ADDENDUM 573-127-706
Issue 1, May, 1968
AT&TCo Standard

REPLACING PAGE ADDENDUM
Filing Instructions:

1. REMOVE FROM THE SECTION THE PAGES NUMBERED THE SAME AS THOSE ATTACHED TO THIS PINK SHEET.
2. INSERT THE ATTACHED PAGES INTO THE SECTION IN THEIR PLACE.
3. PLACE THIS PINK SHEET AHEAD OF PAGE 1 OF THE SECTION.

28F, 28G, 28LA, AND 28LB

TRANSMITTER-DISTRIBUTOR UNITS

REQUIREMENTS AND ADJUSTMENTS

1. GENERAL

1.001 This addendum which supplements Section 573-127-706, Issue 3, is issued to incorporate engineering changes for the distributor rocker spring requirement and lever slide requirement. Arrows in the margin indicate changes.

1.002 Insert the attached pages in accordance with the filing instruction above.

Attached:
Page 11 dated May 1968, revised
Page 12 dated May 1968, reissued
Page 19 dated May 1968, revised
Page 20 dated May 1968, reissued

Prepared for American Telephone and Telegraph Company
by Teletype Corporation
Printed in U. S. A.

28F, 28G, 28LA, AND 28LB

TRANSMITTER-DISTRIBUTOR UNITS

REQUIREMENTS AND ADJUSTMENTS

CONTENTS

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section contains the requirements and adjusting procedures for the maintenance of the 28F, 28G, 28LA, and 28LB transmitter-distributor units.

1.02 This section is reissued to include adjustment information for modification kits which have been approved for use with these transmitter-distributor units, and to bring all adjustment information up to date.

1.03 In this section left or right, front or rear, and top or bottom apply to the apparatus in its normal operating position as viewed from the front.

1.04 When the requirement calls for the clutch to be disengaged, the clutch-shoe lever must be fully latched between its triplever 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 either the sensing or distributor shaft is rotated 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 main shaft to rotate freely, apply pressure on a lug of the clutch disc with a screwdriver to cause it to engage its latchlever and thus disengage the internal-expansion clutch shoes.

1.05 The covers may be removed for inspection and minor repair of the unit; however, when more extensive maintenance is to be undertaken, it is recommended that the unit be removed from its subbase to disconnect the power and to permit the unit to be inverted. Separate the unit from its subbase by sliding the unit toward the front to disconnect the electrical connectors and then lift upward.

1.06 In addition to the usual teletypewriter tools and materials, the following are required to maintain the transmitter-distributor units with pull-back mechanism.

(a) TP172060 Adjusting Tool: To bend the storing switch mechanism, transfer-type reading contacts.

(b) TP170283 Gauge: To adjust the tape guide.

(c) 28B Stroboscopic Test Set: To check contact-timing measurements.

1.07 Unless otherwise indicated, the requirements and adjustments in 2. of this section are common to the units both with and without the pull-back mechanism.

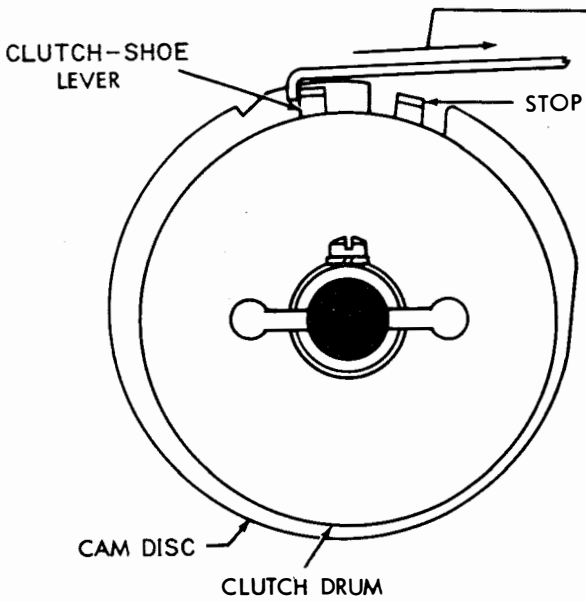
2. REQUIREMENTS AND ADJUSTMENTS

2.01 The following figures show the adjusting tolerances, positions of moving parts, and spring tensions. The illustrations are arranged so that the adjustments are in the sequence that would be followed if a complete readjustment of the apparatus were being made. In some cases 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.

A. Transmitter-Distributor Unit

2.02 Clutch Mechanism

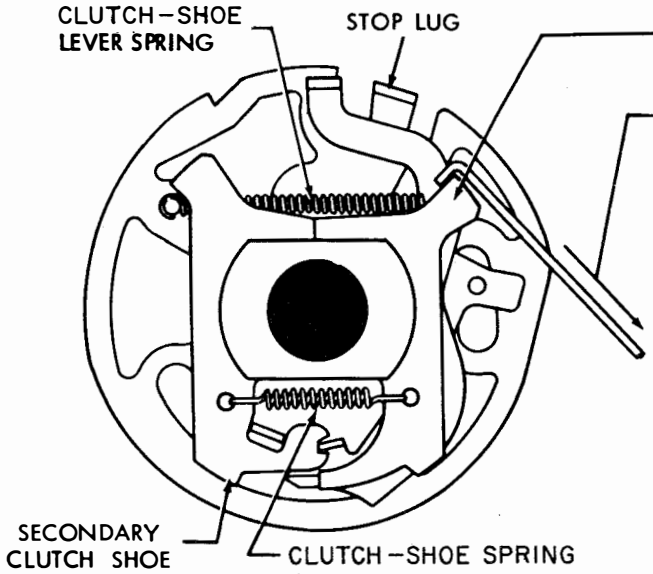
NOTE 1: REQUIREMENTS A AND B ARE ADJUSTED AT THE FACTORY AND SHOULD NOT BE DISTURBED UNLESS ASSOCIATED MECHANISMS HAVE BEEN REMOVED FOR SERVICING OR THERE IS REASON TO BELIEVE THAT THE REQUIREMENTS ARE NOT MET. THE FOLLOWING REQUIREMENTS APPLY TO BOTH THE SENSING CLUTCH AND DISTRIBUTOR CLUTCH.



(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

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

MAKE THIS ADJUSTMENT PRIOR TO ASSEMBLING GEAR.

REQUIREMENT

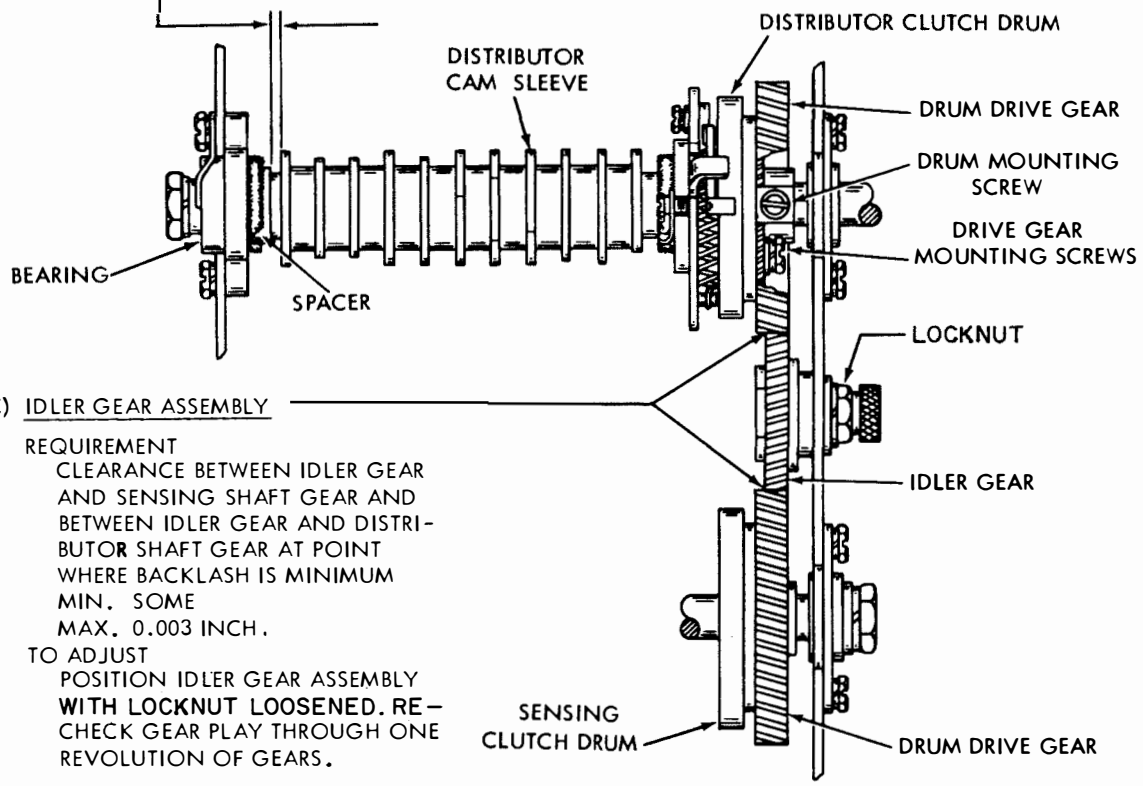
MIN. SOME

MAX. 0.010 INCH

PLAY BETWEEN SLEEVE AND SPACER.

TO ADJUST

REMOVE CLUTCH-DRUM DRIVE GEAR AND LOOSEN DRUM MOUNTING SCREW. RELEASE CLUTCH AND POSITION CAM SLEEVE. TIGHTEN CAM-SLEEVE MOUNTING SCREW AND REINSTALL DRIVE GEAR.



(C) IDLER GEAR ASSEMBLY

REQUIREMENT

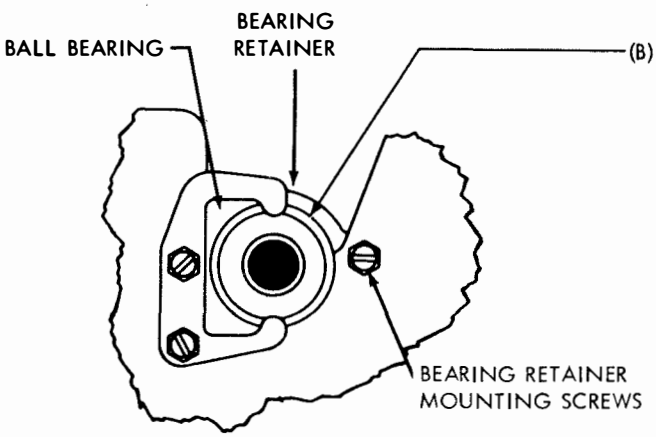
CLEARANCE BETWEEN IDLER GEAR AND SENSING SHAFT GEAR AND BETWEEN IDLER GEAR AND DISTRIBUTOR SHAFT GEAR AT POINT WHERE BACKLASH IS MINIMUM

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.

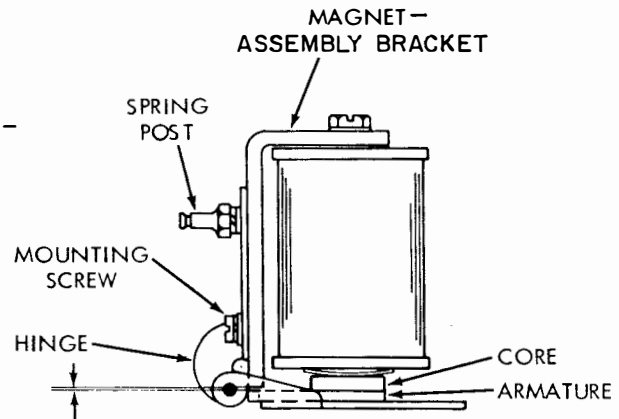
2.04 Clutch Trip Mechanism

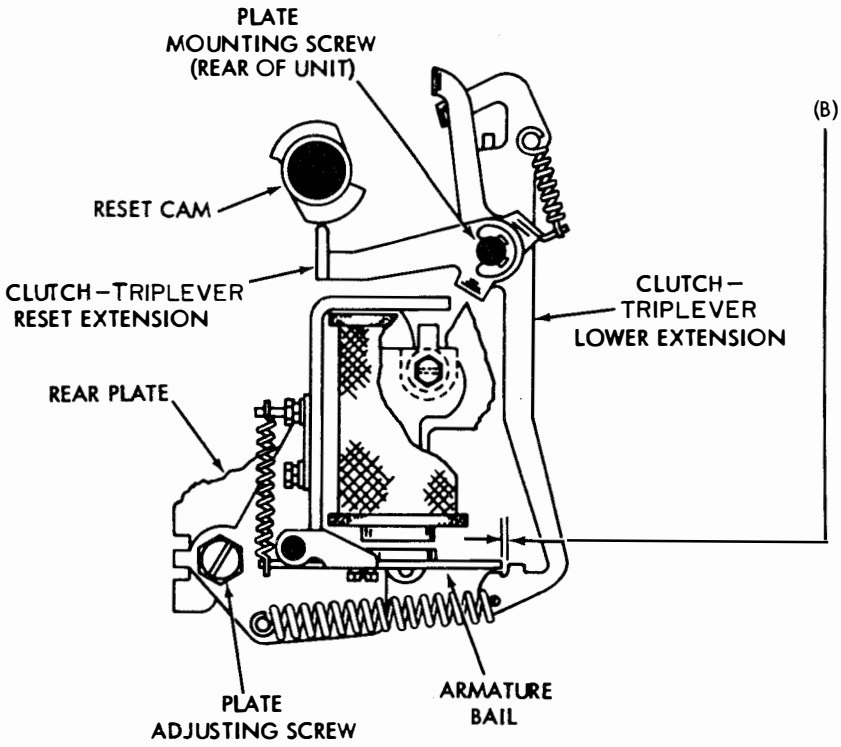
NOTE: REQUIREMENTS APPLY TO BOTH CLUTCH TRIP MECHANISMS. TOP PLATE AND COVER PLATE REMOVED.

(A) CLUTCH ARMATURE AIR GAP

REQUIREMENT
AIR GAP 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 AIR GAP AND REPLACE SPRING.

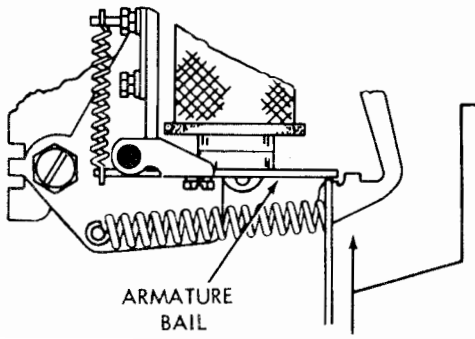




(B) CLUTCH TRIP ASSEMBLY MOUNTING PLATE

REQUIREMENT
CLEARANCE BETWEEN END OF ARMATURE BAIL AND LATCHING SURFACE OF CLUTCH-TRIPLEVER LOWER EXTENSION WITH CLUTCH-TRIPLEVER 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

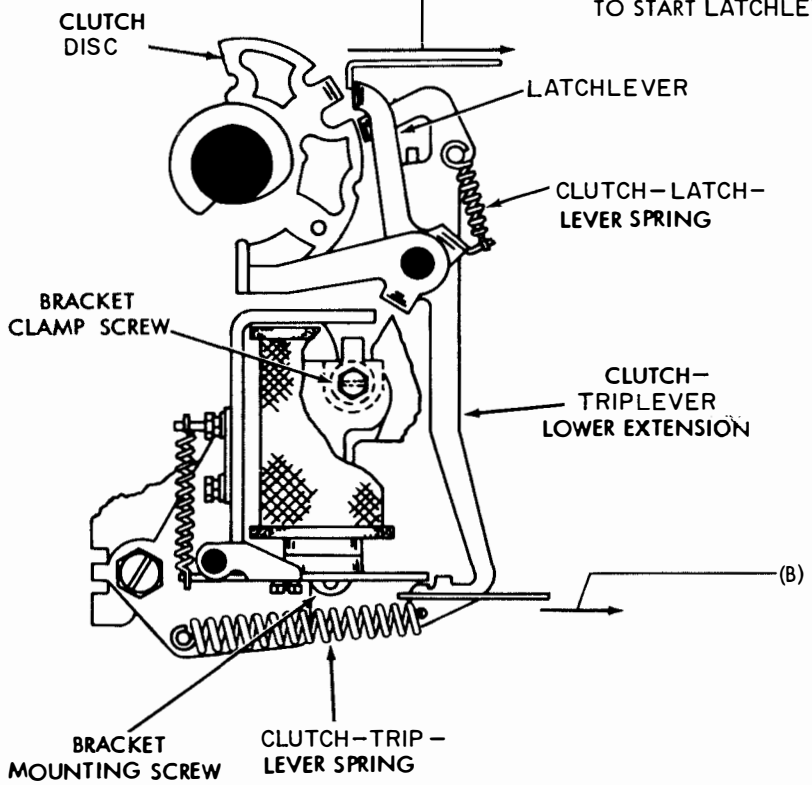
REQUIREMENT
TRIPLEVER RESET EXTENSION ON HIGH PART OF CAM. SCALE APPLIED TO LATCHING END OF ARMATURE BAIL.
MIN. 3 OZS.
MAX. 4-1/2 OZS.
TO START ARMATURE BAIL MOVING.

2.04 Clutch Trip Mechanism (Cont)

NOTE: REFER TO REQUIREMENTS IN PRECEDING PARAGRAPH.
TAPE – GUIDE PLATE REMOVED.

(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. 2-1/2 OZS.
MAX. 4-1/2 OZS.
TO START LATCHLEVER MOVING.



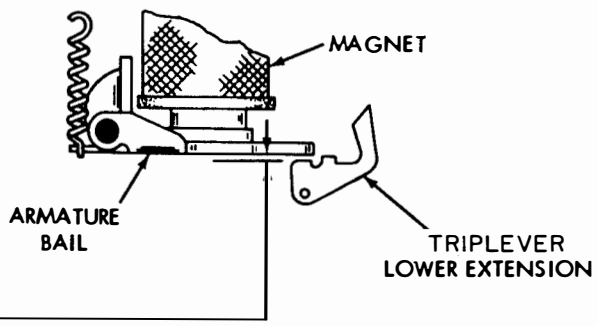
(B) CLUTCH – TRIPLEVER SPRING

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.



2.05 Clutch Mechanism

NOTE 1: REQUIREMENTS A AND B APPLY TO BOTH CLUTCHES. TOP PLATE REMOVED.

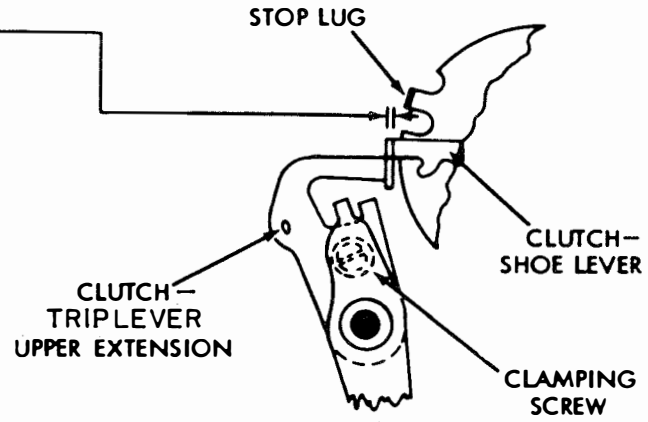
(A) CLUTCH—TRIPLEVER UPPER EXTENSION

(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.

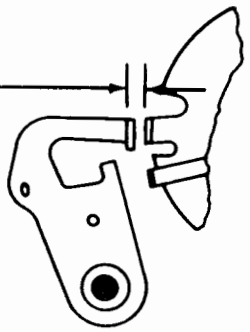


(2) REQUIREMENT

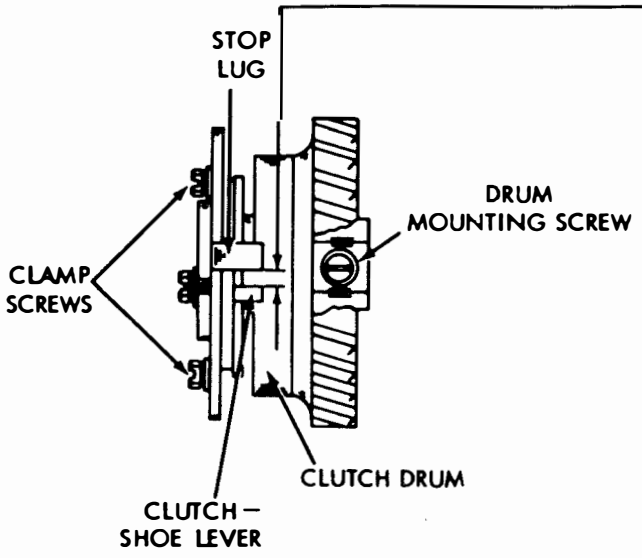
WITH ARMATURE IN ATTRACTED POSITION, THERE SHALL BE SOME CLEARANCE BETWEEN CLUTCH—TRIPLEVER UPPER EXTENSION AND STOP LUG WHEN CLUTCH IS ROTATED TO MAKE CLEARANCE A MINIMUM.

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.

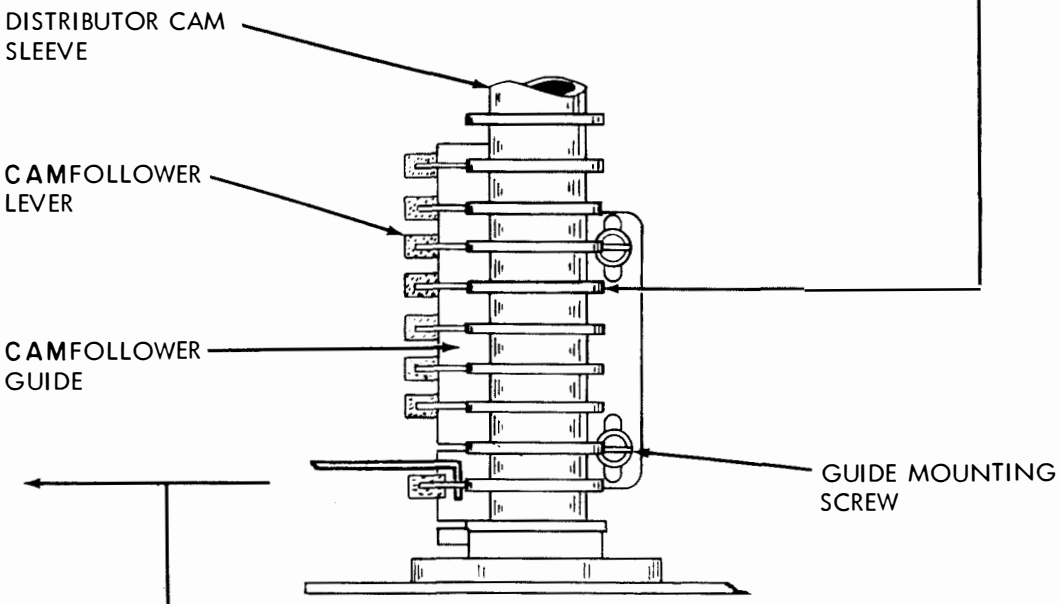
NOTE 2

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.

2.06 Distributor Contact Mechanism

NOTE
REMOVE OIL RESERVOIR AND DISTRIBUTOR BLOCK ASSEMBLY TO FACILITATE ADJUSTMENT.

(A) CAMFOLLOWER GUIDE
REQUIREMENT
(1) CENTER CAMFOLLOWER ENGAGES CAM BY FULL THICKNESS OF FOLLOWER WHEN MOVED FROM SIDE TO SIDE IN ITS GUIDE SLOT.
(2) IN SIMILAR MANNER, OTHER FOLLOWER SHALL ENGAGE CAM BY AT LEAST 75% OF FOLLOWER THICKNESS.
(3) ALL FOLLOWERS MOVE FREELY IN THEIR GUIDE SLOTS.
TO ADJUST
POSITION CAMFOLLOWER GUIDE WITH ITS MOUNTING SCREWS LOOSENED.



(B) 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.

(A) DISTRIBUTOR ROCKER SPRING

TO CHECK

POSITION EACH CONTACT SCREW SO ITS CONTACT SURFACE IS ABOUT 1/32 INCH FROM EDGE OF BLOCK.

