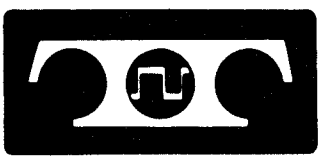
BULLETIN 312B
NAVSHIPS 0967-173-6020
VOLUME 2
(of 3 Volumes)

TECHNICAL MANUAL
28 AUTOMATIC SEND-RECEIVE (ASR) TELETYPEWRITER SETS



TELETYPE®
CORPORATION
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INTRODUCTION

This manual contains three (3) volumes of literature for the 28 Automatic Send-Receive Teletypewriter Sets as follows:

Volume 1, NAVSHIPS 0967-173-6010, provides cross reference material, description and principles of operation, installation, operating test, disassembly and reassembly of the set, and component wiring diagrams.

Volume 2, NAVSHIPS 0967-173-6020, provides adjusting information, lubrication, and disassembly and reassembly of components.

Volume 3, NAVSHIPS 0967-173-6030, provides parts ordering information.

Each volume is made up of a group of appropriate independent sections. The sections are complete within themselves; they are separately identified by title and section number and the pages of each section are numbered consecutively, independent of other sections.

The identifying number of a section, a 9-digit number, appears at the top of each page of the section, in the left corner of left-hand pages and the right corner of right-hand pages.

To locate specific information, refer to the table of contents. The name of the involved component, the title of the section, and the 9-digit section number may then be found. The sections are arranged in the order shown in the table of contents. Turn to page one of the section indicated where the contents of the section will be found (except where a section is small and does not require a listing of contents).

VOLUME 2

TABLE OF CONTENTS

28 CABINET FOR AUTOMATIC SEND-RECEIVE TELETYPEWRITER SETS

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section has been revised to include recent engineering changes and additions, and to rearrange the text so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 This section contains the specific requirements and adjustments for the 28 cabinet for automatic send-receive teletypewriter sets.

1.03 Maintenance procedures apply only to mechanisms of a particular design, or to certain models of 28 cabinets for automatic send-receive teletypewriter sets.

1.04 The adjustments of each unit are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

1.05 References made to left or right, up or down, front or rear, etc apply to the unit in its normal operating position as viewed from the front.

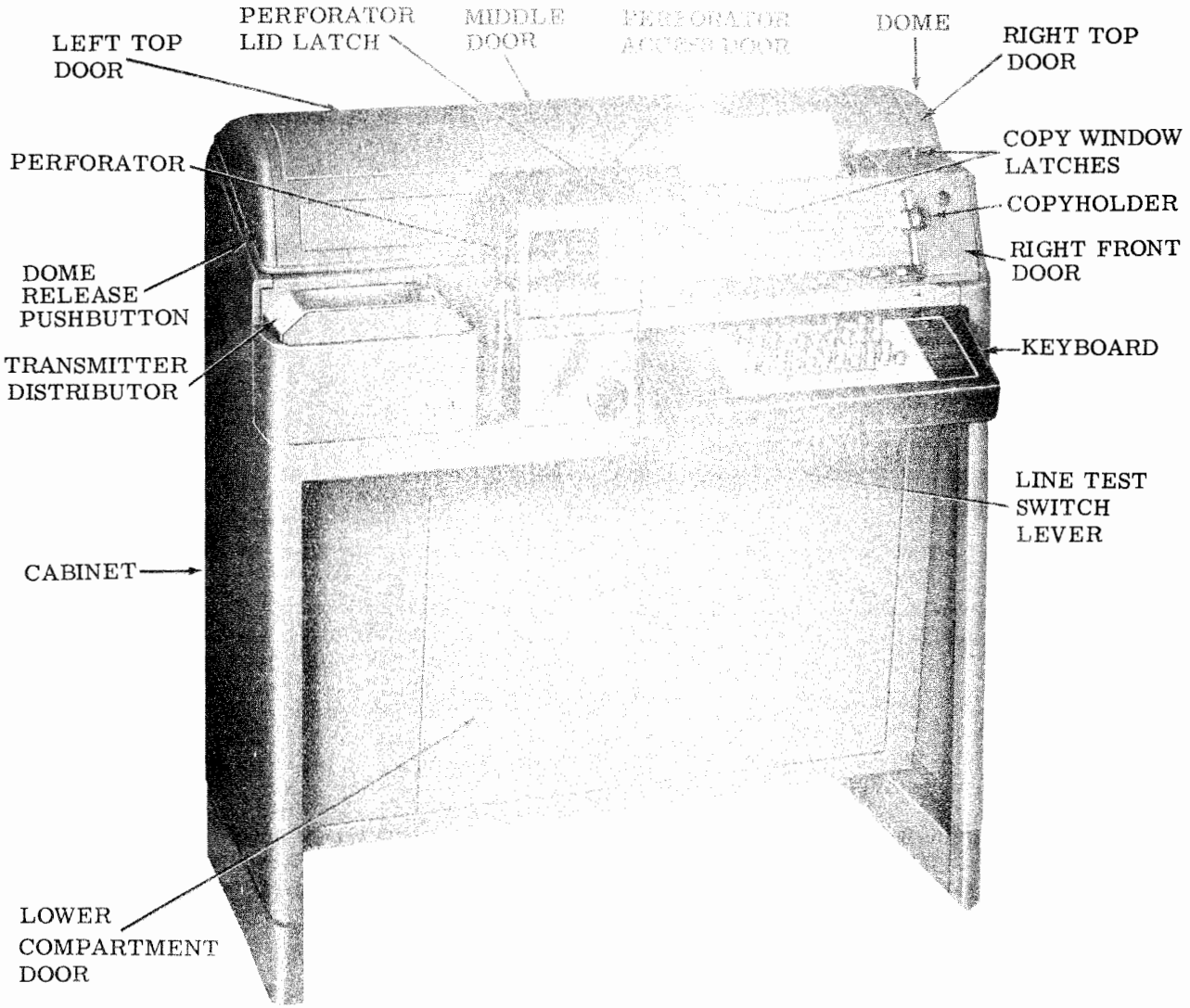
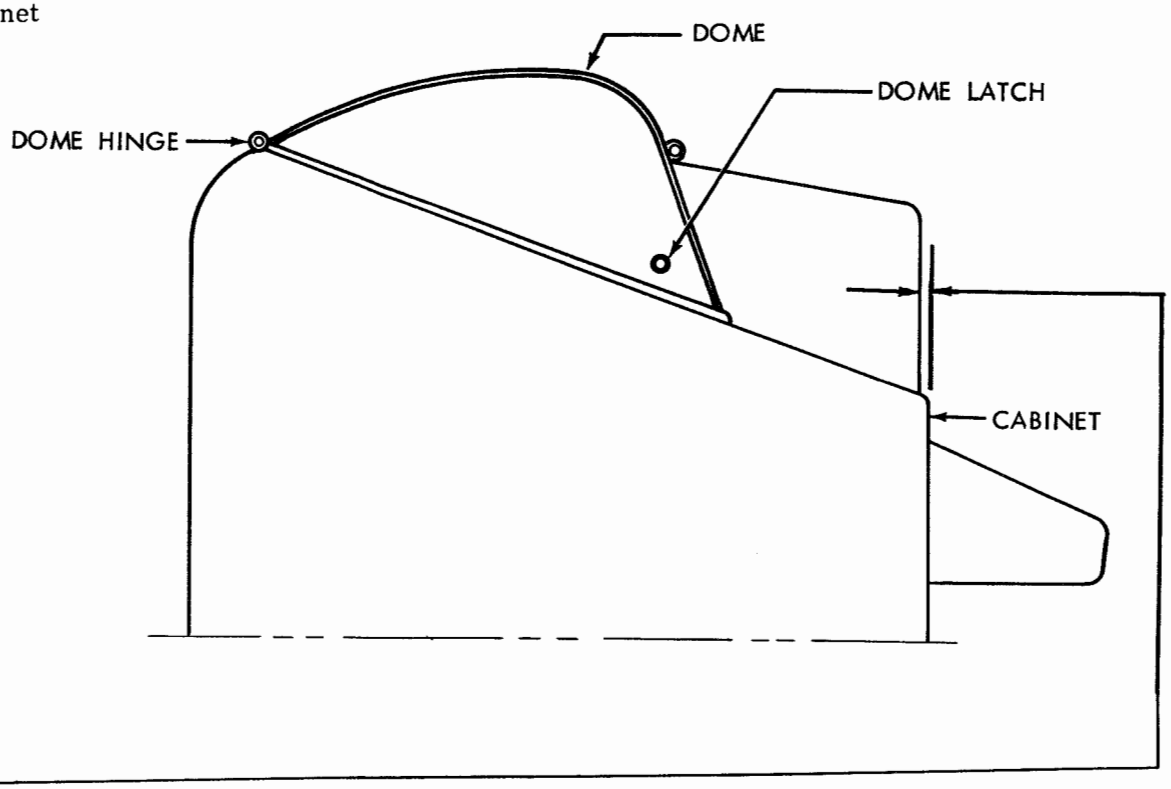


Figure 1 - Model 28 [illegible] Receive Set

2. BASIC UNIT

2.01 Cabinet



DOME

REQUIREMENT

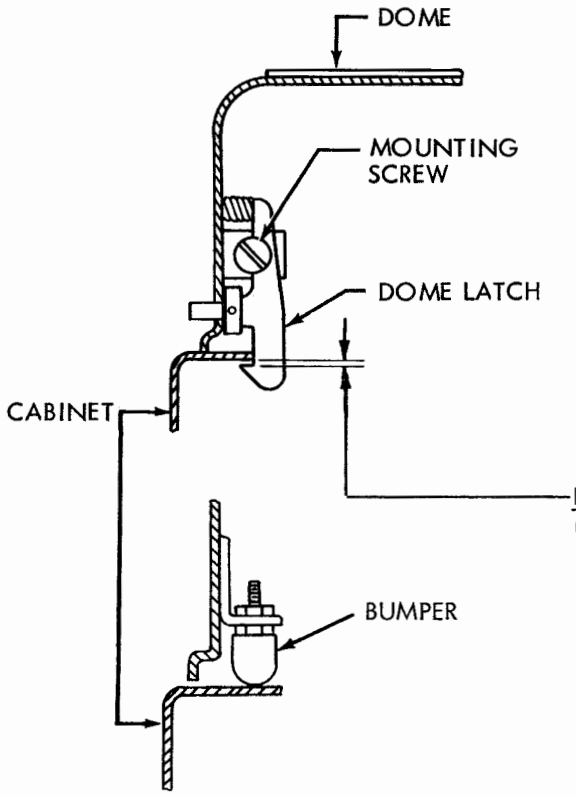
THE DOME SHOULD BE CENTERED ON THE CABINET FROM RIGHT TO LEFT AND PLACED APPROXIMATELY 0.050 INCH FROM THE FRONT EDGE OF CABINET OR SO THE EXTRUDED PORTIONS OF THE LEFT FRONT DOOR AND RIGHT FRONT CROSS BAR LINE UP.

TO ADJUST

(1) DISCONNECT THE UPSTOP LATCH ARM ON RIGHT SIDE OF DOME. THEN PIVOTING DOME REARWARDLY OVER THE BACK, PRY END OF TORSION BARS OUT OF HOLE AND SLIP OUT FROM REAR BRACKET IN DOME.

(2) POSITION THE DOME WITH THE SCREWS THAT SECURE THE DOME HINGE TO THE CABINET LOOSENED. THE DOME WHEN CLOSED SHOULD BE RESTING ALONG THE TOP FRONT EDGE ON THE CABINET BODY, THE RIGHT FRONT CROSS BAR AND LEFT FRONT CROSS BAR, WITH SOME DAYLIGHT SHOWING REARWARDLY ALONG THE TOP FLANGE OF THE SIDES TOWARD THE REAR HINGE.

2.02 Cabinet (continued)



NOTE: IF NECESSARY TO CHECK REQUIREMENT, REMOVE BLANK CONTROL PANEL.

DOME LATCH

(1) REQUIREMENT

WITH THE DOME LATCHED THERE SHOULD BE A SLIGHT PRESSURE ON THE RUBBER BUMPER.

TO ADJUST

LOOSEN PIVOT SCREWS ON BOTH RIGHT AND LEFT LATCHES. POSITION LATCHES TO PROVIDE SOME TO 0.032 INCH BETWEEN EACH LATCH AND ITS LATCHING SURFACE AND LOCK THE SCREWS. POSITION RUBBER BUMPER TO PROVIDE 0.030 TO 0.045 INCH BETWEEN DOME AND CABINET AND SECURE THE BUMPERS. A SLIGHT PRESSURE SHOULD LATCH THE DOME.

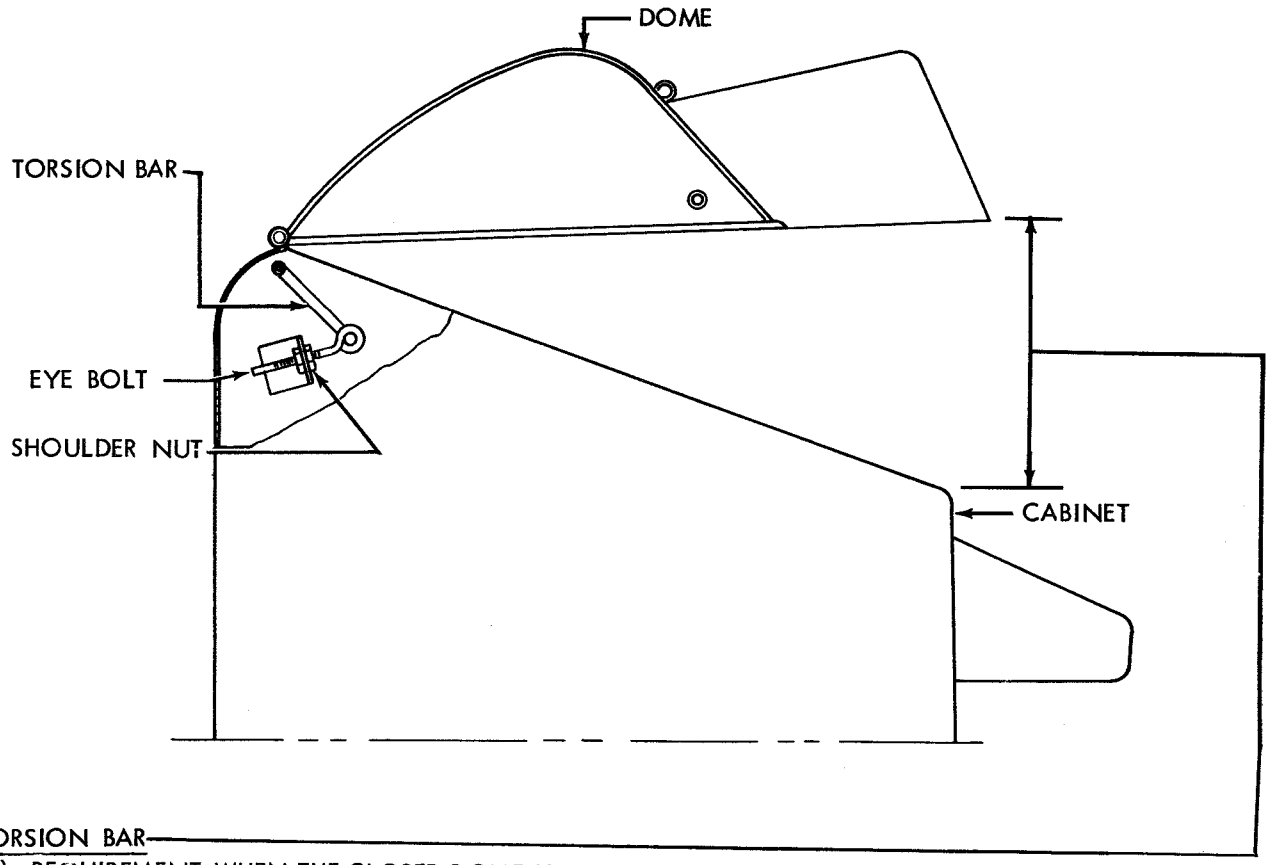
(2) REQUIREMENT

IT SHOULD NOT BE POSSIBLE TO DEPRESS THE DOME LATCH BUTTON COMPLETELY INTO THE DOME.

TO ADJUST

POSITION THE LATCH TOWARD THE OUTSIDE SURFACE OF DOME WITH MOUNTING SCREWS LOOSENED. PIVOT DOME OPEN REARWARDLY OVER BACK OF CABINET. REPLACE ENDS OF TORSION RODS BY SLIDING THE STRAIGHT PORTION OF RODS UNDER BRACKET ON THE GUSSET IN CORNERS OF THE DOME, UNTIL BENT END OF ROD SLIPS INTO RETAINING HOLE IN FRONT OF BRACKET. PIVOT DOME FORWARD, AND REPLACE UPSTOP LATCH ARM ON RIGHT SIDE OF DOME AND SECURE IN PLACE WITH SCREW AS BEFORE.

2.03 Cabinet (continued)



TORSION BAR

(1) REQUIREMENT-WHEN THE CLOSED DOME IS RELEASED FROM ITS LATCHES THE TORSION BARS SHOULD LIFT THE DOME ABOVE THE FRONT EDGE OF CABINET
MIN. 7 INCHES---MAX. 9 INCHES

(2) REQUIREMENT-WHEN DOME IS STARTED DOWN BY SLIGHT PUSH FROM ITS FULLY OPENED POSITION IT SHOULD NOT CLOSE OR LATCH. NOTE: READJUST DOME IF MORE APPARATUS IS ADDED.

TO ADJUST

TURN THE SHOULDER NUTS ON THE EYE BOLTS CLOCKWISE TO INCREASE THE SPRING TORQUE, AND COUNTERCLOCKWISE TO DECREASE THE SPRING TORQUE.

2.04 Cabinet (continued)

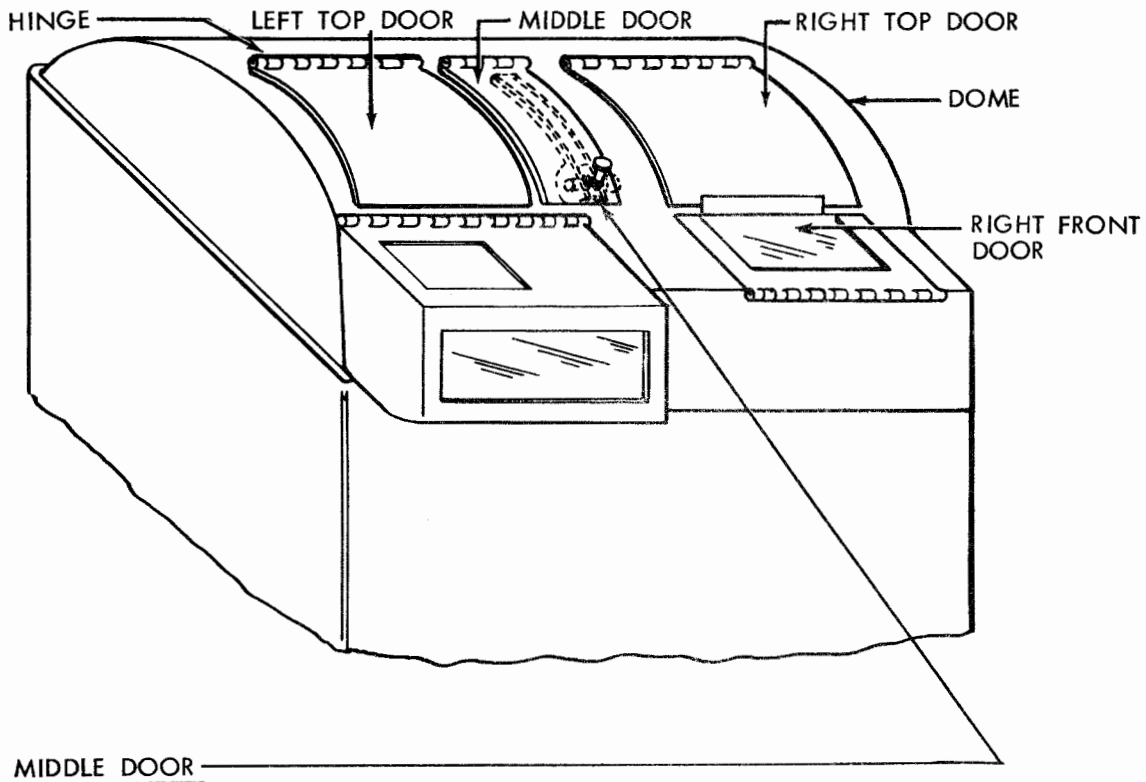
TOP DOORS (RIGHT AND LEFT)

REQUIREMENT

THE DOORS SHOULD SET SQUARELY AND UNIFORMLY ON THE CONTOUR OF THE DOME.

TO ADJUST

POSITION EACH DOOR WITH ITS HINGE MOUNTING SCREWS LOOSENED.



TOP MIDDLE DOOR

REQUIREMENT

THE DOOR SHOULD REST FLAT AND SQUARELY ON THE DOME. THE REINFORCEMENT CHANNEL SHOULD FIT OVER ITS GUIDE BRACKET IN THE DOME.

TO ADJUST

REMOVE THE SPRING DETENT FROM CENTER OF DOME AND POSITION THE DOOR WITH ITS HINGE MOUNTING SCREWS AND BRACKET MOUNTING SCREWS LOOSENED.

RIGHT FRONT DOOR

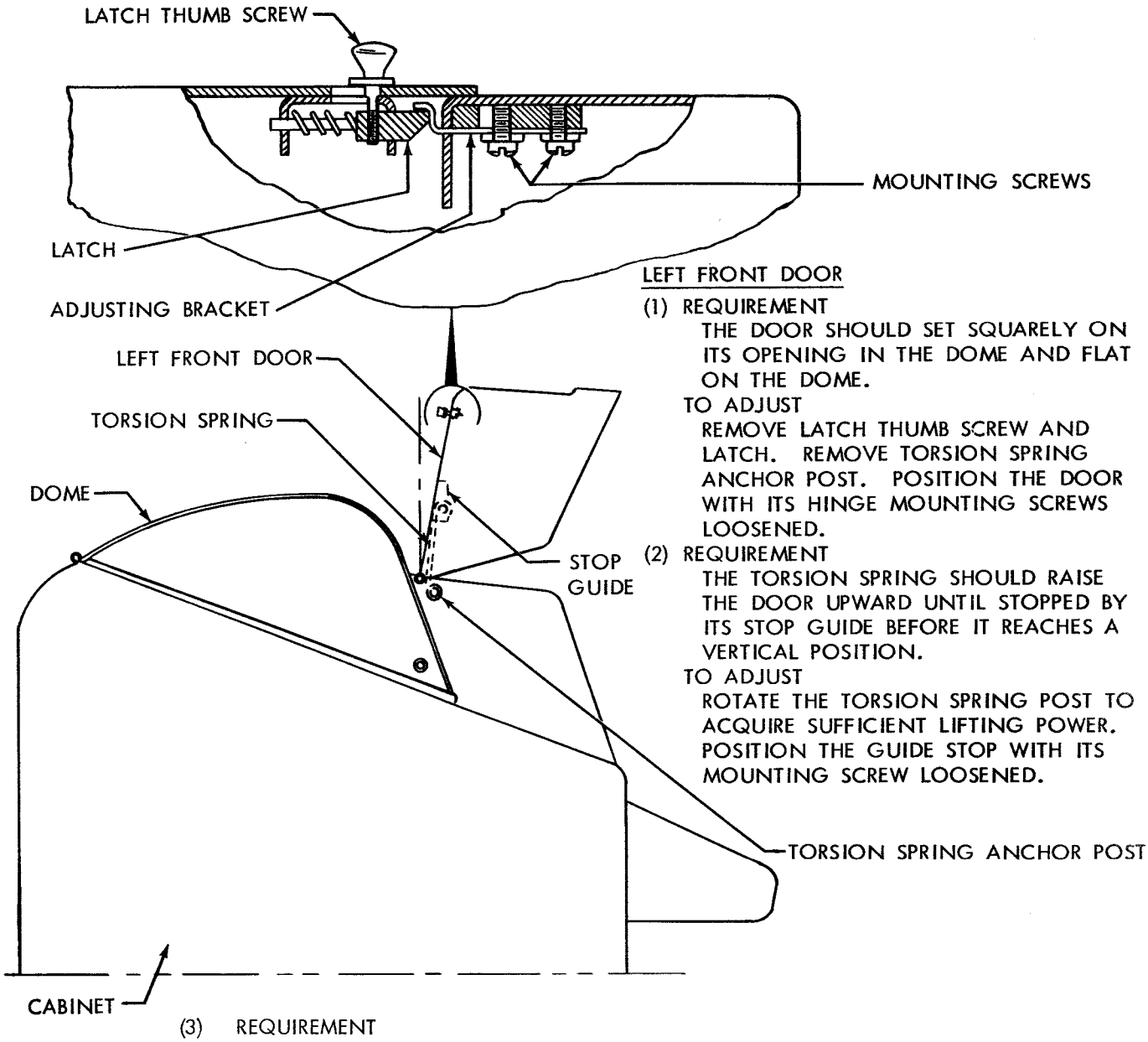
REQUIREMENT

THE RIGHT AND LEFT EDGES OF THE RIGHT FRONT DOOR SHOULD BE EVEN WITH THE RIGHT TOP DOOR. WITH THE DOOR CLOSED IT SHOULD REST FLAT ON THE HORIZONTAL SURFACE OF THE DOME.

TO ADJUST

REMOVE THE THUMB SCREWS, LATCHES, AND SPRINGS FROM THE DOOR, AND POSITION THE DOOR WITH ITS MOUNTING SCREWS LOOSENED.

2.05 Cabinet (continued)



LEFT FRONT DOOR

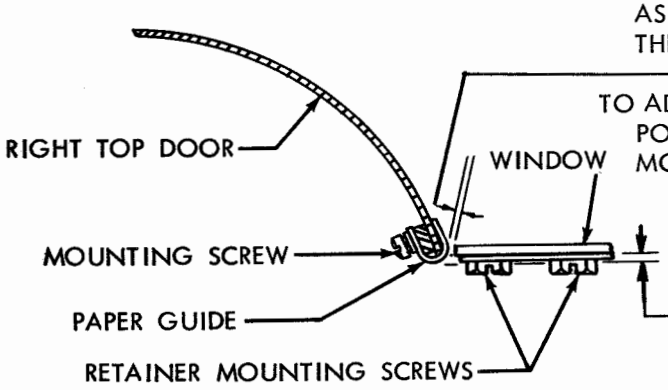
(1) REQUIREMENT
THE DOOR SHOULD SET SQUARELY ON ITS OPENING IN THE DOME AND FLAT ON THE DOME.
TO ADJUST
REMOVE LATCH THUMB SCREW AND LATCH. REMOVE TORSION SPRING ANCHOR POST. POSITION THE DOOR WITH ITS HINGE MOUNTING SCREWS LOOSENED.

(2) REQUIREMENT
THE TORSION SPRING SHOULD RAISE THE DOOR UPWARD UNTIL STOPPED BY ITS STOP GUIDE BEFORE IT REACHES A VERTICAL POSITION.
TO ADJUST
ROTATE THE TORSION SPRING POST TO ACQUIRE SUFFICIENT LIFTING POWER. POSITION THE GUIDE STOP WITH ITS MOUNTING SCREW LOOSENED.

(3) REQUIREMENT
THE DOOR LATCH SHOULD HAVE SUFFICIENT LATCHING SURFACE ON ITS BRACKET AND SHOULD HOLD THE DOOR CLOSED REASONABLY TIGHT.
TO ADJUST
POSITION ITS ADJUSTING BRACKET HORIZONTALLY WITH ITS MOUNTING SCREWS LOOSENED. MODIFY UP OR DOWN POSITION OF BRACKET IF NECESSARY.

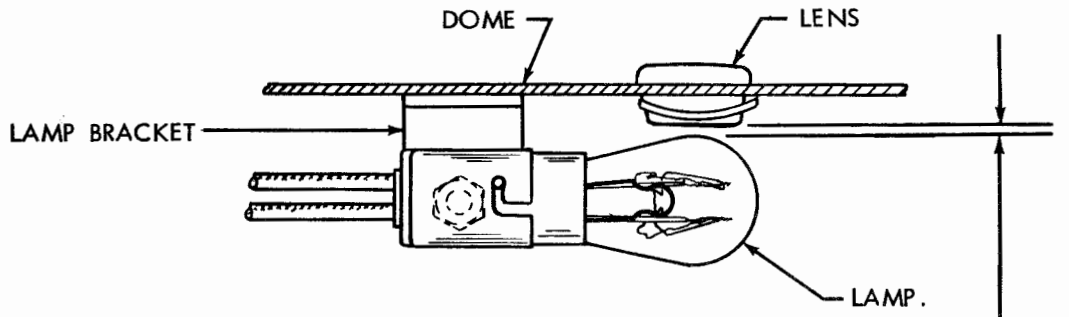
2.06 Cabinet (continued)

NOTE: THE REQUIREMENTS FOR PAPER GUIDE AND WINDOW GIVEN HEREIN ALSO APPLY WHERE THE CABINET IS EQUIPPED WITH A FORM GUIDE INSTEAD OF A PAPER GUIDE.

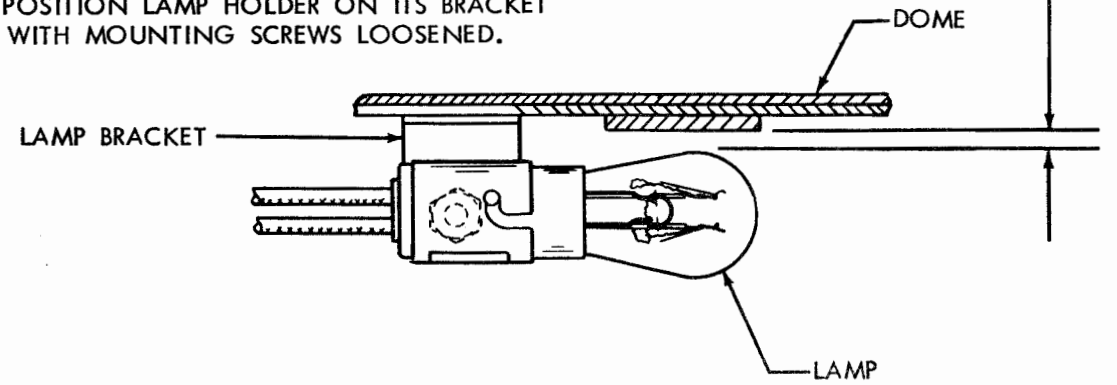


WINDOW
REQUIREMENT
AS THE RIGHT FRONT DOOR IS BEING OPENED OR CLOSED, THE PAPER GUIDE SHOULD CLEAR THE WINDOW BY 1/16 INCH
TO ADJUST
POSITION THE WINDOW WITH ITS RETAINER MOUNTING SCREWS LOOSENED.

PAPER GUIDE
REQUIREMENT
WITH THE RIGHT TOP DOOR CLOSED, THE BOTTOM EDGE OF THE PAPER GUIDE SHOULD BE MIN. 7/64 INCH --- MAX. 9/64 INCH BELOW THE BOTTOM EDGE OF THE SURFACE OF THE WINDOW IN THE RIGHT FRONT DOOR.
TO ADJUST
POSITION THE PAPER GUIDE WITH ITS MOUNTING SCREWS LOOSENED.



LAMP POSITION
REQUIREMENT
CLEARANCE BETWEEN EACH LAMP AND ITS LENS OR THE DOME
MIN. 1/16 INCH
TO ADJUST
POSITION LAMP HOLDER ON ITS BRACKET WITH MOUNTING SCREWS LOOSENED.



2.07 Cabinet (continued)

CRADLE

(1) REQUIREMENT

UNDER NORMAL LOAD, THE TOP OF THE CRADLE RAILING SHOULD BE 2 INCHES ± 1/32 INCH FROM THE SHELF ON THE CABINET.

TO ADJUST

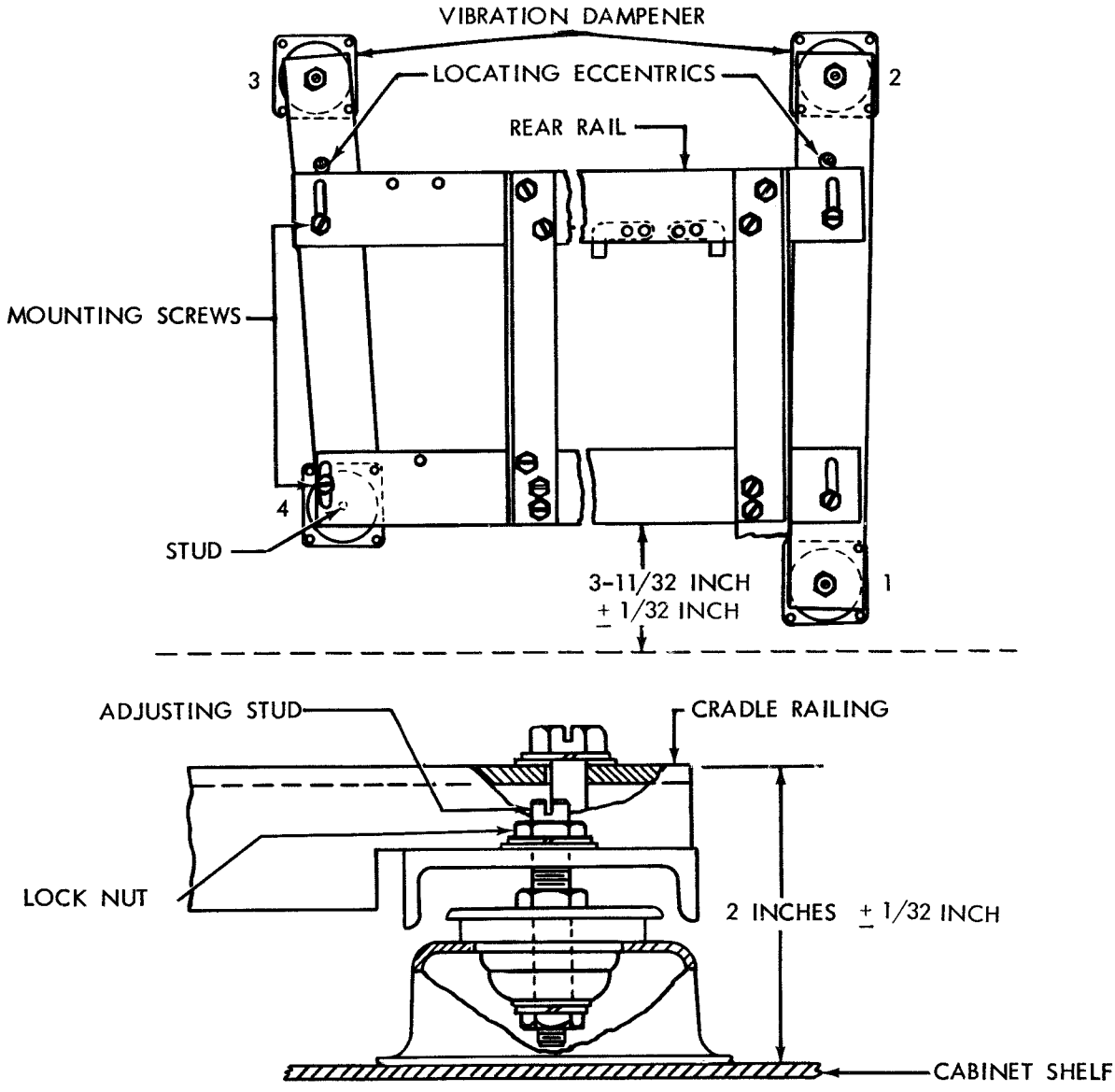
LOOSEN THE LOCK NUTS ON VIBRATION DAMPENER NO. 1, 2, AND 3 ON TOP OF THE LEFT AND RIGHT RAILS. LOOSEN THE NUT ON THE LOWER END OF STUD IN MOUNT NO. 4. ROTATE THE ADJUSTING STUDS UNTIL THE RAILS HAVE REACHED THE DESIRED HEIGHT. TIGHTEN ALL NUTS PREVIOUSLY LOOSENED.

(2) REQUIREMENT

THE FRONT RAIL SHOULD BE POSITIONED APPROXIMATELY 3-11/32 INCH ± 1/32 INCH FROM AND PARALLEL TO THE FRONT OF THE CABINET.

TO ADJUST

POSITION THE BASE RAIL ASSEMBLY WITH ITS FOUR MOUNTING SCREWS AND TWO LOCATING ECCENTRICS LOOSENED AFTER POSITIONING THE RAIL ASSEMBLY TO DESIRED POSITION, ROTATE THE ECCENTRICS AGAINST THE REAR RAIL AND LOCK IN POSITION.



2.08 Cabinet (continued)

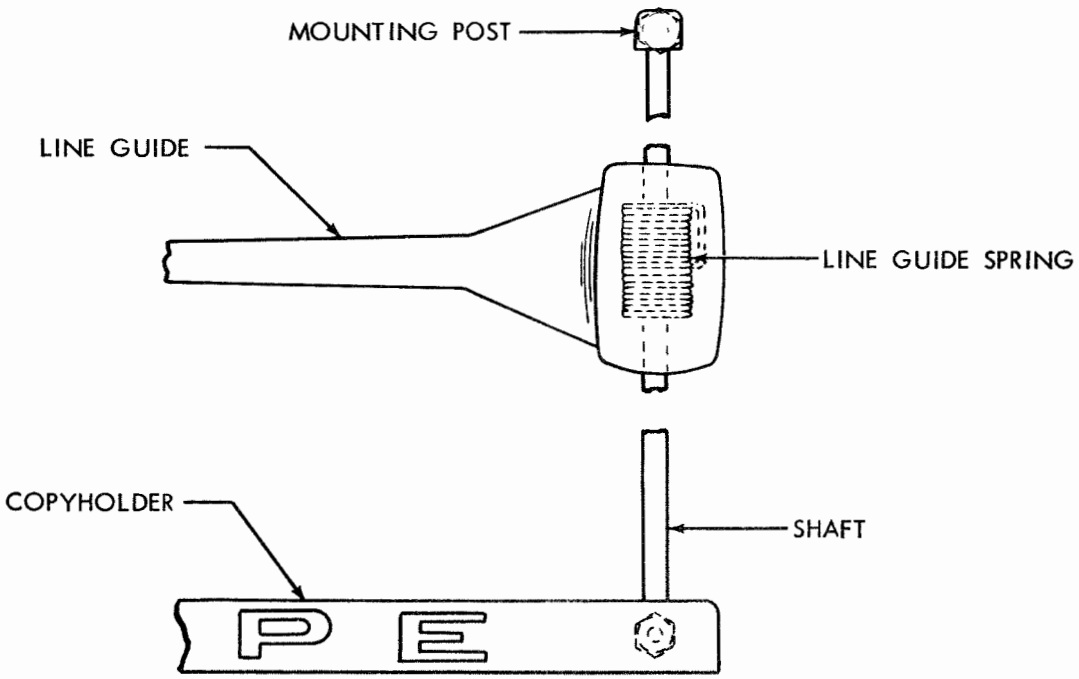
LEFT FRONT CROSS BAR

NOTE:
THE FRONT CROSS BAR BRACKETS ARE LOCATED AT THE FACTORY AND SHOULD NOT BE DISTURBED UNLESS IT IS NECESSARY TO REMOVE FOR REPLACEMENT. SHOULD THEY HOWEVER BE REMOVED REPLACE AS FOLLOWS:
REQUIREMENT
THE ADJUSTABLE CROSS BAR BRACKETS SHOULD BE POSITIONED 0.050 FROM THE FRONT EDGE OF THE CABINET BODY CROSS BAR

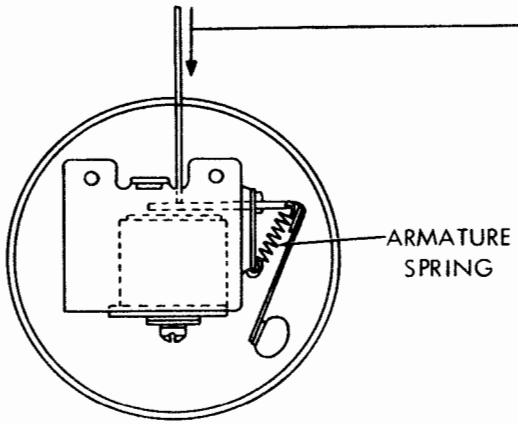
TRANSMITTER HOUSING

REQUIREMENT
THE HOUSING MOUNTING BRACKET ON THE LEFT FRONT CROSS BAR SHOULD BE POSITIONED TO PROVIDE A MINIMUM OF 0.020 INCH BETWEEN THE HOUSING AND THE TRANSMITTER UNIT.

COPYHOLDER
REQUIREMENT
THERE SHOULD BE SUFFICIENT TENSION ON THE LINE GUIDE TO PREVENT IT FROM SLIPPING DOWN ITS SHAFT. IT SHOULD ALSO HOLD THE COPY iN PLACE.
TO ADJUST
REMOVE THE MOUNTING SCREWS OR NUTS FROM THE SHAFT AND TURN THE SHAFT SO AS TO INCREASE THE SPRING TENSION. REPLACE THE SHAFT MOUNTING POST.



2.09 Cabinet (continued)



ARMATURE SPRING TENSION

REQUIREMENT

MIN. 1/2 OZ. ---- MAX. 1 OZ.

TO PUSH THE ARMATURE AGAINST THE CORE (VERTICALLY)

REMOTE SIGNAL BELL

REQUIREMENT

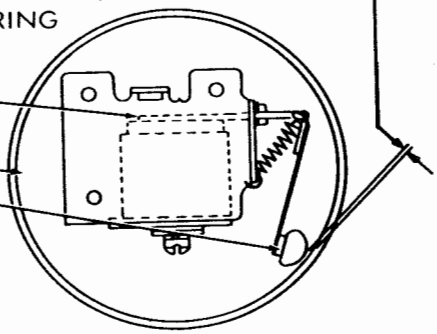
ARMATURE HELD AGAINST THE MAGNET CORE. CLEARANCE BETWEEN THE ARMATURE BALL AND THE BELL

MIN. 0.020 INCH

MAX. 0.035 INCH

TO ADJUST

BEND THE ARMATURE EXTENSION, BELOW THE ARMATURE SPRING



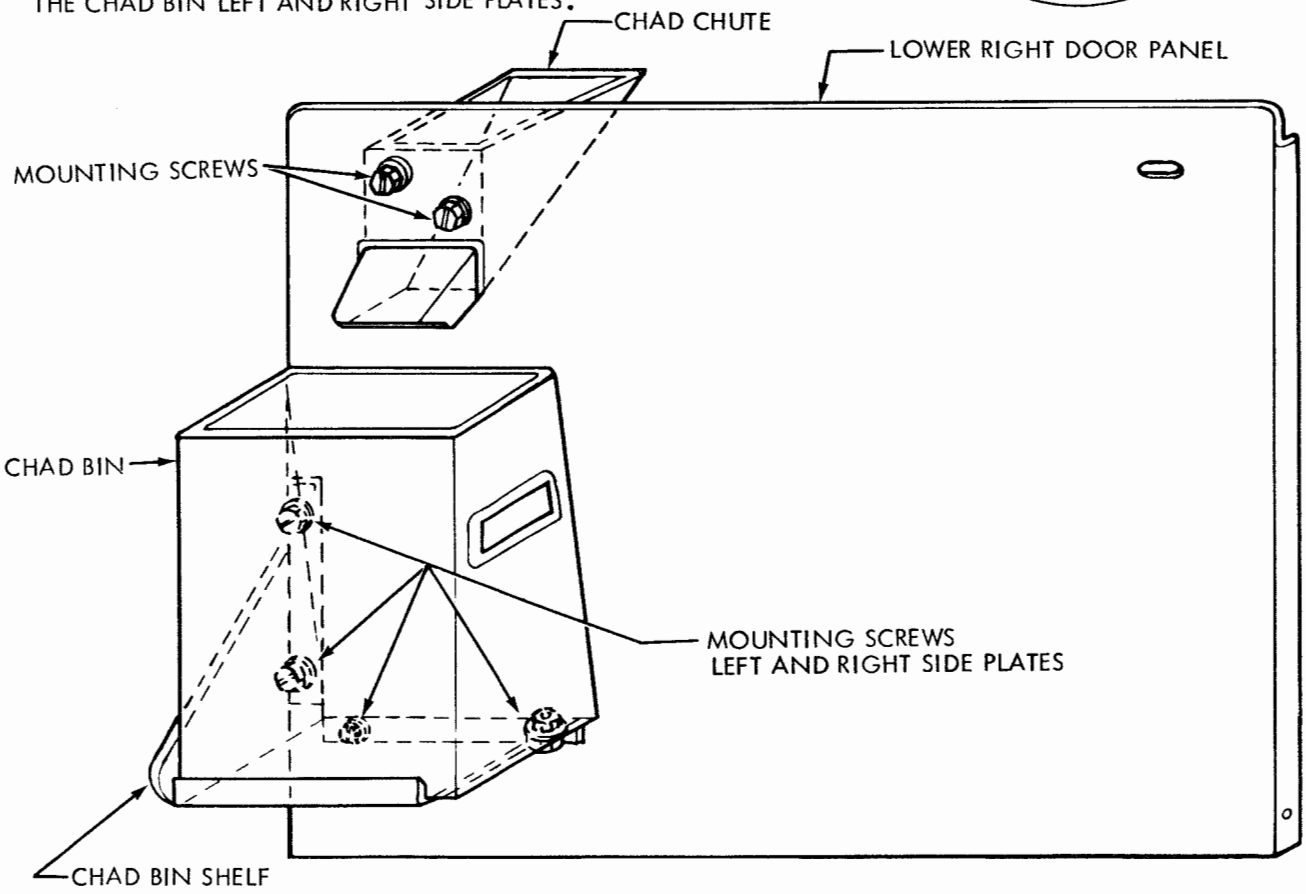
CHAD CHUTE AND CHAD BIN ASSEMBLIES -
(AUTOMATIC SEND-RECEIVE SET)

REQUIREMENT

WHEN CHAD BIN IS INSERTED ON SLIDE PLATES, THE CABINET DOOR SHOULD CLOSE WITHOUT INTERFERING WITH CHAD BIN.

TO ADJUST

USING THE SLACK IN THE MOUNTING SCREW BODY HOLES, POSITION THE CHAD CHUTE AND THE CHAD BIN LEFT AND RIGHT SIDE PLATES.



2.10 Cabinet (continued)

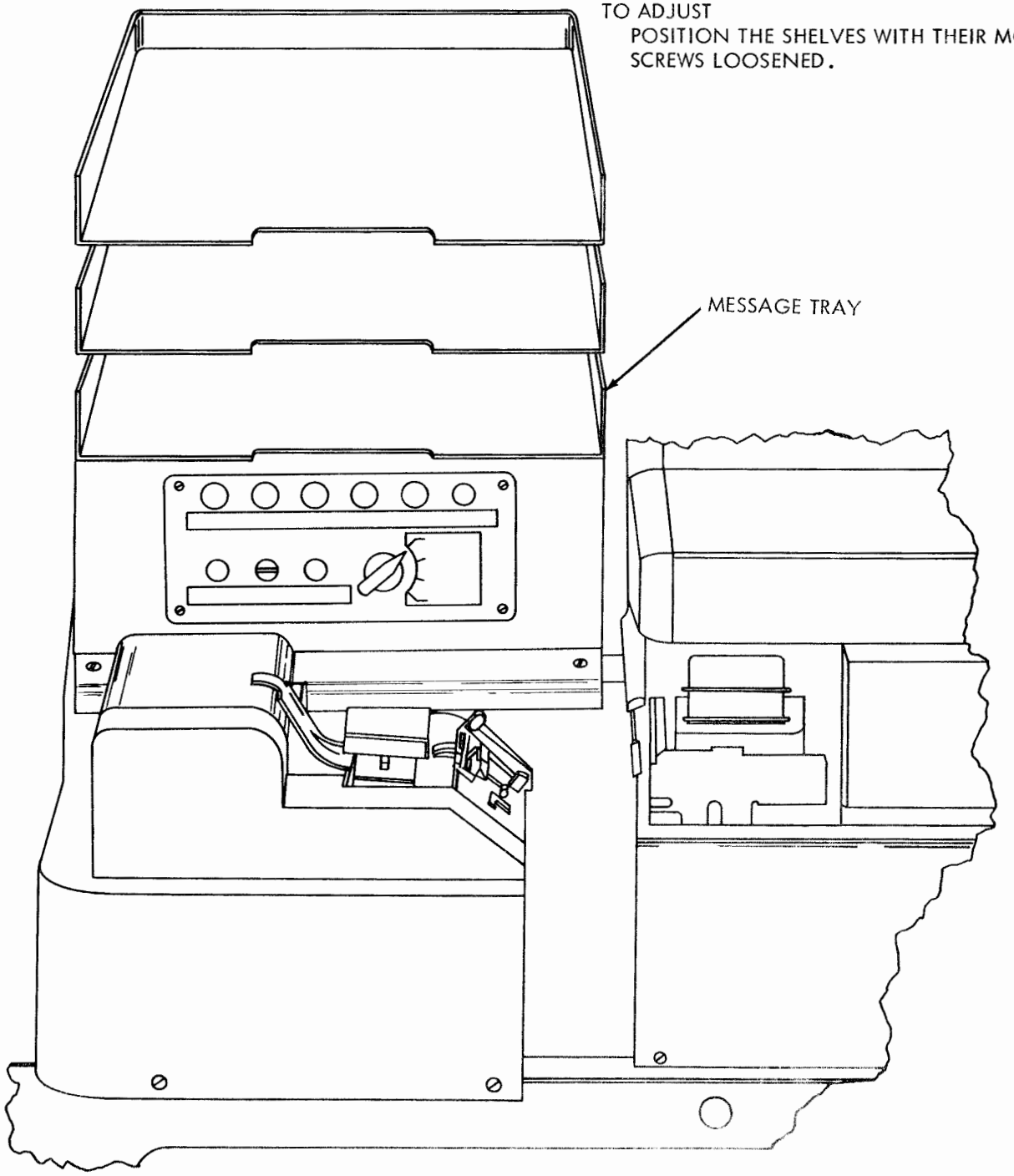
MESSAGE TRAY POSITION

REQUIREMENT

THE THREE-SHELF MESSAGE TRAY SHOULD BE POSITIONED SO AS NOT TO INTERFERE WITH THE CABINET DOME TORSION BARS.

TO ADJUST

POSITION THE SHELVES WITH THEIR MOUNTING SCREWS LOOSENED.



28 ELECTRICAL SERVICE UNITS

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section provides mechanical adjusting information for the 28 electrical service units and most of the various components that may be assembled onto it. It is reissued to include a signal bell assembly and to arrange the material in a standardized format.

Note: Remove power from units, before making adjustments.

1.02 Since this is a general revision, marginal arrows normally used to indicate changes and additions have been omitted.

2. REQUIREMENTS AND ADJUSTMENTS

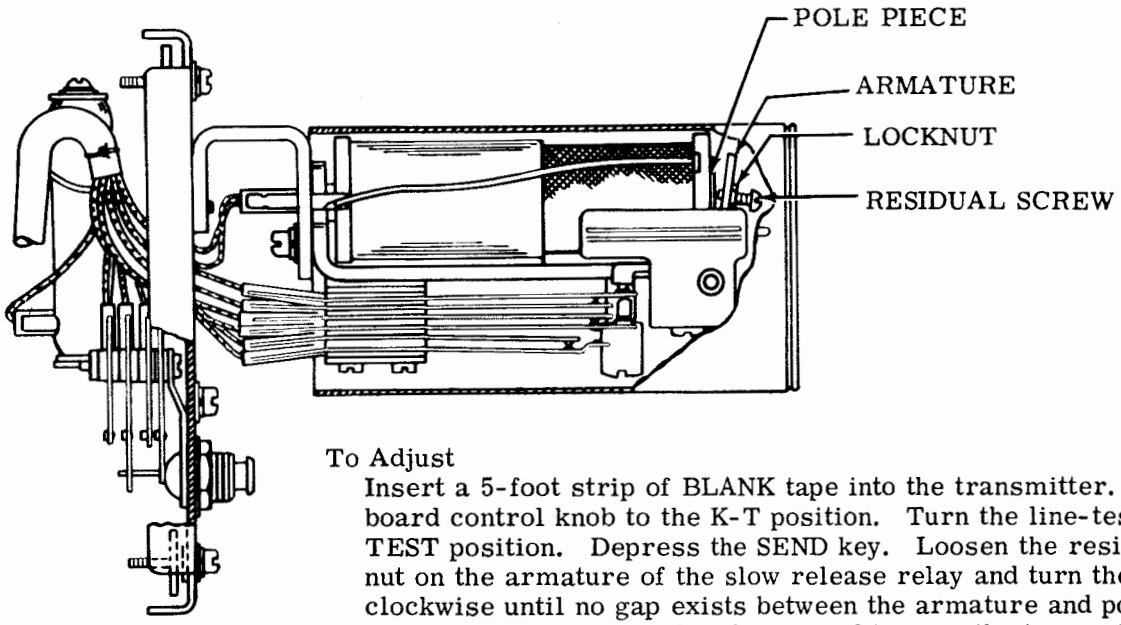
2.01 28G and 28G-1 Electrical Service Unit

SLOW RELEASE RELAY

Requirement

The relay should not de-energize while receiving a series of BLANK code combinations. The time required to stop an associated transmitter after receipt of line break signal should not exceed

Max 800 milliseconds.



To Adjust

Insert a 5-foot strip of BLANK tape into the transmitter. Turn the keyboard control knob to the K-T position. Turn the line-test key to the TEST position. Depress the SEND key. Loosen the residual screw locknut on the armature of the slow release relay and turn the screw counterclockwise until no gap exists between the armature and pole piece. Press the slow release relay test button and turn on the transmitter. With the tape running through the transmitter turn the residual screw clockwise until the slow release relay armature begins to vibrate. Then turn the residual screw counterclockwise slowly until the armature stops vibrating. Tighten the locknut. Rerun the entire 5-foot strip of tape through the transmitter, while the slow release relay test key is held depressed; the slow release relay armature must not drop out.

Insert a 5-foot strip of LETTERS tape into the transmitter. Plainly mark a row of perforations approximately three inches back from the sensing pins on the transmitter. Hold the slow release relay test button depressed, and start the transmitter. When the previously marked row of perforations reach the sensing pins, depress the line-break key and hold depressed until the transmitter stops. Mark the row of perforations immediately over the sensing pins, remove the tape from the transmitter and count the number of perforations between the two marked lines. The number of perforations between these lines should be no greater than,

(1) Eight for 100 wpm operation.
(2) Six for 75 wpm operation.
(3) Five for 60 wpm operation.

Should the number of perforations be greater than that specified above, turn the residual screw clockwise approximately 1/8 turn and repeat the above test. The number of perforations may be fewer than that specified above provided the requirement is met.

2.02 Electrical Motor-Control Mechanism (if Equipped)

(A) STOP ARMATURE SPRING

Requirement
Stop armature latched on start armature. Stop armature spring unhooked.
Min 4-1/2 oz---Max 6 oz
to pull spring to installed length.

(B) INTERMEDIATE LEVER SPRING

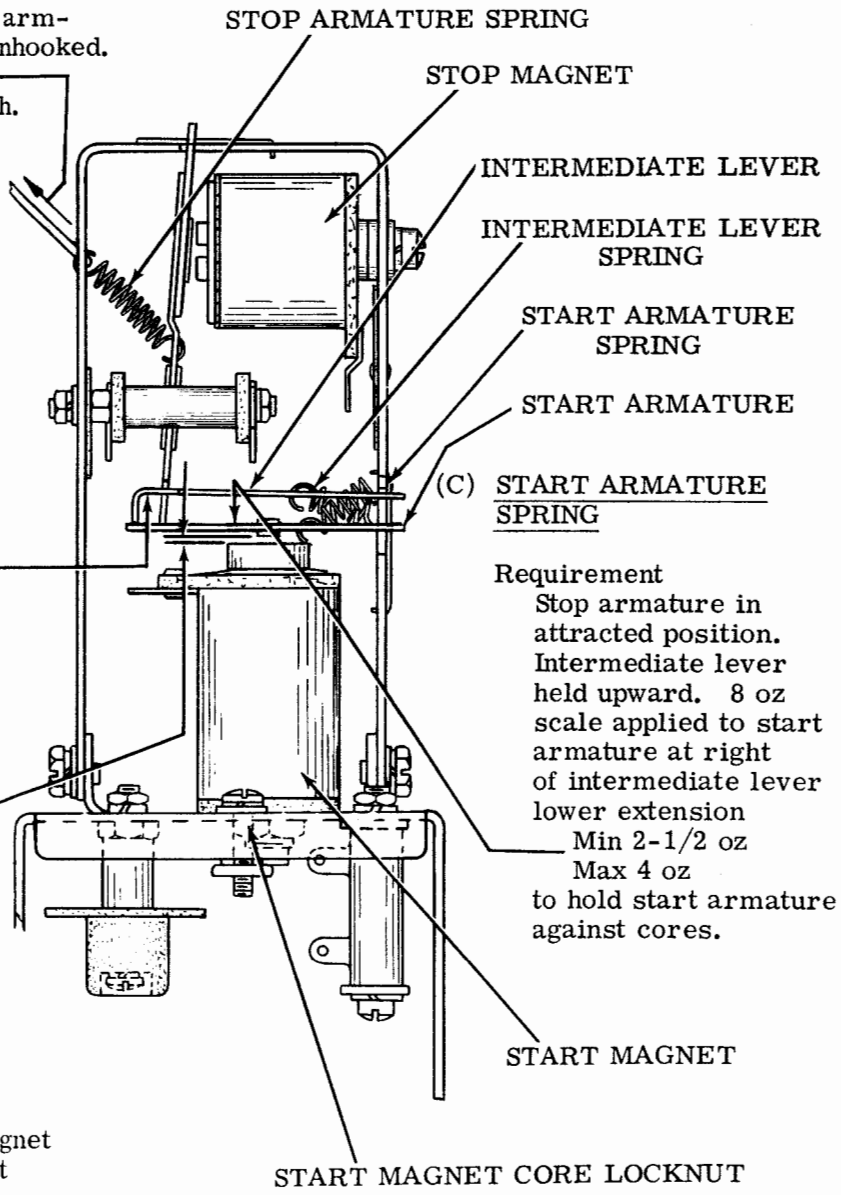
Requirement
With the stop and start armatures held against their cores, apply a gram scale to the under side of the intermediate lever just to the right of its downward extension and push upward.
Min 10 grams
Max 20 grams
to start the lever moving upward.

(D) START MAGNET CORE

Requirement
Stop armature in unattracted position. Clearance between the start magnet core and anti-freeze rivet on the start armature

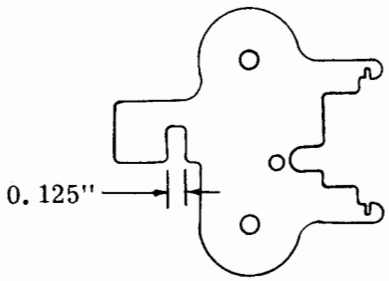
Armature	TP151409	TP152849
Min	0.003 inch	0.010 inch
Max	0.010 inch	0.015 inch

To Adjust
Advance or retard the start magnet cores with screwdriver (locknut loosened).

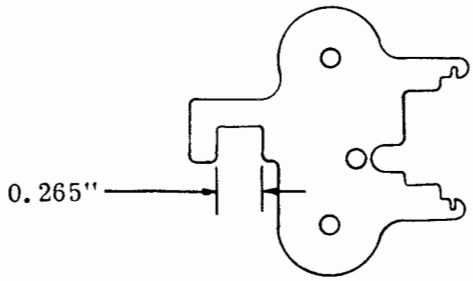


(C) START ARMATURE SPRING

Requirement
Stop armature in attracted position. Intermediate lever held upward. 8 oz scale applied to start armature at right of intermediate lever lower extension
Min 2-1/2 oz
Max 4 oz
to hold start armature against cores.



TP151409 ARMATURE



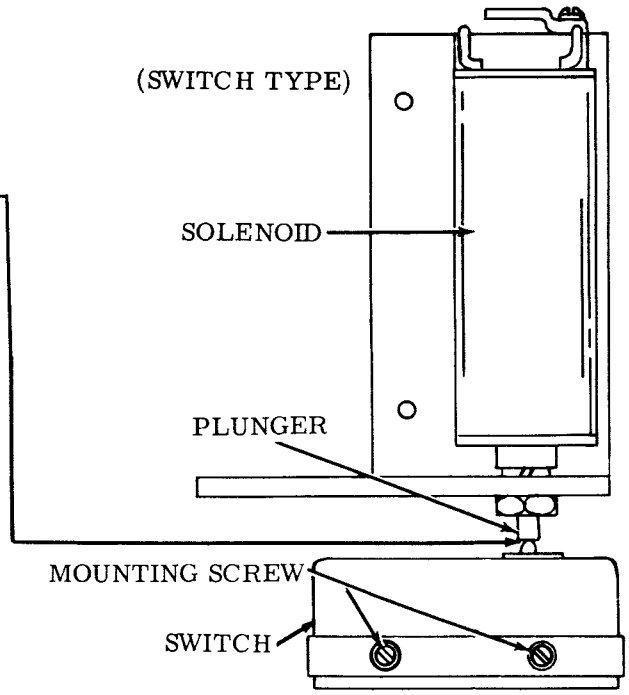
TP152849 ARMATURE

2.03 Relay Motor-Control Mechanism (if Equipped)

SWITCH POSITION (IF UNIT IS SO EQUIPPED)

Requirement
When the solenoid plunger is depressed slowly, the switch should operate when the plunger is within
Max 0.005 inch
from the end of its travel (gauge by eye). Check by the audible click or by test lamp.

To Adjust
Loosen the switch mounting screws. Hold the plunger downward and move the switch toward the plunger until it operates. Tighten the screws.



EARLIER DESIGN
(CONTACT PILE-UP TYPE)

(A) MIDDLE CONTACT SPRING

Requirement
With solenoid plunger unoperated
Min 2 oz---Max 3 oz
to break contact with inner contact.

To Adjust
Form middle contact spring with suitable spring bender.

(B) OUTER CONTACT SPRING

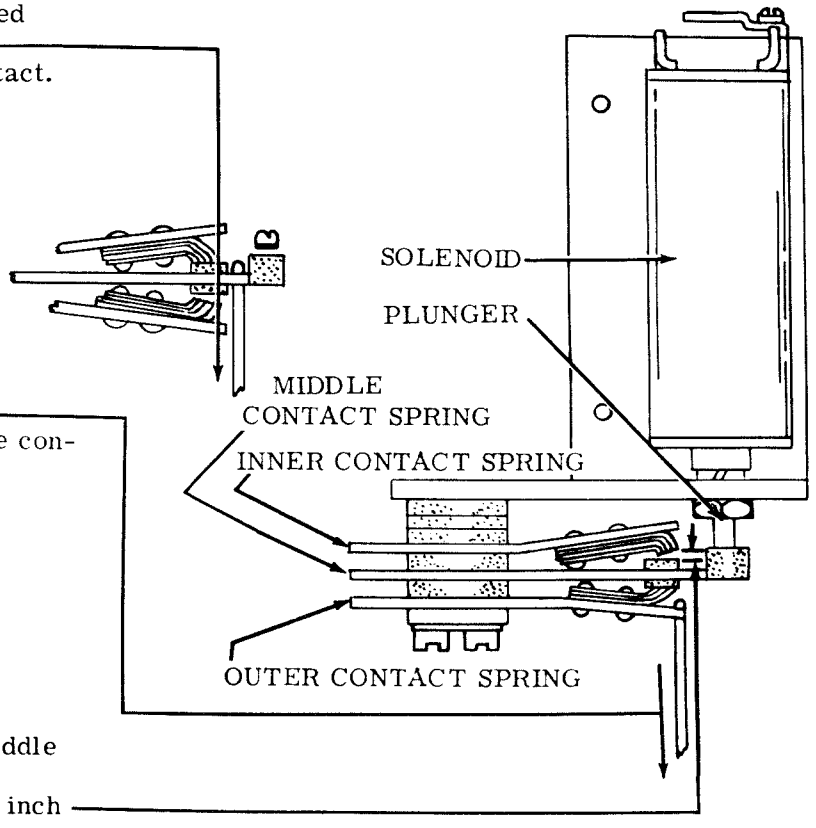
Requirement
Hold solenoid plunger operated.
Min 12 oz---Max 16 oz
to break contact with the middle contact spring.

To Adjust
Form outer contact spring with suitable spring bender.

(C) INNER CONTACT SPRING GAP

Requirement
Hold solenoid plunger operated.
Clearance between inner and middle contact spring contact surface
Min 0.025 inch---Max 0.030 inch

To Adjust
Form inner contact spring with suitable spring bender.



2.04 Signal Bell

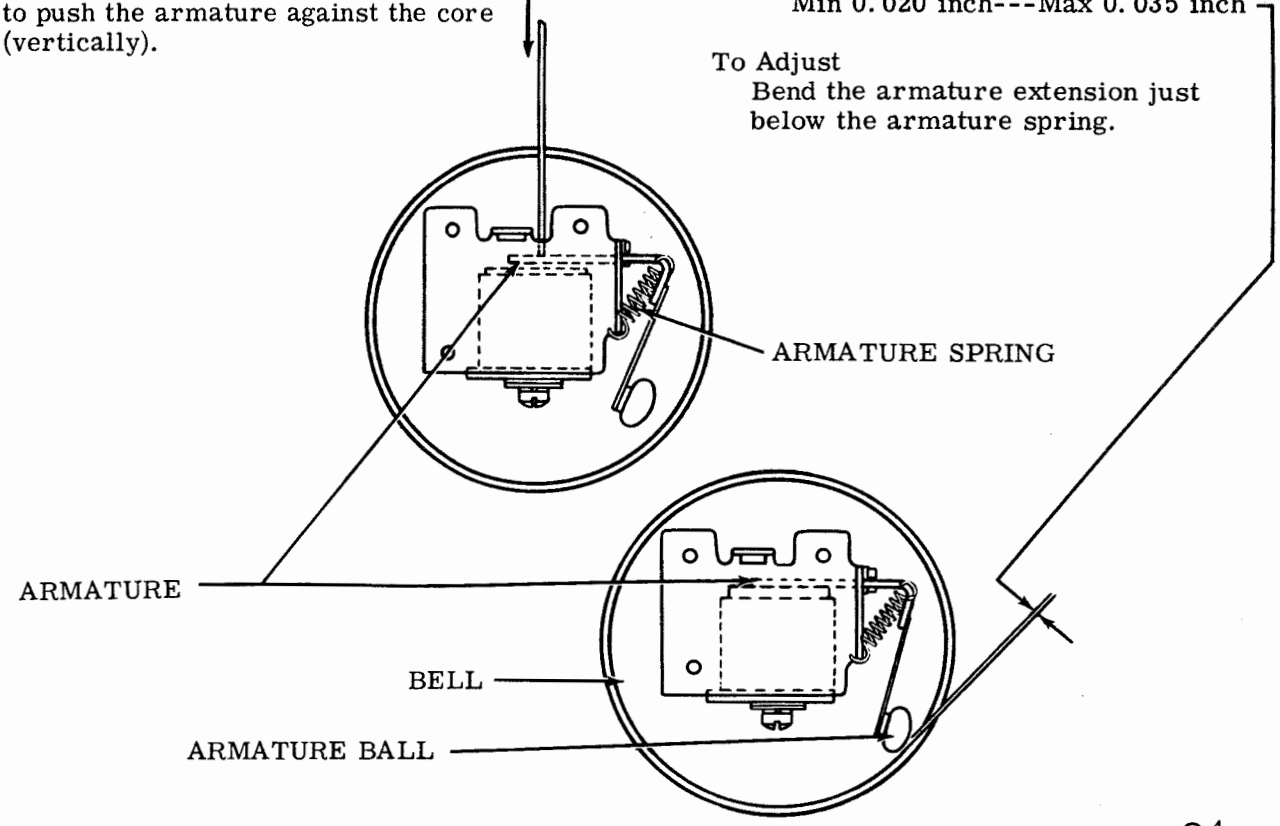
(A) ARMATURE SPRING TENSION

Requirement
Min 1/2 oz---Max 1 oz
to push the armature against the core (vertically).

(B) REMOTE SIGNAL BELL

Requirement
Armature held against the magnet core. Clearance between the armature ball and the bell
Min 0.020 inch---Max 0.035 inch

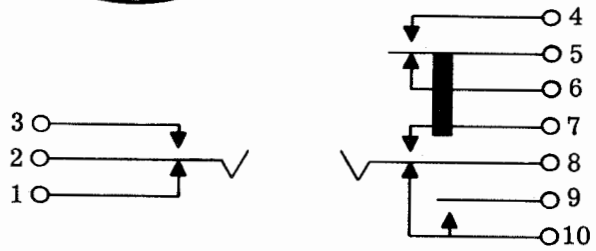
To Adjust
Bend the armature extension just below the armature spring.

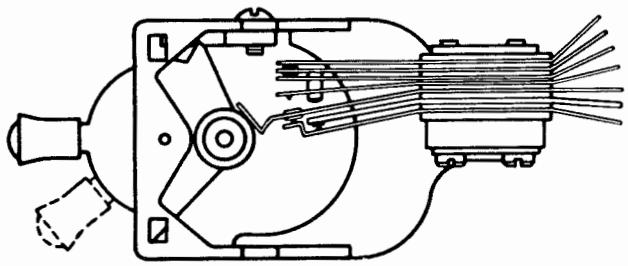


2.05 Line Test Key Assembly (if Equipped)

LINE TEST KEY

Note: This key is carefully adjusted at the factory and should not need readjusting unless it has been disassembled or mutilated.





Requirement
When knob is moved to downward position contacts 9-10 should close before contacts 8-10 and 5-6 open.

To Adjust (if necessary)
Form contact leaf springs with a suitable spring bender to meet requirements.

2.06 28 LB Electrical Service Unit

(A) Requirement for circuit assurance detector: The circuit assurance detector should accept incoming spacing signals from a receive set without setting off an alarm. If the spacing signals fall within the limits of 32.6 to 73.0 ms in length, and are received at least once each 500 ms, the alarm does not operate. The alarm contacts in the dry-reed relay pack (a part of the circuit assurance detector) close to initiate an alarm if the signal to the send set does not comply.

(B) To adjust: The timers on the circuit assurance card are adjusted with off-line signals by using the TP146439 adapter. The character T or V (32.6 ms marking pulse and 73.0 ms marking pulse respectively) is sent from the 28 LA or 28 LB transmitter distributor to the MLR relay. Using the TP146439 adapter, a 32.6 ms spacing pulse, and a 73.0 ms spacing pulse are taken from the normally closed contacts of the MLR relay and fed into the card. The operating point of the lower limit timer is set by using the 32.6 ms spacing pulse and the operating point of the upper limit timer is set by using the 73.0 ms spacing pulse.

(C) Preliminary preparation:

(1) Prepare four test tapes as follows:

(a) Three feet punched with BLANKS only.

(b) Three feet punched with T only.

(c) Three feet punched with M only.

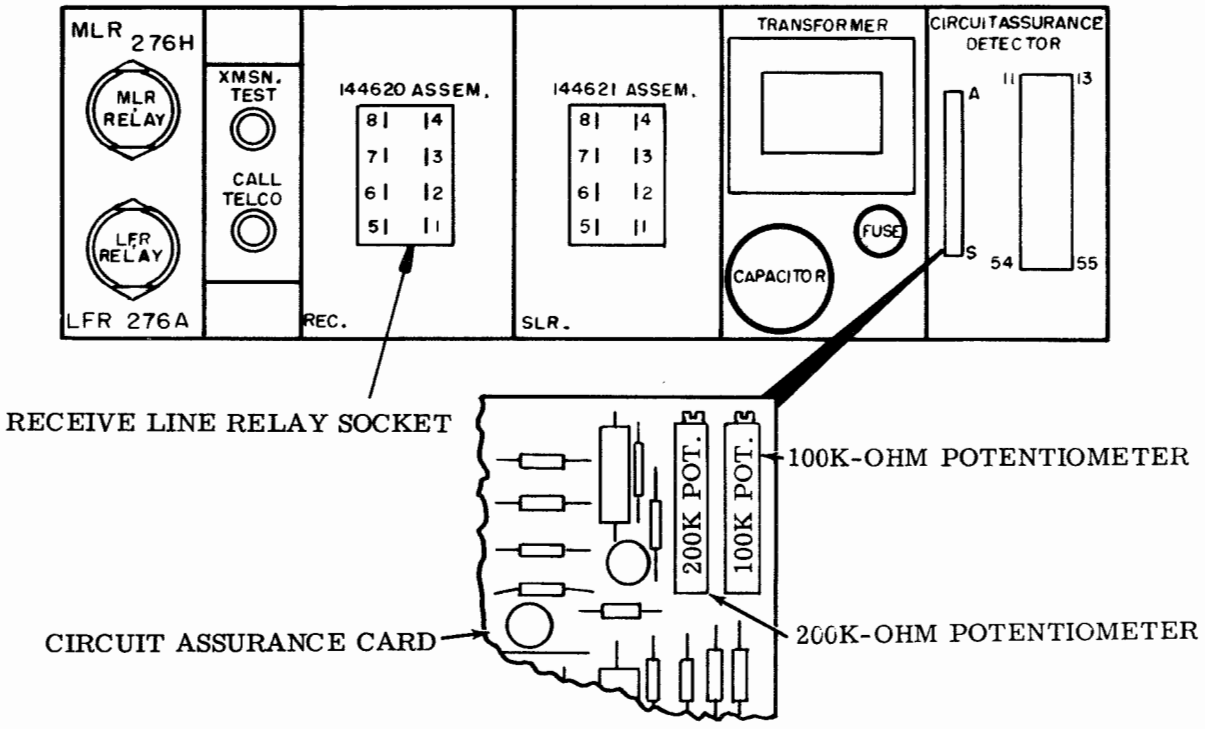
(d) Three feet punched with V only.

(2) Lower the message processing panel of the send set.

(a) Block relay CFR operated.

(b) Block relay PBRB operated.

(c) Set the timer disable switch to its NORMAL position.



(3) Lower the alarm panel of the send set.

(a) Block relay TCFR in the unoperated position.

(4) Remove the following from their sockets in the electrical service unit.

(a) Relay REC.

(b) Relay LFR.

(c) Relay MLR.

(d) Wave shaping assembly (TP-146652).

(5) Plug relay MLR into the socket provided in the adapter.

(6) Plug the adapter, with the MLR relay, into the MLR socket of the electrical service unit.

(7) Plug the adapter test plug into the REC socket of the electrical service unit.

(D) Upper limit timer adjustment (73 ms):

(1) Set the switch on the adapter to its ADJUST position.

(2) Place the beginning of the V test tape in the reading head of the TD.

(3) Set the TD STOP-RUN lever in the STOP position.

(4) Press the RESET key on the key and lamp assembly to clear all alarms.

(5) Set the TRANSMITTER selector switch on the key and lamp assembly to its NORMAL position.

(6) Start the test tape through the TD by operating the STOP-RUN lever to the RUN position.

(7) With the TD reading the V test tape, rotate the adjusting screw of the 200K potentiometer (rear potentiometer) on the card counterclockwise until CONNECTION LOST alarm operates. Then rotate the adjusting screw clockwise until the CONNECTION LOST alarm fails to operate.

Note: Every time the alarm operates, the circuit must be reset by pressing the RESET key with the TD lever in the STOP position.

(8) Very slowly rotate the adjusting screw counterclockwise until the CONNECTION LOST alarm just operates as V test tape is read by TD.

(E) Lower limit timer adjustment (32. 6 ms):

(1) Set the switch on the adapter to ADJUST position.

(2) Place the beginning of the T test tape in the reading head of the TD.

(3) Set the TD STOP-RUN lever in the STOP position.

(4) Press the RESET key on the key and lamp assembly to clear all alarms.

(5) Set the TRANSMITTER selector switch on the key and lamp assembly to its NORMAL position.

(6) Start the test tape through the TD by setting the STOP-RUN lever on RUN.

(7) With the TD reading the T test tape, rotate the adjusting screw of the 100K potentiometer (forward potentiometer) on the card clockwise until the CONNECTION LOST alarm operates. Then rotate the screw counterclockwise until the alarm fails to operate.

Note: Every time the alarm operates, the circuit must be reset by pressing the RESET key with the TD lever in the STOP position.

(8) Very slowly rotate the adjusting screw clockwise until the CONNECTION LOST alarm just operates as T test tape is read by TD.

(F) Final tests:

(1) Set the adapter switch in its TEST position. Press the RESET key on the key and lamp assembly with the TD lever in the STOP position to clear any alarms.

(2) Place the beginning of the BLANK test tape in the reading head of the TD and start the TD reading. CONNECTION LOST alarm should operate. If not, readjust the upper limit timer. To clear an alarm condition depress the RESET key on the key and lamp assembly with the TD lever in the STOP position

(3) Replace the BLANK test tape with the T test tape and start the TD. The CONNECTION LOST alarm should fail to operate. If the alarm operates, readjust the upper limit timer as described in (D).

(4) Replace the T test tape with the M test tape and start the TD. The CONNECTION LOST alarm should fail to operate. If the alarm operates, readjust the lower limit timer as described in (E).

(5) Replace the M test tape with the V test tape and start the TD. The CONNECTION LOST alarm should operate. If the alarm fails to operate, readjust the lower limit timer as described in (E). Clear the alarm as previously described.

(6) Restore the equipment to normal by reversing the order of (C), Preliminary preparation. The timer disable switch should be in NORMAL position.

28 PERFORATOR-TRANSMITTER BASE

ADJUSTMENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section has been revised to include recent engineering changes and additions, and to rearrange the text, so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 This section contains the specific requirements and adjustments for the 28 perforator-transmitter base.

1.03 Maintenance procedures which apply only to mechanisms of a particular design, or to certain models of 28 perforator-transmitter bases are so indicated in the titles of the paragraphs which contain these particular adjustment requirements.

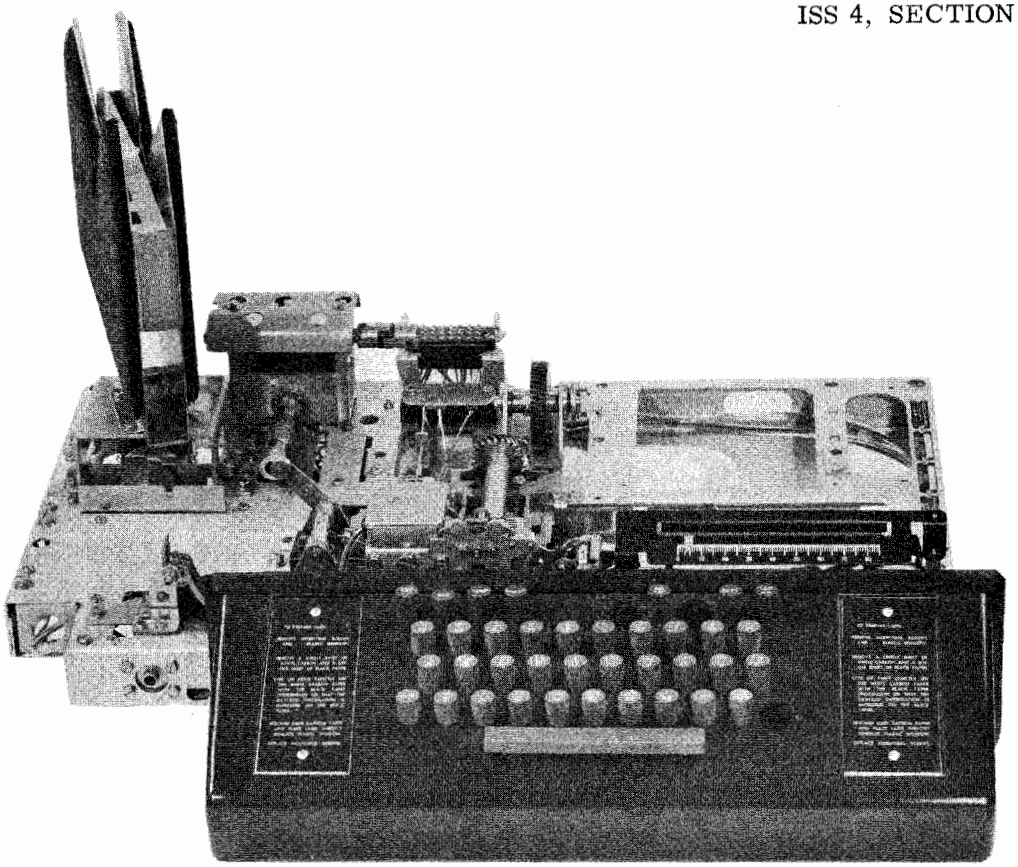


Figure 1 - 28 Perforator-Transmitter Base

1.04 The adjustments of each unit are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

1.05 References made to left or right, up or down, front or rear, etc apply to the unit in its normal operating position as viewed from the front.

1.06 The letters K (Keyboard), K-T (Keyboard - Tape), and T (Tape) are used in this section to refer to corresponding positions of the keyboard-control knob. Unless otherwise specified adjustments should be made in the K-T position.

1.07 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch-lever 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 the signal generator shaft is rotated by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve drag and permit the main shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latchlever and fully disengage the clutch.

1.08 All electrical contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 per cent of the contact diameter. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustment or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

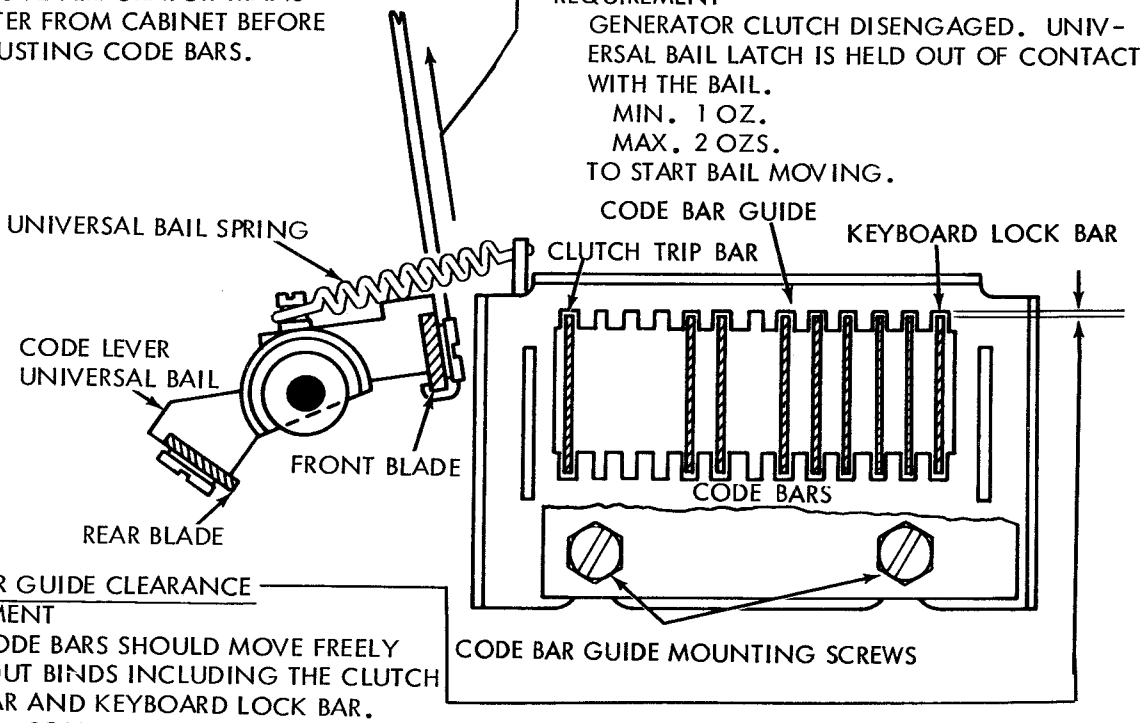
CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

2. BASIC UNIT

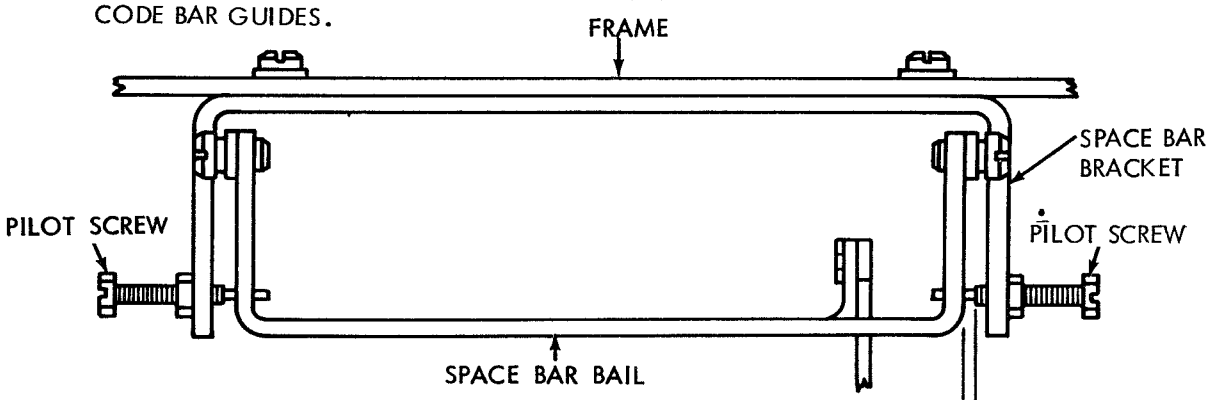
2.01 Code Bar Assembly

NOTE: REMOVE PERFORATOR TRANSMITTER FROM CABINET BEFORE ADJUSTING CODE BARS.

(B) CODE LEVER UNIVERSAL BAIL SPRING TENSION REQUIREMENT
GENERATOR CLUTCH DISENGAGED. UNIVERSAL BAIL LATCH IS HELD OUT OF CONTACT WITH THE BAIL.
MIN. 1 OZ.
MAX. 2 OZS.
TO START BAIL MOVING.



(A) CODE BAR GUIDE CLEARANCE REQUIREMENT
ALL CODE BARS SHOULD MOVE FREELY WITHOUT BINDS INCLUDING THE CLUTCH TRIP BAR AND KEYBOARD LOCK BAR.
MIN. SOME
MAX. 0.010 INCH
TO ADJUST
LOOSEN MOUNTING SCREWS AND POSITION CODE BAR GUIDES.

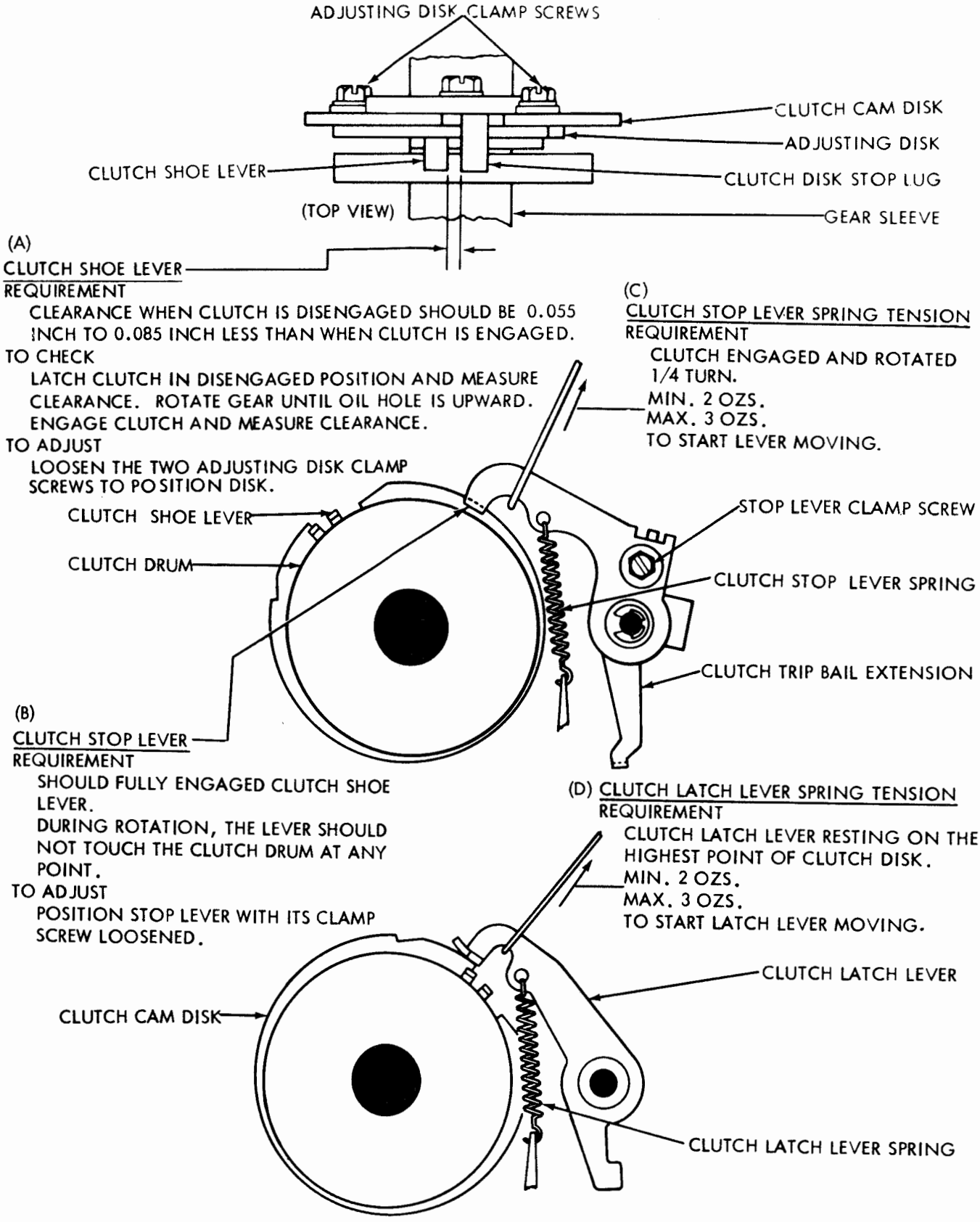


NOTE: KEYLEVER COVER MUST BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY.

(C) SPACE BAR BAIL PIVOT REQUIREMENT
MIN. SOME END PLAY.
MAX. 0.010 INCH.
SPACE BAR FREE FROM BIND.
TO ADJUST
POSITION SPACE BAR WITH PILOT SCREWS LOOSENED.

NOTE: THE BAIL SHOULD BE SO ADJUSTED THAT THE SPACE BAR CAN BE OPERATED WITHOUT BINDING IN THE HOLES IN THE GUIDE PLATE AND THE FRAME.

2.02 Signal Generator Mechanism

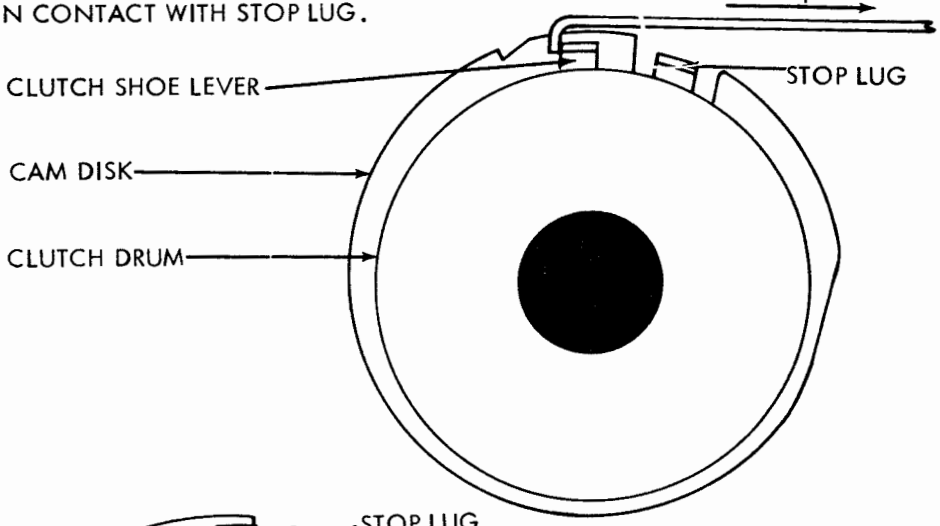


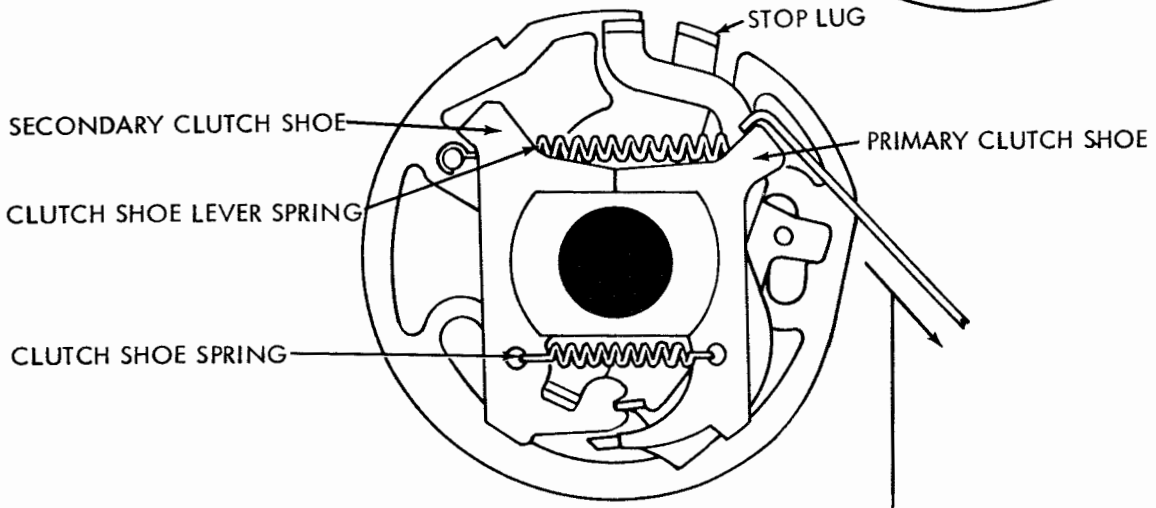
2.03 Signal Generator Mechanism continued

(A) CLUTCH SHOE LEVER SPRING TENSION

REQUIREMENT

CLUTCH ENGAGED.
CAM DISK HELD TO PREVENT TURNING.
MIN. 15 OZS.
MAX. 20 OZS.
TO MOVE SHOE LEVER IN CONTACT WITH STOP LUG.





(B) CLUTCH SHOE SPRING TENSION

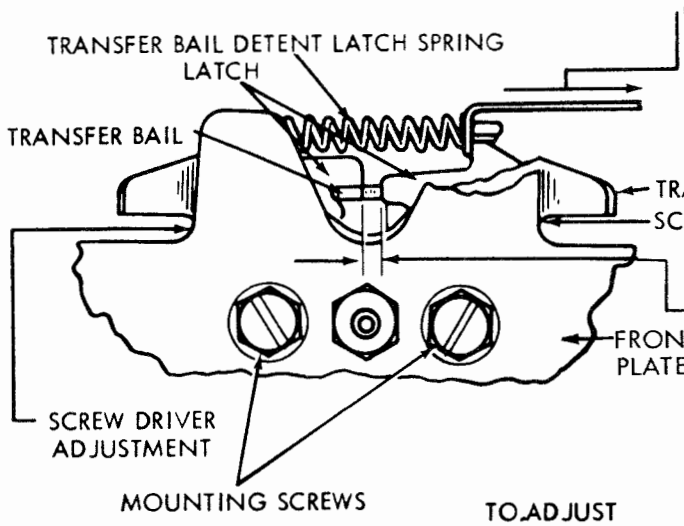
NOTE

IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SIGNAL GENERATOR DRIVE SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO BELIEVE THAT IT DOES NOT MEET ITS REQUIREMENT.

REQUIREMENT

CLUTCH DRUM REMOVED.
MIN. 3 OZS.
MAX. 5 OZS.
TO START PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE AT POINT OF CONTACT.

2.04 Signal Generator Mechanism continued



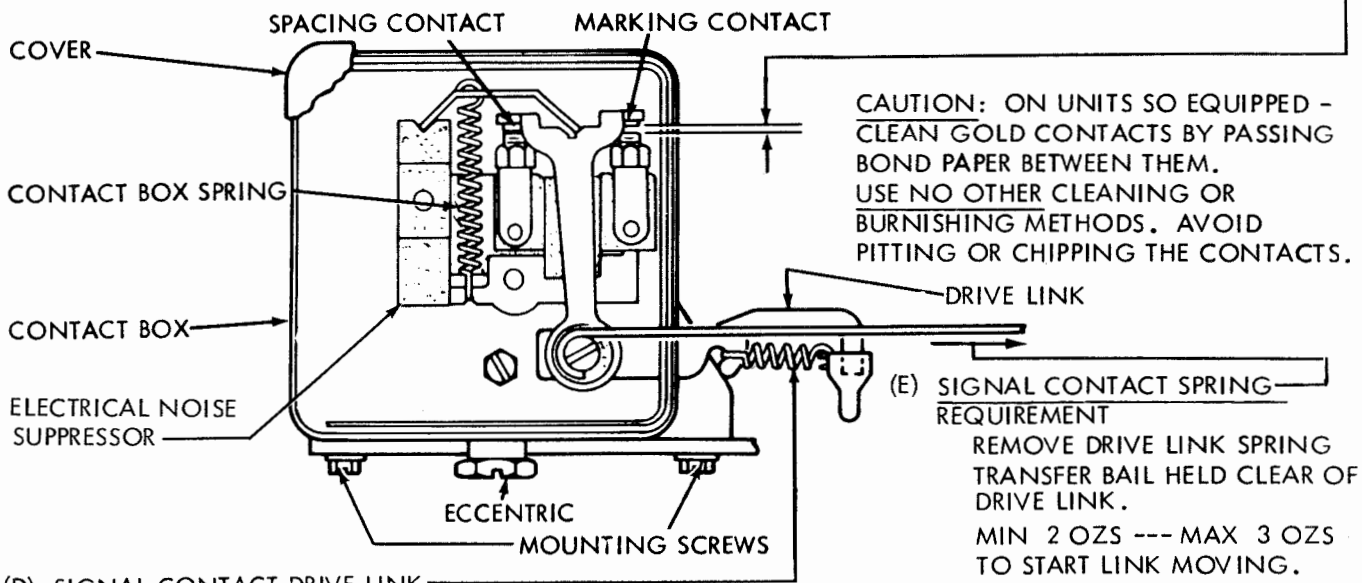
(B) TRANSFER BAIL DETENT LATCH SPRING
REQUIREMENT
MIN 2-3/4 OZS.
MAX 4-1/4 OZS.
TO START LATCH MOVING.
HOLD TRANSFER BAIL TO LEFT.

(A) TRANSFER BAIL DETENT PLATE
REQUIREMENT
EQUAL L. H. AND R. H. CLEARANCE WITHIN 0.002 INCH WHEN TRANSFER BAIL IS AT EXTREME L.H. OR R.H. POSITION AS THESE OCCUR IN A CHARACTER BETWEEN START AND NO. 1 PULSES ONLY.

TO ADJUST
ROTATE DETENT PLATE RIGHT OR LEFT BY MEANS OF SCREWDRIVER WITH DETENT PLATE MOUNTING SCREWS LOOSENED.

(C) SIGNAL CONTACT CLEARANCE
REQUIREMENT
MARKING AND SPACING GAPS SHOULD BE EQUAL WITHIN 0.001 INCH.
TO CHECK
DEPRESS Y KEYLEVER AND ROTATE SIGNAL GENERATOR CAM SLEEVE UNTIL EACH CONTACT HAS FULLY OPENED.
TO ADJUST
LOOSEN MOUNTING SCREWS AND MOVE CONTACT BOX BY MEANS OF ECCENTRIC.

NOTE: CHECK BY MEANS OF SIGNAL CHECKING DEVICE WHERE POSSIBLE, AND CAREFULLY REFINE THE ADJUSTMENT TO ELIMINATE ALL BIAS FROM THE SIGNALS BY EQUALIZING THE CURRENT-ON AND CURRENT-OFF INTERVALS

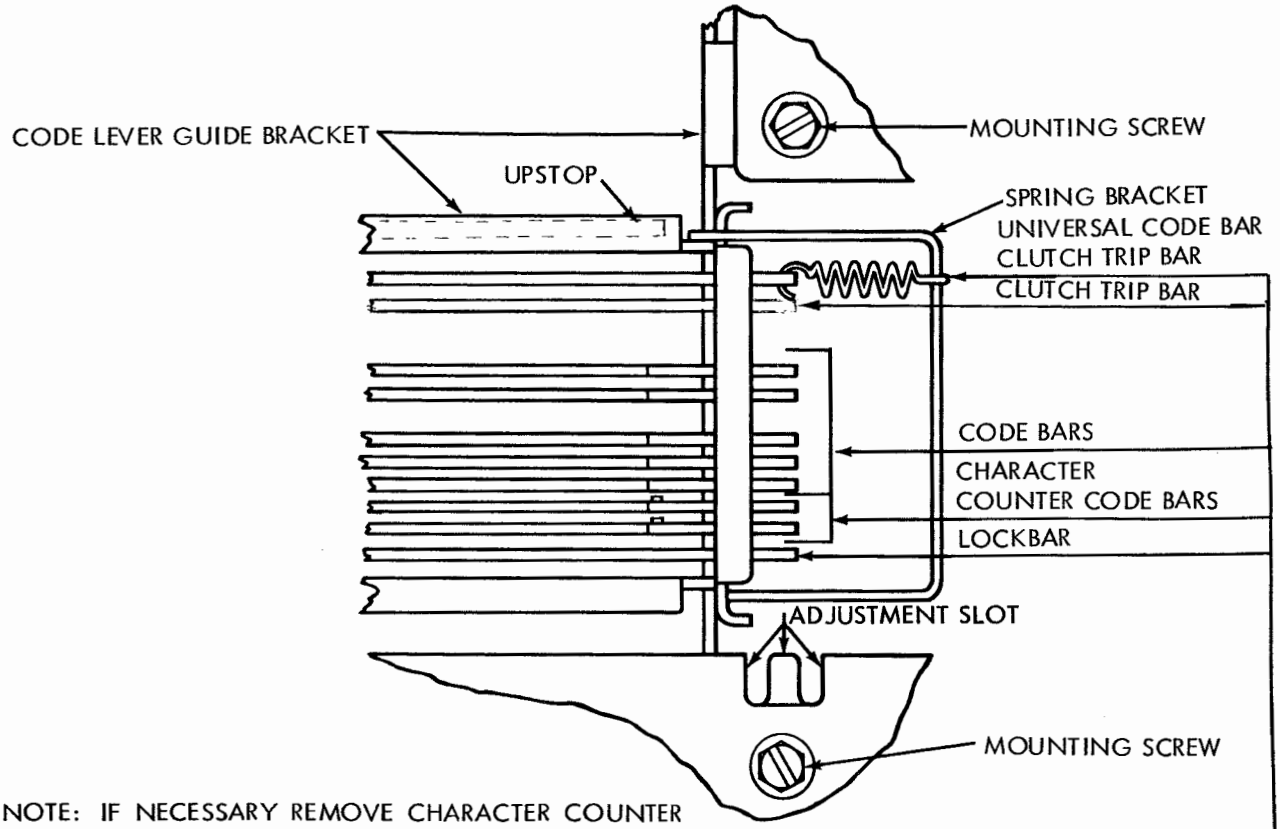


CAUTION: ON UNITS SO EQUIPPED - CLEAN GOLD CONTACTS BY PASSING BOND PAPER BETWEEN THEM. USE NO OTHER CLEANING OR BURNISHING METHODS. AVOID PITTING OR CHIPPING THE CONTACTS.

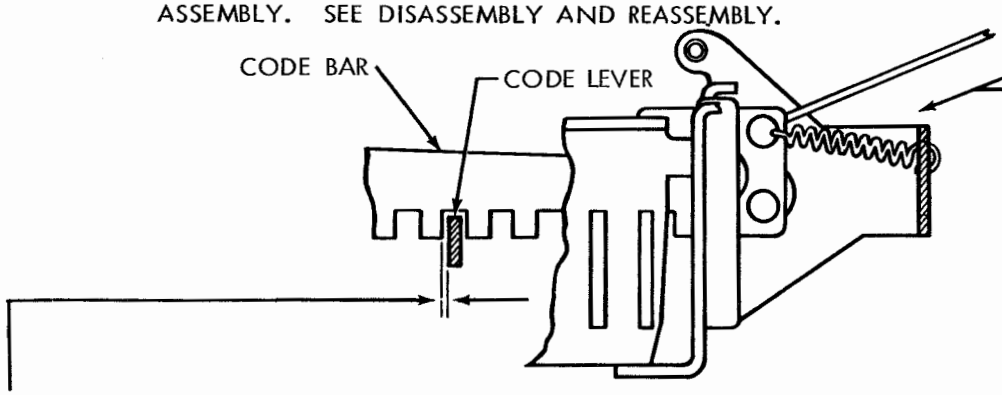
(E) SIGNAL CONTACT SPRING
REQUIREMENT
REMOVE DRIVE LINK SPRING
TRANSFER BAIL HELD CLEAR OF DRIVE LINK.
MIN 2 OZS --- MAX 3 OZS
TO START LINK MOVING.

(D) SIGNAL CONTACT DRIVE LINK
REQUIREMENT
WITH MAINSHAFT IN STOP POSITION AND TRANSFER BAIL DETENT LATCH SPRING UNHOOKED (SEE FIG ABOVE), MOVE LATCHES AWAY FROM TRANSFER BAIL EXTENSION. HOLD THE TOGGLE FIRMLY AGAINST CONTACTS.
MIN 6 OZS ---MAX 9 OZS
TO START TRANSFER BAIL EXTENSION MOVING.

2.05 Codebar Assembly continued



NOTE: IF NECESSARY REMOVE CHARACTER COUNTER ASSEMBLY. SEE DISASSEMBLY AND REASSEMBLY.



(A) CODE BAR AND CODE LEVER CLEARANCE

REQUIREMENT

CARRIAGE RETURN KEY DEPRESSED BUT NOT ENOUGH TO TRIP OFF UNIVERSAL BAIL LATCH OR CLUTCH BAR.

MIN. 0.006 INCH --- MAX. 0.017 INCH

MEASURE AT CODE BAR #3

TO ADJUST

POSITION GUIDE BY ADJUSTING SLOT WITH FOUR MOUNTING SCREWS LOOSENED.

(B) CLUTCH TRIP BAR SPRING TENSION

REQUIREMENT

BLANK KEY DEPRESSED TO ALLOW THE CLUTCH TRIP BAR TO FALL TO RIGHT.

SPRING UNHOOKED FROM BRACKET

MIN. 8 OZS. --- MAX. 12 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

NOTE: SEE FOLLOWING PAGE FOR ADJUSTMENTS (C),(D),(E) AND (F).

Codebar Assembly continued

NOTE: ADJUSTMENTS CONTINUED FROM PRECEDING PAGE.

(C) CLUTCH TRIP BAR (USED FOR SYNCHRONOUS PULSED TRANSMISSION)

REQUIREMENT

WITH THE CLUTCH DISENGAGED AND LATCHED, POWER OFF AND ARMATURE OF THE MAGNET ASSEMBLY HELD AWAY FROM THE CLUTCH TRIP BAR. PUSH AT THE RIGHT HAND END OF CLUTCH TRIP BAR.

MIN. 9 OZS. --- MAX. 12 OZS.

TO START CLUTCH TRIP BAR MOVING.

NOTE: HOLD THE SWINGER OF THE CONTACT ASSEMBLY AWAY FROM THE UNIVERSAL CODE BAR WHEN MEASURING THE CLUTCH TRIP SPRING TENSION.

(D) UNIVERSAL CODE BAR (USED FOR SYNCHRONOUS PULSED TRANSMISSION)

REQUIREMENT

WITH THE CLUTCH DISENGAGED AND LATCHED, DEPRESS THE BLANK KEY TO ALLOW THE UNIVERSAL CODE BAR TO FALL TO THE RIGHT. SPRING UNHOOKED FROM THE BRACKET.

MIN. 8 OZS. --- MAX. 12 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

(E) CODE BAR SPRING TENSION

REQUIREMENT

KEYBOARD IN K POSITION, LETTERS KEYLEVER DEPRESSED (POWER OFF) HOLD TRANSFER LEVERS (REF. FIGURE 1-15) TO THE RIGHT SO THEY DO NOT AFFECT THE CODE BARS.

MIN. 3 OZS. --- MAX. 5 OZS.

TO START CODE BAR MOVING.

(F) LOCK BAR SPRING TENSION

REQUIREMENT

CLUTCH DISENGAGED, KEYBOARD LOCK KEYLEVER DEPRESSED. APPLY PUSH END OF SCALE AGAINST R.H. END OF LOCK BAR.

MIN. 2-1/2 OZS. --- MAX. 6 OZS.

TO START LOCK BAR MOVING.

2.06 Codebar Assembly continued

(A) FUNCTION BAIL AND CODE LEVER CLEARANCE

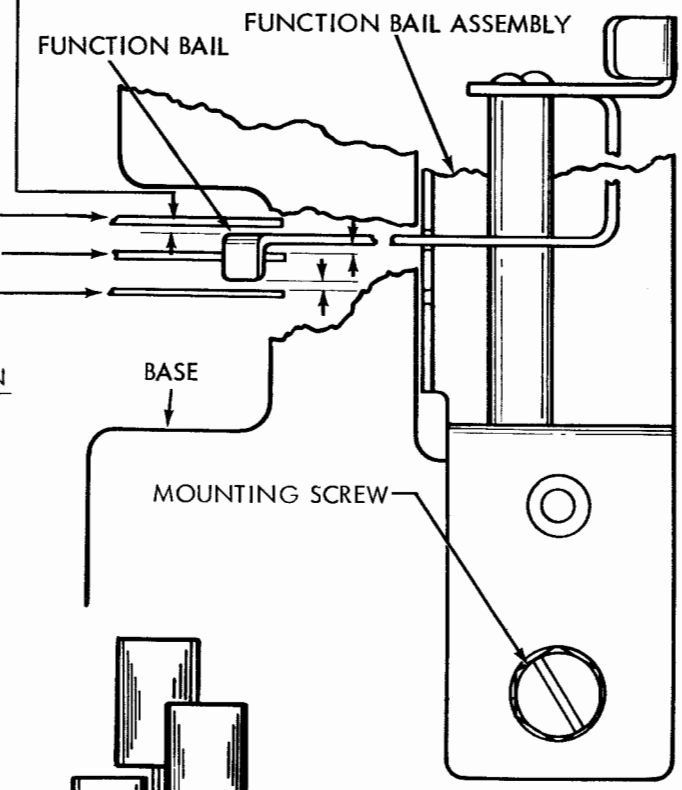
REQUIREMENT

MIN. 0.015 INCH BETWEEN ANY FUNCTION BAIL AND ITS ADJACENT CODE LEVER.

TO ADJUST

POSITION FUNCTION BAIL ASSEMBLY WITH MOUNTING SCREWS AND TYPING UNIT LOCATING STUDS LOOSENED.

NOTE: THIS ADJUSTMENT SHOULD NOT BE MADE UNLESS THE LOCK BALL CHANNEL HAS BEEN DISASSEMBLED.



2.07 Keyboard Mechanism

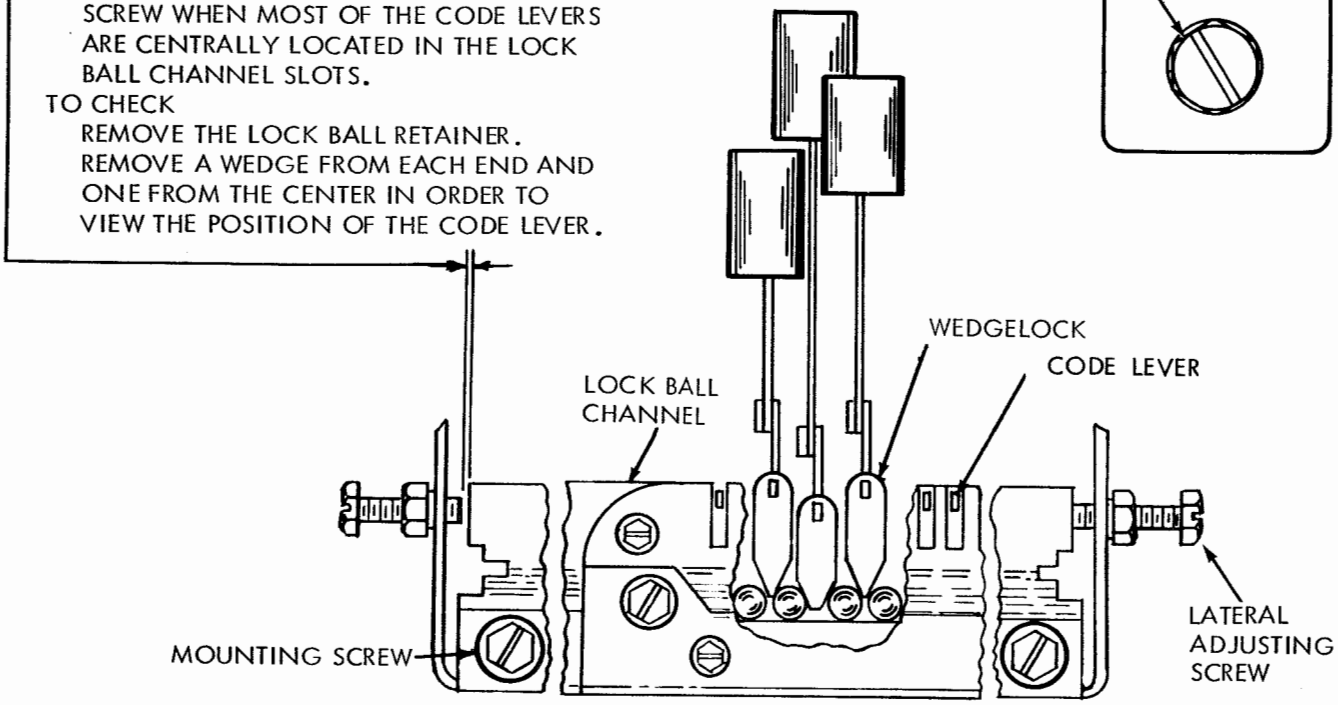
(B) LOCK BALL CHANNEL

REQUIREMENT

THERE SHOULD BE SOME TO 0.006 INCH CLEARANCE BETWEEN END OF LOCK BALL CHANNEL AND ADJUSTING SCREW WHEN MOST OF THE CODE LEVERS ARE CENTRALLY LOCATED IN THE LOCK BALL CHANNEL SLOTS.

TO CHECK

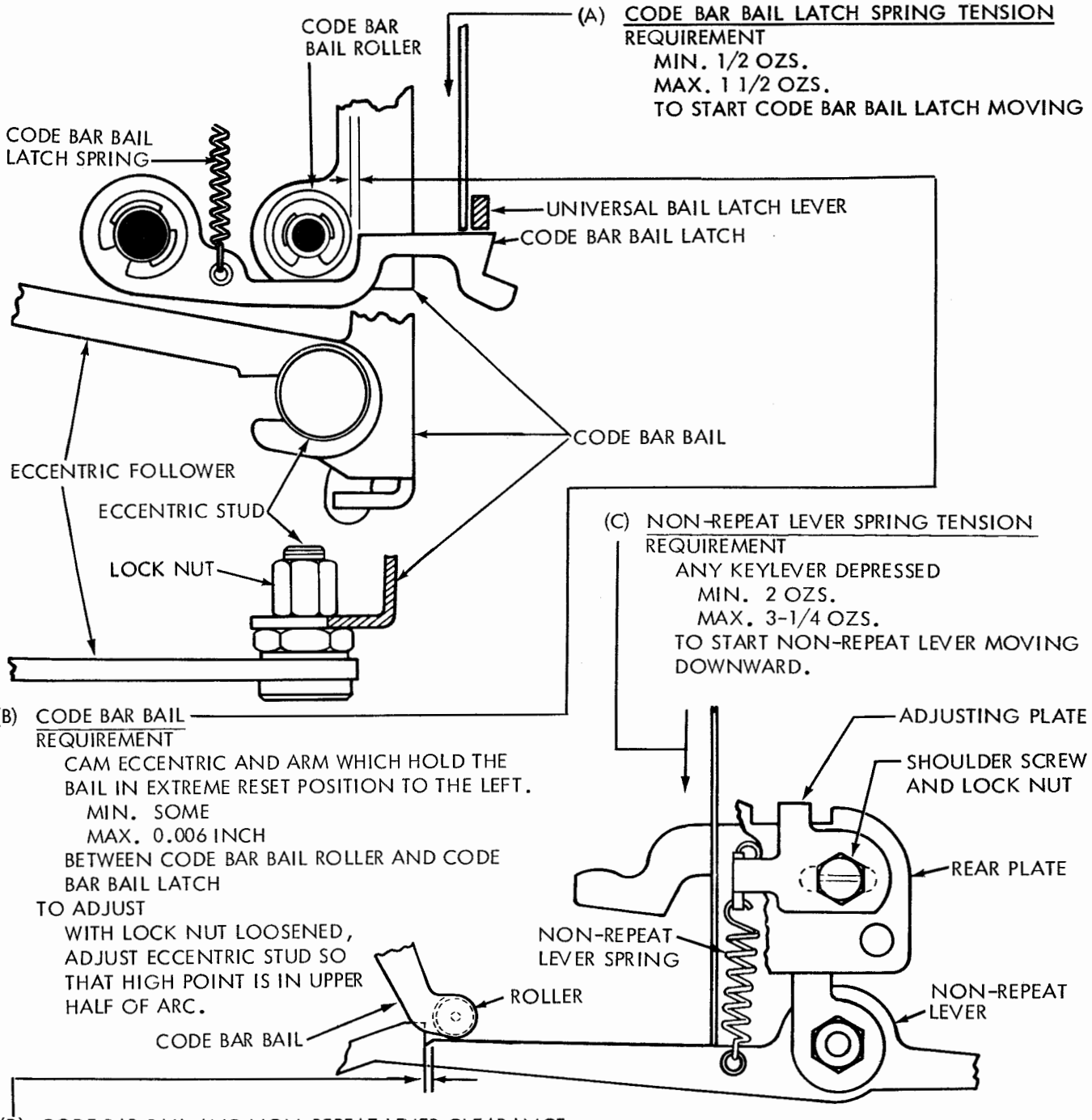
REMOVE THE LOCK BALL RETAINER. REMOVE A WEDGE FROM EACH END AND ONE FROM THE CENTER IN ORDER TO VIEW THE POSITION OF THE CODE LEVER.



TO ADJUST

LOOSEN THE LOCK BALL CHANNEL MOUNTING SCREWS. BACK OFF LATERAL ADJUSTING SCREWS AND POSITION CHANNEL. TURN ONE ADJUSTING SCREW IN AGAINST THE END OF THE CHANNEL AND LOCK IT. TURN THE OTHER ADJUSTING SCREW IN TO THE END OF THE CHANNEL AND BACK IT OFF 1/4 TURN. LOCK THE SCREW. REPLACE THE WEDGES AND CHECK THEIR POSITION WITH RESPECT TO THE BALLS. PULL CHANNEL ASSEMBLY DOWNWARD UNTIL ALL CODE LEVERS STRIKE THEIR UPSTOP WITHOUT WEDGES JUMPING OUT OF POSITION. REPLACE LOCK BALL RETAINER. BACK OFF BALL ENDPLAY ADJUSTING SCREW.

2.08 Code Bar Assembly continued



(A) CODE BAR BAIL LATCH SPRING TENSION
REQUIREMENT
MIN. 1/2 OZS.
MAX. 1 1/2 OZS.
TO START CODE BAR BAIL LATCH MOVING

(B) CODE BAR BAIL
REQUIREMENT
CAM ECCENTRIC AND ARM WHICH HOLD THE BAIL IN EXTREME RESET POSITION TO THE LEFT.
MIN. SOME
MAX. 0.006 INCH
BETWEEN CODE BAR BAIL ROLLER AND CODE BAR BAIL LATCH
TO ADJUST
WITH LOCK NUT LOOSENED, ADJUST ECCENTRIC STUD SO THAT HIGH POINT IS IN UPPER HALF OF ARC.

(C) NON-REPEAT LEVER SPRING TENSION
REQUIREMENT
ANY KEYLEVER DEPRESSED
MIN. 2 OZS.
MAX. 3-1/4 OZS.
TO START NON-REPEAT LEVER MOVING DOWNWARD.

(D) CODE BAR BAIL AND NON-REPEAT LEVER CLEARANCE
REQUIREMENT
MECHANISM IN INITIAL TRIP-OFF POSITION, ANY KEY DEPRESSED, NO POWER.
MIN. 0.010 INCH
MAX. 0.020 INCH
BETWEEN ROLLER OF CODE BAR BAIL AND NON-REPEAT LEVER PICK-UP STEP.
TO ADJUST
LOOSEN LOCK NUT AND SHOULDER SCREW AND MOVE MECHANISM LEFT OR RIGHT.

2.09 Keyboard Mechanism continued

(A) BALL WEDGELOCK AND BALL TRACK CLEARANCE

REQUIREMENT (PRELIMINARY)

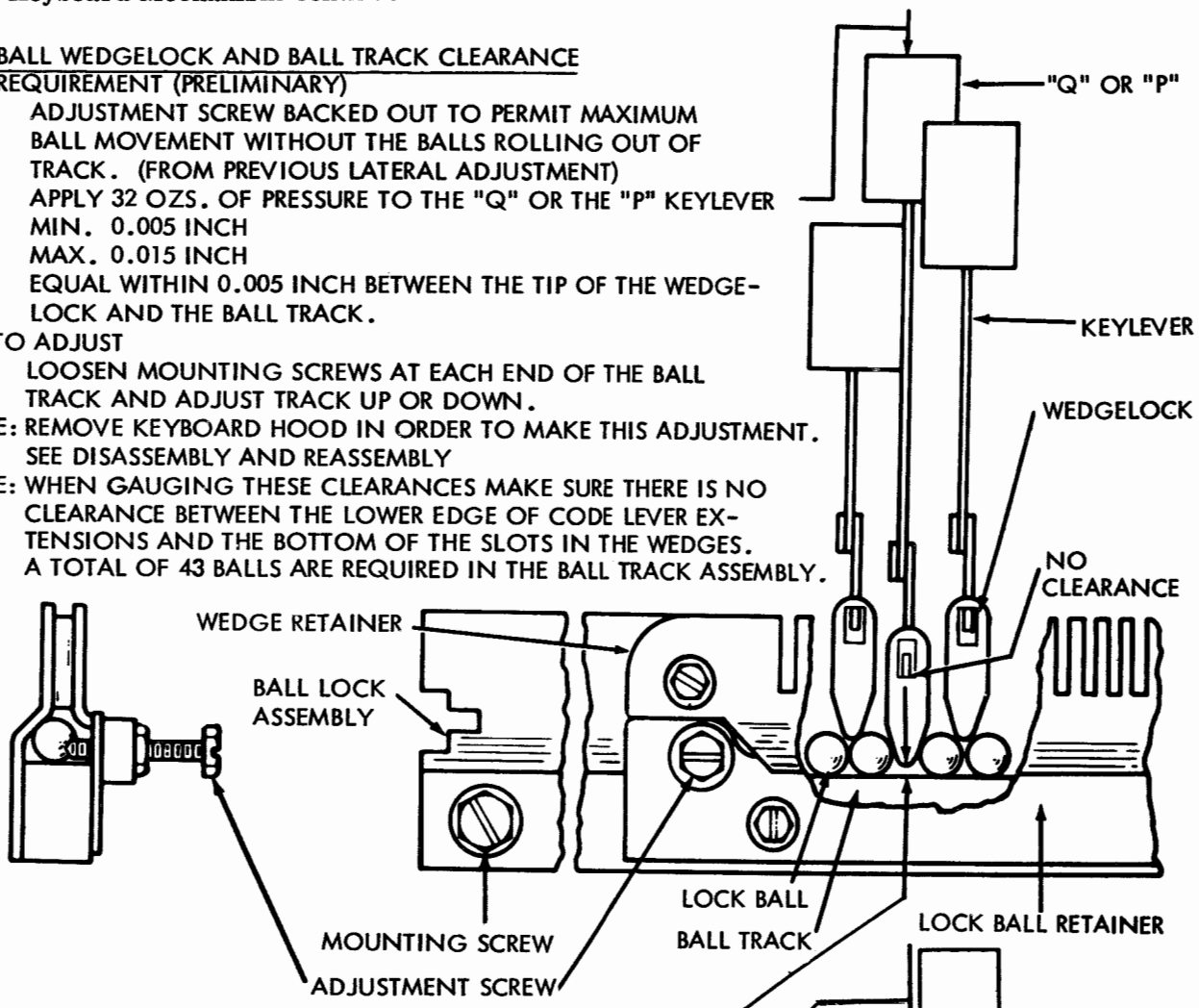
ADJUSTMENT SCREW BACKED OUT TO PERMIT MAXIMUM BALL MOVEMENT WITHOUT THE BALLS ROLLING OUT OF TRACK. (FROM PREVIOUS LATERAL ADJUSTMENT)
APPLY 32 OZS. OF PRESSURE TO THE "Q" OR THE "P" KEYLEVER
MIN. 0.005 INCH
MAX. 0.015 INCH
EQUAL WITHIN 0.005 INCH BETWEEN THE TIP OF THE WEDGE-LOCK AND THE BALL TRACK.

TO ADJUST

LOOSEN MOUNTING SCREWS AT EACH END OF THE BALL TRACK AND ADJUST TRACK UP OR DOWN.

NOTE: REMOVE KEYBOARD HOOD IN ORDER TO MAKE THIS ADJUSTMENT. SEE DISASSEMBLY AND REASSEMBLY

NOTE: WHEN GAUGING THESE CLEARANCES MAKE SURE THERE IS NO CLEARANCE BETWEEN THE LOWER EDGE OF CODE LEVER EX-TENSIONS AND THE BOTTOM OF THE SLOTS IN THE WEDGES. A TOTAL OF 43 BALLS ARE REQUIRED IN THE BALL TRACK ASSEMBLY.



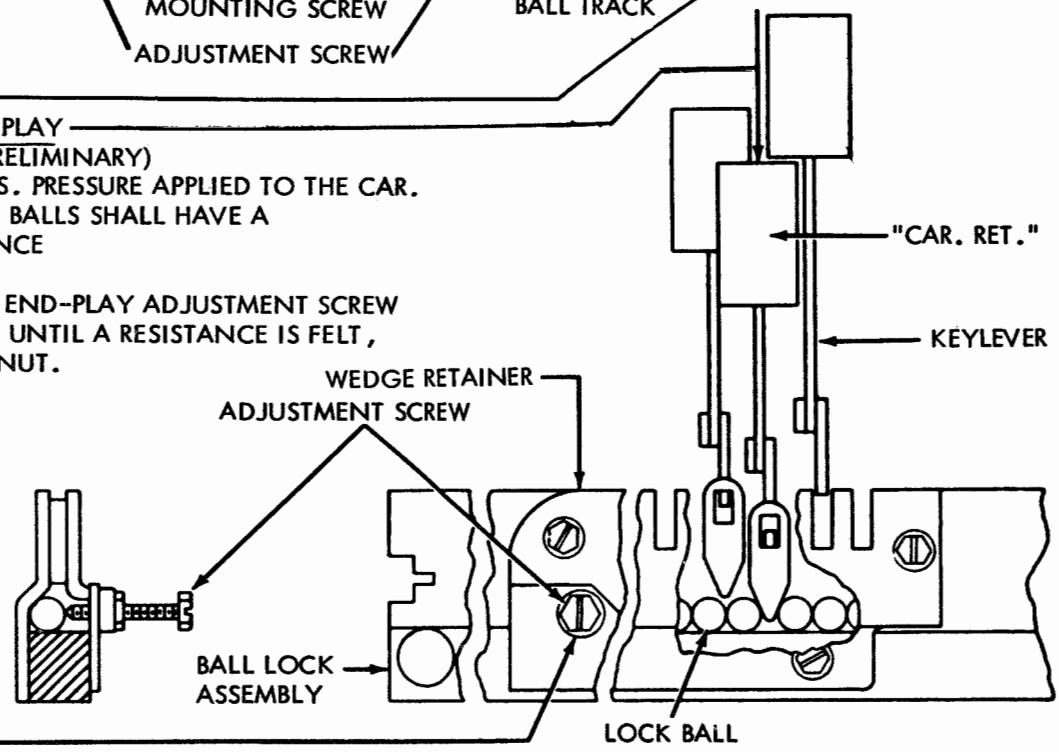
(B) LOCK BALL-END PLAY

REQUIREMENT (PRELIMINARY)

WITH A 32 OZS. PRESSURE APPLIED TO THE CAR. RET. KEY, THE BALLS SHALL HAVE A MIN. CLEARANCE

TO ADJUST

TURN IN BALL END-PLAY ADJUSTMENT SCREW WITH FINGERS UNTIL A RESISTANCE IS FELT, TIGHTEN THE NUT.

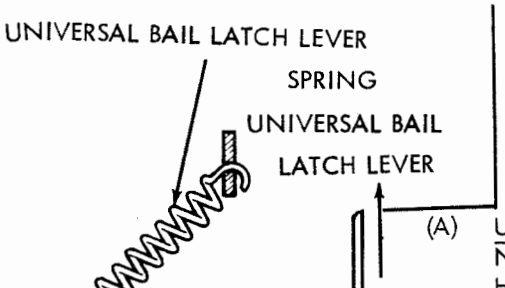


2.10 Codebar Assembly continued

(B) UNIVERSAL BAIL LATCH SPRING TENSION

REQUIREMENT

CLUTCH DISENGAGED, UNIVERSAL BAIL HELD AWAY FROM LATCH LEVER. NON-REPEAT LEVER BELL CRANK HELD DOWN AGAINST ITS STOP POST.
MIN. 7 1/2 OZS.
MAX. 11 OZS.
TO START LATCH LEVER MOVING.



(A) UNIVERSAL BAIL LATCH LEVER (PRELIMINARY)

NOTE: ON KEYBOARDS EQUIPPED FOR REPEAT SPACE OPERATION, UNHOOK THE SPRING FROM THE PLATE WITH STUD - SEE PARAGRAPH 3.09.

REQUIREMENT

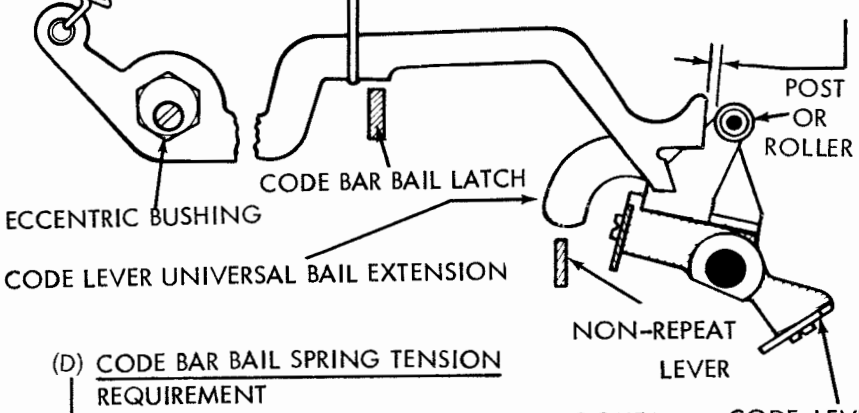
CLEARANCE BETWEEN UNIVERSAL BAIL LATCH LEVER AND ROLLER ON UNIVERSAL BAIL EXTENSION.
MIN. 0.015 INCH
MAX. 0.025 INCH

TO CHECK

DEPRESS SPACE BAR SLOWLY WITH 32 OZS. PRESSURE. MANUALLY ROTATE UNIVERSAL BAIL BACKWARDS AND RELEASE QUICKLY.

TO ADJUST

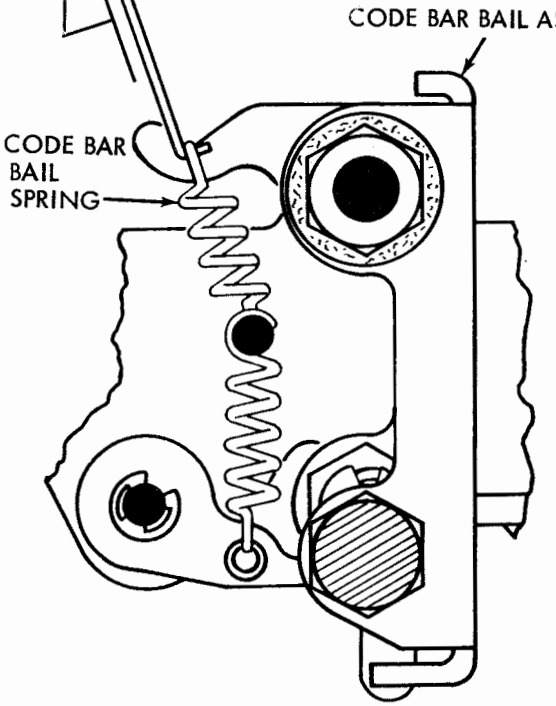
ROTATE ECCENTRIC. KEEP HIGH PART OF ECCENTRIC UP.

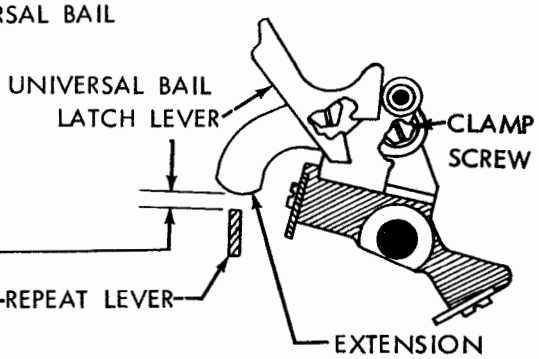


(D) CODE BAR BAIL SPRING TENSION

REQUIREMENT

CLUTCH DISENGAGED, SPRING UNHOOKED FROM ARM.
MIN. 9 OZS.
MAX. 11 OZS.
TO PULL TO INSTALLED LENGTH.





(C) UNIVERSAL BAIL EXTENSION

REQUIREMENT (POWER OFF)

UNIVERSAL BAIL EXTENSION ROLLER RESTING AGAINST END OF UNIVERSAL BAIL LATCH LEVER
MIN. 0.060 INCH
MAX. 0.080 INCH
BETWEEN EXTENSION AND NON-REPEAT LEVER

TO CHECK

DEPRESS LETTERS KEYLEVER AND RELEASE IT. CHECK CLEARANCE.

TO ADJUST

POSITION THE EXTENSION WITH ITS CLAMP SCREW LOOSENED.

2.11 Keyboard Mechanism continued

BALL WEDGELOCK, BALL END-PLAY AND UNIVERSAL BAIL LATCH ADJUSTMENTS - (FINAL)

CHECK UNDER POWER

(1) REQUIREMENT
MIN. 2 OZS.
MAX. 5 OZS.
TO TRIP ANY CENTER ROW KEY.

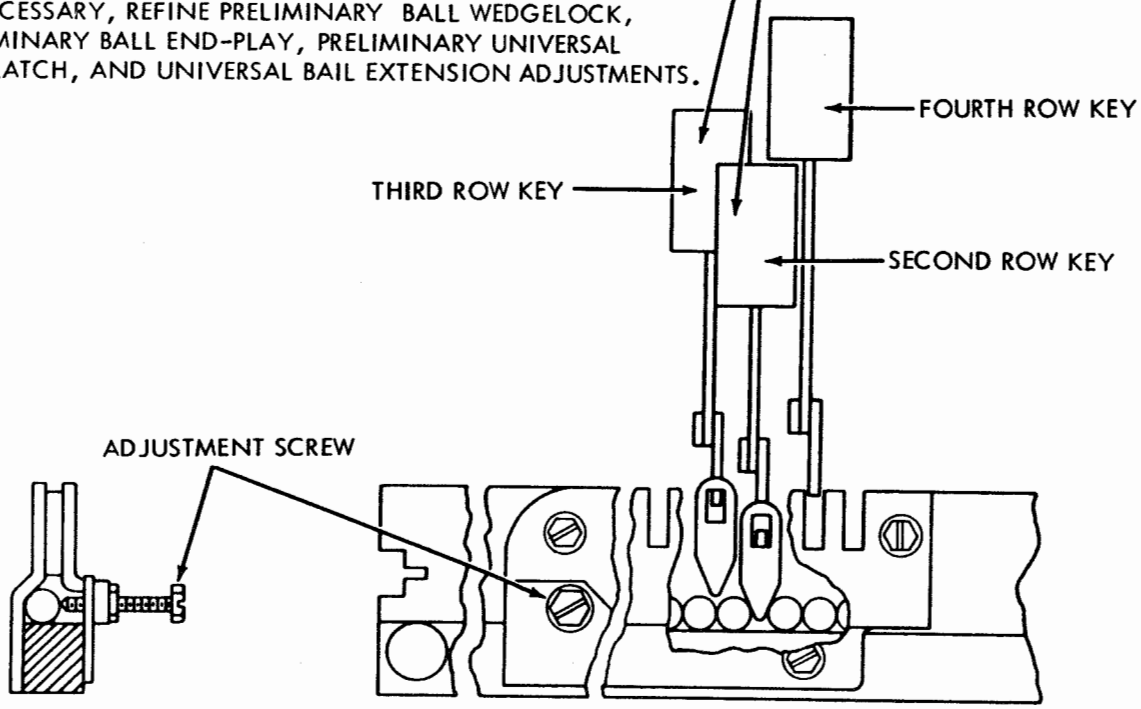
(2) REQUIREMENT
WITH 5-1/2 OZS. PRESSURE APPLIED PERPENDICULAR TO THE "A" KEY, DEPRESS EACH KEY IN THE THIRD ROW. THE "A" KEY SHALL TRIP EACH TIME A KEY IS RELEASED. REPEAT THIS CHECK WITH THE 5-1/2 OZS. PRESSURE ON THE "CAR. RET." KEY.

(3) REQUIREMENT
THE CLUTCH SHALL NOT TRIP WHEN ANY TWO KEYS ARE DEPRESSED SIMULTANEOUSLY.

(4) REQUIREMENT
WITH 4-1/4 ± 1/4 OZ. APPLIED TO THE "SPACE BAR," DEPRESS "CAR. RET." KEY. THE "SPACE BAR" SHALL TRIP EACH TIME THE "CAR. RET." KEY IS RELEASED BY MOVING THE FINGER OFF THE KEY IN A HORIZONTAL DIRECTION.

NOTE
DISREGARD MULTIPLE SPACE OPERATION IF UNIT IS EQUIPPED WITH 163775 MODIFICATION KIT FOR REPEAT-SPACE OPERATION.

TO ADJUST
IF NECESSARY, REFINE PRELIMINARY BALL WEDGELOCK, PRELIMINARY BALL END-PLAY, PRELIMINARY UNIVERSAL BAIL LATCH, AND UNIVERSAL BAIL EXTENSION ADJUSTMENTS.



2. 12 Signal Generator Mechanism continued

SIGNAL CONTACT CLEARANCE (USING SIGNAL TEST SET --- SUCH AS DXD/LSS)
PRELIMINARY --- WITH ELECTRICAL NOISE SUPPRESSOR DISCONNECTED FROM CIRCUIT, CONNECT SIGNAL CONTACTS SO AS TO INTERRUPT (KEY) CURRENT TO "STROBE" LAMP OF DXD OR LSS. TEST SET AND KEYBOARD MUST OPERATE AT SAME SPEED. (SEE TABLE 1-1).

REQUIREMENTS

(1) WITH BLANKS COMBINATION SELECTED, ORIENT SCALE OF TEST SET TO ALIGN ZERO MARK OF STOP SEGMENT WITH BEGINNING OF STOP PULSE IMAGE. LENGTH OF TRACE SHALL BE FROM THE ZERO MARK (NOTE 1.) TO (MIN. 141-1/2 DIVISIONS ---------- MAX. 142-1/2 DIVISIONS) TO ADJUST - IF VARIATIONS OCCUR, POSITION SCALE SO THAT VARIATIONS EXTEND EQUALLY ON RIGHT & LEFT OF 142 MARK.

(2) NOMINAL LENGTH OF PULSES NO. 1, 2, 3, 4, & 5 IS 100 DIVISIONS. TO ADJUST - RECHECK CONTACT CLEARANCE REQUIREMENT FIG. 1-4. REFINE CLEARANCE, WHERE NECESSARY, TO FAVOR PULSES 1 THRU 5 BY ORIENTING BEGINNING OF STOP PULSE TRACE UP TO ± 5 DIVS. FROM ZERO MARK OF SEGMENT (REFER TO REQUIREMENTS "A" AND "B" BELOW)

(3) EACH PULSE TRACE (SEE "C" BELOW) TO BE FREE OF UNDERSIRABLE BREAKS. TO ADJUST - RECHECK TRANSFER BAIL DETENT PLATE REQUIREMENT. (FIG. 1-4) AND WHERE NECESSARY, REFINE ADJUSTMENT. NOTE --- DETENT PLATE MAY BE ROTATED EITHER LEFT OR RIGHT AS LONG AS DETENT TOGGLE LATCH CONTINUES TO CAM OFF PROJECTION OF TRANSFER BAIL.

A. BEGINNING OF EACH TRACE SHOULD FALL BETWEEN
   1. ZERO MARK AND 5TH DIV. OF SCALE SEGMENT
   2. 95TH DIV. (PREVIOUS SEGMENT) AND ZERO MARK.
B. END OF EACH TRACE (EXCEPT STOP PULSE)
   1. 95TH DIV. (PREVIOUS SEGMENT) & ZERO MARK
   2. ZERO MARK AND 5TH DIV. OF SCALE SEGMENT.

} SEE "R" & "Y" COMBINATION FIGURE 1-16D

C. EACH TRACE OF THE MARKING CODE PULSES MAY HAVE A BREAK WITHIN TOLERANCE LIMITS --- THE BREAK SHOULD NOT OCCUR PRIOR TO 95TH DIVISION OF OBSERVED PULSE (1 THROUGH 5) OR 137TH DIVISION OF STOP PULSE. SEE TABLE 1-1 FOR PERMISSIBLE WIDTH OF BREAK AT SPEED OF OPERATION.

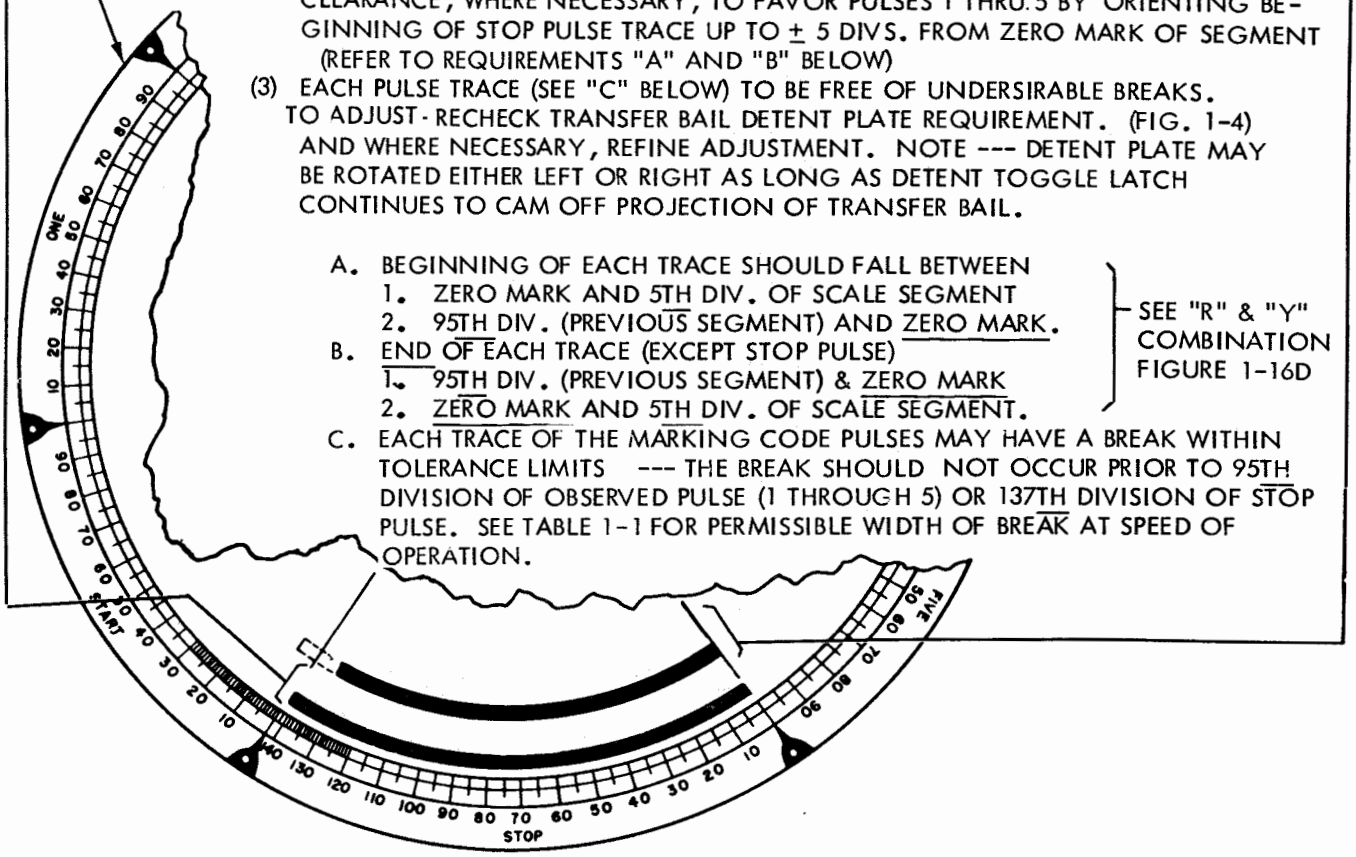
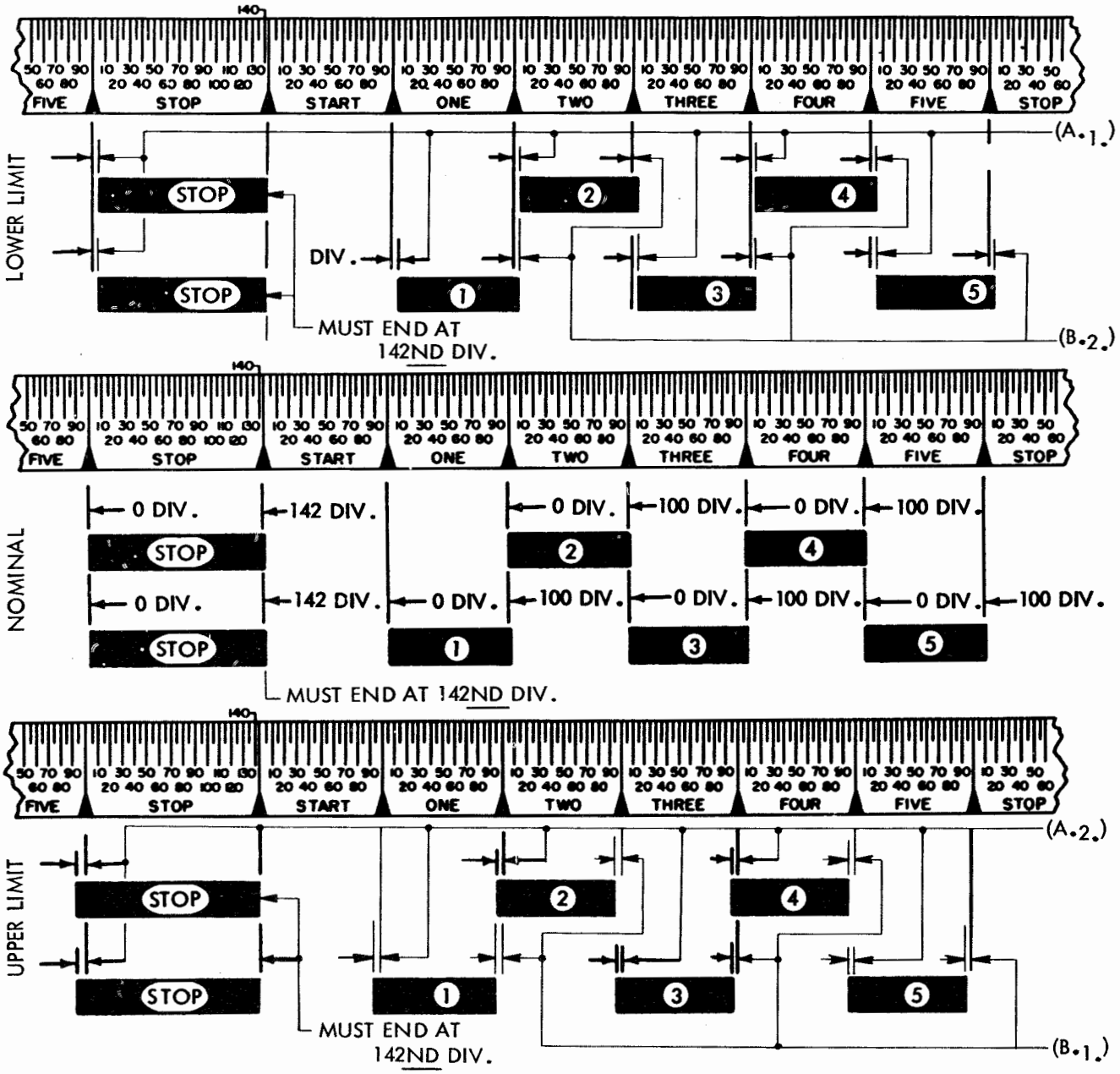


TABLE 1-1 SIGNALING PULSE SPEED AND PERMISSIBLE WIDTH OF BREAK

SPEED	OPERATIONS PER MINUTE	WIDTH OF BREAK NOT TO EXCEED	REMARKS
60 W.P.M.	368.182	1 DIVISION	MARKING PULSES (1 THROUGH 5 & STOP)
75 W.P.M.	460.00	1-1/2 DIVISION	MARKING PULSES (1 THROUGH 5 & STOP)
100 W.P.M.	600.00	2 DIVISION	MARKING PULSES (1 THROUGH 5 & STOP)

2.13 Signal Generator Mechanism continued

"R" AND "Y" COMBINATION



FOR UNITS WITH SPACING CONTACTS OF SIGNAL GENERATOR WIRED FOR POLAR OPERATION

REQUIREMENTS ---

(1) SPACING PULSES SHALL START NO EARLIER THAN 94TH DIV. OF PREVIOUS SEGMENT AND NO LATER THAN 6TH DIV. OF PULSE UNDER OBSERVATION.

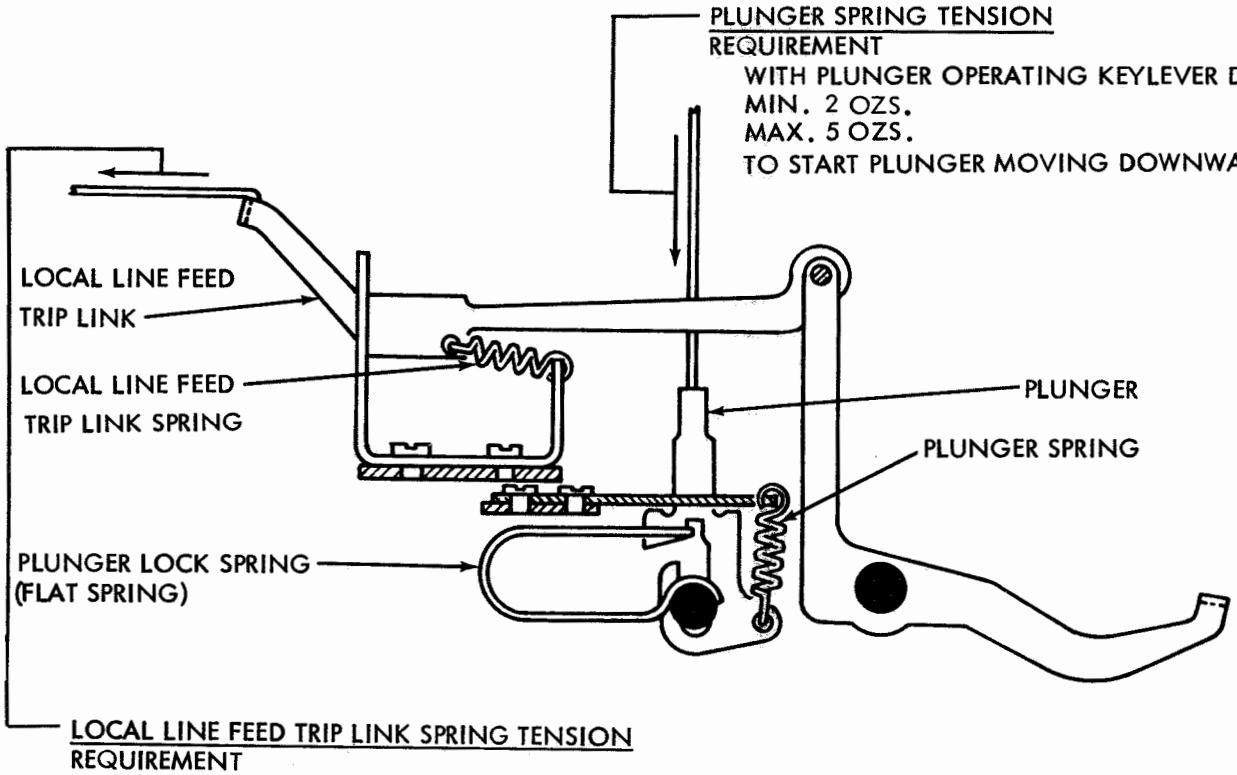
(2) TRACE OF SPACING PULSE SHALL END NO EARLIER THAN 94TH DIV. OF PULSE UNDER OBSERVATION AND END NO LATER THAN 6TH DIV. OF FOLLOWING PULSE.

(3) TRACE OF START PULSE SHALL BEGIN NO EARLIER THAN 136TH DIV. OF STOP SEGMENT AND NO LATER THAN 6TH DIV. OF START SEGMENT. START PULSE SHALL END NO EARLIER THAN 94TH DIV. OF START SEGMENT AND END NO LATER THAN 6TH DIV. OF NO. 1. SEGMENT.

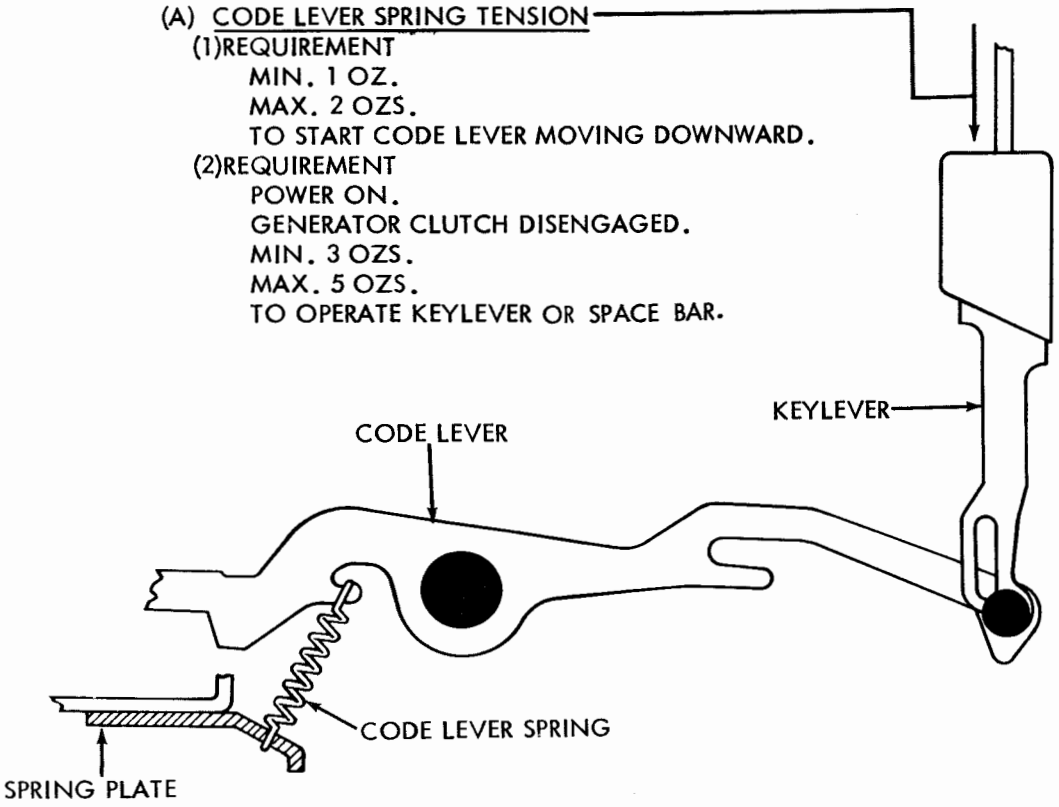
(4) SPACING PULSE MAY HAVE A BREAK PROVIDED THE BREAK IS NOT OVER ONE DIVISION WIDE AND IT DOES NOT OCCUR PRIOR TO 95TH DIV. OF PULSE UNDER OBSERVATION.

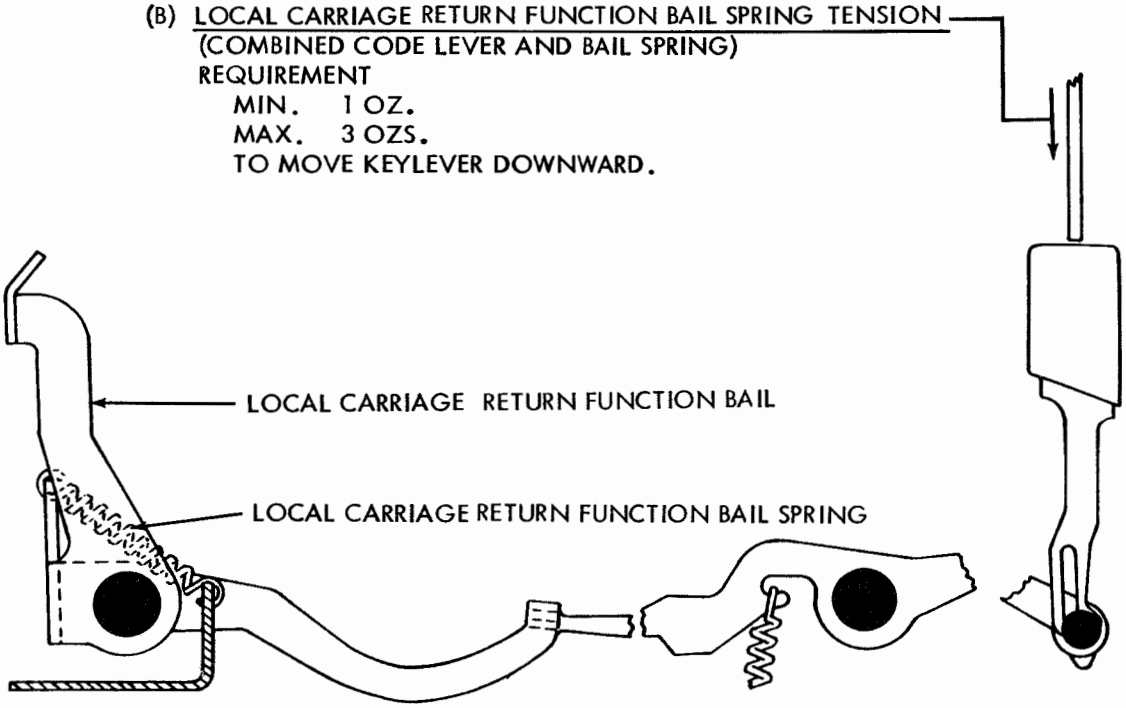
SEE TABLE 1-1 FOR PERMISSIBLE WIDTH OF BREAK AT SPEED OF OPERATION.

2.14 Keyboard Mechanism continued



2.15 Keyboard Mechanism continued

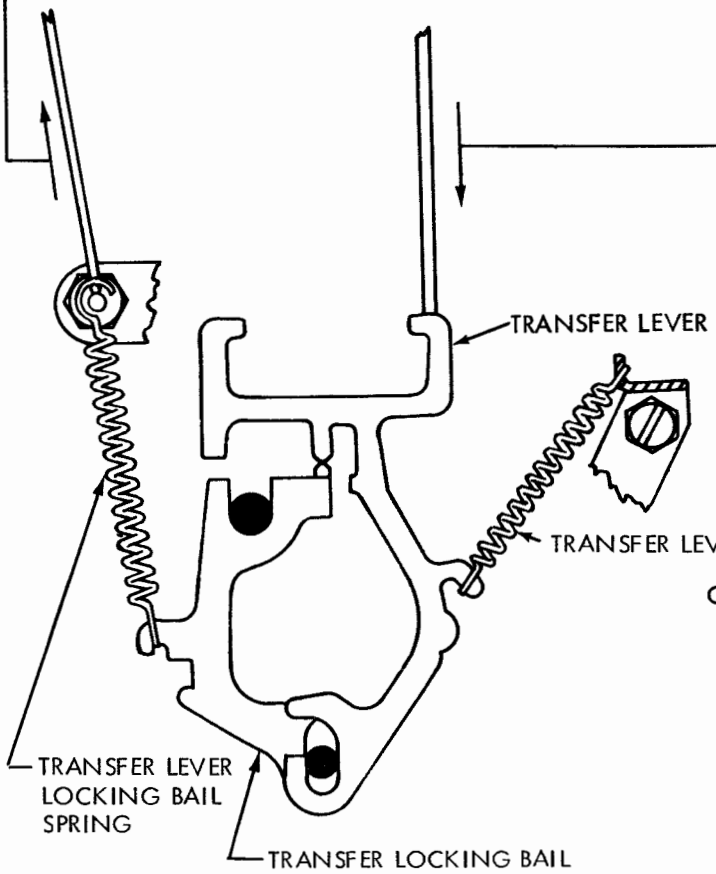


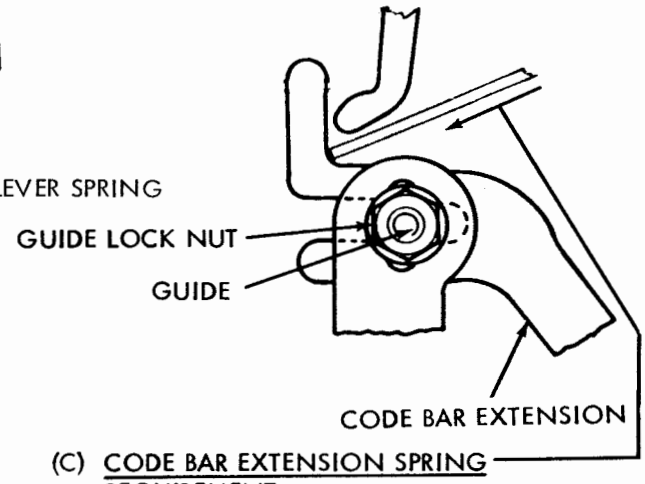


2.16 Codebar Assembly and Signal Generator Mechanism continued

(B) TRANSFER LEVER LOCKING BAIL SPRING TENSION
REQUIREMENT
SPRING UNHOOKED FROM POST. CLUTCH DISENGAGED.
MIN. 5 OZS.
MAX. 6 OZS.
TO PULL TO INSTALLED LENGTH.

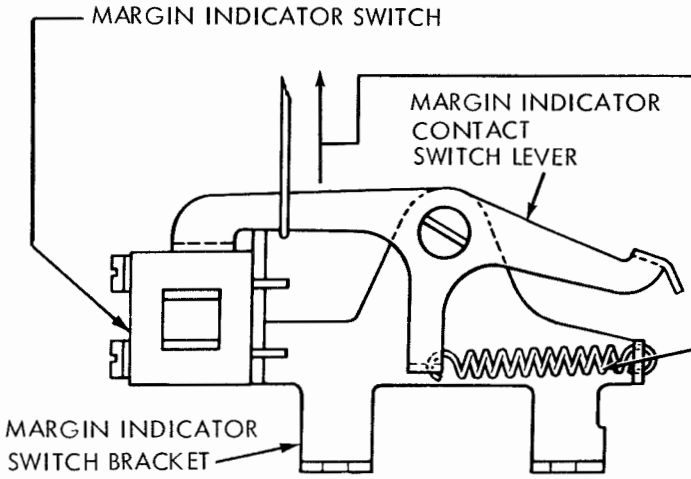
(A) TRANSFER LEVER SPRING TENSION
REQUIREMENT
CLUTCH DISENGAGED.
MIN. 1 1/2 OZS.
MAX. 2 1/2 OZS.
TO START EACH OF SEVEN LEVERS MOVING.





(C) CODE BAR EXTENSION SPRING
REQUIREMENT
MIN. 5 OZS.
MAX. 7 OZS.
TO START EACH EXTENSION MOVING.

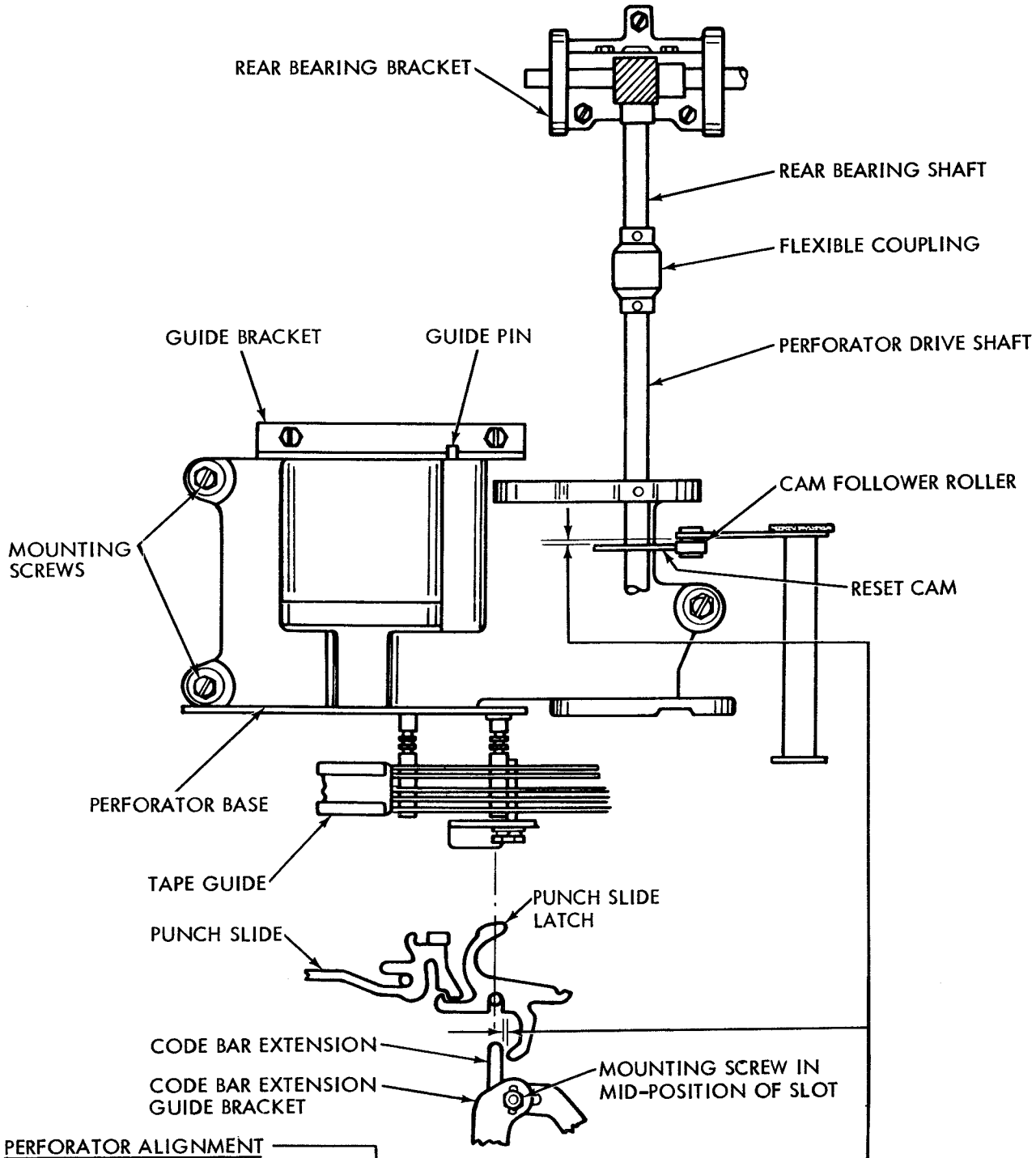
2.17 Interrelated Features



(D) MARGIN INDICATOR SPRING TENSION
REQUIREMENT
MIN. 7 OZS.
MAX. 11 OZS.
TO START LEVER MOVING.

Note: Paragraph 2.18 through 2.23 apply to both typing and non-typing perforators.

2.18 Interrelated Features continued



PERFORATOR ALIGNMENT

(1) REQUIREMENT

PUNCH SLIDE LATCHES SHOULD ALIGN WITH CODE BAR EXTENSIONS MIN. 0.010 -- MAX. 0.020 INCH TO RIGHT OF CODE BAR EXTENSION.

(2) REQUIREMENT

RESET CAM SHOULD ALIGN WITH ITS CAM FOLLOWER ROLLER APPROXIMATELY 0.030 INCH FORWARD OF THE REAR EDGE OF THE ROLLER.

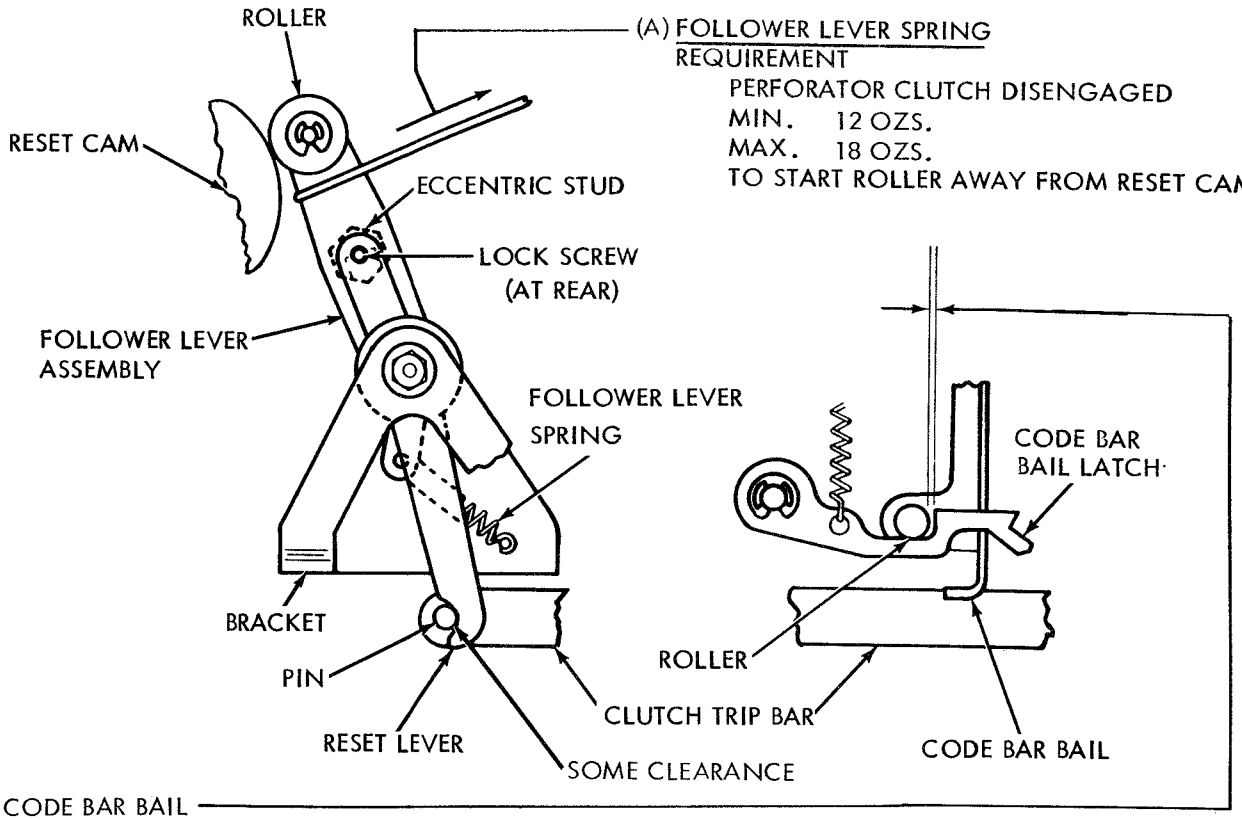
CONTINUED ON FOLLOWING PAGE.

CONTINUED FROM PRECEDING PAGE.

TO ADJUST

LOOSEN SET SCREWS AND DISENGAGE FLEXIBLE COUPLINGS. LOOSEN TWO ALIGNMENT BRACKET SCREWS AND THREE PERFORATOR MOUNTING SCREWS. SET EXTENSION GUIDE PIN IN MIDDLE OF GUIDE BRACKET SLOT AND ALIGN PERFORATOR AND RESET CAM. TIGHTEN PERFORATOR MOUNTING SCREWS. POSITION ALIGNMENT BRACKET SO THAT IT CONTACTS PERFORATOR CASTING FOR ITS FULL LENGTH, AND TIGHTEN SCREWS. POSITION REAR BEARING BRACKET UNTIL PERFORATOR DRIVE SHAFT LINES UP WITH BEARING BRACKET SHAFT. A STRAIGHT-EDGE RULE APPLIED TO THE CENTER OF THE BEARING BRACKET SHAFT SHOULD ALSO EXTEND THROUGH THE CENTER OF THE PERFORATOR DRIVE SHAFT. TIGHTEN SCREWS, AND ENGAGE THE COUPLING, IF NECESSARY, REFINE LINE UP OF PUNCH SLIDE LATCHES AND CODE BAR EXTENSIONS BY ADJUSTING THE CODE BAR EXTENSION GUIDE BRACKET IN ITS MOUNTING HOLES.

2.19 Interrelated Features continued



(A) FOLLOWER LEVER SPRING REQUIREMENT

PERFORATOR CLUTCH DISENGAGED
MIN. 12 OZS.
MAX. 18 OZS.
TO START ROLLER AWAY FROM RESET CAM.

(B) CODE BAR BAIL REQUIREMENT

CONTROL KNOB IN T POSITION. CODE BAR BAIL AT EXTREME LEFT. CLEARANCE BETWEEN CODE BAR BAIL LATCH LEVER AND ROLLER.

MIN. SOME --- MAX. 0.006 INCH

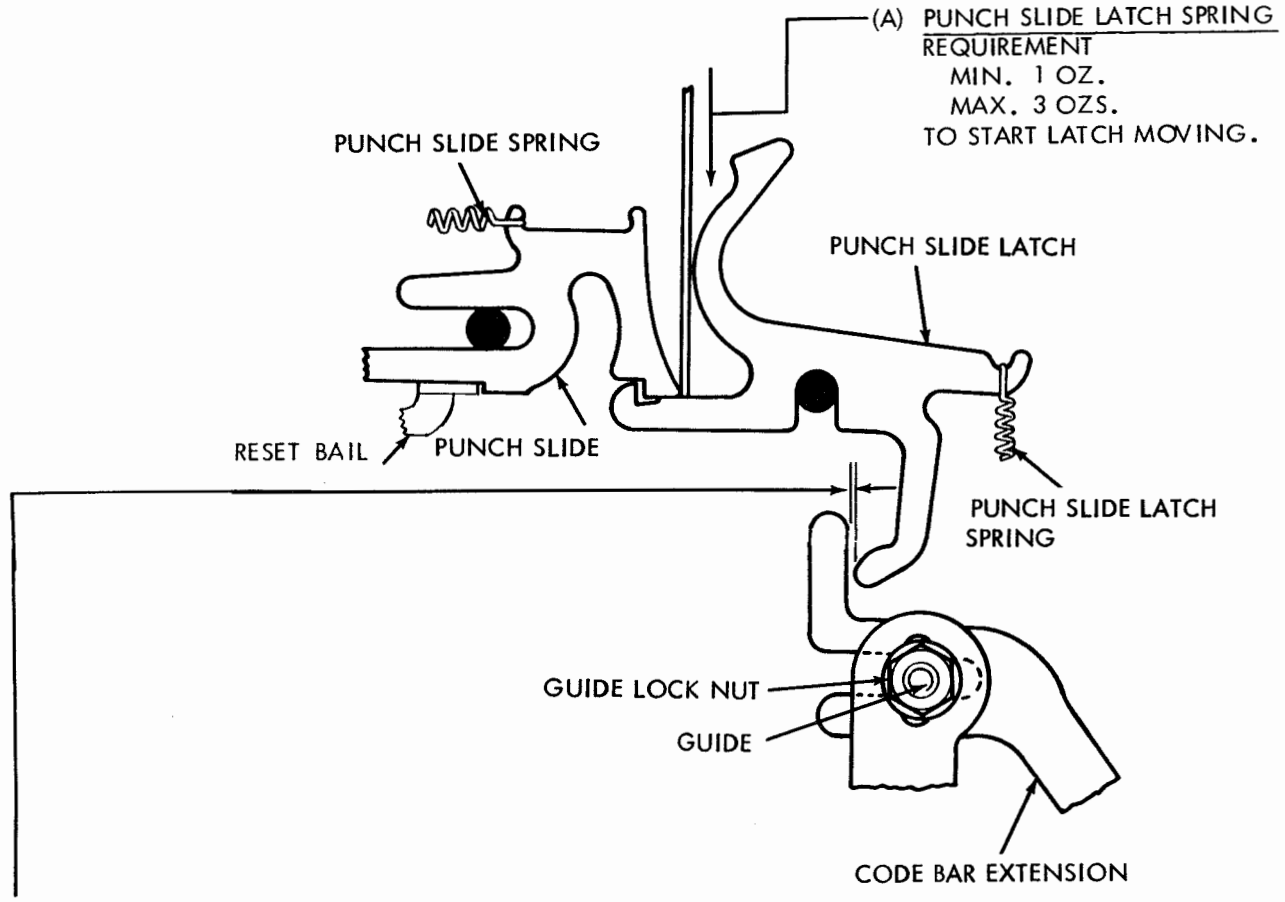
TO ADJUST

POSITION ECCENTRIC STUD WITH LOCK SCREW LOOSENED TO MEET REQUIREMENT. RECHECK AFTER TIGHTENING LOCK SCREW.

TO CHECK

WITH ALL CLUTCHES LATCHED, DEPRESS LTRS KEY. AFTER CODE BARS HAVE MOVED TO RIGHT, THERE MUST BE SOME CLEARANCE BETWEEN FOLLOWER RESET LEVER AND CLUTCH TRIP BAR PIN.

2.20 Interrelated Features continued



(B) CODE BAR EXTENSION AND PUNCH SLIDE LATCH

(1) REQUIREMENT
CONTROL KNOB IN T POSITION, BLANK KEYLEVER DEPRESSED. PUNCH SLIDE LATCHED. PLAY BETWEEN CODE BAR EXTENSIONS AND CODE BARS TAKEN UP BY MOVING AND HOLDING EXTENSIONS AT ENGAGEMENT WITH CODE BARS. CLEARANCE SHOULD BE
MIN. SOME --- MAX. 0.010 INCH
BETWEEN CODE BAR EXTENSIONS AND CLOSEST PUNCH SLIDE LATCH.

(2) REQUIREMENT
LTRS KEYLEVER DEPRESSED. CODE BAR EXTENSIONS SHOULD ROTATE PUNCH SLIDE LATCHES TO RELEASE ALL PUNCH SLIDES. CHECK DYNAMIC OPERATION BY DEPRESSING THE "REPEAT" AND "BLANK" KEY SIMULTANEOUSLY.

(3) ON KEYBOARD PERFORATORS NOT HAVING THE "BLANK" KEY, OPERATE THE "BLANK" CODE BAR LEVER BY LIFTING WITH A SPRING HOOK.
TO ADJUST
POSITION GUIDE VERTICALLY WITH GUIDE LOCK NUT LOOSENED TO OBTAIN REQUIRED CLEARANCE. TIGHTEN LOCK NUT.

2.21 Interrelated Features continued

PERFORATOR CLUTCH RELEASE TRIP

REQUIREMENT

PERFORATOR CLUTCH SHOULD TRIP CONSISTENTLY IN K-T POSITIONS WHEN BLANK AND REPEAT KEYLEVERS ARE DEPRESSED SIMULTANEOUSLY. WHEN THE CONTROL KNOB IS TURNED FROM K POSITION TO K-T POSITION, THE PERFORATOR CLUTCH SHOULD TRIP WHEN THE FIRST KEYLEVER IS DEPRESSED. CLEARANCE BETWEEN MAIN TRIP LEVER AND CLUTCH RELEASE

MIN. 0.015 INCH
MAX. 0.025 INCH

TO ADJUST

PLACE CONTROL KNOB IN T POSITION. LOOSEN MAIN TRIP LEVER LATCH CLAMP SCREWS AND MOVE LATCH TO EXTREME LEFT. STRIKE BLANK KEYLEVER. MOVE THE STOP BRACKET TO THE RIGHT UNTIL IT IS OUT OF ENGAGEMENT WITH THE LATCH. MOVE THE CLUTCH TRIP BAR EXTENSION TO THE RIGHT UNTIL IT LATCHES. POSITION MAIN TRIP LEVER LATCH TO RIGHT TO OBTAIN REQUIRED CLEARANCE. TIGHTEN SCREWS.

NOTE: CHECK FOR CLEARANCE BETWEEN RESET BAIL AND SLIDES WHEN THE RESET LEVER IS TRIPPED. REFINE ADJUSTMENT IF NECESSARY TO OBTAIN OPERATIONAL CLEARANCE.

TO CHECK

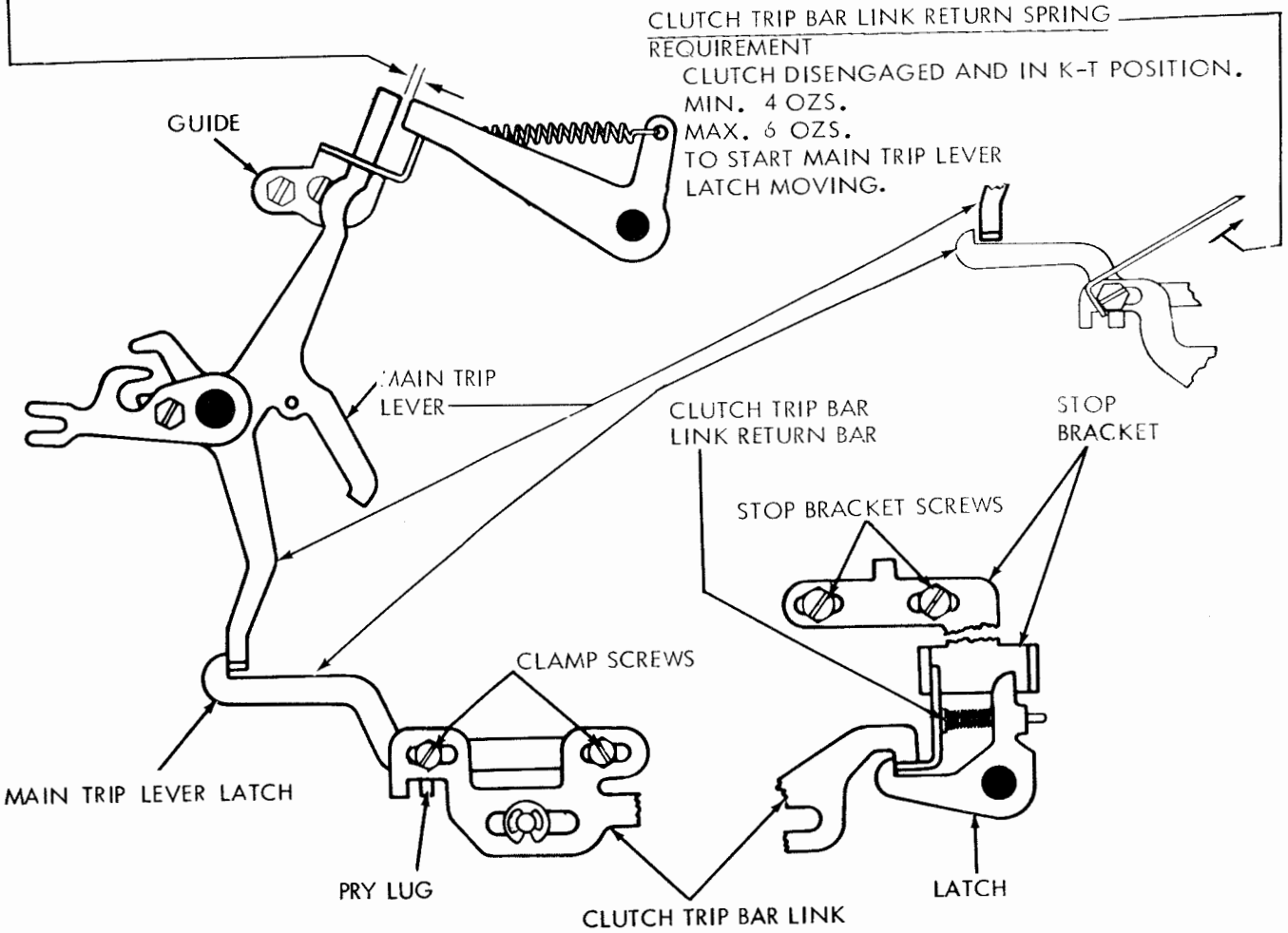
WITH THE STOP BRACKET SCREWS FRICTION TIGHT, MOVE THE STOP BRACKET SLOWLY TO THE LEFT UNTIL THE LATCH JUST TRIPS. TIGHTEN CLAMP SCREWS. TURN ON MOTOR. DEPRESS BLANK AND REPEAT KEYLEVERS SIMULTANEOUSLY. IF OPERATION IS SATISFACTORY, TURN TO K-T POSITION AND REPEAT. TURN TO K POSITION AND BACK TO K-T POSITION. DEPRESS A KEYLEVER. PERFORATOR CLUTCH SHOULD TRIP. IF IT DOES NOT, MOVE STOP BRACKET SLIGHTLY TO THE RIGHT AND REPEAT THE ABOVE ADJUSTMENT.

NOTE: IF KEYBOARD DOES NOT HAVE BLANK KEYLEVER USE "T" KEYLEVER INSTEAD OF BLANK.

CLUTCH TRIP BAR LINK RETURN SPRING

REQUIREMENT

CLUTCH DISENGAGED AND IN K-T POSITION.
MIN. 4 OZS.
MAX. 6 OZS.
TO START MAIN TRIP LEVER LATCH MOVING.



2.22 Interrelated Features continued

CODE BAR EXTENSION BLOCKING ASSEMBLY

REQUIREMENT

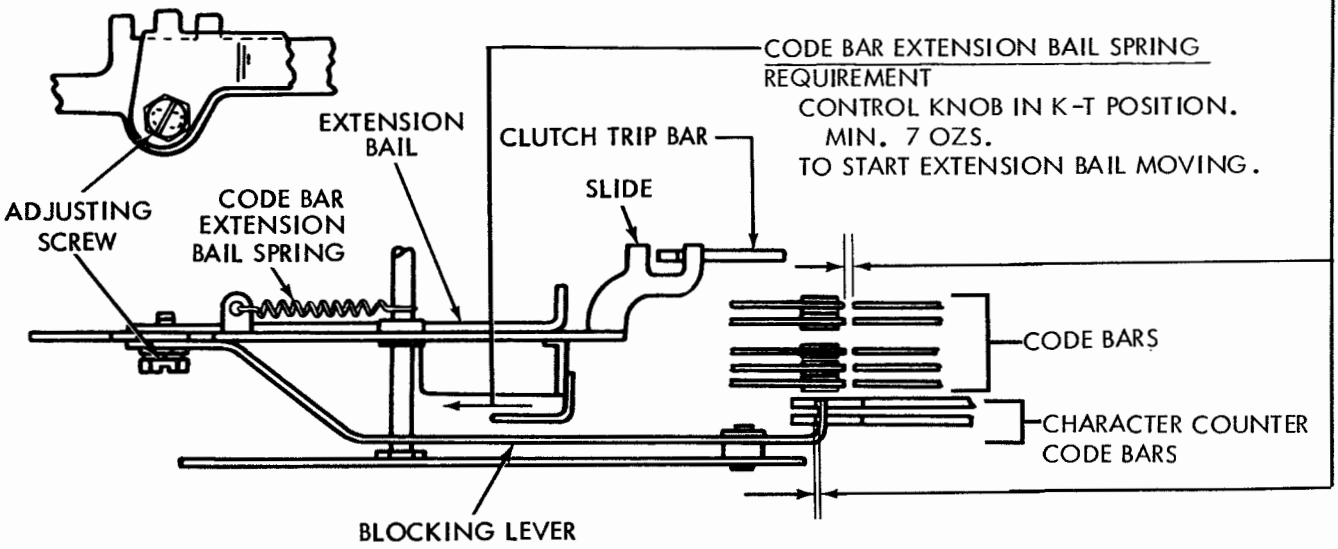
SELECTOR SWITCH IN K POSITION. CODE BAR EXTENSIONS AND CHARACTER COUNTER BARS SHOULD NOT OPERATE.

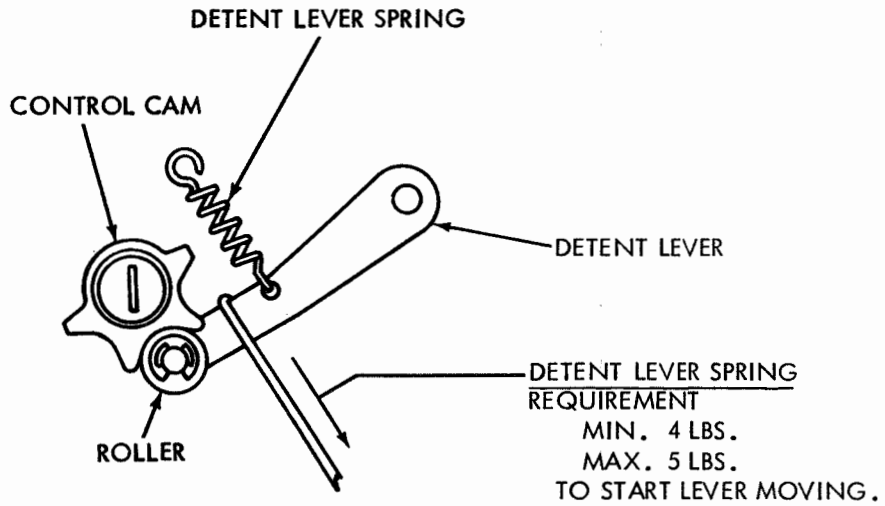
(1) CLEARANCE BETWEEN RIGHT END AT CODE BAR EXTENSIONS AND CODE BARS.
MIN. SOME
MAX. 0.015 INCH

(2) CLEARANCE BETWEEN BLOCKING LEVER AND SIDE OF NOTCH IN CHARACTER COUNTER CODE BARS. BAR WITH CLOSEST GAP
MIN. SOME
MAX. 0.010 INCH

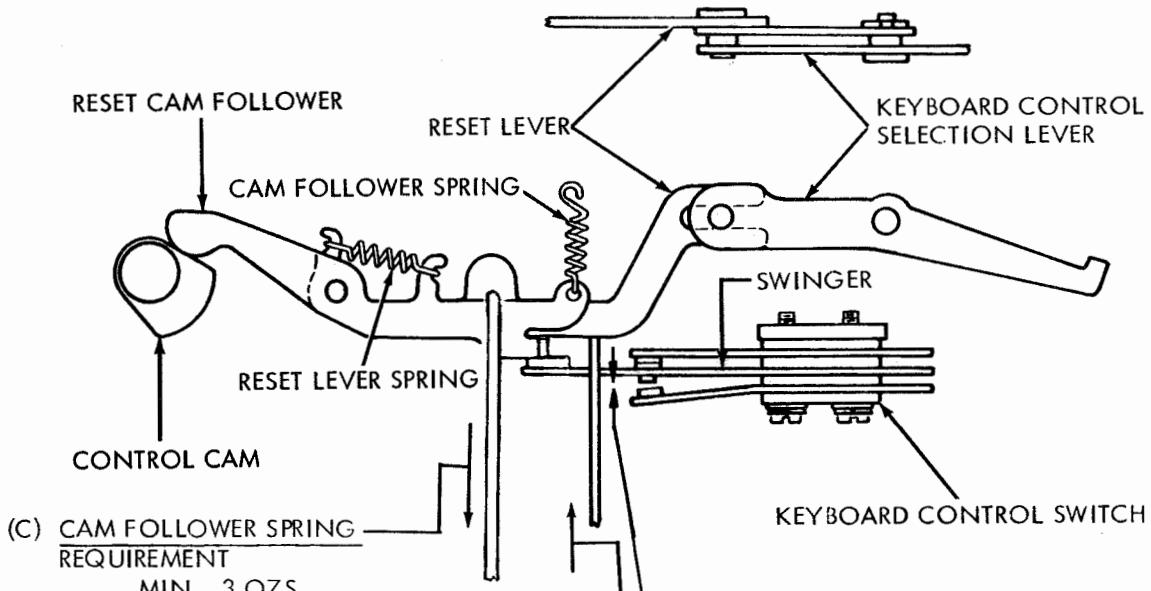
TO ADJUST

WITH CLUTCH LATCHED, TURN CONTROL KNOB TO THE K POSITION. STRIKE LTRS KEYLEVER AND ROTATE SIGNAL GENERATOR SHAFT TO RETURN CODE BARS TO EXTREME LEFT. WITH ADJUSTING SCREW FRICTION TIGHT, POSITION EXTENSION BAIL TO OBTAIN REQUIREMENT (1) AND POSITION BLOCKING LEVER TO OBTAIN REQUIREMENT (2) MAKE CERTAIN THAT THE CODE BAR EXTENSION BAIL IS FREE ON ITS GUIDE POST. TEST OPERATION IN K, K-T AND T POSITIONS.





2.23 Interrelated Features continued



(C) CAM FOLLOWER SPRING REQUIREMENT
MIN. 3 OZS.
MAX. 5 OZS.
TO START CAM FOLLOWER MOVING.

(A) KEYBOARD CONTROL SWITCH REQUIREMENT
(1) IN T POSITION THE NORMALLY OPEN CONTACT GAP
MIN. 0.015 INCH
(2) IN K-T POSITION THE NORMALLY CLOSED CONTACT GAP
MIN. 0.015 INCH
(3) ALL CONTACTS SHOULD CLOSE WITH SOME OVERTRAVEL
TO ADJUST
BEND THE CONTACT SPRINGS.

(B) RESET LEVER SPRING REQUIREMENT
CONTROL KNOB IN T POSITION
MIN. 10 OZS.
MAX. 14 OZS.
TO START LEVER MOVING.

2.24 Interrelated Features continued

CAUTION

IF THE MOTOR SHOULD BECOME BLOCKED FOR SEVERAL SECONDS, THE THERMAL CUT-OUT SWITCH WILL BREAK THE CIRCUIT. SHOULD THIS HAPPEN, ALLOW THE MOTOR TO COOL AT LEAST 5 MINUTES BEFORE MANUALLY DEPRESSING THE RED BUTTON. AVOID REPEATED DEPRESSION.

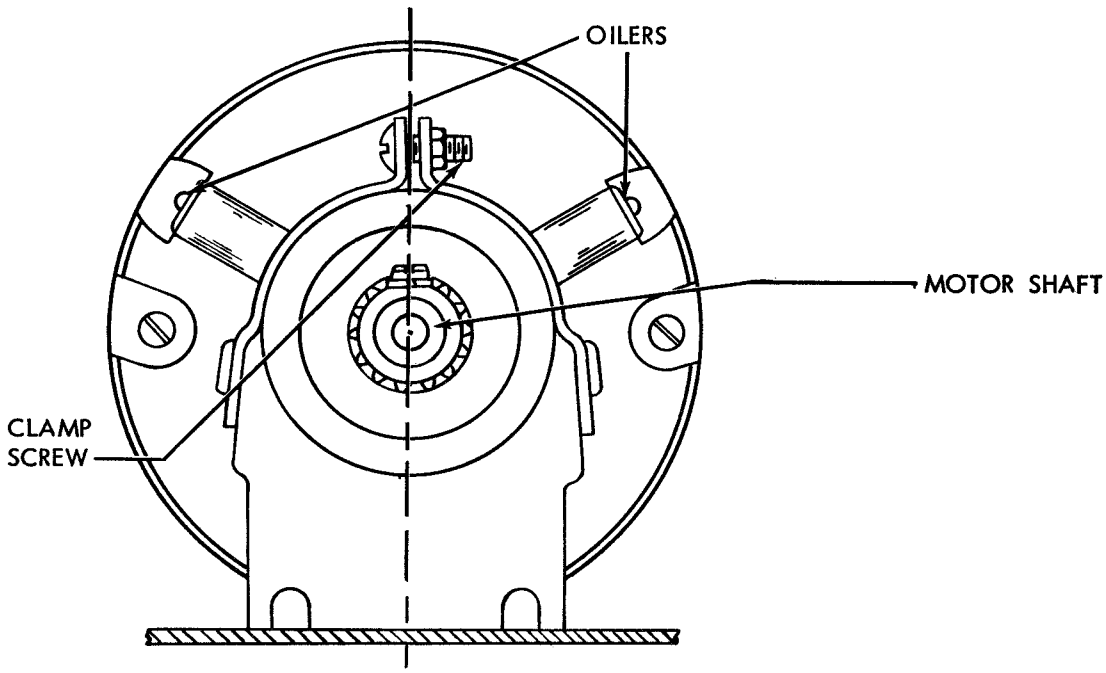
SYNCHRONOUS MOTOR POSITIONING

REQUIREMENT

TWO OILERS SHOULD BE UPWARD AND APPROXIMATELY EQUIDISTANT FROM A VERTICAL LINE THROUGH THE MOTOR SHAFT.

TO ADJUST

POSITION THE MOTOR WITH BOTH CLAMP SCREWS LOOSENED.



2.25 Interrelated Features continued

INTERMEDIATE GEAR BRACKET

(1) REQUIREMENT

BARELY PERCEPTIBLE BACKLASH BETWEEN THE TYPING UNIT DRIVEN GEAR AND THE TYPING UNIT DRIVING GEAR AT THE CLOSEST POINT.

TO ADJUST

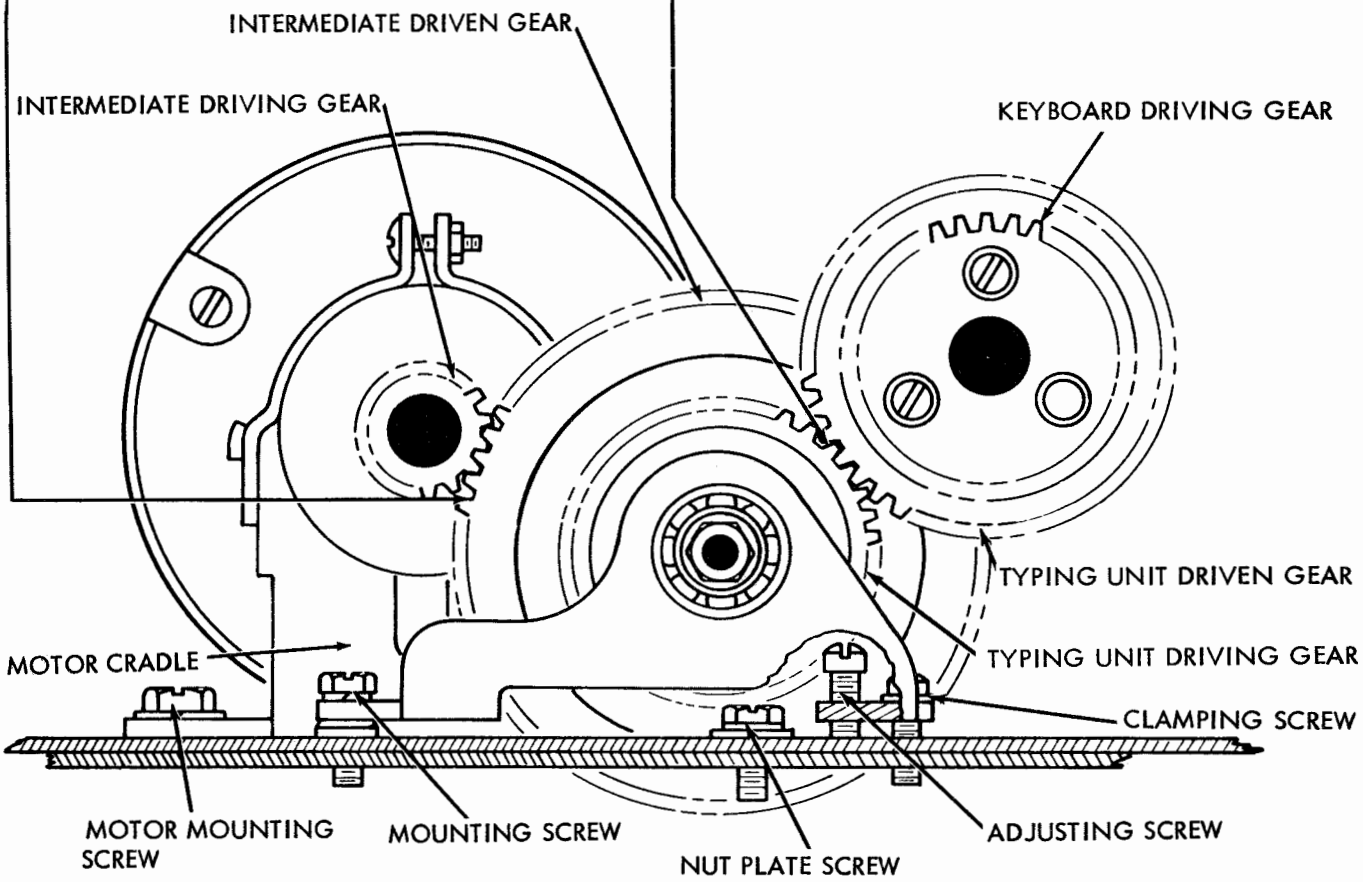
POSITION THE COMPLETE INTERMEDIATE GEAR MECHANISM BRACKET BY UTILIZING THE ADJUSTING SLOTS WITH THE THREE HEXAGON HEAD SCREWS LOOSENED. ALIGN THE GEARS AT THIS TIME.

(2) REQUIREMENT

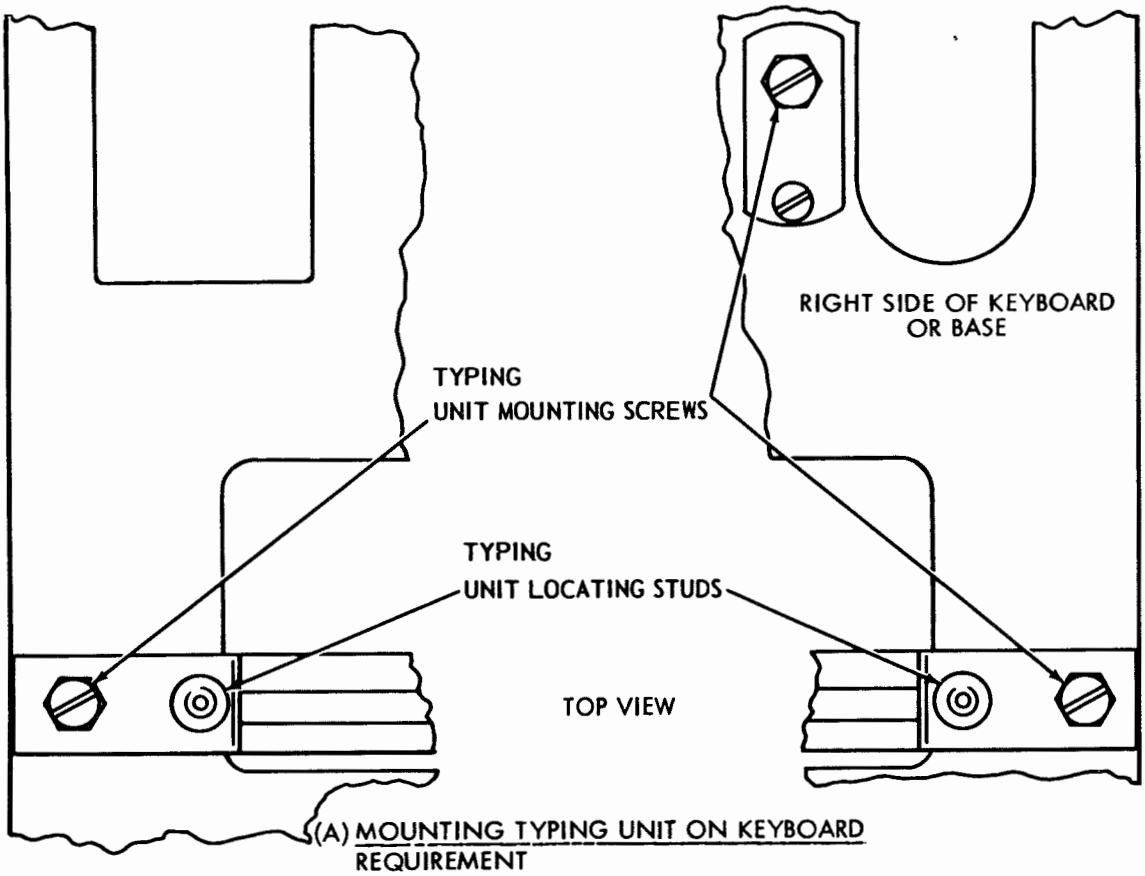
BARELY PERCEPTIBLE BACKLASH BETWEEN THE INTERMEDIATE DRIVING GEAR AND THE INTERMEDIATE DRIVEN GEAR AT THE CLOSEST POINT.

TO ADJUST

RAISE OR LOWER THE FRONT END OF THE INTERMEDIATE GEAR BRACKET BY MEANS OF THE FILLISTER HEAD ADJUSTING AND CLAMPING SCREWS LOCATED AT THE FRONT END OF THE BRACKET. REFINE REQUIREMENTS IF NECESSARY.



2.26 Interrelated Features continued



(A) MOUNTING TYPING UNIT ON KEYBOARD

REQUIREMENT

WHEN PLACING THE TYPING UNIT ON THE BASE HOLD IT TILTED SLIGHTLY TO THE RIGHT AND LOWER THE RIGHT END INTO ENGAGEMENT WITH THE RIGHT LOCATING STUD. WHILE EASING THE LEFT END DOWNWARD ROTATE THE MOTOR BY HAND TO PROPERLY MESH THE GEARS. SECURE BY FOUR MOUNTING SCREWS. ROTATE THE MOTOR BY HAND TO INSURE PROPER MESHING OF GEARS.

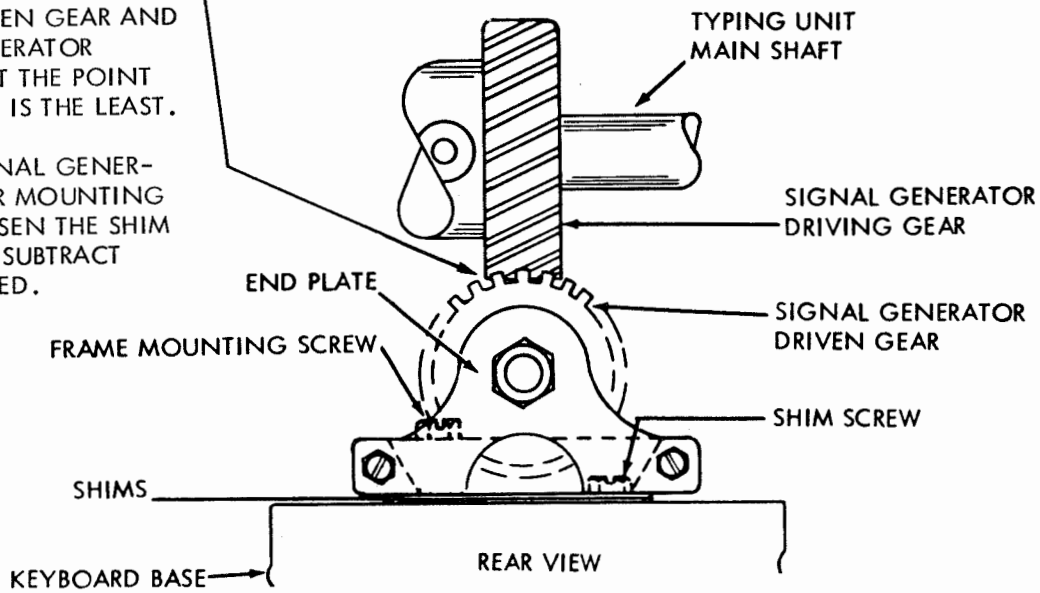
(B) SIGNAL GENERATOR FRAME

REQUIREMENT

WITH TYPING UNIT MOUNTED IN POSITION, THERE SHOULD BE A PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE SIGNAL GENERATOR DRIVEN GEAR AND THE SIGNAL GENERATOR DRIVING GEAR AT THE POINT WHERE BACKLASH IS THE LEAST.

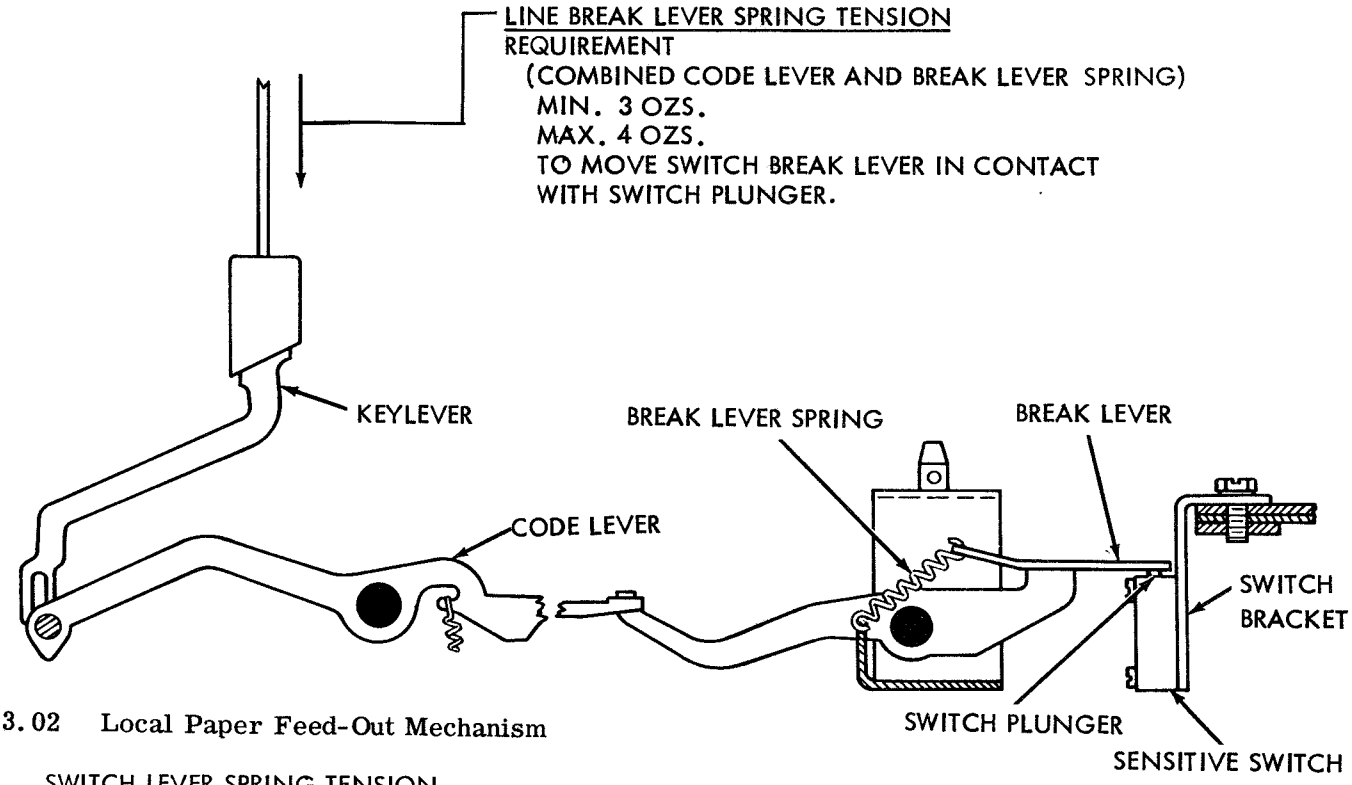
TO ADJUST

REMOVE THE SIGNAL GENERATOR FRAME REAR MOUNTING SCREW AND LOOSEN THE SHIM SCREW. ADD OR SUBTRACT SHIMS AS REQUIRED.

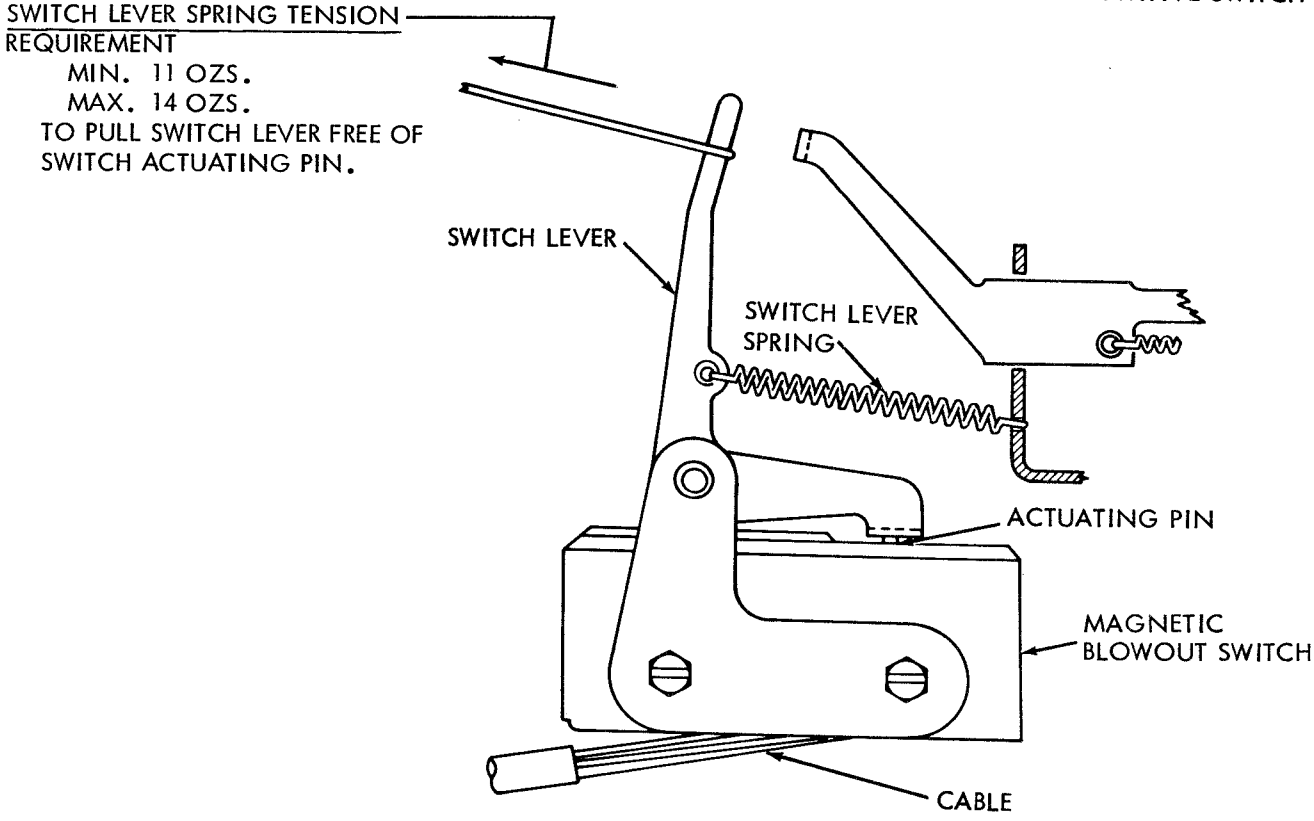


3. VARIABLE FEATURES

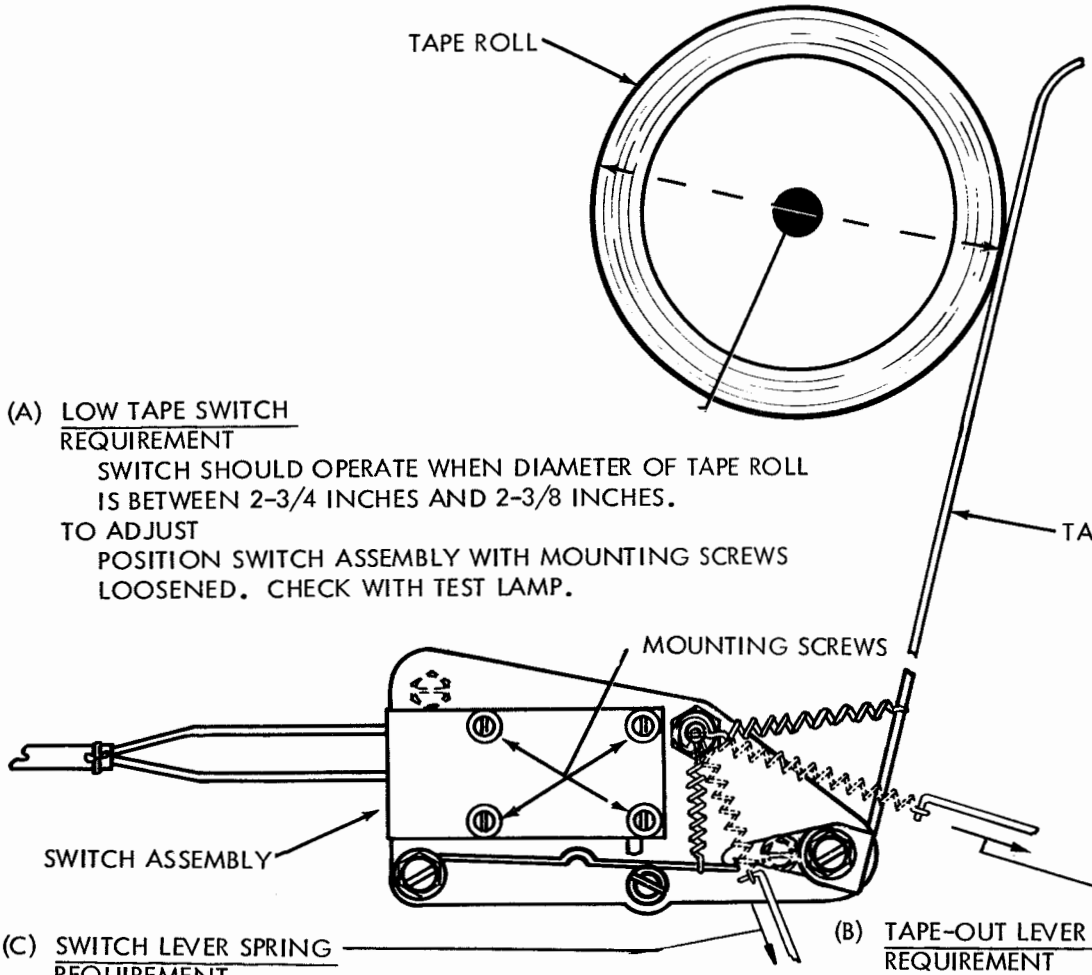
3.01 Electrical Line Break Mechanism



3.02 Local Paper Feed-Out Mechanism



3.03 Tape Out Switch Mechanism

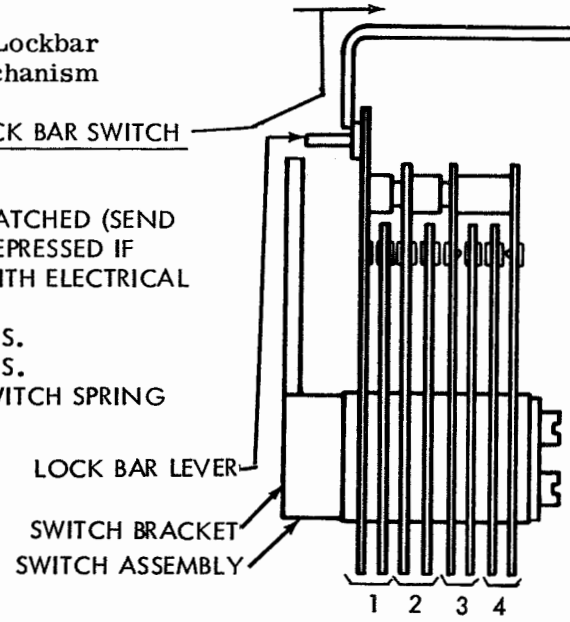


(A) LOW TAPE SWITCH
REQUIREMENT
SWITCH SHOULD OPERATE WHEN DIAMETER OF TAPE ROLL IS BETWEEN 2-3/4 INCHES AND 2-3/8 INCHES.
TO ADJUST
POSITION SWITCH ASSEMBLY WITH MOUNTING SCREWS LOOSENED. CHECK WITH TEST LAMP.

(C) SWITCH LEVER SPRING
REQUIREMENT
MIN. 6 OZS. --- MAX. 7 OZS.
TO PULL SPRING TO LENGTH OF 1-1/4 INCHES

(B) TAPE-OUT LEVER SPRING
REQUIREMENT
MIN. 6 OZS. --- MAX. 8 OZS.
TO PULL SPRING TO LENGTH OF 1-17/32 INCHES.

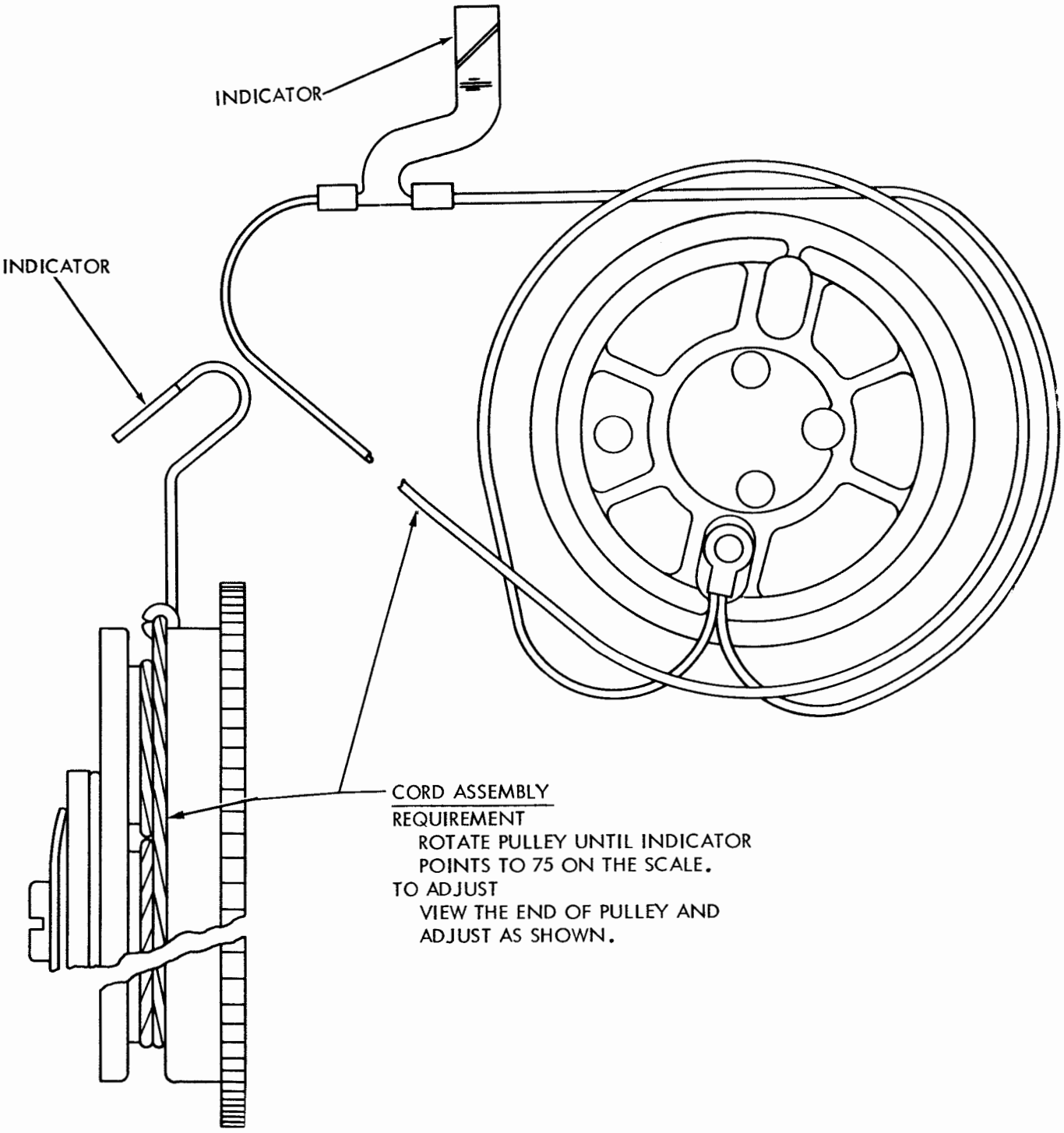
3.04 Keyboard Lockbar Switch Mechanism



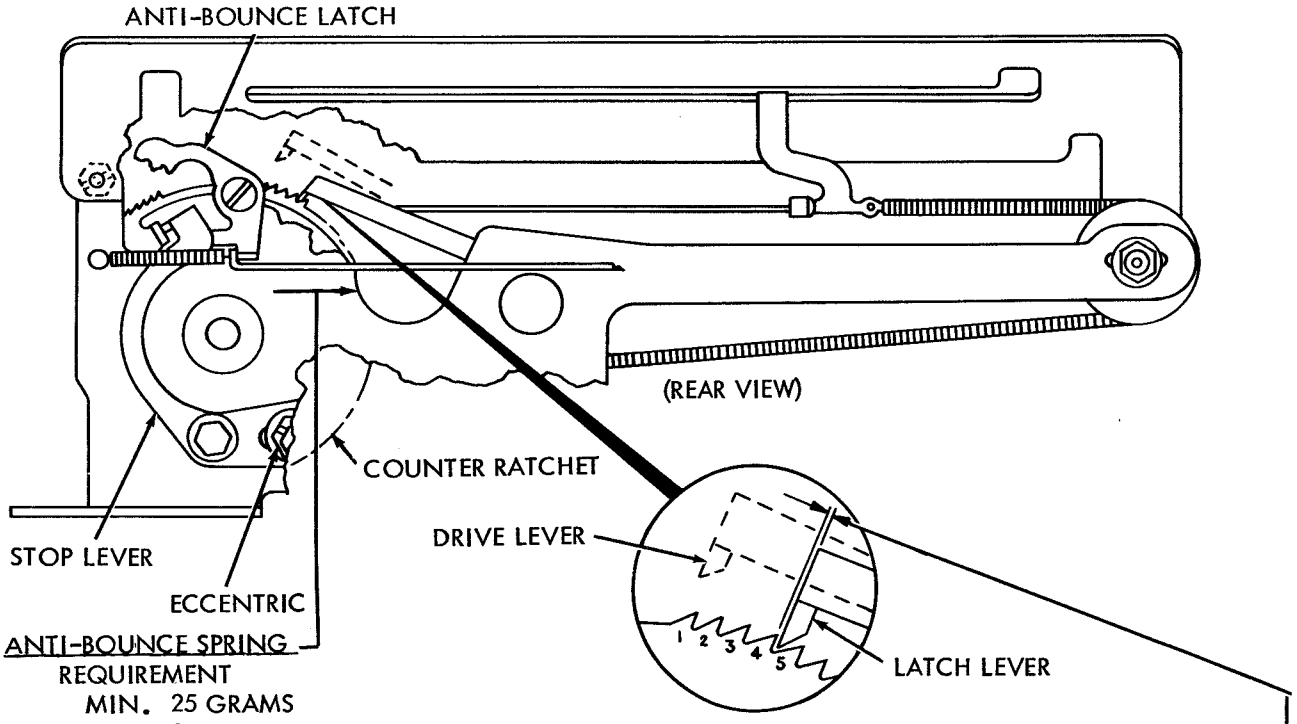
(D) KEYBOARD LOCK BAR SWITCH SPRING
REQUIREMENT
LOCK BAR LATCHED (SEND KEYLEVER DEPRESSED IF EQUIPPED WITH ELECTRICAL LOCK-OUT)
MIN. 8 OZS.
MAX. 15 OZS.
TO START SWITCH SPRING MOVING.

(E) KEYBOARD LOCK-BAR SWITCH
(1) REQUIREMENT
WITH THE RECEIVE KEY DEPRESSED THE CONTACT GAP OF THE NORMALLY OPEN CONTACT (NO'S 1,2,3) SHOULD BE
MIN. 0.008 INCH
(2) REQUIREMENT
WITH THE SEND KEY DEPRESSED CONTACT GAP OF THE NORMALLY CLOSED CONTACT NO. 4 SHOULD BE
MIN. 0.008 INCH
(3) REQUIREMENT
ALL CONTACTS SHOULD CLOSE WITH SOME OVER-TRAVEL
TO ADJUST
BEND CONTACT SPRINGS

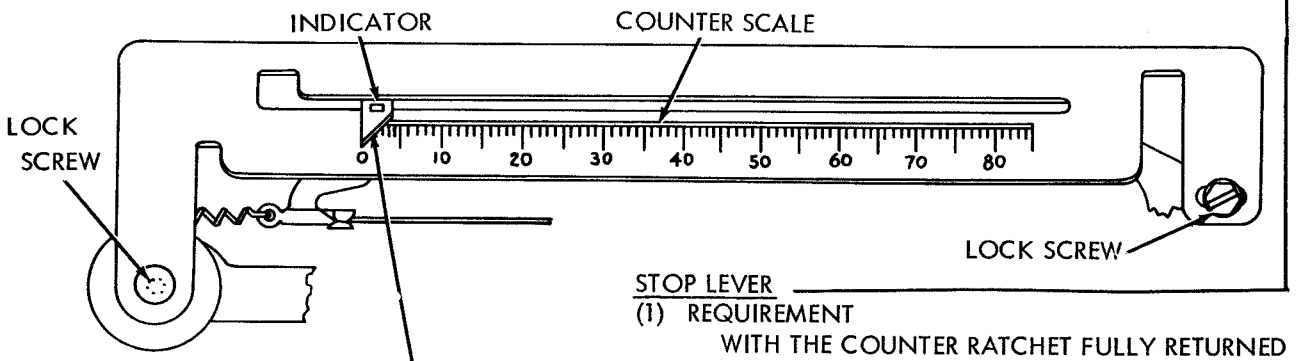
3.05 Character Counter Mechanism



3.06 Character Counter Mechanism continued



ANTI-BOUNCE SPRING
REQUIREMENT
MIN. 25 GRAMS
MAX. 35 GRAMS
TO PULL LATCH TO THE END OF ITS TRAVEL.



CHARACTER COUNTER SCALE

(1) REQUIREMENT
WHEN INDICATOR IS AT EXTREME LEFT OF SCALE, IT SHOULD POINT TO ZERO.
TO ADJUST
SET INDICATOR TO LEFT. LOOSEN LOCK SCREWS AND POSITION SCALE.

(2) REQUIREMENT
POINT OF INDICATOR SHOULD NOT TOUCH THROUGHOUT ITS ENTIRE TRAVEL.
TO ADJUST
FORM THE INDICATOR.

STOP LEVER

(1) REQUIREMENT
WITH THE COUNTER RATCHET FULLY RETURNED AND RESTING AGAINST ITS STOP LEVER, THE CLEARANCE BETWEEN THE LATCH LEVER AND THE FACE OF THE 4TH RATCHET TOOTH SHOULD BE
MIN. 0.002 INCH
MAX. 0.010 INCH

(2) REQUIREMENT
THE ANTI-BOUNCE LATCH SHOULD NOT INTERFERE WITH THE ROTATION OF THE RATCHET.
TO ADJUST
HOLD THE DRIVE LEVER OUT OF ENGAGEMENT WITH THE RATCHET AND ROTATE THE STOP LEVER ECCENTRIC.

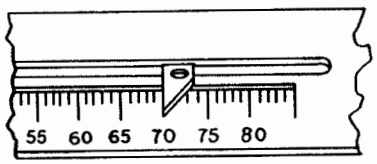
3.07 Character Counter Mechanism continued

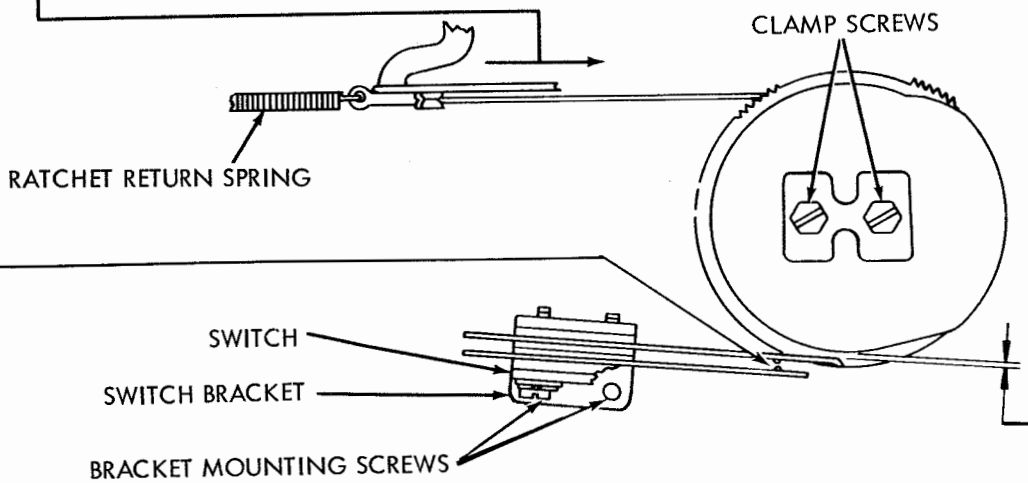
RATCHET DRUM ASSEMBLY RETURN SPRING

REQUIREMENT

1/2 TO 1 1/2 OZS. WHEN INDICATOR POINTS TO 35 ON THE SCALE.

1 1/2 TO 2 1/2 OZS. WHEN INDICATOR POINTS TO 70 ON THE SCALE.





CHARACTER COUNTER END-OF-LINE SWITCH

(1) REQUIREMENT

THE SWITCH SHOULD CLOSE AT A PRESET NUMBER OF CHARACTERS.

(2) REQUIREMENT

BEFORE INSTALLING THE COUNTER ON THE KEYBOARD PERFORATOR, TIGHTEN THE CLAMP SCREWS AND SWITCH BRACKET MOUNTING SCREWS FRICTION TIGHT. WITH THE SWITCH LEAF SPRINGS APPROXIMATELY PARALLEL TO THE SWITCH MOUNTING BRACKET (GAGE BY EYE) AND WITH

MIN. 0.005 INCH --- MAX. 0.020 INCH

CLEARANCE BETWEEN THE LEAF SPRING SWITCH CONTACTS (BEND LOWER LEAF SPRING).

TO ADJUST

POSITION SWITCH BRACKET UNTIL THE UPPER SWITCH LEAF SPRING CLEARS THE LOW OF THE CAM

MIN. SOME --- MAX. 0.025 INCH

CHECK CLOSEST POINT AND TIGHTEN BRACKET SCREWS. SET INDICATOR TO COUNT DESIRED AND ADJUST CAM UNTIL THE SWITCH JUST CLOSES. TIGHTEN CLAMP SCREWS.

TO CHECK OPERATION

MOVE RATCHET DRUM UNTIL THE INDICATOR TRAVERSES THE ENTIRE SCALE. THE SWITCH SHOULD CLOSE ON THE DESIRED COUNT, WITH A SMALL AMOUNT OF OVER-TRAVEL OF BOTH BLADES. IT MAY BE NECESSARY TO REFINE THE ABOVE ADJUSTMENTS WHEN OPERATING ON THE EXTREME ENDS OF THE 65 TO 80 CHARACTER RANGE.

3.08 Character Counter Mechanism continued

CHARACTER COUNTER STROKE

REQUIREMENT

WHEN CHARACTER AND REPEAT KEYS ARE DEPRESSED, THE COUNTER SHOULD OPERATE CONSISTENTLY IN T OR K-T POSITION. WHEN CARRIAGE RETURN KEY IS DEPRESSED, THE COUNTER SHOULD RESET WITHOUT BINDING. THE MECHANISM SHOULD COUNT THE FIRST CHARACTER ON A RESTART AFTER RESET CONDITION.

MIN. 0.006---MAX. 0.015 INCH

BETWEEN DRIVE LEVER AND RATCHET TOOTH, WHEN COUNTER IS SET NEAR MID-POINT OF ITS RANGE.

TO ADJUST

LOOSEN MOUNTING SCREWS. WITH KEYBOARD IN T POSTION, START MOTOR AND STRIKE CARRIAGE RETURN KEY, AND THEN E KEY. TURN OFF MOTOR. DEPRESS E KEY. POSITION CHARACTER COUNTER FRAME FOR CLEARANCE. TURN CONTROL KNOB TO K-T POSITION AND RECHECK. REFINE IF NECESSARY.

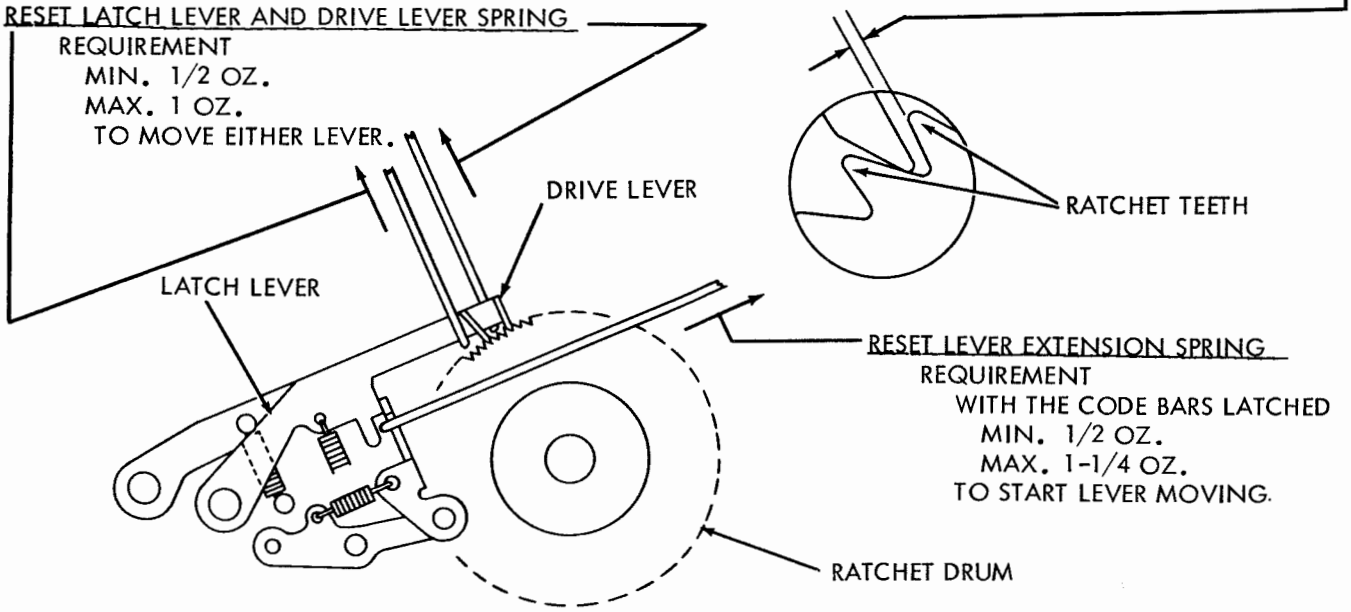
RESET LATCH LEVER AND DRIVE LEVER SPRING

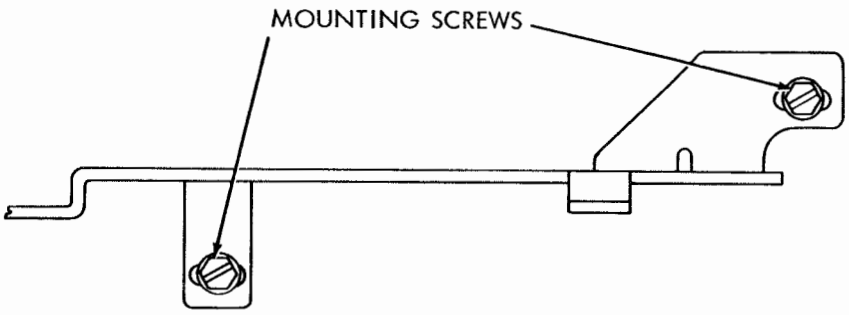
REQUIREMENT

MIN. 1/2 OZ.

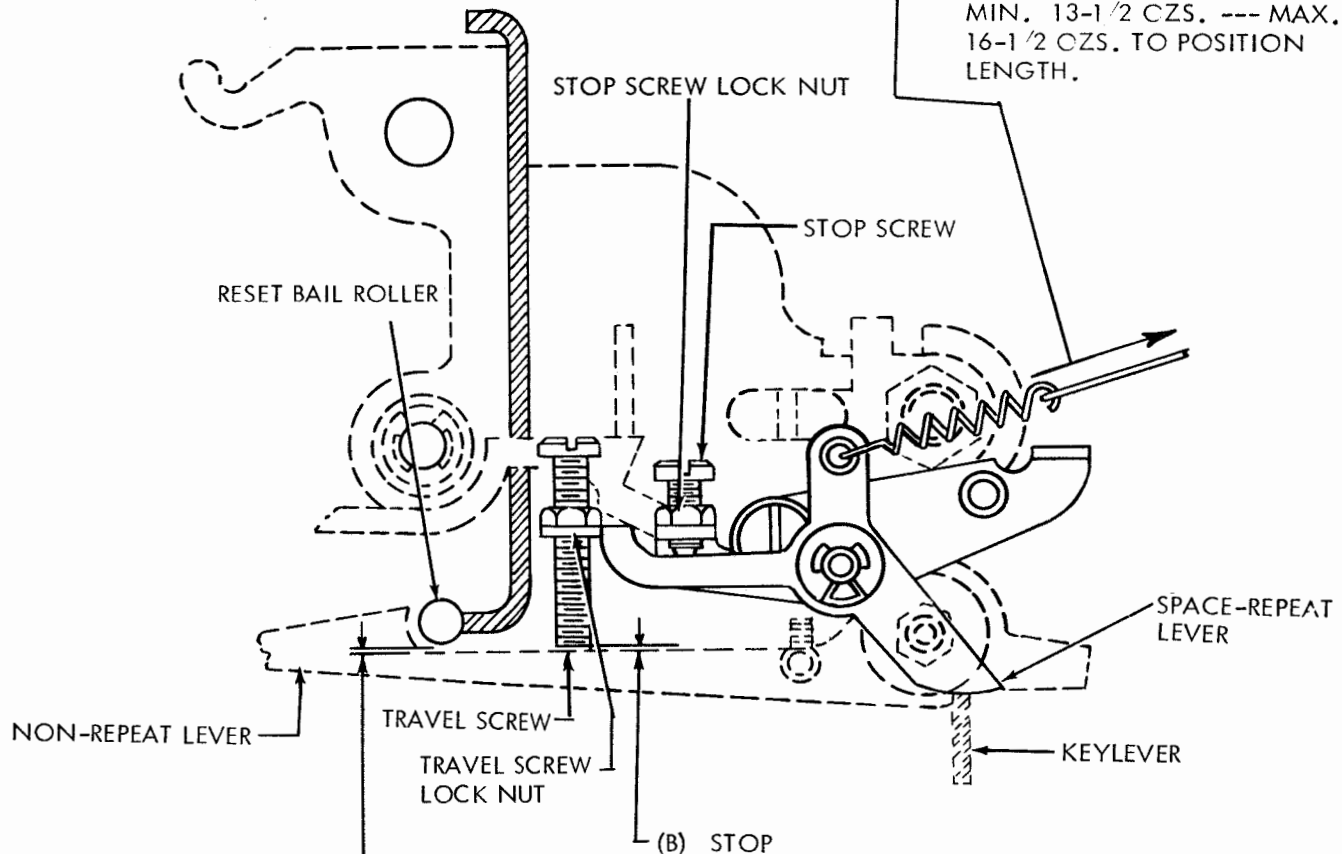
MAX. 1 OZ.

TO MOVE EITHER LEVER.

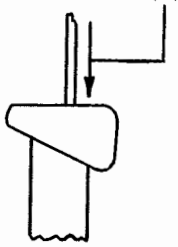




3.09 Repeat On Space Mechanism



NOTE: SPACE BAR TOUCH TO OBTAIN A REPEAT IS AFFECTED BY THIS ADJUSTMENT. TO GET A LIGHTER TOUCH, ADJUST TO MAXIMUM LIMIT. TO OBTAIN A HEAVIER TOUCH ADJUST TO THE MINIMUM LIMIT.



(D) SPACE BAR

(1) REQUIREMENT (SINGLE SPACE)
NORMAL KEY TOP PRESSURE TO TRANSMIT SINGLE SPACE

(2) REQUIREMENT (REPEAT SPACE)
SPACE BAR FULLY DEPRESSED AND HELD DOWN TO EFFECT CONTINUCUS SPACE TRANSMISSION.

3.10 Time Delay Mechanism

TIME DELAY SWITCH POSITION

REQUIREMENT

CONTACT PAWL NOT BLOCKED BY LATCH LEVER AND ON HIGH PART OF THE RATCHET WHEEL. SOME CLEARANCE BETWEEN CONTACT PAWL AND SWITCH PLUNGER WHEN PLAY IN RATCHET WHEELS IS TAKEN UP IN DOWNWARD DIRECTION MAX. 0.010 INCH

TO ADJUST

POSITION THE SWITCH WITH THE TWO SWITCH MOUNTING SCREWS LOOSENED.

TIME DELAY RATCHET WHEEL TENSION

REQUIREMENT

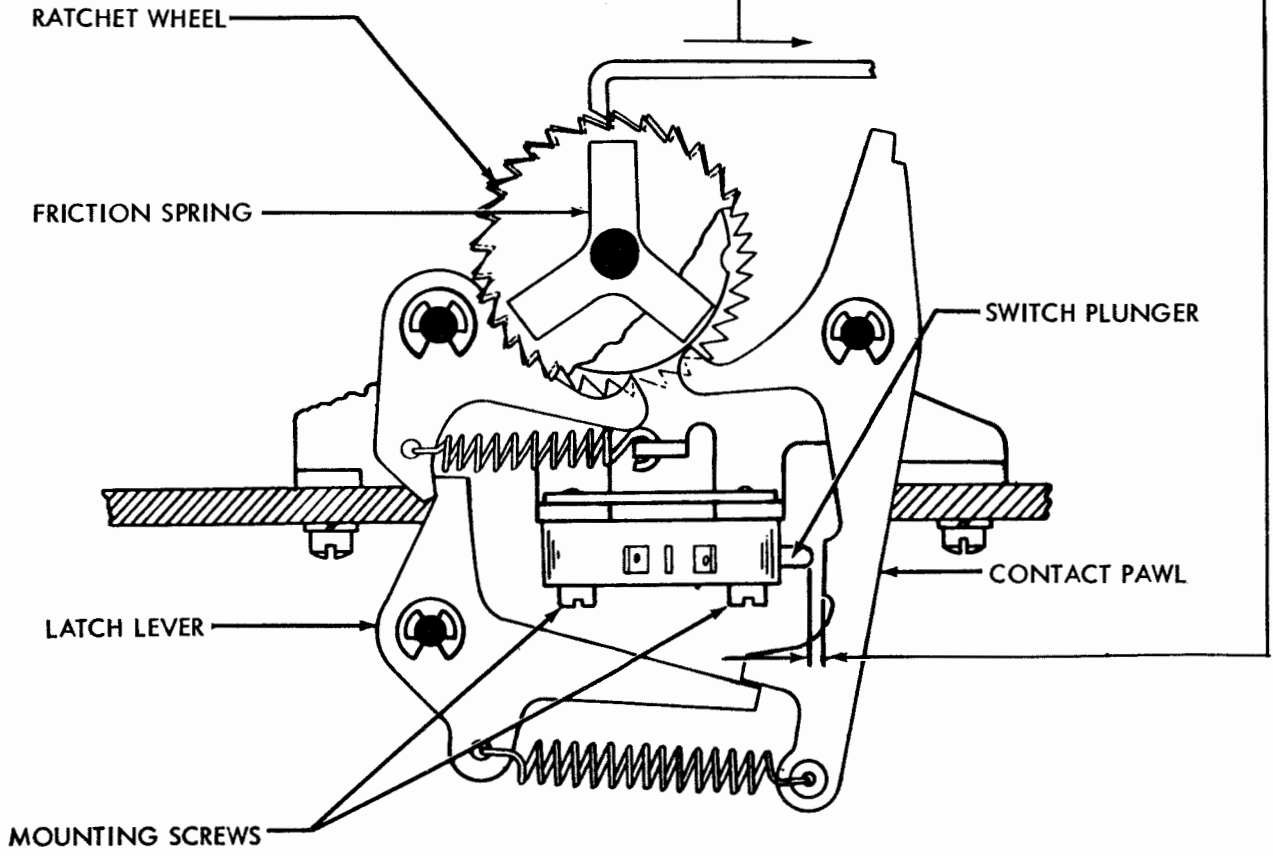
HOLD OFF ALL PAWLS.

MIN. 2 OZS.
MAX. 8 OZS.

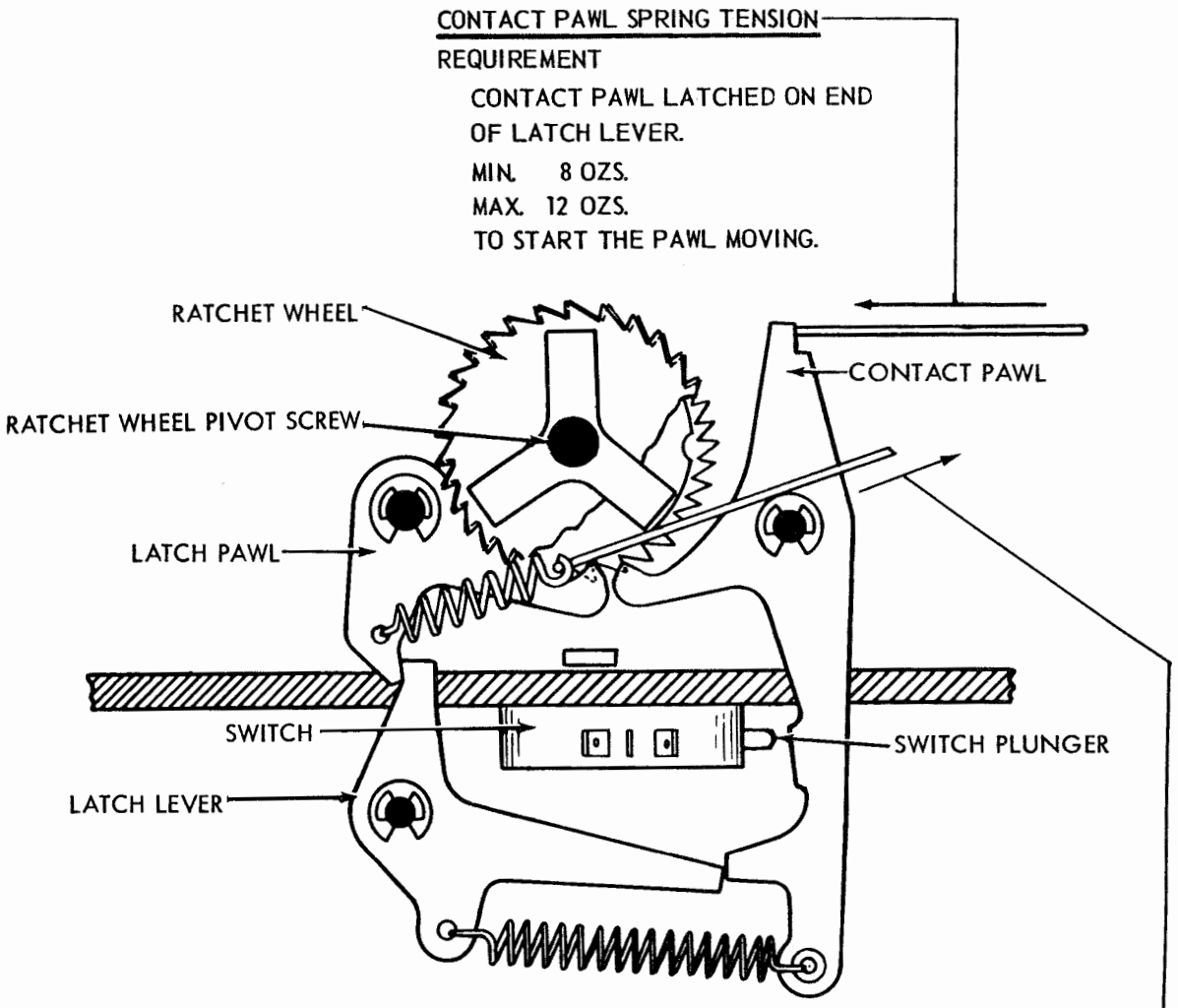
TO MOVE RATCHET WHEEL.

