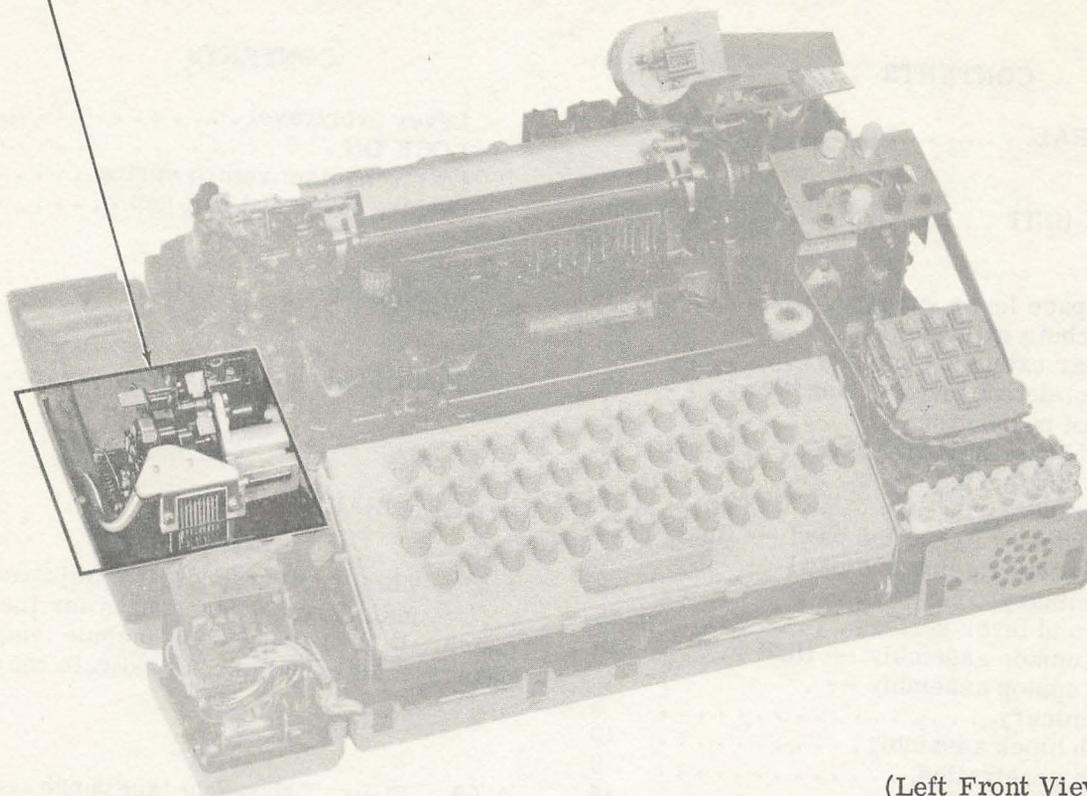


33 TAPE PUNCH
 ADJUSTMENTS

CONTENTS	PAGE	CONTENTS	PAGE
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2. BASIC UNIT	5	LOCK ON	25
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Control detent lever spring	18	Folded tape guide	28
Control pushbuttons	18		
Detent lever spring	16	1. GENERAL	
Drive link spring	19	1.01 This section provides adjustment and maintenance information for the 33 tape punch. It is reissued to include engineering changes. Marginal arrows indicate the changes. ←	
Feed pawl spring	16	1.02 Figure 1 shows the tape punch area where the punch adjustments and spring tension checks are made.	
Feed wheel ratchet and pawl — final	11	1.03 In the adjustments covered in this section, location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Requirements and procedures are set forth in several texts that accompany the line drawings. Required tools are included in TP185830 Maintenance Tool Kit and are listed in Section 570-005-800TC.	
Feed wheel ratchet and pawl — preliminary	6	1.04 The sequence in which the adjustments appear should be followed when a complete readjustment of the tape punch is undertaken. No adjustment should be undertaken without completely understanding the procedure and the requirements. Read a procedure all the way through before making an adjustment or checking a spring tension.	
Pawl and lever springs	15		
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TAPE PUNCH AREA



(Left Front View)

Figure 1 - Tape Punch Area

Note: Remove all electrical power sources from unit before checking or performing any adjustments.

1.05 References to left, right, front, or rear, etc consider the tape punch to be viewed from a position where the tape guide assembly faces up and the backspace lever is located to the viewer's left.

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

1.07 If the tape punch is removed from the typing unit to facilitate making an adjustment and then replaced, recheck any adjustment that may have been affected. Also, if parts are removed from the tape punch to facilitate making an adjustment, be sure that they are replaced. Recheck any adjustment that may have been affected by the removal of the parts.

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

meet their requirements should be replaced by new ones. Only springs that directly affect the operation of the tape punch are measured, however, others may be measured indirectly in the process. If this is the case and the requirement is not met, replace the springs one at a time, starting with the indicated spring, until the requirement is satisfied.

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

Note 2: Spring tensions may be checked in any sequence.

1.09 Certain adjustments require that the tape punch be either "on" or "off." These conditions can be identified as follows:

(a) "Off" condition

(1) Manual (Punch) Controls: A tape punch is "off" when the control lever is in its clockwise detented position and fully engages the drive post.

(2) Automatic (Punch) Controls: An "automatic" tape punch is "off" when the associated typing unit is in the stop condition and the On-Off bail assembly is latched by the latch bail.

Note 1: If the automatic punch is equipped with the "On Lock" option, the "unlock" button must be depressed to enable the On-Off bail assembly to be latched.

Note 2: If the automatic punch is equipped with the interlock mechanism, the nonprint codebar must be in its unoperated position — solenoid not energized.

(b) "On" condition

(1) Manual (Punch) Controls: A tape punch is "on" when the control lever is detented in its counterclockwise posi-

tion and the drive post is fully engaged by the drive link.

(2) Automatic (Punch) Controls: An automatic tape punch is "on" when the On-Off bail assembly is in its unlatched counterclockwise position.

1.10 With the tape punch and typing unit assembled together, all adjusting procedures should be started with the typing unit in the stop condition. It is in the stop condition when the selector armature is in its attracted (frontward) position and all clutches are disengaged.

Note: When the typing unit is in the stop condition and the punch is "on," the tape punch is said to be in the off position.

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

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

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

Note 2: If the shaft is turned by hand, a clutch will not fully disengage upon reaching a stop position. To fully disengage a clutch, rotate the clutch to a stop position, apply a screwdriver to the associated stop-lug, and push the clutch disc in the normal direction of main shaft rotation until the corresponding latchlever seats in its clutch disc notch.

Note 3: The distributor clutch will not disengage unless the answer-back drum is in its home position, which is the position where the control lever is fully detented into the indent on the answer-back drum.

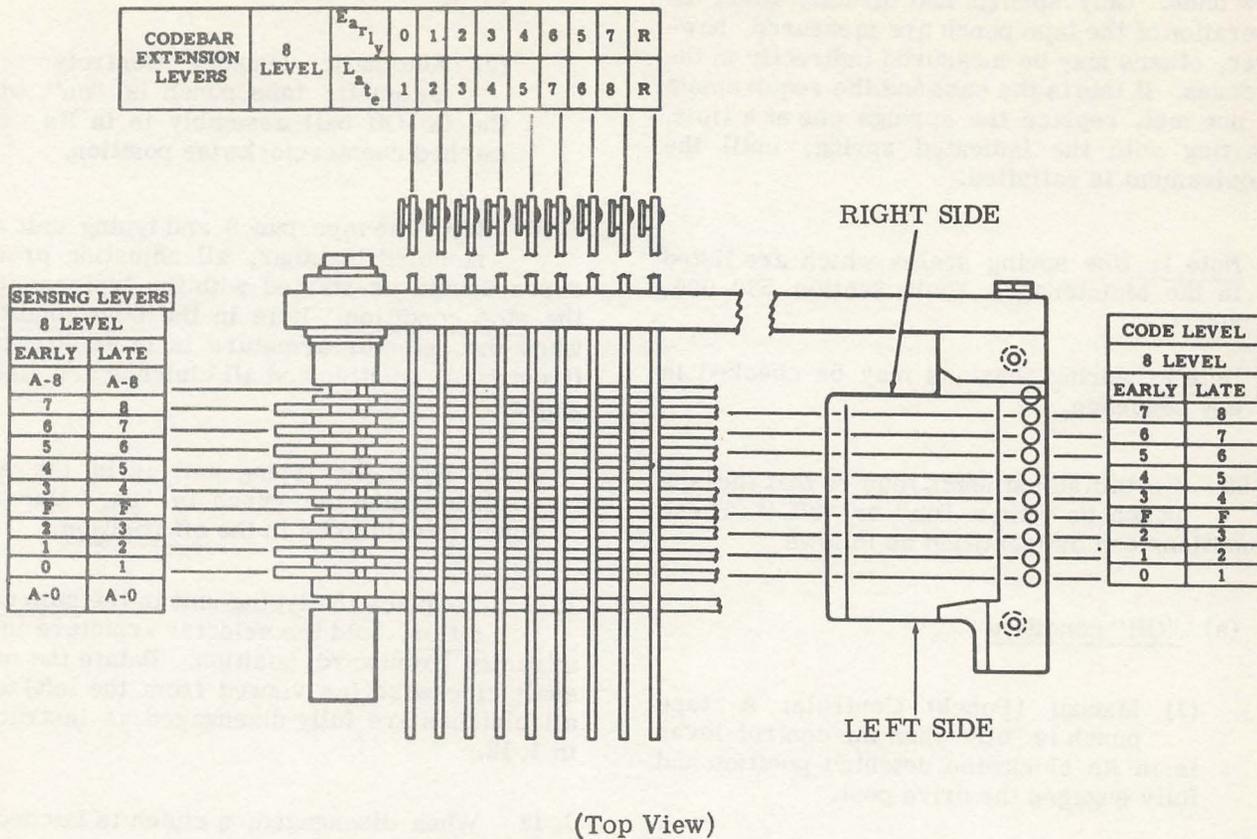


Figure 2 - Tape Punch Code Level Cross Reference Chart

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

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

1.15 The relationship between code levels, sensing levers, and codebar extensions is illustrated in Figure 2.

1.16 The following procedure may be used to determine the positions of the function bail on typing units having indicator marks on the function cam and carriage drive link:

(a) The function rocker shaft is in its rearmost position when the mark on the carriage drive link is centrally located within the first notch on the function cam and the hole in the cam is down.

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

2. BASIC UNIT

2.01 Tape Punch Area

Note 1: These adjustments are to be made only if these areas have been disturbed during disassembly.

Note 2: Prior to making adjustments, remove the chad extension. Reassemble when the adjustments are completed.

PAWL UPSTOP ASSEMBLY — PRELIMINARY

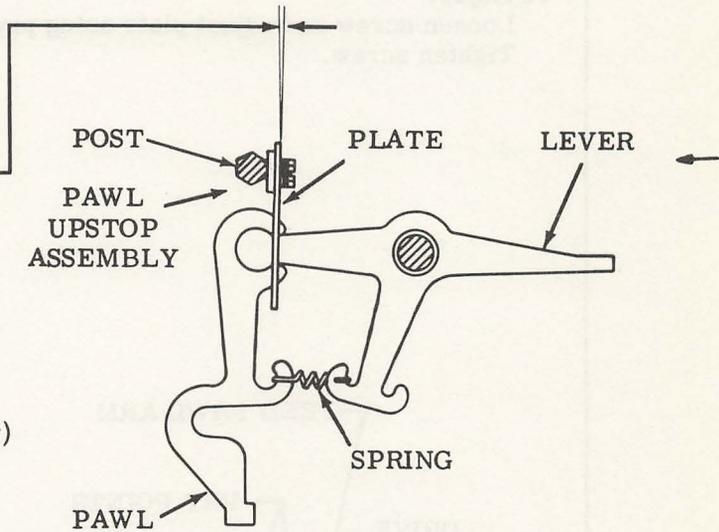
Requirement

The pawl upstop assembly should be positioned so that it is vertical or within 2 degrees clockwise from vertical, as gauged by eye.

To Adjust

Loosen the screw which secures the pawl upstop assembly post to the tape punch casting and position pawl upstop assembly. Tighten screw.

(Left Side View)



TAPE NUDGER

Note 3: This adjustment applies only to tape punch castings which have an elongated tape nudger post mounting hole.

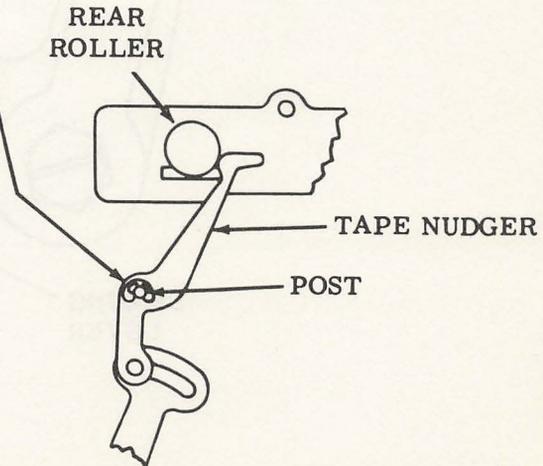
Requirement

The post should be in its most rearward position.

To Adjust

Loosen the screw which secures the post to the tape punch casting and position the post. Tighten screw.