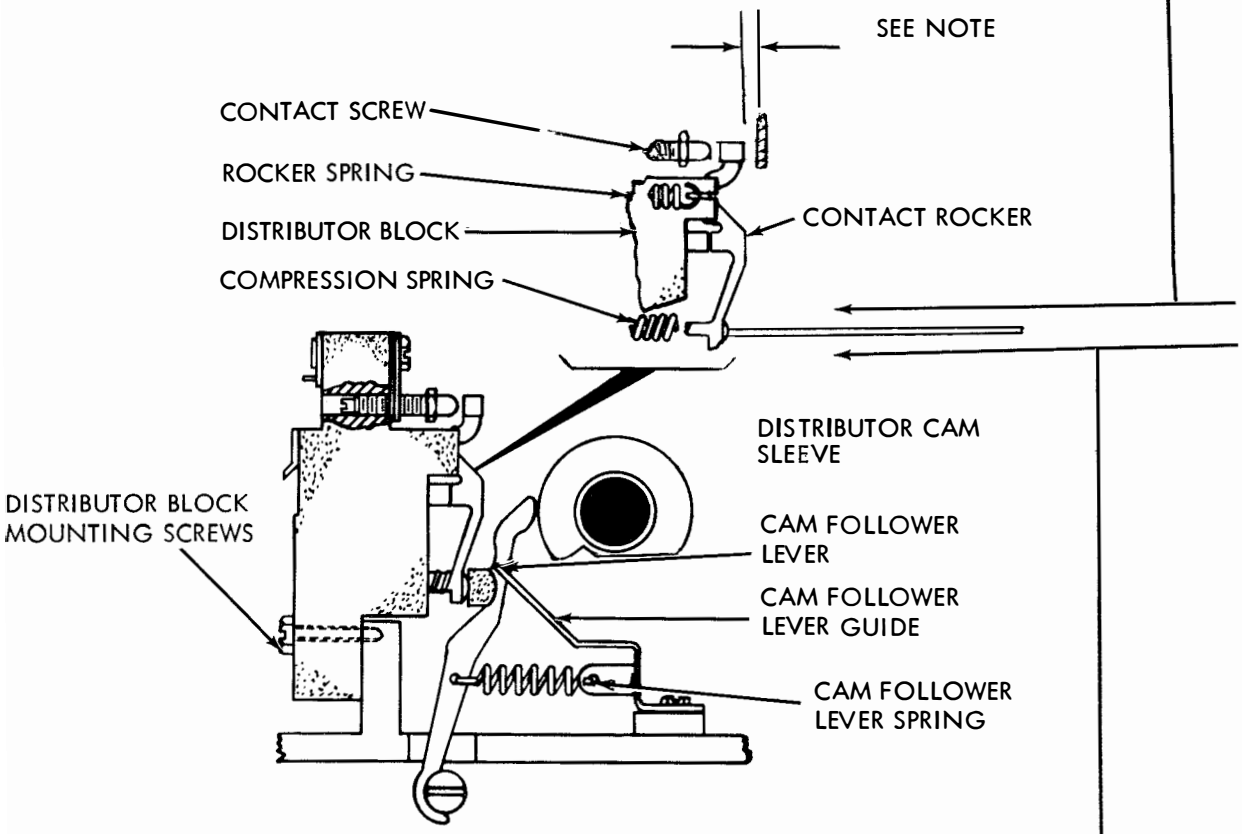
REQUIREMENT

WITH COMPRESSION SPRINGS REMOVED, HOLD DISTRIBUTOR BLOCK IN HORIZONTAL POSITION. PUSH SPRING SCALE DOWNWARD (VERTICALLY).

MIN. 3-1/2 OZS.

MAX. 4-1/2 OZS.

TO SEPARATE CONTACTS.



(B) DISTRIBUTOR ROCKER COMPRESSION SPRINGS

REQUIREMENT

WITH COMPRESSION SPRINGS INSTALLED, AND BLOCK IN A HORIZONTAL POSITION, APPLY SPRING SCALE AT LOWER END OF ROCKER AND PUSH DOWNWARD.

MIN. 6-1/2 OZS.

MAX. 9-1/2 OZS.

TO SEPARATE CONTACTS.

NOTE

WITH DISTRIBUTOR BLOCK REMOVED, ADJUST CONTACTS SO THAT THERE IS 0.070 TO 0.080 INCHES BETWEEN ROCKER LEVERS AND OIL GUARD.

2.06 Distributor Contact Mechanism (Cont)

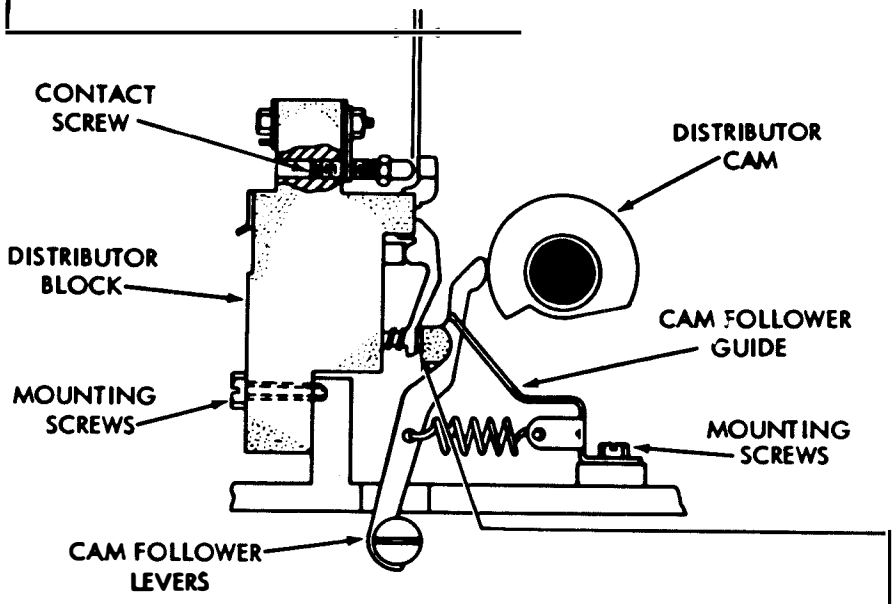
(D) DISTRIBUTOR CONTACT GAP

REQUIREMENT

CONTACT GAP, WITH CAM FOLLOWER ON HIGH PART OF CAM:
MIN. 0.020 INCH
MAX. 0.030 INCH

TO ADJUST

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



(C) DISTRIBUTOR BLOCK ASSEMBLY

REQUIREMENT

ROCKERS SHALL FULLY ENGAGE INSULATED PORTIONS OF RESPECTIVE CAM FOLLOWER LEVERS.

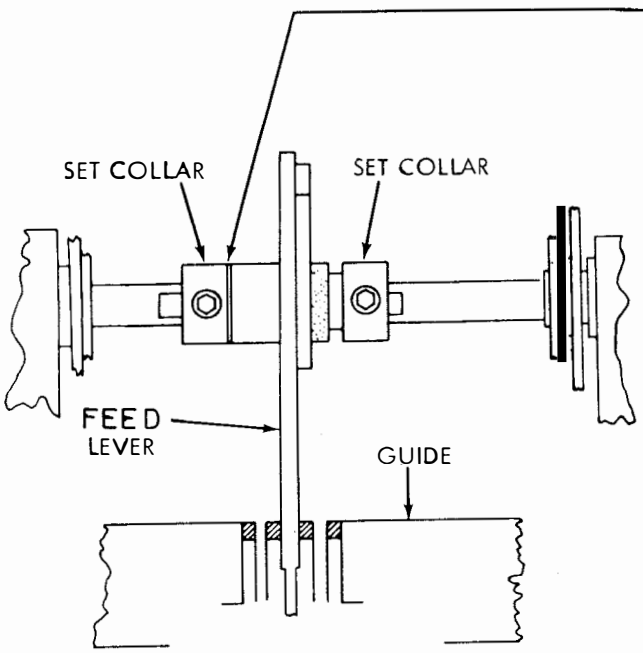
TO ADJUST

POSITION DISTRIBUTOR BLOCK WITH MOUNTING SCREWS LOOSENED.

NOTE

FOR REFINEMENT OF DISTRIBUTOR CONTACT ADJUSTMENTS, REFER TO CONTACT TIMING REQUIREMENTS.

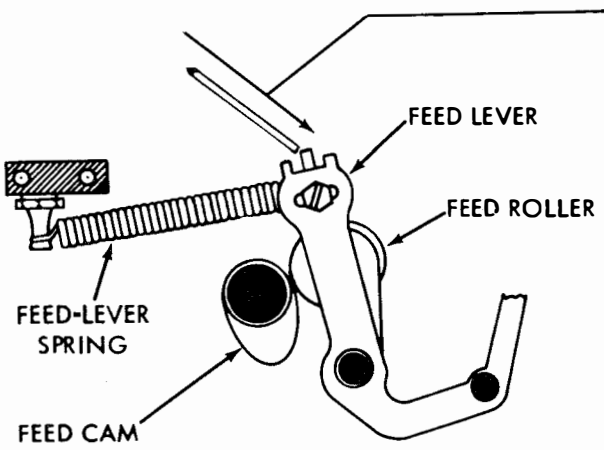
2.07 Feed-Lever Mechanism



(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.

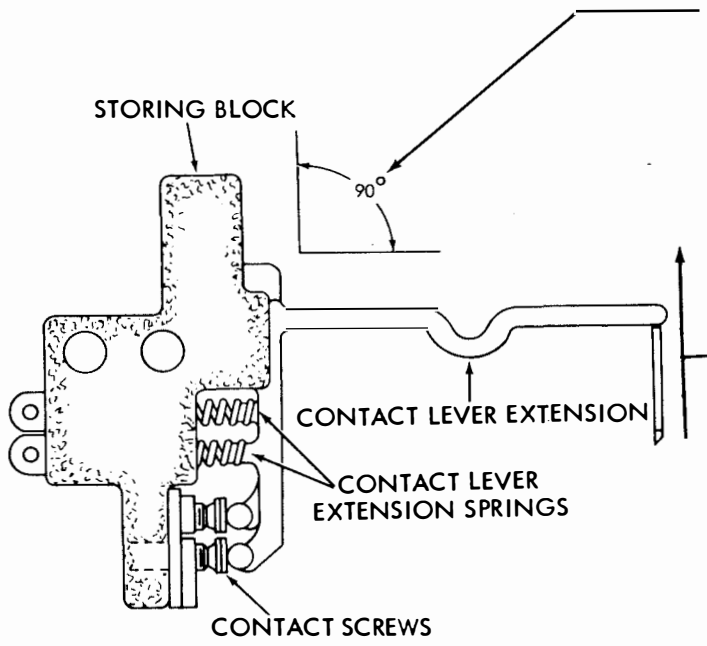
NOTE
AFTER TIGHTENING SET SCREWS, RECHECK ADJUSTMENT FOR BINDS BETWEEN FEED LEVER AND COLLARS, AND BETWEEN FEED LEVER AND GUIDE.



(B) FEED-LEVER SPRING

REQUIREMENT
WITH THE FEED-LEVER CAMFOLLOWER ROLLER ON THE LOW PART OF THE SENSING CAM
MIN. 10 OZS.
MAX. 17 OZS.
TO MOVE FEED LEVER AWAY FROM CAM.

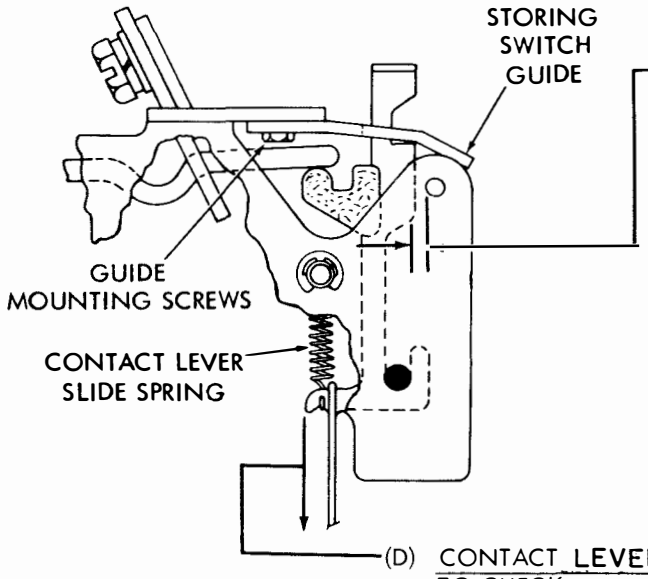
2.08 Storing Switch Mechanism (Nontransfer Type) (Unit Without Pull-back Mechanism)



(A) STORING SWITCH CONTACTS

TO CHECK
REMOVE STORING SWITCH ASSEMBLY.
REQUIREMENT
CONTACT LEVER EXTENSIONS **SHALL** BE PERPENDICULAR TO STORING BLOCK.
TO ADJUST
TURN EACH CONTACT SCREW WITH **HEX** WRENCH. GAUGE BY EYE.

(B) STORING SWITCH CONTACT LEVER EXTENSION SPRING
REQUIREMENT
MIN. 1-3/4 OZS.
MAX. 3-1/2 OZS.
TO START EACH CONTACT LEVER EXTENSION MOVING.



(C) STORING SWITCH GUIDES
PRELIMINARY - BEFORE SWITCH ASSEMBLY IS SECURED TO UNIT, ROTATE SLIDE ECCENTRIC TO MAKE CLEARANCE BETWEEN SLIDE STOP POST AND END CONTACT LEVER SLIDES MINIMUM.
(1) REQUIREMENT
MIN. 0.005 INCH
MAX. 0.012 INCH
CLEARANCE BETWEEN END SLIDES AND STOP POST. (HOLD SLIDES AWAY FROM STOP POST.)
NOTE
AFTER CONTACT LEVER SLIDE ADJUSTMENT, **CLEARANCE MAY BE 0.005 TO** 0.015 INCH.
(2) REQUIREMENT
CONTACT LEVER SLIDES FREE IN GUIDE SLOTS AND PARALLEL TO SIDE PLATES (GAUGE BY EYE).
TO ADJUST
POSITION GUIDE WITH ITS MOUNTING SCREWS LOOSENED.

(D) CONTACT **LEVER SLIDE SPRINGS**
TO CHECK
SELECT BLANK COMBINATION, TRIP SENSING CLUTCH AND ROTATE SHAFT UNTIL LATCHES MOVE AWAY FROM SLIDES. HOLD CONTACT EXTENSION LEVERS AWAY.
REQUIREMENT
MIN. 4 OZS.
MAX. 6 OZS.
TO START EACH **LEVER SLIDE MOVING.**

INSTRUCTIONS FOR REPLACING
STORING SWITCH ASSEMBLY

REQUIREMENT

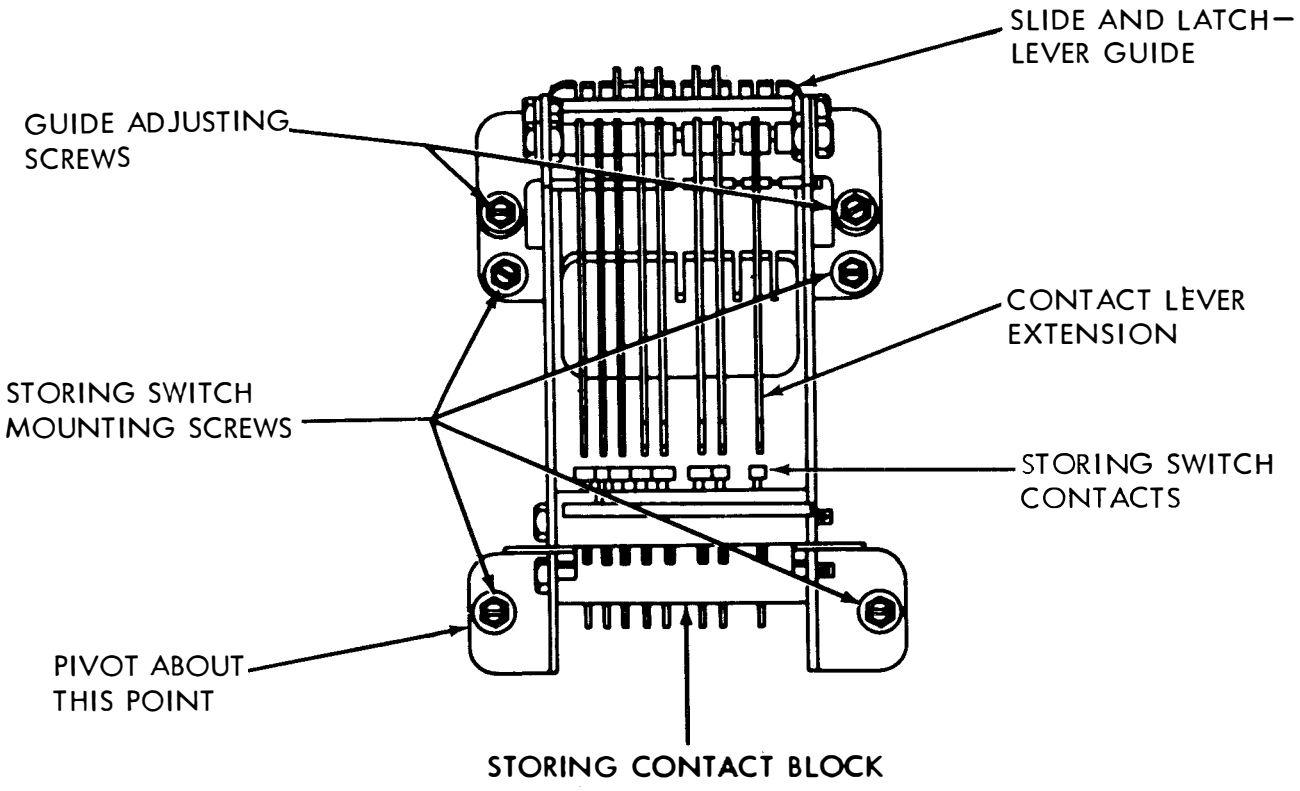
STORING SWITCH ASSEMBLY SHALL ALIGN WITH LATCHLEVERS SO THAT LATCHLEVERS AND SLIDES FUNCTION WITHOUT BINDING.

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

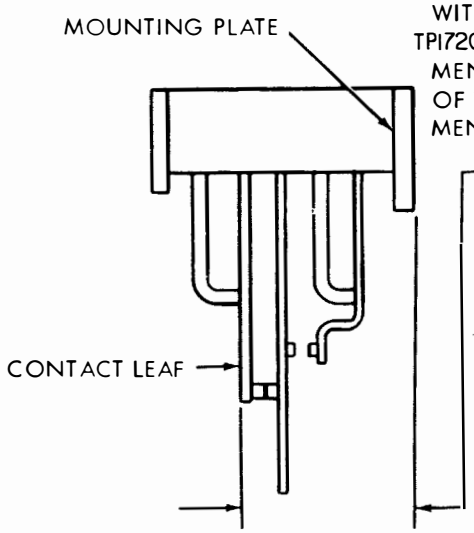
PIVOT STORING SWITCH WITH STORING SWITCH MOUNTING SCREWS LOOSENED. RECHECK REQUIREMENT.



2.09 Transfer-type Storing Switch Mechanism (Unit With Pull-back Mechanism)

NOTE 1

FOLLOWING ADJUSTMENTS (A THROUGH E) ARE TO BE MADE WITH THE CONTACT ASSEMBLIES REMOVED FROM THE UNIT. USE A TP172060 ADJUSTING TOOL TO BEND THE CONTACTS. FOR EACH ADJUSTMENT START WITH THE CONTACT PILE-UP FARTHEST FROM THE HANDLE OF THE BENDING TOOL TO AVOID DISTURBING COMPLETED ADJUSTMENTS.



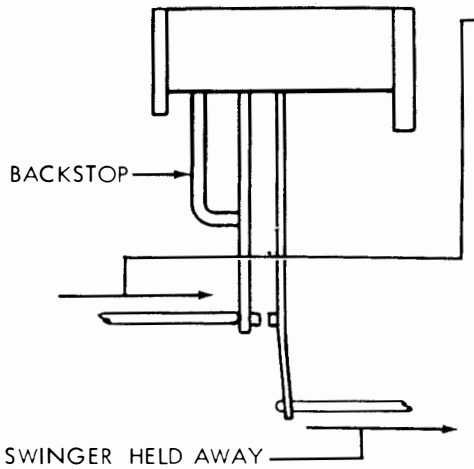
(A) BACKSTOP - NORMALLY CLOSED CONTACT

REQUIREMENT

NORMALLY CLOSED CONTACT LEAVES PARALLEL TO MOUNTING PLATE AND IN LINE WITH EACH OTHER AS GAUGED BY EYE.

TO ADJUST

BEND BACKSTOP.



(B) SPRING TENSION - NORMALLY CLOSED CONTACT

REQUIREMENT

WITH SWINGER CONTACT HELD AWAY

MIN. 2 OZS.

MAX. 6 OZS.

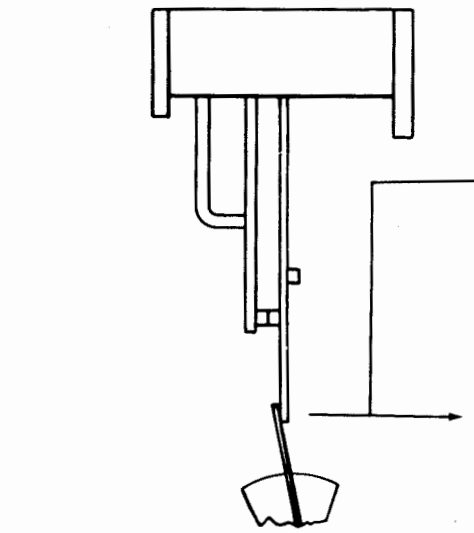
TO MOVE EACH NORMALLY CLOSED LEAF AWAY FROM BACKSTOP.

TO ADJUST

BEND NORMALLY CLOSED LEAF SPRING

NOTE 2

TO INCREASE TENSION OF NORMALLY CLOSED LEAF, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM LEAF, BEND LEAF, AND THEN REMAKE ADJUSTMENT (A).



(C) SWINGER SPRING TENSION

REQUIREMENT

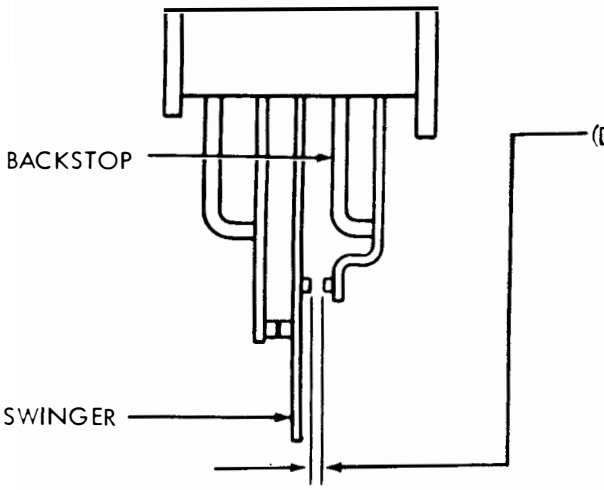
MIN. 35 GRAMS

MAX. 50 GRAMS

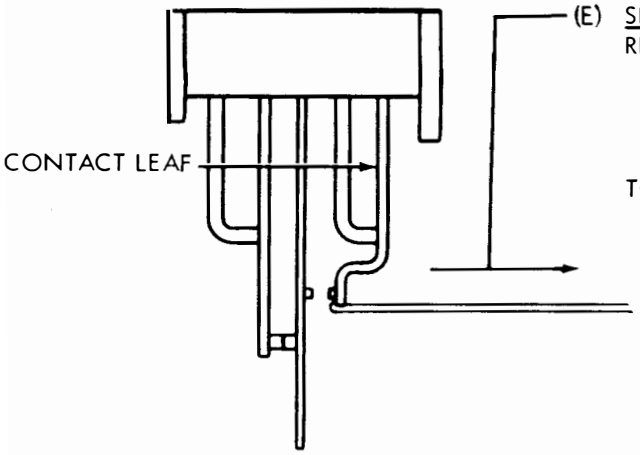
TO OPEN NORMALLY CLOSED CONTACT.

TO ADJUST

BEND SWINGER LEAF.



(D) NORMALLY OPEN CONTACT GAP
REQUIREMENT
MIN. 0.010 INCH
MAX. 0.015 INCH
CLEARANCE.
TO ADJUST
BEND NORMALLY OPEN CONTACT BACKSTOP.



(E) SPRING TENSION - NORMALLY OPEN CONTACT
REQUIREMENT
MIN. 35 GRAMS
MAX. 50 GRAMS
TO MOVE EACH NORMALLY OPEN LEAF AWAY FROM ITS BACKSTOP.
TO ADJUST
BEND NORMALLY OPEN LEAF SPRING.

NOTE
TO INCREASE TENSION OF NORMALLY OPEN LEAF SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM LEAF, BEND LEAF, AND THEN REMAKE ADJUSTMENT (E).

2.09 Transfer-type Storing Switch Mechanism (Unit With Pull-back Mechanism) (Cont)

INSTRUCTIONS FOR REPLACING STORING SWITCH ASSEMBLY (TRANSFER TYPE)

PLACE SWITCH ASSEMBLY ON LOWER SURFACE OF MAIN CASTING. EXERCISE CARE IN SEATING LEVER SLIDES AGAINST PUSHLEVERS AND LATCHLEVERS IN APPROPRIATE SLOT OF LEVER SLIDE GUIDE.

