32 TAPE PUNCH

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section contains adjustment information for the 32 tape punch. It is reissued to include engineering changes and add alpha-numeric codes to the adjustment titles. These codes are not used for the spring adjustments. Because this is a general revision, arrows normally used to indicate changes are omitted.

1.02 Figure 1 shows the tape punch area where the adjustments are made.

1.03 In the adjustment procedures, location of clearances, position of parts, and angle of scale applications are illustrated by line drawings. Requirements and procedures accompany the line drawings. Tools, to make adjustments, are listed in Section 570-005-800TC.

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 made without completely understanding the procedure and the requirements.

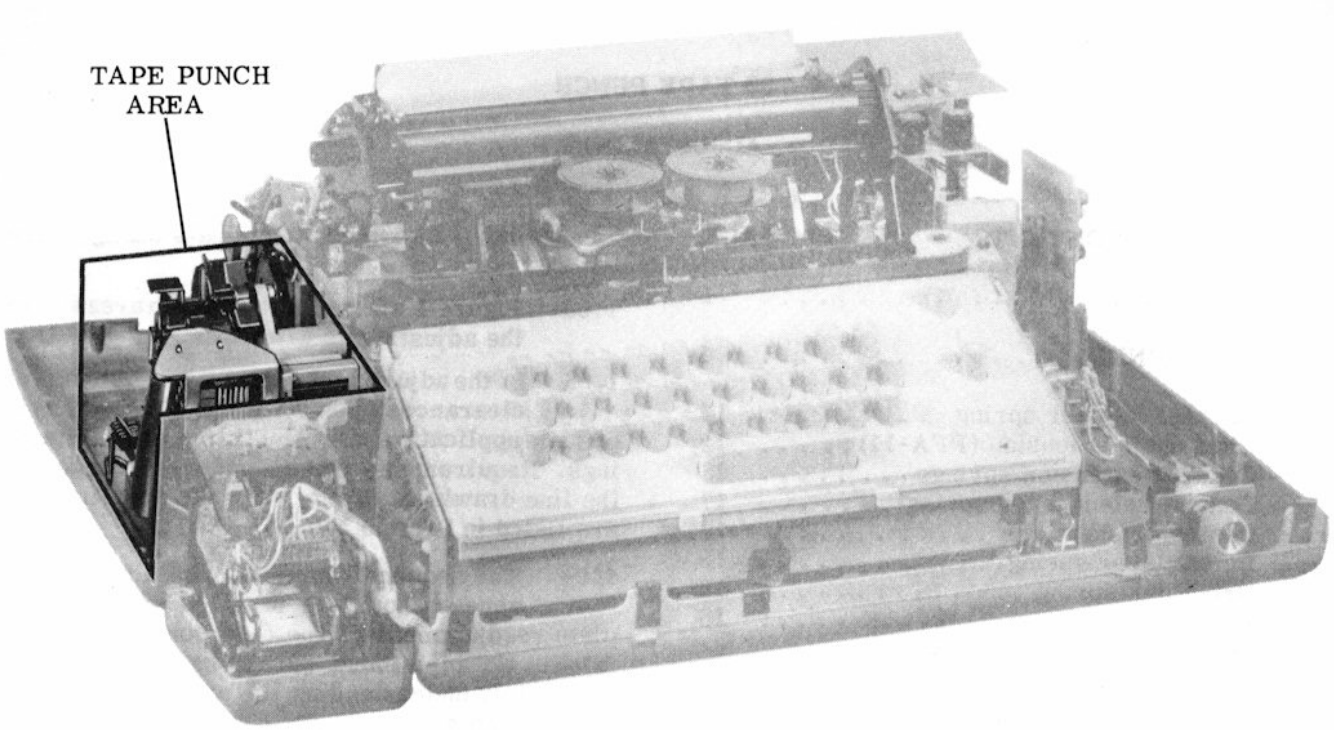
Note: Disconnect power from unit.

1.05 References to left, right, front, or rear, etc consider the tape punch to be viewed from its normal operating position (Figure 1).

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 or any of its parts are removed from the typing unit and then replaced, check any adjustment that may have been affected.

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.



(Right Front View)

Figure 1 - Tape Punch Area

Note: 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: A tape punch is "off" when the control lever is in its clockwise detented position, and fully engages the drive post.

(b) "On" condition: A tape punch is "on" when the control lever is detented in its counterclockwise position and the drive post is fully engaged by the drive link.

1.10 With the tape punch and typing unit assembly 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 disengaged.

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

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

Note 2: If the shaft is turned by hand, a clutch will not fully disengage upon reaching a stop position. To fully disengage a clutch, rotate the clutch to a stop position, apply a screwdriver to the associated stop-lug, and push

the clutch disc in the normal direction of main shaft rotation until the corresponding latch-lever seats in its clutch disc notch.

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

1.13 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 lever 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 arranged from 1 through 4 left to right. To set up the character "Y" for example, whose combination is 1-3-5, strip the push levers from the 2 and 4 selector levers.

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

1.16 Some adjustments must be made at specific points in the operating cycle. These points are specified as follows:
Position 1 - The main shaft is rotated until the function bail is in its uppermost position.
Position 3 - The main shaft is rotated until the function bail is in its lowermost position.

Note: Position 2 is not required for any tape punch adjustments.

