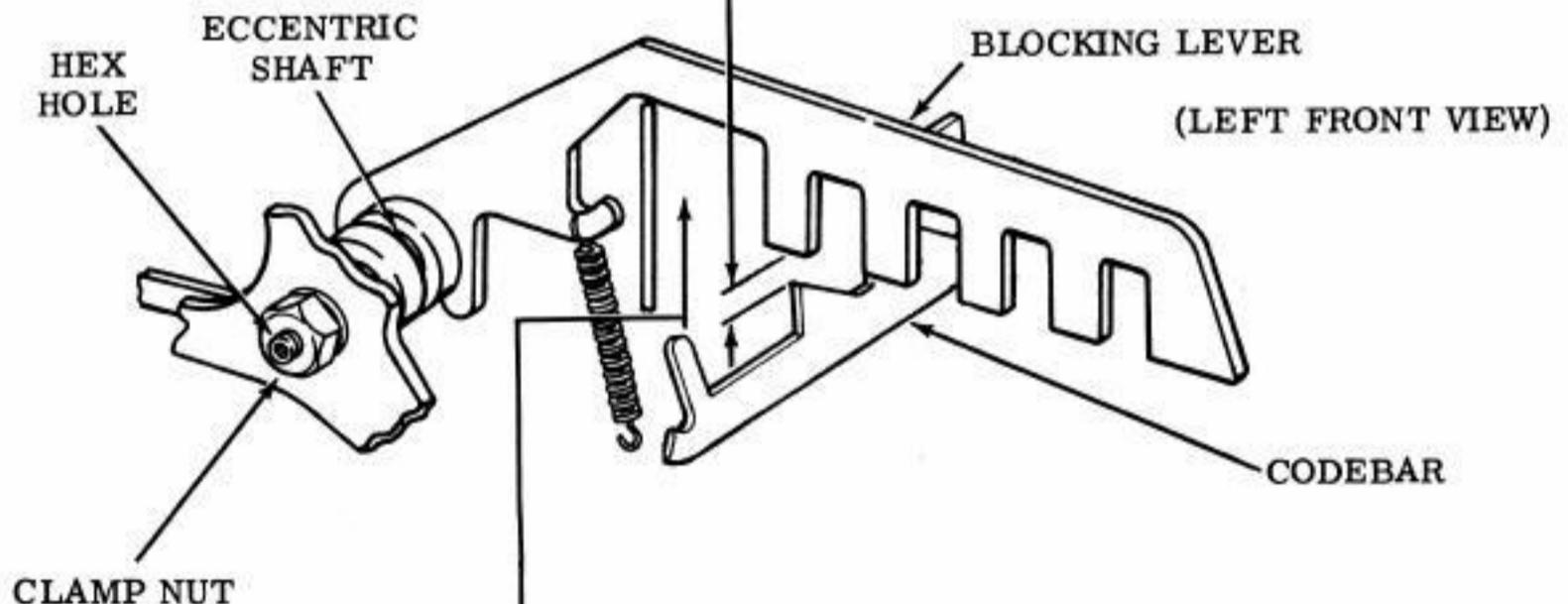
With the selector armature in its unattracted position, place the selector clutch shoe lever just past the trip lever. Hold the selector armature in its attracted position and rotate the main shaft until the shoe lever is approximately 90° past the trip lever. Notice any vertical motion of the no. 1 and/or no. 2 blocking levers while rotating the main shaft.

Requirement

There shall be no vertical motion of the no. 1 and/or no. 2 blocking levers while rotating main shaft through arc of 90°.

To Adjust

Refine "To Adjust" in "(1) To Check" above.

**BLOCKING LEVER SPRINGS****To Check**

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

Requirement

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

Note 3: Check for each blocking lever spring.

2.29 Function Area (continued)

Note: The following adjustment applies only to 8-level typing units.

NO. 1 CODEBAR GUIDE

To Check

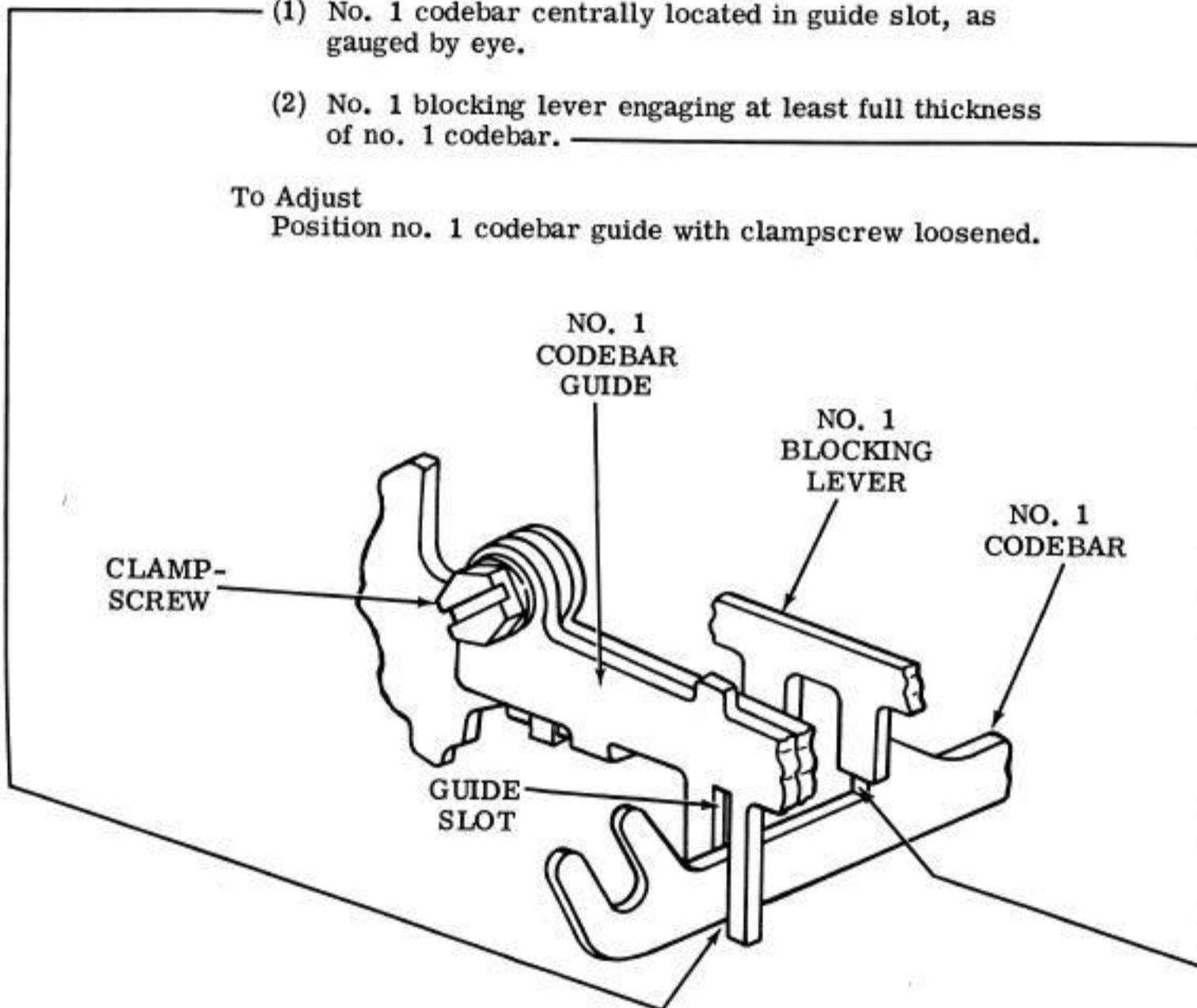
Place typing unit in stop condition and manually operate the typing unit until the no. 1 blocking lever is in its lowest position.

Requirement

- (1) No. 1 codebar centrally located in guide slot, as gauged by eye.
- (2) No. 1 blocking lever engaging at least full thickness of no. 1 codebar.

To Adjust

Position no. 1 codebar guide with clampscrew loosened.



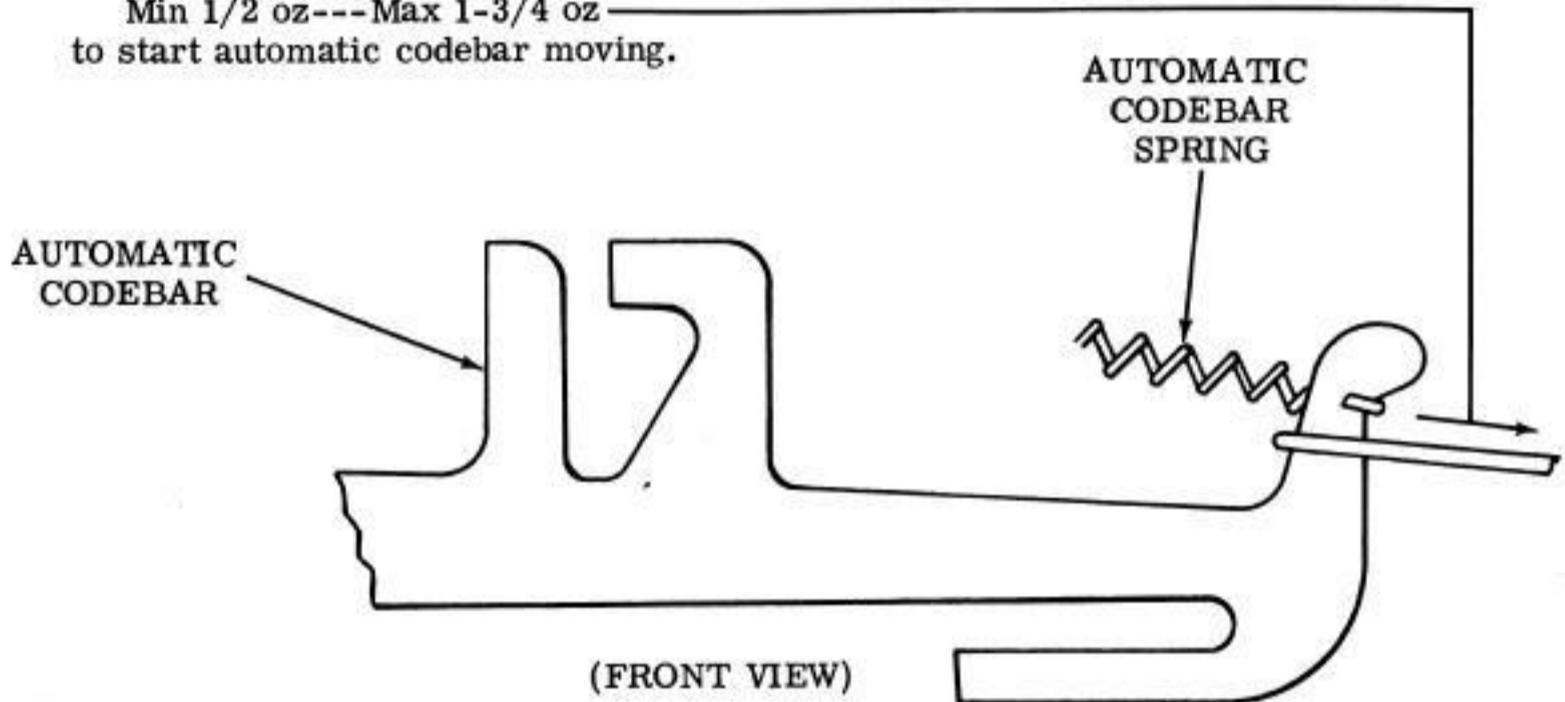
(LEFT FRONT VIEW)

2.30 Function Area (continued)

AUTOMATIC CODEBAR SPRING

Requirement

With carriage at left margin
 Min 1/2 oz---Max 1-3/4 oz
 to start automatic codebar moving.



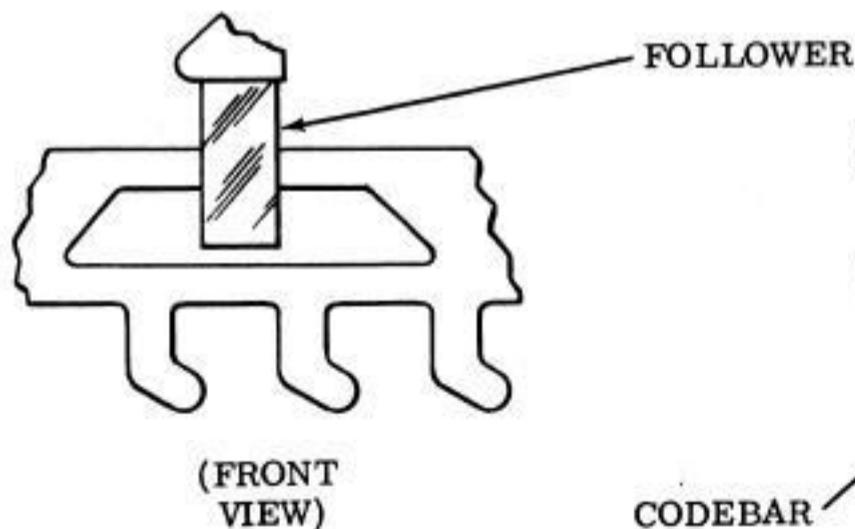
PRINT SUPPRESSION AND NO. 3 (4)* CODEBAR SPRING

Requirement

With typing unit in stop condition and no. 3 (4)*
 codebar's follower on carriage lifted.
 Min 12 oz---Max 14 oz
 to start codebar moving.

Note 1: Check the print suppression
 and no. 3 (4)* codebar springs.

* Note 2: No. 3 on 5-level typing units.
 No. 4 on 8-level typing units.

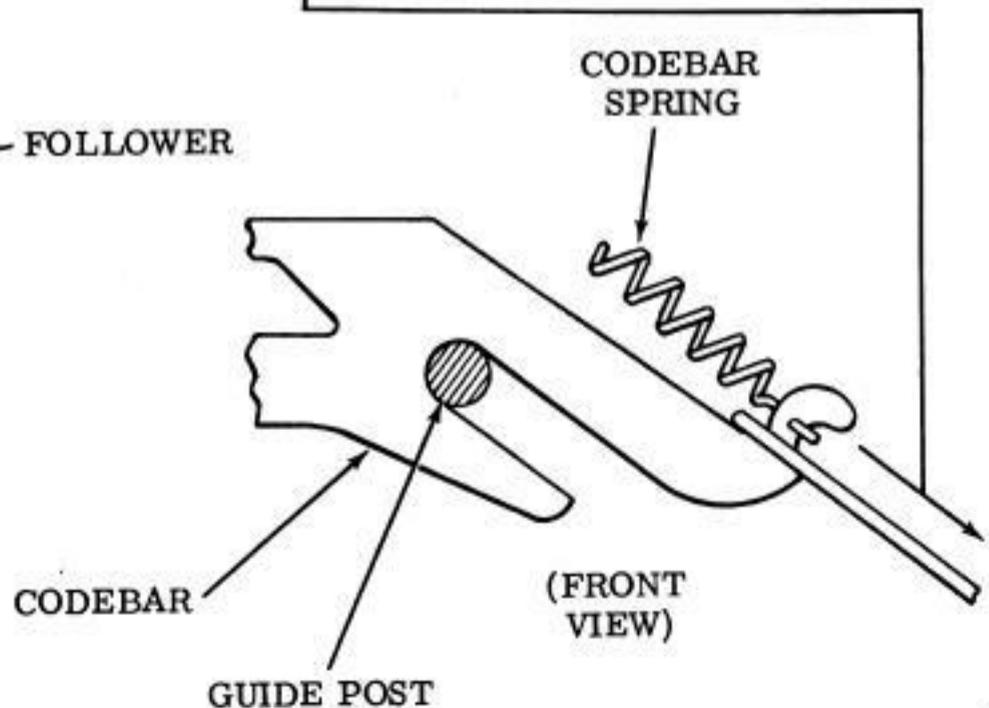


CODEBAR SPRINGS

Note 3: Check each codebar
 spring other than automatic
 print suppression and no. 3 (4)*.

Requirement

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



2.31 Function Area (continued)

FUNCTION PAWL SPRING

Requirement

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

Min 1-1/4 oz---Max 2-1/2 oz to start answer-back, blocking, and carriage return function pawls moving.

Min 9 oz---Max 13 oz to start each remaining function pawl moving.

Note: Check each pawl spring.

LEFT ROCKER DRIVE ARM

To Check

Set up "carriage return" code combination (---4-) or (1-34---8) in selector. Rotate main shaft until function bail is at highest point of travel.

Requirement

Min 0.020 inch---Max 0.040 inch between carriage return function lever and its function pawl.

To Adjust

Using pry point, adjust left rocker drive arm with clampscrew loosened.

Related Adjustments

Affects

RIGHT ROCKER DRIVE ARM
(Function Area **)

CARRIAGE RETURN LEVER
(Spacing Area)

SPACE SUPPRESSION TRIP LEVER (Spacing Area)

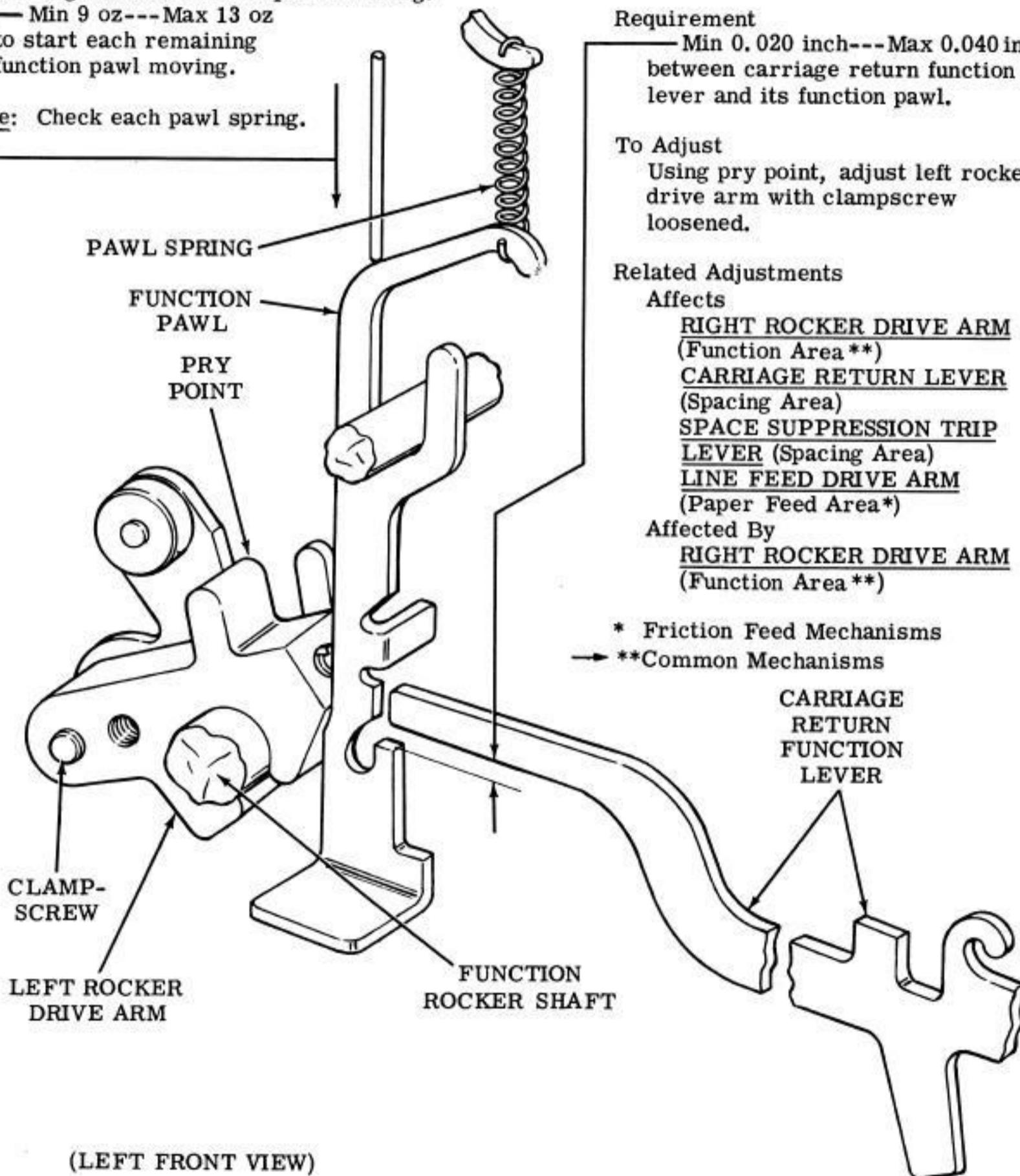
LINE FEED DRIVE ARM
(Paper Feed Area*)

Affected By

RIGHT ROCKER DRIVE ARM
(Function Area **)

* Friction Feed Mechanisms

→ **Common Mechanisms



(LEFT FRONT VIEW)

2.32 Function Area (continued)

RIGHT ROCKER DRIVE ARM

To Check

Set up answer-back character "WRU" (-234-) or (1-3----8) code combination in selector. Rotate main shaft until function bail is at its highest point. Make sure that distributor clutch has not been tripped.

Requirement

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

To Adjust

Using pry point, adjust right rocker drive arm with clampscrew loosened. Recheck LEFT ROCKER DRIVE ARM (Function Area***) adjustment.

Related Adjustments

Affects

CARRIAGE RETURN LEVER (Spacing Area)

FORM-OUT LEVER OVERTRAVEL (Platen Drive Area)

LINE FEED DRIVE ARM (Paper Feed Area*)

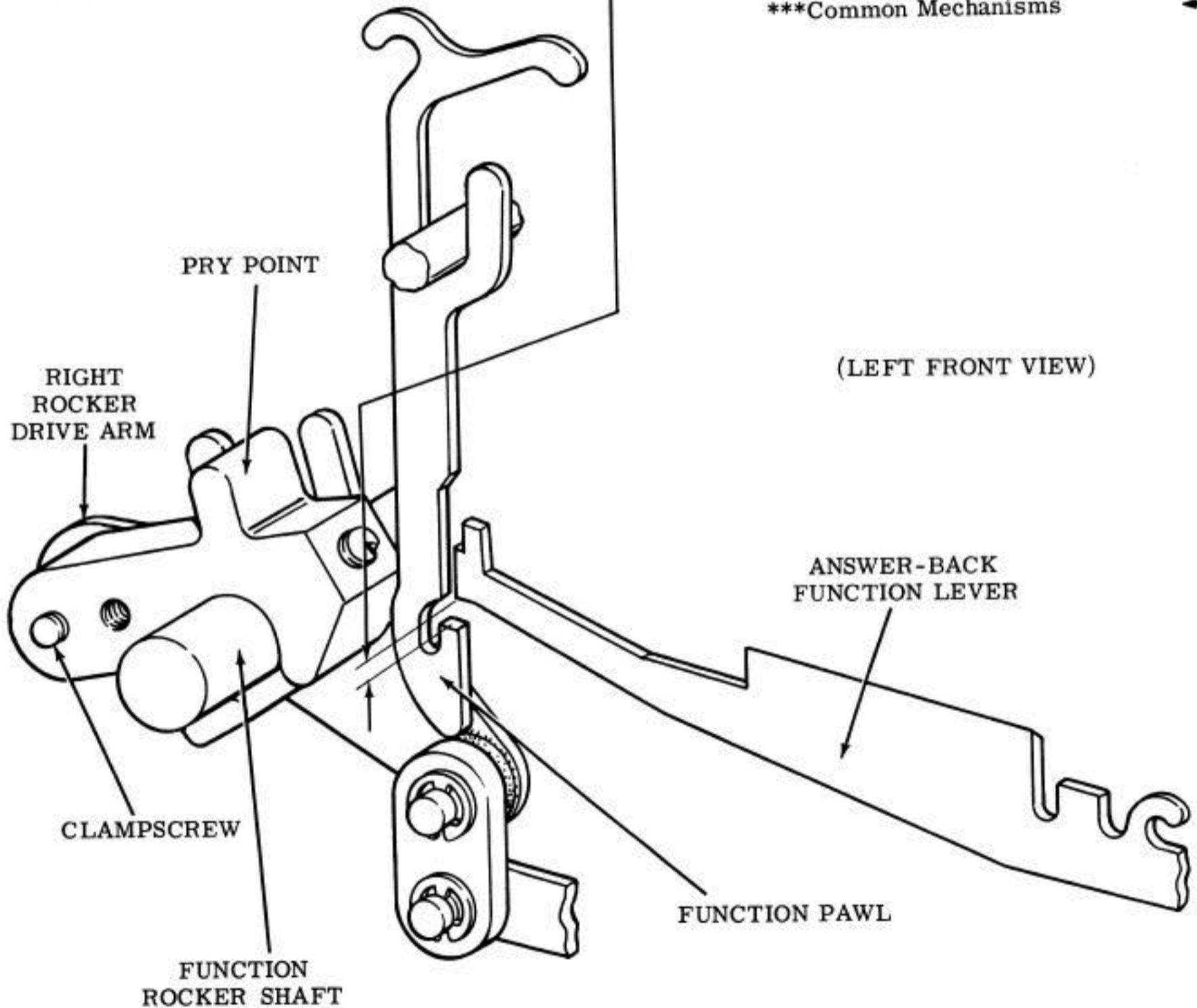
LINE FEED STRIP LEVER (Function Area**)

SPACE SUPPRESSION TRIP LEVER (Spacing Area)

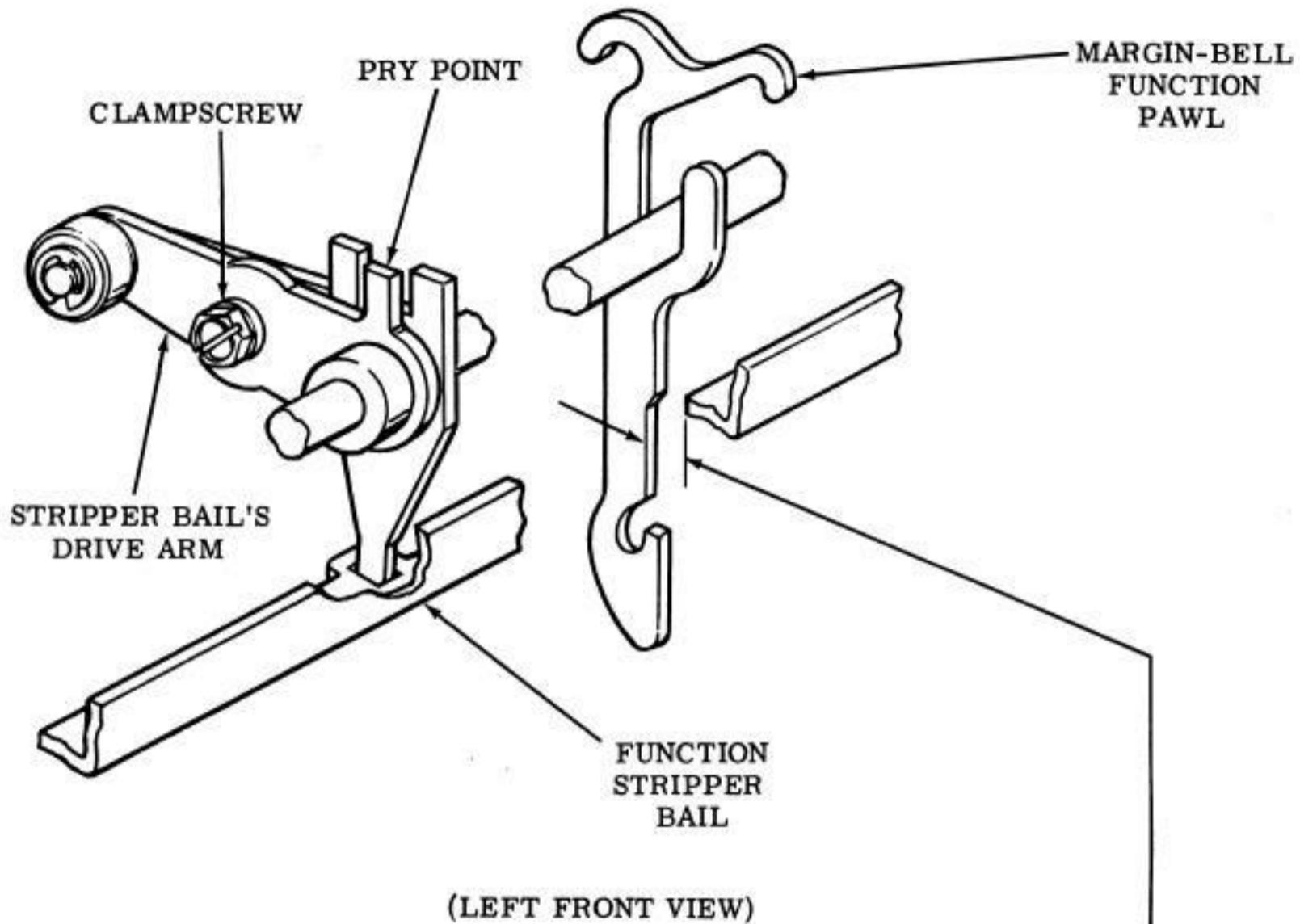
Affected By

LEFT ROCKER DRIVE ARM (Function Area***)

*Friction Feed Mechanisms
 **Sprocket Feed Mechanisms
 ***Common Mechanisms



2.33 Function Area (continued)



STRIPPER BAIL

Requirement

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

To Adjust

Using pry point, adjust stripper bail's drive
arm with clampscrew loosened.

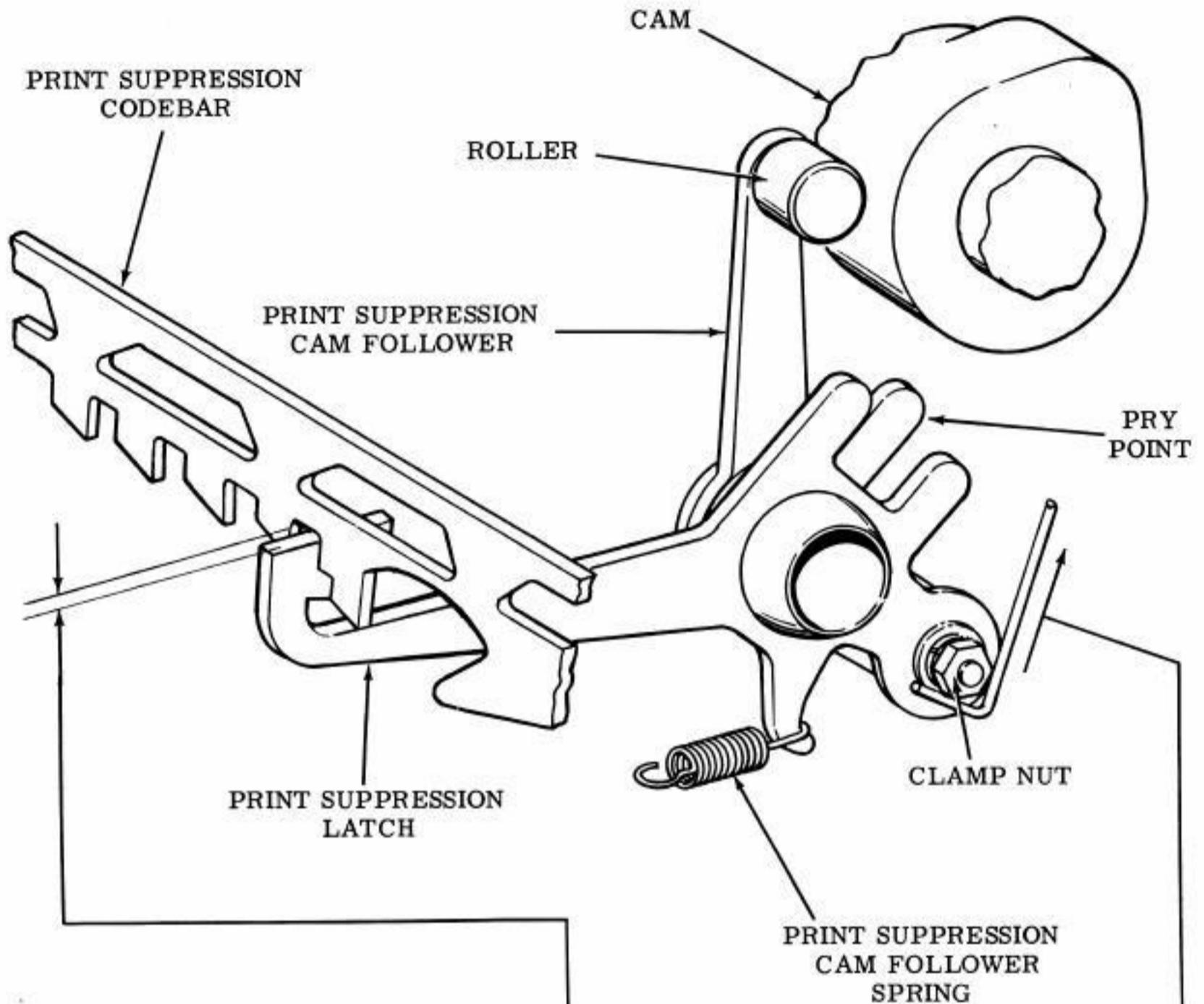
Related Adjustment

Affects

LINE FEED STRIPPER PLATE (Paper
Feed Area*)

*Friction Feed Mechanisms

2.34 Function Area (continued)



PRINT SUPPRESSION CAM FOLLOWER

Requirement

With typing unit in stop condition and print suppression cam follower roller resting on its cam

Min 0.005 inch --- Max 0.030 inch
between print suppression latch and print suppression codebar.

To Adjust

Using pry point, position print suppression cam follower with clamp nut loosened.

Related Adjustment

Affected By

CODEBAR RESET LEVER (Function Area*)

*Common Mechanisms

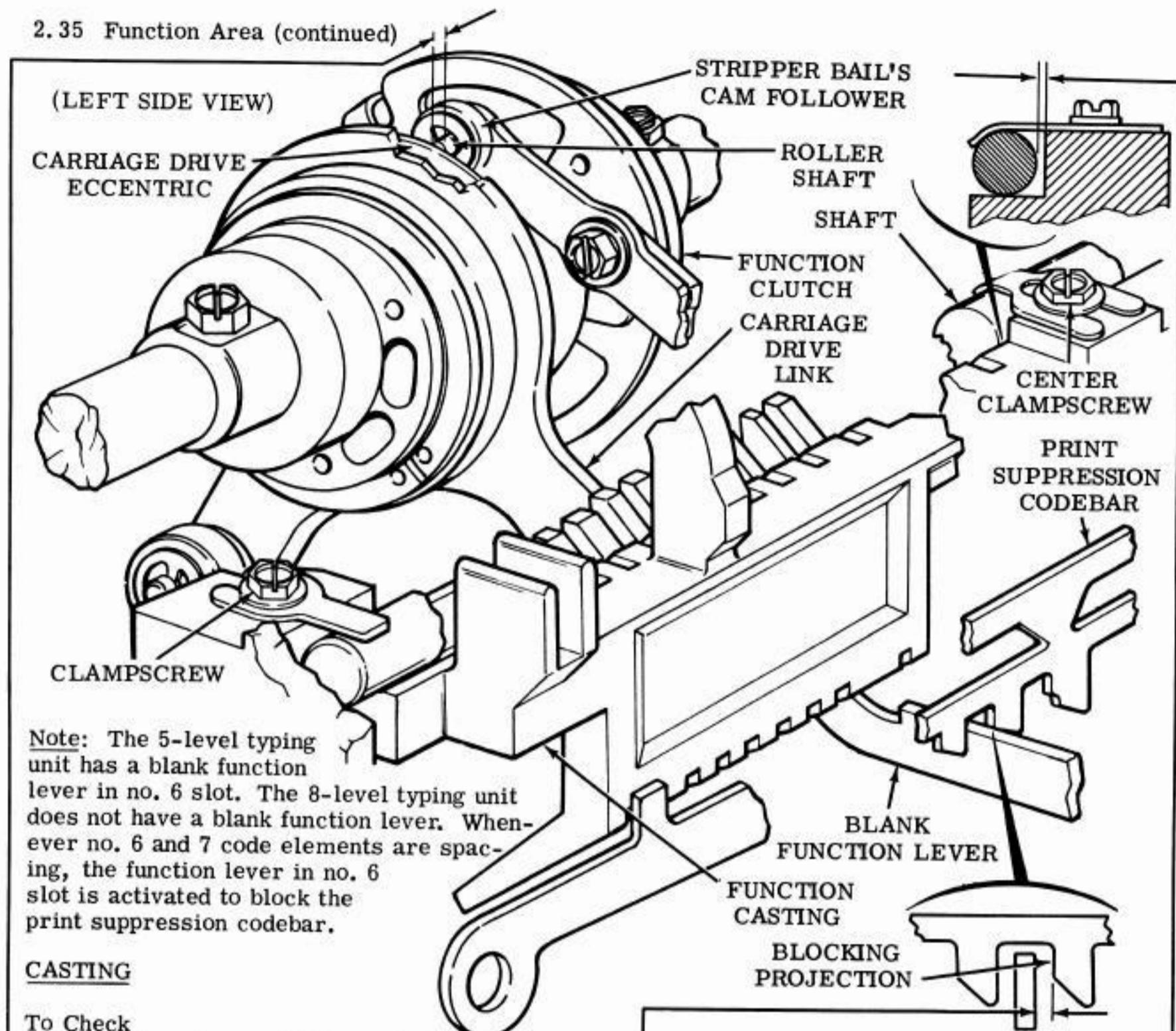
(RIGHT SIDE VIEW)

PRINT SUPPRESSION CAM FOLLOWER SPRING

Requirement

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

2.35 Function Area (continued)

CASTING

To Check

Manually set up an "all-spacing" code combination in selector. Rotate main shaft until function bail approaches high part of travel, but stop rotating main shaft before print suppression cam follower reaches high part of its cam.

(1) Requirement

(a) As gauged by eye

Min 0.030 inch---Max 0.050 inch between blocking projections on print suppression codebar and blank function lever.

(b) Min 0.005 inch

between carriage drive eccentric and roller shaft on stripper bail's cam follower.

To Adjust

Position function casting with two end clampscrews loosened.

(2) Requirement

The shaft shall be in contact with, or not more than

Max 0.003 inch

away from the vertical surface at the center of the function casting.

To Adjust

With the center and two end clampscrews loosened, position shaft. Recheck "(1) Requirement" above.

Related Adjustments

Affects

FUNCTION CLUTCH—PRELIMINARY
(Main Shaft Area)

Affected By

PRINT SUPPRESSION LATCH
(Function Area *)

→ *Common Mechanisms

2.36 Spacing Area

CARRIAGE RETURN LEVER

To Check

Set up "carriage return" code combinations (---4-) or (1-34---8) in selector. Rotate main shaft until function bail reaches lowest point of travel.

Requirement

- (1) Early design:
carriage return lever flush with carriage return latch
Within 0.005 inch
as gauged by eye.
- (2) Late design:
Min Some --- Max 0.030 inch
between carriage return lever and
carriage return latch with clampscrew
loosened.

To Adjust

Using pry points, position carriage return lever with clampscrew loosened.

Related Adjustments

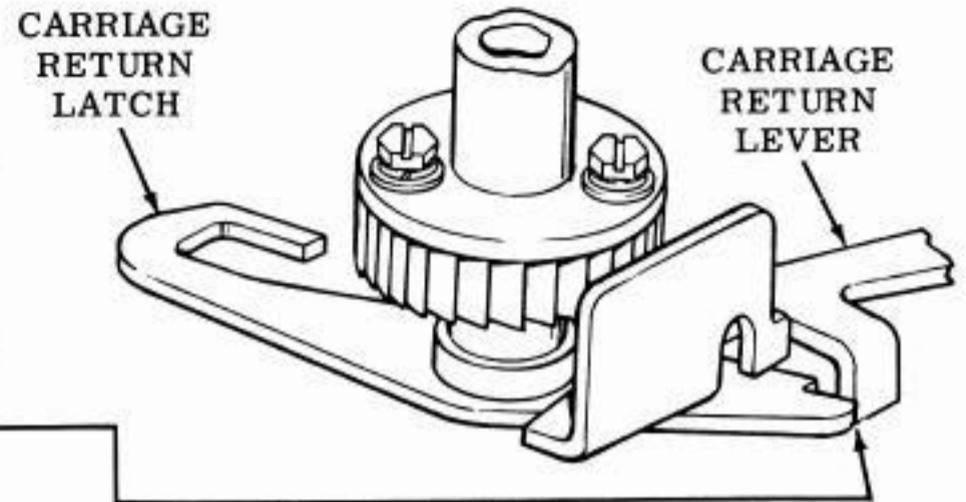
Affected By

- LEFT ROCKER DRIVE ARM (Function Area *)
- RIGHT ROCKER DRIVE ARM (Function Area *)

*Common Mechanisms

(LATE DESIGN)

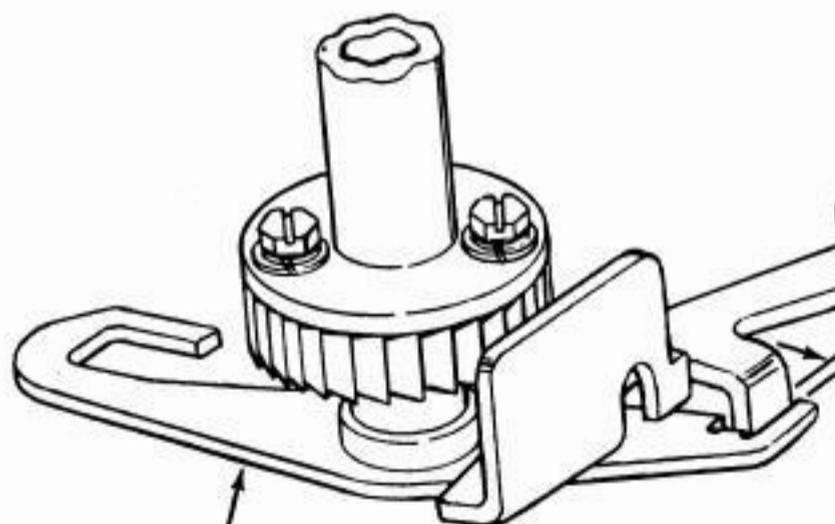
(LEFT FRONT VIEW) (EARLY DESIGN)



PRY POINTS

CLAMPSCREW

CARRIAGE RETURN LEVER



(LEFT FRONT VIEW)

CARRIAGE RETURN LATCH

2.37 Function and Spacing Areas

CARRIAGE DRIVE BAIL

To Check

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

Requirement

As gauged to eye

Min Some --- Max 0.015 inch endplay in carriage drive bail.

To Adjust

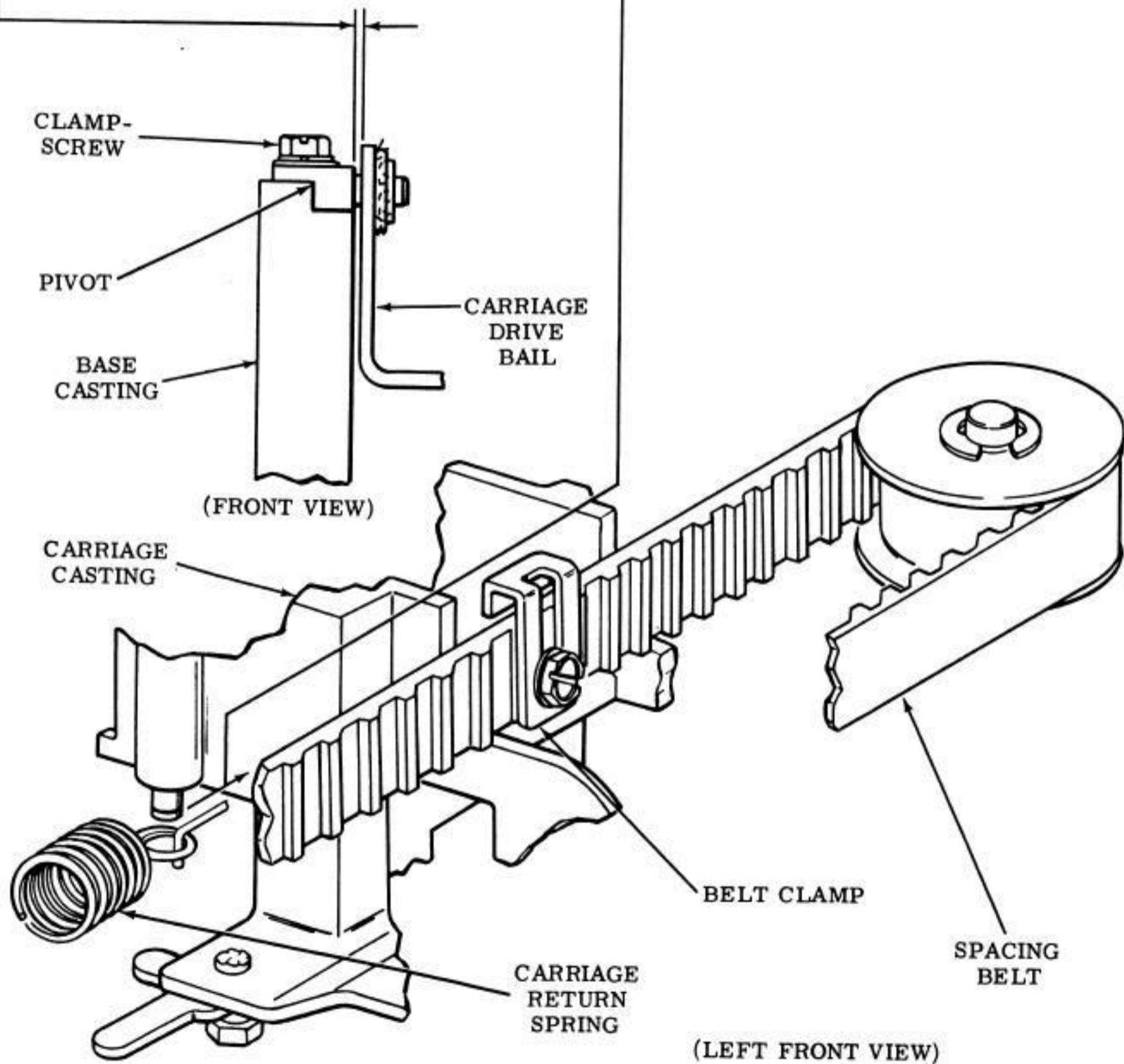
Position carriage drive bail's left pivot with clampscrew loosened.

CARRIAGE RETURN SPRING

Requirement

With typing unit in stop condition and carriage at right margin

Min 56 oz --- Max 64 oz to pull carriage return spring to installed length.



2.38 Carriage Area

FRONT ROLLERS

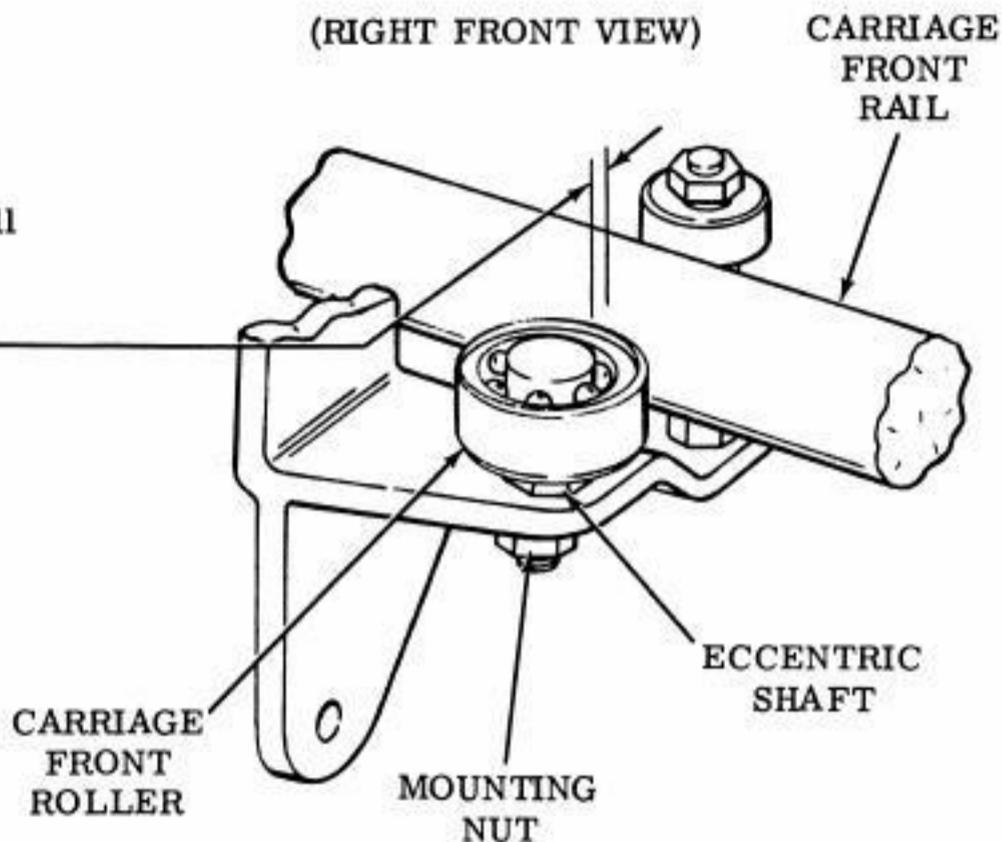
Requirement

With typing unit in stop condition, the two carriage front rollers shall spin freely along the entire travel on their rail with

Max clearance of 0.004 inch.

To Adjust

With carriage return spring removed and mounting nut loosened, position each roller against rail by means of eccentric shaft. Slowly back off eccentric shaft to meet requirement.



REAR ROLLER

To Check

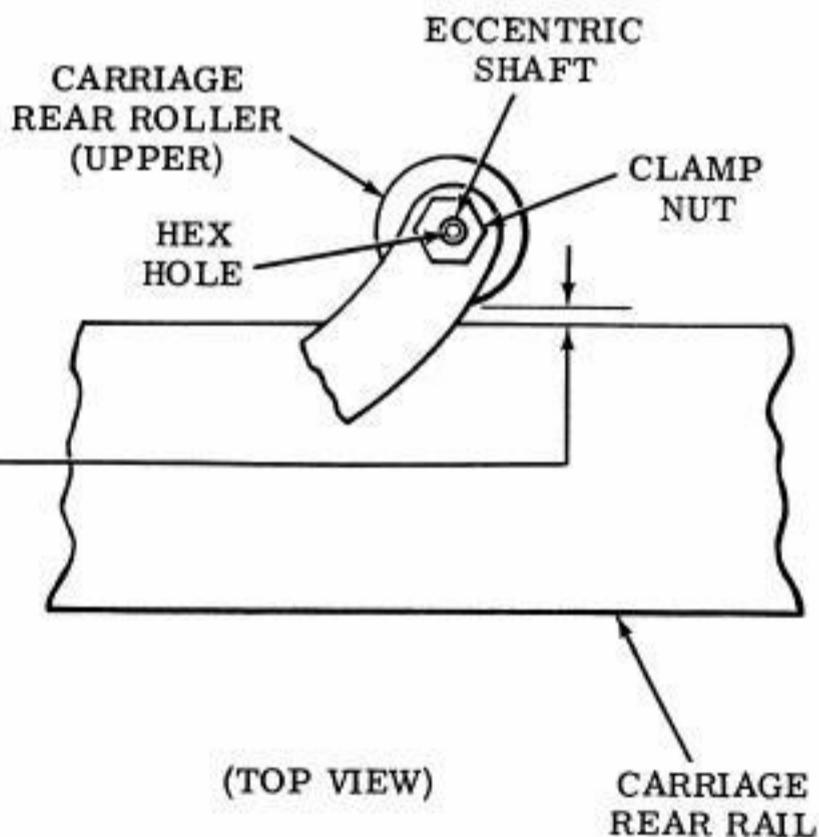
Position carriage near right margin. Trip selector clutch. Rotate main shaft until carriage drive bail is in rearmost position.

Requirement

Min Some---Max 0.005 inch between carriage rear rail and carriage rear roller (upper).

To Adjust

With clamp nut loosened, position eccentric shaft with hex wrench in hex hole.



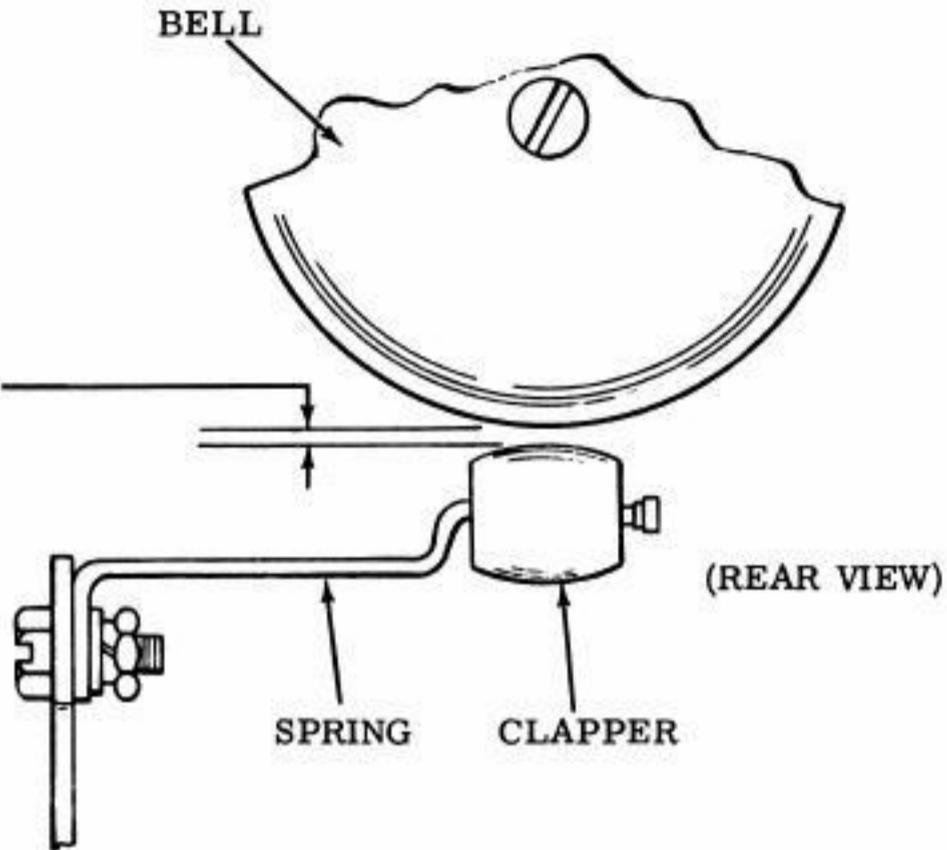
2.39 Function and Carriage Areas

BELL CLAPPER

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

To Adjust
 Using pliers, bend clapper spring.

- (2) Requirement
 The bell must be audible when the
 appropriate selection is made.



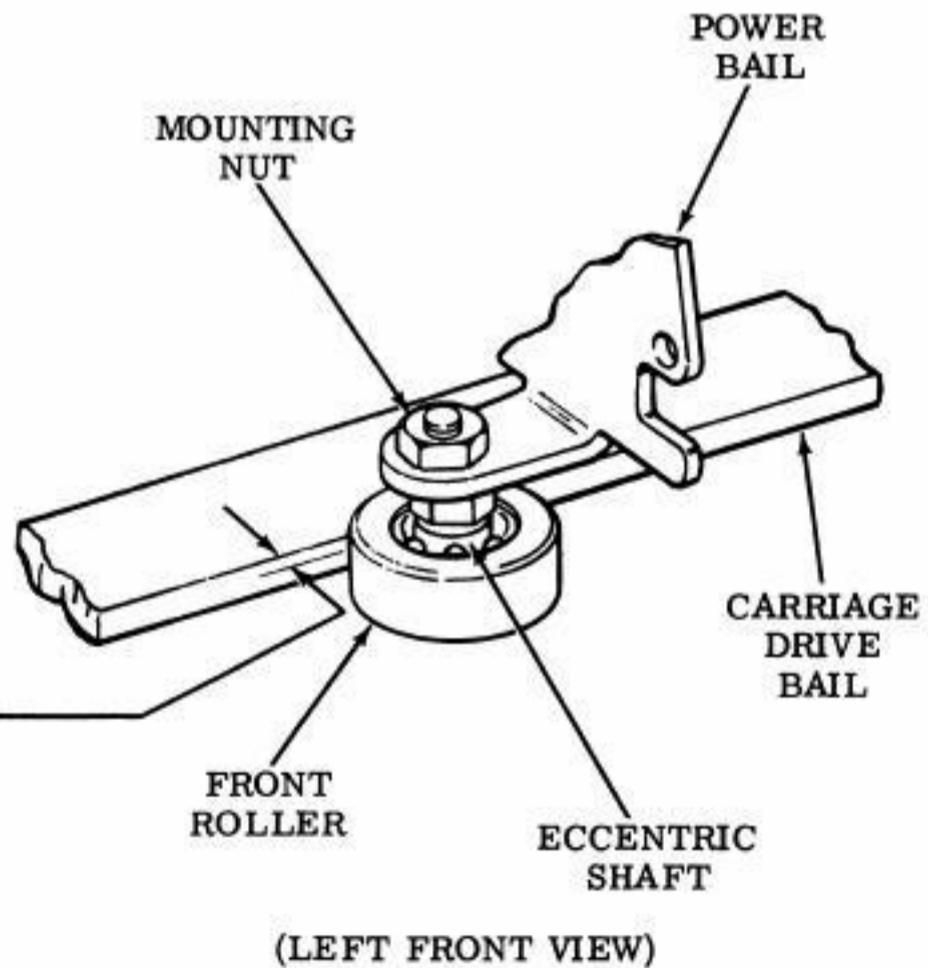
Note: Remove ribbon mechanism at this point in complete readjustment procedure. For instructions, see the appropriate typing unit section.

POWER BAIL ROLLER

- To Check
 Trip function clutch and rotate main shaft until carriage drive bail is parallel to base casting.

- Requirement
 Front roller shall spin freely with
 Min Some---Max 0.005 inch
 clearance.

To Adjust
 With mounting nut loosened, position front roller against drive bail by means of eccentric shaft. Back off shaft slowly to meet requirement.



2.40 Carriage Area

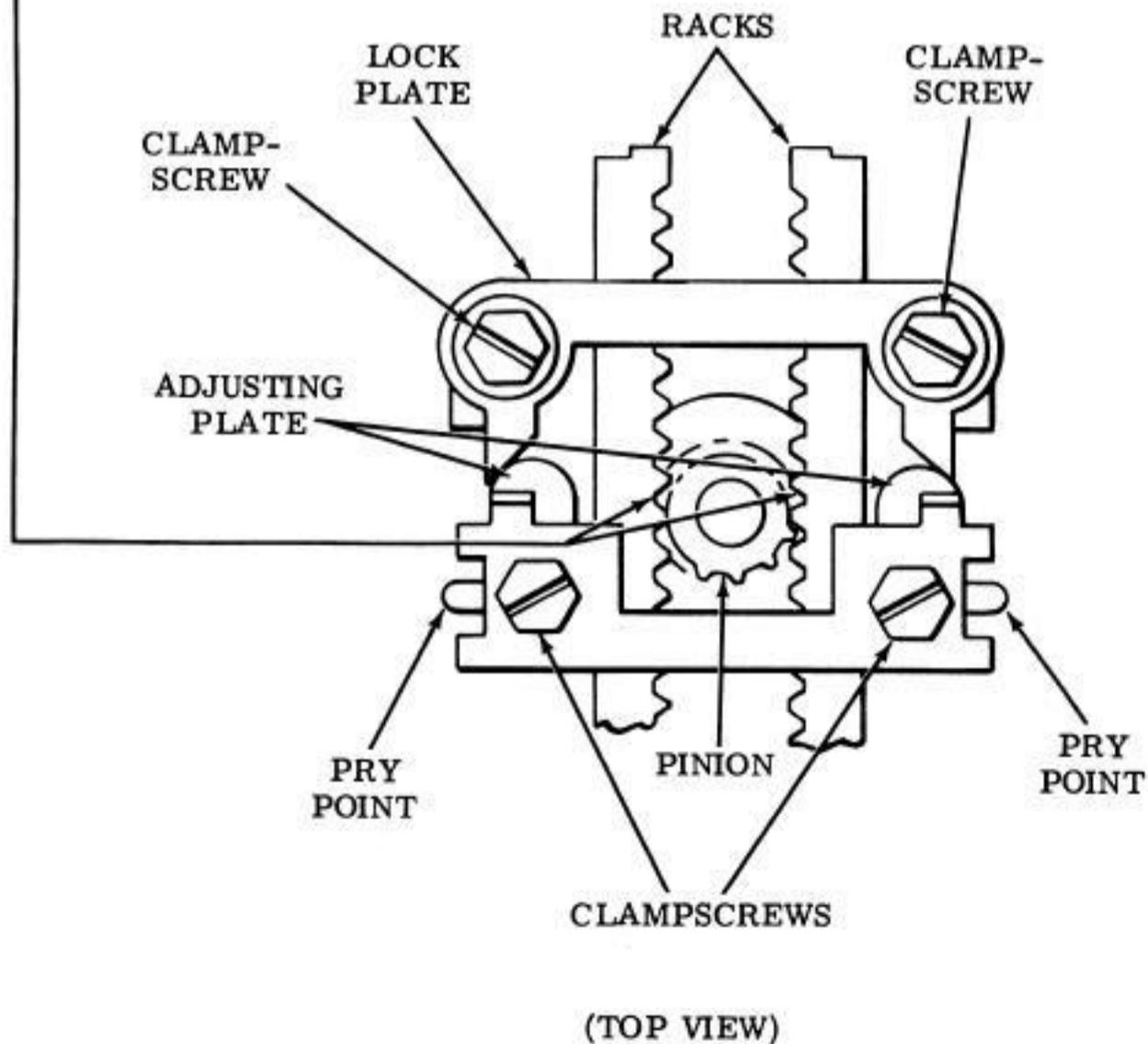
ROTARY RACKS

To Check
Put typing unit in stop condition.

Requirement
0.006 inch backlash
between pinion and each rack.

To Adjust
Loosen adjusting plate and lock plate clamp-screws. Place 0.006 inch feeler gauge between one of racks and adjusting plate. Using pry point, position adjusting plate for no play between rack and pinion. Make adjustment for other rack. Tighten adjusting plate clampscrews. Remove feeler gauge. Position lock plate tight against adjusting plate and tighten its clampscrews.

Related Adjustment
Affects
STOP PLATE (Carriage Area)



2.41 Carriage Area (continued)

REAR RAIL

(1) To Check

Position the carriage on the left side of the typing unit with the center of the typewheel 2-7/8 inches from the platen left mounting plate. Manually operate the typing unit until the codebars fully rise. Depress the letters blocking lever.

Note: Depression of the letters blocking lever is required only on 5-level typing units.

Continue to rotate the main shaft until the shift slide barely comes to rest on the stop plate.

Requirement

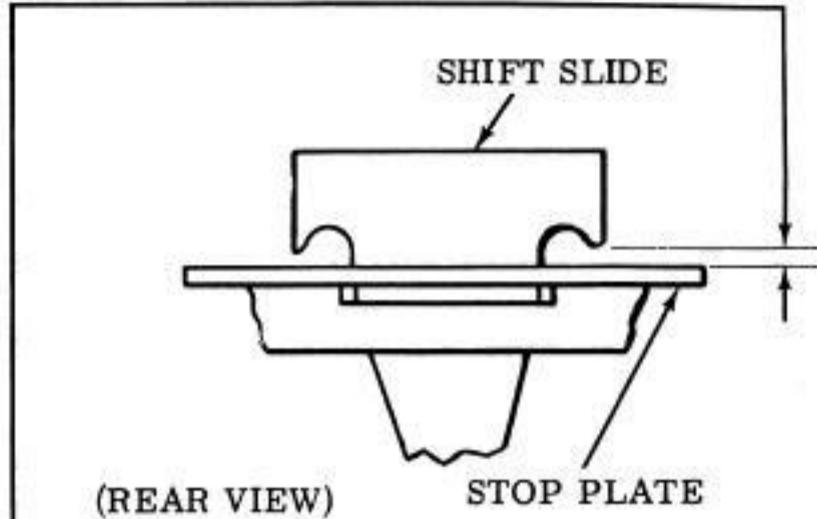
With all play in shift slide taken up in the downward direction
 Min 0.028 inch --- Max 0.042 inch
 between bottom edge of shift slide and top edge of stop plate. Record the measurement.

(2) To Check

Position the carriage to the right side of the typing unit with the center of the typewheel 1/2 inch from the right-hand margin. Manually operate the typing unit until the codebars fully rise. Depress the letters blocking lever (see above note). Continue to rotate the main shaft until the shift slide barely comes to rest on the stop plate.

Requirement

Perform "Requirement" in "(1) To Check" above.



(3) To Check

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

Requirement

Max 0.010 inch
 difference between recorded measurements.