TO ADJUST

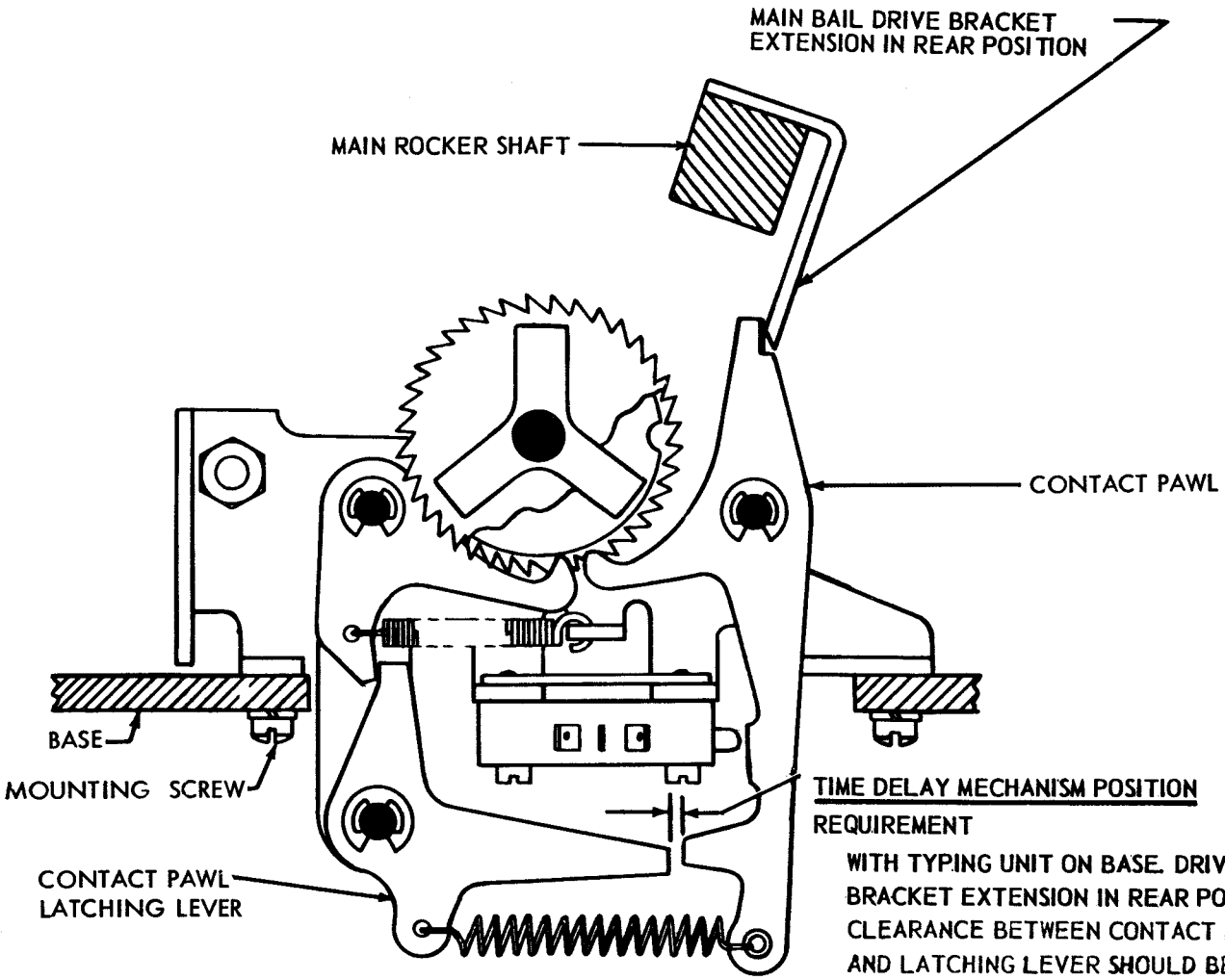
REMOVE AND BEND THE FRICTION SPRINGS.



3.11 Time Delay Mechanism continued

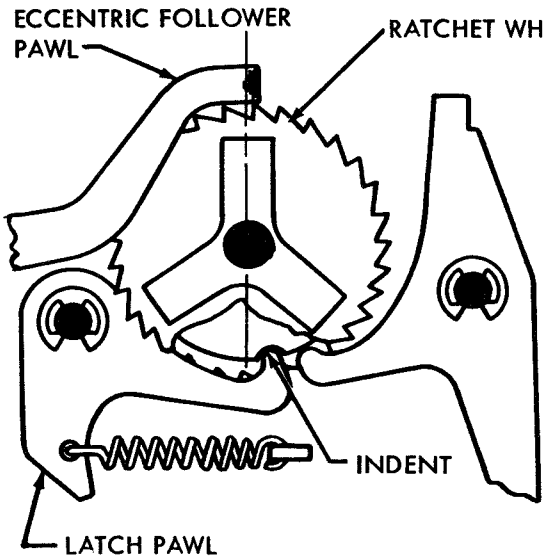


3.12 Time Delay Mechanism continued



TIME DELAY MECHANISM POSITION REQUIREMENT

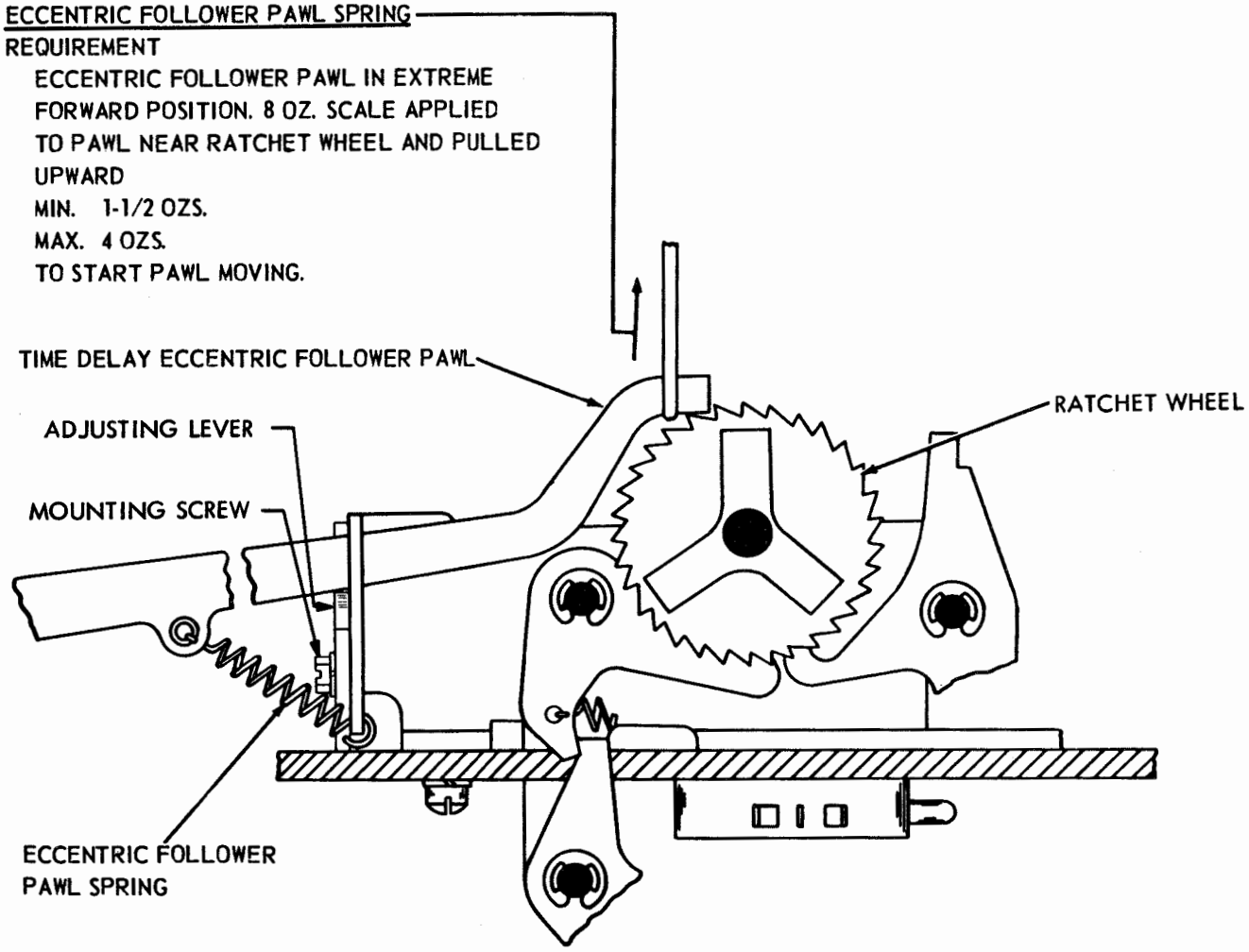
WITH TYPING UNIT ON BASE. DRIVE BRACKET EXTENSION IN REAR POSITION. CLEARANCE BETWEEN CONTACT PAWL AND LATCHING LEVER SHOULD BE MIN. 0.020 INCH.



TO ADJUST

REMOVE THE TYPING UNIT FROM THE BASE. LOOSEN THE TIME DELAY MOUNTING SCREWS. ROTATE THE RATCHET WHEELS UNTIL THE LATCH PAWL DROPS INTO THE INDENTS IN THE TWO RATCHET WHEELS. LIFT THE ECCENTRIC FOLLOWER PAWL UPWARD. TAKE UP THE PLAY BY PRESSING THE RATCHET WHEELS BACKWARD. WITH THE ECCENTRIC FOLLOWER PAWL AT THE END OF ITS EXTREME FORWARD TRAVEL, POSITION THE MECHANISM SO THAT THE POINT OF THE LOWER BEVELED EDGE OF THE FOLLOWER PAWL RESTS ON THE PEAK OF THE FIRST RATCHET-WHEEL TOOTH FORWARD OF A VERTICAL CENTERLINE THROUGH THE RATCHET WHEEL OR OVER TRAVELS THE PEAK BY NOT MORE THAN 0.010 INCH. RECHECK MINIMUM CLEARANCE OF 0.020 INCH WITH TYPER ON KEYBOARD BASE. IF NECESSARY, REFINE ADJUSTMENT

3.13 Time Delay Mechanism continued



TIME DELAY DISABLING DEVICE
REQUIREMENT
DISABLE THE TIME DELAY MECHANISM WHEN NOT REQUIRED.
TO ADJUST
LOOSEN THE ADJUSTING LEVER MOUNTING SCREW AND PRESS DOWNWARD ON THE LEVER TO RAISE ECCENTRIC FOLLOWER OUT OF ENGAGEMENT WITH ITS RATCHET WHEEL.

3.14 Synchronous Pulse Mechanism

MOUNTING BRACKET (A)

TO CHECK

WITH MAGNET NOT ATTRACTED AND CLUTCH TRIP BAR IN FURTHEST LEFT POSITION.

REQUIREMENT

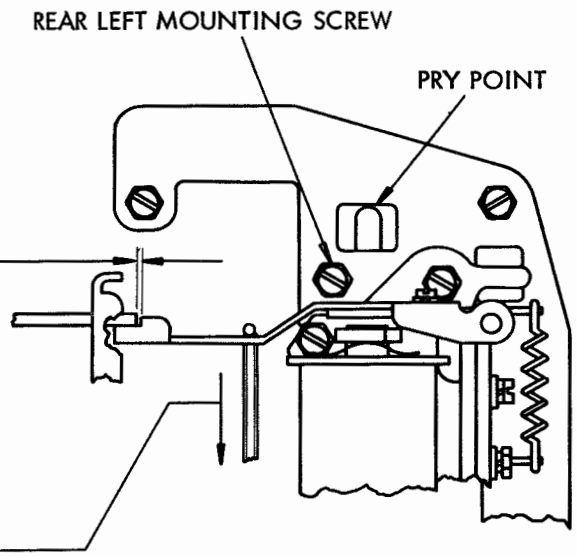
MIN. 0.005 INCH --- MAX. 0.015 INCH BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

TO ADJUST

POSITION MOUNTING BRACKET WITH THREE MOUNTING SCREWS LOOSE BY MEANS OF PRY POINT.

NOTE

TIGHTEN REAR LEFT MOUNTING SCREW AND MAKE MOUNTING BRACKET ADJUSTMENT (B).



MAGNET ARMATURE (D)

TO CHECK

CLUTCH TRIP BAR IN EXTREME LEFT POSITION. HOOK 32 OZ. SCALE TO ARMATURE LEVER AS SHOWN. MEASURE AT RIGHT ANGLE TO ARMATURE LEVER AS INDICATED.

REQUIREMENT

MIN. 3 OZS. --- MAX. 5 OZS.

TO PULL ARMATURE LEVER FROM CLUTCH TRIP BAR.

MOUNTING BRACKET (B)

TO CHECK

WITH ARMATURE LEVER HELD AGAINST MAGNET POLE FACE AND CLUTCH TRIP BAR IN FURTHEST RIGHT POSITION.

REQUIREMENT

MIN. 0.005 INCH --- MAX. 0.015 INCH BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

TO ADJUST

WITH RIGHT REAR AND LEFT FRONT MOUNTING BRACKET SCREWS LOOSE POSITION MOUNTING BRACKET BY MEANS OF PRY POINT.

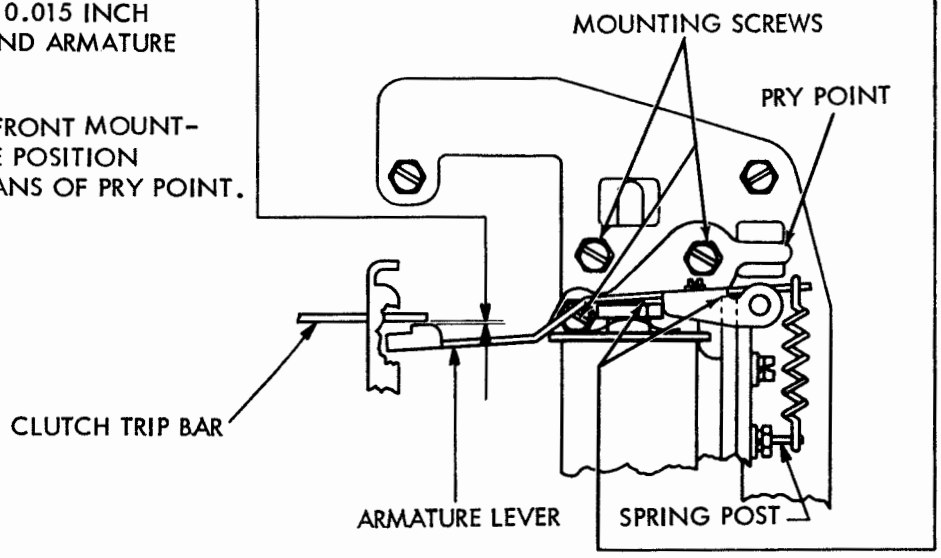
ARMATURE HINGE (C)

REQUIREMENT

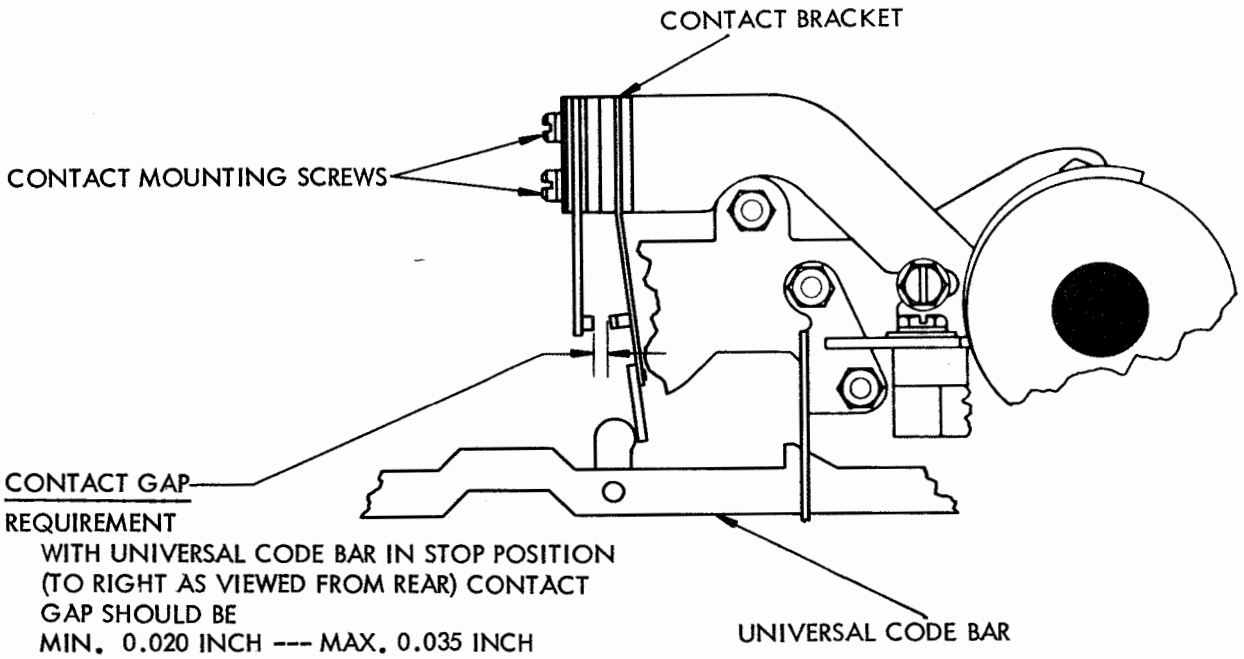
WITH ARMATURE IN ATTRACTED POSITION ARMATURE FLUSH WITH POLE FACE AND MAGNET BRACKET EXTENSION.

TO ADJUST

POSITION ARMATURE WITH HINGE BRACKET MOUNTING SCREW AND SPRING POST LOOSE.



3.15 Synchronous Pulse Mechanism continued



CONTACT GAP

REQUIREMENT

WITH UNIVERSAL CODE BAR IN STOP POSITION (TO RIGHT AS VIEWED FROM REAR) CONTACT GAP SHOULD BE

MIN. 0.020 INCH --- MAX. 0.035 INCH

TO ADJUST

POSITION CONTACT MOUNTING BRACKET WITH MOUNTING SCREWS LOOSE.

UNIVERSAL CODE BAR CONTACT

REQUIREMENT

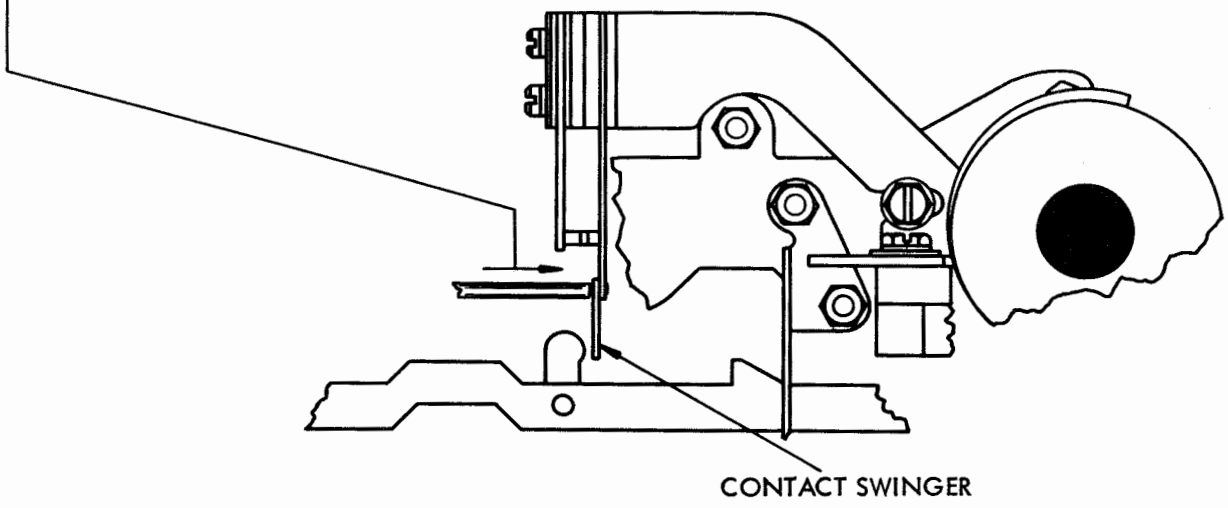
WITH UNIVERSAL CODE BAR IN OPERATED POSITION (TO THE LEFT AS VIEWED FROM REAR)

MIN. 3-1/2 OZS. --- MAX. 4-1/2 OZS.

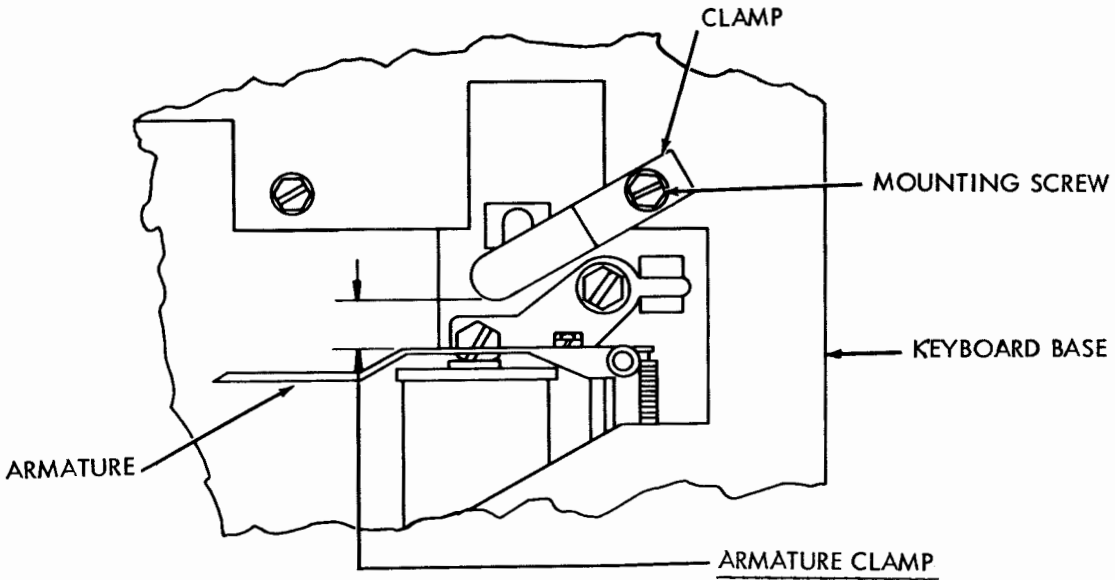
TO OPEN CONTACTS.

TO ADJUST

BEND CONTACT SWINGER.



3.16 Synchronous Pulse Mechanism continued



NOTE: TO MAKE KEYBOARD OPERABLE WITHOUT ELECTRICAL PULSE TO OPERATE STEPPING MAGNET LOOSEN CLAMP MOUNTING SCREW AND ROTATE CLAMP COUNTERCLOCKWISE TO HOLD THE ARMATURE IN THE OPERATING POSITION. MAINTAIN 0.005 INCH TO 0.015 INCH CLEARANCE BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

REQUIREMENT

WITH ARMATURE OPERATED, CLEARANCE BETWEEN ARMATURE CLAMP AND ARMATURE APPROX. 3/8 INCH

TO ADJUST

POSITION CLAMP WITH ITS MOUNTING SCREW LOOSENED.

3.17 Power Backspace Switch

POWER BACKSPACE SWITCH POSITION

NOTE

THIS IS NOT A ROUTINE ADJUSTMENT AND SHOULD BE CHECKED AND MADE ONLY IF TROUBLE IN ITS OPERATION IS ENCOUNTERED OR PARTS ARE DISASSEMBLED AND REPLACED.

(1) REQUIREMENT

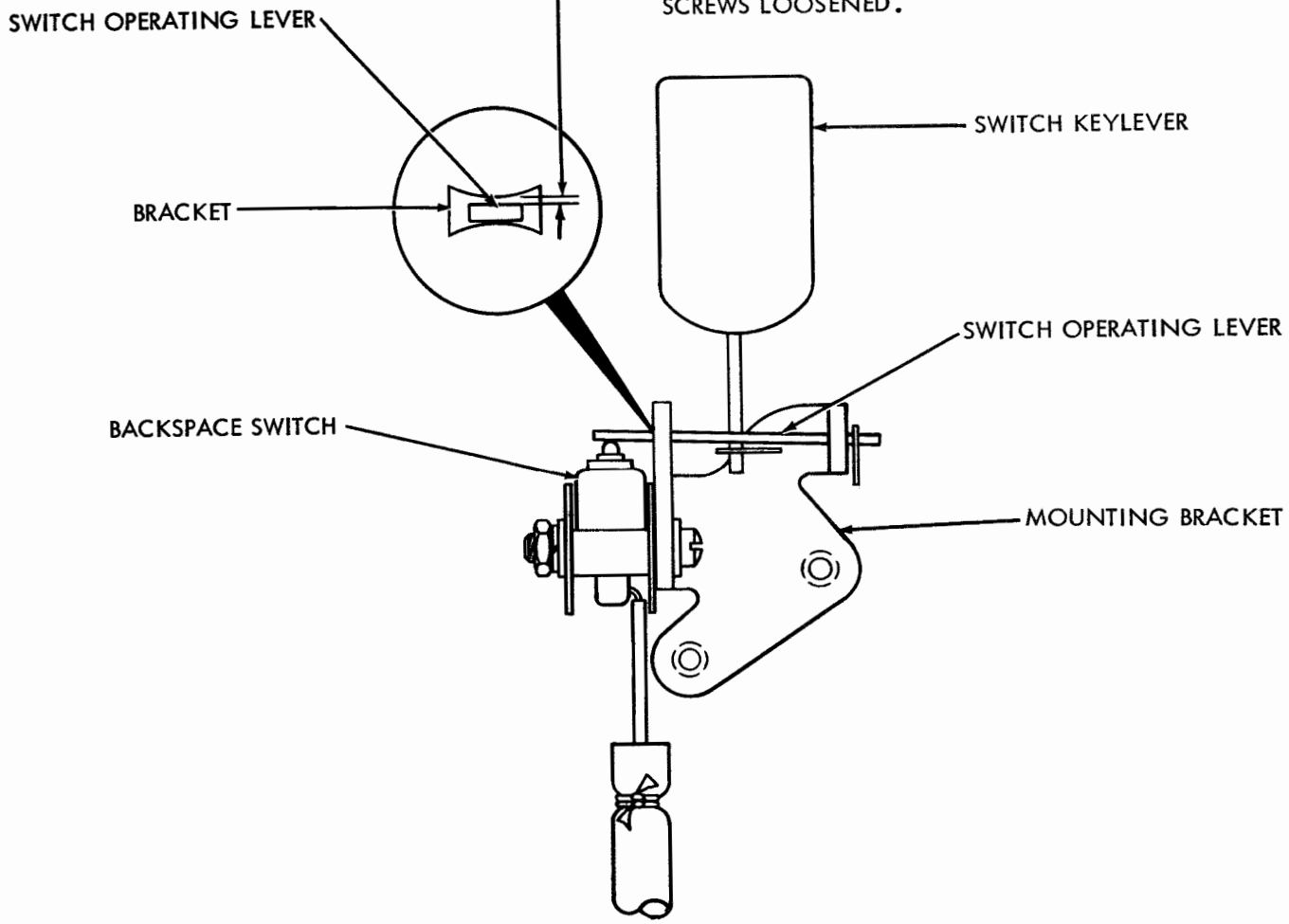
WITH SWITCH OPERATING LEVER HELD PARALLEL TO THE TOP OF ITS MOUNTING BRACKET AND DEPRESSED TO LIMIT OF ITS TRAVEL, THE SWITCH SHALL BE OPERATED.

(2) REQUIREMENT

WITH SWITCH IN UNOPERATED CONDITION AND OPERATING LEVER HELD PARALLEL TO TOP OF ITS MOUNTING BRACKET, THERE SHOULD BE SOME CLEARANCE BETWEEN THE OPERATING LEVER AND TOP OF THE CURVED SLOT IN THE BRACKET.

TO ADJUST

POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED.



3.18 Remote Control Gear Shift Mechanism

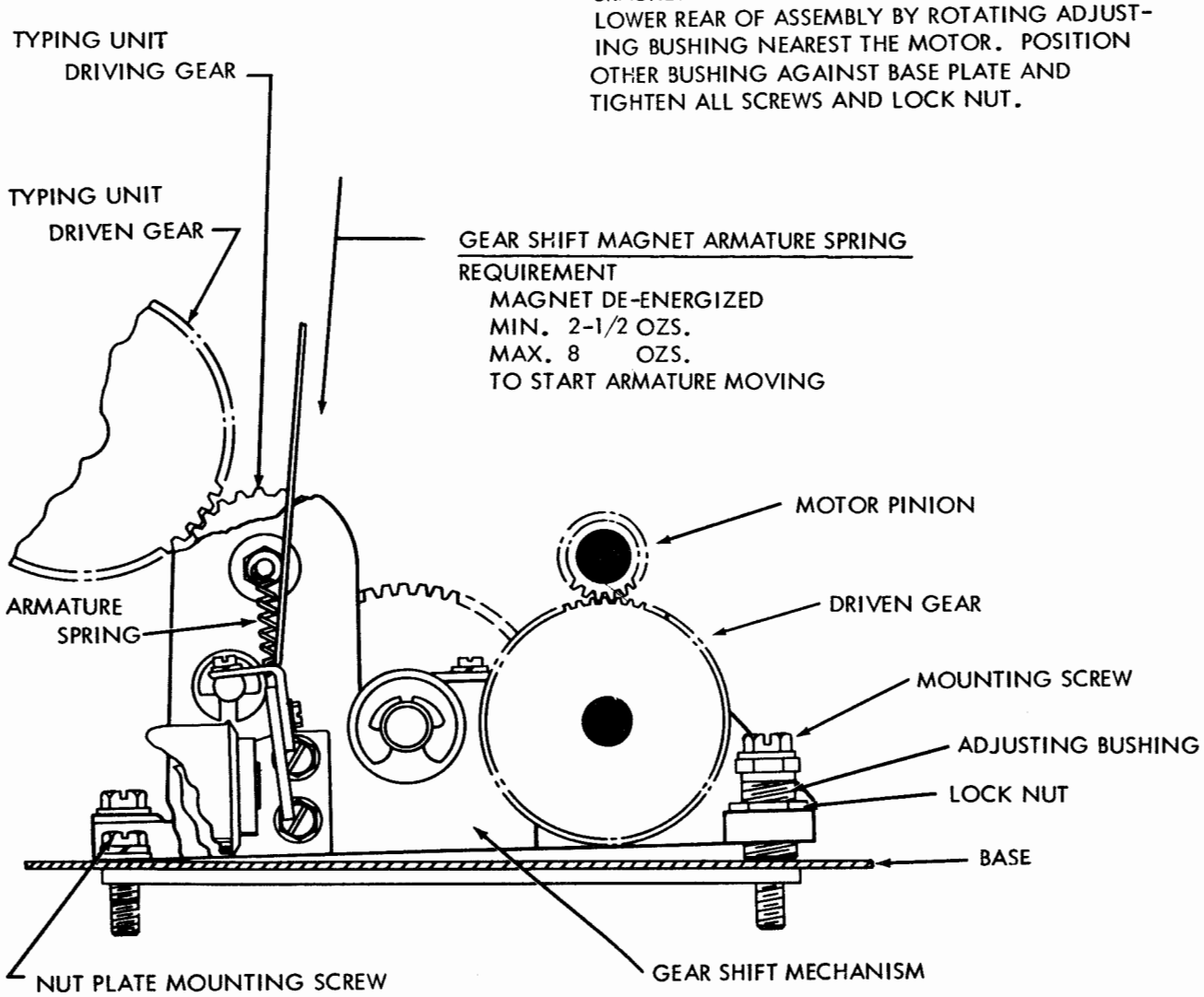
GEAR SHIFT MECHANISM

REQUIREMENT

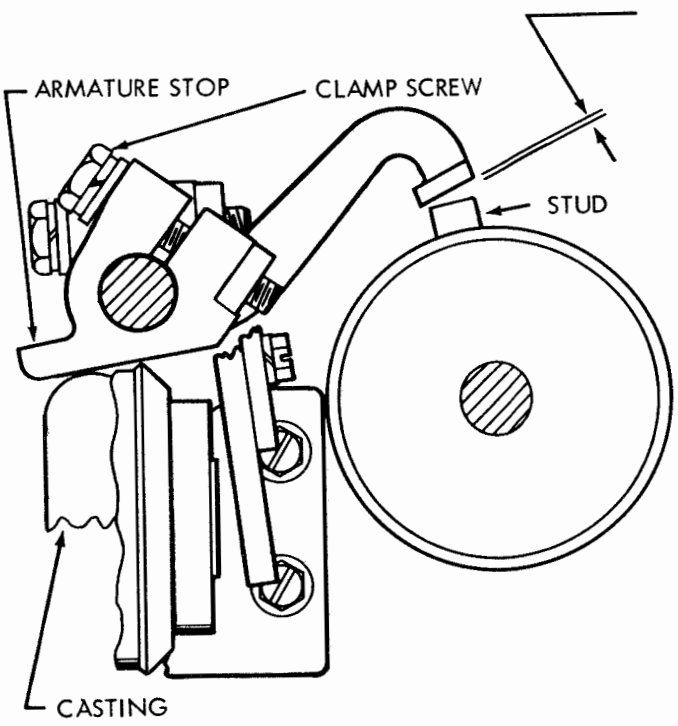
THE BACKLASH BETWEEN THE MOTOR PINION AND ITS DRIVEN GEAR AND BETWEEN THE TYPING UNIT DRIVEN GEAR AND ITS DRIVING GEAR SHOULD BE SOME --- MAX. 0.005 INCH

TO ADJUST

LOOSEN THE FOUR SCREWS WHICH MOUNT THE ASSEMBLY BRACKET TO BASE. LOOSEN THE NUT-PLATE MOUNTING SCREW AT FRONT OF ASSEMBLY BRACKET. LOOSEN LOCK NUTS ON ADJUSTING BUSHINGS. POSITION GEAR SHIFT BRACKET ASSEMBLY FRONT TO REAR. RAISE OR LOWER REAR OF ASSEMBLY BY ROTATING ADJUSTING BUSHING NEAREST THE MOTOR. POSITION OTHER BUSHING AGAINST BASE PLATE AND TIGHTEN ALL SCREWS AND LOCK NUT.



3.19 Remote Control Gear Shift Mechanism continued



ARMATURE STOP

REQUIREMENT

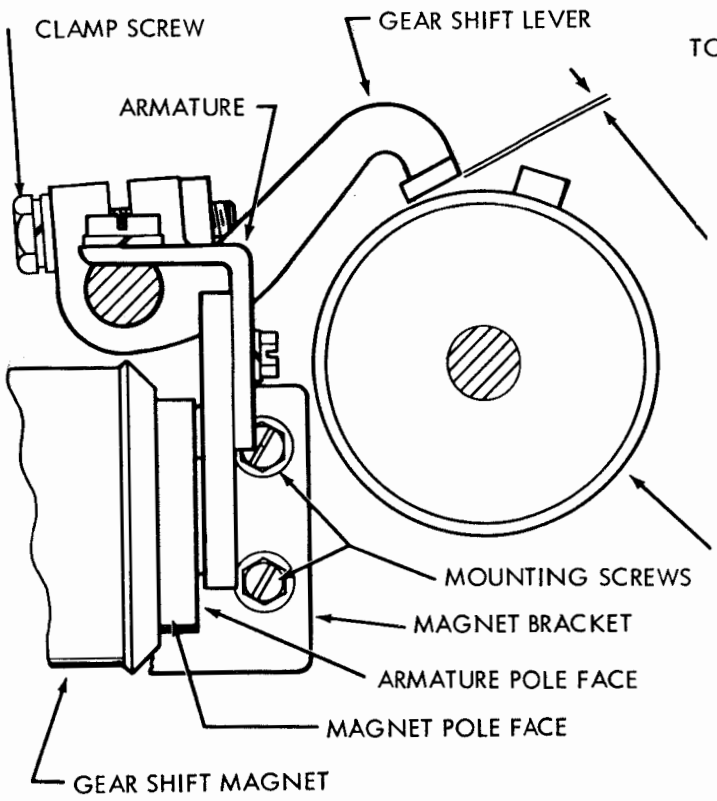
WITH ARMATURE IN ITS OPEN POSITION AND THE ARMATURE STOP AGAINST THE CASTING, CLEARANCE BETWEEN GEAR SHIFT LEVER AND STUD ON SLEEVE

MIN. 0.010 INCH

MAX. 0.020 INCH

TO ADJUST

HOLD GEAR SHIFT LEVER IN POSITION AND POSITION ARMATURE STOP WITH ITS CLAMP SCREW LOOSENED UNTIL REQUIREMENT IS MET.



GEAR SHIFT MAGNET

REQUIREMENT

THE POLE FACE OF THE ARMATURE SHOULD MEET THE POLE FACE OF THE MAGNET SQUARELY

TO ADJUST

POSITION ARMATURE WITH GEAR SHIFT LEVER CLAMP SCREW LOOSENED AND POSITION MAGNET BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

CLUTCH STOP LEVER

REQUIREMENT

ARMATURE RESTING AGAINST MAGNET POLE FACE, CLEARANCE BETWEEN GEAR SHIFT LEVER AND THE SLEEVE

MIN. 0.002 INCH

MAX. 0.010 INCH

TO ADJUST

POSITION GEAR SHIFT LEVER WITH ITS CLAMP SCREW LOOSENED.

3.20 Perforator Motor

PERFORATOR MOTOR PINION AND DRIVEN GEAR MESH

REQUIREMENT

MIN. 0.004 INCH

MAX. 0.008 INCH

BACKLASH BETWEEN MOTOR PINION AND DRIVEN GEAR AT POINT OF MINIMUM BACKLASH.

TO CHECK

(1) LOOSEN THE FOUR MOTOR MOUNTING SCREWS.

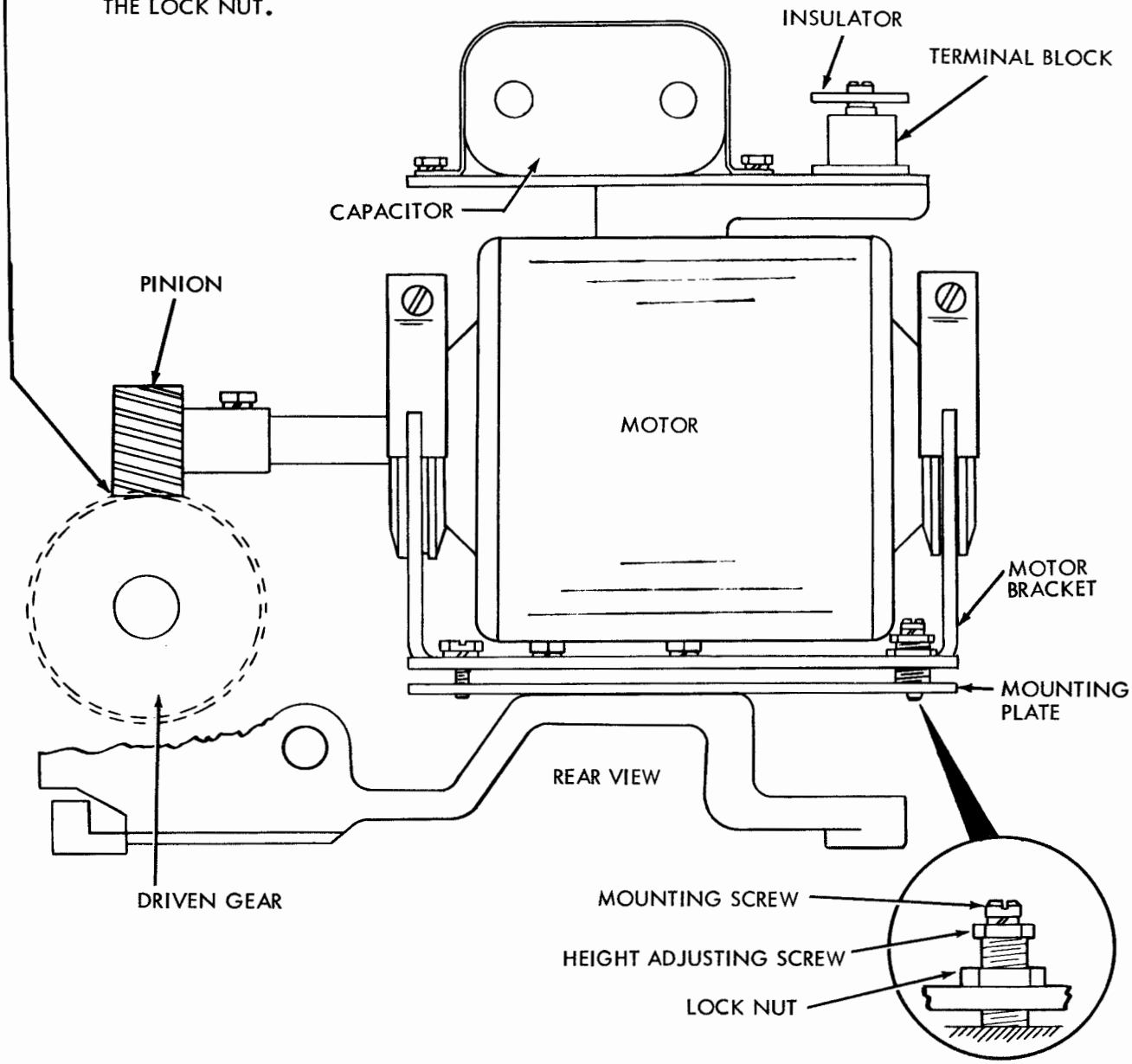
(2) LOOSEN THE TWO NUTS WHICH LOCK THE ADJUSTING BUSHINGS AT THE RIGHT END OF THE MOTOR (REAR VIEW)

TO ADJUST

(1) BACK OFF A FEW TURNS ON THE REAR ADJUSTING BUSHING TO PROVIDE ENOUGH CLEARANCE TO MAKE THE ADJUSTMENT.

(2) BY MEANS OF THE FRONT ADJUSTING BUSHING, ADJUST THE MOTOR HEIGHT TO MEET REQUIREMENT AT THE PINION AND DRIVEN GEARS. TIGHTEN THE LOCK NUT.

(3) TURN THE REAR ADJUSTING BUSHING UNTIL IT TOUCHES THE MOUNTING PLATE. TIGHTEN THE LOCK NUT.



3.21 Universal Keyboard Switch

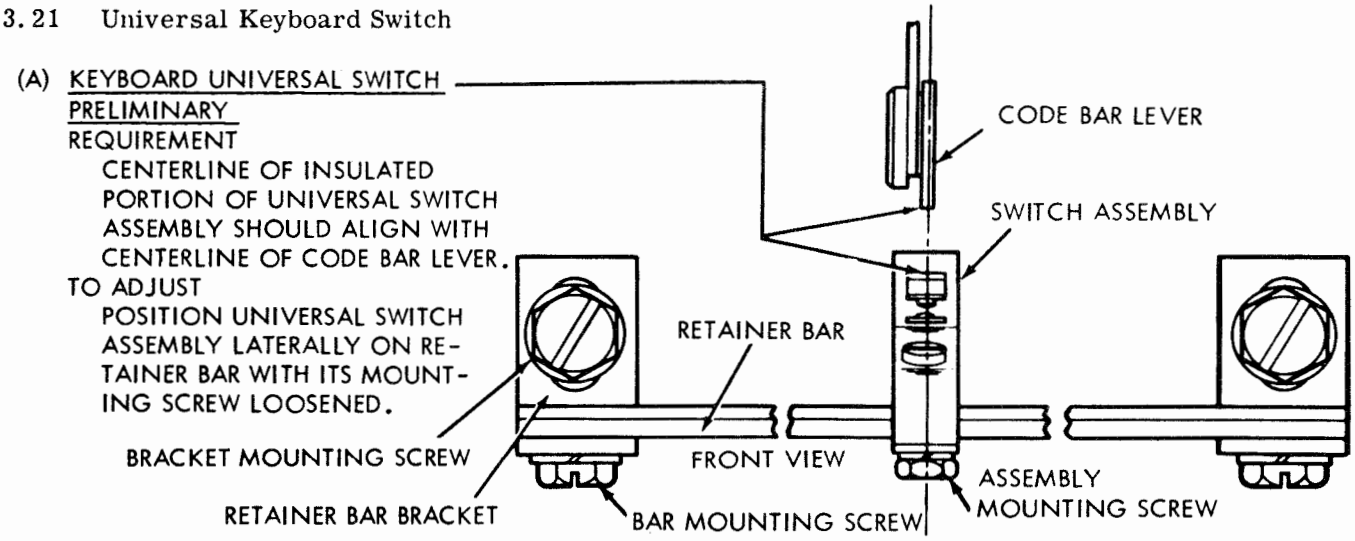
(A) KEYBOARD UNIVERSAL SWITCH

PRELIMINARY REQUIREMENT

CENTERLINE OF INSULATED PORTION OF UNIVERSAL SWITCH ASSEMBLY SHOULD ALIGN WITH CENTERLINE OF CODE BAR LEVER.

TO ADJUST

POSITION UNIVERSAL SWITCH ASSEMBLY LATERALLY ON RETAINER BAR WITH ITS MOUNTING SCREW LOOSENED.



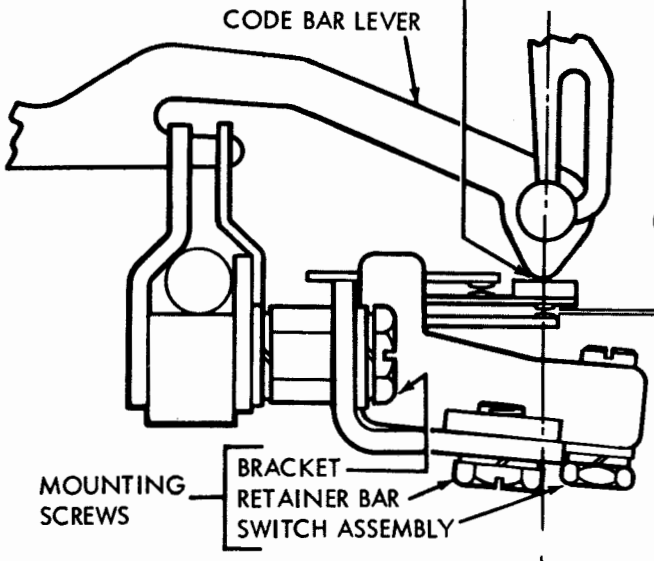
(B) KEYBOARD UNIVERSAL SWITCH - HORIZONTAL

REQUIREMENT

CENTERLINE OF INSULATED PORTION OF UNIVERSAL SWITCH ASSEMBLY SHOULD ALIGN WITH CENTERLINE OF LOWERMOST PORTION OF CODE BAR LEVER.

TO ADJUST

POSITION RETAINER BAR FORWARD OR REARWARD ON ITS BRACKETS WITH ITS MOUNTING SCREWS LOOSENED.



(C) KEYBOARD UNIVERSAL SWITCH - VERTICAL

REQUIREMENT

1. CLEARANCE BETWEEN CENTER AND LOWER CONTACT POINTS SHOULD BE MIN. 0.015 INCH --- MAX. 0.025 INCH

TO CHECK

PULL CONTACT FUNCTION LEVER DOWN AGAINST CODE BAR BASKET AT REAR OF BASKET AND FRONT OF CONTACT LEVER TOUCHING CENTER OF CONTACT INSULATOR

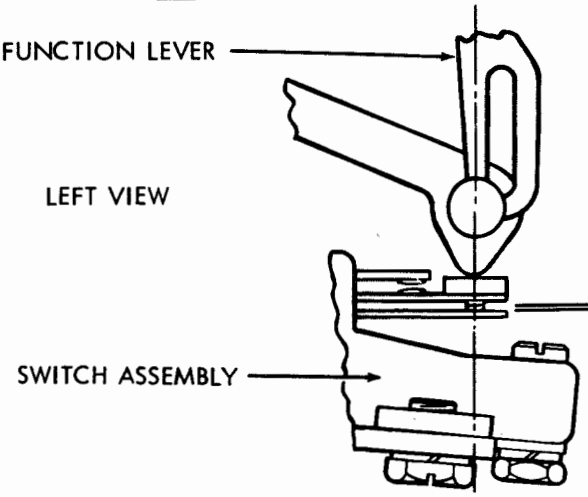
TO ADJUST

BEND UPPER CONTACT SPRING

2. CLEARANCE BETWEEN CENTER AND LOWER CONTACT POINTS SHOULD BE AT LEAST 0.010 INCH

TO CHECK

DEPRESS CONTACT OPERATING KEY WITH 16 OZS. PRESSURE.



3. CENTER AND LOWER CONTACTS SHOULD CLOSE WITH SOME OVER-TRAVEL

TO CHECK

FULLY DEPRESS CONTACT OPERATING KEY

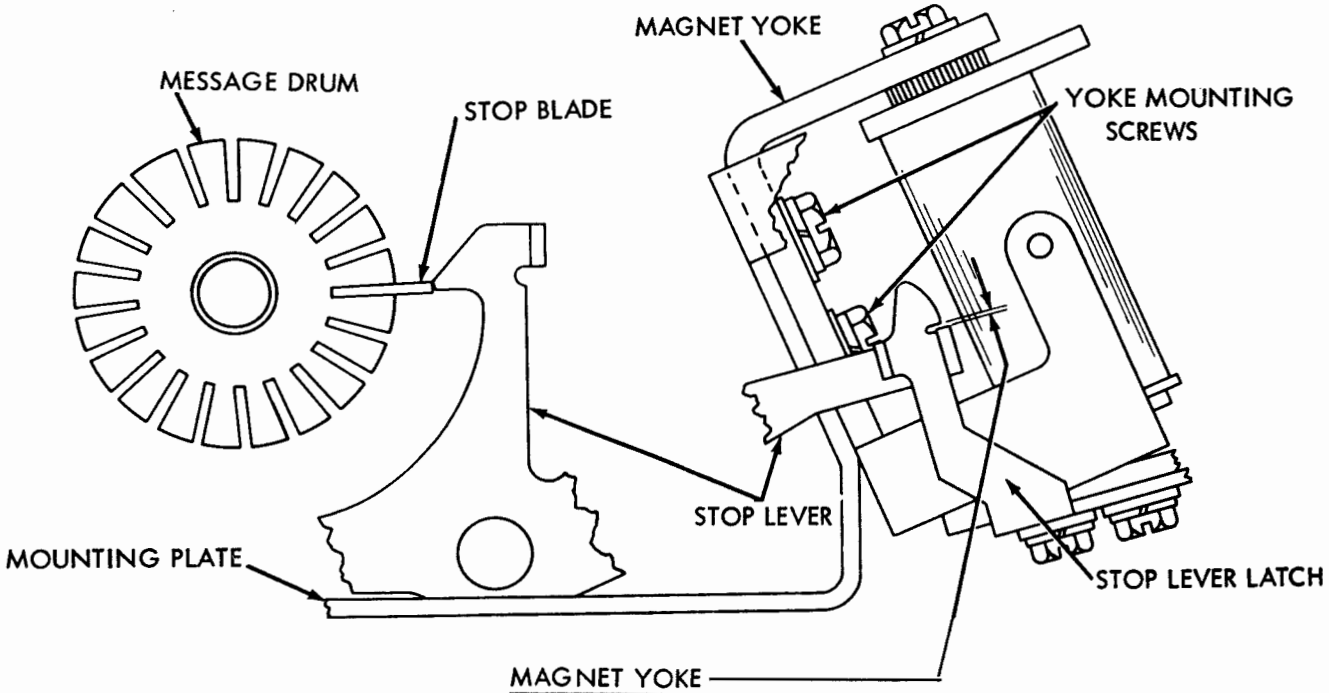
TO ADJUST

POSITION COMPLETE ASSEMBLY WITH RIGHT AND LEFT BRACKET MOUNTING SCREWS LOOSENED.

3.22 Answer-Back Mechanism

NOTE 1: ADJUSTMENTS ON THIS PAGE SHOULD BE MADE WITH THE ANSWER-BACK MECHANISM REMOVED FROM THE KEYBOARD.

NOTE 2: FOR "HERE IS" KEYLEVER SWITCH REQUIREMENTS SEE UNIVERSAL KEYBOARD SWITCH ADJUSTMENTS, PAGE 47.



MAGNET YOKE

REQUIREMENT

CLEARANCE BETWEEN LATCHING SURFACES OF STOP LEVER EXTENSION AND STOP LEVER LATCH SHOULD BE

MIN. 0.005 INCH

MAX. 0.015 INCH

TO CHECK

HOLD TIP OF STOP LEVER AGAINST STOP BLADE.

TO ADJUST

POSITION MAGNET YOKE WITH ITS TWO MOUNTING SCREWS LOOSENED.

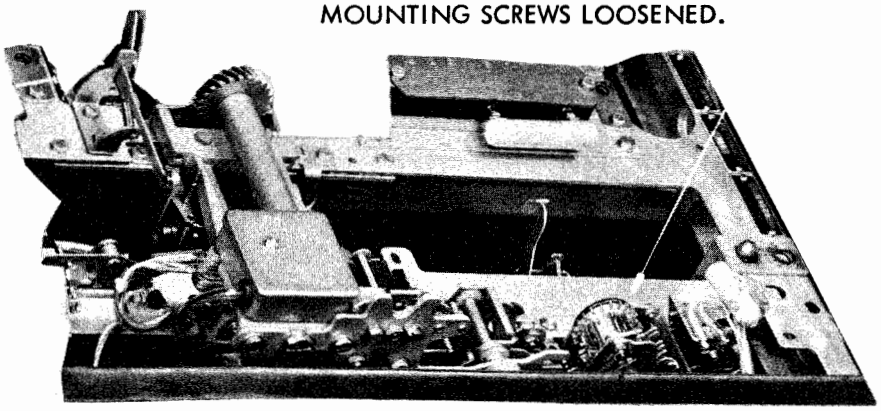
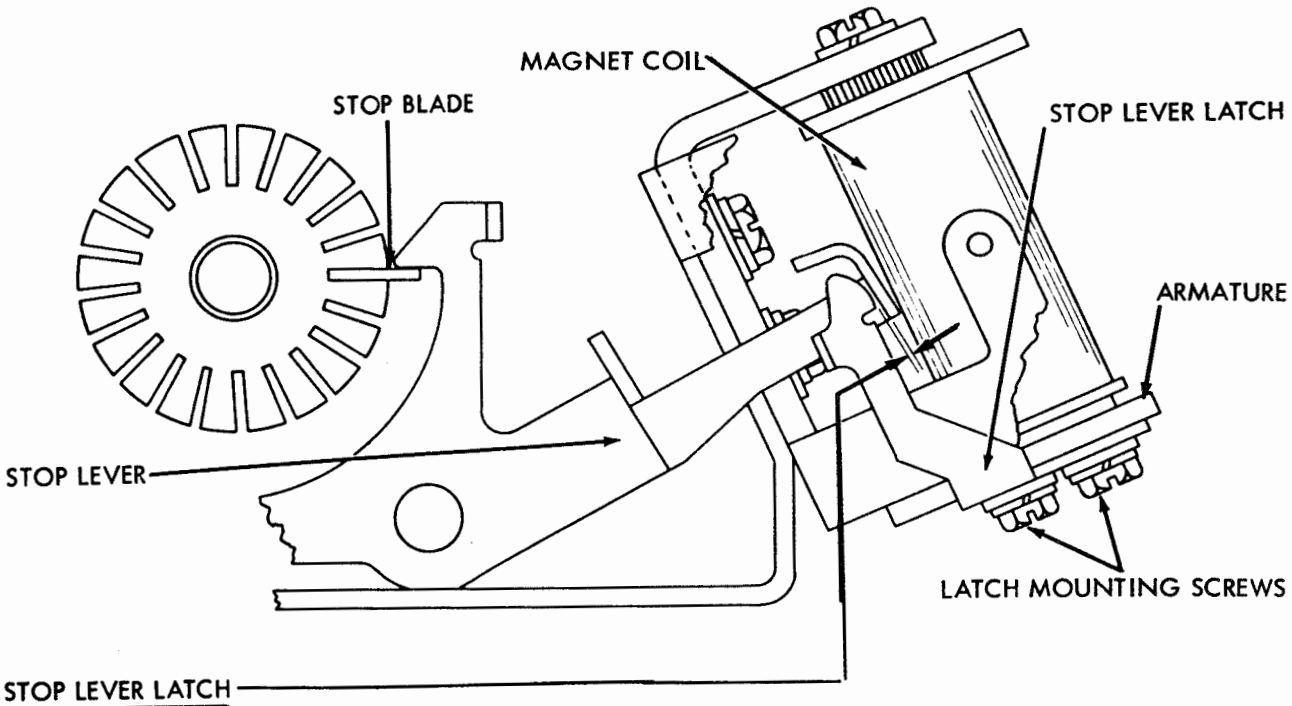


Figure 2-28 — Answer-Back Mechanism

3.23 Answer-Back Mechanism continued



STOP LEVER LATCH

(1) REQUIREMENT
CLEARANCE BETWEEN STOP LEVER AND STOP LEVER LATCH SHOULD BE
MIN. 0.002 INCH
MAX. 0.007 INCH
TO CHECK
HOLD ARMATURE AGAINST THE MAGNET CORE AND THE STOP LEVER IN ITS MAXIMUM COUNTER-CLOCKWISE POSITION.

(2) REQUIREMENT
CLEARANCE BETWEEN STOP LEVER AND STOP LEVER LATCH THROUGHOUT A COMPLETE TRAVEL OF THE STOP LEVER
MIN. 0.002 INCH
TO CHECK
HOLD ARMATURE AGAINST MAGNET CORE.
TO ADJUST
POSITION STOP LEVER LATCH WITH ITS TWO MOUNTING SCREWS LOOSENED.

3.24 Answer-Back Mechanism continued

NOTE: TO FACILITATE MAKING THIS ADJUSTMENT, REMOVE MESSAGE DRUM AND DRIVE PLATE ASSEMBLY FROM MECHANISM.

(B) SENSING LEVER SPRINGS

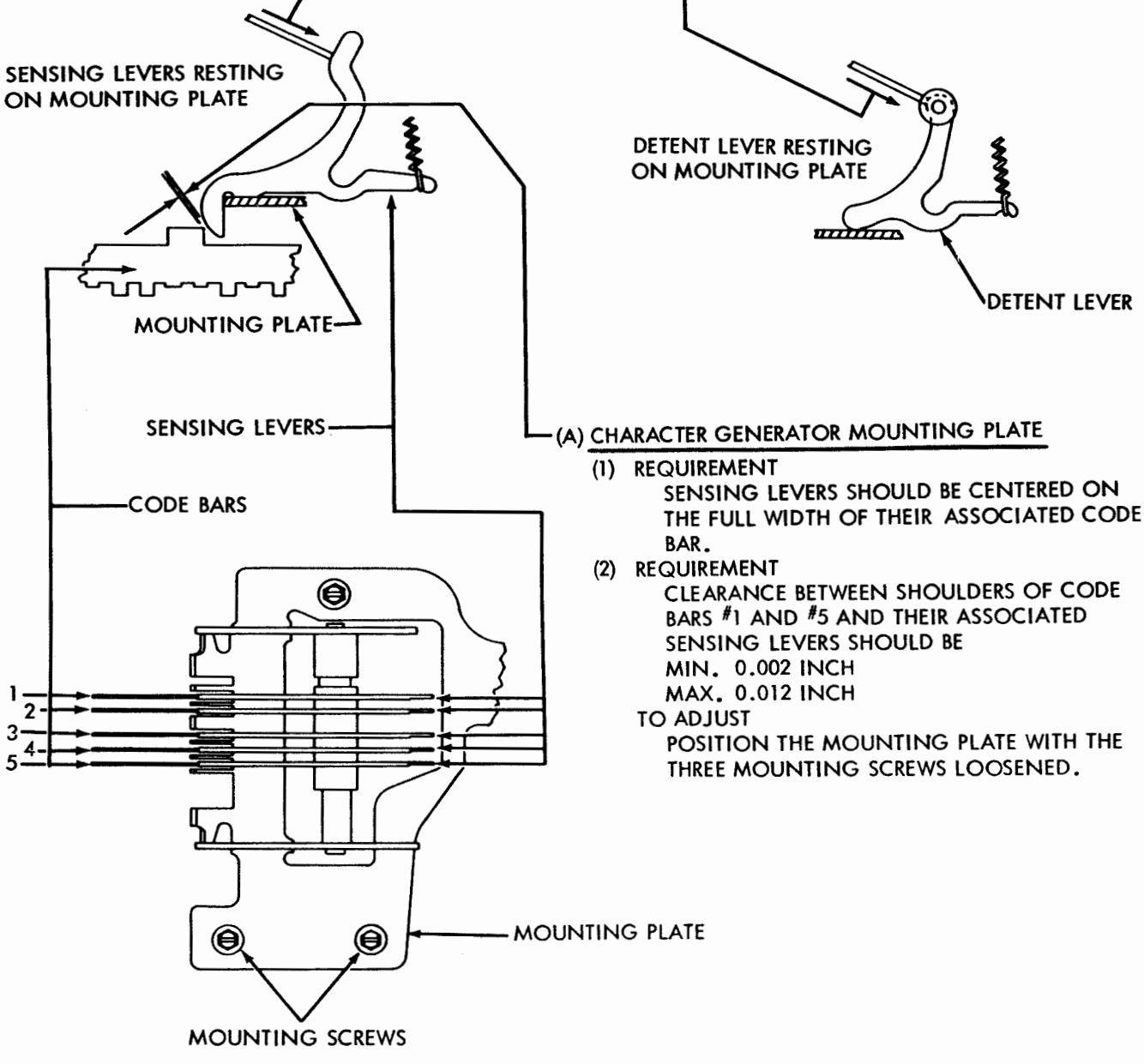
REQUIREMENT

WITH THE SIGNAL GENERATOR CLUTCH IN STOP POSITION AND THE MESSAGE DRUM REMOVED IT SHOULD REQUIRE
MIN. 1/4 OUNCE
MAX. 1-1/4 OUNCES
TO START EACH SENSING LEVER MOVING.

(C) DETENT LEVER SPRING

REQUIREMENT

WITH THE SIGNAL GENERATOR CLUTCH IN STOP POSITION AND THE MESSAGE DRUM REMOVED, IT SHOULD REQUIRE
MIN. 22 OUNCES
MAX. 26 OUNCES
TO START THE DETENT LEVER MOVING.



(A) CHARACTER GENERATOR MOUNTING PLATE

(1) REQUIREMENT

SENSING LEVERS SHOULD BE CENTERED ON THE FULL WIDTH OF THEIR ASSOCIATED CODE BAR.

(2) REQUIREMENT

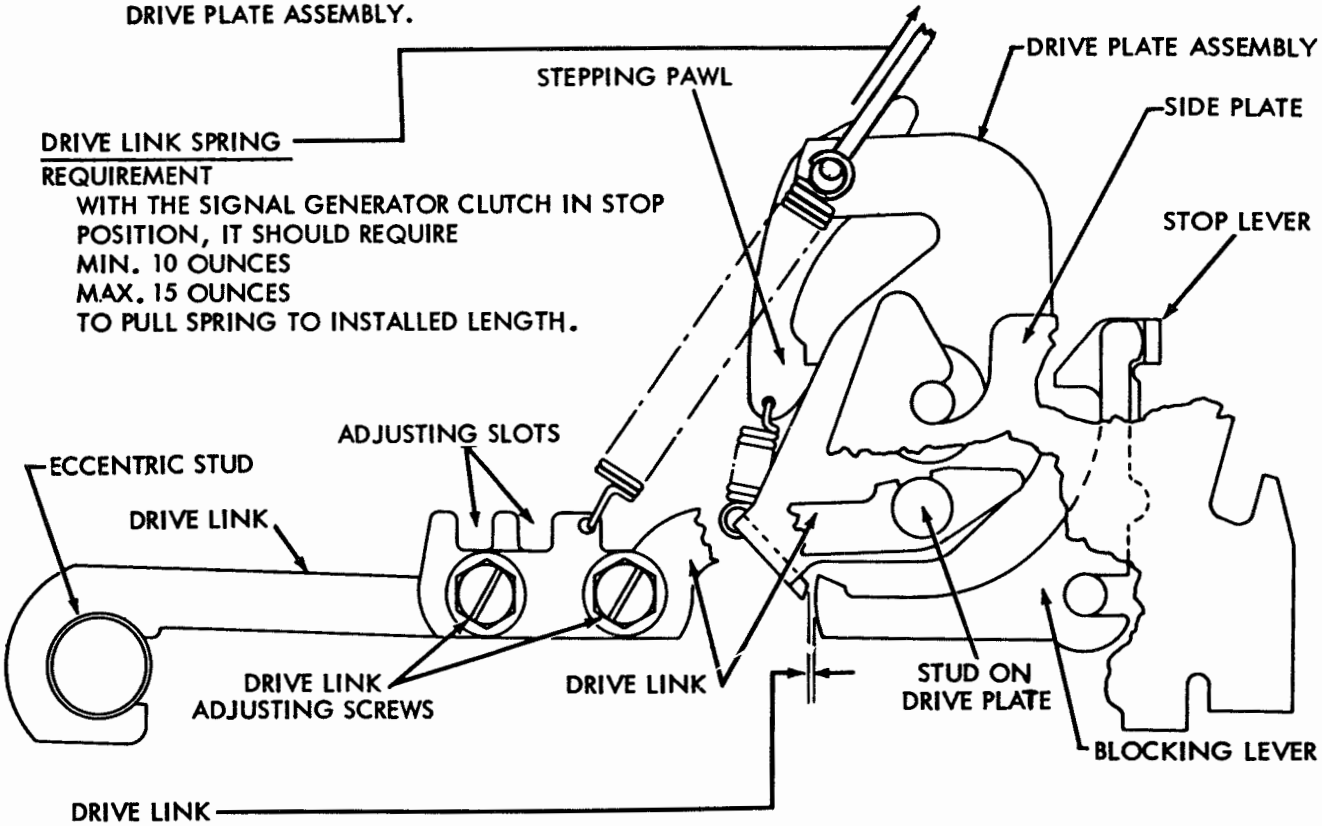
CLEARANCE BETWEEN SHOULDERS OF CODE BARS #1 AND #5 AND THEIR ASSOCIATED SENSING LEVERS SHOULD BE
MIN. 0.002 INCH
MAX. 0.012 INCH

TO ADJUST

POSITION THE MOUNTING PLATE WITH THE THREE MOUNTING SCREWS LOOSENED.

3.25 Answer-Back Mechanism continued

PERFORM THIS ADJUSTMENT BEFORE FINAL INSTALLATION OF MESSAGE DRUM AND DRIVE PLATE ASSEMBLY.



DRIVE LINK SPRING
REQUIREMENT
WITH THE SIGNAL GENERATOR CLUTCH IN STOP POSITION, IT SHOULD REQUIRE
MIN. 10 OUNCES
MAX. 15 OUNCES
TO PULL SPRING TO INSTALLED LENGTH.

DRIVE LINK
REQUIREMENT
CLEARANCE BETWEEN DRIVE PLATE EXTENSION AND BLOCKING LEVER SHOULD BE
MIN. 0.002 INCH
MAX. 0.007 INCH
TO CHECK
SIGNAL GENERATOR CAM ECCENTRIC AND ARM HOLDING CODE BAR BAIL IN EXTREME RESET POSITION TO THE LEFT.
TO ADJUST
LOOSEN THE TWO ADJUSTING SCREWS AND POSITION THE TWO DRIVE LINKS BY MEANS OF THE ADJUSTING SLOTS.

NOTE: THE STANDARD KEYBOARD ADJUSTMENTS LISTED BELOW SHOULD BE CHECKED DURING INSTALLATION OF THE ANSWER-BACK MECHANISM.

A. CODE BAR AND CODE LEVER CLEARANCE, PAGE 4.
B. CODE BAR BAIL, PAGE 11.
C. CODE BAR BAIL AND NON-REPEAT LEVER CLEARANCE, PAGE 11.
D. UNIVERSAL BAIL LATCH LEVER, PAGE 13.
E. UNIVERSAL BAIL EXTENSION, PAGE 13.

3. 26 Answer-Back Mechanism continued

THE FOLLOWING FINAL ADJUSTMENTS FOR THE ANSWER-BACK MECHANISM SHOULD BE MADE AFTER INSTALLATION OF THE MECHANISM ON THE KEYBOARD.

STEPPING PAWL

REQUIREMENT

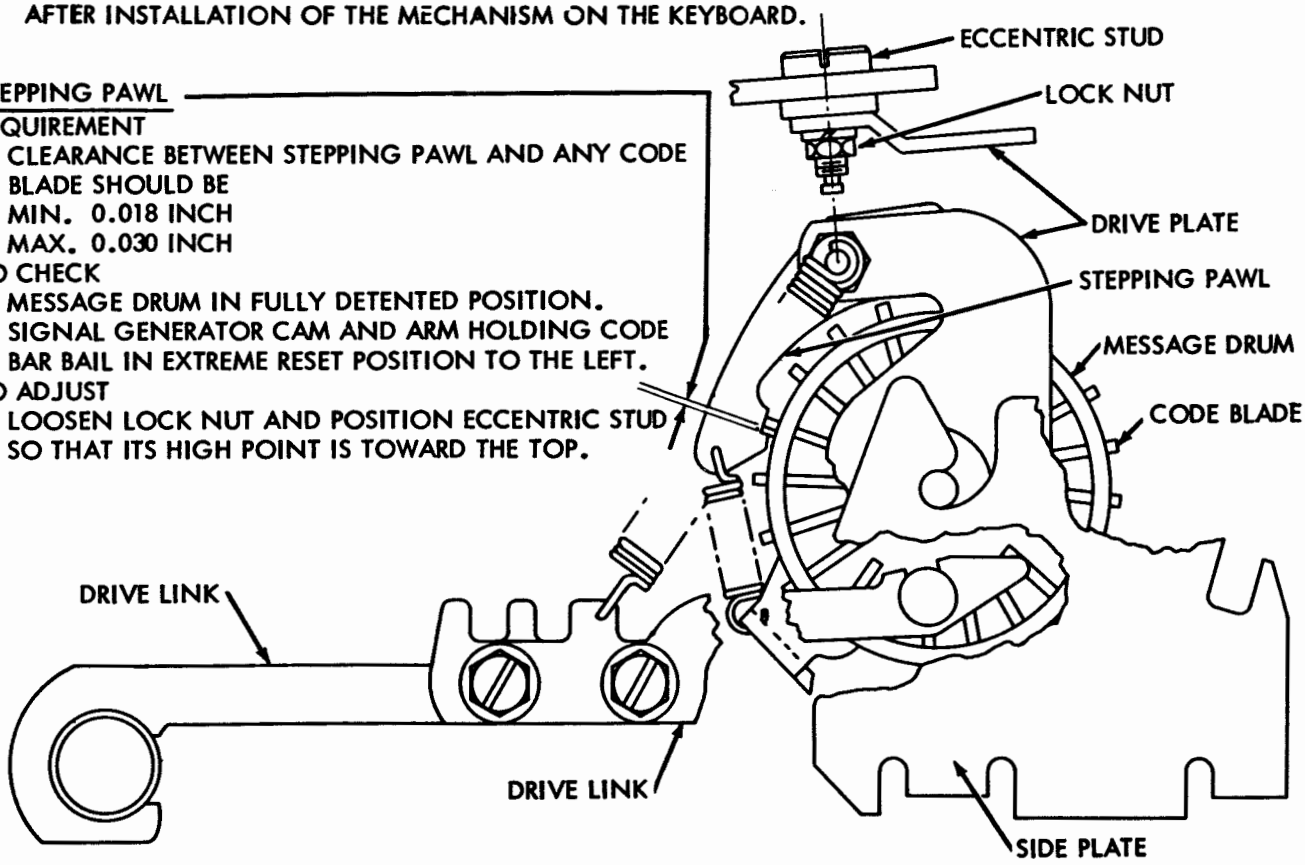
CLEARANCE BETWEEN STEPPING PAWL AND ANY CODE BLADE SHOULD BE
MIN. 0.018 INCH
MAX. 0.030 INCH

TO CHECK

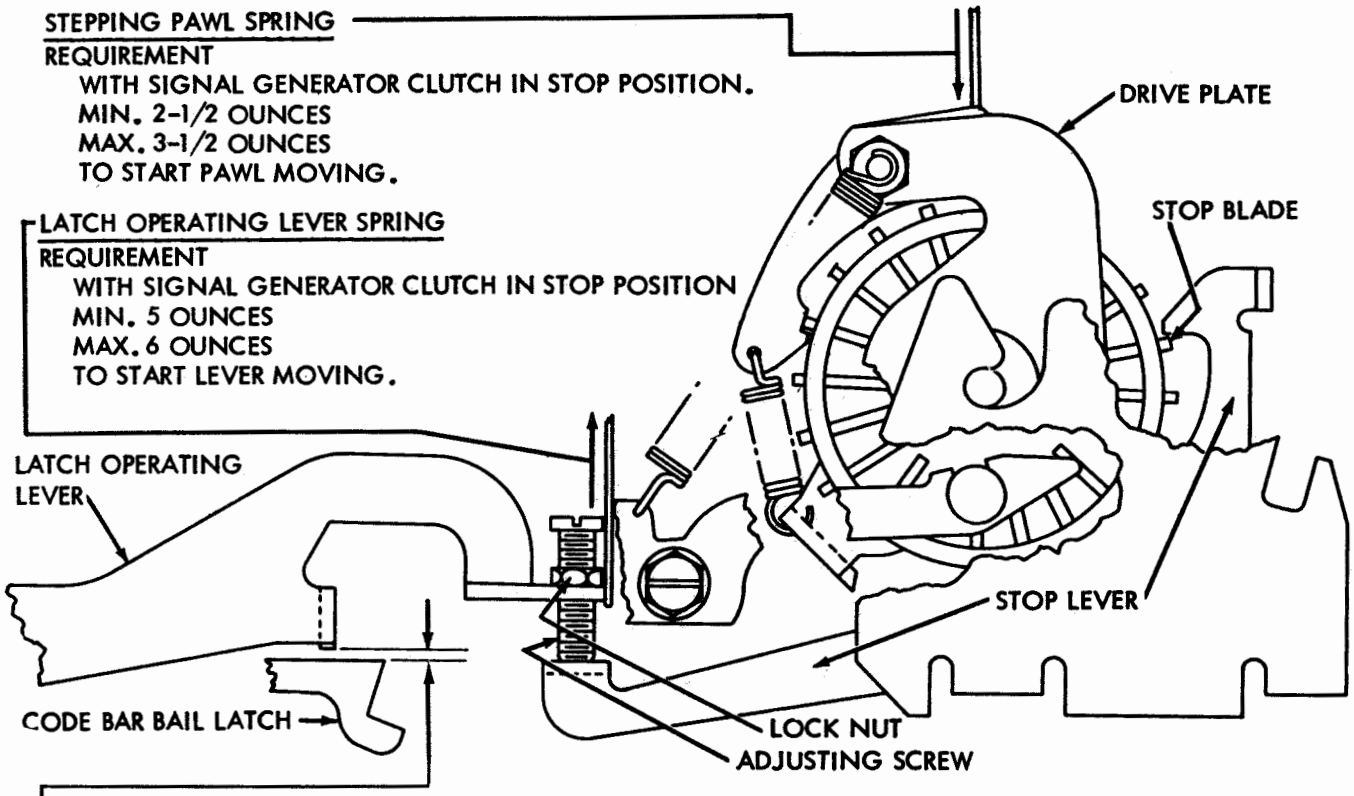
MESSAGE DRUM IN FULLY DETENTED POSITION.
SIGNAL GENERATOR CAM AND ARM HOLDING CODE BAR BAIL IN EXTREME RESET POSITION TO THE LEFT.

TO ADJUST

LOOSEN LOCK NUT AND POSITION ECCENTRIC STUD SO THAT ITS HIGH POINT IS TOWARD THE TOP.



3.27 Answer-Back Mechanism continued



LATCH OPERATING LEVER ADJUSTING SCREW

REQUIREMENT

CLEARANCE BETWEEN EXTENSION ON LATCH OPERATING LEVER AND CODE BAR BAIL LATCH SHOULD BE

MIN. 0.005 INCH

MAX. 0.015 INCH

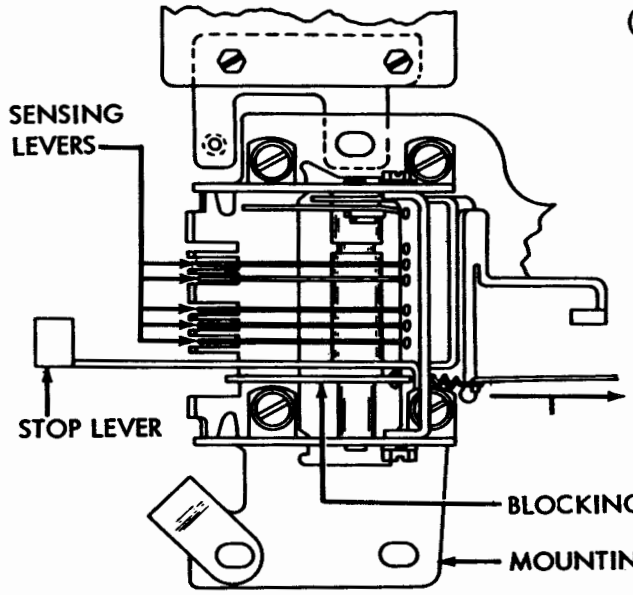
TO CHECK

SIGNAL GENERATOR CLUTCH FULLY DISENGAGED. STOP LEVER LATCHED ON MAGNET ARMATURE LATCH.

TO ADJUST

WITH LOCK NUT LOOSENED, POSITION LATCH OPERATING ADJUSTING SCREW.

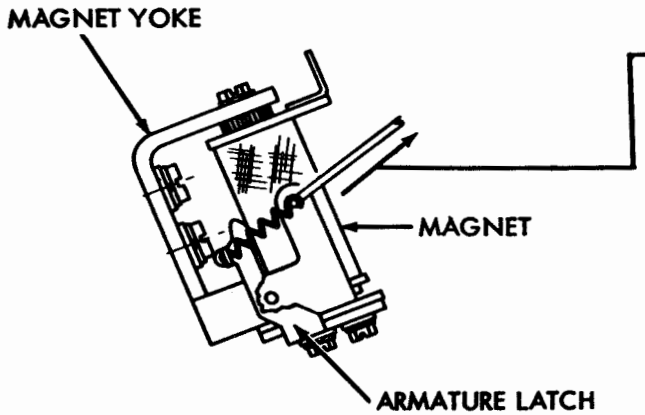
3.28 Answer-Back Mechanism continued



(A) BLOCKING LEVER SPRING

REQUIREMENT

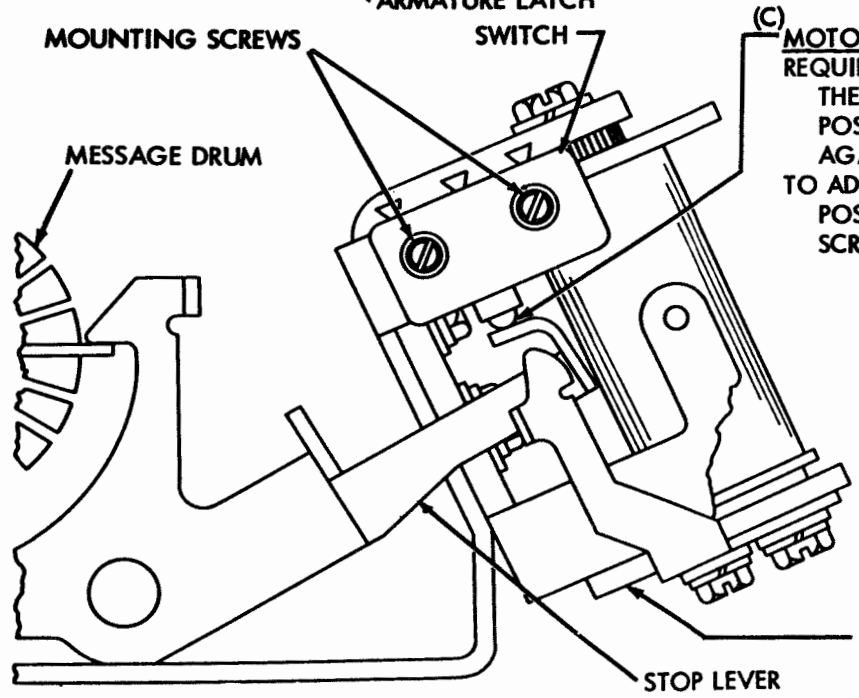
WITH SIGNAL GENERATOR CLUTCH IN STOP POSITION, UNHOOK BLOCKING LEVER SPRING FROM STOP LEVER.
MIN. 1 OUNCE
MAX. 2 OUNCES
TO PULL SPRING TO INSTALLED LENGTH.



(B) ARMATURE LATCH SPRING

REQUIREMENT

WITH SIGNAL GENERATOR CLUTCH IN STOP POSITION, UNHOOK ARMATURE LATCH SPRING FROM SPRING POST ON MAGNET YOKE.
MIN. 2 OUNCES
MAX. 4 OUNCES
TO PULL SPRING TO INSTALLED LENGTH.



(C) MOTOR CONTROL RELAY SWITCH

REQUIREMENT

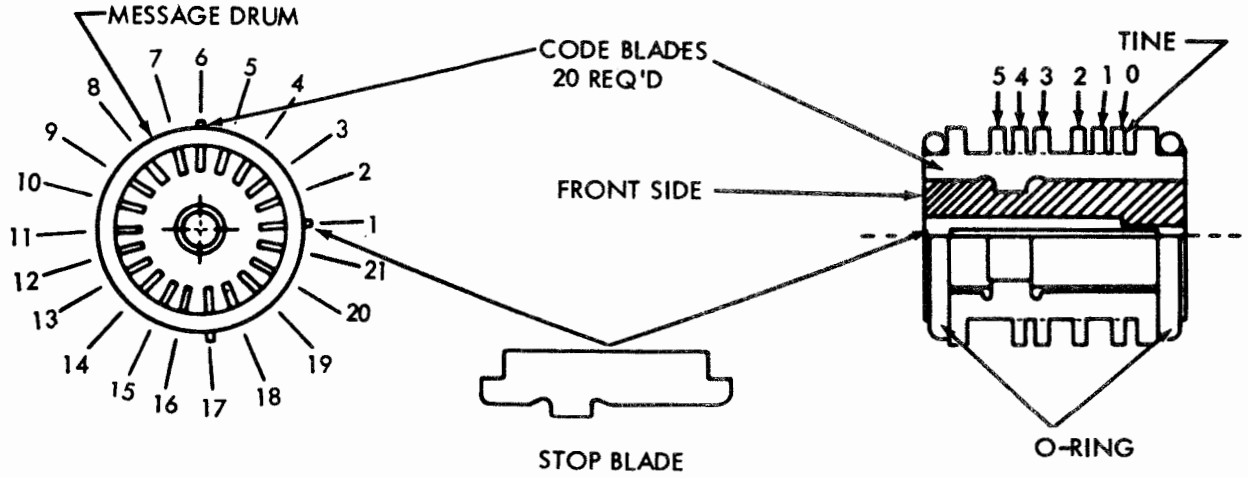
THE SWITCH SHOULD BE IN ITS OPERATED POSITION WHEN THE ARMATURE IS HELD AGAINST THE MAGNET CORE.

TO ADJUST

POSITION SWITCH WITH ITS MOUNTING SCREWS LOOSENED.

3.29 Answer-Back Mechanism continued

CODING THE MESSAGE DRUM



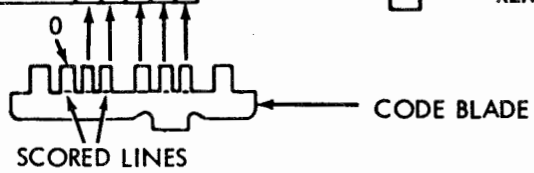
1. REMOVE MESSAGE DRUM FROM ANSWER BACK ASSEMBLY AND TAKE OUT CODE BLADES AS FOLLOWS: REMOVE DRIVE LINK SPRING ALLOWING DRIVE LINK TO DROP OUT OF ENGAGEMENT WITH STUD ON DRIVE PLATE. LIFT MESSAGE DRUM FROM NOTCHES. DEPRESS STEPPING PAWL EXTENSION AND PULL DRUM OFF SHAFT. REMOVE "O" RING FROM ONE END OF DRUM AND TAKE OUT TWENTY CODE BLADES. IT IS NOT NECESSARY TO TAKE OUT STOP BLADE.

LETTERS	TYPICAL FIG. ARRGT.	CODE 1	2	3	4	5
A	—	■	■	□	□	□
B	?	■	□	□	■	■
C	:	□	■	■	■	□
D	$	■	□	□	■	□
E	3	■	□	□	□	□
F	!	■	□	■	■	□
G	&	□	□	■	□	■
H	#	□	□	■	□	■
I	8	□	■	■	□	□
J	'	■	■	□	■	□
K	(	■	■	■	■	□
L	)	□	■	□	□	■
M	.	□	□	■	■	■
N	,	□	□	■	■	□
O	9	□	□	■	□	■
P	0	□	■	■	□	□
Q	1	■	■	■	□	□
R	4	□	■	□	■	□
S	BELL	■	□	■	□	■
T	5	□	□	□	□	■
U	7	■	■	■	□	□
V	;	□	■	■	■	■
W	2	■	■	□	□	■
X	/	■	□	■	■	■
Y	6	■	□	■	□	□
Z	"	■	□	□	□	■
CARRIAGE RETURN		□	□	□	□	□
LINE FEED		□	■	□	□	□
LETTERS SHIFT		■	■	■	■	■
FIGURES SHIFT		■	■	□	■	■
SPACE		□	□	■	□	□
BLANK		□	□	□	□	□

2. CODE A BLADE BY BREAKING OFF UNWANTED TINES AT SCORED LINE AT BASE OF EACH TINE. THE FIGURE BELOW INDICATES TINES TO BE REMOVED FOR A PARTICULAR CHARACTER. HOLD EACH BLADE SECURELY NEAR SCORE MARK OF TINE TO BE REMOVED. IN STANDARD 5 LEVEL OPERATION, THE O CODE LEVEL TINE IS DISREGARDED.
3. CODE THE DRUM IN A COUNTER-CLOCKWISE DIRECTION STARTING WITH NO. 2 CODE BLADE (ADJACENT TO STOP BLADE). BEGIN MESSAGE WITH "LETTERS" (STOP BLADE) FOLLOWED BY "CARRIAGE RETURN" AND "LINE FEED". END MESSAGE WITH "CARRIAGE RETURN" AND "LINE FEED". THIS LEAVES 16 CHARACTERS AVAILABLE FOR MESSAGE PROPER. CODE ANY UNUSED CHARACTERS WITH "LETTERS" OR "BLANKS", SINCE EACH SLOT POSITION IN DRUM MUST BE OCCUPIED BY A CODE BLADE.
4. INSTALL CODED BLADES IN PROPER SLOTS IN DRUM - INSERT END OF BLADE UNDER REMAINING "O" RING AND ROTATE THE BLADE TOWARD CENTER OF DRUM UNTIL IT IS FULLY SEATED. WHEN ALL THE SLOTS ARE FILLED REPLACE "O" RING REMOVED IN 1. ABOVE
5. APPLY GREASE TO SHAFT OF MESSAGE DRUM. REASSEMBLE MECHANISM REVERSING PROCEDURE OF STEP 1. BE SURE PARTS ARE PROPERLY SEATED. LUBRICATE PER INSTRUCTION IN SECTION 3.

■ — LEAVE TINE

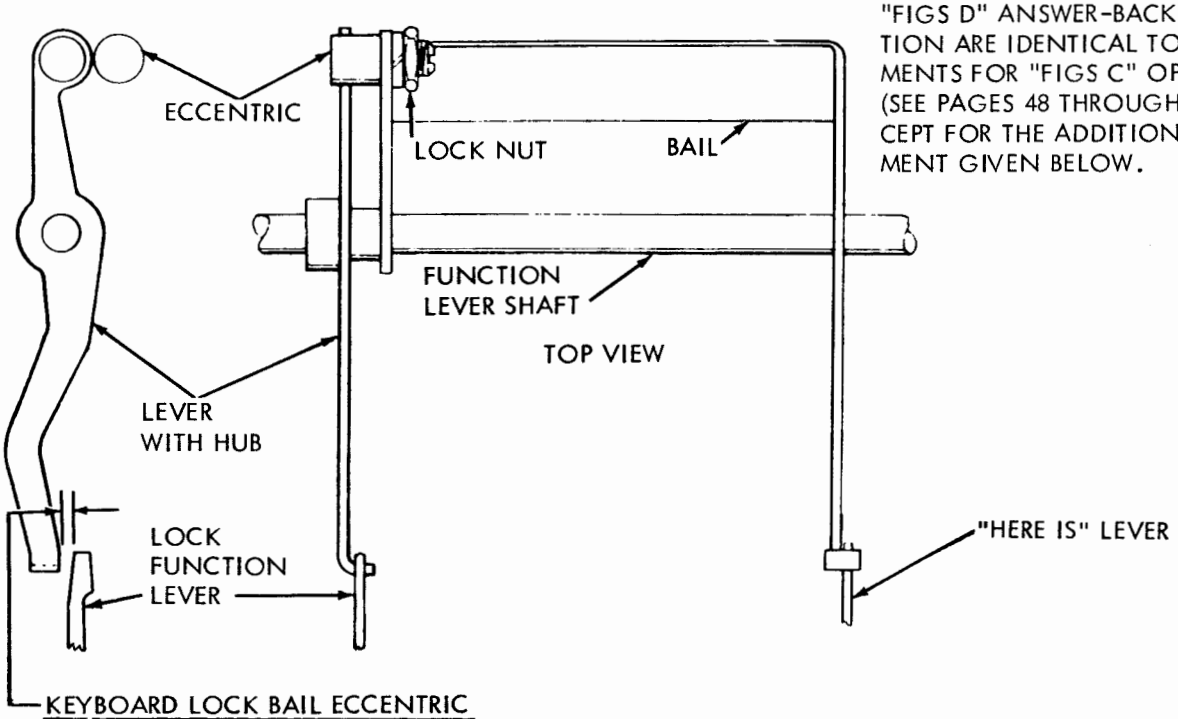
□ — REMOVE TINE



3.30 Answer-Back Mechanism ("Figs D")

NOTE

ADJUSTMENT REQUIREMENTS FOR "FIGS D" ANSWER-BACK OPERATION ARE IDENTICAL TO REQUIREMENTS FOR "FIGS C" OPERATION (SEE PAGES 48 THROUGH 55) EXCEPT FOR THE ADDITIONAL REQUIREMENT GIVEN BELOW.



KEYBOARD LOCK BAIL ECCENTRIC

REQUIREMENT

CLEARANCE BETWEEN KEYBOARD LOCK LEVER W/HUB AND KEYBOARD LOCK FUNCTION LEVER SHOULD BE

MIN. SOME --- MAX. 0.006 INCH

TO CHECK

FULLY DEPRESS BOTH "KYBD LOCK" AND "HERE IS" KEYS (HOLD LIGHTLY).

TO ADJUST

LOOSEN LOCK NUT AND POSITION ECCENTRIC WITH ITS HIGH POINT TOWARD FRONT OF KEYBOARD.

3.31 Clutch Trip Delay Mechanism

CLUTCH TRIP DELAY

REQUIREMENT

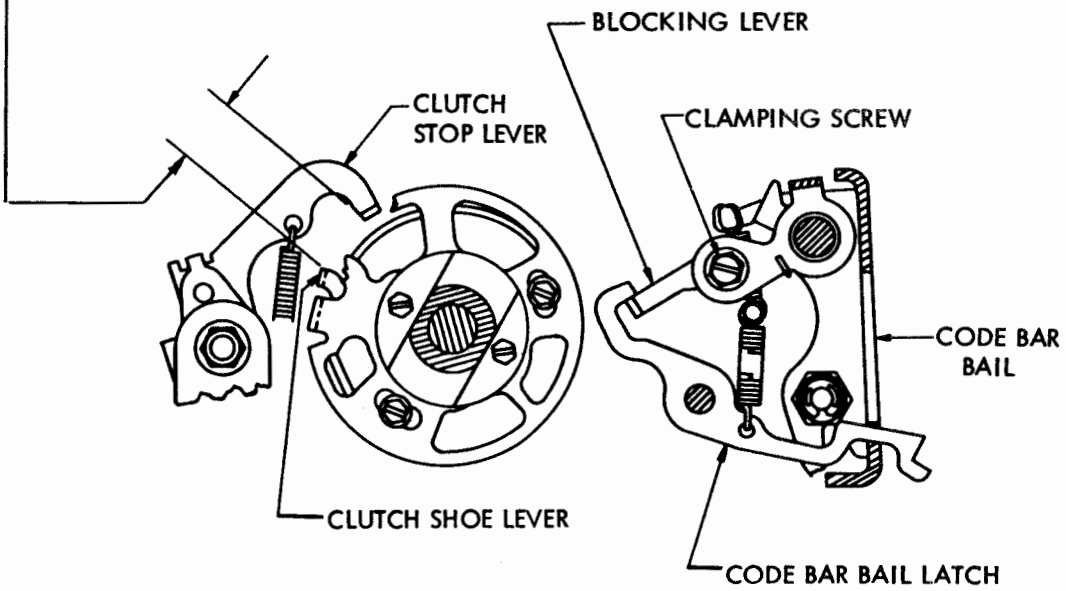
PLACE KEYBOARD IN K-T POSITION. WITH KEYBOARD IN ITS TRIPPED POSITION AND SIGNAL GENERATOR SHAFT ROTATED SO THAT CLUTCH IS APPROXIMATELY 180 DEGREES FROM ITS LATCHED POSITION, DEPRESS LTRS KEYLEVER. SLOWLY CONTINUE ROTATION OF SIGNAL GENERATOR SHAFT IN CLOCKWISE DIRECTION NOTING GAP BETWEEN NEAREST EDGE OF CLUTCH SHOE LEVER AND CLUTCH STOP LEVER. CODEBAR BAIL SHALL NOT TRIP UNTIL GAP MEASURES

MIN. 3/8 INCH
MAX. 1/2 INCH

TO ADJUST

POSITION BLOCKING LEVER WITH CLAMPING SCREW FRICTION TIGHT, UTILIZING PRY POINTS PROVIDED.

NOTE: IF SIGNAL DISTORTION TEST SET IS AVAILABLE, MINIMUM GAP REQUIREMENT SHALL BE CONSIDERED MET IF 100 WPM SIGNAL GENERATOR STROBE REQUIREMENTS CAN BE MET.

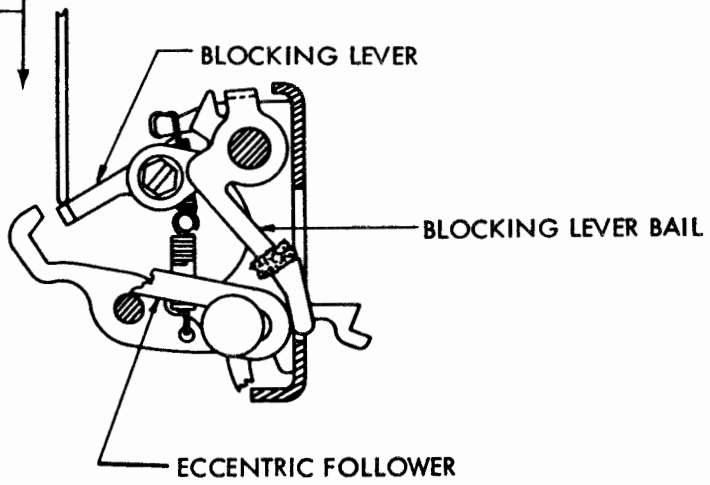


TRIP DELAY TORSION SPRING

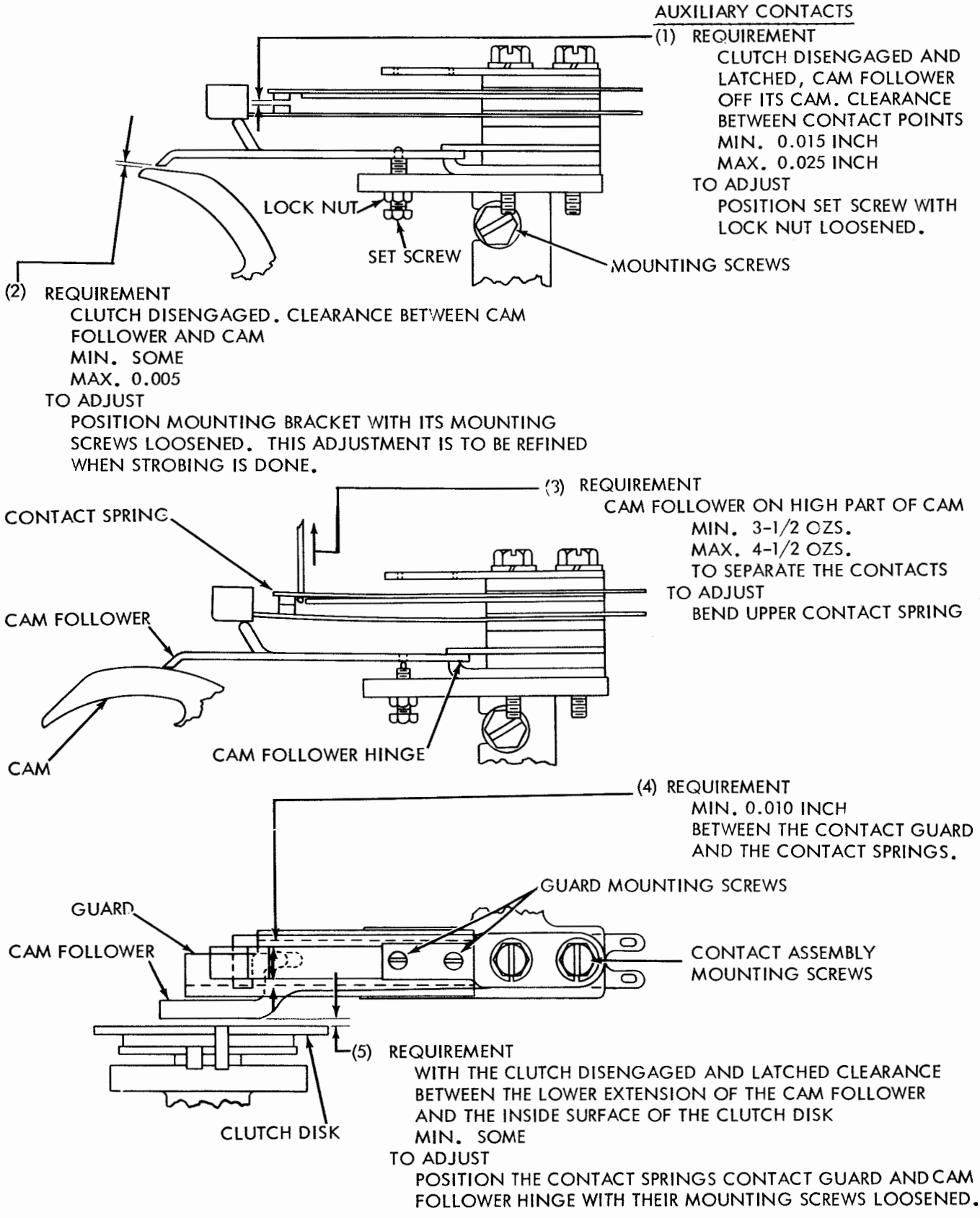
REQUIREMENT

WITH KEYBOARD CLUTCH DISENGAGED, APPLY PUSH END OF 8 OZ. SCALE VERTICALLY TO EDGE OF FORMED END OF BLOCKING LEVER.

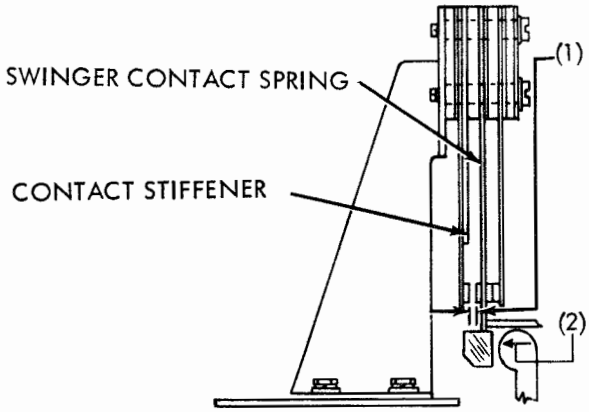
MIN. 4-1/2 OZS.
MAX. 8 OZS.
TO START BLOCKING LEVER MOVING.



3.32 Auxiliary Contacts



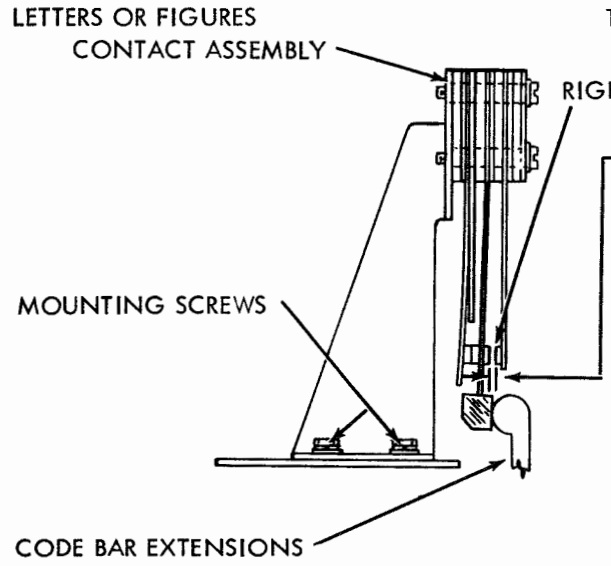
3.33 Letters and Figures Contacts



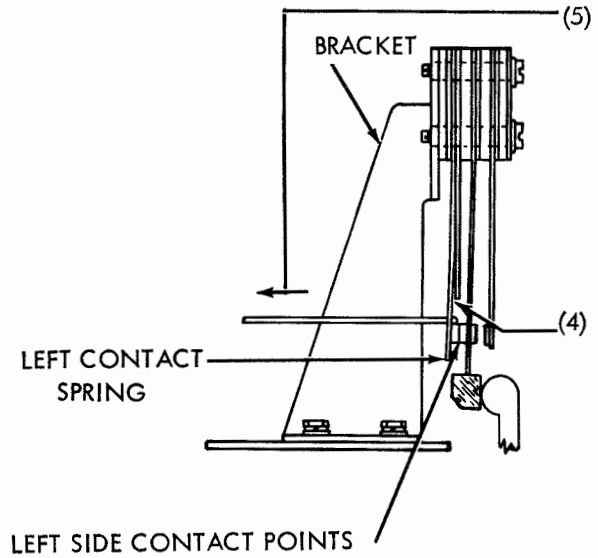
LETTERS-FIGURES CONTACT

(1) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED THEN LETTERS OR FIGURES KEYLEVER DEPRESSED. LEFT HAND CONTACT GAP
MIN. 0.012 INCH
MAX. 0.018 INCH
TO ADJUST
BEND CONTACT STIFFENER. CHECK BOTH CONTACT ASSEMBLIES.

(2) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED, THEN LETTERS OR FIGURES KEYLEVER DEPRESSED
MIN. 4-1/2 OZS.
MAX. 5-1/2 OZS.
TO SEPARATE CONTACTS
TO ADJUST
BEND SWINGER. RECHECK CONTACT GAPS.



(3) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED. THEN ANY KEYLEVER OTHER THAN LETTERS OR FIGURES DEPRESSED. RIGHT CONTACT GAP
MIN. 0.012 INCH
MAX. 0.018 INCH
CHECK BOTH LETTERS OR FIGURES CONTACTS
TO ADJUST
POSITION CONTACT ASSEMBLY WITH ITS BRACKET MOUNTING SCREWS LOOSENED.

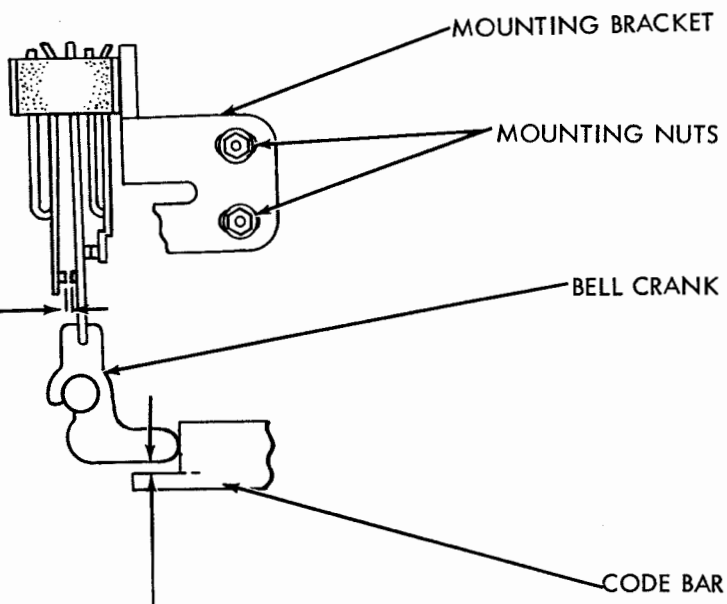


(5) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED, THEN ANY KEYLEVER OTHER THAN LETTERS OR FIGURES DEPRESSED.
MIN. 4-1/2 OZS.
MAX. 5-1/2 OZS.
TO SEPARATE LEFT HAND CONTACT POINTS
TO ADJUST
BEND LEFT CONTACT SPRING. CHECK BOTH CONTACT ASSEMBLIES. RECHECK CONTACT GAP.

(4) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED, THEN WITH ANY KEYLEVER OTHER THAN LETTERS OR FIGURES DEPRESSED CLEARANCE BETWEEN LEFT CONTACT SPRING AND ITS STIFFENER
MIN. 0.003 INCH
TO ADJUST
REFINE POSITION OF CONTACT ASSEMBLY BRACKET.

3.34 Code Reading Contacts (Transmitting)

NOTE: REFER TO SECTION 573-139-700 FOR OTHER ADJUSTMENTS OF CODE READING CONTACTS.



CODE READING CONTACTS

(1) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED. CLEARANCE BEWTEEN LEFT SIDE CONTACT POINTS
MIN. 0.030 INCH
MAX. 0.035 INCH

(2) REQUIREMENT
CLEARANCE BETWEEN THE LOWER SURFACE OF BELLCRANK AND THE CODE BAR (CHECK NO. 1 AND NO. 5 ONLY)
MIN. 0.050 INCH
MAX.0.065 I NCH

(3) REQUIREMENT
LOWER SURFACE OF BELLCRANK SHOULD BE PARALLEL TO THE CODE BAR

TO ADJUST
POSITION THE MOUNTING BRACKET WITH ITS MOUNTING NUTS LOOSENED.

28 TYPING UNIT

ADJUSTMENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

Positioning Mechanism

Printing Mechanism

CONTENTS PAGE

Selector Mechanism

Spacing Mechanism

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section is reissued: to incorporate adjusting information for the Selector Armature Downstop, and the Selector Armature Vertical Adjustment; to rearrange the text matter and assembly grouping to conform to the new

standard format. Since this is a general revision, marginal arrows are omitted.

1.02 The adjustments in this section are divided into basic units, variable features, and earlier design mechanisms. The basic units consist of the friction feed and sprocket feed typing units; the adjustments are sub-divided into major mechanisms most of which are common to both units. All other mechanisms which are of an optional nature to create variations of the 28 typing unit, appear under variable features. When applicable, earlier design mechanisms for the basic units and variable features are cross referenced in their adjustment text.

Note: Remove power from unit before making adjustments.

1.03 The adjustments for the basic units are arranged in a sequence that would be followed if a complete readjustment were undertaken. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened to facilitate the adjustment. If a part that is mounted on shims is to be removed, the number of shims used at each mounting screw should be noted so that the same shim pile up can be replaced when the part is remounted.

1.04 The spring tensions given in this section are indicated values and should be checked with proper spring scales in the position indicated. The adjusting illustrations, in addition to indicating the adjusting tolerances, positions of moving parts, and spring tensions, also show the angle at which the scale should be applied when measuring spring tensions.

1.05 Tools and spring scales required to perform the adjustments are not supplied as part of the equipment but are listed separately in Teletype Bulletin 1124B.

1.06 References made to left or right, up or down, and front or rear apply to the typing unit in its normal operating position as viewed by the operator facing the unit.

1.07 Where instructions call for the removal of parts or subassemblies, refer to appropriate section, covering Disassembly and Reassembly.

UNMOUNTED POSITIONS OF TYPING UNIT

1.08 The typing unit may be safely placed in any one of three positions for servicing:

(1) In an upright position, and resting on all four feet.

(2) Tilted backward, and resting on the two rear feet and rear points of side frames.

(3) Bottom upwards, and resting on two upper points on each side frame.

In addition, the typing unit may be placed on either end by using the TP159358 modification kit (not supplied with the unit).

OPERATING CONDITIONS OF CLUTCHES

1.09 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched so that the clutch shoes are disengaged from the clutch drum. To become fully latched the trip lever must engage the clutch shoe lever, and the clutch disc must rotate far enough to permit the latch lever to fall into the notch on the clutch disc. The disengaged condition is illustrated in the upper figure of Par. 2.21. When engaged, the clutch shoe lever is unlatched and the clutch shoes are wedged against the clutch drum.

Note: When rotating the main shaft of the typing unit by hand, the clutches do not fully disengage upon reaching their stop positions. In order to relieve the drag on the clutches and permit the main shaft to rotate freely, apply pressure to the stop lug on each clutch disc with a screwdriver until each latch lever falls into its notch on its clutch disc. Thus each internal expansion clutch becomes fully disengaged. This procedure should be followed before placing the typing unit on the base and switching on the power.

MANUAL SELECTION OF CHARACTERS OR FUNCTIONS

1.10 To manually operate the typing unit while removed from the keyboard or base, hold the selector magnet armature (Par. 2.01) against the pole pieces with an armature clip. Rotate the main shaft in a counterclockwise direction (handwheel listed in Bulletin 1124B) to bring all clutches to their disengaged position.

Note: The armature clip is attached to the armature by carefully inserting the flat formed end of the clip over the top of the armature and between the pole pieces, and hooking the extruded projection under the edge of the armature. The top end of the clip

should then be hooked over the top of the selector coil terminal (bakelite) guard. The spring tension of the clip will hold the armature in the marking (attracted) position.

1.11 Fully disengage all clutches as described in the note following Par. 1.09. Release the armature momentarily to permit the selector clutch to engage. Turn the main shaft slowly until the no. 5 selector lever has just moved to the peak of its cam. Strip from the selector levers all push levers which are spacing in the code combination that is being selected. It should be noted that selector levers (Par. 2.12) move in succession, starting with the inner (no. 1). Continue to rotate the main shaft until all operations initiated by the selector mechanism clear the typing unit.

VARIABLE FEATURES

1.12 In addition to the basic unit adjustments, covered in Part 2, adjustments for a number of variable features appear in Part 3. Where adjustments of these variable features affect the adjustment sequence, cross reference information has been included in Part 2. Variable feature adjustments which do not affect the adjusting sequence, may be done at any time during the adjusting procedure.

EARLIER DESIGN MECHANISMS

1.13 Parts 2 and 3 contain illustrations and adjusting procedures for mechanisms currently being manufactured. Illustrations and adjusting procedures for mechanisms of earlier design are located in Part 4. Where a new mechanism has replaced a mechanism of earlier design, reference has been made in Parts 2 and 3 to the corresponding mechanism in Part 4.

COMPLETE ADJUSTMENT OF TYPING UNIT

1.14 When making a complete adjustment of the typing unit, the following conditioning operations should be performed to prevent damage:

(a) Loosen the clamp screw on the code bar shift lever drive arm (Par. 2.15).

(b) Move the right and left vertical positioning lever eccentric studs (Par. 2.28 and 2.29) in the rocker shaft brackets to their lowest position.

(c) Loosen the two bearing stud mounting screws and two connecting strip clamp screws in the horizontal positioning drive linkage (Par. 2.35).

(d) Loosen the clamp screws and move the reversing slide brackets to their uppermost position (Par. 2.34).

(e) Loosen the function reset bail blade mounting screws (Par. 2.32).

(f) For units equipped with two-stop function clutches: Loosen the shoulder bushings on each function stripper blade arm and move stripper blade and arms to their lowest positions (Par. 4.18).

(g) Loosen the carriage return lever clamp screw (Par. 2.40).

(h) Loosen the clamp screws in the oscillating rail slide (Par. 2.30).

(i) Loosen the reversing slide adjusting stud (Par. 2.34).

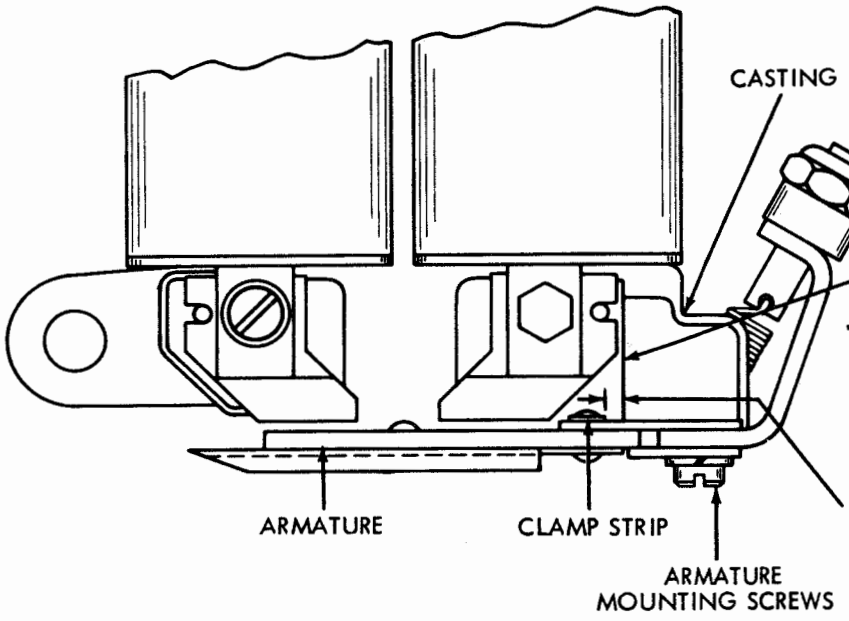
(j) Loosen the clamp nuts on the shift code bar guide plates (Par. 2.33).

2. BASIC UNITS

2.01 Selector Mechanism

NOTE

TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER AND SELECTOR MAGNET ASSEMBLIES. TO INSURE BETTER OPERATION, PULL A PIECE OF KS BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OF PAPER REMAIN BETWEEN THE POLE PIECES AND ARMATURE.

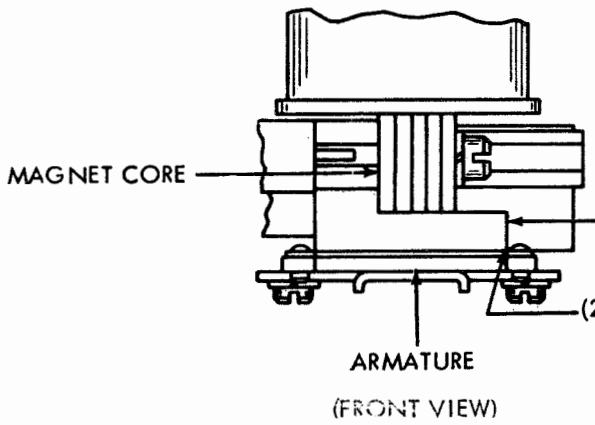


SELECTOR ARMATURE

NOTE

THIS REQUIREMENT NEED NOT BE MADE NOR CHECKED IF THE SELECTOR MAGNET BRACKET AND RECEIVING MARGIN REQUIREMENTS ARE MET.

(1) REQUIREMENT (ARMATURE CLAMP STRIP) CLEARANCE BETWEEN ARMATURE CLAMP STRIP AND CASTING.
MIN. 0.025 INCH
MAX. 0.045 INCH

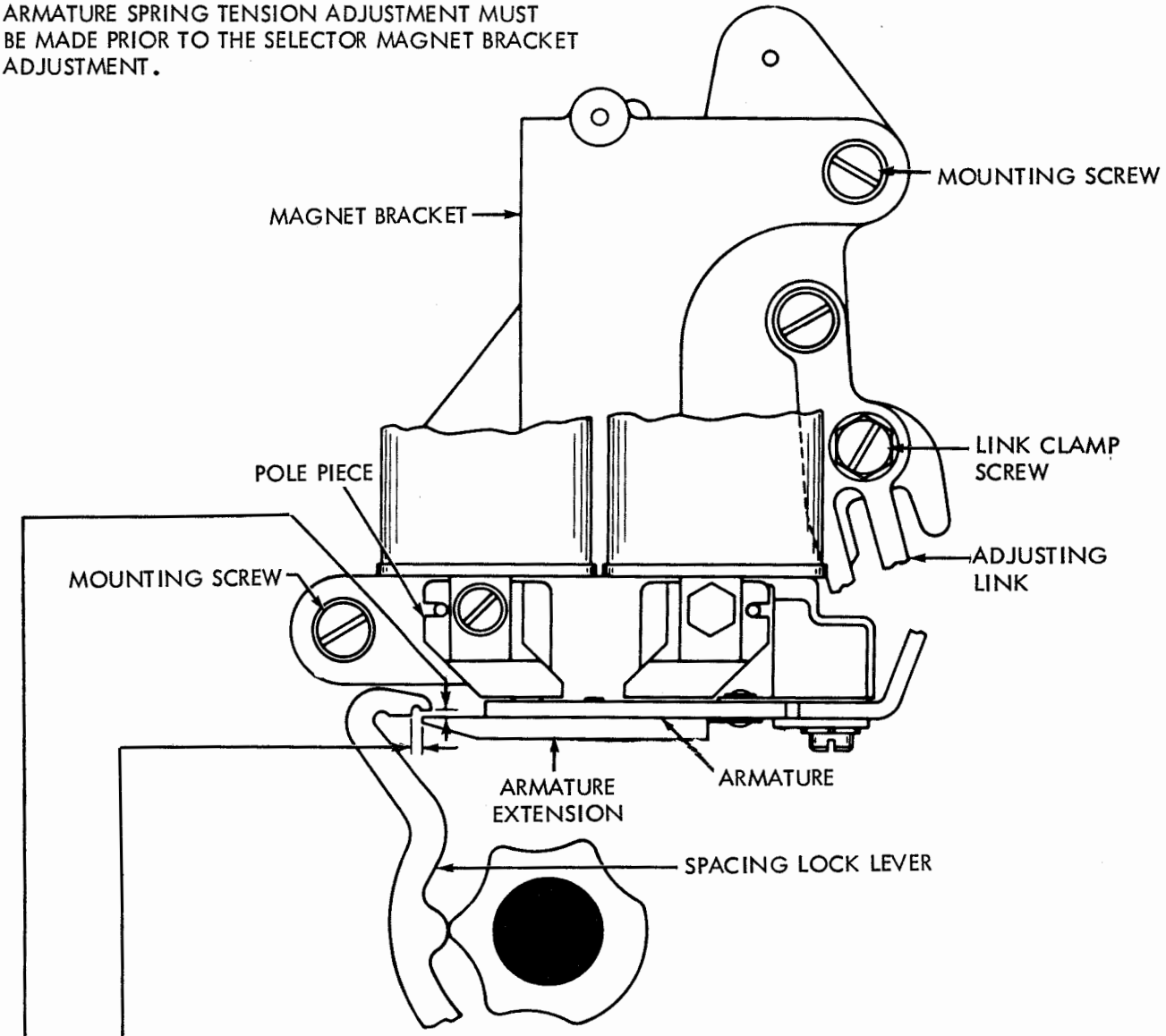


(FRONT VIEW)

(2) REQUIREMENT (ARMATURE ALIGNMENT) OUTER EDGE OF ARMATURE SHOULD BE FLUSH WITHIN 0.015 INCH WITH OUTER EDGE OF POLE PIECES.

2.02 Selector Mechanism (Cont.)

NOTE
THE APPROPRIATE PRELIMINARY SELECTOR ARMATURE SPRING TENSION ADJUSTMENT MUST BE MADE PRIOR TO THE SELECTOR MAGNET BRACKET ADJUSTMENT.



SELECTOR MAGNET BRACKET (MAGNETS ENERGIZED)

(1) REQUIREMENT---SPACING LOCK LEVER ON EACH HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SHOULDER ON SPACING LOCK LEVER.
MIN. 0.020 INCH ---------- MAX. 0.035 INCH
TO ADJUST --- LOOSEN TWO MAGNET BRACKET MOUNTING SCREWS AND ADJUSTING LINK CLAMP SCREW. POSITION MAGNET BRACKET BY MEANS OF ADJUSTING LINK AND TIGHTEN LINK CLAMP SCREW ONLY.

(2) REQUIREMENT --- SPACING LOCK LEVER ON EACH HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. SOME CLEARANCE BETWEEN UPPER SURFACE OF ARMATURE EXTENSION AND LOWER SURFACE OF SPACING LOCK LEVER WHEN LOCK LEVER IS HELD DOWNWARD.
MAX. 0.003 INCH
TO ADJUST --- POSITION UPPER END OF MAGNET BRACKET. TIGHTEN TWO MAGNET BRACKET MOUNTING SCREWS. RECHECK REQUIREMENT (1).

2.03 Selector Mechanism (Cont.)

CAUTION

BEFORE PROCEEDING WITH THE SELECTOR ARMATURE SPRING ADJUSTMENT, THE TYPE OF ARMATURE (ONE ANTIFREEZE BUTTON OR TWO ANTIFREEZE BUTTONS) MUST BE KNOWN. EXCESSIVE TENSION ON, OR THE MISHANDLING OF A TWO BUTTON ARMATURE CAN DAMAGE THE THIN LEAF SPRING ATTACHED TO THE PIVOT END. IF REMOVAL FOR EXAMINATION IS NECESSARY, DISASSEMBLE AS FOLLOWS:

(1) DISCONNECT ARMATURE SPRING.
(2) REMOVE ARMATURE MOUNTING SCREWS.
(3) WITHDRAW ARMATURE FROM SELECTOR.

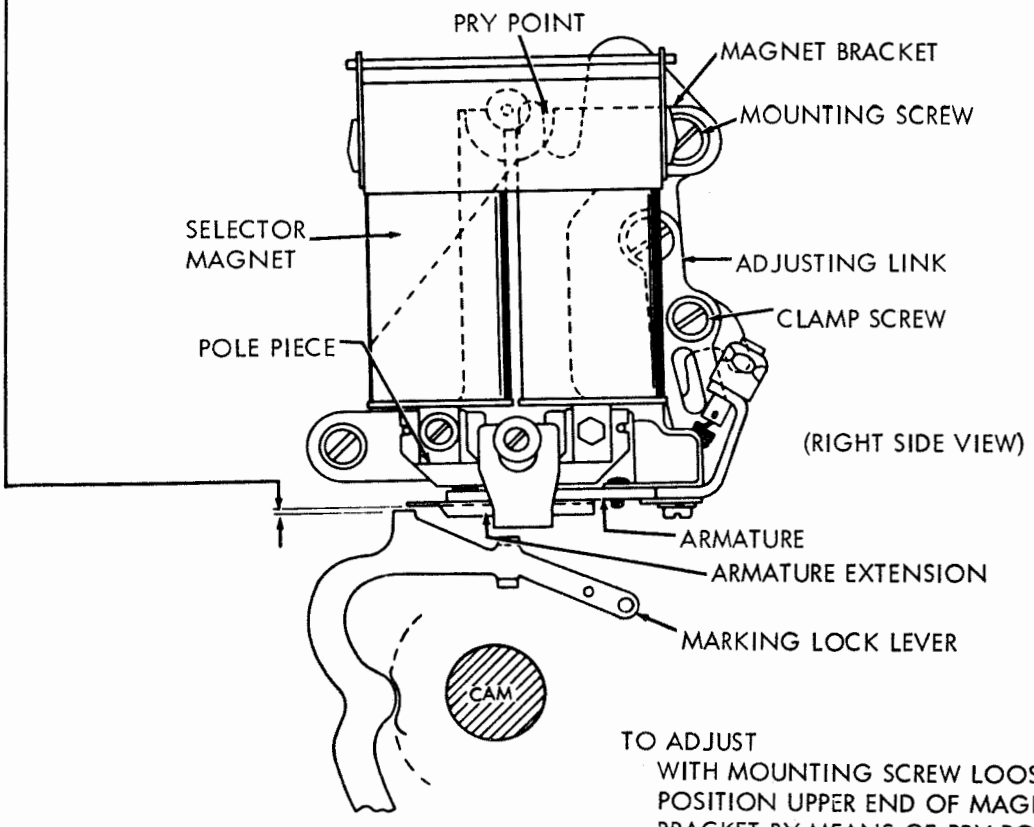
REASSEMBLE AND RECHECK THE FOLLOWING ADJUSTMENTS:

SELECTOR ARMATURE
SELECTOR ARMATURE DOWNSTOP BRACKET
SELECTOR MAGNET BRACKET

SELECTOR MAGNET BRACKET - VERTICAL ADJUSTMENT

(3) REQUIREMENT

MARKING LOCK LEVER ON LOW PART OF CAM. ARMATURE IN CONTACT WITH FRONT POLE PIECE (MAGNET ENERGIZED). THERE SHOULD BE SOME CLEARANCE BETWEEN LOWER SURFACE OF ARMATURE EXTENSION AND UPPER SURFACE OF MARKING LOCK LEVER. GAUGE BY EYE.



TO ADJUST

WITH MOUNTING SCREW LOOSENED POSITION UPPER END OF MAGNET BRACKET BY MEANS OF PRY POINT. RECHECK REQUIREMENTS (1) AND (2).

2.04 Selector Mechanism (Cont.)

SELECTOR ARMATURE SPRING (500 MA SELECTOR COILS
REFER TO PAR. 2.05 USING THE FOLLOWING:

SINGLE BUTTON ARMATURE
500 MA; MIN 4-1/2 OZS --- MAX 5-1/2 OZS

DOUBLE BUTTON ARMATURE
500 MA; APPROXIMATELY --- 1-1/8 OZ
TO PULL REAR BUTTON AGAINST ITS POLE PIECE

2.05 Selector Mechanism (Cont.)

SELECTOR ARMATURE SPRING (FOR UNITS WITH SINGLE ANTI-FREEZE BUTTON ON SELECTOR ARMATURE)

REQUIREMENT --- (PRELIMINARY) WITH START LEVER, MARKING AND SPACING LOCK LEVERS ON HIGH PART OF THEIR CAMS, HOOK SCALE UNDER END OF ARMATURE EXTENSION (HOLD AS NEARLY VERTICAL AS POSSIBLE). IT SHOULD REQUIRE

(a) MIN. 1-1/2 OZS. ---------- MAX. 2 OZS. FOR 20 MA OPERATION.

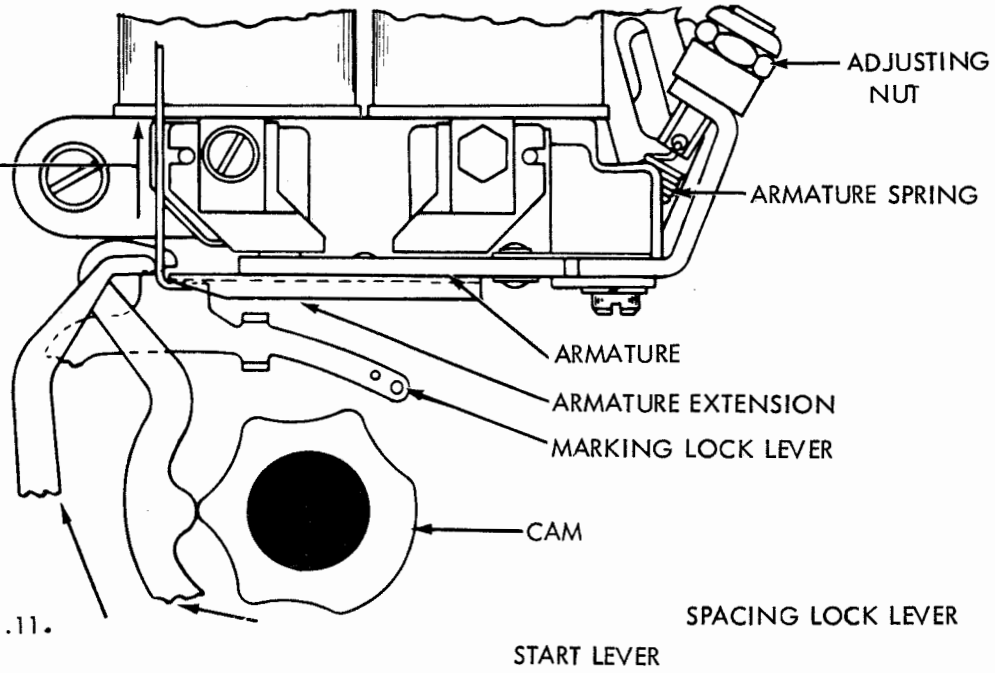
(b) MIN. 2-1/2 OZS. ---------- MAX. 3 OZS. FOR 60 MA OPERATION.

TO PULL ARMATURE TO MARKING POSITION.

TO ADJUST --- POSITION ADJUSTING NUT.

REQUIREMENT --- (FINAL) REFER TO SELECTOR RECEIVING MARGIN PAR. 2.11

NOTE
SPRING TENSIONS SHOWN ON THIS PAGE PERMIT OPERATION OF PRINTER PRIOR TO MEASUREMENT OF RECEIVING MARGINS. REFINE SPRING TENSION FOR MAXIMUM SELECTOR PERFORMANCE WITH UNIT CONNECTED TO SPECIFIC CIRCUIT IN WHICH IT IS TO FUNCTION (OPERATING AT DESIRED SPEED AND LINE CURRENT). SEE PAR. 2.11.



SELECTOR ARMATURE SPRING (FOR UNITS WITH TWO ANTI-FREEZE BUTTONS ON SELECTOR ARMATURE)

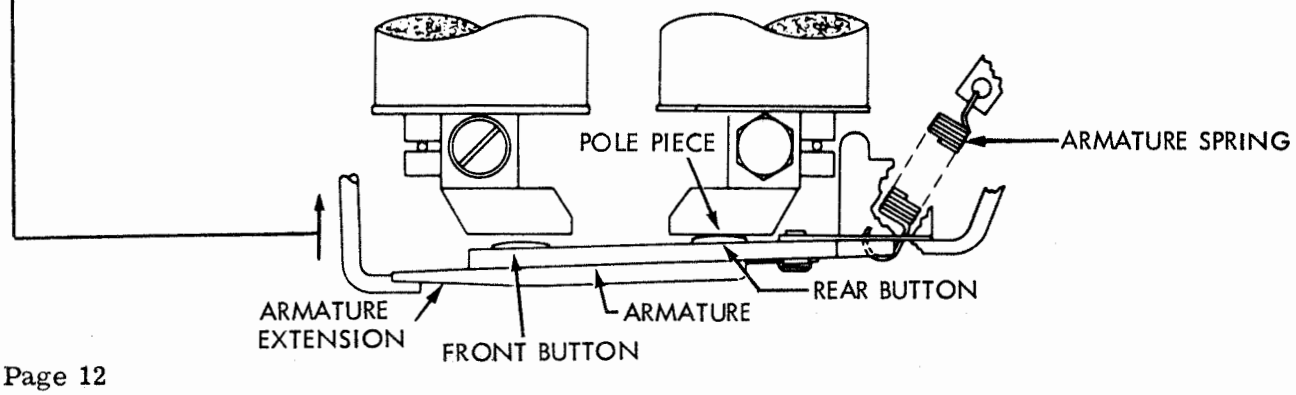
REQUIREMENT --- (PRELIMINARY) WITH START LEVER, MARKING AND SPACING LOCK LEVERS ON HIGH PART OF THEIR CAMS, HOOK SCALE UNDER END OF ARMATURE EXTENSION (HOLD AS NEARLY VERTICAL AS POSSIBLE). IT SHOULD REQUIRE

0.020 AMPERES	0.030 AMPERES	0.060 AMPERES
14 GRAMS	18 GRAMS	21 GRAMS

TO PULL REAR BUTTON AGAINST ITS POLE PIECE

TO ADJUST --- POSITION ADJUSTING NUT.

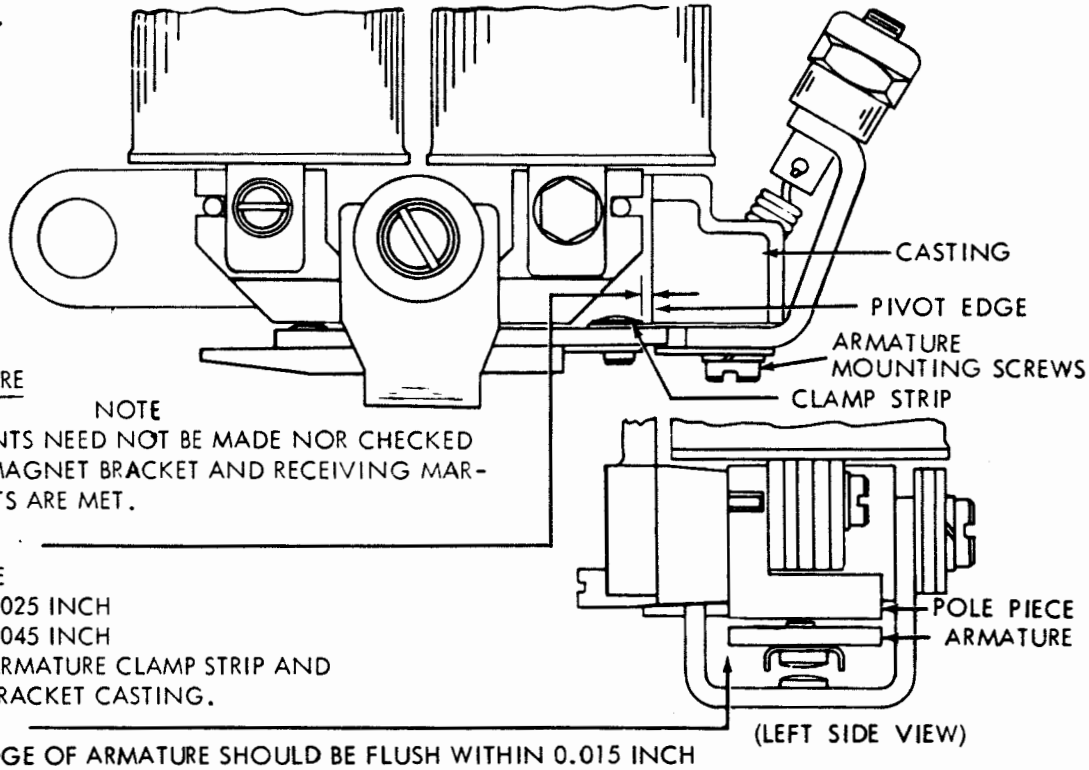
REQUIREMENT --- (FINAL) WHEN A DISTORTION TEST SET IS AVAILABLE, REFINE SELECTOR ARMATURE SPRING ADJUSTMENT TO MEET SELECTOR RECEIVING MARGIN PAR. 2.11. NOTE --- WITH SELECTOR MAGNETS ENERGIZED, FRONT ANTI-FREEZE BUTTON MUST BE IN CONTACT WITH ITS MAGNET CORE.



2.06 Selector Mechanism (Cont.)

NOTE

TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER ASSEMBLY AND SELECTOR MAGNET ASSEMBLY. TO INSURE BETTER OPERATION, PULL A PIECE OF BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OF PAPER REMAIN BETWEEN THE POLE PIECES AND THE ARMATURE.



SELECTOR ARMATURE

NOTE

THESE REQUIREMENTS NEED NOT BE MADE NOR CHECKED IF THE SELECTOR MAGNET BRACKET AND RECEIVING MARGIN REQUIREMENTS ARE MET.

(1) REQUIREMENT

CLEARANCE

MIN. 0.025 INCH

MAX. 0.045 INCH

BETWEEN ARMATURE CLAMP STRIP AND MAGNET BRACKET CASTING.

(2) REQUIREMENT

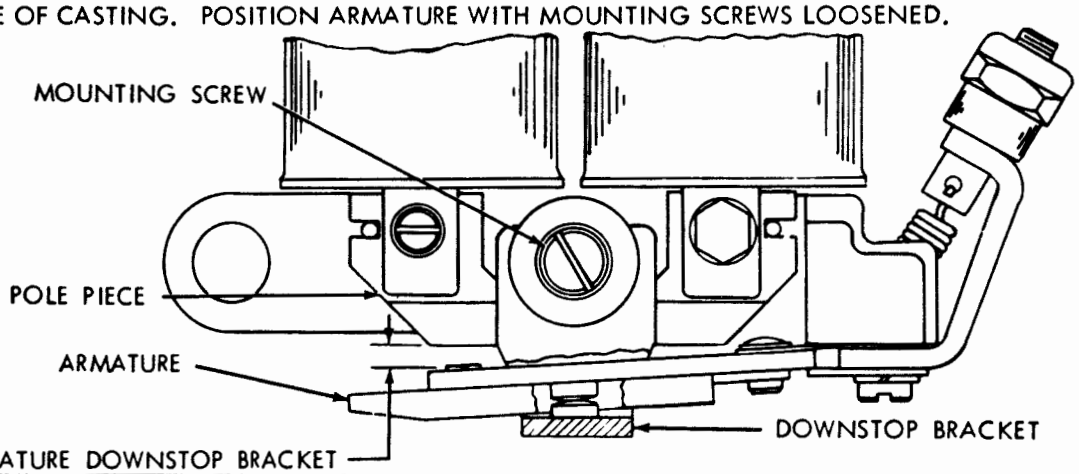
OUTER EDGE OF ARMATURE SHOULD BE FLUSH WITHIN 0.015 INCH WITH OUTER EDGE OF POLE PIECES.

(3) REQUIREMENT

START LEVER SHALL DROP FREELY INTO ARMATURE EXTENSION SLOT.

TO ADJUST

POSITION ARMATURE SPRING ADJUSTING NUT TO HOLD ARMATURE FIRMLY AGAINST PIVOT EDGE OF CASTING. POSITION ARMATURE WITH MOUNTING SCREWS LOOSENED.



SELECTOR ARMATURE DOWNSTOP BRACKET

REQUIREMENT

REMOVE OIL SHIELD. WITH MAGNET DE-ENERGIZED, LOCK LEVERS ON HIGH PART OF THEIR CAM, AND ARMATURE RESTING AGAINST ITS DOWNSTOP, CLEARANCE BETWEEN END OF ARMATURE AND LEFT EDGE OF LEFT POLE PIECE

MIN. 0.025 INCH MAX. 0.030 INCH.

TO ADJUST

POSITION DOWNSTOP BRACKET WITH MOUNTING SCREW LOOSENED. REPLACE OIL SHIELD AND CHECK OIL SHIELD ADJUSTMENT.

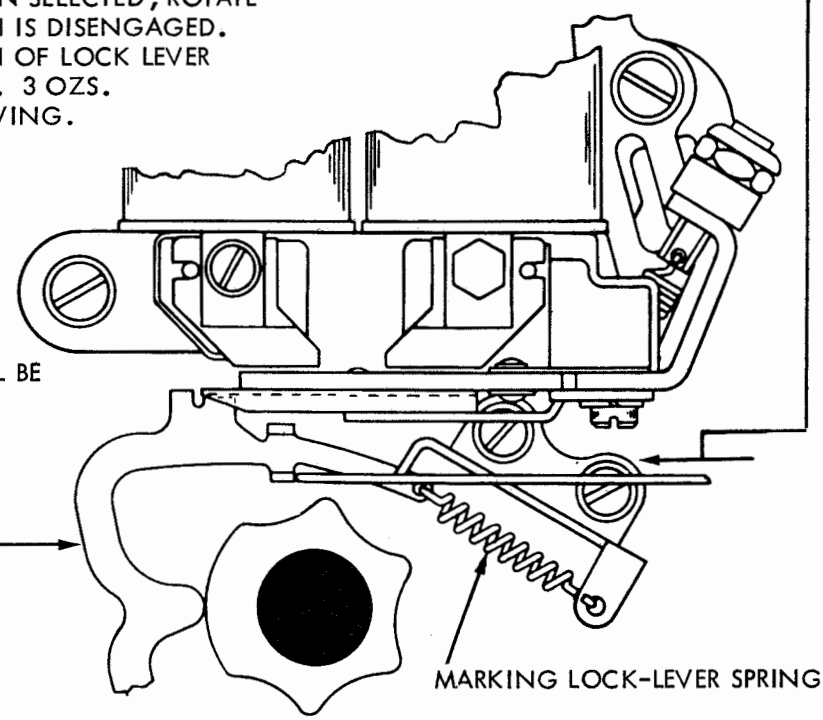
2.07 Selector Mechanism (Cont.)

MARKING LOCK LEVER SPRING

REQUIREMENT --- LETTERS COMBINATION SELECTED, ROTATE MAIN SHAFT UNTIL SELECTOR CLUTCH IS DISENGAGED. SCALE APPLIED TO LOWER EXTENSION OF LOCK LEVER MIN. 1-1/2 OZS. ---------- MAX. 3 OZS. TO START MARKING LOCK LEVER MOVING.

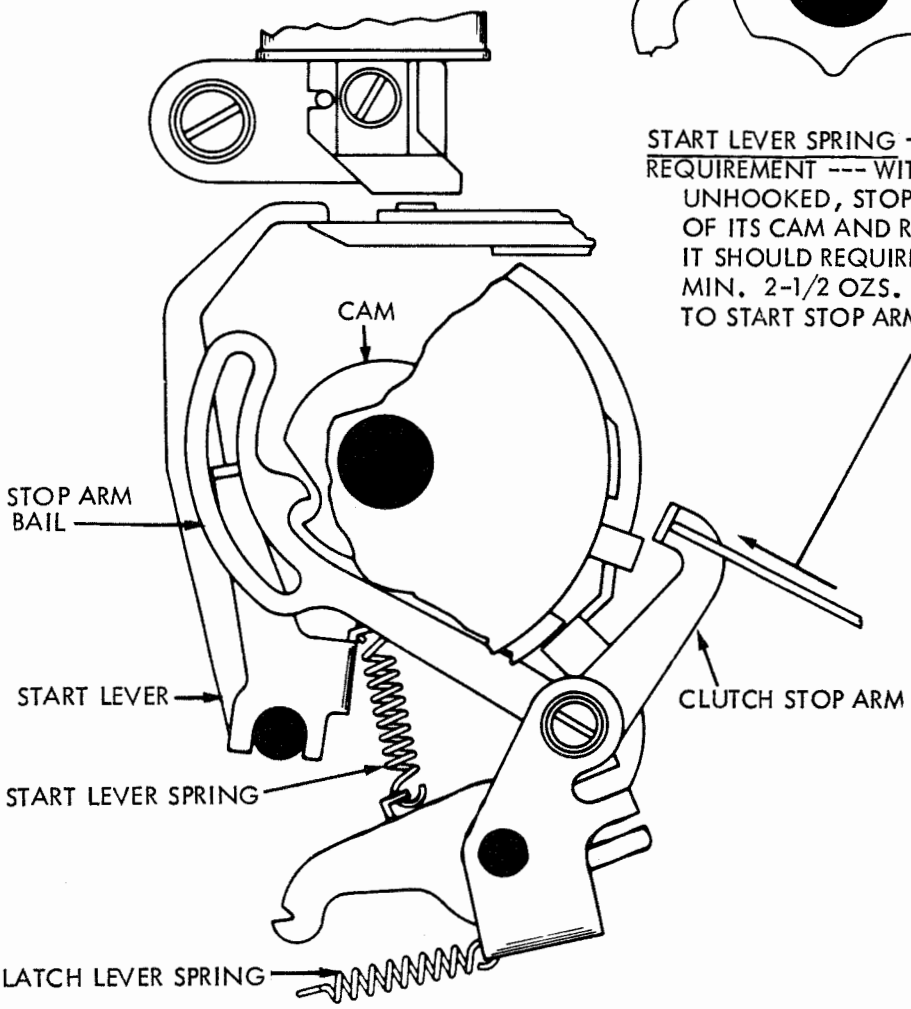
NOTE FOR BELL SERVICE ONLY

WHEN CHECKING UNITS WITH SINGLE BUTTON ARMATURE, SIGNAL LINE SHALL BE SHUNTED BY A TWX SWITCHBOARD SIMULATOR. SIMULATOR SHALL NOT BE USED WITH UNITS EMPLOYING THE TWO BUTTON ARMATURE



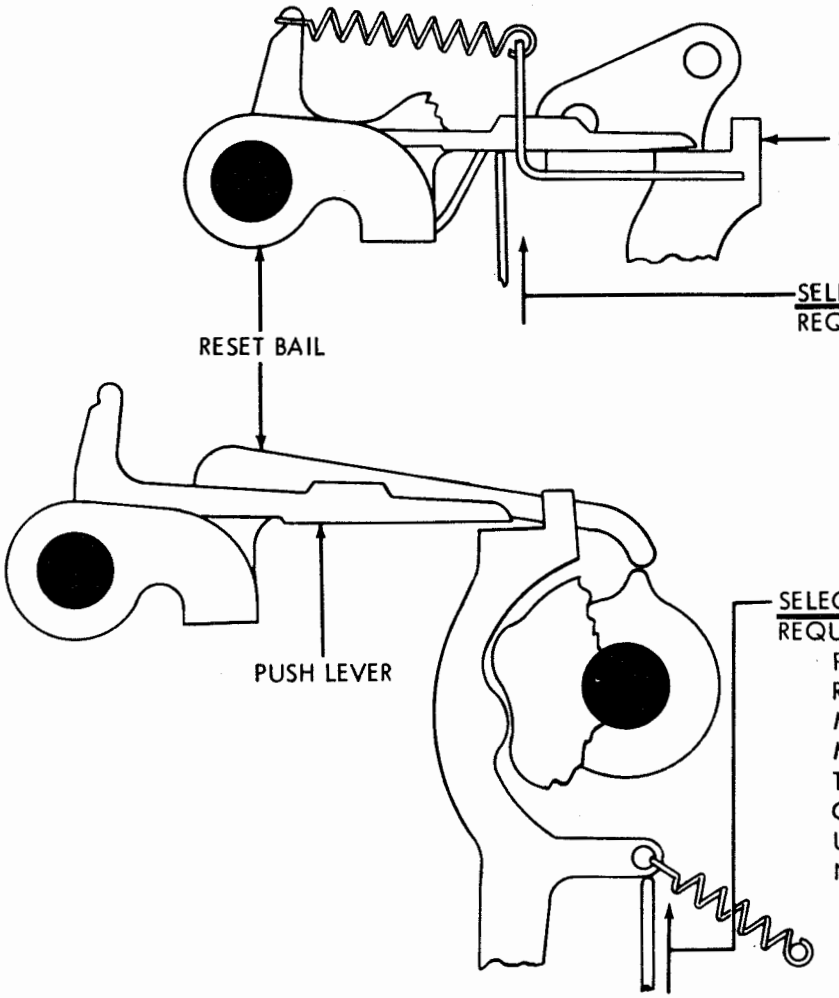
START LEVER SPRING

REQUIREMENT --- WITH LATCH LEVER SPRING UNHOOKED, STOP ARM BAIL IN THE INDENT OF ITS CAM AND RANGE SCALE SET AT 60, IT SHOULD REQUIRE MIN. 2-1/2 OZS. --------- MAX. 4-1/2 OZS. TO START STOP ARM MOVING.



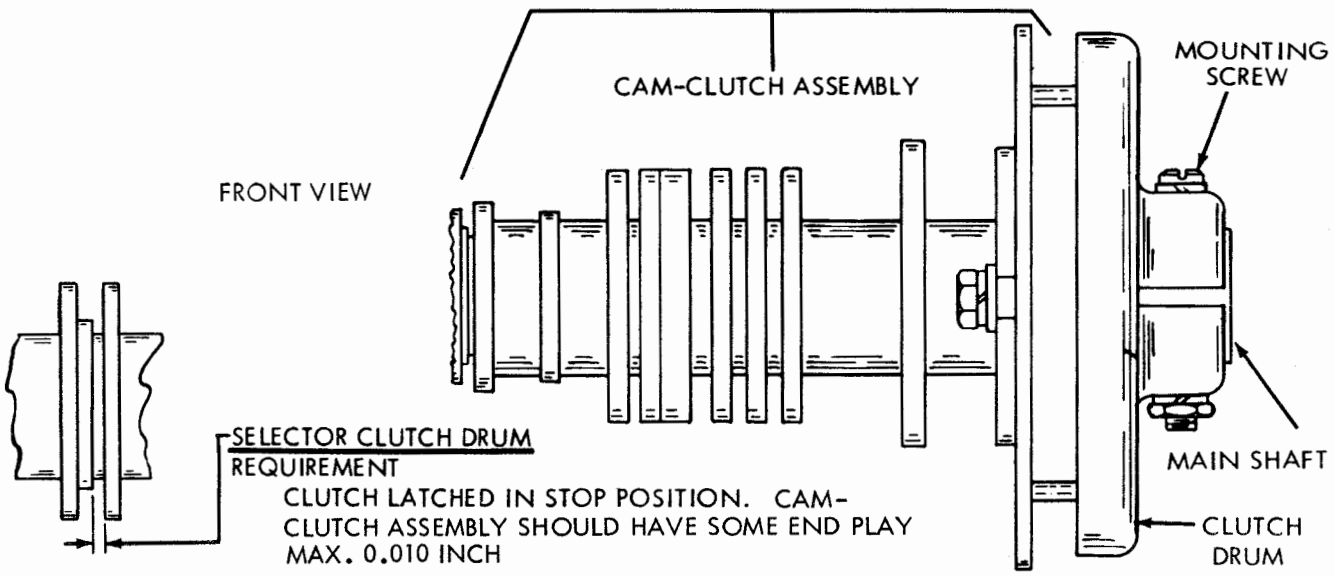
NOTE
FOR EARLIER DESIGN
SEE PAR. 4.01

2.08 Selector Mechanism (Cont.)



SELECTOR PUSH LEVER SPRING
REQUIREMENT
PUSH LEVER IN SPACING POSITION
MIN. 3/4 OZ.
MAX. 1-1/2 OZS.
TO MOVE PUSH LEVER FROM SELECTOR LEVER. CHECK FIVE SPRINGS.

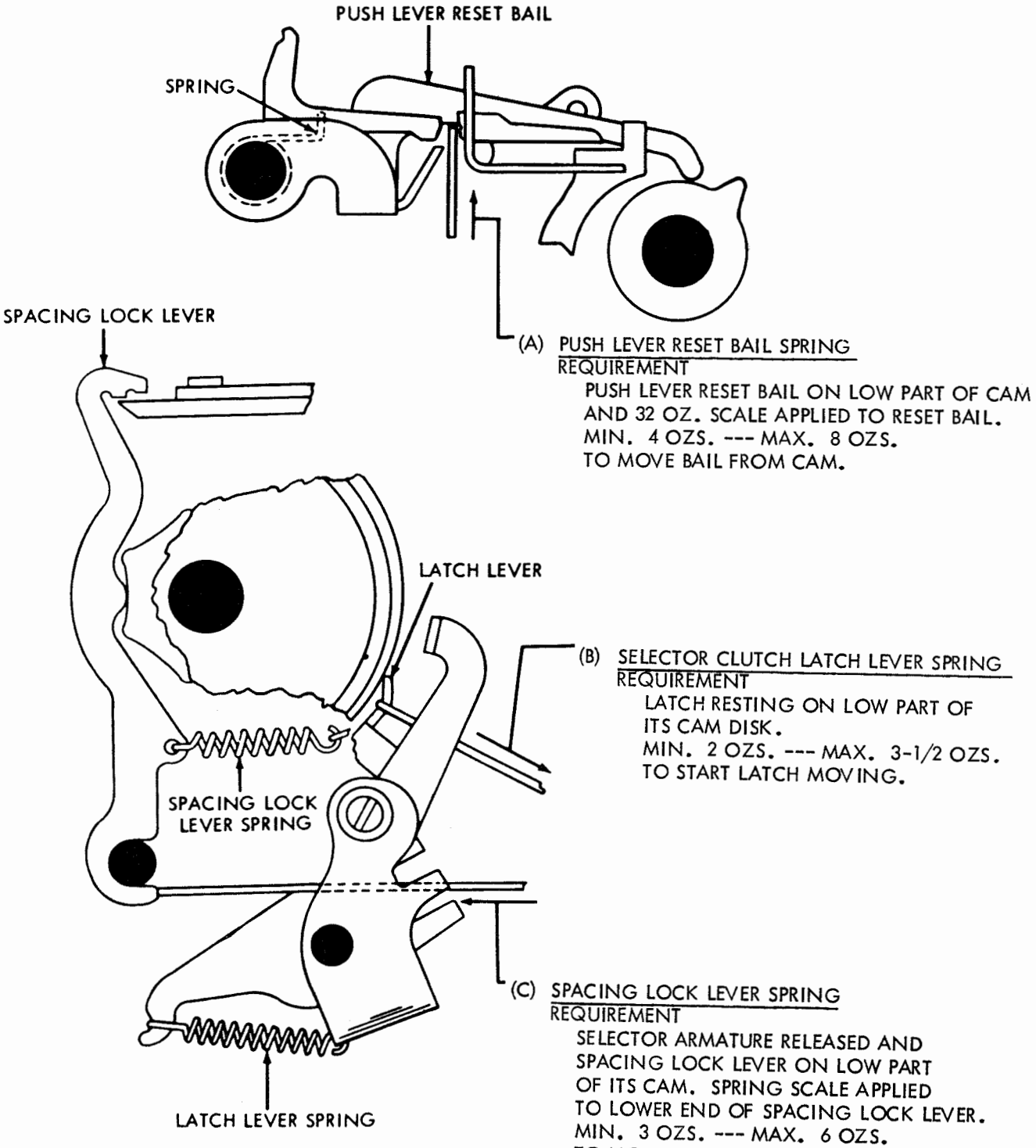
SELECTOR LEVER SPRING
REQUIREMENT
PLACE UNIT UPSIDE DOWN.
RESET BAIL ON PEAK OF ITS CAM.
MIN. 1-1/4 OZS.
MAX. 2-1/2 OZS.
TO START EACH LEVER MOVING.
CHECK FIVE SPRINGS. IF NECESSARY, UNHOOK START LEVER SPRING TO CHECK NO. 4 SELECTOR LEVER SPRING.



SELECTOR CLUTCH DRUM
REQUIREMENT
CLUTCH LATCHED IN STOP POSITION. CAM-CLUTCH ASSEMBLY SHOULD HAVE SOME END PLAY MAX. 0.010 INCH

TO ADJUST
POSITION CLUTCH DRUM WITH MOUNTING SCREW LOOSENED.

2.09 Selector Mechanism (Cont.)



(A) PUSH LEVER RESET BAIL SPRING REQUIREMENT

PUSH LEVER RESET BAIL ON LOW PART OF CAM AND 32 OZ. SCALE APPLIED TO RESET BAIL.
MIN. 4 OZS. --- MAX. 8 OZS.
TO MOVE BAIL FROM CAM.

(B) SELECTOR CLUTCH LATCH LEVER SPRING REQUIREMENT

LATCH RESTING ON LOW PART OF ITS CAM DISK.
MIN. 2 OZS. --- MAX. 3-1/2 OZS.
TO START LATCH MOVING.

(C) SPACING LOCK LEVER SPRING REQUIREMENT

SELECTOR ARMATURE RELEASED AND SPACING LOCK LEVER ON LOW PART OF ITS CAM. SPRING SCALE APPLIED TO LOWER END OF SPACING LOCK LEVER.
MIN. 3 OZS. --- MAX. 6 OZS.
TO MOVE SPACING LOCK LEVER FROM ITS PIVOT SHAFT

2.10 Selector Mechanism (Cont.)

NOTE: REPLACE RANGE FINDER AND SELECTOR MAGNET ASSEMBLY

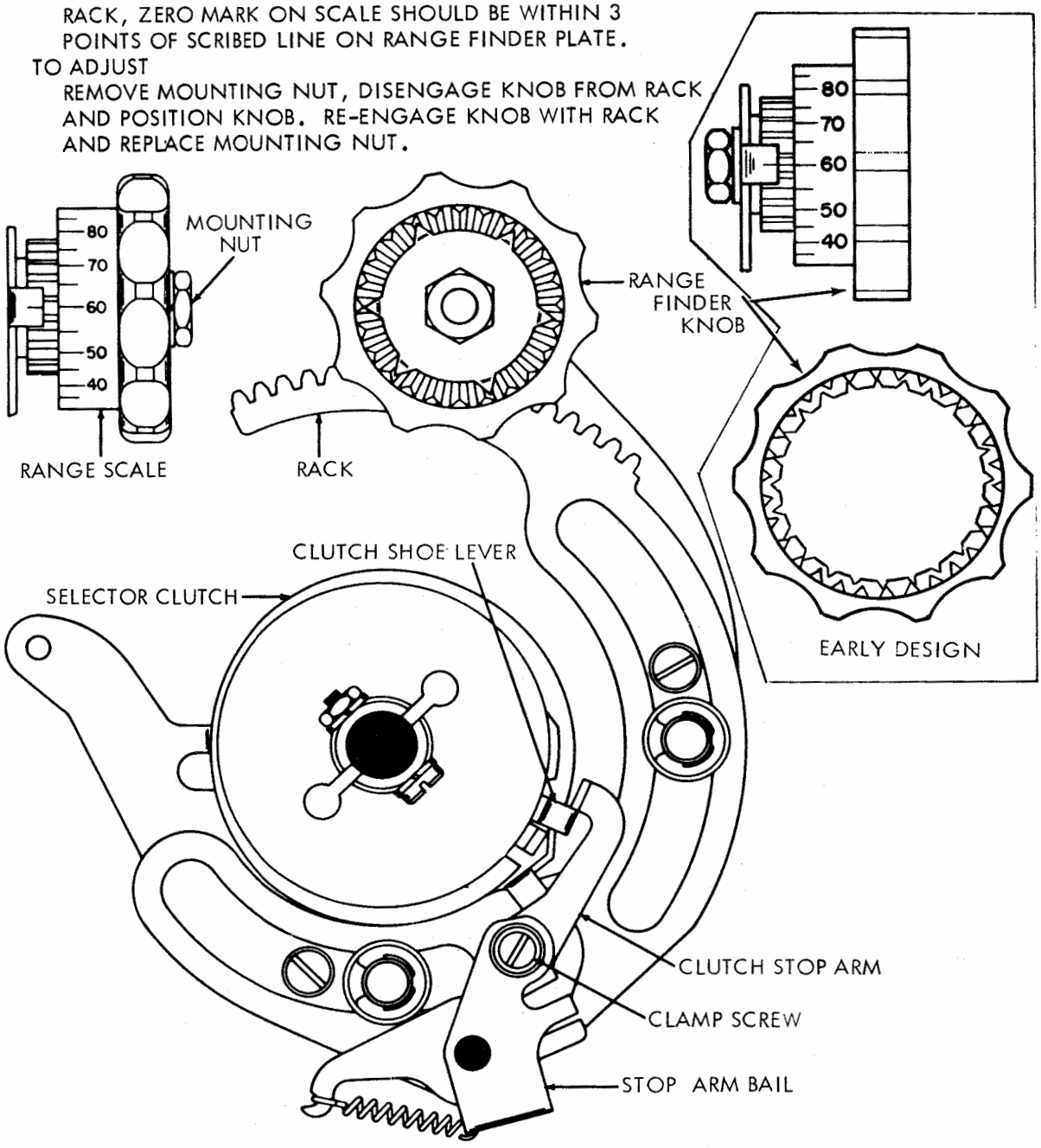
(A) RANGE FINDER KNOB PHASING

REQUIREMENT

WITH RANGE FINDER KNOB TURNED TO EITHER END OF RACK, ZERO MARK ON SCALE SHOULD BE WITHIN 3 POINTS OF SCRIBED LINE ON RANGE FINDER PLATE.

TO ADJUST

REMOVE MOUNTING NUT, DISENGAGE KNOB FROM RACK AND POSITION KNOB. RE-ENGAGE KNOB WITH RACK AND REPLACE MOUNTING NUT.



(B) SELECTOR CLUTCH STOP ARM

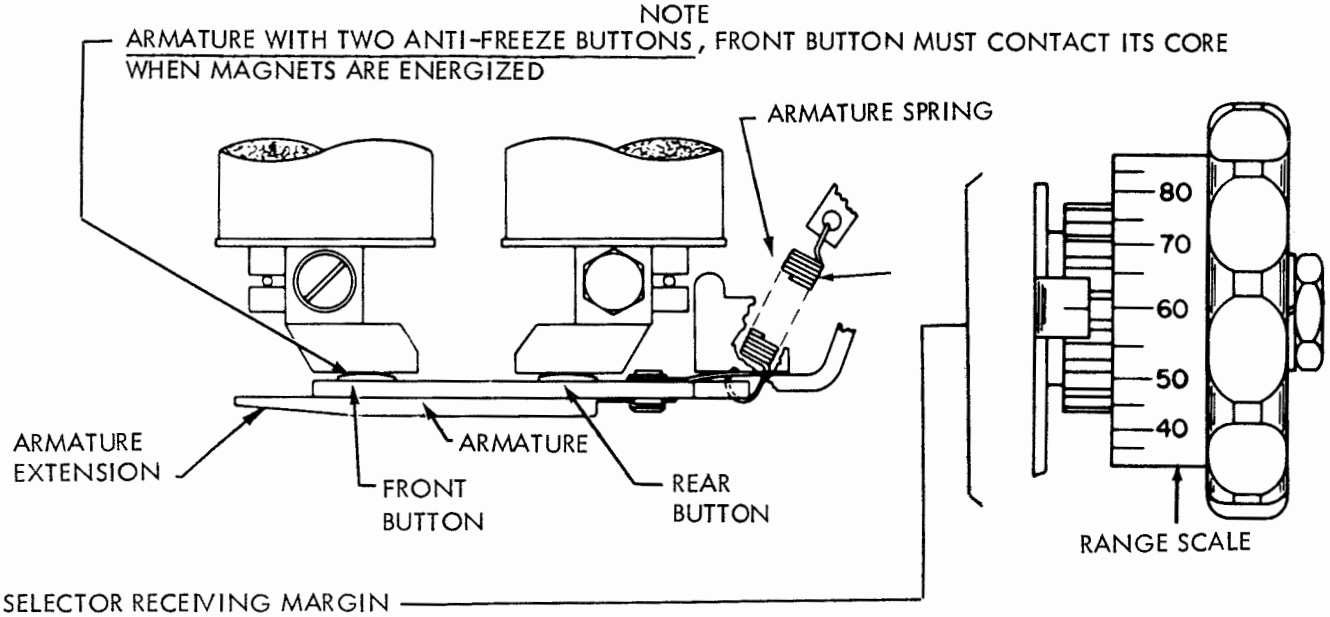
REQUIREMENT

RANGE SCALE SET AT 60. SELECTOR CLUTCH DISENGAGED. ARMATURE IN MARKING POSITION. CLUTCH STOP ARM SHOULD ENGAGE CLUTCH SHOE LEVER BY APPROXIMATELY FULL THICKNESS OF SHOE LEVER.

TO ADJUST

POSITION STOP ARM ON STOP ARM BAIL WITH CLAMP SCREW LOOSENED.

2.11 Selector Mechanism (Cont.)



REQUIREMENT (FOR UNITS EMPLOYING ARMATURE WITH ONE ANTI-FREEZE BUTTON) WHEN A SIGNAL DISTORTION TEST SET IS USED FOR DETERMINING THE RECEIVING MARGINS OF THE SELECTOR, AND WHERE THE CONDITION OF THE COMPONENTS IS EQUIVALENT TO THAT OF NEW EQUIPMENT, THE RANGE AND DISTORTION TOLERANCES BELOW SHOULD BE MET.

REQUIREMENT (FOR UNITS EMPLOYING ARMATURE WITH TWO ANTI-FREEZE BUTTONS) WHEN A DISTORTION TEST SET IS AVAILABLE, THE SELECTOR ARMATURE SPRING TENSION SHOULD BE REFINED, IF NECESSARY, TO MEET THE SELECTOR RECEIVING MARGINS. THE FRONT ANTI-FREEZE BUTTON MUST CONTACT THE MAGNET CORE WHEN THE MAGNET COILS ARE ENERGIZED.

SELECTOR RECEIVING MARGIN MINIMUM REQUIREMENTS

CURRENT	SPEED WPM	POINTS RANGE (ZERO DISTORTION)	PERCENT MARKING AND SPACING BIAS TOLERATED	END DISTORTION TOLERATED (SCALE SET AT BIAS OPTIMUM)
0.060 AMP. (WINDINGS PARALLEL)	60 75 100	72	40	35
0.020 AMP. (WINDINGS SERIES)	60 75	72	40	35

TO ADJUST: REFINE THE SELECTOR ARMATURE SPRING (SEE PAR. 2.04 and 2.05).

RECEIVING MARGIN FOR DUAL SPEED OPERATION (60 AND 100 WPM)

REQUIREMENT

WITH RANGE SCALE SET AT COMMON OPTIMUM SETTING FOR DUAL SPEED OPERATION, THE PAGE PRINTER SHOULD ACCEPT SIGNALS WITH 35% BIAS AND END DISTORTION WHEN OPERATED AT 60 OR 100 WPM.

TO ADJUST

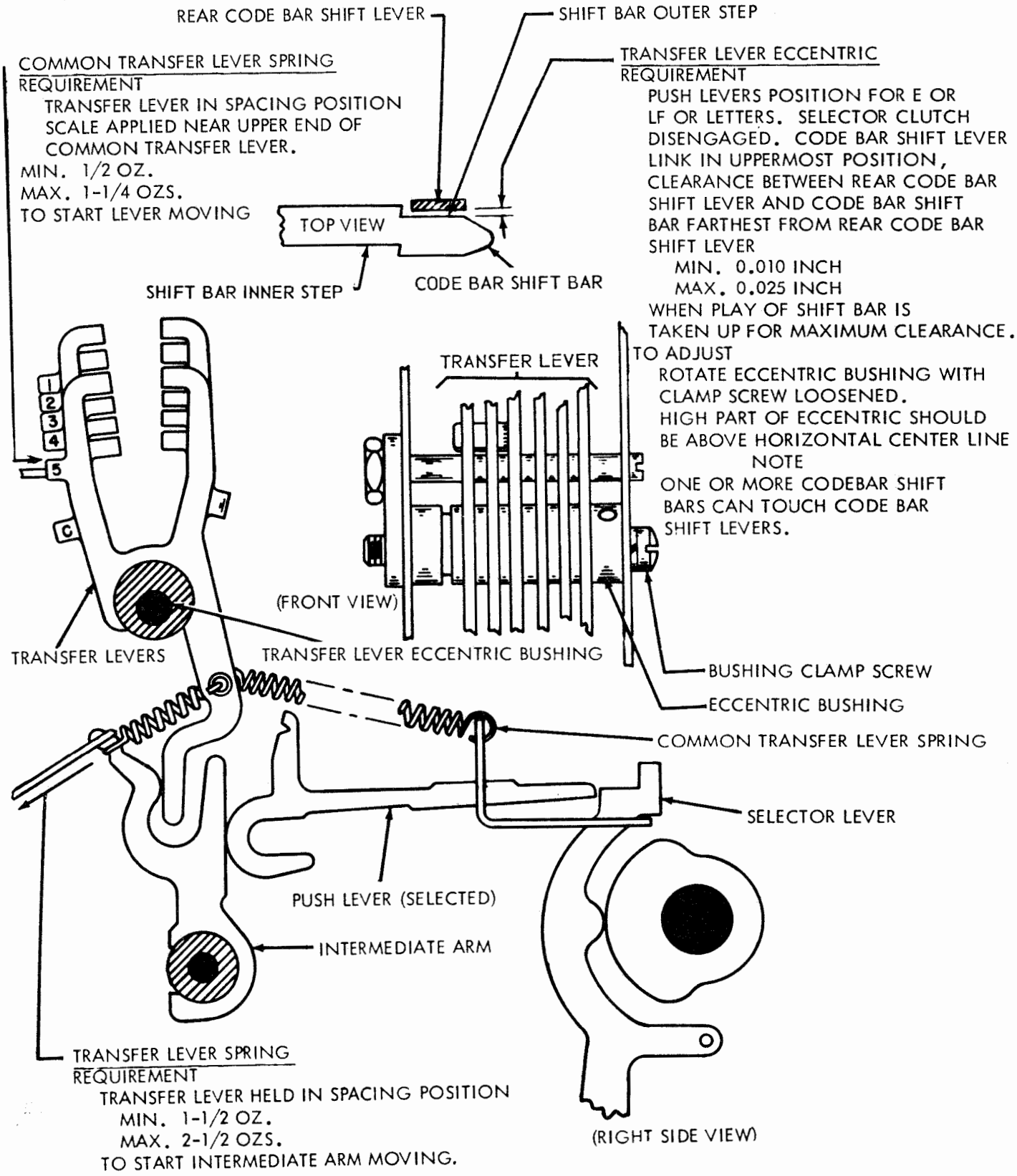
1. BIAS SELECTOR BETWEEN LIMITS OF 0% TO -7% INTERNAL BIAS AT 100 WPM. (DO NOT READJUST FOR 60 WPM).
2. OBTAIN RECEIVING MARGINS AT 60 AND 100 WPM.
3. CALCULATE COMMON OPTIMUM BIAS SETTING AS FOLLOWS: $O_c = \frac{UMB_{100} + LSB_{60}}{2}$ WHERE

   O_c = COMMON OPTIMUM BIAS SETTING

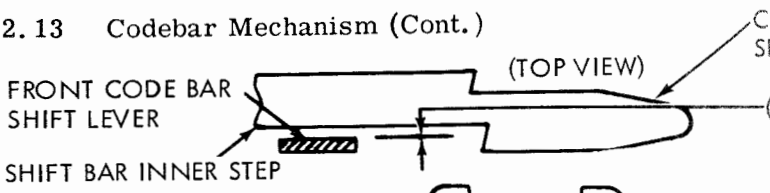
   UMB_{100} = UPPER ORIENT LIMIT MARKING BIAS AT 100 WPM

   LSB_{60} = LOWER ORIENT LIMIT SPACING BIAS AT 60 WPM

2.12 Codebar Mechanism



2.13 Codebar Mechanism (Cont.)



(A) INTERMEDIATE ARM BACKSTOP BRACKET

REQUIREMENT

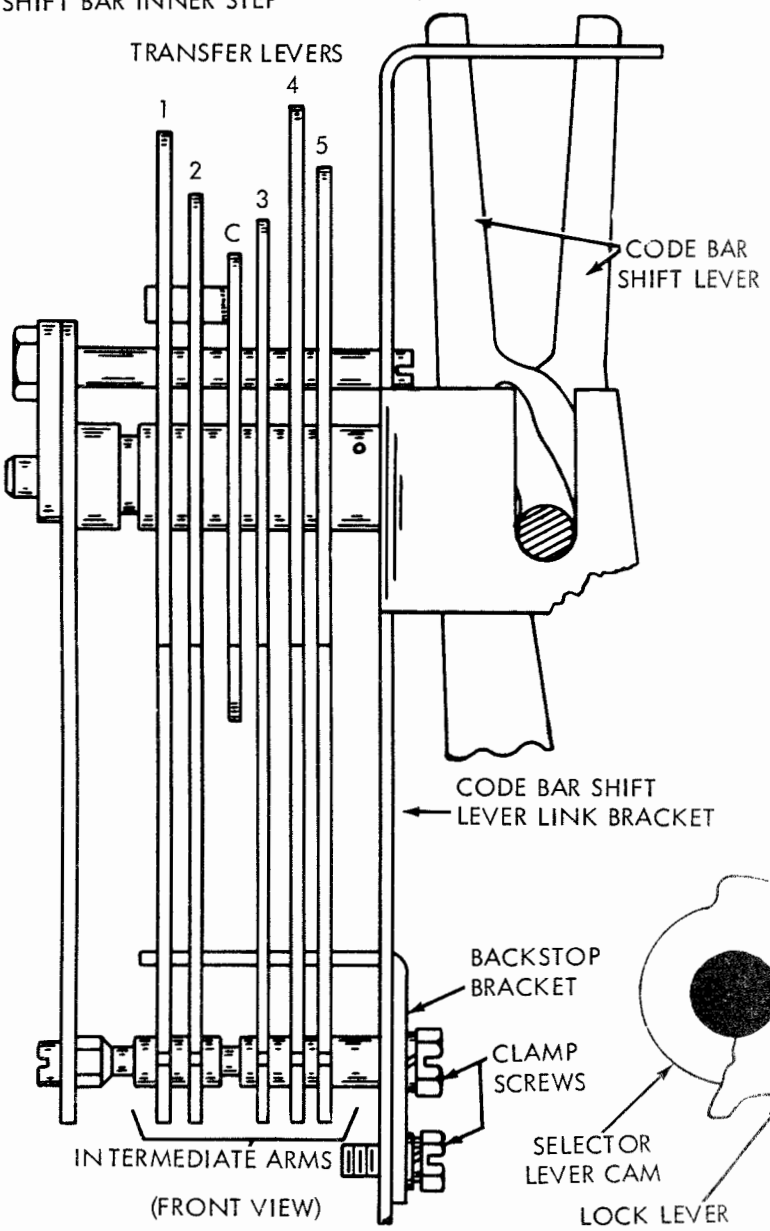
PUSH LEVERS NOT SELECTED. ALL CODE BAR SHIFT BARS TO THE RIGHT. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN LOWERMOST POSITION. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND INNER STEP OF CODE BAR SHIFT BAR FARTHEST FROM FRONT CODE BAR SHIFT LEVER

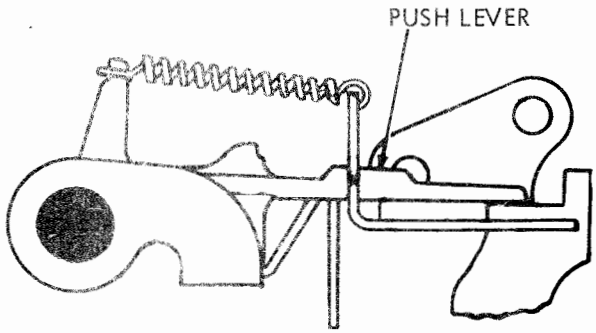
MIN. 0.010 INCH
MAX. 0.025 INCH

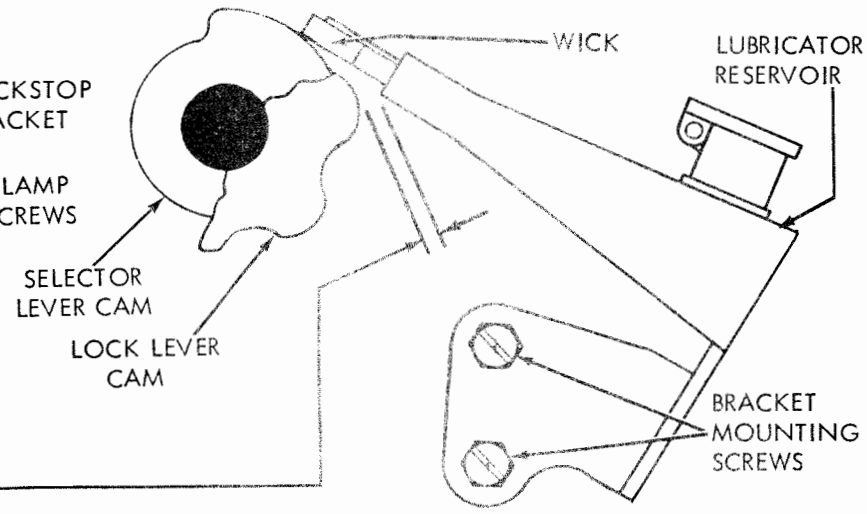
WHEN PLAY IN PARTS IS TAKEN UP FOR MAXIMUM CLEARANCE.

TO ADJUST

POSITION BACKSTOP BRACKET WITH ITS TWO CLAMP SCREWS LOOSENED.







2.14 Selector Mechanism (Cont.)

(B)
SELECTOR CAM LUBRICATOR

REQUIREMENT

THE LUBRICATOR TUBE SHOULD CLEAR THE HIGH PART OF THE LOCK LEVER CAM
MIN. 0.020 INCH

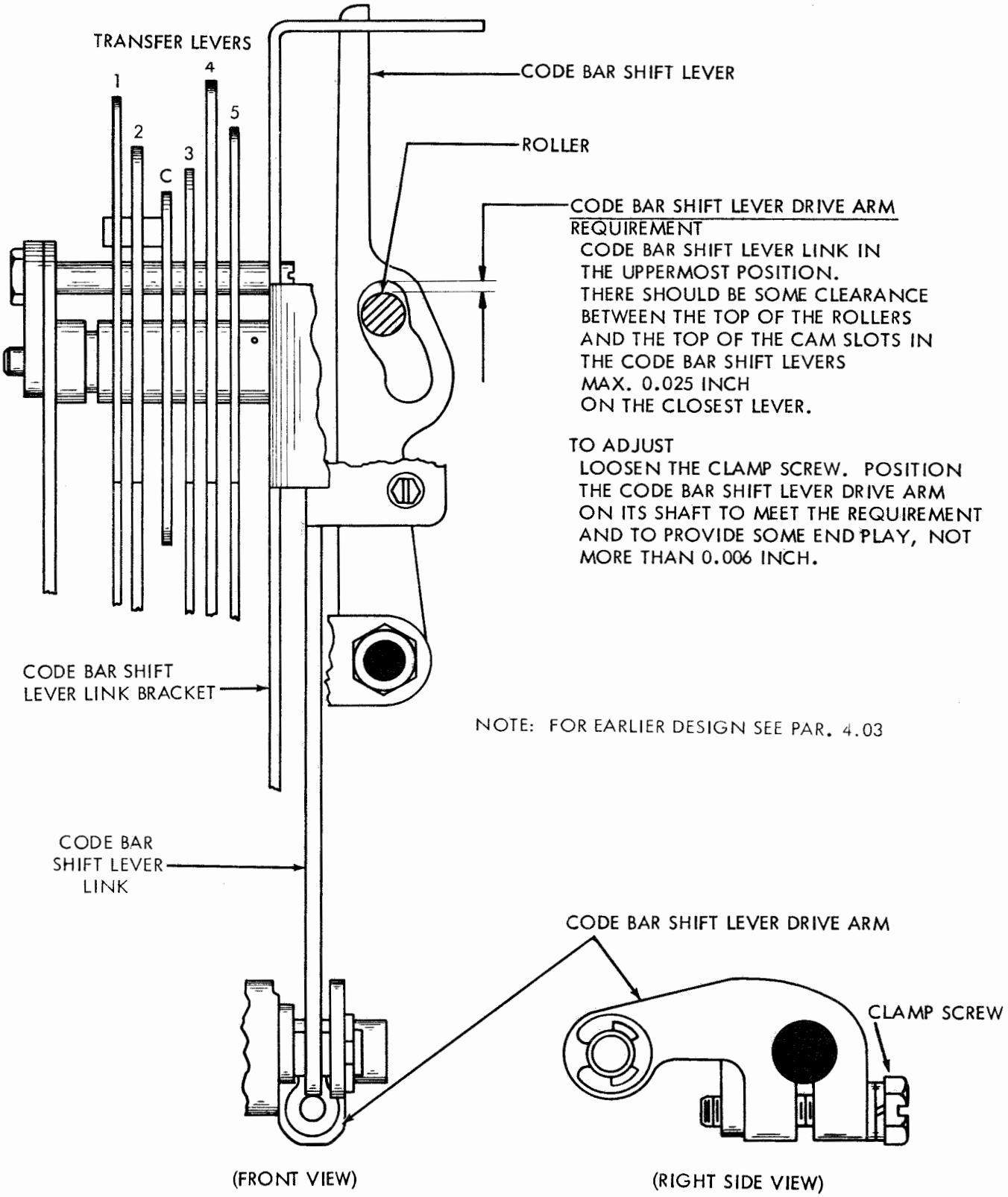
THE HIGH PART OF THE SELECTOR LEVER CAMS SHOULD TOUCH THE LUBRICATOR WICK, BUT SHOULD NOT RAISE IT MORE THAN 1/32 INCH.

NOTE: THERE SHOULD BE SOME CLEARANCE BETWEEN THE MARKING LOCK LEVER SPRING AND THE RESERVOIR.

TO ADJUST

POSITION THE LUBRICATOR BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

2.15 Codebar Mechanism (Cont.)



2.16 Codebar Mechanism (Cont.)

CODE BAR SHIFT LEVER LINK BRACKET

REQUIREMENT

MOTION OF FRONT AND REAR CODE BAR SHIFT LEVERS SHOULD BE EQUALIZED WITH RESPECT TO CODE BAR TRAVEL.

TO CHECK (FRONT)

SELECT BLANK COMBINATION AND ROTATE MAINSHAFT UNTIL CODE BAR SHIFT LEVER LINK REACHES HIGHEST TRAVEL. TAKE UP PLAY FOR MAXIMUM CLEARANCE. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR

MIN. 0.002 INCH
MAX. 0.025 INCH

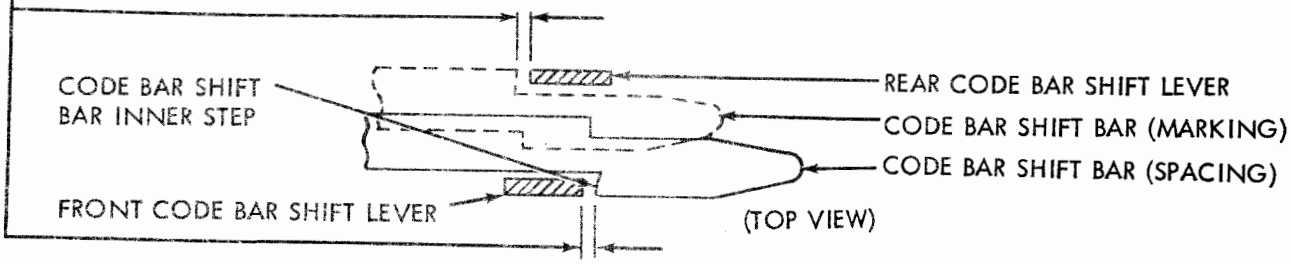
TO CHECK (REAR)

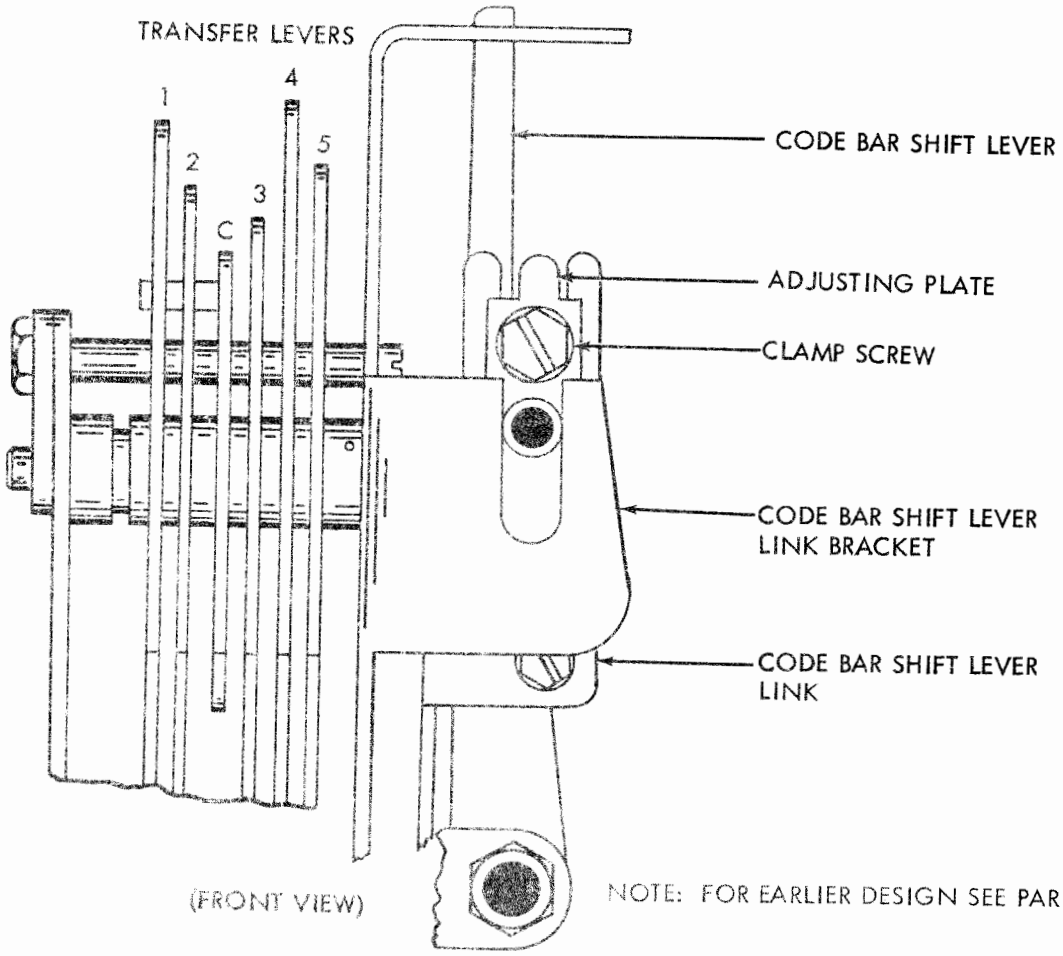
SELECT LETTERS COMBINATION. CHECK CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR IN SAME WAY.

MIN. 0.002 INCH
MAX. 0.025 INCH

TO ADJUST

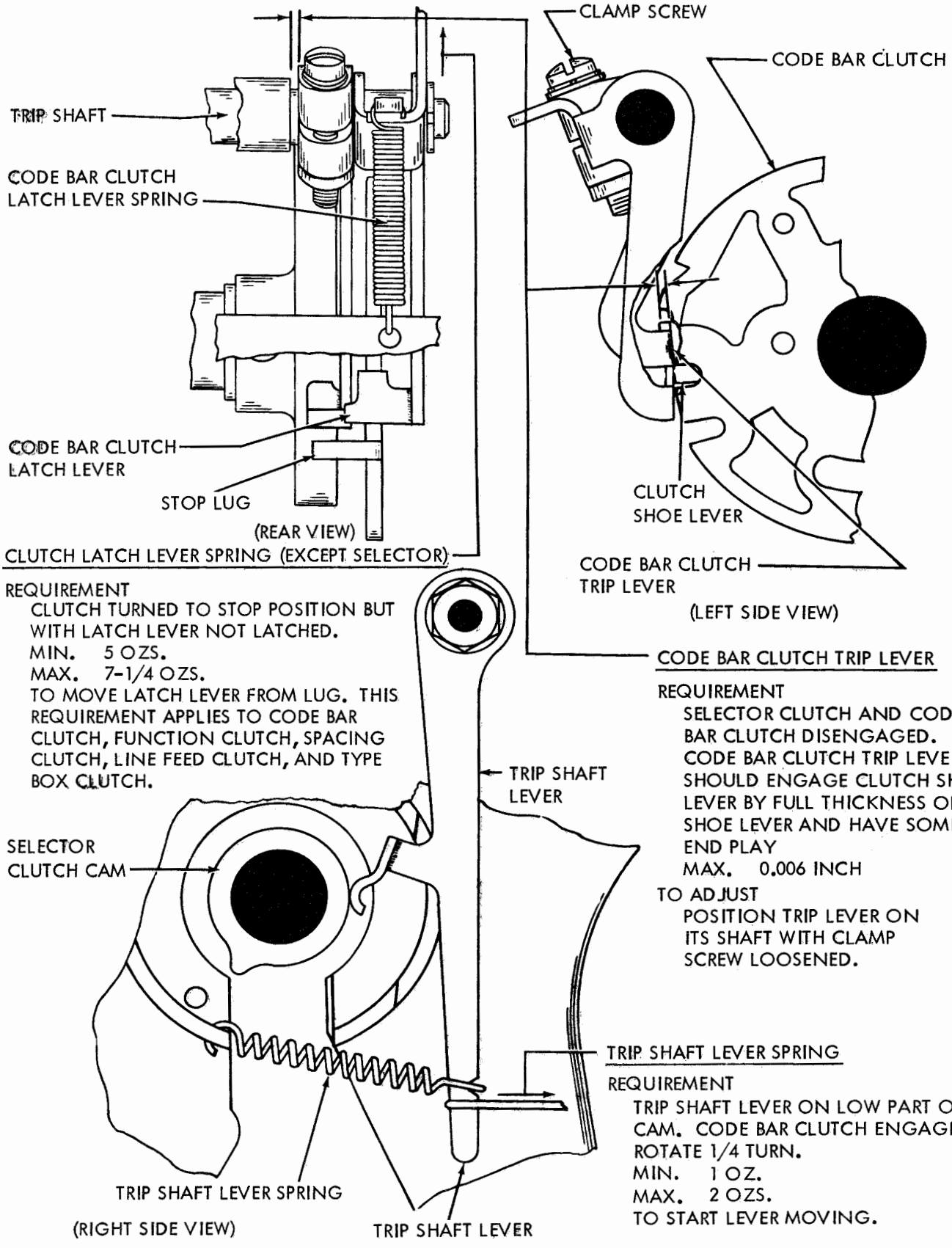
POSITION ADJUSTING PLATES (FRONT AND REAR) WITH CLAMP SCREWS LOOSENED.



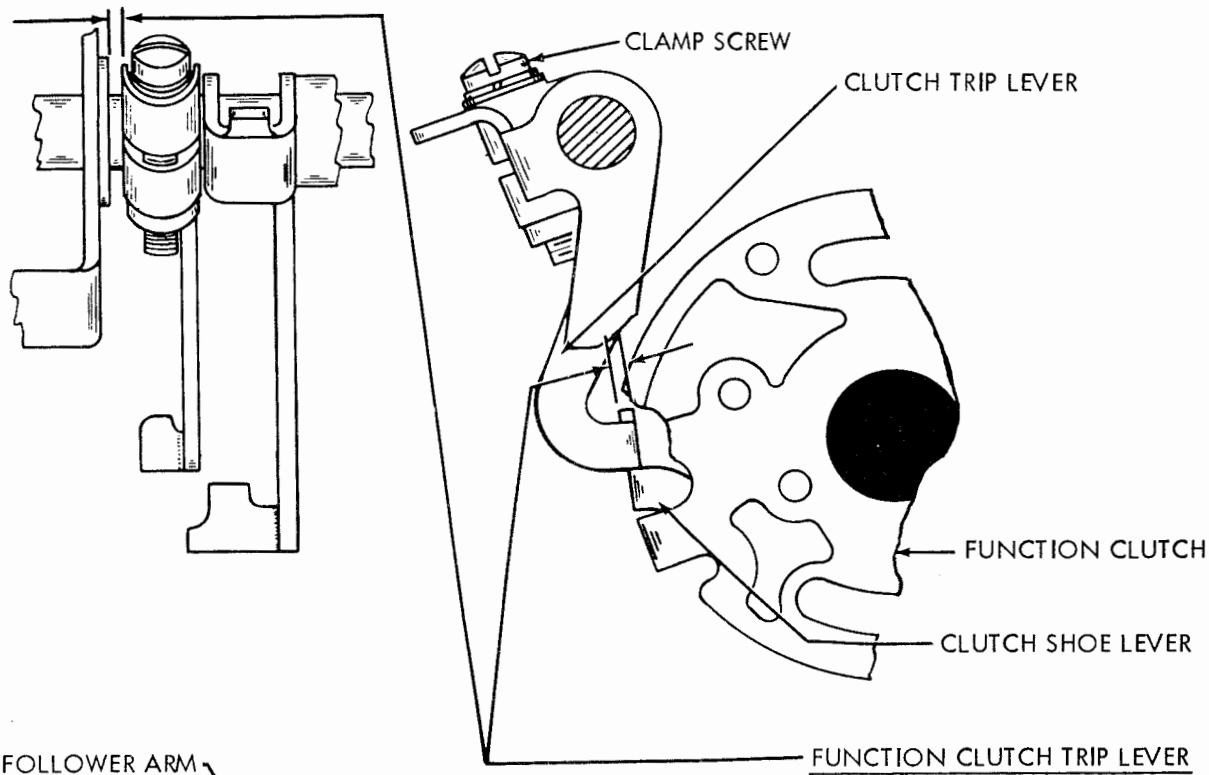


NOTE: FOR EARLIER DESIGN SEE PAR. 4.04

2.17 Main Shaft and Trip Shaft Mechanisms

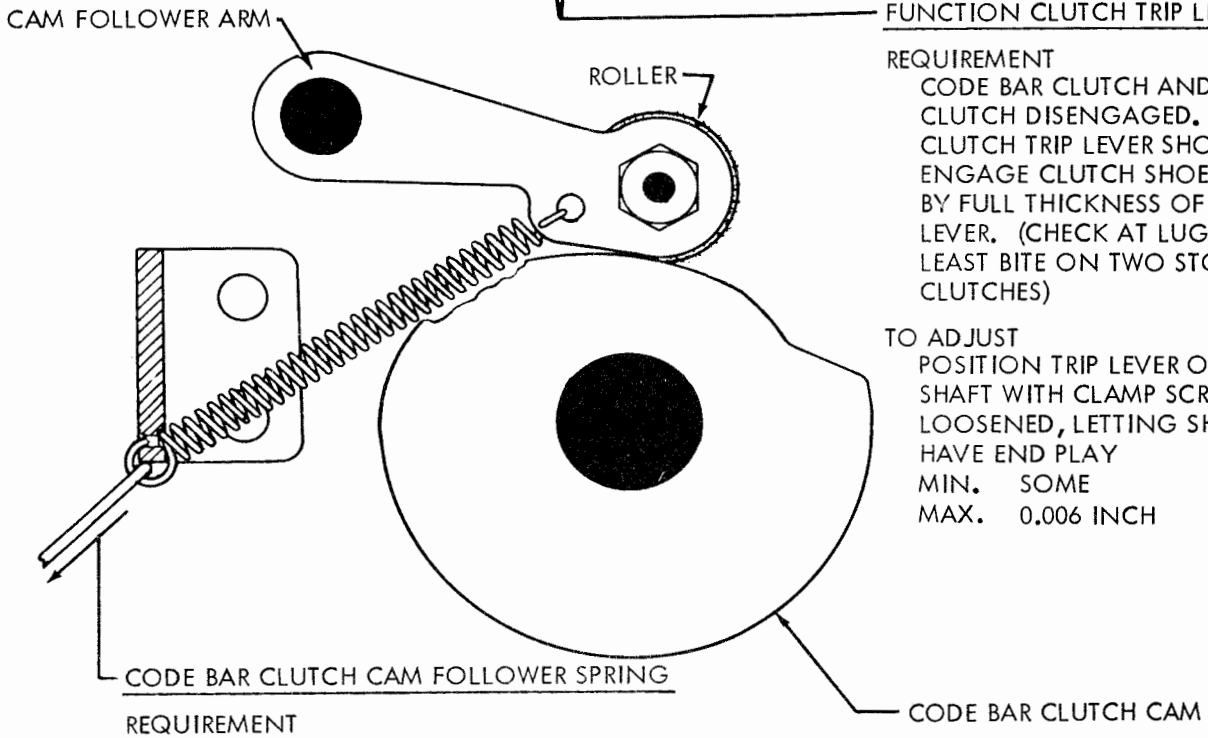


2. 18 Main Shaft and Trip Shaft Mechanisms (Cont.)



REQUIREMENT
CODE BAR CLUTCH AND FUNCTION CLUTCH DISENGAGED. FUNCTION CLUTCH TRIP LEVER SHOULD ENGAGE CLUTCH SHOE LEVER BY FULL THICKNESS OF SHOE LEVER. (CHECK AT LUG WITH LEAST BITE ON TWO STOP CLUTCHES)

TO ADJUST
POSITION TRIP LEVER ON ITS SHAFT WITH CLAMP SCREW LOOSENED, LETTING SHAFT HAVE END PLAY
MIN. SOME
MAX. 0.006 INCH



REQUIREMENT
CAM FOLLOWER ROLLER ON THE LOW PART OF CAM.
THE SPRING UNHOOKED FROM SPRING BRACKET.
MIN. 20 OZS.
MAX. 24 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

2. 19 Main Shaft and Trip Shaft Mechanisms (Cont.)

(A) CLUTCH TRIP SHAFT SET COLLARS

(1) REQUIREMENT

SPACING CUT-OUT LEVER SHOULD HAVE SIDE PLAY

MIN. SOME
MAX. 0.008 INCH

TO ADJUST

POSITION SPACING CUT-OUT LEVER SET COLLAR

NOTE: FOR EARLIER DESIGN SEE PAR. 4.05.

(2) REQUIREMENT

APPROXIMATE ALIGNMENT OF RIGHT END OF STOP EXTENSIONS ON TRIP LEVER AND SHOE LEVER.

TO ADJUST

POSITION LINE FEED CLUTCH TRIP LEVER SET COLLAR.

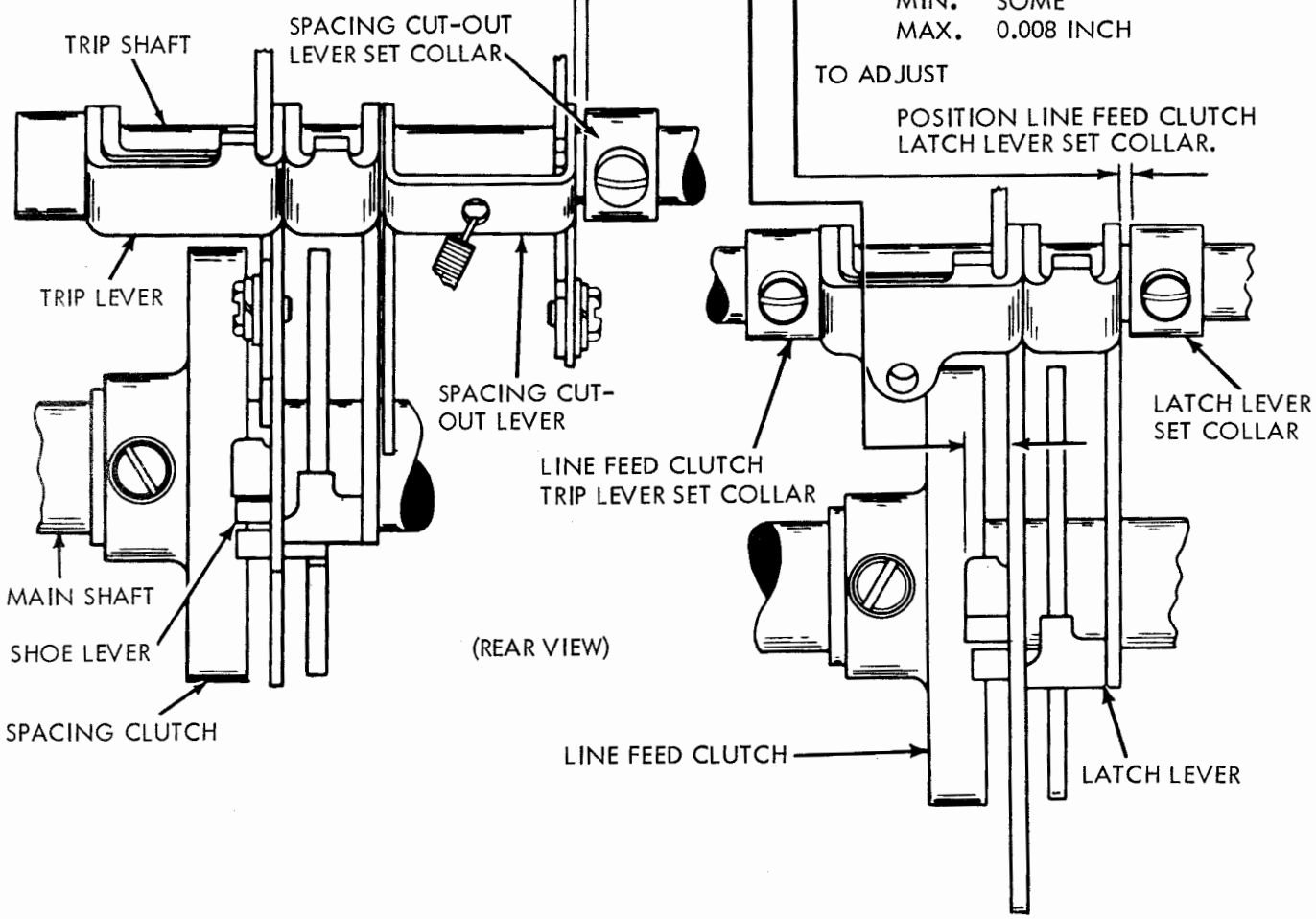
(3) REQUIREMENT

LINE FEED CLUTCH LATCH LEVER SHOULD HAVE SIDE PLAY.

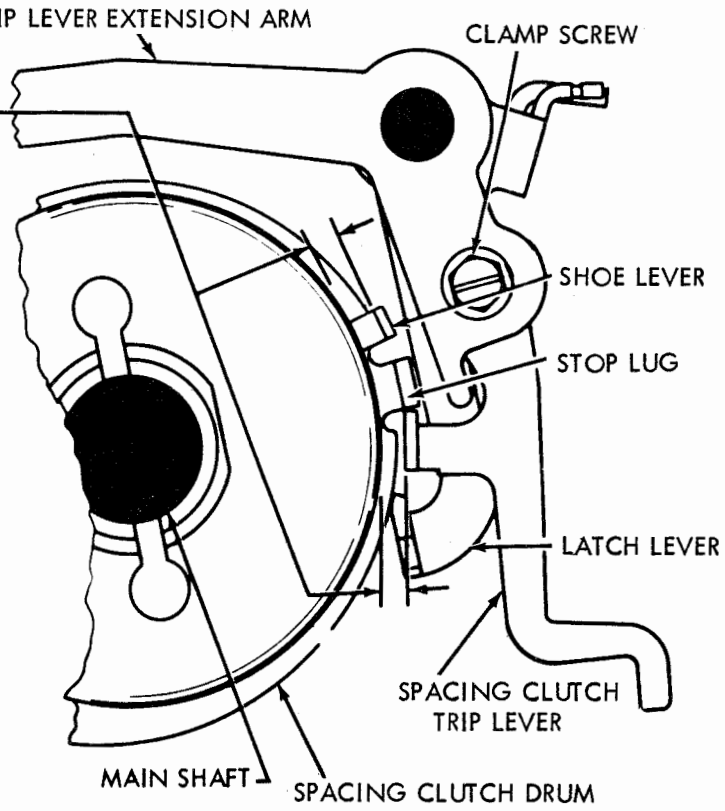
MIN. SOME
MAX. 0.008 INCH

TO ADJUST

POSITION LINE FEED CLUTCH LATCH LEVER SET COLLAR.



2.20 Main Shaft and Trip Shaft Mechanisms (Cont.)



(RIGHT SIDE VIEW)

SPACING CLUTCH TRIP LEVER

REQUIREMENT

CLEARANCE BETWEEN TRIP LEVER AND CLUTCH DRUM SHOULD BE 0.018 TO 0.035 INCH LESS THAN CLEARANCE BETWEEN SHOE LEVER AND DRUM AT STOP SHOWING GREATEST CLEARANCE. THERE SHOULD BE SOME OVERBITE ON ALL STOP LUGS. GAUGE BY EYE.

TO CHECK

DISENGAGE THE CLUTCH. TRIP CLUTCH TRIP LEVER AND ROTATE MAIN SHAFT UNTIL TRIP LEVER IS OVER THE SHOE LEVER. TAKE UP PLAY OF SHOE LEVER INWARD BY SNAPPING THE TRIP LEVER OVER THE SHOE LEVER. CHECK CLEARANCE BETWEEN SHOE LEVER AND DRUM AT EACH STOP POSITION. WITH THE TRIP LEVER AT THE STOP POSITION WHICH YIELDS GREATEST CLEARANCE, ROTATE MAIN SHAFT SLOWLY UNTIL THE TRIP LEVER JUST FALLS OFF THE STOP LUG. CHECK CLEARANCE BETWEEN TRIP LEVER AND DRUM.

TO ADJUST

POSITION THE TRIP LEVER BY MEANS OF ITS CLAMP SCREW.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.06.

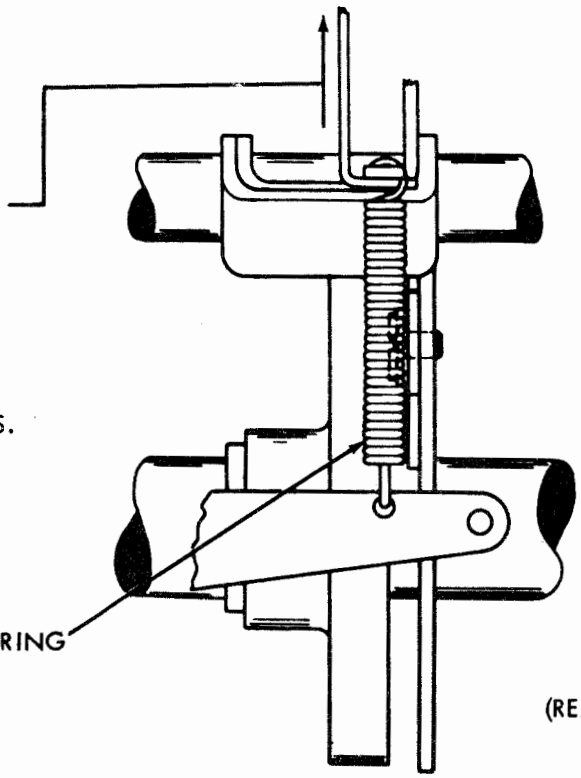
CLUTCH TRIP LEVER SPRING

REQUIREMENT

CLUTCH ENGAGED AND ROTATED UNTIL TRIP LEVER RESTS ON STOP LUG

CLUTCH	MIN.	MAX.
SPACING	11 OZS.	16 OZS.
LINE FEED	9 OZS.	12 OZS.
TYPE BOX	5 OZS.	7-1/4 OZS.

TO MOVE LEVER AWAY FROM STOP LUG.



(REAR VIEW)

2.21 Main Shaft and Trip Shaft Mechanisms (Cont.)

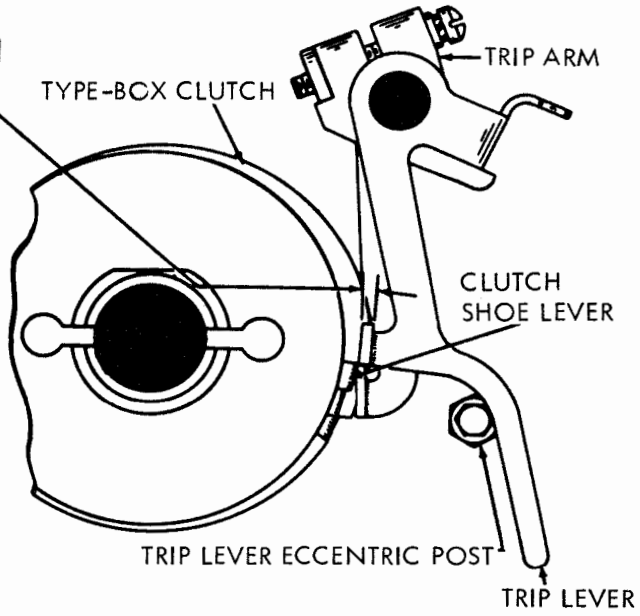
(A) TYPE BOX CLUTCH TRIP LEVER ECCENTRIC POST

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED. TRIP LEVER SHOULD ENGAGE THE CLUTCH SHOE LEVER BY THE FULL THICKNESS OF THE SHOE LEVER.

TO ADJUST

POSITION THE TRIP LEVER ECCENTRIC POST.



(C) LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW

REQUIREMENT

LINE FEED FUNCTION SLIDE ARM IN REAR POSITION.

CLUTCH TRIP LEVER AGAINST ITS ECCENTRIC POST.

TRIP ARM HELD AGAINST ITS FUNCTION SLIDE ARM.

SOME CLEARANCE BETWEEN THE END OF THE TRIP LEVER ADJUSTING SCREW AND THE TRIP ARM.

MAX. 0.006 INCH

TO ADJUST

POSITION THE ADJUSTING SCREW.

(B) LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST

REQUIREMENT

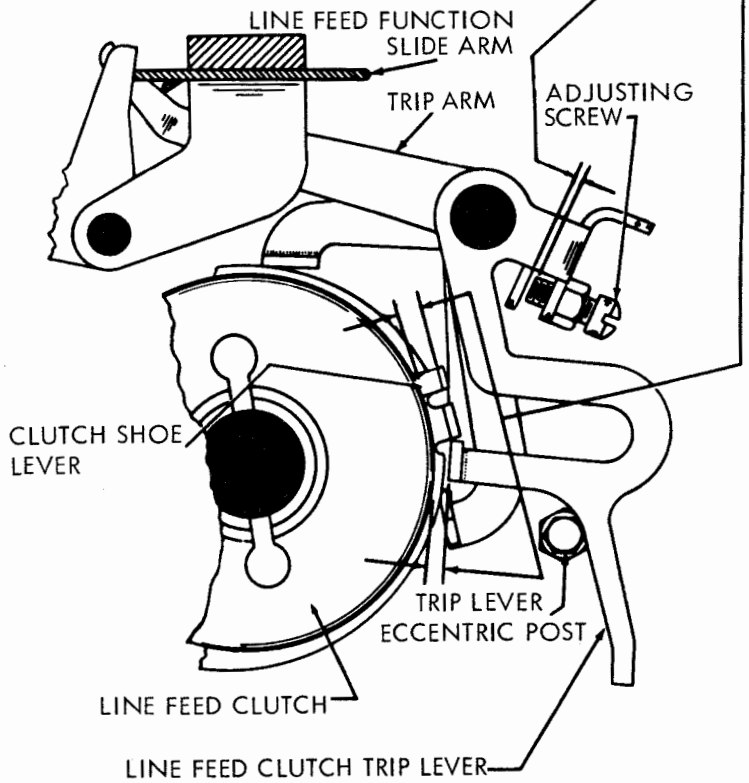
CLEARANCE BETWEEN TRIP LEVER AND CLUTCH DRUM SHOULD BE 0.018 TO 0.035 INCH LESS THAN CLEARANCE BETWEEN SHOE LEVER AND DRUM AT STOP WHICH SHOWS GREATEST CLEARANCE. THERE SHOULD BE SOME OVERBITE ON ALL THREE STOP LUGS AS GAUGED BY EYE.

TO CHECK

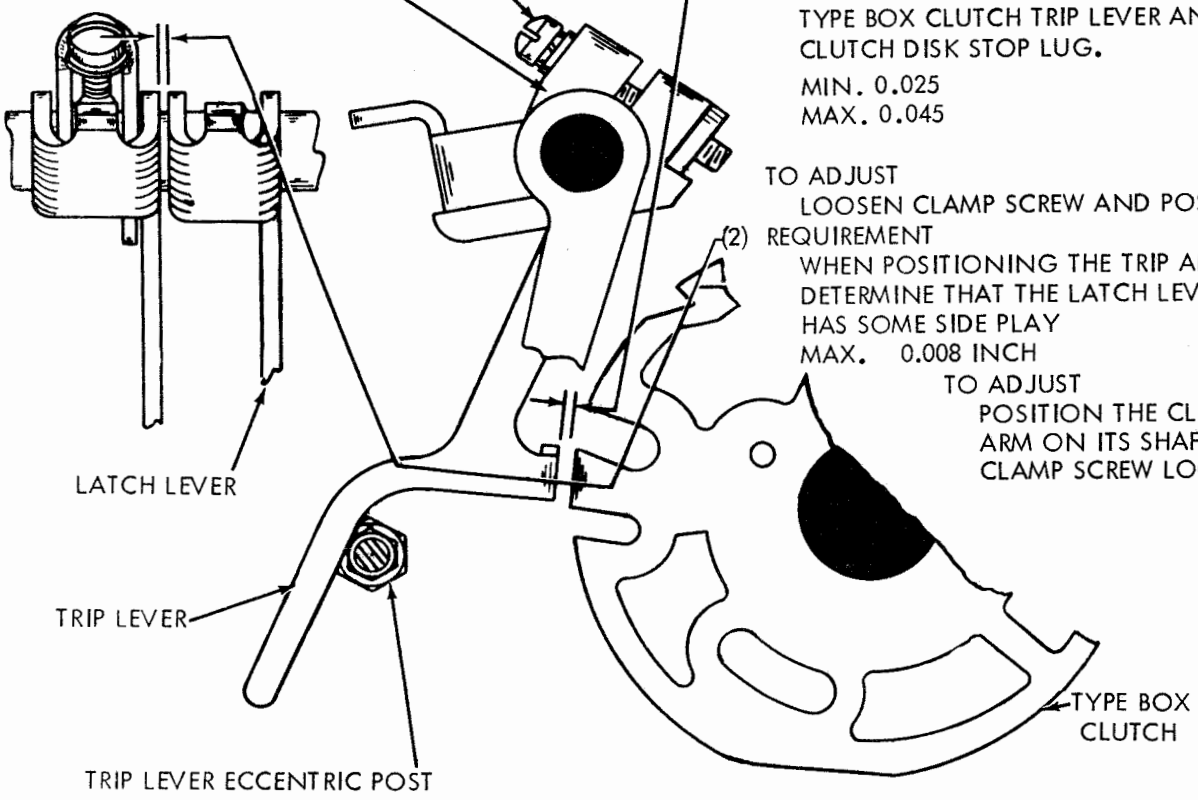
DISENGAGE THE CLUTCH. TRIP CLUTCH TRIP LEVER AND ROTATE MAIN SHAFT UNTIL TRIP LEVER IS OVER THE SHOE LEVER. TAKE UP PLAY OF SHOE LEVER INWARD BY SNAPPING THE TRIP LEVER OVER THE SHOE LEVER. CHECK CLEARANCE BETWEEN SHOE LEVER AND DRUM AT EACH STOP POSITION. WITH TRIP LEVER AT THE STOP POSITION WHICH YIELDS GREATEST CLEARANCE, ROTATE MAIN SHAFT SLOWLY UNTIL THE TRIP LEVER JUST FALLS OFF THE STOP LUG. CHECK CLEARANCE BETWEEN TRIP LEVER AND DRUM.

TO ADJUST

BACK OFF TRIP LEVER ADJUSTING SCREW AND POSITION TRIP LEVER ECCENTRIC STOP POST.



2.22 Main Shaft and Trip Shaft Mechanisms (Cont.)



TYPE BOX CLUTCH TRIP LEVER

(1) REQUIREMENT

CLUTCH TRIP SHAFT CAM FOLLOWER ROLLER (SEE PAR. 2.18) ON LOWEST SURFACE OF CAM (LOCATED ON CODE BAR CLUTCH). CLEARANCE BETWEEN INNER FACE OF TYPE BOX CLUTCH TRIP LEVER AND THE CLUTCH DISK STOP LUG.

MIN. 0.025
MAX. 0.045

TO ADJUST

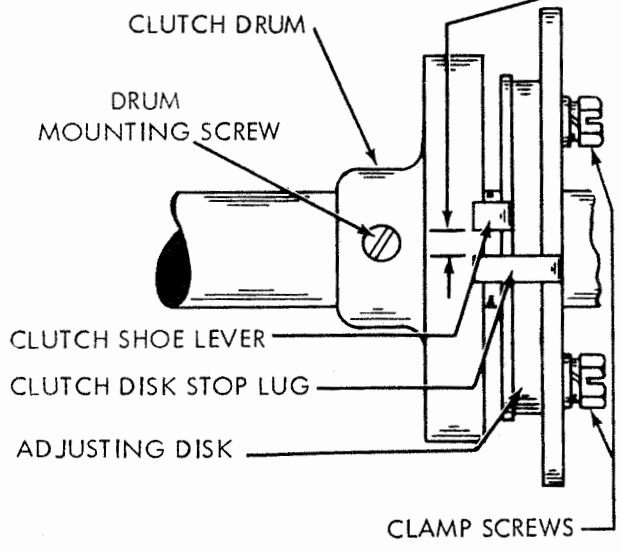
LOOSEN CLAMP SCREW AND POSITION STOP.

(2) REQUIREMENT

WHEN POSITIONING THE TRIP ARM DETERMINE THAT THE LATCH LEVER HAS SOME SIDE PLAY
MAX. 0.008 INCH

TO ADJUST

POSITION THE CLUTCH TRIP ARM ON ITS SHAFT WITH THE CLAMP SCREW LOOSENED.



CLUTCH SHOE LEVER

REQUIREMENT

GAP BETWEEN CLUTCH SHOE LEVER AND ITS STOP LUG SHOULD BE 0.055 INCH TO 0.085 INCH GREATER WHEN CLUTCH IS ENGAGED THAN WHEN THE CLUTCH IS DISENGAGED.

TO CHECK

DISENGAGE THE CLUTCH AND MEASURE THE GAP. TRIP THE CLUTCH AND ROTATE IT UNTIL THE CLUTCH SHOE LEVER IS TOWARD THE BOTTOM OF THE UNIT. AGAIN MEASURE THE GAP WITH THE CLUTCH THUS ENGAGED.

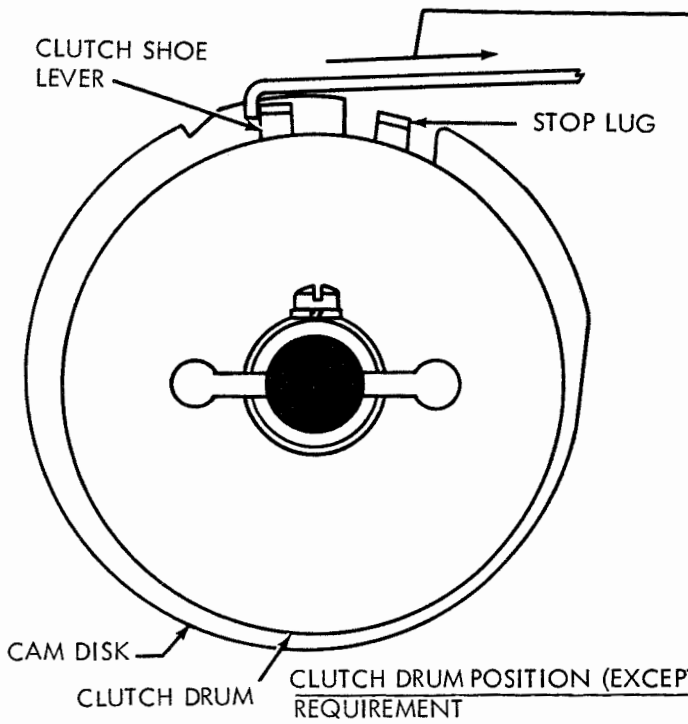
NOTE

ON MULTIPLE STOP CLUTCHES CHECK THE CLEARANCE AT THE STOP LUG THAT IS ADJACENT TO THE FORM IN THE CLUTCH ADJUSTING DISK.

TO ADJUST

LOOSEN THE TWO CLAMP SCREWS ON THE CLUTCH DISK. ENGAGE A WRENCH OR SCREWDRIVER ON THE LUG OF THE ADJUSTING DISK AND ROTATE THE DISK.

2.23 Main Shaft and Trip Shaft Mechanisms (Cont.)



CLUTCH SHOE LEVER SPRING

REQUIREMENT

CLUTCH ENGAGED. HOLD CAM DISK TO PREVENT TURNING. SPRING SCALE PULLED AT TANGENT TO CLUTCH.

MIN. 15 OZS.
MAX. 20 OZS. ONE-STOP CLUTCHES

MIN. 16 OZS.
MAX. 22 OZS. MULTIPLE-STOP CLUTCHES

TO MOVE THE SHOE LEVER IN CONTACT WITH THE STOP LUG.

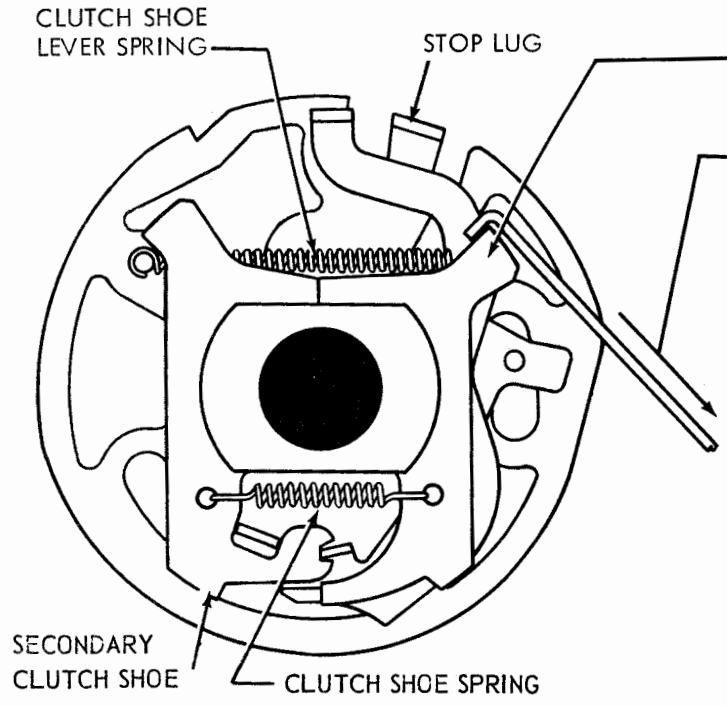
CLUTCH DRUM POSITION (EXCEPT SELECTOR)

REQUIREMENT

CLUTCH SHOE LEVER HELD DISENGAGED. CLUTCH SHOULD HAVE SOME END PLAY
MAX. 0.015 INCH

TO ADJUST

POSITION EACH DRUM AND SPACING CLUTCH SET COLLAR WITH MOUNTING SCREWS LOOSENED.



CLUTCH SHOE SPRING

NOTE

IN ORDER TO CHECK THIS SPRING TENSION, IT IT NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO BELIEVE THAT IT DOES NOT MEET ITS REQUIREMENT.

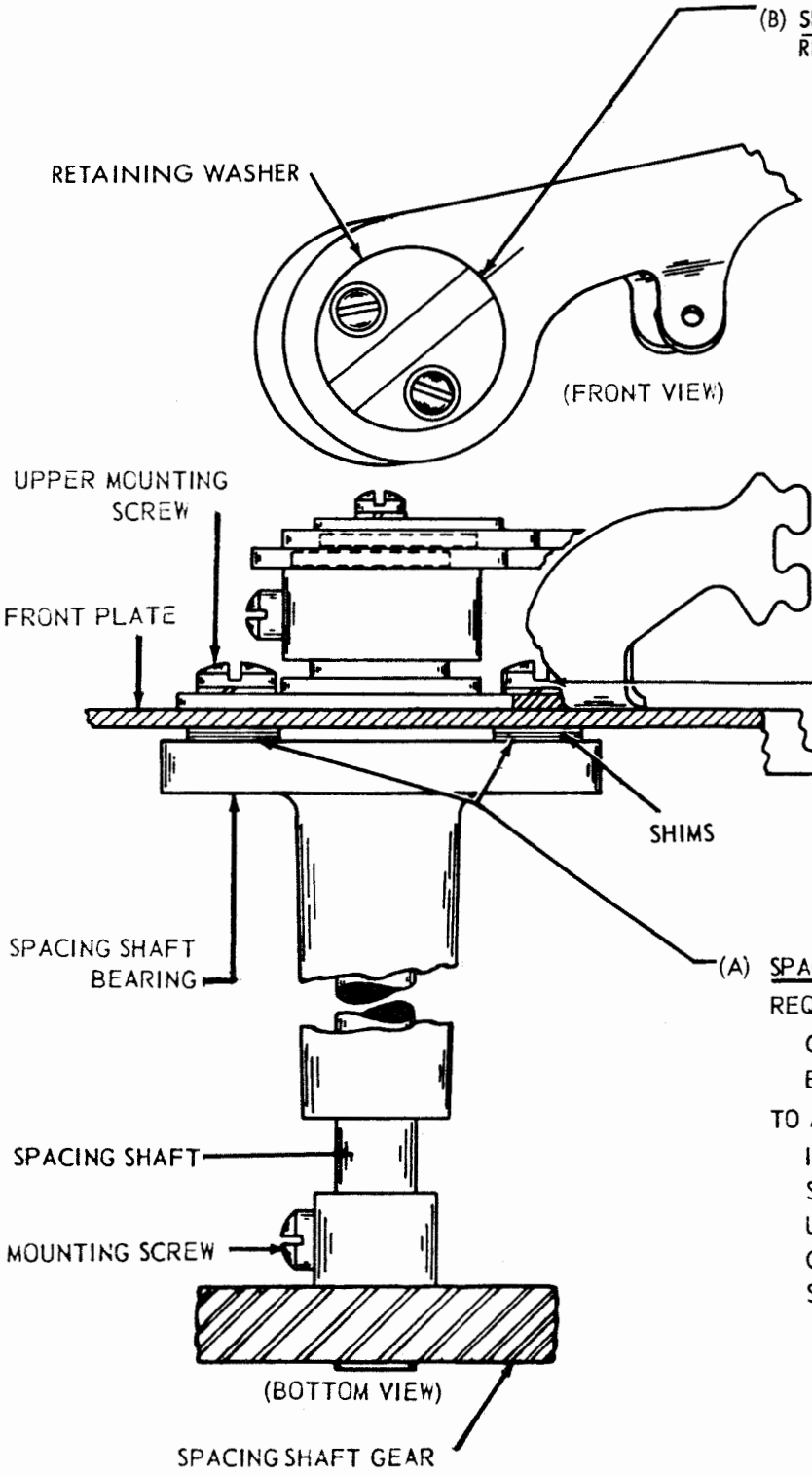
REQUIREMENT

CLUTCH DRUM REMOVED. SPRING SCALE APPLIED TO PRIMARY SHOE AT A TANGENT TO THE FRICTION SURFACE.

MIN. 3 OZS.
MAX. 5 OZS.

TO START THE PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE AT POINT OF CONTACT

2.24 Spacing Mechanism



(B) SPACING GEAR PHASING

REQUIREMENT

SPACING CLUTCH DISENGAGED. INDEX LINE ON THE SPACING PAWL SHOULD BE AS NEAR AS POSSIBLE TO THE CENTER OF THE TWO LINES ON THE PAWL RETAINING WASHER.

TO ADJUST

REMOVE THE MOUNTING SCREW FROM THE SPACING SHAFT GEAR. HOLD THE PAWLS IN ALIGNMENT AND ENGAGE THE SPACING SHAFT GEAR WITH THE CLUTCH GEAR AT A POINT WHERE THE SPACING SHAFT GEAR MOUNTING SCREW HOLE IS IN LINE WITH THE TAPPED HOLE IN THE SPACING SHAFT AND INSERT THE MOUNTING SCREW

(A) SPACING GEAR CLEARANCE

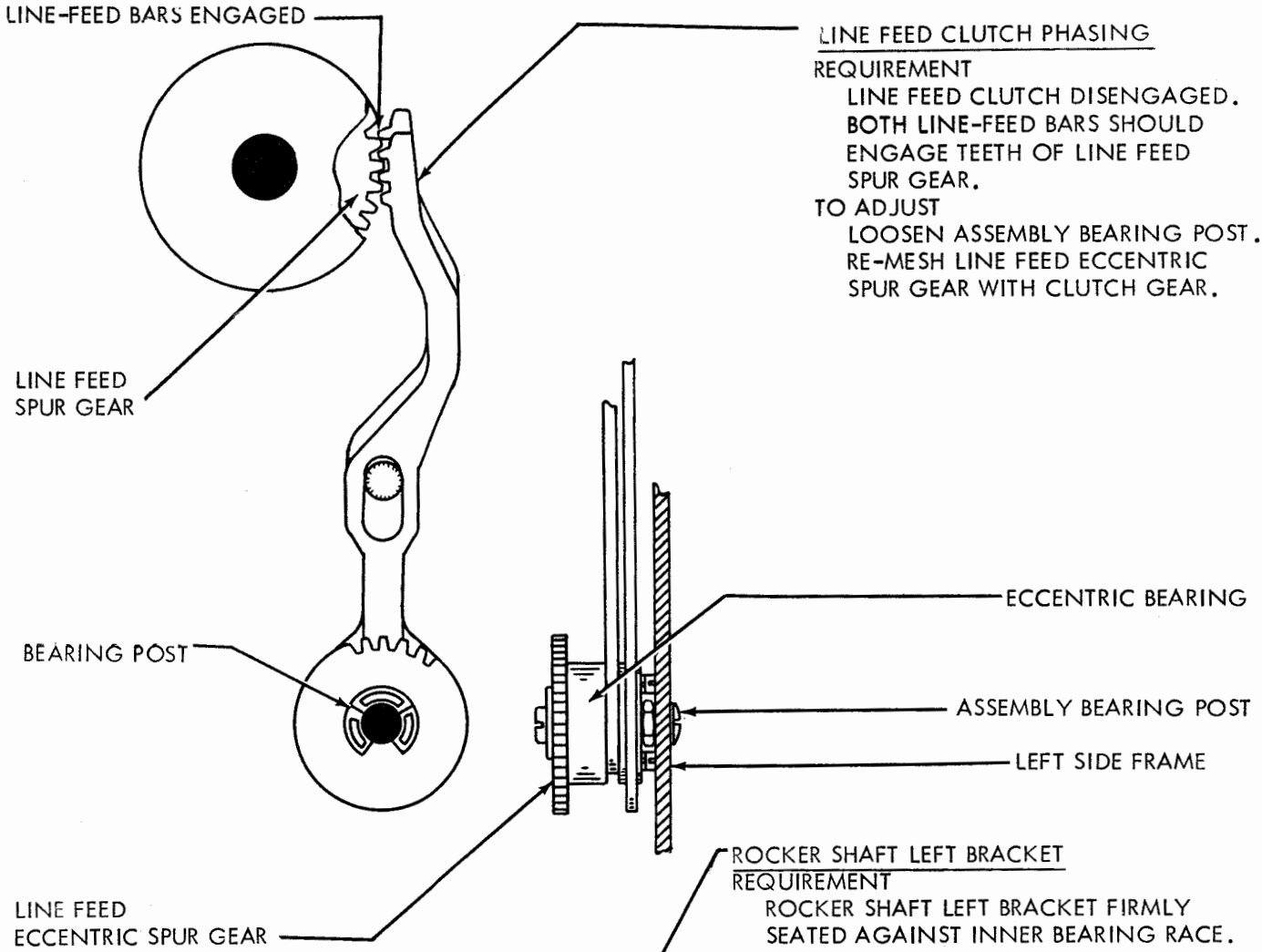
REQUIREMENT

CARRIAGE FULLY RETURNED. MINIMUM BACKLASH OF SPACING GEARS WITHOUT BIND.

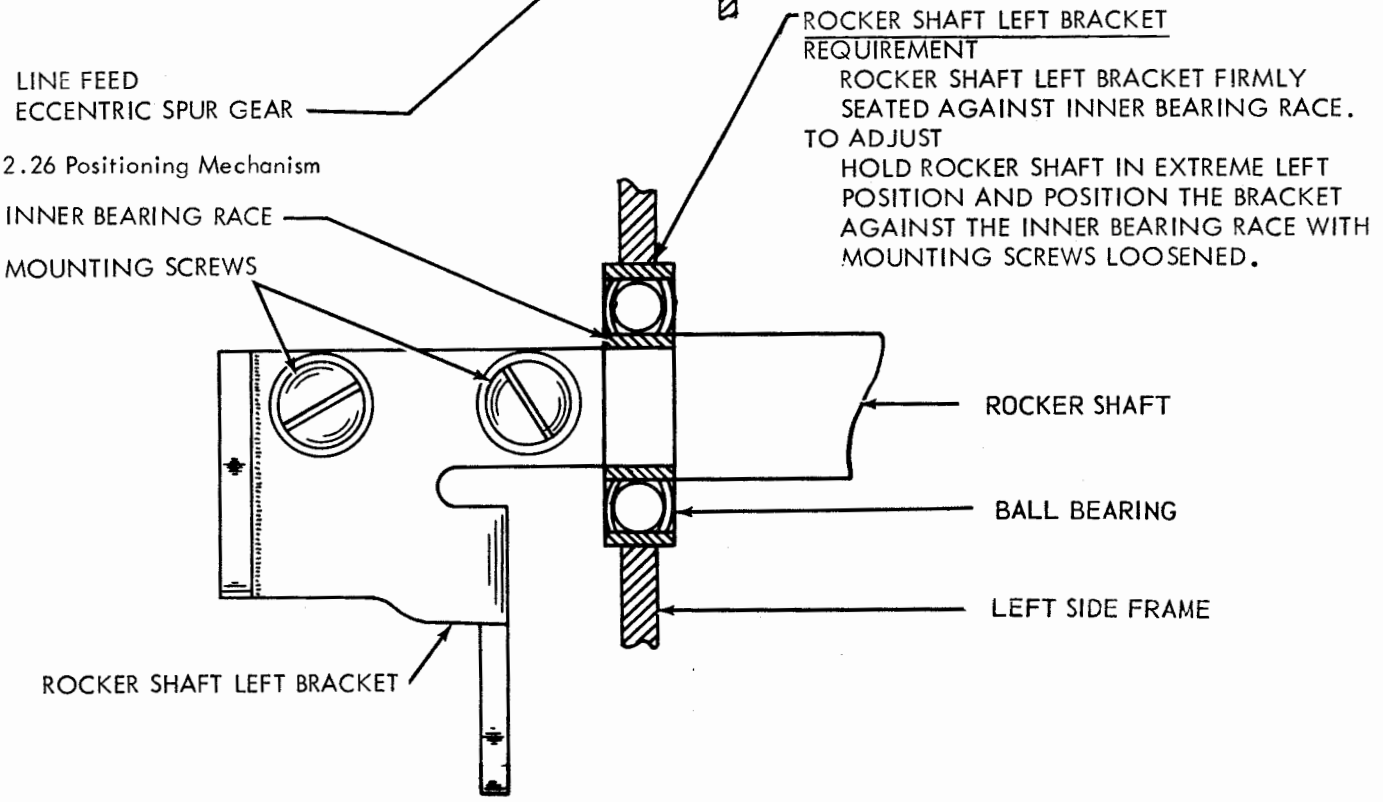
TO ADJUST

INSERT SHIMS BETWEEN THE SPACING SHAFT BEARING AND FRONT PLATE AT UPPER MOUNTING SCREW TO INCREASE CLEARANCE AND AT LOWER MOUNTING SCREW TO DECREASE BACKLASH.

2.25 Line Feed and Platen Mechanism



2.26 Positioning Mechanism



2.27 Positioning Mechanism (Cont.)

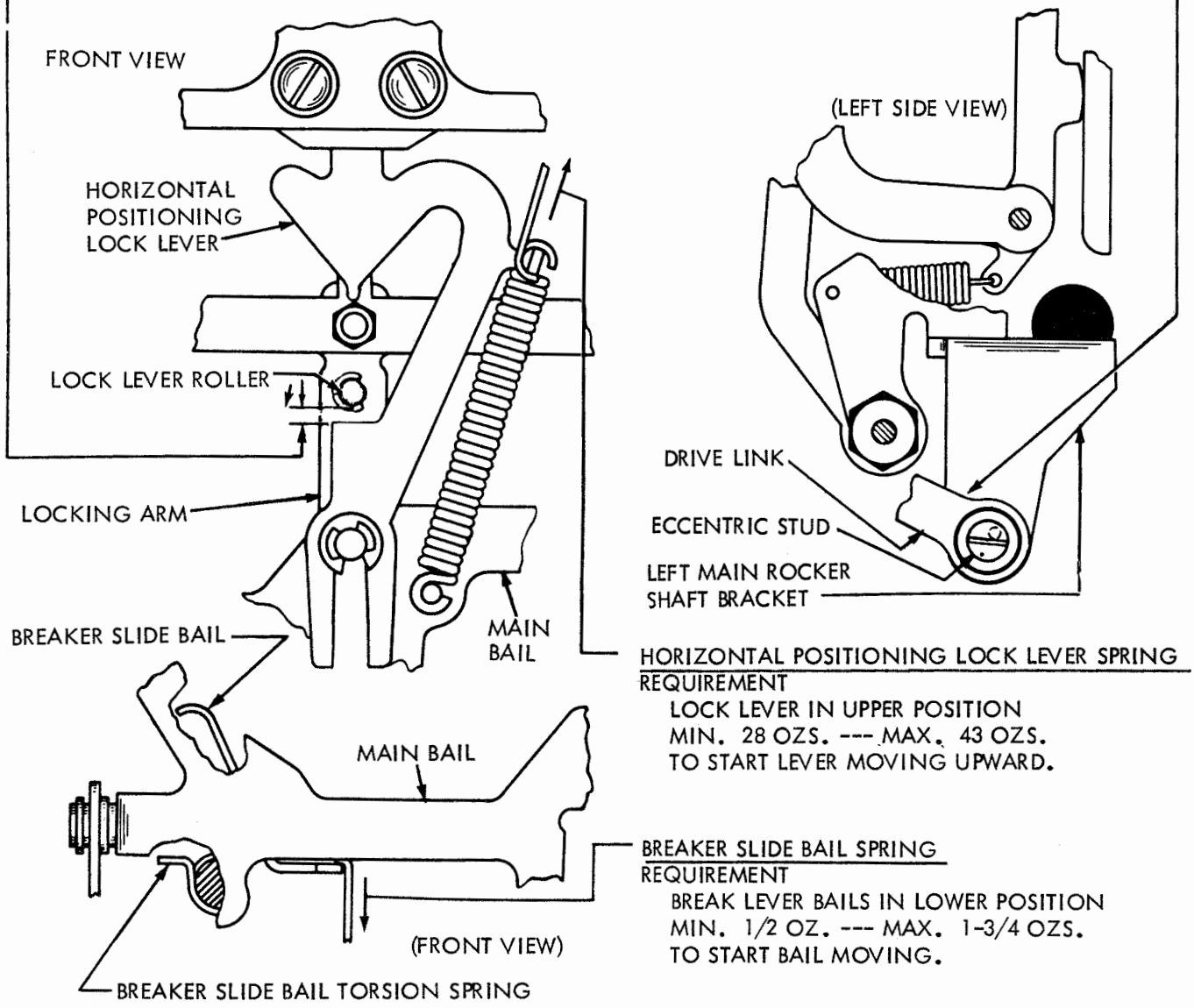
ROCKER SHAFT BRACKET ECCENTRIC STUD

(1) REQUIREMENT --- WITH TYPE BOX CLUTCH DISENGAGED AND PLAY IN LOCKING ARM TAKEN UP TOWARD FRONT, GAP BETWEEN LOWER SIDE OF LOCK LEVER ROLLER AND TOP EDGE OF SHOULDER ON HORIZONTAL POSITIONING LOCK LEVER SHOULD BE:
MIN. 0.055 INCH ---------- MAX. 0.090 INCH

(2) REQUIREMENT --- MAKE SURE THAT ROCKER SHAFT DRIVE LINK IS FREE IN ITS BEARINGS (NOT UNDER LOAD) WHEN CLUTCH IS IN (a) ITS STOP POSITION; (b) WHEN IT IS ROTATED 180 DEGREES FROM STOP POSITION.

TO ADJUST --- (1) POSITION ECCENTRIC STUD IN LOWER END OF ROCKER-SHAFT LEFT BRACKET. KEEP HIGH PART OF ECCENTRIC (MARKED WITH DOT) BELOW CENTER LINE OF DRIVE LINK. (2) MAKE SURE THAT STUD IS FREE IN TYPE BOX CLUTCH BEARING AT POSITIONS (a) AND (b) ABOVE (NO PUSHING OR PULLING FORCE ON DRIVE LINK). CHECK MANUALLY BY MOVING LINK TOWARD LEFT SIDE FRAME AND THEN IN REVERSE DIRECTION.

NOTE --- ANY CHANGE IN THIS ADJUSTMENT WILL REQUIRE THAT THE FOLLOWING RELATED ADJUSTMENTS BE RECHECKED: HORIZONTAL POSITIONING DRIVE LINKAGE (PAR. 2.35) RIGHT VERTICAL POSITIONING LEVER ECCENTRIC STUD (PAR. 2.28), LEFT VERTICAL POSITIONING LEVER ECCENTRIC STUD (PAR. 2.29) VERTICAL POSITIONING LOCK LEVER (PAR. 2.36), RIBBON FEED LEVER BRACKET (PAR. 2.53), FUNCTION STRIPPER BLADE ARMS (PAR. 4.18), SPACING TRIP LEVER BAIL CAM PLATE (PAR. 2.31). REVERSING SLIDE BRACKETS (PAR. 2.34) AND RIBBON REVERSE SPUR GEAR (PAR. 2.52) PRINTING TRACK (PAR. 2.49) AND PRINTING ARM (PAR. 2.50).



HORIZONTAL POSITIONING LOCK LEVER SPRING

REQUIREMENT

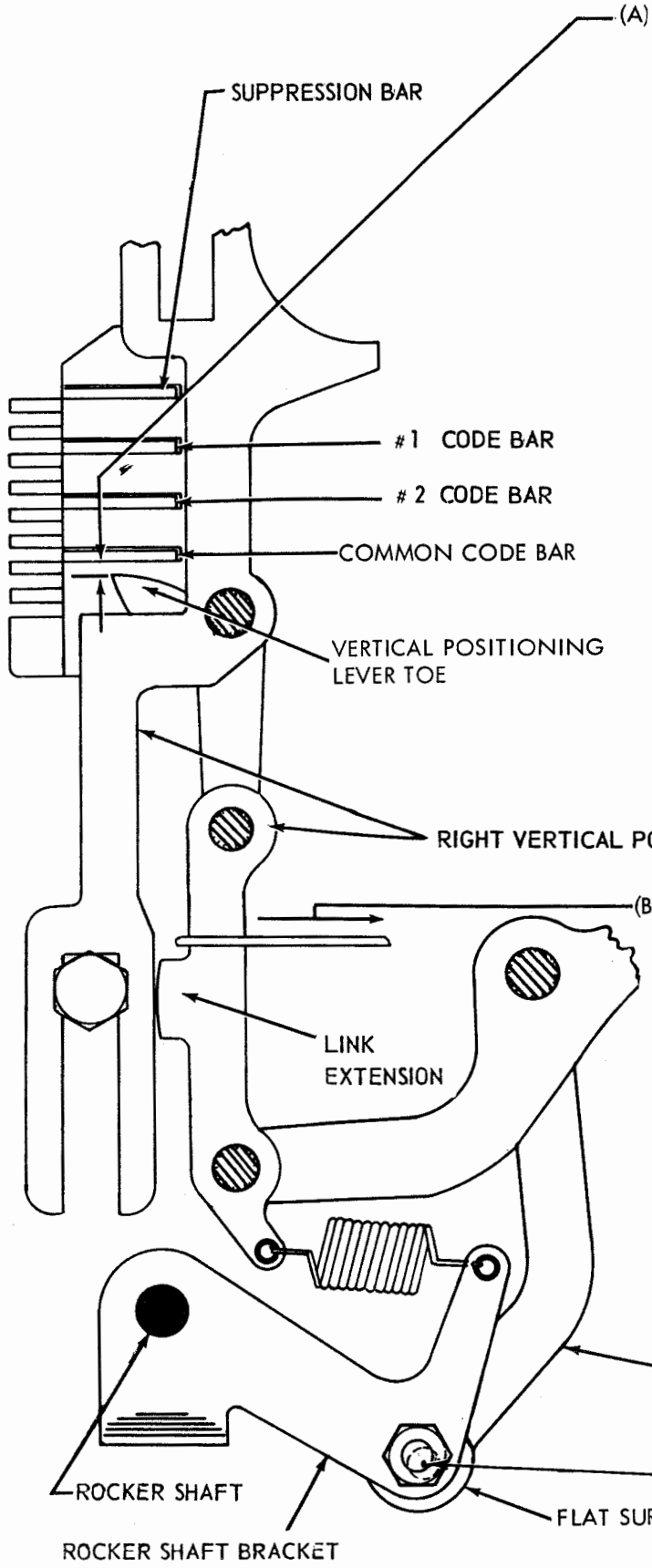
LOCK LEVER IN UPPER POSITION
MIN. 28 OZS. --- MAX. 43 OZS.
TO START LEVER MOVING UPWARD.

BREAKER SLIDE BAIL SPRING

REQUIREMENT

BREAK LEVER BAILS IN LOWER POSITION
MIN. 1/2 OZ. --- MAX. 1-3/4 OZS.
TO START BAIL MOVING.

2.28 Positioning Mechanism (Cont.)



RIGHT VERTICAL POSITIONING LEVER ECCENTRIC STUD

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED, COMMON CODE BAR IN SPACING POSITION. PLAY TAKEN UP BY PRESSING DOWNWARD ON COMMON CODE BAR AT GUIDE BLOCK.

MIN. 0.030 INCH
MAX. 0.050 INCH

CLEARANCE BETWEEN THE TOE OF VERTICAL POSITIONING LEVER AND THE BOTTOM OF THE COMMON CODE BAR WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE A MINIMUM

TO ADJUST

POSITION THE ECCENTRIC STUD IN THE RIGHT ROCKER SHAFT BRACKET. POSITION HIGH PART OF ECCENTRIC (MARKED WITH DOT TOWARD THE REAR. THE HIGH PART OF THE ECCENTRIC CAN ALSO BE IDENTIFIED BY THE EXPOSED PORTION OF THE FLAT SURFACE OF THE VERTICAL POSITIONING LINK.

(B) VERTICAL POSITIONING LEVER SPRING

REQUIREMENT

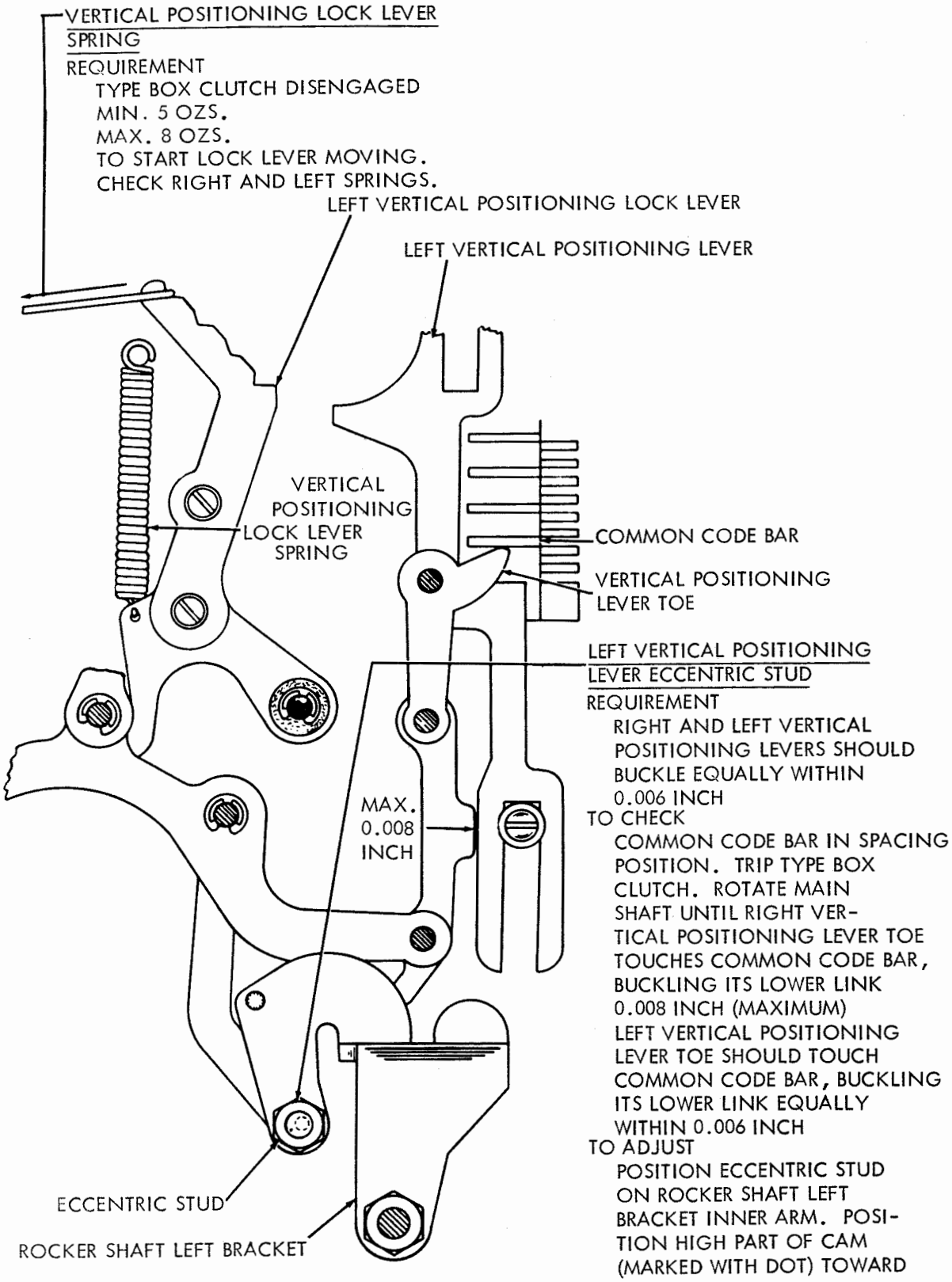
VERTICAL POSITIONING LEVER TOES (RIGHT AND LEFT) IN CONTACT WITH THE SUPPRESSION CODE BAR, LEVERS NOT BUCKLED.

MIN. 4 OZS.
MAX. 12 OZS.

TO MOVE THE LINK EXTENSION AWAY FROM THE VERTICAL POSITIONING LEVER.

CHECK BOTH RIGHT AND LEFT SPRINGS.

2.29 Positioning Mechanism (Cont.)



2.30 Spacing Mechanism (Cont.)

NOTE: CHECK RELATED ADJUSTMENTS, PARS. 2.43, 2.44, AND 2.47, IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

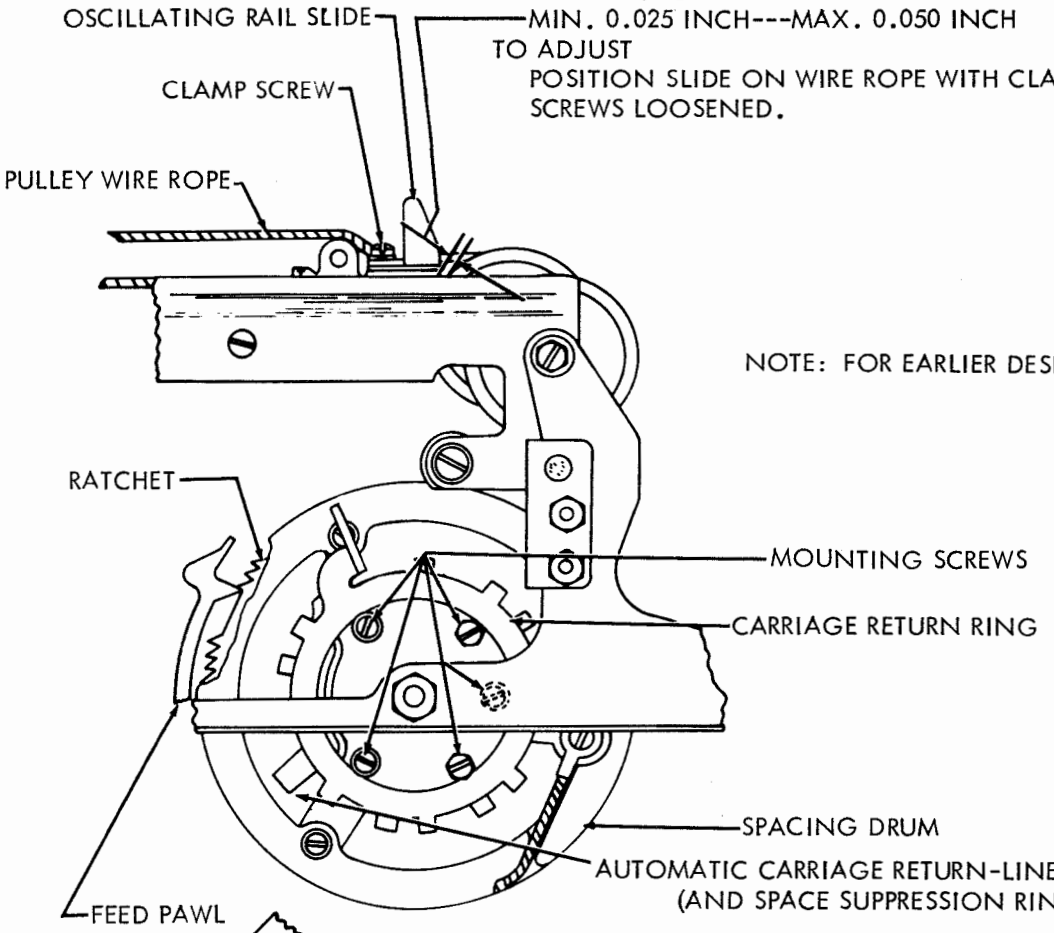
OSCILLATING RAIL SLIDE POSITION

REQUIREMENT

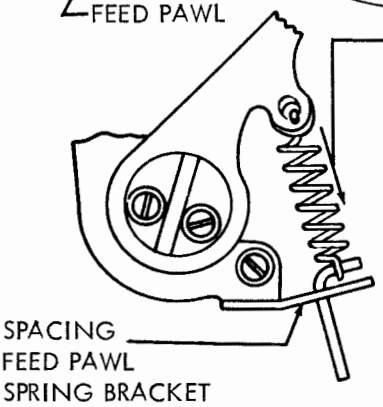
CARRIAGE RETURN RING AND AUTOMATIC CARRIAGE RETURN-LINE FEED RING FREE TO ROTATE ON SPACING DRUM (FIVE MOUNTING SCREWS LOOSENED). SPACING CLUTCH DISENGAGED. FEED PAWL, WHICH IS FARTHEST ADVANCED, ENGAGING TOOTH IMMEDIATELY ABOVE CUT-AWAY SECTION OF RATCHET. CLEARANCE BETWEEN SLIDE AND PULLEY MIN. 0.025 INCH---MAX. 0.050 INCH

TO ADJUST

POSITION SLIDE ON WIRE ROPE WITH CLAMP SCREWS LOOSENED.