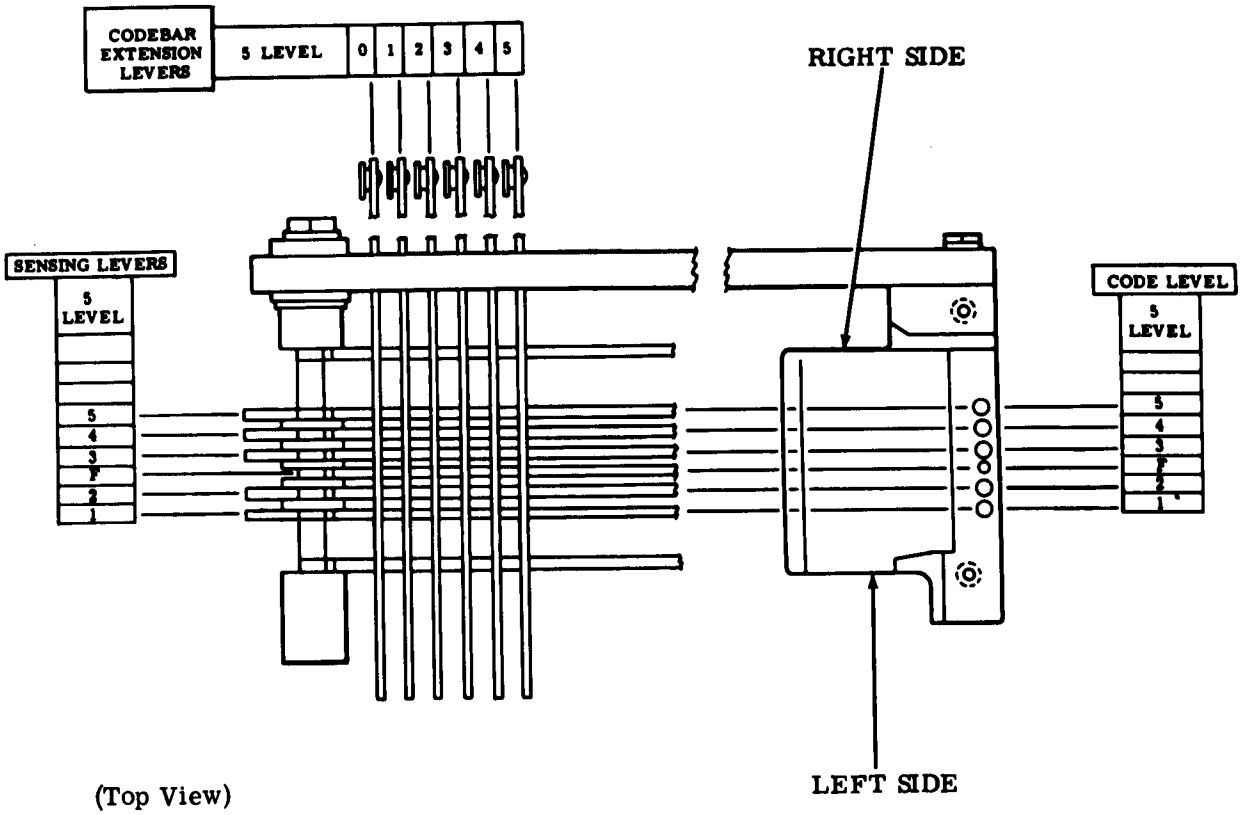


Figure 2 - Tape Punch Code Level Cross Reference Chart

2. BASIC UNIT

2.01 Tape Punch Area

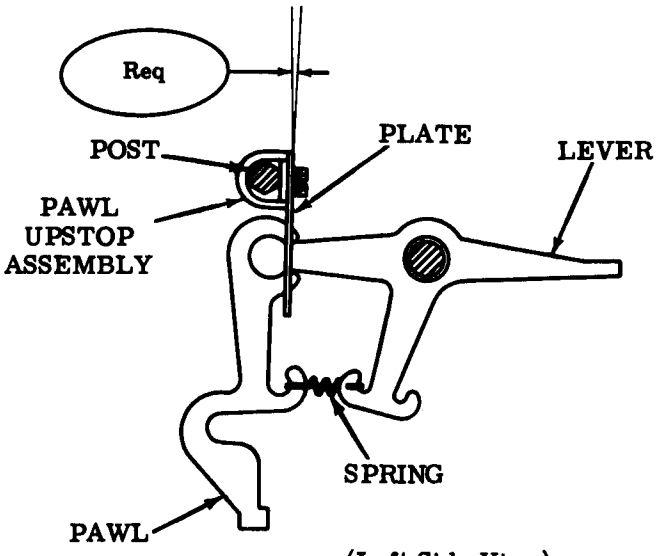
Note 1: These adjustments are to be made only if the areas have been disturbed during disassembly.

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

PAWL UPSTOP ASSEMBLY — PRELIMINARY (PFA-1)

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.



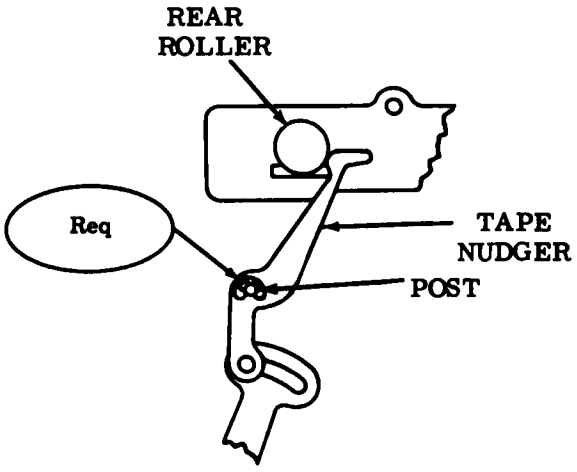
(Left Side View)

TAPE NUDGER (PFA-2)

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

Requirement
The post should be in its rearmost position.

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



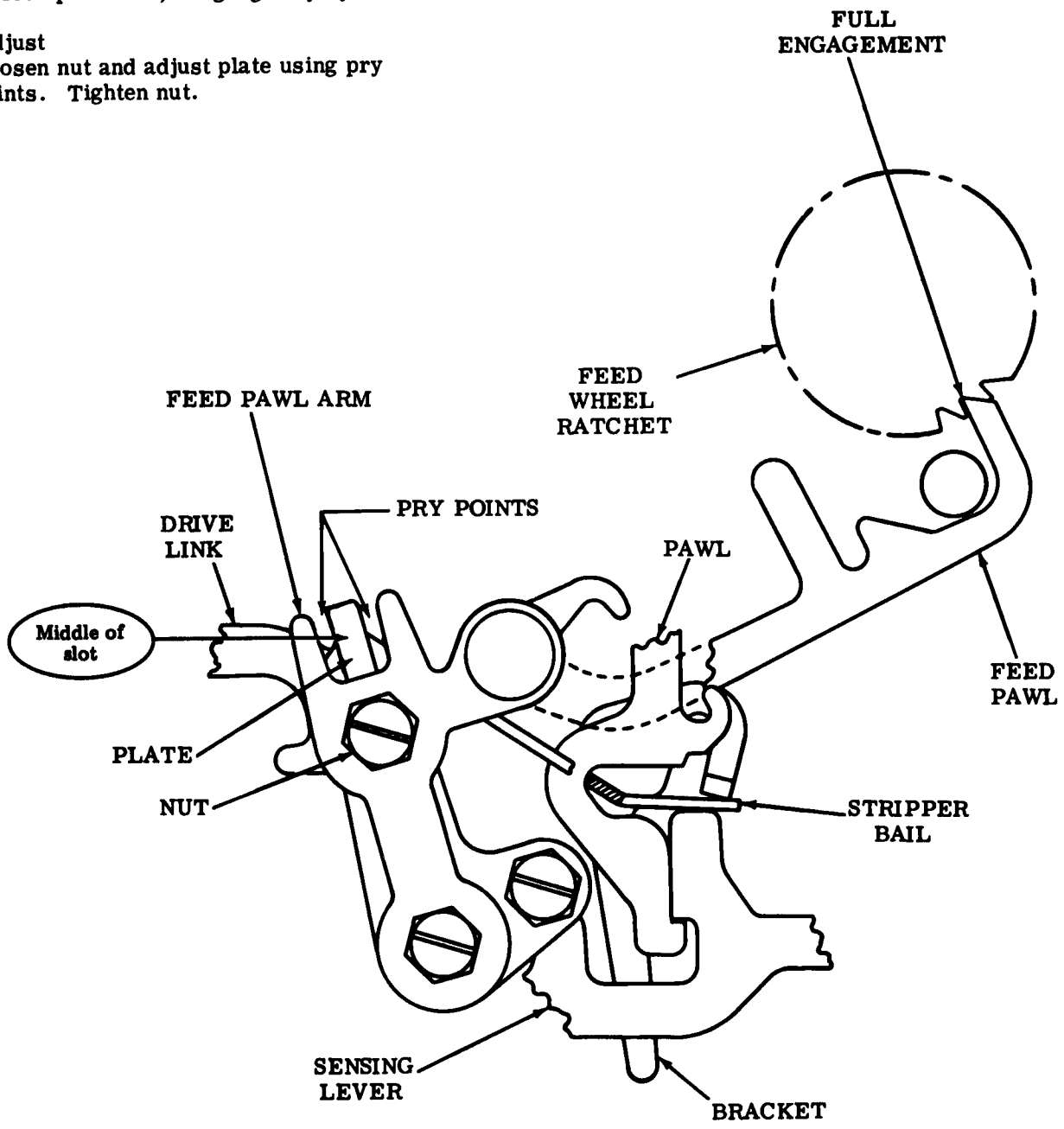
(Left Side View)

2.02 Tape Punch Area (continued)

FEED WHEEL RATCHET AND PAWL — PRELIMINARY (PFA-3)

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

To Adjust
Loosen nut and adjust plate using pry points. Tighten nut.



