

## 28B AND 28C TRANSMITTER- DISTRIBUTOR UNITS REQUIREMENTS AND ADJUSTMENTS

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## 1. GENERAL

1.01 This section contains the requirements and adjusting procedures for the maintenance of the 28B and 28C transmitter-distributor units. The material herein, together with the section containing the general requirements for teletypewriter apparatus, provides complete adjusting information for maintenance of these units.

1.02 This section is reissued to combine the requirements and adjustments for the 28C transmitter-distributor unit with those for the 28B transmitter-distributor unit and to bring up to date the requirements and adjusting procedures for both of these units. Since this is a general revision of the section, the arrows ordinarily used to indicate changes have been omitted.

1.03 In this section, left or right, front or rear, and up or down, refer to the apparatus in its normal operating position as viewed from the operator's position in front of the unit. Parts are shown in an upright position unless otherwise indicated.

1.04 The cover may be removed for inspection of the unit. However, before any maintenance procedures are started, the unit should first be removed from its subbase to disconnect the power and to permit the unit to be turned bottom upward so that parts on the bottom of the unit are more accessible.

1.05 Where a requirement calls for the clutch to be **disengaged**, the clutch-shoe lever must be fully latched between its tripler and latchlever so that the clutch shoes release their tension on the clutch drum. When **engaged**, the clutch-shoe lever is unlatched and the clutch shoes are wedged firmly against the clutch drum.



**Note:** When rotating either the sensing shaft or distributor shaft by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve the drag on the clutch and permit the shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latchlever, and thus disengage the internal expansion clutch shoes to prevent them from dragging on the clutch drum.

1.06 Unless otherwise indicated, the requirements and adjustments in Part 2 of this section are common to both the 28B and 28C transmitter-distributor units.

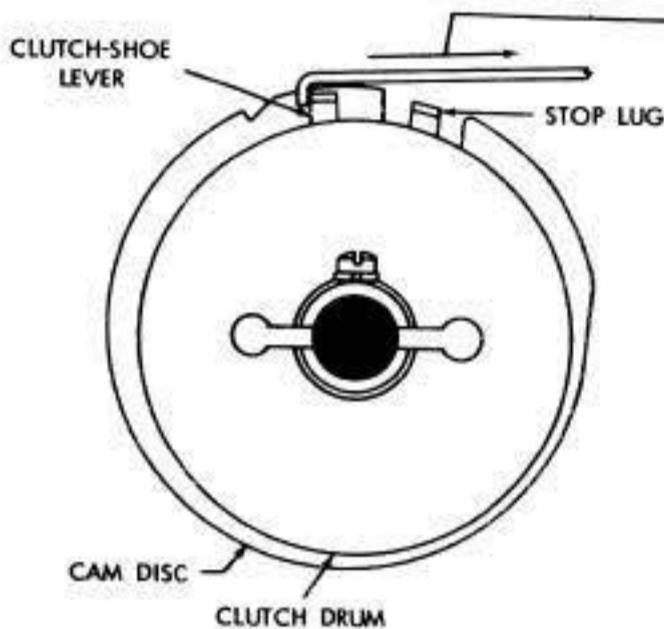
## 2. REQUIREMENTS AND ADJUSTMENTS

2.01 The following figures show the adjusting tolerances, positions of moving parts, and spring tensions. The illustrations are placed so that the adjustments are arranged in the sequence that would be followed if a complete readjustment of the apparatus were being made. Where an illustration shows interrelated parts, the sequence that should be followed in checking the requirements and making the adjustments shown is indicated by the letters (A), (B), (C), etc.

**Note:** On all 28C units having 2-cycle cams, both halves of the cam sleeves should be checked.

## 2.02 Clutch Mechanism

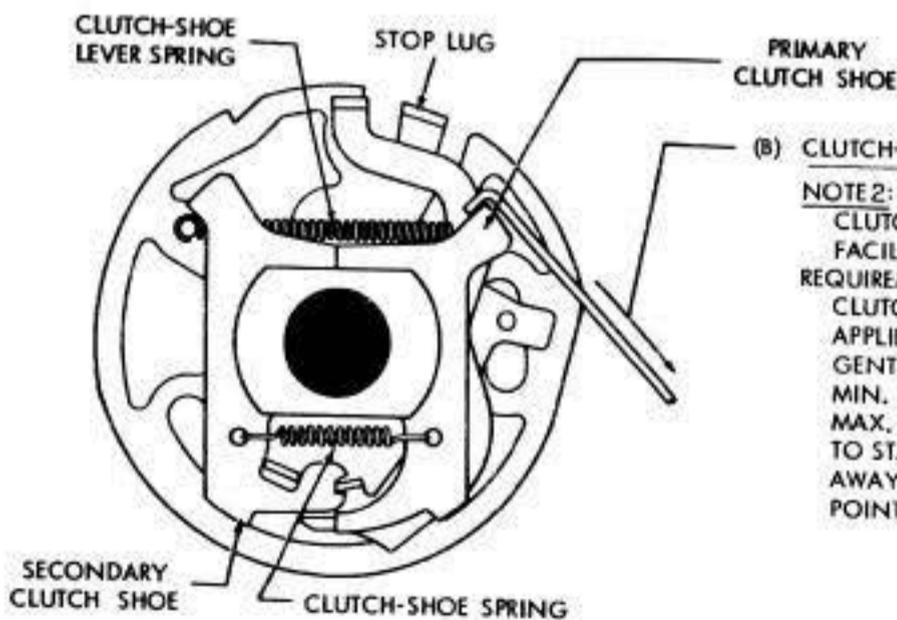
**NOTE 1:** REQUIREMENTS (A) AND (B) ARE ADJUSTED AT THE FACTORY AND SHOULD NOT BE DISTURBED UNLESS ASSOCIATED MECHANISMS HAVE BEEN REMOVED FOR SERVICING OR THERE IS REASON TO BELIEVE THAT THE REQUIREMENTS ARE NOT MET. THE FOLLOWING REQUIREMENTS APPLY TO BOTH THE SENSING CLUTCH AND DISTRIBUTOR CLUTCH.



(A) CLUTCH-SHOE LEVER SPRING

**REQUIREMENT**

CLUTCH ENGAGED AND CAM DISC HELD TO PREVENT TURNING. SCALE PULLED AT TANGENT TO CLUTCH. MIN. 15 OZS. MAX. 20 OZS. TO MOVE CLUTCH-SHOE LEVER IN CONTACT WITH STOP LUG.



(B) CLUTCH-SHOE SPRING

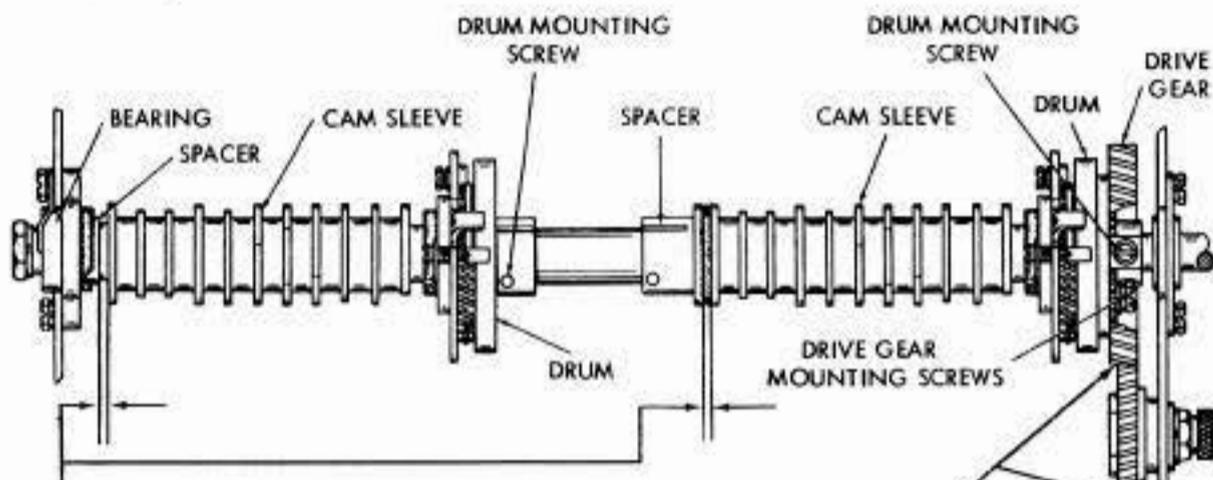
**NOTE 2:** IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SHAFT TO FACILITATE THIS CHECK.

**REQUIREMENT**

CLUTCH DRUM REMOVED. SCALE APPLIED TO PRIMARY SHOE AT A TANGENT TO THE FRICTION SURFACE. MIN. 3 OZS. MAX. 5 OZS. TO START PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE AT POINT OF CONTACT.

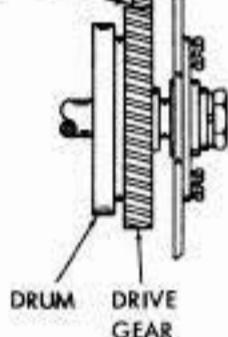
## 2.03 Cam Shafts (28B Unit)

NOTE 1: THE FOLLOWING REQUIREMENTS APPLY TO BOTH THE DISTRIBUTOR AND SENSING CAM SLEEVES. THESE MECHANISMS SHOULD NOT BE DISTURBED UNLESS THERE IS REASON TO BELIEVE THE REQUIREMENTS ARE NOT MET.



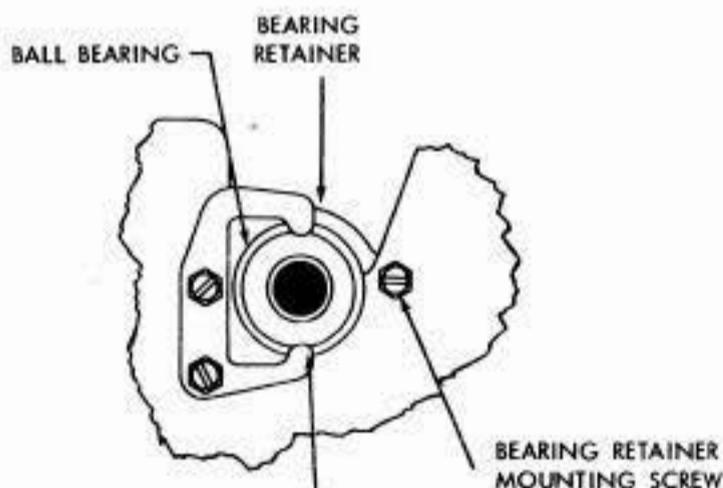
(A) CAM-SLEEVE ENDPLAY

NOTE 2: THE ADJUSTMENT IS TO BE MADE PRIOR TO ASSEMBLY OF DRIVE GEAR TO CLUTCH DRUM.  
 REQUIREMENT  
 MIN. SOME  
 MAX. 0.010 INCH  
 PLAY BETWEEN CAM SLEEVES AND SPACERS.  
 TO ADJUST  
 REMOVE CLUTCH DRUM DRIVE GEAR AND LOOSEN DRUM MOUNTING SCREW. RELEASE CLUTCH AND POSITION CAM SLEEVE. TIGHTEN DRUM MOUNTING SCREW AND REINSTALL DRIVE GEAR.



(C) IDLER GEAR ASSEMBLY

REQUIREMENT  
 CLEARANCE BETWEEN IDLER GEAR AND SENSING SHAFT GEAR, AND BETWEEN IDLER GEAR AND DISTRIBUTOR SHAFT GEAR AT POINT WHERE BACKLASH IS MINIMUM:  
 MIN. SOME  
 MAX. 0.003 INCH.  
 TO ADJUST  
 POSITION IDLER GEAR ASSEMBLY WITH LOCKNUT LOOSENED. RECHECK GEAR PLAY THROUGH ONE REVOLUTION OF GEARS.

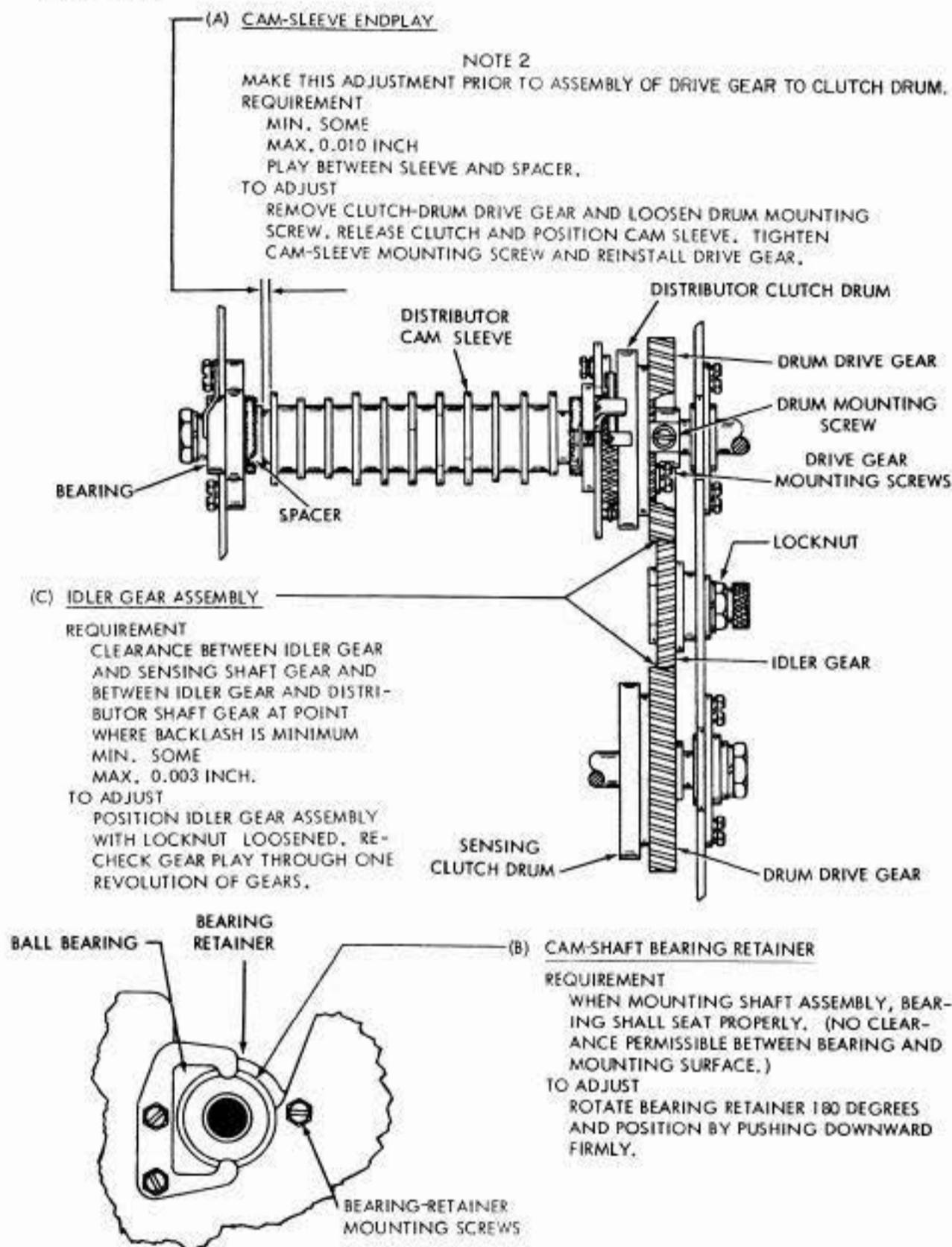


(B) CAM-SHAFT BEARING RETAINER

REQUIREMENT  
 WHEN MOUNTING SHAFT ASSEMBLY, BEARING SHALL SEAT PROPERLY. (NO CLEARANCE PERMISSIBLE BETWEEN BEARING AND MOUNTING SURFACE.)  
 TO ADJUST  
 ROTATE BEARING RETAINER 180 DEGREES AND POSITION BY PUSHING DOWNWARD FIRMLY.

## 2.04 Cam Shafts (28C Unit)

NOTE 1: THE FOLLOWING REQUIREMENTS APPLY TO BOTH THE DISTRIBUTOR AND SENSING CAM SLEEVES. THESE MECHANISMS SHOULD NOT BE DISTURBED UNLESS THERE IS REASON TO BELIEVE THE REQUIREMENTS ARE NOT MET.



## 2.05 Clutch-trip Mechanism

NOTE: REQUIREMENTS APPLY TO BOTH CLUTCH TRIP MECHANISMS.

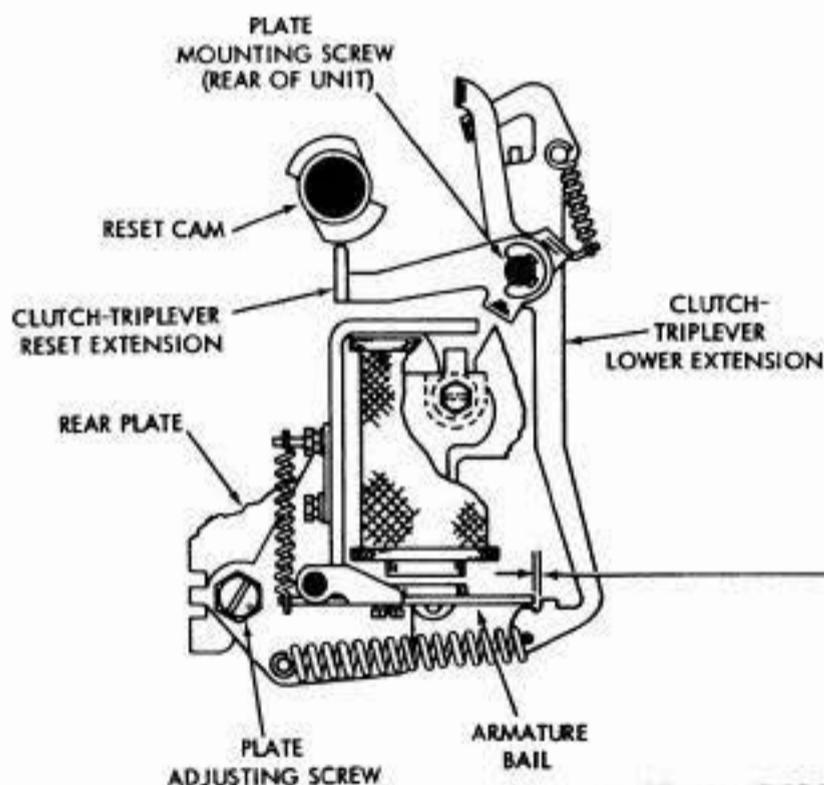
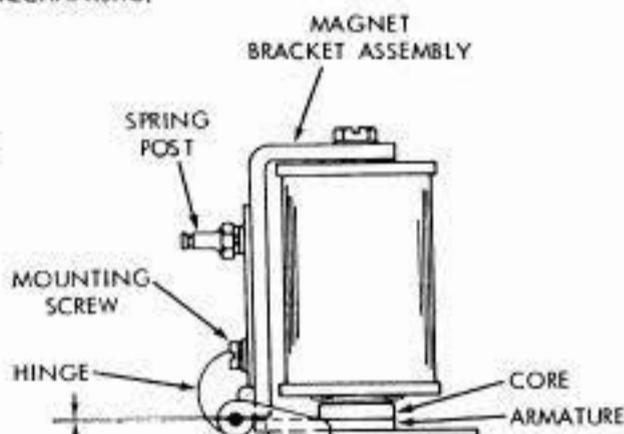
### (A) CLUTCH ARMATURE AIRGAP

#### REQUIREMENT

AIRGAP BETWEEN ARMATURE AND MAGNET ASSEMBLY BRACKET WITH ARMATURE FLUSH AGAINST MAGNET CORE  
MIN. 0.004 INCH  
MAX. 0.008 INCH.

#### TO ADJUST

REMOVE ARMATURE-EXTENSION SPRING. POSITION HINGE WITH SPRING POST AND HINGE MOUNTING SCREW LOOSENED. RECHECK AIRGAP AND REPLACE SPRING.



### (B) CLUTCH TRIP ASSEMBLY MOUNTING PLATE

#### REQUIREMENT

CLEARANCE BETWEEN END OF ARMATURE BAIL AND LATCHING SURFACE OF CLUTCH-TRIP LEVER LOWER EXTENSION WITH CLUTCH-TRIP LEVER RESET EXTENSION ON HIGH PART OF CAM (TAKE UP PLAY IN PARTS FOR MINIMUM CLEARANCE.)  
MIN. 0.020 INCH  
MAX. 0.030 INCH.

#### TO ADJUST

POSITION PLATE WITH SCREWDRIVER IN LOWER ADJUSTING SLOT WITH PLATE ADJUSTING SCREW AND PLATE MOUNTING SCREW LOOSENED. (TAKE UP PLAY IN TRIPLEVER IN DIRECTION OF CAM.)

### (C) ARMATURE-BAIL SPRING

#### REQUIREMENT

INVERT UNIT. TRIP CLUTCH MAGNET AND ROTATE SHAFT MANUALLY UNTIL TRIPLEVER RESET EXTENSION IS ON HIGH PART OF ITS CAM.

MIN. 3 OZS.

MAX. 4-1/2 OZS.

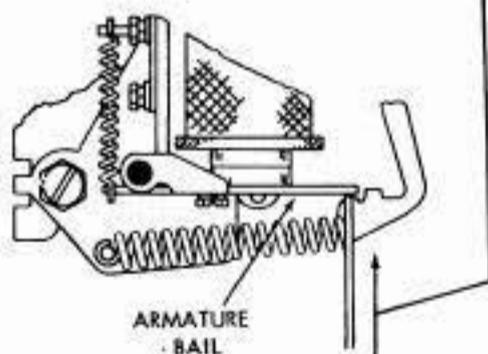
FOR 28B UNIT

MIN. 2-1/2 OZS.

MAX. 4-1/2 OZS.

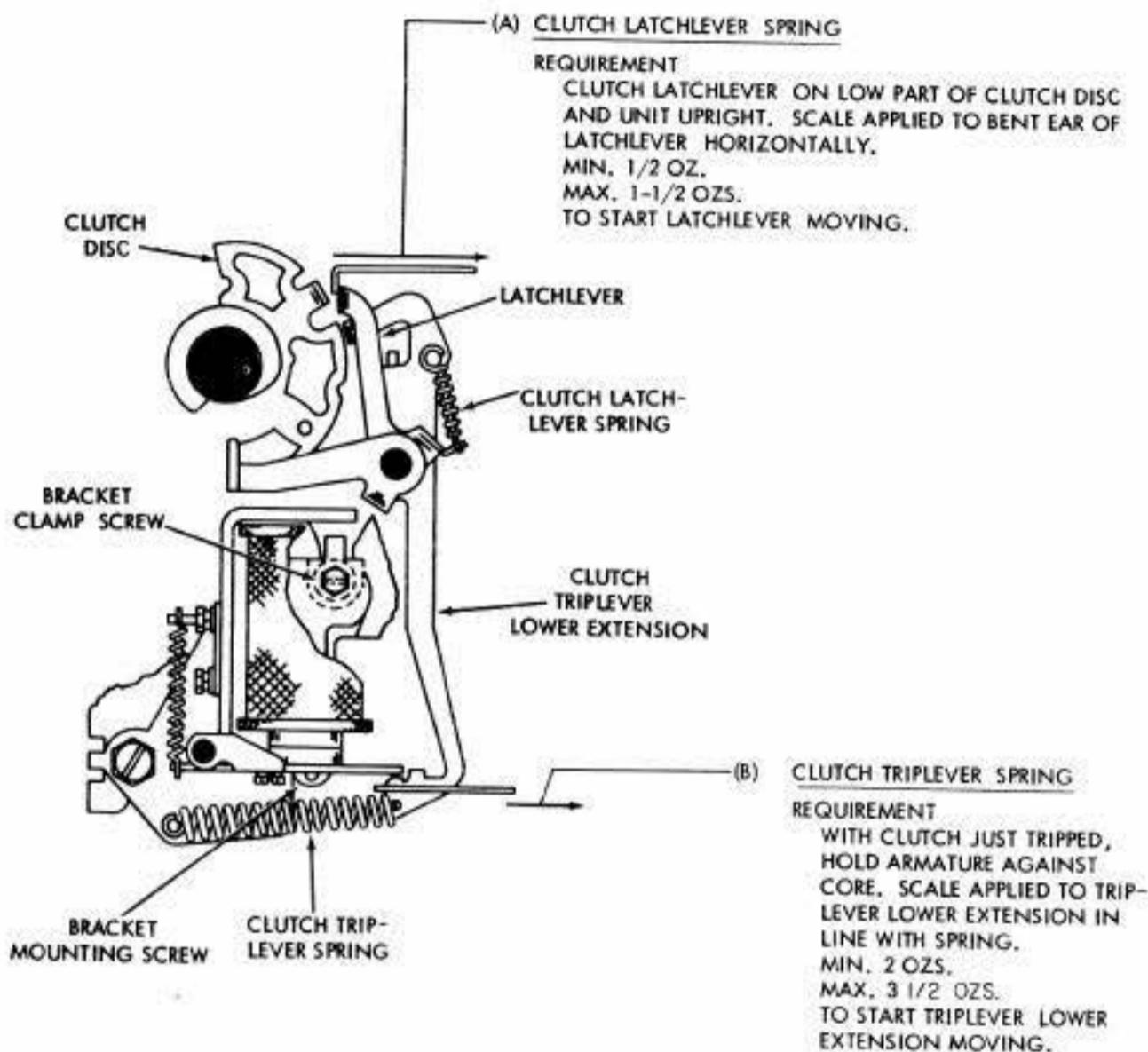
FOR 28C UNIT

TO START ARMATURE BAIL MOVING.



