

HIGH SPEED TAPE READER UNITS (CX)

ADJUSTMENTS

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Feed wheel detent spring. . . . .	12	1.01 This section provides adjustment infor- mation for the high speed tape reader units (Figure 1). It is reissued to incorporate engineering changes and comments received on Issue 4. Since only a limited distribution was made on Issue 4, marginal arrows have been omitted.	
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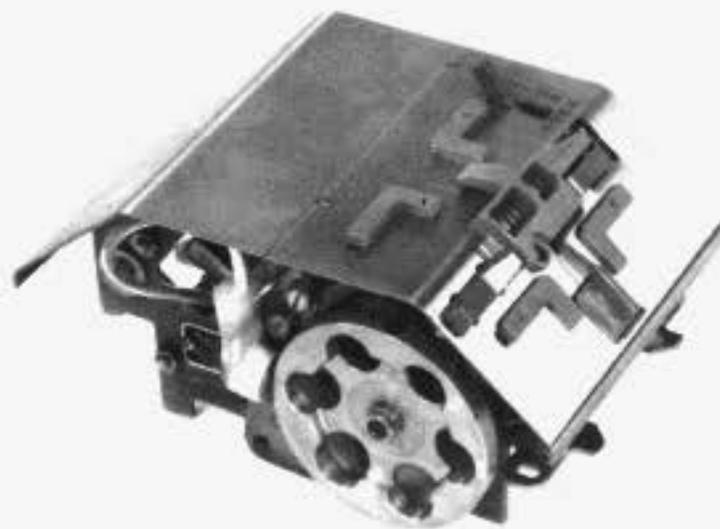


Figure 1 - High Speed Tape Reader Unit

## SECTION 592-801-700TC

1.02 The adjustments are arranged in a sequence which should be followed if a complete readjustment of the reader is undertaken. In some cases, the sequence that should be followed is indicated by the letters (A), (B), (C), etc. No single adjustment should be undertaken without first completely understanding the procedure and knowing the requirement. Therefore, read a procedure all the way through before as a first step. If one adjustment is changed, related adjustments should be checked.

**CAUTION: REMOVE POWER BEFORE MAKING ANY ADJUSTMENTS.**

1.03 In the adjustment procedures, the location of clearances and the position of parts are illustrated by line drawings. Requirements and procedures are presented in the several texts accompanying the drawings. Tools necessary to maintain the reader are illustrated in Section 570-005-800TC.

1.04 References made to left or right, front or rear, top or bottom, etc refer to the reader as viewed with the flywheel in the front (Figure 1).

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

1.06 The spring tensions specified are indications and not exact values. Therefore, to obtain reliable readings it is important that spring tensions be measured by spring scales placed in the positions shown in the drawings. Springs that do not meet the requirements should be replaced by new ones.

Note: Use only spring scales found in Maintenance Tools, Section 570-005-800TC.

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

1.08 If metal dust is near any moving part, it may indicate insufficient clearance, and the proper adjustment should be made immediately.

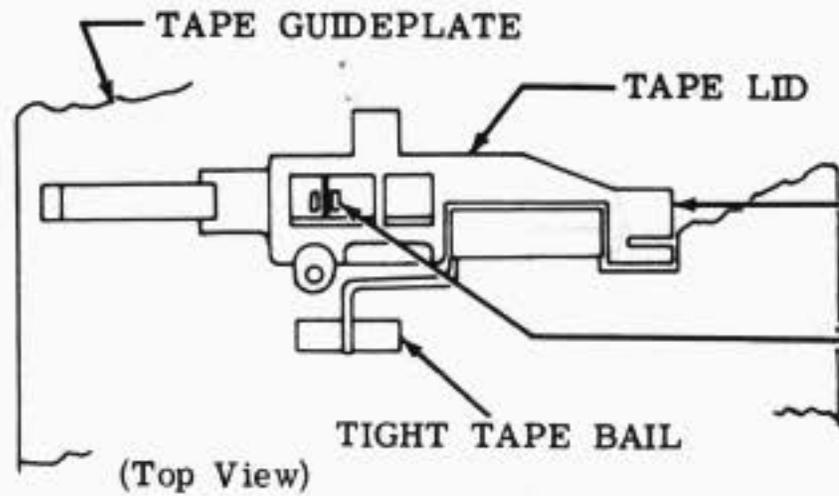
1.09 Before proceeding with the adjustments, put the start-stop lever into the RUN (left) position. Manually actuate the operating magnet and slowly rotate the main shaft counterclockwise, as viewed from the flywheel. This will put the various mechanical assemblies into operation. Check for freedom of movement (no binding) between parts.

**CAUTION: IMPROPERLY ADJUSTED EQUIPMENT MAY BE DAMAGED IN A MATTER OF SECONDS IF OPERATED UNDER POWER.**

2. BASIC UNIT

2.01 Control Mechanism

**Note:** Remove tape guideplate and rear plate (or coverplate). Lubricate tape lid and cover per Section 592-801-701TC.

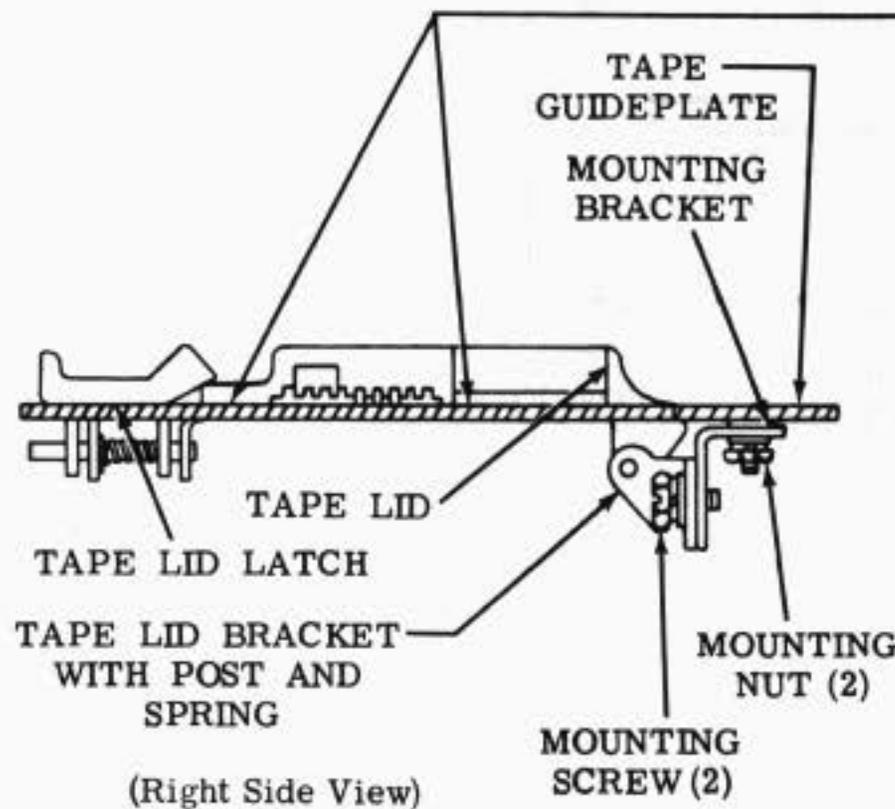


**TAPE LID**

- (1) Requirement  
Radius of tape guideplate should match contour of tape lid.
- (2) Requirement  
Feed wheel groove in tape lid should line up with slot in tape guideplate. Tape lid vanes should be centrally located between slots in tape guideplate.
- (3) Requirement  
Two flat bearing surfaces of tape lid should rest against tape guideplate. Remaining bearing surfaces should be within 0.005 inch from tape guideplate.

**To Adjust**

Loosen two mounting nuts and screws. With locating pin engaged in tape guideplate slot, position lid to meet requirements (1) and (2). Press tape lid against tape guideplate and tighten nuts and screws to meet requirement (3). Check requirements and, if necessary, refine adjustments.

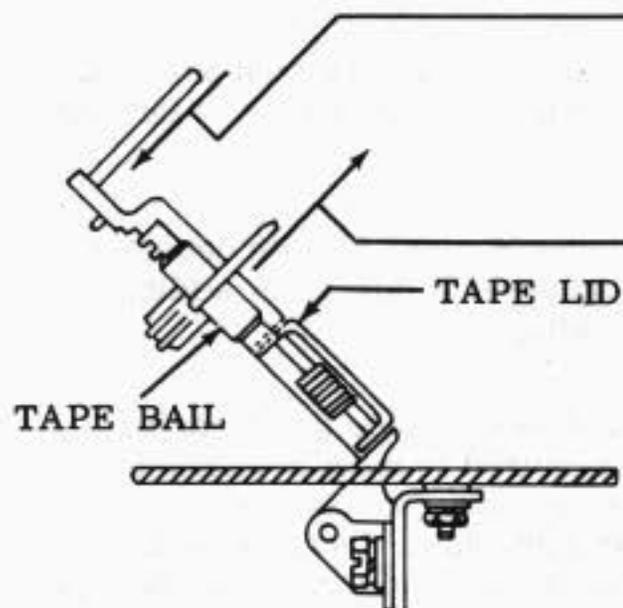


**TAPE LID SPRING**

Requirement  
Min 1 oz---Max 4 oz  
to start tape lid moving.

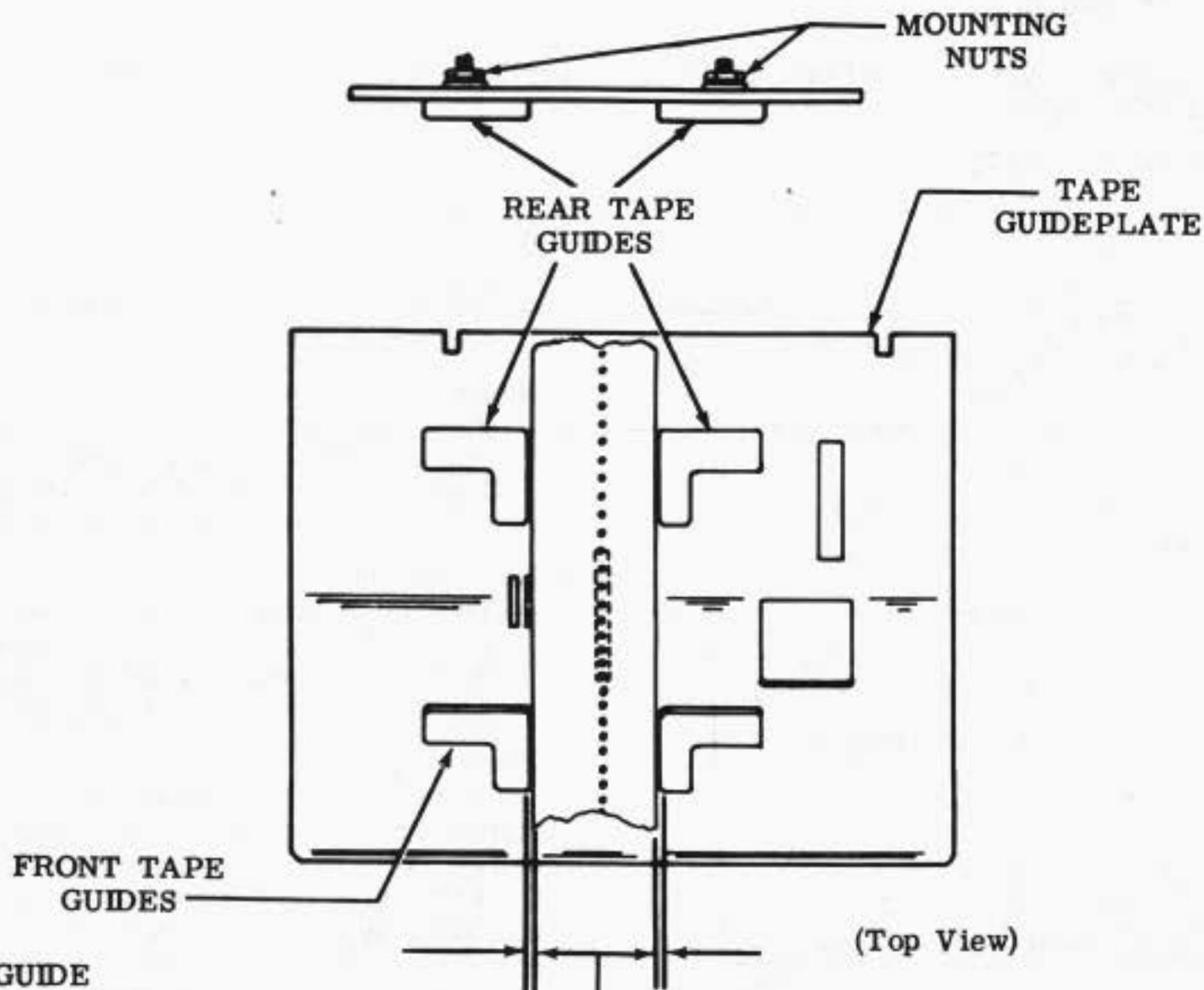
**TAPE BAIL TENSION**

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



(Right Side View)

## 2.02 Control Mechanism (continued)

TAPE GUIDE**To Check**

Place tape in unit and close tape lid. Draw tape through to left. Tape should run parallel to edge of tape guideplate without binding.

**(1) Requirement**

Min 0.005 inch---Max 0.010 inch clearance between tape edge and guides. 5-level units use 5-level tape, 6-level units use 6-level tape, etc.

**(2) Requirement**

Tape should not ride up sides of tape guides.

**(3) Requirement**

Tape guides should be in line with tape path as gauged by eye.

**To Adjust**

Loosen tape guide mounting nuts friction tight. Unlatch tape lid and place tape between tape guides with tape over feed wheel slot in tape guideplate. Push tape guide in horizontal direction to meet requirements. Tighten mounting nuts while holding tape guide firmly. Recheck and refine adjustment if necessary.

TAPE GUIDE SPRING (Units With Universal Tape Reading Mechanism)**To Check**

Push guide into various detented positions. Place tape in unit and draw tape to left and right sides.

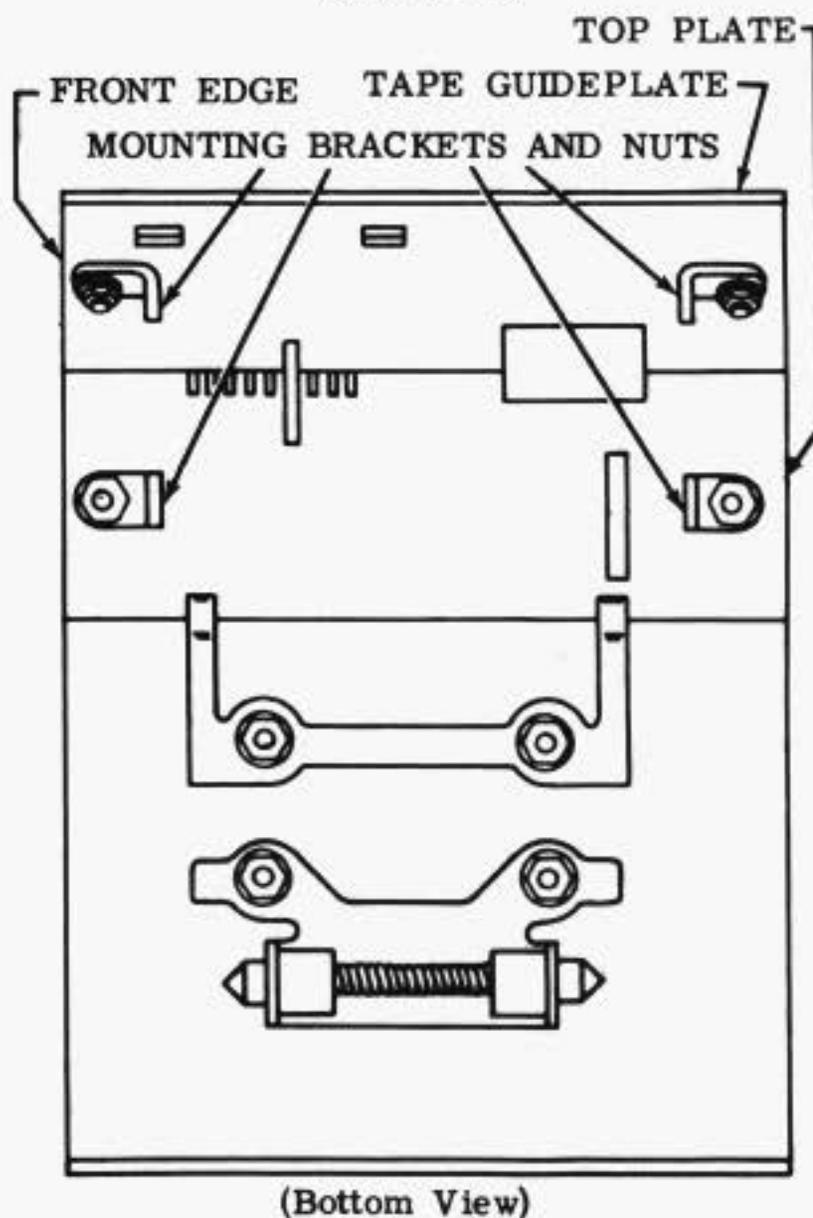
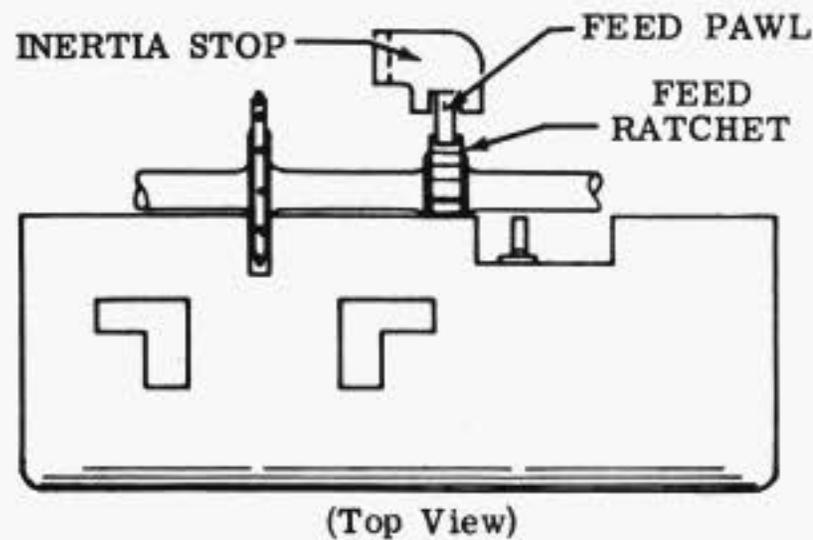
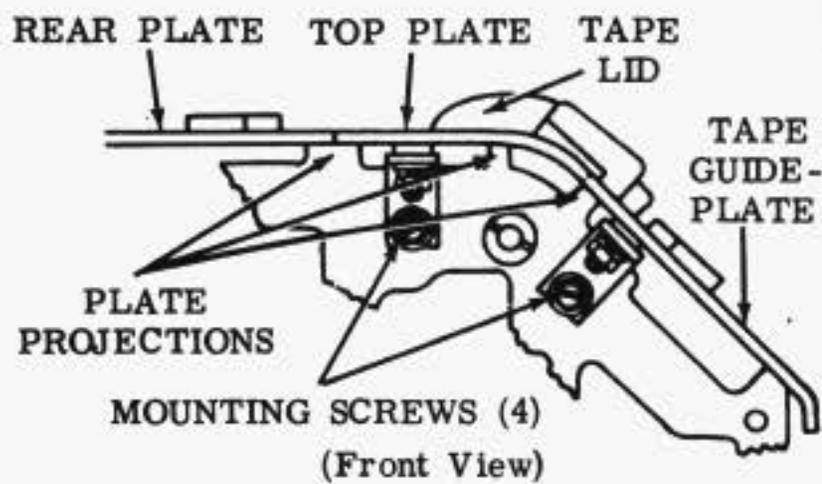
**Requirement**