(Left Side View)

2.03 Tape Punch Area (continued)

STRIPPER BAIL UPSTOP (PFA-4)

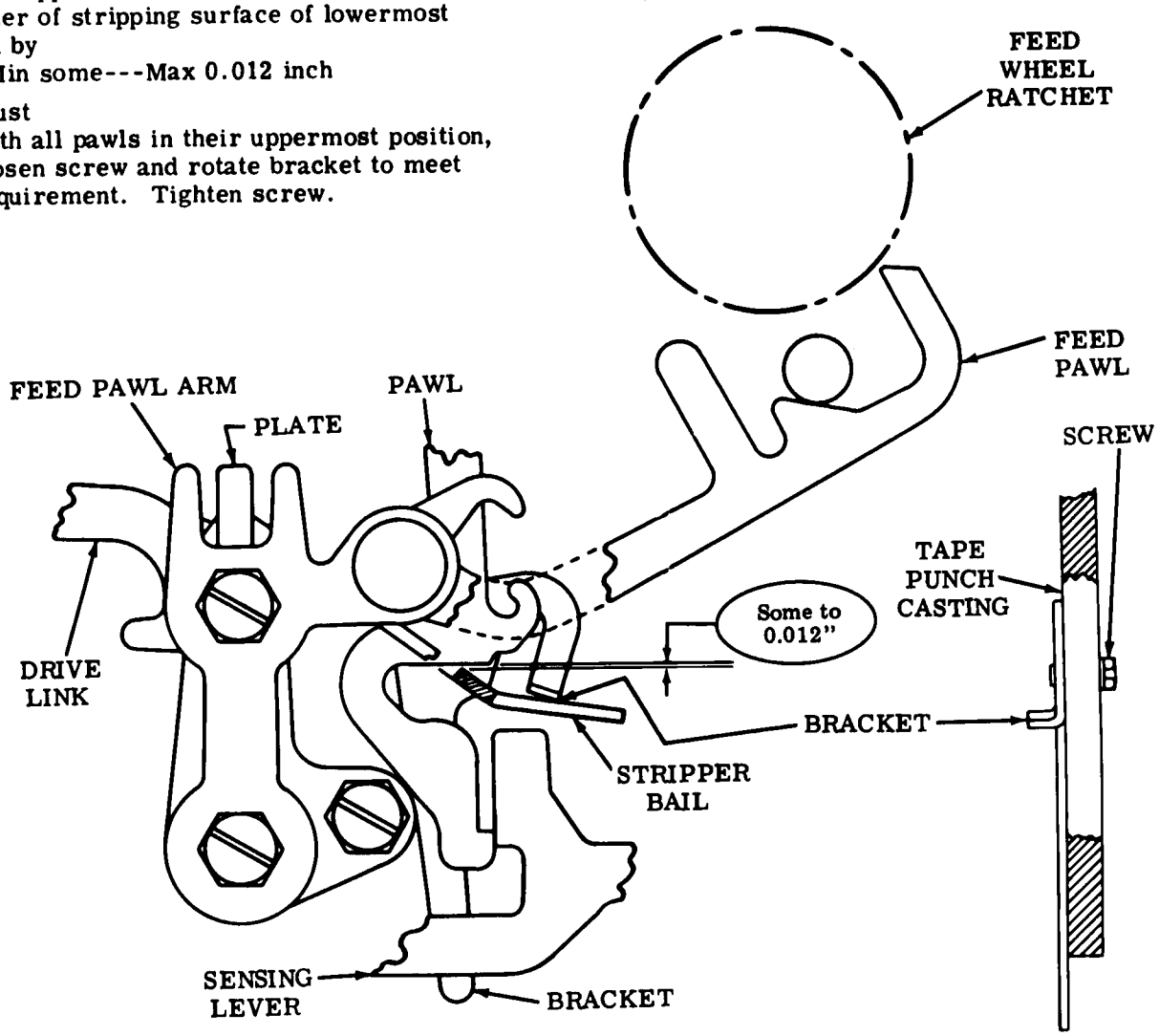
Requirement

With main shaft in stop position, and tape punch in "off" (manual control), "unlock" (auto control), or "on" (remote control), the stripper bail should clear bottom corner of 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 "32 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.

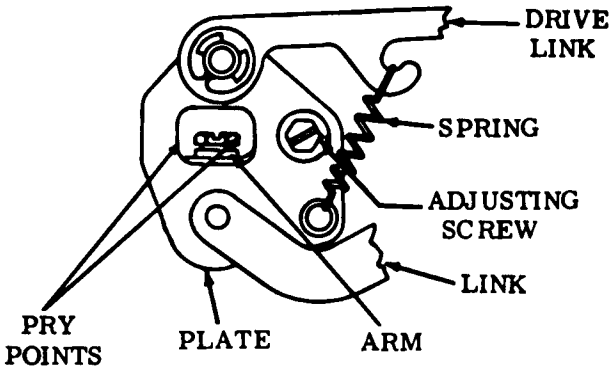
TAPE PUNCH DRIVE (PFA-5)

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 (position 3). 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.

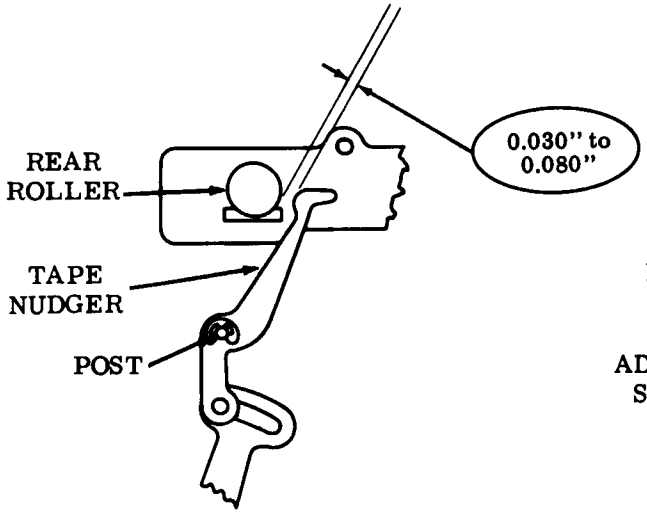
To Adjust
Loosen adjusting screw and use pry points to position plate. Tighten screw.

Related Adjustment
Affected by
LEFT ROCKER DRIVE (FNA-10) in Section 574-172-700TC.



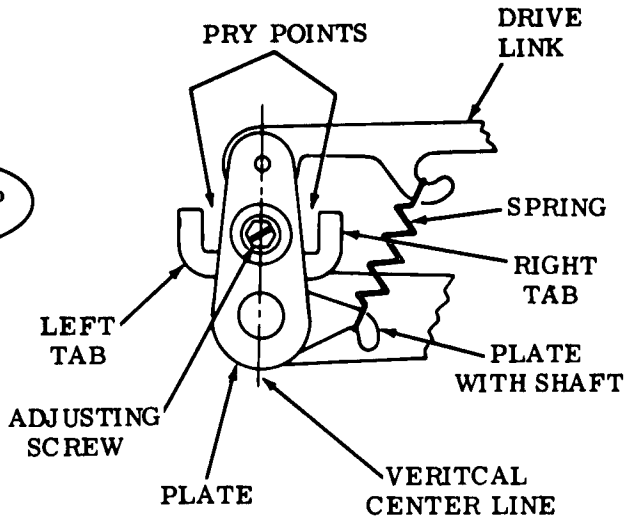
EARLY DESIGN

(Left Side View)



EARLY OR LATE DESIGN

(Left Side View)



LATE DESIGN

(Left Side View)

