

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

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL	3	Distributor contacts - stop and No. 1 through No. 5	42
2. REQUIREMENTS AND ADJUST- MENTS	4	Storing switch auxiliary, tape-out, and clutch-trip contacts	43
Cam Shafts (28B Unit)		Storing switch contacts No. 1 through No. 5	43
Cam-shaft bearing retainer	4	Cover Plate Mechanism (28B Unit)	
Cam-sleeve endplay	4	Cover plate	22
Idler gear assembly	4	Cover-plate detent spring	22
Cam Shafts (28C Unit)		Distributor Contact Mechanism	
Cam-shaft bearing retainer	5	Camfollower-lever spring	10
Cam-sleeve endplay	5	Distributor block assembly	11
Idler gear assembly	5	Distributor camfollower guide	10
Clutch Mechanism		Distributor contact gap	11
Clutch-shoe lever	9	Distributor rocker-compression springs	10
Clutch-shoe lever spring	8	Feed Lever	
Clutch-shoe spring	8	Feed-lever set collar	12
Clutch triplever upper extension..	9	Feed-lever spring (fixed head) (28B unit)	12
Clutch Trip Mechanism		Feed-lever spring (pivoted head) ..	12
Armature-bail spring	6	Fully Enclosed Last-character Contact Switch	
Clutch armature airgap	6	Last-character contact assembly	35
Clutch trip assembly mounting plate	6	Last-character contact spring	35
Clutch latchlever spring	7	Oil Reservoir	26
Clutch triplever spring	7	Pivoted Sensing Head	
Magnet bracket	7	Check pawl	31
Contact Timing Requirements for Fixed Sensing Head (28B Unit)		Check pawl spring	31
Distributor contacts - stop and No. 1 through No. 5	45	Feed pawl (final)	31
Storing switch auxiliary and clutch-trip contacts	46	Feed pawl (preliminary)	31
Storing switch contacts No. 1 through No. 5	46	Sensing head pivot screws	30
Contact Timing Requirements for Pivoted Sensing Head (One- cycle Cam)		Tape deflector	30
Distributor auxiliary contacts	42	Tape-deflector bracket	30
		Tape-retaining lid latch	32
		Top plate	32

CONTENTS	PAGE	CONTENTS	PAGE
Sensing and Storing Switch Mechanism		Tape-guide Plate (28B Unit)	
Contact lever slide	29	Tape guide	18
Storing switch contact	29	Tape-guide plate	18
Sensing Mechanism		Tape Lid Mechanism (28B Unit With Tape-lid Spring)	
Auxiliary lever spring	24	START-STOP lever detent spring	15
Latchlever spring	27	Tape lid	15
Latch-stripper-bail spring	14	Tape-lid release-plunger spring ..	15
Pushlever	24	Tape-lid spring	15
Pushlever spring	27	Tape Lid Mechanism (28B Unit Without Tape-lid Spring)	
Pusher-stripper-bail spring	14	Release plunger	17
Sensing bail springs	25	Tape lid	17
Sensing pins (28C unit)	24	Tape-lid release-plunger spring	17
Sensing pins (pivoted and fixed heads) (28B unit)	23	Tape-out and Tape-lid Pin Mechanism (28B Unit Without START-STOP Lever)	
Sensing pin springs (fixed head) (28B unit)	28	Tape-lid pin	37
Sensing pin springs (pivoted head)	28	Tape-lid pin spring	37
Tape-out (6th) pin spring	28	Tape-out and tape-lid pin downstop	37
START-STOP Switch Assembly (28B Unit)		Tape-out and tape-lid switch bracket	37
START-STOP bail yield spring	41	Tape-out pin spring bracket	37
START-STOP lever switch bracket	41	Tape-out and Tape-lid Switch (28B Unit Without START-STOP Lever)	
Storing Switch Mechanism		Instructions for removing tape-out and tape-lid switch assembly	36
Contact lever slide springs	13	Tape-out and tape-lid switch	36
Storing switch assembly replacement	26	Tape-out Pin and Bail Assembly (28B Unit With START-STOP Lever)	
Storing switch contact alignment	13	Tape-out bail yield spring	40
Storing switch contact-lever-extension springs	13	Tape-out extension bail spring	40
Storing switch guides	13	Tape-out pin spring	40
Tape Depressor and Last-character Contact Switch		Tape-out Switch Assembly (28B Unit With START-STOP Lever)	
Last-character switch contact springs	34	Tape-out pin	39
Tape-deflector spring	34	Tape-out switch	39
Tape depressor alignment	33	Tape-out switch bracket	39
Tape-depressor spring	34	Tape Feed Mechanism (28B Unit)	
Tape Feed Mechanism (28B Unit)		Feed pawl	20
Feed pawl	20	Feed-pawl spring	20
Feed-pawl spring	20	Feed-ratchet detent spring	19
Feed-ratchet detent spring	19	Feed-wheel detent	19
Feed-wheel detent	19		

CONTENTS	PAGE
Tight-tape Switch Assembly (28B Unit)	
Tight-tape arm	38
Tight-tape bail yield spring	38
Tight-tape switch	38
Tight-tape switch bracket	38
Top Plate Assembly (28B Unit)	
Top plate (fixed head)	21

INDEX OF FIGURES

Length of Stop Pulse (Figure 1)	42
Pulse Length Requirements for Distributor Contacts No. 1 Through No. 5 (Figure 2)	43
Pulse Length Requirements for Auxiliary Contacts A and B (Figure 3)	44
Pulse Length Requirements for Storing Switch Contacts No. 1 Through No. 5 (Figure 4).....	44
Pulse Length Requirements for Storing Switch Auxiliary Contacts (28C Unit) (Figure 5)	45
Pulse Length Requirements for Storing Switch Auxiliary Contacts (28B Unit) (Figure 6)	45
Pulse Length Requirements for Storing Switch Auxiliary Contacts (28B Unit Fixed Head) (Figure 7)	46

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.

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 triplerver 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 The figures in this section show the adjusting tolerances, positions of moving parts, and spring tensions. The illustrations are arranged 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 inter-related 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.

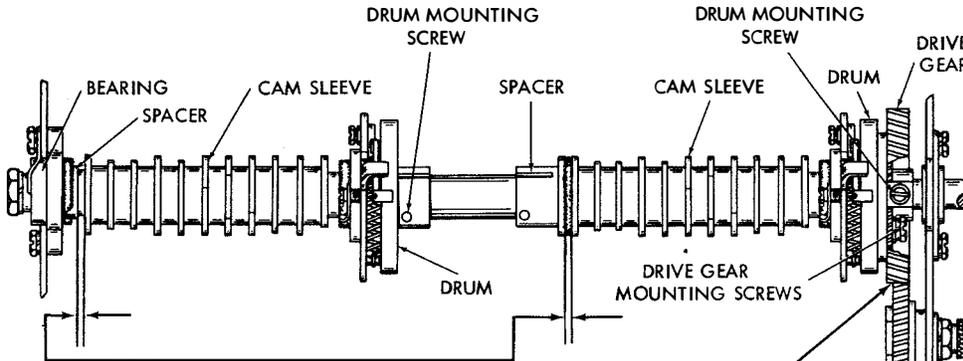
Note: On all 28C units having 2-cycle cams, both halves of the cam-sleeve should be checked.

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

2. REQUIREMENTS AND ADJUSTMENTS

2.01 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.

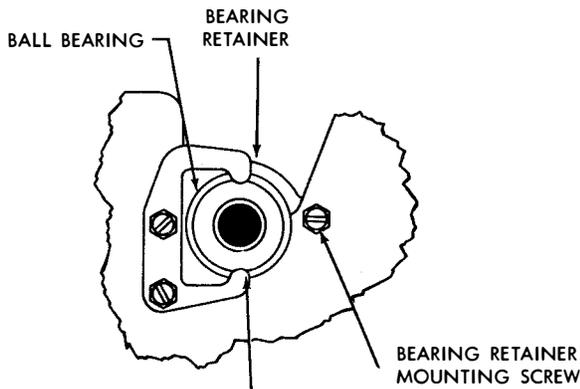


(A) CAM-SLEEVE ENDPLAY

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.

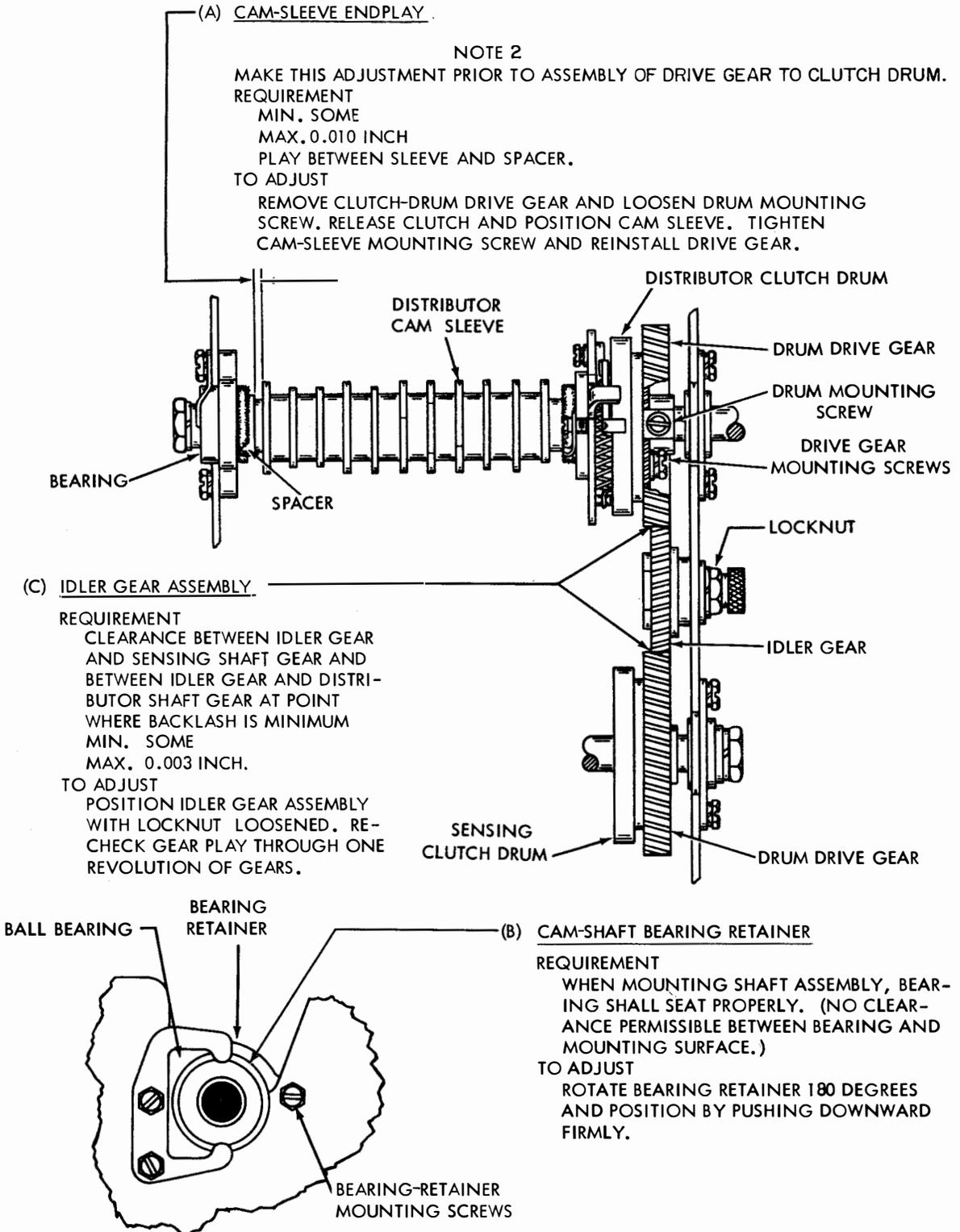


(B) CAM-SHAFT BEARING RETAINER

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.

2.02 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.

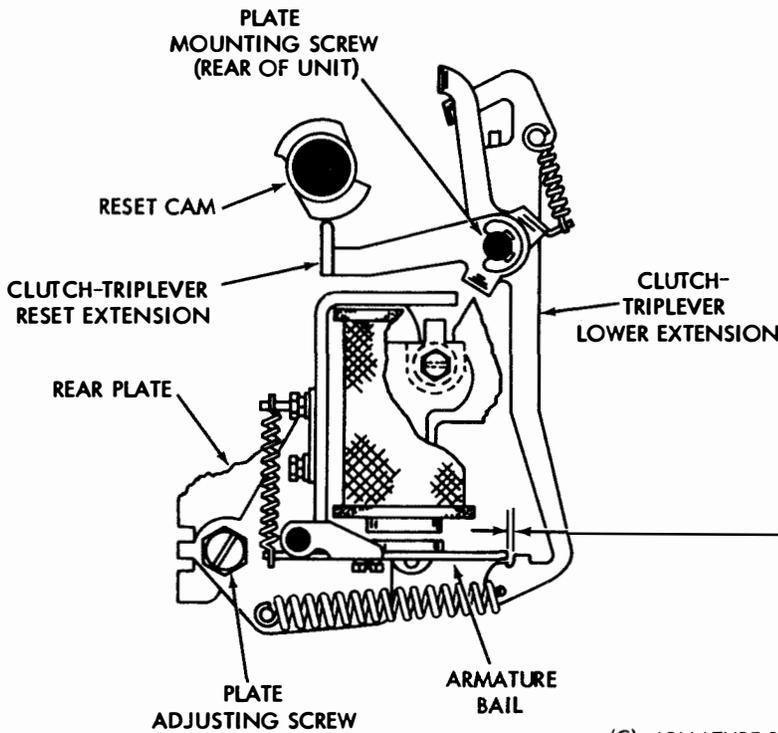
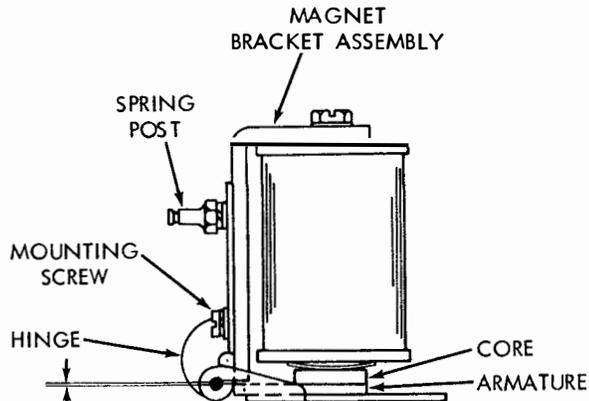


2.03 Clutch Trip Mechanism

NOTE: REQUIREMENTS APPLY TO BOTH CLUTCH TRIP MECHANISMS.

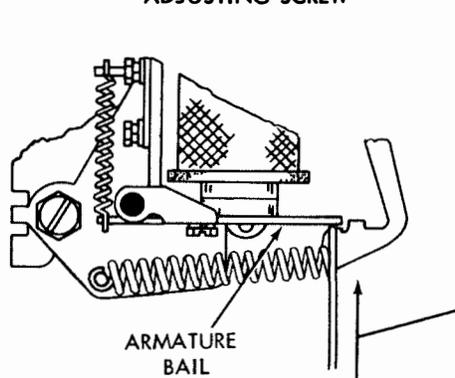
(A) CLUTCH ARMATURE AIRGAP

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

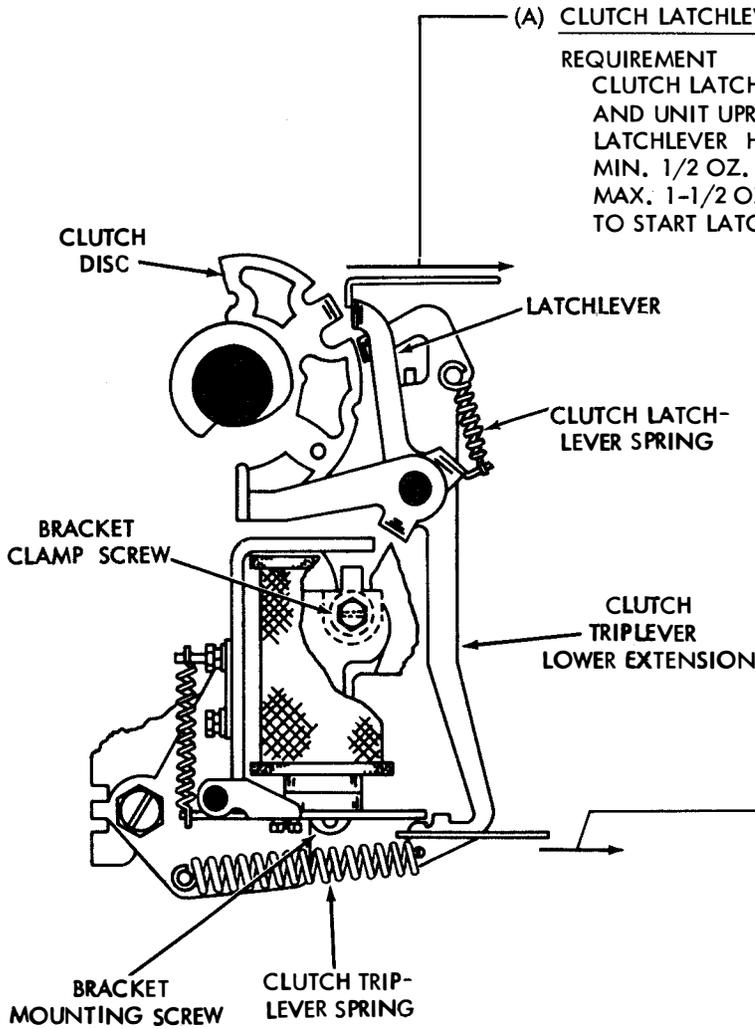
REQUIREMENT
 CLEARANCE BETWEEN END OF
 ARMATURE BAIL AND LATCHING
 SURFACE OF CLUTCH-
 TRIP LEVER LOWER EXTENSION
 WITH CLUTCH-TRIP-
 LEVER RESET EXTENSION ON
 HIGH PART OF CAM. (TAKE
 UP PLAY IN PARTS FOR MIN-
 IMUM CLEARANCE.)
 MIN. 0.020 INCH
 MAX. 0.030 INCH.
TO ADJUST
 POSITION PLATE WITH
 SCREWDRIVER IN LOWER
 ADJUSTING SLOT WITH
 PLATE ADJUSTING SCREW
 AND PLATE MOUNTING
 SCREW LOOSENED. (TAKE
 UP PLAY IN TRIP LEVER IN
 DIRECTION OF CAM.)



(C) ARMATURE-BAIL SPRING

REQUIREMENT
 INVERT UNIT. TRIP CLUTCH MAGNET AND
 ROTATE SHAFT MANUALLY UNTIL TRIP LEVER
 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.

NOTE: REQUIREMENTS APPLY TO BOTH CLUTCH TRIP MECHANISMS.