(Left Side View)



2.02 Tape Punch Area (continued)

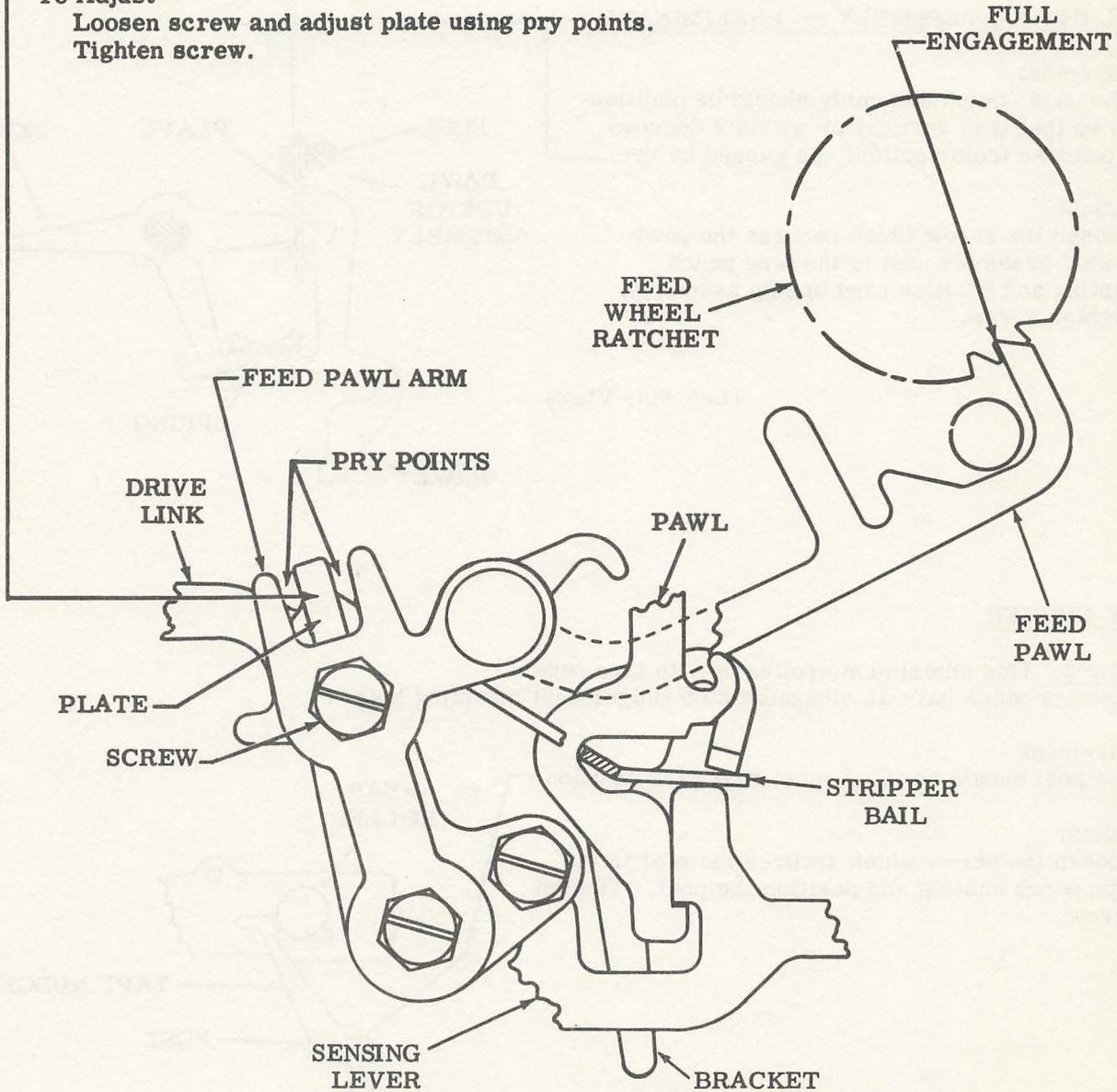
FEE WHEEL RATCHET AND PAWL — PRELIMINARY

Requirement

The plate should be in middle of slot located in feed pawl arm, as gauged by eye.

To Adjust

Loosen screw and adjust plate using pry points.
Tighten screw.



(Left Side View)

2.03 Tape Punch Area (continued)

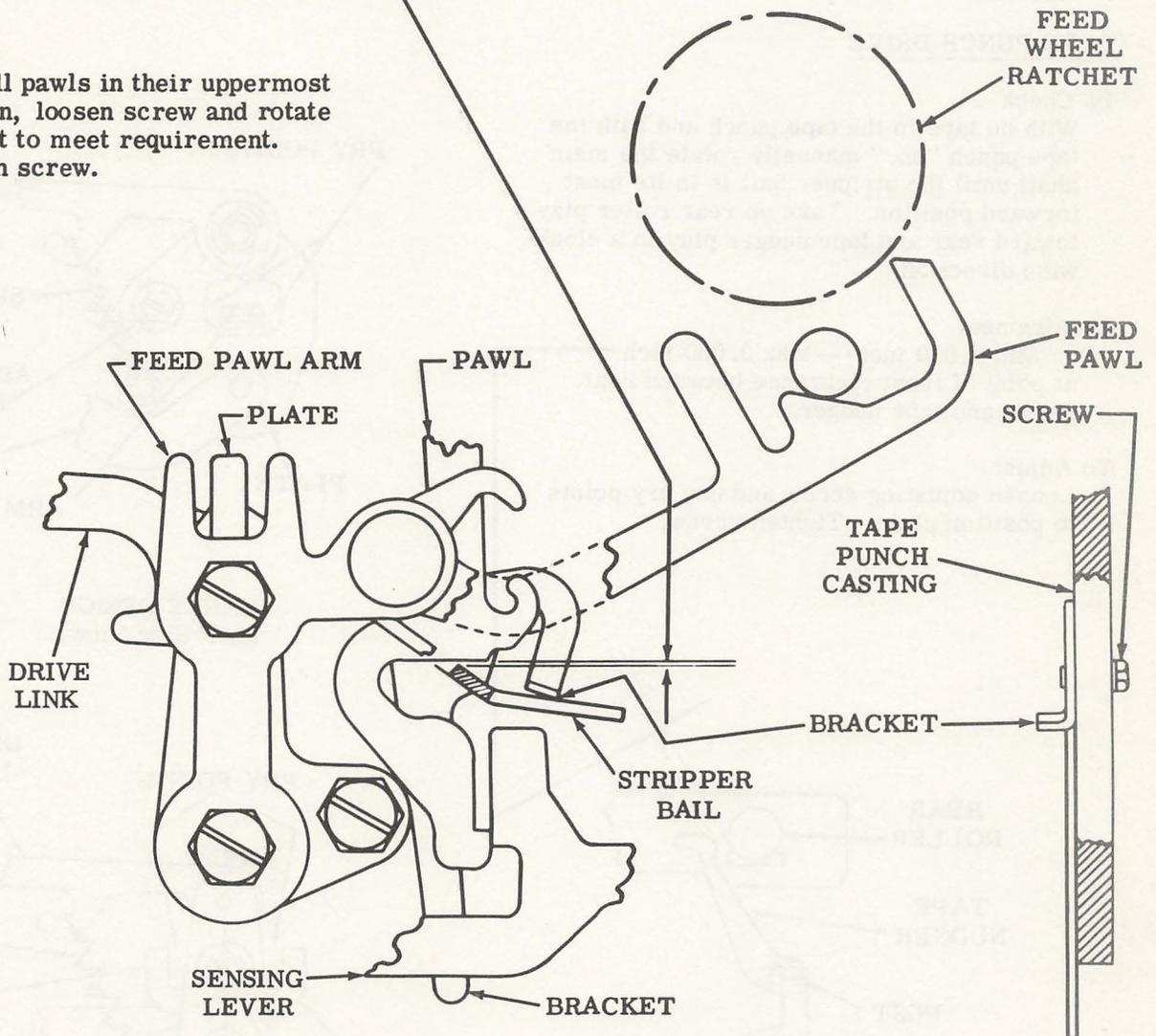
STRIPPER BAIL UPSTOP

Requirement

With the tape punch "off" and all pawls in their uppermost position, the stripper bail should clear bottom corner of the stripping surface of lowermost pawl by
 Min some---Max 0.012 inch

To Adjust

With all pawls in their uppermost position, loosen screw and rotate bracket to meet requirement.
 Tighten screw.



(Left Side View)

(Front View)

2.04 Tape Punch Area (continued)

Note 1: For the adjustments which follow, the tape punch should be mounted to the typing unit. For instructions, see section titled "33 Tape Punch, Disassembly and Reassembly."

Note 2: The following Tape Punch Area adjustments must be made in sequence: TAPE PUNCH DRIVE, PUNCH PENETRATION, PAWL UPSTOP ASSEMBLY — FINAL, and FEED WHEEL RATCHET AND PAWL — FINAL. Prior to making the above adjustments, check or make the following Tape Punch Area adjustments: PAWL UPSTOP ASSEMBLY — PRELIMINARY, TAPE NUDGER, FEED WHEEL RATCHET AND PAWL — PRELIMINARY, and STRIPPER BAIL UPSTOP.

TAPE PUNCH DRIVE

To Check

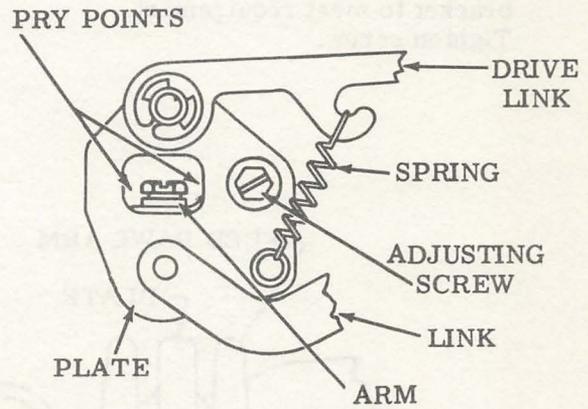
With no tape in the tape punch and with the tape punch "on," manually rotate the main shaft until the stripper bail is in its most forward position. Take up rear roller play toward rear and tape nudger play in a clockwise direction.

Requirement

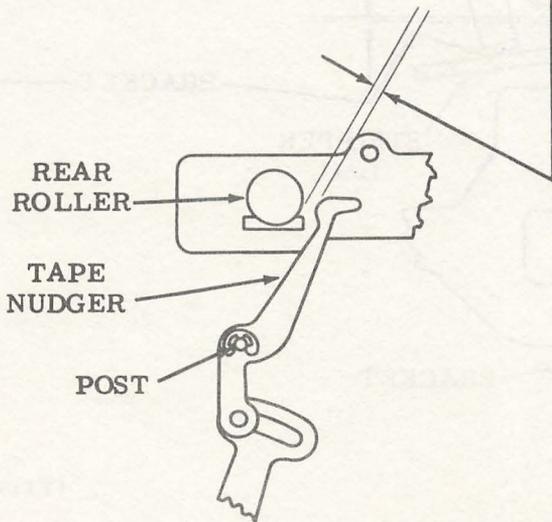
Min 0.030 inch---Max 0.080 inch at point of least clearance between rear roller and tape nudger.

To Adjust

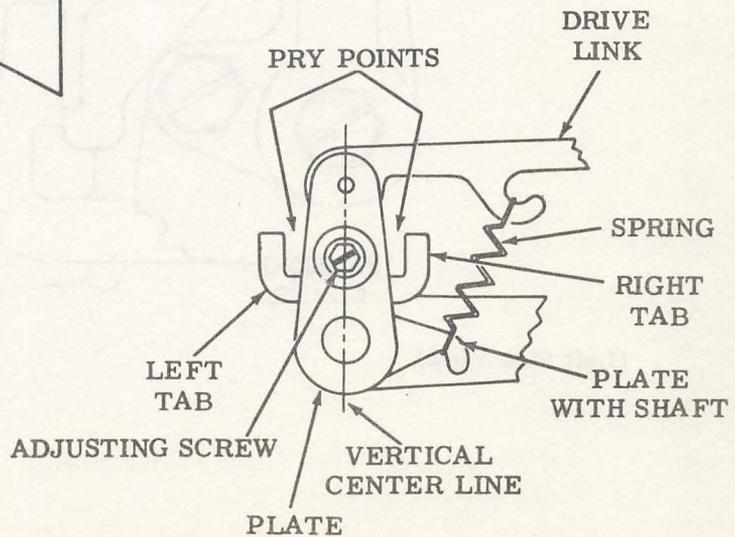
Loosen adjusting screw and use pry points to position plate. Tighten screw.