2.05 Tape Punch Area (continued)

PUNCH PENETRATION (PFA-6)

To Check

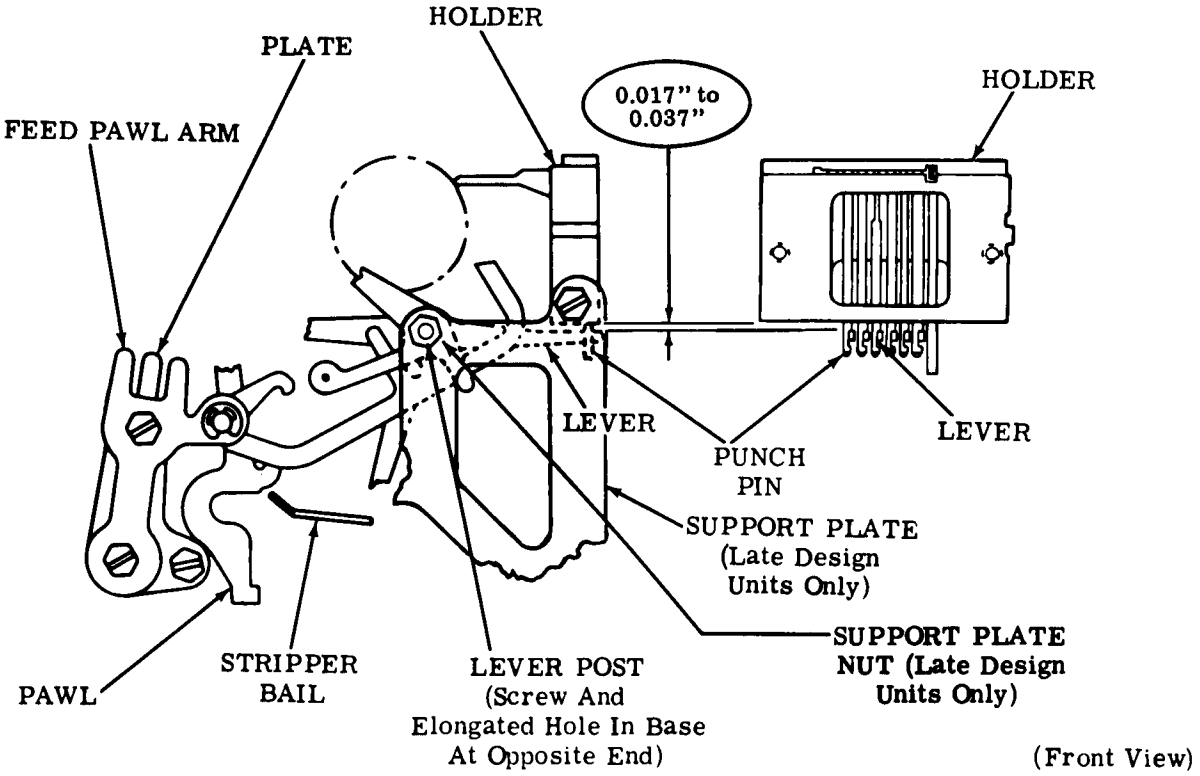
With the tape punch "on," set up an all-marking code combination in the selector. Manually rotate the main shaft until the stripper bail is in its most forward position.

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.



Note: For those 5-level tape punches equipped with an auxiliary TP182186 drive bail, repeat the above procedure with a FIGS D code combination set up in the selector. Omit checking the lever in the no. 3 code level position (Figure 2), since it is not operated.

2.06 Tape Punch Area (continued)

PAWL UPSTOP ASSEMBLY — FINAL (PFA-7)

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 (position 1).

Note 1: For tape punches equipped with a FIGS D control, 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 FIGS D control to operate. Manually rotate the main shaft until the stripper bail is in its rearmost position (position 1). 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 (position 1). Check requirement (2).

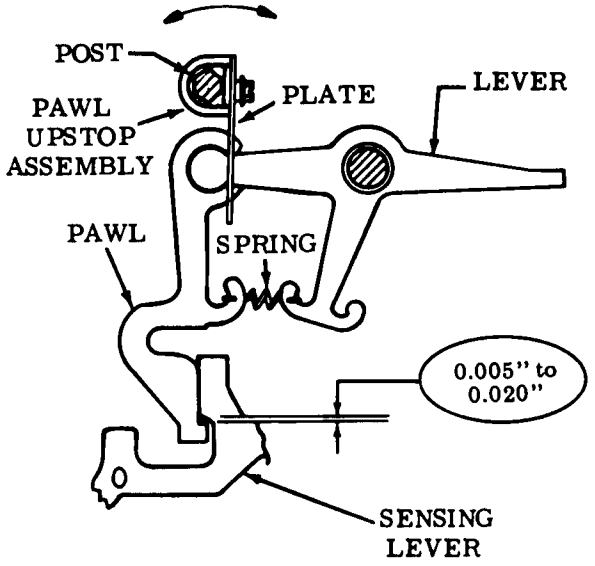
(1) Requirement

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 the FIGS D control, 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 if a sensing lever is pressed down slightly without moving its associated pawl.



(Left Side View)

(2) Requirement

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

To Adjust

Loosen the screw which secures the pawl upstop assembly post to the tape punch casting. Provide proper clearance by rotating the pawl upstop assembly. Tighten screw. Recheck requirement (1) above and refine if necessary. Remake STRIPPER BAIL UPSTOP (PFA-4) adjustment.

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

2.07 Tape Punch Area (continued)

FEED WHEEL RATCHET AND PAWL — FINAL (PFA-8)

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 (position 1). Take up all play in stripper bail toward the front.