Tape guide should move into its detented positions and prevent tape from sliding under its guiding edge.

**To Adjust**

Increase or decrease tape guide spring tension as required to meet requirement. To decrease tension, push tape guide nut toward tape guideplate. Increase tension before removing and reforming the spring.

## 2.03 Control Mechanism (continued)

TAPE GUIDEPLATE

- (1) Requirement  
Tape guideplate should rest firmly on two left and at least one right plate projection. Two projections must be over ends of feed wheel shaft.
- (2) Requirement  
Feed wheel should turn freely with control lever in FREE position.
- (3) Requirement  
With "letters" tape in unit, tape-out pin should be centered between code holes, or code holes and edge of tape.

To Adjust

Loosen tape guideplate mounting bracket nuts friction tight. Place sensing pins in their most retracted position. Position tape guideplate with tape lid unlatched and control lever in STOP position. Recheck all requirements.

TOP PLATE (If Present On Unit)

- (1) Requirement  
Top plate should rest firmly on two right and at least one left plate projection. Upper surface of the top plate should be flush with, or below (Max 0.003 inch) surface of tape guideplate in area of sensing fingers.
- (2) Requirement  
Feed wheel slot in top plate should be in line with slot in tape guideplate. With unit in FREE position, feed wheel should rotate freely.

To Adjust

Position top plate with its mounting bracket nuts and screws friction tight. Do not tighten.

- (3) Requirement  
With "letters" tape in unit, tape-out pin should be centered between code holes, or code holes and edge of tape.

To Adjust

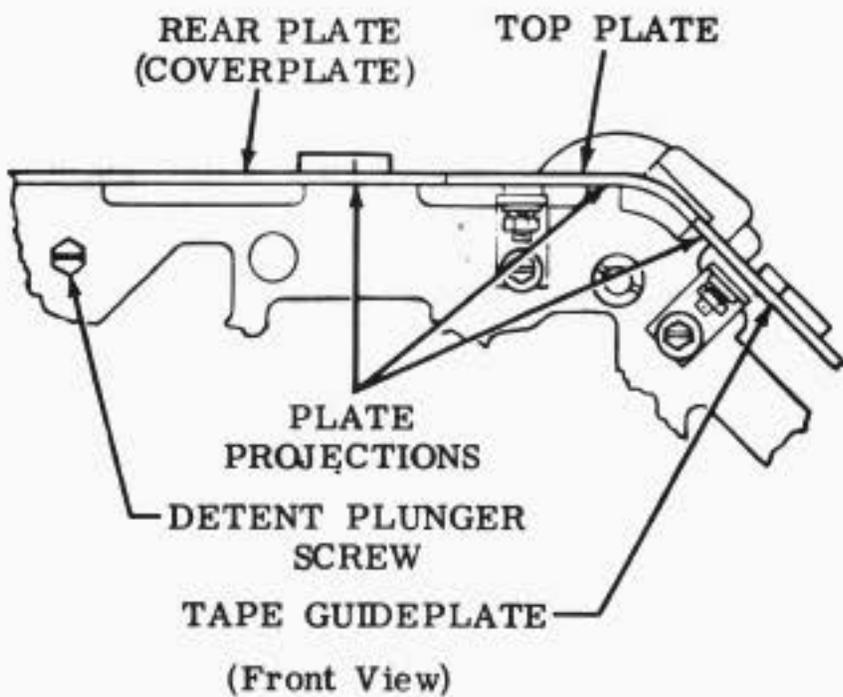
Position tape guideplate and top plate.

- (4) Requirement  
With tape lid latched  
Min 0.008 inch---Max 0.025 inch clearance under tape lid extensions covering feed wheel slots and tape-out pin.  
Min 0.008 inch---Max 0.015 inch clearance between tape lid and top plate measured in area of sensing finger slots when play in lid is taken toward tape guideplate.

To Adjust

Loosen screws holding tape lid mounting brackets together. Position tape lid to meet requirements. Recheck requirements (1) and (2).

2.04 Control Mechanism (continued)

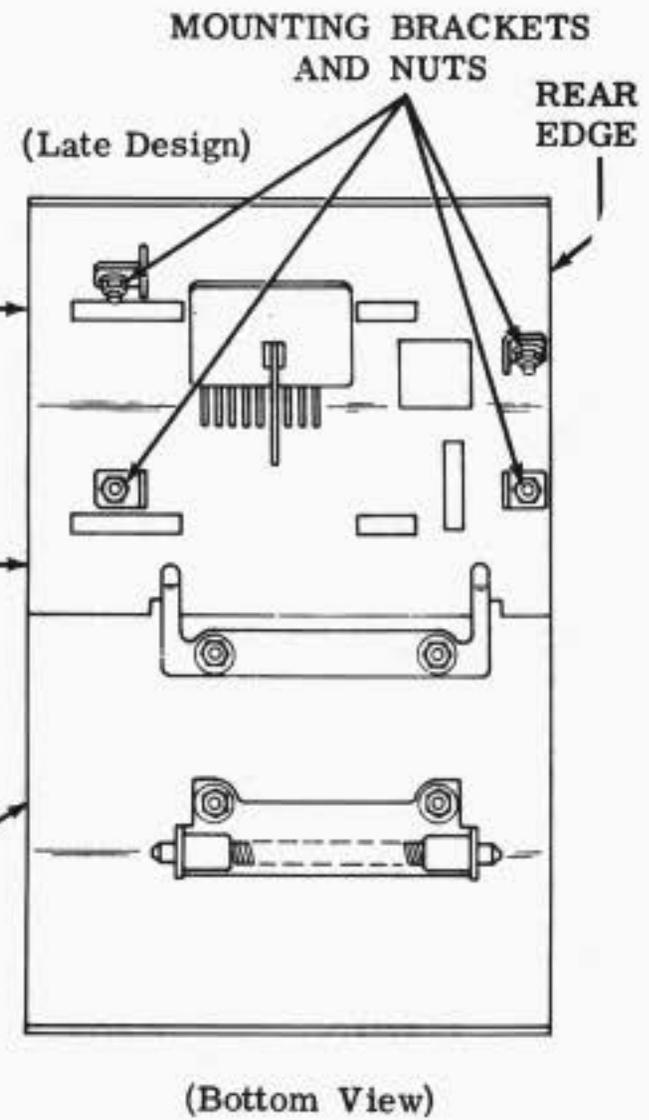
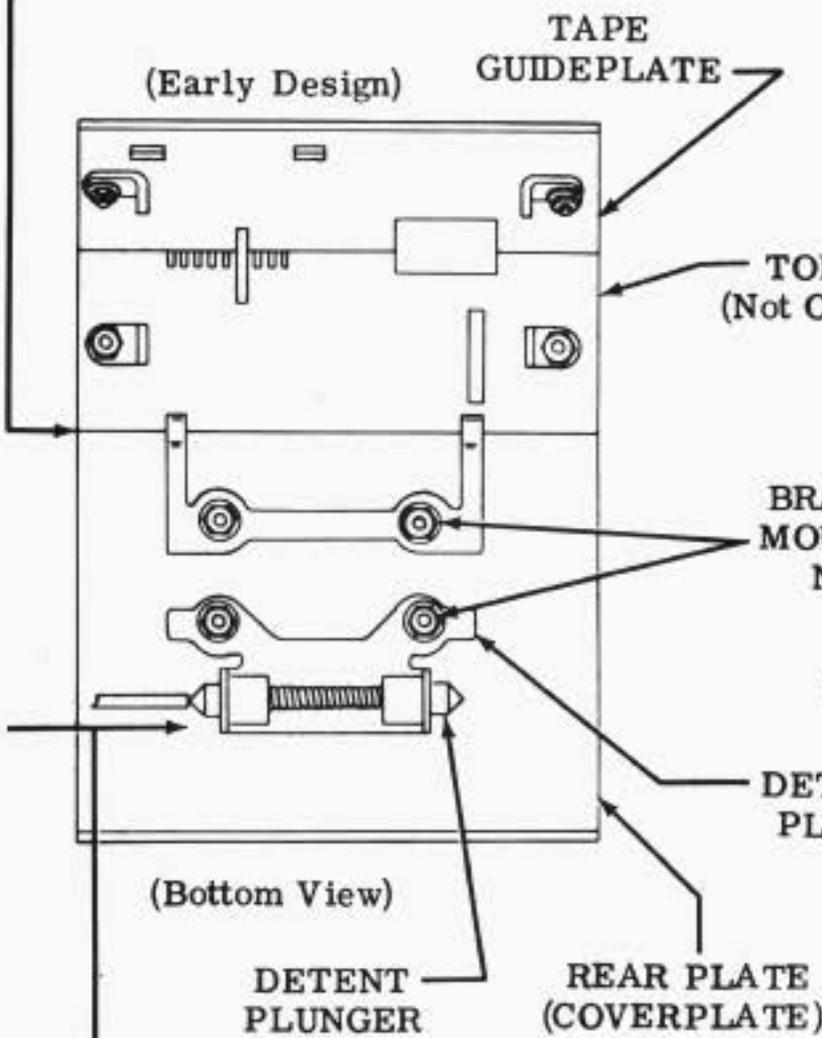


REAR PLATE

- (1) Requirement  
Rear plate and top plate should be held flush along their common edge by detent action.
- (2) Requirement  
Rear plate should rest firmly on at least three front and rear plate projections.
- (3) Requirement  
Front edge of rear plate and top plate should be in line.

To Adjust

Move screws which fix position of detent plunger to extreme lower right position. Tighten screws. Loosen four bracket mounting nuts on rear plate, and position plate. If necessary, refine location of detent plunger screws to meet requirement (1).



COVERPLATE PLUNGER SPRING

Requirement  
Min 8 oz---Max 20 oz  
to start one of the plungers moving.

## 2.05 Control Mechanism (continued)

TAPE-OUT CONTACT ASSEMBLY

## To Check

Remove contact assembly from its mounting bracket.

## (1) Requirement

Min 8 grams---Max 15 grams  
to open normally closed contacts.

## To Adjust

Bend contact swinger.

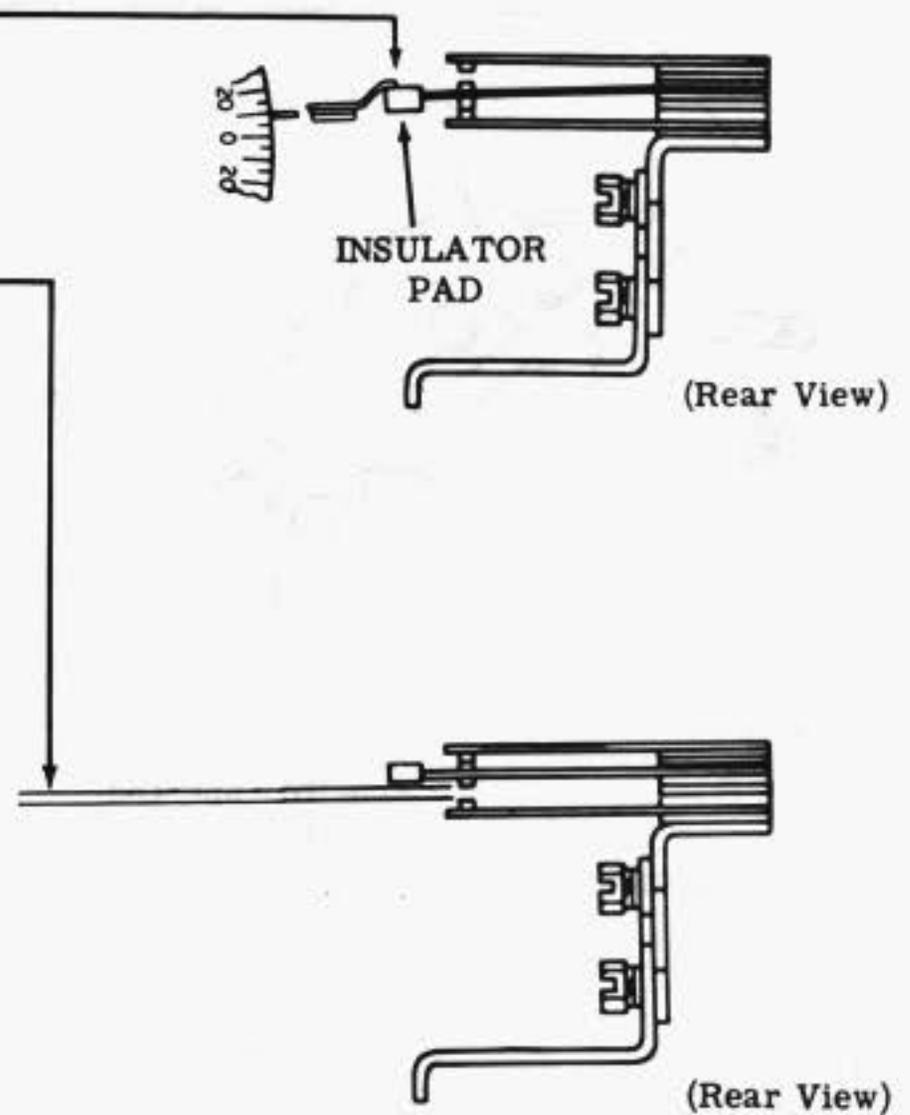
## (2) Requirement

Min 0.008 inch---Max 0.015 inch  
clearance between normally open contacts.

## To Adjust

Bend upper contact leaf.

Note: Replace contact assembly. Make sure contact swinger is under tape-out pin extension.

TAPE-OUT CONTACT ASSEMBLY BRACKET

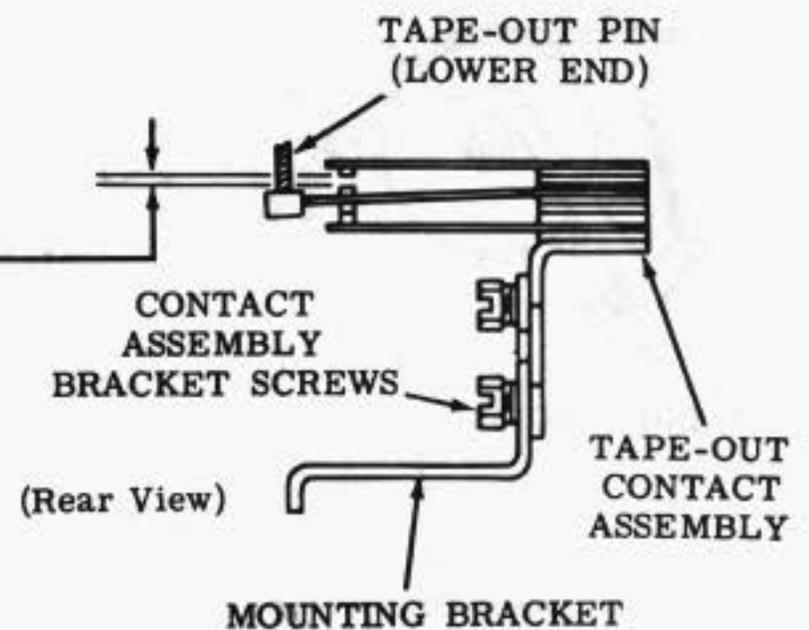
## Requirement

With tape in unit, tape lid latched. There should be

Min 0.008 inch---Max 0.015 inch  
gap between top contacts. Some movement of bottom contacts when top contacts are opened.