EARLY DESIGN
(Left Side View)



EARLY OR
LATE DESIGN
(Left Side View)



LATE DESIGN
(Left Side View)

2.05 Tape Punch Area (continued)

PUNCH PENETRATION

To Check

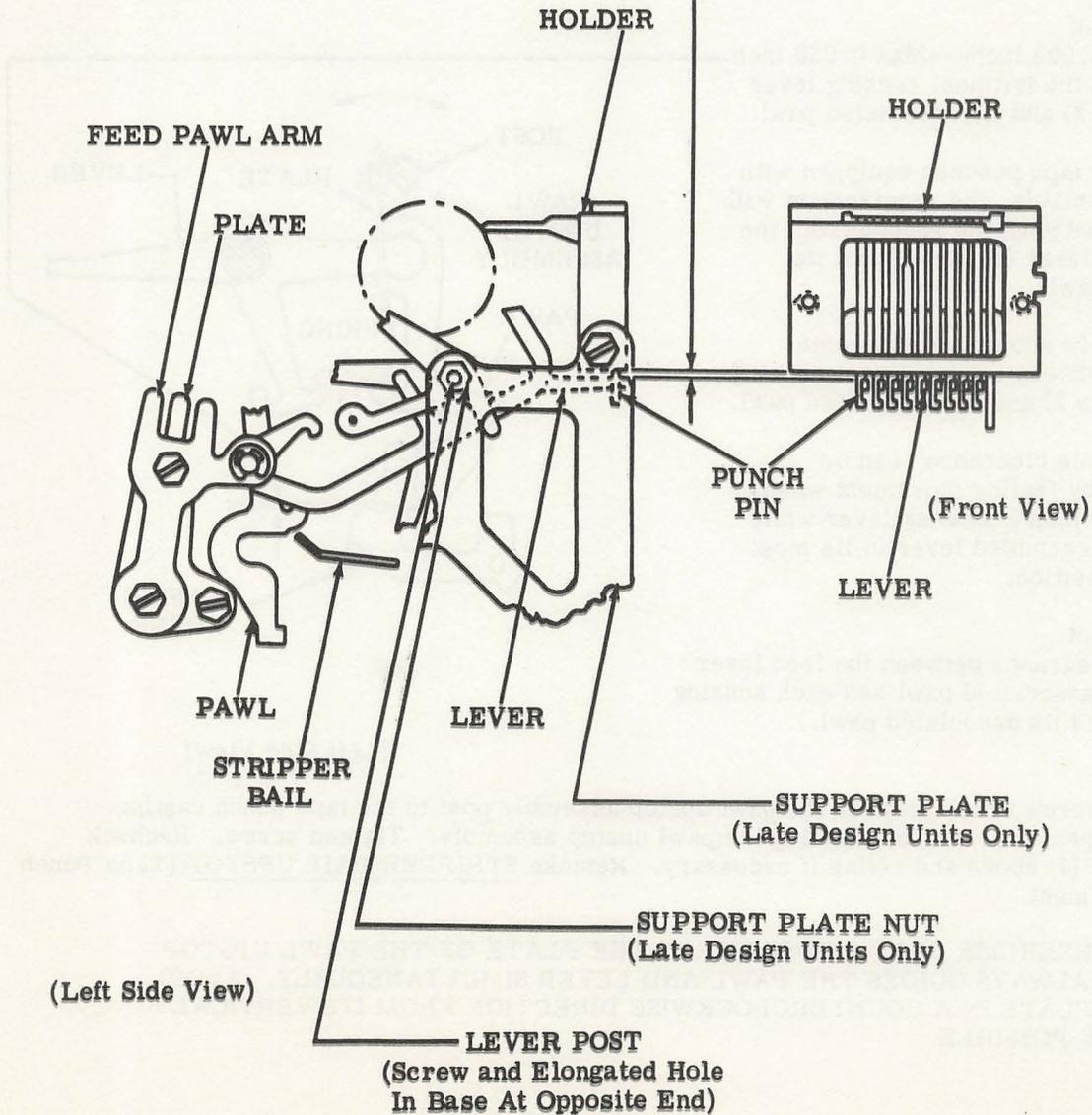
With the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its most forward position.

Requirement

Min 0.017 inch---Max 0.037 inch between bottom surface of holder and top surface of any lever.

To Adjust

With code lever post mounting screw (and support plate nut on late design units) friction tight, position post within the elongated base hole (and support plate hole — late design units). Tighten screw and nut.



2.06 Tape Punch Area (continued)

PAWL UPSTOP ASSEMBLY — FINAL

To Check

With the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its rearmost position.

Note 1: For tape punches equipped with the answer-back blocking option or automatic controls, use the following "To Check" procedure:

To Check

With the tape punch "on," set up the code combination in the selector that will cause the special feature to operate. Manually rotate the main shaft until the stripper bail is in its rearmost position. Check requirement (1). Then, set up an all-marking code combination in selector. Manually rotate the main shaft until the stripper bail is in its rearmost position. Check requirement (2).

(1) Requirement

Min 0.005 inch---Max 0.020 inch
between the leftmost sensing lever
(Figure 2) and its associated pawl.

Note 2: For tape punches equipped with automatic controls, the requirement will be checked between the second from the left sensing lever (Figure 2) and its associated pawl.

Note 3: There should also be some clearance between the rightmost sensing lever (Figure 2) and its associated pawl.

Note 4: "Some clearance" can be determined by feeling movement when pressing down on a sensing lever while holding its assembled lever in its most downward position.

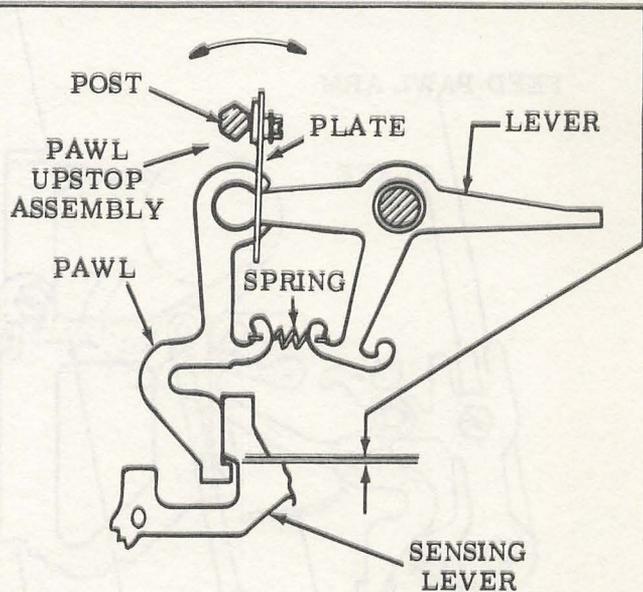
(2) Requirement

Some clearance between the feed lever and its associated pawl and each sensing lever and its associated pawl.

To Adjust

Loosen the screw which secures the pawl upstop assembly post to the tape punch casting. Provide proper clearance by rotating the pawl upstop assembly. Tighten screw. Recheck requirement (1) above and refine if necessary. Remake STRIPPER BAIL UPSTOP (Tape Punch Area) adjustment.

CAUTION: EXERCISE CARE AND SEE THAT THE PLATE OF THE PAWL UPSTOP ASSEMBLY ALWAYS GUIDES THE PAWL AND LEVER SIMULTANEOUSLY. AVOID ROTATING PLATE IN A COUNTERCLOCKWISE DIRECTION FROM ITS VERTICAL POSITION IF POSSIBLE.



(Left Side View)

2.07 Tape Punch Area (continued)

FEED WHEEL RATCHET AND PAWL - FINAL

Note 1: Prior to checking the adjustment, the PLATE in the illustration should be located in the center of the slot, as gauged by eye.

To Check

With no tape in the tape punch and with the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its rearmost position. Take up all play in stripper bail toward the front.

Requirement

With feed wheel ratchet in its fully detented position

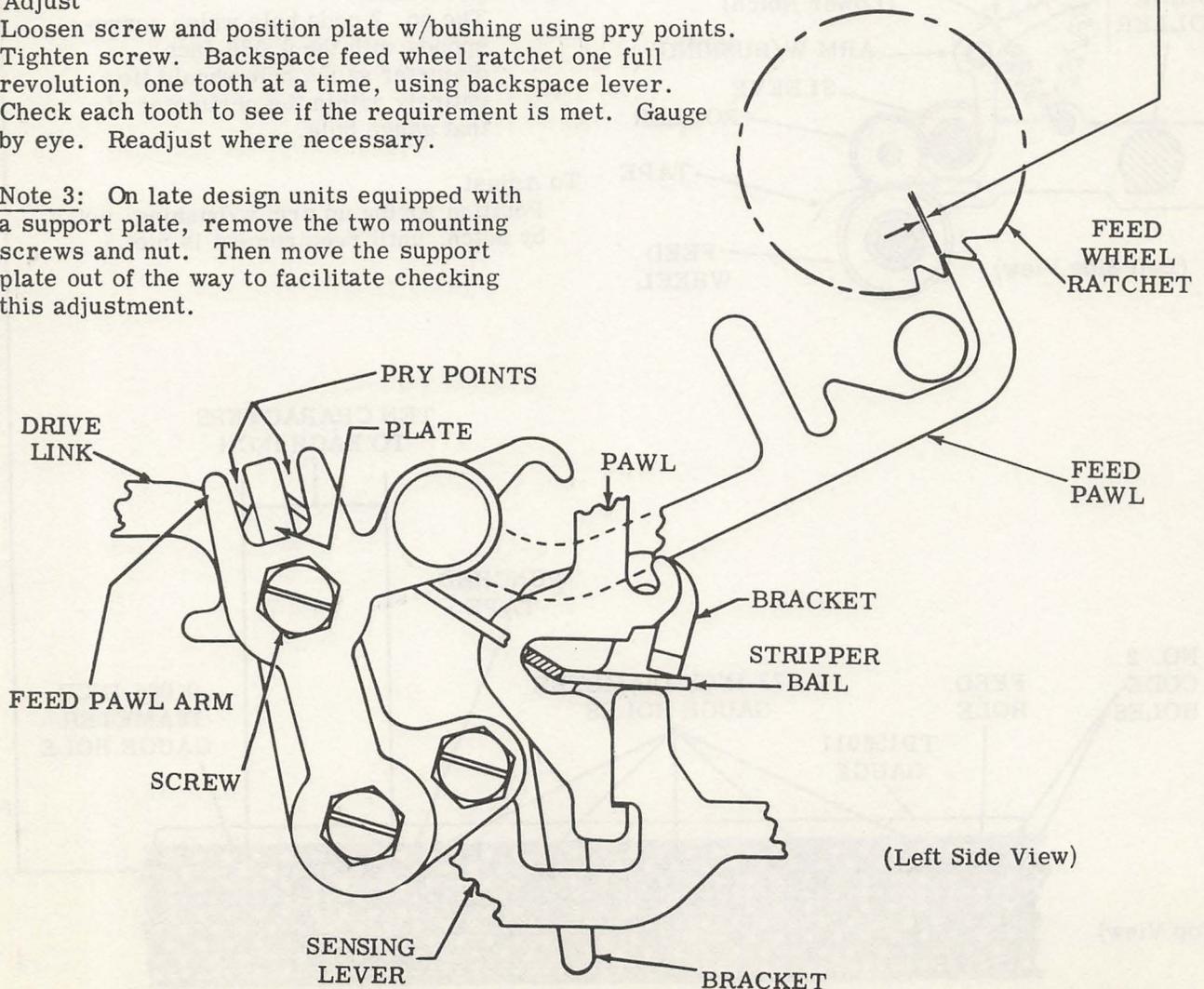
Min some---Max 0.010 inch
between the feed pawl and feed wheel ratchet tooth.

Note 2: The "some" clearance will be considered met if, when the feed pawl is pulled out until the tip of the pawl is just beyond the outer diameter of the feed wheel ratchet and slowly allowed to return to full engagement, it does not rub.

To Adjust

Loosen screw and position plate w/bushing using pry points. Tighten screw. Backspace feed wheel ratchet one full revolution, one tooth at a time, using backspace lever. Check each tooth to see if the requirement is met. Gauge by eye. Readjust where necessary.

Note 3: On late design units equipped with a support plate, remove the two mounting screws and nut. Then move the support plate out of the way to facilitate checking this adjustment.



(Left Side View)

2.08 Tape Punch Area (continued)

TEN CHARACTERS PER INCH

Note: From left to right, with the smooth side of TP156011 gauge up, there are six holes in line — five holes with 0.072-inch diameters and one hole with a 0.086-inch diameter.

To Check

Position one end of spring to lower notch of arm w/bushing. Operate the typing unit under power and perforate an alternate R and "hyphen" code combination in approximately 8 inches of tape. Tear the 8-inch length of punched tape from the tape punch and place it to the smooth side of TP156011 gauge. Concentrically align a no. 2 code hole of the punched tape with the first 0.072-inch diameter hole of TP156011 gauge.

(1) Requirement

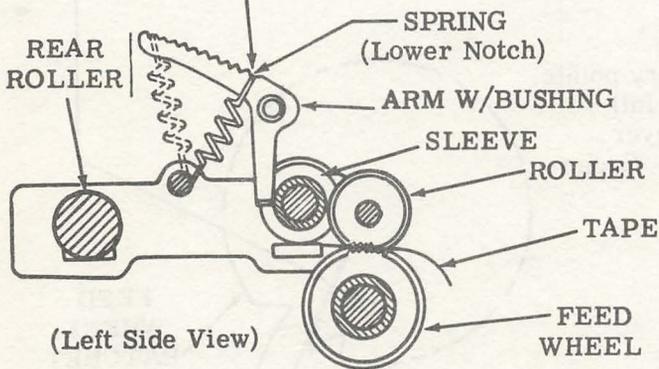
The four remaining 0.072-inch diameter gauge holes should be visible through corresponding no. 2 code holes in the punched tape.

(2) Requirement

The no. 2 code hole which corresponds with the 0.086-inch diameter gauge hole should lie entirely within the perimeter of that gauge hole.