(A) CLUTCH LATCHLEVER SPRING

REQUIREMENT
 CLUTCH LATCHLEVER ON LOW PART OF CLUTCH DISC AND UNIT UPRIGHT. SCALE APPLIED TO BENT EAR OF LATCHLEVER HORIZONTALLY.
 MIN. 1/2 OZ.
 MAX. 1-1/2 OZS.
 TO START LATCHLEVER MOVING.

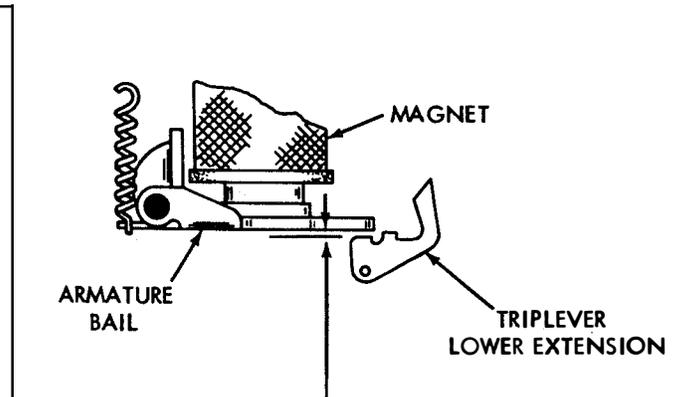
(B) CLUTCH TRIPLEVER SPRING

REQUIREMENT
 WITH CLUTCH JUST TRIPPED, HOLD ARMATURE AGAINST CORE. SCALE APPLIED TO TRIPLEVER LOWER EXTENSION IN LINE WITH SPRING.
 MIN. 2 OZS.
 MAX. 3 1/2 OZS.
 TO START TRIPLEVER LOWER EXTENSION MOVING.

(C) MAGNET BRACKET

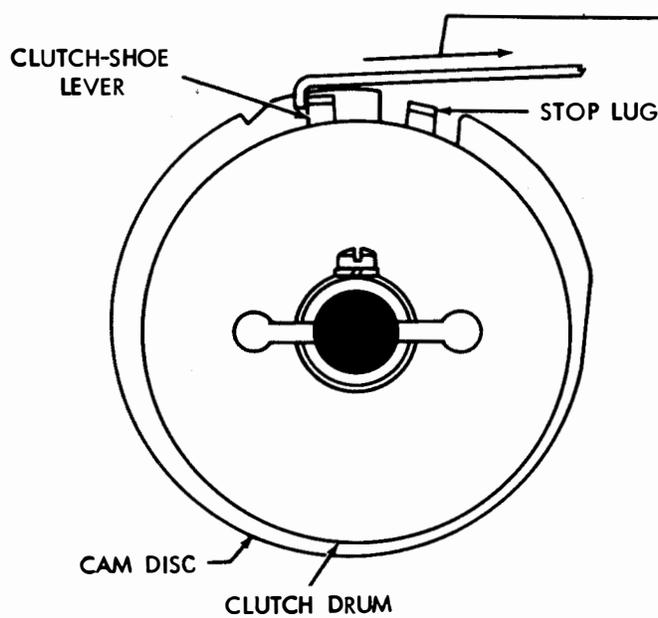
REQUIREMENT
 CLEARANCE BETWEEN ARMATURE BAIL AND TOP EDGE OF TRIPLEVER LOWER EXTENSION WITH CLUTCH TRIPLEVER RESET EXTENSION ON HIGH PART OF CAM AND ARMATURE FLUSH AGAINST CORE (TAKE UP PLAY FOR MINIMUM CLEARANCE.)
 MIN. 0.030 INCH
 MAX. 0.040 INCH.

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



2.04 Clutch Mechanism

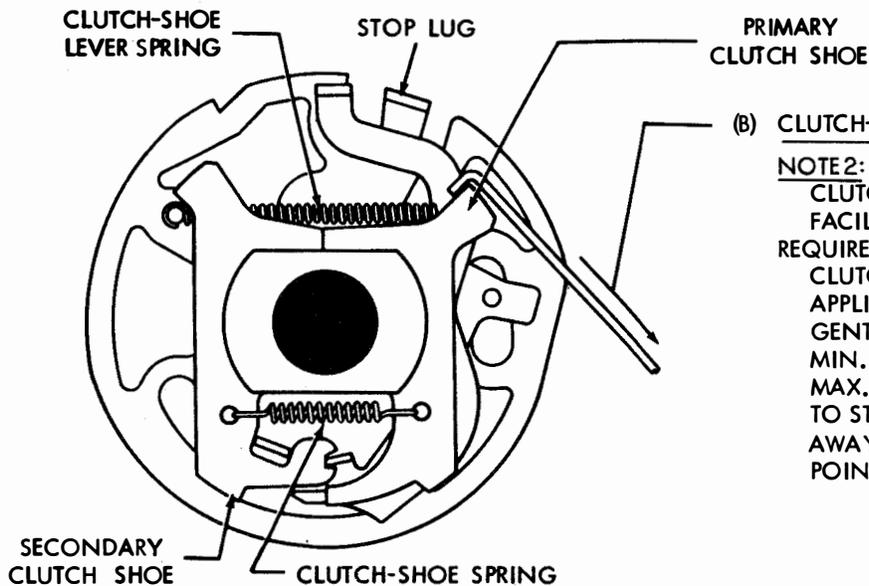
NOTE 1: REQUIREMENTS (A) AND (B) ARE ADJUSTED AT THE FACTORY AND SHOULD NOT BE DISTURBED UNLESS ASSOCIATED MECHANISMS HAVE BEEN REMOVED FOR SERVICING OR THERE IS REASON TO BELIEVE THAT THE REQUIREMENTS ARE NOT MET. THE FOLLOWING REQUIREMENTS APPLY TO BOTH THE SENSING CLUTCH AND DISTRIBUTOR CLUTCH.



(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.



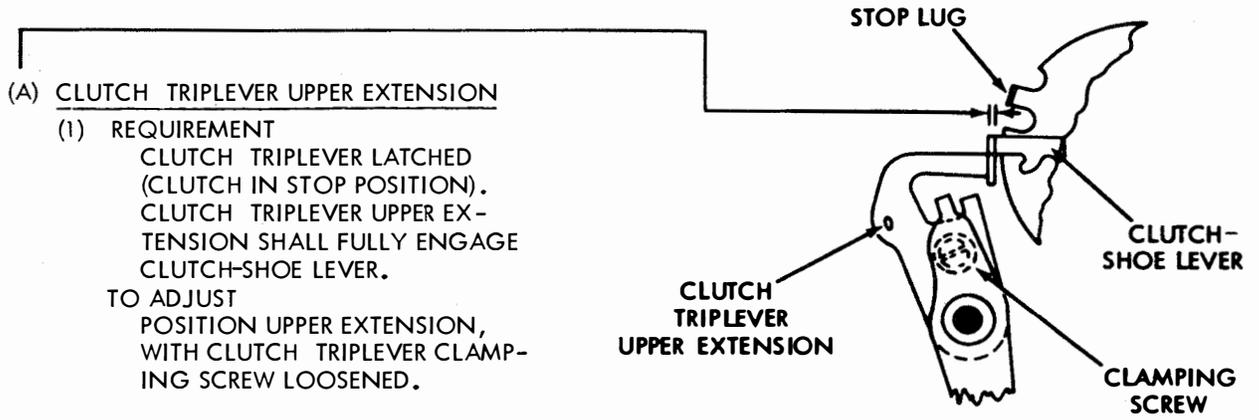
(B) CLUTCH-SHOE SPRING

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

REQUIREMENT

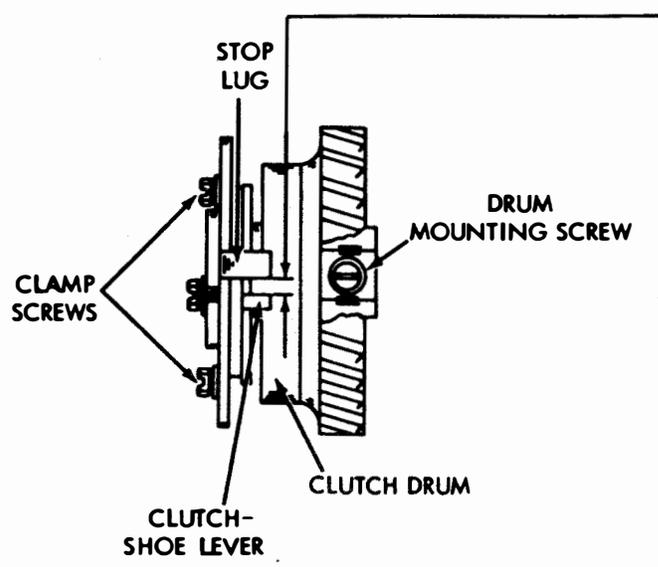
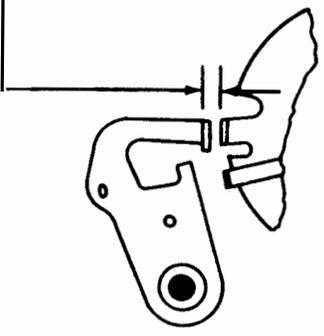
CLUTCH DRUM REMOVED. SCALE APPLIED TO PRIMARY SHOE AT A TANGENT TO THE FRICTION SURFACE. MIN. 3 OZS. MAX. 5 OZS. TO START PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE AT POINT OF CONTACT.

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



(A) CLUTCH TRIPLEVER UPPER EXTENSION
 (1) REQUIREMENT
 CLUTCH TRIPLEVER LATCHED (CLUTCH IN STOP POSITION). CLUTCH TRIPLEVER UPPER EXTENSION SHALL FULLY ENGAGE CLUTCH-SHOE LEVER.
 TO ADJUST POSITION UPPER EXTENSION, WITH CLUTCH TRIPLEVER CLAMPING SCREW LOOSENED.

(2) REQUIREMENT
 WITH ARMATURE IN ATTRACTED POSITION, THERE SHALL BE SOME CLEARANCE BETWEEN CLUTCH TRIPLEVER UPPER EXTENSION AND STOP LUG WHEN CLUTCH IS ROTATED TO MAKE CLEARANCE A MINIMUM.
 TO ADJUST REFINE REQUIREMENT (1), IF NECESSARY, SO THAT CLUTCH TRIPLEVER UPPER EXTENSION IS UNDER OR OVERFLUSH WITH STOP LUG BY NOT MORE THAN 0.015 INCH.



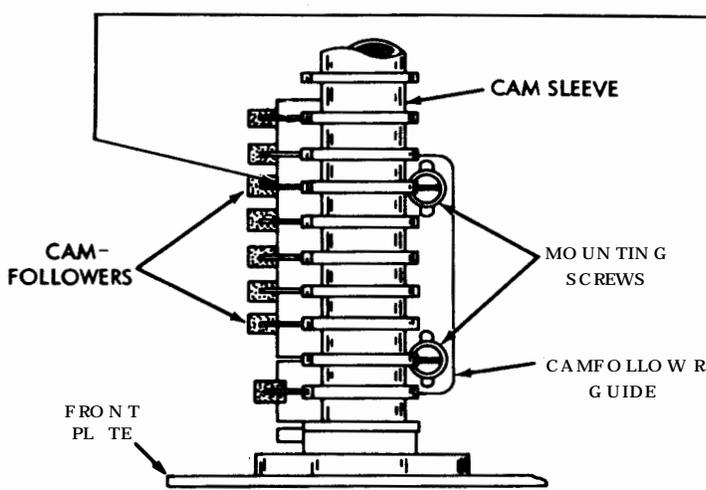
(B) CLUTCH-SHOE LEVER
 REQUIREMENT
 GAP BETWEEN CLUTCH-SHOE LEVER AND ITS STOP LUG SHALL BE 0.055 INCH TO 0.085 INCH GREATER WHEN CLUTCH IS ENGAGED THAN WHEN CLUTCH IS DISENGAGED.
 TO ADJUST ENGAGE A WRENCH OR SCREWDRIVER ON A SCREW ON THE ADJUSTING DISC. ROTATE DISC WITH CLAMP SCREWS LOOSENED AND CLUTCH DISENGAGED.

NOTE 2
 AFTER ADJUSTMENT, DISENGAGE CLUTCH, REMOVE DRUM MOUNTING SCREW AND ROTATE DRUM IN ITS NORMAL DIRECTION OF ROTATION TO MAKE CERTAIN THAT IT DOES NOT DRAG ON SHOE. IF DRUM DRAGS, REFINE ABOVE ADJUSTMENT.

2.05 Distributor Contact Mechanism

NOTE 1

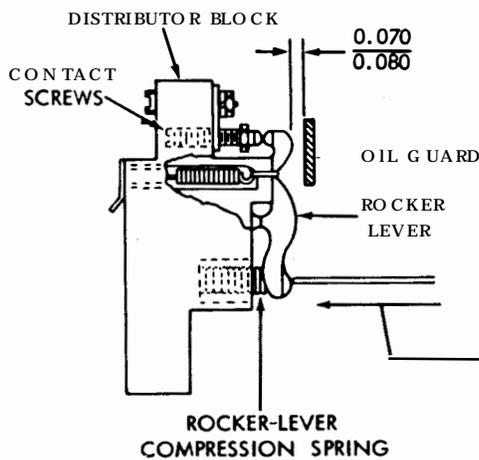
REMOVE OIL RESERVOIR AND DISTRIBUTOR BLOCK ASSEMBLY FOR FOLLOWING ADJUSTMENTS.



(A) DISTRIBUTOR CAMFOLLOWER GUIDE

REQUIREMENT

AT LEAST ONE CAMFOLLOWER SHALL ENGAGE CAM BY FULL THICKNESS OF THE FOLLOWER AS FOLLOWER IS MOVED FROM SIDE TO SIDE IN ITS GUIDE SLOT. OTHER CAMFOLLOWERS SHALL ENGAGE BY 75 PER CENT IN SAME MANNER WHEN PLAY IS TAKEN UP FOR A MAXIMUM. ALL CAMFOLLOWERS SHALL MOVE FREELY IN GUIDE SLOTS. TO ADJUST POSITION GUIDE WITH CAM-FOLLOWER GUIDE MOUNTING SCREWS LOOSENED. RECHECK REQUIREMENT.



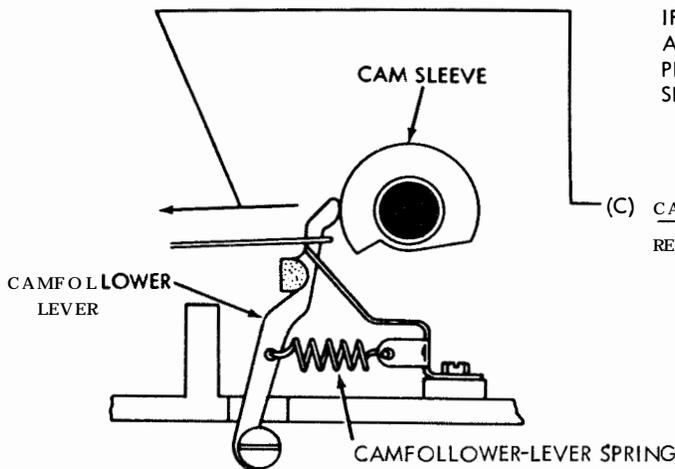
NOTE 2-- WITH DISTRIBUTOR BLOCK REMOVED ADJUST CONTACTS SO THAT THERE IS 0.070 TO 0.080 INCH BETWEEN ROCKER LEVERS AND OIL GUARD.

(B) DISTRIBUTOR ROCKER-COMPRESSION SPRINGS

REQUIREMENT---WITH COMPRESSION SPRINGS INSTALLED, APPLY SPRING SCALE AT LOWER END OF ROCKER AND PUSH DOWNWARD (VERTICALLY). MIN. 6-1/2 OZS. — MAX. 9-1/2 OZS. TO SEPARATE THE CONTACTS.

TO ADJUST ROTATE CONTACT SCREWS.

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



(C) CAMFOLLOWER-LEVER SPRING

REQUIREMENT

CAMFOLLOWER LEVER ON HIGH PART OF CAM. SCALE APPLIED JUST BELOW SLIDING SURFACE OF LEVER HORIZONTALLY. MIN. 1/2 OZ. MAX. 1-1/2 OZS. TO START EACH LEVER MOVING.

NOTE 1
REPLACE DISTRIBUTOR BLOCK.

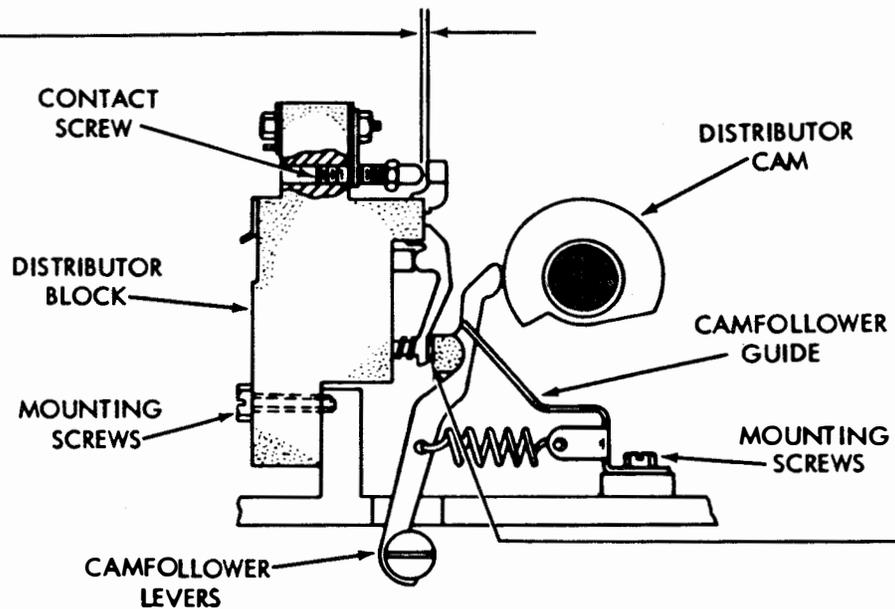
(B) DISTRIBUTOR CONTACT GAP

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

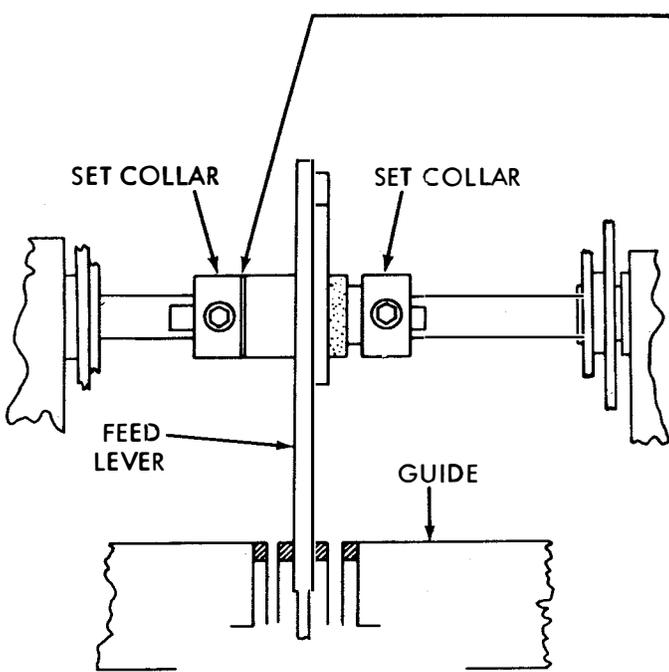
ROCKERS SHOULD FULLY ENGAGE
INSULATED PORTION OF RESPECTIVE
CAMFOLLOWER LEVERS.