STORING SWITCH ASSEMBLY

REQUIREMENT

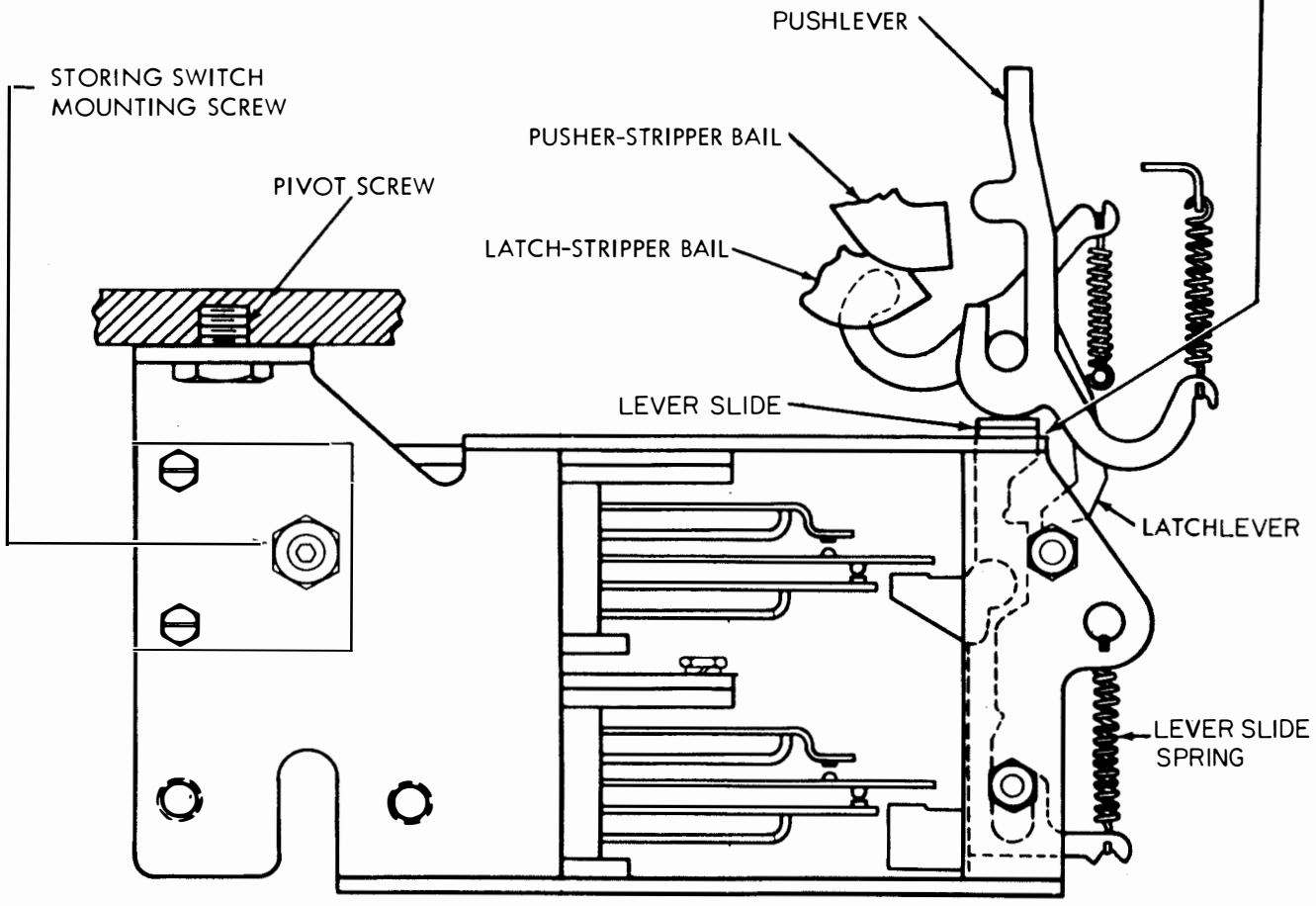
WITH TOP PLATE IN PLACE, SELECT A LTRS-BLANK-LTRS COMBINATION AND OBSERVE LATCH-AND PUSHLEVER ACTION. STORING SWITCH SHALL ALIGN WITH LATCHLEVER SO THAT LATCHLEVERS AND SLIDES FUNCTION WITHOUT BINDING.

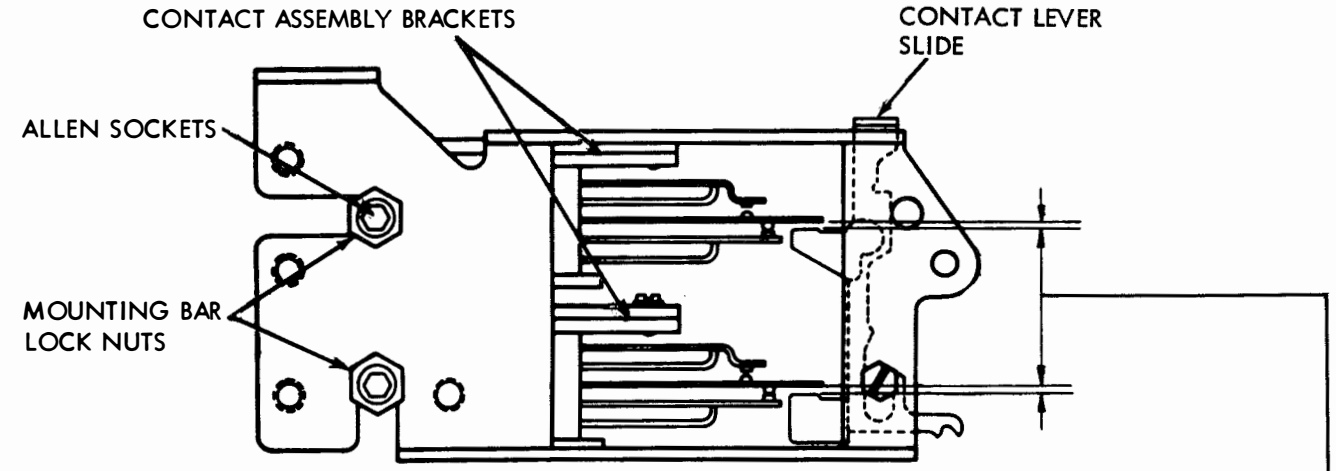
TO ADJUST

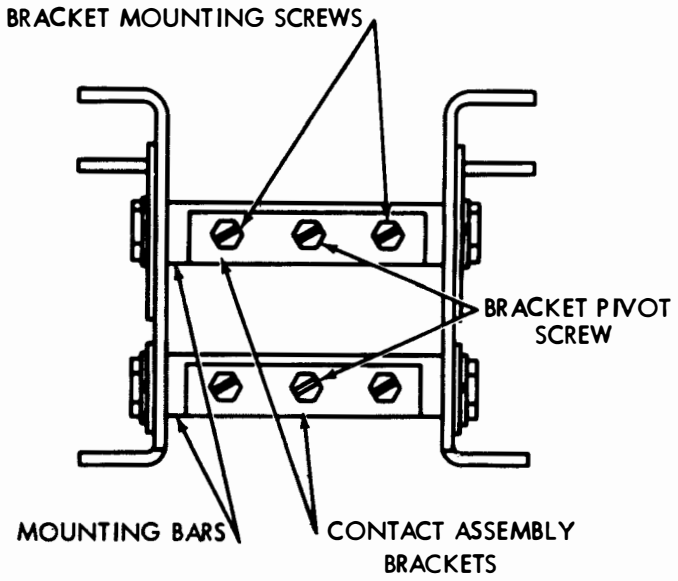
·POSITION SWITCH ASSEMBLY WITH ITS MOUNTING SCREWS LOOSENED. RECHECK REQUIREMENT AFTER TIGHTENING SCREWS.

NOTE

A MINOR ADJUSTMENT OF THE SENSING PIN AND PUSHLEVER GUIDE MAY BE NECESSARY.





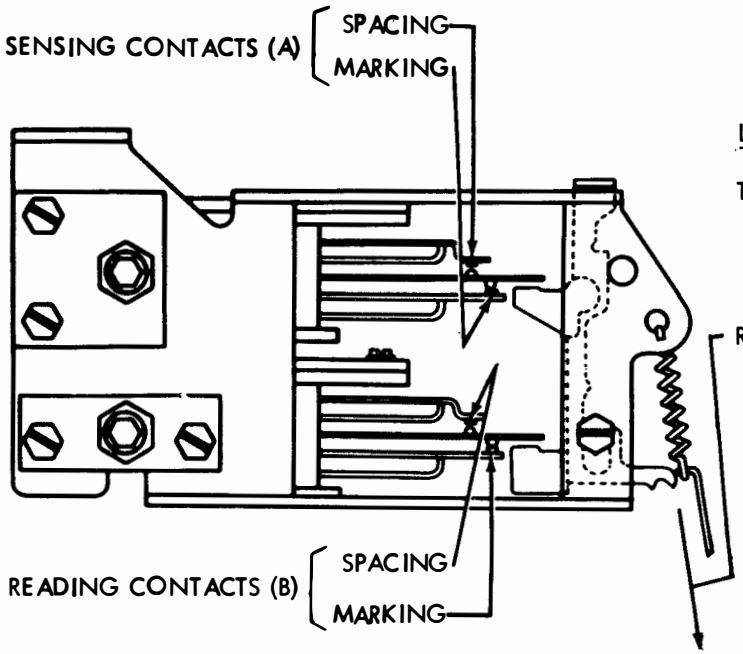


LEVER SLIDE (FINAL EXCEPT WHERE TEST SET IS AVAILABLE)

TO CHECK
STORING SWITCH ASSEMBLY INSTALLED AND SENSING SLIDES SELECTED AND LATCHED.

REQUIREMENT
MIN. SOME
MAX. 0.020 INCH
CLEARANCE BETWEEN ALL SENSING SLIDES AND CONTACT SWINGERS.

TO ADJUST
LOOSEN MOUNTING BAR LOCK NUTS AND BRACKET MOUNTING SCREWS TO FRICTION TIGHT. INSERT AN ALLEN WRENCH IN END OF CONTACT ASSEMBLY MOUNTING BAR. POSITION CONTACT ASSEMBLY BY ROTATING BAR TO PIVOT CONTACT ASSEMBLY. CHECK AT ALL SWINGERS.



LEVER SLIDE SPRING

TO CHECK
PLACE LEVER SLIDES IN UPPERMOST POSITION (BLANK SELECTED, LATCHES STRIPPED). HOOK SPRING SCALE IN THE SPRING LOOP.

REQUIREMENT
MIN. 6 OZS.
MAX. 9 OZS.
TO PULL EACH SPRING TO ITS INSTALLED LENGTH.

2.10 Tape Lid Mechanism (Tape Lid Assembly Without Tape-lid Spring) (Unit Without Pull-back Mechanism)

NOTE 1

REMOVE TOP AND TAPE GUIDE PLATES. LUBRICATE PRIOR TO ADJUSTMENT.

(1) REQUIREMENT (PRELIMINARY)

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

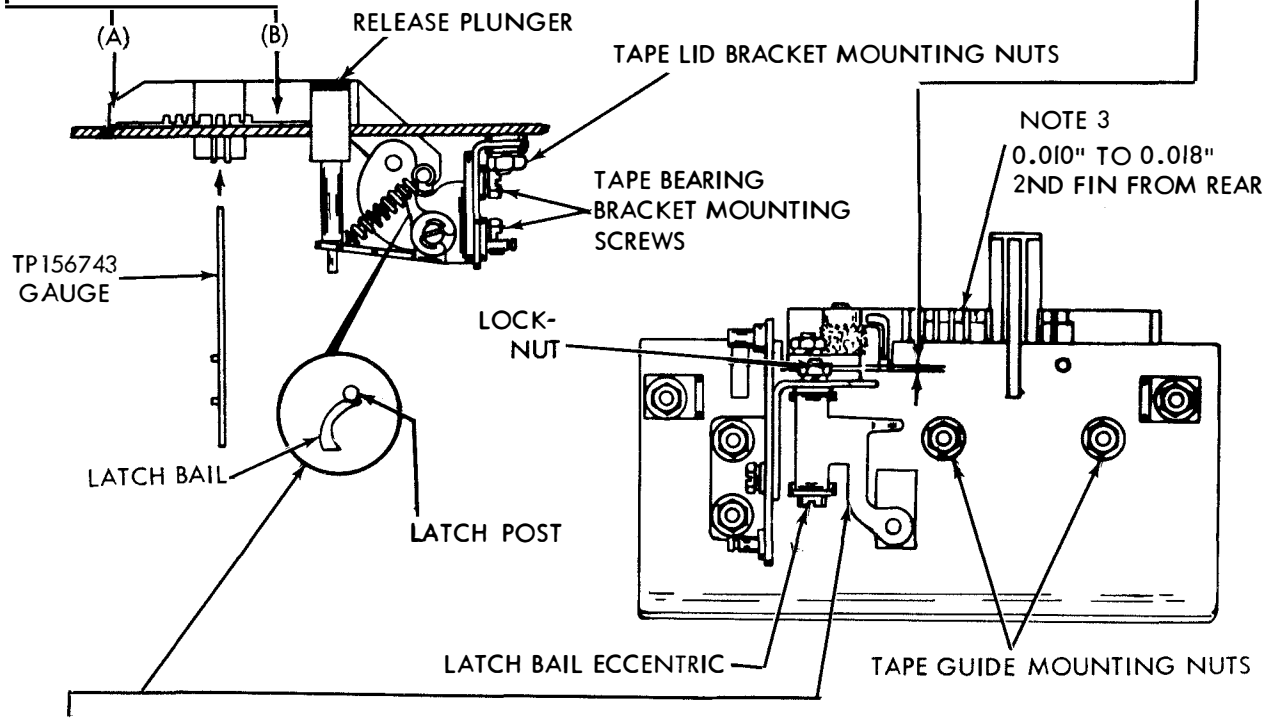
TAPE LID FRONT BEARING SURFACE (A) SHALL TOUCH TAPE GUIDE PLATE. CLEARANCE (B) MEASURED AT FIN OF TAPE LID IN LINE WITH REAR TAPE GUIDE (SEE NOTE 3):
MIN. 0.010 INCH
MAX. 0.018 INCH

NOTE 2

WHEN BOTH 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 BRACKET. RECHECK REQUIREMENT (1).



(3) REQUIREMENT

RELEASE PLUNGER SHALL HAVE SOME END PLAY WHEN LID IS LATCHED AGAINST TAPE GUIDE PLATE.

TO ADJUST

WITH ECCENTRIC MOUNTING POST LOCK NUT FRICTION TIGHT AND LID RAISED, ROTATE HIGH PART OF ECCENTRIC TOWARD TAPE GUIDE PLATE. CLOSE LID AND AND ROTATE ECCENTRIC TOWARD BRACKET UNTIL LATCH JUST FALLS UNDER FLAT ON POST. RECHECK BY DEPRESSING PLUNGER WITH LID HELD DOWN. TIP OF LATCH SHOULD CLEAR POST AS PLUNGER IS OPERATED.

2.11 Tape Lid Mechanism (With Tape-lid Spring)

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

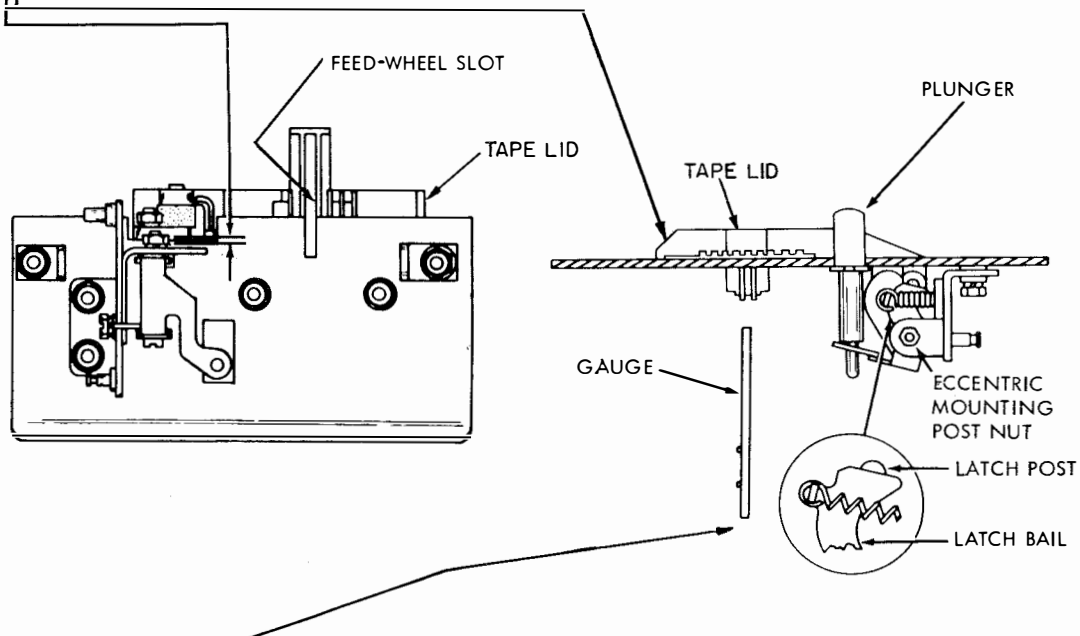
MEASURED AT TAPE-LID FIN IN LINE WITH REAR TAPE GUIDE (2ND. FIN FROM REAR).

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.

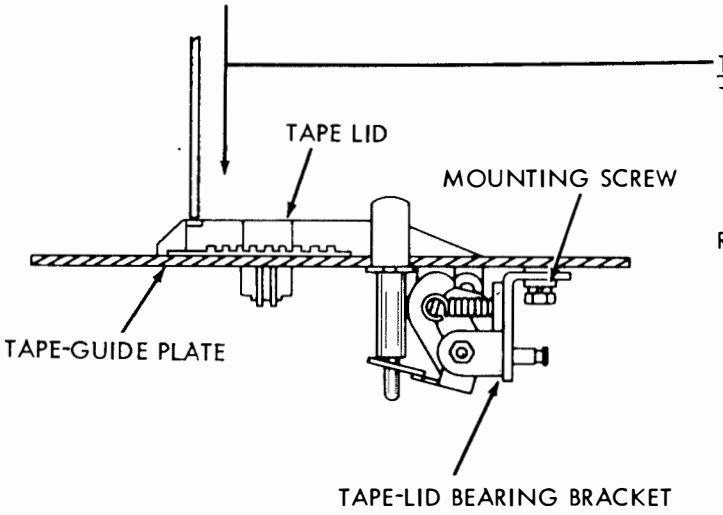
TO ADJUST

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.

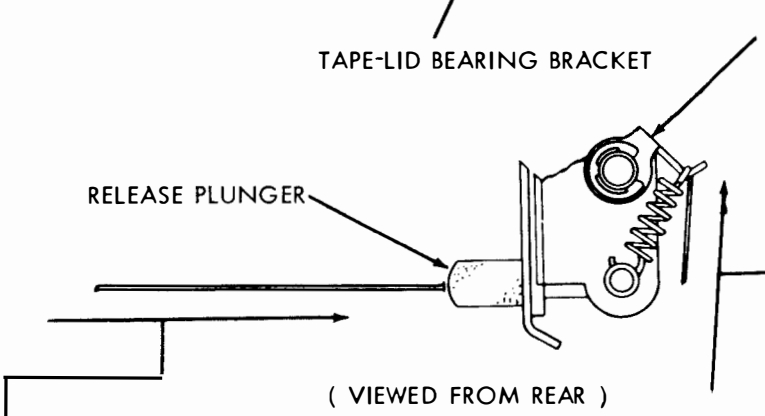
TO CHECK

WITH TAPE LID HELD DOWN MANUALLY, LATCH TIP SHOULD CLEAR LATCH POST WHEN RELEASE BUTTON IS OPERATED. WITH TAPE LID LATCHED, TIP OF LATCH SHOULD PROJECT BEYOND FLAT OF LATCH POST, AND THERE SHOULD BE SOME ENDPLAY IN RELEASE BUTTON.

2.11 Tape Lid Mechanism (With Tape-lid Spring) (Cont)



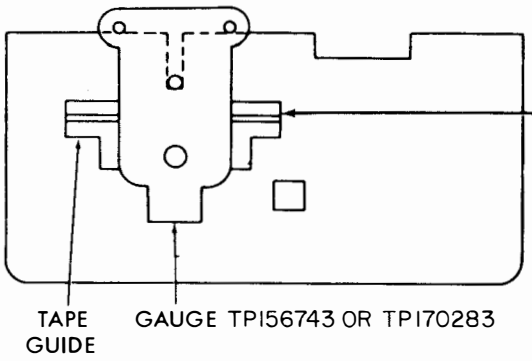
TAPE-LID SPRING
TO CHECK
OPEN TAPE LID. HOLD UNIT SO TAPE-GUIDE PLATE IS HORIZONTAL. APPLY SCALE AT TOP OF LID IMMEDIATELY LEFT OF TAPE-OUT PIN HOLE. HOLD PLUNGER FULLY DEPRESSED.
REQUIREMENT
MIN. 3 OZS. *MIN. 1/8 OZ.
MAX. 4-1/2 OZS. *MAX. 1 OZ.
TO MOVE OPEN END OF TAPE LID AGAINST TAPE-GUIDE PLATE.
*UNITS WITH PULL-BACK MECHANISM



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.

2.12 Tape-guide Plate



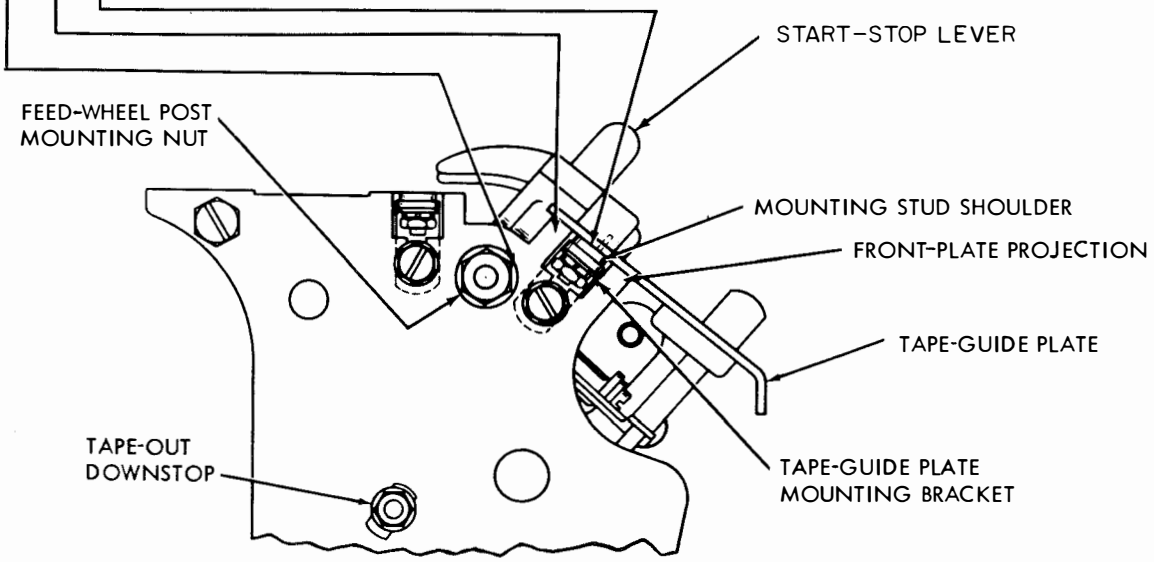
TAPE GUIDE
REQUIREMENT
WITH GAUGE PROPERLY POSITIONED
MIN. SOME
MAX. 0.003 INCH
BETWEEN GAUGE AND TAPE GUIDES.
TO ADJUST
LOOSEN TAPE-GUIDE MOUNTING NUTS TO FRICTION TIGHT. PROPERLY POSITION GAUGE ON TAPE-GUIDE PLATE. POSITION TAPE GUIDES TO MEET REQUIREMENT.

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 PLATES.
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 NOTCHES OF FRONT AND REAR PLATES, AND PLACE SENSING PINS ADJACENT TO LEFT EDGE OF GUIDE PLATE. PLACE TAPE-OUT PIN INTO ITS HOLE. TIGHTEN EACH BRACKET MOUNTING NUT.

(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.



2.13 Top Plate Assembly

TOP PLATE

(1) REQUIREMENT

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

TO ADJUST

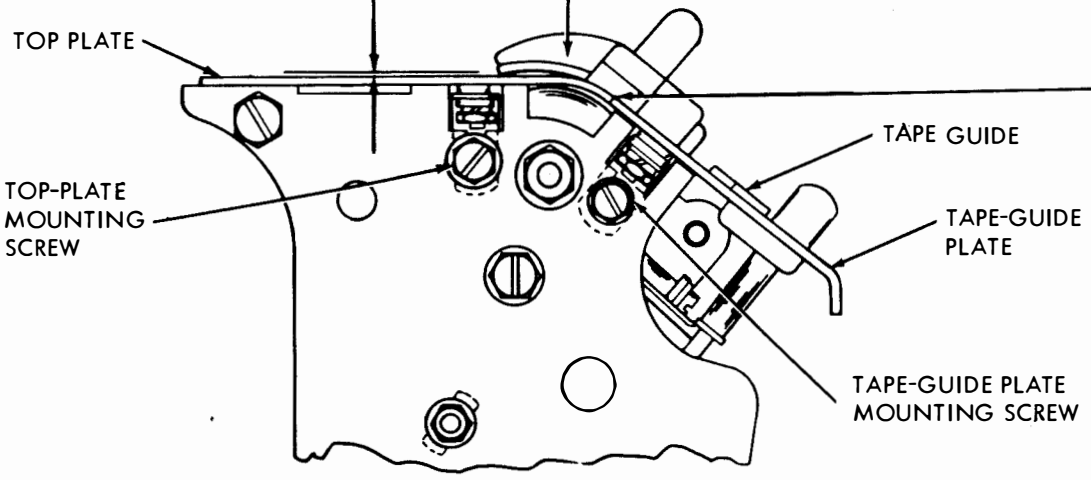
LOOSEN MOUNTING BRACKET NUTS UNTIL BRACKETS ARE FRICTION TIGHT. PRESS TOP PLATE INTO POSITION. TOP PLATE SHALL REST ON AT LEAST THREE PROJECTIONS OF SIDE PLATES. MAKE SURE THE TIGHT-TAPE ARM EXTENSION IS UNDER THE TOP PLATE.