## To Adjust

Loosen screws which hold contact assembly bracket and mounting bracket together. Position bracket by means of pry points. If necessary, refine TAPE-OUT CONTACT ASSEMBLY (2.05).



2.06 Control and Sensing Mechanisms

CONTROL LEVER SPRING

To Check

Place control lever in RUN position and hold tight tape arm away from control lever.

Requirement

Min 1 oz---Max 5 oz to start lever moving.

TAPE-OUT PIN

(1) Requirement

With unit in FREE position it should require

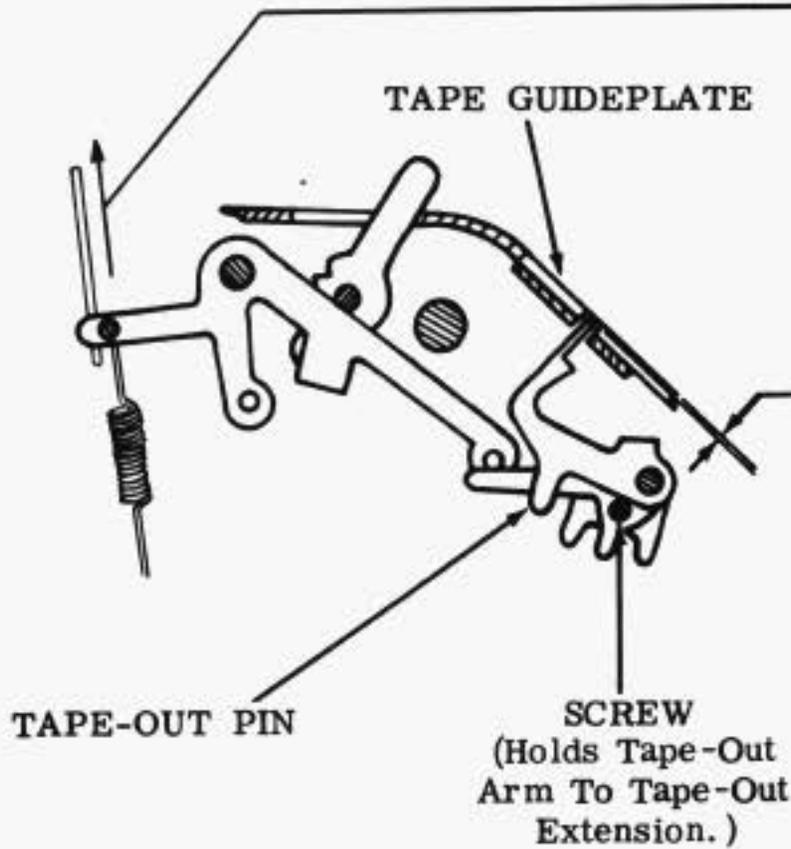
Min some---Max 0.010 inch clearance between tape out pin and tape guideplate.

(2) Requirement

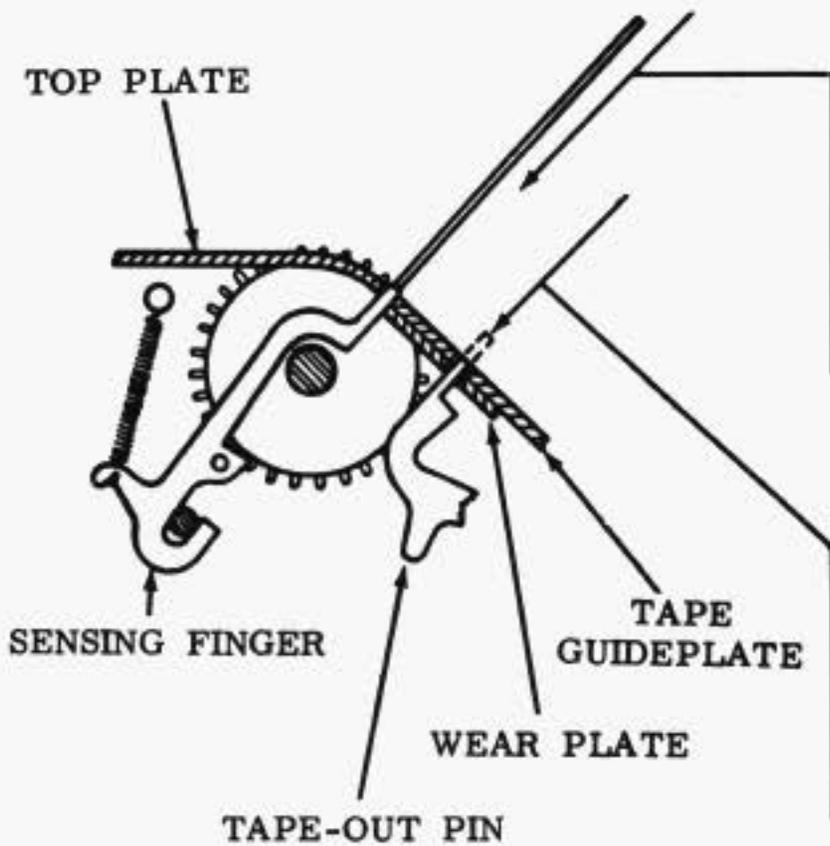
With unit in RUN position and tape in unit, tape-out pin should be stopped by tape guideplate.

To Adjust

Place control lever in STOP position. Loosen screw which secures tape-out arm to tape out extension. Position tape-out pin by means of pry points. Tighten screw and recheck.



(Front View)



(Front View)

SENSING FINGER SPRINGS

Requirement (each spring)

With sensing fingers in uppermost position, code reading contact springs held away it should require

Min 2-1/2 oz---Max 6 oz to move sensing finger flush with tape guideplate.

TAPE-OUT PIN SPRING

Requirement

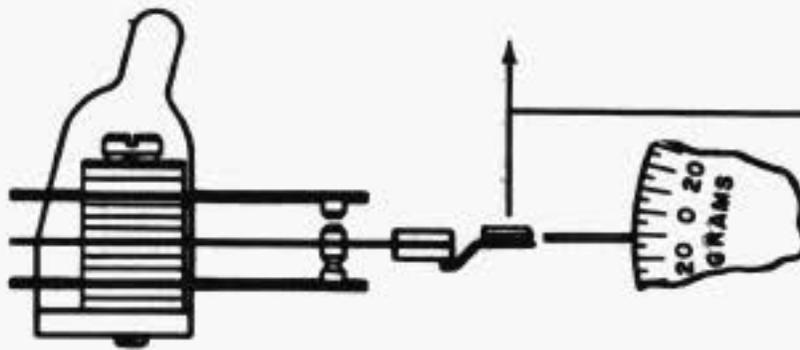
With tape-out contact swinger held away it should require

Min 5 grams---Max 15 grams to move tape-out pin flush with tape guideplate.

## 2.07 Control Mechanism (continued)

START-STOP CONTACT ASSEMBLY**To Check**

Remove contact assembly and its mounting bracket from unit.

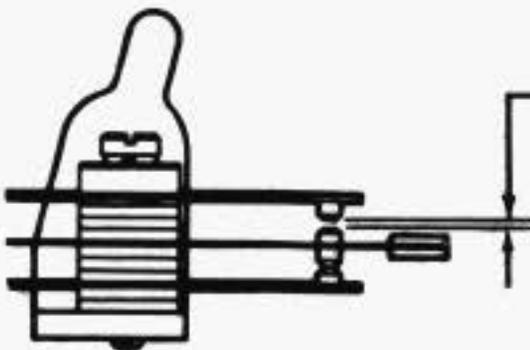
**(1) Requirement**

Min 8 grams---Max 15 grams  
to open normally closed contacts.

**To Adjust**

Bend contact swinger.

(Front Views)

**(2) Requirement**

All Readers except CX805:

Min 0.008 inch---Max 0.015 inch  
clearance between normally open  
contacts.

CX805 Reader:

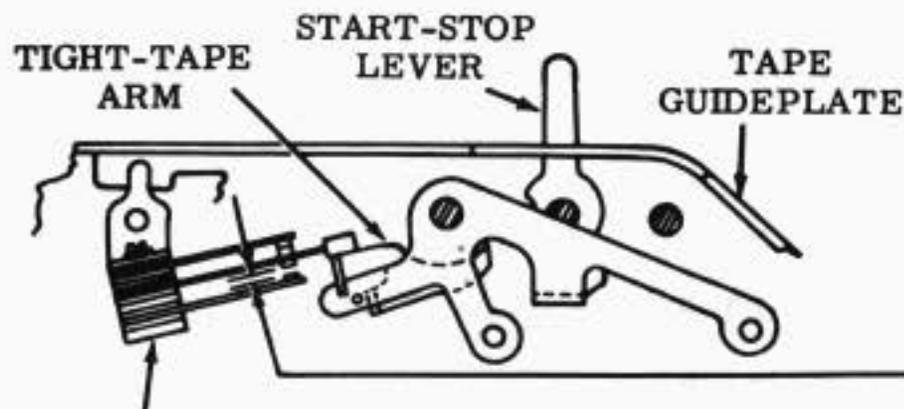
Min 0.022 inch---Max 0.030 inch  
clearance between normally open  
contacts.

**To Adjust**

Bend upper contact leaf.

**Note:** Replace contact assembly. Make  
sure contact swinger is over tight-tape  
arm extension.

2.08 Control Mechanism (continued)



START-STOP CONTACT ASSEMBLY BRACKET

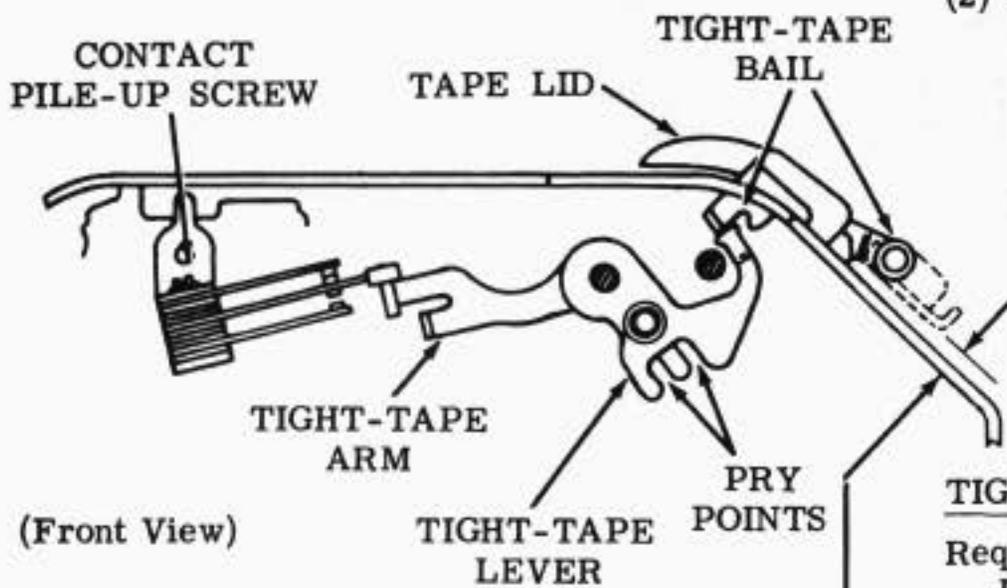
- (1) Requirement  
 With unit in STOP position:  
 — Min 0.010 inch---Max 0.015 inch  
 gap between normally closed contacts.

To Adjust  
 Position contact assembly bracket with its mounting screws loosened.

START-STOP CONTACT ASSEMBLY (Front View - Rear Plate)

- (2) Requirement  
 Tight-tape arm extension should fully engage insulator pad on swinger tip. Swinger should be approximately parallel to rear plate.

To Adjust  
 Loosen screws securing contact pile-up to assembly bracket. Position assembly.



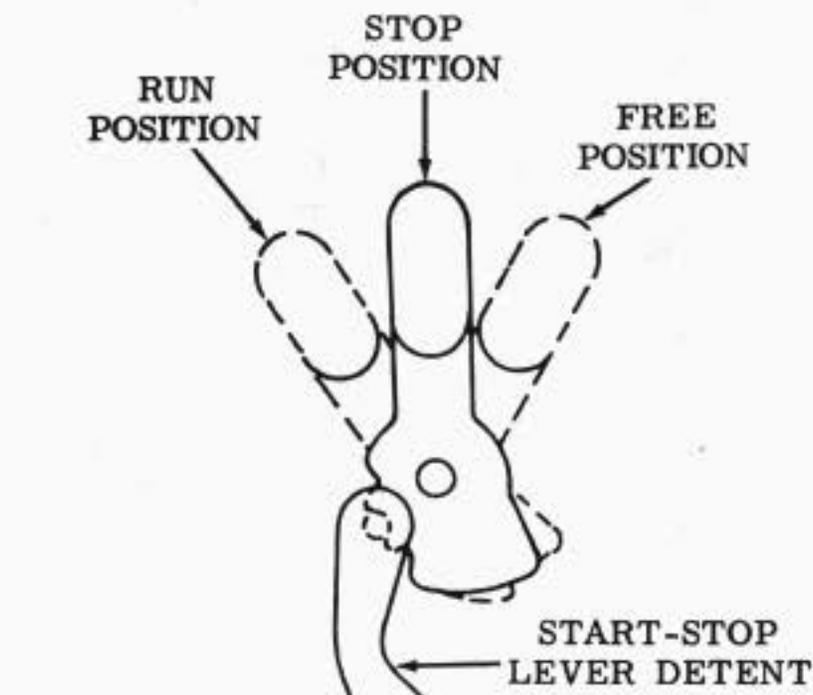
TIGHT-TAPE ARM

- Requirement  
 Bottom set of contacts should open when tight-tape bail is raised:  
 — Min 0.045 inch---Max 0.075 inch  
 from tape guideplate.

To Adjust  
 Place start-stop lever in RUN position. Loosen screw which secures arm with hub to tight-tape lever. By means of pry points, position tight-tape arm to satisfy the following:

With a 0.040 inch gauge between tight-tape bail and tape guideplate, contacts should remain closed.

With a 0.060 inch gauge between tight-tape bail and tape guideplate, contacts should open. Check contacts visually. Tighten screw and recheck.



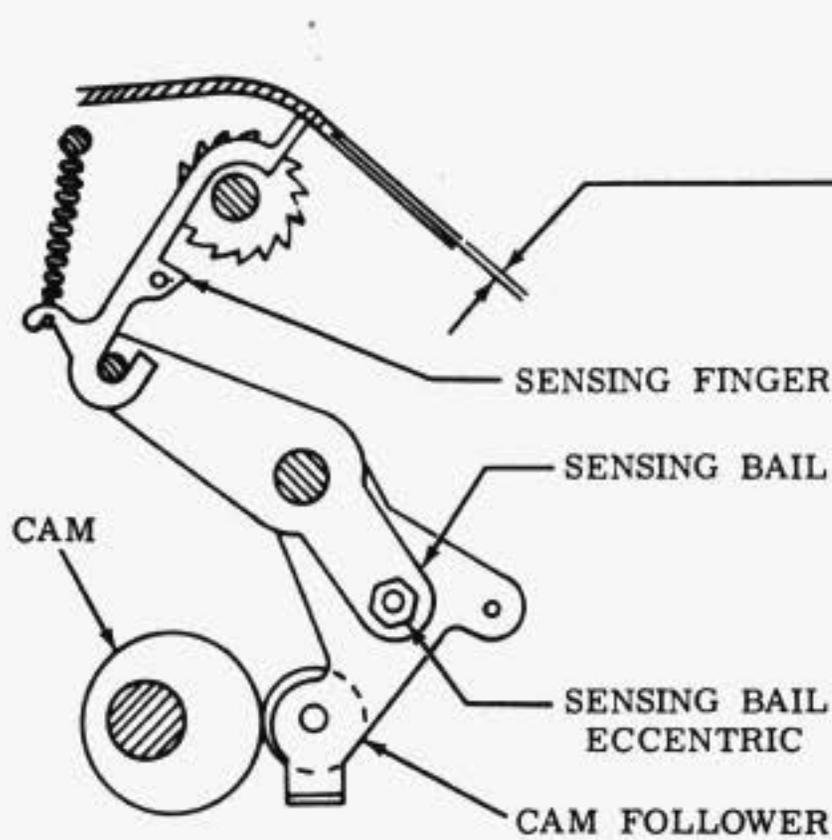
START-STOP LEVER DETENT SPRING

- Requirement  
 With unit in STOP position, it should require  
 — Min 10 oz---Max 16 oz  
 to start detent moving.