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.

2.06 Feed Lever



(A) FEED-LEVER SET COLLAR

REQUIREMENT

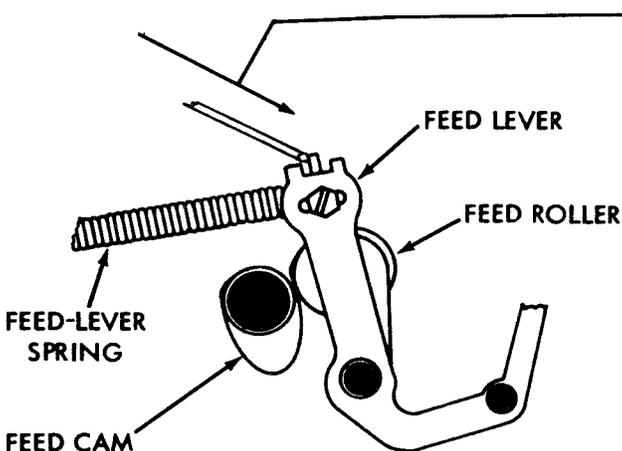
MIN. SOME
MAX. 0.015 INCH
CLEARANCE BETWEEN FEED LEVER AND
COLLAR WHEN FEED LEVER IS FREE IN
ITS GUIDE SLOT.

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

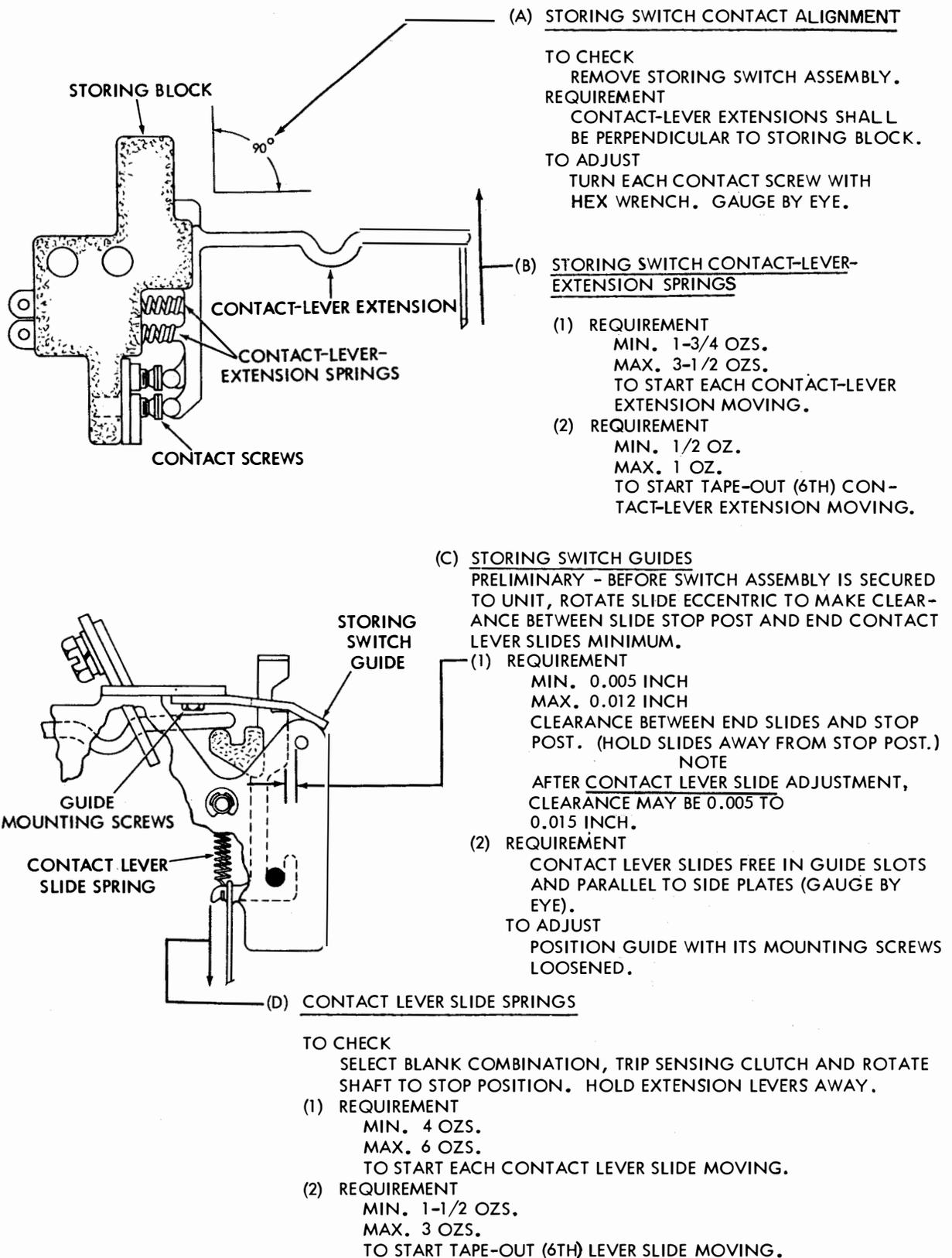
MIN. 30 OZS.
MAX. 40 OZS.
TO START FEED ROLLER MOVING AWAY
FROM CAM.

FEED-LEVER SPRING (FIXED HEAD) (28B UNIT)

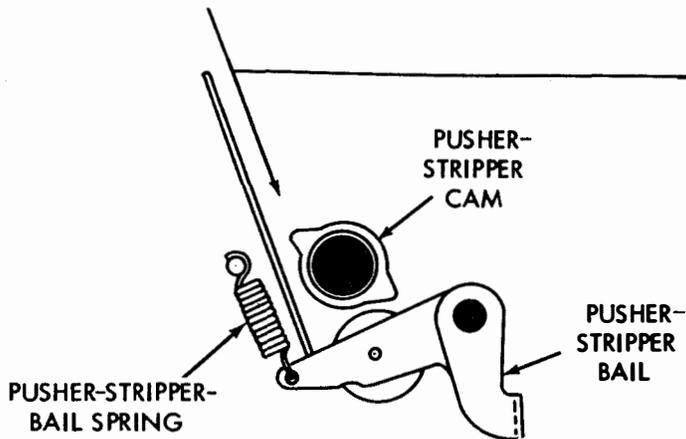
REQUIREMENT

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

2.07 Storing Switch Mechanism



2.08 Sensing Mechanism Springs



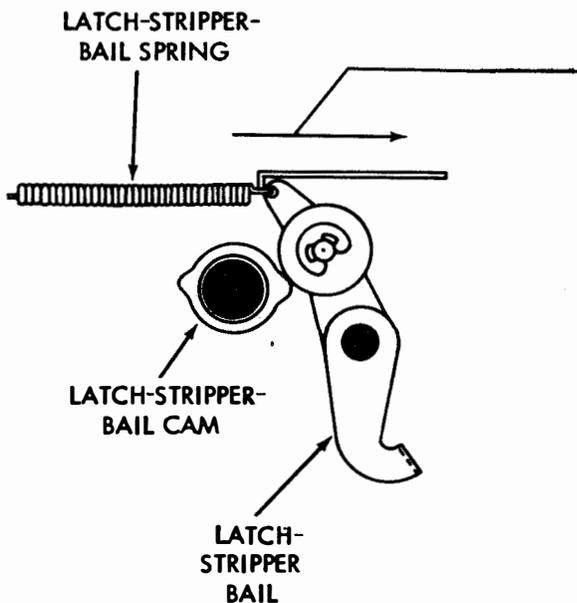
PUSH-STRIPPER-BAIL SPRING

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.

2.09 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.

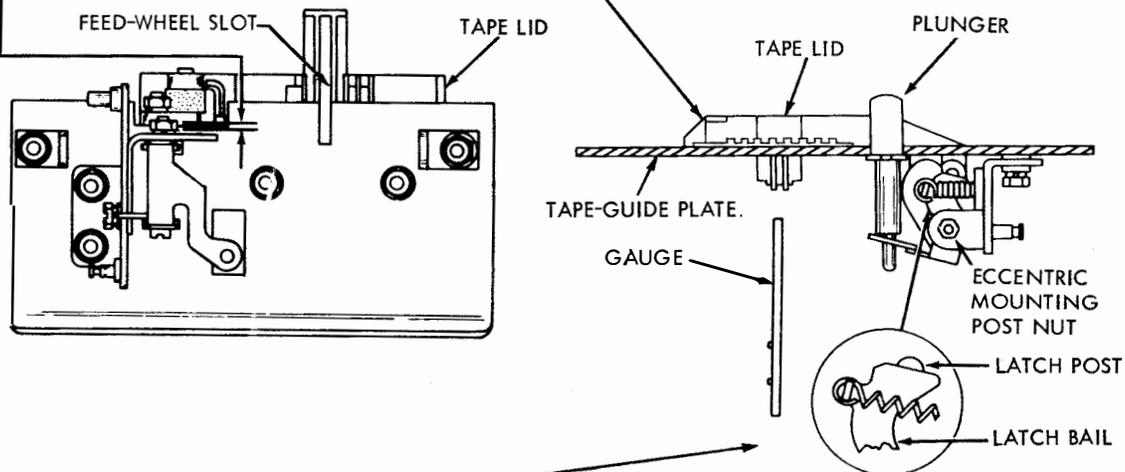
- (2) REQUIREMENT
WITH TAPE-LID FRONT BEARING SURFACE TOUCHING TAPE-GUIDE PLATE, CLEARANCE BETWEEN TAPE LID AND TAPE-GUIDE PLATE:
MIN. 0.010 INCH
MAX. 0.018 INCH
MEASURED AT TAPE-LID FIN IN LINE WITH REAR TAPE GUIDE (2ND FIN FROM REAR).

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.

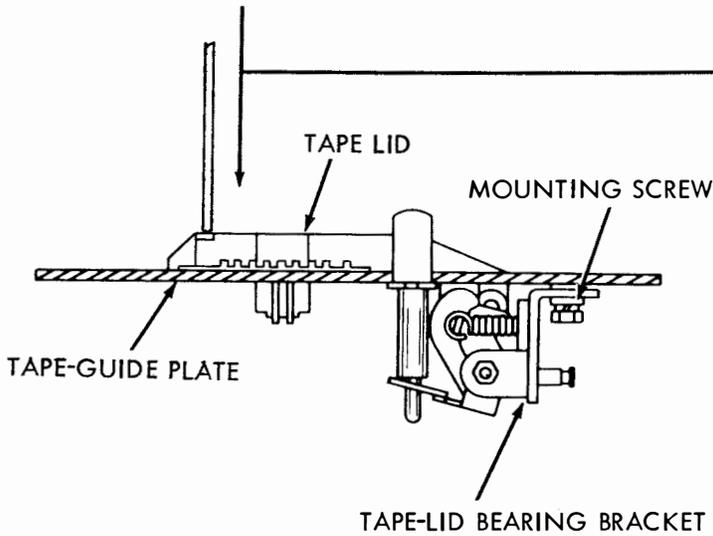
TO ADJUST

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.

2.09 Tape-lid Mechanism (28B Unit With Tape-lid Spring) (Cont)



TAPE-LID SPRING
TO CHECK

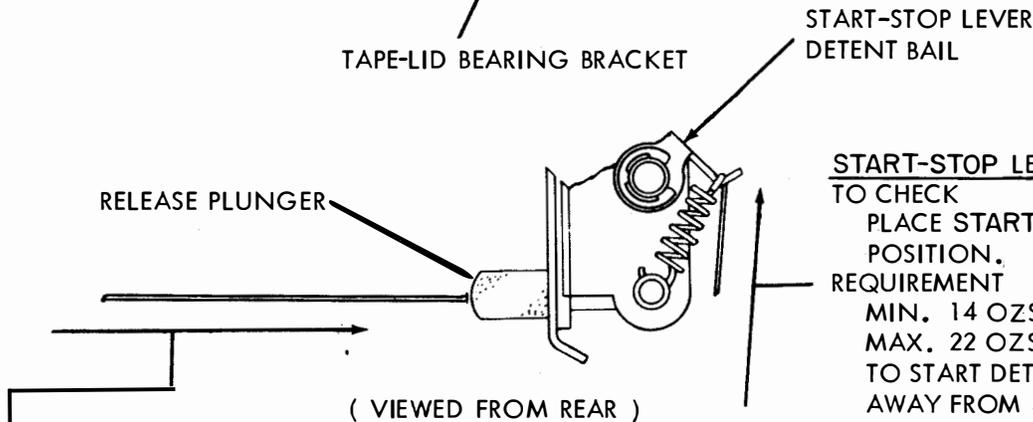
OPEN TAPE LID. HOLD UNIT SO TAPE-GUIDE PLATE IS HORIZONTAL. APPLY SCALE AT TOP OF LID IMMEDIATELY LEFT OF TAPE-OUT PIN HOLE. HOLD PLUNGER FULLY DEPRESSED.

REQUIREMENT

MIN. 3 OZS.

MAX. 4-1/2 OZS.

TO MOVE OPEN END OF TAPE LID AGAINST TAPE-GUIDE PLATE.



START-STOP LEVER DETENT SPRING
TO CHECK

PLACE START-STOP LEVER IN RUN POSITION.

REQUIREMENT

MIN. 14 OZS.

MAX. 22 OZS.

TO START DETENT BAIL MOVING AWAY FROM START-STOP LEVER DETENT.

TAPE-LID RELEASE-PLUNGER SPRING
TO CHECK

HOLD TAPE-GUIDE PLATE SO TOP SURFACE IS HORIZONTAL. OPEN TAPE LID.

REQUIREMENT

MIN. 28 OZS.

MAX. 48 OZS.

TO START TAPE-LID BAIL MOVING.

2.10 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

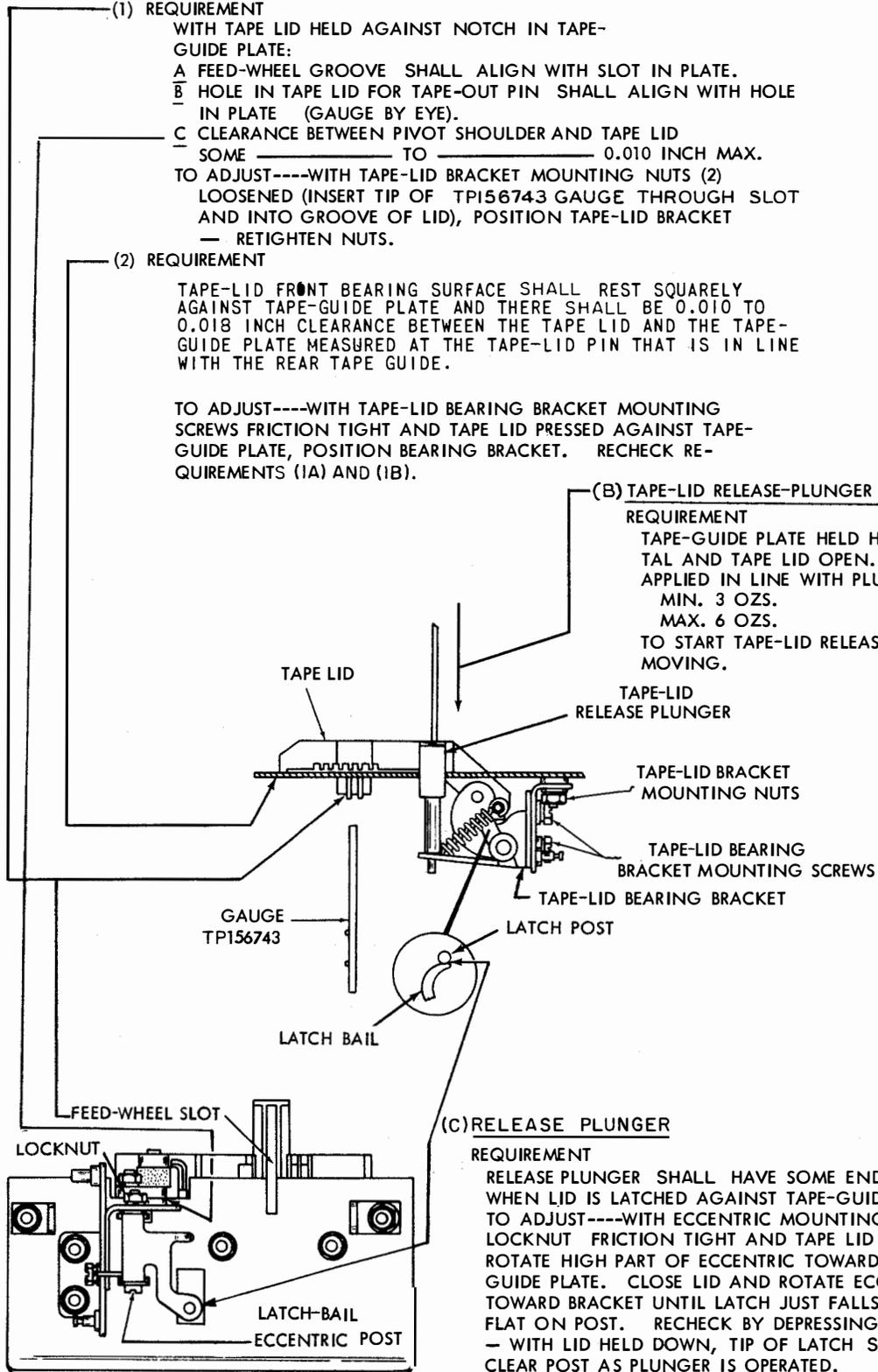
TAPE-LID FRONT BEARING SURFACE SHALL REST SQUARELY AGAINST TAPE-GUIDE PLATE AND THERE SHALL BE 0.010 TO 0.018 INCH CLEARANCE BETWEEN THE TAPE LID AND THE TAPE-GUIDE PLATE MEASURED AT THE TAPE-LID PIN THAT IS IN LINE WITH THE REAR TAPE GUIDE.

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.

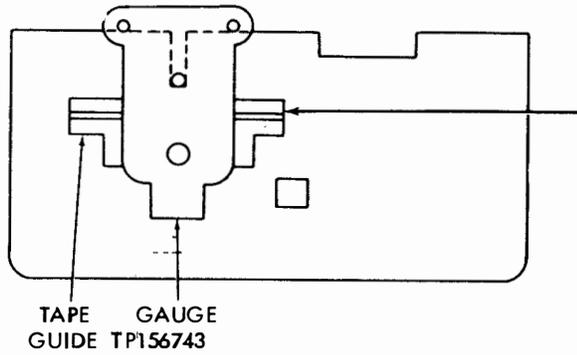


(C) RELEASE PLUNGER

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.