## 2.06 Clutch-trip Mechanism (Contd)

NOTE: REQUIREMENTS APPLY TO BOTH CLUTCH TRIP MECHANISMS.



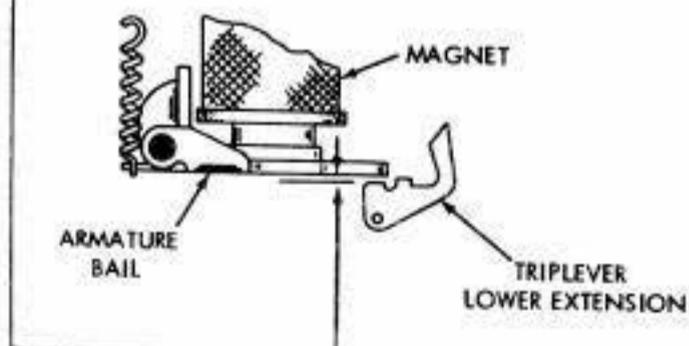
### (C) MAGNET BRACKET

REQUIREMENT

CLEARANCE BETWEEN ARMATURE BAIL AND TOP EDGE OF TRIPLEVER LOWER EXTENSION WITH CLUTCH TRIPLEVER RESET EXTENSION ON HIGH PART OF CAM AND ARMATURE FLUSH AGAINST CORE (TAKE UP PLAY FOR MINIMUM CLEARANCE.)  
 MIN. 0.030 INCH  
 MAX. 0.040 INCH.

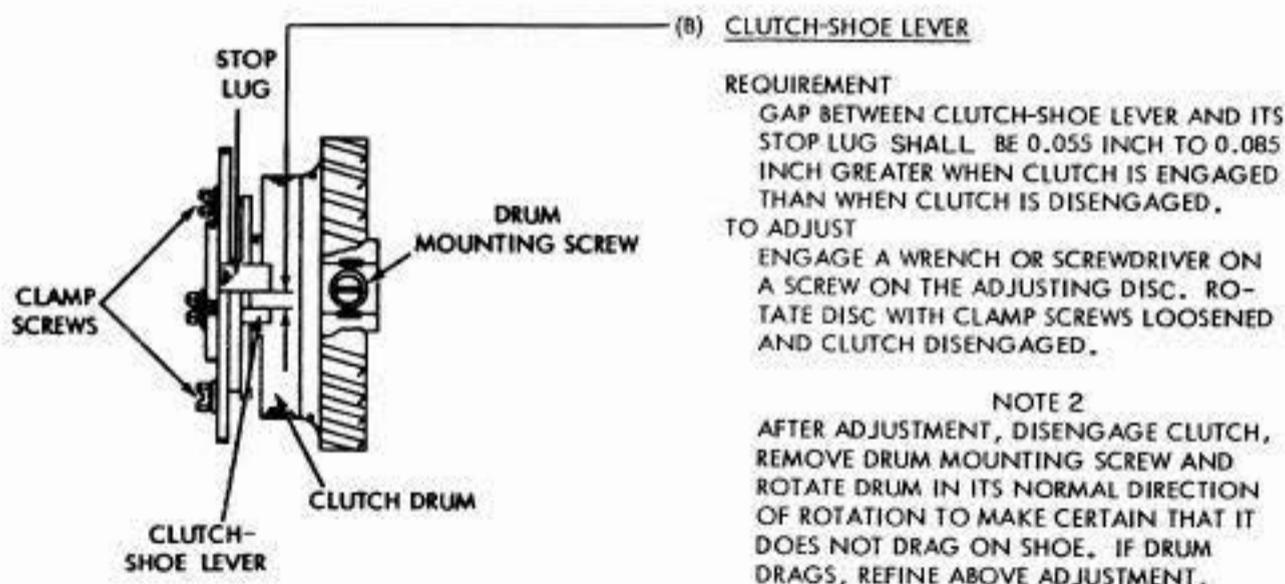
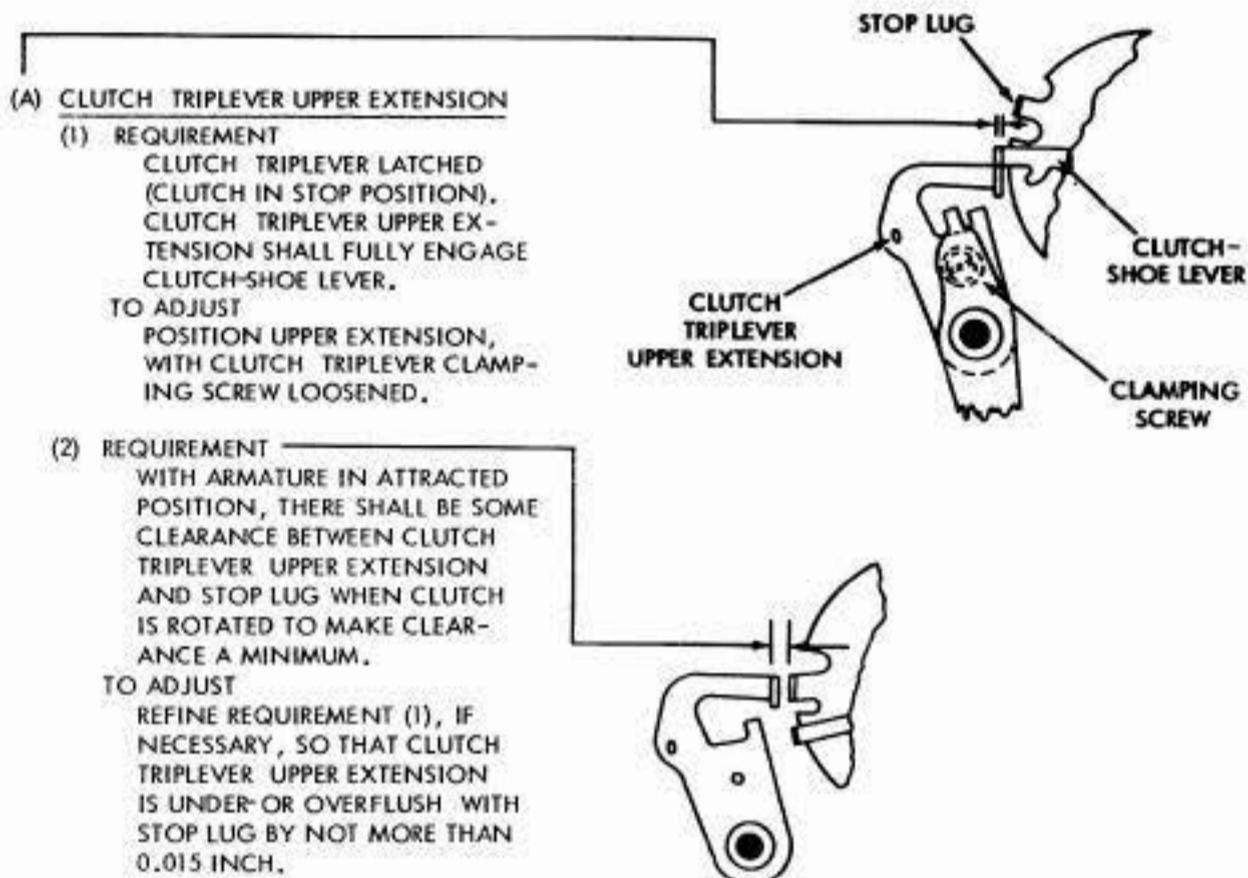
TO ADJUST

INSERT SCREWDRIVER IN UPPER SLOT AND PIVOT BRACKET, WITH BRACKET MOUNTING SCREW AND CLAMP SCREW LOOSENED.



## 2.07 Clutch Mechanism

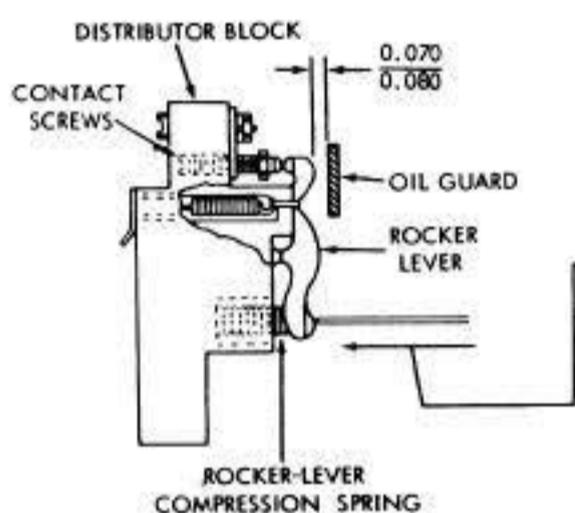
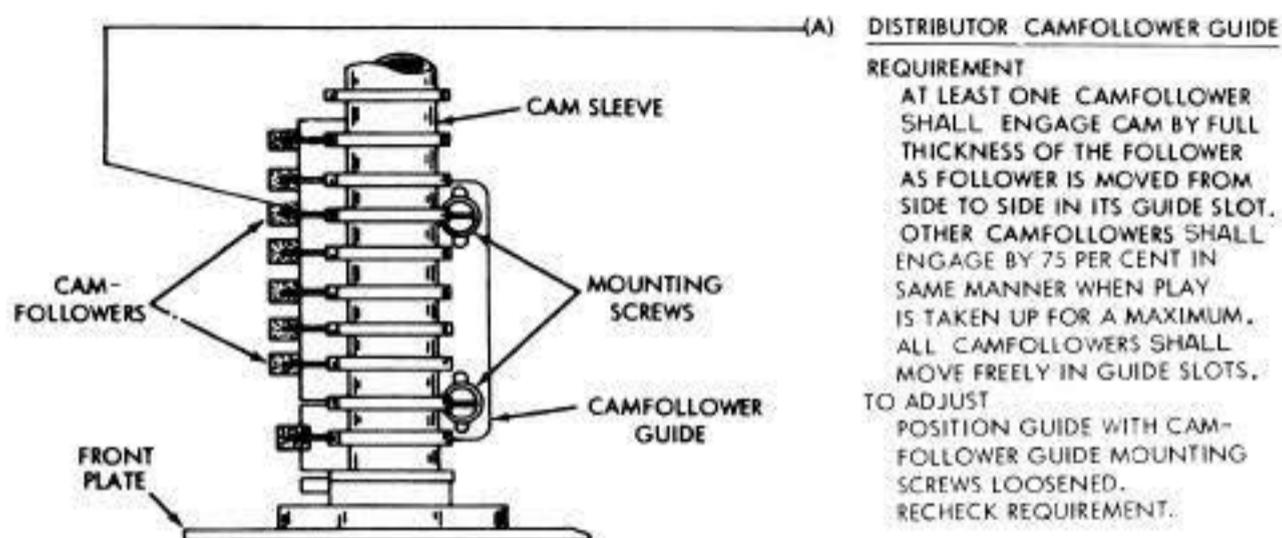
NOTE 1  
REQUIREMENTS (A) AND (B) APPLY TO ALL CLUTCHES.



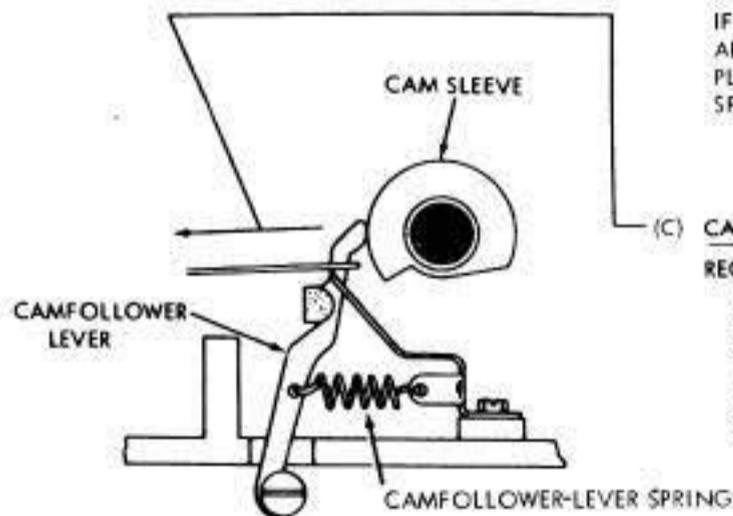
## 2.08 Distributor Contact Mechanism

NOTE 1

REMOVE OIL RESERVOIR AND DISTRIBUTOR BLOCK ASSEMBLY FOR FOLLOWING ADJUSTMENTS.



NOTE 2-- WITH DISTRIBUTOR BLOCK REMOVED ADJUST CONTACTS SO THAT THERE IS 0.070 TO 0.080 INCH BETWEEN ROCKER LEVERS AND OIL GUARD.



IF THE REQUIREMENT CANNOT BE MET AFTER COMPRESSION SPRINGS ARE REPLACED, CHECK ROCKER-LEVER TENSION SPRINGS.

TO ADJUST  
 ROTATE CONTACT SCREWS.

## 2.09 Distributor Contact Mechanism (Contd)

NOTE 1  
REPLACE DISTRIBUTOR BLOCK.

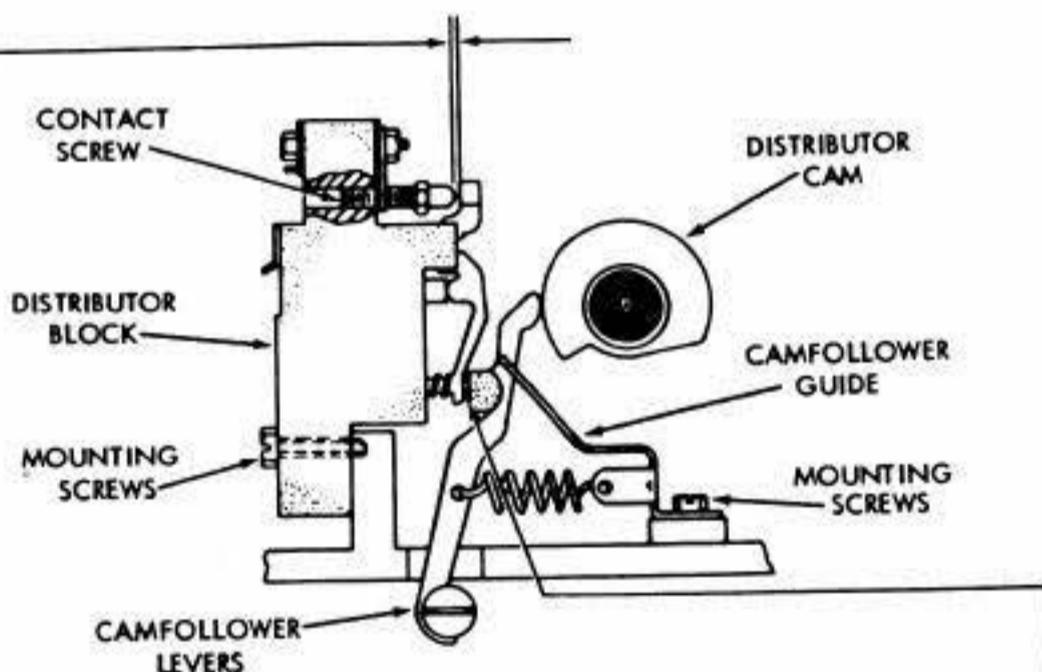
### (B) DISTRIBUTOR CONTACT GAP

#### REQUIREMENT

CONTACT GAP, WITH CAMFOLLOWER LEVER  
ON HIGH PART OF CAM;  
MIN. 0.025 INCH  
MAX. 0.030 INCH.

#### TO ADJUST

TRIP CLUTCH MANUALLY TO POSITION CAM.  
TURN CONTACT SCREW TO ADJUST. CHECK  
ALL CONTACTS.



### (A) DISTRIBUTOR BLOCK ASSEMBLY

#### REQUIREMENT

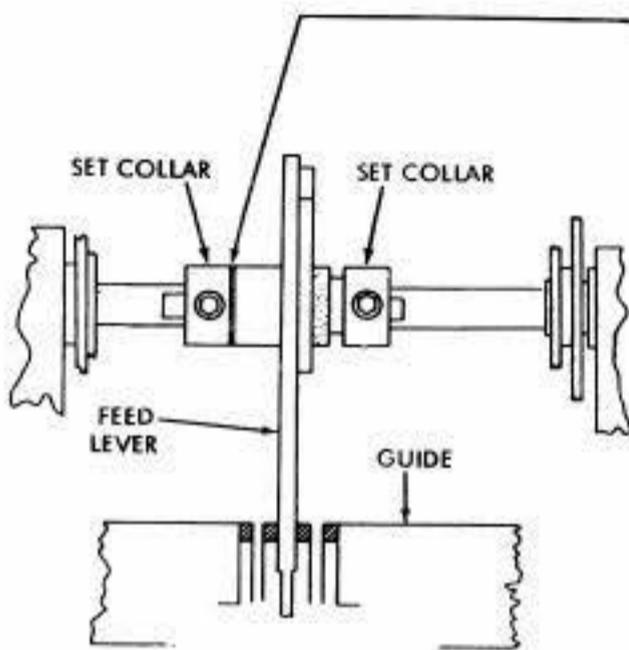
ROCKERS SHOULD FULLY ENGAGE  
INSULATED PORTION OF RESPECTIVE  
CAMFOLLOWER LEVERS.

#### TO ADJUST

POSITION BLOCK WITH DISTRIBUTOR  
BLOCK MOUNTING SCREWS LOOSENED.

NOTE 2  
FOR REFINEMENT OF DISTRIBUTOR CONTACT ADJUSTMENTS, REFER TO  
DISTRIBUTOR-AND TRANSMITTER-CONTACT STROBING.

## 2.10 Feed Lever



(A) FEED-LEVER SET COLLAR

**REQUIREMENT**

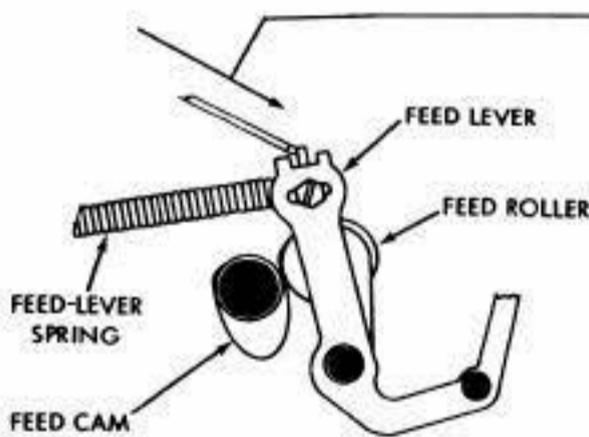
MIN. SOME  
MAX. 0.015 INCH  
CLEARANCE BETWEEN FEED LEVER AND  
COLLAR WHEN FEED LEVER IS FREE IN  
ITS GUIDE SLOT.

**TO ADJUST**

POSITION FEED LEVER WITH SET COLLAR  
SCREWS LOOSENED. FEED LEVER SHALL  
MOVE FREELY WITHOUT BINDING AT  
GUIDE OR COLLARS.

**NOTE**

AFTER TIGHTENING SETSCREWS, RE-  
CHECK ADJUSTMENT FOR BINDS BE-  
TWEEN FEED LEVER AND COLLARS, AND  
BETWEEN FEED LEVER AND GUIDE.



(B) FEED-LEVER SPRING (PIVOTED HEAD)

**TO CHECK**

TRIP SENSING CLUTCH. ROTATE SHAFT  
UNTIL ROLLER IS OFF FEED CAM. APPLY  
SCALE TO FEED LEVER.

**REQUIREMENT**

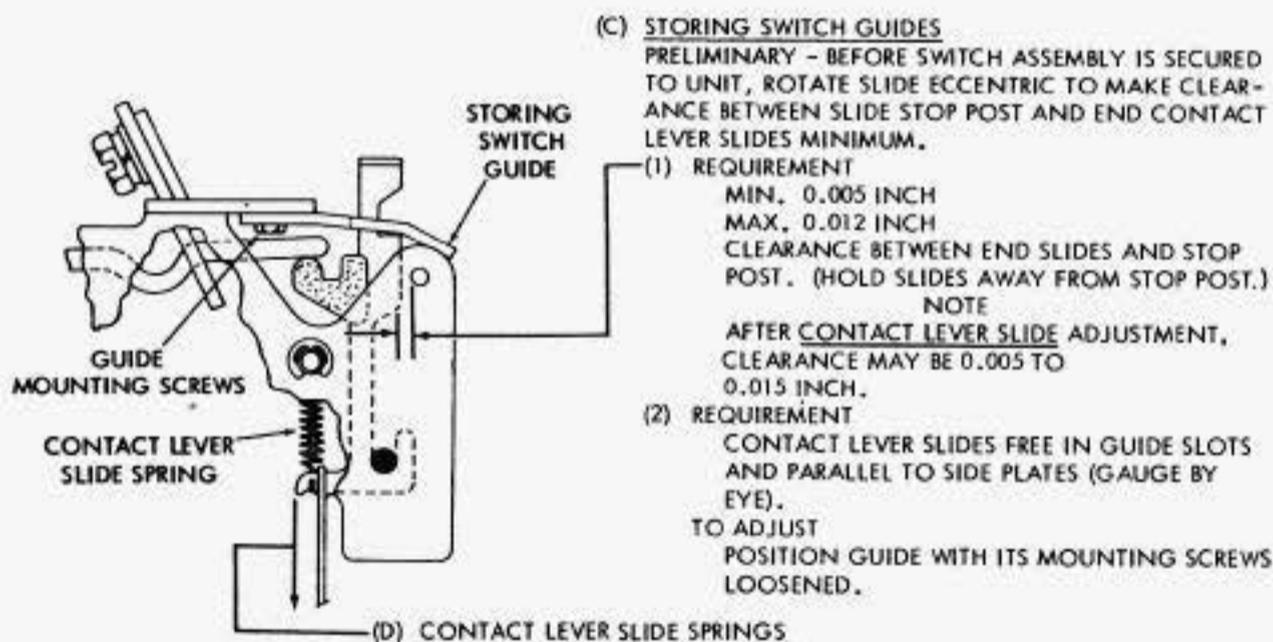
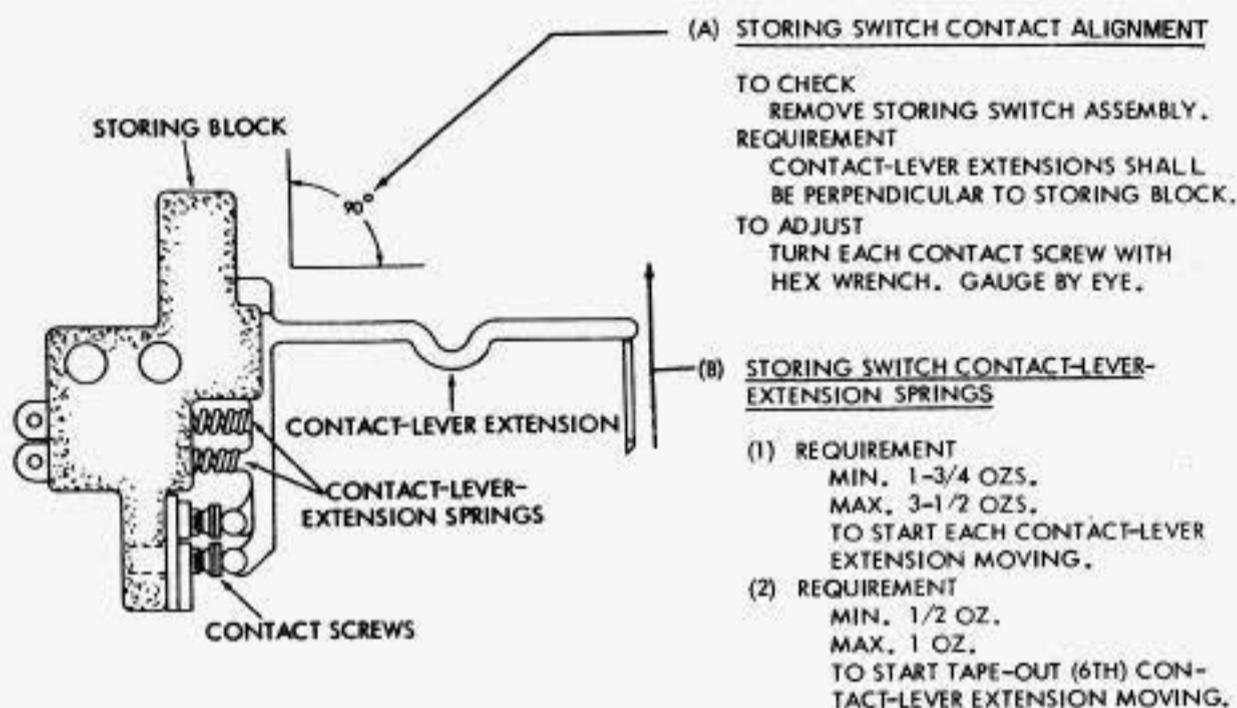
MIN. 30 OZS.  
MAX. 40 OZS.  
TO START FEED ROLLER MOVING AWAY  
FROM CAM.