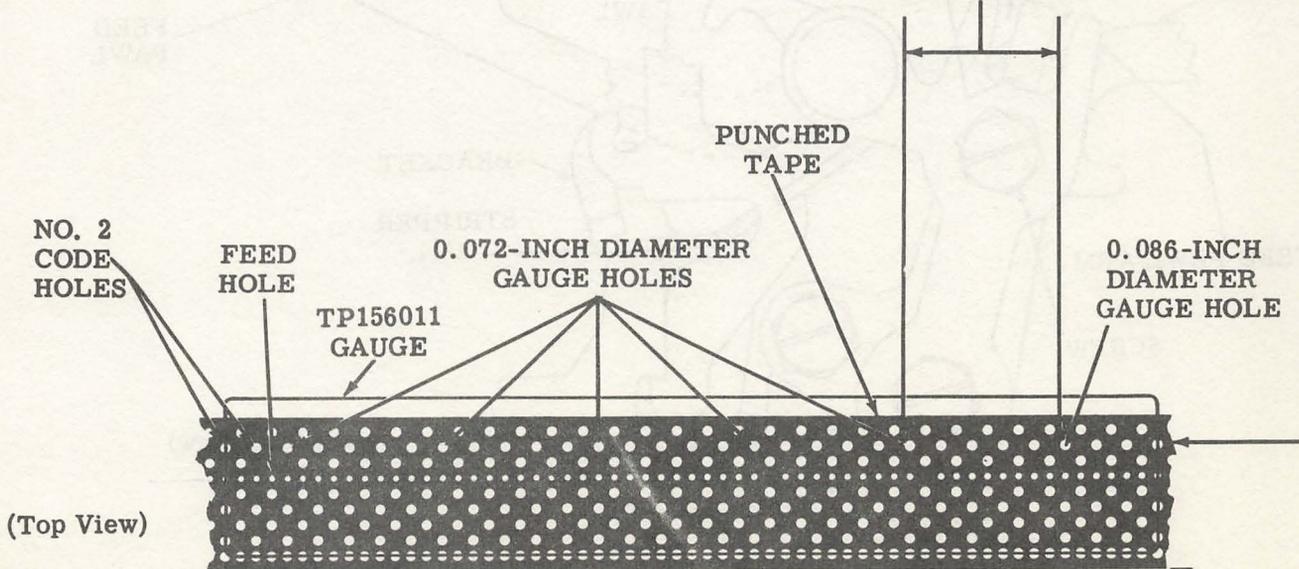
To Adjust

Position spring up arm w/bushing, notch by notch, until requirement is met.



(Left Side View)

TEN CHARACTERS TO EACH INCH



(Top View)

2.09 Tape Punch Area (continued)

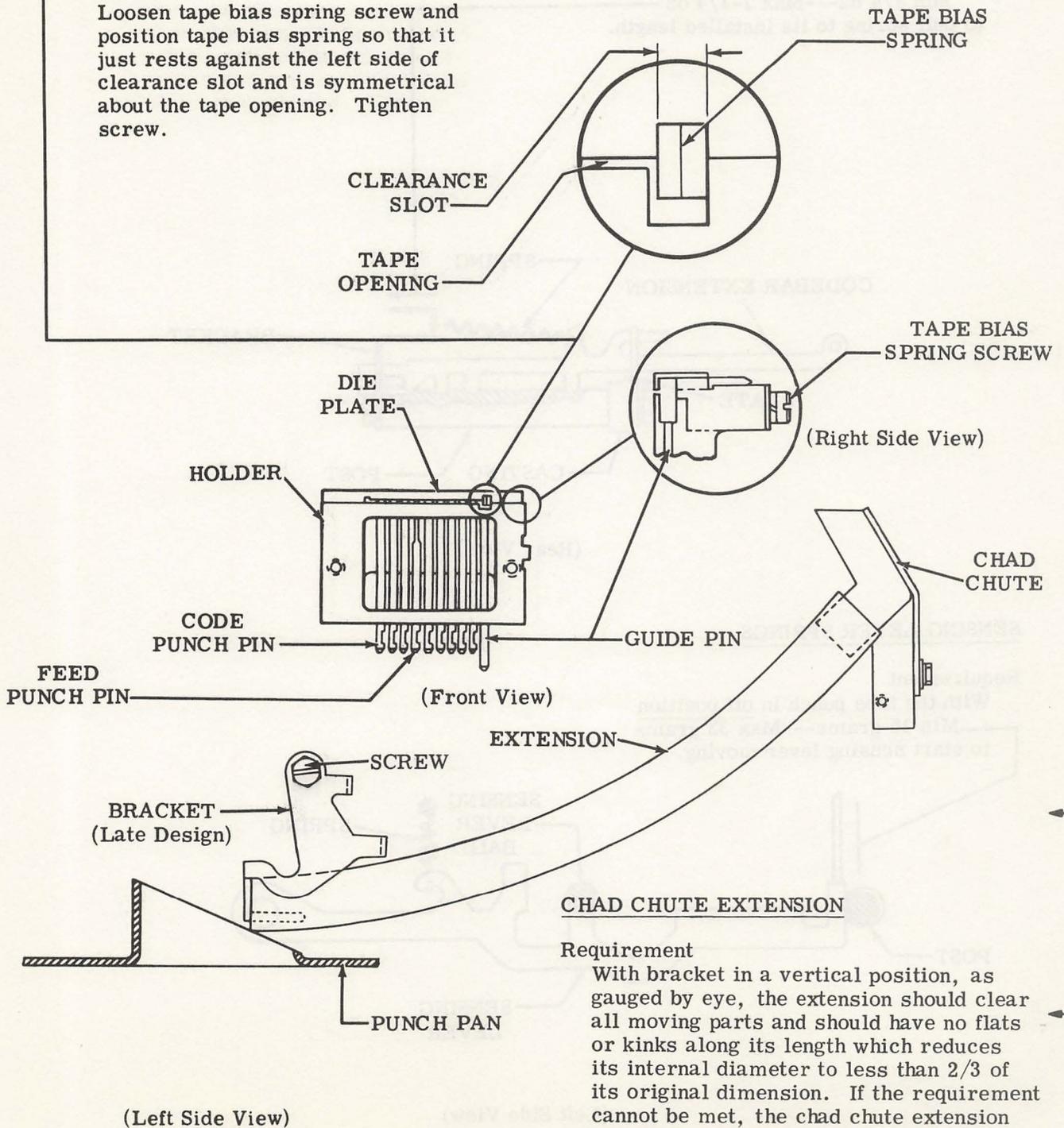
TAPE BIAS SPRING

Requirement

With tape removed from the tape punch, tape bias spring should rest against side of die plate and should be symmetrical about the tape opening, as gauged by eye.

To Adjust

Loosen tape bias spring screw and position tape bias spring so that it just rests against the left side of clearance slot and is symmetrical about the tape opening. Tighten screw.



Requirement

With bracket in a vertical position, as gauged by eye, the extension should clear all moving parts and should have no flats or kinks along its length which reduces its internal diameter to less than 2/3 of its original dimension. If the requirement cannot be met, the chad chute extension should be replaced.

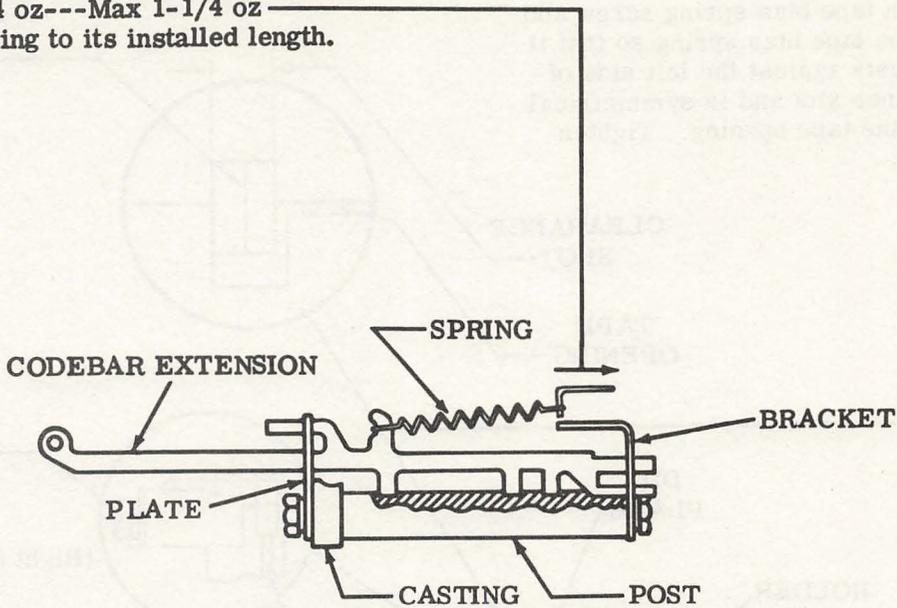
2.10 Tape Punch Area (continued)

CODEBAR EXTENSION SPRINGS

Requirement

With the typing unit in stop condition

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



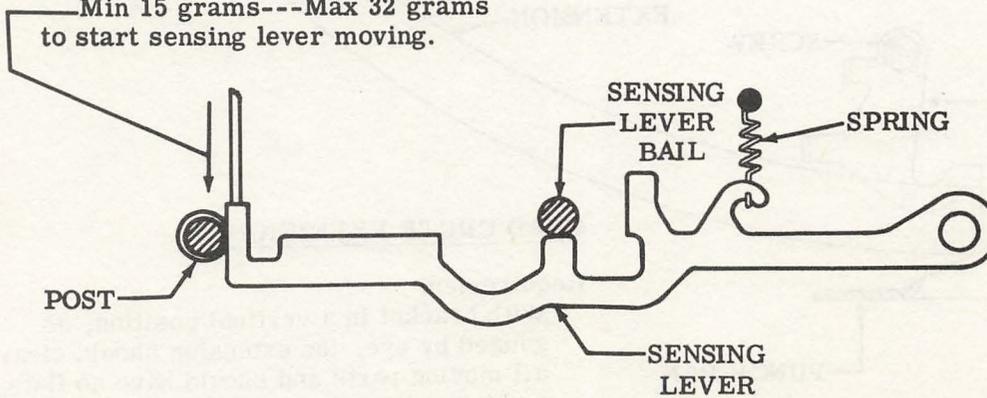
(Rear View)

SENSING LEVER SPRINGS

Requirement

With the tape punch in off position

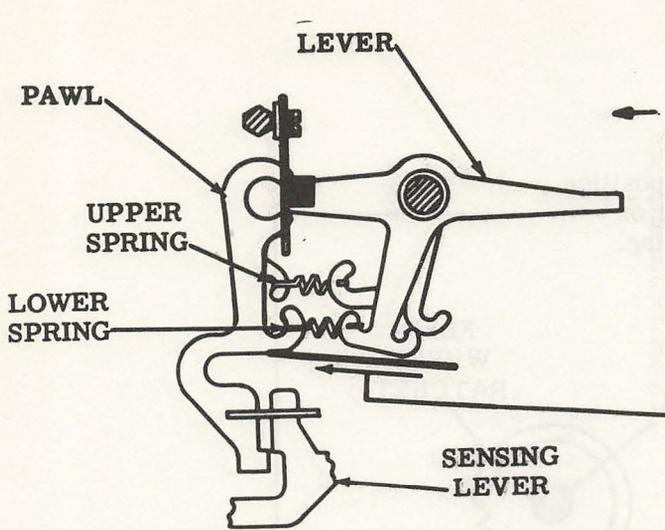
Min 15 grams---Max 32 grams
to start sensing lever moving.



(Left Side View)

2.11 Tape Punch Area (continued)

PAWL AND LEVER SPRINGS



Requirement

With the tape punch "off"

Upper spring

Min 1 oz---Max 2 oz

Lower spring

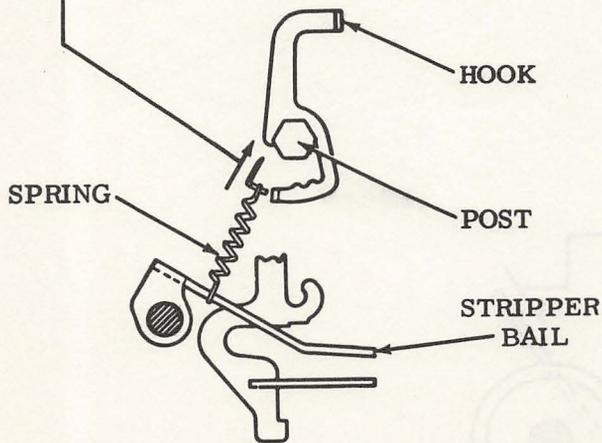
Min 1-1/2 oz---Max 2-1/2 oz
to start pawl moving.

STRIPPER BAIL SPRING

Requirement

With the tape punch in off position

Min 12 oz---Max 15 oz
to pull spring to its installed length.



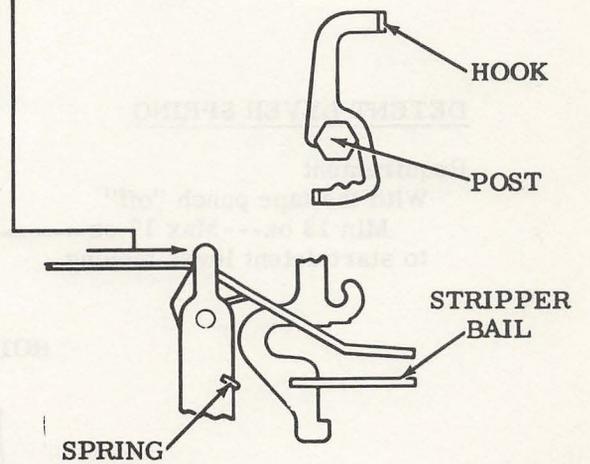
EARLY DESIGN

STRIPPER BAIL SPRING

Requirement

With tape punch in off position

Min 7 oz---Max 13 oz
to start the stripper bail moving.