2.11 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.

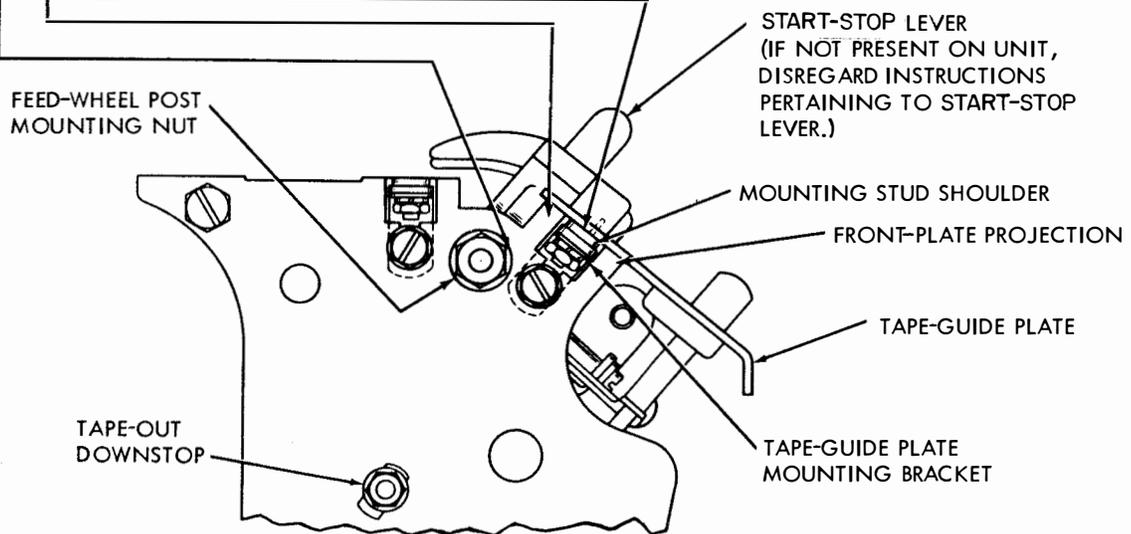
TAPE GUIDE TP156743

TAPE-GUIDE PLATE

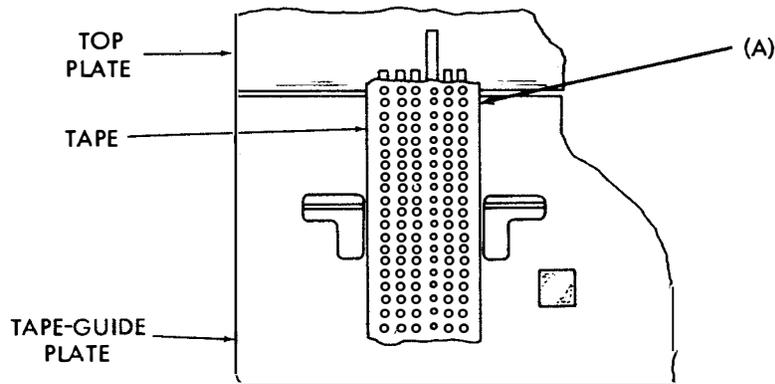
(1) REQUIREMENT
 SHOULDER OF FEED-WHEEL POST SHALL NOT INTERFERE WITH TOP PLATE OR TAPE-GUIDE PLATE MOUNTING BRACKETS.
 TO ADJUST
 ROTATE FEED-WHEEL POST WITH ITS MOUNTING NUT LOOSENED.

(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.



2.12 Tape Feed Mechanism (28B Unit)



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

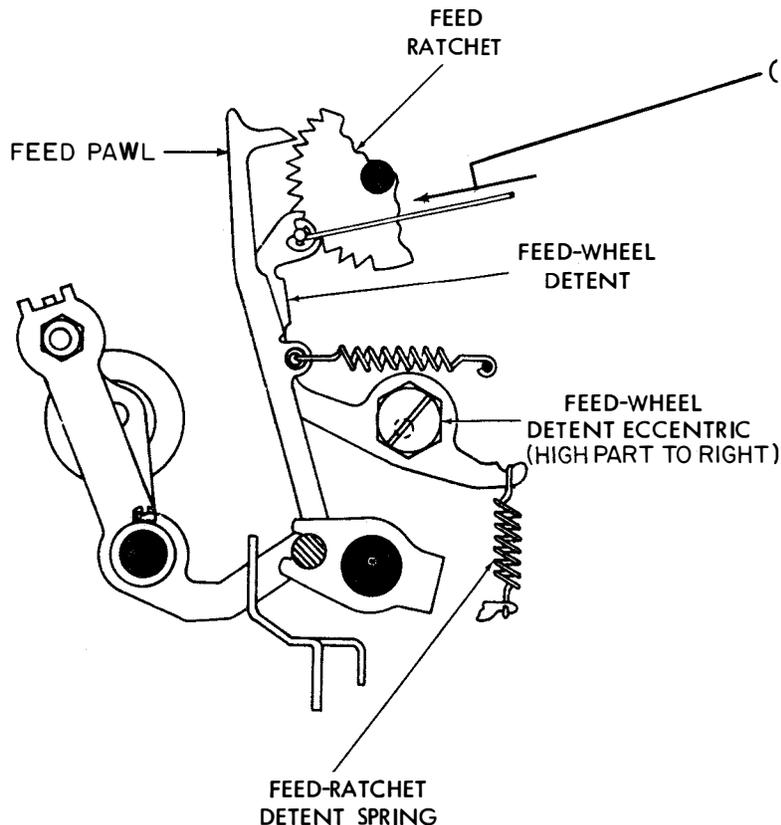
SENSING PINS SHALL BE CENTRALLY LOCATED IN CODE HOLES.

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

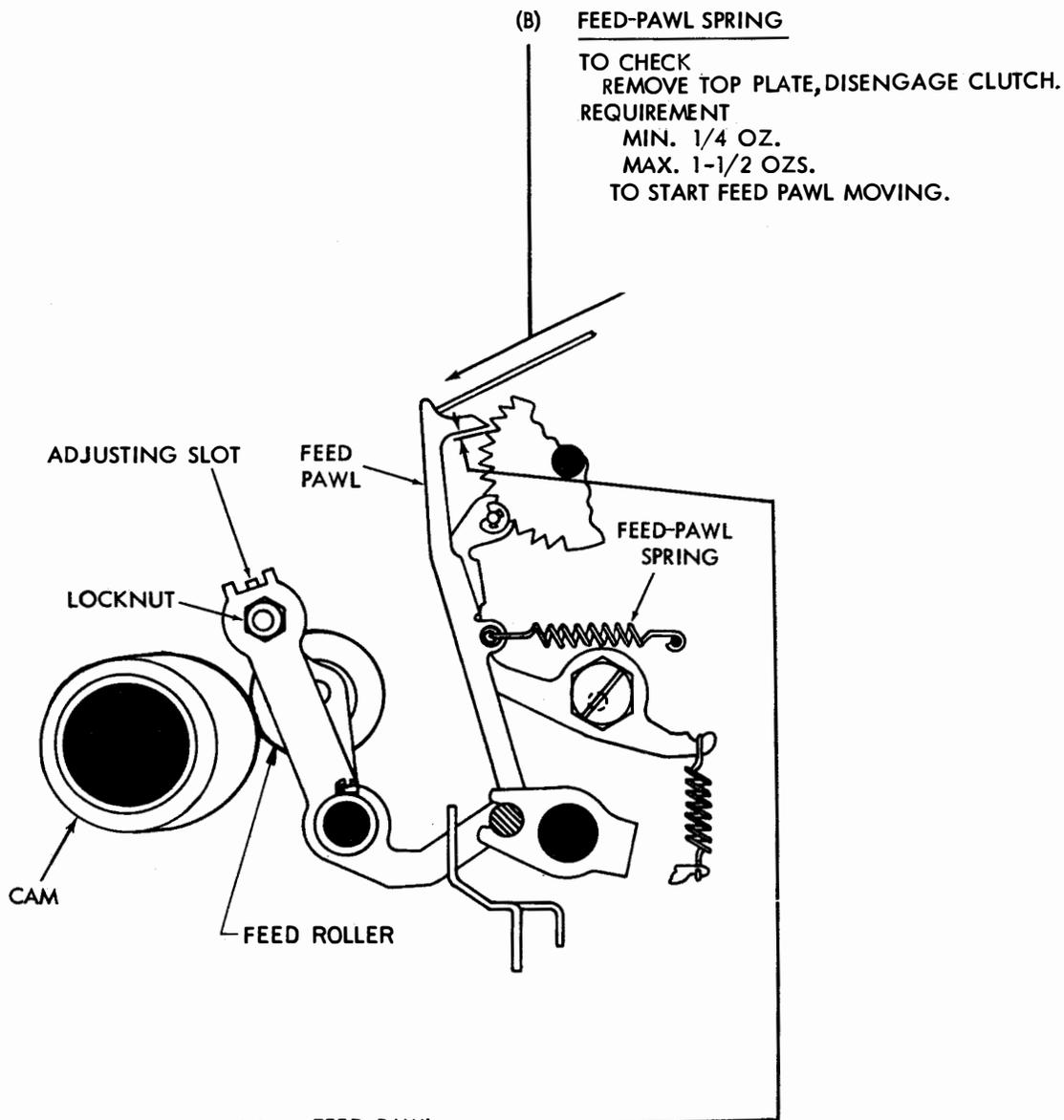
WITH FEED PAWL HELD AWAY FROM RATCHET WHEEL

MIN. 7 OZS.

MAX. 13 OZS.

TO MOVE DETENT ROLLER AWAY FROM FULLY DETENTED POSITION.

2.12 Tape Feed Mechanism (28B Unit) (Cont)



(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.

(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.

2.13 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

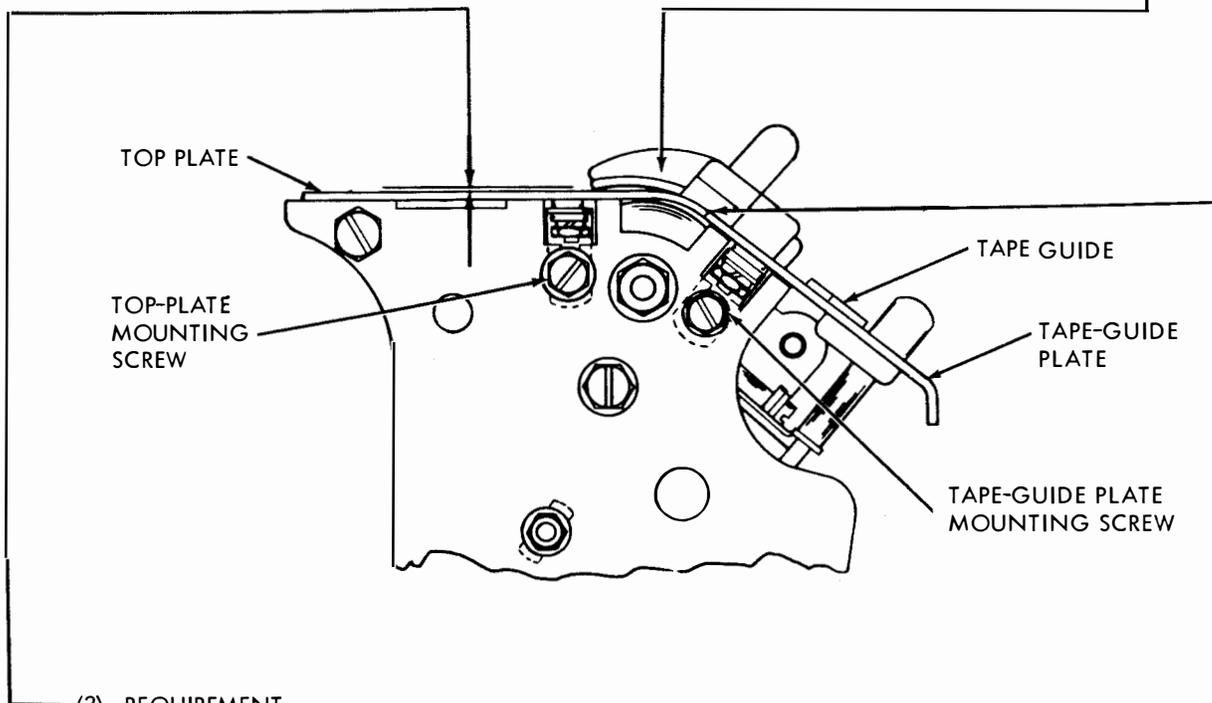
LOOSEN MOUNTING BRACKET NUTS UNTIL BRACKETS ARE FRICTION TIGHT. PRESS TOP PLATE INTO POSITION. TOP PLATE SHALL REST ON AT LEAST THREE PROJECTIONS OF SIDE PLATES. MAKE SURE THE TIGHT-TAPE ARM EXTENSION IS UNDER THE TOP PLATE.

(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

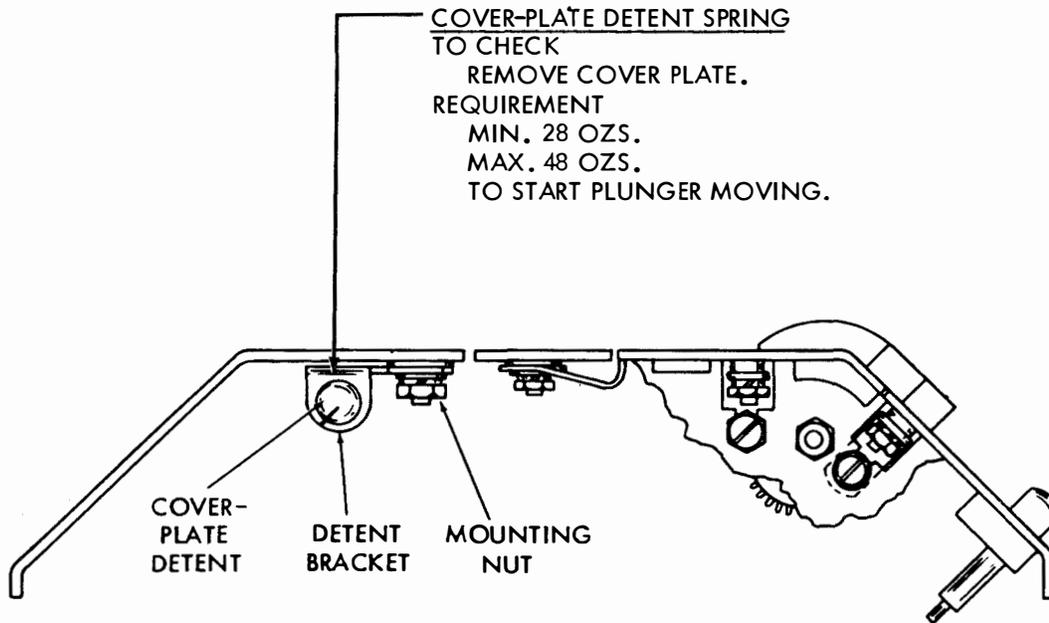
MAX. 0.018 INCH

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.

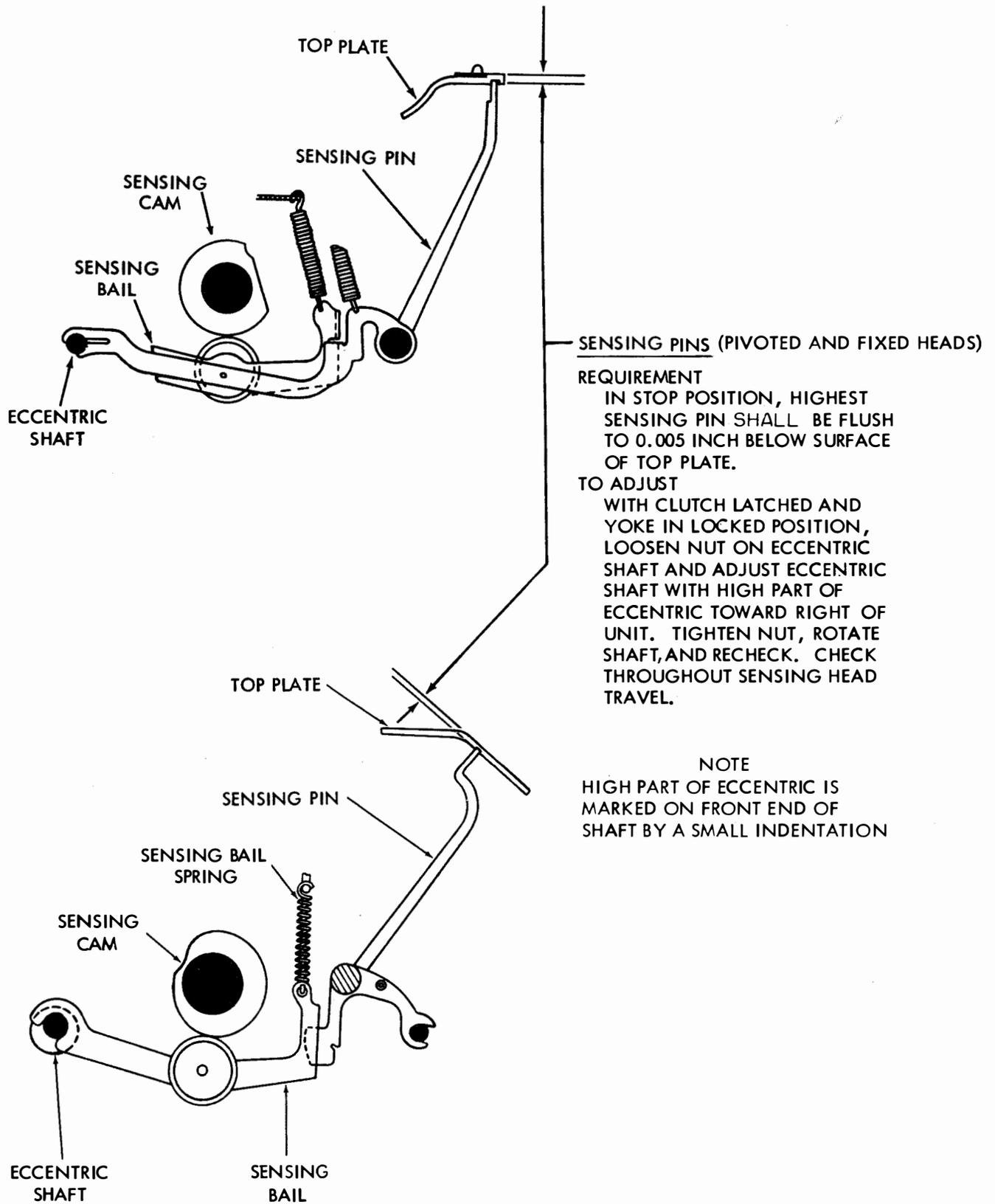
2.14 Cover Plate Mechanism (28B Unit)



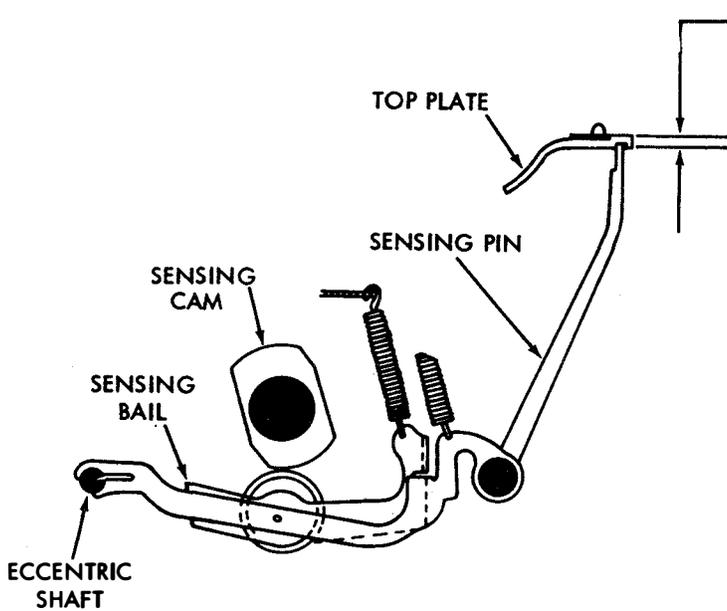
COVER PLATE

- (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.