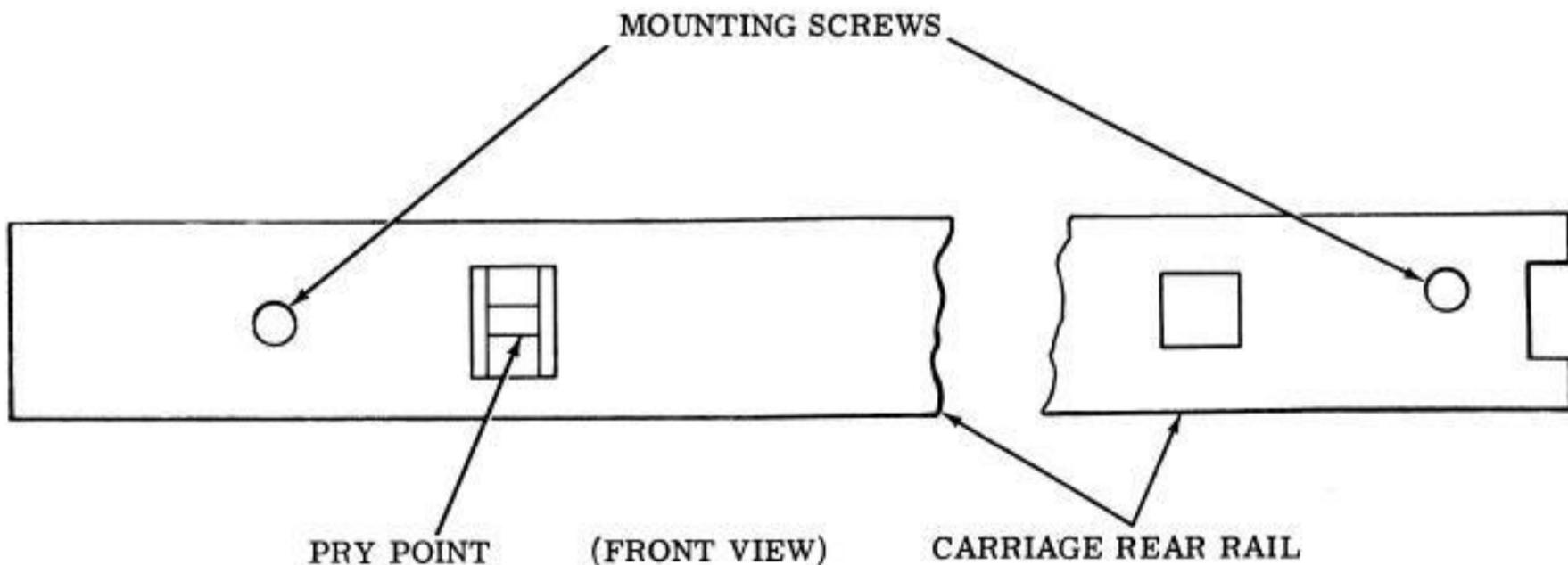
To Adjust

With two carriage rear rail mounting screws friction tight, position carriage rear rail using pry point.

Related Adjustments

Affects

- REAR ROLLER (Carriage Area)
 - RESET LEVER (Carriage Area)
 - PULSE LEVER (Carriage Area)
 - DRIVE BAIL (Carriage Area)
 - PLATEN-VERTICAL (Paper Feed Area*)
 - PRINT RESET ARM (Carriage Area)
 - PRINT DRIVE LEVER (Carriage Area)
- *Friction or Sprocket Feed Mechanisms



2.42 Carriage Area (continued)

RESET LEVER

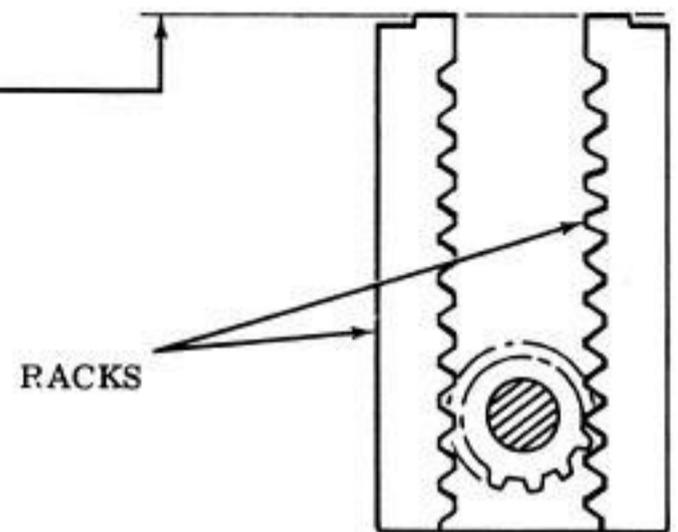
Requirement

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

To Adjust

Place carriage to left margin. Using finger pressure on power bail and reset lever, position reset lever with clampscrew loosened.

Note: With above adjustment completed, only a small amount of play shall be present when typewheel is rotated back and forth.



TOP VIEW

Related Adjustments

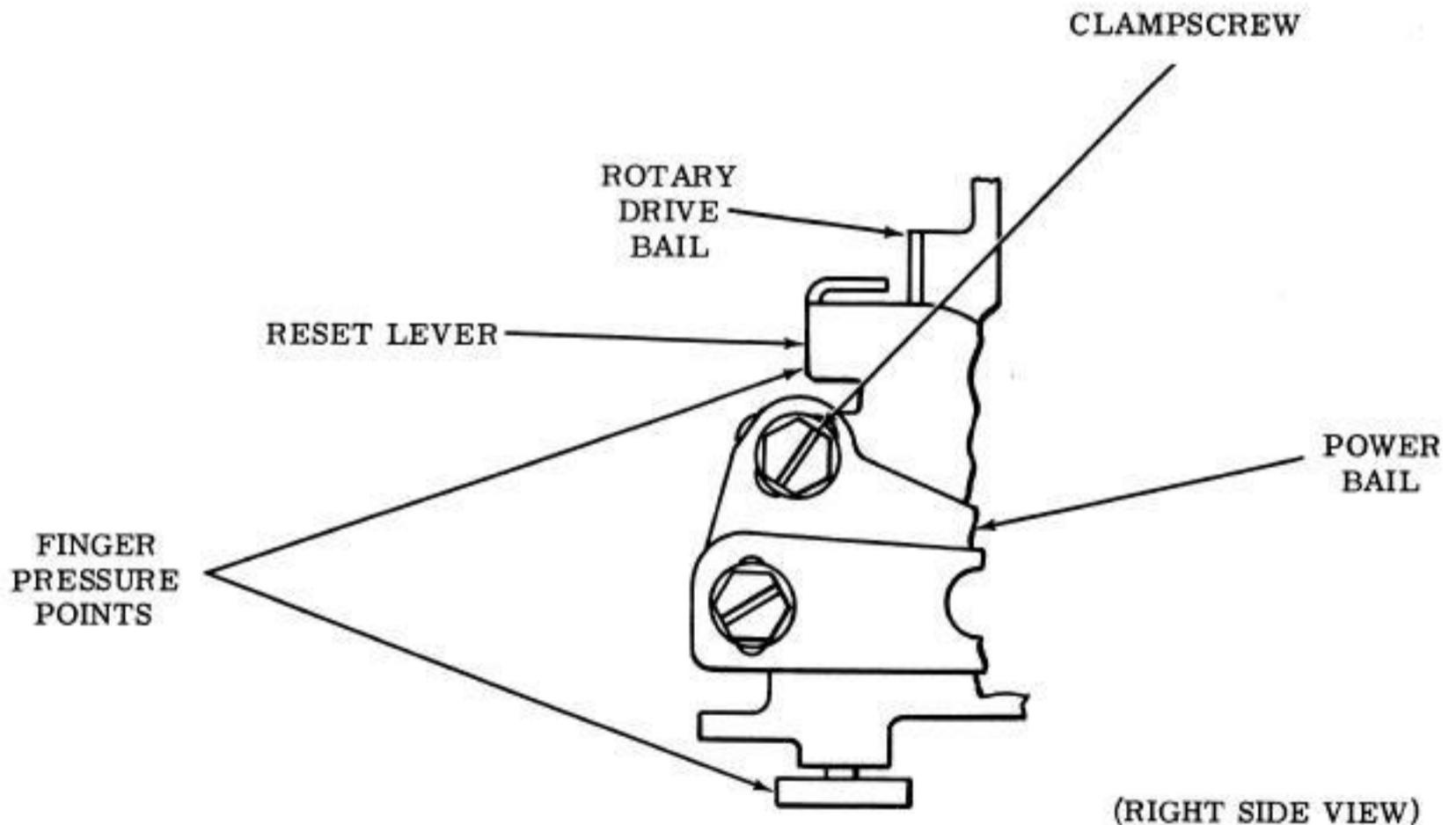
Affects

RIBBON POWER LEVER (Carriage Area)

Affected By

REAR RAIL (Carriage Area)

DRIVE BAIL (Carriage Area)



2.43 Carriage Area (continued)

PULSE LEVER

(1) To Check

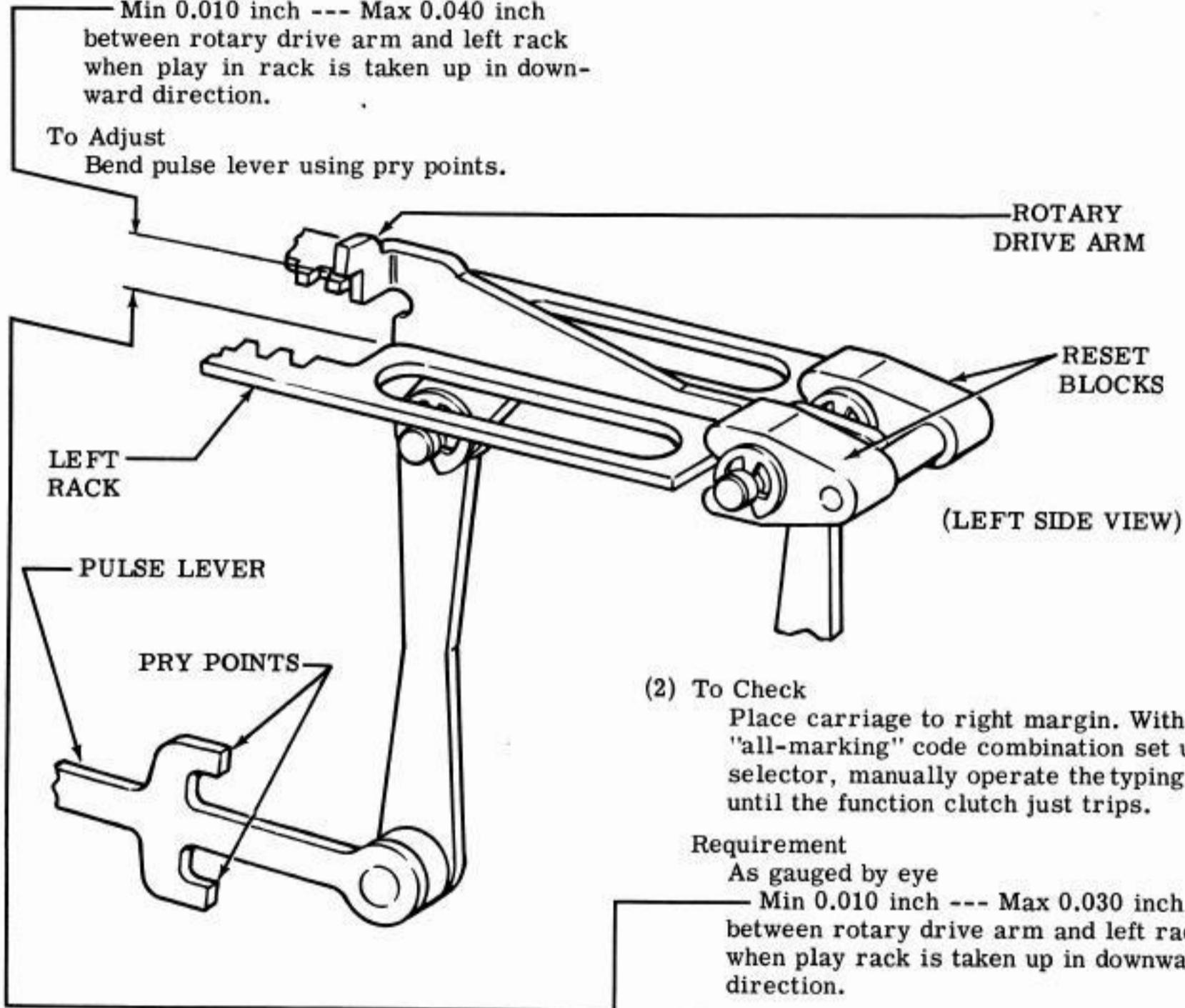
Place carriage to left margin. With an "all-marking" code combination set up in selector, manually operate the typing unit until the function clutch just trips.

Requirement

As gauged by eye
 Min 0.010 inch --- Max 0.040 inch
 between rotary drive arm and left rack
 when play in rack is taken up in down-
 ward direction.

To Adjust

Bend pulse lever using pry points.



(2) To Check

Place carriage to right margin. With an "all-marking" code combination set up in selector, manually operate the typing unit until the function clutch just trips.

Requirement

As gauged by eye
 Min 0.010 inch --- Max 0.030 inch
 between rotary drive arm and left rack
 when play rack is taken up in downward
 direction.

To Adjust

Repeat "(1) To Check" above and refine
 "To Adjust" under "(1) To Check" above.

Related Adjustment

Affected By

REAR RAIL (Carriage Area)

Note: When the typing unit is operated under power, the typewheel shall shift from right to left or left to right side and print the proper characters uniformly.

2.44 Carriage Area (continued)

DRIVE BAIL**To Check**

Place carriage approximately 1/2 inch from left margin. Set up an "all-spacing" code combination in the selector. Rotate main shaft until carriage drive bail reaches its rearmost position.

(1) Requirement

approx 0.030 inch
between print hammer bail and print hammer trip lever.

To Adjust

With print hammer trip lever clampscrew loosened, position print hammer trip lever using pry point.

(2) Requirement

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

To Adjust

With carriage drive bail right pivot clampscrew loosened, position right pivot.

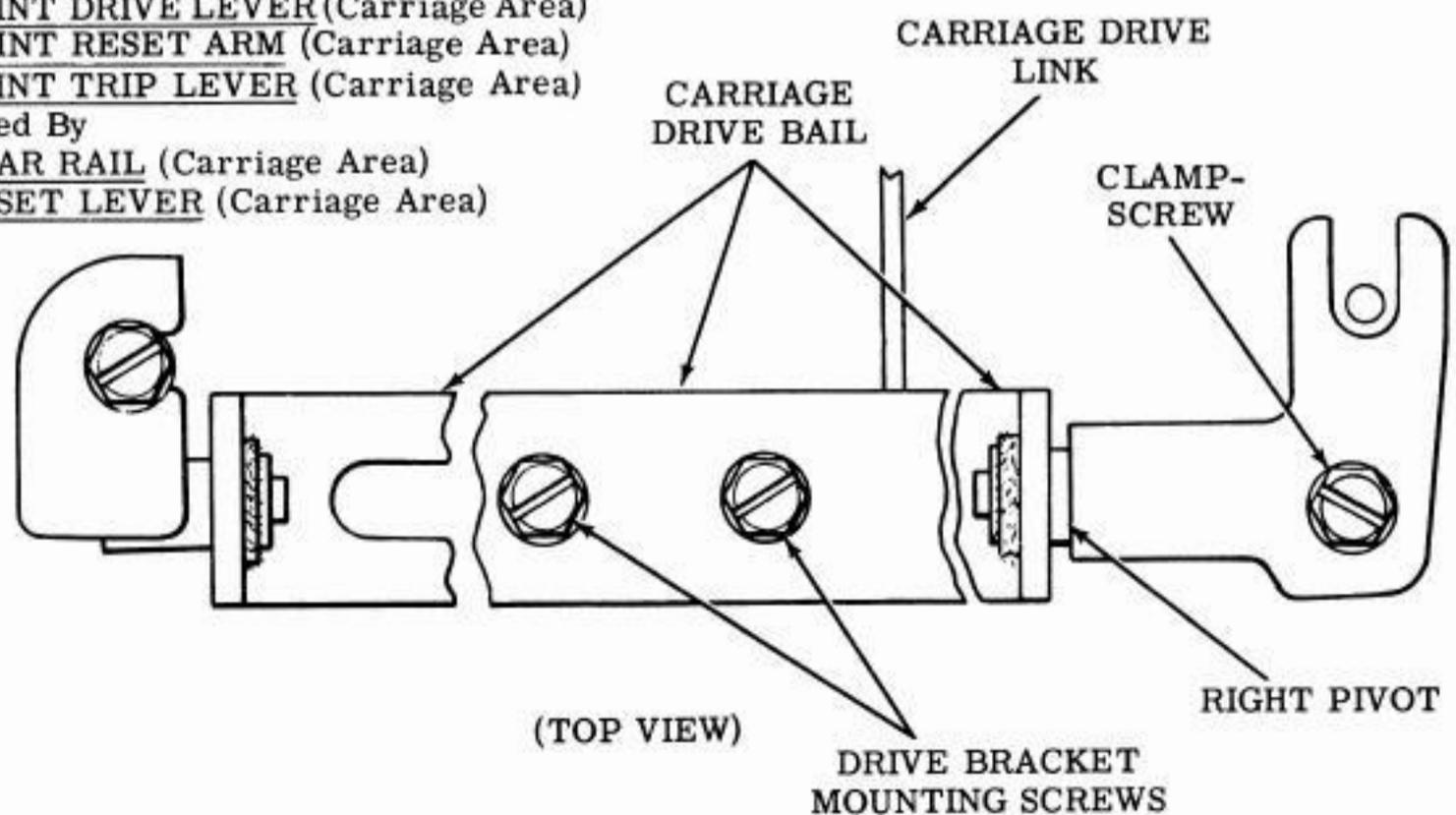
Note: Carriage drive bail shall not be biased to the right or left.

Related Adjustments**Affects**

PRINT DRIVE LEVER (Carriage Area)
PRINT RESET ARM (Carriage Area)
PRINT TRIP LEVER (Carriage Area)

Affected By

REAR RAIL (Carriage Area)
RESET LEVER (Carriage Area)



2.45 Carriage Area (continued)

PRINT DRIVE LEVER

To Check

Place typing unit in stop condition.

Requirement

As gauged with an adjusting tool no. TP180588

Min 0.229 inch --- Max 0.239 inch
between vertical drive bail and common
vertical stop arm.

Note: An adjusting tool no. TP180588
has a nominal dimension of 0.234 inch.

To Adjust

With print drive lever clampscrew loosened,
position print drive lever using pry points.

Related Adjustments

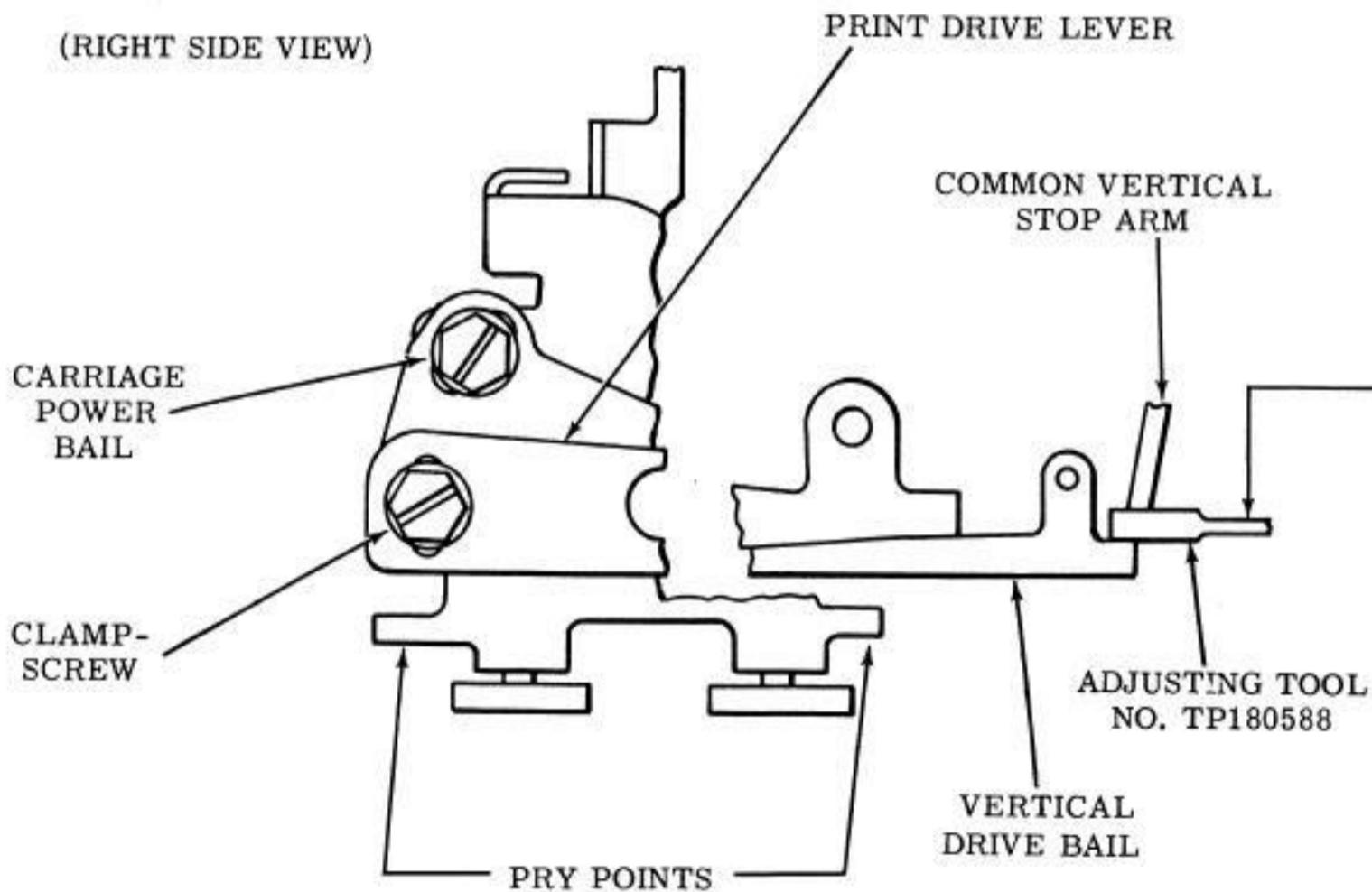
Affects

- PRINT RESET ARM (Carriage Area)
- PRINT TRIP LEVER (Carriage Area)
- PLATEN-VERTICAL (Paper Feed Area*)

Affected By

- REAR RAIL (Carriage Area)
- DRIVE BAIL (Carriage Area)

*Friction or Sprocket Feed Mechanisms



2.46 Carriage and Spacing Areas

PRINT RESET ARM

Requirement

With typing unit in stop condition
 Min 0.009 inch --- Max 0.030 inch
 between print hammer bail and print
 hammer trip lever.

To Adjust

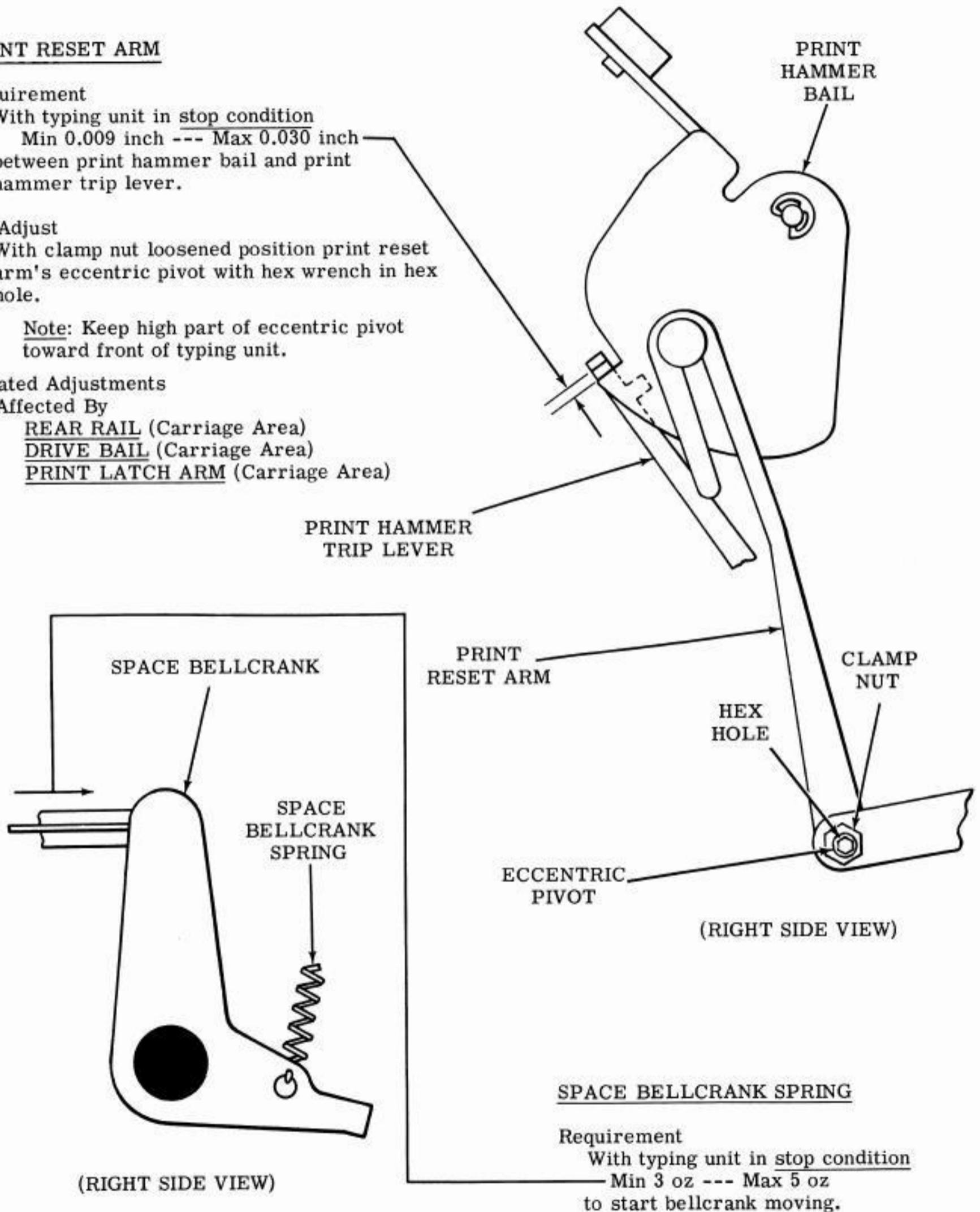
With clamp nut loosened position print reset
 arm's eccentric pivot with hex wrench in hex
 hole.

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

Related Adjustments

Affected By

- REAR RAIL (Carriage Area)
- DRIVE BAIL (Carriage Area)
- PRINT LATCH ARM (Carriage Area)



2.47 Function Area

FUNCTION LEVER SPRINGS

Requirement

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

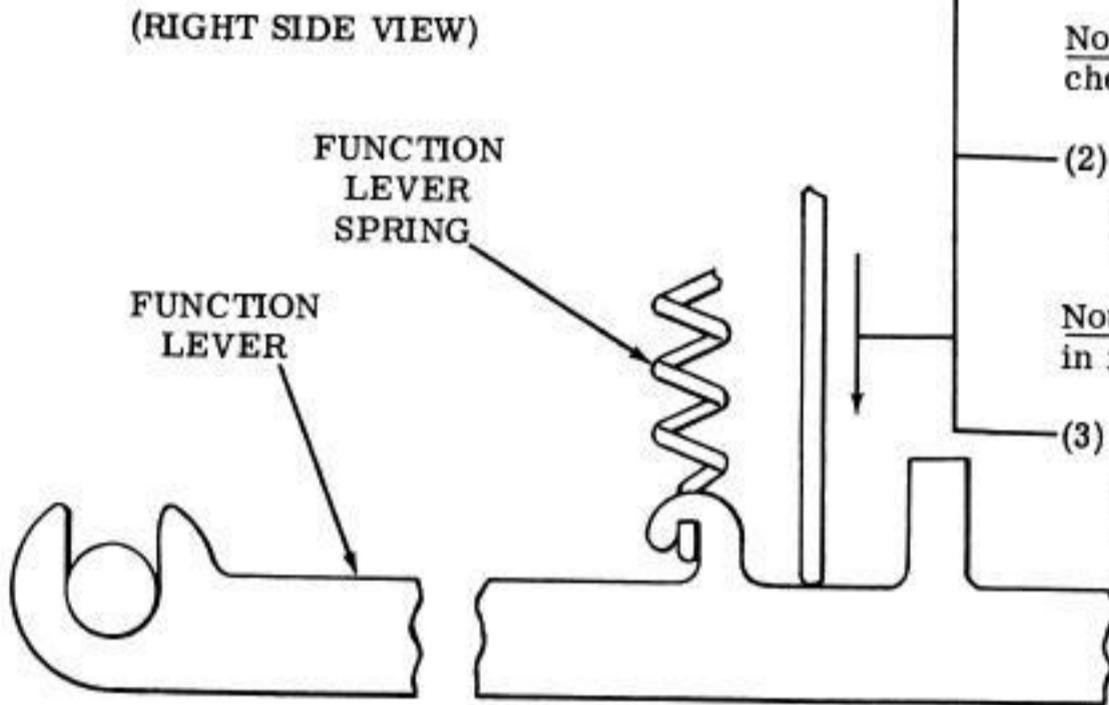
- (1) Min 19 oz---Max 24 oz to start LF and AUTO LF function levers moving.

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

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

Note 2: Hold carriage return lever in forward position.

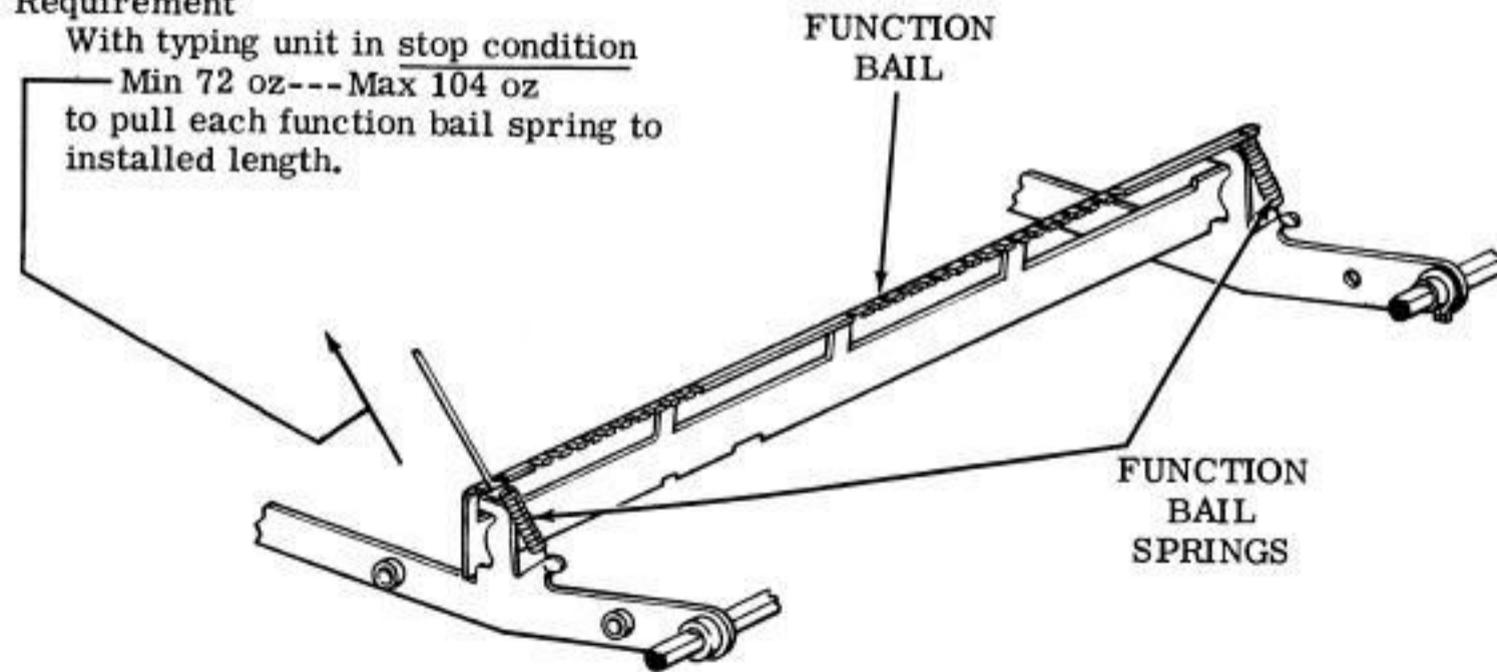
- (3) Min 3-1/2 oz---Max 5-1/2 oz to start remaining function levers moving.



FUNCTION BAIL SPRING

Requirement

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



(LEFT FRONT VIEW)

2.48 Carriage Area

PRINT LATCH ARM**To Check**

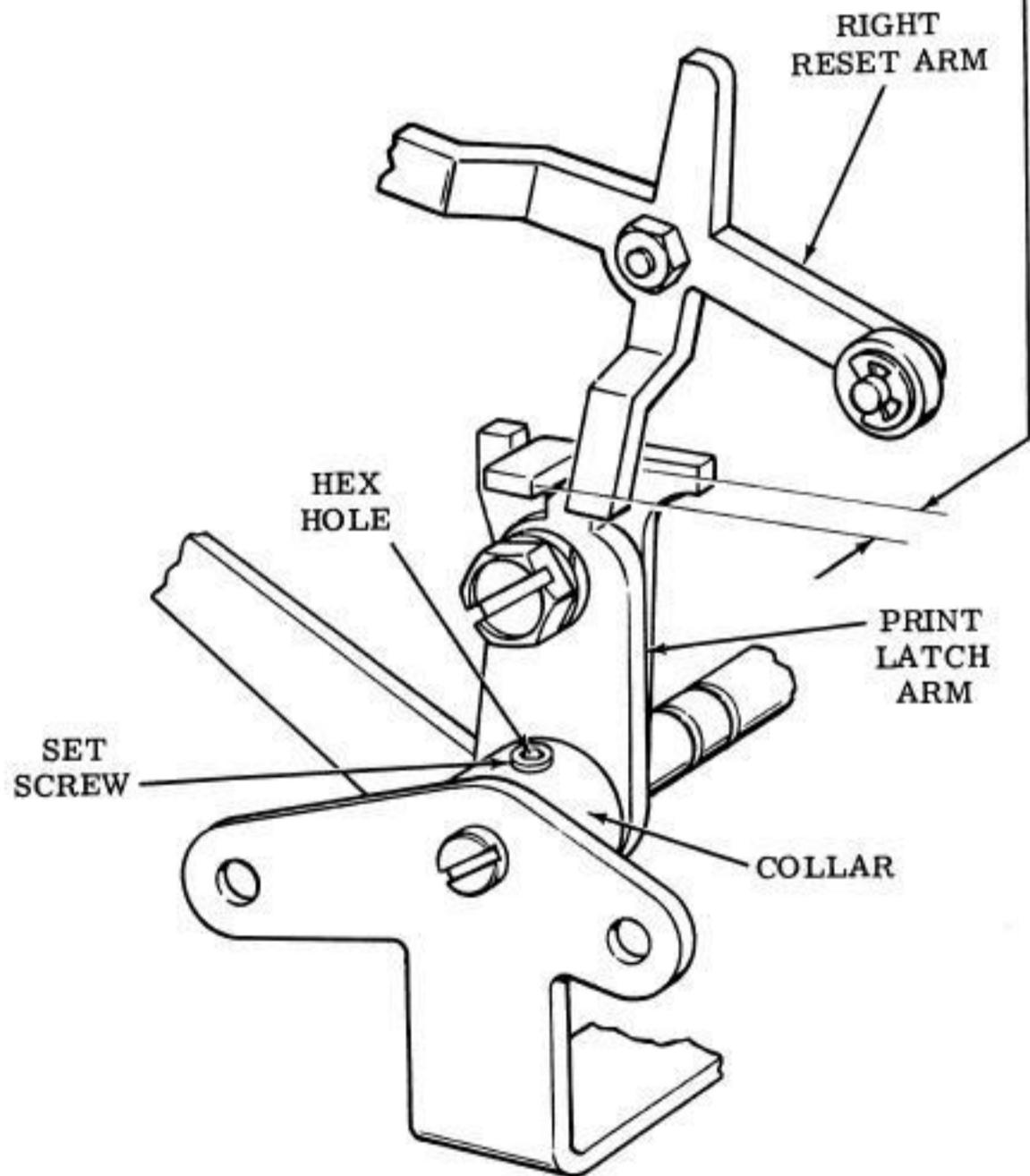
Take up play in print suppression latch-lever towards carriage casting.

Requirement

Print latch arm shall have
Min full engagement
with right reset arm with no binds.

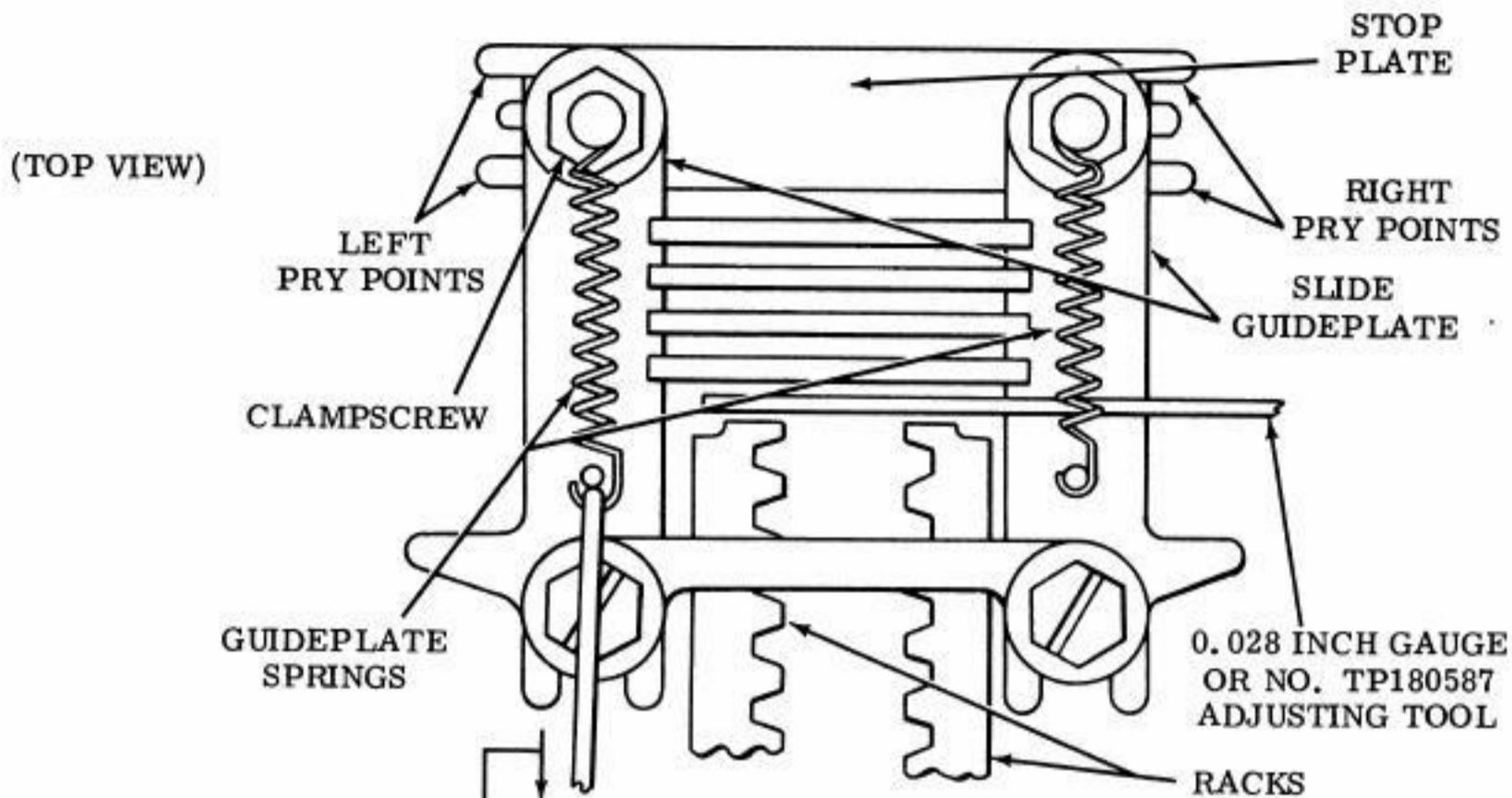
To Adjust

With hex wrench in hex hole, loosen
set screw. Position collar.



(RIGHT REAR VIEW)

2.49 Carriage Area (continued)

STOP PLATE**To Check**

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

Requirement

Typewheel positioning correct in both clockwise and counterclockwise directions.

To Adjust

Place typing unit in stop condition. Open up LEFT SLIDE GUIDEPLATE (Carriage Area) and RIGHT SLIDE GUIDEPLATE (Carriage Area) adjustments. Loosen two clampscrews friction tight. Place either 0.028 inch gauge or tool no. TP180587 across end of racks. Hold reset lever in place and position stop plate so that entire slide assembly is tight against racks and tool.

Related Adjustments**Affects**

RIGHT SLIDE GUIDEPLATE (Carriage Area)
LEFT SLIDE GUIDEPLATE (Carriage Area)

Affected By

ROTARY RACKS (Carriage Area)

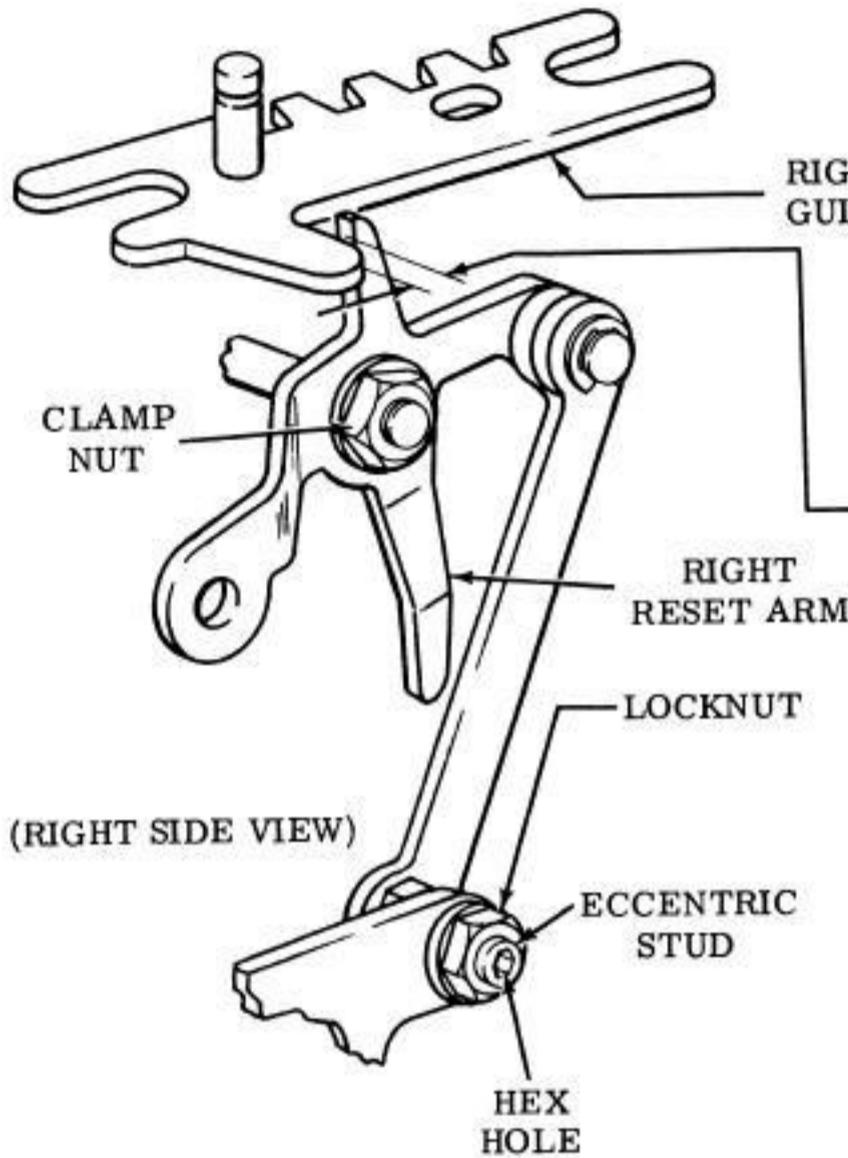
Note 1: To check slide guideplate springs, it is necessary to remove the carriage mechanism from the typing unit. Do not check unless there is reason to believe that the slide guideplate springs will not meet their requirement.

SLIDE GUIDEPLATE SPRINGS**Requirement**

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

Note 2: Check right and left spring.

2.50 Carriage Area (continued)



RIGHT SLIDE GUIDEPLATE

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

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

Related Adjustments

Affects
LEFT SLIDE GUIDEPLATE (Carriage Area)
PRINT TRIP LEVER (Carriage Area)
 Affected By
PRINT DRIVE LEVER (Carriage Area)
STOP PLATE (Carriage Area)

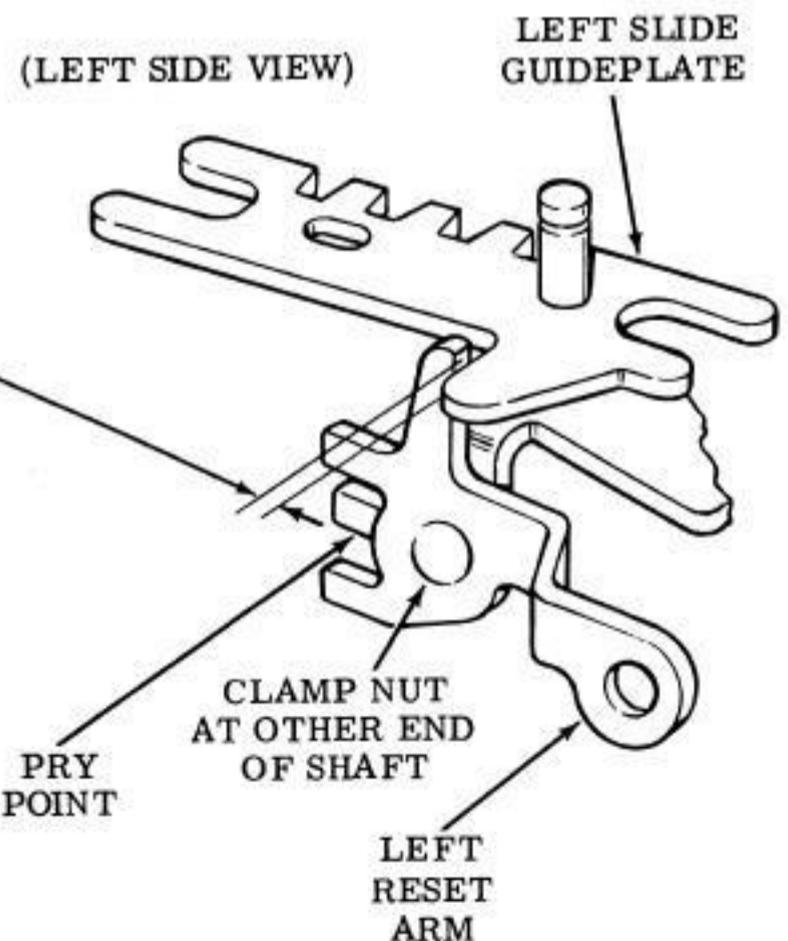
LEFT SLIDE GUIDEPLATE

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

To Adjust
 Loosen left reset arm clamp nut. Position left reset arm using pry point.

Related Adjustments

Affects
RIBBON GUIDE (Carriage Area)
 Affected By
RIGHT SLIDE GUIDEPLATE (Carriage Area)



2.51 Carriage Area (continued)

RIBBON GUIDE

To Check

Manually operate the typing unit until the right ribbon link separates

Min 0.010 inch --- Max 0.015 inch from ribbon guide.

Requirement

Clearance between left ribbon link and ribbon guide

Min Not less than equal to
Max Not more than 0.010 inch greater than clearance between right ribbon link and ribbon guide.

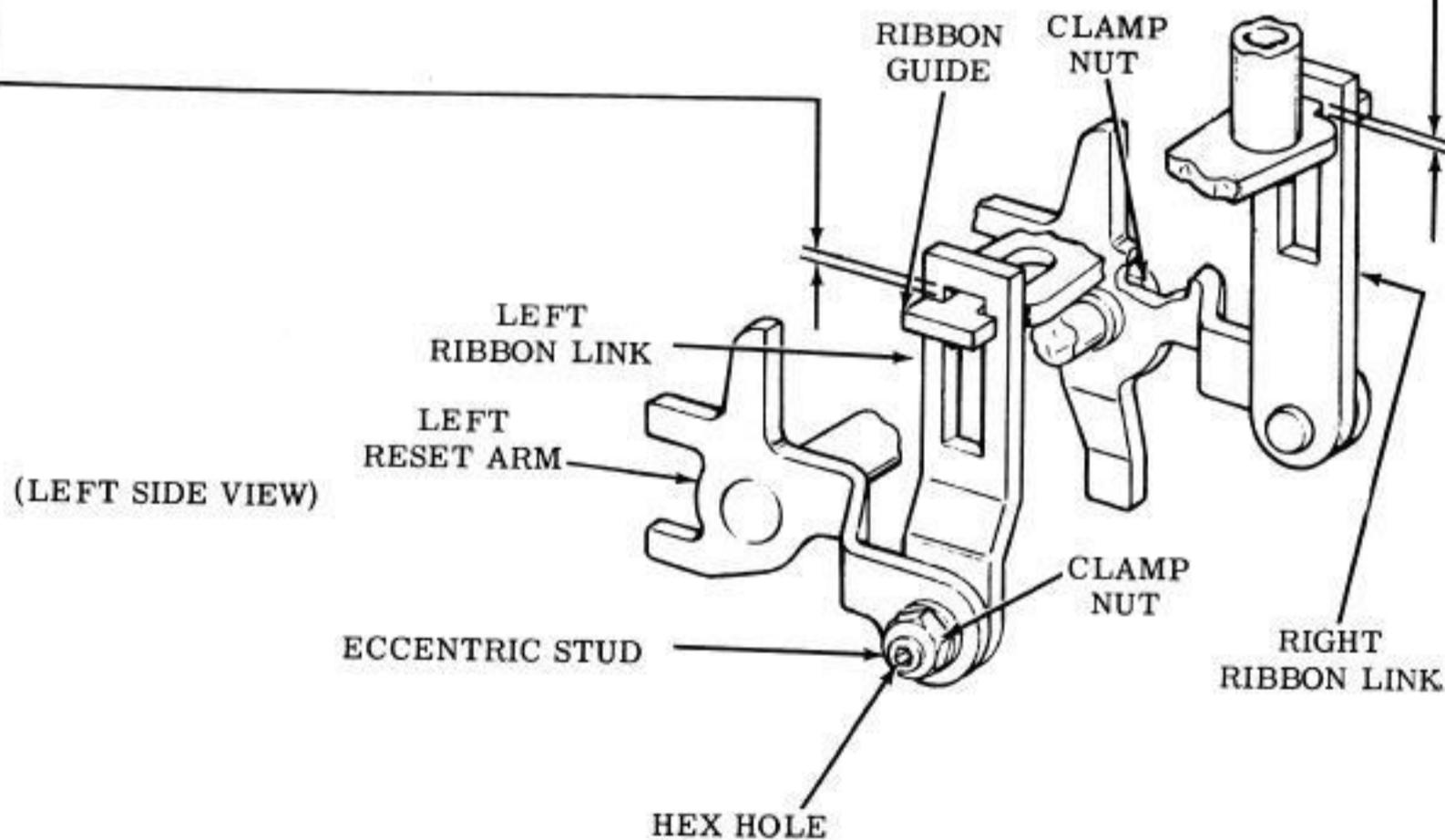
To Adjust

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

Related Adjustment

Affected By

LEFT SLIDE GUIDEPLATE (Carriage Area)



2.52 Carriage Area (continued)

PRINT TRIP LEVER

To Check

Place carriage approximately 1/2 inch from left margin. Set up an "all-spacing" code combination in the selector. Rotate main shaft until carriage drive bail reaches its rearmost position.

(1) Requirement

Min 0.040 inch --- Max 0.100 inch
clearance between print hammer bail and
print hammer trip lever.

(2) Requirement

With carriage approximately 1/2 inch from
right margin, clearance between print hammer
bail and print hammer trip lever to be
Min 0.040 inch --- Max 0.100 inch
and
within 0.030 inch
of actual clearance found in "(1) Requirement"
above.

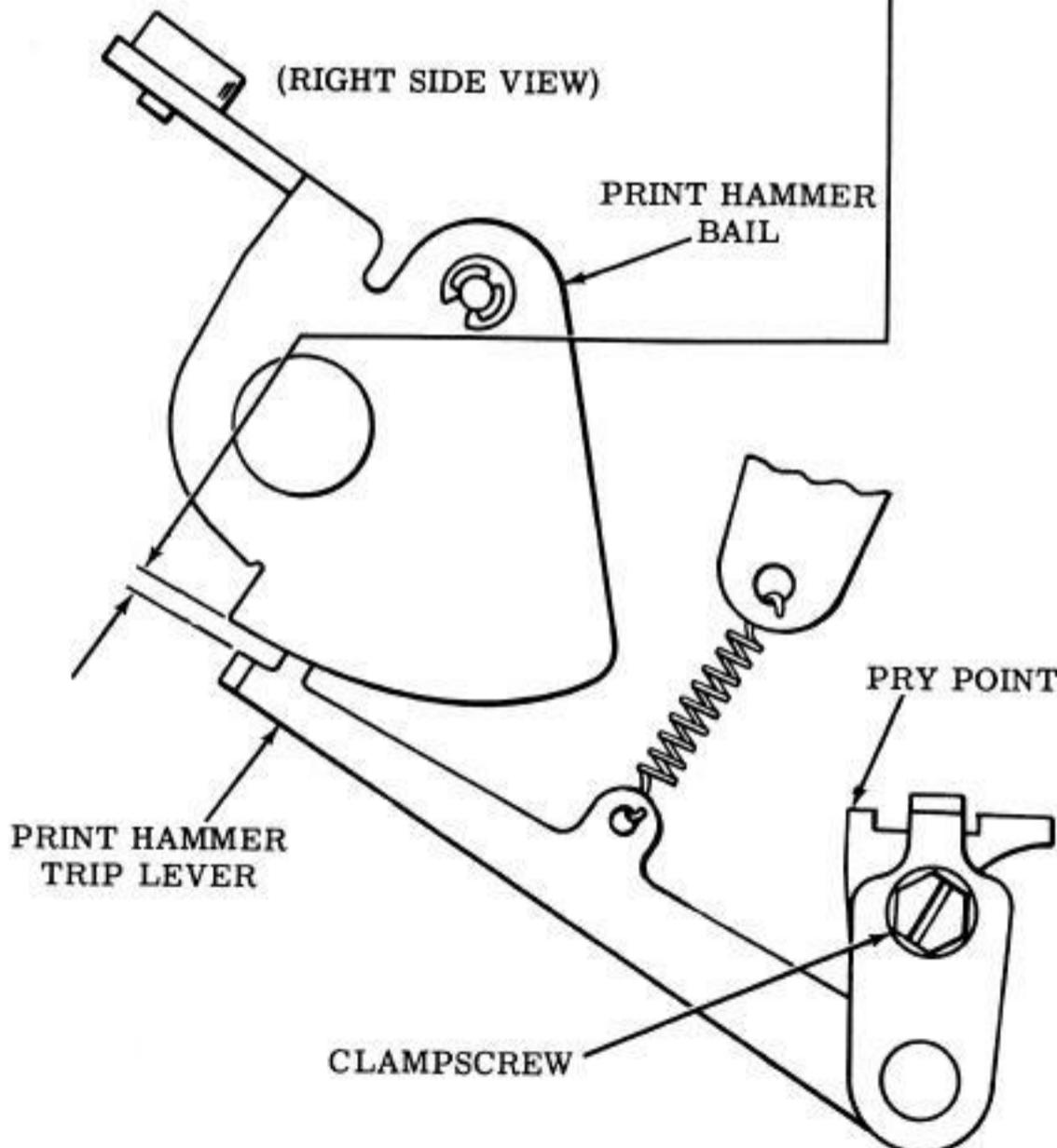
To Adjust

With clampscrew loosened, position
print hammer trip lever using pry
point.

Related Adjustments

Affected By

PRINT DRIVE LEVER (Carriage Area)
RIGHT SLIDE GUIDEPLATE (Carriage
Area)



2.53 Carriage Area (continued)

PRINT SUPPRESSION LATCHLEVER

(1) To Check

Place carriage approximately 1/2 inch from left margin. Set up the "T" (----5) or (--3-5-78) code combination in the selector. Rotate main shaft until the carriage drive bail reaches its rearmost position. Take up the play in the print suppression latchlever to the right.

Requirement

Min 0.030 inch --- Max 0.050 inch
between print suppression latch lever and print hammer bail.

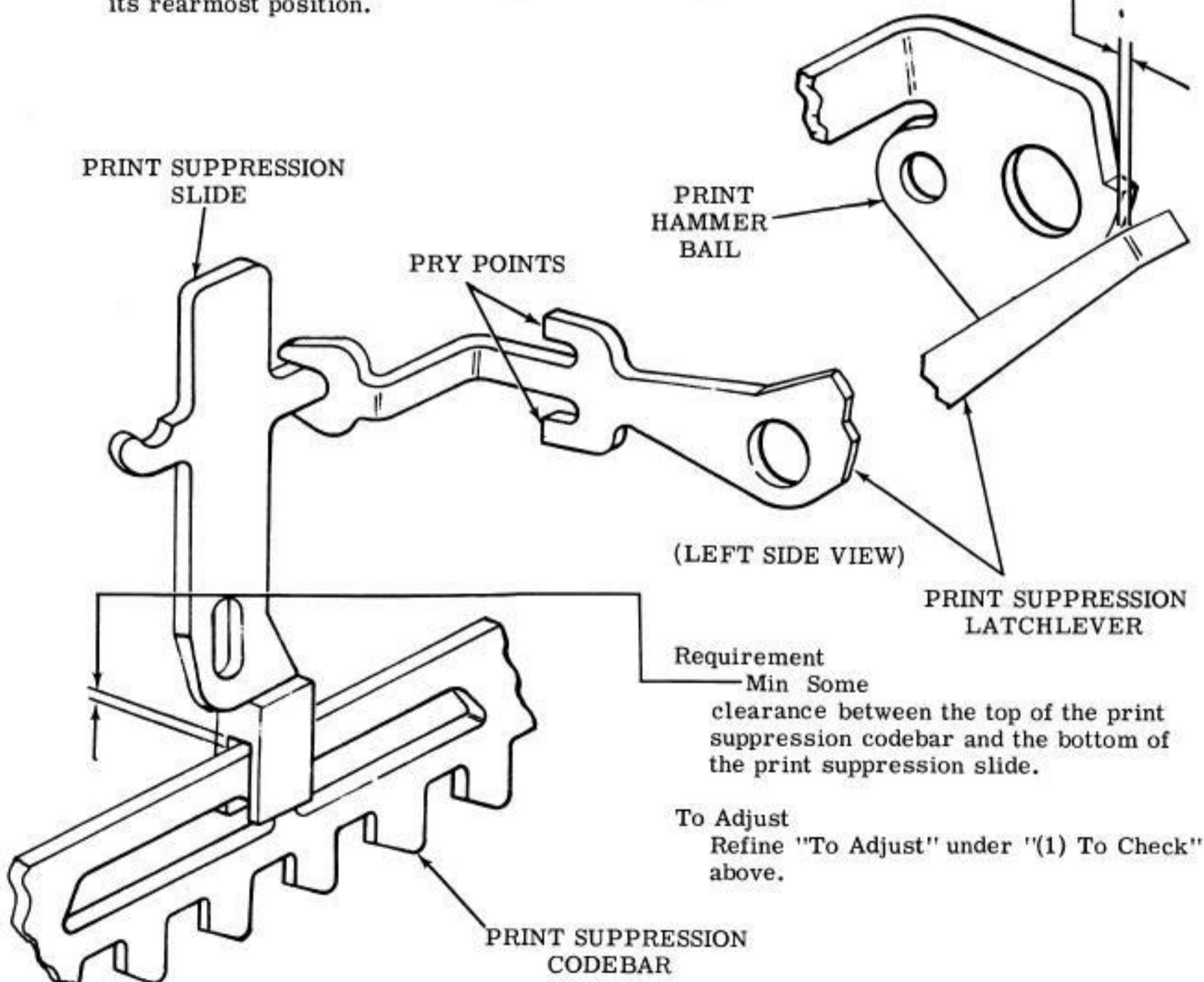
To Adjust

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

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

(2) To Check

Set up an "all-spacing" code combination in the selector. Rotate main shaft until the carriage drive bail reaches its rearmost position.



(LEFT SIDE VIEW)

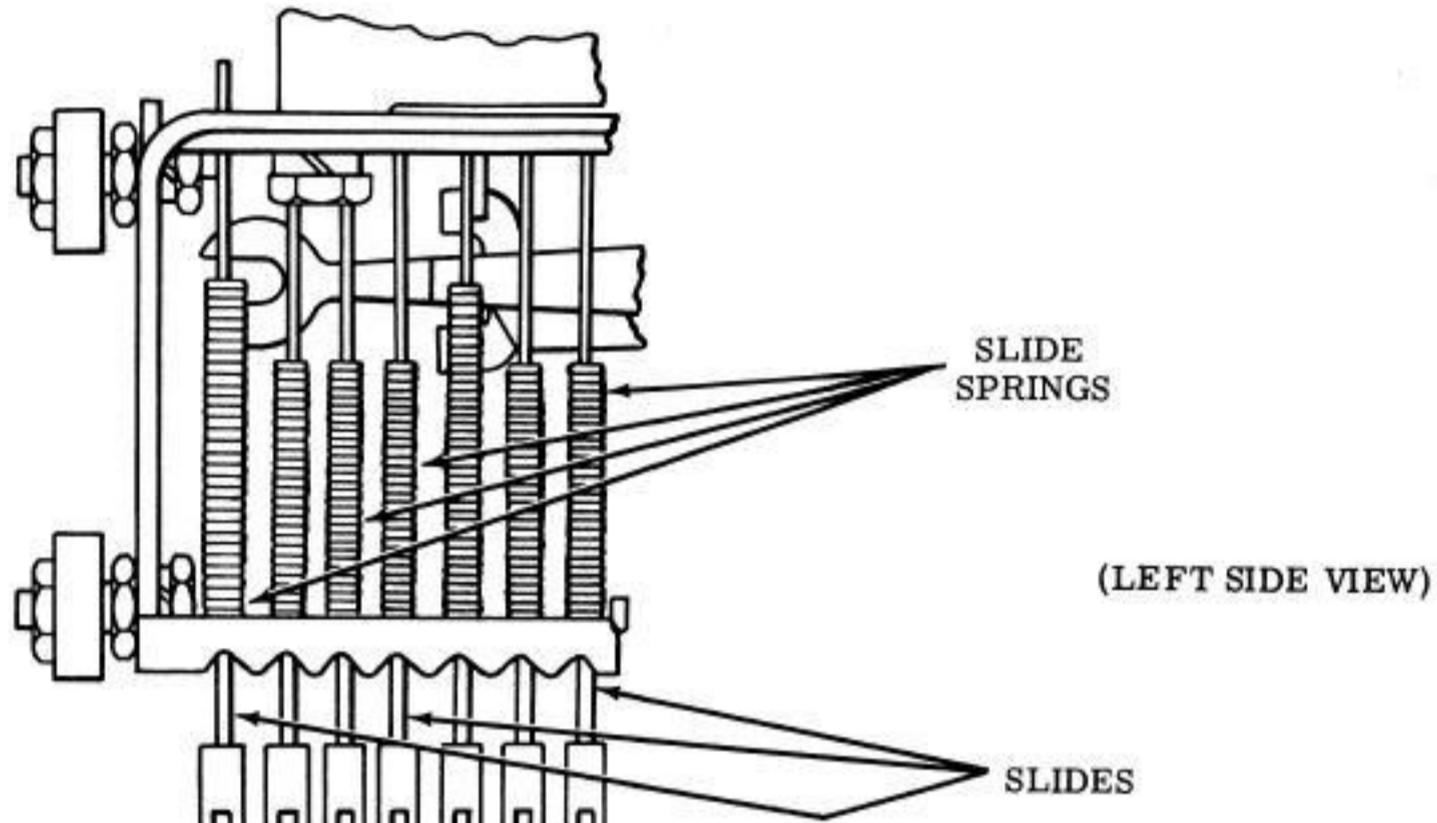
Requirement

Min Some
clearance between the top of the print
suppression codebar and the bottom of
the print suppression slide.

To Adjust

Refine "To Adjust" under "(1) To Check"
above.

2.54 Carriage Area (continued)



SLIDE SPRINGS

Note 1: To check tensions of the slide springs, it is necessary to remove the carriage mechanism from typing unit. For instructions see the appropriate typing unit section. Do not check unless there is reason to believe that the slide springs do not meet their requirements.

Requirement

With carriage power bail in its stop position, towards the front, it shall require the following to start slides moving:

Note 2: Slide numbers outside parentheses apply to 5-level typing units, and slide numbers inside parentheses apply to 8-level typing units.