LATE DESIGN

(Left Side Views)

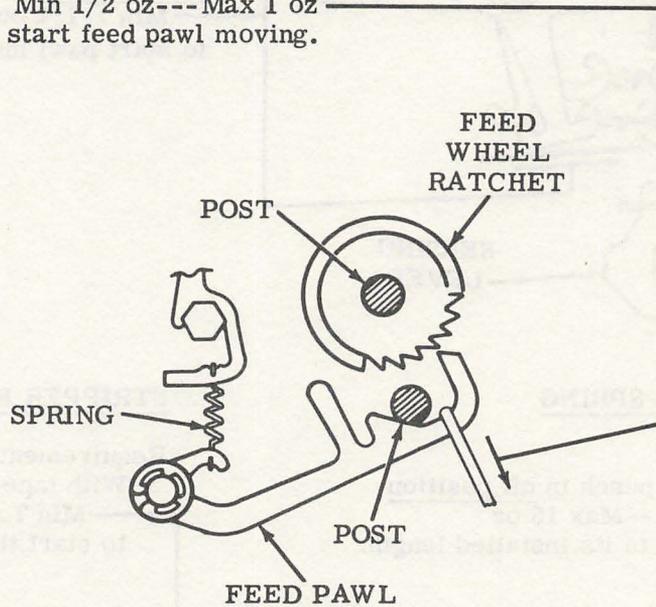
2.12 Tape Punch Area (continued)

FEED PAWL SPRING

Requirement

With tape punch in off position

Min 1/2 oz---Max 1 oz
to start feed pawl moving.



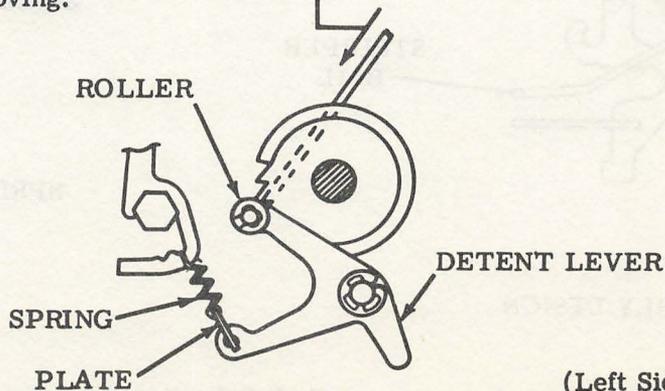
(Left Side View)

DETENT LEVER SPRING

Requirement

With the tape punch "off"

Min 13 oz---Max 17 oz
to start detent lever moving.



(Left Side View)

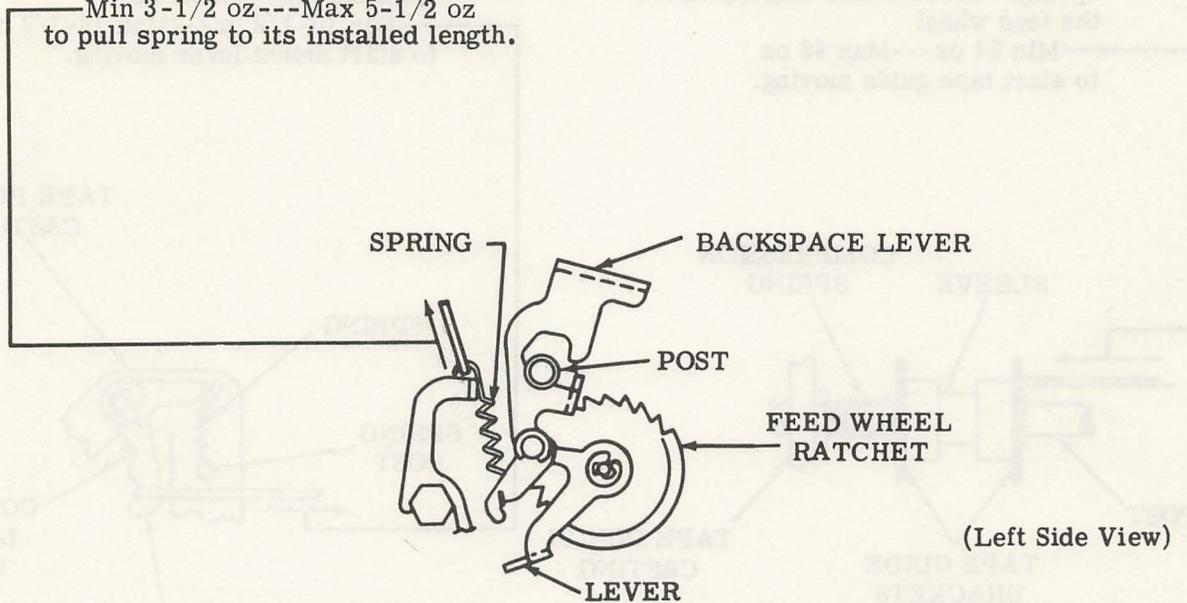
2.13 Tape Punch Area (continued)

BACKSPACE LEVER SPRING

Requirement

With the tape punch in off position

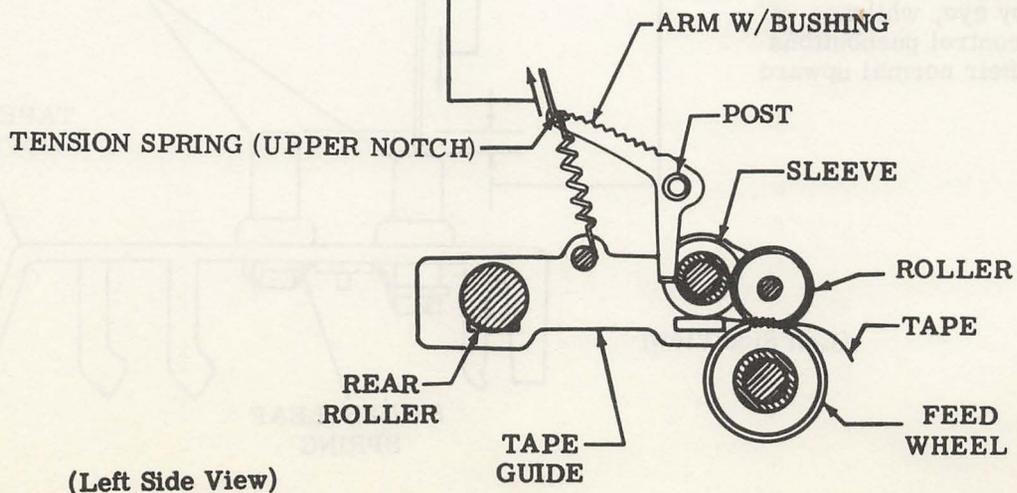
Min 3-1/2 oz---Max 5-1/2 oz
to pull spring to its installed length.



TAPE GUIDE TENSION SPRING

Requirement

Min 34 oz---Max 38 oz
to pull spring to its installed
(upper notch) length.



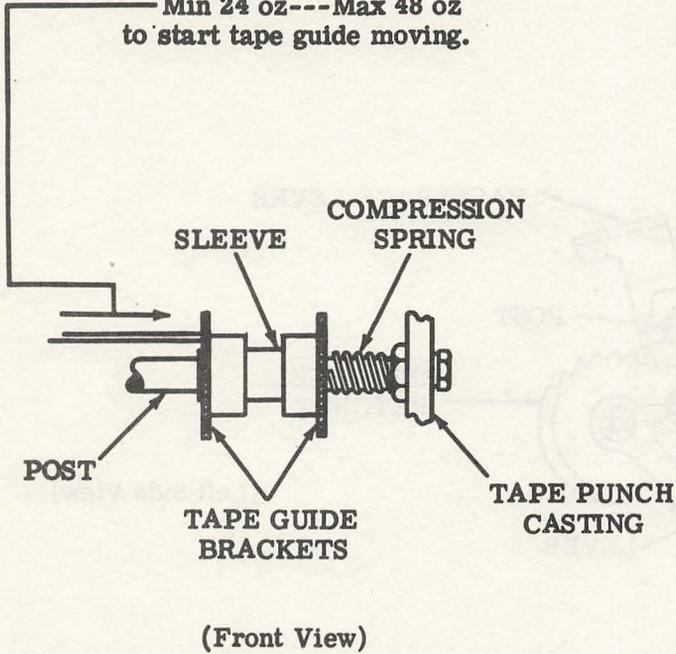
2.14 Tape Punch Area (continued)

TAPE GUIDE COMPRESSION SPRING

Requirement

Remove the tape guide tension spring. Place roller slightly above the feed wheel

Min 24 oz---Max 48 oz to start tape guide moving.



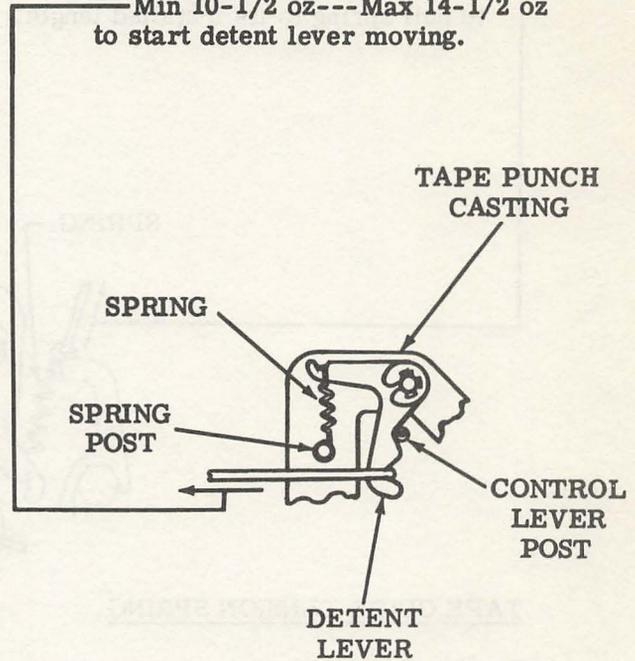
CONTROL DETENT LEVER SPRING

Note: This adjustment applies only to tape punches equipped with TP182843 detent lever.

Requirement

With the tape punch "off"

Min 10-1/2 oz---Max 14-1/2 oz to start detent lever moving.

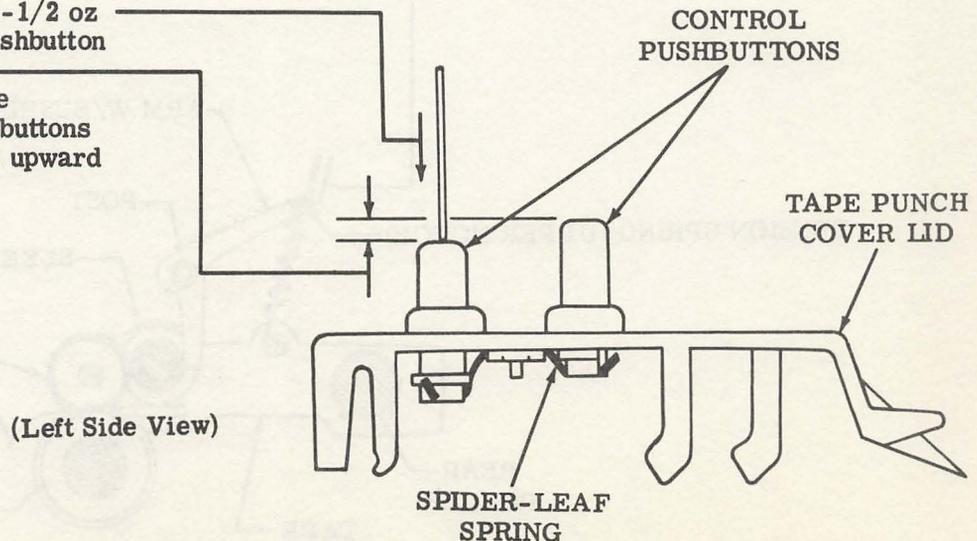


CONTROL PUSHBUTTONS

Requirement

Min 1/2 oz---Max 1-1/2 oz to push each control pushbutton down 1/8 inch

as gauged by eye, while remaining control pushbuttons remain in their normal upward positions.

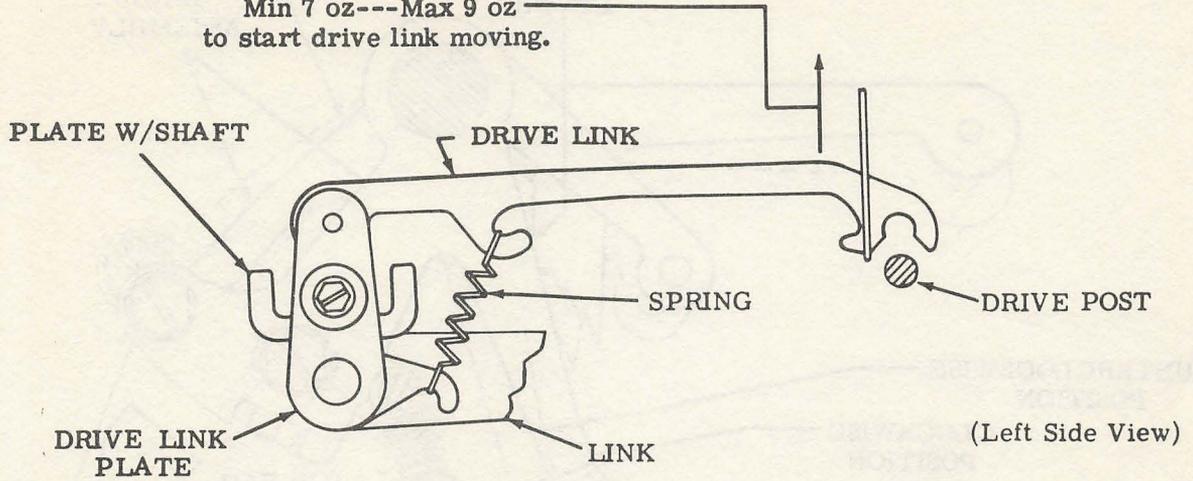


2.15 Tape Punch Area (continued)

DRIVE LINK SPRING

Requirement

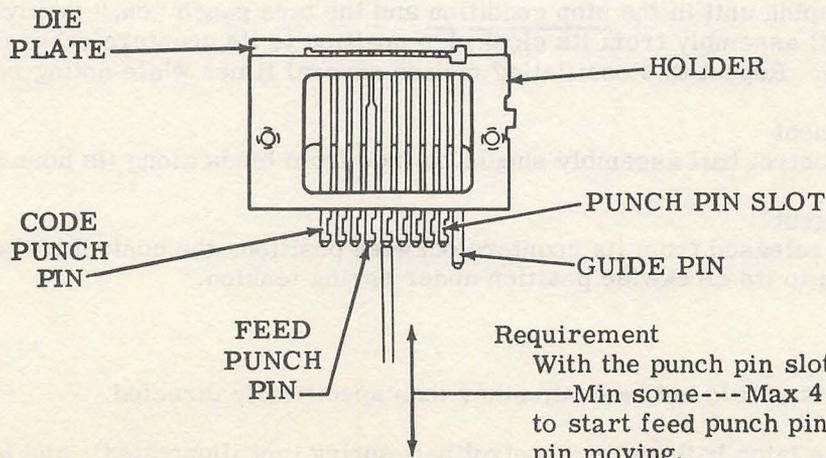
With tape punch "off"
Min 7 oz---Max 9 oz
to start drive link moving.