2.15 Sensing Mechanism (28B Unit)



2.16 Sensing Mechanism

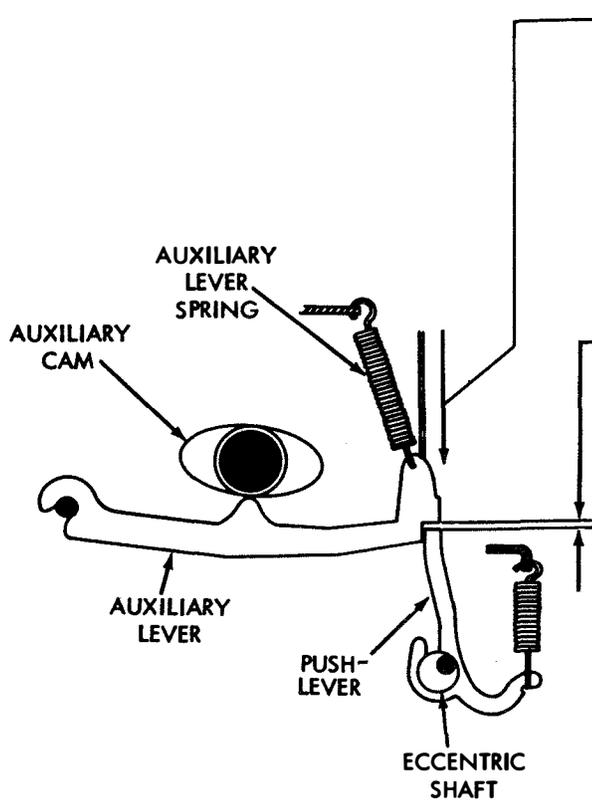


(A) SENSING PINS (28C UNIT)

REQUIREMENT
 IN STOP POSITION, HIGHEST SENSING PIN SHOULD BE FLUSH TO 0.005 INCH BELOW SURFACE OF TOP PLATE.

TO ADJUST
 WITH CLUTCH LATCHED AND YOKE IN LOCKED POSITION, LOOSEN NUT ON ECCENTRIC SHAFT AND ADJUST ECCENTRIC SHAFT WITH HIGH PART OF ECCENTRIC TOWARD RIGHT OF UNIT. TIGHTEN NUT, ROTATE SHAFT, AND RECHECK. CHECK THROUGHOUT SENSING HEAD TRAVEL. FOR TWO-CYCLE OPERATION, CHECK BOTH HALVES OF CAM SLEEVE.

NOTE: HIGH PART OF ECCENTRIC IS MARKED ON FRONT END OF SHAFT BY A SMALL INDENTATION.



(C) AUXILIARY LEVER SPRING

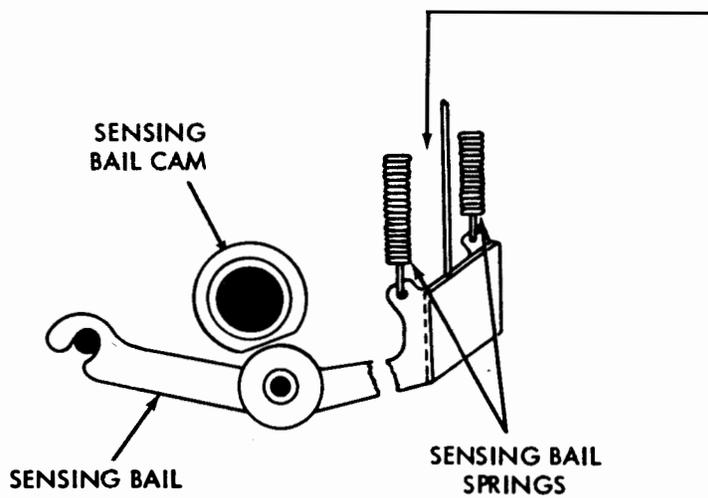
TO CHECK
 EACH AUXILIARY LEVER ON LOW PART OF ITS CAM. SCALE APPLIED TO LEVER JUST TO RIGHT OF SPRING. PUSHLEVER HELD AWAY.

REQUIREMENT
 MIN. 1/2 OZ.
 MAX. 3 OZS.
 TO START AUXILIARY LEVER MOVING.

(B) PUSHLEVER

REQUIREMENT
 WITH FIRST ONE AND THEN THE OTHER OF THE TWO AUXILIARY LEVERS ON THE LOW PART OF THE CAM, THE AUXILIARY LEVER WITH THE LEAST CLEARANCE SHALL CLEAR THE TIP OF ITS PUSHLEVER BY
 MIN. 0.020 INCH
 MAX. 0.045 INCH.

TO ADJUST
 WITH PUSHLEVER ECCENTRIC-SHAFT LOCKNUT (FRONT PLATE) LOOSENED AND HIGH PART OF ECCENTRIC LOCATED TOWARD THE UPPER RIGHT, ROTATE ECCENTRIC TOWARD RIGHT OR LEFT.



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

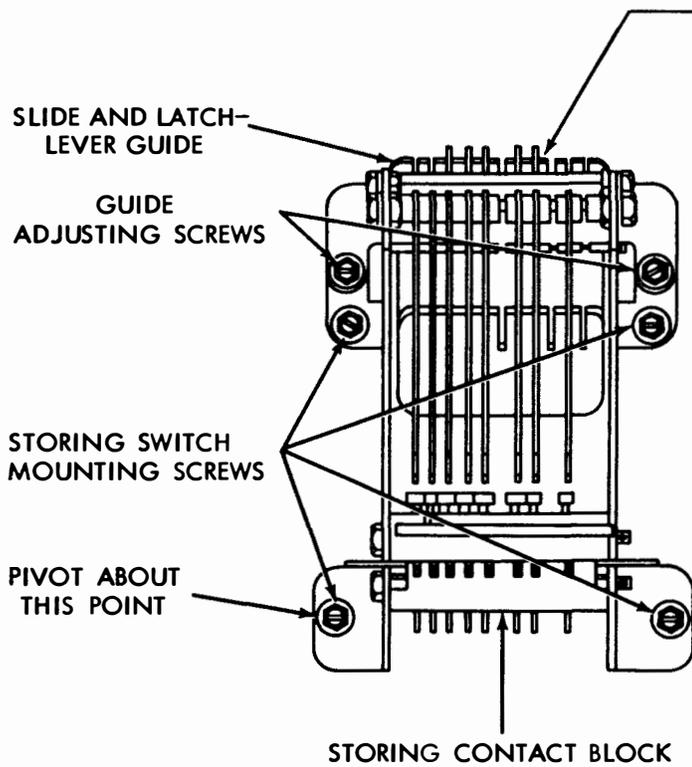
MIN. 1/4 OZ.

MAX. 2 OZ.

TO START SENSING BAIL MOVING.

2.17 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.

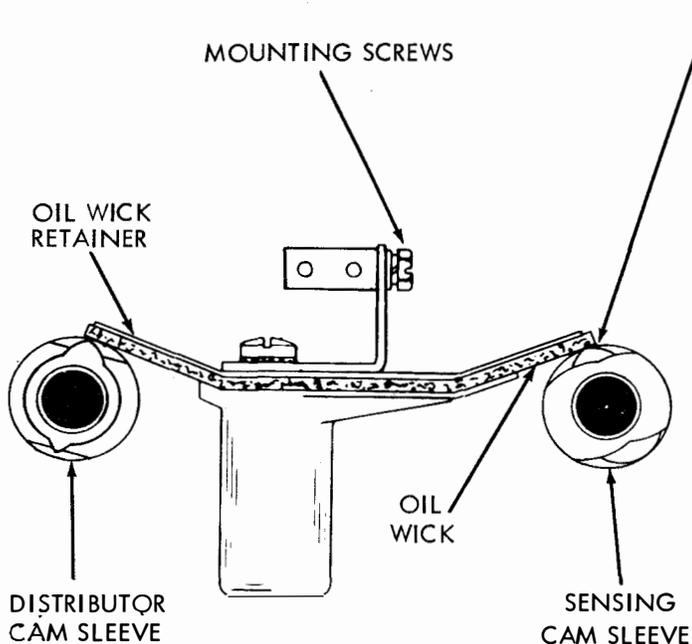
(B) OIL RESERVOIR

REQUIREMENT

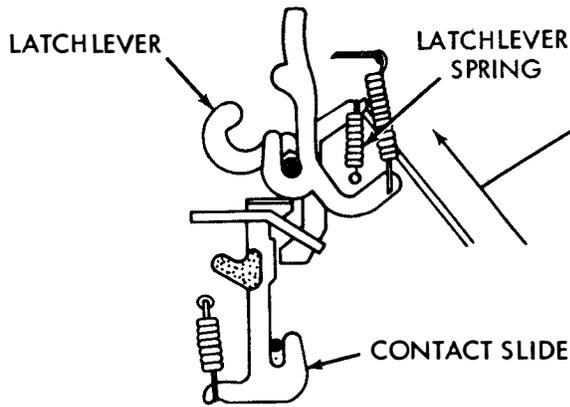
EACH OIL WICK RESTS LIGHTLY ON HIGH PARTS OF FRONT AND REAR CAM OF EACH CAM SLEEVE.

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.

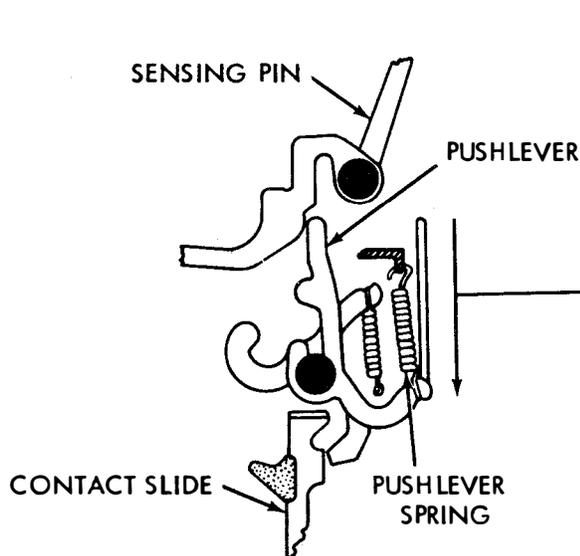


2.18 Sensing Mechanism Springs



(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.

2.18 Sensing Mechanism Springs (Cont)

(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.

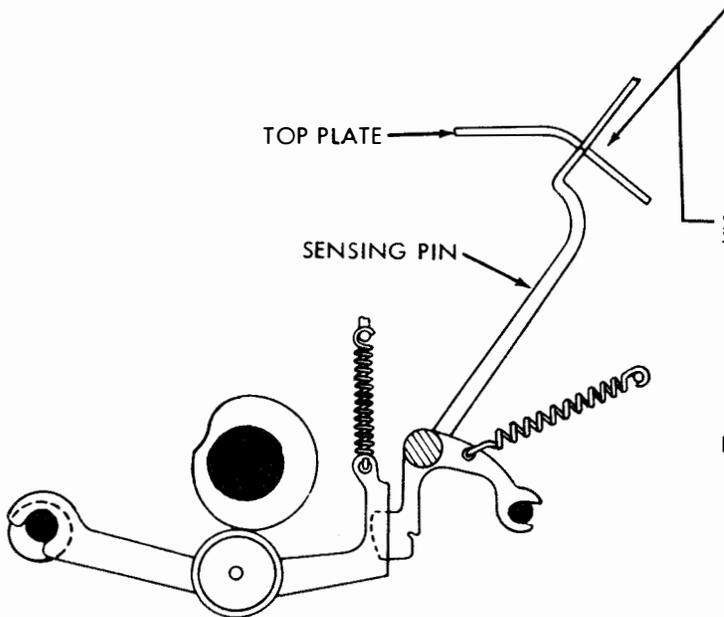
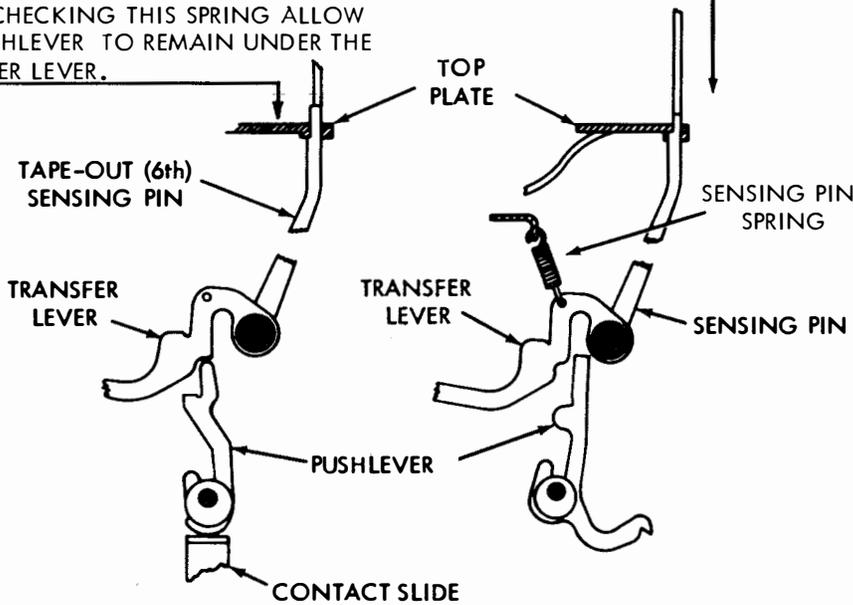
MIN. 1 OZ.
MAX. 2 OZS.
FOR 2-CYCLE CLUTCH(28C UNIT)
TO MOVE SENSING PIN FLUSH WITH
TOP PLATE.

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.

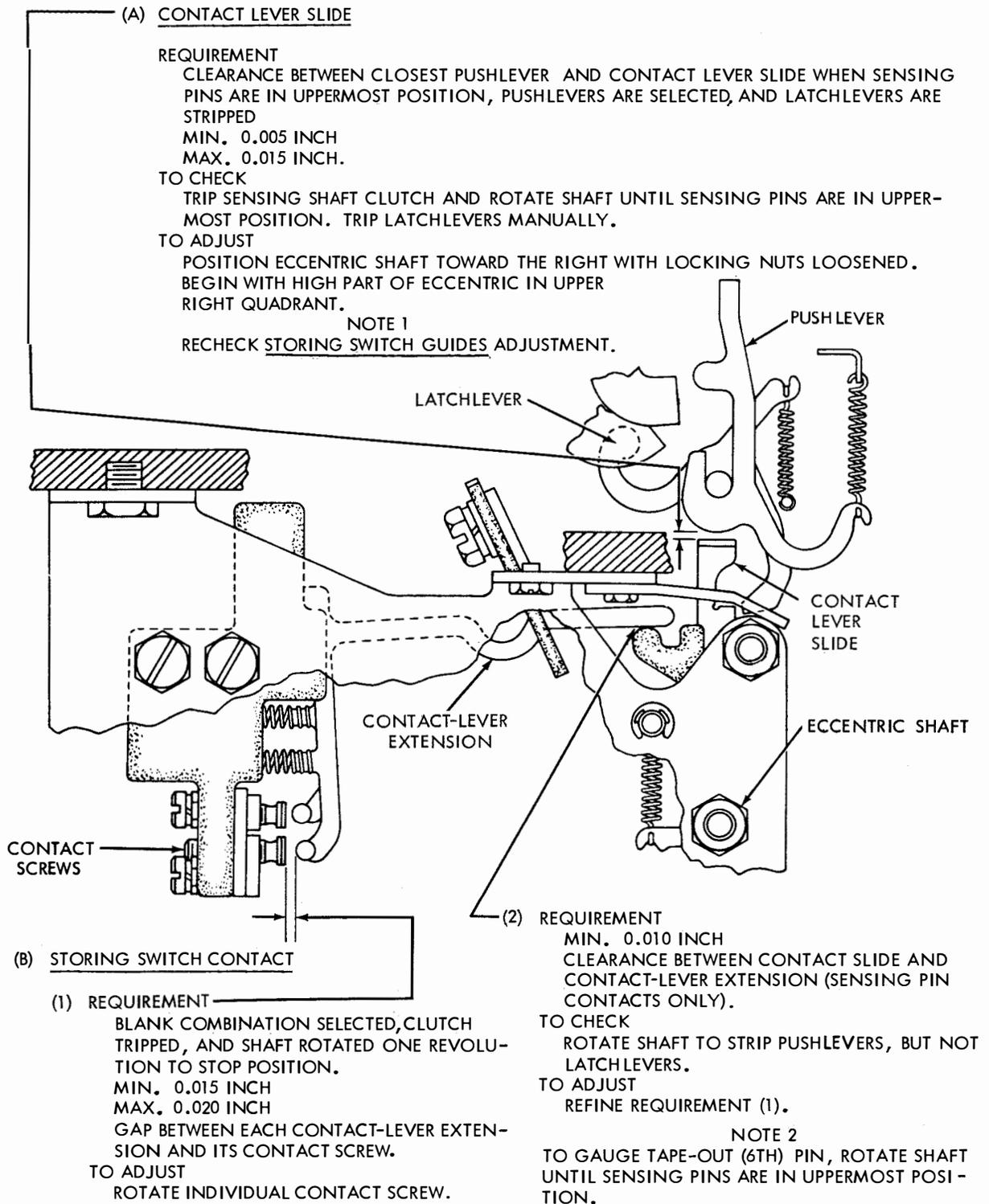


SENSING PIN SPRINGS (FIXED HEAD)(28BUNIT)
TO CHECK

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.