FEED-LEVER SPRING (FIXED HEAD) (2BB UNIT)

**REQUIREMENT**

WITH SENSING CLUTCH IN STOP POSITION  
MIN. 10 OZS.  
MAX. 17 OZS.  
TO MOVE FEED LEVER AWAY FROM ITS CAM  
SURFACE.

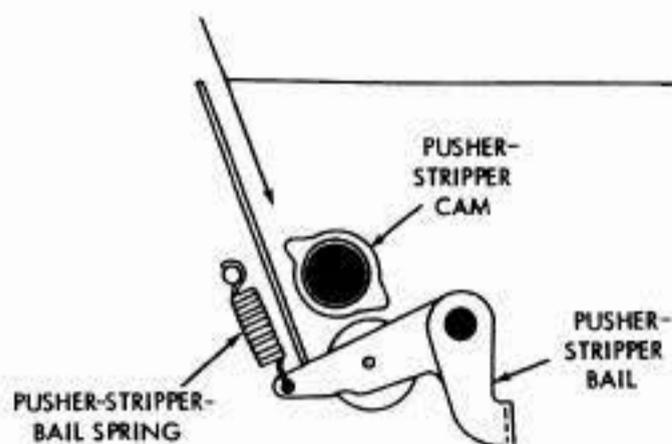
## 2.11 Storing Switch Mechanism



TO CHECK  
SELECT BLANK COMBINATION, TRIP SENSING CLUTCH AND ROTATE SHAFT TO STOP POSITION. HOLD EXTENSION LEVERS AWAY.

- (1) REQUIREMENT  
MIN. 4 OZS.  
MAX. 6 OZS.  
TO START EACH CONTACT LEVER SLIDE MOVING.
- (2) REQUIREMENT  
MIN. 1-1/2 OZS.  
MAX. 3 OZS.  
TO START TAPE-OUT (6TH) LEVER SLIDE MOVING.

## 2.12 Sensing Mechanism Springs



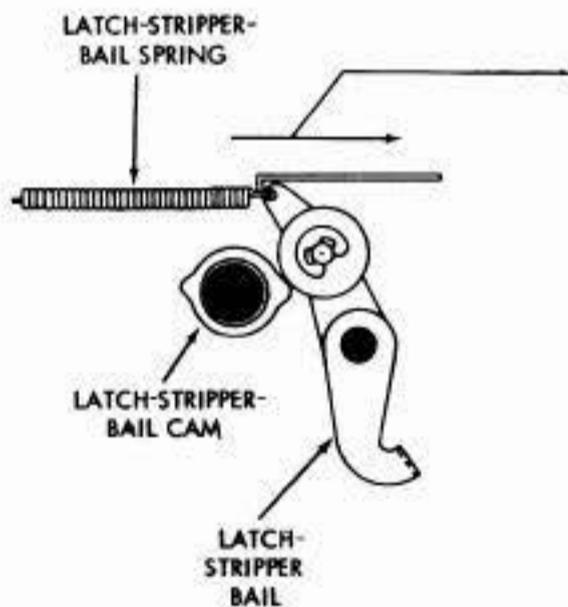
### PUSHER-STRIPPER-BAIL SPRING

#### REQUIREMENT

WITH UNIT UPRIGHT, SELECT BLANK COMBINATION, TRIP CLUTCH AND ROTATE SHAFT TO STOP POSITION. 32 OZ SCALE APPLIED TO POINT JUST BELOW SPRING ANCHOR.  
MIN. 7 OZS.  
MAX. 11 OZS.  
TO START BAIL MOVING AWAY FROM CAM.

#### NOTE

INSTALL OIL RESERVOIR BEFORE MAKING THE FOLLOWING ADJUSTMENT.



### LATCH-STRIPPER-BAIL SPRING

#### TO CHECK

TRIP CLUTCH, ROTATE SHAFT SO LATCH-BAIL-FOLLOWER ROLLER IS ON LOW PART OF CAM. APPLY SCALE TO TOP OF LATCH-STRIPPER BAIL.

#### REQUIREMENT

MIN. 2-3/4 OZS.  
MAX. 6 OZS.  
TO START LATCH-STRIPPER BAIL MOVING.

## 2.13 Tape-lid Mechanism (28B Unit With Tape-lid Spring)

### TAPE LID

#### NOTE 1

REMOVE TOP AND TAPE-GUIDE PLATES. LUBRICATE MATING SURFACES PRIOR TO ADJUSTMENT.

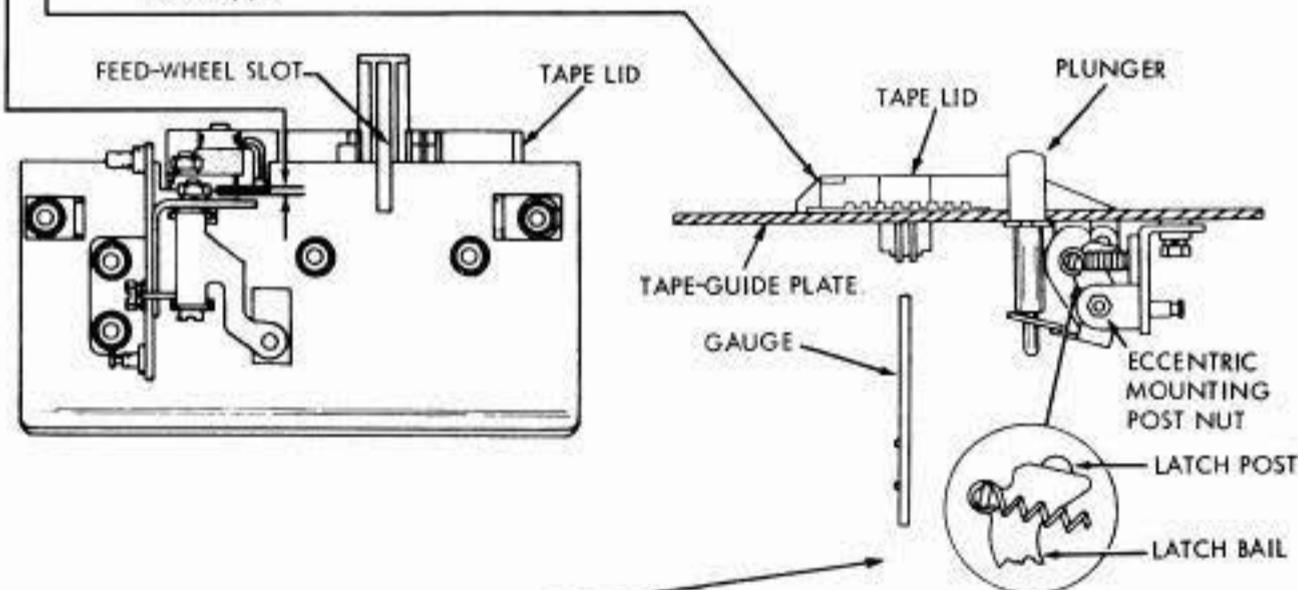
- (1) REQUIREMENT  
MIN. SOME  
MAX. 0.010 INCH  
CLEARANCE BETWEEN PIVOT SHOULDER AND TAPE LID WHEN LID IS PRESSED AGAINST NOTCH IN TAPE-GUIDE PLATE, AND FEED-WHEEL SLOTS AND TAPE-OUT PIN HOLES ARE LINED UP.  
TO ADJUST  
LOOSEN TAPE-LID BRACKET MOUNTING NUTS. USING A TP156743 GAUGE, LINE UP FEED-WHEEL GROOVE IN TAPE LID WITH SLOT IN TAPE-GUIDE PLATE. POSITION TAPE-LID BRACKET TO MEET REQUIREMENT.

- (2) REQUIREMENT  
WITH TAPE-LID FRONT BEARING SURFACE TOUCHING TAPE-GUIDE PLATE, CLEARANCE BETWEEN TAPE LID AND TAPE-GUIDE PLATE:  
MIN. 0.010 INCH  
MAX. 0.018 INCH  
MEASURED AT TAPE-LID FIN IN LINE WITH REAR TAPE GUIDE (2ND FIN FROM REAR).

#### NOTE 2

WHEN BOTH TOP AND TAPE-GUIDE PLATES ARE ASSEMBLED ON UNIT, LEFT EDGE OF LID MAY TOUCH TOP PLATE AND SOME CHANGE IN THIS CLEARANCE MAY BE EXPECTED.

- TO ADJUST  
WITH TAPE-LID BEARING BRACKET MOUNTING SCREWS FRICTION TIGHT, AND TAPE LID PRESSED AGAINST TAPE-GUIDE PLATE, POSITION BEARING BRACKET. RECHECK REQUIREMENT (1).



- (3) REQUIREMENT  
SOME ENDPLAY IN RELEASE PLUNGER WHEN LID IS LATCHED AGAINST TAPE-GUIDE PLATE.  
TO ADJUST  
WITH ECCENTRIC MOUNTING POST NUT FRICTION TIGHT AND TAPE LID RAISED, ROTATE HIGH PART OF ECCENTRIC POST TOWARDS MOUNTING BRACKET. CLOSE TAPE LID. ROTATE ECCENTRIC COUNTERCLOCKWISE (AS VIEWED FROM SLOTTED END OF ECCENTRIC POST) UNTIL FLAT OF LATCH POST FULLY ENGAGES LATCH-BAIL FLAT. ROTATE ECCENTRIC CLOCKWISE TO TAKE UP ALL PLAY IN PARTS, AND TO SEAT OPEN END OF TAPE LID AGAINST TAPE-GUIDE PLATE.  
TO CHECK  
WITH TAPE LID HELD DOWN MANUALLY, LATCH TIP SHALL CLEAR LATCH POST WHEN RELEASE BUTTON IS OPERATED. WITH TAPE LID LATCHED, TIP OF LATCH SHALL PROJECT BEYOND FLAT OF LATCH POST, AND THERE SHALL BE SOME ENDPLAY IN RELEASE BUTTON.

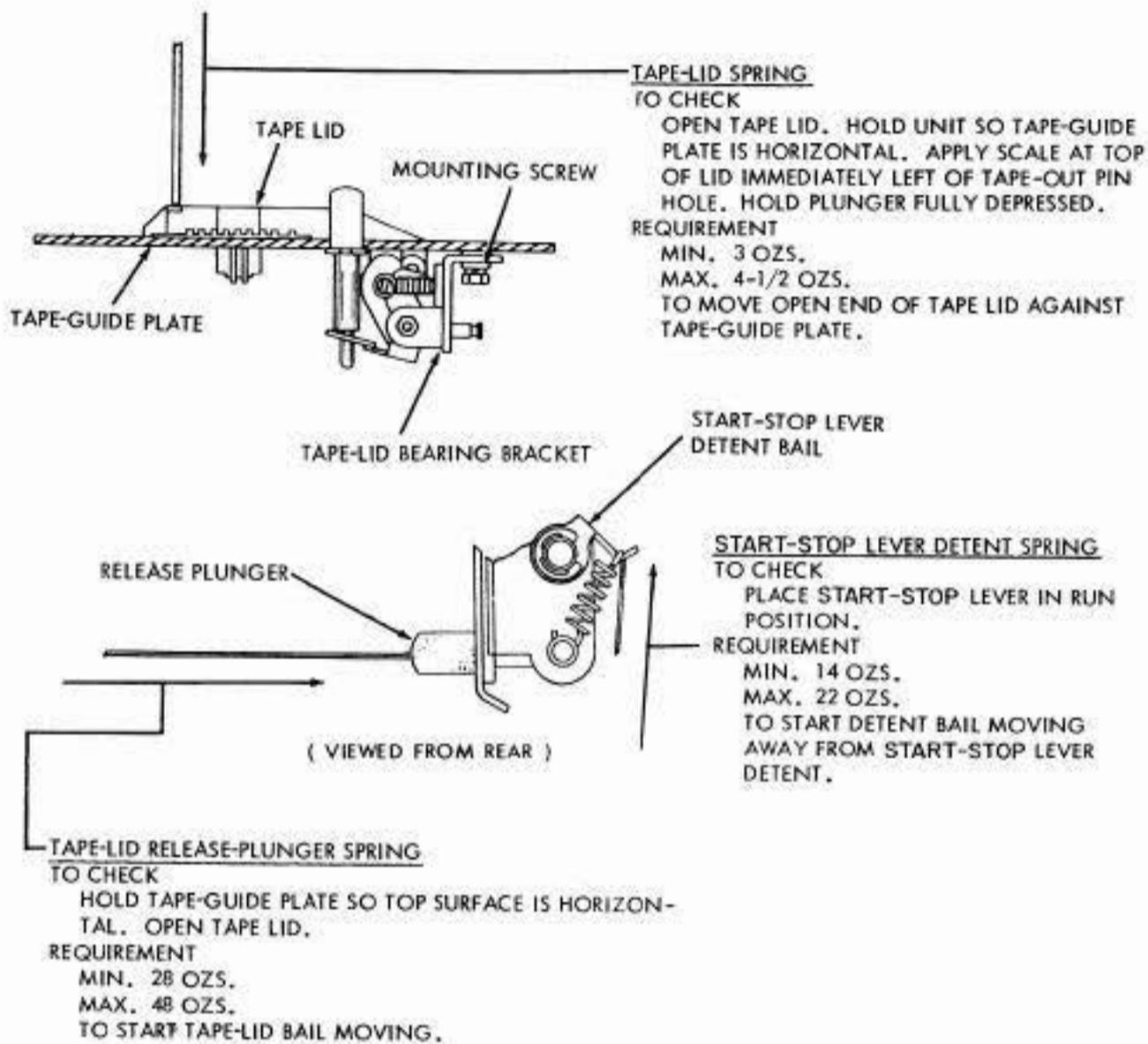
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## 2.14 Tape-lid Mechanism (28B Unit With Tape-lid Spring) (Contd)



## 2.15 Tape-lid Mechanism (28B Unit Without Tape-lid Spring)

### (A) TAPE LID

NOTE: REMOVE TOP AND TAPE-GUIDE PLATE.  
LUBRICATE PRIOR TO ADJUSTMENT.

#### (1) REQUIREMENT

WITH TAPE LID HELD AGAINST NOTCH IN TAPE-GUIDE PLATE:  
A FEED-WHEEL GROOVE SHALL ALIGN WITH SLOT IN PLATE.  
B HOLE IN TAPE LID FOR TAPE-OUT PIN SHALL ALIGN WITH HOLE IN PLATE (GAUGE BY EYE).  
C CLEARANCE BETWEEN PIVOT SHOULDER AND TAPE LID SOME \_\_\_\_\_ TO \_\_\_\_\_ 0.010 INCH MAX.  
TO ADJUST----WITH TAPE-LID BRACKET MOUNTING NUTS (2) LOOSENED (INSERT TIP OF TP156743 GAUGE THROUGH SLOT AND INTO GROOVE OF LID), POSITION TAPE-LID BRACKET — RETIGHTEN NUTS.

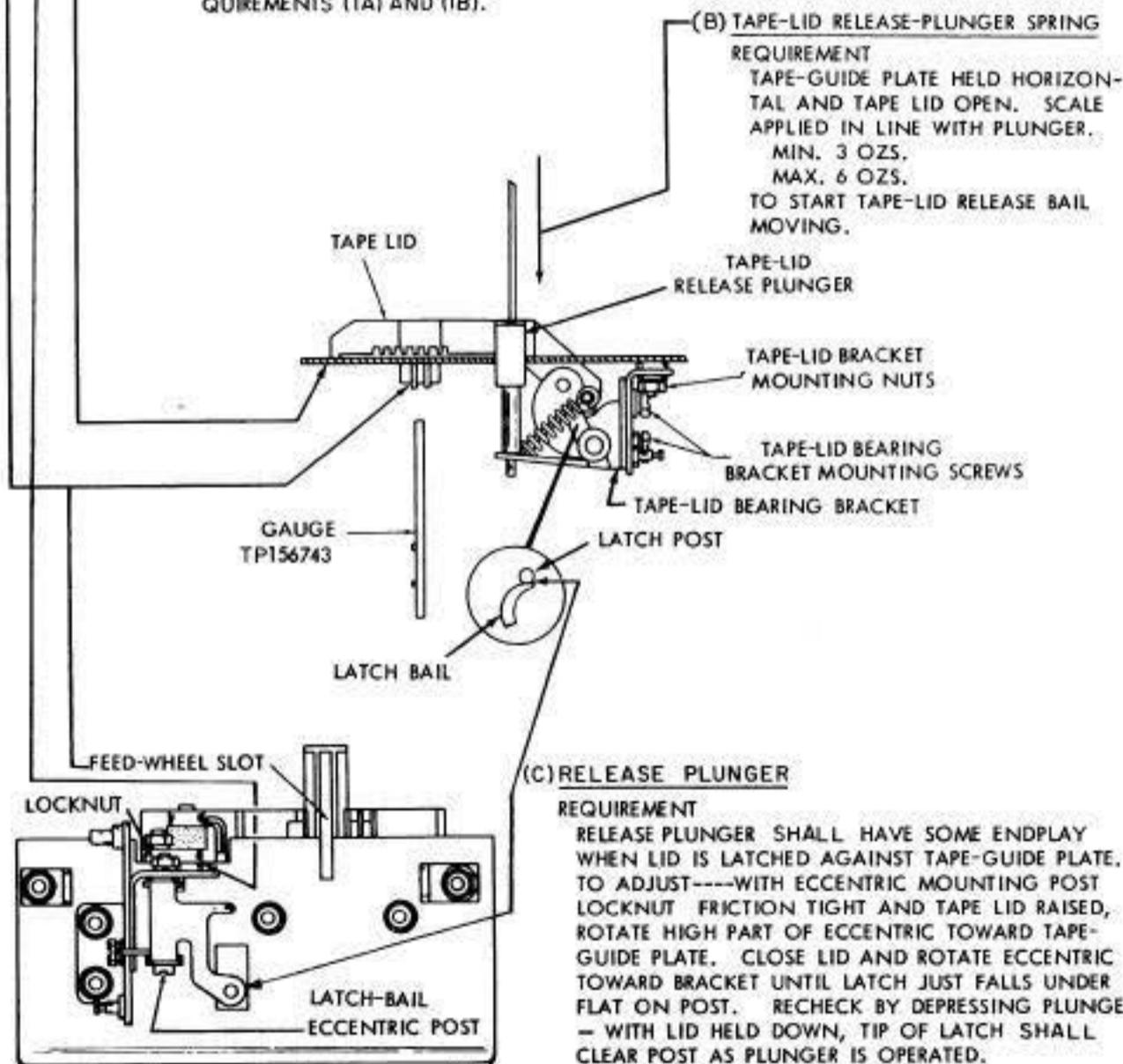
#### (2) REQUIREMENT

TAPE-LID FRONT BEARING SURFACE SHALL REST SQUARELY AGAINST TAPE-GUIDE PLATE AND THERE SHALL BE 0.010 TO 0.018 INCH CLEARANCE BETWEEN THE TAPE LID AND THE TAPE-GUIDE PLATE MEASURED AT THE TAPE-LID PIN THAT IS IN LINE WITH THE REAR TAPE GUIDE.

TO ADJUST----WITH TAPE-LID BEARING BRACKET MOUNTING SCREWS FRICTION TIGHT AND TAPE LID PRESSED AGAINST TAPE-GUIDE PLATE, POSITION BEARING BRACKET. RECHECK REQUIREMENTS (1A) AND (1B).

### (B) TAPE-LID RELEASE-PLUNGER SPRING

REQUIREMENT  
TAPE-GUIDE PLATE HELD HORIZONTAL AND TAPE LID OPEN. SCALE APPLIED IN LINE WITH PLUNGER.  
MIN. 3 OZS.  
MAX. 6 OZS.  
TO START TAPE-LID RELEASE BAIL MOVING.



### (C) RELEASE PLUNGER

REQUIREMENT  
RELEASE PLUNGER SHALL HAVE SOME ENDPLAY WHEN LID IS LATCHED AGAINST TAPE-GUIDE PLATE. TO ADJUST----WITH ECCENTRIC MOUNTING POST LOCKNUT FRICTION TIGHT AND TAPE LID RAISED, ROTATE HIGH PART OF ECCENTRIC TOWARD TAPE-GUIDE PLATE. CLOSE LID AND ROTATE ECCENTRIC TOWARD BRACKET UNTIL LATCH JUST FALLS UNDER FLAT ON POST. RECHECK BY DEPRESSING PLUNGER — WITH LID HELD DOWN, TIP OF LATCH SHALL CLEAR POST AS PLUNGER IS OPERATED.

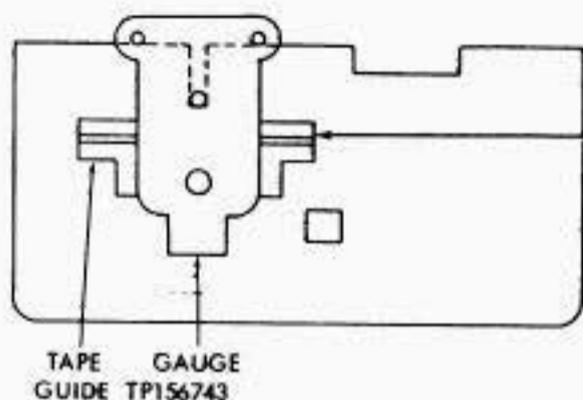
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## 2.16 Tape-guide Plate (28B Unit)



**TAPE GUIDE REQUIREMENT**

WITH GAUGE PROPERLY POSITIONED:  
MIN. SOME  
MAX. 0.003 INCH  
BETWEEN GAUGE AND TAPE GUIDES.

**TO ADJUST**

LOOSEN TAPE-GUIDE MOUNTING NUTS TO FRICTION TIGHT. PROPERLY POSITION GAUGE ON TAPE-GUIDE PLATE. POSITION TAPE GUIDES TO MEET REQUIREMENT.

**TAPE-GUIDE PLATE**

**(1) REQUIREMENT**

SHOULDER OF FEED-WHEEL POST SHALL NOT INTERFERE WITH TOP PLATE OR TAPE-GUIDE PLATE MOUNTING BRACKETS.

**TO ADJUST**

ROTATE FEED-WHEEL POST WITH ITS MOUNTING NUT LOOSENED.

**(2) REQUIREMENT**

TAPE-GUIDE PLATE SHALL REST FIRMLY AGAINST AT LEAST THREE PROJECTIONS OF THE FRONT AND REAR PLATE.

**TO ADJUST**

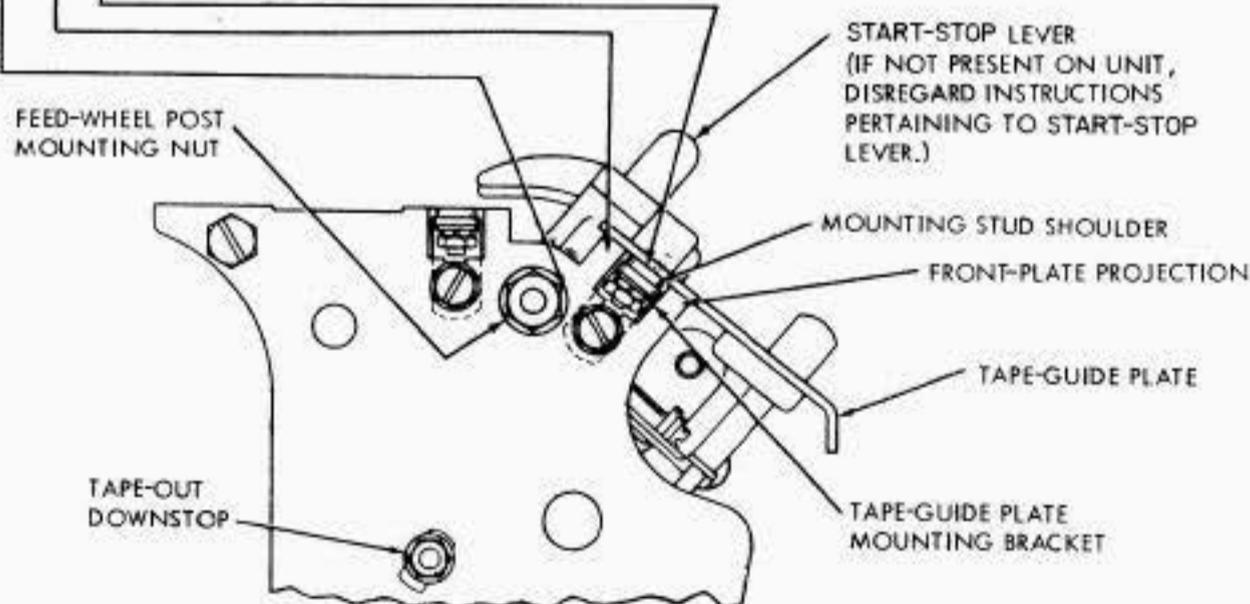
WITH TAPE-OUT DOWNSTOP IN ITS LOWERMOST POSITION, AND TAPE-GUIDE PLATE MOUNTING BRACKET (FRONT AND REAR) NUTS FRICTION TIGHT, TRIP CLUTCH AND ROTATE SHAFT UNTIL SENSING PINS ARE IN THEIR UPPERMOST POSITION. WITH TAPE LID RAISED AND START-STOP LEVER IN RUN POSITION, PRESS TAPE-GUIDE PLATE INTO POSITION. GUIDE MOUNTING SCREWS INTO NOTCH OF FRONT AND REAR PLATE, AND PLACE SENSING PINS ADJACENT TO LEFT EDGE OF GUIDE PLATE. PLACE TAPE-OUT PIN INTO ITS HOLE. TIGHTEN EACH BRACKET MOUNTING SCREW.