SLIDE NO.	4(5) AND 5(6)	3(4)	1(2) AND 2(3)	0(1)	P-S*
Min	1/4 oz	3-3/4 oz	2 oz	1/4 oz	3-3/4 oz
Max	1-1/4 oz	4-1/2 oz	3 oz	1 oz	4-1/2 oz

* Print suppression

2.55 Carriage Area (continued)

ROTARY DRIVE BAIL SPRING

To Check

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

Requirement

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

VERTICAL DRIVE BAIL SPRING

Requirement

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

TYPEWHEEL RETURN SPRING

Requirement

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

TYPEWHEEL

TYPEWHEEL RETURN SPRING

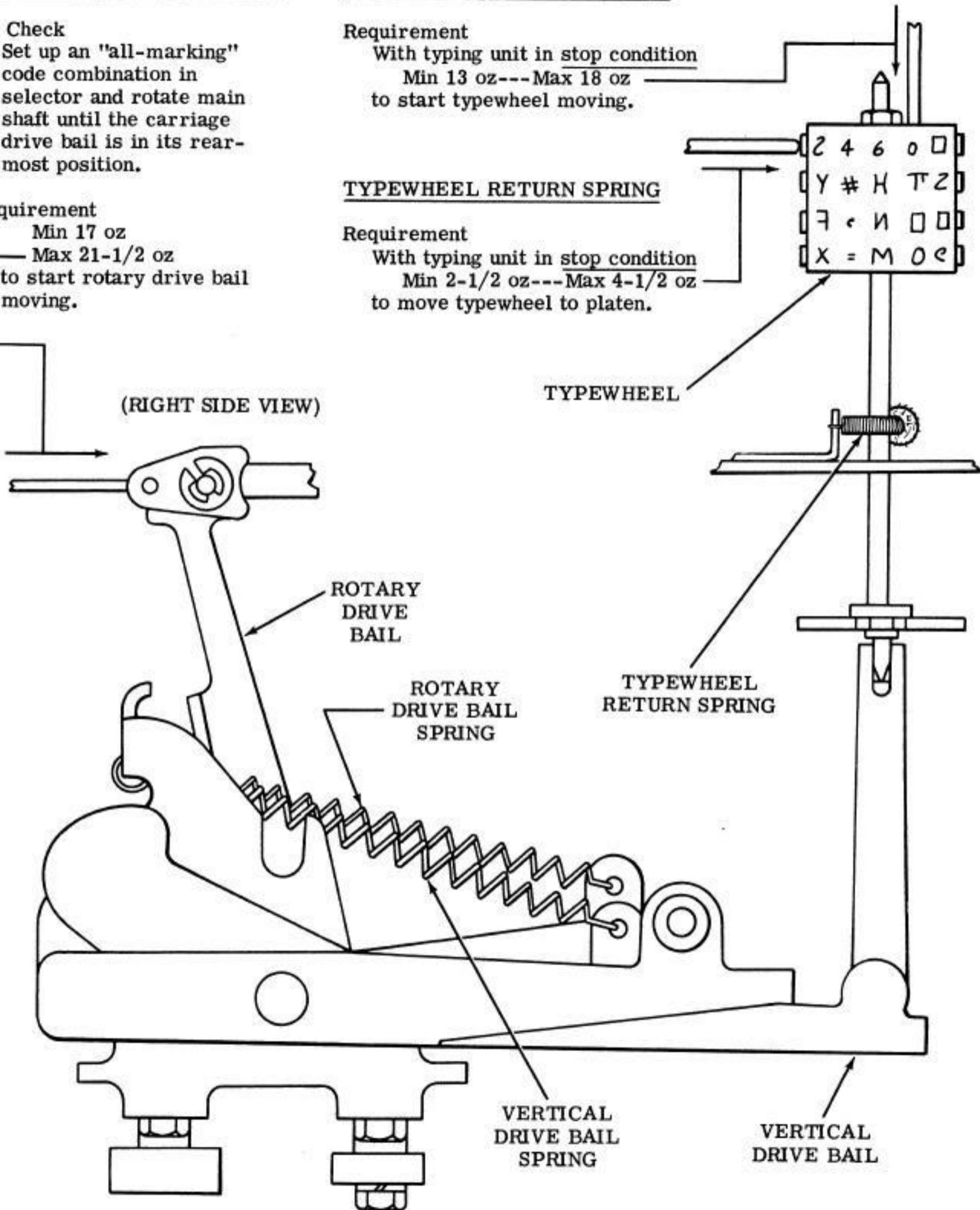
ROTARY DRIVE BAIL

ROTARY DRIVE BAIL SPRING

VERTICAL DRIVE BAIL SPRING

VERTICAL DRIVE BAIL

(RIGHT SIDE VIEW)

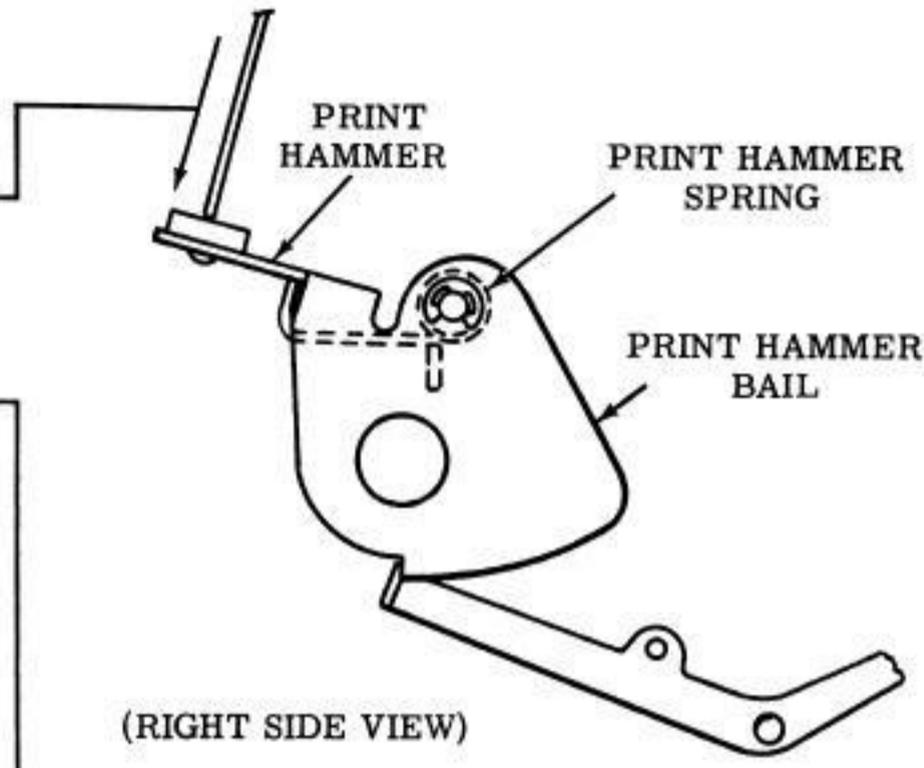


2.56 Carriage Area (continued)

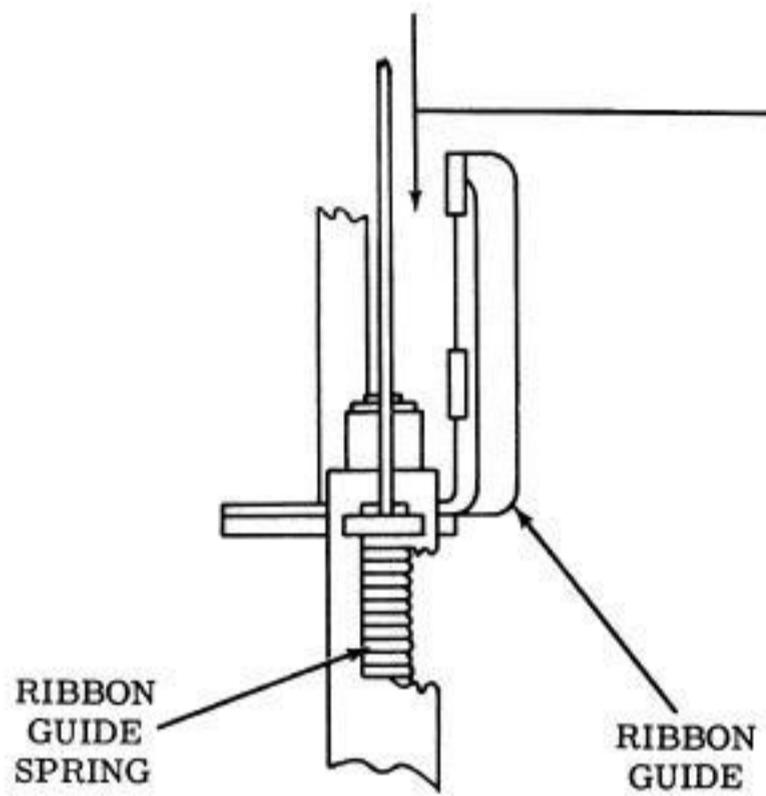
PRINT HAMMER BAIL SPRING

Requirement

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



(RIGHT SIDE VIEW)



(RIGHT SIDE VIEW)

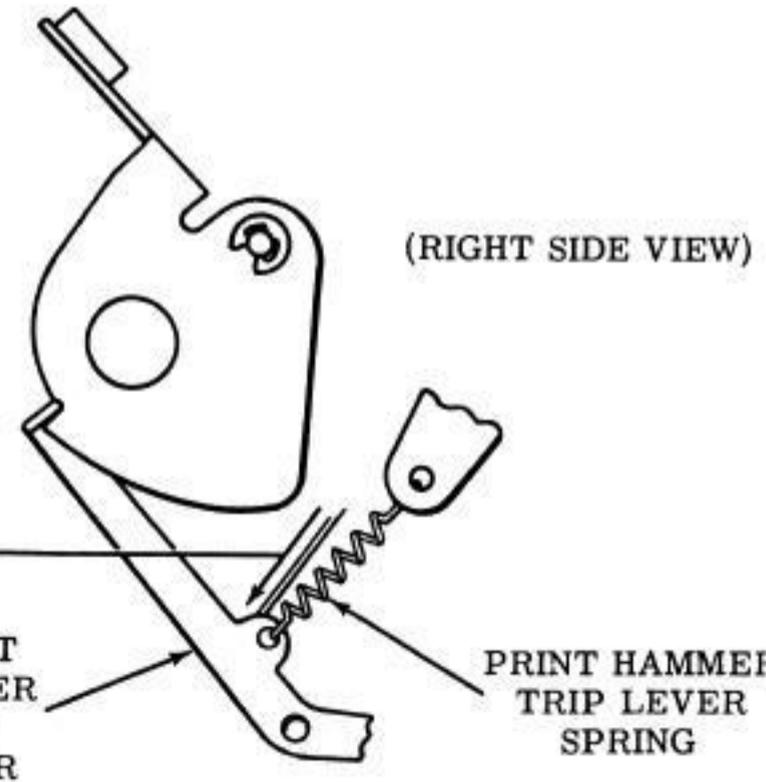
RIBBON GUIDE SPRING

To Check

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

Requirement

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



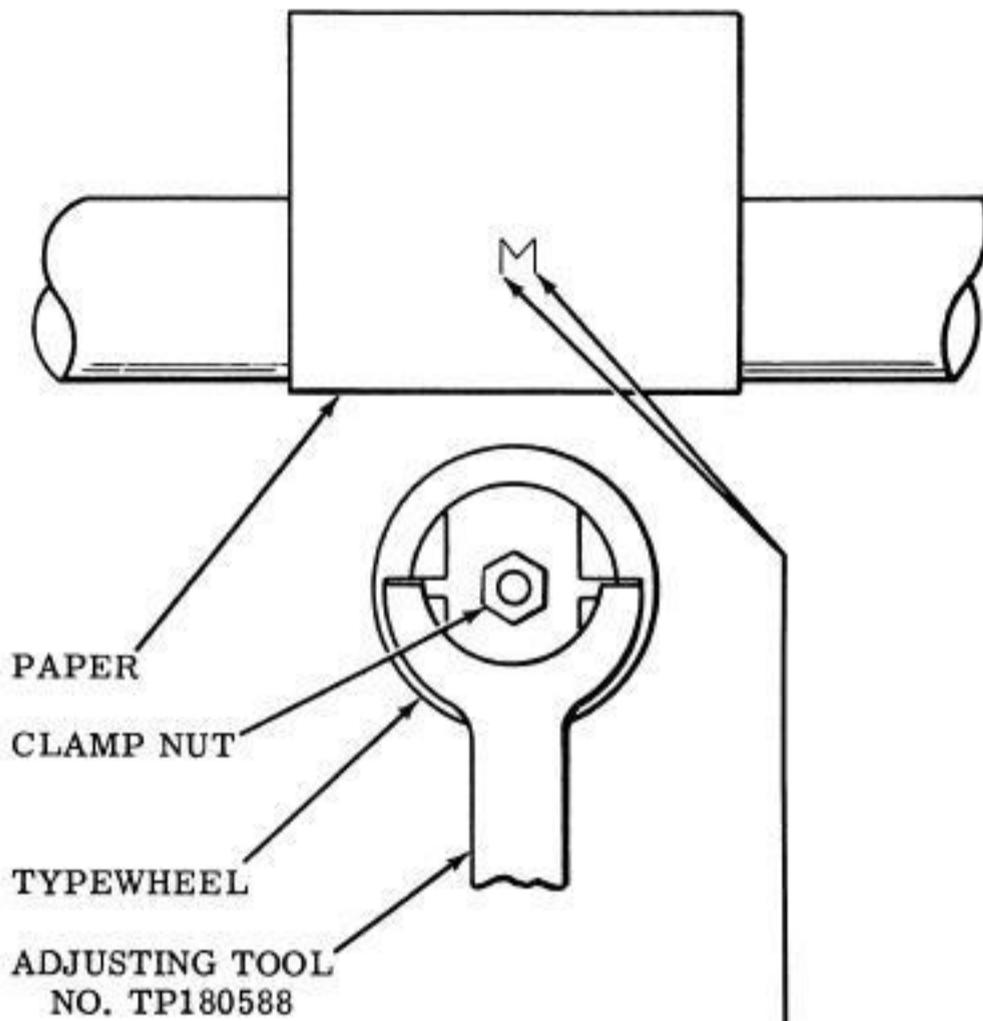
(RIGHT SIDE VIEW)

PRINT HAMMER TRIP LEVER SPRING

Requirement

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

2.57 Carriage Area (continued)



(TOP VIEW)

Note 1: Replace platen, ribbon mechanism, and dashpot cylinder. For instructions, see the appropriate typing unit section.

TYPEWHEEL

To Check

Place paper in typing unit. Set up the character "M" code combination (--345) or (1-34--78) in the selector. Rotate the main shaft until the character is printed.

Requirement

When the printed character is examined by eye from the left side to the right, the shading shall be approximately the same.

Note 2: Consistent shading from the top of the printed character to the bottom may not occur until the PLATEN-VERTICAL (Paper Feed Area*) adjustment has been made.

To Adjust

With clamp nut loosened, position typewheel while it is held with an adjusting tool no. TP180588.

*Friction or Sprocket Feed Mechanisms

2.58 Carriage Area (continued)

RIBBON POWER LEVER

(1) To Check

Manually operate the typing unit until the carriage drive bail is in the rearmost position. Seat feed pawl against left ribbon ratchet.

Requirement

As gauged by eye

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

(2) To Check

Repeat "(1) To Check" above, except seat feed pawl against right ribbon ratchet.

Requirement

Repeat "Requirement" of "(1) To Check" above, except clearance is between face of right ribbon ratchet tooth and corner tip of check pawl.

To Adjust

With locknut loosened, position the eccentric stud with hex wrench in hex hole.

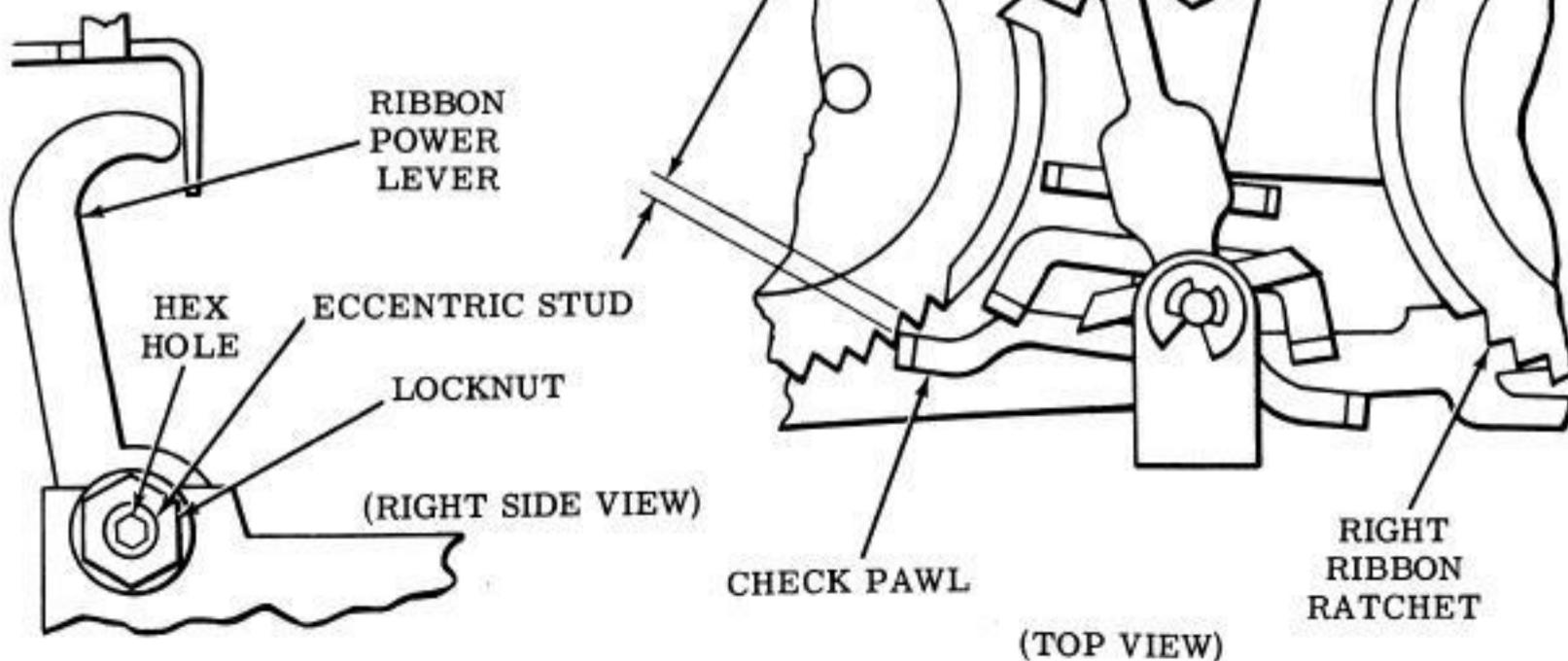
Note 1: Position eccentric stud to the bottom of its mounting slot when tightening locknut.

Note 2: When the typing unit is operated under power, the feed pawl shall advance either the left or right ribbon ratchet one tooth on each operation.

Related Adjustment

Affected By

RESET LEVER (Carriage Area)



2.59 Carriage Area (continued)

RIBBON RATCHET SPRING

Requirement

With feed and check pawls disengaged from spacing ratchet

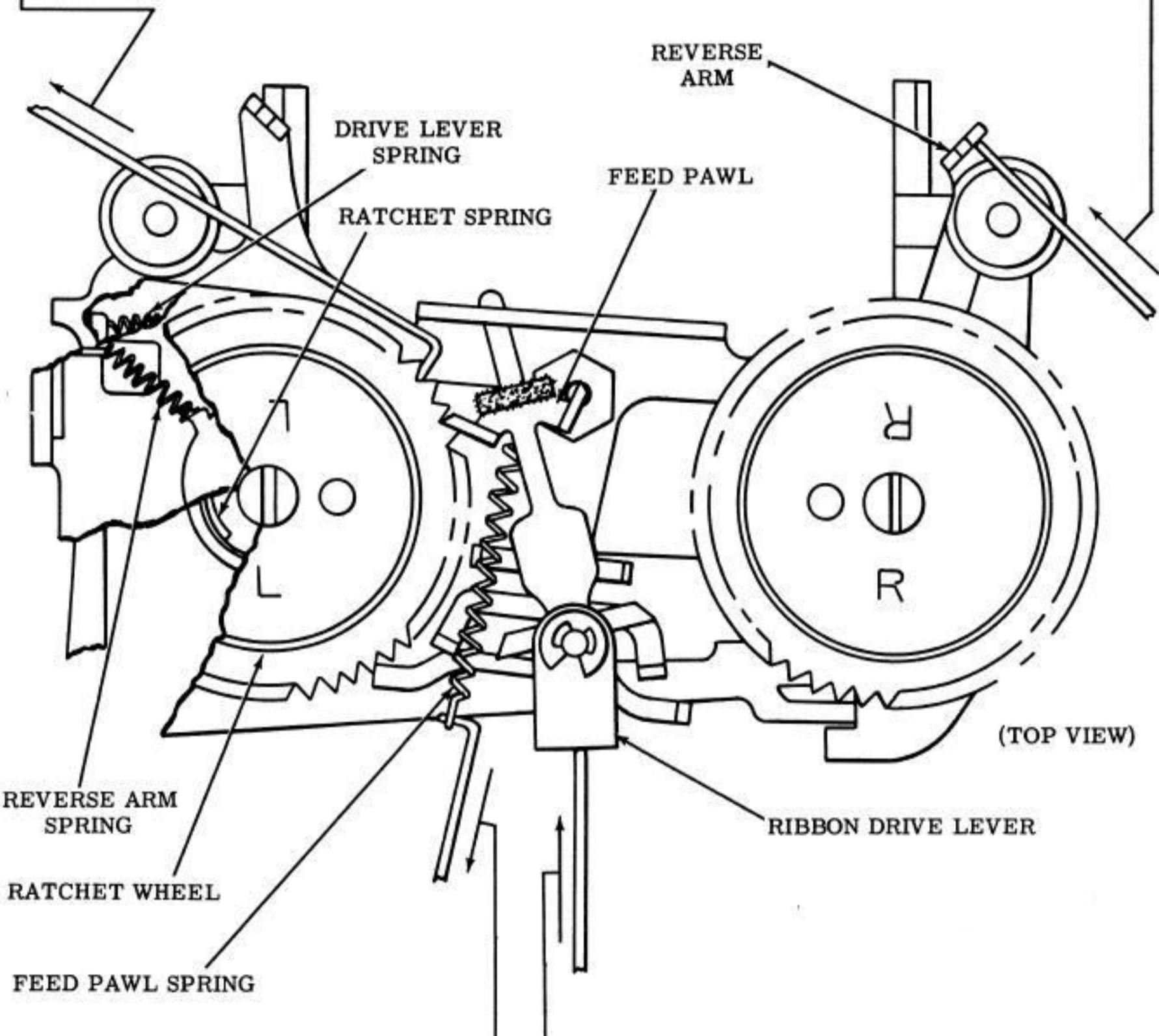
Min 1-1/2 oz --- Max 3-1/2 oz
to start ratchet wheel moving.

RIBBON REVERSE ARM SPRING

Requirement

With typing unit in stop condition and ribbon removed

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



RIBBON FEED PAWL SPRING

Requirement

With typing unit in stop condition

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

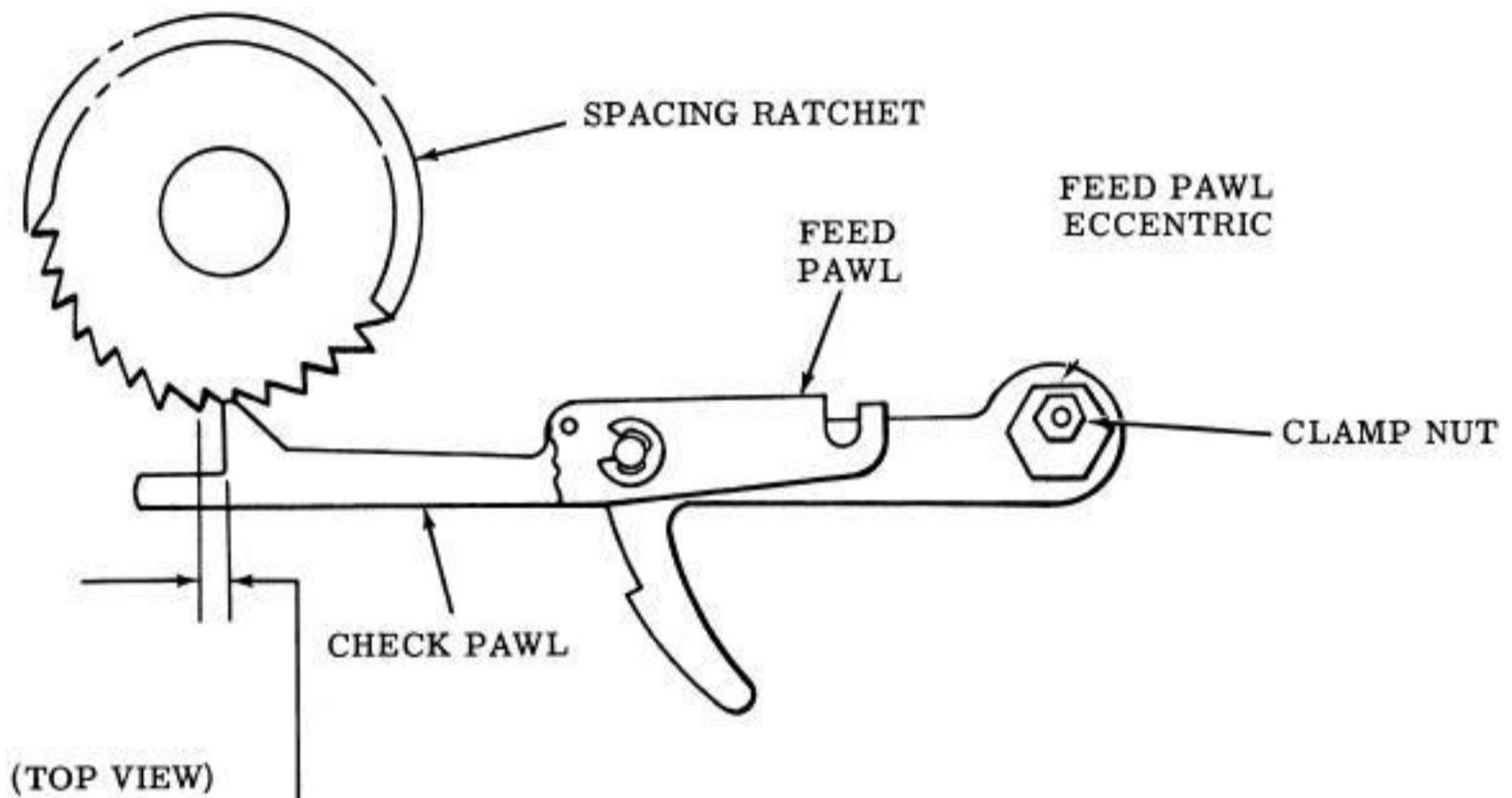
RIBBON DRIVE LEVER SPRING

Requirement

With typing unit in stop condition

Min 5-1/2 oz --- Max 9 oz
to start ribbon drive lever moving.

2.60 Spacing Area

FEED PAWL

Requirement

With carriage near center of platen and typing unit in stop condition

Min 0.004 inch --- Max 0.018 inch
between check pawl and spacing ratchet
tooth, as gauged by eye.

To Adjust

Rotate feed pawl eccentric with clamp nut loosened. Keep high part of eccentric toward front.

Related Adjustment

Affected By

DRIVE BAIL (Carriage Area)

2.61 Spacing Area (continued)

SPACE SUPPRESSION LEVER

To Check

Move carriage to the center of platen. Set up the "T" code combination (----5) or "@" code combination (-----78) in the selector.

Note 1: Set up the "T" code combination in 5-level typing units and the "@" code combination in 8-level typing units.

Note 2: It may be necessary to trip the space suppression lever on typing units which have been maladjusted.

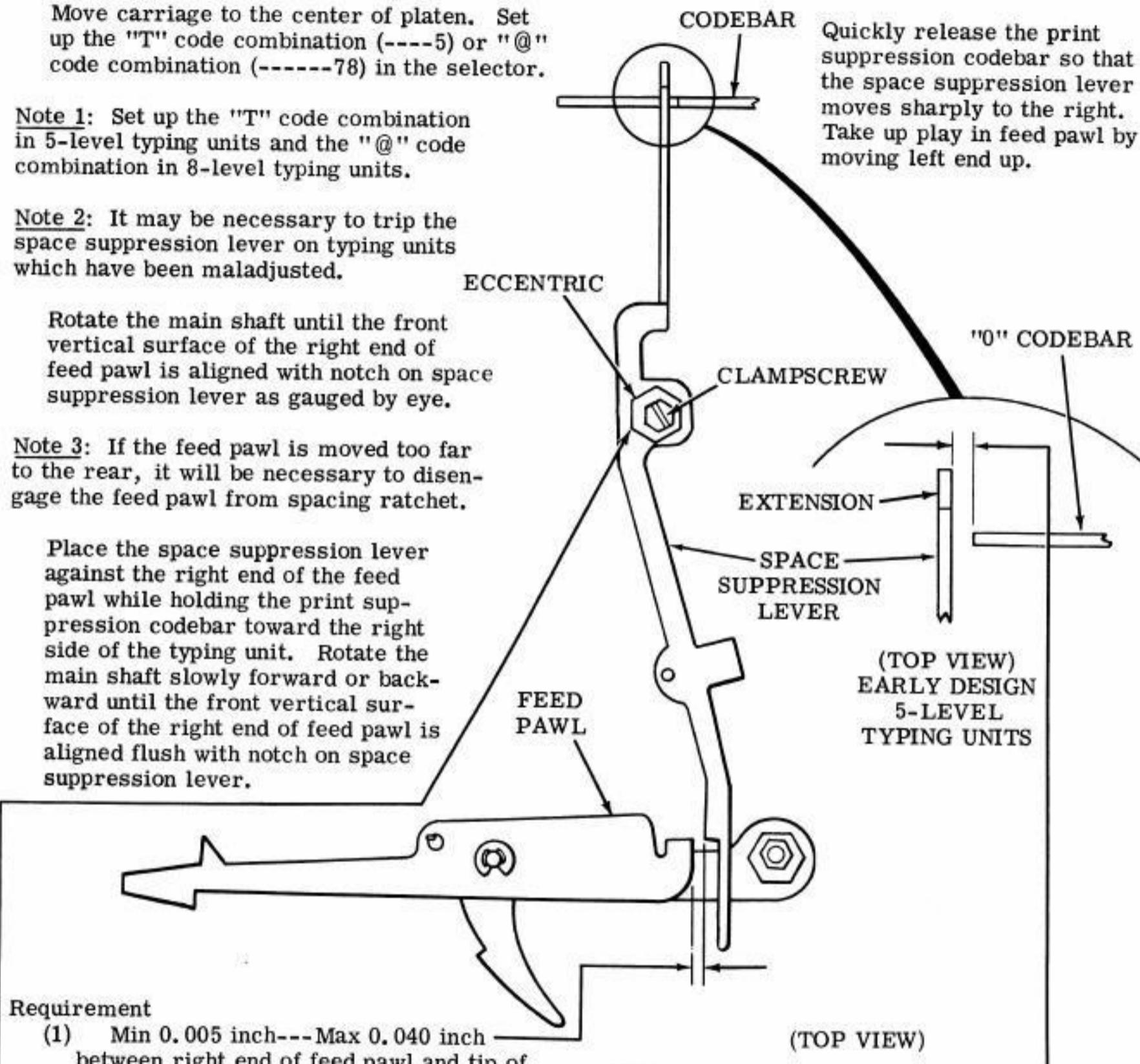
Rotate the main shaft until the front vertical surface of the right end of feed pawl is aligned with notch on space suppression lever as gauged by eye.

Note 3: If the feed pawl is moved too far to the rear, it will be necessary to disengage the feed pawl from spacing ratchet.

Place the space suppression lever against the right end of the feed pawl while holding the print suppression codebar toward the right side of the typing unit. Rotate the main shaft slowly forward or backward until the front vertical surface of the right end of feed pawl is aligned flush with notch on space suppression lever.

Note 4: If the feed pawl is moved too far to the rear when aligning its right end with the notch on the space suppression lever, begin again this "To Check" procedure.

Quickly release the print suppression codebar so that the space suppression lever moves sharply to the right. Take up play in feed pawl by moving left end up.



Requirement

(1) Min 0.005 inch---Max 0.040 inch between right end of feed pawl and tip of notch on the space suppression lever.

Note 5: The following requirement applies only to early design 5-level typing units.

(2) Min Some clearance between left end of "0" codebar and rear extension of space suppression lever.

(3) The position of high part of eccentric shall be toward the rear of the typing unit.

To Adjust

With eccentric clampscrew friction tight, position eccentric. Tighten eccentric clampscrew and again perform "To Check" procedure above. Recheck "Requirement" above and readjust if necessary.

Related Adjustments

Affects

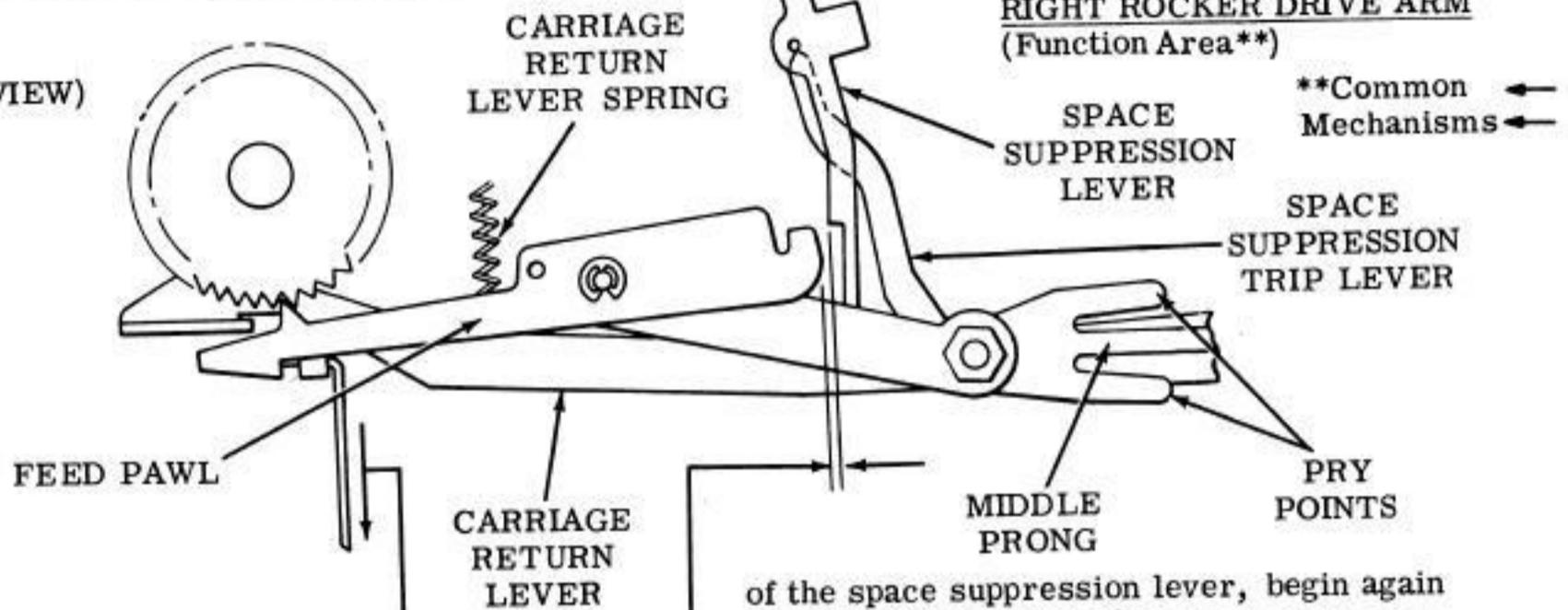
FEED PAWL ENGAGEMENT (Spacing Area)

2.62 Spacing Area (continued)

CARRIAGE RETURN LEVER SPRING**To Check**

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

(TOP VIEW)

**Requirement**

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

SPACE SUPPRESSION TRIP LEVER ***To Check**

Move carriage to the center of platen.
Set up "space" code combination (--3--) or
(-----6-8) in the selector.

Note 1: It may be necessary to trip the space suppression lever on typing units which have been maladjusted.

Rotate main shaft until front vertical surface of right end of feed pawl is aligned with notch on space suppression lever as gauged by eye.

Note 2: If the feed pawl is moved too far to the rear, it will be necessary to disengage feed pawl from spacing ratchet.

Place the space suppression lever against the right end of the feed pawl while pushing the space suppression trip lever to the rear at the point where it is connected to the space function lever linkage. Rotate the main shaft slowly forward or backward until front vertical surface of right end of feed pawl is aligned flush with notch on space suppression lever.

Note 3: If the feed pawl is moved too far to the rear when aligning its right end with the notch

*** Related Adjustments**

Affects

FEED PAWL ENGAGEMENT
(Spacing Area)

Affected By

LEFT ROCKER DRIVE ARM
(Function Area**)

RIGHT ROCKER DRIVE ARM
(Function Area**)

**Common Mechanisms

of the space suppression lever, begin again this "To Check" procedure.

Quickly release space suppression lever so that it moves directly to the right and space suppression trip lever moves directly forward. Take up play in feed pawl by moving left end up.

Requirement

- (1) Min 0.005 inch---Max 0.040 inch between right end of feed pawl and tip of notch on space suppression lever as gauged by eye.
- (2) The space suppression trip lever shall unhesitatingly and fully return to its forward position after being moved toward the rear.

To Adjust

Position the space suppression trip lever by bending the middle prong of its pry points. Repeat "To Check" procedure above and recheck "Requirement" above. Readjust if necessary.

Note 4: Use front pry point to increase clearance and rear pry point to decrease clearance between feed pawl and space suppression lever.

Note 5: If space suppression trip lever binds at its connection to the space function lever linkage, bend formed right end of space suppression trip lever to make it parallel to the space function lever linkage and relieve the bind.

2.63 Spacing Area (continued)

FEEED PAWL ENGAGEMENT

To Check

Place carriage to the center of platen.
Set up an "all-spacing" code combination
in the selector. Rotate main shaft until
feed pawl engages notch on space sup-
pression lever.

Requirement

Min 0.015 inch
engagement between right end of feed
pawl and notch of space suppression
lever as gauged by eye.

To Adjust

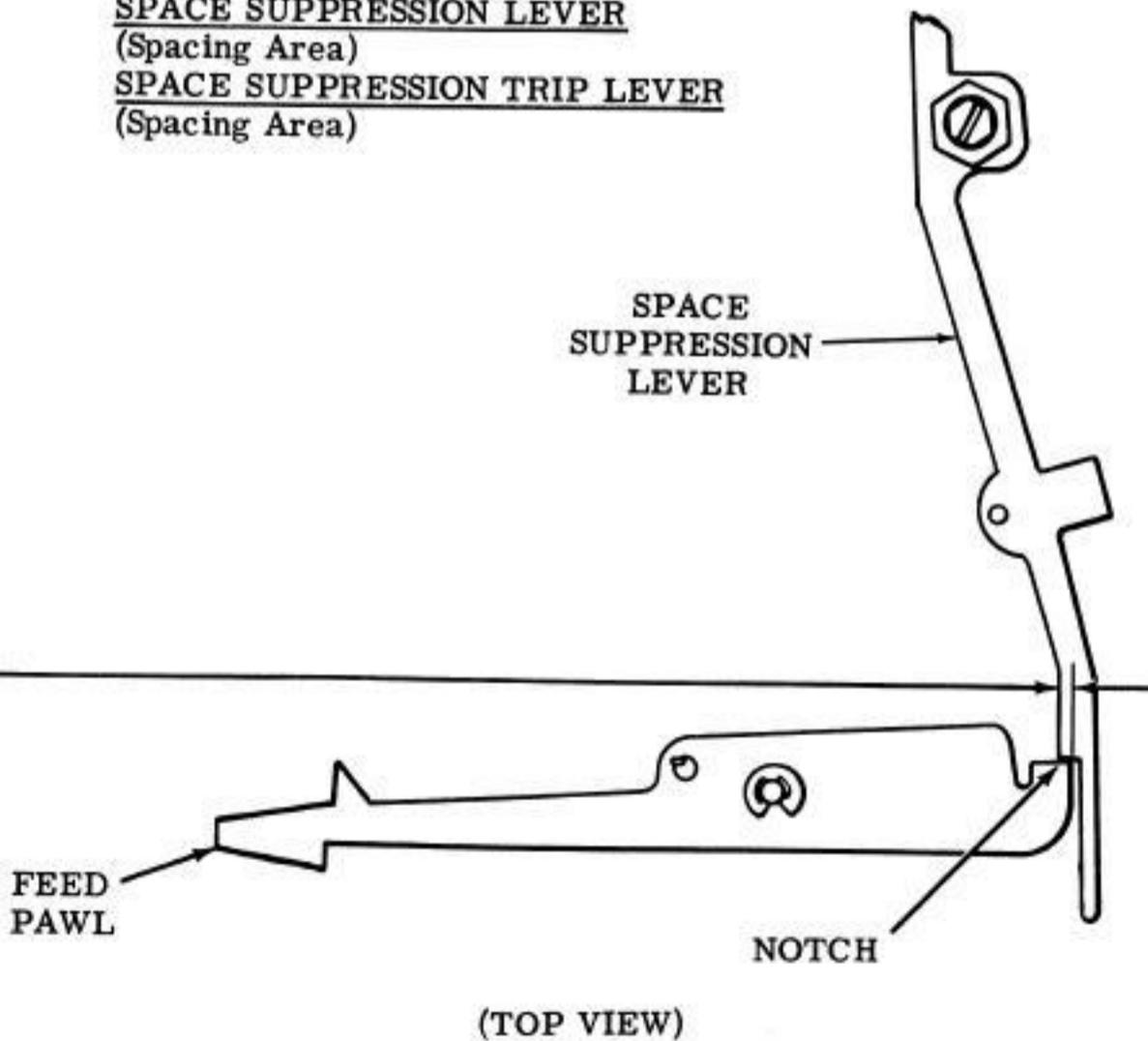
Refine SPACE SUPPRESSION LEVER
(Spacing Area) and SPACE SUPPRESSION
TRIP LEVER (Spacing Area) adjustments
within their requirements.

Related Adjustments

Affected By

SPACE SUPPRESSION LEVER
(Spacing Area)

SPACE SUPPRESSION TRIP LEVER
(Spacing Area)



2.64 Spacing Area (continued)

DRIVE ROLLER

To Check

Place carriage to left margin and set up any character code combination, except a function code combination, in selector. Rotate main shaft until carriage drive bail reaches its rearmost position.

(2) The typing unit shall consistently single space from left to right margin.

To Adjust

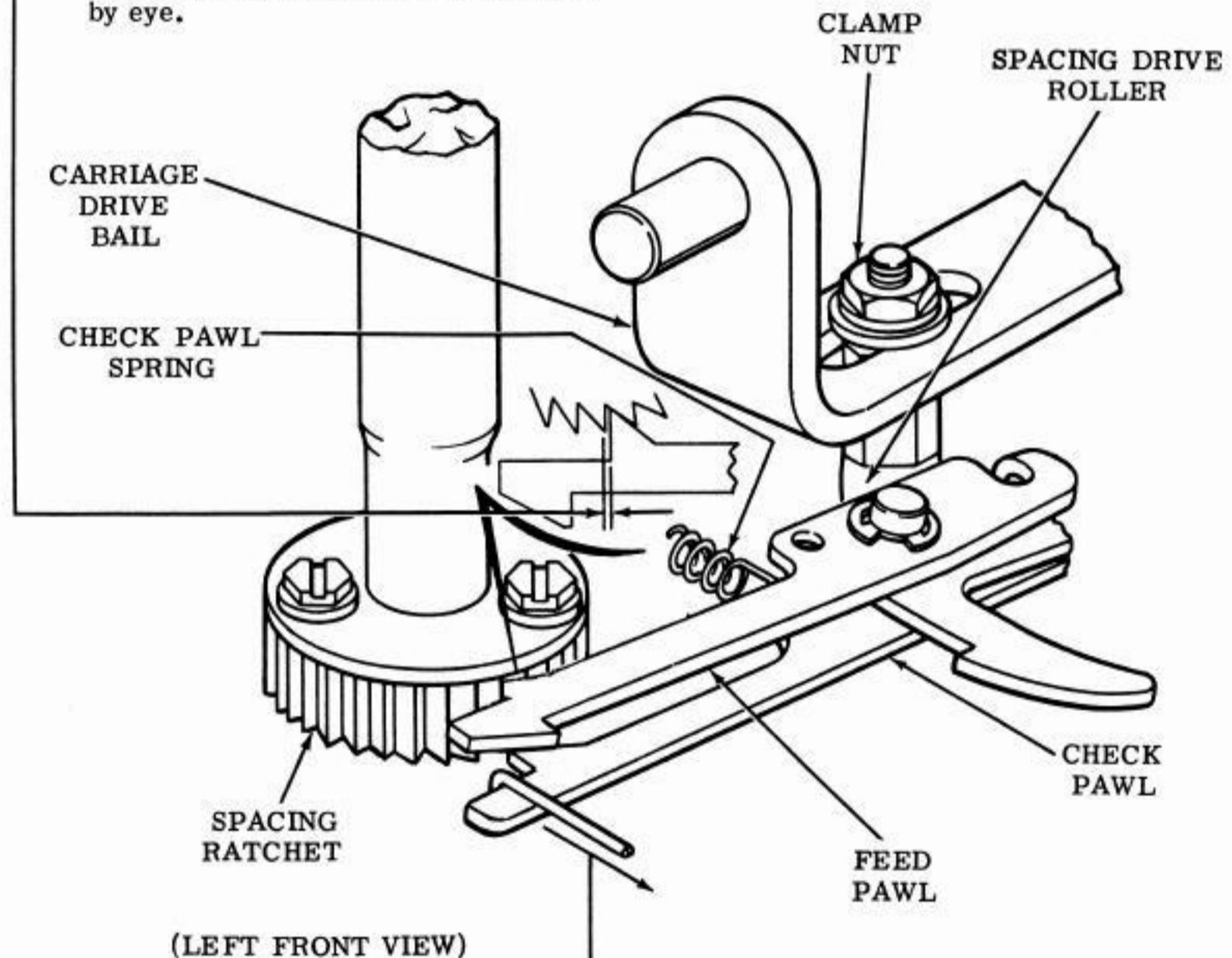
With clamp nut loosened, position spacing drive roller.

Requirement

(1) Min 0.005 inch---Max 0.030 inch between the feeding surface of the feed pawl and the face of ratchet as gauged by eye.

Related Adjustment

Affected By
DRIVE BAIL (Carriage Area)



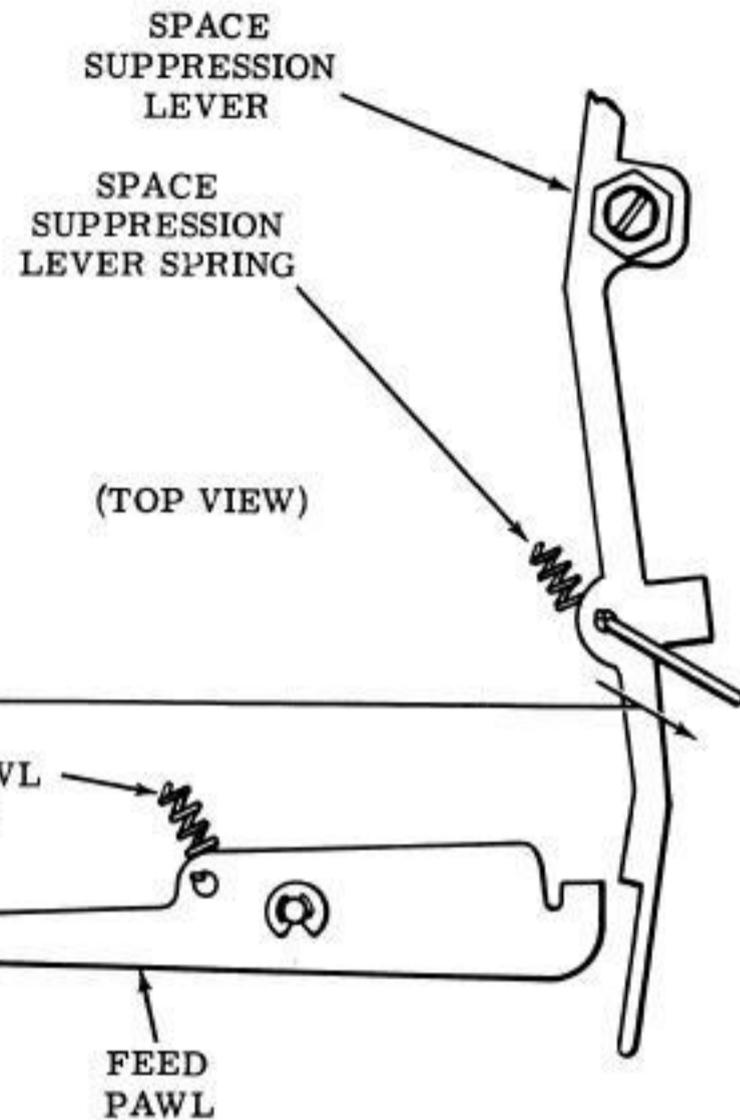
(LEFT FRONT VIEW)

CHECK PAWL SPRING

Requirement

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

2.65 Spacing Area (continued)



SPACE SUPPRESSION LEVER SPRING

Requirement

With typing unit in stop condition

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

FEED PAWL SPRING

Requirement

With typing unit in stop condition
and feed pawl disengaged from
spacing ratchet

Min 2 oz---Max 4 oz
to start feed pawl moving.

Note: When a complete readjustment is being undertaken on typing units equipped with friction feed mechanisms, proceed, at this point, to the Paper Feed Area* and perform the adjustments there.

* Friction Feed Mechanisms.

2.66 Spacing Area (continued)

SPACING BELT TENSION

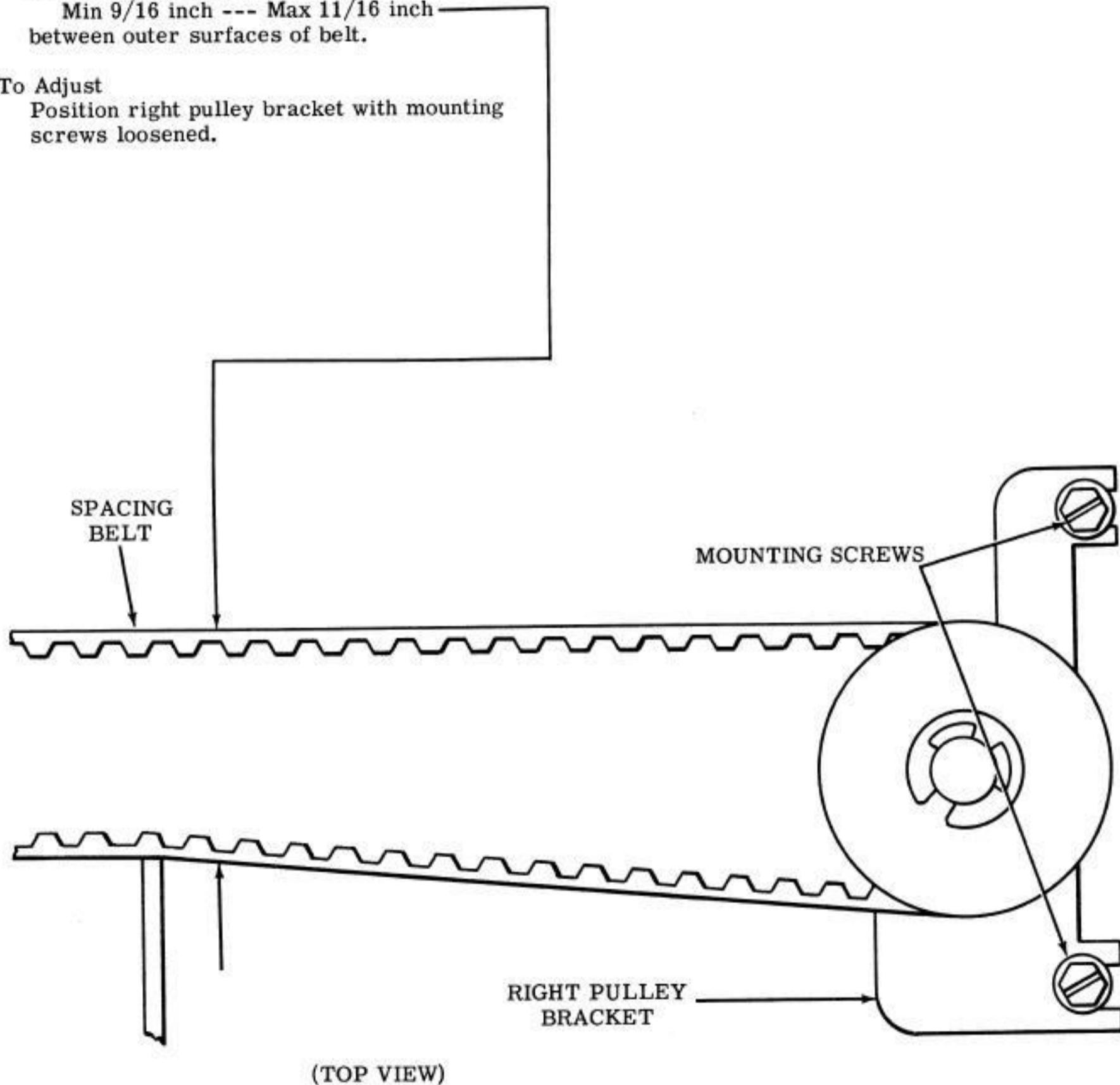
Requirement

With typing unit in stop condition, carriage at left margin, and 8 oz of pressure applied near center of belt

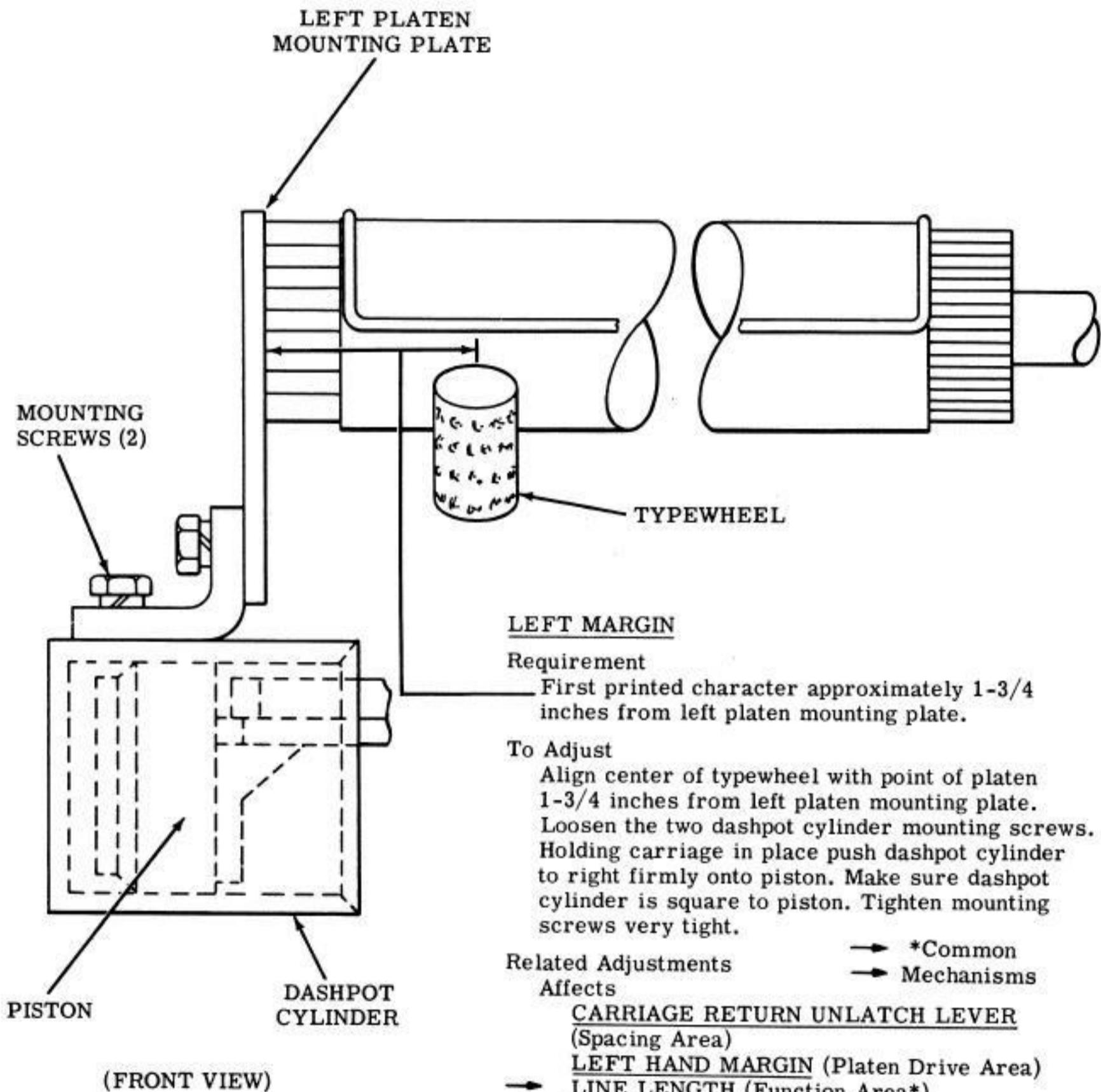
Min 9/16 inch --- Max 11/16 inch between outer surfaces of belt.

To Adjust

Position right pulley bracket with mounting screws loosened.



2.67 Spacing Area (continued)



LEFT MARGIN

Requirement

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

To Adjust

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

Related Adjustments

Affects

- *Common
- Mechanisms
- CARRIAGE RETURN UNLATCH LEVER (Spacing Area)
- LEFT HAND MARGIN (Platen Drive Area)
- LINE LENGTH (Function Area*)
- RIGHT HAND MARGIN (Platen Drive Area)

2. 68 Function and Spacing Areas

END-OF-LINE LATCH SPRING

Requirement

With typing unit in stop condition, carriage return lever unlatched

Min 1-1/2 oz---Max 3 oz
to start end-of-line latch moving.

LINE LENGTH

Automatic Carriage Return - Line Feed:

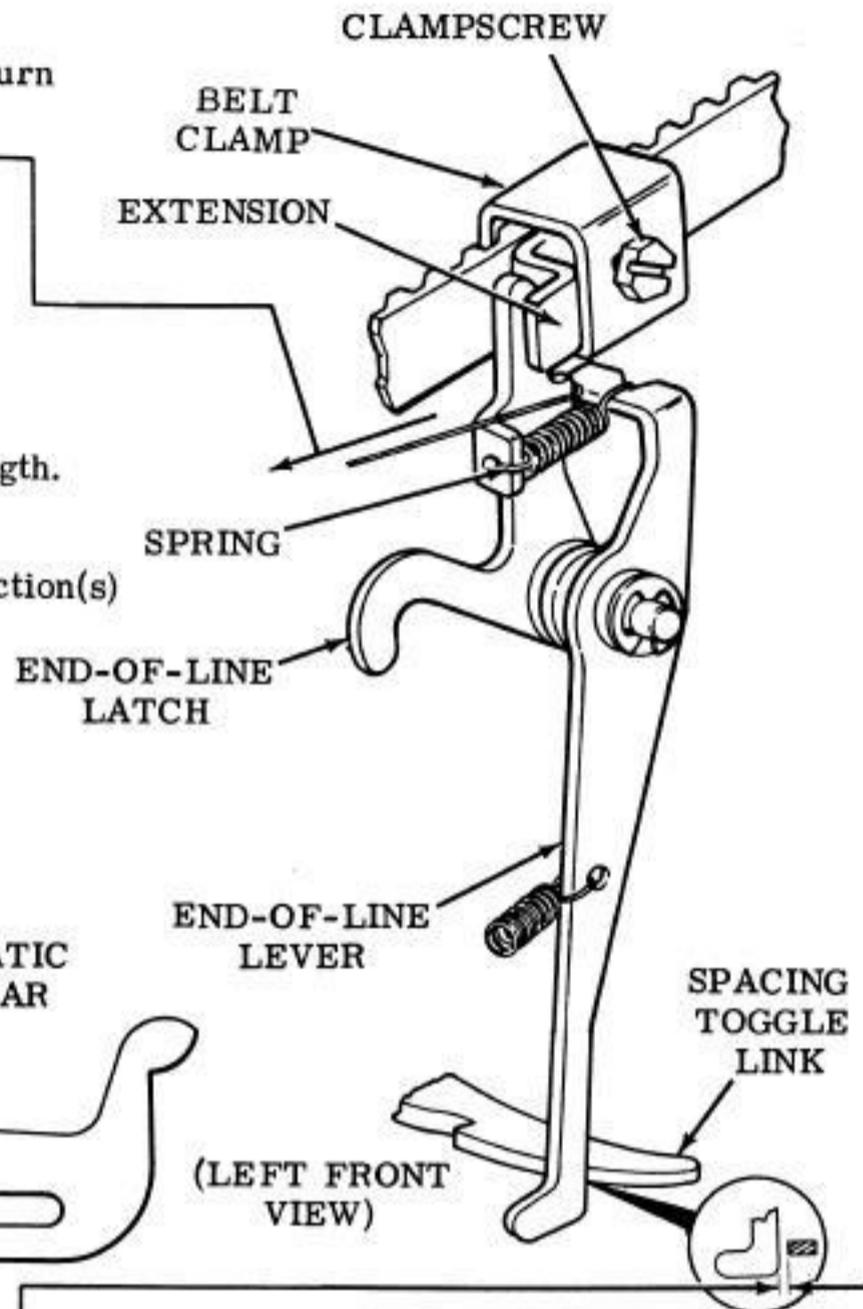
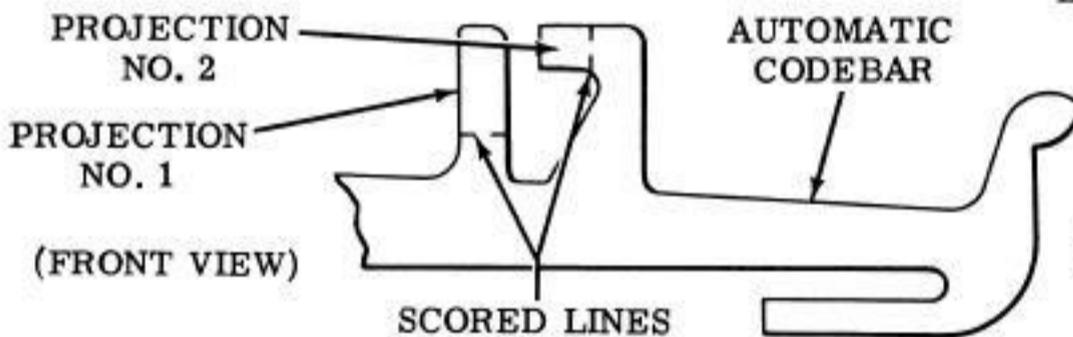
Requirement

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

To Adjust

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

<u>Line Length (Characters)</u>	<u>Projection Removed</u>
69	None
72	1
74	1 and 2



TP183495, TP183496, and TP183497 Automatic Codebars: Use the proper Automatic Codebar as follows:

<u>Line Length (Characters)</u>	<u>Automatic Codebar</u>
69	TP183495
72	TP183496
74	TP183497

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

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

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

End-Of-Line Space Suppression:

Requirement

Select the proper line length as follows:
With the carriage located one character before the end of a line (for example: character 71 on a 72 character line), rotate the main shaft until the carriage drive bail reaches its rearmost position

Min 0.025 inch---Max 0.100 inch
between end-of-line lever and spacing toggle link.

To Adjust

Position belt clamp and extension with clamp-screw loosened.

Related Adjustments

Affects

END-OF-LINE BELL (Paper Feed Area*) ←

Affected By

LEFT MARGIN (Spacing Area) ←

LEFT HAND MARGIN (Platen Drive Area) ←

RIGHT HAND MARGIN (Platen Drive Area) ←

*Sprocket Feed Mechanisms ←

2.69 Spacing Area

DASPOT ORIFICE

To Check

With the carriage at right margin, manually disengage the check pawl and feed pawl of the spacing mechanism. Note the bounce of the carriage as it returns from right to left.

Requirement

No pneumatic or mechanical bounce of carriage upon its return.