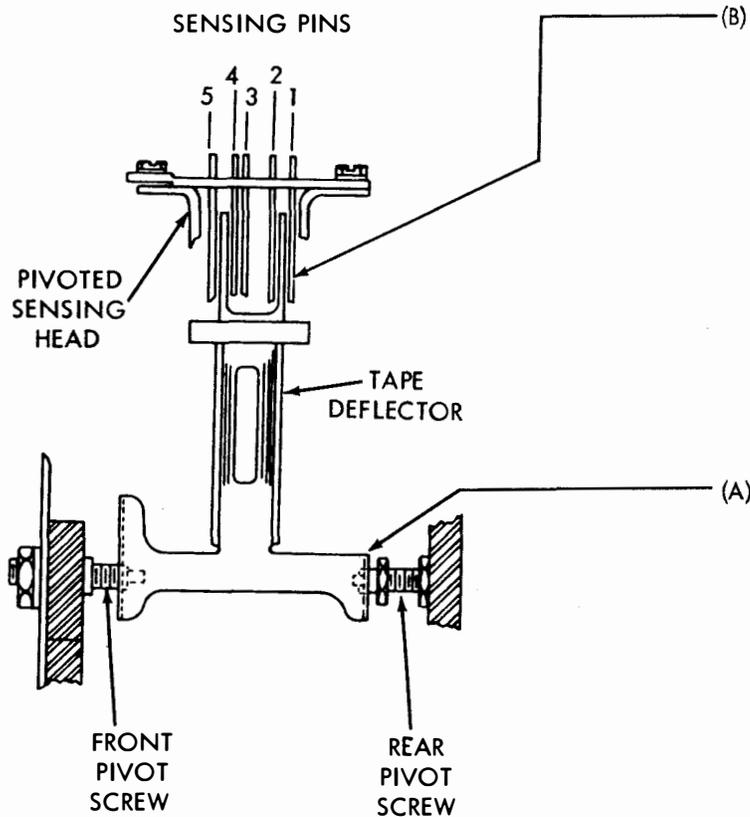
2.19 Sensing and Storing Switch Mechanism



NOTE 3

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

2.20 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

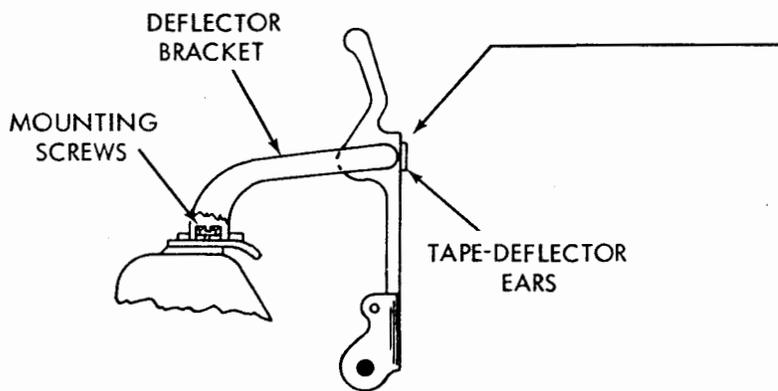
POSITION REAR PIVOT SCREW FOR MINIMUM ENDPLAY WITHOUT BINDING.

(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.

(A) FEED PAWL (PRELIMINARY)

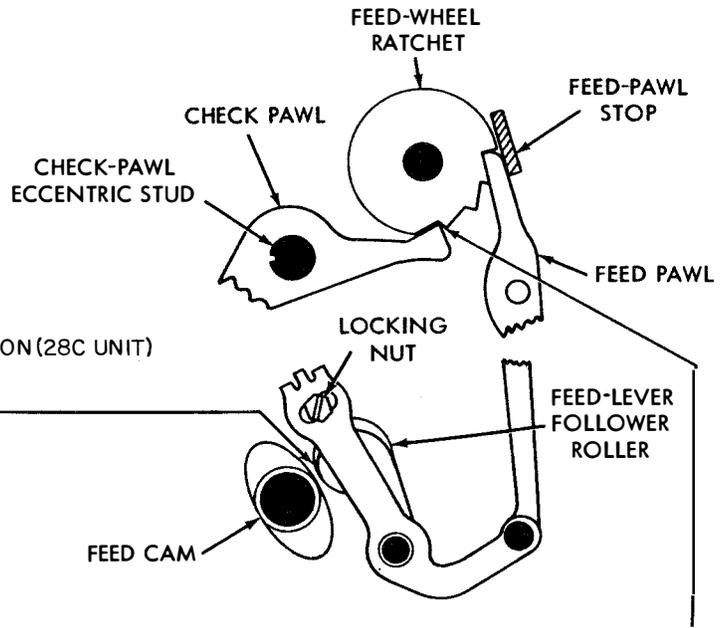
REQUIREMENT

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

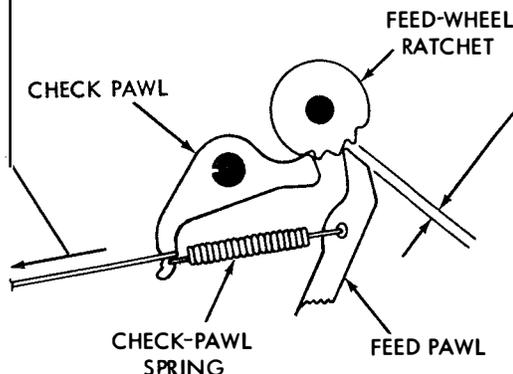
REFINE REQUIREMENT NO. 1

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.

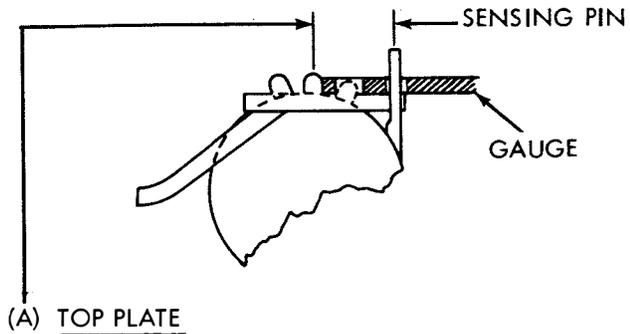
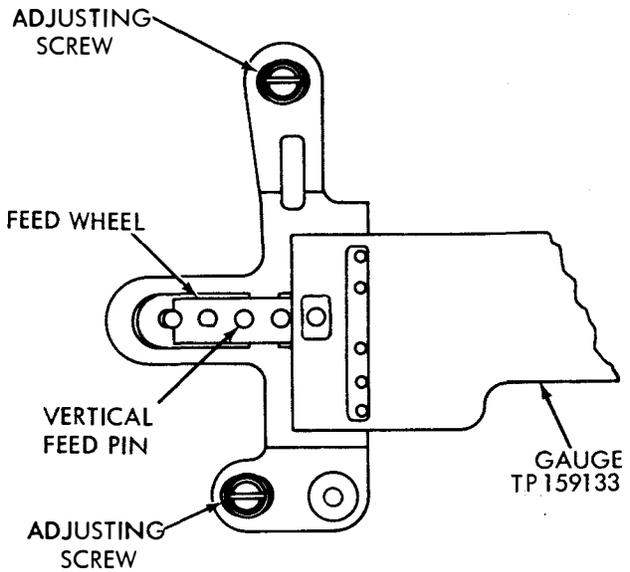
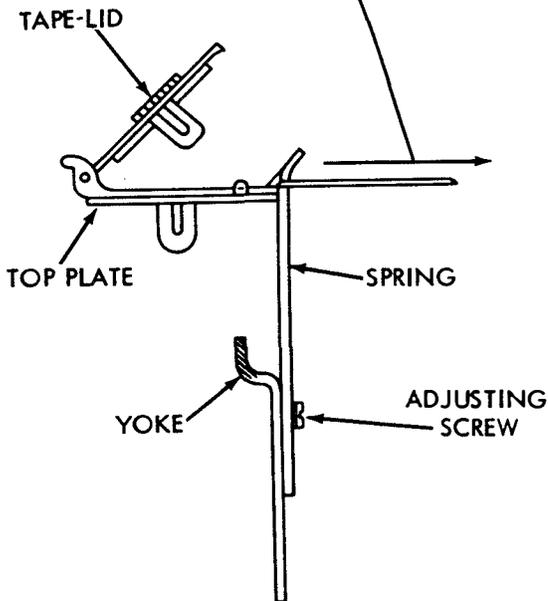
2. 20 Pivoted Sensing Head (Cont)

(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.

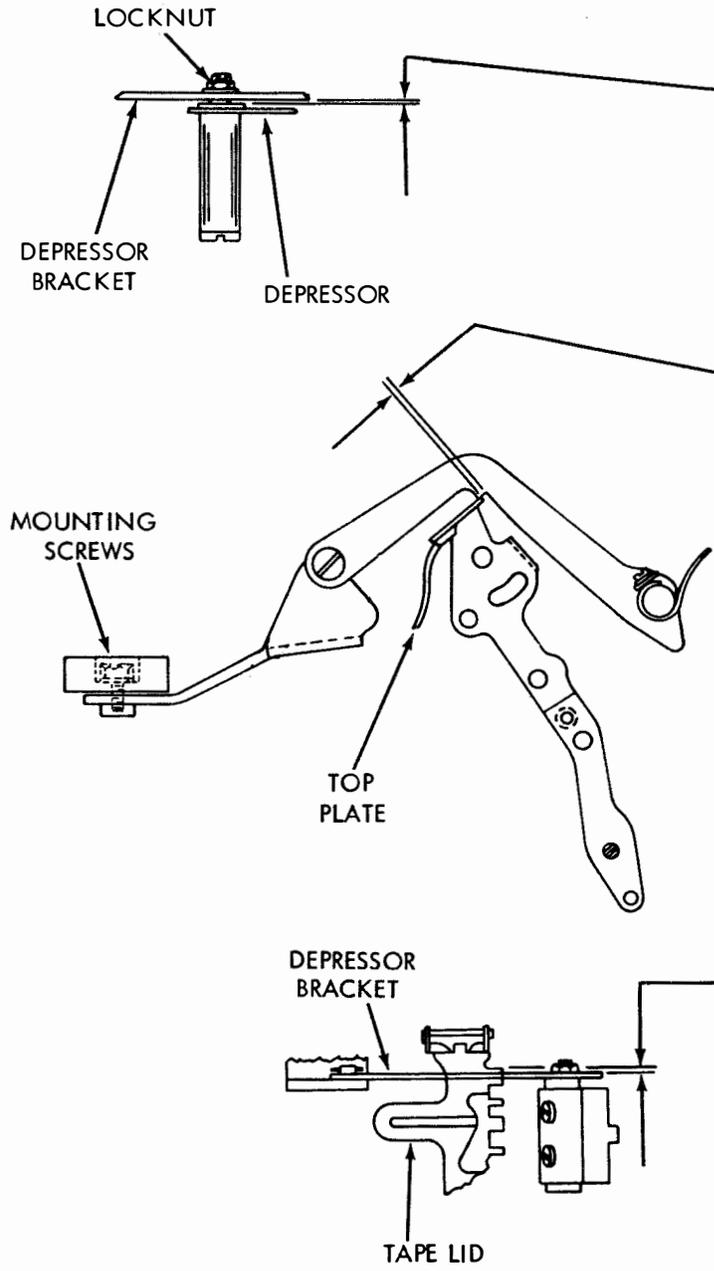
NOTE

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



- (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.

2.21 Tape Depressor



TAPE DEPRESSOR ALIGNMENT

(1) REQUIREMENT
CLEARANCE BETWEEN TAPE DE-
PRESSOR 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 DE-
PRESSOR AND TOP PLATE
MIN. 0.005 INCH
MAX. 0.015 INCH.

TO ADJUST
POSITION TAPE DEPRESSOR WITH
MOUNTING SCREWS LOOSENED.

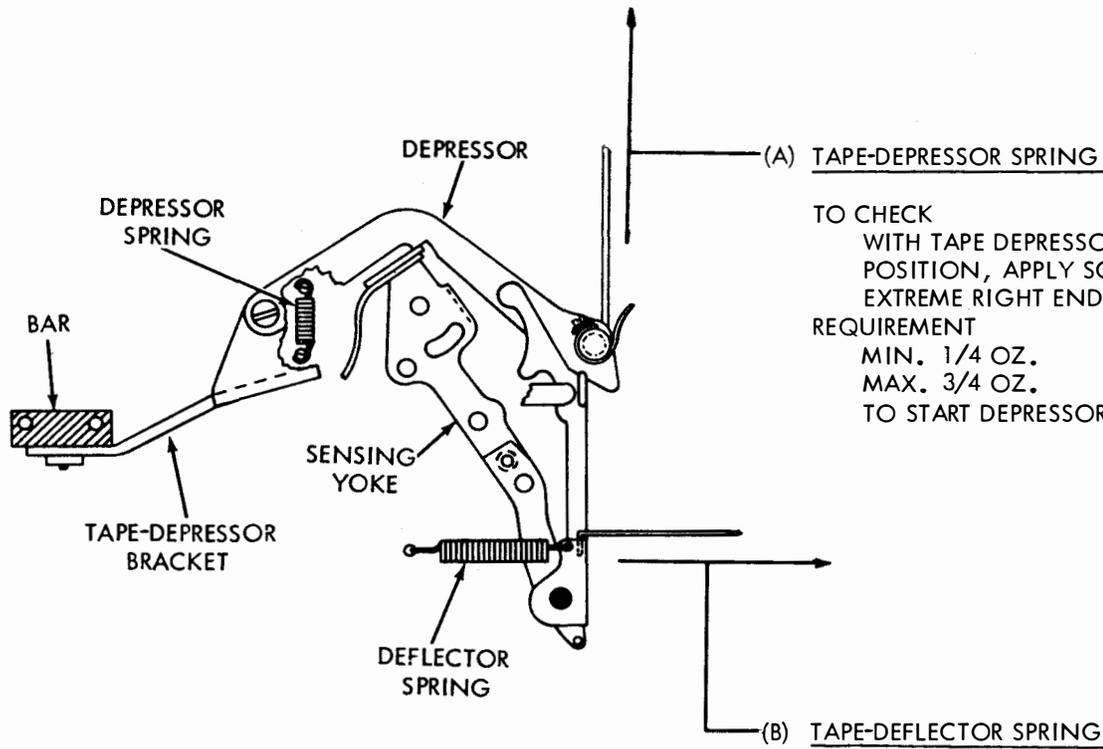
NOTE

WHEN INSTALLED ON REPERFORA-
TOR TRANSMITTER BASE, 0.005-TO
0.020-INCH CLEARANCE IS ACCEP-
TABLE 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.

2.22 Tape Depressor and Last-character Contact Switch

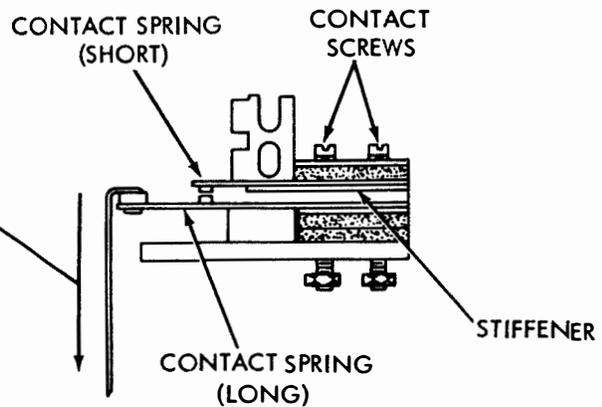


TO CHECK
WITH TAPE DEPRESSOR IN LOCKED
POSITION, APPLY SCALE TO LIP AT
EXTREME RIGHT END OF DEPRESSOR.
REQUIREMENT
MIN. 1/4 OZ.
MAX. 3/4 OZ.
TO START DEPRESSOR MOVING.

REQUIREMENT
MIN. 1/4 OZ.
MAX. 1-1/4 OZS.
TO START DEFLECTOR MOVING.