(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

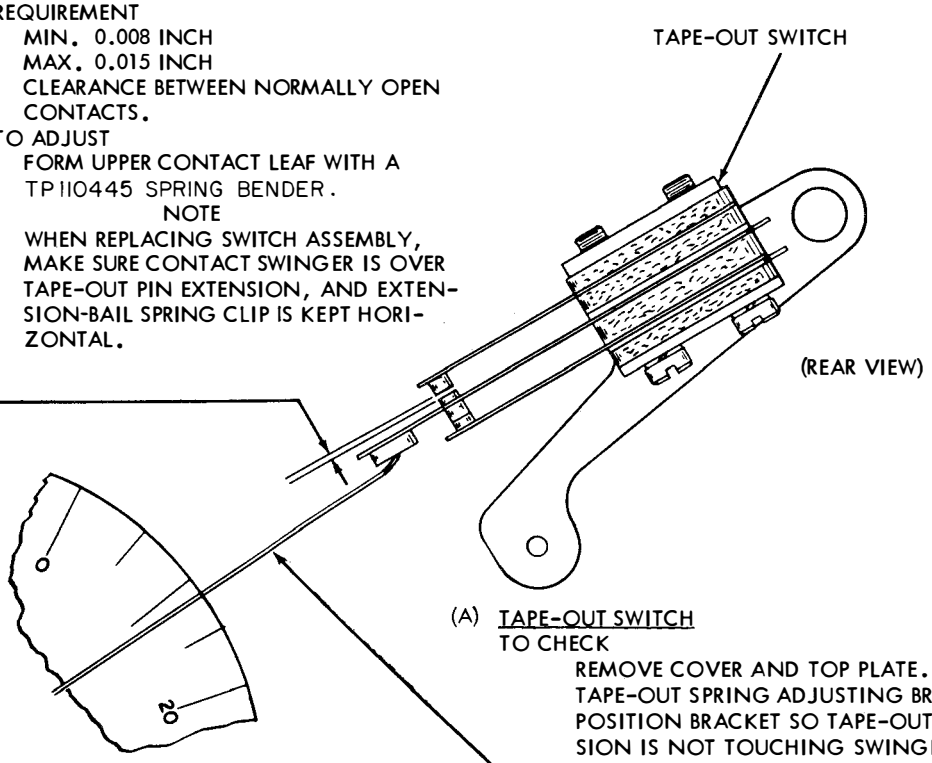
CLEARANCE BETWEEN TAPE LID AND TAPE-GUIDE PLATE MEASURED IN AREA BETWEEN TAPE GUIDES (PLAY IN TAPE LID TAKEN UP TOWARD TAPE-GUIDE PLATE).

TO ADJUST

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

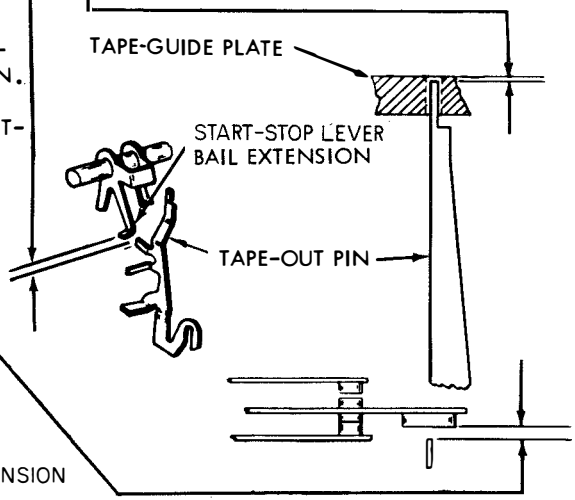
2.14 Tape-out Switch Assembly

(2) REQUIREMENT
MIN. 0.008 INCH
MAX. 0.015 INCH
CLEARANCE BETWEEN NORMALLY OPEN CONTACTS.
TO ADJUST
FORM UPPER CONTACT LEAF WITH A TP110445 SPRING BENDER.
NOTE
WHEN REPLACING SWITCH ASSEMBLY, MAKE SURE CONTACT SWINGER IS OVER TAPE-OUT PIN EXTENSION, AND EXTENSION-BAIL SPRING CLIP IS KEPT HORIZONTAL.



(A) TAPE-OUT SWITCH
TO CHECK
REMOVE COVER AND TOP PLATE. LOOSEN TAPE-OUT SPRING ADJUSTING BRACKET. POSITION BRACKET SO TAPE-OUT EXTENSION IS NOT TOUCHING SWINGER PAD.
(1) REQUIREMENT
MIN. 8 GRAMS
MAX. 15 GRAMS
TO JUST SEPARATE NORMALLY CLOSED CONTACTS (SCALE AT CENTER OF SWINGER PAD).
TO ADJUST
DISCONNECT TAPE-OUT EXTENSION BAIL. REMOVE SWITCH ASSEMBLY.
FORM CONTACT SWINGER WITH A TP110445 SPRING BENDER.

(B) TAPE-OUT PIN
(1) REQUIREMENT
WHEN START-STOP LEVER IS IN FREE-WHEEL OR STOP POSITION, TAPE-OUT PIN SHALL BE FLUSH TO 0.010 INCH BELOW SURFACE OF TAPE-GUIDE PLATE.
TO ADJUST
POSITION TAPE-OUT PIN DOWNSTOP WITH ITS MOUNTING NUT LOOSENED.
(2) REQUIREMENT
WITH START-STOP LEVER IN RUN POSITION
MIN. 0.055 INCH
CLEARANCE BETWEEN TAPE-OUT PIN EXTENSION AND START-STOP LEVER BAIL EXTENSION.
TO ADJUST
POSITION EXTENSION BAIL WITH ITS MOUNTING SCREW LOOSENED.

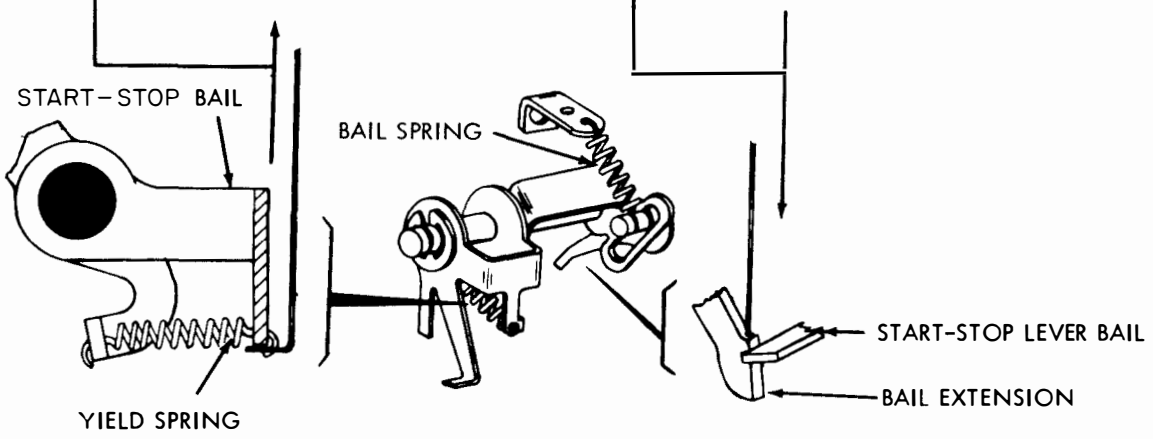


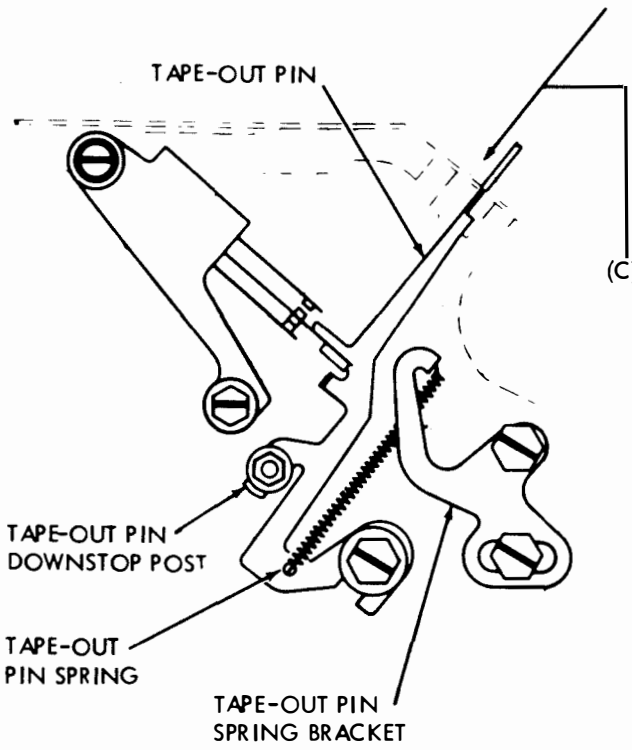
(C) TAPE-OUT SWITCH BRACKET
TO CHECK
INSERT PIECE OF UNPERFORATED TAPE UNDER TAPE LID.
REQUIREMENT
MIN. 0.006 INCH
MAX. 0.012 INCH
FOR UNIT WITHOUT PULL-BACK MECHANISM
MIN. 0.006 INCH
MAX. 0.020 INCH
FOR UNIT WITH PULL-BACK MECHANISM
CLEARANCE BETWEEN TAPE-OUT PIN EXTENSION AND CONTACT SWINGER PAD.
TO ADJUST
POSITION SWITCH BRACKET WITH ITS MOUNTING SCREW LOOSENED.

2.15 Tape-out Pin and Bail Assembly

(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.





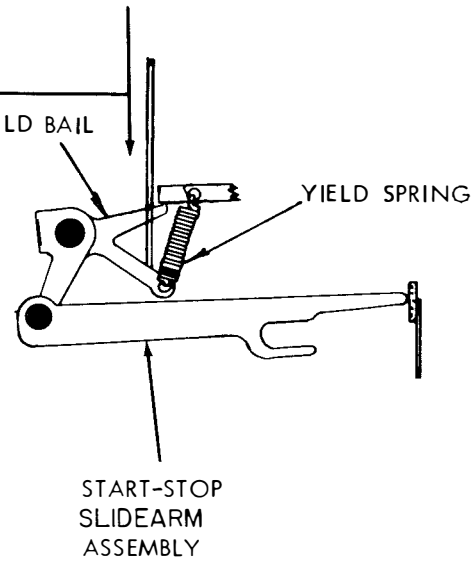
(C) TAPE-OUT PIN SPRING
TO CHECK
PLACE START-STOP LEVER IN RUN POSITION.
REQUIREMENT
MIN. 38 GRAMS
MAX. 45 GRAMS
TO MOVE PIN FLUSH WITH TAPE-GUIDE PLATE.
TO ADJUST
POSITION SPRING BRACKET WITH ITS MOUNTING SCREWS LOOSENED. RECHECK REQUIREMENT.

2.16 START-STOP Switch Assembly

START-STOP BAIL YIELD SPRING

TO CHECK
PLACE START-STOP LEVER IN RUN POSITION.

REQUIREMENT
MIN. 4 OZS.
MAX. 6 OZS.
TO SEPARATE BAILS.



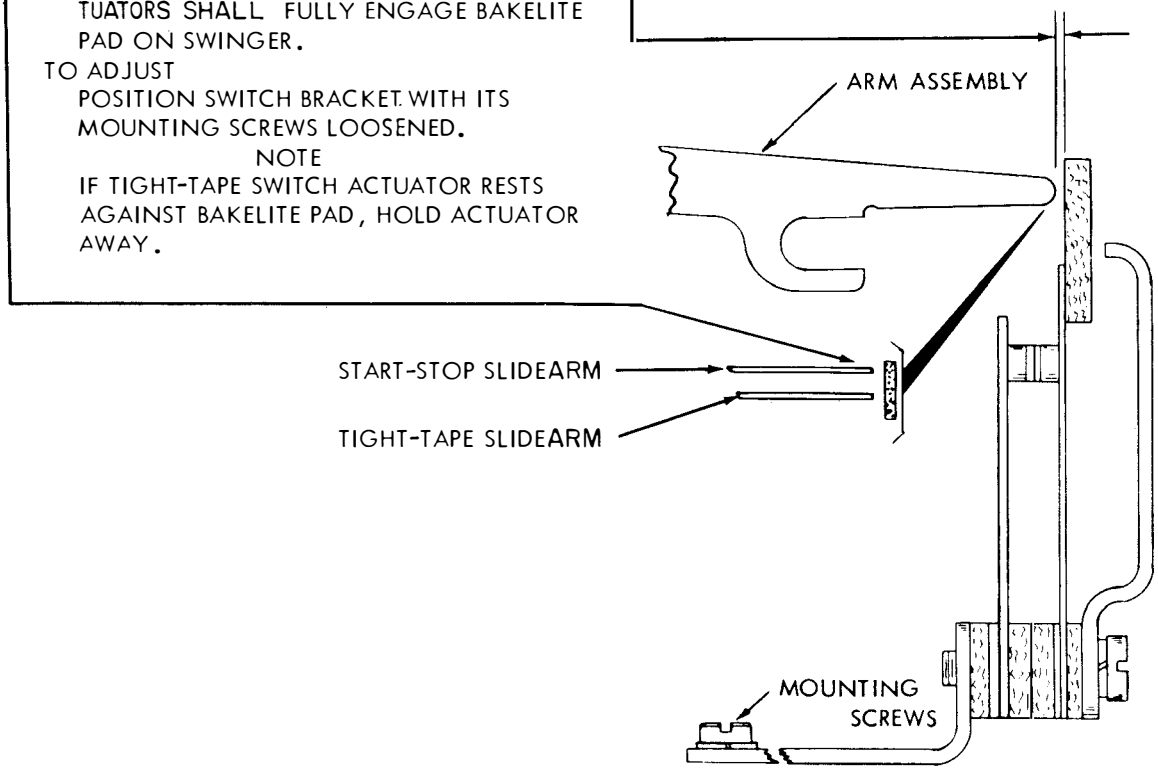
START-STOP LEVER SWITCH BRACKET

(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.

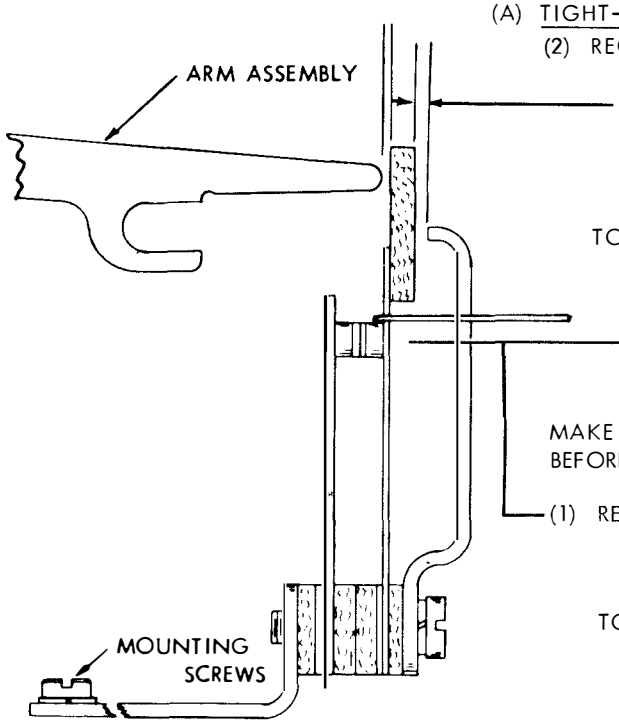
(2) REQUIREMENT
START-STOP AND TIGHT-TAPE SWITCH ACTUATORS SHALL FULLY ENGAGE BAKELITE PAD ON SWINGER.

TO ADJUST
POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

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



2.17 Tight-tape Mechanism (Units Equipped With Tight-Tape, START-STOP Lever)



(A) TIGHT-TAPE, START-STOP LEVER SWITCH

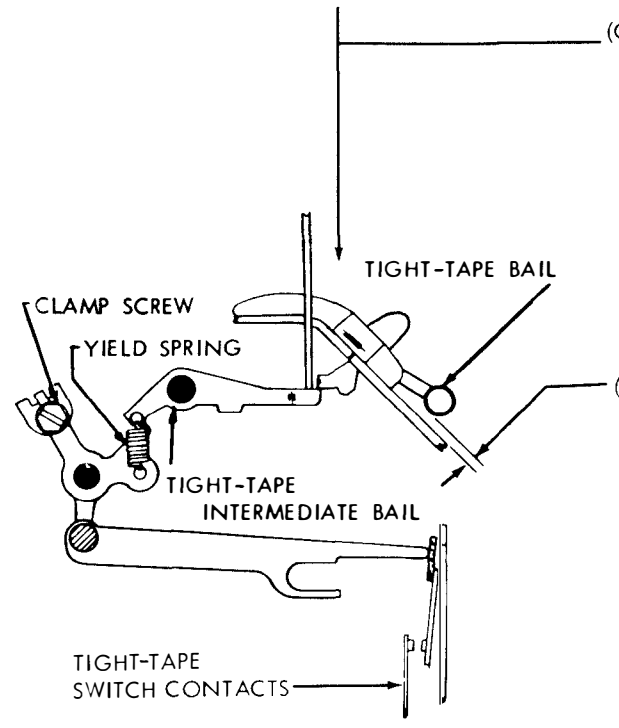
(2) REQUIREMENT
WITH START-STOP LEVER IN RUN POSITION
MIN. 0.050 INCH
MAX. 0.070 INCH
CLEARANCE BETWEEN SWITCH BACKSTOP AND BAKELITE PAD ON SWINGER WHEN SWITCH CONTACTS ARE CLOSED.

TO ADJUST
BEND SWITCH BACKSTOP WITH TP110445 SPRING BENDER.

NOTE
MAKE REQUIREMENT (1) ADJUSTMENT BEFORE ASSEMBLING SWITCH TO UNIT.

(1) REQUIREMENT
MIN. 3 OZS.
MAX. 4 OZS.
TO JUST SEPARATE CONTACTS.

TO ADJUST
BEND CONTACT SWINGER WITH A TP110445 SPRING BENDER.



(C) TIGHT-TAPE BAIL YIELD SPRING

TO CHECK
OPEN TAPE LID. OPERATE START-STOP LEVER TO FREE-WHEELING POSITION.

REQUIREMENT
MIN. 2 OZS.
MAX. 3-1/2 OZS.
TO SEPARATE BAILS.

(B) TIGHT-TAPE SLIDE ARM

TO CHECK
OPERATE START-STOP LEVER TO RUN POSITION.

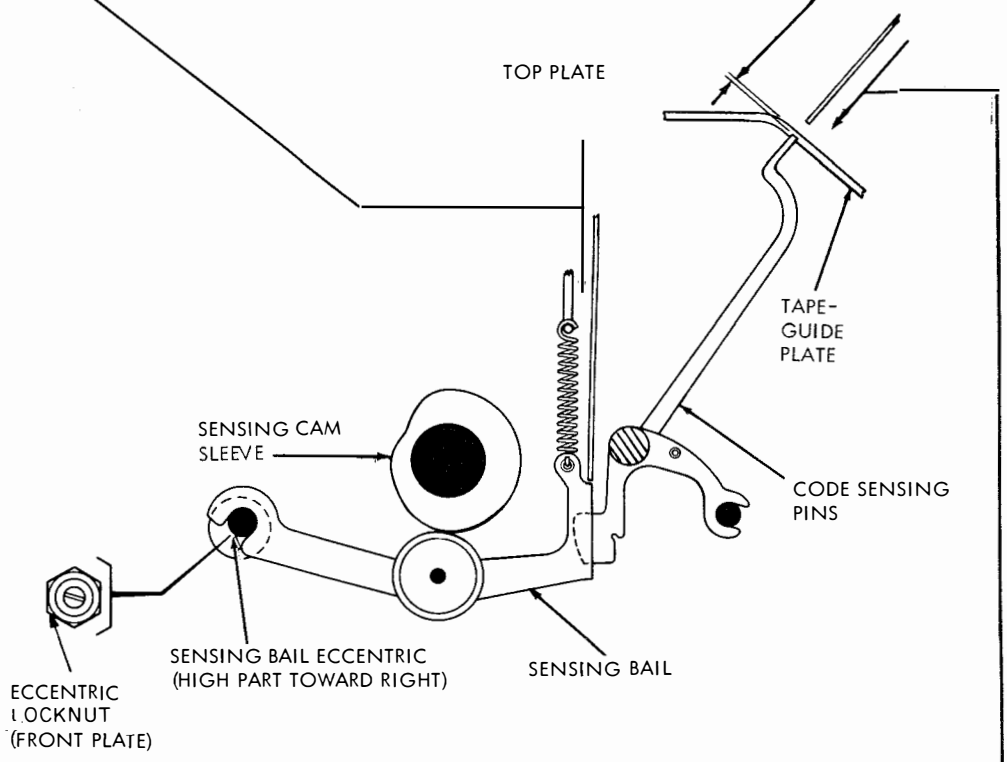
REQUIREMENT
TIGHT-TAPE SWITCH CONTACTS SHALL OPEN WHEN TIGHT-TAPE ARM IS RAISED
MIN. 0.045 INCH
MAX. 0.075 INCH
FOR UNIT WITHOUT PULL-BACK MECHANISM
MIN. 0.090 INCH
MAX. 0.120 INCH
FOR UNIT WITH PULL-BACK MECHANISM ABOVE TAPE-GUIDE PLATE.

TO ADJUST
WITH CLAMP SCREW FRICTION TIGHT, POSITION BAILS, BY MEANS OF PRY POINT, TO MEET REQUIREMENT.

2.18 Sensing Pin Assembly

(A) SENSING BAIL SPRINGS
TO CHECK
REMOVE TOP PLATE. WITH BLANK TAPE UNDER TAPE LID, TRIP CLUTCH MAGNET AND MANUALLY ROTATE SHAFT UNTIL SENSING BAIL IS IN UPPERMOST POSITION. APPLY SCALE TO BAIL BETWEEN SPRINGS.
REQUIREMENT
MIN. 1/4 OZ.
MAX. 2 OZS.
TO START BAIL MOVING.

(C) SENSING PIN
TO CHECK
REPLACE TOP PLATE. DISENGAGE SENSING CLUTCH.
REQUIREMENT
WITH SENSING BAIL ECCENTRIC INDENT TOWARD RIGHT, TIP OF HIGHEST SENSING PIN SHALL BE FLUSH TO 0.005 INCH BELOW TOP SURFACE OF TAPE-GUIDE PLATE.
TO ADJUST
LOOSEN ECCENTRIC-SHAFT LOCKNUT AND POSITION ECCENTRIC. RECHECK REQUIREMENT AFTER LOCKNUT IS TIGHTENED.

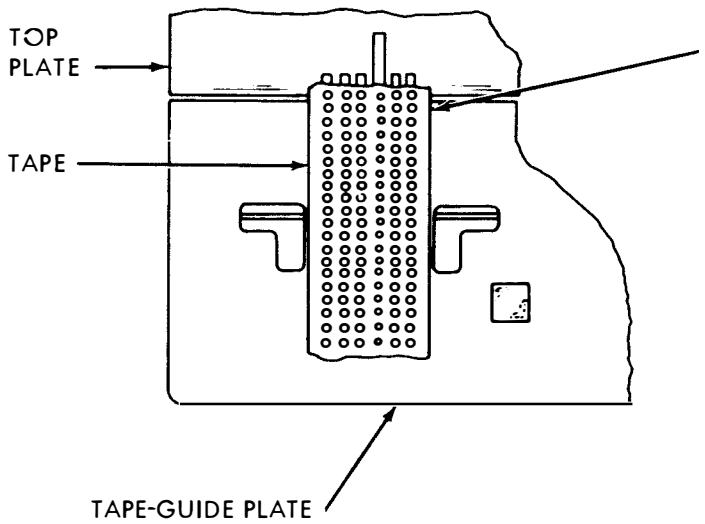


(B) SENSING PIN SPRING
TO CHECK
TRIP SENSING CLUTCH AND ROTATE SHAFT UNTIL SENSING PINS ARE IN THEIR UPPERMOST POSITION. HOLD PUSH-LEVERS AWAY MANUALLY.
REQUIREMENT
MIN. 2 OZS.
MAX. 3 OZS.
FOR UNIT WITHOUT PULL-BACK MECHANISM

NO.1 TO NO.5 AND NO.7 SPRINGS
MIN. 2 OZS.
MAX. 3 OZS.
NO.6 AND NO.8 SPRINGS
MIN. 4-1/2 OZS.
MAX. 6 OZS.
FOR UNIT WITH PULL-BACK MECHANISM

TO MOVE EACH PIN FLUSH WITH TOP SURFACE OF TAPE-GUIDE PLATE.

2.19 Tape Feed Mechanism



(A) FEED-WHEEL DETENT

NOTE 1

PLACE START-STOP LEVER IN STOP POSITION. IF UNIT HAS A SPRING-BIASED START-STOP LEVER, MAKE ADJUSTMENT WITH LEVER IN RUN POSITION.