PUNCH BLOCK ASSEMBLY

To Check

Remove the punch block assembly from the tape punch. Replace after performing this adjustment. (For instructions, see the appropriate tape punch section.)



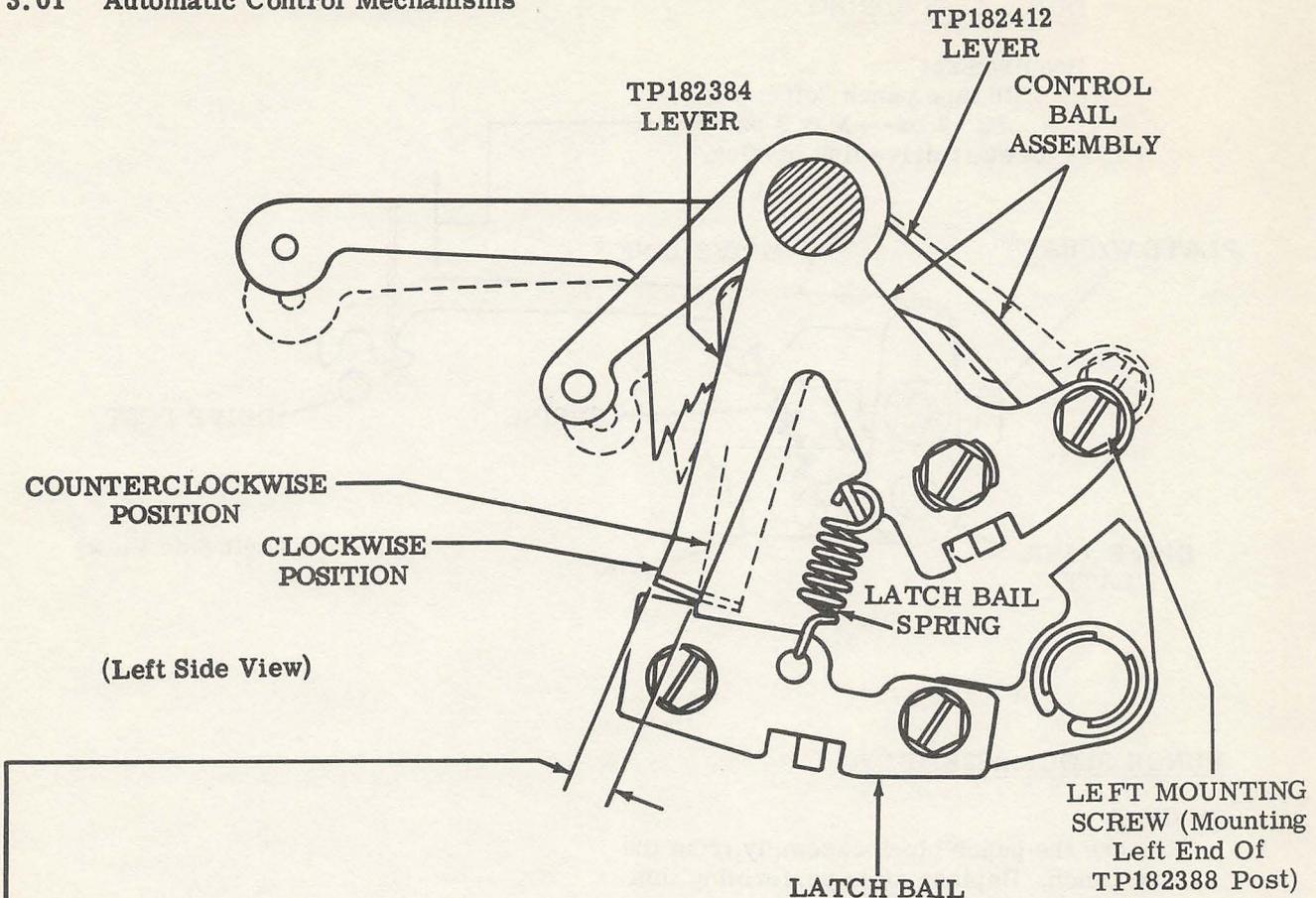
Requirement

With the punch pin slots facing the guide pin
Min some---Max 4 oz
to start feed punch pin and each code punch pin moving.

Note: The above requirement must be met anywhere along each punch pin's upward and downward travel in holder.

3. VARIATIONS TO THE BASIC UNIT

3.01 Automatic Control Mechanisms



CONTROL BAIL ASSEMBLY

To Check

With the typing unit in the stop condition and the tape punch "on," gently oscillate the control bail assembly from its clockwise position to its counterclockwise position and back again. Repeat this oscillating motion several times while noting requirements.

(1) Requirement

The control bail assembly should be free from binds along its normal travel.

(2) Requirement

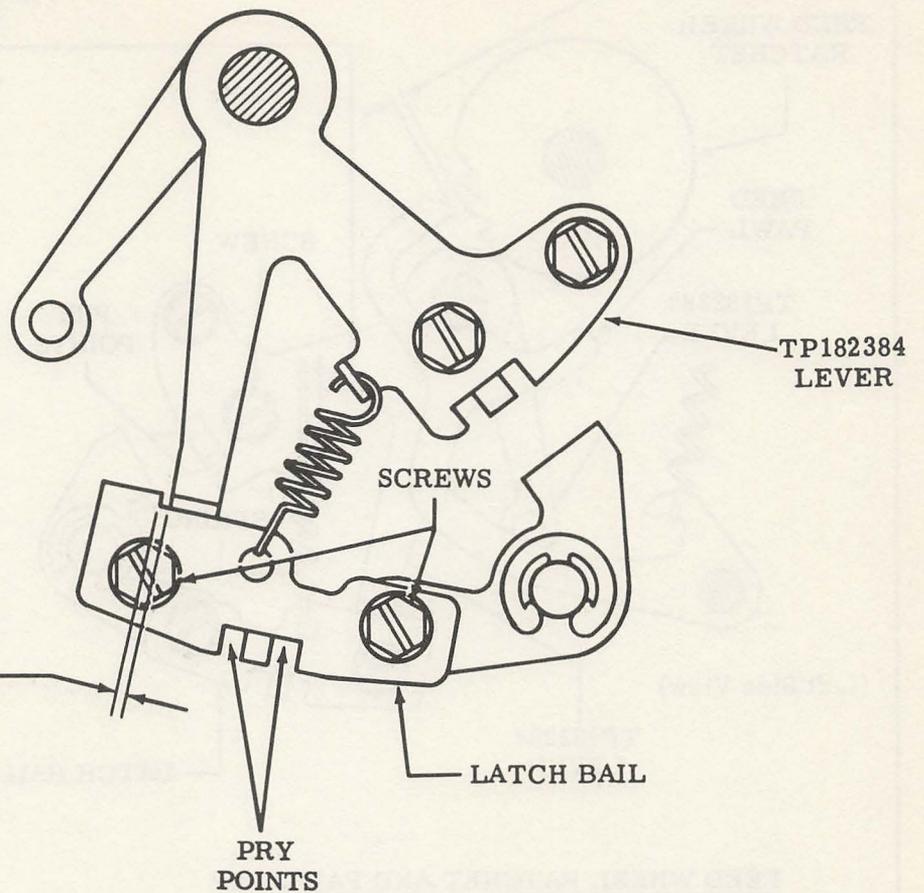
When released from its counterclockwise position, the control bail assembly should return to its clockwise position under spring tension.

To Adjust

Note: Parts should not be bent, other than specifically directed.

Remove the latch bail spring, control bail spring (not illustrated), and left mounting screw which secures the left side of TP182388 post. The TP182388 post threaded hole should be concentric to the left mounting screw hole. If necessary, bend TP182388 post about its right mounting screw (not illustrated). Reassemble left mounting screw and tighten. Replace springs. Recheck requirements and refine adjustment if necessary.

3.02 Automatic Control Mechanisms (continued)



(Left Side View)

LEVER OVERTRAVEL**To Check**

With the tape punch "on," set up the ~~TAPE~~ (--3-5--) code combination in the selector. Manually rotate the main shaft until the function rocker shaft is in its most forward position.

Requirement

Min 0.005 inch---Max 0.015 inch
between the TP182384 lever and latch bail.

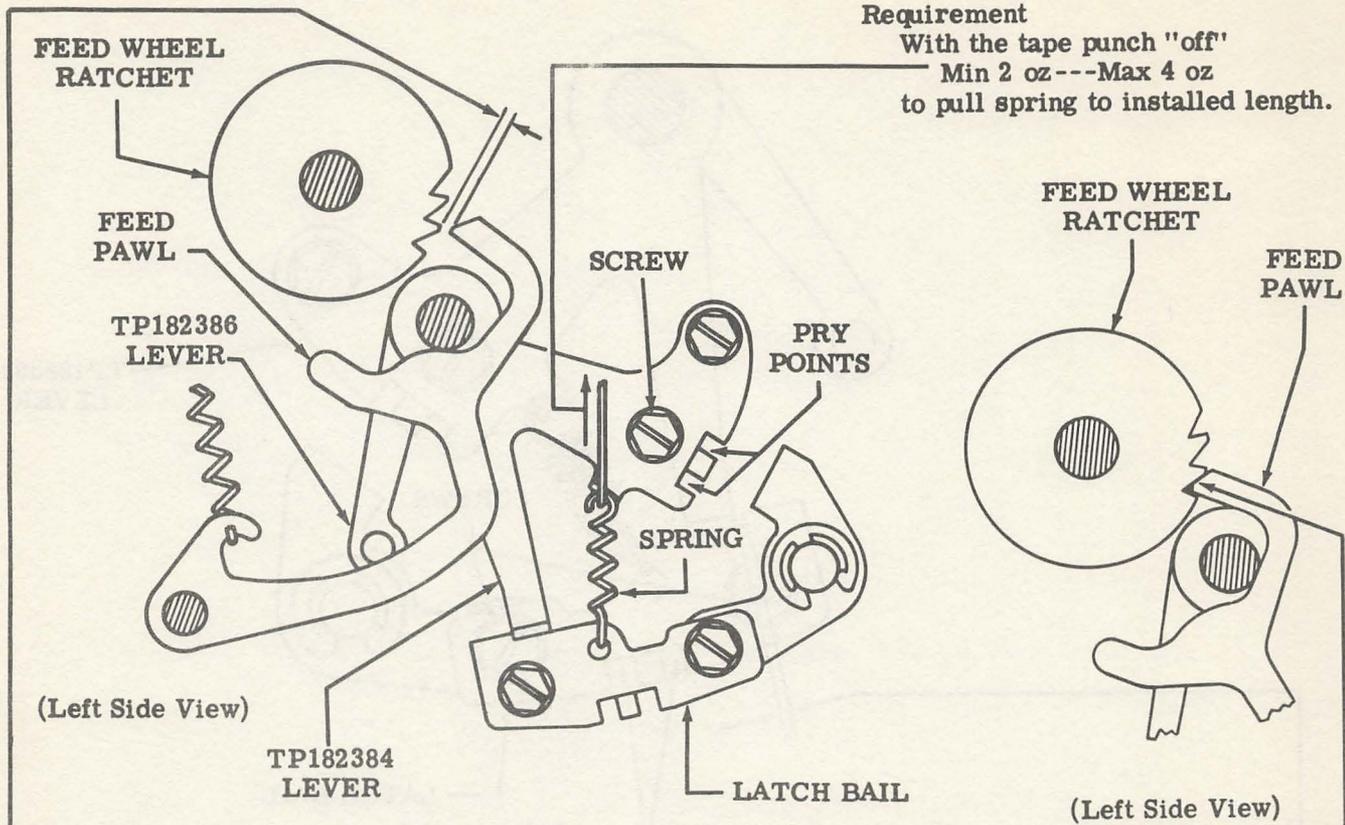
To Adjust

Loosen screws and position latch bail using pry points. Tighten screws.

3.03 Automatic Control Mechanisms (continued)

LATCH BAIL SPRING

Requirement
 With the tape punch "off"
 Min 2 oz ---Max 4 oz
 to pull spring to installed length.



FEED WHEEL RATCHET AND PAWL GAP

(1) To Check

With the tape punch "off," manually rotate the main shaft until the function rocker shaft positions the feed pawl so that there is a minimum clearance between it and a tooth of the feed wheel ratchet.

Requirement

Min 0.015 inch ---Max 0.030 inch

between the feed pawl and a tooth of the feed wheel ratchet.

To Adjust

Loosen the screw and position the TP182386 lever using the pry points. Tighten screw.