INERTIA STOP LEVER ECCENTRIC SCREW

(Front View)

2.09 Sensing and Tape Feed Mechanisms (continued)



(Front View)

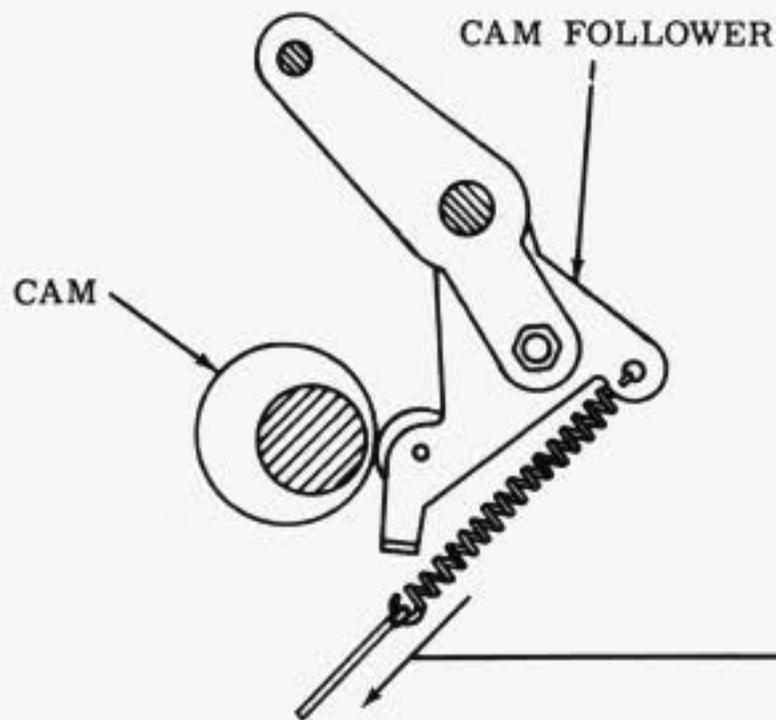
SENSING BAIL

Requirement

With sensing fingers in lowermost position:  
 Min 0.005 inch---Max 0.010 inch  
 between highest sensing pin and surface of  
 tape guideplate.

To Adjust

With nut on sensing bail eccentric friction  
 tight. adjust eccentric. Tighten nut and  
 recheck.



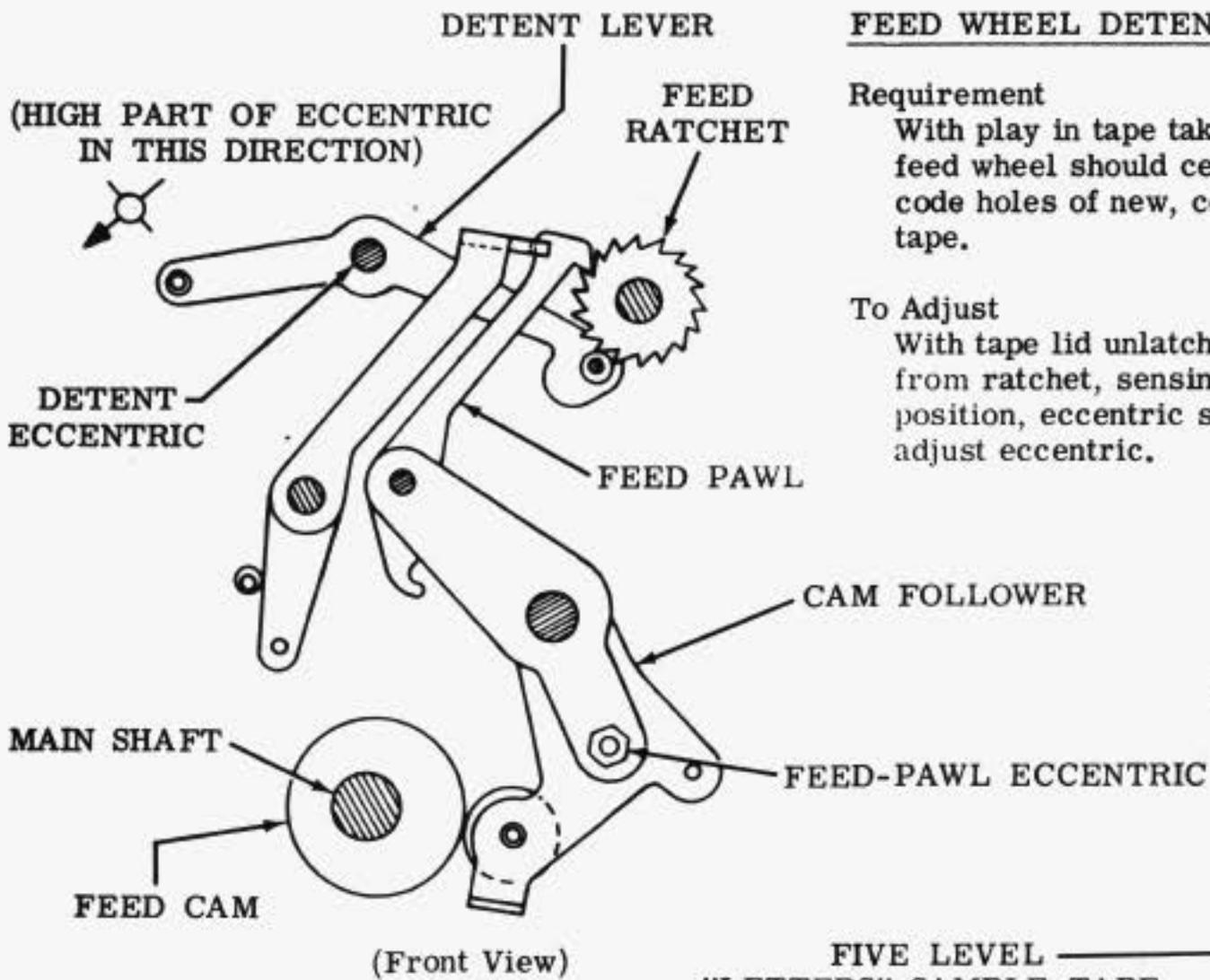
(Front View)

FEED AND SENSING CAM FOLLOWER  
 SPRINGS

Requirement (Each Spring)

With cam followers on low point of cams  
 it should require  
 Min 10 oz---Max 12 oz  
 to pull spring to installed length.

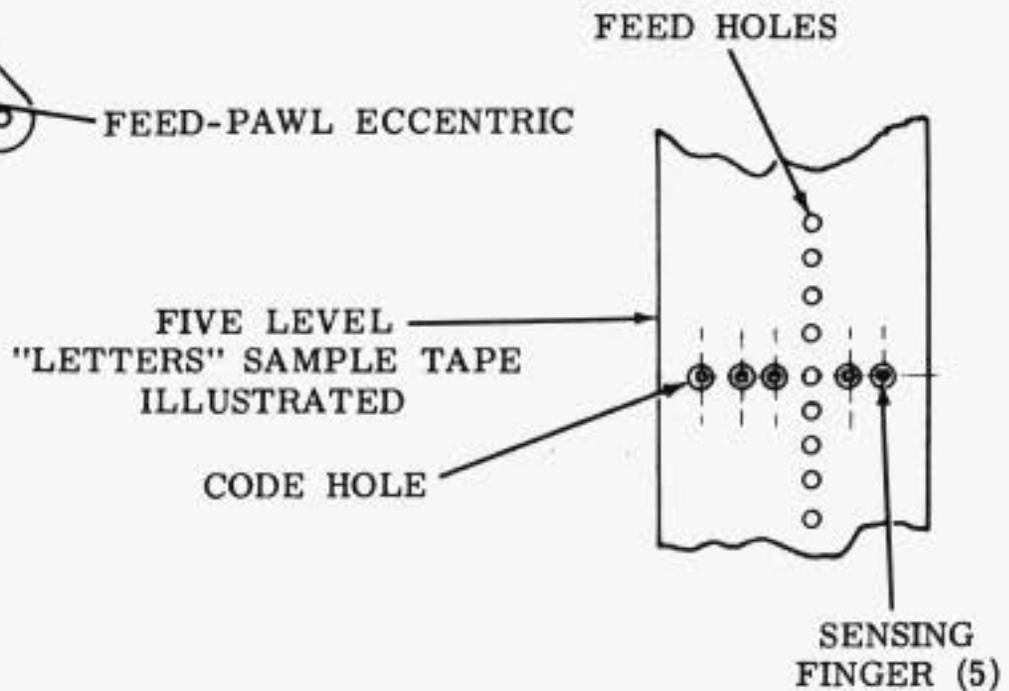
2.10 Tape Feed Mechanism (continued)



FEED WHEEL DETENT

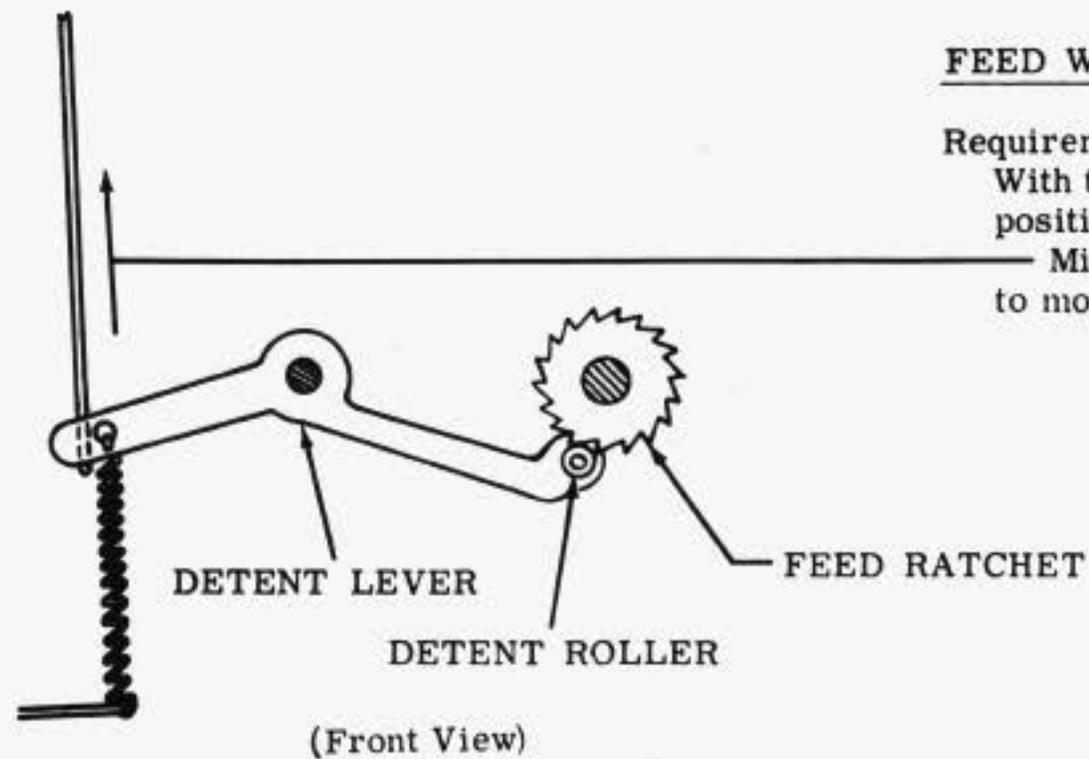
**Requirement**  
 With play in tape taken lightly toward right, feed wheel should center sensing fingers in code holes of new, conforming perforated tape.

**To Adjust**  
 With tape lid unlatched, feed pawl held away from ratchet, sensing fingers in lowermost position, eccentric screw friction tight, adjust eccentric.



FEED WHEEL DETENT SPRING

**Requirement**  
 With top plate removed and unit in STOP position, it should require  
 Min 21 oz---Max 30 oz  
 to move roller away from ratchet.



2.11 Tape Feed Mechanism (continued)

FEED PAWL

**Requirement**

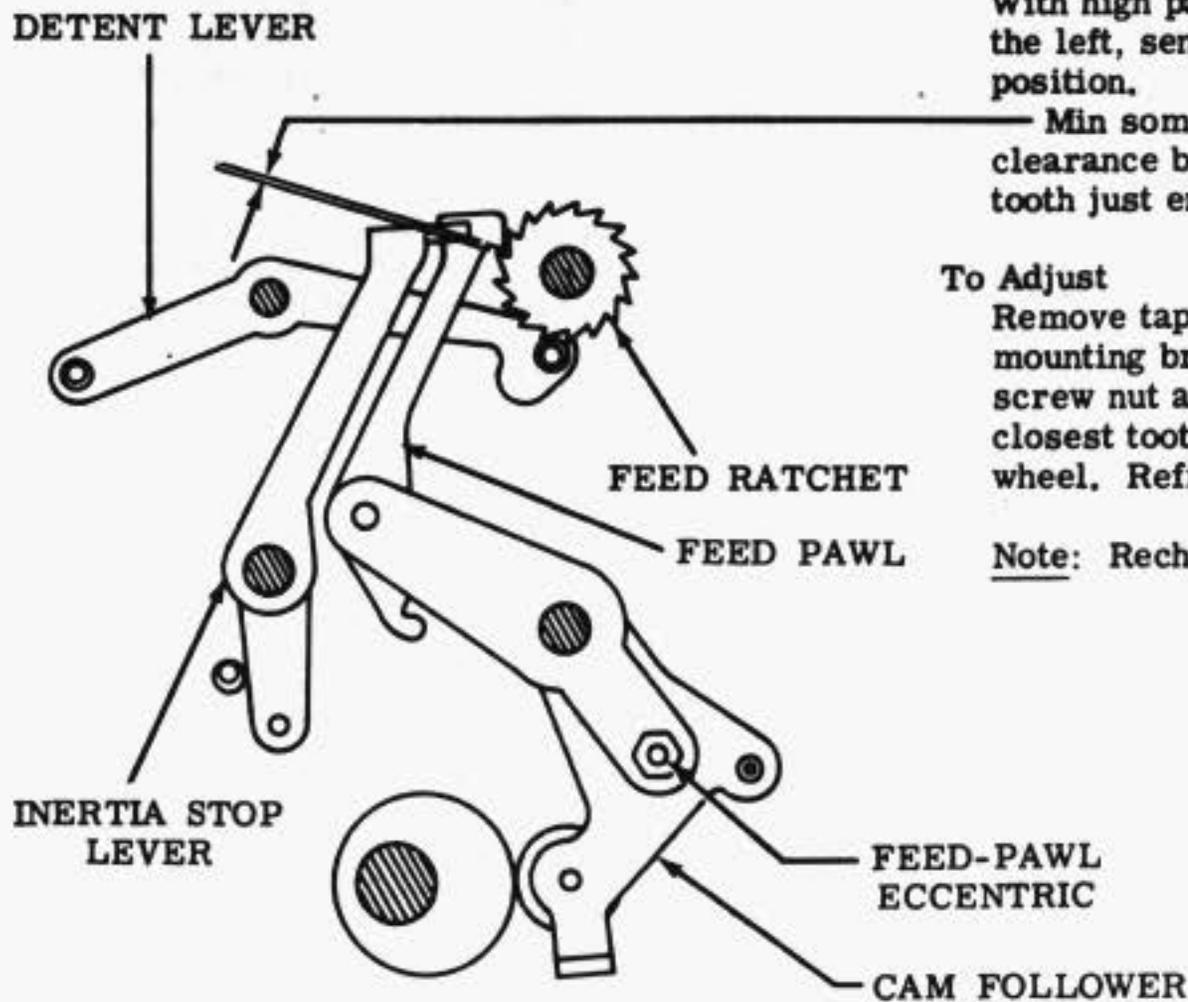
With high part of feed-pawl eccentric to the left, sensing fingers in lowermost position.

Min some---Max 0.003 inch clearance between feed pawl and ratchet tooth just engaged.

**To Adjust**

Remove tape guideplate by loosening its mounting bracket screws. Loosen eccentric screw nut and rotate screw. Recheck at closest tooth through one revolution of feed wheel. Refine if necessary.

Note: Recheck SENSING BAIL (2.09).



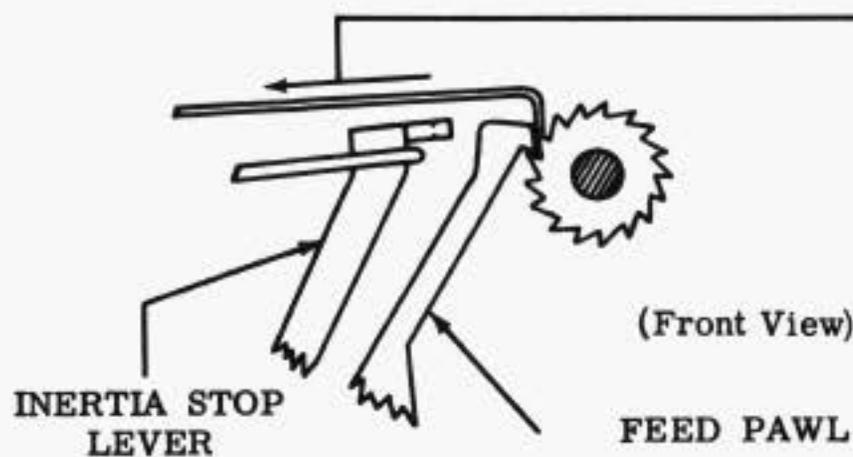
(Front View)

FEED-PAWL SPRING

**Requirement**

With feed pawl in uppermost position and inertia stop lever held away it should require

Min 1 oz---Max 5 oz to start feed pawl moving away from feed ratchet.