TO CHECK

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

REQUIREMENT

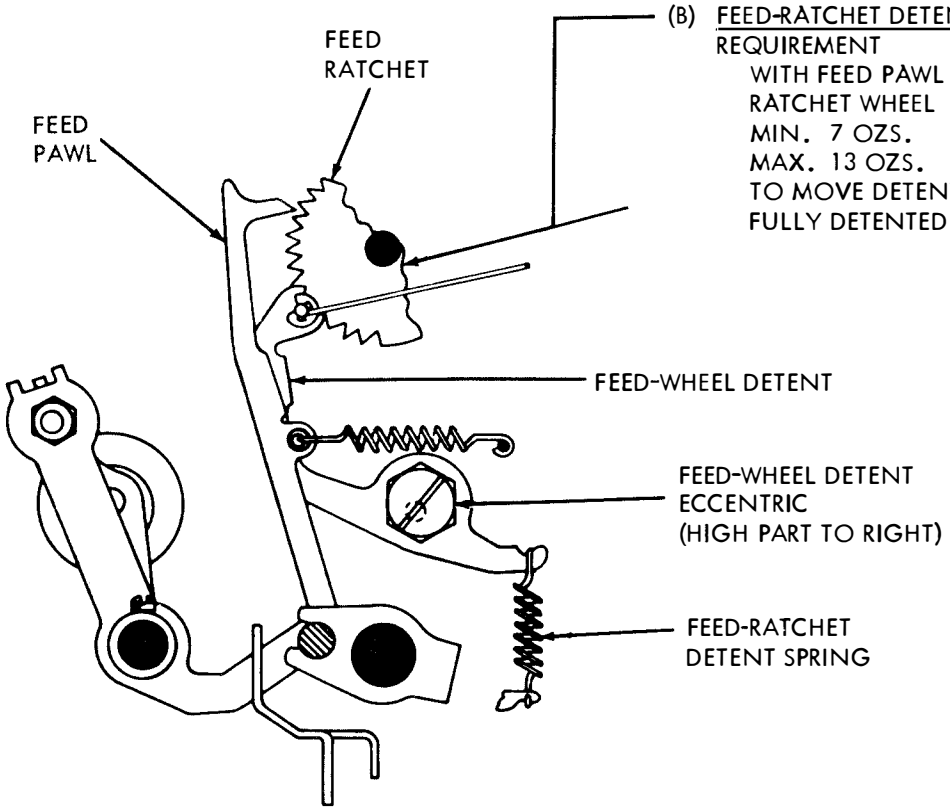
SENSING PINS CENTRALLY LOCATED IN CODE HOLES.

TO ADJUST

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

NOTE 2

HOLD FEED PAWL 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.

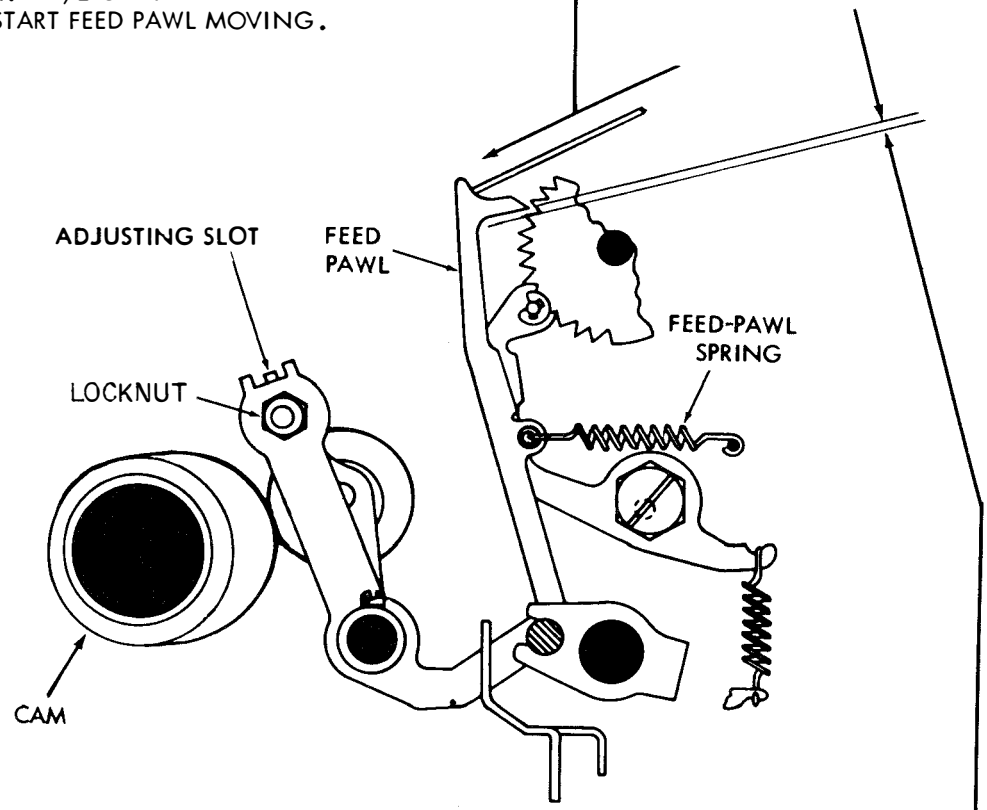
(B) FEED-PAWL SPRING

TO CHECK

PLACE START-STOP LEVER IN STOP POSITION. REMOVE TOP PLATE. DISENGAGE CLUTCH.

REQUIREMENT

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



(A) FEED PAWL

TO CHECK

PLACE START-STOP LEVER IN RUN POSITION. 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.

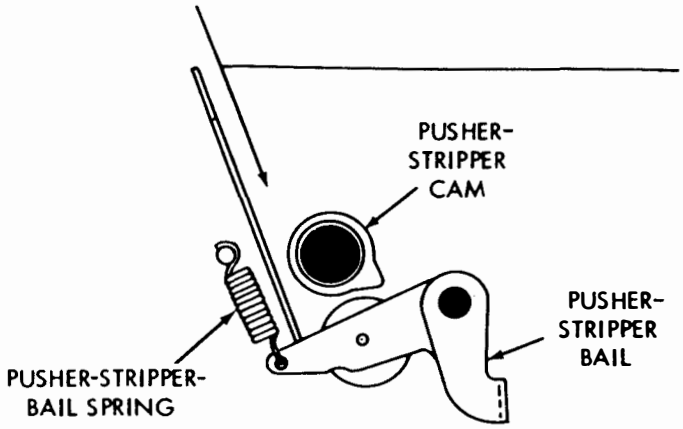
REQUIREMENT

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

TO ADJUST

POSITION FEED LEVER BY MEANS OF THE ADJUSTING SLOT WITH ITS LOCKNUT LOOSENED.

2.20 Sensing Mechanism



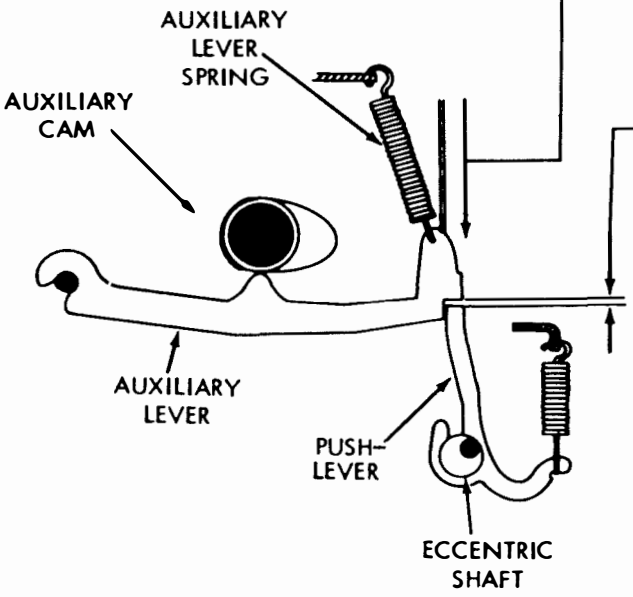
(A) PUSHER-STRIPPER-BAIL SPRING

TO CHECK

SELECT BLANK COMBINATION. TRIP CLUTCH AND ROTATE SHAFT TO STOP POSITION.

REQUIREMENT

MIN. 7 OZS.
MAX. 11 OZS.
TO START BAIL MOVING AWAY FROM CAM.



(C) AUXILIARY LEVER SPRING

TO CHECK

EACH AUXILIARY LEVER ON LOW PART OF ITS CAM. SCALE APPLIED TO LEVER JUST 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 PUSH-LEVER BY

MIN. 0.020 INCH
MAX. 0.045 INCH

FOR UNIT WITHOUT PULL-BACK MECHANISM

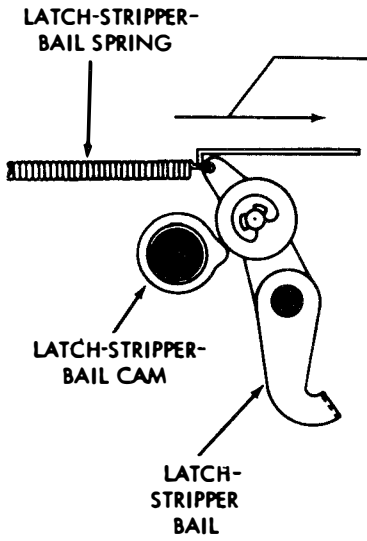
MIN. 0.010 INCH
MAX. 0.020 INCH

FOR UNIT WITH PULL-BACK MECHANISM

TO ADJUST

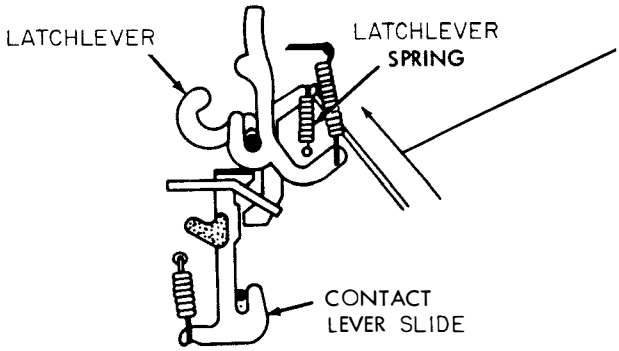
WITH PUSHLEVER ECCENTRIC SHAFT LOCKNUT (FRONT PLATE) LOOSENED AND HIGH PART OF ECCENTRIC LOCATED TOWARD THE UPPER RIGHT, ROTATE ECCENTRIC TOWARD RIGHT OR LEFT.

2.21 Sensing Mechanism Springs



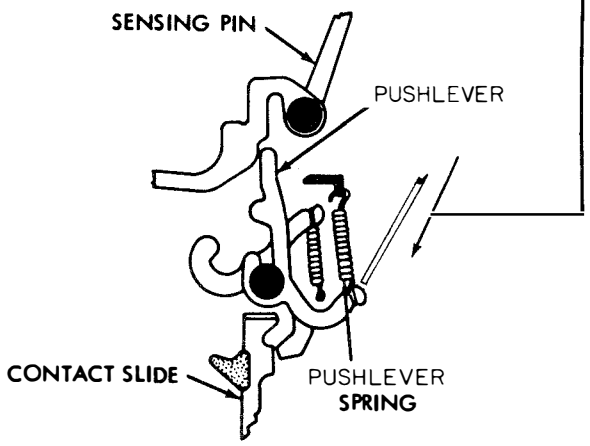
(A) LATCH-STRIPPER-BAIL SPRING

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.



(C) LATCHLEVER SPRING

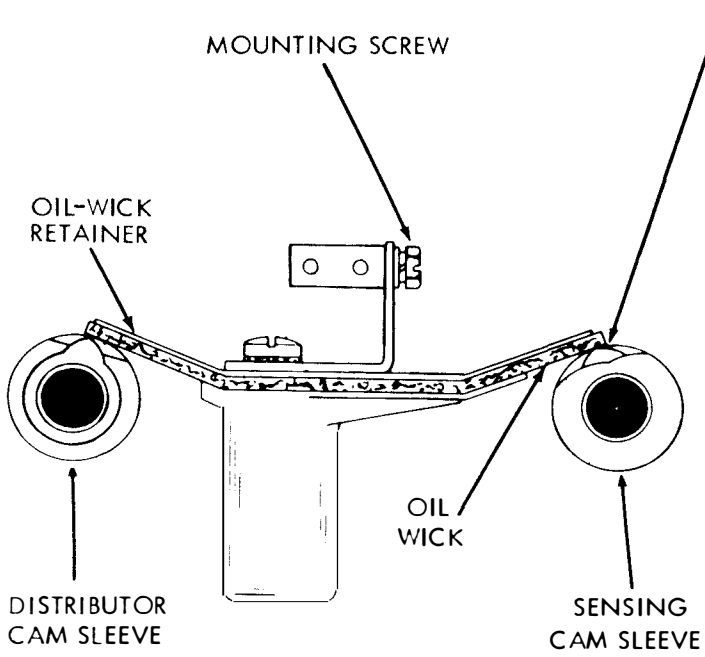
TO CHECK
SELECT BLANK COMBINATION. TRIP SENSING CLUTCH AND ROTATE SHAFT TO STOP POSITION. LEVER SLIDES SHOULD BE IN UPPERMOST POSITION.
REQUIREMENT
MIN. 1 OZ.
MAX. 3 OZS.
TO START LATCHLEVER MOVING.
NOTE 1
TAKE CARE NOT TO DAMAGE PUSHLEVER SPRINGS IN CHECKING REQUIREMENT.



(B) PUSHLEVER SPRING

TO CHECK
SELECT LTRS COMBINATION, AND LATCH SENSING CLUTCH. TRIP CLUTCH AND ROTATE SHAFT UNTIL PUSHLEVERS ARE STRIPPED.
REQUIREMENT
MIN. 1/4 OZ.
MAX. 1-1/2 OZS.
TO START PUSHLEVER MOVING.
NOTE 2
BE SURE CONTACT SLIDES DO NOT INTERFERE WITH MOVEMENT OF PUSHLEVERS.

2.22 Oil Reservoir Assembly



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 (4) 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.

2.23 Storing Switch Mechanism

(A) CONTACT LEVER SLIDE

REQUIREMENT

CLEARANCE BETWEEN CLOSEST PUSHLEVER AND CONTACT LEVER SLIDE WHEN SENSING PINS ARE IN UPPERMOST POSITION, PUSHLEVERS ARE SELECTED, AND LATCHLEVERS ARE STRIPPED

MIN. 0.005 INCH

MAX. 0.015 INCH.

TO CHECK

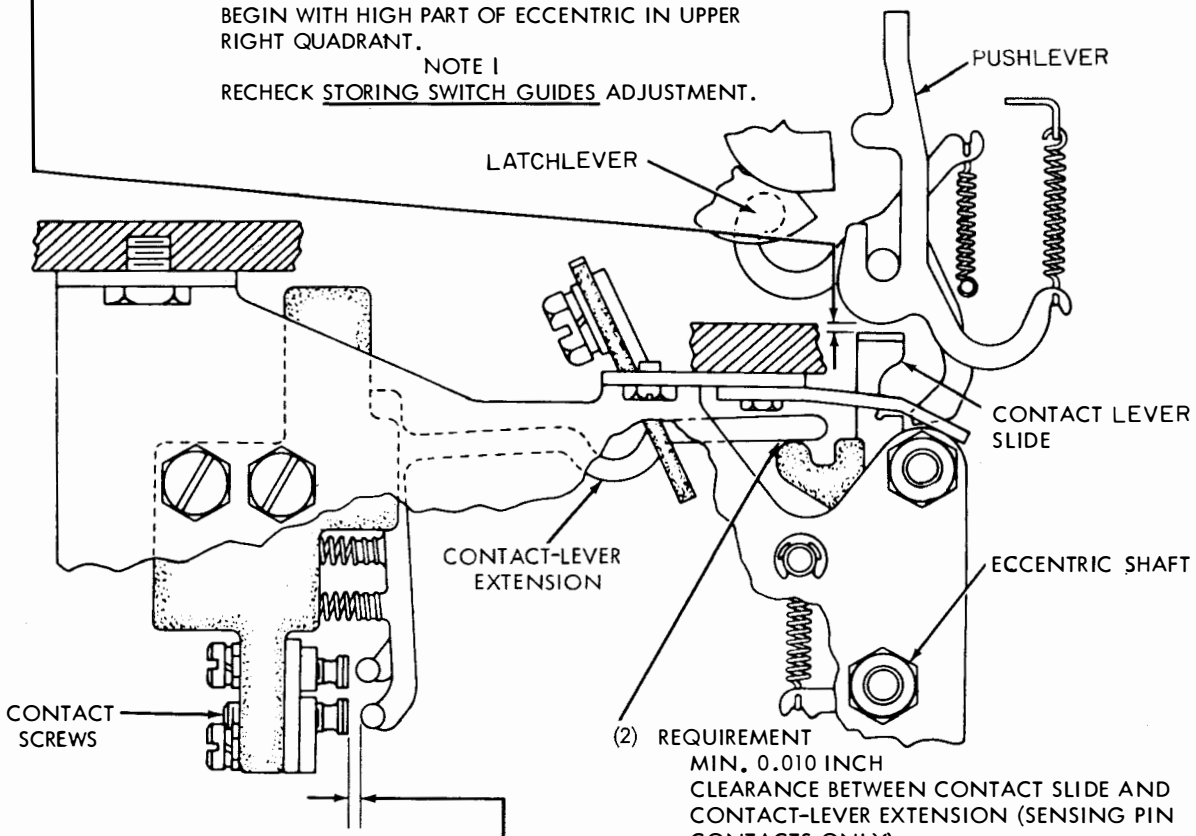
TRIP SENSING SHAFT CLUTCH AND ROTATE SHAFT UNTIL SENSING PINS ARE IN UPPERMOST POSITION. TRIP LATCHLEVERS MANUALLY.

TO ADJUST

POSITION ECCENTRIC SHAFT TOWARD THE RIGHT WITH LOCKING NUTS LOOSENED. BEGIN WITH HIGH PART OF ECCENTRIC IN UPPER RIGHT QUADRANT.

NOTE 1

RECHECK STORING SWITCH GUIDES ADJUSTMENT.



(B) STORING SWITCH CONTACT GAP

(1) REQUIREMENT

BLANK COMBINATION SELECTED, CLUTCH TRIPPED, AND SHAFT ROTATED ONE REVOLUTION TO STOP POSITION.

MIN. 0.015 INCH

MAX. 0.020 INCH

GAP BETWEEN EACH CONTACT-LEVER EXTENSION AND ITS CONTACT SCREW.

TO ADJUST

ROTATE INDIVIDUAL CONTACT SCREW.

(2) REQUIREMENT

MIN. 0.010 INCH

CLEARANCE BETWEEN CONTACT SLIDE AND CONTACT-LEVER EXTENSION (SENSING PIN CONTACTS ONLY).

TO CHECK

SELECT LTRS COMBINATION. TRIP CLUTCH AND ROTATE SHAFT TO STOP POSITION. TRIP CLUTCH AND ROTATE SHAFT UNTIL SENSING PINS ARE IN UPPERMOST POSITION.

TO ADJUST

REFINE REQUIREMENT (1).

(3) REQUIREMENT

MIN. 0.020 INCH

MAX. 0.030 INCH

GAP BETWEEN AUXILIARY A AND B CONTACTS WHEN CONTACTS ARE FULLY OPENED.

TO ADJUST

ROTATE INDIVIDUAL CONTACT SCREW.

NOTE 2

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

2.24 Cover and Panel Assembly

(A) COVER PLATE

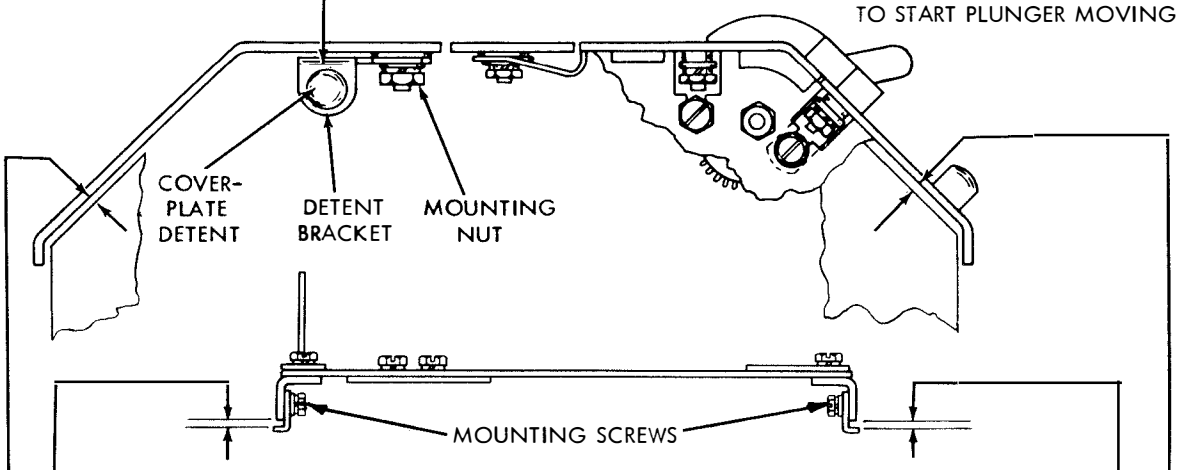
(1) REQUIREMENT
COVER PLATE HELD FLUSH AGAINST TOP PLATE BY DETENT ACTION.

(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. RECHECK AND REFINE REQUIREMENTS.

COVER-PLATE DETENT SPRING
TO CHECK
REMOVE COVER PLATE.
REQUIREMENT
MIN. 28 OZS.
MAX. 48 OZS.
TO START PLUNGER MOVING.



(B) FRONT PANEL

NOTE
REMOVE COVER PLATE PRIOR TO INSTALLING OR REMOVING FRONT PANEL. PANEL SLIDES SHOULD ENGAGE GUIDES ON BASE SO THAT TOP EDGE OF PANEL PASSES UNDER TAPE-GUIDE PLATE.

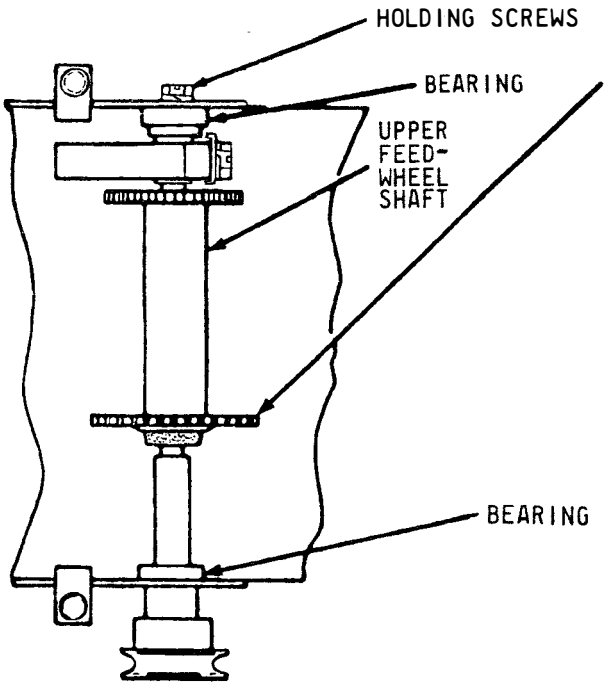
(1) REQUIREMENT
FRONT PANEL LATCHES SECURELY AT LOWER RIGHT AND LEFT CORNERS, AND PANEL SLIDES FULLY ENGAGE BASE GUIDES.
MIN. 0.085 INCH
MAX. 0.105 INCH
CLEARANCE BETWEEN BOTTOM EDGE OF BASE RAIL AND PANEL-GUIDE FLANGE.

TO ADJUST
REMOVE TRANSMITTER FROM BASE. USE SHIMS TO OBTAIN LATERAL POSITION OF PANEL SLIDES, AND POSITION GUIDES VERTICALLY (PLACE UNUSED SHIMS UNDER HEAD OF MOUNTING SCREW). REPLACE TRANSMITTER ON BASE.

(2) REQUIREMENT
MIN. 0.015 INCH
MAX. 0.060 INCH
CLEARANCE BETWEEN PANEL TOP EDGE AND FRONT EDGE OF COVER AND TAPE-GUIDE PLATES. THE UPPER PANEL SIDES SHALL NOT TOUCH THE COVER AND TAPE-GUIDE PLATE EAVES.

TO ADJUST
WITH FRONT PANEL IN PLACE, LOOSEN PANEL-GUIDE MOUNTING SCREWS AND POSITION THE GUIDE. TO FACILITATE ADJUSTMENT, REMOVE THE FOUR VIBRATION-MOUNT NUTS AND SWING SUBBASE AWAY.

2.25 Upper Feed Wheel (Units With Bearings Mounted on Side Plates) and Upper Feed-wheel Detent (Unit With Pull-back Mechanism)



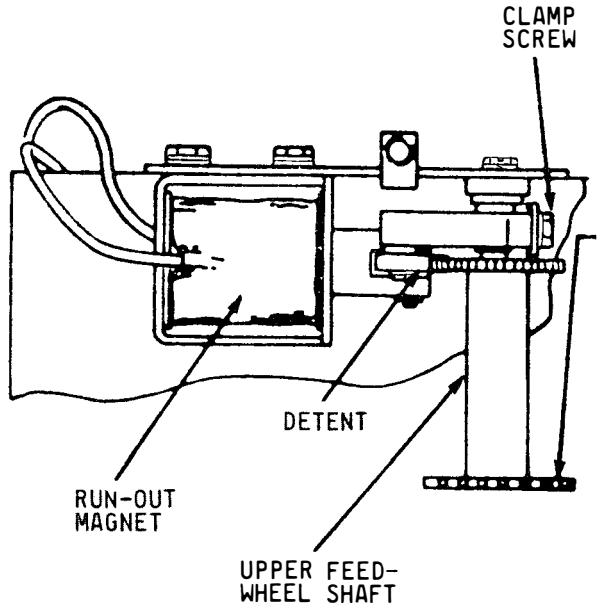
UPPER FEED WHEEL (FOR UNITS WITH BEARINGS MOUNTED ON SIDE PLATES)

REQUIREMENT

WITH DETENT DISENGAGED AND DRIVE PULLEY REMOVED, UPPER FEED WHEEL SHALL ROTATE FREELY WITHOUT INTERFERENCE.