**(3) REQUIREMENT**

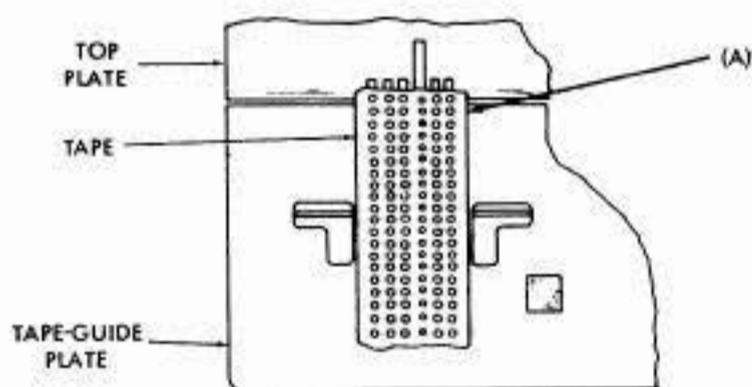
OUTER EDGES OF MOUNTING BRACKETS AND OUTER EDGES OF MOUNTING STUD SHOULDERS SHALL ALIGN AND PROJECT EQUALLY ON FRONT AND REAR BRACKETS.

**TO ADJUST**

MOVE TAPE-GUIDE PLATE TOWARD FRONT OR REAR. TIGHTEN NUTS ONLY AFTER TOP PLATE IS ADJUSTED.



## 2.17 Tape Feed Mechanism (28B Unit)



### (A) FEED-WHEEL DETENT

#### NOTE 1

IF UNIT IS EQUIPPED WITH A START-STOP LEVER, PLACE IT IN STOP POSITION.

#### TO CHECK

PLACE A LTRS PERFORATED TAPE OVER FEED WHEEL, TAKING UP PLAY IN FEED HOLES TOWARD THE RIGHT.

#### REQUIREMENT

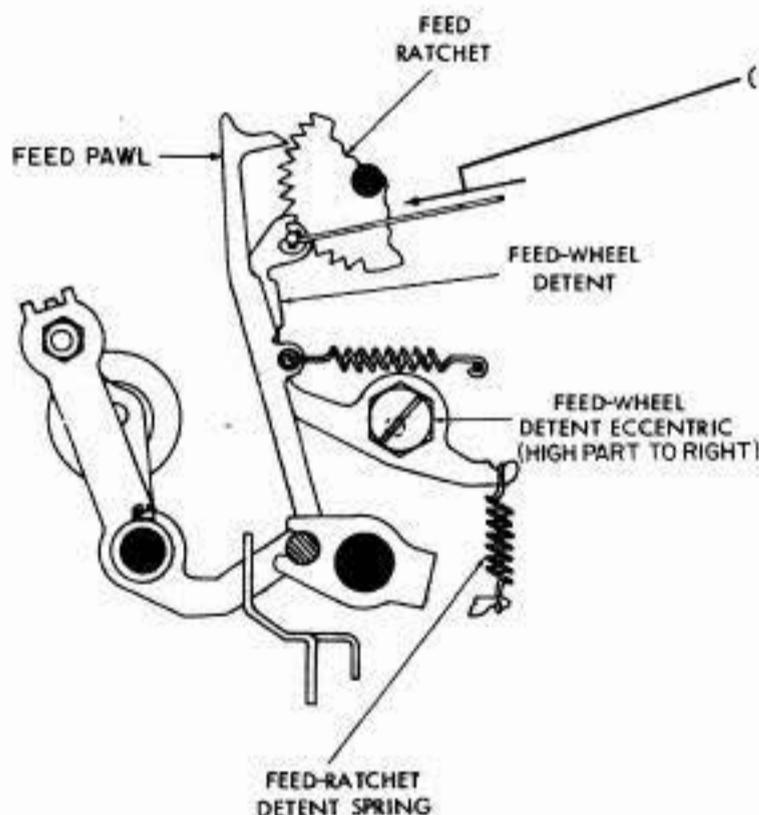
SENSING PINS SHALL BE CENTRALLY LOCATED IN CODE HOLES.

#### TO ADJUST

POSITION FEED-WHEEL DETENT ECCENTRIC WITH ITS LOCKSCREW FRICTION TIGHT. HIGH PART OF ECCENTRIC SHOULD BE TOWARD RIGHT. HOLD ECCENTRIC AND TIGHTEN GUIDE POST AND LOCKSCREW. RECHECK ADJUSTMENT.

#### NOTE 2

FEED PAWL SHOULD BE HELD AWAY TO FACILITATE ADJUSTMENT.



### (B) FEED-RATCHET DETENT SPRING

#### REQUIREMENT

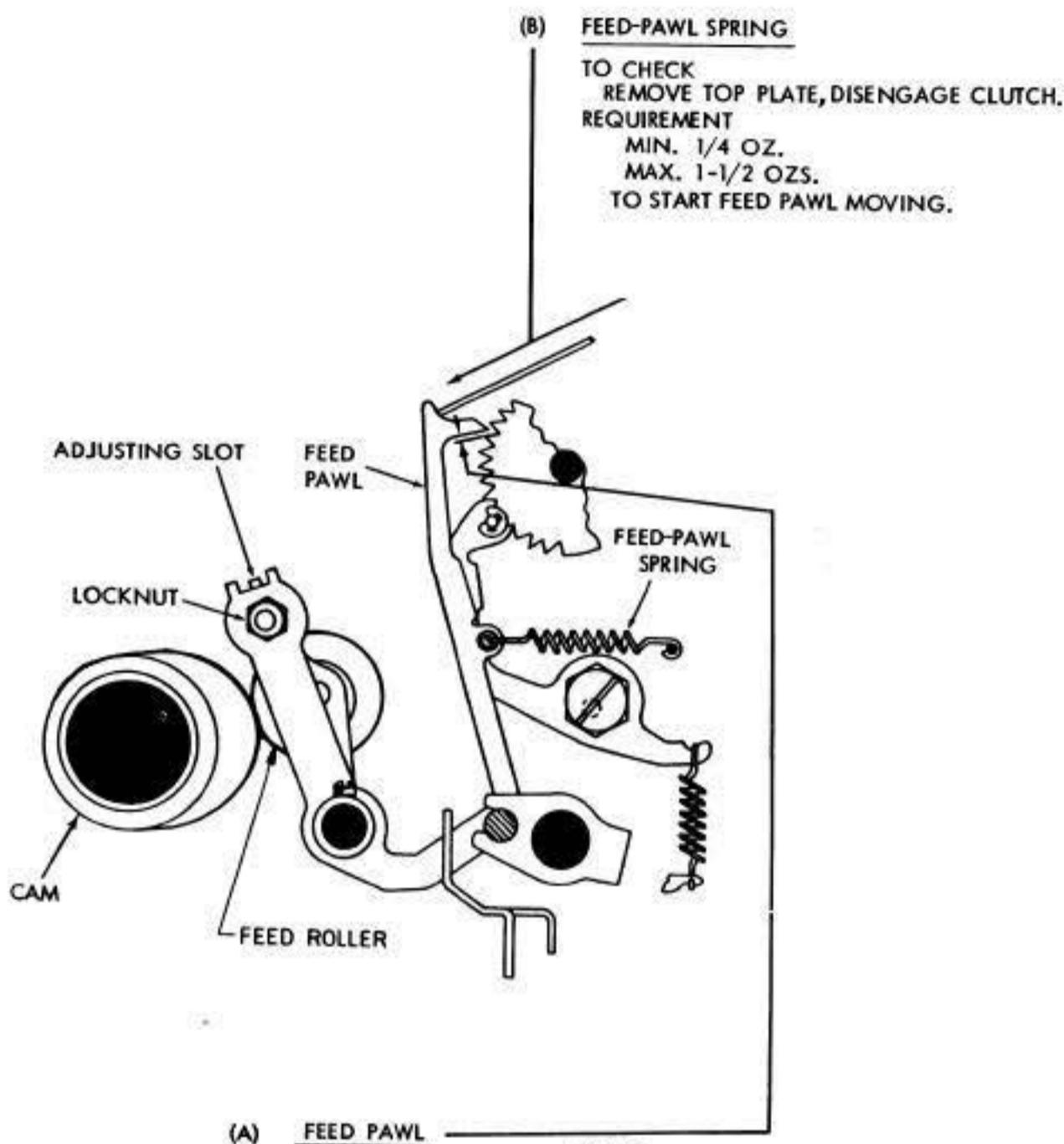
WITH FEED PAWL HELD AWAY FROM RATCHET WHEEL

MIN. 7 OZS.

MAX. 13 OZS.

TO MOVE DETENT ROLLER AWAY FROM FULLY DETENTED POSITION.

## 2.18 Tape Feed Mechanism (28B Unit (Contd))



(A) FEED PAWL

NOTE  
 IF UNIT IS EQUIPPED WITH START-STOP LEVER,  
 PLACE IT IN RUN POSITION.

TO CHECK  
 REMOVE TOP PLATE, TRIP CLUTCH, AND ROTATE CAM SHAFT  
 UNTIL FEED ROLLER IS ON HIGH PART OF CAM. ROTATE  
 RATCHET WHEEL UNTIL OIL HOLE IS UP. TAKE UP PLAY  
 BY PRESSING DOWN LIGHTLY ON RIGHT END OF FEED-PAWL  
 BAIL.

REQUIREMENT  
 MIN. SOME  
 MAX. 0.003 INCH  
 CLEARANCE BETWEEN FEED PAWL AND RATCHET TOOTH.

TO ADJUST  
 POSITION FEED LEVER BY MEANS OF THE AD-  
 JUSTING SLOT WITH ITS LOCKNUT LOOSENED.

(B) FEED-PAWL SPRING

TO CHECK  
 REMOVE TOP PLATE, DISENGAGE CLUTCH.

REQUIREMENT  
 MIN. 1/4 OZ.  
 MAX. 1-1/2 OZS.  
 TO START FEED PAWL MOVING.

## 2.19 Top Plate Assembly (28B Unit)

### TOP PLATE (FIXED HEAD)

#### (1) REQUIREMENT

TOP PLATE FLUSH TO 0.003 INCH UNDERFLUSH WITH TAPE-GUIDE PLATE WITHIN WIDTH OF TAPE LID.

#### TO ADJUST

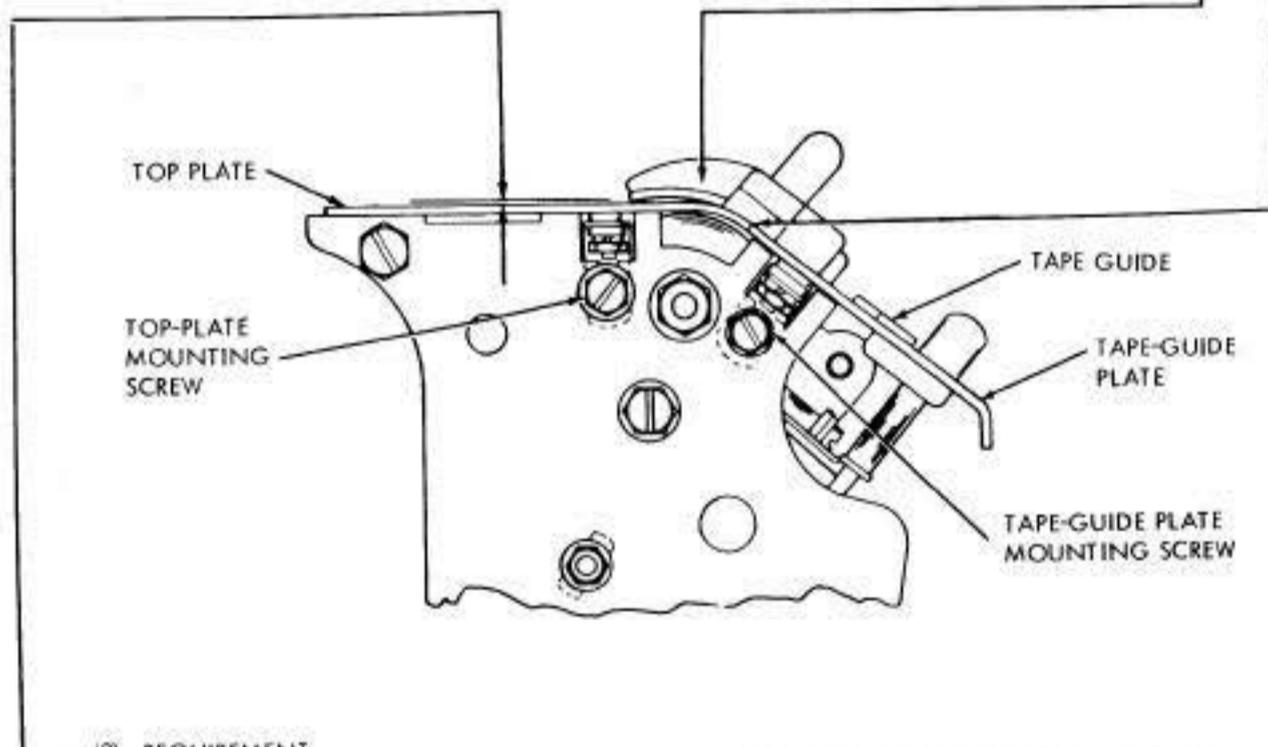
LOOSEN MOUNTING BRACKET NUTS UNTIL BRACKETS ARE FRICTION TIGHT. PRESS TOP PLATE INTO POSITION. TOP PLATE SHALL REST ON AT LEAST THREE PROJECTIONS OF SIDE PLATES. MAKE SURE THE TIGHT-TAPE ARM EXTENSION IS UNDER THE TOP PLATE.

#### (2) REQUIREMENT

FEED-WHEEL SLOT AND TAPE-GUIDE PLATE SLOT SHALL LINE UP.

#### TO ADJUST

MOVE TOP PLATE TO LINE UP FEED-WHEEL SLOT. DO NOT DISTURB REQUIREMENT (2) OF TAPE-GUIDE PLATE ADJUSTMENT.



#### (3) REQUIREMENT

WITH TAPE LID LATCHED, CLEARANCE BETWEEN TAPE-LID EXTENSION COVERING FEED-WHEEL SLOT, AND TOP PLATE:

MIN. 0.010 INCH

MAX. 0.020 INCH

MEASURED AT CURVED PORTION OF TOP PLATE, AND

MIN. 0.010 INCH

MAX. 0.025 INCH

MEASURED AT FLAT PORTION OF TOP PLATE.

ALSO:

MIN. 0.010 INCH

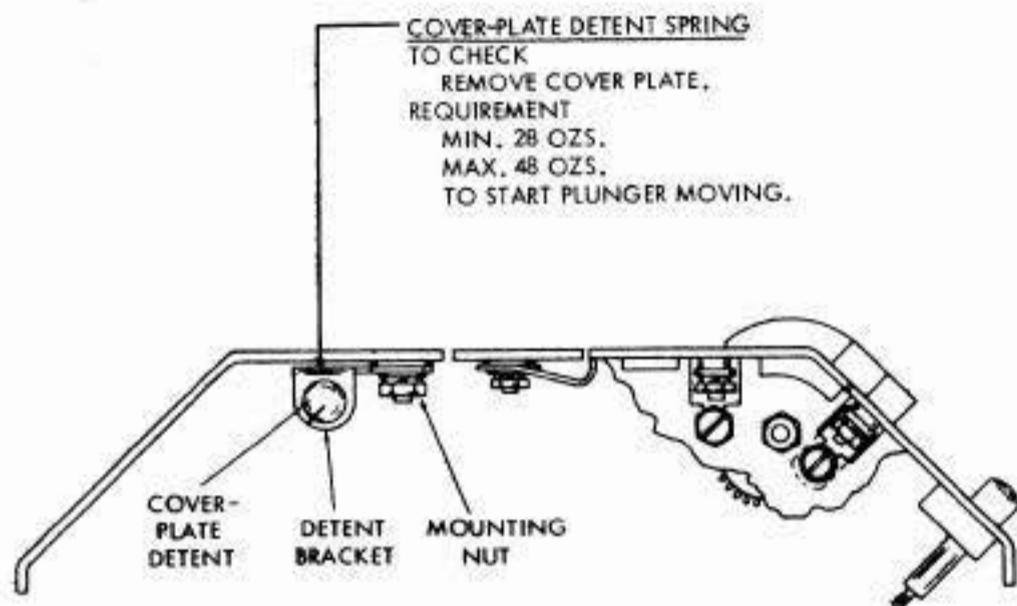
MAX. 0.018 INCH

CLEARANCE BETWEEN TAPE LID AND TAPE-GUIDE PLATE MEASURED IN AREA BETWEEN TAPE GUIDES (PLAY IN TAPE LID TAKEN UP TOWARD TAPE-GUIDE PLATE).

#### TO ADJUST

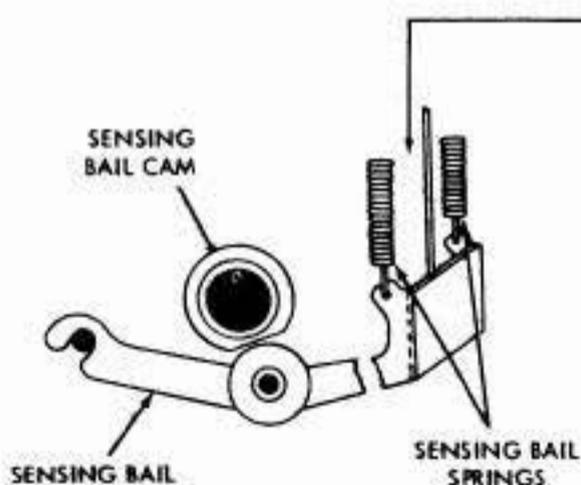
LOOSEN TWO SCREWS HOLDING TAPE-LID MOUNTING BRACKETS TOGETHER, AND POSITION TAPE LID. RECHECK ADJUSTMENTS (1) AND (2) OF TAPE LID ADJUSTMENT.

## 2.20 Coverplate Mechanism (28B Unit) and Sensing Mechanism



### COVER PLATE

- (1) REQUIREMENT  
COVER PLATE HELD FLUSH AGAINST TOP PLATE BY DETENT ACTION.
- (2) REQUIREMENT  
COVER PLATE RESTS ON AT LEAST THREE SIDE-FRAME PROJECTIONS.
- (3) REQUIREMENT  
FRONT EDGE OF COVER AND TOP PLATES IN LINE.
- TO ADJUST  
LOOSEN DETENT NUTS ON SIDE FRAMES AND MOVE THEM TO EXTREME LOWER RIGHT POSITION. TIGHTEN NUTS. LOOSEN FOUR BRACKET MOUNTING NUTS ON COVER PLATE. PLACE COVER INTO POSITION, AND POSITION TO MEET REQUIREMENTS. TIGHTEN NUTS. IF COVER PLATE DOES NOT DETENT PROPERLY [REQUIREMENT (1)], REPOSITION DETENT NUTS.