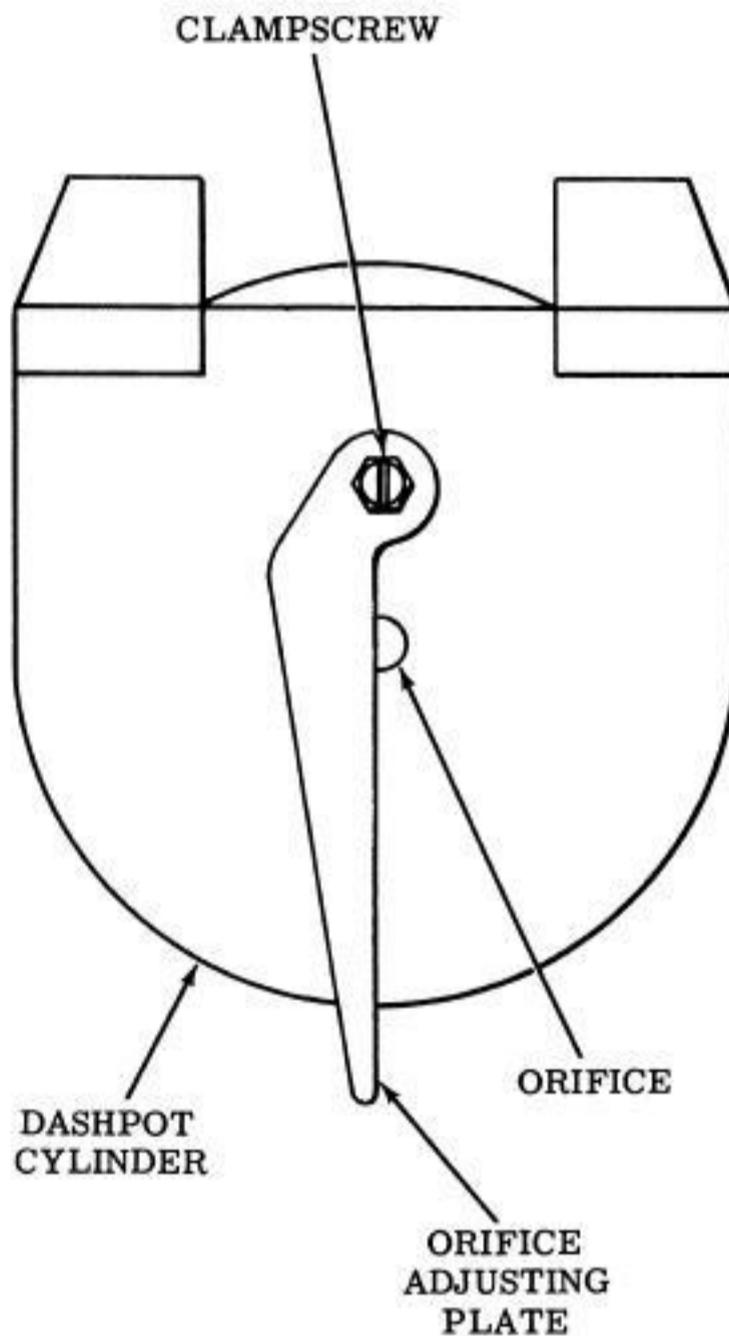
To Adjust

Position orifice adjusting plate with clampscrew loosened.

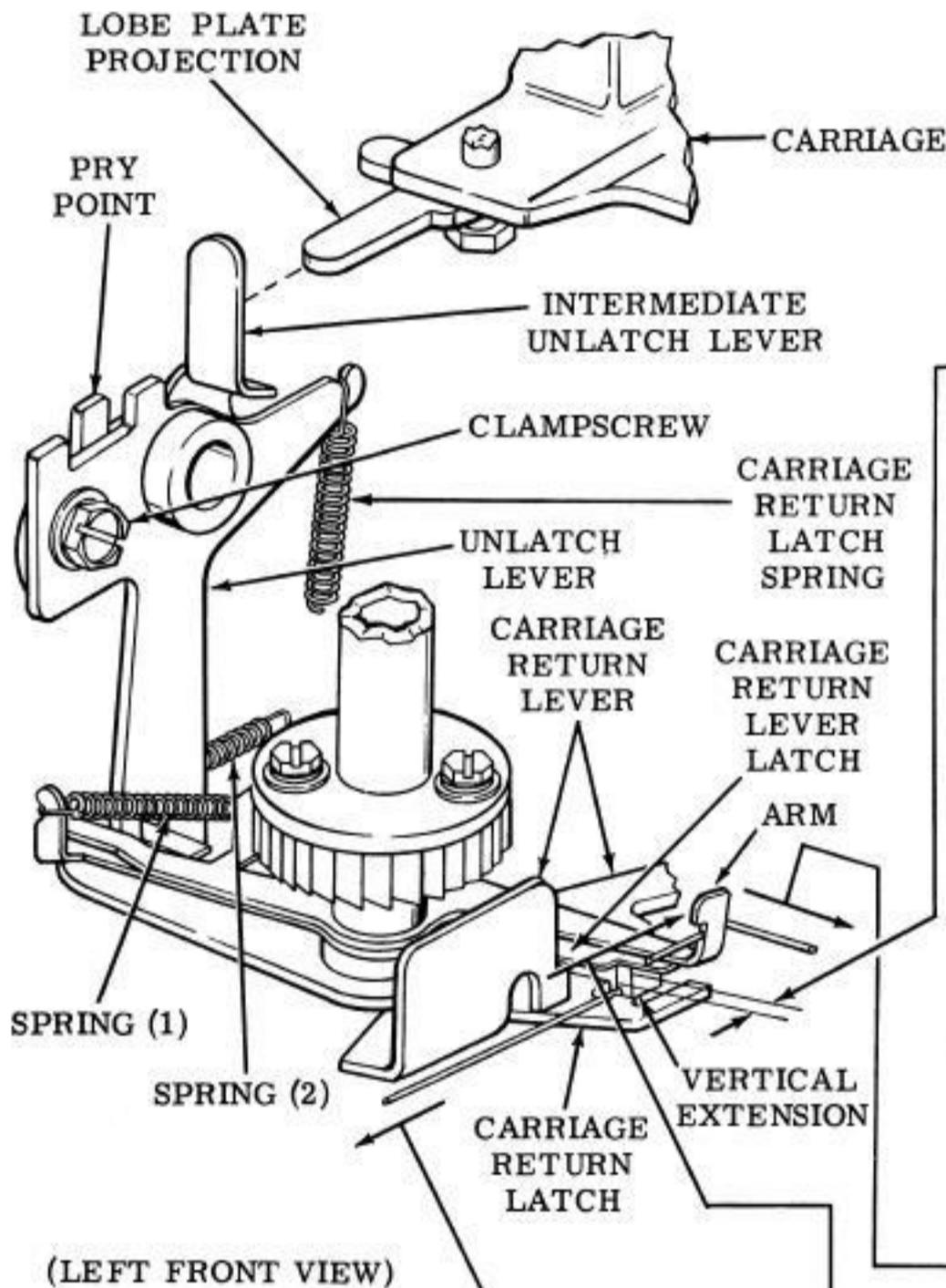


Note: The orifice should never become fully uncovered. If it does become fully uncovered, it is possible that the lobe plate projection may be broken.

(LEFT SIDE VIEW)



2.70 Spacing Area (continued)



CARRIAGE RETURN UNLATCH LEVER

To Check

With check and feed pawls engaged, place carriage to right margin. Pull carriage return lever forward and allow carriage to return to the left margin and act to pivot the carriage return latch to its unlatched position. Take up play in carriage return latch toward right and make the clearance specified in "Requirement" below a minimum.

Requirement

As gauged by eye

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

To Adjust

Loosen clampscrew and position intermediate unlatch lever to the middle of its range. Tighten clampscrew friction tight. Check to see that the selected lobe plate projection touches the intermediate unlatch lever. If it does not, select the lobe plate projection that does. Refine carriage return latch position by positioning unlatch lever using pry point with clampscrew loosened. Check FRONT ROLLERS (Carriage Area) adjustment.

Related Adjustments

Affected By

- LEFT MARGIN (Spacing Area)
- LEFT HAND MARGIN (Platen Drive Area)

CARRIAGE RETURN LATCH SPRING

To Check

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

Requirement

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

UPPER CARRIAGE RETURN LATCH SPRINGS

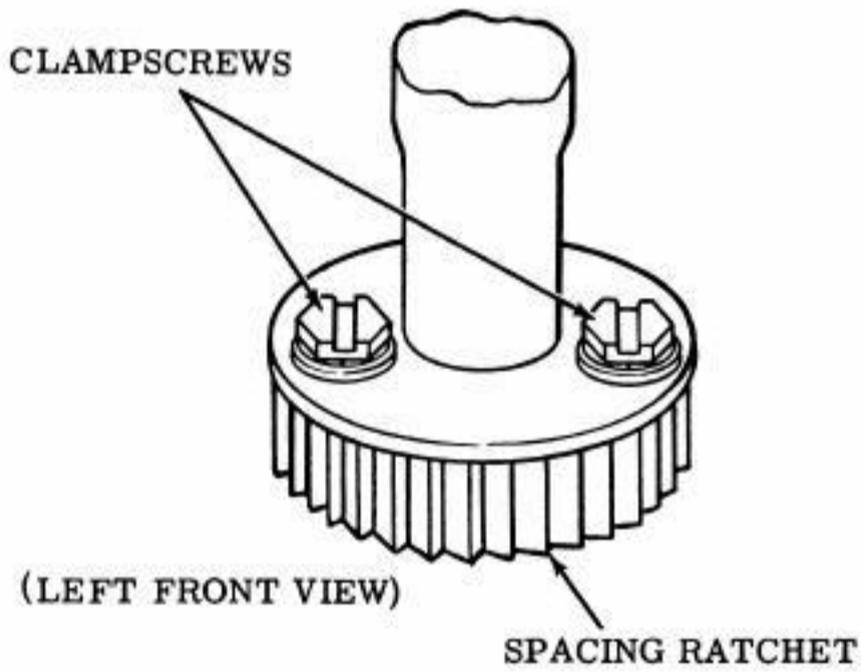
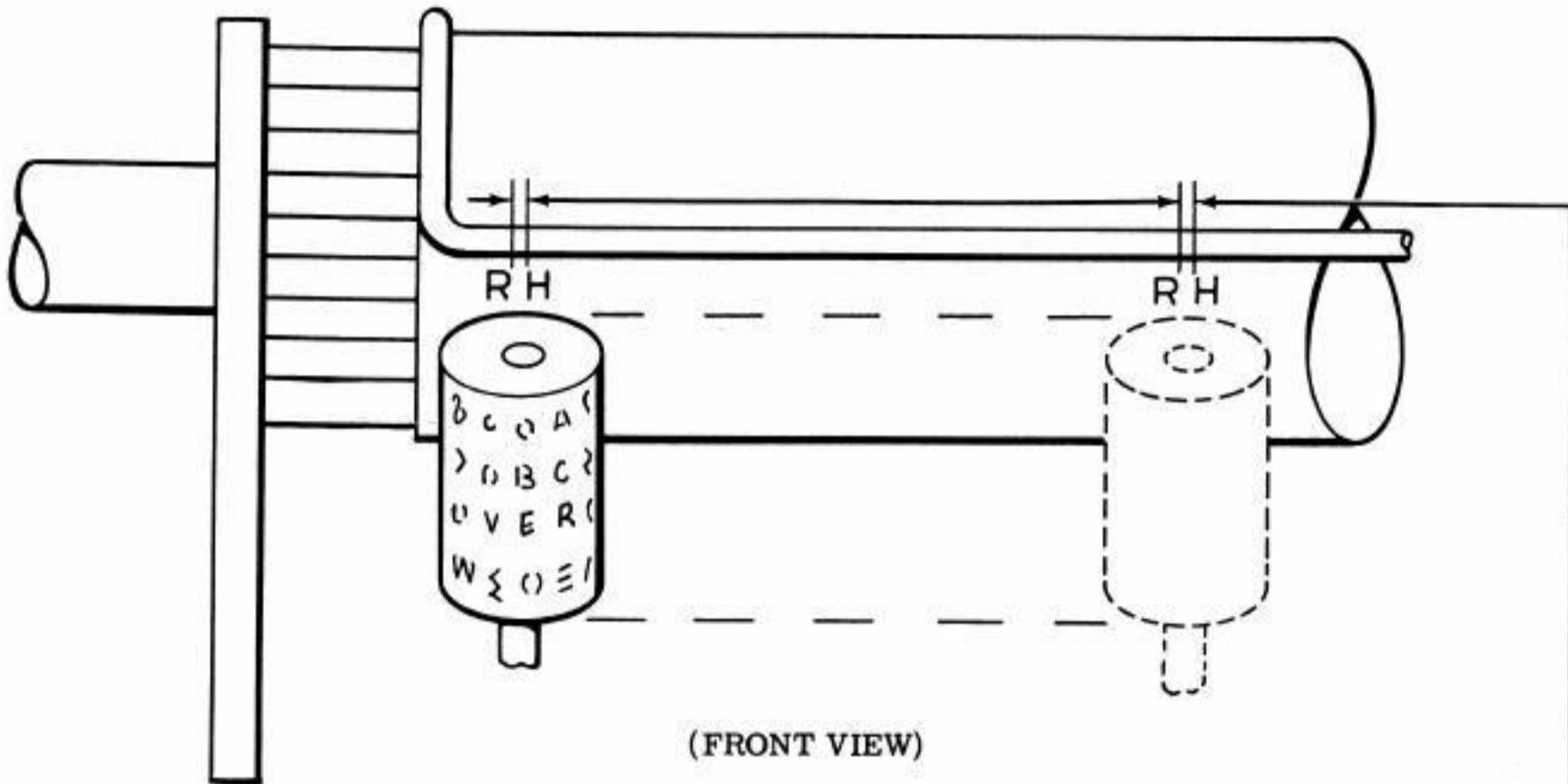
To Check

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

Requirement

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

2.71 Spacing Area (continued)



LEFT MARGIN PRINTING

To Check

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

Requirement

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

To Adjust

Position spacing ratchet with clamp-screws loosened.

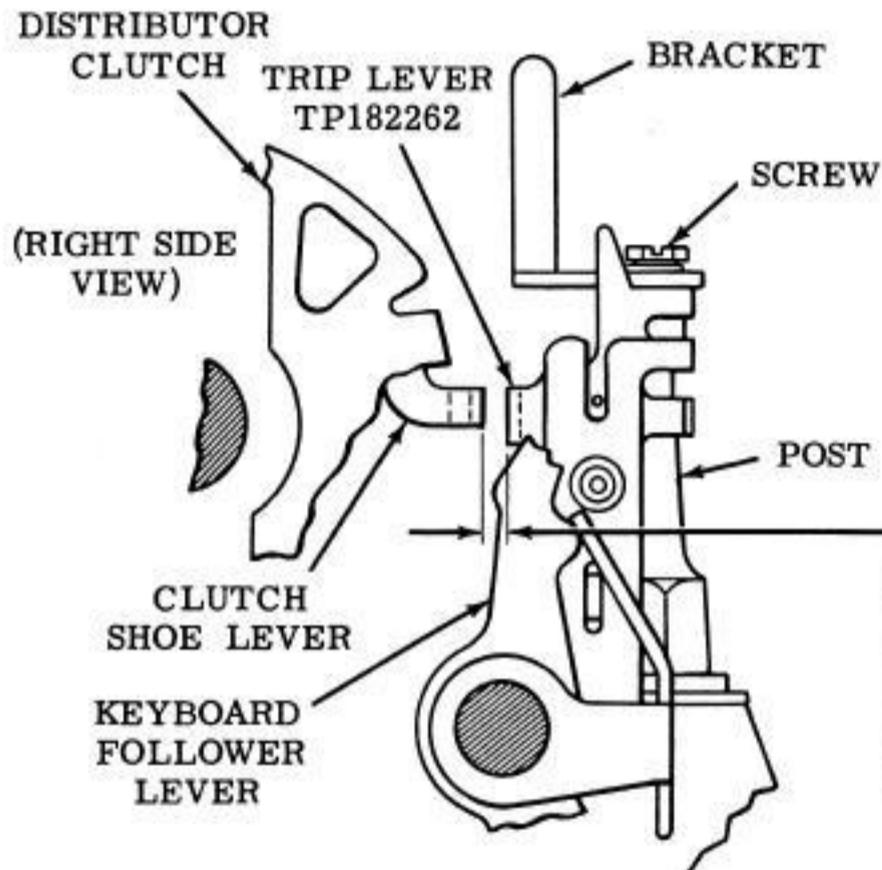
Related Adjustment

Affected By

LEFT-HAND MARGIN (Platen Drive Area)

2.72 Distributor Area

Note 1: If not previously done, replace motor onto typing unit and then replace typing unit onto subbase. For instructions, see the appropriate typing unit section. Remake GEAR BRACKET—PRELIMINARY (Motor Area) and BELT TENSION—PRELIMINARY (Motor Area) adjustments.

TRIP LEVER ENGAGEMENT

Note 2: "(1) Requirement" applies only to late design typing units with trip lever TP182262.

(1) Requirement

Disengage (latch) the distributor clutch. Then, depress any keytop (nonfunction) to unlatch the distributor clutch.

Note 3: Some clearance must exist between the bracket and the trip lever. To obtain clearance, loosen screw and position bracket.

With the upper edge of the clutch shoe lever in line with the upper edge of the trip lever

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

To Adjust

Remove the answer-back drum. Bend the center adjusting tab with bending tool no. TP180993. Replace answer-back drum.

Note 4: The answer-back control lever and reader trip lever should not be touching their respective stop bail adjusting tabs when checking this adjustment.

(2) Requirement

With the typing unit operating under power and the keyboard universal lever in latched position, the clutch shoe lever shall be

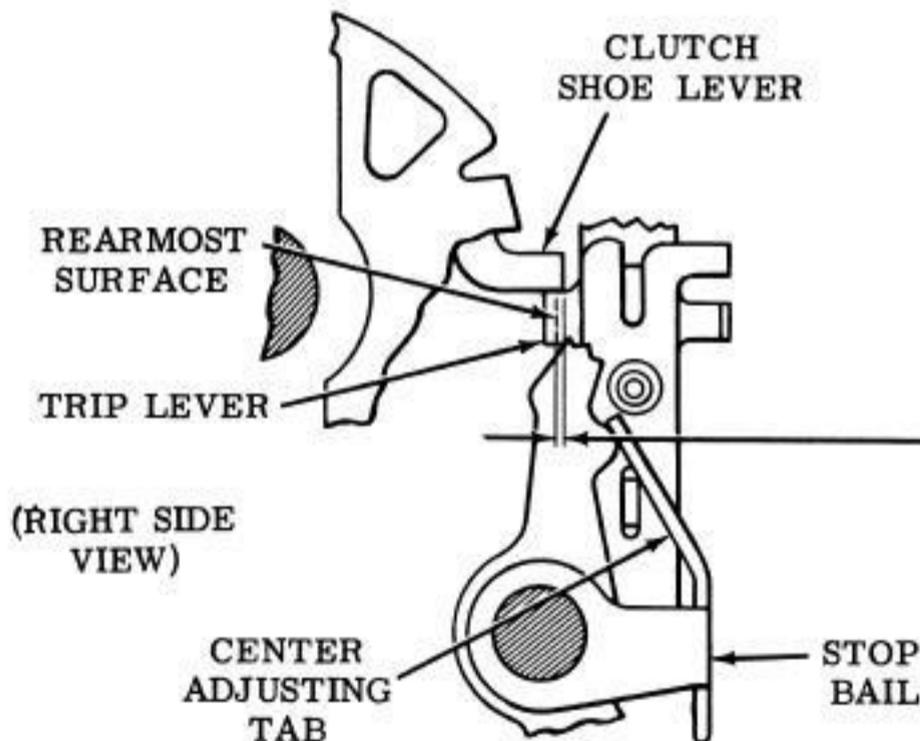
— Min Flush---Max 0.015 inch beyond rearmost surface of trip lever.

To Adjust

Early design without trip lever TP182262: Remove answer-back drum. Bend center adjusting tab with bending tool no. TP180993. See Note 3 above. Replace answer-back drum.

Late design with trip lever TP182262:

With screw loosened friction tight, position bracket.



Related Adjustments

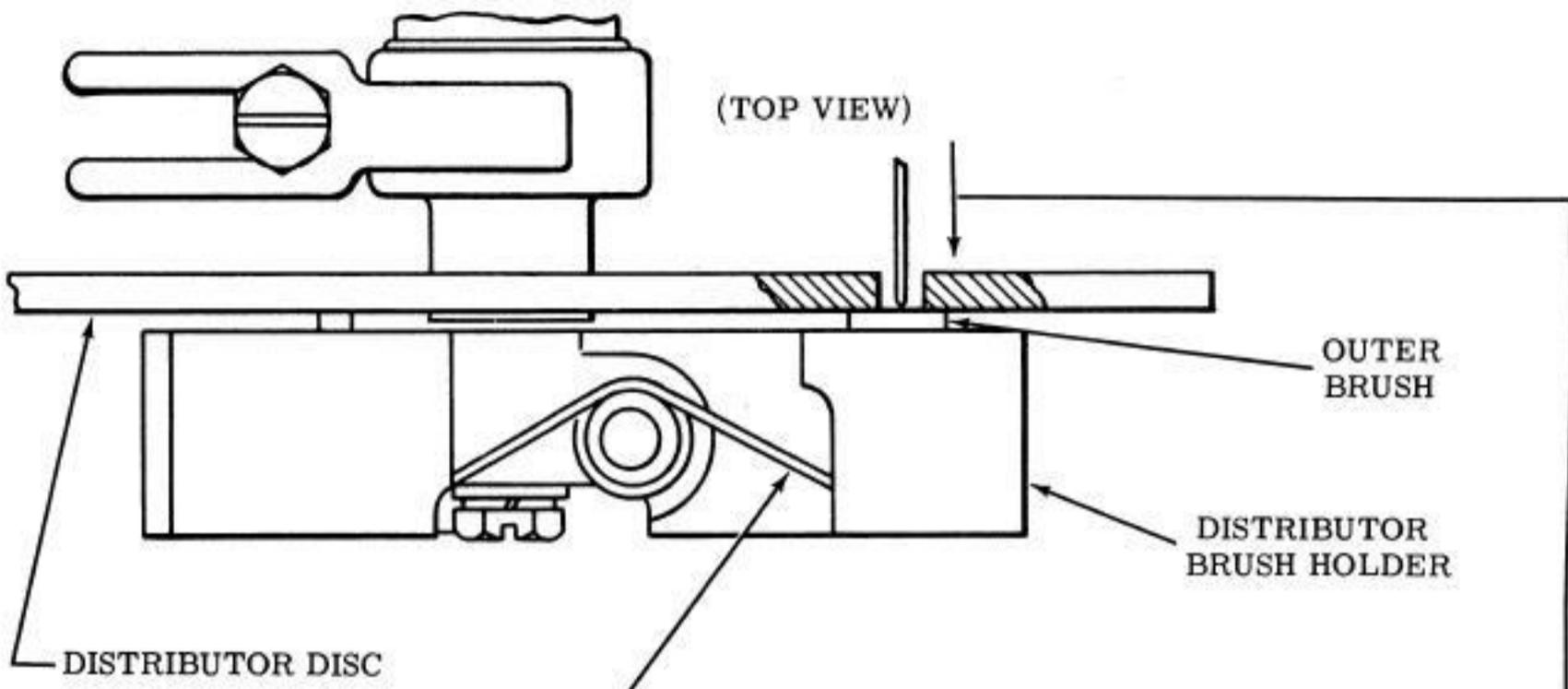
Affects

CLUTCH STOP BAIL (Answer-Back Area)
SHOE LEVER (See the appropriate tape reader section.)

Affected By

DISTRIBUTOR TRIP LINKAGE (See the appropriate keyboard section.)

2.73 Distributor Area (continued)



BRUSH HOLDER SPRING

Requirement

New brush

Min 10-1/2 oz --- Max 13-1/2 oz

Brush worn to 1/4 inch length

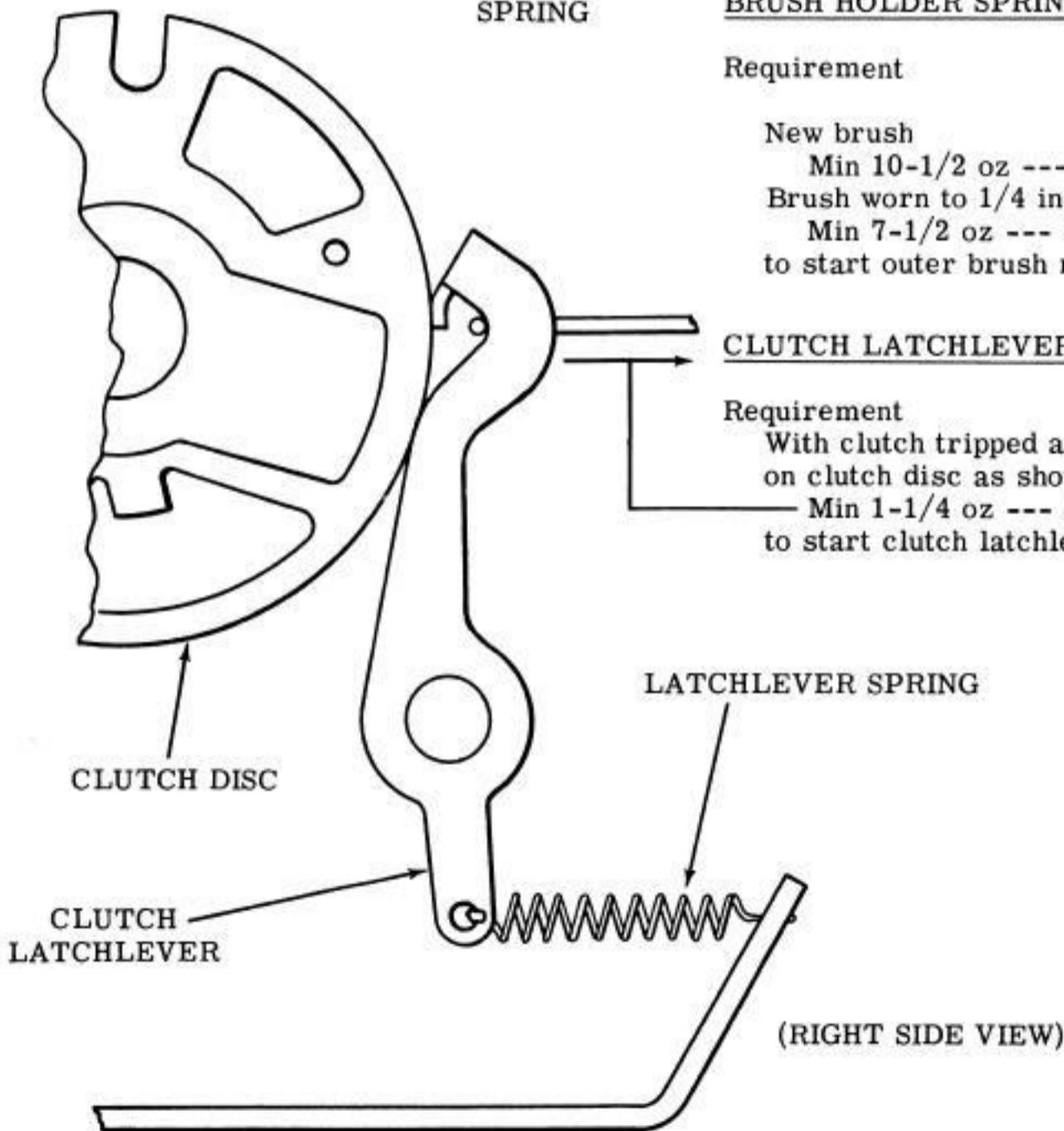
Min 7-1/2 oz --- Max 10-1/2 oz
to start outer brush moving.

CLUTCH LATCHLEVER SPRING

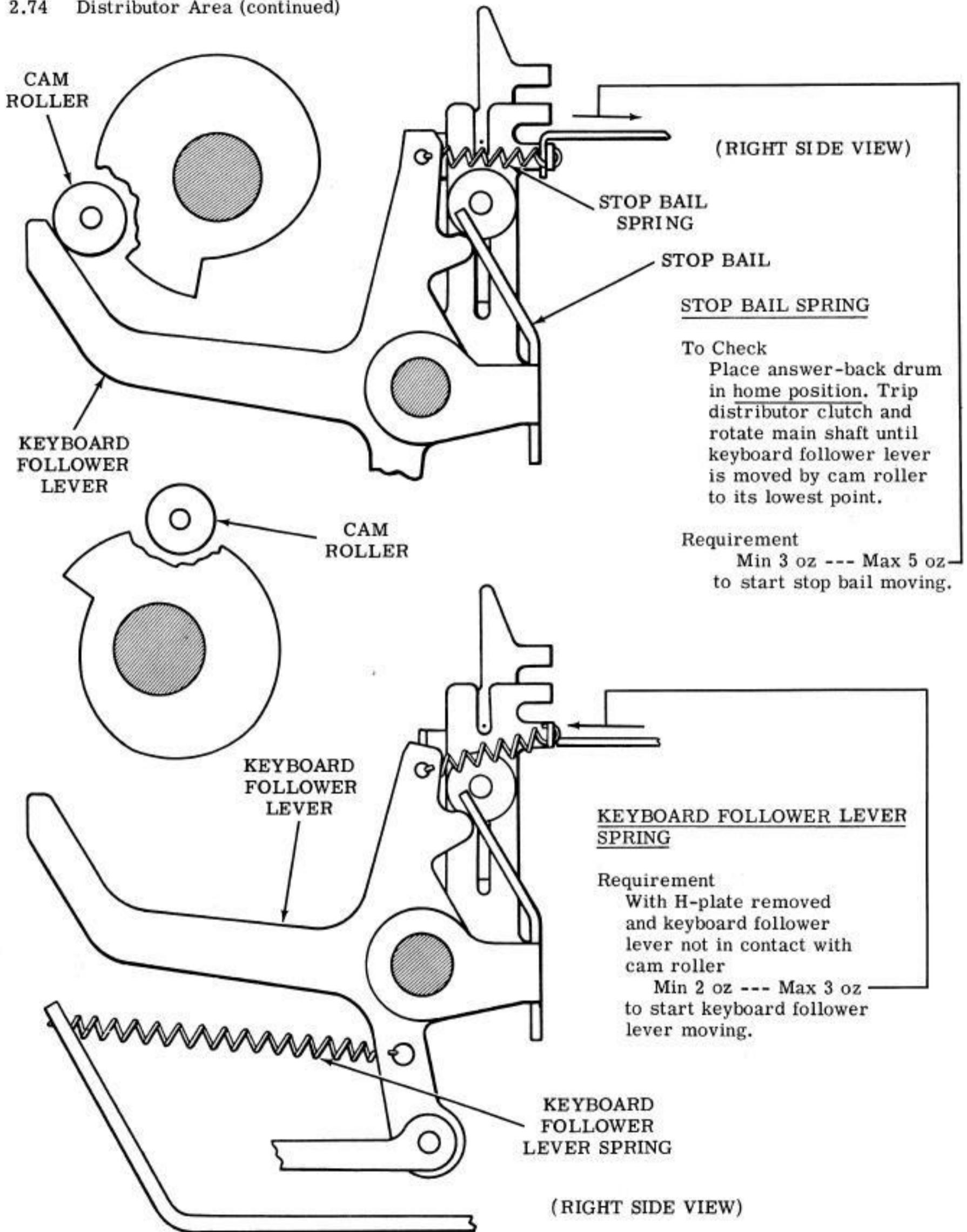
Requirement

With clutch tripped and latchlever resting on clutch disc as shown

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



2.74 Distributor Area (continued)



2.75 Selector Area

RECEIVING MARGINS

To Check

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

Requirement

Obtain minimum selector receiving margins as follows:

<u>LEVEL</u>	<u>SPEED</u>	<u>RANGE</u>		
		<u>ZERO DISTORTION</u>	<u>OVERALL BIAS</u>	<u>END DISTORTION</u>
5 and 6	All Speeds	72 Pt	38 Per cent	35 Per cent*
8	All Speeds	No Reqt	37 Per cent **	35 Per cent**

*At bias optimum setting.

**At same range scale setting.

To Adjust

Refine ARMATURE SPRING (Selector Area) and, if necessary, refine ARMATURE BRACKET (Selector Area) adjustments.

Note: The refinement of the ARMATURE BRACKET (Selector Area) adjustment need not be performed unless the refinement of the ARMATURE SPRING (Selector Area) adjustment fails to bring about the minimum selector receiving margins.

Related Adjustments

Affected By

MAGNET CORE (Selector Area)

ARMATURE BRACKET (Selector Area)

ARMATURE SPRING (Selector Area)

2.76 Miscellaneous Areas

FINAL PRINTING ALIGNMENTGENERAL

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

To Check

Print "TH" at various points along length of printing line.

Requirement

Quality of printed characters shall be good.

To Adjust

Use the following guide in making readjustments.

Shading of top and bottom of characters not equal and/or underscoring or overscoring of characters ---

---refine PLATEN-VERTICAL (Paper Feed Area*) adjustment by moving platen toward portion of light shading.

Left character "T" of poor quality ---

--- using left pry points, refine STOP PLATE (Carriage Area) adjustment.

Right character "H" of poor quality ---

--- using right pry points, refine STOP PLATE (Carriage Area) adjustment.

Characters spread out ---

--- refine STOP PLATE (Carriage Area) adjustment by moving plate forward.

Characters run together ---

--- refine STOP PLATE (Carriage Area) adjustment by moving plate rearward.

Both characters of light shading on left side ---

--- refine TYPEWHEEL (Carriage Area) adjustment by rotating wheel clockwise as viewed from top.

Both characters of light shading on right side ---

--- refine TYPEWHEEL (Carriage Area) adjustment by rotating wheel counterclockwise as viewed from top.

*Friction or Sprocket Feed Mechanisms

FRICTION FEED MECHANISMS

2.77 Paper Feed Area

PLATEN—HORIZONTAL

To Check

Place the flat on left side of platen up and horizontally to base casting.

(1) Requirement

Min 0.042 inch---Max 0.058 inch
between ribbon guide and platen at both left and right margins.

To Check

Place carriage to center of platen and rotate platen until maximum clearance is obtained between platen and ribbon guide. Set up any character code combination in selector. Rotate main shaft until carriage drive bail is in its rearmost position. Push typewheel to the rear until it just touches the platen.

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

(2) Requirement

Typewheel shall not touch inside of either ribbon guide.

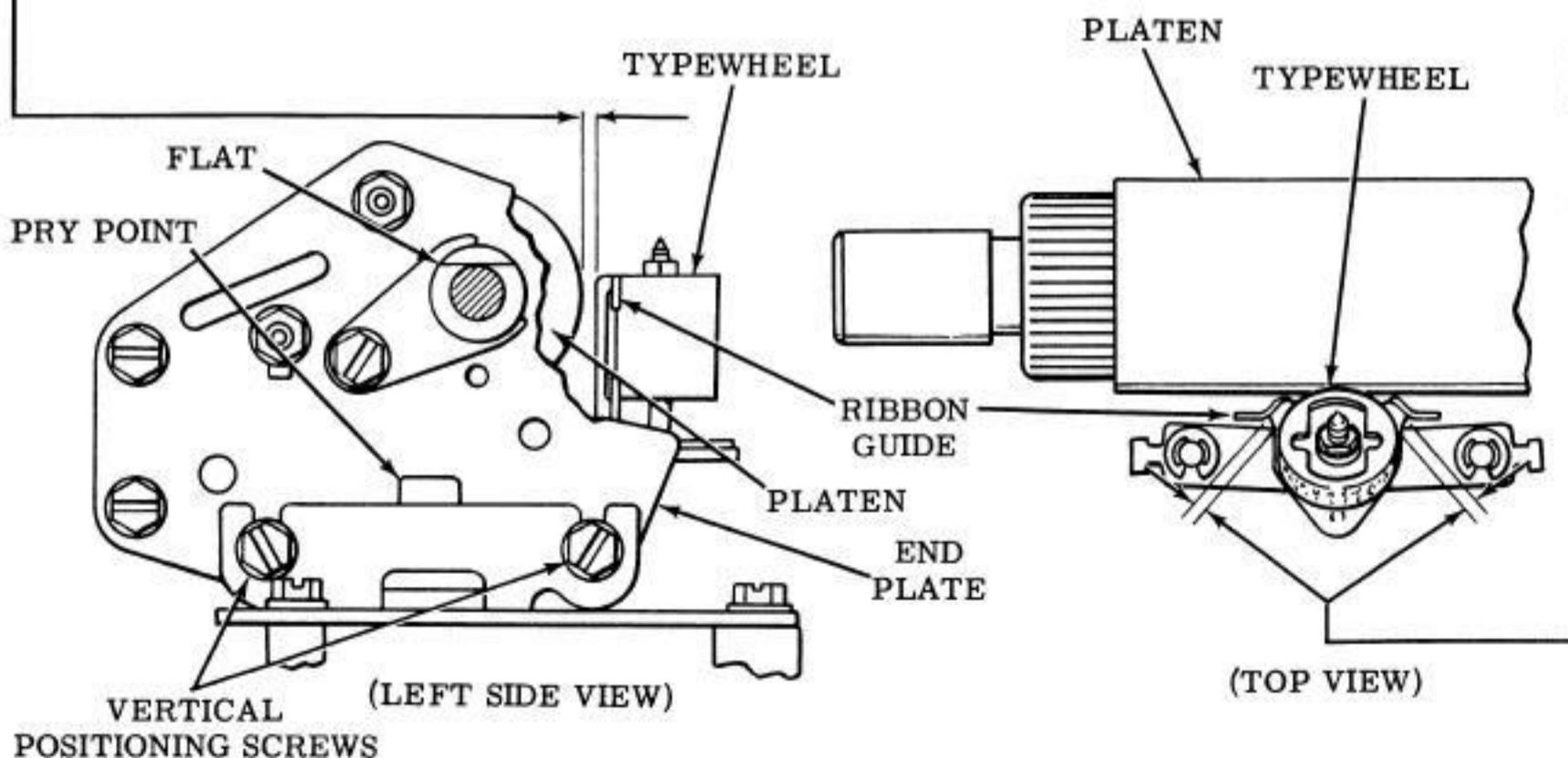
(3) Requirement

No smudging of printed characters when typing unit is operated under power.

To Adjust

Loosen four vertical positioning screws. Place both ends of platen in lowest position. Loosen four horizontal positioning screws. Position platen horizontally to meet requirements. Tighten horizontal positioning screws only. Bend ribbon guide if necessary. Proceed to PLATEN-VERTICAL (Paper Feed Area*) adjustment.

*Friction Feed Mechanisms



2.78 Paper Feed Area (continued)

PLATEN—VERTICAL

To Check

Place paper in typing unit. Set up the character "M" code combination (--345) or (1-34--78) in the selector and rotate the main shaft until the character is printed. Repeat several times along the length of the platen.

Requirement

When each printed character is examined by eye from top to bottom, the shading shall be approximately the same.

To Adjust

With four vertical positioning screws loosened, position the platen using pry points.

Note: When positioning the platen using pry points, be sure to raise the end plates and not to twist them.

Related Adjustments

Affects

LINE FEED UPSTOP BRACKET (Paper Feed Area*)

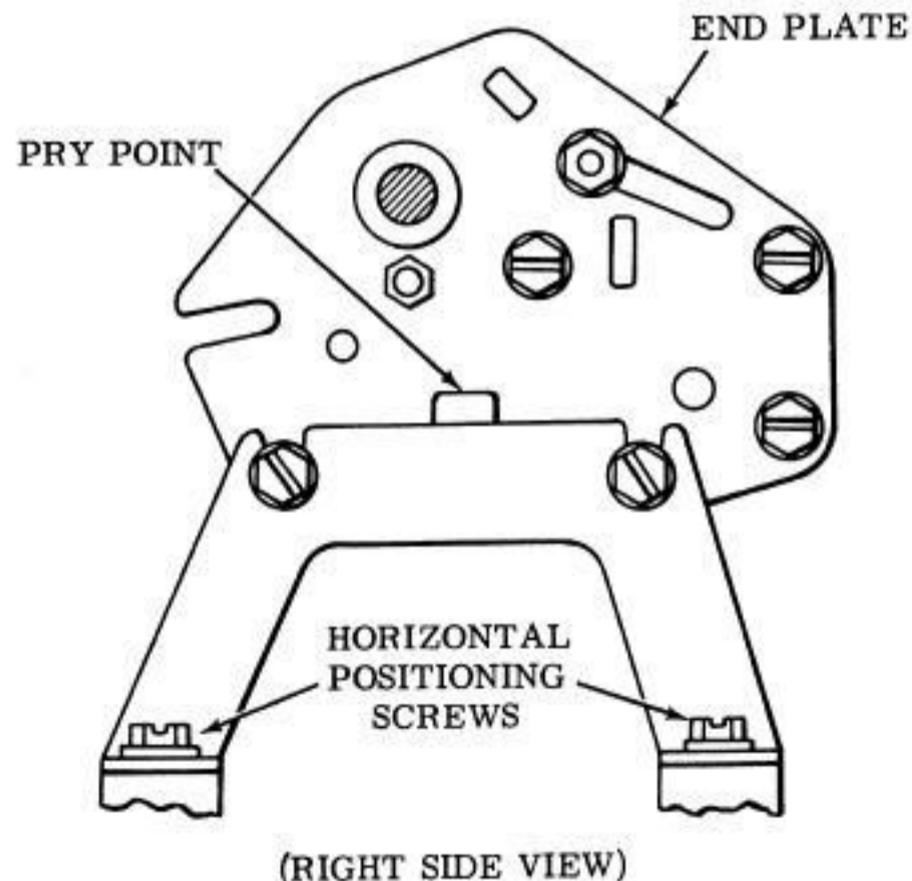
PRESSURE ROLLER (Paper Feed Area*)

Affected By

REAR RAIL (Carriage Area)

PRINT DRIVE LEVER (Carriage Area)

*Friction Feed Mechanisms



2.79 Paper Feed Area (continued)

SINGLE-DOUBLE LINE FEED

Requirement

Upstop stud at lower end of slot.

To Adjust

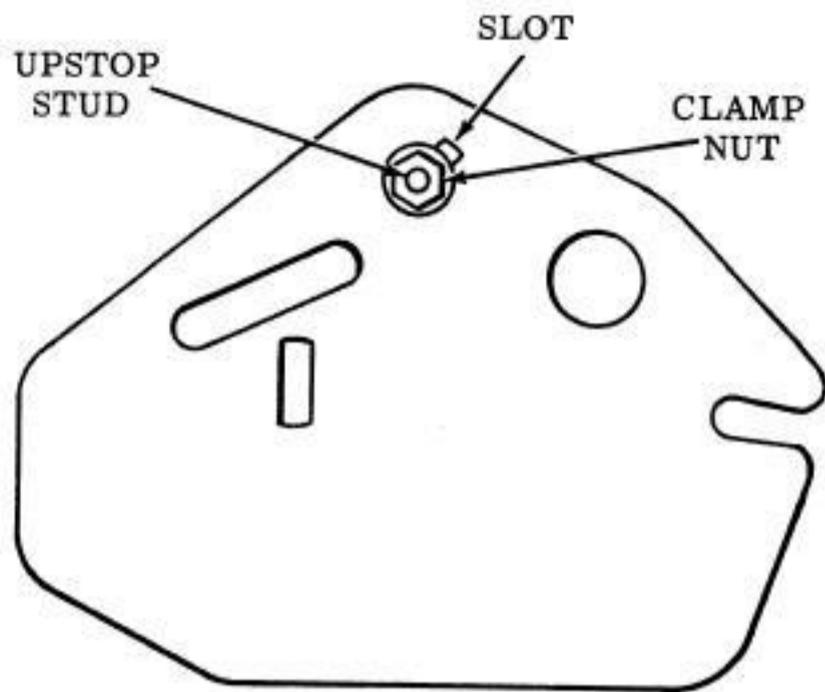
Position stud with clamp nut loosen.

Related Adjustment

Affects

PLATEN DETENT (Paper Feed Area*)

Note: If double line feed is desired, position stud at upper end of slot after all adjustments have been made.

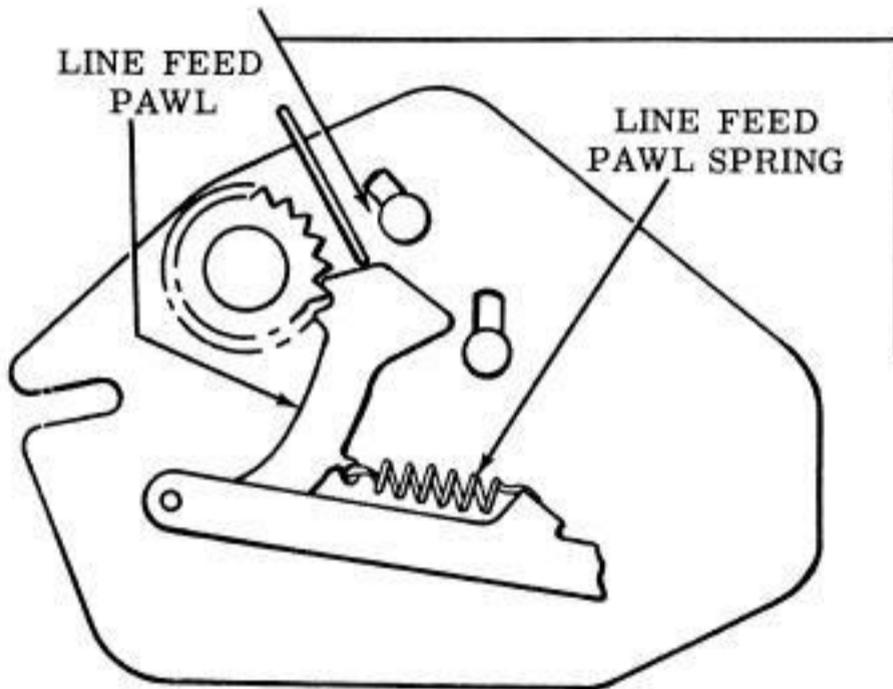


(LEFT SIDE VIEW)

LINE FEED PAWL SPRING

Requirement

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



(RIGHT SIDE VIEW)

PLATEN DETENT

Requirement

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

To Adjust

Position platen detent pawl's pivot with clamp nut loosened.

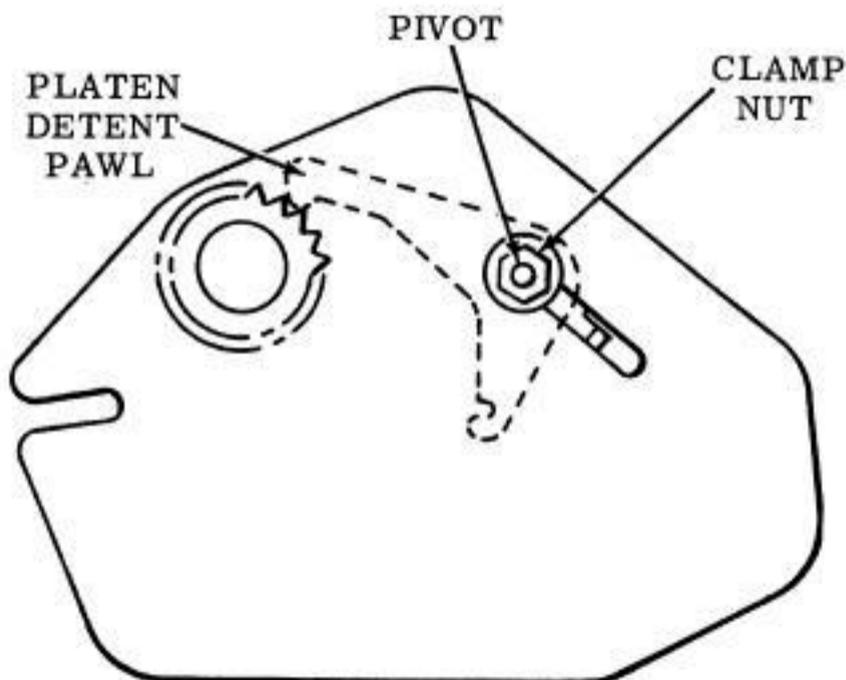
Related Adjustments

Affects

LINE FEED PAWL DOWNSTOP (Paper Feed Area*)

Affected By

SINGLE-DOUBLE LINE FEED (Paper Feed Area*)

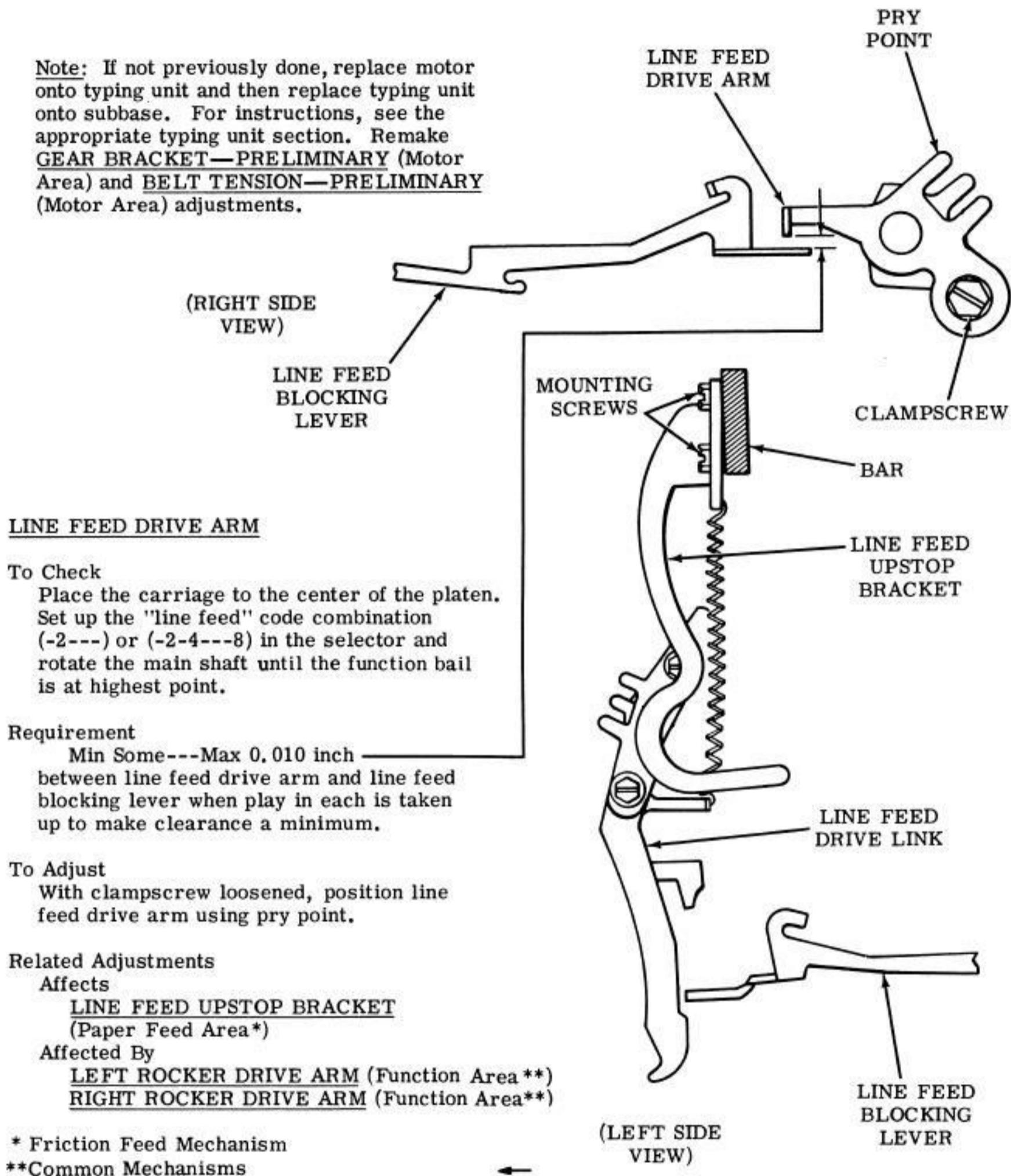


(RIGHT SIDE VIEW)

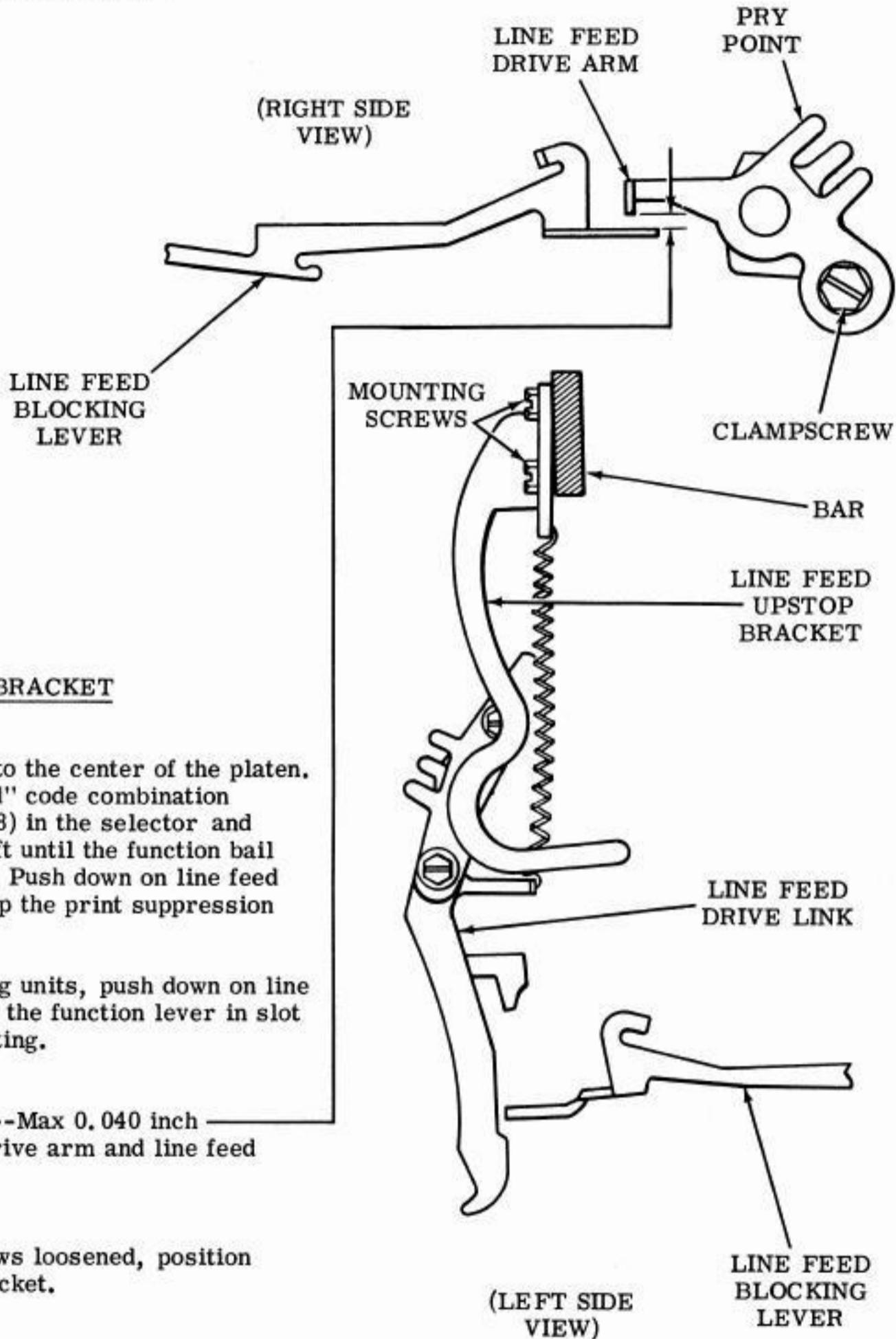
*Friction Feed Mechanism

2.80 Paper Feed Area (continued)

Note: If not previously done, replace motor onto typing unit and then replace typing unit onto subbase. For instructions, see the appropriate typing unit section. Remake GEAR BRACKET—PRELIMINARY (Motor Area) and BELT TENSION—PRELIMINARY (Motor Area) adjustments.



2.81 Paper Feed Area (continued)

LINE FEED UPSTOP BRACKET**To Check**

Place the carriage to the center of the platen. Set up the "line feed" code combination (-2---) or (-2-4---8) in the selector and rotate the main shaft until the function bail is at highest point. Push down on line feed function lever to trip the print suppression codebar.

Note: On 8-level typing units, push down on line feed function lever and the function lever in slot "6" in the function casting.

Requirement

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

To Adjust

With mounting screws loosened, position line feed upstop bracket.

Related Adjustments**Affected By**

PLATEN—VERTICAL (Paper Feed Area*)
LINE FEED DRIVE ARM (Paper Feed Area*)

* Friction Feed Mechanisms

2.82 Paper Feed Area (continued)

LINE FEED DRIVE LINK

To Check

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

Requirement

- (1) The motion supplied by the drive arm of the function rocker shaft to the line feed pawl shall be adequate to rotate the platen the required amount.
- (2) With the typing unit operating under power, the spacing of the line feed shall be uniform and consistent with no backlash.

Note: With the platen detent pawl held away from the ratchet and the function bail at its lowest point of travel, there shall be no more than a barely perceptible motion in the platen when the platen detent pawl is lowered into its seat between two ratchet teeth.

To Adjust

Loosen two clampscrews and use pry points to position line feed drive link so that line feed pawl rotates platen one tooth and the platen detent pawl seats fully in ratchet. Tighten clampscrews.

Related Adjustment

Affected By

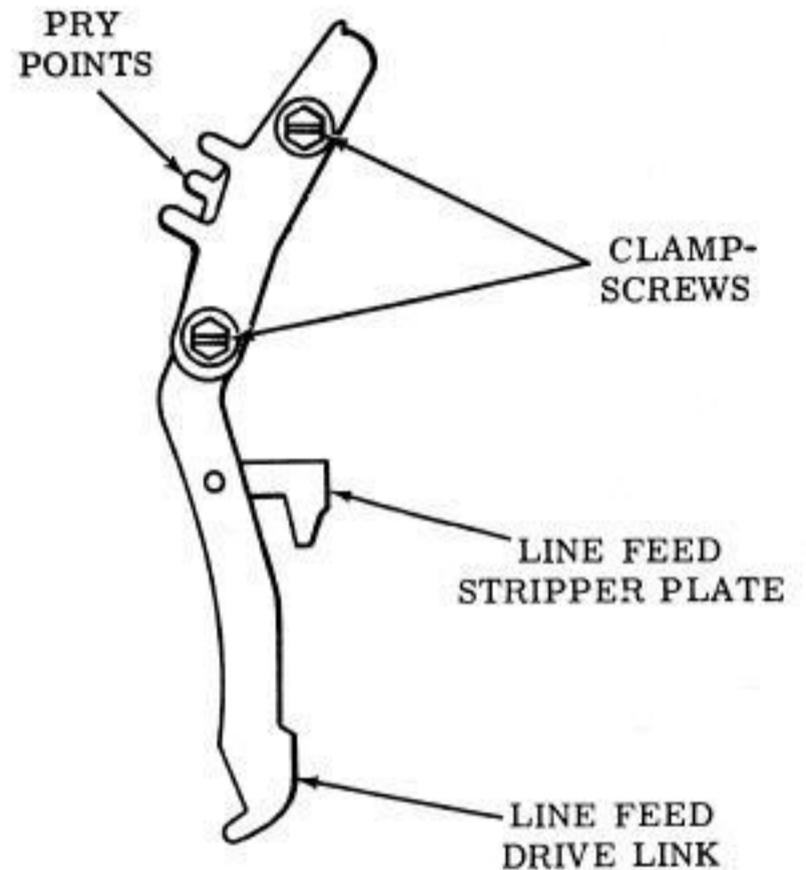
LINE FEED PAWL DOWNSTOP
(Paper Feed Area*)

*Friction Feed Mechanisms

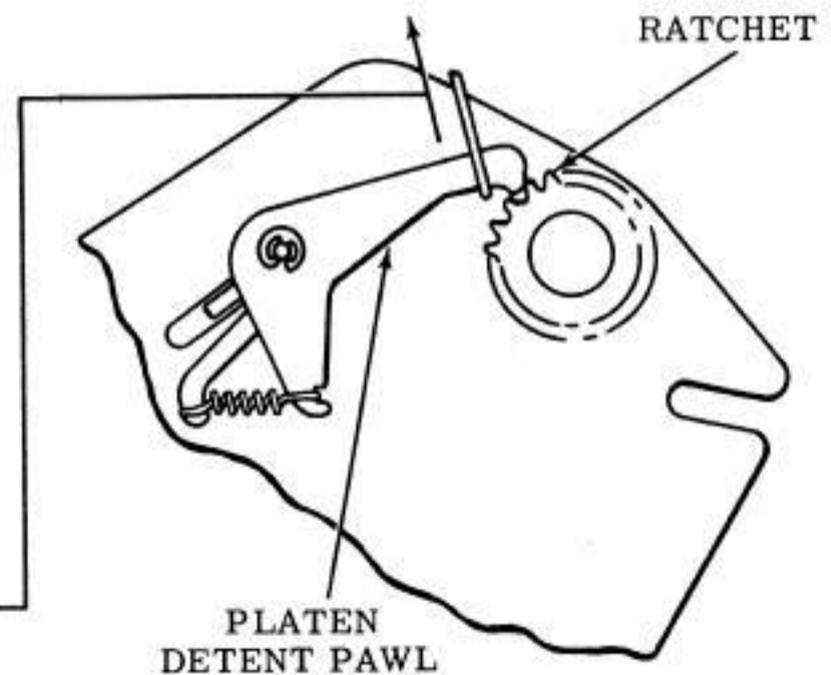
PLATEN DETENT PAWL SPRING

Requirement

Min 24 oz---Max 30 oz
to start platen detent pawl moving.



(LEFT SIDE VIEW)



(LEFT SIDE VIEW)

2.83 Paper Feed Area (continued)

LINE FEED PAWL DOWNSTOP

To Check

Place the carriage to the center of the platen, Place the flat on left side of platen up and horizontally to base casting and set up the "line feed" code combination (-2---) or (-2-4---8) in the selector. Rotate main shaft until line feed pawl has rotated platen one tooth and platen detent pawl has fully seated in ratchet.

Requirement

Min Some --- Max 0,010 inch
between back of line feed pawl and its downstop.

To Adjust

With downstop clamp nut loosened, position downstop.

Related Adjustments

Affects

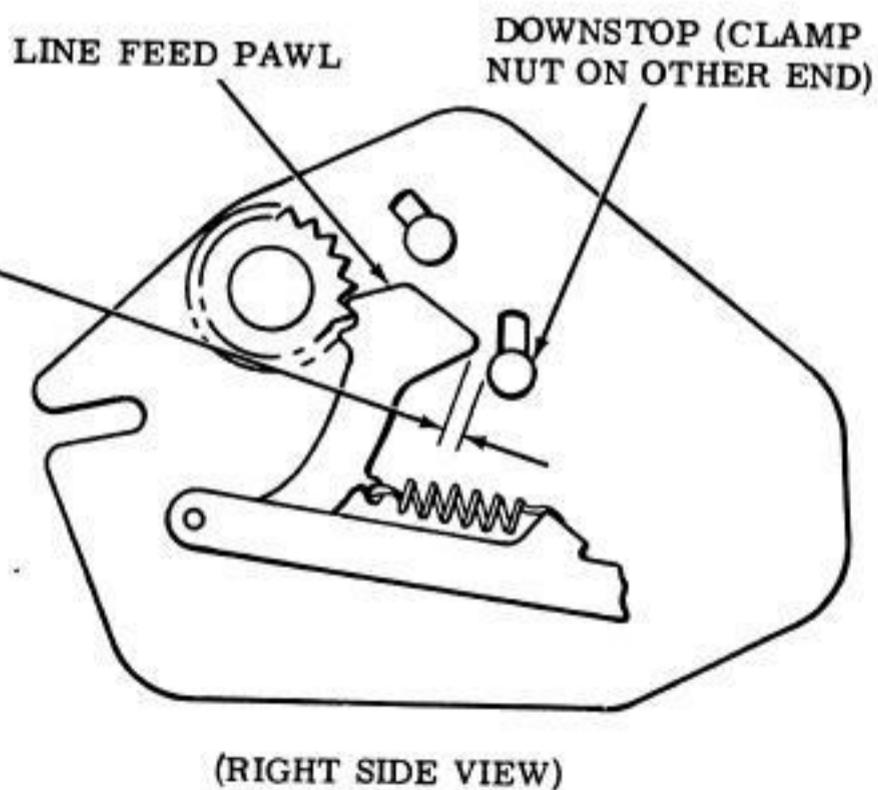
LINE FEED DRIVE LINK (Paper Feed Area*)

Affected By

PLATEN DETENT (Paper Feed Area*)

LINE FEED DRIVE LINK (Paper Feed Area*)

*Friction Feed Mechanisms



2.84 Paper Feed Area (continued)

PRESSURE ROLLER

Requirement

With pressure roller released (pressure lever in frontward position)

Min 0.010 inch
gauged by eye, between pressure roller and slide spring posts on slide guide on carriage.