TO ADJUST

LOOSEN SCREWS (2) HOLDING EACH BEARING FRICTION TIGHT. POSITION UPPER FEED-WHEEL SHAFT TO MEET REQUIREMENT. TIGHTEN SCREWS.



UPPER FEED-WHEEL DETENT

REQUIREMENT

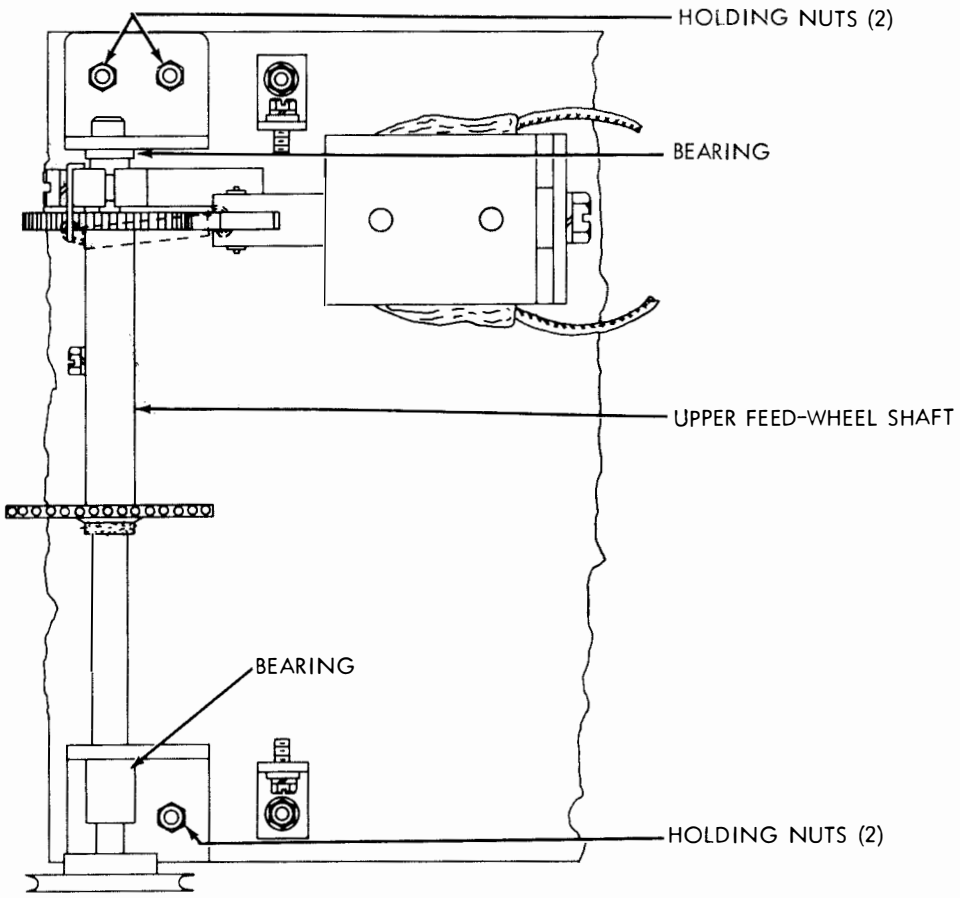
WITH REPEAT RUB-OUT TAPE IN UNIT, LOWER AND UPPER TAPE LIDS LATCHED, MANUALLY OPERATE PULL-BACK SOLENOID UNTIL TAPE IS TAUT BETWEEN UPPER AND LOWER TAPE FEED WHEELS. CODE HOLES SHALL BE CENTERED OVER RESPECTIVE SENSING PINS.

TO ADJUST

LOOSEN DETENT MOUNTING CLAMP SCREW FRICTION TIGHT. WITH TAPE PULL-BACK SOLENOID HELD IN ENERGIZED CONDITION, ROTATE UPPER FEED-WHEEL DETENT ON MOUNTING POST UNTIL CODE HOLES ARE CENTERED OVER SENSING PINS AND DETENT ENGAGES UPPER FEED-WHEEL RATCHET AT SECOND TOOTH BELOW CENTER OF UPPER FEED-WHEEL SHAFT.

NOTE: AFTER MAKING THIS ADJUSTMENT, THE REQUIREMENT MUST BE MET WHEN THE UNIT IS OPERATED UNDER POWER, CHECKING FIRST AFTER TAPE RUN-OUT AND THEN AFTER TAPE PULL-BACK. IN BOTH CASES, THE SENSING PINS SHALL BE VISIBLE THROUGH THE TAPE CODE HOLES. REFINE THE ADJUSTMENT IF NECESSARY.

2.26 Upper Feed Wheel (Units With Bearings Mounted on Top Plate) (Unit With Pull-back Mechanism)



UPPER FEED WHEEL

REQUIREMENT

WITH DETENT DISENGAGED AND DRIVE PULLEY REMOVED, UPPER FEED WHEEL SHALL ROTATE FREELY WITHOUT INTERFERENCE.

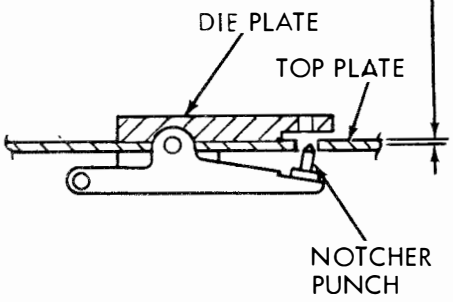
TO ADJUST

NOTE: PERFORM ADJUSTMENT WITH TOP PLATE, FEED WHEEL AND BEARINGS, AND RUN-OUT SOLENOID MECHANISM REMOVED FROM UNIT. REMOVE BY LOOSENING TWO MOUNTING SCREWS AND LIFTING OFF TOP PLATE.

LOOSEN HOLDING NUTS (2) HOLDING EACH BEARING FRICTION TIGHT AND ALIGN BEARINGS SO FEED WHEEL ROTATES FREELY. RECHECK AFTER NUTS ARE TIGHTENED.

FOLLOWING THIS ADJUSTMENT, CHECK UPPER FEED-WHEEL DETENT.

2.27 Notcher Armature Travel and Notcher Springs (Unit With Pull-back Mechanism)



NOTCHER ARMATURE TRAVEL

REQUIREMENT (EACH NOTCHER)

(1) WITH ARMATURE IN UPPERMOST POSITION, NOTCHER PUNCH BELOW TOP SURFACE OF TOP PLATE.

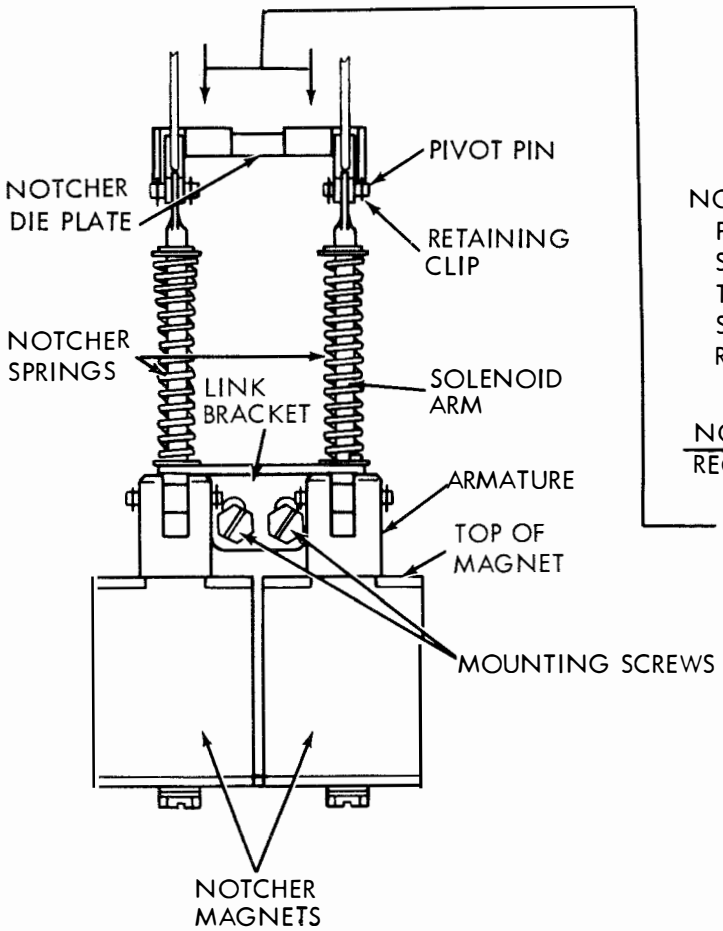
(2) NOTCHER PUNCH FULLY SEATED IN DIE PLATE BEFORE ARMATURE QUITE REACHES LOWERMOST POSITION.

(3) OPERATING STROKE OF ARMATURE MIN. 0.090 INCH --- MAX. 0.100 INCH.

TO ADJUST (EACH NOTCHER)

(A) REMOVE PIVOT PIN AND RETAINING CLIP. PLACE ARMATURE IN LOWERMOST POSITION. DRAW PENCIL LINE ON ARMATURE AT TOP OF MAGNET. REPLACE PIVOT PIN. MOVE ARMATURE DOWN UNTIL PUNCH IS FULLY SEATED IN DIE PLATE. PENCIL LINE SHOULD BE 1/32 INCH ABOVE TOP OF MAGNET. IF NOT, REMOVE PIN AND ADJUST BY ROTATING SOLENOID ARM. REPLACE PIVOT PIN AND RETAINING CLIP.

(B) WITH MOUNTING SCREWS LOOSENED, POSITION LINK BRACKET SO THAT, WHEN ARMATURE IS IN UPPERMOST POSITION, PENCIL LINE IS 1/8 INCH ABOVE TOP OF MAGNET.

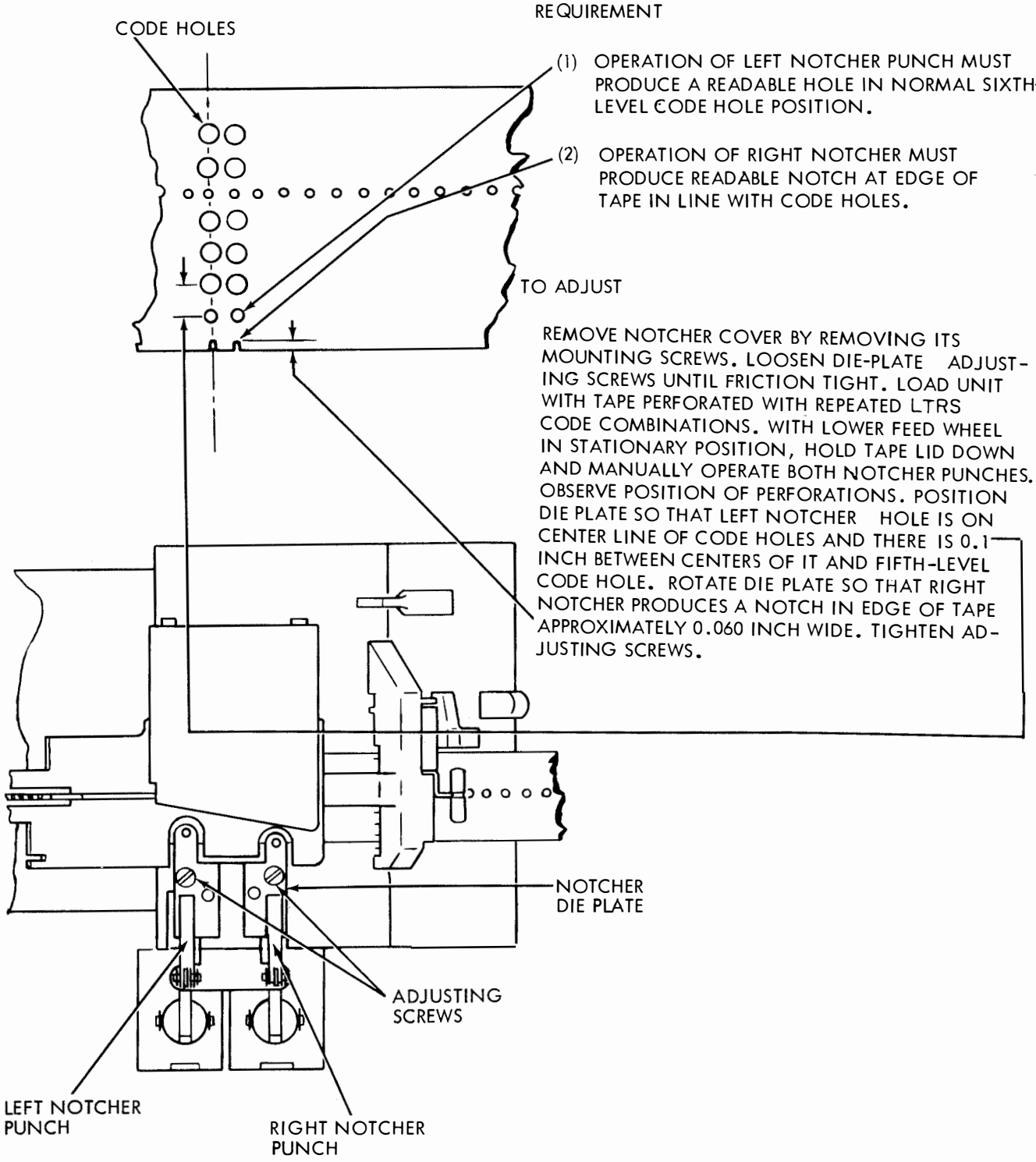


NOTE: WITH NOTCHER MAGNETS DE-ENERGIZED, PLACE START-STOP LEVER IN FREE WHEELING POSITION. LOAD UNIT WITH TAPE. PULL TAPE TOWARD REAR OF UNIT. TAPE SHOULD NOT BE SNAGGED ON NOTCHER POINTS. CHECK AND REFINE BOTH NOTCHER PUNCH ADJUSTMENTS.

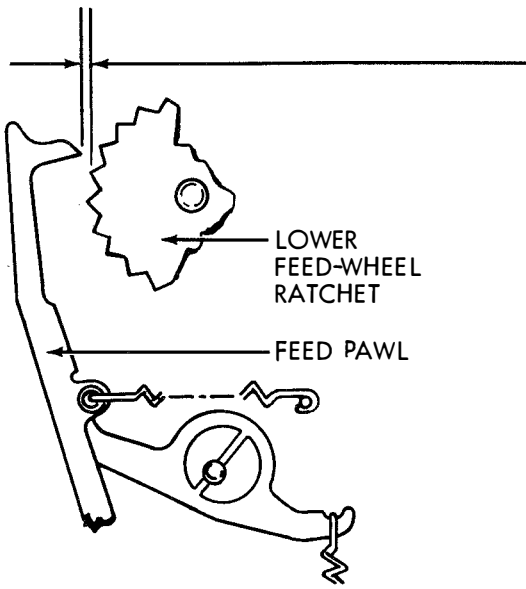
NOTCHER SPRINGS (2)

REQUIREMENT (EACH SPRING)
WITH MAGNET DE-ENERGIZED:
MIN. 1 OZ. --- MAX. 2 OZS.
TO START SOLENOID ARM MOVING.

2.28 Notcher Punches (Left and Right) (Unit With Pull-back Mechanism)



2.29 Pull-back Magnet (Unit With Pull-back Mechanism)



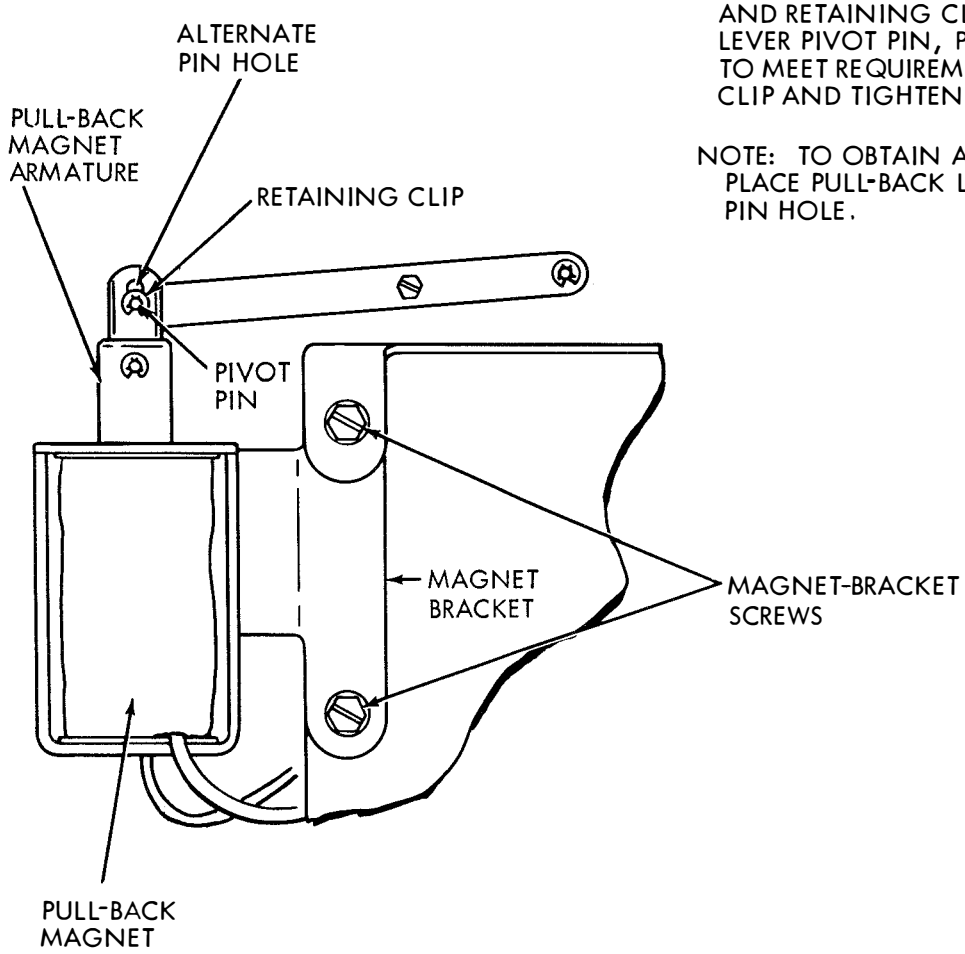
REQUIREMENT

WITH PULL-BACK MAGNET ARMATURE HELD AT ITS LOWERMOST POSITION MIN. 0.060 INCH CLEARANCE BETWEEN FEED PAWL AND LOWER FEED-WHEEL RATCHET TEETH.

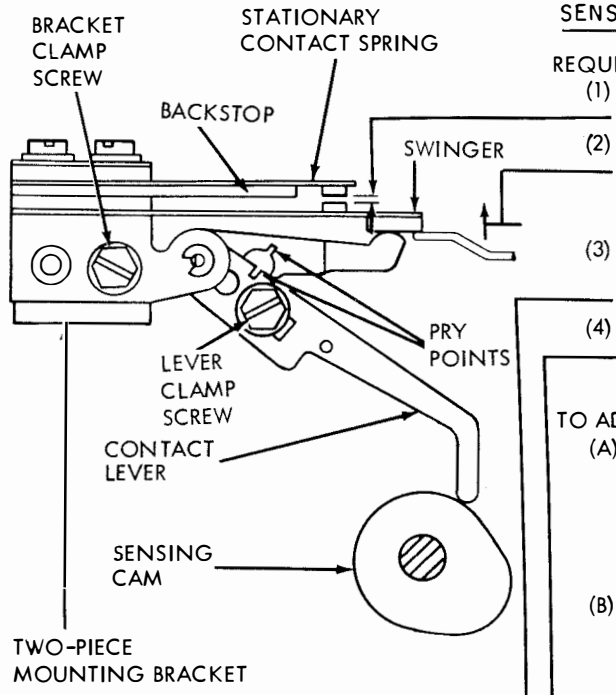
TO ADJUST

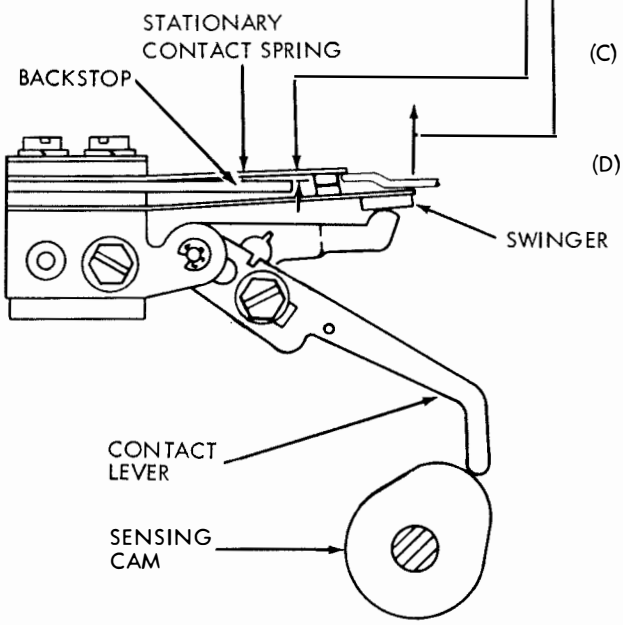
WITH MAGNET-BRACKET SCREWS FRICTION TIGHT AND RETAINING CLIP REMOVED FROM PULL-BACK LEVER PIVOT PIN, POSITION MAGNET BRACKET TO MEET REQUIREMENT. REPLACE RETAINING CLIP AND TIGHTEN SCREWS.

NOTE: TO OBTAIN A GREATER ADJUSTMENT RANGE, PLACE PULL-BACK LEVER PIVOT PIN IN ALTERNATE PIN HOLE.



2.30 Sensing Auxiliary Contacts (Preliminary) With Two-piece Mounting Bracket (Unit With Pull-back Mechanism)





SENSING AUXILIARY CONTACTS (PRELIMINARY)

REQUIREMENTS-EACH CONTACT

(1) WITH CONTACT OPEN, GAP MIN. 0.010 INCH.

(2) WITH CONTACT OPEN: MIN. 5 GRAMS --- MAX. 30 GRAMS TO START SWINGER MOVING AWAY FROM CONTACT LEVER.

(3) WITH CONTACT CLOSED, STATIONARY CONTACT SPRING RAISED ABOVE BACKSTOP: MIN. 0.002 INCH.

(4) WITH CONTACT CLOSED: MIN. 40 GRAMS --- MAX. 60 GRAMS TO START STATIONARY CONTACT SPRING MOVING.

TO ADJUST - EACH CONTACT

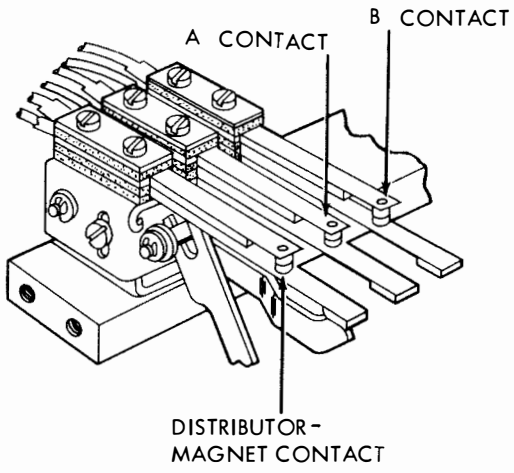
(A) WITH BRACKET CLAMP SCREW LOOSENED, POSITION BRACKET SO THAT, WHEN CONTACT LEVER IS ON LOW PART OF CAM, ACTUATING LEVER TOUCHES SWINGER AND CONTACT GAP IS APPROX 0.015 INCH. TIGHTEN CLAMP SCREW. DO NOT DISTURB THIS ADJUSTMENT DURING REST OF PROCEDURE.

(B) BEND STATIONARY CONTACT SPRING SO THAT FORCE OF 1 OZ. APPLIED AT END WILL GIVE CLEARANCE OF APPROX 0.020 INCH AT END OF BACKSTOP. BEND STATIONARY CONTACT SPRING AND BACKSTOP TO OBTAIN GAP OF 0.015 - 0.025 INCH AT A AND B CONTACTS AND 0.010 - 0.025 INCH AT DISTRIBUTOR-MAGNET CONTACTS.

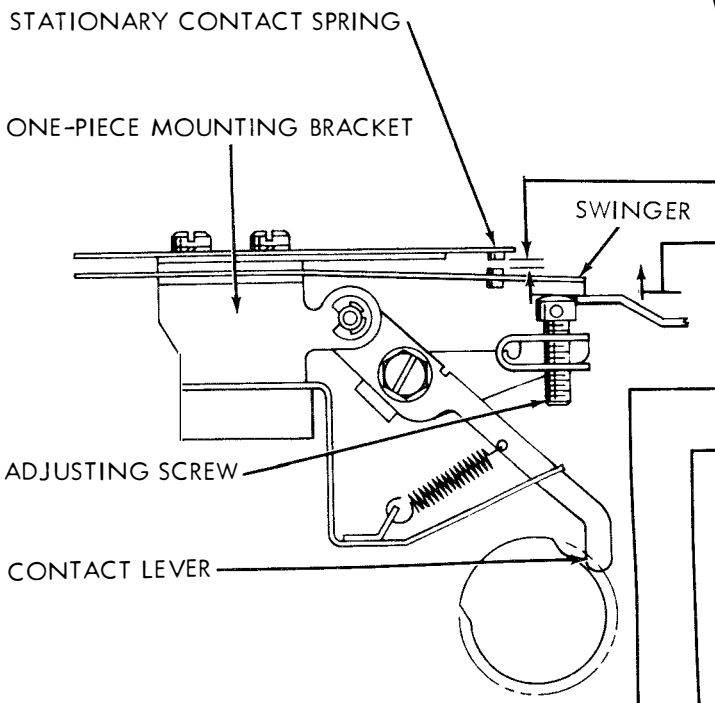
(C) POSITION SHAFT SO THAT CONTACT LEVER IS ON HIGH PART OF CAM. CHECK REQUIREMENTS (3) AND (4). IF THEY ARE NOT MET, BEND STATIONARY CONTACT SPRING.