Requirement

With feed wheel ratchet in its fully detented position

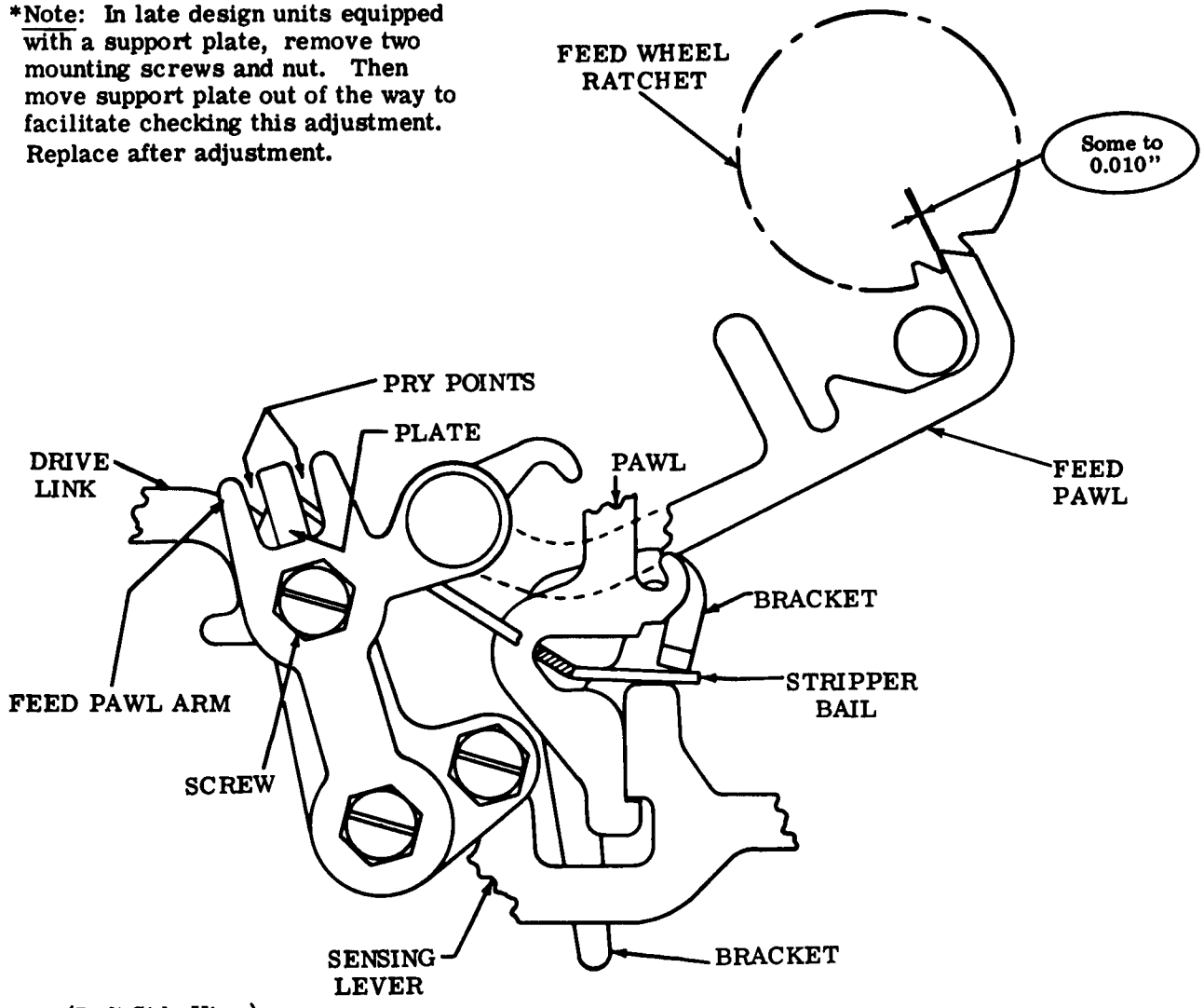
Min some---Max 0.010 inch

between the feed pawl and feed wheel ratchet tooth.

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



(Left Side View)

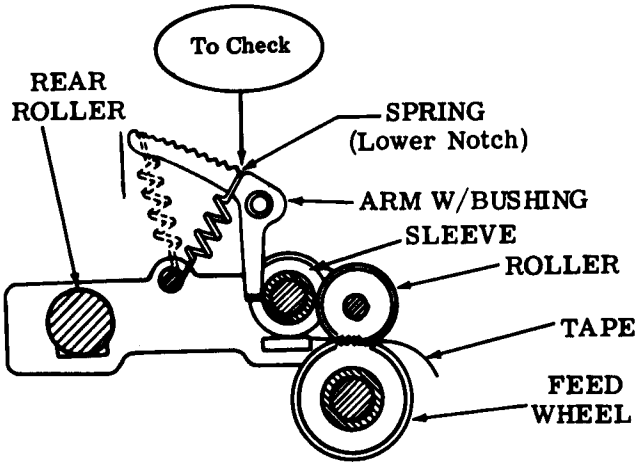
2.08 Tape Punch Area (continued)

TEN CHARACTERS PER INCH (PFA-9)

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 Y 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.



(Left Side View)

(1) Requirement

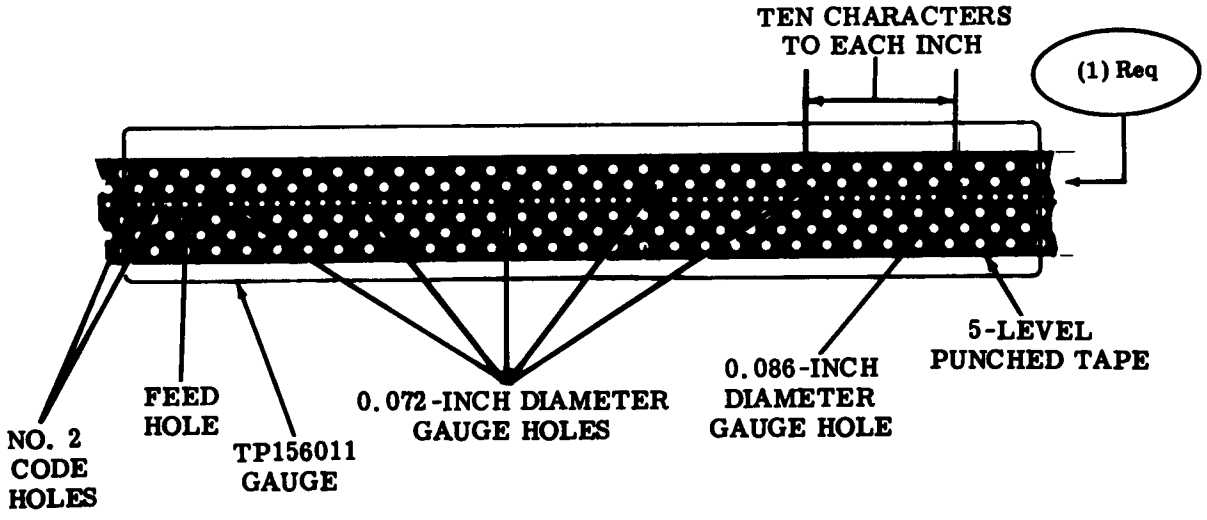
The four remaining 0.072-inch diameter gauge holes should be visible through corresponding no. 2 code holes in the punched tape.

(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

If the no. 2 code hole is beyond the edge of the hole in the gauge, position spring upward, notch by notch, until requirement is met. If the no. 2 code hole is short of the edge of the hole in the gauge, position spring toward lower notch of arm.



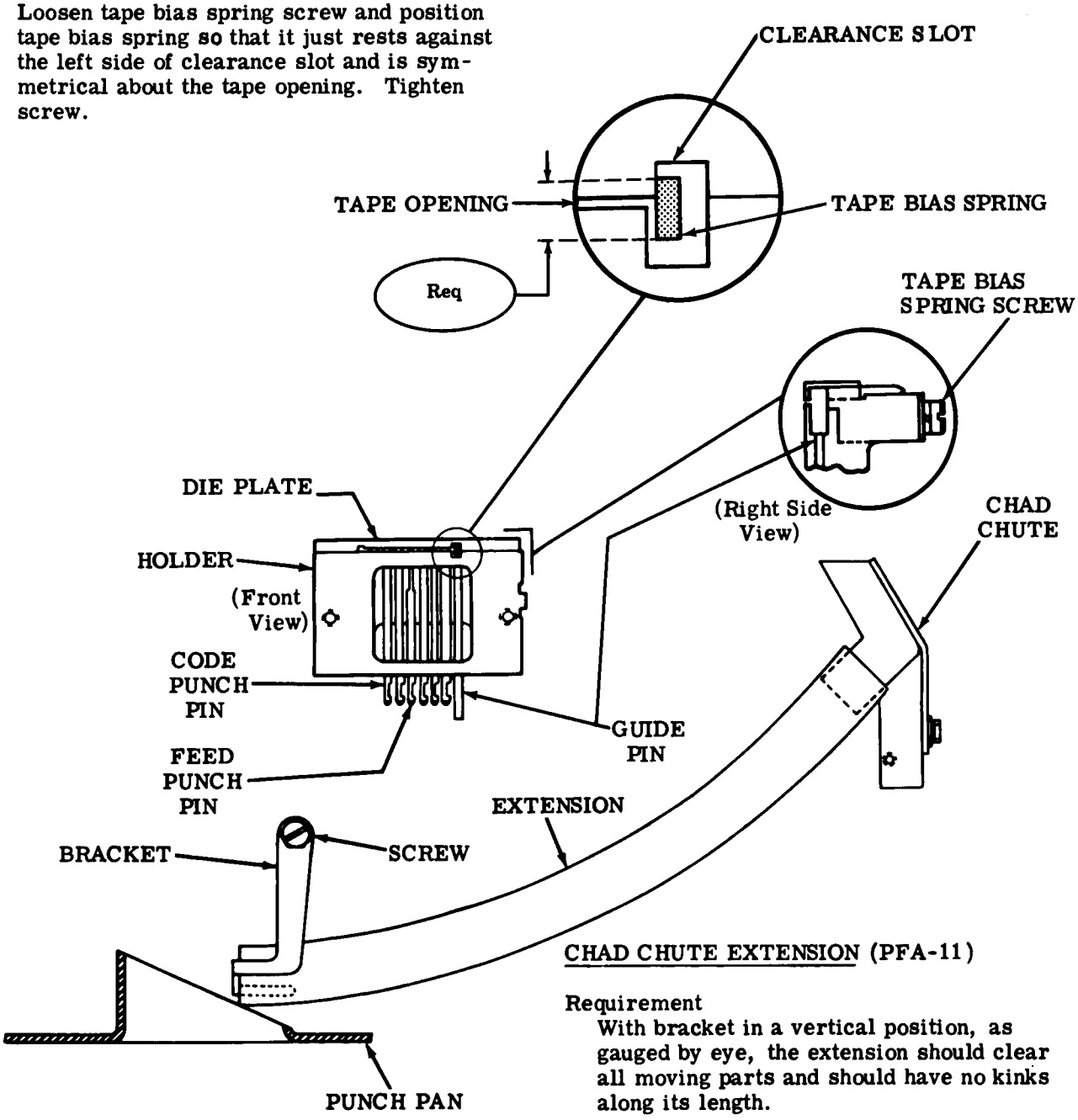
(Top View)