NOTE: FOR EARLIER DESIGN SEE PAR. 4.07.



SPACING FEED PAWL SPRING

REQUIREMENT

EACH SPACING PAWL IN LEAST ADVANCED POSITION RESTING AGAINST RATCHET WHEEL. EACH SPRING UNHOOKED FROM BRACKET

MIN. 2-1/2 OZS.

MAX. 4 OZS.

TO PULL SPRINGS TO INSTALLED LENGTH.

NOTE: ON UNITS EQUIPPED FOR 6 SPACES PER INCH THIS TENSION SHOULD BE

MIN. 8 OZS.

MAX. 10 OZS.

TO PULL SPRINGS TO INSTALLED LENGTH.

2. 31 Spacing Mechanism (Cont.)

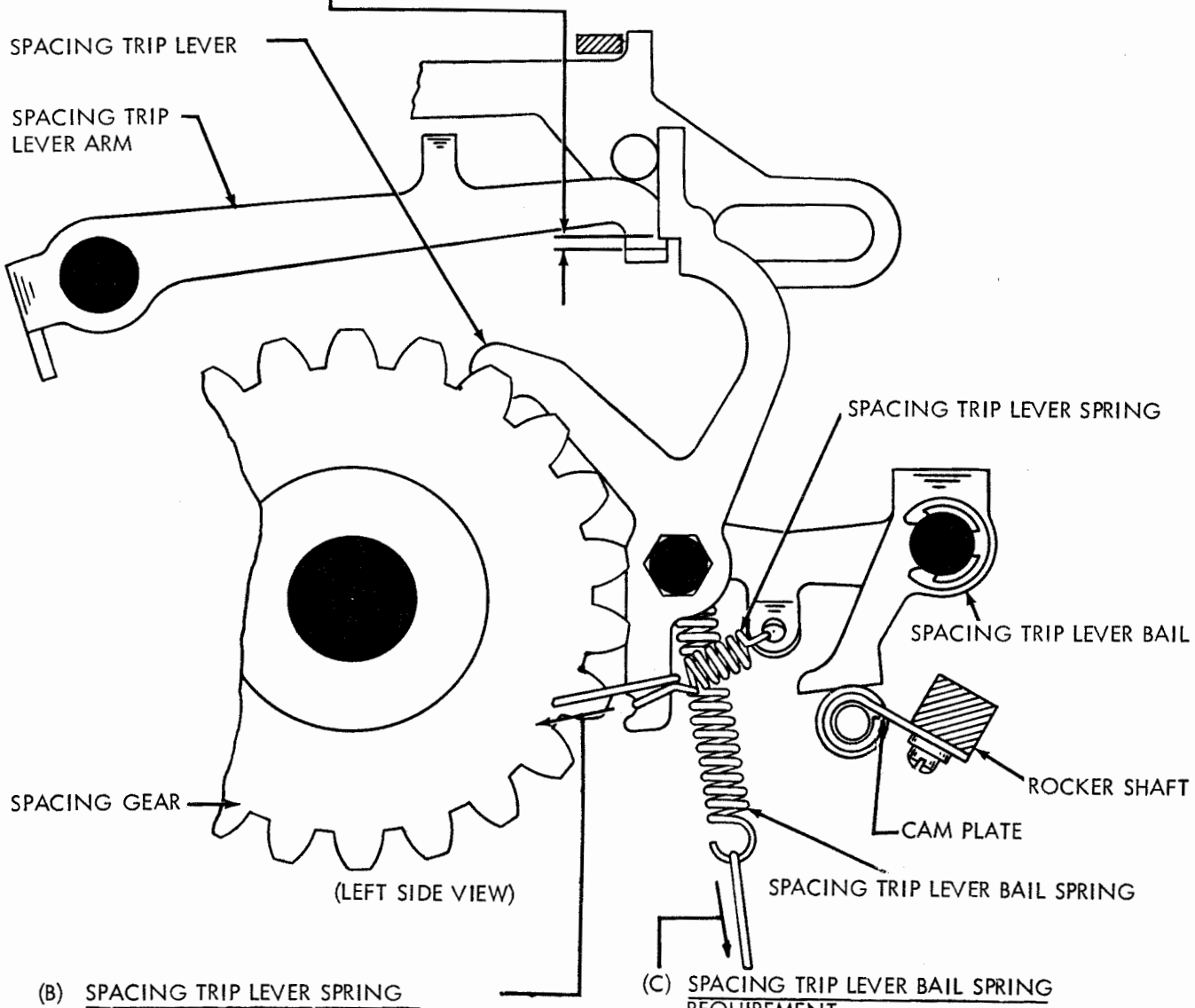
(A) SPACING TRIP LEVER BAIL CAM PLATE

REQUIREMENT

SPACING TRIP LEVER ARM IN UPWARD POSITION. TYPE BOX CLUTCH ROTATED THROUGH APPROXIMATELY ONE-HALF OF ITS CYCLE. ALL FUNCTION PAWLS DISENGAGED FROM FUNCTION BAR. CLEARANCE BETWEEN TOP SURFACE OF TRIP LEVER ARM EXTENSION AND SPACING TRIP LEVER SHOULDER.
MIN. 0.010 INCH
MAX. 0.040 INCH

TO ADJUST

POSITION CAM PLATE ON ROCKER SHAFT WITH MOUNTING SCREWS LOOSENED. POSITION FORWARD EDGE OF CAM PLATE PARALLEL TO SHAFT.



(B) SPACING TRIP LEVER SPRING

REQUIREMENT

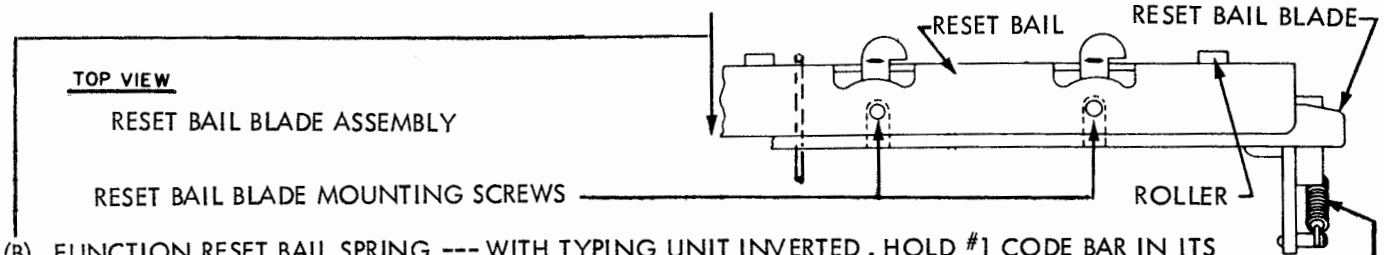
TYPE BOX CLUTCH DISENGAGED.
MIN. 2-1/2 OZS.
MAX. 5 OZS.
TO START LEVER MOVING.

(C) SPACING TRIP LEVER BAIL SPRING

REQUIREMENT

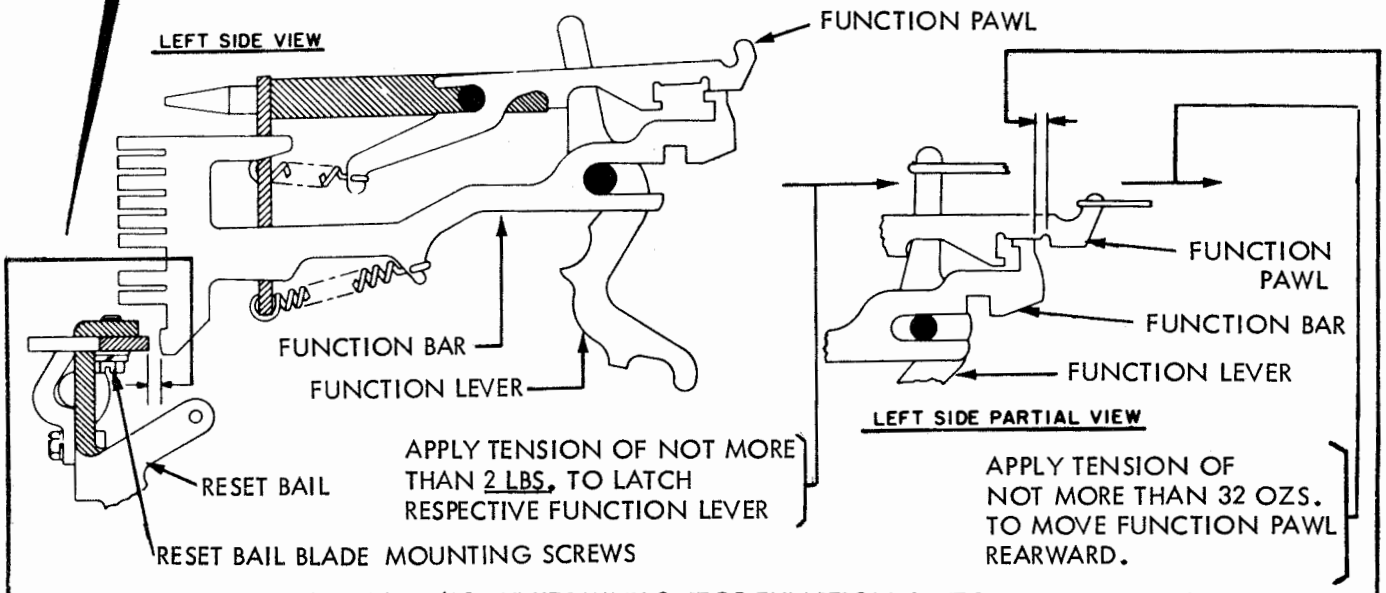
SPACING TRIP LEVER BAIL AGAINST STOP.
SPACING TRIP LEVER BAIL SPRING UNHOOKED.
MIN. 8 OZS.
MAX. 12 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

2.32 Function Mechanism



(B) FUNCTION RESET BAIL SPRING --- WITH TYPING UNIT INVERTED, HOLD #1 CODE BAR IN ITS MARKING POSITION SO THAT NO FUNCTION BAR IS SELECTED. ROTATE MAIN SHAFT UNTIL FUNCTION RESET BAIL SPRINGS ARE IN THEIR MINIMUM LENGTH POSITION. HOOK A 32 OZ. SCALE (BETWEEN CLUTCH TRIP SHAFT AND SPACE SUPPRESSOR BAIL) ON FRONT EDGE OF RESET BAIL (AT MIDDLE OF BAIL) AND PULL REARWARD.
MIN. 10 OZS. ---------- MAX. 22 OZS. (TO START BAIL MOVING).

RESET BAIL SPRING



(A) FUNCTION RESET BAIL BLADE (FOR UNITS WITH 2-STOP FUNCTION CLUTCH SEE PAR. 4.09)

(1) REQUIREMENT --- WITH ALL CLUTCHES DISENGAGED, TRIP CODE BAR CLUTCH AND TURN MAIN SHAFT UNTIL CODE-BAR CLUTCH SHOE-RELEASE LEVER JUST TOUCHES ITS STOP LEVER. UNLATCH ALL FUNCTION PAWLS FROM THEIR FUNCTION BARS. HOLD RESPECTIVE FUNCTION BAR IN ITS EXTREME REARWARD POSITION WITH SPRING HOOK; CLEARANCE BETWEEN FUNCTION BAR AND RESET BAIL BLADE SHOULD BE
MIN. 0.018 INCH ---------- MAX. 0.035 INCH

TO CHECK --- MEASURE CLEARANCE AT BARS IN STUNT BOX SLOTS, NO'S 1, 4, 11, 18, 23, 33, 38 AND 41. IF A DESIGNATED SLOT IS VACANT, USE NEAREST BAR OR SELECT BAR WITH HIGHEST NUMBERED SLOT WHEN A BAR IS LOCATED ON BOTH SIDES OF VACANT SLOT. (VIEW SLOTS FROM REAR, NUMBERING FROM LEFT TO RIGHT).

TO ADJUST --- POSITION BLADE ON RESET BAIL WITH ITS MOUNTING SCREWS FRICTION TIGHT.

(2) REQUIREMENT --- EACH FUNCTION PAWL SHOULD OVER TRAVEL ITS FUNCTION BAR BY AT LEAST 0.002 INCH WITH INDICATED TENSIONS APPLIED. CHECK PAWLS ONE AT-A-TIME AT SLOT NO'S. USED ABOVE.

TO CHECK --- IF CARRIAGE RETURN LEVER ADJUSTMENT HAS NOT BEEN MADE, LOOSEN ITS CLAMP SCREW. LATCH FUNCTION PAWLS BY LOWERING STRIPPER BLADE; TRIP CODE BAR CLUTCH AND POSITION ITS RELEASE LEVER AS IN (1) ABOVE. STRIP OFF ANY FUNCTIONS WHICH MAY HAVE BEEN SELECTED.

TO ADJUST --- REFINE REQUIREMENT (1) ABOVE, HOLDING THE READJUSTMENT WITHIN LIMITS
MIN. 0.018 INCH ---------- MAX. 0.035 INCH

NOTE: IF THE FUNCTION RESET BAIL BLADE IS REPOSITIONED, CHECK THE ADJUSTMENT OF THE FIGS-LTRS SHIFT CODE BAR OPERATING MECHANISM FOLLOWING.

2.33 Function Mechanism (Cont.)

NOTE 1. FOR UNITS WITH ADJUSTABLE GUIDE PLATES AND ONE-STOP FUNCTION CLUTCHES, PROCEED AS SPECIFIED.

NOTE 2. FOR UNITS WITH ADJUSTABLE GUIDE PLATES AND TWO-STOP FUNCTION CLUTCHES, CHANGE FIRST SENTENCE IN REQUIREMENT (1) TO "DISENGAGE FUNCTION CLUTCH AT STOP GIVING LEAST CLEARANCE." THEN PROCEED AS SPECIFIED.

FIGS - LTRS SHIFT CODE BAR OPERATING MECHANISM

(1) REQUIREMENT

WITH FUNCTION CLUTCH ROTATED UNTIL CLUTCH DISK STOP LUG IS TOWARD BOTTOM OF UNIT, HOOK FIGURES FUNCTION PAWL OVER THE END OF THE FUNCTION BAR. CLEARANCE BETWEEN UPPER GUIDE PLATE EXTENSION AND SHIFT SLIDE.
MAX. 0.020 WHEN PLAY IS TAKEN UP FOR MAXIMUM.

(2) REQUIREMENT

WITH 32 OZ. PULL APPLIED TO FUNCTION PAWL THERE SHOULD BE
MIN. 0.002 INCH
BETWEEN SHOULDER OF FIGURES FUNCTION PAWL AND FACE OF FUNCTION BAR.

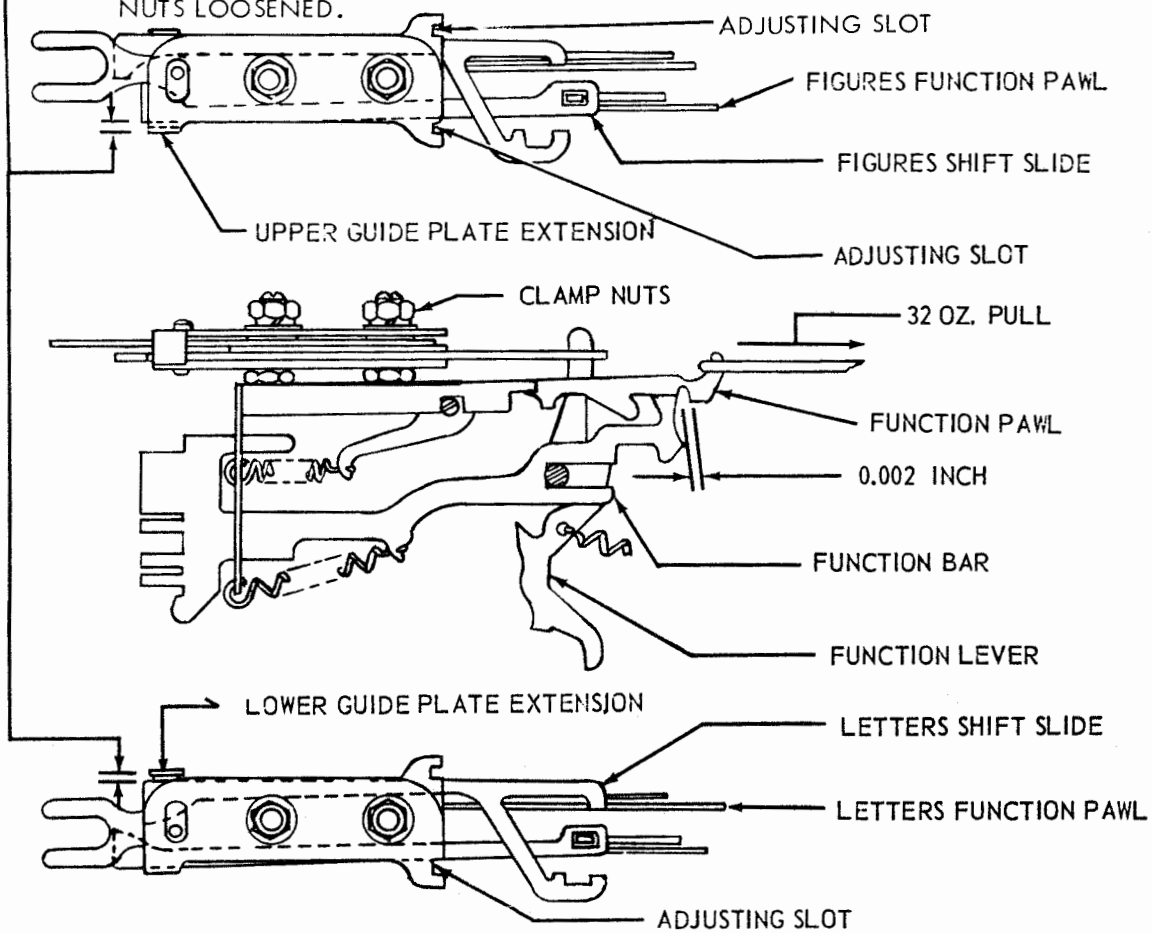
(3) REQUIREMENT

REPEAT REQUIREMENT (1) & (2) FOR THE LETTERS FUNCTION PAWL. CHECK MAX. CLEARANCE BETWEEN LOWER GUIDE PLATE EXTENSION AND SHIFT SLIDE. CHECK MIN. CLEARANCE BETWEEN SHOULDER OF LETTER FUNCTION PAWL AND FACE OF FUNCTION BAR.

NOTE: THERE SHOULD BE SOME CLEARANCE BETWEEN THE UNOPERATED SHIFT SLIDE AND ITS GUIDE PLATE, WHEN THE SHIFT SLIDE HAS REACHED ITS POSITION OF MAXIMUM TRAVEL.

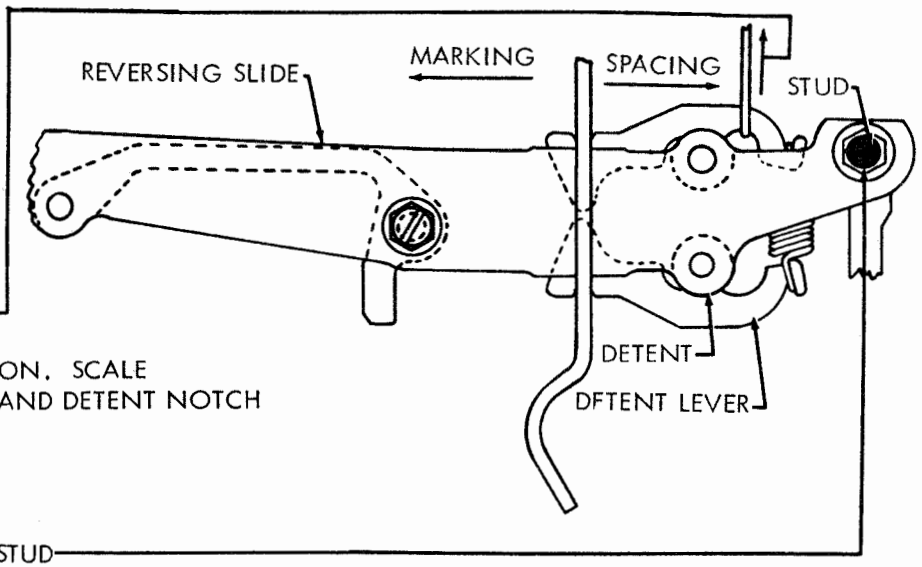
TO ADJUST

POSITION UPPER AND/OR LOWER GUIDE PLATE BY THE ADJUSTING SLOT WITH THE CLAMP NUTS LOOSENED.



NOTE: FOR EARLIER DESIGN SEE PAR. 4.08

2.34 Positioning Mechanism (Cont.)



(A) REVERSING SLIDE DETENT SPRING REQUIREMENT

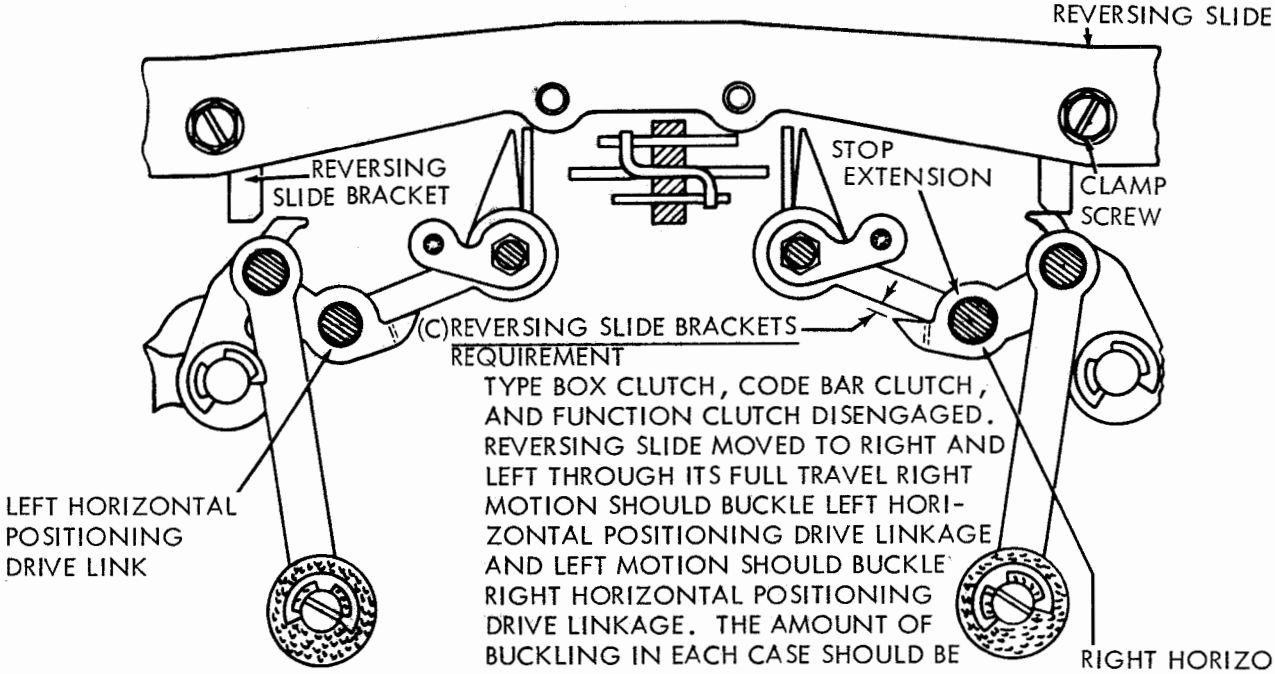
SLIDE IN LEFT HAND POSITION. SCALE HOOKED IN UPPER RIGHT HAND DETENT NOTCH
MIN. 2 OZS.
MAX. 4-1/2 OZS.
TO START DETENT MOVING

(B) REVERSING SLIDE ADJUSTING STUD REQUIREMENT

TYPE BOX CLUTCH DISENGAGED.
WITH NO. 3 CODE BAR IN SPACING POSITION (RIGHT), THE REVERSING SLIDE DETENT ROLLERS SHOULD BE FULLY SEATED IN THE RIGHT-HAND NOTCHES OF THE DETENT LEVER.
WITH NO. 3 CODE BAR IN MARKING POSITION (LEFT), THE REVERSING SLIDE DETENT ROLLERS SHOULD BE FULLY SEATED IN THE LEFT-HAND NOTCHES OF THE DETENT LEVER.

TO ADJUST

POSITION THE REVERSING SLIDE STUD IN ITS ELONGATED HOLE WITH ITS MOUNTING NUT LOOSENED.



(C) REVERSING SLIDE BRACKETS REQUIREMENT

TYPE BOX CLUTCH, CODE BAR CLUTCH, AND FUNCTION CLUTCH DISENGAGED. REVERSING SLIDE MOVED TO RIGHT AND LEFT THROUGH ITS FULL TRAVEL RIGHT MOTION SHOULD BUCKLE LEFT HORIZONTAL POSITIONING DRIVE LINKAGE AND LEFT MOTION SHOULD BUCKLE RIGHT HORIZONTAL POSITIONING DRIVE LINKAGE. THE AMOUNT OF BUCKLING IN EACH CASE SHOULD BE
MIN. 0.030 INCH
MAX. 0.050 INCH
MEASURED AT POINT OF MAXIMUM CLEARANCE

TO ADJUST

POSITION EACH REVERSING SLIDE BRACKET WITH THEIR CLAMP SCREWS LOOSENED.

2. 35 Positioning Mechanism (Cont.)

NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TORSION SPRINGS.

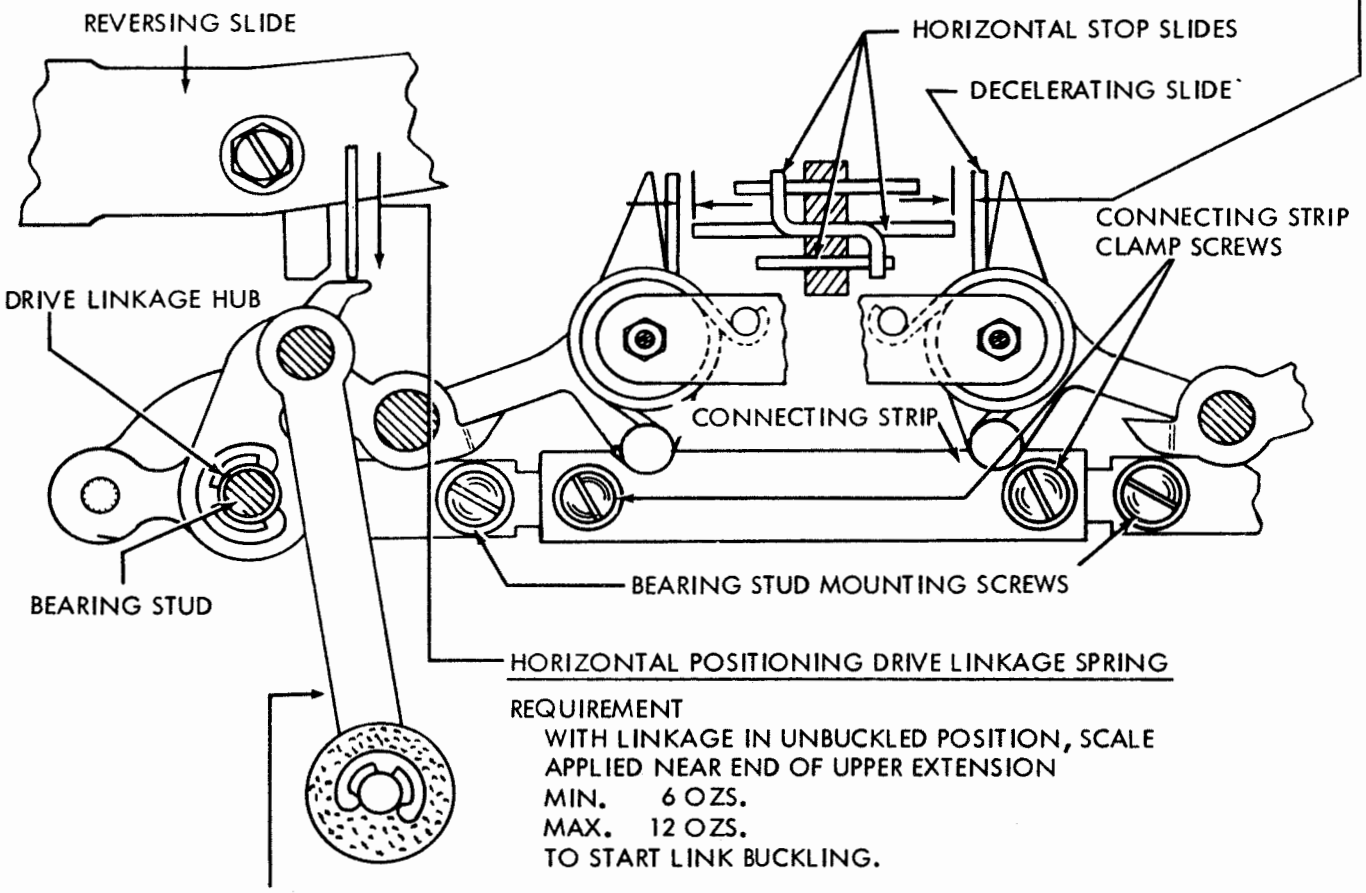
HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED.
CODE BARS 4 AND 5 TO SPACING (RIGHT).
CLEARANCE BETWEEN EACH SIDE OF CENTER HORIZONTAL STOP SLIDE AND DECELERATING SLIDES, ON SIDE WHERE KNEE LINK IS STRAIGHT SHOULD BE EQUAL (WITHIN 0.008 INCH)
MIN. 0.090 INCH
MAX. 0.110 INCH

TO ADJUST

LOOSEN BEARING STUD MOUNTING SCREWS AND CONNECTING STRIP MOUNTING SCREWS FRICTION TIGHT. POSITION ONE OR BOTH BEARING STUDS ON THE CONNECTING STRIP TO PROVIDE 0.095 INCH TO 0.105 INCH BETWEEN THE CENTER HORIZONTAL SLIDE AND THE DECELERATING SLIDE ON THE SIDE WHERE THE LINKAGE IS NOT BUCKLED. TIGHTEN THE TWO INNER MOUNTING SCREWS. CHANGE POSITION OF REVERSING SLIDE AND CHECK OPPOSITE CLEARANCE. EQUALIZE BY SHIFTING BOTH STUDS AND CONNECTING STRIP AS A UNIT. HOLD THE DRIVE LINKAGE HUB AGAINST THE LOWER VERTICAL LINK OF THE DRIVE LINKAGE. TIGHTEN THE TWO OUTER BEARING STUD MOUNTING SCREWS. CHECK THE LINKAGE FOR FREENESS THROUGHOUT A COMPLETE CYCLE. THE TYPE BOX CLUTCH DISK SHOULD HAVE SOME MOVEMENT IN THE NORMAL DIRECTION OF ROTATION IN THE STOP POSITION.



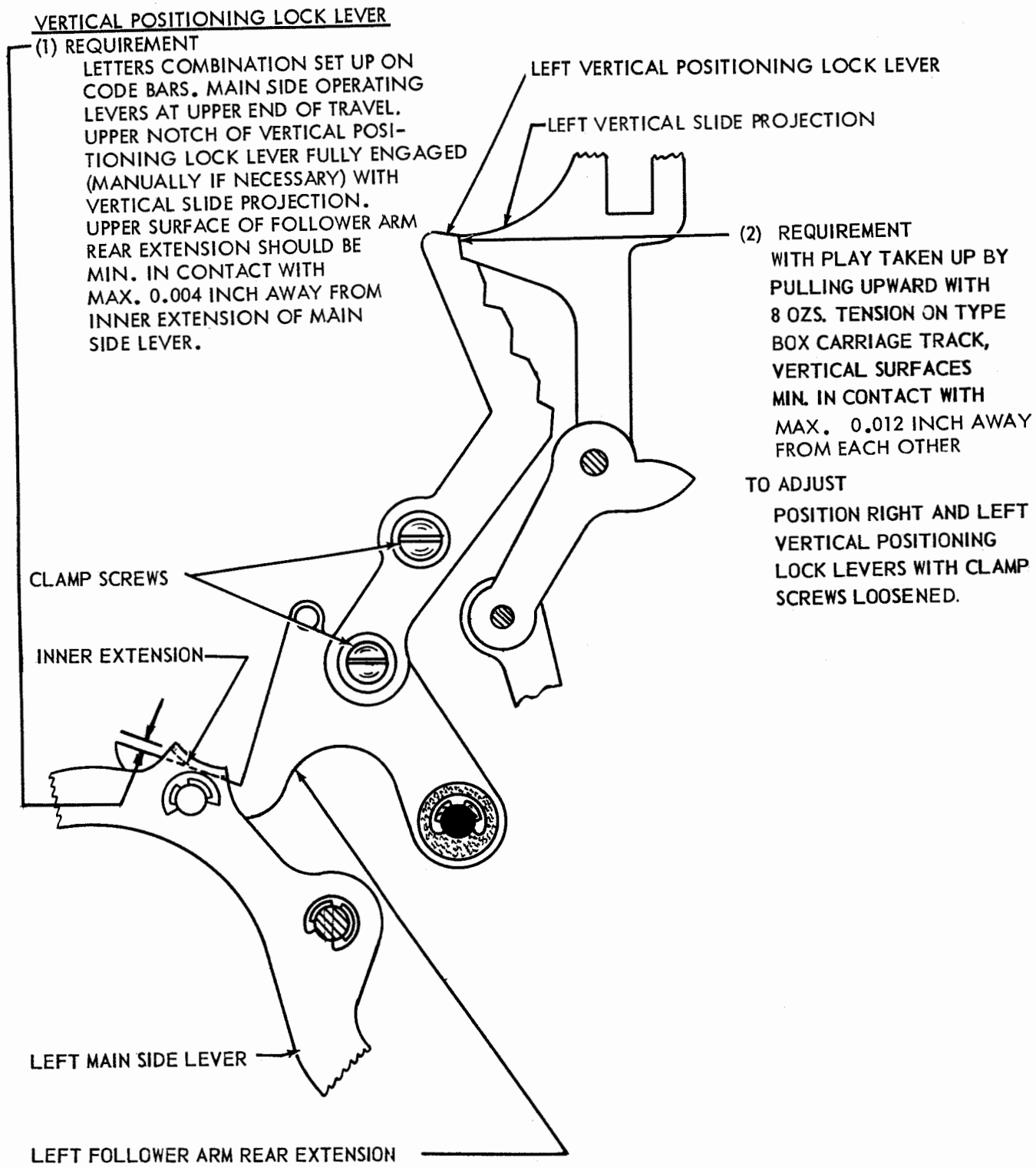
HORIZONTAL POSITIONING DRIVE LINKAGE SPRING

REQUIREMENT

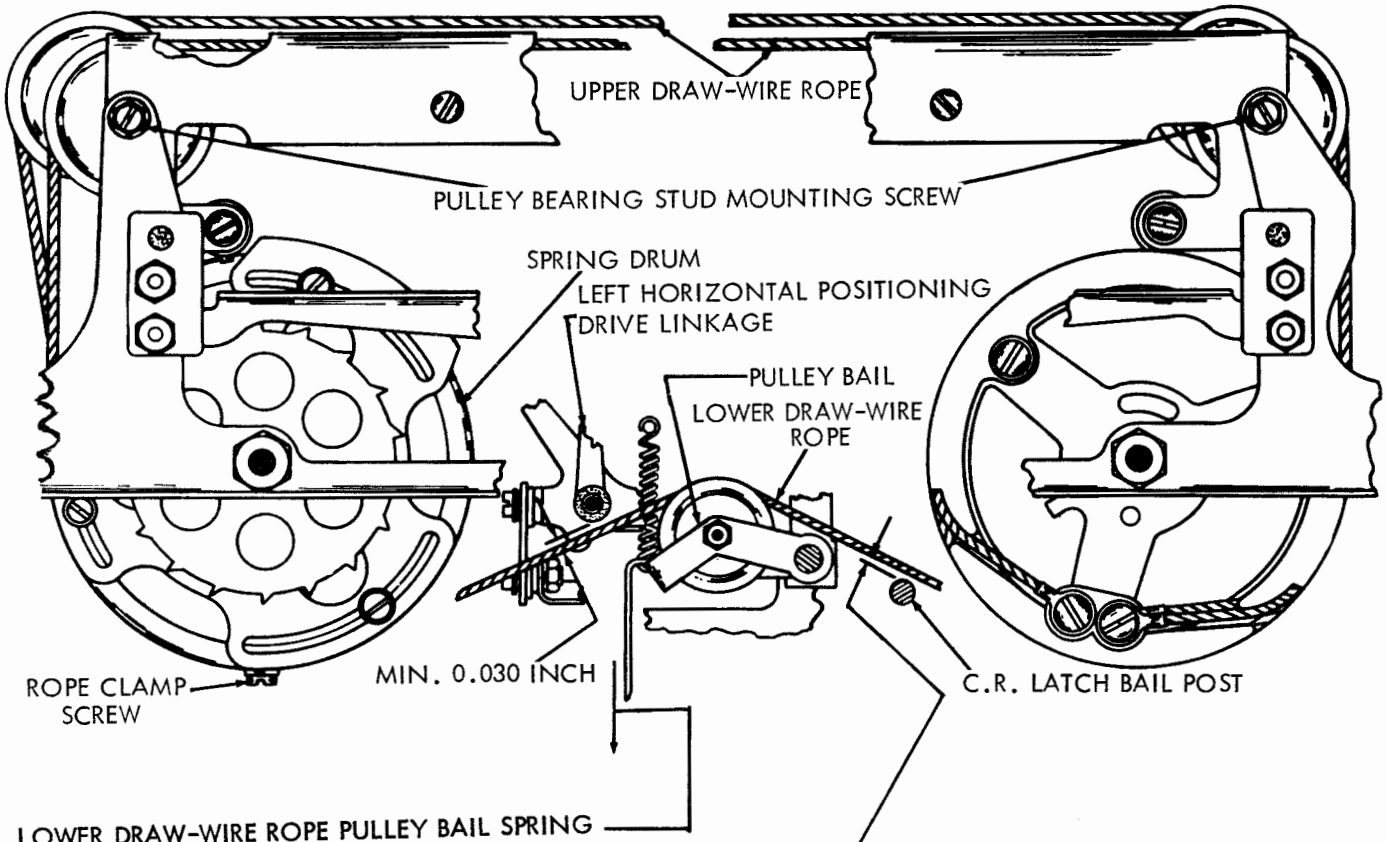
WITH LINKAGE IN UNBUCKLED POSITION, SCALE APPLIED NEAR END OF UPPER EXTENSION
MIN. 6 OZS.
MAX. 12 OZS.
TO START LINK BUCKLING.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.10

2.36 Positioning Mechanism (Cont.)



2.37 Spacing Mechanism (cont.)



LOWER DRAW-WIRE ROPE PULLEY BAIL SPRING

REQUIREMENT

SPRING UNHOOKED FROM PULLEY BAIL, BAIL EXTENSION RESTING ON OPENING IN FRONT PLATE.
MIN. 18 OZS.
MAX. 22 OZS.
TO PULL SPRING TO POSITION LENGTH.

CARRIAGE DRAW-WIRE ROPE

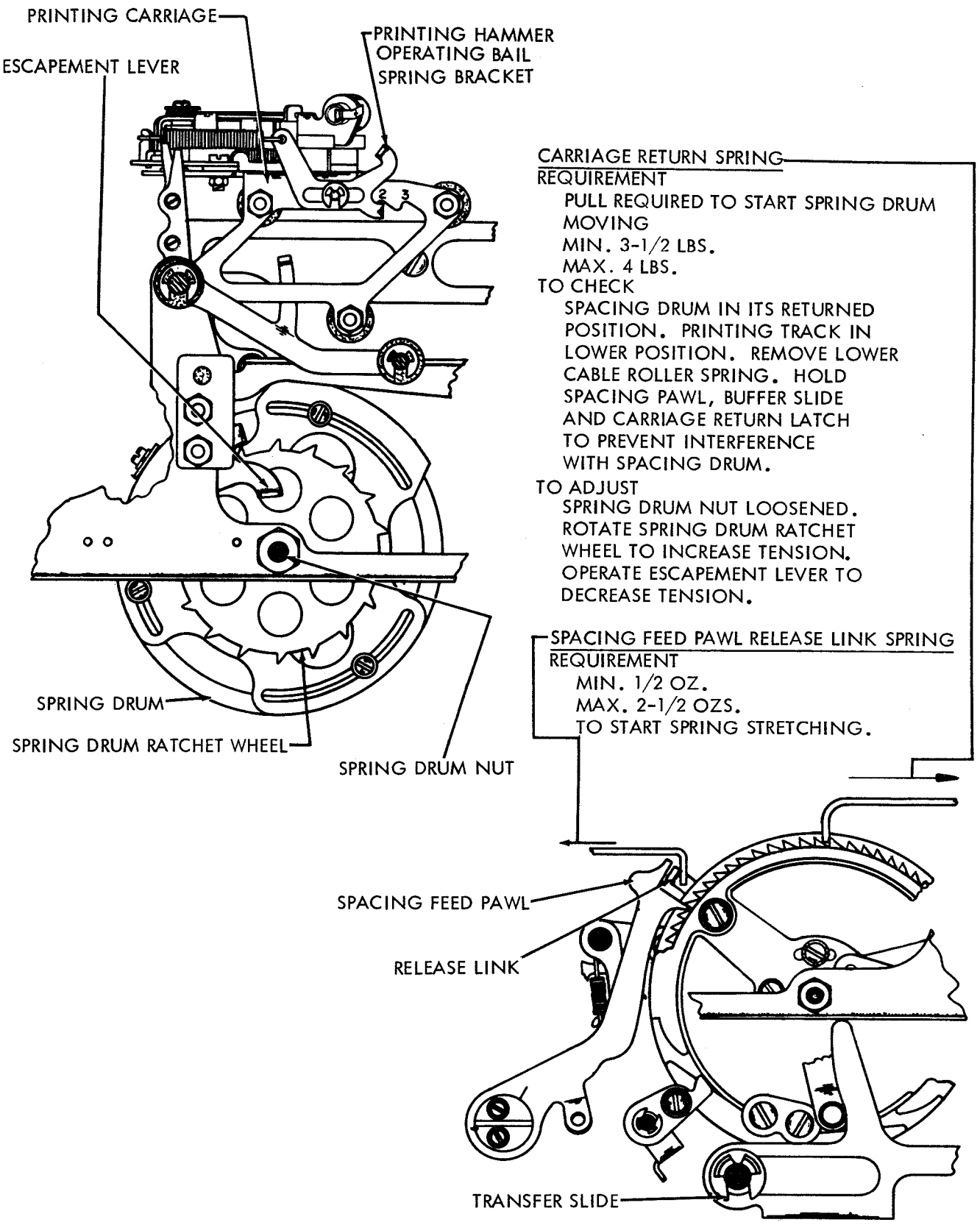
REQUIREMENT

CLEARANCE BETWEEN LOWER DRAW-WIRE ROPE AND CARRIAGE RETURN LATCH BAIL POST SHOULD BE AT LEAST 0.006 INCH. WITH THE HORIZONTAL POSITIONING MECHANISM IN ITS LOWEST POSITION, CLEARANCE BETWEEN THE LOWER DRAW-WIRE ROPE AND THE LEFT HORIZONTAL POSITIONING DRIVE LINKAGE SHOULD BE MIN. 0.030 INCH

TO ADJUST

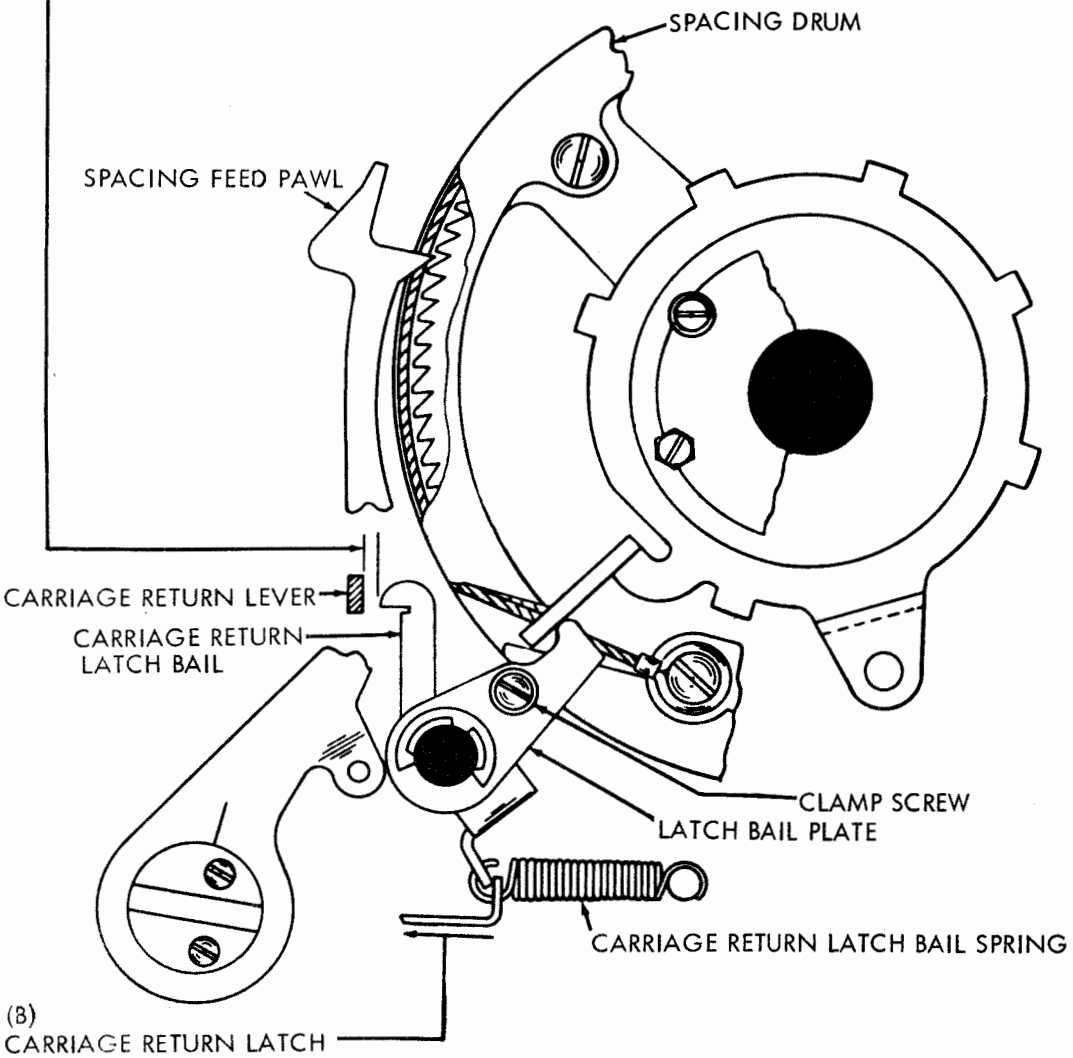
ADVANCE PRINTING CARRIAGE TO EXTREME RIGHT HAND POSITION. ROTATE TYPE BOX CLUTCH 1/2 REVOLUTION. LOOSEN ROPE CLAMP SCREW ONE TURN ONLY. POSITION PULLEY BEARING STUDS, WITH THEIR MOUNTING SCREWS LOOSENED, TO MEET REQUIREMENT. CHECK THAT CABLE HAS MOVED AROUND ITS EQUALIZING CLAMP SO THAT REAR CABLE HAS SLIGHTLY GREATER TENSION THAN FRONT CABLE, GAUGED BY FEEL. TIGHTEN THE CLAMP SCREW.

2.38 Spacing Mechanism (Cont.)



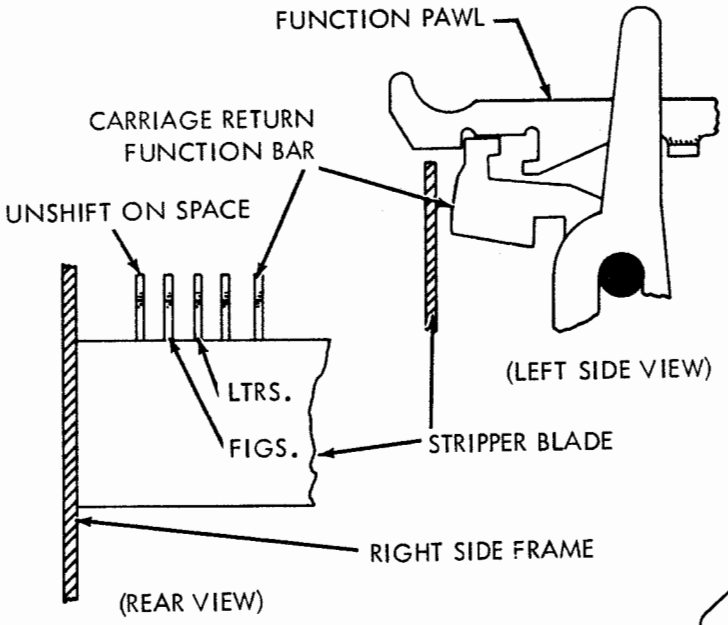
2.39 Spacing Mechanism (Cont.)

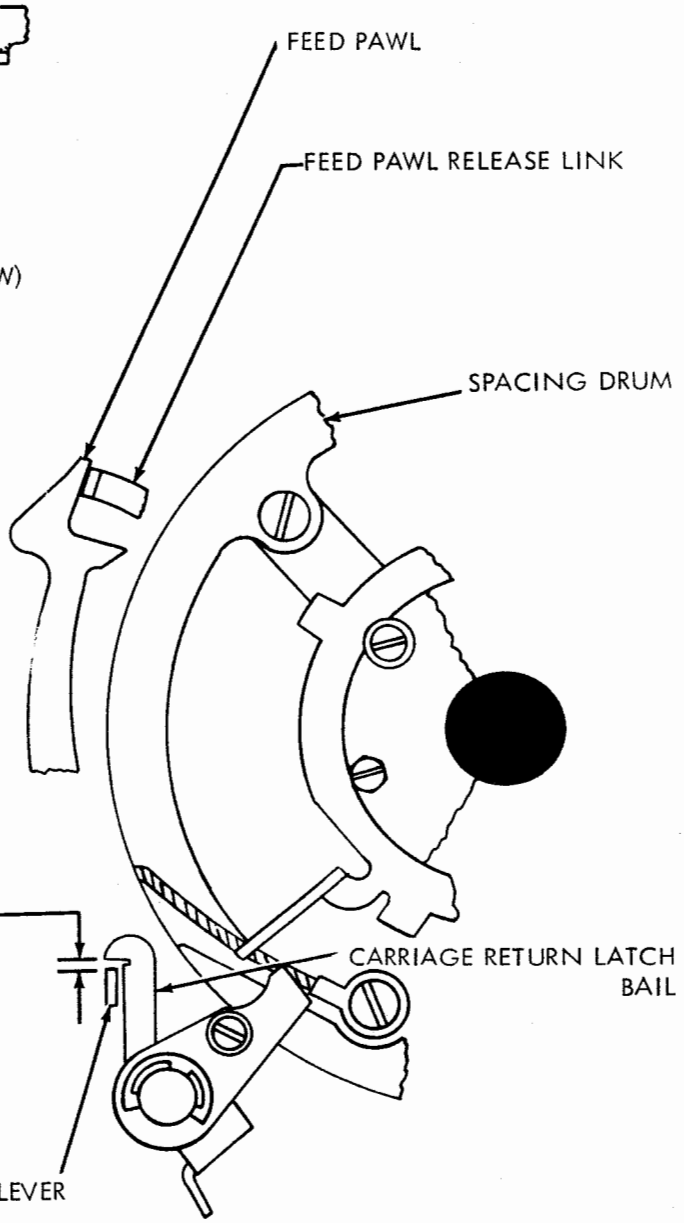
(A)
CARRIAGE RETURN LATCH BAIL
REQUIREMENT
CARRIAGE FULLY RETURNED (SEE PAR. 2.43)
PLAY IN CARRIAGE RETURN BAIL TAKEN UP TO RIGHT BY HOLDING RIGHT SIDE OF BAIL AGAINST ITS RETAINER. CLEARANCE BETWEEN CARRIAGE RETURN LATCH BAIL AND CARRIAGE RETURN LEVER.
MIN. 0.004 INCH
MAX. 0.040 INCH
TO ADJUST
POSITION LATCH BAIL PLATE WITH CLAMP SCREW LOOSENED.



(B)
CARRIAGE RETURN LATCH BAIL SPRING
REQUIREMENT
SPACING DRUM FULLY RETURNED
MIN. 3 OZS.
MAX. 4-1/2 OZS.
TO START LATCH BAIL MOVING

2.40 **Spacing Mechanism (Cont.)**





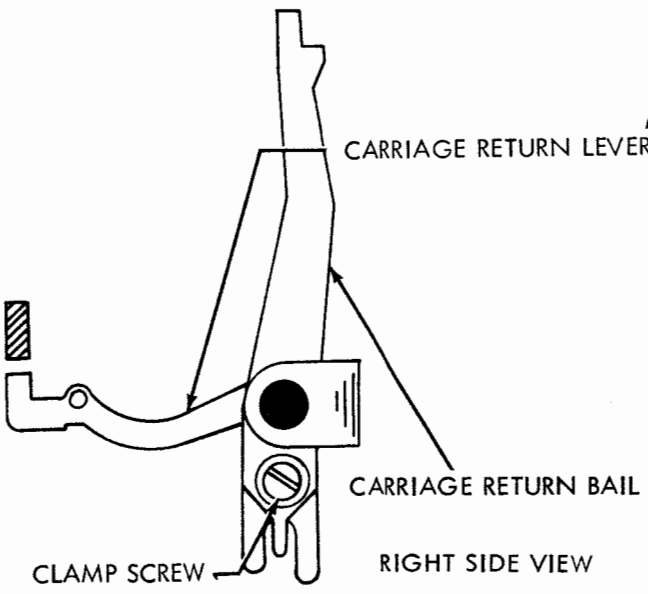
CARRIAGE RETURN LEVER

REQUIREMENT (UNITS EQUIPPED WITH ONE-STOP FUNCTION CLUTCH)

CARRIAGE RETURN FUNCTION SET UP ON SELECTOR. MAIN SHAFT ROTATED UNTIL FUNCTION CLUTCH STOP LUG IS TOWARD BOTTOM OF UNIT. CARRIAGE RETURN FUNCTION PAWL HOOKED OVER ITS FUNCTION BAR. SPACING DRUM HELD SO THAT CARRIAGE RETURN LATCH BAIL IS LATCHED.

CLEARANCE BETWEEN LATCH BAIL AND CARRIAGE RETURN LEVER.

MIN. 0.006 INCH — MAX. 0.035 INCH



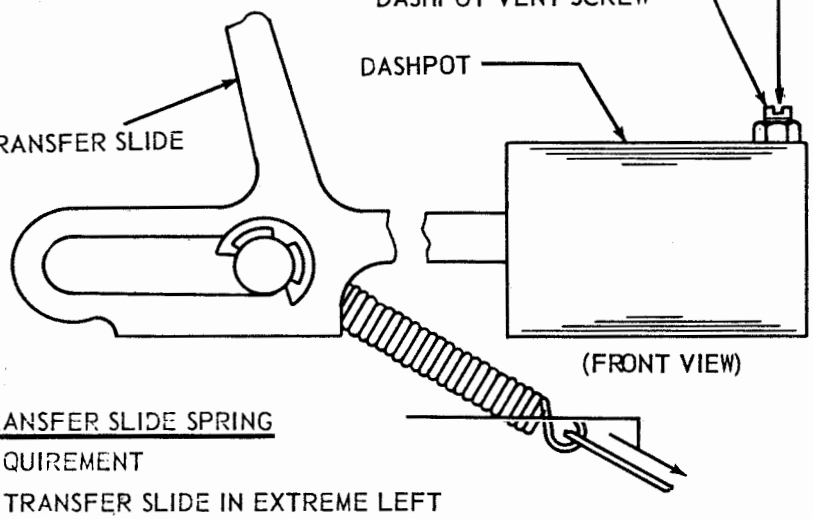
REQUIREMENT (UNITS EQUIPPED WITH TWO-STOP FUNCTION CLUTCH)

SAME EXCEPT MAIN SHAFT SHOULD BE ROTATED UNTIL FUNCTION CLUTCH IS DISENGAGED IN STOP POSITION THAT RESULTS IN LEAST CLEARANCE.

TO ADJUST

POSITION CARRIAGE RETURN LEVER ON CARRIAGE RETURN BAIL WITH CLAMP SCREW LOOSENED.

2.41 Spacing Mechanism (Cont.)



DASH POT VENT SCREW

REQUIREMENT

TYPE BOX CARRIAGE SHOULD RETURN FROM ANY LENGTH OF LINE WITHOUT BOUNCING.

TO CHECK

PRINTER OPERATED AT ANY SPEED FROM AUTOMATIC TRANSMISSION WITH ONE CR AND ONE LF SIGNAL BETWEEN LINES. FIRST CHARACTER OF EACH LINE SHOULD BE PRINTED IN SAME LOCATION AS IF UNIT WAS MANUALLY OPERATED SLOWLY.

TO ADJUST

TURN DOWN VENT SCREW UNTIL SLIGHT PNEUMATIC BOUNCE IS PERCEPTIBLE. BACK OFF SCREW UNTIL EFFECT DISAPPEARS.

FOR DASHPOTS WITH ONE VENT HOLE: THEN BACK SCREW OFF ONE FULL TURN. TIGHTEN NUT.

FOR DASHPOTS WITH TWO VENT HOLES: THEN BACK SCREW OFF 1/4 TURN. TIGHTEN NUT.

TRANSFER SLIDE SPRING

REQUIREMENT

TRANSFER SLIDE IN EXTREME LEFT POSITION.

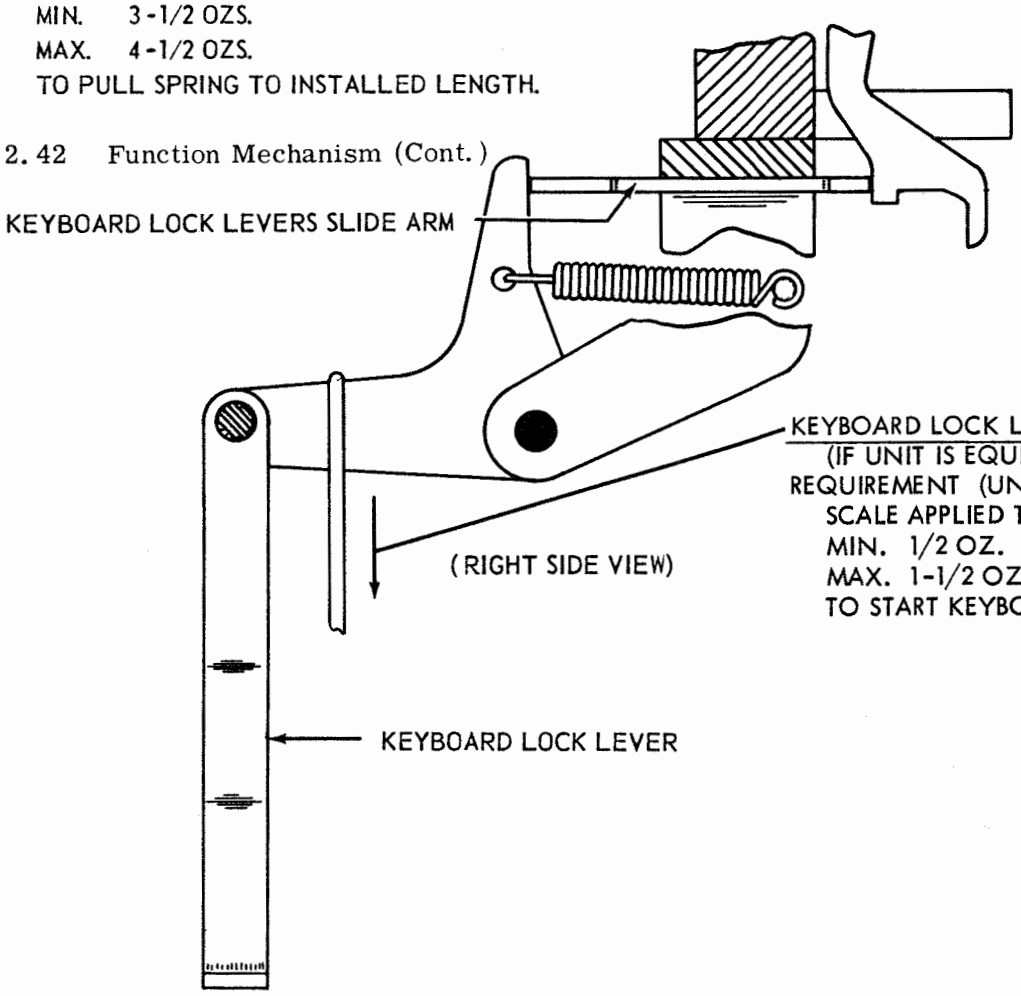
SPRING UNHOOKED.

MIN. 3-1/2 OZS.

MAX. 4-1/2 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

2.42 Function Mechanism (Cont.)



KEYBOARD LOCK LEVER SPRING

(IF UNIT IS EQUIPPED)

REQUIREMENT (UNIT UPSIDE DOWN)

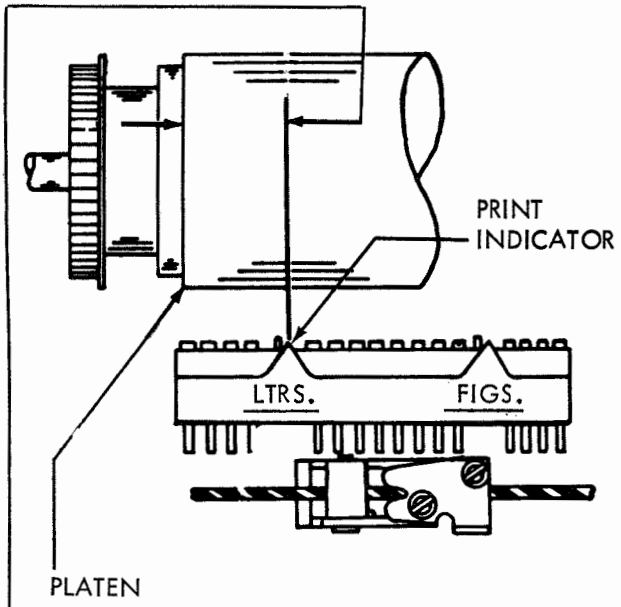
SCALE APPLIED TO BELL CRANK

MIN. 1/2 OZ.

MAX. 1-1/2 OZS.

TO START KEYBOARD LOCK LEVER MOVING

2.43 Spacing Mechanism (Cont.)



NOTES

1. WHEN ADJUSTMENTS ON THIS PAGE ARE MADE CHECK RELATED REQUIREMENTS IN PARS. 2.30, 2.44, AND 2.47.
2. FOR SPROCKET FEED PRINTER REQUIREMENTS REFER TO ADJUSTMENTS IN PARS. 2.71 THROUGH 2.75.
3. LEFT MARGIN MAY BE VARIED AS REQUIRED FROM ZERO TO ONE INCH. MAXIMUM RANGE OF ADJUSTMENT FOR MECHANISMS WITH STANDARD (10 CHARACTERS-PER-INCH) SPACING IS AS FOLLOWS:
   (a) FRICTION FEED PLATEN - 85 CHARACTERS
   (b) SPROCKET FEED PLATEN - 74 CHARACTERS
4. PRINTING CARRIAGE POSITION REQUIREMENT
   REFER TO STANDARD ADJUSTMENT --- PAR. 2.47
5. FOR EARLY DESIGN REFER TO PAR. 4.12.

AUTOMATIC CR/LF BELL CRANK SPRING REQUIREMENT --- (FOR UNITS SO EQUIPPED).
WITH FUNCTION CLUTCH DISENGAGED.
MIN. 2-1/2 OZS. --- MAX. 7 OZS.
TO MOVE THE BELL CRANK.

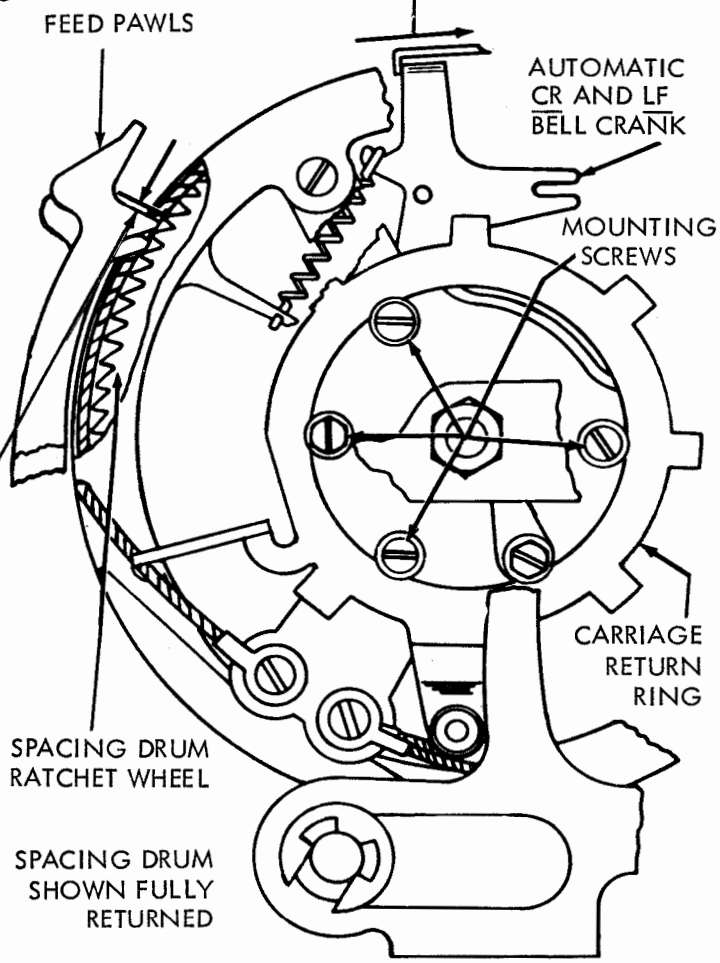
LEFT MARGIN
REQUIREMENTS --- (72 CHARACTER TYPICAL LINE).

(1) WITH TYPE BOX CLUTCH DISENGAGED, SPACING DRUM IN ITS RETURN POSITION AND TYPE BOX SHIFTED TO LETTERS POSITION; CLEARANCE BETWEEN LEFT EDGE OF PLATEN AND LETTERS PRINT INDICATOR. (SEE NOTE 3).
MIN. 15/16 INCH --- MAX. 1-1/16 INCH.
TO ADJUST --- POSITION STOP ARM OF SPACING DRUM* WITH ITS CLAMP SCREWS LOOSENED.

(2) WITH SPACING CLUTCH DISENGAGED, FRONT SPACING FEED PAWL FARTHEST ADVANCED, SPACING DRUM FULLY RETURNED (DASH POT PLUNGER DEPRESSED FULLY) PLAY IN SPACING SHAFT GEAR (PAR. 2.24) TAKEN UP IN CLOCKWISE DIRECTION; CLEARANCE BETWEEN PAWL AND SHOULDER OF RATCHET WHEEL TOOTH IMMEDIATELY AHEAD.
MIN. SOME --- MAX. 0.008 INCH.

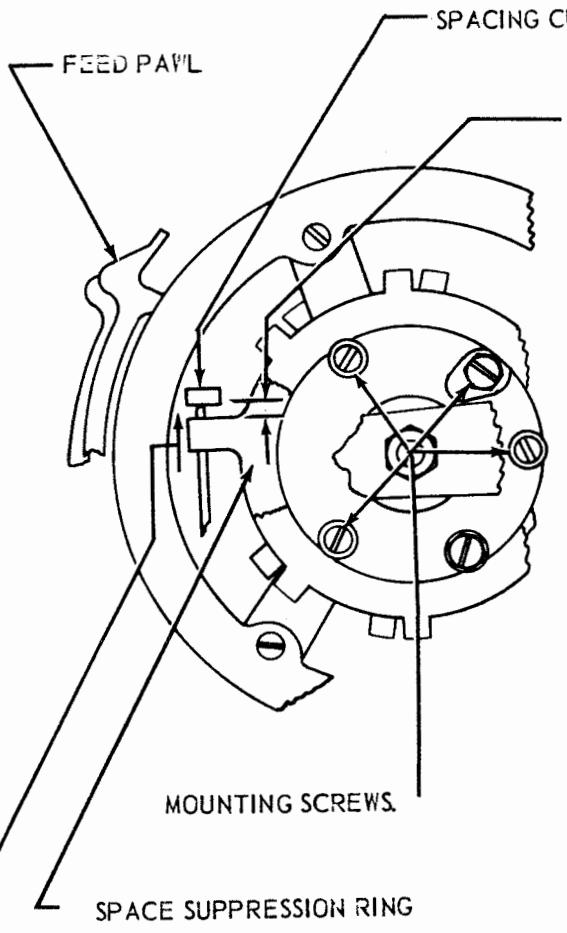
(3) THE REAR PAWL, WHEN FARTHEST ADVANCED, SHOULD DROP INTO INDENTATION BETWEEN RATCHET WHEEL TEETH AND SHOULD BOTTOM FIRMLY IN NOTCH.
TO ADJUST --- REFINE REQUIREMENT (1) ABOVE.

*SHIFT TYPE BOX TO LTRS. POSITION, RETURN PRINT CARRIAGE TO ITS LEFT POSITION AND LOOSEN CARRIAGE RETURN RING MOUNTING SCREWS (4). HOLD CARRIAGE RETURN RING IN ITS COUNTER-CLOCKWISE POSITION, AND POSITION TYPE BOX SO THAT ITS LTRS. INDICATOR ALIGNS WITH REQUIRED MARGIN. TIGHTEN MOUNTING SCREWS.



2.44 Spacing Mechanism (Cont.)

NOTE: CHECK RELATED ADJUSTMENTS, PARS. 2.30, 2.43 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.



RIGHT MARGIN

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED. CARRIAGE IN POSITION TO PRINT CHARACTER ON WHICH SPACING CUTOUT IS TO OCCUR. FRONT FEED PAWL FARTHEST ADVANCED. SPACING CUTOUT TRANSFER BAIL HELD IN ITS UPPERMOST POSITION. ON UNITS HAVING TWO PIECE SPACING CUTOUT BAIL PUSH THE CUTOUT BAIL TOWARDS REAR OF UNIT THROUGH HOLE IN FRONT PLATE. CLEARANCE BETWEEN EXTENSION ON SPACE SUPPRESSION RING AND TRANSFER BAIL

MIN. 0.006 INCH — MAX. 0.025 INCH

TO ADJUST

POSITION SPACE SUPPRESSION RING WITH FOUR INDICATED MOUNTING SCREWS LOOSENED.

NOTE

(1) RANGE OF ADJUSTMENT IS FROM 0 TO 85 CHARACTERS.

(2) ON UNITS EQUIPPED WITH AUTOMATIC CARRIAGE RETURN - LINE FEED RING, THIS ADJUSTMENT IS NOT APPLICABLE. (SEE PAR. 2.62)

SPACING CUTOUT TRANSFER BAIL SPRING

REQUIREMENT

MIN. 1 OZ.
MAX. 3-1/2 OZS.
TO START BAIL MOVING.

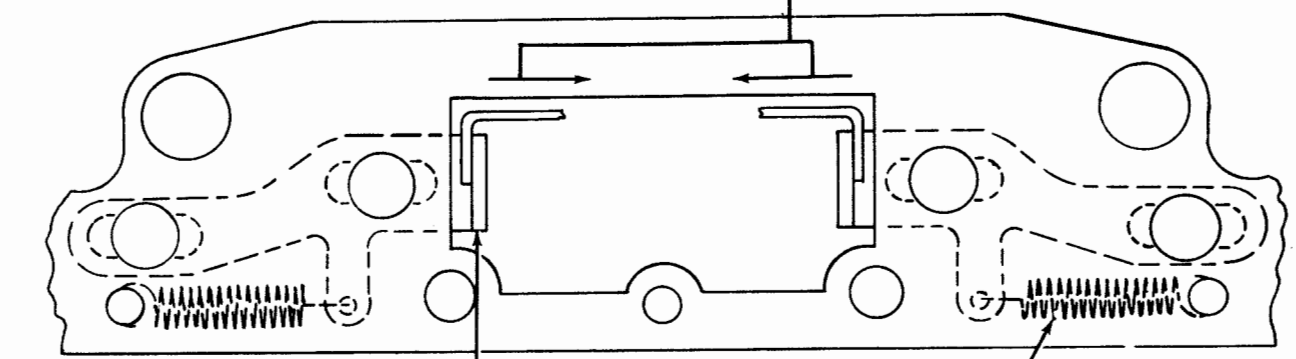
NOTE: FOR EARLIER DESIGN SEE PAR. 4.13

2.45 Positioning Mechanism (Cont.)

DECELERATING SLIDE SPRING

REQUIREMENT

PRINTING BAIL IN DOWNWARD POSITION. PRINTING CARRIAGE AND DECELERATING SLIDE ASSEMBLY IN RIGHT HAND POSITION.
MIN. 1/2 OZ.
MAX. 1-1/2 OZS.
TO START THE SLIDE MOVING.
WITH THE PRINTING CARRIAGE AND DECELERATING SLIDE IN THEIR LEFT HAND POSITION
CHECK THE LEFT HAND DECELERATING SLIDE SPRING

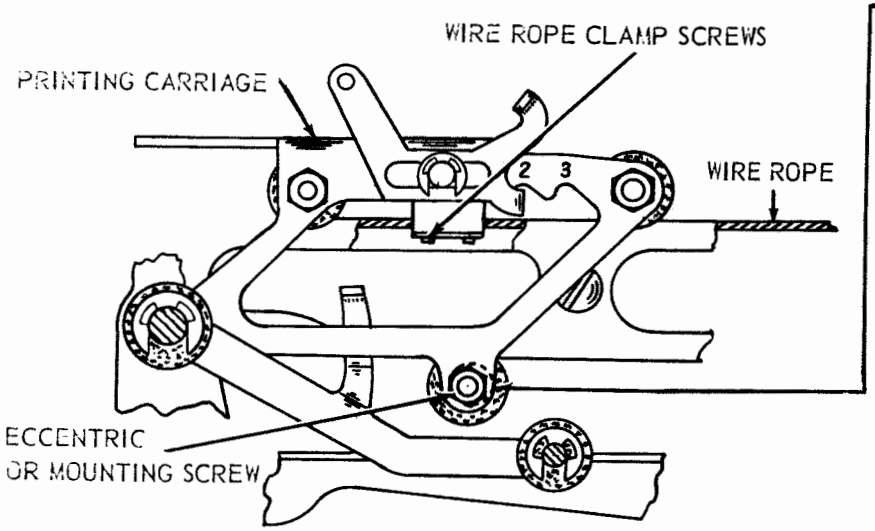


DECELERATING SLIDE

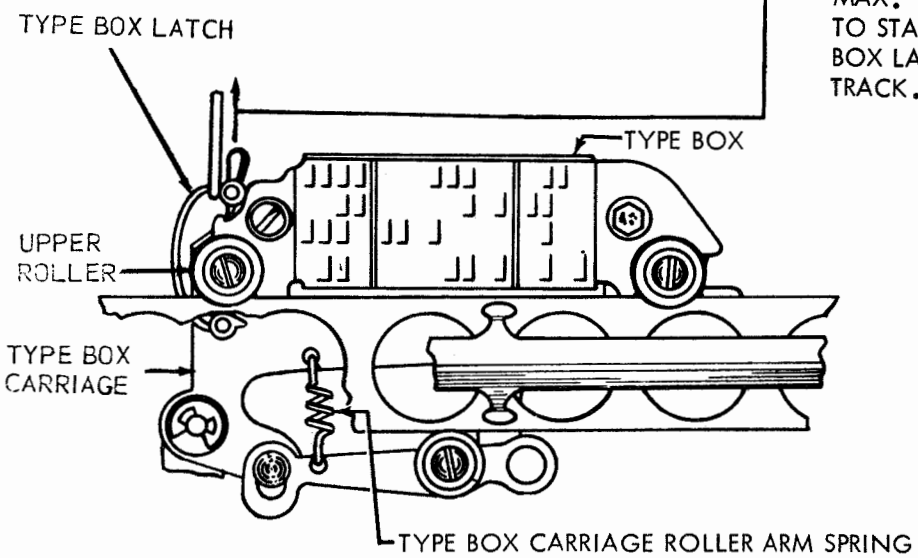
DECELERATING SLIDE SPRING

NOTE: FOR EARLIER DESIGN SEE PAR. 4.13

2.46 Printing Mechanism



PRINTING CARRIAGE LOWER ROLLER
REQUIREMENT
CARRIAGE WIRE ROPE CLAMP SCREWS LOOSENED. PLAY OF CARRIAGE ON TRACK-MIN. WITHOUT BIND, THROUGHOUT TRACK'S FULL LENGTH
TO ADJUST (ECCENTRIC BUSHING)
POSITION LOWER ROLLER WITH SCREW NUT LOOSENED. KEEP HIGH PART OF ECCENTRIC (CHAMFERED CORNER) TOWARD THE RIGHT
TO ADJUST (SLIDING SCREW)
POSITION LOWER ROLLER WITH MOUNTING SCREW LOOSENED.

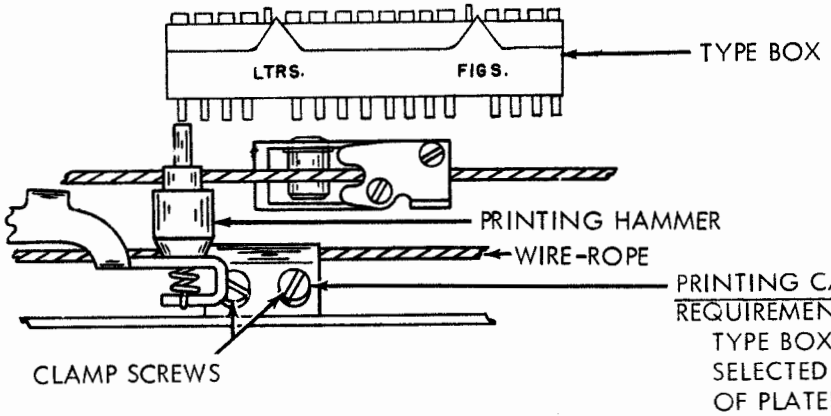


TYPE BOX CARRIAGE ROLLER ARM SPRING
REQUIREMENT
MIN. 28 OZS.
MAX. 36 OZS.
TO START UPPER ROLLER, NEAREST TYPE BOX LATCH, MOVING AWAY FROM CARRIAGE TRACK.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.14

2.47 Printing Mechanism (Cont.)

NOTE: CHECK RELATED ADJUSTMENTS, PARS. 2.30, 2.38, AND 2.44, IF THE FOLLOWING ADJUSTMENTS ARE REMADE. FOR TYPING UNITS OF EARLIER DESIGN, CHECK RELATED ADJUSTMENTS, PARS. 4.07, 2.38, 2.39, AND 4.13.



(TOP VIEW)

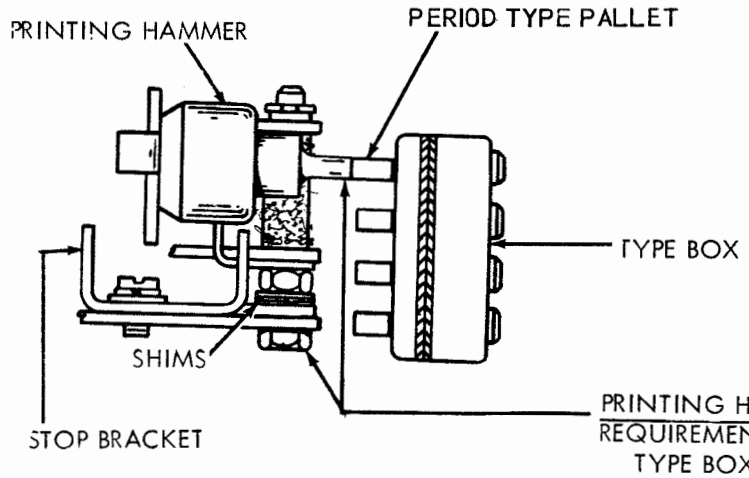
PRINTING CARRIAGE POSITION

REQUIREMENT

TYPE BOX IN LETTERS POSITION. M TYPE PALLET SELECTED. CARRIAGE AT APPROXIMATE MIDPOINT OF PLATEN. TYPE BOX IN PRINTING POSITION. M TYPE PALLET SHOULD BE APPROXIMATELY IN CENTER OF PRINTING HAMMER WHEN HAMMER IS JUST TOUCHING M TYPE PALLET. TAKE UP PLAY IN TYPE BOX CARRIAGE IN EACH DIRECTION AND SET HAMMER IN CENTER OF PLAY.

TO ADJUST

POSITION PRINTING CARRIAGE ON WIRE ROPE WITH CLAMP SCREWS LOOSENED.



(RIGHT SIDE VIEW)

PRINTING HAMMER BEARING STUD

REQUIREMENT

TYPE BOX AT MIDPOINT OF PLATEN AND IN POSITION TO PRINT PERIOD. PRINTING HAMMER IN CONTACT WITH TYPE PALLET AND PRESSED DOWNWARD AT BEARING POST. FACE OF HAMMER SHOULD BE FULLY ON END OF TYPE PALLET.

TO ADJUST

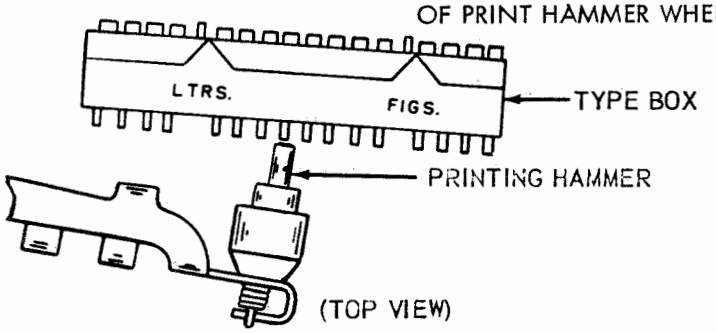
ADD OR REMOVE SHIMS BETWEEN SHOULDER ON BEARING POST AND STOP BRACKET

2. 48 Positioning Mechanism (Cont.)

(A) SHIFT LINKAGE

REQUIREMENT

CARRIAGE NEAR MIDPOINT OF PLATEN. TYPE BOX IN POSITION TO PRINT LETTER "O". MANUALLY BUCKLE RIGHT SHIFT LINKAGE. SHIFT TYPE BOX TO LEFT. FIGURE "9" TYPE PALLET SHOULD BE APPROXIMATELY IN CENTER OF PRINT HAMMER WHEN HAMMER IS JUST TOUCHING "9" TYPE PALLET.

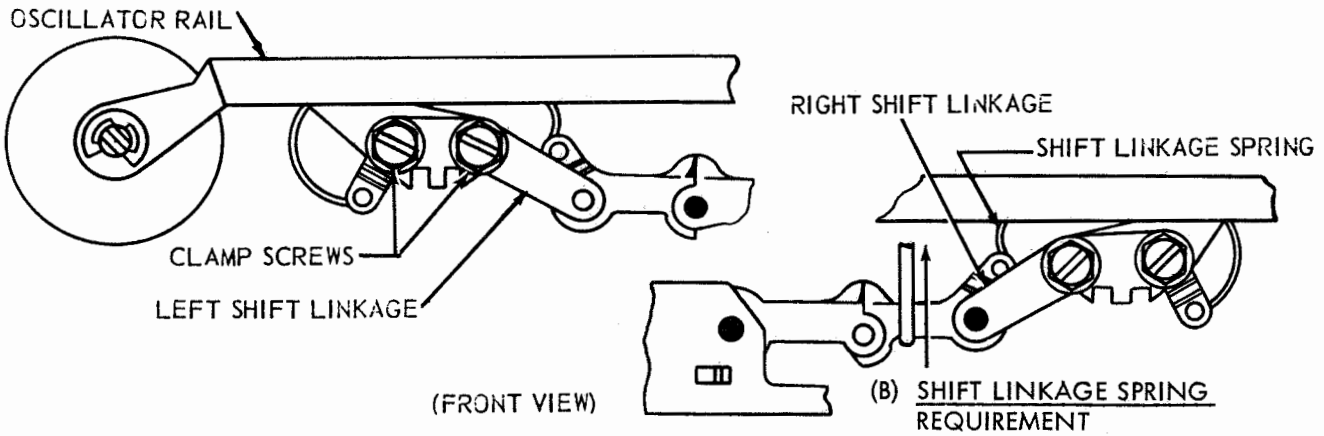


TO ADJUST

POSITION LEFT SHIFT LINKAGE ON OSCILLATOR RAIL WITH TWO CLAMP SCREWS LOOSENED.

TO RECHECK

SHIFT ALTERNATELY FROM "W" TO "2". TAKE UP PLAY IN EACH DIRECTION. REFINE ADJUSTMENT IF NECESSARY.



(B) SHIFT LINKAGE SPRING

REQUIREMENT

LINK IN STRAIGHT POSITION
MIN. 6 OZS.
MAX. 14 OZS.
TO START EACH LINK MOVING.

NOTE: FOR SHIFT MECHANISMS WITH TORSION SPRINGS SEE PAR. 4.15

2.49 Printing Mechanism (Cont.)

(A) PRINTING TRACK

REQUIREMENT

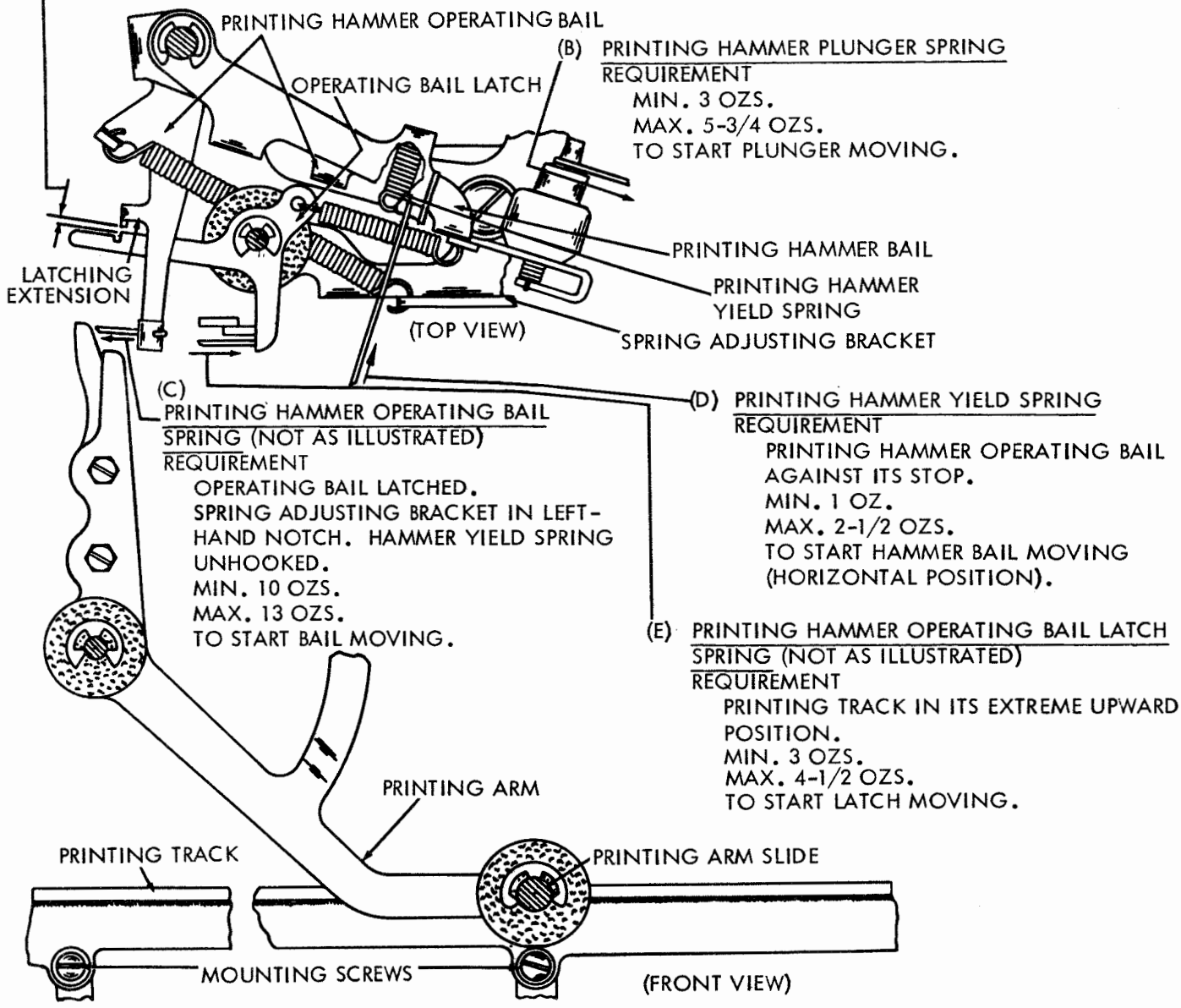
PRINTING TRACK IN ITS EXTREME DOWNWARD POSITION. BLANK SELECTION IN FIGURES. PRINTING HAMMER OPERATING BAIL LATCHING EXTENSION HELD WITH LEFT FACE IN LINE WITH THE LATCH SHOULDER. PRINTING ARM SLIDE POSITIONED ALTERNATELY OVER EACH TRACK MOUNTING SCREW. PRINTING BAIL RESET EACH TIME. CLEARANCE BETWEEN LATCHING EXTENSION AND OPERATING BAIL LATCH SHOULD BE

MIN. 0.015 INCH

MAX. 0.040 INCH

TO ADJUST

POSITION THE PRINTING TRACK UP OR DOWN WITH ITS MOUNTING SCREWS LOOSENED. HOLD CLEARANCE TO MAXIMUM.



(B) PRINTING HAMMER PLUNGER SPRING

REQUIREMENT

MIN. 3 OZS.

MAX. 5-3/4 OZS.

TO START PLUNGER MOVING.

(C) PRINTING HAMMER OPERATING BAIL SPRING (NOT AS ILLUSTRATED)

REQUIREMENT

OPERATING BAIL LATCHED. SPRING ADJUSTING BRACKET IN LEFT-HAND NOTCH. HAMMER YIELD SPRING UNHOOKED.

MIN. 10 OZS.

MAX. 13 OZS.

TO START BAIL MOVING.

(D) PRINTING HAMMER YIELD SPRING

REQUIREMENT

PRINTING HAMMER OPERATING BAIL AGAINST ITS STOP.

MIN. 1 OZ.

MAX. 2-1/2 OZS.

TO START HAMMER BAIL MOVING (HORIZONTAL POSITION).

(E) PRINTING HAMMER OPERATING BAIL LATCH SPRING (NOT AS ILLUSTRATED)

REQUIREMENT

PRINTING TRACK IN ITS EXTREME UPWARD POSITION.

MIN. 3 OZS.

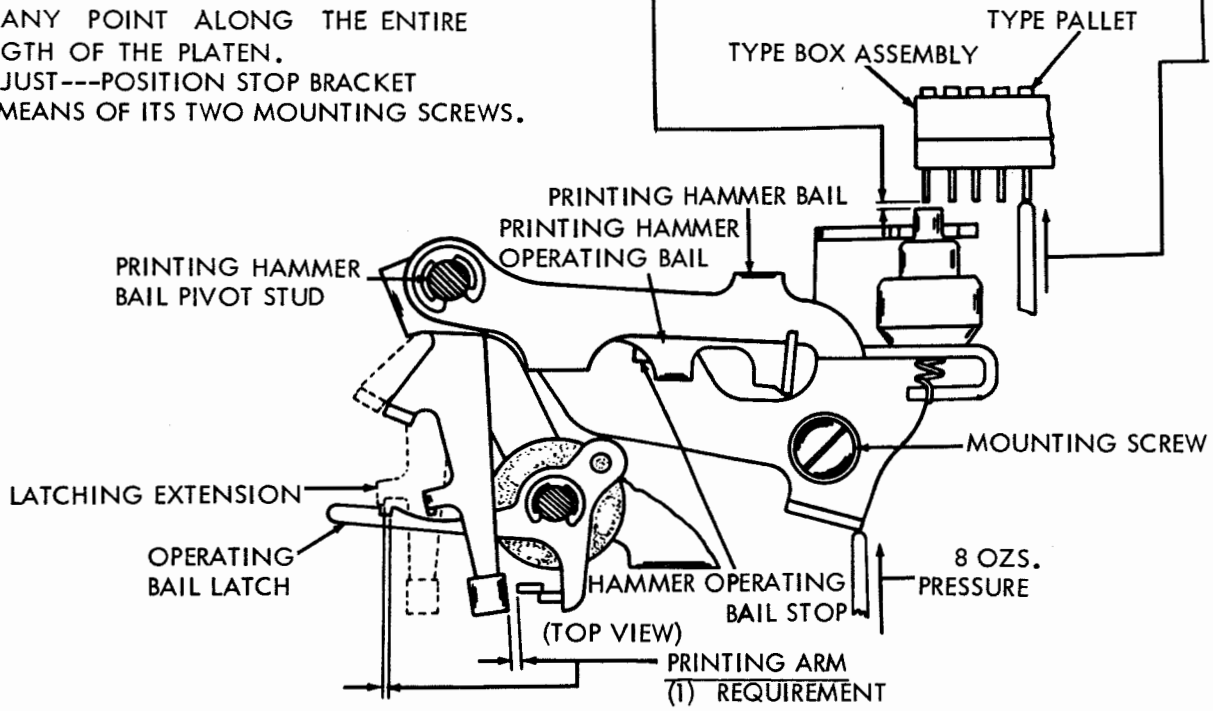
MAX. 4-1/2 OZS.

TO START LATCH MOVING.

2. 50 Printing Mechanism (Cont.)

PRINTING HAMMER STOP BRACKET
REQUIREMENT --- WITH TYPE BOX IN POSITION TO PRINT CHARACTER "M", PRINTING TRACK IN ITS MAXIMUM DOWNWARD POSITION, AND PRINTING HAMMER STOP BRACKET HELD TOWARD THE PLATEN WITH PRESSURE OF 8 OZS; CLEARANCE BETWEEN PRINTING HAMMER AND "M" TYPE PALLET.
MIN. 0.005 INCH
MAX. 0.035 INCH
AT ANY POINT ALONG THE ENTIRE LENGTH OF THE PLATEN.
TO ADJUST---POSITION STOP BRACKET BY MEANS OF ITS TWO MOUNTING SCREWS.

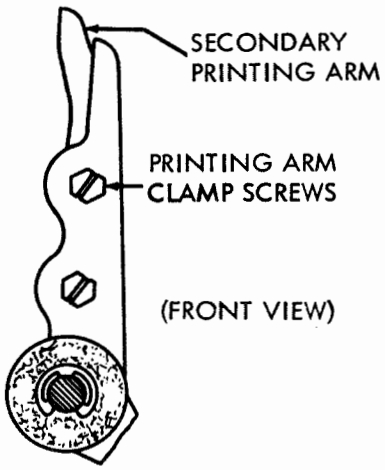
TYPE PALLET SPRING
REQUIREMENT
TYPE BOX REMOVED FROM THE UNIT. 8 OZS. SCALE APPLIED VERTICALLY TO THE END OF THE PALLET SHANK.
MIN. 1/4 OZS.
MAX. 3/4 OZS.
TO START PALLET MOVING.



PRINTING ARM
(1) REQUIREMENT
PRINTING TRACK IN MAXIMUM DOWNWARD POSITION.
PRINTING HAMMER OPERATING BAIL AGAINST ITS STOP.
SOME CLEARANCE BETWEEN SECONDARY PRINTING ARM AND FORWARD EXTENSION OF HAMMER OPERATING BAIL.
MAX. 0.015 INCH
WHEN PRINTING ARM SLIDE IS HELD DOWNWARD OVER EACH PRINTING TRACK MOUNTING SCREW FOR MAXIMUM CLEARANCE

(2) REQUIREMENT
PRINTING TRACK IN UPPERMOST POSITION. LATCHING EXTENSION OF PRINTING HAMMER OPERATING BAIL SHOULD OVERTRAVEL LATCHING SURFACE OF OPERATING BAIL LATCH BY MIN. 0.006 INCH
CHECK RIGHT AND LEFT POSITIONS
TO ADJUST
POSITION SECONDARY PRINTING ARM WITH CLAMP SCREWS LOOSENED.

NOTE 2
FOR EARLIER DESIGN SEE PAR. 4.16



NOTE 1
THE PRINTING ARM ADJUSTMENT SHOULD ALWAYS BE MADE WITH THE PRINTING HAMMER OPERATING BAIL SPRING BRACKET IN THE NO. 1 POSITION. POSITIONS NO. 2 AND 3 ARE TO BE USED ONLY FOR MAKING MULTIPLE COPIES.

2.51 Printing Mechanism (Cont.)

NOTE: THIS ADJUSTMENT APPLIES ONLY TO UNITS SO EQUIPPED AND SHOULD BE MADE WITH THE TYPEBOX IN ITS UPPER POSITION.

NOTE: RECHECK PRINTING STOP BRACKET ADJUSTMENT PAR. 2.50, AND READJUST IF NECESSARY.

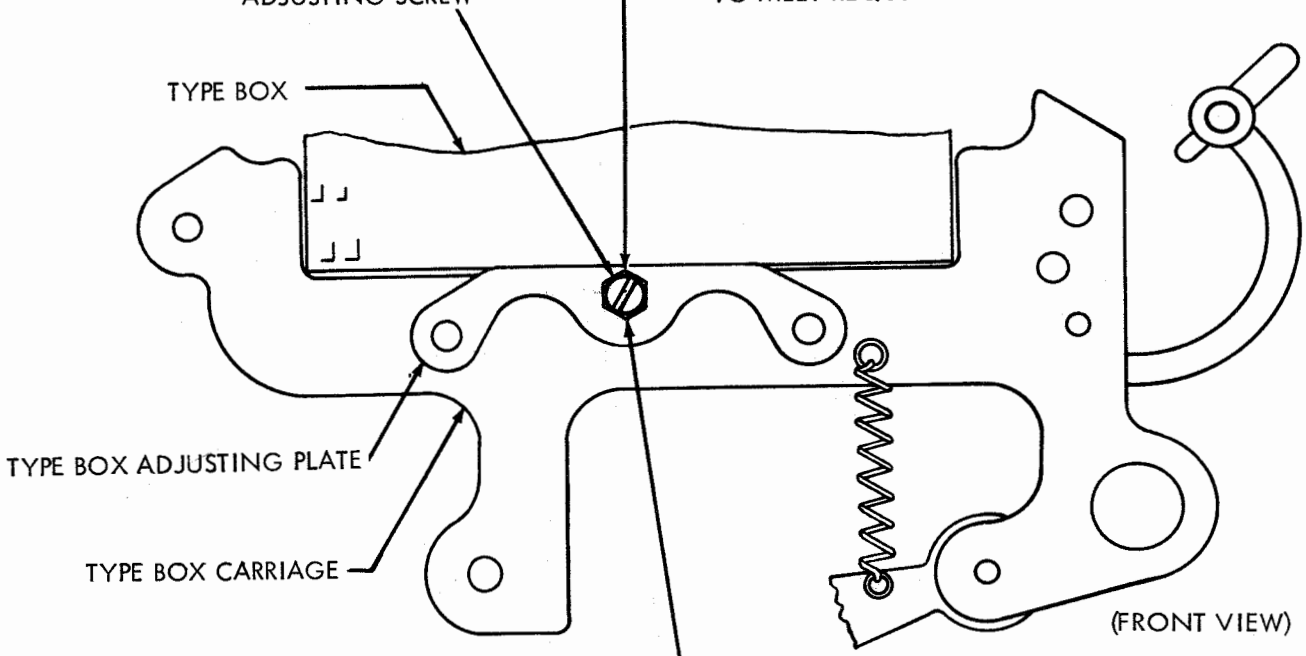
TYPE BOX ALIGNMENT

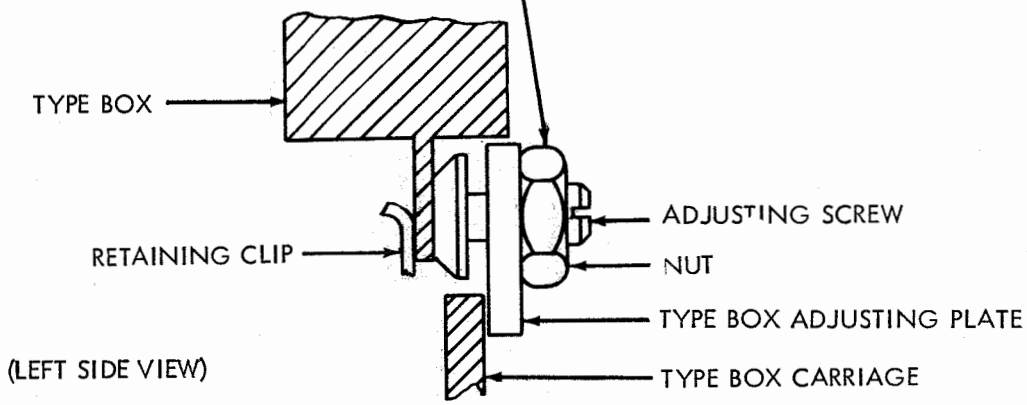
REQUIREMENT

PRINTED IMPRESSION OF CHARACTERS AT TOP AND AT BOTTOM SHOULD BE EQUAL. (GAUGE VISUALLY)

TO ADJUST

LOOSEN NUT. OPERATE PRINTER UNDER POWER. REPEAT CHARACTERS E AND Z. TURN ADJUSTING SCREW IN OR OUT (IN STEPS OF 1/4 TURN) TO MEET REQUIREMENT. TIGHTEN NUT.

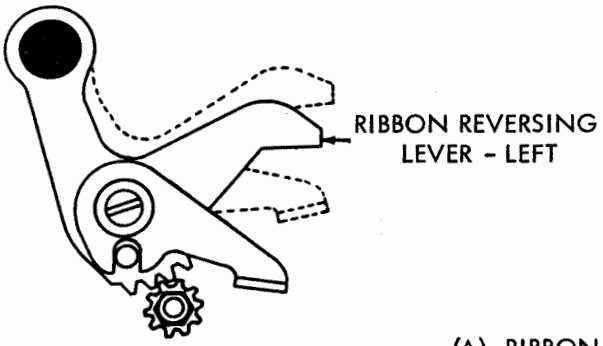


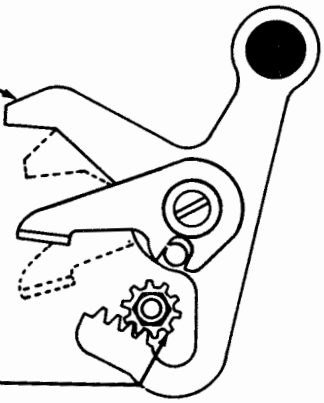


NOTE: SOME TYPING UNITS ARE EQUIPPED WITH A RIBBON GUIDE WHICH HAS A TYPE BOX RETAINING CLIP WITH A LIMITED YIELD. IN CASES WHERE IT IS NECESSARY TO BACK THE ADJUSTING SCREW OUT TO PROVIDE HEAVIER PRINTING AT THE TOP OF A CHARACTER, IT MAY BE NECESSARY TO BEND THE SPRING CLIP ON THE RIBBON GUIDE TOWARD THE FRONT SO THAT THE TAB AT THE BOTTOM OF THE TYPE BOX IS HELD AGAINST THE HEAD OF THE ADJUSTING SCREW.

2.52 Printing Mechanism (Cont.)

CHECK THE TWO COLOR RIBBON REQUIREMENTS PARS. 3.44 AND 3.45 ON UNITS SO EQUIPPED.





(A) RIBBON REVERSE SPUR GEAR

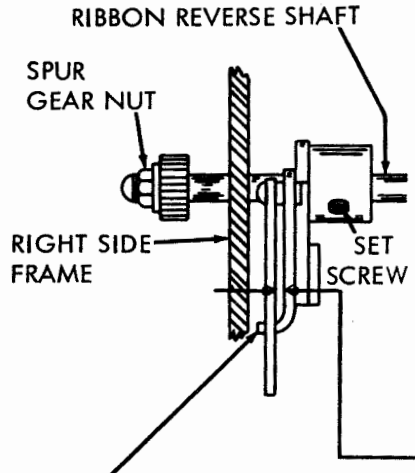
REQUIREMENT

WHEN RIGHT REVERSING LEVER IS IN MAXIMUM DOWNWARD POSITION, THE LEFT REVERSING LEVER SHOULD BE IN ITS MAXIMUM UPWARD POSITION.

TO ADJUST

LOOSEN THE SET SCREWS IN THE DETENT CAM. LOOSEN THE LEFT SPUR GEAR NUT. SECURELY TIGHTEN THE RIGHT SPUR GEAR NUT. MOVE THE RIGHT REVERSING LEVER TO ITS MAXIMUM DOWNWARD POSITION AND HOLD LEFT REVERSING LEVER IN ITS MAXIMUM UPWARD POSITION. THEN TIGHTEN THE LEFT SPUR GEAR NUT.

NOTE: ROTATE TYPE BOX CLUTCH 1/2 TURN AND MOVE RIGHT REVERSING LEVER UNDER THE SEGMENT. THERE SHOULD BE SOME CLEARANCE BETWEEN SEGMENT AND THE LEVER. REFINE ADJ. IF NECESSARY



(B) RIBBON REVERSE DETENT

REQUIREMENT

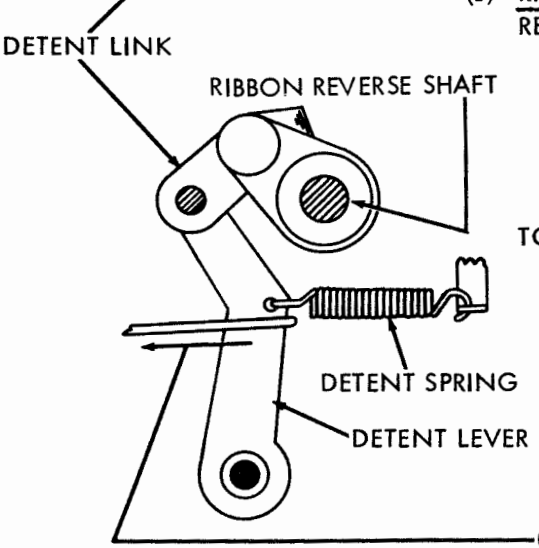
RIBBON REVERSE DETENT LINK BUCKLED IN ITS DOWNWARD POSITION, CLEARANCE BETWEEN DETENT LINK AND DETENT LEVER.

MIN. SOME---MAX. 0.055 INCH

WHEN PLAY IN THE LEVER IS TAKEN UP LIGHTLY TOWARD THE RIGHT SIDE OF THE PRINTER.

TO ADJUST

HOLD LEFT RIBBON REVERSING LEVER IN ITS DOWNWARD POSITION, POSITION DETENT LINK, AND TIGHTEN THE UPPER SET SCREW IN THE HUB OF THE DETENT LINK. BUCKLE THE DETENT LINK UPWARD AND TIGHTEN LOWER SET SCREW.



NOTE: FOR EARLIER DESIGN SEE PAR. 4.17

(C) RIBBON REVERSE DETENT LEVER SPRING
(IF UNIT IS EQUIPPED)

REQUIREMENT

DETENT LINK BUCKLED IN UPWARD POSITION
MIN. 10 OZS.
MAX. 18 OZS.
TO START DETENT LEVER MOVING TOWARD REAR.

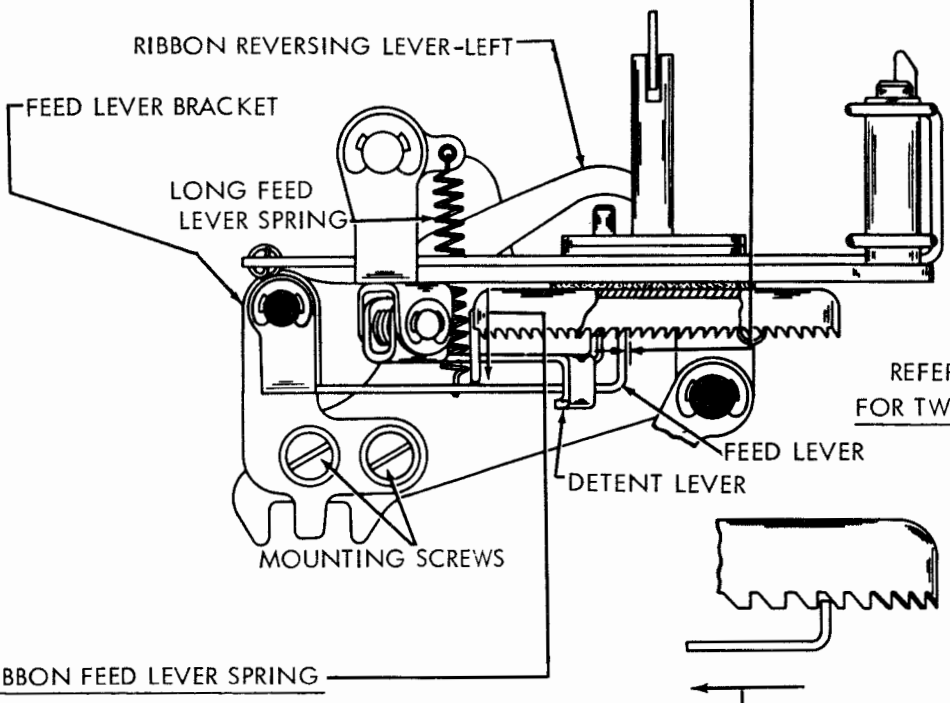
2.53 Printing Mechanism (Cont.)

RIBBON FEED LEVER BRACKET

(1) REQUIREMENT (LEFT-HAND MECHANISM)
LEFT REVERSING LEVER IN UPWARD POSITION.
RIBBON MECHANISM IN UPPER POSITION.
RATCHET WHEEL HELD AGAINST THE DETENT LEVER.
CLEARANCE BETWEEN THE FRONT FACE OF THE FEED LEVER AND THE SHOULDER OF A TOOTH ON THE RATCHET WHEEL.
MIN. 0.015 INCH
MAX. 0.035 INCH
TO ADJUST
POSITION THE FEED LEVER BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

(2) REQUIREMENT (RIGHT-HAND MECHANISM)
RIGHT REVERSING LEVER AND RIBBON MECHANISM IN UPWARD POSITION.
ADJUST FEED LEVER BRACKET IN THE SAME MANNER

NOTE
ROTATE THE MAIN SHAFT. THE RATCHET WHEEL SHOULD STEP ONE TOOTH ONLY WITH EACH OPERATION.



REFER TO PARS. 3.44 AND 3.45 FOR TWO COLOR RIBBON MECHANISM

RIBBON FEED LEVER SPRING

REQUIREMENT
RIBBON FEED LEVERS IN UPPERMOST POSITION.
FOR LONG LEVER: PUSH DOWNWARD NEAR ITS SPRING.
FOR SHORT LEVER: PUSH DOWNWARD AT POINT NEAR LONG LEVER SPRING.
MIN. 3/4 OZ.
MAX. 2 OZS.
TO START FEED LEVERS MOVING.
MEASURE ALL FOUR PAWLS.

NOTE: IF MINIMUM REQUIREMENT OF SHORT LEVER IS NOT MET, PULL LOWER END OF TORSION SPRING TO REAR.

RIBBON RATCHET WHEEL FRICTION SPRING

REQUIREMENT
FEED LEVERS DISENGAGED.
MIN. 3 OZS.
MAX. 7-1/2 OZS.
TO START THE RATCHET WHEEL MOVING.

*TWO COLOR RIBBON REQUIREMENT
MIN. 3 OZS.---MAX. 4 OZS.
TO START RATCHET WHEEL MOVING.

2.54 Printing Mechanism (Cont.)

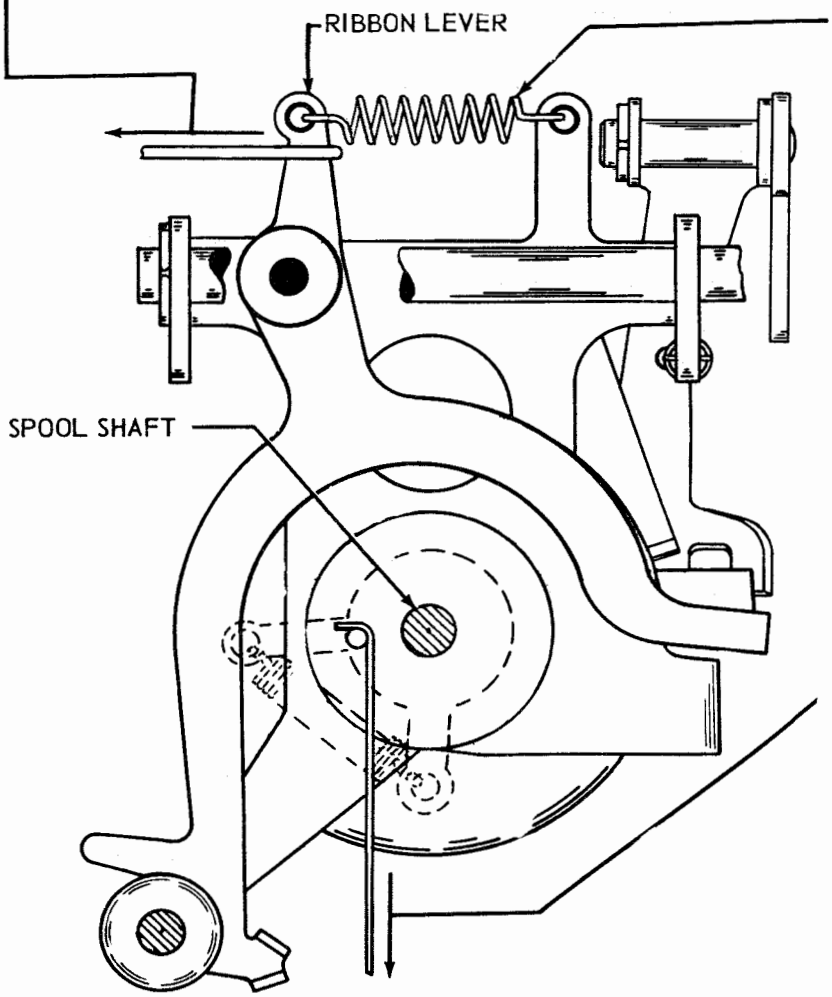
RIBBON LEVER SPRING

REQUIREMENT

MIN. 1-1/2 OZS.

MAX. 3 OZS.

TO START THE LEVER MOVING. CHECK BOTH RIGHT AND LEFT SPRINGS



RIBBON TENSION SPRING

REQUIREMENT

RIBBON RATCHET WHEEL POSITIONED SO THAT EACH DRIVING PIN IS TOWARD THE OUTSIDE OF THE SPOOL SHAFT.

MIN. 3 OZS.

MAX. 5-1/2 OZS.

TO START SPOOL SHAFT MOVING.

2.55 Function Mechanism (Cont.)

NOTE: REFER TO BULLETIN 1149B FOR INSTRUCTIONS ON CODING THE UNCODED FUNCTION BAR.

(A)
FUNCTION LEVER SPRING

NOTE: IF A FUNCTION LEVER OPERATES A CONTACT OR A SLIDE, HOLD OFF THE CONTACT OR SLIDE WHEN CHECKING THE SPRING TENSION

REQUIREMENT

FUNCTION LEVER IN UNOPERATED POSITION.
SUPPRESSION BAIL HELD FORWARD.

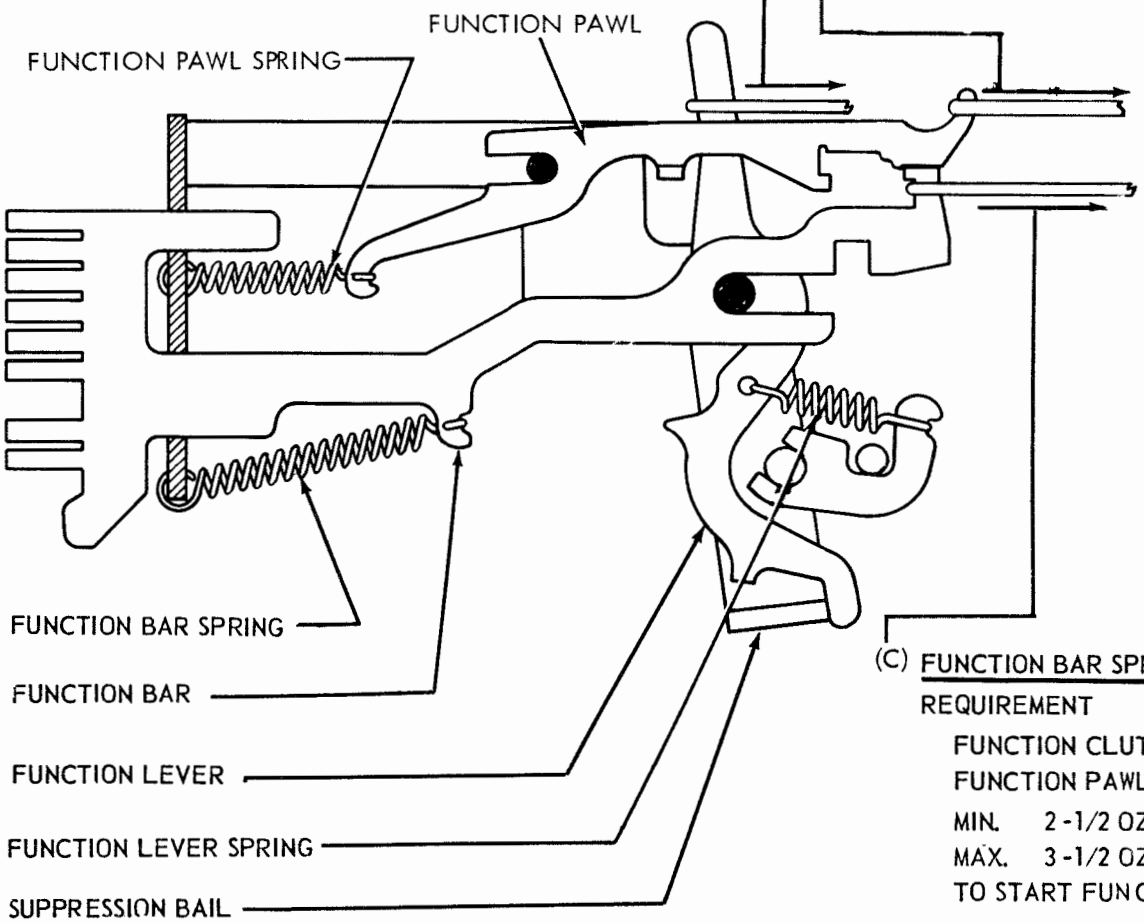
STANDARD	LEVER WITH STUD THAT OPERATES TWO CONTACTS
MIN. 1-1/2 OZS.	2 OZS.
MAX. 2-3/4 OZS.	3-1/2 OZS.

TO START FUNCTION LEVER MOVING.
CHECK EACH SPRING.

(B) FUNCTION PAWL SPRING

REQUIREMENT

REAR END OF FUNCTION PAWL RESTING ON FUNCTION BAR
ONE STOP FUNCTION CLUTCH UNITS:
MIN. 3 OZS.
MAX. 5 OZS.
TWO STOP FUNCTION CLUTCH UNITS:
MIN. 7 OZS.
MAX. 10-1/2 OZS.
TO START PAWL MOVING.
CHECK EACH SPRING.



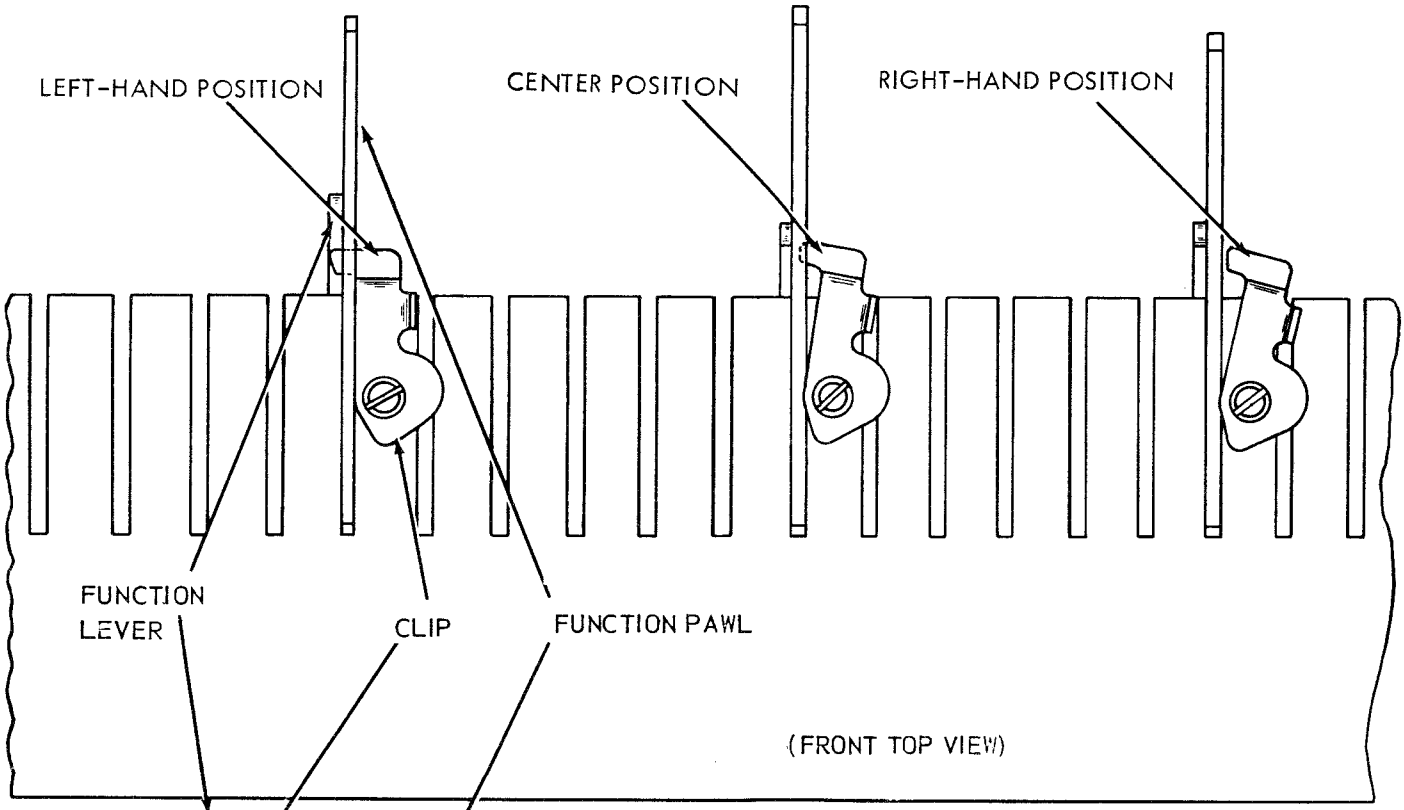
(C) FUNCTION BAR SPRING

REQUIREMENT

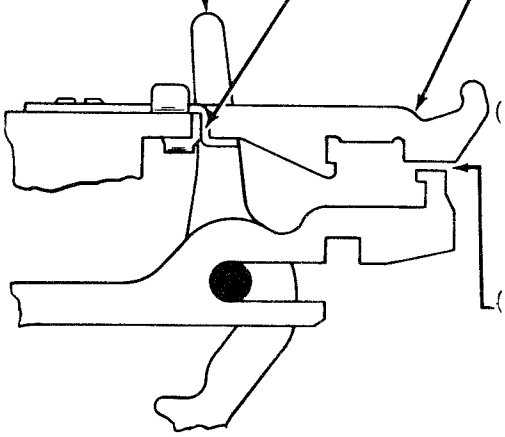
FUNCTION CLUTCH DISENGAGED
FUNCTION PAWL HELD AWAY.
MIN. 2-1/2 OZS.
MAX. 3-1/2 OZS.
TO START FUNCTION BAR MOVING.

CAUTION: SEVERE WEAR TO THE POINT OF OPERATIONAL FAILURE WILL RESULT IF THE TELETYPEWRITER IS OPERATED WITHOUT EACH FUNCTION PAWL HAVING EITHER A RELATED FUNCTION BAR OR, WHERE A FUNCTION BAR IS MISSING, A RELATED FUNCTION PAWL CLIP TO HOLD THE FUNCTION PAWL AWAY FROM THE STRIPPER BLADE.

2.56 Function Mechanism (Cont.)

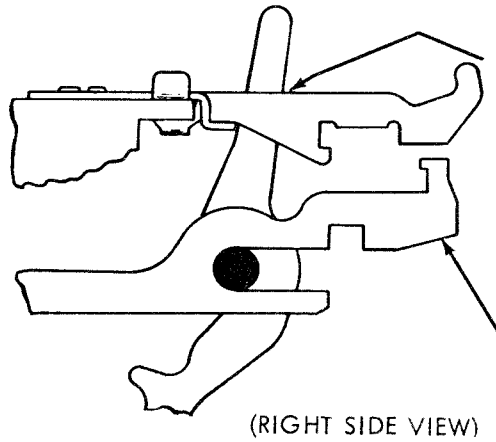


STUNT BOX CLIP (FOR UNITS EQUIPPED WITH CLIPS ONLY)



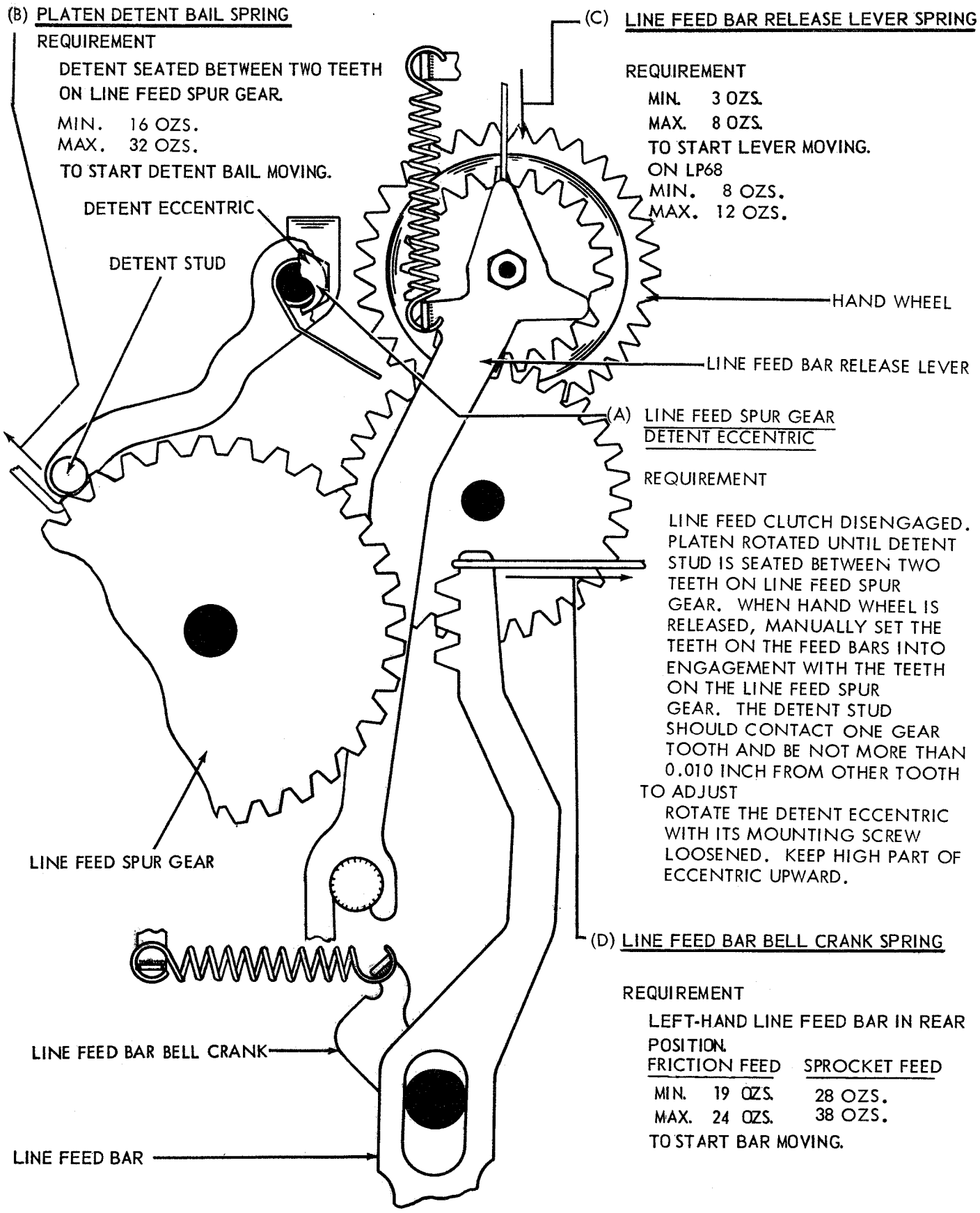
(1) REQUIREMENT (RIGHT-HAND POSITION)
THE CLIP SHOULD NOT PREVENT THE ASSOCIATED FUNCTION PAWL FROM ENGAGING ITS FUNCTION BAR.
TO ADJUST
POSITION THE CLIP TO ITS EXTREME RIGHT-HAND POSITION

(2) REQUIREMENT (CENTER POSITION)
THE CLIP SHOULD HOLD THE FUNCTION PAWL OUT OF ENGAGEMENT WITH ITS FUNCTION BAR BUT SHOULD NOT INTERFERE WITH THE FUNCTION LEVER.
TO ADJUST
POSITION THE CLIP WITH ITS MOUNTING SCREW LOOSENED.



(3) REQUIREMENT (LEFT-HAND POSITION)
THE CLIP SHOULD HOLD THE FUNCTION PAWL UPWARD OUT OF ENGAGEMENT WITH ITS FUNCTION BAR. IT SHOULD ALSO HOLD THE TOP END OF THE FUNCTION LEVER IN ITS REAR POSITION.
TO ADJUST
POSITION THE CLIP TO ITS EXTREME LEFT-HAND POSITION.

2.57 Line Feed and Platen Mechanism (Cont.)



2.58 Function Mechanism (Cont.)

STRIPPER BLADE DRIVE CAM POSITION

REQUIREMENT

STRIPPER BLADE DRIVE CAM SHOULD MOVE EACH STRIPPER BLADE CAM ARM AN EQUAL DISTANCE ABOVE AND BELOW CENTER LINE OF ITS PIVOT (GAUGE BY EYE)

A. UPWARD DIRECTION

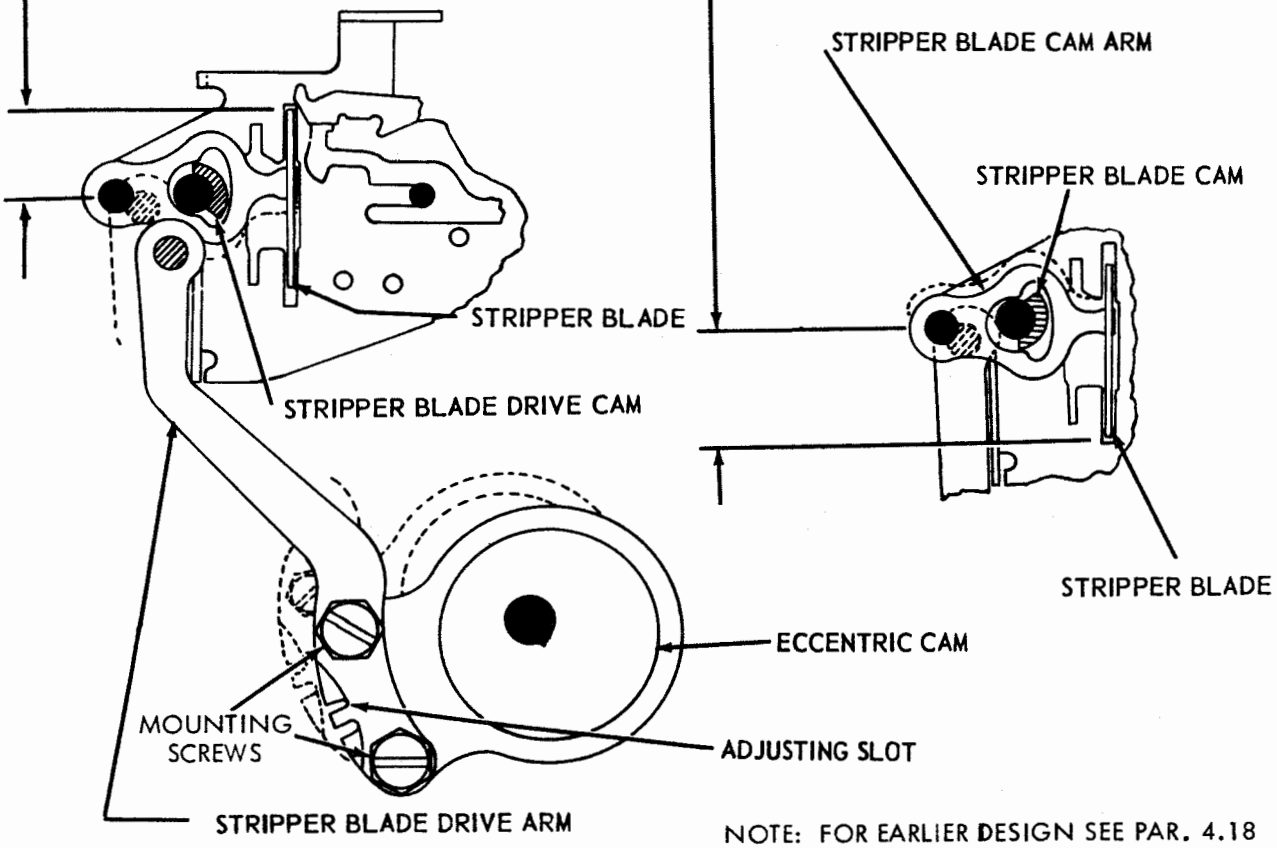
B. DOWNWARD DIRECTION

TO CHECK

WITH FUNCTION CLUTCH DISENGAGED OBSERVE ENGAGEMENT OF STRIPPER BLADE DRIVE CAM (UPPER PEAK) WITH STRIPPER BLADE CAM ARM. THEN ROTATE CLUTCH TO TURN CAM TO ITS EXTREME DOWNWARD POSITION AND OBSERVE ENGAGEMENT OF LOWER CAM PEAK.

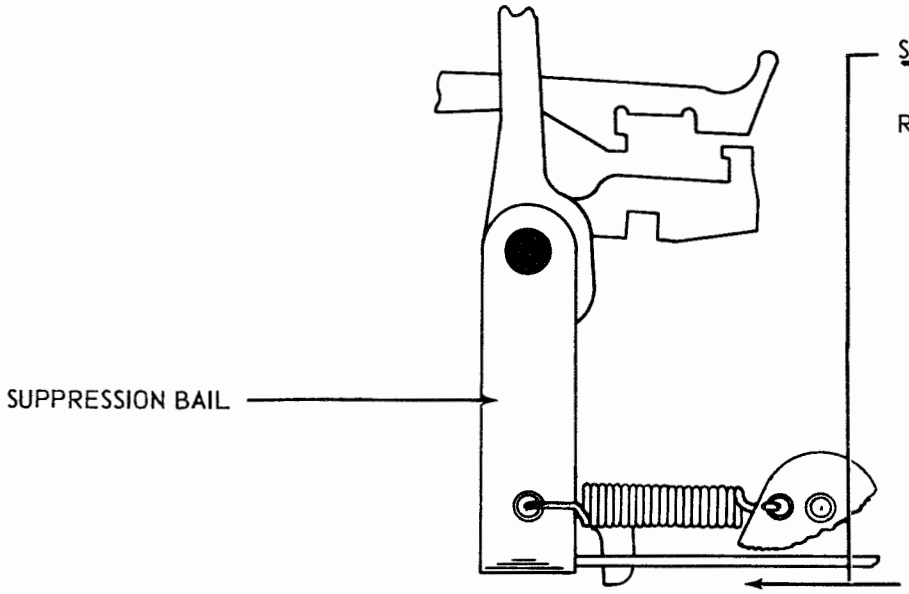
TO ADJUST

WITH STRIPPER BLADE DRIVE ARM MOUNTING SCREWS LOOSENED, EQUALIZE THE OVERTRAVEL OF EACH CAM PEAK.



NOTE: FOR EARLIER DESIGN SEE PAR. 4.18

2.59 Spacing Mechanism (Cont.)



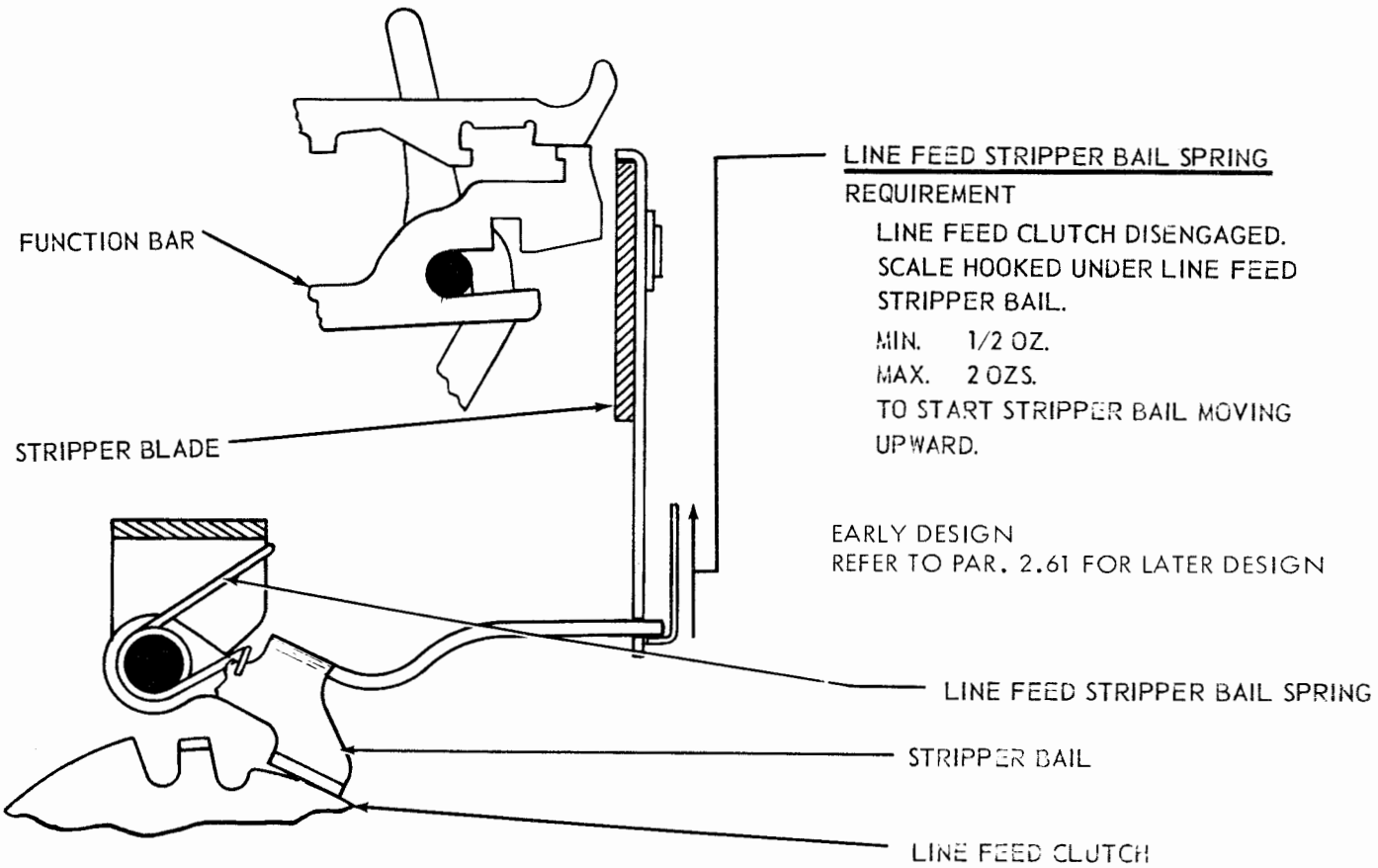
SPACING SUPPRESSION BAIL SPRING

REQUIREMENT

SPACING SUPPRESSION BAIL IN REAR POSITION. SCALE APPLIED NEAR CENTER OF HORIZONTAL PORTION OF BAIL.

MIN. 1/2 OZ.
MAX. 1-1/2 OZS.
TO START BAIL MOVING.

2.60 Line Feed and Platen Mechanism (Cont.)



LINE FEED STRIPPER BAIL SPRING

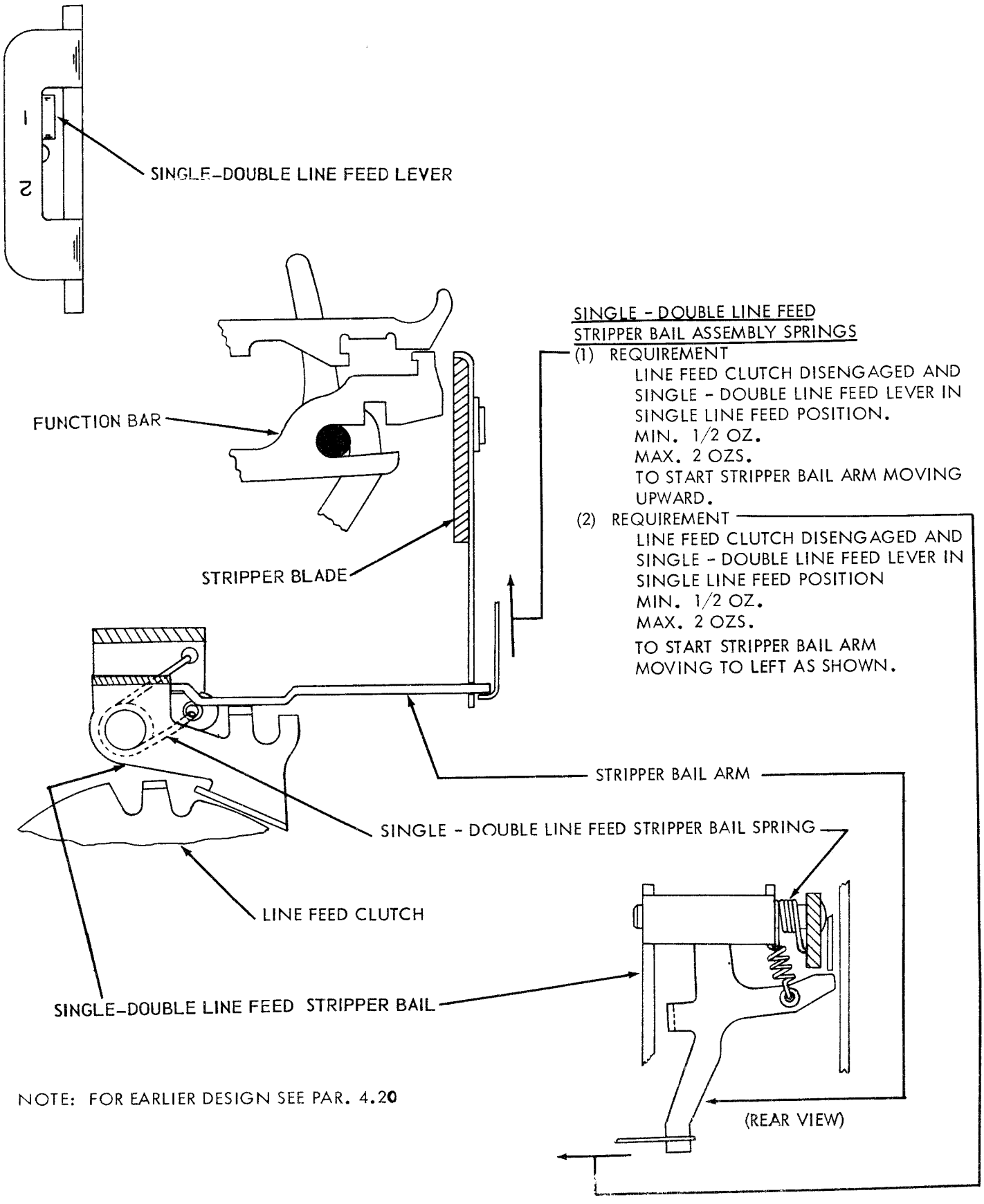
REQUIREMENT

LINE FEED CLUTCH DISENGAGED. SCALE HOOKED UNDER LINE FEED STRIPPER BAIL.

MIN. 1/2 OZ.
MAX. 2 OZS.
TO START STRIPPER BAIL MOVING UPWARD.

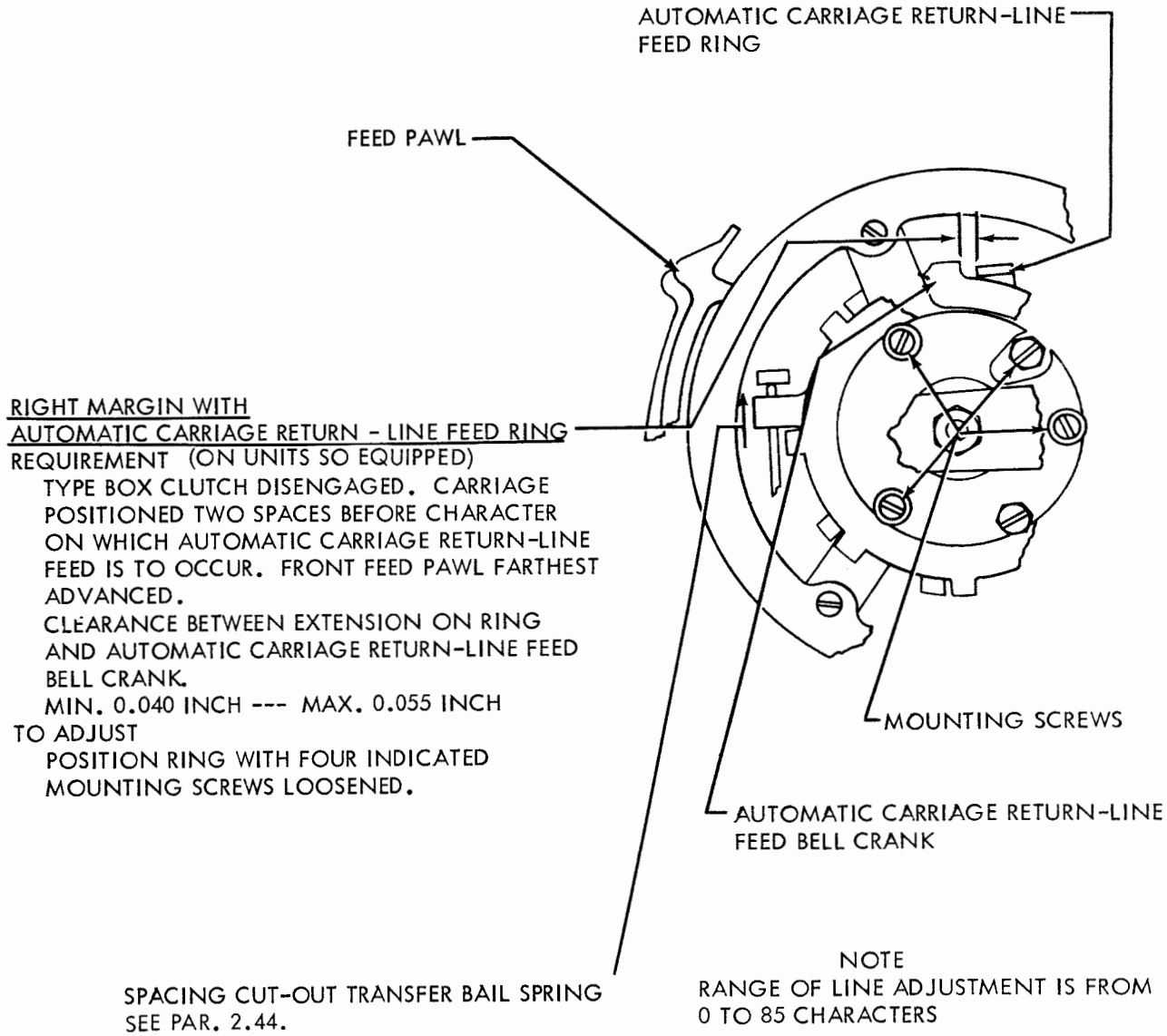
EARLY DESIGN
REFER TO PAR. 2.61 FOR LATER DESIGN

2.61 Line Feed and Platen Mechanism (Cont.)



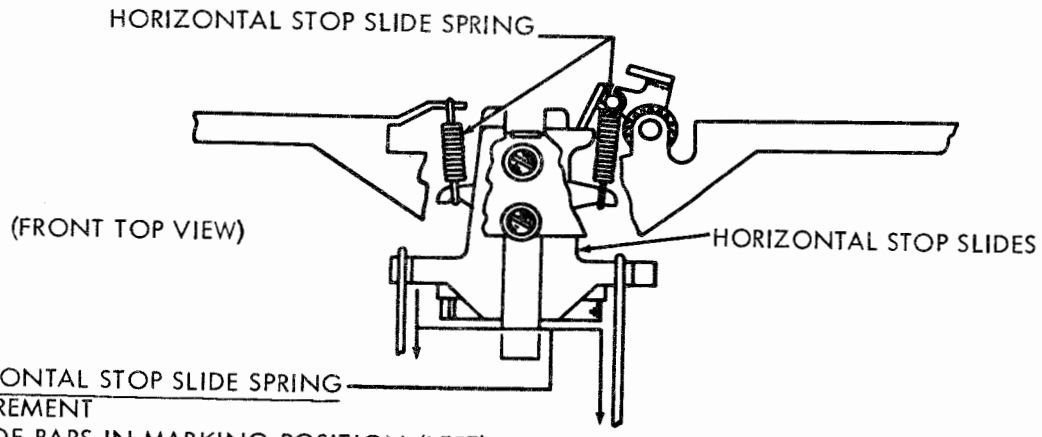
NOTE: FOR EARLIER DESIGN SEE PAR. 4.20

2.62 Spacing Mechanism (Cont.)



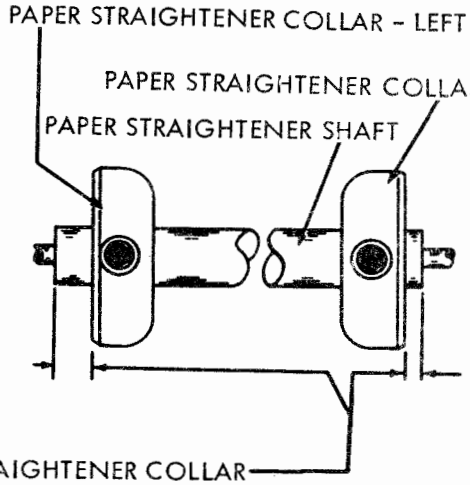
NOTE: FOR ADJUSTMENT ON EARLIER MODELS SEE PAR. 4.19

2.63 Positioning Mechanism (Cont.)

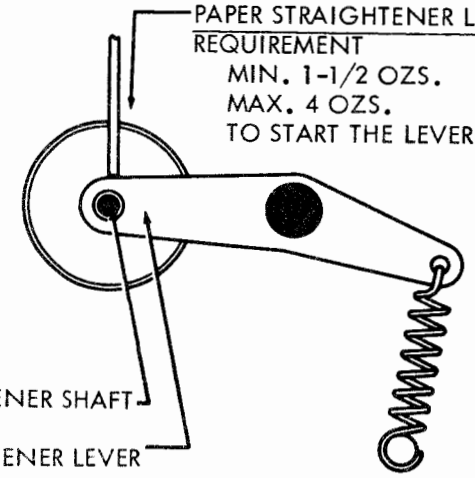


REQUIREMENT
CODE BARS IN MARKING POSITION (LEFT)
TYPE BOX CLUTCH ROTATED 1/4 TURN FROM ITS STOP POSITION
HORIZONTAL MOTION DECELERATING SLIDES (PAR. 2.35) HELD AWAY FROM HORIZONTAL STOP SLIDES
MIN. 1/2 OZ. MAX. 1-1/2 OZS. FOR UPPER AND LOWER SLIDES
MIN. 1-3/4 OZS. MAX. 3 OZS. FOR MIDDLE SLIDE
TO START SLIDE MOVING.
NOTE: WHEN CHECKING UPPER AND LOWER SLIDES, HOLD MIDDLE SLIDE 1/32 INCH FORWARD.

2.64 Line Feed and Platen Mechanism (Cont.)



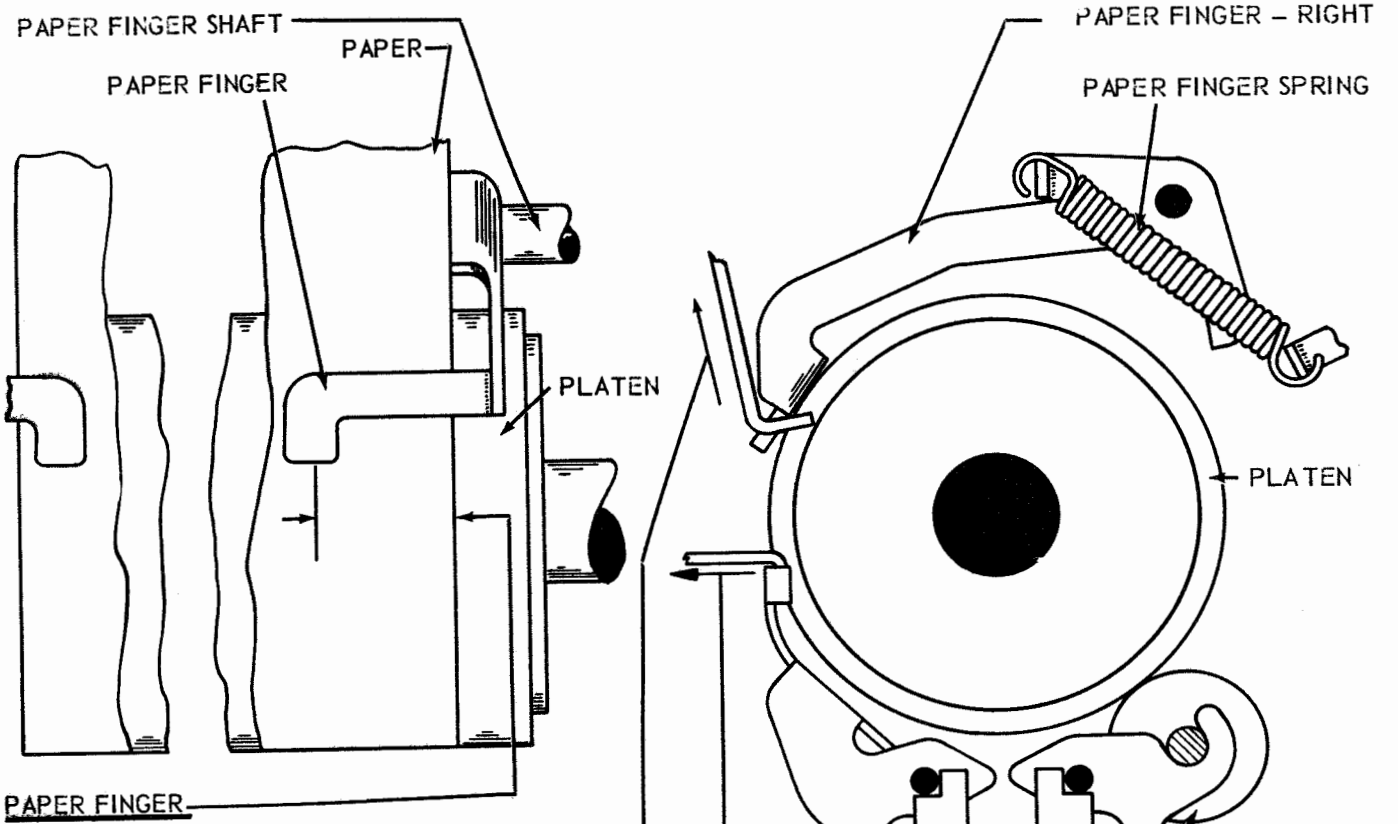
REQUIREMENT
LEFT COLLAR SPACE
MIN. 9/32 INCH
MAX. 21/64 INCH
FROM THE LEFT SHOULDER ON THE PAPER STRAIGHTENER SHAFT.
RIGHT COLLAR SPACED.
MIN. 1/16 INCH
MAX. 5/64 INCH
FROM THE RIGHT SHOULDER.
TO ADJUST
POSITION COLLARS ON SHAFT WITH SET SCREWS LOOSENED.



REQUIREMENT
MIN. 1-1/2 OZS.
MAX. 4 OZS.
TO START THE LEVER MOVING.

NOTE: FOR SPROCKET FEED MECHANISM SEE PAR. 2.75

2.65 Line Feed and Platen Mechanism (Cont.)



PAPER FINGER

REQUIREMENT

THE PRESSURE END OF THE PAPER FINGERS SHOULD OVERLAP THE PAPER FROM 3/8 INCH TO 1/2 INCH.

TO ADJUST

POSITION THE PAPER FINGERS BY SLIDING THEM ON THEIR SHAFT.

PAPER FINGER SPRING

REQUIREMENT

PULL UPWARD ON RIGHT PAPER FINGER TO START LEFT PAPER FINGER MOVING FROM PLATEN.

MIN. 3 OZS.

MAX. 6 OZS.

PRESSURE ROLLER LEVER SPRING

REQUIREMENT

MIN. 28 OZS.

MAX. 36 OZS.

TO START EACH CENTER LEVER MOVING. ALTERNATELY

PAPER PRESSURE BAIL SPRING

REQUIREMENT

SCALE HOOKED OVER PRESSURE BAIL AT EACH END OF PLATEN.

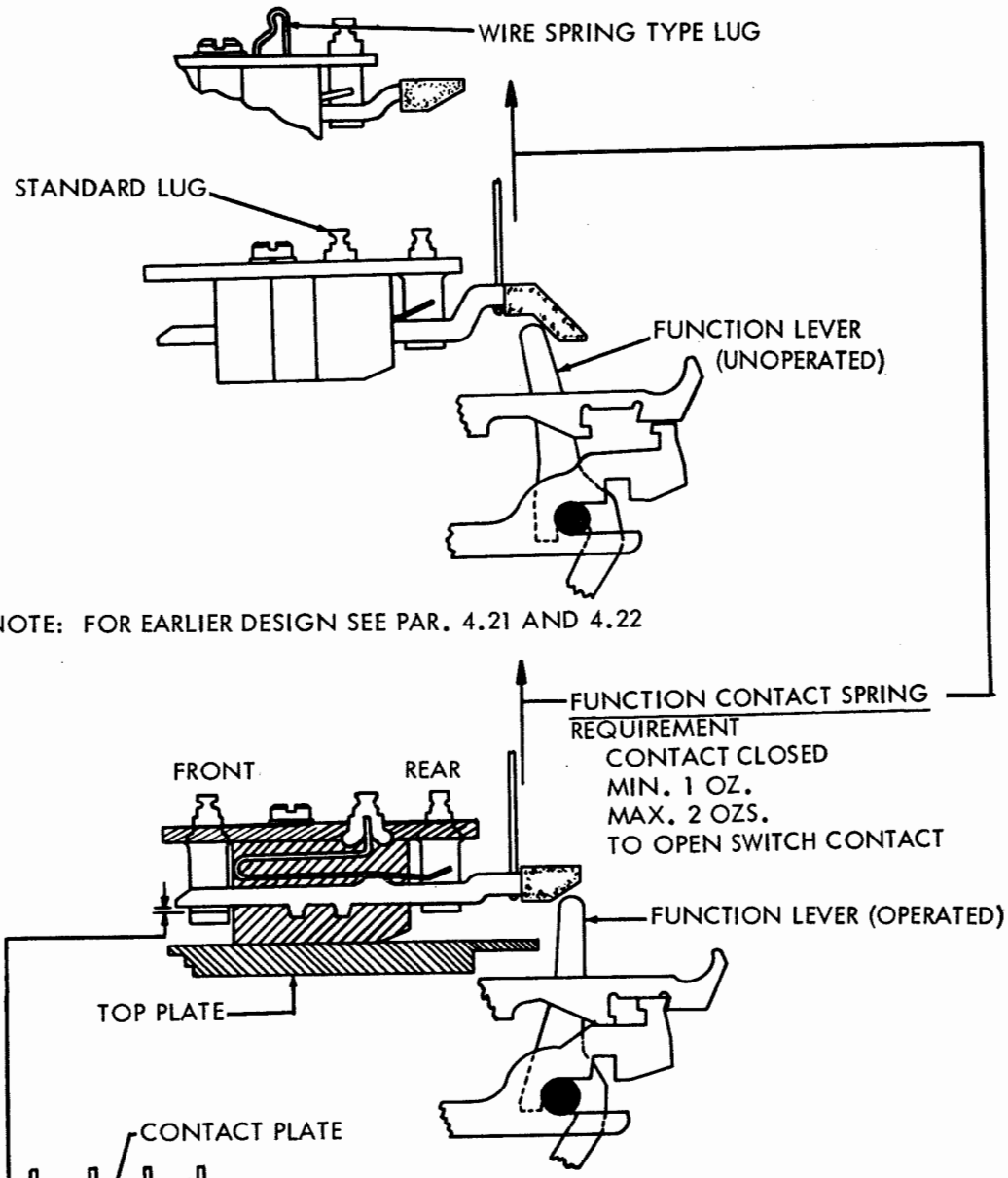
MIN. 7 OZS.

MAX. 20 OZS.

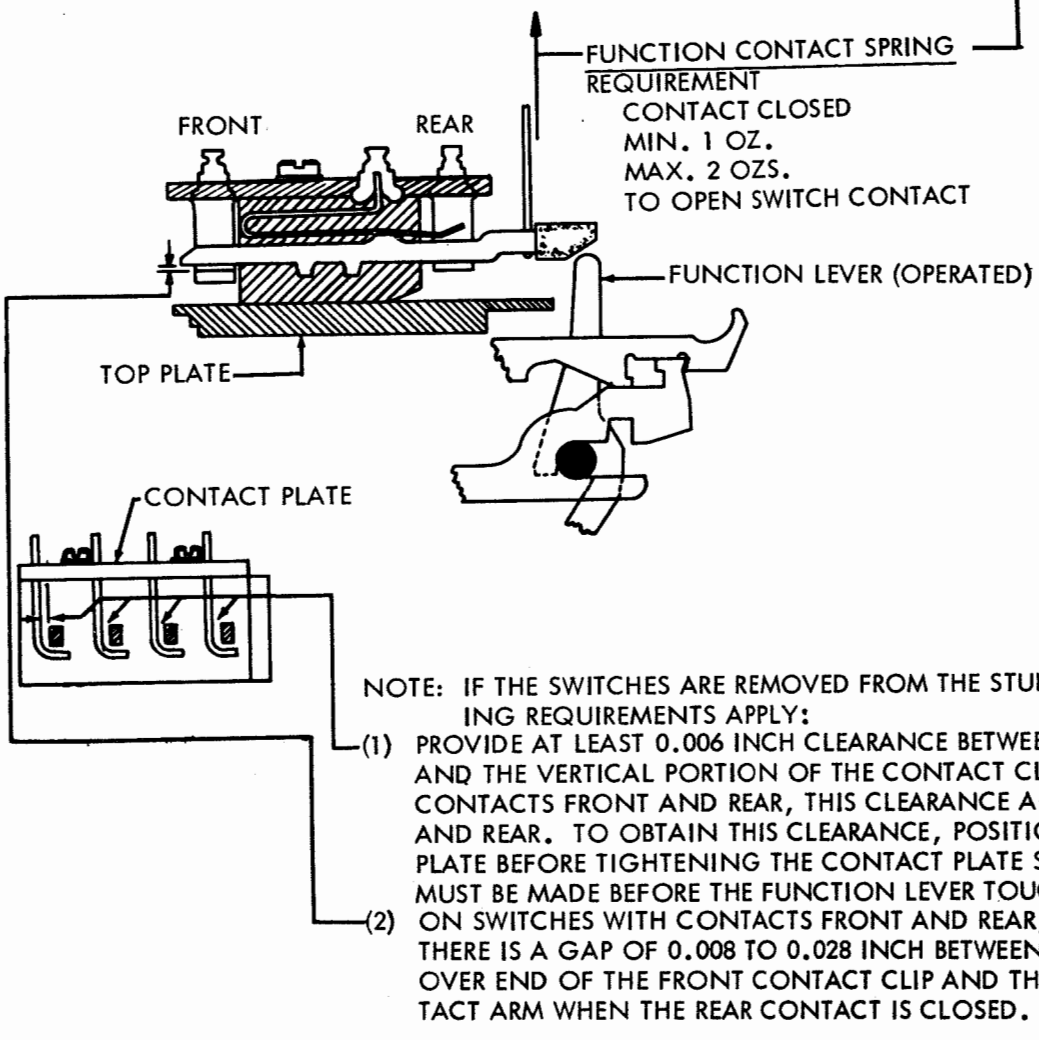
TO MOVE PRESSURE BAIL FROM PLATEN.

NOTE: FOR SPROCKET FEED MECHANISM SEE PAR. 2.73

2.66 Function Mechanism (Cont.)



NOTE: FOR EARLIER DESIGN SEE PAR. 4.21 AND 4.22

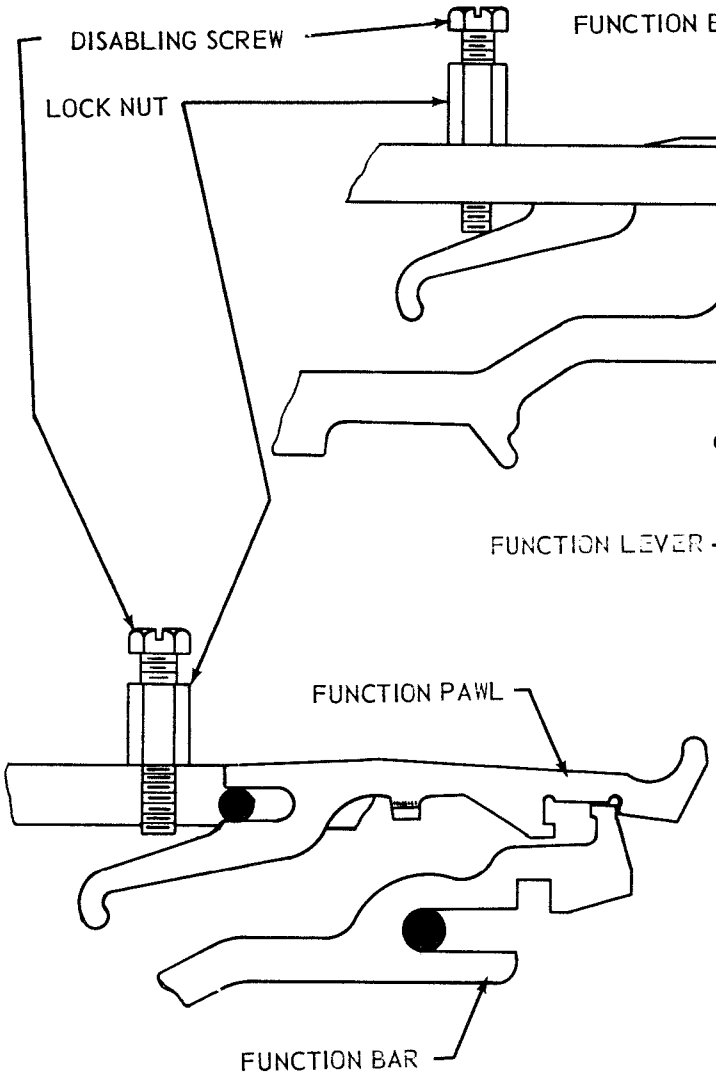


NOTE: IF THE SWITCHES ARE REMOVED FROM THE STUNT BOX, THE FOLLOWING REQUIREMENTS APPLY:

(1) PROVIDE AT LEAST 0.006 INCH CLEARANCE BETWEEN THE CONTACT ARM AND THE VERTICAL PORTION OF THE CONTACT CLIP. IF THE SWITCH HAS CONTACTS FRONT AND REAR, THIS CLEARANCE APPLIES TO BOTH FRONT AND REAR. TO OBTAIN THIS CLEARANCE, POSITION THE CONTACT PLATE BEFORE TIGHTENING THE CONTACT PLATE SCREWS. THE CONTACT MUST BE MADE BEFORE THE FUNCTION LEVER TOUCHES THE TOP PLATE.

(2) ON SWITCHES WITH CONTACTS FRONT AND REAR, CHECK TO SEE THAT THERE IS A GAP OF 0.008 TO 0.028 INCH BETWEEN THE FORMED-OVER END OF THE FRONT CONTACT CLIP AND THE BOTTOM OF THE CONTACT ARM WHEN THE REAR CONTACT IS CLOSED.

2.67 Function Mechanism (Cont.)



UNSHIFT-ON-SPACE FUNCTION PAWL

(1) REQUIREMENT

TO PREVENT UNSHIFT-ON-SPACE FUNCTION, PROVIDE CLEARANCE BETWEEN THE LOWER EDGE OF THE UNSHIFT-ON-SPACE FUNCTION PAWL AND ITS FUNCTION BAR.

MIN. 0.015 INCH
MAX. 0.060 INCH

TO ADJUST

LOOSEN THE LOCK NUT AND TURN THE DISABLING SCREW IN.

(2) REQUIREMENT

TO RESTORE THE UNSHIFT-ON-SPACE FUNCTION, BACK OFF THE SCREW SO THAT PAWL FULLY ENGAGES THE FUNCTION BAR. THEN CONTINUE TO TURN THE SCREW OUT ONE TO THREE TURNS.

2.08 Codebar Mechanism (Cont.)

CODE BAR DETENT

REQUIREMENT

FRONT PLATE REMOVED. ALL CLUTCHES DISENGAGED. SUPPRESSION AND SHIFT CODE BARS SHOULD DETENT EQUALLY (GAUGED BY EYE)

TO ADJUST

EQUALIZE THE DETENTING OF THE CODE BARS BY ADDING OR REMOVING SHIMS BETWEEN THE CASTING AND THE CODE BAR BRACKET.

CODE BAR DETENT SPRING

NOTE

UNLESS THERE IS REASON TO BELIEVE THAT THESE SPRINGS ARE CAUSING OPERATING FAILURE DO NOT CHECK THIS REQUIREMENT.

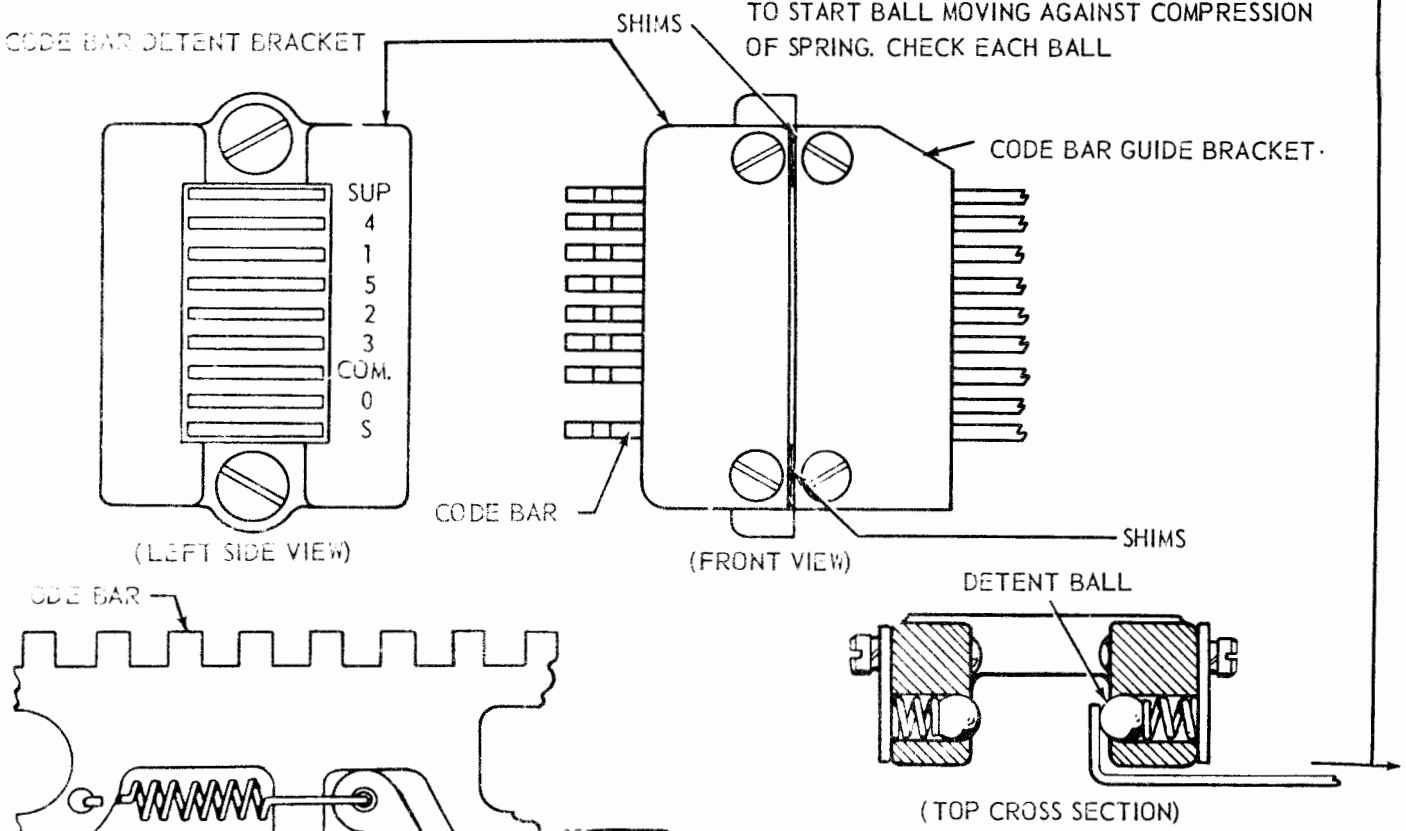
REQUIREMENT

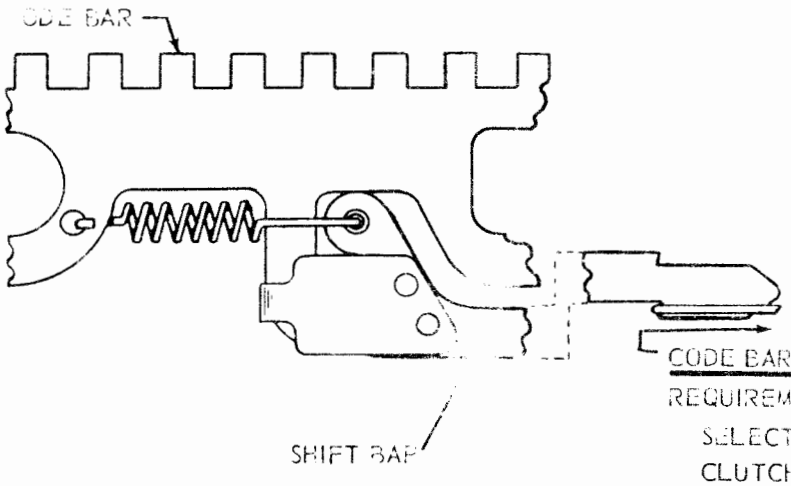
CODE BAR DETENT BRACKET CAREFULLY REMOVED AND CODE BARS REMOVED FROM DETENT BRACKET. SCALE APPLIED TO DETENT BALL AND PULLED IN DIRECTION OF BALL TRAVEL

MIN. 1-1/2 OZS.

MAX. 3-1/2 OZS.

TO START BALL MOVING AGAINST COMPRESSION OF SPRING. CHECK EACH BALL





CODE BAR YIELD SPRING (IF SO EQUIPPED)

REQUIREMENT

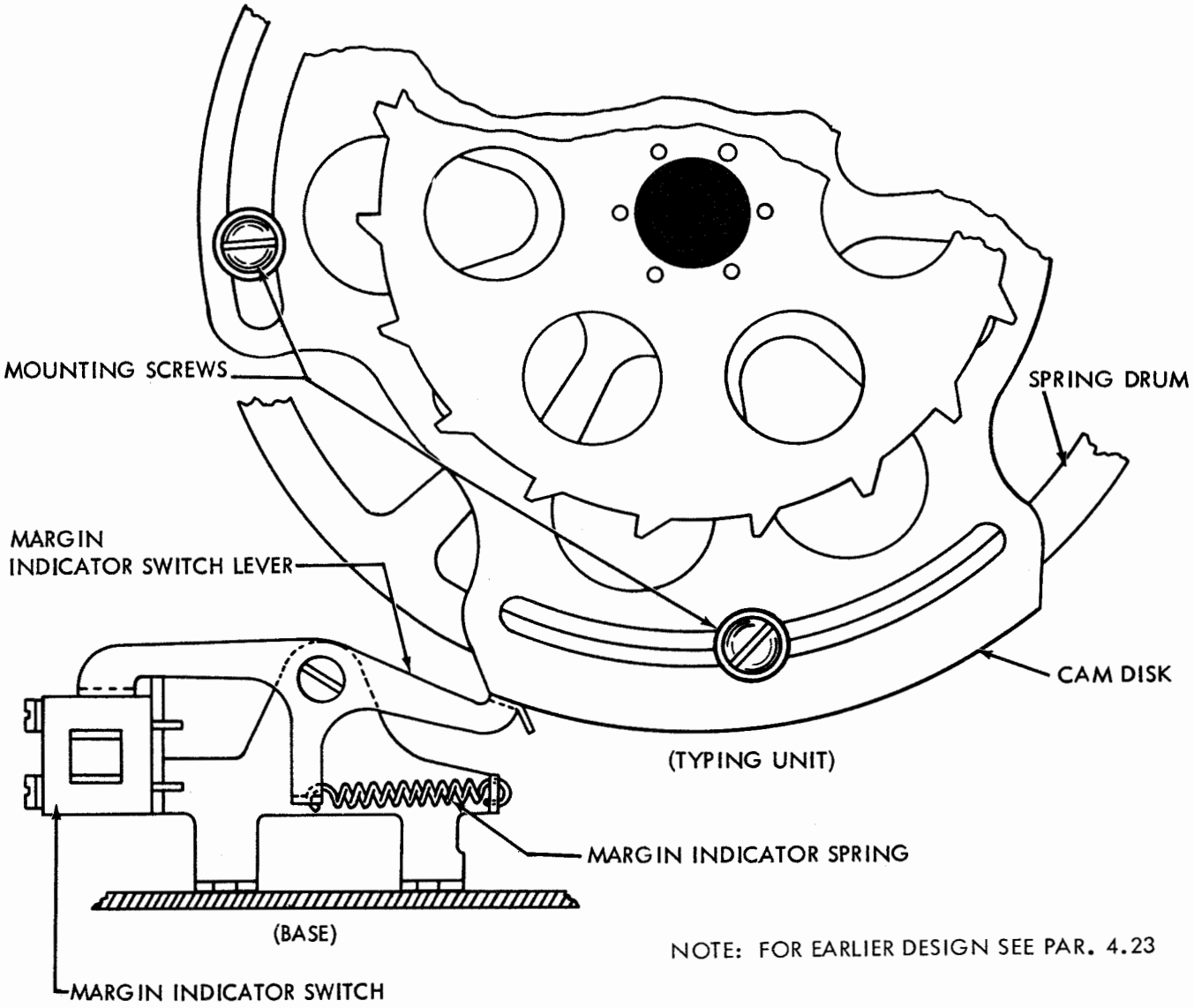
SELECTOR CLUTCH, CODE BAR CLUTCH, AND TYPE BOX CLUTCH DISENGAGED. NO. 1 CODE BAR IN SPACING POSITION

MIN. 14 OZS.

MAX. 23 OZS.

TO START CODE BAR SHIFT BAR PIVOT MOVING AWAY FROM CODE BAR. CHECK NO. 2 AND COMMON CODE BAR SHIFT BAR IN THE SAME MANNER.

2.69 Spacing Mechanism (Cont.)



NOTE: FOR EARLIER DESIGN SEE PAR. 4.23

MARGIN INDICATOR LAMP

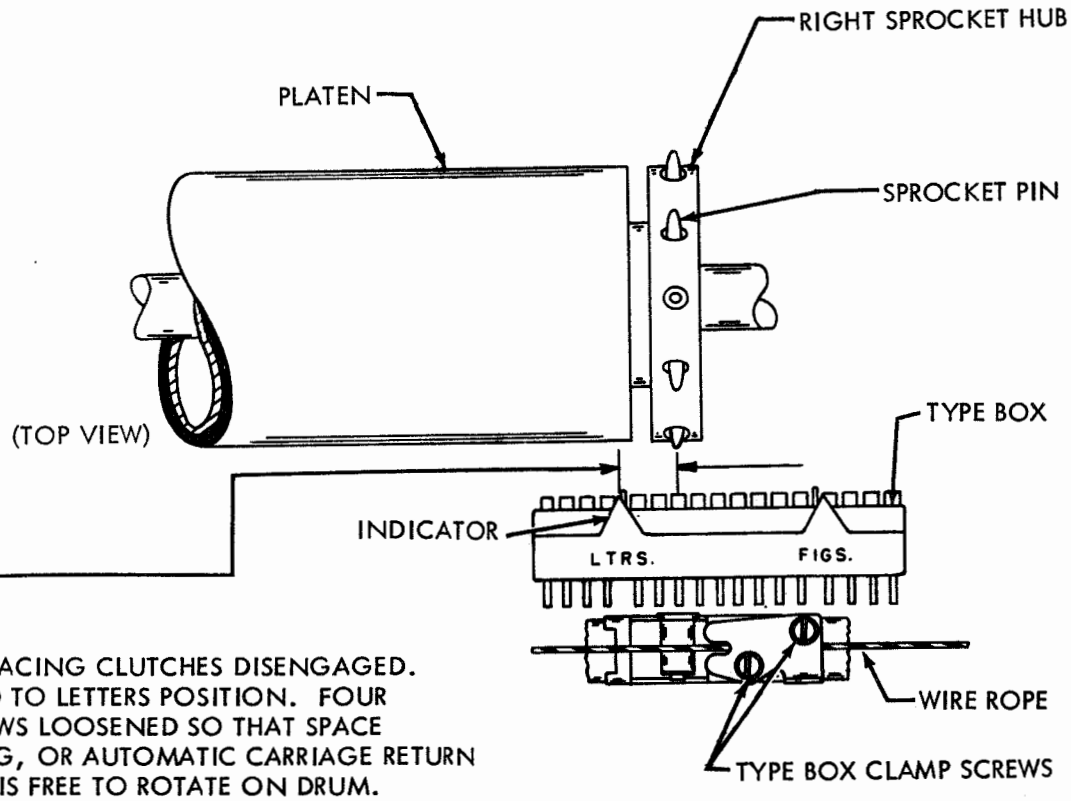
REQUIREMENT

OPERATING UNDER POWER, THE LAMP SHOULD LIGHT ON THE DESIRED CHARACTER.

TO ADJUST

SET THE TYPE BOX CARRIAGE TO PRINT THE DESIRED CHARACTER AND POSITION THE CAM DISK COUNTERCLOCKWISE ON THE SPRING DRUM WITH ITS THREE MOUNTING SCREWS LOOSENED SO THAT THE SWITCH JUST OPENS. IF A LINE SHORTER THAN 72 CHARACTERS IS REQUIRED, IT MAY BE NECESSARY TO REMOVE THE CAM DISK SCREWS AND INSERT THEM IN ADJACENT SLOTS IN THE DISK, IF THE RANGE OF ROTATION IN ONE SLOT IS NOT ENOUGH.

2.70 Positioning Mechanism (Cont.)



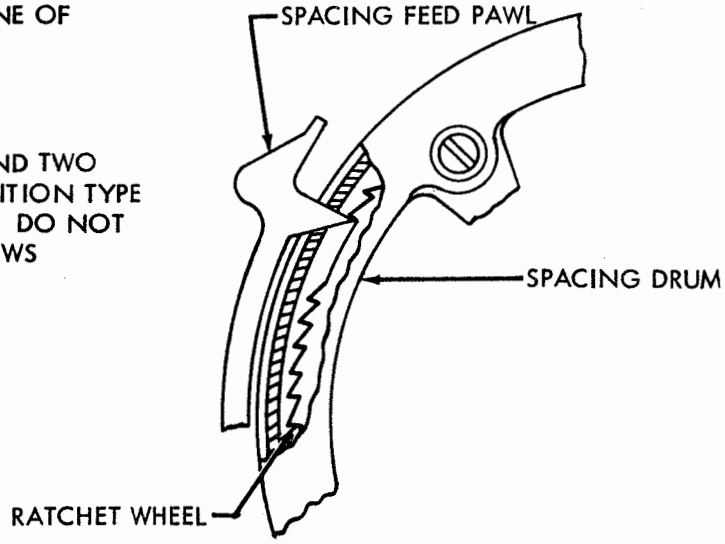
TYPE BOX POSITION

REQUIREMENT

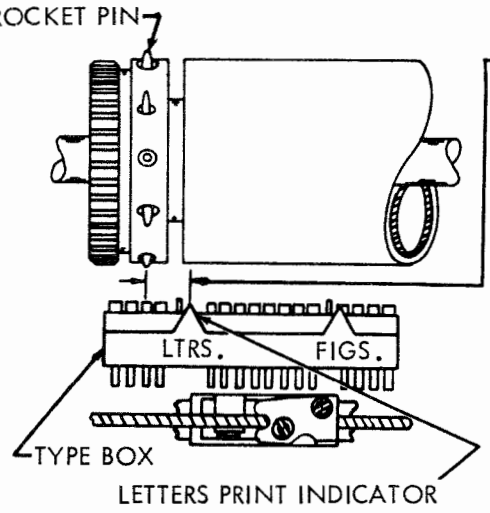
TYPE BOX AND SPACING CLUTCHES DISENGAGED. TYPE BOX SHIFTED TO LETTERS POSITION. FOUR MOUNTING SCREWS LOOSENED SO THAT SPACE SUPPRESSION RING, OR AUTOMATIC CARRIAGE RETURN LINE FEED RING, IS FREE TO ROTATE ON DRUM. (UNITS EQUIPPED WITH LIMITED ADJUSTMENT SPACING DRUM: SPACING CUT OUT AND AUTOMATIC CARRIAGE RETURN LINE FEED ARMS IN MAXIMUM COUNTER-CLOCKWISE POSITION. SEE PAR. 4.07) CLEARANCE BETWEEN LETTERS PRINT INDICATOR AND CENTER LINE OF SPROCKET PINS IN RIGHT HUB:
MIN. 5/16 INCH
MAX. 7/16 INCH

TO ADJUST

LOOSEN TWO TYPE BOX CLAMP SCREWS AND TWO PRINTING CARRIAGE CLAMP SCREWS. POSITION TYPE BOX. TIGHTEN TYPE BOX CLAMP SCREWS. DO NOT TIGHTEN PRINTING CARRIAGE CLAMP SCREWS UNTIL PRINTING CARRIAGE POSITION ADJUSTMENT IS MADE.



2.71 Line Feed and Platen Mechanism (Con't)



(TOP VIEW)

(A) LEFT MARGIN REQUIREMENT

(1) TYPE BOX CLUTCH DISENGAGED, SPACING DRUM FULLY RETURNED, AND TYPE BOX SHIFTED TO LETTERS POSITION: CLEARANCE BETWEEN CENTER OF LETTERS PRINT INDICATOR ON TYPE BOX AND CENTER LINE OF SPROCKET PINS AT LEFT HUB SHOULD BE:
MIN. 5/16 INCH --- MAX. 7/16 INCH
TO ADJUST --- POSITION CARRIAGE RETURN RING WITH ITS MOUNTING SCREWS LOOSENED.

(2) SPACING CLUTCH DISENGAGED, FRONT SPACING FEED PAWL IN ITS FARTHEST ADVANCED POSITION, SPACING DRUM FULLY RETURNED, AND PLAY IN SPACING GEAR (PAR. 2.24) TAKEN UP-CLOCKWISE: CLEARANCE BETWEEN PAWL AND SHOULDER OF RATCHET WHEEL TOOTH IMMEDIATELY AHEAD:
MIN. SOME --- MAX. 0.008 INCH

(3) THE REAR PAWL WHEN FARTHEST ADVANCED SHOULD DROP INTO THE INDENTATION BETWEEN RATCHET WHEEL TEETH AND SHOULD BOTTOM FIRMLY IN NOTCH.

TO ADJUST --- REFINE REQUIREMENT (1) ABOVE

(B) PRINTING HAMMER STOP BRACKET

(1) FOR UNITS WITH THICK TYPEBOX AND DUMMY TYPE PALLETS USE CORRESPONDING STANDARD ADJUSTMENT EXCEPT CLEARANCE BETWEEN PRINTING HAMMER AND DUMMY TYPE PALLET SHOULD BE
MIN. SOME --- MAX. 0.020 INCH

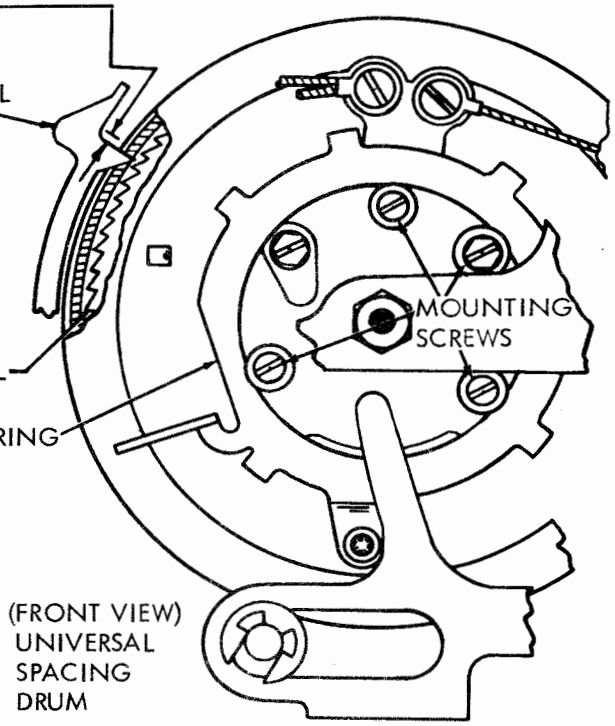
(2) FOR UNITS WITH THIN TYPEBOX - NO DUMMY TYPE PALLETS, USE CORRESPONDING STANDARD ADJUSTMENT.

(3) CERTAIN MULTIPLE FORM UNITS WILL REQUIRE A REFINEMENT OF STANDARD ADJUSTMENT FOR THE STOP BRACKET TO
MIN. 0.005 INCH --- MAX. 0.015 INCH

(C) RIGHT MARGIN

(1) FOR UNITS WITH LIMITED ADJUSTMENT SPACING DRUM, USE CORRESPONDING STANDARD ADJUSTMENT.

(2) FOR UNITS WITH UNIVERSAL SPACING DRUM, USE CORRESPONDING STANDARD ADJUSTMENT.



(FRONT VIEW) UNIVERSAL SPACING DRUM

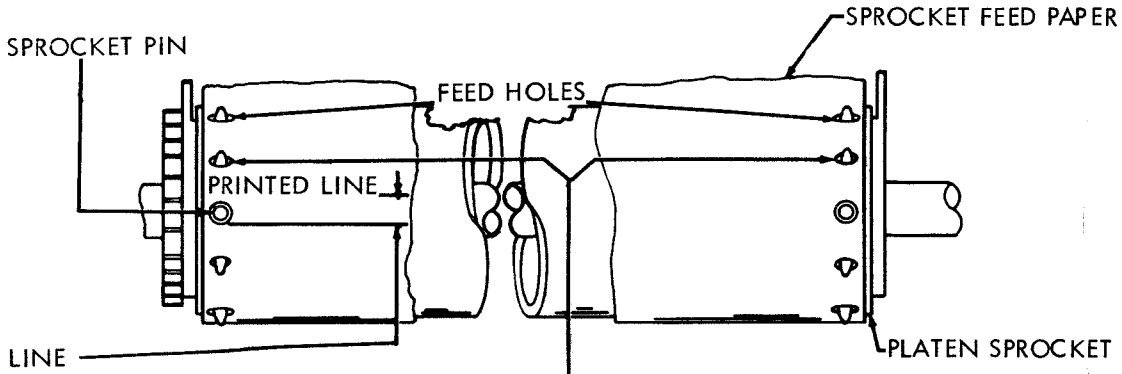
(D) PRINTING CARRIAGE POSITION
USE PAR. 2.47

(E) TYPE BOX ALIGNMENT
USE PAR. 2.51

FOLLOWING THIS ADJUSTMENT, ALL SCREWS SHOULD BE TIGHTENED.

2.72 Line Feed and Platen Mechanism (Con't)

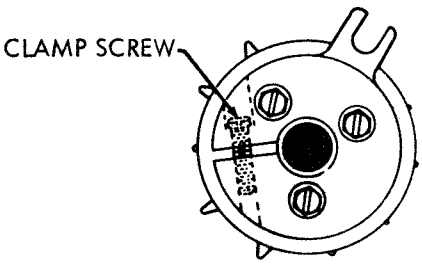
(A) LINE FEED SPUR GEAR DETENT ECCENTRIC
USE PAR. 2.57



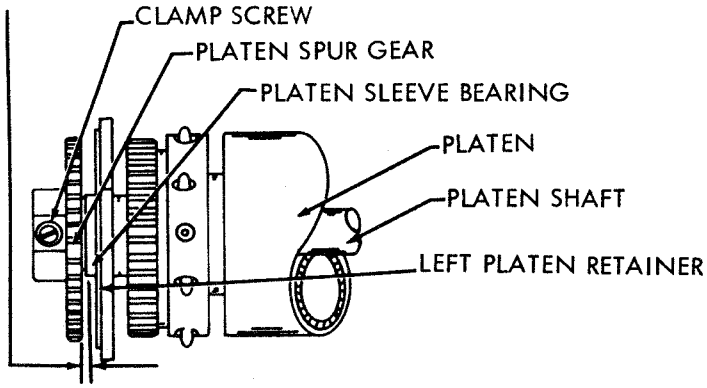
(B) PRINTED LINE
REQUIREMENT
THE BOTTOM OF THE PRINTED LINE SHOULD BE 1/32 INCH ± 1/64 INCH (PLUS A MULTIPLE OF 1/6 INCH IF REQUIRED) ABOVE A HORIZONTAL LINE DRAWN EVEN WITH THE BOTTOM EDGE OF ANY SPROCKET HOLE.
TO ADJUST
LOOSEN SCREWS AND POSITION LEFT SPROCKET. IF OTHER THAN STANDARD PAPER IS USED, IT MAY BE NECESSARY TO MAKE A VARIATION IN THIS ADJUSTMENT.
NOTE: SPUR GEAR AND LEFT PLATEN RETAINER MUST BE REMOVED TO MAKE PRINTED LINE ADJUSTMENT.

(C) PLATEN END PLAY
REQUIREMENT
LINE FEED PAWLS DISENGAGED. PLATEN SHAFT SHOULD HAVE SOME END PLAY
MAX. 0.010 INCH
TO ADJUST
POSITION PLATEN SPUR GEAR WITH CLAMP SCREW LOOSENED.

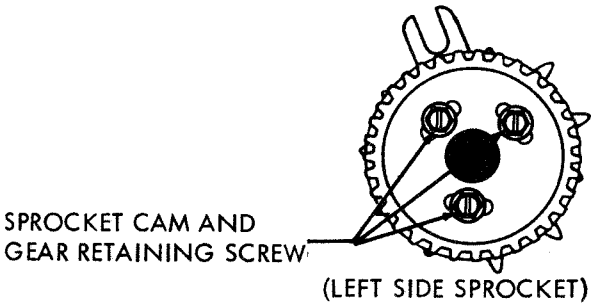
(D)
SPROCKET PIN SEPARATION
(1) REQUIREMENT
WITH SINGLE SHEET OF SPROCKET FEED PAPER PLACED ON THE PLATEN THE SPROCKET PINS SHOULD BE CENTRALLY LOCATED IN THE FEED HOLES OF THE PAPER
(2) REQUIREMENT
PRINTED LINE SHOULD BE PARALLEL TO A LINE DRAWN PERPENDICULAR TO EDGE OF PAPER WITHIN PLUS OR MINUS 1/32 INCH
TO ADJUST
POSITION RIGHT SPROCKET WITH CLAMP SCREW LOOSENED.



(RIGHT SIDE SPROCKET)

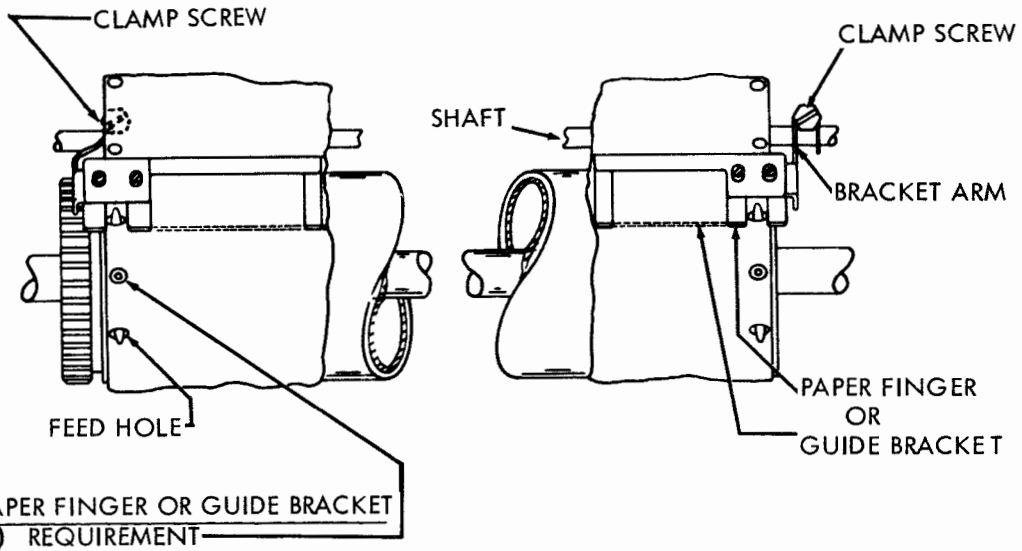


(FRONT VIEW)



(LEFT SIDE SPROCKET)

2.73 Line Feed and Platen Mechanism (Con't)



(1) REQUIREMENT

SPROCKET PIN SHOULD BE CENTRALLY LOCATED IN THE PAPER FINGER OR GUIDE BRACKET SLOT.

(2) REQUIREMENT *

THE GAP BETWEEN THE PLATEN AND THE PAPER FINGER OR GUIDE BRACKET SHOULD BE

STAPLED MULTIPLE COPY	SINGLE COPY OR UNSTAPLED MULTIPLE COPY
MIN. 0.050 INCH	0.020 INCH
MAX. 0.105 INCH	0.060 INCH

TO ADJUST

WITH PAPER FINGER OR GUIDE BRACKET ASSEMBLY IN LATCHED POSITION, LOOSEN BOTH CLAMP SCREWS, POSITION ASSEMBLY HORIZONTALLY TO MEET REQUIREMENT (1). ROTATE ASSEMBLY TO MEET REQUIREMENT (2).

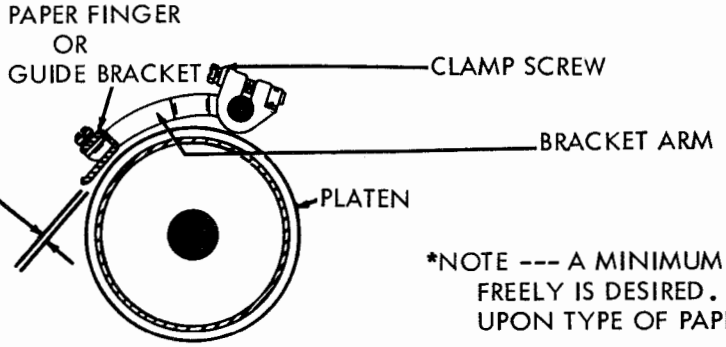
(3) REQUIREMENT (NOT ILLUSTRATED)

MIN. 0.035 INCH

BETWEEN LEADING EDGE OF PAPER FINGER OR GUIDE BRACKET AND RIBBON GUIDE. BOTH RIGHT AND LEFT PAPER FINGERS MUST BE PARALLEL TO THE SAME PRINTED LINE AS GAUGED BY EYE.

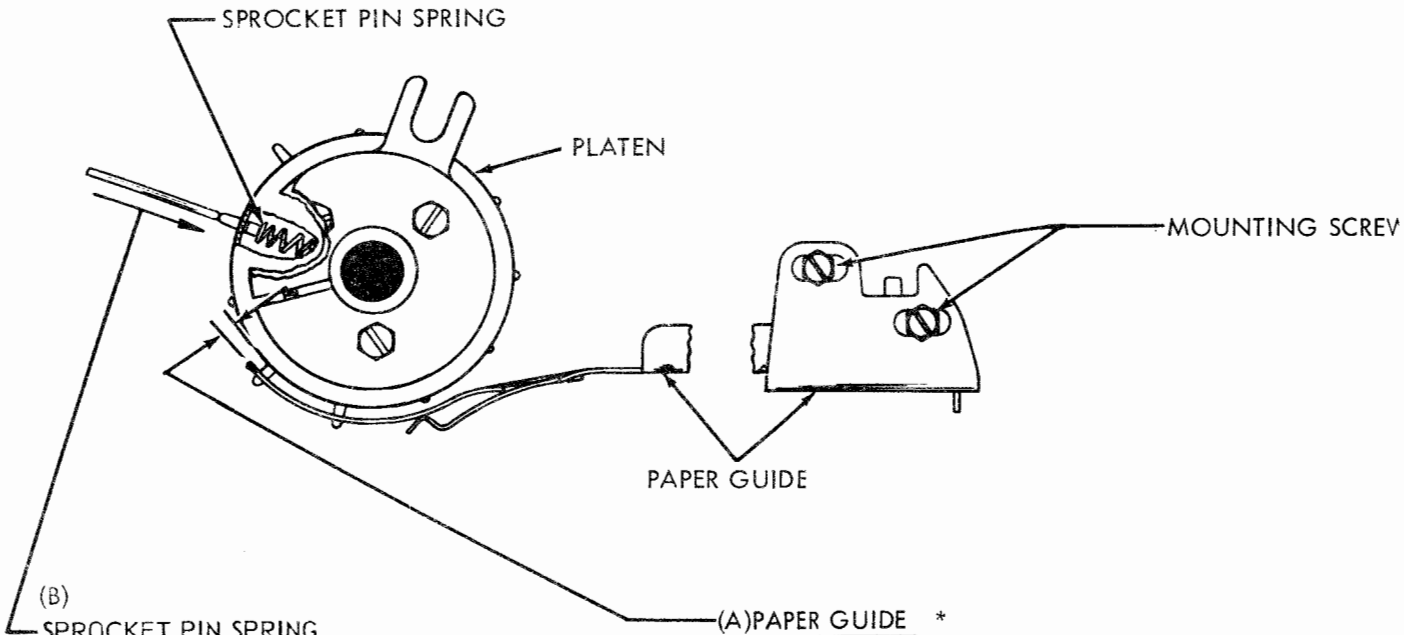
TO ADJUST

SELECT LETTERS COMBINATION AND ROTATE TYPE BOX CLUTCH 1/2 REVOLUTION. POSITION PAPER FINGERS BY MEANS OF ELONGATED MOUNTING HOLES. AFTER TIGHTENING THE SCREWS RECHECK THESE REQUIREMENTS.



*NOTE --- A MINIMUM CLEARANCE THAT WILL PASS STATIONERY FREELY IS DESIRED. THIS MINIMUM VALUE IS DEPENDENT UPON TYPE OF PAPER, NUMBER OF COPIES, STAPLING ETC.

2.74 Line Feed and Platen Mechanism (Cont.)



(B)
SPROCKET PIN SPRING
REQUIREMENT
MIN. 6 OZS.
MAX. 8 OZS.
TO START DEPRESSING THE PIN.

(A) PAPER GUIDE *
REQUIREMENT
THE CLEARANCE BETWEEN THE PLATEN AND THE FRONT EDGE OF THE PAPER GUIDE SHOULD BE

	STAPLED MULTIPLE COPY	SINGLE COPY OR UNSTAPLED MULTIPLE COPY
MIN.	0.050 INCH	0.020 INCH
MAX.	0.105 INCH	0.060 INCH

TO ADJUST
POSITION THE GUIDE WITH ITS REAR MOUNTING SCREWS LOOSENED.

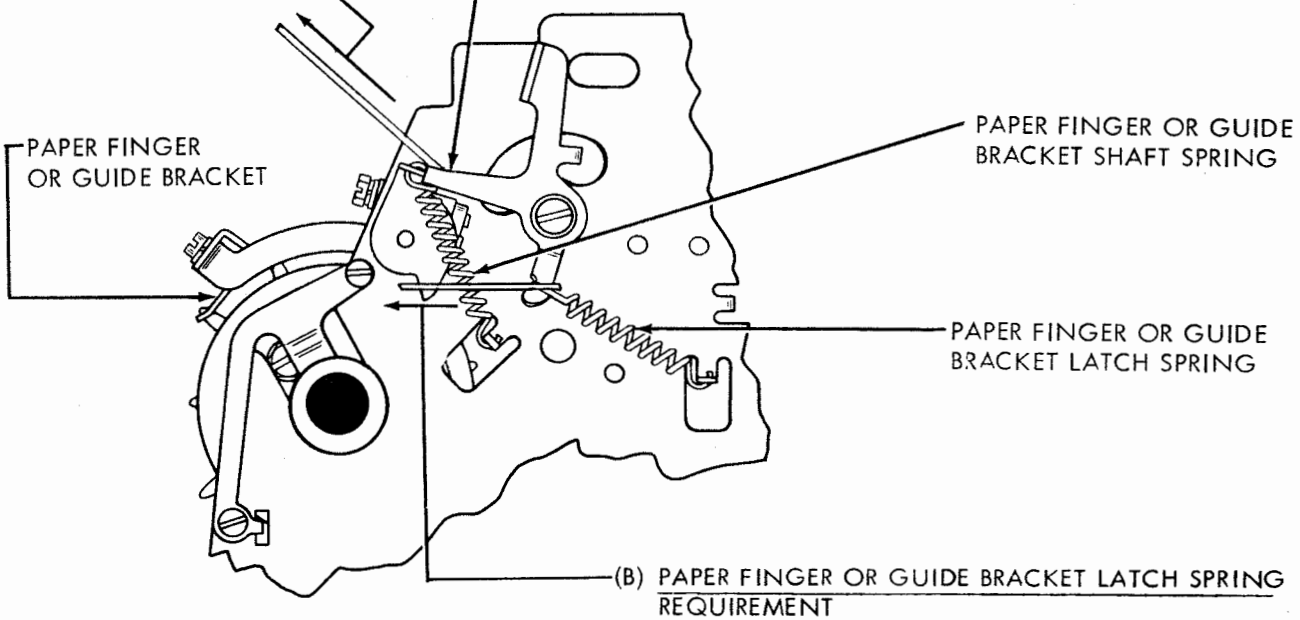
*NOTE --- A MINIMUM CLEARANCE THAT WILL PASS STATIONERY FREELY IS DESIRED. THIS MINIMUM VALUE IS DEPENDENT UPON TYPE OF PAPER, NUMBER OF COPIES, STAPLING ETC.

(C) RIBBON REVERSE SPUR GEAR
USE PAR. 2.52

(D) RIBBON REVERSE DETENT
USE PAR. 2.52

(E) LINE FEED BAR BELL CRANK SPRING
USE PAR. 2.57 EXCEPT
MIN. 28 OZS.
MAX. 38 OZS.
TO START BAR MOVING.

2.75 Line Feed and Platen Mechanism (Con't)



NOTE
SPROCKET FEED MECHANISM WITH RETRACTABLE PINS

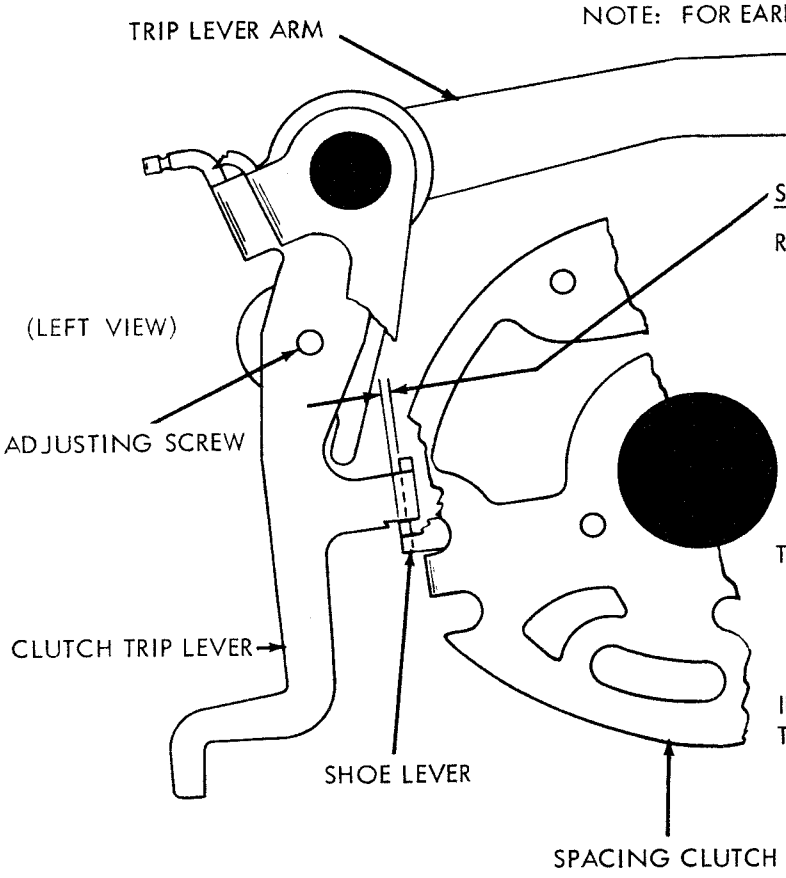
PAPER FINGER LOCKING ARM SPRING
REQUIREMENT --- IT SHALL REQUIRE
MIN 1 OZ --- MAX 1-1/2 OZS
TO MOVE ARM AWAY FROM PLATEN

PLATEN DETENT BAIL SPRING
USE PAR. 2.57

3. VARIABLE FEATURES

3.01 Horizontal Tabulator Mechanism

NOTE: FOR EARLIER DESIGN SEE PARS. 4.24 THROUGH 4.29.



SPACING CLUTCH TRIP LEVER

REQUIREMENT

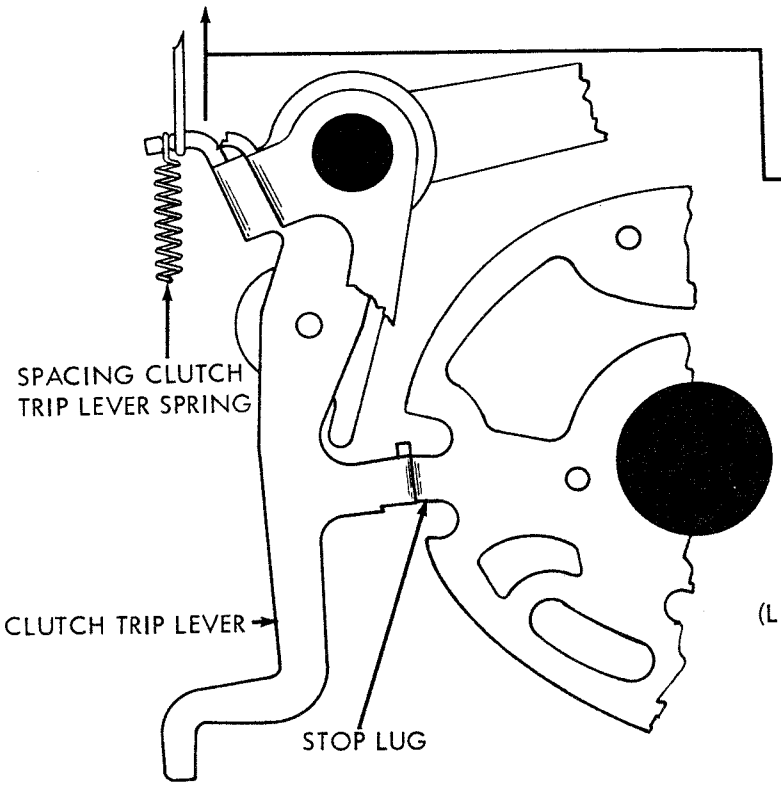
SPACING CLUTCH DISENGAGED. TRIP LEVER ARM AND INTERMEDIATE BAIL IN THEIR UPWARD POSITION. THE OUTER SURFACE OF THE TRIP LEVER SHOULD BE FLUSH WITH THE OUTER SURFACE OF THE SHOE LEVER OR UNDER FLUSH TO .010 INCH. CHECK AT STOP LUG WITH LEAST BITE.

TO ADJUST

USE ADJUSTING SCREW TO POSITION SPACING CLUTCH TRIP LEVER.

NOTE

IF THIS ADJUSTMENT IS CHANGED, CHECK THE LATCH BAIL ADJUSTING PLATE - PAR. 3.03



CLUTCH TRIP LEVER SPRING

REQUIREMENT

SPACING CLUTCH ENGAGED. ROTATE CLUTCH UNTIL TRIP LEVER RESTS ON STOP LUG.

MIN. 11 OZS.
MAX. 16 OZS.

TO MOVE TRIP LEVER AWAY FROM STOP LUG.

(LEFT VIEW)

3.02 Horizontal Tabulator Mechanism (Con't)

OPERATING LEVER SLIDE ARM

NOTE

PRIOR TO THIS ADJUSTMENT CHECK THE FUNCTION RESET BAIL BLADE ADJUSTMENT.

REQUIREMENT

ON UNITS WITH TWO-STOP FUNCTION CLUTCHES. FUNCTION CLUTCH DISENGAGED. TYPE BOX CLUTCH ROTATED 1/2 REVOLUTION PAST STOP POSITION. ON UNITS WITH ONE-STOP FUNCTION CLUTCH, ROTATE FUNCTION CLUTCH UNTIL FUNCTION PAWL STRIPPER BLADE IS IN ITS LOWER POSITION AND THE FUNCTION RESET BAIL ROLLER IS ON THE HIGH PART OF ITS CAM. HORIZONTAL TABULATOR FUNCTION PAWL PULLED TO REAR UNTIL LATCHED ON ITS FUNCTION BAR. CLEARANCE BETWEEN FRONT END OF OPERATING LEVER SLIDE ARM AND BLOCKING SURFACE OF BLOCKING LEVER MIN. 0.015 INCH---MAX. 0.035 INCH

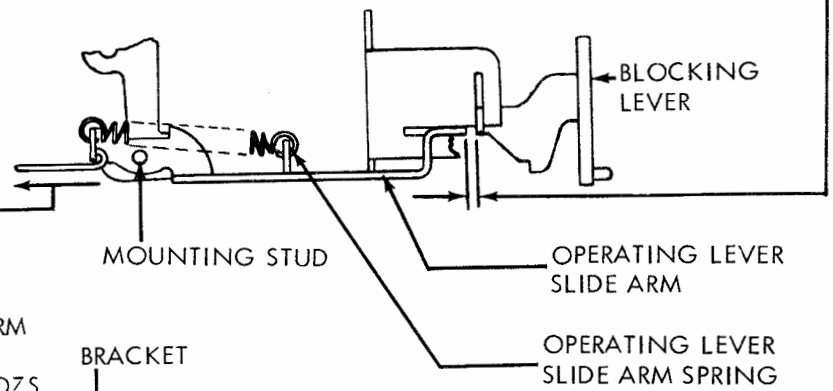
TO ADJUST

POSITION SLIDE ARM ON OPERATING LEVER WITH MOUNTING STUD FRICTION TIGHT.

NOTE

WHEN PULLING FUNCTION PAWL TO THE REAR, IF THE OPERATING LEVER CAM ARM SHOULD BE STRIPPED OFF THE TABULATOR SLIDE ARM BEFORE THE FUNCTION PAWL IS LATCHED ON THE FUNCTION BAR, TEMPORARILY DISABLE THE STRIPPER BAIL ARM BY LOOSENING ITS ADJUSTING SCREW.

(LEFT VIEW)



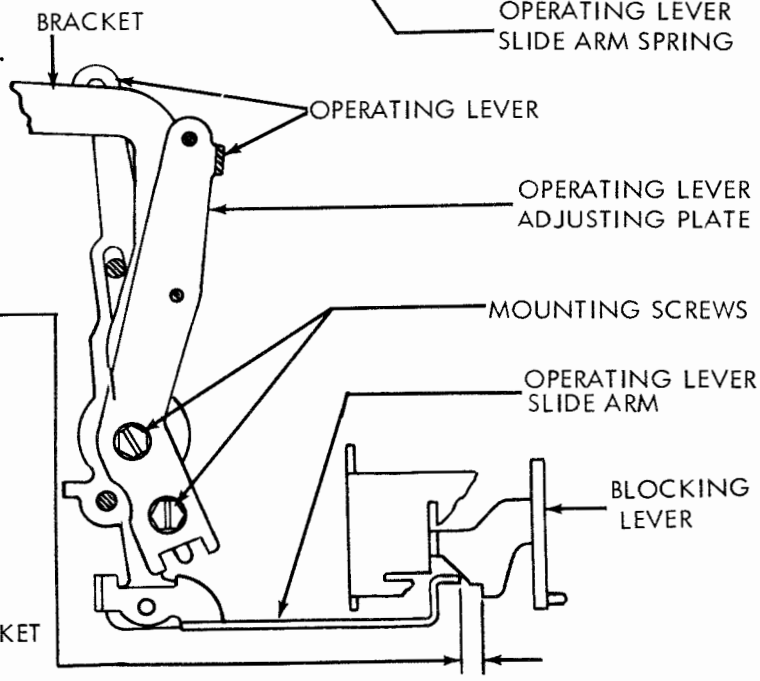
OPERATING LEVER SLIDE ARM SPRING

REQUIREMENT

TRIP LEVER ARM LATCH BAIL SPRING UNHOOKED. OPERATING LEVER IN OPERATED POSITION WITH SLIDE ARM AGAINST BLOCKING LEVER.
MIN. 8-3/4 OZS.---MAX. 10-3/4 OZS. TO START LINK MOVING.

NOTE

ON UNITS EQUIPPED WITH TRANSMITTER CONTROL CONTACT, HOLD CONTACT SPRING AWAY FROM STUD WHEN MEASURING TENSION.



OPERATING LEVER ADJUSTING PLATE

REQUIREMENT

OPERATING LEVER IN UNOPERATED POSITION. TAKE UP PLAY IN SLIDE ARM AND BLOCKING LEVER TO MINIMIZE CLEARANCE. CLEARANCE BETWEEN FRONT END OF SLIDE ARM AND LOWER PROJECTION OF BLOCKING LEVER
MIN. 0.020 INCH---MAX. 0.045 INCH

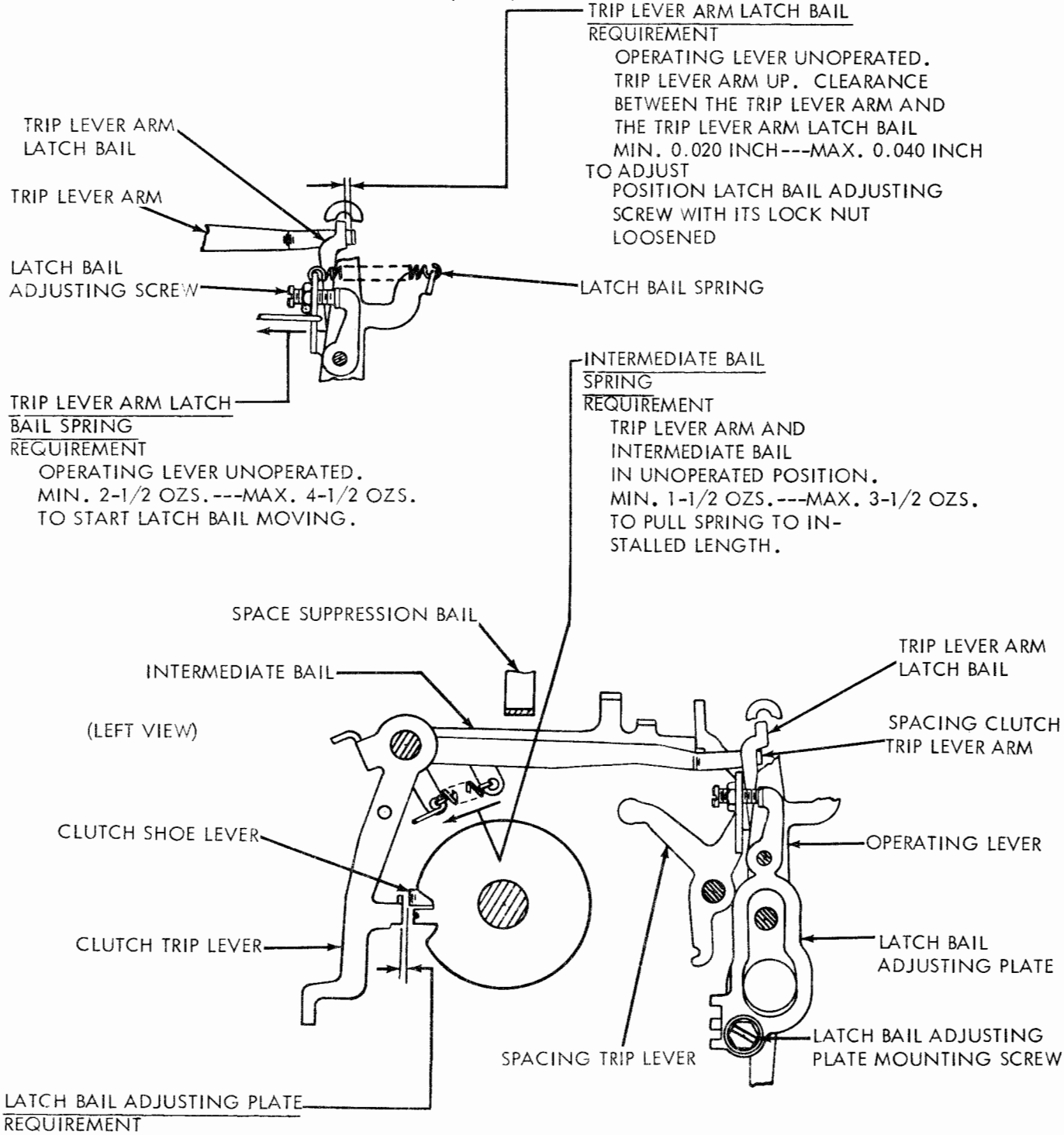
TO ADJUST

POSITION ADJUSTING PLATE ON BRACKET WITH MOUNTING SCREWS LOOSENED.

NOTE

IF OPERATING LEVER SLIDE ARM OR OPERATING LEVER ADJUSTING PLATE ADJUSTMENT IS CHANGED ON UNITS EQUIPPED WITH TRANSMITTER CONTROL CONTACT, CHECK CONTROL CONTACT GAP AND REMAKE IF NECESSARY.

3.03 Horizontal Tabulator Mechanism (Con't)



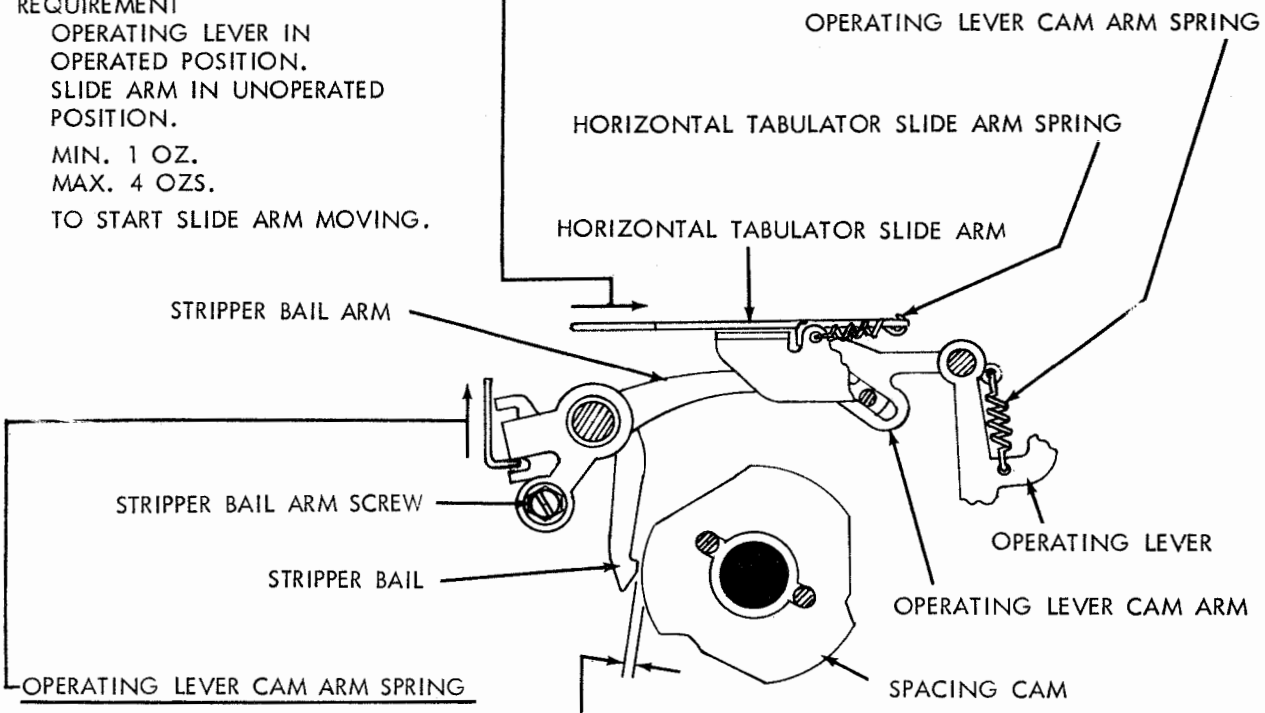
3.04 **Horizontal Tabulator Mechanism (Cont.)**

HORIZONTAL TABULATOR SLIDE ARM SPRING

REQUIREMENT
OPERATING LEVER IN OPERATED POSITION.
SLIDE ARM IN UNOPERATED POSITION.

MIN. 1 OZ.
MAX. 4 OZS.

TO START SLIDE ARM MOVING.



(LEFT SIDE VIEW)

OPERATING LEVER CAM ARM SPRING

REQUIREMENT
OPERATING LEVER IN UNOPERATED POSITION. HORIZONTAL TABULATOR FUNCTION PAWL UNLATCHED.

MIN. 4 OZS.
MAX. 9 OZS.

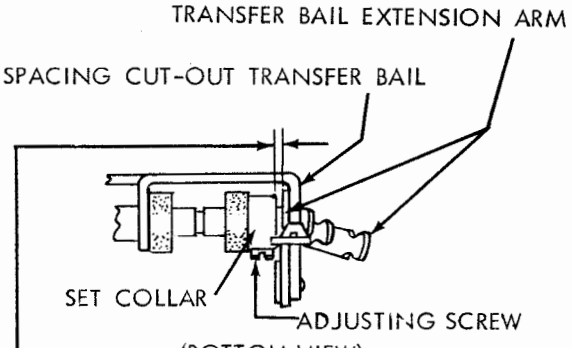
TO START STRIPPER BAIL MOVING.

CAM ARM STRIPPER BAIL

REQUIREMENT
OPERATING LEVER AND TABULATOR SLIDE ARM IN UNOPERATED POSITIONS SPACING CLUTCH ROTATED UNTIL HIGH PART OF SPACING CAM IS OPPOSITE STRIPPER BAIL. CLEARANCE BETWEEN SPACING CAM AND STRIPPER BAIL

MIN. 0.010 INCH
MAX. 0.025 INCH

TO ADJUST
POSITION STRIPPER BAIL ARM ON STRIPPER BAIL WITH STRIPPER BAIL ARM SCREW FRICTION TIGHT.



(BOTTOM VIEW)

SPACING CUT-OUT TRANSFER BAIL

SET COLLAR

REQUIREMENT
TRANSFER BAIL SHOULD HAVE SOME END PLAY.
MAX. 0.008 INCH

TO ADJUST
POSITION SET COLLAR WITH ADJUSTING SCREW LOOSENED.

3.05 Horizontal Tabulator Mechanism (Cont.)

SPACE SUPPRESSION BY-PASS SPRING

REQUIREMENT
MIN. 20 OZS.
MAX. 26 OZS.
TO START BAIL EXTENSION MOVING

SPACING CUT-OUT TRANSFER BAIL

BAIL EXTENSION ARM

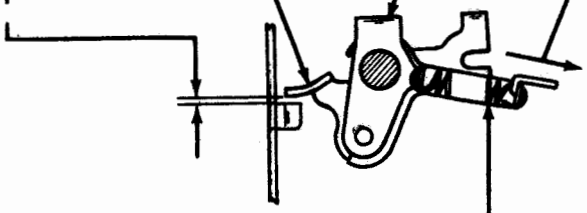
RIGHT MARGIN

REQUIREMENT
CLEARANCE BETWEEN SPACING CUT-OUT LEVER ON SPACING DRUM AND BAIL EXTENSION ARM
MIN. 0.006 INCH
MAX. 0.025 INCH

TO CHECK
PLACE TYPE BOX IN POSITION TO PRINT CHARACTER ON WHICH SPACING CUT-OUT IS DESIRED. PULL FORWARD ON PART OF TRANSFER BAIL EXTENDING BELOW MOUNTING SHAFT UNTIL BAIL IS IN FULLY OPERATED POSITION. GAGE CLEARANCE.

TO ADJUST
POSITION CUT-OUT LEVER WITH CLAMP SCREW LOOSENED.

NOTE
FOUR SCREWS MUST BE LOOSENED TO ADJUST CIRCULAR CUT-OUT LEVERS. DO NOT LOOSEN HEX. HEAD SCREW THAT CLAMPS FRONT RING.

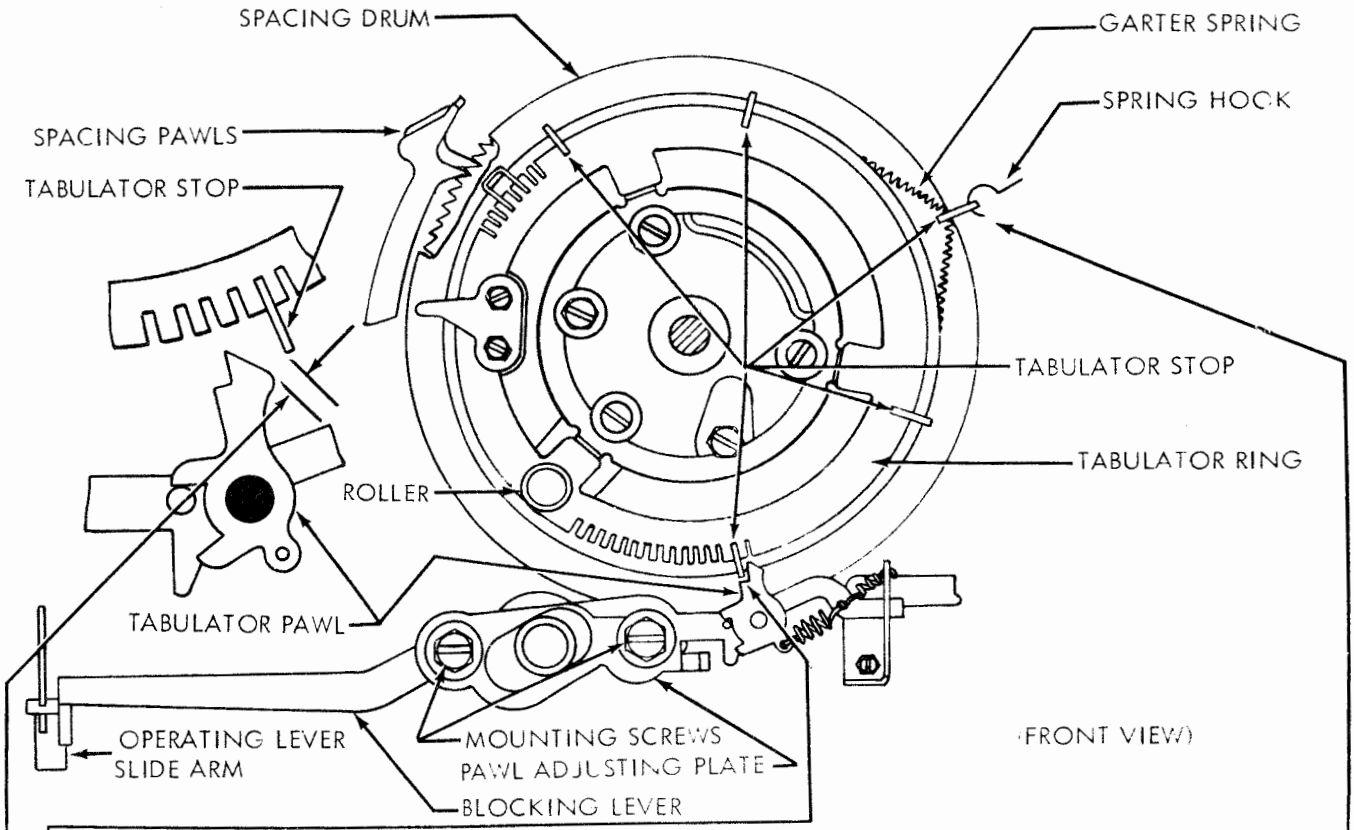


SPACING CUT-OUT LEVER ON SPACING DRUM

SPACE SUPPRESSION BY-PASS SPRING

(RIGHT SIDE VIEW)

3.06 Horizontal Tabulator Mechanism (Con't)



TABULATOR PAWL (PRELIMINARY)

NOTE:

BEFORE MAKING THIS ADJUSTMENT, CHECK LEFT MARGIN AND SPACING GEAR PHASING ADJUSTMENTS.

PURPOSE

TO SELECT TABULATOR STOP TO BE USED AS REFERENCE IN MAKING FINAL TABULATOR PAWL HORIZONTAL AND VERTICAL ADJUSTMENTS.

PROCEDURE

(1) BEGINNING WITH 15TH SLOT COUNTERCLOCKWISE FROM ROLLER ON TABULATOR RING, PLACE TABULATOR STOPS APPROXIMATELY AN EQUAL NUMBER OF SLOTS APART AROUND REMAINING SLOTTED PERIPHERY OF RING CORRESPONDING TO LENGTH OF PRINTED LINE.

(2) TO MOVE STOPS, HOOK SMALL SPRING HOOK IN HOLE AND PULL OUT RADIALLY FROM DRUM. HOLDING STOP AWAY FROM DRUM, SLIDE IT ON GARTER SPRING TO DESIRED LOCATION AND INSERT IN SLOT. SPACING DRUM MAY HAVE TO BE ROTATED TO MAKE SOME SLOTS ACCESSIBLE. CAUTION: MAKE SURE ALL STOPS ARE FIRMLY SEATED AND NOT TURNED SIDEWAYS. DO NOT USE PLIERS TO MOVE STOPS.

(3) DISENGAGE ALL CLUTCHES SO FRONT SPACING FEED PAWL IS IN LOWER POSITION. PLACE PAWL ADJUSTING PLATE AT CENTER OF HORIZONTAL AND VERTICAL ADJUSTMENT: TO ADJUST VERTICALLY, LOOSEN BOTH MOUNTING SCREWS: TO ADJUST HORIZONTALLY, LOOSEN ONLY LEFT SCREW. HORIZONTAL ADJUSTMENT SHOULD BE MADE AFTER VERTICAL. DISENGAGE SPACING FEED PAWLS AND ALLOW DRUM TO ROTATE TO EXTREME COUNTERCLOCKWISE POSITION. KEEPING SPACING CLUTCH DISENGAGED, MANUALLY ADVANCE DRUM UNTIL FIRST STOP IS IMMEDIATELY TO LEFT OF PAWL. POSITION ADJUSTING PLATE HORIZONTALLY SO THAT STOP IS ALIGNED WITH LEFT EDGE OF PAWL SHOULDER.

(4) PLACE BLOCKING LEVER AND OPERATING LEVER SLIDE ARM IN UNBLOCKED POSITION. DISENGAGE FEED PAWLS AND LET DRUM ROTATE TWO SPACES COUNTERCLOCKWISE. BOTH FEED PAWLS SHOULD BE FULLY ENGAGED. BLOCK SLIDE ARM WITH BLOCKING LEVER. GAGE AND NOTE CLEARANCE BETWEEN STOP AND SLOPE ON PAWL.

(5) ROTATE DRUM CLOCKWISE UNTIL NEXT STOP IS JUST TO LEFT OF PAWL. REPEAT PROCEDURE DESCRIBED IN PARAGRAPH (4) FOR THIS STOP. REPEAT PROCEDURE FOR REMAINING STOPS, NOTING EACH CLEARANCE.

(6) STOP WITH MAXIMUM CLEARANCE SHOULD BE USED AS REFERENCE IN MAKING FINAL HORIZONTAL AND VERTICAL PAWL ADJUSTMENTS.

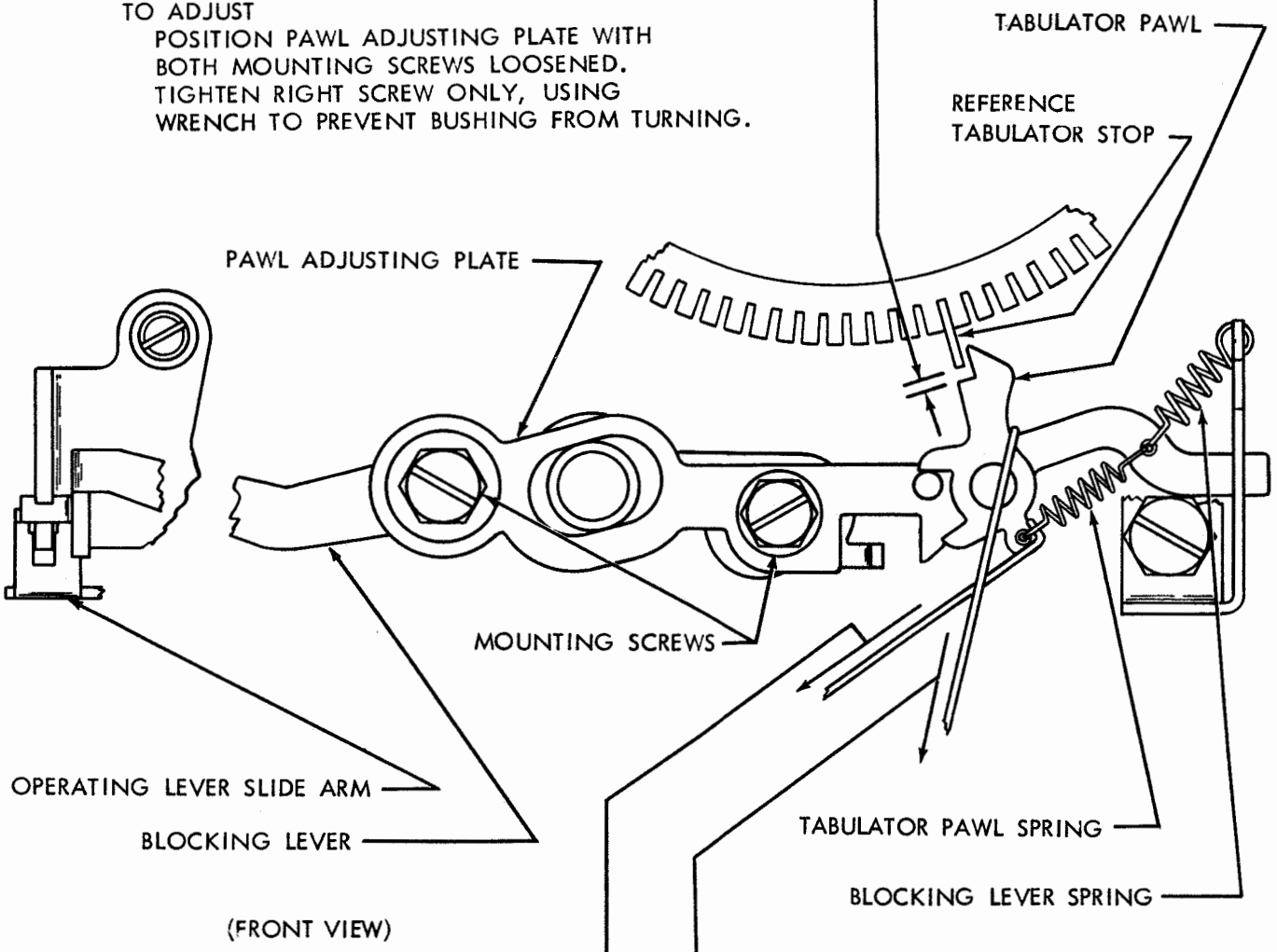
3.07 Horizontal Tabulator Mechanism (Cont.)

TABULATOR PAWL - VERTICAL (FINAL)

TO CHECK
POSITION SPACING DRUM SUCH THAT REFERENCE TABULATOR STOP, AS DETERMINED BY PRELIMINARY TABULATOR PAWL ADJUSTMENT (PAR. 3.06), IS OPPOSITE SHOULDER ON PAWL. BLOCK OPERATING LEVER SLIDE ARM WITH BLOCKING LEVER.

REQUIREMENT
CLEARANCE BETWEEN PAWL AND STOP:
MIN. 0.055 INCH MAX. 0.075 INCH

TO ADJUST
POSITION PAWL ADJUSTING PLATE WITH BOTH MOUNTING SCREWS LOOSENED. TIGHTEN RIGHT SCREW ONLY, USING WRENCH TO PREVENT BUSHING FROM TURNING.



(FRONT VIEW)

TABULATOR PAWL SPRING

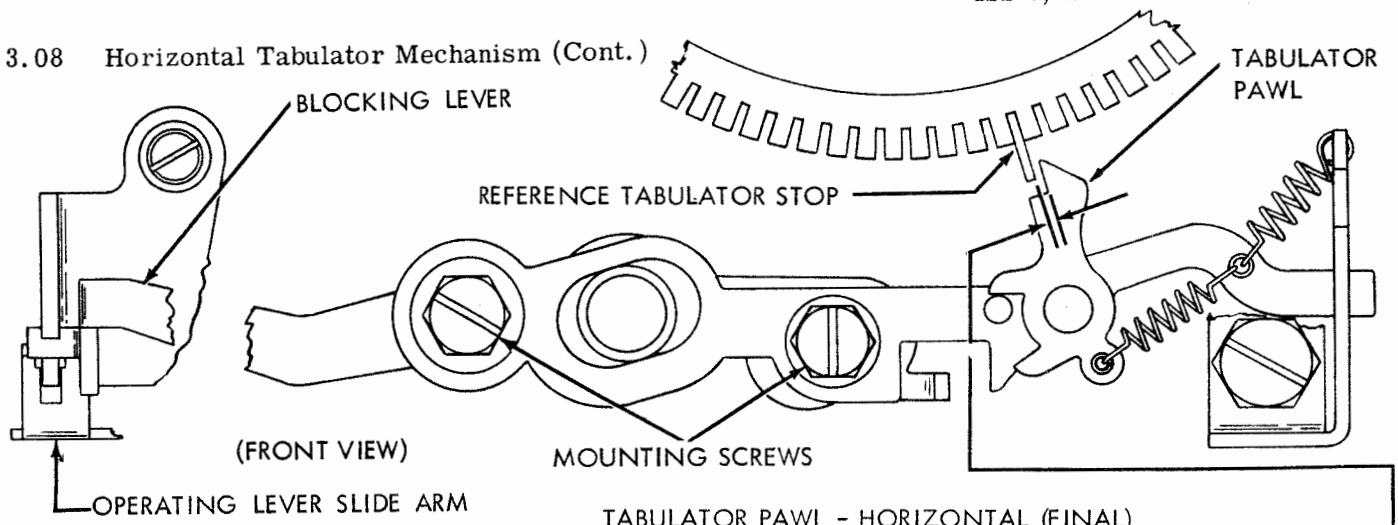
REQUIREMENT
MIN. 3 OZS. MAX. 5 OZS.
TO START PAWL MOVING.

BLOCKING LEVER SPRING

TO CHECK
HOLD OPERATING LEVER SLIDE ARM TO THE REAR.

REQUIREMENT
MIN. 2-1/2 OZS. MAX. 4-1/2 OZS.
TO START BLOCKING LEVER MOVING.

3.08 Horizontal Tabulator Mechanism (Cont.)



TABULATOR PAWL - HORIZONTAL (FINAL)

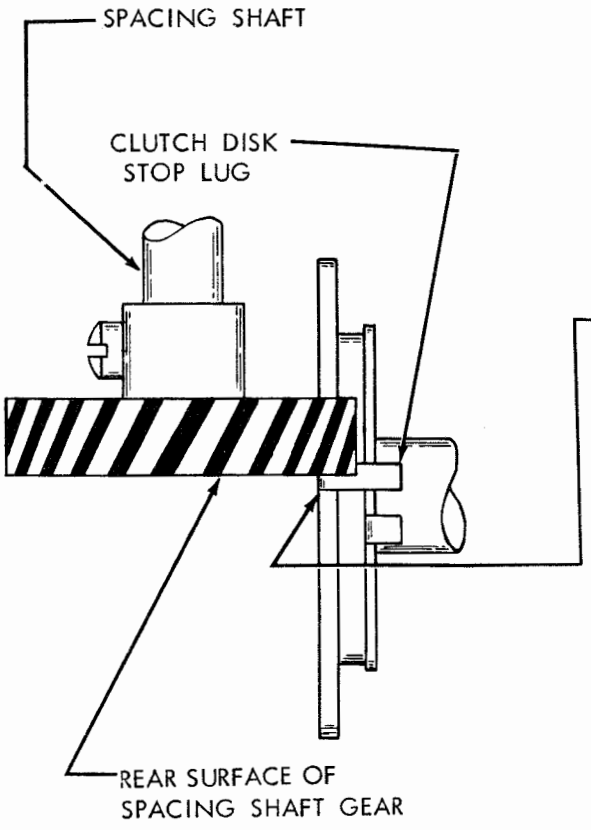
TO CHECK

(1) DISENGAGE ALL CLUTCHES SO THAT FRONT SPACING FEED PAWL IS IN LOWER POSITION (AS SHOWN IN PAR. 3.06). POSITION SPACING DRUM SO THAT REFERENCE TABULATOR STOP, AS DETERMINED IN PRELIMINARY TABULATOR PAWL ADJUSTMENT (PAR. 3.06), IS IMMEDIATELY TO LEFT OF PAWL. OPERATING LEVER SLIDE ARM SHOULD BE FORWARD IN UNBLOCKED POSITION. DISENGAGE FEED PAWLS AND ALLOW DRUM TO ROTATE ONE SPACE COUNTER-CLOCKWISE. BOTH FEED PAWLS SHOULD BE FULLY ENGAGED. MOVE SLIDE ARM TO REAR TO BLOCKED POSITION.

(2) TRIP SPACING CLUTCH STOP LEVER AND SLOWLY ROTATE MAIN SHAFT UNTIL BLOCKING LEVER IS JUST TRIPPED. TAKE UP PLAY IN SPACING SHAFT TOWARD REAR.

REQUIREMENT

SOME PORTION OF CLUTCH DISK STOP LUG SHOULD BE ALIGNED WITH REAR SURFACE OF SPACING SHAFT GEAR.



TO ADJUST

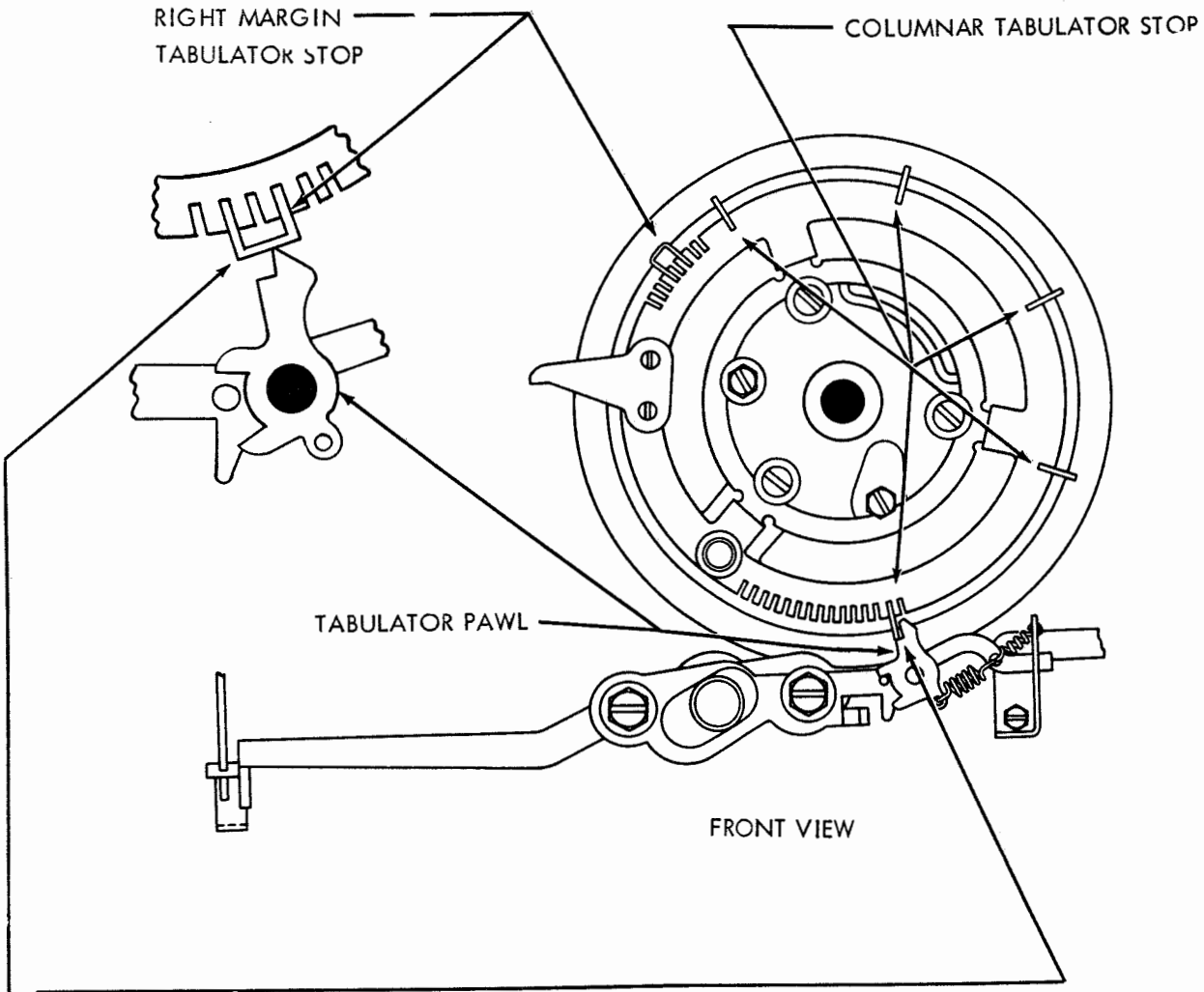
REPEAT PROCEDURE SET FORTH IN PARAGRAPH (1) ABOVE. TRIP SPACING CLUTCH AND ROTATE SHAFT UNTIL MIDDLE OF STOP LUG IS IN LINE WITH REAR SURFACE OF GEAR. IF BLOCKING LEVER TRIPPED TOO SOON, WITH LEFT MOUNTING SCREW LOOSENED, POSITION PAWL ADJUSTING PLATE TO LEFT UNTIL SLIDE ARM CAN BE BLOCKED. SLOWLY MOVE PLATE TO RIGHT UNTIL BLOCKING LEVER JUST TRIPS. WHEN ADJUSTING TRIP-OFF POINT, CARE SHOULD BE TAKEN THAT BLOCKING LEVER IS CAMMED DOWN BY STOP AND NOT MANUALLY MOVED OUT OF BLOCKED POSITION BY ACCIDENT. RECHECK REQUIREMENT.