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

To Adjust

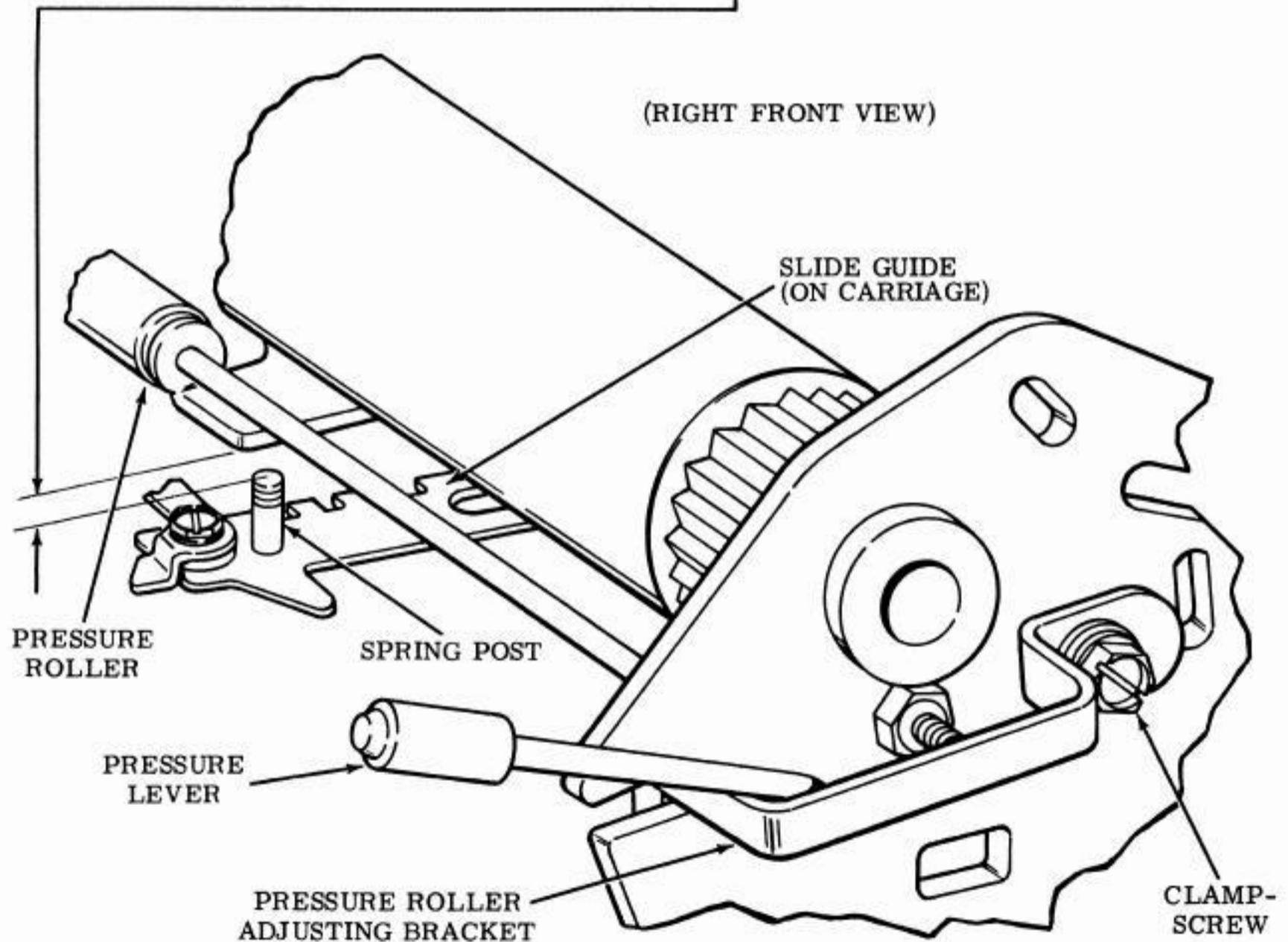
Position pressure roller adjusting bracket with clampscrew loosened.

Related Adjustment

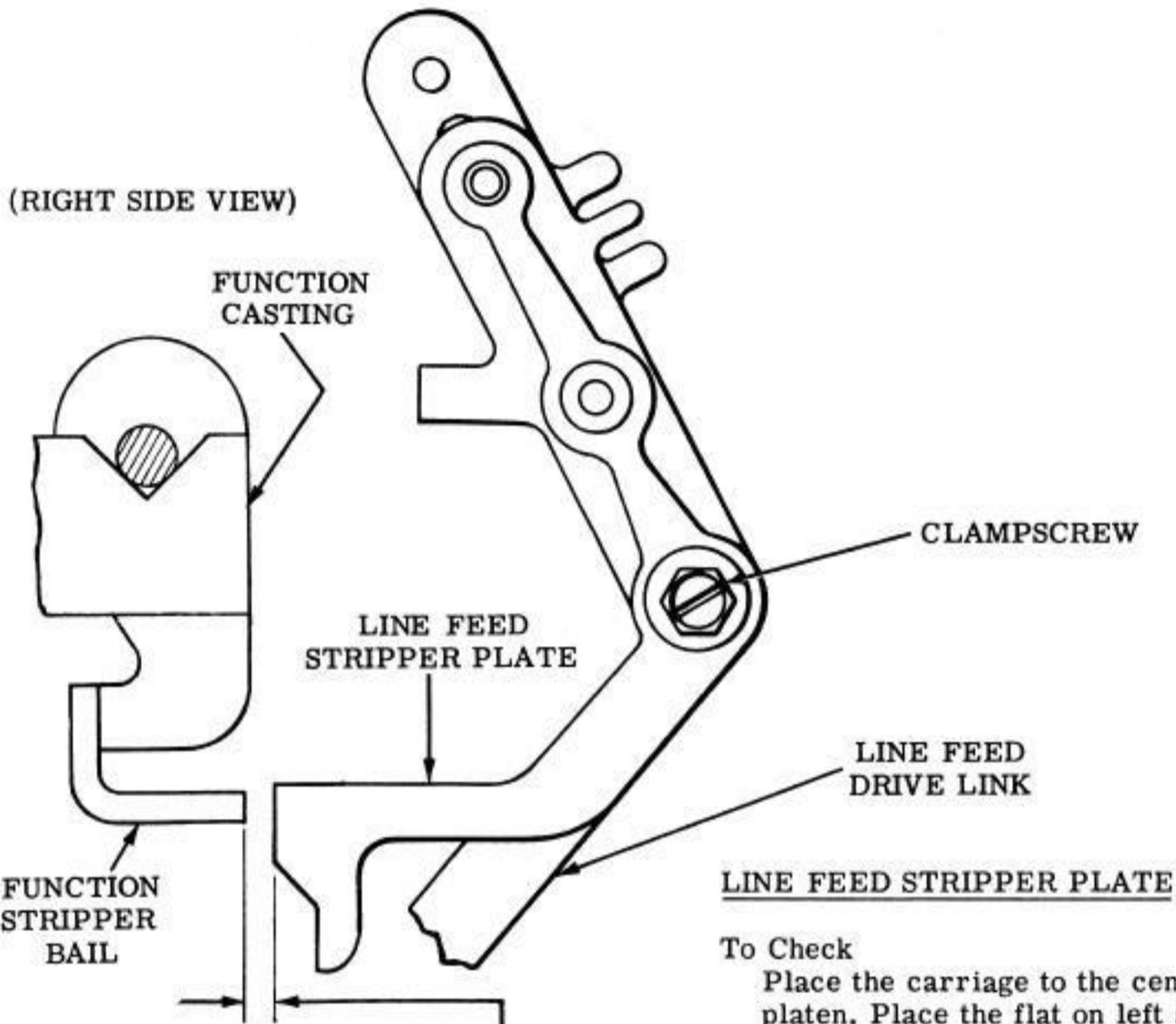
Affected By

PLATEN-VERTICAL (Paper Feed Area*)

*Friction Feed Mechanisms



2.85 Paper Feed Area (continued)



To Check

Place the carriage to the center of the platen. Place the flat on left side of platen up and horizontally to base casting and set up with "line feed" code combination (-2---) or (-2-4---8) in the selector. Rotate the main shaft until function bail reaches its lowest point.

Requirement

The line feed stripper plate shall be
 --- Min Contacting --- Max 0.005 inch
 away from function stripper bail

To Adjust

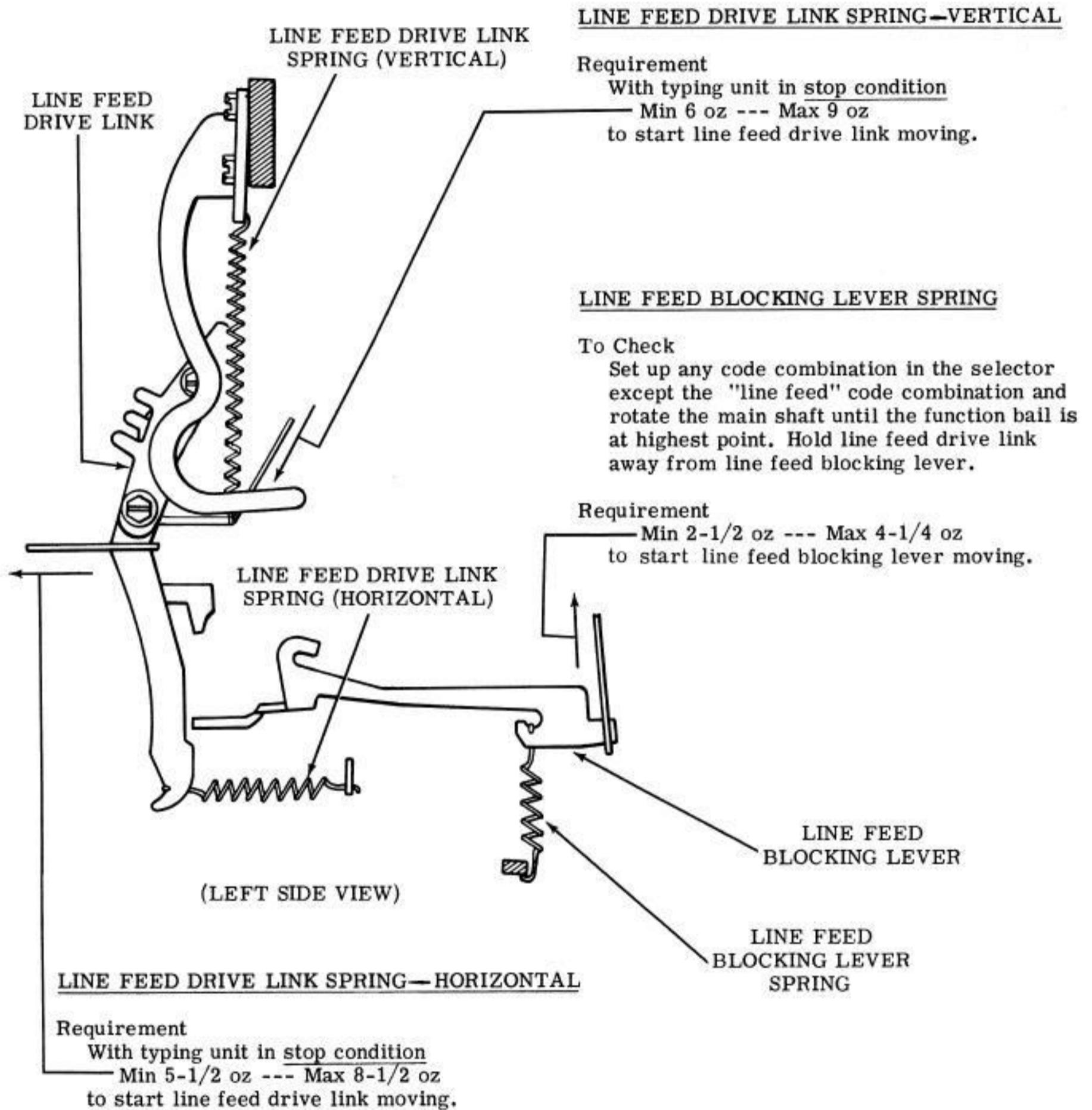
With clampscrew loosened, position line feed stripper plate.

Related Adjustment

Affected By
STRIPPER BAIL (Function Area *)

*Common Mechanisms

2.86 Paper Feed Area (continued)



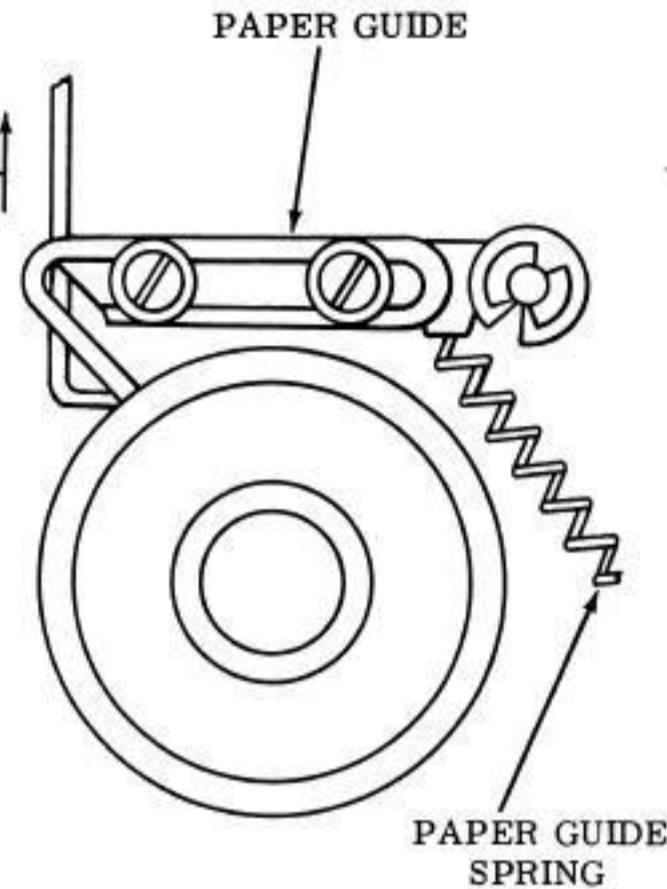
2.87 Paper Feed Area (continued)

PAPER GUIDE SPRINGS

Requirement

With scale at either the left or right end of paper guide

Min 1-1/2 oz --- Max 3-1/2 oz
to start paper guide moving.



PAPER STRAIGHTENER BAIL SPRING

Requirement

With scale at center of paper straightener bail

Min 1 oz --- Max 3 oz
to start paper straightener bail moving.

PAPER GUIDEPLATE SPRINGS

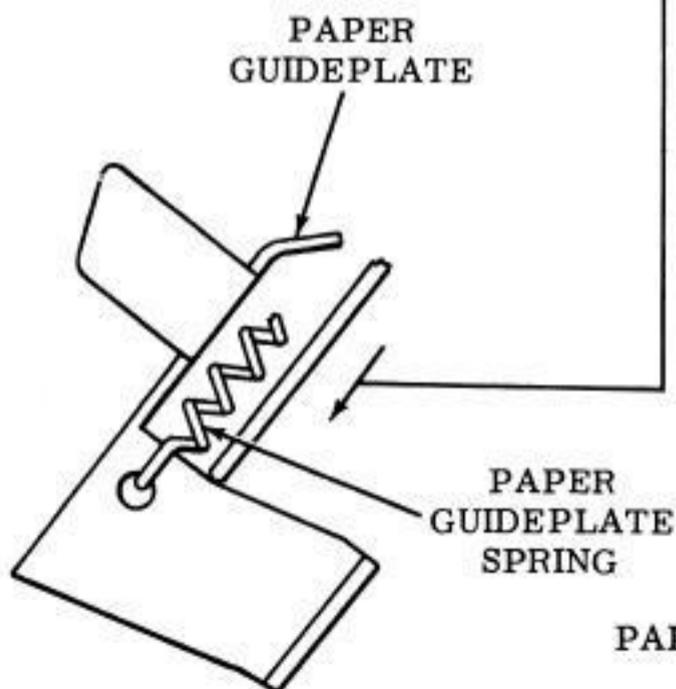
Requirement

With pressure lever released

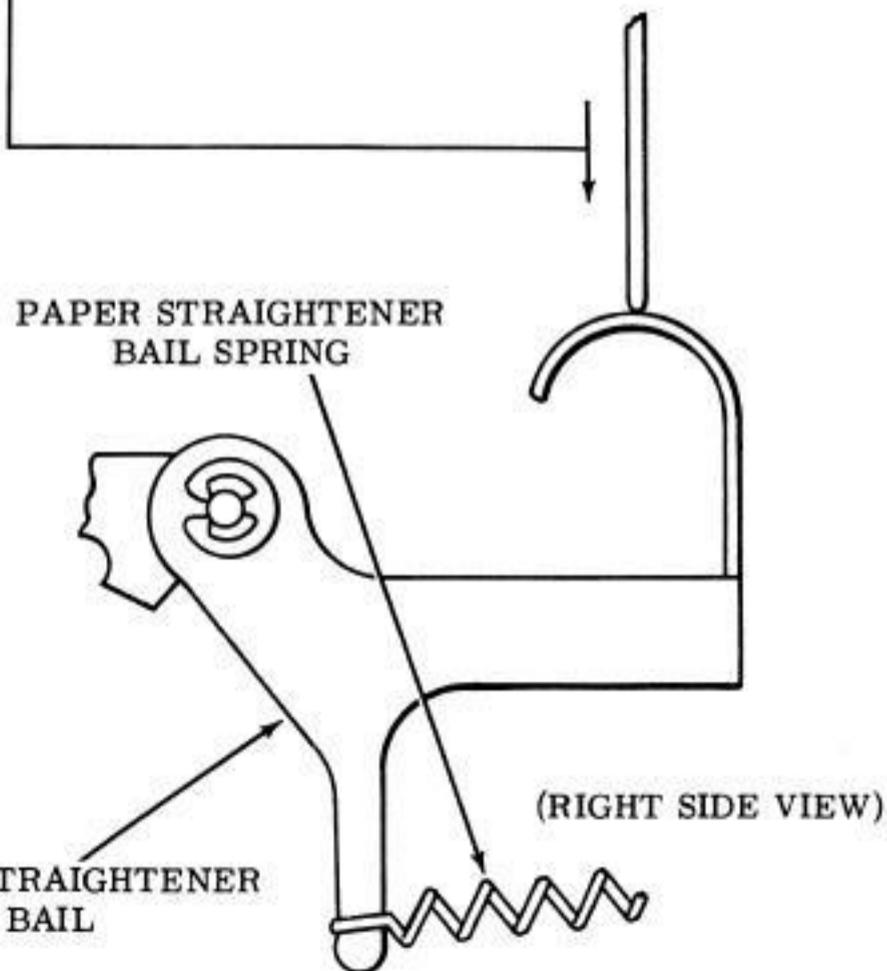
Min 3/4 oz --- Max 1-3/4 oz
to start paper guideplate moving.

Note: Check each of two springs.

(RIGHT SIDE VIEW)



(RIGHT SIDE VIEW)



(RIGHT SIDE VIEW)

2.88 Paper Feed Area (continued)

PAPER GUIDE

(1) Requirement

The copy holder wire shall fall somewhere between two lines of printed copy, not obscuring more than 1/2 the height of either line.

To Adjust

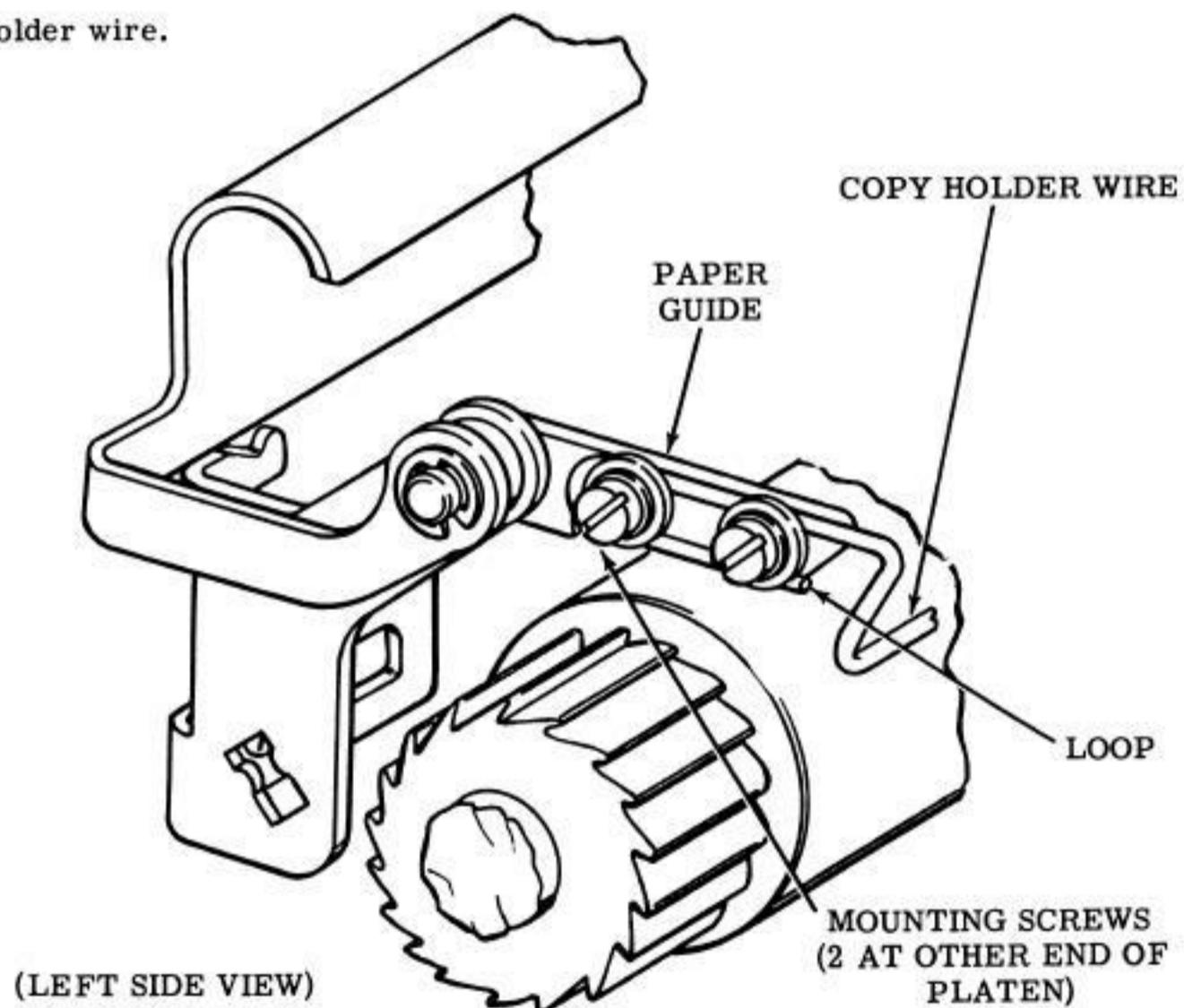
Position copy holder wire with four mounting screws loosened.

(2) Requirement

The copy holder wire shall return and rest against the platen at both ends and middle after raising and releasing.

To Adjust

Bend copy holder wire.



Note: When a complete readjustment is being undertaken on typing units equipped with friction feed mechanisms, the sequence is altered to perform the adjustments in the paper feed area*. The PAPER GUIDE (Paper Feed Area*) adjustment above is the last adjustment in the paper feed area*, therefore, return now to the point where the sequence was interrupted and continue.

*Friction Feed Mechanisms

SPROCKET FEED MECHANISMS

2.89 Paper Feed Area

PAPER GUIDEPLATE

Requirement

With no sprocket forms in the platen mechanism

Min 0.008 inch---Max 0.018 inch between the platen and the left and right ends of the paper guideplate—adjacent to the fingers. Record the two clearances.**

To Adjust

Loosen locknut and adjust screw.

Note 1: If the PAPER GUIDEPLATE (Paper Feed Area*) adjustment cannot be made as indicated above, remove the platen mechanism from the typing unit. (See instructions in the appropriate typing unit section.) Then, preliminary adjust according to the following adjustment instructions:

Requirement

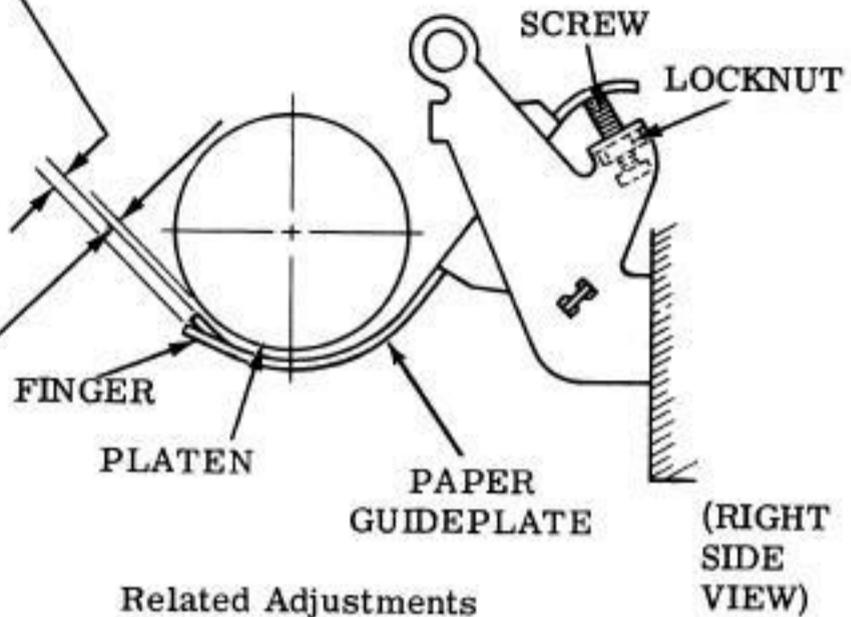
With the screw backed off and no sprocket forms in the platen mechanism

Min Zero---Max 0.012 inch between the platen and the left and right ends of the paper guideplate—adjacent to the fingers. Record the two clearances.**

To Adjust

Loosen end plate screws friction tight and position end plates.

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



Related Adjustments

Affects

PLATEN—HORIZONTAL

(Paper Feed Area*)

PLATEN—VERTICAL

(Paper Feed Area*)

LOW-PAPER ALARM CONTACT

(Paper Alarm Control Area)

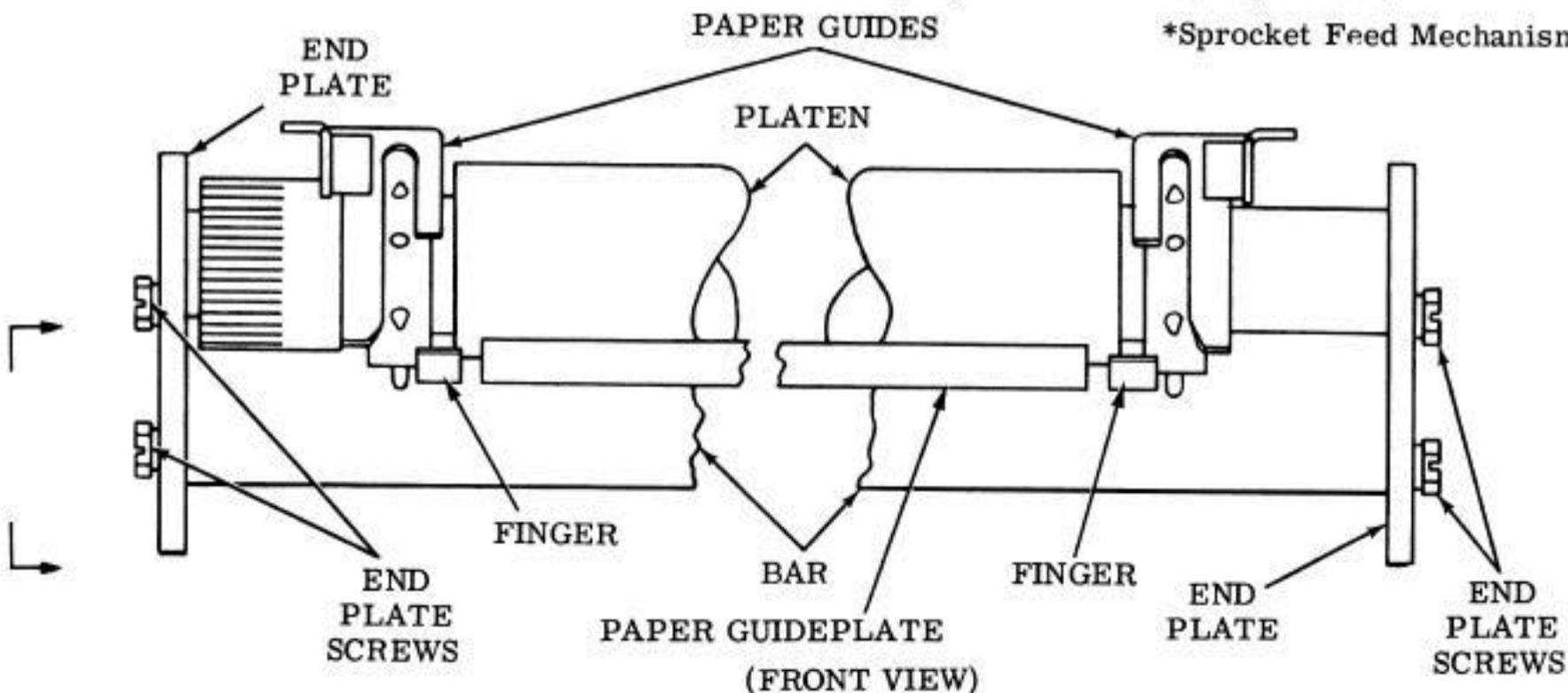
LOW-PAPER AND PAPER-OUT

ALARM CONTACT (Paper Alarm Control Area)

PAPER-OUT ALARM CONTACT

(Paper Alarm Control Area)

Replace platen mechanism onto the typing unit. (See instructions in the appropriate typing unit section.) Perform PAPER GUIDEPLATE (Paper Feed Area*) adjustment.



*Sprocket Feed Mechanisms

2.90 Paper Feed Area (continued)

PAPER GUIDE SPRING

Requirement

With paper guides resting on platen

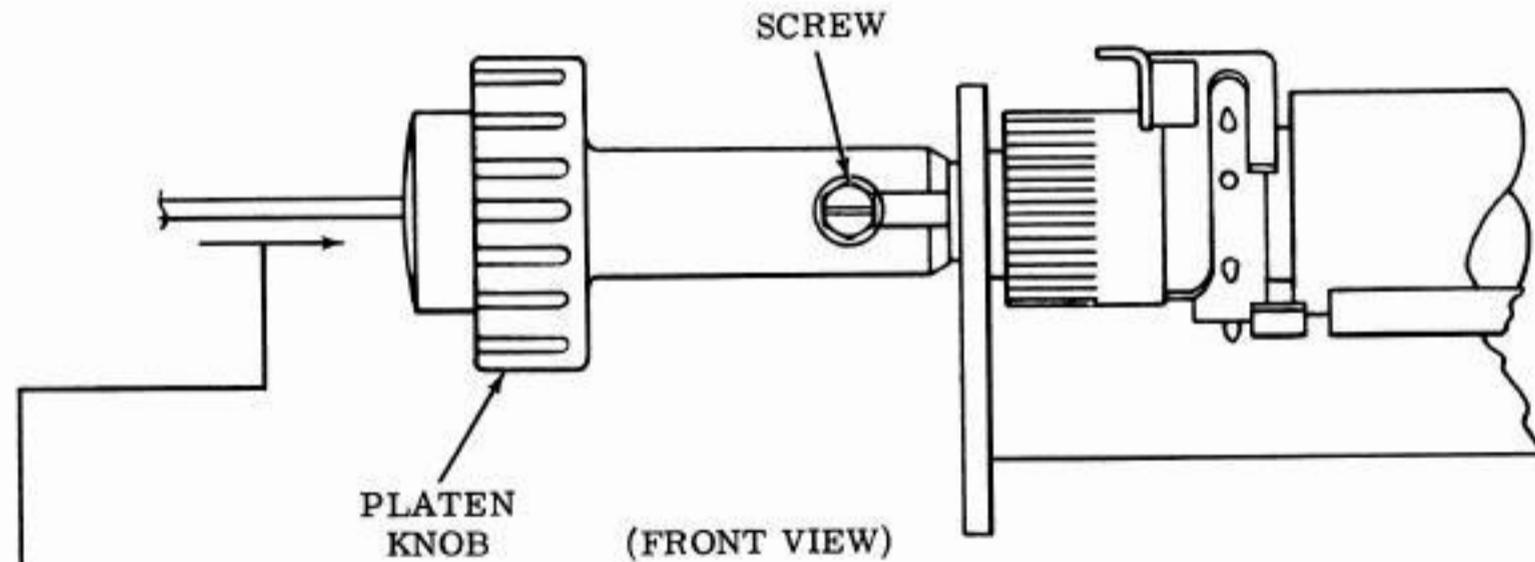
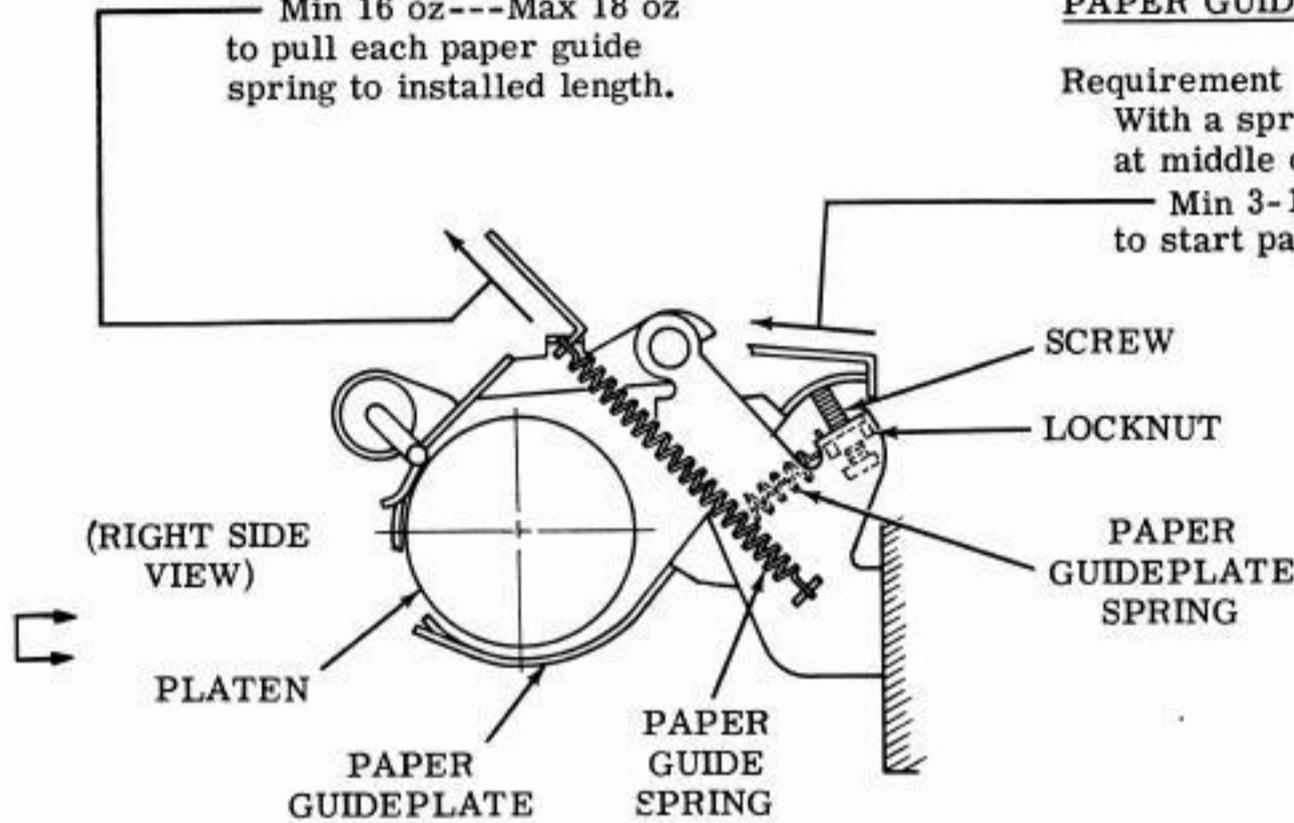
Min 16 oz---Max 18 oz to pull each paper guide spring to installed length.

PAPER GUIDEPLATE SPRING

Requirement

With a spring scale positioned at middle of paper guideplate

Min 3-1/2 oz---Max 7-1/2 oz to start paper guideplate moving.



PLATEN KNOB SPRING

Requirement

With a spring scale positioned on platen knob

Min 15 oz---Max 23 oz to start platen knob moving.

PLATEN KNOB

Requirement

The platen knob shall be fully seated toward the right.

To Adjust

With screw loosened, position platen knob.

2.91 Paper Feed Area (continued)

LEFT SPROCKET RING

Requirement

The left sprocket ring pins shall be located within the slot of the paper guide and shall not contact the side surfaces of the paper guide slot.

To Adjust

With set screws loosened, position the left sprocket ring.

Note: Do not tighten set screws until RIGHT SPROCKET RING (Paper Feed Area*) adjustment has been completed.

Related Adjustments

Affects

- LEFT HAND MARGIN
(Paper Feed Area*)
- RIGHT SPROCKET RING
(Paper Feed Area*)
- PRINTING LINE POSITION
(Paper Feed Area*)
- WIRE GUIDE - FINAL
(Paper Feed Area*)

* Sprocket Feed Mechanisms

RIGHT SPROCKET RING

To Check

With the set screws of the left and right sprocket rings in line, place a single sprocket form on the platen with the sprocket form feed holes over the left and right sprocket ring pins.

Requirement

The left and right sprocket ring pins shall be in line and centrally located in the sprocket form feed holes.

To Adjust

With set screws loosened, position the left and/or right sprocket rings as required.

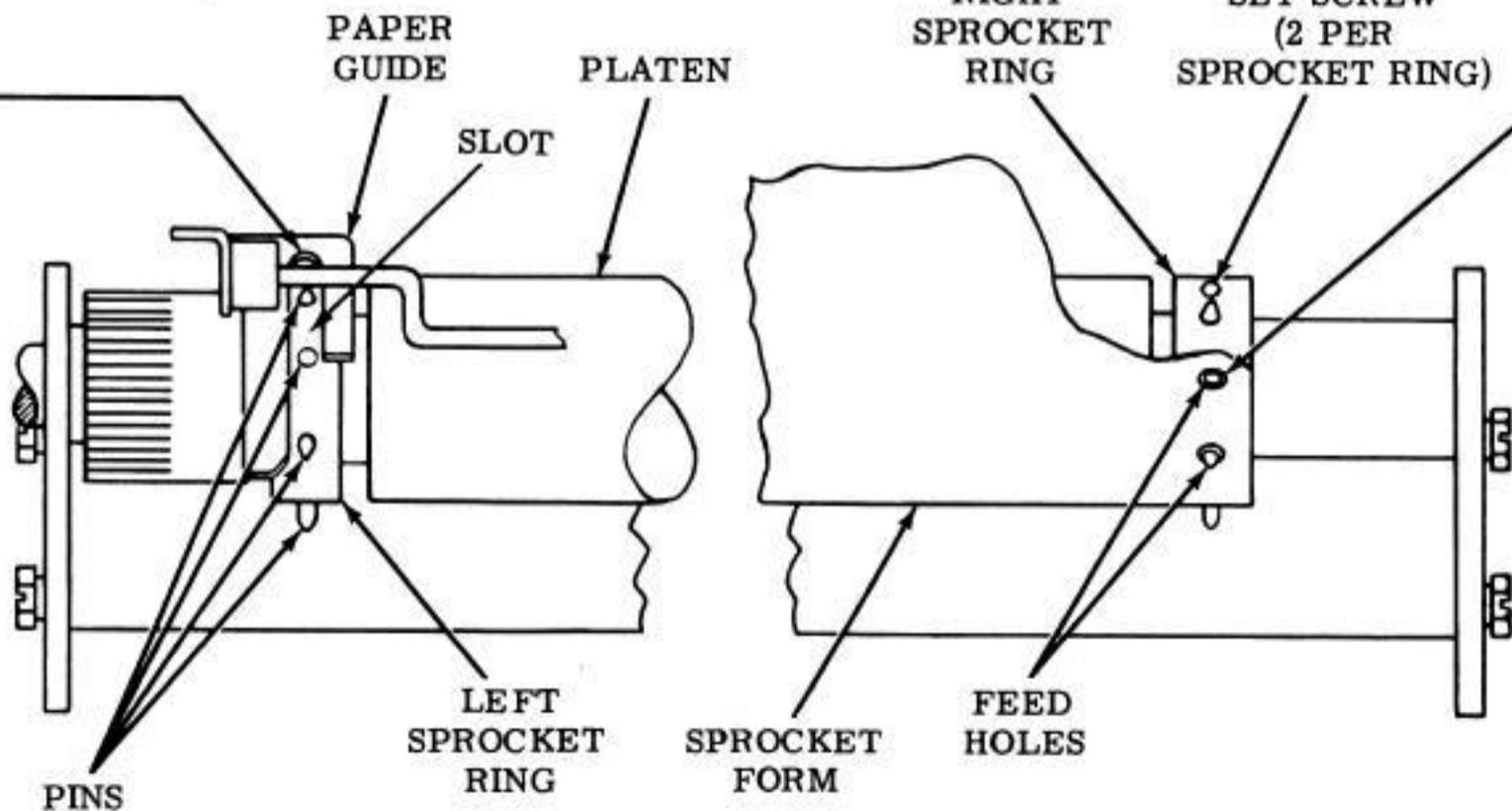
Related Adjustments

Affects

- PRINTING LINE POSITION
(Paper Feed Area*)
- RIGHT GUIDE (Paper Feed Area*)
- RIGHT HAND MARGIN (Paper Feed Area*)
- WIRE GUIDE - FINAL (Paper Feed Area*)

Affected By

- LEFT SPROCKET RING (Paper Feed Area*)



(FRONT VIEW)

2.92 Paper Feed Area (continued)

RIGHT GUIDE

Requirement

The right sprocket ring pins shall be located within the slot of the paper guide and shall not contact the side surfaces of the paper guide slot.

To Adjust

With the right paper guide screws and the set screw which secures the wire guide on the right side loosened, position the right paper guide.

Related Adjustments

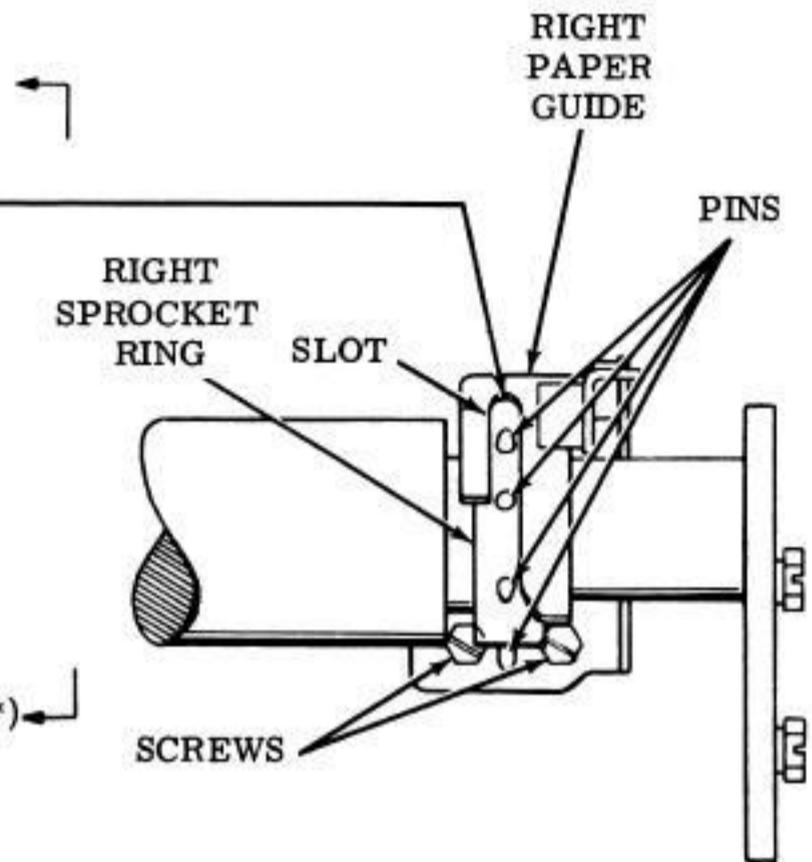
Affects

WIRE GUIDE - FINAL (Paper Feed Area*)

WIRE GUIDE - PRELIMINARY (Paper Feed Area*)

Affected By

RIGHT SPROCKET RING (Paper Feed Area*)



(FRONT VIEW)

WIRE GUIDE—PRELIMINARY

To Check

Place a sprocket form into the platen mechanism.

Requirement

With the sprocket form and the left and right paper guides fully engaged with the left and right sprocket rings, respectively, the wire guide shall contact the sprocket form.

To Adjust

Loosen set screws. Hold the sprocket form and the left and right paper guides against the left and right sprocket rings, respectively. Rotate wire guide in a clockwise direction (as viewed from the right side) until it just comes into contact with the sprocket form.

Related Adjustments

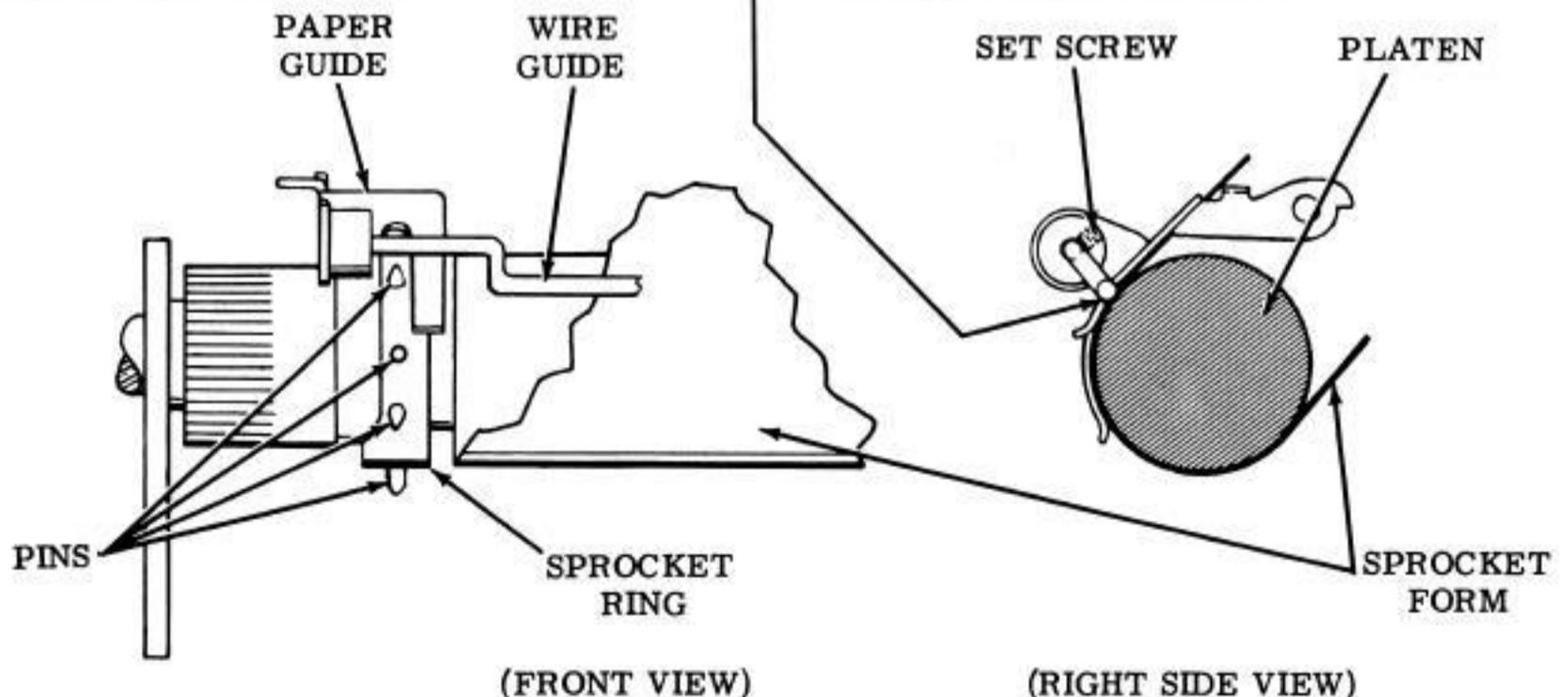
Affects

WIRE GUIDE—FINAL (Paper Feed Area*)

Affected By

RIGHT GUIDE (Paper Feed Area*)

*Sprocket Feed Mechanisms



(FRONT VIEW)

(RIGHT SIDE VIEW)

2.93 Paper Feed Area (continued)

Note 1: Before making the PLATEN—HORIZONTAL (Paper Feed Area*) adjustment, loosen the nut securing the idler post and back off the idler.

PLATEN—HORIZONTAL**To Check**

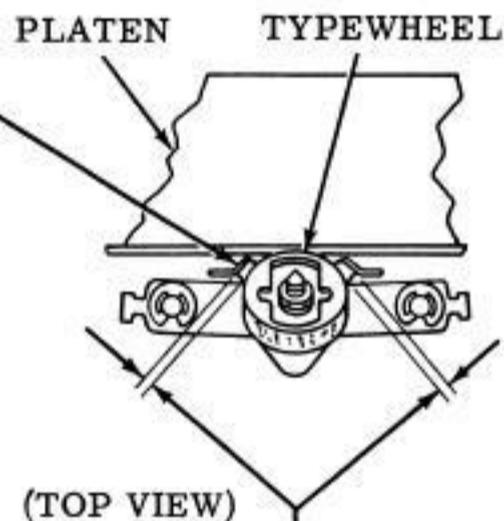
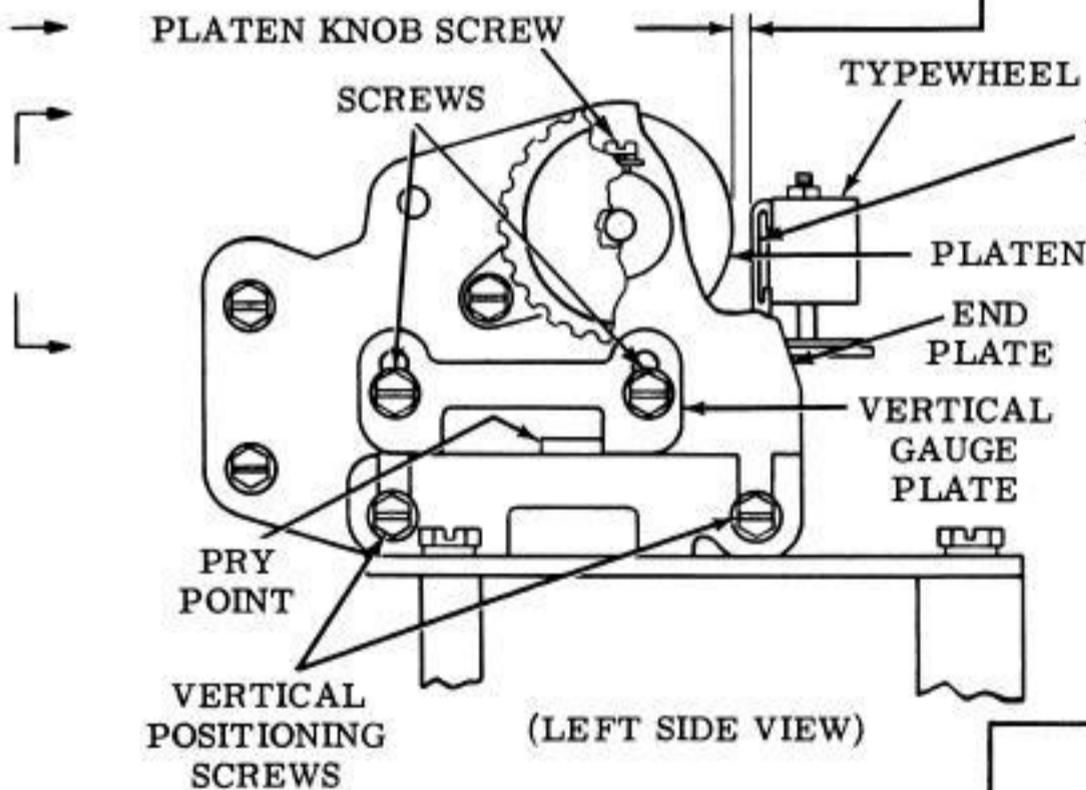
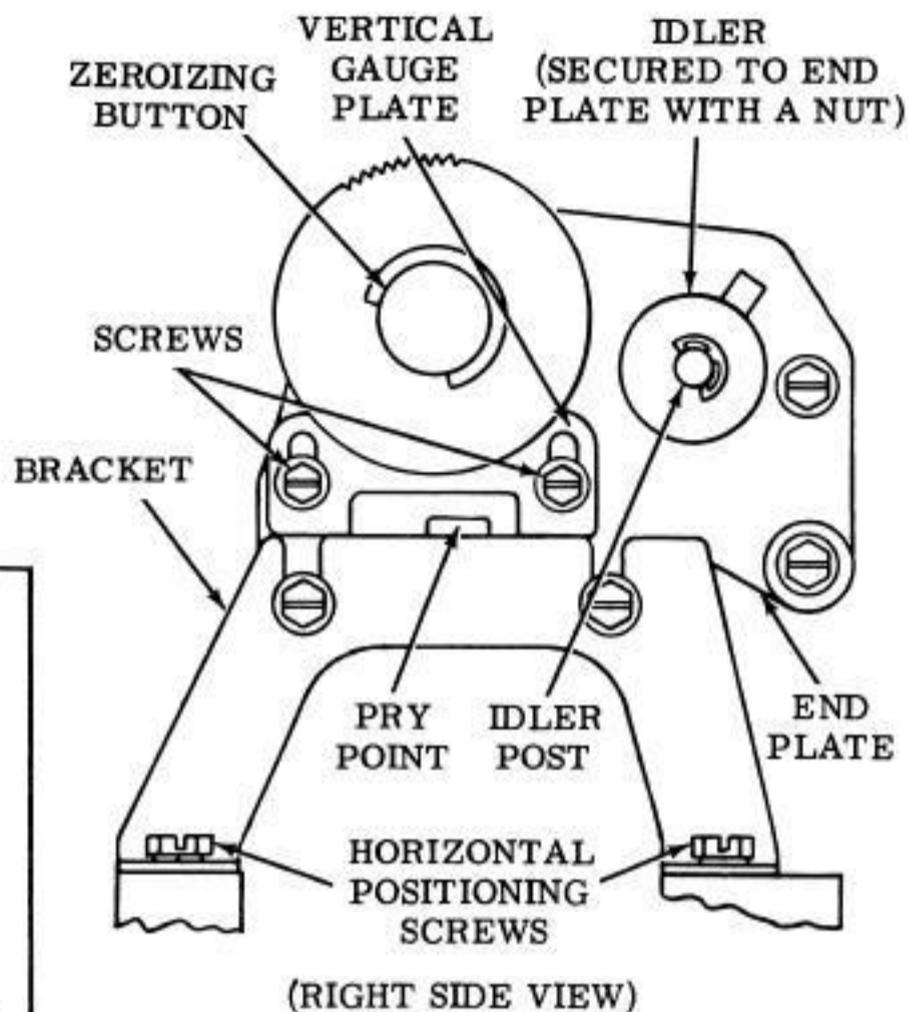
Place the platen knob screw up and permit the detent ratchet pawl to seat in a groove of the detent ratchet.

(1) Requirement

Min 0.042 inch---Max 0.058 inch between ribbon guide and platen at both left and right margins.

To Check

Place typing unit carriage to center of platen and rotate platen until maximum clearance is obtained between platen and ribbon guide. Set up any character code combination (except function) in selector. Rotate main shaft until carriage drive bail is in its rearmost position. Push type-wheel to the rear until it just touches platen.



* Sprocket Feed Mechanisms

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

(2) Requirement

Typewheel shall not touch inside of either ribbon guide.

(3) Requirement

No smudging of printed characters when typing unit is operated under power.

To Adjust

Loosen four vertical positioning screws. Place both ends of platen in lowest position. Loosen four horizontal positioning screws. Position platen horizontally to meet requirements. Tighten horizontal positioning screw only. Bend ribbon guide, if necessary.

Proceed to PLATEN—VERTICAL (Paper Feed Area*) adjustment.

2.94 Paper Feed Area (continued)

Note 1: Before making the PLATEN—VERTICAL (Paper Feed Area*) adjustment, loosen the nut securing the idler post and back off the idler. See illustrations on the preceding page in connection with PLATEN—HORIZONTAL (Paper Feed Area*) adjustment.

Note 2: Loosen the vertical gauge plate screw and back off the vertical gauge plate on each side of the platen mechanism. After making the PLATEN—VERTICAL (Paper Feed Area*) adjustment, position each vertical gauge plate so that it is resting on the top of its associated bracket.

PLATEN—VERTICAL

To Check

Place a sprocket form in the typing unit. Set up the character "M" code combination (--345) or (1-34--78) in the selector and rotate the main shaft until the character is printed. Repeat several times along the length of the platen.

Requirement

When each printed character is examined by eye from top to bottom, the shading shall be approximately the same.

To Adjust

With four vertical positioning screws loosened, position the platen using pry points.

Note 3: When positioning the platen using pry points, be sure to raise the end plates and not to twist them.

Related Adjustments

Affects

CAM ZERO POSITION (Platen Drive Area)
DETENT POSITION (Paper Feed Area*)
IDLER (Platen Drive Area)
WIRE GUIDE - FINAL (Paper Feed Area*)

Affected By

PAPER GUIDE PLATE (Paper Feed Area*)
PRINT DRIVE LEVER (Carriage Area)
REAR RAIL (Carriage Area)

* Sprocket Feed Mechanisms

2.95 Platen Drive Area

LINE FEED CLUTCH ENDPLAY

Requirement

Min Some---Max 0.012 inch
endplay between washer and line feed
clutch.

To Adjust

With drum screw loosened, position drum.

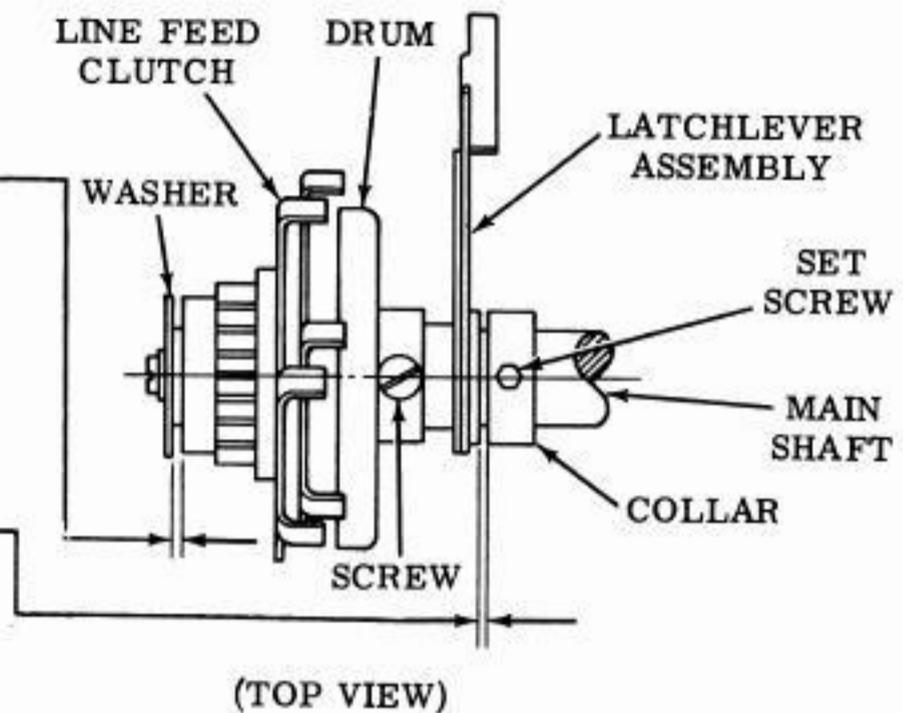
LATCHLEVER ASSEMBLY ENDPLAY

Requirement

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

To Adjust

With set screw loosened, position collar.

FORM-OUT BELT TENSION

Requirement

The form-out belt tension shall not be
too tight or too loose.

To Adjust

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

Related Adjustments

Affects

CAM ZERO POSITION (Platen Drive Area)

DETENT POSITION (Paper Feed Area*)

IDLER (Platen Drive Area)

FORM-OUT DOWNSTOP (Platen
Drive Area)

FORM-OUT LEVER OVERTRAVEL
(Platen Drive Area)

LINE FEED (Platen Drive Area)

LINE FEED CLUTCH TRIP LEVER
(Platen Drive Area)

LINE FEED DOWNSTOP (Platen
Drive Area)

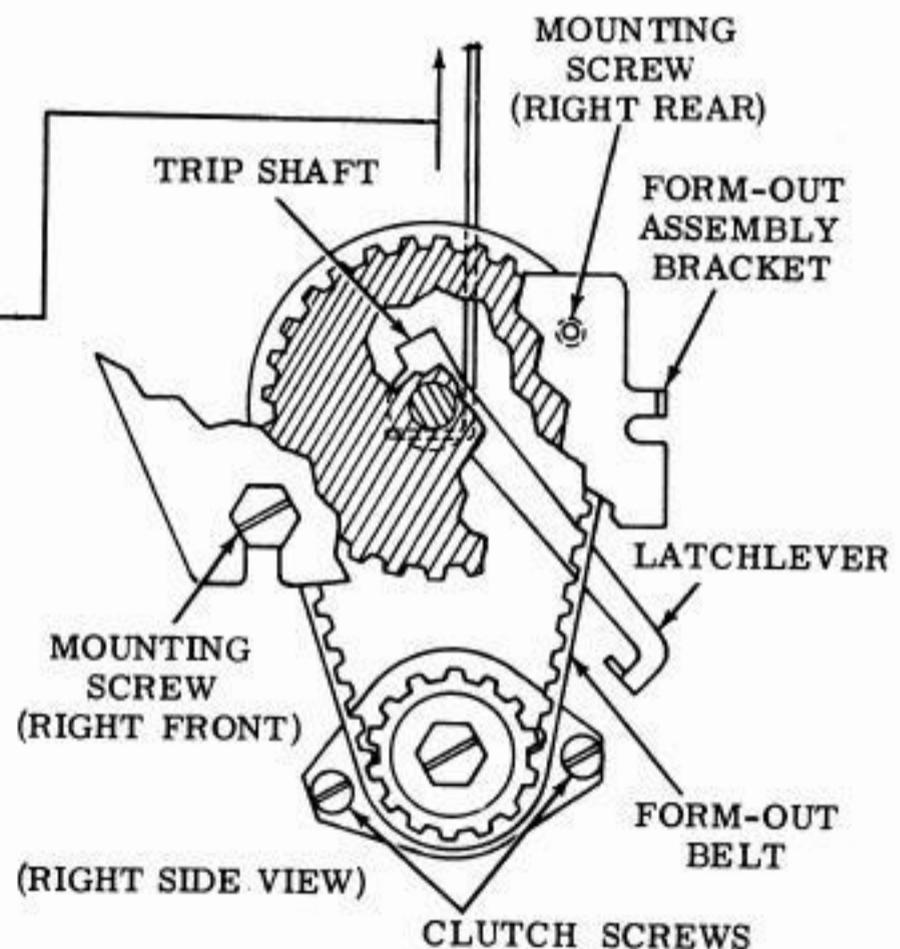
LINE FEED LEVER LINE-UP AND
ENDPLAY (Platen Drive Area)

LINE FEED LEVER UPSTOP (Platen
Drive Area)

READER-STOP CONTACT (Platen
Drive Area)

RESET (Platen Drive Area)

RESET CAM LOBE LINE-UP (Platen
Drive Area)



Note 1: Since it is difficult to measure the FORM-OUT BELT TENSION (Platen Drive Area) requirement adequately, make the adjustment only if the form-out belt tension is suspected to be too tight or too loose.