(Front View)

2.12 Tape Feed Mechanism (continued)

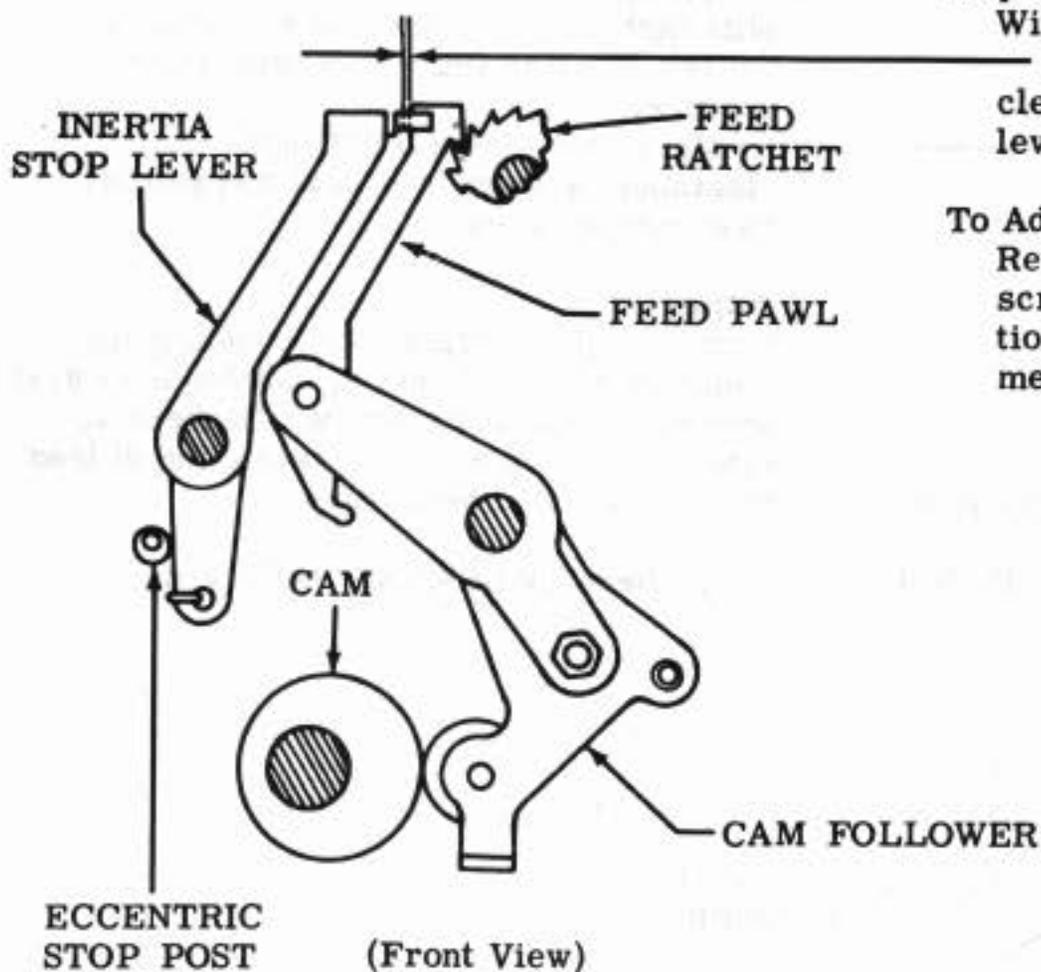
INERTIA STOP LEVER

Requirement

With feed pawl in lowermost position:  
 — Min some---Max 0.012 inch  
 clearance between notch in inertia stop  
 lever and feed pawl.

To Adjust

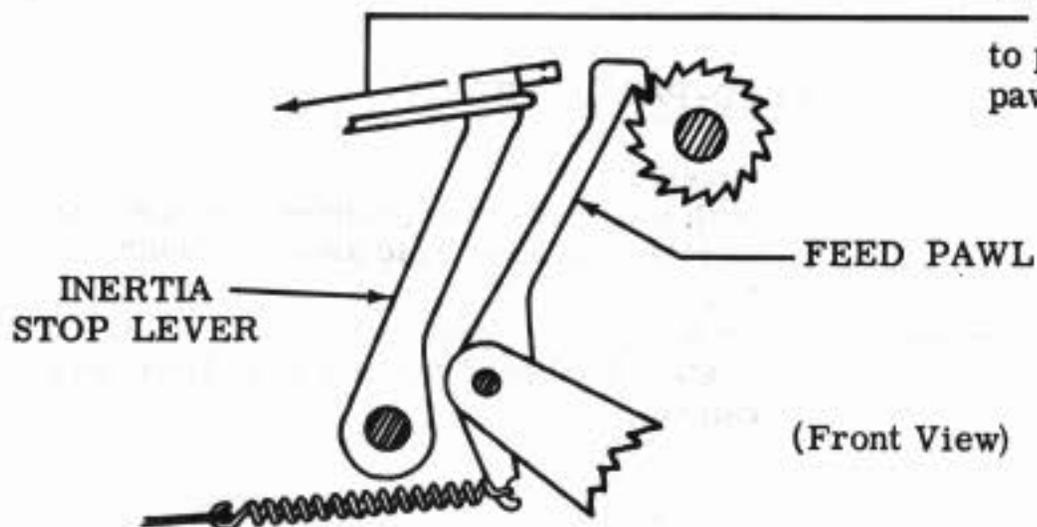
Remove top plate by loosening its mounting  
 screws. With eccentric stop post fric-  
 tion tight, rotate stop post to meet require-  
 ment.



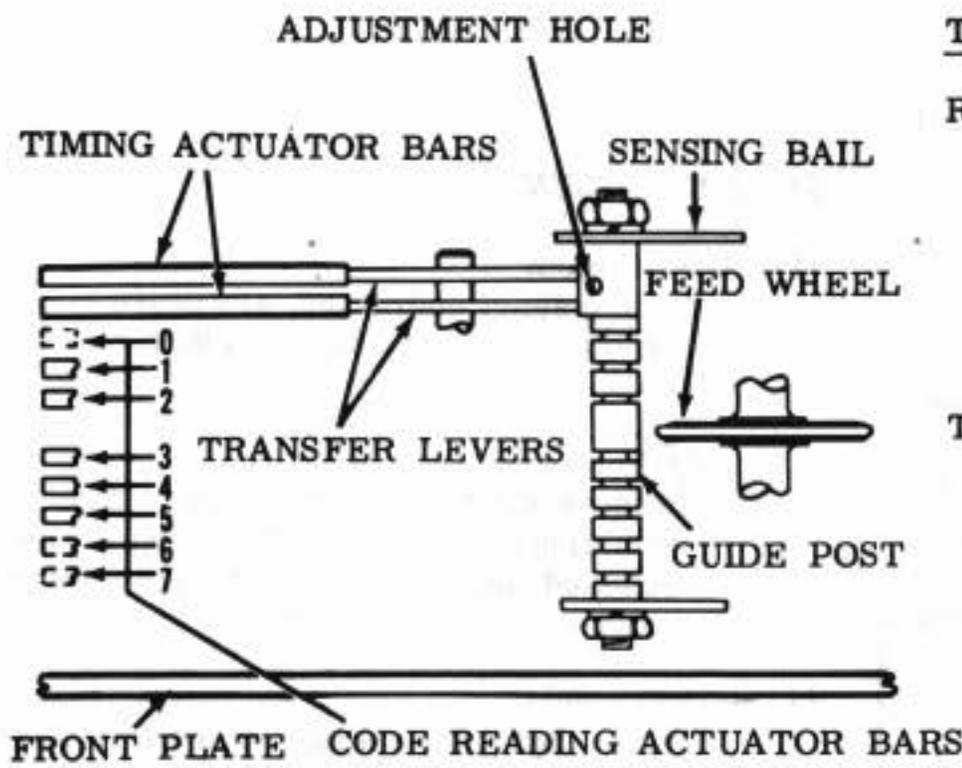
INERTIA STOP LEVER SPRING

Requirement

With unit in STOP position it should require  
 — Min 1 oz---Max 5 oz  
 to pull inertia stop lever away from feed  
 pawl.



2.13 Sensing Mechanism (continued)



(Top View)

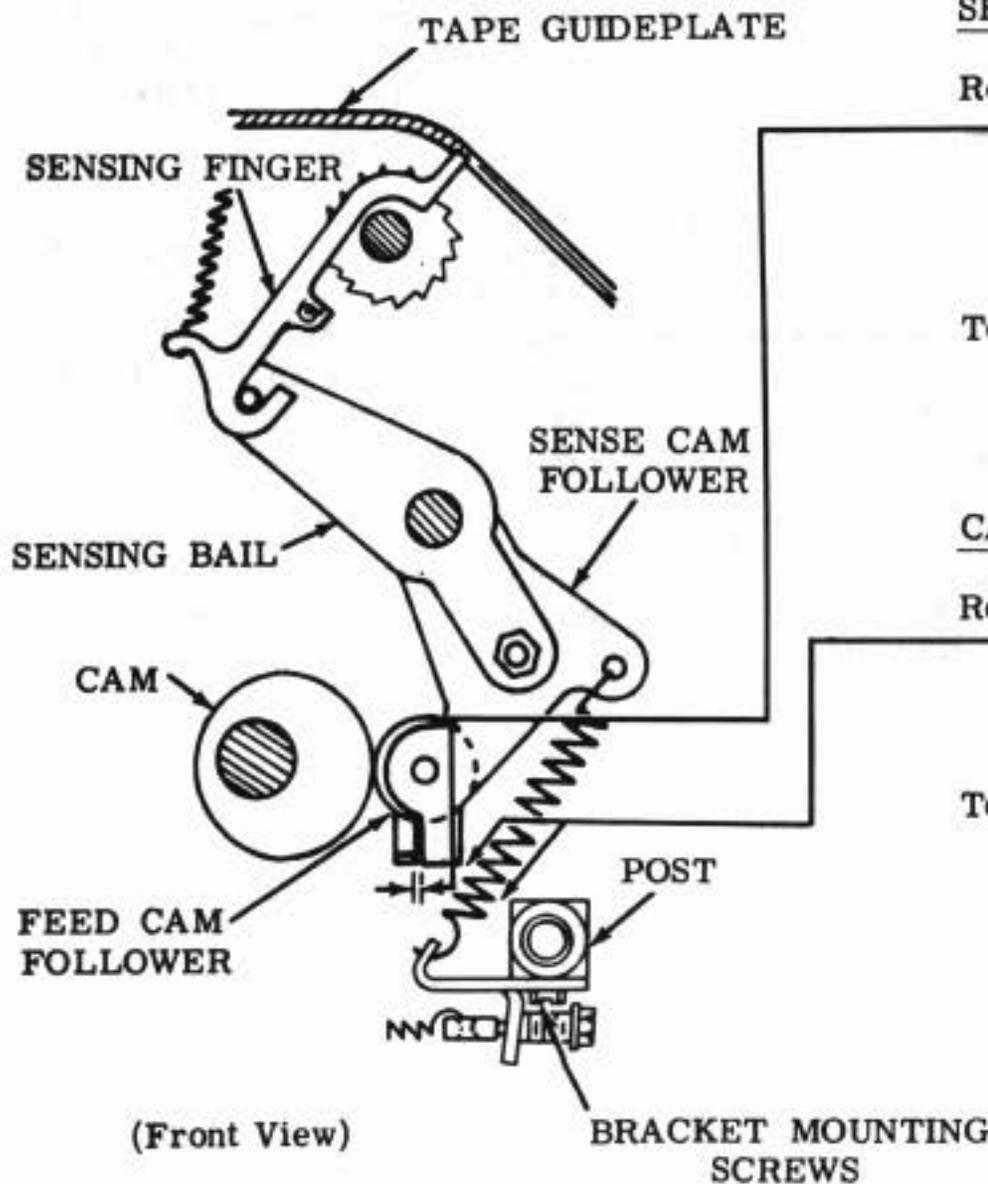
TIMING (UNIVERSAL) CONTACT ACTUATOR

**Requirement**

With straight edge along left ends of actuator bars, timing actuator bars should be in line with code reading actuator bars. When main shaft is rotated, timing actuator bars should start to move with code reading actuator bars.

**To Adjust**

Loosen nuts which secure guidepost to sensing bail. Rotate post to meet requirement.



(Front View)

SENSE CAM FOLLOWER

**Requirement**

With feed cam follower on high part of cam, there should be some clearance between tabs on feed cam follower and sense cam follower.

**To Adjust**

Bend tab on sense cam follower to meet requirement.

CAM FOLLOWER SPRING CLEARANCE

**Requirement**

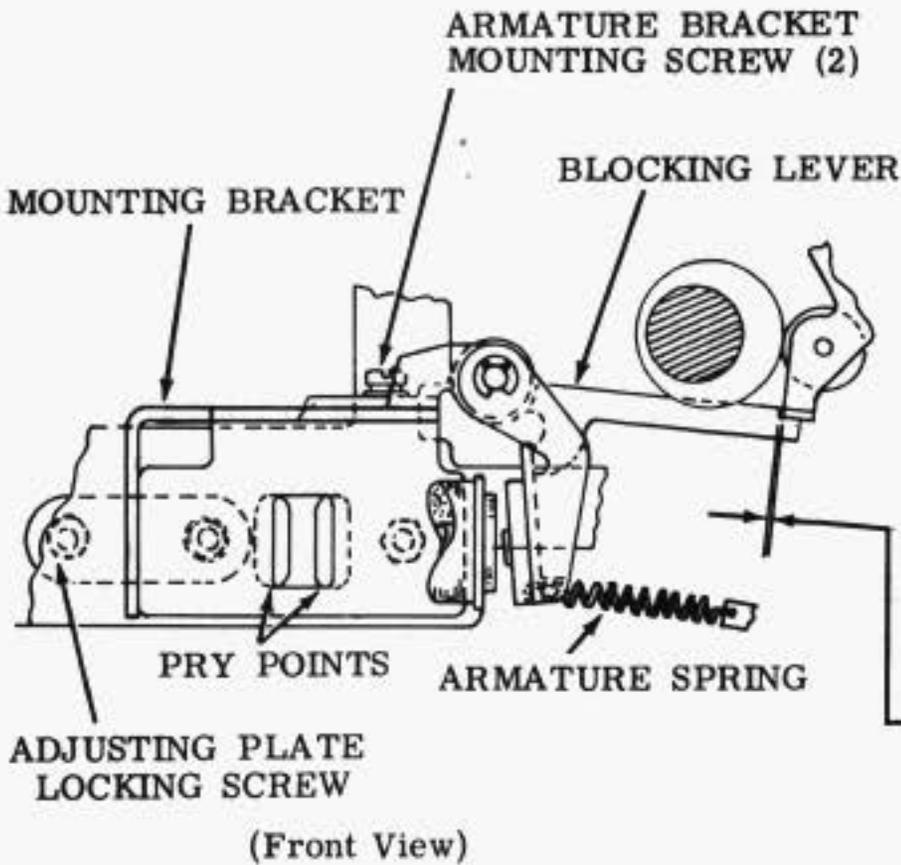
Clearance of cam follower springs between cam followers and post should be approximately equal.

**To Adjust**

With feed cam follower on high part of cam and mounting bracket screws friction tight, position bracket to meet requirement. Tighten mounting bracket screws.

**Note:** Rotate camshaft one revolution to insure that cam followers or post do not interfere with springs.

2.14 Control Mechanism (continued)



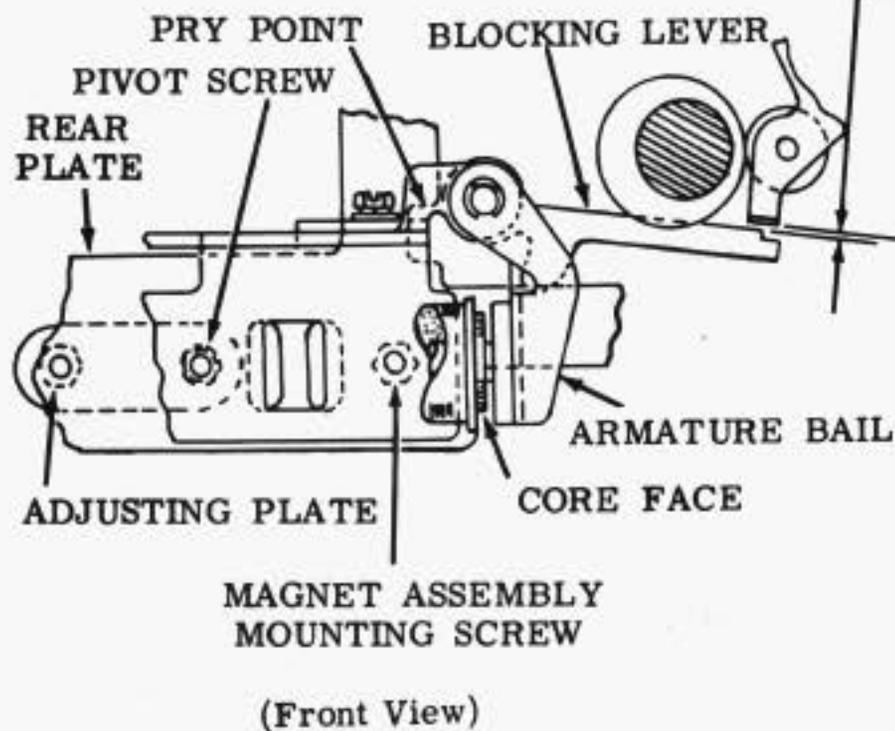
MAGNET ASSEMBLY

- (1) Requirement  
With magnet energized, armature should contact and be flush with core faces.
- To Adjust  
Remove magnet assembly from unit. With armature bracket mounting screws loosened, position armature and tighten screws. Replace assembly.
- (2) Requirement  
With magnet de-energized and followers on high point of cams there should be  
Min 0.005 inch---Max 0.008 inch clearance between blocking surface of blocking lever and feed cam follower.