NOTE:

AFTER OBTAINING TRIP-OFF POINT, CONTINUE ROTATING MAIN SHAFT UNTIL SPACING CLUTCH IS DISENGAGED. PAWL SHOULD BE TO RIGHT OF STOP. WHEN SLIDE ARM IS MOVED TO REAR, BLOCKING LEVER SHOULD MOVE TO BLOCKED POSITION. IF TIP OF PAWL SHOULD REST ON END OF STOP, READJUST PLATE TO RIGHT SO THAT CLEARANCE BETWEEN PAWL AND STOP IS:

MIN. 0.003 --- MAX. 0.008

3.09 Horizontal Tabulator Mechanism (Cont.)



TABULATOR STOP SETTINGS

NOTE:
FOR INSTRUCTIONS ON HOW TO MOVE TABULATOR STOPS, SEE TABULATOR PAWL PRELIMINARY ADJUSTMENT. PAR. 3.06 (2)

(1) COLUMNAR TABULATOR STOPS

PLACE CARRIAGE IN POSITION TO PRINT FIRST CHARACTER IN COLUMN. PLACE STOP IN SLOT IMMEDIATELY TO LEFT OF PAWL. TO FACILITATE INSERTING STOPS, MARK DESIRED SLOT AND ROTATE DRUM TO MORE ACCESSIBLE POSITION. FOR SETTINGS NEAR LEFT MARGIN, COUNT NUMBER OF SPACING OPERATIONS FROM LEFT MARGIN AND PLACE STOP CORRESPONDING NUMBER OF SLOTS COUNTERCLOCKWISE FROM ROLLER.

NOTE: WHEN PRINTING FORMS, CHECK STOP SETTINGS IN RELATION TO COLUMNS. CORRESPONDING STOPS ON ALL MACHINES ON A CIRCUIT MUST BE THE SAME NUMBER OF SLOTS FROM LEFT MARGIN.

(2) RIGHT MARGIN TABULATOR STOP (WITH WIDE SHELF)

NOTE: BEFORE MAKING THIS ADJUSTMENT, CHECK RIGHT MARGIN AND TABULATOR PAWL ADJUSTMENTS.

POSITION PRINTING CARRIAGE AT RIGHT MARGIN (SPACING CUTOUT OPERATED). INSERT STOP WITH WIDE SHELF IN SLOT IMMEDIATELY TO LEFT OF PAWL. SHELF SHOULD EXTEND TO RIGHT SO THAT PAWL RESTS ON IT.

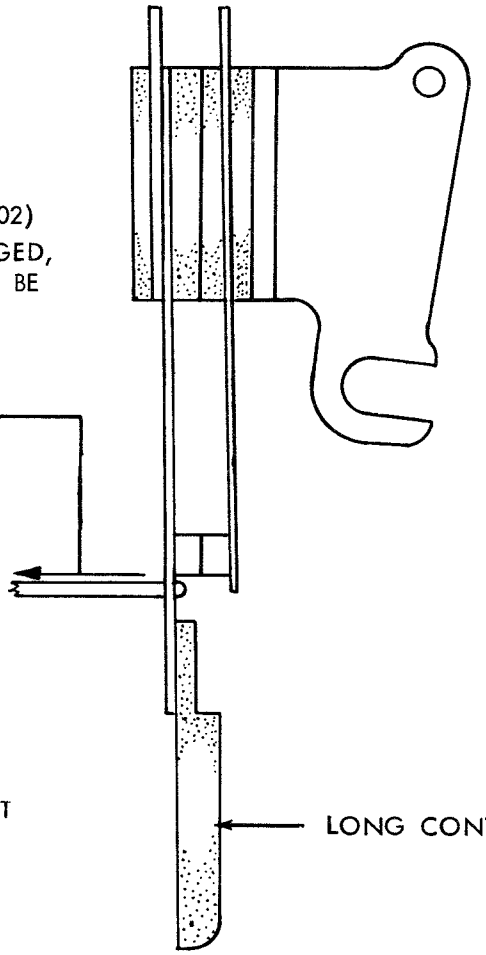
3.10 Horizontal Tabulator Mechanism (Cont.)

NOTE

THE FOLLOWING TWO HORIZONTAL TABULATOR MECHANISM ADJUSTMENTS SHOULD BE CHECKED BEFORE MAKING THE TRANSMITTER CONTROL ADJUSTMENTS SHOWN BELOW.

1. OPERATING LEVER SLIDE ARM (PAR. 3.02)
2. OPERATING LEVER ADJUSTING PLATE (PAR. 3.02)

IF EITHER OF THE ABOVE ADJUSTMENTS ARE CHANGED, THE TRANSMITTER CONTROL ADJUSTMENTS SHOULD BE RECHECKED.



TRANSMITTER CONTROL CONTACT SPRING

REQUIREMENT

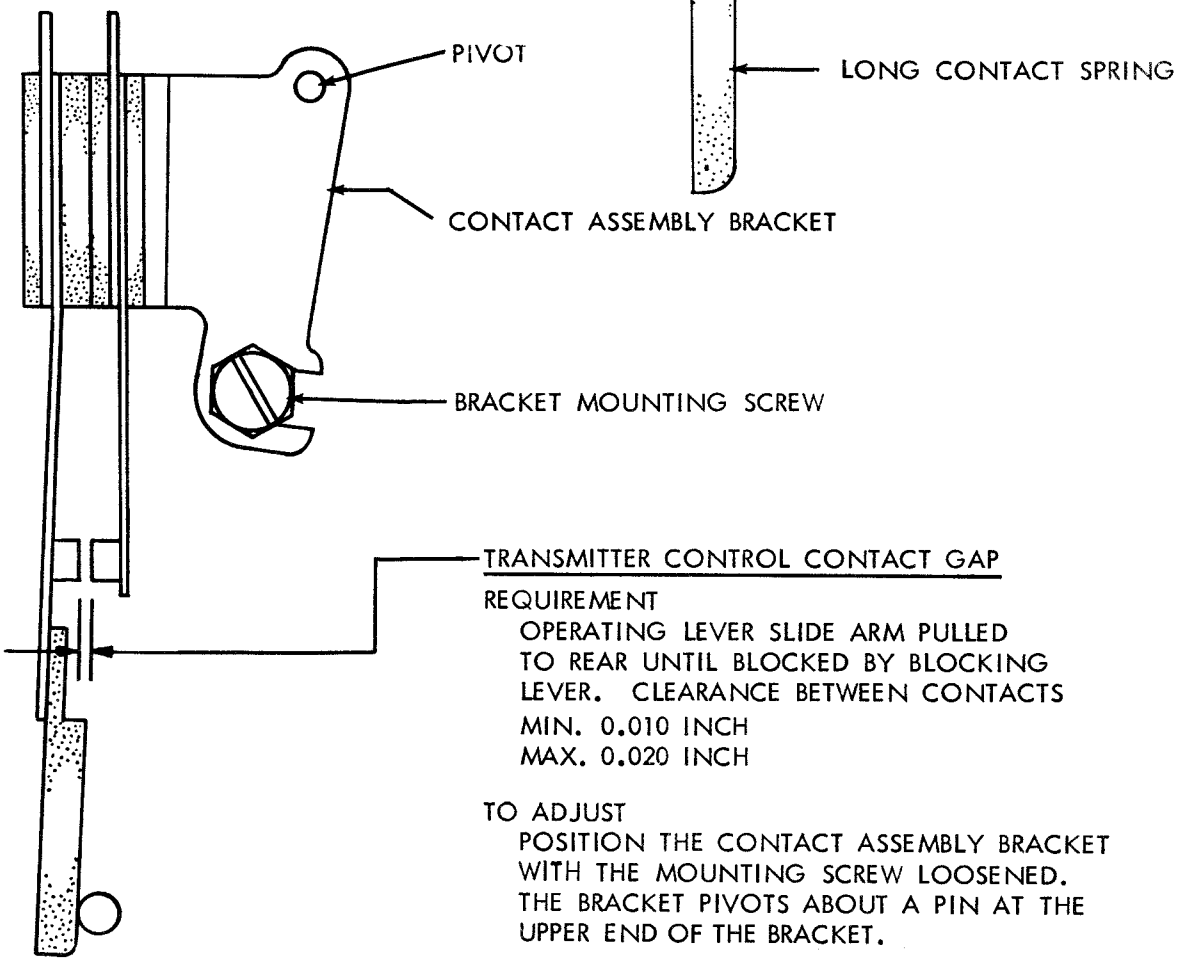
OPERATING LEVER IN UNOPERATED POSITION.

MIN. 3-1/2 OZS.
MAX. 4-1/2 OZS.

TO JUST OPEN CONTACTS.

TO ADJUST

BEND THE LONG CONTACT SPRING



TRANSMITTER CONTROL CONTACT GAP

REQUIREMENT

OPERATING LEVER SLIDE ARM PULLED TO REAR UNTIL BLOCKED BY BLOCKING LEVER. CLEARANCE BETWEEN CONTACTS

MIN. 0.010 INCH
MAX. 0.020 INCH

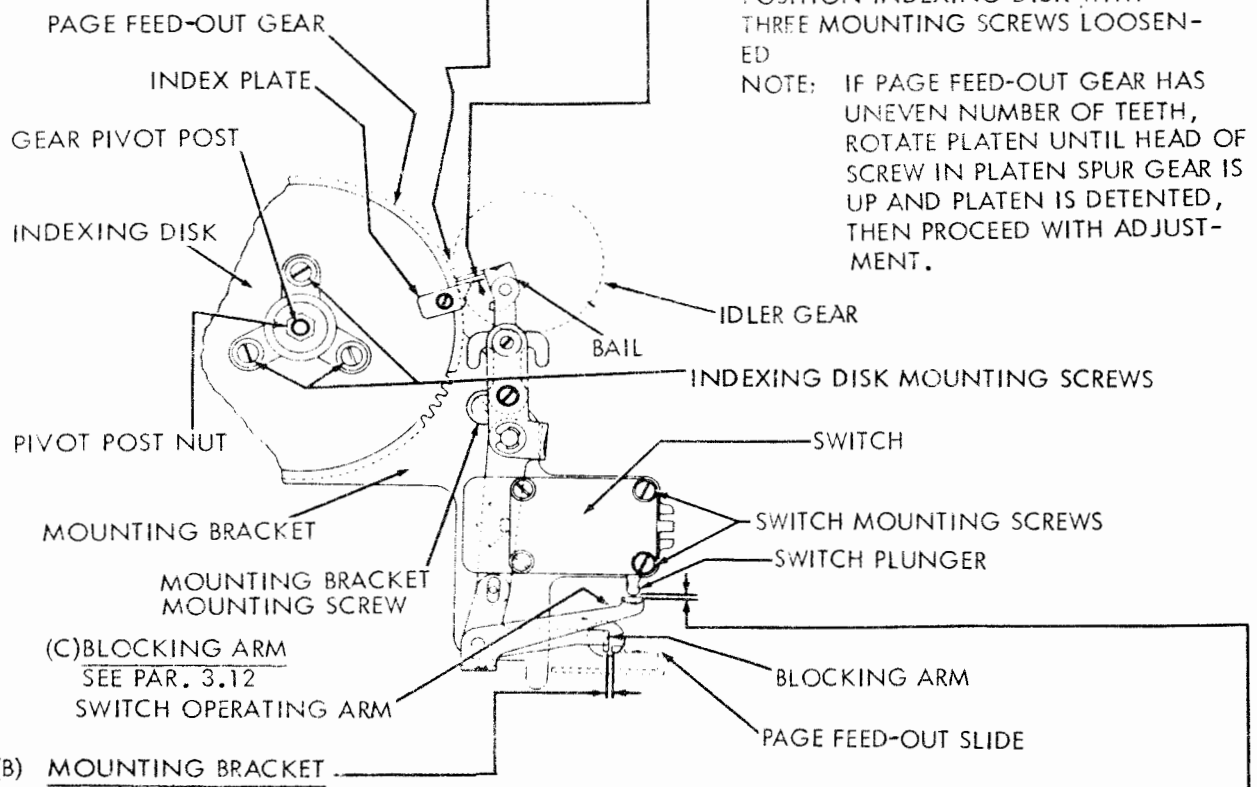
TO ADJUST

POSITION THE CONTACT ASSEMBLY BRACKET WITH THE MOUNTING SCREW LOOSENED. THE BRACKET PIVOTS ABOUT A PIN AT THE UPPER END OF THE BRACKET.

3.11 Page Feed-Out Mechanism

(A) PAGE FEED-OUT GEAR PLAY
REQUIREMENT
BARELY PERCEPTIBLE BACKLASH.
TO ADJUST
POSITION GEAR PIVOT POST WITH NUT LOOSENED.

(D) INDEXING DISK
REQUIREMENT
CLEARANCE BETWEEN HIGHEST NUMBERED INDEX PLATE AND BAIL
MIN. 0.020 INCH
MAX. 0.040 INCH
TO CHECK
LINE FEED CLUTCH DISENGAGED. INDEX PLATE ADJACENT TO BAIL. TAKE UP PLAY BETWEEN GEARS TO MAKE CLEARANCE MINIMUM.
TO ADJUST
DISENGAGE GEAR FROM IDLER. TURN HANDWHEEL CLOCKWISE UNTIL INDEX PLATE JUST OPERATES BAIL. ENGAGE FIRST TOOTH ON IDLER. POSITION INDEXING DISK WITH THREE MOUNTING SCREWS LOOSENED
NOTE: IF PAGE FEED-OUT GEAR HAS UNEVEN NUMBER OF TEETH, ROTATE PLATEN UNTIL HEAD OF SCREW IN PLATEN SPUR GEAR IS UP AND PLATEN IS DETENTED, THEN PROCEED WITH ADJUSTMENT.

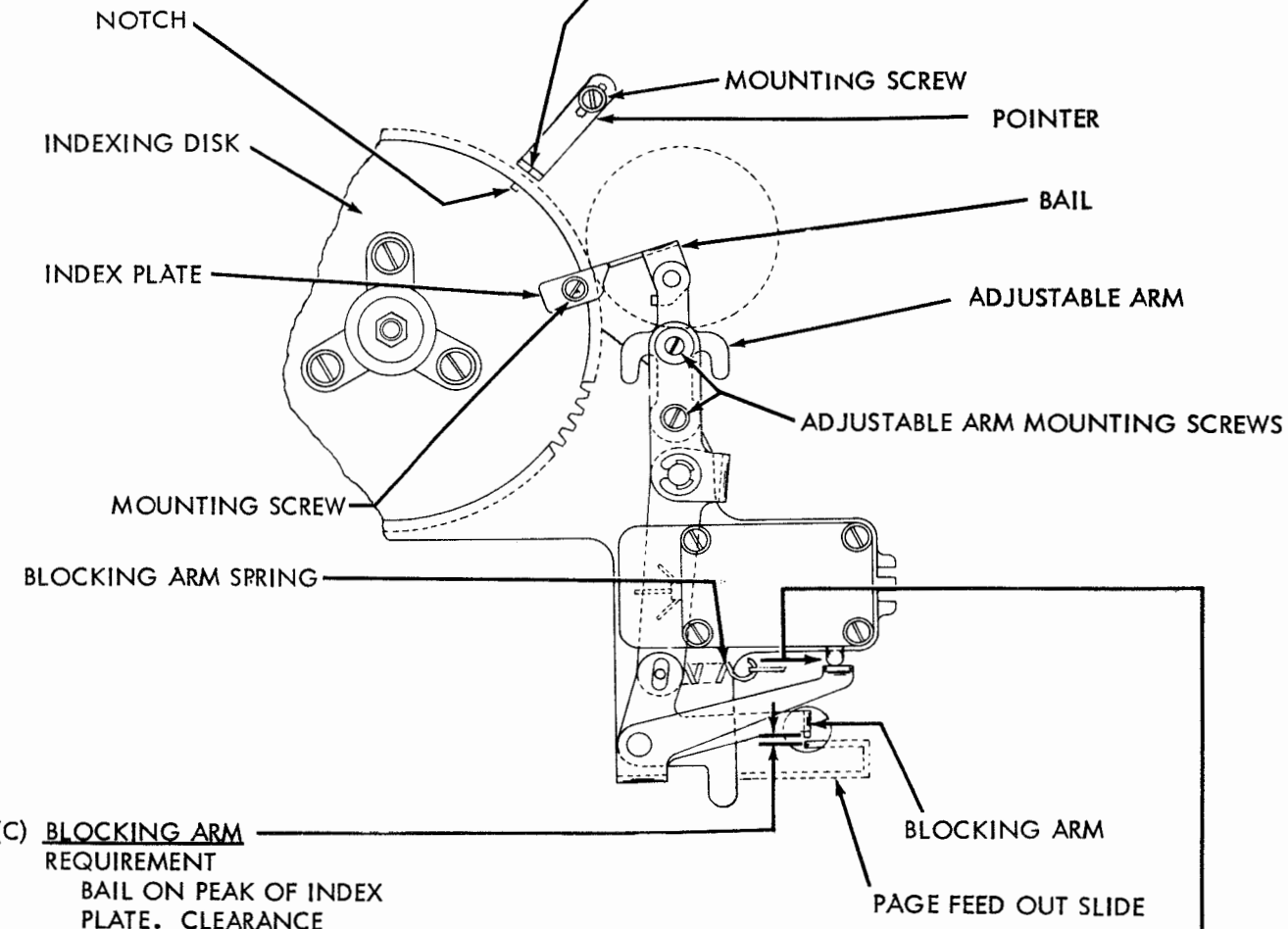


(B) MOUNTING BRACKET
REQUIREMENT
CLEARANCE BETWEEN BLOCKING ARM AND PAGE FEED-OUT SLIDE.
MIN. 0.002 INCH
MAX. 0.015 INCH
TO CHECK
SELECT FEED-OUT SEQUENCE CODE BAR CLUTCH DISENGAGED. TAKE UP PLAY IN BLOCKING ARM AND FEED-OUT SLIDE TO MAKE CLEARANCE MINIMUM.
TO ADJUST
POSITION LOWER PORTION OF MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.

(E) SWITCH OPERATING ARM (USED ONLY WITH TRANSMITTER CONTROL)
REQUIREMENT
BLOCKING ARM IN POSITION TO BLOCK SLIDE. CLEARANCE
MIN. SOME
MAX. 0.005 INCH
TO ADJUST
POSITION SWITCH WITH TWO MOUNTING SCREWS LOOSENED.

3.12 Page Feed-Out Mechanism (Cont.)

(F) POINTER
REQUIREMENT
LINE FEED CLUTCH DISENGAGED. INDEX PLATE ADJACENT TO BAIL AS SHOWN IN PAR. 3.11. POINTER SHOULD LINE UP WITH NOTCH IN INDEXING DISK AND CLEAR DISK BY APPROXIMATELY 1/16 INCH.
TO ADJUST
POSITION POINTER WITH MOUNTING SCREWS LOOSENED.



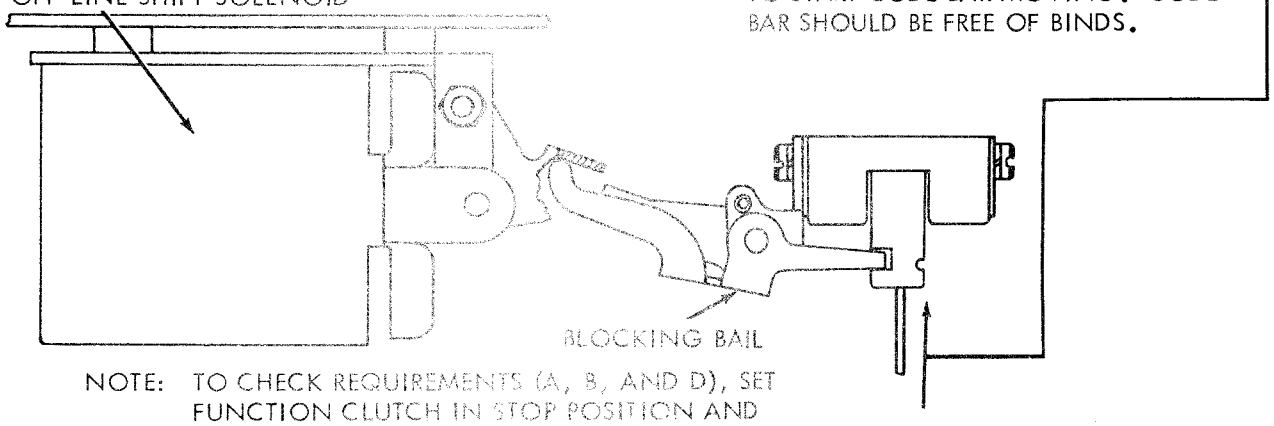
(C) BLOCKING ARM
REQUIREMENT
BAIL ON PEAK OF INDEX PLATE. CLEARANCE
MIN. 0.005 INCH
MAX. 0.045 INCH
TO ADJUST
POSITION ADJUSTABLE ARM WITH MOUNTING SCREWS LOOSENED.
NOTE
IF REQUIREMENT CANNOT BE MET FOR EACH PLATE, REPOSITION PLATE WITH MOUNTING SCREW LOOSENED.

(H) BLOCKING ARM SPRING
REQUIREMENT
BLOCKING ARM IN UNBLOCKED POSITION.
MIN. 3 OZS.
MAX. 5 OZS.
TO PULL SPRING TO OPERATING LENGTH.

3. 13 Selective Calling Mechanism

TYPE BOX CLUTCH TRIP LEVER
(SELECTIVE - CALLING UNITS WITH OR WITHOUT OFF-LINE SHIFT SOLENOID)
CLEARANCE BETWEEN TYPE BOX CLUTCH TRIP LEVER AND CLUTCH DISK STOP LUG SHOULD BE MIN. 0.040 INCH---MAX. 0.055 INCH
SEE PAR. 2.22.

PRINT SUPPRESSOR CODE BAR SPRING REQUIREMENT
SUPPRESSOR CODE BAR TO LEFT.
MIN. 4-1/2 OZS.---MAX. 7-1/2 OZS.
TO START CODE BAR MOVING. CODE BAR SHOULD BE FREE OF BINDS.



NOTE: TO CHECK REQUIREMENTS (A, B, AND D), SET FUNCTION CLUTCH IN STOP POSITION AND ALL CODE BARS TO THE RIGHT.

(A) CODE BAR SHIFT MECHANISM
REQUIREMENTS
1. WITH FUNCTION CLUTCH IN STOP POSITION, LATCH FUNCTION LEVER (SHIFT MECH.) ON ITS LOWER RELEASING LATCH, NOTCH IN SUPP. CODE BAR SHOULD ALIGN WITH NOTCHES IN OTHER CODE BARS WHEN ALL CODE BARS ARE SHIFTED TO THE RIGHT.

TO ADJUST
POSITION UPPER OR LOWER GUIDE PLATE (PAR. 2.33) WITH ITS CLAMP NUTS LOOSENED.

2. REPEAT FOR EACH STUNT CASE CODE BAR SHIFT MECHANISM.

NOTE --- POSITION THE ASSOCIATED GUIDE PLATE SO THAT THE MOVEMENT OF THE FORK IS NOT RESTRICTED WITHIN THE RANGE OF ADJUSTMENT.

(D) OFF LINE SHIFT SOLENOID BRACKET ASSEMBLY (OFF LINE ONLY)
REQUIREMENT
NOTCH IN SUPPRESSION CODE BAR SHOULD ALIGN WITH NOTCHES IN OTHER CODE BARS WHEN ALL CODE BARS ARE SHIFTED TO THE RIGHT.

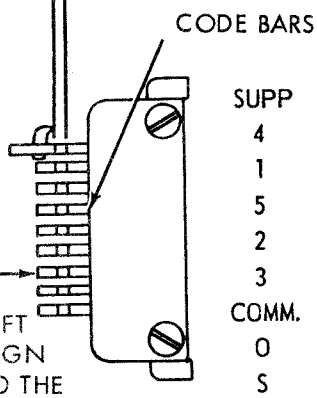
TO ADJUST
POSITION THE SOLENOID BRACKET ASSEMBLY WITH ITS MOUNTING SCREWS LOOSENED.

(C) TYPE BOX CLUTCH SUPPRESSION ARM
SEE PAR. 3.14

(B) CONDITION CODE (ZERO) CODE BAR SHIFT MECHANISM
REQUIREMENT
WITH FUNCTION CLUTCH IN STOP POSITION, LATCH FUNCTION LEVER (SHIFT MECH.). THE NOTCH IN CONDITION CODE (ZERO) CODE BAR SHOULD ALIGN WITH NOTCHES IN OTHER CODE BARS WHEN ALL CODE BARS ARE SHIFTED TO THE RIGHT.

TO ADJUST
POSITION THE UPPER OR LOWER GUIDE PLATE (PAR. 2.33) WITH ITS CLAMP NUTS LOOSENED.

NOTE --- POSITION THE ASSOCIATED GUIDE PLATE SO THAT THE MOVEMENT OF THE FORK IS NOT RESTRICTED.



3.14 Selective Calling Mechanism (Con't)

(C) TYPE BOX CLUTCH SUPPRESSION ARM (WITH OR WITHOUT SOLENOID SHIFT)

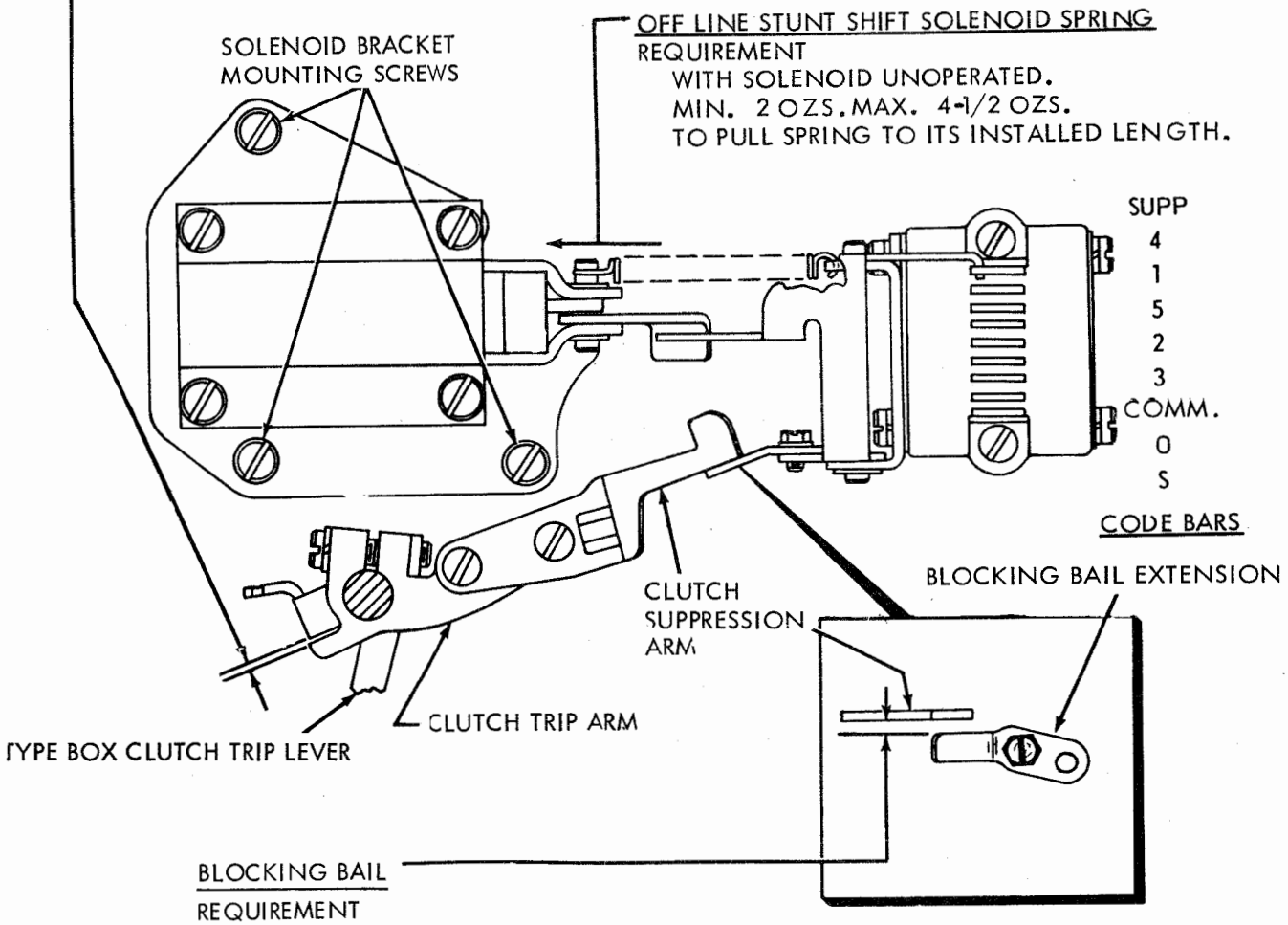
REQUIREMENT

SUPPRESSION ARM IN BLOCKING POSITION. SHAFT ROTATED UNTIL THE FUNCTION CLUTCH SHOE LEVER IS OPPOSITE THE FUNCTION CLUTCH TRIP LEVER.

1. AT LEAST 0.003 INCH CLEARANCE BETWEEN TRIP ARM EXTENSION AND CLUTCH TRIP LEVER.
2. AT LEAST 0.006 INCH CLEARANCE BETWEEN THE FUNCTION CLUTCH SHOE LEVER AND FUNCTION CLUTCH TRIP LEVER.

TO ADJUST

POSITION SUPPRESSION ARM WITH ITS MOUNTING SCREWS LOOSENED.



REQUIREMENT

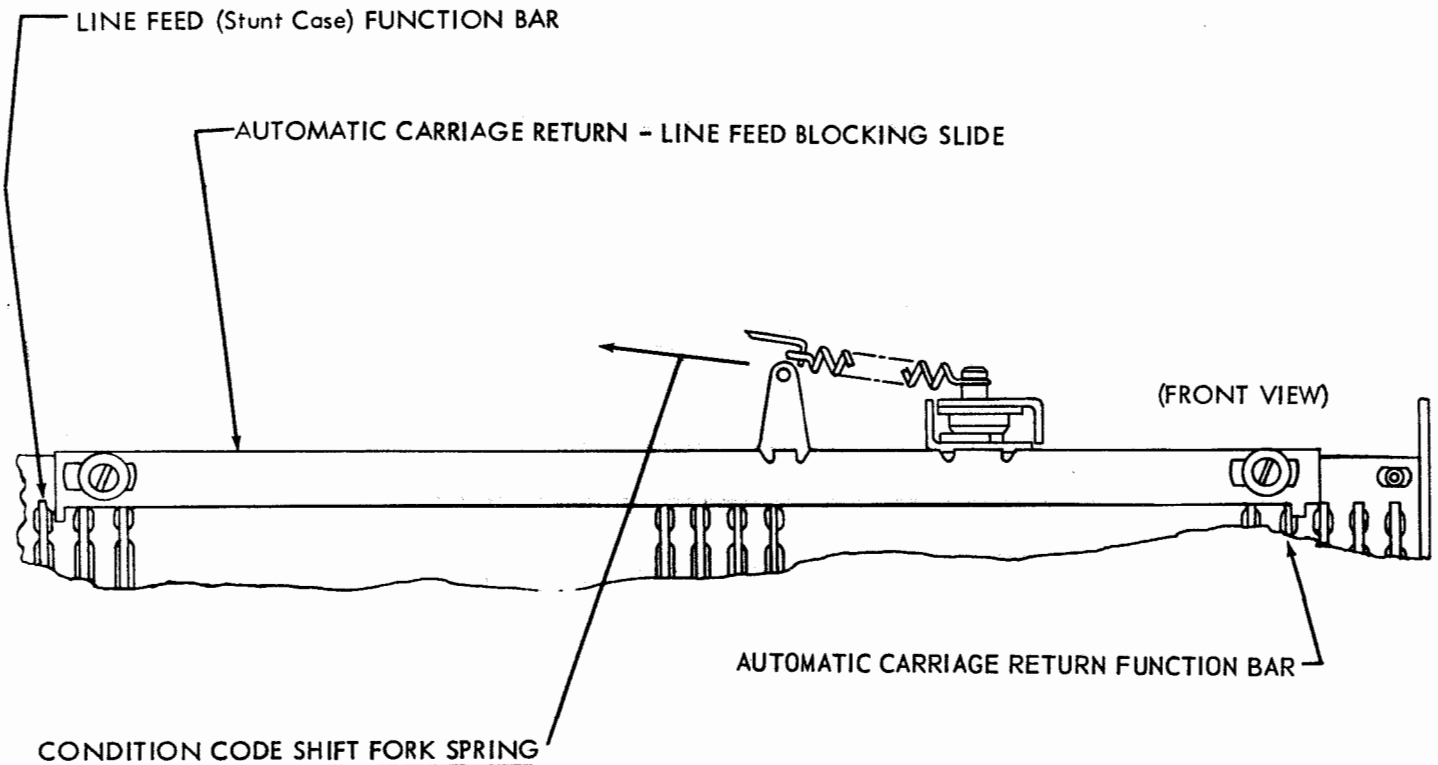
1. LATCH FUNCTION LEVER OF ANY STUNT CASE CODE BAR SHIFT MECHANISM AND ROTATE MAIN SHAFT UNTIL LOWER SURFACE OF THE SUPPRESSION ARM IS ALIGNED (APPROX) WITH BOTTOM SURFACE OF BLOCKING BAIL EXTENSION. CLEARANCE BETWEEN SUPPRESSION ARM AND BLOCKING BAIL EXTENSION, WITH PLAY TAKEN UP TO PRODUCE MINIMUM CLEARANCE.
   MIN. 0.008 INCH ——— MAX. 0.055 INCH

TO ADJUST

POSITION EXTENSION WITH ITS MOUNTING SCREW LOOSENED. REFINE THE ADJUSTMENT IF NECESSARY, AND RECHECK EACH SHIFT MECHANISM.

2. REFINE THE STUNT CASE CODE BAR SHIFT MECHANISM ADJUSTMENT OF ANY SHIFT MECHANISM THAT DOES NOT MEET THE ABOVE REQUIREMENT.

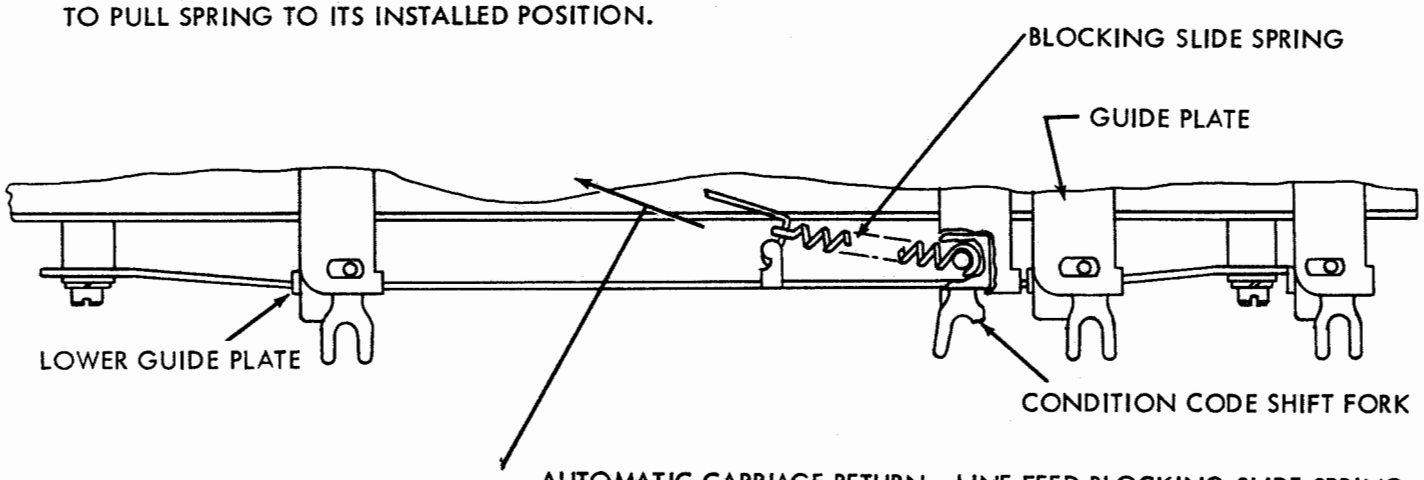
3.15 Selective Calling Mechanism (Cont.)



CONDITION CODE SHIFT FORK SPRING

REQUIREMENT

WITH CONDITION CODE SHIFT IN ITS UNOPERATED POSITION.
MIN. 1 OZ.
MAX. 3 OZS.
TO PULL SPRING TO ITS INSTALLED POSITION.



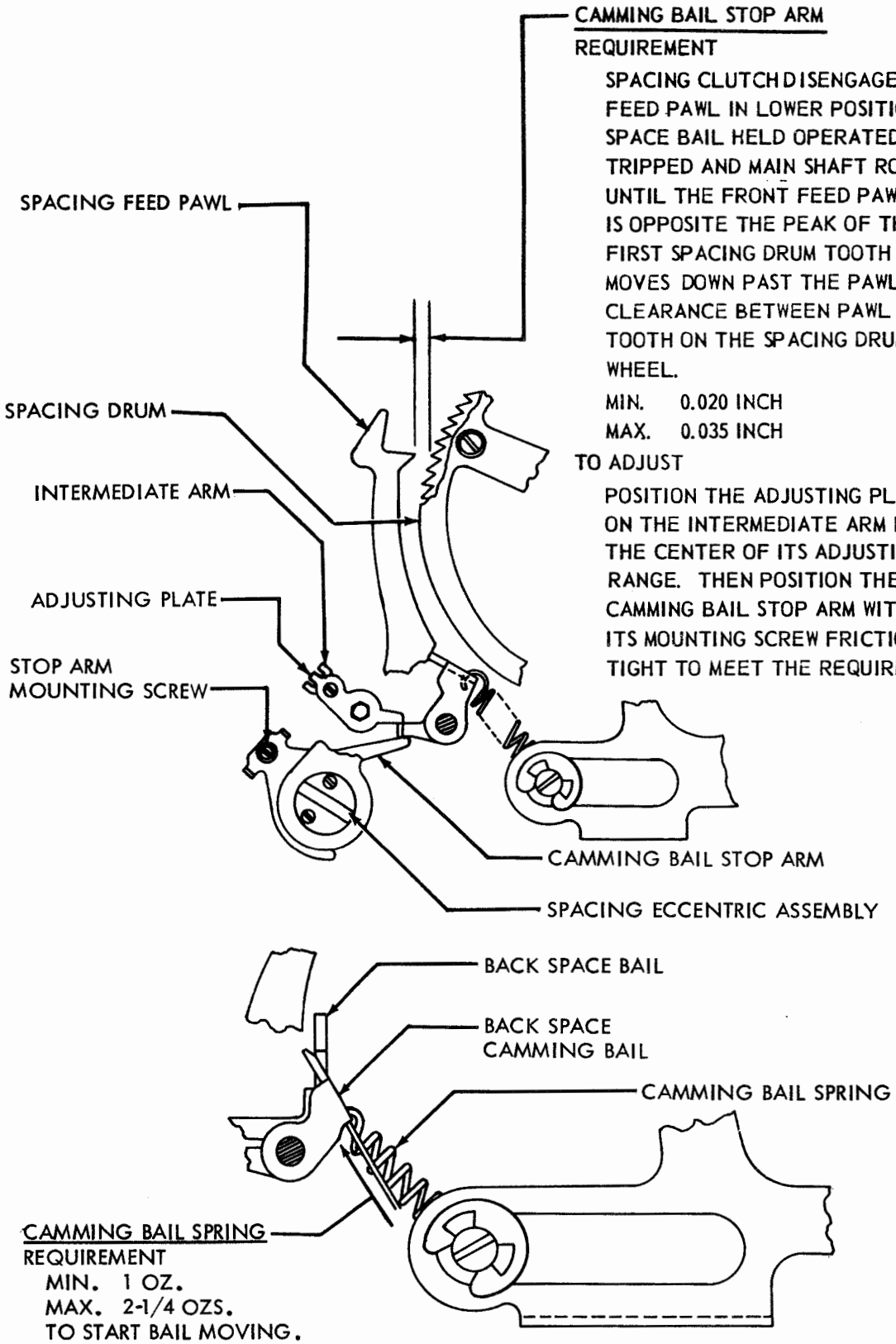
(TOP VIEW)

AUTOMATIC CARRIAGE RETURN - LINE FEED BLOCKING SLIDE SPRING

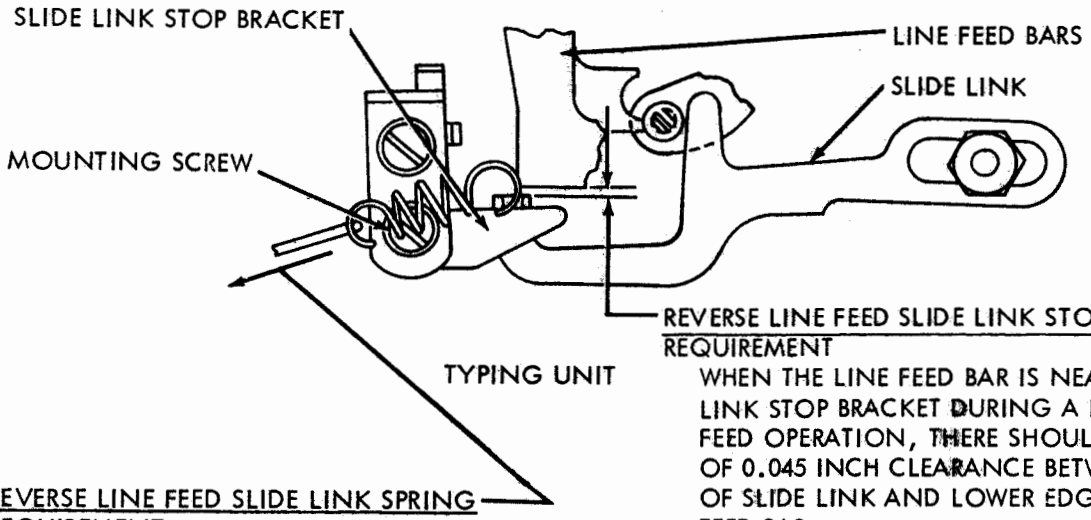
REQUIREMENT

WITH CONDITION CODE SHIFT FORK IN ITS UNOPERATED POSITION.
MIN. 1 OZ.
MAX. 3 OZS.
TO PULL SPRING TO ITS INSTALLED POSITION

3.16 Local Back Space Mechanism



3. 17 Reverse Line Feed Mechanism



REVERSE LINE FEED SLIDE LINK STOP BRACKET
REQUIREMENT
WHEN THE LINE FEED BAR IS NEAREST THE SLIDE LINK STOP BRACKET DURING A FORWARD LINE FEED OPERATION, THERE SHOULD BE A MINIMUM OF 0.045 INCH CLEARANCE BETWEEN TOP SURFACE OF SLIDE LINK AND LOWER EDGE OF CLOSEST LINE FEED BAR.

TO ADJUST
POSITION THE SLIDE LINK STOP BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

REVERSE LINE FEED SLIDE LINK SPRING
REQUIREMENT
SLIDE LINK RESTING ON ITS STOP BRACKET, LINE FEED CLUTCH DISENGAGED.
MIN. 1-1/2 OZS.
MAX. 3-1/2 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

3.18 Reverse Line Feed Mechanism (Cont.)

LINE FEED CLUTCH SPUR GEAR

REQUIREMENT

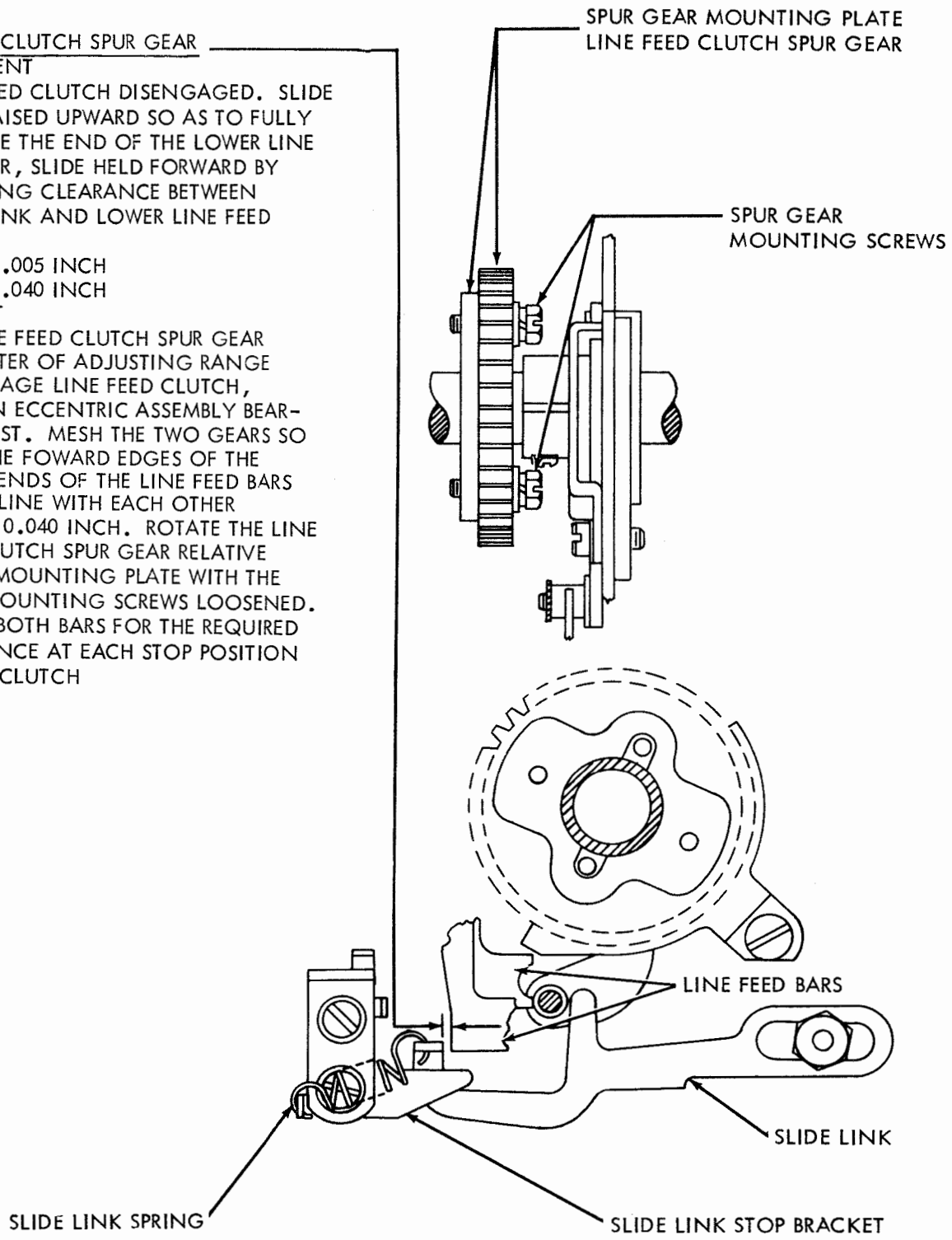
LINE FEED CLUTCH DISENGAGED. SLIDE LINK RAISED UPWARD SO AS TO FULLY ENGAGE THE END OF THE LOWER LINE FEED BAR, SLIDE HELD FORWARD BY ITS SPRING CLEARANCE BETWEEN SLIDE LINK AND LOWER LINE FEED BAR.

MIN. 0.005 INCH

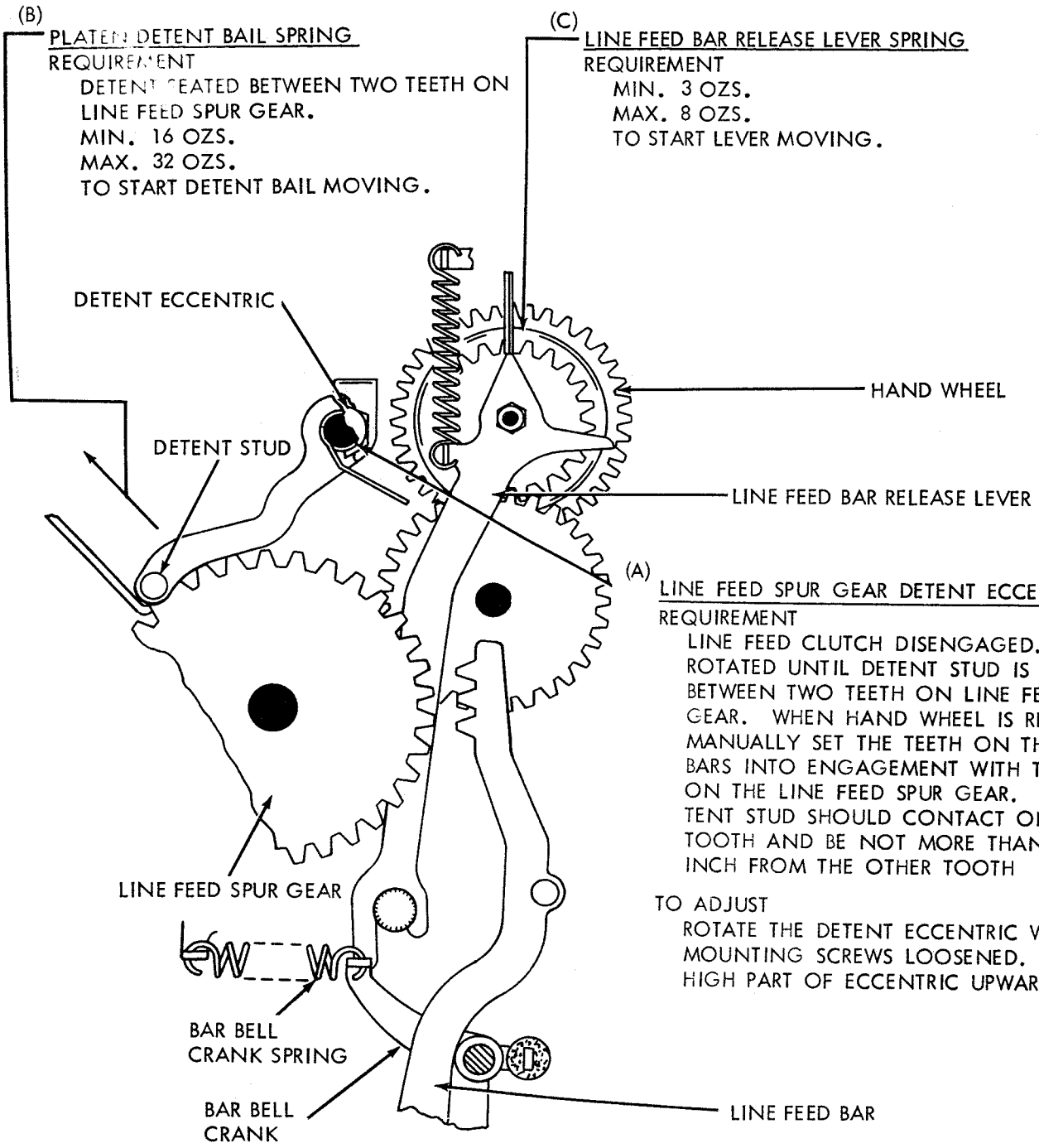
MAX. 0.040 INCH

TO ADJUST

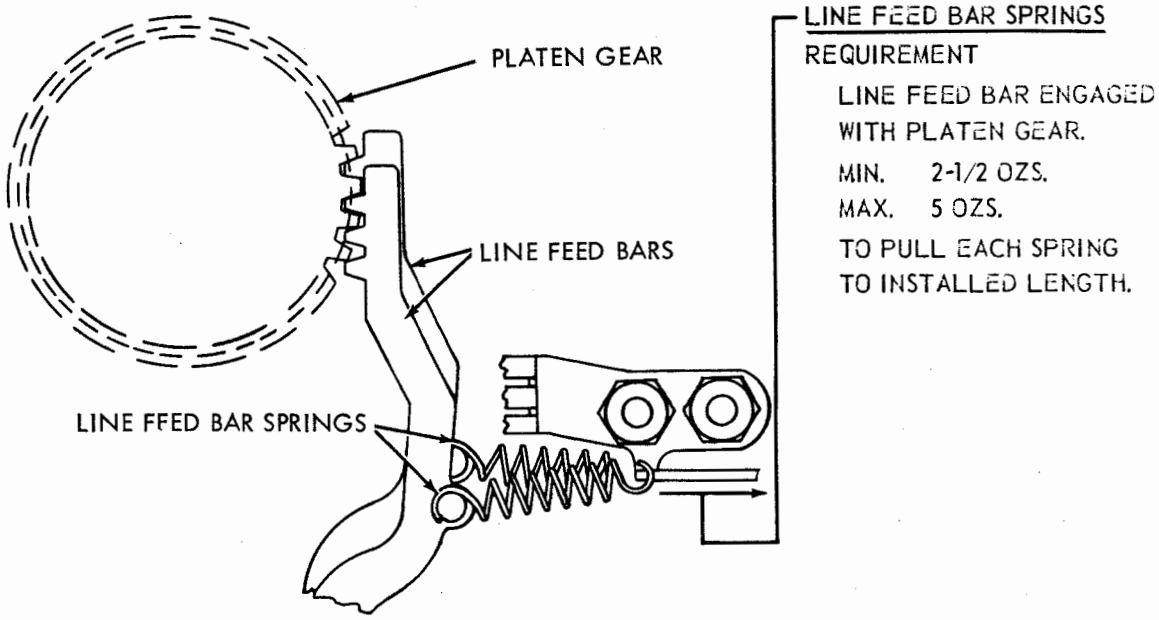
SET LINE FEED CLUTCH SPUR GEAR AT CENTER OF ADJUSTING RANGE DISENGAGE LINE FEED CLUTCH, LOOSEN ECCENTRIC ASSEMBLY BEARING POST. MESH THE TWO GEARS SO THAT THE FOWARD EDGES OF THE LOWER ENDS OF THE LINE FEED BARS ARE IN LINE WITH EACH OTHER WITHIN 0.040 INCH. ROTATE THE LINE FEED CLUTCH SPUR GEAR RELATIVE TO ITS MOUNTING PLATE WITH THE GEAR MOUNTING SCREWS LOOSENED. CHECK BOTH BARS FOR THE REQUIRED CLEARANCE AT EACH STOP POSITION OF THE CLUTCH



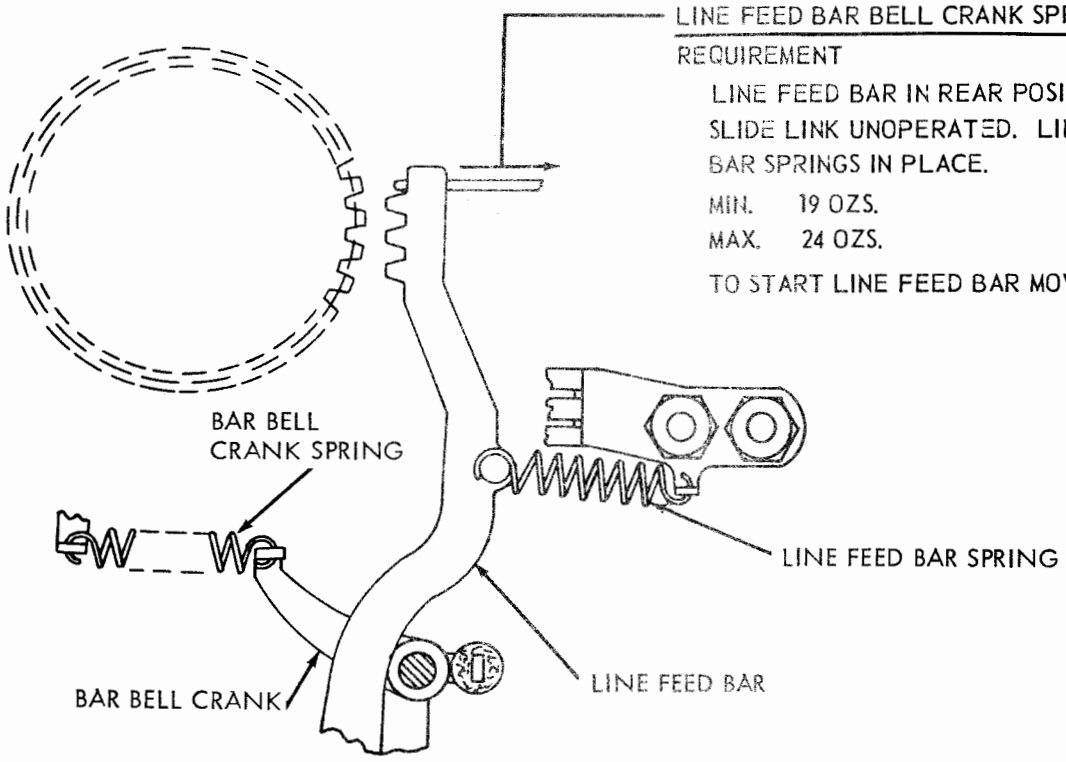
3.19 Reverse Line Feed Mechanism (Cont.)



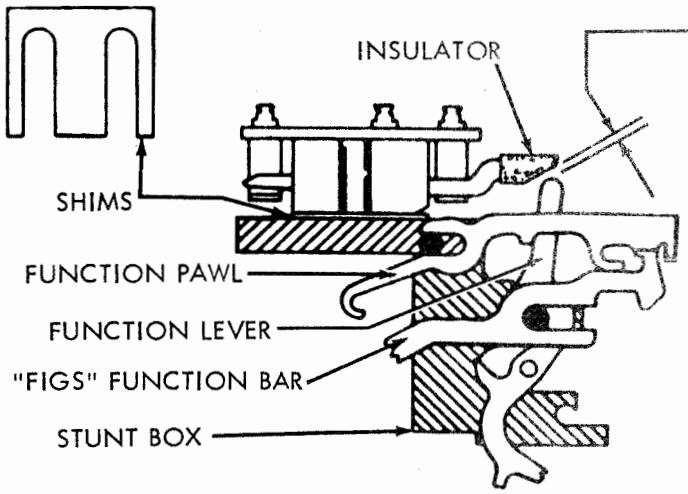
3.20 **Reverse Line Feed Mechanism (Cont.)**



3.21 Reverse Line Feed Mechanism (Cont.)

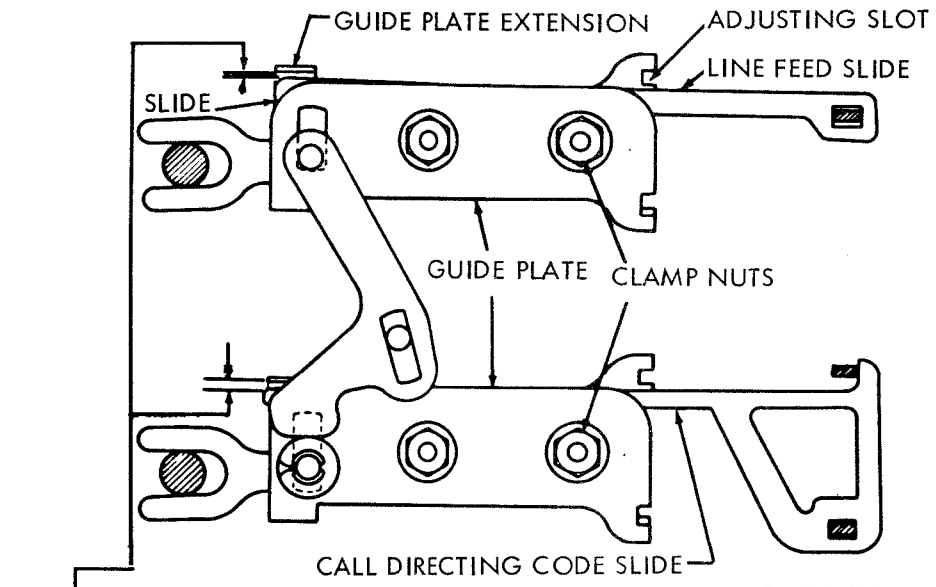


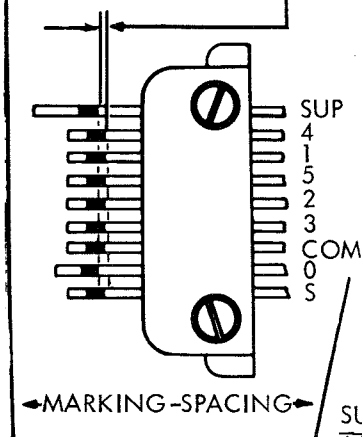
3.22 Answer-Back Mechanism (Switched Circuit Network)



"FIGURES" STUNT BOX CONTACT
(STUNT BOX SLOT 32)
REQUIREMENT
CLEARANCE BETWEEN CONTACT INSULATOR AND FUNCTION LEVER SHOULD BE MIN. SOME --- MAX. 0.010 INCH
TO CHECK
STUNT BOX MOUNTED ON TYPING UNIT AND "LETTERS" COMBINATION MANUALLY SET UP ON TYPING UNIT SELECTOR. ROTATE TYPING UNIT MAIN SHAFT UNTIL FUNCTION LEVER IS IN EXTREME FORWARD POSITION TOWARD CONTACT INSULATOR.
TO ADJUST
WITH CONTACT MOUNTING SCREWS LOOSENED, ADD OR REMOVE SHIMS AS REQUIRED.

3.23 Print Suppression Mechanism





ZERO CODE BAR SHIFT MECHANISM

(1) REQUIREMENT

FUNCTION CLUTCH ROTATED UNTIL FUNCTION BARS ARE IN EXTREME REAR POSITION. LINE FEED FUNCTION PAWL HOOKED OVER ITS FUNCTION BAR AND THEN STRIPPED. THE NOTCH IN THE ZERO CODE BAR SHOULD LINE UP VERTICALLY WITH THE NOTCHES IN THE 4, 1, 5, 2, 3 CODE BARS BUT MAY BE OUT OF ALIGNMENT

MAX. 0.010 INCH

IN THE MARKING DIRECTION.

(2) REQUIREMENT

MAX. 0.002 INCH

CLEARANCE BETWEEN GUIDE PLATE EXTENSION AND SLIDE.

TO ADJUST

POSITION THE GUIDE PLATE BY ITS LOWER ADJUSTING SLOT WITH ITS CLAMP NUTS LOOSENED.

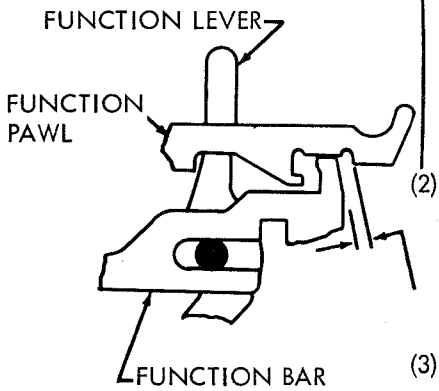
SUPPRESSION CODE BAR MECHANISM

(1) REQUIREMENT

FUNCTION BARS IN REAR POSITION. CALL DIRECTING FUNCTION PAWL HOOKED OVER ITS FUNCTION BAR AND STRIPPED. NOTCH IN SUPPRESSION CODE BAR SHOULD LINE UP VERTICALLY WITH NOTCHES IN 4, 1, 5, 2, 3 CODE BARS BUT MAY BE OUT OF ALIGNMENT

MAX. 0.010 INCH

IN THE MARKING DIRECTION



(2) REQUIREMENT

MAX. 0.002 INCH

CLEARANCE BETWEEN GUIDE PLATE EXTENSION AND SLIDE.

TO ADJUST

POSITION THE GUIDE PLATE BY ITS LOWER ADJUSTING SLOT WITH ITS CLAMP NUTS LOOSENED.

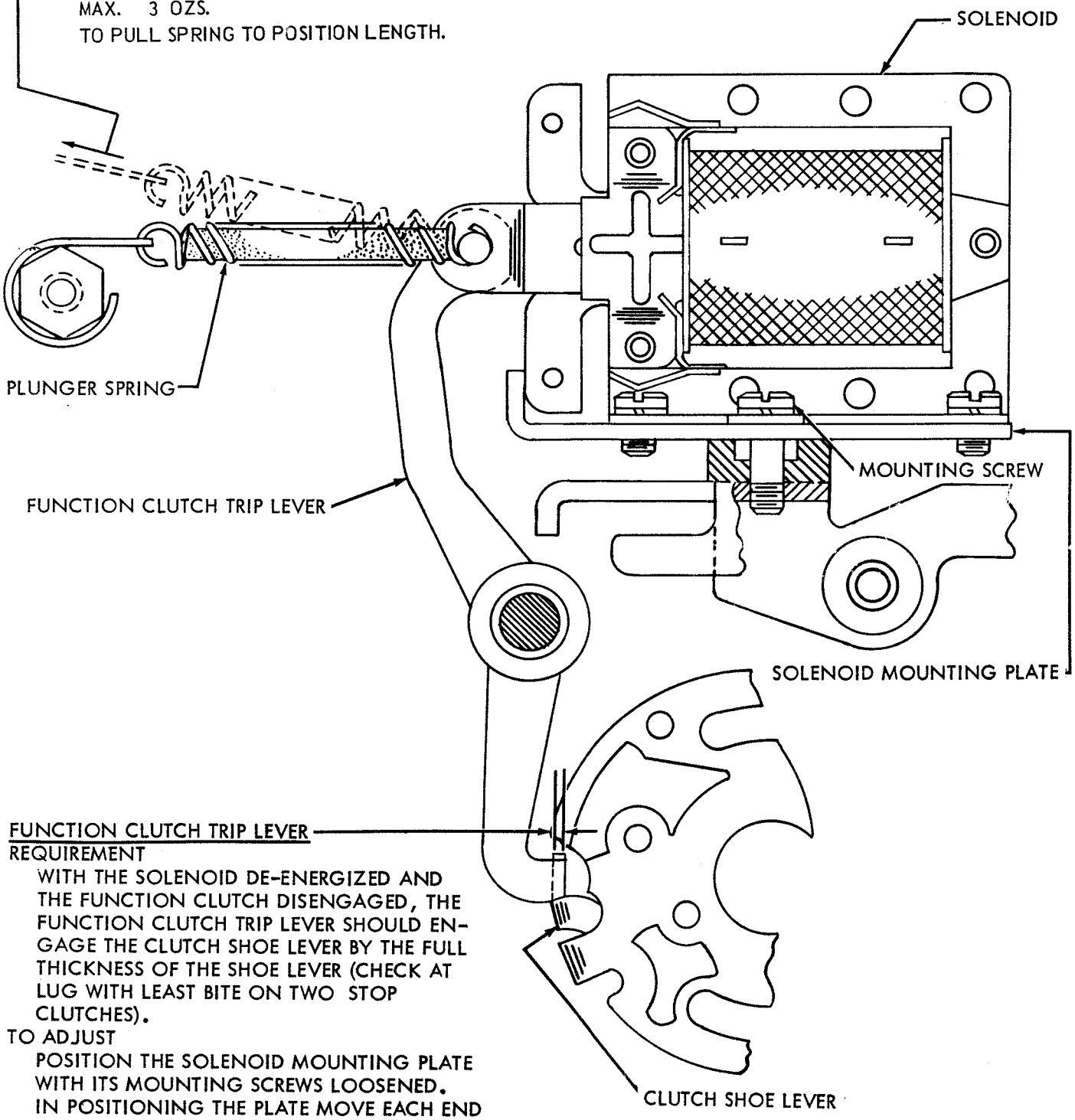
(3) REQUIREMENT

THERE SHOULD BE SOME CLEARANCE BETWEEN THE REAR END OF THE FUNCTION BAR AND THE FACE OF THE NOTCH ON THE FUNCTION PAWL WHEN THE LINE FEED FUNCTION PAWL AND CALL DIRECTING FUNCTION PAWL ARE ALTERNATELY HOOKED OVER THEIR RESPECTIVE FUNCTION BAR.

REFINE THE TWO ADJUSTMENTS ABOVE IF NECESSARY.

3. 24 Continuous Spacing Mechanism

SOLENOID PLUNGER SPRING
REQUIREMENT
SOLENOID DE-ENERGIZED, SPRING UNHOOKED
MIN. 1-1/2 OZS.
MAX. 3 OZS.
TO PULL SPRING TO POSITION LENGTH.



FUNCTION CLUTCH TRIP LEVER
REQUIREMENT
WITH THE SOLENOID DE-ENERGIZED AND THE FUNCTION CLUTCH DISENGAGED, THE FUNCTION CLUTCH TRIP LEVER SHOULD ENGAGE THE CLUTCH SHOE LEVER BY THE FULL THICKNESS OF THE SHOE LEVER (CHECK AT LUG WITH LEAST BITE ON TWO STOP CLUTCHES).
TO ADJUST
POSITION THE SOLENOID MOUNTING PLATE WITH ITS MOUNTING SCREWS LOOSENED. IN POSITIONING THE PLATE MOVE EACH END EQUALLY TO AVOID BINDS IN THE SOLENOID PLUNGER AND FUNCTION CLUTCH TRIP LEVER.

3.25 Continuous Spacing Mechanism (Cont.)

SUPPRESSION BAIL ADJUSTING BRACKET

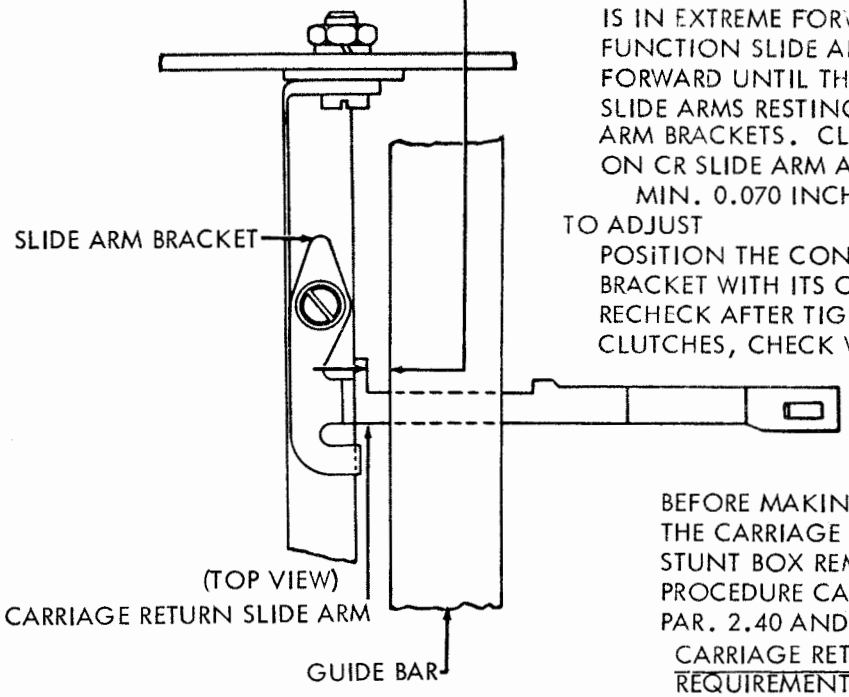
REQUIREMENT

FUNCTION CLUTCH ROTATED UNTIL SUPPRESSION BAIL IS IN EXTREME FORWARD POSITION. CR AND LF FUNCTION SLIDE ARMS MANUALLY PUSHED FORWARD UNTIL THE CR AND LF LEVERS ARE TRIPPED. SLIDE ARMS RESTING BACK AGAINST THEIR SLIDE ARM BRACKETS. CLEARANCE BETWEEN PROJECTION ON CR SLIDE ARM AND GUIDE BAR

MIN. 0.070 INCH --- MAX. 0.095 INCH

TO ADJUST

POSITION THE CONNECTING LINK ON THE ADJUSTING BRACKET WITH ITS CLAMP SCREW LOOSENED. RECHECK AFTER TIGHTENING SCREW. ON TWO-STOP CLUTCHES, CHECK WITH CLUTCH IN EACH POSITION.



NOTE

BEFORE MAKING THE FOLLOWING ADJUSTMENT CHECK THE CARRIAGE RETURN LEVER ADJUSTMENT. WITH THE STUNT BOX REMOVED, THE STANDARD ADJUSTING PROCEDURE CANNOT BE FOLLOWED. REFER TO PAR. 2.40 AND USE THE FOLLOWING PROCEDURE.

CARRIAGE RETURN LEVER

REQUIREMENT

CLEARANCE BETWEEN CARRIAGE RETURN LATCH BAIL AND CARRIAGE RETURN LEVER (PAR. 2.40) SHOULD BE

MIN. 0.006 INCH---MAX. 0.040 INCH

TO CHECK

PRINTING CARRIAGE IN RETURNED POSITION. TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL SUPPRESSION BAIL IS IN EXTREME FORWARD POSITION. LOCATE SPACING DRUM SO THAT CARRIAGE RETURN LATCH BAIL RESETS AGAINST CARRIAGE RETURN LEVER EXTENSION.

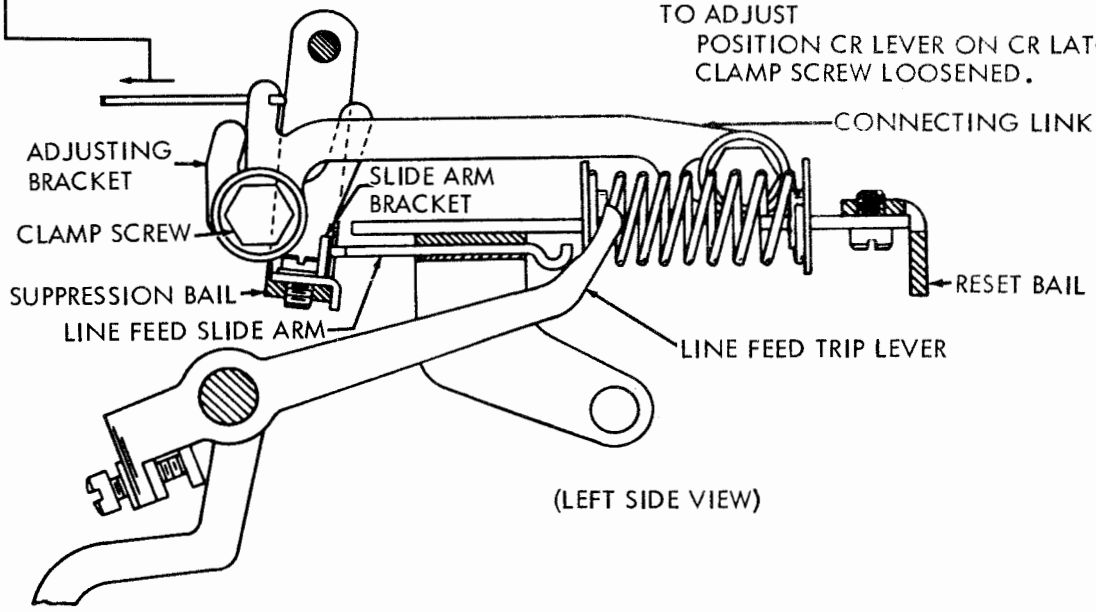
TO ADJUST

POSITION CR LEVER ON CR LATCH BAIL WITH CLAMP SCREW LOOSENED.

RESET BAIL OPERATING SPRING

REQUIREMENT

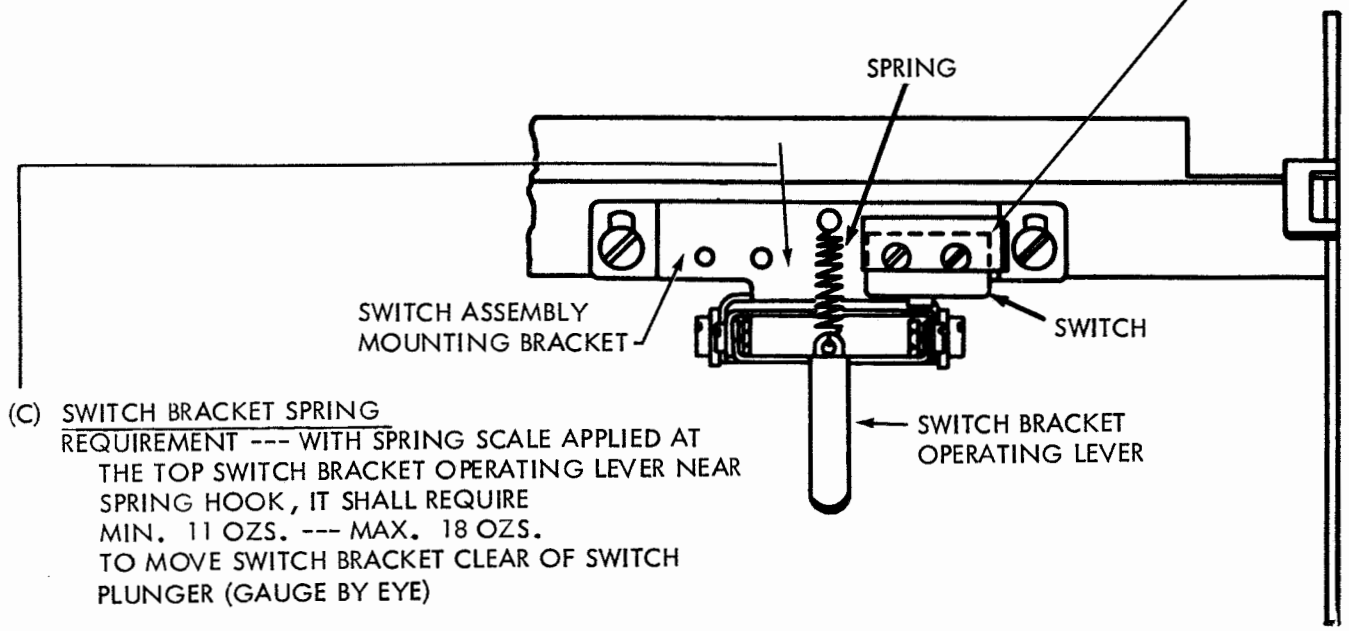
FUNCTION RESET BAIL IN FORWARD POSITION MIN. 2-1/4 LBS.---MAX. 3-1/2 LBS. TO START BAIL MOVING.



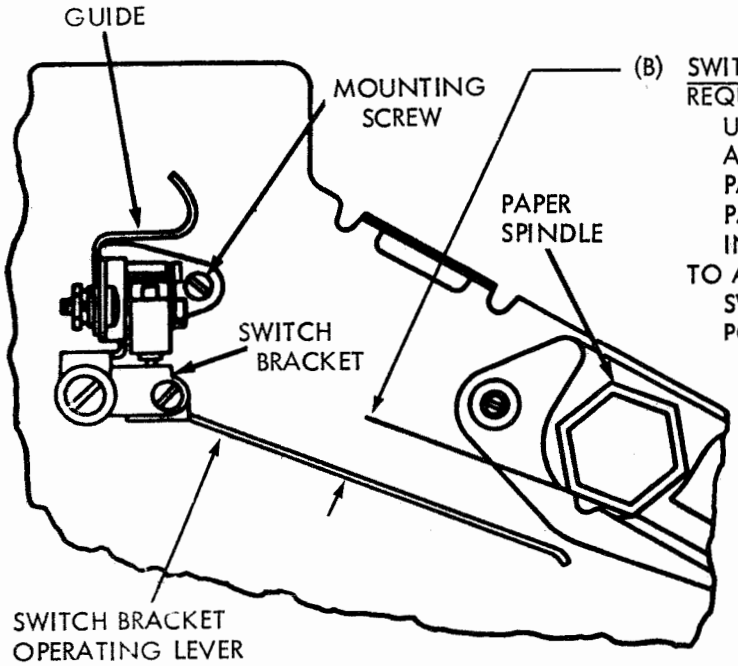
3. 26 Paper-Out Alarm Mechanism

FOR EARLY DESIGN
SEE PARAGRAPH 4.30

(A) SWITCH POSITION
REQUIREMENT --- HORIZONTAL AXIS OF SWITCH SHALL LIE IN A PLANE PARALLEL TO THE SWITCH BRACKET WHEN THE SWITCH IS MOVED TOWARD UPPER LIMIT OF ITS TRAVEL IN THE MOUNTING HOLES.
TO ADJUST --- WITH ITS MOUNTING SCREWS (2) LOOSENED, POSITION AND ALIGN THE SWITCH.



(C) SWITCH BRACKET SPRING
REQUIREMENT --- WITH SPRING SCALE APPLIED AT THE TOP SWITCH BRACKET OPERATING LEVER NEAR SPRING HOOK, IT SHALL REQUIRE
MIN. 11 OZS. --- MAX. 18 OZS.
TO MOVE SWITCH BRACKET CLEAR OF SWITCH PLUNGER (GAUGE BY EYE)



(B) SWITCH OPERATING LEVER
REQUIREMENT --- WITH PAPER ROLL REMOVED, UPPER SURFACE OF SWITCH BRACKET OPERATING LEVER SHALL LIE IN A PLANE THAT IS PARALLEL WITH UNDER SIDE OF HEXAGONAL PAPER SPINDLE AND REST APPROXIMATELY 1/4 INCH FROM THE SPINDLE.
TO ADJUST --- LOOSEN SCREW THAT SECURE THE SWITCH ASSEMBLY MOUNTING BRACKET AND POSITION THE ASSEMBLY UPWARD OR DOWNWARD.

3. 27 Vertical Tabulation and Transmitter Distributor Control Mechanism

(C) PAGE FEED-OUT GEAR PLAY

REQUIREMENT

BARELY PERCEPTIBLE BACKLASH BETWEEN IDLER GEAR AND FEED-OUT GEAR

TO ADJUST

POSITION GEAR PIVOT POST WITH NUT LOOSENED.

NOTE: GEARS SHOULD MESH ACCURATELY WHEN CHECKED AT 3 EQUAL DISTANCES AROUND CIRCUMFERENCE OF GEAR.

(D) BLOCKING LEVER

SEE PAR. 3.28

(E) INDEXING DISK

REQUIREMENT

CLEARANCE BETWEEN INDEX PLATE AND PAWL SHOULD BE

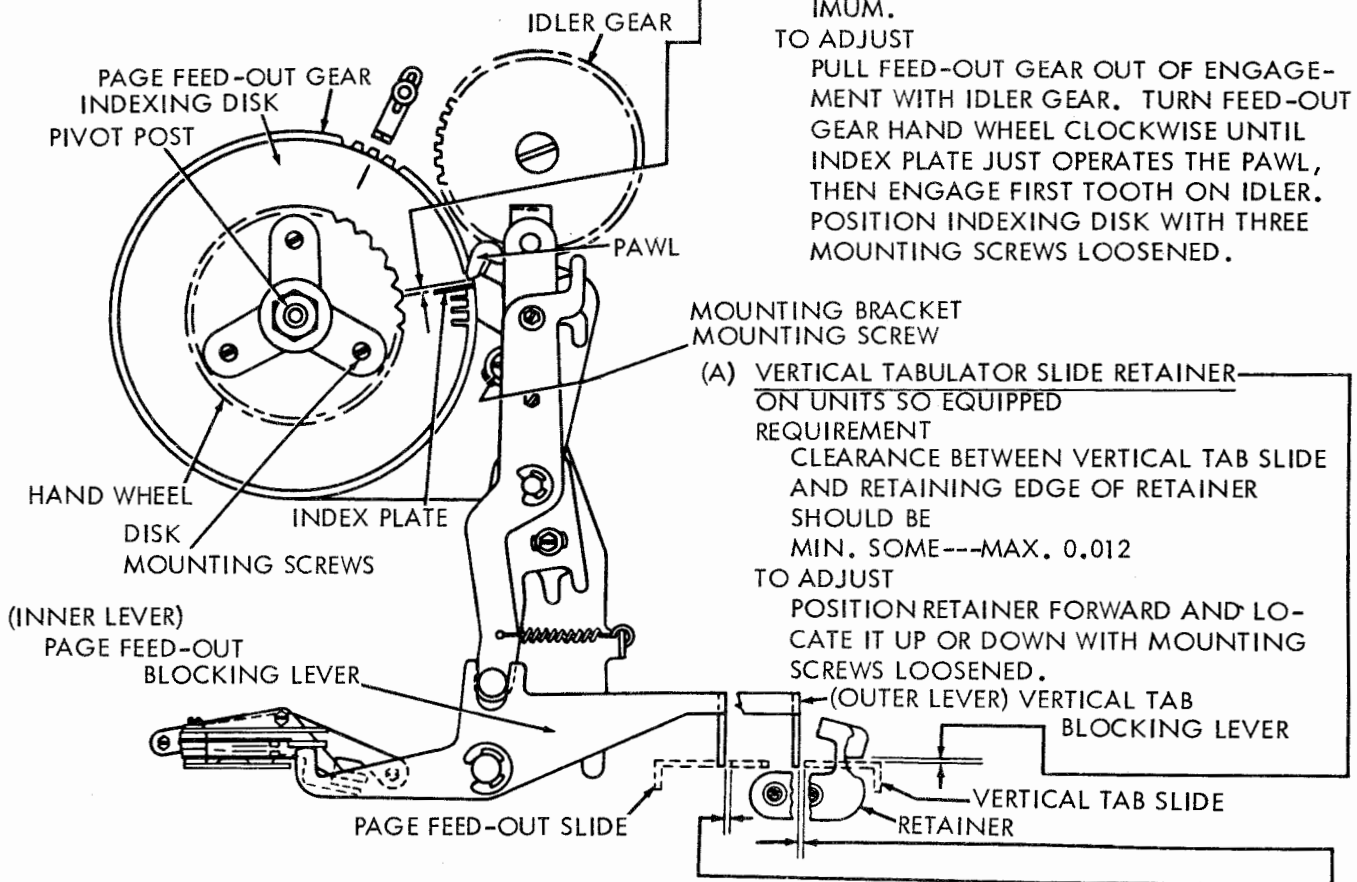
MIN. 0.015 INCH---MAX. 0.040 INCH

TO CHECK

LINE FEED CLUTCH DISENGAGED. INDEX PLATE ADJACENT TO PAWL. SLACK IN GEARS TAKEN UP TO MAKE GAP A MINIMUM.

TO ADJUST

PULL FEED-OUT GEAR OUT OF ENGAGEMENT WITH IDLER GEAR. TURN FEED-OUT GEAR HAND WHEEL CLOCKWISE UNTIL INDEX PLATE JUST OPERATES THE PAWL, THEN ENGAGE FIRST TOOTH ON IDLER. POSITION INDEXING DISK WITH THREE MOUNTING SCREWS LOOSENED.



(A) VERTICAL TABULATOR SLIDE RETAINER ON UNITS SO EQUIPPED

REQUIREMENT

CLEARANCE BETWEEN VERTICAL TAB SLIDE AND RETAINING EDGE OF RETAINER SHOULD BE

MIN. SOME---MAX. 0.012

TO ADJUST

POSITION RETAINER FORWARD AND LOCATE IT UP OR DOWN WITH MOUNTING SCREWS LOOSENED.

(B) MOUNTING BRACKET

REQUIREMENT

1. CLEARANCE BETWEEN FEED-OUT BLOCKING LEVER (INNER LEVER) AND FEED-OUT SLIDE MIN. SOME---MAX. 0.020 INCH

TO CHECK

SELECT UPPER CASE "Z" AND ROTATE MAIN SHAFT UNTIL PAGE FEED-OUT SLIDE IS IN ITS MOST FORWARD POSITION. TAKE UP PLAY IN PAGE FEED-OUT BLOCKING LEVER TO MAKE CLEARANCE A MINIMUM.

2. CLEARANCE BETWEEN VERTICAL TAB SLIDE AND VERTICAL TAB BLOCKING LEVER (OUTER LEVER) --- MIN. 0.002 INCH

TO CHECK

SELECT UPPER CASE "J" AND ROTATE MAIN SHAFT UNTIL VERTICAL TAB SLIDE IS IN ITS MOST FORWARD POSITION. TAKE UP PLAY IN VERTICAL TAB BLOCKING LEVER TO MAKE CLEARANCE A MINIMUM.

TO ADJUST

POSITION LOWER PORTION OF MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.

3.28 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

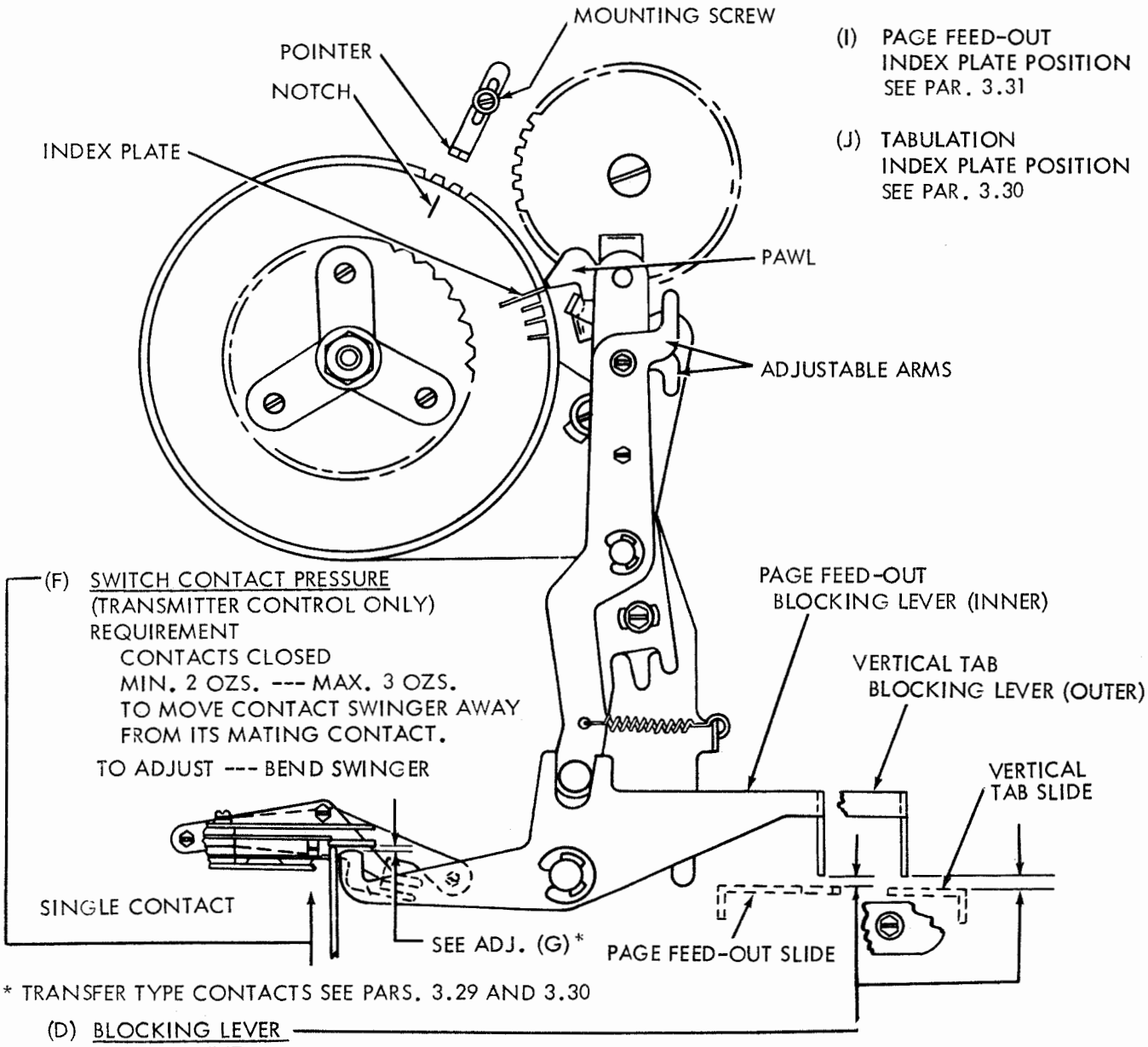
(H) POINTER

REQUIREMENT

LINE FEED CLUTCH DISENGAGED. INDEX PLATE ADJACENT TO PAWL. POINTER SHOULD LINE UP WITH NOTCH IN INDEXING DISK AND CLEAR ANY INDEX PLATE BY APPROXIMATELY 1/16 INCH.

TO ADJUST

POSITION POINTER ON SIDE FRAME WITH ITS MOUNTING SCREW LOOSENED.



* TRANSFER TYPE CONTACTS SEE PARS. 3.29 AND 3.30

(D) BLOCKING LEVER

REQUIREMENT

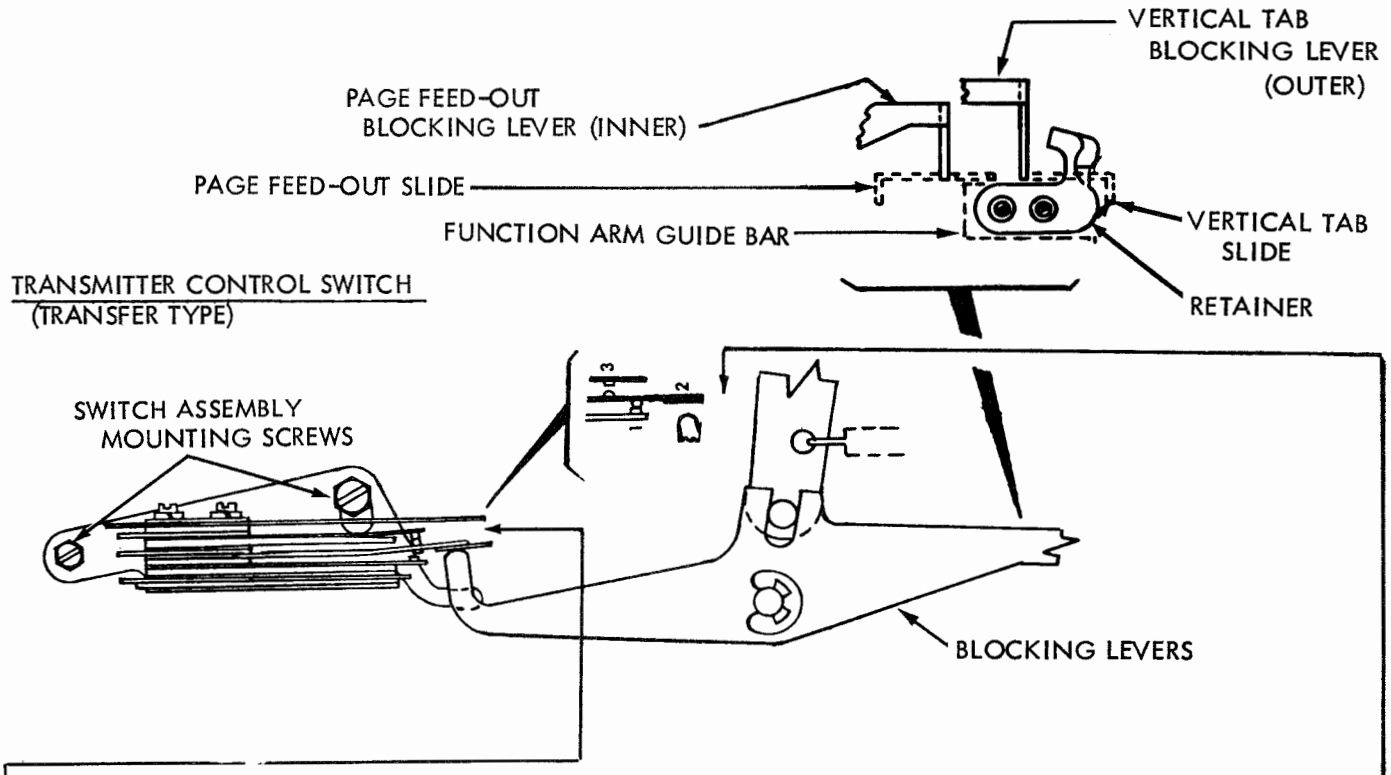
CLEARANCE BETWEEN BOTTOM OF BLOCKING LEVER AND TOP OF SLIDE WHEN PAWL IS ON PEAK OF INDEX PLATE SHOULD BE

MIN. 0.005 INCH --- MAX. 0.045 INCH

TO ADJUST

TRIP LINE FEED CLUTCH. ROTATE MAIN SHAFT UNTIL PAWL IS ON PEAK OF INDEX PLATE. POSITION ADJUSTABLE ARM WITH MOUNTING SCREWS LOOSENED. MAKE ADJUSTMENT FOR EACH BLOCKING LEVER.

3.29 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)



TRANSMITTER CONTROL SWITCH (TRANSMITTER CONTROL ONLY)

REQUIREMENTS --- FOR TRANSFER TYPE CONTACTS

1. WITH NORMALLY CLOSED (LOWER) CONTACTS CLOSED, CLEARANCE BETWEEN INSULATED EXTENSION OF SWINGER AND LOBES OF FEED-OUT AND VERTICAL TABULATOR BLOCKING LEVER SHALL BE MIN. SOME CLEARANCE ---------- MAX 0.005 INCH

TO CHECK --- ROTATE MAINSHAFT UNTIL FEED-OUT AND VERTICAL TABULATOR BLOCKING LEVERS ARE UNOPERATED (BLOCKING LEVERS RESTING ON SLIDES).

TO ADJUST - WITH TRANSMITTER CONTROL SWITCH MOUNTING SCREWS LOOSENED, POSITION THE CONTACT ASSEMBLY.

2. WITH THE NORMALLY OPEN (UPPER) CONTACTS CLOSED
   (a). LOBE OF FEED-OUT BLOCKING LEVER (INNER LEVER) SHALL FULLY ENGAGE INSULATED EXTENSION OF CONTACT SWINGER.
   (b). THE FEED-OUT BLOCKING LEVER SHALL REST FIRMLY ON THE FUNCTION ARM GUIDE BAR (INTERNAL --- CHECK BY LIFTING LEVER LIGHTLY AT CONTACT END) AND ALSO SEPARATE THE NORMALLY OPEN CONTACT SPRING FROM IT STIFFENER AS THE UPPER CONTACT CLOSES.

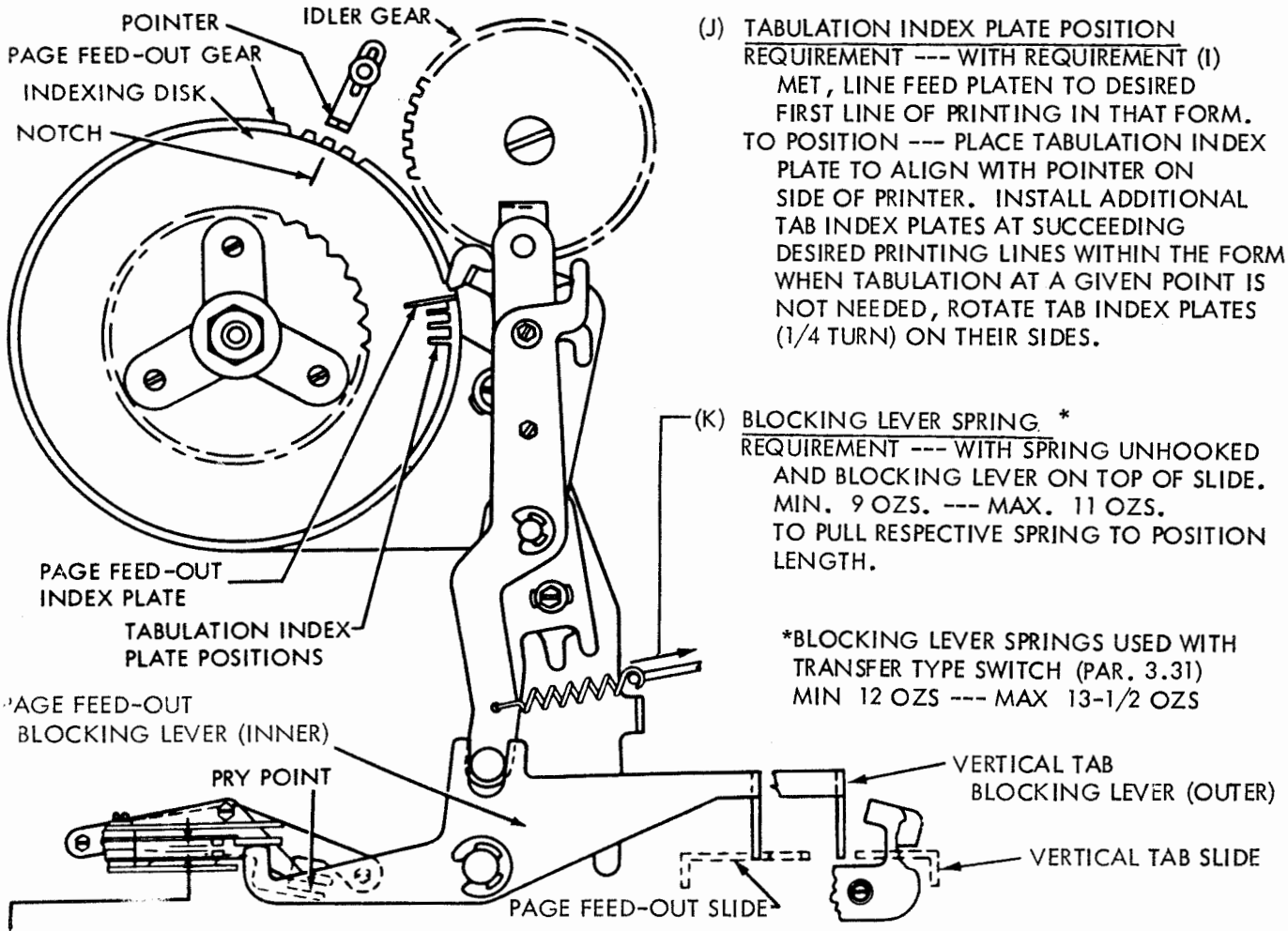
   TO CHECK --- SELECT FEED-OUT CODE COMBINATION, ROTATE MAIN SHAFT UNTIL FEED-OUT SLIDE IS IN ITS EXTREME FORWARD POSITION AND FEED-OUT BLOCKING LEVER DROPS BEHIND ITS SLIDE TO CLOSE NORMALLY OPENED CONTACTS.

   TO ADJUST --- WITH CONTACT PILE-UP MOUNTING SCREWS LOOSENED, POSITION THE ASSEMBLY.

3. WITH THE NORMALLY OPEN (UPPER) CONTACTS CLOSED
   (a). LOBE OF VERTICAL TABULATOR BLOCKING LEVER (OUTER) SHALL FULLY ENGAGE THE INSULATED EXTENSION OF THE SWINGER.
   (b). THE VERTICAL TABULATOR BLOCKING LEVER SHALL REST FIRMLY ON THE FUNCTION ARM GUIDE BAR (INTERNAL --- CHECK BY LIFTING LEVER LIGHTLY AT CONTACT END.) AND ALSO SEPARATE NORMALLY OPEN CONTACT SPRING FROM ITS STIFFENER AS UPPER CONTACT CLOSES.

   TO CHECK --- SELECT VERTICAL TABULATOR COMBINATION AND PROCEED AS IN ITEM TO CHECK OF REQUIREMENT 2 ABOVE.

3.30 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)



(J) TABULATION INDEX PLATE POSITION

REQUIREMENT --- WITH REQUIREMENT (I) MET, LINE FEED PLATEN TO DESIRED FIRST LINE OF PRINTING IN THAT FORM.

TO POSITION --- PLACE TABULATION INDEX PLATE TO ALIGN WITH POINTER ON SIDE OF PRINTER. INSTALL ADDITIONAL TAB INDEX PLATES AT SUCCEEDING DESIRED PRINTING LINES WITHIN THE FORM. WHEN TABULATION AT A GIVEN POINT IS NOT NEEDED, ROTATE TAB INDEX PLATES (1/4 TURN) ON THEIR SIDES.

(K) BLOCKING LEVER SPRING *

REQUIREMENT --- WITH SPRING UNHOOKED AND BLOCKING LEVER ON TOP OF SLIDE. MIN. 9 OZS. --- MAX. 11 OZS. TO PULL RESPECTIVE SPRING TO POSITION LENGTH.

*BLOCKING LEVER SPRINGS USED WITH TRANSFER TYPE SWITCH (PAR. 3.31) MIN 12 OZS --- MAX 13-1/2 OZS

(G) TRANSMITTER CONTROL SWITCH (TRANSMITTER CONTROL ONLY)

REQUIREMENTS --- FOR SINGLE-CONTACT TYPE CONTROL

1. WITH TRANSMITTER CONTROL CONTACTS CLOSED, THERE SHOULD BE SOME CLEARANCE BETWEEN INSULATED EXTENSION OF SWINGER AND LOBE OF FEED-OUT AND VERTICAL TABULATOR BLOCKING LEVERS.

   TO CHECK - ROTATE MAIN SHAFT UNTIL FEED-OUT AND VERTICAL TABULATOR BLOCKING LEVERS ARE UNOPERATED (RESTING ON TOP OF SLIDES).

   TO ADJUST - POSITION THE CONTACT ASSEMBLY WITH ITS MOUNTING SCREWS LOOSENED.

2. WITH TRANSMITTER CONTROL CONTACTS OPENED BY FEED-OUT BLOCKING LEVER, CLEARANCE BETWEEN SWITCH CONTACTS SHALL BE

   MIN 0.010 INCH ---------- MAX 0.020 INCH

   TO CHECK - SELECT FEED-OUT CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FEED-OUT SLIDE IS IN ITS EXTREME FORWARD POSITION AND FEED-OUT BLOCKING LEVER DROPS BEHIND ITS SLIDE TO OPEN CONTACTS

   TO ADJUST - REFINE REQUIREMENT NO. 1 ABOVE.

3. WITH CONTROL CONTACTS OPENED BY VERTICAL TABULATOR BLOCKING LEVER, CLEARANCE BETWEEN SWITCH CONTACTS SHOULD BE

   MIN 0.010 INCH ---------- MAX 0.020 INCH

   TO CHECK - SELECT VERTICAL TABULATOR CODE COMBINATION. ROTATE MAIN SHAFT UNTIL VERTICAL TAB SLIDE IS IN ITS EXTREME FORWARD POSITION AND VERTICAL TABULATOR BLOCKING LEVER DROPS BEHIND ITS SLIDE

   TO ADJUST - REFINE REQUIREMENT NO. 1. ABOVE.

3.31 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

(I) PAGE FEED-OUT INDEX PLATE POSITION

REQUIREMENT --- PLACE AN INDEX PLATE IN THE NUMBERED SLOTS ON DISK CORRESPONDING TO LENGTH OF PAGE FORM TO BE USED. SYNCHRONIZE PAGE FEED-OUT WITH A FORM BY POSITIONING FORM SO THAT TYPING UNIT WILL PRINT IN FIRST TYPING LINE OF THE FORM. WHEN TYPING UNIT IS IN STOP POSITION, TOP OF RIBBON GUIDE SHOULD ALIGN WITH BOTTOM OF PRINTING LINE.

TO POSITION --- WITH PAGE FORM IN DESIRED POSITION, DISENGAGE PAGE FEED-OUT GEAR FROM ITS IDLER GEAR. ROTATE FEED-OUT GEAR UNTIL NOTCH IN INDEXING DISK ALIGNS WITH POINTER ON SIDE OF PRINTER, RE-ENGAGE GEARS.

SWITCH CONTACTS (TRANSMITTER CONTROL ONLY)

REQUIREMENTS --- FOR TRANSFER TYPE CONTROL SWITCH

1. WITH NORMALLY CLOSED (LOWER) CONTACTS CLOSED, LIFT SWINGER FREE OF MATING CONTACT. IT SHALL REQUIRE A MINIMUM OF 30 GRAMS TO MOVE LOWER CONTACT SPRING AWAY FROM ITS STIFFENER.

   TO ADJUST - FORM THE LOWER CONTACT SPRING BY BENDING.

2. WITH LOWER CONTACT CLOSED

   MIN 30 GRAMS ---------- MAX 45 GRAMS.

   TO MOVE SWINGER FROM ITS MATING CONTACTS.

   TO ADJUST - FORM THE SWINGER BY BENDING.

3. WITH LOWER CONTACT CLOSED

   (a) GAP BETWEEN UPPER CONTACT AND MATING CONTACT OF SWINGER

   MIN 0.008 INCH ---------- MAX 0.015 INCH

   TO ADJUST - POSITION STIFFENER OF NORMALLY CLOSED CONTACT.

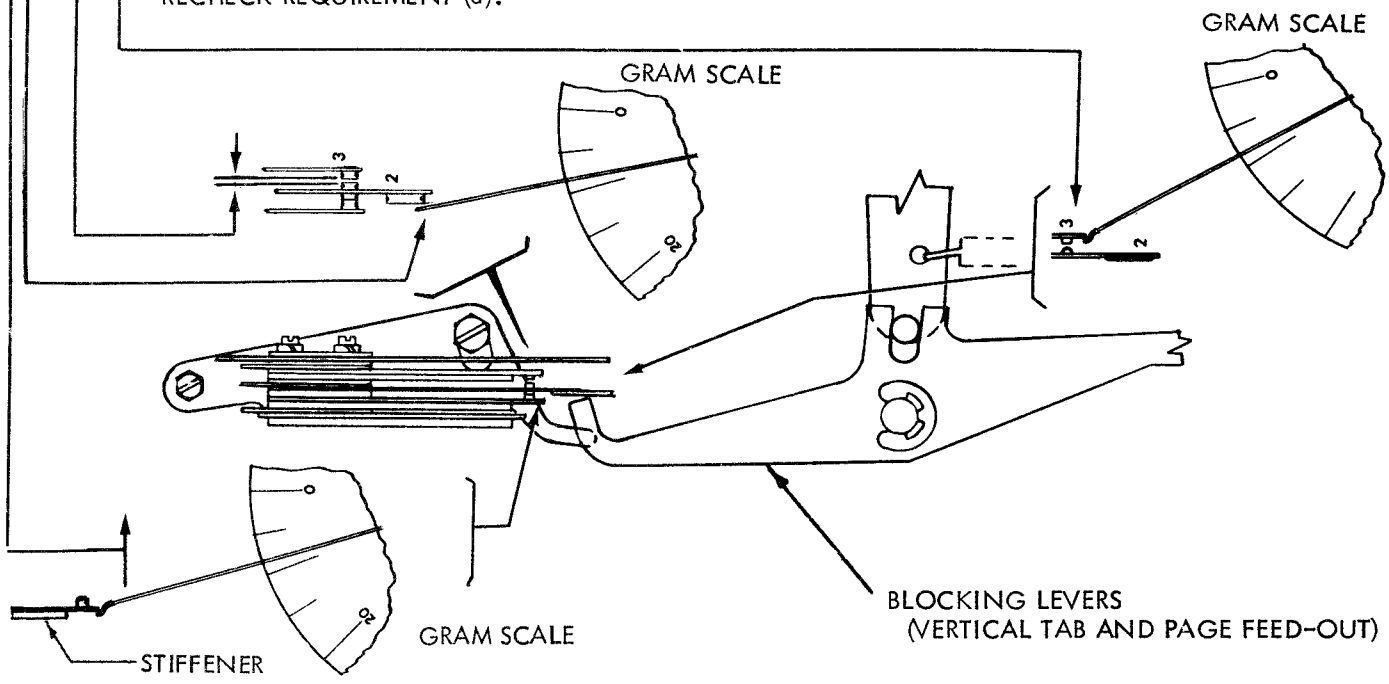
   (b) WITH A GAP OF 0.008 TO 0.015 INCH, IT SHALL REQUIRE

   MIN 25 GRAMS ---------- MAX 35 GRAMS

   TO PULL UPPER CONTACT AWAY FROM ITS STIFFENER

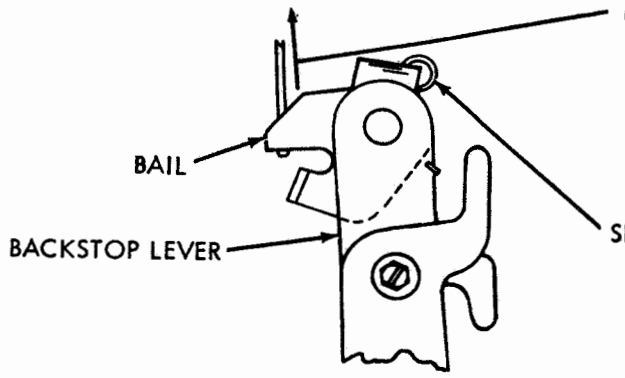
   TO ADJUST - FORM THE UPPER CONTACT SPRING BY BENDING.

   RECHECK REQUIREMENT (a).



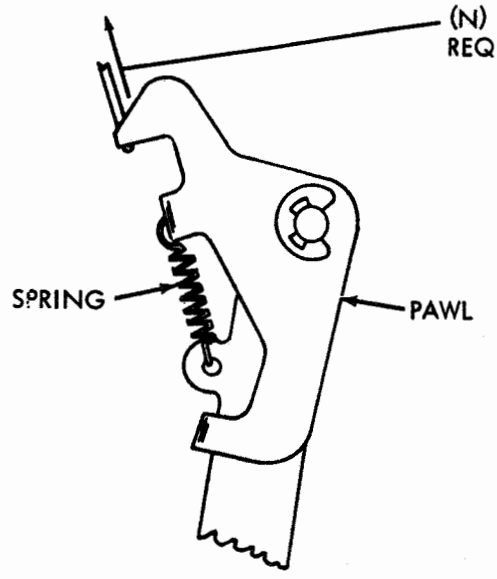
3. 32 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

(L) LINE FEED CLUTCH TRIP LEVER SPRING
SEE PAR. 2.20



(M) TABULATOR BAIL SPRING
REQUIREMENT
MIN. 3 OZS.
MAX. 8 OZS.
TO PULL BAIL AWAY FROM ITS BACKSTOP LEVER.

(O) STUNT BOX SWITCH SPRING
SEE PAR. 2.66



(N) FORM-OUT PAWL SPRING
REQUIREMENT
MIN. 3 OZS.
MAX. 8 OZS.
TO PULL THE PAWL AWAY FROM ITS BACKSTOP LEVER.

3. 33 Universal Contact (Selector) Mechanism

(A) CONTACT MOUNTING BRACKET

REQUIREMENT

THE DRIVE ARM LINKAGE SHOULD BE VERTICALLY ALIGNED TO PREVENT BINDS.

TO ADJUST

POSITION THE CONTACT MOUNTING BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

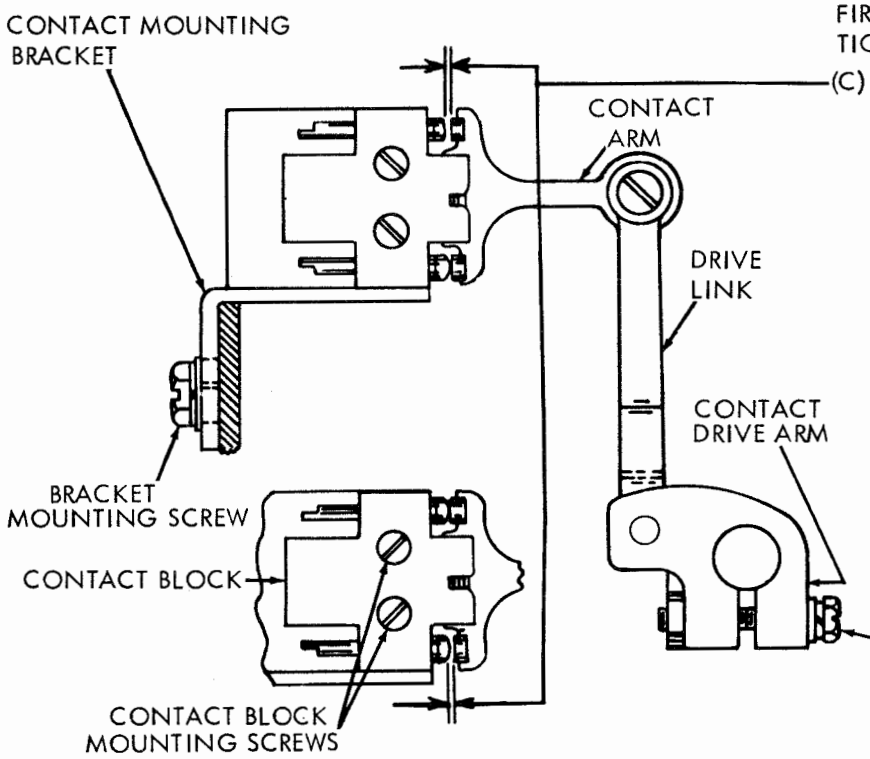
(B) CONTACT BLOCK

REQUIREMENT

THE CONTACT FACES SHOULD BE IN A VERTICAL STRAIGHT LINE

TO ADJUST

LOOSEN THE TWO CONTACT MOUNTING SCREWS. PRESS THE CONTACT BLOCK TOWARD THE REAR OF THE TYPING UNIT FIRMLY AGAINST THE SCREWS AND TIGHTEN THE SCREWS.



(C) CONTACT DRIVE ARM POSITION

REQUIREMENT

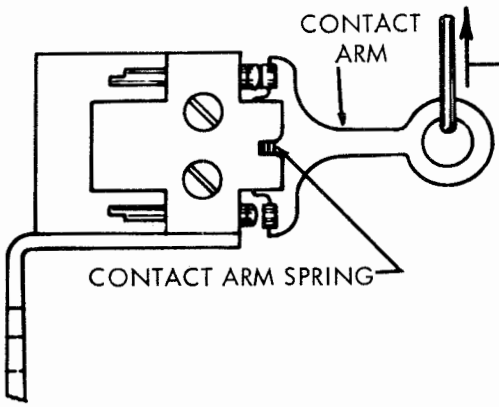
THE CONTACTS SHOULD OPEN EQUALLY WITHIN 0.010 INCH

TO CHECK

ROTATE CODE BAR CLUTCH UNTIL IT IS DISENGAGED AND LATCHED IN STOP POSITION. MEASURE GAP BETWEEN UPPER CONTACTS. TRIP CODE BAR CLUTCH AND ROTATE 180 DEGREES OR UNTIL LOWER CONTACT GAP REACHES ITS MAXIMUM OPENING. MEASURE THE GAP.

TO ADJUST

POSITION CONTACT DRIVE ARM WITH ITS CLAMP SCREW LOOSENED.



(D) CONTACT ARM SPRING

REQUIREMENT

WITH SHOULDER SCREW WHICH CONNECTS CONTACT ARM TO DRIVE LINK REMOVED AND SPRING SCALE APPLIED VERTICALLY UPWARD OR DOWNWARD

MIN. 2 OZS.---MAX. 5 OZS.

TO OPEN EITHER CONTACT.

3. 34 Universal Contact (Stunt Box) Mechanism

NOTE: 1. THESE ADJUSTMENTS SHOULD BE MADE WITH THE CONTACT BRACKET ASSEMBLY REMOVED
NOTE: 2. IF CONTACT SCREWS ARE DISTURBED TO OBTAIN A REQUIREMENT, THEY MUST BE RETIGHTENED AND ALL PRECEDING REQUIREMENTS RECHECKED.

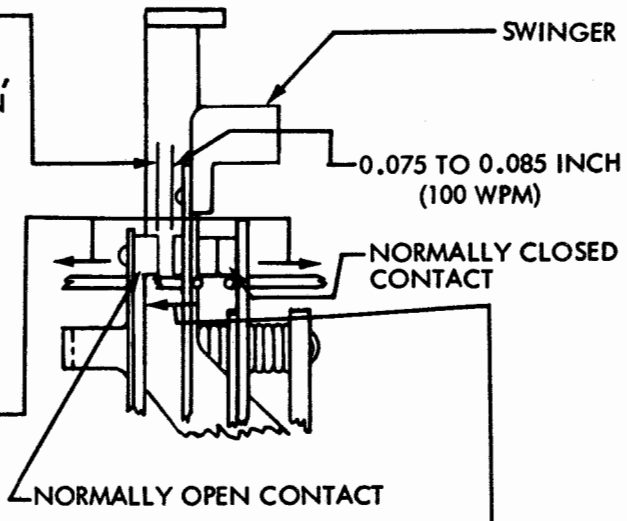
CAUTION: IF IT IS NECESSARY TO INCREASE THE CONTACT SPRING TENSIONS, IT IS ADVISABLE TO REMOVE THE CONTACT SPRING TO INCREASE ITS CURVATURE. AVOID DAMAGE TO CONTACT SPRINGS WHEN ADJUSTING THE STIFFENERS IN THE ASSEMBLY.

(A) CONTACT

1. REQUIREMENT
   CONTACT SPRINGS AND STIFFENERS MOUNTED VERTICALLY AND CONTACT POINTS IN ALIGNMENT (GAUGE BY EYE).
   TO ADJUST
   POSITION THE CONTACT SPRINGS AND STIFFENERS WITH ASSEMBLY SCREWS LOOSENED.
2. REQUIREMENT
   STIFFENERS SHOULD BE PARALLEL WITH THE CONTACT BRACKETS.
   TO ADJUST
   FORM THE STIFFENER
3. REQUIREMENT
   CONTACT SPRINGS SHOULD REST AGAINST THEIR STIFFENERS THROUGHOUT THEIR WIDTH.
   TO ADJUST
   BEND TOP FORMED SECTION OF STIFFENER. IF NECESSARY, BEND CONTACT SPRINGS.

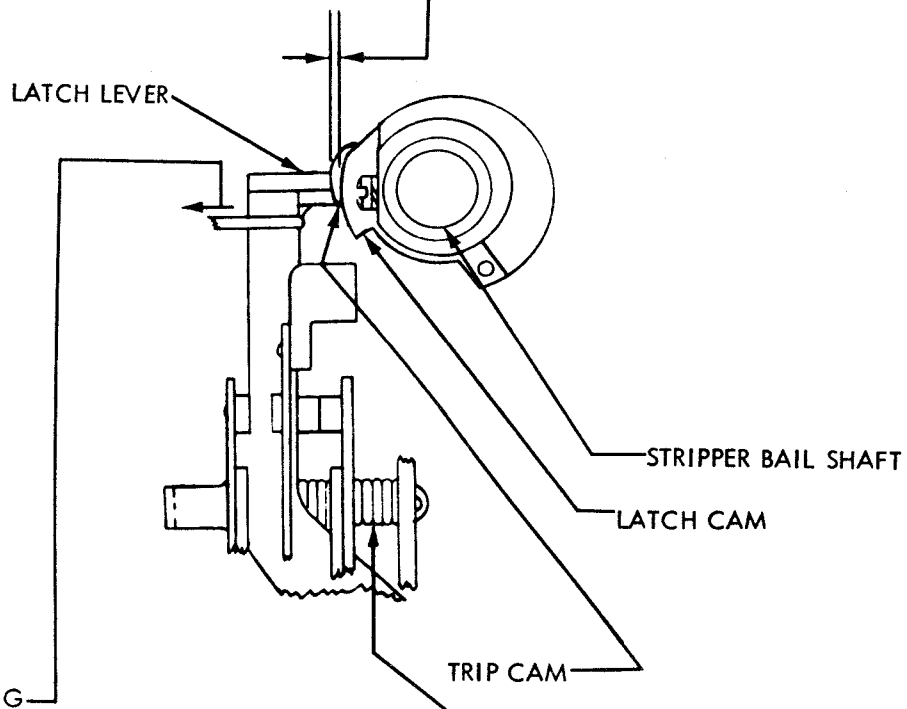
(B) NORMALLY OPEN CONTACT GAP
REQUIREMENT
WITH THE NORMALLY CLOSED CONTACTS CLOSED, THE NORMALLY OPEN CONTACT SHOULD BE OPEN
MIN 0.020 INCH
MAX 0.025 INCH
TO ADJUST
BEND STIFFENER

(C) CONTACT SPRING (TWO SPRINGS)
REQUIREMENT
MIN 2 OZ
MAX 3 OZ
TO MOVE EACH CONTACT SPRING AWAY FROM ITS STIFFENER, WITH THE SWINGER HELD AWAY
TO ADJUST
REMOVE AND FORM THE SPRING.



(D) SWINGER SPRING
REQUIREMENT
MIN 4 OZ
MAX 6 OZ
TO MOVE SWINGER FROM NORMALLY CLOSED CONTACT.
TO ADJUST
BEND SWINGER

3. 35 **Universal Contact (Stunt Box) Mechanism (continued)**



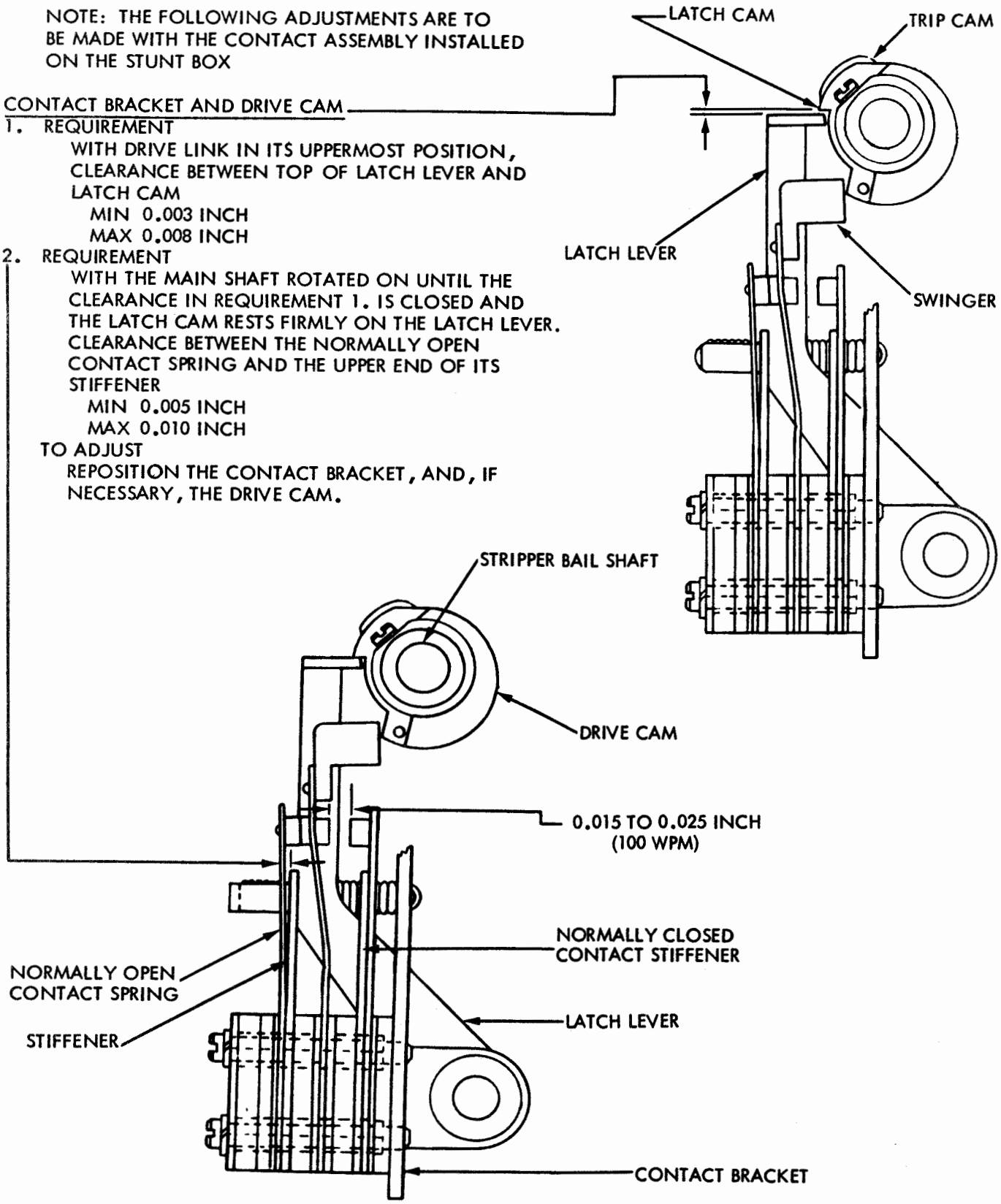
3. 36 Universal Contact (Stunt Box) Mechanism (continued)

NOTE: THE FOLLOWING ADJUSTMENTS ARE TO BE MADE WITH THE CONTACT ASSEMBLY INSTALLED ON THE STUNT BOX

CONTACT BRACKET AND DRIVE CAM

1. REQUIREMENT
   WITH DRIVE LINK IN ITS UPPERMOST POSITION, CLEARANCE BETWEEN TOP OF LATCH LEVER AND LATCH CAM
   MIN 0.003 INCH
   MAX 0.008 INCH
2. REQUIREMENT
   WITH THE MAIN SHAFT ROTATED ON UNTIL THE CLEARANCE IN REQUIREMENT 1. IS CLOSED AND THE LATCH CAM RESTS FIRMLY ON THE LATCH LEVER. CLEARANCE BETWEEN THE NORMALLY OPEN CONTACT SPRING AND THE UPPER END OF ITS STIFFENER
   MIN 0.005 INCH
   MAX 0.010 INCH

   TO ADJUST
   REPOSITION THE CONTACT BRACKET, AND, IF NECESSARY, THE DRIVE CAM.



3.37 Universal Contact (Stunt Box) Mechanism (continued)

GENERAL APPLICATION TIMING - FINAL (USING DXD OR SIMILAR EQUIPMENT)

CONTACT BRACKET AND DRIVE CAM POSITION
REQUIREMENT
THE NORMALLY OPEN UNIVERSAL CONTACTS SHOULD CLOSE WITHIN ±5 MILLISECONDS OF THE CLOSURE OF THE NORMALLY OPEN STUNT BOX CONTACT.
TO ADJUST
REFINE THE DRIVE CAM (AND, IF NECESSARY, THE BRACKET) ADJUSTMENT BY ROTATING THE DRIVE CAM WITHIN THE SPECIFIED LIMITS.

TRIP CAM
REQUIREMENT
THE NORMALLY OPEN UNIVERSAL CONTACTS SHOULD OPEN WITHIN -5 +0 MILLISECONDS OF THE OPENING OF THE NORMALLY OPEN STUNT BOX CONTACT.
TO ADJUST
REFINE THE TRIP CAM ADJUSTMENT BY ROTATING THE TRIP CAM ON ITS SHAFT WITHIN THE SPECIFIED LIMITS.

SPECIAL ADJUSTMENTS (FOR 100 WPM)

NOTE: TO PREVENT EXCESSIVE FLEXING OF THE SWINGER, THE NORMALLY OPEN CONTACT SPRING STIFFENER MUST BE BENT TO HOLD THE SPRING AWAY FROM THE SWINGER WITH THE DRIVE LINK IN ITS UPPERMOST POSITION.

NORMALLY OPEN CONTACT GAP (100 WPM)
REQUIREMENT
WITH THE SWINGER RESTING AGAINST THE NORMALLY CLOSED CONTACT THE GAP SHOULD BE
MIN 0.075 INCH
MAX 0.085 INCH
TO ADJUST
BEND THE CONTACT SPRING STIFFENER.

CONTACT BRACKET AND DRIVE CAM POSITION (100 WPM)
REQUIREMENT
WITH THE LATCH CAM IN ITS FULLY LATCHED POSITION
MIN 0.015 INCH
MAX 0.025 INCH
BETWEEN THE NORMALLY OPEN CONTACT SPRING AND ITS STIFFENER.
TO ADJUST
POSITION THE DRIVE CAM AND/OR, IF NECESSARY, THE CONTACT BRACKET.

SPECIAL APPLICATION TIMING (USING DXD OR SIMILAR EQUIPMENT)

A. NORMALLY CLOSED CONTACTS (100 WPM FOR 83B2 SWITCHING SYSTEM)

1. THE NORMALLY CLOSED CONTACTS SHOULD CLOSE WITHIN 50 TO 80 DIVISIONS AFTER THE START OF THE STOP PULSE.
2. THE NORMALLY OPEN CONTACT SHOULD CLOSE PRIOR TO THE END OF NO. 3 PULSE.
3. THE NORMALLY OPEN CONTACTS SHOULD REMAIN CLOSED FOR AT LEAST 238 DIVISIONS (100 WPM DXD WITH 742 SCALE DIVISIONS).

NOTE: THE RELATION BETWEEN THE NORMALLY CLOSED UNIVERSAL CONTACT MARKING PULSE AND THE STOP IMPULSE OF THE RECEIVED SIGNAL VARIES WITH THE RANGE SCALE SETTING OF THE UNIT.

3. 38 Universal Contact (Stunt Box) Mechanism (continued)

B. NORMALLY CLOSED CONTACTS (100 WPM USED IN DELTA AND UNITED AIRLINES SYSTEM)

WHEN THE NORMALLY OPEN CONTACTS ARE NOT USED, THE NORMALLY CLOSED CONTACTS SHOULD REMAIN OPEN FOR 53.88 MILLISECONDS OR 400 + 15 DXD DIVISIONS.

TO ADJUST

REFINE THE DRIVE CAM, TRIP CAM AND, IF NECESSARY, THE BRACKET POSITIONS TO MEET THE TIMING REQUIREMENTS.

NOTE 1:
THE NORMAL 0.003 TO 0.008 INCH OVERTRAVEL OF THE LATCH CAM OVER THE LATCH LEVER WITH THE DRIVE LINK IN ITS UPPERMOST POSITION MUST BE INCREASED IN ORDER TO DECREASE NORMALLY CLOSED CONTACT GAP IN THE LATCHED POSITION OF THE LATCH CAM. THIS PREVENTS THE CONTACT FROM BOUNCING WHEN THE LATCH LEVER IS RELEASED.

NOTE 2:
WITH THE LATCH CAM IN ITS LATCHED POSITION, THERE SHOULD BE 0.015 INCH MINIMUM CONTACT GAP BETWEEN THE NORMALLY CLOSED CONTACTS.

GENERAL REQUIREMENTS AFTER TIMING ADJUSTMENTS

NOTE: IT IS VERY IMPORTANT THAT THE FOLLOWING REQUIREMENTS BE MET

A. WITH THE DRIVE LINK IN ITS UPPERMOST POSITION:

1. THE LATCH CAM SHALL NOT OVERTRAVEL OR HANG UP ON THE SWINGER INSULATOR.

2. THERE SHALL BE AT LEAST 0.003 INCH CLEARANCE BETWEEN THE LATCHING SURFACE OF THE LATCH CAM AND THE LATCHING SURFACE OF THE LATCH LEVER.

3. THE CLEARANCE BETWEEN THE NORMALLY OPEN CONTACT SPRING AND ITS STIFFENER SHALL NOT EXCEED 0.025 INCH.

B. WITH THE DRIVE LINK IN ITS LOWERMOST POSITION:

1. THE TOP OF THE SWINGER INSULATOR MUST CLEAR THE CUT-OUT SECTION OF THE LATCH CAM.

2. THERE SHALL BE AT LEAST 0.003 INCH CLEARANCE BETWEEN THE FRONT EDGE OF THE LATCH LEVER LATCHING SURFACE AND THE HIGH PART OF THE LATCH CAM.

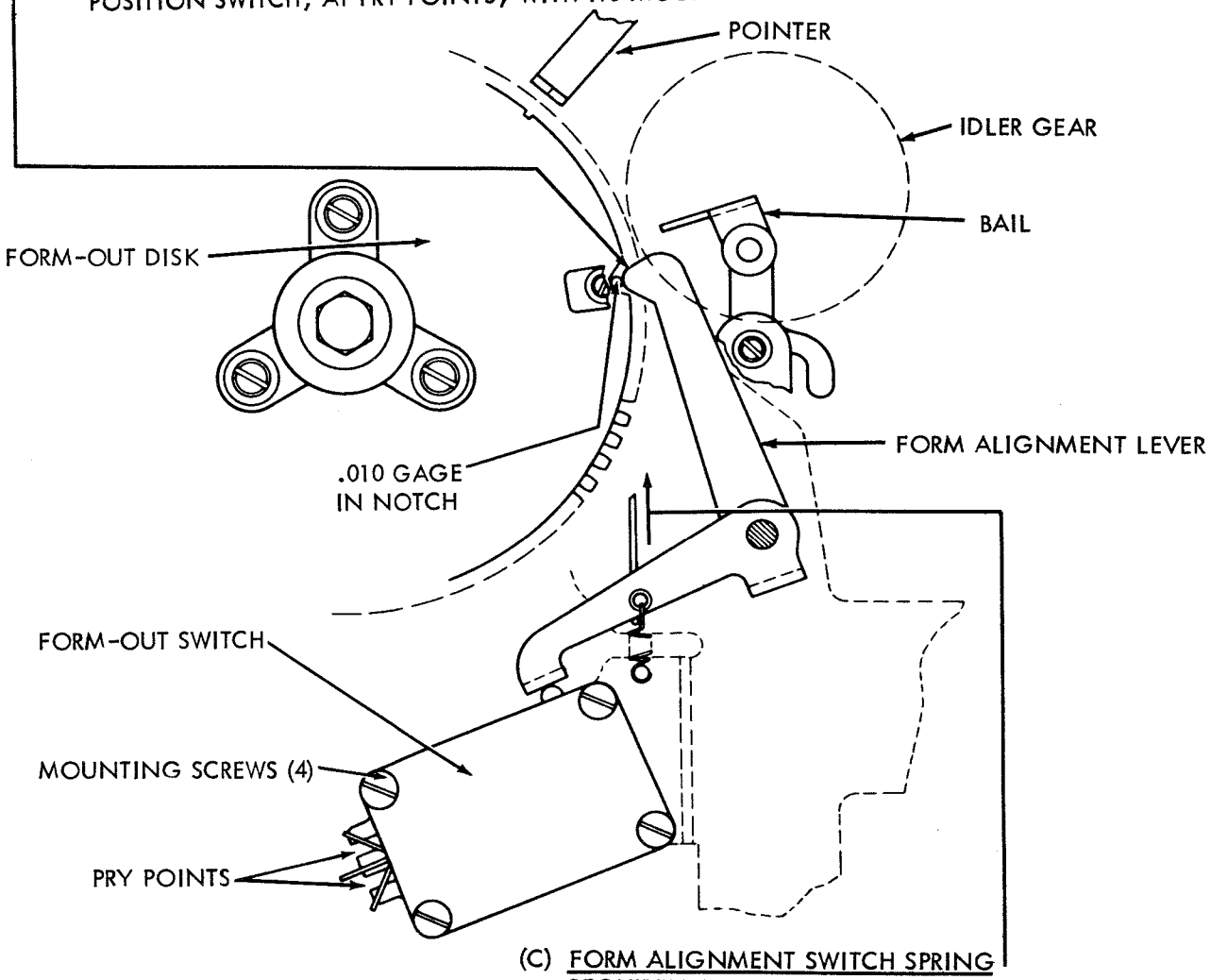
C. WITH THE LATCH CAM IN ITS LATCHED POSITION, THERE SHALL BE AT LEAST 0.005 INCH CLEARANCE BETWEEN THE NORMALLY OPEN CONTACT SPRING AND THE UPPER END OF ITS STIFFENER.

D. THE LATCHING SURFACE OF THE LATCH LEVER SHALL COVER THE WIDTH OF THE TRIP CAM AND LATCH CAM.

3. 39 Form Alignment Switch Mechanism

(A) FORM FEED-OUT ADJUSTMENT
SEE PARS. 3.11 AND 3.12

(B) FORM ALIGNMENT SWITCH
(REMOVE POWER FROM SWITCH)
REQUIREMENT
SWITCH SHOULD BE OPERATED WHEN SWITCH LEVER IS WITHIN 0.010 INCH OF BOTTOM OF NOTCH IN FORM-OUT DISK AND SHOULD NOT BE OPERATED WHEN LEVER IS ON OUTER EDGE OF DISK.
TO CHECK
1. ROTATE DISK UNTIL LEVER FALLS INTO NOTCH. PLACE 0.010 INCH FEELER GAGE BENEATH LEVER. LIFT LEVER AND ALLOW IT TO COME TO REST ON GAGE. SWITCH SHOULD BE OPERATED.
2. ROTATE DISK UNTIL LEVER RESTS ON OUTER EDGE. SWITCH SHOULD NOT BE OPERATED.
TO ADJUST
POSITION SWITCH, AT PRY POINTS, WITH ITS MOUNTING SCREWS LOOSENED.



LEFT VIEW

(C) FORM ALIGNMENT SWITCH SPRING
REQUIREMENT
MIN. 6 OZS.
MAX. 8 OZS.
TO MOVE THE LEVER FROM OUTER-EDGE OF DISK.
TO CHECK
SWITCH OPERATING LEVER ON OUTER EDGE OF DISK (NOT IN NOTCH AS SHOWN)

3.40 DC Magnet Operated Print Suppression Mechanism

(D) ARMATURE EXTENSION OVERTRAVEL

REQUIREMENT

1. OVERTRAVEL OF ARMATURE EXTENSION SHOULD BE MIN. 0.010 INCH --MAX. 0.015 INCH
2. THERE SHOULD BE NO CLEARANCE BETWEEN BLOCKING SURFACE OF ARMATURE EXTENSION AND BOTTOM SURFACE OF SUPPRESSION ARM.

TO CHECK (REQUIREMENTS 1 AND 2.)

SUPPRESSION ARM BLOCKED BY BLOCKING BAIL EXTENSION. HOLD ARMATURE AGAINST POLE FACE OF MAGNET.

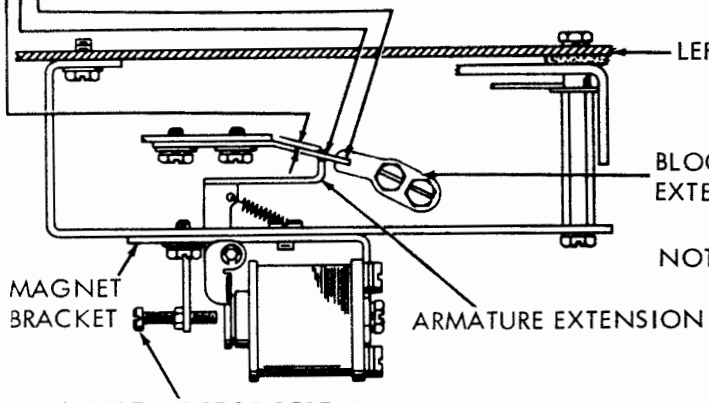
3. ROTATE BLOCKING BAIL EXTENSION. IT SHOULD SLIDE UNDER THE SUPPRESSION ARM WITH NO PERCEPTIBLE CLEARANCE.

TO CHECK (REQUIREMENT 3.)

SUPPRESSION ARM BLOCKED BY ARMATURE EXTENSION

TO ADJUST

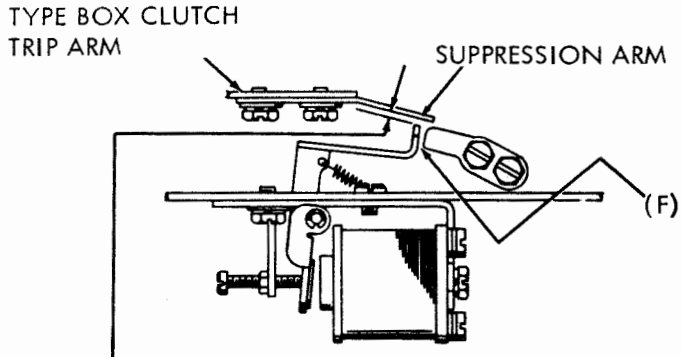
PIVOT MAGNET BRACKET, UP OR DOWN AND TO THE FRONT OR REAR, WITH ITS MOUNTING SCREWS LOOSENED, USING AN ECCENTRIC ADJUSTING TOOL. PRESS ARMATURE EXTENSION FIRMLY AGAINST BOTTOM OF SUPPRESSION ARM. IF NECESSARY, ADD OR REMOVE SHIMS BETWEEN SUPPRESSION ARM AND TYPE BOX CLUTCH TRIP ARM. RECHECK (B) AND (C).



NOTE: KEEP POLE FACE FREE OF OIL AND GREASE.

(A) TYPE BOX CLUTCH TRIP LEVER

SEE PAR. 2.22 AND REFINE REQUIREMENT TO MIN. 0.040 INCH---MAX. 0.055 INCH



(B) TYPE BOX CLUTCH SUPPRESSION ARM

SEE PAR. 3.14

(C) BLOCKING BAIL

SEE PAR. 3.14

(F) BLOCKING BAIL EXTENSION CLEARANCE

REQUIREMENT

THERE SHOULD BE NO INTERFERENCE BETWEEN ARMATURE EXTENSION AND BLOCKING BAIL EXTENSION.

TO ADJUST

REFINE ABOVE ADJUSTMENTS AS NECESSARY.

(E) ARMATURE EXTENSION CLEARANCE

REQUIREMENT

CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SUPPRESSION ARM SHOULD BE MIN. 0.012 INCH---MAX. 0.030 INCH

TO CHECK

ARMATURE RELEASED

TO ADJUST

POSITION ARMATURE WITH ARMATURE STOP SCREW. RECHECK (D).

3.41 Print Suppression and Offline Stunt Shift Control Mechanism

(A) SUPPRESSION CODE BAR POSITION

REQUIREMENT

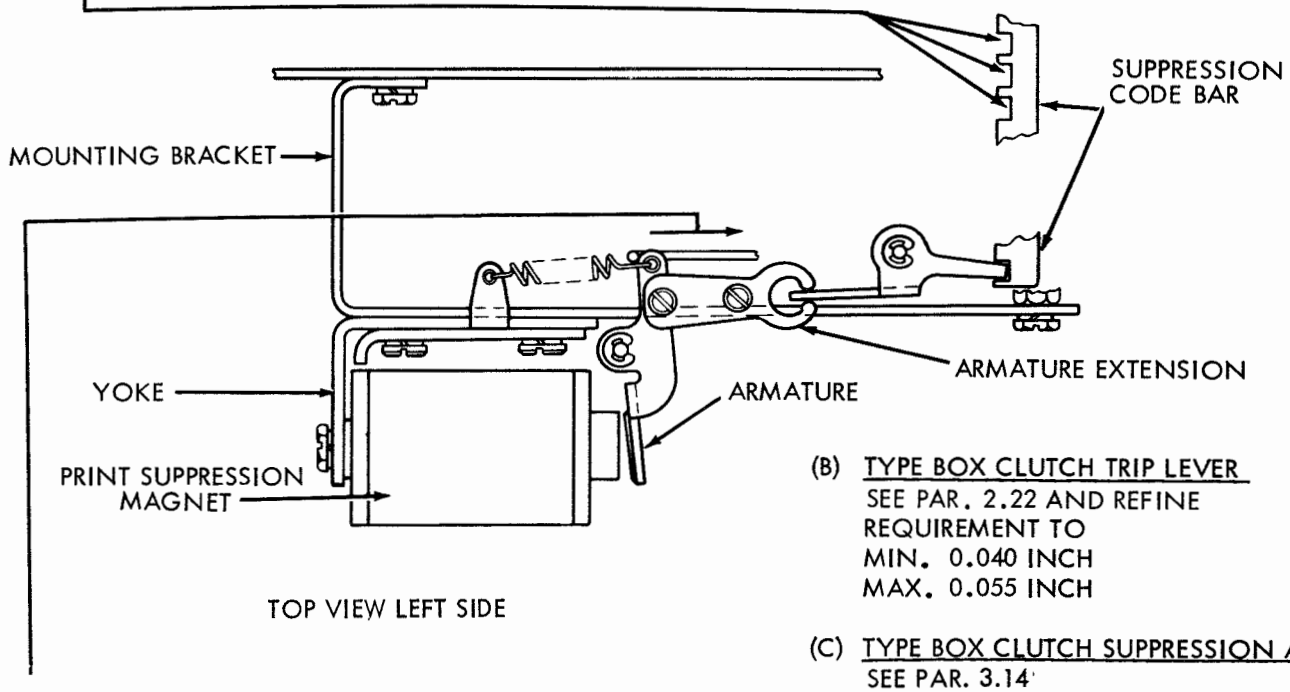
NOTCHES IN SUPPRESSION CODE BAR SHOULD ALIGN WITH NOTCHES IN OTHER CODE BARS. VIEW FROM REAR OF UNIT ABOVE STUNT BOX. GAGE BY EYE.

TO CHECK

ENERGIZE THE PRINT SUPPRESSION MAGNET AND PLACE ALL CODE BARS IN SPACING POSITION.

TO ADJUST

OPERATE MAGNET ARMATURE MANUALLY OR ELECTRICALLY. PLACE ALL CODE BARS IN SPACING POSITION. PIVOT THE ARMATURE EXTENSION IN ITS ELONGATED MOUNTING HOLE WITH THE MOUNTING SCREWS LOOSENED.



TOP VIEW LEFT SIDE

(B) TYPE BOX CLUTCH TRIP LEVER

SEE PAR. 2.22 AND REFINE REQUIREMENT TO

MIN. 0.040 INCH

MAX. 0.055 INCH

(C) TYPE BOX CLUTCH SUPPRESSION ARM

SEE PAR. 3.14

(D) BLOCKING BAIL

SEE PAR. 3.14

(E) PRINT SUPPRESSION MAGNET ARMATURE RETURN SPRING

REQUIREMENT

MIN. 7 OZS.

MAX. 10-1/2 OZS.

TO START MAGNET ARMATURE MOVING TOWARD CORE

TO CHECK

PRINT SUPPRESSION MAGNET UNOPERATED

NOTE: KEEP POLE FACE FREE OF OIL AND GREASE.

3.42 Letters - Figures Codebar Shift Magnet Mechanism

(A) SHIFT MAGNET YOKE

REQUIREMENT

CLEARANCE BETWEEN ARMATURE AND END OF HEELPIECE SHOULD BE MIN. SOME --- MAX. 0.003 INCH

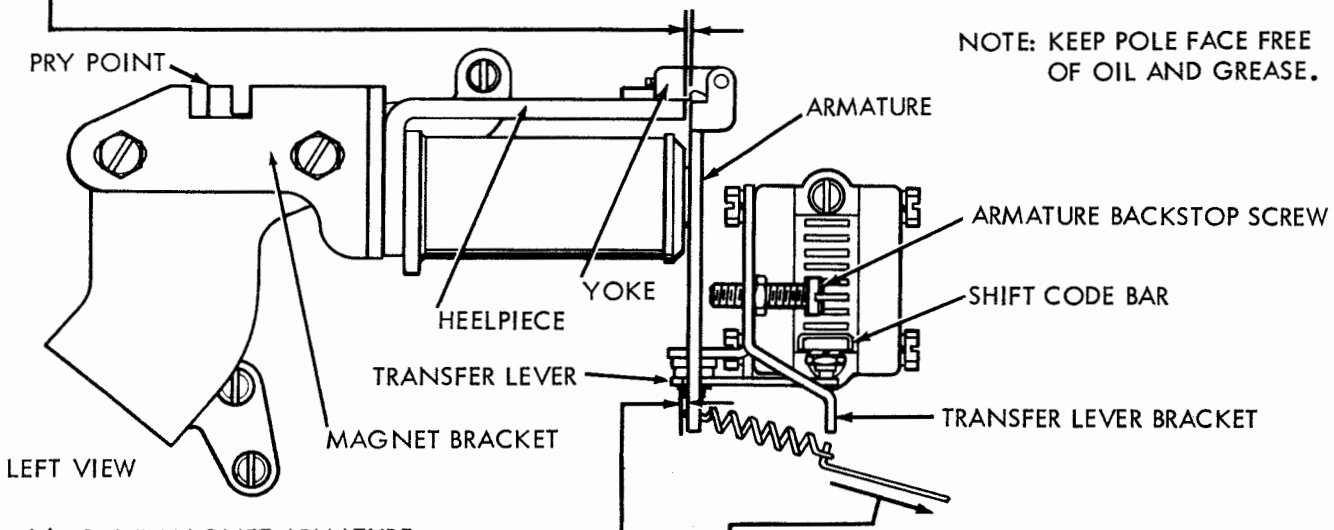
TO CHECK

MAGNET ARMATURE HELD AGAINST CORE. CHECK CLEARANCE ACROSS END OF HEELPIECE

TO ADJUST

POSITION YOKE WITH ITS CLAMP SCREW LOOSENED.

NOTE: KEEP POLE FACE FREE OF OIL AND GREASE.



(B) SHIFT MAGNET ARMATURE

REQUIREMENT

1. CLEARANCE BETWEEN ARMATURE AND TRANSFER LEVER SHOULD BE MIN. SOME --- MAX. 0.005 INCH

TO CHECK

MAGNET ARMATURE ATTRACTED. SHIFT CODE BAR IN FULL MARKING POSITION.

TO ADJUST

POSITION MAGNET FORWARD OR BACKWARD WITH BRACKET MOUNTING SCREWS LOOSENED.

2. CLEARANCE BETWEEN ARMATURE AND TRANSFER LEVER SHOULD BE MIN. SOME --- MAX. 0.010 INCH

TO CHECK

MAGNET ARMATURE UNOPERATED. SHIFT CODE BAR IN FULL SPACING POSITION.

TO ADJUST

POSITION ARMATURE BACKSTOP SCREW WITH LOCK NUT LOOSENED.

(C) SHIFT MAGNET ARMATURE RETURN SPRING

REQUIREMENT

MIN. 1 OZ. --- MAX. 3 OZS.

TO PULL SPRING TO INSTALLED LENGTH

(D) SHIFT CODE BAR RETURN SPRING

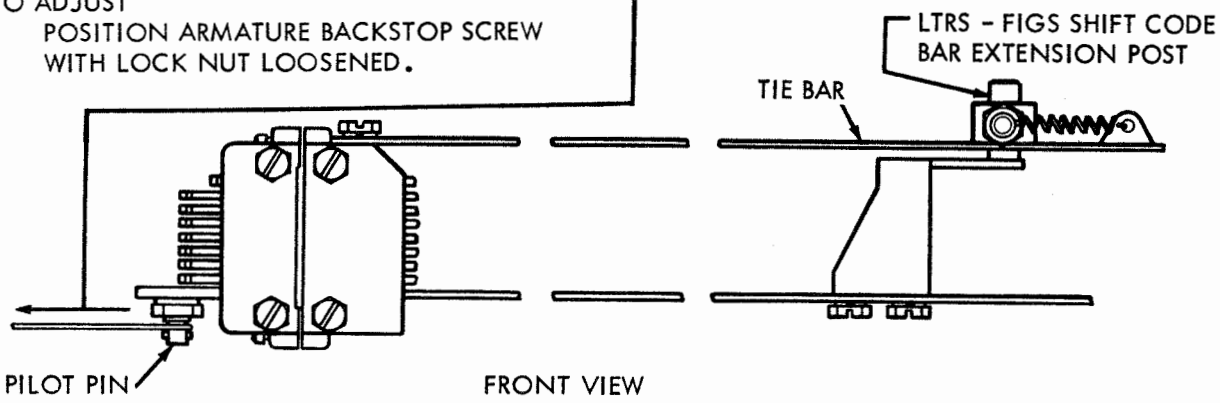
REQUIREMENT

MIN. 3 OZS. --- MAX. 7 OZS.

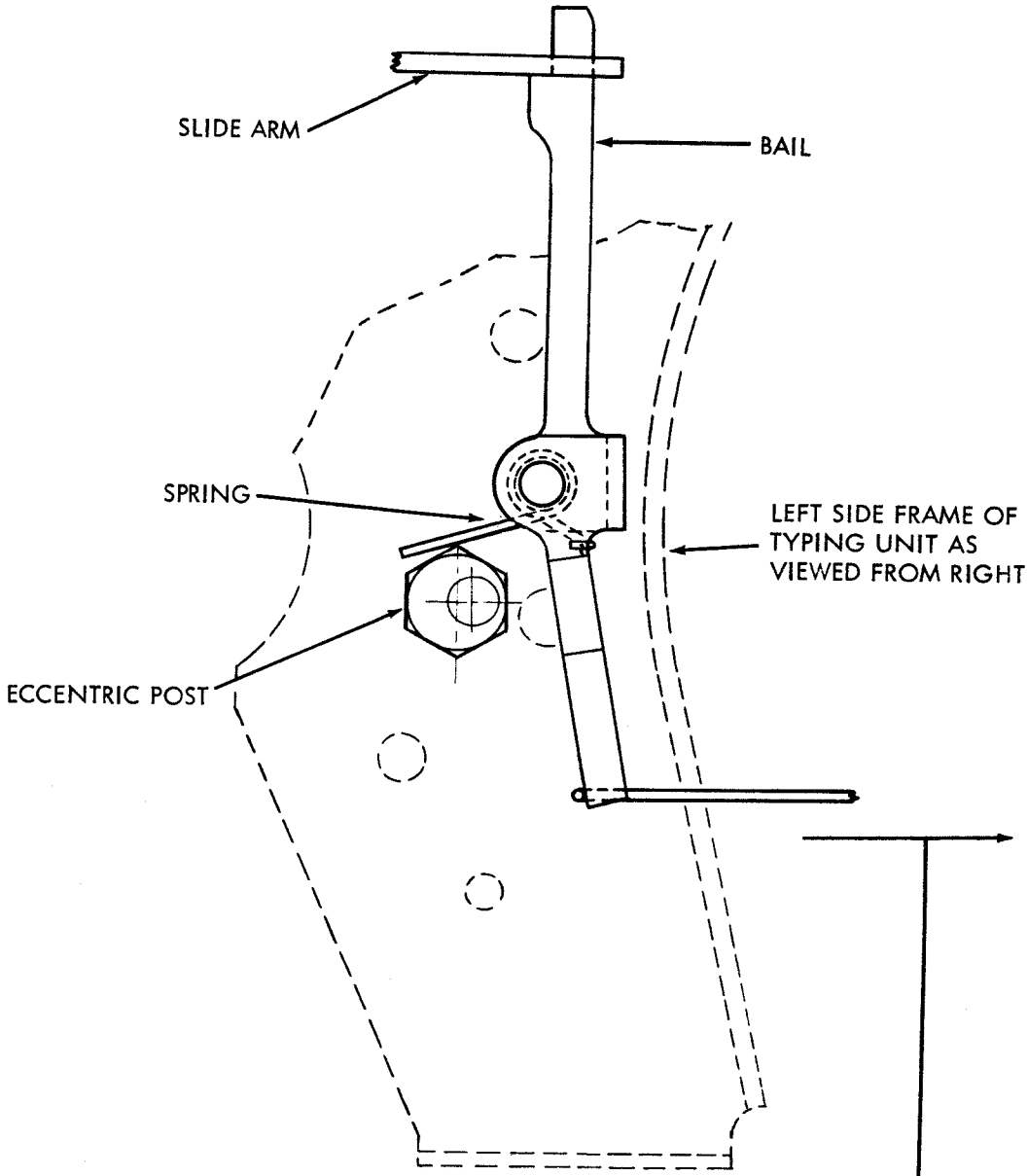
TO START CODE BAR MOVING

TO CHECK

TRIP TYPE BOX CLUTCH, ROTATE MAIN SHAFT UNTIL PRINTING TRACK IS IN LOWEST POSITION



3.43 Form Feed-Out Mechanism



FORM FEED-OUT TORSION SPRING

REQUIREMENT *
MIN. 1/8 OZ.
MAX. 1-1/4 OZ.
TO START BAIL MOVING TOWARDS REAR OF UNIT.

TO CHECK
DISENGAGE LINE FEED CLUTCH TRIP LEVER.

*RECEIVE ONLY UNITS
MIN 2 OZS
MAX 6 OZS

3.44 Two Color Ribbon Mechanism

SEE NOTES 1 THROUGH 5 ON FOLLOWING PAGE

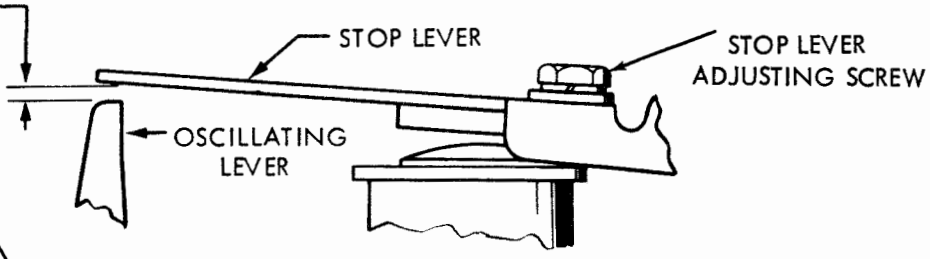
(A) RIBBON MAGNET HINGE BRACKET (LEFT AND RIGHT) (PRELIMINARY)
REQUIREMENT --- MAGNET ENERGIZED OR IN ATTRACTED POSITION, ARMATURE ON POLE PIECE. CLEARANCE BETWEEN ARMATURE AND POLE PIECE SHOULD BE NOT MORE THAN .005 INCH.
TO ADJUST --- POSITION HINGE BRACKET WITH MOUNTING SCREWS LOOSENED.

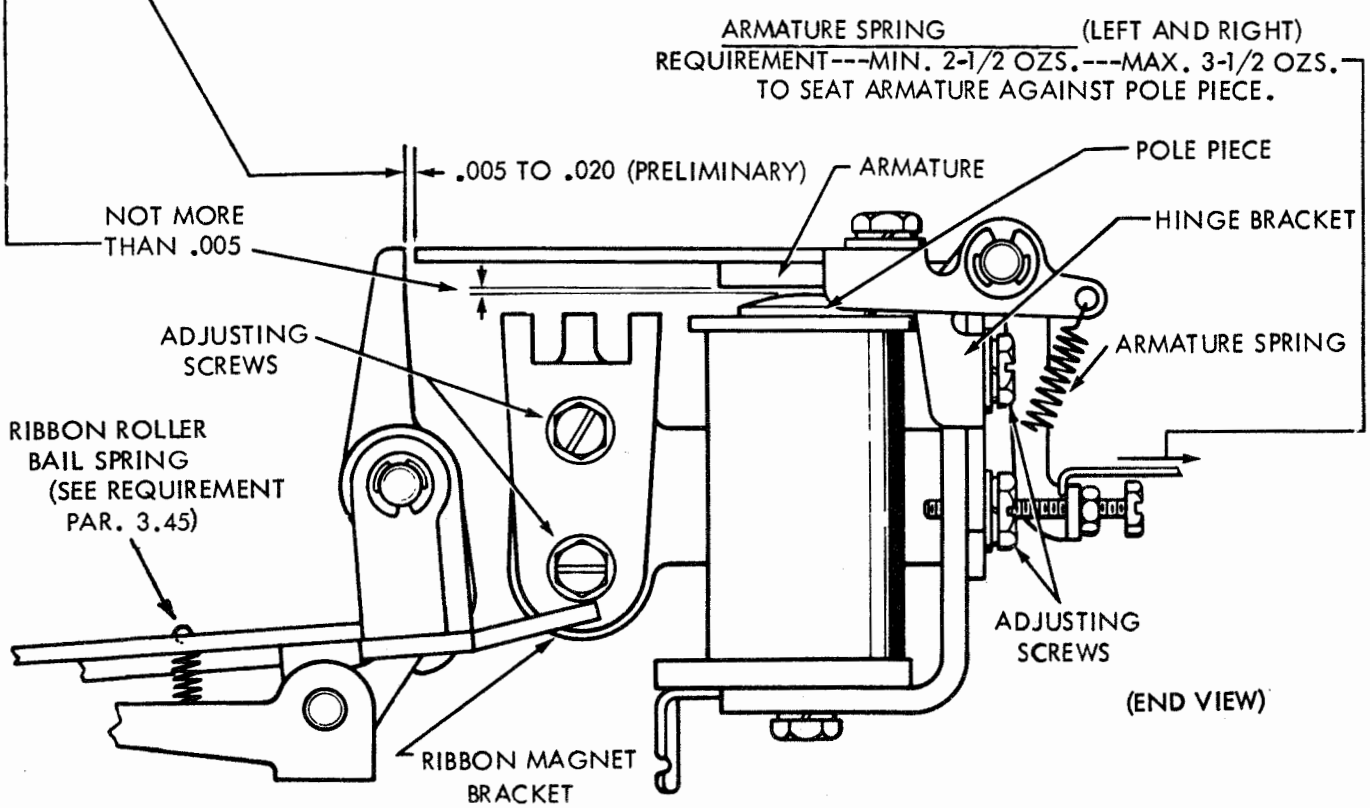
(B) RIBBON MAGNET BRACKET (LEFT AND RIGHT) (PRELIMINARY)
REQUIREMENT --- ADJUSTING SCREW IN LOWEST POSITION, ALL CLUTCHES DISENGAGED, POSITION RIBBON MAGNET BRACKET AS FOLLOWS:

1. HOLD MAGNET ARMATURE STOP LEVER AGAINST MAGNET CORE, LEVER SHOULD BE PARALLEL TO OSCILLATING LEVER TOP SURFACE AND ENGAGE THE OSCILLATING LEVER BY AT LEAST 1/2 OF THE STOP LEVER THICKNESS. GAUGE BY EYE.
2. STOP LEVER HELD AGAINST MAGNET CORE. CLEARANCE BETWEEN STOP LEVER AND OSCILLATING LEVER SHOULD BE: MIN. 0.005 INCH --- MAX. 0.020 INCH WITH PLAY TAKEN UP TOWARD FRONT OF UNIT.

TO ADJUST---LOOSEN AND POSITION RIBBON MAGNET BRACKET TO MEET ABOVE REQUIREMENTS.

(C) RIBBON MAGNET HINGE BRACKET (LEFT AND RIGHT) (FINAL)
REQUIREMENT --- MAGNET DE-ENERGIZED OR IN RELEASED POSITION, ROTATE MAIN SHAFT UNTIL OSCILLATING LEVER IS FULLY UNDER STOP LEVER. CLEARANCE BETWEEN OSCILLATING LEVER AND STOP LEVER SHOULD BE: MIN. 0.020 INCH --- MAX. 0.040 INCH.
TO ADJUST --- POSITION STOP LEVER ADJUSTING SCREW WITH LOCK NUT LOOSENED.

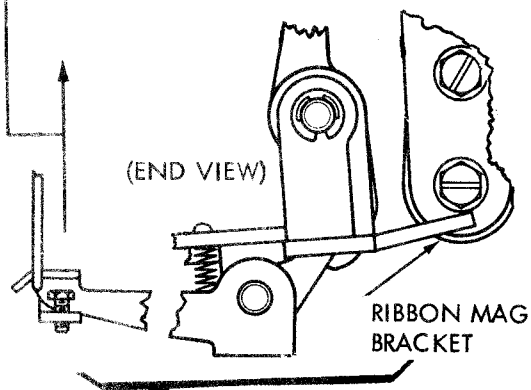




3.45 Two Color Ribbon Mechanism

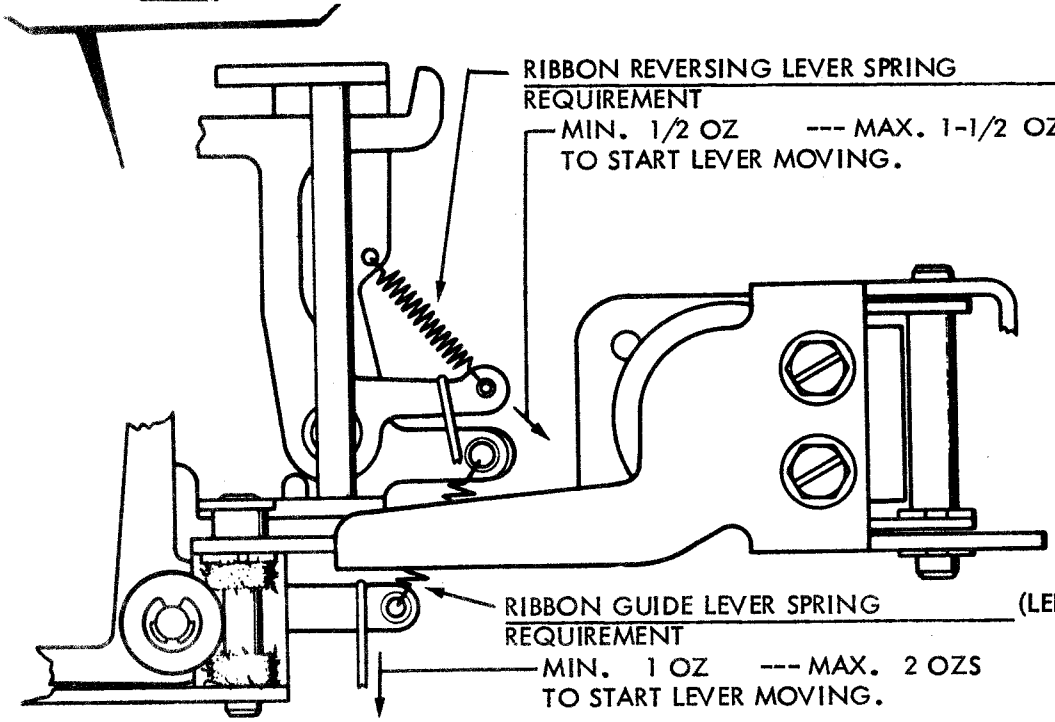
OPERATIONAL REQUIREMENT - RIBBON MAGNET BRACKET (FINAL) (SEE PRECEDING FIGURE)
PRINTER OPERATING AT 60, 75, OR 100 WPM, TEST BEING PRINTED.
REQUIREMENT
PRINTS RED WHEN RIBBON MAGNETS ARE ENERGIZED.
TO ADJUST
TURN LEFT AND RIGHT RIBBON BRACKET ROLLER BAIL ADJUSTING SCREWS 1/2 TURN UP. REFINE RIBBON AND RIBBON HINGE BRACKET ADJUSTMENTS.
REPEAT ABOVE PROCEDURE IF BLACK IS PRINTED.

RIBBON ROLLER BAIL SPRING (LEFT AND RIGHT) (SEE PRECEDING FIGURE)
REQUIREMENT
ALL CLUTCHES DISENGAGED, ADJUSTING SCREW IN LOWEST POSITION
MIN. 4 OZS. --- MAX. 6 OZS.
TO START LIFTER BAIL MOVING.



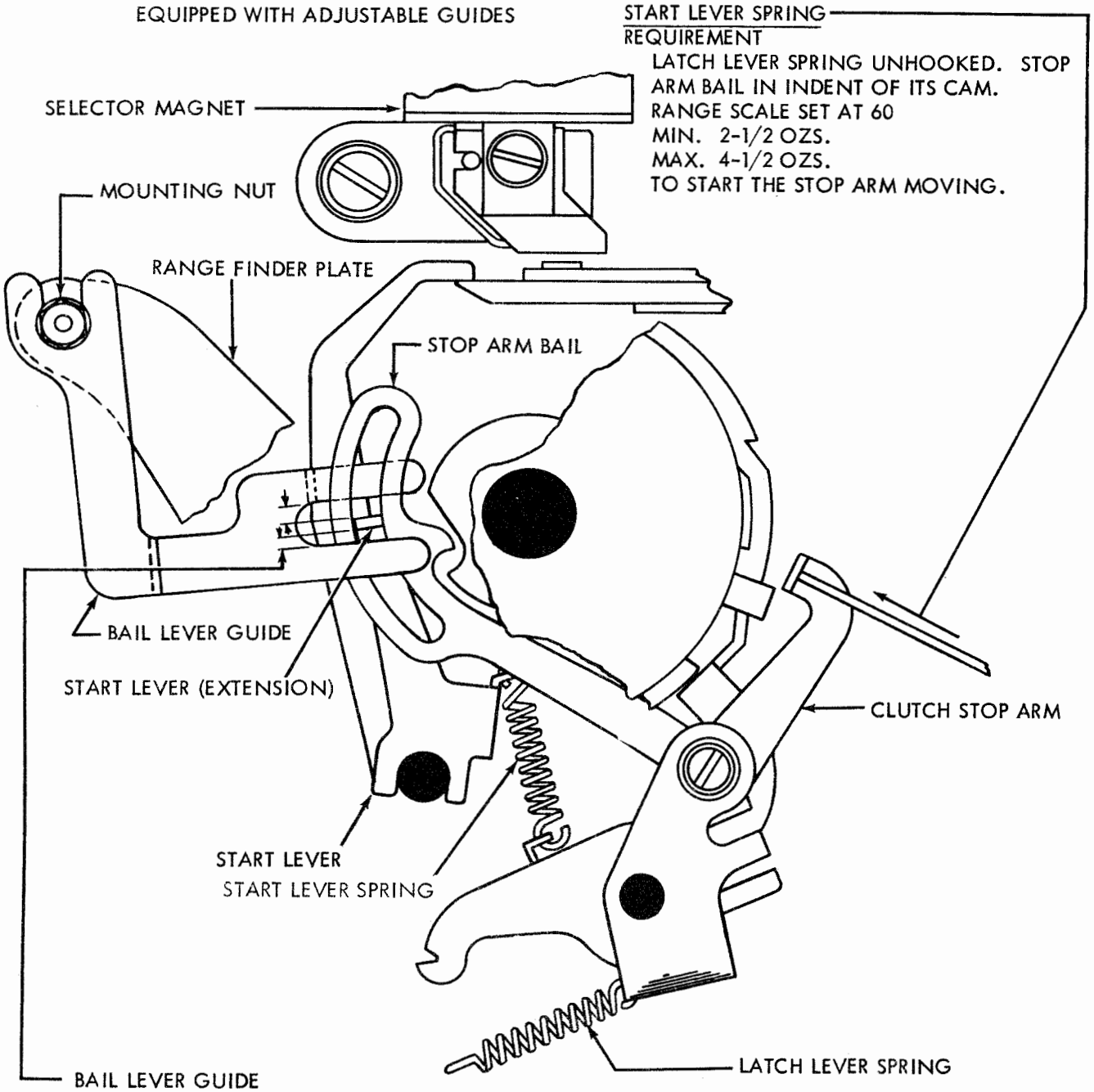
NOTES

REFER TO RELATED REQUIREMENTS
1. VERTICAL POSITION LOCK LEVER EXTENSION - PAR.2.36
2. RIBBON REVERSE SPUR GEAR - PAR. 2.52
3. RIBBON REVERSE DETENT - PAR. 2.52
4. RIBBON FEED LEVER BRACKET - PAR. 2.53
5. RIBBON RATCHET WHEEL FRICTION SPRING - PAR. 2.53 (MIN 3-1/3 OZS --- MAX 4-1/2 OZS).



4. EARLIER DESIGN MECHANISMS
BASIC UNITS
4.01 SELECTOR MECHANISM

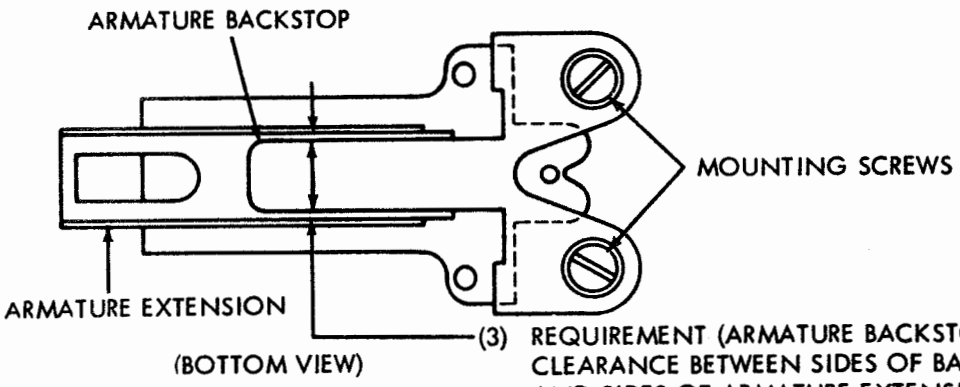
NOTE: BAIL LEVER GUIDE ADJUSTMENT APPLIES ONLY TO UNITS EQUIPPED WITH ADJUSTABLE GUIDES



(RIGHT SIDE VIEW)

4.02 Selector Mechanism

SELECTOR ARMATURE
FOR REQUIREMENTS (1) AND (2) SEE PAR. 2.01 UNDER BASIC UNITS

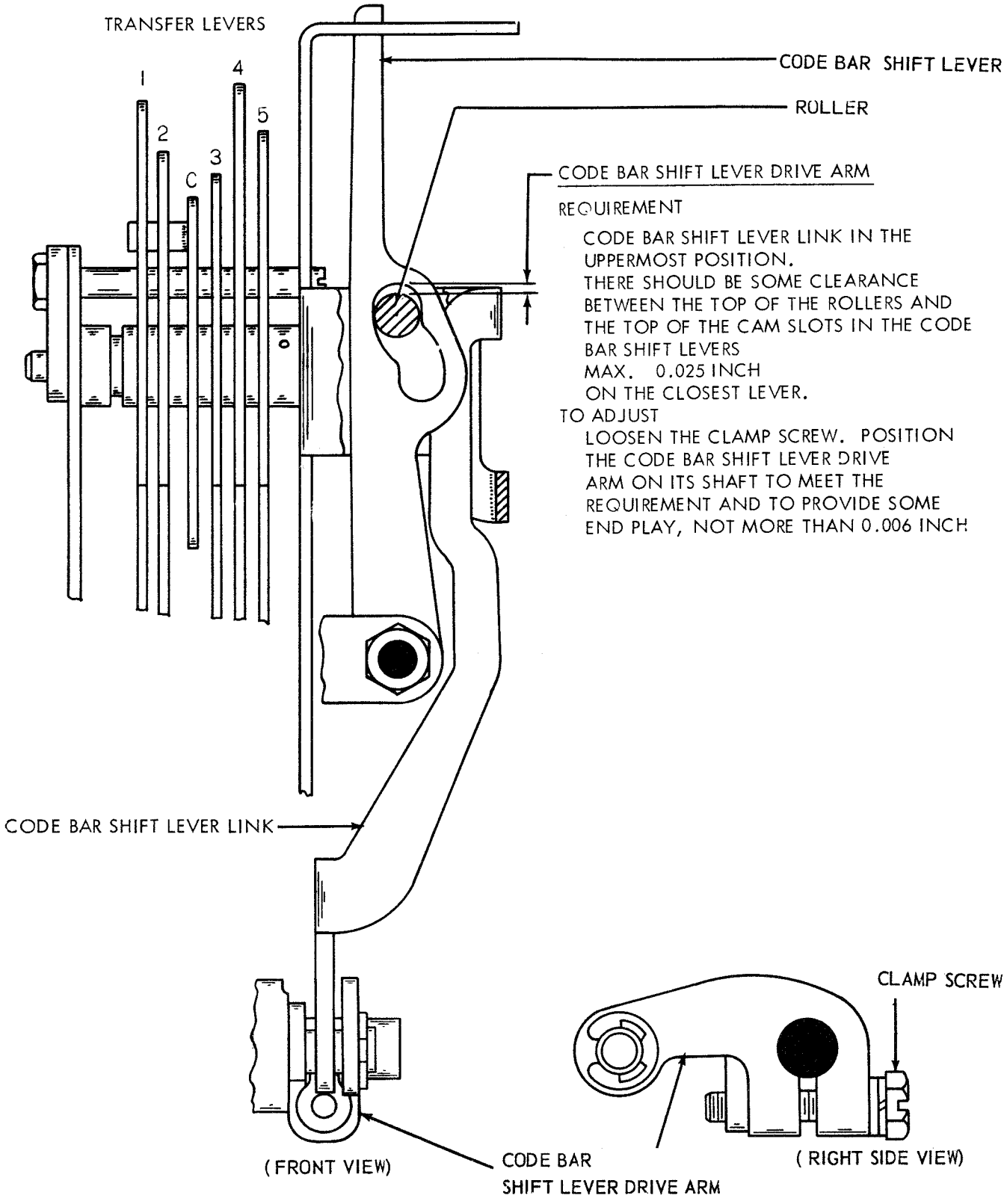


(3) REQUIREMENT (ARMATURE BACKSTOP ALIGNMENT)
CLEARANCE BETWEEN SIDES OF BACKSTOP
AND SIDES OF ARMATURE EXTENSION.
MIN. 0.010 INCH

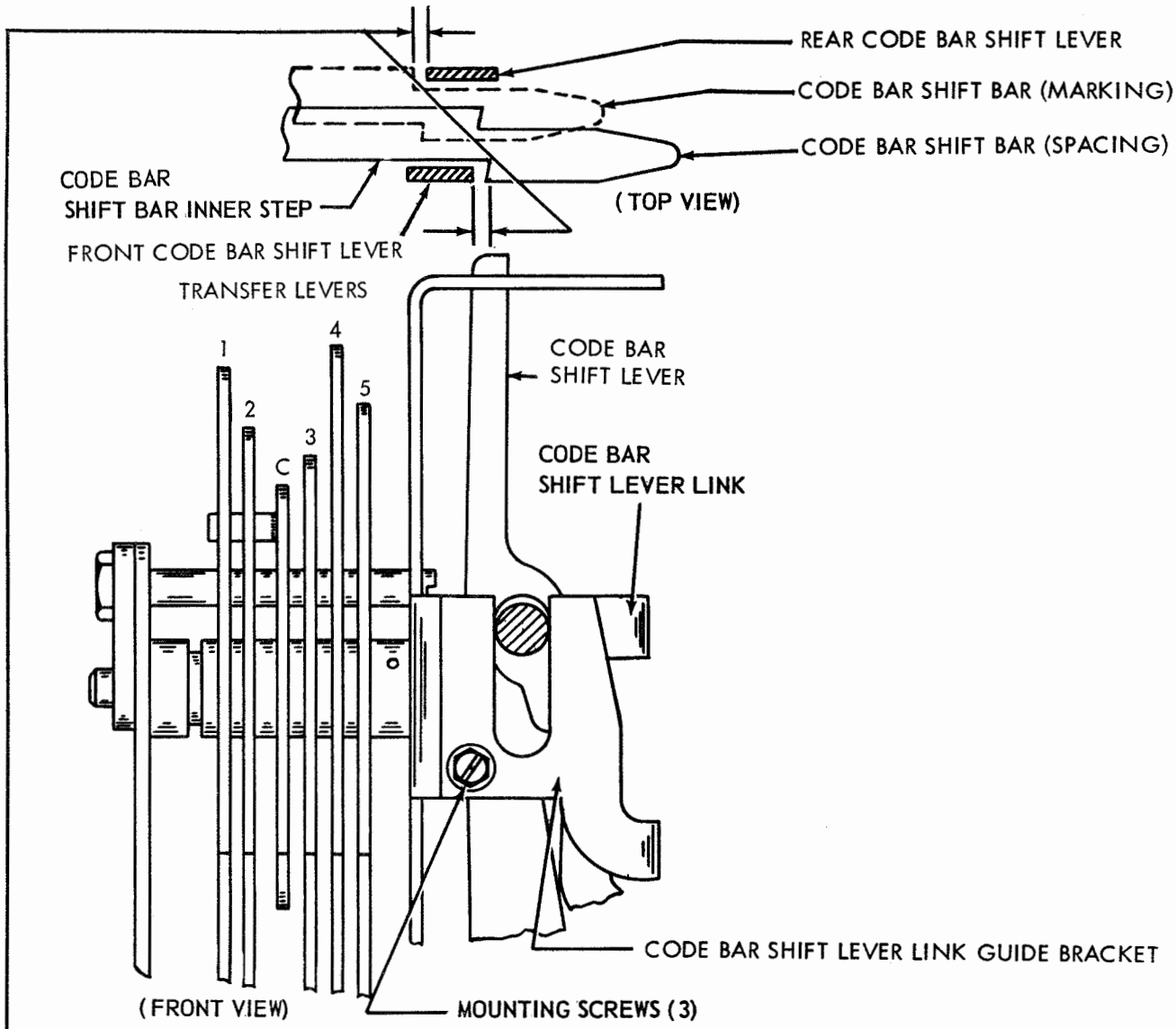
TO ADJUST

1. POSITION ARMATURE SPRING ADJUSTING NUT TO HOLD ARMATURE FIRMLY AGAINST PIVOT EDGE OF CASTING.
2. POSITION ARMATURE AND BACKSTOP WITH MOUNTING SCREWS LOOSENED.

4.03 Codebar Mechanism



4.04 Codebar Mechanism (Cont.)



CODE BAR SHIFT LEVER LINK GUIDE BRACKET

REQUIREMENT

MOTION OF FRONT AND REAR CODE BAR SHIFT LEVERS SHOULD BE EQUALIZED WITH RESPECT TO CODE BAR TRAVEL.

TO CHECK (FRONT)

SELECT BLANK COMBINATION AND ROTATE MAIN SHAFT UNTIL CODE BAR SHIFT LEVER LINK REACHES HIGHEST TRAVEL. TAKE UP PLAY FOR MAXIMUM CLEARANCE. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR

MIN. 0.002 INCH---MAX. 0.025 INCH

TO CHECK (REAR)

SELECT LETTERS COMBINATION. CHECK CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND SHOULDER OF CODE BAR SHIFT BAR IN SAME WAY.

MIN. 0.002 INCH---MAX. 0.025 INCH

TO ADJUST

POSITION CODE BAR SHIFT LEVER LINK GUIDE BRACKET BY MEANS OF MOUNTING SCREWS (3).

4.05 Main Shaft and Trip Shaft Mechanisms

(A) CLUTCH TRIP SHAFT SET COLLARS

(1) REQUIREMENT

SPACING CLUTCH LATCH LEVER SHOULD HAVE SIDE PLAY
MIN. SOME
MAX. 0.008 INCH

TO ADJUST

POSITION SPACING CLUTCH LATCH LEVER SET COLLAR.

(2) REQUIREMENT

APPROXIMATE ALIGNMENT OF RIGHT END OF STOP EXTENSIONS ON TRIP LEVER AND SHOE LEVER

TO ADJUST

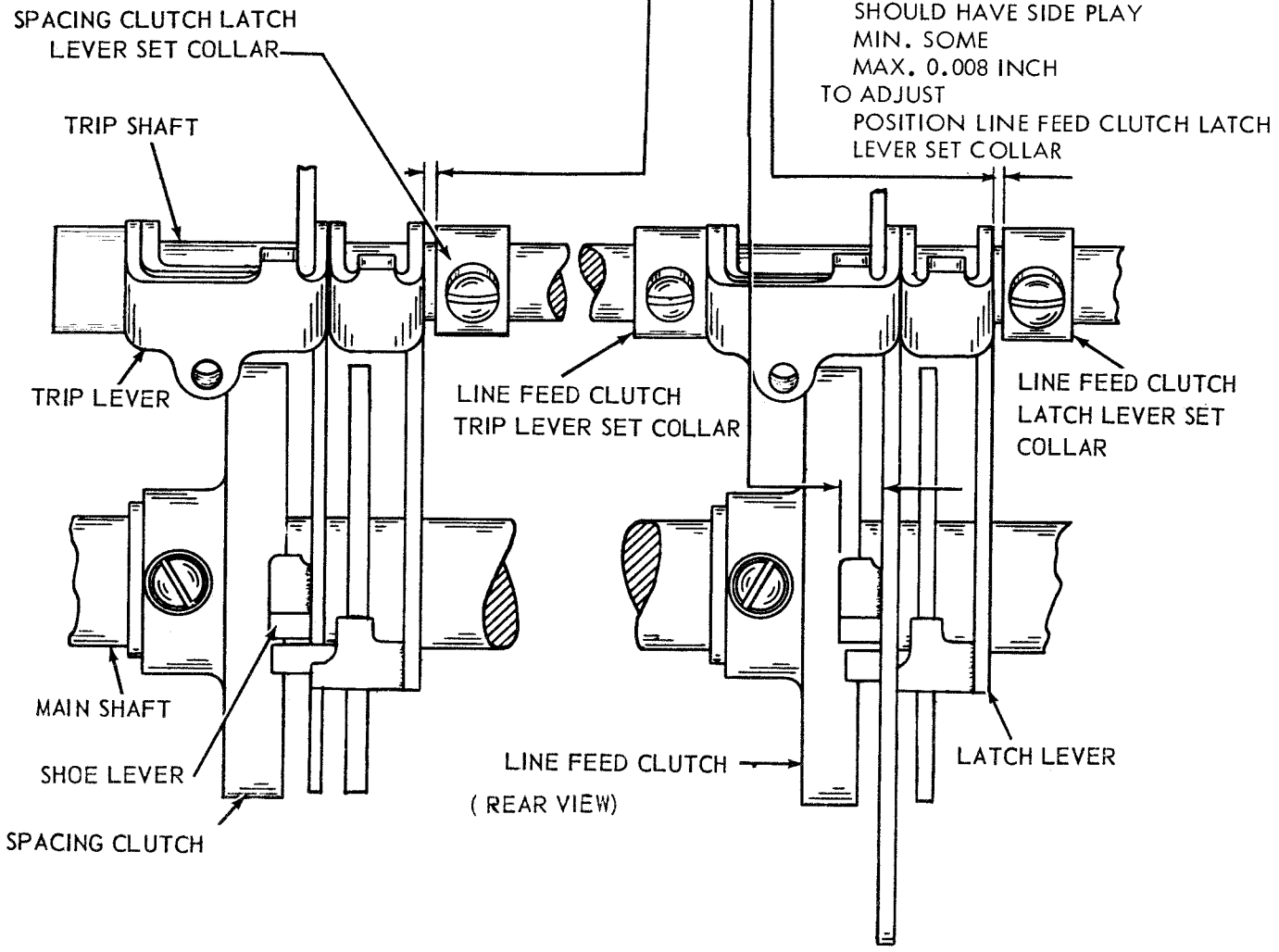
POSITION LINE FEED CLUTCH TRIP LEVER SET COLLAR.

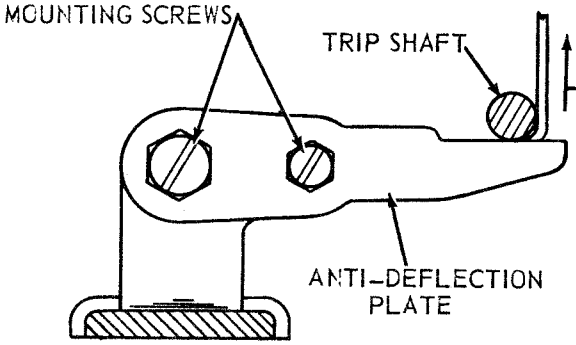
(3) REQUIREMENT

LINE FEED CLUTCH LATCH LEVER SHOULD HAVE SIDE PLAY
MIN. SOME
MAX. 0.008 INCH

TO ADJUST

POSITION LINE FEED CLUTCH LATCH LEVER SET COLLAR





(LEFT SIDE VIEW, UPSIDE DOWN)

NOTE: ANTI-DEFLECTION PLATE ADJUSTMENT APPLIES ONLY TO UNITS SO EQUIPPED.

(B)

ANTI-DEFLECTION PLATE

REQUIREMENT

WITH TYPING UNIT UPSIDE DOWN AND FUNCTION, SPACING, LINE FEED, AND TYPE BOX CLUTCHES LATCHED DISENGAGED.

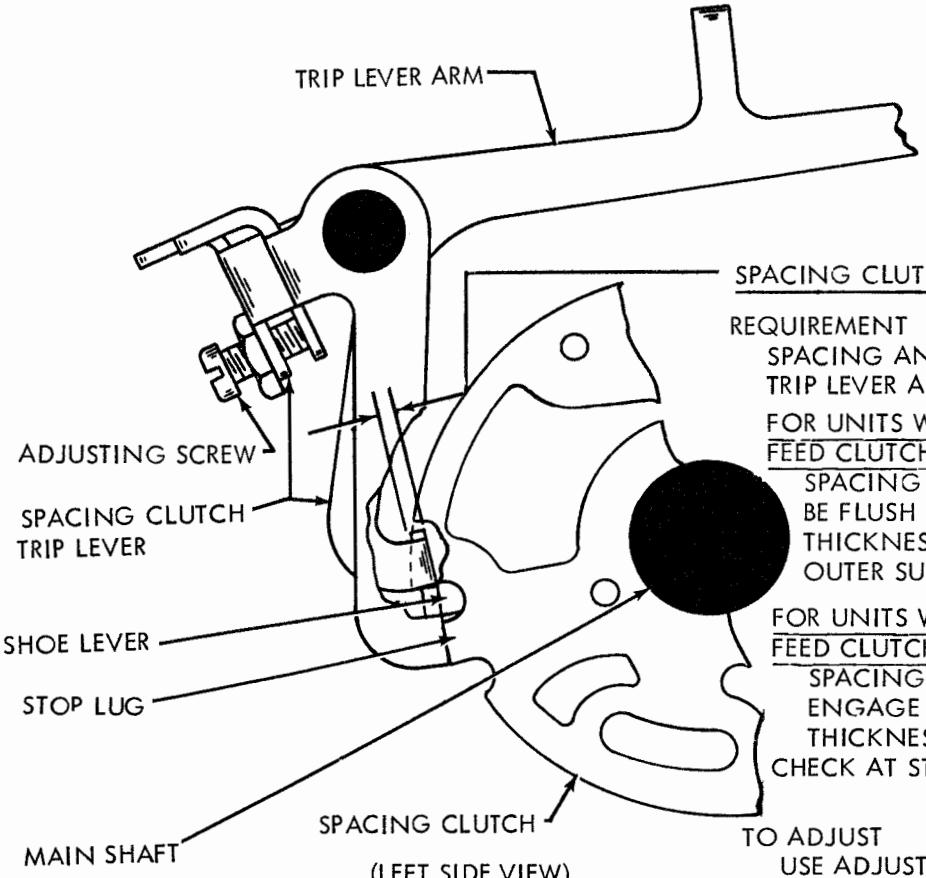
MIN. 1 LB. MAX. 5 LBS.

TO PULL TRIP SHAFT AWAY FROM ANTIDEFLECTION PLATE.

TO ADJUST

POSITION PLATE WITH MOUNTING SCREWS LOOSENED.

4.06 Main Shaft and Trip Shaft Mechanisms (Cont.)



SPACING CLUTCH TRIP LEVER

REQUIREMENT

SPACING AND TYPE BOX CLUTCHES DISENGAGED TRIP LEVER ARM IN UPWARD POSITION.

FOR UNITS WITHOUT U-SHAPED LINE FEED CLUTCH TRIP LEVER:

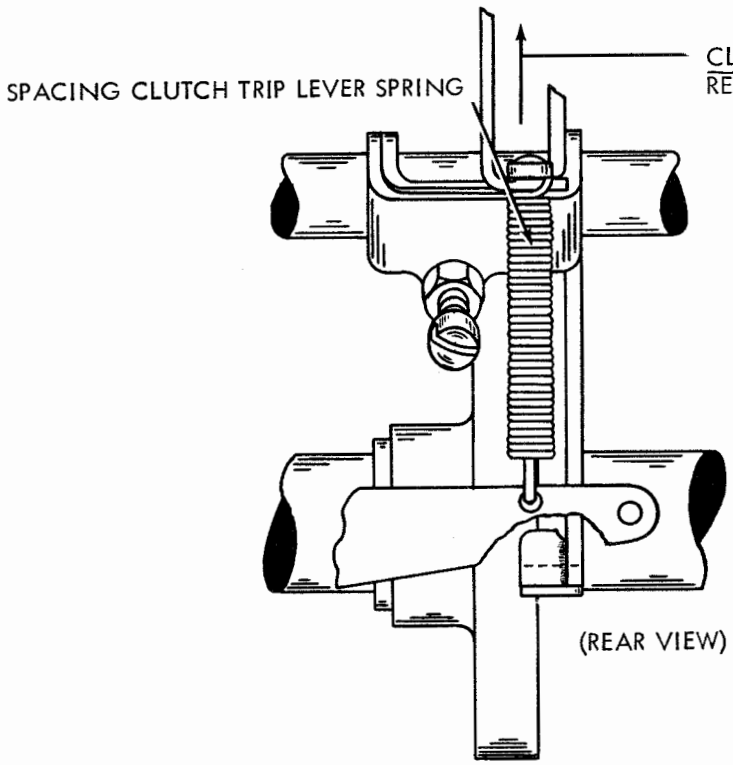
SPACING CLUTCH TRIP LEVER SHOULD BE FLUSH OR UNDERFLUSH BY 1/2 THICKNESS OF SHOE LEVER WITH OUTER SURFACE OF SHOE LEVER.

FOR UNITS WITH U-SHAPED LINE FEED CLUTCH TRIP LEVER:

SPACING CLUTCH TRIP LEVER SHOULD ENGAGE SHOE LEVER BY FULL THICKNESS OF SHOE LEVER CHECK AT STOP LUG WITH LEAST BITE.

TO ADJUST

USE ADJUSTING SCREW TO POSITION SPACING CLUTCH TRIP ARM.



CLUTCH TRIP LEVER SPRING

REQUIREMENT

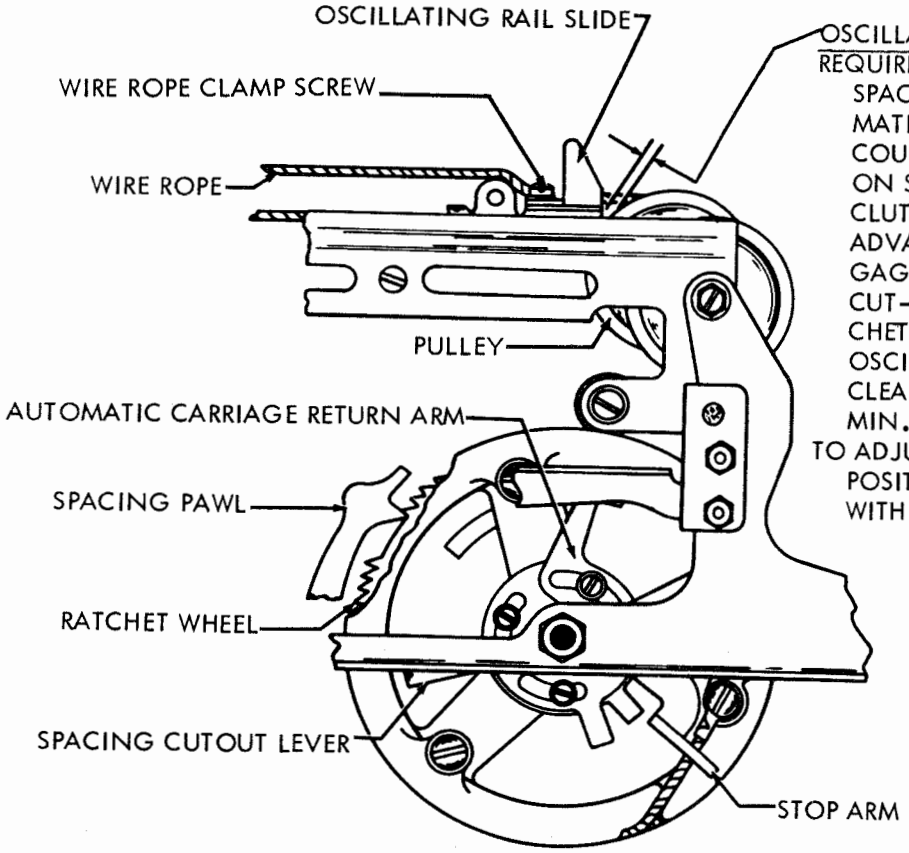
CLUTCH ENGAGED AND ROTATED UNTIL TRIP LEVER RESTS ON STOP LUG.

CLUTCH	MIN.	MAX.
SPACING	11 OZS.	16 OZS.
LINE FEED	9 OZS.	12 OZS.
TYPE BOX	5 OZS.	7-1/4 OZS.

TO MOVE LEVER AWAY FROM STOP LUG.

4.07 Spacing Mechanism

NOTE: CHECK RELATED ADJUSTMENTS, PARS.4.12,4.13,2.47, IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

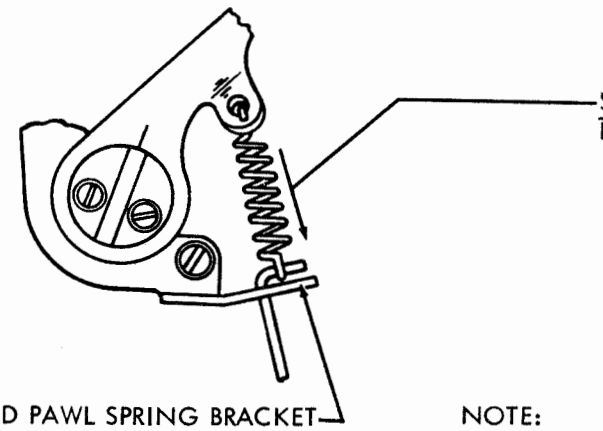


OSCILLATING RAIL SLIDE POSITION REQUIREMENT

SPACING CUTOUT LEVER AND AUTOMATIC CR-LF ARM IN MAXIMUM COUNTERCLOCKWISE POSITION ON SPACING DRUM. SPACING CLUTCH DISENGAGED. FARTHEST ADVANCED SPACING PAWL ENGAGED WITH TOOTH JUST ABOVE CUT-AWAY SECTION IN RATCHET WHEEL. RIGHT END OF OSCILLATING RAIL SLIDE SHOULD CLEAR PULLEY.

MIN. 0.025 INCH---MAX. 0.050 INCH TO ADJUST

POSITION SLIDE ON WIRE ROPE WITH CLAMP SCREWS LOOSENED.



SPACING FEED PAWL SPRING REQUIREMENT

EACH SPACING PAWL IN LEAST ADVANCED POSITION, RESTING AGAINST RACHET WHEEL.EACH SPRING UNHOOKED FROM BRACKET

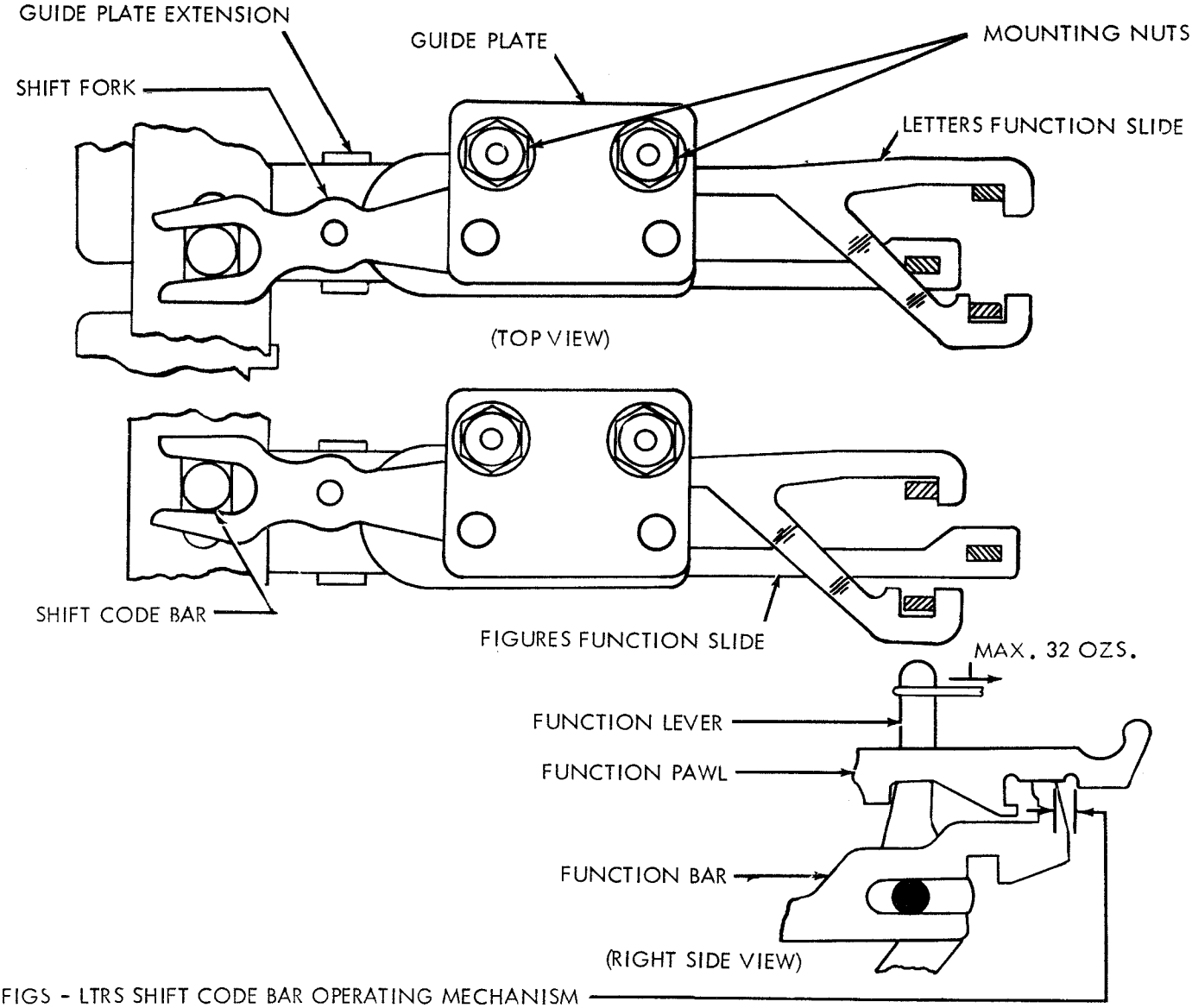
MIN. 2-1/2 OZS.---MAX. 4 OZS. TO PULL SPRINGS TO INSTALLED LENGTH.

NOTE:

ON UNITS EQUIPPED FOR 6 SPACES PER INCH, THIS TENSION SHOULD BE MIN. 8 OZS.---MAX. 10 OZS. TO PULL SPRINGS TO INSTALLED LENGTH.

4.08 Function Mechanism

NOTE: 1. THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH NON-ADJUSTABLE GUIDE PLATES
2. FOR UNITS WITH ADJUSTABLE GUIDE PLATES SEE PAR. 2.32.



FIGS - LTRS SHIFT CODE BAR OPERATING MECHANISM

REQUIREMENT: (FOR TWO STOP FUNCTION CLUTCH)

DISENGAGE FUNCTION CLUTCH AT POSITION GIVING LEAST CLEARANCE. ROTATE TYPE BOX CLUTCH 1/2 REVOLUTION. HOLD FIGURES FUNCTION LEVER IN REARWARD POSITION WITH TENSION OF 32 OZS. CLEARANCE BETWEEN THE FUNCTION PAWL SHOULDER AND FACE OF FUNCTION BAR

MIN. 0.002 INCH

MAX. 0.015 INCH

WHEN PLAY IN PAWL IS TAKEN FOR MAXIMUM CLEARANCE.

DISENGAGE FIGURES FUNCTION PAWL. CHECK LETTERS FUNCTION PAWL IN SAME MANNER.

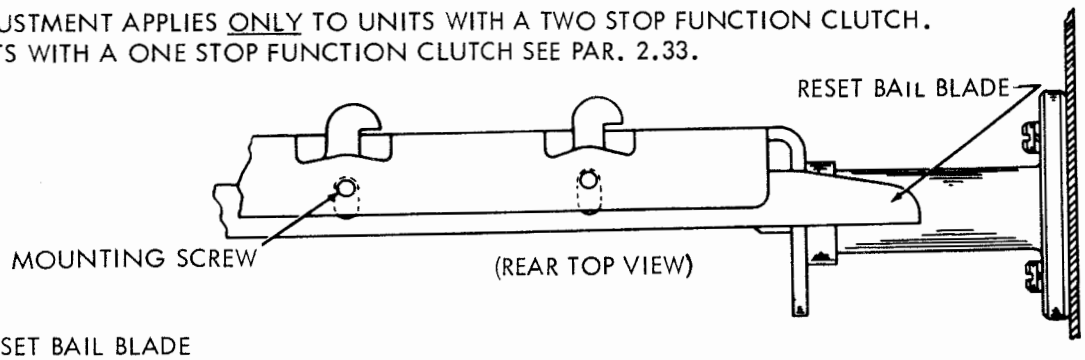
TO ADJUST

POSITION SHIFT ASSEMBLY WITH CLAMP SCREWS LOOSENED. TAKE UP PLAY IN MOUNTING HOLES TO REAR.

CAUTION: MANUALLY OPERATE LETTERS AND FIGURES FUNCTION LEVER ALTERNATELY LEVERS SHOULD BE FREE OF BINDS.

4.09 Function Mechanism (Cont.)

NOTE: 1. THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH A TWO STOP FUNCTION CLUTCH.
2. FOR UNITS WITH A ONE STOP FUNCTION CLUTCH SEE PAR. 2.33.



FUNCTION RESET BAIL BLADE

(1) REQUIREMENT

FUNCTION CLUTCH DISENGAGED AT STOP POSITION GIVING LEAST CLEARANCE. TYPE BOX CLUTCH DISENGAGED. ALL FUNCTION PAWLS UNLATCHED FROM THEIR FUNCTION BARS. FUNCTION BAR HELD IN MAXIMUM REARWARD POSITION. CLEARANCE BETWEEN FUNCTION BAR AND RESET BAIL BLADE

MIN. 0.018 INCH---MAX. 0.035 INCH

TO CHECK

MEASURE CLEARANCE AT BARS LOCATED IN STUNT BOX SLOTS. 1, 4, 11, 18, 23, 33, 38, AND 41. IF THERE IS NO BAR IN A DESIGNATED SLOT, USE NEAREST BAR. IF THERE IS A BAR ON EACH SIDE OF A DESIGNATED VACANT SLOT, USE BAR IN HIGHEST NUMBERED SLOT. (NOTE: FACING REAR OF UNIT, SLOTS ARE NUMBERED FROM LEFT TO RIGHT)

TO ADJUST

POSITION BLADE ON RESET BAIL WITH BLADE MOUNTING SCREWS FRICTION TIGHT.

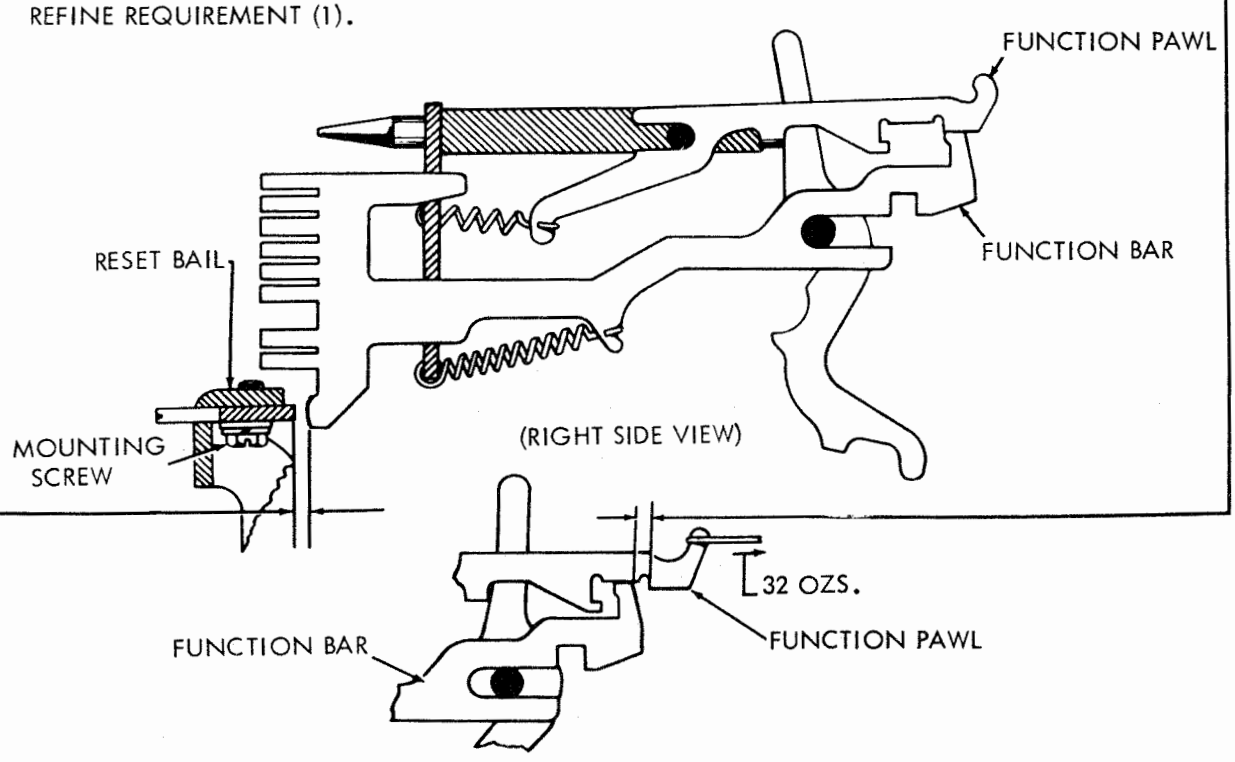
(2) REQUIREMENT

TYPE BOX CLUTCH ROTATED 1/2 REVOLUTION, FUNCTION LEVER HELD IN REARMOST POSITION WITH 2 LBS. MAXIMUM TENSION. LATCH ASSOCIATED PAWL ONLY ONE AT A TIME. WITH 32 OZS. TENSION APPLIED TO FUNCTION PAWL, IT SHOULD OVERTRAVEL ITS BAR

MIN. 0.002 INCH

TO ADJUST

REFINE REQUIREMENT (1).



4.10 Positioning Mechanism

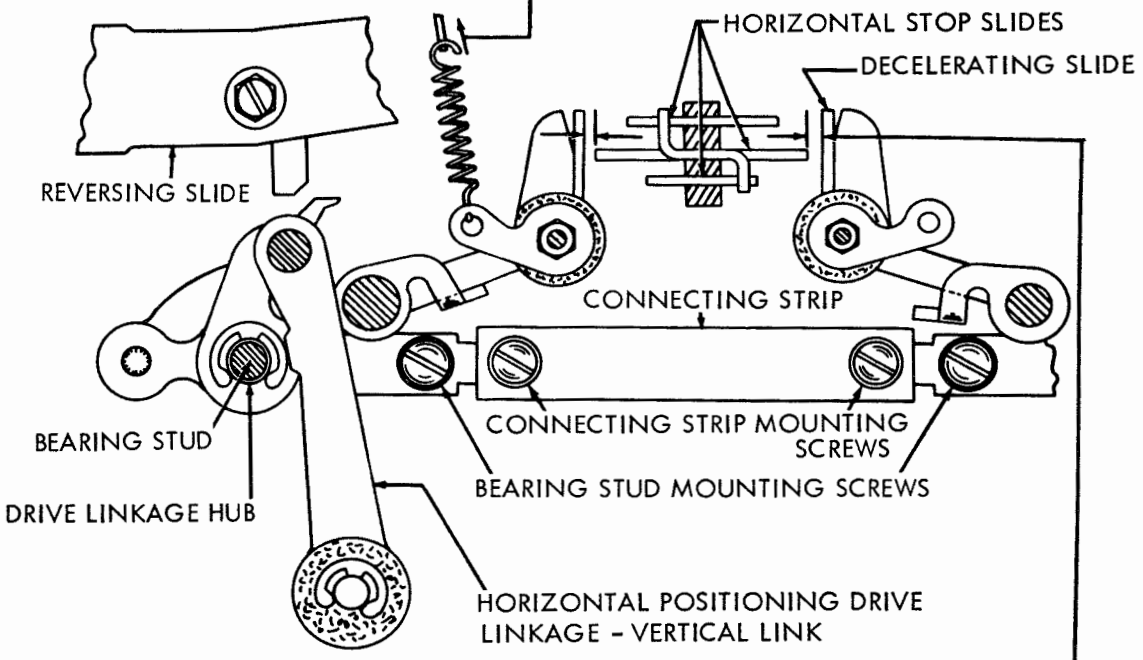
NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TENSION SPRINGS.

NOTE: THE LOOPS OF THIS SPRING ARE OFF-SET FROM CENTER IN THE SAME DIRECTION. THE SPRING MUST BE HOOKED ON ITS ANCHORS SO THAT THE SIDE OF THE SPRING ON WHICH THE LOOPS ARE LOCATED, IS TOWARD THE REAR OF THE MACHINE. WHEN REMOVING EITHER SPRING EXERCISE CARE TO AVOID KINKS IN LOOPS.

HORIZONTAL POSITIONING DRIVE LINKAGE SPRING

REQUIREMENT

SPRING UNHOOKED FROM ITS POST.
LINKAGE IN ITS UNBUCKLED POSITION.
MIN. 14 OZS.---MAX. 18 OZS.
TO PULL SPRING TO INSTALLED LENGTH.



HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED. CODE BARS 4 AND 5 TO SPACING (RIGHT).
CLEARANCE BETWEEN EACH SIDE OF CENTER HORIZONTAL STOP SLIDE AND DECELERATING SLIDES ON SIDE WHERE KNEE LINK IS STRAIGHT, SHOULD BE EQUAL (WITHIN 0.005 INCH)
MIN. 0.020 INCH---MAX. 0.040 INCH

TO ADJUST

LOOSEN BEARING STUD MOUNTING SCREWS AND CONNECTING STRIP MOUNTING SCREWS FRICTION TIGHT. POSITION ONE OR BOTH BEARING STUDS ON THE CONNECTING STRIP TO PROVIDE 0.025 INCH TO 0.035 INCH BETWEEN THE CENTER HORIZONTAL SLIDE AND THE DECELERATING SLIDE ON THE SIDE WHERE THE LINKAGE IS NOT BUCKLED. TIGHTEN THE TWO INNER MOUNTING SCREWS. CHANGE POSITION OF REVERSING SLIDE AND CHECK OPPOSITE CLEARANCE. EQUALIZE BY SHIFTING BOTH STUDS AND CONNECTING STRIP AS A UNIT. HOLD THE DRIVE LINKAGE HUB AGAINST THE LOWER VERTICAL LINK OF THE DRIVE LINKAGE. TIGHTEN THE TWO OUTER BEARING STUD MOUNTING SCREWS. CHECK THE LINKAGE FOR FREENESS THROUGHOUT A COMPLETE CYCLE. THE TYPE BOX CLUTCH DISK SHOULD HAVE SOME MOVEMENT IN THE NORMAL DIRECTION OF ROTATION IN THE STOP POSITION.

4. 11 Positioning Mechanism (Cont.)

NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TORSION SPRINGS.

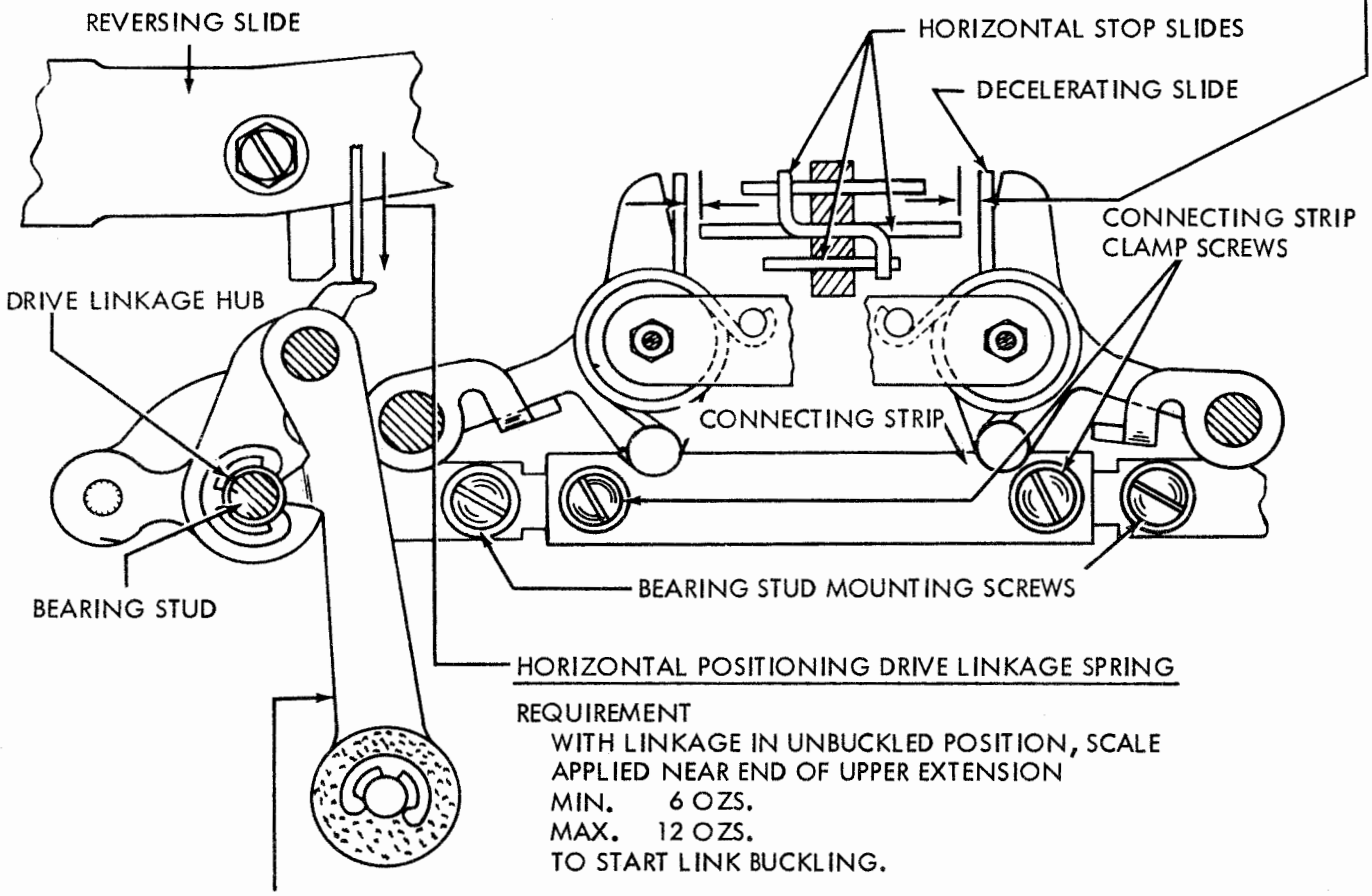
HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED.
CODE BARS 4 AND 5 TO SPACING (RIGHT).
CLEARANCE BETWEEN EACH SIDE OF CENTER HORIZONTAL STOP SLIDE AND DECELERATING SLIDES, ON SIDE WHERE KNEE LINK IS STRAIGHT SHOULD BE EQUAL (WITHIN 0.008 INCH)
MIN. 0.015 INCH
MAX. 0.040 INCH

TO ADJUST

LOOSEN BEARING STUD MOUNTING SCREWS AND CONNECTING STRIP MOUNTING SCREWS FRICTION TIGHT. POSITION ONE OR BOTH BEARING STUDS ON THE CONNECTING STRIP TO PROVIDE 0.025 INCH TO 0.035 INCH BETWEEN THE CENTER HORIZONTAL SLIDE AND THE DECELERATING SLIDE ON THE SIDE WHERE THE LINKAGE IS NOT BUCKLED. TIGHTEN THE TWO INNER MOUNTING SCREWS. CHANGE POSITION OF REVERSING SLIDE AND CHECK OPPOSITE CLEARANCE. EQUALIZE BY SHIFTING BOTH STUDS AND CONNECTING STRIP AS A UNIT. HOLD THE DRIVE LINKAGE HUB AGAINST THE LOWER VERTICAL LINK OF THE DRIVE LINKAGE. TIGHTEN THE TWO OUTER BEARING STUD MOUNTING SCREWS. CHECK THE LINKAGE FOR FREENESS THROUGHOUT A COMPLETE CYCLE. THE TYPE BOX CLUTCH DISK SHOULD HAVE SOME MOVEMENT IN THE NORMAL DIRECTION OF ROTATION IN THE STOP POSITION.



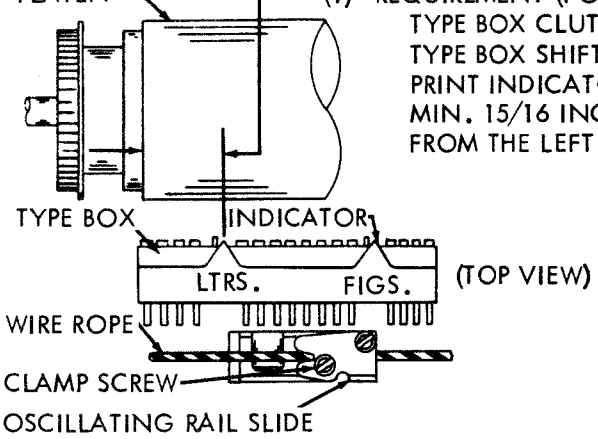
HORIZONTAL POSITIONING DRIVE LINKAGE SPRING

REQUIREMENT

WITH LINKAGE IN UNBUCKLED POSITION, SCALE APPLIED NEAR END OF UPPER EXTENSION
MIN. 6 OZS.
MAX. 12 OZS.
TO START LINK BUCKLING.

4. 12 Spacing Mechanism (Cont.)

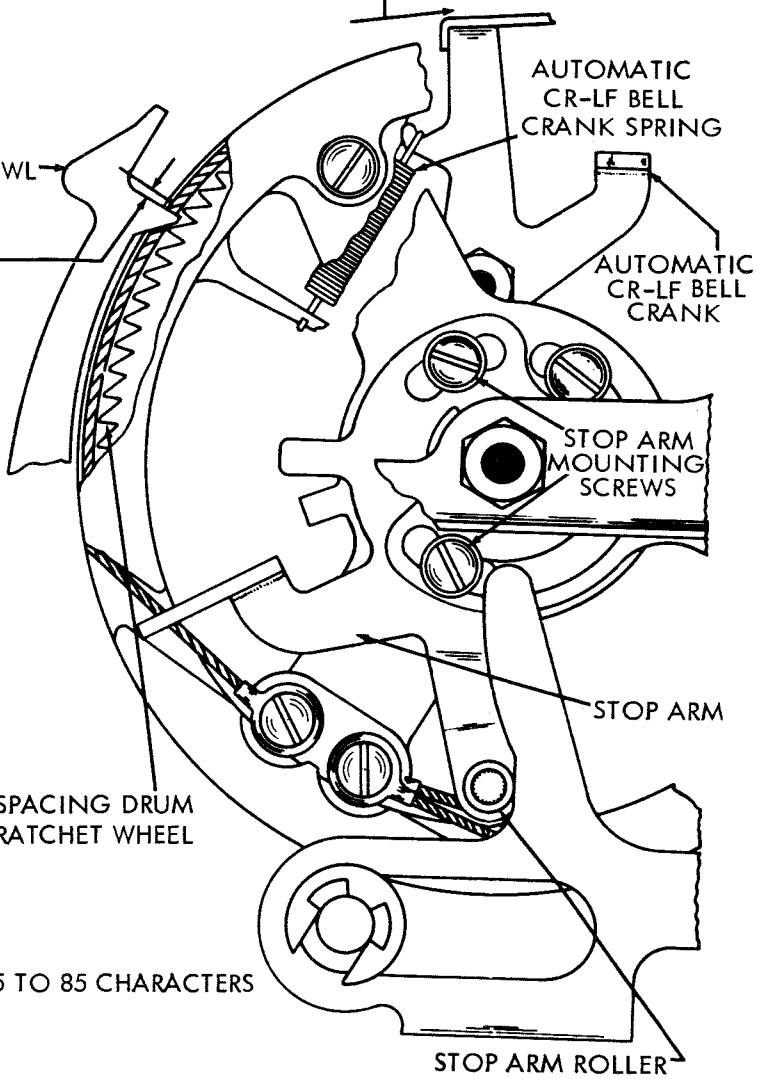
NOTE: CHECK RELATED ADJUSTMENTS, PARS. 4.07, 4.13 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.



(B) LEFT MARGIN (FOR SPROCKET FEED UNITS SEE PAR. 2.71)

(1) REQUIREMENT (FOR 72 CHARACTER LINE)
TYPE BOX CLUTCH DISENGAGED. SPACING DRUM IN RETURNED POSITION. TYPE BOX SHIFTED TO THE LETTERS POSITION. CENTER OF THE LETTERS PRINT INDICATOR ON THE TYPE BOX SHOULD BE MIN. 15/16 INCH---MAX. 1-1/16 INCH FROM THE LEFT EDGE OF THE PLATEN.

(C) AUTOMATIC CR-LF BELL CRANK SPRING REQUIREMENT
FUNCTION CLUTCH DISENGAGED. MIN. 6-1/2 OZS.---MAX. 11 OZS. TO MOVE THE BELL CRANK.



(2) REQUIREMENT
SPACING CLUTCH DISENGAGED. FRONT SPACING FEED PAWL FARTHEST ADVANCED. SPACING DRUM FULLY RETURNED. PLAY IN SPACING SHAFT GEAR PAR. 2.24 TAKEN UP CLOCKWISE. CLEARANCE BETWEEN PAWL AND SHOULDER OF RATCHET WHEEL TOOTH IMMEDIATELY AHEAD MIN. 0.002 INCH---MAX. 0.015 INCH

(3) REQUIREMENT
REAR PAWL, WHEN FARTHEST ADVANCED, SHOULD REST AT BOTTOM OF INDENTATION BETWEEN RATCHET WHEEL TEETH.

TO ADJUST
POSITION STOP ARM ON SPACING DRUM WITH MOUNTING SCREWS LOOSENED.

(A) PRINTING CARRIAGE POSITION (USE STANDARD ADJUSTMENT PAR. 2.47)

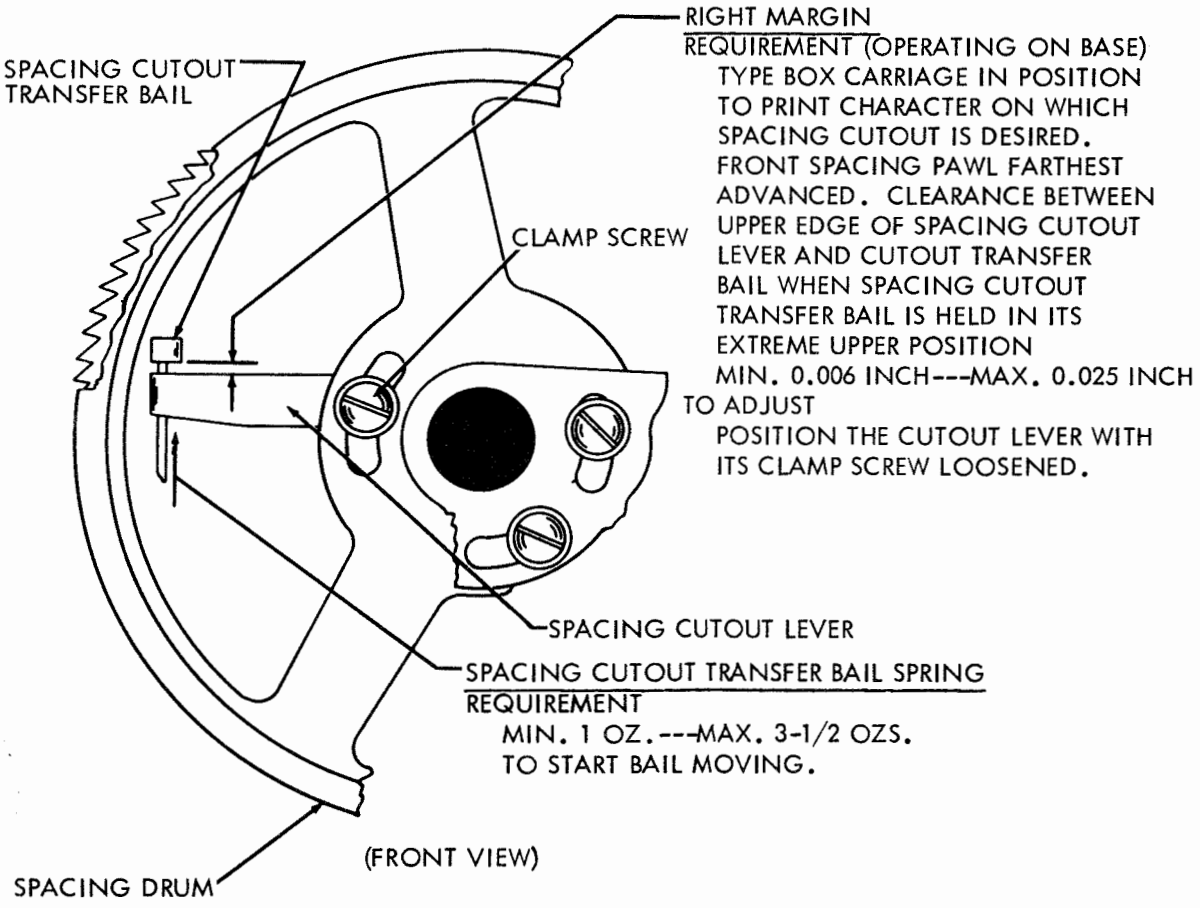
NOTE:
FOR OTHER LENGTHS OF LINE, RANGING FROM 65 TO 85 CHARACTERS THE MARGIN CAN BE VARIED AS REQUIRED.

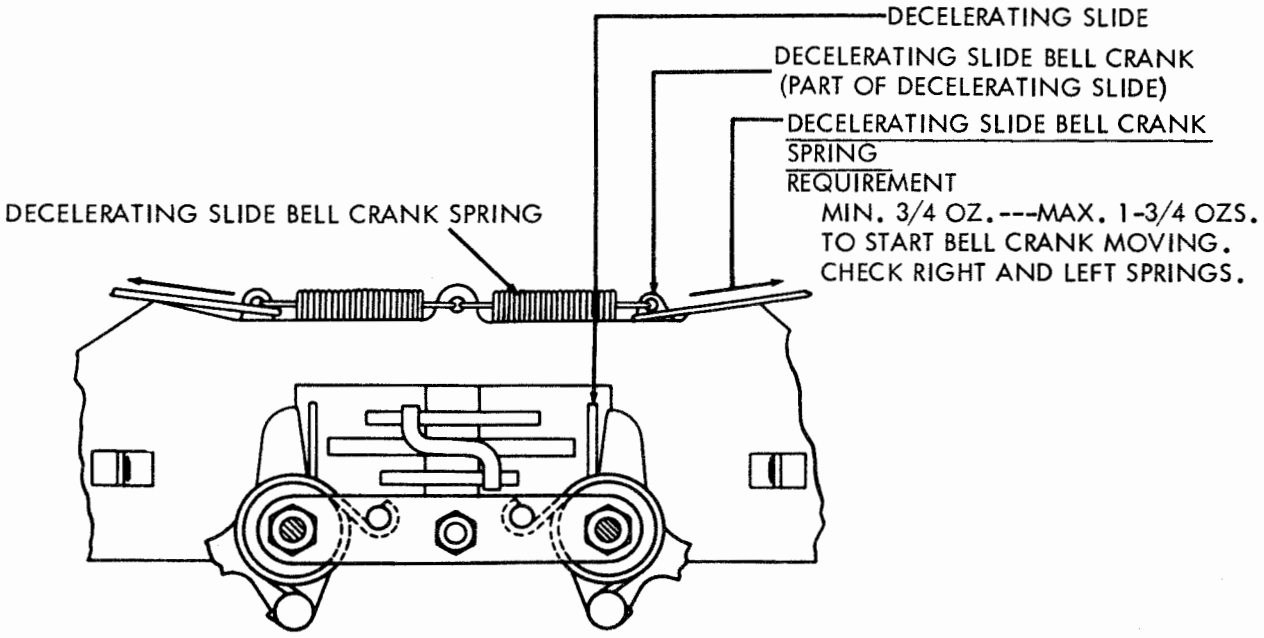
NOTE
THIS VIEW SHOWS THE SPACING DRUM FULLY RETURNED.

(FRONT VIEW)

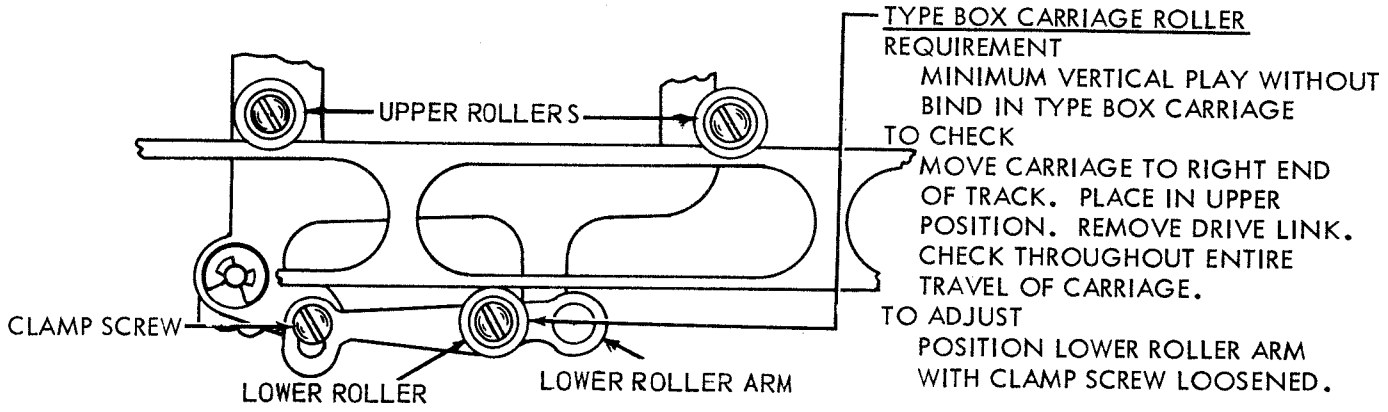
4.13 Spacing Mechanism (Cont.)

NOTE: CHECK RELATED ADJUSTMENTS, PARS. 4.07, 2.38 AND 2.47, IF THE FOLLOWING ADJUSTMENT ARE REMADE.

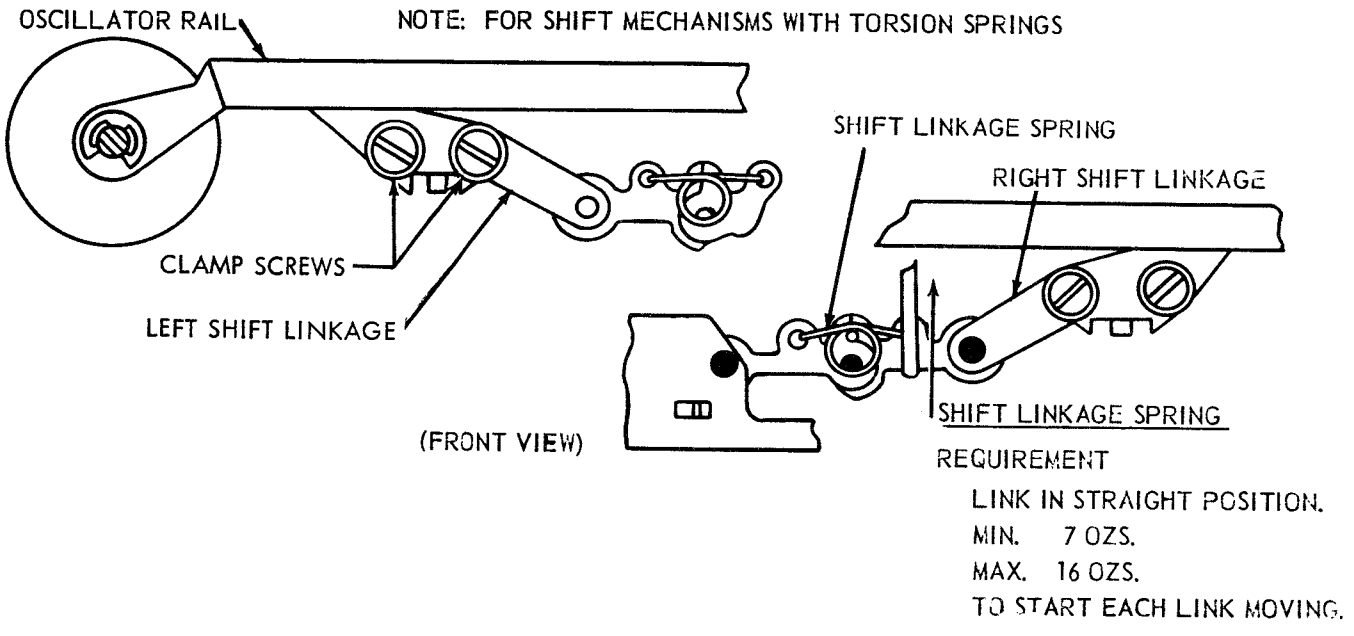




4. 14 Printing Mechanism



4. 15 Positioning Mechanism (Cont.)



4.16 Printing Mechanism (Cont.)

(A)PRINTING HAMMER STOP BRACKET

(FOR THICK TYPE BOX WITH DUMMY PALLETS)

REQUIREMENT

TYPE BOX IN BLANK OR CR POSITION (WHICHEVER DOES NOT PRINT) AND NEAR CENTER OF PLATEN. PRINTING TRACK IN ITS DOWNWARD POSITION. PRINTING HAMMER HELD AGAINST ITS STOP WITH 8 OZS. OF PRESSURE. CLEARANCE BETWEEN PRINTING HAMMER AND DUMMY TYPE PALLET

FRICTION FEED

MIN. 0.008 INCH

MAX. 0.020 INCH

TO ADJUST

POSITION THE STOP BRACKET WITH ITS MOUNTING SCREW AND THE PRINTING HAMMER BAIL PIVOT STUD LOOSENED.

(FOR SPROCKET FEED UNITS, SEE PAR. 2.71)

(C)

TYPE PALLET SPRING

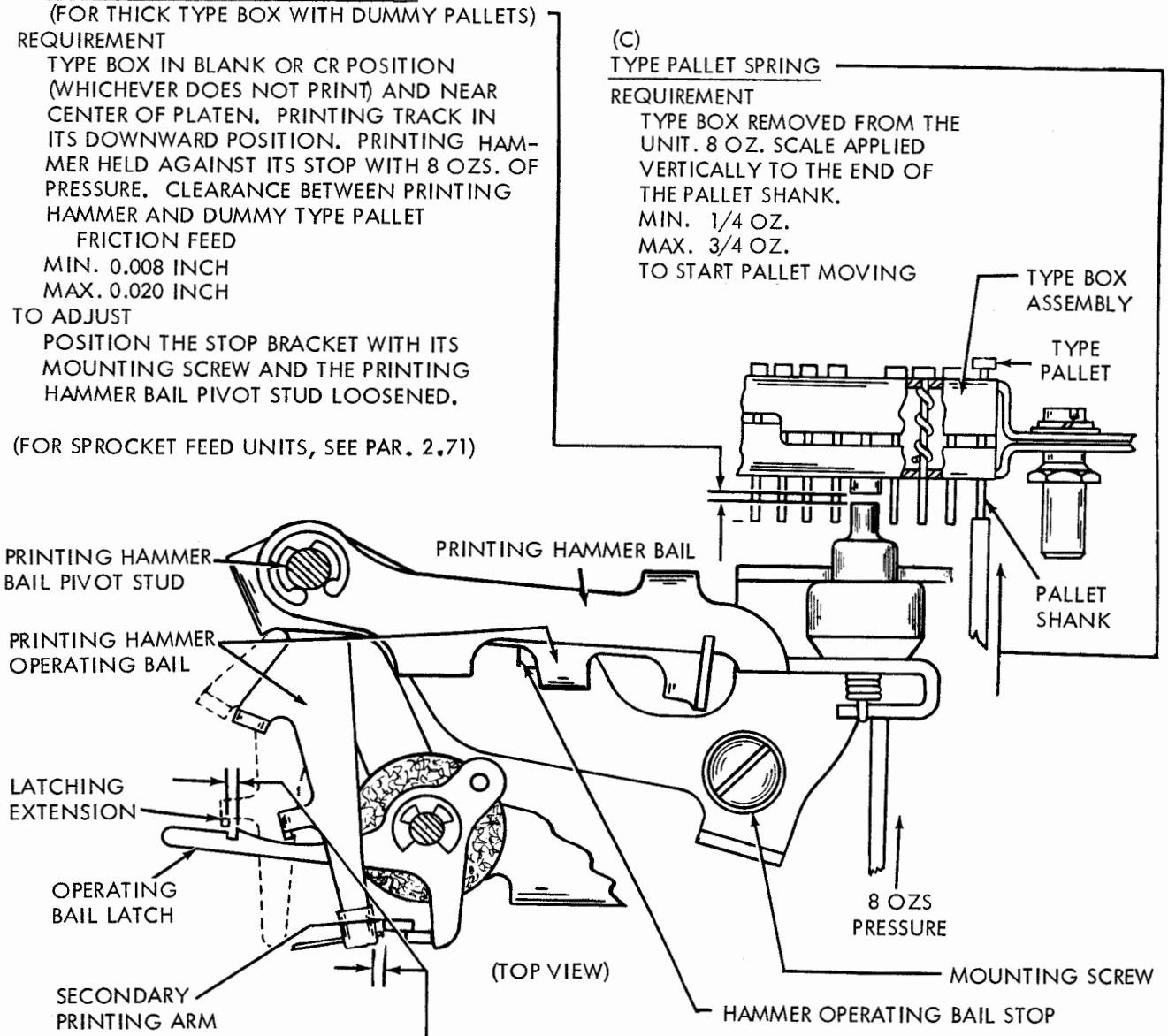
REQUIREMENT

TYPE BOX REMOVED FROM THE UNIT. 8 OZ. SCALE APPLIED VERTICALLY TO THE END OF THE PALLET SHANK.

MIN. 1/4 OZ.

MAX. 3/4 OZ.

TO START PALLET MOVING



(B)PRINTING ARM

(1) REQUIREMENT

PRINTING TRACK IN MAXIMUM DOWNWARD POSITION. PRINTING HAMMER OPERATING BAIL AGAINST ITS STOP. SOME CLEARANCE BETWEEN SECONDARY PRINTING ARM AND FORWARD EXTENSION OF HAMMER OPERATING BAIL.

MAX. 0.015 INCH

WHEN PRINTING ARM SLIDE IS HELD DOWNWARD OVER EACH PRINTING TRACK MOUNTING SCREW FOR MAXIMUM CLEARANCE.

(2) REQUIREMENT

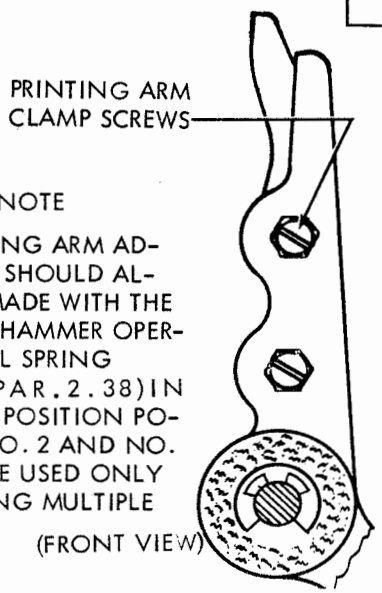
PRINTING TRACK IN UPPERMOST POSITION. LATCHING EXTENSION OF PRINTING HAMMER OPERATING BAIL SHOULD OVERTRAVEL LATCHING SURFACE OF OPERATING BAIL LATCH BY

MIN. 0.006 INCH

CHECK RIGHT AND LEFT POSITION

TO ADJUST

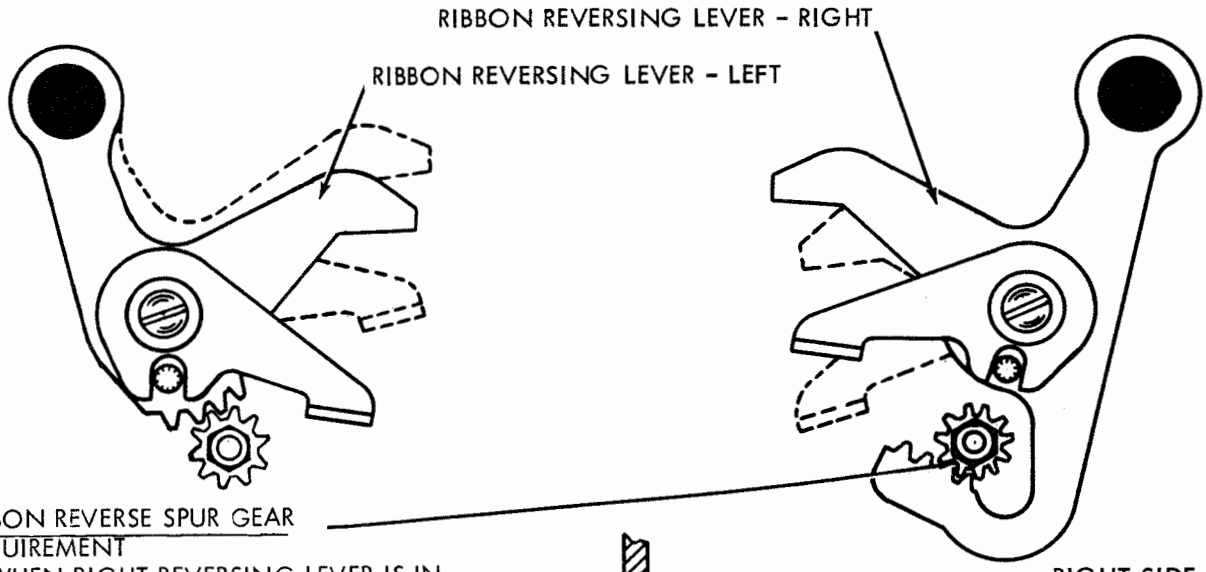
POSITION SECONDARY PRINTING ARM WITH CLAMP SCREWS LOOSENED.



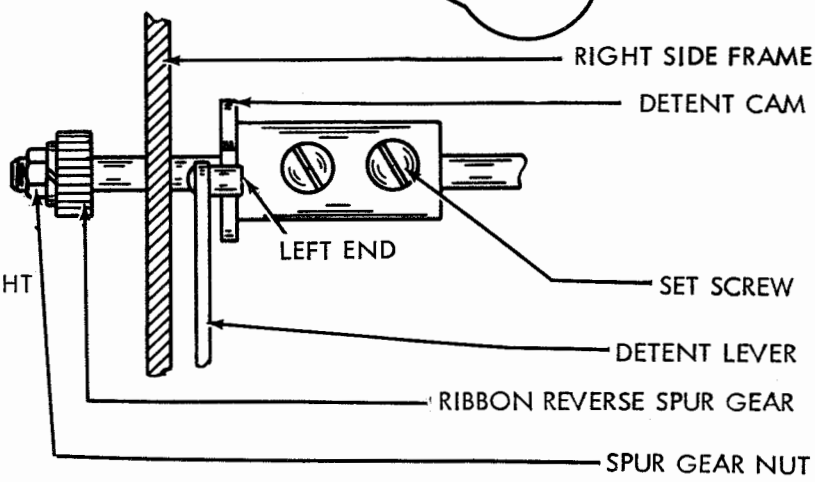
NOTE

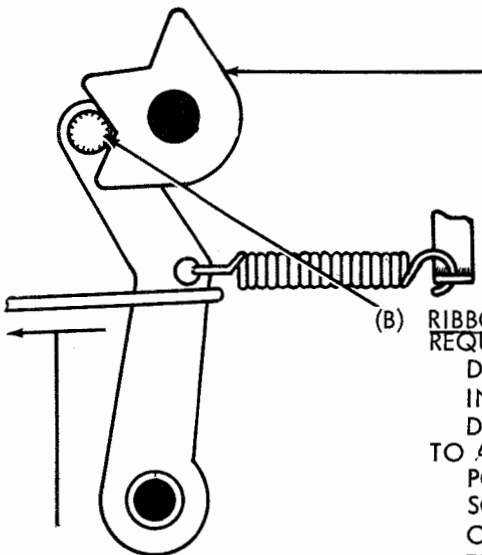
THE PRINTING ARM ADJUSTMENT SHOULD ALWAYS BE MADE WITH THE PRINTING HAMMER OPERATING BAIL SPRING BRACKET (PAR. 2.38) IN THE NO. 1 POSITION POSITIONS NO. 2 AND NO. 3 ARE TO BE USED ONLY FOR MAKING MULTIPLE COPIES.

4.17 Printing Mechanism (Cont.)



(A) RIBBON REVERSE SPUR GEAR
REQUIREMENT
WHEN RIGHT REVERSING LEVER IS IN MAXIMUM DOWNWARD POSITION, THE LEFT REVERSING LEVER SHOULD BE IN ITS MAXIMUM UPWARD POSITION.
TO ADJUST
LOOSEN THE SET SCREWS IN THE DETENT CAM. LOOSEN THE LEFT SPUR GEAR NUT. SECURELY TIGHTEN THE RIGHT SPUR GEAR NUT. MOVE THE RIGHT REVERSING LEVER TO ITS MAXIMUM DOWNWARD POSITION AND HOLD LEFT REVERSING LEVER IN ITS MAXIMUM UPWARD POSITION. THEN TIGHTEN THE LEFT SPUR GEAR NUT.