(D) POSITION SHAFT SO THAT LEVER IS ON LOW PART OF CAM. BEND SWINGER TO MEET REQUIREMENT (2).

NOTE: FOR FINAL REQUIREMENTS, SEE CONTACT TIMING REQUIREMENTS (UNIT WITH PULL-BACK MECHANISM).



2.31 Sensing Auxiliary Contacts (Preliminary) With One-piece Mounting Bracket (Unit With Pull-back Mechanism)



SENSING AUXILIARY CONTACTS (PRELIMINARY) WITH ONE-PIECE MOUNTING BRACKET

NOTE 1: FOR CONTACTS WITH TWO-PIECE MOUNTING BRACKET, SEE PREVIOUS PARAGRAPH.

REQUIREMENTS EACH CONTACT

(1) WITH CONTACT OPEN, GAP MIN. 0.010 INCH.

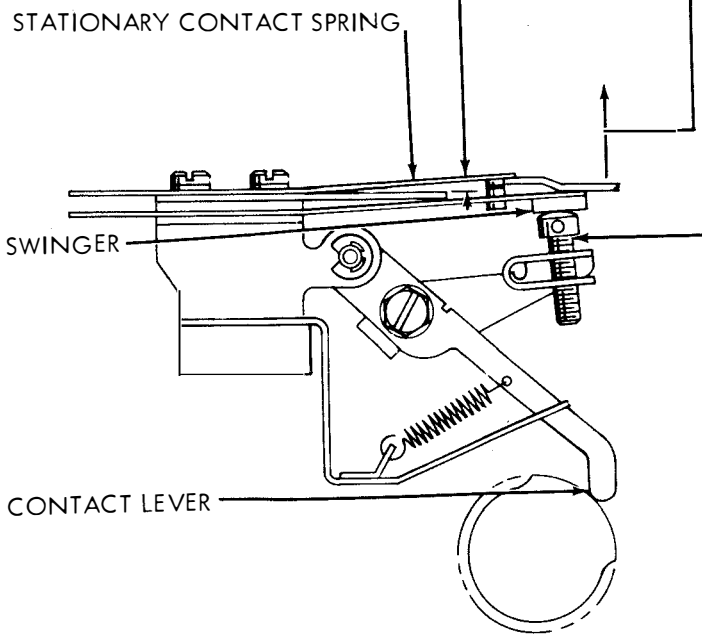
(2) WITH CONTACT OPEN: MIN. 5 GRAMS --- MAX. 30 GRAMS TO START SWINGER MOVING AWAY FROM CONTACT LEVER.

(3) WITH CONTACT CLOSED, STATIONARY CONTACT SPRING RAISED ABOVE BACKSTOP: MIN. 0.002 INCH.

(4) WITH CONTACT CLOSED: MIN. 40 GRAMS --- MAX. 60 GRAMS TO START STATIONARY CONTACT SPRING MOVING.

TO ADJUST - EACH CONTACT

BEND STATIONARY CONTACT SPRING SO THAT 1 OZ. APPLIED AT END OF SPRING WILL PRODUCE CLEARANCE OF APPROX 0.020 INCH BETWEEN SPRING AND BACKSTOP. POSITION ADJUSTING SCREW SO THAT, WHEN CONTACT LEVER IS ON LOW PART OF CAM, CONTACT GAP IS 0.015 - 0.025 INCH. BEND SWINGER SO THAT IT CONTACTS ADJUSTING SCREW THROUGHOUT ROTATION OF CAM.

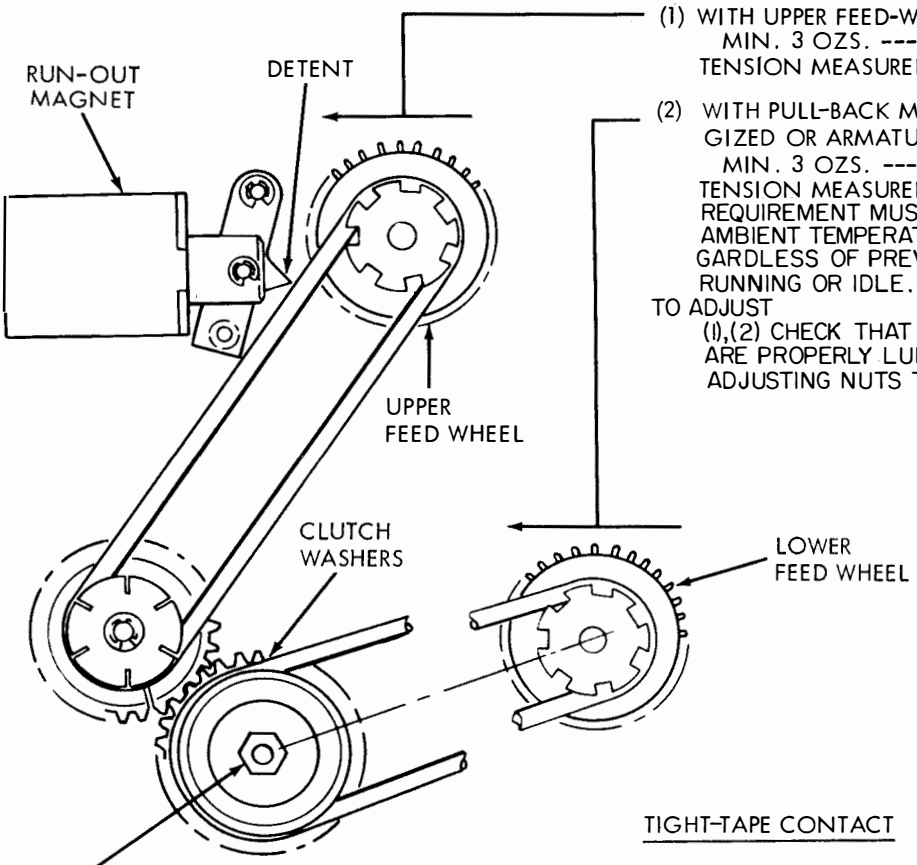


NOTE 2: FOR FINAL REQUIREMENTS, SEE CONTACT TIMING REQUIREMENTS (UNIT WITH PULL-BACK MECHANISM).

NOTE 3:

RELATIVE POSITION OF DISTRIBUTOR-MAGNET CONTACT AND A AND B CONTACTS IS SAME AS SHOWN ON FIGURE FOR SENSING AUXILIARY CONTACTS (PRELIMINARY) WITH TWO-PIECE MOUNTING BRACKET.

2.32 Pull-back Run-out Clutch and Tight-tape Contact (Unit With Pull-back Mechanism)



PULL-BACK RUN-OUT CLUTCH

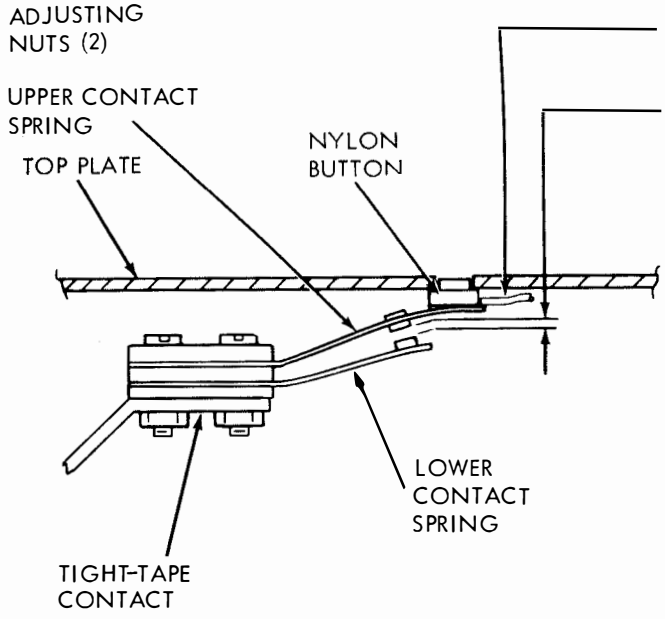
REQUIREMENT (UNDER POWER)

(1) WITH UPPER FEED-WHEEL DETENT DISENGAGED MIN. 3 OZS. --- MAX. 5 OZS. TENSION MEASURED AT TAPE-FEED PINS.

(2) WITH PULL-BACK MAGNET ENERGIZED OR ARMATURE MANUALLY DEPRESSED: MIN. 3 OZS. --- MAX. 6 OZS. TENSION MEASURED AT TAPE-FEED PINS. THIS REQUIREMENT MUST BE MET WHEN THE AMBIENT TEMPERATURE IS 60° TO 80 F REGARDLESS OF PREVIOUS CONDITION, RUNNING OR IDLE.

TO ADJUST

(1),(2) CHECK THAT CLUTCH FELT WASHERS ARE PROPERLY LUBRICATED. SET TORQUE ADJUSTING NUTS TO MEET REQUIREMENTS.



TIGHT-TAPE CONTACT

REQUIREMENT

(1) MIN. 40 GRAMS --- MAX. 50 GRAMS TO HOLD CONTACT CLOSED.

(2) WITH CONTACT OPEN, GAP: MIN. 0.010 INCH --- MAX. 0.020 INCH.

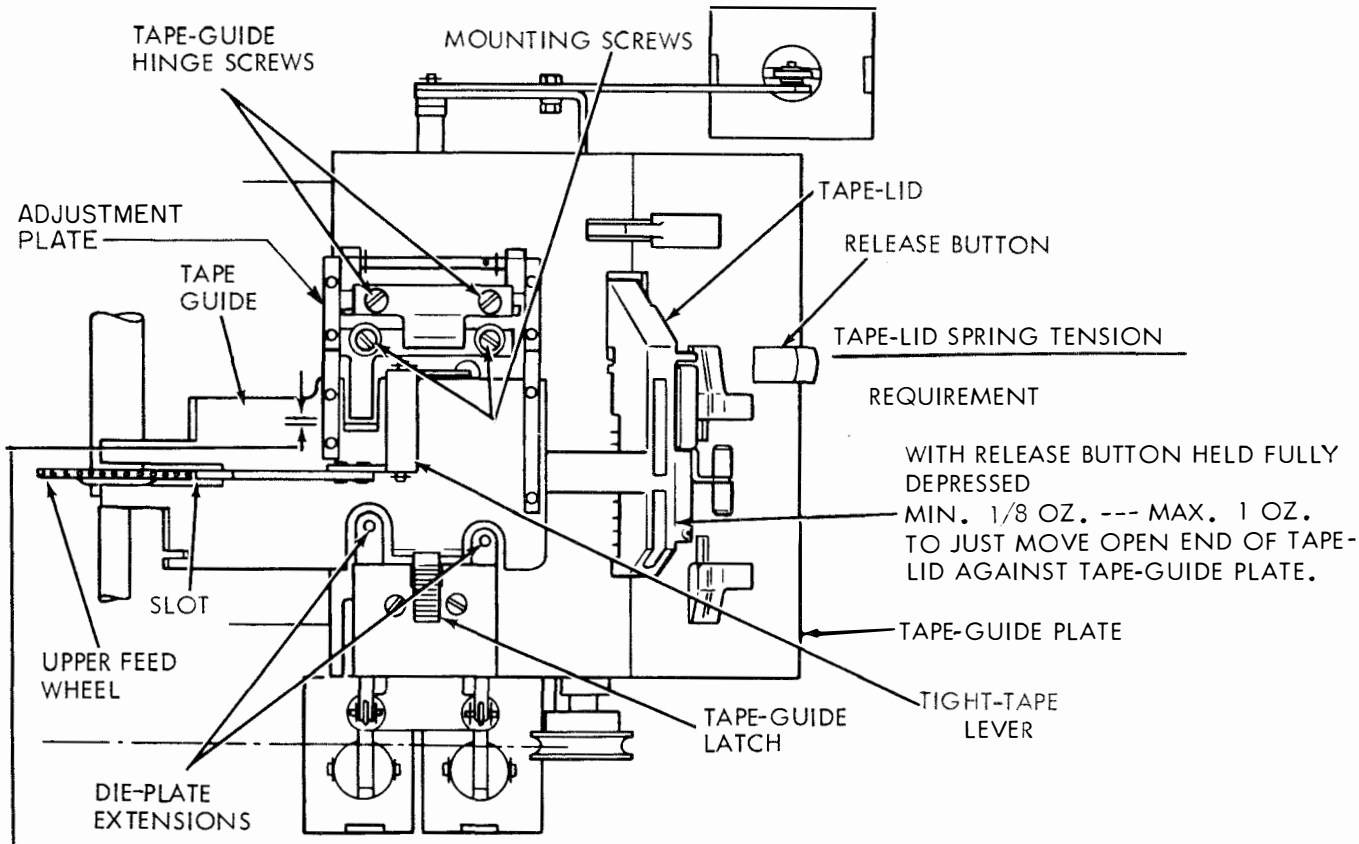
TO ADJUST

(1) BEND UPPER CONTACT SPRING SO THAT NYLON BUTTON RESTS AGAINST TOP PLATE AND A FORCE OF 2 TO 3 OZS. IS REQUIRED TO START SPRING MOVING.

(2) BEND LOWER CONTACT SPRING TO MEET REQUIREMENT (2).

(3) RECHECK REQUIREMENT (1). REFINE ADJUSTMENTS IF NECESSARY.

2.33 Adjustment Plate, Tape Guide, Tape-guide Plate and Tape-lid Spring (Unit With Pull-back Mechanism)



(A) TAPE GUIDE

REQUIREMENT

WITH TAPE GUIDE IN LATCHED POSITION, TAPE GUIDE SHALL CLEAR DIE-PLATE EXTENSIONS AND BE CENTERED ON THE UPPER FEED WHEEL.

TO ADJUST

WITH TAPE-GUIDE COVER REMOVED, LOOSEN GUIDE HINGE SCREWS FRICTION TIGHT. LATCH TAPE GUIDE IN POSITION. POSITION TAPE GUIDE TO MEET REQUIREMENT. TAPE GUIDE SHOULD ENGAGE LATCH BY APPROXIMATELY 0.020 INCH TO 0.030 INCH. WHEN UNLATCHED, TAPE GUIDE SHOULD NOT INTERFERE WITH DIE PLATE. TIGHTEN HINGE SCREWS. REPLACE TAPE-GUIDE COVER.

(B) TAPE-GUIDE PLATE

REQUIREMENT

WITH TAPE IN UNIT AND AGAINST GUIDING EDGE OF DIE PLATE, APPROX 0.010 INCH CLEARANCE BETWEEN TAPE-GUIDE PLATE AND EDGE OF TAPE.

TO ADJUST

POSITION TAPE-GUIDE PLATE WITH MOUNTING SCREWS LOOSENED.

(C) ADJUSTMENT PLATE

REQUIREMENT

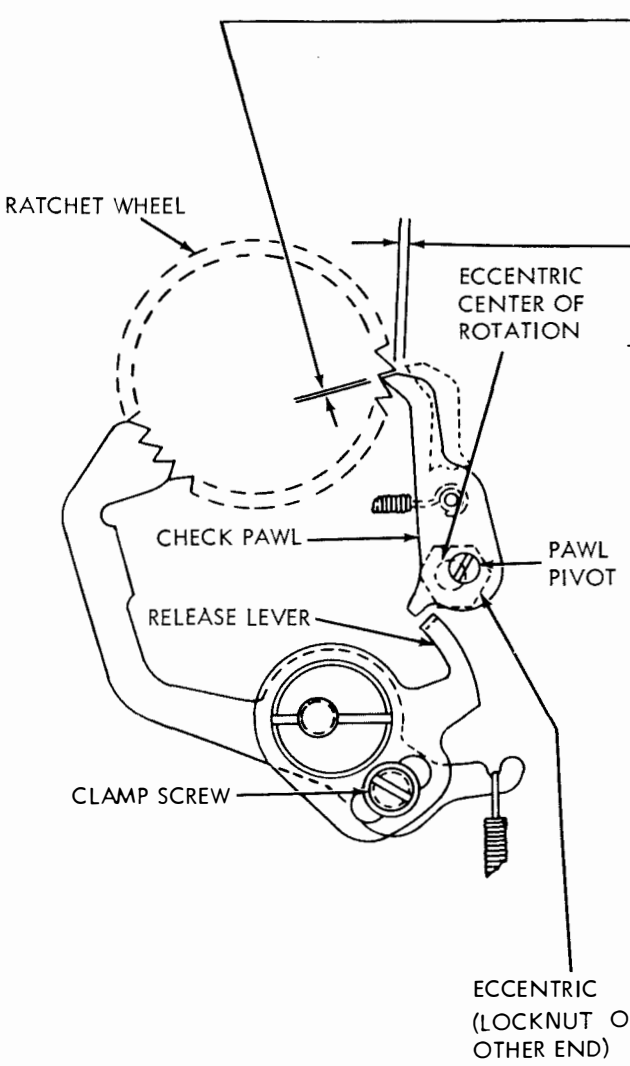
POSITION ADJUSTMENT PLATE SO THAT IT GUIDES TAPE CORRECTLY.

TO ADJUST

(1) WITH 1-INCH TAPE IN THE UNIT, AND LOWER EDGE OF TAPE AGAINST THE GUIDING EDGE OF THE DIE PLATE, SET THE ADJUSTMENT PLATE SO THAT THERE IS APPROX 0.010 INCH CLEARANCE BETWEEN THE EDGE OF THE TAPE AND THE ADJUSTMENT PLATE.

(2) CHECK THAT TAPE CAN BE DRAWN FREELY THROUGH THE UNIT, BEING GUIDED BUT NOT BINDING BETWEEN THE DIE PLATE AND THE ADJUSTMENT PLATE.

2.34 Lower Feed-wheel Check Pawl and Tight-tape Lever (Unit With Pull-back Mechanism)



LOWER FEED-WHEEL CHECK PAWL

REQUIREMENT

(1) AT END OF FEEDING OPERATION, CHECK PAWL DROPPED BEHIND A TOOTH ON RATCHET WHEEL AND MIN. 0.003 INCH ---- MAX. 0.006 INCH CLEARANCE BETWEEN PAWL AND TOOTH. THIS REQUIREMENT SHALL BE MET WITH THE TOOTH WHICH PROVIDES THE LEAST CLEARANCE.

(2) WITH PULL-BACK MAGNET MANUALLY OPERATED, CHECK PAWL DISENGAGED FROM RATCHET WHEEL AND MIN. 0.020 INCH --- MAX. 0.040 INCH CLEARANCE BETWEEN PAWL AND OUTSIDE DIAMETER OF RATCHET WHEEL.

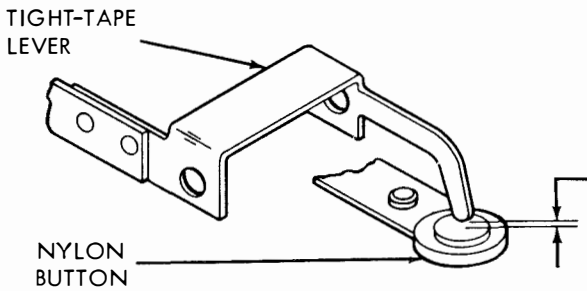
TO ADJUST

(A) MAKE SURE THAT FEED PAWL IS ADJUSTED PROPERLY.

(B) REMOVE PULL-BACK DRIVE BELT TO PREVENT BACKWARD MOVEMENT OF FEED WHEEL DURING ADJUSTMENT.

(C) WITH LOCKNUT LOOSENED, POSITION CHECK-PAWL ECCENTRIC TO MEET REQUIREMENT (1). KEEP CENTER OF PAWL PIVOT TO RIGHT OF ECCENTRIC CENTER OF ROTATION. TIGHTEN LOCKNUT AND RECHECK REQUIREMENT (1).

(D) LOOSEN CLAMP SCREW. HOLD PULL-BACK MAGNET IN OPERATED POSITION AND POSITION RELEASE LEVER TO MEET REQUIREMENT (2). TIGHTEN CLAMP SCREW. HOLD PULL-BACK MAGNET OPERATED AND SPIN RATCHET WHEEL TO CHECK THAT IT IS FREE THROUGHOUT ROTATION.



TIGHT-TAPE LEVER

REQUIREMENT

(1) WITH TIGHT-TAPE LEVER RESTING AGAINST TAPE GUIDE MIN. SOME --- MAX. 0.005 INCH BETWEEN LEVER AND TIGHT-TAPE CONTACT NYLON BUTTON.

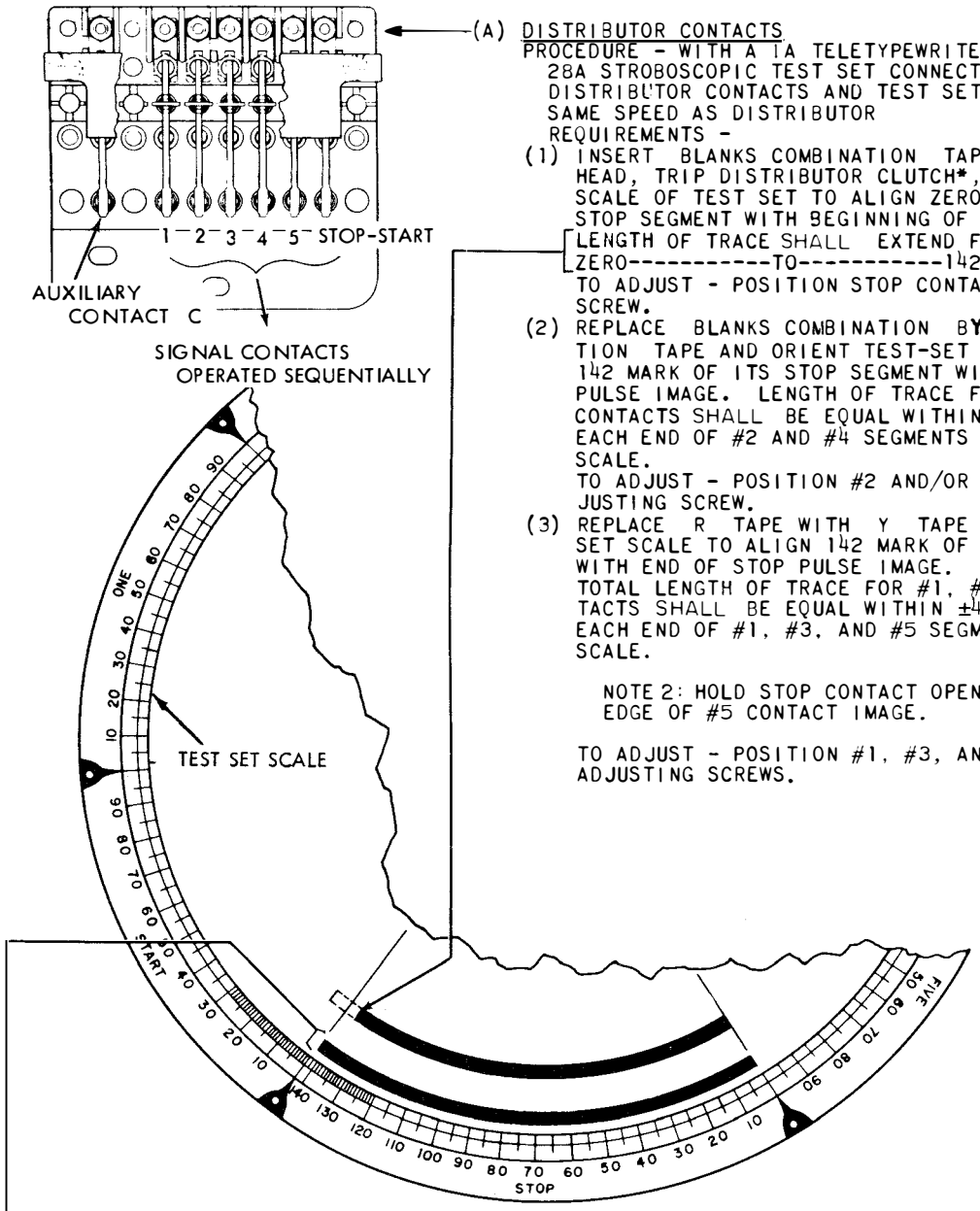
(2) BAKELITE PORTION OF TIGHT-TAPE LEVER SHALL ALWAYS FALL INTO ITS SLOT IN THE UPPER TAPE GUIDE. CHECK WITH GUIDE UP AS WELL AS DOWN.

TO ADJUST

BEND TIGHT-TAPE LEVER.

2.35 Contact Timing Requirements (Unit Without Pull-back Mechanism)

(1) Distributor Contacts



(A) DISTRIBUTOR CONTACTS

PROCEDURE - WITH A 1A TELETYPEWRITER TEST SET OR 28A STROBOSCOPIC TEST SET CONNECTED TO OUTPUT OF DISTRIBUTOR CONTACTS AND TEST SET OPERATING AT SAME SPEED AS DISTRIBUTOR

REQUIREMENTS -

(1) INSERT BLANKS COMBINATION TAPE IN SENSING HEAD, TRIP DISTRIBUTOR CLUTCH*, AND ORIENT SCALE OF TEST SET TO ALIGN ZERO MARK OF ITS STOP SEGMENT WITH BEGINNING OF STOP PULSE IMAGE.
LENGTH OF TRACE SHALL EXTEND FROM ZERO----------TO----------142.00 ±4 DIVISIONS.
TO ADJUST - POSITION STOP CONTACT ADJUSTING SCREW.