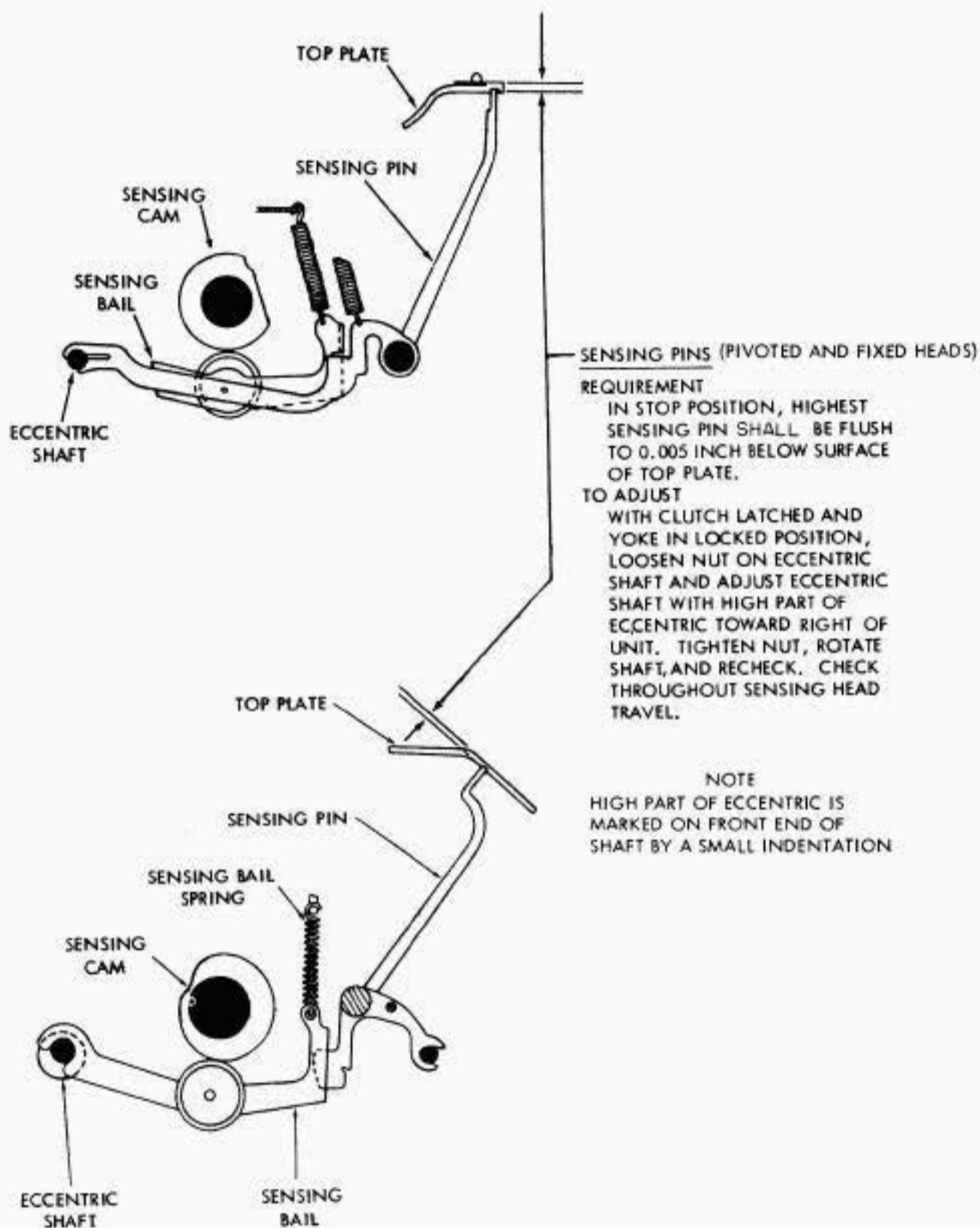


### SENSING BAIL SPRINGS

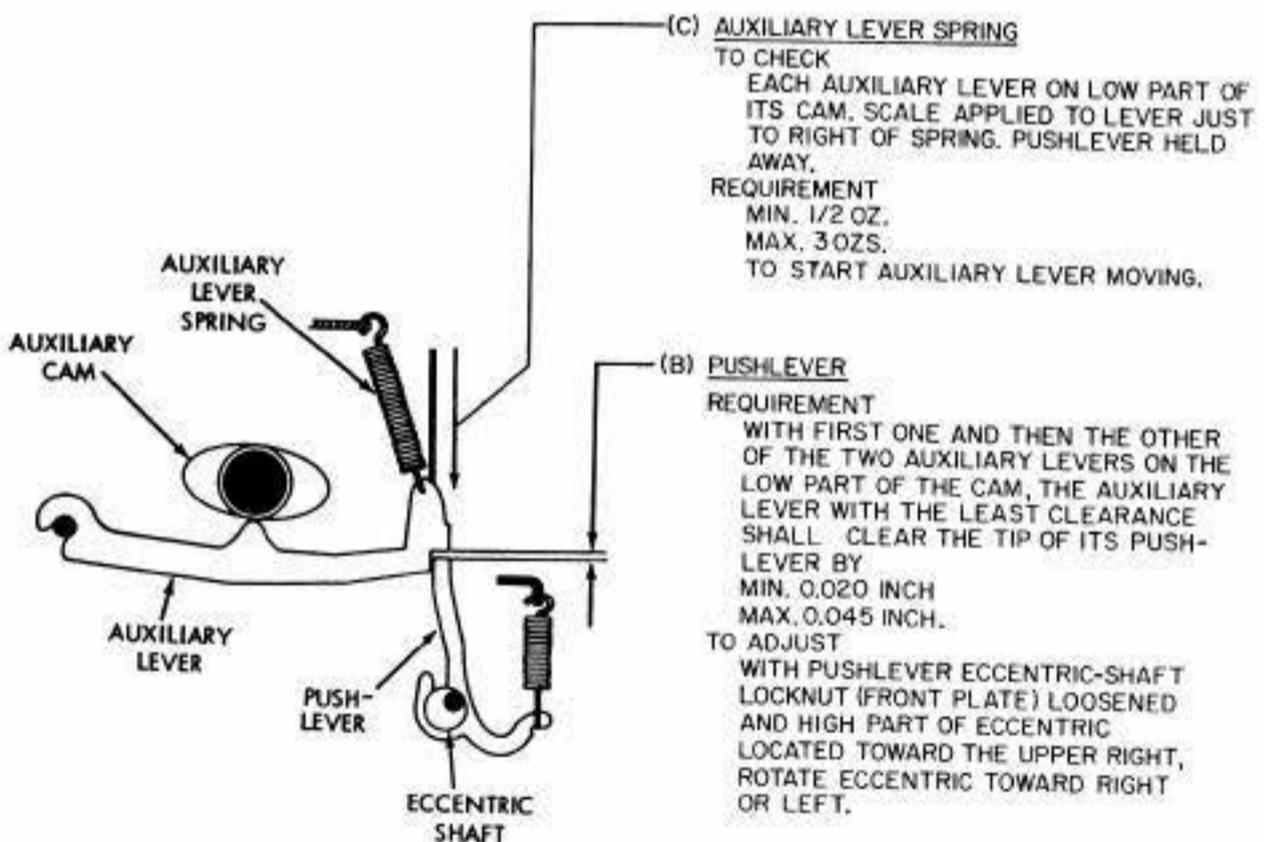
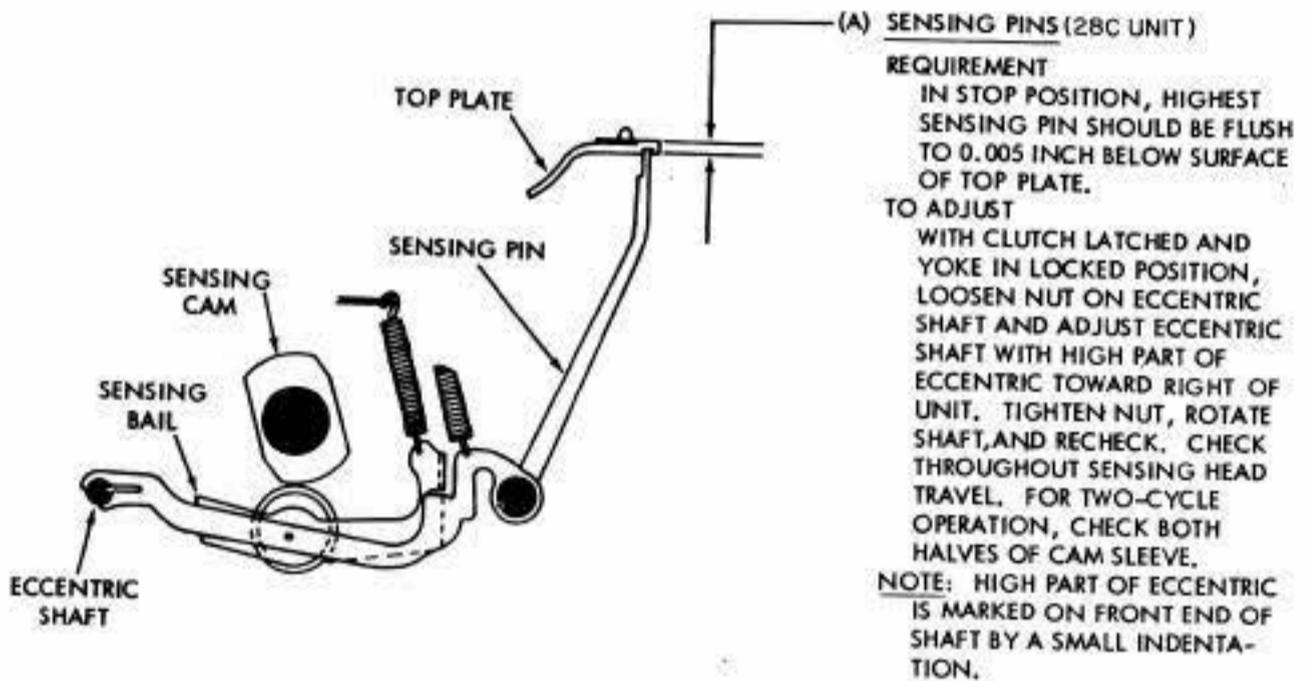
TO CHECK  
WITH BLANK TAPE UNDER TAPE LID, TRIP CLUTCH MAGNET AND MANUALLY ROTATE SHAFT UNTIL SENSING BAIL IS IN UPPER-MOST POSITION. APPLY SCALE TO BAIL BETWEEN SPRINGS.

REQUIREMENT  
MIN. 1/4 OZ.  
MAX. 2 OZ.  
TO START SENSING BAIL MOVING.

## 2.21 Sensing Mechanism (28B Unit)

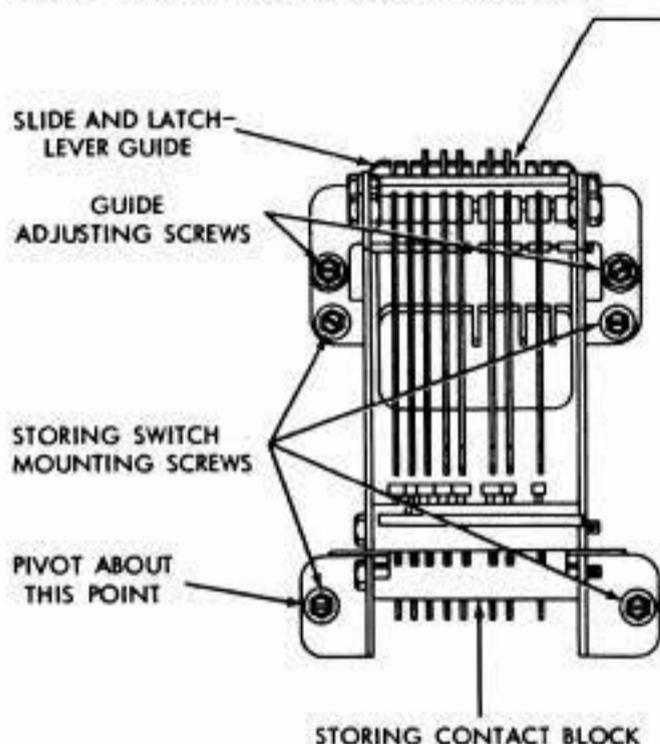


## 2.22 Sensing Mechanism



## 2.23 Storing Switch Mechanism and Oil Reservoir

NOTE: REINSTALL STORING SWITCH ASSEMBLY.



### (A) STORING SWITCH ASSEMBLY REPLACEMENT

#### REQUIREMENT

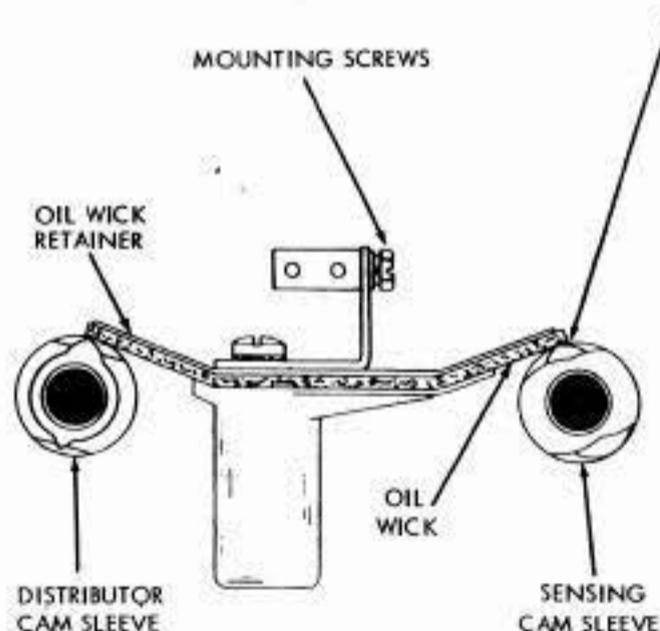
STORING SWITCH ASSEMBLY SHALL ALIGN WITH LATCHLEVERS SO THAT LATCHLEVERS AND SLIDES FUNCTION WITHOUT BINDING.

#### TO CHECK

MANUALLY PUSH LATCH BAIL FOLLOWER AWAY FROM CAM UNTIL LATCHES ARE FREE FROM GUIDE. RELEASE LATCH-BAIL FOLLOWER AND NOTE IF LATCHES FALL INTO THEIR RESPECTIVE SLOTS.

#### TO ADJUST

PIVOT STORING SWITCH WITH STORING SWITCH MOUNTING SCREWS LOOSENED. RECHECK REQUIREMENT.



### (B) OIL RESERVOIR

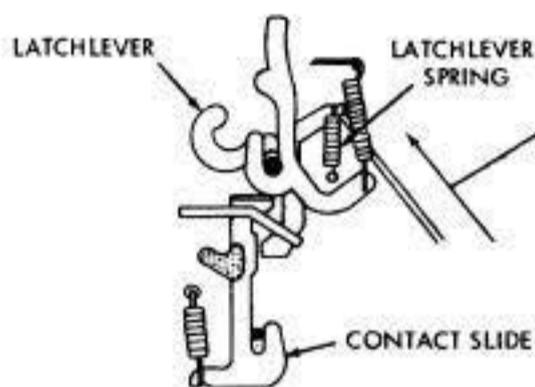
#### REQUIREMENT

EACH OIL WICK RESTS LIGHTLY ON HIGH PARTS OF FRONT AND REAR CAM OF EACH CAM SLEEVE.

#### TO ADJUST

TRIP BOTH ARMATURES AND ROTATE SHAFT UNTIL HIGH PART OF FRONT AND REAR CAM OF EACH SLEEVE IS UNDER ITS WICK. POSITION OIL RESERVOIR ASSEMBLY WITH ITS MOUNTING SCREWS (2) LOOSENED. WHEN CAM SLEEVE IS ROTATED, TEETH OF WICK RETAINER SHALL NOT DEFLECT UPWARD MORE THAN 1/32 INCH (GAUGE BY EYE). REFINE ADJUSTMENT BY SLIGHTLY BENDING TEETH ON WICK COMB SPRING.

## 2.24 Sensing Mechanism Springs

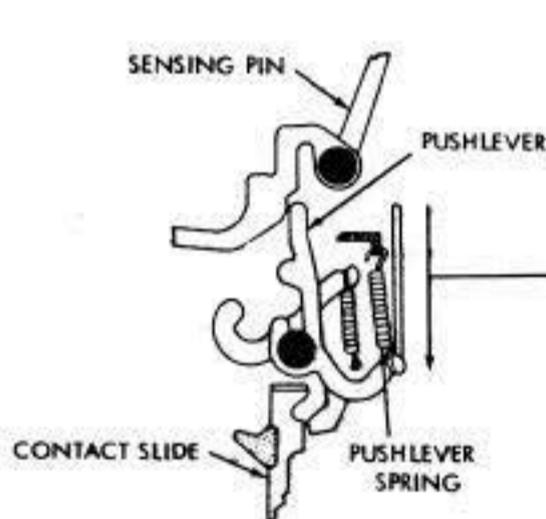


### (B) LATCHLEVER SPRING

TO CHECK  
SELECT BLANK COMBINATION. TRIP SENSING CLUTCH AND ROTATE SHAFT TO STOP POSITION. APPLY SCALE AT RIGHT ANGLE TO TOP OF LATCHLEVER.

REQUIREMENT  
MIN. 1 OZ.  
MAX. 3 OZS.  
TO START LATCHLEVER MOVING.

NOTE 1  
TAKE CARE NOT TO DAMAGE PUSHLEVER SPRINGS IN CHECKING REQUIREMENT.



### (A) PUSHLEVER SPRING

TO CHECK  
TRIP CLUTCH AND ROTATE SHAFT UNTIL SENSING PINS ARE IN UPPERMOST POSITION. APPLY SCALE AT RIGHT ANGLE TO EXTREME LOWER END OF PUSHLEVER (SENSING PUSHLEVERS ONLY).

REQUIREMENT  
MIN. 1 OZ.  
MAX. 2 OZS.  
TO START PUSHLEVER MOVING.

NOTE 2  
BE SURE CONTACT SLIDES DO NOT INTERFERE WITH MOVEMENT OF PUSHLEVERS.

## 2.25 Sensing Mechanism Springs (Contd)

### (C) TAPE-OUT (6TH) PIN SPRING

#### TO CHECK

SENSING HEAD IN LOCKED POSITION, AND TAPE-OUT PIN IN UPPERMOST POSITION. APPLY SCALE IN LINE WITH PIN.

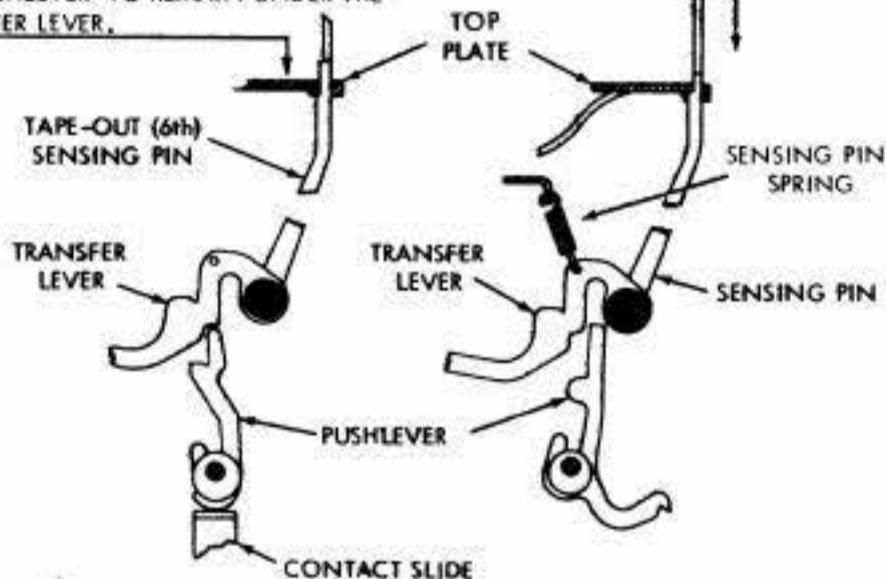
#### REQUIREMENT

MIN. 2-1/2 OZS.  
MAX. 5 OZS.  
FOR ONE-CYCLE CLUTCH.

MIN. 1 OZ.  
MAX. 2 OZS.  
FOR 2-CYCLE CLUTCH (28C UNIT)  
TO MOVE SENSING PIN FLUSH WITH  
TOP PLATE.

#### NOTE

WHEN CHECKING THIS SPRING ALLOW  
THE PUSHLEVER TO REMAIN UNDER THE  
TRANSFER LEVER.



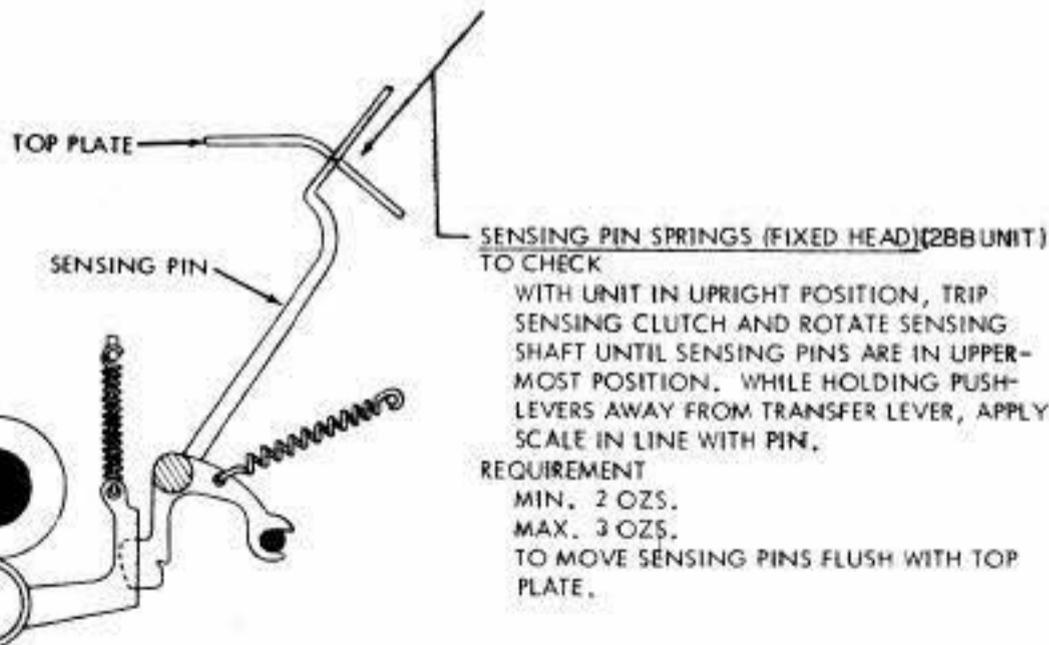
### (B) SENSING PIN SPRINGS (PIVOTED HEAD)

#### TO CHECK

WITH SENSING HEAD IN LOCKED POSITION, TRIP SENSING CLUTCH AND ROTATE SENSING SHAFT UNTIL SENSING PINS ARE IN UPPERMOST POSITION. WHILE HOLDING PUSHLEVERS AWAY FROM TRANSFER LEVER, APPLY SCALE IN LINE WITH PIN.

#### REQUIREMENT

MIN. 3 OZS.  
MAX. 4 OZS.  
TO MOVE SENSING PINS FLUSH WITH  
TOP PLATE.



### SENSING PIN SPRINGS (FIXED HEAD) (28B UNIT)

#### TO CHECK

WITH UNIT IN UPRIGHT POSITION, TRIP SENSING CLUTCH AND ROTATE SENSING SHAFT UNTIL SENSING PINS ARE IN UPPERMOST POSITION. WHILE HOLDING PUSHLEVERS AWAY FROM TRANSFER LEVER, APPLY SCALE IN LINE WITH PIN.

#### REQUIREMENT

MIN. 2 OZS.  
MAX. 3 OZS.  
TO MOVE SENSING PINS FLUSH WITH  
TOP PLATE.

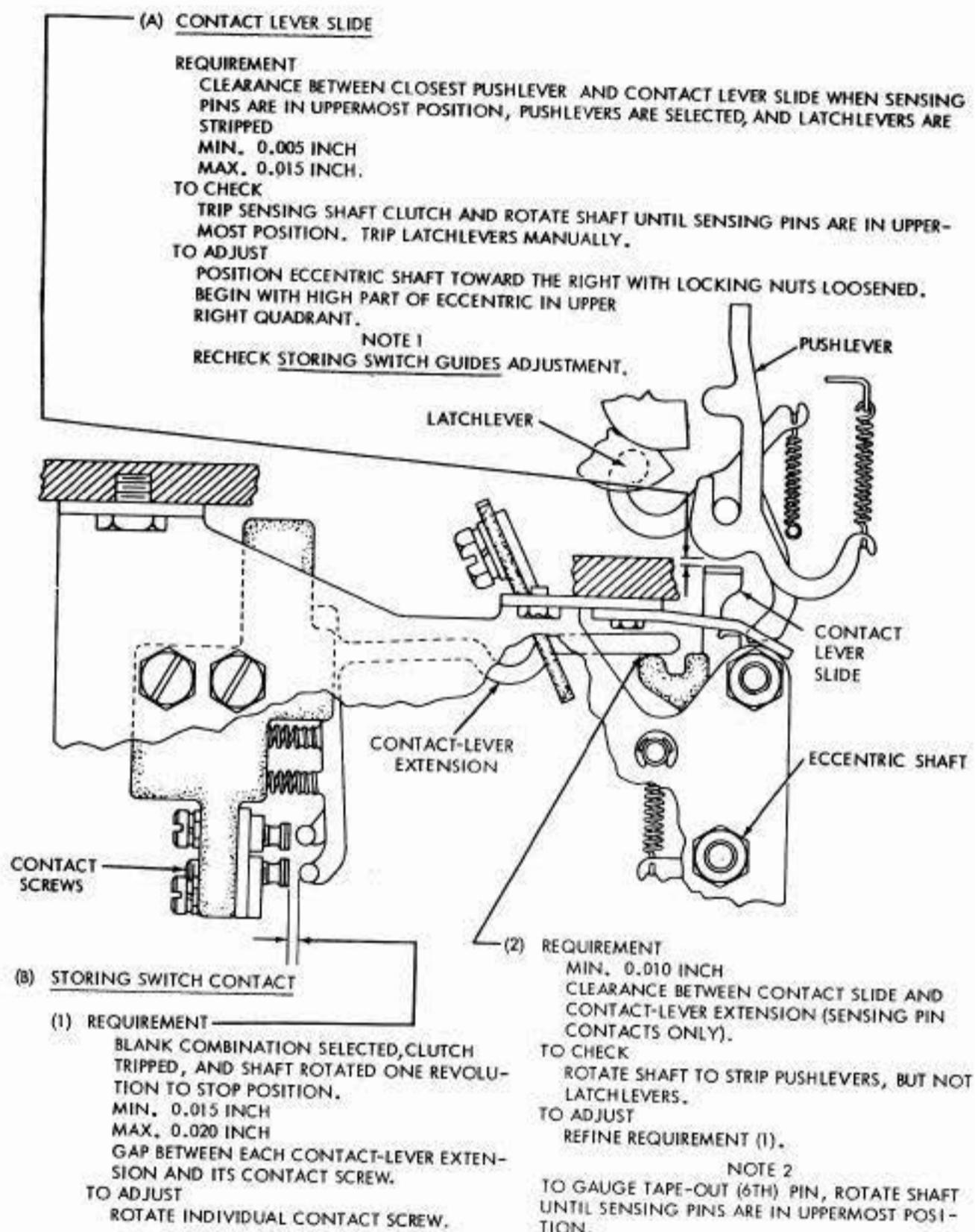
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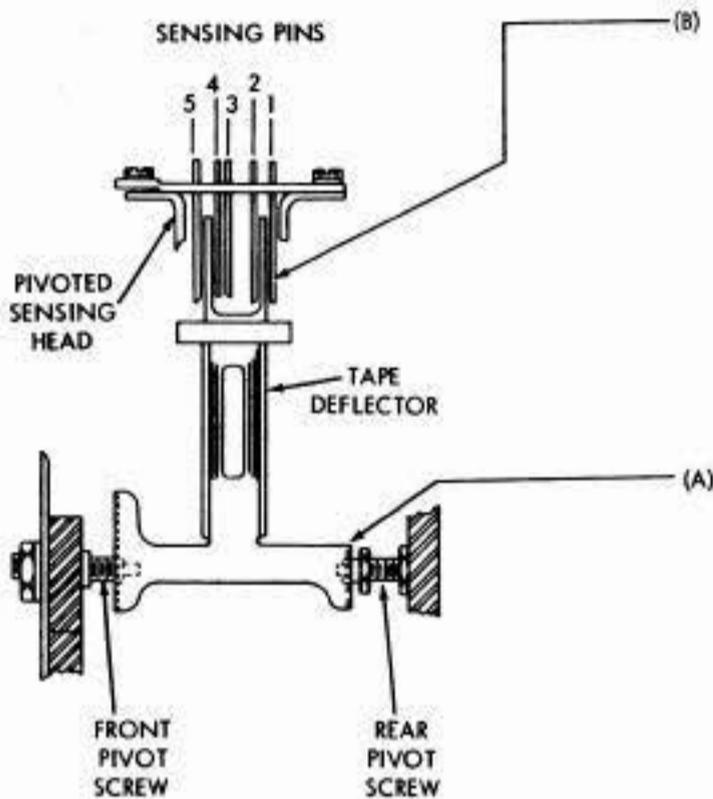
MITTER-  
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TOR UNITS

## 2.26 Sensing and Storing Switch Mechanism



**NOTE 3**  
 THE ABOVE REQUIREMENTS ARE FINAL EXCEPT IN LOCATIONS WHERE A 1A TELETYPEWRITER TEST SET OR A 28A STROBOSCOPIC TEST SET IS AVAILABLE.