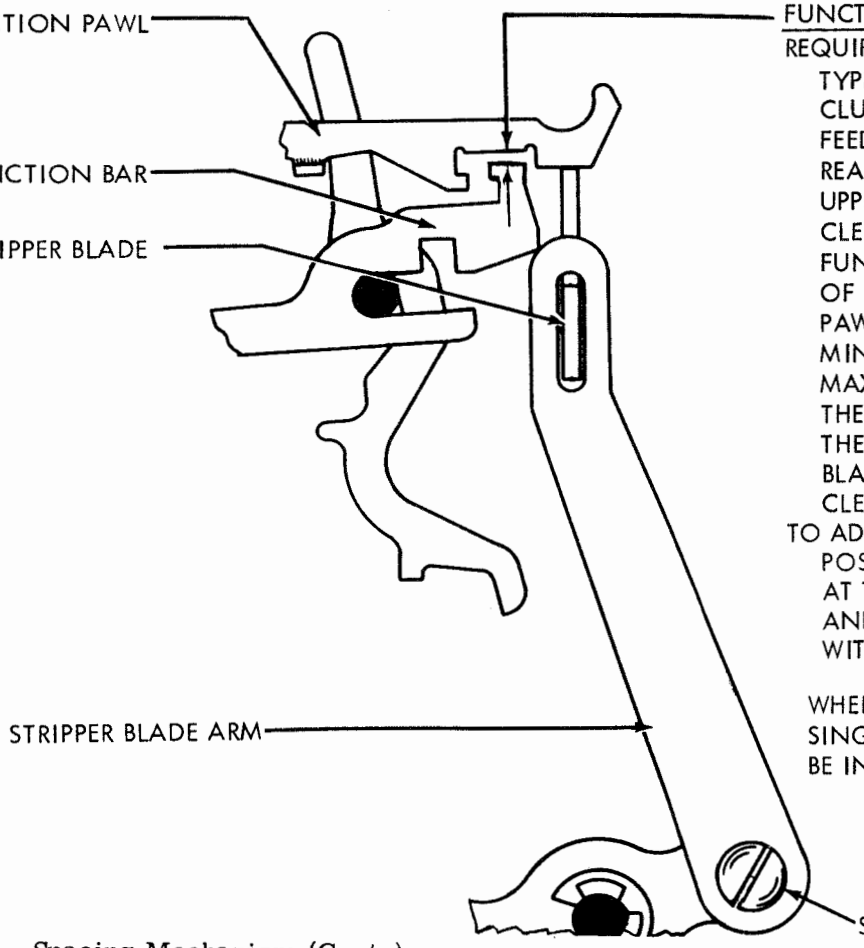




(B) RIBBON REVERSE DETENT
REQUIREMENT
DETENT SEATED APPROXIMATELY EQUAL IN UPPER AND LOWER POSITIONS OF DETENT CAM
TO ADJUST
POSITION CAM ON SHAFT WITH SET SCREWS LOOSENED. LET LEFT END OF DETENT STUD BE APPROXIMATELY FLUSH WITH LEFT FACE OF CAM (PLAY IN DETENT TAKEN TO RIGHT OF PRINTER)

(C) RIBBON REVERSE DETENT LEVER SPRING
REQUIREMENT
DETENT SEATED IN NOTCH OF CAM. RIGHT RIBBON REVERSING LEVER HELD DOWNWARD.
MIN. 6-1/2 OZS.---MAX. 9 OZS. TO START THE DETENT LEVER MOVING.

4. 18 Function Mechanism (Cont.)



FUNCTION STRIPPER BLADE ARMS

REQUIREMENT

TYPE BOX CLUTCH AND FUNCTION CLUTCH DISENGAGED. LEFT LINE FEED FUNCTION PAWL HELD IN ITS REAR POSITION AND RESTING ON THE UPPER EDGE OF THE STRIPPER BLADE. CLEARANCE BETWEEN UPPER EDGE OF FUNCTION BAR AND LOWER SURFACE OF NOTCHED SECTION OF FUNCTION PAWL.

MIN. 0.055 INCH
MAX. 0.065 INCH

THE LETTERS FUNCTION PAWL NEAR THE OPPOSITE END OF THE STRIPPER BLADE SHOULD HAVE THE SAME CLEARANCE.

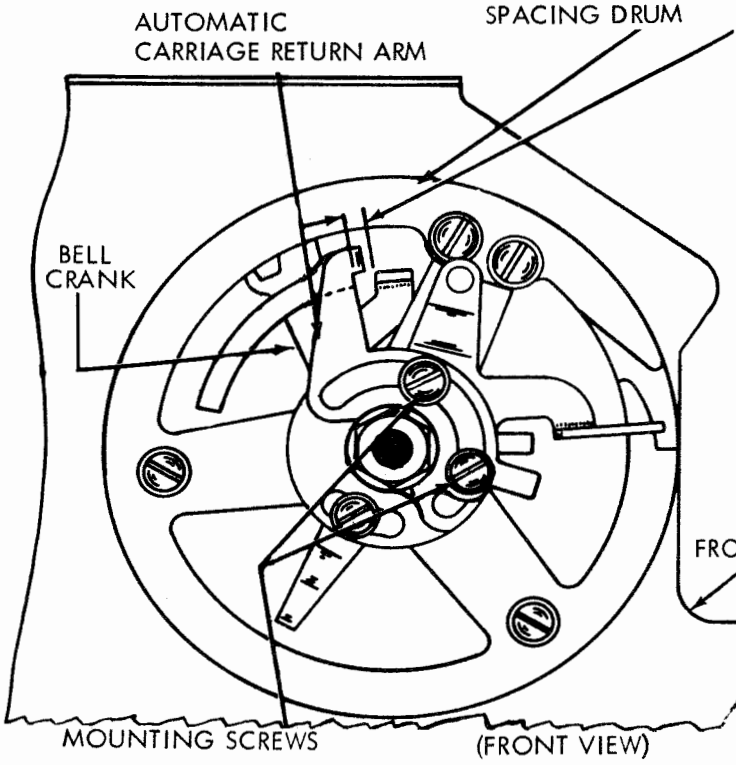
TO ADJUST

POSITION THE SHOULDER BUSHING AT THE LOWER END OF THE RIGHT AND LEFT STRIPPER BLADE ARM WITH THE LOCK NUT LOOSENED.

NOTE

WHEN CHECKING THIS ADJUSTMENT SINGLE-DOUBLE LINE FEED LEVER MUST BE IN DOUBLE LINE FEED POSITION.

4. 19 Spacing Mechanism (Cont.)



AUTOMATIC CARRIAGE RETURN AND LINE FEED ARM

REQUIREMENT (OPERATING ON BASE)

CARRIAGE IN POSITION TO PRINT TWO SPACES BEFORE THE LAST DESIRED CHARACTERS, AND FRONT SPACING PAWL FARTHEST ADVANCED. CLEARANCE BETWEEN LEADING END OF AUTOMATIC CARRIAGE RETURN ARM AND BELL CRANK.

MIN. 0.040 INCH
MAX. 0.055 INCH

TO ADJUST

POSITION AUTOMATIC CARRIAGE RETURN ARM WITH MOUNTING SCREWS LOOSENED.

NOTE

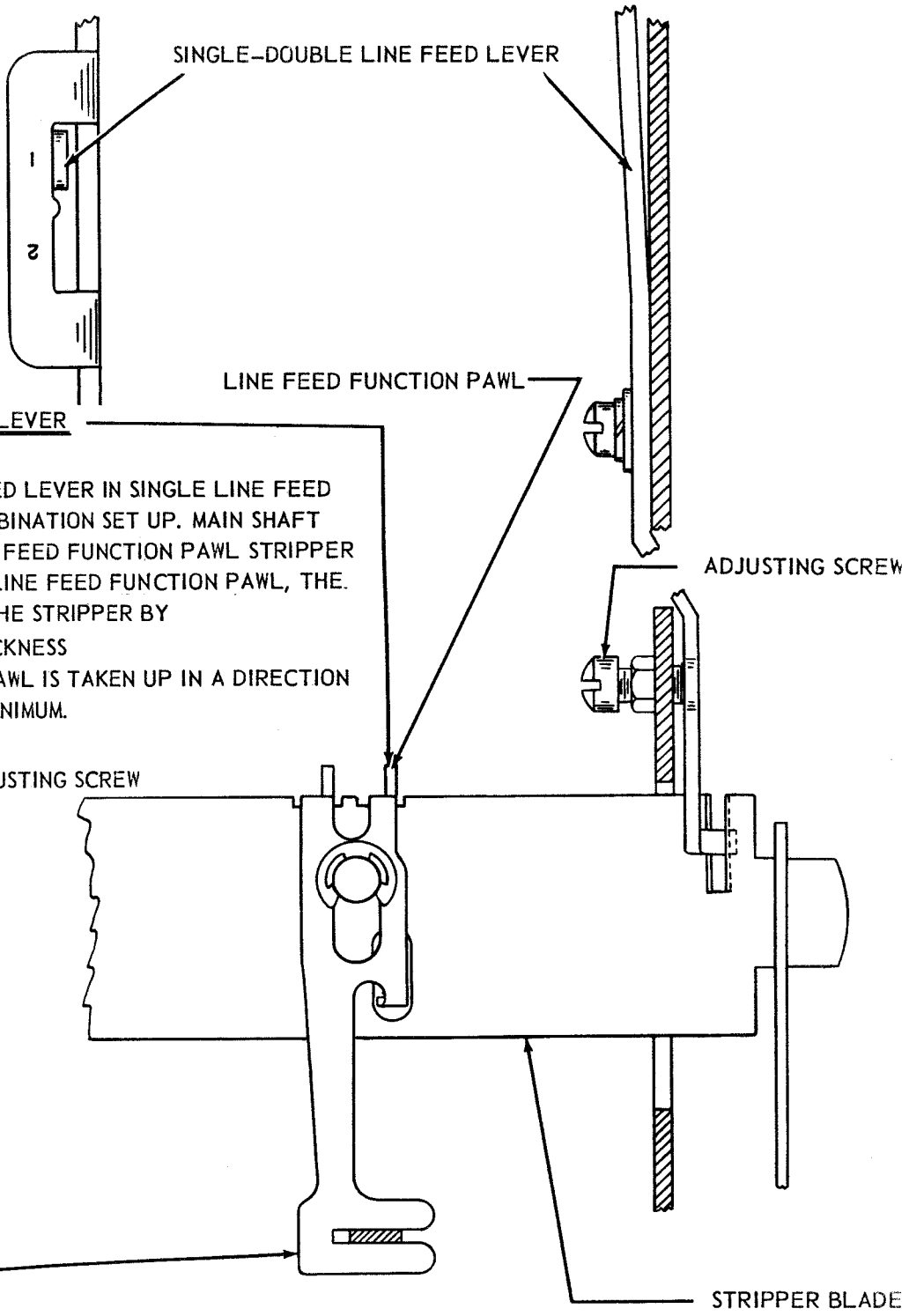
RANGE OF ADJUSTMENT IS FROM 65TH TO 85TH CHARACTERS.

NOTE

FOR UNITS EQUIPPED WITH UNIVERSAL SPACING DRUM, SEE PAR. 2.62.

4.20 Line Feed Mechanism and Platen Mechanism

NOTE: THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH A TWO-STOP FUNCTION CLUTCH



SINGLE–DOUBLE LINE FEED LEVER

REQUIREMENT

SINGLE–DOUBLE LINE FEED LEVER IN SINGLE LINE FEED POSITION. LINE FEED COMBINATION SET UP. MAIN SHAFT ROTATED UNTIL THE LINE FEED FUNCTION PAWL STRIPPER IS IN CONTACT WITH THE LINE FEED FUNCTION PAWL, THE PAWL SHOULD OVERLAP THE STRIPPER BY

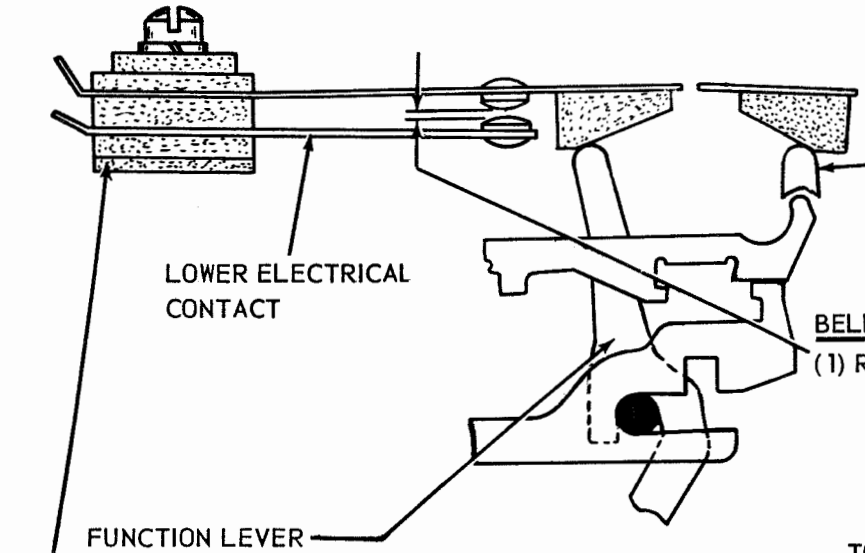
MIN. 1/2 THE PAWL THICKNESS

WHEN THE PLAY IN THE PAWL IS TAKEN UP IN A DIRECTION TO MAKE THE OVERLAP MINIMUM.

TO ADJUST

POSITION THE LEVER ADJUSTING SCREW

4.21 Function Mechanism (Cont.)



BELL OR MOTOR STOP FUNCTION CONTACT

(1) REQUIREMENT

FUNCTION LEVER AS SHOWN

CONTACT GAP

MIN. 0.010 INCH

MAX. 0.020 INCH

TO ADJUST

BEND THE LOWER ELECTRICAL CONTACT.

(2) REQUIREMENT

FUNCTION LEVER AS SHOWN

MIN. 1-1/4 OZS.

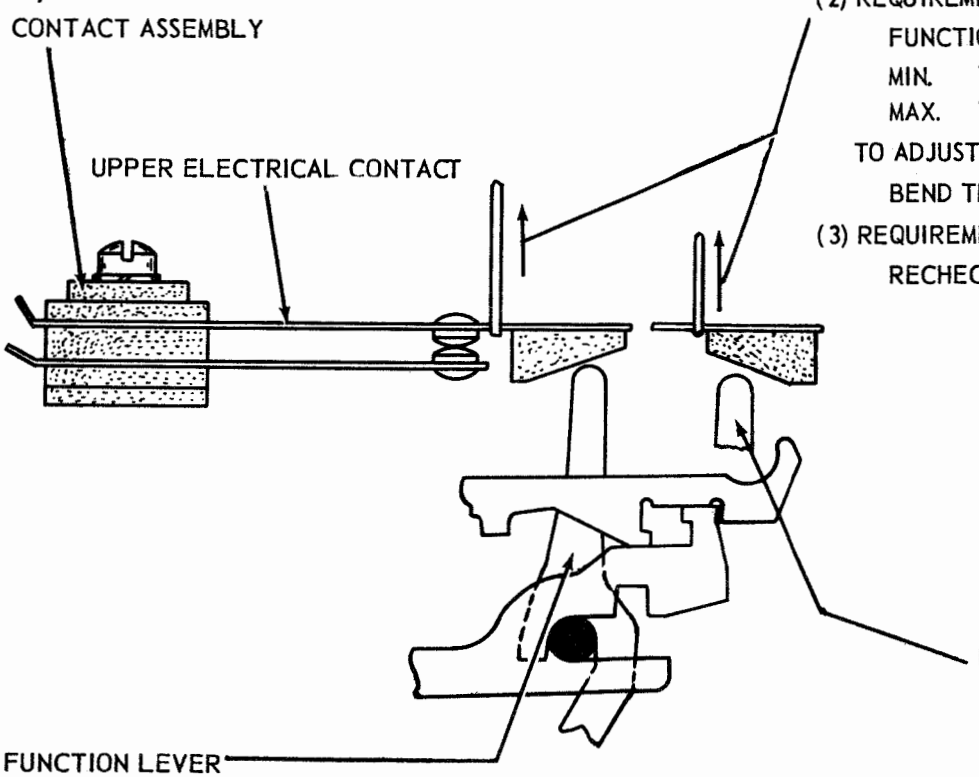
MAX. 1-3/4 OZS.

TO ADJUST

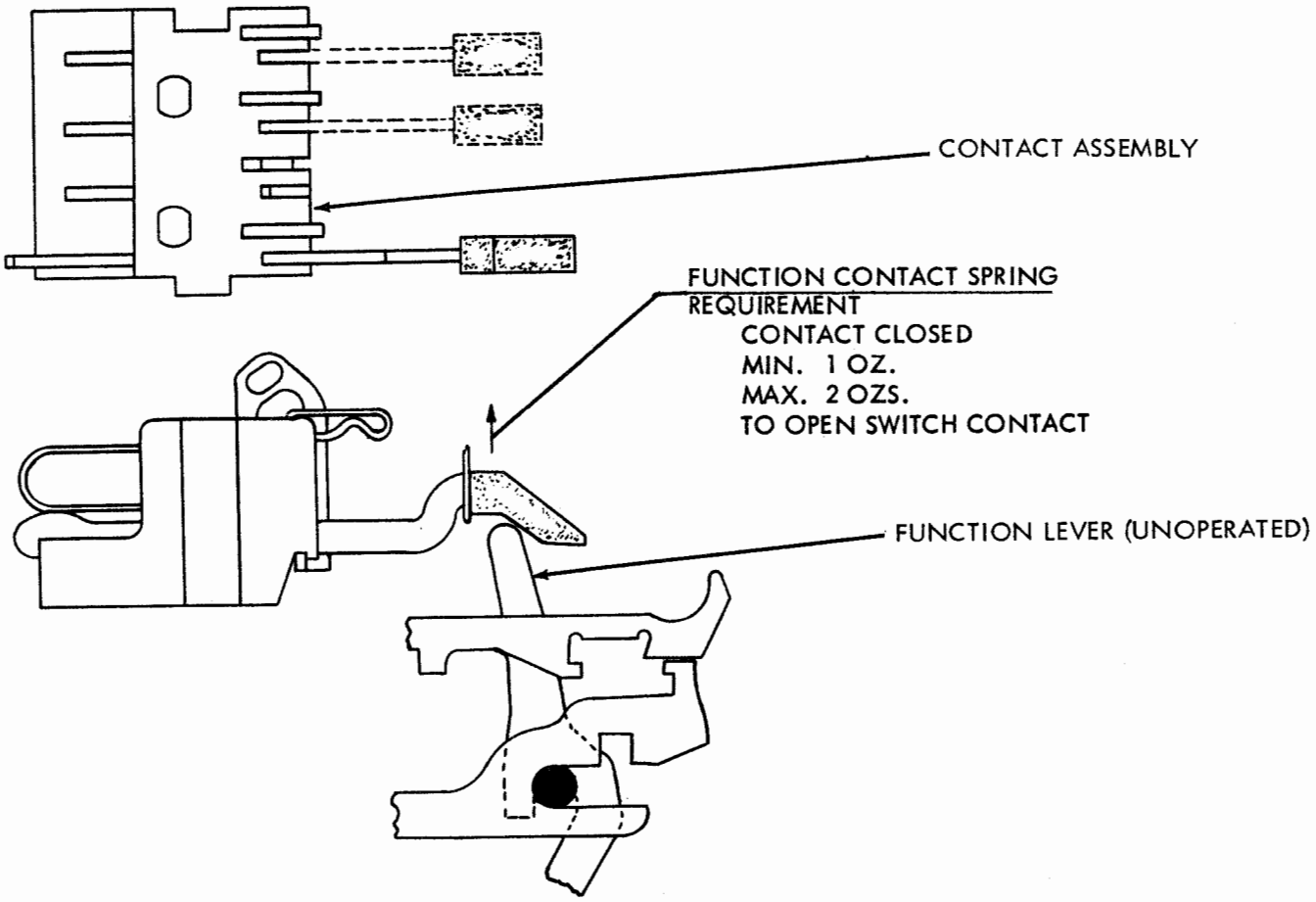
BEND THE UPPER ELECTRICAL CONTACT

(3) REQUIREMENT

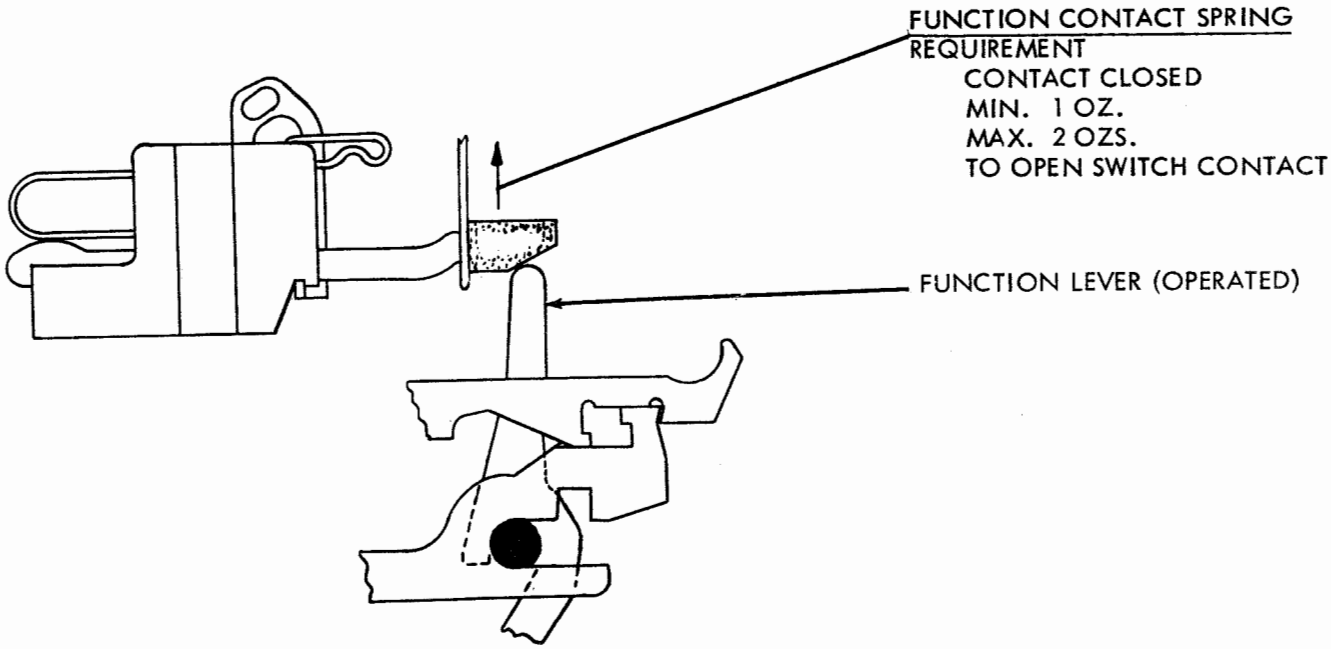
RECHECK REQUIREMENT (1)



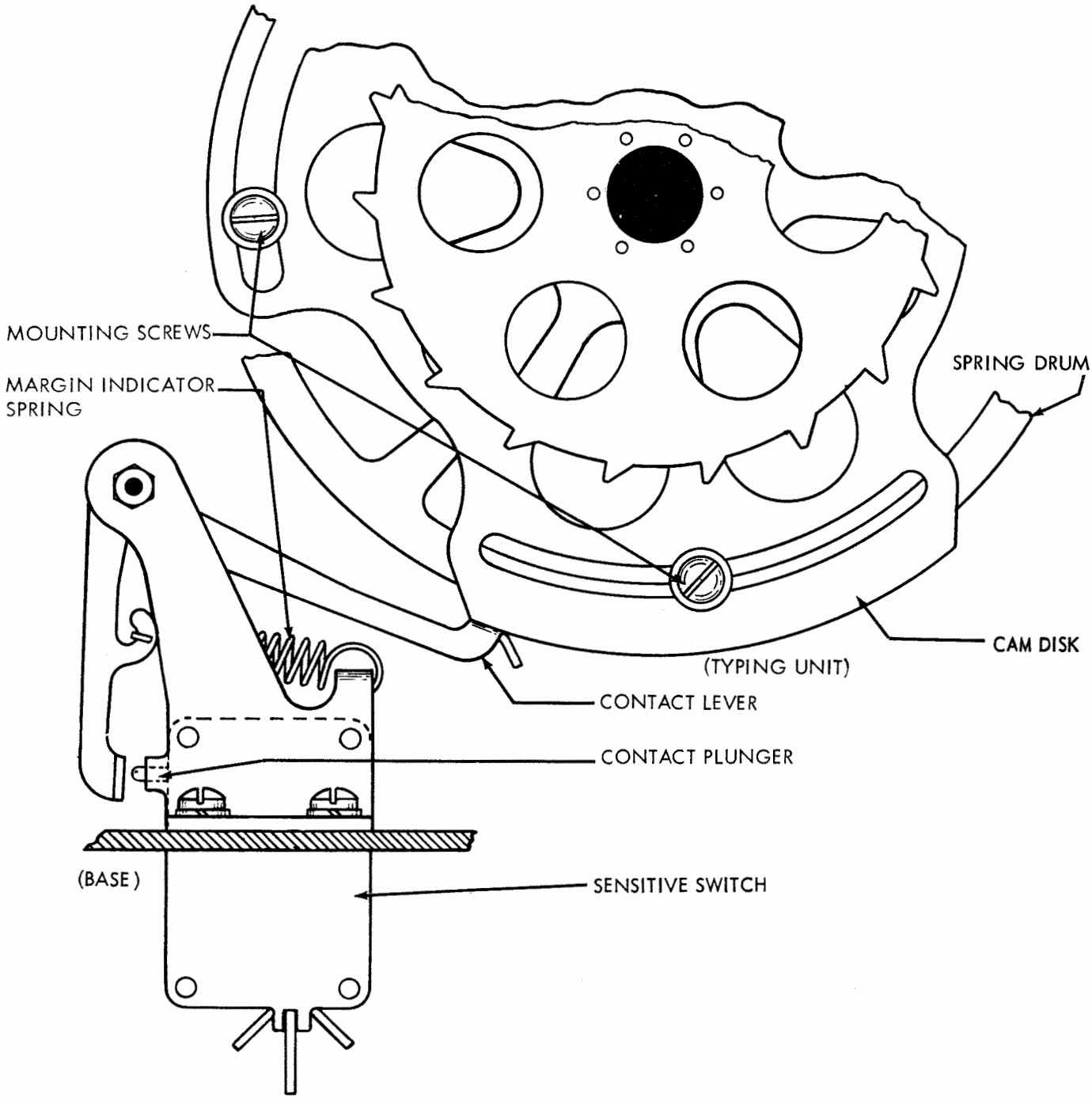
4.22 Function Mechanism (Cont.)



CAUTION: CARE SHOULD BE EXERCISED IN SOLDERING TO CONTACT SPRINGS SINCE EXCESSIVE HEAT WILL ANNEAL THE SPRINGS.



4.23 Spacing Mechanism (Cont.)



MARGIN INDICATOR LAMP

REQUIREMENT

OPERATING UNDER POWER, THE LAMP SHOULD LIGHT ON THE DESIRED CHARACTER.

TO ADJUST

SET THE TYPE BOX CARRIAGE TO PRINT THE DESIRED CHARACTER AND POSITION THE CAM DISK COUNTERCLOCKWISE ON THE SPRING DRUM WITH ITS THREE MOUNTING SCREWS LOOSENED SO THAT THE SWITCH JUST OPENS. IF A LINE SHORTER THAN 72 CHARACTERS IS REQUIRED, IT MAY BE NECESSARY TO REMOVE THE CAM DISK SCREWS AND INSERT THEM IN ADJACENT SLOTS OF THE DISK, IF THE RANGE OF ROTATION IN ONE SLOT IS NOT ENOUGH.

VARIABLE FEATURES

4.24 Horizontal Tabulator Mechanism

(A)

OPERATING LEVER SLIDE ARM

NOTE

PRIOR TO THIS ADJUSTMENT CHECK FUNCTION RESET BAIL BLADE ADJUSTMENT (PAR.4.09)

REQUIREMENT

ON UNITS WITH TWO-STOP FUNCTION CLUTCHES. FUNCTION CLUTCH DISENGAGED. TYPE BOX CLUTCH ROTATED 1/2 REVOLUTION PAST STOP POSITION. ON UNITS WITH ONE-STOP FUNCTION CLUTCH, ROTATE CLUTCH UNTIL FUNCTION PAWL STRIPPER BLADE IS IN ITS LOWER POSITION AND THE FUNCTION RESET BAIL ROLLER IS ON THE HIGH PART OF CAM. HORIZONTAL TABULATOR FUNCTION PAWL PULLED TO REAR AND LATCHED OVER FUNCTION BAR. CLEARANCE

MIN. 0.020 INCH

MAX. 0.030 INCH

TO ADJUST

POSITION SLIDE ARM ON OPERATING LEVER WITH MOUNTING STUD FRICTION TIGHT

(C)

OPERATING LEVER EXTENSION LINK SPRING

REQUIREMENT

TRIP ARM LATCH BAIL SPRING UNHOOKED. OPERATING LEVER IN OPERATED POSITION. SLIDE ARM AGAINST BLOCKING LINK.

MIN. 8-3/4 OZS.

MAX. 10-3/4 OZS.

TO START LINK MOVING.

(B)

OPERATING LEVER ADJUSTING PLATE

REQUIREMENT

OPERATING LEVER IN UNOPERATED POSITION. CLEARANCE

MIN. 0.070 INCH

MAX. 0.085 INCH

TO ADJUST

POSITION ADJUSTING PLATE ON BRACKET WITH MOUNTING SCREWS LOOSE.

(D) TABULATOR SHAFT SPRING (TORSION)

NOTE

FOR LOCATION OF SPRING SEE PAR.4.27

REQUIREMENT

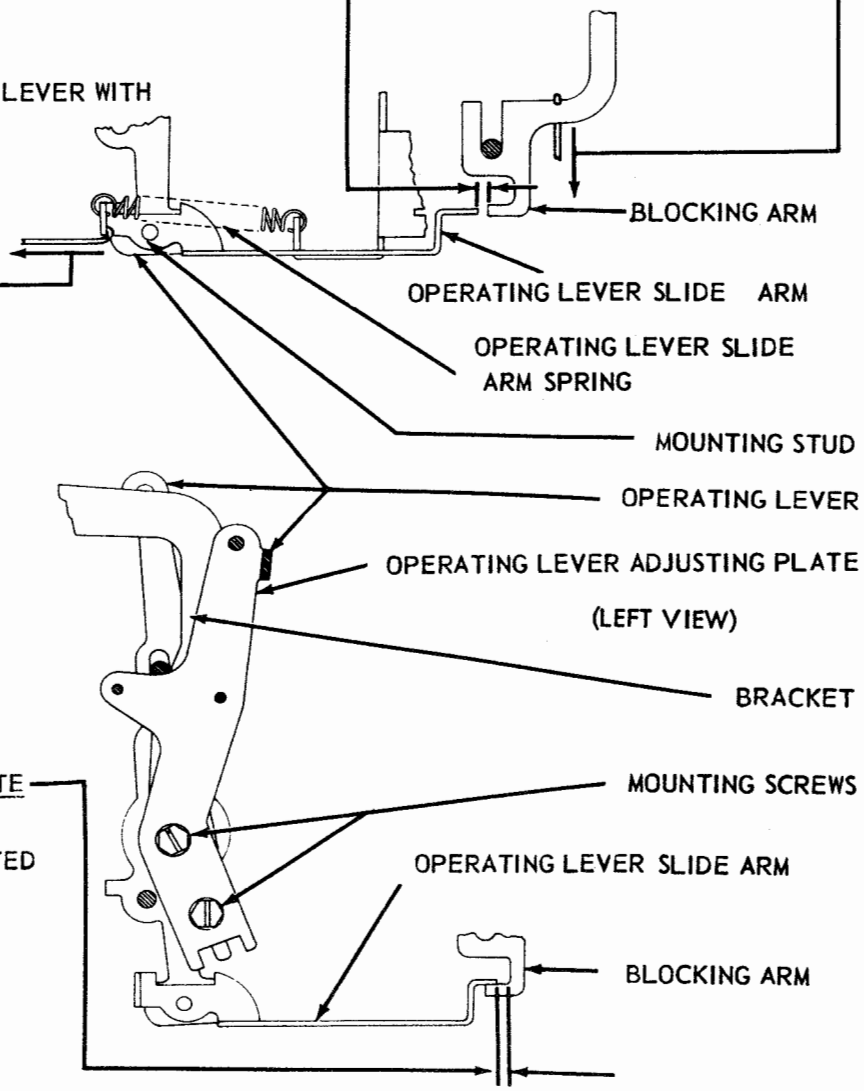
OPERATING LEVER IN UNOPERATED POSITION.

(AS IN LOWER FIGURE)

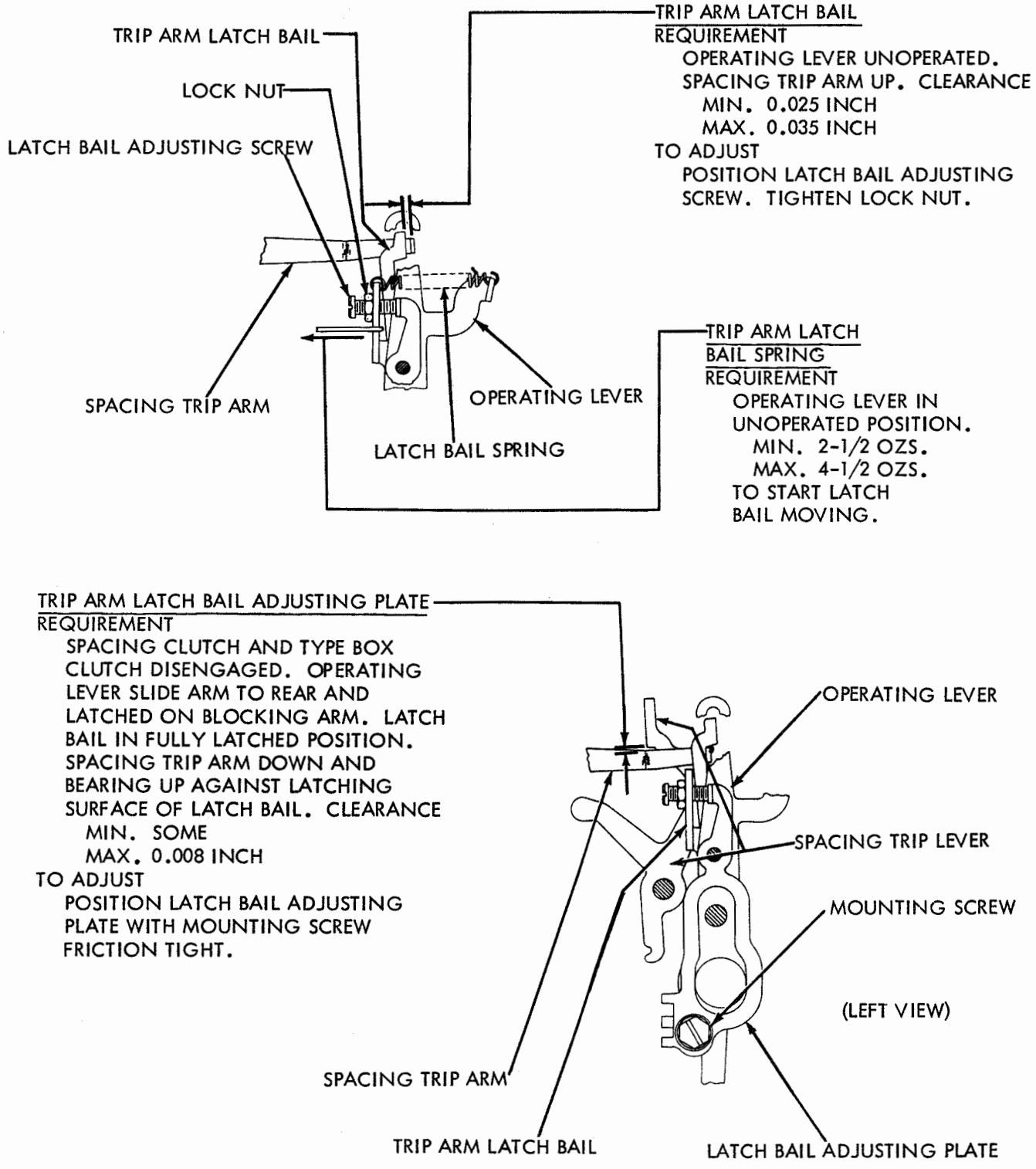
MIN. 1-1/2 OZS.

MAX. 3-1/2 OZS.

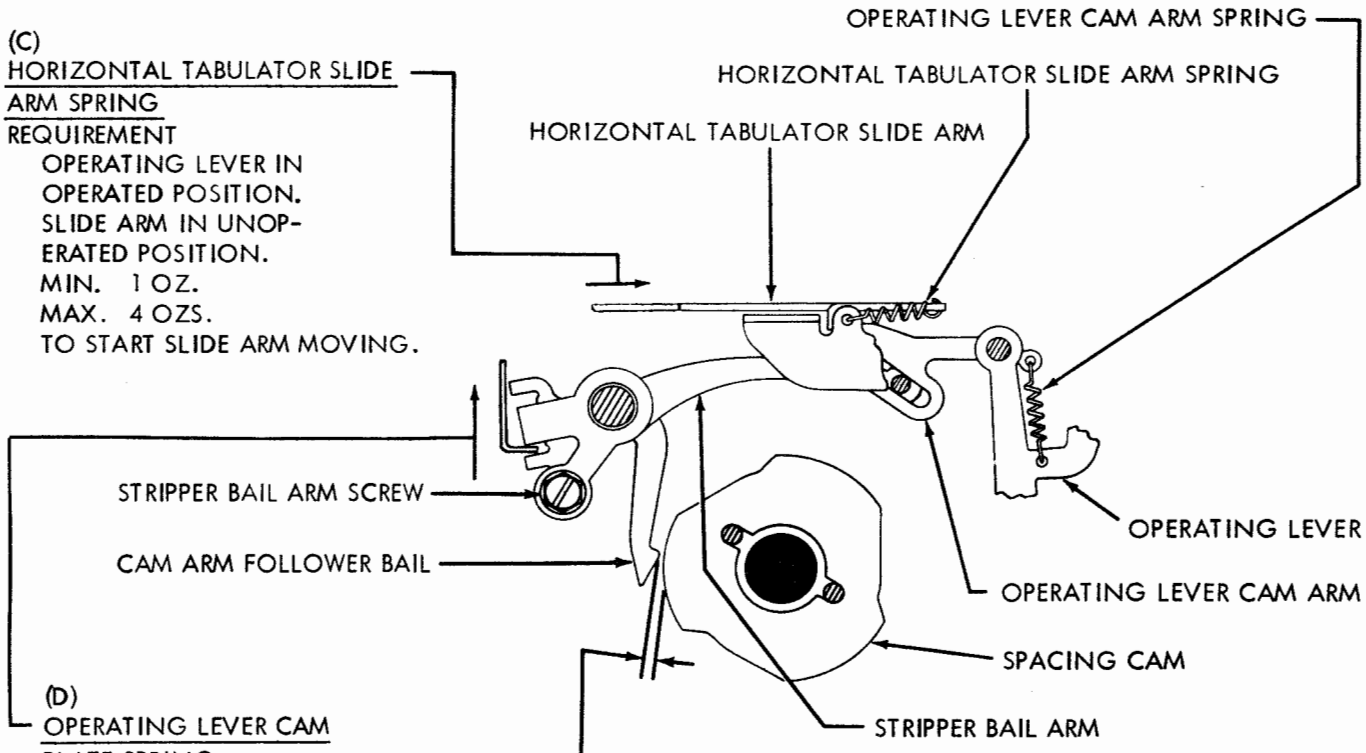
TO START SLIDE ARM MOVING.



4.25 Horizontal Tabulator Mechanism (Cont.)



4.26 Horizontal Tabulator Mechanism (Cont.)

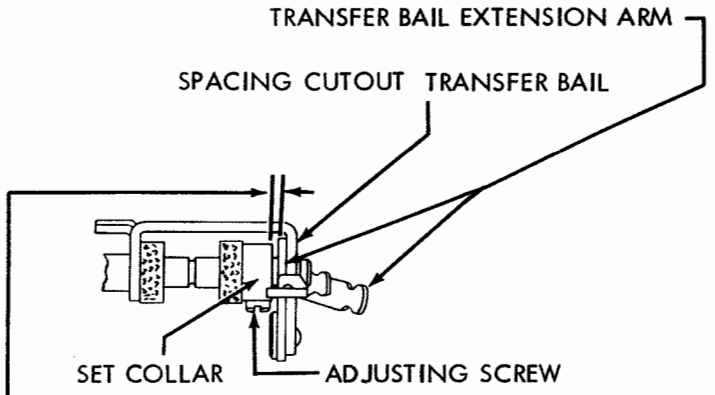


(LEFT SIDE VIEW)

(C)
HORIZONTAL TABULATOR SLIDE ARM SPRING
REQUIREMENT
OPERATING LEVER IN OPERATED POSITION. SLIDE ARM IN UNOPERATED POSITION.
MIN. 1 OZ.
MAX. 4 OZS.
TO START SLIDE ARM MOVING.

(D)
OPERATING LEVER CAM PLATE SPRING
REQUIREMENT
OPERATING LEVER IN UNOPERATED POSITION. HORIZONTAL TABULATOR FUNCTION PAWL UNLATCHED.
MIN. 4 OZS.
MAX. 9 OZS.
TO START STRIPPER BAIL ARM MOVING.

(A)
CAM PLATE STRIPPER BAIL
REQUIREMENT
OPERATING LEVER AND TABULATOR SLIDE ARM IN UNOPERATED POSITIONS. SPACING CLUTCH ROTATED UNTIL HIGH PART OF SPACING CAM IS OPPOSITE CAM ARM FOLLOWER BAIL. CLEARANCE
MIN. 0.010 INCH
MAX. 0.025 INCH
TO ADJUST
POSITION STRIPPER BAIL ARM ON CAM ARM FOLLOWER BAIL WITH STRIPPER BAIL ARM SCREW FRICTION TIGHT.



(B)
SPACING CUTOUT TRANSFER BAIL SET COLLAR
REQUIREMENT
TRANSFER BAIL SHOULD HAVE SOME END PLAY.
MAX. 0.008 INCH.
TO ADJUST
POSITION SET COLLAR WITH ADJUSTING SCREW LOOSENED.

4.27 Horizontal Tabulator Mechanism (Cont.)

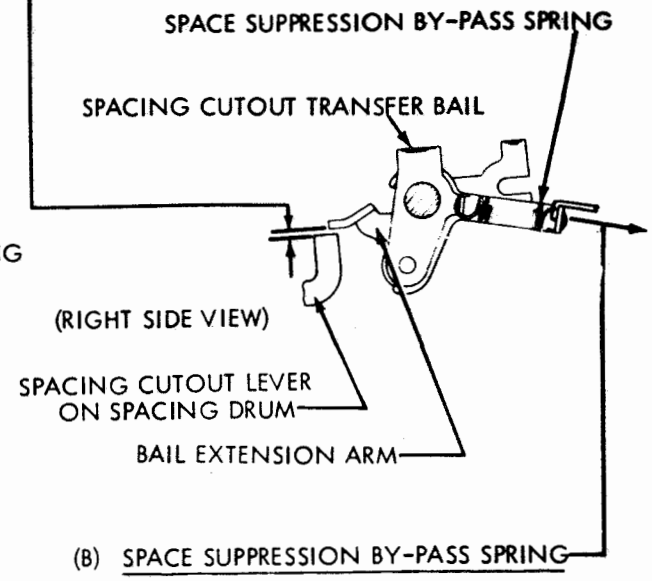
(A) RIGHT MARGIN

REQUIREMENT
CLEARANCE
MIN. 0.006 INCH---MAX. 0.025 INCH

TO CHECK
PLACE TYPE BOX IN POSITION TO PRINT CHARACTER ON WHICH SPACING CUTOUT IS DESIRED. PULL FORWARD ON PART OF TRANSFER BAIL EXTENDING BELOW MOUNTING SHAFT UNTIL BAIL IS IN FULLY OPERATED POSITION. GAUGE CLEARANCE.

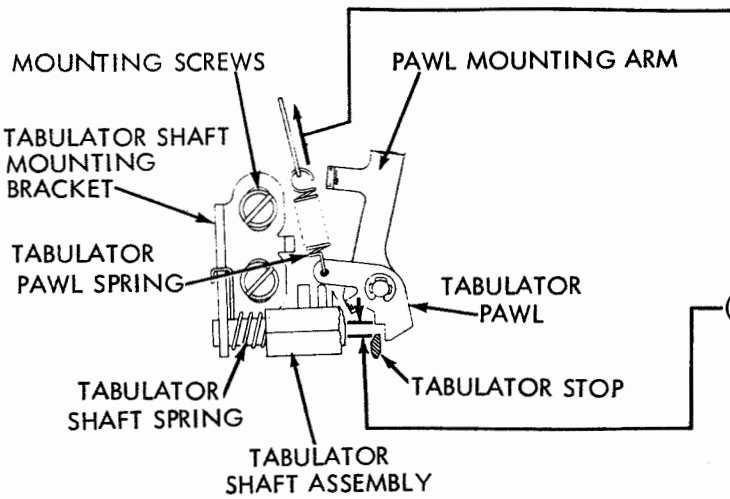
TO ADJUST
POSITION CUTOUT LEVER WITH CLAMP SCREW LOOSENED. (FOR LOCATION OF CLAMP SCREW SEE PAR.4.13)

NOTE: FOUR SCREWS MUST BE LOOSENED TO ADJUST CIRCULAR CUTOUT LEVERS.



(B) SPACE SUPPRESSION BY-PASS SPRING

REQUIREMENT
MIN. 20 OZS.
MAX. 26 OZS.
TO START ARM MOVING.



(D) TABULATOR PAWL SPRING

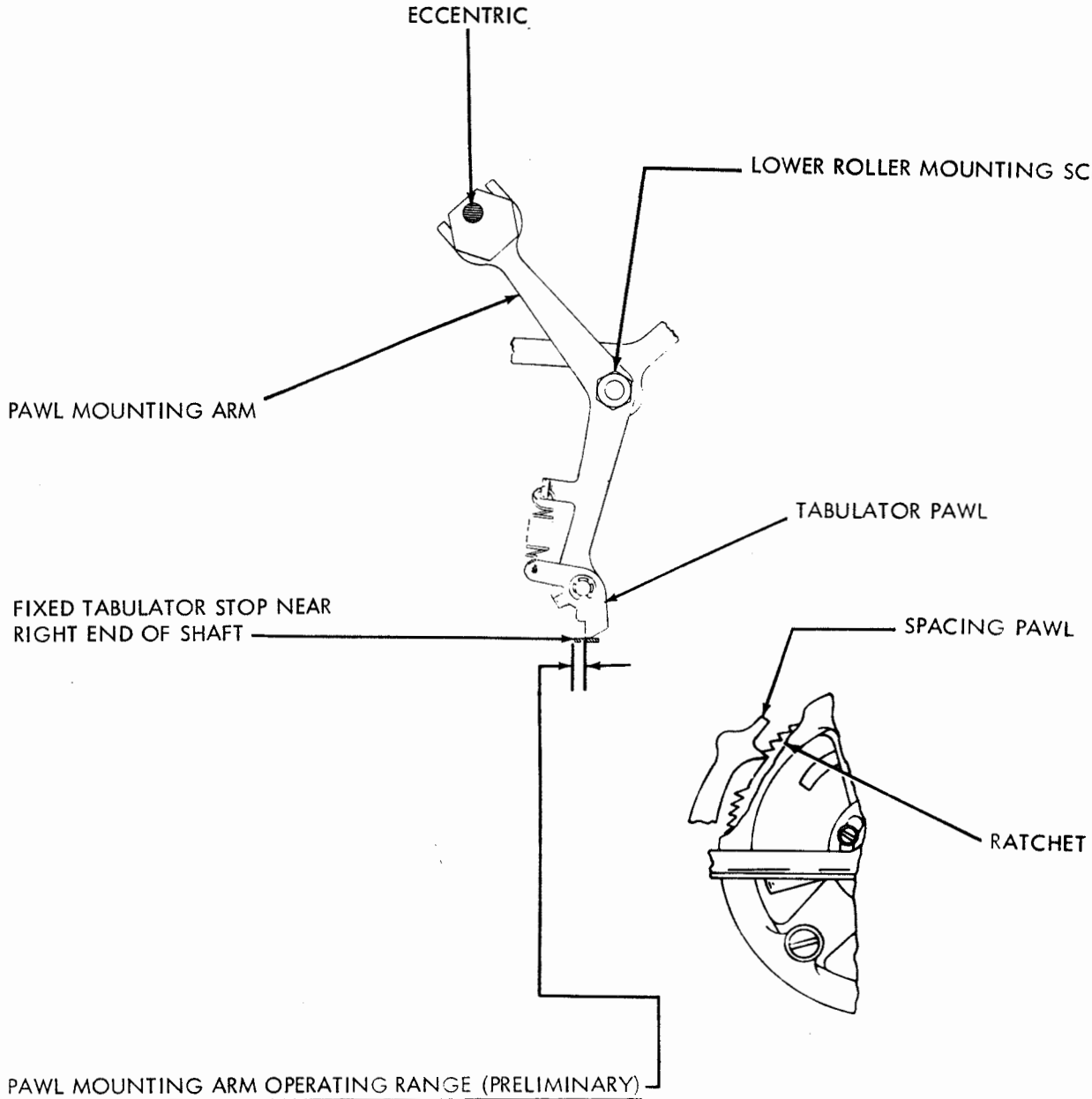
REQUIREMENT
MIN. 1-3/4 OZS.
MAX. 3 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(C) TABULATOR SHAFT MOUNTING BRACKETS

REQUIREMENT
LEVER SLIDE ARM TO REAR SO THAT BLOCKING ARM AND TABULATOR STOP ARE IN EXTREME UPPER POSITION.
CLEARANCE
MIN. 0.050 INCH---MAX. 0.065 INCH
CLEARANCE MEASURED NEAR LEFT AND RIGHT END OF SHAFT EQUAL WITHIN 0.007 INCH.

TO ADJUST
POSITION MOUNTING BRACKETS WITH MOUNTING SCREWS LOOSENED.
NOTE: MAKE SURE SHAFT IS FREE OF BINDS.

4.28 Horizontal Tabulator Mechanism (Cont.)



PAWL MOUNTING ARM OPERATING RANGE (PRELIMINARY)

NOTE --- PRIOR TO THIS ADJUSTMENT, CHECK THE FOLLOWING: OSCILLATING RAIL SLIDE (PAR. 2.30), PRINTING CARRIAGE POSITION (PAR. 2.47) AND PRINTING CARRIAGE LOWER ROLLER (PAR. 2.46).

REQUIREMENT (UNITS WITH FRICTION FEED PLATENS)

SPACING CLUTCH DISENGAGED. SPACING PAWL, WHICH IS FARTHEST ADVANCED, ENGAGING TOOTH IMMEDIATELY ABOVE CUTAWAY SECTION OF RATCHET. TABULATOR PAWL RIDING UP ON FIXED STOP. HIGH PART OF ECCENTRIC TOWARD FORK OF MOUNTING ARM. CLEARANCE

MIN. 0.070 INCH MAX. 0.090 INCH

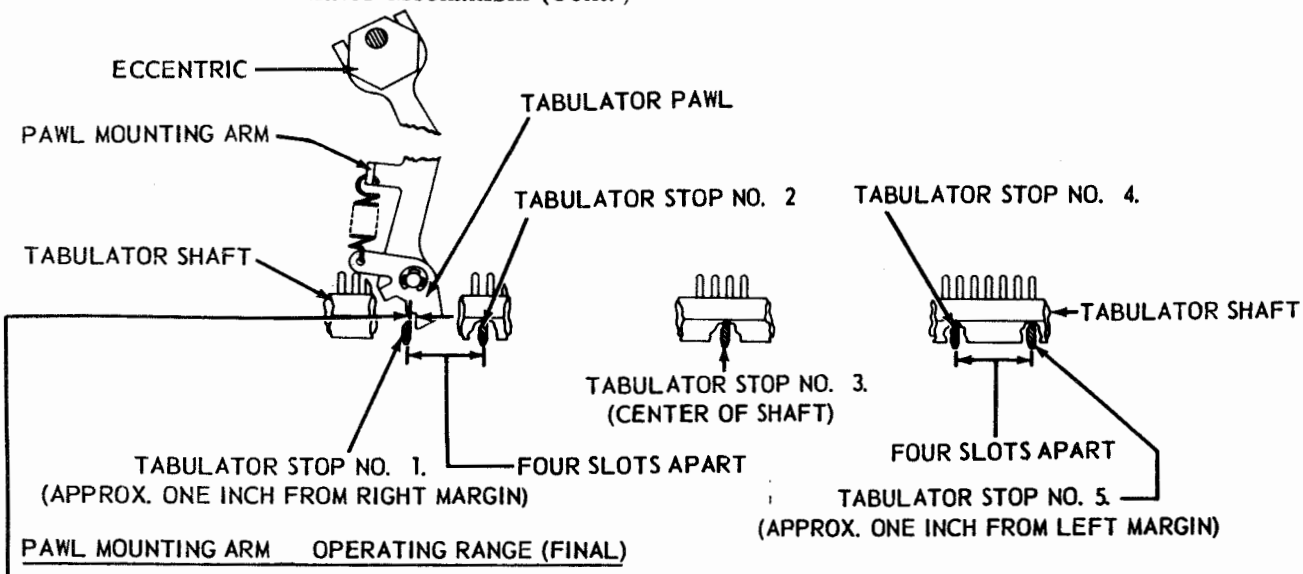
REQUIREMENT (UNITS WITH SPROCKET FEED PLATENS)

HIGH PART OF ECCENTRIC TOWARD LOWER ROLLER MOUNTING SCREW.

TO ADJUST

POSITION ECCENTRIC.

4.29 Horizontal Tabulator Mechanism (Cont.)



PAWL MOUNTING ARM OPERATING RANGE (FINAL)

REQUIREMENT

CLEARANCE MIDWAY BETWEEN MINIMUM AND MAXIMUM LIMITS OF OPERATING RANGE.

TO CHECK

TO DETERMINE MAXIMUM LIMIT. . . (A) SET FIVE TABULATOR STOPS AS SHOWN IN FIGURE. (B) POSITION PAWL IMMEDIATELY TO RIGHT OF STOP NO. 1. (C) POSITION ECCENTRIC TO SET CLEARANCE APPROXIMATELY 0.030 INCH. (NOTE - - - MEASURE ALL CLEARANCES AT STOP NO. 1. WITH PLAY TAKEN UP IN CARRIAGE TO REDUCE GAP TO MINIMUM.) (D) MARK COLUMN LOCATION BY PRINTING A CHARACTER ON PAPER. (E) POSITION PAWL IMMEDIATELY TO RIGHT OF STOP NO. 2 AND MARK COLUMN LOCATION AS IN STEP (D). (F) REPEAT STEP (E) FOR OTHER THREE STOPS. (G) GRADUALLY INCREASE CLEARANCE UNTIL CARRIAGE STOPS ONE SPACE BEFORE ANY COLUMN WHILE RECEIVING FIGURES G LETTERS X FROM TRANSMITTER DISTRIBUTOR. (NOTE - - - IF UNIT IS NOT EQUIPPED WITH XD CONTROL, PUT FILL-IN CHARACTERS OF LETTERS OR FIGURES IN TAPE TO DELAY PRINTING UNTIL CARRIAGE COMPLETES TRAVEL.) (H) DECREASE CLEARANCE UNTIL TEN LINES OF TABULAR OPERATION CAN BE MADE WITHOUT ERROR. (1) GAUGE AND RECORD VALUES OF CLEARANCE. (2) GAGE ALL CLEARANCES WITH FRONT FEED PAWL FARTHEST ADVANCED.

TO DETERMINE MINIMUM LIMITS - - - (A) REPEAT STEPS (B) AND (C) ABOVE. (B) GRADUALLY DECREASE CLEARANCE UNTIL CARRIAGE STOPS ONE SPACE AFTER ANY COLUMN. (C) INCREASE CLEARANCE UNTIL TEN LINES OF TABULAR OPERATION CAN BE MADE WITHOUT ERROR. (1) GAUGE AND RECORD VALUE OF CLEARANCE.

TO ADJUST

IF MINIMUM LIMIT IS POSITIVE, ADD IT TO MAXIMUM LIMIT AND DIVIDE THE SUM BY TWO. SET RESULTANT AMOUNT AS MIDPOINT OF RANGE. IF MINIMUM LIMIT IS ZERO OR LESS, DIVIDE MAXIMUM LIMIT BY TWO AND SET THIS AMOUNT AS MIDPOINT OF RANGE. THE DIFFERENCES BETWEEN LIMITS NORMALLY IS NOT LESS THAN 0.045 INCH.

TABULATOR STOP SETTING (NOT ILLUSTRATED)

RIGHT MARGIN TABULATOR STOP (WITH WIDE SHELF)

NOTE: PRIOR TO THIS ADJUSTMENT, CHECK THE FOLLOWING: RIGHT MARGIN (PAR.4.27) AND PAWL MOUNTING ARM OPERATING RANGE (PAR.4.28 AND 4.29).

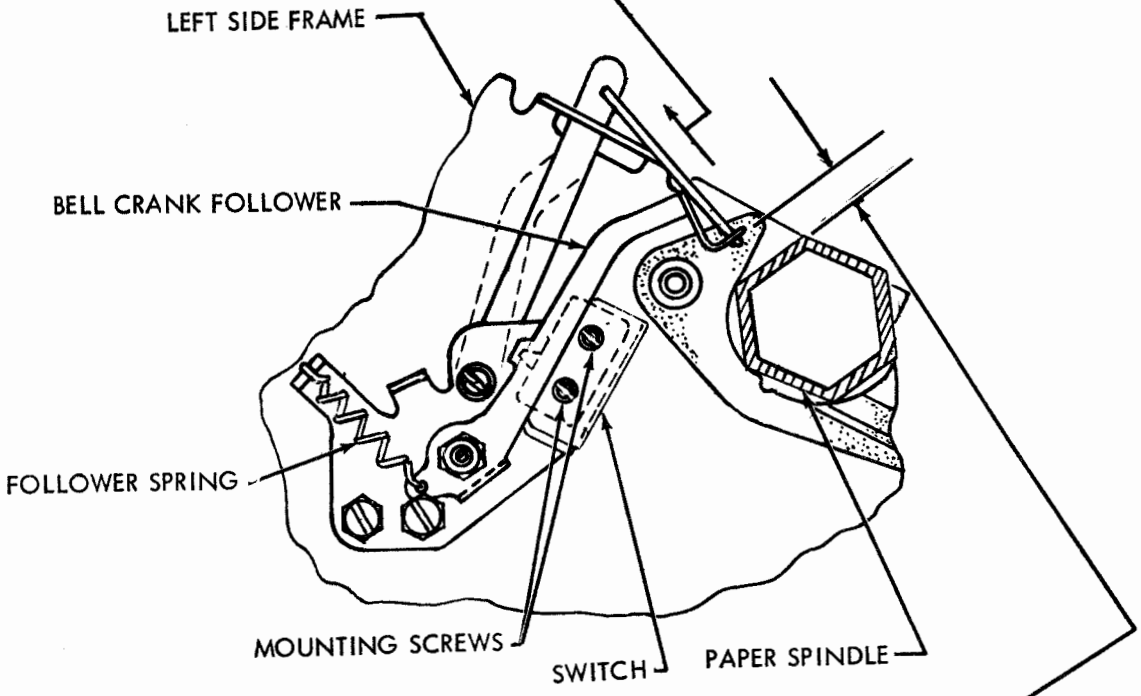
POSITION PRINTING CARRIAGE AT RIGHT MARGIN (SPACING CUTOUT OPERATED). INSERT STOP WITH WIDE SHELF IN SLOT IMMEDIATELY TO LEFT OF TABULATOR PAWL.

COLUMNAR TABULATOR STOPS

PLACE CARRIAGE IN POSITION TO PRINT FIRST CHARACTER IN COLUMN. INSERT STOP IN SLOT IMMEDIATELY TO LEFT OF TABULATOR PAWL. STORE EXTRA STOPS IN SLOTS BEYOND PRINTING LINE AT EITHER END OF SHAFT.

NOTE - - - WHEN PRINTING FORMS, CHECK STOP SETTINGS WITH RELATION TO COLUMNS. CORRESPONDING STOPS ON ALL MACHINES CONNECTED IN A CIRCUIT MUST BE THE SAME NUMBER OF SPACING OPERATIONS FROM LEFT MARGIN.

4.30 Paper-Out Alarm Mechanism



REPLACING PAGE ADDENDUM

Filing Instructions

1. Remove from the section the pages numbered the same as those attached to this sheet.

2. Insert the attached pages into the section in their place.

3. Place this sheet ahead of Page 1 of the section.

28 TYPING AND NONTYPING PERFORATORS

ADJUSTMENTS

1. GENERAL

1.001 This addendum supplements Section 573-139-700TC, Issue 1, and is issued to incorporate engineering changes to the backspace mechanism, and to change the requirement tolerance for the LATCH LEVER CLEARANCE adjustment of the punch mechanism. Arrows in the margins indicate changes.

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

Attached:
Page 1 dated May 1966, reissued; April 1968, reissued
Page 2 dated May 1966, revised; April 1968, reissued
Page 17 dated April 1968, revised
Page 18 dated April 1968, reissued
Page 57 dated May 1966, revised; April 1968, reissued
Page 58 dated May 1966, revised; April 1968, reissued
Page 61 dated May 1966, reissued; April 1968, reissued
Page 62 dated May 1966, revised; April 1968, reissued

28 TYPING AND NONTYPING PERFORATORS

ADJUSTMENTS

CONTENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section has been revised to include recent engineering changes and additions, and to rearrange the text, so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 This section contains the specific requirements and adjustments for the 28 typing and non-typing perforators.

1.03 Maintenance procedures which apply only to mechanisms of a particular design, or to certain models of 28 typing or non-typing perforators are so indicated in the titles of the paragraphs which contain these particular adjustment requirements.

1.04 The adjustments of each unit are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

1.05 Reference made to left or right, up or down, front or rear, etc apply to the unit in its normal operating position as viewed from the front.

1.06 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch lever 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 the signal generator shaft is rotated by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve drag and permit the main shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latch lever and fully disengage the clutch.

1.07 All electrical contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 per cent of the contact diameter. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustments or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

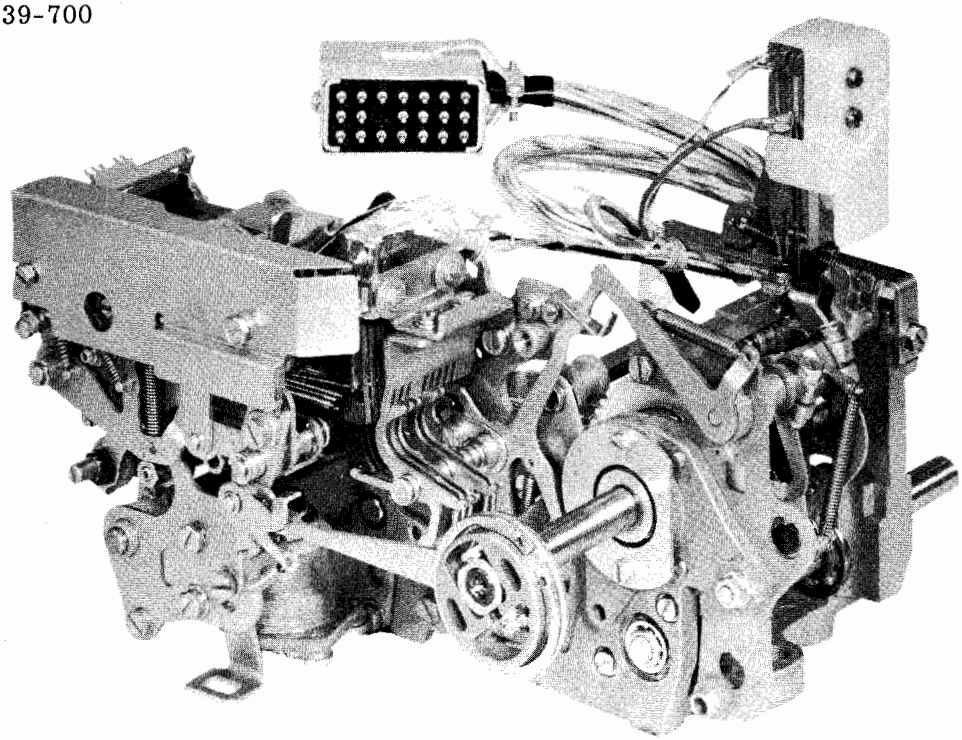


Figure 1 - 28 Non-Typing Perforator - Chadless Tape (With Code Reading Contacts, Timing Contacts and Backspace Mechanism)

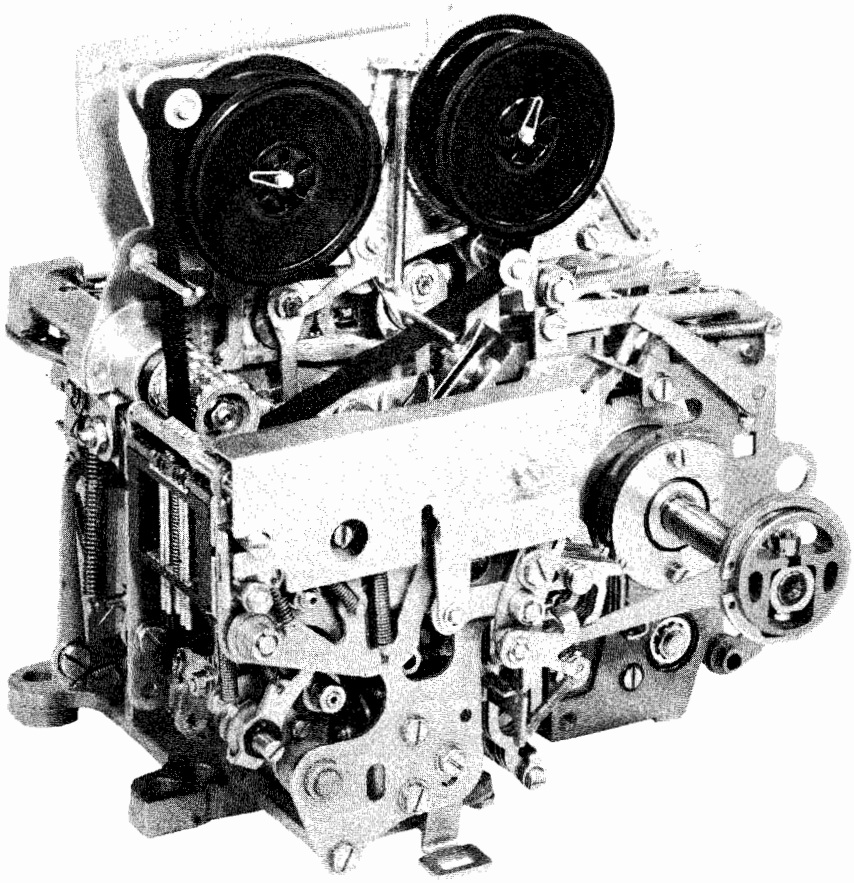


Figure 2 - 28 Typing Perforator - Chadless Tape (With Backspace Mechanism)

2. BASIC UNIT

2.01 Function Mechanism

NOTE: UNLESS OTHERWISE SPECIFIED, THESE ADJUSTMENTS APPLY TO BOTH TYPING AND NON-TYPING PERFORATORS.

(A) FUNCTION CLUTCH SHOE LEVER

TO CHECK

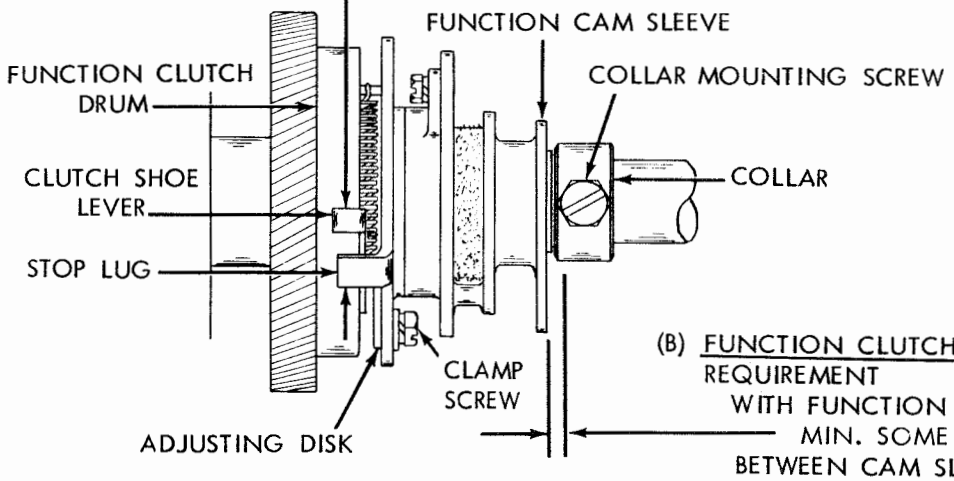
(1) DISENGAGE CLUTCH. MEASURE CLEARANCE.
(2) ALIGN HEAD OF CLUTCH DRUM MOUNTING SCREW WITH STOP LUG. ENGAGE CLUTCH. MANUALLY PRESS SHOE LEVER AND STOP LUG TOGETHER AND ALLOW TO SNAP APART. MEASURE CLEARANCE.

REQUIREMENT

CLEARANCE BETWEEN SHOE LEVER AND STOP LUG.
MIN. 0.055 INCH --- MAX. 0.085 INCH
GREATER WHEN CLUTCH IS ENGAGED (2) THAN WHEN DISINGAGED (1).

TO ADJUST

ENGAGE WRENCH OR SCREWDRIVER WITH LUG ON ADJUSTING DISK. ROTATE DISK WITH CLAMP SCREWS LOOSENED.



(B) FUNCTION CLUTCH DRUM END PLAY

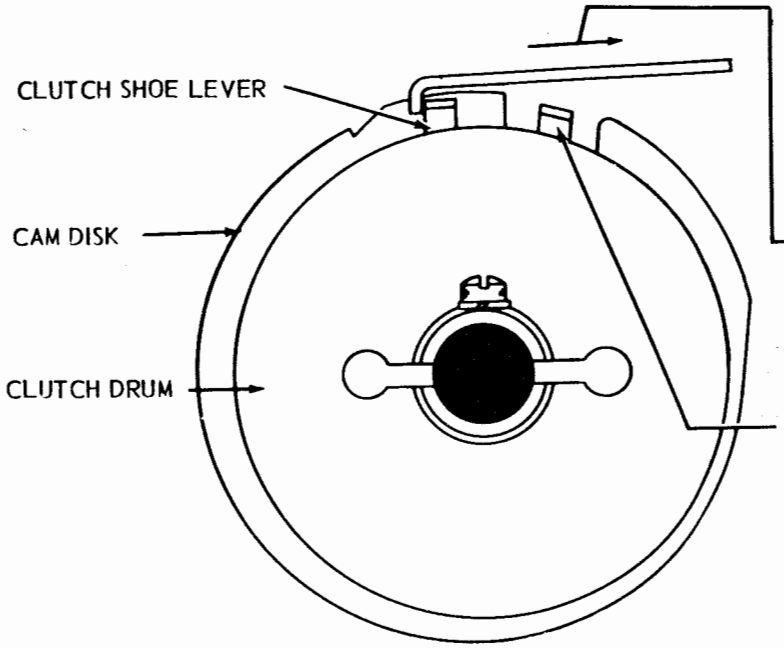
REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED.
MIN. SOME --- MAX. 0.015 INCH
BETWEEN CAM SLEEVE AND COLLAR WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM.

TO ADJUST

POSITION COLLAR WITH MOUNTING SCREW LOOSENED.

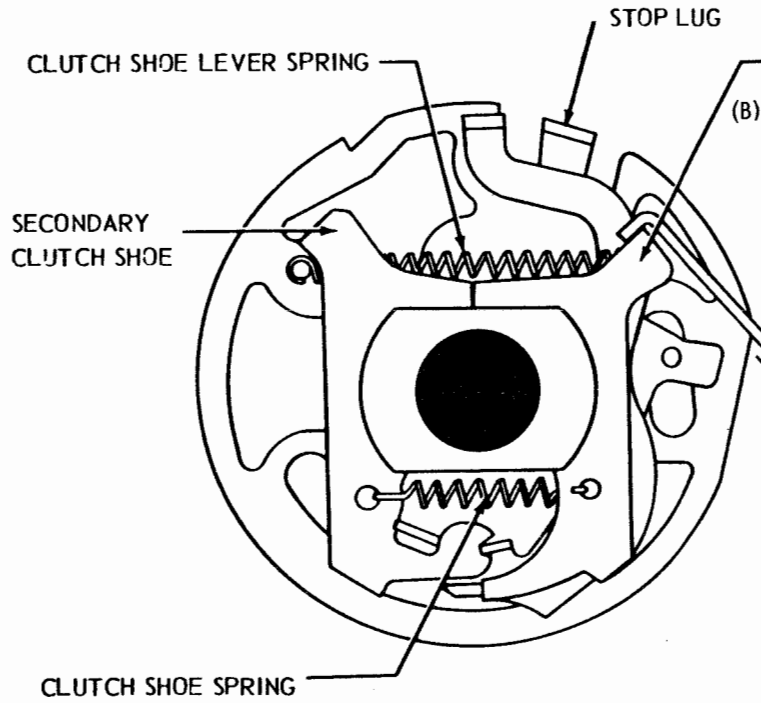
2.02 Function Mechanism continued



(A)
CLUTCH SHOE LEVER SPRING

TO CHECK
ENGAGE CLUTCH. HOLD CAM DISK TO PREVENT ITS TURNING.

REQUIREMENT
FOR TYPING PERFORATOR ONLY
MIN. 15 OZS ----- MAX. 20 OZS
FOR NON-TYPING PERFORATOR ONLY
MIN. 16 OZS ----- MAX. 22 OZS
CHECK BOTH SHOE LEVERS.



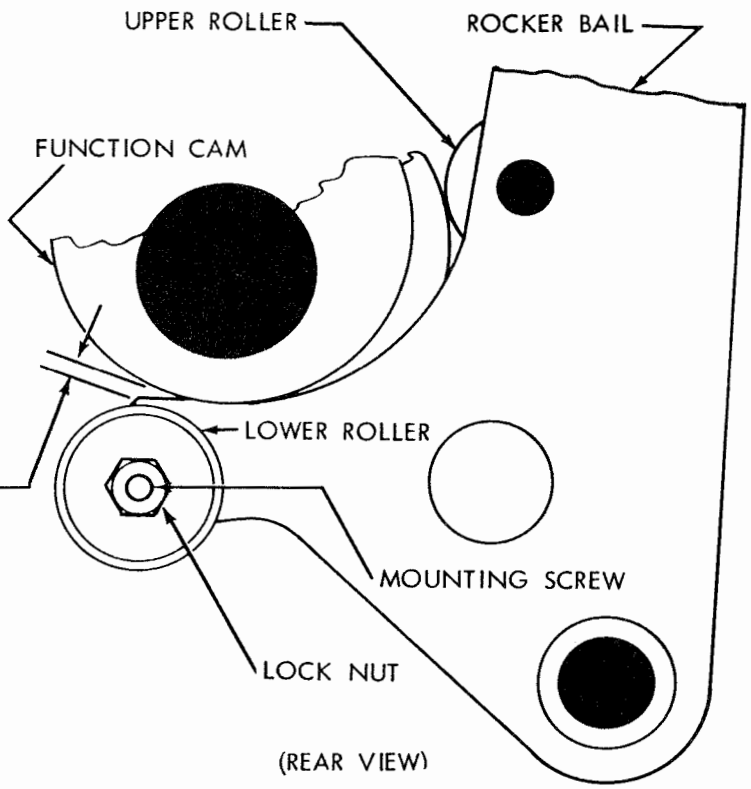
(B) CLUTCH SHOE SPRING

NOTE:
IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS REASON TO BELIEVE IT WILL NOT MEET ITS REQUIREMENT.

TO CHECK
REMOVE CLUTCH FROM DRUM.

REQUIREMENT
MIN. 3 OZS. ------MAX. 5 OZS.
TO START PRIMARY SHOE MOVING.

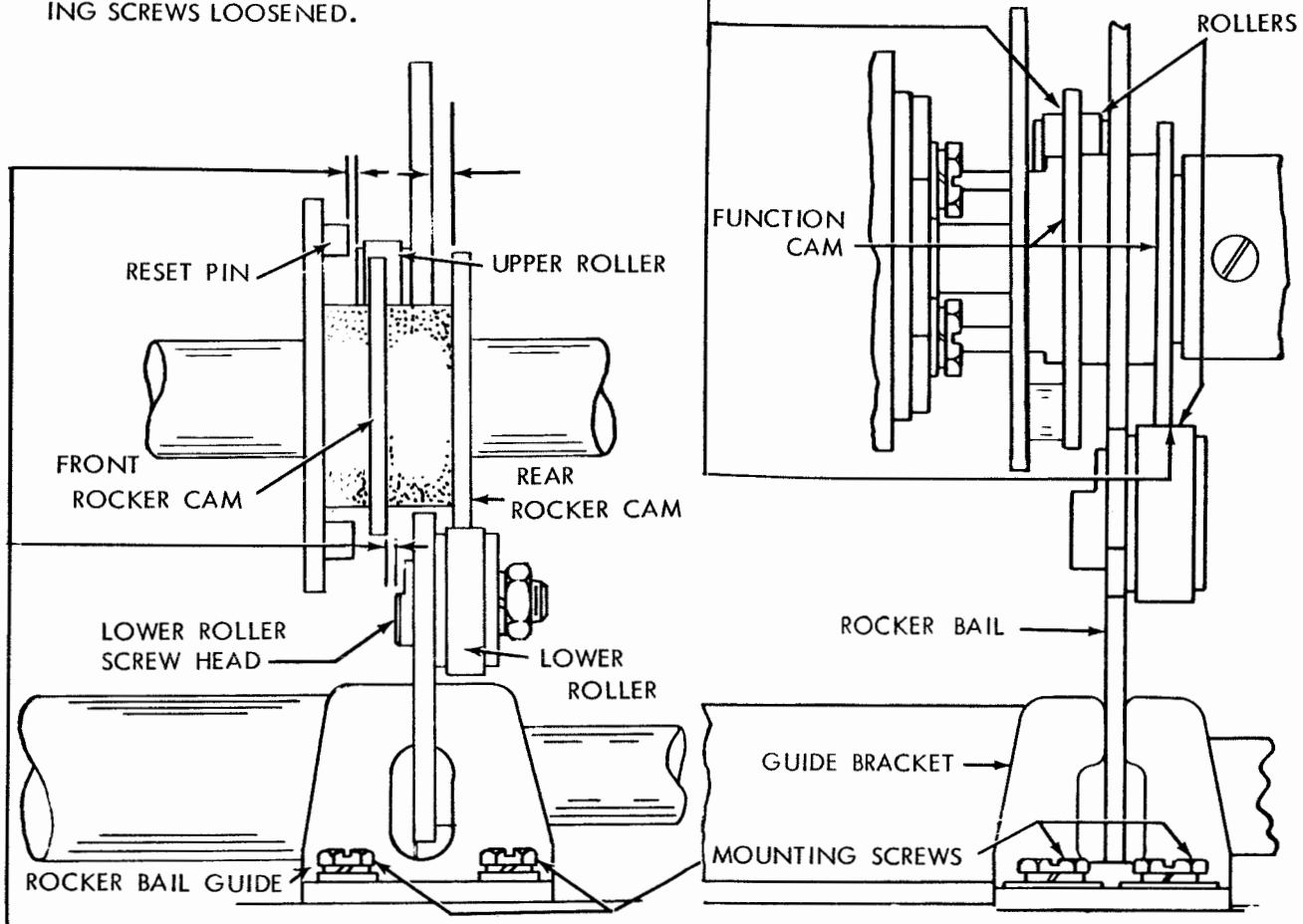
2.03 Function Mechanism continued



ROCKER BAIL
REQUIREMENT
WITH ROCKER BAIL POSITIONED TO ITS EXTREME LEFT AND UPPER ROLLER IN CONTACT WITH FUNCTION CAM:
MIN. SOME -----MAX. 0.004 INCH
CLEARANCE BETWEEN CAM AND LOWER ROLLER AT POINT OF LEAST CLEARANCE.
TO ADJUST
POSITION LOWER ROLLER MOUNTING SCREW IN ELONGATED SLOT WITH LOCK NUT LOOSENED. CHECK THROUGHOUT A COMPLETE REVOLUTION FOR BINDS.

2.04 Function Mechanism continued

ROCKER BAIL GUIDE BRACKET
(TYPING PERFORATOR ONLY)
REQUIREMENT
(1) ROCKER BAIL ROLLERS SHOULD ENGAGE FULL THICKNESS OF FUNCTION CAM.
(2) LIFTER ROLLER IN FULL ENGAGEMENT WITH ROCKER BAIL CAMMING SURFACE. SEE PARAGRAPH 2.36.
TO ADJUST
POSITION ROCKER BAIL AND GUIDE BRACKET WITH GUIDE BRACKET MOUNTING SCREWS LOOSENED.



ROCKER BAIL GUIDE BRACKET
(NON-TYPING PERFORATOR ONLY)
REQUIREMENT
CLEARANCE BETWEEN UPPER ROLLER AND RESET PINS; BETWEEN LOWER ROLLER SCREW HEAD AND FRONT CAM; BETWEEN ROCKER BAIL AND REAR ROCKER CAM.
MIN. 0.010 INCH
TO ADJUST
POSITION ROCKER BAIL WITH GUIDE MOUNTING SCREWS LOOSENED.

2.05 Function Mechanism continued

(A) FUNCTION CLUTCH TRIP LEVER

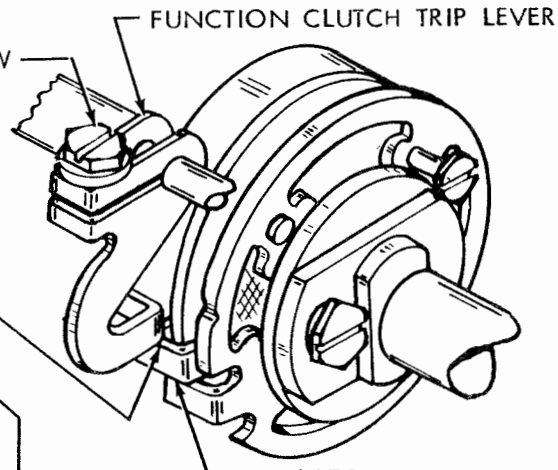
REQUIREMENT

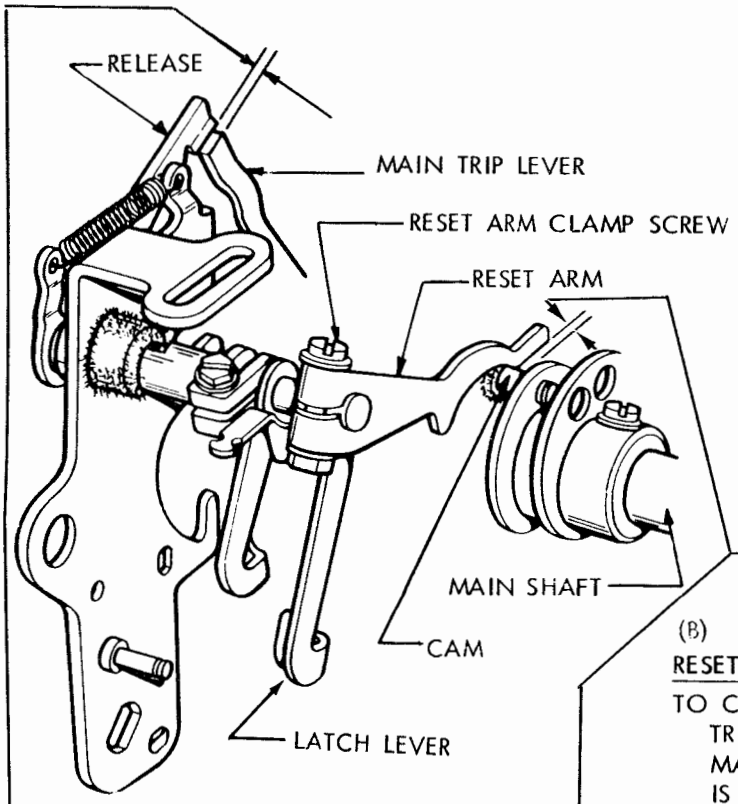
(1) WITH RELEASE RESTING ON MAIN TRIP LEVER (SEE BELOW), FUNCTION CLUTCH TRIP LEVER SHOULD ENGAGE FULL THICKNESS OF SHOE LEVER AT THE STOP WHERE BITE IS LEAST

(2) TRIP LEVER END PLAY:
MIN. SOME --- MAX. 0.010 INCH

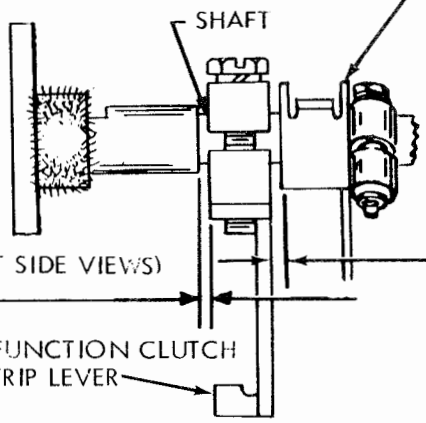
TO ADJUST

POSITION TRIP LEVER ON ITS SHAFT WITH CLAMP SCREW LOOSENED.





(RIGHT SIDE VIEW)



(RIGHT SIDE VIEWS)

(3) CLEARANCE BETWEEN RELEASE LEVER AND FUNCTION CAM:
MIN. SOME

(B)

RESET ARM

TO CHECK

TRIP FUNCTION CLUTCH AND POSITION MAIN SHAFT SO THAT RESET ARM IS HELD IN ITS HIGHEST POSITION BY CAM.

REQUIREMENT

(1) CLEARANCE BETWEEN RELEASE AND MAIN TRIP LEVER.

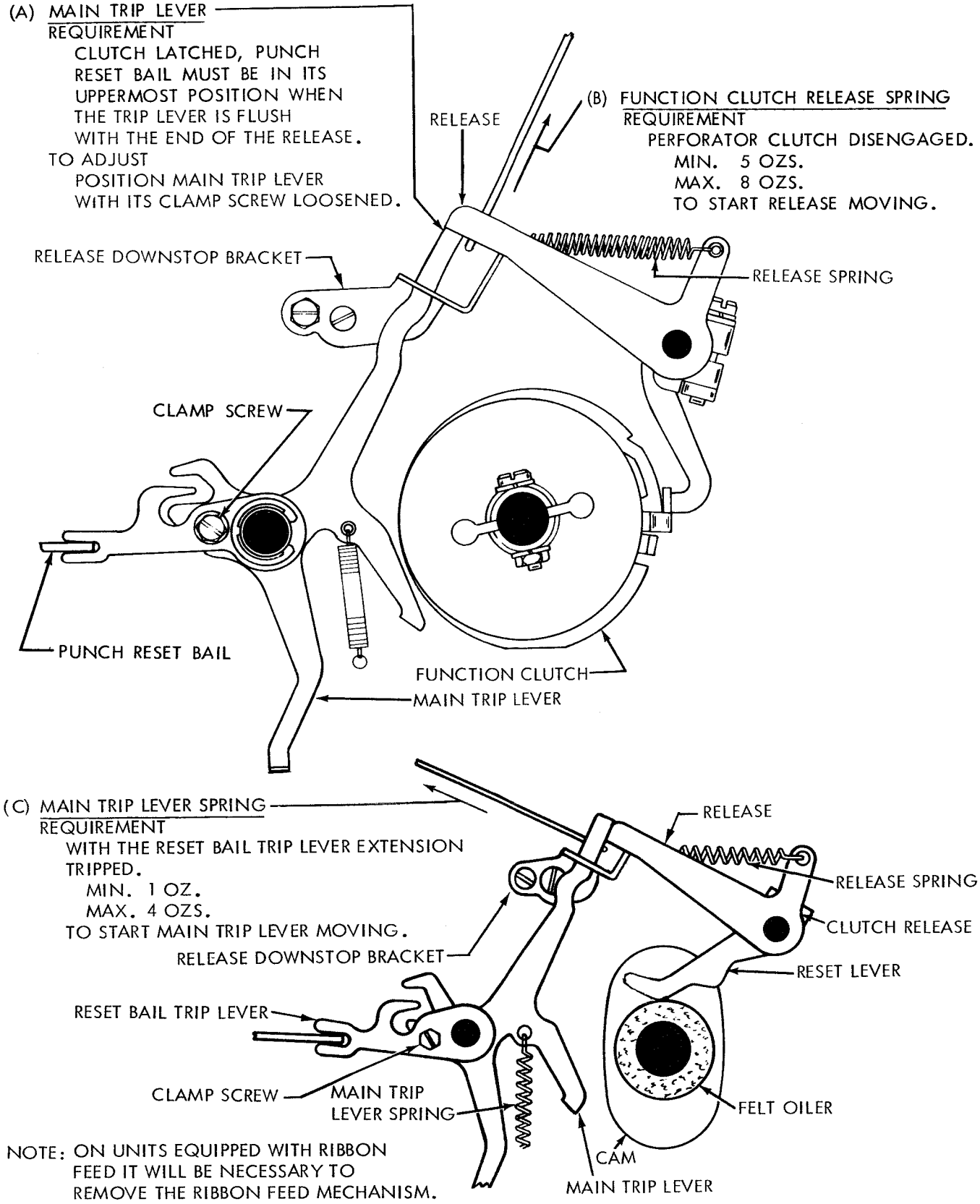
	NON-TYPING PERFORATOR	TYPING PERFORATOR
MIN.	0.005 INCH	0.005 INCH
MAX.	0.030 INCH	0.030 INCH

(2) LATCH LEVER END PLAY:
MIN. SOME
MAX. 0.010 INCH

TO ADJUST

POSITION RESET ARM ON ITS SHAFT WITH ITS CLAMP SCREW LOOSENED.

2.06 Function Mechanism continued



2.07 Punch Mechanism

PERFORATOR POSITION -PRELIMINARY - (FOR NON-TYPING PERFORATOR ONLY)

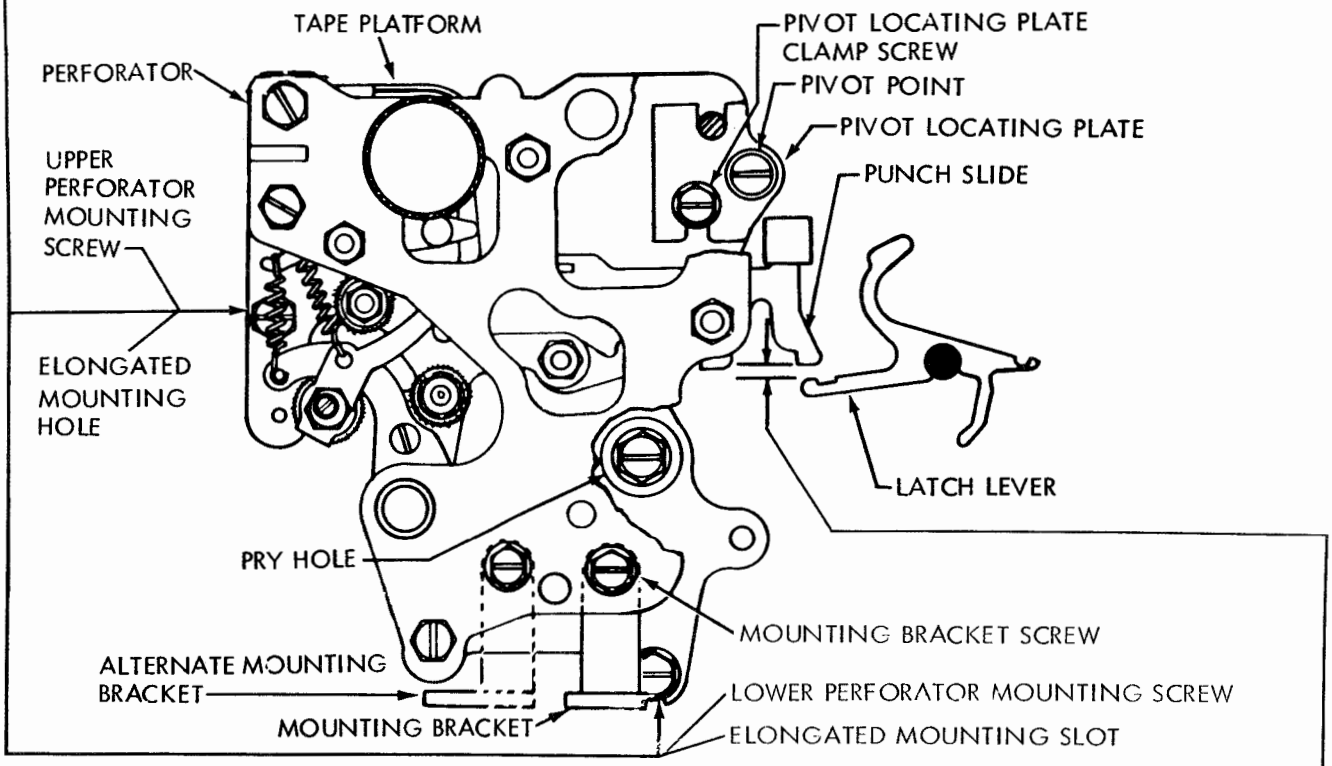
REQUIREMENT

THE PERFORATOR MECHANISM MOUNTING SCREW BENEATH PUNCH BLOCK AND MOUNTING SCREW AT LOWER EDGE OF PERFORATOR MECHANISM BACKPLATE SHALL BE LOCATED CENTRALLY WITHIN THEIR RESPECTIVE MOUNTING HOLES.

NOTE: THE MOUNTING HOLES ARE OVERSIZE TO FACILITATE USE OF PERFORATOR MECHANISM ON THE TYPING REPERFORATOR.

TO ADJUST

REMOVE MOUNTING SCREW AT THE LOWER EDGE OF PERFORATOR MECHANISM BACKPLATE, WITH THE TWO REMAINING BACKPLATE MOUNTING SCREWS AND MOUNTING BRACKET SCREW FRICTION TIGHT, POSITION PERFORATOR MECHANISM SO THAT THE TAPPED HOLE OF THE FRAME IS CENTRALLY LOCATED (AS GAUGED BY EYE) WITHIN LARGE BODY HOLE OF PUNCH MECHANISM BACKPLATE. TIGHTEN THE TWO BACKPLATE MOUNTING SCREWS AND RECHECK TO SEE THAT REQUIREMENT IS MET. REPLACE AND TIGHTEN THE LOWER BACKPLATE MOUNTING SCREW. TIGHTEN THE BRACKET MOUNTING SCREW.



PERFORATOR POSITION -FINAL - (FOR NON-TYPING PERFORATOR ONLY)

REQUIREMENT

WITH LETTERS COMBINATION SELECTED AND FUNCTION CLUTCH JUST TRIPPED.

MIN. 0.015 INCH --- MAX. 0.045 INCH

CLEARANCE BETWEEN THE CLOSEST LATCH LEVER AND ASSOCIATED PUNCH SLIDE.

TO ADJUST

LOOSEN (FRICTION TIGHT) REAR FRAME MOUNTING SCREWS (AND PIVOT LOCATING PLATE CLAMP SCREW IF THE TYPING UNIT IS USED ON THE PUNCH), THE FRONT MOUNTING BRACKET SCREWS, PLACE TIP OF SCREWDRIVER BETWEEN HEX HEAD SCREW AND ITS CLEARANCE HOLE RIM AND PRY UP OR DOWN. TIGHTEN SCREWS. (IF THE TYPING UNIT IS BEING USED, TIGHTEN PIVOT LOCATING PLATE CLAMP SCREW ONLY, AS THE NEXT ADJUSTMENT WILL BE TO OBTAIN CLEARANCE BETWEEN TYPEWHEEL AND PUNCH.

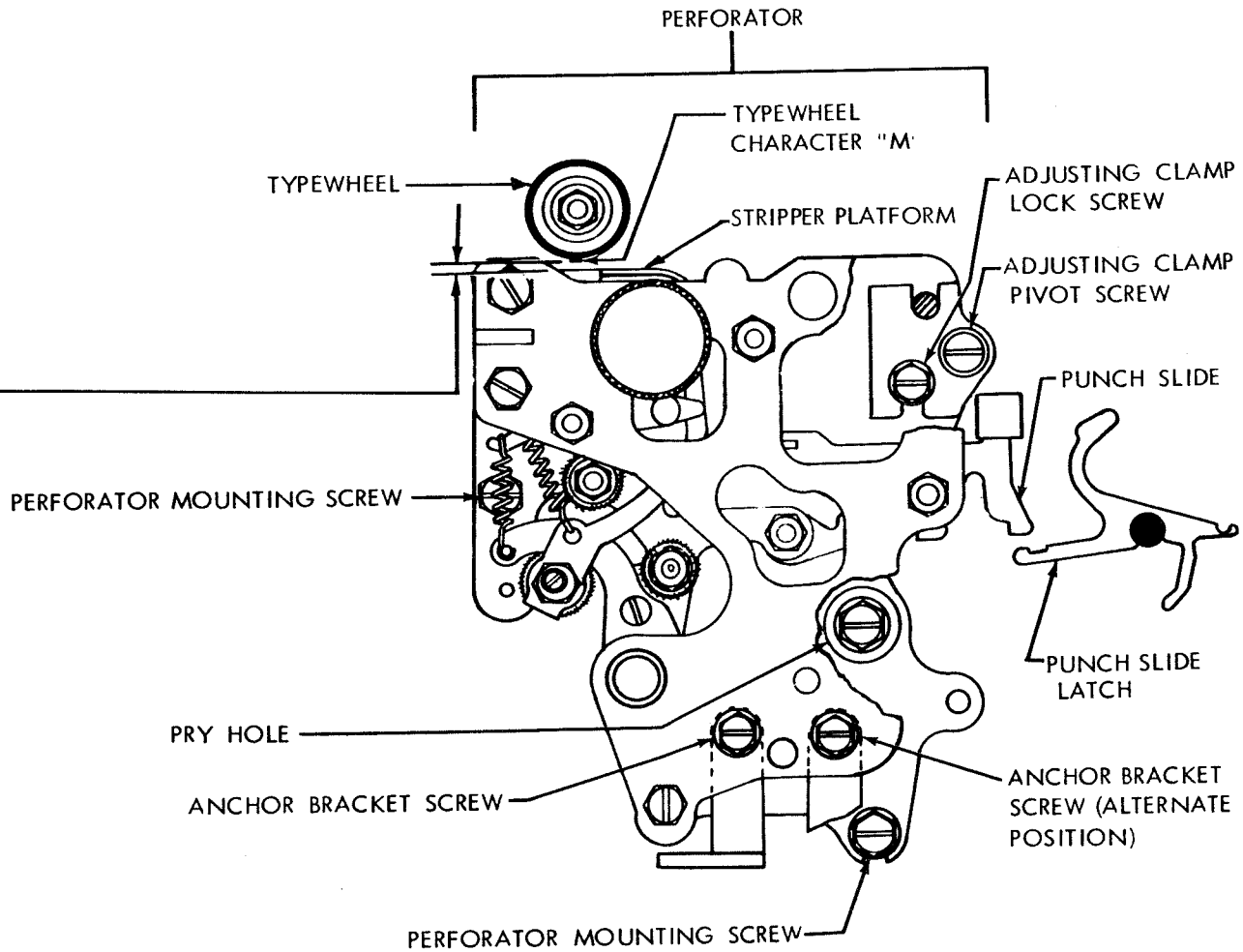
2.08 Punch Mechanism continued

PERFORATOR POSITION (FOR TYPING PERFORATOR ONLY)

(1) REQUIREMENT - (FOR TYPING PERFORATOR WITH SPRING RETRACTED PUNCH UNIT) WITH UNIT IN STOP POSITION AND TYPEWHEEL IN THE LETTERS FIELD. CLEARANCE BETWEEN THE LETTER "Z" ON THE TYPEWHEEL AND THE TOP OF THE STRIPPER PLATFORM.
MIN. 0.090 INCH --- MAX. 0.110 INCH

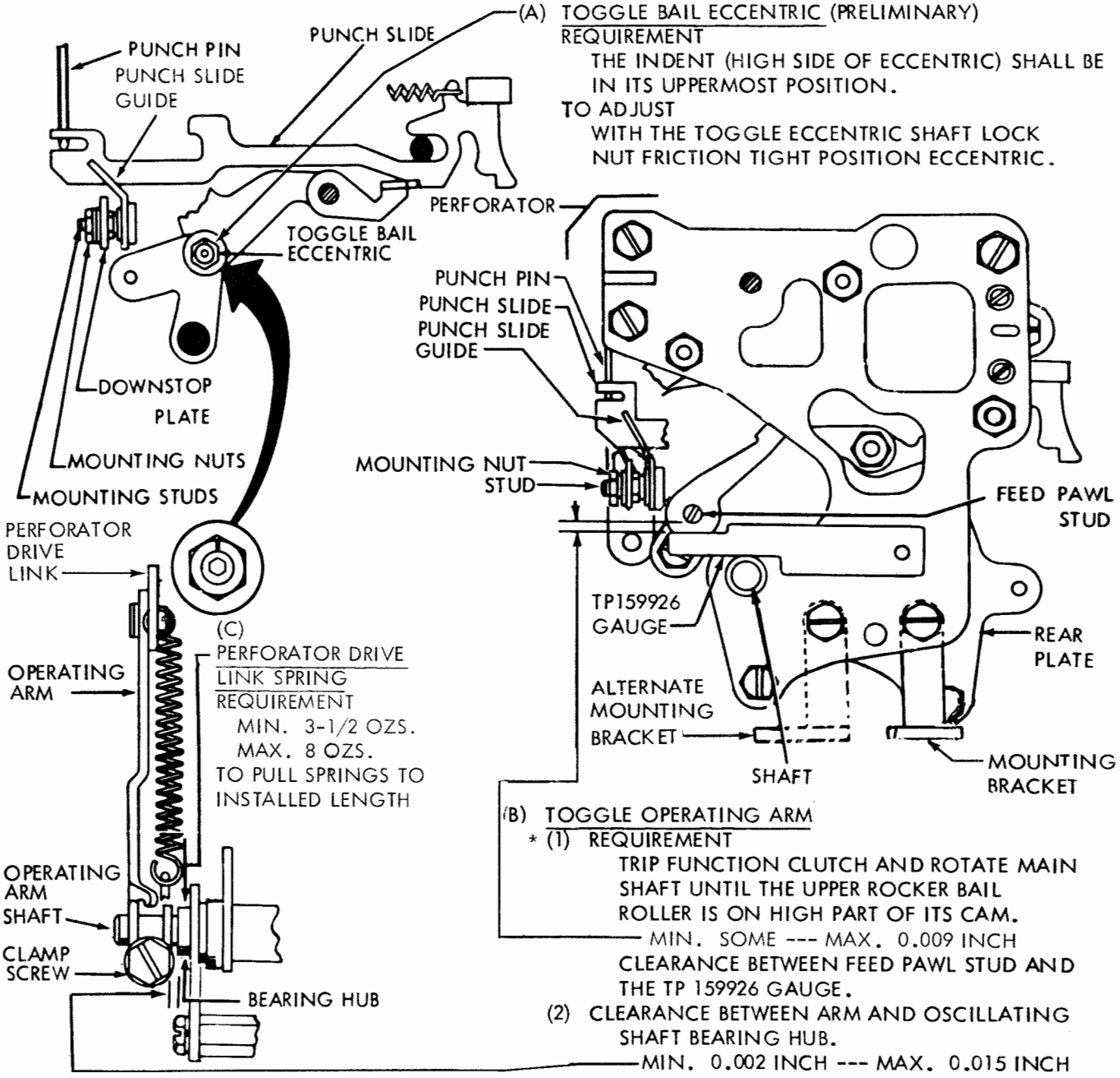
(2) REQUIREMENT - (FOR TYPING PERFORATOR WITH POWER RETRACTED PUNCH UNIT) WITH UNIT IN STOP POSITION AND TYPEWHEEL IN THE FIGURES FIELD. CLEARANCE BETWEEN THE FIGURE "5" ON THE TYPEWHEEL AND THE TOP OF THE STRIPPER PLATFORM.
MIN. 0.075 INCH --- MAX. 0.095 INCH

TO ADJUST
REMOVE RIBBON FROM CARRIER. POSITION PERFORATOR WITH TWO MOUNTING SCREWS, ADJUSTING CLAMP PIVOT SCREW AND ANCHOR BRACKET SCREW LOOSENED. CHECK RESET BAIL TRIP LEVER REQUIREMENT FOR SOME CLEARANCE AND ADJUST IF NECESSARY.



2.09 Punch Mechanism continued

NOTE: BEFORE PROCEEDING WITH THE PUNCH MECHANISM ADJUSTMENTS, CHECK THE ROCKER BAIL CAM FOLLOWER ROLLER ADJUSTMENT AND LOOSEN THE PUNCH SLIDE DOWNSTOP MOUNTING NUT AND GUIDE MOUNTING STUD.



(A) TOGGLE BAIL ECCENTRIC (PRELIMINARY)

REQUIREMENT

THE INDENT (HIGH SIDE OF ECCENTRIC) SHALL BE IN ITS UPPERMOST POSITION.

TO ADJUST

WITH THE TOGGLE ECCENTRIC SHAFT LOCK NUT FRICTION TIGHT POSITION ECCENTRIC.

(C) PERFORATOR DRIVE LINK SPRING

REQUIREMENT

MIN. 3-1/2 OZS.
MAX. 8 OZS.
TO PULL SPRINGS TO INSTALLED LENGTH

(B) TOGGLE OPERATING ARM

* (1) REQUIREMENT

TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL THE UPPER ROCKER BAIL ROLLER IS ON HIGH PART OF ITS CAM.

MIN. SOME --- MAX. 0.009 INCH CLEARANCE BETWEEN FEED PAWL STUD AND THE TP 159926 GAUGE.

(2) CLEARANCE BETWEEN ARM AND OSCILLATING SHAFT BEARING HUB.

MIN. 0.002 INCH --- MAX. 0.015 INCH WITH PLAY TAKEN UP IN DIRECTION TO MAKE CLEARANCE MAXIMUM.

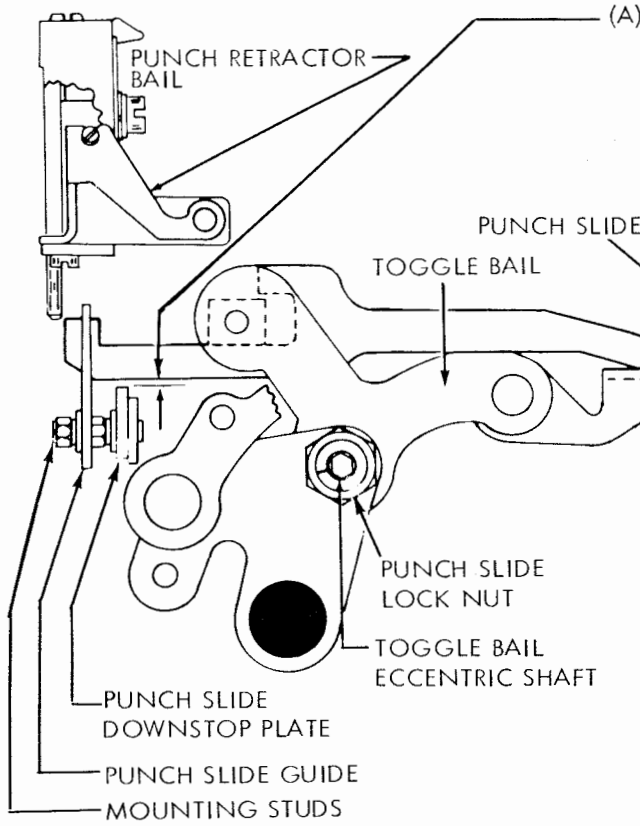
TO ADJUST

WITH LOCKSCREW FRICTION TIGHT, POSITION TOGGLE BAIL AND OPERATING ARM.

*AFTER FEED PAWL ADJUSTMENT HAS BEEN MADE, IF PUNCH PIN PENETRATION AND FEED PAWL REQUIREMENTS ARE MET, THIS REQUIREMENT SHOULD BE CONSIDERED FULFILLED.

2.10 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



(A) PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

FUNCTION CLUTCH DISENGAGED. UP AND DOWN PLAY AT LEFT END OF PUNCH SLIDES TAKEN UP TOWARD TOP, CLEARANCE BETWEEN FRONT AND REAR PUNCH SLIDES AND THEIR DOWNSTOP PLATE.

MIN. SOME --- MAX. 0.008 INCH ALL OTHER PUNCHES SHOULD HAVE SOME CLEARANCE.

TO ADJUST

REMOVE PUNCH SLIDE GUIDE, LOOSEN DOWNSTOP PLATE MOUNTING STUDS AND POSITION THE DOWNSTOP PLATE. TIGHTEN STUDS AND REPLACE GUIDE SO THAT PUNCH SLIDES ALIGN WITH PUNCH PINS (AS GAUGED BY EYE).

NOTE: TO CHECK FOR SOME CLEARANCE PLACE UNIT IN THE STOP POSITION, TRIP FUNCTION TRIP MECHANISM AND LATCHES, THE PUNCH SLIDES SHALL MOVE FREELY TO THEIR OPERATED POSITION.

(B) PUNCH PIN PENETRATION

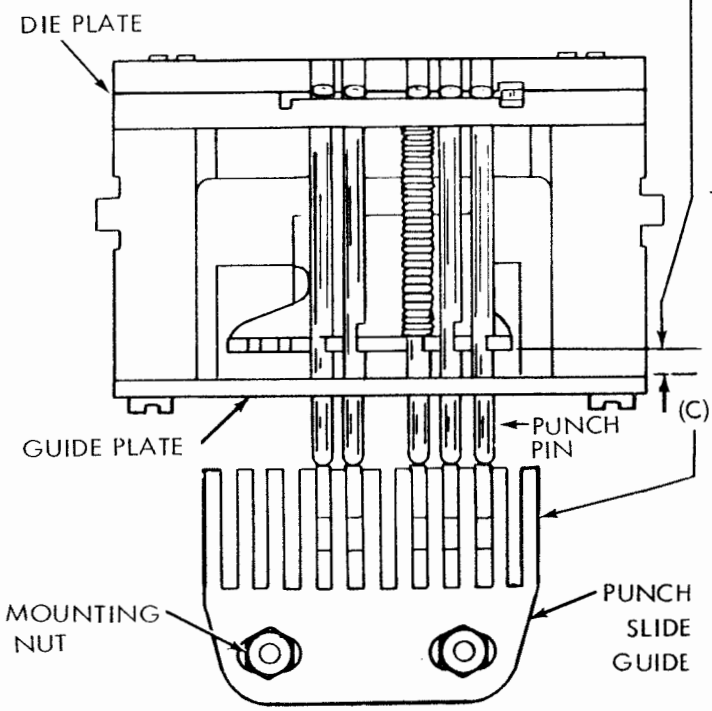
REQUIREMENT

LETTERS MANUALLY SELECTED, CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE, CLEARANCE BETWEEN LOWER EDGE OF PUNCH RETRACTOR BAIL AND UPPER SIDE OF GUIDE PLATE (MEASURED AT LEFT EDGE OF PUNCH PINS WHERE CLEARANCE IS LEAST). THE CODE PUNCHES SHOULD PUNCH A FULL LID WITH A MINIMUM AMOUNT OF TEAR. (REFINE ADJUSTMENT).

MIN. 0.060 INCH --- MAX. 0.075 INCH

TO ADJUST

ROTATE THE TOGGLE BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT LOOSENED. KEEP THE INDENTATION IN THE ECCENTRIC SHAFT TO THE LEFT OF A VERTICAL CENTER LINE THROUGH THE SHAFT.



(C) PUNCH SLIDE GUIDE POSITION

REQUIREMENT

LETTERS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL THE PUNCH SLIDES JUST TOUCH THE PUNCH PINS. THE PUNCH SLIDES SHOULD ALIGN CENTRALLY WITH THEIR RESPECTIVE PUNCH PINS (GAUGED BY EYE).

TO ADJUST

POSITION THE PUNCH SLIDE GUIDE WITH ITS MOUNTING NUTS LOOSENED.

2.11 Punch Mechanism continued

(A) PUNCH PIN PENETRATION

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.

REQUIREMENT

(1) WITH THE LETTERS COMBINATION SELECTED FUNCTION CLUTCH ENGAGED. ROTATE MAIN SHAFT UNTIL ALL PUNCH PINS ARE INTO OR ABOVE THE TAPE APERTURE IN PUNCH BLOCK. WITH THE TP159926 GAUGE IN POSITION

MIN. 0.050 INCH

CLEARANCE BETWEEN FEED PAWL STUD AND THE GAUGE.

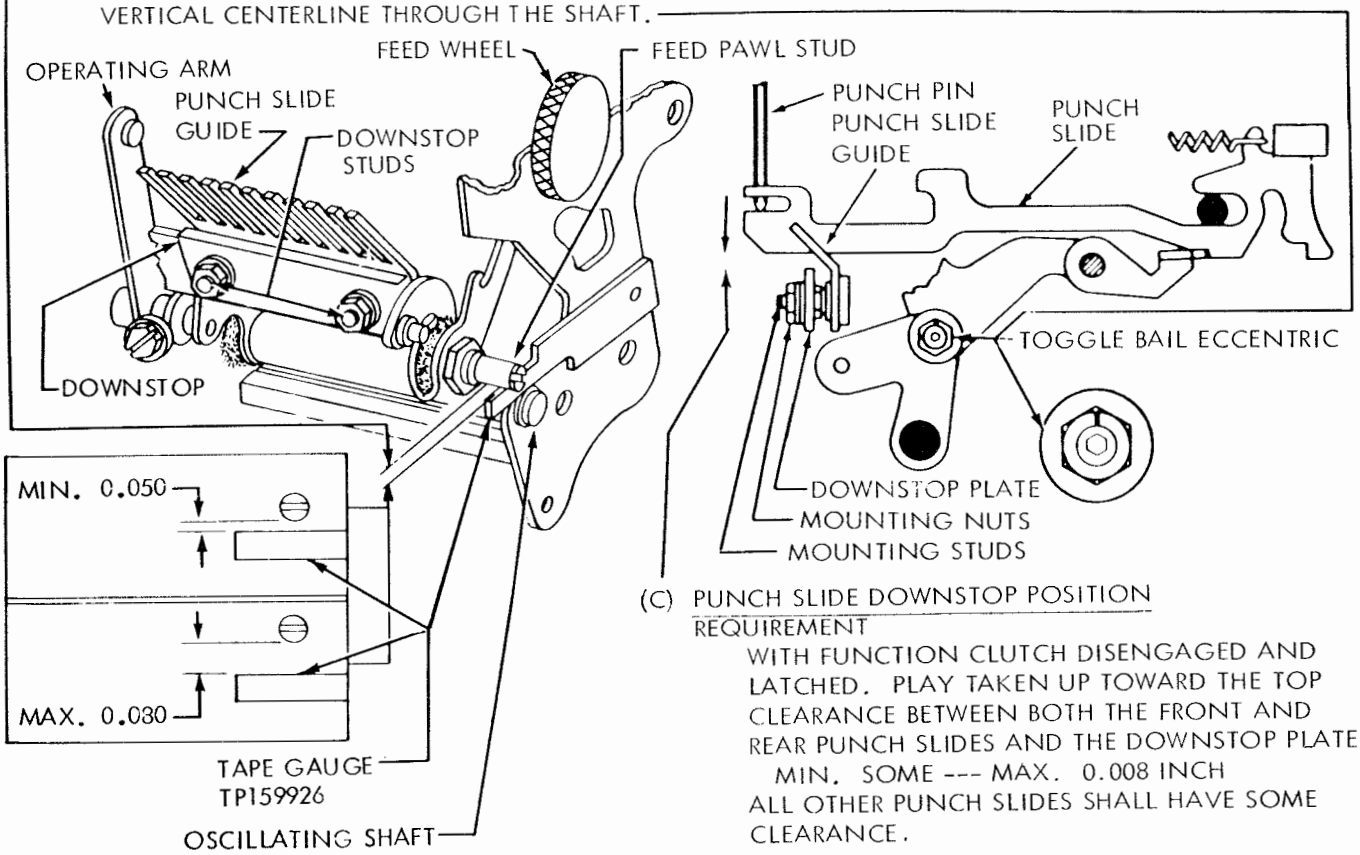
(2) WITH LETTERS COMBINATION SELECTED, FUNCTION CLUTCH ENGAGED. ROTATE MAIN SHAFT UNTIL ALL PUNCH PINS HAVE CLEARED THE PUNCH BLOCK. WITH THE TP159926 GAUGE IN POSITION

MAX. 0.080 INCH

CLEARANCE BETWEEN FEED PAWL STUD AND GAUGE.

TO ADJUST

REFINE THE TOGGLE BAIL ECCENTRIC ADJUSTMENT KEEPING THE INDENT TO THE RIGHT OF A VERTICAL CENTERLINE THROUGH THE SHAFT.



(C) PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED AND LATCHED. PLAY TAKEN UP TOWARD THE TOP CLEARANCE BETWEEN BOTH THE FRONT AND REAR PUNCH SLIDES AND THE DOWNSTOP PLATE

MIN. SOME --- MAX. 0.008 INCH

ALL OTHER PUNCH SLIDES SHALL HAVE SOME CLEARANCE.

(B) PUNCH SLIDE GUIDE

REQUIREMENT

THE PUNCH SLIDES SHOULD ALIGN WITH THEIR CORRESPONDING PUNCH PINS AND BE FREE OF BINDS AFTER TIGHTENING THE GUIDE MOUNTING STUDS. EACH PUNCH SLIDE SHOULD RETURN FREELY AFTER BEING PUSHED IN NOT MORE THAN 1/16 INCH.

TO ADJUST

POSITION THE GUIDE WITH ITS MOUNTING STUDS FRICTION TIGHT.

NOTE: TO CHECK FOR SOME CLEARANCE, PLACE UNIT IN STOP POSITION, TRIP FUNCTION TRIP MECHANISM AND LATCHES, THE PUNCH SLIDES SHALL MOVE FULLY TO THEIR OPERATED POSITION.

TO ADJUST

WITH UNIT IN STOP POSITION, LOOSEN THE TWO DOWNSTOP PLATE MOUNTING LOCK NUTS AND LOCATE THE DOWNSTOP PLATE TO MEET THE REQUIREMENT.

2. 12 Punch Mechanism continued

RESET BAIL TRIP LEVER

REQUIREMENT

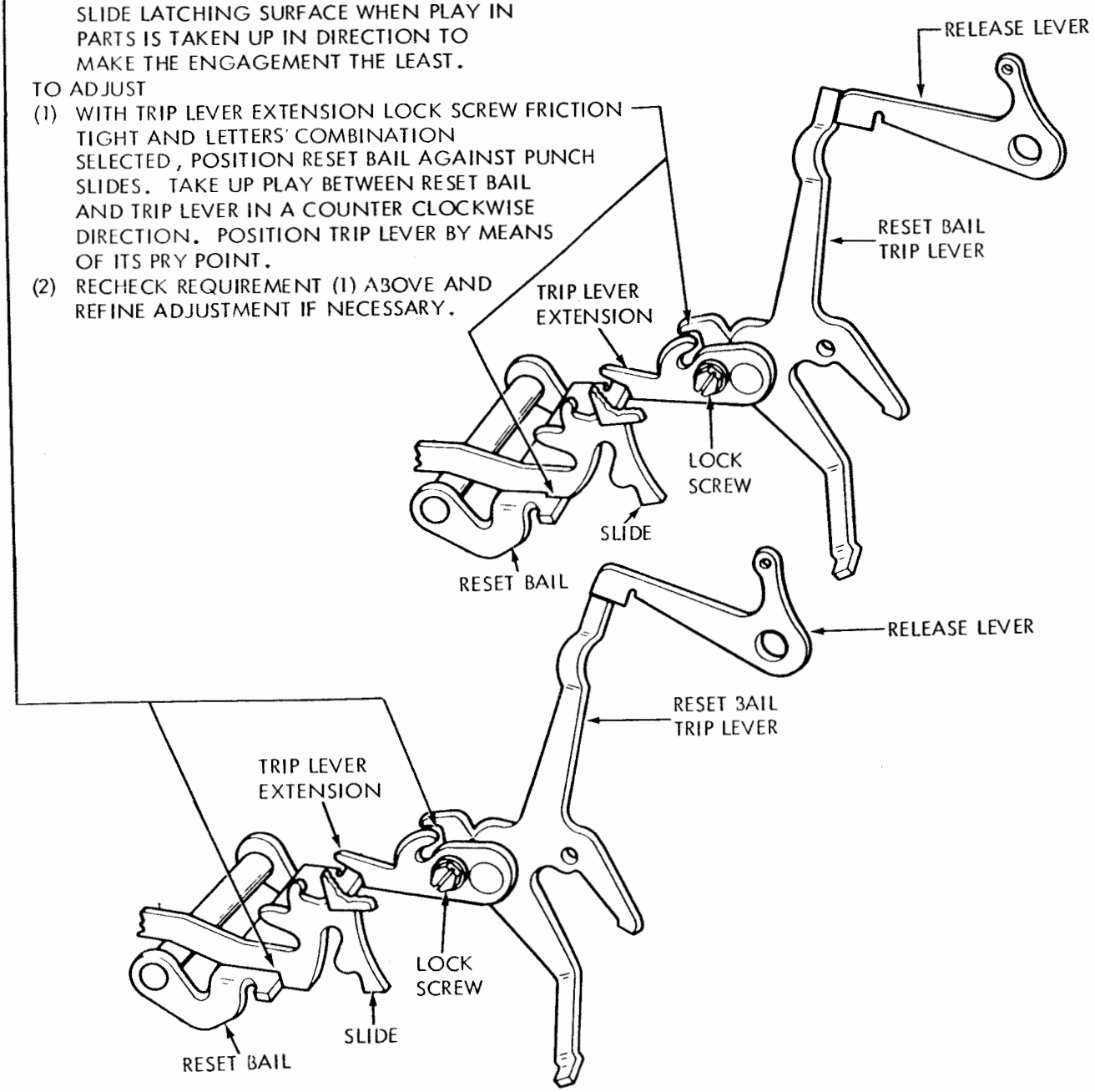
(1) MANUALLY SELECT BLANK COMBINATION. MANUALLY ROTATE RESET BAIL TRIP LEVER. THE PUNCH SLIDE RESET BAIL SHALL TRIP BEFORE THE FUNCTION CLUTCH IS TRIPPED.

(2) WITH FUNCTION AND SELECTOR CLUTCHES DISENGAGED AND LATCHED, THE PUNCH SLIDE RESET BAIL SHALL FULLY ENGAGE THE PUNCH SLIDE LATCHING SURFACE WHEN PLAY IN PARTS IS TAKEN UP IN DIRECTION TO MAKE THE ENGAGEMENT THE LEAST.

TO ADJUST

(1) WITH TRIP LEVER EXTENSION LOCK SCREW FRICTION TIGHT AND LETTERS' COMBINATION SELECTED, POSITION RESET BAIL AGAINST PUNCH SLIDES. TAKE UP PLAY BETWEEN RESET BAIL AND TRIP LEVER IN A COUNTER CLOCKWISE DIRECTION. POSITION TRIP LEVER BY MEANS OF ITS PRY POINT.

(2) RECHECK REQUIREMENT (1) ABOVE AND REFINE ADJUSTMENT IF NECESSARY.



2.13 Punch Mechanism continued

LATCH LEVER CLEARANCE

REQUIREMENT (FOR BOTH TYPING AND NON-TYPING PERFORATORS)

WITH "BLANK" COMBINATION SELECTED, THE FUNCTION CLUTCH DISENGAGED AND LATCHED, CLEARANCE BETWEEN THE PUNCH SLIDE AND ITS ASSOCIATED LATCH LEVER.

MIN. 0.008 INCH

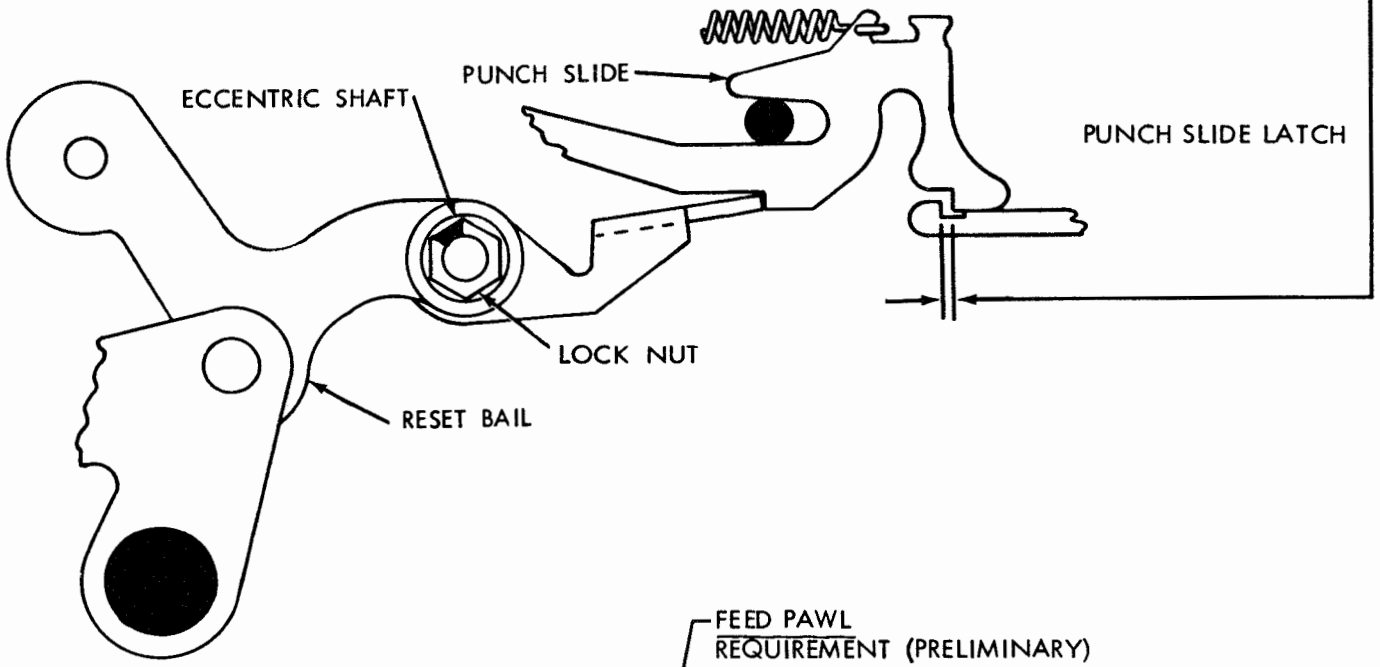
MAX. 0.020 INCH

FOR THE SLIDE HAVING THE LEAST CLEARANCE.

TO ADJUST

LOOSEN THE LOCK NUT ON THE RESET BAIL ECCENTRIC SHAFT AND POSITION THE RESET BAIL BY ROTATING THE ECCENTRIC SHAFT TO MEET THE REQUIREMENT: THE INDENT SHALL BE KEPT ABOVE THE HORIZONTAL CENTER LINE OF THE ECCENTRIC.

NOTE: ON KEYBOARD PERFORATORS NOT HAVING A "BLANK" KEY, SUBSTITUTE USE OF THE "T" KEY WHENEVER USE OF THE "BLANK" KEY IS REQUIRED.



FEED PAWL

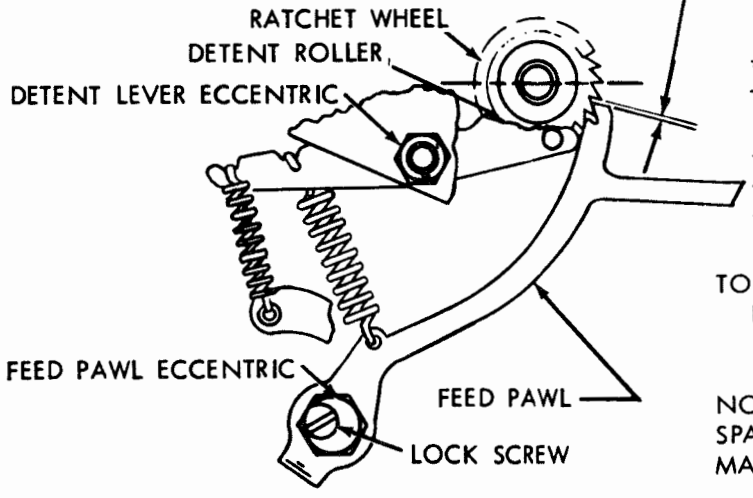
REQUIREMENT (PRELIMINARY)

FUNCTION CLUTCH DISENGAGED, IDENTATION IN DETENT LEVER ECCENTRIC AT RIGHT ANGLE TO LEVER, DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, HIGH PART OF FEED PAWL ECCENTRIC TO THE RIGHT OF ITS LOCK SCREW, THE FEED PAWL SHOULD ENGAGE THE FIRST TOOTH BELOW A HORIZONTAL CENTER LINE THROUGH THE RATCHET WHEEL WITH NO PERCEPTIBLE CLEARANCE.

TO ADJUST

ROTATE THE FEED PAWL ECCENTRIC WITH LOCK NUT LOOSENED.

NOTE: THIS ADJUSTMENT IS RELATED TO FEED HOLE SPACING AND THE TWO ADJUSTMENTS MUST BE MADE AT THE SAME TIME.



2.14 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.

FEED HOLE SPACING (PRELIMINARY)

REQUIREMENT

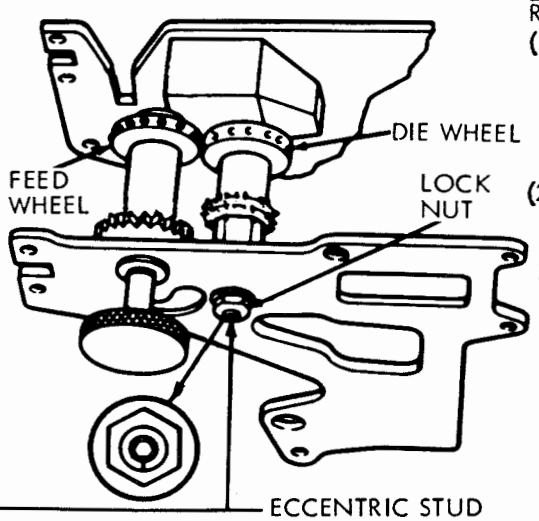
THE INDENT OF DIE WHEEL ECCENTRIC STUD SHALL BE POINTING DOWNWARD.

TO ADJUST

POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED.

NOTE

BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS.

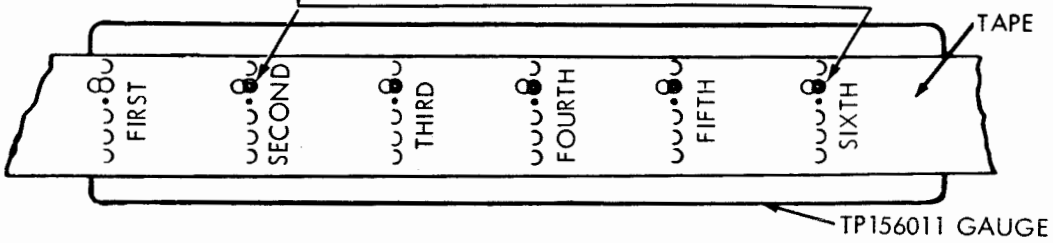


FEED HOLE SPACING (FINAL)

REQUIREMENT

(1) WITH TAPE SHOE BLOCKED AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. (CHECK THROUGH 3 OR 4 ROTATIONS).

(2) PERFORATE SIX SERIES OF (9) "BLANK" COMBINATIONS FOLLOWED BY (1) "LETTERS" COMBINATION. OPEN CHADS SO CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF THE TP156011 TAPE GAUGE SO CIRCULAR PORTION OF THE FIRST NUMBER TWO CODE HOLE IN TAPE IS CONCENTRIC WITH THE FIRST (0.072) HOLE OF TAPE GAUGE. (SEE NOTE). THE NEXT FOUR 0.072 HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH THE NUMBER TWO CODE HOLES IN TAPE AND CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER TWO CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIA. HOLE OF TAPE GAUGE.



NOTE: THE FIRST FIVE HOLES IN GAUGE ARE THE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER) BUT THE SIXTH HOLE IN GAUGE IS LARGER THAN THE FIRST FIVE (0.086 INCH DIAMETER). THIS ARRANGEMENT ALLOWS ± 0.007 INCH VARIATION IN FIVE (5) INCHES.

TO ADJUST

(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCK NUT AND ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL, BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 ROTATIONS). KEEP INDENT OF ECCENTRIC STUD BELOW THE HORIZONTAL CENTER LINE OF STUD.

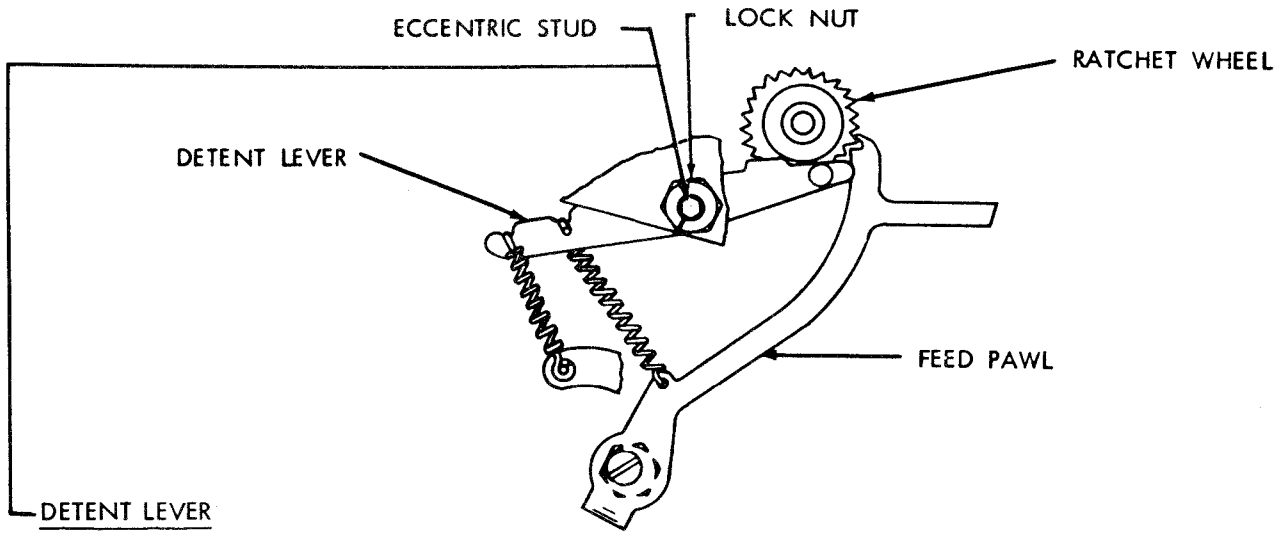
(2) CHECK TEN CHARACTERS PER INCH REQUIREMENT AND REFINE FEED WHEEL DIE WHEEL CLEARANCE ADJUSTMENT TO MEET THE REQUIREMENT BY MOVING INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE THE CHARACTER SPACING.

CAUTION: WITH THE TAPE REMOVED FROM THE PUNCH MECHANISM, BE SURE THE DIE WHEEL DOES NOT BIND.

(3) WITH THE TAPE SHOE AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND THE TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. FAILURE TO MEET THIS REQUIREMENT INDICATES THE DIE WHEEL ECCENTRIC HAS BEEN OVER-ADJUSTED. TO MEET THIS REQUIREMENT, REFINE THE ADJUSTMENT.

2.15 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



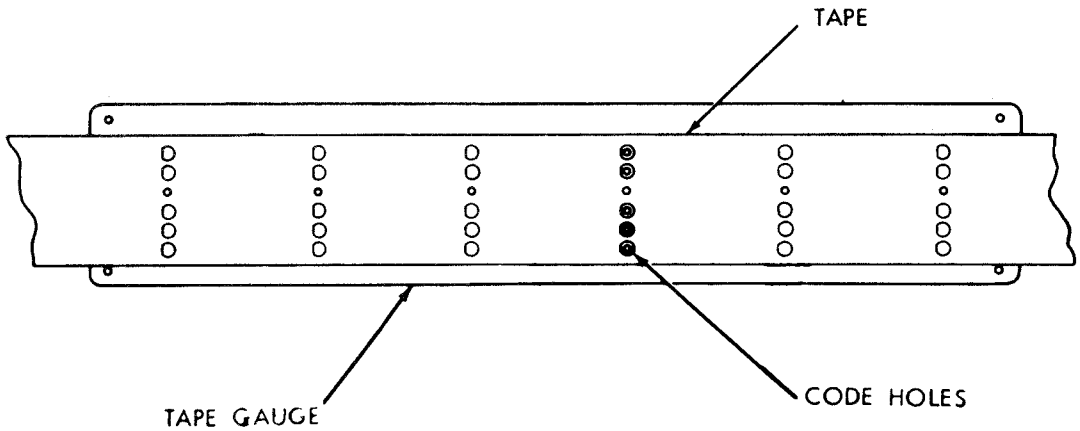
REQUIREMENT

A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION PERFORATED ON THE PERFORATOR MUST CONFORM TO THE TP156011 TAPE GAUGE. THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHOULD COINCIDE WITH A LATERAL CENTERLINE THROUGH THE HOLES IN THE GAUGE.

TO ADJUST

ROTATE THE DETENT ECCENTRIC CLOCKWISE TO MOVE THE FEED HOLES TOWARD THE HINGED EDGE OF THE CODE HOLES AND COUNTERCLOCKWISE TO MOVE THE FEED HOLES TOWARD THE TRAILING EDGE OF THE CODE HOLES. TIGHTEN THE ECCENTRIC LOCK NUT AND REFINE THE FEED PAWL ADJUSTMENT.

RECHECK FEED PAWL ADJUSTMENT.



2.16 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.

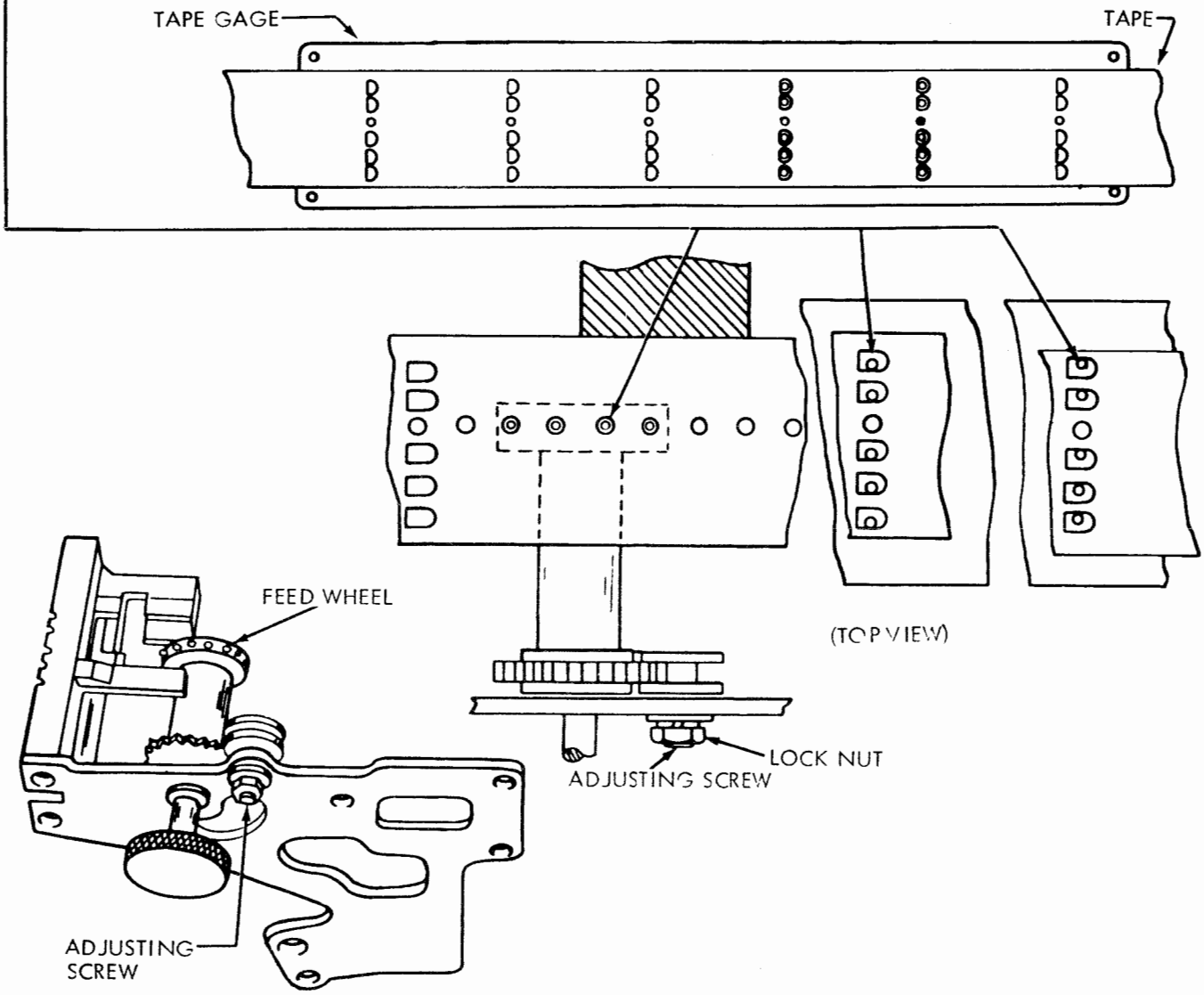
FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

WITH MACHINE OPERATING UNDER POWER, OBTAIN A TAPE CONSISTING OF A SERIES OF NINE "BLANKS" FOLLOWED BY A "LETTERS" COMBINATION. OPEN CHADS SO CODE HOLES ARE VISIBLE AND PLACE TAPE OVER THE TP156011 TAPE GAUGE WITH "LETTERS" COMBINATION FEED HOLES ENGAGING FEED PINS. THE LARGE HOLES IN GAUGE ARE THE SAME DIAMETER AS THE CIRCULAR PORTION OF CODE HOLES IN TAPE. THE SMALL HOLES IN GAUGE SERVE AS A GUIDE FOR GAUGING. THE CIRCULAR PORTION OF CODE HOLES IN TAPE SHALL BE CONCENTRIC WITH HOLES IN TAPE GAUGE.

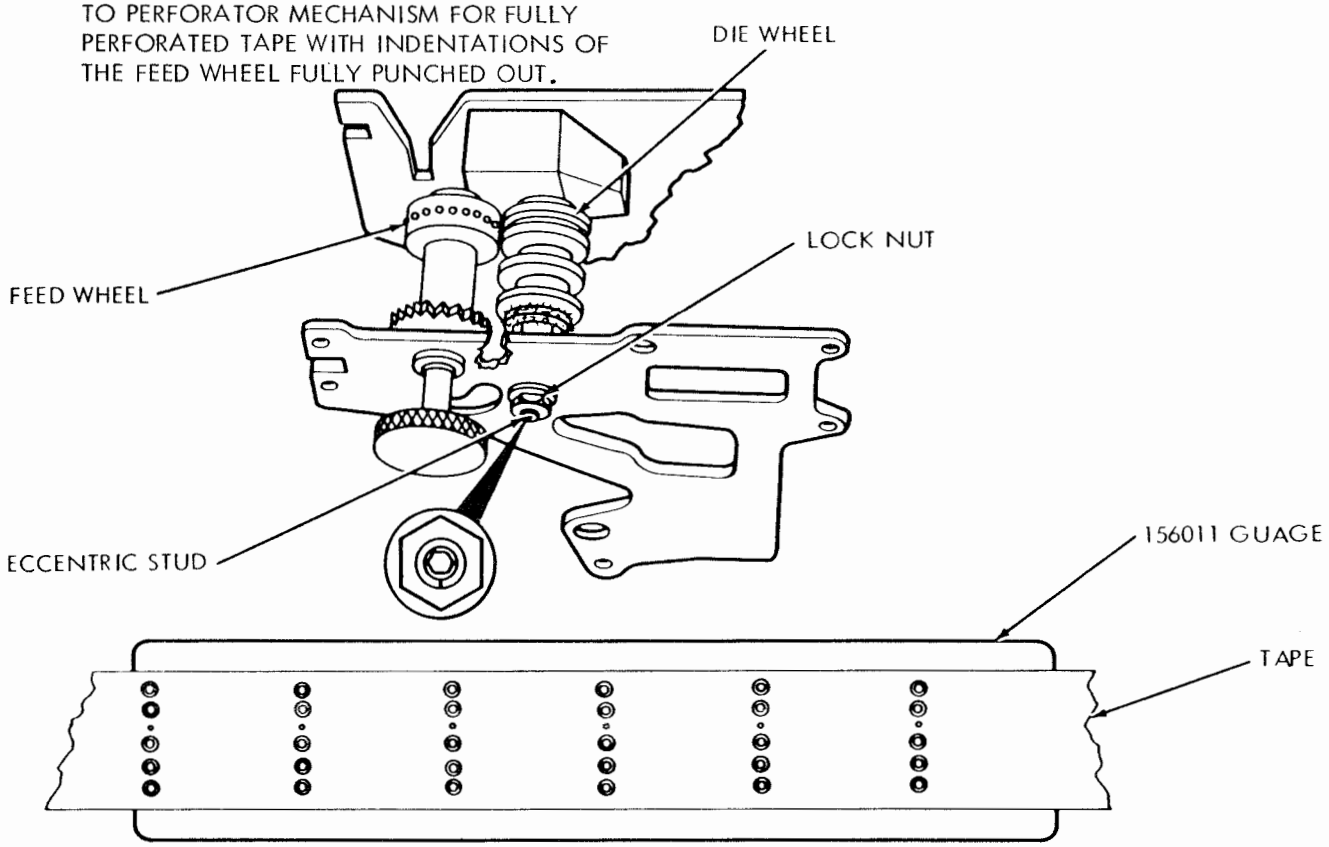
TO ADJUST

LOOSEN ADJUSTING SCREW LOCK NUT AND POSITION ADJUSTING SCREW. TO MOVE HOLES OF GAUGE AWAY FROM REFERENCE EDGE OF TAPE, MOVE FEED WHEEL TOWARDS FRONT PLATE OF PUNCH MECHANISM BY ROTATING ADJUSTING SCREW COUNTER CLOCKWISE. TO MOVE HOLES OF GAUGE TOWARD THE REFERENCE EDGE OF TAPE, MOVE FEED WHEEL TOWARD BACKPLATE OF PUNCH MECHANISM BY ROTATING ADJUSTING SCREW CLOCKWISE. TIGHTEN THE LOCK NUT. REFINE DETENT ADJUSTMENT TO ALIGN LATERAL CENTER LINES OF CODE HOLES AND FEED HOLE IF REQUIRED.



2.17 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL FULLY PUNCHED OUT.



NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENT CHECK BOTH TAPE GUIDE SPRING TENSIONS

FEED HOLE SPACING

(1) REQUIREMENT

WITH A PIECE OF TAPE PERFORATED WITH SIX SERIES OF 9 BLANK CODE COMBINATIONS FOLLOWED BY A LETTERS COMBINATION PLACED OVER THE SMOOTH SIDE OF THE 156011 TAPE GAUGE SO THAT THE CIRCULAR PORTION OF THE FIRST NUMBER 2 CODE HOLE IN THE TAPE IS CONCENTRIC WITH THE FIRST HOLE OF THE TAPE GAUGE, THE NEXT FOUR HOLES IN THE TAPE GAUGE SHOULD BE VISIBLE THROUGH THE NUMBER 2 CODE HOLES IN THE TAPE AND THE CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER 2 CODE HOLE IN THE TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIAMETER HOLE OF THE TAPE GAUGE.

(2) REQUIREMENT

WITH TAPE SHOE HELD AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED AND TAPE REMOVED, FEED WHEEL SHOULD ROTATE FREELY.

TO ADJUST

WITH TAPE REMOVED FROM THE PUNCH MECHANISM, LOOSEN THE ECCENTRIC LOCK NUT AND ROTATE THE DIE WHEEL ECCENTRIC SHAFT UNTIL IT BINDS AGAINST THE FEED WHEEL. BACK OFF THE ECCENTRIC UNTIL THE DIE WHEEL IS JUST FREE. KEEP THE INDENT OF THE ECCENTRIC BELOW THE HORIZONTAL CENTERLINE OF THE STUD. REFINE ADJUSTMENT FOR REQUIREMENT (1), IF NECESSARY, BY MOVING THE DIE WHEEL TOWARD THE FEED WHEEL TO DECREASE THE CHARACTER SPACING AND AWAY FROM THE FEED WHEEL TO INCREASE THE CHARACTER SPACING.

2.18 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL FULLY PUNCHED OUT.

FEED WHEEL INDENTATION ALIGNMENT

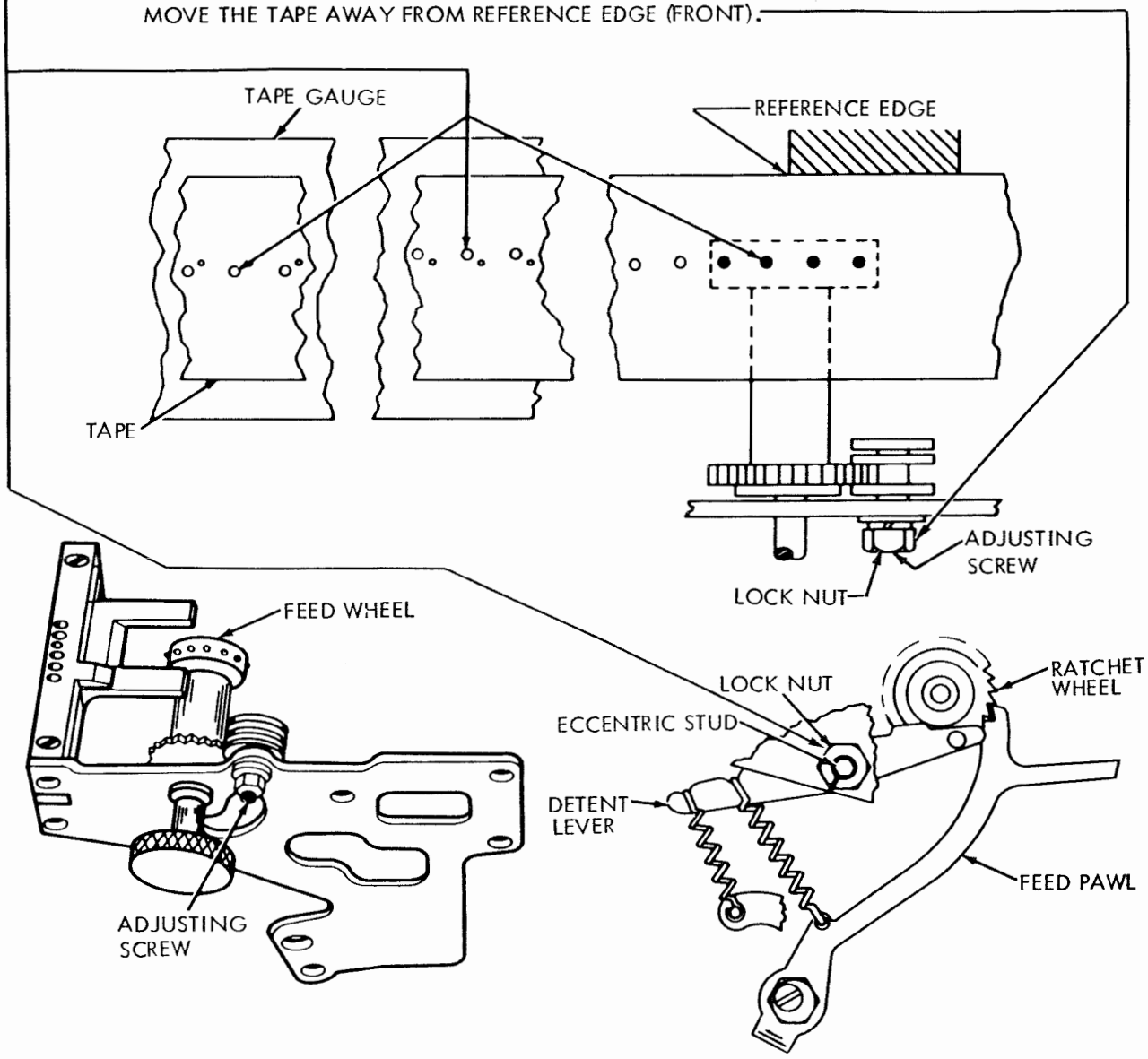
(1) REQUIREMENT

WHEN A PIECE OF TAPE IS PERFORATED WITH A SERIES OF BLANK CODE COMBINATIONS THE INDENTATIONS OF THE FEED WHEEL SHALL BE FULLY PUNCHED OUT.

TO ADJUST

RIGHT OR LEFT, ROTATE THE DETENT LEVER ECCENTRIC STUD CLOCKWISE TO MOVE THE FEED PERFORATION TOWARD THE LEADING EDGE OF THE CODE HOLES, AND COUNTER CLOCK-WISE TO MOVE THE FEED WHEEL PERFORATIONS TOWARD THE TRAILING EDGE OF THE CODE HOLES. REFINE THE FEED PAWL ADJUSTMENT.

FRONT TO REAR, LOOSEN THE LOCK NUT ON THE ADJUSTING SCREW AND TURN THE SCREW CLOCKWISE TO MOVE TAPE TOWARD REFERENCE EDGE (REAR), AND COUNTER CLOCKWISE TO MOVE THE TAPE AWAY FROM REFERENCE EDGE (FRONT).



2.19 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL BETWEEN THE FEED HOLES.

NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS.

FEED HOLE SPACING (FINAL)

REQUIREMENT

(1) WITH TAPE SHOE BLOCKED AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. (CHECK THROUGH 3 OR 4 ROTATIONS).

(2) PERFORATE SIX SERIES OF (9) "BLANK" COMBINATIONS FOLLOWED BY (1) "LETTERS" COMBINATION. PLACE TAPE OVER SMOOTH SIDE OF THE TP156011 TAPE GAUGE SO CIRCULAR PORTION OF THE FIRST NUMBER TWO CODE HOLE IN TAPE IS CONCENTRIC WITH THE FIRST (0.072) HOLE OF TAPE GAUGE. (SEE NOTE). THE NEXT FOUR 0.072 HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH THE NUMBER TWO CODE HOLES IN TAPE AND CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER TWO CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIA. HOLE OF TAPE GAUGE.

NOTE:
THE FIRST FIVE HOLES IN GAUGE ARE THE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER) BUT THE SIXTH HOLE IN GAUGE IS LARGER THAN THE FIRST FIVE (0.086 INCH DIAMETER). THIS ARRANGEMENT ALLOWS $\pm$ 0.007 INCH VARIATION IN FIVE (5) INCHES.

TO ADJUST

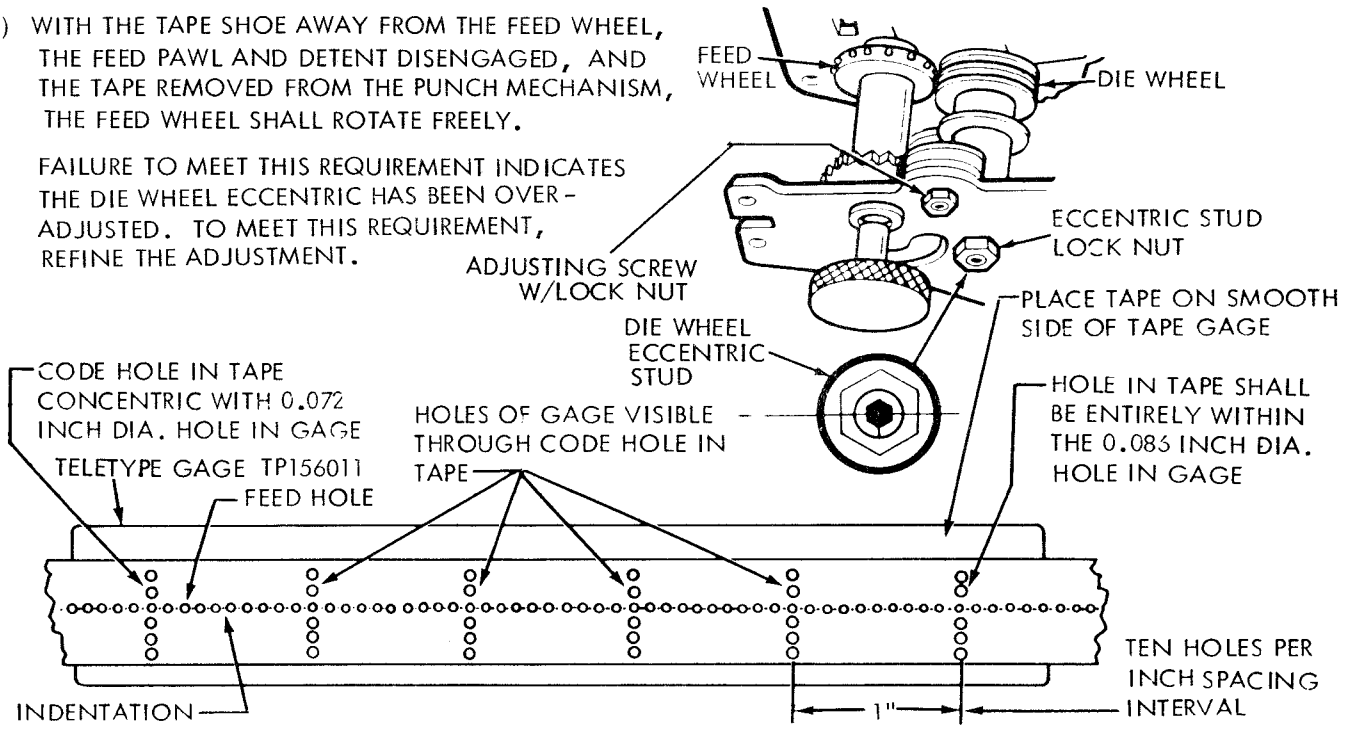
(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCK NUT AND ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL, BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 ROTATIONS). KEEP INDENT OFF ECCENTRIC STUD BELOW THE HORIZONTAL CENTER LINE OF STUD.

(2) CHECK TEN CHARACTERS PER INCH REQUIREMENT AND REFINE FEED WHEEL DIE WHEEL CLEARANCE ADJUSTMENT TO MEET THE REQUIREMENT BY MOVING INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE THE CHARACTER SPACING.

CAUTION: WITH THE TAPE REMOVED FROM THE PUNCH MECHANISM, BE SURE THE DIE WHEEL DOES NOT BIND.

(3) WITH THE TAPE SHOE AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND THE TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY.

FAILURE TO MEET THIS REQUIREMENT INDICATES THE DIE WHEEL ECCENTRIC HAS BEEN OVER-ADJUSTED. TO MEET THIS REQUIREMENT, REFINE THE ADJUSTMENT.



2.20 Punch Mechanism continued

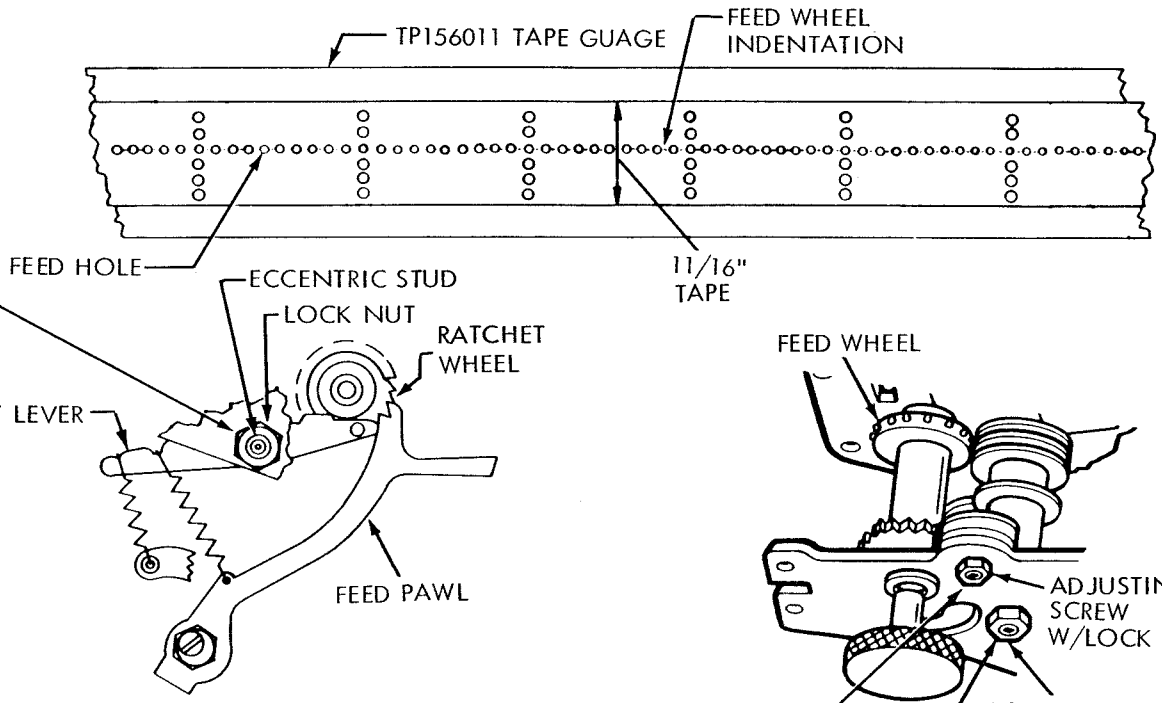
DETENT (FOR FULLY PERFORATED TAPE WITH INDENTATION OF FEED WHEEL BETWEEN THE FEED HOLES)

REQUIREMENT

WITH THE UNIT OPERATING UNDER POWER, THE INDENTATIONS OF THE FEED WHEEL SHALL BE CENTRALLY LOCATED BETWEEN TWO FULLY PERFORATED FEED HOLES, AS GAUGED BY EYE.

TO ADJUST

LOOSEN THE DETENT LEVER ECCENTRIC STUD LOCK NUT AND TURN THE ECCENTRIC STUD CLOCKWISE TO MOVE THE INDENTATION TOWARD THE LEADING EDGE OF THE FEED HOLE AND COUNTER CLOCKWISE TO MOVE THE INDENTATION TOWARD THE TRAILING EDGE. TIGHTEN THE LOCK NUT AND RE-CHECK THE FEED PAWL ADJUSTMENT.



NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO PERFORATOR MECHANISM FOR FULLY PERFORATED TAPE WITH INDENTATIONS OF THE FEED WHEEL BETWEEN THE FEED HOLES.

FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

WITH THE UNIT OPERATING UNDER POWER, THE INDENTATIONS OF THE FEED WHEEL SHOULD BE ON A CENTERLINE BETWEEN THE FULLY PERFORATED FEED HOLES, AS GAUGED BY EYE.

TO ADJUST

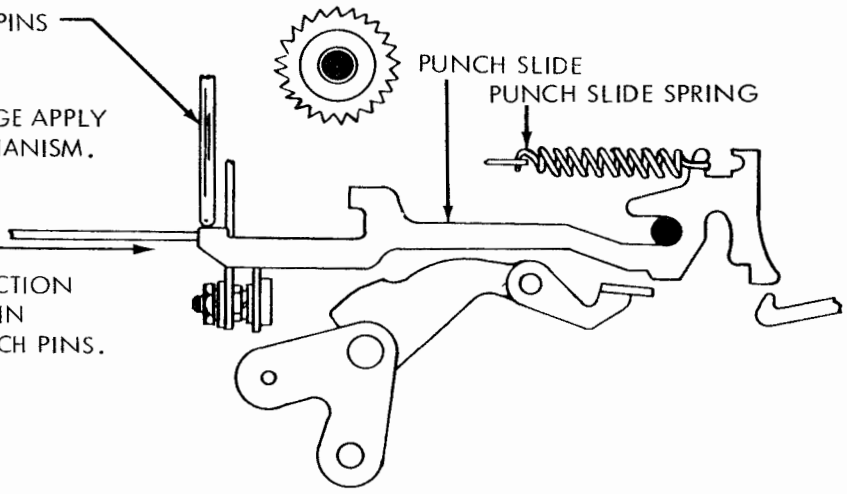
WITH THE ADJUSTING SCREW LOCK NUT LOOSE TURN THE ADJUSTING SCREW CLOCKWISE TO MOVE THE INDENTATION TOWARD THE REAR AND COUNTERCLOCKWISE TO MOVE THE INDENTATIONS TOWARD THE FRONT.

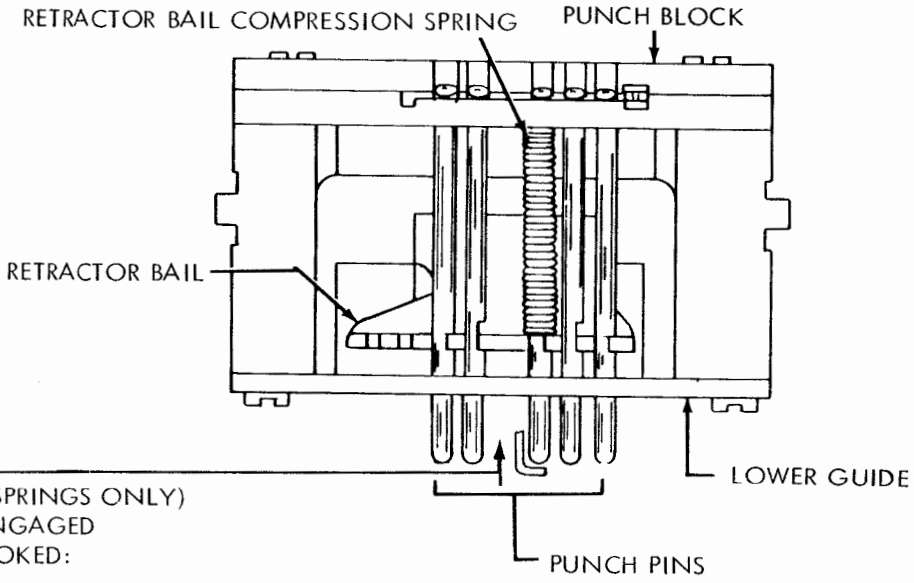
2.21 Punch Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.

(A)
PUNCH SLIDE SPRING REQUIREMENT

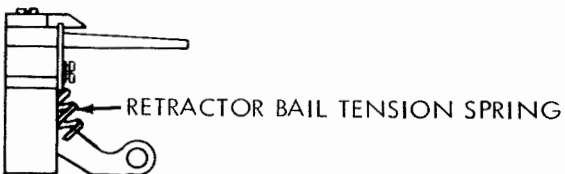
LETTERS COMBINATION SET UP, FUNCTION CLUTCH TRIPPED AND PUNCH SLIDES IN SELECTED POSITION UNDER THE PUNCH PINS.
MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.
TO START EACH SLIDE MOVING.



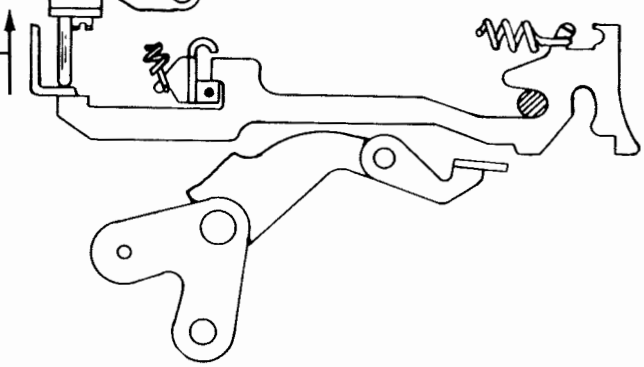


(B)
RETRACTOR BAIL SPRINGS

(1) REQUIREMENT (COMPRESSION SPRINGS ONLY)
WITH FUNCTION CLUTCH DISENGAGED AND TENSION SPRINGS UNHOOKED:
MIN. 15 OZS.
MAX. 32 OZS.
TO LIFT RETRACTOR BAIL AWAY FROM LOWER GUIDE OF PUNCH BLOCK.



(2) REQUIREMENT (COMBINED COMPRESSION AND TENSION SPRINGS)
UNDER THE SAME CONDITIONS AS REQUIREMENT (1) ABOVE, EXCEPT WITH TENSION SPRINGS HOOKED*
MIN. 4 LBS.
MAX. 5 LBS.
TO LIFT THE RETRACTOR BAIL AWAY FROM THE LOWER GUIDE OF THE PUNCH BLOCK.



*TO FACILITATE REHOOKING TENSION SPRINGS, PLACE PUNCH PINS IN UPPERMOST POSITION.

2.22 Punch Mechanism continued

(B) TAPE GUIDE ASSEMBLY SPRING

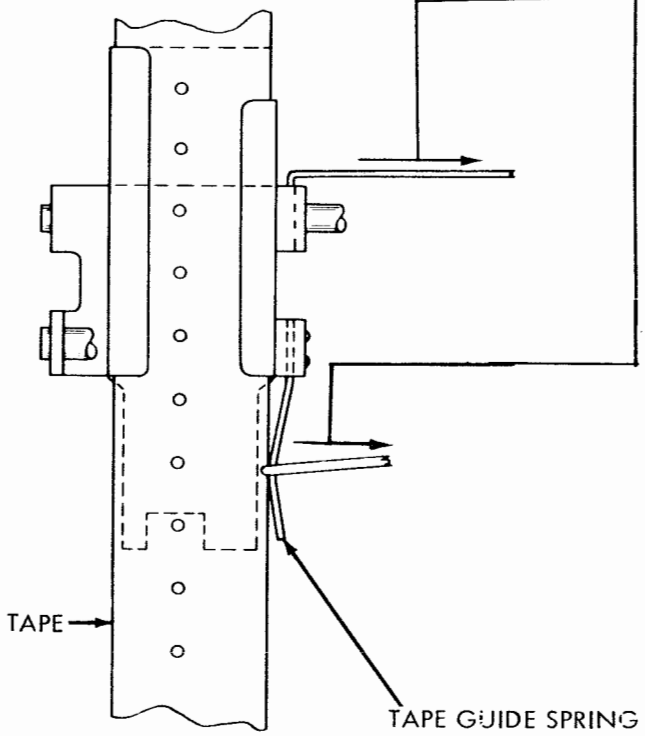
REQUIREMENT

THE TAPE GUIDE ASSEMBLY SHOULD BE FREE TO RETURN TO REST AGAINST THE TAPE GUIDE BLOCK AFTER A MIN. 16 OZS. IS USED TO PULL THE TAPE GUIDE ASSEMBLY AWAY FROM THE BLOCK.

TO ADJUST

REPLACE SPRING IF REQUIREMENT IS NOT MET.

IF THE TAPE GUIDE ASSEMBLY IS NOT FREE TO RETURN, REPOSITION THE TAPE GUIDE ASSEMBLY MOUNTING POST TO FREE THE TAPE GUIDE ASSEMBLY.



(A)

TAPE GUIDE SPRING (TAPE CHUTE)

REQUIREMENT

CLUTCH DISENGAGED AND TAPE THREADED THROUGH THE PUNCH ASSEMBLY, IT SHOULD REQUIRE

MIN. 1-1/4 OZS.

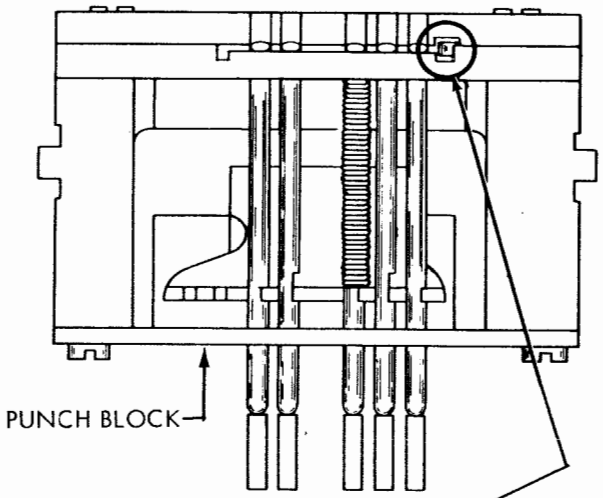
MAX. 2-1/4 OZS.

TO JUST MOVE THE SPRING AWAY FROM THE TAPE.

TO ADJUST

BEND THE SPRING.

NOTE: IN ORDER TO CHECK THIS SPRING TENSION ON UNITS EQUIPPED WITH BACKSPACE MECHANISM, IT IS NECESSARY TO REMOVE SEVERAL PARTS. IT SHOULD NOT BE CHECKED UNLESS THERE IS REASON TO BELIEVE THAT REQUIREMENTS CANNOT BE MET.



(C) TAPE GUIDE SPRING PUNCH BLOCK (FOR CHADLESS TAPE MECHANISM)

(1) REQUIREMENT

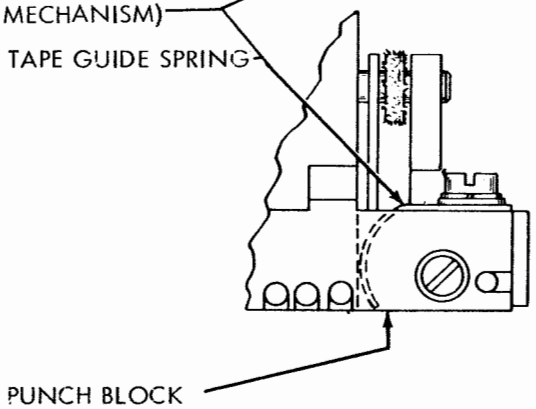
WITH THE TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMMETRICAL MANNER.

(2) REQUIREMENT

WITH TAPE IN THE PUNCH BLOCK AND THE PERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE.

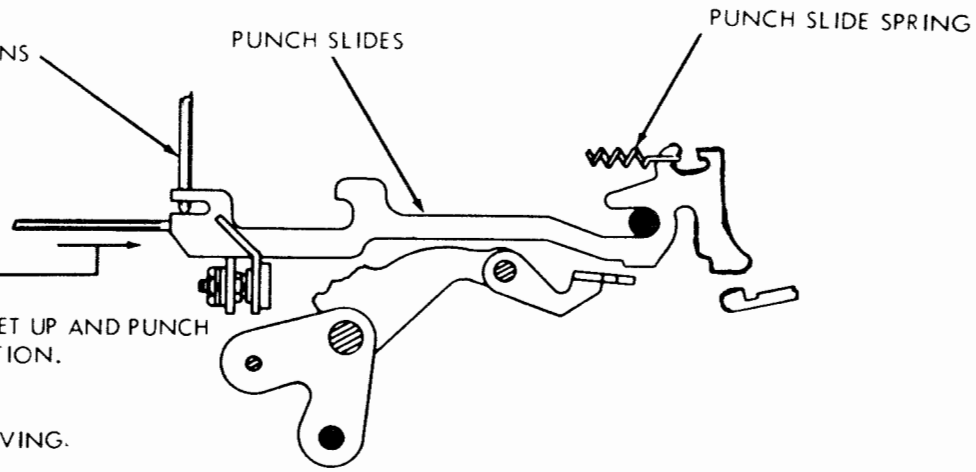
TO ADJUST

BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED.



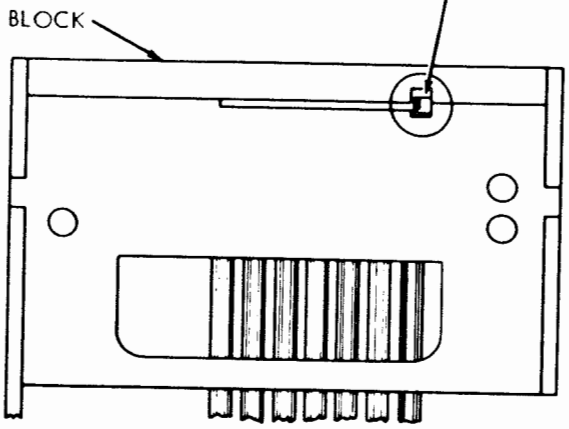
2.23 Punch Mechanism continued

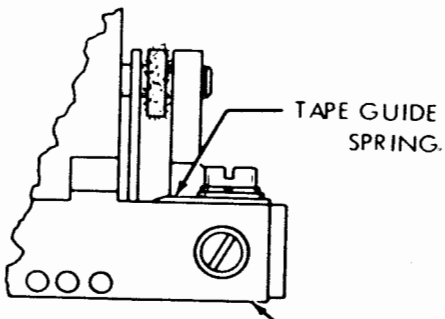
NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.



PUNCH SLIDE SPRING
REQUIREMENT
LETTERS COMBINATION SET UP AND PUNCH SLIDES IN SELECTED POSITION.
MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.
TO START EACH SLIDE MOVING.

TAPE GUIDE SPRING (PUNCH BLOCK)
(1) REQUIREMENT
WITH TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMETRICAL MANNER.
(2) REQUIREMENT
WITH TAPE IN THE PUNCH BLOCK AND THE REPERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE.
TO ADJUST
BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED.

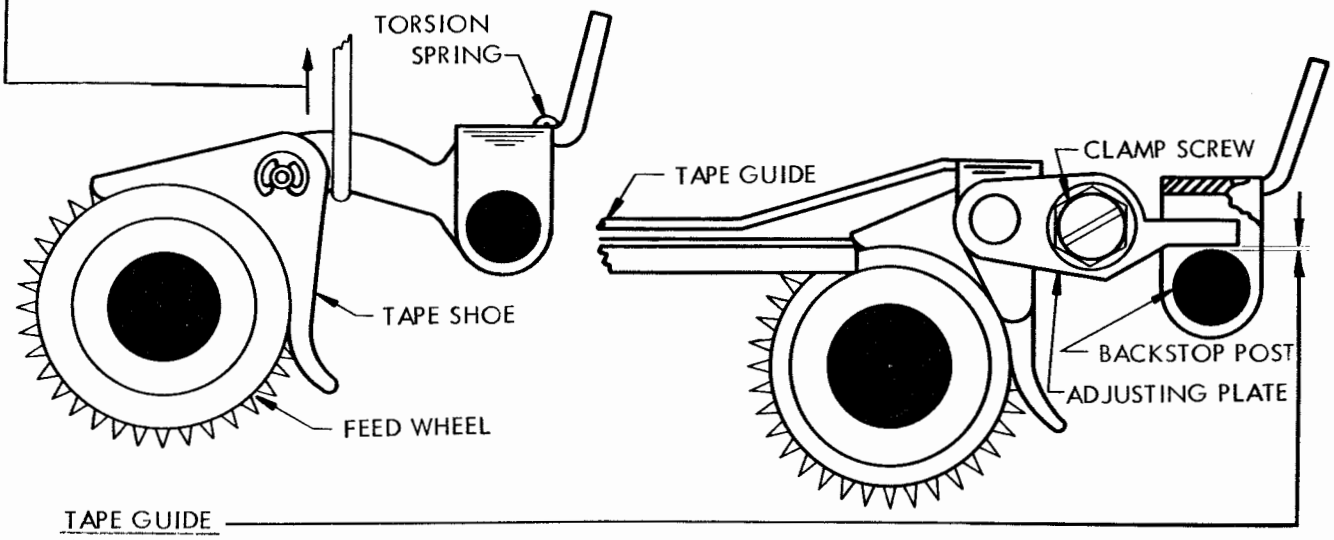




PUNCH BLOCK (TOP VIEW)

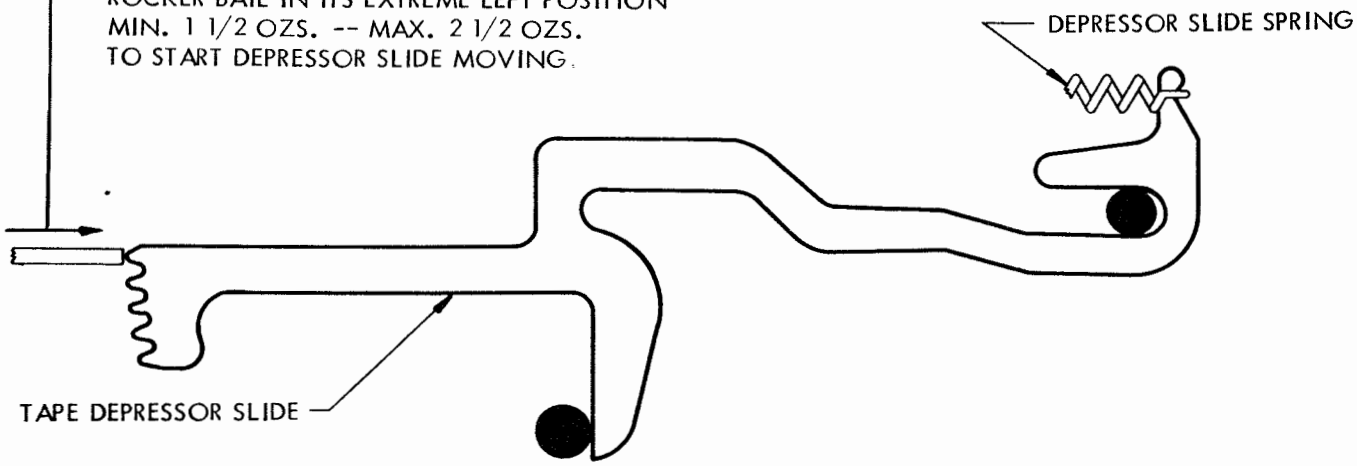
2.24 Punch Mechanism continued

TAPE SHOE TORSION SPRING
REQUIREMENT
MIN. 13 OZS. ---- MAX. 18 OZS.
TO MOVE TAPE SHOE FROM FEED WHEEL

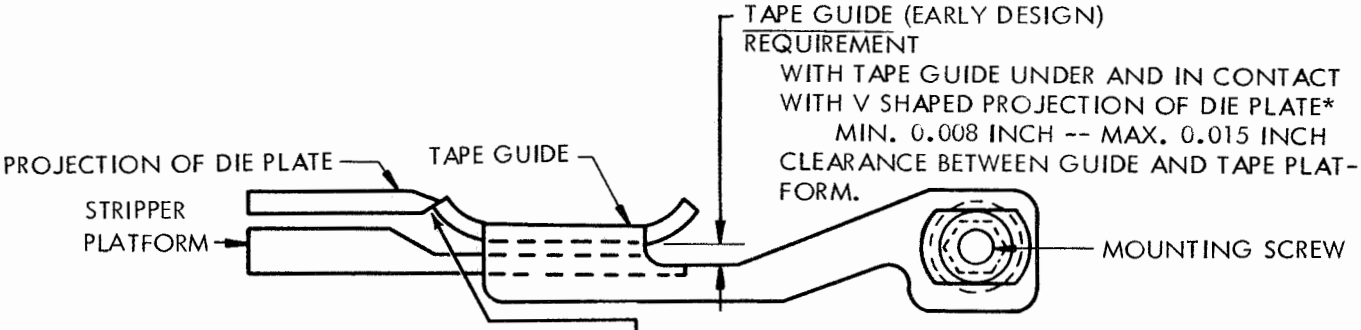


TAPE GUIDE
TO CHECK
ROTATE FEED WHEEL UNTIL OIL HOLE IS UPWARD.
CENTER TAPE SHOE AND TAPE GUIDE. HOLD TAPE GUIDE DOWNWARD.
REQUIREMENT
CLEARANCE BETWEEN ADJUSTING PLATE AND BACKSTOP POST
MIN. 0.002 INCH
MAX. 0.008 INCH
TO ADJUST
POSITION ADJUSTING PLATE WITH ITS CLAMP SCREW LOOSENED.

TAPE DEPRESSOR SLIDE SPRING
REQUIREMENT
ROCKER BAIL IN ITS EXTREME LEFT POSITION
MIN. 1 1/2 OZS. -- MAX. 2 1/2 OZS.
TO START DEPRESSOR SLIDE MOVING.



2.25 Punch Mechanism continued

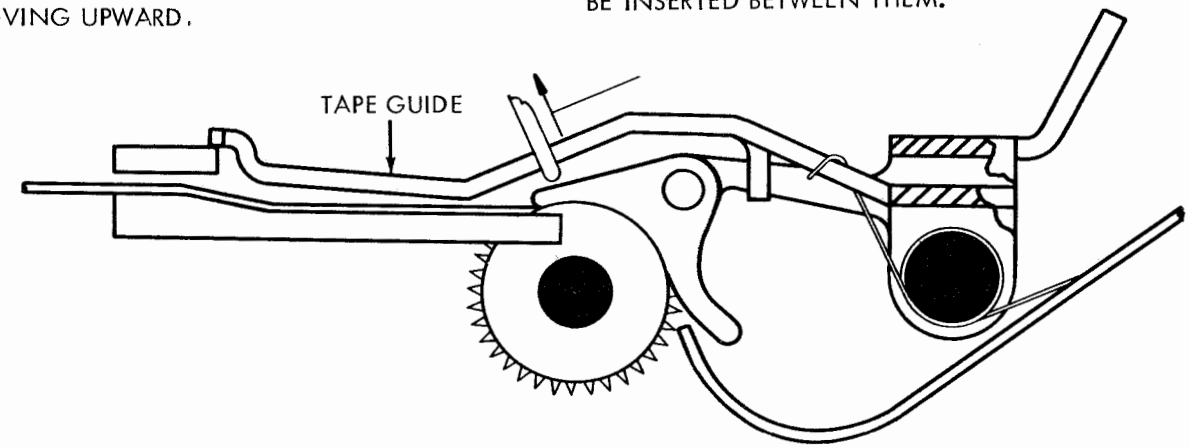


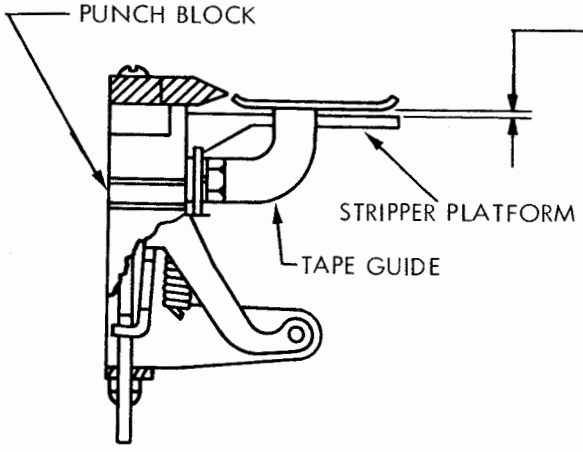
TAPE GUIDE (EARLY DESIGN)
REQUIREMENT
WITH TAPE GUIDE UNDER AND IN CONTACT WITH V SHAPED PROJECTION OF DIE PLATE*
MIN. 0.008 INCH -- MAX. 0.015 INCH CLEARANCE BETWEEN GUIDE AND TAPE PLATFORM.

TO ADJUST
WITH MOUNTING SCREW FRICTION TIGHT, PLACE 0.010 INCH FLAT GAUGE BETWEEN GUIDE AND TAPE PLATFORM. PRESS GUIDE DOWN AND TO LEFT. TIGHTEN MOUNTING SCREW WHILE HOLDING FEED WHEEL ADJUSTING SCREW STATIONARY BY MEANS OF AN ALLEN WRENCH.

*GUIDE IS CONSIDERED "IN CONTACT" WITH PROJECTION WHEN 0.0015 INCH GAUGE CANNOT BE INSERTED BETWEEN THEM.

TAPE GUIDE SPRING (ON UNITS NOT EQUIPPED WITH TAPE GUIDE ADJUSTING PLATE)
REQUIREMENT
MIN. 8 OZS. TO START TAPE GUIDE BAIL MOVING UPWARD.

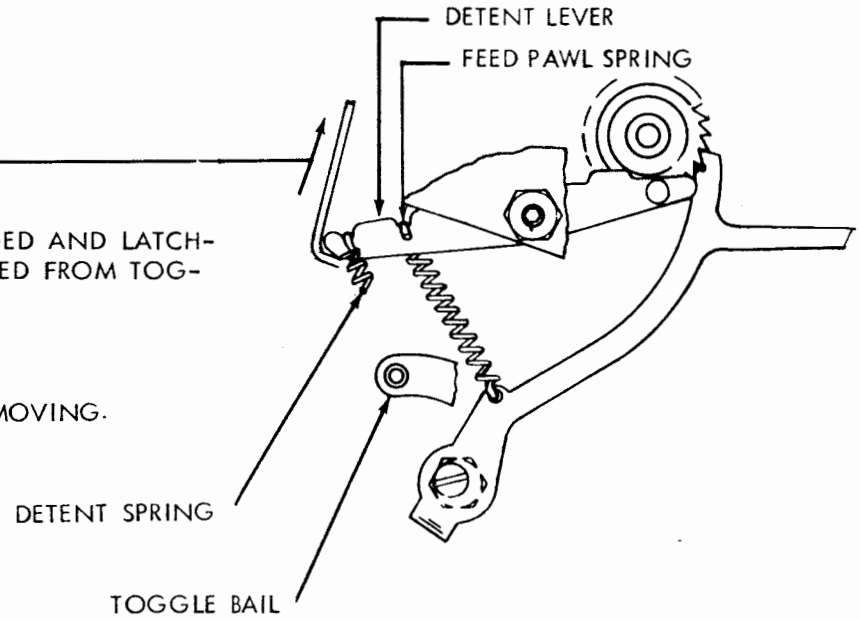




TAPE GUIDE (LATEST DESIGN)
REQUIREMENT
CLEARANCE UNDER THE TAPE GUIDE.
MIN. 0.008 INCH
MAX. 0.015 INCH

TO ADJUST
WITH MOUNTING SCREW FRICTION TIGHT, POSITION THE TAPE GUIDE. KEEPING THE GUIDE AGAINST THE FRONT PLATE OF THE PUNCH.

2.26 Punch Mechanism continued



(A)

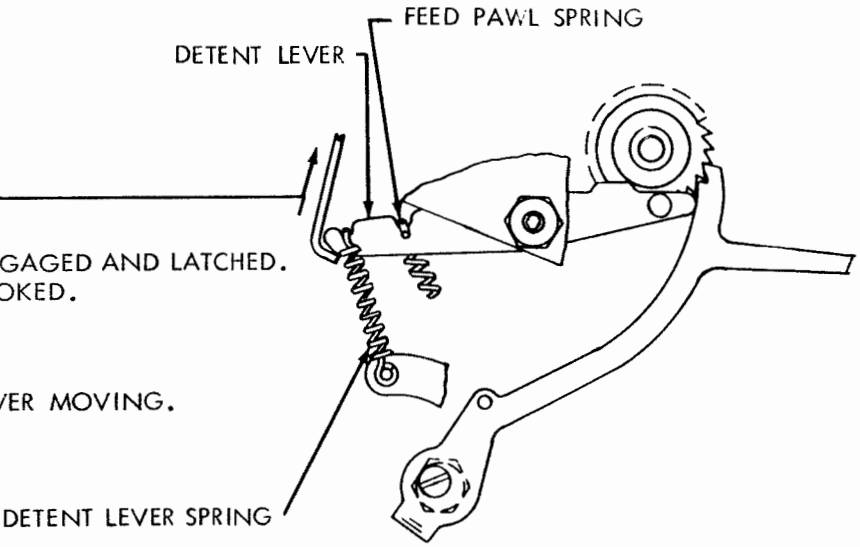
FEED PAWL SPRING

REQUIREMENT

FUNCTION CLUTCH DISENGAGED AND LATCHED. DETENT SPRING UNHOOKED FROM TOGGLE BAIL

MIN. 3 OZS.
MAX. 4-1/2 OZS.

TO START THE DETENT LEVER MOVING.



(B)

DETENT LEVER SPRING

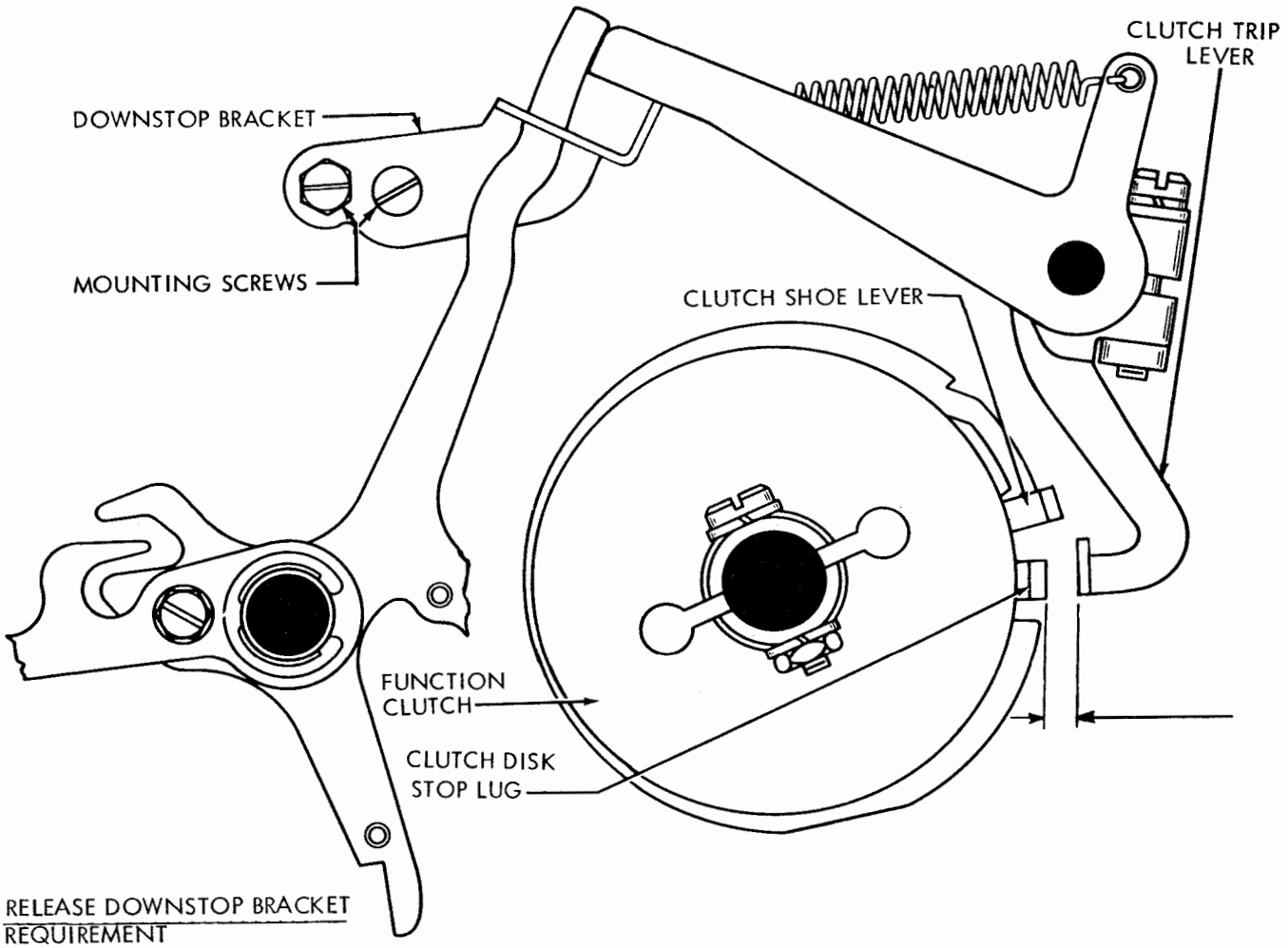
REQUIREMENT

FUNCTION CLUTCH DISENGAGED AND LATCHED. FEED PAWL SPRING UNHOOKED.

MIN. 7 OZS.
MAX. 10 OZS.

TO START THE DETENT LEVER MOVING.

2.27 Function Mechanism continued



RELEASE DOWNSTOP BRACKET

REQUIREMENT

WITH FUNCTION CLUTCH TRIPPED, ROTATE SHAFT UNTIL CLEARANCE BETWEEN FUNCTION CLUTCH DISK STOP LUG AND CLUTCH STOP LEVER IS AT A MINIMUM. RELEASE RESTING AGAINST DOWNSTOP BRACKET. CLEARANCE BETWEEN FUNCTION CLUTCH DISK STOP LUG AND STOP LEVER:

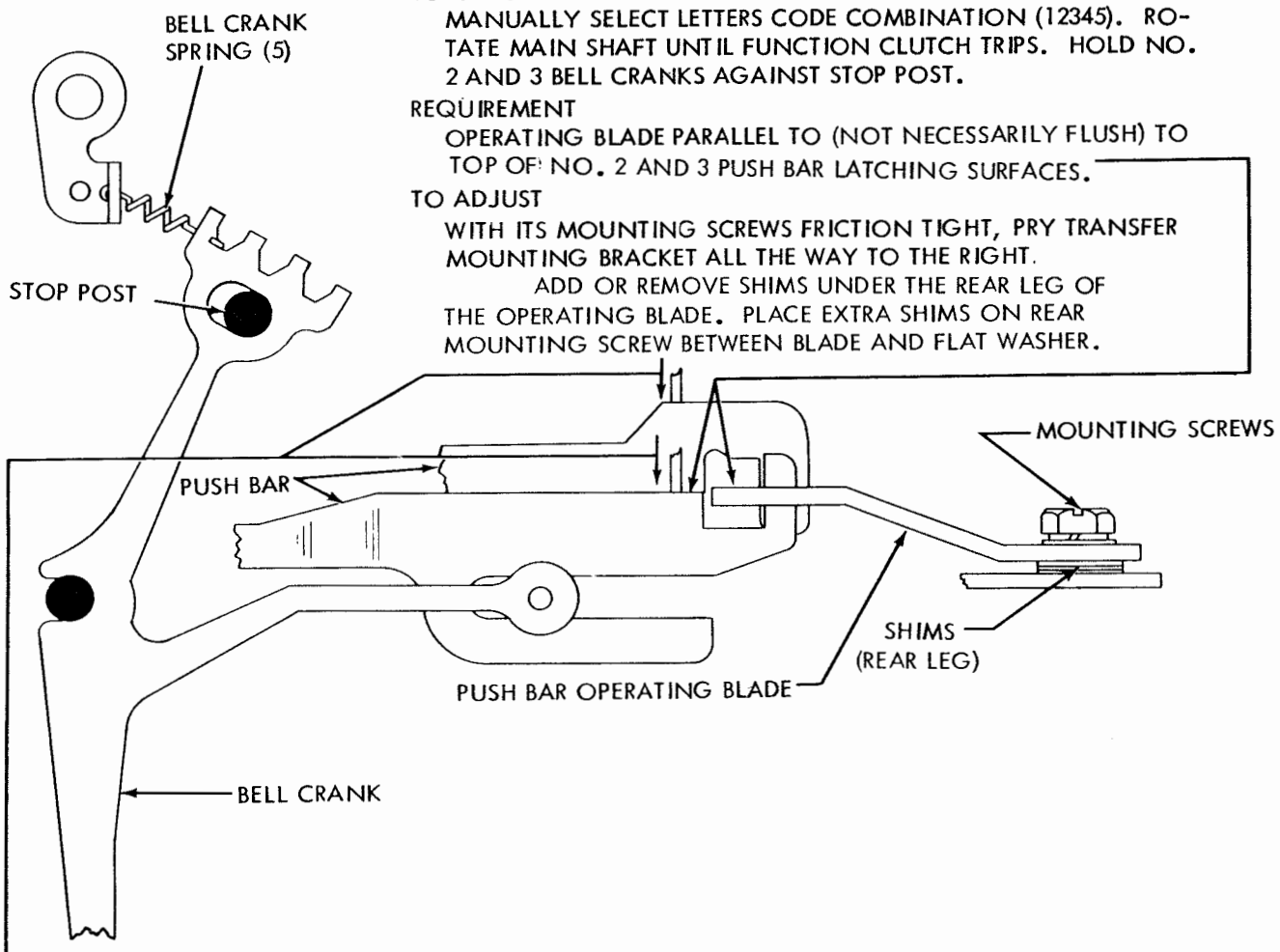
MIN. 0.002 INCH---MAX. 0.045 INCH

TO ADJUST

REMOVE TAPE GUARD. WITH DOWNSTOP BRACKET MOUNTING SCREWS FRICTION TIGHT POSITION BRACKET. RECHECK FOR SOME CLEARANCE BETWEEN TRIP LEVER EXTENSION AND LEFT END OF SLOT IN RELEASE LEVER DOWNSTOP BRACKET.

NOTE: ON NON-TYPING PERFORATORS WITH 2-STOP FUNCTION CLUTCH, GAUGE AT STOP HAVING LEAST CLEARANCE.

2.28 Typing Mechanism



PUSH BAR OPERATING BLADE (PRELIMINARY)

TO CHECK

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. HOLD NO. 2 AND 3 BELL CRANKS AGAINST STOP POST.

REQUIREMENT

OPERATING BLADE PARALLEL TO (NOT NECESSARILY FLUSH) TO TOP OF NO. 2 AND 3 PUSH BAR LATCHING SURFACES.

TO ADJUST

WITH ITS MOUNTING SCREWS FRICTION TIGHT, PRY TRANSFER MOUNTING BRACKET ALL THE WAY TO THE RIGHT.

ADD OR REMOVE SHIMS UNDER THE REAR LEG OF THE OPERATING BLADE. PLACE EXTRA SHIMS ON REAR MOUNTING SCREW BETWEEN BLADE AND FLAT WASHER.

BELL CRANK SPRINGS (5)

TO CHECK

SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

REQUIREMENT

MIN. 1 OZ.---MAX. 3 OZS.

TO START PUSH BAR MOVING

NOTE:

CHECK ALL FIVE SPRINGS.

2.29 Typing Mechanism continued

PUSH BAR OPERATING BLADE (FINAL)

(1) TO CHECK

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. MANUALLY SEAT PUSH BARS IN DETENTED POSITION. IN BAR WHICH IS NEAREST LEFT EDGE OF BLADE, TAKE UP PLAY TO LEFT AND REAR, AND THEN RELEASE.

REQUIREMENT

CLEARANCE BETWEEN BAR AND LEFT EDGE OF BLADE:

MIN. 0.015 INCH --- MAX. 0.030 INCH

(2) REQUIREMENT

SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND PUSH BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

(3) REQUIREMENT

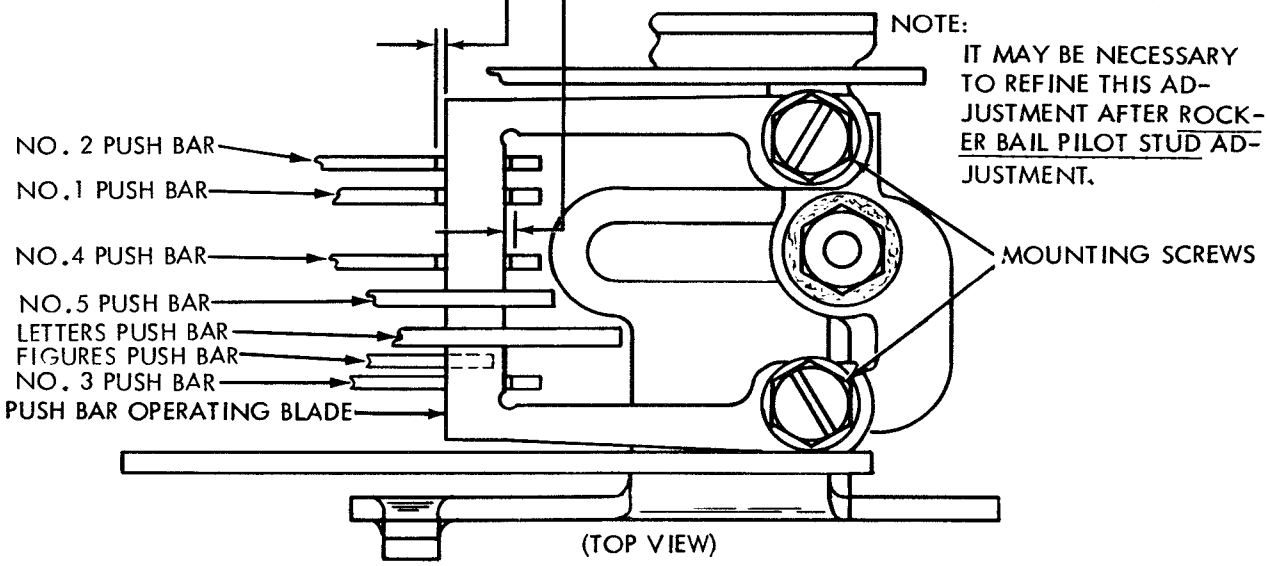
WITH UNIT IN STOP POSITION, SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION OPERATING BLADE IN ELONGATED HOLES.

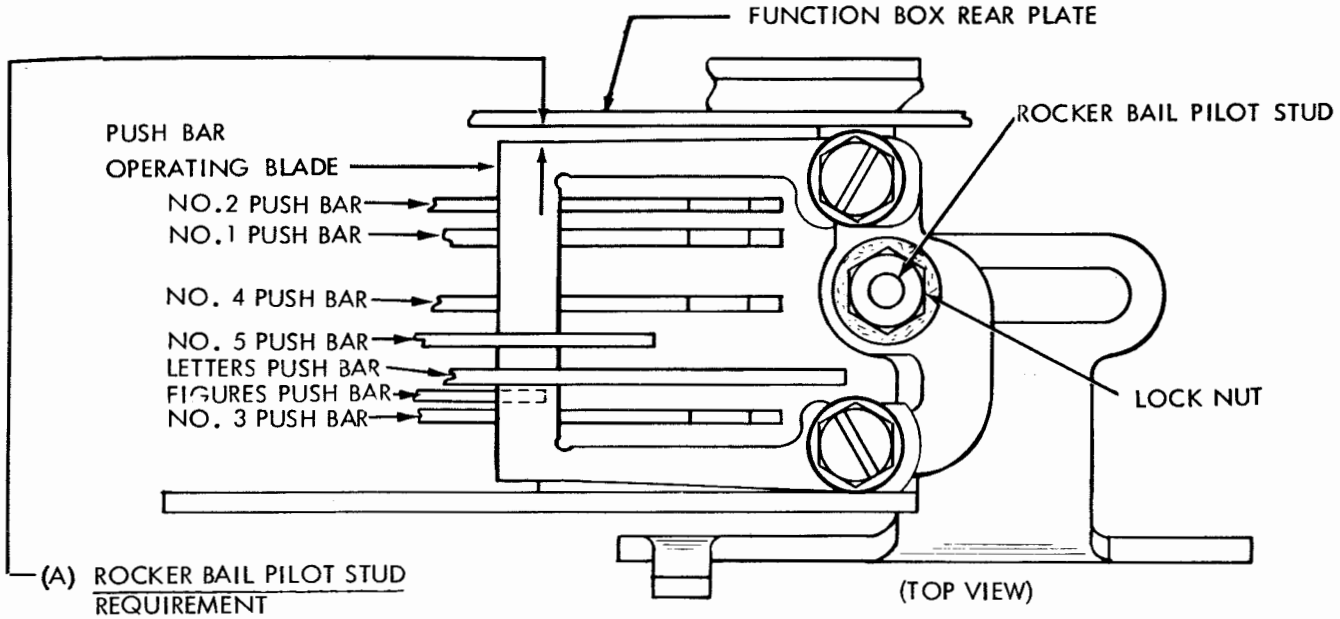
NOTE:

IT MAY BE NECESSARY TO REFINE THIS ADJUSTMENT AFTER ROCKER BAIL PILOT STUD ADJUSTMENT.



(TOP VIEW)

2.30 Typing Mechanism continued



(A) ROCKER BAIL PILOT STUD

REQUIREMENT

SELECT BLANK COMBINATION AND THE TRIP FUNCTION CLUTCH. POSITION ROCKER BAIL THROUGH A COMPLETE CYCLE, TAKING UP PLAY BETWEEN ROCKER BAIL AND FUNCTION BOX REAR PLATE FOR MINIMUM CLEARANCE.

REQUIREMENT

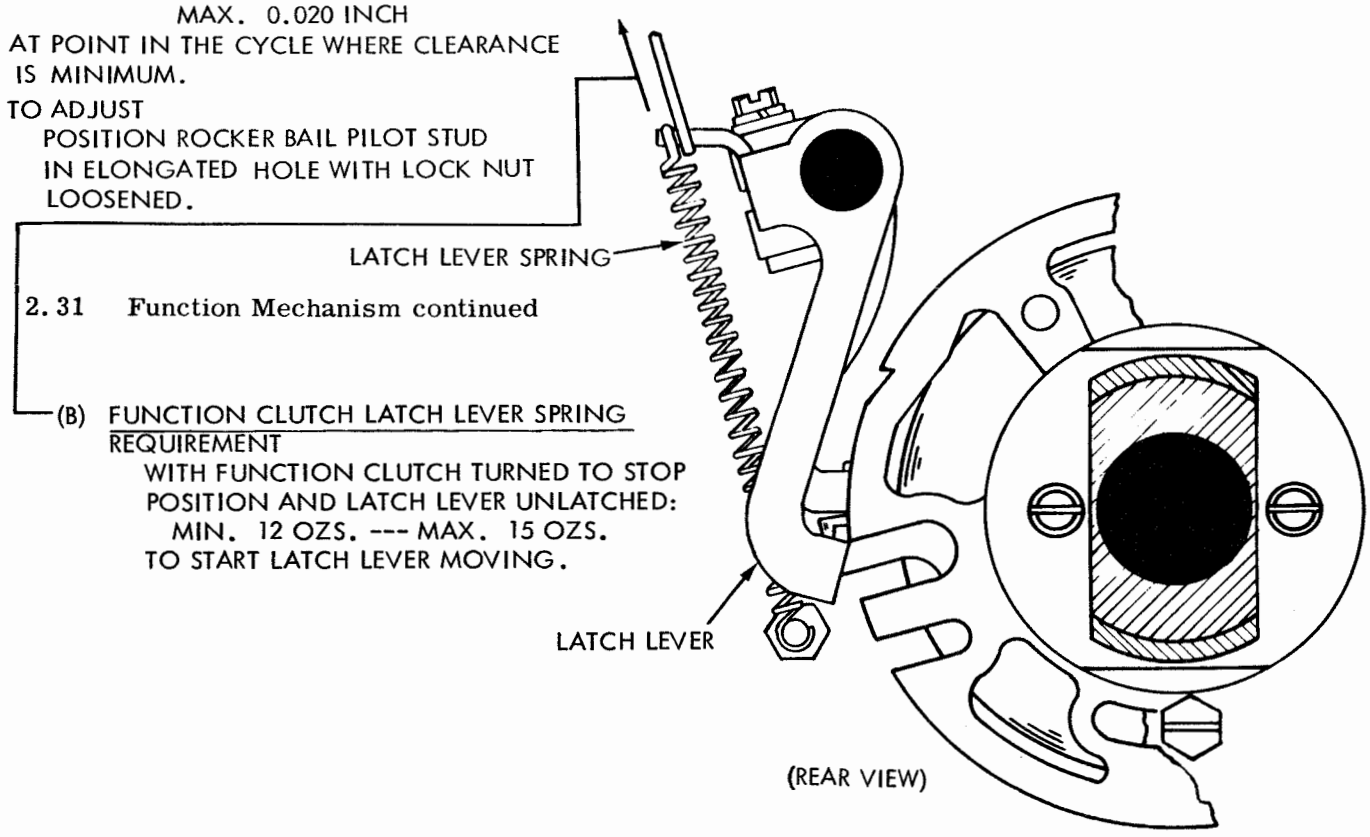
CLEARANCE BETWEEN FUNCTION BOX REAR PLATE AND REAR EDGE OF PUSH BAR OPERATING BLADE.

MIN. 0.005 INCH
MAX. 0.020 INCH

AT POINT IN THE CYCLE WHERE CLEARANCE IS MINIMUM.

TO ADJUST

POSITION ROCKER BAIL PILOT STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.



2.31 Function Mechanism continued

(B) FUNCTION CLUTCH LATCH LEVER SPRING

REQUIREMENT

WITH FUNCTION CLUTCH TURNED TO STOP POSITION AND LATCH LEVER UNLATCHED:

MIN. 12 OZS. --- MAX. 15 OZS.

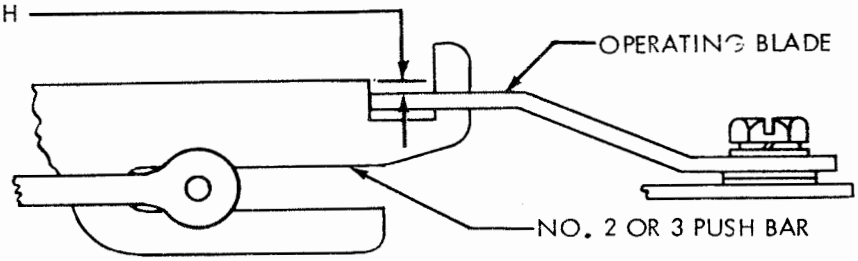
TO START LATCH LEVER MOVING.

2.32 Typing Mechanism continued

FUNCTION BOX
REQUIREMENT

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS, AND PUNCH SLIDES ARE DISENGAGED FROM LATCHES. THE TOP OF THE OPERATING BLADE SHALL BE:

FLUSH --- MAX. 0.020 INCH

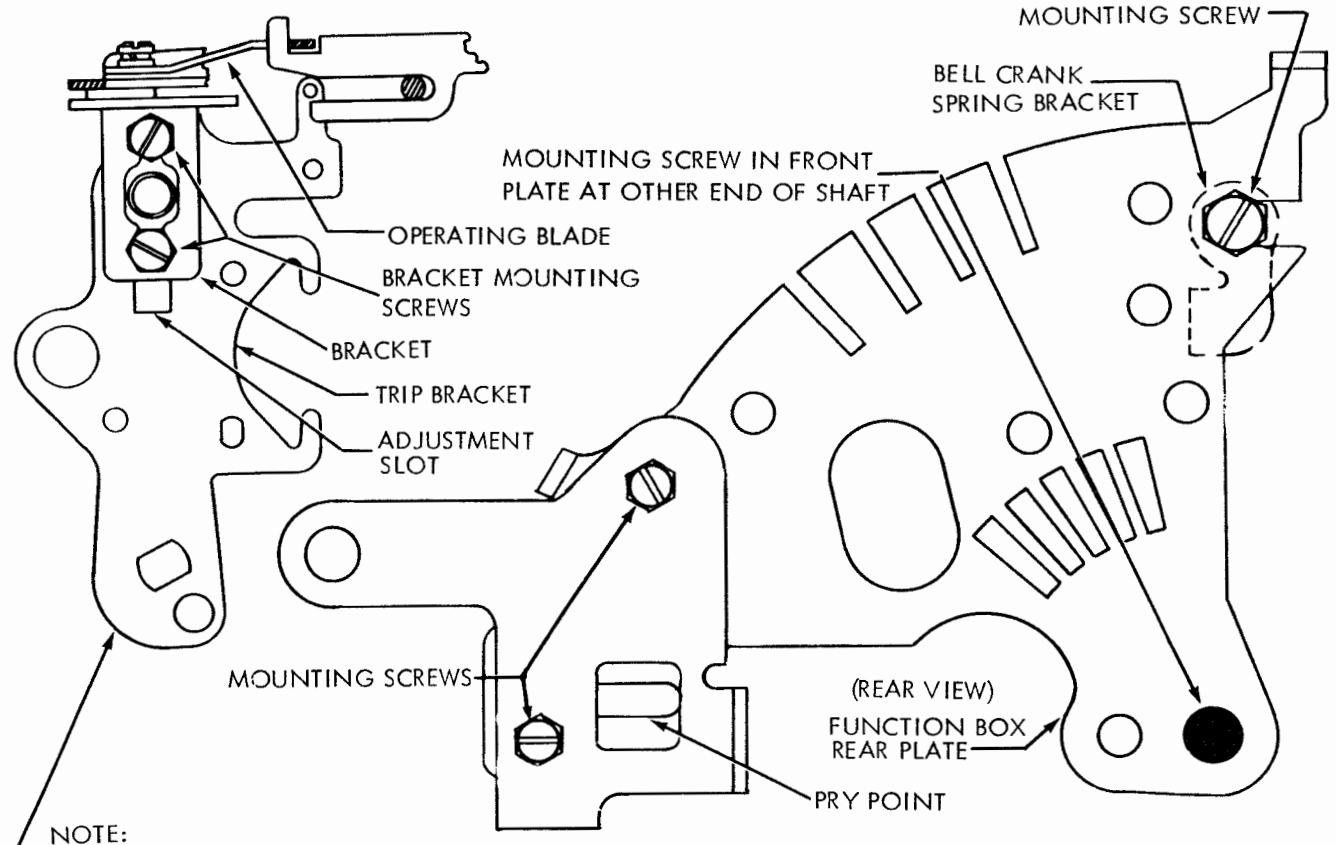


BELOW THE TOPS OF THE NO. 2 AND 3 PUSH BARS. TAKE UP PLAY IN PUSHBARS IN A DOWNWARD DIRECTION THEN RELEASE.

NOTE: WHEN UNIT IS MOUNTED AS PART OF THE KEYBOARD PERFORATOR TRANSMITTER, IT MAY BE NECESSARY TO REFINE THE ADJUSTMENT WITHIN ITS LIMITS TO INCREASE OPERATING MARGINS OF THE UNIT.

TO ADJUST

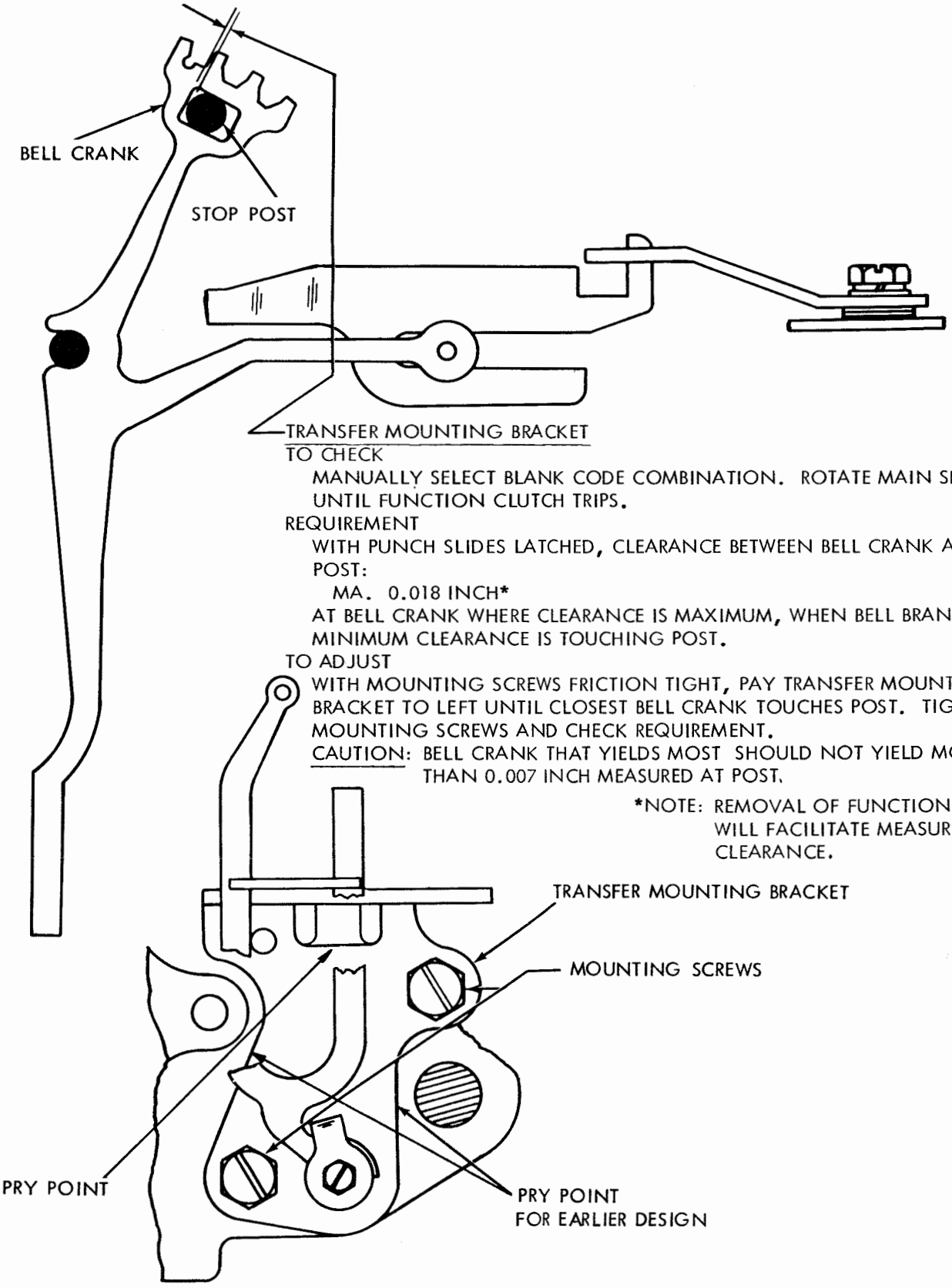
WITH THREE MOUNTING SCREWS IN REAR PLATE AND ONE MOUNTING SCREW IN FRONT PLATE LOOSENED, POSITION FUNCTION BOX BY MEANS OF PRY POINT. CHECK POSITION OF BELL CRANK SPRING BRACKET.



NOTE:

ON UNITS EQUIPPED WITH TWO-PIECE TRIP BRACKET, SET ABOVE ADJUSTMENT IN CENTER OF ITS RANGE AND TIGHTEN SCREWS. LOOSEN TWO SCREWS WHICH MOUNT GUIDE TO BRACKET AND POSITION GUIDE TO MEET ABOVE REQUIREMENT.

2.33 Typing Mechanism continued



TRANSFER MOUNTING BRACKET

TO CHECK

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

REQUIREMENT

WITH PUNCH SLIDES LATCHED, CLEARANCE BETWEEN BELL CRANK AND STOP POST:

MA. 0.018 INCH*

AT BELL CRANK WHERE CLEARANCE IS MAXIMUM, WHEN BELL BRANK WITH MINIMUM CLEARANCE IS TOUCHING POST.

TO ADJUST

WITH MOUNTING SCREWS FRICTION TIGHT, PAY TRANSFER MOUNTING BRACKET TO LEFT UNTIL CLOSEST BELL CRANK TOUCHES POST. TIGHTEN MOUNTING SCREWS AND CHECK REQUIREMENT.

CAUTION: BELL CRANK THAT YIELDS MOST SHOULD NOT YIELD MORE THAN 0.007 INCH MEASURED AT POST.

*NOTE: REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.34 Typing Mechanism continued

(A) LETTERS AND FIGURES YIELD ARMS

(1) TO CHECK

TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL ROCKER BAIL IS TO EXTREME LEFT. MANUALLY PLACE ARM ASSEMBLIES IN LETTERS POSITION. HOLD LETTERS-FIGURES BELL CRANK AGAINST LEFT EDGE OF STOP POST.

REQUIREMENT

MIN. SOME----MAX. 0.006 INCH* CLEARANCE BETWEEN BELL CRANK AND LETTERS EXTENSION ARM.

(CONTINUED ON FOLLOWING PAGE)

(B)

FIGURES ARM ASSEMBLY SPRING

REQUIREMENT

WITH ARM ASSEMBLIES IN LETTERS POSITION:

MIN. 1-1/2 OZS.----MAX. 3-1/2 OZS. TO PULL SPRING TO INSTALLED LENGTH.

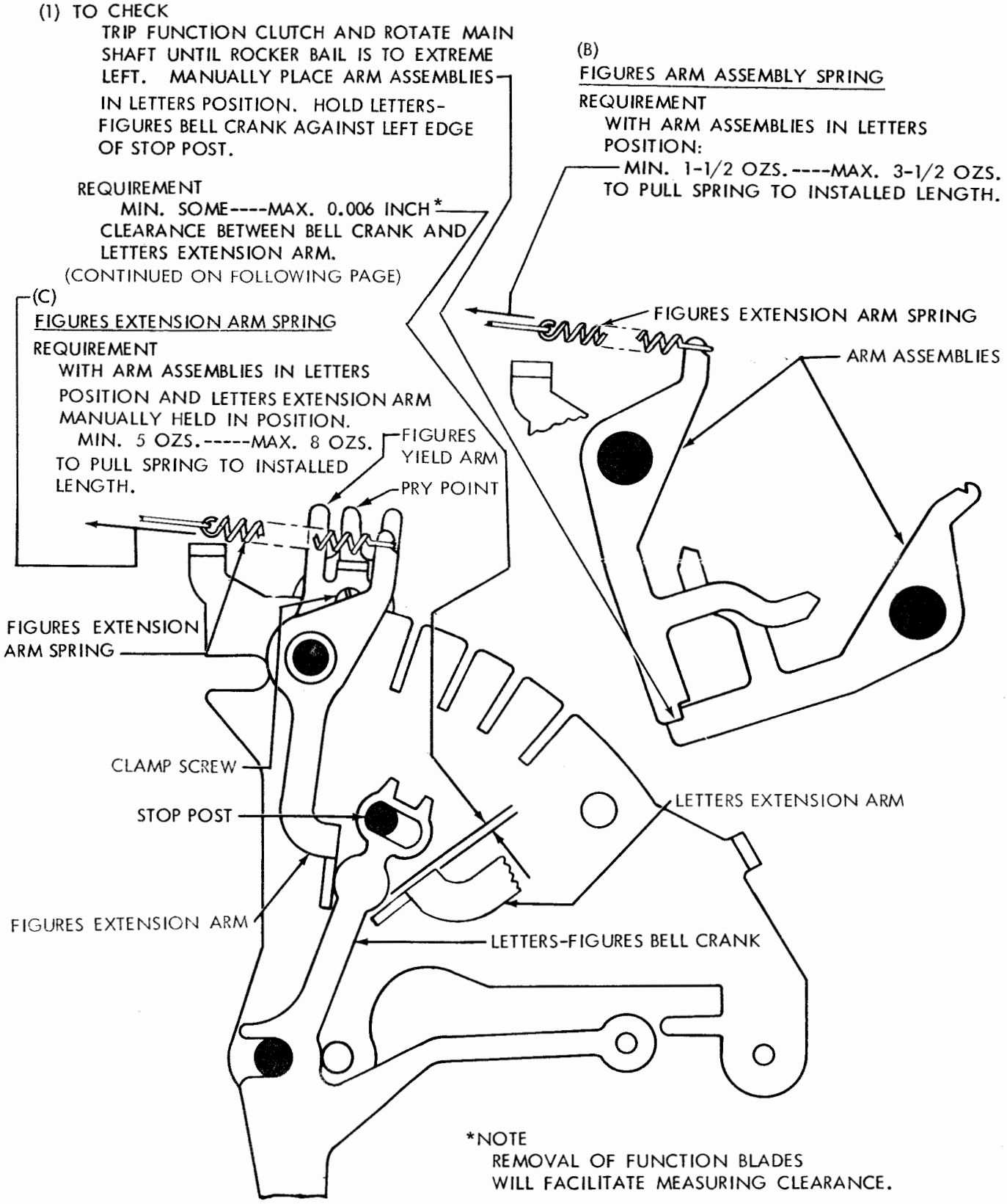
(C)

FIGURES EXTENSION ARM SPRING

REQUIREMENT

WITH ARM ASSEMBLIES IN LETTERS POSITION AND LETTERS EXTENSION ARM MANUALLY HELD IN POSITION.

MIN. 5 OZS.-----MAX. 8 OZS. TO PULL SPRING TO INSTALLED LENGTH.



*NOTE

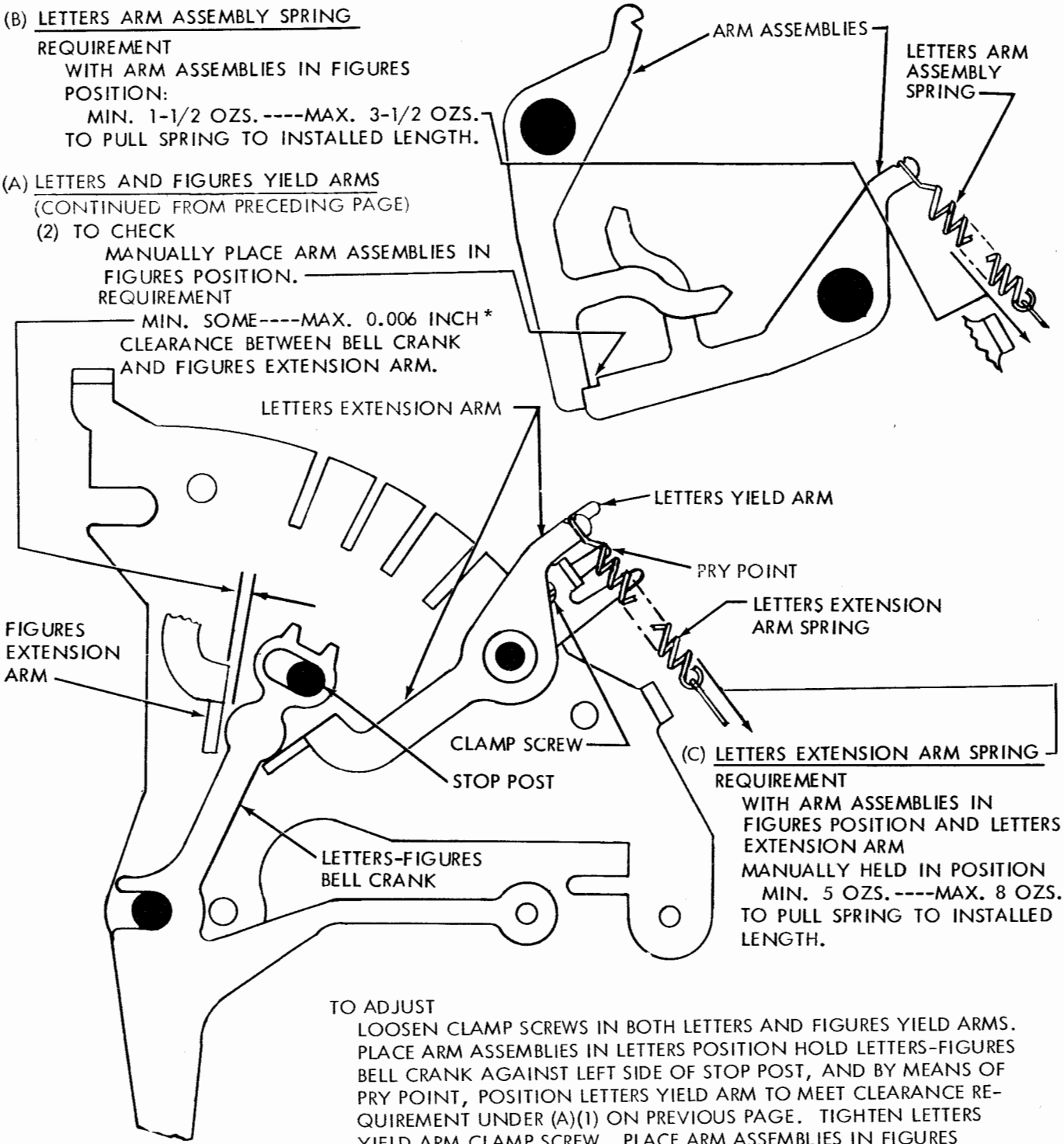
REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.35 Typing Mechanism continued

(B) LETTERS ARM ASSEMBLY SPRING

REQUIREMENT
WITH ARM ASSEMBLIES IN FIGURES POSITION:
MIN. 1-1/2 OZS.----MAX. 3-1/2 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(A) LETTERS AND FIGURES YIELD ARMS
(CONTINUED FROM PRECEDING PAGE)
(2) TO CHECK
MANUALLY PLACE ARM ASSEMBLIES IN FIGURES POSITION.
REQUIREMENT
MIN. SOME----MAX. 0.006 INCH* CLEARANCE BETWEEN BELL CRANK AND FIGURES EXTENSION ARM.



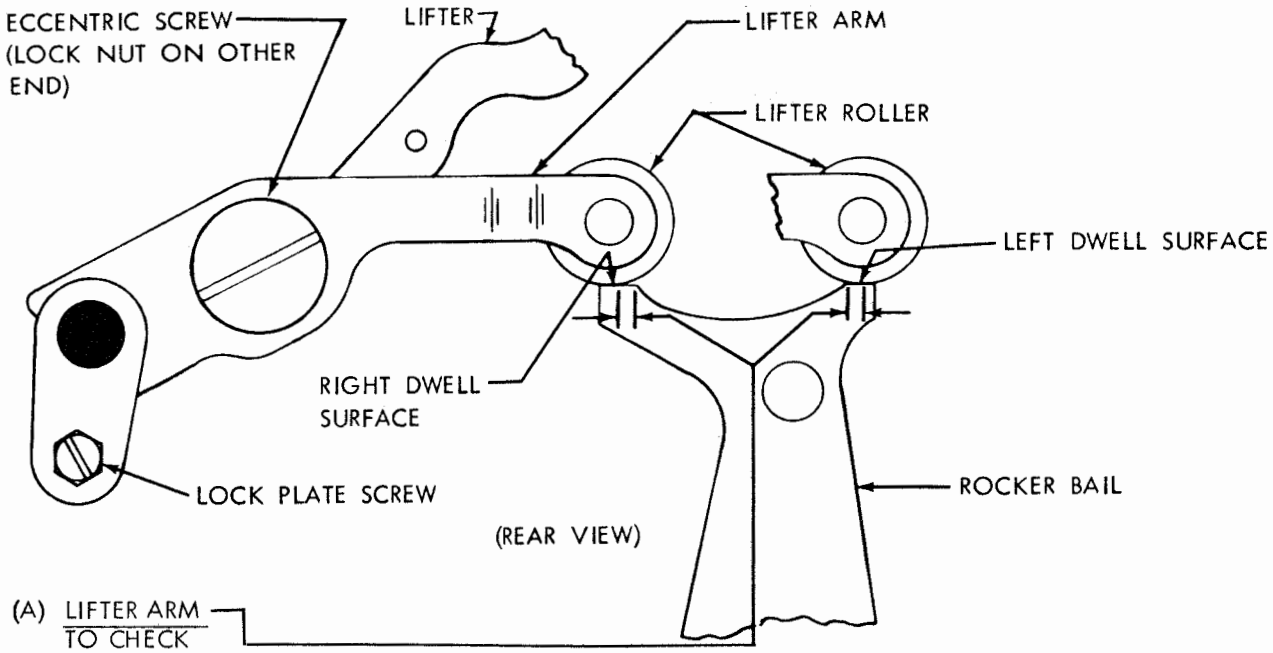
(C) LETTERS EXTENSION ARM SPRING

REQUIREMENT
WITH ARM ASSEMBLIES IN FIGURES POSITION AND LETTERS EXTENSION ARM MANUALLY HELD IN POSITION
MIN. 5 OZS.----MAX. 8 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

TO ADJUST
LOOSEN CLAMP SCREWS IN BOTH LETTERS AND FIGURES YIELD ARMS. PLACE ARM ASSEMBLIES IN LETTERS POSITION HOLD LETTERS-FIGURES BELL CRANK AGAINST LEFT SIDE OF STOP POST, AND BY MEANS OF PRY POINT, POSITION LETTERS YIELD ARM TO MEET CLEARANCE REQUIREMENT UNDER (A)(1) ON PREVIOUS PAGE. TIGHTEN LETTERS YIELD ARM CLAMP SCREW. PLACE ARM ASSEMBLIES IN FIGURES POSITION. HOLD LETTERS-FIGURES BELL CRANK AGAINST RIGHT SIDE OF STOP POST, AND BY MEANS OF PRY POINT POSITION FIGURES YIELD ARM TO MEET REQUIREMENT UNDER (2) ABOVE. TIGHTEN FIGURES YIELD ARM CLAMP SCREW. CAUTION: ARM ASSEMBLIES MAY CHANGE POSITION DURING ADJUSTMENT. AS TIGHTENING OF SCREWS MAY AFFECT ADJUSTMENT, RECHECK REQUIREMENTS.

*NOTE: REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.36 Typing Mechanism continued



(A) LIFTER ARM TO CHECK

TRIP FUNCTION CLUTCH. MOVE ROCKER BAIL TO EXTREME LEFT POSITION AND OBSERVE TRAVEL OF LIFTER ROLLER ON RIGHT DWELL SURFACE. MOVE ROCKER BAIL TO EXTREME RIGHT POSITION AND OBSERVE TRAVEL OF ROLLER ON LEFT DWELL SURFACE.

REQUIREMENT

APPROXIMATELY EQUAL TRAVEL ON EACH DWELL SURFACE.

TO ADJUST*

LOOSEN LOCK PLATE SCREW UNTIL FRICTION TIGHT. WITH ECCENTRIC SCREW LOCK NUT FRICTION TIGHT, POSITION LIFTER ARM ON LIFTER. TIGHTEN LOCK PLATE SCREW. DO NOT TIGHTEN LOCK NUT.

*NOTE: REMOVE TIMING CONTACTS IF UNIT IS SO EQUIPPED.

(B) LIFTER ARM ECCENTRIC SCREW

REQUIREMENT

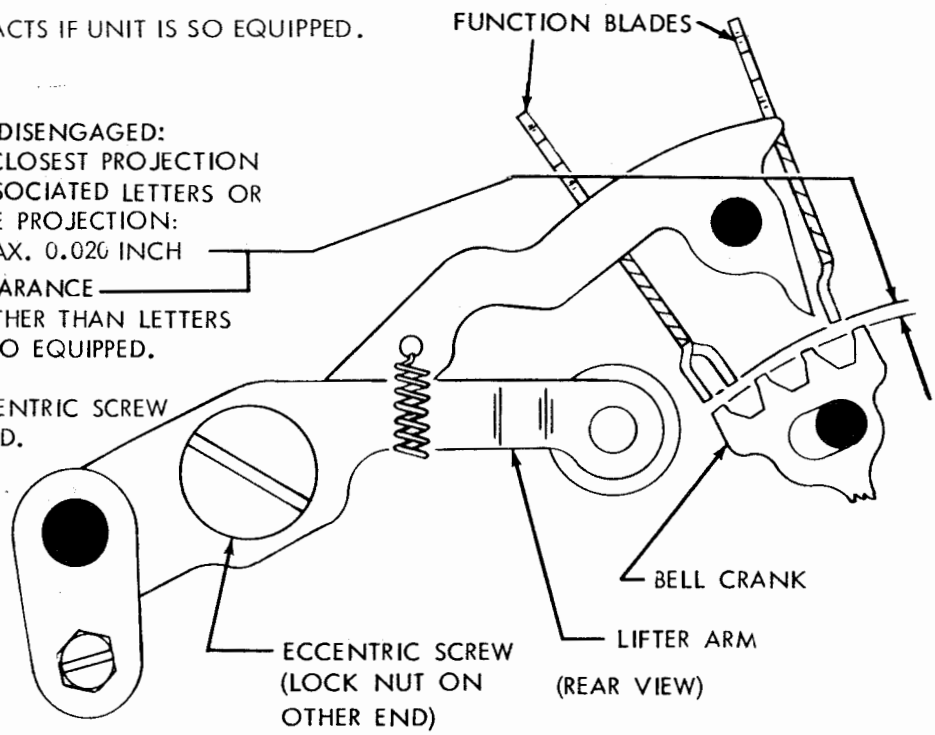
WITH FUNCTION CLUTCH DISENGAGED:

(1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LETTERS OR FIGURES FUNCTION BLADE PROJECTION: MIN. 0.008 INCH--- MAX. 0.020 INCH

(2) MIN. 0.005 INCH CLEARANCE FOR FUNCTION BLADES OTHER THAN LETTERS AND FIGURES IF UNIT IS SO EQUIPPED.

TO ADJUST

POSITION LIFTER ARM ECCENTRIC SCREW WITH LOCK NUT LOOSENED.



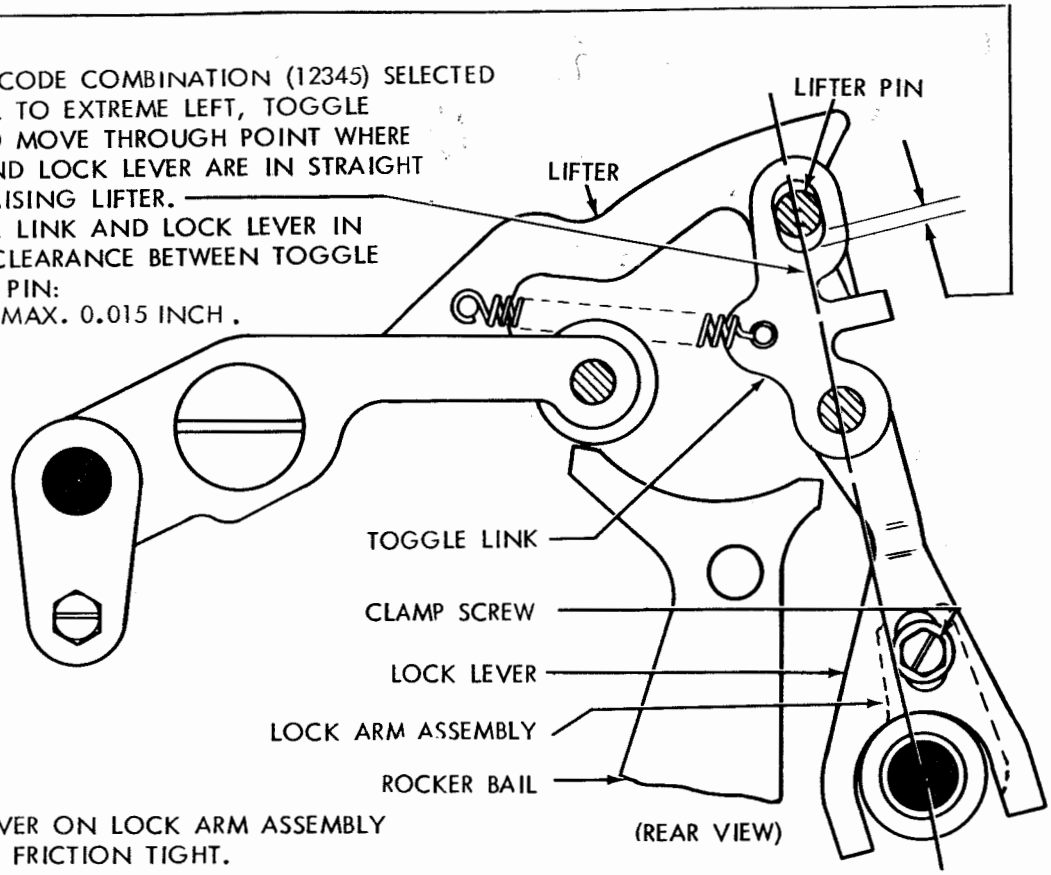
2.37 Typing Mechanism continued

(A) LOCK LEVER

REQUIREMENT

(1) WITH LETTERS CODE COMBINATION (12345) SELECTED AND ROCKER BAIL TO EXTREME LEFT, TOGGLE LINKAGE SHOULD MOVE THROUGH POINT WHERE TOGGLE LINK AND LOCK LEVER ARE IN STRAIGHT LINE WITHOUT RAISING LIFTER.

(2) WITH TOGGLE LINK AND LOCK LEVER IN STRAIGHT LINE, CLEARANCE BETWEEN TOGGLE LINK AND LIFTER PIN:
MIN. SOME --- MAX. 0.015 INCH.



TO ADJUST

POSITION LOCK LEVER ON LOCK ARM ASSEMBLY WITH CLAMP SCREW FRICTION TIGHT.

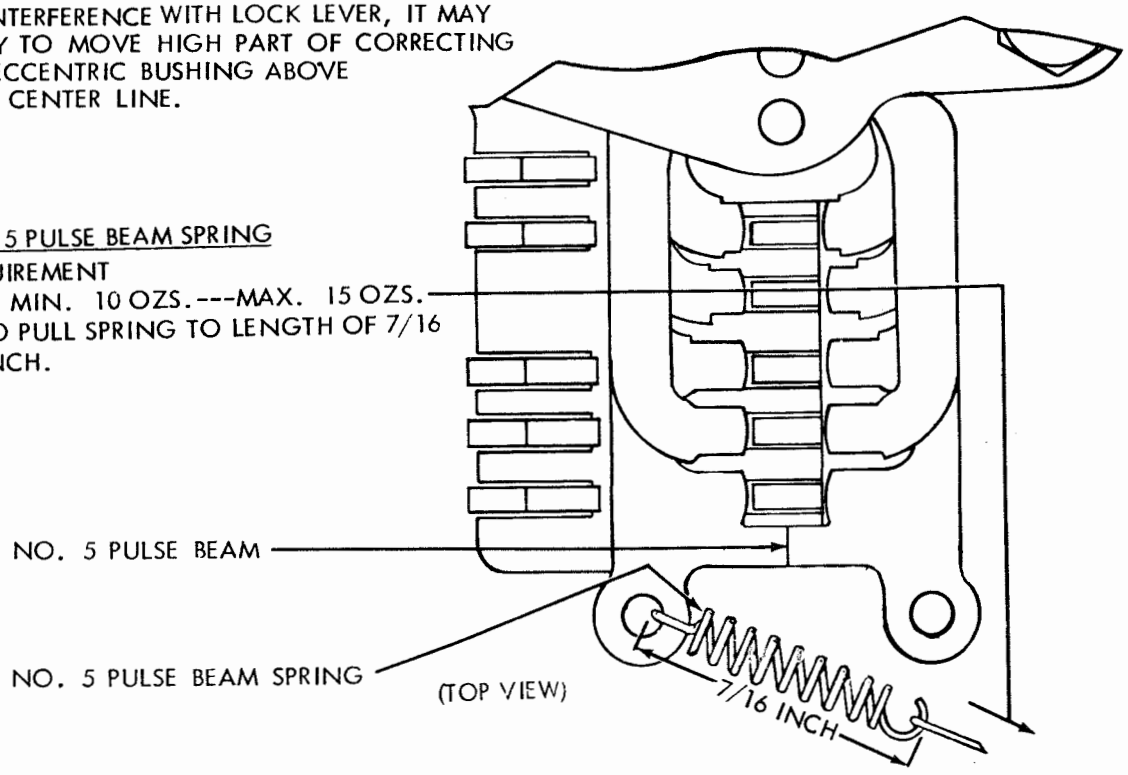
NOTE:

TO AVOID INTERFERENCE WITH LOCK LEVER, IT MAY BE NECESSARY TO MOVE HIGH PART OF CORRECTING DRIVE LINK ECCENTRIC BUSHING ABOVE HORIZONTAL CENTER LINE.

(B) NO. 5 PULSE BEAM SPRING

REQUIREMENT

MIN. 10 OZS.---MAX. 15 OZS. TO PULL SPRING TO LENGTH OF 7/16 INCH.



2.38 Typing Mechanism continued

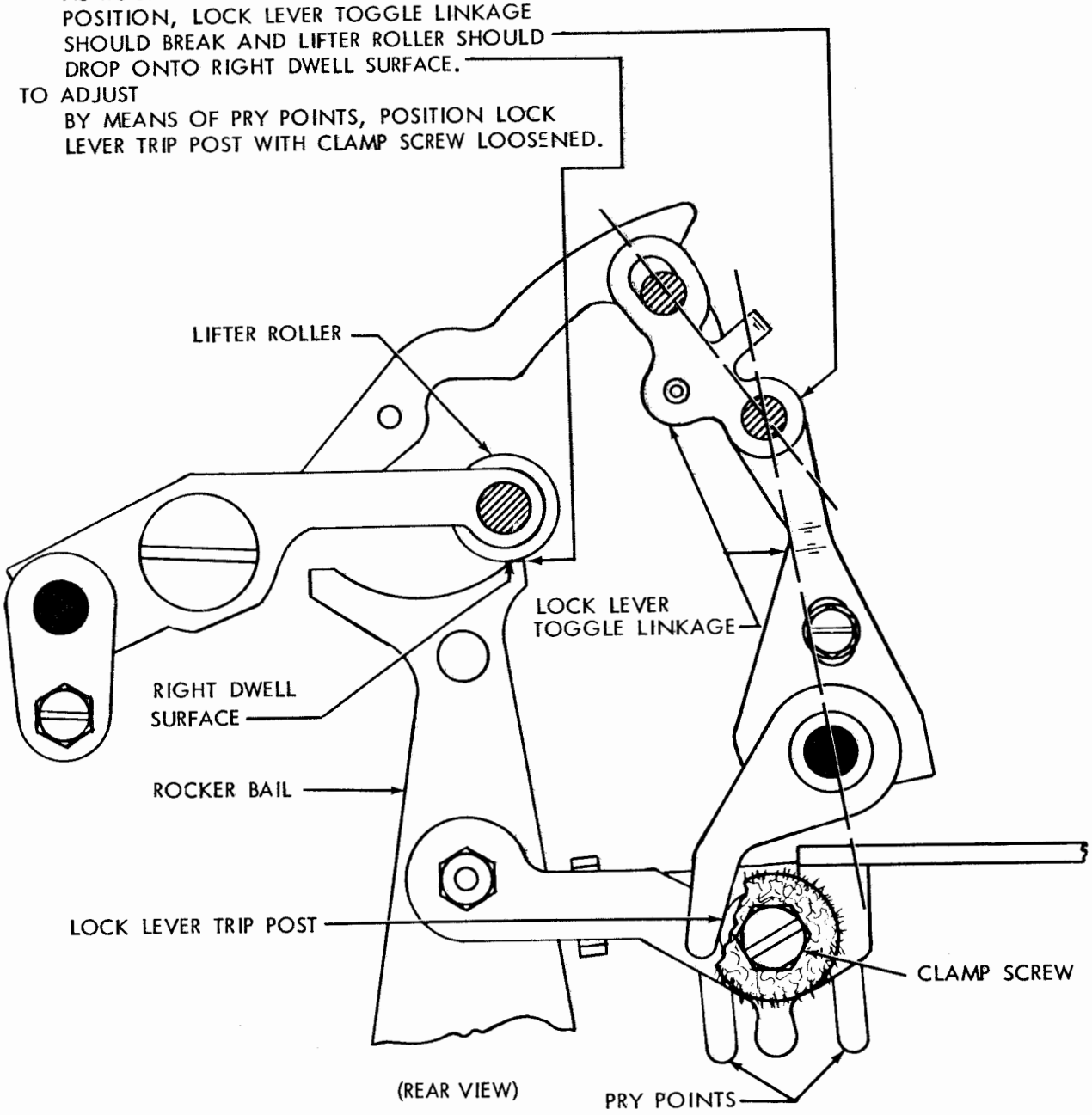
LOCK LEVER TRIP POST

REQUIREMENT

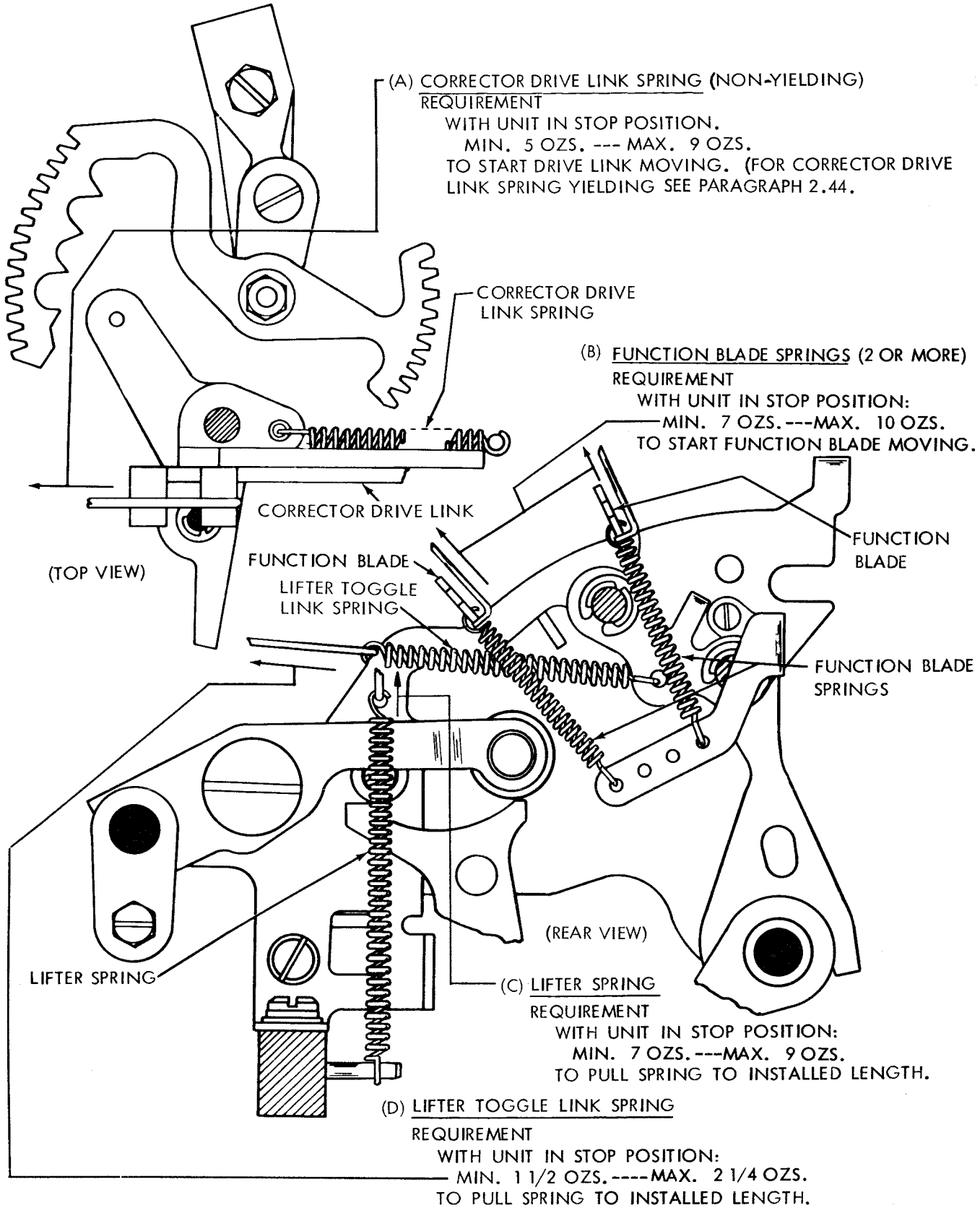
AS ROCKER BAIL APPROACHES EXTREME RIGHT POSITION, LOCK LEVER TOGGLE LINKAGE SHOULD BREAK AND LIFTER ROLLER SHOULD DROP ONTO RIGHT DWELL SURFACE.