2.09 Tape Punch Area (continued)

TAPE BIAS SPRING (PFA-10)

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

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



CHAD CHUTE EXTENSION (PFA-11)

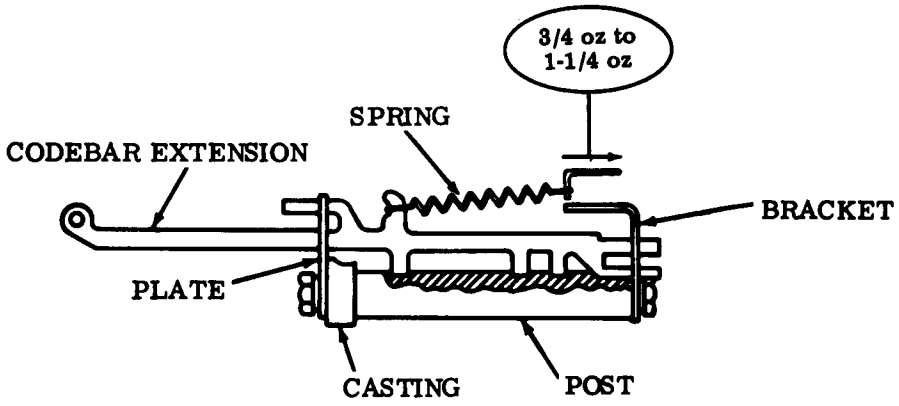
Requirement
With bracket in a vertical position, as gauged by eye, the extension should clear all moving parts and should have no kinks along its length.

To Adjust
Loosen screw and position bracket to meet requirement. Tighten screw.

2.10 Tape Punch Area (continued)

CODEBAR EXTENSION SPRINGS

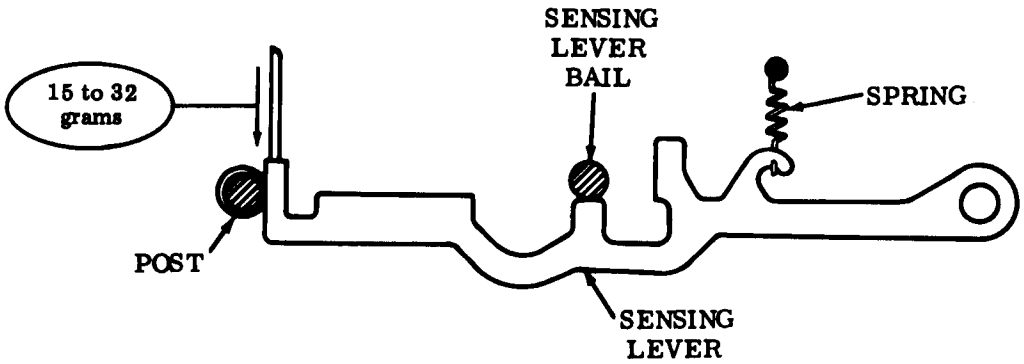
Requirement
With the typing unit in stop condition
Min 3/4 oz---Max 1-1/4 oz
to pull spring to its installed length.



(Rear View)

SENSING LEVER SPRINGS

Requirement
With the tape punch in off position
Min 15 grams---Max 32 grams
to start sensing lever moving.



(Left Side View)

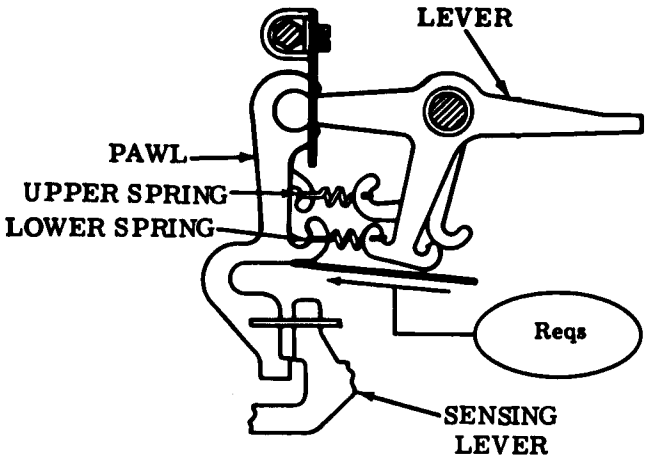
2.11 Tape Punch Area (continued)

PAWL AND LEVER SPRINGS

Requirement
With the tape punch "off"

Upper spring:
Min 1 oz---Max 2 oz

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



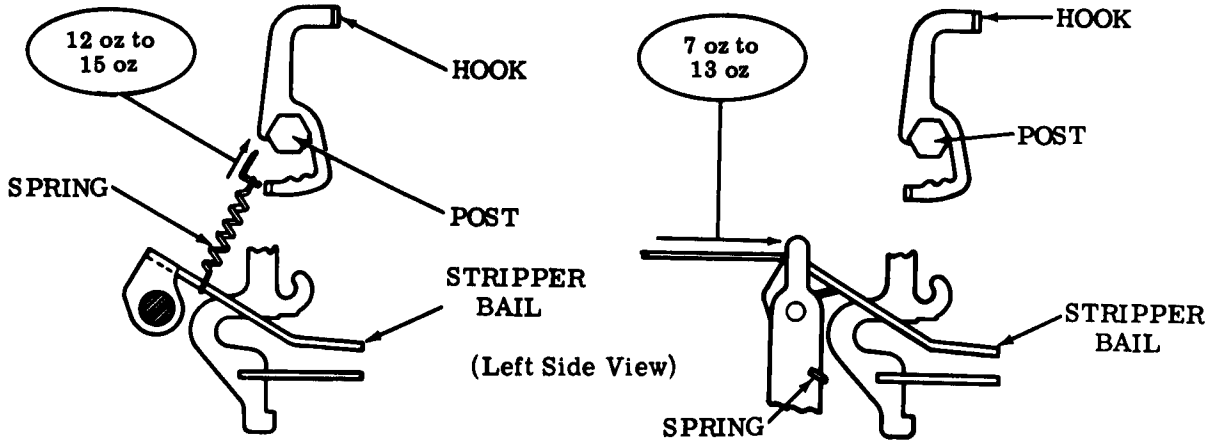
(Left Side View)

STRIPPER BAIL SPRING

Requirement
With tape punch in off position
Min 12 oz---Max 15 oz
to pull spring to its installed length.