## 2.27 Pivoted Sensing Head



### (B) TAPE DEFLECTOR

#### REQUIREMENT

THE TAPE DEFLECTOR VERTICAL EARS SHALL PASS FREELY BETWEEN SENSING PINS 1-2 AND 4-5 AS PIVOTED SENSING HEAD IS MOVED AWAY FROM ITS LOCKED POSITION.

#### TO ADJUST

POSITION TAPE DEFLECTOR WITH FRONT PIVOT SCREW.

### (A) SENSING HEAD PIVOT SCREWS

#### (1) REQUIREMENT

SENSING YOKE SHALL BE FREE OF BINDS.

#### TO ADJUST

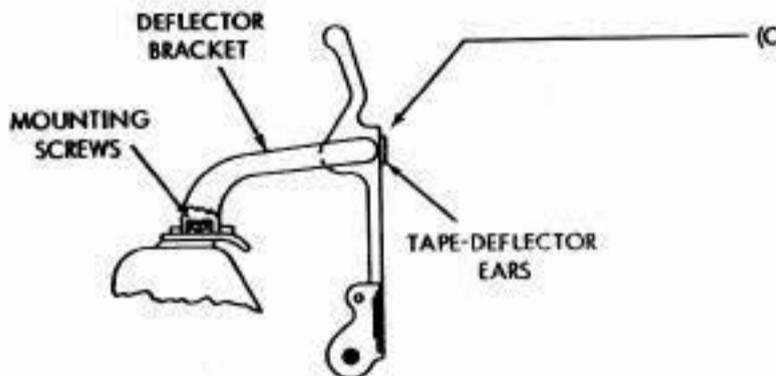
POSITION REAR PIVOT SCREW FOR MINIMUM ENDPLAY WITHOUT BINDING.

#### (2) REQUIREMENT

SENSING PINS SHALL MOVE FREELY IN TOP PLATE.

#### TO ADJUST

REFINE REQUIREMENT NO. 1 ADJUSTMENT.



### (C) TAPE-DEFLECTOR BRACKET

#### REQUIREMENT

ARMS OF DEFLECTOR BRACKET SHALL CONTACT EARS ON TAPE DEFLECTOR SIMULTANEOUSLY WITH SENSING YOKE IN FIXED POSITION.

#### TO ADJUST

POSITION DEFLECTOR BRACKET WITH MOUNTING SCREWS LOOSENED.

## 2.28 Pivoted Sensing Head (Contd)

### (A) FEED PAWL (PRELIMINARY)

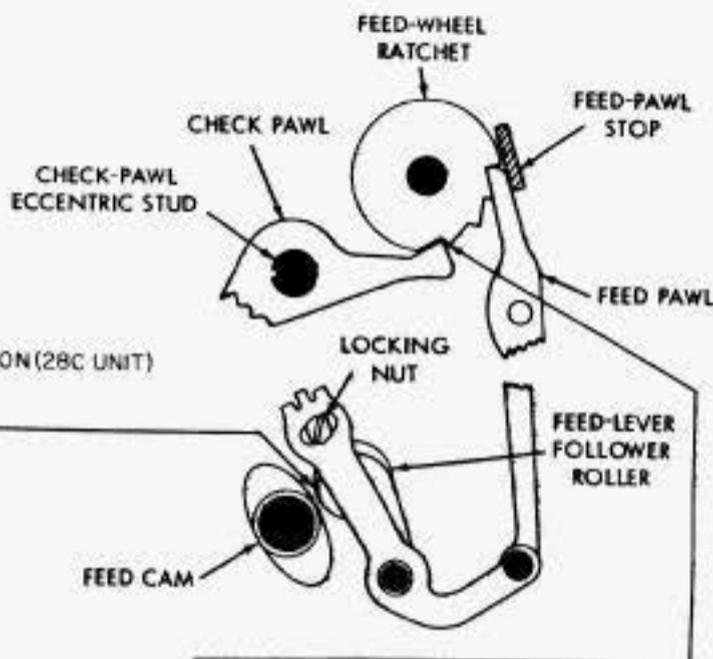
#### REQUIREMENT

FEED-LEVER FOLLOWER ROLLER SHALL BE OFF CAM WHEN FEED PAWL RESTS AGAINST ITS UPWARD STOP.

#### TO ADJUST

TRIP CLUTCH AND ROTATE SHAFT UNTIL FEED PAWL IS IN ITS UPPER POSITION AND BOTTOMED ON ITS STOP. POSITION ROLLER WITH LOCKNUT LOOSENED.

NOTE 1: FOR 2-CYCLE OPERATION (28C UNIT) CHECK BOTH SIDES OF FEED CAM.



### (B) CHECK PAWL

#### (1) REQUIREMENT

CHECK PAWL SHALL ENGAGE BOTH TEETH ON RATCHET WITH FEED PAWL IN ITS UP POSITION.

#### TO ADJUST

ROTATE CHECK-PAWL ECCENTRIC STUD. NOTE 2: GROOVE ON ECCENTRIC STUD (HIGH PART OF ECCENTRIC) MUST BE ON LEFT SIDE DURING ADJUSTMENT.

#### (2) REQUIREMENT

FEED WHEEL SHALL NOT MOVE WITH SENSING CLUTCH IN STOP POSITION (FEED PAWL DOWN FULLY).

NOTE 3: CHECK REQUIREMENT AROUND ENTIRE PERIPHERY OF RATCHET.

#### TO ADJUST

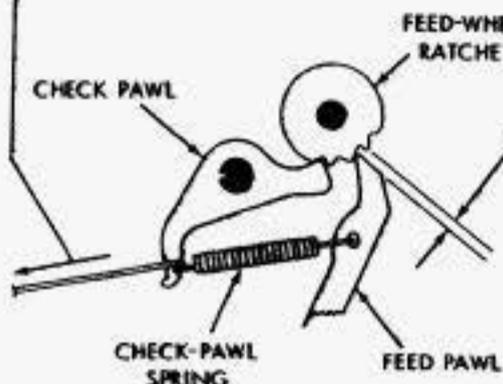
REFINE REQUIREMENT NO. 1

NOTE 4: USE SLIGHT PRESSURE ON FEED WHEEL TO PREVENT FALSE INDICATION DUE TO OVERRIDING CHECK-PAWL SPRING.

### (D) CHECK-PAWL SPRING

#### REQUIREMENT

SENSING CLUTCH IN STOP POSITION. SCALE APPLIED TO CHECK PAWL. MIN: 4-1/2 OZS. MAX. 8-1/2 OZS. TO START CHECK PAWL MOVING.



### (C) FEED PAWL (FINAL)

#### REQUIREMENT

CLEARANCE BETWEEN FEED PAWL AND FEED-RATCHET TOOTH WITH CLUTCH IN STOP POSITION

MIN. 0.030 INCH  
MAX. 0.035 INCH.

#### TO ADJUST

REFINE FEED PAWL PRELIMINARY ADJUSTMENT (A).

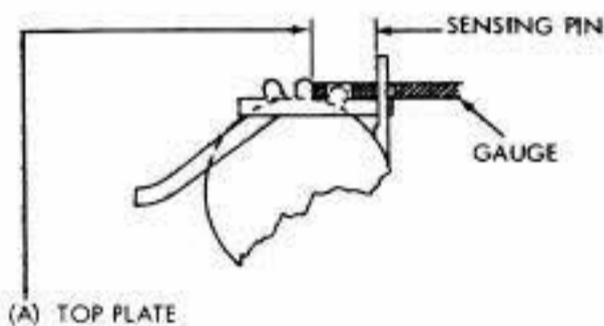
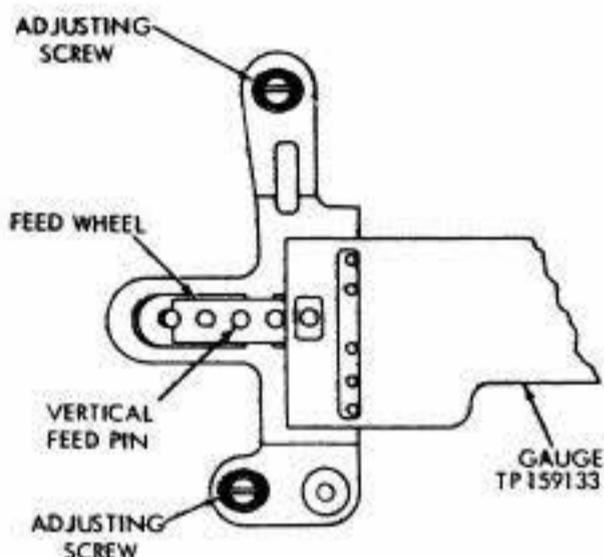
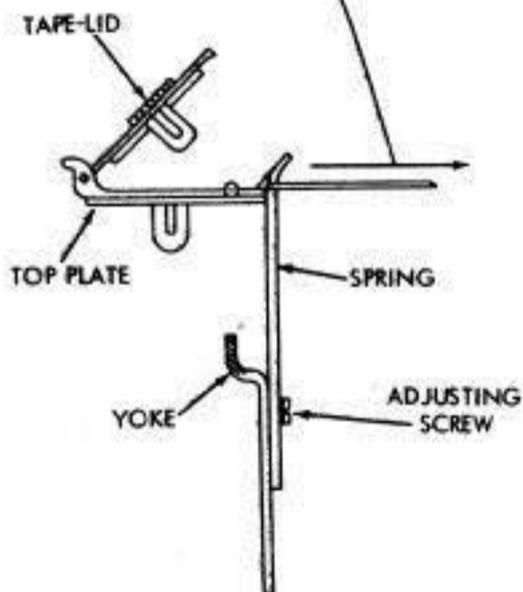
NOTE 5: FOR 2-CYCLE OPERATION (28C UNIT) ADJUST MINIMUM SIDE OF FEED CAM ONLY.

## 2.29 Pivoted Sensing Head (Contd)

### (B) TAPE-RETAINING LID LATCH

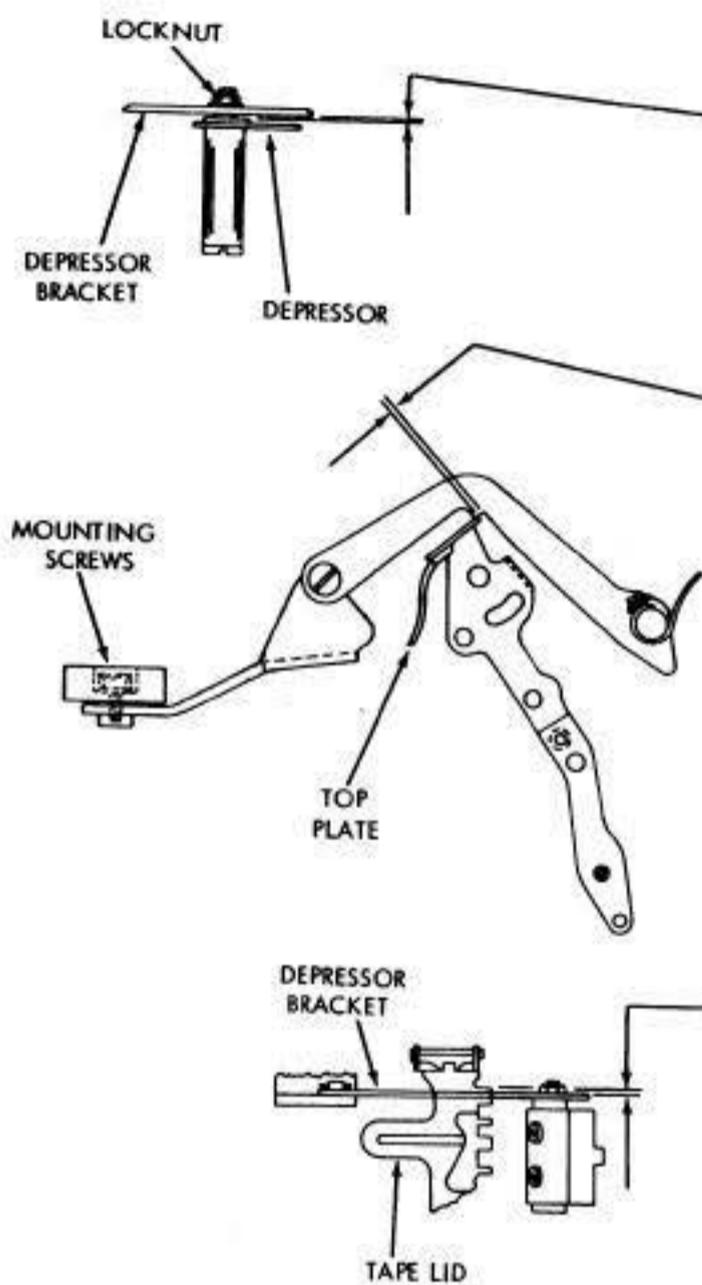
- (1) REQUIREMENT  
MIN. 8 OZS.  
MAX. 14 OZS.  
TO START TAPE-RETAINING LID LATCH SPRING MOVING AWAY FROM TOP PLATE.  
TO ADJUST  
BOW LID LATCH SPRING WITH FINGERS. DO NOT REMOVE SPRING FROM YOKE.
- (2) REQUIREMENT  
NO PLAY BETWEEN TAPE-RETAINING LID AND TOP PLATE WHEN LATCHED.  
TO ADJUST  
POSITION LID LATCH SPRING WITH ADJUSTING SCREW LOOSENED.

NOTE  
BE SURE LID LATCH SPRING ALIGNS WITH LID ON TAPE-RETAINING LID.



- (A) TOP PLATE
- (1) REQUIREMENT  
SPACING BETWEEN VERTICAL FEED WHEEL PIN AND SENSING PINS - 0.300 INCH.  
TO ADJUST  
WITH PIVOTED SENSING HEAD AGAINST ITS BACKSTOP, TRIP CLUTCH AND ROTATE SHAFT UNTIL SENSING PINS ARE IN UPPERMOST POSITION. LOOSEN TOP-PLATE MOUNTING SCREWS. PLACE GAUGE TP159133 ON TOP PLATE. POSITION TOP PLATE UNTIL FRONT EDGE OF GAUGE TOUCHES VERTICAL FEED PINS, AND ALL FIVE SENSING PINS TOUCH REAR EDGE OF GAUGE. RECHECK REQUIREMENT.
- (2) REQUIREMENT  
TAPE-RETAINING LID MUST CENTER OVER TOP PLATE (GAUGE VISUALLY).  
TO ADJUST  
REFINE REQUIREMENT NO. 1.

## 2.30 Tape Depressor



### TAPE DEPRESSOR ALIGNMENT

(1) REQUIREMENT  
CLEARANCE BETWEEN TAPE DEPRESSOR AND DEPRESSOR BRACKET

MIN. SOME  
MAX. 0.002 INCH.

TO ADJUST  
POSITION ADJUSTING SCREW  
AND DEPRESSOR WITH LOCKNUT  
LOOSENED.

(2) REQUIREMENT  
WITH TAPE DEPRESSOR LOCKED  
ON TOP PLATE, AND PIVOTED  
YOKE AGAINST ITS TOP,  
CLEARANCE BETWEEN TAPE DEPRESSOR  
AND TOP PLATE

MIN. 0.005 INCH  
MAX. 0.015 INCH.

TO ADJUST  
POSITION TAPE DEPRESSOR WITH  
MOUNTING SCREWS LOOSENED.

### NOTE

WHEN INSTALLED ON REPERFORATOR TRANSMITTER BASE, 0.005-TO 0.020-INCH CLEARANCE IS ACCEPTABLE AFTER PIVOTED HEAD IS PROPERLY ALIGNED WITH PUNCH BLOCK.

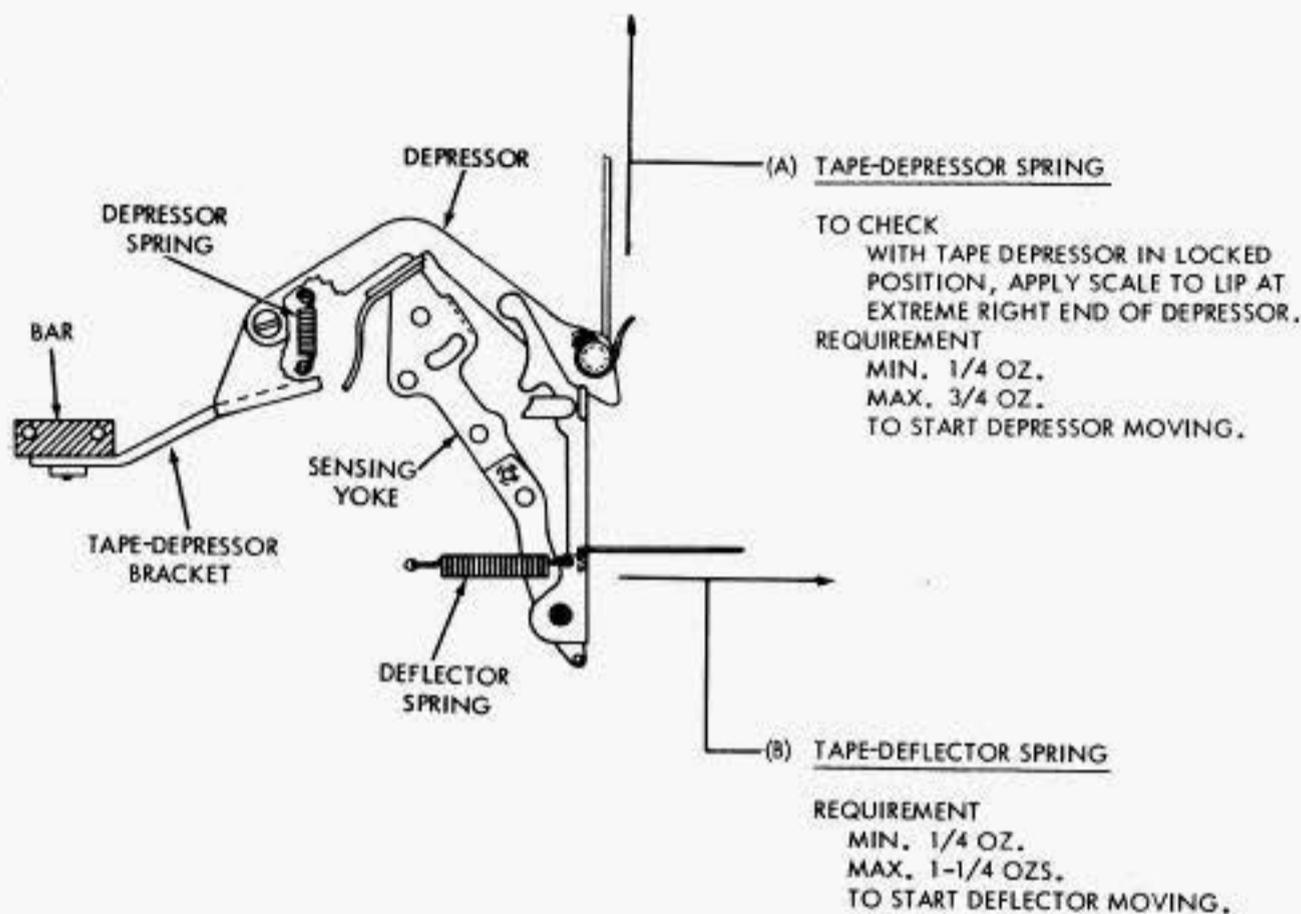
(3) REQUIREMENT  
CLEARANCE BETWEEN DEPRESSOR BRACKET AND TAPE LID

MIN. 0.010 INCH

MAX. 0.050 INCH.

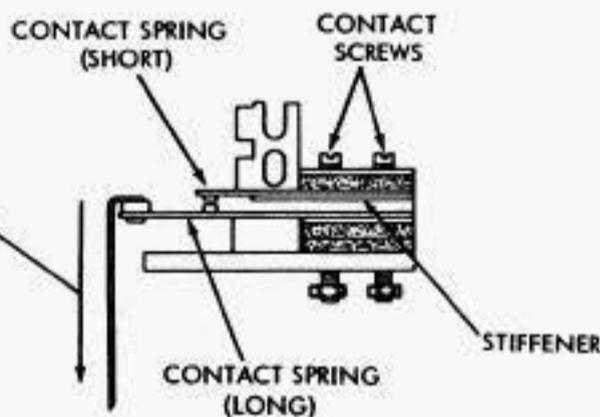
TO ADJUST  
REFINE REQUIREMENT NO. 2.

## 2.31 Tape Depressor and Last-character Contact Switch



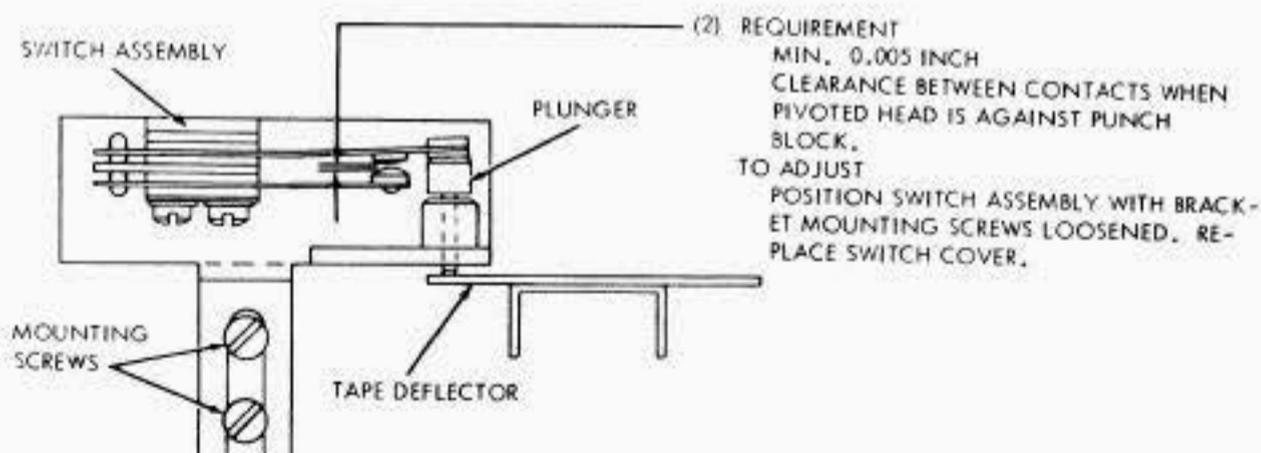
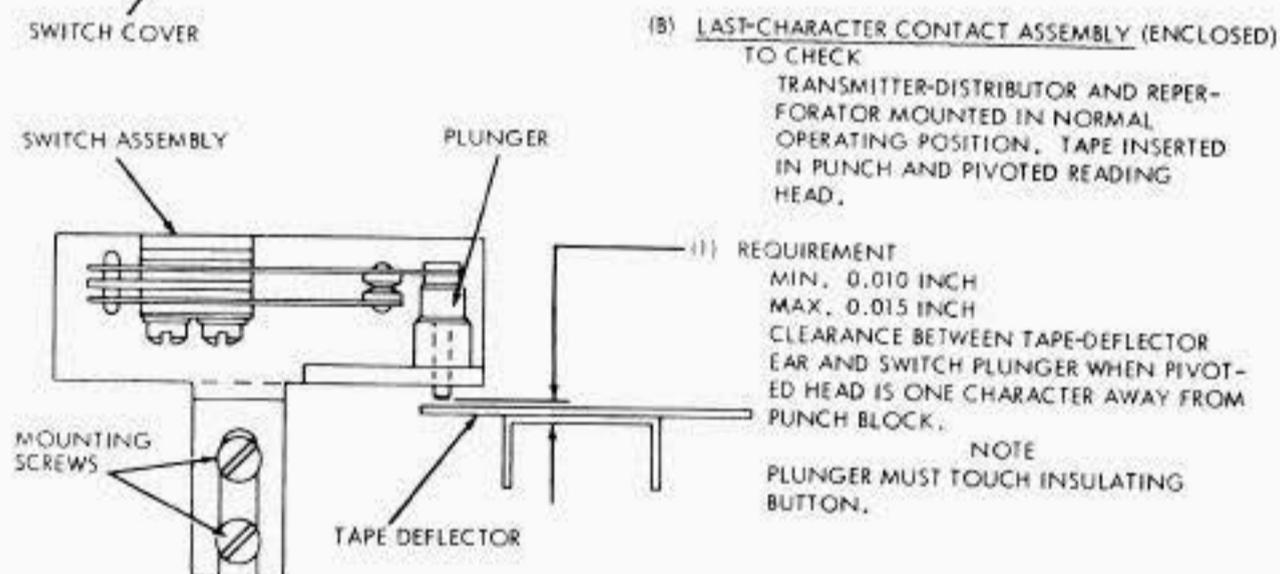
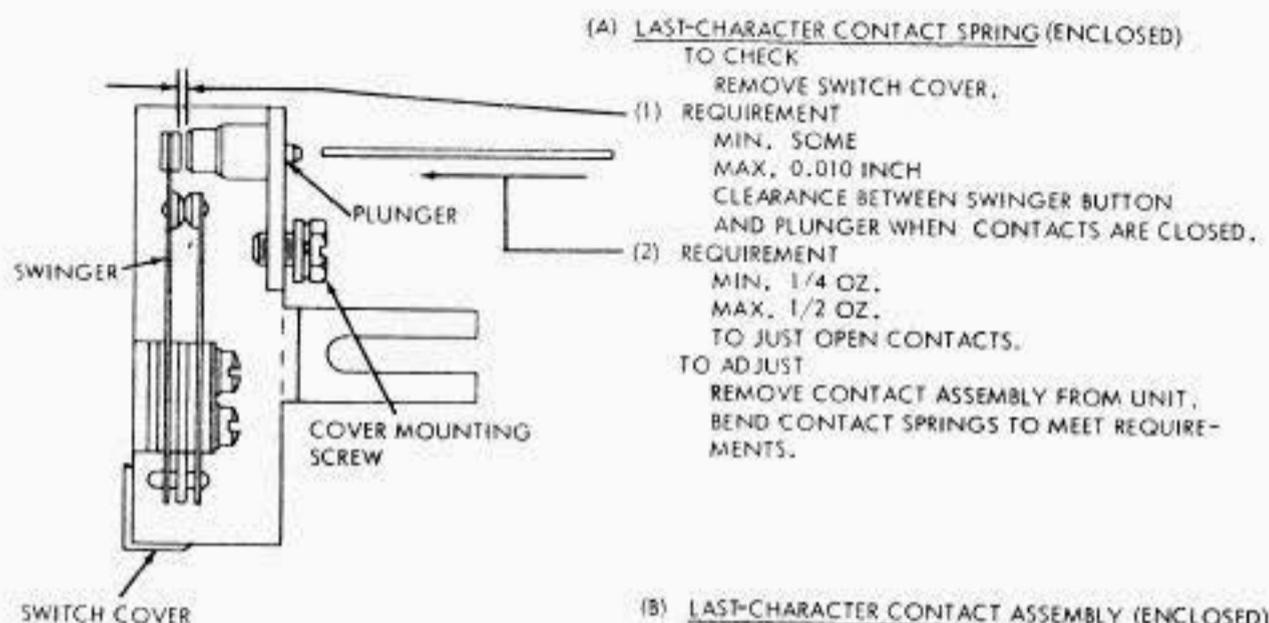
### LAST-CHARACTER SWITCH CONTACT SPRINGS

REQUIREMENT  
MIN. 1/4 OZ.  
MAX. 1/2 OZ.  
TO JUST OPEN CONTACTS.  
TO ADJUST  
WITH COVER REMOVED, BEND LONG CONTACT SPRING.