TO ADJUST

BY MEANS OF PRY POINTS, POSITION LOCK LEVER TRIP POST WITH CLAMP SCREW LOOSENED.



2.39 Typing Mechanism continued



2.40 Typing Mechanism continued

OSCILLATING BAIL DRIVE LINK

TO CHECK

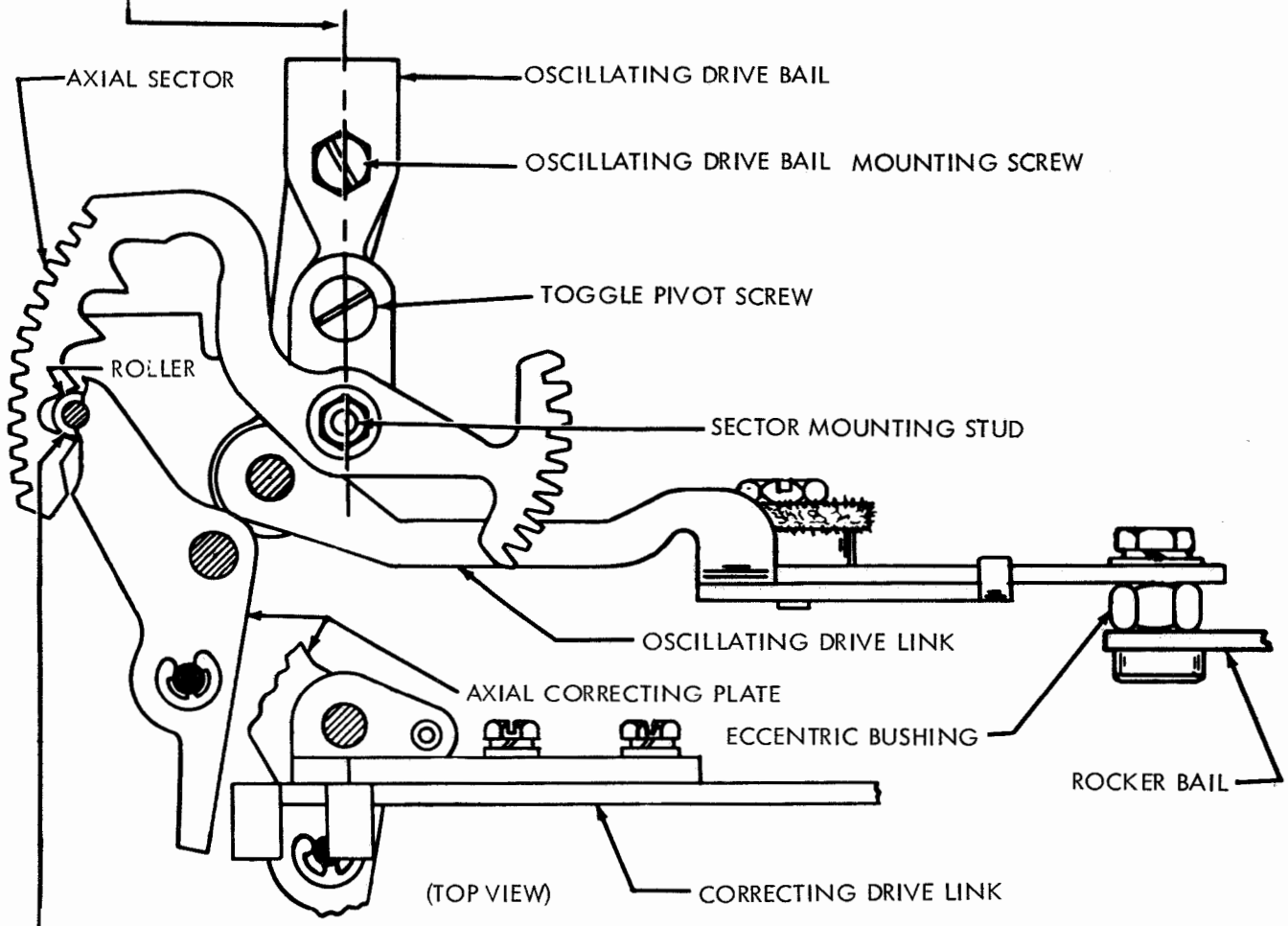
POSITION ROCKER BAIL TO ITS EXTREME LEFT.

REQUIREMENT

SECTOR MOUNTING STUD, TOGGLE PIVOT SCREW AND OSCILLATING DRIVE BAIL MOUNTING SCREW SHOULD APPROXIMATELY LINE UP.

TO ADJUST

POSITION OSCILLATING DRIVE LINK BY MEANS OF ITS ECCENTRIC BUSHING.



OSCILLATING BAIL PIVOT

REQUIREMENT

WITH "BLANK" COMBINATION SELECTED, ROTATE MAIN SHAFT, TAKING UP AXIAL PLAY IN TYPE WHEEL SHAFT TOWARD FRONT OF UNIT, THE AXIAL CORRECTOR ROLLER SHALL ENTER THE FIRST NOTCH OF THE SECTOR CENTRALLY.

TO ADJUST

LOOSEN OSCILLATING BAIL ADJUSTING SCREW. SELECT "BLANK" COMBINATION. POSITION OSCILLATING BAIL BY MEANS OF ITS ELONGATED MOUNTING HOLE SO CORRECTOR ROLLER ENTERS FIRST NOTCH OF SECTOR WHEN ROCKER BAIL MOVES TO ITS EXTREME LEFT POSITION. HOLD CORRECTOR ROLLER FIRMLY IN FIRST NOTCH AND TAKE UP PLAY IN OSCILLATING BAIL LINKAGE BY APPLYING A FORCE TO OSCILLATING BAIL TOWARD REAR OF UNIT. TIGHTEN THE OSCILLATING BAIL ADJUSTING SCREW.

2.41 Typing Mechanism continued

(A) AXIAL SECTOR ALIGNMENT

REQUIREMENT

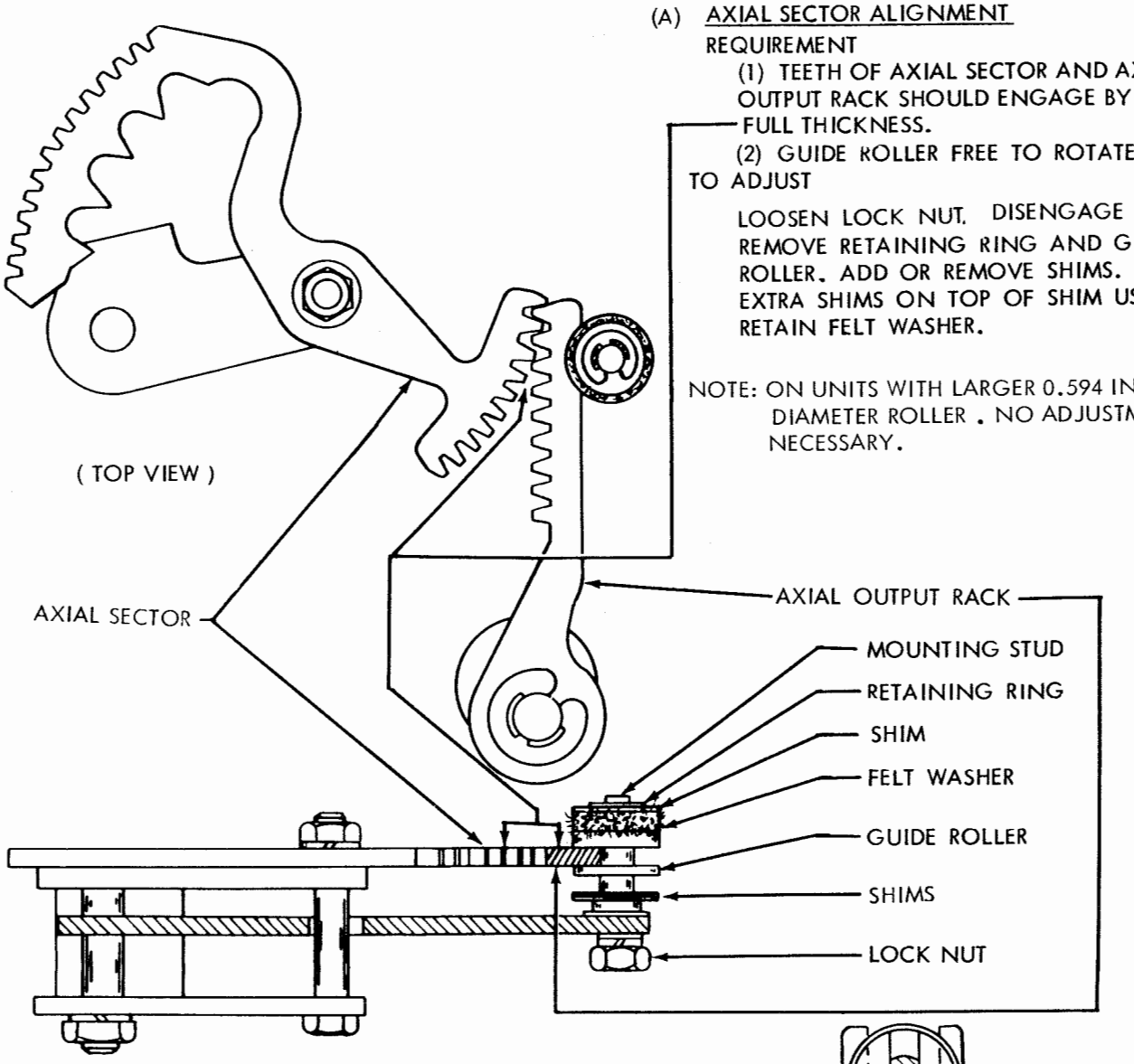
(1) TEETH OF AXIAL SECTOR AND AXIAL OUTPUT RACK SHOULD ENGAGE BY THEIR FULL THICKNESS.

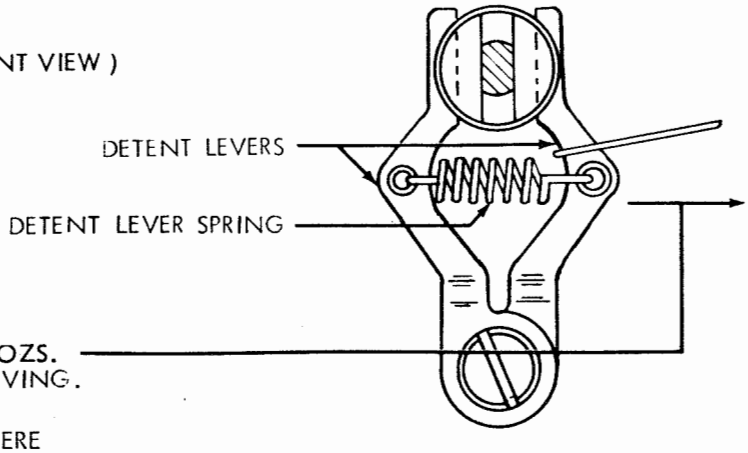
(2) GUIDE ROLLER FREE TO ROTATE.

TO ADJUST

LOOSEN LOCK NUT. DISENGAGE RACK. REMOVE RETAINING RING AND GUIDE ROLLER. ADD OR REMOVE SHIMS. PLACE EXTRA SHIMS ON TOP OF SHIM USED TO RETAIN FELT WASHER.

NOTE: ON UNITS WITH LARGER 0.594 INCH DIAMETER ROLLER . NO ADJUSTMENT IS NECESSARY.





(TOP VIEW OF SPRINGS ON AXIAL POSITIONING MECHANISM)

(B) ECCENTRIC SHAFT

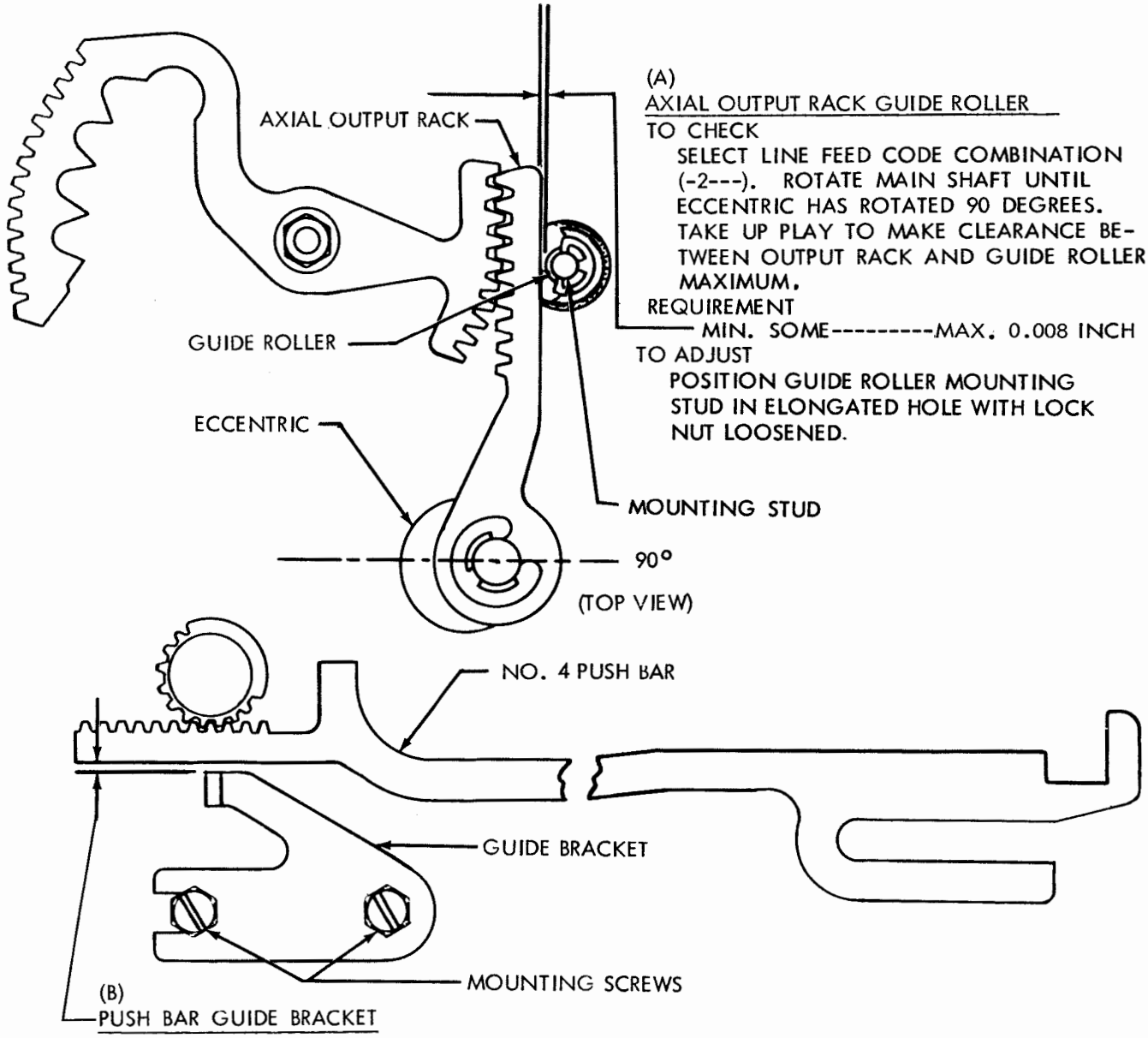
DETENT LEVER SPRINGS

MIN. 7 OZS.---MAX. 10 OZS. TO START DETENT LEVER MOVING.

NOTE:

CHECK ALL SIX SPRINGS. THERE ARE TWO ON THE AXIAL POSITIONING MECHANISM AND FOUR ON THE ROTARY POSITIONING MECHANISM.

2.42 Typing Mechanism continued



(A)
AXIAL OUTPUT RACK GUIDE ROLLER

TO CHECK
SELECT LINE FEED CODE COMBINATION (-2---). ROTATE MAIN SHAFT UNTIL ECCENTRIC HAS ROTATED 90 DEGREES. TAKE UP PLAY TO MAKE CLEARANCE BETWEEN OUTPUT RACK AND GUIDE ROLLER MAXIMUM.

REQUIREMENT
MIN. SOME---------MAX. 0.008 INCH

TO ADJUST
POSITION GUIDE ROLLER MOUNTING STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.

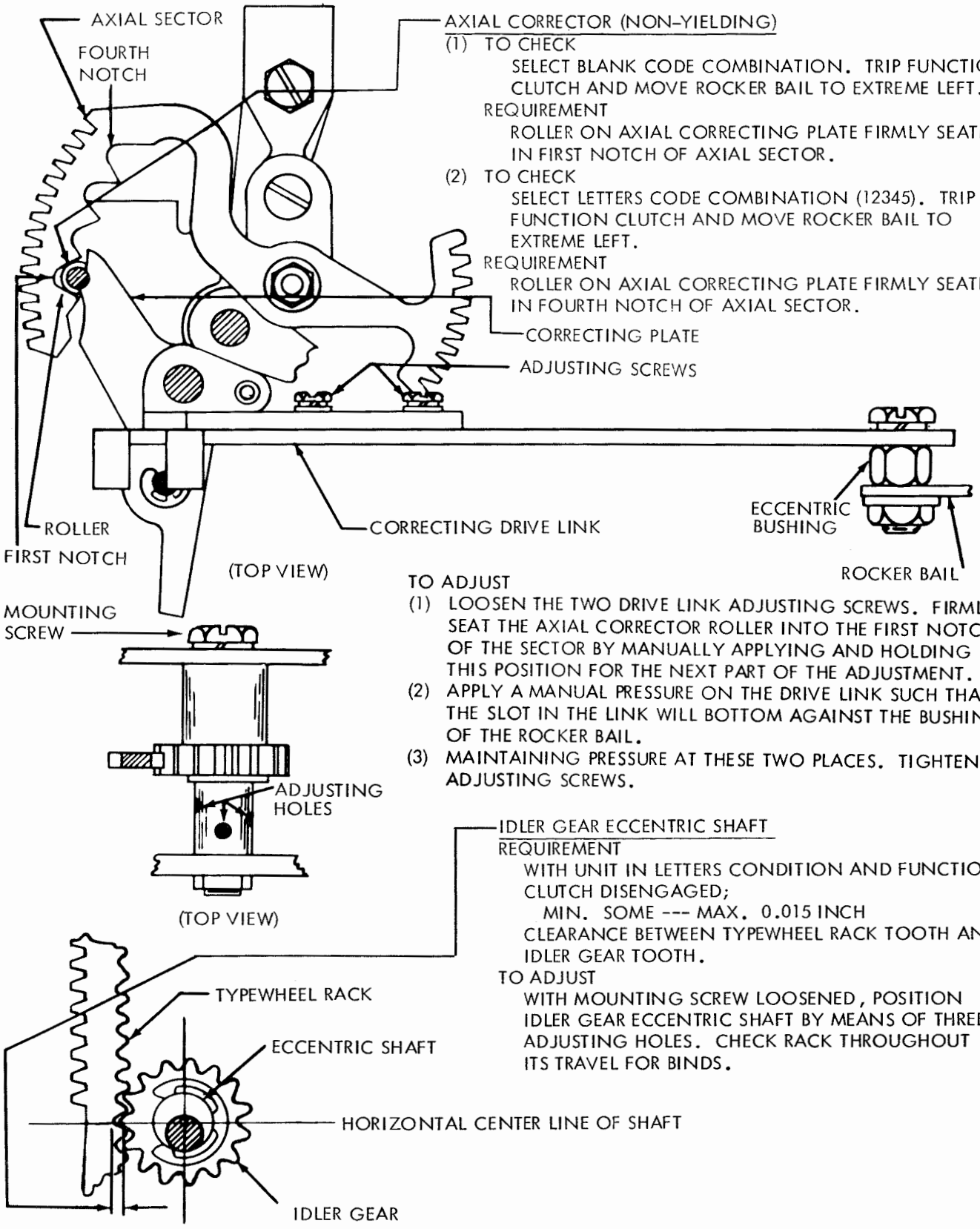
(B)
PUSH BAR GUIDE BRACKET

TO CHECK
MANUALLY SELECT CARRIAGE RETURN CODE COMBINATION (---4-). ROTATE MAIN SHAFT SO THAT NO. 4 PUSH BAR MOVES THROUGH COMPLETE RANGE OF TRAVEL.

REQUIREMENT
WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM:
MIN. SOME---MAX. 0.008 INCH
BETWEEN NO. 4 PUSH BAR AND GUIDE BRACKET THROUGHOUT COMPLETE TRAVEL OF BAR.

TO ADJUST
POSITION GUIDE BRACKET WITH MOUNTING SCREWS LOOSENED.

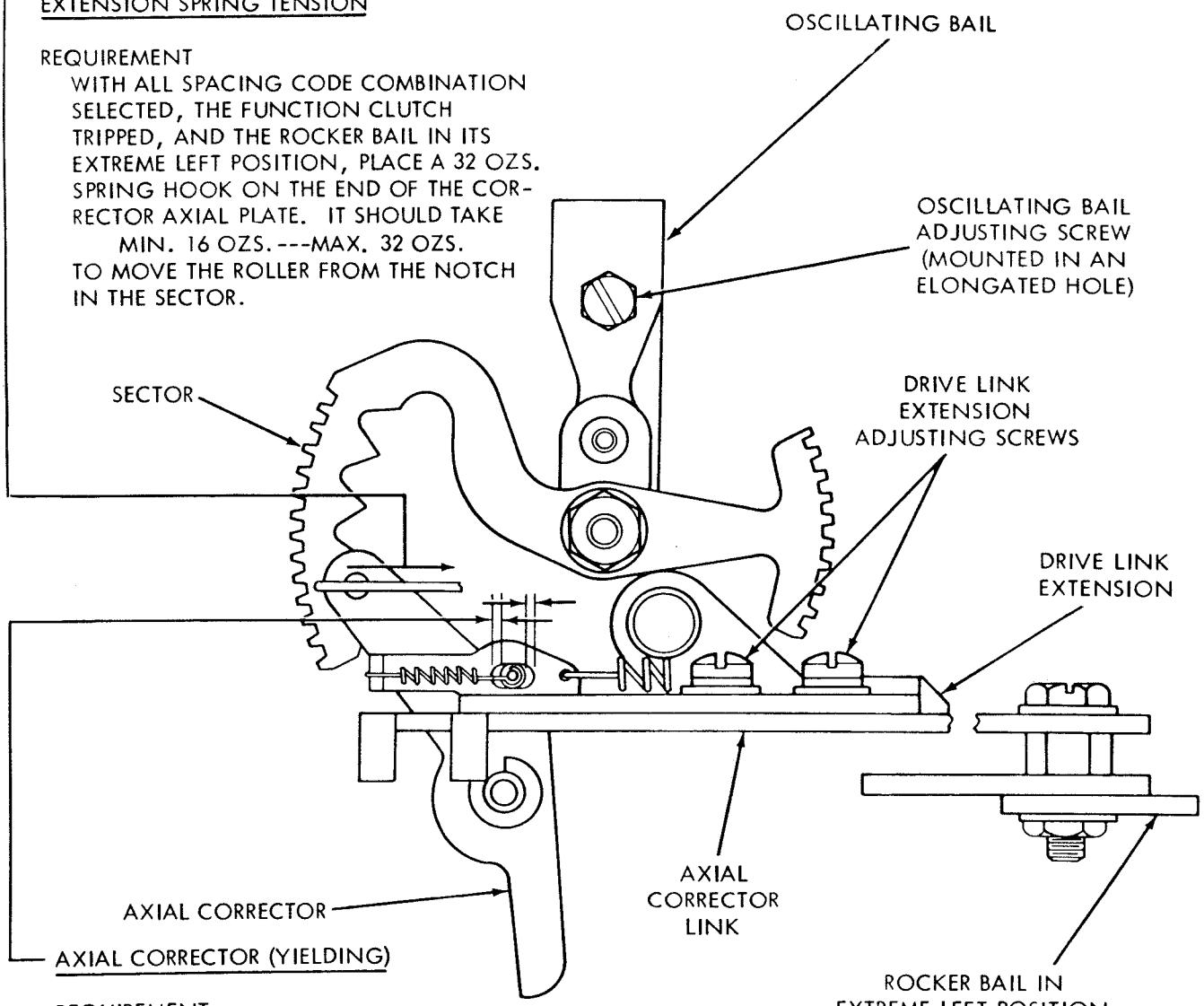
2.43 Typing Mechanism continued



2.44 Typing Mechanism continued

CORRECTOR DRIVE LINK (YIELDING) EXTENSION SPRING TENSION

REQUIREMENT
WITH ALL SPACING CODE COMBINATION SELECTED, THE FUNCTION CLUTCH TRIPPED, AND THE ROCKER BAIL IN ITS EXTREME LEFT POSITION, PLACE A 32 OZS. SPRING HOOK ON THE END OF THE CORRECTOR AXIAL PLATE. IT SHOULD TAKE
MIN. 16 OZS. ---MAX. 32 OZS.
TO MOVE THE ROLLER FROM THE NOTCH IN THE SECTOR.



REQUIREMENT
WITH ALL SPACING CODE COMBINATION SELECTED, FUNCTION CLUTCH TRIPPED AND ROCKER BAIL IN ITS EXTREME LEFT POSITION, THE AXIAL CORRECTOR ROLLER SHOULD SEAT IN THE FIRST SECTOR NOTCH AND THERE SHOULD BE
MIN. 0.005 INCH
BETWEEN THE ENDS OF THE SLOT AND THE SPRING POST. CHECK BOTH SIDES AND CHECK SEATING IN FOURTH NOTCH (LETTERS SELECTION). TURN THE TRU ARC FASTENING THE DRIVE LINK EXTENSION TO THE CORRECTOR PLATE TO CHECK THE MINIMUM REQUIREMENT.

TO ADJUST
LOOSEN TWO DRIVE LINK ADJUSTING SCREWS. POSITION DRIVE LINK TO MEET THE REQUIREMENT AND RETIGHTEN THE SCREWS.

2.45 Typing Mechanism continued

ROTARY CORRECTING LEVER

(1) TO CHECK

LOOSEN CORRECTING CLAMP ADJUSTING SCREW. WITH UNIT IN FIGURES CONDITION, SELECT NO. 9 CODE COMBINATION (---45). TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT ROTARY CORRECTING LEVER IN TYPE WHEEL RACK.

REQUIREMENT

SECOND TOOTH FROM TOP OF RACK SEATED BETWEEN LOBES OF CORRECTING LEVER.

TO ADJUST

LOOSEN ECCENTRIC BUSHING LOCK NUT. WITH CLAMP ADJUSTING SCREW LOOSENED AND CORRECTING LEVER PIVOT TO RIGHT OF CENTER LINE, POSITION CORRECTING LEVER. TIGHTEN BUSHING LOCK NUT. DO NOT TIGHTEN CLAMP ADJUSTING SCREW AT THIS TIME.

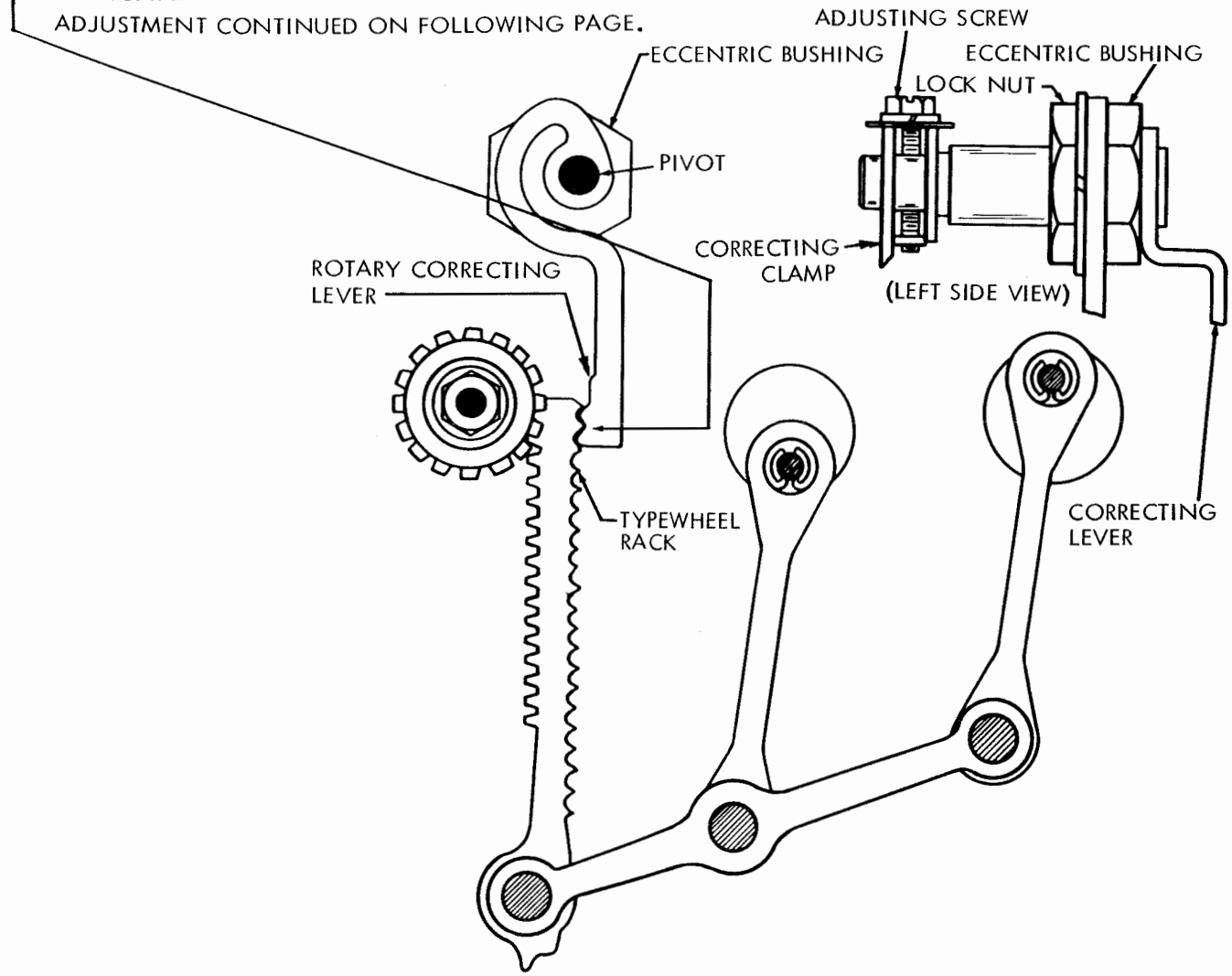
(2) TO CHECK

IN A MANNER SIMILAR TO THAT DESCRIBED ABOVE CHECK ENGAGEMENT OF FIFTH TOOTH (--34- CODE COMBINATION SELECTED IN FIGURES CONDITION), NINTH TOOTH (---4- CODE COMBINATION SELECTED IN LETTERS CONDITION) AND SIXTEENTH TOOTH (--3-5 CODE COMBINATION SELECTED IN LETTERS CONDITION).

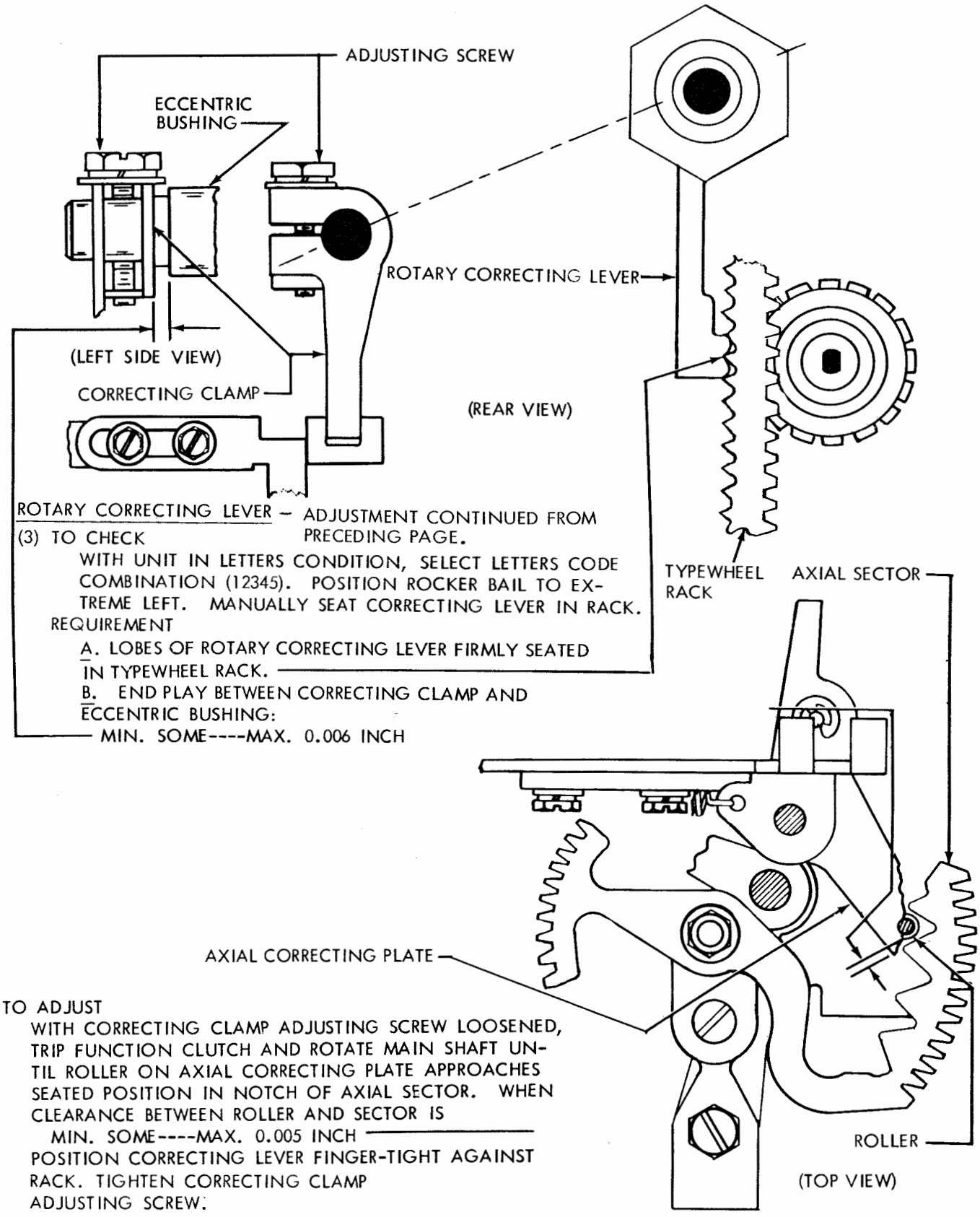
TO ADJUST

REFINE ADJUSTMENT UNDER (1) ABOVE.

ADJUSTMENT CONTINUED ON FOLLOWING PAGE.



2.46 Typing Mechanism continued



ROTARY CORRECTING LEVER – ADJUSTMENT CONTINUED FROM PRECEDING PAGE.

(3) TO CHECK

WITH UNIT IN LETTERS CONDITION, SELECT LETTERS CODE COMBINATION (12345). POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT CORRECTING LEVER IN RACK.

REQUIREMENT

A. LOBES OF ROTARY CORRECTING LEVER FIRMLY SEATED IN TYPEWHEEL RACK.

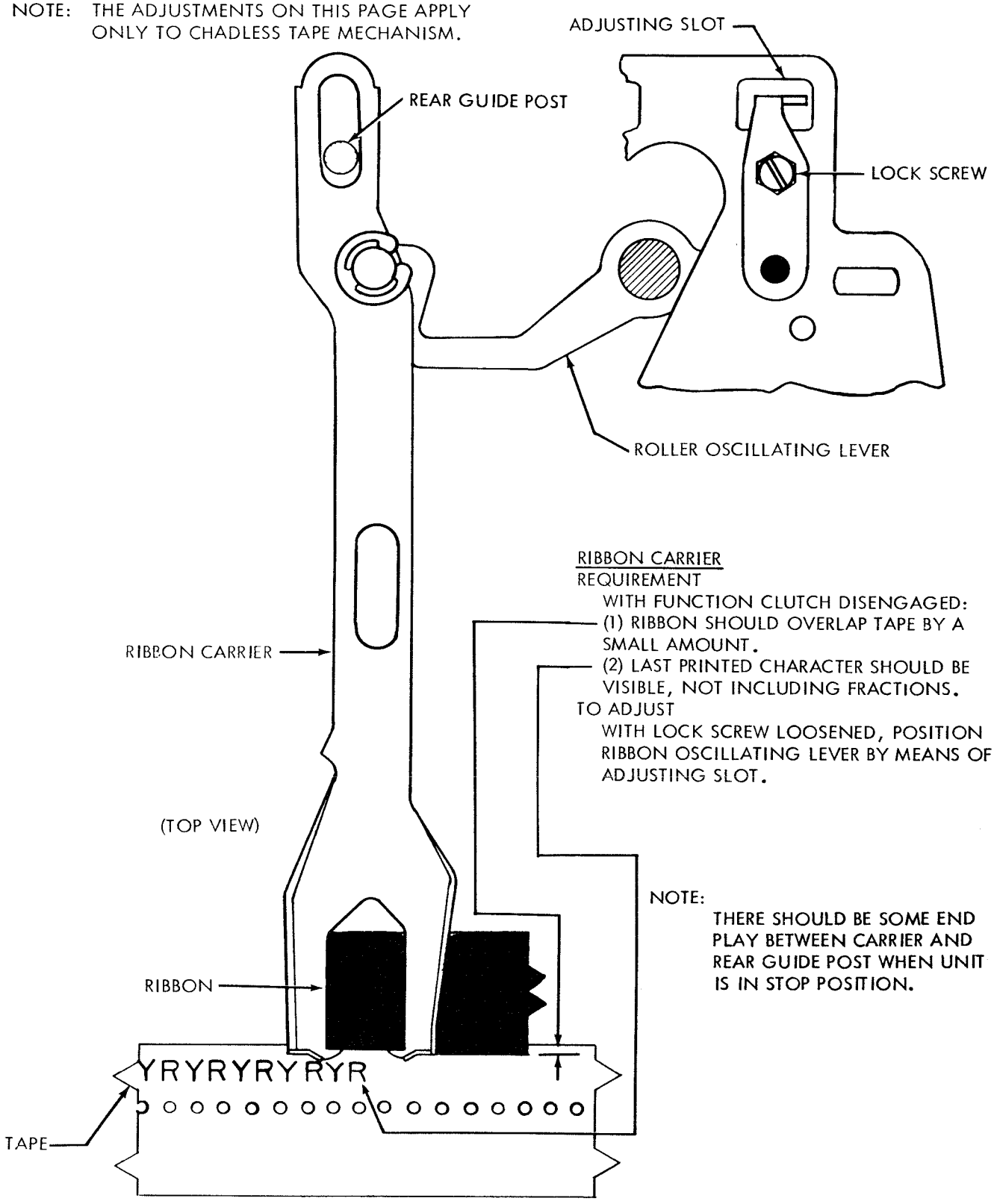
B. END PLAY BETWEEN CORRECTING CLAMP AND ECCENTRIC BUSHING:
MIN. SOME----MAX. 0.006 INCH

TO ADJUST

WITH CORRECTING CLAMP ADJUSTING SCREW LOOSENED, TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL ROLLER ON AXIAL CORRECTING PLATE APPROACHES SEATED POSITION IN NOTCH OF AXIAL SECTOR. WHEN CLEARANCE BETWEEN ROLLER AND SECTOR IS
MIN. SOME----MAX. 0.005 INCH
POSITION CORRECTING LEVER FINGER-TIGHT AGAINST RACK. TIGHTEN CORRECTING CLAMP ADJUSTING SCREW.

2.47 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



RIBBON CARRIER

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:
(1) RIBBON SHOULD OVERLAP TAPE BY A SMALL AMOUNT.
(2) LAST PRINTED CHARACTER SHOULD BE VISIBLE, NOT INCLUDING FRACTIONS.

TO ADJUST

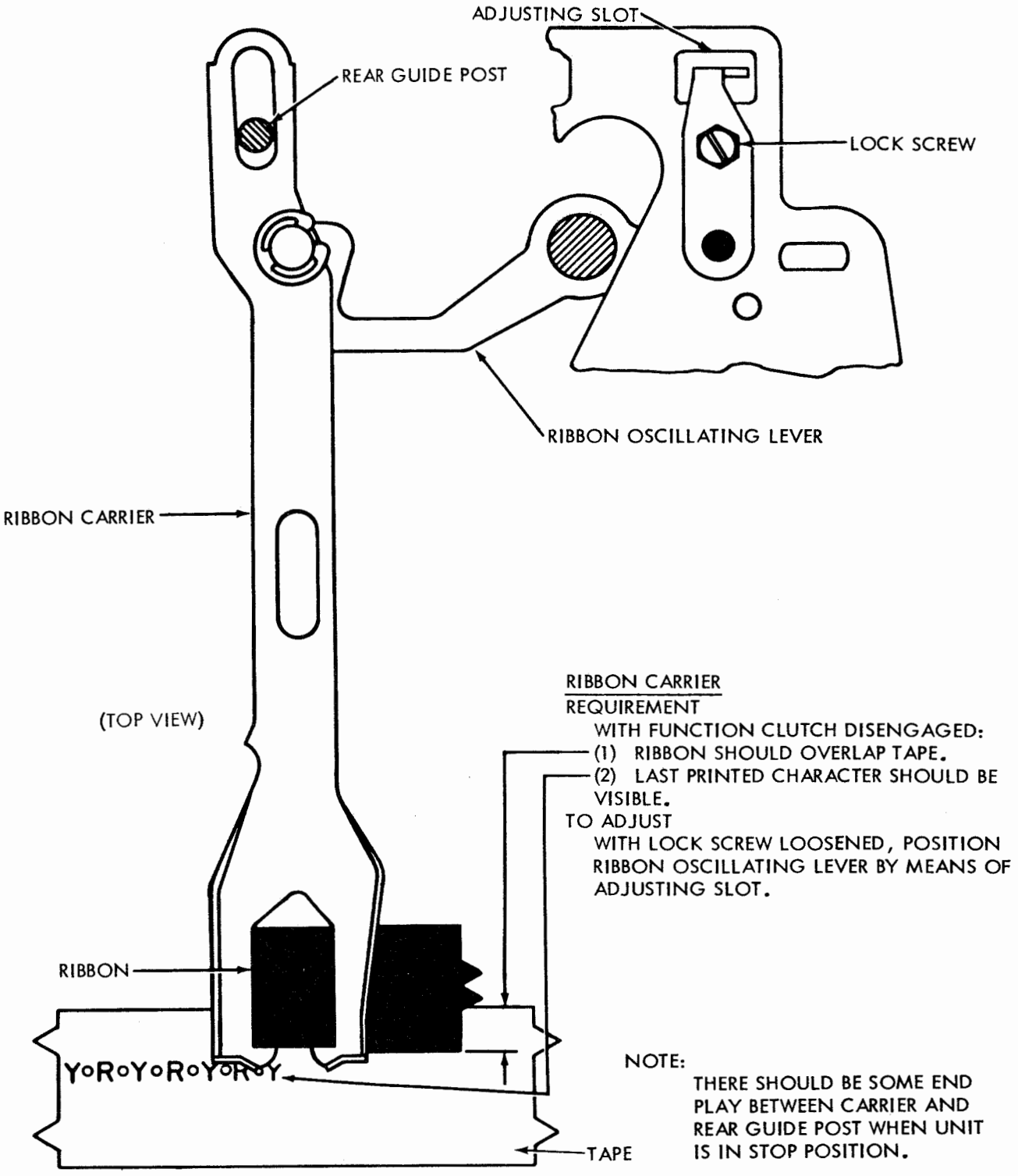
WITH LOCK SCREW LOOSENED, POSITION RIBBON OSCILLATING LEVER BY MEANS OF ADJUSTING SLOT.

NOTE:

THERE SHOULD BE SOME END PLAY BETWEEN CARRIER AND REAR GUIDE POST WHEN UNIT IS IN STOP POSITION.

2.48 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.



RIBBON CARRIER

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:

(1) RIBBON SHOULD OVERLAP TAPE.

(2) LAST PRINTED CHARACTER SHOULD BE VISIBLE.

TO ADJUST

WITH LOCK SCREW LOOSENED, POSITION RIBBON OSCILLATING LEVER BY MEANS OF ADJUSTING SLOT.

NOTE:

THERE SHOULD BE SOME END PLAY BETWEEN CARRIER AND REAR GUIDE POST WHEN UNIT IS IN STOP POSITION.

2.49 Typing Mechanism continued

PRINTING TRIP LINK

TO CHECK

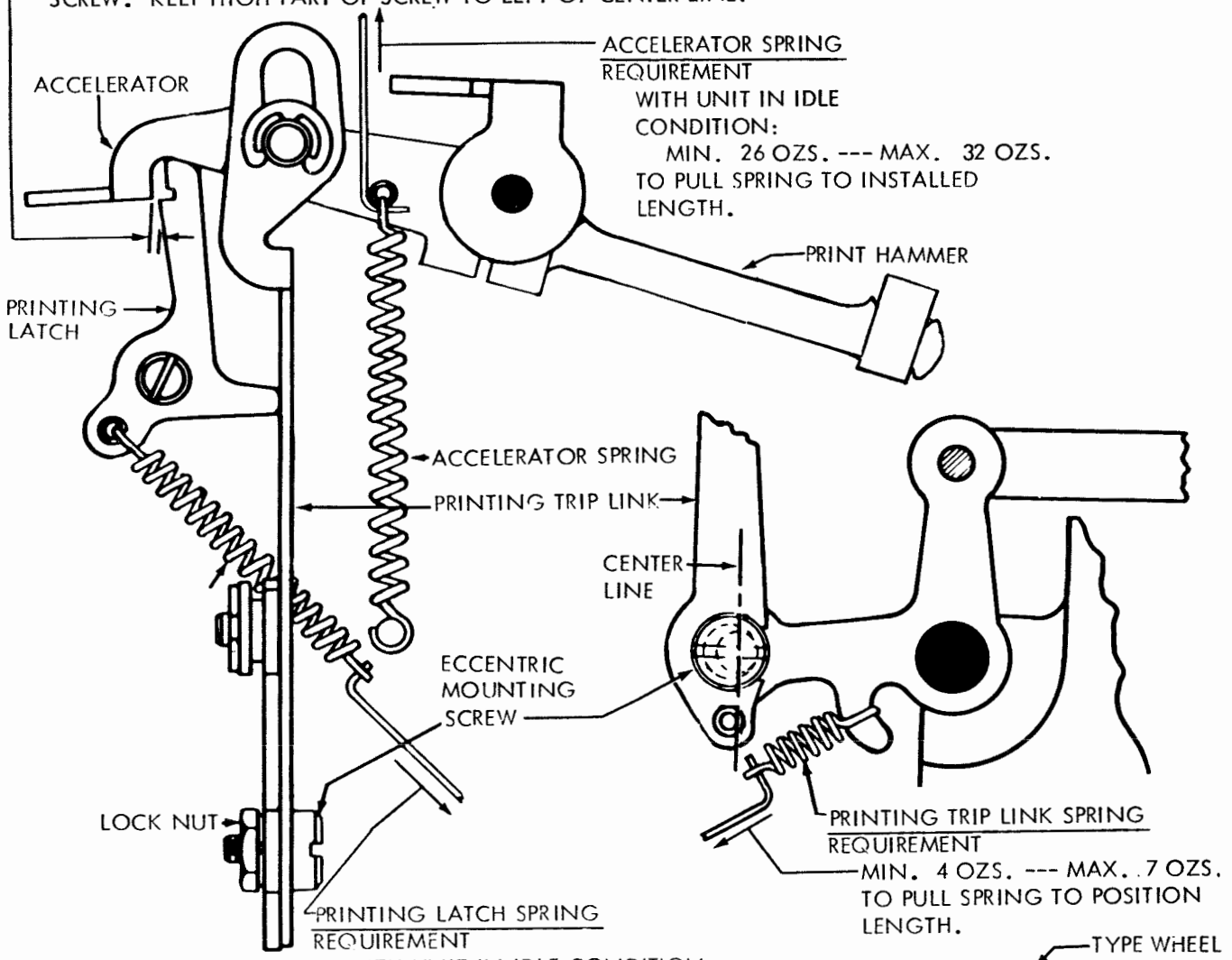
TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY LIFT ACCELERATOR SO THAT LATCHING SURFACES OF PRINTING LATCH AND ACCELERATOR ARE EVEN.

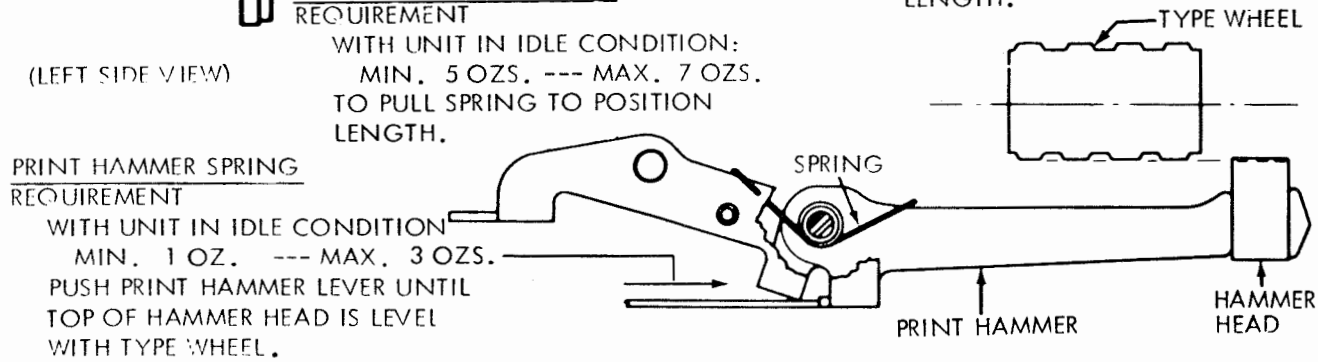
REQUIREMENT

MIN. SOME --- MAX. 0.015 INCH CLEARANCE BETWEEN ACCELERATOR AND LATCH.

TO ADJUST

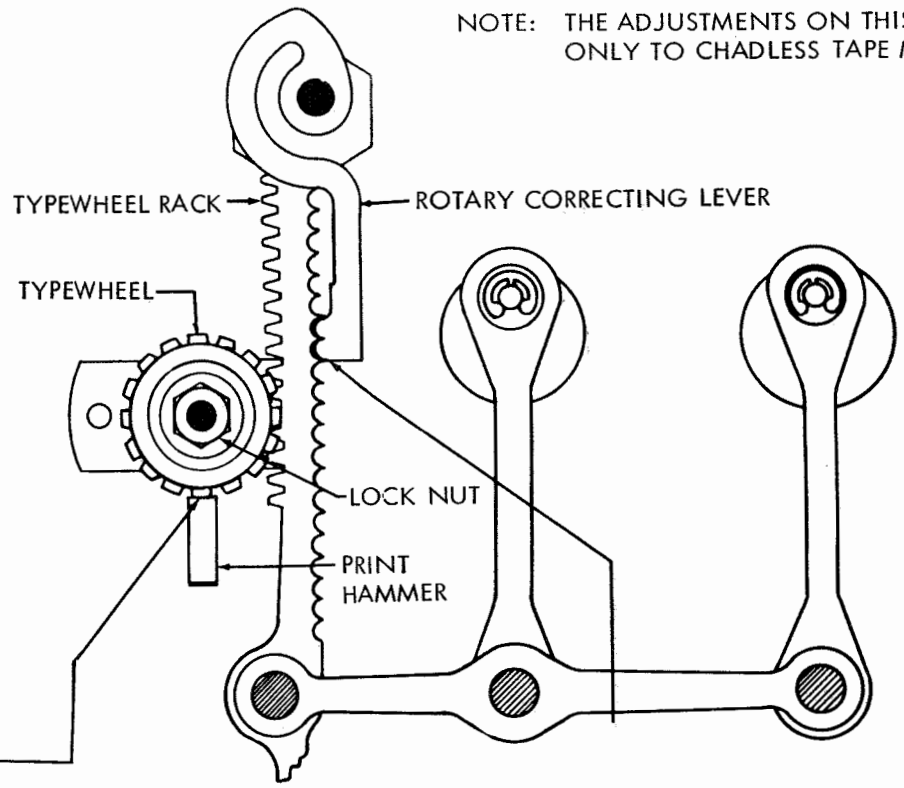
WITH LOCK NUT LOOSENED, POSITION PRINTING TRIP LINK BY MEANS OF ECCENTRIC MOUNTING SCREW. KEEP HIGH PART OF SCREW TO LEFT OF CENTER LINE.





2.50 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM.



(A)
TYPEWHEEL
TO CHECK

SELECT "M" CODE COMBINATION (--345). PLACE ROCKER BAIL TO EXTREME LEFT. CORRECTING LEVER SHOULD BE FIRMLY SEATED IN TYPEWHEEL RACK.

REQUIREMENT

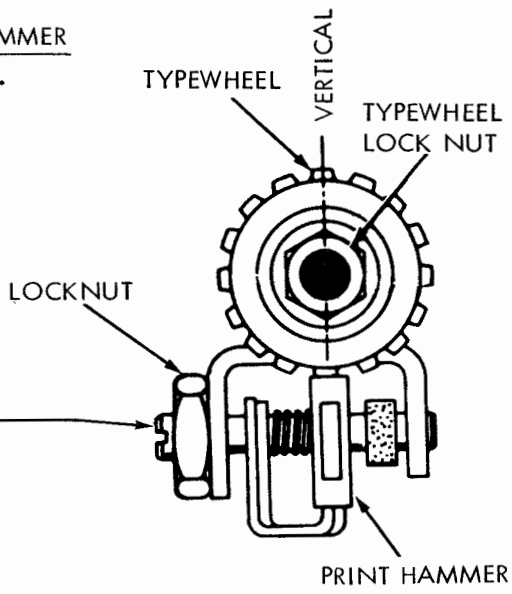
TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY AND $6 \pm 1/4$ CODE HOLE SPACES BEHIND ITS PERFORATED CODE HOLES.

TO ADJUST

POSITION TYPEWHEEL WITH LOCK NUT LOOSENED. CHECK PRINTING BY MANUALLY LIFTING ACCELERATOR TO LATCHED POSITION AND RELEASING IT.

NOTE:

FOR BEST RESULTS IT MAY BE NECESSARY TO MAKE PRINT HAMMER ADJUSTMENT (BELOW) AND THEN REFINE THIS ADJUSTMENT.



(B)
PRINT HAMMER
REQUIREMENT

WHEN OPERATING UNDER POWER, PRINT HAMMER AND TYPEWHEEL ALIGNED SO AS TO OBTAIN BEST QUALITY OF PRINTING.

TO ADJUST

POSITION PRINT HAMMER SHAFT WITH LOCK NUT LOOSENED.

NOTE:

IT MAY BE NECESSARY TO REMAKE TYPEWHEEL ADJUSTMENT (ABOVE) AND THEN REFINE THIS ADJUSTMENT.

2.51 Typing Mechanism continued

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM.

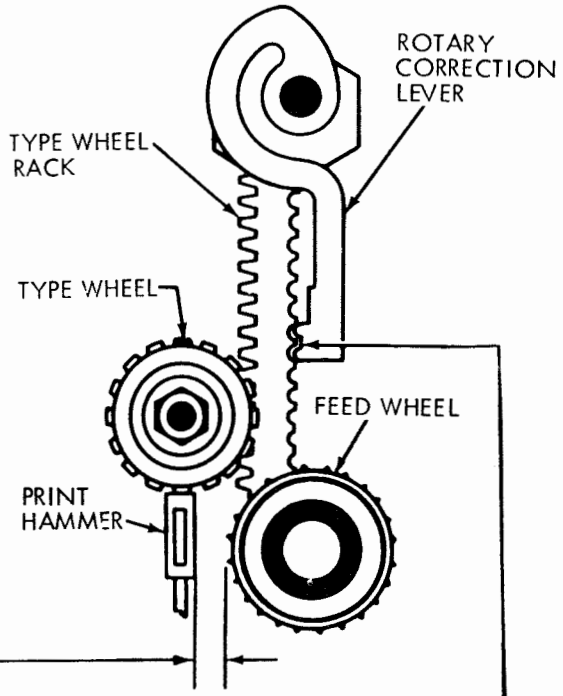
PRINT HAMMER (PRELIMINARY)

REQUIREMENT

POSITION PRINT HAMMER MIN. 0.030 INCH --- MAX. 0.040 INCH FROM THE PIN POINTS ON THE FEED WHEEL.

TO ADJUST

WITH THE PRINT HAMMER SHAFT LOCK NUT LOOSE POSITION THE PRINT HAMMER BY TURNING THE SHAFT CLOCKWISE TO MOVE PRINT HAMMER TOWARD THE FEED WHEEL AND COUNTER CLOCKWISE TO MOVE THE PRINT HAMMER AWAY FROM THE FEED WHEEL.



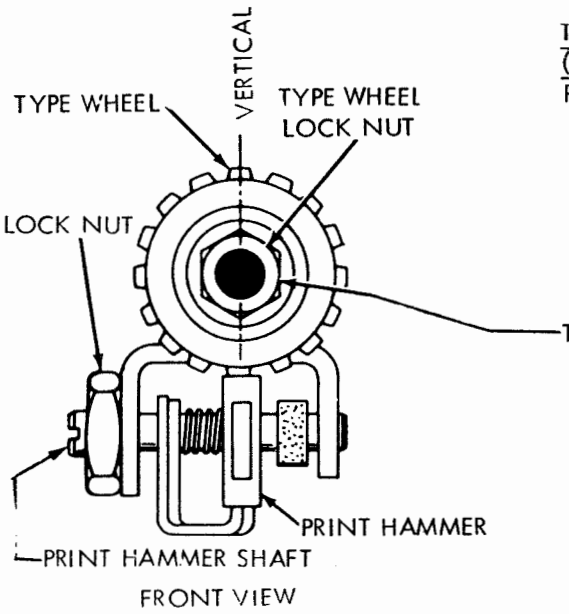
TYPE WHEEL POSITIONING AND PRINT HAMMER (FINAL)

REQUIREMENT

WITH "M" CODE COMBINATION (--345) SELECTED, AND ROCKER BAIL IN ITS EXTREME LEFT POSITION CHECK THAT THE ROTARY CORRECTOR IS FIRMLY SEATED IN THE TYPE WHEEL RACK. THE TYPE WHEEL AND PRINT HAMMER ALIGNMENT COULD BE SUCH THAT A FULL CHARACTER IS PRINTED UNIFORMLY BETWEEN THE FEED HOLES.

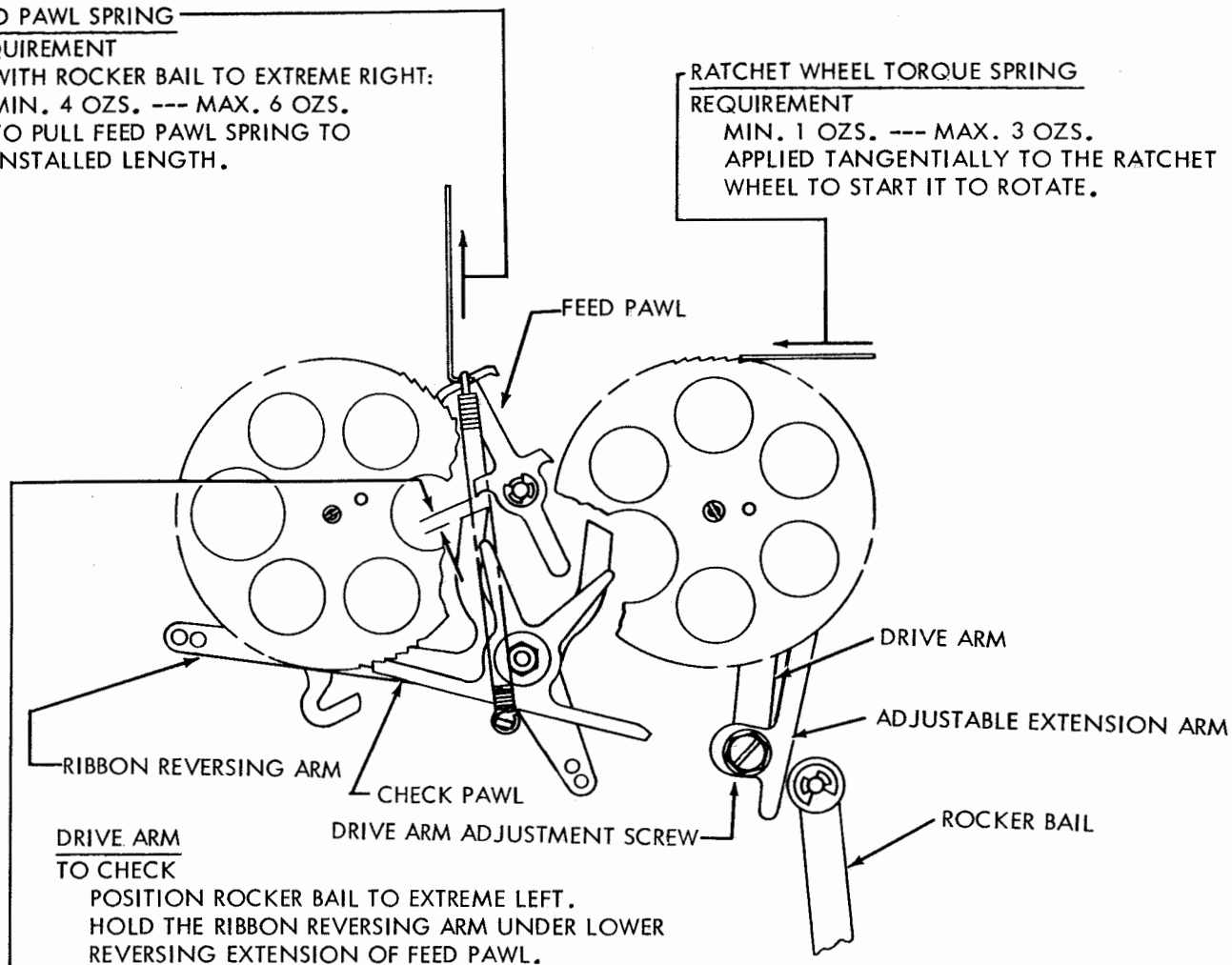
TO ADJUST

WITH TYPEWHEEL LOCK NUT LOOSE POSITION THE TYPE WHEEL. IF NECESSARY, REFINE THE PRINT HAMMER ADJUSTMENT MAKING CERTAIN THE PRINT HAMMER HEAD DOES NOT COME IN CONTACT WITH THE FEED WHEEL.



FRONT VIEW

2.52 Ribbon Mechanism



DRIVE ARM

TO CHECK

POSITION ROCKER BAIL TO EXTREME LEFT. HOLD THE RIBBON REVERSING ARM UNDER LOWER REVERSING EXTENSION OF FEED PAWL.

REQUIREMENT

(1) CLEARANCE BETWEEN BLOCKING EDGE OF RIBBON REVERSE ARM AND REVERSING EXTENSION OF FEED PAWL:
MIN. SOME

(2) CLEARANCE SHALL NOT BE SO GREAT AS TO ALLOW FEED PAWL TO FEED MORE THAN TWO TEETH AT A TIME.

(3) FEED PAWL DETENTED IN BOTH ITS RIGHT AND LEFT POSITION.

TO ADJUST

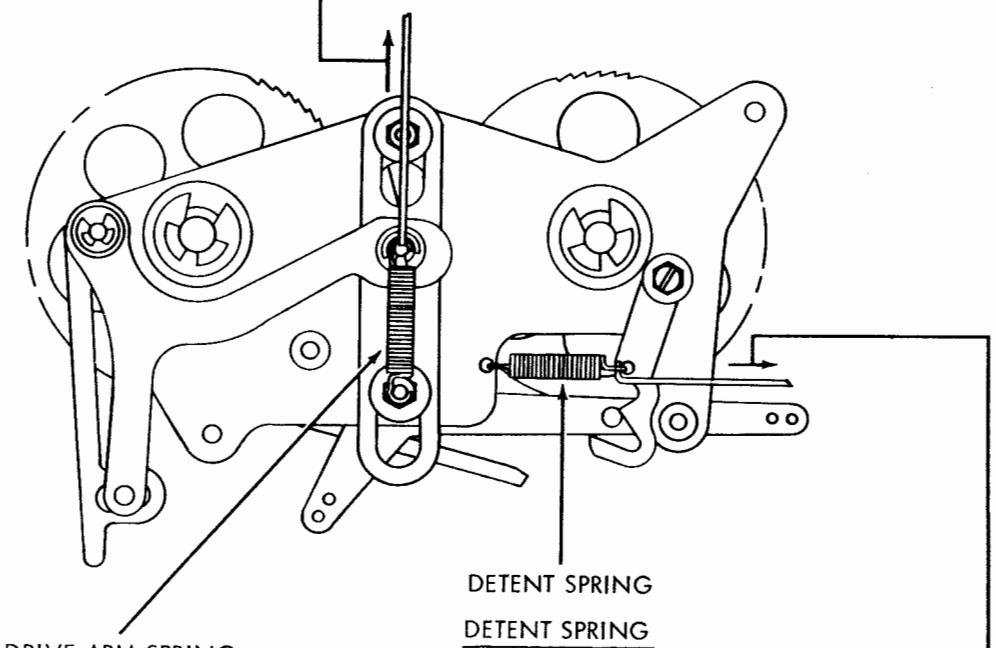
POSITION DRIVE ARM ADJUSTABLE EXTENSION LEVER WITH ITS MOUNTING SCREW LOOSENED.

2.53 Ribbon Mechanism continued

DRIVE ARM SPRING

REQUIREMENT

WITH ROCKER BAIL TO EXTREME RIGHT:
MIN. 9 OZS. --- MAX. 14 OZS.
TO PULL DRIVE ARM SPRING TO
INSTALLED LENGTH.



DRIVE ARM SPRING

DETENT SPRING

DETENT SPRING

REQUIREMENT

WITH REVERSING ARM IN ITS EXTREME
RIGHT OR LEFT POSITION:
MIN. 2 OZS. --- MAX. 4 OZS.
TO PULL DETENT SPRING TO ITS
INSTALLED LENGTH.

3. VARIABLE FEATURES

NOTE: UNLESS OTHERWISE SPECIFIED, THE FOLLOWING BACKSPACE ADJUSTMENTS APPLY TO BOTH THE CHADLESS AND FULLY PERFORATED TAPE MECHANISMS.

3.01 Manual and Power Drive Backspace Mechanism (For Chadless Tape)

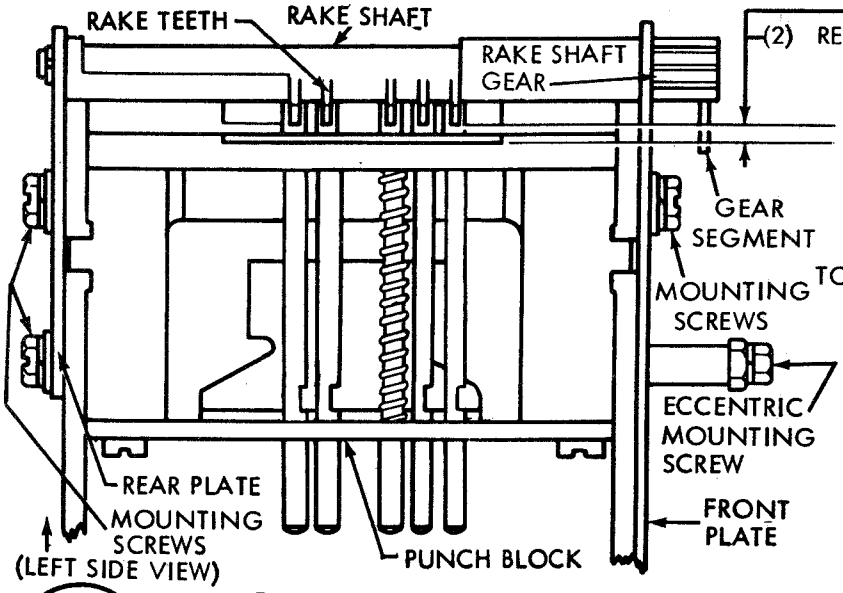
RAKE (A)

(1) REQUIREMENT

WITH ROTATIONAL PLAY IN RAKE TAKEN UP TO LEFT, BOTTOM SURFACE OF RAKE TEETH SHOULD BE WITHIN 0.040 INCH OF THE SAME VERTICAL PLANE AS LEFT SIDE OF PUNCH BLOCK OR SLIGHTLY TO THE RIGHT.

TO ADJUST

REMOVE TWO MOUNTING SCREWS FROM REAR PLATE. POSITION RAKE SHAFT GEAR IN RELATION TO GEAR SEGMENT. REPLACE MOUNTING SCREWS.



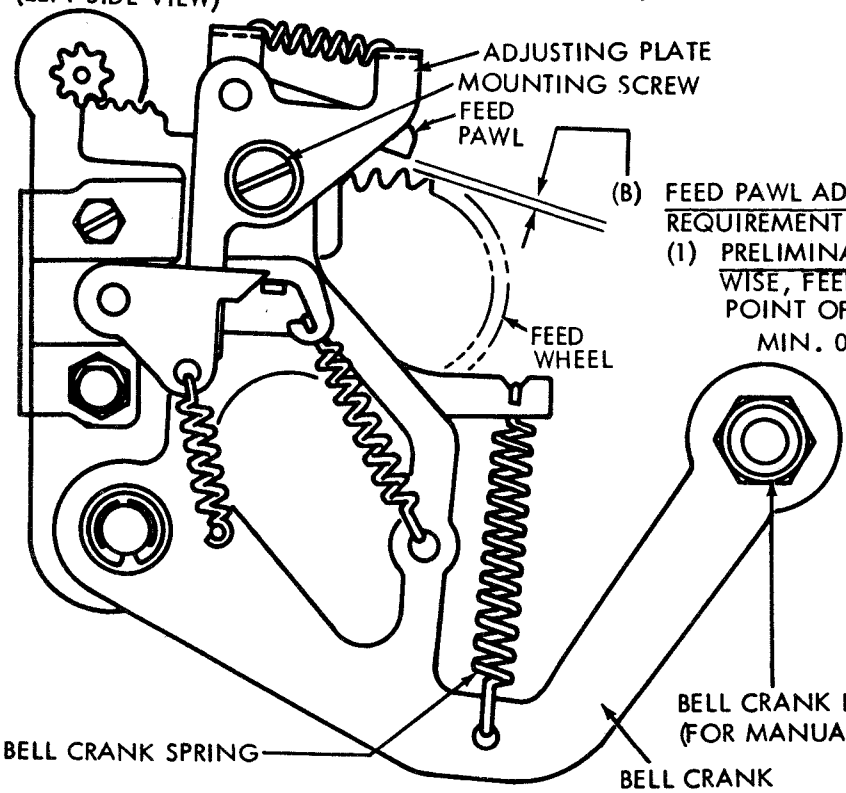
(2) REQUIREMENT

WITH BELL CRANK SPRING UNHOOKED AND RAKE IN OPERATED POSITION, CLEARANCE BETWEEN BOTTOM OF RAKE TEETH AND LOWER SURFACE OF TAPE SLOT:

MIN. 0.007 INCH---MAX. 0.011 INCH (CHECK AT NO. 1 & 5 PINS.)

TO ADJUST

LOOSEN THE FOUR PUNCH BLOCK MOUNTING SCREWS FRICTION TIGHT, POSITION THE RAKE MOUNTING PLATE AND BELL CRANK MOUNTING PLATE SO THAT THE FRONT EDGE OF BOTH PLATES IS APPROXIMATELY IN LINE WITH THE VERTICAL PLANE OF THE PUNCH BLOCK. WITH THE RAKE IN THE OPERATED POSITION (BELL CRANK IN MAXIMUM DOWNWARD POSITION) MOVE THE RAKE UP OR DOWN TO MEET CLEARANCE REQUIREMENT. TIGHTEN SCREWS AND REPLACE THE BELL CRANK SPRING.



(B) FEED PAWL ADJUSTING PLATE

REQUIREMENT

(1) PRELIMINARY: WITH BELL CRANK ROTATED CLOCKWISE, FEED PAWL SHALL MISS FIRST TOOTH AT POINT OF LEAST CLEARANCE BY

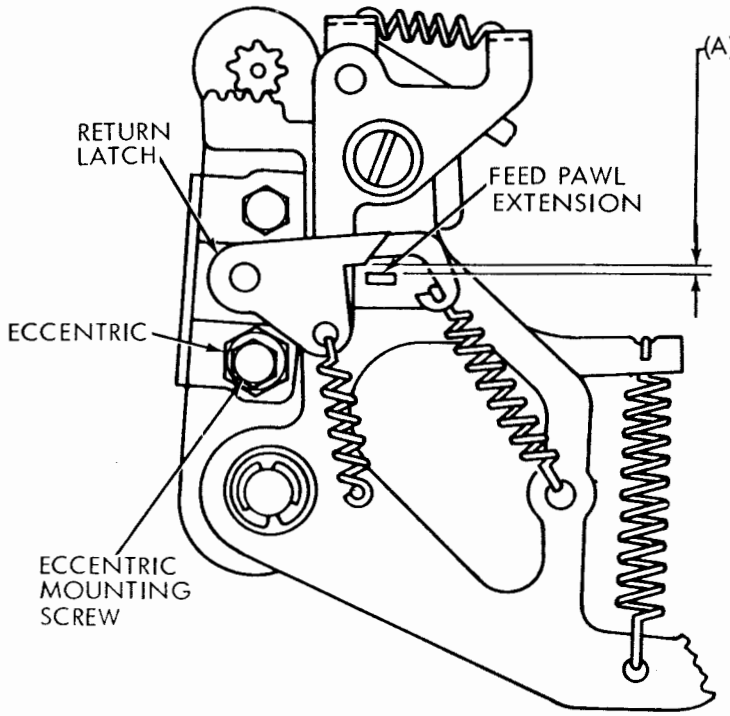
MIN. 0.006 INCH---MAX. 0.040 INCH

(2) FINAL: FEED PAWL SHALL MISS FIRST TOOTH AND ENGAGE SECOND TOOTH BY AT LEAST 1/2 OF RIGHT ENGAGING SURFACE OF FEED PAWL (AS GAUGED BY EYE WHEN FEED PAWL FIRST CONTACTS RATCHET TOOTH).

TO ADJUST

POSITION ADJUSTING PLATE WITH MOUNTING SCREW FRICTION TIGHT.

3.02 Manual and Power Drive Backspace Mechanism (For Chadless Tape) continued



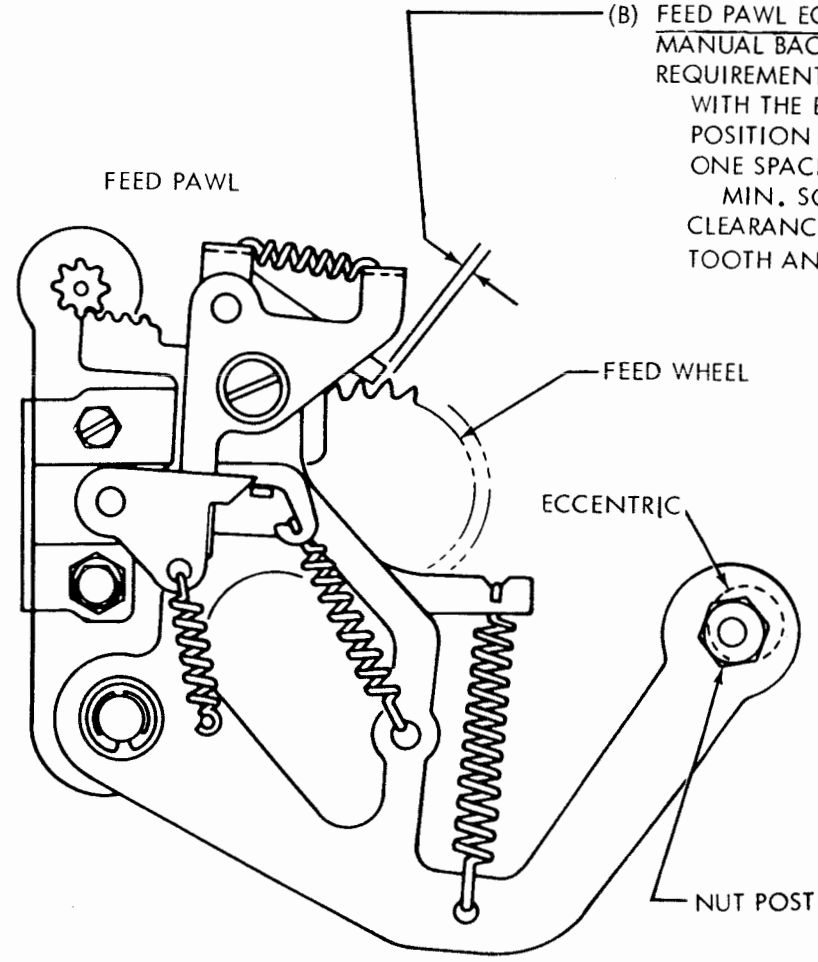
(A) RETURN LATCH REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN RETURN LATCH AND FEED PAWL EXTENSION

MIN. 0.004 INCH
MAX. 0.020 INCH

TO ADJUST

ADJUST ECCENTRIC WITH MOUNTING SCREW FRICTION TIGHT.



(B) FEED PAWL ECCENTRIC MANUAL BACKSPACE (PRELIMINARY) REQUIREMENT

WITH THE BACKSPACE BELL CRANK IN ITS OPERATED POSITION AND THE FEED WHEEL DETENTED BACK ONE SPACE:

MIN. SOME---MAX. 0.003 INCH

CLEARANCE BETWEEN THE FEED WHEEL RATCHET TOOTH AND THE BACKSPACE FEED PAWL.

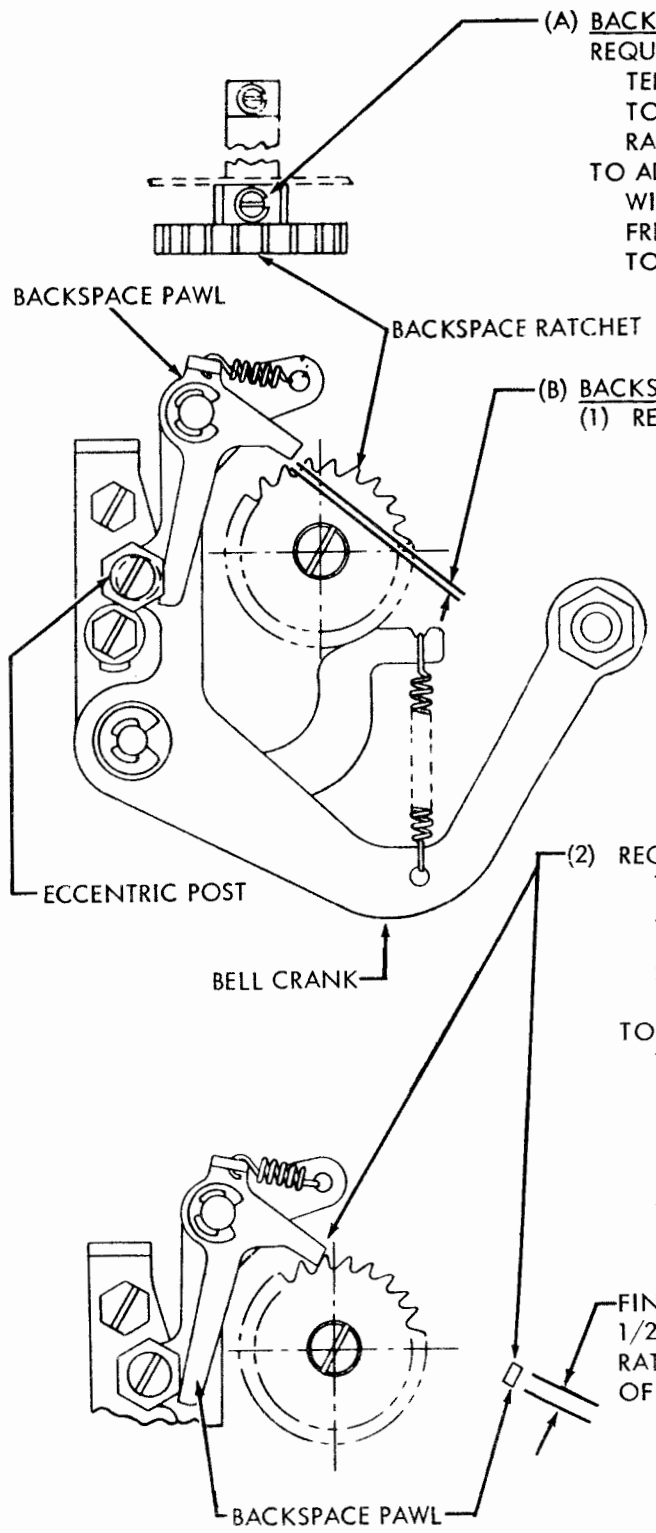
POWER DRIVE BACKSPACE

WITH THE BACKSPACE BELL CRANK IN ITS OPERATED POSITION, THE HIGH SIDE OF THE ECCENTRIC SHOULD BE IN ITS UPPERMOST POSITION.

TO ADJUST

LOOSEN THE NUT POST (FRICTION TIGHT) AND ROTATE ECCENTRIC WITH AN ALLEN WRENCH. TIGHTEN THE NUT POST.

3.03 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape)



(A) BACKSPACE RATCHET

REQUIREMENT

TEETH OF BACKSPACE AND FEED WHEEL RATCHETS TO LINE UP (VISUAL ALIGNMENT) FEED WHEEL RATCHET TO BE IN DETENTED POSITION.

TO ADJUST

WITH ADJUSTING CLAMP MOUNTING SCREW FRICTION TIGHT, ROTATE BACKSPACE RATCHET TO MEET THE REQUIREMENT.

(B) BACKSPACE PAWL CLEARANCE

(1) REQUIREMENT --- PRELIMINALY

WITH BACKSPACE BELL CRANK ROTATED CLOCKWISE, THE BACKSPACE PAWL SHALL MISS THE FIRST TOOTH BY A CLEARANCE OF:

MIN. 0.003 INCH

MAX. 0.010 INCH

AT POINT OF LEAST CLEARANCE.

(2) REQUIREMENT --- FINAL

THE BACKSPACE PAWL SHALL MISS THE FIRST TOOTH AND ENGAGE THE SECOND TOOTH BY AT LEAST 1/2 OF THE RIGHT ENGAGING SURFACE OF THE BACK-SPACE PAWL (AS GAUGED BY EYE) WHEN BACKSPACE PAWL FIRST CONTACTS THE RATCHET TOOTH.

TO ADJUST

TAKE UP ALL ROTATIONAL PLAY OF BACKSPACE RATCHET IN RELATION TO FEED RATCHET BY ROTATING IT CLOCKWISE AT SAME TIME ROTATE BELL CRANK CLOCKWISE. WITH MOUNTING SCREW FRICTION TIGHT ROTATE ECCENTRIC POST TO MEET THE REQUIREMENTS.

FINAL MINIMUM ENGAGEMENT: 1/2 OF SURFACE WITH SECOND RATCHET TOOTH AT FIRST POINT OF CONTACT.

3.04 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) continued

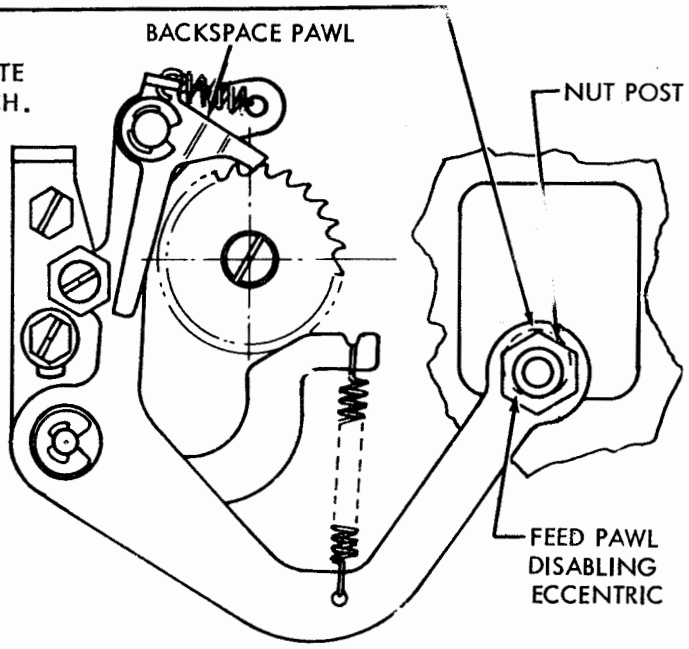
(A) FEED PAWL DISABLING

REQUIREMENT

WHEN BELL CRANK IS IN OPERATED POSITION HIGH SIDE OF FEED PAWL DISABLING ECCENTRIC SHOULD BE IN UPPERMOST POSITION.

TO ADJUST

WITH NUT POST FRICTION TIGHT, ROTATE ECCENTRIC WITH A 0.060" ALLEN WRENCH.



3.05 Power Drive Backspace Mechanism (For Fully Perforated Tape) (Early Design)

(B) DRIVE LINK

REQUIREMENT

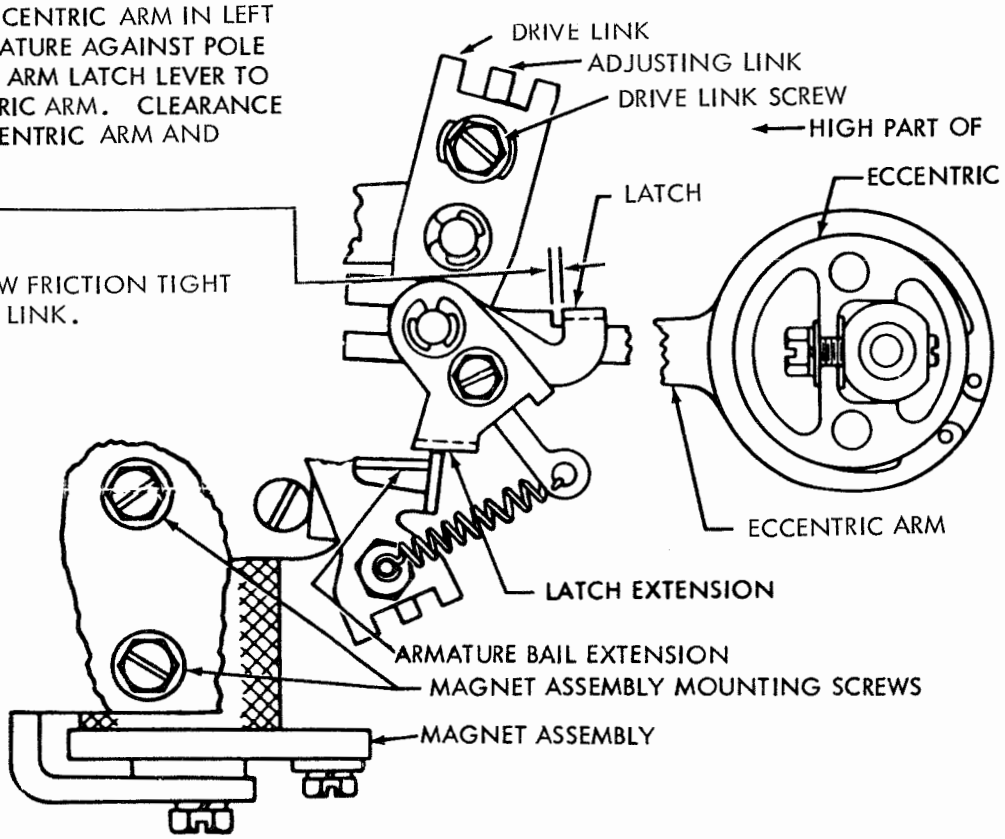
WITH HIGH PART OF ECCENTRIC ARM IN LEFT HAND POSITION, ARMATURE AGAINST POLE FACE TO ALLOW DRIVE ARM LATCH LEVER TO REST AGAINST ECCENTRIC ARM. CLEARANCE BETWEEN STEP ON ECCENTRIC ARM AND LATCH.

MIN. 0.040 INCH

MAX. 0.045 INCH

TO ADJUST

WITH DRIVE LINK SCREW FRICTION TIGHT POSITION ADJUSTING LINK.



3.06 Power Drive Backspace Mechanism (Early Design) continued

(A) ARMATURE HINGE

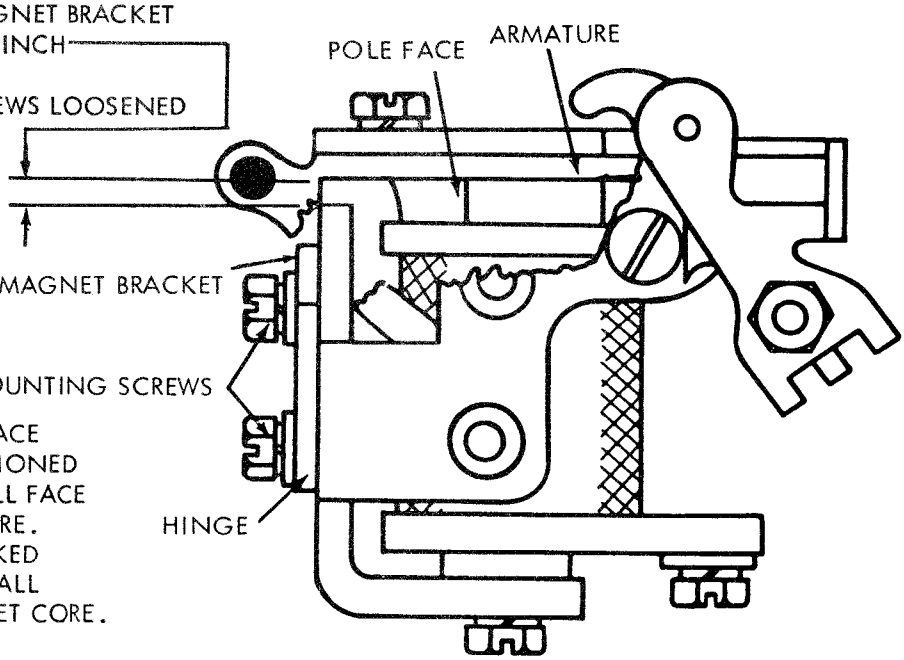
REQUIREMENT

ARMATURE BAIL SPRING REMOVED. WITH ARMATURE HELD AGAINST POLE FACE AND PLAY TAKEN UP AT HINGE IN DOWNWARD DIRECTION, CLEARANCE BETWEEN ARMATURE AND MAGNET BRACKET MIN. SOME --- MAX. 0.004 INCH

TO ADJUST

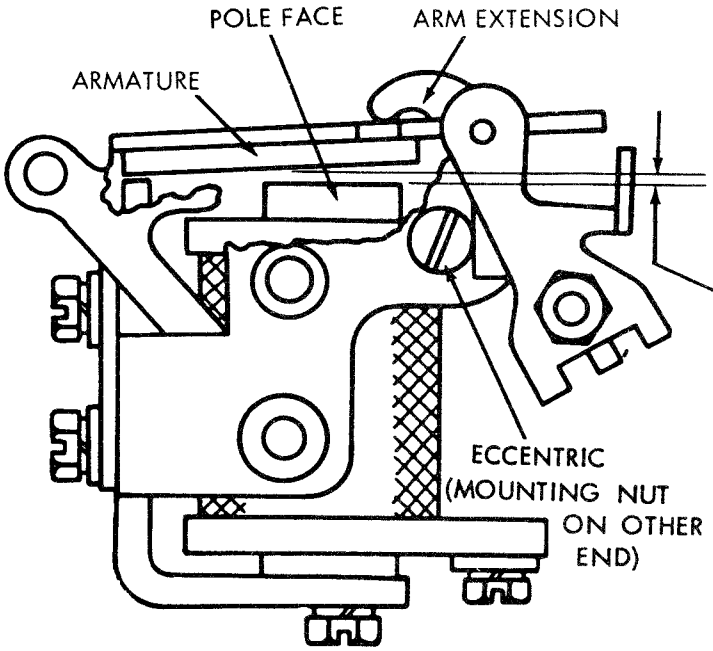
WITH HINGE MOUNTING SCREWS LOOSENED POSITION ARMATURE.

NOTE: THE FOLLOWING ADJUSTMENTS ARE FOR USE WITH THE EARLY DESIGN BACKSPACE MAGNET ASSEMBLY. LATER DESIGN USE A NON-ADJUSTABLE BACKSPACE MAGNET ASSEMBLY.



NOTE:
FOR "DC" OPERATION, THE BACKSPACE MAGNET ARMATURE SHALL BE POSITIONED SO THAT THE SIDE MARKED "C" SHALL FACE THE POLE FACE OF THE MAGNET CORE. FOR "AC" OPERATION, THE UNMARKED SIDE OF THE MAGNET ARMATURE SHALL FACE THE POLE FACE OF THE MAGNET CORE.

NOTE: THIS ADJUSTMENT IS MADE AT FACTORY AND SHOULD NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, THE PUNCH UNIT SHOULD BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE PUNCH UNIT POSITION ADJUSTMENT.



(B) ARMATURE UP-STOP

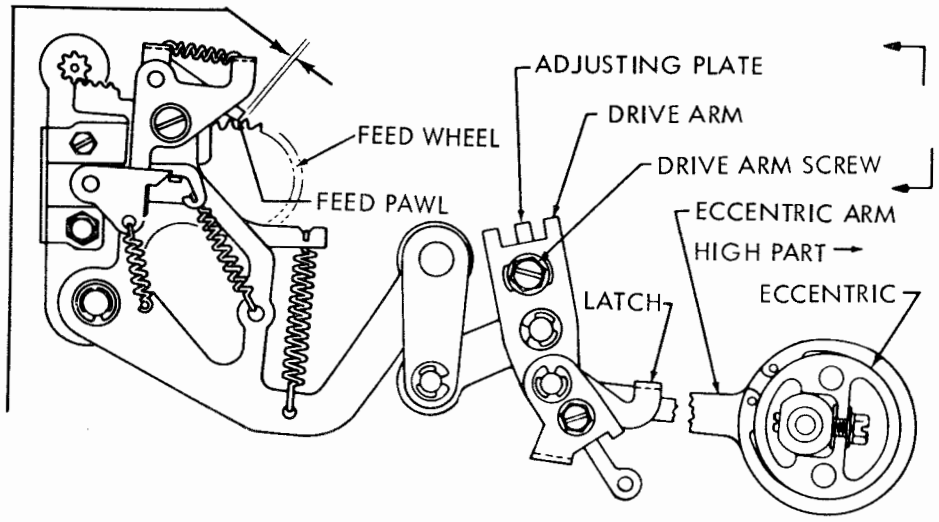
REQUIREMENT

ARMATURE IN UNOPERATED POSITION. GAP BETWEEN ARMATURE AND POLE FACE
MIN. 0.025 INCH.
MAX. 0.030 INCH.
AT CLOSEST POINT.

TO ADJUST

ROTATE ECCENTRIC WITH MOUNTING NUT LOOSENED. KEEP HIGH PART OF ECCENTRIC TO LEFT.

► 3.07 Power Drive Backspace Mechanism (For Chadless Tape) (Early Design) continued



► (A) DRIVE ARM
REQUIREMENT

WITH DRIVE ARM LATCH LEVER ENGAGED WITH ECCENTRIC LINK, MAIN SHAFT ROTATED TO PLACE ECCENTRIC IN ITS EXTREME RIGHT HAND POSITION AND FEED WHEEL DETENTED BACK ONE SPACE:

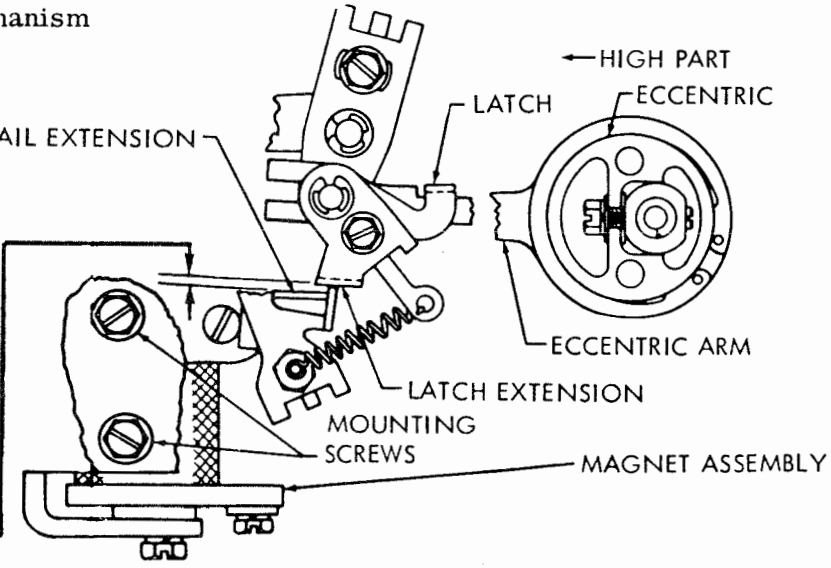
MIN. SOME---MAX. 0.003 INCH

CLEARANCE BETWEEN THE BACKSPACE FEED PAWL AND THE RATCHET TOOTH. CHECK WITH FEED WHEEL SHAFT OIL HOLE IN THE UPPERMOST POSITION AND RECHECK EACH 90 DEGREES ABOUT THE PERIPHERY OF THE FEED WHEEL.

TO ADJUST

► LOOSEN DRIVE ARM SCREW (FRICTION TIGHT) AND POSITION ADJUSTING PLATE.

3.08 Power Drive Backspace Mechanism (Early Design) continued



NOTE:
THIS ADJUSTMENT IS MADE AT FACTORY AND SHOULD NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, PUNCH SHOULD BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE PUNCH POSITION ADJUSTMENT.

(B)
LATCH EXTENSION
REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. HIGH PART OF ECCENTRIC TO LEFT. ARMATURE AGAINST POLE FACE. LATCH RESTING ON ECCENTRIC ARM NOTCH. CLEARANCE BETWEEN TOP OF ARMATURE BAIL EXTENSION AND LATCH EXTENSION

MIN. 0.005 INCH
MAX. 0.020 INCH

TO ADJUST

SWING MAGNET CLOCKWISE OR COUNTERCLOCKWISE, AS NECESSARY, WITH MOUNTING SCREWS FRICTION TIGHT.

3.09 Power Drive Backspace Mechanism (Early Design) continued

(A) LATCH

REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. ARMATURE OFF POLE FACE (DE-ENERGIZED). LATCH EXTENSION AGAINST END OF ARMATURE BAIL EXTENSION. ECCENTRIC ARM AT ITS CLOSEST POINT TO UNDERSIDE OF LATCH. CLEARANCE BETWEEN LATCH AND ECCENTRIC ARM.

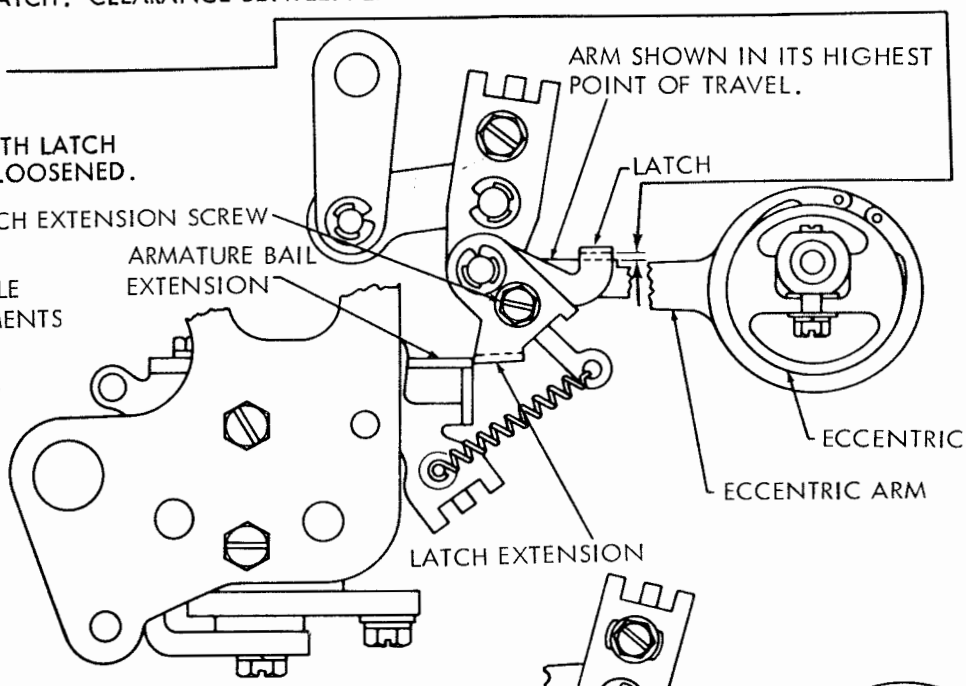
MIN. 0.005 INCH
MAX. 0.025 INCH

TO ADJUST

POSITION LATCH WITH LATCH EXTENSION SCREW LOOSENED.

NOTE 1:

ON UNITS EQUIPPED WITH ONE PIECE NON-ADJUSTABLE LATCH LEVER THE REQUIREMENTS IN THE "FINAL POWER OR MANUAL" MUST BE MET.



(B) NON-REPEAT ARM

REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN TOP SURFACE OF NON-REPEAT ARM AND LOWEST POINT OF LATCH EXTENSION

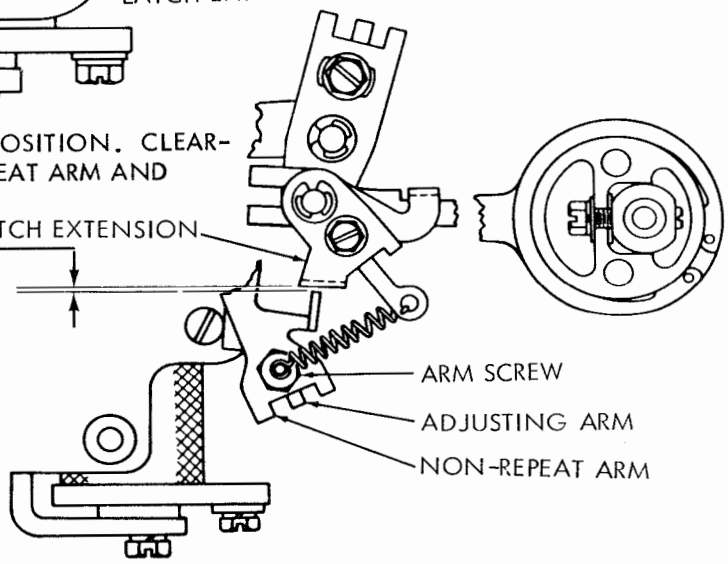
MIN. 0.002 INCH
MAX. 0.010 INCH

TO ADJUST

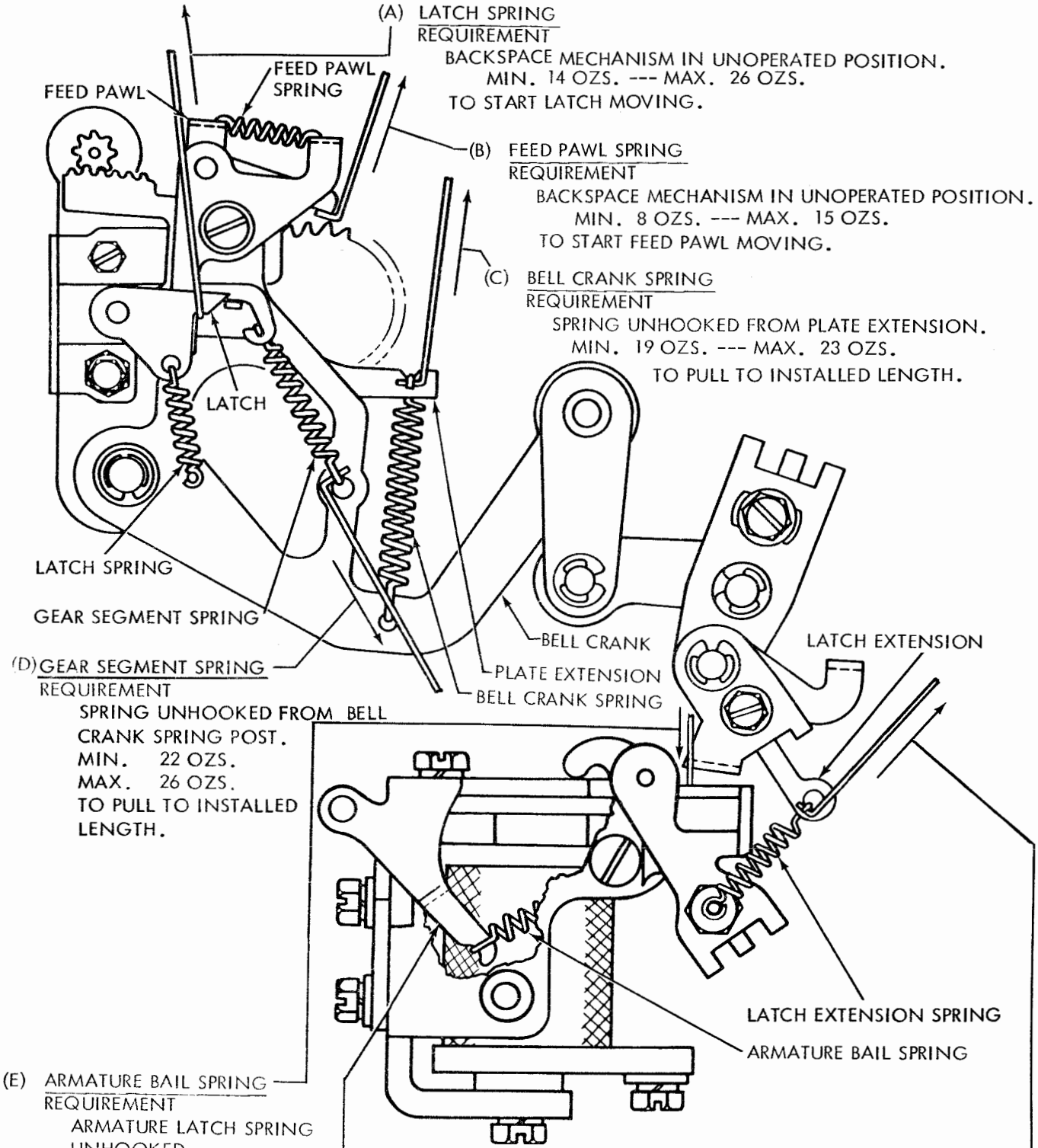
POSITION ADJUSTING ARM WITH ARM SCREW LOOSENED FRICTION TIGHT.

NOTE 2:

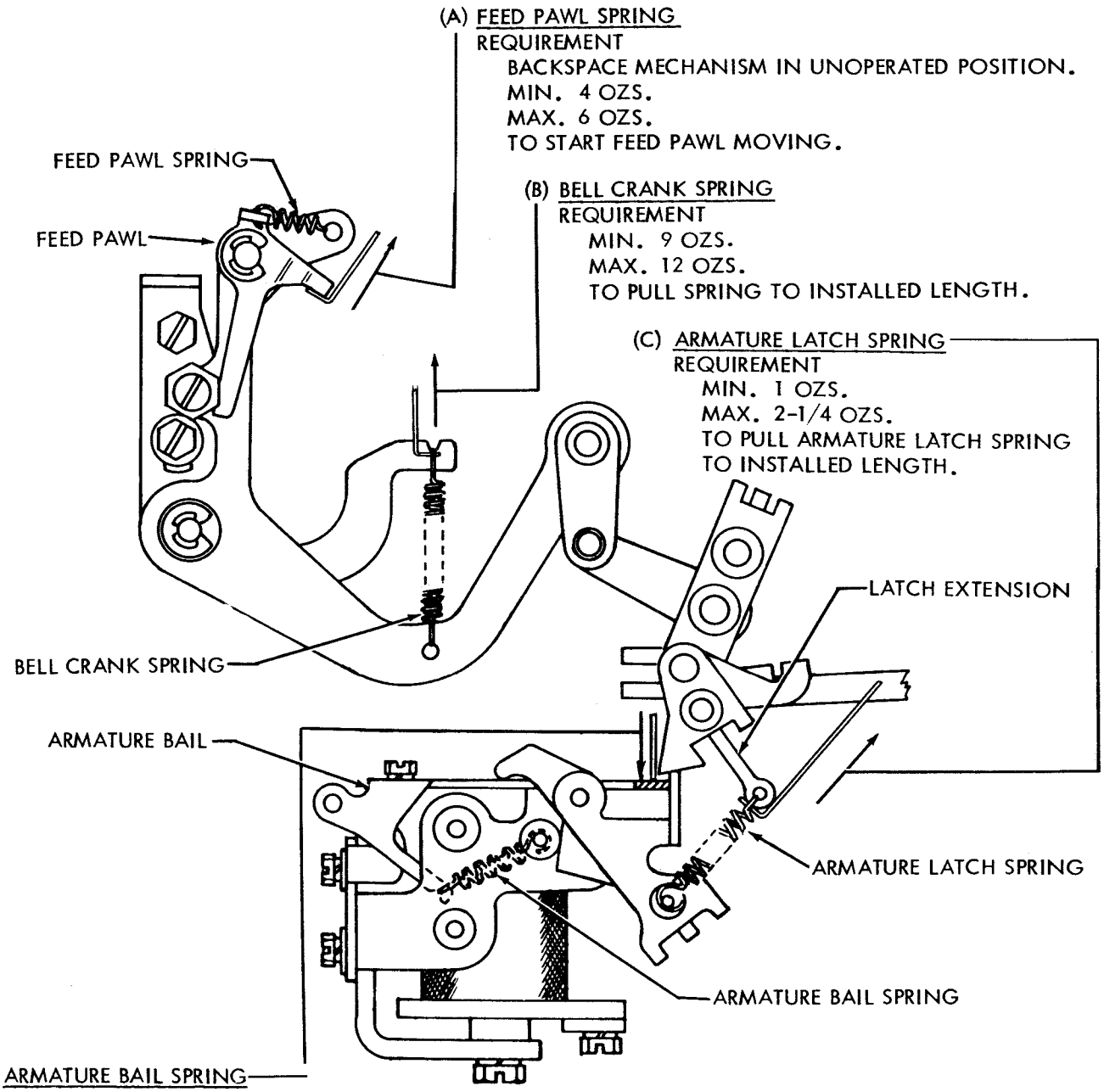
MUST NOT BE OPERATED WITH LATCH AGAINST ARMATURE EXTENSION.



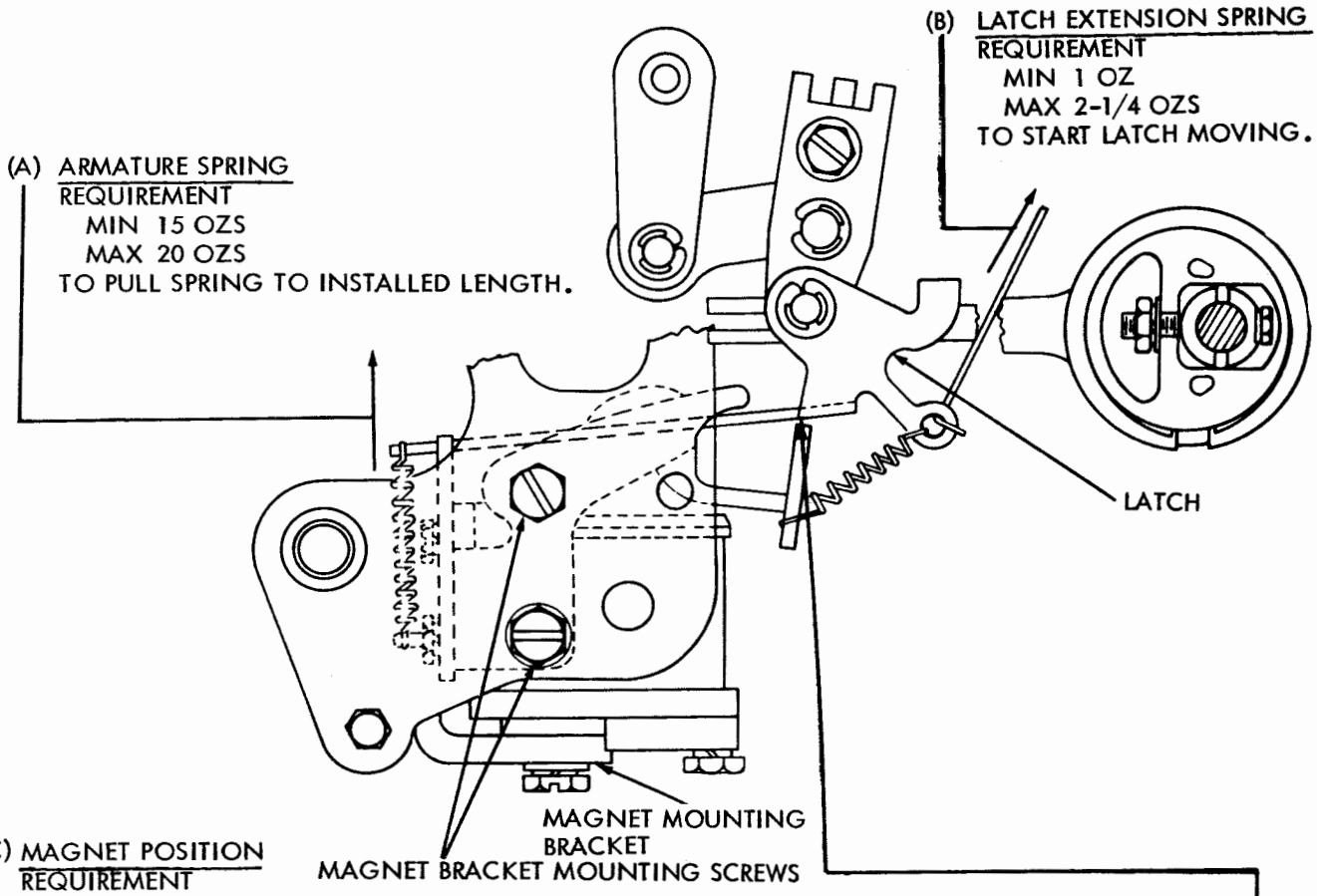
3.10 Manual and Power Drive Backspace Mechanism (For Chadless Tape) (Early Design) continued



3.11 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) (Early Design) continued



3.12 Power Drive Backspace Mechanism (Latest Design)
(Non-Adjustable Backspace Magnet Assembly)



(C) MAGNET POSITION
REQUIREMENT
THE ARMATURE EXTENSION SHALL ENGAGE THE LATCH BY APPROXIMATELY ITS FULL THICKNESS WHEN THE MAGNET IS DE-ENERGIZED.
TO ADJUST
POSITION THE MAGNET ASSEMBLY BY MEANS OF ITS MOUNTING SCREWS.

3.13 Manual and Power Drive Backspace Mechanism (Chadless and Fully Perforated Tape)

(D)
FINAL MANUAL OR POWER
REQUIREMENT
UNIT OPERATING UNDER POWER AND TAPE IN THE PUNCH UNIT. PLACE THE FEED WHEEL SHAFT OIL HOLE IN ITS UPPERMOST POSITION AND OPERATE THE BACKSPACE MECHANISM ONCE. THE BACKSPACE RATCHET WHEEL SHALL BE BACKED ONE SPACE AND THE FEED WHEEL RATCHET TO A FULLY DETENTED POSITION. RECHECK EVERY 90° FOR ONE FULL REVOLUTION OF THE BACKSPACE RATCHET WHEEL.

NOTE 1: A FULLY DETENTED POSITION IS DEFINED AS: WITH THE DETENT ROLLER IN CONTACT WITH THE RATCHET WHEEL THE PUNCH UNIT FEED PAWL SHALL ENGAGE THE FIRST TOOTH BELOW THE HORIZONTAL CENTER LINE OF THE RATCHET FEED WHEEL WITH NO PERCEPTIBLE CLEARANCE.

TO ADJUST
(FOR CHADLESS TAPE MECHANISM) REFINE FEED PAWL ADJUSTMENTS.

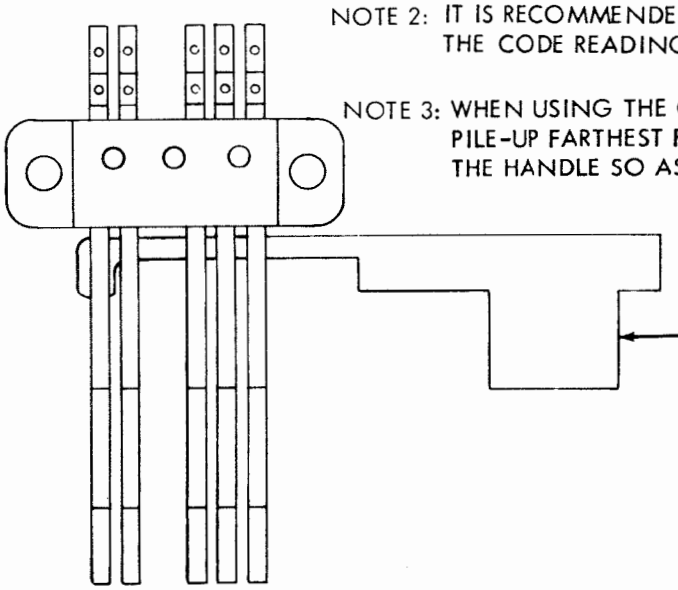
(FOR FULLY PERFORATED TAPE MECHANISM) LOOSEN ARM ADJUSTING SCREW AND MOVE ADJUSTING PLATE.

3.14 Code Reading Contacts

NOTE 1:
UNLESS SPECIFICALLY STATED OTHERWISE, THE FOLLOWING CODE READING CONTACT ADJUSTMENTS APPLY TO BOTH THE TRANSFER (BREAK BEFORE MAKE) TYPE AND MAKE TYPE CONTACTS. WHEN AN ADJUSTMENT IS APPLICABLE TO BOTH TYPES, THE TRANSFER TYPE CONTACTS ARE USED IN THE ILLUSTRATIONS. WHEN TESTING THESE CONTACTS ON ASR SETS THE CONTROL KNOB SHOULD BE IN THE K-T POSITION.

NOTE 2: IT IS RECOMMENDED THAT THE FOLLOWING ADJUSTMENTS BE MADE WITH THE CODE READING CONTACT ASSEMBLY REMOVED FROM THE UNIT.

NOTE 3: WHEN USING THE CONTACT SPRING BENDER, START WITH THE CONTACT PILE-UP FARTHEST FROM THE HANDLE OF THE TOOL AND WORK TOWARD THE HANDLE SO AS NOT TO DISTURB ADJUSTMENTS ALREADY MADE.



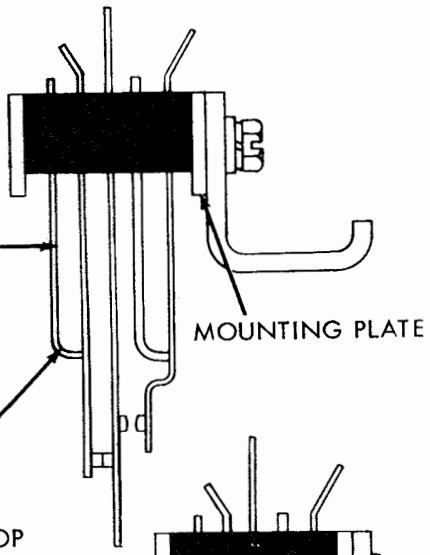
(LEFT SIDE VIEW)

(A)

MARKING CONTACT BACKSTOPS

REQUIREMENT
AS GAUGED BY EYE, FIVE MARKING CONTACT SPRINGS SHOULD ALIGN WITH EACH OTHER AND BE PARALLEL WITH MOUNTING PLATE.

TO ADJUST
BEND MARKING CONTACT BACKSTOPS.



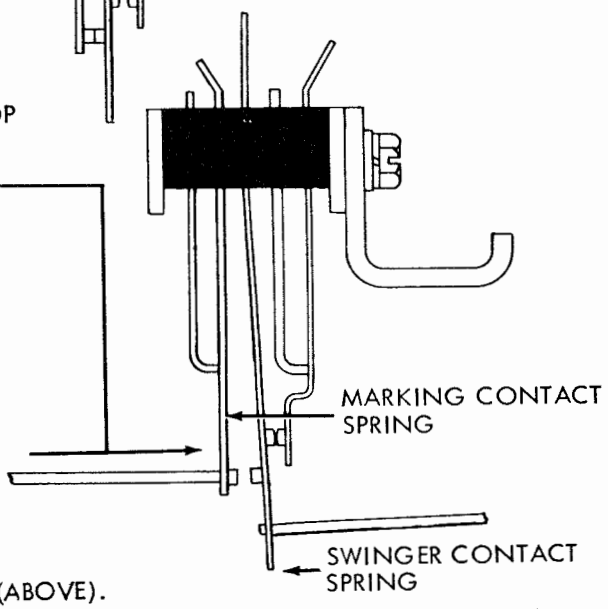
(B)

MARKING CONTACT SPRINGS-PRELIMINARY

REQUIREMENT
WITH SWINGER CONTACT SPRING HELD AWAY:
MIN. 2 OZS.
MAX. 6 OZS.
TO MOVE EACH SPRING AWAY FROM BACKSTOP.

TO ADJUST
BEND MARKING CONTACT SPRINGS.

NOTE 4:
TO INCREASE TENSION OF MARKING CONTACT SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM SPRING, BEND SPRING AND THEN RE-BEND BACKSTOP TO MEET REQUIREMENT OF MARKING CONTACT BACKSTOPS ADJUSTMENT (ABOVE).



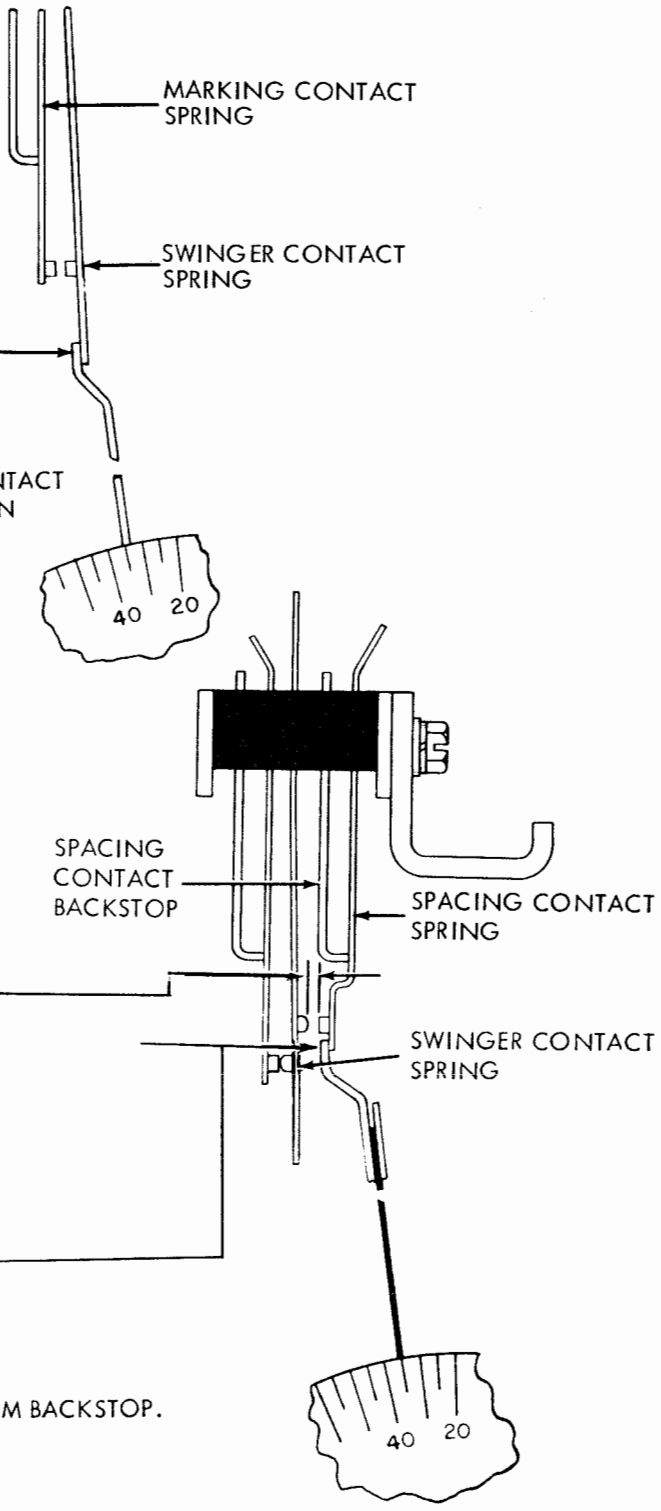
3.15 Code Reading Contacts continued

(A) SWINGER CONTACT SPRINGS-PRELIMINARY
REQUIREMENT
MIN. 30 GRAMS
MAX. 40 GRAMS
TO OPEN MARKING CONTACTS.
TO ADJUST
BEND SWINGER CONTACT SPRINGS.

NOTE 1: SPACING CONTACTS (ON TRANSFER TYPE CONTACT ASSEMBLIES ONLY) ARE NORMALLY OPEN WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT.

(B) SPACING CONTACT BACKSTOPS - PRELIMINARY
(APPLIES TO TRANSFER TYPE CONTACTS ONLY)
REQUIREMENT
GAP BETWEEN SPACING CONTACTS
MIN. 0.018 INCH
MAX. 0.025 INCH
TO ADJUST
BEND SPACING CONTACT BACKSTOPS.

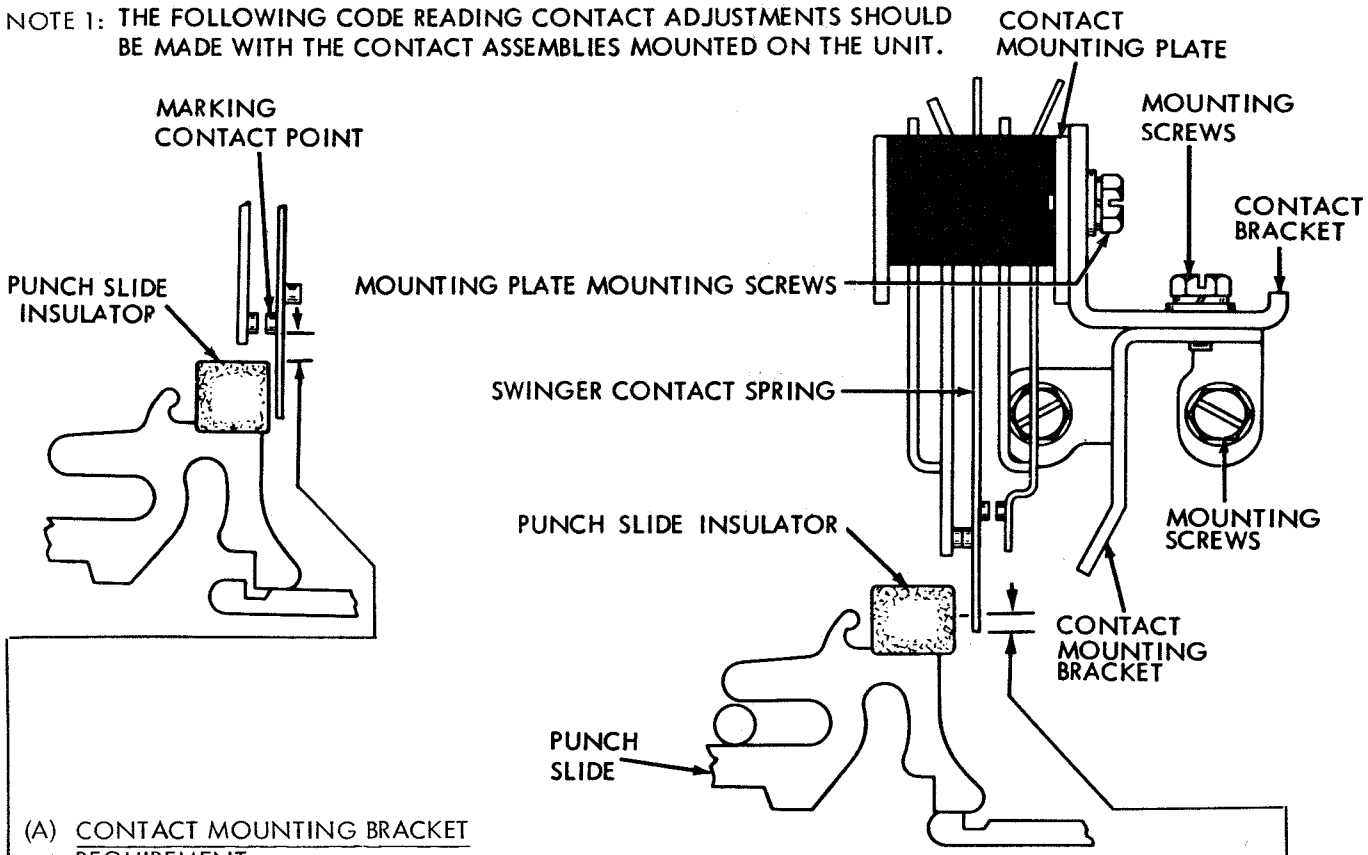
(C) SPACING CONTACT SPRINGS-PRELIMINARY
(APPLIES TO TRANSFER TYPE CONTACTS ONLY)
REQUIREMENT
MIN. 35 GRAMS
MAX. 50 GRAMS
TO MOVE EACH CONTACT SPRING AWAY FROM BACKSTOP.
TO ADJUST
BEND SPACING CONTACT SPRINGS.



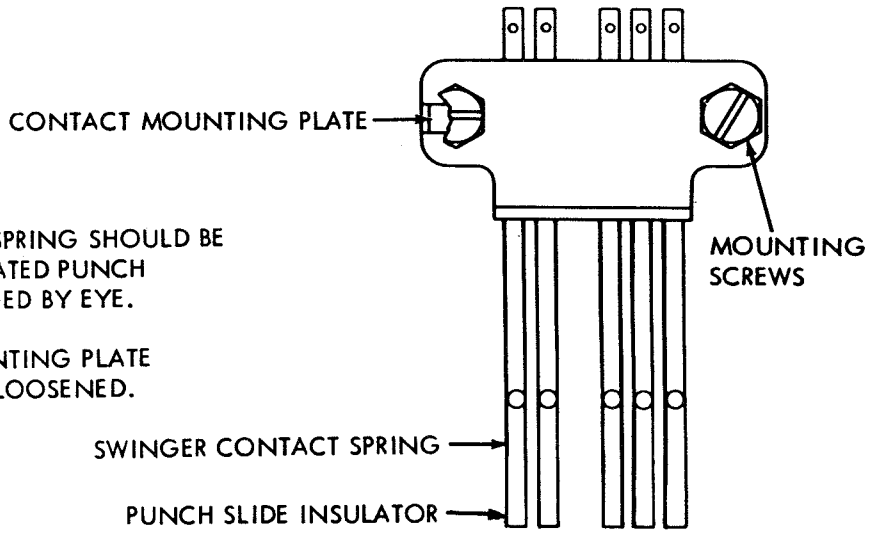
NOTE 2: TO INCREASE TENSION OF SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM SPRING, BEND SPRING, AND THEN RE-BEND BACKSTOP TO MEET REQUIREMENT OF SPACING CONTACT BACKSTOPS ADJUSTMENT ABOVE.

3.16 Code Reading Contacts continued

NOTE 1: THE FOLLOWING CODE READING CONTACT ADJUSTMENTS SHOULD BE MADE WITH THE CONTACT ASSEMBLIES MOUNTED ON THE UNIT.

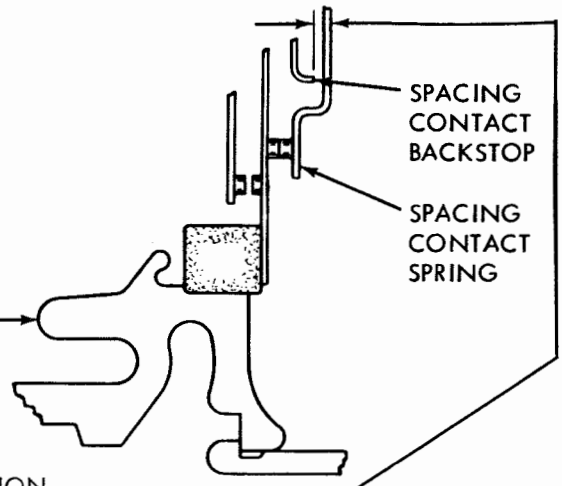


(A) CONTACT MOUNTING BRACKET
REQUIREMENT
(1) WITH FUNCTION CLUTCH DISENGAGED AND LATCHED, THERE SHALL BE MIN. 0.015 INCH CLEARANCE BETWEEN THE CLOSEST NORMALLY CLOSED CONTACT SPRING (MARKING CONTACT) AND PUNCH SLIDE INSULATOR.
(2) WITH LETTERS COMBINATION SELECTED AND PUNCH PINS IN THEIR UPPERMOST POSITION, THE SWINGER SHALL BE PARALLEL TO RIGHT END OF PUNCH SLIDE AND EXTEND BELOW ITS CENTER, AS GAGED BY EYE.
TO ADJUST
POSITION CONTACT MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.



(B) CONTACT MOUNTING PLATE
REQUIREMENT
EACH SWINGER CONTACT SPRING SHOULD BE ALIGNED WITH ITS ASSOCIATED PUNCH SLIDE INSULATOR AS GAUGED BY EYE.
TO ADJUST
POSITION CONTACT MOUNTING PLATE WITH MOUNTING SCREWS LOOSENED.

3.17 Code Reading Contacts continued



CONTACT BRACKET-PRELIMINARY (APPLIES TO TRANSFER TYPE CONTACTS ONLY)

(1) REQUIREMENT

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. SOME CLEARANCE BETWEEN SPACING CONTACT SPRING AND ITS BACKSTOP.

MIN. SOME
MAX. 0.008 INCH

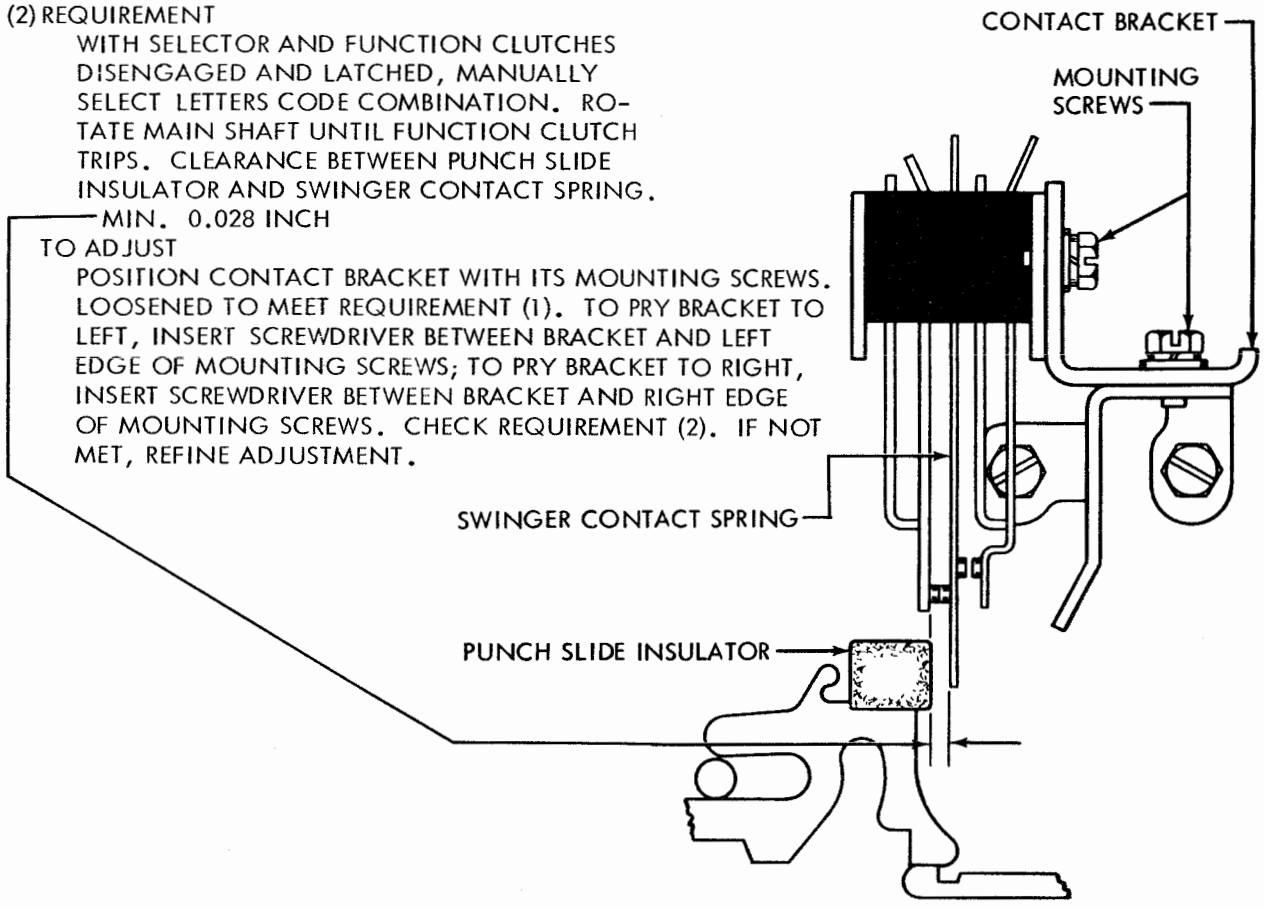
(2) REQUIREMENT

WITH SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT LETTERS CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING.

MIN. 0.028 INCH

TO ADJUST

POSITION CONTACT BRACKET WITH ITS MOUNTING SCREWS. LOOSENED TO MEET REQUIREMENT (1). TO PRY BRACKET TO LEFT, INSERT SCREWDRIVER BETWEEN BRACKET AND LEFT EDGE OF MOUNTING SCREWS; TO PRY BRACKET TO RIGHT, INSERT SCREWDRIVER BETWEEN BRACKET AND RIGHT EDGE OF MOUNTING SCREWS. CHECK REQUIREMENT (2). IF NOT MET, REFINE ADJUSTMENT.



3.18 Code Reading Contacts continued

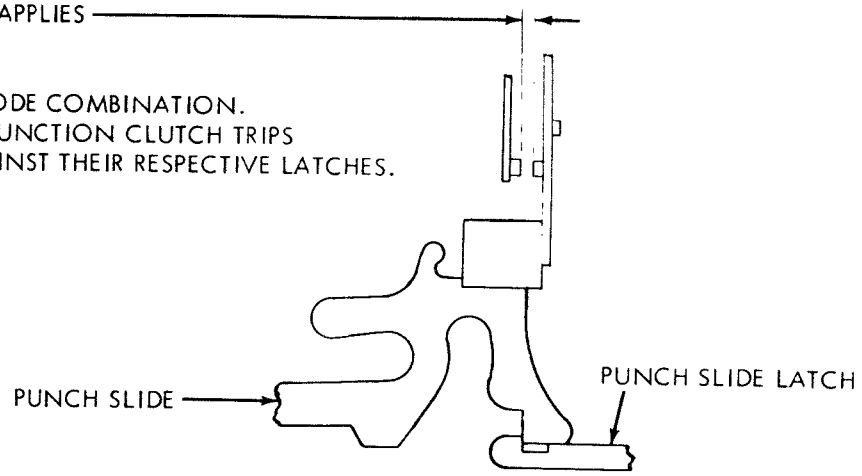
CONTACT BRACKET-PRELIMINARY (APPLIES TO MAKE TYPE CONTACTS ONLY)

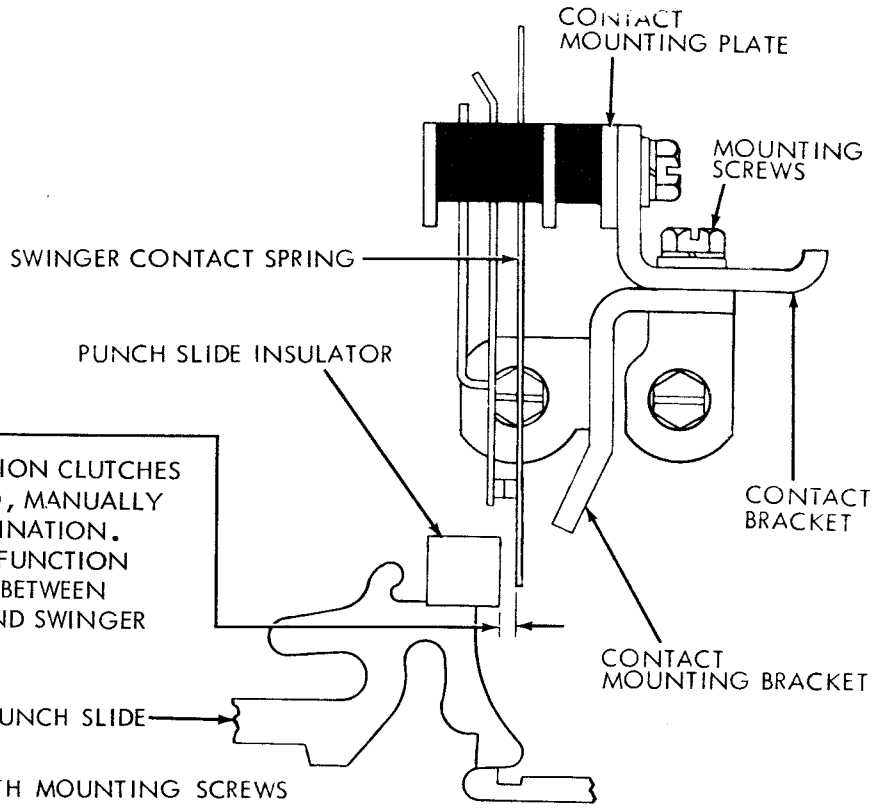
(1) REQUIREMENT

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS AND PUNCH SLIDES ARE AGAINST THEIR RESPECTIVE LATCHES. GAP BETWEEN CONTACTS.

MIN. 0.020 INCH

MAX. 0.025 INCH





(2) REQUIREMENT

WITH SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT LETTERS CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING.

MIN. 0.028 INCH

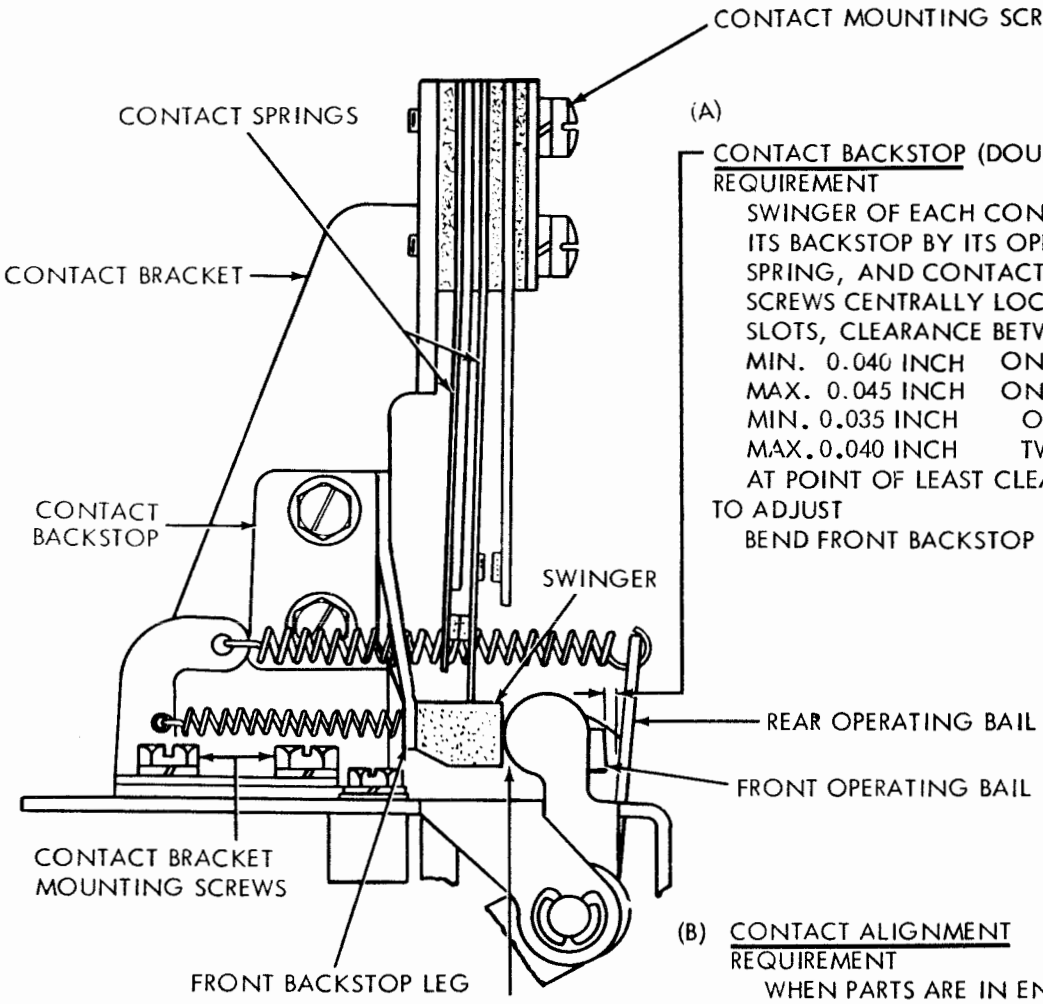
TO ADJUST

POSITION CONTACT BRACKET WITH MOUNTING SCREWS FRICTION TIGHT. TO PRY BRACKET TO LEFT, INSERT SCREW DRIVER BETWEEN BRACKET AND LEFT EDGE OF MOUNTING SCREW; TO PRY BRACKET TO RIGHT, INSERT SCREW DRIVER BETWEEN BRACKET AND RIGHT EDGE OF MOUNTING SCREW.

3.19 Timing Contacts

NOTE 1: THERE ARE TWO TYPES OF TIMING CONTACT ASSEMBLIES, SINGLE AND DOUBLE. SINGLE CONTACT ASSEMBLIES HAVE A FRONT CONTACT ONLY, NO REAR CONTACT. IF UNIT IS EQUIPPED WITH A DOUBLE CONTACT ASSEMBLY, THE FOLLOWING ADJUSTMENTS APPLY TO BOTH FRONT AND REAR CONTACTS.

NOTE 2: IN CASE OF SINGLE-CONTACT ASSEMBLY, MAKE CERTAIN CONTACT BRACKET MOUNTING SCREWS ARE CENTRALLY LOCATED IN ELONGATED SLOTS, AND PROCEED TO NEXT ADJUSTMENT.



(A)

CONTACT BACKSTOP (DOUBLE CONTACT ASSEMBLY)

REQUIREMENT

SWINGER OF EACH CONTACT HELD AGAINST ITS BACKSTOP BY ITS OPERATING BAIL AND SPRING, AND CONTACT BRACKET MOUNTING SCREWS CENTRALLY LOCATED IN ELONGATED SLOTS, CLEARANCE BETWEEN OPERATING BAILS

MIN. 0.040 INCH — ON UNITS EQUIPPED WITH
MAX. 0.045 INCH — ONE-CYCLE CAMS,
MIN. 0.035 INCH — ON UNITS EQUIPPED WITH
MAX. 0.040 INCH — TWO-CYCLE CAMS

AT POINT OF LEAST CLEARANCE.

TO ADJUST

BEND FRONT BACKSTOP LEG.

(B) CONTACT ALIGNMENT

REQUIREMENT

WHEN PARTS ARE IN ENGAGEMENT:

(1) OPERATING BAIL CENTRALLY LOCATED WITH RESPECT TO SWINGER.

(2) MATING CONTACT POINTS ALIGNED.

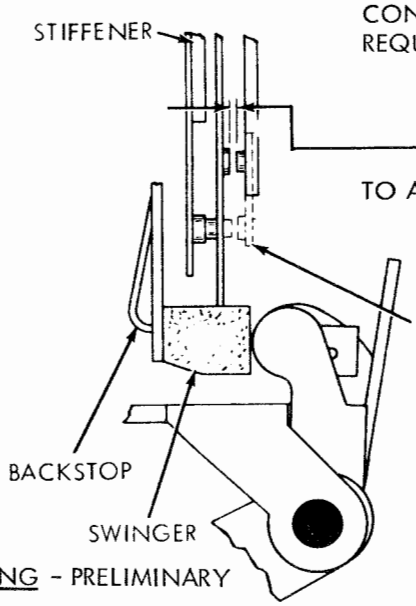
TO ADJUST

POSITION CONTACT SPRINGS WITH CONTACT MOUNTING SCREWS LOOSENED.

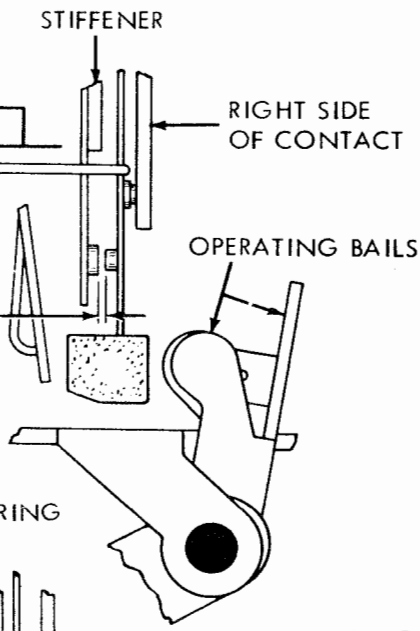
3.20 Timing Contacts continued

NOTE 1: IT IS RECOMMENDED THAT THE FOLLOWING TIMING CONTACT ADJUSTMENTS BE MADE WITH CONTACT ASSEMBLIES REMOVED FROM THE UNIT.

(A) RIGHT CONTACT GAP (NORMALLY CLOSED WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT)
REQUIREMENT
SWINGER HELD AGAINST ITS BACKSTOP.
GAP BETWEEN CONTACTS
MIN. 0.020 INCH
MAX. 0.025 INCH
TO ADJUST
BEND RIGHT CONTACT SPRING.

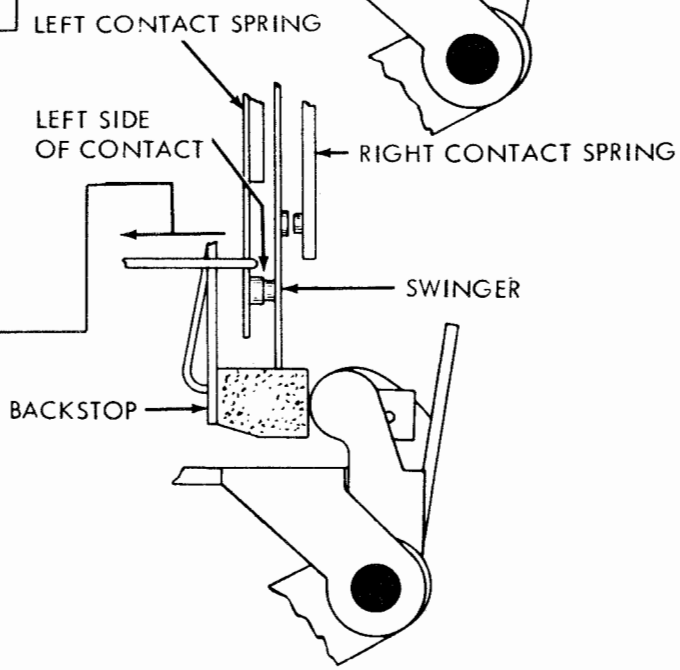


(B) SWINGER CONTACT SPRING - PRELIMINARY
REQUIREMENT
OPERATING BAIL HELD AWAY FROM SWINGER
MIN. 4 1/2 OZS.
MAX. 5 1/2 OZS.
TO OPEN RIGHT SIDE OF CONTACT
TO ADJUST
BEND SWINGER CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND READJUST IF NECESSARY.



(C) LEFT CONTACT GAP (NORMALLY OPEN WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT)
REQUIREMENT
OPERATING BAIL HELD AWAY FROM SWINGER, GAP BETWEEN CONTACTS
MIN. 0.020 INCH
MAX. 0.025 INCH
TO ADJUST
BEND STIFFENER.

(D) LEFT CONTACT SPRING - PRELIMINARY
REQUIREMENT
SWINGER HELD AGAINST BACKSTOP BY ITS OPERATING BAIL AND SPRING.
MIN. 4 1/2 OZS.
MAX. 5 1/2 OZS.
TO OPEN LEFT SIDE OF CONTACT.
TO ADJUST
BEND LEFT CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND LEFT CONTACT GAP, AND READJUST IF NECESSARY.



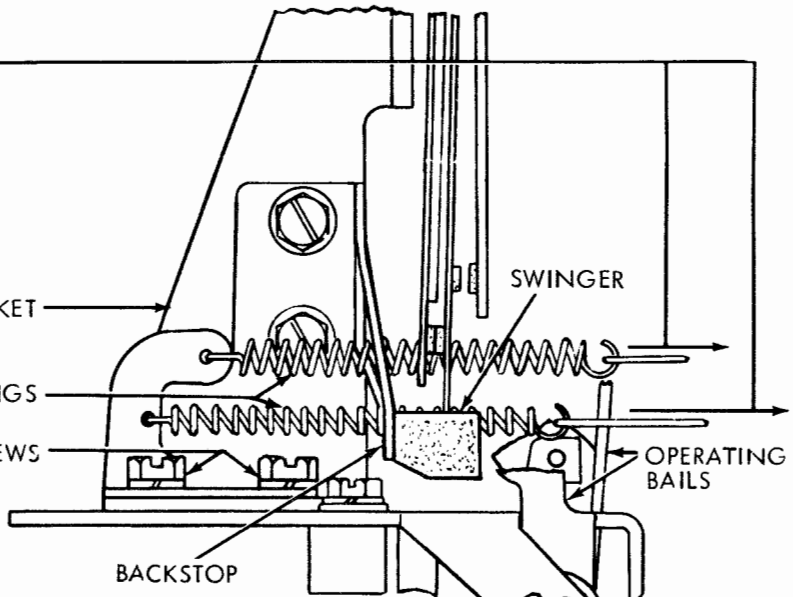
3.21 Timing Contacts continued

NOTE 1: THE FOLLOWING TIMING CONTACT ADJUSTMENTS SHOULD BE MADE WITH CONTACT ASSEMBLY MOUNTED ON UNIT.

(B) OPERATING BAIL SPRINGS

REQUIREMENT

OPERATING BAIL HELD SO THAT SWINGER IS AGAINST BACKSTOP.
MIN. 7 OZS.
MAX. 12 OZS.
TO PULL SPRING TO INSTALLED LENGTH.



(A) CONTACT BRACKET-PRELIMINARY (FOR UNITS EQUIPPED WITH ONE-CYCLE CAMS)

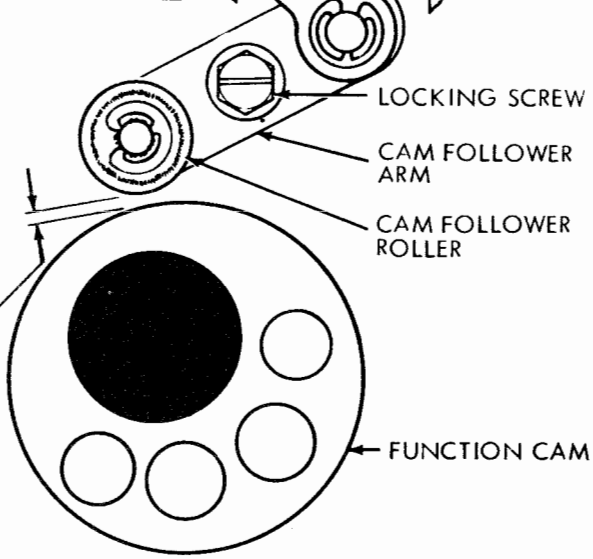
LOOSEN LOCKING SCREW. POSITION CAM FOLLOWER ARM, BY MEANS OF ITS ELONGATED MOUNTING HOLE, TO ITS MINIMUM LENGTH ON OPERATING BAIL. TIGHTEN LOCKING SCREW.

REQUIREMENT

SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED. CLEARANCE BETWEEN CAM FOLLOWER ROLLER AND FUNCTION CAM.
MIN. 0.050 INCH
MAX. 0.055 INCH

TO ADJUST

POSITION CONTACT BRACKET WITH MOUNTING SCREWS LOOSENED.



NOTE 2: ON UNITS EQUIPPED WITH DOUBLE CONTACT ASSEMBLIES, RECHECK CONTACT BACKSTOP ADJUSTMENT. IF REQUIREMENT IS NOT MET, REFINE CONTACT BRACKET ADJUSTMENT.

3.22 Code Reading Contacts continued

CONTACT BRACKET-PRELIMINARY (FOR UNITS EQUIPPED WITH TWO-CYCLE CAMS)

LOOSEN LOCKING SCREW. POSITION CAM FOLLOWER ARM, BY MEANS OF ITS ELONGATED MOUNTING HOLES, TO ITS MAXIMUM LENGTH ON OPERATING BAIL. TIGHTEN LOCKING SCREW.

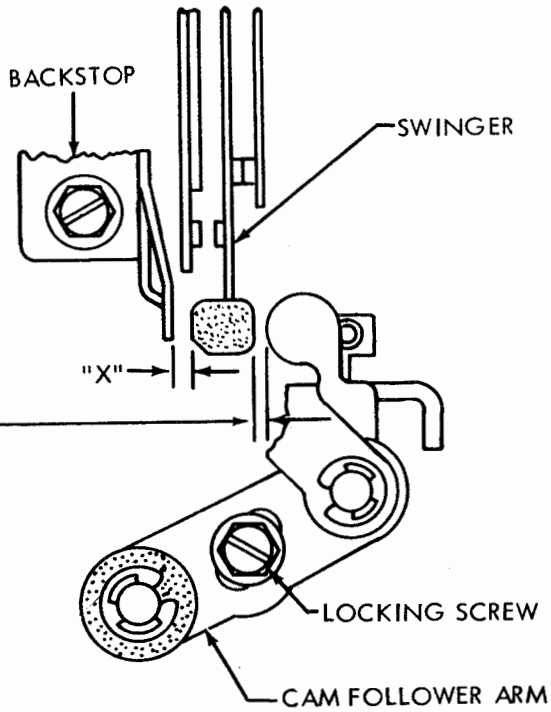
REQUIREMENT

SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED. CLEARANCE BETWEEN BAIL AND SWINGER INSULATOR OF PILE-UP HAVING LEAST CLEARANCE SHOULD BE 0.118 INCH MINUS CLEARANCE "X" BETWEEN BACKSTOP AND SWINGER INSULATOR.

TO ADJUST

POSITION CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

NOTE 1: THE RANGE OF THIS ADJUSTMENT IS 0.005 INCH. FOR EXAMPLE; IF CLEARANCE "X" IS 0.080 INCH, THE NORMAL ADJUSTMENT IS 0.038 INCH AND THE RANGE OF ADJUSTMENT IS 0.035 INCH TO 0.040 INCH.

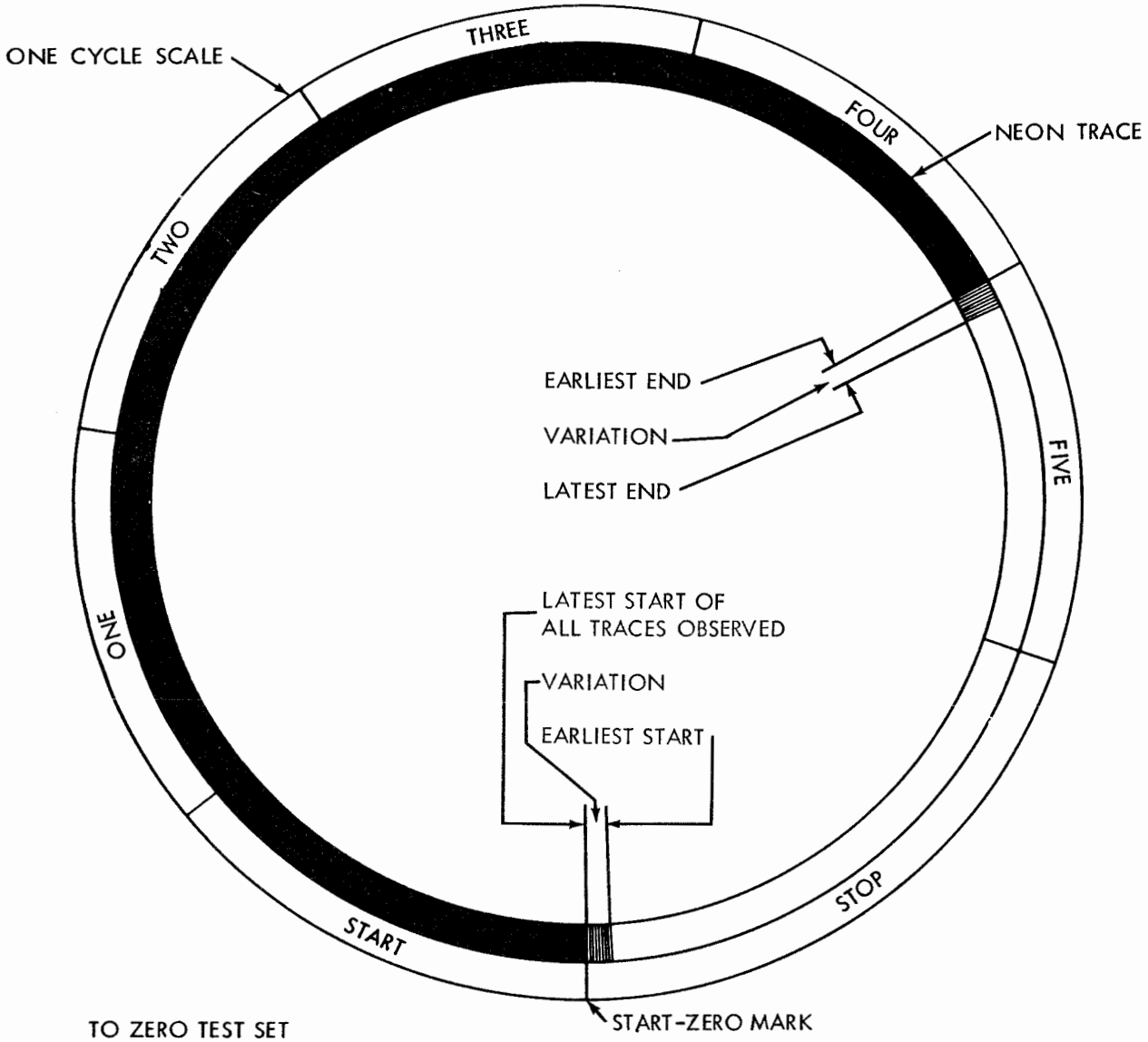


3.23 Code Reading Contacts Strobing (Using Signal Distortion Test Set)

THE FOLLOWING TESTS REQUIRE THE USE OF A TELETYPE SIGNAL DISTORTION TEST SET. THEY SHOULD BE MADE AFTER THE CONTACT ASSEMBLIES HAVE BEEN ADJUSTED AS INSTRUCTED ON THE PRECEDING PAGES. WHERE REQUIREMENTS ARE NOT MET, DESIGNATED ADJUSTMENTS MUST BE REFINED, AND/OR RELATED LENGTHS MAY HAVE TO BE CHANGED TO MEET TIMING REQUIREMENTS.

ALL TEST SHOULD BE MADE WITH THE CONTROL KNOB OF THE MODEL 28 ASR IN THE K-T POSITION AND WITH THE UNIT AND TEST SET OPERATING AT 600 O.P.M.

OBSERVATIONS ARE TO BE MADE OF A NEON TRACE ON THE GRADUATED DISC OF A TEST SET. TRACE WILL HAVE TENDENCY TO "JUMP"; THAT IS, IT WILL NOT BE STEADY ENOUGH TO BE ACCURATELY MEASURED. VARIATION MAY BE AS HIGH AS TEN DIVISIONS ON SCALE. MINIMUM SIGNAL LENGTH IS MEASURED BETWEEN LATEST START AND EARLIEST END OF ALL TRACES. MAXIMUM SIGNAL LENGTH IS MEASURED BETWEEN EARLIEST START AND LATEST END OF ALL TRACES.

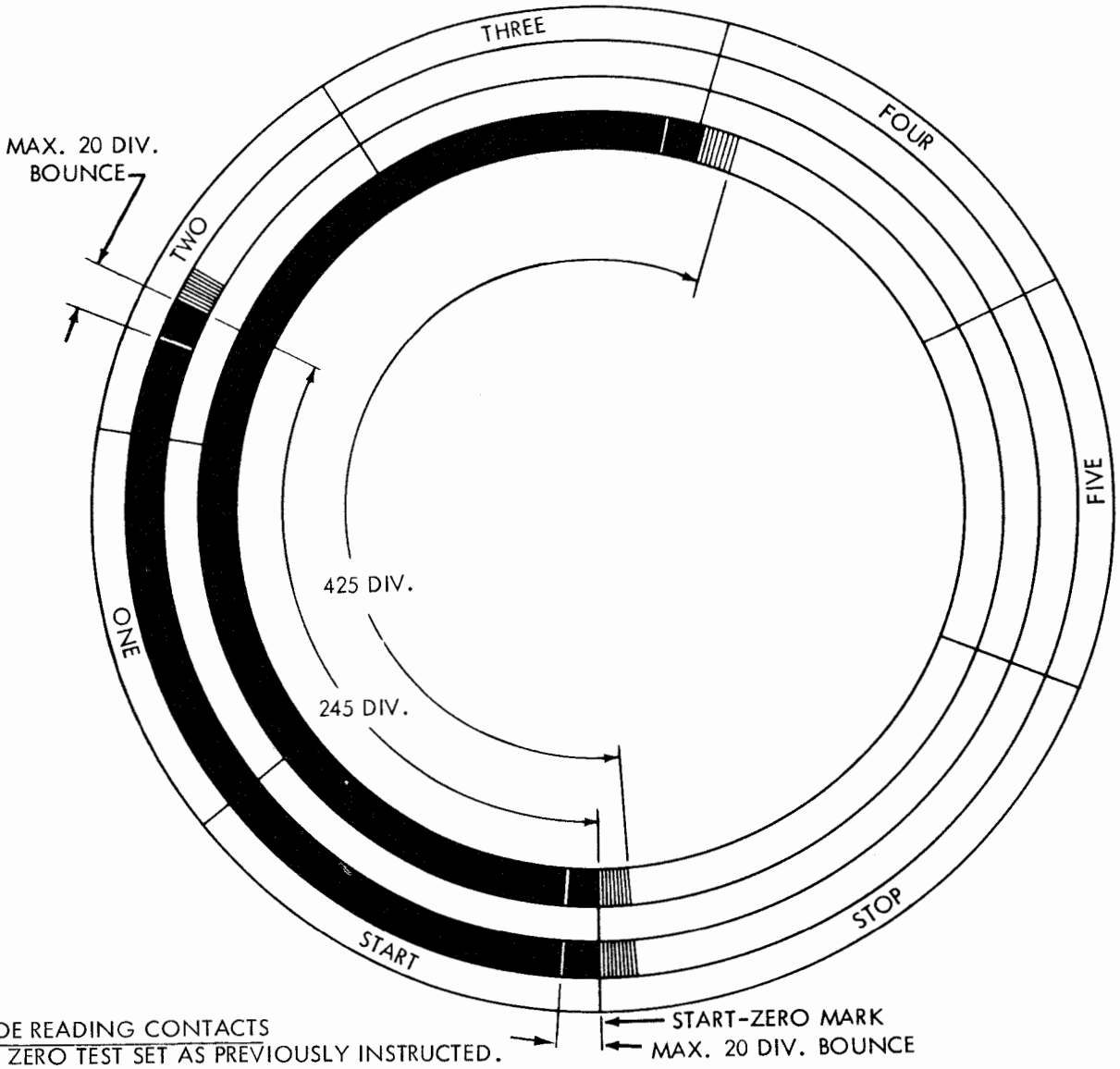


TO ZERO TEST SET

CONNECT NEON TRACE TO NO. 1 CODE READING CONTACT (REARMOST). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE AND NOTE POINT AT WHICH TRACE ENDS. TRACES WILL JUMP AS DESCRIBED ABOVE; NOTE EARLIEST END OF TRACES. REPEAT FOR REMAINING CONTACTS. OF ALL TRACES OBSERVED, CHOOSE ONE THAT STARTS THE LATEST. SET "START-ZERO" MARK OF SCALE AT LATEST START OF CHOSEN TRACE. RECORD EARLIEST END OF CHOSEN TRACE FOR FUTURE ADJUSTMENT REFERENCES.

3.24 Code Reading Contacts Strobing continued

NOTE 1: TEST PROCEDURES ON THIS PAGE APPLY TO A UNIT WITH 2-CYCLE CLUTCH



CODE READING CONTACTS

(1) ZERO TEST SET AS PREVIOUSLY INSTRUCTED.

(2) CONNECT NEON TRACE TO MARKING SIDE OF CODE READING CONTACT. (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE TRACE.

REQUIREMENTS

A. SIGNAL LENGTH
MIN. 245 DIVISIONS
MAX. 425 DIVISIONS

B. BOUNCE SHOULD END WITHIN MAX. OF 20 DIVISIONS OF EARLIEST START AND EARLIEST END OF TRACE.

(3) TO ADJUST

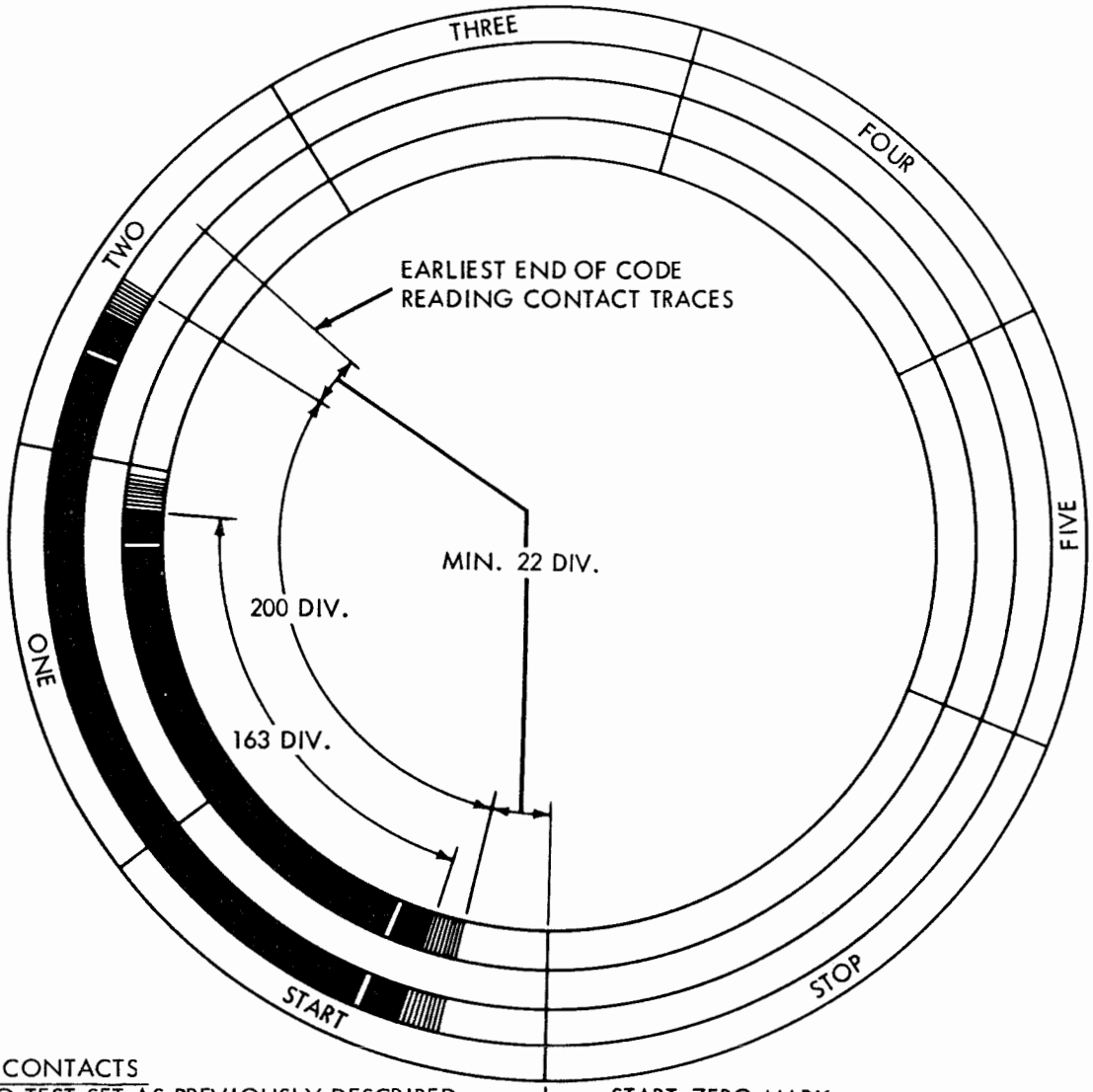
A. IF REQUIREMENTS UNDER (2)A. ARE NOT MET, REFINE CONTACT BRACKET ADJUSTMENT. IF NECESSARY, REFINE CONTACT GAP TO MEET STROBE REQUIREMENTS. RECHECK CONTACT SPRING TENSIONS.

B. IF BOUNCE REQUIREMENTS UNDER (2)B. ARE NOT MET, REFINE MARKING CONTACT SPRING AND SWINGER CONTROL SPRING TENSIONS.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.25 Timing Contacts Strobing

NOTE 1: TEST PROCEDURES ON THIS PAGE APPLY TO A UNIT WITH 2-CYCLE CLUTCH



TIMING CONTACTS

(1) ZERO TEST SET AS PREVIOUSLY DESCRIBED.

(2) CONNECT NEON TRACE TO RIGHT SIDE OF FRONT CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS FROM KEYBOARD TRANSMISSION, OBSERVE TRACE.

REQUIREMENTS

A. EARLIEST START MIN. 22 DIVISIONS AFTER START-ZERO MARK.

B. LATEST END MIN. 22 DIVISIONS BEFORE EARLIEST END OF CODE READING CONTACT TRACES.

C. TRACE LENGTH
MIN. 163 DIVISIONS
MAX. 200 DIVISIONS

D. BOUNCE SHOULD END WITHIN MAX. OF 5 DIVISIONS OF EARLIEST START OR LATEST END OF TRACE.

(3) TO ADJUST

A. IF REQUIREMENTS UNDER (2)A., B., AND C. ARE NOT MET, REFINE RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, AND LEFT CONTACT SPRING.

B. IF BOUNCE REQUIREMENTS UNDER (2)D. ARE NOT MET, REFINE SWINGER CONTACT SPRING AND LEFT CONTACT SPRING.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.26 Unshift-On-Space Mechanism

(A)
UNSHIFT-ON-SPACE FUNCTION BLADE

(1) TO CHECK

REMOVE SIGNAL BELL CONTACT ASSEMBLY WITH BRACKET AND SIGNAL BELL FUNCTION BLADE.

SELECT FIGURES CODE COMBINATION (12-45). ROTATE MAIN SHAFT UNTIL LIFTER ROLLER IS ON LOW PART OF ROCKER BAIL'S CAMMING SURFACE AND UNSHIFT-ON-SPACE FUNCTION BLADE RESTS ON BELL CRANKS.

REQUIREMENT

MIN. SOME---MAX. 0.015 INCH BETWEEN STRIPPER BLADE AND LETTERS EXTENSION ARM.

(2) TO CHECK

SELECT SPACE CODE COMBINATION (--3--). ROTATE MAIN SHAFT UNTIL STRIPPER BLADE TOUCHES LETTERS EXTENSION ARM.

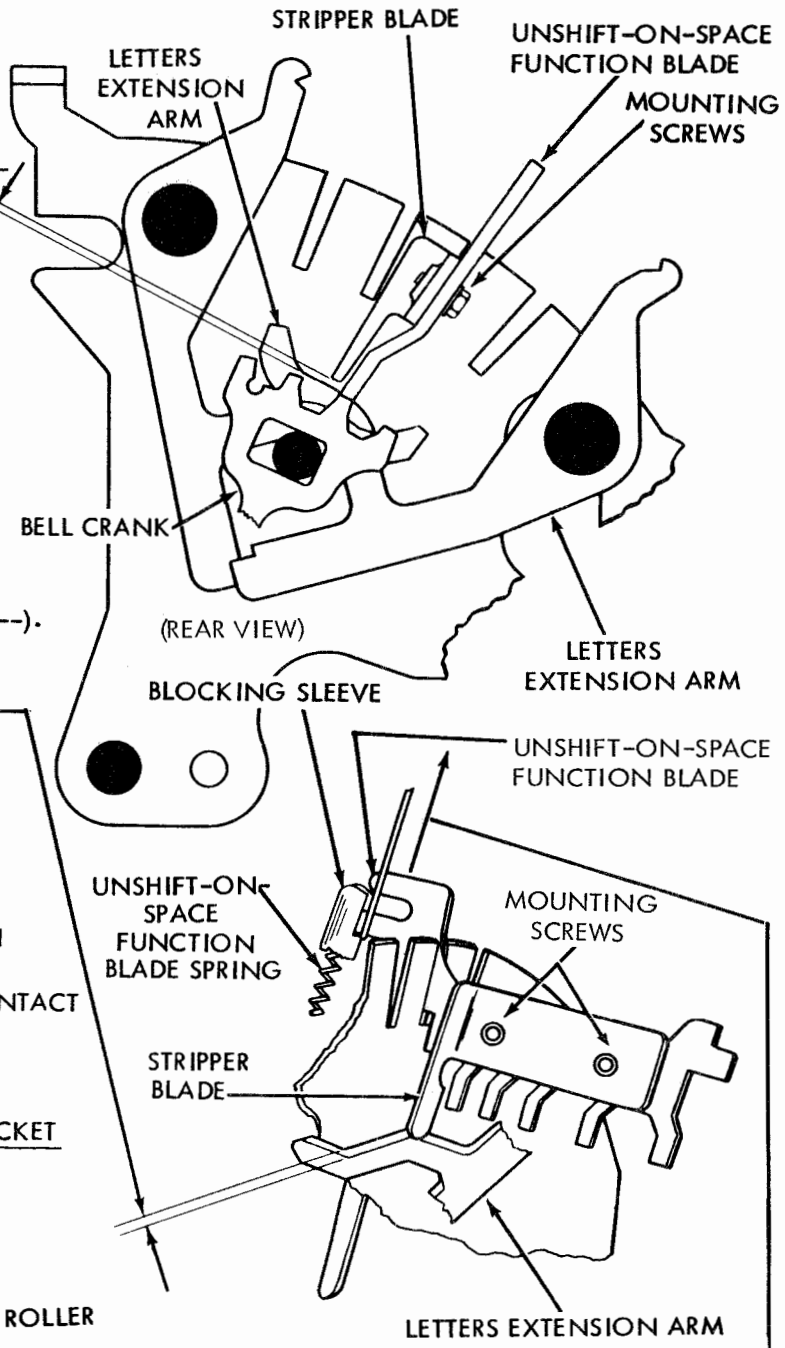
REQUIREMENT

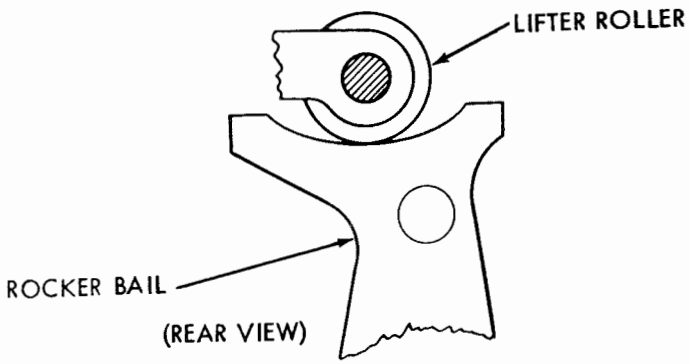
WHEN PLAY IS TAKEN UP IN EITHER DIRECTION, STRIPPER BLADE SHOULD ENGAGE AN EQUAL THICKNESS OF LETTERS EXTENSION ARM.

TO ADJUST

POSITION STRIPPER BLADE ON FUNCTION BLADE WITH TWO MOUNTING SCREWS LOOSENED, REINSTALL SIGNAL BELL CONTACT ASSEMBLY WITH BRACKET AND SIGNAL BELL FUNCTION BLADE.

MAKE SIGNAL BELL CONTACT MOUNTING BRACKET ADJUSTMENT





(B) UNSHIFT-ON-SPACE FUNCTION BLADE SPRING

REQUIREMENT

WITH UNIT IN STOP POSITION AND LONG SLOT IN BLOCKING SLEEVE ENGAGING FUNCTION BLADE:

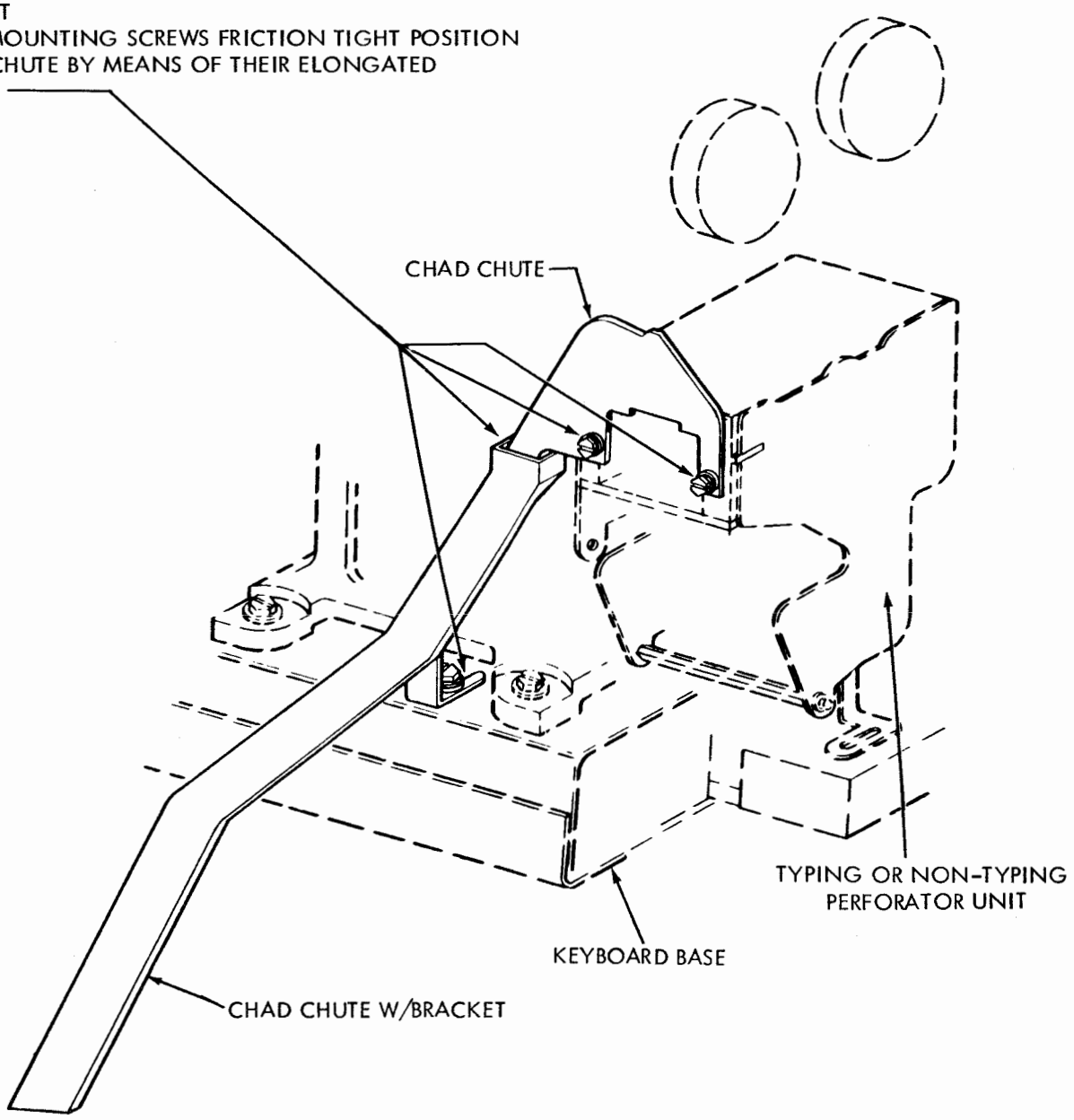
MIN. 10 OZS.---- MAX. 13 OZS. TO START BLADE MOVING.

3.27 Chad Chute Assembly (Keyboard Perforator Typing or Non-Typing)

CHAD CHUTE ASSEMBLY (KEYBOARD PERFORATOR "TYPING OR NON-TYPING" AUTOMATIC SEND-RECEIVE SET)

REQUIREMENT
CLEARANCE BETWEEN EACH CHAD CHUTE AND ADJACENT UNITS SHOULD BE EQUAL IN ALL DIRECTIONS.

TO ADJUST
WITH MOUNTING SCREWS FRICTION TIGHT POSITION EACH CHUTE BY MEANS OF THEIR ELONGATED SLOTS.



28 TYPING REPERFORATOR AND TAPE PRINTER

ADJUSTMENTS

CONTENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section contains the specific requirements and adjustments for the 28 typing reperforators and tape printers.

1.02 This section has been revised to include recent engineering changes and additions, and to rearrange the text, so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

Note: Remove power from set or unit before making adjustment.

1.03 Maintenance procedures which apply only to mechanisms of a particular design, or to certain models of 28 typing reperforators and tape printers are so indicated in the titles of the paragraphs which contain these particular adjustment requirements.

1.04 The adjustments are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

1.05 Reference made to left or right, up or down, front or rear, etc apply to the unit in its normal operating position as viewed from the front.

1.06 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch lever 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 the main shaft is rotated by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve drag and permit the main shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latch lever and fully disengage the clutch.

1.07 To manually operate the typing reperforator or tape printer proceed as follows:

(1) Attach the TP312709 armature clip to the selector magnet armature by carefully placing the spring loop over the magnet terminal insulator and pressing down to engage the hook of the clip on the underside of the armature and releasing. The spring tension of the armature clip will hold the selector armature in the marking (attracted) position.

(2) While holding the selector magnet armature operated by means of the armature clip, use the handwheel, included with the special tools for servicing 28 teletypewriter apparatus, to manually rotate the main shaft in a counterclockwise direction until all the clutches are brought to their disengaged position.

(3) Fully disengage all clutches in accordance with 1.06, Note.

(4) Release the selector magnet armature momentarily to permit the selector clutch to engage.

(5) Rotate the main shaft slowly until all the pushlevers have fallen to the left of their selecting levers.

(6) Strip the pushlevers from their selector levers, which are spacing in the code combination of the character function that is being selected, and allow the pushlevers to move to the right.

(7) The pushlevers and the selector levers move in succession starting with the inner lever No. 1 to the outer lever No. 5.

(8) Continue to rotate the main shaft until all operations initiated by the selector action clear through the unit.

1.08 All electrical contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 per cent of the contact diameter. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustments or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

1.09 Where a typing reperforator is used as a component of the 28 reperforator-transmitter unit or the 28 perforator-transmitter base or the multiple reperforator base, refer to the applicable sections for the additional adjustments.

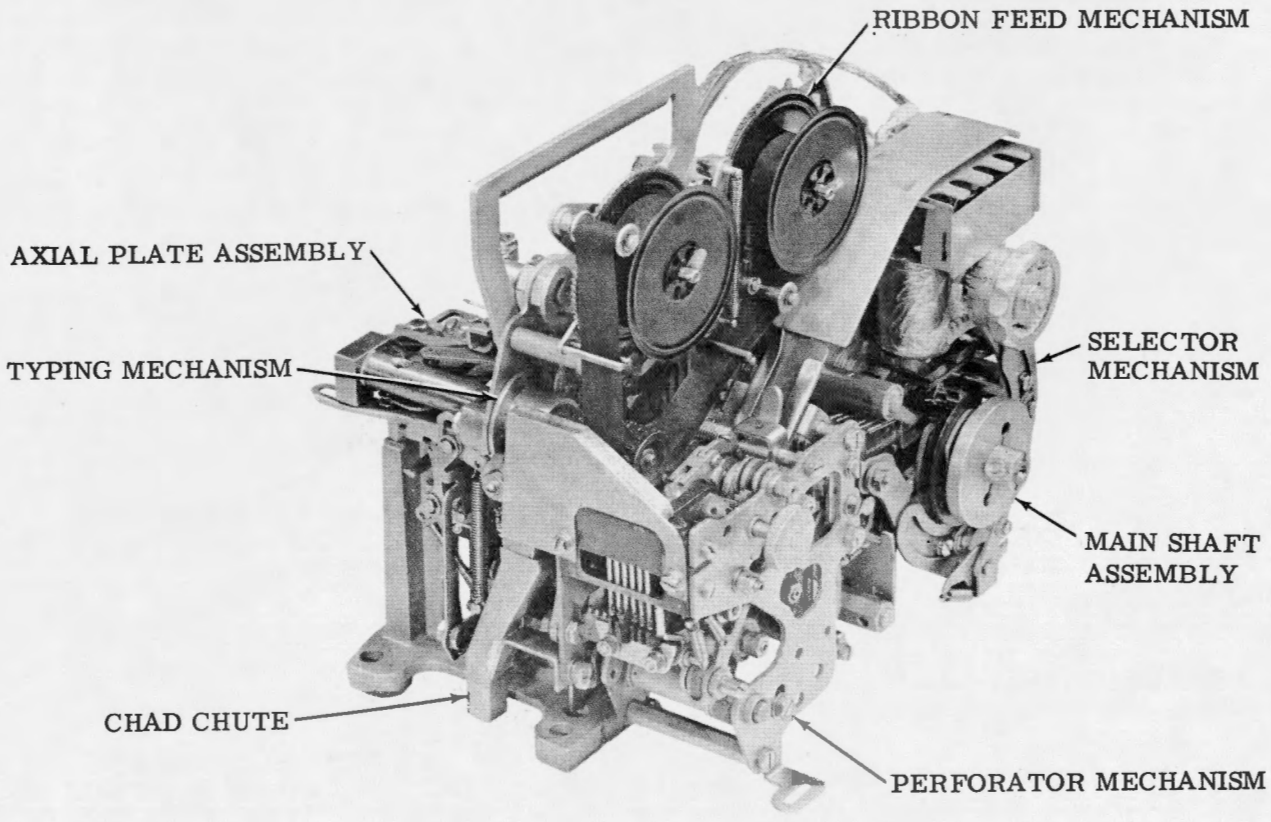


Figure 1 - 28 Typing Reperforator Unit (Fully Perforated Tape)

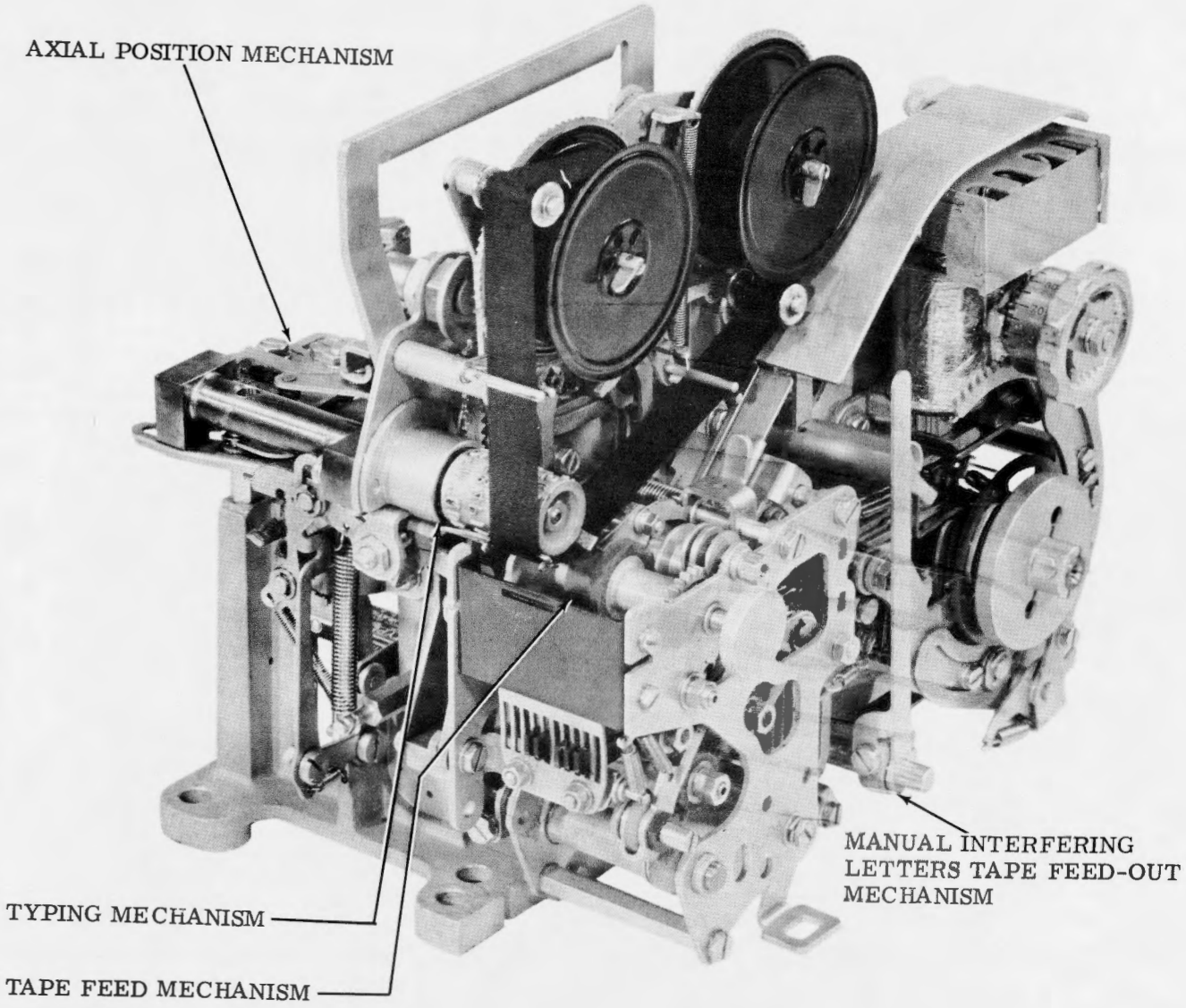


Figure 2 - 28 Tape Printer Unit With Manual Interfering LTRS Tape Feed-Out Mechanism

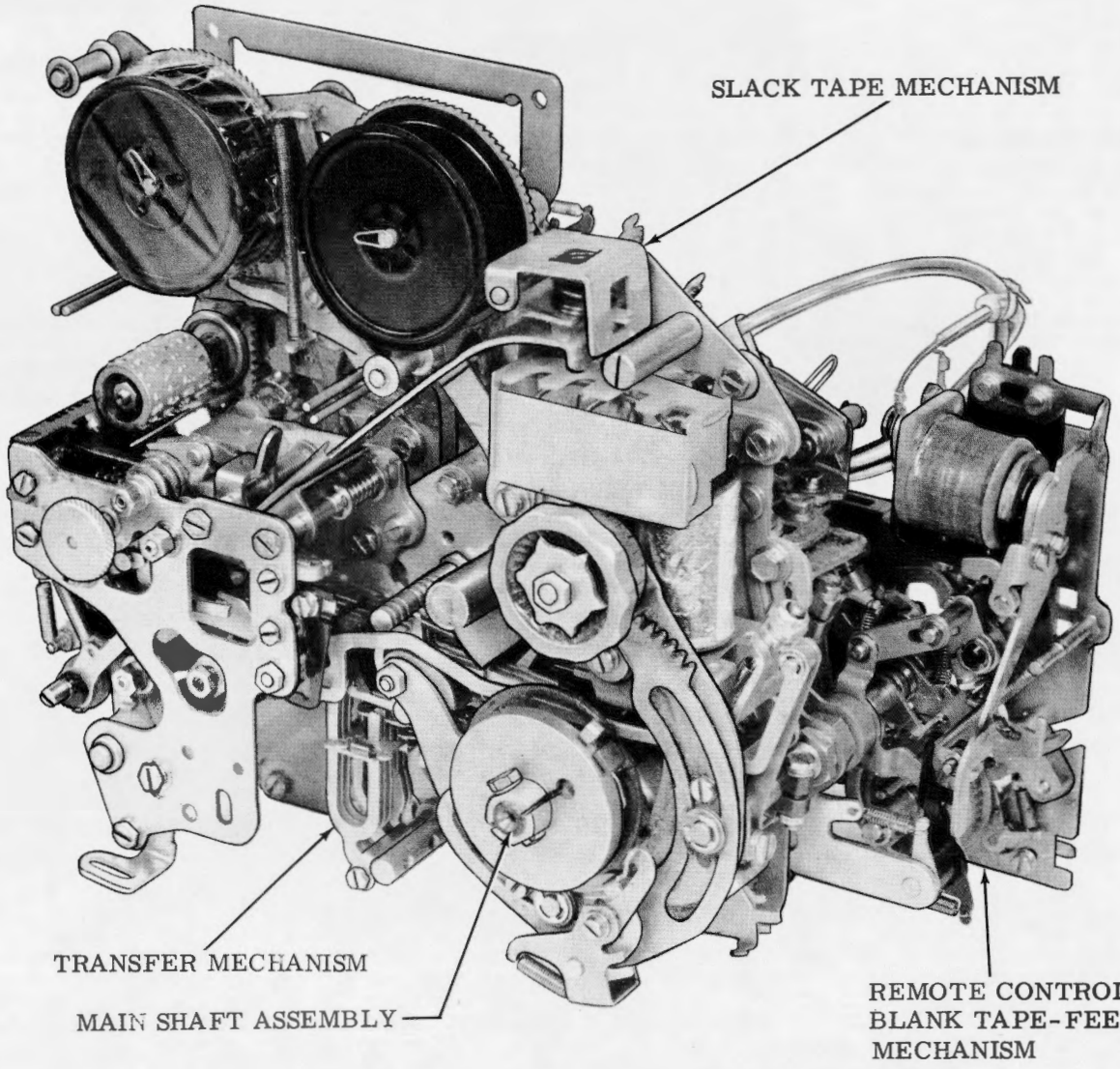


Figure 3 - 28 Typing Reperforator Unit With Remote Control BLANK Tape Feed-Out Mechanism (Fully Perforated Tape)

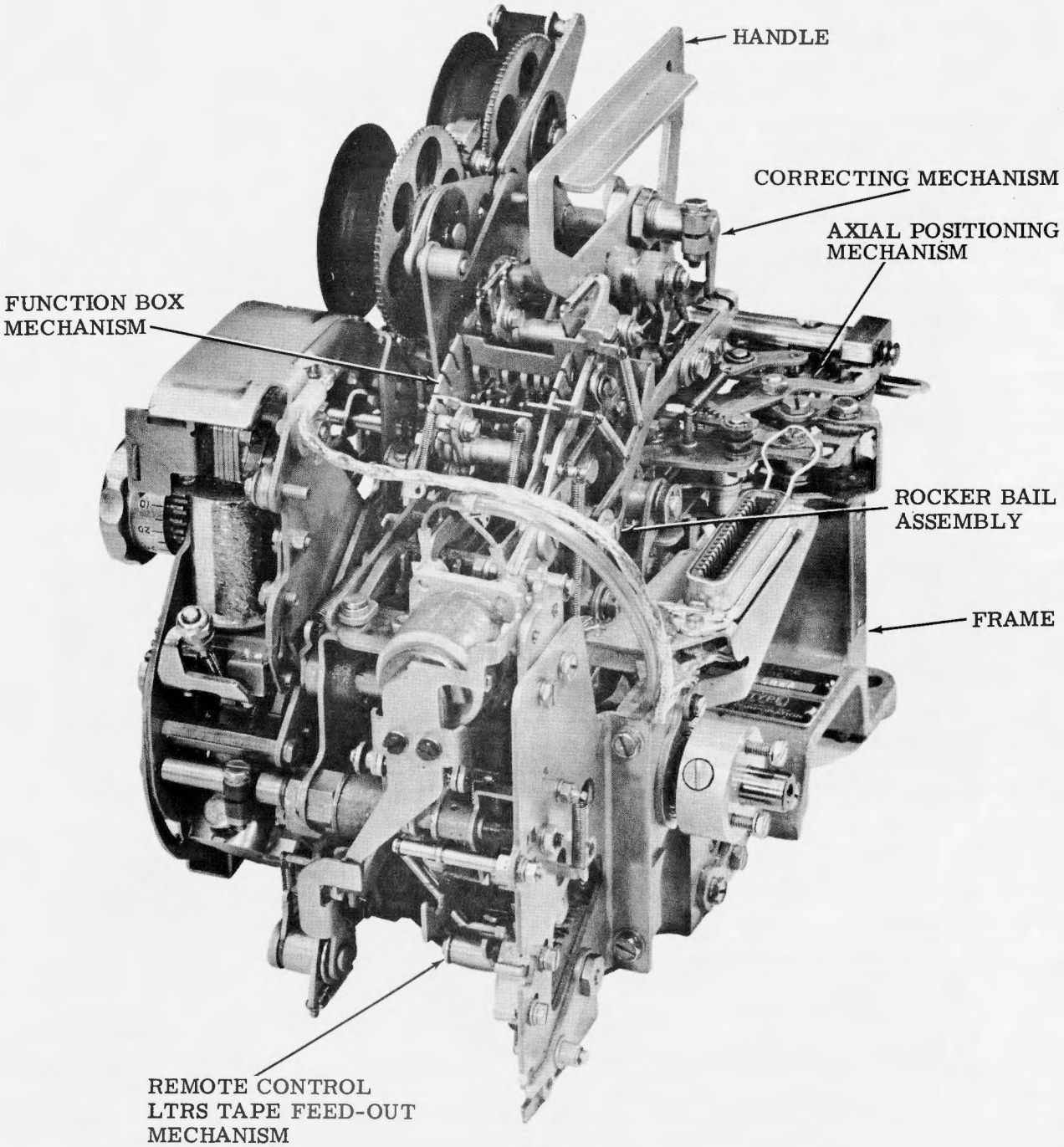


Figure 4 - 28 Typing Reperforator Unit With Remote Control LTRS Tape Feed-Out Mechanism (Rear View)

2. BASIC UNITS

2.01 Selector and Function Clutch Mechanisms

Note: To facilitate adjustments, remove typing reperforator from base as follows:
(1) For typing reperforator equipped with one-shaft mechanism, refer to section containing the disassembly and reassembly routines for the 28 typing reperforator.
(2) For typing reperforator equipped with two-shaft mechanism, refer to section containing the disassembly and reassembly routines for the 28 perforator-transmitter base.

(A) CLUTCH SHOE LEVER

NOTE: THIS ADJUSTMENT SHALL BE MADE FOR BOTH SELECTOR AND FUNCTION CLUTCHES.

TO CHECK

(1) DISENGAGE CLUTCH. MEASURE CLEARANCE.

(2) ALIGN HEAD OF CLUTCH DRUM MOUNTING SCREW WITH STOP LUG. ENGAGE CLUTCH. MANUALLY PRESS SHOE LEVER AND STOP LUG TOGETHER AND ALLOW TO SNAP APART. MEASURE CLEARANCE.

REQUIREMENT

CLEARANCE BETWEEN SHOE LEVER AND STOP LUG

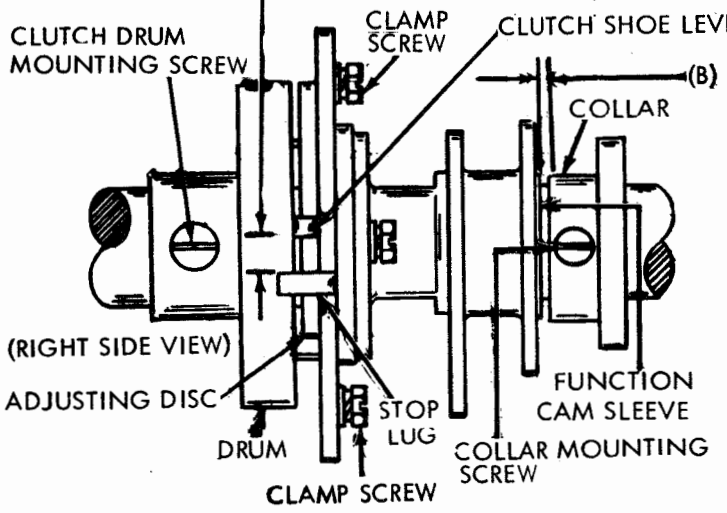
MIN. 0.055 INCH---MAX. 0.085 INCH

GREATER WHEN CLUTCH ENGAGED (2) THAN WHEN DISENGAGED (1).

TO ADJUST

ENGAGE WRENCH OR SCREWDRIVER WITH LUG ON ADJUSTING DISC. ROTATE DISC WITH CLAMP SCREWS LOOSENED.

NOTE: AFTER MAKING ADJUSTMENT, DISENGAGE CLUTCH. REMOVE DRUM MOUNTING SCREW. ROTATE DRUM IN NORMAL DIRECTION AND CHECK TO SEE IF IT DRAGS ON SHOE. IF IT DOES, REFINE ADJUSTMENT.



(B) FUNCTION CLUTCH DRUM END PLAY (FOR ONE-SHAFT UNIT)

REQUIREMENT

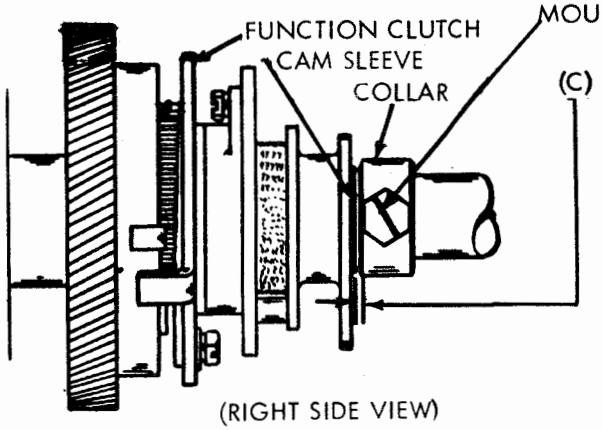
WITH CLUTCH SHOE LEVER HELD IN DISENGAGED POSITION:

MIN. SOME --- MAX. 0.015 INCH

WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAX.

TO ADJUST

WITH ITS MOUNTING SCREW LOOSENED, MOVE DRUM TO EXTREME FRONT POSITION. TIGHTEN DRUM MOUNTING SCREW. POSITION COLLAR WITH MOUNTING SCREW LOOSENED.



(C) FUNCTION CLUTCH DRUM END PLAY (FOR TWO-SHAFT UNIT)

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED:

MIN. SOME --- MAX. 0.015 INCH

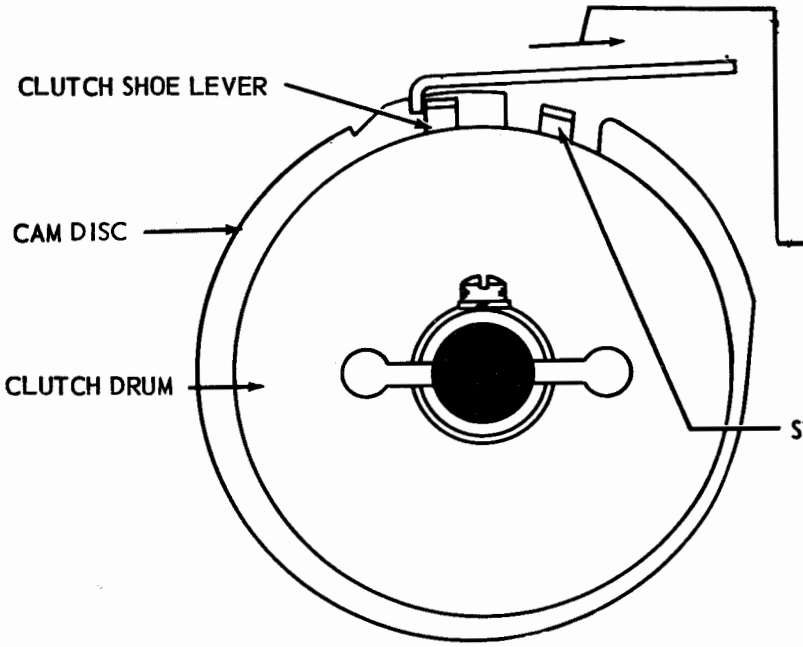
BETWEEN CAM SLEEVE AND COLLAR WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM.

TO ADJUST

POSITION COLLAR WITH MOUNTING SCREW LOOSENED.

2.02 Selector and Function Clutch Mechanisms continued

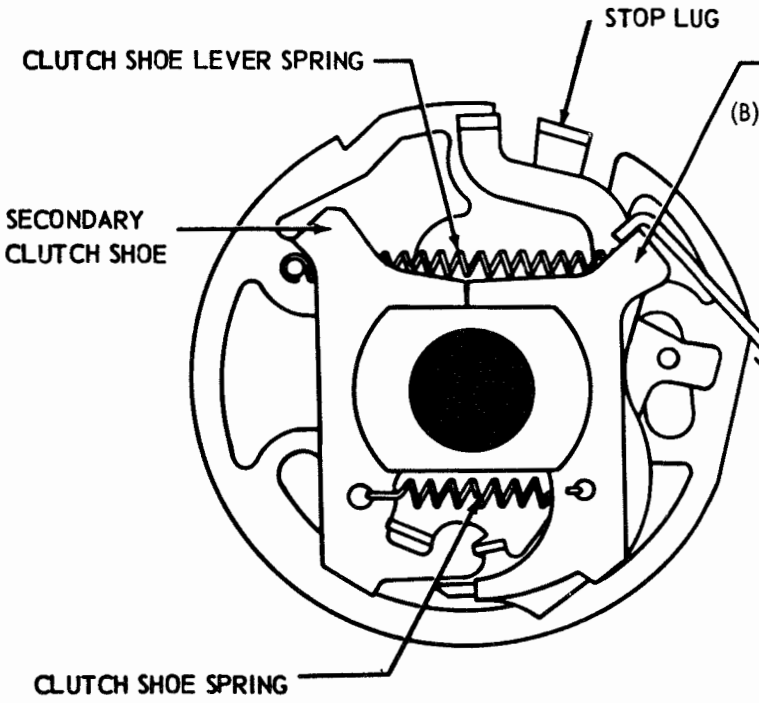
NOTE:
THESE SPRING TENSIONS APPLY TO BOTH CLUTCHES.



(A)
CLUTCH SHOE LEVER SPRING

TO CHECK
ENGAGE CLUTCH. HOLD CAM DISC TO PREVENT ITS TURNING.

REQUIREMENT
MIN. 15 OZS. ----MAX. 20 OZS.
TO PULL SHOE LEVER IN CONTACT WITH STOP LUG.



(B) CLUTCH SHOE SPRING

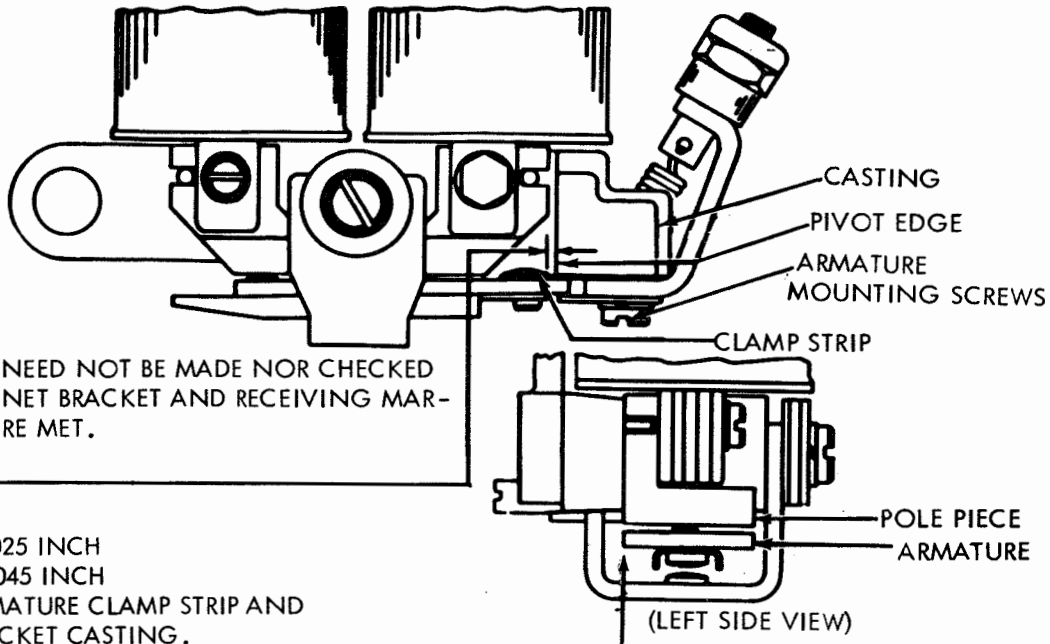
NOTE:
IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS REASON TO BELIEVE IT WILL NOT MEET ITS REQUIREMENT.

TO CHECK
REMOVE CLUTCH FROM DRUM.

REQUIREMENT
MIN. 3 OZS. ------MAX. 5 OZS.
TO START PRIMARY SHOE MOVING.

2.03 Selector Mechanism

NOTE: TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER AND SELECTOR MAGNET ASSEMBLIES. TO INSURE BETTER OPERATION, PULL A PIECE OF BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OR PAPER REMAIN BETWEEN THE POLE PIECES AND ARMATURE.



SELECTOR ARMATURE

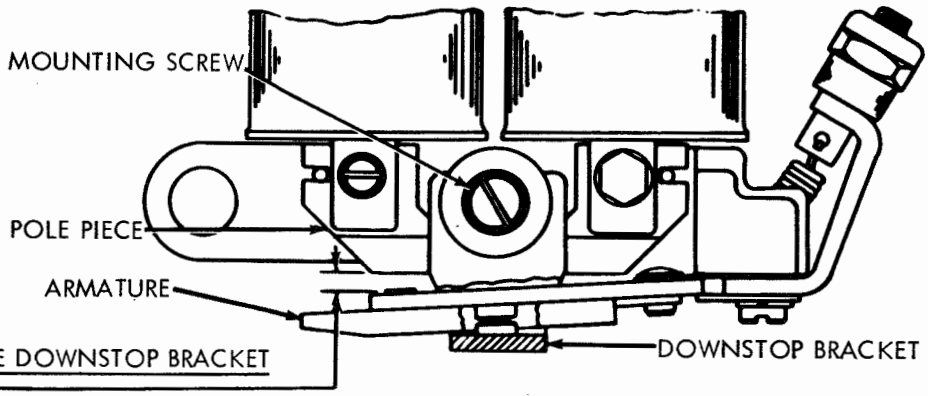
NOTE:
THESE REQUIREMENTS NEED NOT BE MADE NOR CHECKED IF THE SELECTOR MAGNET BRACKET AND RECEIVING MARGIN REQUIREMENTS ARE MET.

(1) REQUIREMENT
CLEARANCE
MIN. 0.025 INCH
MAX. 0.045 INCH
BETWEEN ARMATURE CLAMP STRIP AND MAGNET BRACKET CASTING.

(2) REQUIREMENT
OUTER EDGE OF ARMATURE SHOULD BE FLUSH WITHIN 0.015 INCH WITH OUTER EDGE OF POLE PIECES.

(3) REQUIREMENT
START LEVER SHALL DROP FREELY INTO ARMATURE EXTENSION SLOT.

TO ADJUST
POSITION ARMATURE SPRING ADJUSTING NUT TO HOLD ARMATURE FIRMLY AGAINST PIVOT EDGE OF CASTING. POSITION ARMATURE WITH MOUNTING SCREWS LOOSENED.



SELECTOR ARMATURE DOWNSTOP BRACKET

REQUIREMENT
REMOVE OIL SHIELD. WITH MAGNET DE-ENERGIZED, LOCK LEVER ON HIGH PART OF THEIR CAM, AND ARMATURE RESTING AGAINST ITS DOWNSTOP, CLEARANCE BETWEEN END OF ARMATURE AND LEFT EDGE OF LEFT POLE PIECE.
MIN. 0.025 INCH
MAX. 0.030 INCH

TO ADJUST
POSITION DOWNSTOP BRACKET WITH MCUNTING SCREW LOOSENED.

2.04 Selector Mechanism continued

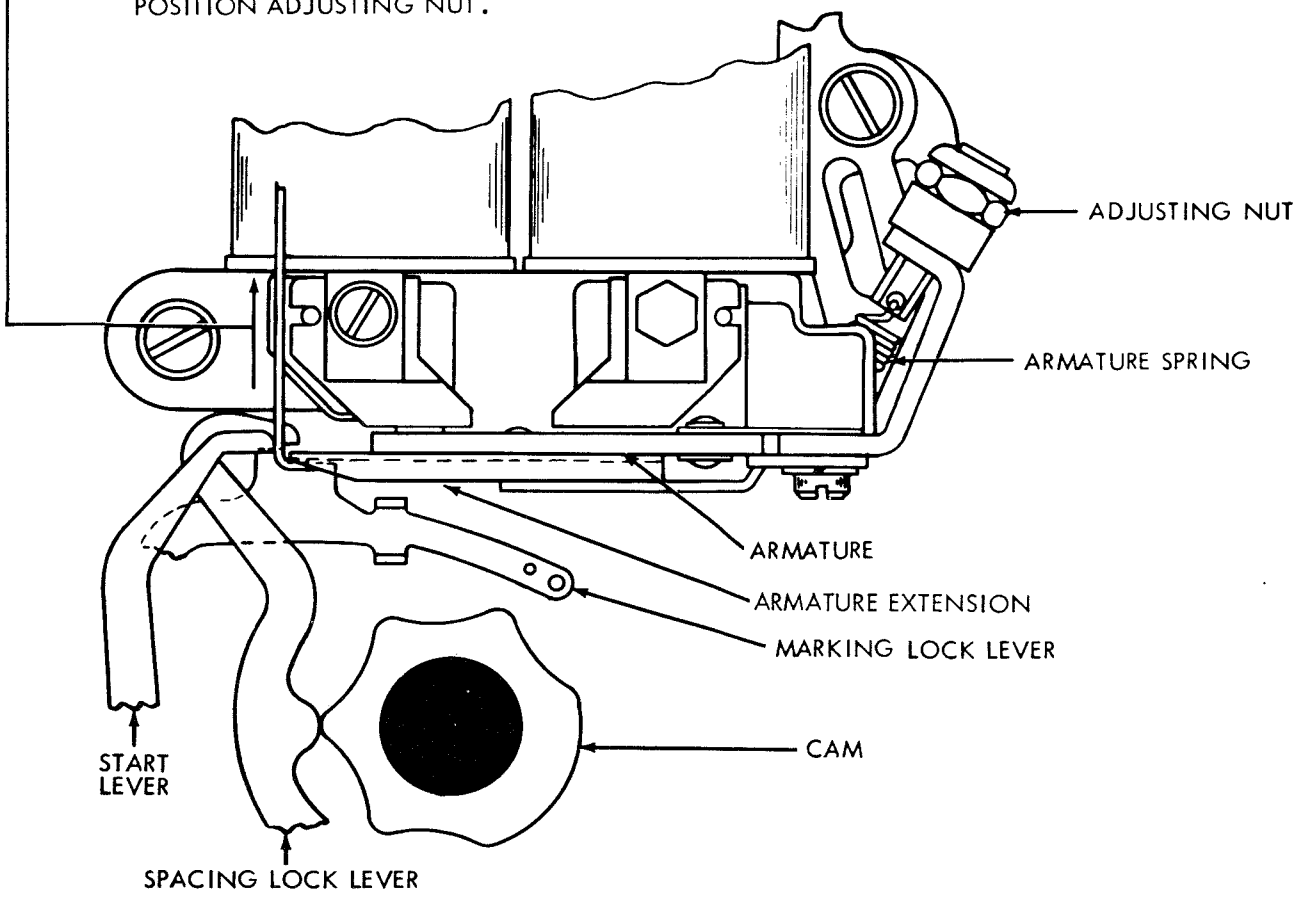
SELECTOR ARMATURE SPRING (PRELIMINARY)
(FOR UNITS EMPLOYING SELECTOR ARMATURE WITH SINGLE ANTI-FREEZE BUTTON ONLY).
REQUIREMENT

WITH LOCKING LEVERS AND START LEVER ON HIGH PART OF THEIR CAMS, SCALE APPLIED AS NEARLY VERTICAL AS POSSIBLE UNDER END OF ARMATURE EXTENSION. IT SHALL REQUIRE THE FOLLOWING TENSIONS TO MOVE ARMATURE TO MARKING POSITION:

0.060 AMPERES	0.020 AMPERES AND 0.035 AMPERES
MIN. 2-1/2 OZS. --- MAX. 3 OZS.	MIN. 1-1/2 OZS. --- MAX. 2 OZS.

NOTE:
THIS SPRING CAN BE ADJUSTED FOR MAXIMUM SELECTOR PERFORMANCE ONLY WHEN PRINTER IS CONNECTED TO THE SPECIFIC CIRCUIT OVER WHICH IT IS TO OPERATE UNDER SERVICE CONDITIONS. SINCE THERE ARE SEVERAL OPERATING SPEEDS AND SINCE CIRCUITS VARY WIDELY, IT IS IMPOSSIBLE TO ADJUST SPRING FOR MAXIMUM PERFORMANCE AT THE FACTORY. THE FOREGOING SPRING TENSION REQUIREMENT IS GIVEN TO PERMIT OPERATION PRIOR TO MEASUREMENT OF RECEIVING MARGINS. READJUSTMENT MADE TO OBTAIN SATISFACTORY RECEIVING MARGIN SHOULD NOT BE DISTURBED IN ORDER TO MEET REQUIREMENTS OF THIS ADJUSTMENT.

TO ADJUST
POSITION ADJUSTING NUT.



SELECTOR ARMATURE SPRING (FINAL)
REQUIREMENT
(SEE SELECTOR RECEIVING MARGIN ADJUSTMENT)

2.05 Selector Mechanism continued

SELECTOR ARMATURE SPRING (PRELIMINARY)

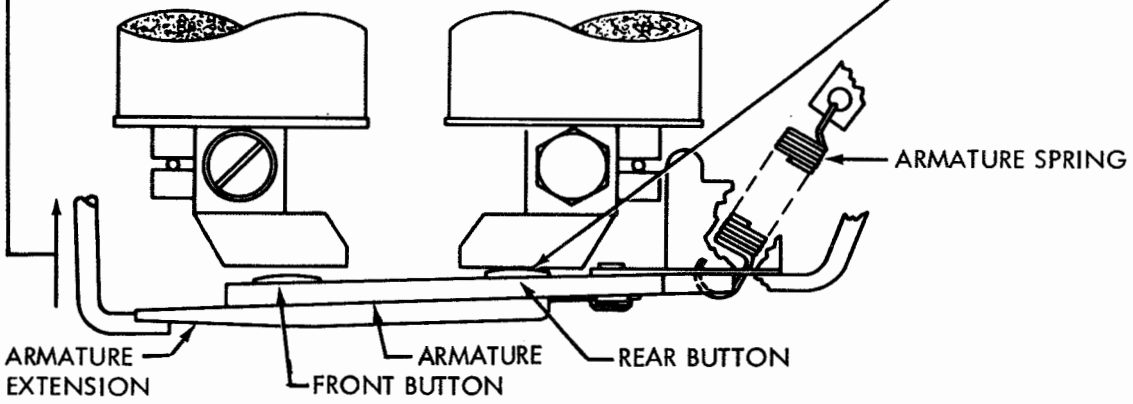
(FOR UNITS EMPLOYING SELECTOR ARMATURE WITH TWO ANTI-FREEZE BUTTONS ONLY).

REQUIREMENT

WITH LOCKING LEVERS AND START LEVER ON HIGH PART OF THEIR CAMS, SCALE APPLIED AS NEARLY VERTICAL AS POSSIBLE UNDER END OF ARMATURE EXTENSION. IT SHALL REQUIRE APPROXIMATELY THE FOLLOWING TENSIONS TO MOVE THE REAR ANTI-FREEZE BUTTON AGAINST THE MAGNET CORE:

0.020 AMPERE	0.030 AMPERE	0.060 AMPERE
14 GRAMS	18 GRAMS	21 GRAMS

TO ADJUST
POSITION ADJUSTING NUT.

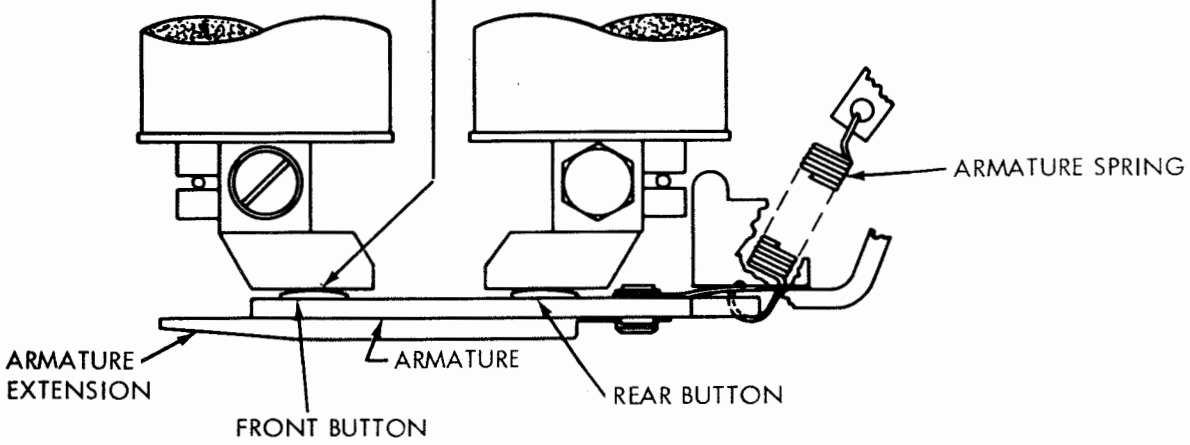


SELECTOR ARMATURE SPRING (FINAL)

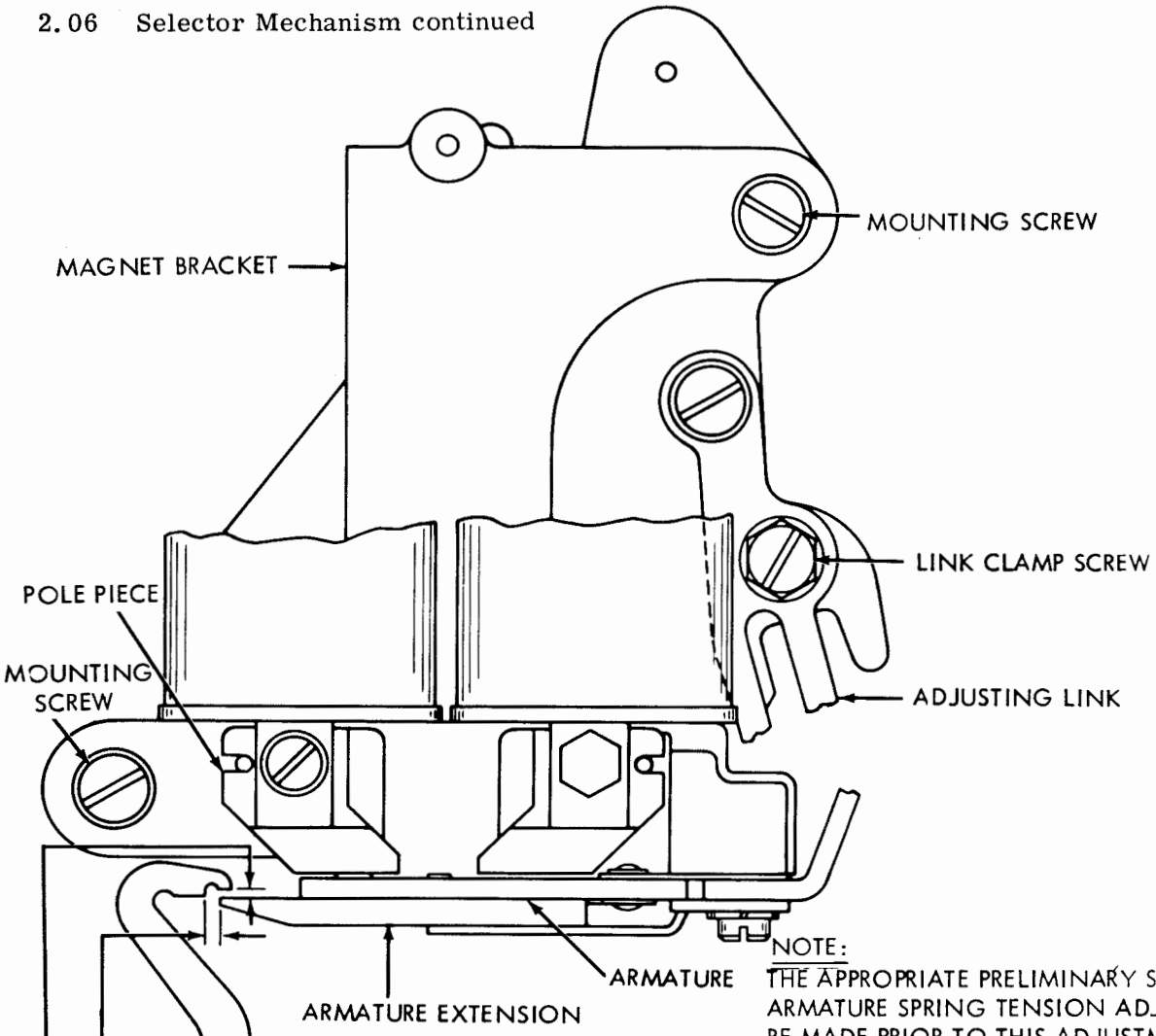
REQUIREMENT

WHEN A DISTORTION TEST SET IS AVAILABLE, THE SELECTOR ARMATURE SPRING TENSION SHOULD BE REFINED, IF NECESSARY, TO OBTAIN SATISFACTORY RECEIVING MARGINS. THE FRONT ANTI-FREEZE BUTTON MUST CONTACT THE MAGNET CORE WHEN THE MAGNET COILS ARE ENERGIZED.

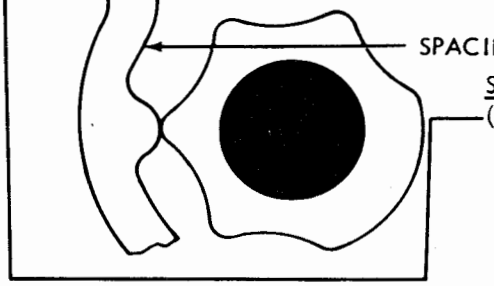
(SEE SELECTOR RECEIVING MARGIN ADJUSTMENT.)



2.06 Selector Mechanism continued



NOTE:
THE APPROPRIATE PRELIMINARY SELECTOR ARMATURE SPRING TENSION ADJUSTMENT MUST BE MADE PRIOR TO THIS ADJUSTMENT.



SELECTOR MAGNET BRACKET

(1) REQUIREMENT

SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SHOULDER ON SPACING LOCK LEVER.

MIN. 0.020 INCH
MAX. 0.035 INCH

TO ADJUST

LOOSEN TWO MAGNET BRACKET MOUNTING SCREWS AND ADJUSTING LINK CLAMP SCREW. POSITION MAGNET BRACKET BY MEANS OF ADJUSTING LINK AND TIGHTEN LINK CLAMP SCREW ONLY.

(2) REQUIREMENT

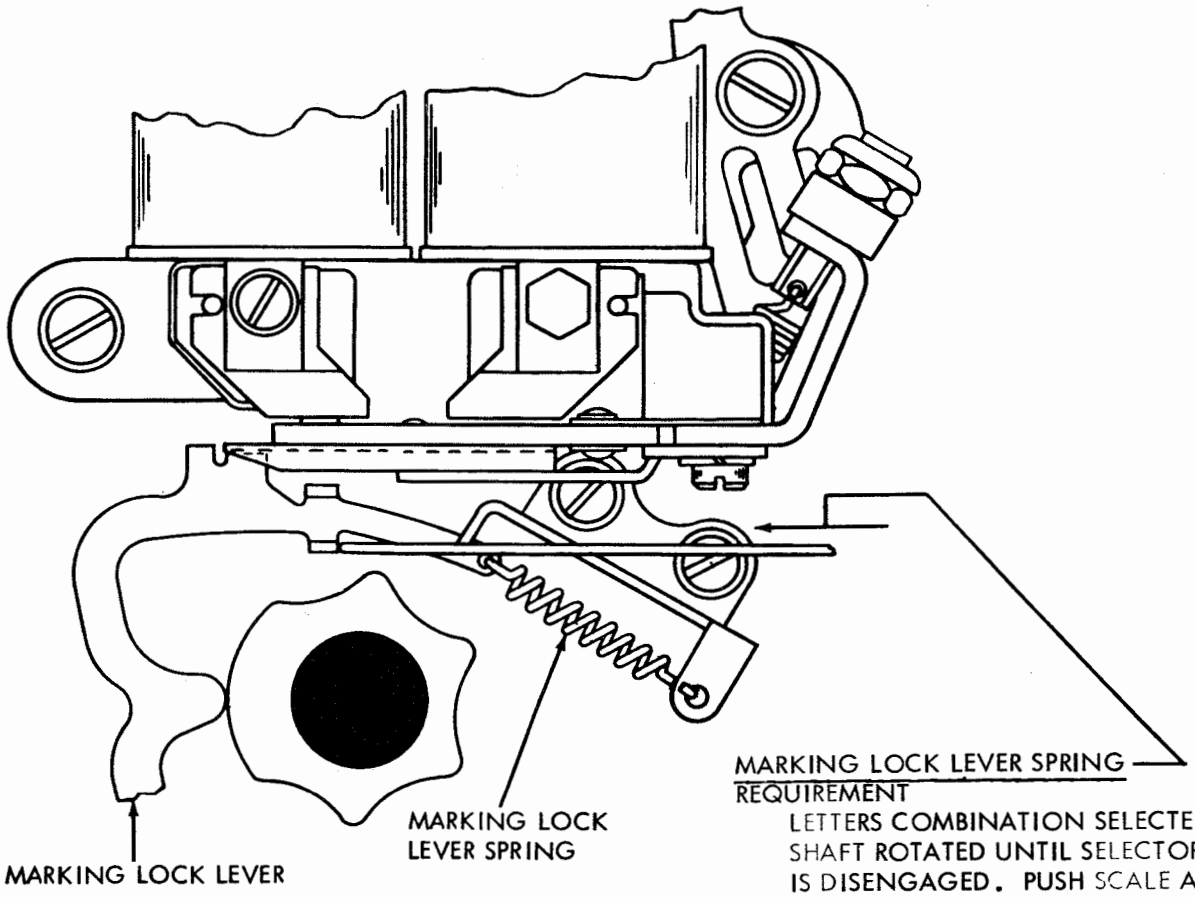
SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. SOME CLEARANCE BETWEEN UPPER SURFACE OF ARMATURE EXTENSION AND LOWER SURFACE OF SPACING LOCK LEVER WHEN LOCK LEVER IS HELD DOWNWARD.

MAX. 0.003 INCH

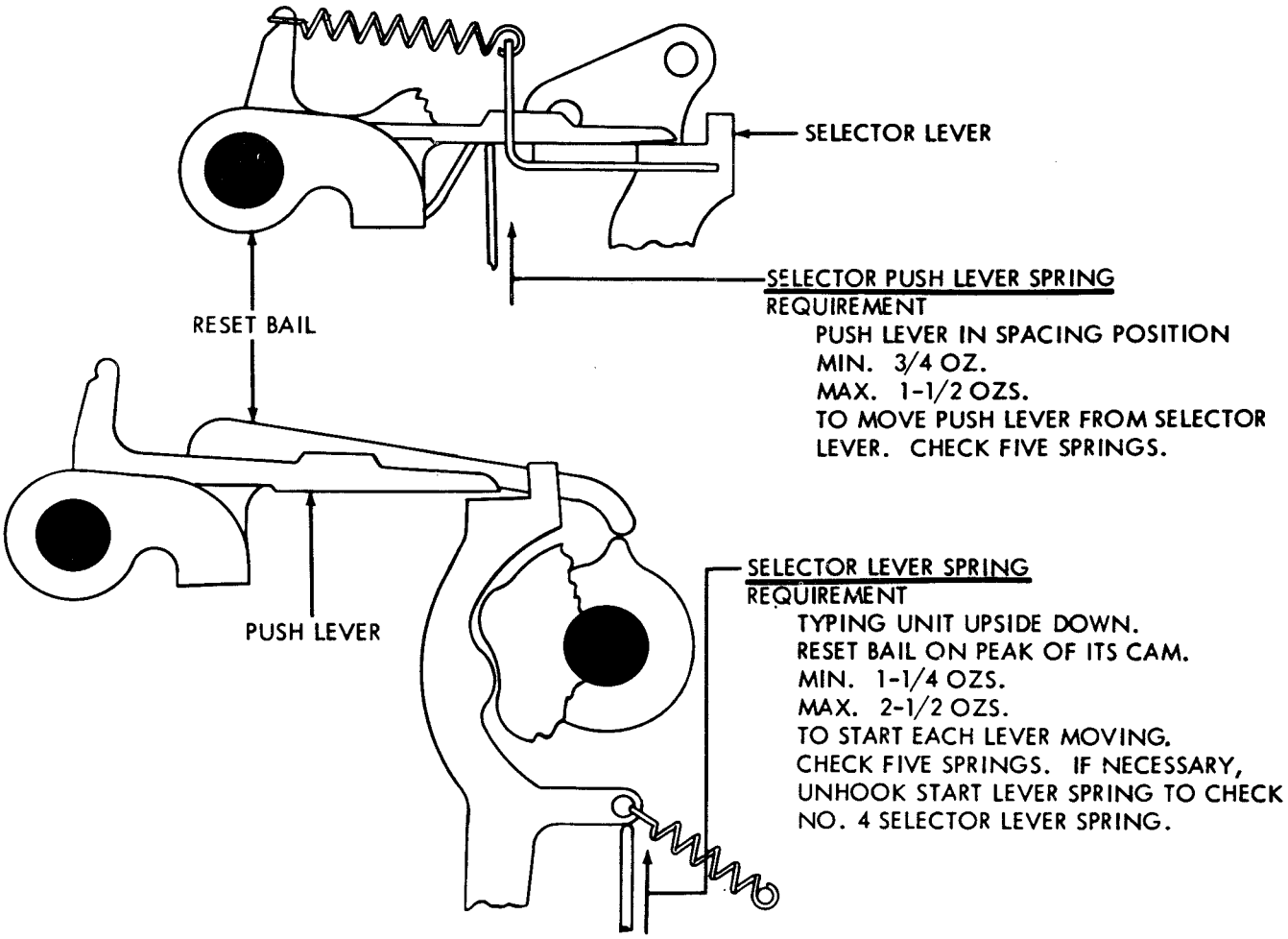
TO ADJUST

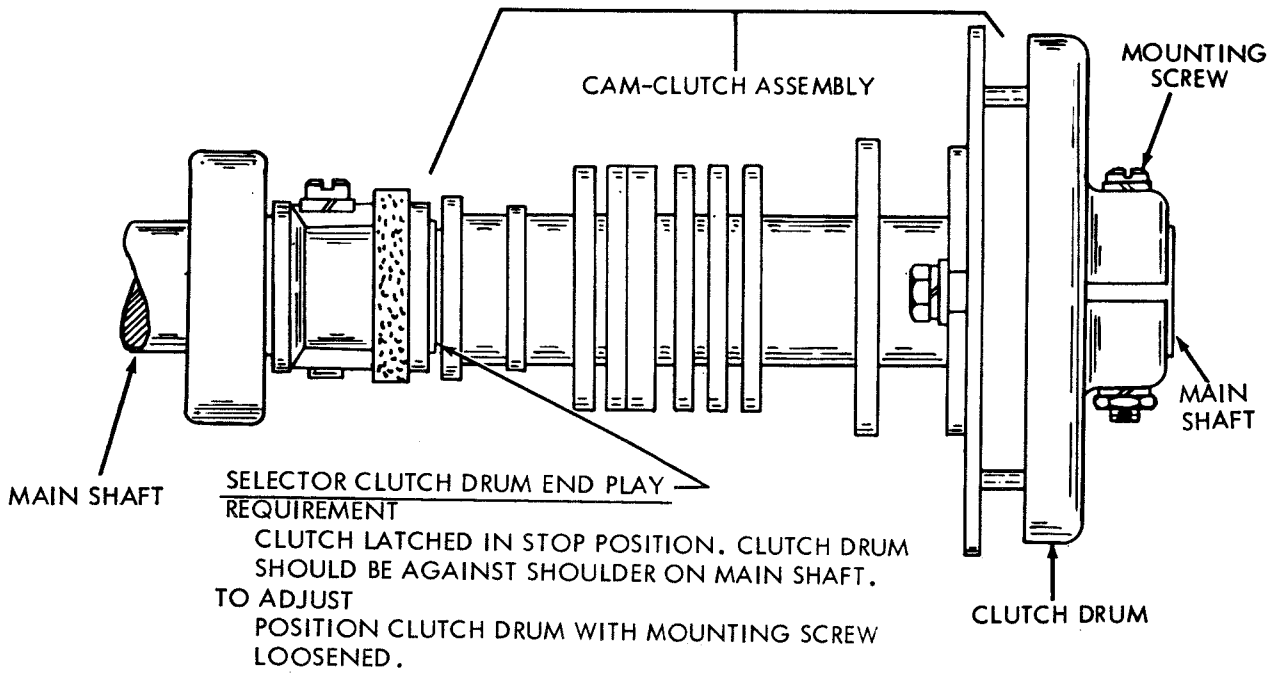
POSITION UPPER END OF MAGNET BRACKET. TIGHTEN TWO MAGNET BRACKET MOUNTING SCREWS. RECHECK REQUIREMENT (1).

2.07 Selector Mechanism continued

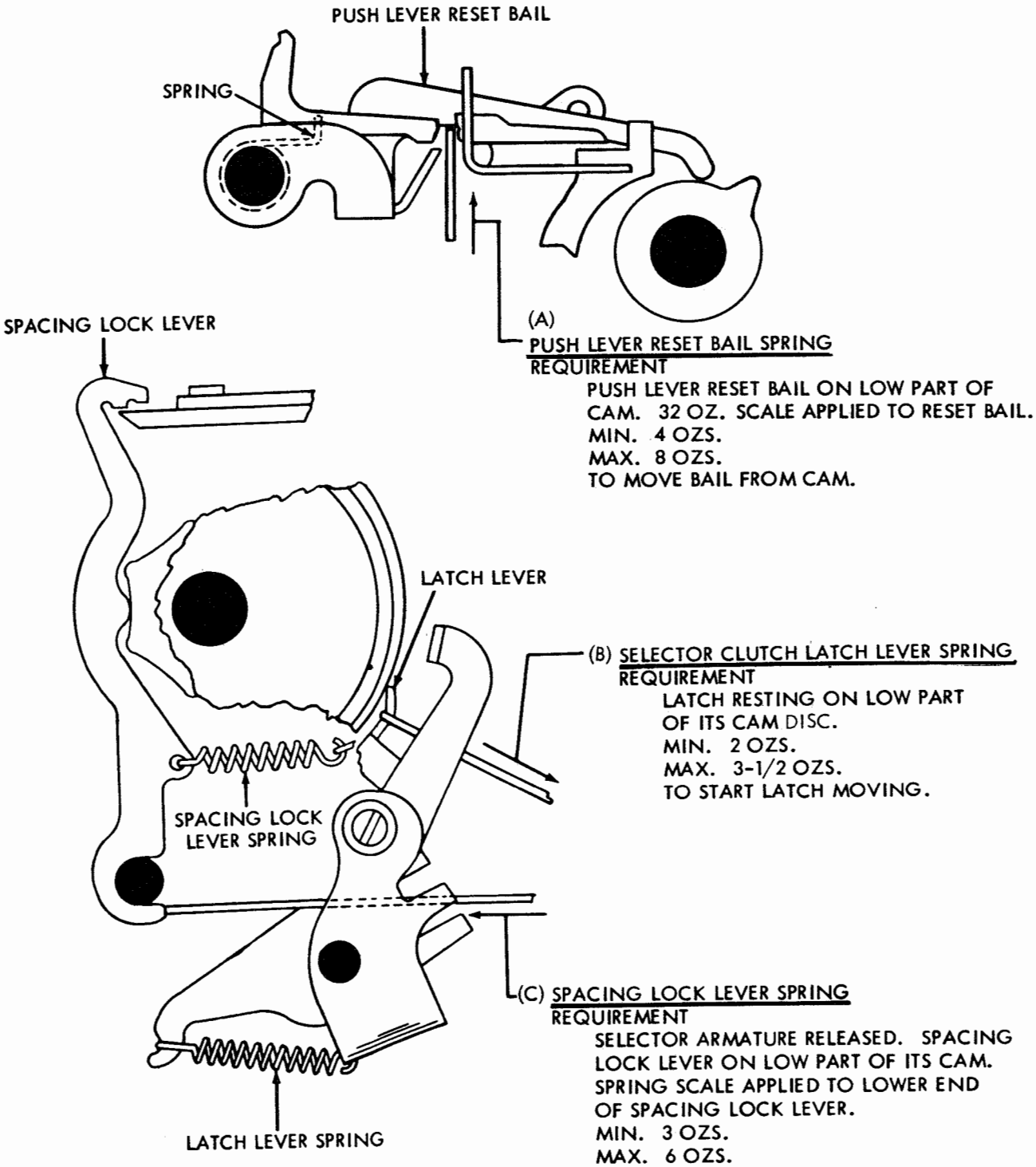


2.08 Selector Mechanism continued





2.09 Selector Mechanism continued



2.10 Selector Mechanism continued

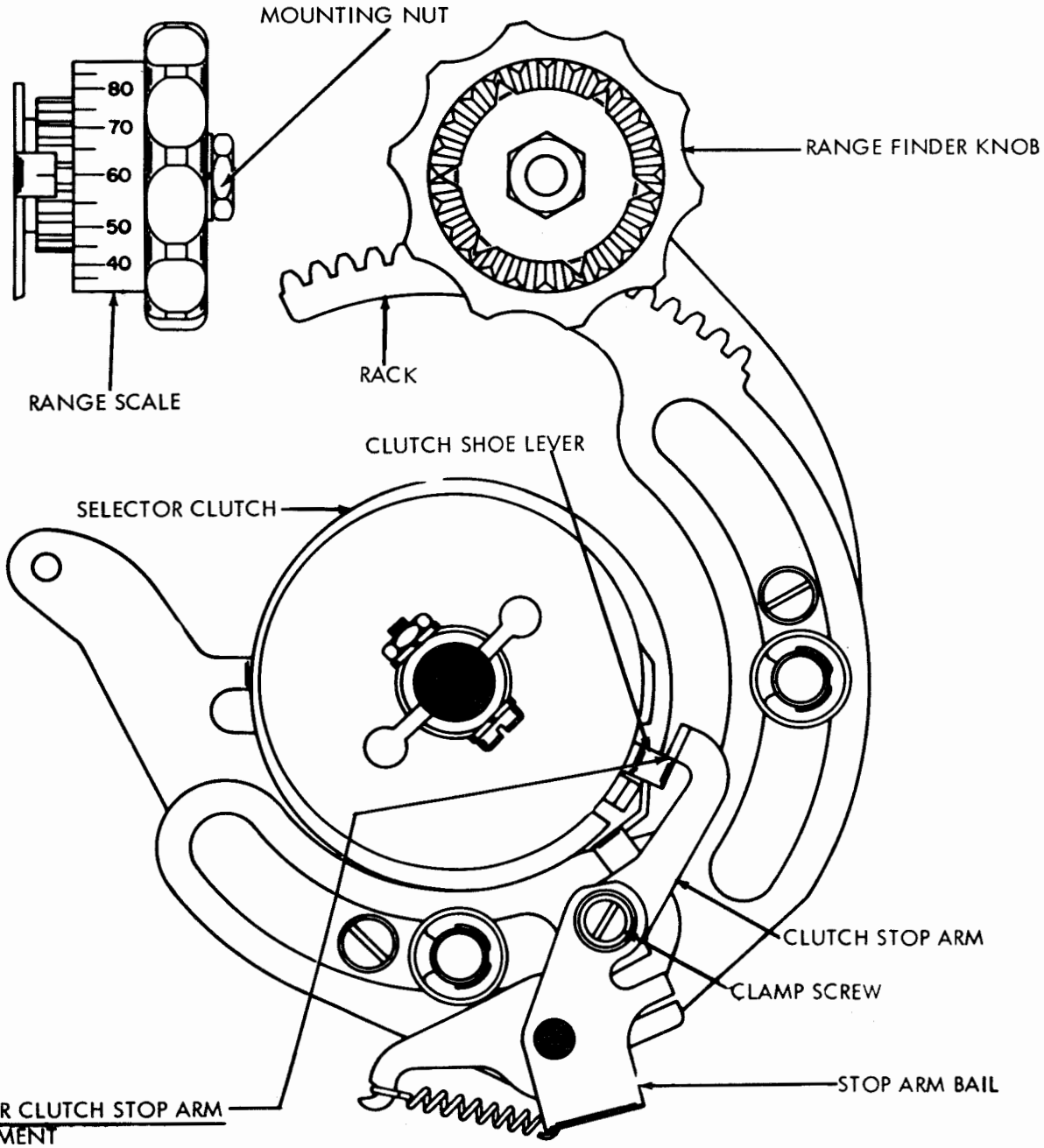
(A) RANGE SCALE KNOB

REQUIREMENT

WITH RANGE SCALE KNOB TURNED TO EITHER END OF RACK, ZERO MARK ON SCALE SHOULD BE WITHIN 3 POINTS OF SCRIBED LINE ON RANGE SCALE PLATE AND THE INNER TEETH OF THE KNOB AND SECTOR ASSEMBLY ARE ENGAGED.

TO ADJUST

LOOSEN RANGE SCALE MOUNTING NUT, DISENGAGE RANGE SCALE GEAR FROM RACK TEETH REPOSITION RANGE SCALE AND TIGHTEN MOUNTING NUT.