(2) REPLACE BLANKS COMBINATION BY AN R COMBINATION TAPE AND ORIENT TEST-SET SCALE TO ALIGN 142 MARK OF ITS STOP SEGMENT WITH END OF STOP PULSE IMAGE. LENGTH OF TRACE FOR #2 AND #4 CONTACTS SHALL BE EQUAL WITHIN ±4 DIVISIONS ON EACH END OF #2 AND #4 SEGMENTS OF TEST-SET SCALE.
TO ADJUST - POSITION #2 AND/OR #4 CONTACT ADJUSTING SCREW.

(3) REPLACE R TAPE WITH Y TAPE AND ORIENT TEST-SET SCALE TO ALIGN 142 MARK OF ITS STOP SEGMENT WITH END OF STOP PULSE IMAGE.
TOTAL LENGTH OF TRACE FOR #1, #3, AND #5 CONTACTS SHALL BE EQUAL WITHIN ±4 DIVISIONS ON EACH END OF #1, #3, AND #5 SEGMENTS OF TEST-SET SCALE.

NOTE 2: HOLD STOP CONTACT OPEN TO VIEW TRAILING EDGE OF #5 CONTACT IMAGE.

TO ADJUST - POSITION #1, #3, AND #5 CONTACT ADJUSTING SCREWS.

(B) DISTRIBUTOR AUXILIARY CONTACTS

(1) REQUIREMENT - WITH TEST SET CONNECTED TO AUXILIARY CONTACT C
ALIGN END OF STOP PULSE IMAGE WITH 142 MARK ON STOP SEGMENT OF TEST-SET SCALE. CONTACT SHALL CLOSE AT 32 ±15 DIVISIONS IN START PULSE SEGMENT OF TEST-SET SCALE AND OPEN AT 29 ±15 DIVISIONS IN STOP PULSE SEGMENT OF TEST-SET SCALE.
TO ADJUST - POSITION CONTACT ADJUSTING SCREW.

(2) REQUIREMENT - WITH TEST SET CONNECTED TO AUXILIARY CONTACT B (IF SO EQUIPPED)
ALIGN END OF STOP PULSE IMAGE WITH 142 MARK ON STOP SEGMENT OF TEST-SET SCALE. CONTACT SHALL CLOSE AT 25 ±15 DIVISIONS IN #1 PULSE SEGMENT OF TEST-SET SCALE AND OPEN AT 75 ±15 DIVISIONS IN #5 PULSE SEGMENT OF TEST-SET SCALE.
TO ADJUST - POSITION CONTACT ADJUSTING SCREW.

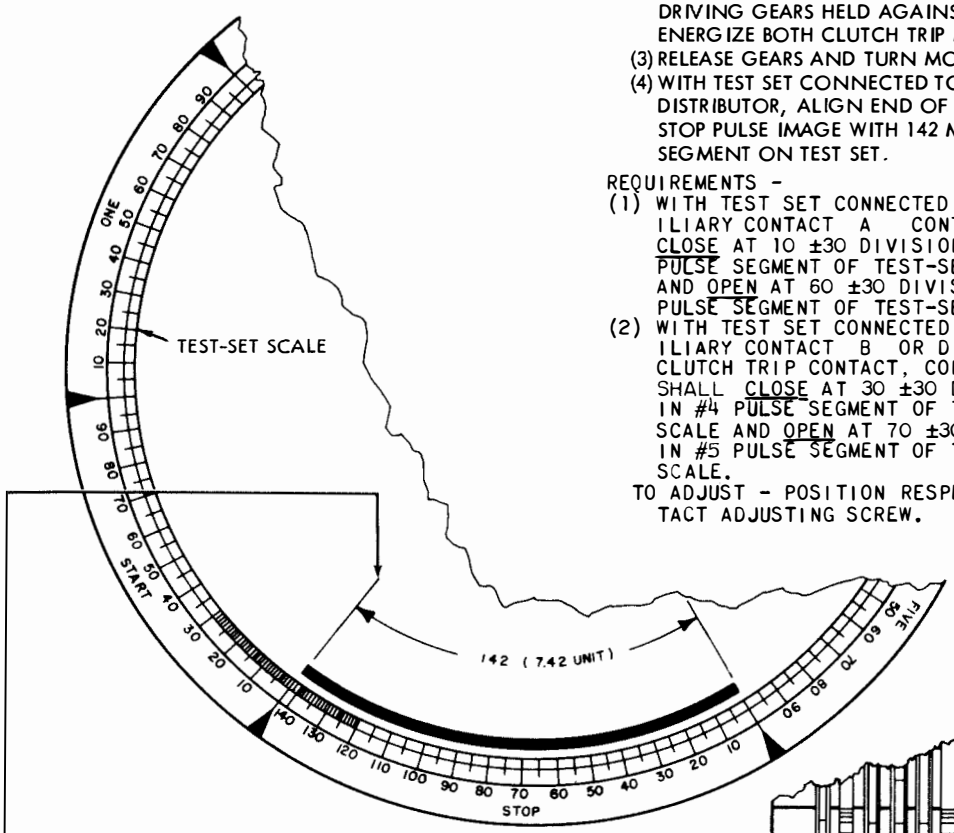
* NOTE 1: - CLUTCH ON CERTAIN UNITS TRIGGERED (ELECTRICALLY) FROM OPPOSITE SHAFT.

2.35 Contact Timing Requirements (Unit Without Pull-back Mechanism) (Cont)

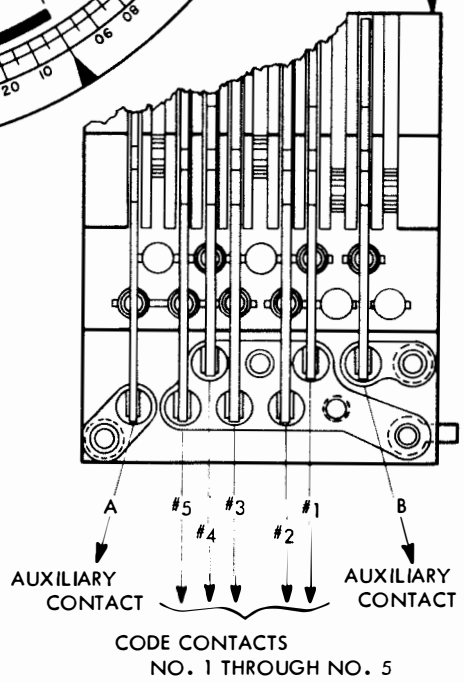
(2) Storing Switch Contacts

(B) AUXILIARY CONTACTS
PROCEDURE ---
(1) WITH BOTH MAGNETS DE-ENERGIZED, DISTRIBUTOR AND SENSING SHAFT CLUTCHES LATCHED AND IN THEIR STOP POSITION, TURN MOTOR OFF.
(2) WITH SENSING AND DISTRIBUTOR SHAFT DRIVING GEARS HELD AGAINST ROTATION, ENERGIZE BOTH CLUTCH TRIP MAGNETS.
(3) RELEASE GEARS AND TURN MOTOR ON.
(4) WITH TEST SET CONNECTED TO OUTPUT OF DISTRIBUTOR, ALIGN END OF DISTRIBUTOR STOP PULSE IMAGE WITH 142 MARK ON STOP SEGMENT ON TEST SET.

REQUIREMENTS -
(1) WITH TEST SET CONNECTED TO AUXILIARY CONTACT A CONTACT SHALL CLOSE AT 10 ±30 DIVISIONS IN START PULSE SEGMENT OF TEST-SET SCALE AND OPEN AT 60 ±30 DIVISIONS IN #4 PULSE SEGMENT OF TEST-SET SCALE.
(2) WITH TEST SET CONNECTED TO AUXILIARY CONTACT B OR DISTRIBUTOR CLUTCH TRIP CONTACT, CONTACT SHALL CLOSE AT 30 ±30 DIVISIONS IN #4 PULSE SEGMENT OF TEST-SET SCALE AND OPEN AT 70 ±30 DIVISIONS IN #5 PULSE SEGMENT OF TEST-SET SCALE.
TO ADJUST - POSITION RESPECTIVE CONTACT ADJUSTING SCREW.



(A) STORING CONTACTS (#1 THROUGH #5)
REQUIREMENTS - WITH TEST SET CONNECTED TO TRANSMITTER-DISTRIBUTOR, A LTRS TAPE (OR ALTERNATE R AND Y TAPE) PLACED IN SENSING HEAD
ALIGN END OF STOP PULSE IMAGE WITH 142 MARK ON STOP SEGMENT OF TEST-SET SCALE. THEN CONNECT INPUT OF TEST SET TO RESPECTIVE CONTACT (#1 THROUGH #5) OF STORING SWITCH.
(1) (WITH ALTERNATE R AND Y TAPE USED) THE BEGINNING AND END OF EACH TRACE SHALL OCCUR 20 DIVISIONS OR MORE AFTER THE BEGINNING OF THE STOP SEGMENT AND 20 DIVISIONS OR MORE BEFORE THE END OF THE START SEGMENT ON THE TEST-SET SCALE.
(2) READING OF SUCCESSIVE MARKING CODE PERFORATIONS IN THE TAPE (WITH LTRS TAPE USED) SHALL NOT CAUSE THE RESPECTIVE CONTACT TO OPEN IN EXCESS OF 1.5 MILLISECONDS. CONTACTS #1 THROUGH #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, 1-1/2 SCALE DIVISIONS AT 60 WPM. NO MORE THAN ONE BREAK IS PERMITTED. HOWEVER, BREAKS OCCURRING WITHIN ±4% TOLERANCE LIMITS OF DISTRIBUTOR ARE ACCEPTABLE.
TO ADJUST - POSITION RESPECTIVE CONTACT ADJUSTING SCREW.



2.36 Contact Timing Requirements (Unit With Pull-back Mechanism)

(a) DISTRIBUTOR CONTACTS

(1) To Check: Use a 28B stroboscopic test set in accordance with the instructions for strobing distributor contacts as given in the appropriate section.

(2) Tests: The requirements and adjustments for Distributor Contacts (Unit Without Pull-back Mechanism) of this section apply except that, for the unit with pull-back mechanism, all references to ±4 divisions are changed to ±3 divisions.

(b) DISTRIBUTOR AUXILIARY CONTACT

(1) To Check: Use a 28B stroboscopic test set in accordance with the instructions for strobing distributor contacts as given in the appropriate section.

(2) Tests: The requirements and adjustments for Distributor Auxiliary Contact (Unit Without Pull-back Mechanism) of this section apply except that, for the unit with pull-back mechanism the following requirements are substituted:

Close: 110 ±5 divisions in STOP segment.
Open: 31 ±8 divisions in STOP segment.

(c) TRANSMITTER SENSING CODE CONTACTS, ZERO THROUGH EIGHTH LEVEL

(1) To Check: Use a 28B stroboscopic test set in accordance with the instructions for strobing transmitter sensing code and auxiliary contacts as given in the appropriate section.

(2) Tests: The requirements and adjustments are the same as those for Storing Contacts (1 Through 5) (Unit Without Pull-back Mechanism) of this section. In addition, when testing the transmitter-distributor unit with pull-back mechanism, note the position of the latest transition (eg 85 divisions in the STOP segment) for use in checking the requirements for the transmitter sensing auxiliary contacts, sequential clutch operation.

(d) TRANSMITTER SENSING AUXILIARY CONTACTS, SIMULTANEOUS CLUTCH OPERATION.

(1) To Check: Use a 28B stroboscopic test set in accordance with instructions for strobing transmitter sensing auxiliary and code contacts as given in the appropriate section.

(2) Requirements:

(a) A Contact:

Close: 107 ±18 divisions in STOP segment.
Open: 89 ±15 divisions in TWO segment.

(b) B Contact:

Close: 2 (±15) divisions in THREE segment.
Open: 4 (±25, -15) divisions in ONE segment.

(c) Distributor Magnet Contact

Close: 85 ±10 divisions in START segment.
Remain Closed: 180 to 220 divisions.

(3) To Adjust (Each Contact): With lever clamp screw loosened, position contact lever shown in Sensing Auxiliary Contact (Preliminary), With Two-piece Mounting Bracket (Unit With Pull-back Mechanism) or Sensing Auxiliary Contacts (Preliminary) With One-piece Mounting Bracket (Unit With Pull-back Mechanism). Move lever upward to advance timing and downward to retard timing.

Note: The A contact on the two-piece mounting bracket is not adjustable.

(e) TRANSMITTER SENSING AUXILIARY CONTACTS, SEQUENTIAL CLUTCH OPERATION.

(1) To Check: Use a 28B stroboscopic test set in accordance with the instructions for strobing transmitter sensing code and auxiliary contacts as given in the appropriate section.

(2) Requirements:

(a) When reading alternate rub-out and Blank characters, the mark-to-space and space-to-mark overlap transitions shall be between 25 and 85 divisions in STOP segment.

(b) With repeat rub-out tape being read, breaks in marking image shall be less than 3 divisions in transition range and no breaks outside transition range.

(c) The B contact must open in the FIVE segment. There shall be a minimum of 74 divisions between latest transition of sensing code contacts (see Transmitter Sensing Code Contacts, Zero Through Eighth Level (Unit With Pull-back Mechanism)) and closure of B contact.

(3) To Adjust:

(a) Refine preliminary adjustment in Sensing Auxiliary Contacts (Preliminary) With Two-piece Mounting Bracket (Unit With Pull-back Mechanism) or Sensing Auxiliary Contacts (Preliminary) With One-piece Mounting Bracket (Unit With Pull-back Mechanism) and contact-lever adjustment in Transmitter Sensing Auxiliary Contacts, Simultaneous Clutch Operation (Unit With Pull-back Mechanism) for distributor magnet contact to meet the requirements in (b) (1) and (b) (2).

(b) Refine the adjustments in (c) (1) for B contact to meet requirement (b) (3).

(f) GENERAL STROBING NOTES

(1) Make sure that there is overtravel in the sensing auxiliary contacts after the strobing adjustments have been made and that the contacts open with a minimum gap of 0.010 inch.

(2) To obtain overlap transitions, refine the lever slide adjustment shown in Transfer-type Storing Switch Mechanism within its 0.005- to 0.020-inch range, or refine the pushlever adjustment shown in Sensing Mechanism to within its 0.010- to 0.020-inch range. Increasing either of these gaps will increase the overlap.

B. Auxiliary Features (Unit Without Pull-back Mechanism)

Modification Kit to Provide Combination Tape-out and Tape-lid Switch

2.37 Tape-out and Tape-lid Switch Assembly

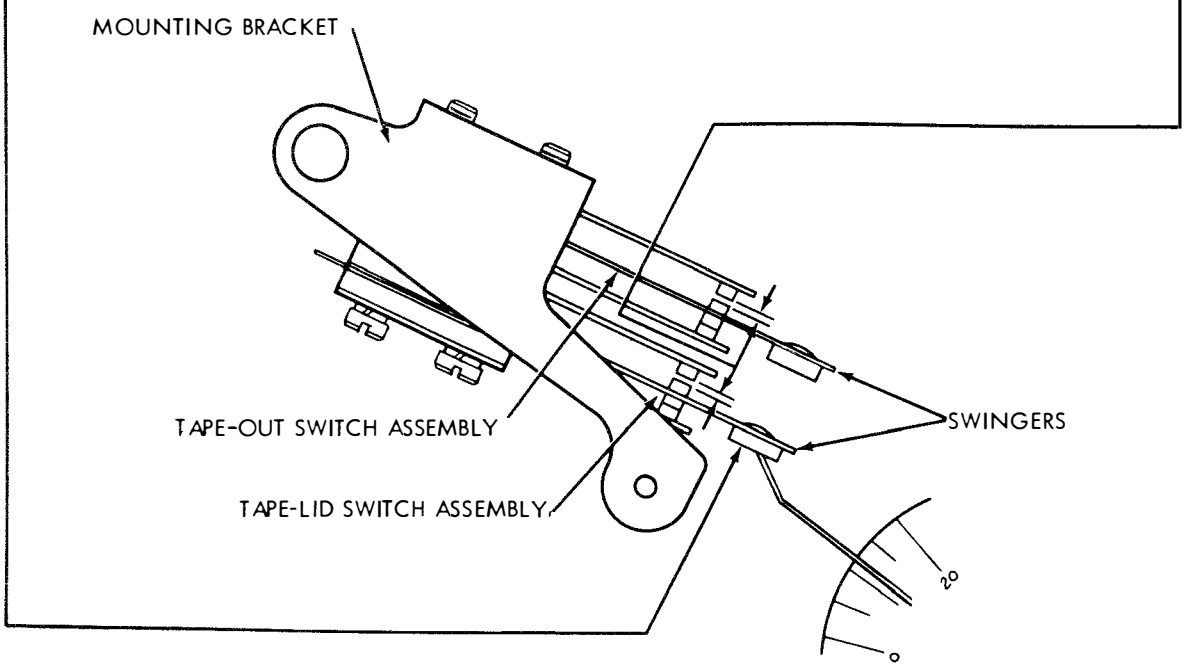
TAPE-OUT AND TAPE-LID SWITCH

NOTE 1

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 TP 110445 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 TP 110445 SPRING BENDER.



NOTE 2

TO REMOVE 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

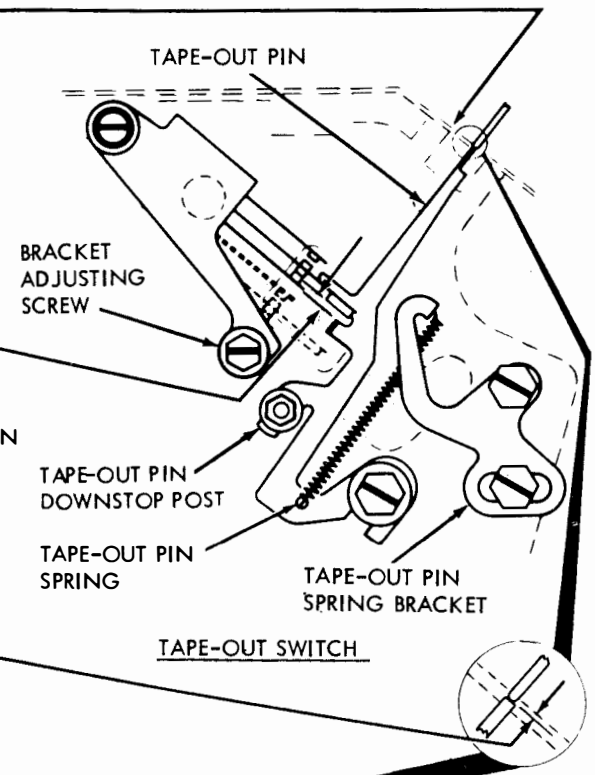
REVERSE DISASSEMBLY PROCEDURE.

2.38 Tape-out and Tape-lid Pin Mechanism

(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. 0.006 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.

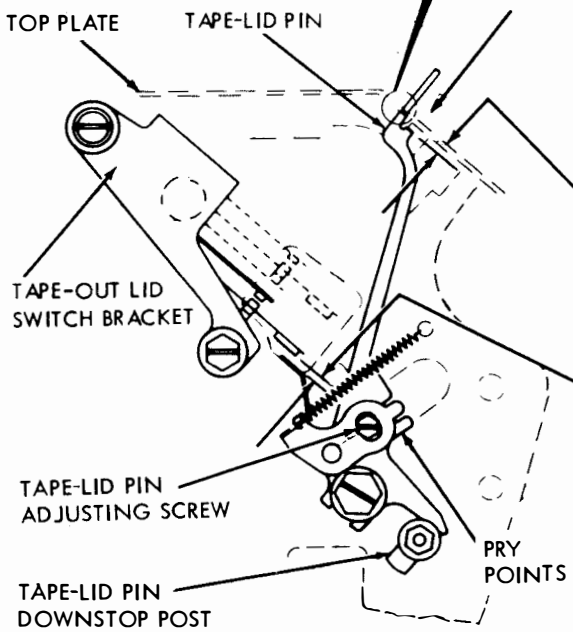
(C) TAPE-OUT AND TAPE-LID PIN DOWNSTOP
REQUIREMENT
WHEN DEPRESSED TO THEIR LOWERMOST POSITIONS TAPE-OUT AND TAPE-LID PINS SHALL BE FLUSH TO 0.005 INCH BELOW SURFACE OF TAPE-GUIDE PLATE.
TO ADJUST
POSITION RESPECTIVE DOWNSTOP POST WITH ITS MOUNTING NUT LOOSENED.



TAPE-OUT SWITCH

(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 POINT.



TAPE-LID SWITCH

2.39 Tight-tape Switch Assembly (Units Not Equipped With START-STOP Lever)

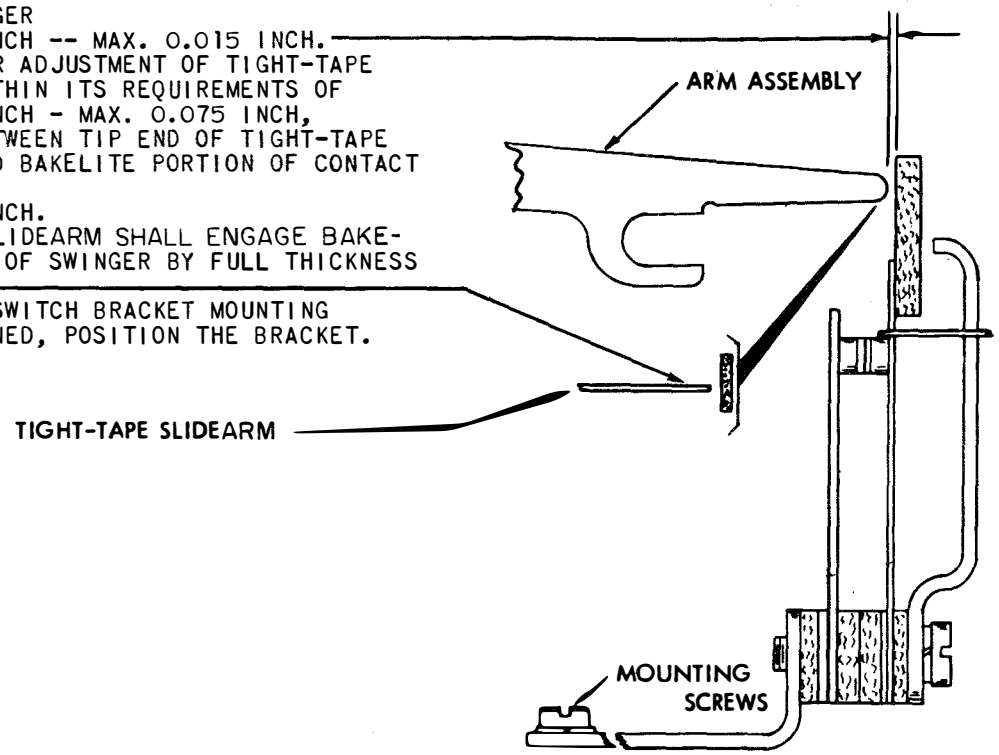
(A) TIGHT-TAPE SWITCH BRACKET REQUIREMENT

(1) PRELIMINARY: WITH TIGHT-TAPE SLIDEARM ADJUSTED TO THE CENTER OF ITS ADJUSTMENT RANGE, CLEARANCE BETWEEN TIP END OF TIGHT-TAPE SLIDEARM AND BAKELITE PORTION OF CONTACT SWINGER
MIN. 0.006 INCH -- MAX. 0.015 INCH.

(2) FINAL: AFTER ADJUSTMENT OF TIGHT-TAPE SLIDEARM WITHIN ITS REQUIREMENTS OF MIN. 0.045 INCH - MAX. 0.075 INCH, CLEARANCE BETWEEN TIP END OF TIGHT-TAPE SLIDEARM AND BAKELITE PORTION OF CONTACT SWINGER
MIN. 0.006 INCH.

(3) TIGHT-TAPE SLIDEARM SHALL ENGAGE BAKELITE PORTION OF SWINGER BY FULL THICKNESS OF ARM.

TO ADJUST - WITH SWITCH BRACKET MOUNTING SCREWS LOOSENED, POSITION THE BRACKET.



(B) TIGHT-TAPE LEVER SWITCH SEE STANDARD ADJUSTMENT.

(C) TIGHT-TAPE SLIDEARM SEE STANDARD ADJUSTMENT.

(D) TIGHT-TAPE BAIL YIELD SPRING SEE STANDARD ADJUSTMENT.

NOTE: STANDARD ADJUSTMENT IS FOUND IN PARAGRAPH, TIGHT-TAPE START-STOP MECHANISM (FOR UNITS EQUIPPED WITH TIGHT-TAPE START-STOP LEVER).

2.40 Modification Kit to Permit Use of 11/16-inch and 7/8-inch Tape Interchangeably

Tape Guide

RIGHT AND LEFT GUIDE ADJUSTMENT

REQUIREMENT

WITH THE TP156743 GUIDE INSERTED BETWEEN THE RIGHT TAPE GUIDE AND THE LEFT TAPE GUIDE, THE GAUGE MAY TOUCH EITHER GUIDE BUT SHALL NOT BIND. CLEARANCE SHALL NOT EXCEED 0.003 INCH.

TO ADJUST

POSITION EACH TAPE GUIDE WITH THE TAPE-GUIDE MOUNTING NUTS FRICTION TIGHT.