To Adjust  
With assembly mounting screws and locking screw friction tight, position assembly by means of pry points. Tighten locking screw.

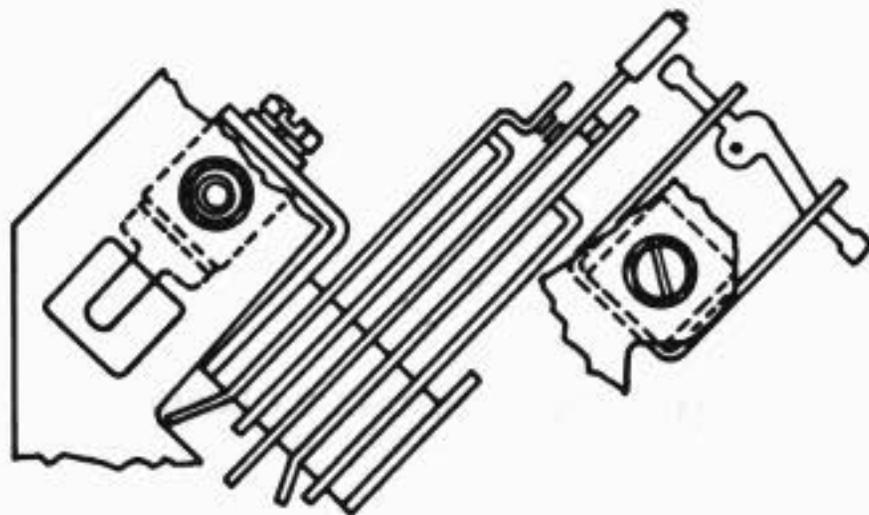
- (3) Requirement  
With magnet energized, followers on low point of cams:  
Min 0.005 inch---Max 0.010 inch clearance between top surface of blocking lever and feed cam follower at closes point.

To Adjust  
With pivot screw friction tight, position assembly by means of pry point.



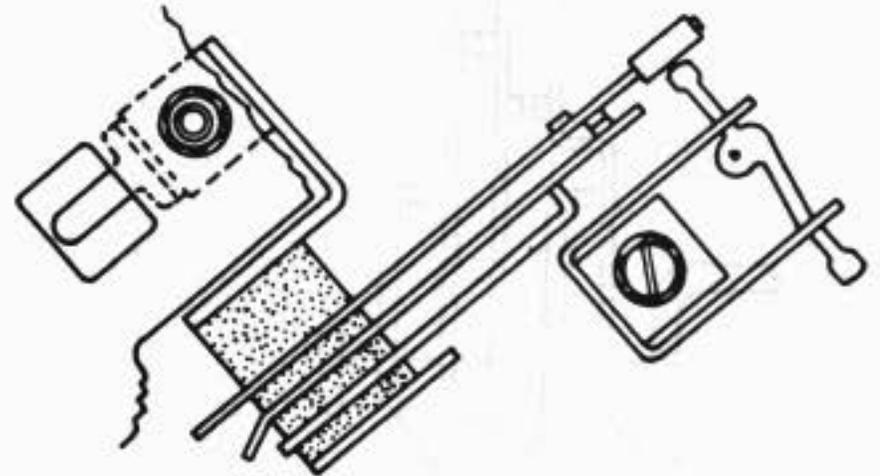
2.15 Control Mechanism (continued)

Note: The illustrations of code contacts on this page apply to the procedures in 2.16 through 2.18. Adjustments (D), (E) and (F-2) apply to transfer type contact assemblies only; all other adjustments apply to both transfer type and make-only type contact assemblies. Adjustments (A) through (E) are preliminary. Preliminary adjustments should be made with the contact assembly removed from the reader. For each adjustment, start with the contact pile-up farthest from the bending tool handle to avoid disturbing completed adjustments.



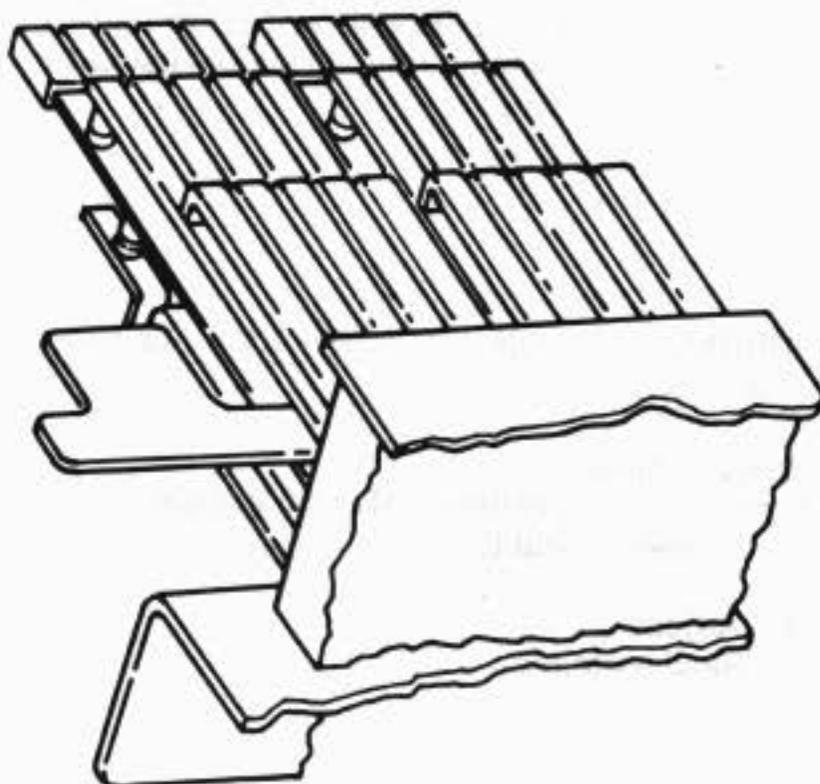
TRANSFER TYPE CONTACT ASSEMBLY

(Front View)



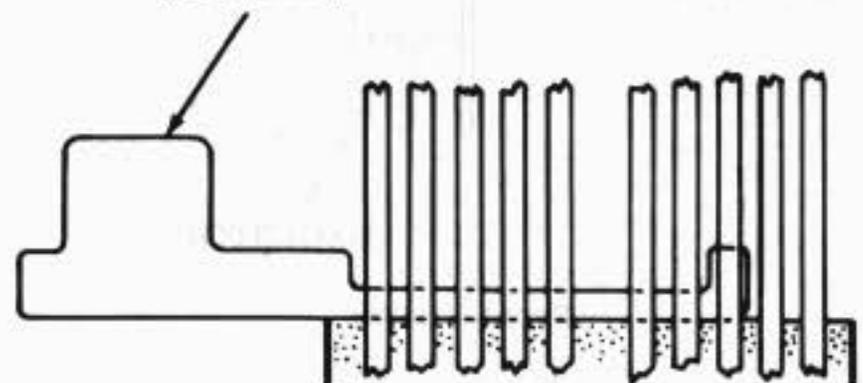
MAKE-ONLY TYPE CONTACT ASSEMBLY

(Front View)



(Bottom View - From Left Side)

CONTACT SPRING BENDER  
(TP172060)



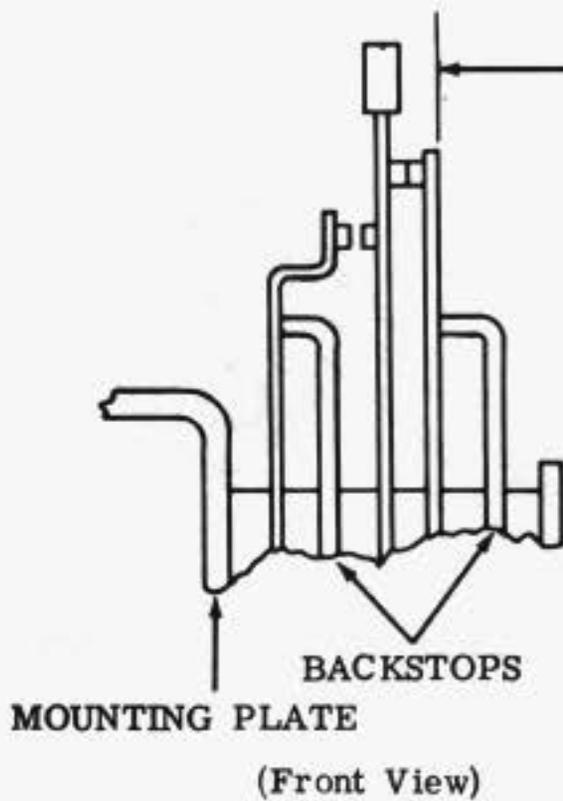
5 4 3 2 1

(Top View - From Left Side)

2.16 Control Mechanism (continued)

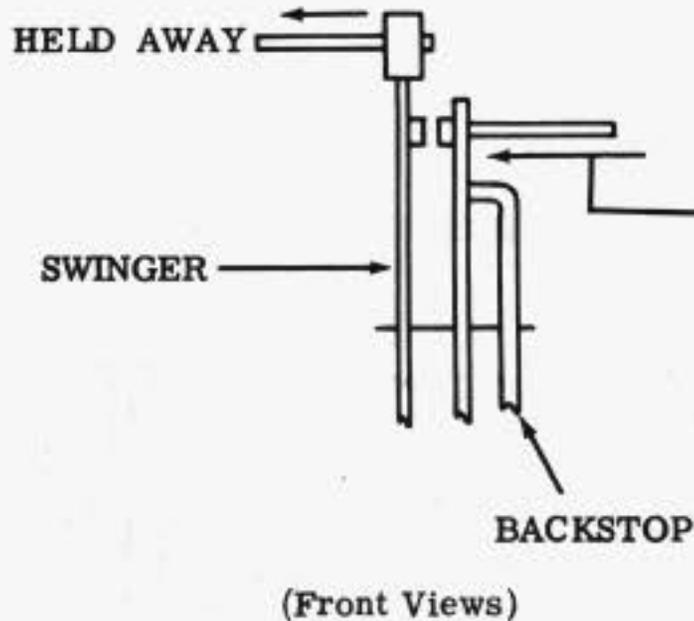
Note: Refer to note in 2.15 before proceeding.

(A) BACKSTOP - NORMALLY CLOSED CONTACT



Requirement  
Normally closed contact leaves should be parallel to mounting plate and in line with each other.

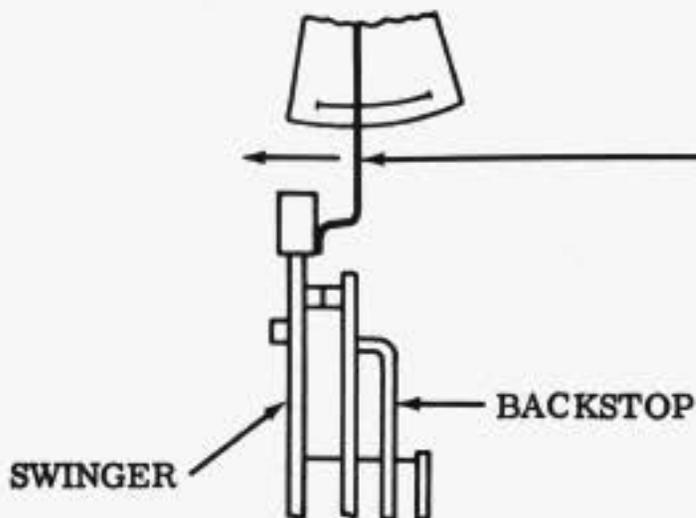
To Adjust  
Bend backstop. Gauge by eye.



(B) SPRING TENSION - NORMALLY CLOSED CONTACT AGAINST BACKSTOP

Requirement  
Min 4 oz---Max 7 oz  
to move stationary leaf away from backstop.

To Adjust  
Bend stationary leaf and, if necessary, bend backstop away from leaf and form leaf to increase tension. Reposition backstop to meet (A) above.



(C) SPRING TENSION - NORMALLY CLOSED CONTACT

Requirement  
Min 30 grams---Max 50 grams  
to open contact.

To Adjust  
Bend swinger.

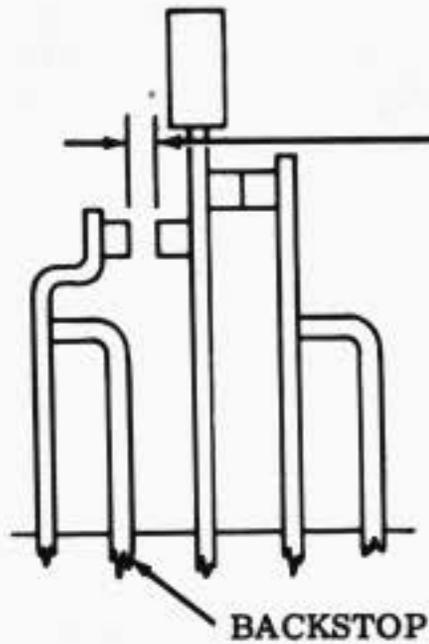
2.17 Control Mechanism (continued)

Note: Refer to note in 2.15 before proceeding.

(D) NORMALLY OPEN CONTACT

Requirement  
 Min 0.010 inch---Max 0.015 inch  
 gap between contacts.

To Adjust  
 Bend backstop.

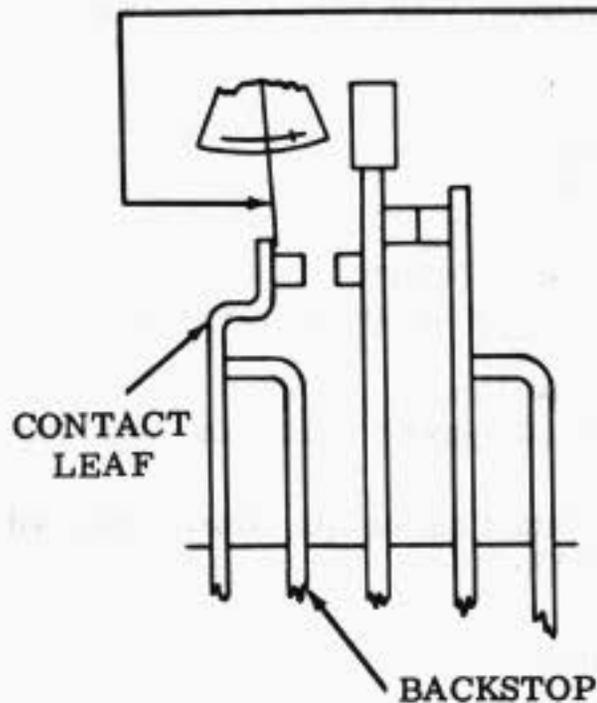


(Front View)

(E) SPRING TENSION – NORMALLY OPEN CONTACT

Requirement  
 Min 30 grams---Max 40 grams  
 to move contact from backstop.

To Adjust  
 Bend contact leaf. If necessary, bend  
 backstop away from leaf to increase  
 tension, then reposition backstop to  
 meet requirement (D) above.