NOTE: FOR FULLY ENCLOSED LAST-CHARACTER CONTACT SWITCH SEE FOLLOWING PARAGRAPH.

## 2.32 Fully Enclosed Last-character Contact Switch



## 2.33 Tape-out and Tape-lid Switch (28B Unit Without START-STOP Lever)

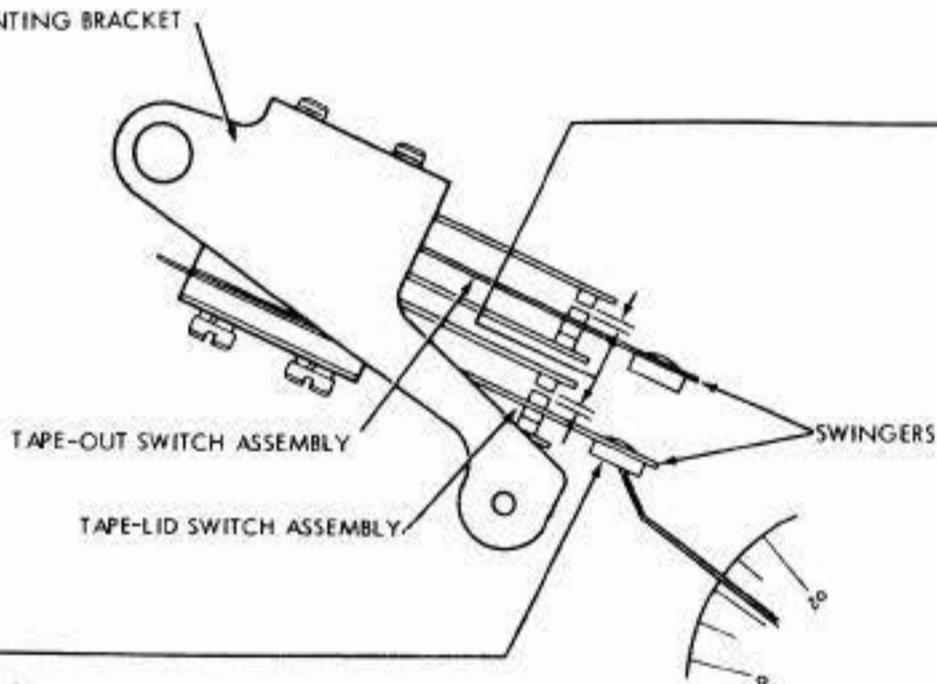
### TAPE-OUT AND TAPE-LID SWITCH

#### NOTE

MAKE THIS ADJUSTMENT BEFORE ASSEMBLING SWITCH TO UNIT.

- (1) REQUIREMENT  
MIN. 8 GRAMS  
MAX. 15 GRAMS  
TO JUST SEPARATE NORMALLY CLOSED CONTACTS (APPLY SCALE TO CENTER OF NYLON PAD).  
TO ADJUST  
BEND CONTACT SWINGER WITH A TP110445 SPRING BENDER.
- (2) REQUIREMENT  
MIN. 0.008 INCH  
MAX. 0.015 INCH  
GAP BETWEEN NORMALLY OPEN CONTACTS.  
TO ADJUST  
BEND UPPER CONTACT LEAF WITH A TP110445 SPRING BENDER.

MOUNTING BRACKET



#### INSTRUCTIONS FOR REMOVING TAPE-OUT AND TAPE-LID SWITCH ASSEMBLY

- (1) REMOVE COVER AND TOP PLATES.
- (2) REMOVE SPRING ATTACHED TO BRACKET ON GUIDE POST.
- (3) LOOSEN SCREW SECURING GUIDE POST TO REAR PLATE.
- (4) REMOVE SCREW AND LOCKWASHER FROM FRONT END OF GUIDE POST.
- (5) REMOVE ADJUSTING SCREW FROM LOWER END OF SWITCH BRACKET.
- (6) GUIDE POST AND SWITCH ASSEMBLY CAN NOW BE REMOVED. TAKE CARE NOT TO DISTORT SWITCH LEAF SPRINGS.

#### TO REPLACE SWITCH ASSEMBLY

REVERSE DISASSEMBLY PROCEDURE.

## 2.34 Tape-out and Tape-lid Pin Mechanism (28B Unit Without START-STOP Lever)

### (B) TAPE-OUT PIN SPRING BRACKET

#### REQUIREMENT

MIN. 38 GRAMS

MAX. 45 GRAMS

TO DEPRESS TAPE-OUT PIN UNTIL FLUSH WITH TAPE-GUIDE PLATE.

#### TO ADJUST

POSITION TAPE-OUT PIN SPRING BRACKET WITH ITS MOUNTING SCREWS FRICTION TIGHT. TIGHTEN SCREWS AND RECHECK REQUIREMENT.

### (A) TAPE-OUT AND TAPE-LID SWITCH BRACKET

#### REQUIREMENT

MIN. 0.005 INCH

MAX. 0.020 INCH

CLEARANCE BETWEEN TAPE-OUT PIN EXTENSION AND CONTACT SWINGER INSULATOR WHEN TAPE-OUT PIN IS HELD DOWN.

#### TO ADJUST

INSERT A LENGTH OF UNPERFORATED TAPE UNDER TAPE LID. ADJUST SWITCH BRACKET WITH ITS MOUNTING SCREW LOOSENED.

### (C) TAPE-OUT AND TAPE LID PIN DOWNSTOP

#### REQUIREMENT

WHEN DEPRESSED TO THEIR LOWERMOST POSITIONS, TAPE-OUT AND TAPE LID PINS SHOULD BE FLUSH TO 0.005 INCH BELOW SURFACE OF TAPE-GUIDE PLATE.

#### TO ADJUST

POSITION RESPECTIVE DOWNSTOP POST WITH ITS MOUNTING NUT LOOSENED.

### (D) TAPE LID PIN SPRING

#### REQUIREMENT

MIN. 1-1/2 OZS.

MAX. 3 OZS.

TO MOVE TAPE LID PIN FLUSH WITH TOP SURFACE OF TOP PLATE.

### (E) TAPE LID PIN

#### TO CHECK

REMOVE COVER PLATE.

#### (2) REQUIREMENT

WITH TAPE LID OPEN, AND NORMALLY OPEN CONTACTS CLOSED BY TAPE LID PIN:

MIN. 0.010 INCH

CLEARANCE BETWEEN SHOULDER ON PIN AND BOTTOM SURFACE OF TAPE-GUIDE PLATE.

#### (1) REQUIREMENT

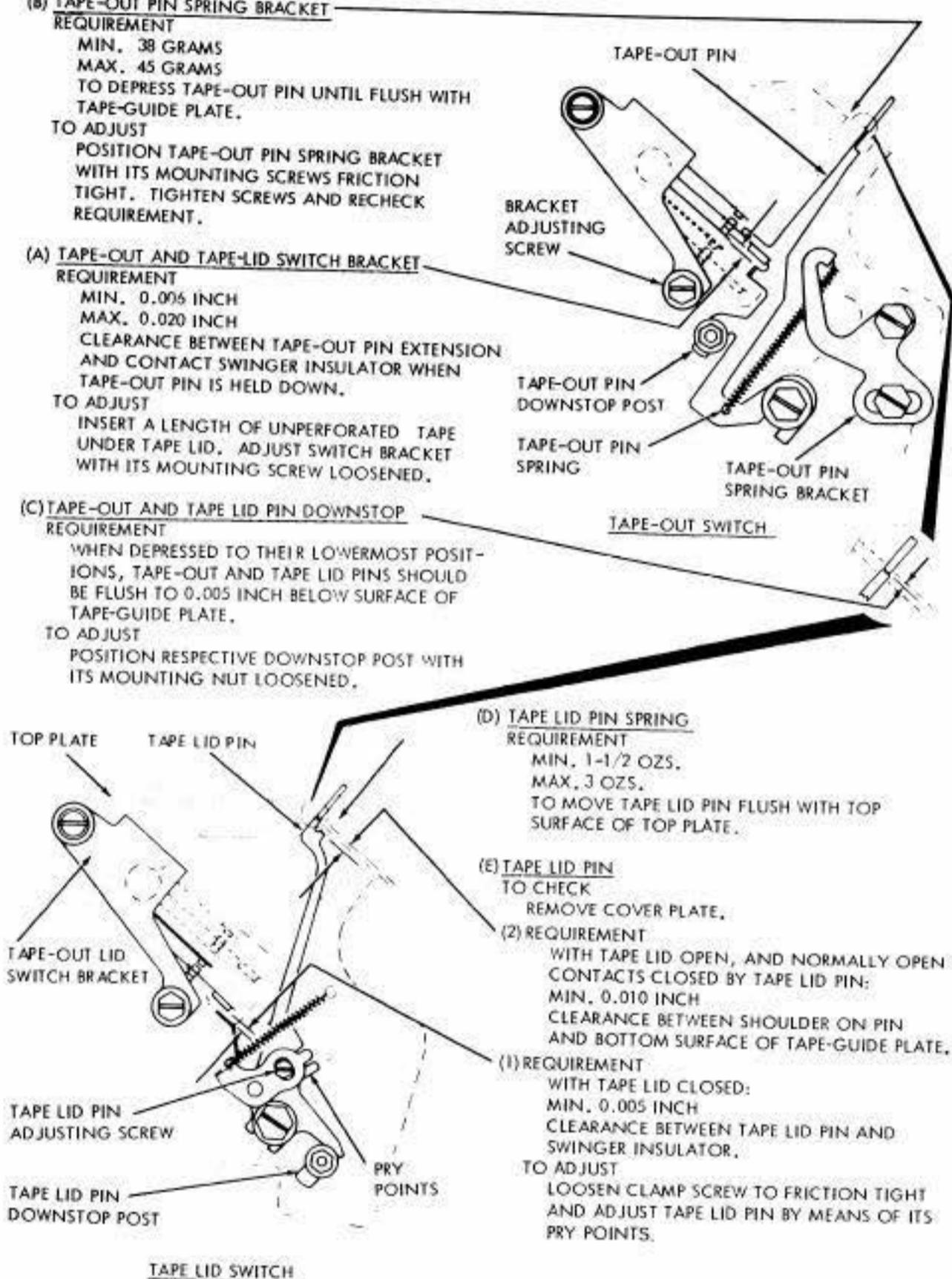
WITH TAPE LID CLOSED:

MIN. 0.005 INCH

CLEARANCE BETWEEN TAPE LID PIN AND SWINGER INSULATOR.

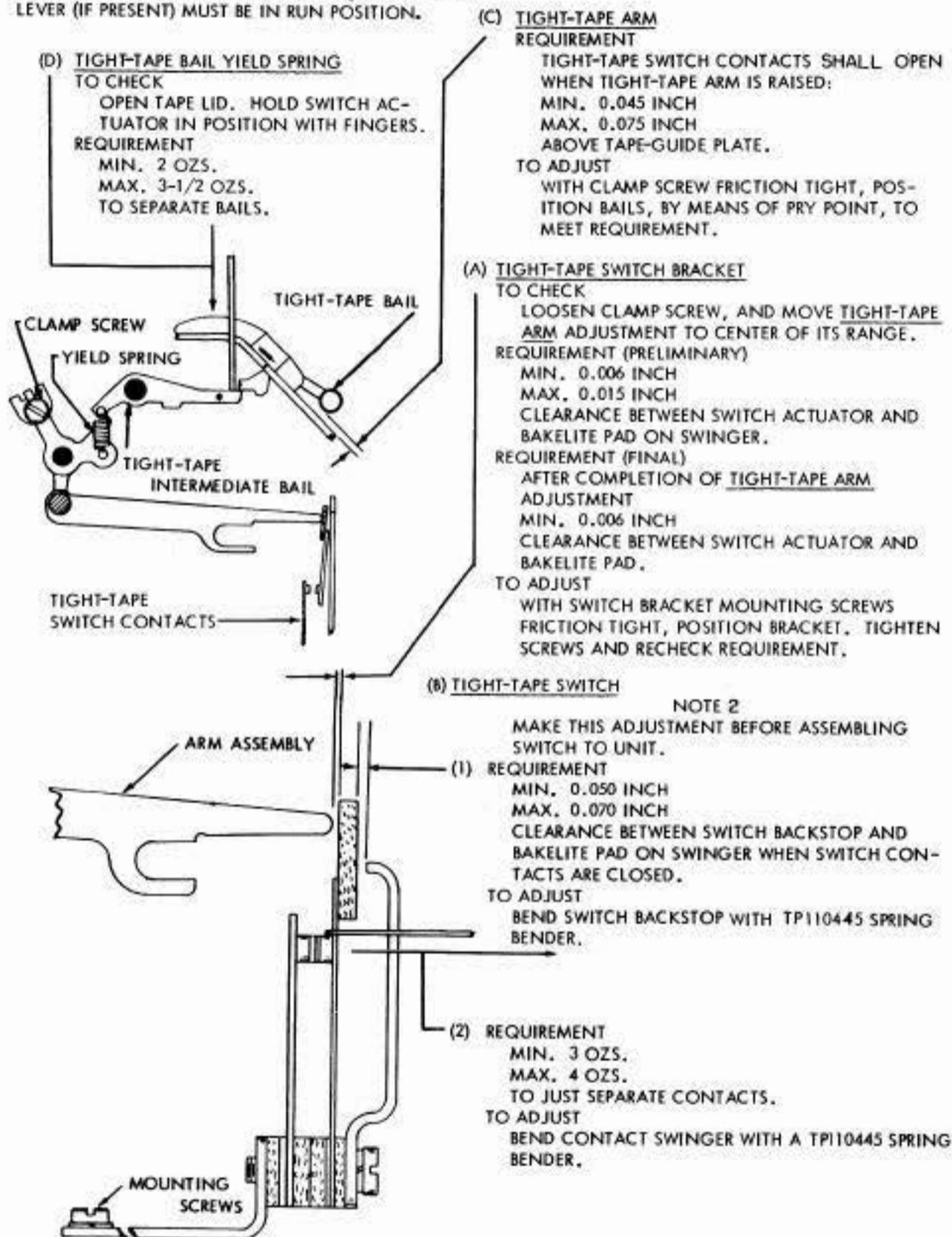
#### TO ADJUST

LOOSEN CLAMP SCREW TO FRICTION TIGHT AND ADJUST TAPE LID PIN BY MEANS OF ITS PRY POINTS.

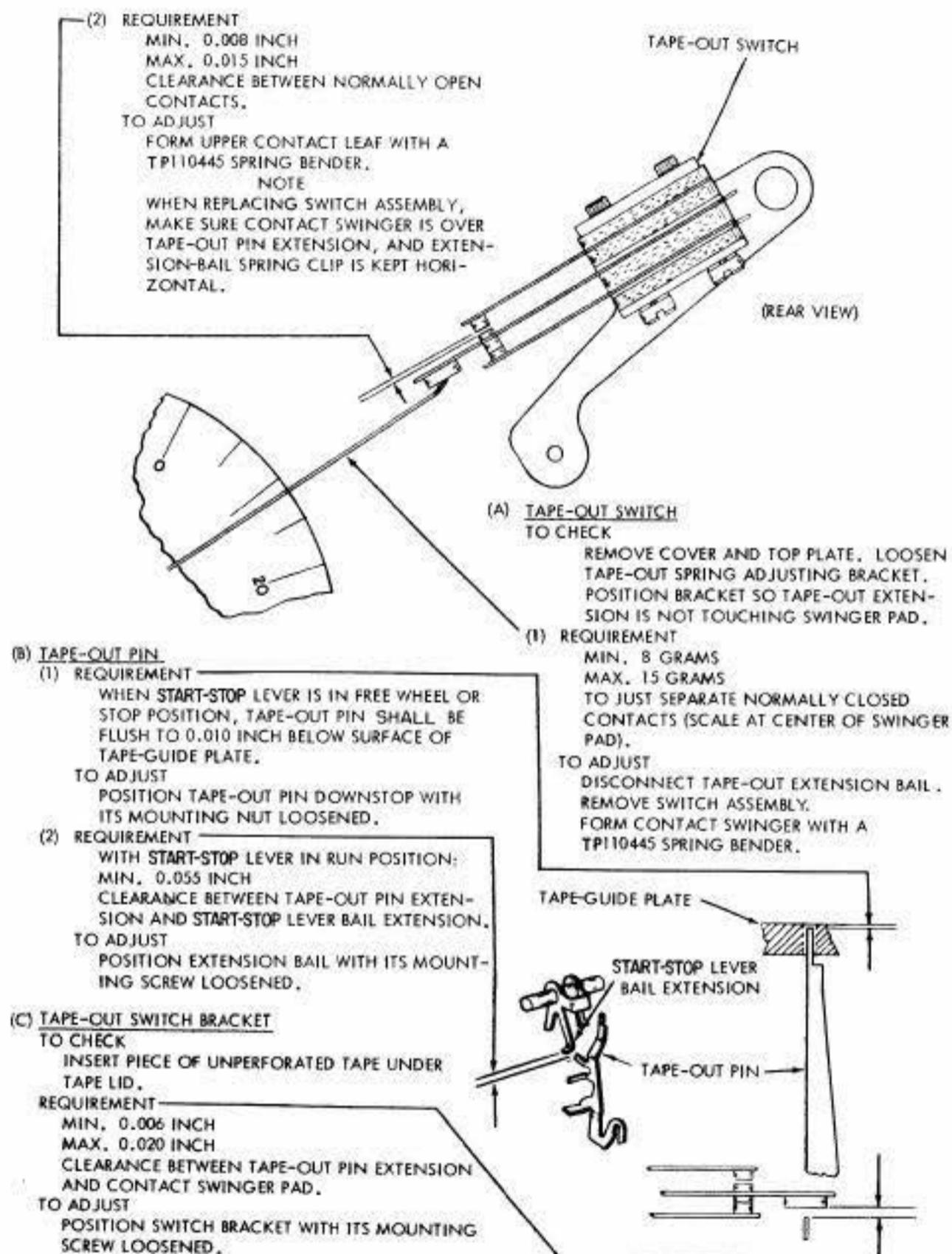


## 2.35 Tight-tape Switch Assembly (28B Unit)

NOTE 1  
FOR ALL ADJUSTMENTS ON THIS PAGE, START-STOP  
LEVER (IF PRESENT) MUST BE IN RUN POSITION.



## 2.36 Tape-out Switch Assembly (28B Unit With START-STOP Lever)



## 2.37 Tape-out Pin and Bail Assembly (28B Unit With START-STOP Lever)

### (A) TAPE-OUT BAIL YIELD SPRING

TO CHECK

PLACE START-STOP LEVER IN RUN POSITION.

REQUIREMENT

MIN. 3 OZS.

MAX. 5 OZS.

TO SEPARATE BAILS.

### (B) TAPE-OUT EXTENSION BAIL SPRING

TO CHECK

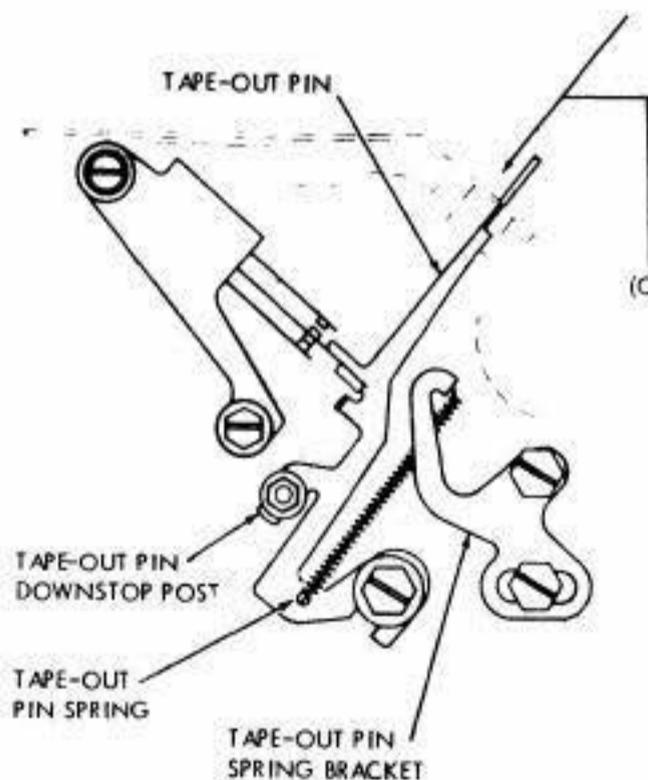
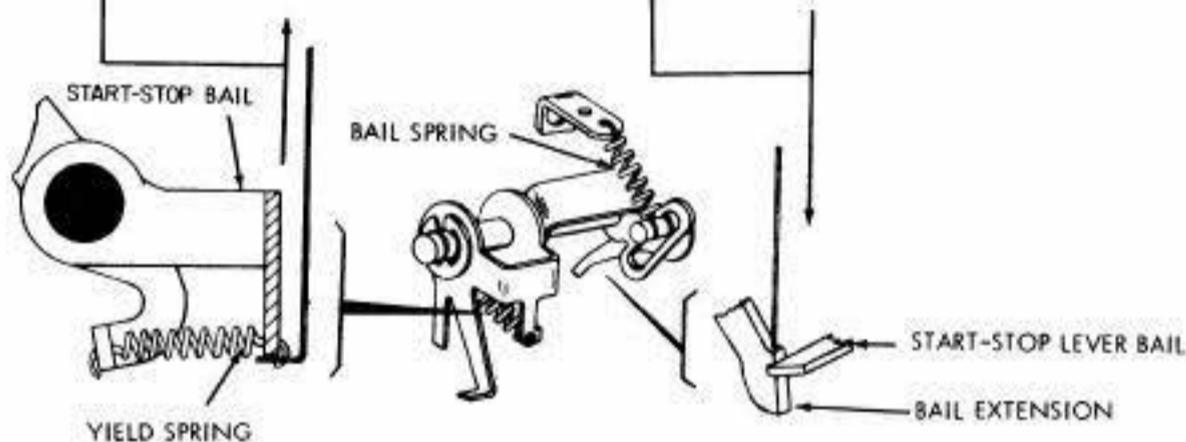
PLACE START-STOP LEVER IN RUN POSITION.

REQUIREMENT

MIN. 1 OZ.

MAX. 2-1/2 OZS.

TO START BAIL MOVING.



### (C) TAPE-OUT PIN SPRING

TO CHECK

PLACE START-STOP LEVER IN RUN POSITION.

REQUIREMENT

MIN. 38 GRAMS

MAX. 45 GRAMS

TO MOVE PIN FLUSH WITH TAPE GUIDE PLATE.