(2) To Check

With the tape punch "on," manually rotate the main shaft until the function rocker shaft positions the feed pawl so that it engages a tooth of the feed wheel ratchet.

Requirement

The feed pawl should fully engage a tooth of the feed wheel ratchet.

To Adjust

Refine requirement under (1) To Check.

3.04 Automatic Control Mechanisms (continued)

SENSING LEVER AND BAIL GAP

Note: This adjustment applies only to tape punches equipped with the sense suppression option — TP182430 bail etc.

To Check

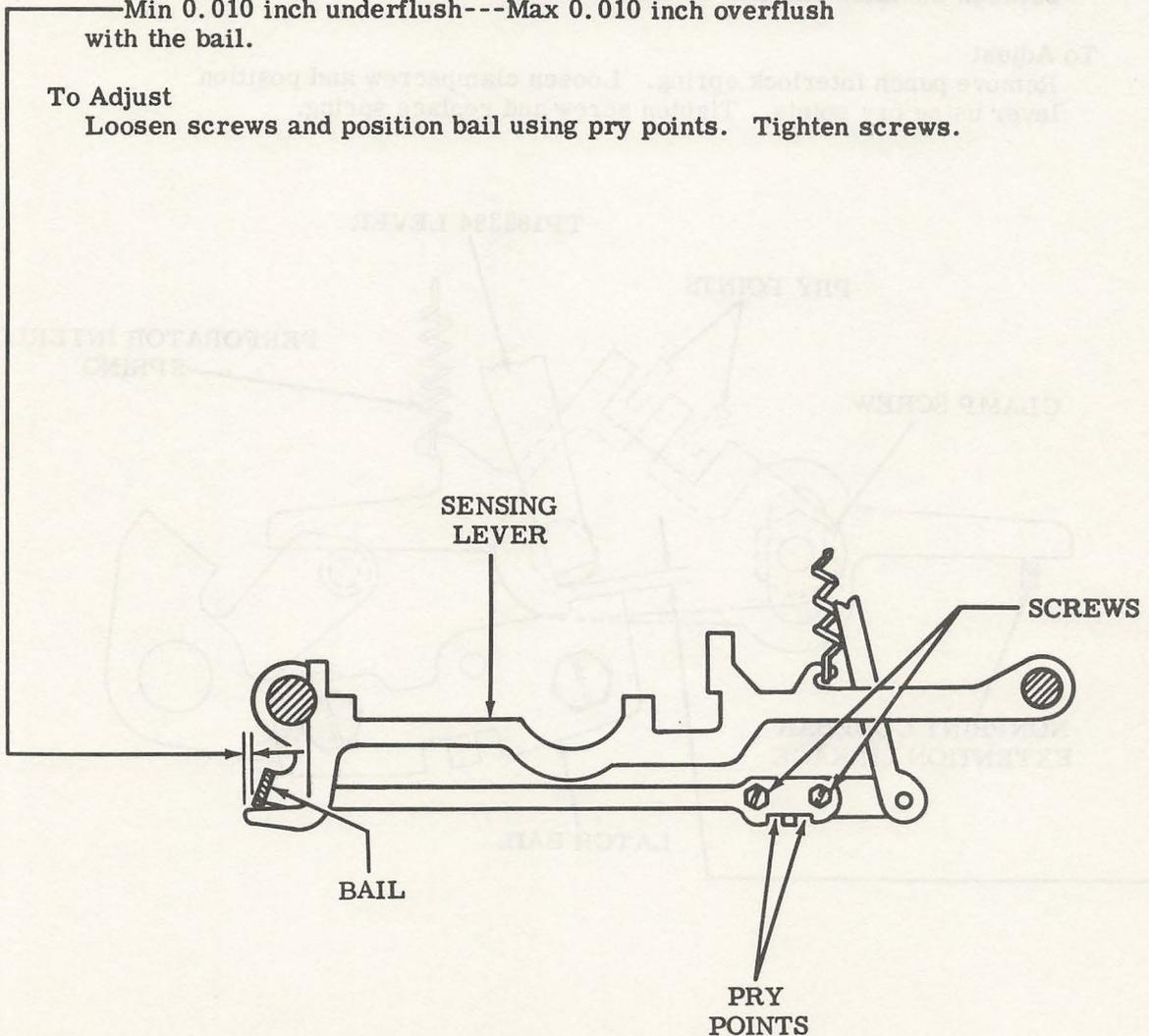
Place the tape punch "off."

Requirement

The sensing lever associated with the leftmost code level (Figure 2) should be
—Min 0.010 inch underflush---Max 0.010 inch overflush
with the bail.

To Adjust

Loosen screws and position bail using pry points. Tighten screws.



(Left Side View)

3.05 Automatic Control Mechanisms (continued)

LATCH BAIL GAP

Note: This adjustment applies only to tape punches equipped with tape punch interlock mechanism.

To Check

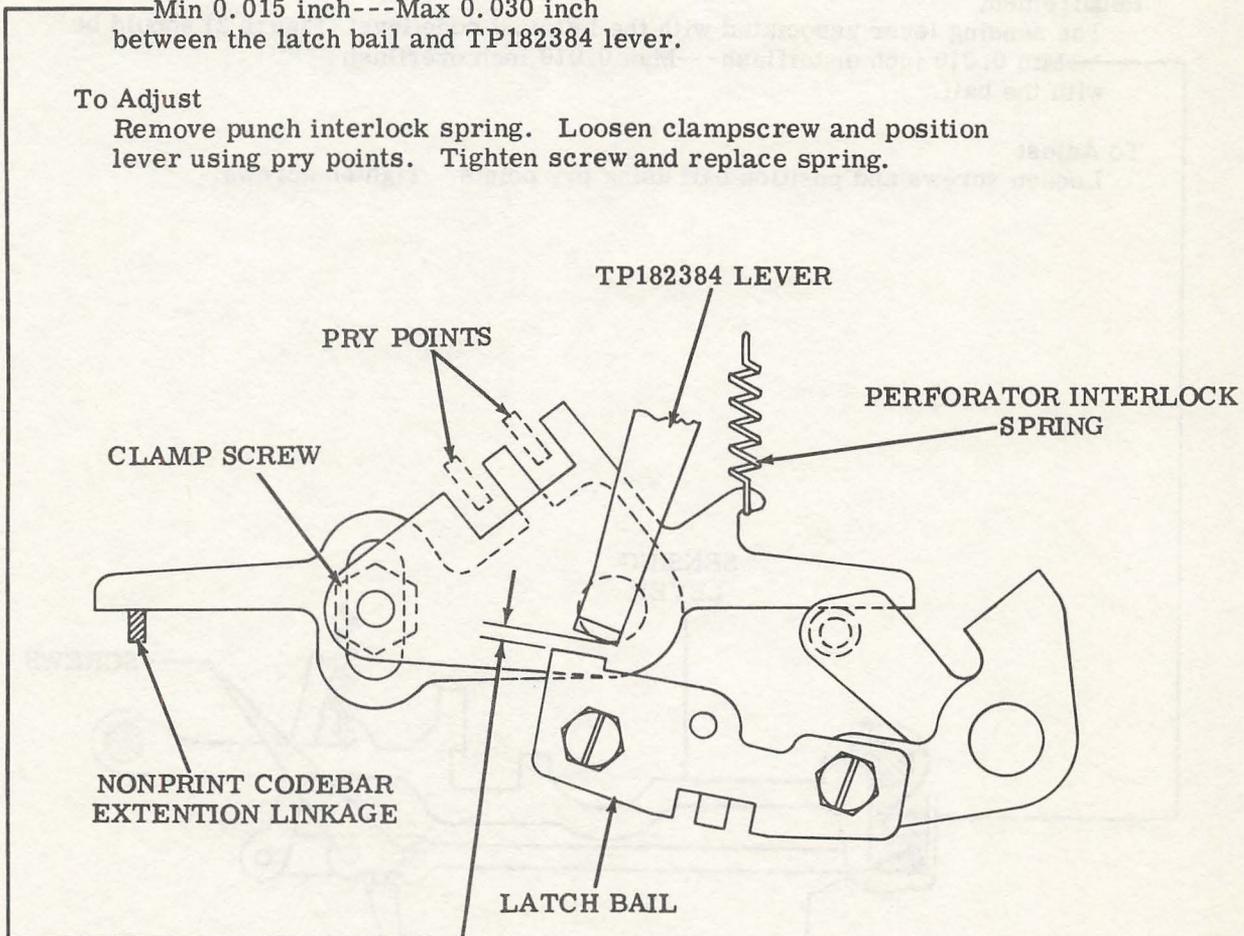
Place the typing unit in the stop condition and the tape punch "off."
Place the nonprint codebar in its operated position (solenoid energized).

Requirement

Min 0.015 inch---Max 0.030 inch
between the latch bail and TP182384 lever.

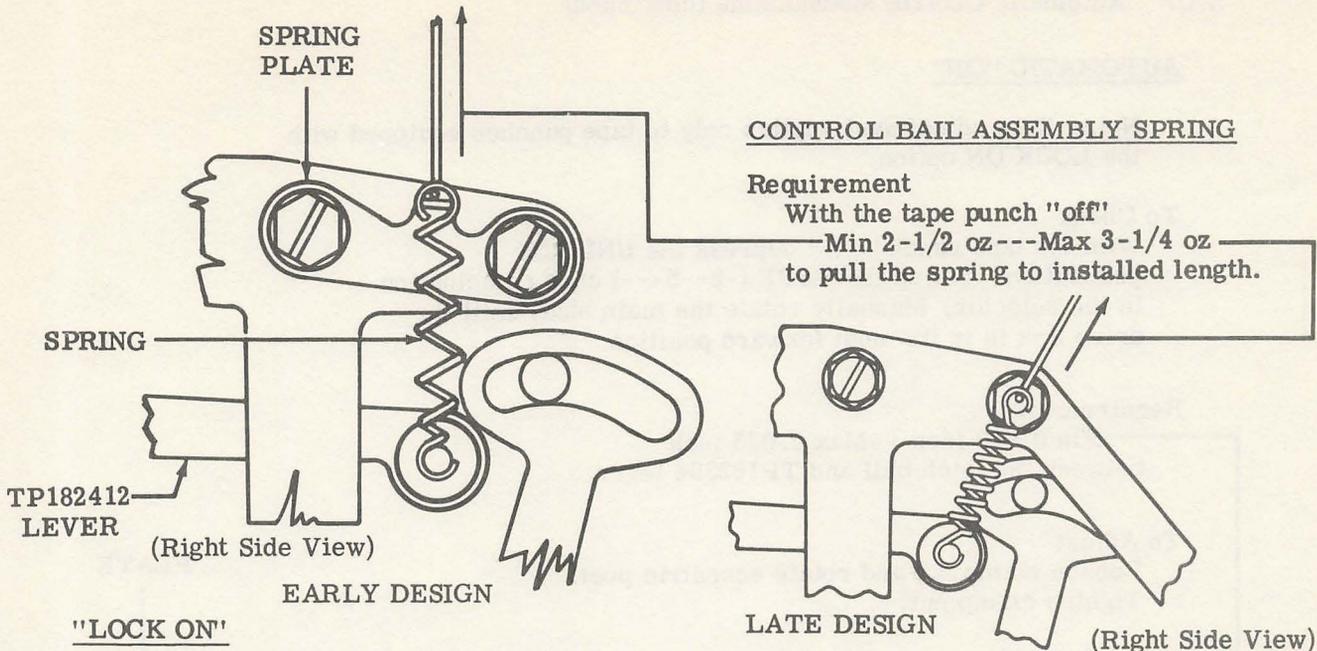
To Adjust

Remove punch interlock spring. Loosen clampscrew and position lever using pry points. Tighten screw and replace spring.



(Left Side View)

3.06 Automatic Control Mechanisms (continued)



Note: This adjustment applies only to tape punches equipped with the LOCK ON option — TP184200 lock bail, etc.

To Check

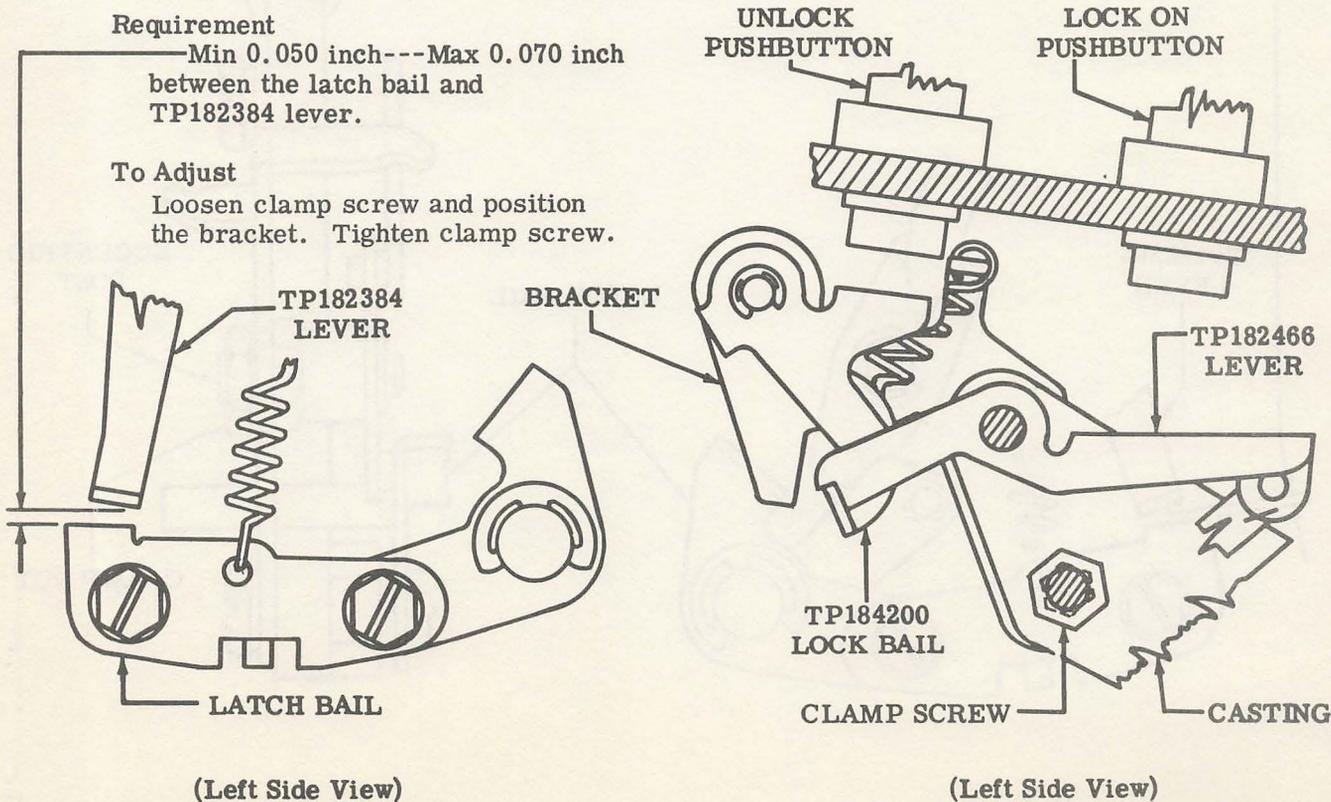
Place the tape punch in the "off" condition. Depress the LOCK ON pushbutton and allow the TP184200 lock bail to latch the TP182466 lever.