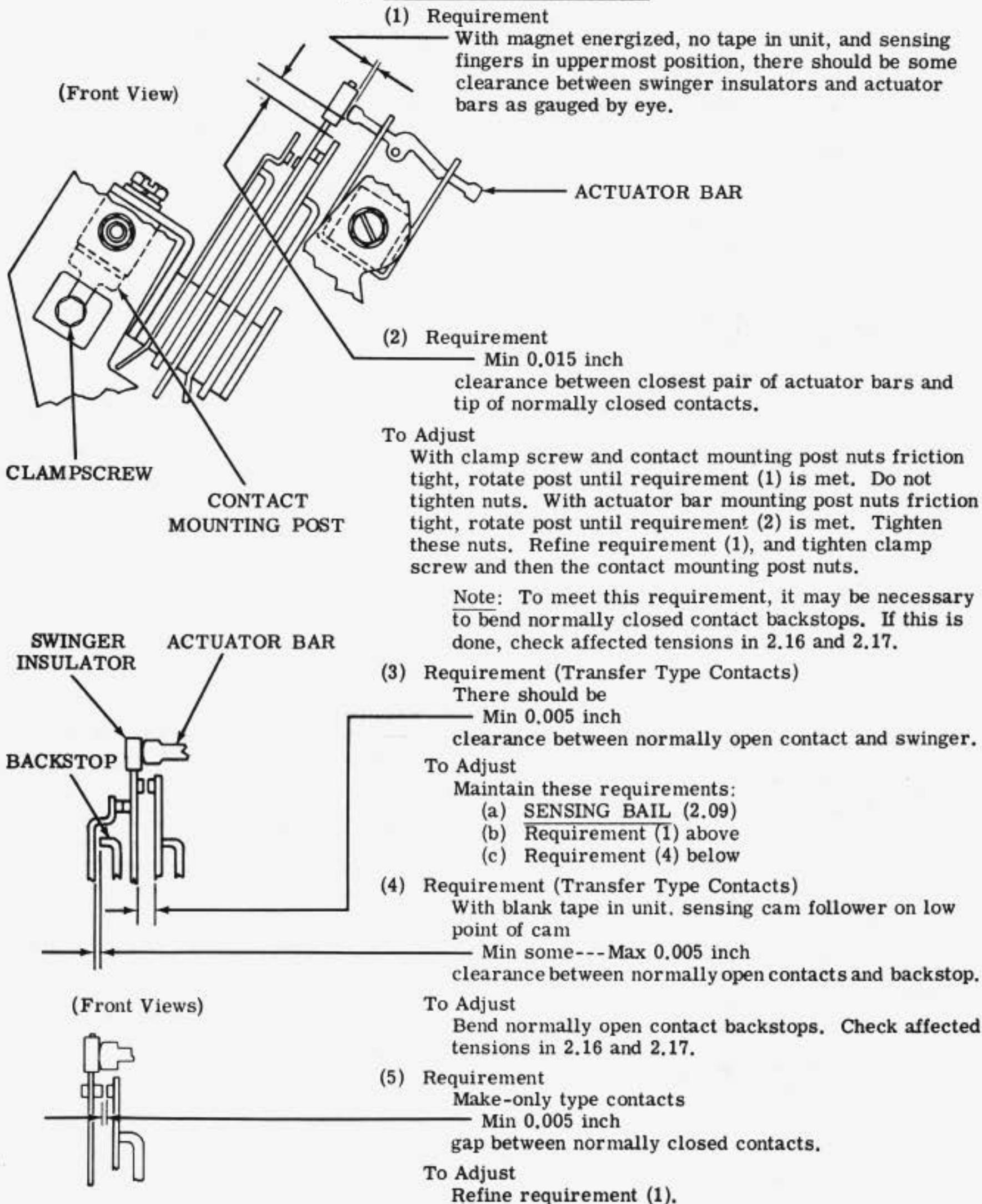


(Front View)

2.18 Control Mechanism (continued)

Note: Make the following adjustments with contact assembly installed in unit.

**(F) CONTACT INSTALLATION**



## 2.19 Code Contact Output (Transfer and Make-Only Contact Assemblies)

CODE CONTACT OUTPUT**To Check**

Connect 28 v dc (minimum) power supply to contact swinger. Connect contact spring through suitable resistance to power supply to provide 10 to 20 milliamperes current. Connect an oscilloscope across resistor to view contact closures.

## (1) Requirement

With unit reading "blank" tape (spacing) spacing contacts should not open and marking contacts should not close.

## (2) Requirement

With unit reading "letters" tape (marking) at 1000 wpm, spacing contacts should open every cycle and marking contacts (spacing - or marking-type contacts) should close for approximately 3 to 5 milliseconds. Central portion of marking signal (1.75 milliseconds minimum length) should be free of breaks or chatter greater than 10 microseconds duration.

## (3) Requirement (Units Without Pickup Coil)

With unit reading "letters" tape at 750 wpm, spacing side contacts (spacing-type contacts) should open every cycle and marking contacts (spacing - or marking-type contacts) should close for approximately 3.3 to 5.3 milliseconds. Central portion of this closure (2.8 milliseconds minimum) should have no breaks or chatter of 10 microseconds duration or longer. No code-level contact should close later than 0.25 milliseconds before the universal contact closes nor open less than 0.25 milliseconds after the universal contact opens.

**To Adjust**

Perform preliminary CONTACT INSTALLATION adjustments in 2.18. Connect oscilloscope to contact assembly to be adjusted.

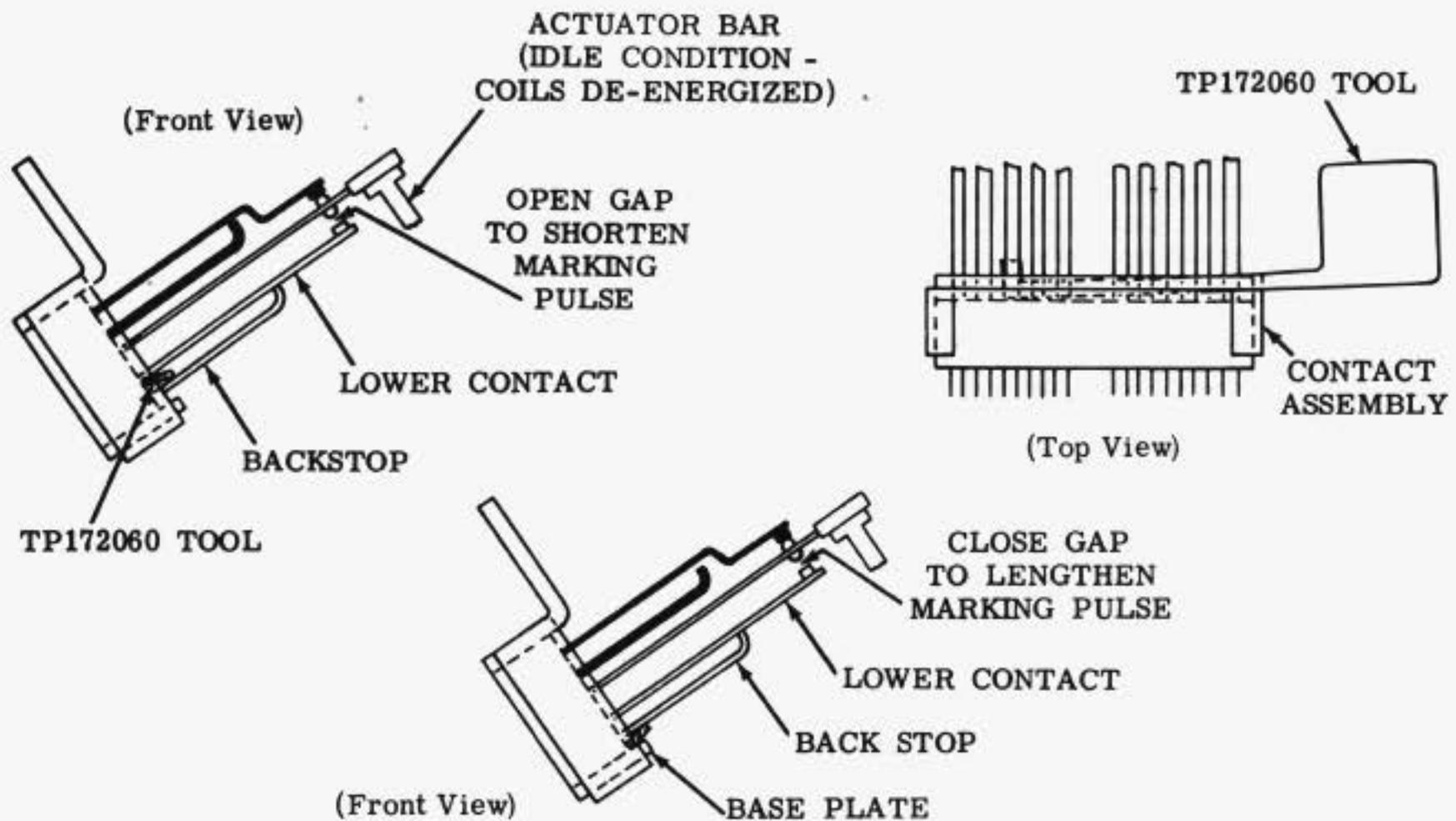
Note 1: For each adjustment, start with the contact pile-up farthest from the bending tool handle to avoid disturbing completed adjustments and work towards the front plate.

If the marking contact closure being viewed is too long, remove power from unit (idle condition, coils not energized) insert the TP172060 tool between the lower contact and its backstop and carefully bend the backstop down. If the marking closure is too short, insert the tool between the backstop and base plate of the contact assembly and bend backstop up.

Note 2: A barely perceptible movement of the backstop can considerably affect contact closure times.

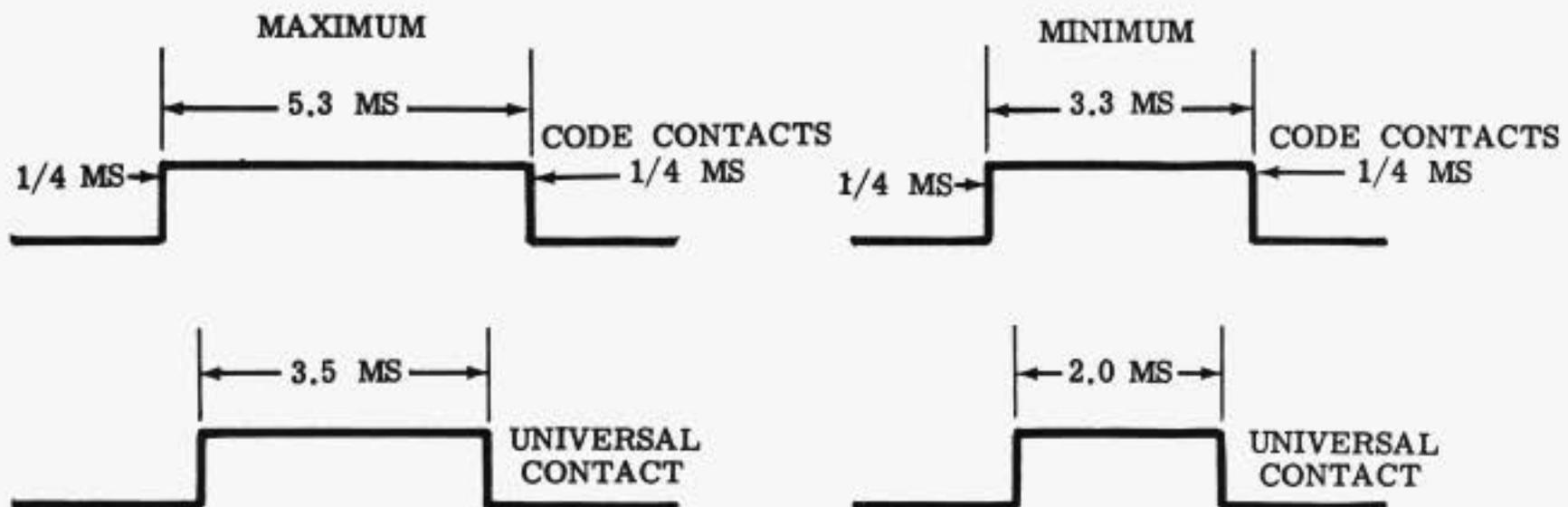
2.20 Code Contact Output (Transfer and Make-Only Contact Assemblies (continued))

Note: The following illustrations apply to the procedures in 2.19.



Note: Shaded contacts and backstops not included on TP171884 contact assembly.

WAVEFORMS FOR READERS WITHOUT PICKUP COIL



2.21 Control Mechanism (continued)

TAPE LID      TAPE LID LATCH



(Front View)

TAPE LID LATCH (Early Design)

Requirement

With tape lid held closed it should require  
Min some---Max 0.015 inch  
clearance between left edge of latch and  
tape lid.

To Adjust

Position latch with its mounting screws  
loosened.

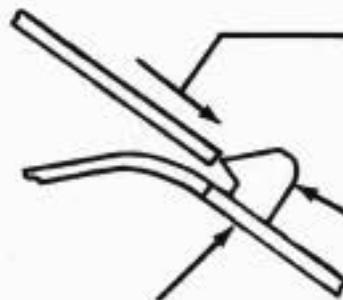
TAPE LID LATCH SPRING (Early Design)

To Check

Hold tape lid in latched position.

Requirement

Min 4-1/2 oz---Max 7-1/2 oz  
to start latch moving.



TAPE GUIDEPLATE

TAPE LID LATCH

(Front View)

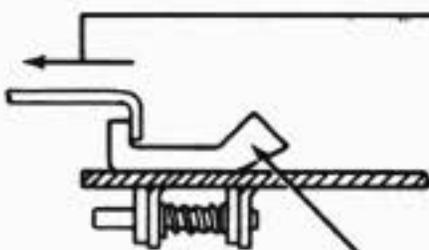
TAPE LID LATCH SPRING (Late Design)

To Check

Open tape lid.

Requirement

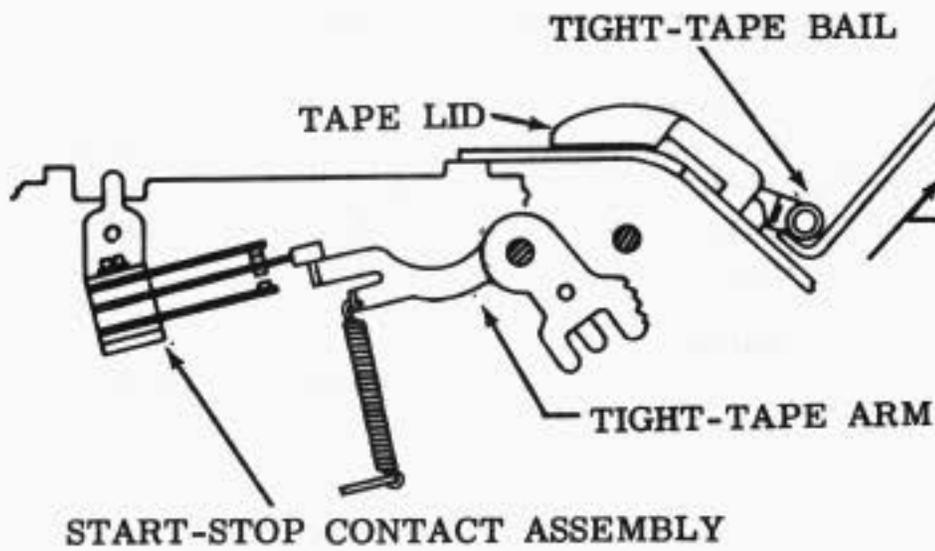
Min 9 oz---Max 15 oz  
to start latch moving.



TAPE LID LATCH

(Right Side View)

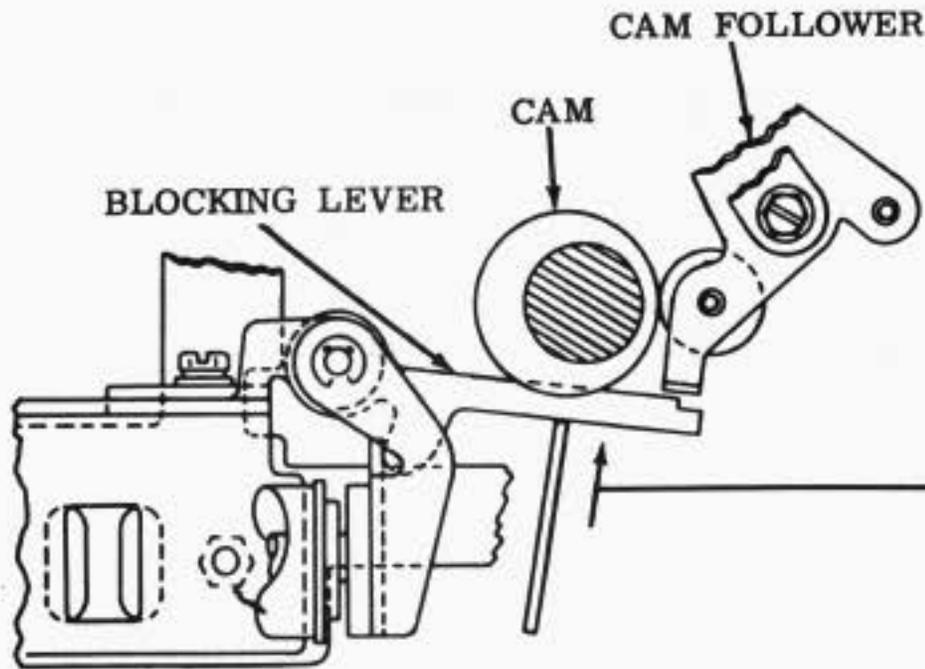
2.22 Control Mechanism (continued)



(Front View)

TIGHT-TAPE ARM SPRING

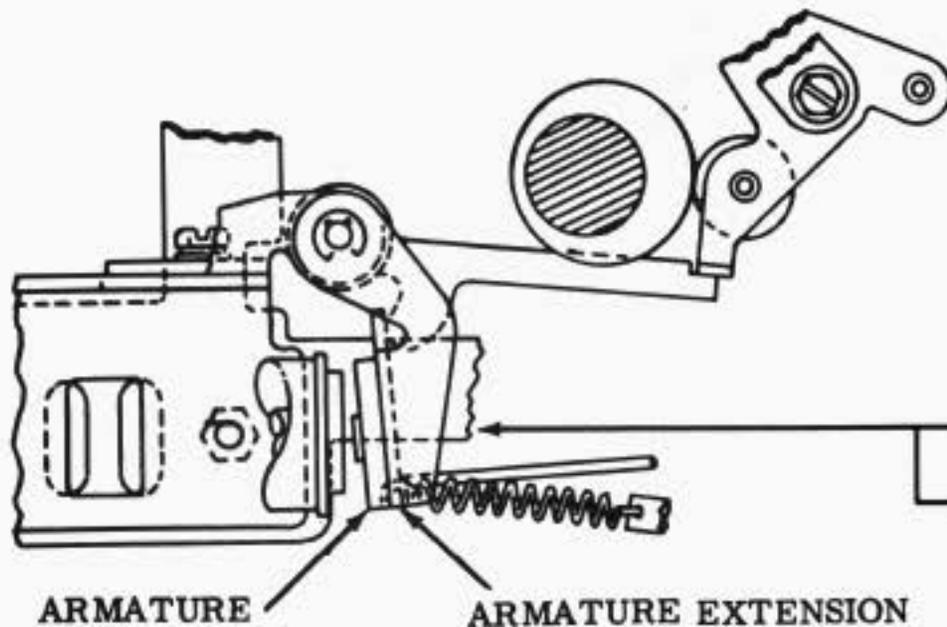
Requirement  
 With unit in RUN position and tape lid latched, it should require  
 Min 1 oz---Max 3-1/2 oz  
 to open bottom start-stop contacts.