TO ADJUST

POSITION SPRING BRACKET WITH ITS MOUNTING SCREWS LOOSENED. RECHECK REQUIREMENT.

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MITTER-  
DISTRIBU-  
TOR UNITS

## 2.38 START-STOP Switch Assembly (28B Unit)

### START-STOP BAIL YIELD SPRING

TO CHECK

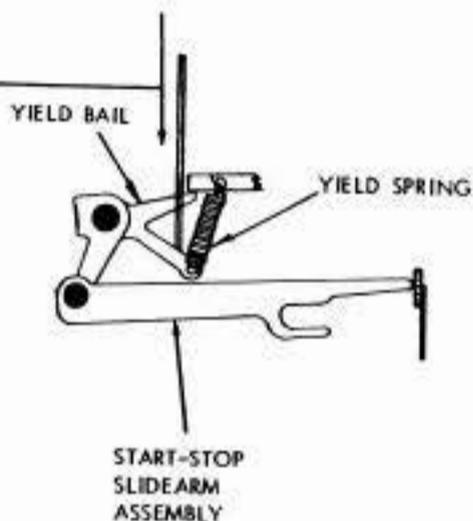
PLACE START-STOP LEVER IN RUN POSITION.

REQUIREMENT

MIN. 4 OZS.

MAX. 6 OZS.

TO SEPARATE BAILS.



### START-STOP LEVER SWITCH BRACKET

(1) REQUIREMENT

WITH START-STOP LEVER IN RUN POSITION;

MIN. 0.006 INCH

MAX. 0.015 INCH

CLEARANCE BETWEEN SWITCH ACTUATOR AND BAKELITE PAD ON SWINGER.

(2) REQUIREMENT

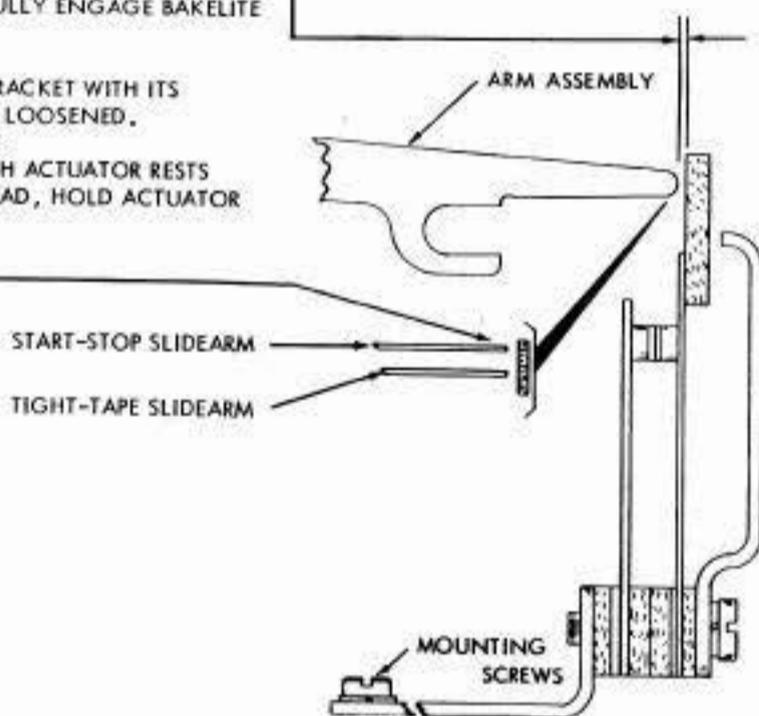
START-STOP AND TIGHT-TAPE SWITCH ACTUATORS SHOULD FULLY ENGAGE BAKELITE PAD ON SWINGER.

TO ADJUST

POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

NOTE

IF TIGHT-TAPE SWITCH ACTUATOR RESTS AGAINST BAKELITE PAD, HOLD ACTUATOR AWAY.



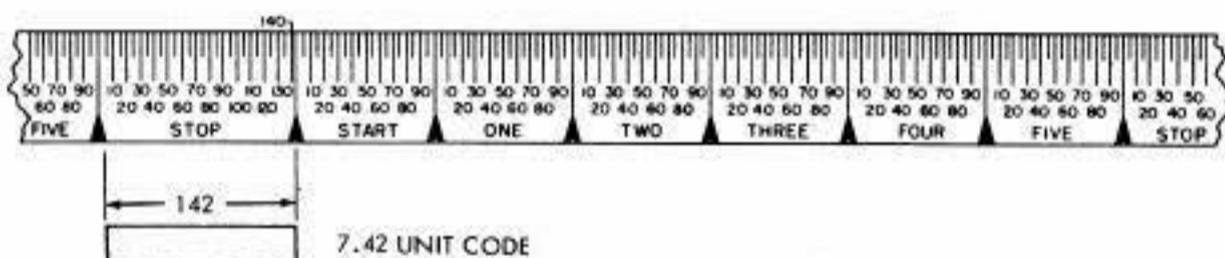
## Contact Timing Requirements for Pivoted Sensing Head (One-cycle Cam)

### 2.39 Distributor Contacts — Stop and No. 1 Through No. 5

(a) **To check:** Use a 1A teletypewriter test set or a 28A stroboscopic test set connected to the output of the distributor contacts with the test set operating at the same speed as the distributor.

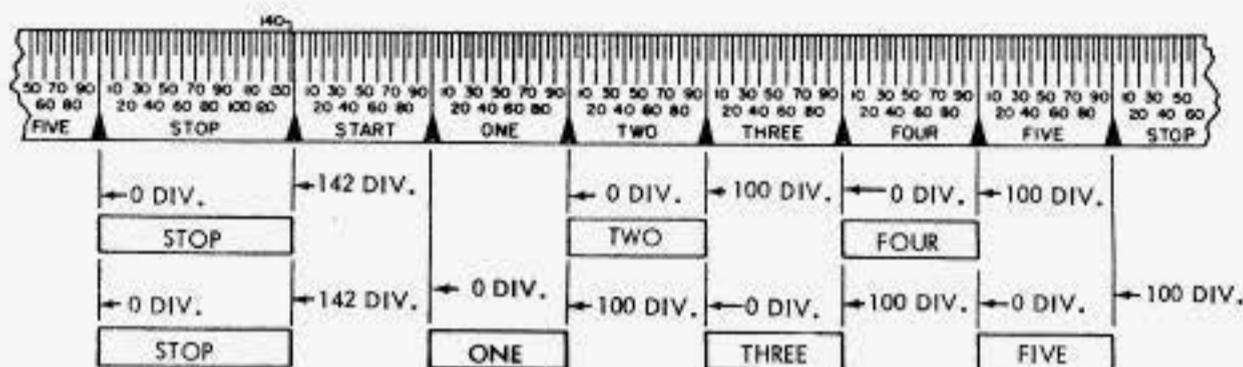
#### (b) Requirements

(1) Insert Blank combination tape in sensing head, trip the distributor clutch, and orient the scale of the test set to align the 0 mark of its stop segment with the beginning of the stop pulse image. Length of the trace shall extend from 0 to  $142 \pm 4$  divisions on the test-set scale. (See Fig. 1.)



**Fig. 1 — Length of Stop Pulse**

(2) Replace Blank combination with an R perforated tape and orient the test-set scale to align the 142 mark of its stop segment with the end of the stop pulse image. Length of the trace for the No. 2 and No. 4 contacts shall be equal within  $\pm 4$  divisions on each end of the No. 2 and No. 4 segments of the test-set scale. (See Fig. 2.)



**Fig. 2 — Pulse Length Requirements for Distributor Contacts No. 1 Through No. 5**

(3) Replace the R perforated tape with Y perforated tape and orient the test-set scale to align the 142 mark of its stop segment with the end of the stop pulse segment. Length of the trace shall be equal within  $\pm 4$  divisions on each end of No. 1, No. 3, and No. 5 segments of the test-set scale. (See Fig. 2.)

**Note:** Hold the stop contact open to view the trailing edge of the No. 5 contact image.

(c) **To adjust:**

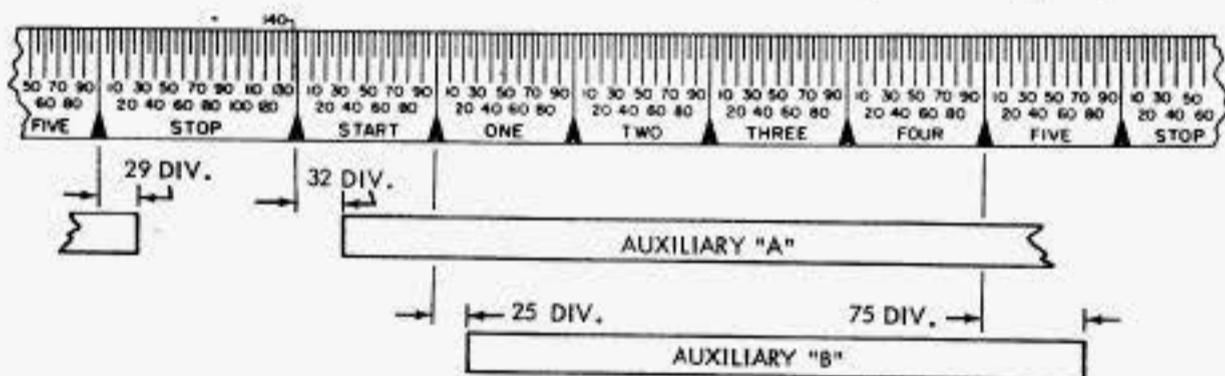
- (1) To meet Requirement (2), position the No. 2 and No. 4 contact adjusting screws.
- (2) To meet Requirement (3), position the No. 1, No. 3, and No. 5 contact adjusting screws.

## 2.40 Distributor Auxiliary Contacts

(a) **To check:** Connect the test set to auxiliary contact A or B.

(b) **Requirements**

- (1) Align the end of the stop pulse image with the 142 mark on the stop segment of the test-set scale.
- (2) The distributor auxiliary contact A shall **close** at  $32 \pm 15$  divisions in the start pulse segment of the test-set scale and **open** at  $29 \pm 15$  divisions in the stop pulse segment of the test-set scale. (See Fig. 3.)



**Fig. 3 — Pulse Length Requirements for Auxiliary Contacts A and B**

- (3) The distributor auxiliary contact B shall **close** at  $25 \pm 15$  divisions in the No. 1 pulse segment of the test-set scale and **open** at  $75 \pm 15$  divisions in the No. 5 pulse segment of the test-set scale. (See Fig. 3.)

(c) **To adjust:** Position the contact adjusting screw.

#### 2.41 Storing Switch Contacts No. 1 Through No. 5

(a) **To check:** With the test set connected to the transmitter-distributor and a LTRS tape (or alternate R and Y tape) placed in the sensing head, align the end of the stop pulse image with the 142 mark on the stop segment of the test-set scale. Then connect the input of the test set to the respective contact (No. 1 through No. 5) of the storing switch.

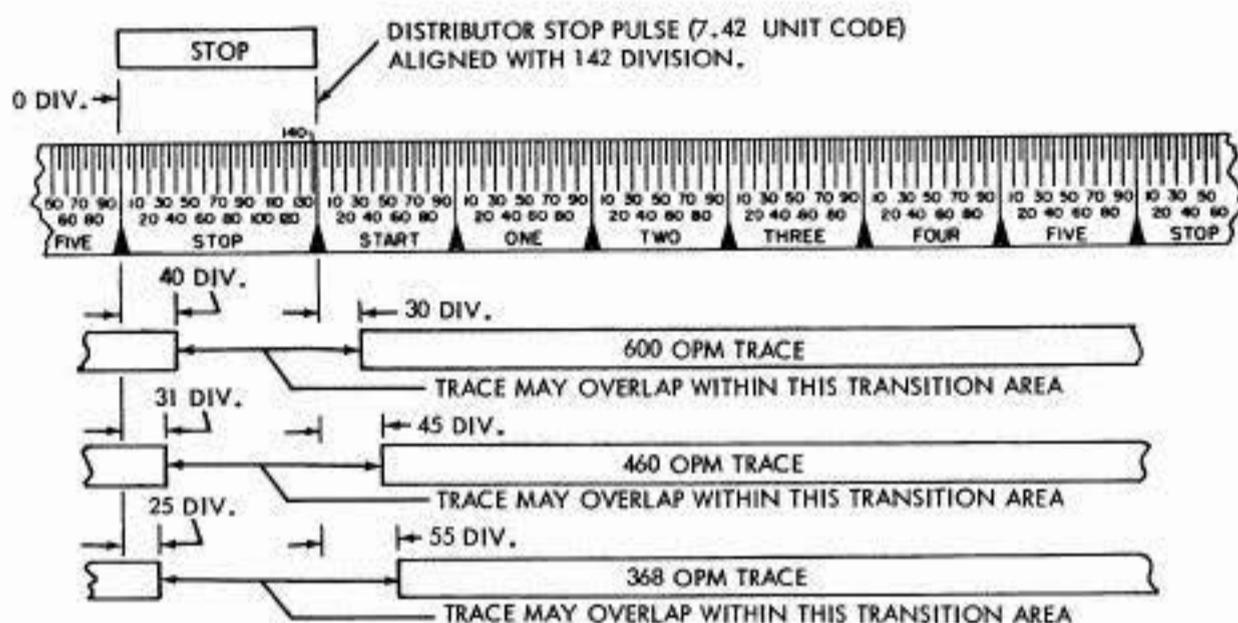
#### (b) Requirements

(1) **With alternate R and Y tape used,** the beginning and end of each trace shall occur as follows (see Fig. 4).

<b>WPM</b>	<b>Beginning of Trace</b>	<b>End of Trace</b>
100	Before 30 divisions in start segment	After 40 divisions in stop segment
75	Before 45 divisions in start segment	After 31 divisions in stop segment
60	Before 55 divisions in start segment	After 25 divisions in stop segment

(2) **With LTRS tape used,** contacts No. 1 through No. 5 shall have no electrical break during the code pulse segments greater than 2-1/2 scale divisions at 100 wpm, 2 scale divisions at 75 wpm, or 1-1/2 scale divisions at 60 wpm. No more than one break is permitted.

- (c) **To adjust:** Position the respective contact adjusting screw.



**Fig. 4 — Pulse Length Requirements for Storing Switch Contacts No. 1 Through No. 5**

## 2.42 Storing Switch Auxiliary, Tape-out, and Clutch-trip Contacts

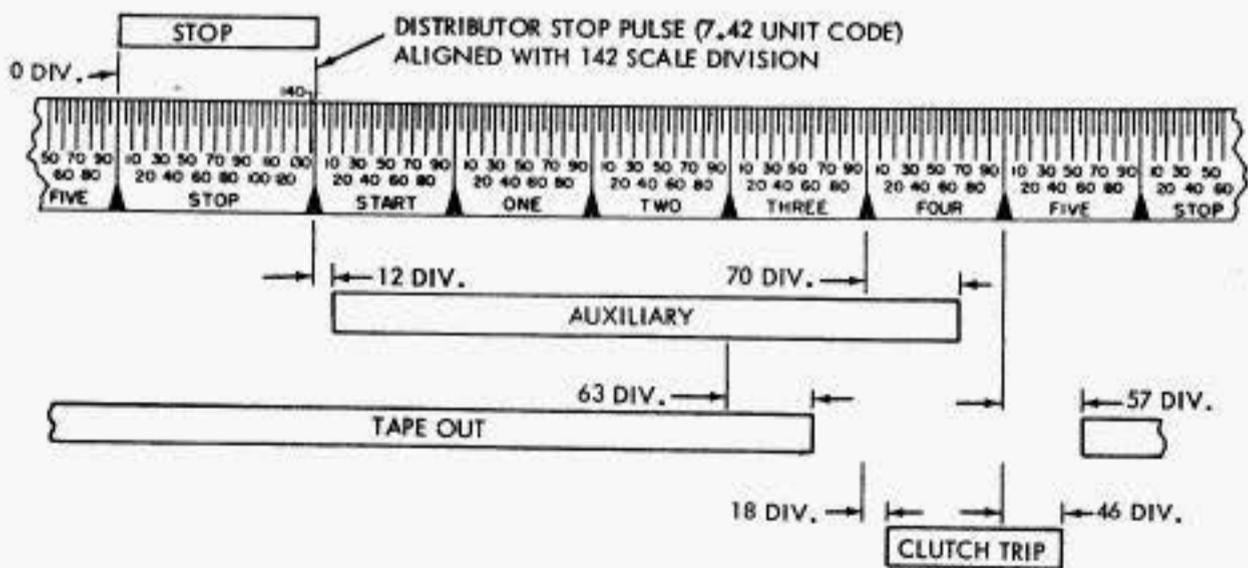
- (a) **To check:**

- (1) With both magnets de-energized and the distributor and sensing shaft clutches latched and in their stop position, turn the motor off.
- (2) Hold the distributor and transmitter shaft gears against rotation and energize both clutch-trip magnets.

- (3) Release the gears and turn the motor on.
- (4) With the test set connected to the output of the distributor, align the end of the distributor stop pulse image with the 142 mark on the stop segment of the test set.

(b) **Requirements**

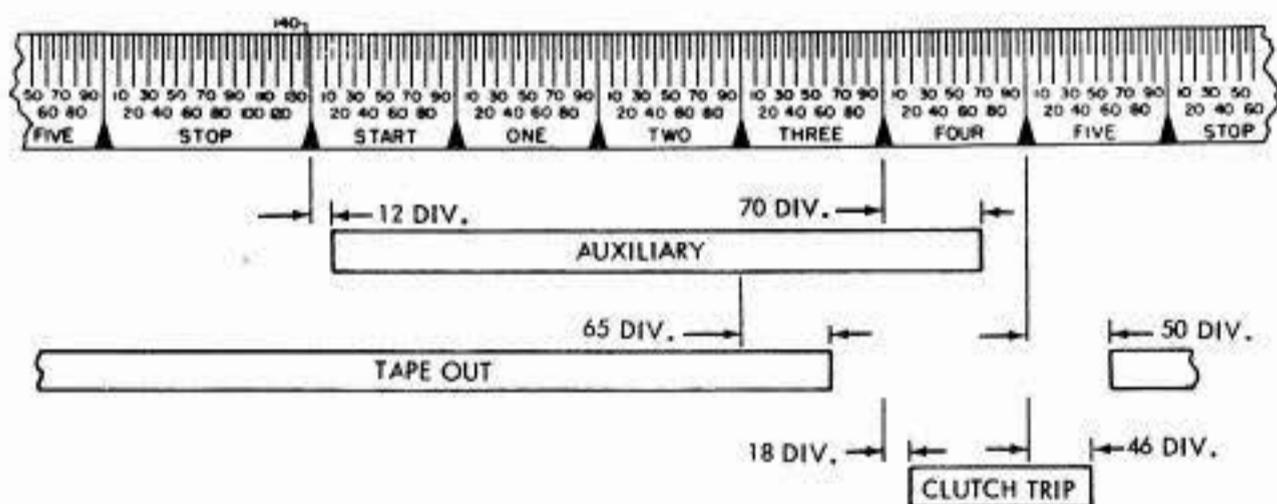
- (1) With test set connected to auxiliary contact A or transmitter auxiliary contact, contact shall **close** at  $12 \pm 30$  divisions in start pulse segment of test-set scale and **open** at  $70 \pm 30$  divisions in No. 4 pulse segment of test-set scale. (See Fig. 5.)



**Fig. 5 — Pulse Length Requirements for Storing Switch Auxiliary Contacts (28C Unit)**

(2) With test set connected to auxiliary contact B or distributor clutch-trip contact, contact shall **close** at  $18 \pm 30$  divisions in No. 4 pulse segment of test-set scale and **open** at  $46 \pm 30$  divisions in No. 5 pulse segment of test-set scale. (See Fig. 5.)

(3) With test set connected to tape-out contact or 6th pin contact of **28B unit** and with no tape in the pivoted head transmitter, contact shall **close** at  $50 \pm 30$  divisions in No. 5 pulse segment of test-set scale and **open** at  $65 \pm 30$  divisions in No. 3 pulse segment of test-set scale. (See Fig. 6.)



**Fig. 6 — Pulse Length Requirements for Storing Switch Auxiliary Contacts (28B Unit)**

(4) With test set connected to tape-out contact or 6th pin contact of **28C unit** and with no tape in the transmitter, contact shall **close** at  $57 \pm 40$  divisions in No. 5 pulse segment of test-set scale and **open** at  $63 \pm 40$  divisions in No. 3 pulse segment of test-set scale. (See Fig. 5.)

(c) **To adjust:** Position respective contact adjusting screw.

### **Contact Timing Requirements for Fixed Sensing Head (28B Unit)**

#### **2.43 Distributor Contacts — Stop and No. 1 Through No. 5**

**Note:** The following is merely a check on the operation of the fixed reader storing contacts and no readjustments should be necessary. Any signal breaks may be due to dirt or oil on the contacts, or to low contact pressure.

(a) **To check:** Use a 1A teletypewriter test set or a 28A stroboscopic test set connected to the output of the distributor contacts with the test set operating at the same speed as the distributor.

#### **(b) Requirements**

(1) Insert Blank combination tape in the fixed sensing head. Trip the fixed reader sensing shaft clutch (on some units, the sensing shaft clutch may be tripped electrically via operation of the pivoted head distributor shaft). Orient the scale of the test set to align the 0 mark of its stop segment with the beginning of the stop pulse image. Length of the trace shall extend from 0 to  $142 \pm 4$  divisions on the test-set scale. (See Fig. 1.)

(2) Check the No. 1, No. 3, and No. 5 contacts in accordance with the instructions given for the No. 1, No. 3, and No. 5 distributor contacts of the pivoted sensing head.

2.44 **Storing Switch Contacts No. 1 Through No. 5:** Check the storing switch contacts No. 1 through No. 5 in accordance with the instructions given for the storing switch contacts No. 1 through No. 5 of the pivoted sensing head.

2.45 **Storing Switch Auxiliary and Clutch-trip Contacts**

(a) **To check:**

(1) With both magnets de-energized and the pivoted reader distributor and fixed reader transmitter clutches latched and in the stop position, turn the motor off.

(2) Hold the fixed reader transmitter and the pivoted reader distributor gears against rotation. Energize both magnets.

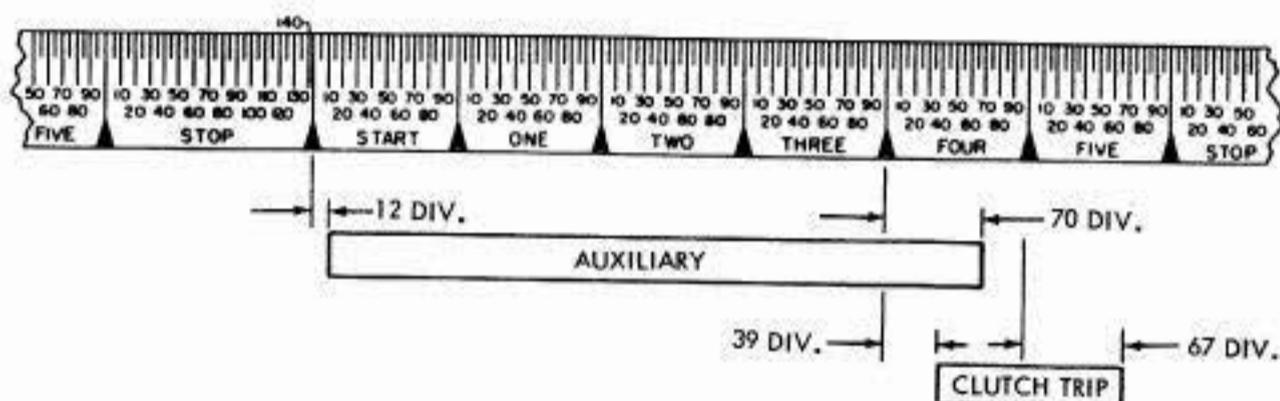
(3) Release the gears and turn the motor on.

(4) With the test set connected to the output of the distributor, align the end of the distributor stop pulse image with the 142 mark on the stop segment of the test-set scale.

(b) **Requirements**

(1) With the test set connected to the auxiliary contact, the contact shall **close** at  $12 \pm 30$  divisions in start pulse segment of test-set scale and **open** at  $70 \pm 30$  divisions in No. 4 pulse segment of test-set scale. (See Fig. 7.)

- (2) With the distributor clutch-trip contact electrically isolated from the circuit, the clutch-trip contact shall **close** at  $39 \pm 30$  divisions in No. 4 pulse segment of the test-set scale and **open** at  $67 \pm 30$  divisions in the No. 5 pulse segment of the test-set scale. (See Fig. 7.)
- (c) **To adjust:** Position the respective contact adjusting screws.



**Fig. 7 — Pulse Length Requirements for Storing Switch Auxiliary Contacts (28B Unit Fixed Head)**

### **3. ASSOCIATED BELL SYSTEM PRACTICES**

3.01 Other Bell System Practices that may be required in connection with this section are listed in Section P34.001, Alphabetical Index of 28-type Equipment, Bell System Practices, and Associated 28ASR Station Drawings.