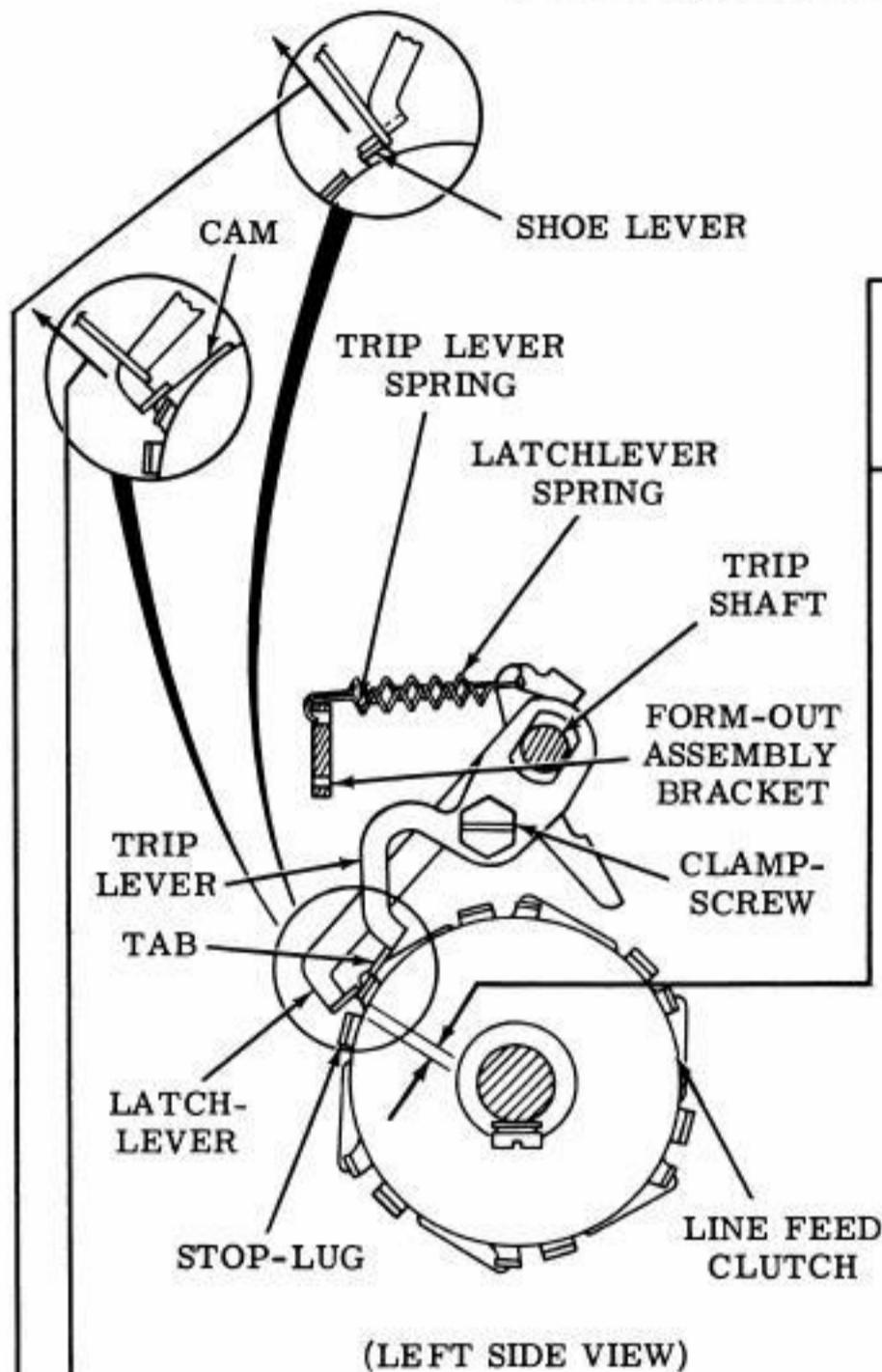
Note 2: Make certain that the shaft is free by rotating reset follower lever. If necessary free trip shaft by repositioning the left mounting bracket of the form-out assembly bracket against the form-out assembly bracket.

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

→ *Sprocket Feed Mechanisms

2.96 Platen Drive Area (continued)

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

LINE FEED CLUTCH TRIP LEVER

Requirement

- (1) Clearance between each stop-lug and its associated shoe lever
Min 0.040 inch---Max 0.070 inch
greater when line feed clutch is engaged than when disengaged (latched).
- (2) With line feed clutch disengaged (latched)
Min 0.015 inch
between each stop-lug and its associated shoe lever.

Note: Check each stop-lug and its associated shoe lever.

To Adjust
With clampscrew loosened, position trip lever.

Related Adjustments

Affects

FORM-OUT DOWNSTOP
(Platen Drive Area)
LINE FEED DOWNSTOP
(Platen Drive Area)

Affected By

FORM-OUT BELT TENSION
(Platen Drive Area)

TRIP LEVER SPRING

Requirement

With trip lever tab resting on top of a shoe lever
Min 4-1/4 oz---Max 6-1/4 oz
to start trip lever moving.

LATCHLEVER SPRING

Requirement

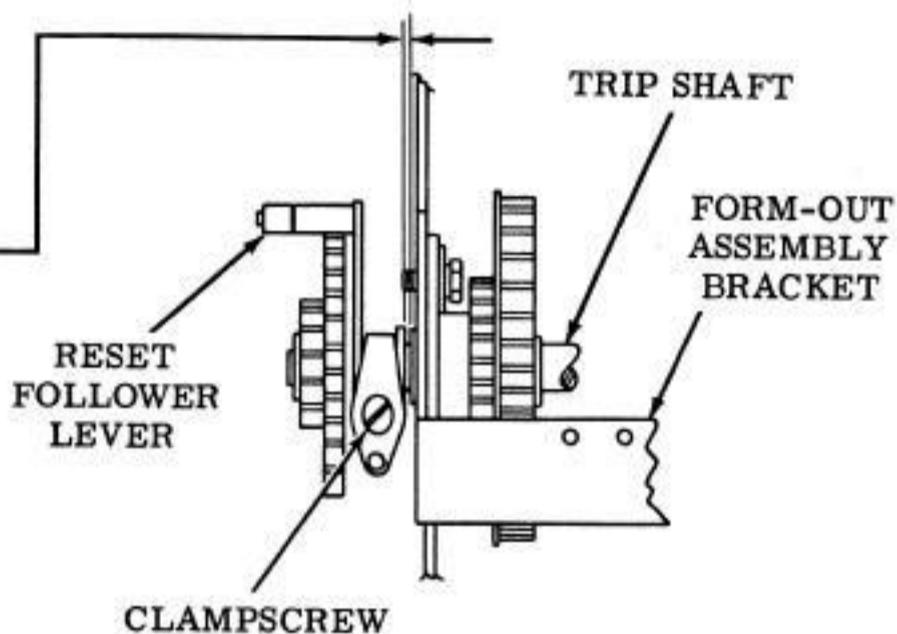
With latchlever resting on the high part of a cam
Min 2-1/4 oz---Max 3-1/2 oz
to start latchlever moving.

2.97 Platen Drive Area (continued)

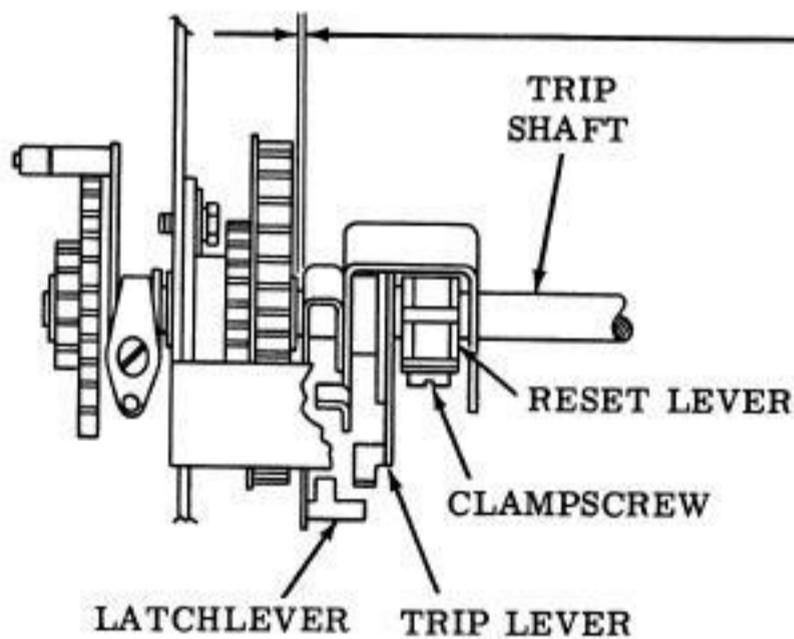
TRIP SHAFT ENDPLAY

Requirement
 Min Some---Max 0.010 inch
 endplay of the trip shaft.

To Adjust
 With clampscrew loosened,
 position reset follower lever
 on trip shaft.



(REAR VIEW)



(REAR VIEW)

TRIP LEVER AND LATCHLEVER ENDPLAY

Requirement
 The trip lever and latchlever shall have
 Min Some---Max 0.010 inch
 endplay.

To Adjust
 With clampscrew loosened, position
 reset lever

→ 2.98 Function and Platen Drive Areas

LINE FEED LEVER LINE-UP AND ENDPLAY

Requirement

- (1) The line feed pawl shall fully engage the flat on the tab of the line feed lever.
- (2) The line feed lever shall have
Min Some---Max 0.010 inch
endplay.
- (3) There must be some clearance between the line feed lever and the main shaft gear.

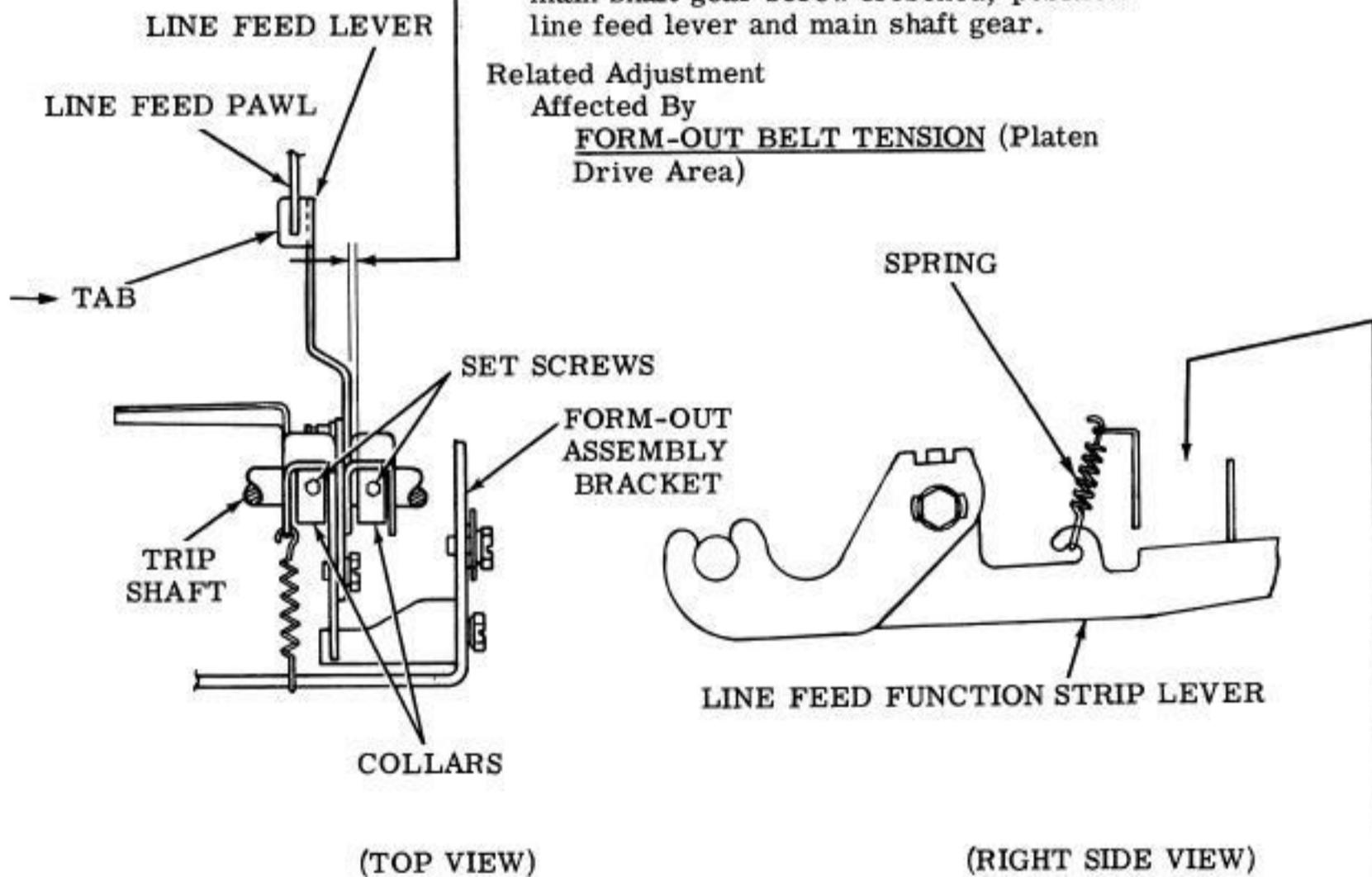
To Adjust

With set screws in two collars and the main shaft gear screw loosened, position line feed lever and main shaft gear.

Related Adjustment

Affected By

FORM-OUT BELT TENSION (Platen Drive Area)

LINE FEED FUNCTION STRIP LEVER SPRING

Requirement

With a spring scale positioned on the line feed function strip lever

Min 64 oz---Max 70 oz
to start the line feed function strip lever moving.

2.99 Platen Drive Area

***Note:** If the form-out character is other than FIGS Z, set up the correct form-out code combination.

FORM-OUT LEVER OVERTRAVEL

To Check

With the "form-out" code combination (1---5)* or (--34---8) set up in selector, rotate the main shaft until the form-out function lever is in its lowermost position.

Requirement

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

To Adjust

With screw loosened and form-out function lever held against its pawl, position arm using pry points.

Related Adjustments

Affected By

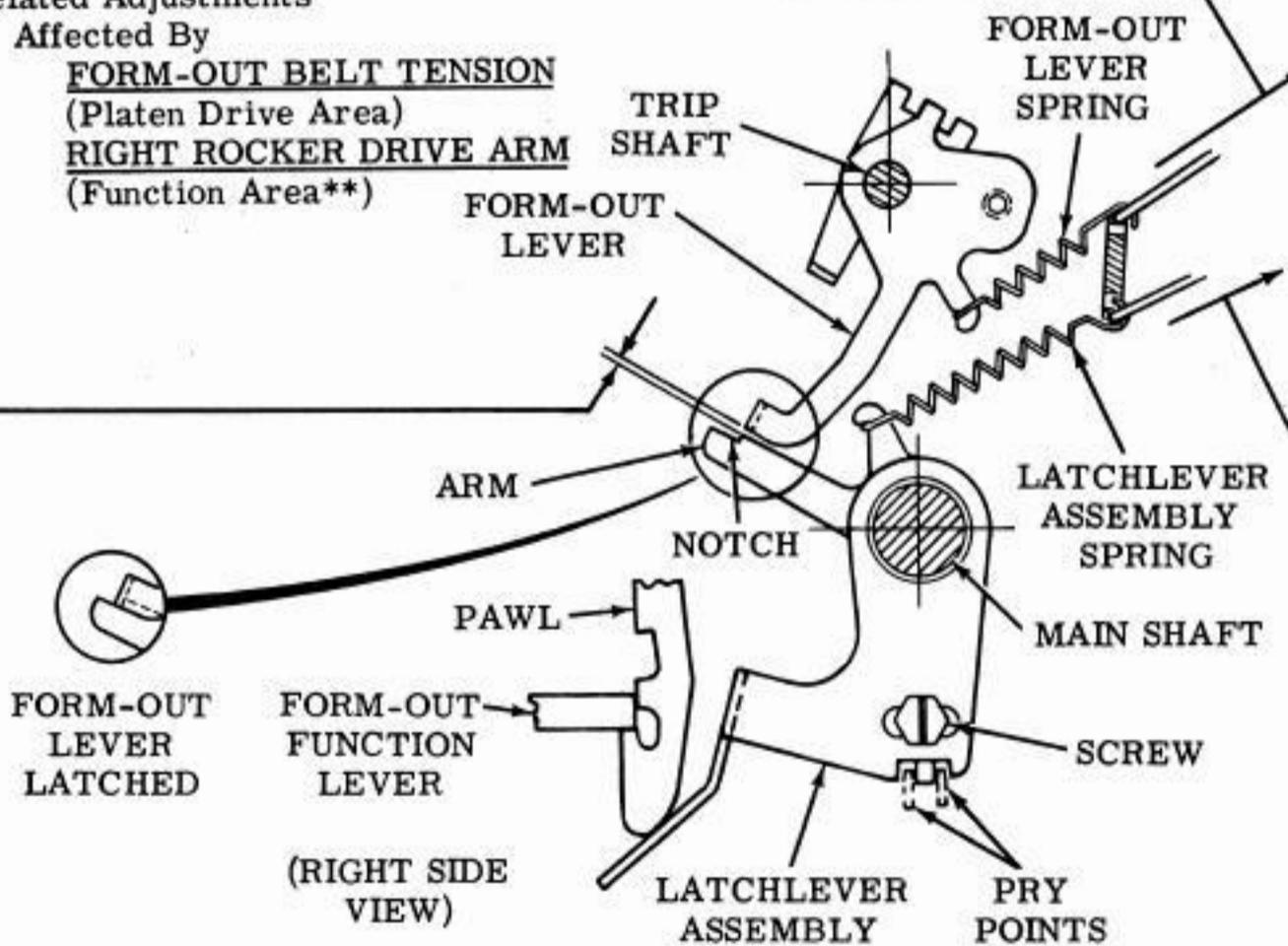
- FORM-OUT BELT TENSION
(Platen Drive Area)
- RIGHT ROCKER DRIVE ARM
(Function Area**)

→ **Common mechanisms

FORM-OUT LEVER SPRING

Requirement

With the form-out lever latched
Min 33 oz---Max 37 oz
to pull form-out lever spring to installed length.



LATCHLEVER ASSEMBLY SPRING

Requirement

With the form-out lever latched
Min 4 oz---Max 5-1/4 oz
to pull latchlever assembly spring to installed length.

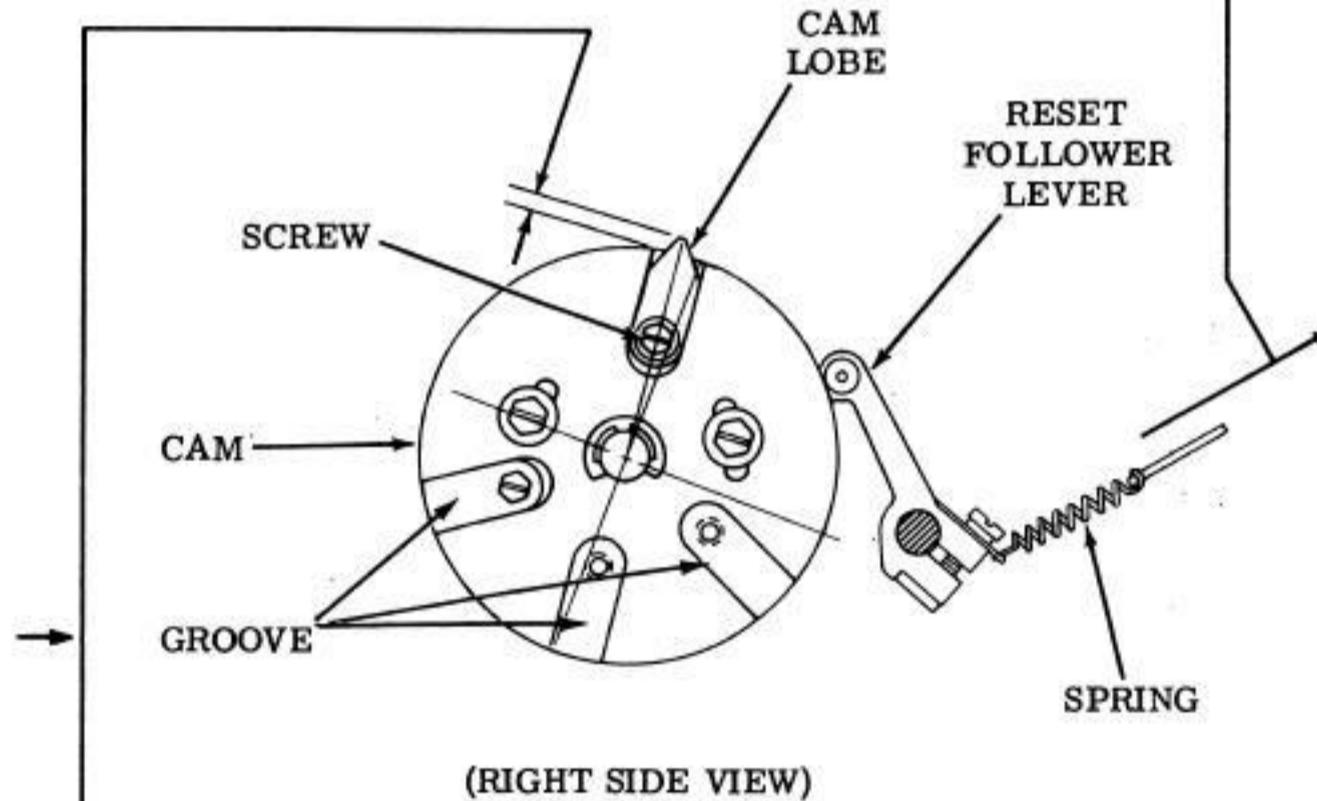
2.100 Platen Drive Area (continued)

RESET FOLLOWER LEVER SPRING

Requirement

With reset follower lever on low part of cam

Min 12 oz---Max 16 oz
to pull reset follower lever
spring to installed length.



CAM LOBE

Note: Cam lobes, in addition to the one opposite the three closely spaced grooves, shall be adjusted according to the RESET adjustment.

Requirement

The top of the cam lobe shall be
Min 0.050 inch---Max 0.055 inch
above the low point of the cam.

To Adjust

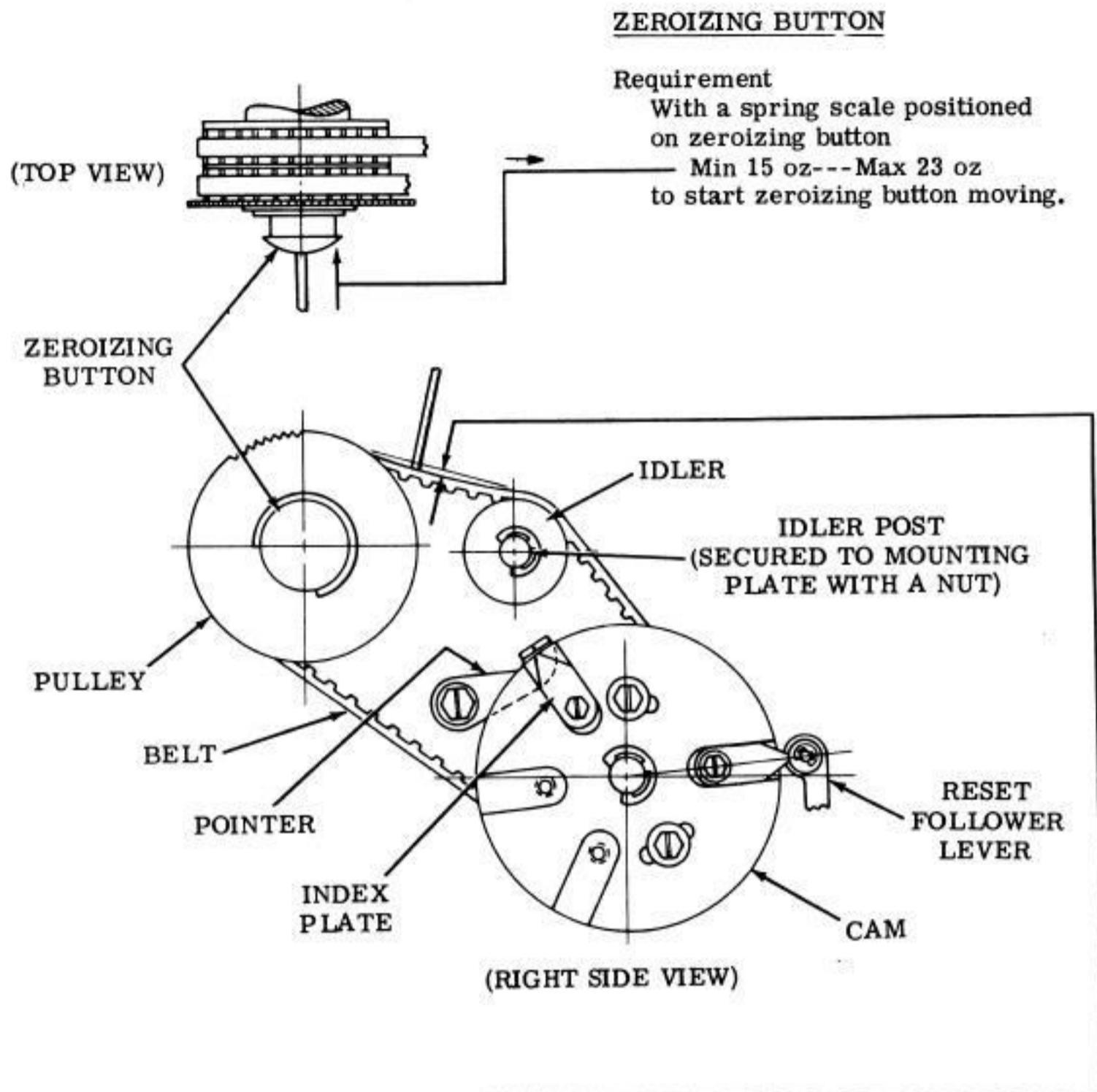
With screw loosened, position the cam lobe.

Related Adjustment

Affects

RESET (Platen Drive Area)

2.101 Platen Drive Area (continued)



IDLER

To Check

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

Requirement

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

To Adjust

Loosen idler post and position.

Note: Check the IDLER (Platen Drive Area) adjustment for each of two belts.

Related Adjustments

Affects

- CAM ZERO POSITION (Platen Drive Area)
- DETENT POSITION (Paper Feed Area*)
- RESET CAM LOBE LINE-UP (Platen Drive Area)

Affected By

- FORM-OUT BELT TENSION (Platen Drive Area)
- PLATEN-HORIZONTAL (Paper Feed Area*)
- PLATEN-VERTICAL (Paper Feed Area*)

*Sprocket Feed Mechanisms

2.102 Platen Drive Area (continued)

RESET

To Check

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

Requirement

Min 0.005 inch---Max 0.015 inch clearance between the latching surface of the arm and the form-out lever.

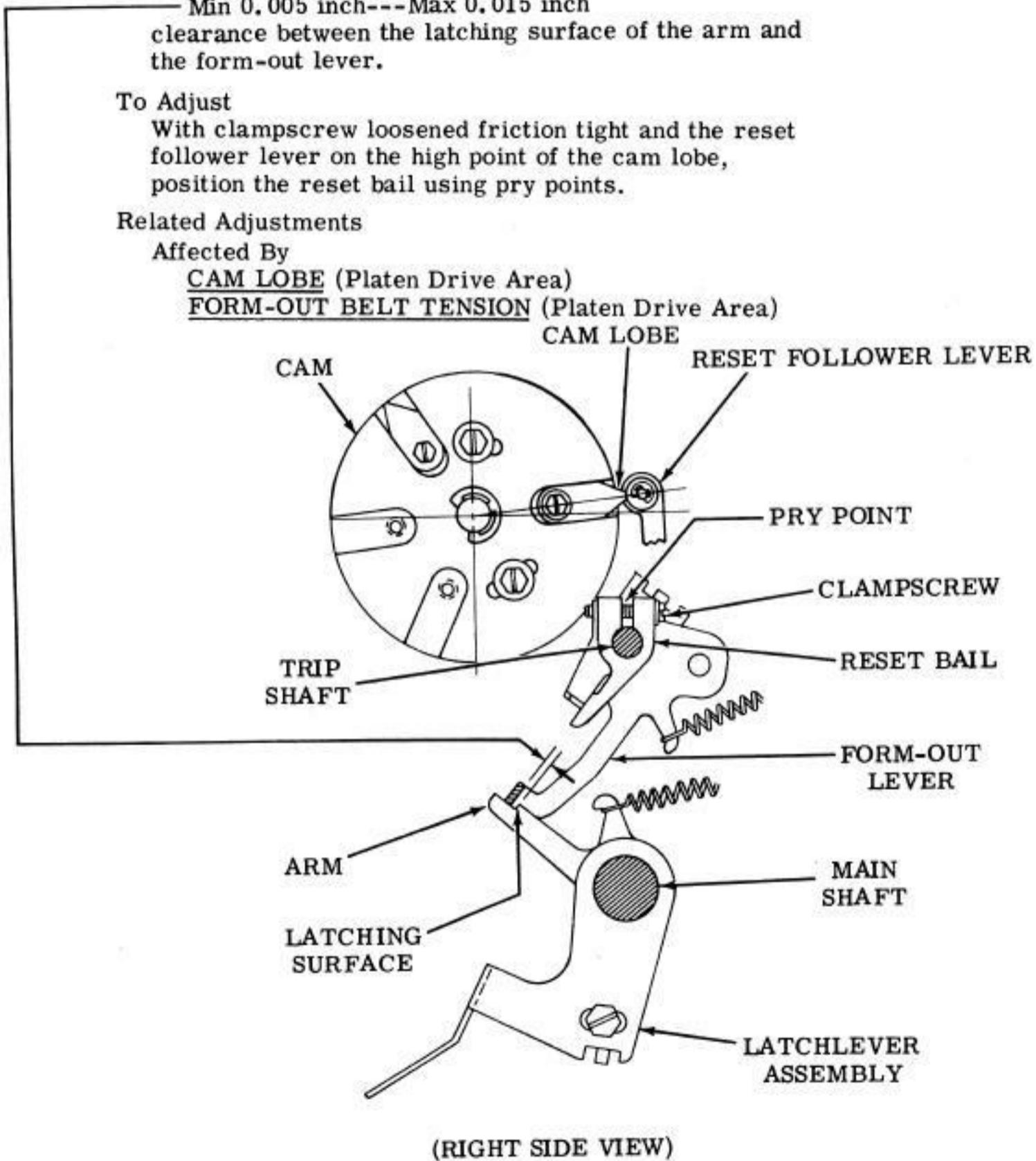
To Adjust

With clampscrew loosened friction tight and the reset follower lever on the high point of the cam lobe, position the reset bail using pry points.

Related Adjustments

Affected By

- CAM LOBE (Platen Drive Area)
- FORM-OUT BELT TENSION (Platen Drive Area)



2.103 Platen Drive Area (continued)

FORM-OUT DOWNSTOP

To Check

With the typing unit in stop condition, place the reset follower lever on the low part of its cam by pushing in on the zeroizing button and rotating the pulley until the required situation is obtained. With screw loosened, position the pry point of the form-out lever to the center of lever groove. Loosen the downstop bracket screw and push the downstop bracket to its lowermost position. Then, with the line feed lever screw loosened, position the line lever so that it does not interfere with the making of this adjustment.

Requirement

The top surface of the trip lever shall be
 Min Flush---Max 0.005 inch
 above top surface of a shoe lever.

Note: Check requirement at each stop-lug.

To Adjust

With form-out lever held against the latching surface of the latchlever assembly arm and the form-out lever screw loosened, position form-out lever using pry points.

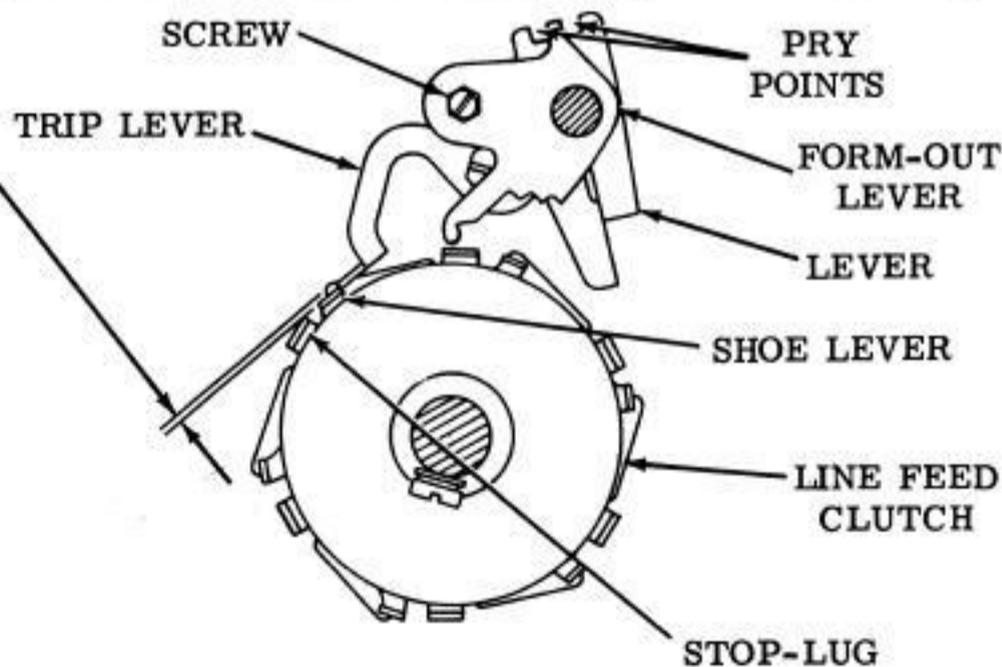
Related Adjustments

Affects

LINE FEED (Platen Drive Area)
LINE FEED DOWNSTOP (Platen Drive Area)

Affected By

FORM-OUT BELT TENSION (Platen Drive Area)
LINE FEED CLUTCH TRIP LEVER (Platen Drive Area)



(LEFT SIDE VIEW)

2.104 Platen Drive Area (continued)

LINE FEED DOWNSTOP

To Check

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

Requirement

The top surface of the trip lever shall be
 Min Flush---Max 0.005 inch
 above top surface of a shoe lever.

Note: Check requirement at each stop-lug.

To Adjust

Loosen screw and position the line feed lever so that it does not interfere with the making of this adjustment. With downstop bracket screw loosened, position downstop bracket so that line feed bail positions trip lever to meet requirement.

Related Adjustments

Affects

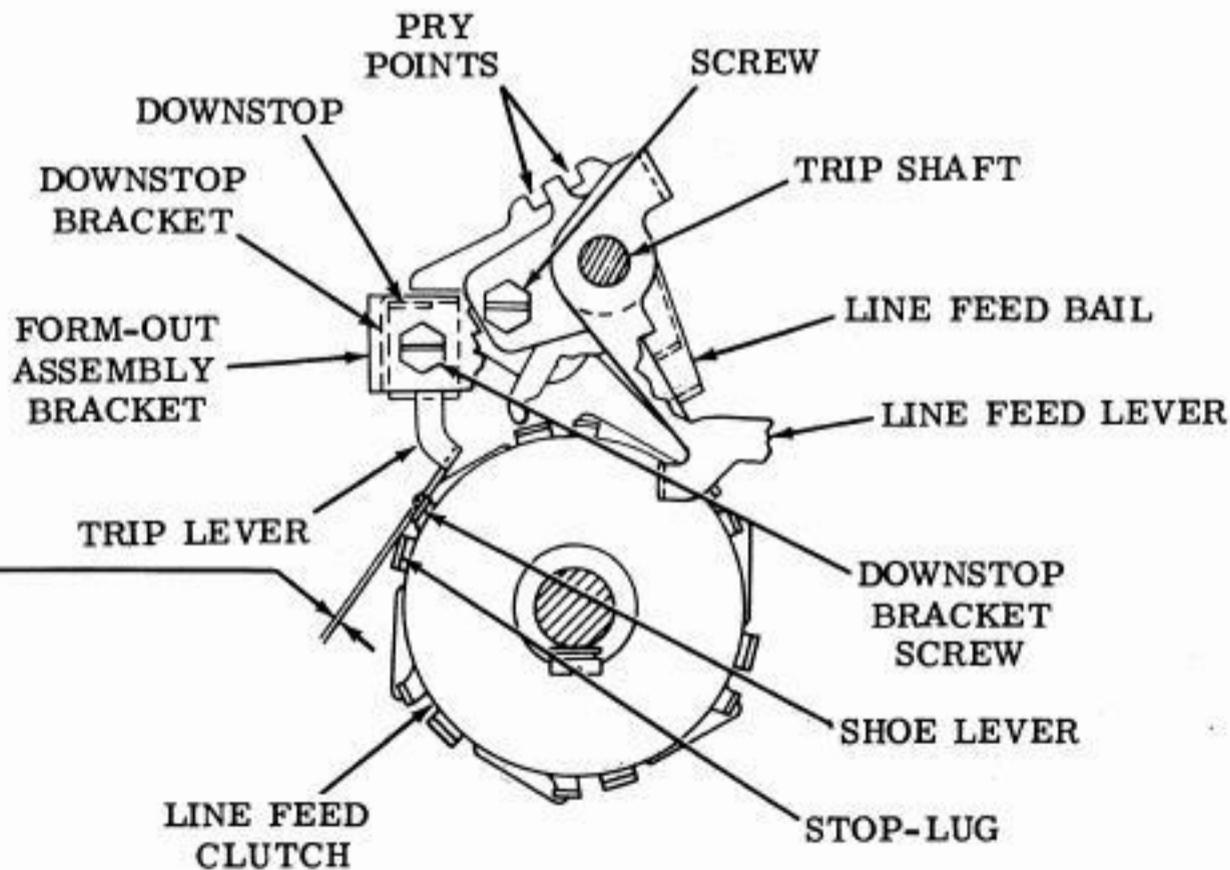
LINE FEED (Platen Drive Area)

Affected By

FORM-OUT BELT TENSION (Platen Drive Area)

FORM OUT DOWNSTOP (Platen Drive Area)

LINE FEED CLUTCH TRIP LEVER (Platen Drive Area)



(LEFT SIDE VIEW)

2.105 Platen Drive Area (continued)

LINE FEED LEVER UPSTOP

To Check

Set up the typing unit for double line feed (see LINE FEED LEVER (Platen Drive Area) adjustment). Trip line feed clutch and rotate main shaft until the blocking edge of the trip lever is in line with the counterclockwise edge of a stop-lug.

Requirement

Min 0.030 inch---Max 0.035 inch
between trip lever and stop lug.

To Adjust

Note: For typing units with a reader feed magnet contact assembly, remove it. Replace it after making adjustment. For instructions, see the appropriate tape reader section.

With screws loosened, position upstop.

Related Adjustments

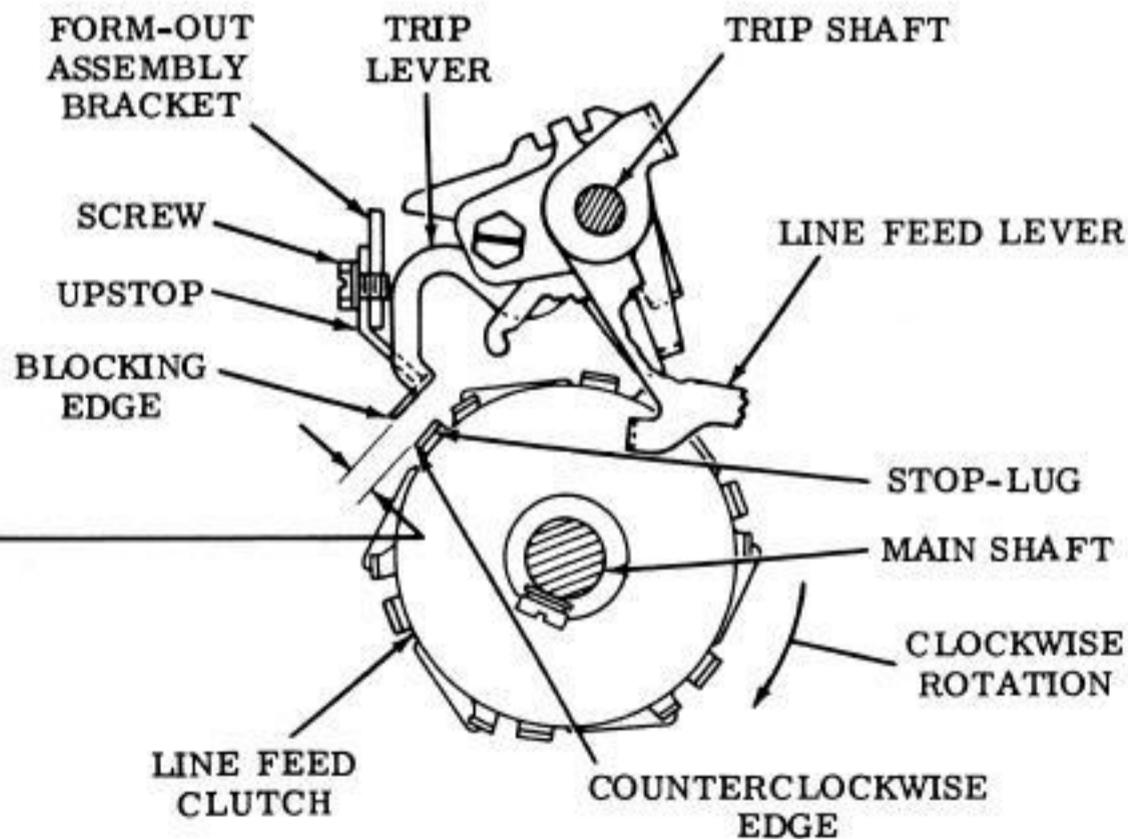
Affects

CONTACT GAP (applies to typing units with a reader feed magnet contact assembly. For adjustment instructions, see the appropriate tape reader section).

LINE FEED (Platen Drive Area)

Affected By

FORM-OUT BELT TENSION (Platen Drive Area)



(LEFT SIDE VIEW)

2.106 Function Area

LINE FEED STRIP LEVER

Note: The typing unit was set up for double line feed during the LINE FEED LEVER UPSTOP (Platen Drive Area) adjustment and shall remain in that condition for this adjustment.

To Check

With the typing unit set up for double line feed (LINE FEED (Platen Drive Area) adjustment), push the line feed strip lever down and allow the line feed upstop pawl to assume its normal position against the line feed strip lever. Manually set up the LINE FEED code combination in the selector and rotate the main shaft until the line feed clutch trip lever trips.

To Adjust

Place the typing unit in the stop condition. Push the line feed strip lever down and allow the line feed upstop pawl to assume its normal position against the line feed strip lever. After loosening the screw friction tight and positioning it to the most forward position in its elongated hole, manually set up the LINE FEED code combination in the selector. Rotate the main shaft until the line feed clutch trip lever trips and just passes over the second of two shoe levers. Using pry points, carefully pry the line feed strip lever to the rear to where the line feed pawl just strips off the line feed function lever. Repeat this adjustment procedure and refine if necessary.

Related Adjustments

Affects

LINE FEED (Platen Drive Area)

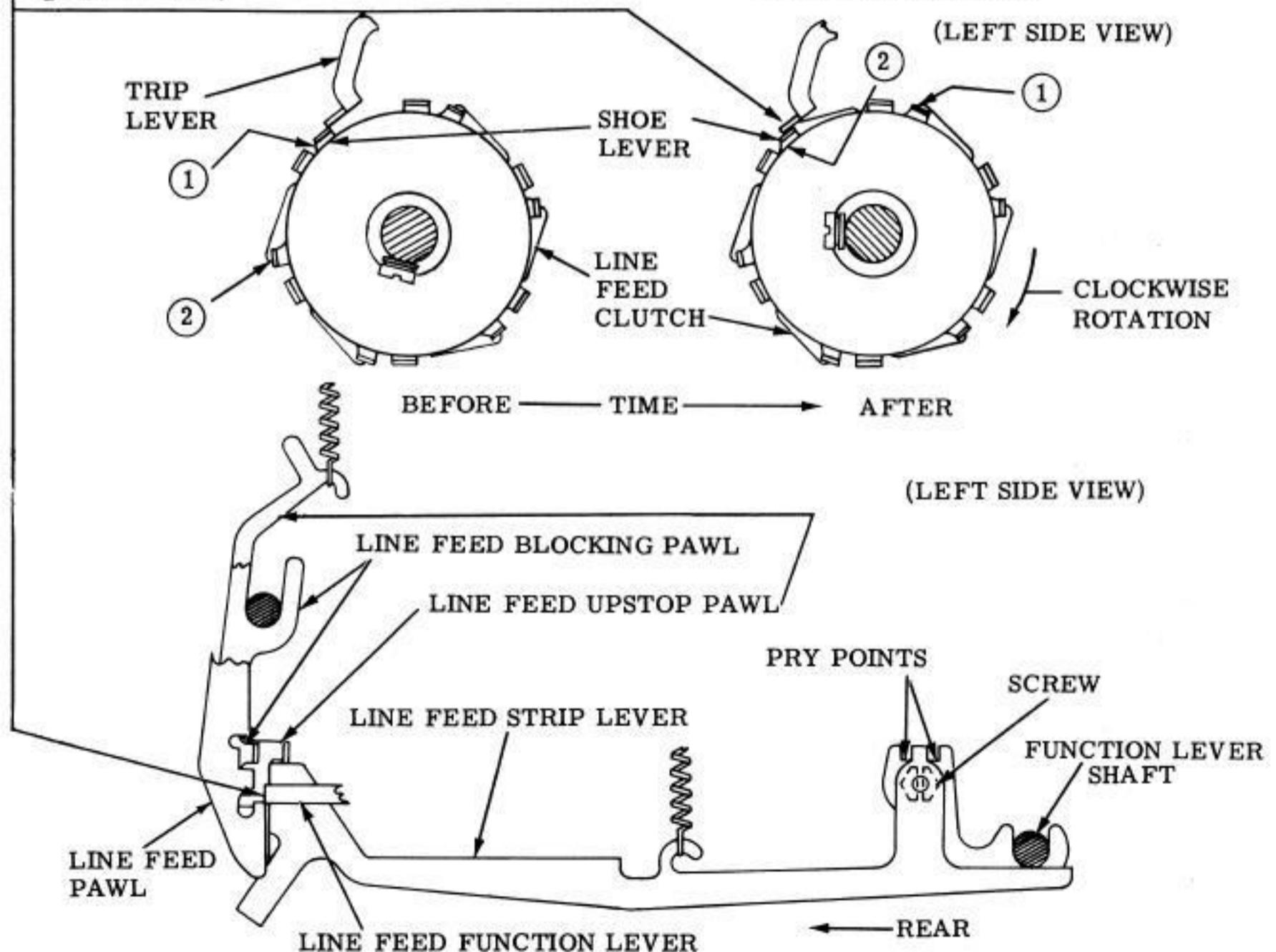
Affected By

RIGHT ROCKER DRIVE ARM (Function Area*)

*Common Mechanisms

Requirement

After the line feed clutch trip lever has just passed over the second of two shoe levers, the line feed pawl shall strip the line feed function lever.



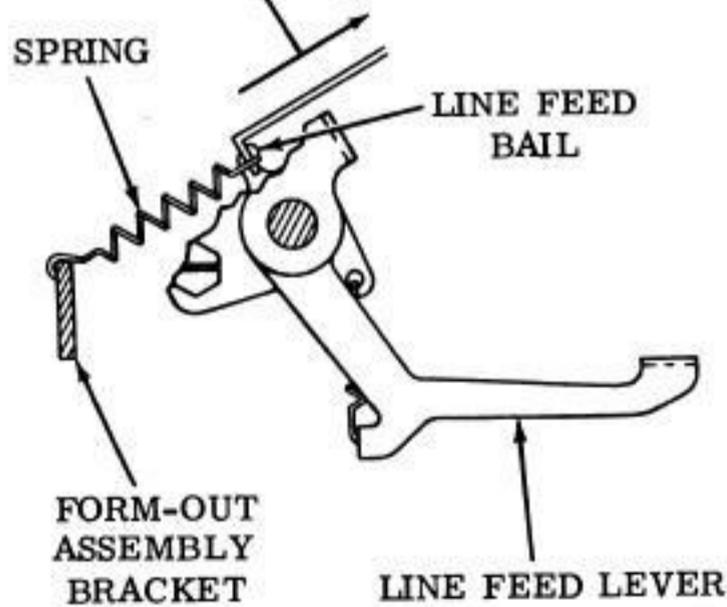
2.107 Platen Drive Area

LINE FEED BAIL SPRING

Requirement
 Min 6-1/4 oz---Max 7-1/2 oz
 to pull line feed bail spring to
 installed length.

LINE FEED LEVER SPRING

Requirement
 With arm held against its downstop
 Min 17-3/4 oz---Max 24-1/2 oz
 to start line feed lever moving.



(LEFT SIDE VIEW)

LINE FEED

To Check

Place typing unit in stop condition.

Requirement

Single line feed:

Min 0.115 inch---Max 0.125 inch
 between pawl and line feed lever.

Double line feed:

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

To Adjust

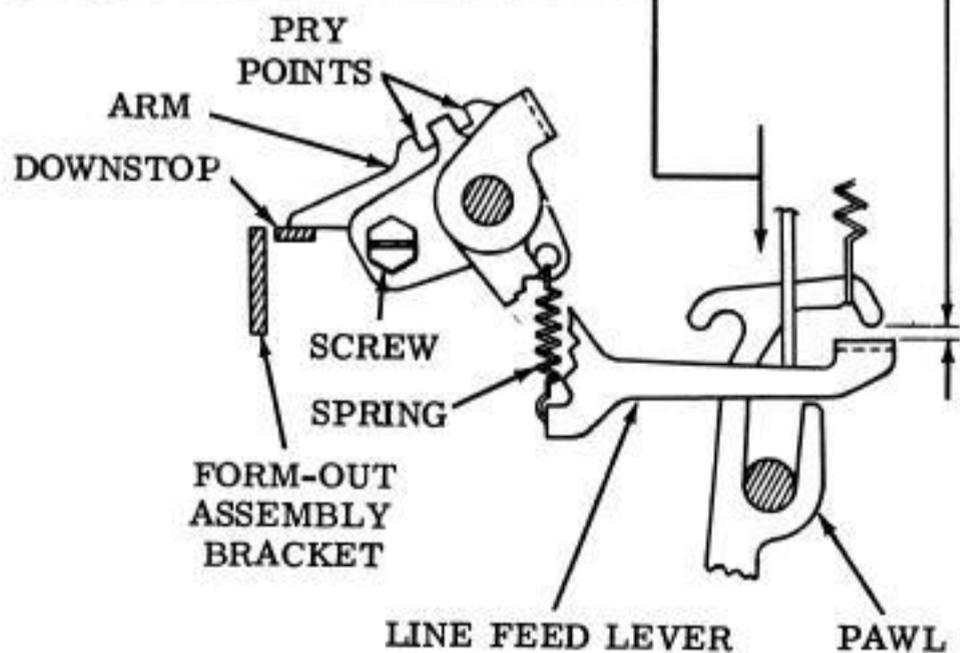
While holding rear part of line feed lever
 against downstop, loosen screw friction
 tight. Position line feed lever using pry
 points.

Related Adjustments

Affected By

- FORM-OUT BELT TENSION (Platen Drive Area)
- FORM-OUT DOWNSTOP (Platen Drive Area)
- LINE FEED DOWNSTOP (Platen Drive Area)
- LINE FEED LEVER UPSTOP (Platen Drive Area)
- LINE FEED STRIP LEVER (Function Area*)

*Sprocket Feed Mechanisms



(LEFT SIDE VIEW)

2.108 Paper Feed Area

DETENT POSITION

To Check

Set up a LINE FEED code combination in the selector and clear it through the typing unit by manual operation. Disengage (latch) all clutches.

Requirement

- (1) The pawl shall be fully seated in the groove of the detent ratchet.
- (2) Min Some---Max 0.030 inch between the plate and detent ratchet.

To Adjust

Set up a LINE FEED code combination in the selector. With the set screws loosened, apply finger pressure to the pawl to fully seat it in a groove of the detent ratchet and manually operate the typing unit to complete the line feed cycle. Disengage (latch) all clutches and tighten set screws to meet requirement.

Related Adjustments

Affected By

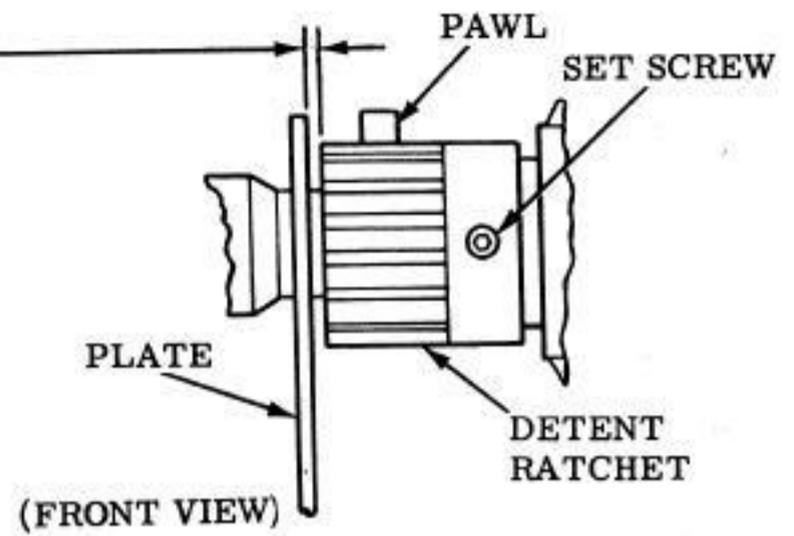
FORM-OUT BELT TENSION (Platen Drive Area)

IDLER (Platen Drive Area)

PLATEN-HORIZONTAL (Paper Feed Area*)

PLATEN-VERTICAL (Paper Feed Area*)

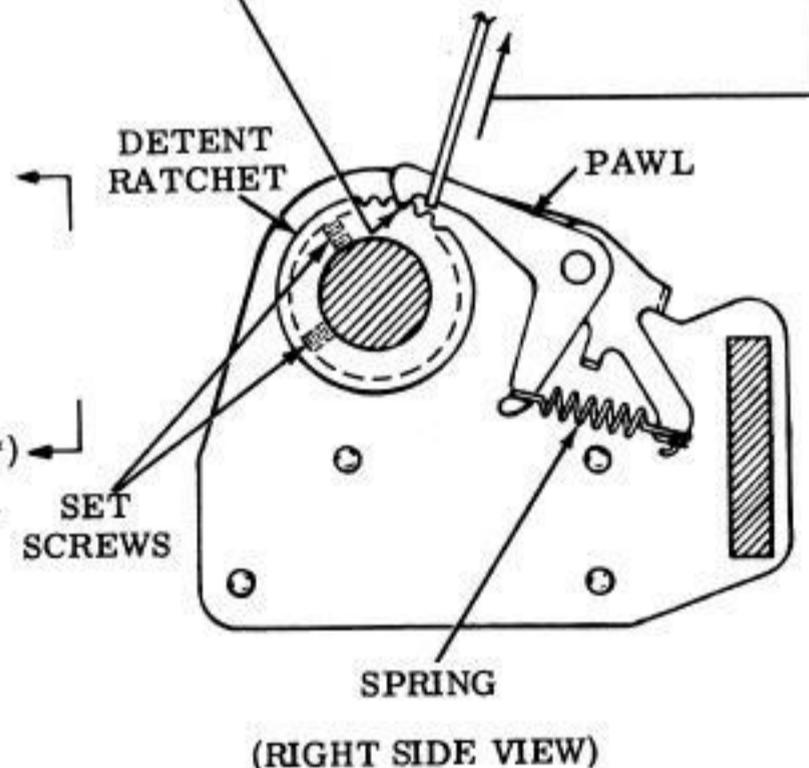
*Sprocket Feed Mechanisms



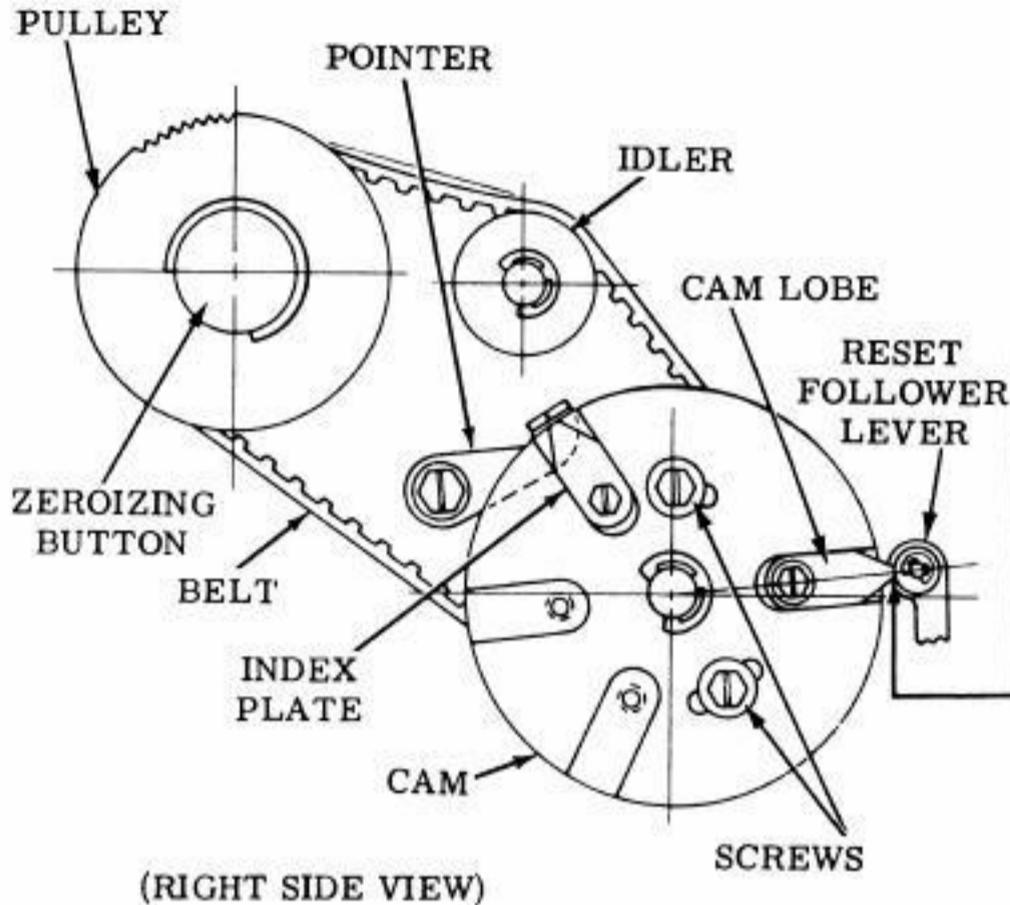
DETENT RATCHET PAWL SPRING

Requirement

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



2.109 Platen Drive Area



(RIGHT SIDE VIEW)

RESET CAM LOBE LINE-UP

To Check

With typing unit under power, depress the form-out keytop to initiate a form-out cycle.

Requirement

At the end of a form-out cycle, the reset follower lever shall come to rest on the high point of the cam lobe.

To Adjust

With screws loosened, adjust cam.

Related Adjustments

Affects

CAM ZERO POSITION (Platen Drive Area)

Affected By

FORM-OUT BELT TENSION (Platen Drive Area)

IDLER (Platen Drive Area)

CAM ZERO POSITION

To Check

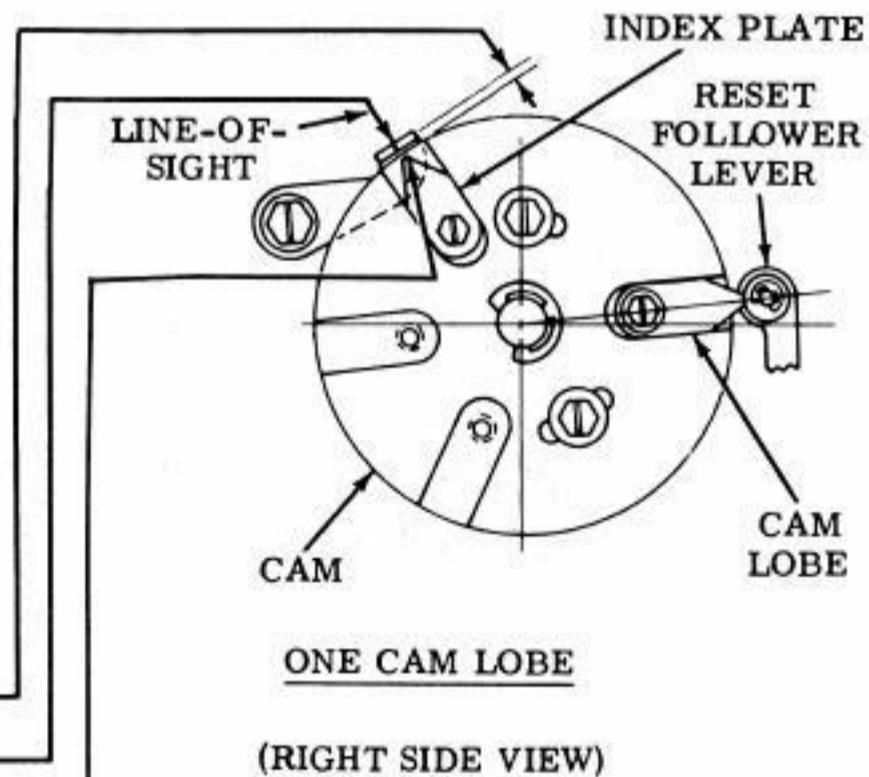
With cam lobes and index plates located on cam as shown on line drawings associated with this adjustment, place typing unit in stop condition.

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

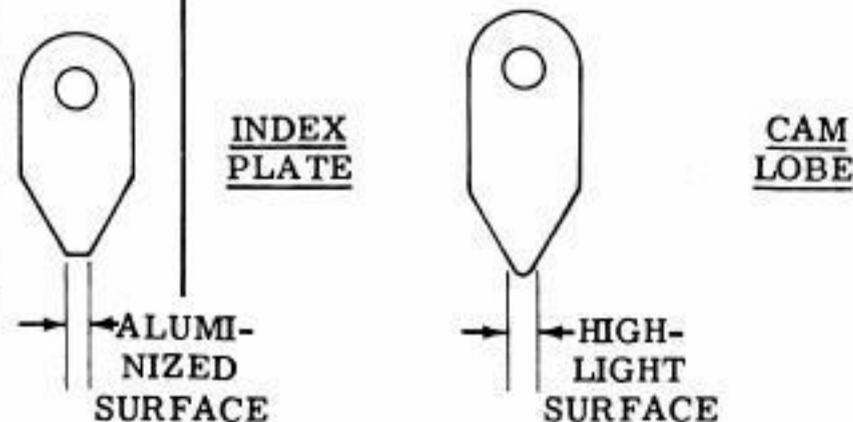
Requirement

One cam lobe:

- (1) With reset follower lever on high point of cam lobe and zeroizing button in its most right position
Min 0.025 inch---Max 0.035 inch between bottom surface of pointer and low part of cam.
- (2) With one's line-of-sight in line with the aluminized surface of index plate and center of cam shaft, tip of pointer shall fall within aluminized surface on plate.



(RIGHT SIDE VIEW)

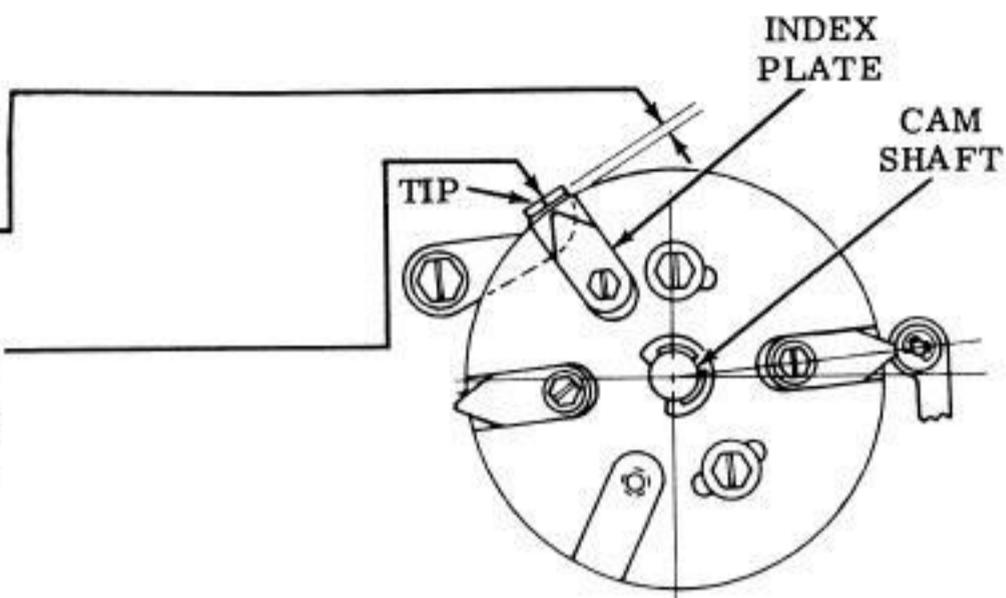


2.110 Platen Drive Area (continued)

CAM ZERO POSITION (Continued)

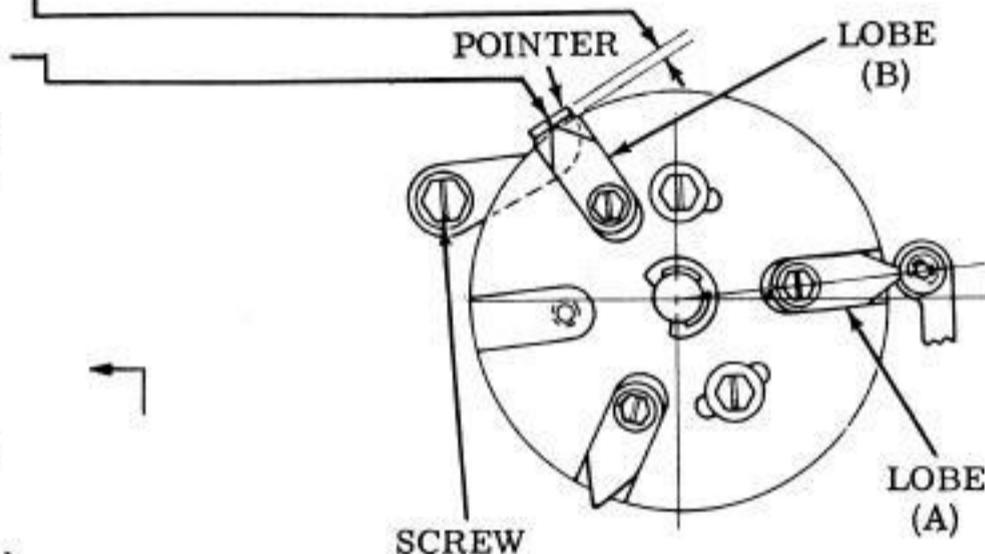
Two cam lobes:

- (1) With reset follower lever on high point of cam lobe and zeroizing button in its most right position
Min 0.025 inch---Max 0.035 inch between bottom surface of pointer and low part of cam.
- (2) With one's line-of-sight in line with the aluminized surface of index plate and center of cam shaft, tip of pointer shall fall within aluminized surface on plate.