Requirement

Min 0.050 inch ---Max 0.070 inch between the latch bail and TP182384 lever.

To Adjust

Loosen clamp screw and position the bracket. Tighten clamp screw.



3.07 Automatic Control Mechanisms (continued)

AUTOMATIC "ON"

Note: This adjustment applies only to tape punches equipped with the LOCK ON option.

To Check

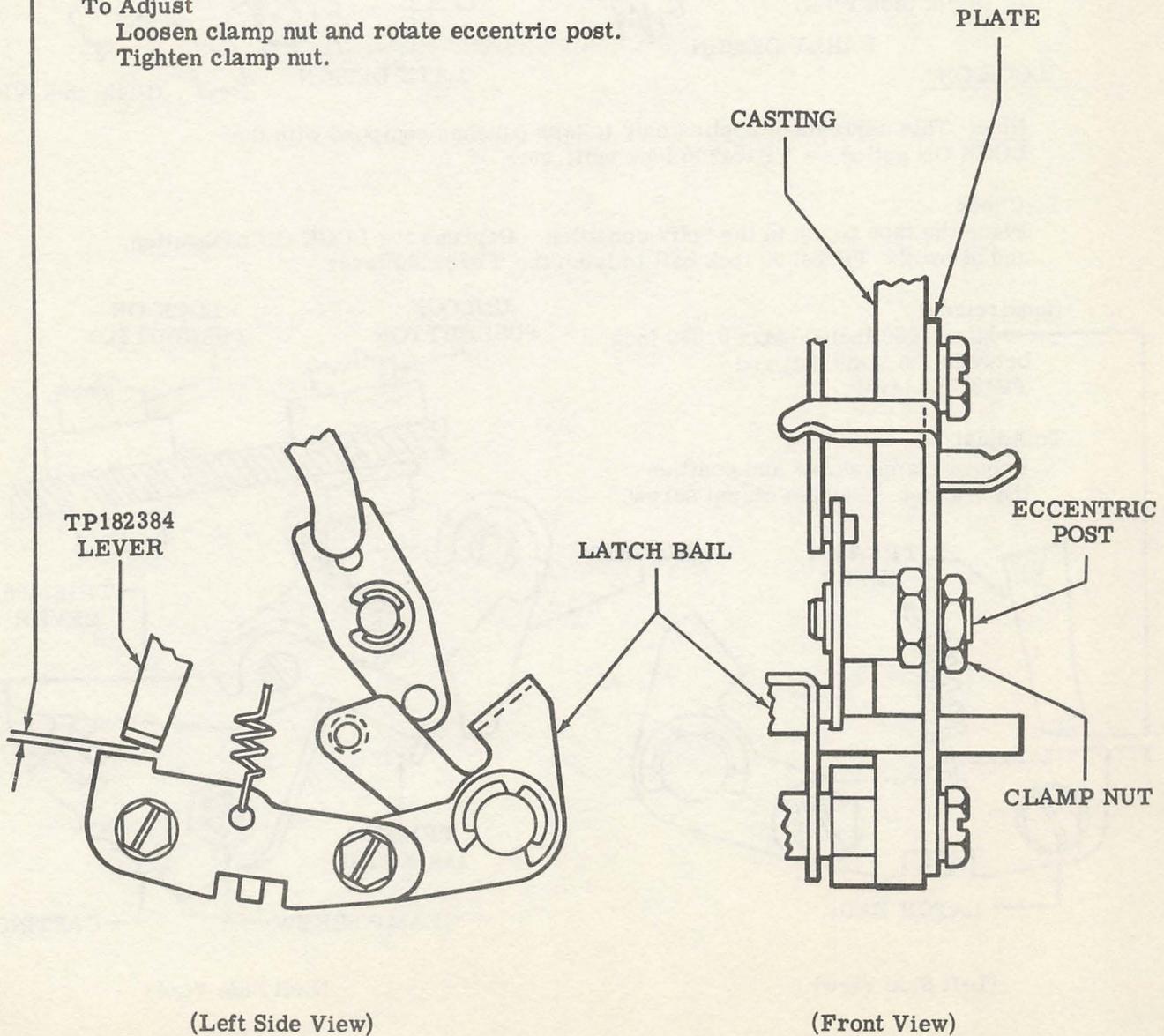
With the tape punch "on," depress the UNLOCK pushbutton. Set up the TAPE (-2--5---) code combination in the selector. Manually rotate the main shaft until the drive link is in its most forward position.

Requirement

Min 0.010 inch---Max 0.025 inch
between the latch bail and TP182384 lever.

To Adjust

Loosen clamp nut and rotate eccentric post.
Tighten clamp nut.

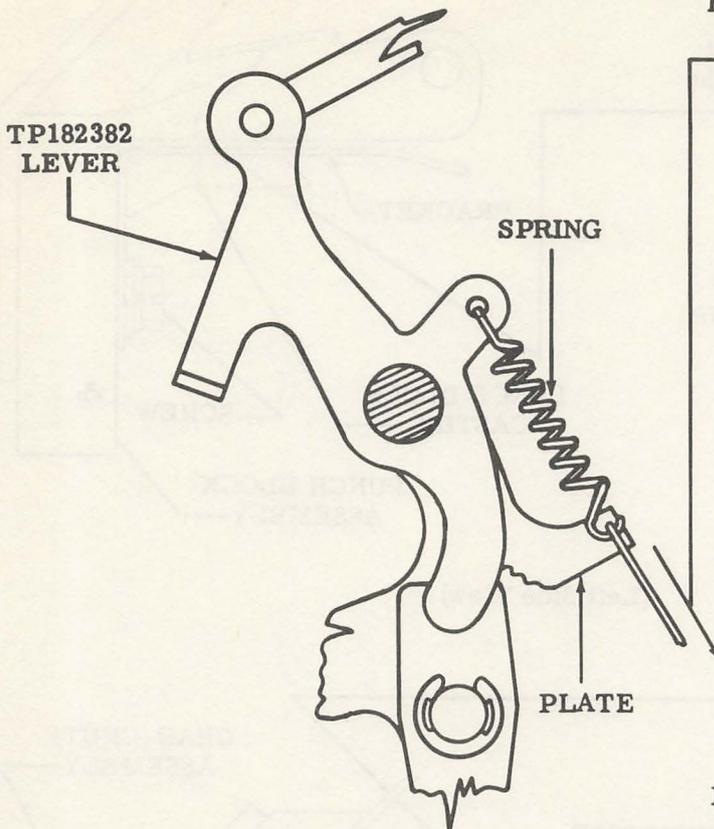


3.08 Automatic Control Mechanisms (continued)

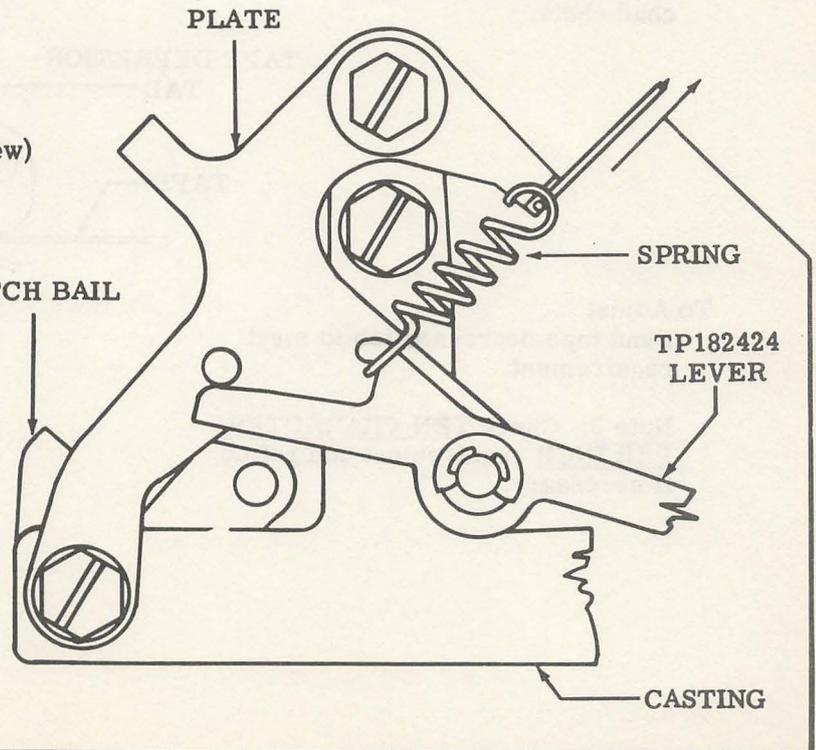
"ON" MECHANISM RETURN SPRING

Requirement

With the tape punch "off"
 Min 1/2 oz --- Max 2-1/2 oz
 to pull spring to installed length.



(Left Side View)



(Right Side View)

AUTOMATIC PUNCH INTERLOCK SPRING

Note: This adjustment applies only to tape punches equipped with the interlock mechanism.

Requirement

With nonprint codebar in its operated position (solenoid energized)
 Min 4 oz --- Max 6 oz
 to pull spring to installed length.

3.09 Miscellaneous

FOLDED TAPE GUIDE

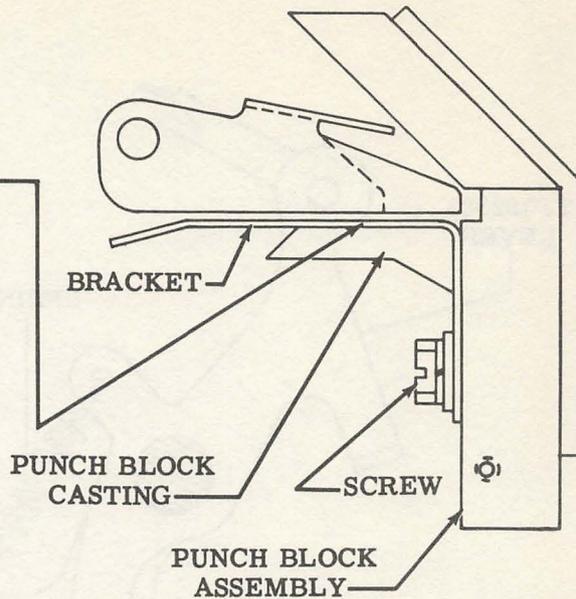
(1) Requirement

With no tape in the punch, the bracket should be flush to the top surface of the punch block casting.

To Adjust

Loosen screw and position bracket.
Tighten screw.

Note 1: This adjustment applies only to tape punches equipped with TP185705 folded tape guide modification kit.

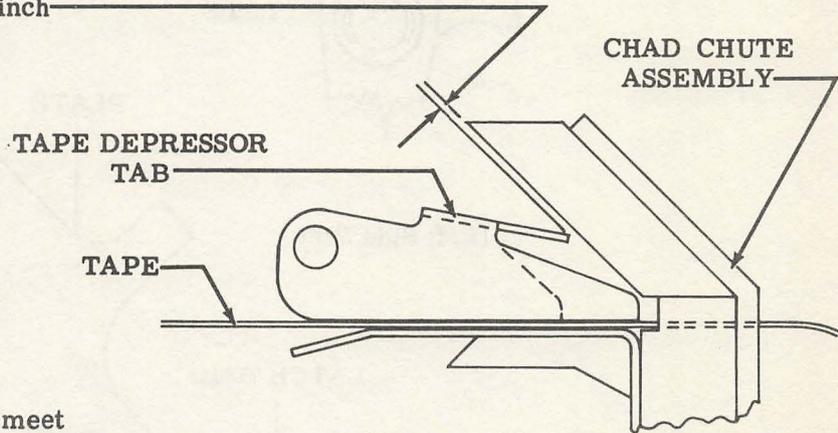


(Left Side View)

(2) Requirement

With tape in punch

Min some---Max 0.015 inch between the tape depressor tab and underside of the chad chute.



To Adjust

Bend tape depressor tab to meet requirement.

Note 2: Check TEN CHARACTERS PER INCH requirement and refine if necessary.