STRIPPER BAIL SPRING

Requirement
With tape punch in off position
Min 7 oz--Max 13 oz
to start the stripper bail moving.



(Left Side View)

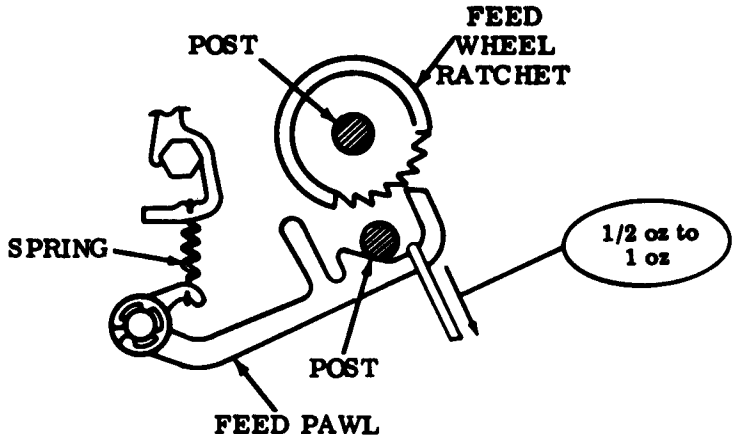
EARLY DESIGN

LATE DESIGN

2.12 Tape Punch Area (continued)

FEED PAWL SPRING

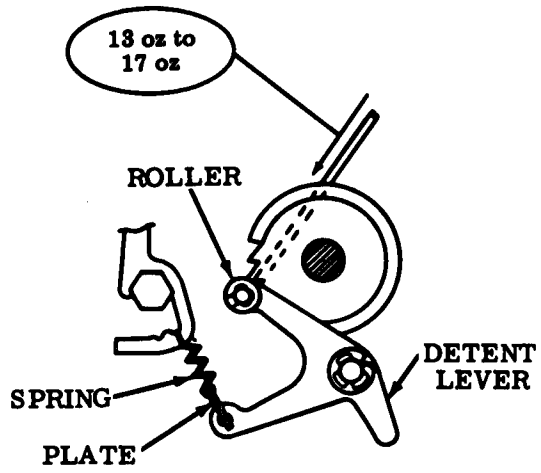
Requirement
With tape punch in off position
Min 1/2 oz---Max 1 oz
to start feed pawl moving.



(Left Side View)

DETENT LEVER SPRING

Requirement
With the tape punch "off"
Min 13 oz---Max 17 oz
to start detent lever moving.

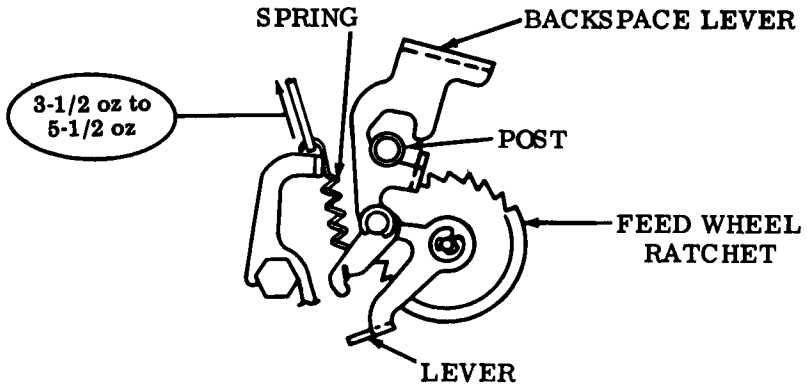


(Left Side View)

2.13 Tape Punch Area (continued)

BACKSPACE LEVER SPRING

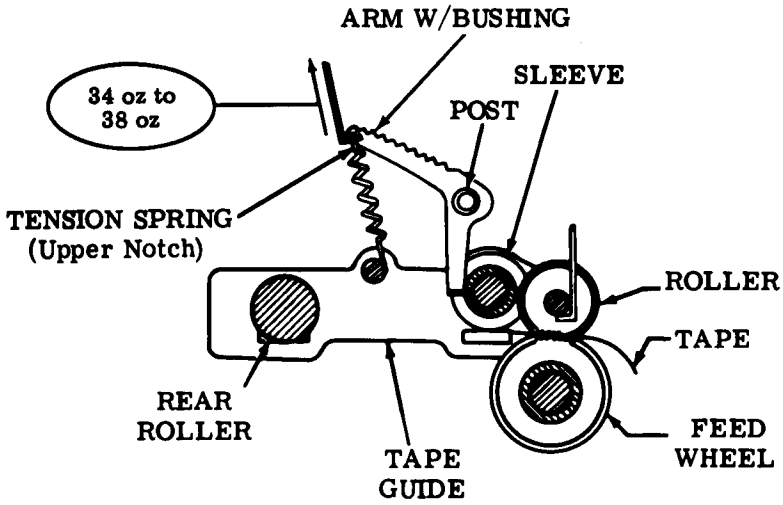
Requirement
With the tape punch in off position
Min 3-1/2 oz---Max 5-1/2 oz
to pull spring to its installed length.



(Left Side View)

TAPE GUIDE TENSION SPRING

Requirement
Min 34 oz---Max 38 oz
to pull spring to upper notch
installed length.

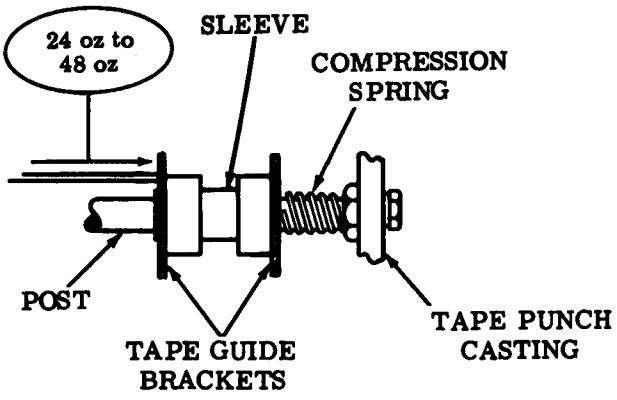


(Left Side View)

2.14 Tape Punch Area (continued)

TAPE GUIDE COMPRESSION SPRING

Requirement
Remove the tape guide tension spring. Place roller slightly above the feed wheel
Min 24 oz---Max 48 oz
to start tape guide moving.



(Front View)

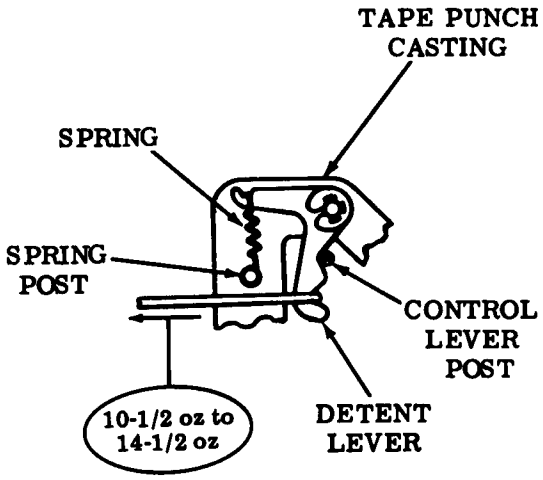
CONTROL PUSHBUTTONS

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.