(B) SELECTOR CLUTCH STOP ARM

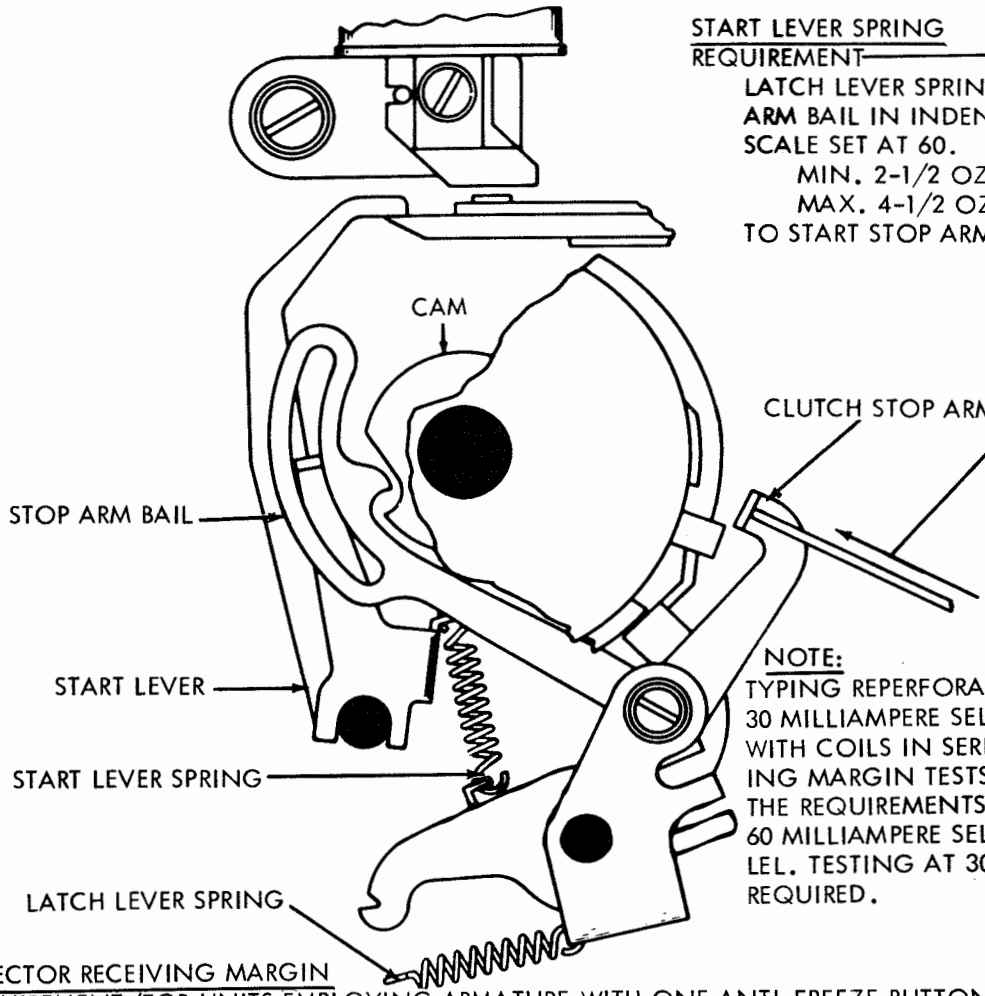
REQUIREMENT

RANGE SCALE SET AT 60. SELECTOR CLUTCH DISENGAGED. ARMATURE IN MARKING POSITION. CLUTCH STOP ARM SHALL ENGAGE CLUTCH SHOE LEVER BY APPROXIMATELY FULL THICKNESS OF SHOE LEVER.

TO ADJUST

POSITION STOP ARM ON STOP ARM BAIL WITH CLAMP SCREW LOOSENED.

2.11 Selector Mechanism continued



START LEVER SPRING REQUIREMENT

LATCH LEVER SPRING UNHOOKED. STOP ARM BAIL IN INDENT OF ITS CAM. RANGE SCALE SET AT 60.

MIN. 2-1/2 OZS.
MAX. 4-1/2 OZS.

TO START STOP ARM MOVING.

NOTE:
TYPING REPERFORATORS OPERATING WITH 30 MILLIAMPERE SELECTOR COIL CURRENT WITH COILS IN SERIES SHALL HAVE RECEIVING MARGIN TESTS RUN AT, AND MEET THE REQUIREMENTS FOR 100 WPM SPEED, 60 MILLIAMPERE SELECTOR COILS IN PARALLEL. TESTING AT 30 MILLIAMPERE IS NOT REQUIRED.

SELECTOR RECEIVING MARGIN REQUIREMENT (FOR UNITS EMPLOYING ARMATURE WITH ONE ANTI-FREEZE BUTTON)

WHEN A SIGNAL DISTORTION TEST SET IS USED FOR DETERMINING THE RECEIVING MARGINS OF THE SELECTOR, AND WHERE THE CONDITION OF THE COMPONENTS IS EQUIVALENT TO THAT OF NEW EQUIPMENT, THE RANGE AND DISTORTION TOLERANCES BELOW SHOULD BE MET.

REQUIREMENT (FOR UNITS EMPLOYING ARMATURE WITH TWO ANTI-FREEZE BUTTONS)

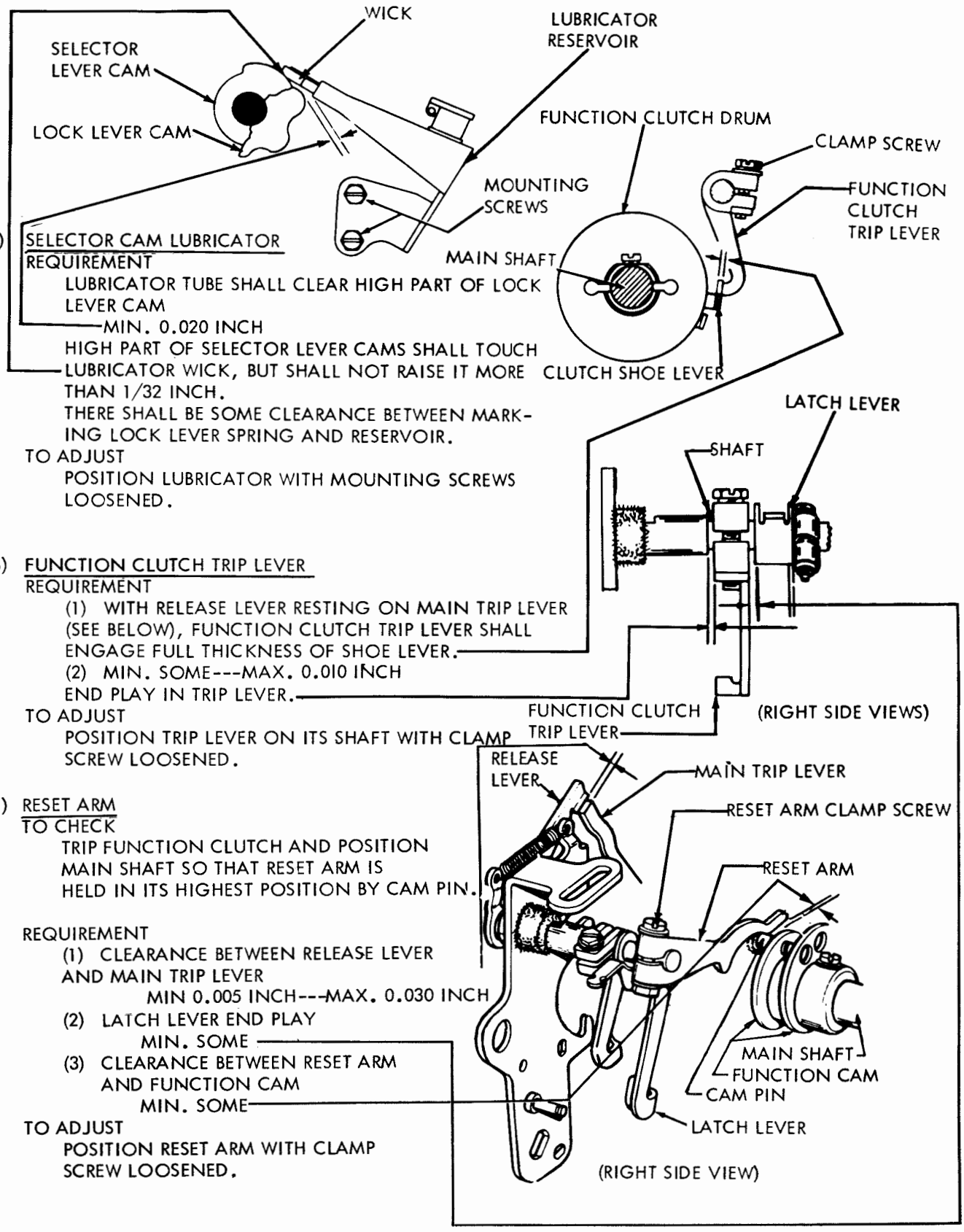
WHEN A DISTORTION TEST SET IS AVAILABLE, THE SELECTOR ARMATURE SPRING TENSION SHOULD BE REFINED, IF NECESSARY, TO OBTAIN SATISFACTORY RECEIVING MARGINS. THE FRONT ANTI-FREEZE BUTTON MUST CONTACT THE MAGNET CORE WHEN THE MAGNET COILS ARE ENERGIZED.

TO ADJUST: REFINE THE SELECTOR ARMATURE SPRING.

SELECTOR RECEIVING MARGIN MINIMUM REQUIREMENTS

CURRENT	SPEED IN W.P.M.	POINTS RANGE WITH ZERO DISTORTION	PERCENTAGE OF MARKING AND SPACING BIAS TOLERATED	END DISTORTION TOLERATED WITH SCALE AT BIAS OPTIMUM SETTING
0.060 AMP. (WINDINGS PARALLEL)	60 75 100	72	40	35
0.020 AMP. (WINDINGS SERIES)	60 75	72	40	35
0.035 AMP. (WINDINGS SERIES)	65 (45.5 BAUD) 106 (75.0 BAUD)	72	40	35

2.12 Selector and Function Mechanisms



(A) SELECTOR CAM LUBRICATOR

REQUIREMENT

LUBRICATOR TUBE SHALL CLEAR HIGH PART OF LOCK LEVER CAM

MIN. 0.020 INCH

HIGH PART OF SELECTOR LEVER CAMS SHALL TOUCH LUBRICATOR WICK, BUT SHALL NOT RAISE IT MORE THAN 1/32 INCH.

THERE SHALL BE SOME CLEARANCE BETWEEN MARKING LOCK LEVER SPRING AND RESERVOIR.

TO ADJUST

POSITION LUBRICATOR WITH MOUNTING SCREWS LOOSENED.

(B) FUNCTION CLUTCH TRIP LEVER

REQUIREMENT

(1) WITH RELEASE LEVER RESTING ON MAIN TRIP LEVER (SEE BELOW), FUNCTION CLUTCH TRIP LEVER SHALL ENGAGE FULL THICKNESS OF SHOE LEVER.

(2) MIN. SOME---MAX. 0.010 INCH END PLAY IN TRIP LEVER.

TO ADJUST

POSITION TRIP LEVER ON ITS SHAFT WITH CLAMP SCREW LOOSENED.

(C) RESET ARM

TO CHECK

TRIP FUNCTION CLUTCH AND POSITION MAIN SHAFT SO THAT RESET ARM IS HELD IN ITS HIGHEST POSITION BY CAM PIN.

REQUIREMENT

(1) CLEARANCE BETWEEN RELEASE LEVER AND MAIN TRIP LEVER

MIN 0.005 INCH---MAX. 0.030 INCH

(2) LATCH LEVER END PLAY

MIN. SOME

(3) CLEARANCE BETWEEN RESET ARM AND FUNCTION CAM

MIN. SOME

TO ADJUST

POSITION RESET ARM WITH CLAMP SCREW LOOSENED.

2.13 Function Mechanisms

(A) FOLLOWER LEVER

REQUIREMENT

WITH FOLLOWER LEVER ON HIGH PART OF CAM

(1) CLEARANCE BETWEEN RELEASE LEVER AND MAIN TRIP LEVER
MIN. 0.010 INCH---MAX. 0.030 INCH

(2) SOME CLEARANCE BETWEEN MAIN TRIP LEVER AND DOWNSTOP BRACKET.

TO ADJUST

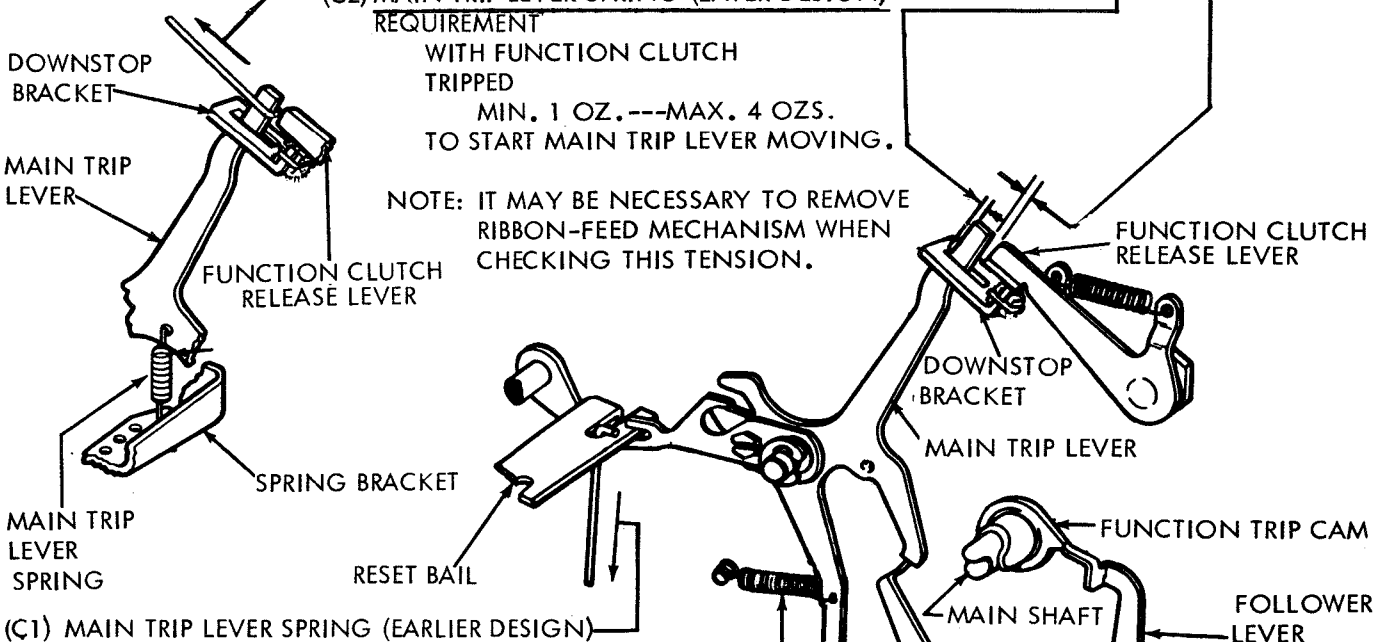
BY MEANS OF PRY POINT, POSITION ADJUSTING ARM OF FOLLOWER LEVER WITH LOCK NUT LOOSENED.

(C2) MAIN TRIP LEVER SPRING (LATER DESIGN)

REQUIREMENT

WITH FUNCTION CLUTCH TRIPPED
MIN. 1 OZ.---MAX. 4 OZS.
TO START MAIN TRIP LEVER MOVING.

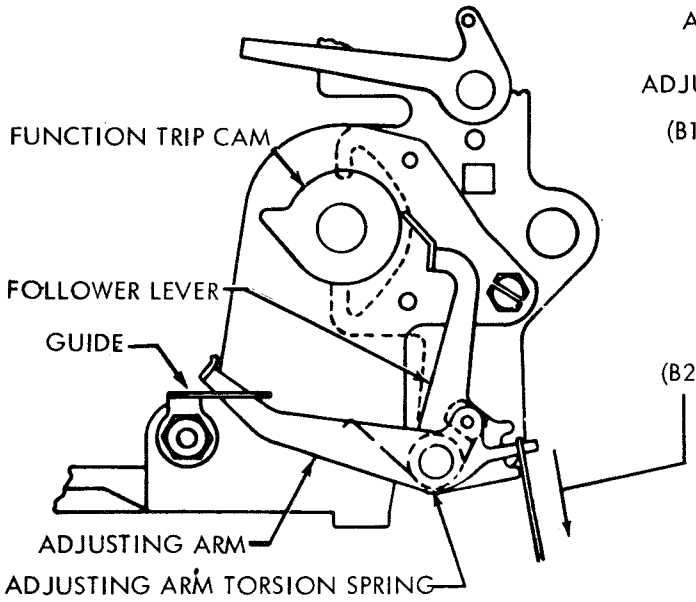
NOTE: IT MAY BE NECESSARY TO REMOVE RIBBON-FEED MECHANISM WHEN CHECKING THIS TENSION.



(C1) MAIN TRIP LEVER SPRING (EARLIER DESIGN)

REQUIREMENT

WITH FOLLOWER LEVER ON HIGH PART OF TRIP CAM
MIN. 2-1/2 OZS.---MAX. 4-1/2 OZS.
TO START TRIP LEVER MOVING.



(B1) ADJUSTING ARM SPRING (EARLIER DESIGN)

REQUIREMENT

WITH FOLLOWER LEVER ON HIGH PART OF TRIP CAM AND MAIN TRIP LEVER HELD AWAY FROM ADJUSTING ARM
MIN. 2-1/2 OZS.---MAX. 4 OZS.
TO START ADJUSTING ARM MOVING.

(B2) ADJUSTING ARM TORSION SPRING (LATER DESIGN)

REQUIREMENT

WITH FOLLOWER LEVER ON LOW PART OF TRIP CAM AND MAIN TRIP LEVER HELD AWAY FROM ADJUSTING ARM
MIN. 1 OZ.---MAX. 4 OZS.
TO START ADJUSTING ARM MOVING.

2.14 Function Mechanisms continued

(A) ROCKER BAIL

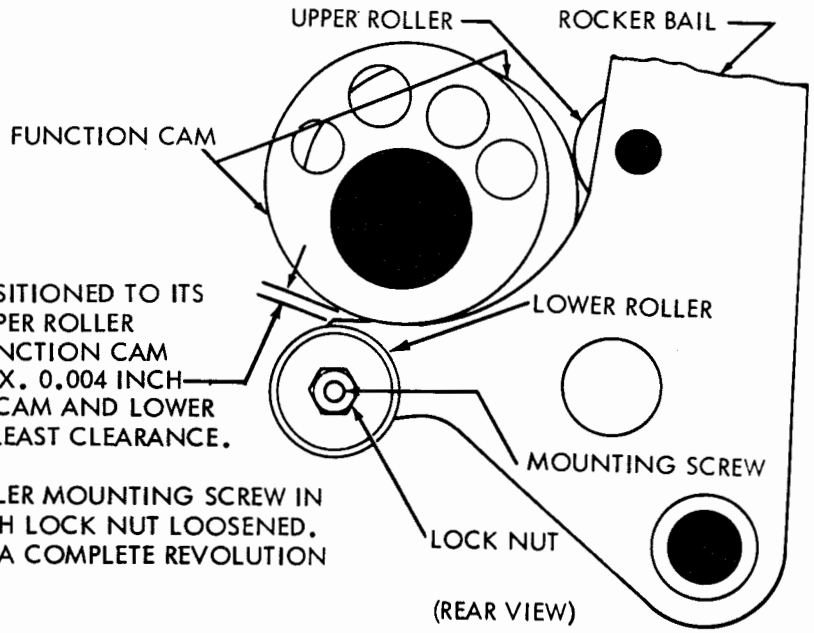
REQUIREMENT

WITH ROCKER BAIL POSITIONED TO ITS EXTREME LEFT AND UPPER ROLLER IN CONTACT WITH FUNCTION CAM

MIN. SOME---MAX. 0.004 INCH CLEARANCE BETWEEN CAM AND LOWER ROLLER AT POINT OF LEAST CLEARANCE.

TO ADJUST

POSITION LOWER ROLLER MOUNTING SCREW IN ELONGATED SLOT WITH LOCK NUT LOOSENED. CHECK THROUGHOUT A COMPLETE REVOLUTION FOR BINDS.



(REAR VIEW)

(B) ROCKER BAIL GUIDE BRACKET

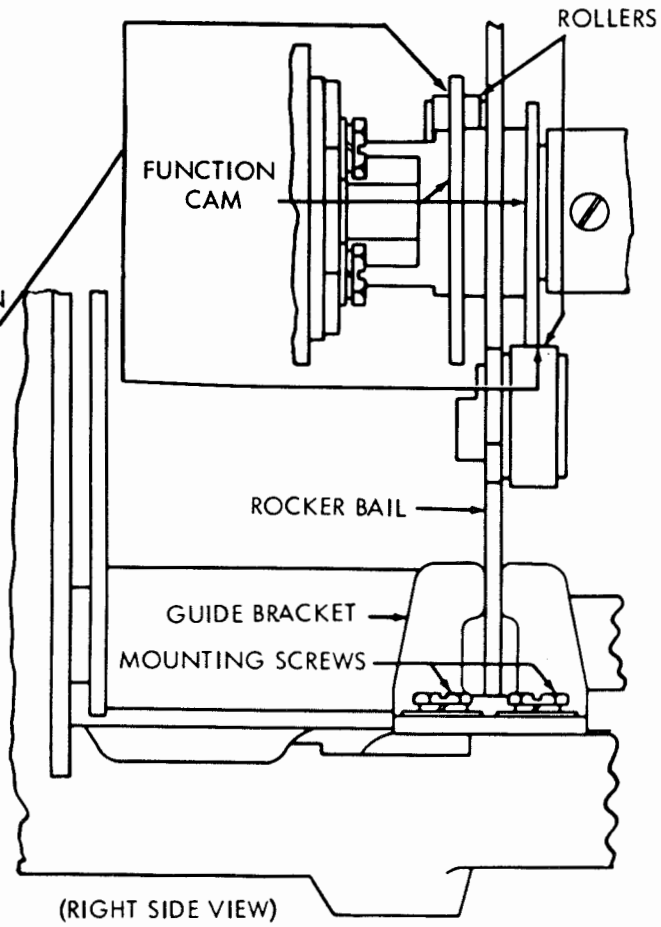
REQUIREMENT

(1) ROCKER BAIL ROLLERS SHOULD ENGAGE FULL THICKNESS OF FUNCTION CAM.

(2) LIFTER ROLLER IN FULL ENGAGEMENT WITH ROCKER BAIL CAMMING SURFACE.

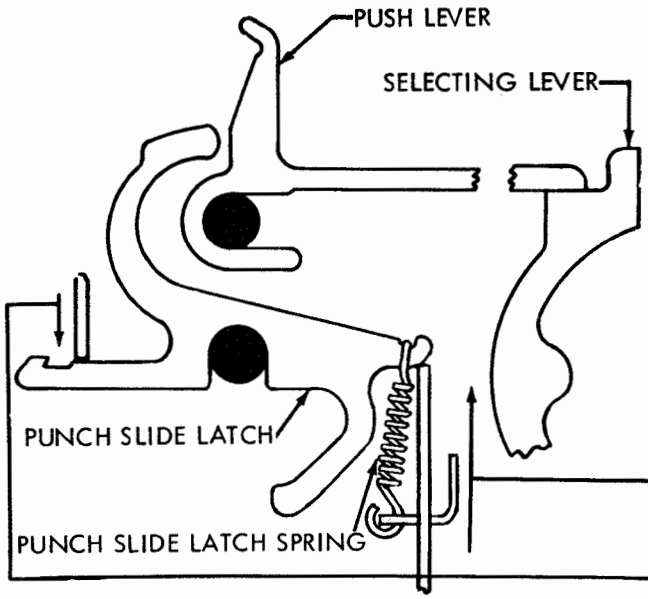
TO ADJUST

POSITION ROCKER BAIL AND GUIDE BRACKET WITH GUIDE BRACKET MOUNTING SCREWS LOOSENED.



(RIGHT SIDE VIEW)

2.15 Selector Mechanisms



PUNCH SLIDE LATCH SPRINGS

TO CHECK

SELECT LETTERS CODE COMBINATION (12345). POSITION ROCKER BAIL TO EXTREME LEFT. STRIP PUSH LEVERS FROM SELECTING LEVERS.

REQUIREMENT

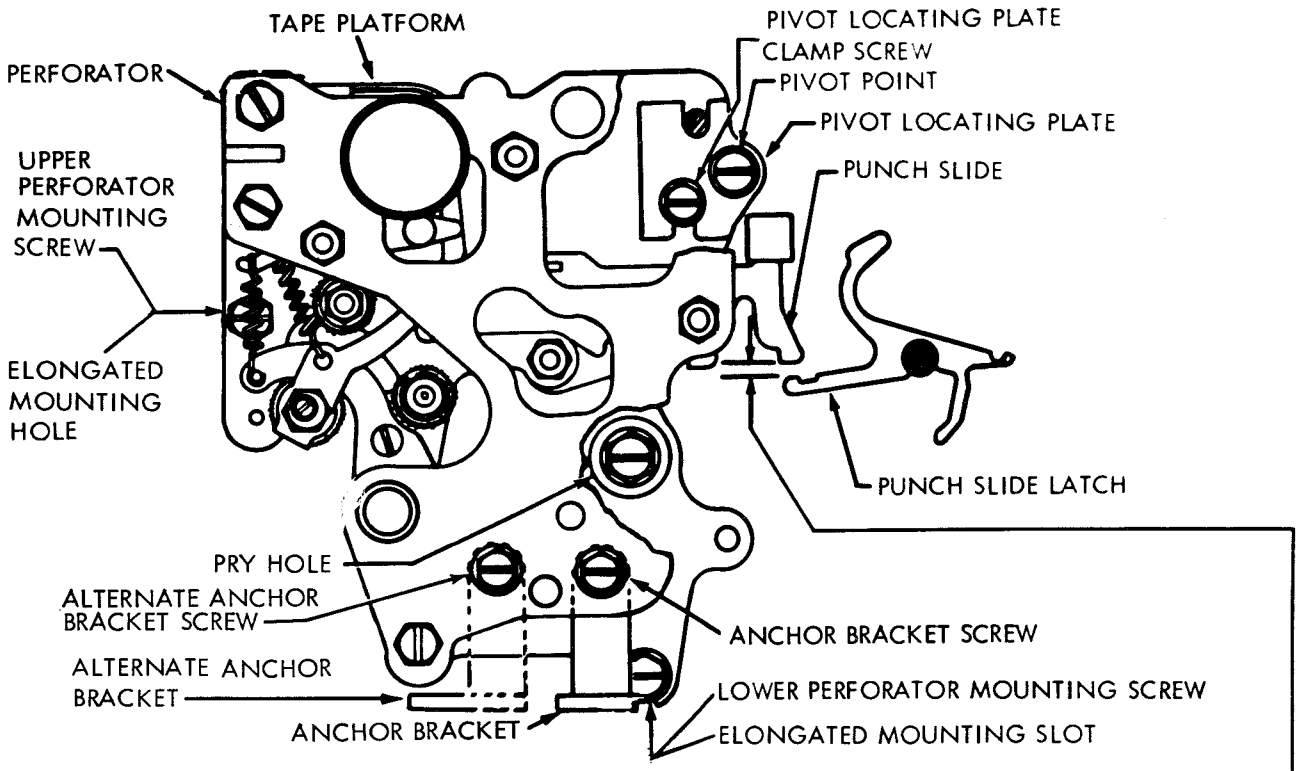
FOR ONE-SHAFT UNIT

MIN. 1 OZS. --- MAX. 3 OZS. TO START LATCH MOVING.

FOR TWO-SHAFT UNIT

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

2.16 Punch Mechanisms



PERFORATOR POSITION

REQUIREMENT

WITH LETTERS COMBINATION SELECTED AND FUNCTION CLUTCH JUST TRIPPED.
MIN. 0.015 INCH --- MAX. 0.045 INCH
CLEARANCE BETWEEN THE CLOSEST LATCH LEVER AND ASSOCIATED PUNCH SLIDE.

TO ADJUST

LOOSEN (FRICTION TIGHT) REAR FRAME MOUNTING SCREWS (AND PIVOT LOCATING PLATE CLAMP SCREW IF THE TYPING UNIT IS USED ON THE PUNCH), THE ANCHOR BRACKET MOUNTING SCREWS, PLACE TIP OF SCREWDRIVER BETWEEN HEX HEAD SCREW AND ITS CLEARANCE HOLE RIM AND PRY UP OR DOWN. TIGHTEN SCREWS. TIGHTEN PIVOT LOCATING PLATE CLAMP SCREW ONLY, AS THE NEXT ADJUSTMENT WILL BE TO OBTAIN CLEARANCE BETWEEN TYPEWHEEL AND PUNCH.

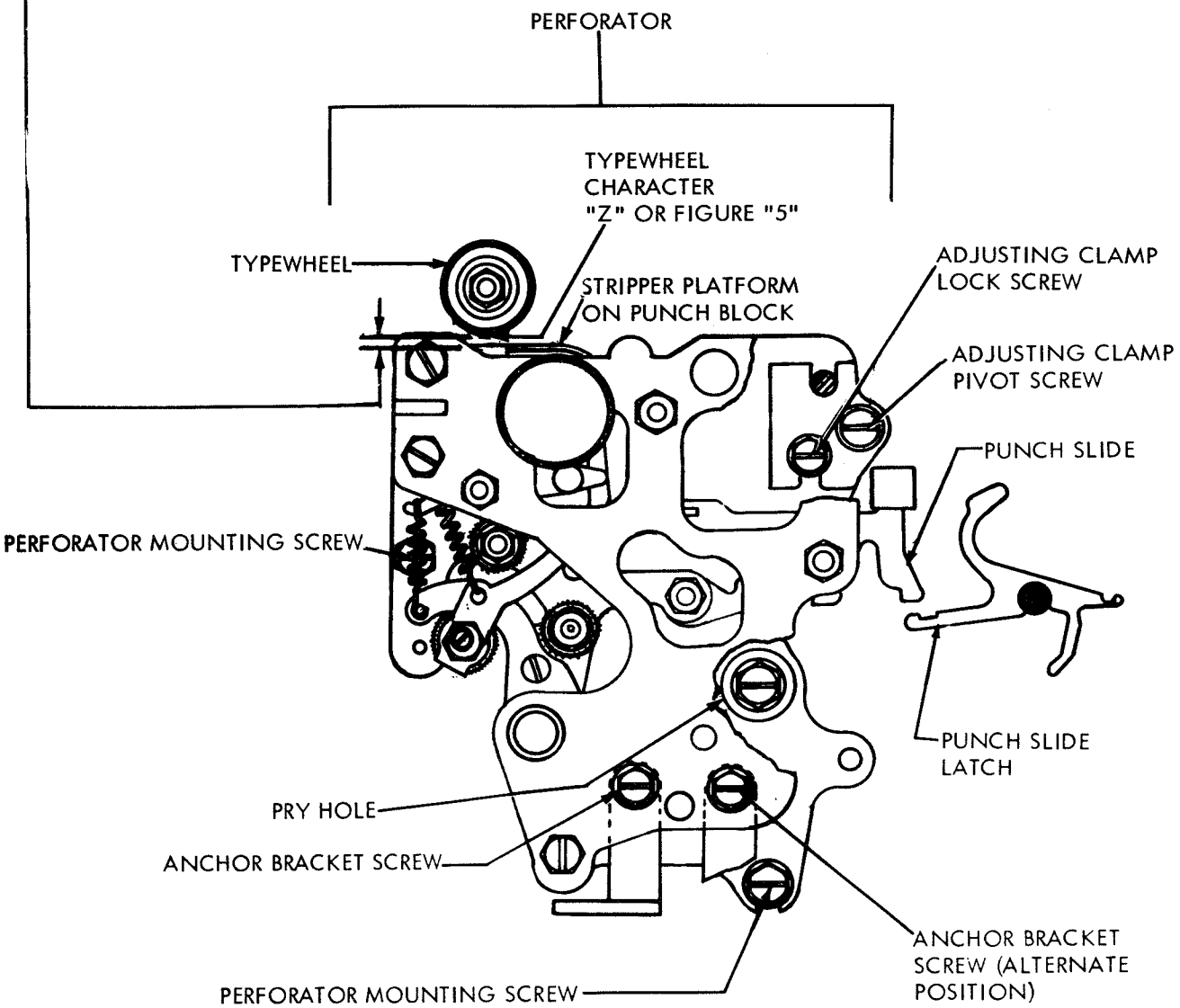
2.17 Punch Mechanisms continued

PERFORATOR POSITION

(1) REQUIREMENT-(FOR TYPING REPERFORATOR WITH SPRING RETRACTED PUNCH UNIT) WITH UNIT IN STOP POSITION AND TYPEWHEEL IN THE LETTERS FIELD. CLEARANCE BETWEEN THE LETTER "Z" ON THE TYPEWHEEL AND THE TOP OF THE STRIPPER PLATFORM.
MIN. 0.090 INCH --- MAX. 0.110 INCH

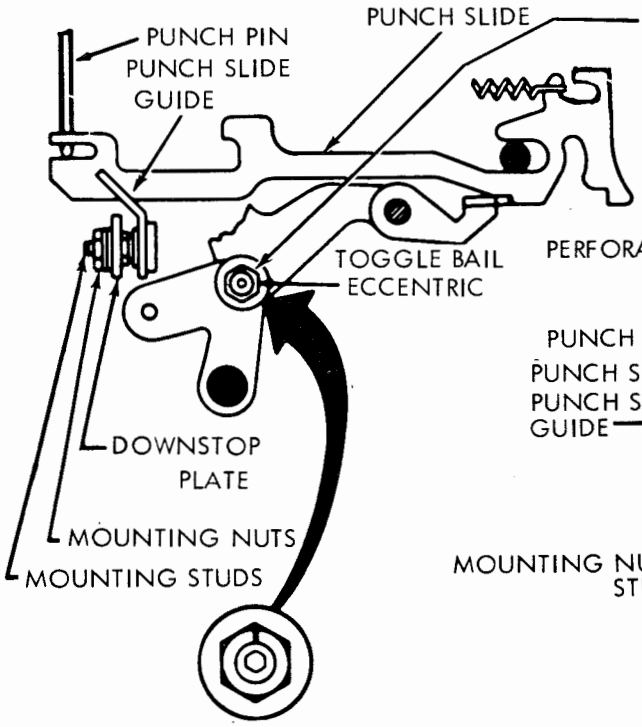
(2) REQUIREMENT - (FOR TYPING REPERFORATOR WITH POWER RETRACTED PUNCH UNIT) WITH UNIT IN STOP POSITION AND TYPEWHEEL IN THE FIGURES FIELD. CLEARANCE BETWEEN THE FIGURE "5" ON THE TYPEWHEEL AND THE TOP OF THE STRIPPER PLATFORM.
MIN. 0.075 INCH---MAX. 0.095 INCH

TO ADJUST
REMOVE RIBBON FROM CARRIER. POSITION PERFORATOR WITH TWO MOUNTING SCREWS, ADJUSTING CLAMP PIVOT SCREW AND ANCHOR BRACKET SCREW LOOSENED. CHECK RESET BAIL TRIP LEVER REQUIREMENT FOR SOME CLEARANCE AND ADJUST IF NECESSARY.

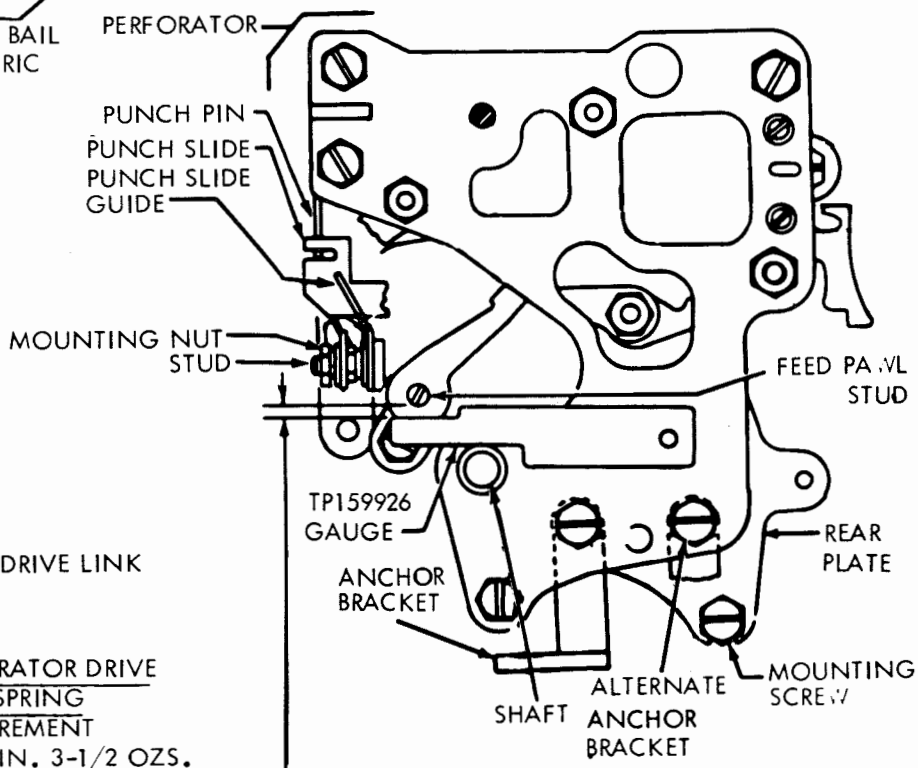


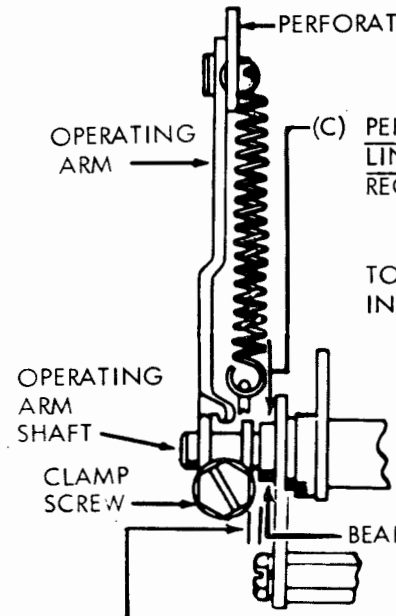
2. 18 Punch Mechanisms continued

NOTE: BEFORE PROCEEDING WITH THE PUNCH MECHANSIM ADJUSTMENTS, CHECK THE ROCKER BAIL CAM FOLLOWER ROLLER ADJUSTMENT AND LOOSEN THE PUNCH SLIDE DOWNSTOP MOUNTING NUT AND GUIDE MOUNTING STUD.



(A) TOGGLE BAIL ECCENTRIC (PRELIMINARY)
REQUIREMENT
THE INDENT (HIGH SIDE OF ECCENTRIC) SHALL BE IN ITS UPPERMOST POSITION.
TO ADJUST
WITH THE TOGGLE ECCENTRIC SHAFT LOCK NUT FRICTION TIGHT POSITION ECCENTRIC.



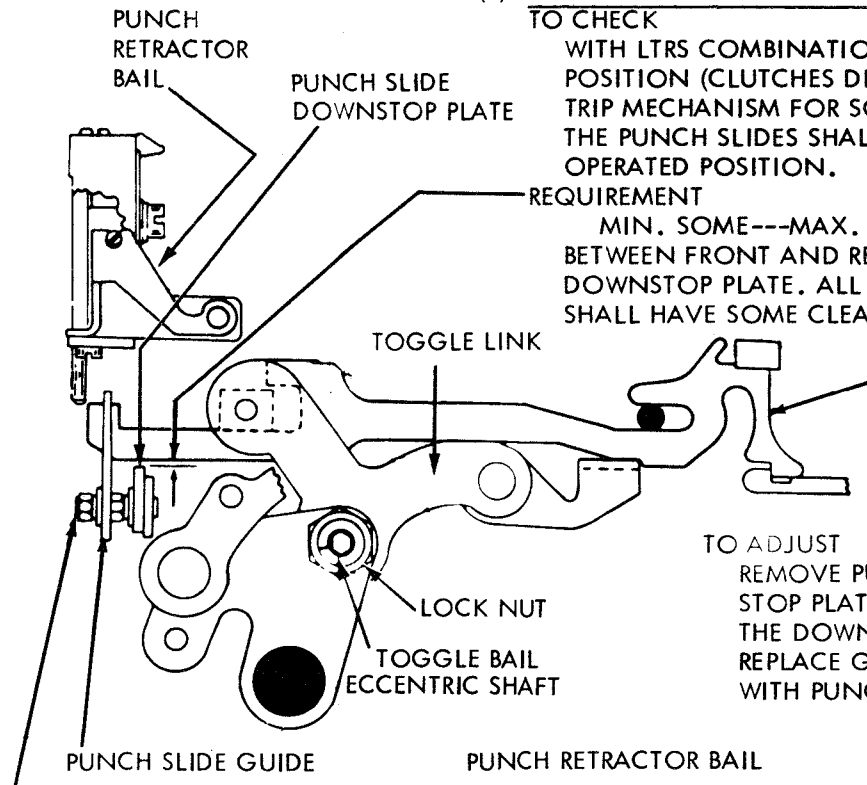


(C) PERFORATOR DRIVE LINK SPRING REQUIREMENT
MIN. 3-1/2 OZS.
MAX. 8 OZS.
TO PULL SPRINGS TO INSTALLED LENGTH.

(B) TOGGLE OPERATING ARM
*(1) REQUIREMENT
TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL THE UPPER ROCKER BAIL ROLLER IS ON HIGH PART OF ITS CAM.
MIN. SOME---MAX. 0.009 INCH CLEARANCE BETWEEN FEED PAWL STUD AND THE TP159926 GAUGE.
(2) CLEARANCE BETWEEN ARM AND OSCILLATING SHAFT BEARING HUB.
MIN. 0.002 INCH---MAX. 0.015 INCH WITH PLAY TAKEN UP IN DIRECTION TO MAKE CLEARANCE MAXIMUM.
TO ADJUST
WITH LOCKSCREW FRICTION TIGHT, POSITION TOGGLE BAIL AND OPERATING ARM.

*AFTER FEED PAWL ADJUSTMENT HAS BEEN MADE, IF PUNCH PIN PENETRATION AND FEED PAWL REQUIREMENTS ARE MET, THIS REQUIREMENT SHOULD BE CONSIDERED FULFILLED.

2.19 Punch Mechanisms for Chadless Tape



(B) PUNCH SLIDE DOWNSTOP PLATE POSITION

TO CHECK

WITH LTRS COMBINATION SELECTED AND UNIT IN STOP POSITION (CLUTCHES DISENGAGED), TRIP FUNCTION RESET TRIP MECHANISM FOR SOME CLEARANCE. THE PUNCH SLIDES SHALL MOVE FREELY TO THEIR OPERATED POSITION.

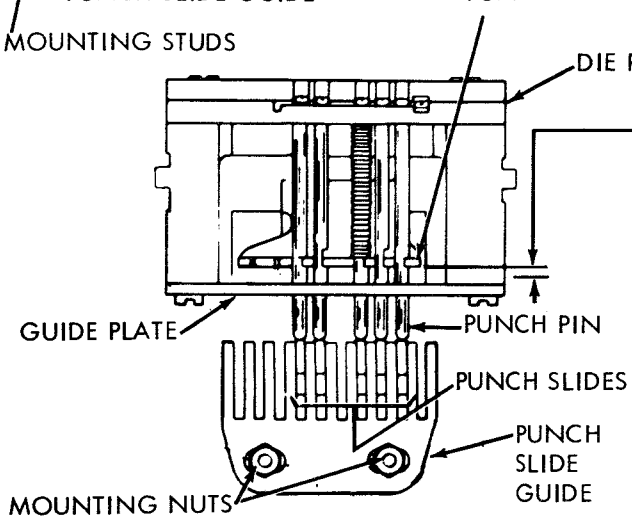
REQUIREMENT

MIN. SOME---MAX. 0.008 INCH BETWEEN FRONT AND REAR PUNCH SLIDES AND DOWNSTOP PLATE. ALL OTHER PUNCH SLIDES SHALL HAVE SOME CLEARANCE.

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

TO ADJUST

REMOVE PUNCH SLIDE GUIDE, LOOSEN DOWNSTOP PLATE MOUNTING STUDS, AND POSITION THE DOWNSTOP PLATE. TIGHTEN STUDS AND REPLACE GUIDE SO THAT PUNCH SLIDES ALIGN WITH PUNCH PINS (AS GAUGED BY EYE).



(A) PUNCH PIN PENETRATION

REQUIREMENT

LTRS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE, CLEARANCE BETWEEN LOWER EDGE OF PUNCH RETRACTOR BAIL AND UPPER SIDE OF GUIDE PLATE (MEASURED ADJACENT TO NO. 1 AND NO. 5 PUNCH PINS WHERE CLEARANCE IS LEAST).

MIN. 0.060 INCH
MAX. 0.075 INCH

TO ADJUST

ROTATE THE TOGGLE BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT LOOSENED. KEEP THE INDENTATION IN THE ECCENTRIC SHAFT TO THE LEFT OF A VERTICAL CENTERLINE THROUGH THE SHAFT.

(C) PUNCH SLIDE GUIDE (LEFT SIDE VIEW)

REQUIREMENT

LTRS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL THE PUNCH SLIDES JUST TOUCH THE PUNCH PINS. THE PUNCH SLIDES SHALL ALIGN CENTRALLY WITH THEIR RESPECTIVE PUNCH PINS (GAUGED BY EYE).

TO ADJUST

POSITION THE PUNCH SLIDE GUIDE WITH ITS MOUNTING NUTS LOOSENED.

NOTE:

THE CODE PUNCHES SHALL PUNCH A FULL TAPE LID WITH SLIGHT AMOUNT OF TEAR. THE TEAR SHALL BE RESTRICTED TO A MINIMUM. REFINE PUNCH PIN PENETRATION ADJUSTMENT, IF NECESSARY.

2.20 Punch Mechanisms for Fully Perforated Tape

(A) PUNCH PIN PENETRATION

REQUIREMENT

(1) WITH THE LETTERS COMBINATION SELECTED, FUNCTION CLUTCH ENGAGED. ROTATE MAIN SHAFT UNTIL ALL PUNCH PINS ARE INTO OR ABOVE THE TAPE APERTURE IN PUNCH BLOCK. WITH THE TP159926 GAUGE IN POSITION

MIN. 0.050 INCH

CLEARANCE BETWEEN FEED PAWL STUD AND THE GAUGE.

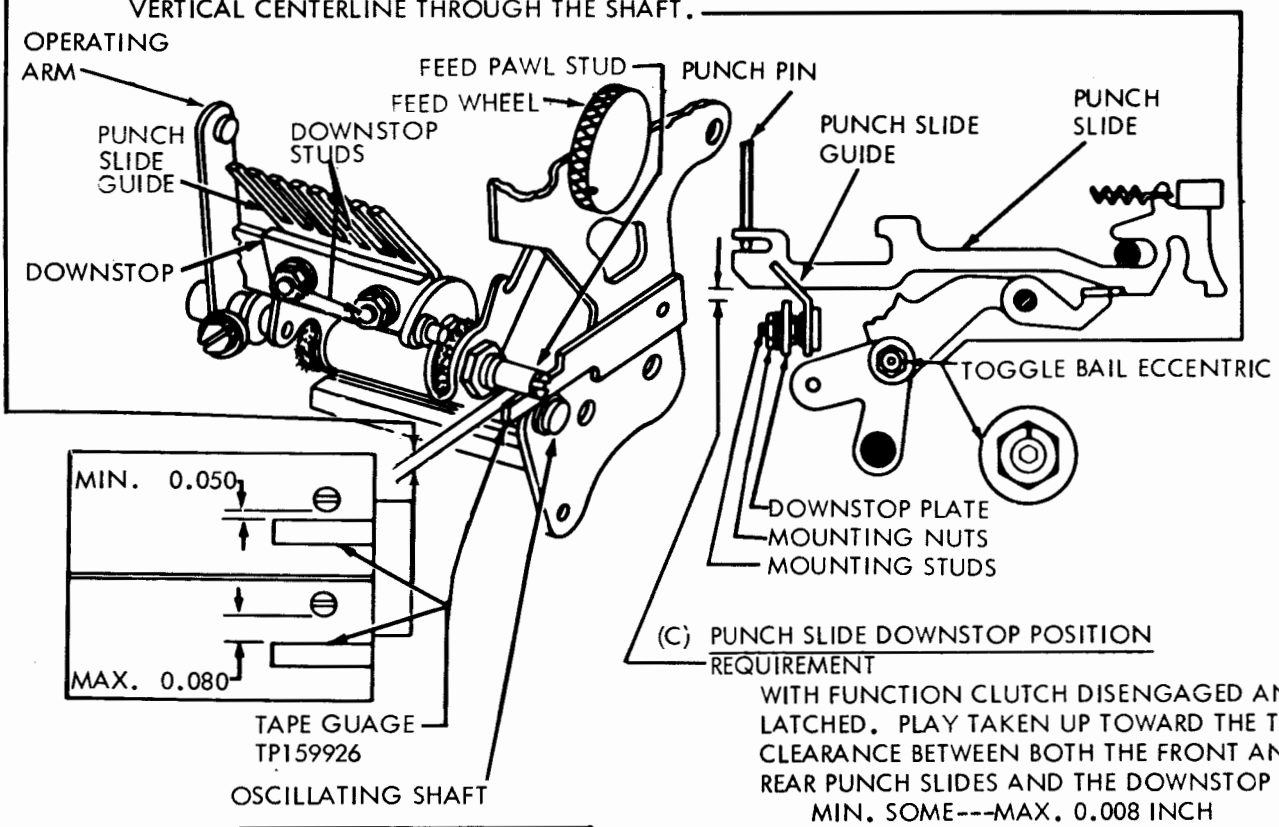
(2) WITH LETTERS COMBINATION SELECTED, FUNCTION CLUTCH ENGAGED. ROTATE MAIN SHAFT UNTIL ALL PUNCH PINS HAVE CLEARED THE PUNCH BLOCK. WITH THE TP159926 GAUGE IN POSITION

MAX. 0.080 INCH

CLEARANCE BETWEEN FEED PAWL STUD AND GAUGE.

TO ADJUST

REFINE THE TOGGLE BAIL ECCENTRIC ADJUSTMENT KEEPING THE INDENT TO THE RIGHT OF A VERTICAL CENTERLINE THROUGH THE SHAFT.



NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

(B) PUNCH SLIDE GUIDE

REQUIREMENT

THE PUNCH SLIDES SHOULD ALIGN WITH THEIR CORRESPONDING PUNCH PINS AND BE FREE OF BINDS AFTER TIGHTENING THE GUIDE MOUNTING STUDS. EACH PUNCH SLIDE SHOULD RETURN FREELY AFTER BEING PUSHED IN NOT MORE THAN 1/16 INCH.

TO ADJUST

POSITION THE GUIDE WITH ITS MOUNTING STUDS FRICTION TIGHT.

(C) PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED AND LATCHED. PLAY TAKEN UP TOWARD THE TOP CLEARANCE BETWEEN BOTH THE FRONT AND REAR PUNCH SLIDES AND THE DOWNSTOP PLATE

MIN. SOME---MAX. 0.008 INCH

ALL OTHER PUNCH SLIDES SHALL HAVE SOME CLEARANCE.

NOTE: TO CHECK FOR SOME CLEARANCE, PLACE UNIT IN STOP POSITION, TRIP FUNCTION TRIP MECHANISM AND LATCHES, THE PUNCH SLIDES SHALL MOVE FULLY TO THEIR OPERATED POSITION.

TO ADJUST

WITH UNIT IN STOP POSITION, LOOSEN THE TWO DOWNSTOP PLATE MOUNTING LOCK NUTS AND LOCATE THE DOWNSTOP PLATE TO MEET THE REQUIREMENT.

2. 21 Function Mechanism continued

RESET BAIL TRIP LEVER

REQUIREMENT

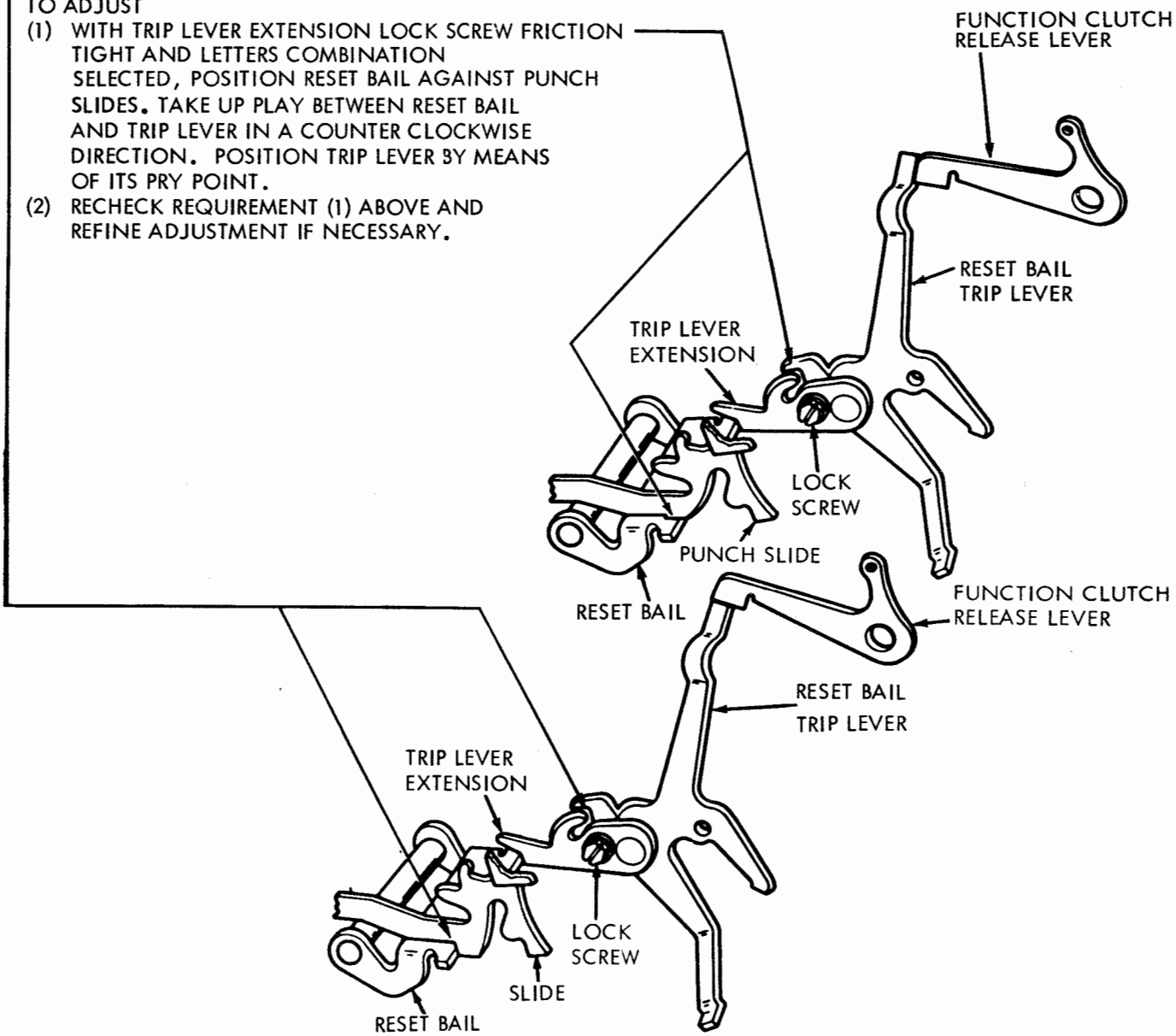
(1) MANUALLY SELECT BLANK COMBINATION. MANUALLY ROTATE RESET BAIL TRIP LEVER. THE PUNCH SLIDE RESET BAIL SHALL TRIP BEFORE THE FUNCTION CLUTCH IS TRIPPED.

(2) WITH FUNCTION AND SELECTOR CLUTCHES DISENGAGED AND LATCHED, THE PUNCH SLIDE RESET BAIL SHALL FULLY ENGAGE THE PUNCH SLIDE LATCHING SURFACE WHEN PLAY IN PARTS IS TAKEN UP IN DIRECTION TO MAKE THE ENGAGEMENT THE LEAST.

TO ADJUST

(1) WITH TRIP LEVER EXTENSION LOCK SCREW FRICTION TIGHT AND LETTERS COMBINATION SELECTED, POSITION RESET BAIL AGAINST PUNCH SLIDES. TAKE UP PLAY BETWEEN RESET BAIL AND TRIP LEVER IN A COUNTER CLOCKWISE DIRECTION. POSITION TRIP LEVER BY MEANS OF ITS PRY POINT.

(2) RECHECK REQUIREMENT (1) ABOVE AND REFINE ADJUSTMENT IF NECESSARY.



2.22 Punch Mechanism continued

(A) LATCH LEVER CLEARANCE

TO CHECK

PUNCH SLIDES SHALL BE IN SPACING POSITION.

REQUIREMENT

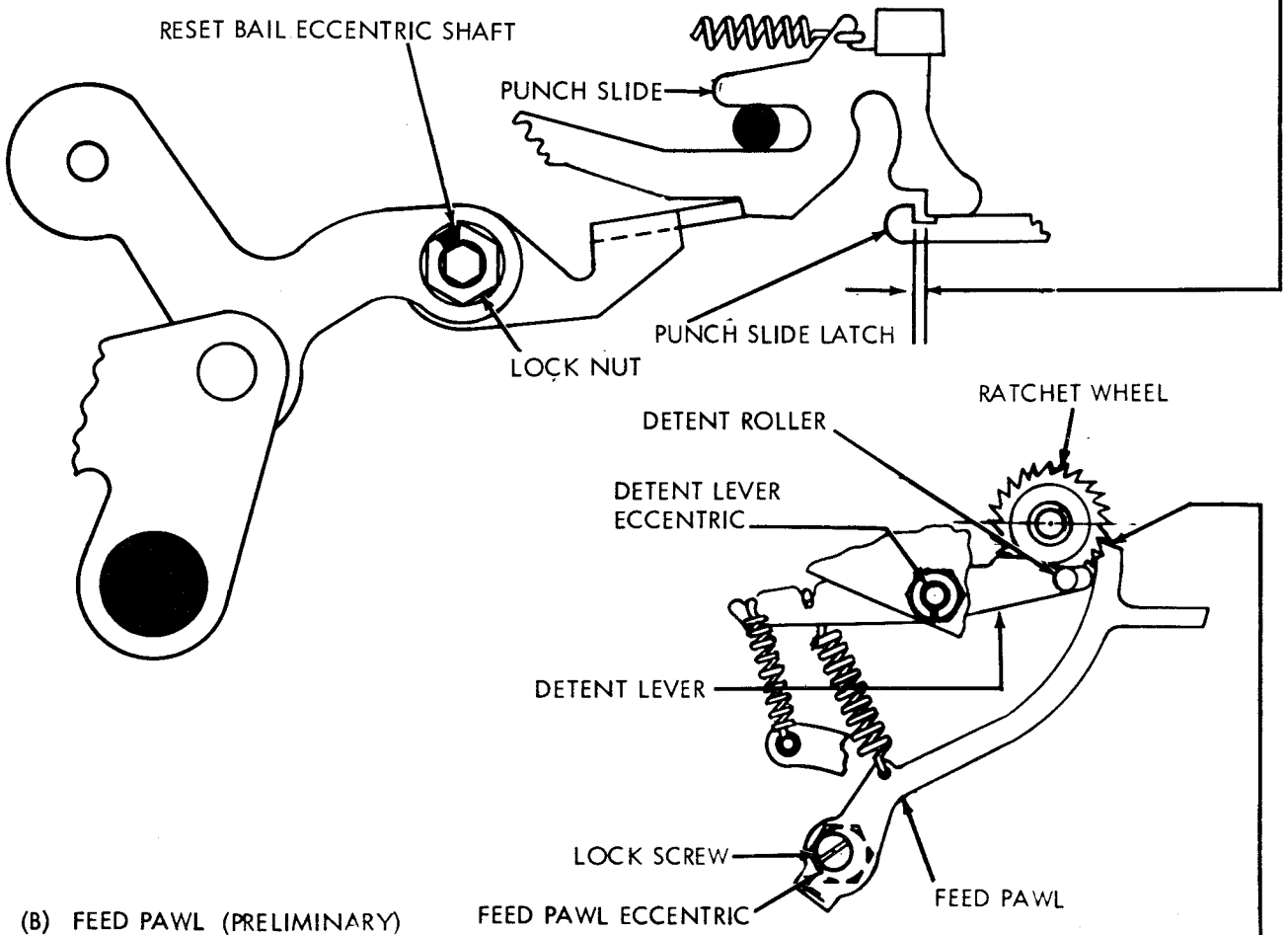
WITH FUNCTION CLUTCH DISENGAGED AND LATCHED. CLEARANCE BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH

MIN. 0.008 INCH --- MAX. 0.020 INCH

FOR SLIDE HAVING THE LEAST CLEARANCE.

TO ADJUST

ROTATE THE RESET BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT LOOSENED. KEEP INDENTATION IN ECCENTRIC ABOVE HORIZONTAL CENTER OF SHAFT.



(B) FEED PAWL (PRELIMINARY)

TO CHECK

FEED WHEEL OIL HOLE SHALL BE IN UP POSITION.

REQUIREMENT

FUNCTION CLUTCH DISENGAGED, INDENTATION IN DETENT LEVER ECCENTRIC AT RIGHT ANGLE TO LEVER, DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, HIGH PART OF FEED PAWL ECCENTRIC TO THE RIGHT OF ITS LOCK SCREW. THE FEED PAWL SHALL ENGAGE THE FIRST TOOTH BELOW A HORIZONTAL CENTERLINE THROUGH THE RATCHET WHEEL WITH NO PERCEPTIBLE CLEARANCE.

TO ADJUST

ROTATE THE FEED PAWL ECCENTRIC WITH LOCK SCREW LOOSENED.

NOTE:

THIS ADJUSTMENT IS RELATED TO FEED HOLE SPACING AND TWO ADJUSTMENTS SHALL BE MADE AT THE SAME TIME.

2.23 Punch Mechanism for Chadless Tape continued

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

FEED HOLE SPACING (PRELIMINARY)

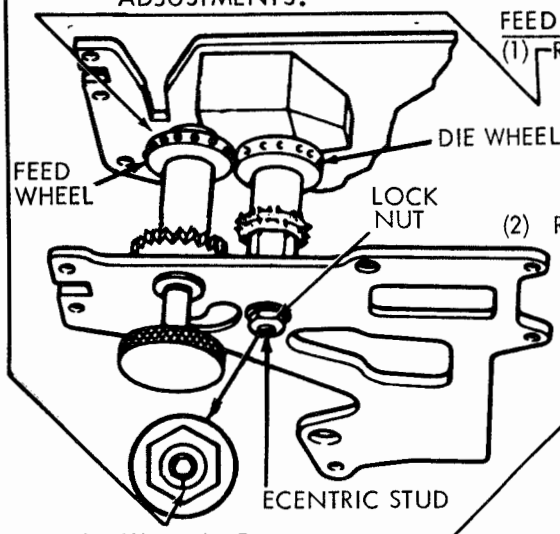
REQUIREMENT

INDENT OF DIE WHEEL ECCENTRIC STUD POINTING DOWNWARD.

TO ADJUST

POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED.

NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING ADJUSTMENTS.



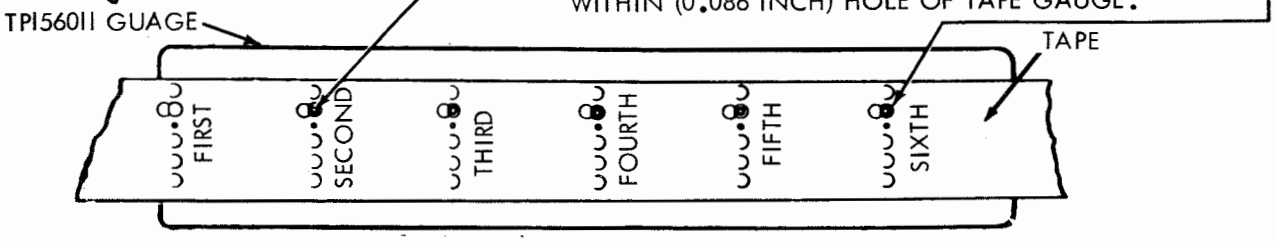
FEED HOLE SPACING (FINAL)

(1) REQUIREMENT

WITH TAPE SHOE BLOCKED AWAY FROM THE FEED WHEEL, FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. (CHECK THROUGH 3 OR 4 ROTATIONS).

(2) REQUIREMENT

PERFORATE SIX SERIES OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LTRS COMBINATION. OPEN CHADS SO THAT CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF TP156011 TAPE GAUGE SO THAT CIRCULAR PORTION OF FIRST NO. 2 CODE HOLE IS CONCENTRIC WITH FIRST (0.072 INCH) HOLE OF TAPE GAUGE. (SEE NOTE BELOW.) SECOND THROUGH FIFTH HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH NO. 2 CODE HOLES IN TAPE. CIRCULAR PORTION OF SIXTH NO. 2 CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN (0.086 INCH) HOLE OF TAPE GAUGE.



TO ADJUST

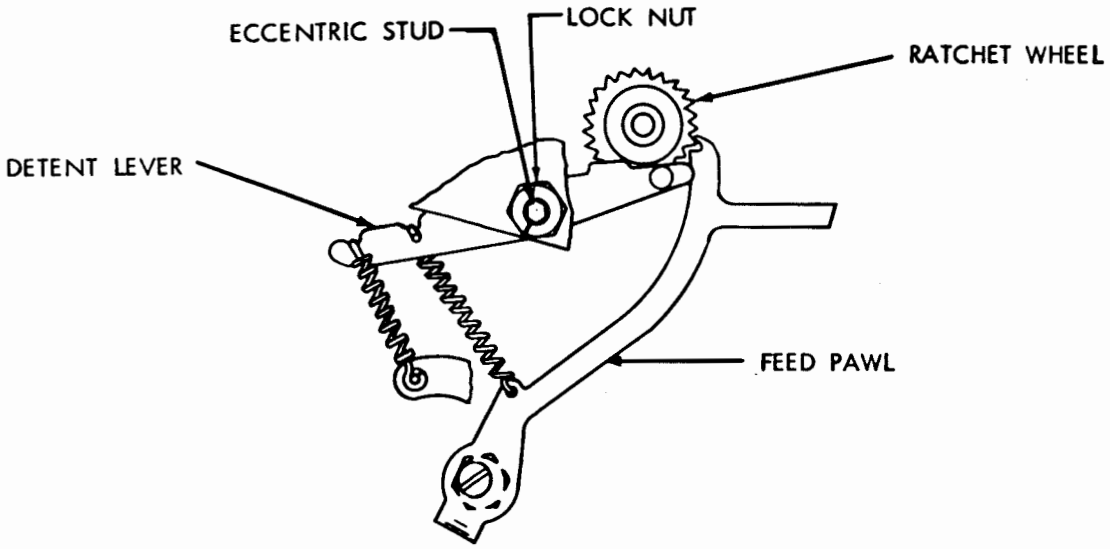
(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCKNUT. ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL. BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 REVOLUTIONS). KEEP INDENT OF ECCENTRIC STUD BELOW HORIZONTAL CENTERLINE OF STUD.

(2) REFINE ABOVE ADJUSTMENT TO MEET REQUIREMENT (2). IF NECESSARY, MOVE INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE CHARACTER SPACING.
CAUTION: WITH TAPE REMOVED FROM PUNCH MECHANISM, MAKE SURE DIE WHEEL DOES NOT BIND.

(3) RECHECK REQUIREMENT (1). IF IT IS NOT MET, DIE WHEEL ECCENTRIC HAS BEEN OVER ADJUSTED.
REFINE.

NOTE:
FIRST THROUGH FIFTH HOLES IN GAUGE ARE SAME SIZE AS CODE IN TAPE (0.072 INCH DIAMETER). BUT SIXTH HOLE IN GAUGE IS LARGER (0.086 INCH). THIS ARRANGEMENT ALLOWS ± 0.007 INCH VARIATION IN 5 INCHES.

2.24 Punch Mechanism for Chadless Tape continued



DETENT LEVER

REQUIREMENT

A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION PERFORATED ON THE PERFORATOR MUST CONFORM TO THE TP156011 TAPE GAUGE.

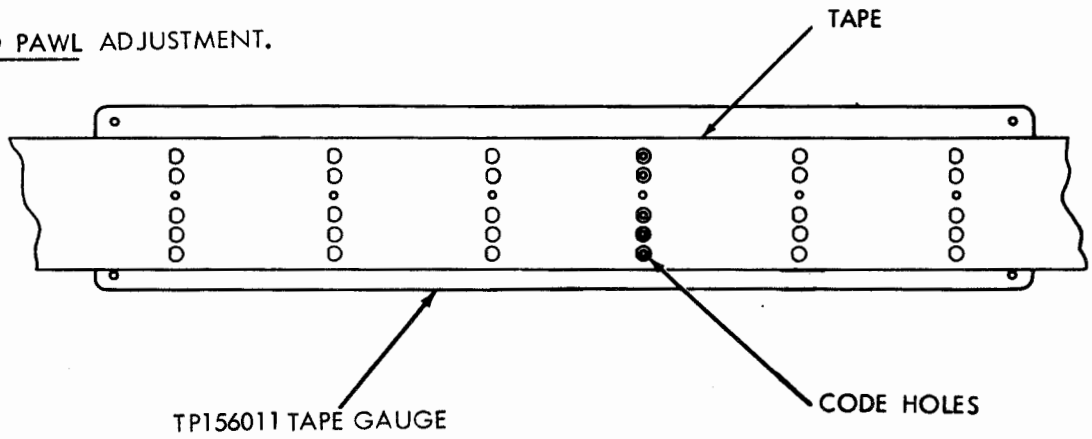
THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHOULD COINCIDE WITH A LATERAL CENTERLINE THROUGH THE HOLES IN THE GAUGE.

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

TO ADJUST

ROTATE THE DETENT ECCENTRIC CLOCKWISE TO MOVE THE FEED HOLES TOWARD THE HINGED EDGE OF THE CODE HOLES AND COUNTERCLOCKWISE TO MOVE THE FEED HOLES TOWARD THE TRAILING EDGE OF THE CODE HOLES. TIGHTEN THE ECCENTRIC LOCK NUT AND REFINE THE FEED PAWL ADJUSTMENT.

RECHECK FEED PAWL ADJUSTMENT.



2.25 Punch Mechanism for Chadless Tape continued

NOTE: IF UNIT IS EQUIPPED WITH TAPE GUIDE (EARLIER DESIGN), LOCKNUT MUST BE LOOSENED BEFORE FEED HOLE LATERAL ALIGNMENT ADJUSTMENT IS MADE.

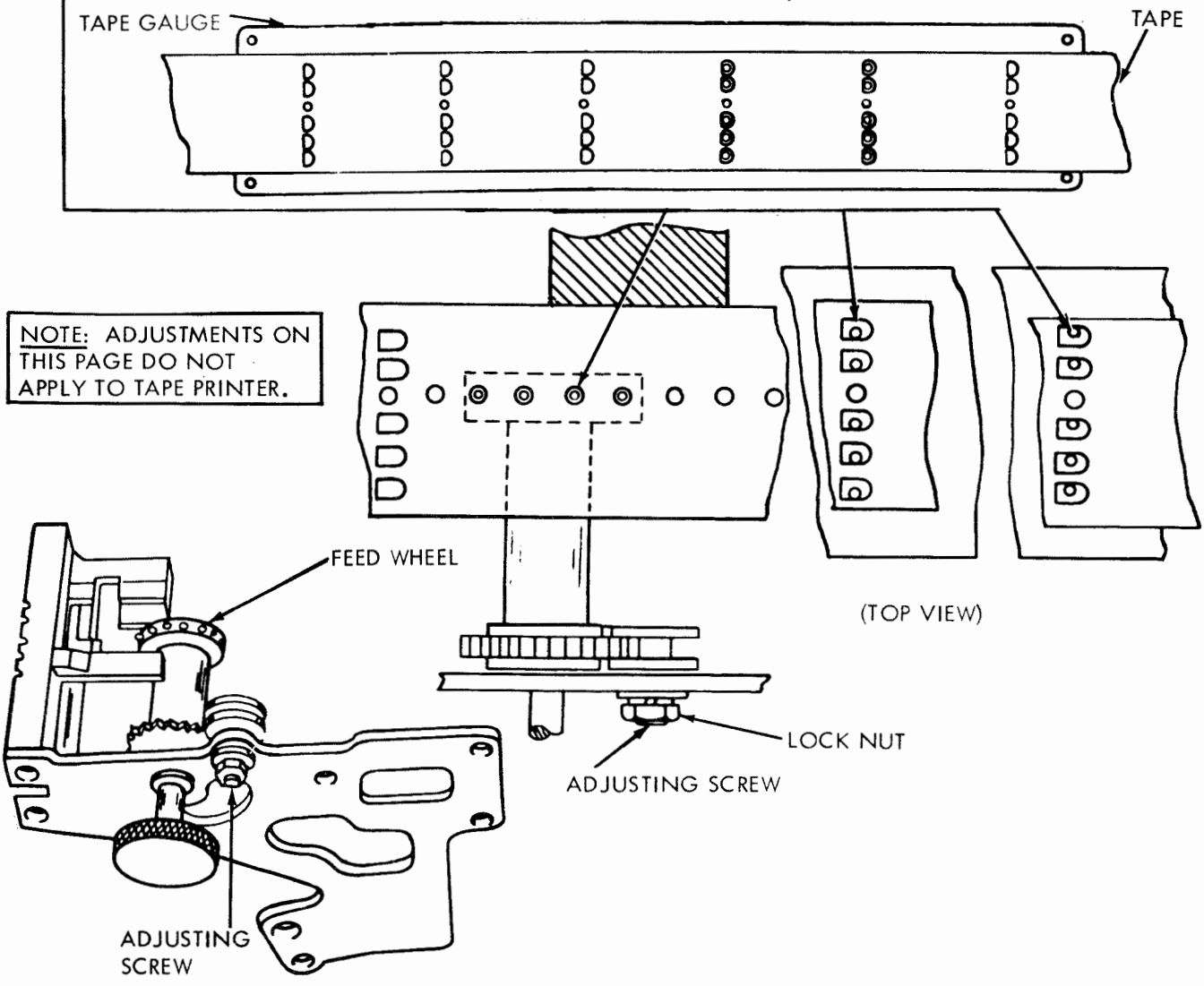
FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

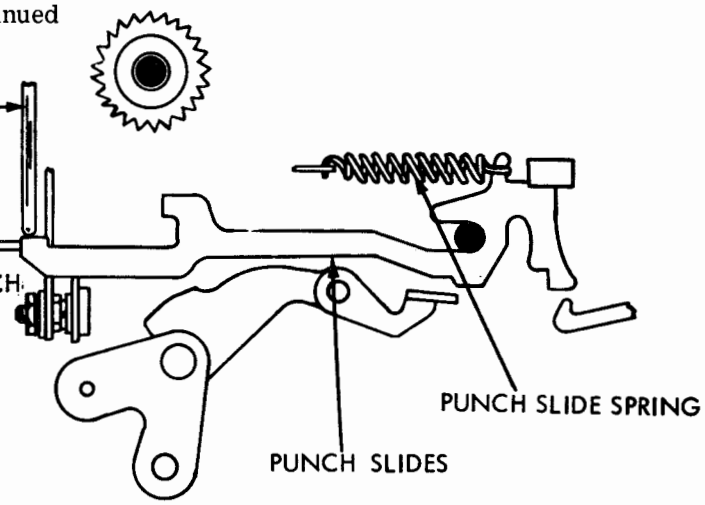
WITH REPERFORATOR OPERATING UNDER POWER, OBTAIN A PIECE OF TAPE CONTAINING A SERIES OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LTRS COMBINATION. OPEN CHADS SO CODE HOLES ARE VISIBLE AND PLACE TAPE OVER TP156011 TAPE GAUGE WITH LTRS COMBINATION FEED HOLES ENGAGING FEED PINS. LARGE HOLES IN GAUGE ARE SAME DIAMETER AS CIRCULAR PORTION OF CODE HOLES IN TAPE. SMALL HOLES IN GAUGE SERVE AS GUIDE FOR GAUGING. CIRCULAR PORTION OF CODE HOLES IN TAPE SHALL BE CONCENTRIC WITH HOLES IN TAPE GAUGE.

TO ADJUST

LOOSEN ADJUSTING SCREW LOCKNUT AND POSITION ADJUSTING SCREW. TO MOVE HOLES OF GAUGE AWAY FROM REFERENCE EDGE OF TAPE, MOVE FEED WHEEL TOWARD FRONT PLATE OF PUNCH MECHANISM BY ROTATING ADJUSTING SCREW COUNTERCLOCKWISE. TO MOVE HOLES OF GAUGE TOWARD REFERENCE EDGE OF TAPE, MOVE FEED WHEEL TOWARDS BACKPLATE OF PUNCH MECHANISM BY ROTATING ADJUSTING SCREW CLOCKWISE. TIGHTEN LOCKNUT. REFINE DETENT LEVER ADJUSTMENT TO ALIGN LATERAL CENTERLINES OF CODE HOLES AND FEED HOLES, IF REQUIRED.



2.26 Punch Mechanism for Chadless Tape continued

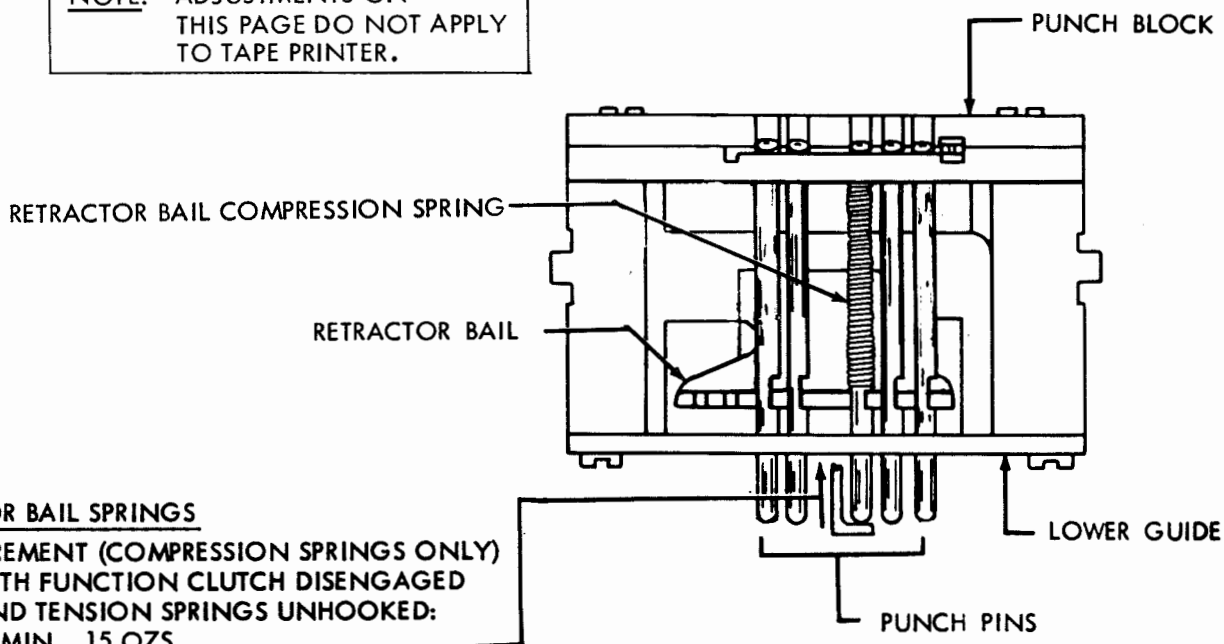


(A)
PUNCH SLIDE SPRING

REQUIREMENT
LETTERS COMBINATION SET UP. FUNCTION CLUTCH TRIPPED. PUNCH SLIDES IN SELECTED POSITION UNDER PUNCH PINS.

MIN. 2 1/4 OZS.
MAX. 3 1/4 OZS.
TO START EACH SLIDE MOVING.

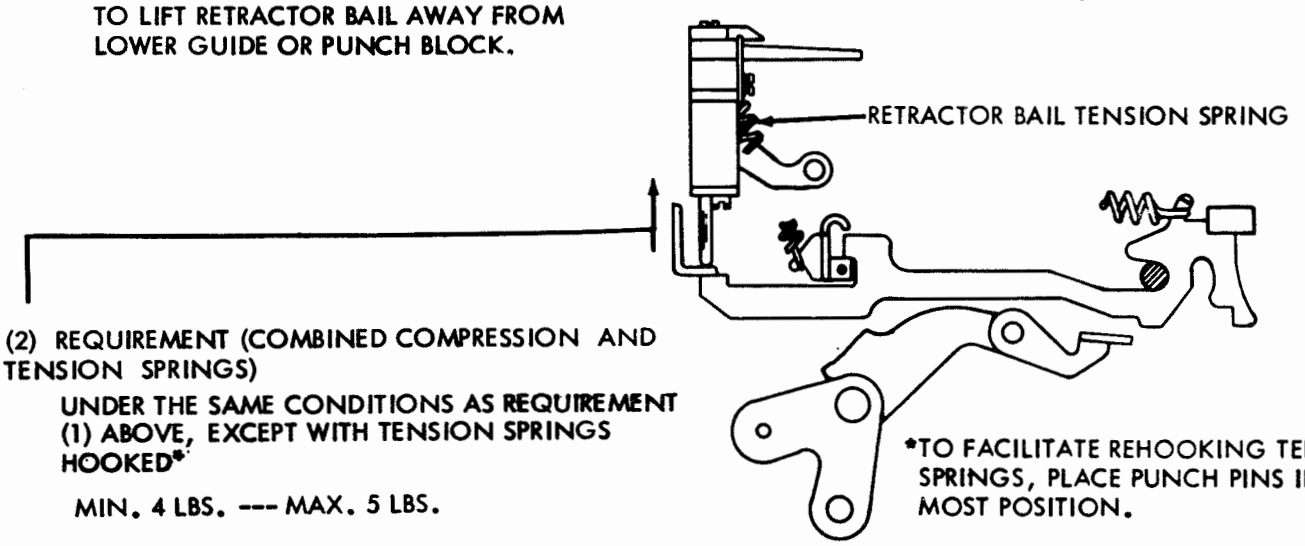
NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.



(LEFT SIDE VIEW)

(B)
RETRACTOR BAIL SPRINGS

(1) REQUIREMENT (COMPRESSION SPRINGS ONLY) WITH FUNCTION CLUTCH DISENGAGED AND TENSION SPRINGS UNHOOKED:
MIN. 15 OZS.
MAX. 32 OZS.
TO LIFT RETRACTOR BAIL AWAY FROM LOWER GUIDE OR PUNCH BLOCK.



(2) REQUIREMENT (COMBINED COMPRESSION AND TENSION SPRINGS)
UNDER THE SAME CONDITIONS AS REQUIREMENT (1) ABOVE, EXCEPT WITH TENSION SPRINGS HOOKED*

MIN. 4 LBS. --- MAX. 5 LBS.

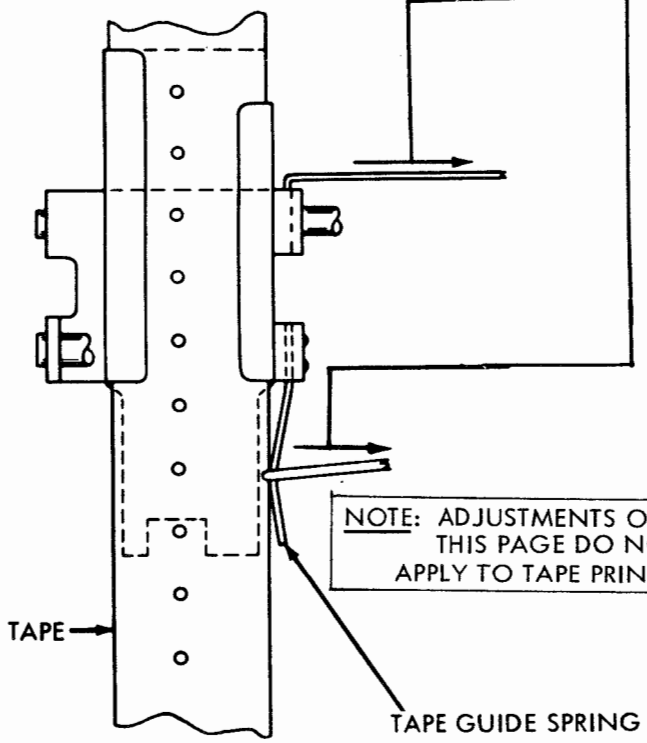
*TO FACILITATE REHOOKING TENSION SPRINGS, PLACE PUNCH PINS IN UPPERMOST POSITION.

2.27 Punch Mechanism for Chadless Tape continued

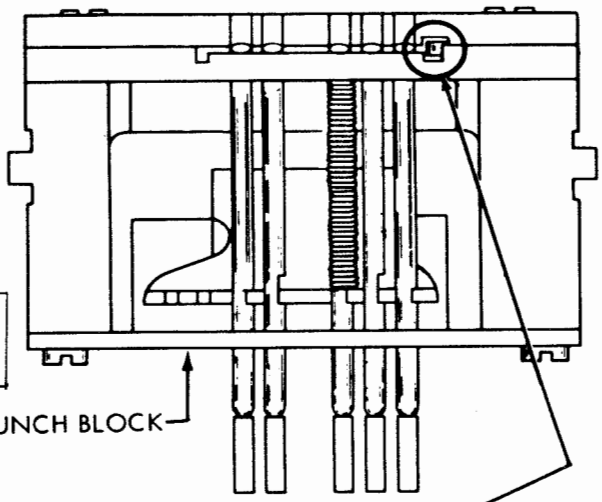
(B) TAPE GUIDE ASSEMBLY SPRING
REQUIREMENT
THE TAPE GUIDE ASSEMBLY SHOULD BE FREE TO RETURN TO REST AGAINST THE TAPE GUIDE BLOCK AFTER A
MIN. 16 OZS.
IS USED TO PULL THE TAPE GUIDE ASSEMBLY AWAY FROM THE BLOCK.
TO ADJUST
REPLACE SPRING IF REQUIREMENT IS NOT MET.
IF THE TAPE GUIDE ASSEMBLY IS NOT FREE TO RETURN, REPOSITION THE TAPE GUIDE ASSEMBLY MOUNTING POST TO FREE THE TAPE GUIDE ASSEMBLY.

(A)
TAPE GUIDE SPRING (TAPE GUIDE)
REQUIREMENT
CLUTCH DISENGAGED AND TAPE THREADED THROUGH THE PUNCH ASSEMBLY,
IT SHOULD REQUIRE
MIN. 1-1/4 OZS.
MAX. 2-1/4 OZS.
TO JUST MOVE THE SPRING AWAY FROM THE TAPE.
TO ADJUST
BEND THE SPRING.

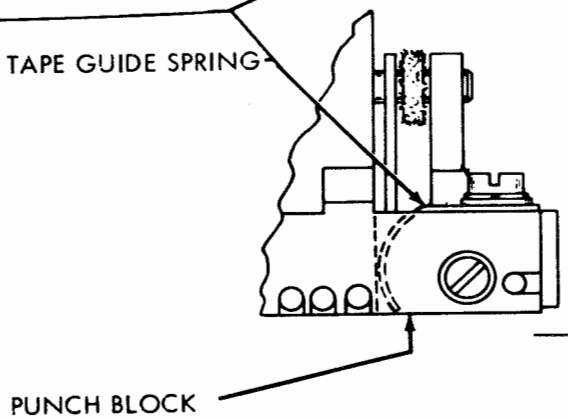
NOTE: IN ORDER TO CHECK THIS SPRING TENSION ON UNITS EQUIPPED WITH BACKSPACE MECHANISM, IT IS NECESSARY TO REMOVE SEVERAL PARTS. IT SHOULD NOT BE CHECKED UNLESS THERE IS REASON TO BELIEVE THAT REQUIREMENTS CANNOT BE MET.



NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.



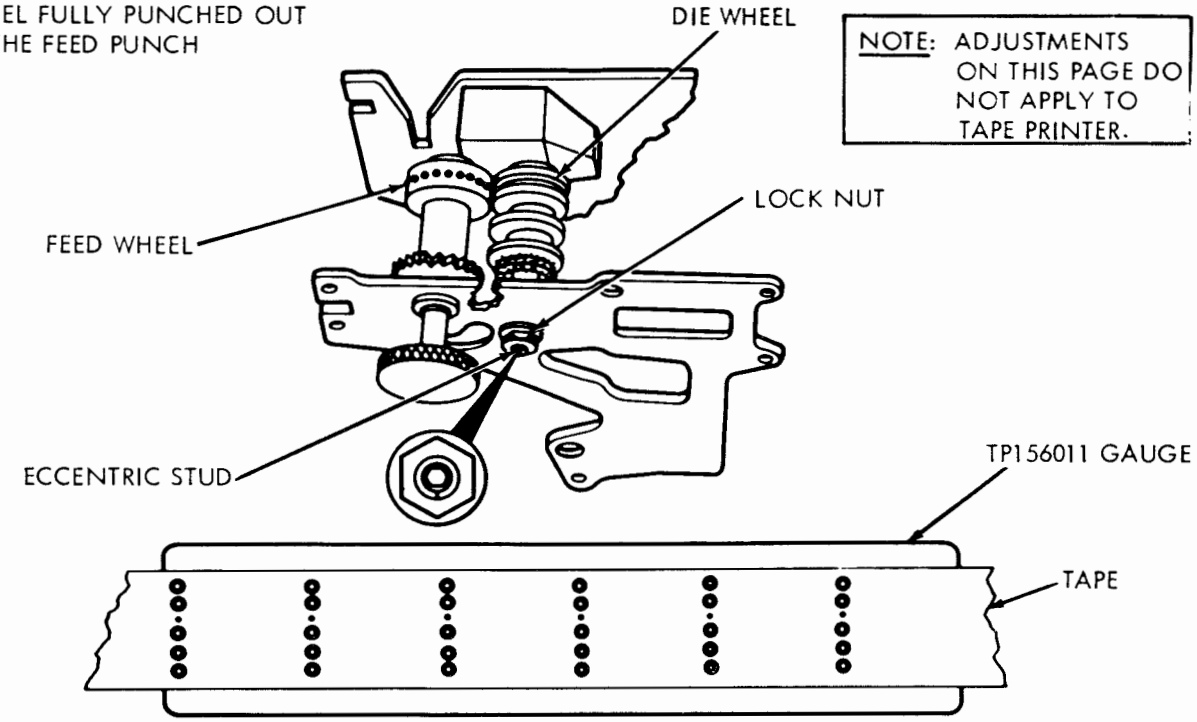
(C) TAPE GUIDE SPRING (PUNCH BLOCK)
(1) REQUIREMENT
WITH THE TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMMETRICAL MANNER.
(2) REQUIREMENT
WITH TAPE IN THE PUNCH BLOCK AND THE PERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE.
TO ADJUST
BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED.



2.28 Punch Mechanism for Fully Perforated Tape continued

NOTE: INDENTATIONS OF THE FEED WHEEL FULLY PUNCHED OUT BY THE FEED PUNCH

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.



NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING ADJUSTMENTS.

FEED HOLE SPACING

(1) REQUIREMENT

WITH TAPE SHOE BLOCKED AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, FEED WHEEL SHALL ROTATE FREELY. (SHALL BE CHECKED THROUGH 3 OR 4 REVOLUTIONS.)

(2) REQUIREMENT

PERFORATE SIX SERIES OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LTRS COMBINATION. PLACE TAPE OVER SMOOTH SIDE OF TP156011 TAPE GAUGE SO THAT CIRCULAR PORTION OF FIRST NO. 2 CODE HOLE IS CONCENTRIC WITH FIRST (0.072 INCH) HOLE OF TAPE GAUGE. (SEE NOTE BELOW.) SECOND THROUGH FIFTH HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH NO. 2 CODE HOLES IN TAPE. CIRCULAR PORTION OF SIXTH NO. 2 CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN (0.086 INCH) HOLE OF TAPE GAUGE.

TO ADJUST

(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCKNUT. ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL. BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 REVOLUTIONS). KEEP INDENT OF ECCENTRIC STUD BELOW HORIZONTAL CENTERLINE OF STUD.

(2) REFINE ABOVE ADJUSTMENT TO MEET REQUIREMENT (2). IF NECESSARY, MOVE INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE CHARACTER SPACING.
CAUTION: WITH TAPE REMOVED FROM PUNCH MECHANISM, MAKE SURE DIE WHEEL DOES NOT BIND.

(3) RECHECK REQUIREMENT (1). IF IT IS NOT MET, DIE WHEEL ECCENTRIC HAS BEEN OVERADJUSTED. REFINE.

NOTE: FIRST THROUGH FIFTH HOLES IN GAUGE ARE SAME SIZE AS CODE IN TAPE (0.072 INCH DIAMETER). BUT SIXTH HOLE IN GAUGE IS LARGER (0.086 INCH). THIS ARRANGEMENT ALLOWS ± 0.007 INCH VARIATION IN 5 INCHES.

2.29 Punch Mechanism for Fully Perforated Tape continued

NOTE:
(INDENTATION OF THE FEED WHEEL FULLY PUNCHED OUT BY THE FEED PUNCH)

NOTE: IF UNIT IS EQUIPPED WITH TAPE GUIDE (EARLIER DESIGN), LOCKNUT MUST BE LOOSENED BEFORE FEED HOLE LATERAL ALIGNMENT ADJUSTMENT IS MADE.

FEED WHEEL INDENTATION ALIGNMENT

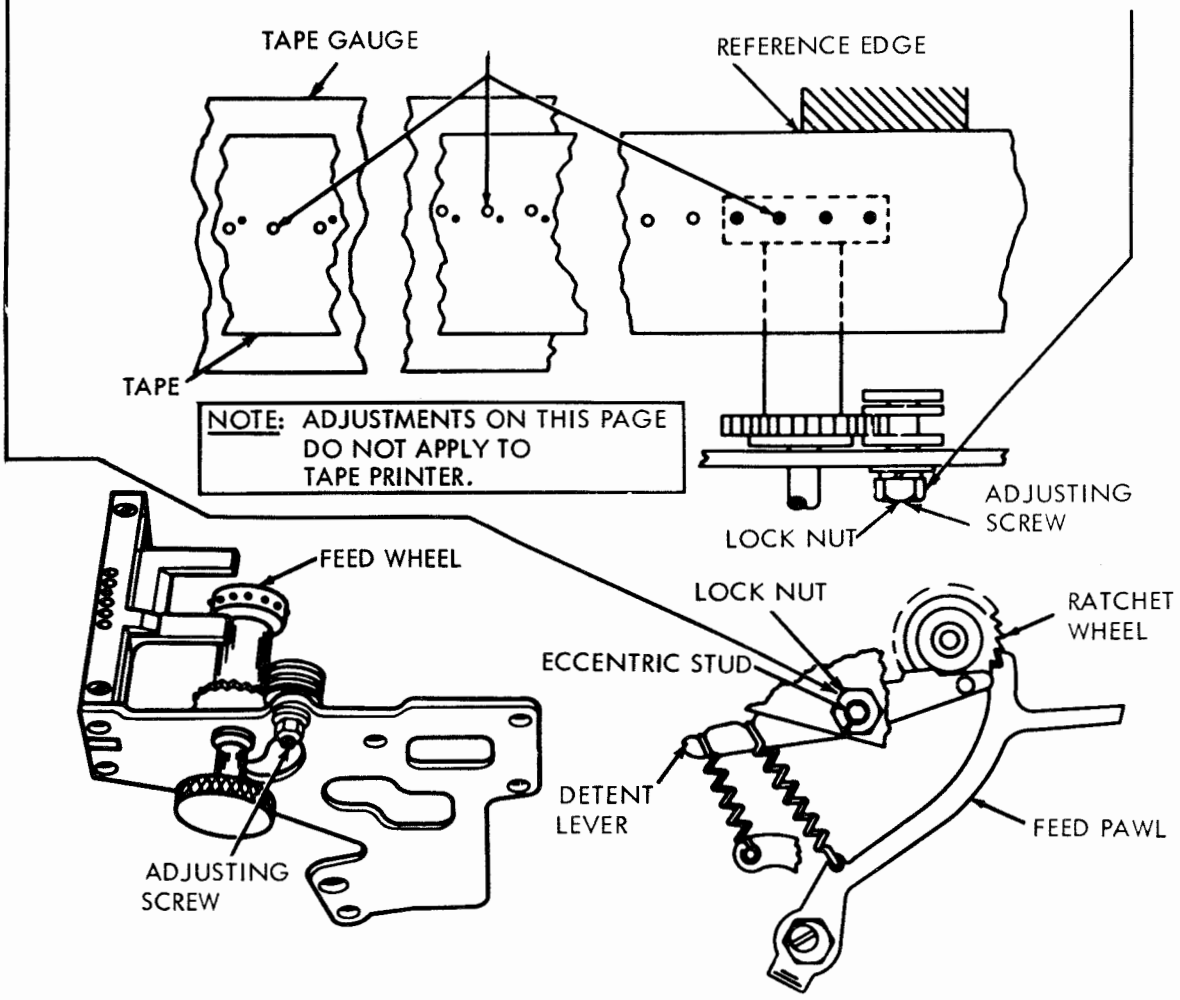
(1) REQUIREMENT

WHEN A PIECE OF TAPE IS PERFORATED WITH A SERIES OF BLANK CODE COMBINATIONS, THE INDENTATIONS OF THE FEED WHEEL SHALL BE FULLY PUNCHED OUT.

TO ADJUST

RIGHT OR LEFT, ROTATE THE DETENT LEVER ECCENTRIC STUD CLOCKWISE TO MOVE THE FEED WHEEL PERFORATIONS TOWARD THE LEADING EDGE OF THE CODE HOLES, AND COUNTERCLOCKWISE TO MOVE THE FEED WHEEL PERFORATIONS TOWARD THE TRAILING EDGE OF THE CODE HOLES. REFINE THE FEED PAWL ADJUSTMENT.

FRONT TO REAR, LOOSEN THE LOCK NUT ON THE ADJUSTING SCREW AND TURN THE SCREW CLOCKWISE TO MOVE TAPE TOWARD REFERENCE EDGE (REAR), AND COUNTERCLOCKWISE TO MOVE THE TAPE AWAY FROM REFERENCE EDGE (FRONT).



2.30 Punch Mechanism for Fully Perforated Tape continued
(Indentations of the Feed Wheel Between Feed Holes.)

NOTE: BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS.

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

FEED HOLE SPACING (FINAL) *(SEE NOTE BELOW)

REQUIREMENT

(1) WITH TAPE SHOE BLOCKED AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. (CHECK THROUGH 3 OR 4 ROTATIONS).

(2) PERFORATE SIX SERIES OF (9) "BLANK" COMBINATIONS FOLLOWED BY (1) "LETTERS" COMBINATION. PLACE TAPE OVER SMOOTH SIDE OF THE TP156011 TAPE GAUGE SO CIRCULAR PORTION OF THE FIRST NUMBER TWO CODE HOLE IN TAPE IS CONCENTRIC WITH THE FIRST (0.072) HOLE OF TAPE GAUGE. (SEE NOTE). THE NEXT FOUR 0.072 HOLES IN TAPE GAUGE SHALL BE VISIBLE THROUGH THE NUMBER TWO CODE HOLES IN TAPE AND CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER TWO CODE HOLE IN TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIA. HOLE OF TAPE GAUGE.

NOTE: THE FIRST FIVE HOLES IN GAUGE ARE THE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER) BUT THE SIXTH HOLE IN GAUGE IS LARGER THAN THE FIRST FIVE (0.086 INCH DIAMETER). THIS ARRANGEMENT ALLOWS $\pm$ 0.007 INCH VARIATION IN FIVE (5) INCHES.

TO ADJUST

(1) WITH TAPE REMOVED FROM PUNCH MECHANISM, LOOSEN DIE WHEEL ECCENTRIC STUD LOCK NUT AND ADJUST DIE WHEEL SO THAT IT JUST BINDS ON FEED WHEEL, BACK OFF ECCENTRIC SO DIE WHEEL IS JUST FREE (CHECK FREENESS THROUGH 3 OR 4 ROTATIONS). KEEP INDENT OFF ECCENTRIC STUD BELOW THE HORIZONTAL CENTER LINE OF STUD.

(2) CHECK TEN CHARACTERS PER INCH REQUIREMENT AND REFINE FEED WHEEL DIE WHEEL CLEARANCE ADJUSTMENT TO MEET THE REQUIREMENT BY MOVING INDENT OF DIE WHEEL ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE CHARACTER SPACING AND AWAY FROM FEED WHEEL TO INCREASE THE CHARACTER SPACING.

CAUTION: WITH THE TAPE REMOVED FROM THE PUNCH MECHANISM, BE SURE THE DIE WHEEL DOES NOT BIND.

(3) WITH THE TAPE SHOE AWAY FROM THE FEED WHEEL, THE FEED PAWL AND DETENT DISENGAGED, AND THE TAPE REMOVED FROM THE PUNCH MECHANISM, THE FEED WHEEL SHALL ROTATE FREELY. FAILURE TO MEET THIS REQUIREMENT INDICATES THE DIE WHEEL ECCENTRIC HAS BEEN OVER-ADJUSTED. TO MEET THIS REQUIREMENT, REFINE THE ADJUSTMENT.

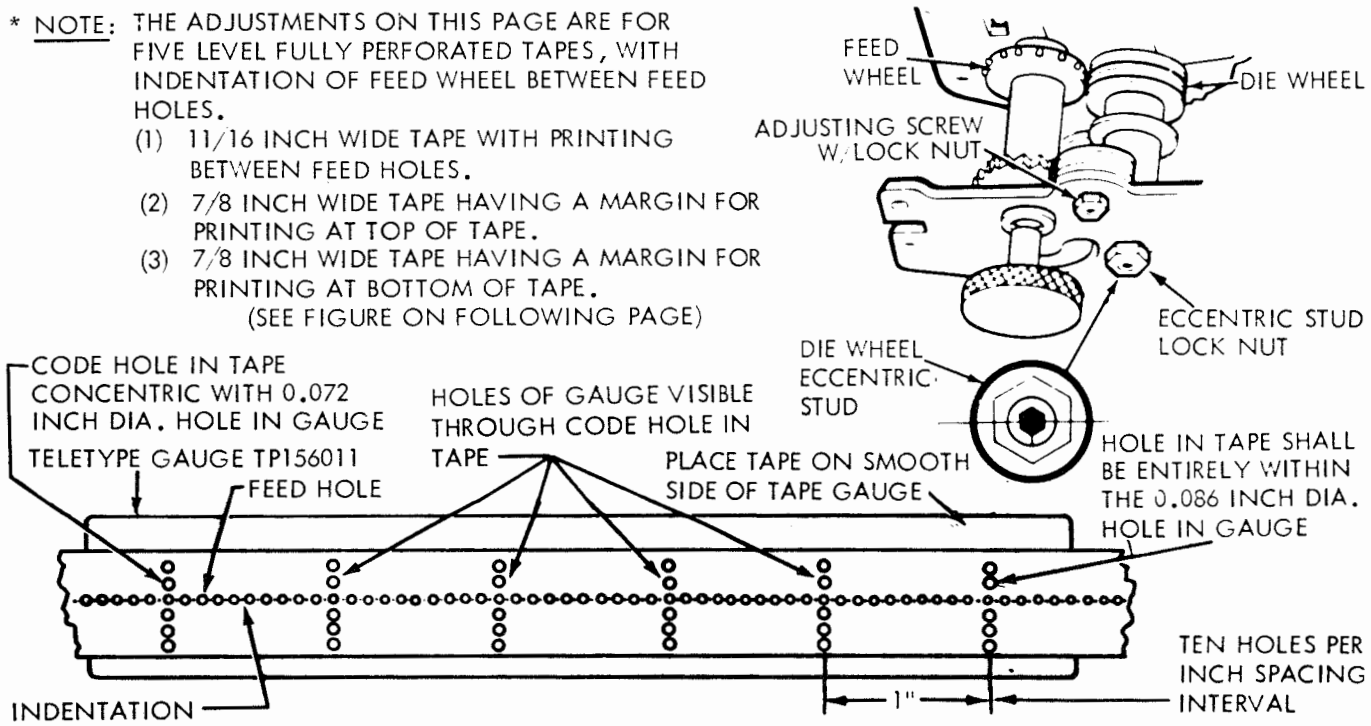
* NOTE: THE ADJUSTMENTS ON THIS PAGE ARE FOR FIVE LEVEL FULLY PERFORATED TAPES, WITH INDENTATION OF FEED WHEEL BETWEEN FEED HOLES.

(1) 11/16 INCH WIDE TAPE WITH PRINTING BETWEEN FEED HOLES.

(2) 7/8 INCH WIDE TAPE HAVING A MARGIN FOR PRINTING AT TOP OF TAPE.

(3) 7/8 INCH WIDE TAPE HAVING A MARGIN FOR PRINTING AT BOTTOM OF TAPE.

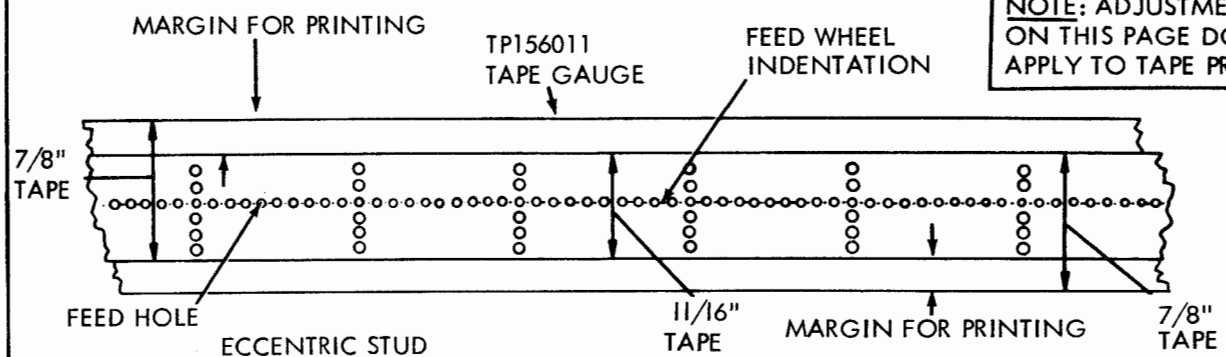
(SEE FIGURE ON FOLLOWING PAGE)

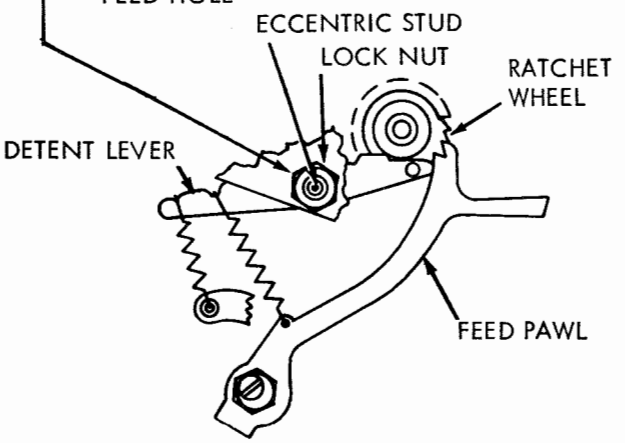


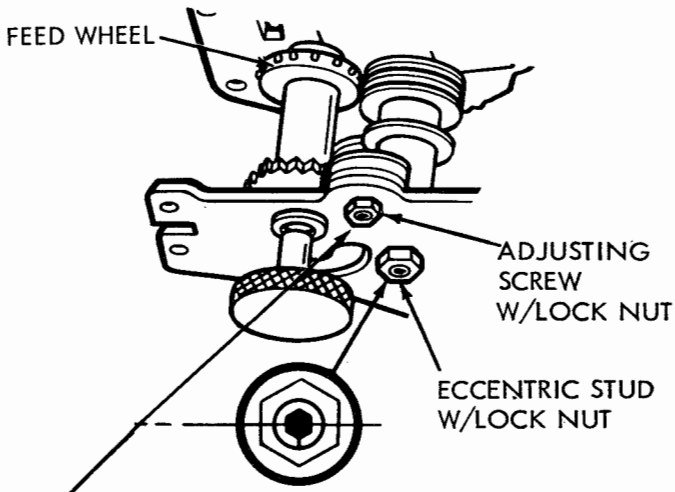
2.31 Punch Mechanism For Fully Perforated Tape continued
(Indentation of Feed Wheel Between The Feed Holes)

DETENT
REQUIREMENT *(SEE NOTE BELOW)
WITH THE UNIT OPERATING UNDER POWER, THE INDENTATIONS OF THE FEED WHEEL SHALL BE CENTRALLY LOCATED BETWEEN TWO FULLY PERFORATED FEED HOLES, AS GAUGED BY EYE.
TO ADJUST
LOOSEN THE DETENT LEVER ECCENTRIC STUD LOCK NUT AND TURN THE ECCENTRIC STUD CLOCKWISE TO MOVE THE INDENTATION TOWARD THE LEADING EDGE OF THE FEED HOLE AND COUNTERCLOCKWISE TO MOVE THE INDENTATION TOWARD THE TRAILING EDGE. TIGHTEN THE LOCK NUT AND RE-CHECK THE FEED PAWL ADJUSTMENT.

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.







FEED HOLE LATERAL ALIGNMENT
REQUIREMENT
WITH THE UNIT OPERATING UNDER POWER, THE INDENTATIONS OF THE FEED WHEEL SHOULD BE ON A CENTERLINE BETWEEN THE FULLY PERFORATED FEED HOLES, AS GAUGED BY EYE.
TO ADJUST
WITH THE ADJUSTING SCREW LOCK NUT LOOSE, TURN THE ADJUSTING SCREW CLOCKWISE TO MOVE THE INDENTATION TOWARD THE REAR AND COUNTERCLOCKWISE TO MOVE THE INDENTATIONS TOWARD THE FRONT.

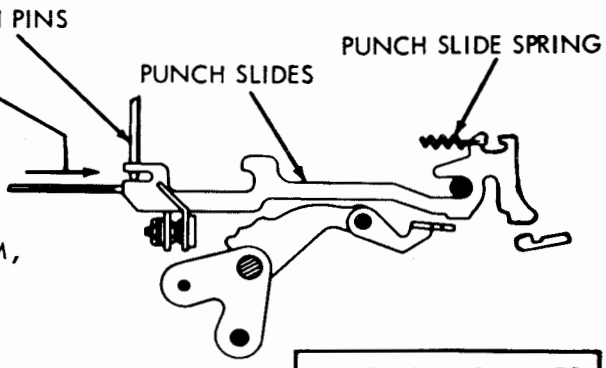
* NOTE:
THE ADJUSTMENTS ON THIS PAGE ARE FOR FIVE-LEVEL FULLY PERFORATED TAPES, WITH INDENTATION OF FEED WHEEL BETWEEN FEED HOLES.
(1) 11/16 INCH WIDE TAPE WITH PRINTING BETWEEN FEED HOLES.
(2) 7/8 INCH WIDE TAPE HAVING A MARGIN FOR PRINTING AT TOP OF TAPE.
(3) 7/8 INCH WIDE TAPE HAVING A MARGIN FOR PRINTING AT BOTTOM OF TAPE.

2.32 Punch Mechanism For Fully Perforated Tape continued

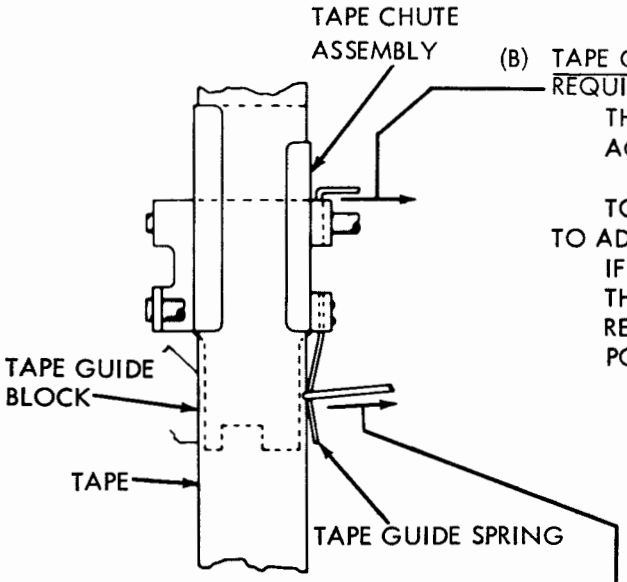
(A) PUNCH SLIDE SPRING REQUIREMENT

LETTERS COMBINATION SET UP AND PUNCH SLIDES IN SELECTED POSITION.
MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.
TO START EACH SLIDE MOVING.

NOTE: ON UNITS EQUIPPED WITH BACKSPACE MECHANISM, IT IS NECESSARY TO REMOVE SEVERAL PARTS IN ORDER TO CHECK THIS SPRING TENSION. IT SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO BELIEVE THAT IT DOES NOT MEET ITS REQUIREMENTS.



NOTE: ADJUSTMENTS (B), (C) AND (D) ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.



(B) TAPE GUIDE ASSEMBLY SPRING REQUIREMENT

THE TAPE GUIDE ASSEMBLY SHALL BE FREE TO RETURN TO REST AGAINST THE TAPE GUIDE BLOCK.
MIN. 16 OZS.
TO PULL THE TAPE GUIDE ASSEMBLY AWAY FROM THE BLOCK.

TO ADJUST

IF THE SPRING DOES NOT MEET THE REQUIREMENT, REPLACE THE SPRING. IF THE TAPE GUIDE ASSEMBLY IS NOT FREE TO RETURN, REPOSITION THE TAPE GUIDE ASSEMBLY MOUNTING POST TO FREE THE TAPE GUIDE ASSEMBLY.

(C) TAPE GUIDE SPRING (TAPE GUIDE) REQUIREMENT

CLUTCH DISENGAGED AND TAPE THREADED THROUGH THE PUNCH ASSEMBLY, IT SHOULD REQUIRE
MIN. 1-1/4 OZS.---MAX. 2-1/4 OZS.
TO JUST MOVE THE SPRING AWAY FROM THE TAPE.

TO ADJUST

BEND THE SPRING.

(D) TAPE GUIDE SPRING (PUNCH BLOCK)

(1) REQUIREMENT

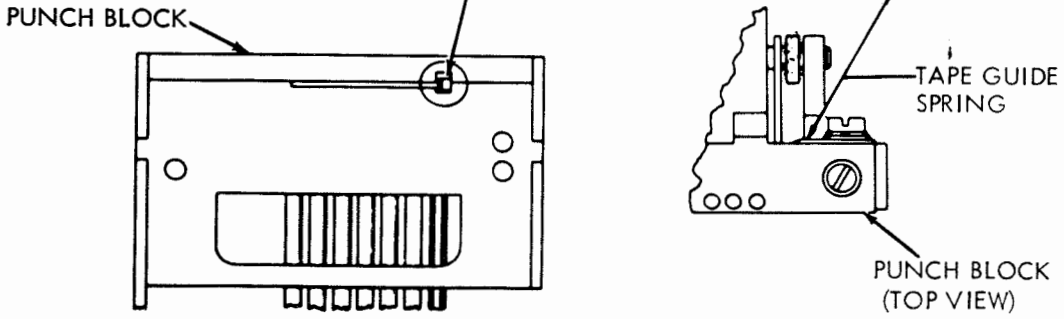
WITH TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMMETRICAL MANNER.

(2) REQUIREMENT

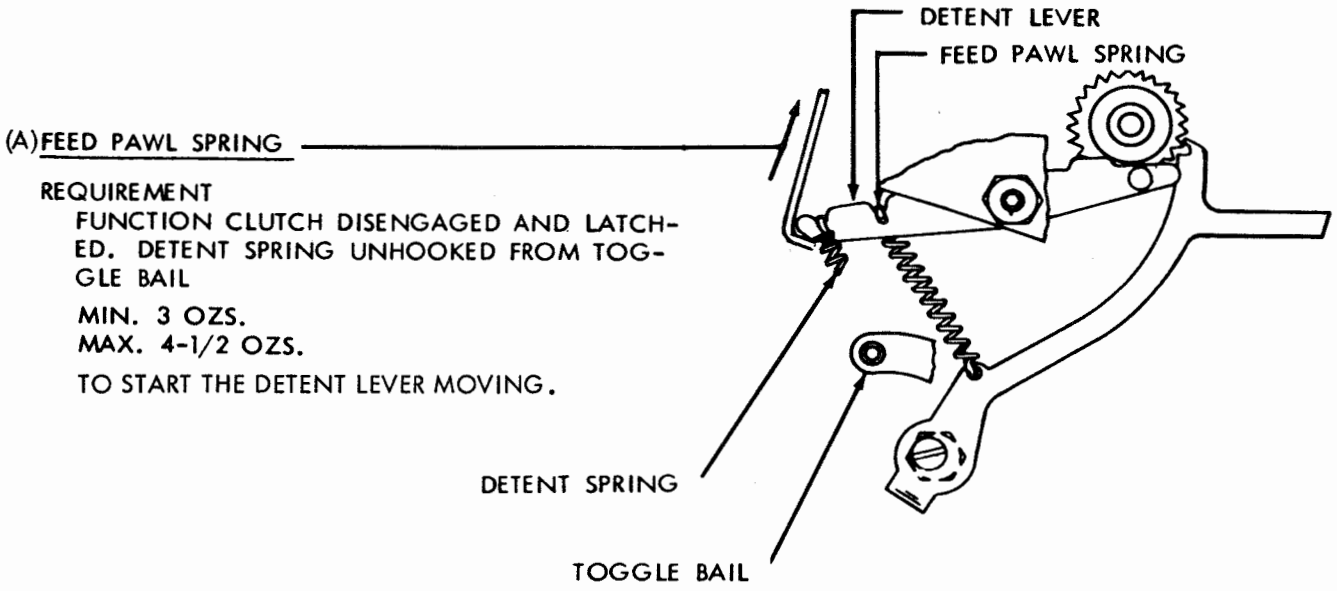
WITH TAPE IN THE PUNCH BLOCK AND THE REPERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE.

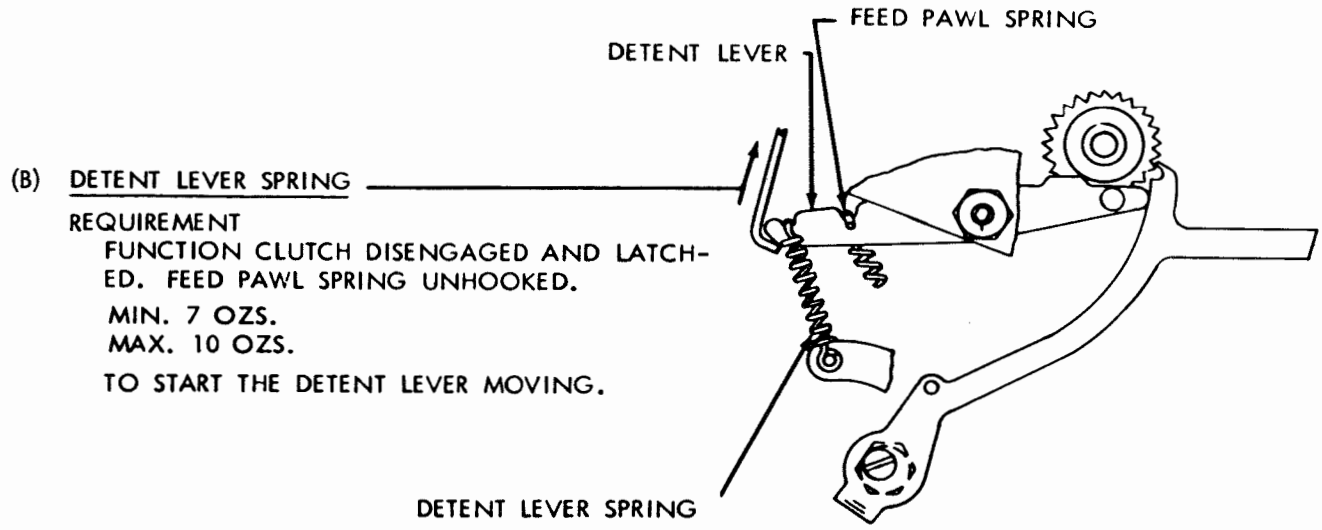
TO ADJUST

BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED.



2.33 Punch Mechanism continued





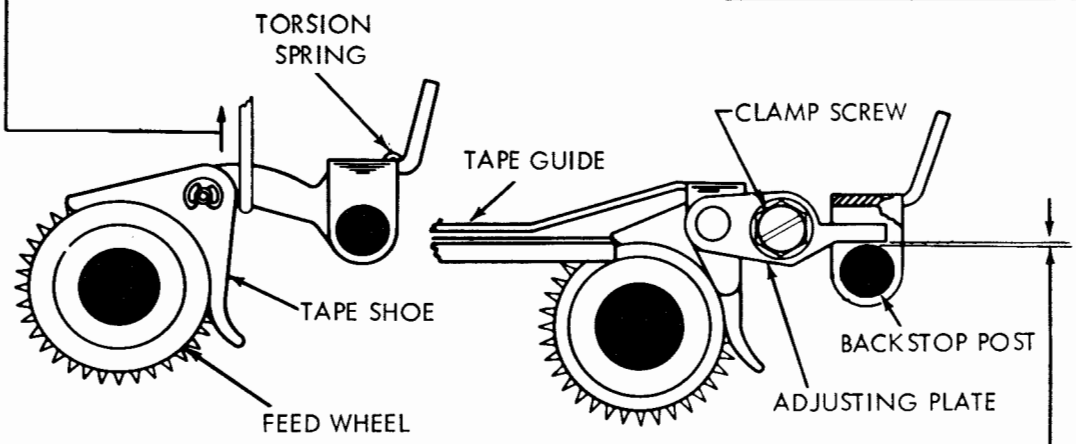
2.34 Punch Mechanism continued

(A) TAPE SHOE TORSION SPRING

REQUIREMENT

MIN. 13 OZS.---MAX. 18 OZS.
TO MOVE TAPE FROM FEED WHEEL.

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.



(B) TAPE GUIDE

TO CHECK

ROTATE FEED WHEEL UNTIL OIL HOLE IS UPWARD.
CENTER TAPE SHOE AND TAPE GUIDE. HOLD TAPE GUIDE DOWNWARD.

REQUIREMENT

CLEARANCE BETWEEN ADJUSTING PLATE AND BACKSTOP POST
MIN. 0.002 INCH
MAX. 0.008 INCH

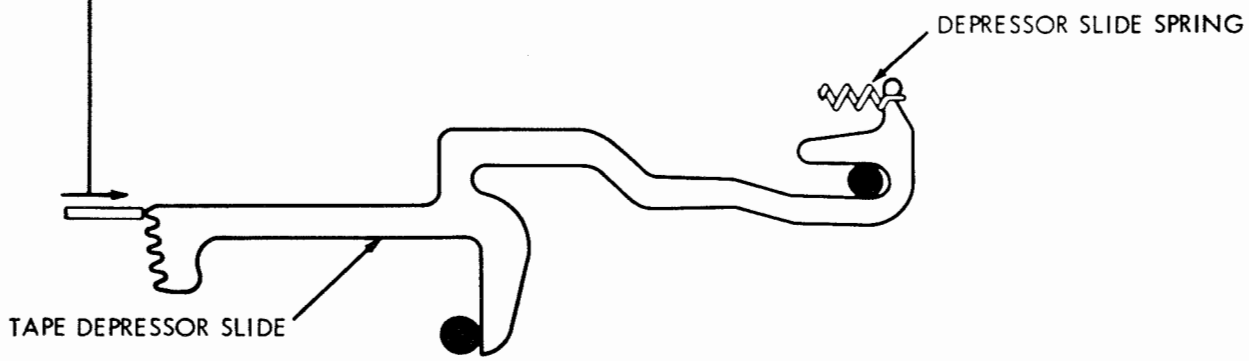
TO ADJUST

POSITION ADJUSTING PLATE WITH ITS CLAMP SCREW LOOSENED.

(C) TAPE DEPRESSOR SLIDE SPRING

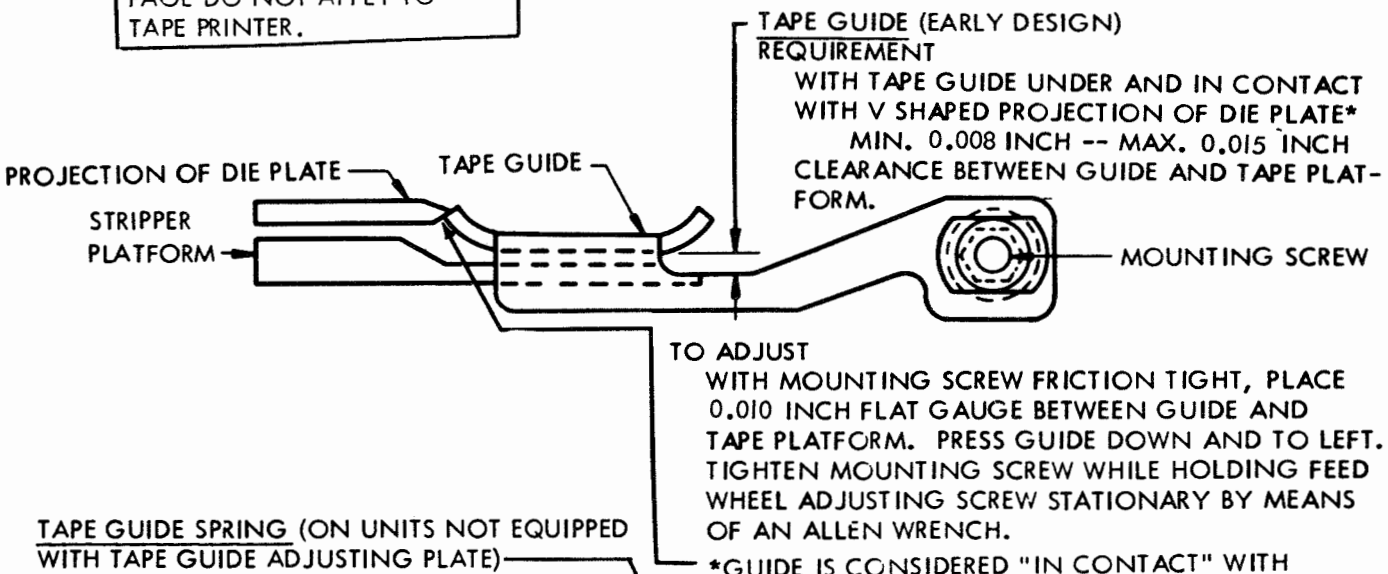
REQUIREMENT

ROCKER BAIL IN ITS EXTREME LEFT POSITION
MIN. 1-1/2 OZS. --- MAX. 2-1/2 OZS.
TO START DEPRESSOR SLIDE MOVING.



2.35 Punch Mechanism continued

NOTE: ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.

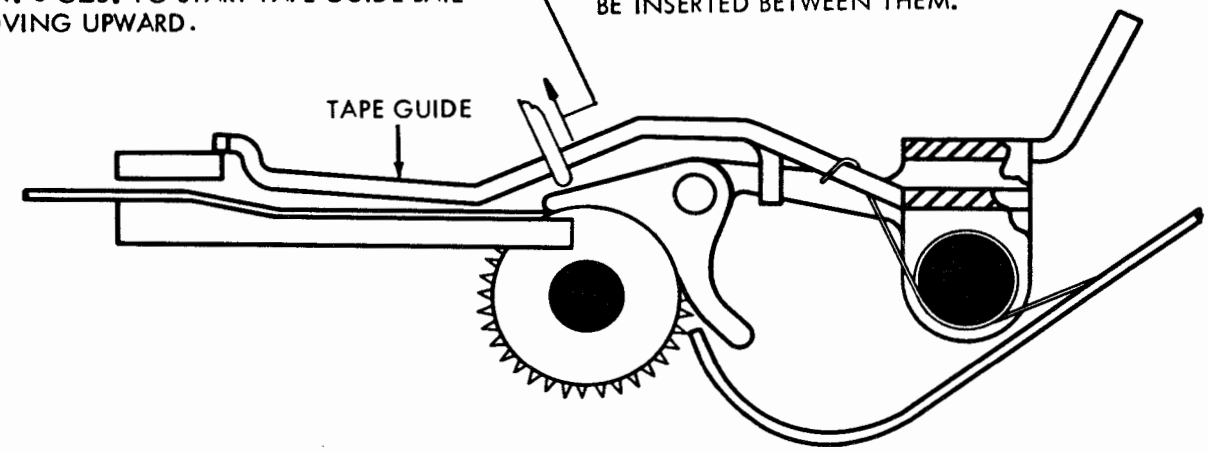


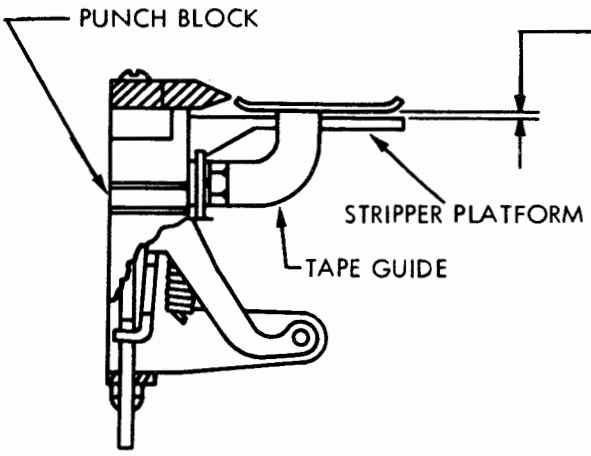
TAPE GUIDE (EARLY DESIGN)
REQUIREMENT
WITH TAPE GUIDE UNDER AND IN CONTACT WITH V SHAPED PROJECTION OF DIE PLATE*
MIN. 0.008 INCH -- MAX. 0.015 INCH CLEARANCE BETWEEN GUIDE AND TAPE PLATFORM.

TO ADJUST
WITH MOUNTING SCREW FRICTION TIGHT, PLACE 0.010 INCH FLAT GAUGE BETWEEN GUIDE AND TAPE PLATFORM. PRESS GUIDE DOWN AND TO LEFT. TIGHTEN MOUNTING SCREW WHILE HOLDING FEED WHEEL ADJUSTING SCREW STATIONARY BY MEANS OF AN ALLEN WRENCH.

*GUIDE IS CONSIDERED "IN CONTACT" WITH PROJECTION WHEN 0.0015 INCH GAUGE CANNOT BE INSERTED BETWEEN THEM.

TAPE GUIDE SPRING (ON UNITS NOT EQUIPPED WITH TAPE GUIDE ADJUSTING PLATE)
REQUIREMENT
MIN. 8 OZS. TO START TAPE GUIDE BAIL MOVING UPWARD.





TAPE GUIDE (LATEST DESIGN)
REQUIREMENT
CLEARANCE UNDER THE TAPE GUIDE.
MIN. 0.008 INCH
MAX. 0.015 INCH

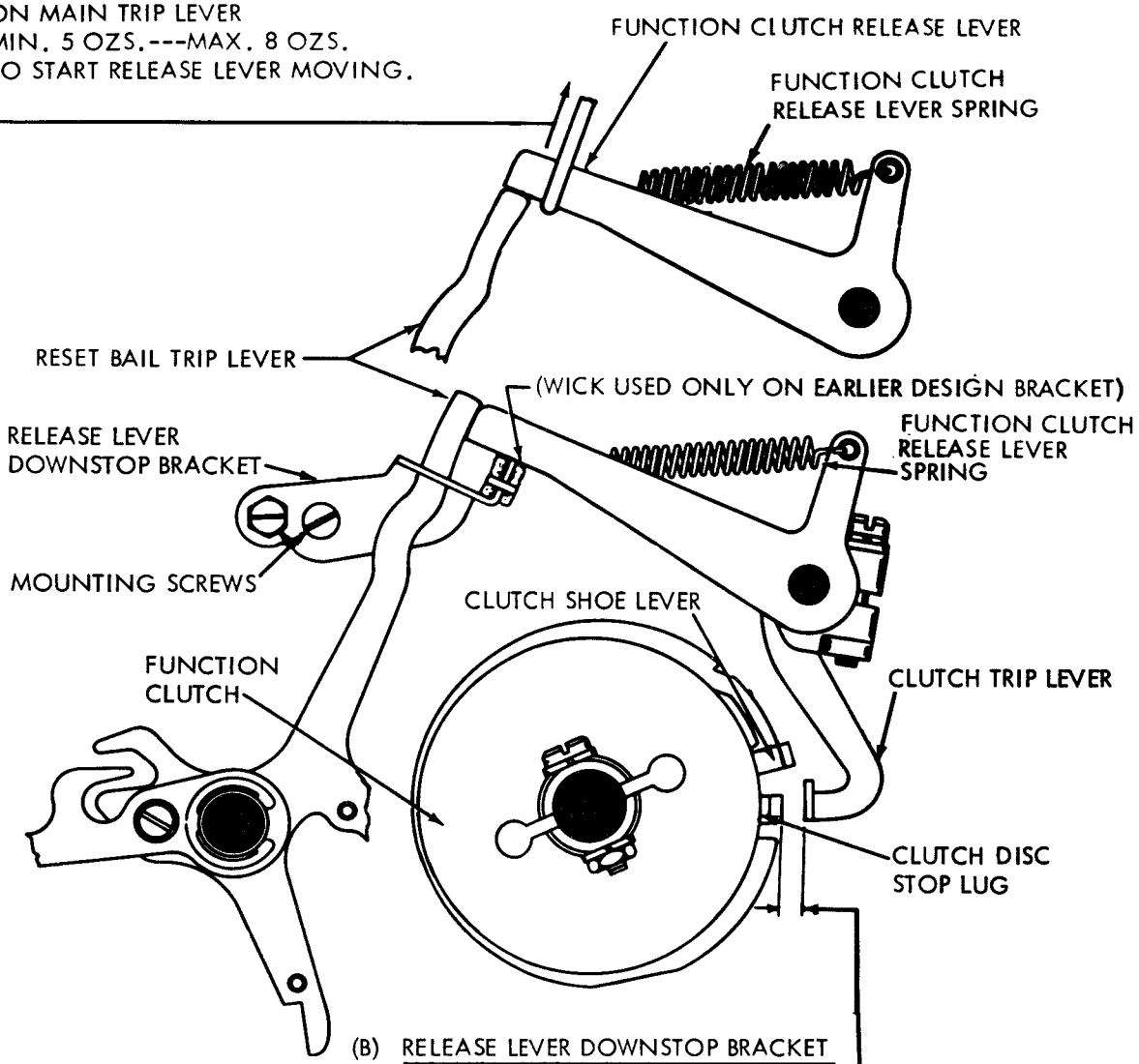
TO ADJUST
WITH MOUNTING SCREW FRICTION TIGHT, POSITION THE TAPE GUIDE. KEEP THE GUIDE AGAINST THE FRONT PLATE OF THE PUNCH.

2.36 Function Mechanism

(A) FUNCTION CLUTCH RELEASE LEVER SPRING

REQUIREMENT

TRIP FUNCTION CLUTCH. ROTATE MAIN SHAFT UNTIL RELEASE LEVER IS RESET ON MAIN TRIP LEVER
MIN. 5 OZS.---MAX. 8 OZS.
TO START RELEASE LEVER MOVING.



(B) RELEASE LEVER DOWNSTOP BRACKET

REQUIREMENT

WITH FUNCTION CLUTCH TRIPPED, ROTATE SHAFT UNTIL CLEARANCE BETWEEN FUNCTION CLUTCH DISC STOP LUG AND CLUTCH TRIP LEVER IS AT A MINIMUM. RELEASE LEVER RESTING AGAINST DOWN-STOP BRACKET. CLEARANCE BETWEEN FUNCTION CLUTCH DISC STOP LUG AND TRIP LEVER
MIN. 0.002 INCH---MAX. 0.045 INCH

TO ADJUST

REMOVE TAPE GUARD. WITH DOWNSTOP BRACKET MOUNTING SCREWS FRICTION TIGHT, POSITION BRACKET. RECHECK FOR SOME CLEARANCE BETWEEN TRIP LEVER EXTENSION AND LEFT END OF SLOT IN RELEASE LEVER DOWNSTOP BRACKET.

2.37 Typing Mechanism

(A) PUSH BAR OPERATING BLADE (PRELIMINARY)

TO CHECK

MANUALLY SELECT LTRS CODE COMBINATION (12345) ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. HOLE NO. 2 AND 3 BELL CRANKS AGAINST STOP POST.

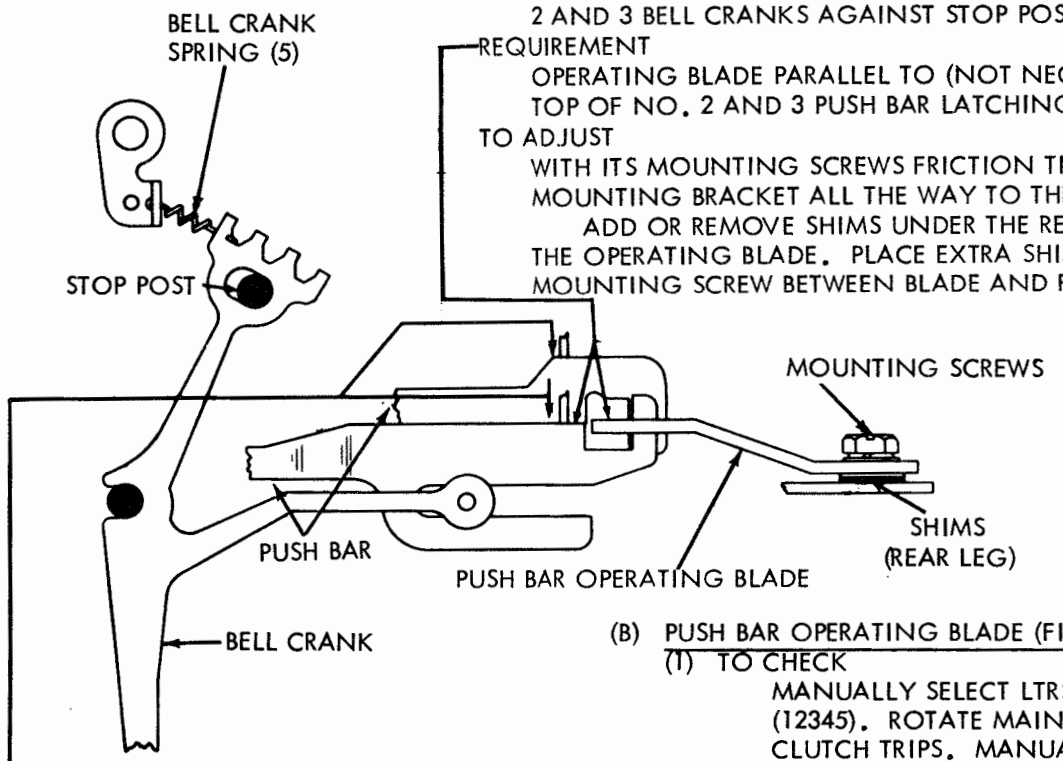
REQUIREMENT

OPERATING BLADE PARALLEL TO (NOT NECESSARILY FLUSH) TO TOP OF NO. 2 AND 3 PUSH BAR LATCHING SURFACES.

TO ADJUST

WITH ITS MOUNTING SCREWS FRICTION TIGHT PRY TRANSFER MOUNTING BRACKET ALL THE WAY TO THE RIGHT.

ADD OR REMOVE SHIMS UNDER THE REAR LEG OF THE OPERATING BLADE. PLACE EXTRA SHIMS ON REAR MOUNTING SCREW BETWEEN BLADE AND FLAT WASHER.



(B) PUSH BAR OPERATING BLADE (FINAL)

(1) TO CHECK

MANUALLY SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. MANUALLY SEAT PUSH BARS IN DETENTED POSITION. IN BAR WHICH IS NEAREST LEFT EDGE OF BLADE, TAKE UP PLAY TO LEFT AND REAR, AND THEN RELEASE.

REQUIREMENT

CLEARANCE BETWEEN BAR AND LEFT EDGE OF BLADE.

MIN. 0.015 INCH---MAX. 0.030 INCH

(2) REQUIREMENT

SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND PUSH BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

(3) REQUIREMENT

WITH UNIT IN STOP POSITION, SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION OPERATING BLADE IN ELONGATED HOLES.

NOTE:

IT MAY BE NECESSARY TO REFINE THIS ADJUSTMENT AFTER ROCKER BAIL PILOT STUD ADJUSTMENT.

(C) BELL CRANK SPRINGS (5)

TO CHECK

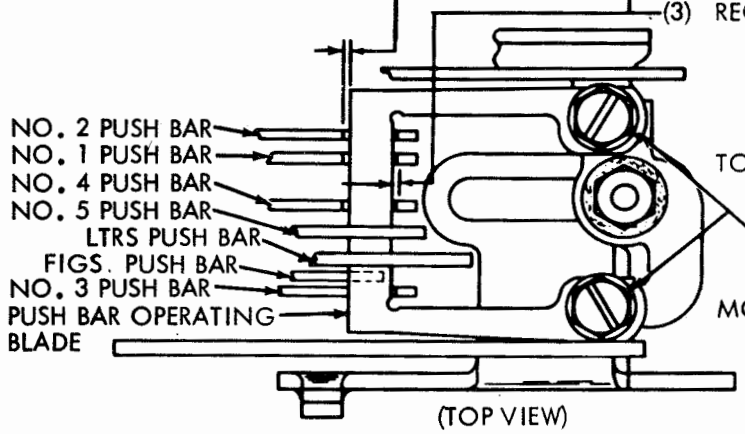
SELECT LTRS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

REQUIREMENT

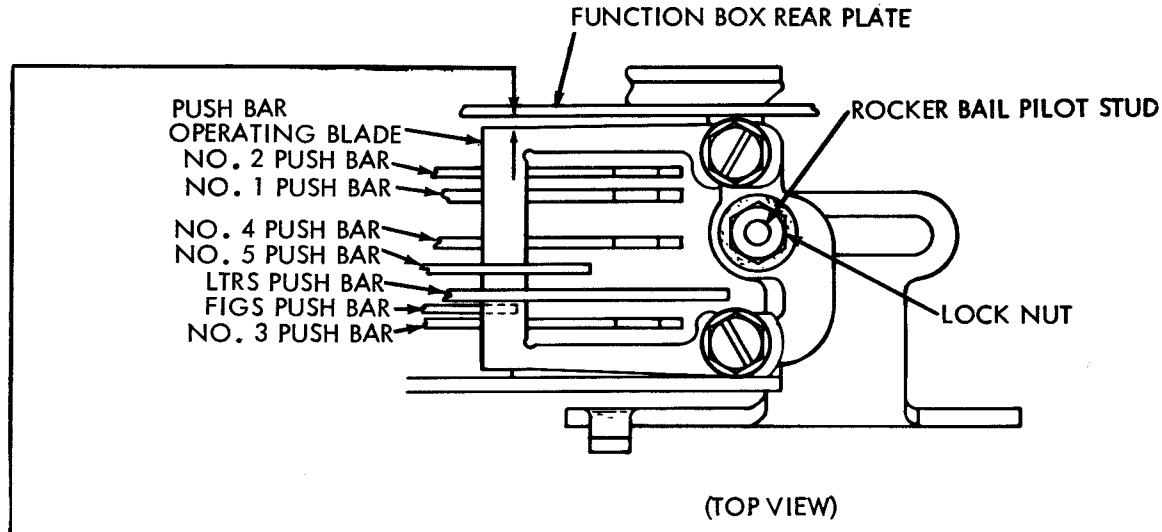
MIN. 1 OZ.---MAX. 3 OZS. TO START PUSH BAR MOVING.

NOTE:

CHECK ALL FIVE SPRINGS.



2.38 Typing Mechanism continued



(TOP VIEW)

(A) ROCKER BAIL PILOT STUD

TO CHECK

SELECT BLANK COMBINATION. POSITION ROCKER BAIL THROUGH A COMPLETE CYCLE TO INSURE THE CLEARANCE IS A MINIMUM.

REQUIREMENT

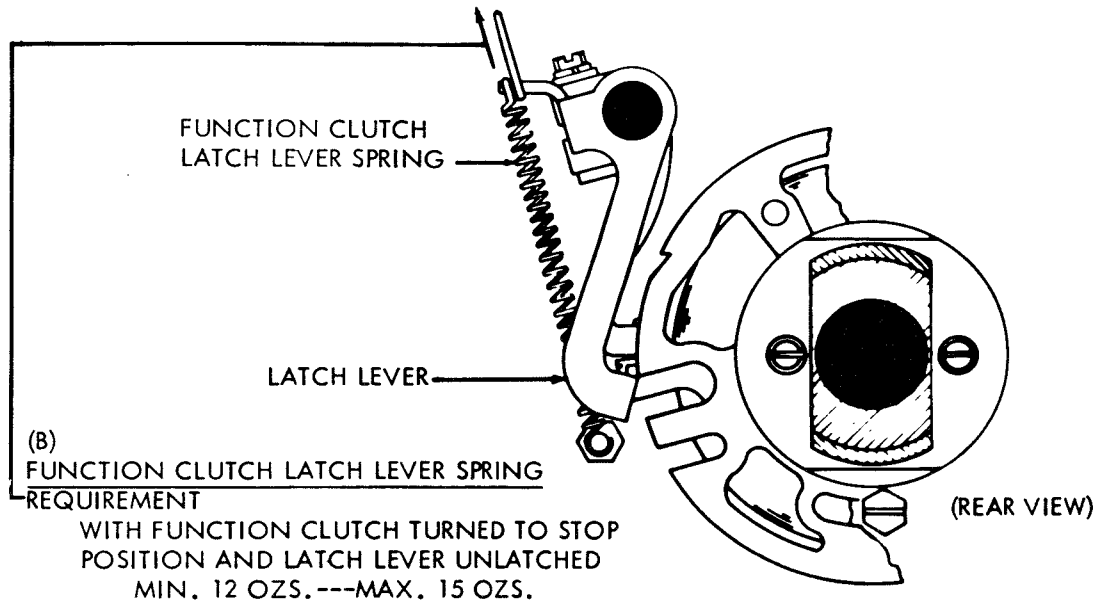
CLEARANCE BETWEEN FUNCTION BOX REAR PLATE AND PUSH BAR OPERATING BLADE

MIN. 0.005 INCH---MAX. 0.020 INCH

AT A POINT IN THE CYCLE AND WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MINIMUM.

TO ADJUST

POSITION ROCKER BAIL PILOT STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.



(REAR VIEW)

(B)

FUNCTION CLUTCH LATCH LEVER SPRING

REQUIREMENT

WITH FUNCTION CLUTCH TURNED TO STOP POSITION AND LATCH LEVER UNLATCHED

MIN. 12 OZS.---MAX. 15 OZS.

TO START LATCH LEVER MOVING.

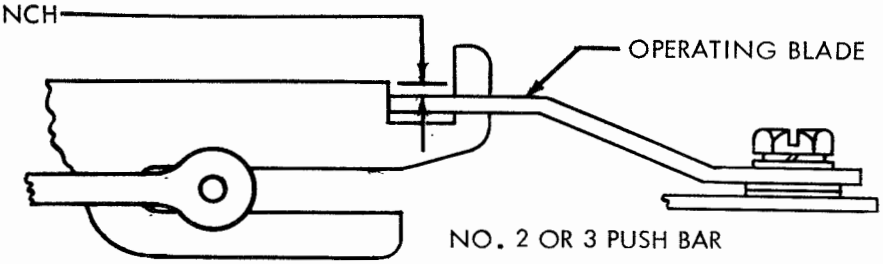
2.39 Typing Mechanism continued

FUNCTION BOX

REQUIREMENT

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS, AND PUNCH SLIDES ARE DISENGAGED FROM LATCHES. THE TOP OF THE OPERATING BLADE SHALL BE

FLUSH --- MAX. 0.020 INCH



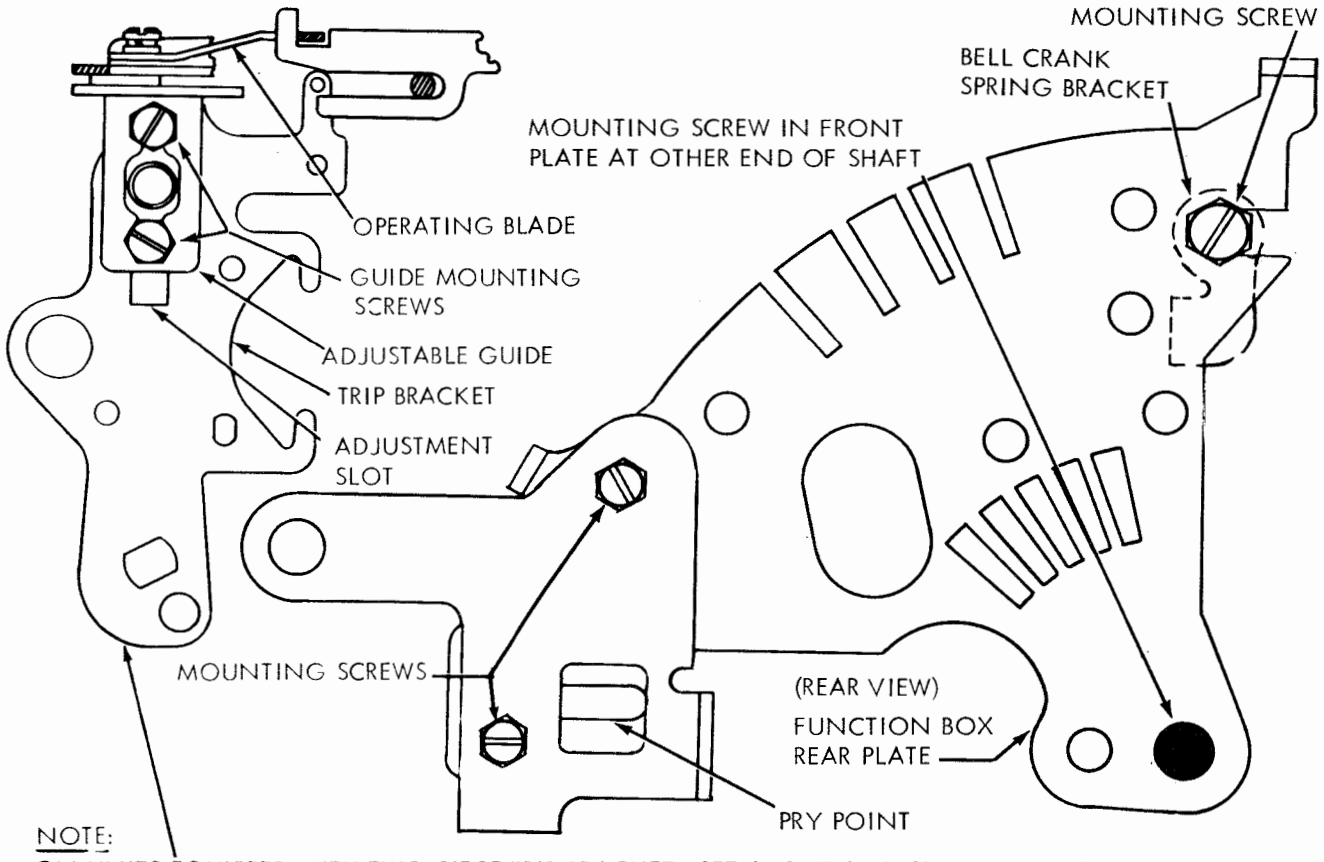
BELOW THE TOPS OF THE NO. 2 AND 3 PUSHBARS. TAKE UP PLAY IN PUSHBARS IN A DOWNWARD DIRECTION THEN RELEASE.

NOTE:

WHEN UNIT IS MOUNTED AS PART OF THE KEYBOARD PERFORATOR TRANSMITTER, IT MAY BE NECESSARY TO REFINE THE ADJUSTMENT WITHIN ITS LIMITS TO INCREASE OPERATING MARGINS OF THE UNIT.

TO ADJUST

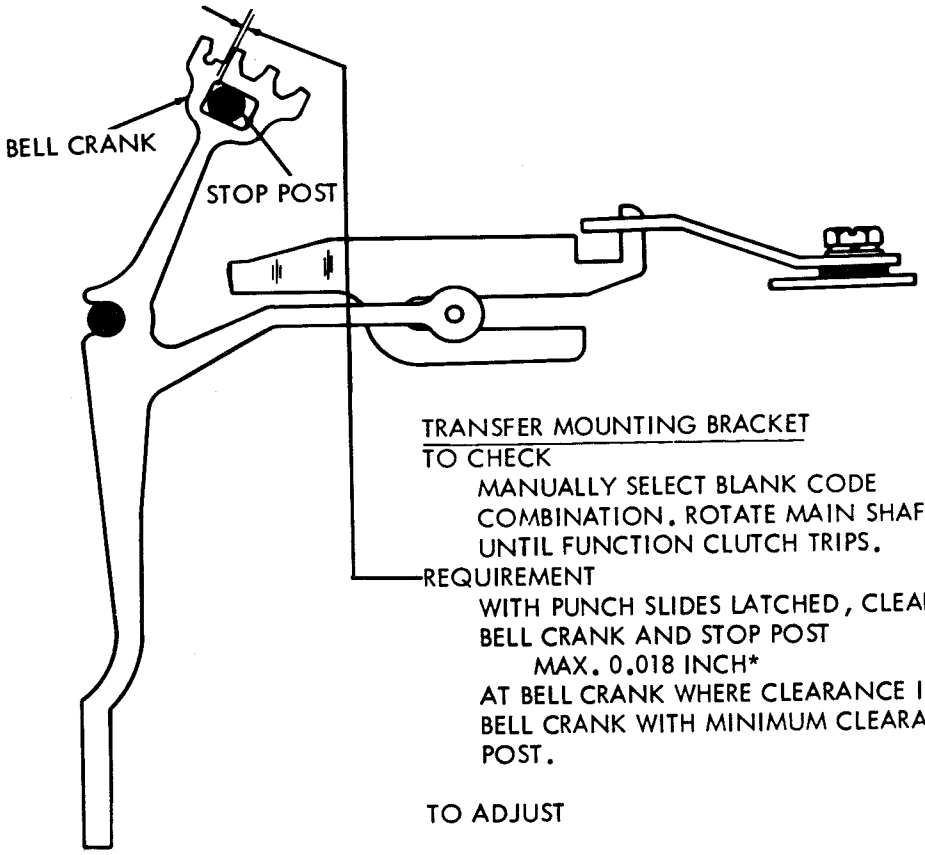
WITH THREE MOUNTING SCREWS IN REAR PLATE AND ONE MOUNTING SCREW IN FRONT PLATE LOOSENED, POSITION FUNCTION BOX BY MEANS OF PRY POINT. CHECK POSITION OF BELL CRANK.



NOTE:

ON UNITS EQUIPPED WITH TWO-PIECE TRIP BRACKET, SET ABOVE ADJUSTMENT IN CENTER OF ITS RANGE AND TIGHTEN SCREWS. LOOSEN TWO SCREWS WHICH MOUNT GUIDE TO BRACKET AND POSITION GUIDE TO MEET ABOVE REQUIREMENT.

2.40 Typing Mechanism continued



TRANSFER MOUNTING BRACKET

TO CHECK

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

REQUIREMENT

WITH PUNCH SLIDES LATCHED, CLEARANCE BETWEEN BELL CRANK AND STOP POST

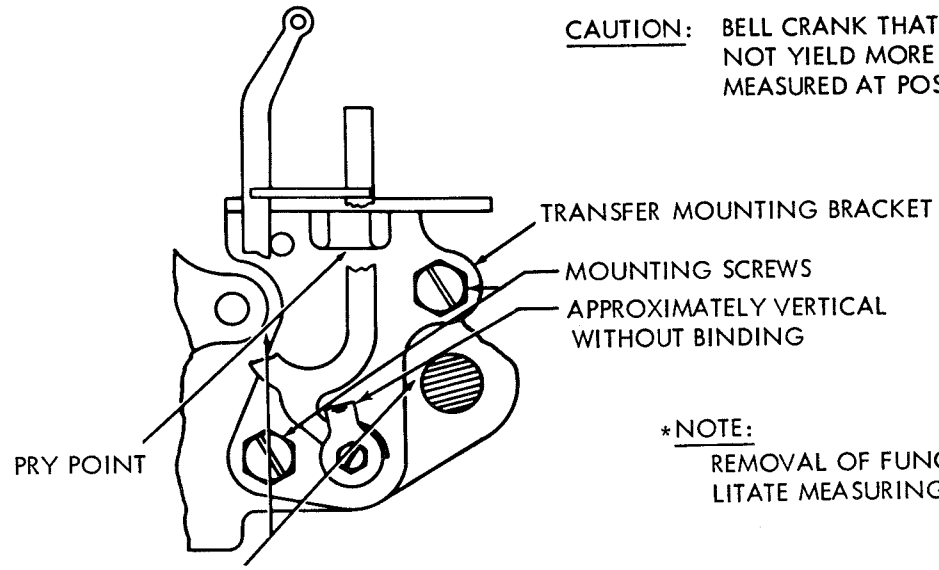
MAX. 0.018 INCH*

AT BELL CRANK WHERE CLEARANCE IS MAXIMUM WHEN BELL CRANK WITH MINIMUM CLEARANCE IS TOUCHING POST.

TO ADJUST

WITH MOUNTING SCREWS FRICTION TIGHT, PRY TRANSFER MOUNTING BRACKET TO LEFT UNTIL CLOSEST BELL CRANK TOUCHES POST. TIGHTEN MOUNTING SCREWS AND CHECK REQUIREMENT.

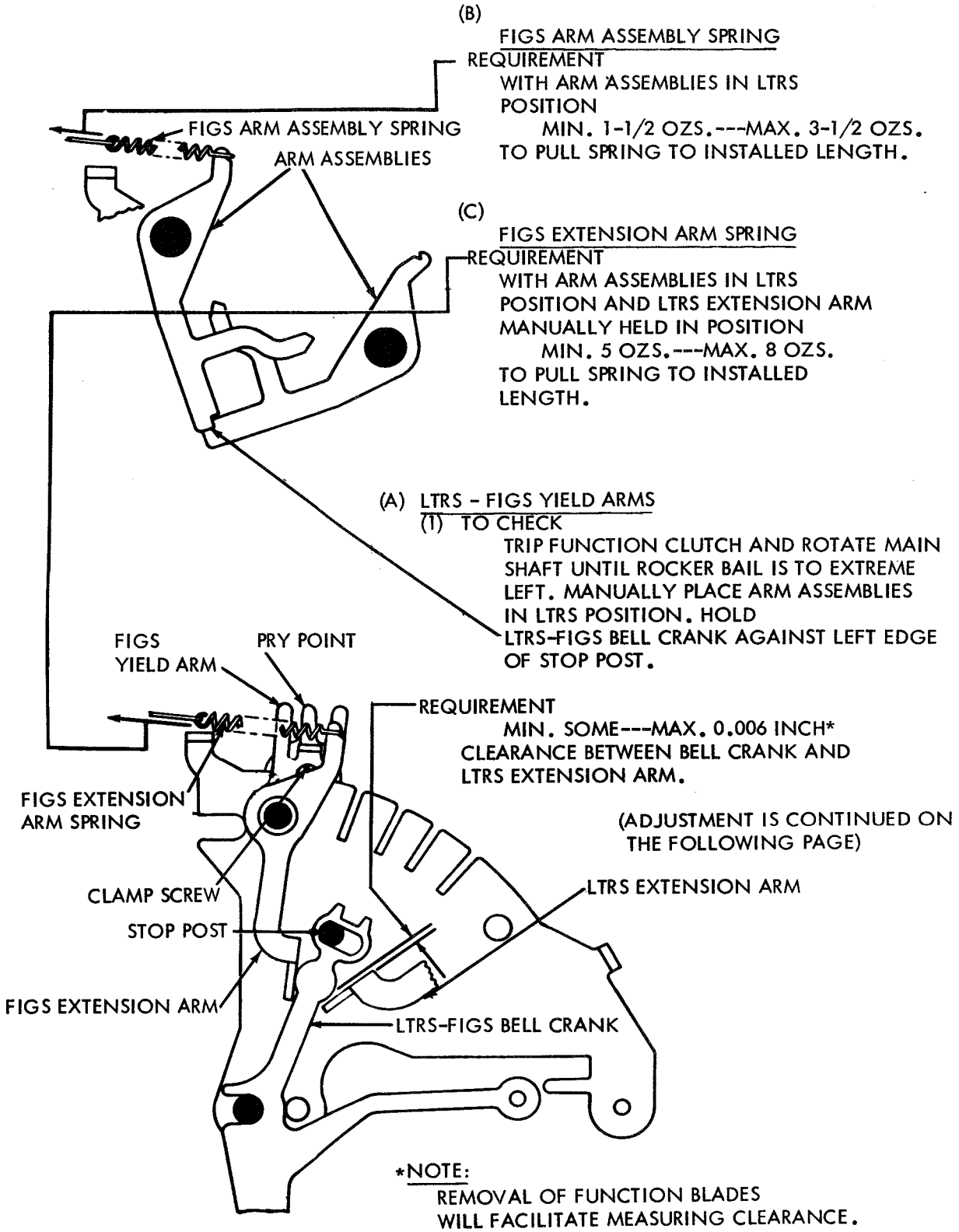
CAUTION: BELL CRANK THAT YIELDS MOST SHALL NOT YIELD MORE THAN 0.007 INCH MEASURED AT POST.



*NOTE:

REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

2.41 Typing Mechanism continued



2.42 Typing Mechanism continued

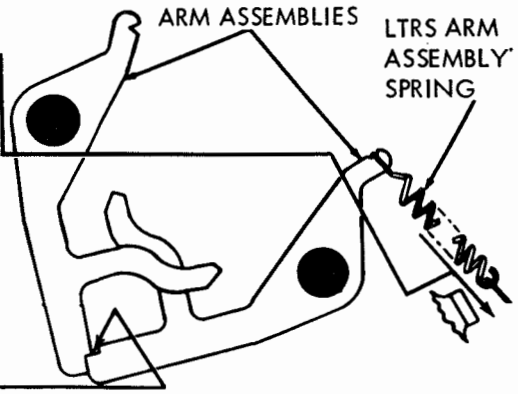
(B)

LTRS ARM ASSEMBLY SPRING

REQUIREMENT

WITH ARM ASSEMBLIES IN FIGS POSITION

MIN. 1-1/2 OZS.---MAX. 3-1/2 OZS. TO PULL SPRING TO INSTALLED LENGTH.



(A)

LTRS - FIGS YIELD ARMS (CONTINUED FROM PREVIOUS PAGE)

(2) TO CHECK

MANUALLY PLACE ARM ASSEMBLIES IN FIGS POSITION.

HOLD LTRS - FIGS BELL CRANK AGAINST RIGHT EDGE OF STOP POST.

REQUIREMENT

MIN. SOME---MAX. 0.006 INCH* CLEARANCE BETWEEN BELL CRANK AND FIGS EXTENSION ARM.

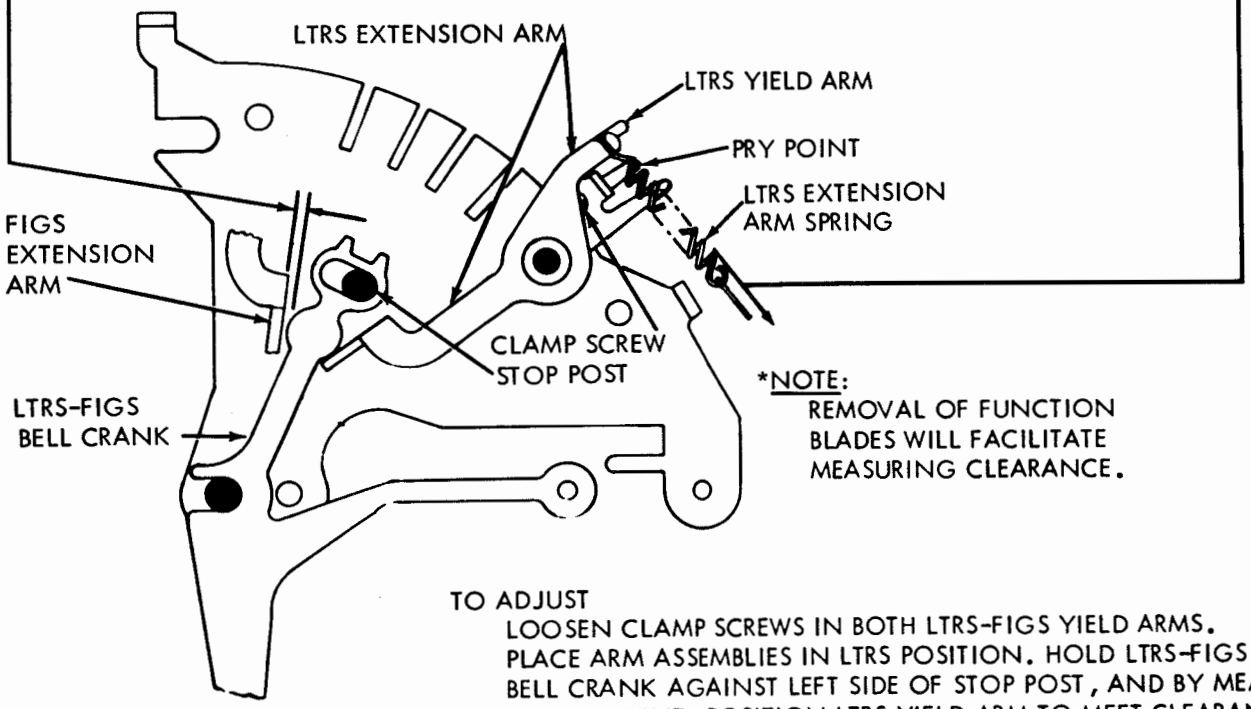
(C)

LTRS EXTENSION ARM SPRING

REQUIREMENT

WITH ARM ASSEMBLIES IN FIGS POSITION AND LTRS EXTENSION ARM MANUALLY HELD IN POSITION

MIN. 5 OZS.---MAX. 8 OZS. TO PULL SPRING TO INSTALLED LENGTH.



*NOTE: REMOVAL OF FUNCTION BLADES WILL FACILITATE MEASURING CLEARANCE.

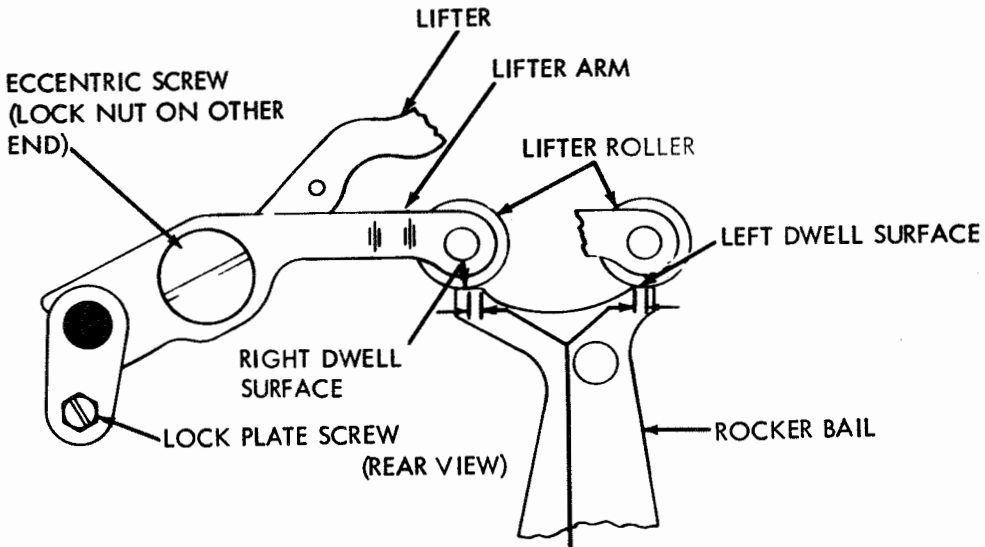
TO ADJUST

LOOSEN CLAMP SCREWS IN BOTH LTRS-FIGS YIELD ARMS. PLACE ARM ASSEMBLIES IN LTRS POSITION. HOLD LTRS-FIGS BELL CRANK AGAINST LEFT SIDE OF STOP POST, AND BY MEANS OF PRY POINT, POSITION LTRS YIELD ARM TO MEET CLEARANCE REQUIREMENT UNDER (A) (1) FIG. ON PREVIOUS PAGE. TIGHTEN LTRS YIELD ARM CLAMP SCREW.

PLACE ARM ASSEMBLIES IN FIGS POSITION AND BY MEANS OF PRY POINT, POSITION FIGS YIELD ARM TO MEET REQUIREMENT UNDER (2) ABOVE. TIGHTEN FIGS YIELD ARM CLAMP SCREW.

CAUTION: ARM ASSEMBLIES MAY CHANGE POSITION DURING ADJUSTMENT. AS TIGHTENING OF SCREWS MAY AFFECT ADJUSTMENT, RECHECK REQUIREMENTS.

2.43 Typing Mechanism continued



(A) LIFTER ARM

TO CHECK

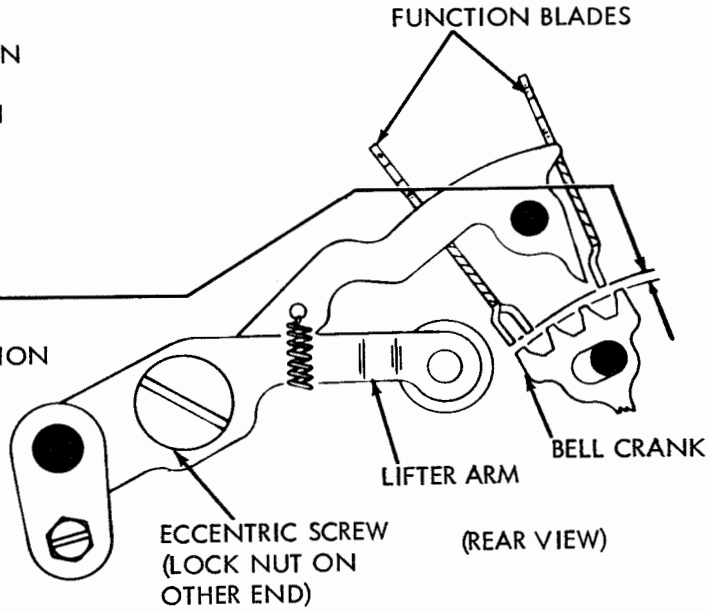
TRIP FUNCTION CLUTCH. MOVE ROCKER BAIL TO EXTREME LEFT POSITION AND OBSERVE TRAVEL OF LIFTER ROLLER ON RIGHT DWELL SURFACE. MOVE ROCKER BAIL TO EXTREME RIGHT POSITION AND OBSERVE TRAVEL OF ROLLER ON LEFT DWELL SURFACE.

REQUIREMENT

APPROXIMATELY EQUAL TRAVEL ON EACH DWELL SURFACE.

TO ADJUST*

LOOSEN LOCK PLATE SCREW UNTIL FRICTION TIGHT. WITH ECCENTRIC SCREW LOCK NUT FRICTION TIGHT, POSITION LIFTER ARM ON LIFTER. TIGHTEN LOCK PLATE SCREW. DO NOT TIGHTEN LOCK NUT.



(B) LIFTER ARM ECCENTRIC SCREW

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED

(1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LTRS-FIGS FUNCTION BLADE PROJECTION MIN. 0.008 INCH---MAX. 0.020 INCH

(2) MIN. 0.005 INCH CLEARANCE FOR FUNCTION BLADES OTHER THAN LTRS-FIGS IF UNIT IS SO EQUIPPED

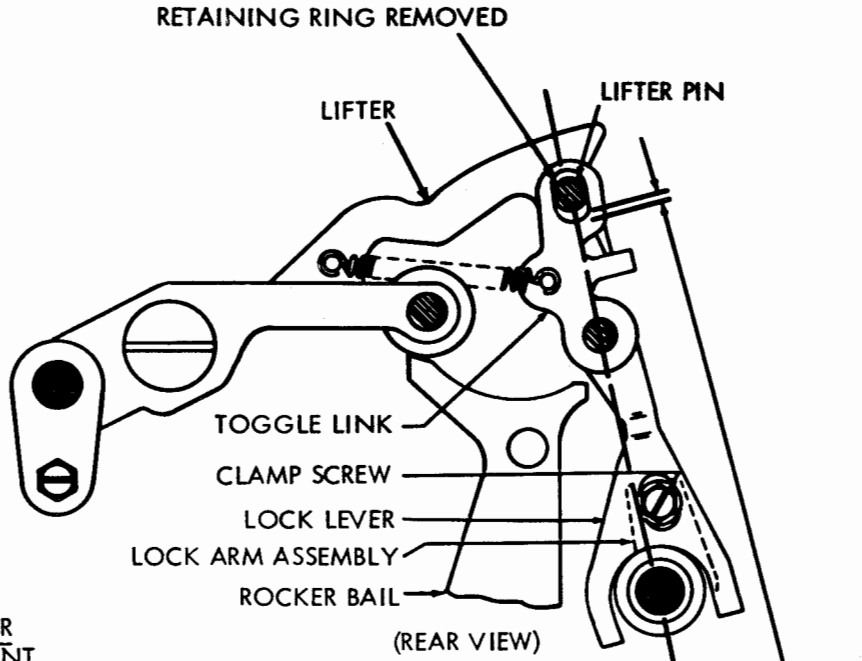
TO ADJUST

POSITION LIFTER ARM ECCENTRIC SCREW WITH LOCK NUT LOOSENED.

*NOTE:

REMOVE TIMING CONTACTS IF UNIT IS SO EQUIPPED.

2.44 Typing Mechanism continued



LOCK LEVER
REQUIREMENT

(1) WITH LETTERS CODE COMBINATION (12345) SELECTED AND ROCKER BAIL TO EXTREME LEFT, TOGGLE LINKAGE SHOULD MOVE THROUGH POINT WHERE TOGGLE LINK AND LOCK LEVER ARE IN STRAIGHT LINE WITHOUT RAISING LIFTER.

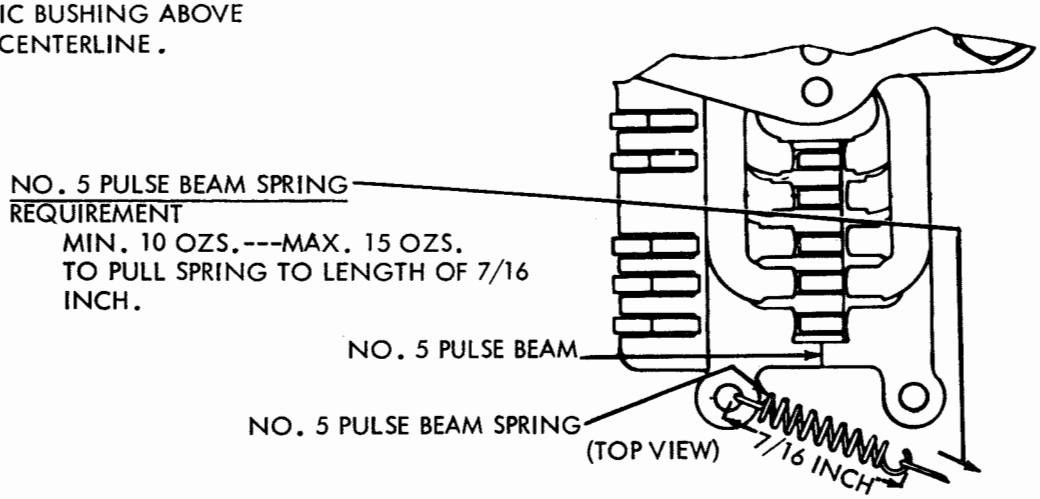
(2) WITH TOGGLE LINK AND LOCK LEVER IN STRAIGHT LINE, CLEARANCE BETWEEN TOGGLE LINK AND LIFTER PIN (WITH RETAINING RING REMOVED)
MIN. SOME---MAX. 0.015 INCH.

TO ADJUST

POSITION LOCK LEVER ON LOCK ARM ASSEMBLY WITH CLAMP SCREW FRICTION TIGHT.

NOTE:

TO AVOID INTERFERENCE WITH LOCK LEVER, IT MAY BE NECESSARY TO MOVE HIGH PART OF CORRECTING DRIVE LINK ECCENTRIC BUSHING ABOVE HORIZONTAL CENTERLINE.



NO. 5 PULSE BEAM SPRING
REQUIREMENT

MIN. 10 OZS.---MAX. 15 OZS. TO PULL SPRING TO LENGTH OF 7/16 INCH.

2.45 Typing Mechanism continued

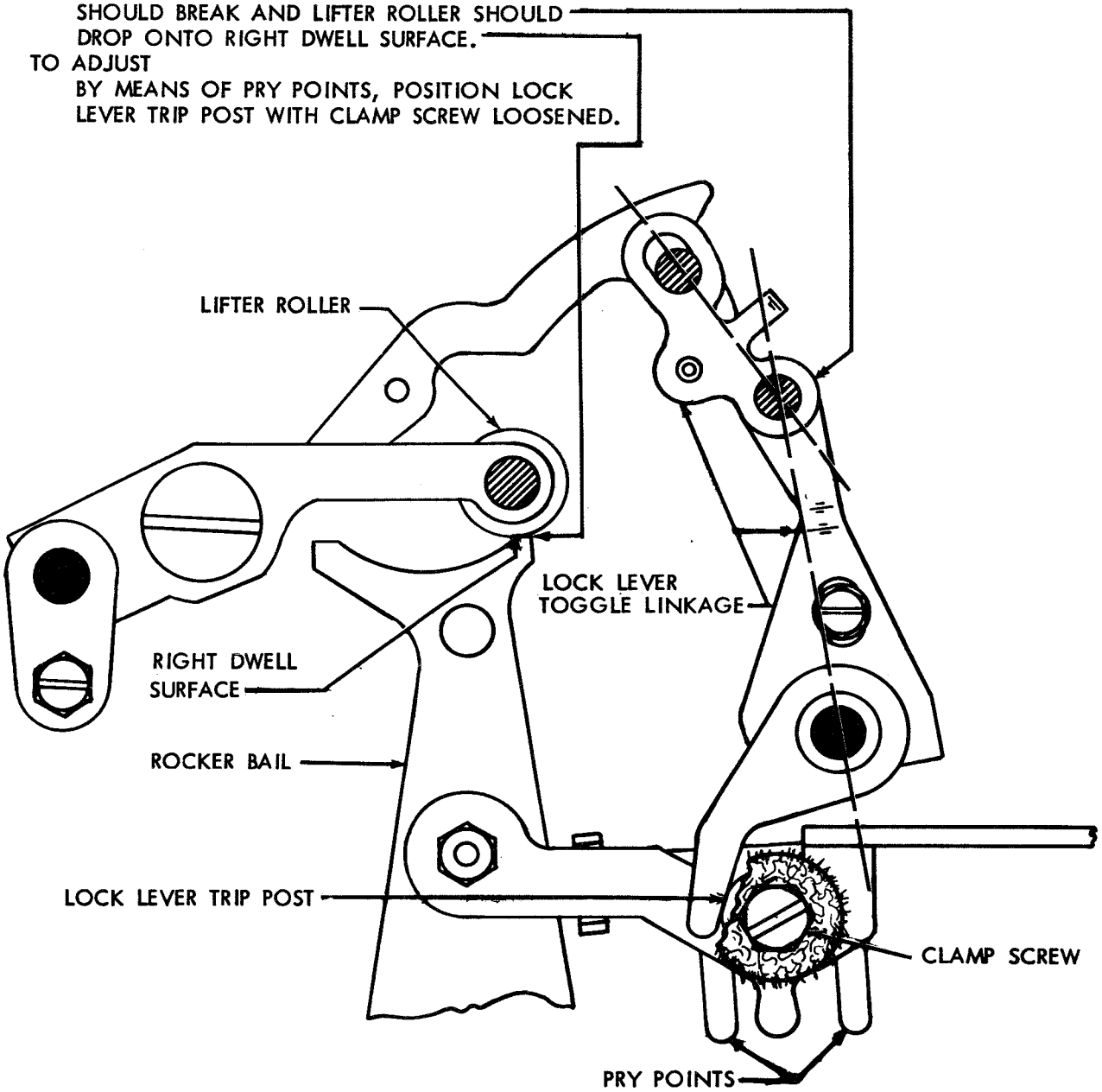
LOCK LEVER TRIP POST

REQUIREMENT

AS ROCKER BAIL APPROACHES EXTREME RIGHT POSITION, LOCK LEVER TOGGLE LINKAGE SHOULD BREAK AND LIFTER ROLLER SHOULD DROP ONTO RIGHT DWELL SURFACE.

TO ADJUST

BY MEANS OF PRY POINTS, POSITION LOCK LEVER TRIP POST WITH CLAMP SCREW LOOSENED.

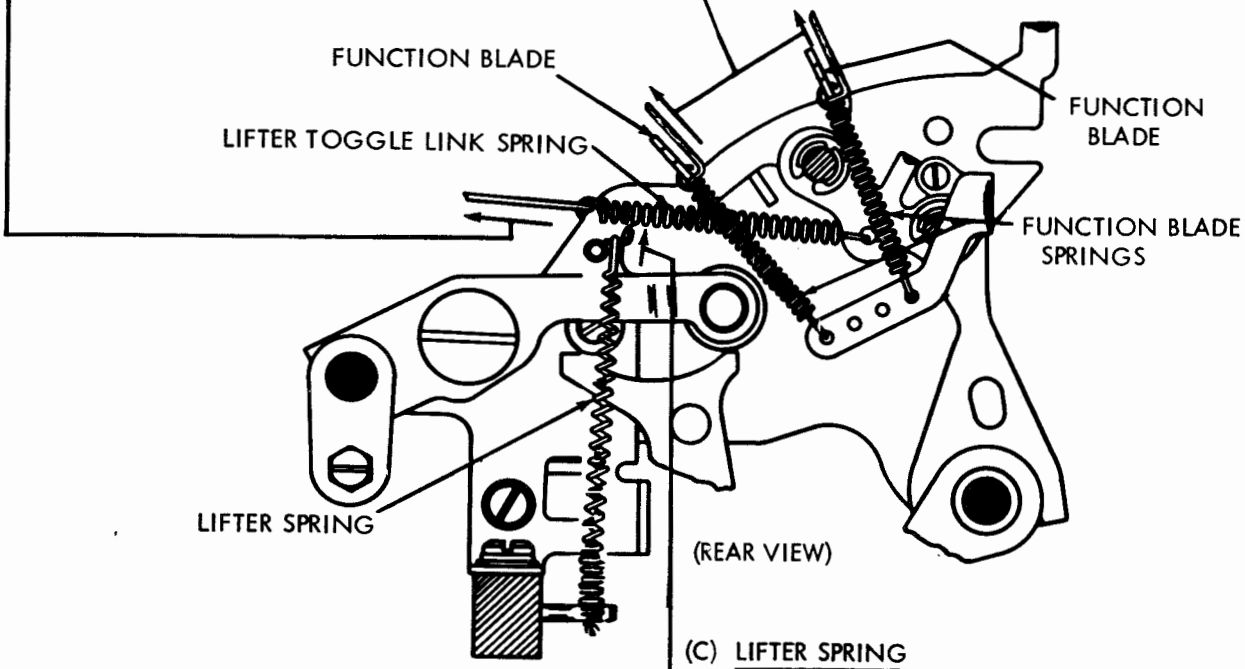


(REAR VIEW)

2.46 Typing Mechanism continued

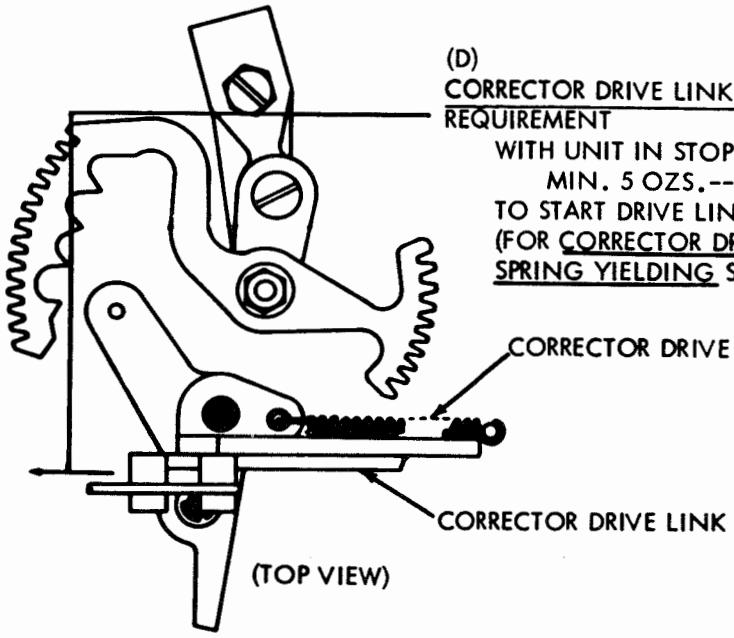
(A)
LIFTER TOGGLE LINK SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION
MIN. 1-1/2 OZS.---MAX. 2-1/4 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(B) FUNCTION BLADE SPRINGS
REQUIREMENT
WITH UNIT IN STOP POSITION.
LETTERS AND FIGURES FUNCTION BLADES.
MIN. 10 OZS.---MAX. 13 OZS.
OTHER FUNCTION BLADES
MIN. 7 OZS.---MAX. 10 OZS.
TO START FUNCTION BLADE MOVING.



(C) LIFTER SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION
MIN. 7 OZS.---MAX. 9 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(D)
CORRECTOR DRIVE LINK SPRING (NON-YIELDING)
REQUIREMENT
WITH UNIT IN STOP POSITION
MIN. 5 OZS.---MAX. 9 OZS.
TO START DRIVE LINK MOVING.
(FOR CORRECTOR DRIVE LINK SPRING YIELDING SEE PAR. 2.51)



2.47 Typing Mechanism continued

(A) OSCILLATING DRIVE LINK

TO CHECK

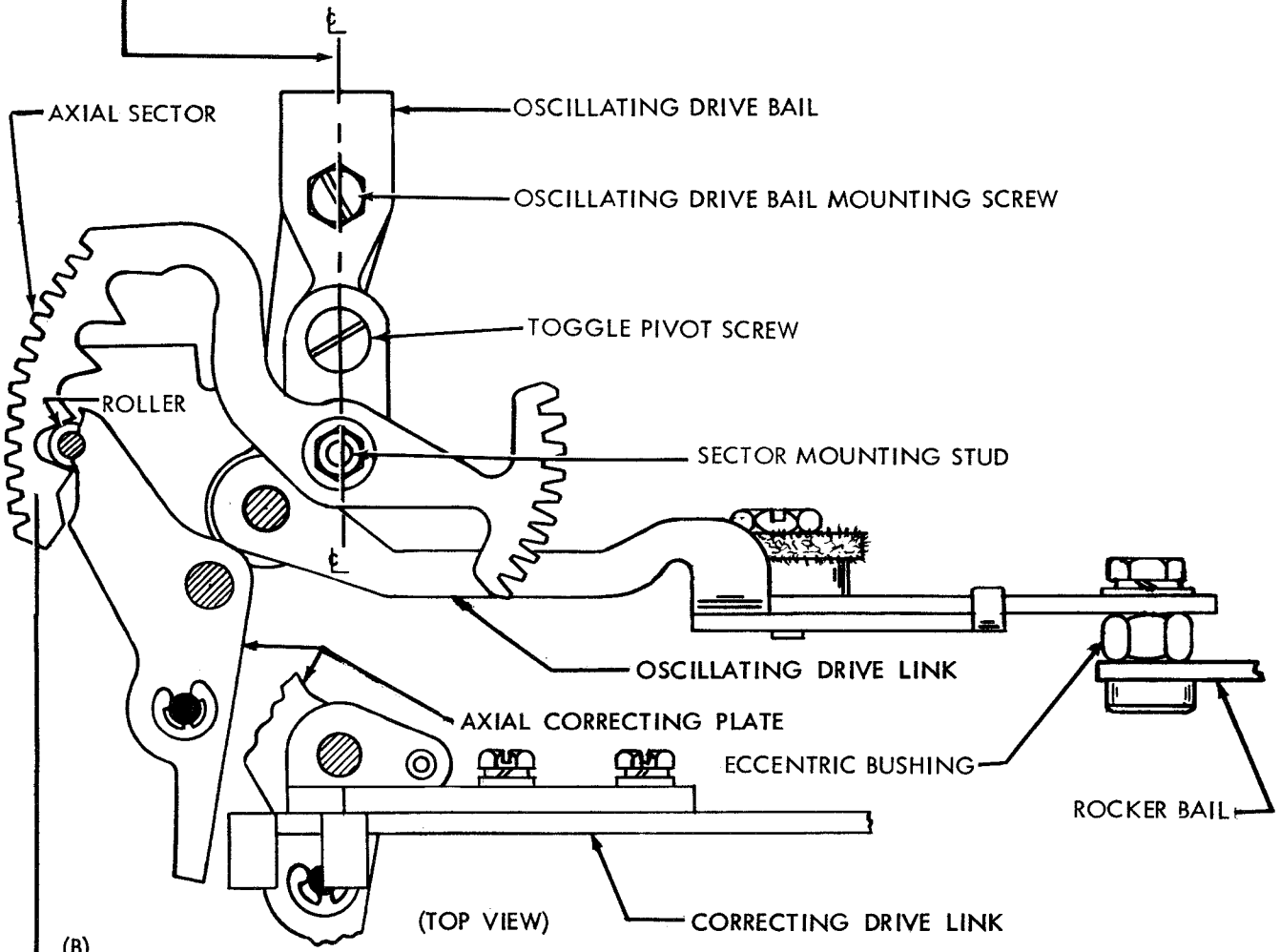
POSITION ROCKER BAIL TO ITS EXTREME LEFT.

REQUIREMENT

SECTOR MOUNTING STUD, TOGGLE PIVOT SCREW AND OSCILLATING DRIVE BAIL MOUNTING SCREW SHOULD APPROXIMATELY LINE UP.

TO ADJUST

POSITION OSCILLATING DRIVE LINK BY MEANS OF ITS ECCENTRIC BUSHING.



(B)

OSCILLATING DRIVE BAIL

REQUIREMENT

WITH "BLANK" COMBINATION SELECTED, ROTATE MAIN SHAFT, TAKING UP AXIAL PLAY IN TYPE WHEEL SHAFT TOWARD FRONT OF UNIT, THE AXIAL CORRECTOR ROLLER SHALL ENTER THE FIRST NOTCH OF THE SECTOR CENTRALLY.

TO ADJUST

LOOSEN OSCILLATING BAIL ADJUSTING SCREW. SELECT "BLANK" COMBINATION. POSITION OSCILLATING BAIL BY MEANS OF ITS ELONGATED MOUNTING HOLE SO CORRECTOR ROLLER ENTERS FIRST NOTCH OF SECTOR WHEN ROCKER BAIL MOVES TO ITS EXTREME LEFT POSITION. HOLD CORRECTOR ROLLER FIRMLY IN FIRST NOTCH AND TAKE UP PLAY IN OSCILLATING BAIL LINKAGE BY APPLYING A FORCE TO OSCILLATING BAIL TOWARD REAR OF UNIT. TIGHTEN THE OSCILLATING BAIL ADJUSTING SCREW.

2.48 Typing Mechanism continued

(A) AXIAL SECTOR ALIGNMENT

REQUIREMENT

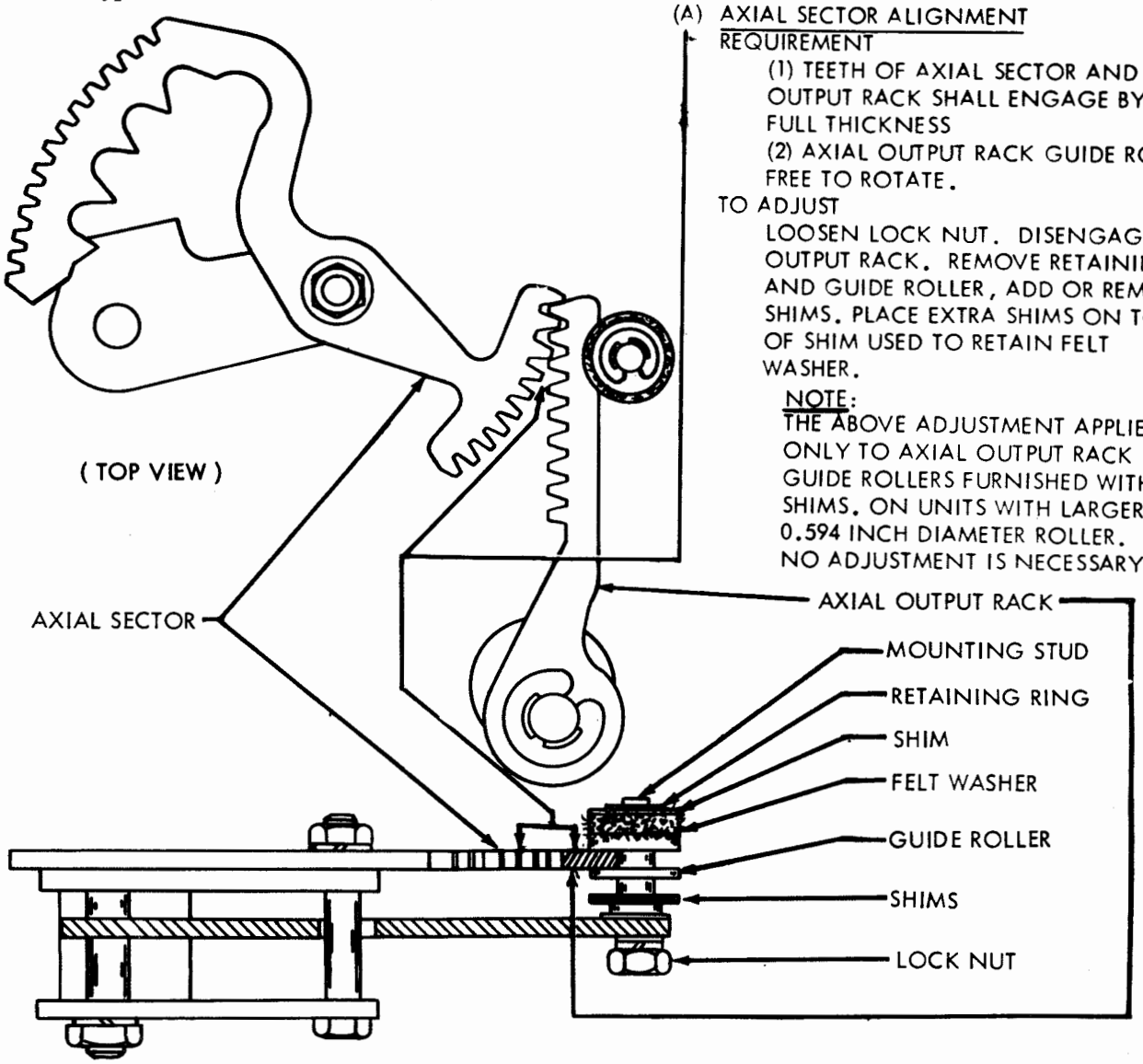
(1) TEETH OF AXIAL SECTOR AND AXIAL OUTPUT RACK SHALL ENGAGE BY THEIR FULL THICKNESS

(2) AXIAL OUTPUT RACK GUIDE ROLLER FREE TO ROTATE.

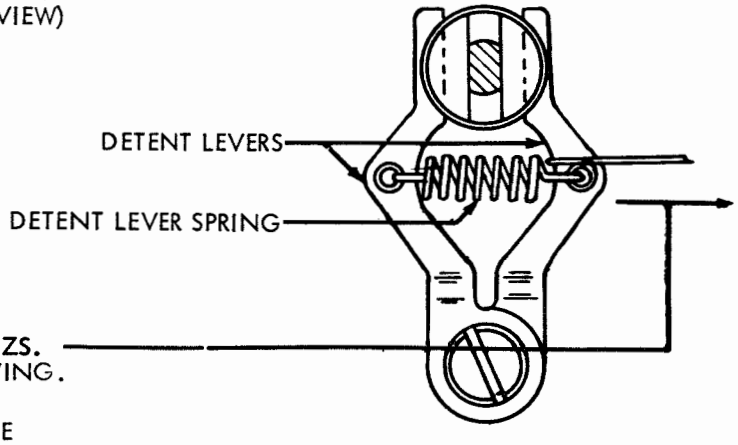
TO ADJUST

LOOSEN LOCK NUT. DISENGAGE AXIAL OUTPUT RACK. REMOVE RETAINING RING AND GUIDE ROLLER, ADD OR REMOVE SHIMS. PLACE EXTRA SHIMS ON TOP OF SHIM USED TO RETAIN FELT WASHER.

NOTE:
THE ABOVE ADJUSTMENT APPLIES ONLY TO AXIAL OUTPUT RACK GUIDE ROLLERS FURNISHED WITH SHIMS. ON UNITS WITH LARGER 0.594 INCH DIAMETER ROLLER. NO ADJUSTMENT IS NECESSARY.



(FRONT VIEW)



(B) ECCENTRIC SHAFT

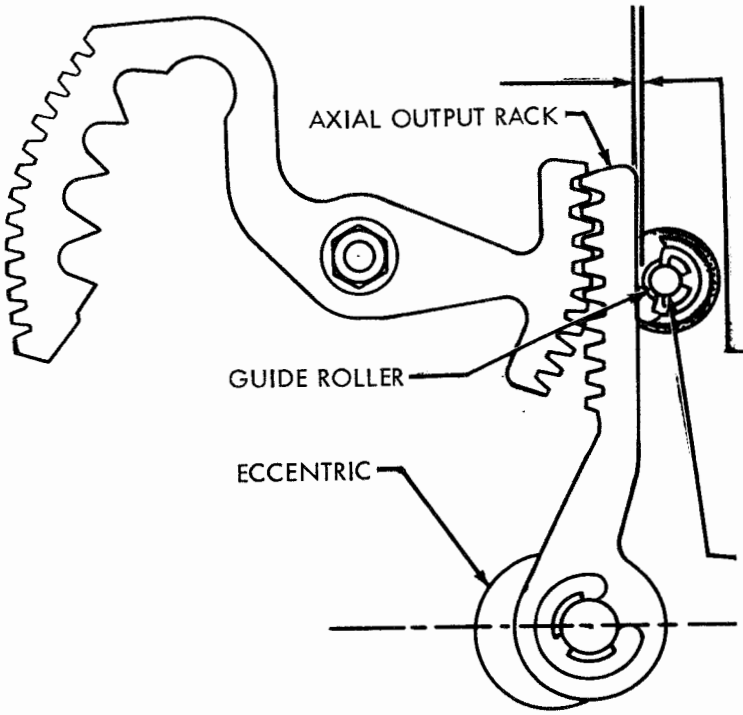
DETENT LEVER SPRINGS (6)

MIN. 7 OZS.---MAX. 10 OZS.
TO START DETENT LEVER MOVING.

NOTE:
CHECK ALL 6 SPRINGS. THERE ARE TWO ON THE AXIAL POSITIONING MECHANISM AND FOUR ON THE ROTARY POSITIONING MECHANISM.

(TOP VIEW OF SPRINGS ON AXIAL POSITIONING MECHANISM)

2.49 Typing Mechanism continued



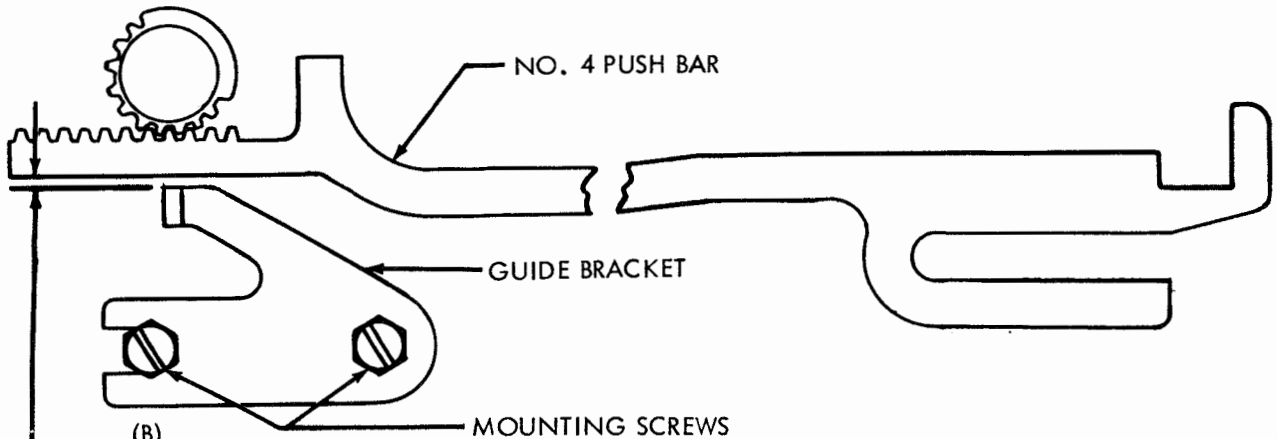
(TOP VIEW)

(A)
AXIAL OUTPUT RACK GUIDE ROLLER

TO CHECK
SELECT LINE FEED CODE COMBINATION (-2---). ROTATE MAIN SHAFT UNTIL ECCENTRIC HAS ROTATED 90 DEGREES. TAKE UP PLAY TO MAKE CLEARANCE BETWEEN OUTPUT RACK AND GUIDE ROLLER MAXIMUM.

REQUIREMENT
MIN. SOME --- MAX. 0.008 INCH

TO ADJUST
POSITION GUIDE ROLLER MOUNTING STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.



(B)
PUSH BAR GUIDE BRACKET

TO CHECK
MANUALLY SELECT CARRIAGE RETURN CODE COMBINATION (---4-). ROTATE MAIN SHAFT SO THAT NO. 4 PUSH BAR MOVES THROUGH COMPLETE RANGE OF TRAVEL.

REQUIREMENT
WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM:
MIN. SOME ----MAX. 0.008 INCH
BETWEEN NO. 4 PUSH BAR AND GUIDE BRACKET THROUGHOUT COMPLETE TRAVEL OF BAR.

TO ADJUST
POSITION GUIDE BRACKET WITH MOUNTING SCREWS LOOSENED.

2.50 Typing Mechanism continued

AXIAL CORRECTOR (NON-YIELDING)

(1) TO CHECK

SELECT BLANK CODE COMBINATION. TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.

REQUIREMENT

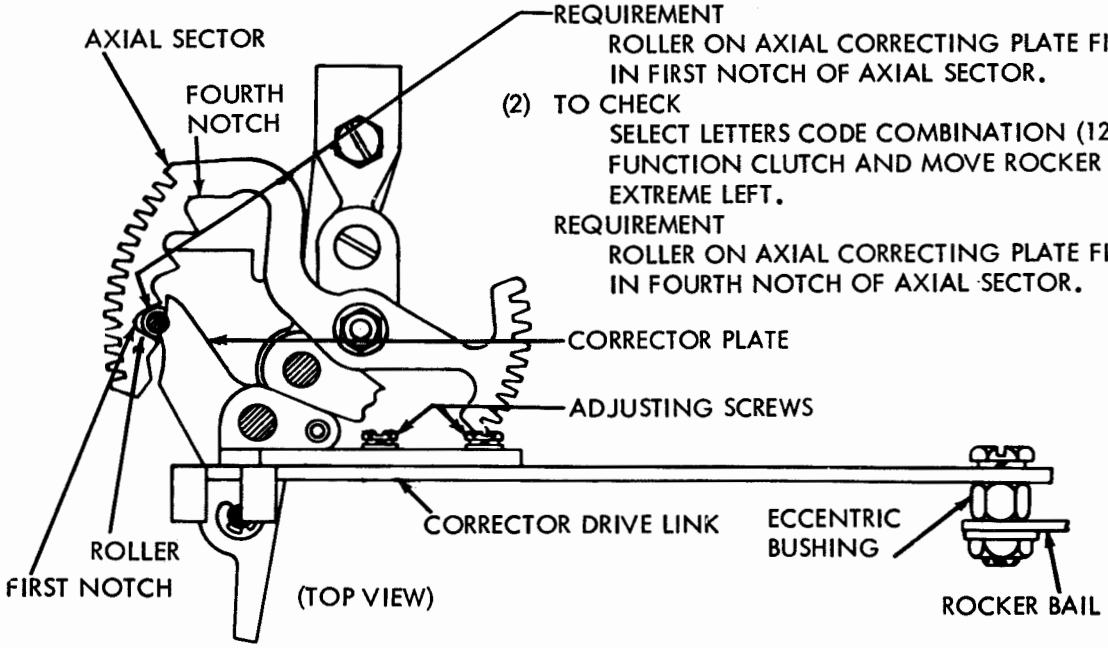
ROLLER ON AXIAL CORRECTING PLATE FIRMLY SEATED IN FIRST NOTCH OF AXIAL SECTOR.

(2) TO CHECK

SELECT LETTERS CODE COMBINATION (12345). TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.

REQUIREMENT

ROLLER ON AXIAL CORRECTING PLATE FIRMLY SEATED IN FOURTH NOTCH OF AXIAL SECTOR.

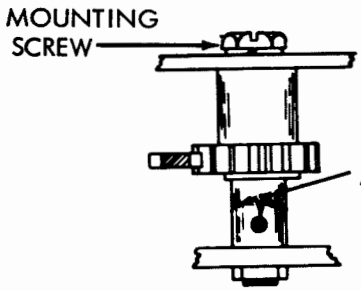


TO ADJUST

(1) LOOSEN THE TWO DRIVE LINK ADJUSTING SCREWS. FIRMLY SEAT THE AXIAL CORRECTOR ROLLER INTO THE FIRST NOTCH OF THE SECTOR BY MANUALLY APPLYING AND HOLDING THIS POSITION FOR THE NEXT PART OF THE ADJUSTMENT.

(2) APPLY A MANUAL PRESSURE ON THE DRIVE LINK SUCH THAT THE SLOT IN THE LINK WILL BOTTOM AGAINST THE BUSHING OF THE ROCKER BAIL.

(3) MAINTANING PRESSURE AT THESE TWO PLACES, TIGHTEN ADJUSTING SCREWS.



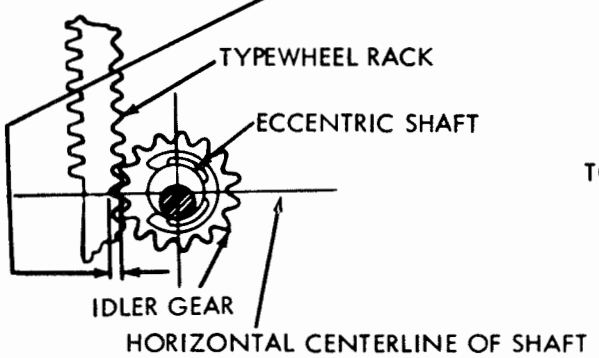
TYPEWHEEL RACK CLEARANCE

REQUIREMENT

WITH UNIT IN LETTERS FIELD, FUNCTION CLUTCH DISENGAGED.

MAX. 0.015 INCH

CLEARANCE BETWEEN IDLER GEAR AND RACK AT THE CLOSEST POINT WITH ALL THE PLAY TAKEN UP IN A DIRECTION TO MAKE THE CLEARANCE MAXIMUM. THERE SHALL BE SOME CLEARANCE THROUGHOUT THE TRAVEL OF THE RACK.



TO ADJUST

WITH MOUNTING SCREW LOOSENED, POSITION IDLER GEAR ECCENTRIC SHAFT BY MEANS OF THREE ADJUSTING HOLES. CHECK RACK THROUGHOUT ITS TRAVEL FOR BINDS.

2.51 Typing Mechanism continued

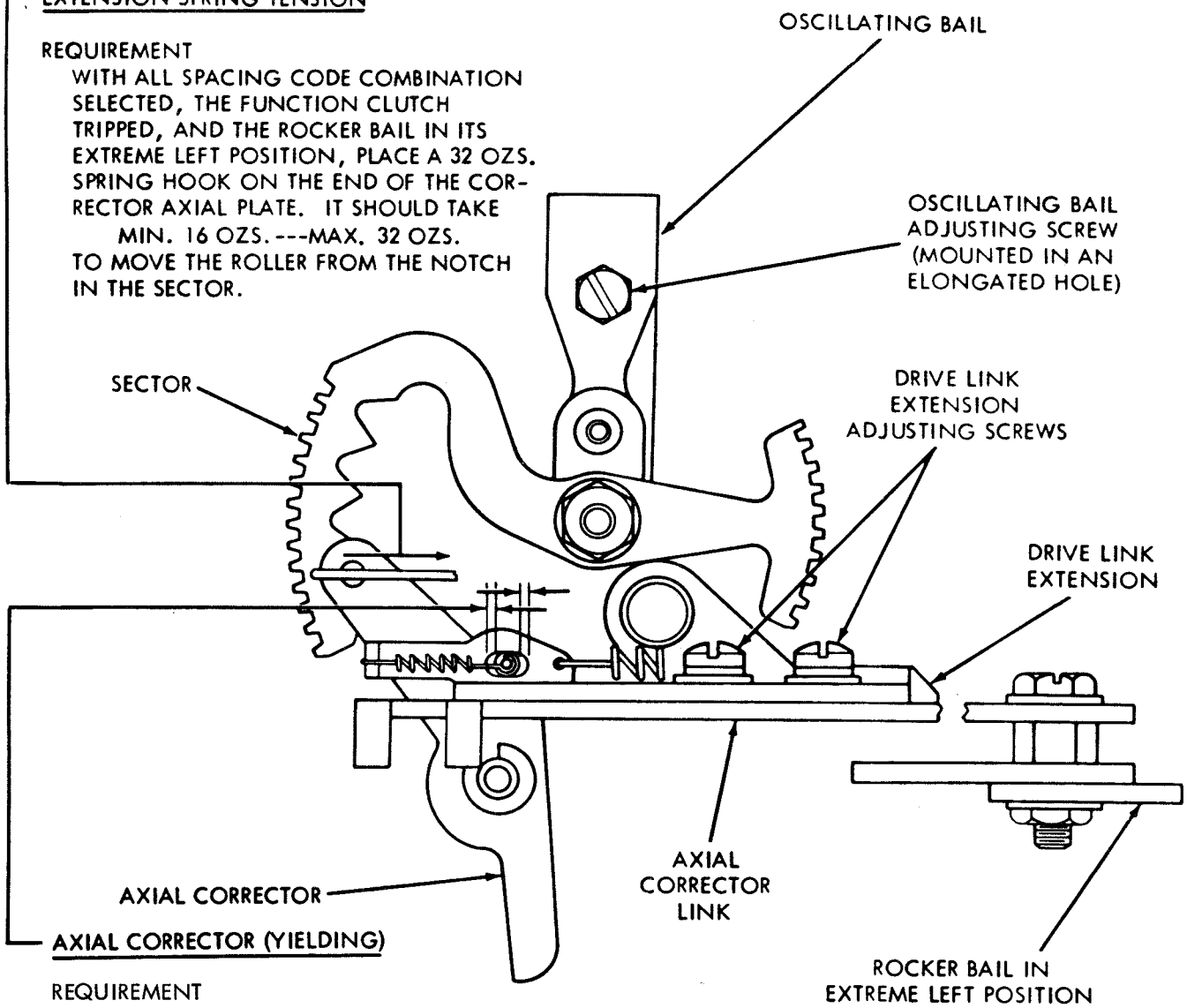
CORRECTOR DRIVE LINK (YIELDING) EXTENSION SPRING TENSION

REQUIREMENT

WITH ALL SPACING CODE COMBINATION SELECTED, THE FUNCTION CLUTCH TRIPPED, AND THE ROCKER BAIL IN ITS EXTREME LEFT POSITION, PLACE A 32 OZS. SPRING HOOK ON THE END OF THE CORRECTOR AXIAL PLATE. IT SHOULD TAKE

MIN. 16 OZS.---MAX. 32 OZS.

TO MOVE THE ROLLER FROM THE NOTCH IN THE SECTOR.



AXIAL CORRECTOR (YIELDING)

REQUIREMENT

WITH BLANK CODE COMBINATION SELECTED, FUNCTION CLUTCH TRIPPED AND ROCKER BAIL IN ITS EXTREME LEFT POSITION, THE AXIAL CORRECTOR ROLLER SHOULD SEAT IN THE FIRST SECTOR NOTCH AND THERE SHOULD BE

MIN. 0.005 INCH

BETWEEN THE ENDS OF THE SLOT AND THE SPRING POST. CHECK BOTH SIDES AND CHECK SEATING IN FOURTH NOTCH (LETTERS SELECTION). TURN THE RETAINING RING FASTENING THE DRIVE LINK EXTENSION TO THE CORRECTOR PLATE TO CHECK THE MINIMUM REQUIREMENT.

TO ADJUST

LOOSEN TWO DRIVE LINK ADJUSTING SCREWS. POSITION DRIVE LINK TO MEET THE REQUIREMENT AND RETIGHTEN THE SCREWS.

2.52 Typing Mechanism continued

ROTARY CORRECTOR MESH

(1) TO CHECK

WITH CLAMP ARM LOOSENED, "FIGURE 9" COMBINATION SELECTED (NO. 4 AND NO. 5 PULSE MARKING IN THE FIGURES POSITION) AND THE ROCKER BAIL IN ITS EXTREME LEFT POSITION.

REQUIREMENT

THE SECOND TOOTH FROM THE TOP OF THE ROTARY OUTPUT RACK (WITH THE PUSH BARS MANUALLY DETENTED) SHOULD SEAT FIRMLY BETWEEN THE LOBES OF THE ROTARY CORRECTOR ARM.

TO ADJUST

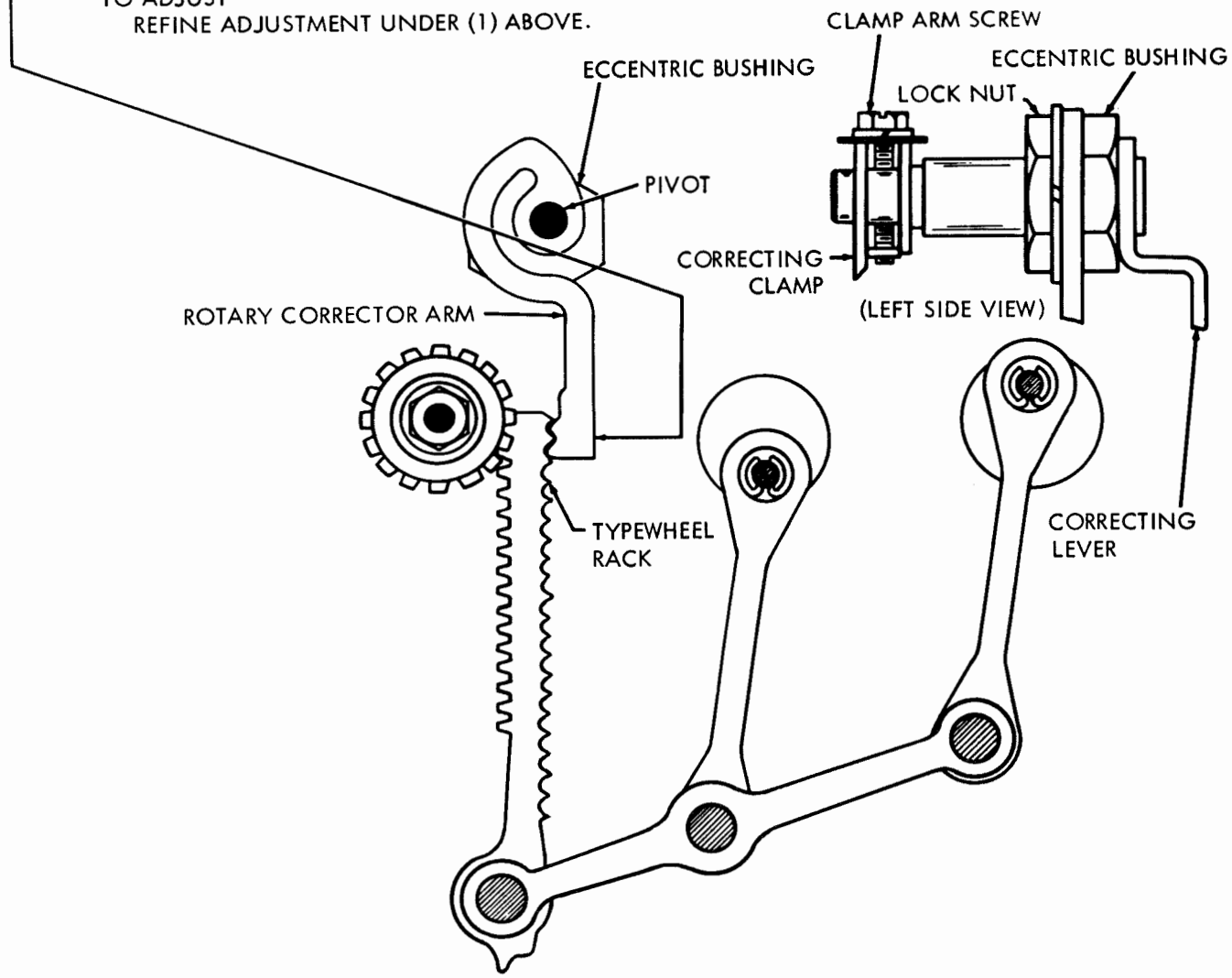
LOOSEN CLAMP ARM SCREW AND ECCENTRIC BUSHING LOCK NUT. WITH THE PIVOT OF THE CORRECTOR ARM TO THE RIGHT OF THE CENTER OF THE BUSHING, POSITION THE ROTARY CORRECTOR. TIGHTEN BUSHING LOCK NUT. DO NOT TIGHTEN CLAMP ARM SCREW AT THIS POINT.

(2) TO CHECK

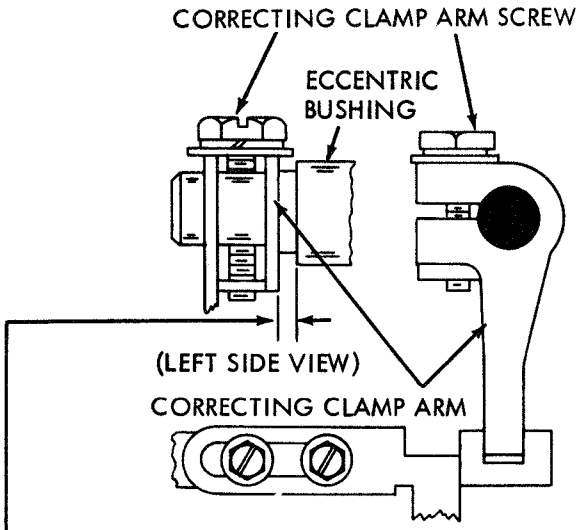
CHECK ENGAGEMENT IN A SIMILAR MANNER AS IN (1) ABOVE WITH THE FIFTH TOOTH (NO. 3 AND NO. 4 MARKING IN FIGURES POSITION), NINTH TOOTH (NO. 4 PULSE MARKING IN THE LETTERS POSITION), SIXTEENTH TOOTH (NO. 3 AND NO. 5 PULSE MARKING IN THE LETTERS FIELD).

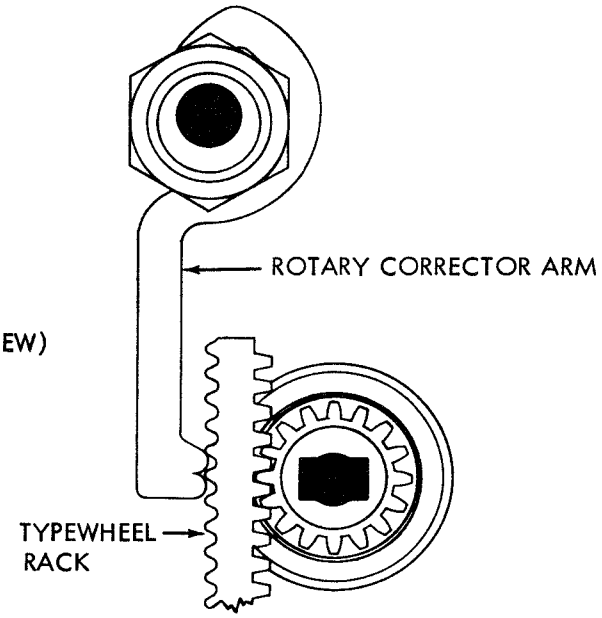
TO ADJUST

REFINE ADJUSTMENT UNDER (1) ABOVE.



2.53 Typing Mechanism continued





ROTARY CORRECTOR ARM

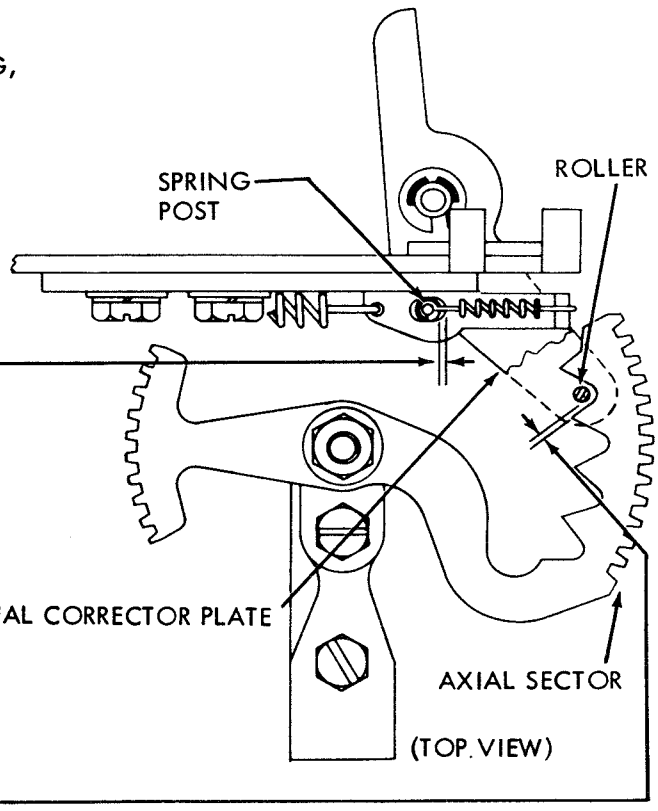
TO CHECK

WITH THE LETTERS COMBINATION SELECTED IN THE LETTERS FIELD AND THE ROCKER BAIL IN ITS EXTREME LEFT POSITION.

REQUIREMENT

THE ROTARY CORRECTOR ARM SHALL SEAT FIRMLY IN THE TYPEWHEEL RACK.

MIN. SOME----MAX. 0.006 INCH END PLAY BETWEEN CLAMP ARM AND BUSHING, WITH UNIT IN THE STOP POSITION.



TO ADJUST

(UNITS EQUIPPED WITH NON-YIELDING AXIAL CORRECTOR)

AS THE ROCKER BAIL APPROACHES THE EXTREME LEFT, MEASURE CLEARANCE BETWEEN THE AXIAL CORRECTOR ROLLER AND THE SECTOR NOTCH. WHEN CLEARANCE IS

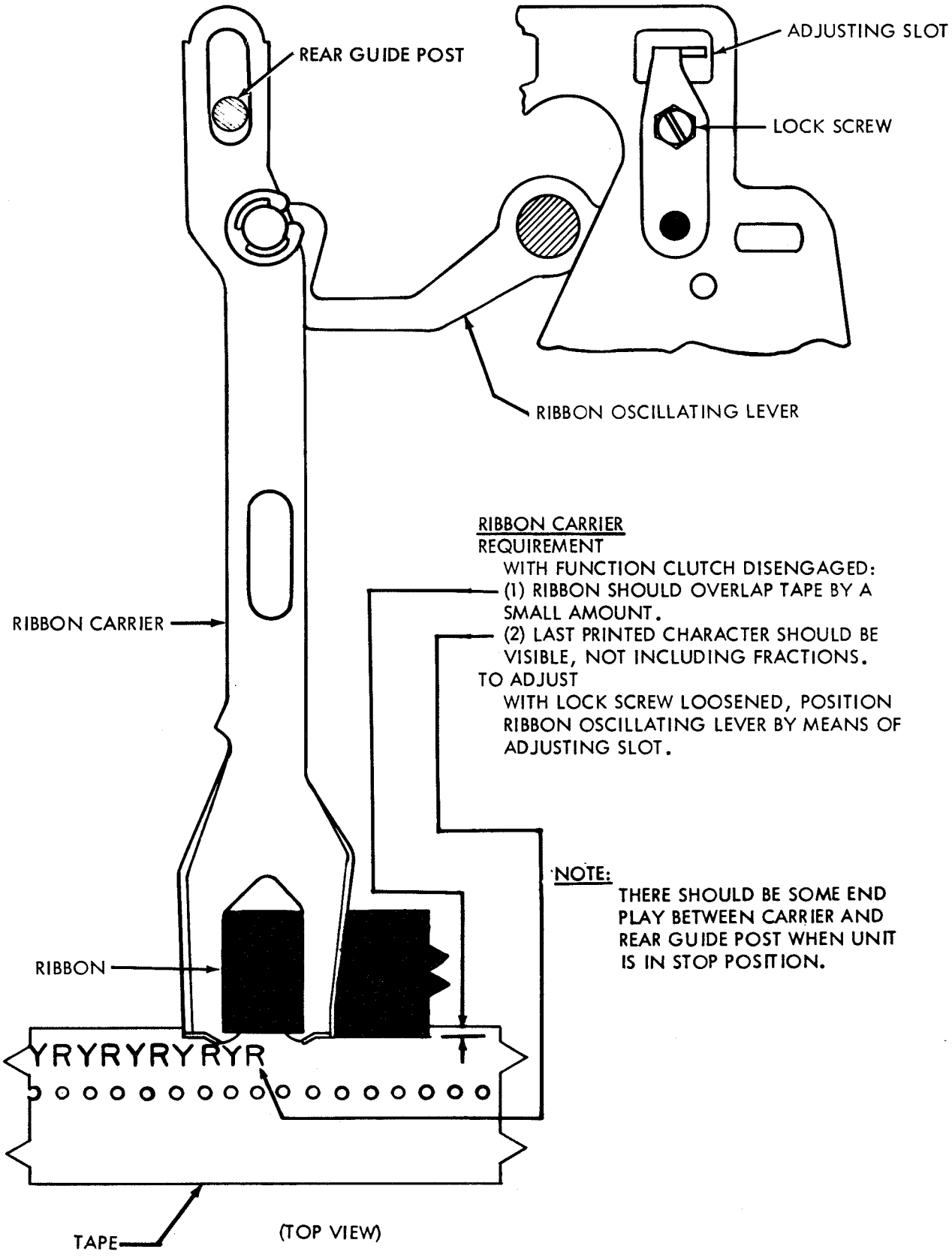
MIN. SOME----MAX. 0.005 INCH

POSITION ROTARY CORRECTOR ARM FINGER TIGHT AGAINST TYPEWHEEL RACK, AND TIGHTEN CORRECTING CLAMP ARM SCREW.

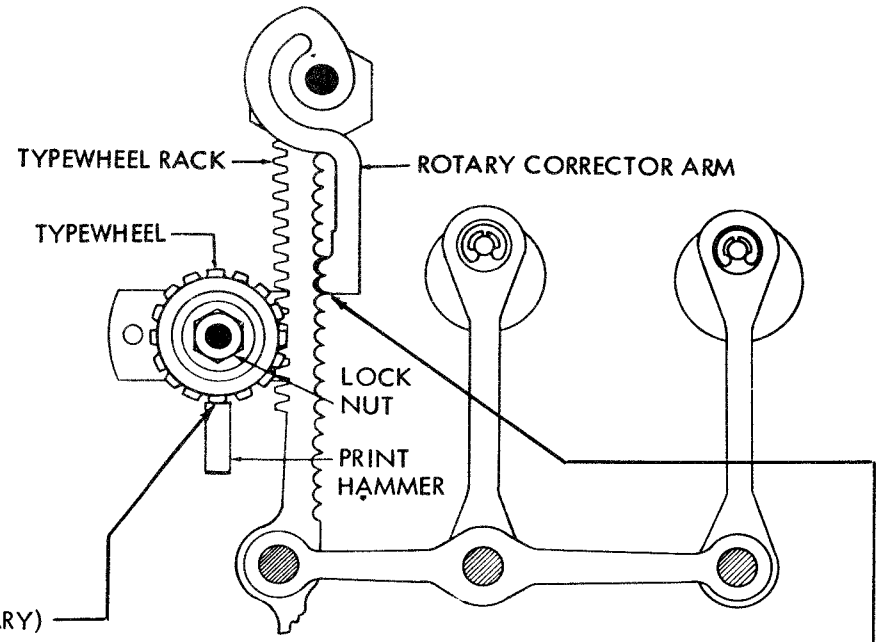
(UNITS EQUIPPED WITH A YIELDING AXIAL CORRECTOR)

AS THE ROCKER BAIL APPROACHES THE EXTREME LEFT AND THE SPRING POST OF THE AXIAL CORRECTOR STARTS TO LEAVE THE END OF ITS SLOT, POSITION THE ROTARY CORRECTOR ARM FINGER TIGHT AGAINST TYPEWHEEL RACK AND TIGHTEN CORRECTING CLAMP ARM SCREW.

2.54 Typing Mechanism for Chadless Tape continued



2.55 Typing Mechanism for Chadless Tape continued



(A) TYPEWHEEL (PRELIMINARY)

TO CHECK

SELECT "H" CODE COMBINATION (--3-5). PLACE ROCKER BAIL TO EXTREME LEFT. THE ROTARY CORRECTOR ARM FIRMLY ENGAGED.

REQUIREMENT

TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY AND 6 ± 1/4 CODE HOLE SPACES BEHIND ITS PERFORATED CODE HOLES.

TO ADJUST

POSITION TYPEWHEEL WITH LOCK NUT LOOSENED. CHECK PRINTING BY MANUALLY LIFTING ACCELERATOR TO LATCHED POSITION AND RELEASING IT.

NOTE:

FOR BEST RESULTS IT MAY BE NECESSARY TO PROCEED TO THE NEXT ADJUSTMENT THEN COME BACK AND REFINE THE ABOVE.

(B) TYPEWHEEL (FINAL)

REQUIREMENT

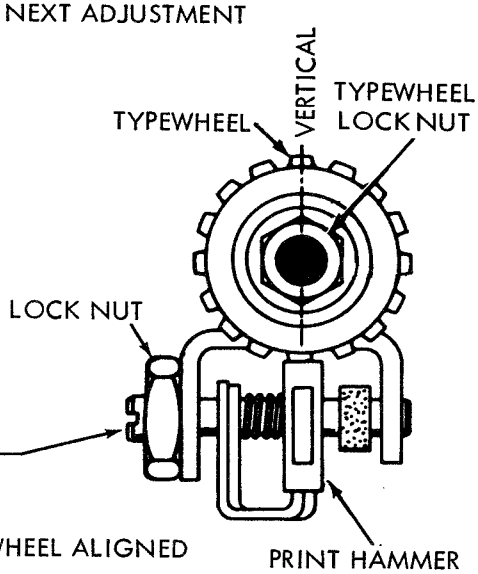
ALL CHARACTERS SHALL BE LEGIBLE AND 6 ± 1/4 CODE HOLE SPACES BEHIND THE PERFORATED CODE HOLES WITH UNIT OPERATING UNDER POWER.

TO ADJUST

REFINE THE TYPEWHEEL POSITION WITH ITS LOCK NUT LOOSENED.

NOTE:

FOR BEST RESULTS IT MAY BE NECESSARY TO MAKE THE PRINT HAMMER ADJUSTMENT AND THEN REFINE THIS ADJUSTMENT.



(C) PRINT HAMMER

REQUIREMENT

WHEN OPERATING UNDER POWER, PRINT HAMMER AND TYPEWHEEL ALIGNED SO AS TO OBTAIN BEST QUALITY OF PRINTING.

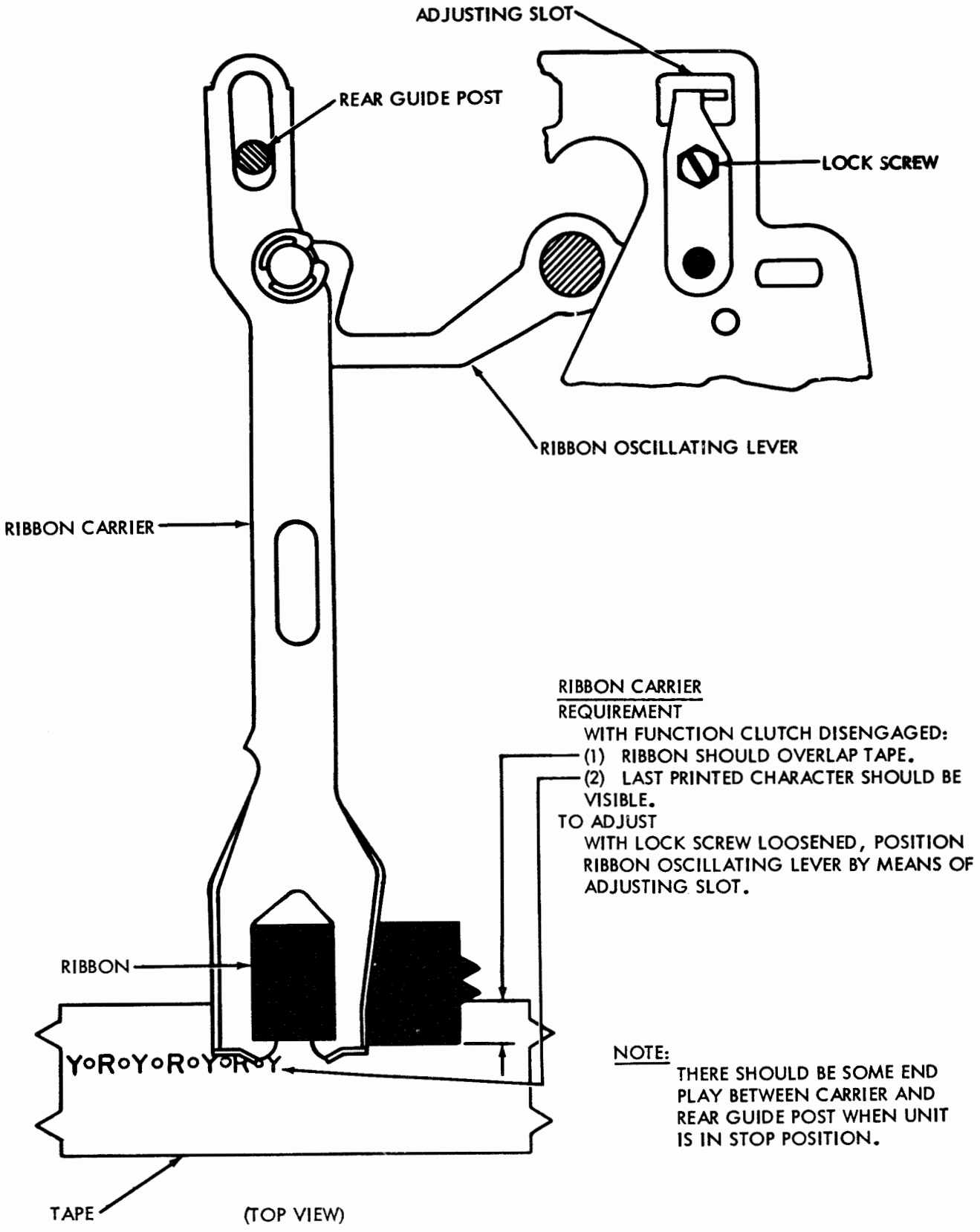
TO ADJUST

POSITION PRINT HAMMER SHAFT WITH LOCK NUT LOOSENED.

NOTE:

IT MAY BE NECESSARY TO REMAKE TYPEWHEEL ADJUSTMENT (ABOVE) AND THEN REFINE THIS ADJUSTMENT.

2.56 Typing Mechanism for Fully Perforated Tape continued



2.57 Typing Mechanism continued

(A) PRINTING LATCH (FOR UNITS WITH ADJUSTABLE PRINTING LATCH MOUNTING BRACKETS)

NOTE: FOR UNITS WITH NON-ADJUSTABLE PRINTING LATCH MOUNTING BRACKET REFER TO REQUIREMENT (1) AND TO ADJUST (3) BELOW ONLY.

REQUIREMENTS

(1) ROCKER BAIL IN EXTREME LEFT POSITION. MANUALLY LIFT PRINT HAMMER ACCELERATOR SO THAT LATCHING SURFACES OF PRINTING LATCH AND ACCELERATOR ARE AT THE CLOSEST POINT.
MIN. SOME---MAX. 0.015 INCH
CLEARANCE BETWEEN ACCELERATOR AND LATCH.

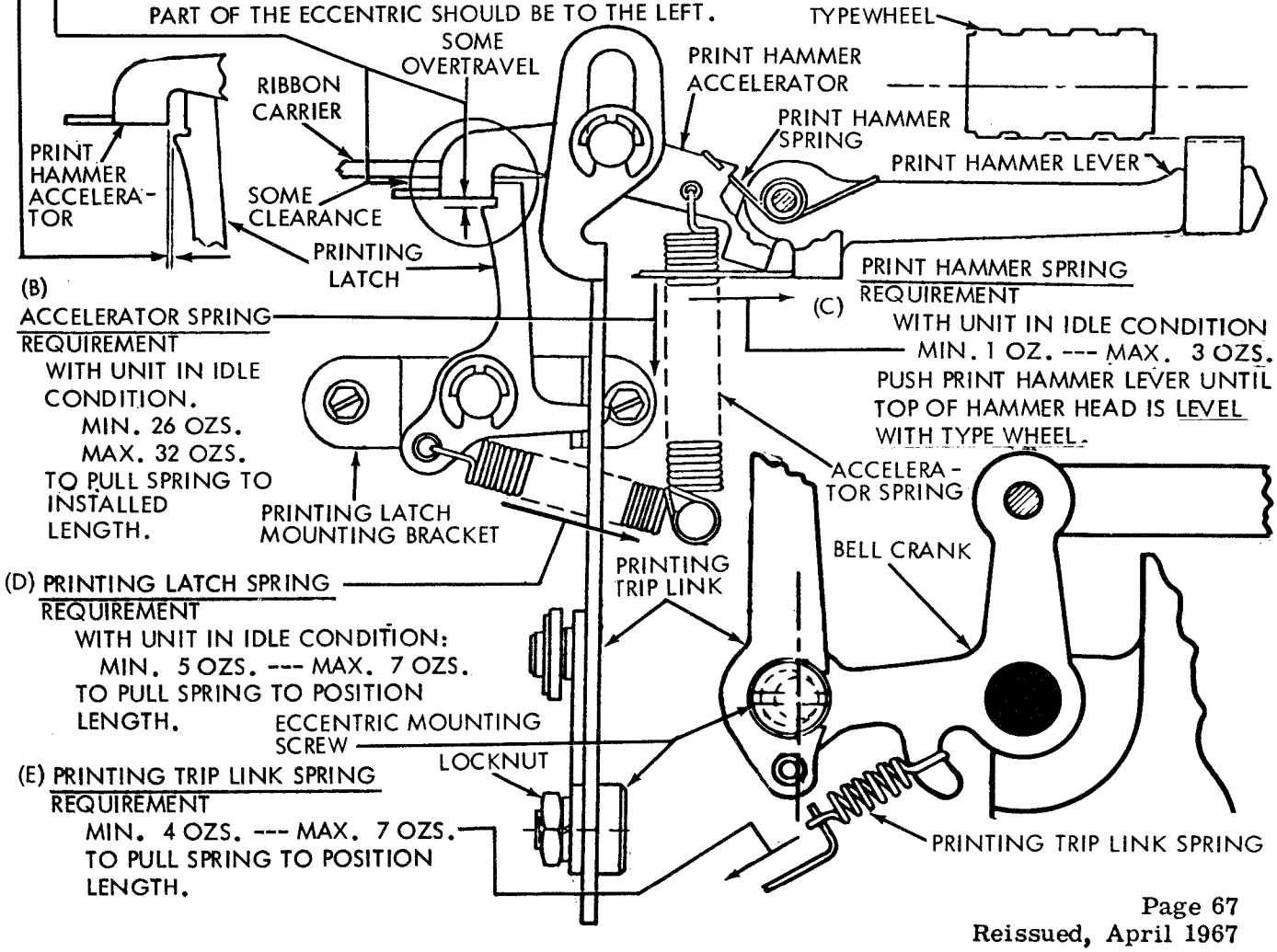
(2) ROCKER BAIL IN ITS EXTREME RIGHT POSITION. THERE SHOULD BE SOME OVERTRAVEL OF THE PRINT HAMMER ACCELERATOR WITH RESPECT TO THE LATCHING SURFACE OF THE PRINTING LATCH AND SOME CLEARANCE BETWEEN THE PRINT HAMMER ACCELERATOR AND THE RIBBON CARRIER.

TO ADJUST

(1) POSITION THE ROCKER BAIL TO THE EXTREME RIGHT. ADJUST THE ECCENTRIC SO THAT THERE IS APPROXIMATELY 0.065 INCH CLEARANCE BETWEEN THE PRINT HAMMER ACCELERATOR AND THE RIBBON CARRIER, KEEPING THE HIGH PART OF THE ECCENTRIC TO THE LEFT. LOOSEN THE TWO SCREWS WHICH FASTEN THE PRINTING LATCH MOUNTING BRACKET UNTIL THEY ARE JUST FRICTION TIGHT, AND MOVE THE BRACKET TO ITS EXTREME REAR POSITION.

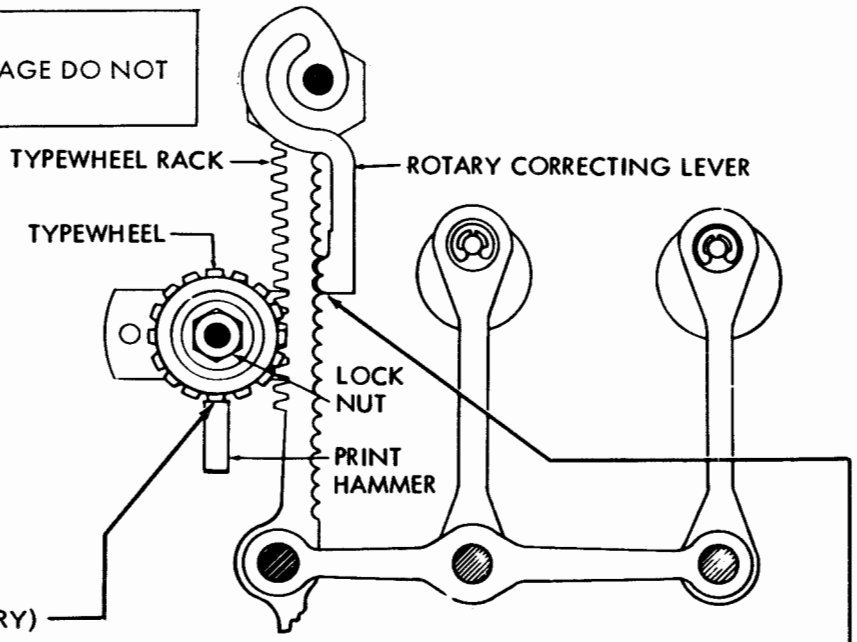
(2) POSITION THE ROCKER BAIL TO THE EXTREME LEFT. MOVE THE PRINTING LATCH MOUNTING BRACKET TOWARD THE FRONT UNTIL THE PRINT HAMMER ACCELERATOR JUST TRIPS. TIGHTEN THE TWO SCREWS WHICH FASTEN THE PRINTING LATCH MOUNTING BRACKET.

(3) WITH THE ROCKER BAIL TO THE EXTREME LEFT, POSITION THE PRINTING TRIP LINK BY ADJUSTING THE ECCENTRIC UNTIL THERE IS:
MIN. SOME---MAX. 0.015 INCH
CLEARANCE BETWEEN THE PRINTING LATCH AND THE PRINT HAMMER ACCELERATOR. THE HIGH PART OF THE ECCENTRIC SHOULD BE TO THE LEFT.



2.58 Typing Mechanism for Fully Perforated Tape continued

NOTE:
ADJUSTMENTS ON THIS PAGE DO NOT APPLY TO TAPE PRINTER.



(A) TYPEWHEEL (PRELIMINARY)

TO CHECK

SELECT "H" CODE COMBINATION (--3-5). PLACE ROCKER BAIL TO EXTREME LEFT. THE ROTARY CORRECTOR FIRMLY ENGAGED.

REQUIREMENT

TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY AND 6-1/2 CODE HOLE SPACES BEHIND ITS PERFORATED CODE HOLES.

TO ADJUST

POSITION TYPEWHEEL WITH LOCK NUT LOOSENED. CHECK PRINTING BY MANUALLY LIFTING ACCELERATOR TO LATCHED POSITION AND RELEASING IT.

NOTE:

FOR BEST RESULTS IT MAY BE NECESSARY TO PROCEED TO THE NEXT ADJUSTMENT THEN COME BACK AND REFINE THE ABOVE.

(B) TYPEWHEEL (FINAL)

REQUIREMENT

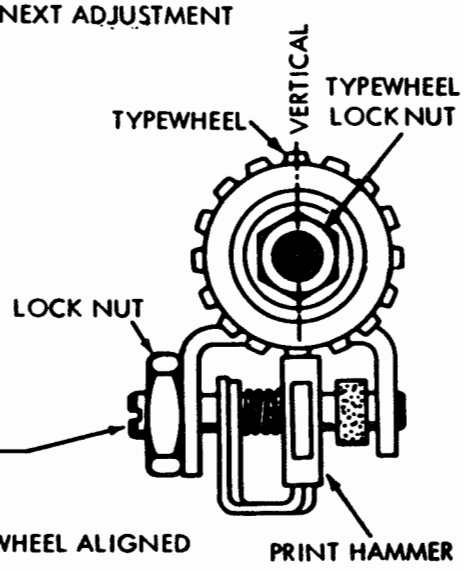
ALL CHARACTERS SHALL BE LEGIBLE AND 6-1/2 CODE HOLE SPACES BEHIND THE PERFORATED CODE HOLES WITH UNIT OPERATING UNDER POWER.

TO ADJUST

REFINE THE TYPEWHEEL POSITION WITH ITS LOCK NUT LOOSENED.

NOTE:

FOR BEST RESULTS IT MAY BE NECESSARY TO MAKE THE PRINT HAMMER ADJUSTMENT AND THEN REFINE THIS ADJUSTMENT.



(C) PRINT HAMMER

REQUIREMENT

WHEN OPERATING UNDER POWER, PRINT HAMMER AND TYPEWHEEL ALIGNED SO AS TO OBTAIN BEST QUALITY OF PRINTING.

TO ADJUST

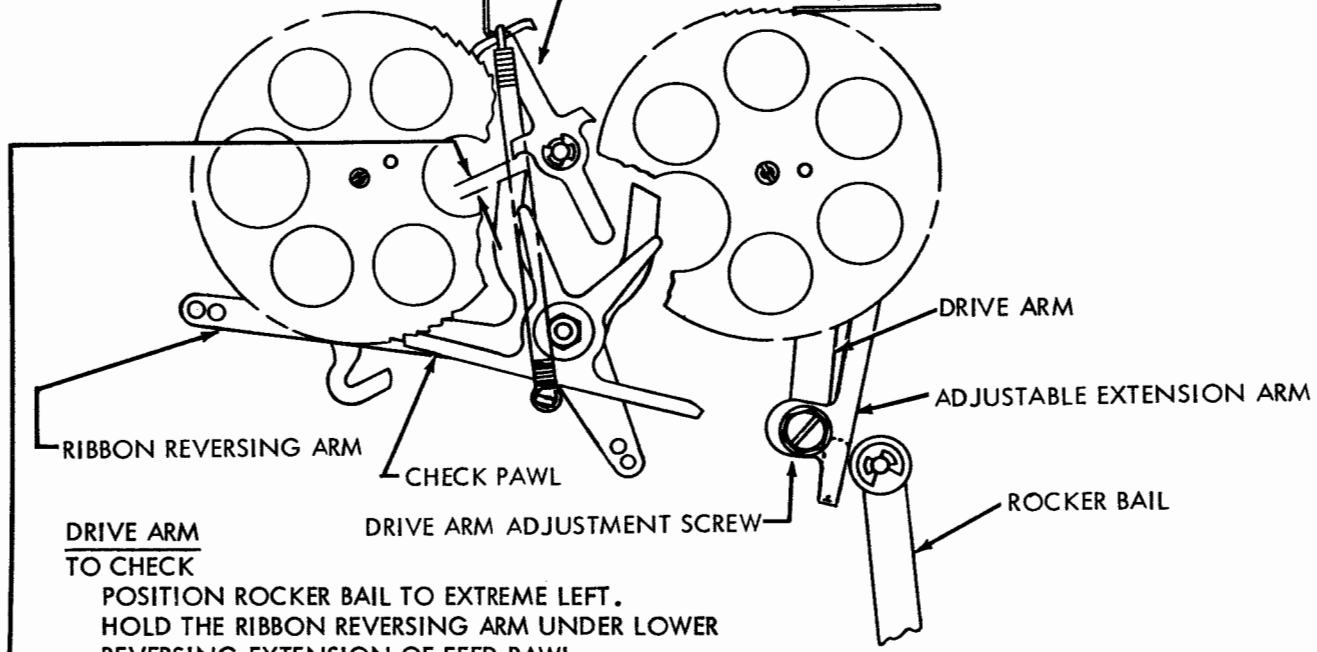
POSITION PRINT HAMMER SHAFT WITH LOCK NUT LOOSENED.

NOTE:

IT MAY BE NECESSARY TO REMAKE TYPEWHEEL ADJUSTMENT (ABOVE) AND THEN REFINE THIS ADJUSTMENT.

2.59 Ribbon Mechanism (Later Design)

(For Earlier Design see Par. 4.01 through 4.03)



FEED PAWL SPRING
REQUIREMENT
WITH ROCKER BAIL TO EXTREME RIGHT:
MIN. 4 OZS. --- MAX. 6 OZS.
TO PULL FEED PAWL SPRING TO
INSTALLED LENGTH.

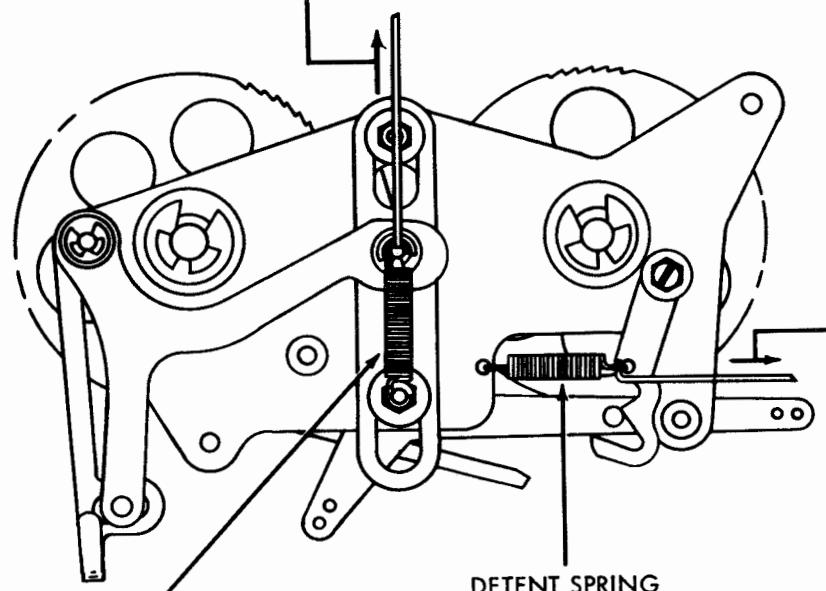
RATCHET WHEEL TORQUE SPRING
REQUIREMENT
MIN. 1 OZS. --- MAX. 3 OZS.
APPLIED TANGENTIALLY TO THE RATCHET
WHEEL TO START IT TO ROTATE.

DRIVE ARM
TO CHECK
POSITION ROCKER BAIL TO EXTREME LEFT.
HOLD THE RIBBON REVERSING ARM UNDER LOWER
REVERSING EXTENSION OF FEED PAWL.
REQUIREMENT
(1) CLEARANCE BETWEEN BLOCKING EDGE OF
RIBBON REVERSE ARM AND REVERSING
EXTENSION OF FEED PAWL:
MIN. SOME
(2) CLEARANCE SHALL NOT BE SO GREAT AS
TO ALLOW FEED PAWL TO FEED MORE
THAN TWO TEETH AT A TIME.
(3) FEED PAWL DETENTED IN BOTH ITS RIGHT
AND LEFT POSITION.
TO ADJUST
POSITION DRIVE ARM ADJUSTABLE EXTENSION
LEVER WITH ITS MOUNTING SCREW LOOSENED.

2.60 Ribbon Mechanism (Later Design) continued

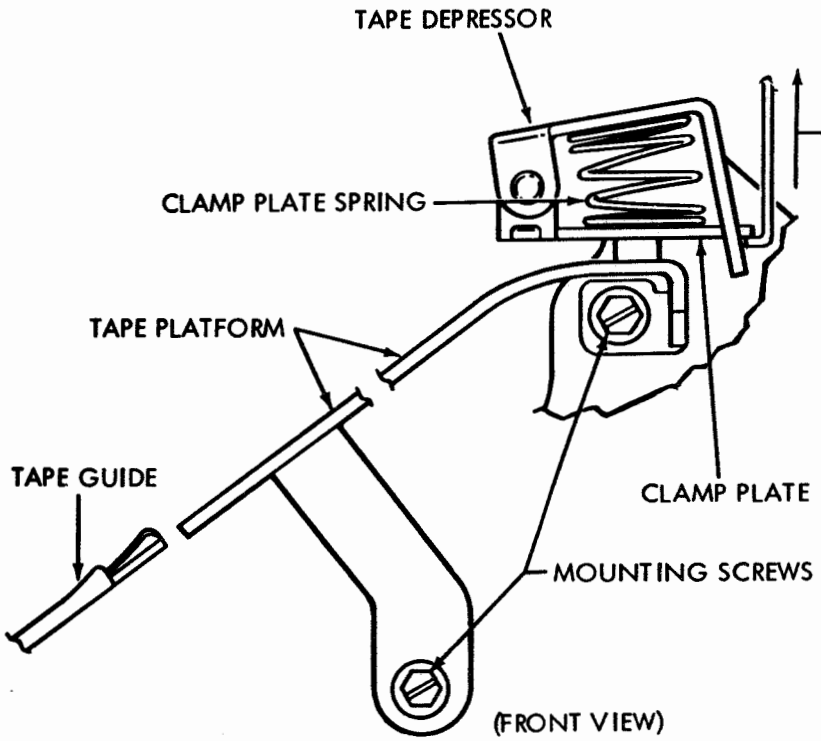
(For Earlier Design see Par. 4.01 through 4.03)

DRIVE ARM SPRING
REQUIREMENT
WITH ROCKER BAIL TO EXTREME RIGHT:
MIN. 9 OZS. --- MAX. 14 OZS.
TO PULL DRIVE ARM SPRING TO
INSTALLED LENGTH.