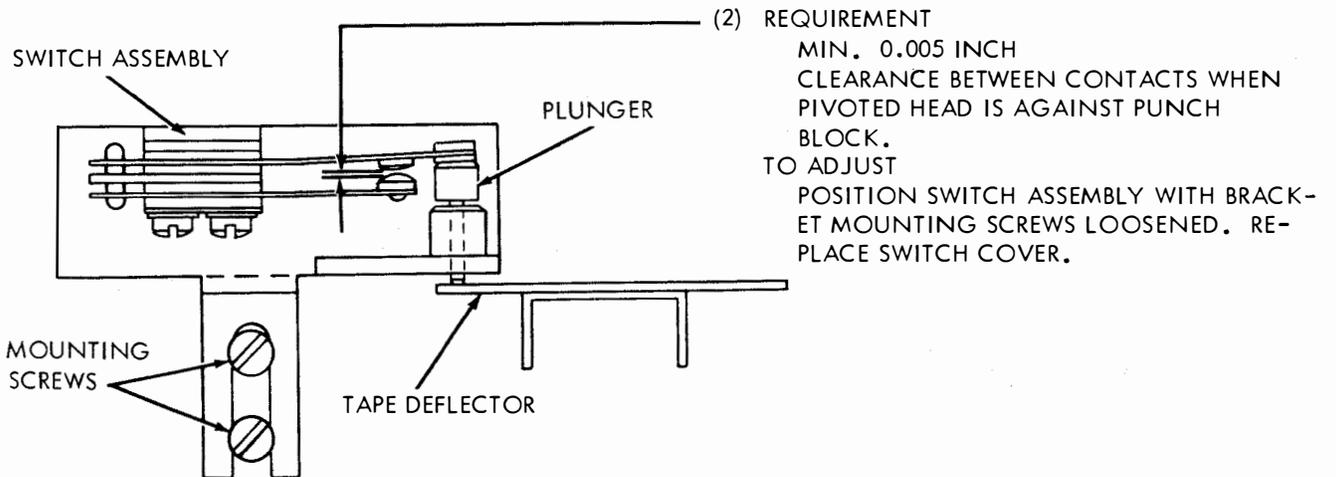
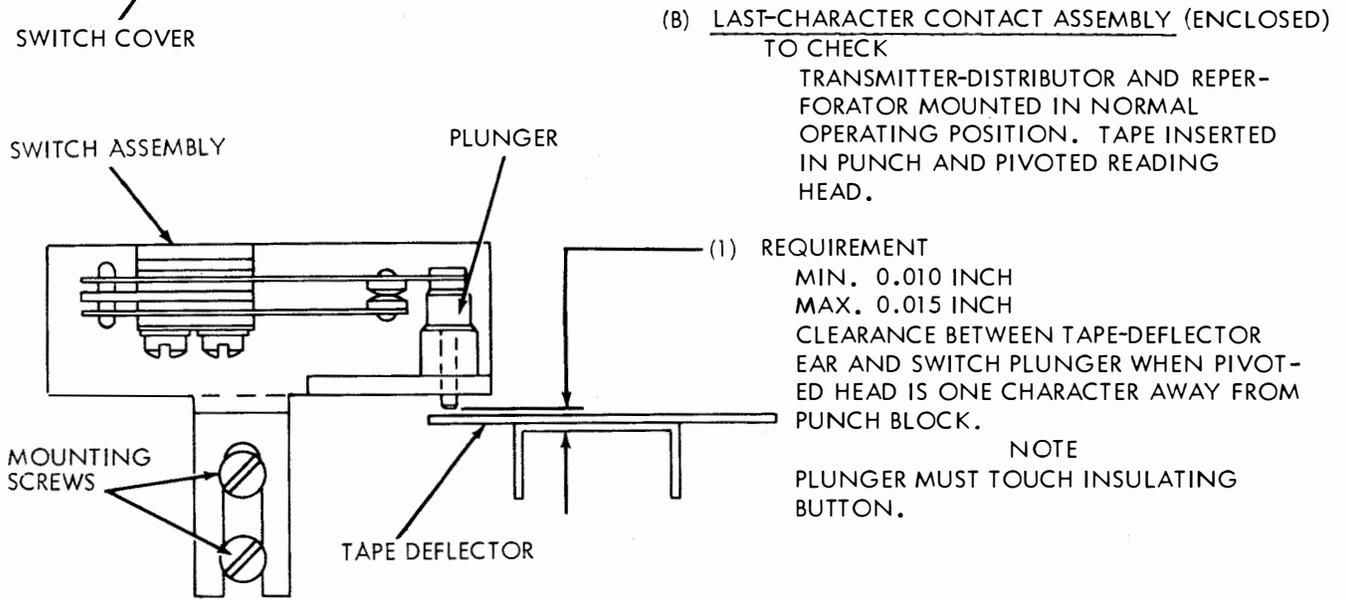
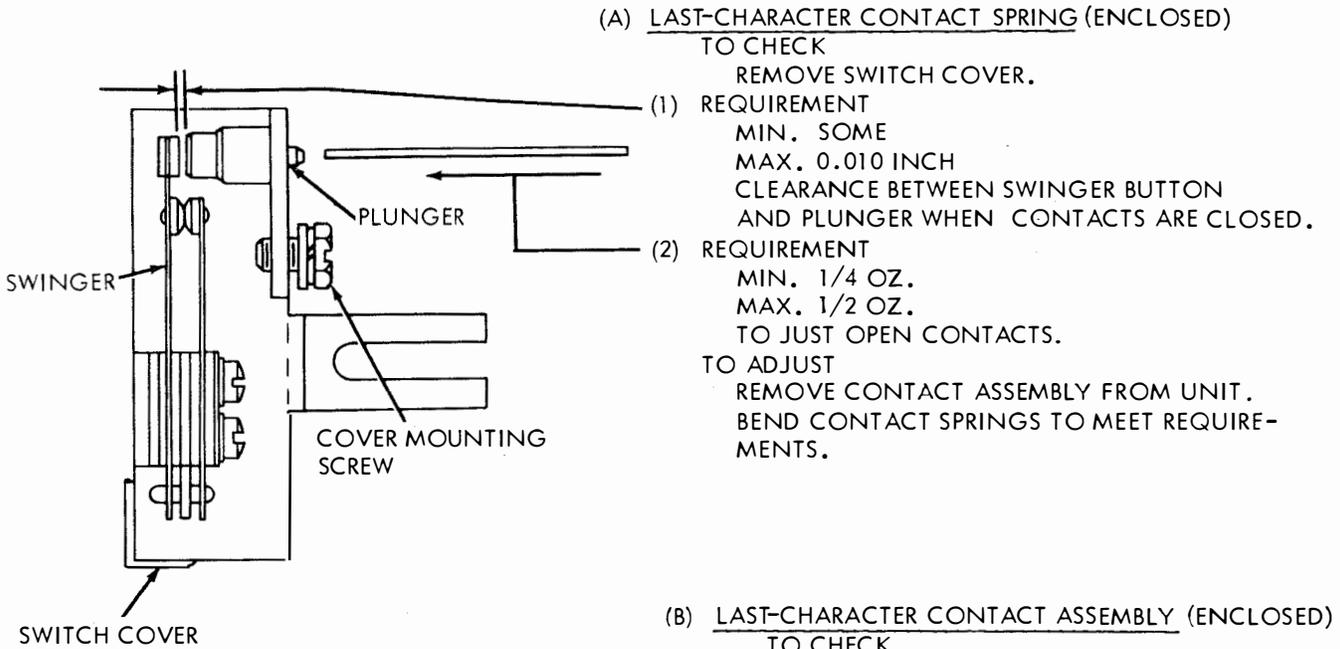
LAST-CHARACTER SWITCH CONTACT SPRINGS

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.

2.23 Fully Enclosed Last-character Contact Switch



2.24 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.

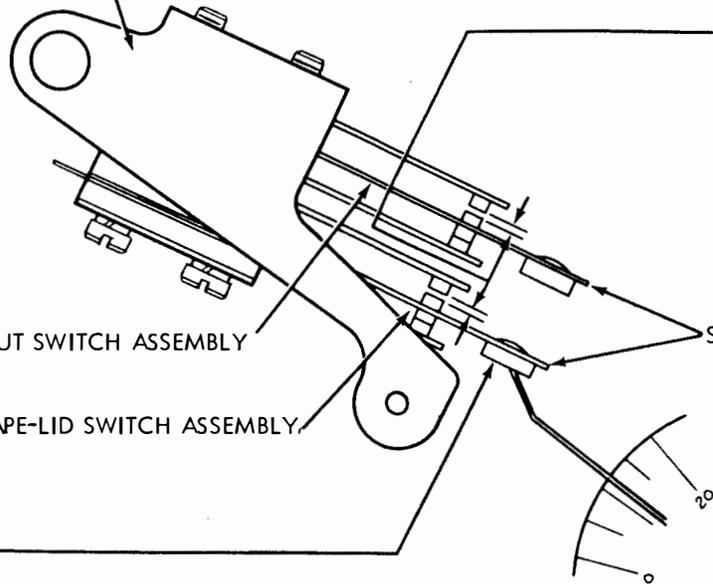
TO ADJUST
BEND UPPER CONTACT LEAF WITH A TP110445 SPRING BENDER.

MOUNTING BRACKET

TAPE-OUT SWITCH ASSEMBLY

TAPE-LID SWITCH ASSEMBLY

SWINGERS



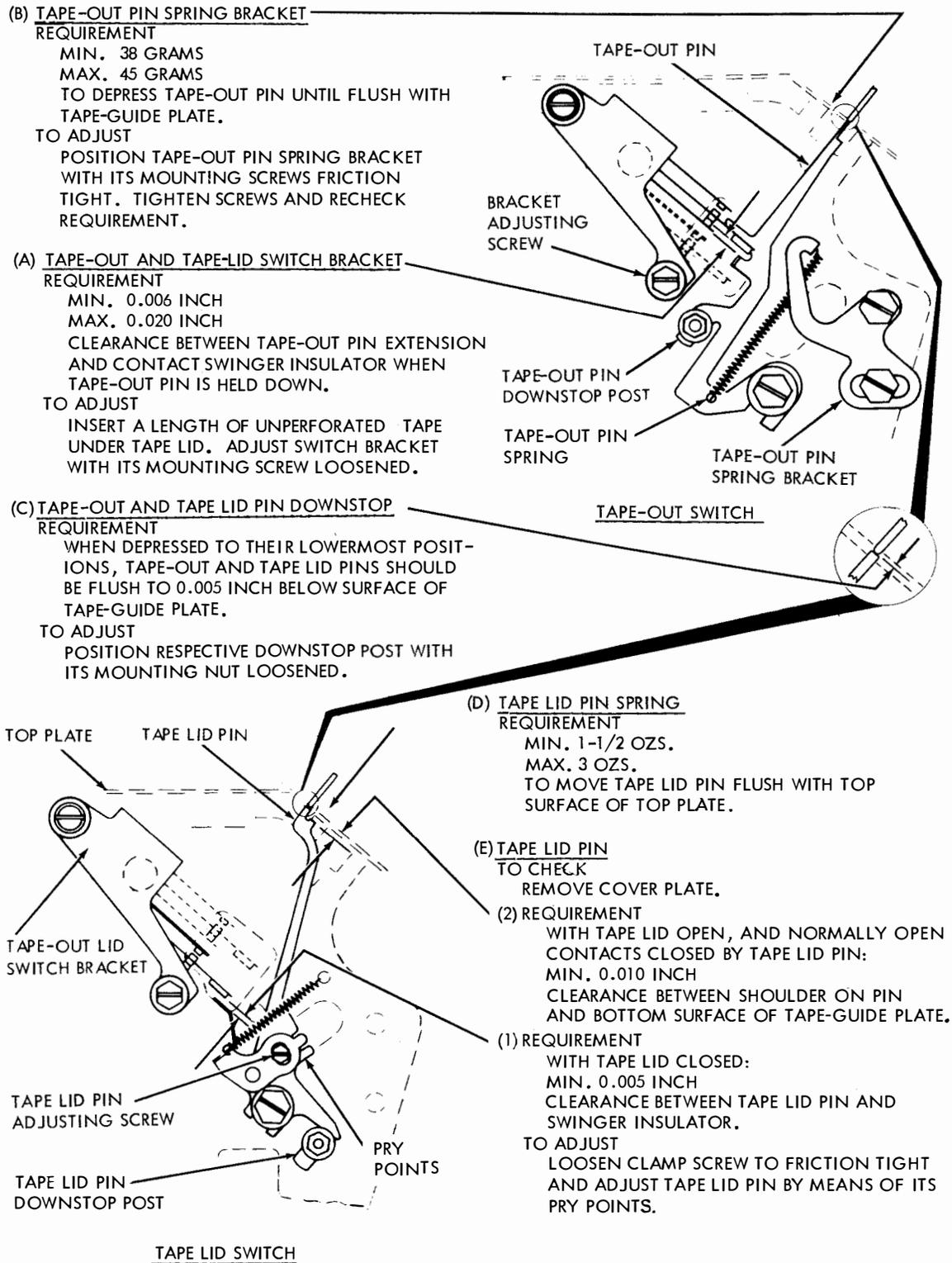
INSTRUCTIONS FOR REMOVING TAPE-OUT AND TAPE-LID SWITCH ASSEMBLY

- (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

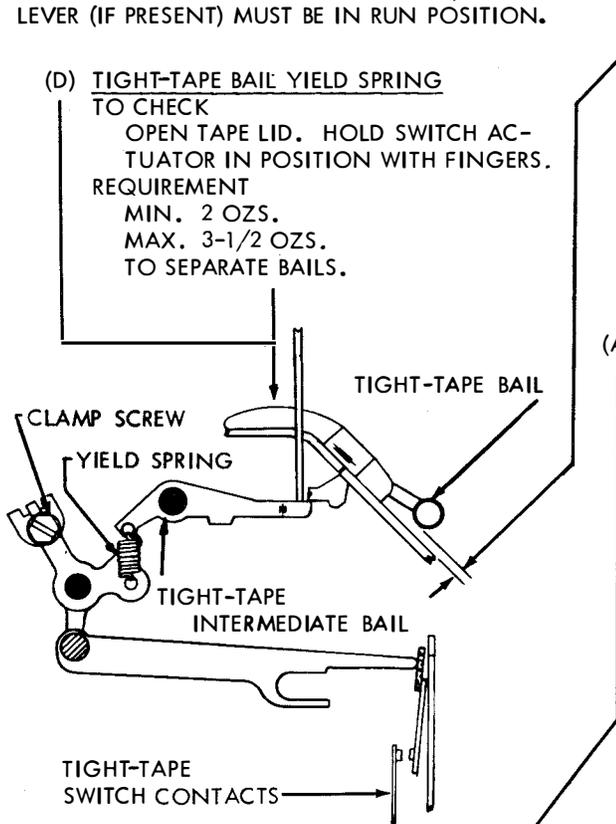
REVERSE DISASSEMBLY PROCEDURE.

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



2.26 Tight-Tape Switch Assembly (28B Unit)

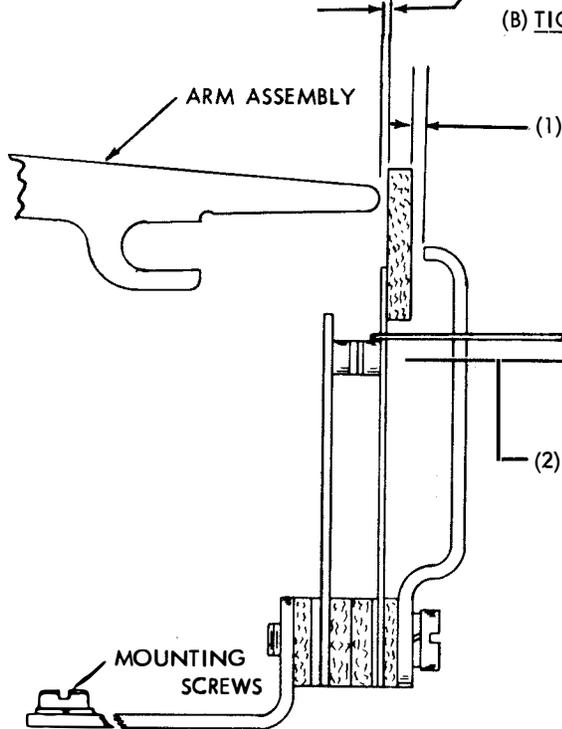
NOTE 1
FOR ALL ADJUSTMENTS ON THIS PAGE, START-STOP LEVER (IF PRESENT) MUST BE IN RUN POSITION.



(D) TIGHT-TAPE BAIL YIELD SPRING
TO CHECK
OPEN TAPE LID. HOLD SWITCH ACTUATOR IN POSITION WITH FINGERS.
REQUIREMENT
MIN. 2 OZS.
MAX. 3-1/2 OZS.
TO SEPARATE BAILS.

(C) TIGHT-TAPE ARM
REQUIREMENT
TIGHT-TAPE SWITCH CONTACTS SHALL OPEN WHEN TIGHT-TAPE ARM IS RAISED:
MIN. 0.045 INCH
MAX. 0.075 INCH
ABOVE TAPE-GUIDE PLATE.
TO ADJUST
WITH CLAMP SCREW FRICTION TIGHT, POSITION BAILS, BY MEANS OF PRY POINT, TO MEET REQUIREMENT.

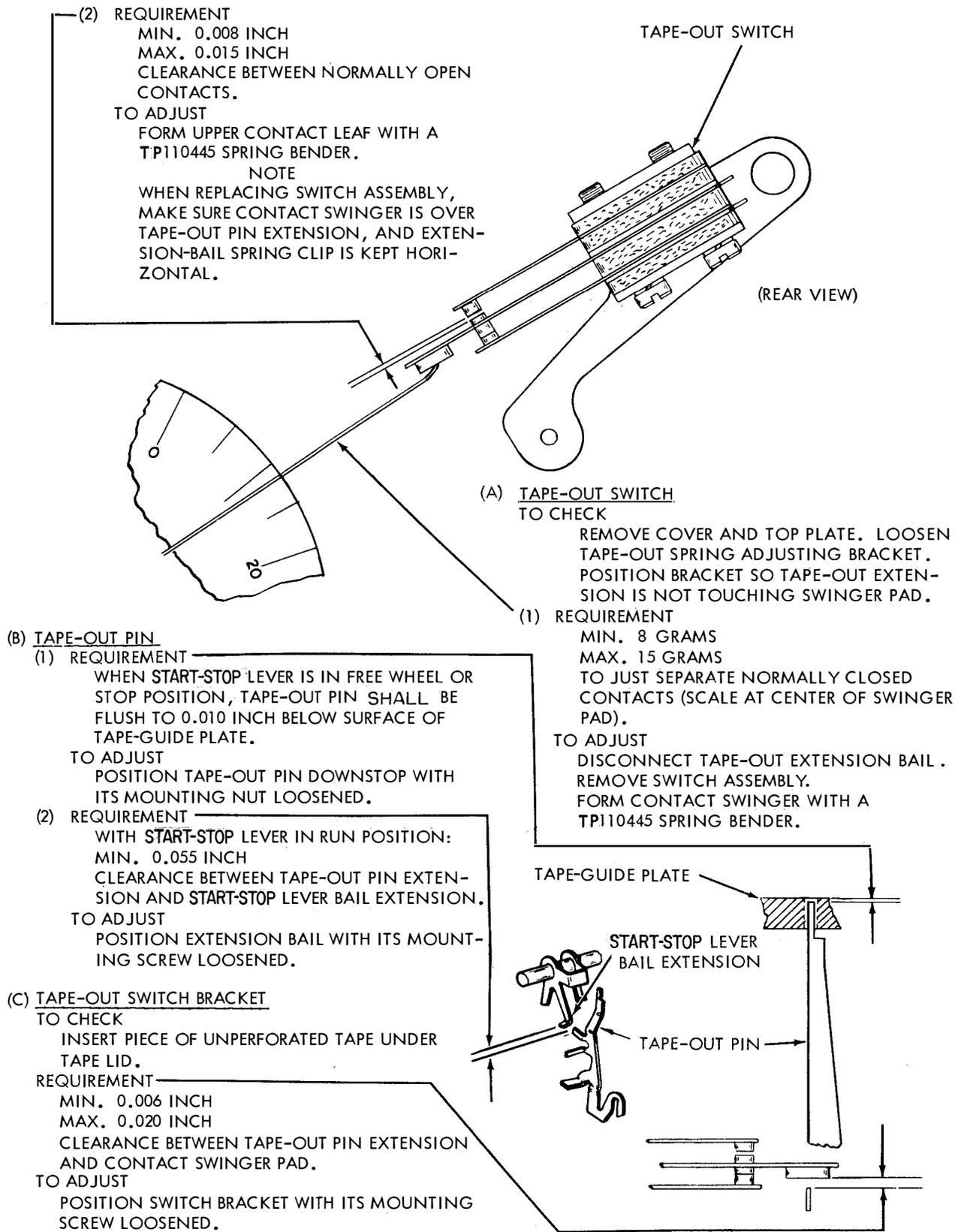
(A) TIGHT-TAPE SWITCH BRACKET
TO CHECK
LOOSEN CLAMP SCREW, AND MOVE TIGHT-TAPE ARM ADJUSTMENT TO CENTER OF ITS RANGE.
REQUIREMENT (PRELIMINARY)
MIN. 0.006 INCH
MAX. 0.015 INCH
CLEARANCE BETWEEN SWITCH ACTUATOR AND BAKELITE PAD ON SWINGER.
REQUIREMENT (FINAL)
AFTER COMPLETION OF TIGHT-TAPE ARM ADJUSTMENT
MIN. 0.006 INCH
CLEARANCE BETWEEN SWITCH ACTUATOR AND BAKELITE PAD.
TO ADJUST
WITH SWITCH BRACKET MOUNTING SCREWS FRICTION TIGHT, POSITION BRACKET. TIGHTEN SCREWS AND RECHECK REQUIREMENT.



(B) TIGHT-TAPE SWITCH
NOTE 2
MAKE THIS ADJUSTMENT BEFORE ASSEMBLING SWITCH TO UNIT.
(1) REQUIREMENT
MIN. 0.050 INCH
MAX. 0.070 INCH
CLEARANCE BETWEEN SWITCH BACKSTOP AND BAKELITE PAD ON SWINGER WHEN SWITCH CONTACTS ARE CLOSED.