TWO CAM LOBES

Three cam lobes:

- (1) With reset follower lever on high point of cam lobe (A) and zeroizing button in its most right position
Min 0.025 inch---Max 0.035 inch between bottom surface of pointer and low part of cam.
- (2) With one's line-of-sight in line with the highlight surface of cam lobe (B) and center of cam shaft, tip of pointer shall fall within highlight surface on lobe (B).

THREE CAM LOBES

(RIGHT SIDE VIEWS)

To Adjust

With screw loosened, position pointer.

Related Adjustments

Affected By

FORM-OUT BELT TENSION (Platen Drive Area)IDLER (Platen Drive Area)PLATEN-HORIZONTAL (Paper Feed Area*)PLATEN-VERTICAL (Paper Feed Area*)RESET CAM LOBE LINE-UP (Platen Drive Area)

*Sprocket Feed Mechanisms

2.111 Platen Drive Area (continued)

READER-STOP CONTACT

To Check

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

Requirement

Min 0.010 inch---Max 0.015 inch between reader-stop bail and insulator.

To Adjust

With clampscrew loosened, position contact bracket.

Related Adjustment

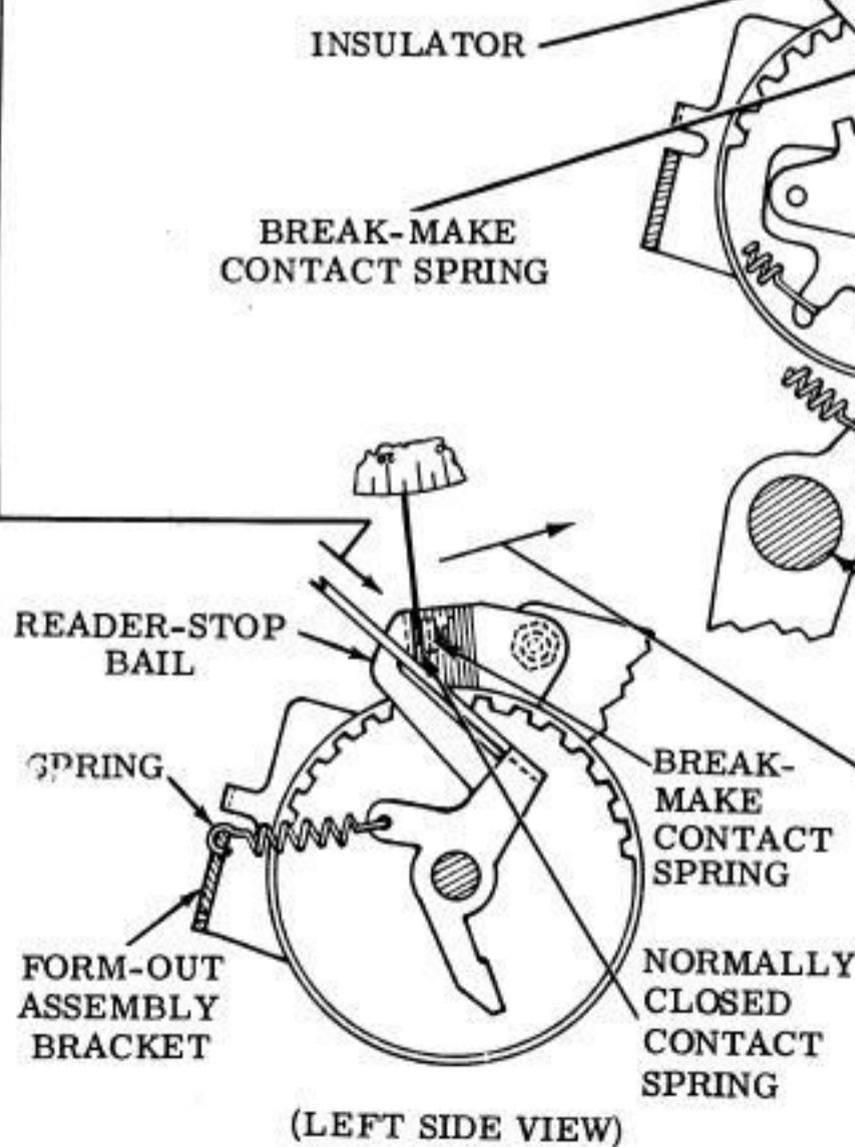
Affected By

FORM-OUT BELT TENSION (Platen Drive Area)

READER-STOP BAIL SPRING

Requirement

With the form-out lever latched
Min 1-1/4 oz---Max 2-1/2 oz to start reader-stop bail spring moving.



READER-STOP CONTACT GAP

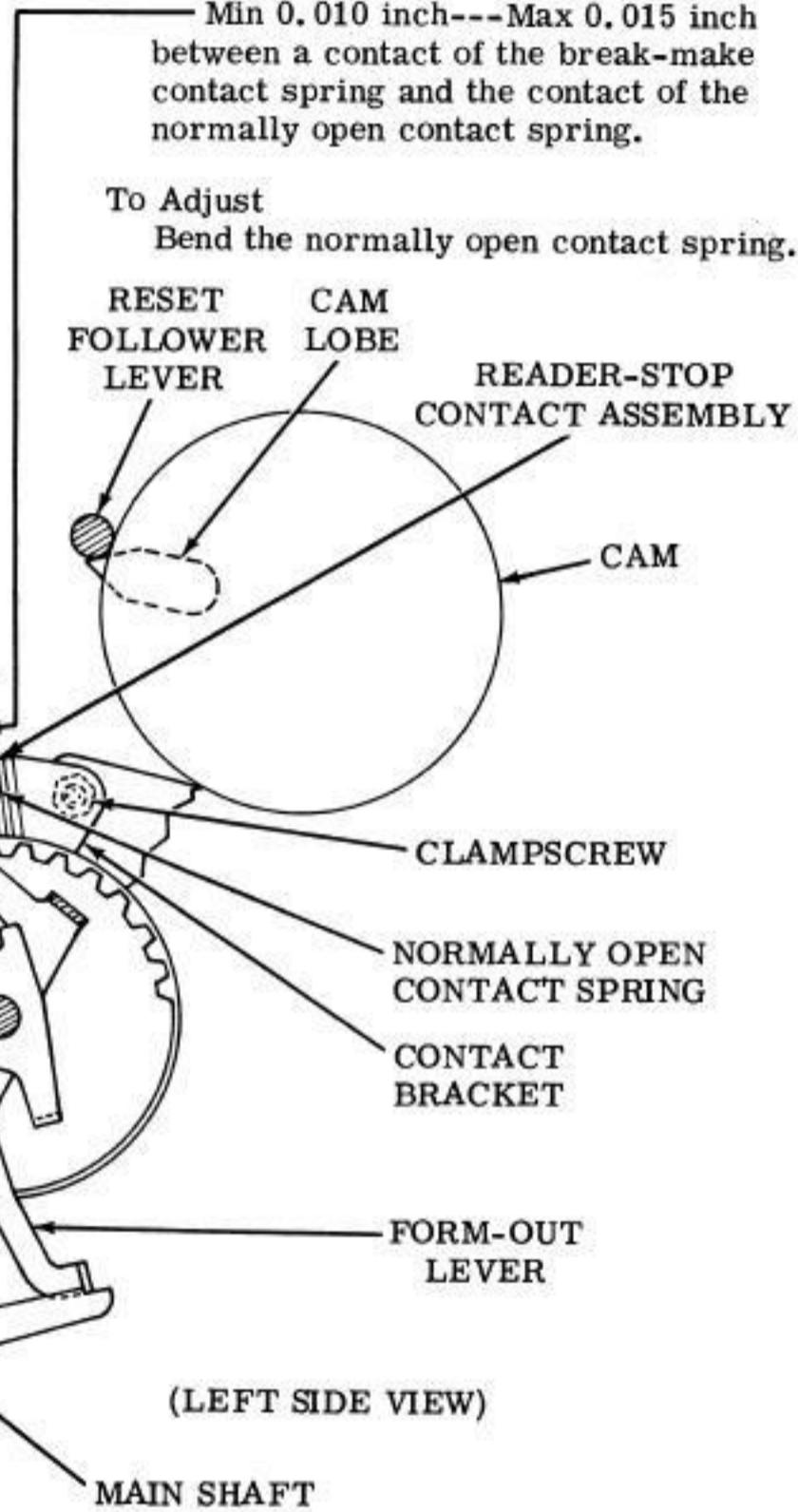
Requirement

With the reader-stop bail not in contact with the insulator

Min 0.010 inch---Max 0.015 inch between a contact of the break-make contact spring and the contact of the normally open contact spring.

To Adjust

Bend the normally open contact spring.



READER-STOP CONTACT PRESSURE

Requirement

With the reader-stop bail not in contact with the insulator

Min 15 grams---Max 20 grams to separate break-make contact spring and the normally closed contact spring.

To Adjust

Bend the normally closed contact spring.

LEFT HAND MARGIN

To Check

Place carriage to the left hand margin, fully seating the piston in the dashpot cylinder.

Requirement

Min 0.055 inch---Max 0.065 inch between the closest sprocket ring pin and the ribbon lifter.

To Adjust

With two dashpot cylinder mounting screws loosened, position dashpot cylinder.

Related Adjustments

Affects

- CARRIAGE RETURN UNLATCH LEVER (Spacing Area)
- LINE LENGTH (Function Area**)
- RIGHT HAND MARGIN (Paper Feed Area*)

Affected By

- LEFT MARGIN (Spacing Area)
- LEFT SPROCKET RING (Paper Feed Area*)

RIGHT HAND MARGIN

To Check

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

Requirement

Min 0.030 inch clearance between sprocket ring pin and the ribbon lifter.

To Adjust

Refine LEFT HAND MARGIN (Paper Feed Area*) adjustment.

Related Adjustments

Affects

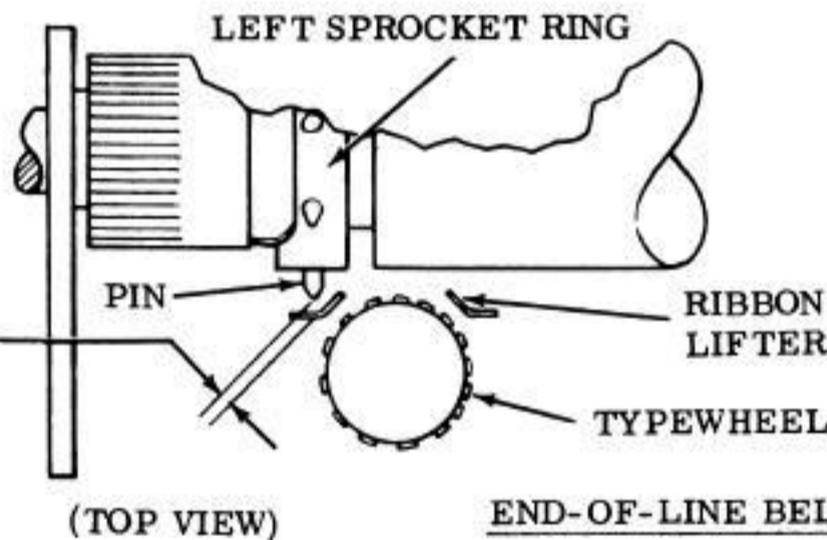
- LINE LENGTH (Function Area**)

Affected By

- LEFT HAND MARGIN (Paper Feed Area*)
- LEFT MARGIN (Spacing Area)
- RIGHT SPROCKET RING (Paper Feed Area*)

*Sprocket Feed Mechanisms

**Common Mechanisms



END-OF-LINE BELL

CAUTION: THIS ADJUSTMENT APPLIES ONLY TO TYPING UNITS WITH SPROCKET FEED.

Requirement

The end-of-line bell shall ring at the proper time when a 72 character line length is provided.

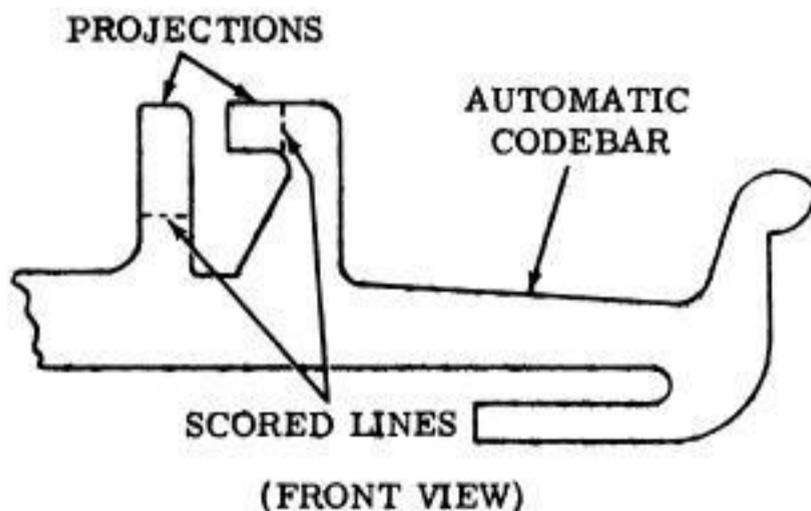
To Adjust

Use either TP180948 or TP183498 automatic codebar and no other. Do not remove any projections from TP180948 automatic codebar.

Related Adjustment

Affected By

- LINE LENGTH (Function Area**)



2.113 Paper Feed Area (continued)

PRINTING LINE POSITION

To Check

With a single sheet of a sprocket form in the platen mechanism, place platen in its detent position with the top edge of the feed holes of the sprocket form engaged with the top edge of the left and right sprocket ring pins. Print the character "M" several times to establish a printing line.

Requirement

Printed Form:

Printed line shall be in register with sprocket form.

Nonprinted Form:

(1) A horizontal line shall be 1/6 inch, or a multiple of 1/6 inch, from the bottom of any feed hole.

(2) The bottom of a printing line shall be 1/32 inch \pm 1/64 inch above a horizontal line.

To Adjust

With set screws loosened, position the right and/or left sprocket rings.

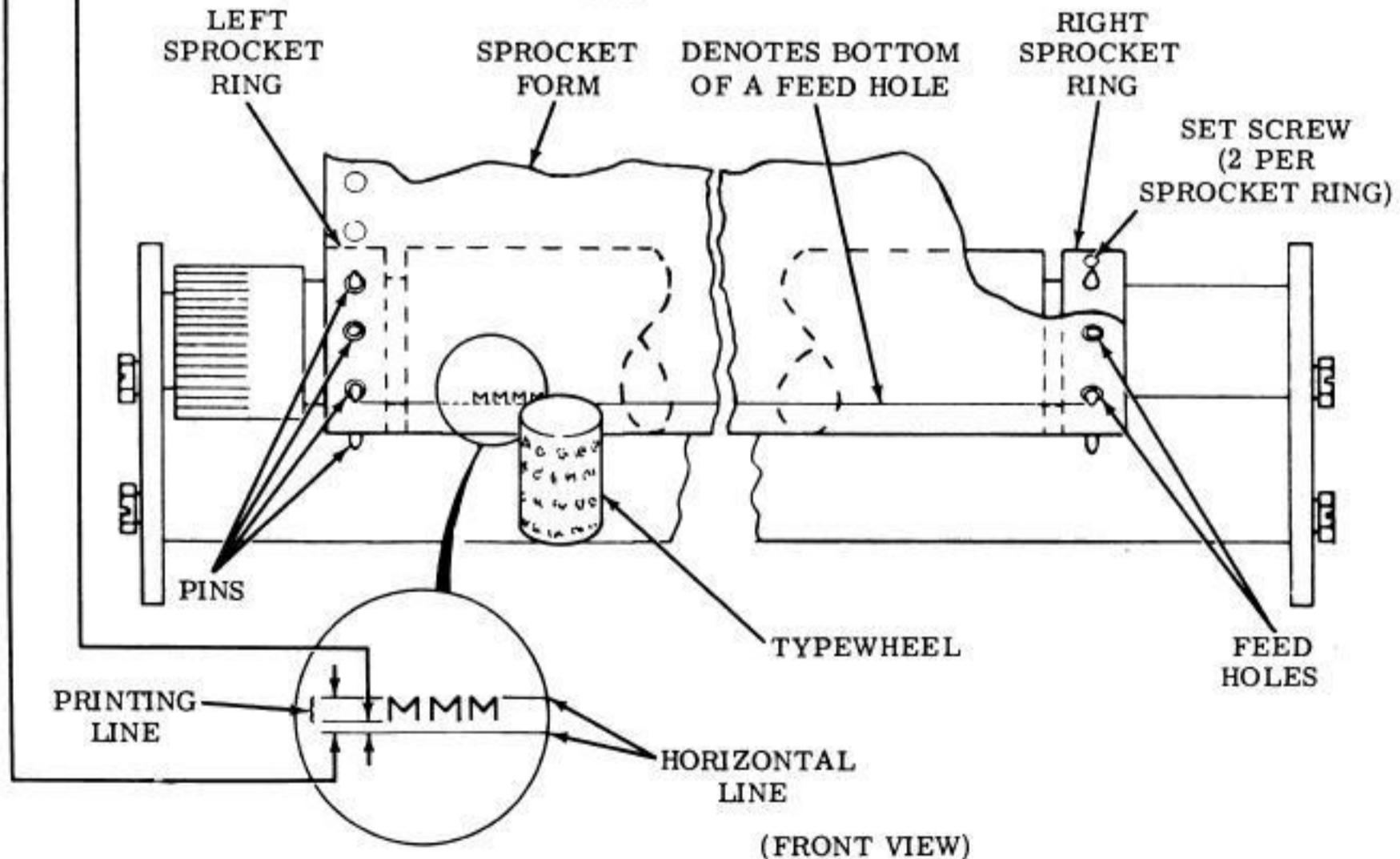
Related Adjustments

Affected By

LEFT SPROCKET RING (Paper Feed Area*)

RIGHT SPROCKET RING (Paper Feed Area*)

*Sprocket Feed Mechanisms



2.114 Platen Drive Area

FORM LENGTH**To Check**

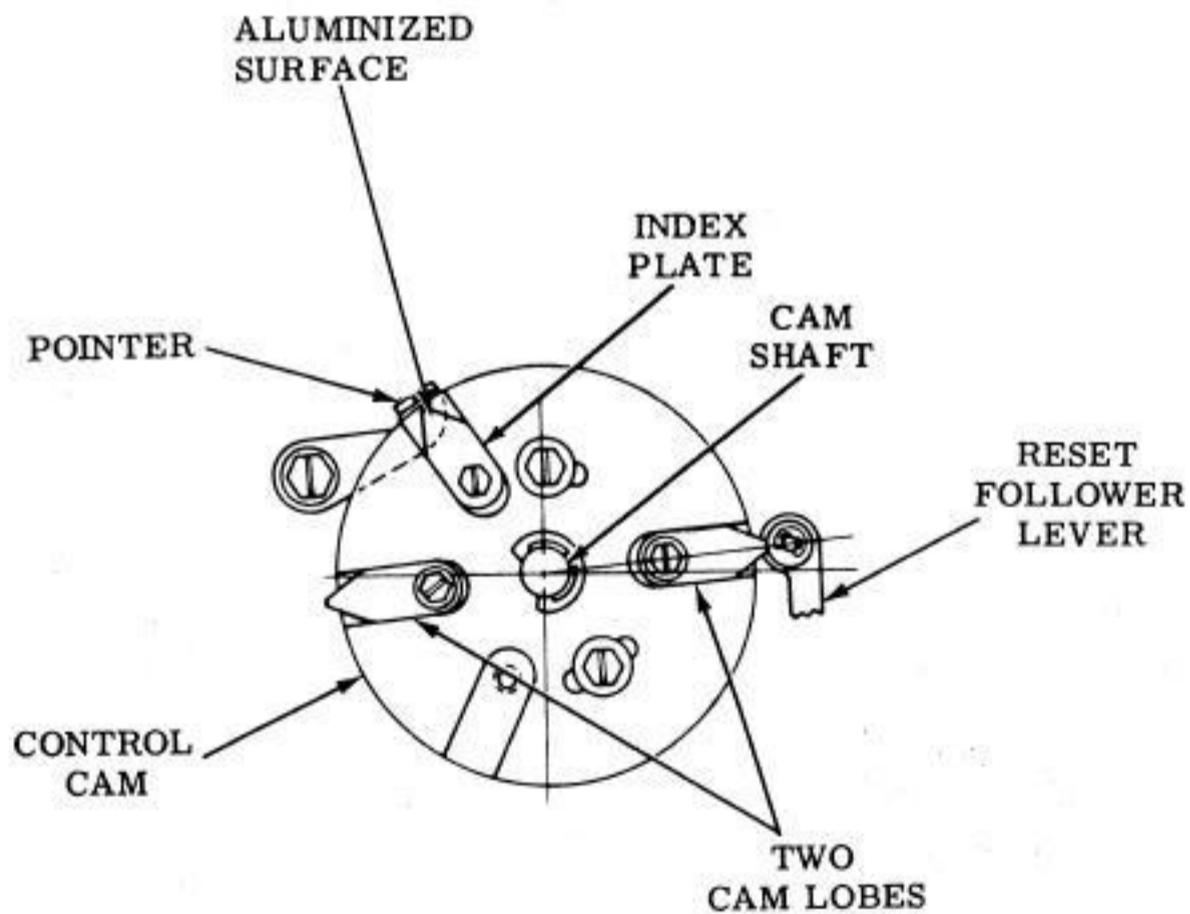
The control cam of the platen drive mechanism normally will come with two cam lobes. This causes sprocket forms to feed out one-half the basic form length.

Requirement

A longer form length.

To Adjust

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



(RIGHT SIDE VIEW)

2.115 Paper Feed Area

WIRE GUIDE—FINAL

To Check

With a single sheet of sprocket form in the platen mechanism, place platen in its detent position with the top edge of the feed holes of the sprocket form engaged with the top edge of the sprocket ring pins.

Requirement

Wire guide shall lie between printing lines.

To Adjust

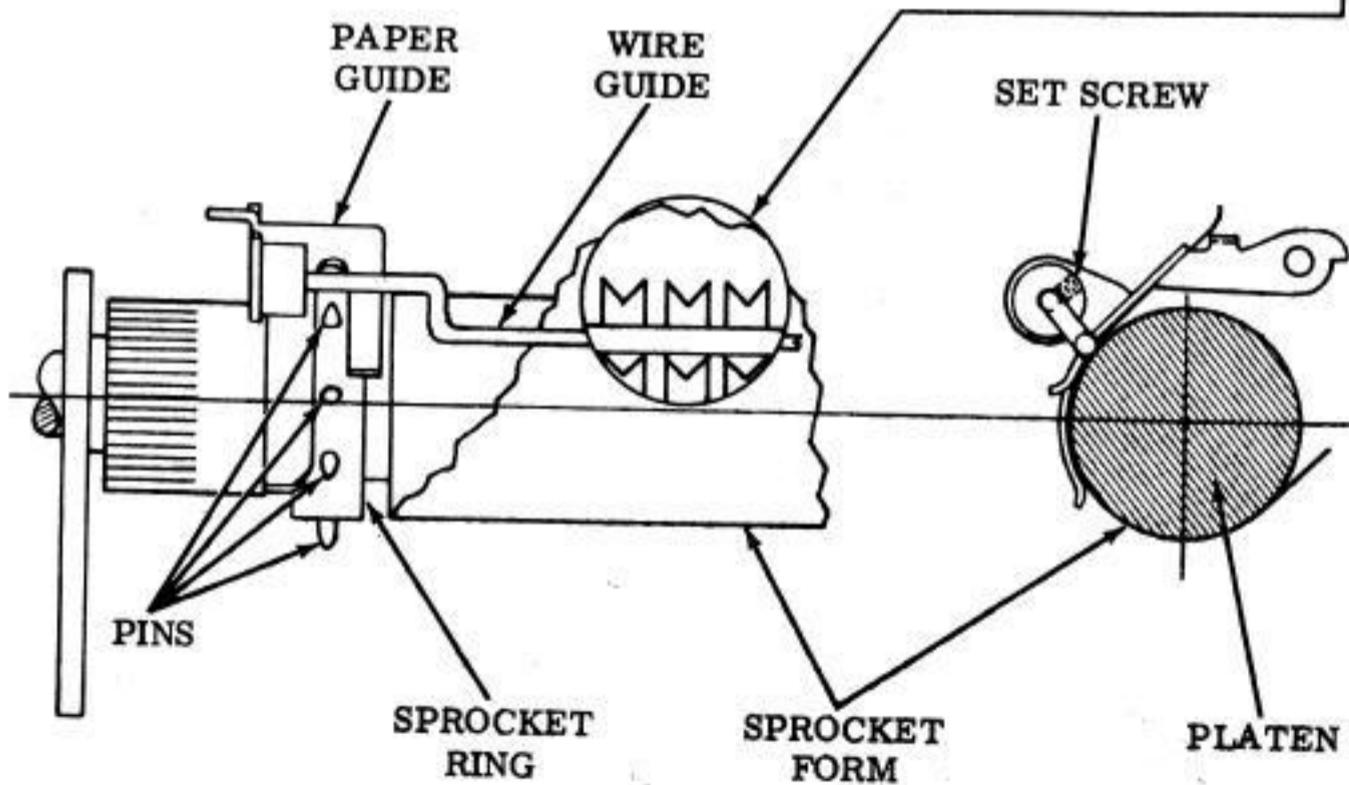
Loosen set screws. Hold sprocket form and the left and right paper guides against the left and right sprocket rings respectively. Rotate wire guide in a clockwise direction (as viewed from the right side) until it just comes into contact with the sprocket form.

Related Adjustments

Affected By

- LEFT SPROCKET RING (Paper Feed Area*)
- PLATEN-HORIZONTAL (Paper Feed Area*)
- PLATEN-VERTICAL (Paper Feed Area*)
- RIGHT GUIDE (Paper Feed Area*)
- RIGHT SPROCKET RING (Paper Feed Area*)
- WIRE GUIDE-PRELIMINARY (Paper Feed Area*)

*Sprocket Feed Mechanisms



(FRONT VIEW)

(RIGHT SIDE VIEW)

3. VARIATIONS TO BASIC UNITS

3.01 Answer-Back Area

BLOCKING FOLLOWER LEVER

To Check

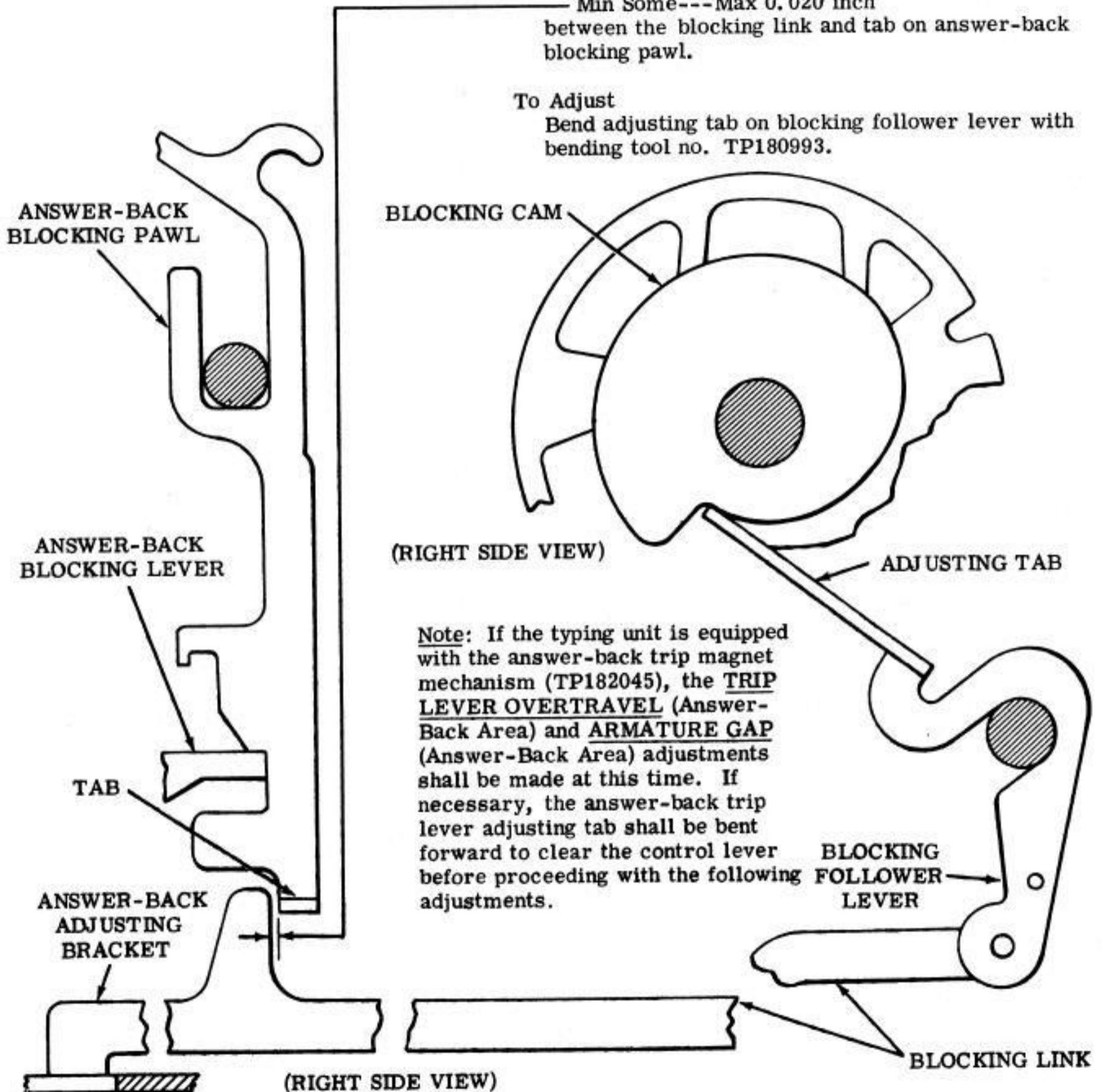
Disengage (latch) distributor and function clutches, engage the answer-back blocking lever fully in indent of answer-back blocking pawl. Take up play in the blocking cam in a downward direction, and hold the answer-back blocking pawl toward the front of the typing unit.

Requirement

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

To Adjust

Bend adjusting tab on blocking follower lever with bending tool no. TP180993.



3.02 Answer-Back Area (continued)

Note 1: For instructions on coding the answer-back drum, see the appropriate typing unit section.

DRUM

To Check

Engage lower extension of control lever in indent of answer-back drum and locate detent lever between "ST" and "20" rows on answer-back drum. Disengage (latch) distributor clutch.

Note 2: If necessary to insure clearance between the feed lever adjusting tab and the control lever, bend the feed lever adjusting tab toward the front of the typing unit.

Hold the feed pawl out of engagement with the answer-back drum and manually move the upper extension of the control lever toward the rear of the typing unit while checking to see that the answer-back drum is fully detented. Move the upper extension

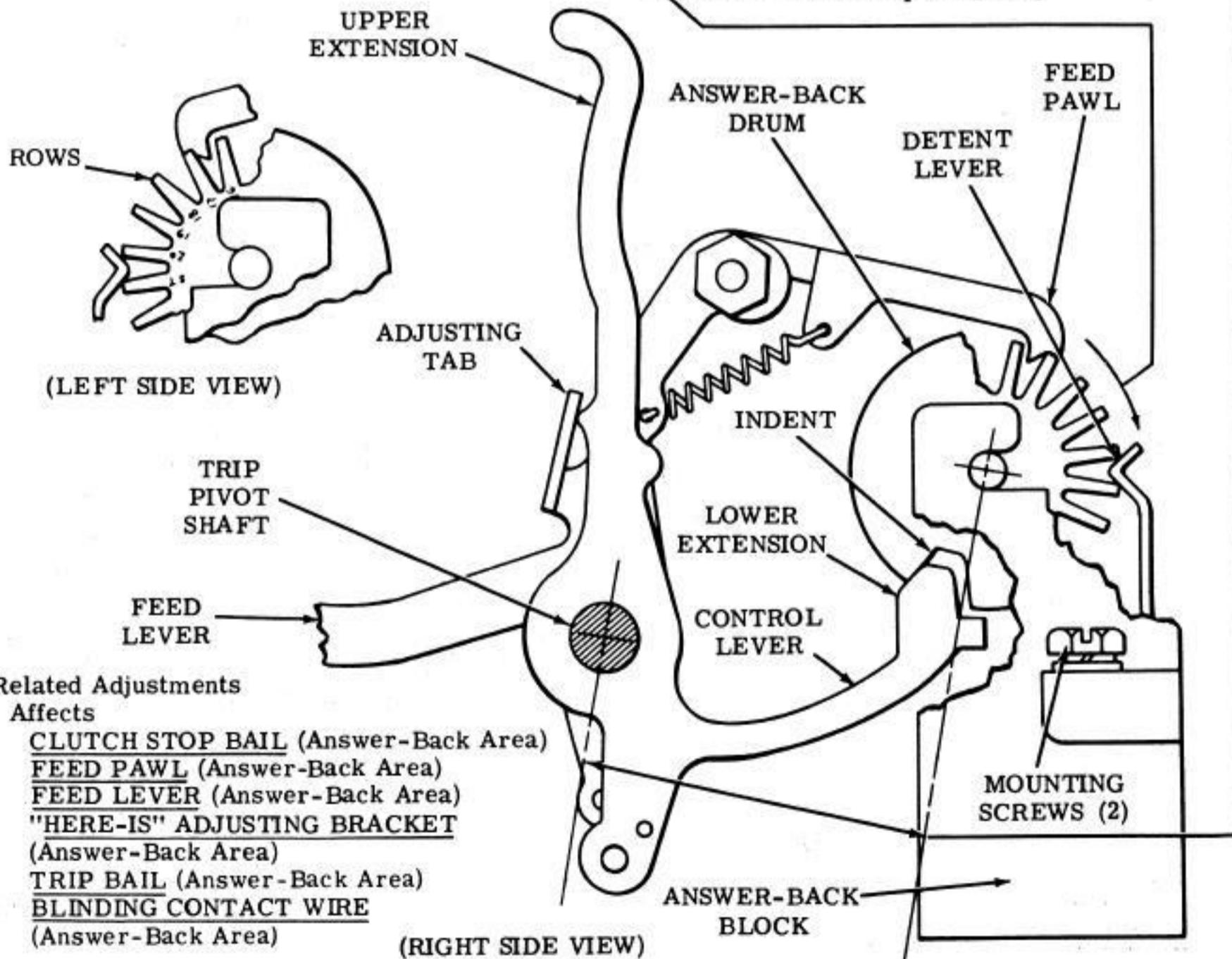
of the control lever toward the front of the typing unit while noticing any clockwise movement of the answer-back drum.

Requirement

- (1) Barely perceptible clockwise movement of answer-back drum from its fully detented position when upper extension of control lever is moved toward front of typing unit.
- (2) The axis of the answer-back drum shall be parallel to the trip pivot shaft as gauged by eye.

To Adjust

Loosen HERE-IS adjusting bracket clampscrew and answer-back bracket clampscrew with answer-back block mounting screws friction tight. Move block to meet requirements.



Related Adjustments

Affects

- CLUTCH STOP BAIL (Answer-Back Area)
- FEED PAWL (Answer-Back Area)
- FEED LEVER (Answer-Back Area)
- "HERE-IS" ADJUSTING BRACKET (Answer-Back Area)
- TRIP BAIL (Answer-Back Area)
- BLINDING CONTACT WIRE (Answer-Back Area)

(RIGHT SIDE VIEW)

3.03 Answer-Back Area (continued)

CLUTCH STOP BAIL

To Check

Trip distributor clutch and manually rotate main shaft to place upper edge of clutch shoe lever in line with upper edge of trip lever. Lift feed pawl and manually rotate answer-back drum counterclockwise until detent lever is located between "1" and "2" on answer-back drum.

Requirement

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

To Adjust

Bend right adjusting tab using bending tool no. TP180993.

Note: As gauged by eye, the plane of right adjusting tab shall be parallel to the axis of trip pivot shaft.

Related Adjustments

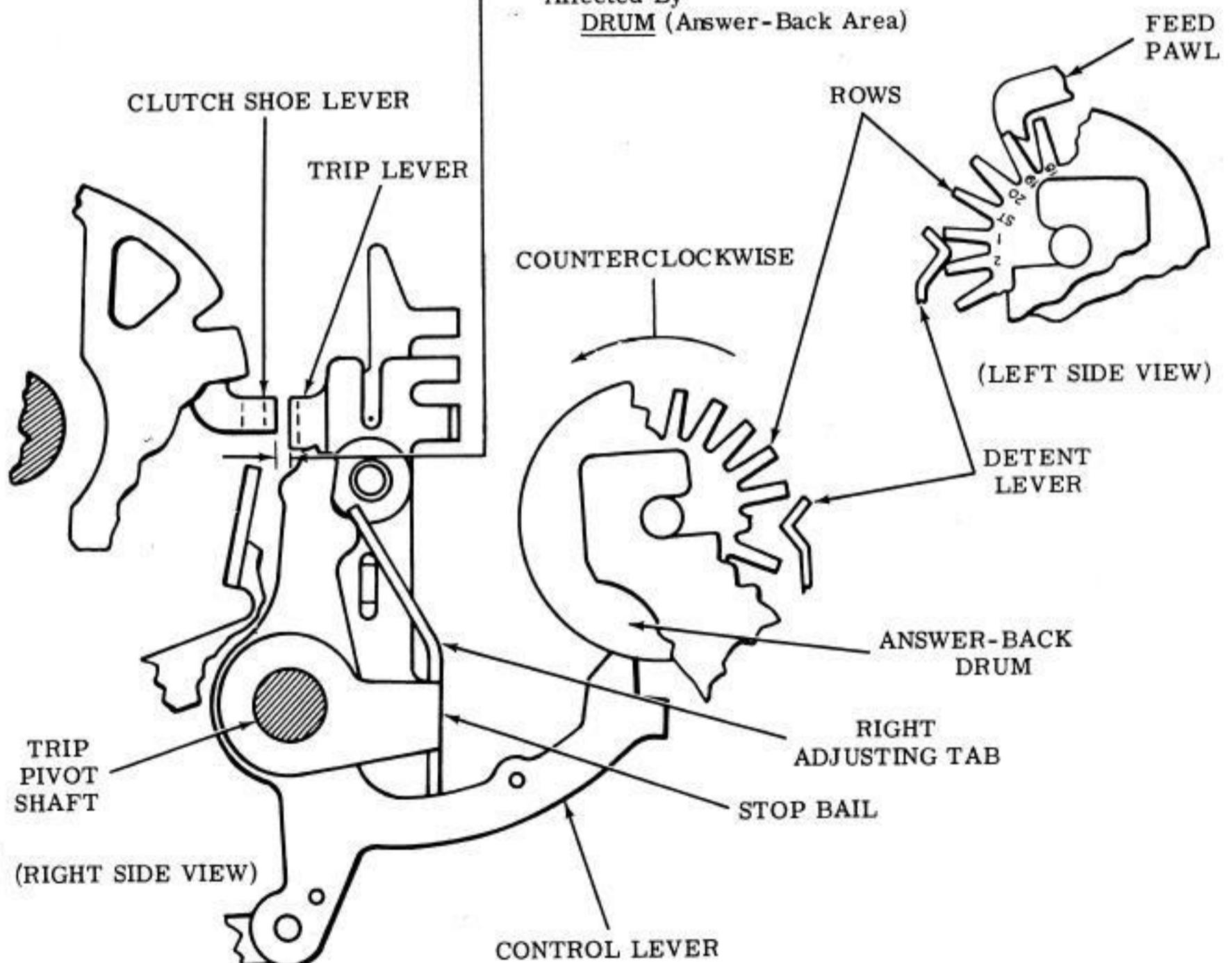
Affects

SHOE LEVER (See appropriate tape reader section.)

TRIP LEVER ENGAGEMENT (Distributor Area)

Affected By

DRUM (Answer-Back Area)



3.04 Answer-Back Area (continued)

FEED PAWL

(1) To Check

With answer-back drum fully detented in its home position, disengage (latch) distributor clutch. Manually trip distributor clutch and rotate main shaft until the cam roller is on high part of feed lever.

Requirement

Some clearance between feed lever adjusting tab and control lever.

To Adjust

Bend feed lever adjusting tab toward the front of the typing unit.

(2) To Check

With the answer-back drum fully detented in its home position, disengage (latch) distributor clutch. Manually trip distributor clutch and rotate main shaft until cam roller is on high part of feed lever. Lift up the feed pawl and position the feed

lever to either the left or right to make the entire width of the feed pawl tooth ride only on the answer-back drum feed ratchet and to make the feed lever perpendicular to the answer-back drum axis as gauged by eye.

Requirement

Feed pawl tooth to rest on rear half of the top of row "16" of answer-back drum feed ratchet.

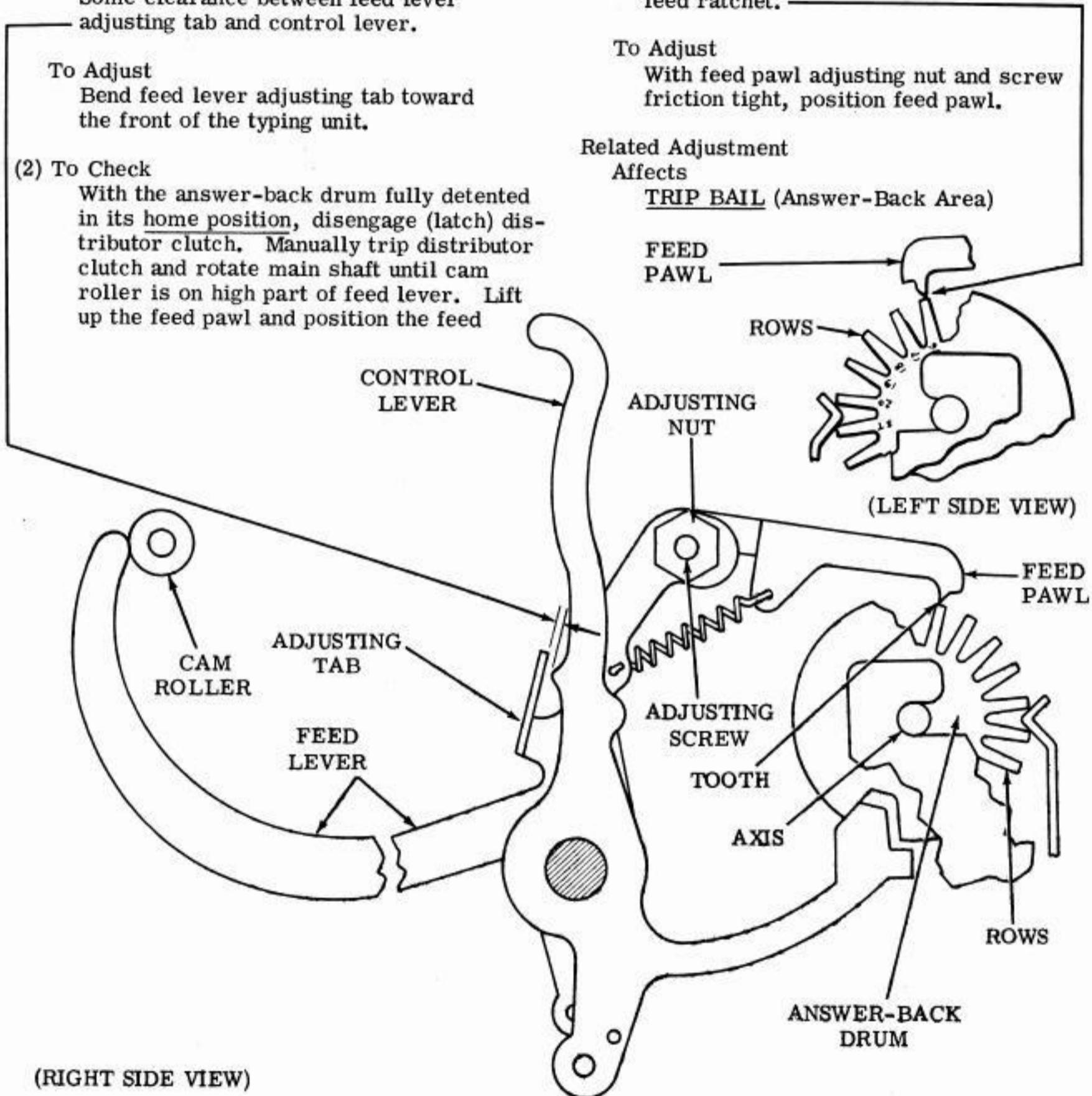
To Adjust

With feed pawl adjusting nut and screw friction tight, position feed pawl.

Related Adjustment

Affects

TRIP BAIL (Answer-Back Area)



3.05 Answer-Back Area (continued)

FEED LEVER

To Check

With answer-back drum fully detented in its home position, trip distributor clutch and manually rotate main shaft until cam roller is not touching the feed lever. Take up the play in the control lever toward the front of the typing unit. Lift up the feed pawl and position the feed lever to either the left or right to make the entire width of the feed pawl tooth ride only on the answer-back drum feed ratchet and to make the feed lever perpendicular to the answer-back drum axis as gauged by eye. Take up play in feed pawl toward the rear of the typing unit and release.

Requirement

Min 0.006 inch --- Max 0.020 inch
between feed pawl and face of answer-back drum feed ratchet of row "16."

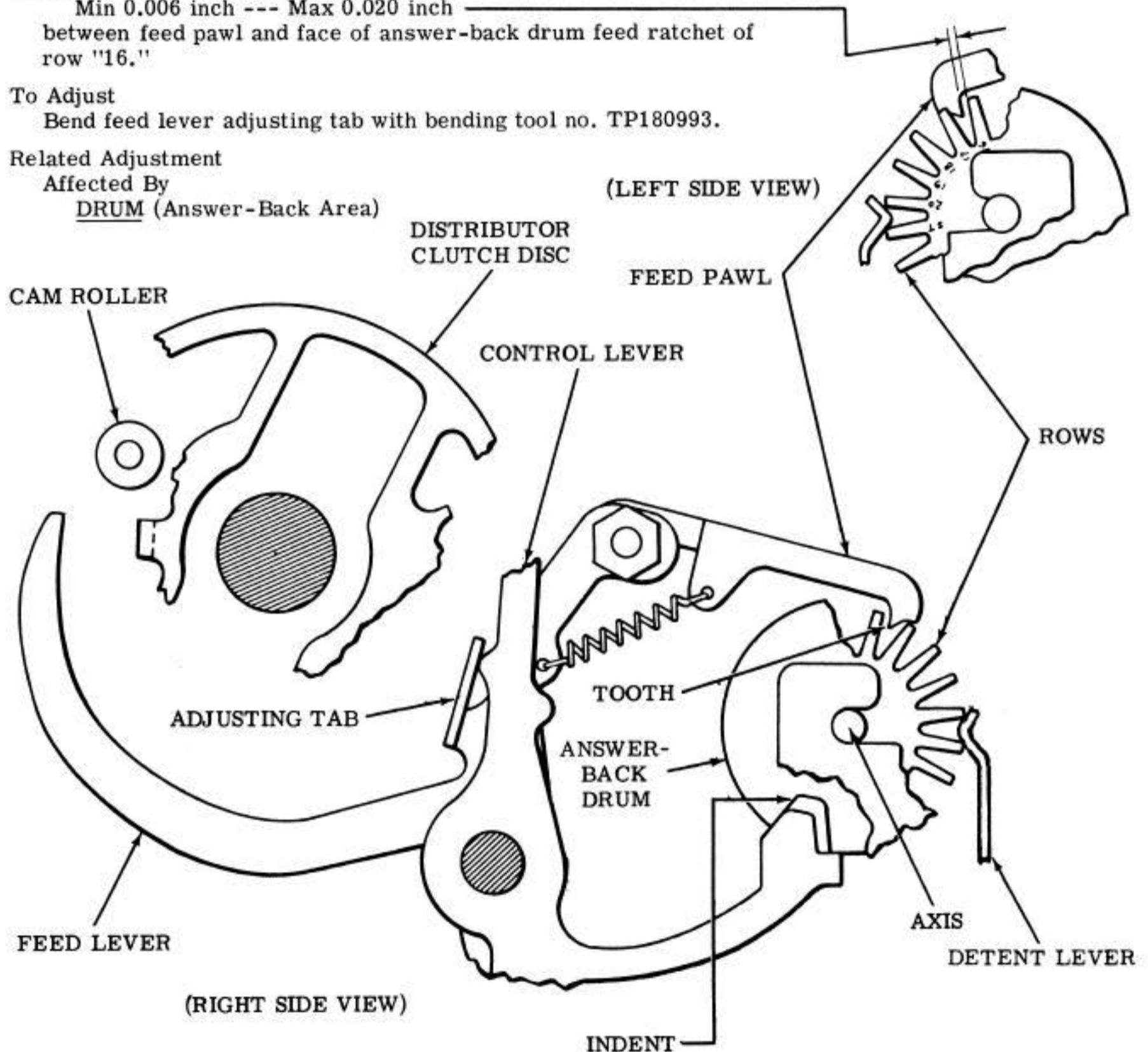
To Adjust

Bend feed lever adjusting tab with bending tool no. TP180993.

Related Adjustment

Affected By

DRUM (Answer-Back Area)



3.06 Answer-Back Area (continued)

"HERE IS" ADJUSTING BRACKET

(1) To Check

With answer-back drum fully detented in its home position, trip distributor clutch and manually rotate main shaft until feed lever is no longer in contact with cam roller. Depress HERE IS key with a force of from 20 oz to 24 oz.

Requirement

Early design typing units—HERE IS adjusting bracket does not have a stop projection:

Min 0.015 inch---Max 0.030 inch overtravel between feed pawl and face of answer-back drum feed ratchet tooth of row "17."

Late design typing units—HERE IS adjusting bracket has a stop projection:

Min 0.025 inch---Max 0.045 inch overtravel between feed pawl and face of answer-back drum feed ratchet tooth of row "17."

(2) To Check

With the answer-back drum fully detented in its home position and HERE IS key in its unoperated position, disengage (latch) distributor clutch.

Requirement

Some clearance between tip of HERE IS key and bellcrank.

To Adjust

With clampscrew loosened friction tight, position HERE IS adjusting bracket using pry points.

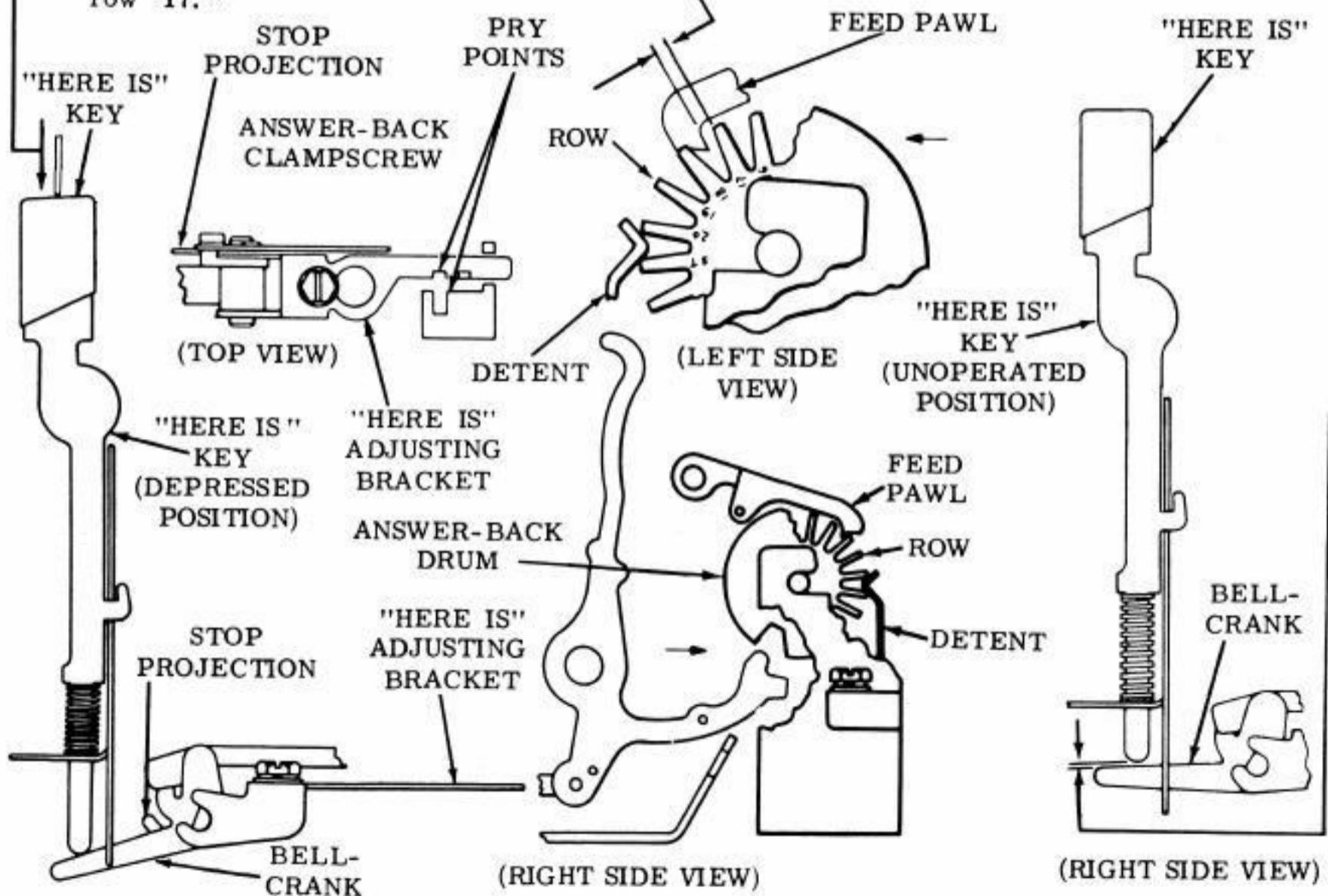
Related Adjustments

Affects

BLOCKING FOLLOWER LEVER
(Answer-Back Area)
BLINDING CONTACT WIRE
(Answer-Back Area)

Affected By

FEED PAWL (Answer-Back Area)



3.07 Answer-Back Area (continued)

TRIPBAIL

(1) To Check

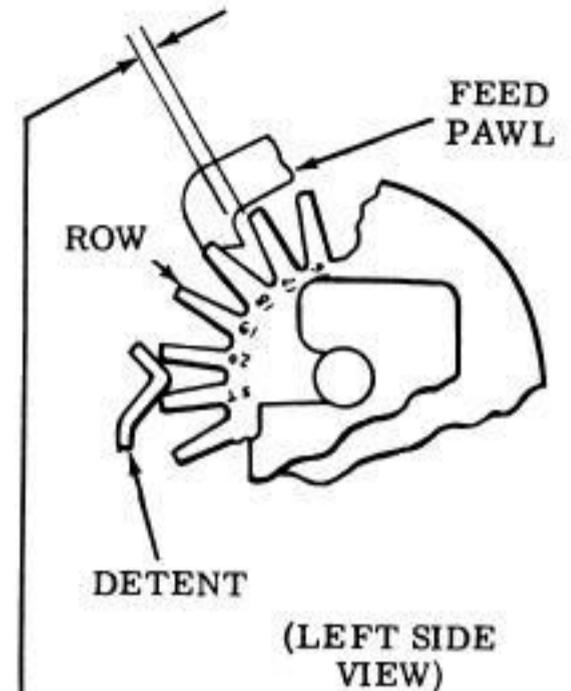
With the typing unit in stop condition, trip function clutch. Rotate main shaft until the function bail is in its highest position. Push the answer-back function pawl down until its notch is engaged by its function lever. Trip the distributor clutch and continue to rotate the main shaft until the answer-back function pawl reaches its lowest point of travel.

Note: The feed pawl will move back to pick up the next tooth on the answer-back drum feed ratchet.

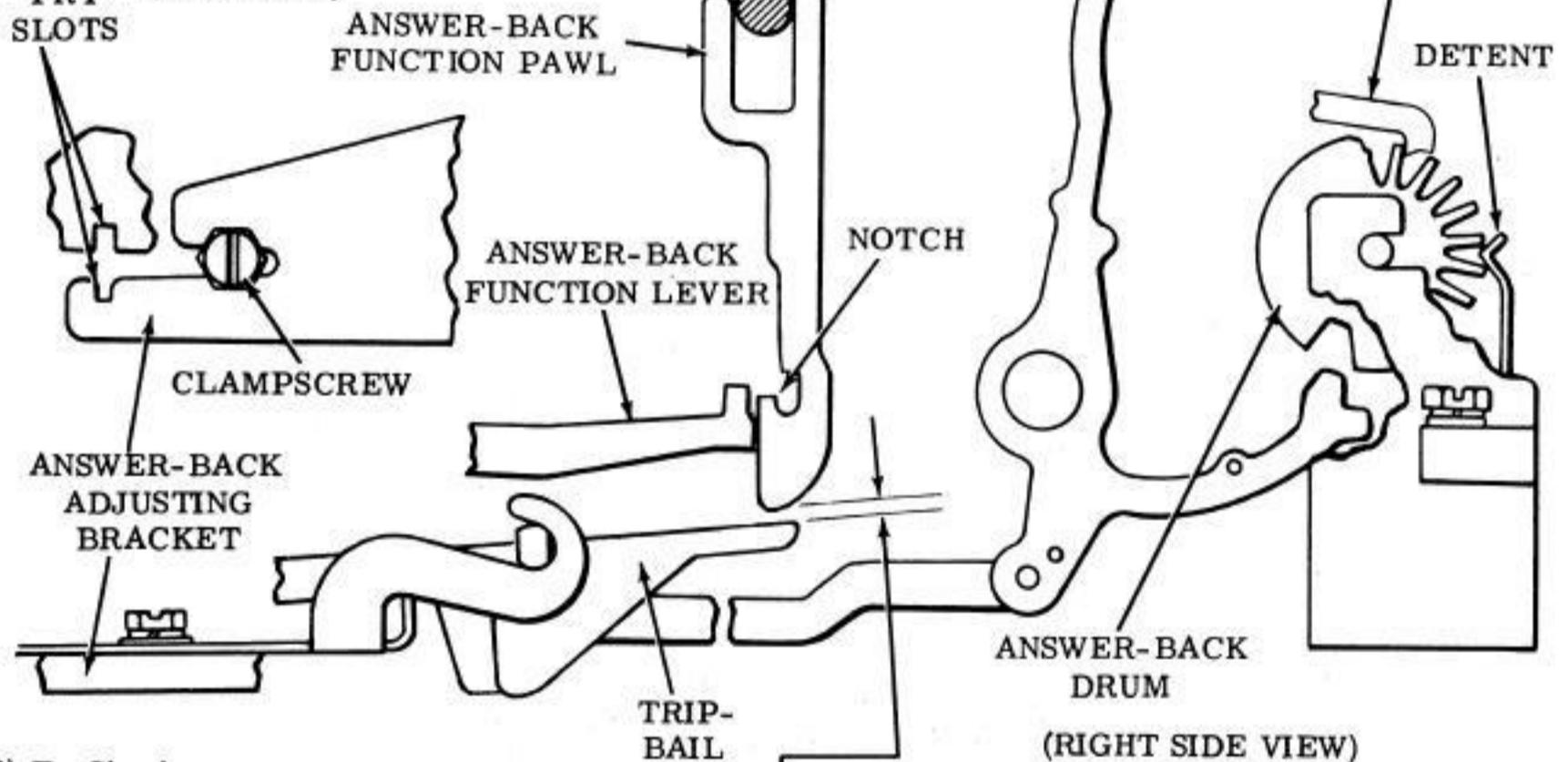
With the feed pawl centered on the answer-back drum feed ratchet, take up play in feed pawl toward the rear.

Requirement

Min 0.020 inch---Max 0.055 inch
overtravel between feed pawl and face of answer-back drum feed ratchet of row "17."



PRY SLOTS (TOP VIEW)



(2) To Check

With the answer-back drum in its home position, place the typing unit in stop condition. Place the answer-back function pawl in its unselected position, and take up play in tripbail in the downward direction.

Requirement

Some clearance between the tip of answer-back function pawl and top face of tripbail.

To Adjust
With clampscrew loosened friction tight, position answer-back adjusting bracket using pry slots.

Related Adjustment
Affected By
FEED PAWL (Answer-Back Area)

3.08 Answer-Back Area (continued)

BLINDING CONTACT WIRE

To Check

With answer-back drum fully detented in its home position, disengage (latch) distributor clutch.

Requirement

Min 0.015 inch --- Max 0.045 inch between blinding contact wire and common contact.

To Adjust

Position adjusting spring on the tie link.