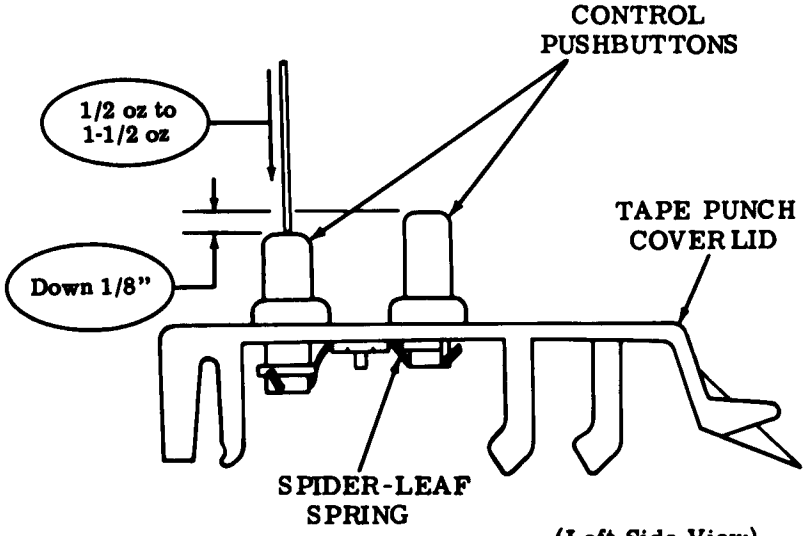
CONTROL DETENT LEVER SPRING

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

Requirement
With tape punch "off"
Min 10-1/2 oz---Max 14-1/2 oz
to start detent lever moving.



(Left Side View)

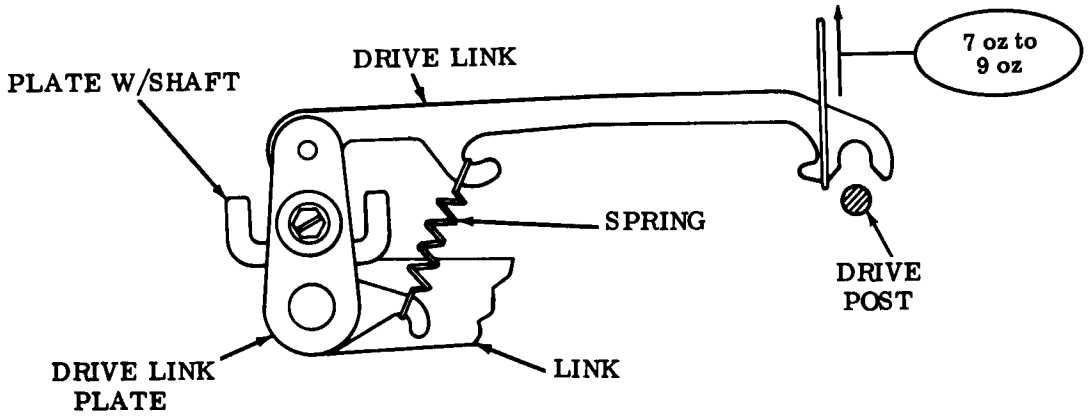


(Left Side View)

2.15 Tape Punch Area (continued)

DRIVE LINK SPRING

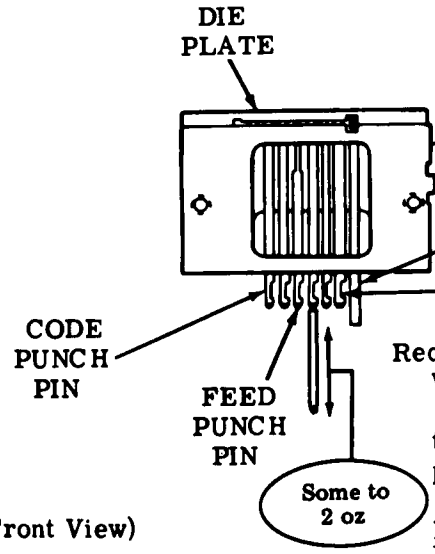
Requirement
With tape punch "off"
Min 7 oz---Max 9 oz
to start drive link moving.



(Left Side View)

PUNCH BLOCK ASSEMBLY

To Check
Remove the punch block assembly from the tape punch. Replace after performing this adjustment. (For instructions, refer to Section 574-175-702TC.)



(Front View)

Requirement
With the punch pin slots facing the guide pin
Min some---Max 2 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. VARIATION TO BASIC UNIT

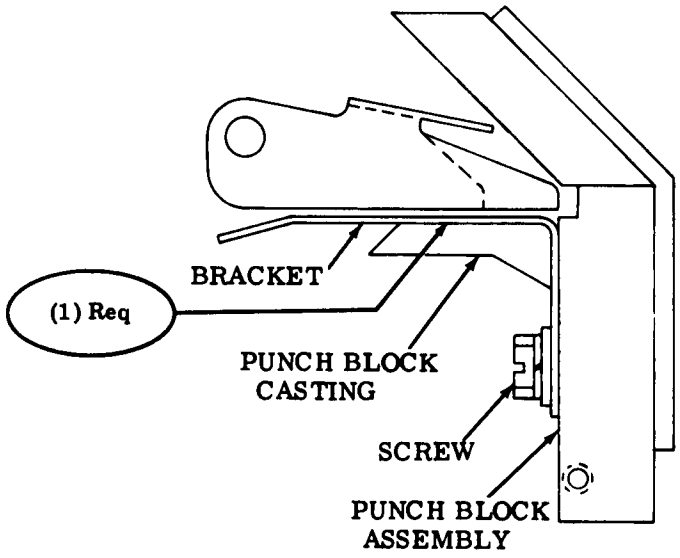
3.01 Tape Punch Area

FOLDED TAPE GUIDE

(1) Requirement
With no tape in punch, bracket should be flush with top surface of 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.

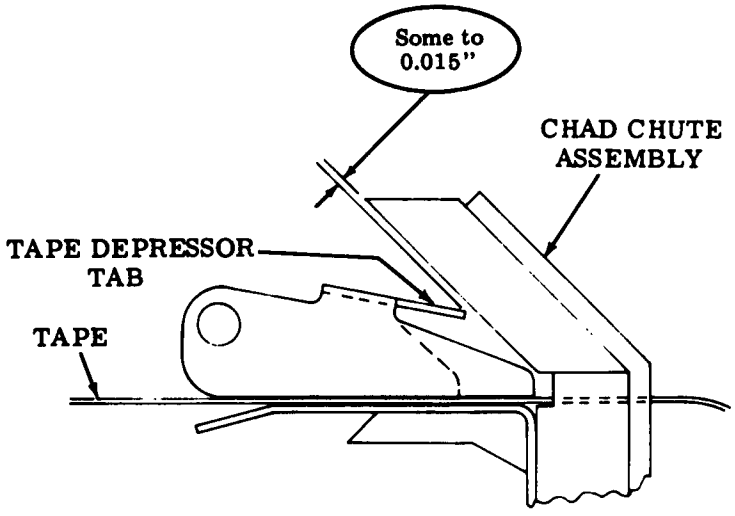


(Left Side View)

(2) Requirement
With tape in punch
Min some---Max 0.015 inch between tape depressor tab and underside of chad chute.

To Adjust
Bend tape depressor tab.

Note 2: Check TEN CHARACTERS PER INCH (PFA-9).



(Left Side View)