TO ADJUST
BEND SWITCH BACKSTOP WITH TP110445 SPRING BENDER.
(2) REQUIREMENT
MIN. 3 OZS.
MAX. 4 OZS.
TO JUST SEPARATE CONTACTS.
TO ADJUST
BEND CONTACT SWINGER WITH A TP110445 SPRING BENDER.

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



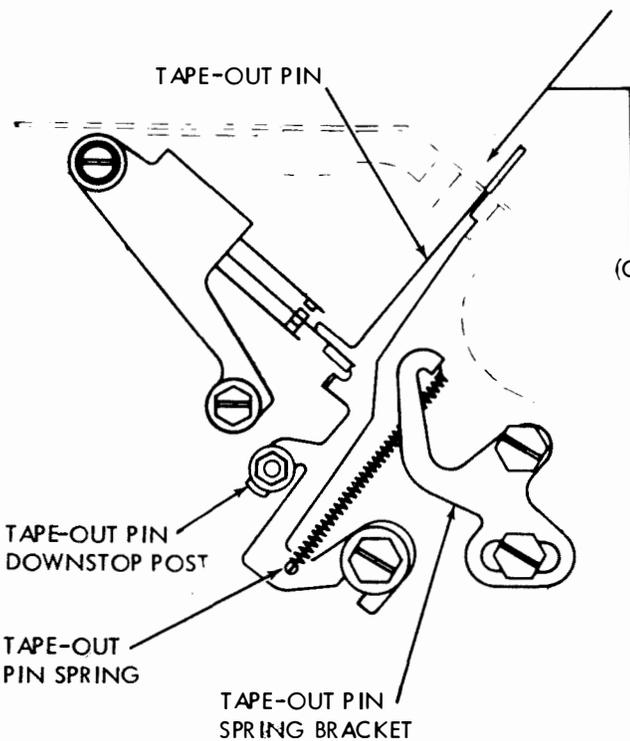
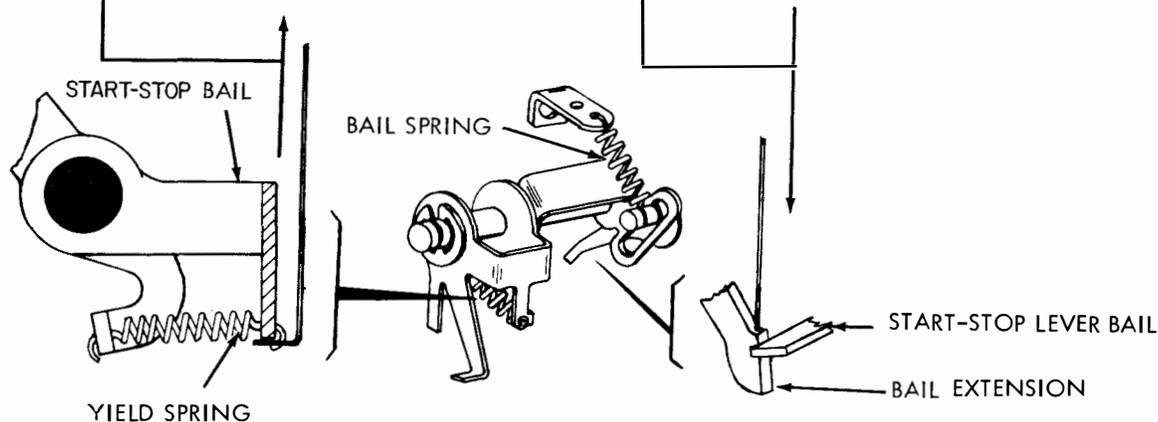
2.28 Tape-out Pin and Bail Assembly (28B Unit With START-STOP Lever)

(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.

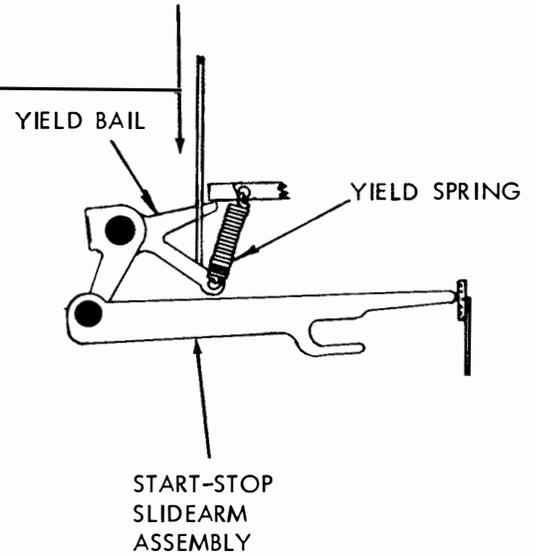


(C) TAPE-OUT PIN SPRING

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.

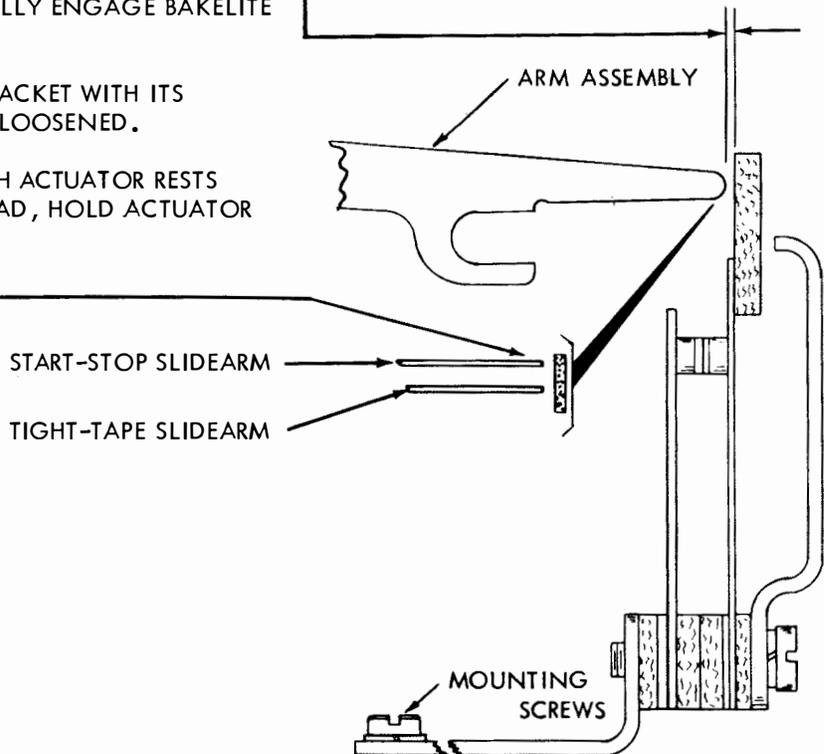
2.29 START-STOP Switch Assembly (28B Unit)

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 AC-
 TUATORS 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.



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

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 Figure 1.)

(2) Replace Blank combination by 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 Figure 2.)

(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 Figure 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.

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 Figure 3.)

(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 Figure 3.)

(c) TO ADJUST: Position the contact adjusting screw.

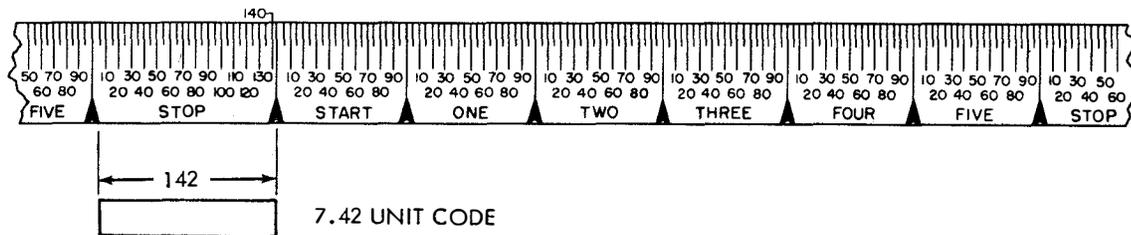


Figure 1 - Length of Stop Pulse

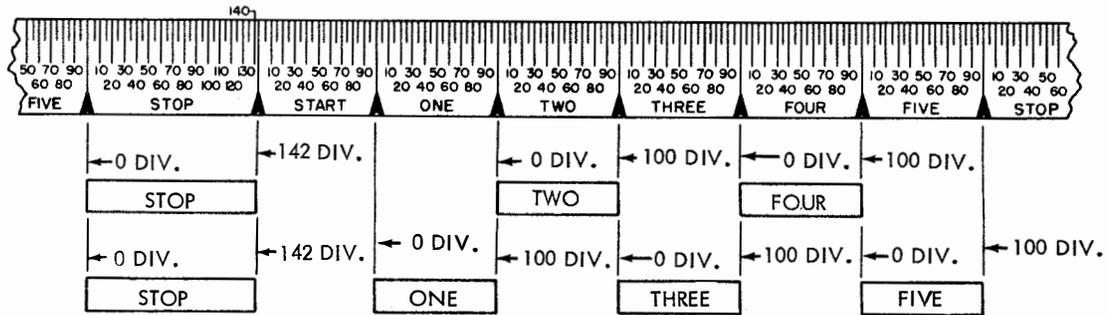


Figure 2 - Pulse Length Requirements for Distributor Contacts No. 1 Through No. 5

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 Figure 4):

<u>WPM</u>	<u>Beginning of Trace</u>	<u>End of Trace</u>
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 respective contact adjusting screw.

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.

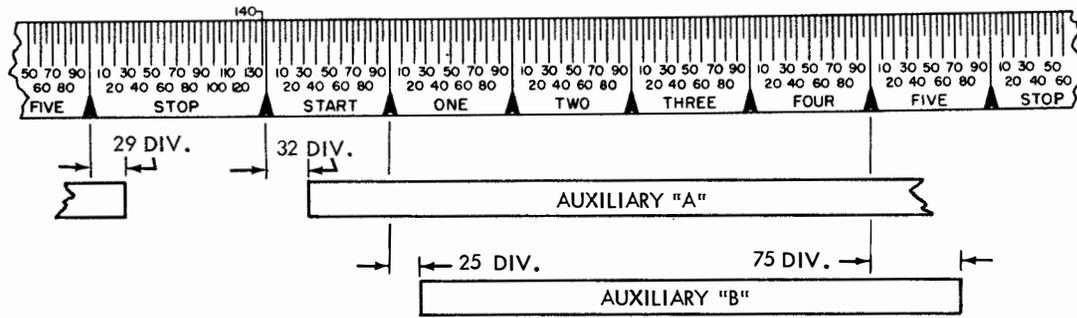


Figure 3 - Pulse Length Requirements for Auxiliary Contacts A and B

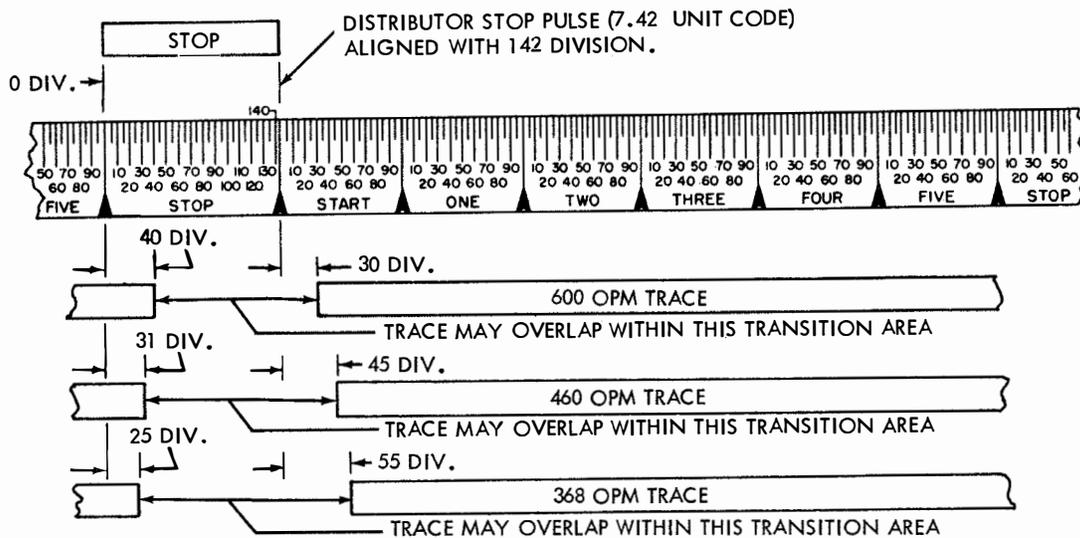


Figure 4 - Pulse Length Requirements for Storing Switch Contacts No. 1 Through No. 5

(b) REQUIREMENTS:

- (1) With test set connected to auxiliary contact A or transmitter auxiliary contact, contact shall close at 12 ± 30 divisions in start pulse segment of test-set scale and open at 70 ± 30 divisions in No. 4 pulse segment of test-set scale. (See Figure 5.)
- (2) With test set connected to auxiliary contact B or distributor clutch-trip contact, contact shall close at 18 ± 30 divisions in No. 4 pulse segment of test-set scale and open at 46 ± 30 divisions in No. 5 pulse segment of test-set scale. (See Figure 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 ± 30 divisions in No. 5 pulse segment of test-set scale and open at 65 ± 30 divisions in No. 3 pulse segment of test-set scale. (See Figure 6.)
- (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 ± 40 divisions in No. 5 pulse segment of test-set scale and open at 63 ± 40 divisions in No. 3 pulse segment of test-set scale. (See Figure 5.)

(c) TO ADJUST: Position respective contact adjusting screw.

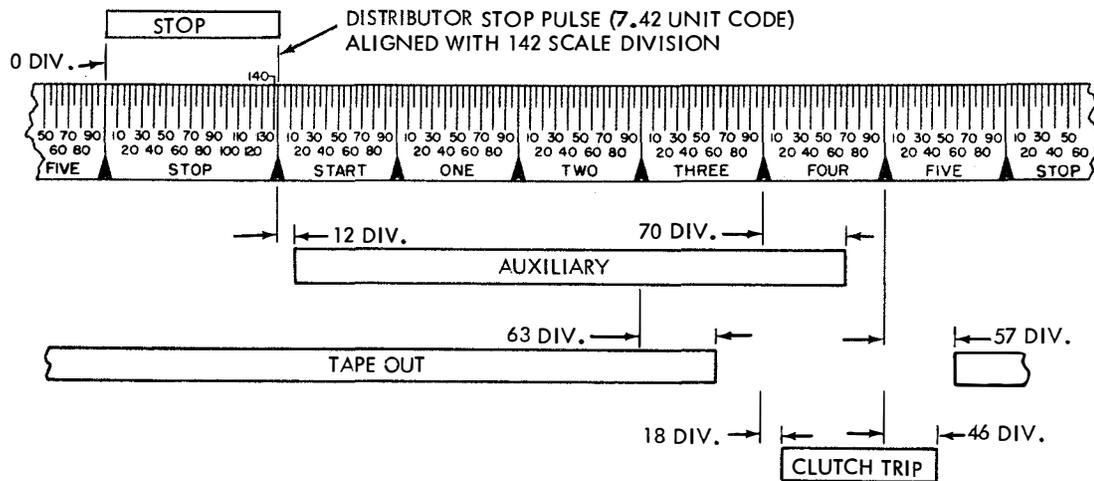


Figure 5 - Pulse Length Requirements for Storing Switch Auxiliary Contacts (28C Unit)

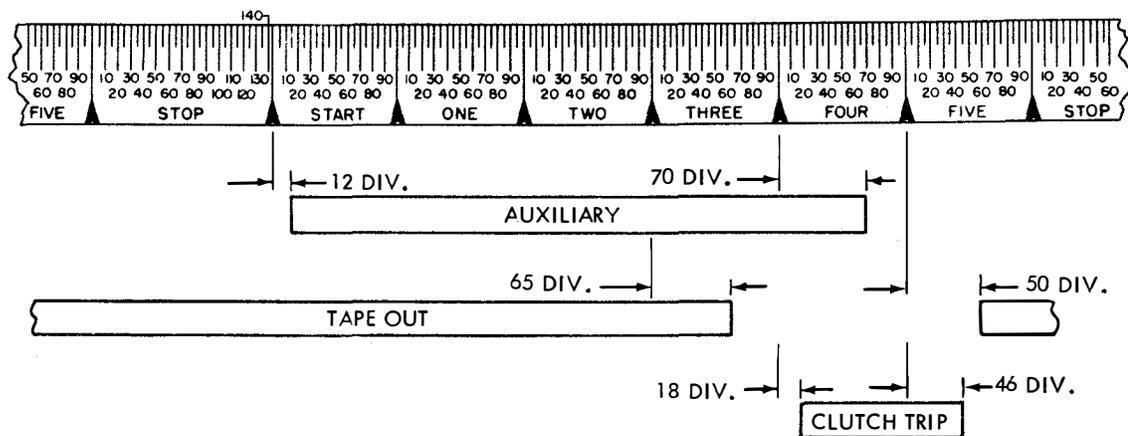


Figure 6 - Pulse Length Requirements for Storing Switch Auxiliary Contacts (28B Unit)

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

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 con-

nected 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 Figure 1.)

(2) Check the No. 2 and No. 4 contacts in accordance with the instructions given for the No. 2 and No. 4 distributor contacts of the pivoted sensing head.

(3) 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.

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.

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 ± 30 divisions in start pulse segment of test-set scale and open at 70 ± 30 divisions in No. 4 pulse segment of test-set scale. (See Figure 7.)

(2) With the distributor clutch-trip contact electrically isolated from the circuit, the clutch-trip contact shall close at 39 ± 30 divisions in No. 4 pulse segment of the test-set scale and open at 67 ± 30 divisions in the No. 5 pulse segment of the test-set scale. (See Figure 7.)

(c) TO ADJUST: Position the respective contact adjusting screws.

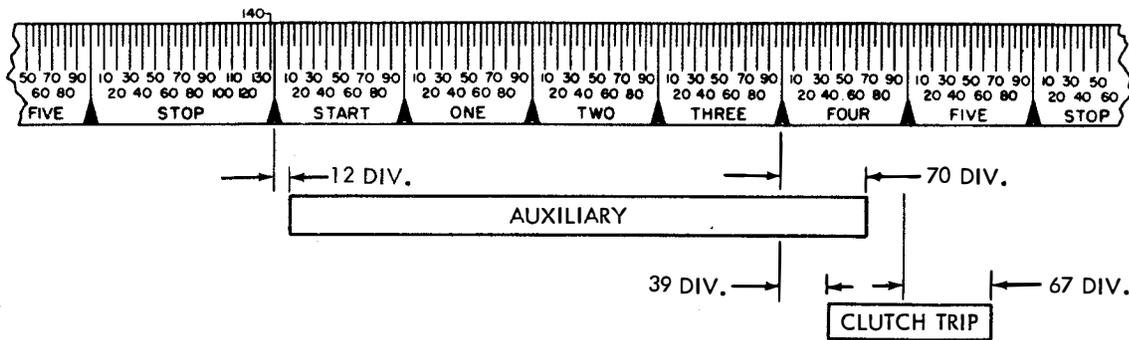


Figure 7 - Pulse Length Requirements for Storing Switch Auxiliary Contacts (28B Unit Fixed Head)