(Front View)

BLOCKING LEVER SPRING

Requirement  
 With unit resting on rear plate, magnet in energized position, and followers on low point of cams, it should require  
 Min 1/2 oz---Max 1-1/2 oz  
 to start blocking lever moving.

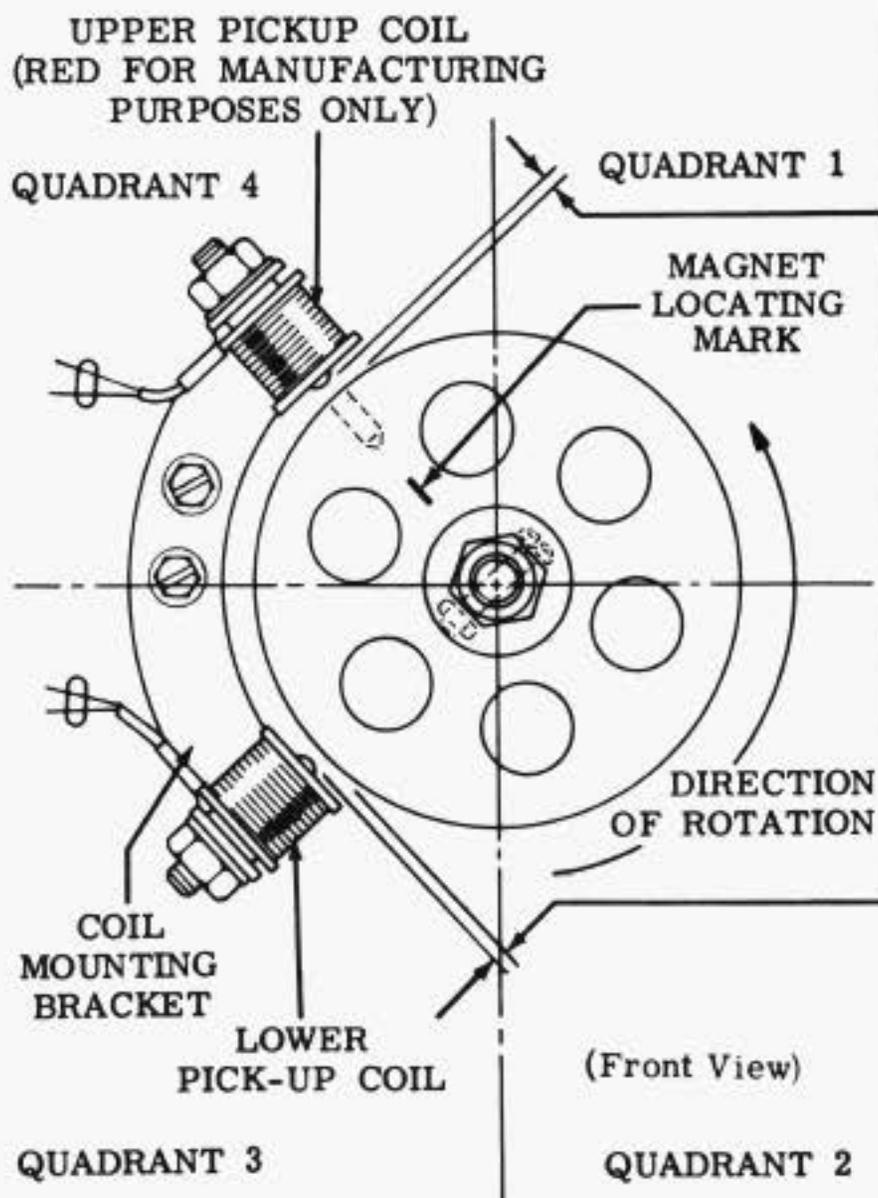
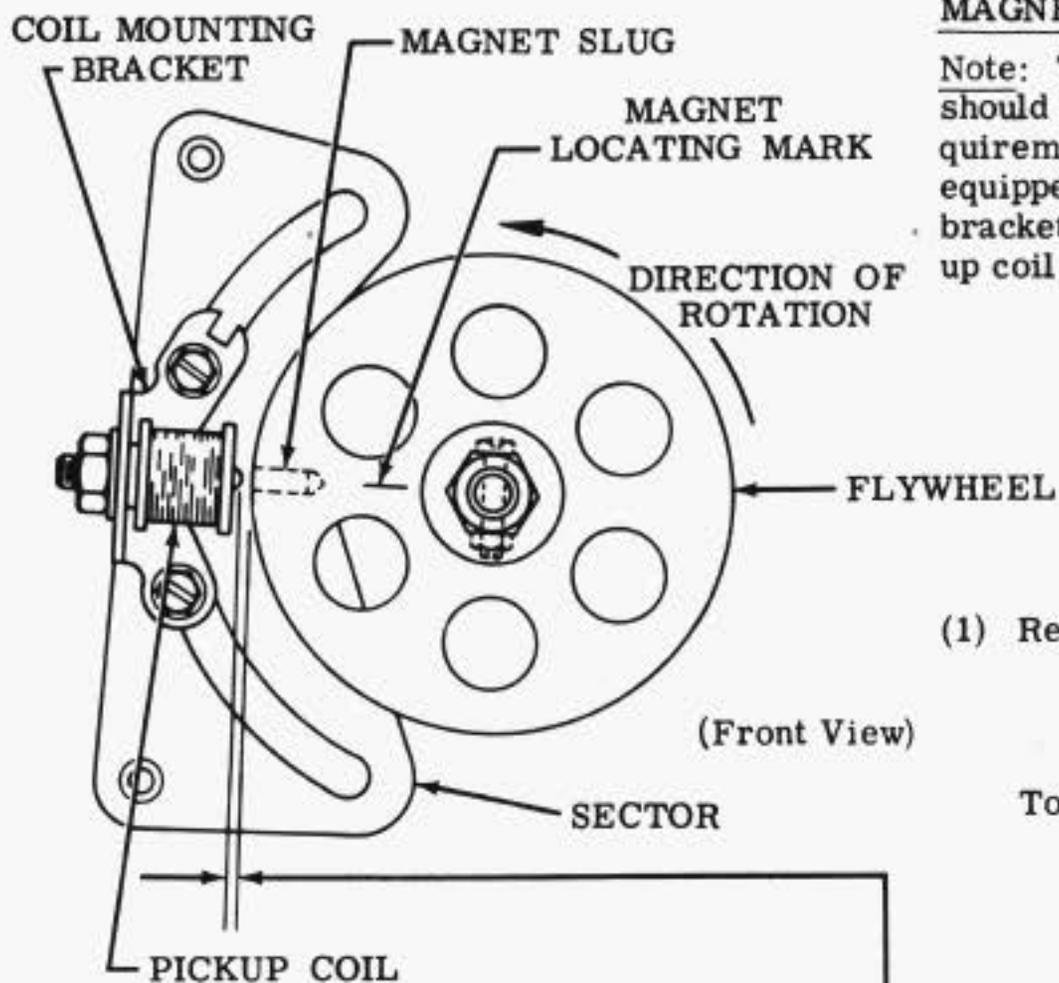


(Front View)

ARMATURE SPRING

Requirement  
 All readers except CX805:  
 Min 28 oz---Max 32 oz  
 CX805:  
 Min 24 oz---Max 28 oz  
 to hold armature against core faces.

## 2.23 Magnetic Pickup and Timing Mechanism

**MAGNETIC PICKUP**

Note: This is a preliminary adjustment. It should be modified to meet specific timing requirements of associated apparatus. For units equipped with the TP149989 coil mounting bracket, it may also be necessary to mount pick-up coil on either upper or lower ear of bracket.

**(1) Requirement**

With sensing fingers in uppermost position, magnet slug in flywheel should be adjacent to pickup coil core.

**To Adjust**

Loosen nut on end of main shaft. Remove screw from shaft. Position flywheel to place magnet slug in same quadrant as coil. Tighten nut and replace screw. Loosen coil bracket mounting screws, position coil adjacent to magnet slug.

**(2) Requirement**

At closest point between magnet slug and pickup coil core, clearance should be  
Min 0.003 inch---Max 0.006 inch

**To Adjust**

Loosen screws holding pickup bracket to sector and approximately center pry point. Tighten upper screw friction tight. Position bracket to make a rough adjustment. Tighten lower screw. Loosen upper screw and refine adjustment.

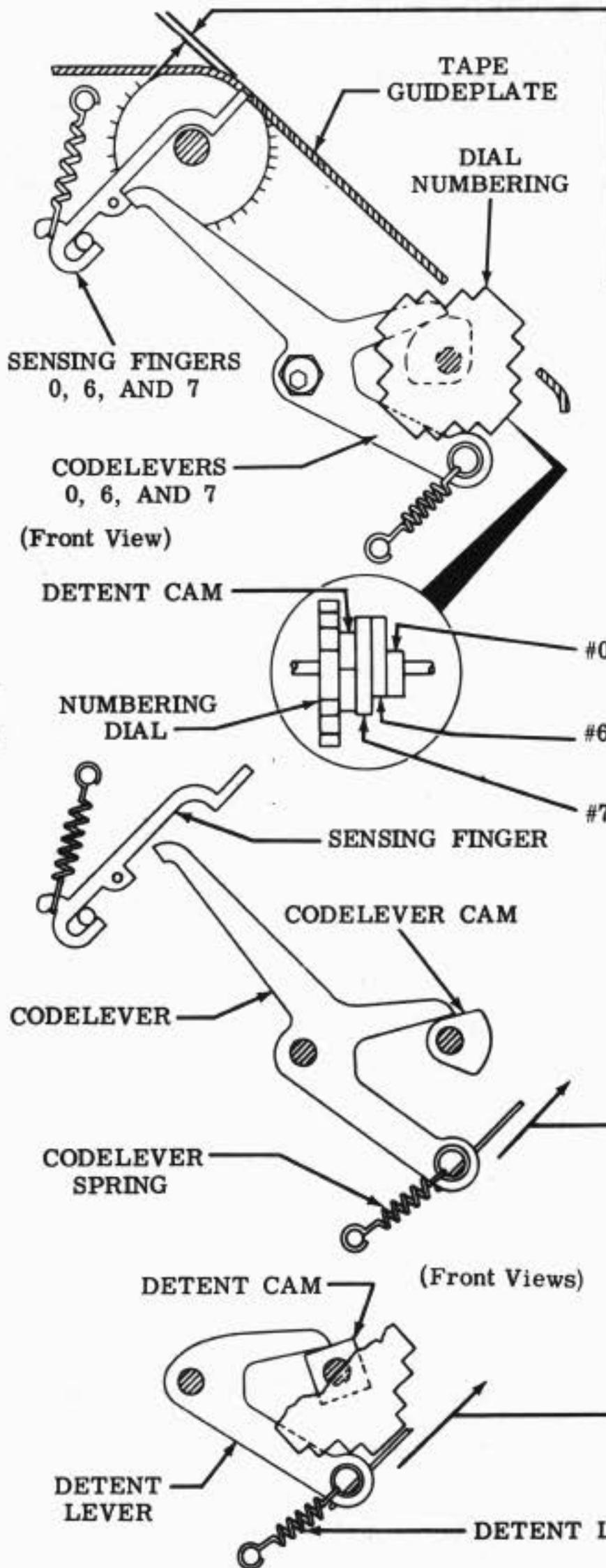
**(3) Requirement (Two-Coil Units)**

With code contacts just starting to make, magnet slug in flywheel should be within quadrant 4. Upper coil core should be adjacent to magnet slug.

**To Adjust**

Loosen nut on end of main shaft. Remove screw and nut from shaft. Position flywheel to meet requirement. Replace screw and tighten nuts. Loosen screws securing coil bracket and position upper coil until it is adjacent to magnet slug. Tighten screws friction tight and recheck requirement (2). Position coil bracket to meet requirement for both coils. Tighten screws.

2.24 Universal Tape Reading Mechanism



UNIVERSAL TRANSFER LEVER

To Check  
Trip clutch and rotate cam until sensing fingers are in their uppermost position.

Requirement  
With numbering dial detented in number 5 position, sensing fingers 0, 6, and 7 should be below tape guideplate:  
Min 0.005 inch---Max 0.010 inch

To Adjust  
Loosen eccentric lever post nut friction tight. Insert wrench into post socket and rotate post.

Note: Identifying slot on lever eccentric post should be in the one to five o'clock quadrant.

UNIVERSAL CODE LEVER SPRING

To Check  
Remove top plate.

Requirement (Each Spring)  
When code levers are on low part of their respective cams:  
Min 1 oz---Max 3 oz  
to start levers moving.

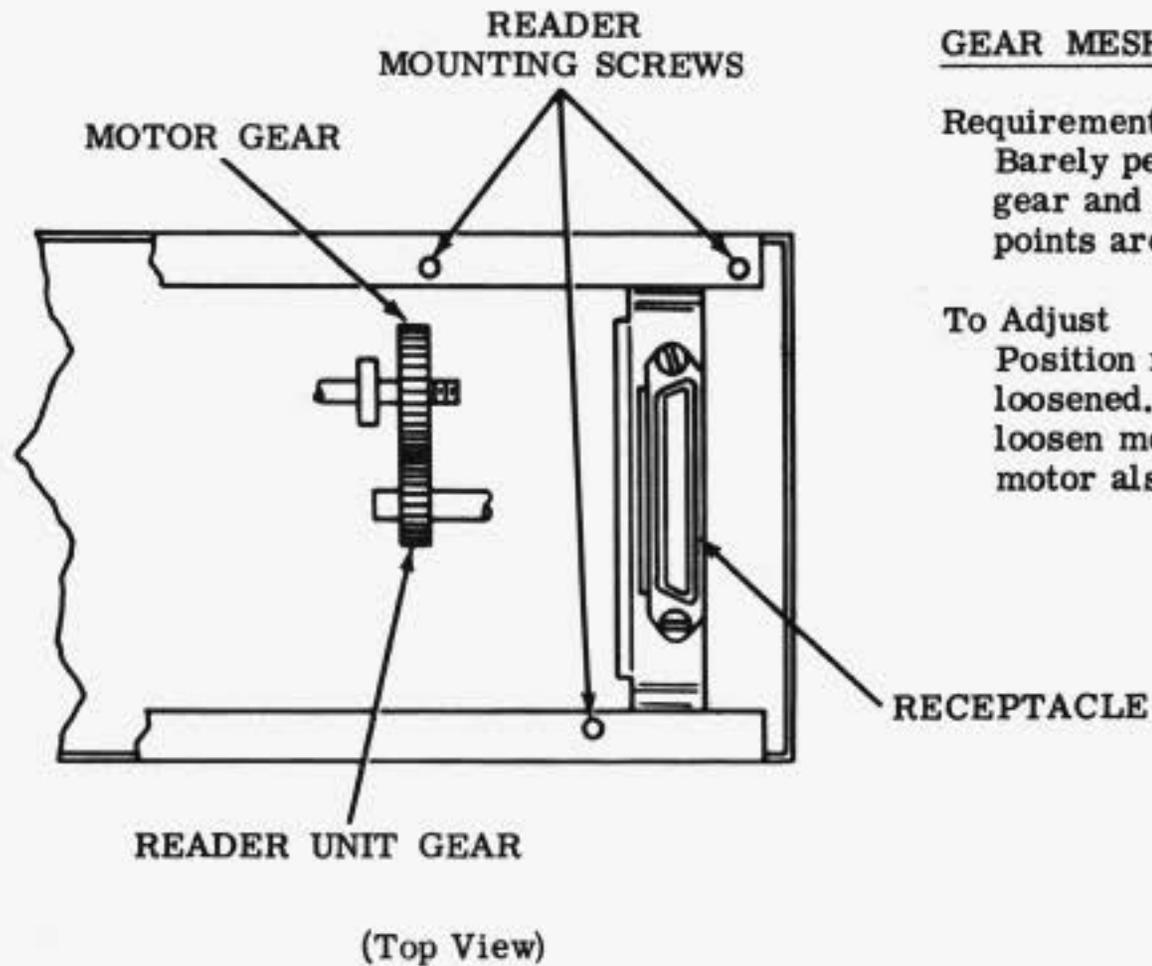
UNIVERSAL DETENT LEVER SPRING

To Check  
Remove top plate.

Requirement  
Min 15 oz---Max 30 oz  
to separate detent lever from its cam.

## 2.25 Reader Installation

Note: This adjustment is required only when the reader is installed initially or following servicing. Refer to the appropriate adjustment section for instructions for readers without drive gears.

GEAR MESH (If so Equipped)**Requirement**

Barely perceptible backlash between reader gear and motor gear measured at four points around motor gear.

**To Adjust**

Position reader with its mounting screws loosened. If requirement cannot be met, loosen motor mounting screws and position motor also.