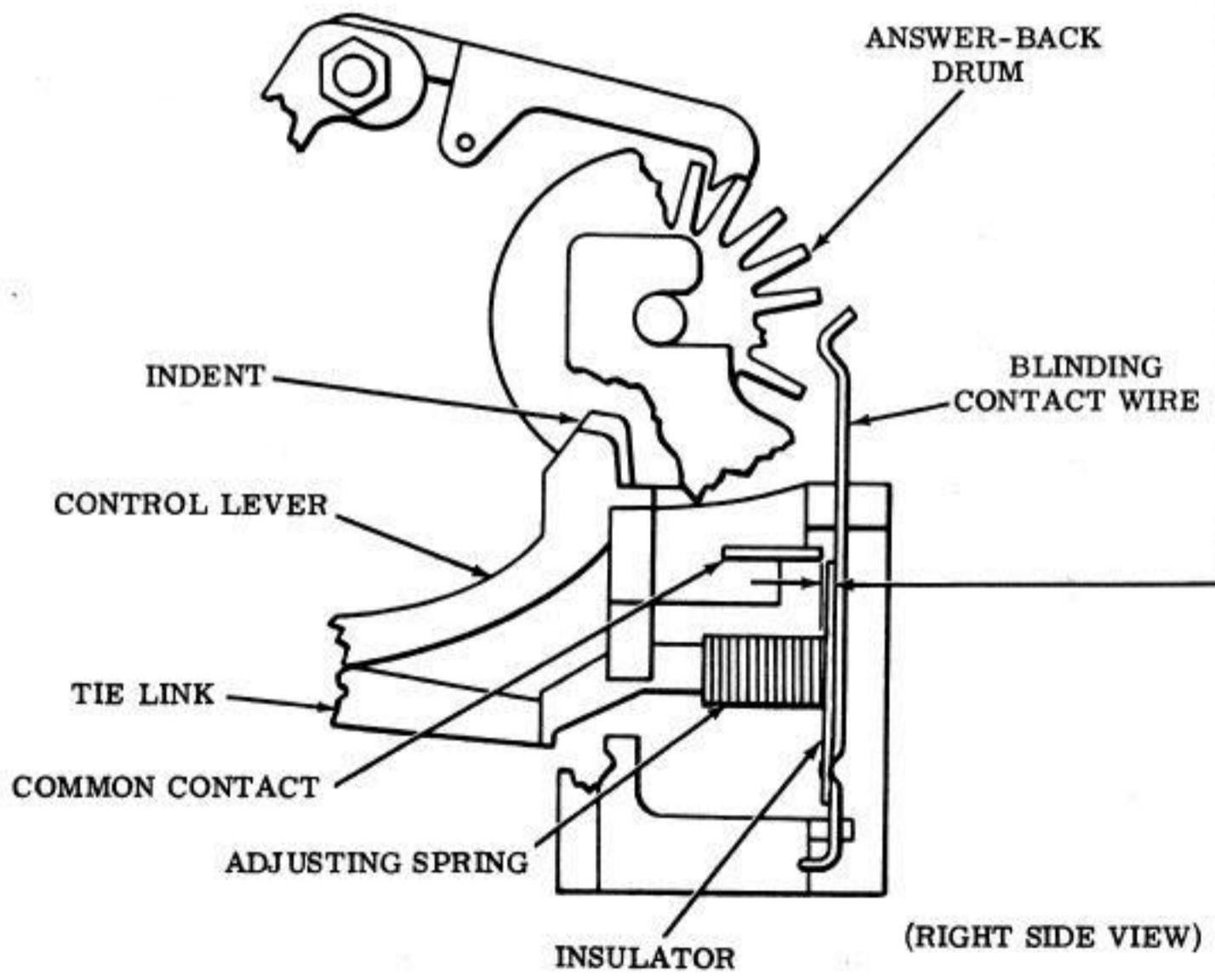
Related Adjustments

Affects

TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Answer-Back Area)
TRIP LEVER (Answer-Back Area)

Affected By

DRUM (Answer-Back Area)



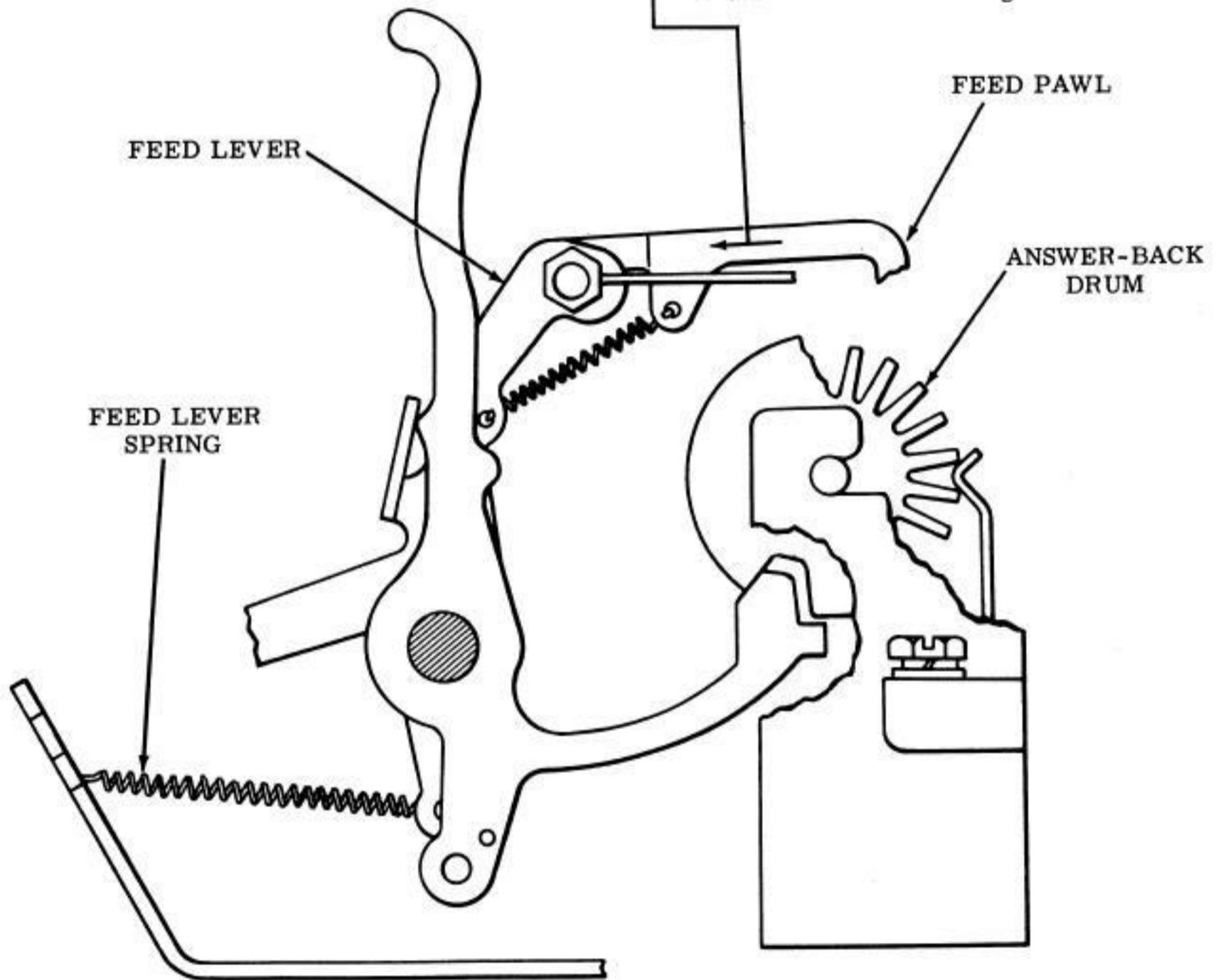
3.09 Answer-Back Area (continued)

FEED LEVER SPRING

Requirement

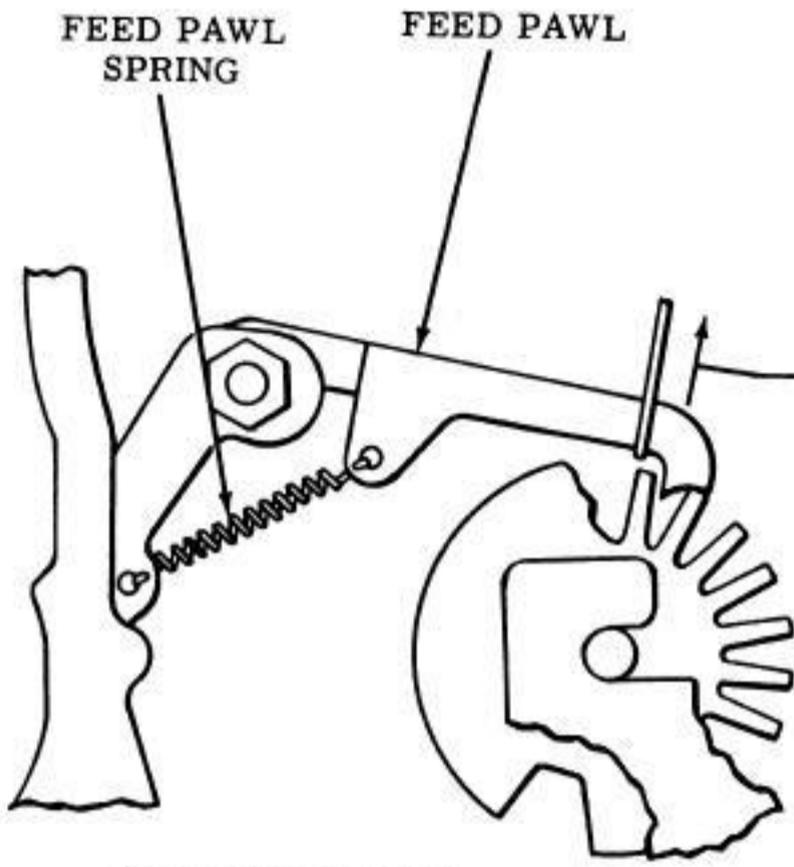
With distributor clutch disengaged (latched) and feed pawl held out of engagement with answer-back drum

Min 4-1/4 oz --- Max 5-1/4 oz to start feed lever moving.



(RIGHT SIDE VIEW)

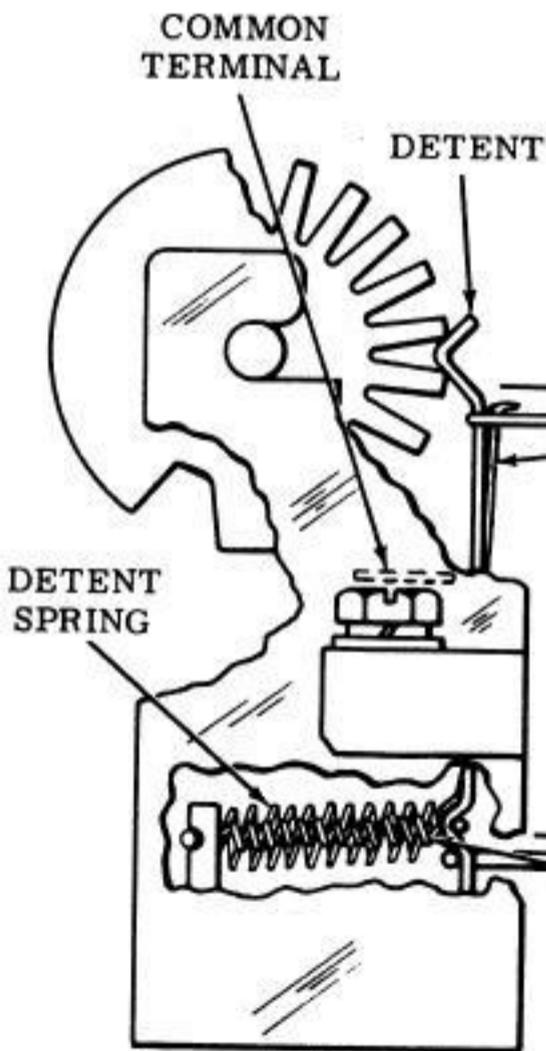
3.10 Answer-Back Area (continued)



(RIGHT SIDE VIEW)

FEED PAWL SPRING

Requirement
With distributor clutch disengaged
(latched)
Min 1/2 oz --- Max 1-1/4 oz
to start feed pawl moving.



(RIGHT SIDE VIEW)

DETENT SPRING

Requirement
Min 8 oz --- Max 12 oz
to start detent moving.

CONTACT WIRE SPRING

Requirement
Min 1 oz --- Max 2 oz
to start contact wire moving away
from common terminal.

3.11 Answer-Back Area (continued)

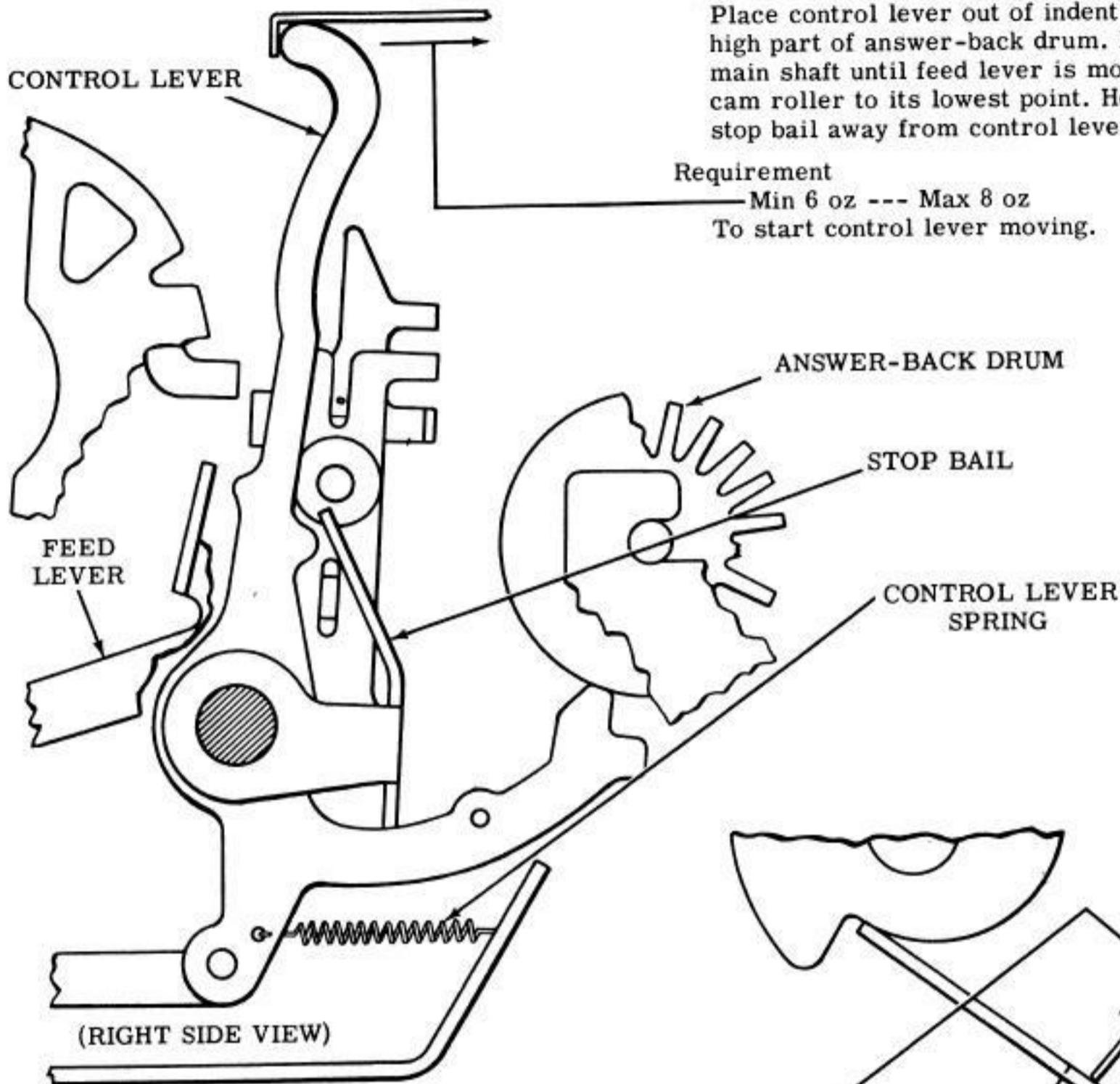
CONTROL LEVER SPRING — HORIZONTAL

To Check

Place control lever out of indent and on high part of answer-back drum. Rotate main shaft until feed lever is moved by cam roller to its lowest point. Hold stop bail away from control lever.

Requirement

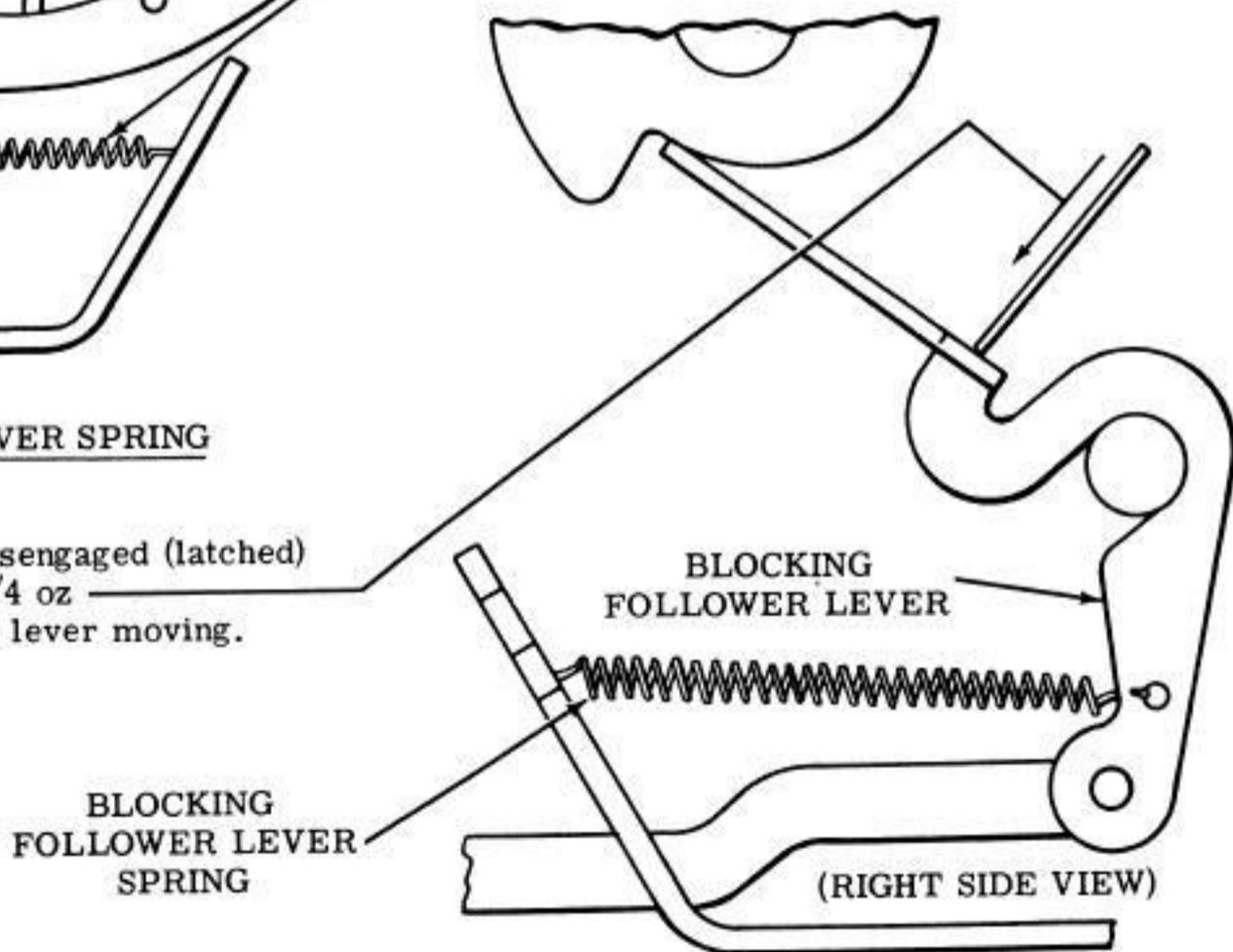
Min 6 oz --- Max 8 oz
To start control lever moving.



BLOCKING FOLLOWER LEVER SPRING

Requirement

With distributor clutch disengaged (latched)
Min 1 oz --- Max 2-1/4 oz
to start blocking follower lever moving.



3.12 Answer-Back Area (continued)

Note: The adjustments on this page apply only to typing units with armature extension TP180845 and trip lever TP180843.

TRIP MAGNET**Requirement**

Magnet bracket to be positioned as far forward and to the left on base casting post as possible.

To Adjust

Position magnet bracket with three mounting screws loosened.

Related Adjustments**Affects**

TRIP LEVER OVERTRAVEL AND ARMATURE GAP (Answer-Back Area)
TRIP LEVER (Answer-Back Area)
TRIP MAGNET (see the appropriate tape reader section)

TRIP LEVER OVERTRAVEL AND ARMATURE GAP**To Check**

With the answer-back drum fully detented in its home position, trip distributor clutch and rotate main shaft until the pointer of the distributor brush holder is in line with the intersection of the conductor path and the stop segment. Place armature extension down so that armature is in its attracted position, and take up play toward the rear of the typing unit. Take up play in blocking cam in an upward and counterclockwise direction.

(1) Requirement

Min 0.006 inch---Max 0.015 inch between the end of armature extension and end of answer-back blocking latch.

To Adjust

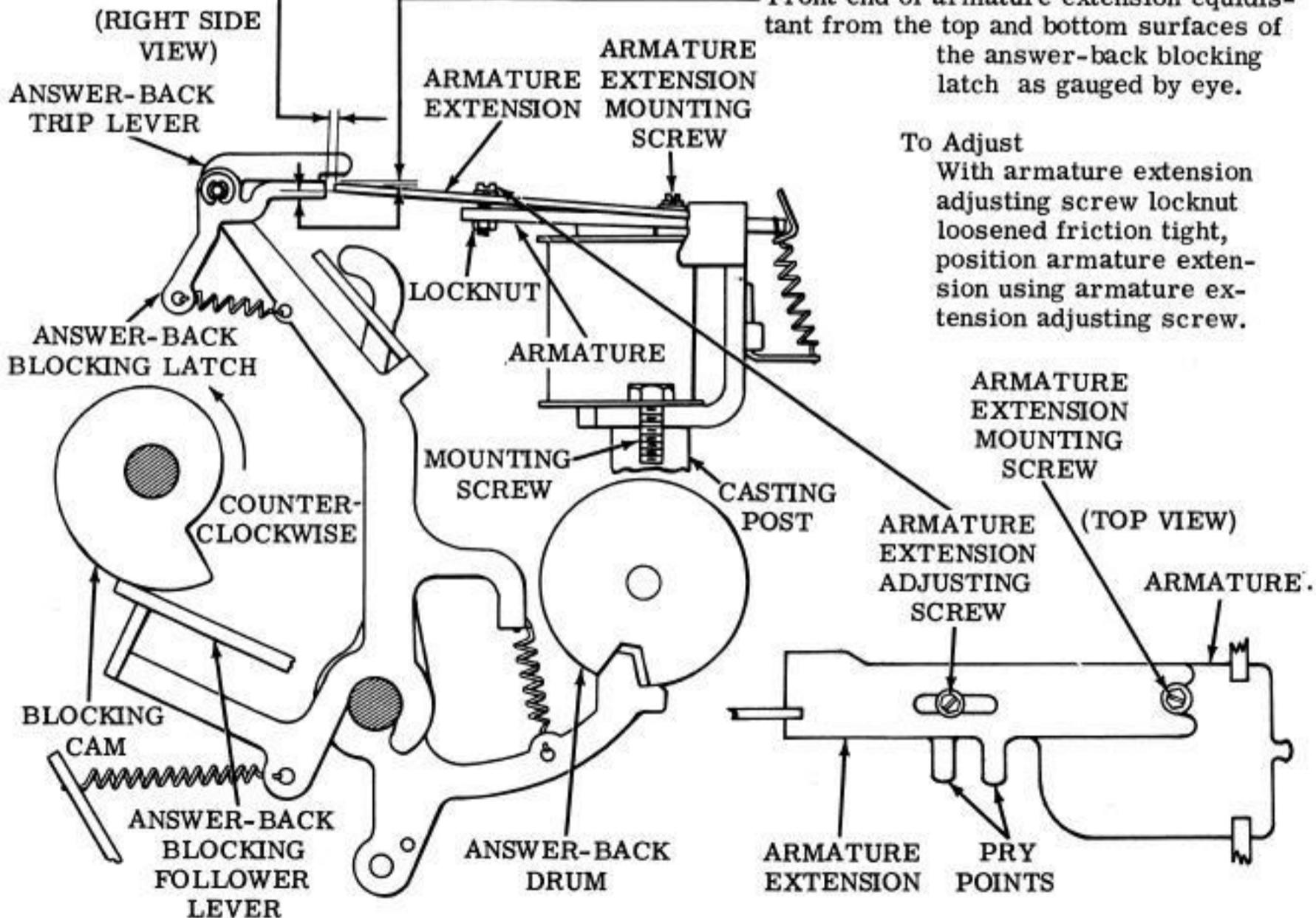
With armature extension mounting screw loosened friction tight, position the armature extension using pry points.

(2) Requirement

Front end of armature extension equidistant from the top and bottom surfaces of the answer-back blocking latch as gauged by eye.

To Adjust

With armature extension adjusting screw locknut loosened friction tight, position armature extension using armature extension adjusting screw.



3.13 Answer-Back Area (continued)

Note: The following adjustment applies only to typing units with armature extension TP180845 and trip lever TP180843.

TRIP LEVER**To Check**

With the answer-back drum fully detented in its home position, place the typing unit in its stop condition. With the armature in its unattracted position, take up the play in the trip lever toward the right and the play in the control lever toward the left. Take up play in the armature toward

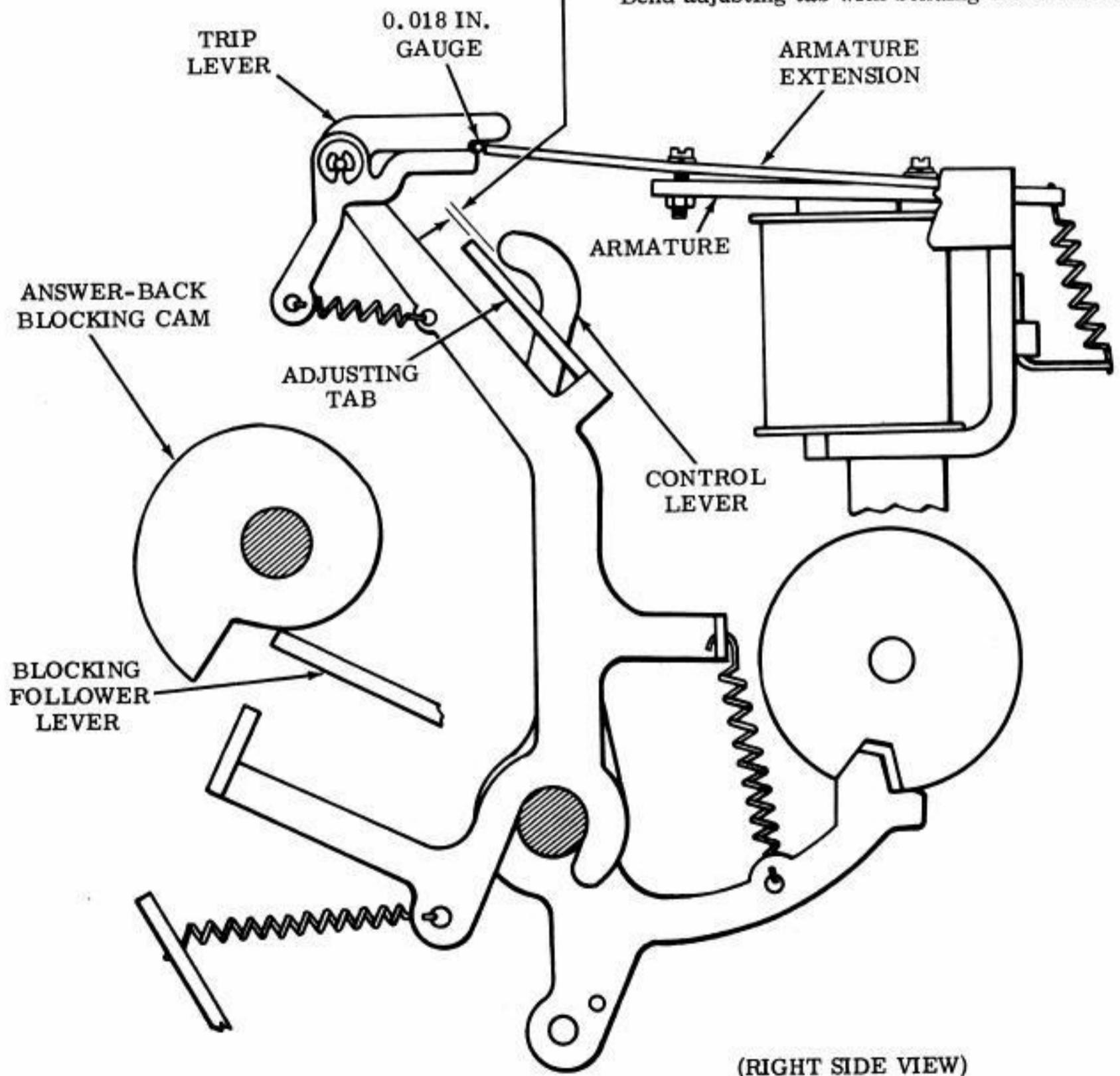
the rear, and place an 0.018 inch gauge between the end of the armature extension and the shoulder of the trip lever.

Requirement

Min Some---Max 0.008 inch between adjusting tab and tip of control lever.

To Adjust

Bend adjusting tab with bending tool TP180993.



3.14 Answer-Back Area (continued)

CONTROL LEVER SPRING—VERTICAL (Early Design)

Note: This adjustment applies to early design typing units with trip lever TP180843.

Requirement

With distributor clutch tripped and blocking follower lever on high part of blocking cam
 Min 7-1/2 oz---Max 10-1/2 oz
 to start control lever moving.

BLOCKING LATCH SPRING

Requirement

With distributor clutch disengaged (latched)
 Min Some * ---Max 3/4 oz
 to start blocking latch moving.

* By feel

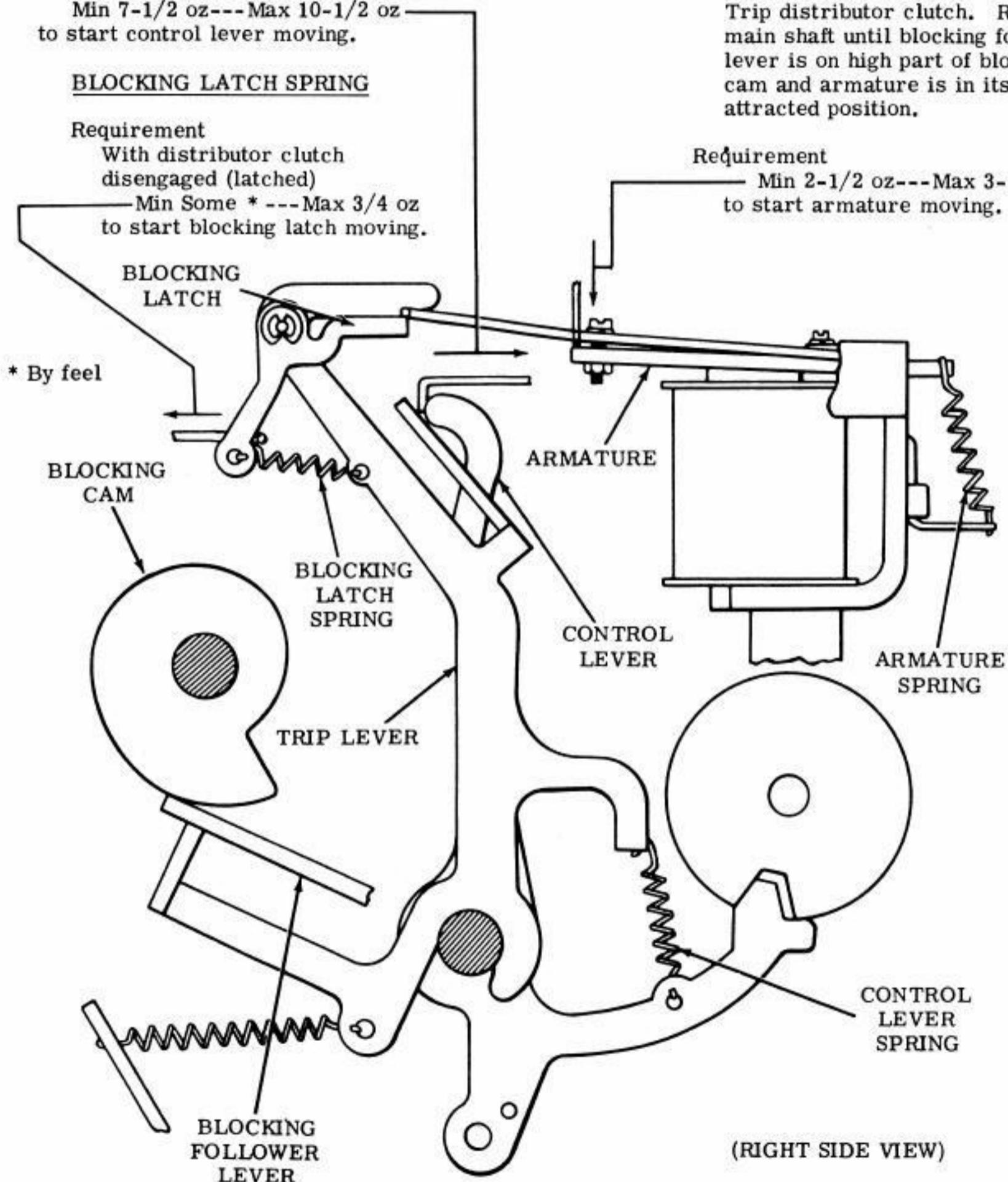
ARMATURE SPRING

To Check

Trip distributor clutch. Rotate main shaft until blocking follower lever is on high part of blocking cam and armature is in its un-attracted position.

Requirement

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



(RIGHT SIDE VIEW)

3.15 Answer-Back Area (continued)

TRIP LEVER SPRING

To Check

Disengage (latch) distributor clutch. Manually trip armature. Position stop bail so that its adjusting tab does not interfere with control lever. Hold armature in its attracted position.

Requirement

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

CONTROL LEVER SPRING—VERTICAL

(Late Design)

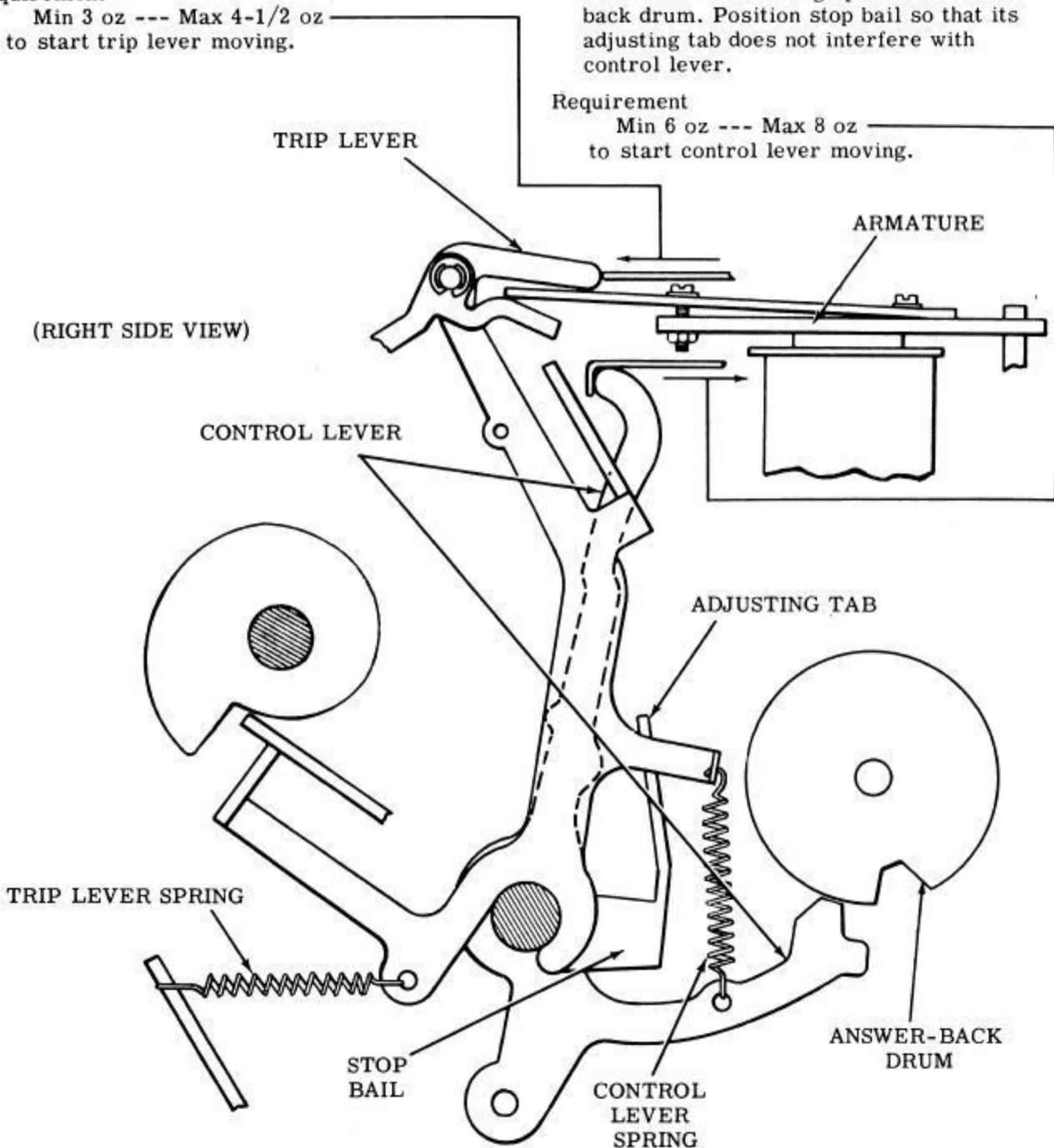
Note: This adjustment applies to late design typing units with trip lever TP182276.

To Check

Disengage (latch) distributor clutch. Manually rotate the answer-back drum until control lever is on high part of answer-back drum. Position stop bail so that its adjusting tab does not interfere with control lever.

Requirement

Min 6 oz --- Max 8 oz
to start control lever moving.



3.16 Miscellaneous Areas

FUNCTION BOX CONTACTS

To Check

Set up code combination in selector that is to operate the contact function pawl, and rotate the main shaft until the function bail is in its highest position.

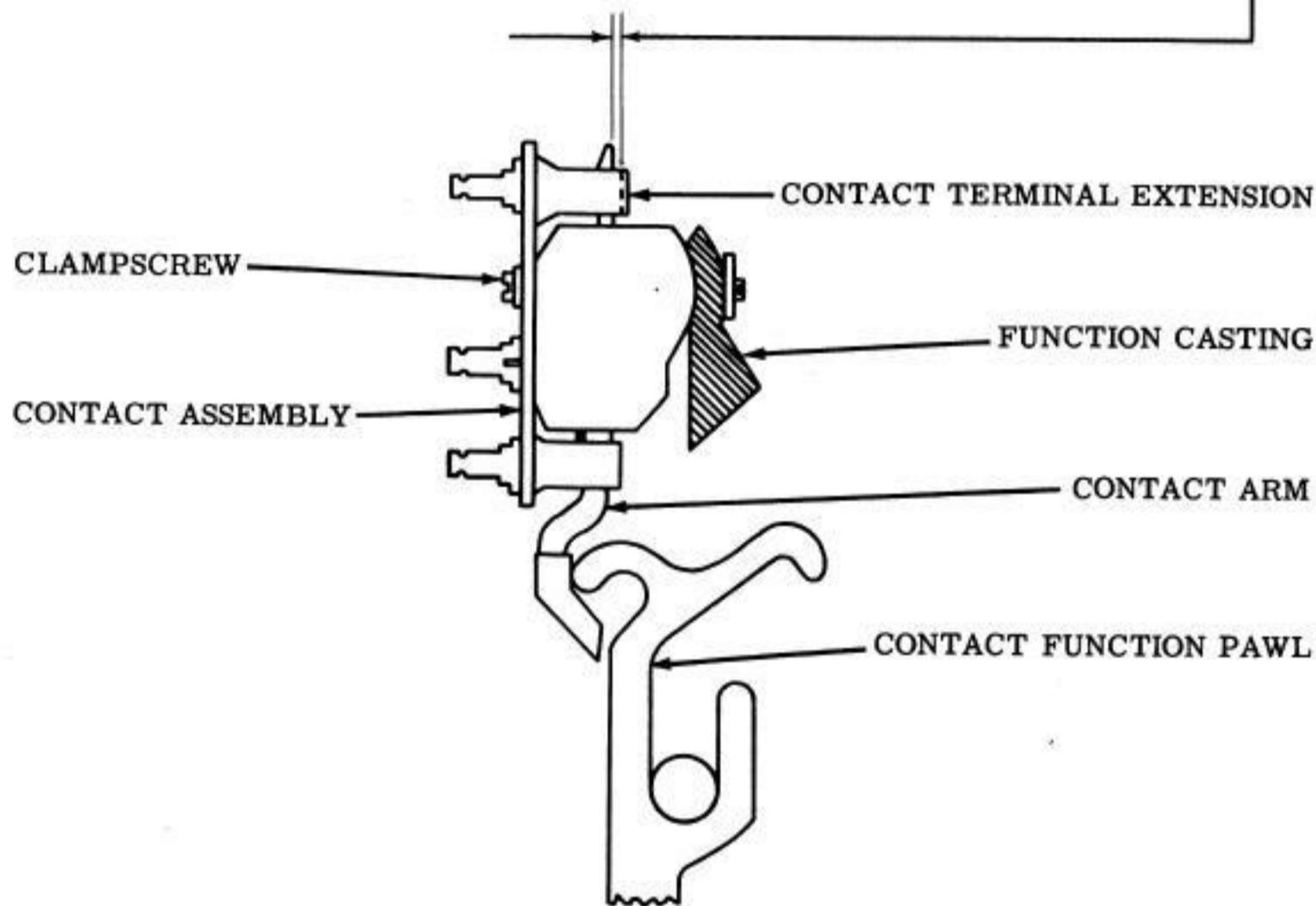
Requirement

Min 0.010 inch --- Max 0.020 inch
between the front surface of the contact arm and the rear surface of the contact terminal extension at the closest point.

To Adjust

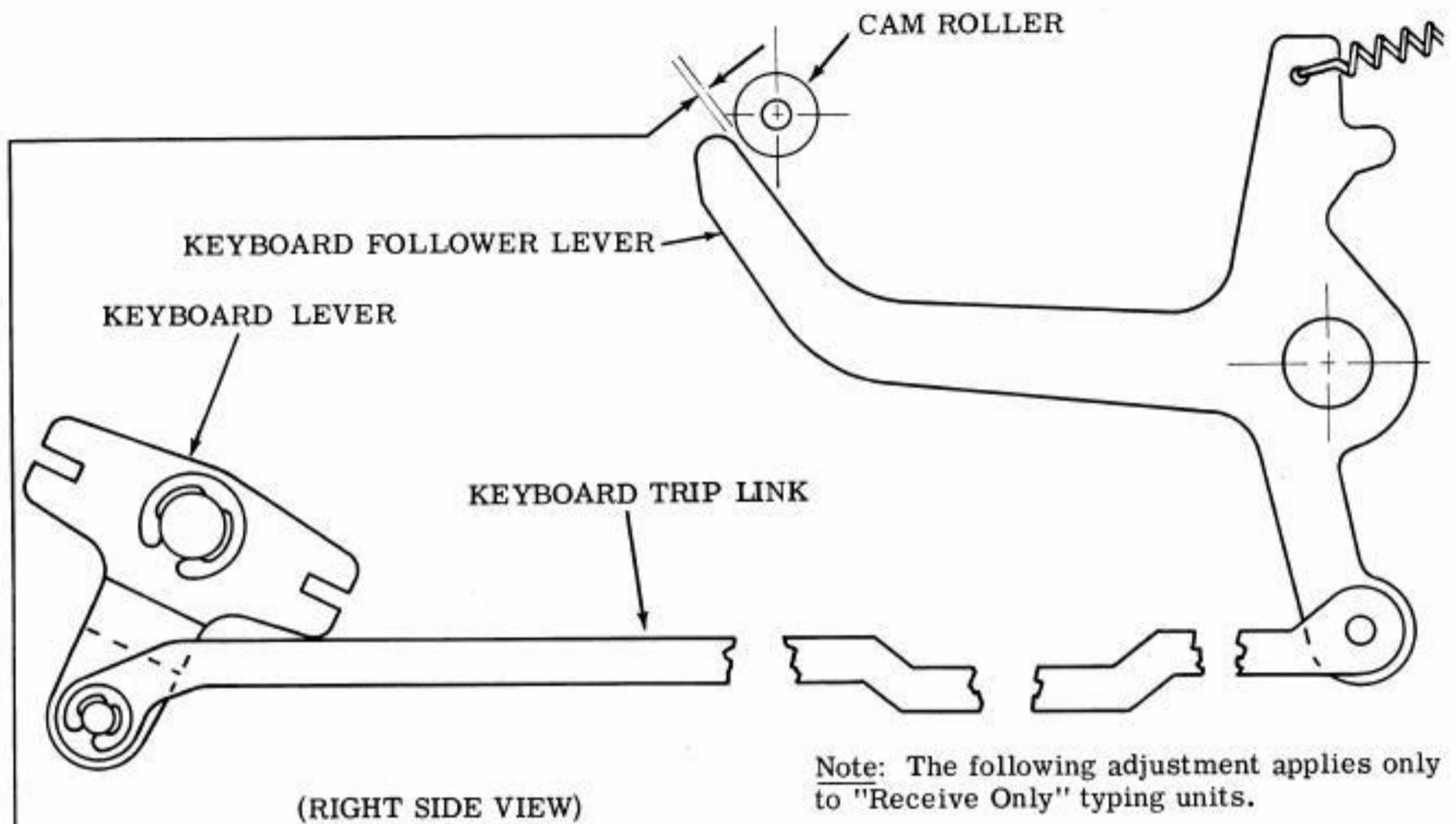
With two clampscrews loosened friction tight, position the contact assembly on the function casting.

Note: When adjusting, be sure that the contact arm lines up with and is in contact with the contact function pawl.



(LEFT SIDE VIEW)

3.17 Miscellaneous Areas (continued)



Note: The following adjustment applies only to "Receive Only" typing units.

KEYBOARD TRIP LEVER (RO)

To Check

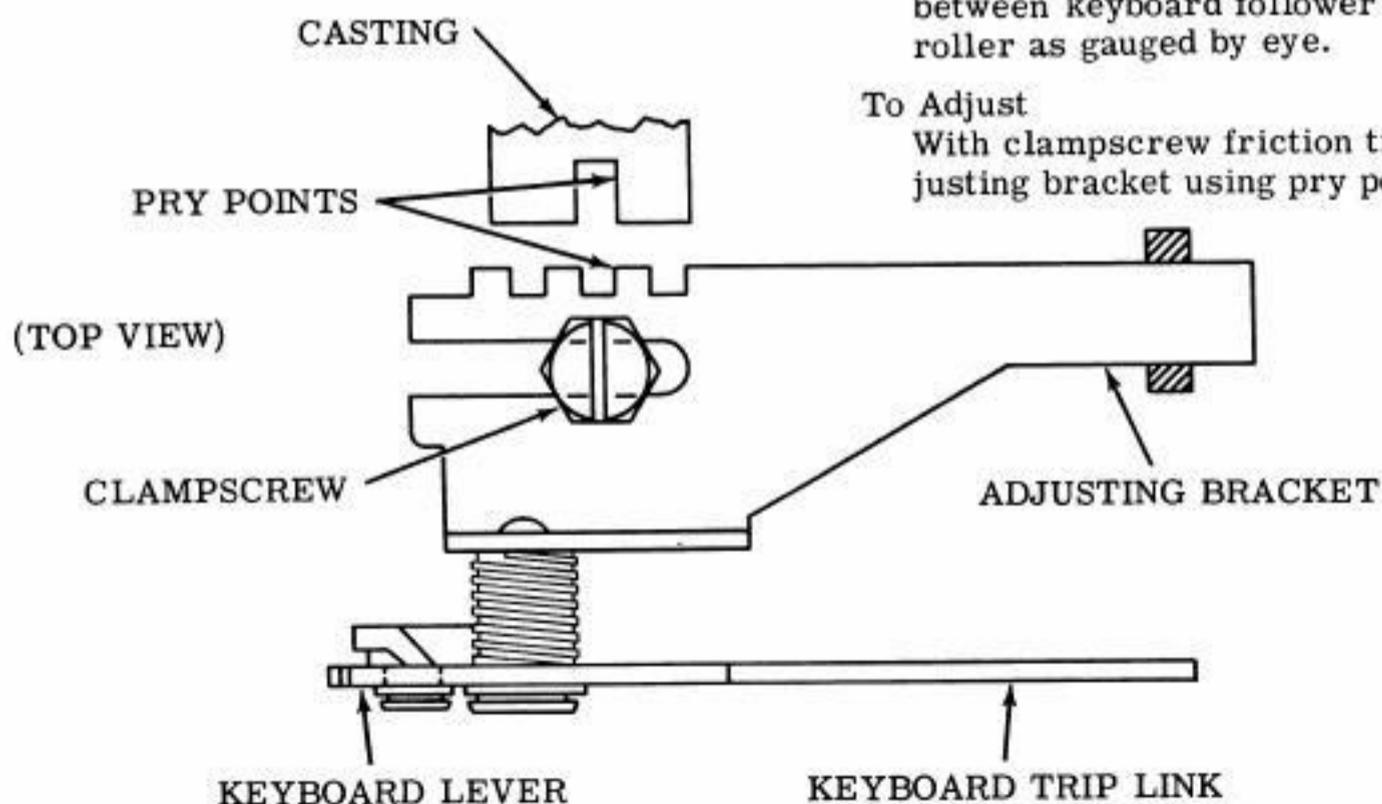
With distributor clutch tripped, rotate main shaft until cam roller is on high part of keyboard follower lever. Place keyboard lever in its lowest position.

Requirement

Min Some --- Max 0.025 inch between keyboard follower lever and cam roller as gauged by eye.

To Adjust

With clampscrew friction tight, move adjusting bracket using pry points.



3.18 Miscellaneous Areas (continued)

Note: The following adjustment applies only to typing units with switch no. TP181441.

LOW-PAPER CONTACTS OPERATING ARM

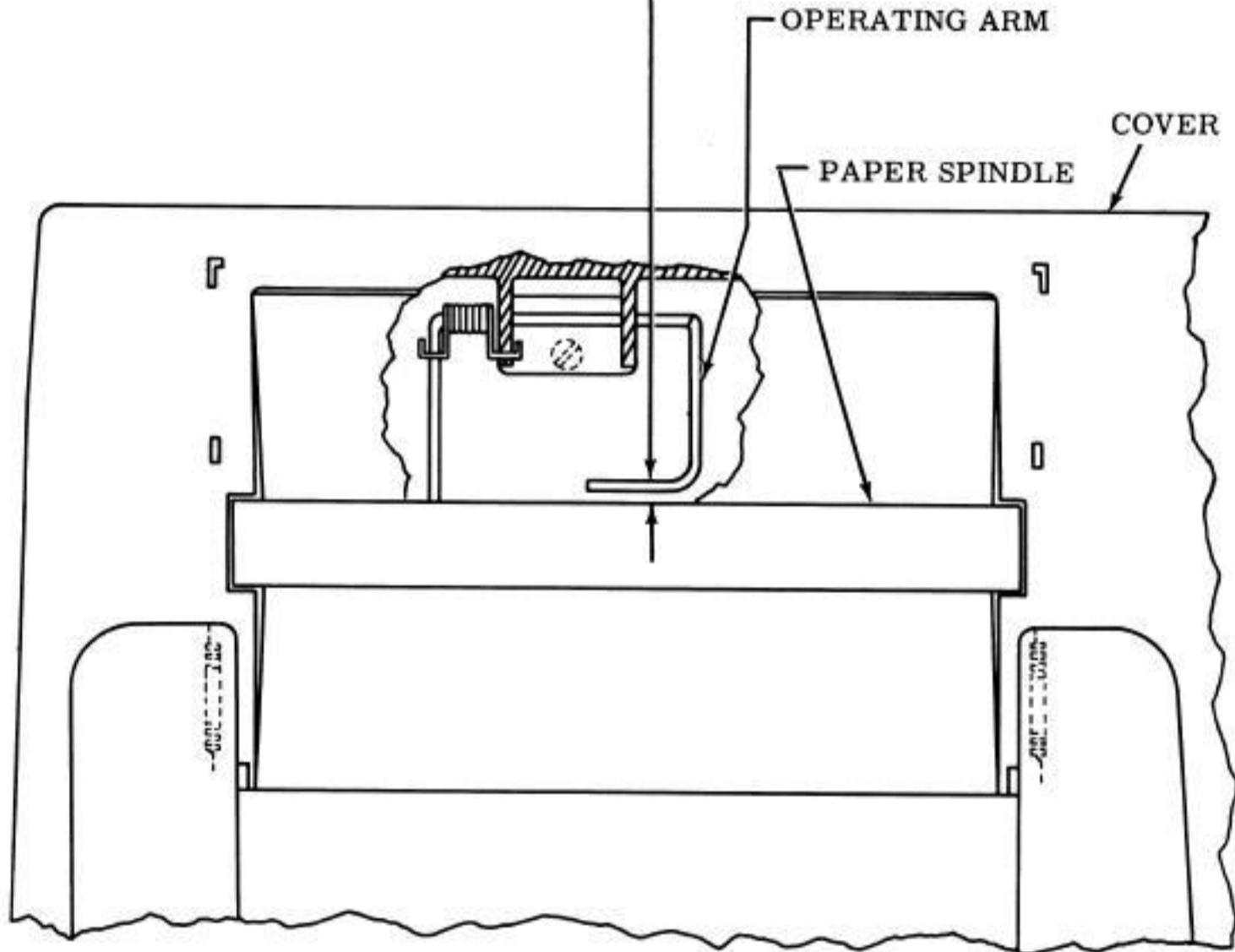
Requirement

With paper spindle in place, clearance between operating arm and spindle

Min 1/4 inch --- Max 3/16 inch

To Adjust

Bend the wire operating arm. If switch operates when roll diameter is too large, bend arm closer to roll. If switch operates when roll diameter is too small, bend arm away from roll.



(TOP VIEW)

3.19 Paper Alarm Control Area

(A) PAPER-OUT ALARM CONTACT PRESSURE

Requirement

With the paper-out lever not in contact with insulator

Min 15 grams---Max 20 grams to separate the contacts of the break-make contact spring and normally closed contact spring.

To Adjust

Bend normally closed contact spring.

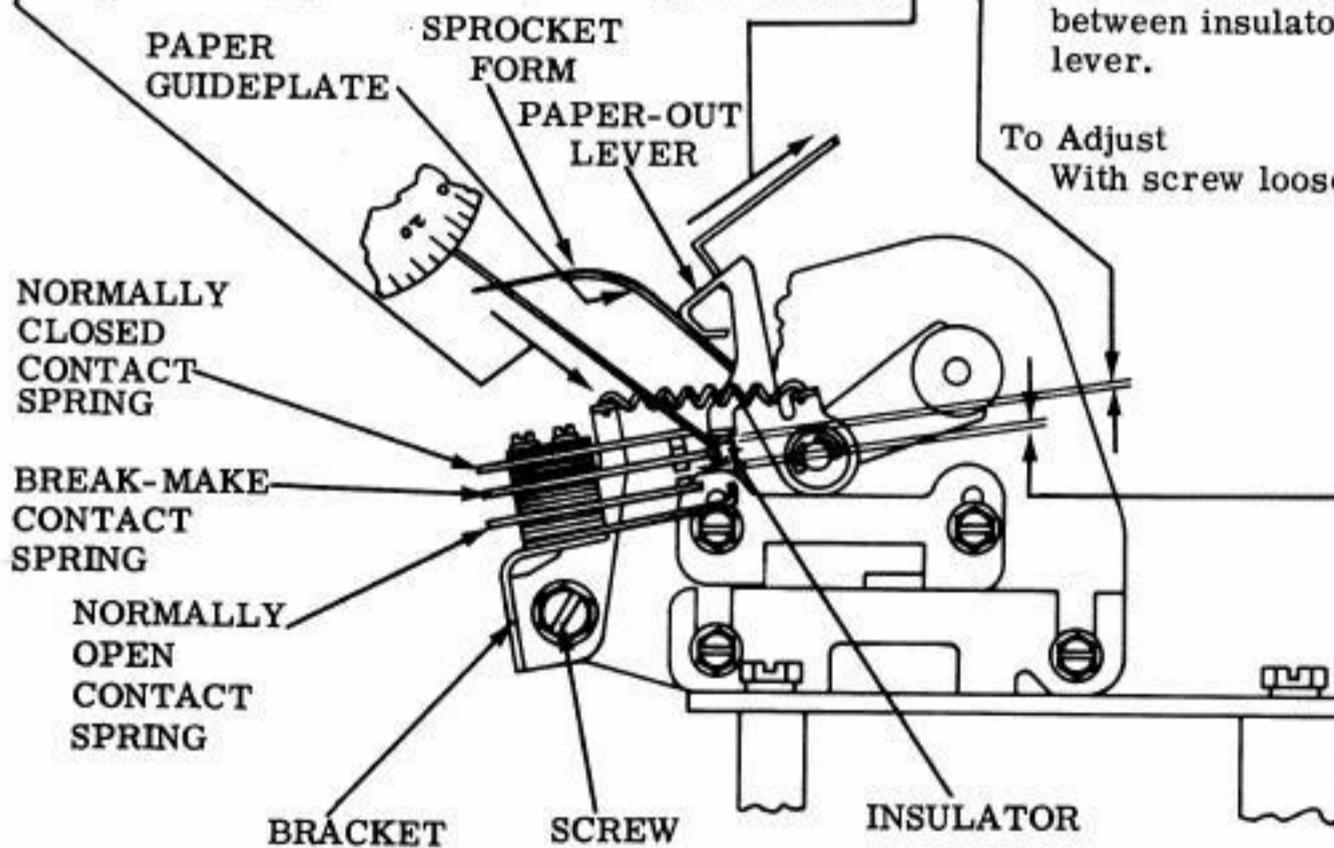
PAPER-OUT LEVER SPRING

To Check

Place a single sheet of a sprocket form between the paper-out lever and paper guide plate. Hold the sprocket form taut over the cutout in the paper guideplate and allow the paper-out lever to rest on the sprocket form. Position a spring scale over the paper-out lever at the rectangular opening in the paper guideplate.

Requirement

Min 1 oz---Max 1-1/2 oz to move paper-out lever from sprocket form.



(LEFT SIDE VIEW)

(B) PAPER-OUT ALARM CONTACT GAP

Requirement

With the paper-out lever not in contact with insulator

Min 0.010 inch---Max 0.015 inch between the contacts of the break-make contact spring and the normally open contact spring.

To Adjust

Bend normally open contact spring.

(C) PAPER-OUT ALARM CONTACT

Note: This adjustment applies only to typing units with a paper-out alarm and no low-paper alarm.

To Check

Place a single sheet of a sprocket form between the paper-out lever and paper guideplate. Hold the sprocket form taut over the cutout in the paper guideplate.

Requirement

Min 0.020 inch---Max 0.030 inch between insulator and paper-out lever.

To Adjust

With screw loosened, position bracket.

Related Adjustment

Affected By
PAPER GUIDEPLATE (Paper Feed Area*)

*Sprocket Feed Mechanisms

3.20 Paper Alarm Control Area (continued)

(A) LOW-PAPER ALARM CONTACT PRESSURE

Requirement

With the low-paper lever not in contact with insulator

Min 15 grams---Max 20 grams to separate the contacts of the break-make contact spring and normally closed contact spring.

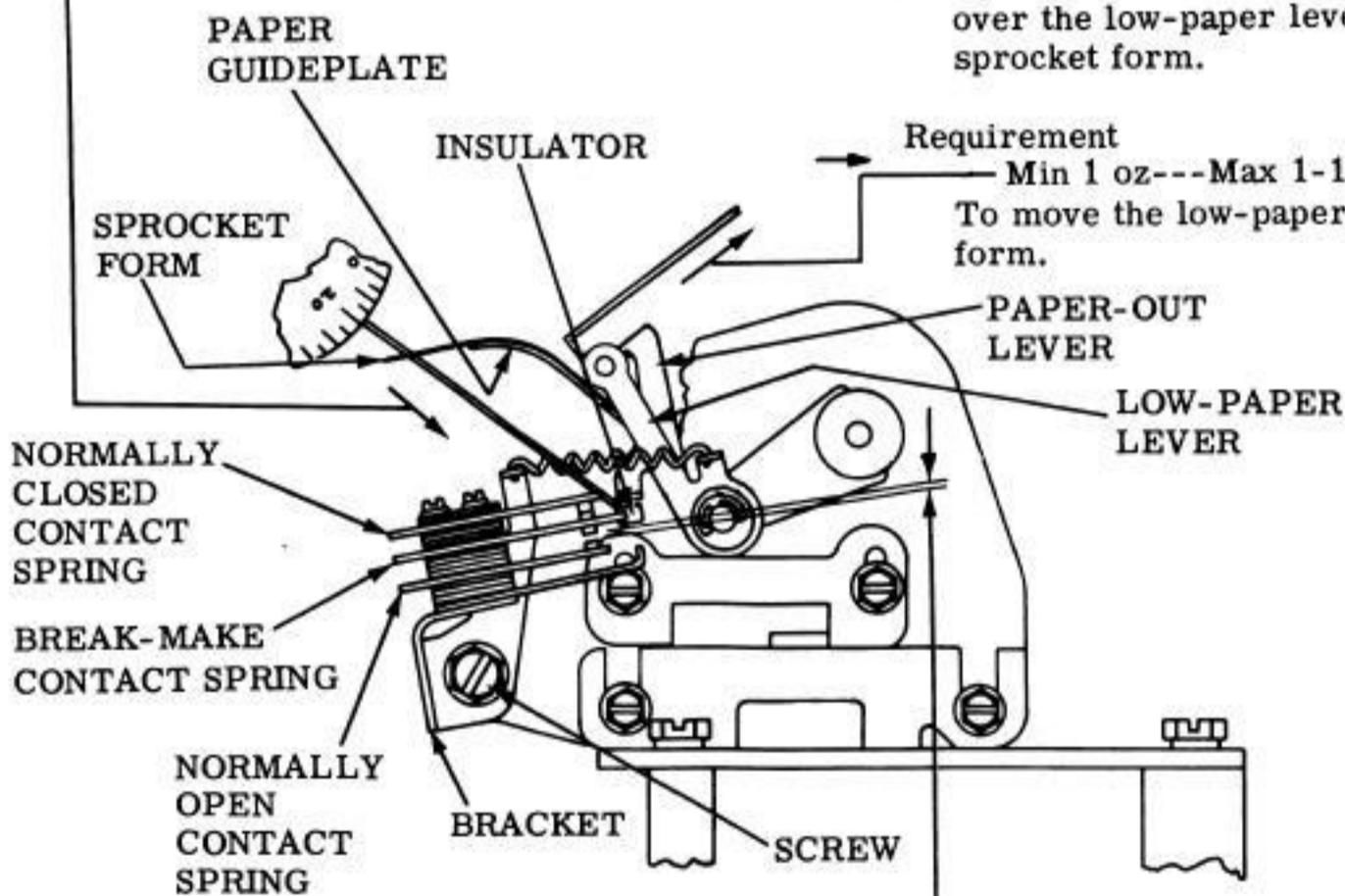
To Adjust

Bend normally closed contact spring.

LOW-PAPER LEVER SPRING

To Check

Place a single sheet of a sprocket form between the low-paper lever and the paper guideplate. Hold the sprocket form taut over the cutout in the paper guideplate and allow the low-paper lever to rest on the sprocket form. Position a spring scale over the low-paper lever adjacent to the sprocket form.



Requirement

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

To move the low-paper lever from sprocket form.

(B) LOW-PAPER ALARM CONTACT GAP

Requirement

With the low-paper lever not in contact with insulator

Min 0.010 inch---Max 0.015 inch between the contacts of the break-make contact spring and the normally open contact spring.

To Adjust

Bend the normally open contact spring.

(LEFT SIDE VIEW)

3.21 Paper Alarm Control Area (continued)

LOW-PAPER ALARM CONTACT

Note: This adjustment applies only to typing units with a low-paper alarm and no paper-out alarm.

To Check

Place a single sheet of a sprocket form between the low-paper lever and paper guideplate. Hold the sprocket form taut over the cutout in the paper guideplate.

Requirement

Min 0.020 inch---Max 0.030 inch between insulator and low-paper lever.

To Adjust

With screw loosened, position bracket.

Related Adjustment

Affected By

PAPER GUIDEPLATE (Paper Feed Area*)

LOW-PAPER AND PAPER-OUT ALARM CONTACT

Note: This adjustment applies only to typing units with both a low paper alarm and a paper-out alarm.

To Check

Place a single sheet of a sprocket form between the paper-out lever and paper guideplate.

Requirement

(1) Min 0.020 inch---Max 0.030 inch between low-paper insulator and low-paper lever.

(2) Some clearance between paper-out insulator and paper-out lever.

(3) With no sprocket forms in the typing unit, the contacts of the break-make contact spring and normally open contact spring shall be fully engaged.

To Adjust

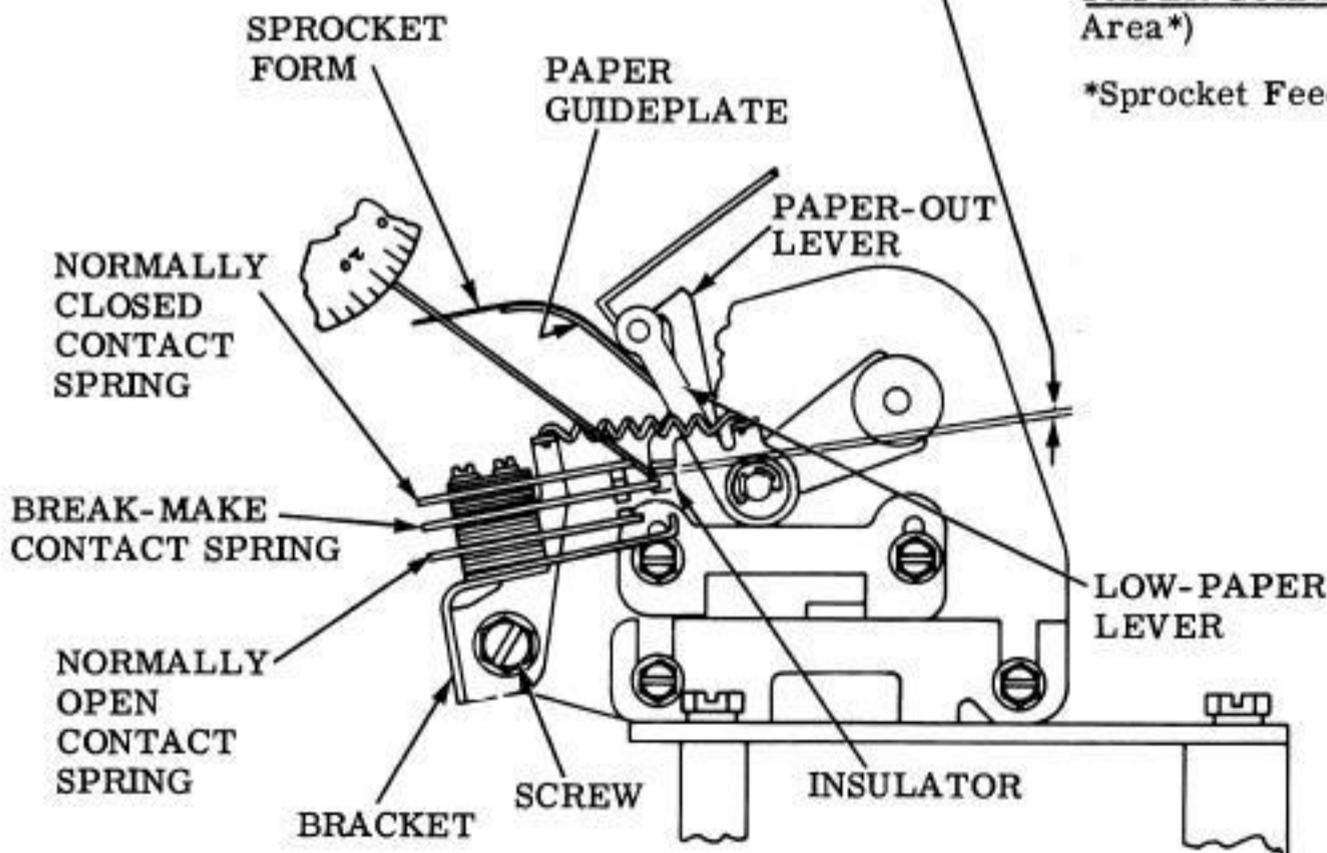
With screw loosened, position bracket. If necessary, bend the contact pile up.

Related Adjustment

Affected By

PAPER GUIDEPLATE (Paper Feed Area*)

*Sprocket Feed Mechanisms



(LEFT SIDE VIEW)