DETENT SPRING
REQUIREMENT
WITH REVERSING ARM IN ITS EXTREME
RIGHT OR LEFT POSITION:
MIN. 2 OZS. --- MAX. 4 OZS.
TO PULL DETENT SPRING TO ITS
INSTALLED LENGTH.

2.61 Slack Tape Mechanism



TAPE PLATFORM
REQUIREMENT
TOP SURFACE OF TAPE PLATFORM SHOULD BE FLUSH WITH TOP SURFACE OF TAPE GUIDE.

TO ADJUST
WITH TAPE PLATFORM MOUNTING SCREWS LOOSENED, POSITION TAPE PLATFORM.

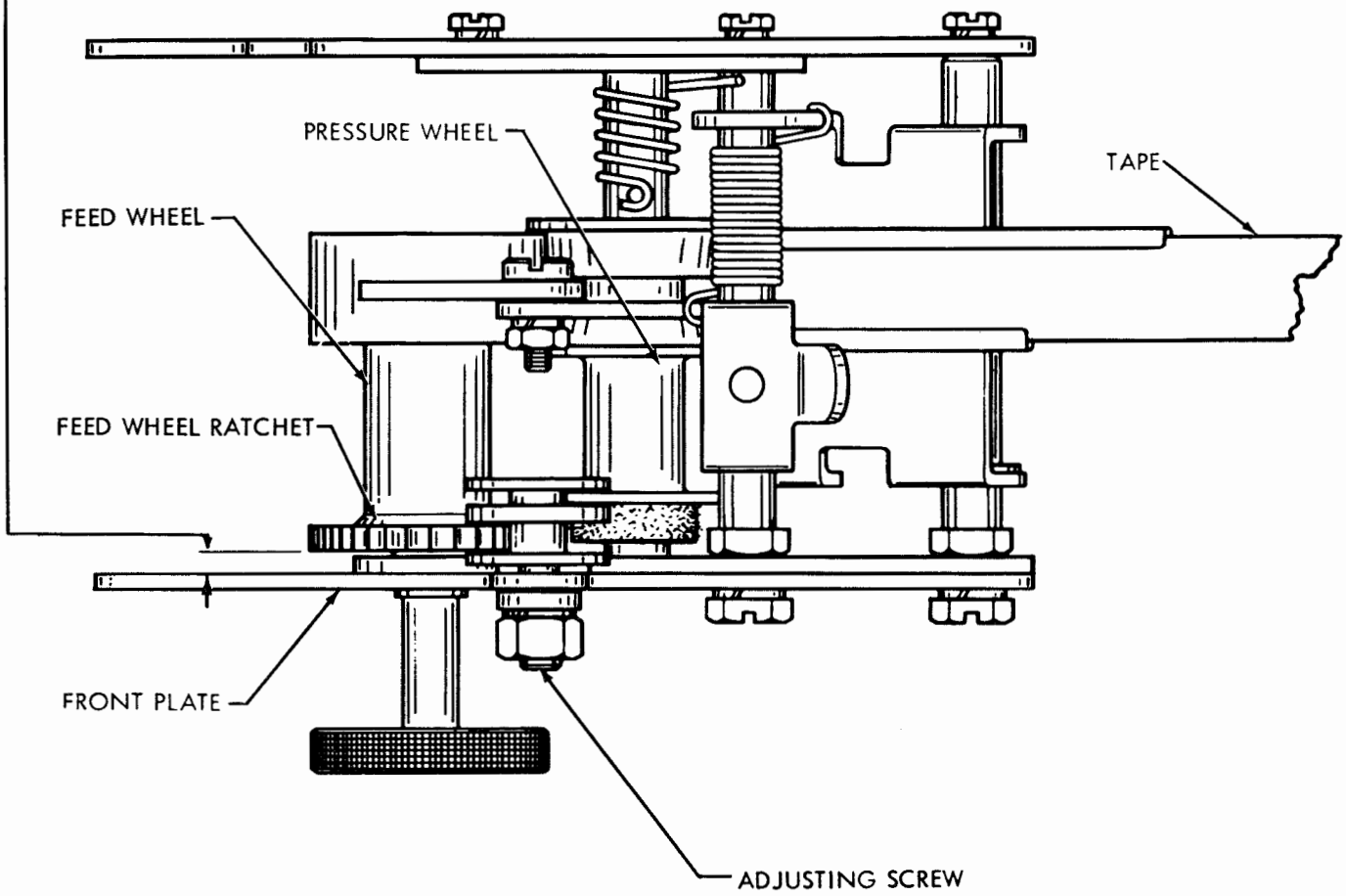
CLAMP PLATE SPRING
REQUIREMENT
FUNCTION CLUTCH DISENGAGED AND LATCHED. CLAMP PLATE SPRING BOWED TO THE RIGHT.
MIN. 18 OZS.---MAX. 24 OZS.
TO MOVE CLAMP PLATE FROM BOTTOM OF SLOT IN TAPE DEPRESSOR.

2.62 Model 28 Tape Printer Unit

NOTE:
THESE ADJUSTMENTS, PLUS APPLICABLE MODEL 28 TYPING REPERFORATOR ADJUSTMENTS, ARE REQUIRED TO ADJUST THE MODEL 28 TAPE PRINTER.

FEED WHEEL
REQUIREMENT (PRELIMINARY)
(1) CLEARANCE BETWEEN FEED WHEEL RATCHET AND FRONT PLATE:
MIN. 0.085 --- MAX. 0.095 INCH
(2) (FINAL)
PRINTING CENTRALLY LOCATED ON TAPE
TO ADJUST
TURN ADJUSTING SCREW WITH LOCK NUT LOOSENED.

TAPE GUIDE
REQUIREMENT
THE TAPE SHALL "RUN" IN THE CENTER OF TAPE GUIDE (GAGE BY EYE).
TO ADJUST
WITH MOUNTING NUTS FRICTION TIGHT, POSITION TAPE GUIDE WITH ROLLER UP OR DOWN TO MEET REQUIREMENT.

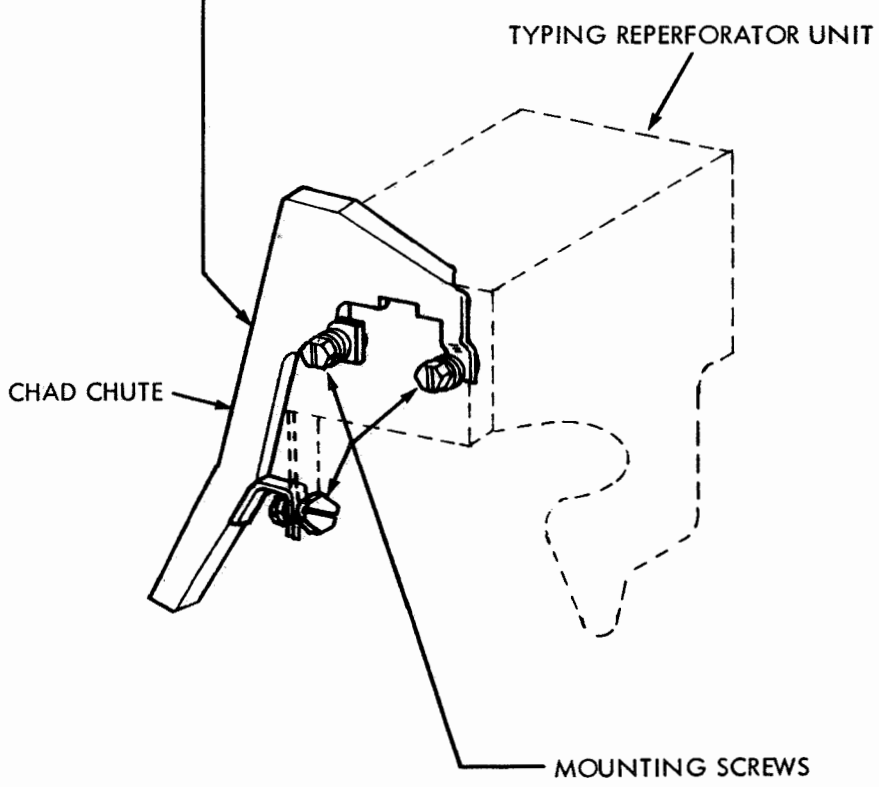


SPECIAL REQUIREMENT
IF THE MODEL 28 TAPE PRINTER IS USED ON A MODEL 28 TYPING REPERFORATOR SINGLE OR DOUBLE PLATE BASE, A TAPE REEL WILL HAVE TO BE USED TO ACCOMMODATE THE 3/8 INCH TAPE. THIS TAPE REEL CONSISTS OF A DISC W/HUB AND A DISC W/NUT.

2.63 Chad Chute Assembly for Self-contained Typing Reperforator Set for Fully Perforated Tape

CHAD CHUTE (SELF CONTAINED TYPING REPERFORATOR SET)
REQUIREMENT
CHAD CHUTE SHOULD BE FLUSH WITH TOP OF PUNCH BLOCK.

TO ADJUST
WITH MOUNTING SCREWS FRICTION TIGHT POSITION CHAD CHUTE.



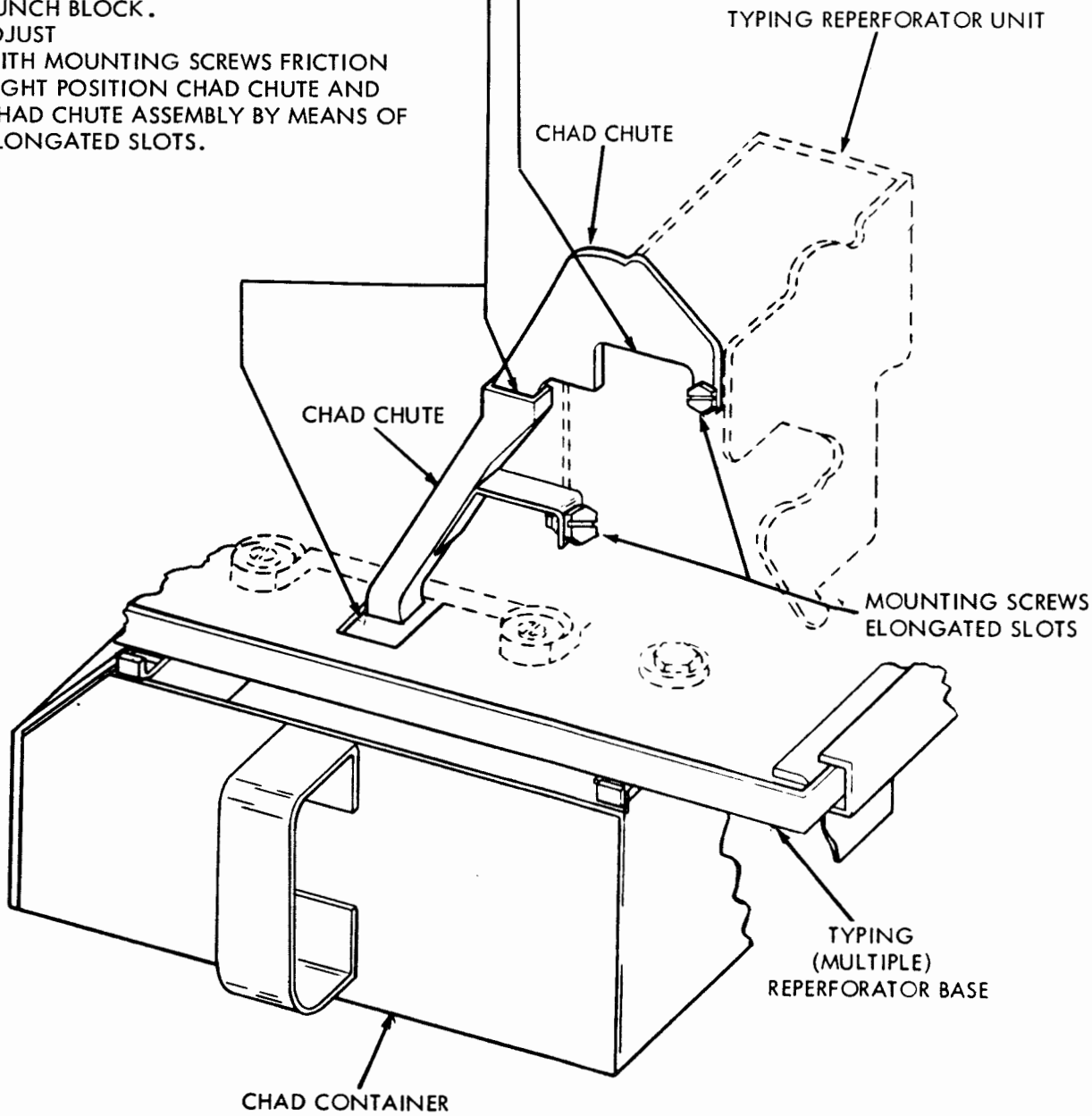
2.64 Chad Chute Assembly for Multiple Typing Reperforator Set for Fully Perforated Tape

CHAD CHUTE ASSEMBLY (MULTIPLE REPERFORATOR SET)
REQUIREMENT

(1) CHAD CHUTE SHOULD BE FLUSH WITH TOP OF PUNCH BLOCK.
(2) CHAD CHUTE ASSEMBLY SHOULD BE ADJUSTED SO CLEARANCE IS MAXIMUM IN ALL DIRECTIONS BETWEEN EACH CHAD CHUTE AND REPERFORATOR CASTING.
(3) POSITION TAPE GUIDE IN ITS MOUNTING SLOTS SO THAT TOP OF ROLLER IS PARALLEL TO AND ABOVE THE TAPE EXIT OF THE PUNCH BLOCK.

TO ADJUST

WITH MOUNTING SCREWS FRICTION TIGHT POSITION CHAD CHUTE AND CHAD CHUTE ASSEMBLY BY MEANS OF ELONGATED SLOTS.



2.65 Chad Chute Assembly for Keyboard Typing Reperforator on Automatic Send-Receive for Fully Perforated Tape

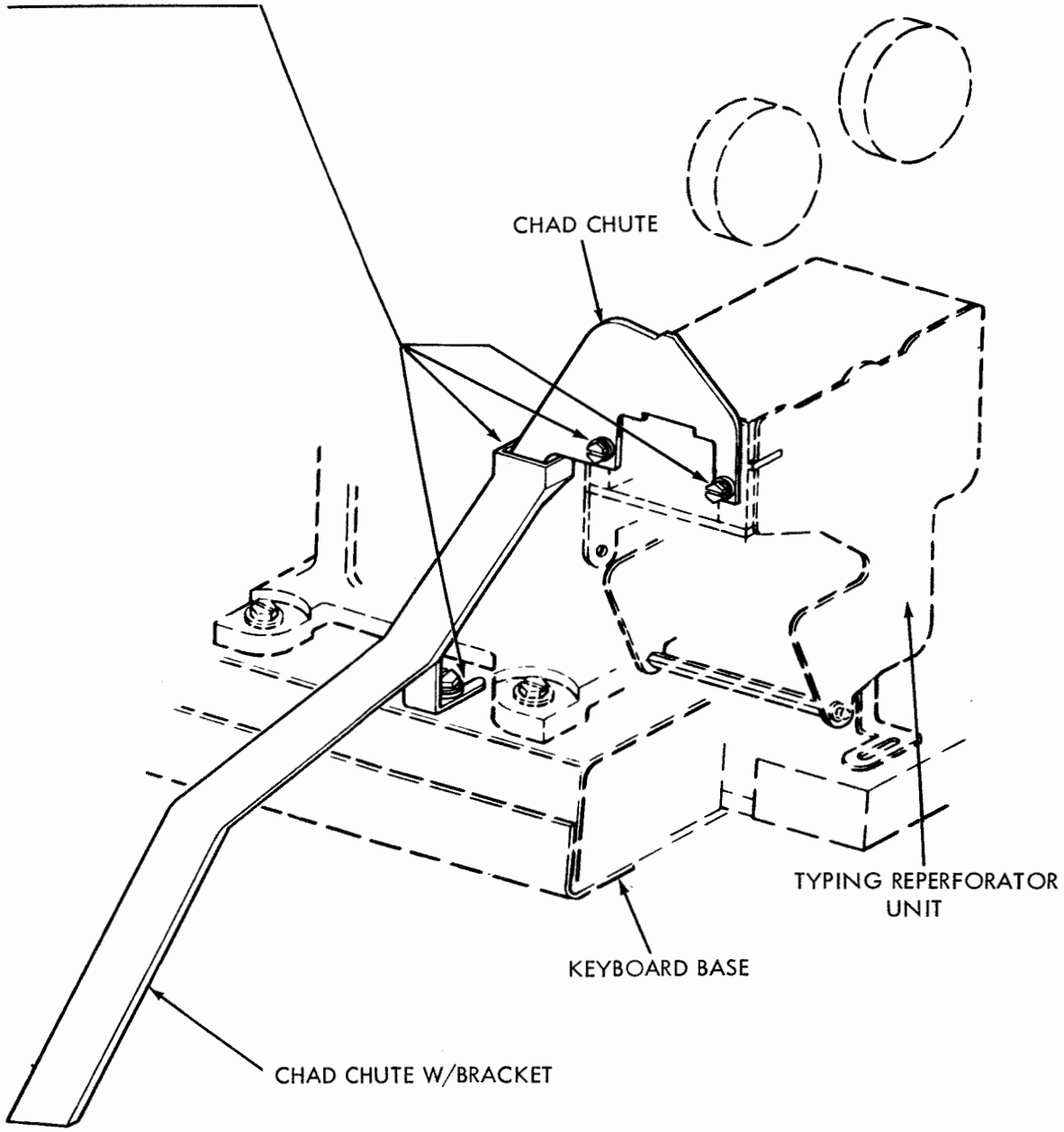
CHAD CHUTE ASSEMBLY (KEYBOARD REPERFORATOR - AUTOMATIC SEND-RECEIVE SET)

REQUIREMENT

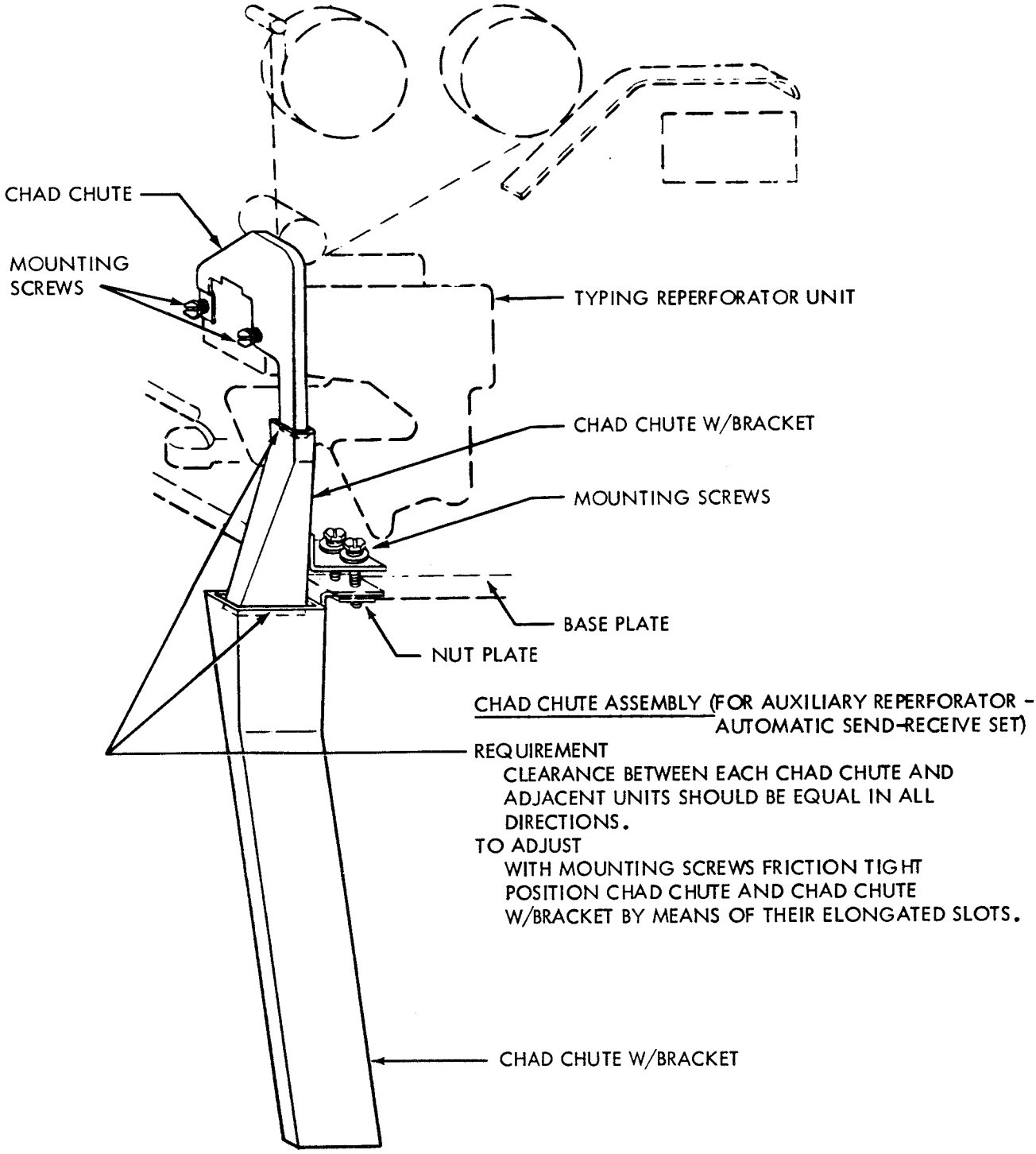
CLEARANCE BETWEEN EACH CHAD CHUTE AND ADJACENT UNITS SHOULD BE EQUAL IN ALL DIRECTIONS.

TO ADJUST

WITH MOUNTING SCREWS FRICTION TIGHT POSITION EACH CHUTE BY MEANS OF THEIR ELONGATED SLOTS.



2.66 Chad Chute Assembly for Auxiliary Typing Reperforator on **Automatic Send-Receive for Fully Perforated Tape**



2.67 Tape Guide Chute Mechanism for Auxiliary Typing Reperforator on Automatic Send-Receive

TAPE GUIDE CHUTE (AUXILIARY TYPING REPERFORATOR) (AUTOMATIC SEND-RECEIVE SET)

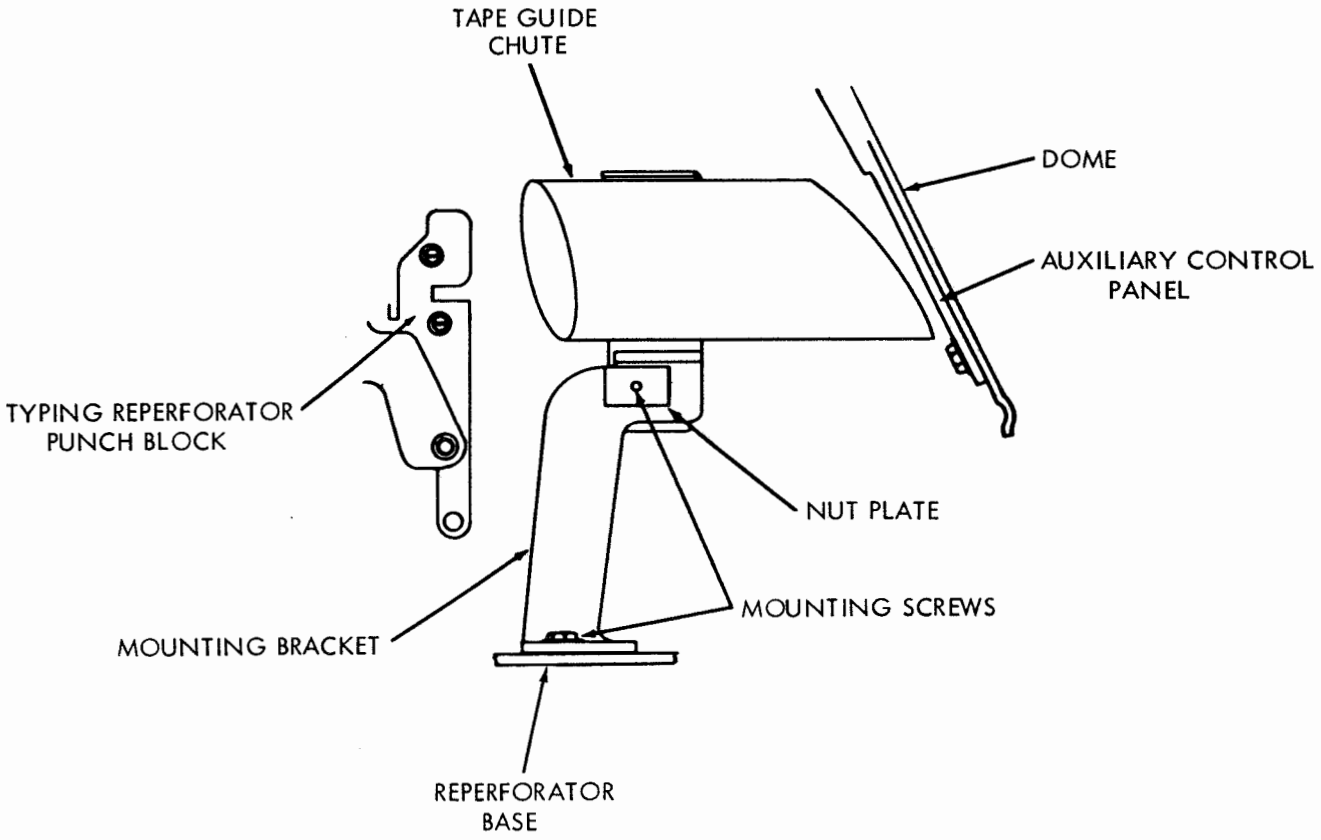
REQUIREMENT

WITH LEFT-TOP AND MIDDLE DOME DOORS OPEN, FRONT AND REAR ENDS OF CHUTE ALIGN WITH PUNCH BLOCK TAPE APERTURE AND WITH HOLE IN AUXILIARY CONTROL PANEL.

TO ADJUST

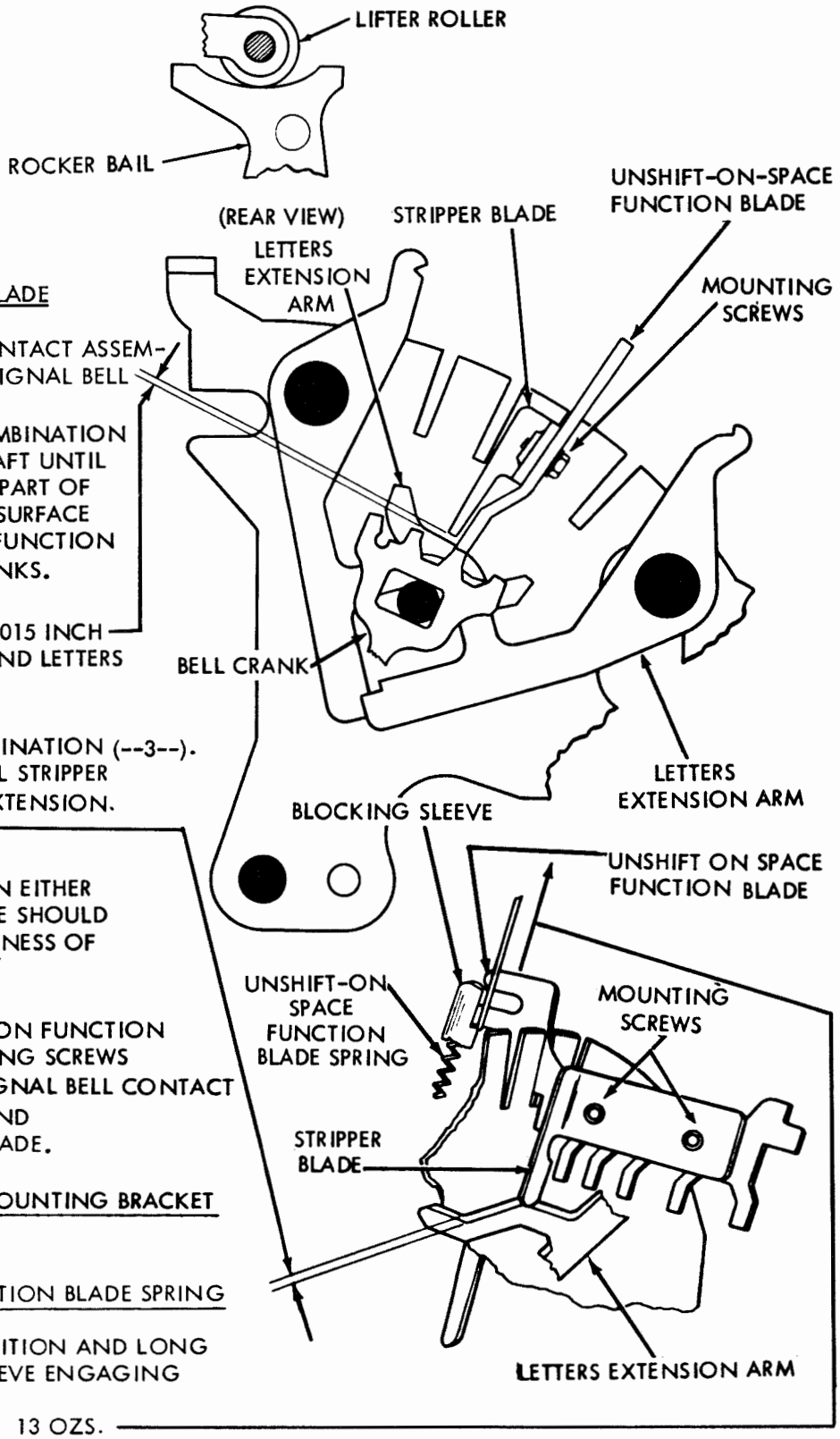
POSITION MOUNTING BRACKET WITH MOUNTING SCREWS FRICTION TIGHT UNTIL CHUTE IS POSITIONED HORIZONTALLY. WITH UPPER ADJUSTING SCREW FRICTION TIGHT IN ITS NUT PLATE, POSITION CHUTE VERTICALLY.

NOTE: TAPE GUIDE CHUTE SHOULD NOT TOUCH TYPING REPERFORATOR OR CABINET. TAPE SHOULD FEED WITHOUT BINDING OR TWISTING.



3. VARIABLE FEATURES

3.01 Unshift-on-Space Mechanism



(A)
UNSHIFT-ON-SPACE FUNCTION BLADE

(1) TO CHECK
REMOVE SIGNAL BELL CONTACT ASSEMBLY WITH BRACKET AND SIGNAL BELL FUNCTION BLADE.
SELECT FIGURES CODE COMBINATION (12-45). ROTATE MAIN SHAFT UNTIL LIFTER ROLLER IS ON LOW PART OF ROCKER BAIL'S CAMMING SURFACE AND UNSHIFT-ON-SPACE FUNCTION BLADE RESTS ON BELL CRANKS.

REQUIREMENT
MIN. SOME---MAX. 0.015 INCH BETWEEN STRIPPER BLADE AND LETTERS EXTENSION ARM.

(2) TO CHECK
SELECT SPACE CODE COMBINATION (--3--). ROTATE MAIN SHAFT UNTIL STRIPPER BLADE TOUCHES LETTERS EXTENSION ARM.

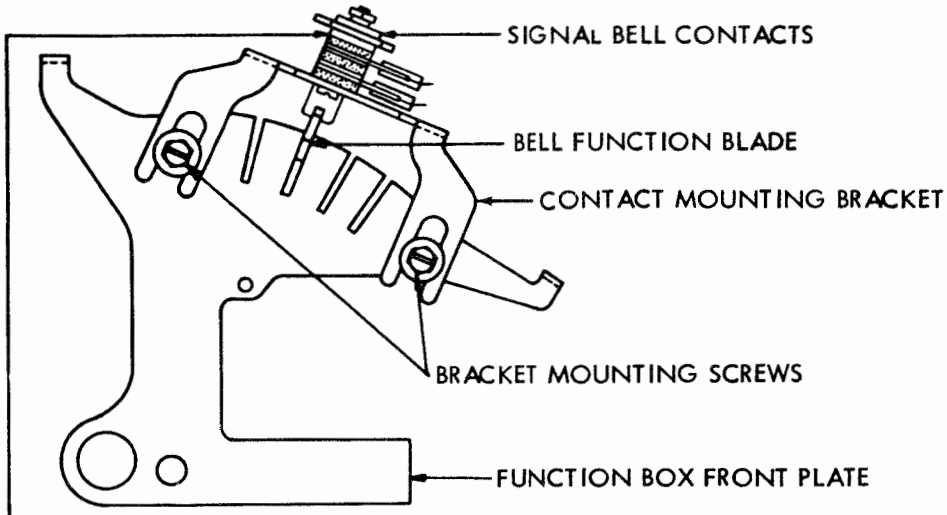
REQUIREMENT
WHEN PLAY IS TAKEN UP IN EITHER DIRECTION, STRIPPER BLADE SHOULD ENGAGE AN EQUAL THICKNESS OF LETTERS EXTENSION ARM.

TO ADJUST
POSITION STRIPPER BLADE ON FUNCTION BLADE WITH TWO MOUNTING SCREWS LOOSENED, REINSTALL SIGNAL BELL CONTACT ASSEMBLY WITH BRACKET AND SIGNAL BELL FUNCTION BLADE.

NOTE:
MAKE SIGNAL BELL CONTACT MOUNTING BRACKET ADJUSTMENT

(B) UNSHIFT-ON-SPACE FUNCTION BLADE SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION AND LONG SLOT IN BLOCKING SLEEVE ENGAGING FUNCTION BLADE
MIN. 10 OZS.---MAX. 13 OZS. TO START BLADE MOVING.

3.02 Signal-bell Contact Mechanism (Later Design)
(For Earlier Design see Par. 4.04)

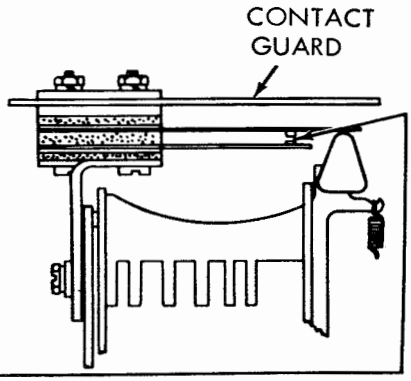


(B) CONTACT BRACKET ASSEMBLY

(1) REQUIREMENT
THE CONTACT ASSEMBLY SHALL BE CENTRALLY LOCATED OVER THE BELL FUNCTION BLADE INSULATOR.

NOTE: SEE FUNCTION BLADE SPRING FOR TENSION.

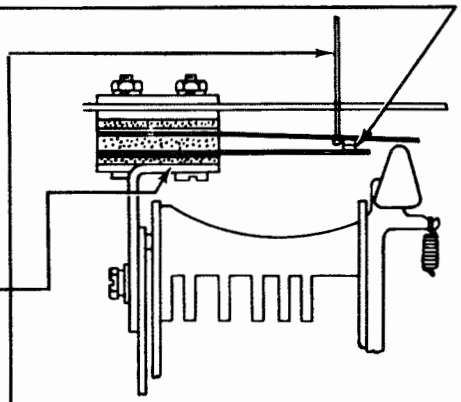
(2) REQUIREMENT
WITH LETTERS CODE COMBINATION (12345) SELECTED ROTATE MAIN SHAFT UNTIL BELL FUNCTION BLADE IS IN ITS LOWEST POSITION (RESTING ON BELL CRANKS). GAP BETWEEN CONTACTS.
MIN. 0.015 INCH
MAX. 0.025 INCH



(3) REQUIREMENT
WITH BELL FUNCTION BLADE IN ITS SELECTED POSITION, THE CONTACTS SHALL BE CLOSED.
TO ADJUST
WITH MOUNTING SCREWS LOOSENED, POSITION CONTACT BRACKET ASSEMBLY.

(A) SIGNAL BELL CONTACT

NOTE:
COMPLETE THE FOLLOWING ADJUSTMENTS WITH THE SIGNAL BELL CONTACT ASSEMBLY REMOVED FROM THE FUNCTION BOX FRONT PLATE.



(1) REQUIREMENT
CONTACT SPRINGS SHALL BE APPROXIMATELY PARALLEL TO TOP OF BRACKET.
TO ADJUST
BEND CONTACT SPRING.

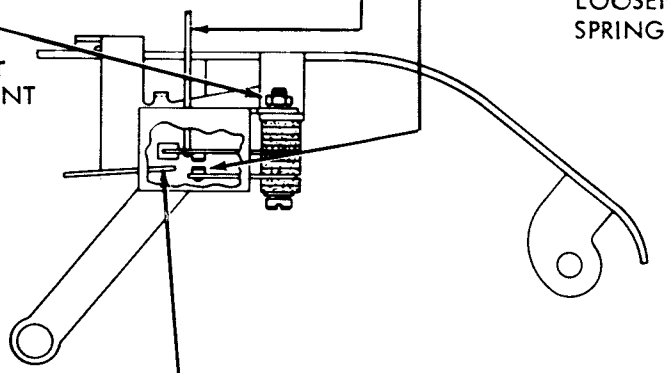
(2) REQUIREMENT
MIN. 1-1/2 OZS.
MAX. 2-1/2 OZS.
WITH PULL APPLIED AT CONTACT POINT TO OPEN CONTACTS.
TO ADJUST
BEND UPPER CONTACT SPRING.

3.03 Tape Absence Contact Assembly

(A) TAPE ABSENCE LONG CONTACT SPRING
REQUIREMENT
TAPE SENSING FINGER IN ITS EXTREME COUNTERCLOCKWISE POSITION.
MIN. 35 GRAMS
MAX. 45 GRAMS
TO ADJUST
REMOVE GUARD. BEND LONG CONTACT SPRING.

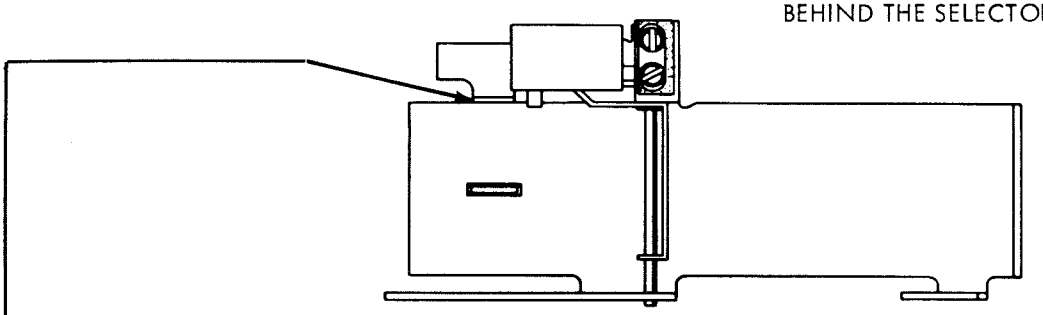
(B) TAPE ABSENCE CONTACT ASSEMBLY POSITION
REQUIREMENT
CONTACT POINTS ALIGNED, INSULATOR ON LONG CONTACT SPRING CENTRALLY LOCATED WITH SENSING FINGER EXTENSION.
TO ADJUST
WITH CONTACT ASSEMBLY GUARD REMOVED, MOUNTING SCREWS LOOSENED, POSITION CONTACT SPRINGS.

(D) TAPE ABSENCE CONTACT ASSEMBLY GUARD POSITION
REQUIREMENT
THE GUARD SHOULD NOT INTERFERE WITH MOVEMENT OF SENSING FINGER.
TO ADJUST.
WITH MOUNTING NUT LOOSENED, POSITION THE GUARD.



(C) TAPE ABSENCE SHORT CONTACT SPRING POSITION
REQUIREMENT
TAPE SENSING FINGER IN ITS EXTREME COUNTER-CLOCKWISE POSITION.
MIN. 0.010 INCH
MAX. 0.020 INCH
CLEARANCE BETWEEN SENSING FINGER EXTENSION AND CLOSEST POINT ON BAKELITE INSULATOR OF LONG CONTACT SPRING.
TO ADJUST
WITH GUARD REMOVED, BEND THE SHORT CONTACT SPRING.

(F) TAPE ABSENCE CONTACTS CABLE ASSEMBLY POSITION
REQUIREMENT
THE CABLE ASSEMBLY FOR THE TAPE ABSENCE CONTACTS SHOULD BE ROUTED TOGETHER WITH THE SELECTOR MAGNET CABLE ASSEMBLY AND, IF PRESENT, THE CODE READING CONTACTS CABLE ASSEMBLY. FORM THE CABLES SO THAT THEY DO NOT INTERFERE WITH THE MOVEMENT OF THE TAPE SENSING FINGER.
TO ADJUST:
SECURE THE POSITION OF THE CABLE ASSEMBLIES BY MEANS OF AN APPROPRIATE CABLE CLAMP LOCATED BEHIND THE SELECTOR MAGNETS.



(E) TAPE ABSENCE CONTACTS SENSING FINGER END PLAY
REQUIREMENT
THE END PLAY BETWEEN TAPE SENSING FINGER AND TAPE GUARD SHOULD BE:
MIN. 0.006 INCH
MAX. 0.035 INCH
TO ADJUST
BEND THE TAPE SENSING FINGER.

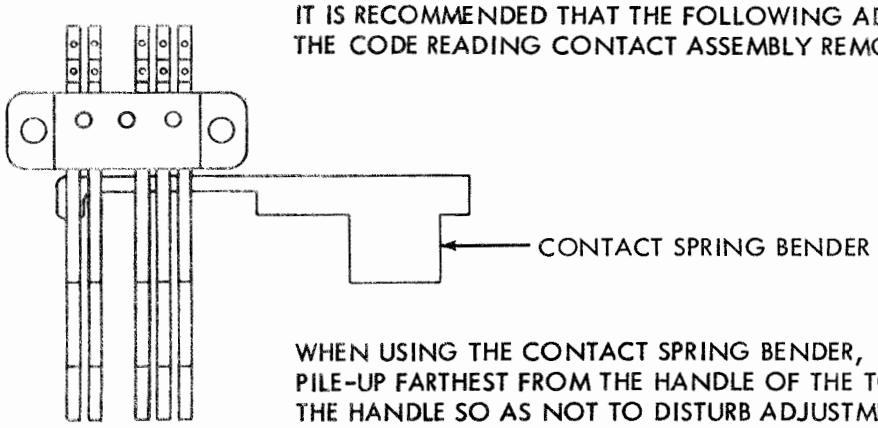
3.04 Code-reading Contact Mechanisms (Make-only and Transfer Types)

NOTE 1:

UNLESS SPECIFICALLY STATED OTHERWISE, THE FOLLOWING CODE READING CONTACT ADJUSTMENTS APPLY TO BOTH THE TRANSFER (BREAK BEFORE MAKE) TYPE AND MAKE TYPE CONTACTS. WHEN AN ADJUSTMENT IS APPLICABLE TO BOTH TYPES, THE TRANSFER TYPE CONTACTS ARE USED IN THE ILLUSTRATIONS. WHEN TESTING THESE CONTACTS ON ASR SETS THE CONTROL KNOB SHOULD BE IN THE K-T POSITION.

NOTE 2:

IT IS RECOMMENDED THAT THE FOLLOWING ADJUSTMENTS BE MADE WITH THE CODE READING CONTACT ASSEMBLY REMOVED FROM THE UNIT.



(LEFT SIDE VIEW)

WHEN USING THE CONTACT SPRING BENDER, START WITH THE CONTACT PILE-UP FARTHEST FROM THE HANDLE OF THE TOOL AND WORK TOWARD THE HANDLE SO AS NOT TO DISTURB ADJUSTMENTS ALREADY MADE.

(A)

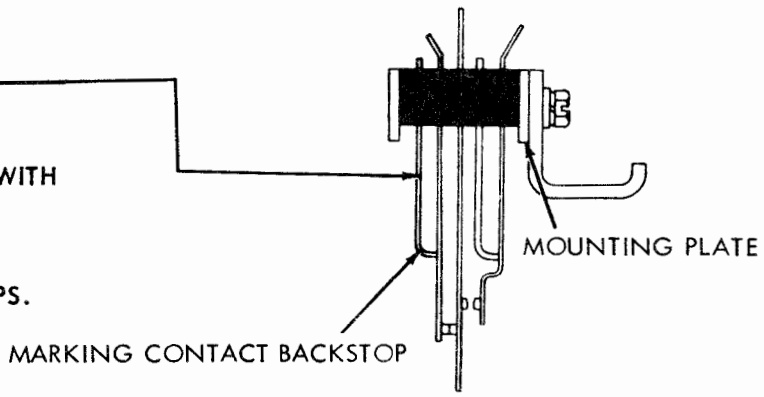
MARKING CONTACT BACKSTOPS

REQUIREMENT

AS GAUGED BY EYE, FIVE MARKING CONTACT SPRINGS SHOULD ALIGN WITH EACH OTHER AND BE PARALLEL WITH MOUNTING PLATE.

TO ADJUST

BEND MARKING CONTACT BACKSTOPS.



(B)

MARKING CONTACT SPRINGS-PRELIMINARY

REQUIREMENT

WITH SWINGER CONTACT SPRING HELD AWAY:

MIN. 2 OZS.

MAX. 6 OZS.

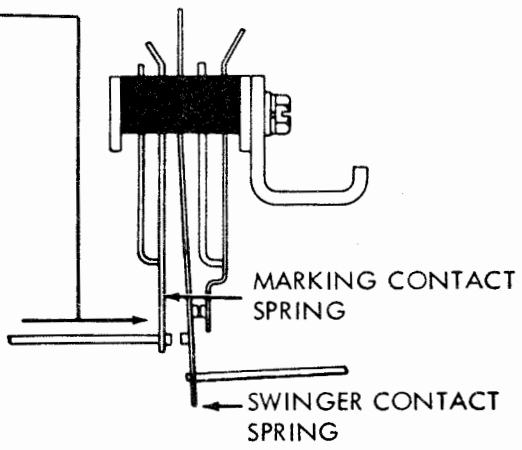
TO MOVE EACH SPRING AWAY FROM BACKSTOP.

TO ADJUST

BEND MARKING CONTACT SPRINGS.

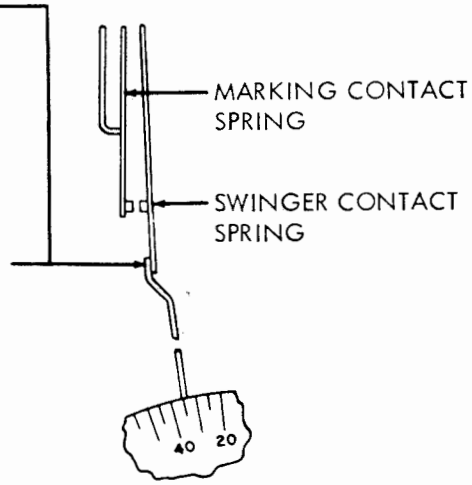
NOTE:

TO INCREASE TENSION OF MARKING CONTACT SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM SPRING, BEND SPRING AND THEN RE-BEND BACKSTOP TO MEET REQUIREMENT OF MARKING CONTACT BACKSTOPS ADJUSTMENT (ABOVE).



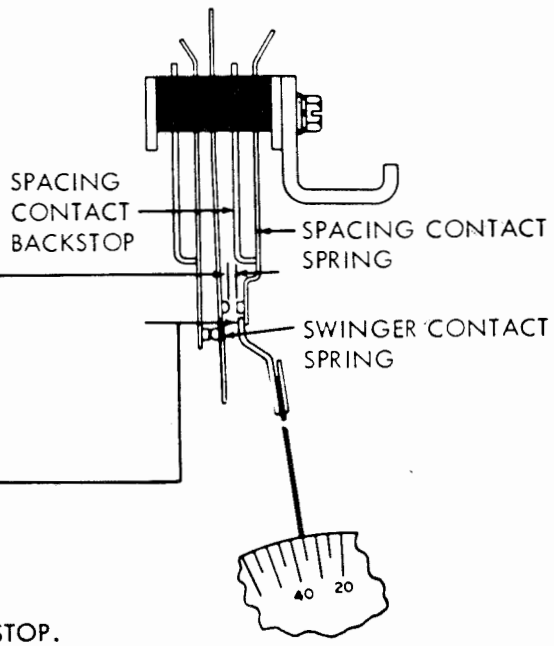
3.05 Code-reading Contact Mechanisms (Make-only and Transfer Types) continued

(A) SWINGER CONTACT SPRINGS-PRELIMINARY
REQUIREMENT
MIN. 30 GRAMS
MAX. 40 GRAMS
TO OPEN MARKING CONTACTS.
TO ADJUST
BEND SWINGER CONTACT SPRINGS.



NOTE:
SPACING CONTACTS (ON TRANSFER TYPE CONTACT ASSEMBLIES ONLY) ARE NORMALLY OPEN WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT.

(B) SPACING CONTACT BACKSTOPS - PRELIMINARY
(APPLIES TO TRANSFER TYPE CONTACTS ONLY)
REQUIREMENT
GAP BETWEEN SPACING CONTACTS
MIN. 0.018 INCH
MAX. 0.025 INCH
TO ADJUST
BEND SPACING CONTACT BACKSTOPS.

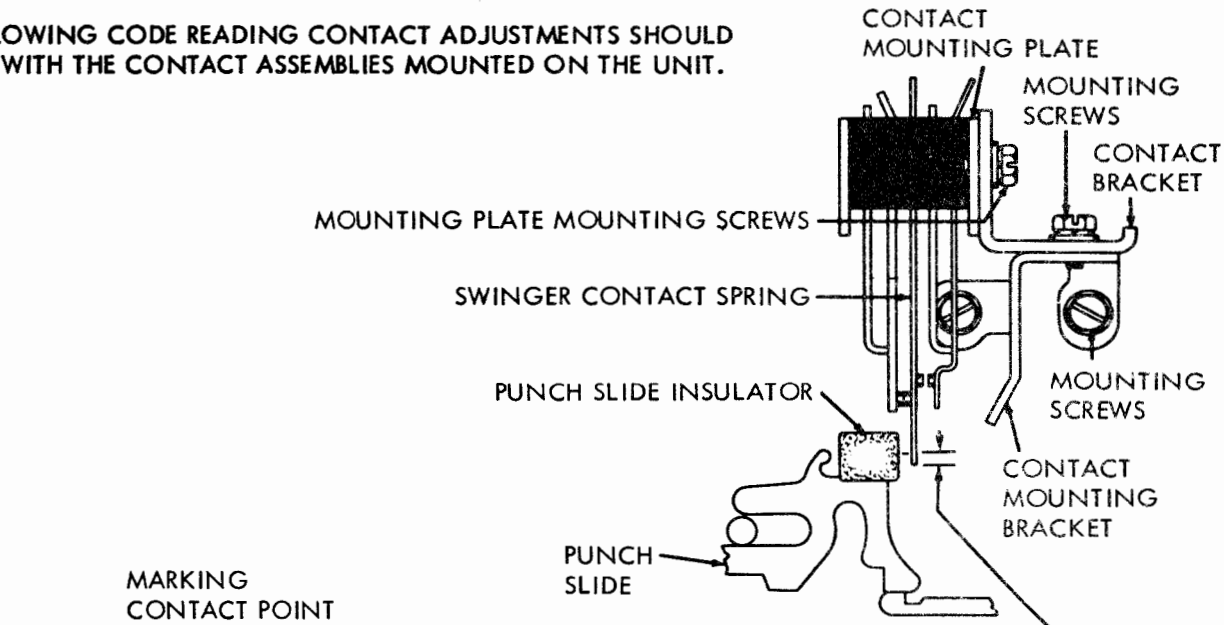


(C) SPACING CONTACT SPRINGS-PRELIMINARY
(APPLIES TO TRANSFER TYPE CONTACTS ONLY)
REQUIREMENT
MIN. 35 GRAMS
MAX. 50 GRAMS
TO MOVE EACH CONTACT SPRING AWAY FROM BACKSTOP.
TO ADJUST
BEND SPACING CONTACT SPRINGS.

NOTE:
TO INCREASE TENSION OF SPRING, IT MAY BE NECESSARY TO BEND BACKSTOP AWAY FROM SPRING, BEND SPRING, AND THEN RE-BEND BACKSTOP TO MEET REQUIREMENT OF SPACING CONTACT BACKSTOPS ADJUSTMENT ABOVE.

3.06 Code-reading Contact Mechanisms (Make-only and Transfer Types) continued

NOTE:
THE FOLLOWING CODE READING CONTACT ADJUSTMENTS SHOULD BE MADE WITH THE CONTACT ASSEMBLIES MOUNTED ON THE UNIT.



(A) CONTACT MOUNTING BRACKET

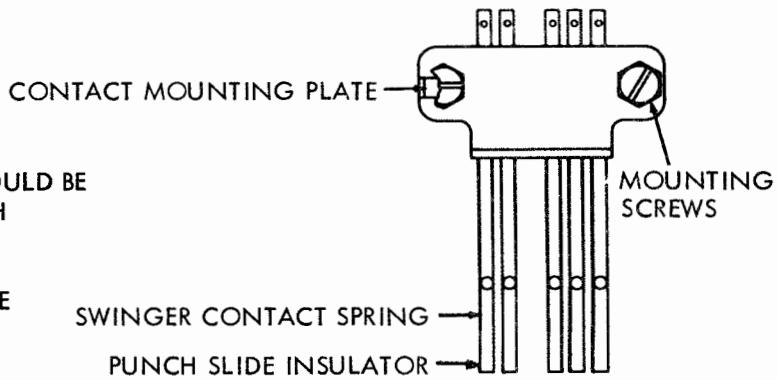
REQUIREMENT

(1) WITH FUNCTION CLUTCH DISENGAGED AND LATCHED, THERE SHALL BE MIN. 0.015 INCH CLEARANCE BETWEEN THE CLOSEST NORMALLY CLOSED CONTACT SPRING (MARKING CONTACT) AND PUNCH SLIDE INSULATOR.

(2) WITH LETTERS COMBINATION SELECTED AND PUNCH PINS IN THEIR UPPERMOST POSITION, THE SWINGER SHALL BE PARALLEL TO RIGHT END OF PUNCH SLIDE AND EXTEND BELOW ITS CENTER, AS GAUGED BY EYE.

TO ADJUST

POSITION CONTACT MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.



(B) CONTACT MOUNTING PLATE

REQUIREMENT

EACH SWINGER CONTACT SPRING SHOULD BE ALIGNED WITH ITS ASSOCIATED PUNCH SLIDE INSULATOR AS GAUGED BY EYE.

TO ADJUST

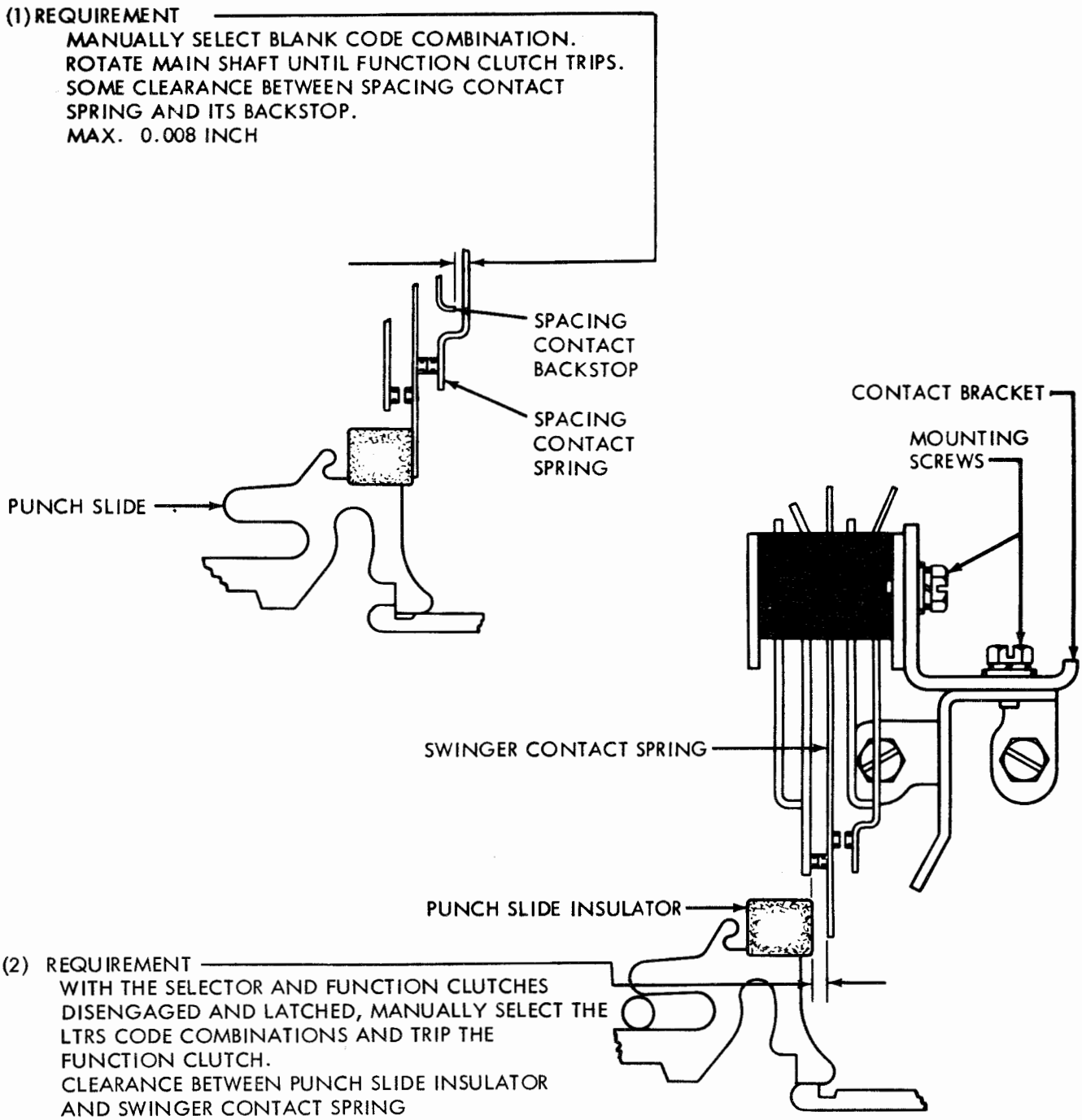
. POSITION CONTACT MOUNTING PLATE WITH MOUNTING SCREWS LOOSENED.

3.07 Code-reading Contact Mechanism (Transfer Type)

CONTACT BRACKET-PRELIMINARY (APPLIES TO TRANSFER - TYPE CONTACTS ONLY)

(1) REQUIREMENT

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. SOME CLEARANCE BETWEEN SPACING CONTACT SPRING AND ITS BACKSTOP.
MAX. 0.008 INCH



(2) REQUIREMENT

WITH THE SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT THE LTRS CODE COMBINATIONS AND TRIP THE FUNCTION CLUTCH.
CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING
MIN. 0.028 INCH

TO ADJUST

POSITION CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED TO MEET REQUIREMENT (1). TO PRY BRACKET TO LEFT, INSERT SCREWDRIVER BETWEEN BRACKET AND LEFT EDGE OF MOUNTING SCREWS; TO PRY BRACKET TO RIGHT, INSERT SCREWDRIVER BETWEEN BRACKET AND RIGHT EDGE OF MOUNTING SCREWS. CHECK REQUIREMENT (2). IF NOT MET, REFINE ADJUSTMENT.

3.08 Code-reading Contact Mechanism (Make-only Type)

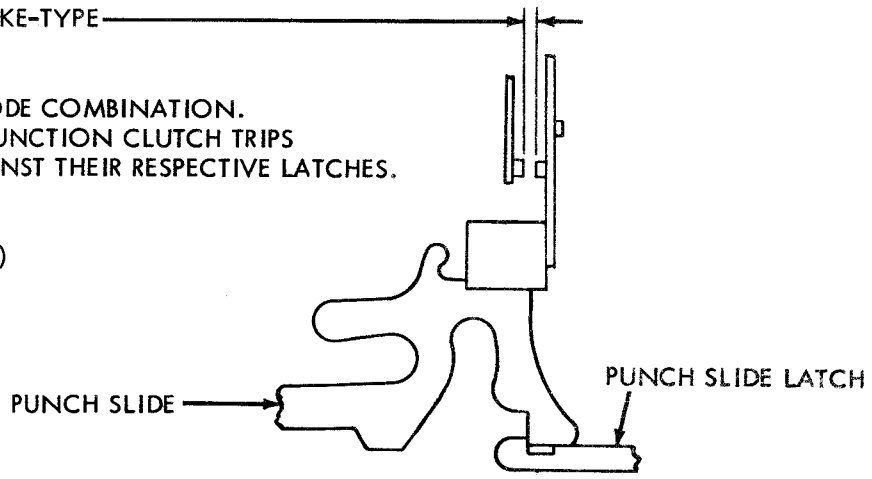
CONTACT BRACKET (APPLIES TO MAKE-TYPE CONTACTS ONLY)---PRELIMINARY

(1) REQUIREMENT

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS AND PUNCH SLIDES ARE AGAINST THEIR RESPECTIVE LATCHES. GAP BETWEEN CONTACTS.

MIN. 0.010 INCH

MAX. 0.015 INCH (SEE NOTE)

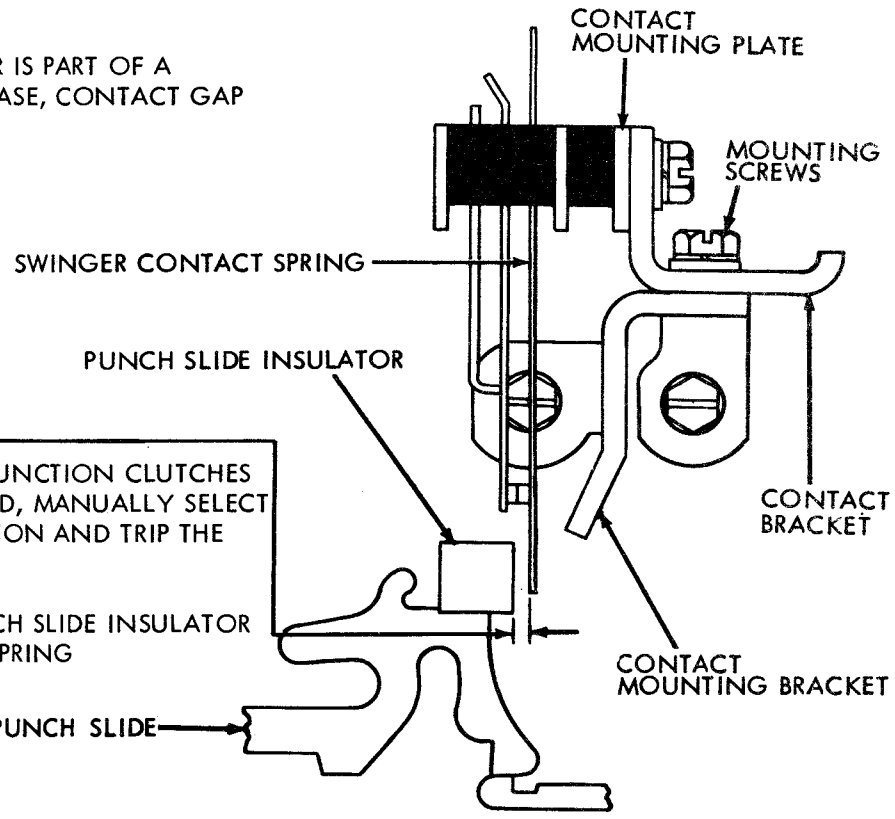


NOTE:

WHERE A TYPING REPERFORATOR IS PART OF A 28 PERFORATOR-TRANSMITTER-BASE, CONTACT GAP SHALL BE

MIN. 0.020 INCH

MAX. 0.025 INCH



(2) TO CHECK

WITH THE SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED, MANUALLY SELECT THE LTRS CODE COMBINATION AND TRIP THE FUNCTION CLUTCH.

REQUIREMENT

CLEARANCE BETWEEN PUNCH SLIDE INSULATOR AND SWINGER CONTACT SPRING

MIN. 0.028 INCH

TO ADJUST

POSITION CONTACT BRACKET WITH MOUNTING SCREWS FRICTION TIGHT. TO PRY BRACKET TO LEFT, INSERT SCREWDRIVER BETWEEN BRACKET AND LEFT EDGE OF MOUNTING SCREW; TO PRY BRACKET TO RIGHT, INSERT SCREWDRIVER BETWEEN BRACKET AND RIGHT EDGE OF MOUNTING SCREW.

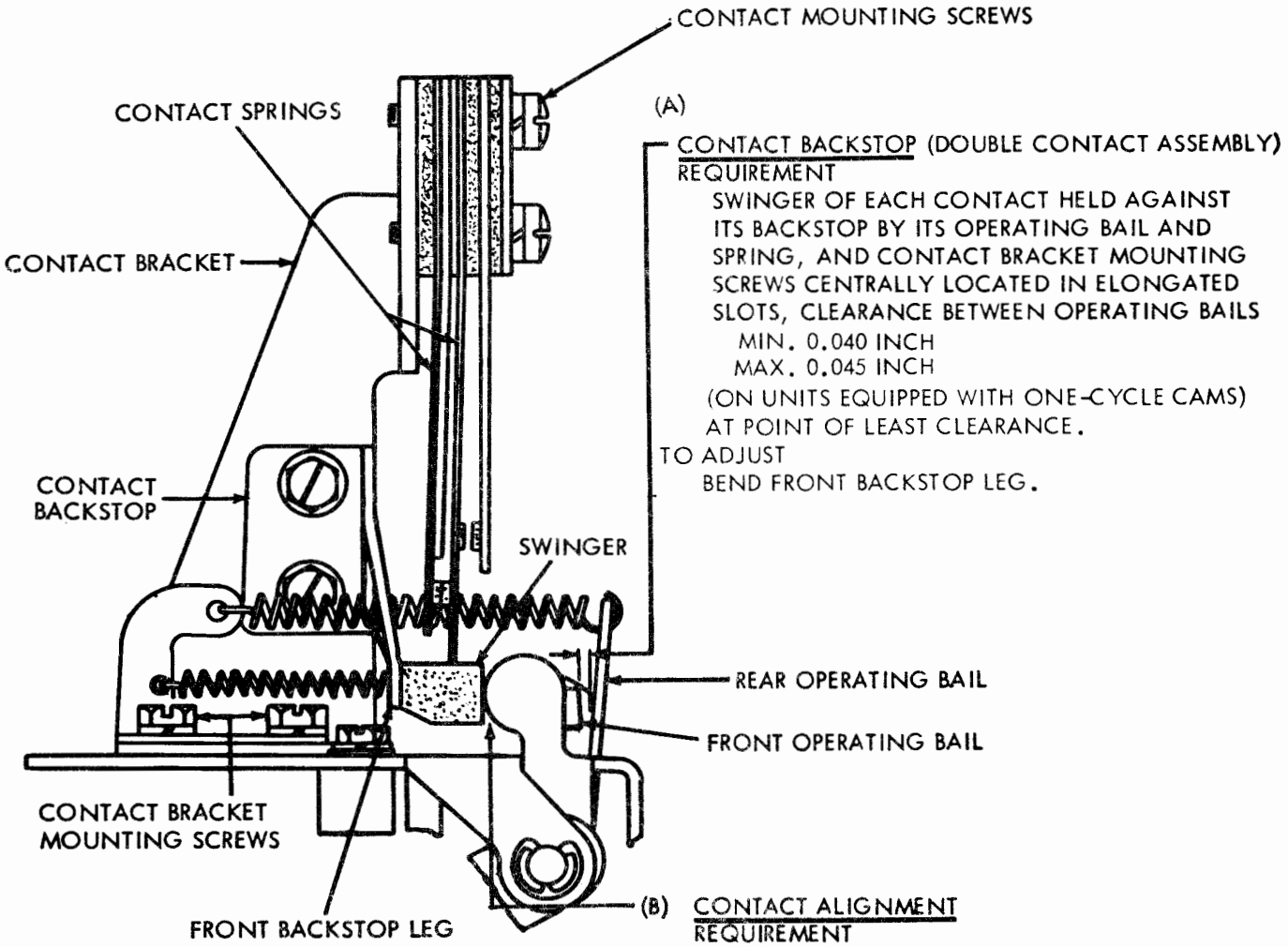
3.09 Auxiliary Timing Contact Mechanisms (Single-contact and Double-contact Types)

NOTE 1:

THERE ARE TWO TYPES OF TIMING CONTACT ASSEMBLIES, SINGLE AND DOUBLE. SINGLE CONTACT ASSEMBLIES HAVE A FRONT CONTACT ONLY, NO REAR CONTACT. IF UNIT IS EQUIPPED WITH A DOUBLE CONTACT ASSEMBLY, THE FOLLOWING ADJUSTMENTS APPLY TO BOTH FRONT AND REAR CONTACTS.

NOTE 2:

IN CASE OF SINGLE-CONTACT ASSEMBLY, MAKE CERTAIN CONTACT BRACKET MOUNTING SCREWS ARE CENTRALLY LOCATED IN ELONGATED SLOTS, AND PROCEED TO NEXT ADJUSTMENT.



(A) CONTACT BACKSTOP (DOUBLE CONTACT ASSEMBLY)

REQUIREMENT

SWINGER OF EACH CONTACT HELD AGAINST ITS BACKSTOP BY ITS OPERATING BAIL AND SPRING, AND CONTACT BRACKET MOUNTING SCREWS CENTRALLY LOCATED IN ELONGATED SLOTS, CLEARANCE BETWEEN OPERATING BAILS

MIN. 0.040 INCH
MAX. 0.045 INCH

(ON UNITS EQUIPPED WITH ONE-CYCLE CAMS) AT POINT OF LEAST CLEARANCE.

TO ADJUST

BEND FRONT BACKSTOP LEG.

(B) CONTACT ALIGNMENT

REQUIREMENT

WHEN PARTS ARE IN ENGAGEMENT:

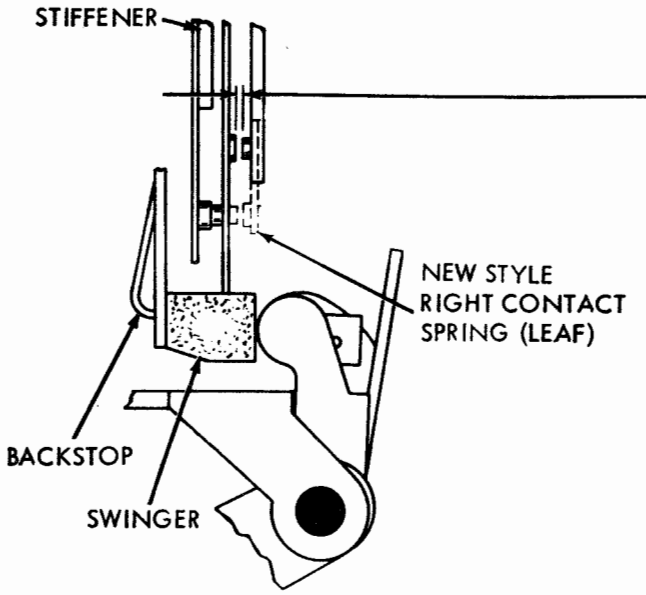
(1) OPERATING BAIL CENTRALLY LOCATED WITH RESPECT TO SWINGER.

(2) MATING CONTACT POINTS ALIGNED.

TO ADJUST

POSITION CONTACT SPRINGS WITH CONTACT MOUNTING SCREWS LOOSENED.

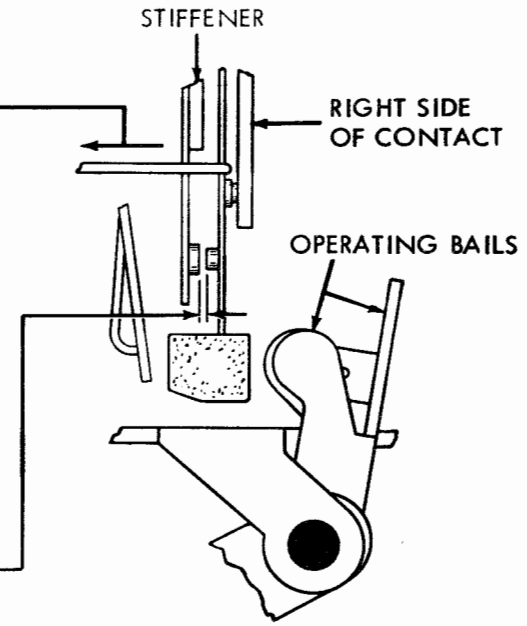
3.10 Auxiliary Timing Contact Mechanisms (Single-contact and Double-contact Types) continued

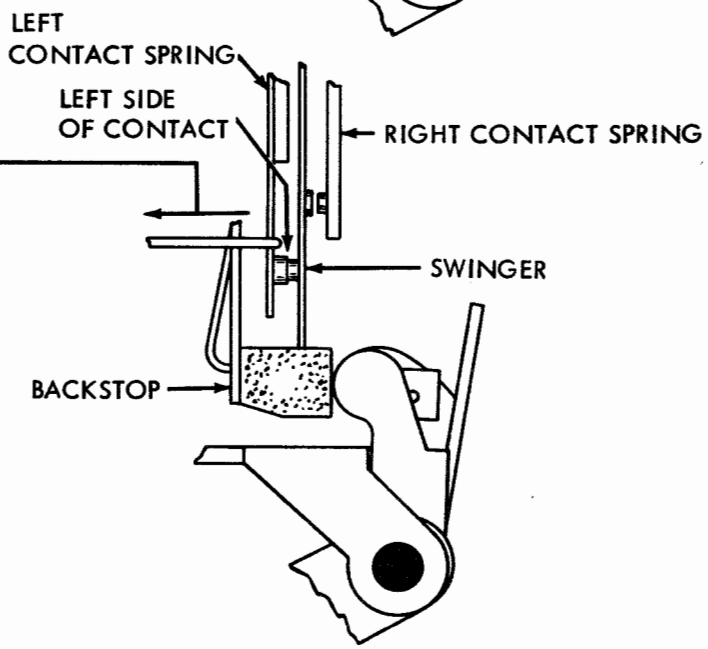


(A) RIGHT CONTACT GAP (NORMALLY CLOSED WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT).
REQUIREMENT
SWINGER HELD AGAINST ITS BACKSTOP.
GAP BETWEEN CONTACTS:
MIN. 0.020 INCH
MAX. 0.025 INCH
TO ADJUST
BEND RIGHT CONTACT SPRING.

(B) SWINGER CONTACT SPRING-PRELIMINARY
REQUIREMENT
OPERATING BAIL HELD AWAY FROM SWINGER
MIN. 4-1/2 OZS.
MAX. 5-1/2 OZS.
TO OPEN RIGHT SIDE OF CONTACT
TO ADJUST
BEND SWINGER CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND READJUST IF NECESSARY.

(C) LEFT CONTACT GAP (NORMALLY OPEN WHEN CONTACT ASSEMBLY IS REMOVED FROM UNIT)
REQUIREMENT
OPERATING BAIL HELD AWAY FROM SWINGER, GAP BETWEEN CONTACTS:
MIN. 0.020 INCH
MAX. 0.025 INCH
TO ADJUST
BEND STIFFENER.



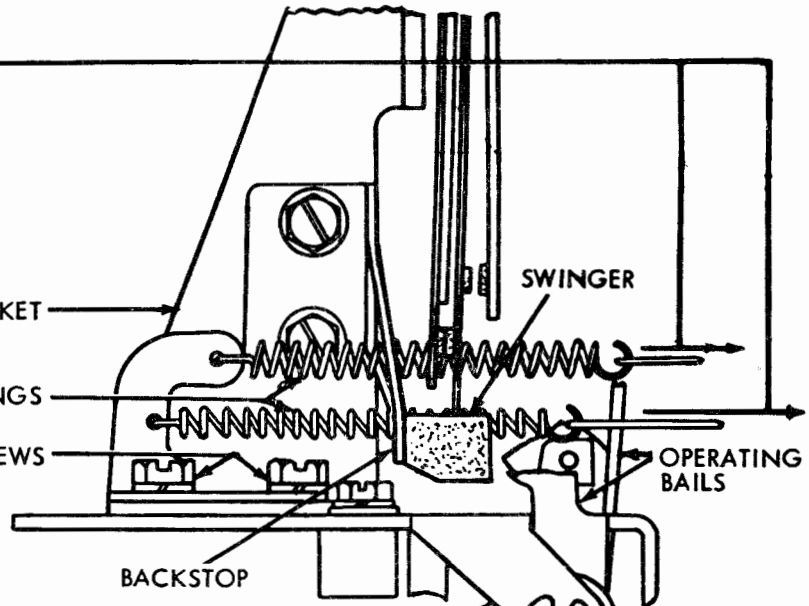


(D) LEFT CONTACT SPRING-PRELIMINARY
REQUIREMENT
SWINGER HELD AGAINST BACKSTOP BY ITS OPERATING BAIL AND SPRING.
MIN. 4-1/2 OZS.
MAX. 5-1/2 OZS.
TO OPEN LEFT SIDE OF CONTACT.
TO ADJUST
BEND LEFT CONTACT SPRING. RECHECK RIGHT CONTACT GAP AND LEFT CONTACT GAP, AND READJUST IF NECESSARY.

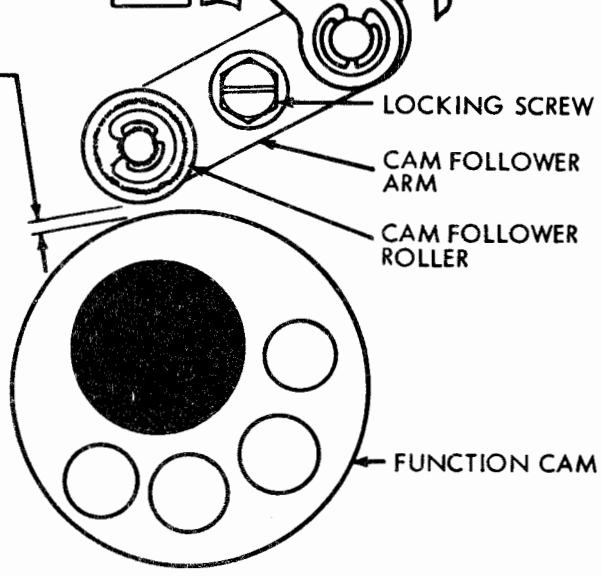
3.11 Auxiliary Timing Contact Mechanisms (Single-contact and Double-contact Types) continued

NOTE:
THE FOLLOWING TIMING CONTACT ADJUSTMENTS SHOULD BE MADE WITH CONTACT ASSEMBLY MOUNTED ON UNIT.

(A) OPERATING BAIL SPRINGS
REQUIREMENT
OPERATING BAIL HELD SO THAT SWINGER IS AGAINST BACKSTOP.
MIN. 7 OZS.
MAX. 12 OZS.
TO PULL SPRING TO INSTALLED LENGTH.



(B)
CONTACT BRACKET-PRELIMINARY (FOR UNITS EQUIPPED WITH ONE-CYCLE CAMS)
LOOSEN LOCKING SCREW. POSITION CAM FOLLOWER ARM, BY MEANS OF ITS ELONGATED MOUNTING HOLE, TO ITS MINIMUM LENGTH ON OPERATING BAIL. TIGHTEN LOCKING SCREW.
REQUIREMENT
SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED. CLEARANCE BETWEEN CAM FOLLOWER ROLLER AND FUNCTION CAM.
MIN. 0.050 INCH
MAX. 0.055 INCH
TO ADJUST
POSITION CONTACT BRACKET WITH MOUNTING SCREWS LOOSENED.



NOTE:
ON UNITS EQUIPPED WITH DOUBLE CONTACT ASSEMBLIES, RECHECK CONTACT BACKSTOP ADJUSTMENT. IF REQUIREMENT IS NOT MET, REFINE CONTACT BRACKET ADJUSTMENT.

3.12 LTRS-FIGS Contact Mechanism (Later Design)

(For Earlier Design see Par. 4.05)

NOTE:
TO FACILITATE CONTACT SPRING ADJUSTMENT, REMOVE CONTACT ASSEMBLY FROM UNIT.

(A) MIDDLE CONTACT SPRING

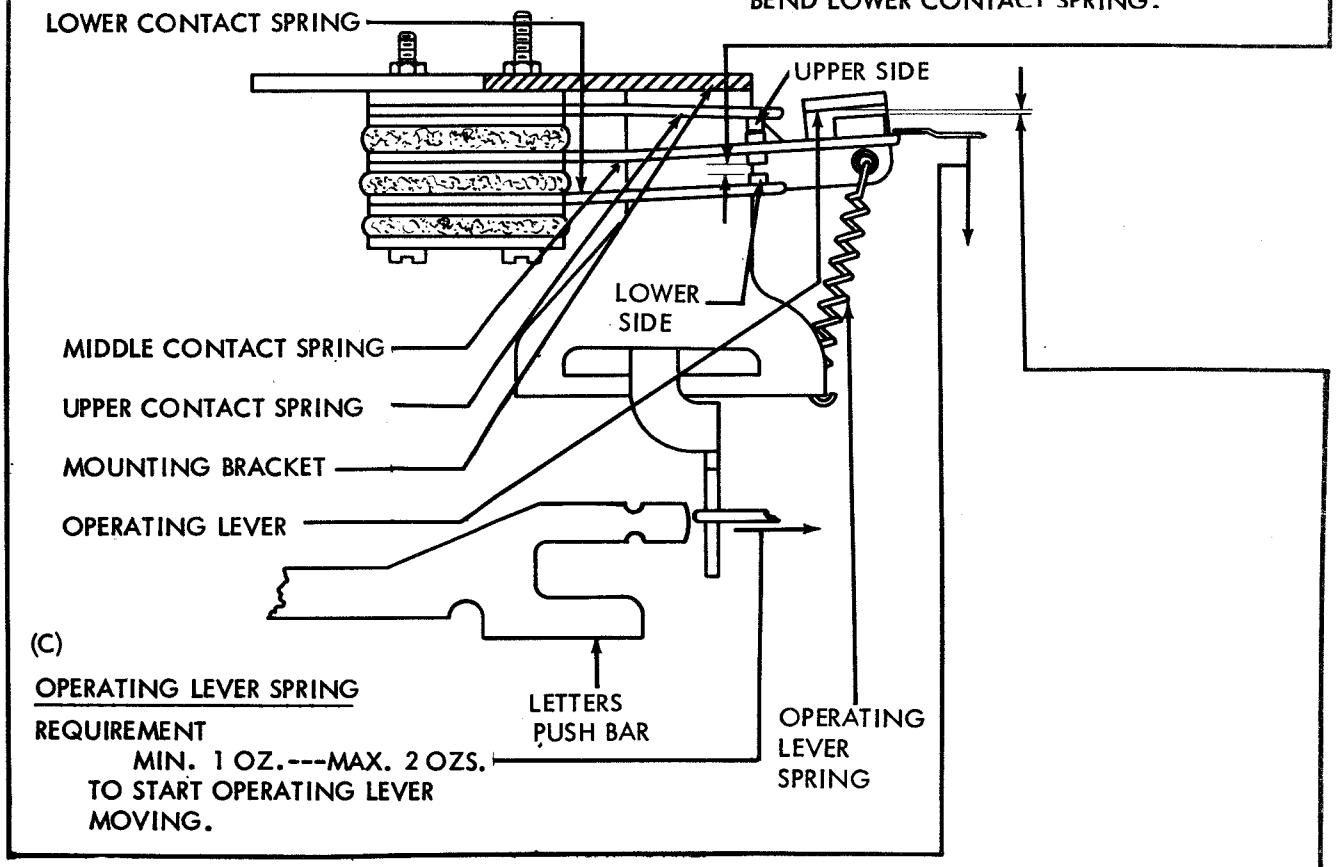
REQUIREMENT
MIN. 25 GRAMS---MAX. 40 GRAMS
TO OPEN UPPER SIDE OF CONTACT.

TO ADJUST
BEND MIDDLE CONTACT SPRING.

(B) LOWER CONTACT SPRING

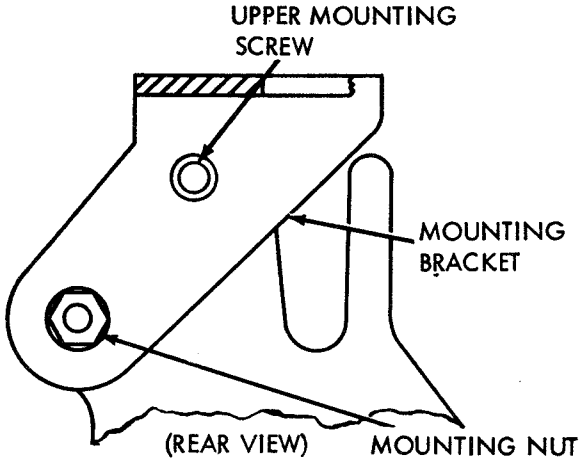
REQUIREMENT
WITH UPPER SIDE OF CONTACT CLOSED:
MIN. 0.012 INCH---MAX. 0.020 INCH
GAP AT LOWER SIDE OF CONTACT.

TO ADJUST
BEND LOWER CONTACT SPRING.



(C) OPERATING LEVER SPRING

REQUIREMENT
MIN. 1 OZ.---MAX. 2 OZS.
TO START OPERATING LEVER MOVING.



(D) MOUNTING BRACKET

NOTE: CONTACT ASSEMBLY SHOULD BE MOUNTED ON UNIT BEFORE THIS ADJUSTMENT IS MADE.

REQUIREMENT
WITH UNIT IN LETTERS CONDITION AND FUNCTION CLUTCH DISENGAGED:
MIN. 0.005 INCH---MAX. 0.015 INCH
BETWEEN OPERATING LEVER AND INSULATOR ON MIDDLE CONTACT SPRING.

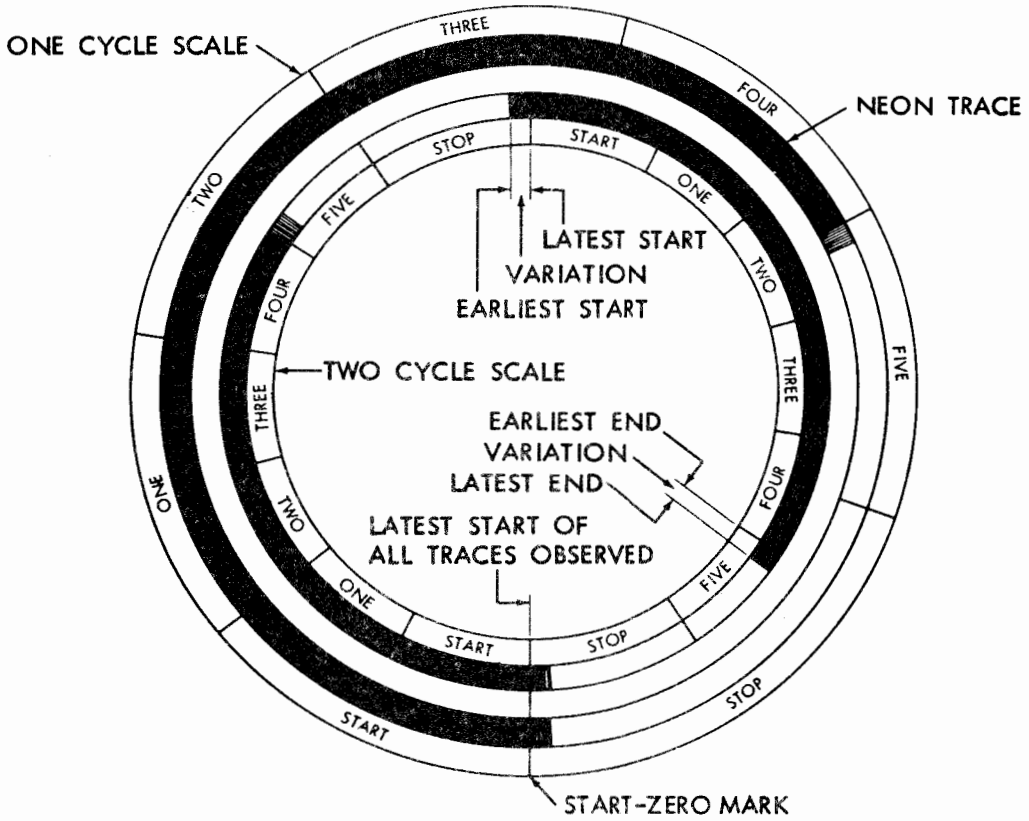
TO ADJUST
WITH MOUNTING NUT AND UPPER MOUNTING SCREW LOOSENED, POSITION MOUNTING BRACKET.

3.13 Contact Timing Measurements (To Zero Test Set)

THE FOLLOWING TESTS REQUIRE THE USE OF A TELETYPE SIGNAL DISTORTION TEST SET. THEY SHOULD BE MADE AFTER THE CONTACT ASSEMBLIES HAVE BEEN ADJUSTED AS INSTRUCTED ON THE PRECEDING PAGES. WHERE REQUIREMENTS ARE NOT MET, DESIGNATED ADJUSTMENTS MUST BE REFINED, AND/OR RELATED LENGTHS MAY HAVE TO BE CHANGED TO MEET TIMING REQUIREMENTS.

TESTS ON 600 OPERATION PER MINUTE UNITS OR LOWER SHOULD BE MADE WITH THE PERFORATOR OR REPERFORATOR AND THE TEST SET OPERATING AT 600 O.P.M. TESTS ON 900 O.P.M. UNITS USED ON THE AUTOMATIC SEND-RECEIVE (ASR) SET SHOULD BE MADE WITH THE TEST SET OPERATING AT 600 O.P.M. AND USING KEYBOARD TRANSMISSION. TESTS ON 1200 O.P.M. UNITS SHOULD BE MADE WITH THE REPERFORATOR OPERATING AT 1200 O.P.M. AND THE TEST SET EQUIPPED WITH A TWO CYCLE SCALE AND OPERATING AT 600 O.P.M.

OBSERVATIONS ARE TO BE MADE OF A NEON TRACE ON THE GRADUATED DISC OF A TEST SET. TRACE WILL HAVE TENDENCY TO "JUMP"; THAT IS, IT WILL NOT BE STEADY ENOUGH TO BE ACCURATELY MEASURED. VARIATION MAY BE AS HIGH AS TEN DIVISIONS ON SCALE. MINIMUM SIGNAL LENGTH IS MEASURED BETWEEN LATEST START AND EARLIEST END OF ALL TRACES. MAXIMUM SIGNAL LENGTH IS MEASURED BETWEEN EARLIEST START AND LATEST END OF ALL TRACES.



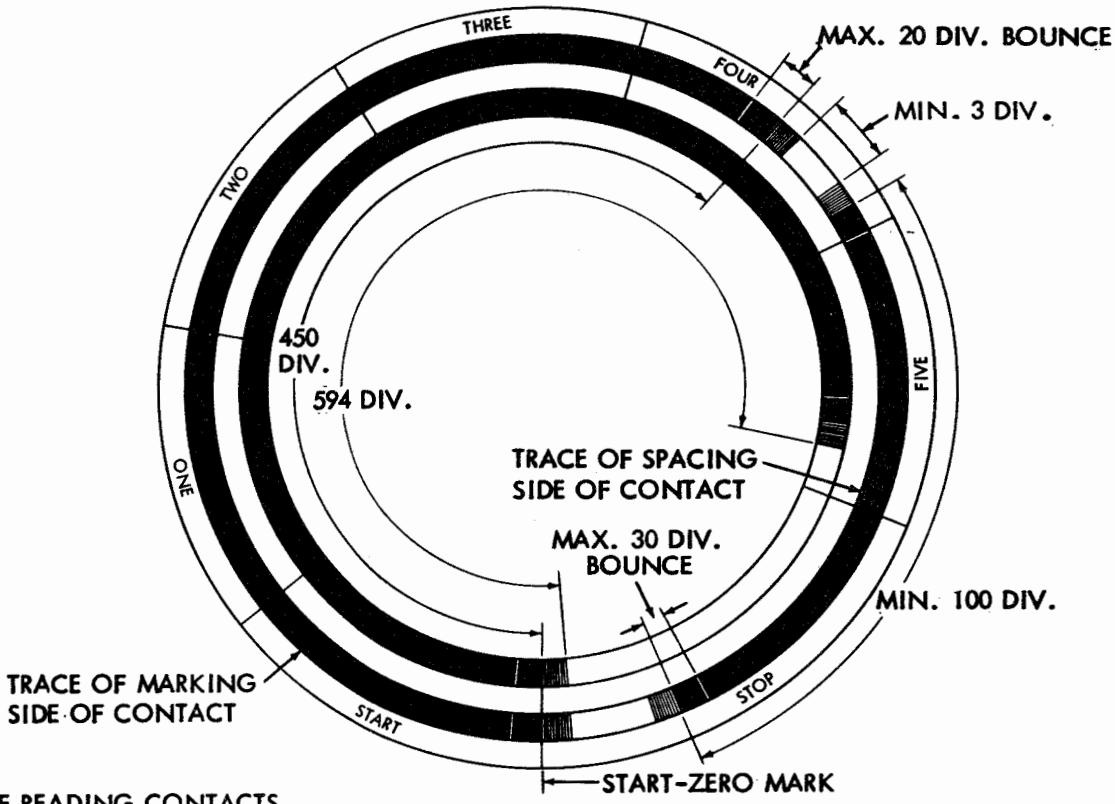
TO ZERO TEST SET

CONNECT NEON TRACE TO NO. 1 CODE READING CONTACT (REARMOST). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE AND NOTE POINT AT WHICH TRACE ENDS. TRACES WILL JUMP AS DESCRIBED ABOVE; NOTE EARLIEST END OF TRACES. REPEAT FOR REMAINING CONTACTS. OF ALL TRACES OBSERVED, CHOOSE ONE THAT STARTS THE LATEST. SET "START-ZERO" MARK OF SCALE AT LATEST START OF CHOSEN TRACE. RECORD EARLIEST END OF CHOSEN TRACE FOR FUTURE ADJUSTMENT REFERENCES.

3.14 Contact-timing Measurements for Code-reading Contacts

NOTE:

TEST PROCEDURES ON THIS PAGE APPLY TO 600 O.P.M. UNITS OR LOWER ONLY.



CODE READING CONTACTS

(1) ZERO TEST SET AS PREVIOUSLY INSTRUCTED.

(2) CONNECT NEON TRACE TO MARKING SIDE OF A CODE READING CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING CONTINUOUS LETTERS CODE COMBINATIONS, OBSERVE TRACE. REPEAT FOR ALL FIVE CONTACTS.

REQUIREMENTS

A. SIGNAL LENGTH FOR EACH CONTACT TRACE AND COMBINED CONTACT TRACES.
MIN. 450 DIVISIONS
MAX. 594 DIVISIONS

B. BOUNCE SHOULD END WITHIN MAX. OF 20 DIVISIONS OF EARLIEST START AND LATEST END OF ALL TRACES.

(3) (APPLIES TO TRANSFER TYPE CONTACTS ONLY) CONNECT NEON TRACE TO BOTH SIDES OF CONTACT. WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE TRACE.

REQUIREMENTS

A. BREAK IN TRACE INDICATING BREAK BEFORE MAKE.
MIN. 3 DIVISIONS

B. SIGNAL LENGTH OF SPACING SIDE OF CONTACT
MIN. 100 DIVISIONS

C. BOUNCE SHOULD END WITHIN 30 DIVISIONS OF EARLIEST START AND LATEST END OF TRACE.

(4) TO ADJUST

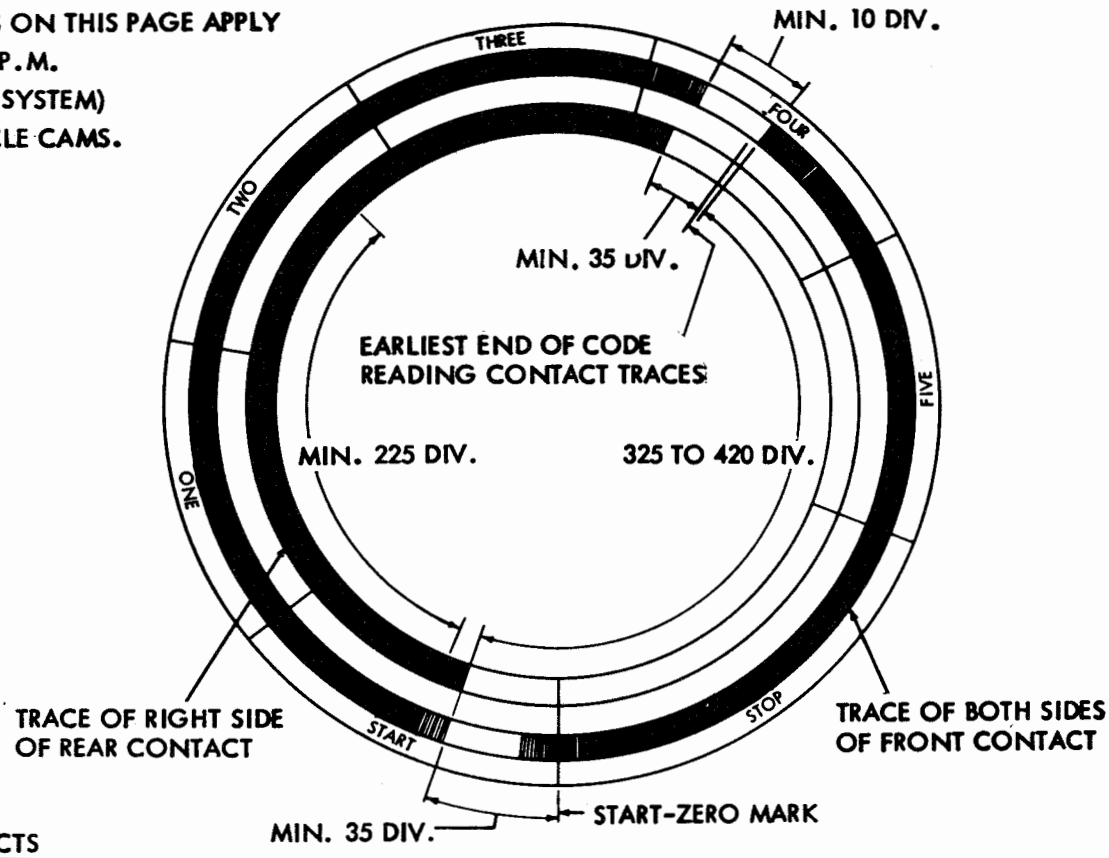
A. IF REQUIREMENTS UNDER (2) A., (3) A., OR (3) B. ARE NOT MET, REFINE CONTACT BRACKET ADJUSTMENT. WHEN REFINING (2) A., ATTEMPT TO ADJUST TOWARD MAXIMUM SIGNAL LENGTH.

B. IF BOUNCE REQUIREMENTS UNDER (2) B. AND (3) C. ARE NOT MET, REFINE MARKING AND SWINGER CONTACT SPRING AND SPACING CONTACT SPRING TENSIONS.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.15 Contact-timing Measurements for Auxiliary Timing Contacts

TEST PROCEDURES ON THIS PAGE APPLY ONLY TO 600 O.P.M. UNITS (BELL 82B1 SYSTEM) USING ONE-CYCLE CAMS.



TIMING CONTACTS

(1) ZERO TEST SET AS PREVIOUSLY DESCRIBED.

(2) REAR CONTACT

A. CONNECT NEON TRACE TO RIGHT SIDE OF REAR CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE TRACE.
REQUIREMENTS
1. EARLIEST START MIN. OF 35 DIVISIONS AFTER START ZERO MARK.
2. LATEST END MIN. OF 35 DIVISIONS BEFORE EARLIEST END OF CODE READING CONTACT TRACES RECORDED WHEN ZEROING TEST SET.
3. MIN. TRACE LENGTH 225 DIVISIONS.
4. BOUNCE SHOULD END WITHIN MAX. 5 DIVISIONS OF START AND END OF ANY TRACE.

(3) FRONT CONTACT

A. CONNECT NEON TRACE TO BOTH SIDES OF FRONT CONTACT. WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE TRACE.
REQUIREMENTS
1. BREAK IN TRACE TO INDICATE BREAK BEFORE MAKE.
MIN. 10 DIVISIONS
2. BETWEEN EARLIEST STARTS OF TRACES OF RIGHT AND LEFT)NORMALLY OPEN AND NORMALLY CLOSED) SIDES OF CONTACT.
MIN. 325 DIVISIONS---MAX. 420 DIVISIONS
3. BOUNCE SHOULD END WITHIN MAX. 5 DIVISIONS OF EARLIEST START AND LATEST END OF ANY TRACE.

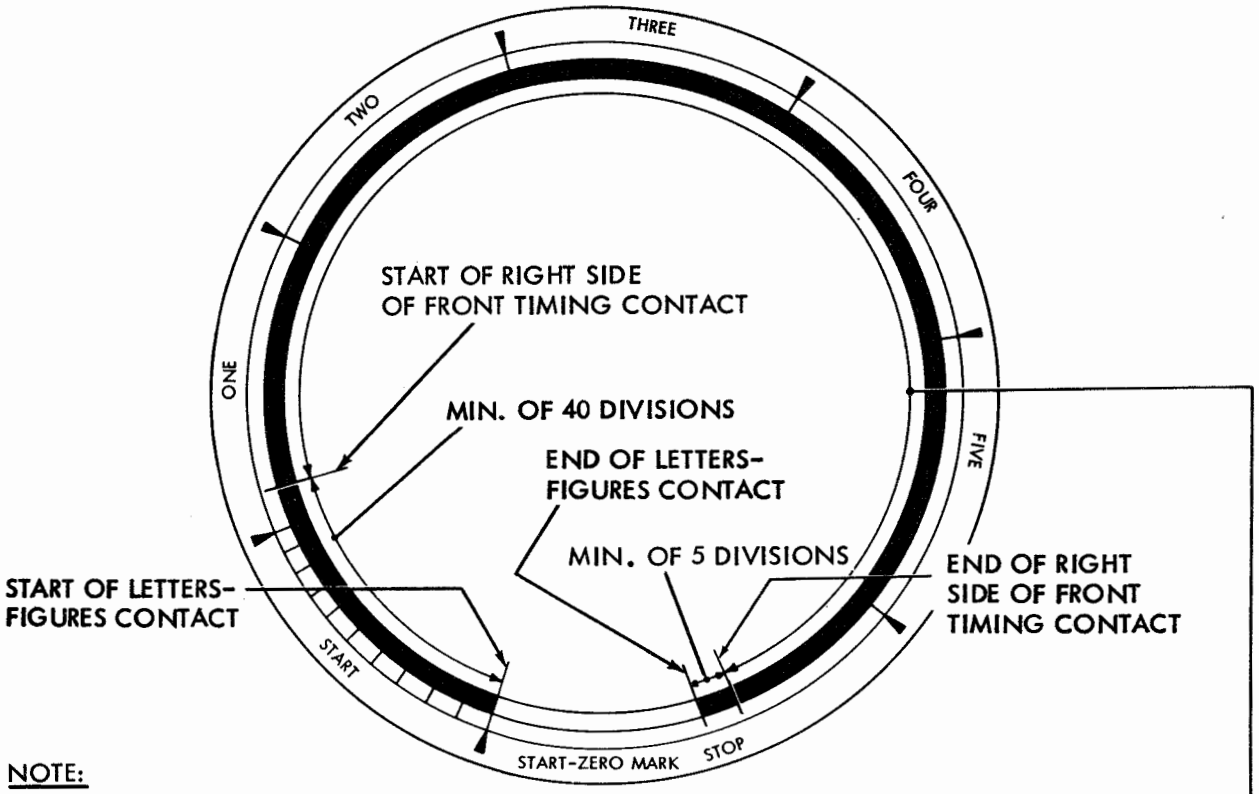
(4) TO ADJUST

A. IF TIMING REQUIREMENTS UNDER (2) A. 1., 2., 3., AND (3) A. 1. AND 2. ARE NOT MET, REFINE CONTACT BRACKET ADJUSTMENT AND/OR RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, AND LEFT CONTACT SPRING ADJUSTMENTS.

B. IF BOUNCE REQUIREMENTS UNDER (2) A. 4. AND (3) A. 3. ARE NOT MET, REFINE SWINGER CONTACT SPRING AND LEFT CONTACT SPRING TENSIONS.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.16 Contact-timing Measurements for LTRS-FIGS Contacts (Later Design)
(For Earlier Design see Par. 4.05)



NOTE:

IF UNIT IS EQUIPPED WITH CODE READING AND/OR TIMING CONTACTS, TEST IS TO BE MADE AFTER INSTALLATION AND ADJUSTMENT OF THESE CONTACTS.

LETTERS-FIGURES COTACT TEST

TO CHECK

CONNECT CABLE LEADS OF LETTERS-FIGURES CONTACT TO NEON TRACE LAMP OF SIGNAL DISTORTION TEST SET. SET CONTROL SWITCHES OF TEST SET TO FOLLOWING POSITIONS: (1) VIEW-TRANSMIT SWITCH TO VIEW; (2) LINE-DIST. SWITCH TO LINE; AND MOTOR SWITCH TO ON. ALTERNATELY SELECT LETTERS (12345) AND FIGURES (12-45). SET START-ZERO MARK OF TEST-SET SCALE AT START OF CONTACT TRACE. CONNECT RIGHT SIDE OF FRONT TIMING CONTACT (PROBE) TO NEON TRACE LAMP; RECORD START AND END OF TRACE. RECONNECT LETTERS-FIGURES CONTACT TO TRACE LAMP AND ALTERNATELY SELECT LETTERS AND FIGURES.

REQUIREMENT

(1) NO CHATTER OR BOUNCE OF LETTERS-FIGURES CONTACT DURING TIME WHEN TIMING CONTACT IS CLOSED.

(2) TRACE OF LETTERS-FIGURES CONTACT START MIN. OF 40 DIVISIONS BEFORE START OF TRACE OF TIMING CONTACT AND END MIN. OF 5 DIVISIONS AFTER END OF TIMING CONTACT.

TO ADJUST

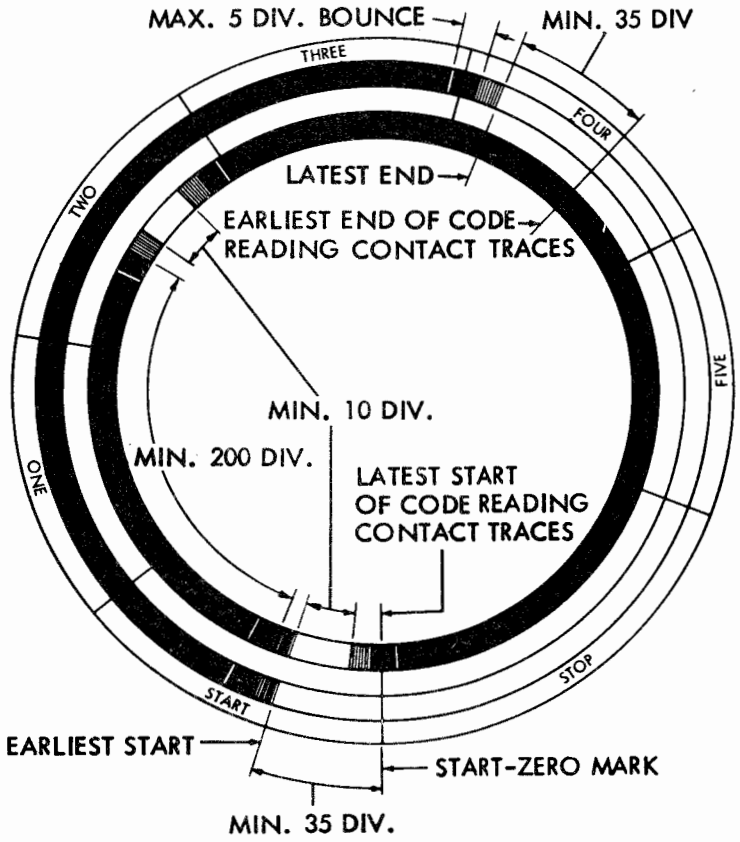
(1) IF (1) OF REQUIREMENT IS NOT MET, REFINE MIDDLE AND LOWER CONTACT SPRING ADJUSTMENTS.

(2) IF (2) OF REQUIREMENT IS NOT MET, REFINE MOUNTING BRACKET ADJUSTMENT.

(3) IF TEST REQUIREMENTS ARE NOT MET, REFINE LTRS-FIGS CONTACT MECHANISM ADJUSTMENTS.

3.17 Contact Timing Measurements (To Zero Test Set)

NOTE:
TEST PROCEDURES ON THIS PAGE AND THE FOLLOWING PAGE APPLY ONLY TO 600 O.P.M. UNITS (WESTERN UNION PLAN 55 SYSTEM) USING ONE-CYCLE CAMS.

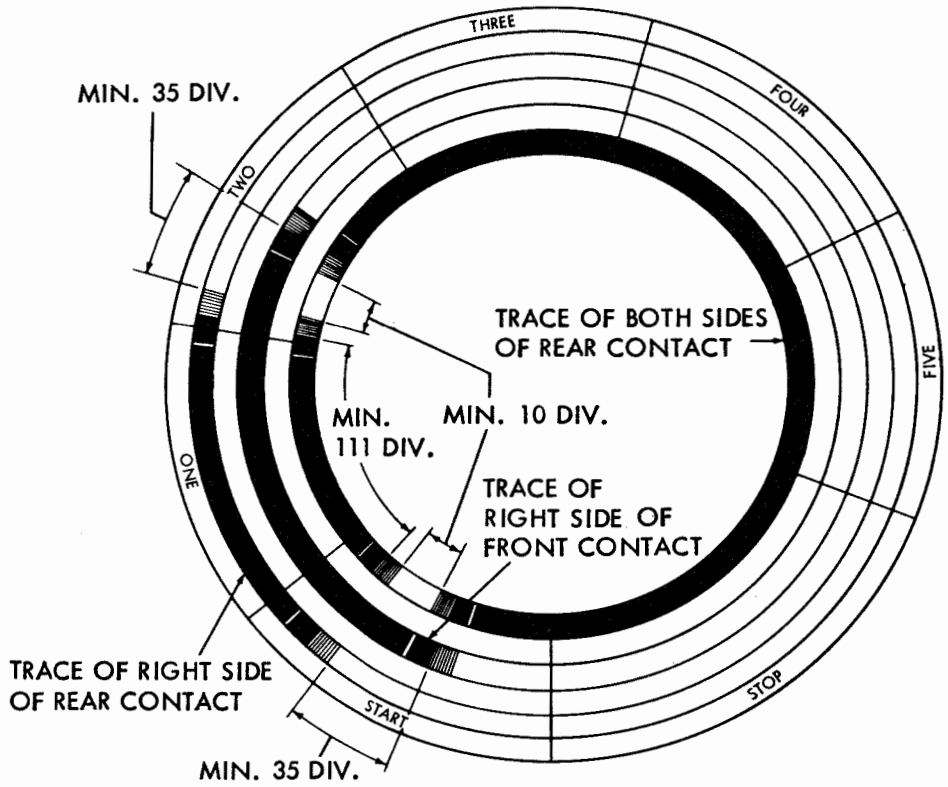


TIMING CONTACTS
(1) ZERO TEST SET AS PREVIOUSLY DESCRIBED.
(2) FRONT CONTACT
A. CONNECT NEON TRACE TO RIGHT SIDE OF FRONT CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING CONTINUOUS LETTERS CODE COMBINATIONS, OBSERVE TRACE.
REQUIREMENTS
1. LATEST END MIN. OF 35 DIVISIONS BEFORE EARLIEST END OF CODE READING CONTACT TRACES.
2. EARLIEST START MIN. OF 35 DIVISIONS AFTER LATEST START OF CODE READING CONTACT TRACES.
3. MIN. TRACE LENGTH 200 DIVISIONS.
4. BOUNCE SHOULD END WITHIN MAX. 5 DIVISIONS OF EARLIEST START AND LATEST END OF ANY TRACE.

B. RECORD LATEST START AND EARLIEST END OF TRACE.
C. (APPLIES ONLY IF COMPLETE TRANSFER CONTACT IS USED). CONNECT NEON TRACE TO BOTH SIDES OF FRONT CONTACT. OBSERVE TRACE.
REQUIREMENT
1. BREAK IN TRACE AT TWO PLACES TO INDICATE BREAK BEFORE MAKE. MIN. 10 DIVISIONS

TEST CONTINUED ON NEXT PAGE)

3.18 Contact Timing Measurements (To Zero Test Set) continued



(3) REAR CONTACT

A. CONNECT NEON TRACE TO RIGHT SIDE OF REAR CONTACT (NORMALLY OPEN WHEN UNIT IS IN IDLE CONDITION). WITH UNIT RECEIVING LETTERS CODE COMBINATIONS, OBSERVE TRACE.
REQUIREMENTS
1. LATEST END OF TRACE MIN. OF 35 DIVISIONS BEFORE EARLIEST END OF TRACE OF RIGHT SIDE OF FRONT CONTACT RECORDED IN (2) B.
2. MIN. TRACE LENGTH 111 DIVISIONS.
3. EARLIEST START OF TRACE MIN. OF 35 DIVISIONS AFTER LATEST START OF TRACE OF RIGHT SIDE OF FRONT CONTACT RECORDED IN (2) B.
4. BOUNCE SHOULD END WITHIN MAX. 5 DIVISIONS OF EARLIEST START AND LATEST END OF ANY TRACE.

B. (APPLIES ONLY IF COMPLETE TRANSFER CONTACT IS USED). CONNECT NEON TRACE TO BOTH SIDES OF REAR CONTACT. OBSERVE TRACE.
REQUIREMENTS
1. BREAK IN TRACE AT TWO PLACES TO INDICATE BREAK BEFORE MAKE. MIN. 10 DIVISIONS

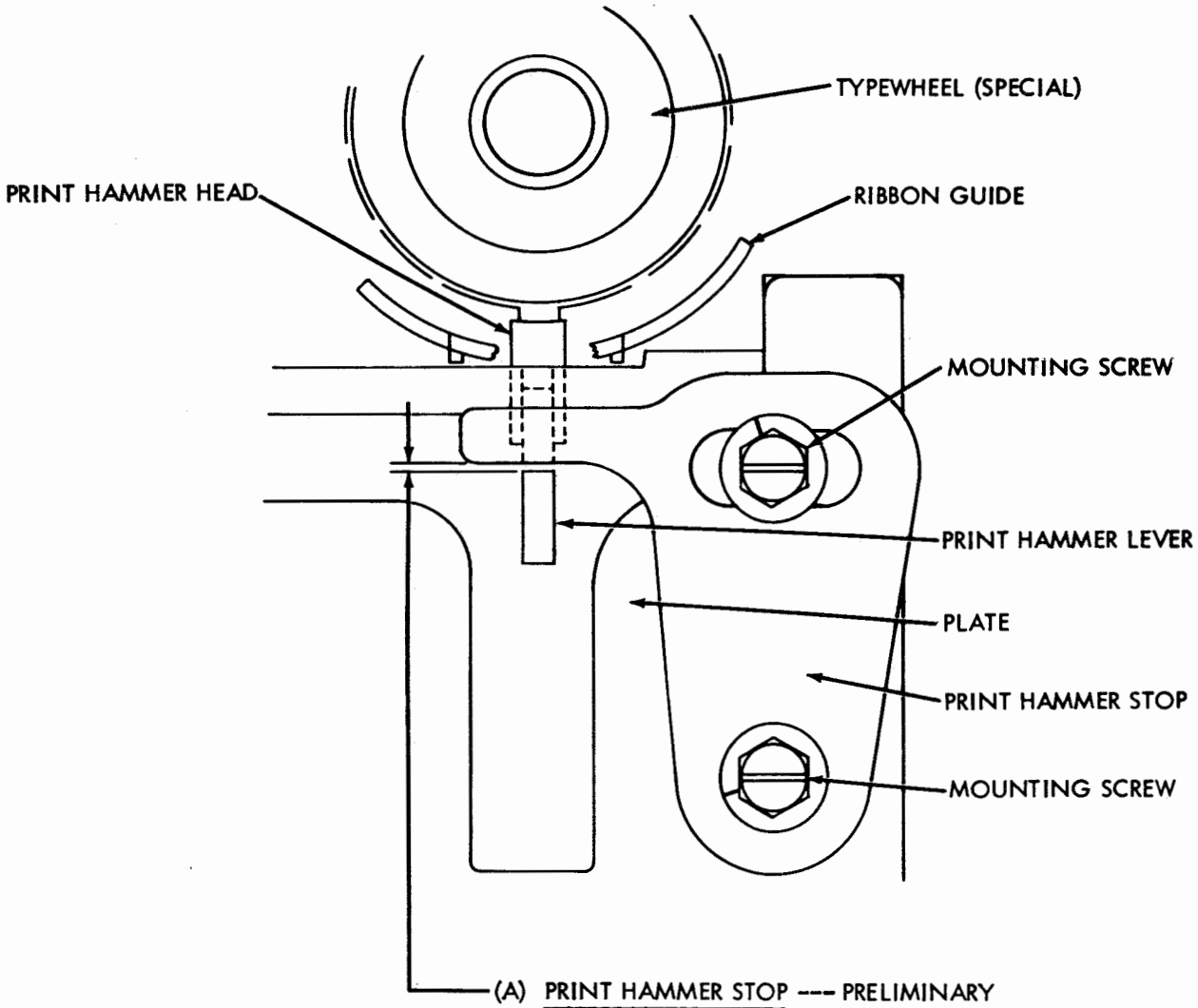
(4) TO ADJUST

A. IF TRACE LENGTHS UNDER (2) A. 3. AND (3) A. 2. ARE BOTH SHORT, REFINE CONTACT BRACKET ADJUSTMENT. IF ONLY ONE TRACE IS SHORT, REFINE CONTACT BACKSTOP ADJUSTMENT AND CHECK RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, AND LEFT CONTACT SPRING ADJUSTMENTS.

B. IF BREAK BEFORE MAKE REQUIREMENTS UNDER (2) C. 1. AND (3) B. 1. ARE NOT MET, REFINE RIGHT CONTACT GAP, LEFT CONTACT GAP, SWINGER CONTACT SPRING, AND LEFT CONTACT SPRING ADJUSTMENTS.

C. IF ANY REFINEMENTS ARE NECESSARY, REPEAT COMPLETE TEST PROCEDURE.

3.19 Print Suppression on Function Mechanism



(A) PRINT HAMMER STOP --- PRELIMINARY

REQUIREMENT

WITH HEAD OF PRINT HAMMER AGAINST CHARACTER ON TYPEWHEEL MIN. SOME --- MAX. 0.010 INCH CLEARANCE BETWEEN PRINT HAMMER LEVER AND PRINT HAMMER STOP.

TO ADJUST

WITH MOUNTING SCREWS LOOSENED POSITION PRINT HAMMER STOP BY MEANS OF ITS ELONGATED UPPER HOLE.

(B) PRINT HAMMER STOP --- FINAL

REQUIREMENT

WITH UNIT OPERATING UNDER POWER, THE AMOUNT OF SMUDGE SHALL BE HELD TO A MINIMUM WHERE PRINT SUPPRESSION IS REQUIRED.

TO ADJUST

REFINE PRINT HAMMER STOP (PRELIMINARY) ADJUSTMENT.

NOTE: UNLESS OTHERWISE SPECIFIED, THE FOLLOWING BACKSPACE ADJUSTMENTS APPLY TO BOTH THE CHADLESS AND FULLY PERFORATED TAPE MECHANISMS.

3.20 Manual and Power Drive Backspace Mechanism (For Chadless Tape)

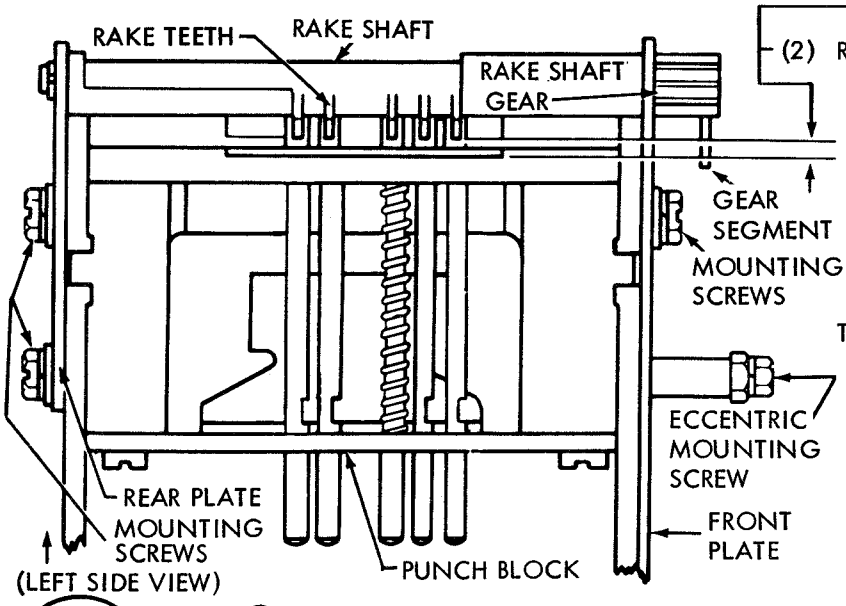
RAKE (A)

(1) REQUIREMENT

WITH ROTATIONAL PLAY IN RAKE TAKEN UP TO LEFT, BOTTOM SURFACE OF RAKE TEETH SHOULD BE WITHIN 0.040 INCH OF THE SAME VERTICAL PLANE AS LEFT SIDE OF PUNCH BLOCK OR SLIGHTLY TO THE RIGHT.

TO ADJUST

REMOVE TWO MOUNTING SCREWS FROM REAR PLATE. POSITION RAKE SHAFT GEAR IN RELATION TO GEAR SEGMENT. REPLACE MOUNTING SCREWS.



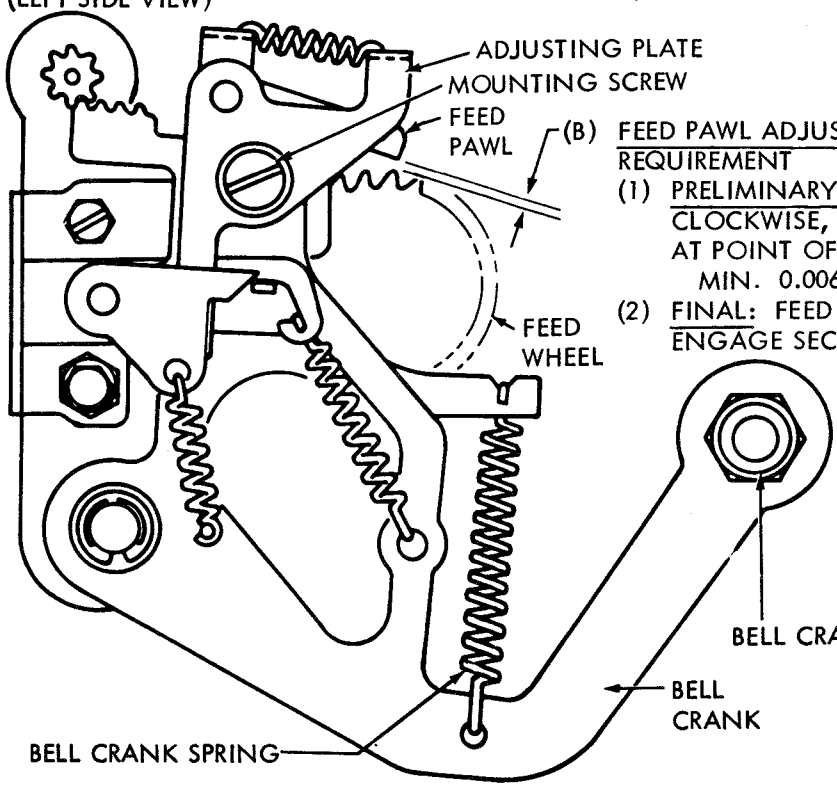
(2) REQUIREMENT

WITH BELLCRANK SPRING UNHOOKED AND RAKE IN OPERATED POSITION, CLEARANCE BETWEEN BOTTOM OF RAKE TEETH AND LOWER SURFACE OF TAPE SLOT:

MIN. 0.007 INCH
MAX. 0.011 INCH
(CHECK AT NO. 1 & 5 PINS.)

TO ADJUST

LOOSEN THREE MOUNTING SCREWS AND ECCENTRIC MOUNT SCREW UNTIL FRICTION TIGHT. POSITION FRONT AND REAR PLATES, WITH BELL CRANK HANDLE FULLY DEPRESSED, UNTIL LEFT EDGES OF BOTH PLATES ARE APPROXIMATELY IN LINE WITH VERTICAL PLANE OF PUNCH BLOCK AND CLEARANCE MEETS THE REQUIREMENT. TIGHTEN MOUNTING SCREWS AND REPLACE BELL CRANK SPRING.



(B) FEED PAWL ADJUSTING PLATE

REQUIREMENT

(1) PRELIMINARY: WITH BELL CRANK ROTATED CLOCKWISE, FEED PAWL SHALL MISS FIRST TOOTH AT POINT OF LEAST CLEARANCE BY

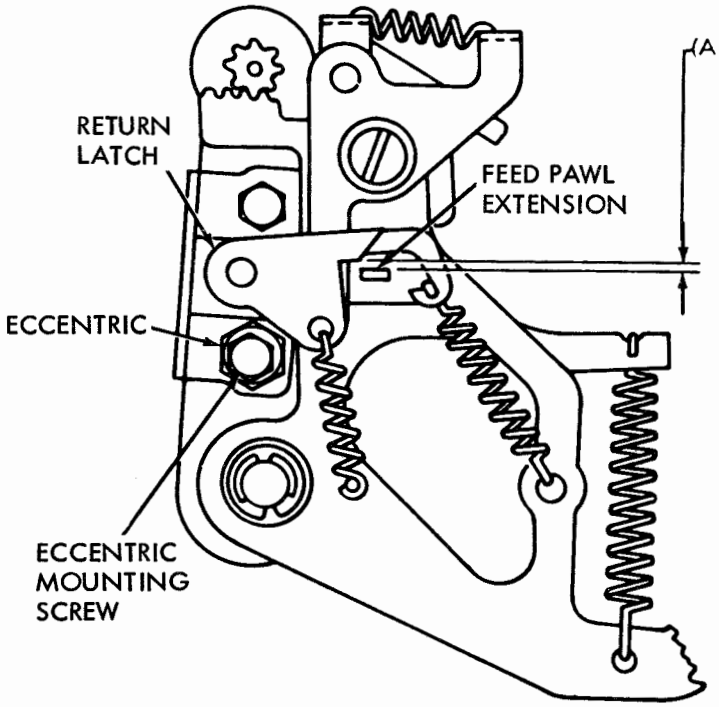
MIN. 0.006 INCH --- MAX. 0.040 INCH

(2) FINAL: FEED PAWL SHALL MISS FIRST TOOTH AND ENGAGE SECOND TOOTH BY AT LEAST 1/2 OF RIGHT ENGAGING SURFACE OF FEED PAWL (AS GAUGED BY EYE WHEN FEED PAWL FIRST CONTACTS RATCHET TOOTH)

TO ADJUST

POSITION ADJUSTING PLATE WITH MOUNTING SCREW FRICTION TIGHT.

3.21 Manual and Power Drive Backspace Mechanism (For Chadless Tape) continued



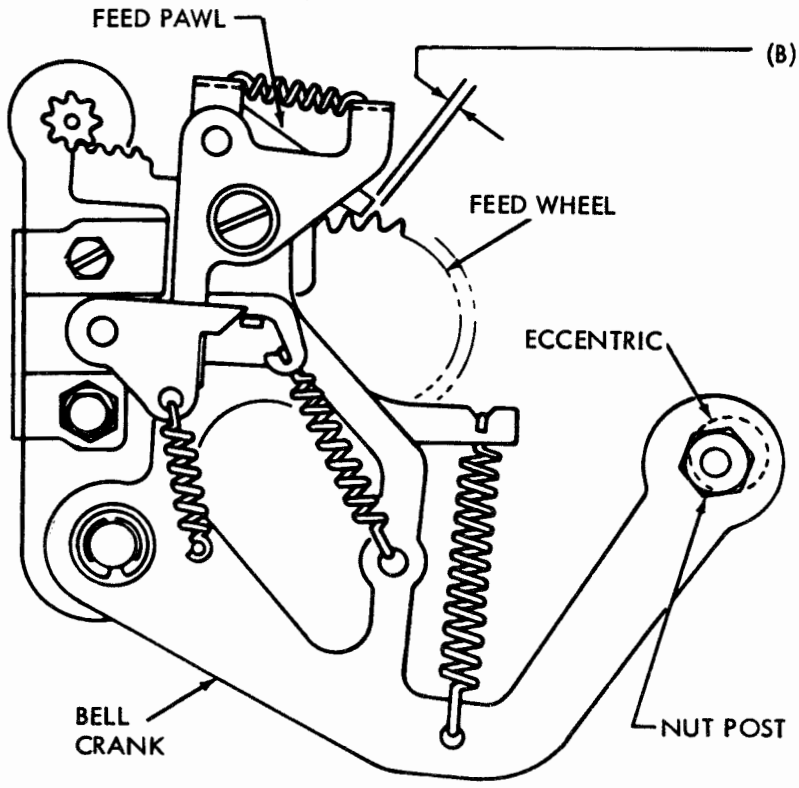
(A) RETURN LATCH REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN RETURN LATCH AND FEED PAWL EXTENSION

MIN. 0.004 INCH
MAX. 0.020 INCH

TO ADJUST

ADJUST ECCENTRIC WITH MOUNTING SCREW FRICTION TIGHT.



(B) FEED PAWL ECCENTRIC MANUAL BACKSPACE (PRELIMINARY) REQUIREMENT

WITH THE BACKSPACE BELL CRANK IN ITS OPERATED POSITION AND THE FEED WHEEL DETENTED BACK ONE SPACE.

MIN. SOME---MAX. 0.003 INCH CLEARANCE BETWEEN THE FEED WHEEL RATCHET TOOTH AND THE BACKSPACE FEED PAWL.

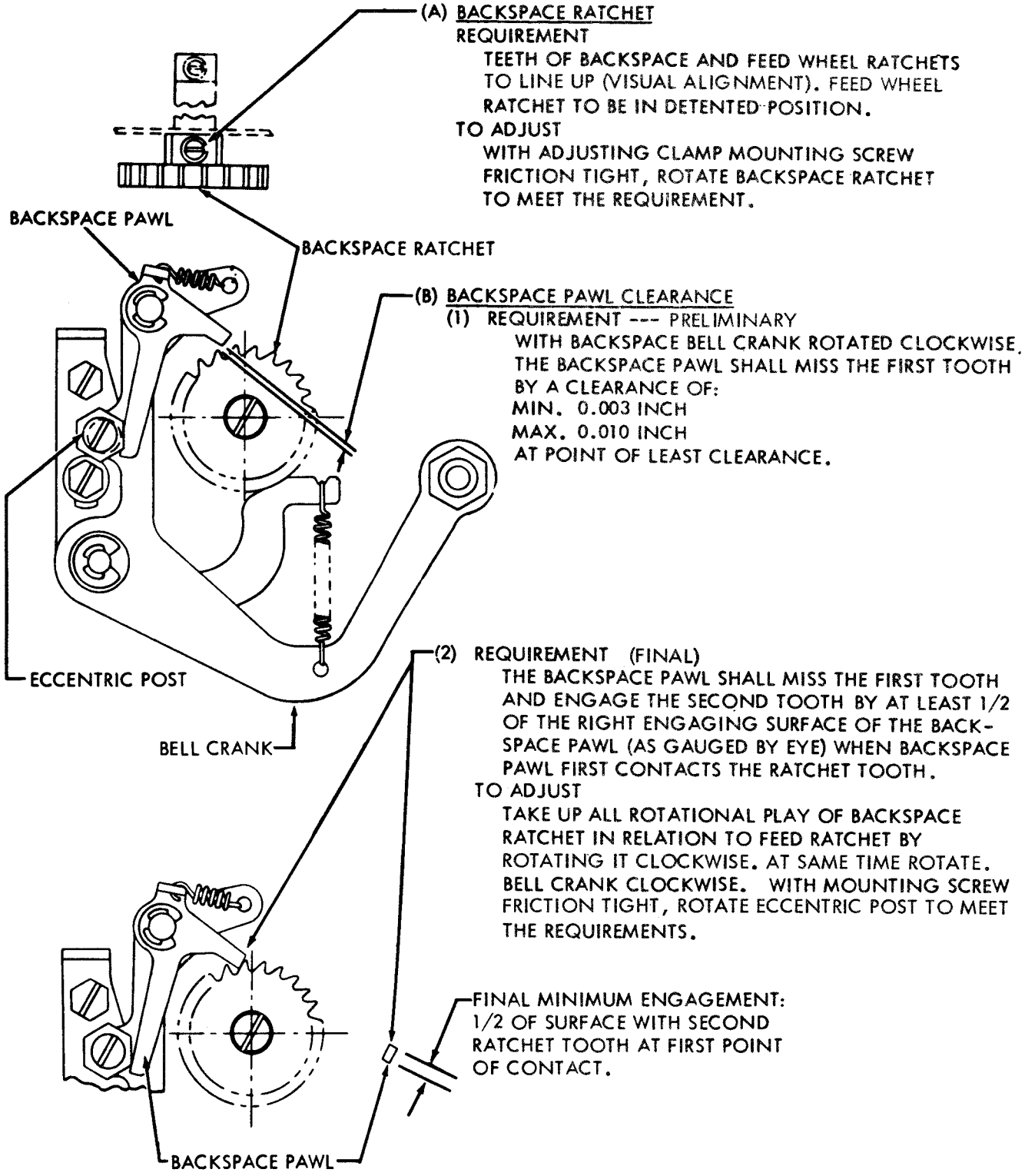
POWER DRIVE BACKSPACE

WITH THE BACKSPACE BELL CRANK IN ITS OPERATED POSITION, THE HIGH SIDE OF THE ECCENTRIC SHOULD BE IN ITS UPPERMOST POSITION.

TO ADJUST

LOOSEN THE NUT POST (FRICTION TIGHT) AND ROTATE ECCENTRIC WITH AN ALLEN WRENCH. TIGHTEN THE NUT POST.

3.22 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape)



3.23 Manual and Power Drive Backspace Mechanism (For Fully Perforated Tape) continued

FEED PAWL ECCENTRIC

MANUAL BACKSPACE (PRELIMINARY)

REQUIREMENT

WITH THE BACKSPACE BELL CRANK ASSEMBLY IN ITS OPERATED POSITION AND THE FEED WHEEL DETENTED BACK ONE SPACE.

MIN. SOME --- MAX. 0.003 INCH

CLEARANCE BETWEEN THE BACKSPACE RATCHET TOOTH AND THE BACKSPACE FEED PAWL WITH ALL THE ROTATIONAL PLAY OF THE BACKSPACE RATCHET TAKEN UP IN A DIRECTION TO MAKE THE CLEARANCE MAXIMUM.

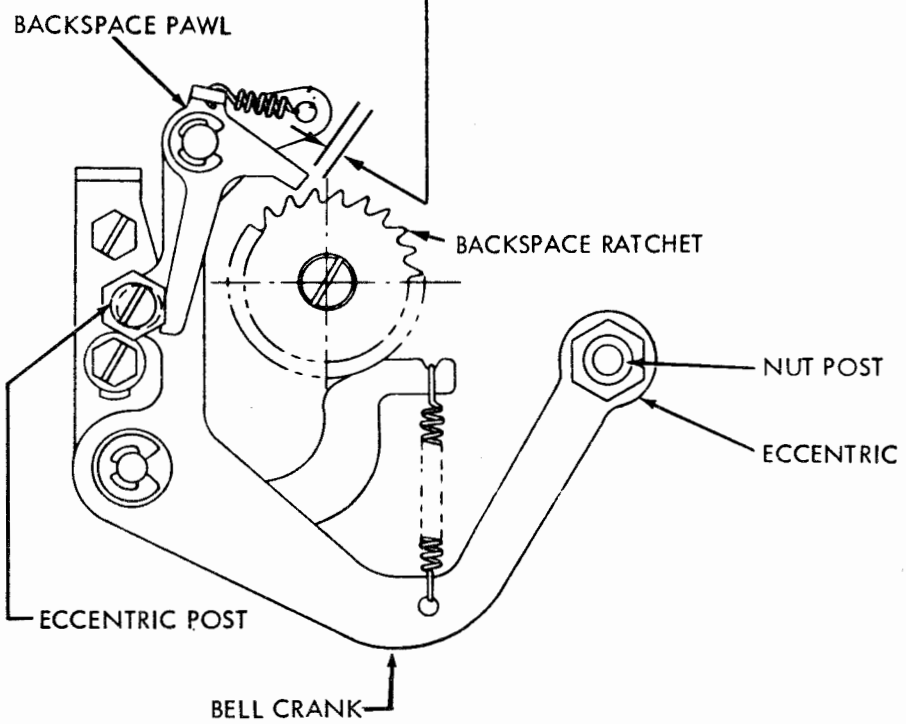
POWER DRIVE BACKSPACE

REQUIREMENT

WITH THE BACKSPACE BELL CRANK ASSEMBLY IN ITS OPERATED POSITION, THE HIGH SIDE OF THE ECCENTRIC SHOULD BE IN ITS UPPERMOST POSITION.

TO ADJUST

LOOSEN THE NUT POST (FRICTION TIGHT) AND ROTATE THE ECCENTRIC WITH AN ALLEN WRENCH. TIGHTEN THE NUT POST.



3.24 Power Drive Backspace Mechanism (Early Design)

NOTE 1:

THE FOLLOWING ADJUSTMENTS ARE FOR USE WITH THE EARLY DESIGN BACKSPACE MAGNET ASSEMBLY. LATER DESIGN USE A NON-ADJUSTABLE BACKSPACE MAGNET ASSEMBLY.

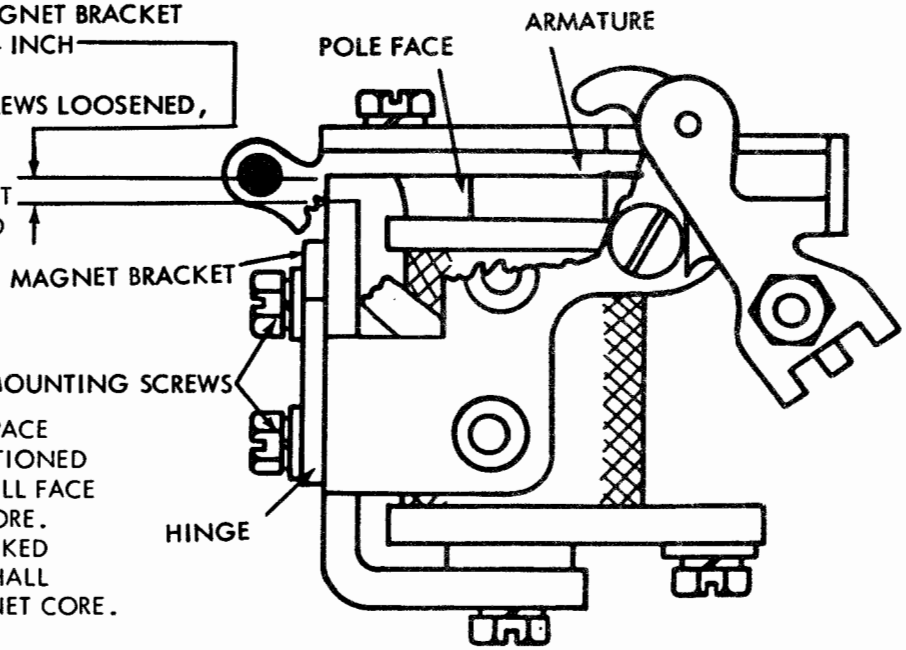
(A) ARMATURE HINGE

REQUIREMENT

ARMATURE BAIL SPRING REMOVED. WITH ARMATURE HELD AGAINST POLE FACE AND PLAY TAKEN UP AT HINGE IN DOWNWARD DIRECTION, CLEARANCE BETWEEN ARMATURE AND MAGNET BRACKET MIN. SOME --- MAX. 0.004 INCH

TO ADJUST

WITH HINGE MOUNTING SCREWS LOOSENED, POSITION ARMATURE. THE ARMATURE SHOULD TOUCH FRONT AND REAR OF MAGNET CORE. TIGHTEN SCREWS AND RECHECK ADJUSTMENT.

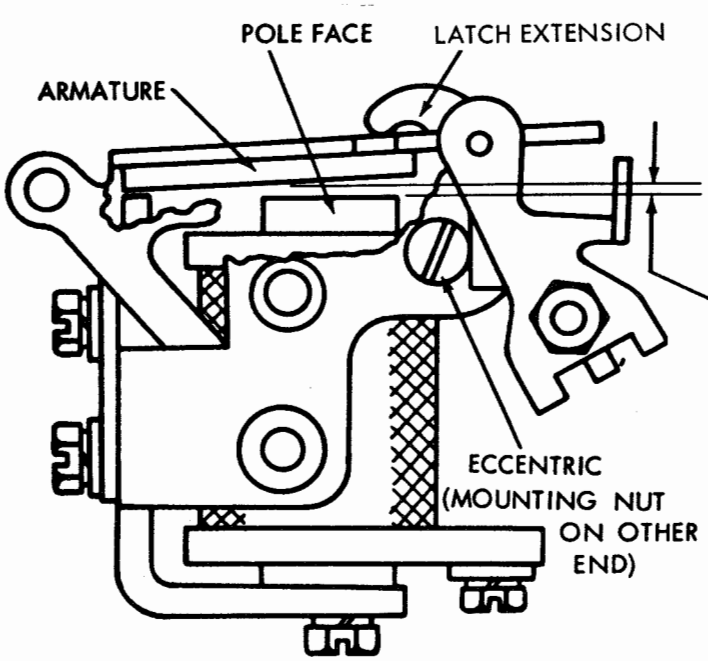


NOTE 2:

FOR "DC" OPERATION, THE BACKSPACE MAGNET ARMATURE SHALL BE POSITIONED SO THAT THE SIDE MARKED "C" SHALL FACE THE POLE FACE OF THE MAGNET CORE. FOR "AC" OPERATION, THE UNMARKED SIDE OF THE MAGNET ARMATURE SHALL FACE THE POLE FACE OF THE MAGNET CORE.

NOTE 3:

THIS ADJUSTMENT IS MADE AT FACTORY AND SHOULD NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, THE PUNCH UNIT SHOULD BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE PUNCH UNIT POSITION ADJUSTMENT.



(B) ARMATURE UP-STOP

REQUIREMENT

ARMATURE IN UNOPERATED POSITION. GAP BETWEEN ARMATURE AND POLE FACE
MIN. 0.025 INCH.
MAX. 0.030 INCH.
AT CLOSEST POINT.

TO ADJUST

ROTATE ECCENTRIC WITH MOUNTING NUT LOOSENED. KEEP HIGH PART OF ECCENTRIC TO LEFT.

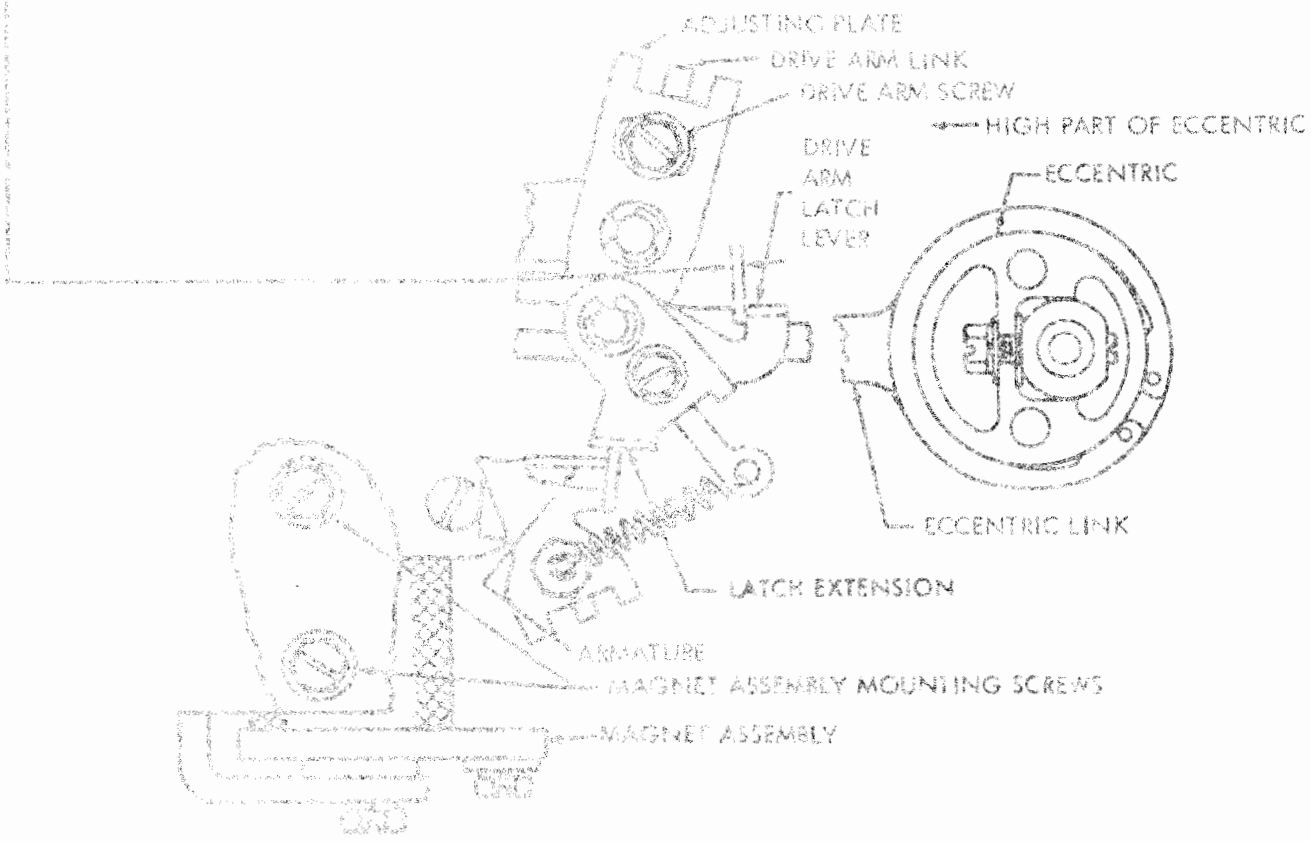
3.25 Power Drive Backspace Mechanism (For Fully Perforated Tape) (Early Design) continued

DRIVE ARM

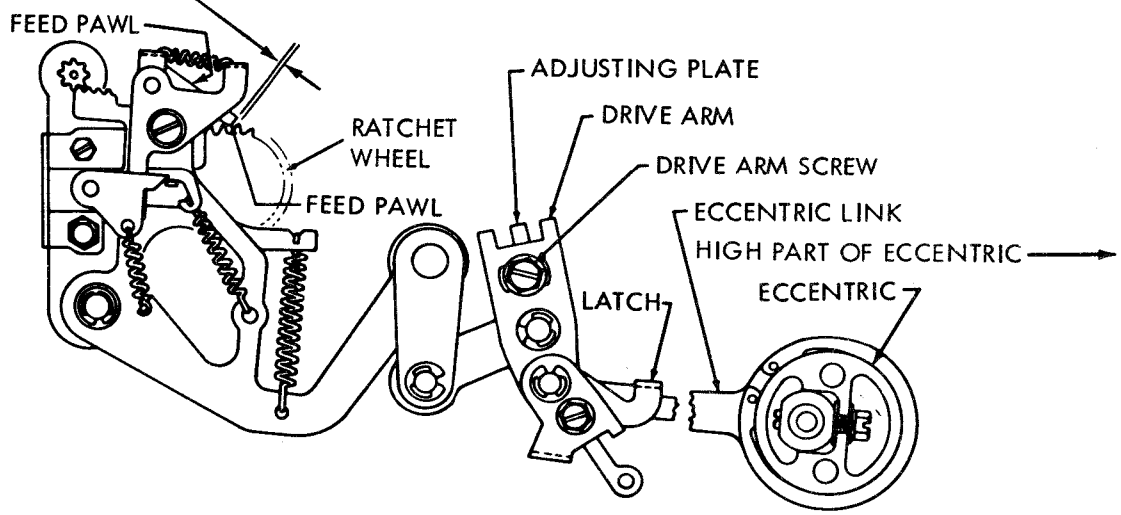
REQUIREMENT (PRELIMINARY)

WITH HIGH PART OF ECCENTRIC LINK IN LEFT HAND POSITION, ARMATURE AGAINST POLE FACE TO ALLOW DRIVE ARM LATCH LEVER TO REST AGAINST ECCENTRIC LINK. CLEARANCE BETWEEN STEP ON ECCENTRIC LINK AND LATCH LEVER WITH PLAY TAKEN UP TO MAKE GAP MINIMUM.

MIN. 0.040 INCH
MAX. 0.045 INCH



3.26 Manual and Power Drive Backspace Mechanism (For Chadless Tape) (Early Design) continued



DRIVE ARM

REQUIREMENT (PRELIMINARY)

WITH DRIVE-ARM LATCH LEVER ENGAGED WITH ECCENTRIC LINK, MAIN SHAFT ROTATED TO PLACE ECCENTRIC IN ITS EXTREME RIGHT HAND POSITION AND FEED WHEEL DETENTED BACK ONE SPACE.

MIN. SOME --- MAX. 0.003 INCH

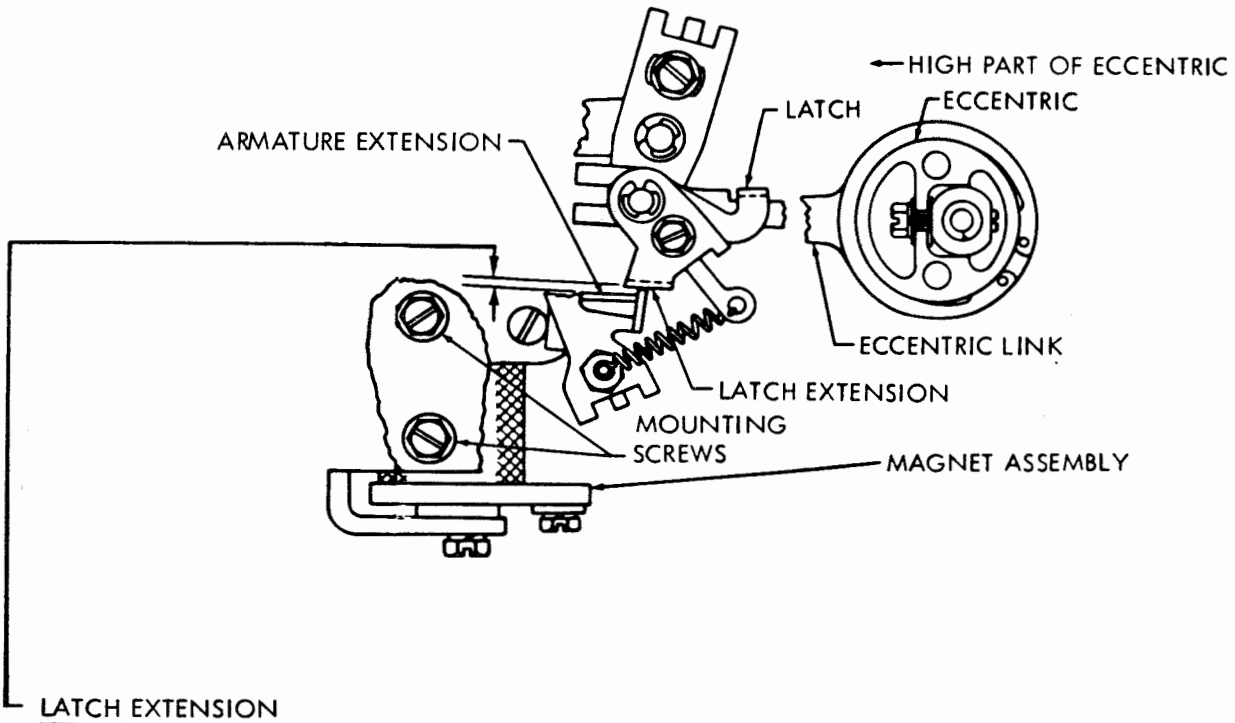
CLEARANCE BETWEEN THE BACKSPACE FEED PAWL AND THE RATCHET TOOTH. CHECK WITH FEED WHEEL SHAFT OIL HOLE IN THE UPPERMOST POSITION AND RECHECK EACH 90 DEGREES ABOUT THE PERIPHERY OF THE FEED WHEEL.

TO ADJUST

LOOSEN DRIVE ARM SCREW (FRICTION TIGHT) AND MOVE ADJUSTING PLATE.

3.27 Power Drive Backspace Mechanism (Early Design) continued

NOTE:
THIS ADJUSTMENT IS MADE AT FACTORY AND SHOULD NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, PUNCH SHOULD BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE PUNCH POSITION ADJUSTMENT.



LATCH EXTENSION

REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. HIGH PART OF ECCENTRIC TO LEFT. ARMATURE AGAINST POLE FACE. LATCH RESTING ON ECCENTRIC LINK NOTCH. CLEARANCE BETWEEN TOP OF ARMATURE EXTENSION AND LATCH EXTENSION

MIN. 0.005 INCH
MAX. 0.020 INCH

TO ADJUST

SWING MAGNET CLOCKWISE OR COUNTERCLOCKWISE, AS NECESSARY, WITH MOUNTING SCREWS FRICTION TIGHT.

3.28 Power Drive Backspace Mechanism (Early Design) continued

(A) LATCH

REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. ARMATURE OFF POLE FACE (DE-ENERGIZED). LATCH EXTENSION AGAINST END OF ARMATURE. ECCENTRIC LINK AT ITS CLOSEST POINT TO UNDERSIDE OF LATCH. CLEARANCE BETWEEN LATCH AND ECCENTRIC LINK.

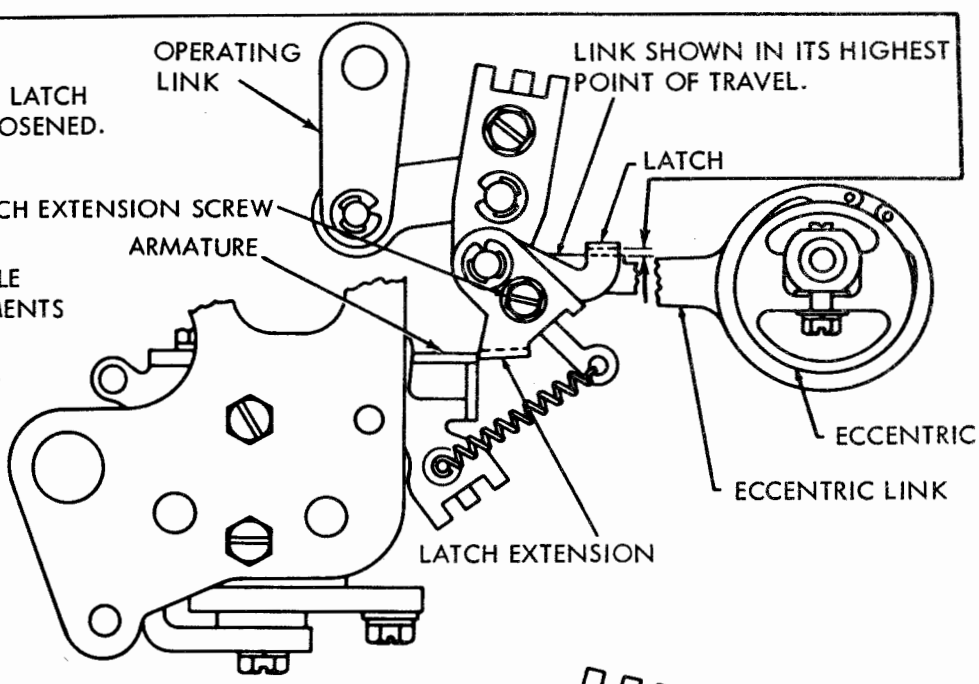
MIN. 0.005 INCH
MAX. 0.025 INCH

TO ADJUST

POSITION LATCH WITH LATCH EXTENSION SCREW LOOSENED.

NOTE 1:

ON UNITS EQUIPPED WITH ONE PIECE NON-ADJUSTABLE LATCH LEVER THE REQUIREMENTS IN THE "FINAL POWER OR MANUAL" MUST BE MET.



(B) NON-REPEAT LATCH

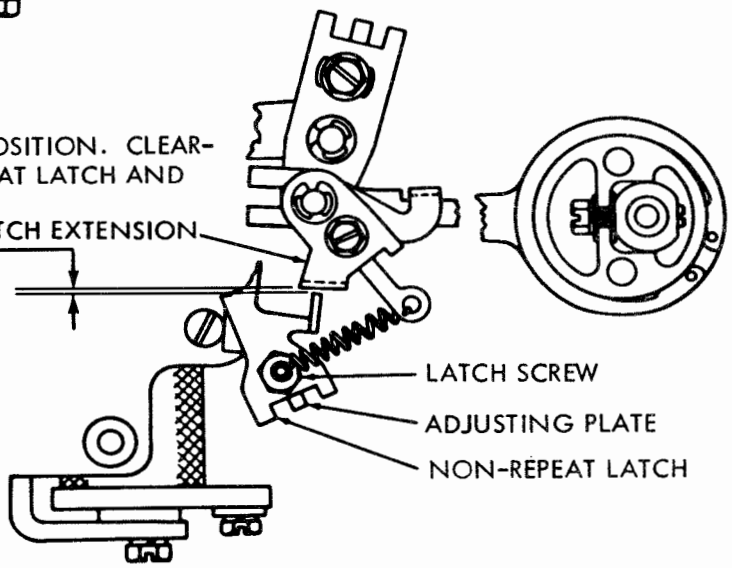
REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN TOP SURFACE OF NON-REPEAT LATCH AND LOWEST POINT OF LATCH EXTENSION

MIN. 0.002 INCH
MAX. 0.010 INCH

TO ADJUST

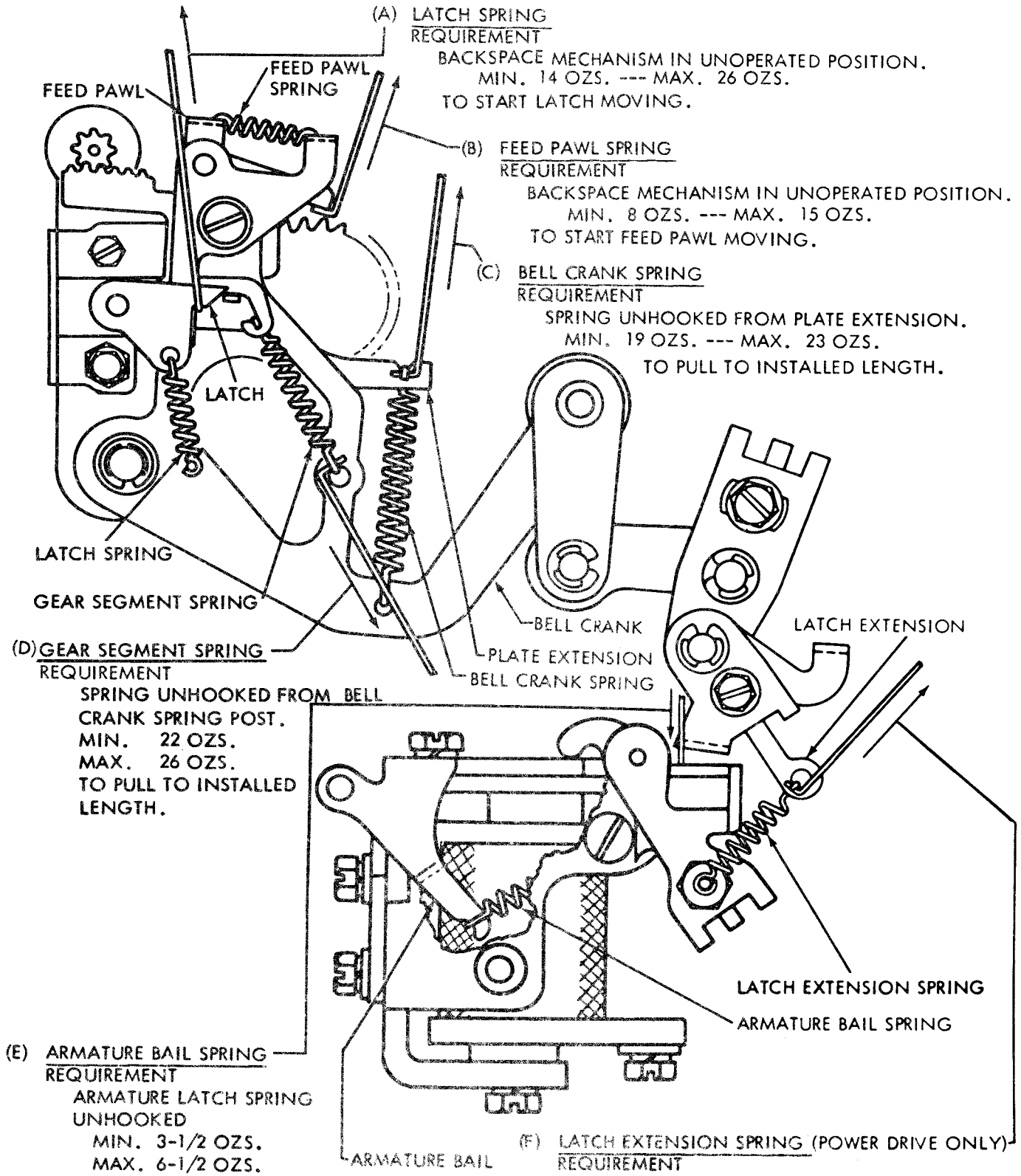
POSITION ADJUSTING PLATE WITH LATCH SCREW LOOSENED FRICTION TIGHT.



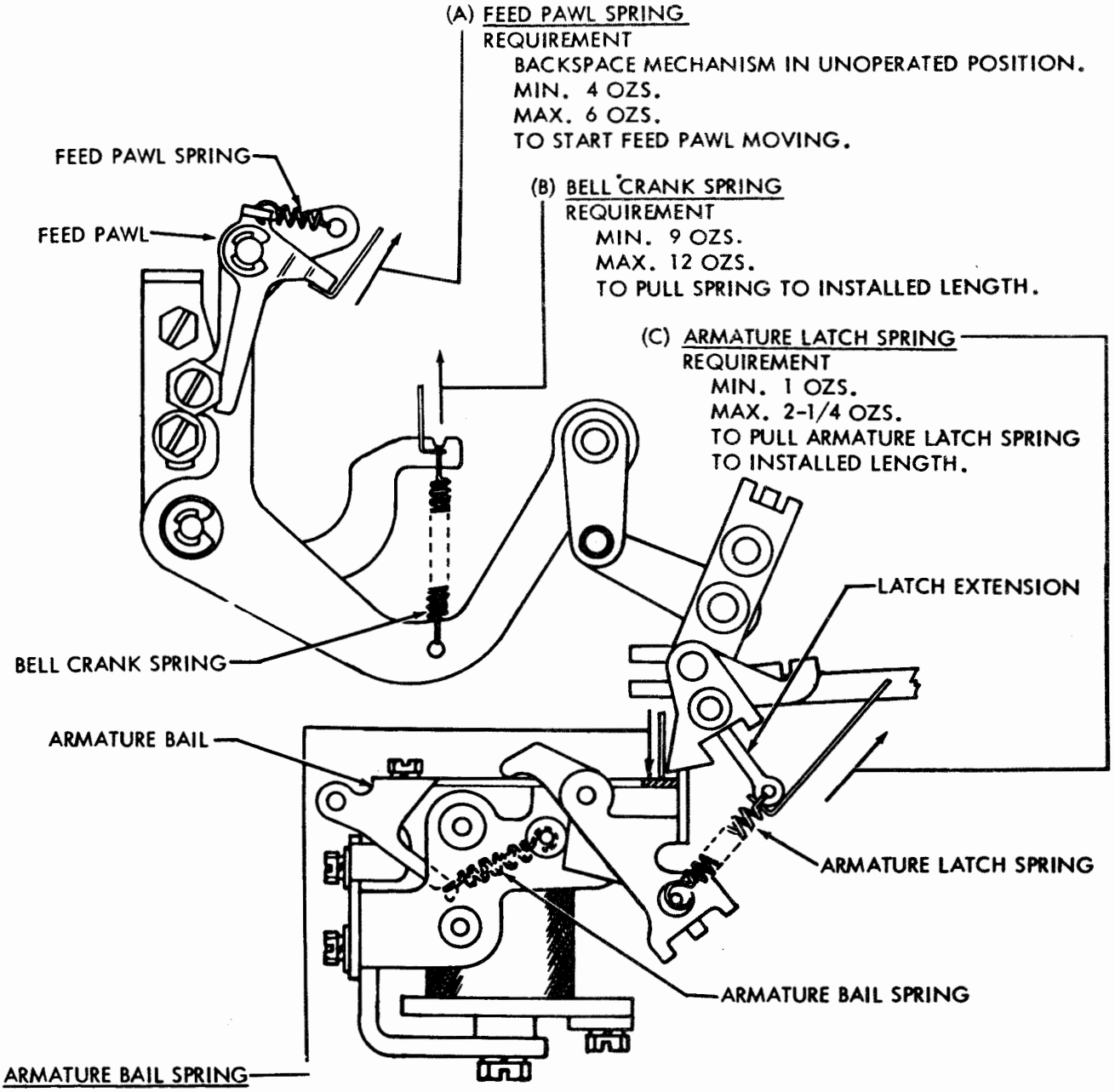
NOTE 2:

MUST NOT BE OPERATED WITH LATCH AGAINST ARMATURE EXTENSION.

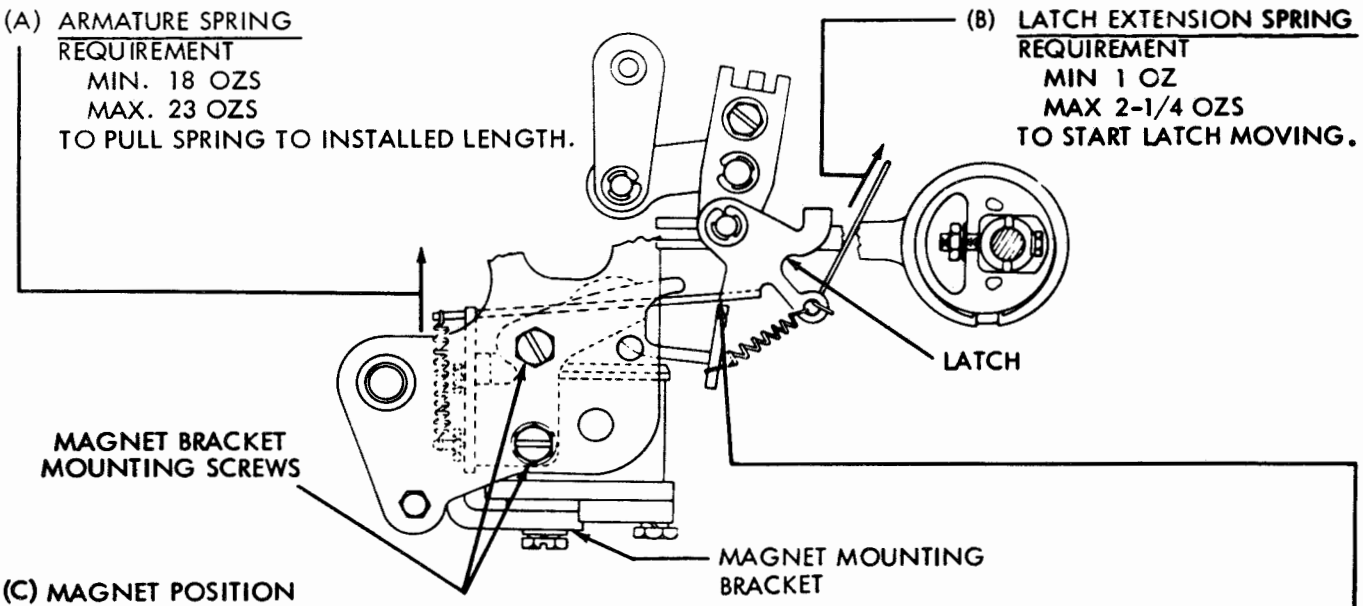
3.29 Manual and Power Drive Backspace Mechanism (For Chadless Tape (Early Design) continued



3.30 Power Drive Backspace Mechanism (For Fully Perforated Tape) (Early Design) continued



3.31 Power Drive Backspace Mechanism (Latest Design)
(Non-Adjustable Backspace Magnet Assembly)



(C) MAGNET POSITION
REQUIREMENT
THE ARMATURE EXTENSION SHALL ENGAGE THE LATCH BY APPROXIMATELY ITS FULL THICKNESS WHEN THE MAGNET IS DE-ENERGIZED.
TO ADJUST
POSITION THE MAGNET ASSEMBLY BY MEANS OF ITS MOUNTING SCREWS.

3.32 Manual and Power Drive Backspace Mechanism (Chadless and Fully Perforated Tape)

NOTE: THE FINAL ADJUSTMENT REQUIREMENT FOR ALL BACKSPACE MECHANISMS, MANUAL OR POWER DRIVE, REGARDLESS OF THE TYPE OF UNIT WILL READ AS FOLLOWS:

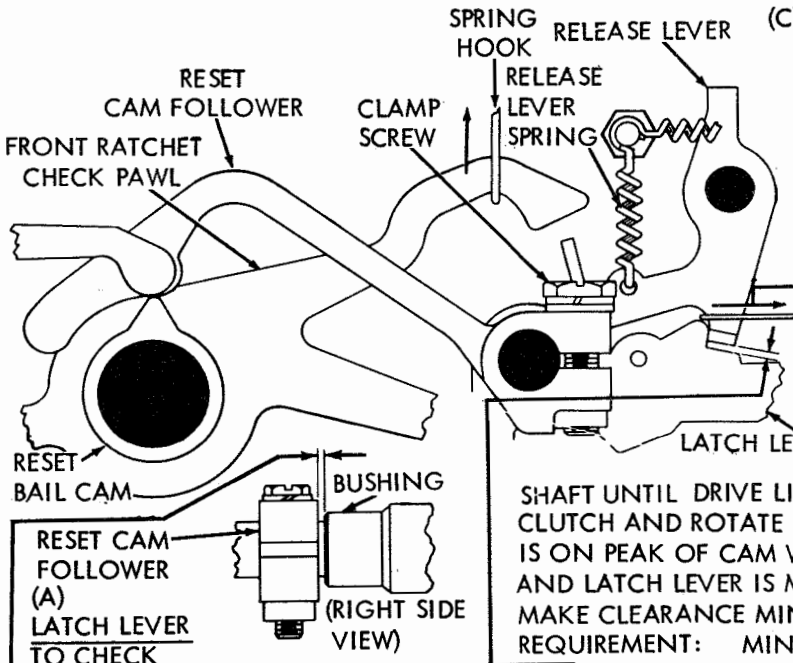
FINAL POWER OR MANUAL
REQUIREMENT
(1) WITH TAPE IN THE UNIT, PLACE THE FEED WHEEL SHAFT OIL HOLE IN ITS UPPERMOST POSITION, OPERATE THE BACKSPACE MECHANISM ONCE. THE RATCHET WHEEL SHALL BE BACKED ONE SPACE INTO A FULLY DETENTED POSITION.

NOTE: A FULLY DETENTED POSITION IS DEFINED AS: WITH THE DETENT ROLLER IN CONTACT WITH THE RATCHET WHEEL THE PUNCH UNIT FEED PAWL SHALL ENGAGE THE FIRST TOOTH BELOW THE HORIZONTAL CENTERLINE OF THE FEED WHEEL RATCHET WITH NO PERCEPTIBLE CLEARANCE.

REQUIREMENT
(2) WITH THE UNIT OPERATING UNDER POWER, PERFORATE APPROXIMATELY TWO (2) INCHES OF TAPE WITH THE "LETTERS" COMBINATION SELECTED. BACKSPACE TWELVE (12) CHARACTERS IN SUCCESSION WITH THE UNIT STILL UNDER POWER. AGAIN PERFORATE APPROXIMATELY TWO (2) INCHES OF TAPE WITH THE "LETTERS" COMBINATION SELECTED. CLIPPING OF THE CODE HOLES SHALL BE HELD TO A MINIMUM AND SHALL NOT EXCEED MORE THAN 0.005 INCH AS GAUGED BY EYE.

TO ADJUST
ON MANUAL OPERATED BACKSPACE MECHANISMS REFINE THE FEED PAWL PRELIMINARY ADJUSTMENT. ON BACKSPACE MECHANISMS EQUIPPED WITH POWER DRIVE, LOOSEN THE ARM ADJUSTING SCREW AND POSITION THE ADJUSTING PLATE. TIGHTEN THE ARM ADJUSTING SCREW.

3.33 Automatic Noninterfering LTRS and Blank Tape Feed-out Mechanisms



(A) LATCH LEVER

TO CHECK

TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF RESET BAIL CAM, WHERE THE CLEARANCE FOR THE FOLLOWING ADJUSTMENT IS AT A MINIMUM.

REQUIREMENT

(1) MIN. 0.018 INCH---MAX. 0.028 INCH BETWEEN RELEASE LEVER AND LATCH LEVER.

(2) MIN. SOME---MAX. 0.008 INCH END PLAY BETWEEN CAM FOLLOWER AND BUSHING.

TO ADJUST

POSITION LATCH LEVER WITH CLAMP SCREW ON RESET CAM FOLLOWER LOOSENED.

(B) SAFETY LATCH

(1) TO CHECK: TRIP FUNCTION CLUTCH BY ROTATING MAIN TRIP LEVER COUNTERCLOCKWISE. ROTATE MAIN SHAFT UNTIL DRIVE LINK IS TO EXTREME LEFT. TRIP SELECTOR CLUTCH AND ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF CAM WHERE CLEARANCE BETWEEN SAFETY LATCH AND LATCH LEVER IS MIN. TAKE UP PLAY IN SAFETY LATCH TO MAKE CLEARANCE MIN. MEASURE CLEARANCE WHERE IT IS MIN.

REQUIREMENT: MIN. SOME---MAX. 0.005 INCH

TO ADJUST: WITH SMALL NUT LOOSENED, POSITION SAFETY LATCH PIVOT BY MEANS OF PRY POINT.

(2) TO CHECK

TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RIGHT EDGE OF SAFETY LATCH AND CONTACTING EDGE OF LATCH LEVER ARE IN LINE.

REQUIREMENT

MAX. OF 0.030 INCH OF SAFETY LATCH NOT ENGAGED BY LATCH LEVER.

TO ADJUST

REFINE (1) ABOVE AND LATCH LEVER ADJUSTMENT.

(C) RELEASE LEVER SPRING

TO CHECK

TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF RESET BAIL CAM. WITH SPRING HOOK, HOLD FRONT RATCHET CHECK PAWL AWAY FROM RELEASE LEVER.

REQUIREMENT

MIN. 5 OZS.--- MAX. 7 OZS. TO START RELEASE LEVER MOVING.

(D) LATCH LEVER SPRING

TO CHECK: TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF RESET BAIL CAM. REQUIREMENT (FOR AUTOMATIC NONINTERFERING LTRS TAPE FEED-OUT MECHANISM) MIN. 2 OZS.---MAX. 4 OZS.

(FOR AUTOMATIC NONINTERFERING BLANK TAPE FEED-OUT MECHANISM) MIN. 7 OZS.---MAX. 10 OZS.

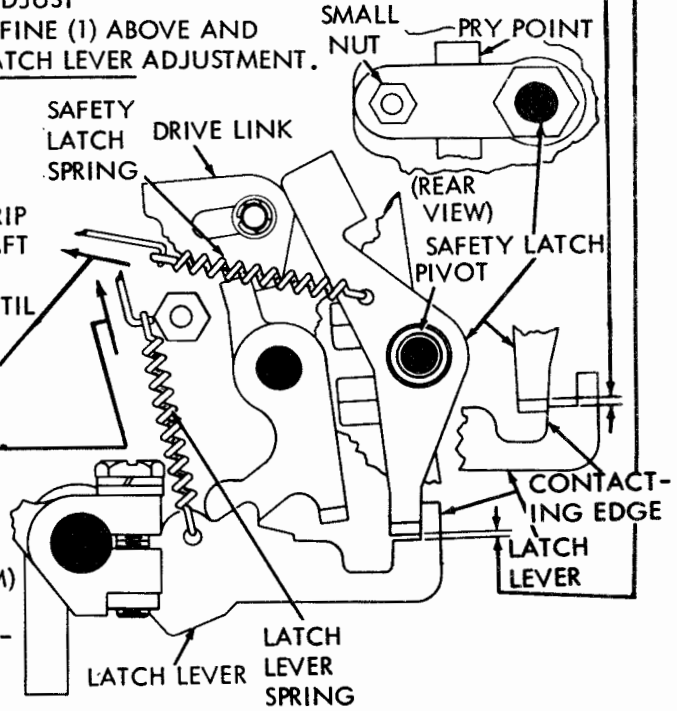
TO PULL SPRING TO INSTALLED LENGTH.

(E) SAFETY LATCH SPRING

TO CHECK

TRIP FUNCTION CLUTCH BY PIVOTING MAIN TRIP LEVER COUNTERCLOCKWISE. ROTATE MAIN SHAFT UNTIL DRIVE LINK IS TO EXTREME LEFT. TRIP SELECTOR CLUTCH AND ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF CAM.

REQUIREMENT: MIN. 1-1/2 OZS.---MAX. 3 OZS. TO PULL SPRING TO INSTALLED LENGTH.



3.34 Automatic Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued

(A) RELEASE ARM

TO CHECK

PLACE UNIT IN FEED OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER. ADVANCE RATCHETS BEYOND TIME DELAY (HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER). POSITION FEED OUT CAM AS SHOWN.

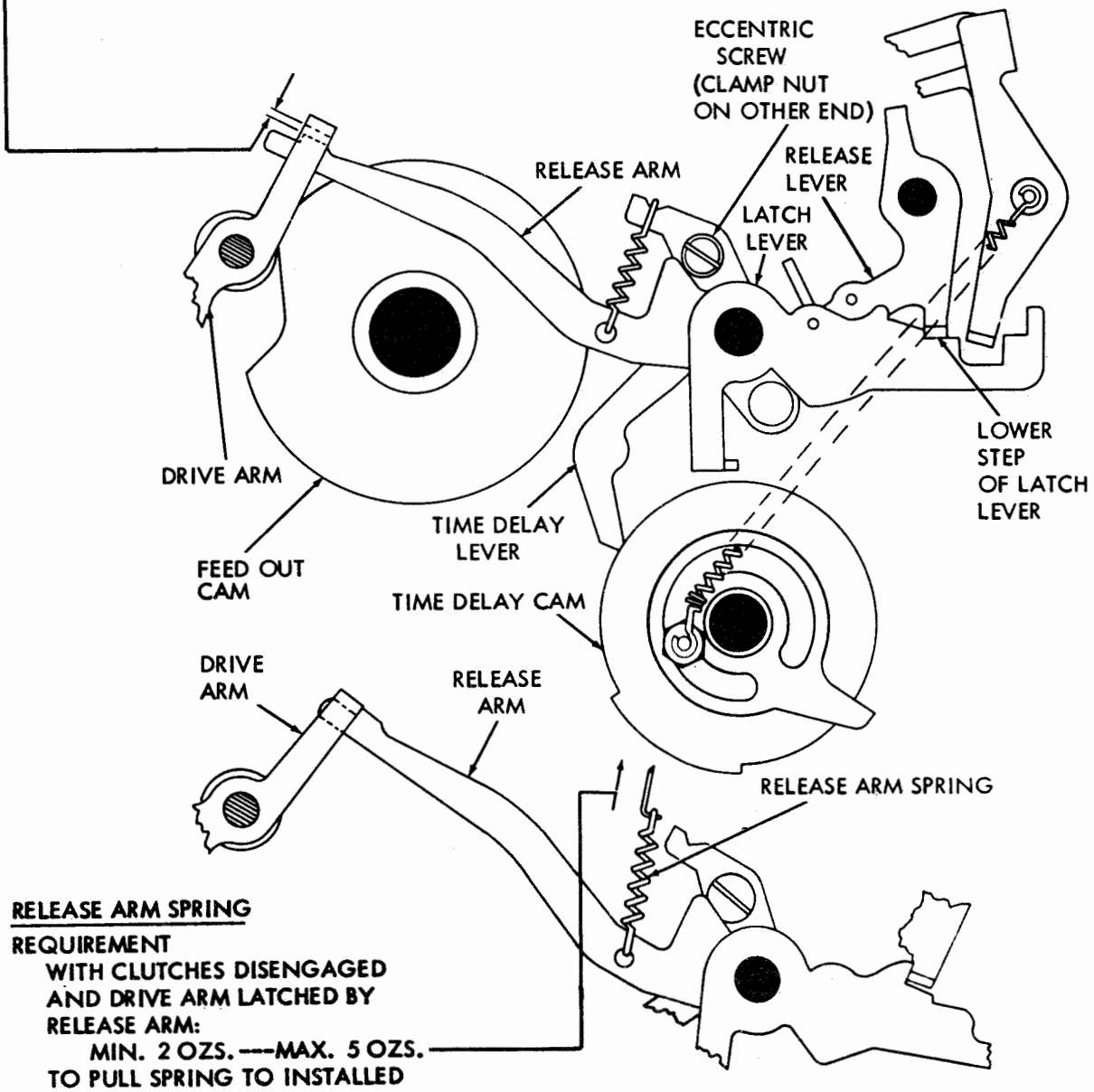
REQUIREMENT

(1) MIN. 0.010 INCH---MAX. 0.030 INCH BETWEEN DRIVE ARM AND RELEASE ARM.

(2) WITH UNIT IN THE STOP POSITION
MAX. 0.015 INCH
OF THE DRIVE BAIL UNENGAGED BY THE RELEASE ARM.

TO ADJUST

WITH CLAMP NUT LOOSENED, POSITION RELEASE ARM BY MEANS OF ECCENTRIC SCREW ON TIME DELAY LEVER.

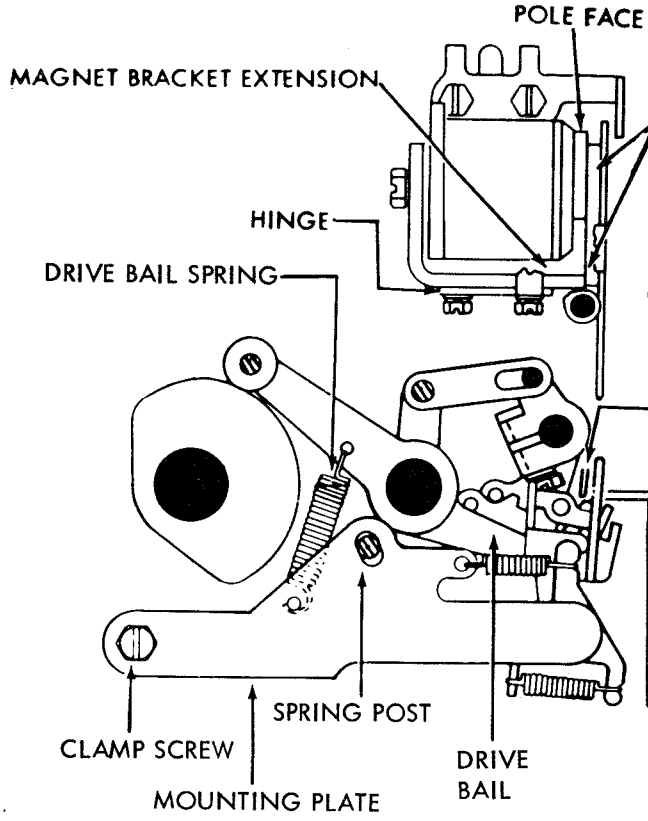


(B) RELEASE ARM SPRING

REQUIREMENT

WITH CLUTCHES DISENGAGED AND DRIVE ARM LATCHED BY RELEASE ARM:
MIN. 2 OZS. ---MAX. 5 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

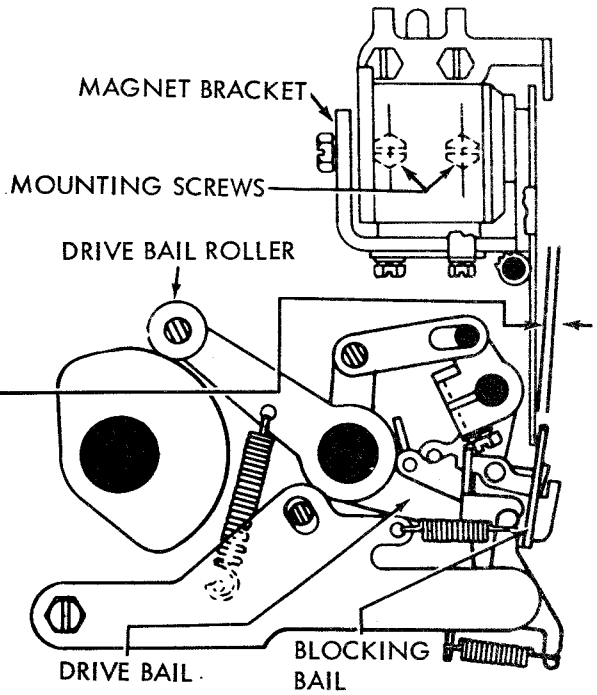
3.35 Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms
(For Earlier Design Noninterfering BLANK Tape Feed-Out Mechanism see Par. 4.06)



(A) ARMATURE HINGE
REQUIREMENT
WITH ARMATURE MANUALLY OPERATED. IT SHALL BE FLUSH AGAINST POLE FACE AND MAGNET BRACKET EXTENSION.
TO ADJUST
LOOSEN ARMATURE HINGE BRACKET MOUNTING SCREWS, POSITION ARMATURE AND TIGHTEN SCREWS.

(B) DRIVE BAIL SPRING
REQUIREMENT
ROTATE MAIN SHAFT UNTIL DRIVE BAIL IS ON HIGH PART OF ITS CAM.
MIN. 20 OZS.---MAX. 28 OZS.
TO START THE DRIVE BAIL MOVING.

(C) MOUNTING PLATE
REQUIREMENT
WITH ARMATURE IN UNOPERATED POSITION. ROTATE MAIN SHAFT UNTIL DRIVE BAIL IS ON HIGH PART OF ITS CAM. CLEARANCE BETWEEN THE BLOCKING BAIL AND DRIVE BAIL SURFACE.
MIN. 0.006 INCH
MAX. 0.015 INCH
TO ADJUST
POSITION BLOCKING BAIL WITH MOUNTING PLATE CLAMP SCREW AND SPRING POST FRICTION TIGHT.

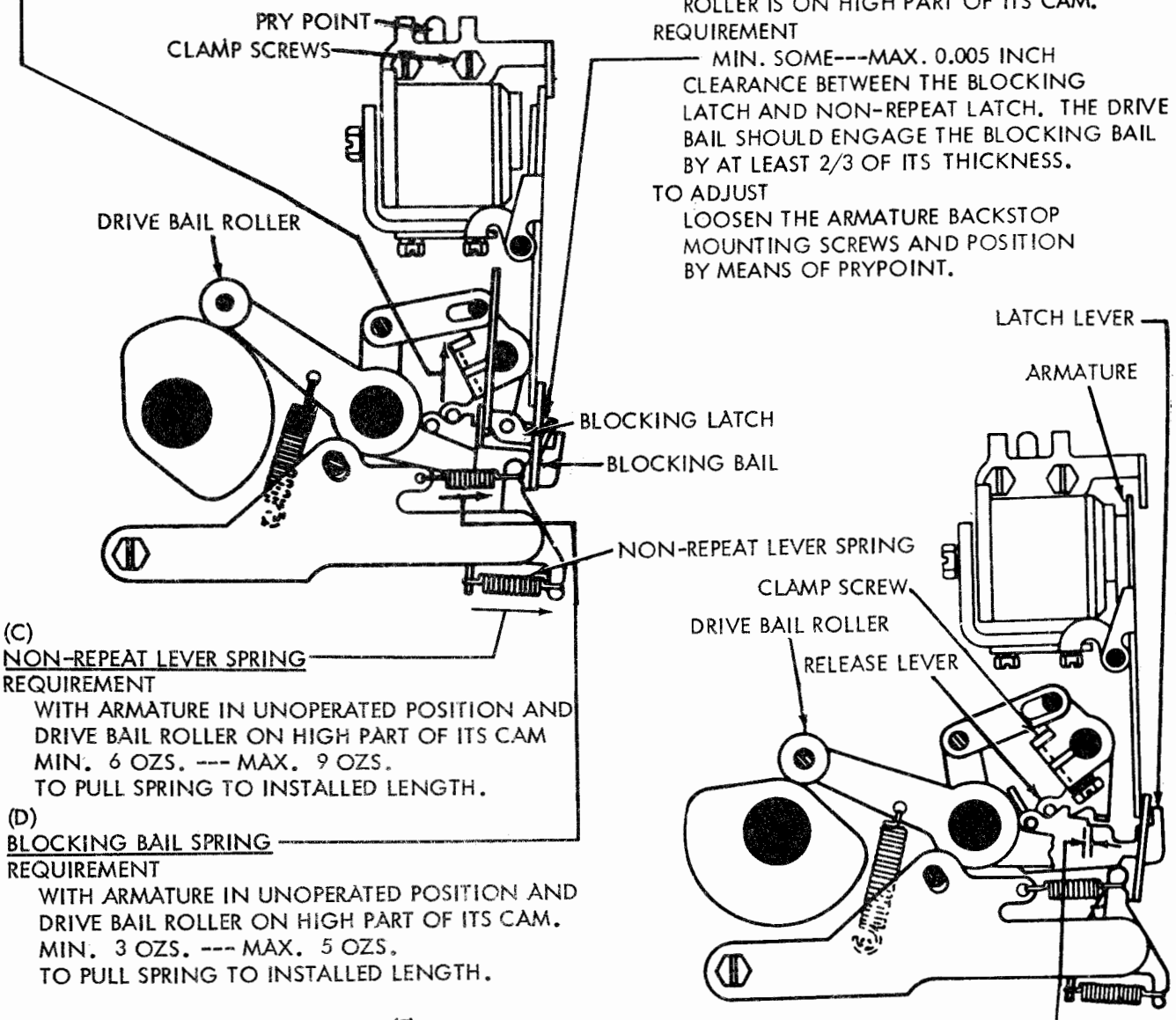


(D) MAGNET ASSEMBLY
REQUIREMENT
WITH ARMATURE HELD IN OPERATED POSITION, ROTATE MAIN SHAFT UNTIL DRIVE BAIL ROLLER IS ON HIGH PART OF ITS CAM. CLEARANCE BETWEEN BLOCKING BAIL AND RIGHT EDGE OF DRIVE BAIL.
MIN. 0.005 INCH
MAX. 0.015 INCH
TO ADJUST
POSITION MAGNET ASSEMBLY, ARMATURE HELD AGAINST MAGNET POLE PIECE WITH MAGNET BRACKET MOUNTING SCREWS FRICTION TIGHT.

3.36 Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued

(A)
BLOCKING LATCH TORSION SPRING
REQUIREMENT
WITH ARMATURE IN UNOPERATED POSITION AND DRIVE BAIL ROLLER ON HIGH PART OF ITS CAM.
MIN. 15 GRAMS --- MAX. 40 GRAMS
TO START BLOCKING LATCH MOVING.

(B)
ARMATURE BACKSTOP
TO CHECK
WITH ARMATURE IN UNOPERATED POSITION, ROTATE MAIN SHAFT UNTIL DRIVE BAIL ROLLER IS ON HIGH PART OF ITS CAM.
REQUIREMENT
MIN. SOME---MAX. 0.005 INCH CLEARANCE BETWEEN THE BLOCKING LATCH AND NON-REPEAT LATCH. THE DRIVE BAIL SHOULD ENGAGE THE BLOCKING BAIL BY AT LEAST 2/3 OF ITS THICKNESS.
TO ADJUST
LOOSEN THE ARMATURE BACKSTOP MOUNTING SCREWS AND POSITION BY MEANS OF PRYPOINT.

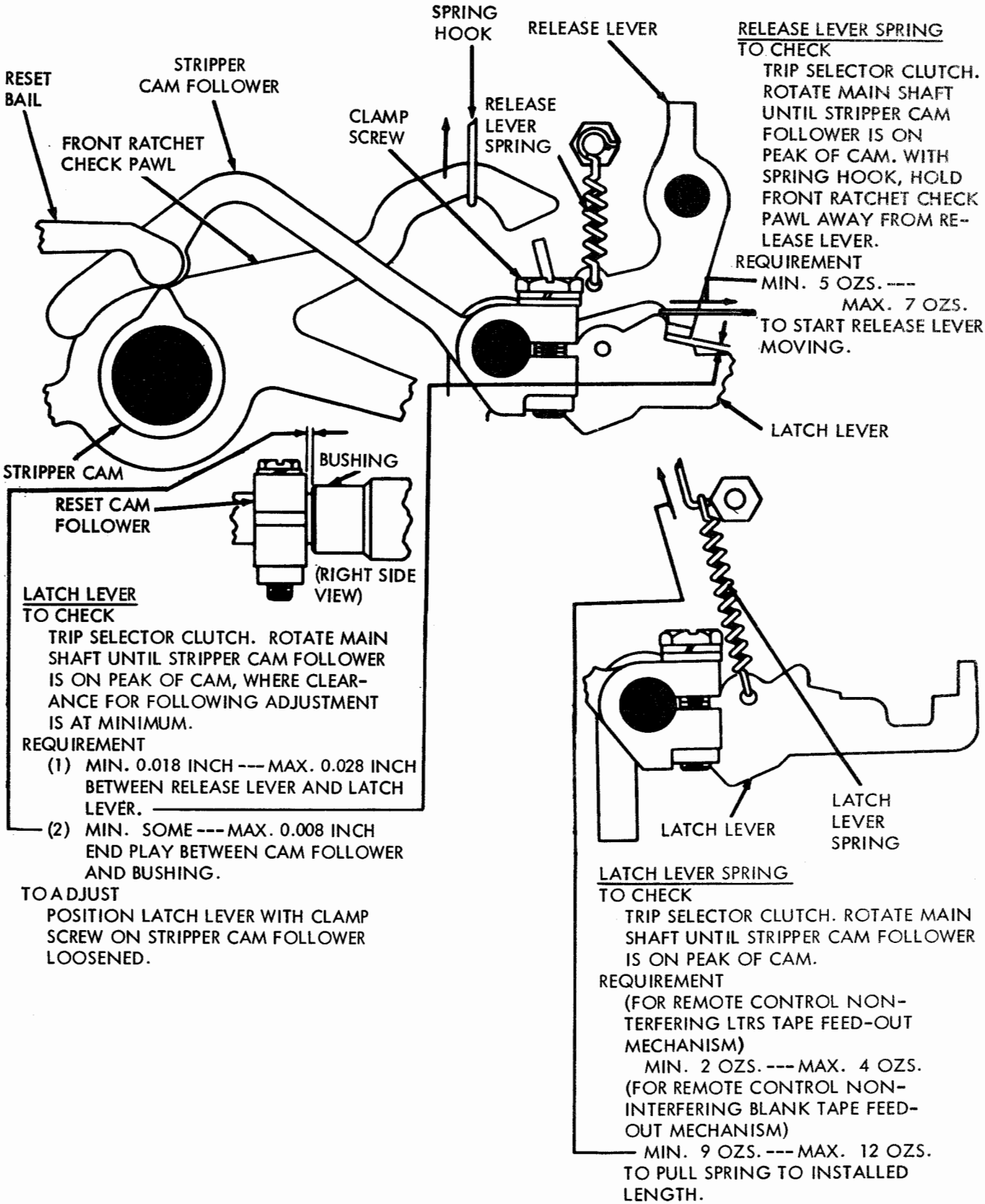


(C)
NON-REPEAT LEVER SPRING
REQUIREMENT
WITH ARMATURE IN UNOPERATED POSITION AND DRIVE BAIL ROLLER ON HIGH PART OF ITS CAM
MIN. 6 OZS. --- MAX. 9 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(D)
BLOCKING BAIL SPRING
REQUIREMENT
WITH ARMATURE IN UNOPERATED POSITION AND DRIVE BAIL ROLLER ON HIGH PART OF ITS CAM.
MIN. 3 OZS. --- MAX. 5 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(E)
RELEASE LEVER
REQUIREMENT
WITH ARMATURE IN OPERATED POSITION. ROTATE MAIN SHAFT UNTIL DRIVE BAIL ROLLER IS IN INDENT OF ITS CAM. CLEARANCE BETWEEN RELEASE LEVER AND LATCH LEVER.
MIN. 0.010 INCH
MAX. 0.025 INCH
TO ADJUST
WITH CLAMP SCREW FRICTION TIGHT POSITION RELEASE LEVER.

3.37 Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued

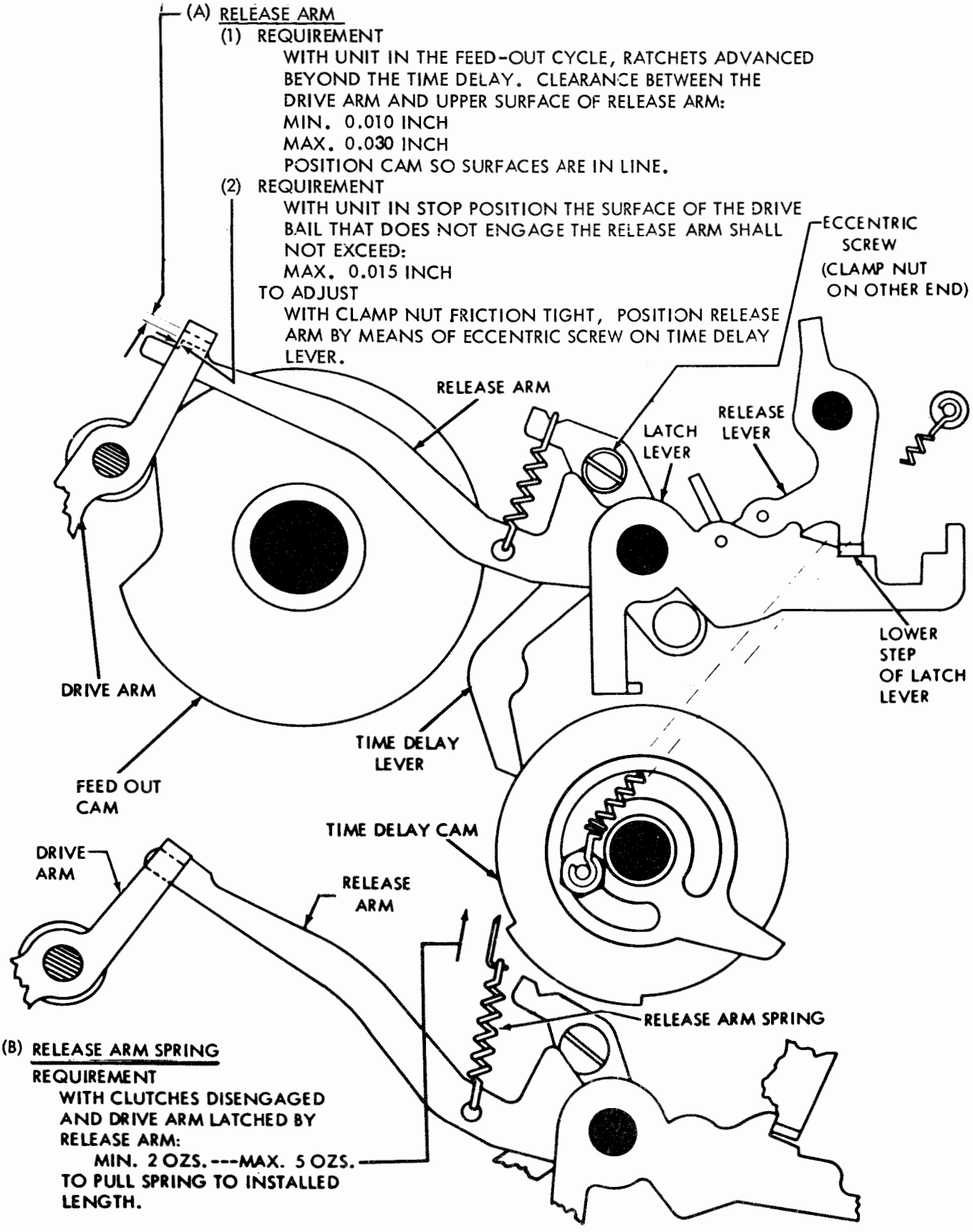


RELEASE LEVER SPRING
TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL STRIPPER CAM FOLLOWER IS ON PEAK OF CAM. WITH SPRING HOOK, HOLD FRONT RATCHET CHECK PAWL AWAY FROM RELEASE LEVER.
REQUIREMENT
MIN. 5 OZS. --- MAX. 7 OZS. TO START RELEASE LEVER MOVING.

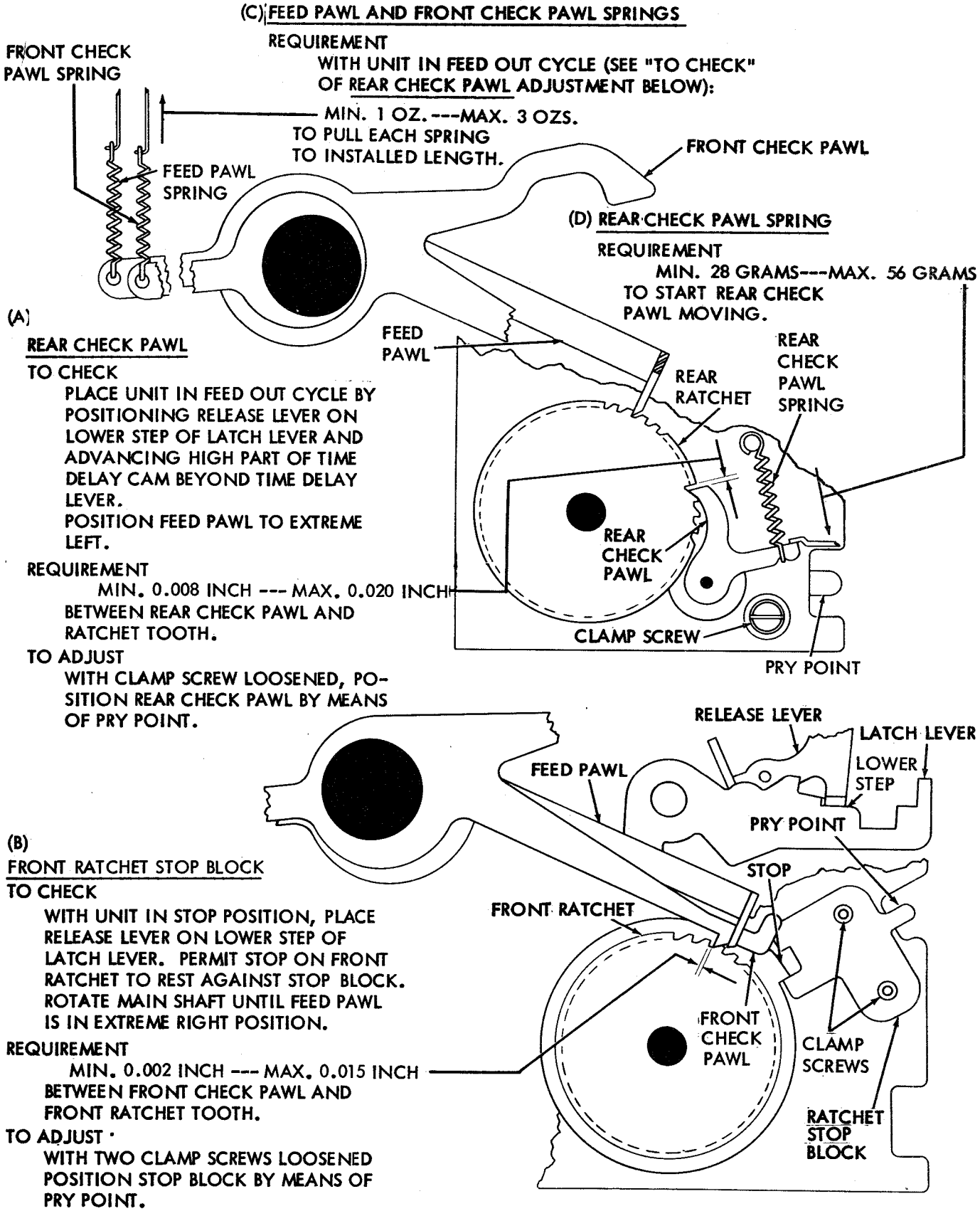
LATCH LEVER
TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL STRIPPER CAM FOLLOWER IS ON PEAK OF CAM, WHERE CLEARANCE FOR FOLLOWING ADJUSTMENT IS AT MINIMUM.
REQUIREMENT
(1) MIN. 0.018 INCH --- MAX. 0.028 INCH BETWEEN RELEASE LEVER AND LATCH LEVER.
(2) MIN. SOME --- MAX. 0.008 INCH END PLAY BETWEEN CAM FOLLOWER AND BUSHING.
TO ADJUST
POSITION LATCH LEVER WITH CLAMP SCREW ON STRIPPER CAM FOLLOWER LOOSENED.

LATCH LEVER SPRING
TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL STRIPPER CAM FOLLOWER IS ON PEAK OF CAM.
REQUIREMENT
(FOR REMOTE CONTROL NONTERFERING LTRS TAPE FEED-OUT MECHANISM)
MIN. 2 OZS. --- MAX. 4 OZS.
(FOR REMOTE CONTROL NONINTERFERING BLANK TAPE FEED-OUT MECHANISM)
MIN. 9 OZS. --- MAX. 12 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

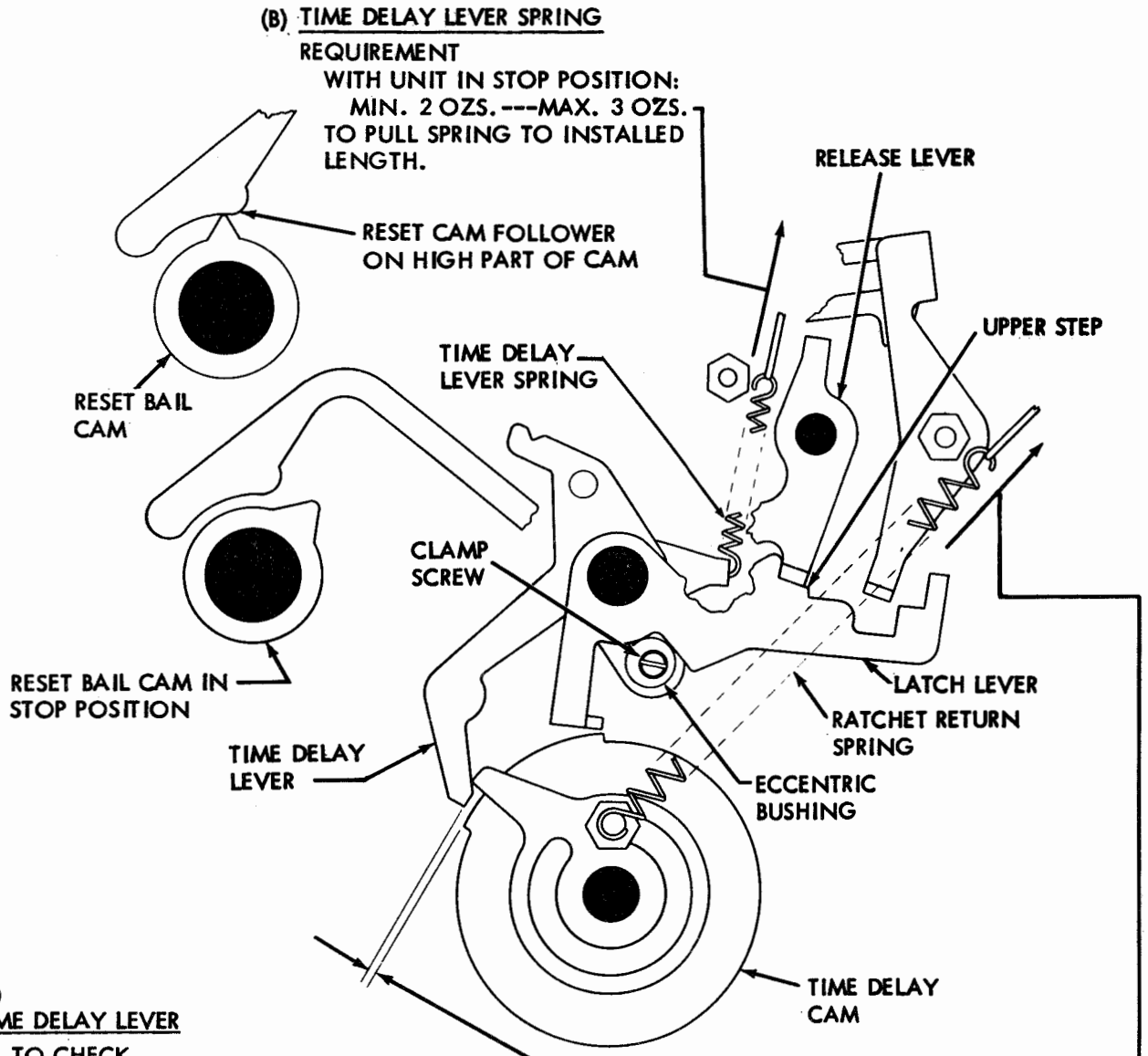
3.38 Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued



3.39 Automatic and Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms

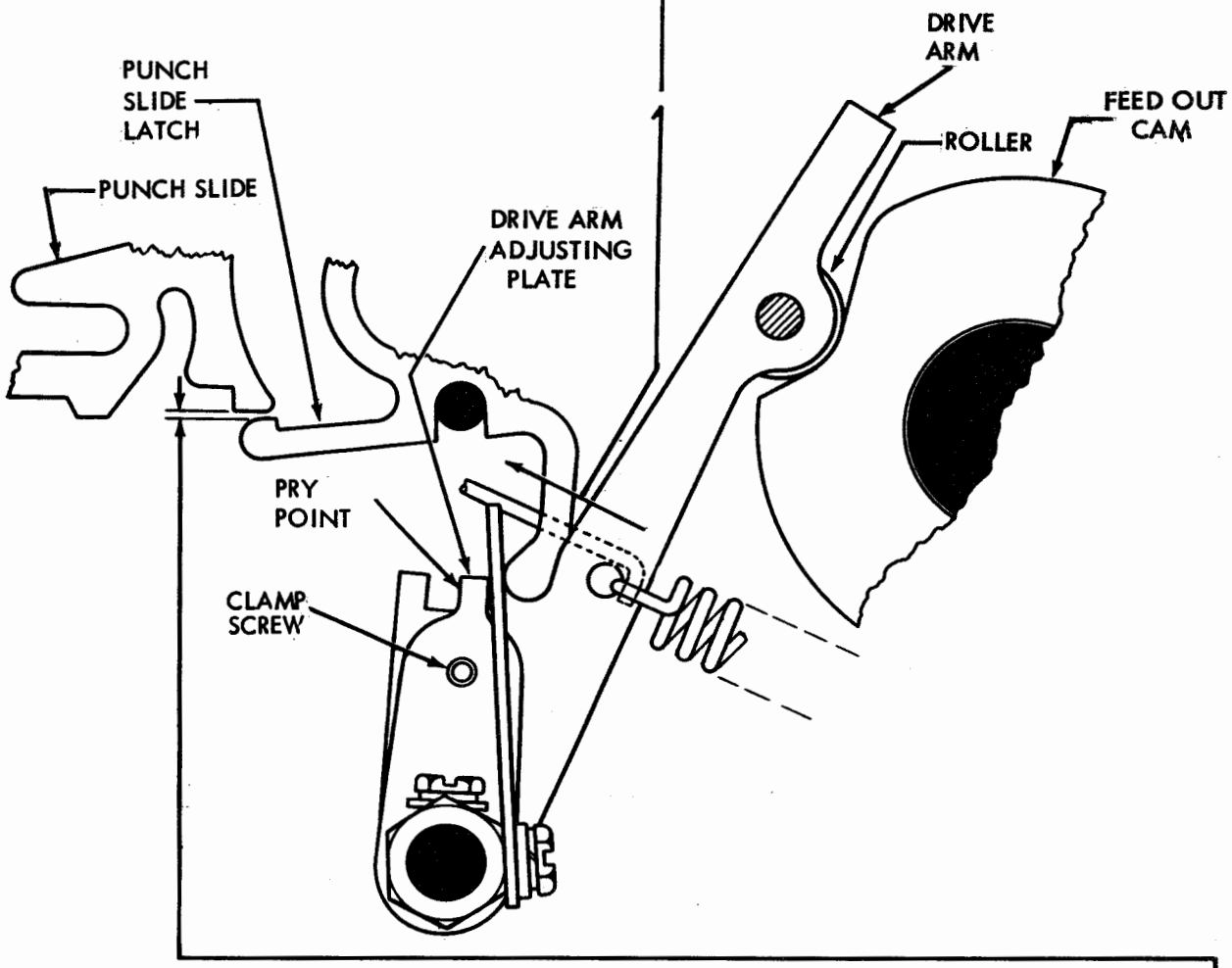


3.40 Automatic and Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued



3.41 Automatic and Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued

DRIVE ARM SPRING
REQUIREMENT
WITH UNIT IN FEED-OUT CYCLE AND DRIVE ARM ROLLER HELD FIRMLY AGAINST ITS CAM INDENT, IT SHALL REQUIRE
MIN. 42 OZS. --- MAX. 50 OZS.
TO PULL SPRING TO INSTALLED LENGTH.



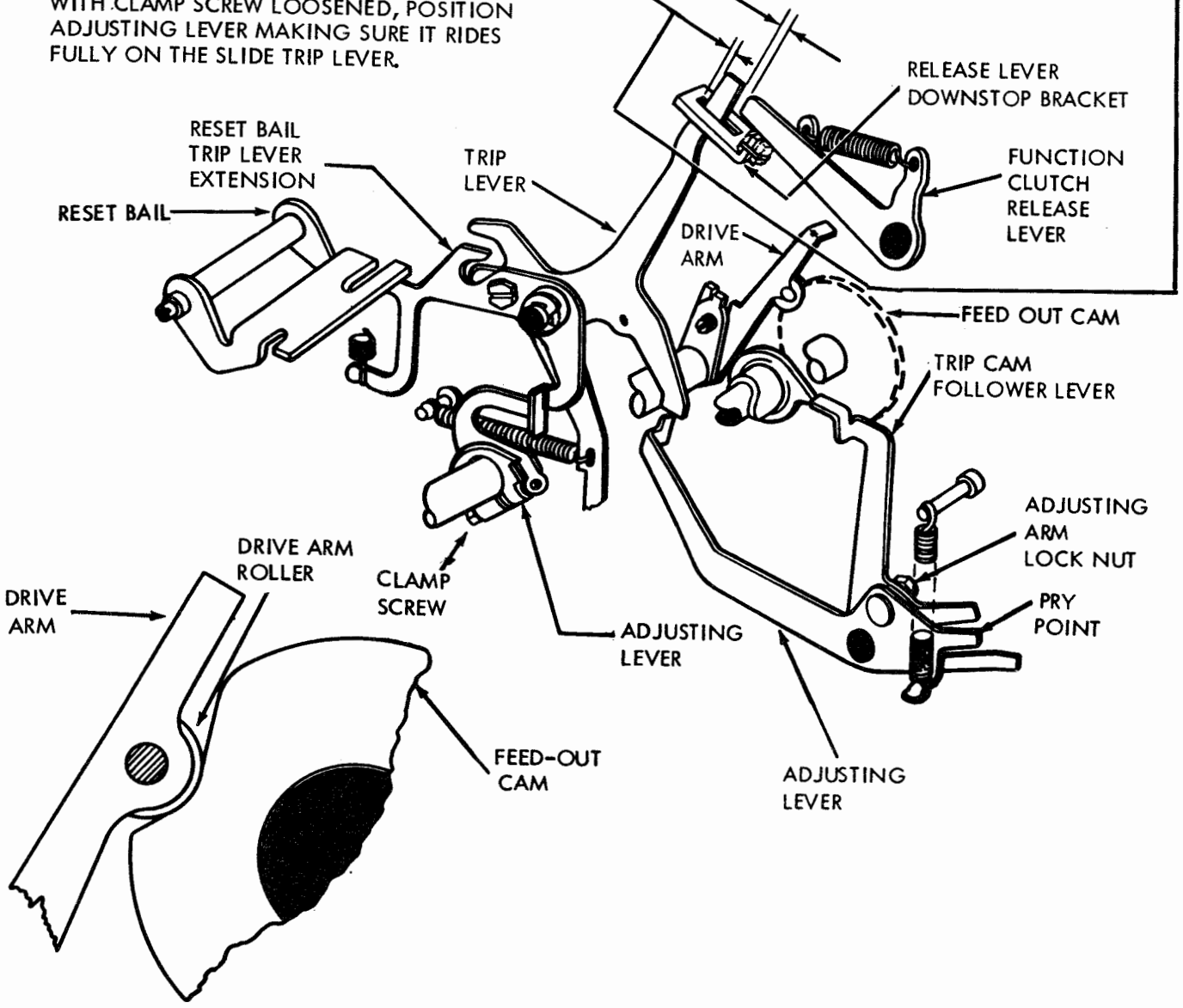
3.42 Automatic and Remote Control Noninterfering LTRS Tape Feed-out Mechanisms continued

PUNCH SLIDE LATCH
TO CHECK
SET UP BLANK CODE COMBINATION (-----) IN SELECTOR. PLACE UNIT IN FEED-OUT CYCLE, THE RATCHETS ADVANCED BEYOND THE TIME DELAY AND THE DRIVE ARM ON THE LOW PART OF ITS CAM.
REQUIREMENT
MIN. 0.010 INCH---MAX. 0.030 INCH
BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH AT SLIDE WHERE CLEARANCE IS LEAST.
NOTE: SEE THAT RESET BAIL IS TRIPPED.
TO ADJUST
WITH CLAMP SCREW LOOSENED, POSITION DRIVE ARM ADJUSTING PLATE BY MEANS OF PRY POINT.

3.43 Automatic and Remote-control Noninterfering LTRS and Blank Tape Feed-out Mechanisms continued

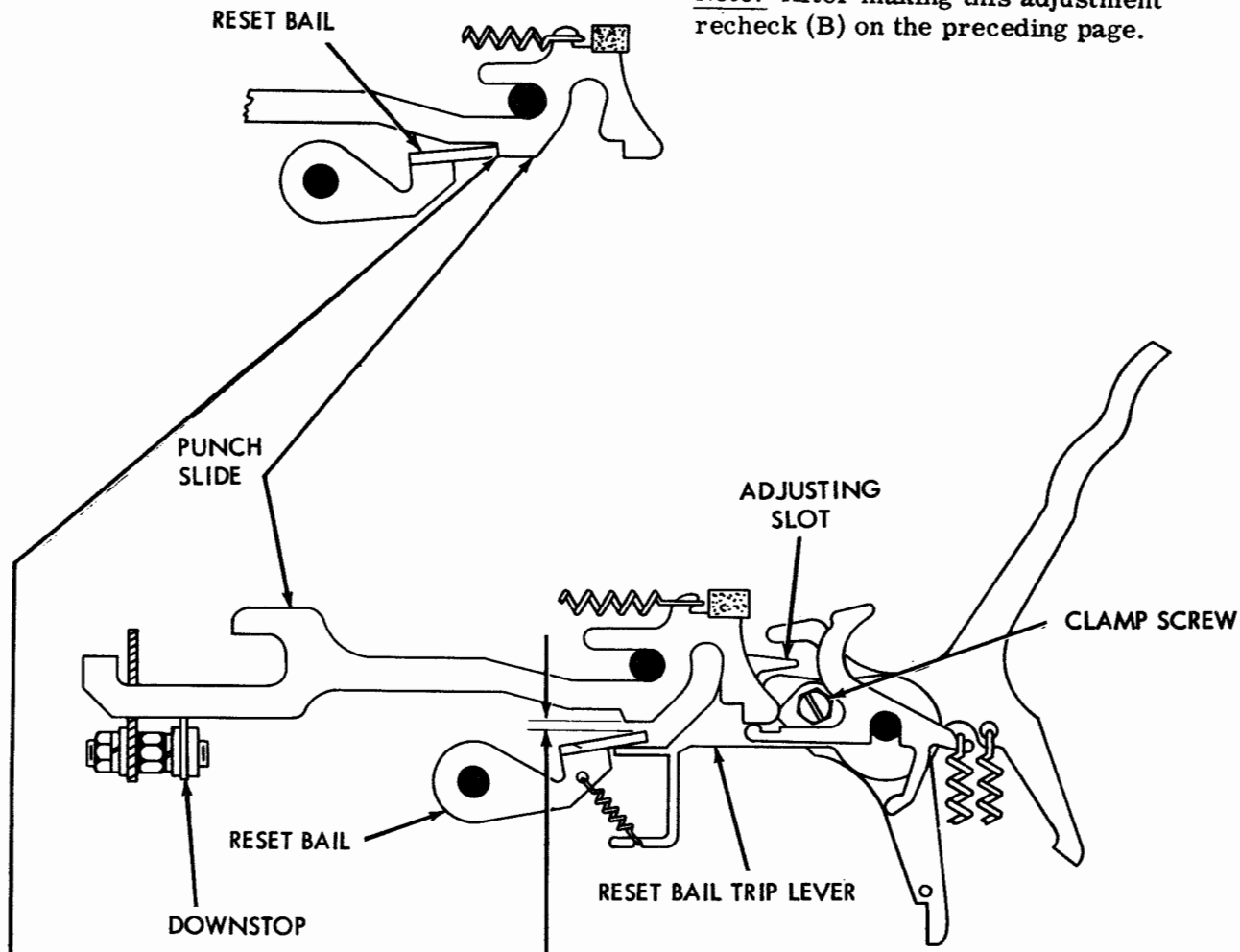
(B)
ADJUSTING LEVER
TO CHECK
PLACE UNIT IN FEED-OUT CYCLE, THE RATCHETS ADVANCED BEYOND THE TIME DELAY AND THE DRIVE ARM ON THE LOW PART OF FEED-OUT CAM.
REQUIREMENT
(1) MIN. 0.010 INCH---MAX. 0.030 INCH CLEARANCE BETWEEN THE TRIP LEVER AND CLUTCH RELEASE LEVER.
(2) MIN. SOME CLEARANCE BETWEEN TRIP LEVER AND LEFT END OF SLOT IN RELEASE LEVER DOWNSTOP BRACKET.
TO ADJUST
WITH CLAMP SCREW LOOSENED, POSITION ADJUSTING LEVER MAKING SURE IT RIDES FULLY ON THE SLIDE TRIP LEVER.

(A) FOLLOWER LEVER
REQUIREMENT
WITH FOLLOWER LEVER ON HIGH PART OF TRIP CAM:
(1) MIN. 0.010 INCH---MAX. 0.030 INCH BETWEEN RELEASE AND MAIN TRIP LEVER.
(2) SOME CLEARANCE BETWEEN MAIN TRIP LEVER AND DOWNSTOP BRACKET.
TO ADJUST
WITH LOCK NUT LOOSENED, POSITION ADJUSTING ARM BY MEANS OF PRY POINT.



3.44 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued

Note: After making this adjustment recheck (B) on the preceding page.



RESET BAIL TRIP LEVER

TO CHECK

LETTERS COMBINATION SELECTED, FUNCTION CLUTCH TRIPPED, TRIP CAM FOLLOWER RESTING ON THE HIGH PART OF CAM, PUNCH SLIDES AGAINST THEIR DOWNSTOP.

(1) REQUIREMENT

MIN. 0.008 INCH---MAX. 0.020 INCH CLEARANCE BETWEEN LOWER EDGE OF SLIDE AND UPPER EDGE OF RESET BAIL.

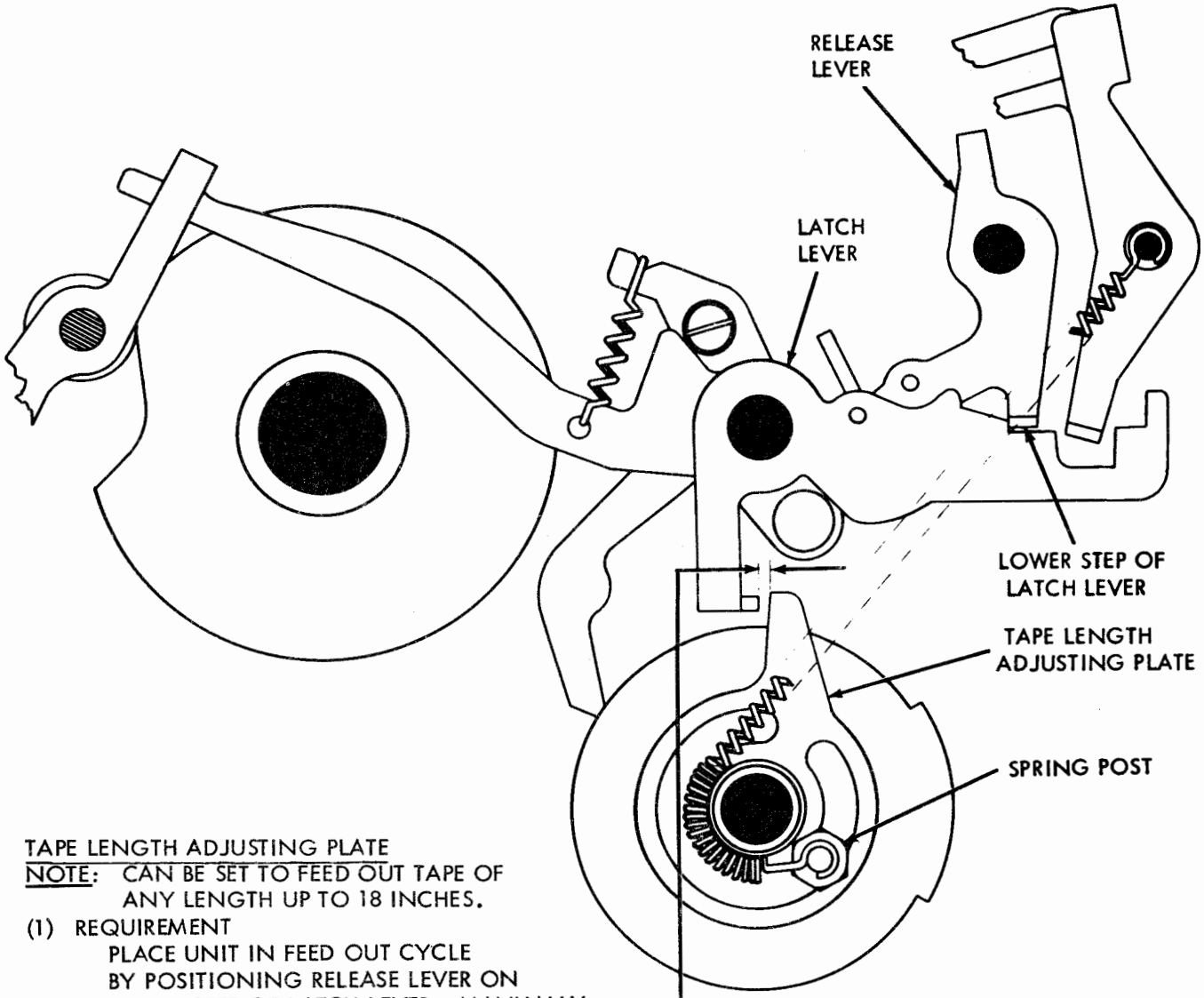
(2) REQUIREMENT

WITH CLUTCHES FULLY DISENGAGED, RESET BAIL SHOULD FULLY ENGAGE NOTCHES IN PUNCH SLIDES.

TO ADJUST

WITH CLAMP SCREW LOOSENED, POSITION RESET BAIL TRIP LEVER BY MEANS OF ADJUSTING SLOT.

3.45 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



TAPE LENGTH ADJUSTING PLATE

NOTE: CAN BE SET TO FEED OUT TAPE OF ANY LENGTH UP TO 18 INCHES.

(1) REQUIREMENT

PLACE UNIT IN FEED OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER. MANUALLY ADVANCE RATCHETS SO THAT FRONT RATCHET IS IN TOOTH PRECEDING TRIP OFF. ROTATE MAIN SHAFT UNTIL FEED PAWL IS IN EXTREME LEFT POSITION. CLEARANCE BETWEEN ADJUSTING PLATE AND LATCH LEVER PROJECTION

MIN. 0.002 INCH---MAX. 0.020 INCH

(2) REQUIREMENT

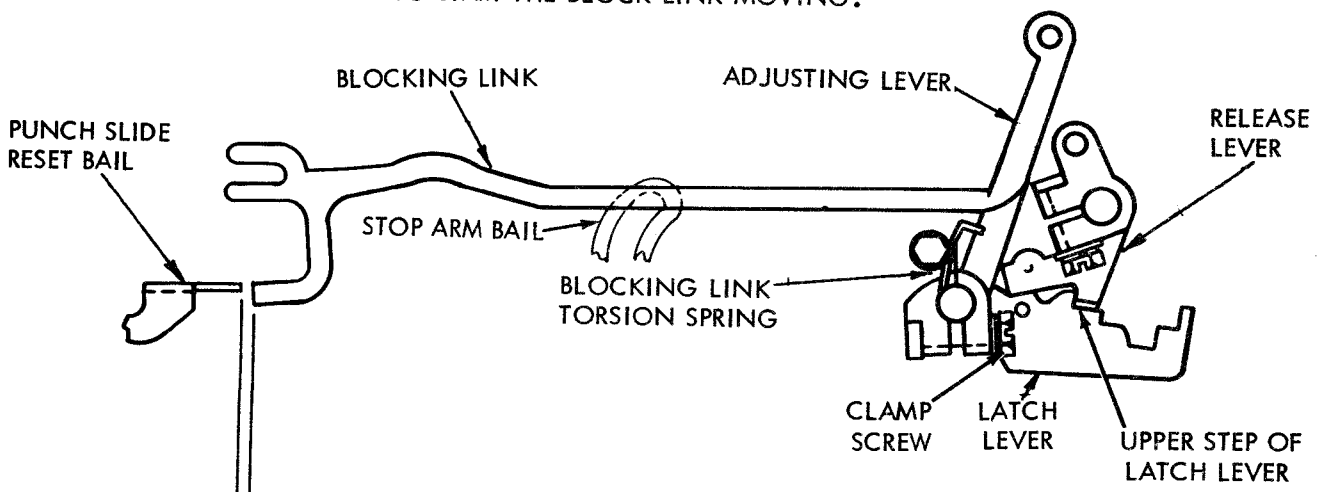
WHEN OPERATING UNDER POWER, UNIT SHOULD FEED OUT CORRECT LENGTH OF TAPE.

TO ADJUST

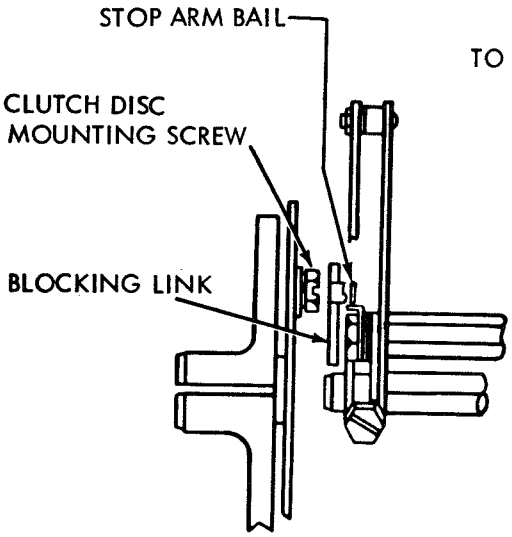
WITH SPRING POST LOOSENED, POSITION ADJUSTING PLATE.

3.46 Automatic and Remote Control Noninterfering BLANK Tape Feed-Out Mechanisms continued

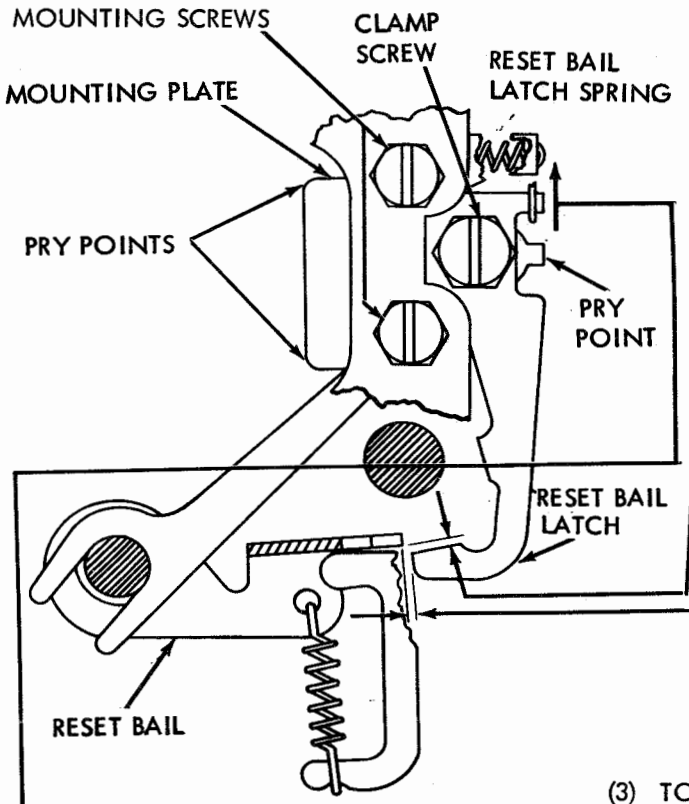
BLOCKING LINK TORSION SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION AND RELEASE LEVER ON LOWER STEP OF LATCH LEVER
MIN. 25 GRAMS---MAX. 45 GRAMS
TO START THE BLOCK LINK MOVING.



BLOCKING LINK
TO CHECK (HORIZONTAL CLEARANCE)
WITH UNIT IN STOP POSITION AND RELEASE LEVER IN UPPER STEP OF LATCH LEVER, MANUALLY TRIP FUNCTION CLUTCH.
REQUIREMENT
(1) MIN. 0.005 INCH---MAX. 0.018 INCH BETWEEN THE RIGHT EDGE OF PUNCH SLIDE RESET BAIL AND BLOCKING LINK.
(2) WITH SELECTOR RANGE SCALE SET AT 120 THE BLOCKING LINK SHOULD BE CENTERED BETWEEN THE CLUTCH DISC MOUNTING SCREWS AND THE SELECTOR STOP ARM BAIL.
TO ADJUST
LOOSEN CLAMP SCREW ON ADJUSTING LEVER AND POSITION BLOCKING LINK TO MEET REQUIREMENT.



3.47 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



(A) RESET BAIL LATCH

(1) TO CHECK (VERTICAL CLEARANCE) SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS AND PUNCH SLIDES ARE TO EXTREME LEFT. SET UP BLANK CODE COMBINATION (-----) IN SELECTOR BY STRIPPING ALL PUSH LEVERS FROM SELECTING LEVERS. ROTATE MAIN SHAFT UNTIL PUNCH SLIDES ARE JUST LATCHED.

REQUIREMENT

MIN. 0.008 INCH---MAX. 0.020 INCH BETWEEN RESET BAIL AND RESET BAIL LATCH.

TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION MOUNTING PLATE BY MEANS OF PRY POINTS.

(2) REQUIREMENT (HORIZONTAL CLEARANCE) WITH CLUTCHES DISENGAGED,

MIN. 0.005 INCH---MAX. 0.020 INCH BETWEEN RESET BAIL AND RESET BAIL LATCH.

TO ADJUST

POSITION RESET BAIL SO THAT APPROX. HALF ITS THICKNESS IS BELOW TOP SURFACE OF ITS LATCH. WITH CLAMP SCREW LOOSENED, POSITION RESET BAIL LATCH BY MEANS OF PRY POINT.

(B) RESET BAIL LATCH SPRING

REQUIREMENT

WITH UNIT IN STOP CONDITION

MIN. 1 OZ.---MAX. 3 OZS.

TO START RESET BAIL LATCH MOVING.

(3) TO CHECK

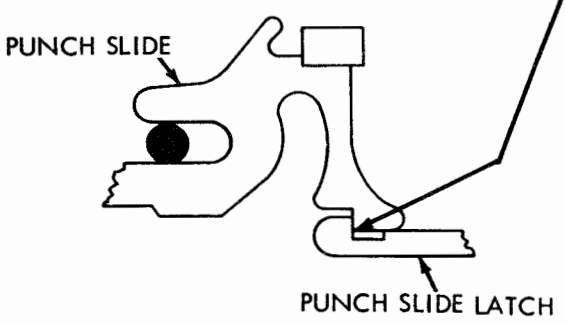
SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. SET UP BLANK CODE COMBINATION (-----) IN SELECTOR BY STRIPPING ALL PUSH LEVERS FROM SELECTING LEVERS. ROTATE MAIN SHAFT TO STOP POSITION.

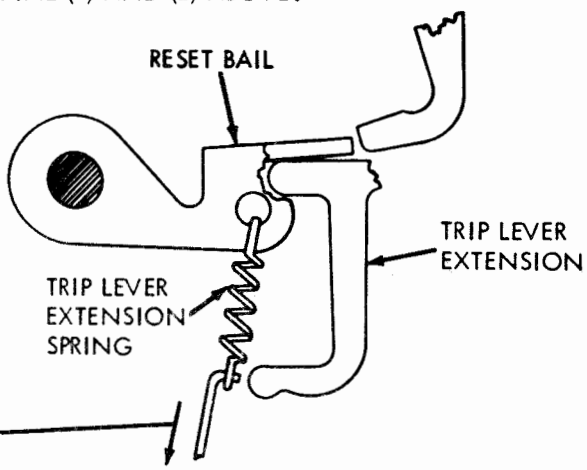
REQUIREMENT

PUNCH SLIDES LATCHED BY PUNCH SLIDE LATCHES.

TO ADJUST

REFINE (1) AND (2) ABOVE.





(C) TRIP LEVER EXTENSION SPRING

TO CHECK

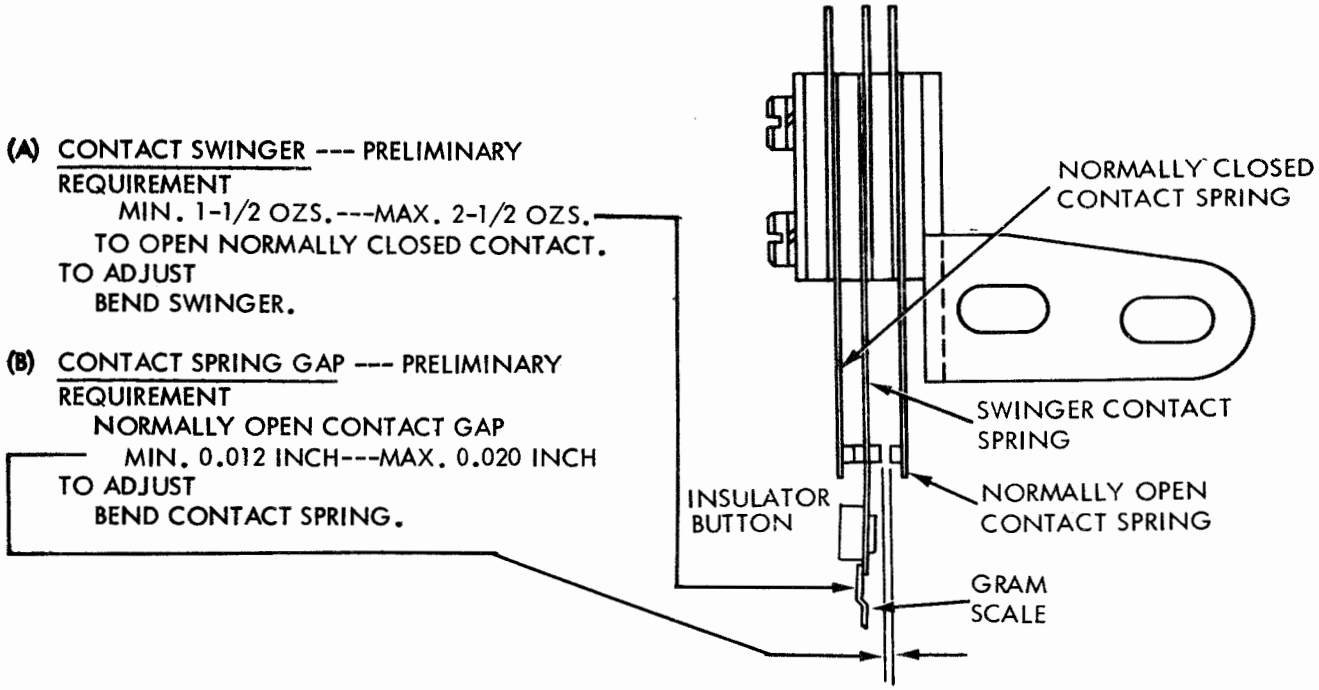
DISENGAGE BOTH CLUTCHES. TRIP FUNCTION CLUTCH BY PIVOTING MAIN TRIP LEVER COUNTERCLOCKWISE. HOLD TRIP LEVER EXTENSION UP AGAINST RESET BAIL.

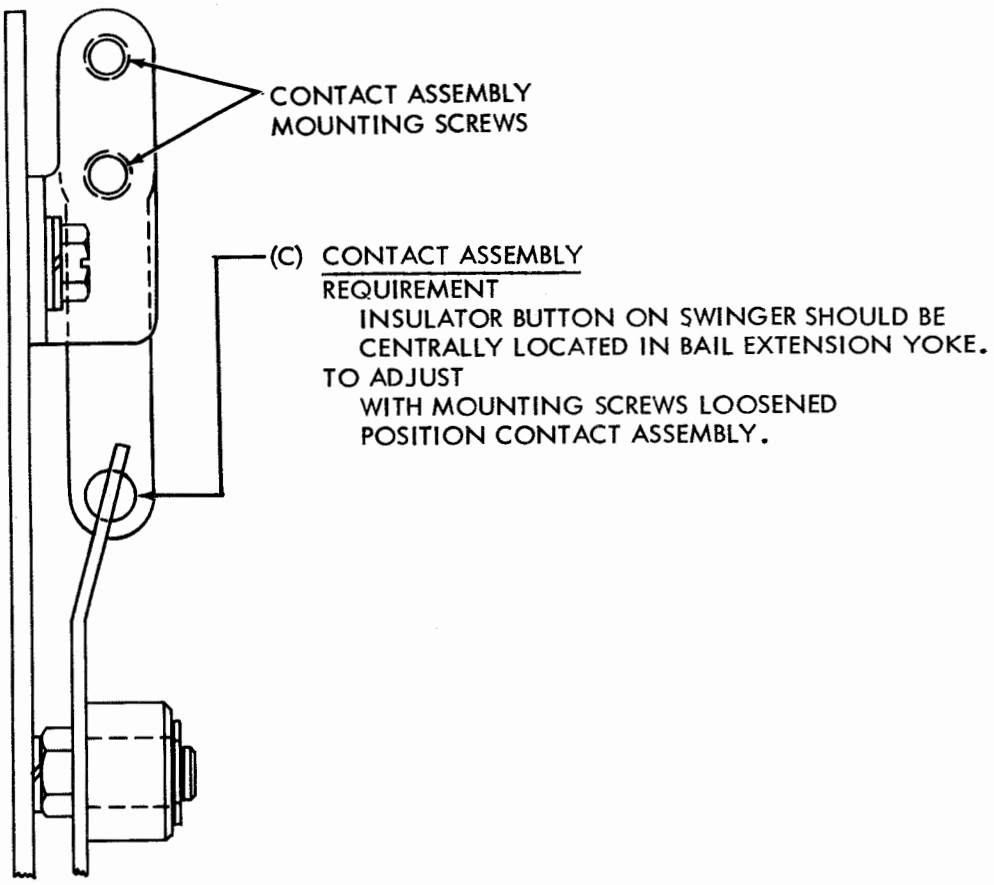
REQUIREMENT

MIN. 18 OZS.---MAX. 24 OZS.

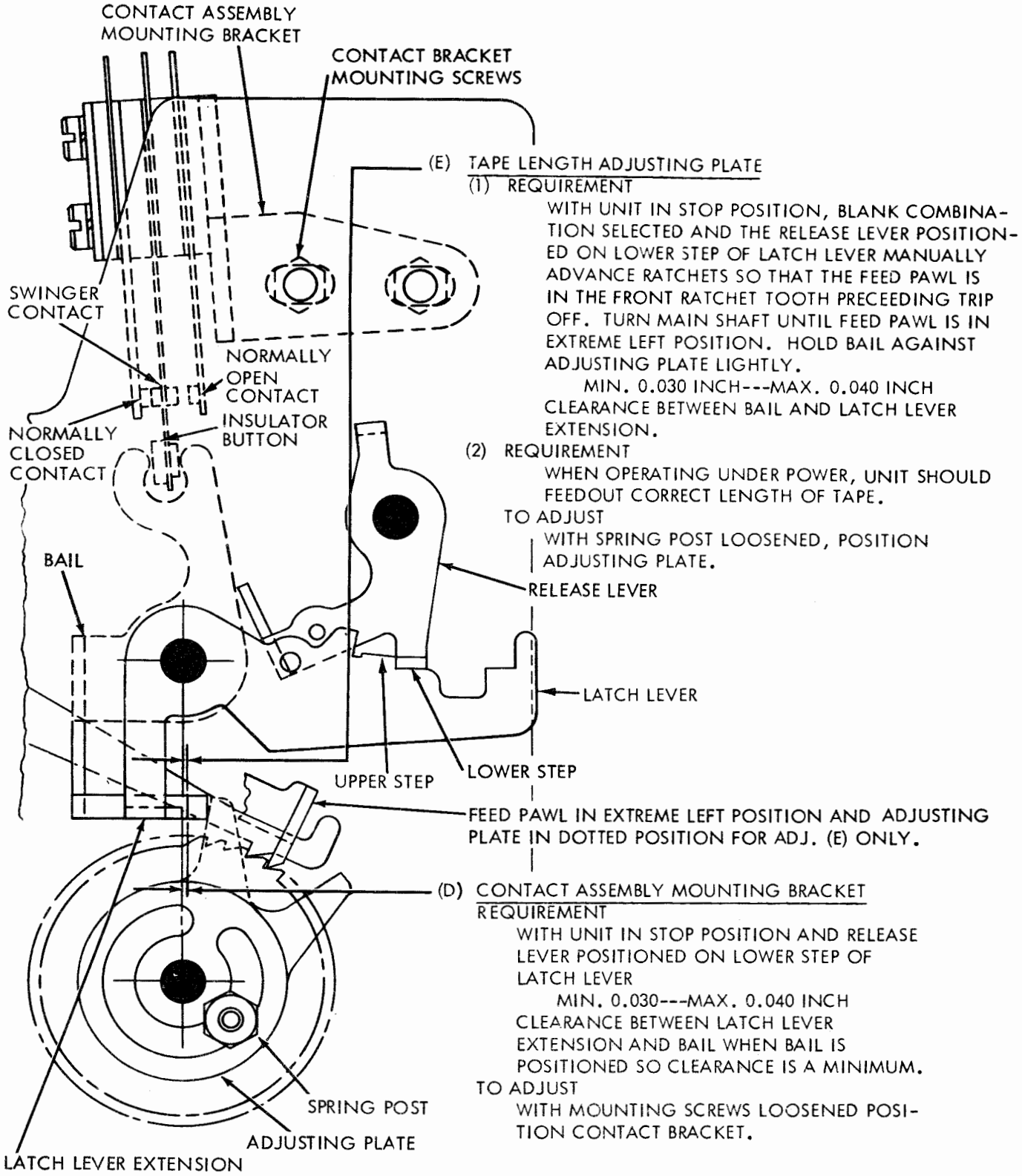
TO PULL SPRING TO INSTALLED LENGTH.

3.48 End of Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms





3.49 End of Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



(E) TAPE LENGTH ADJUSTING PLATE

(1) REQUIREMENT

WITH UNIT IN STOP POSITION, BLANK COMBINATION SELECTED AND THE RELEASE LEVER POSITIONED ON LOWER STEP OF LATCH LEVER MANUALLY ADVANCE RATCHETS SO THAT THE FEED PAWL IS IN THE FRONT RATCHET TOOTH PRECEEDING TRIP OFF. TURN MAIN SHAFT UNTIL FEED PAWL IS IN EXTREME LEFT POSITION. HOLD BAIL AGAINST ADJUSTING PLATE LIGHTLY.

MIN. 0.030 INCH---MAX. 0.040 INCH CLEARANCE BETWEEN BAIL AND LATCH LEVER EXTENSION.

(2) REQUIREMENT

WHEN OPERATING UNDER POWER, UNIT SHOULD FEEDOUT CORRECT LENGTH OF TAPE.

TO ADJUST

WITH SPRING POST LOOSENED, POSITION ADJUSTING PLATE.

FEED PAWL IN EXTREME LEFT POSITION AND ADJUSTING PLATE IN DOTTED POSITION FOR ADJ. (E) ONLY.

(D) CONTACT ASSEMBLY MOUNTING BRACKET

REQUIREMENT

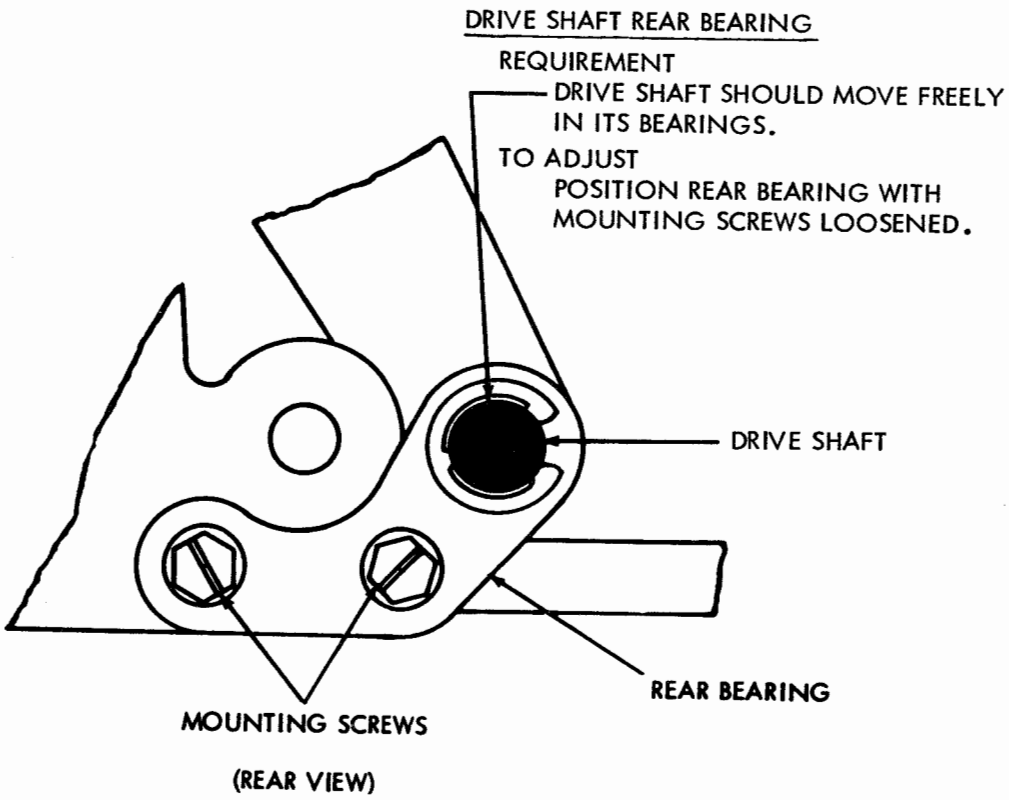
WITH UNIT IN STOP POSITION AND RELEASE LEVER POSITIONED ON LOWER STEP OF LATCH LEVER

MIN. 0.030---MAX. 0.040 INCH CLEARANCE BETWEEN LATCH LEVER EXTENSION AND BAIL WHEN BAIL IS POSITIONED SO CLEARANCE IS A MINIMUM.

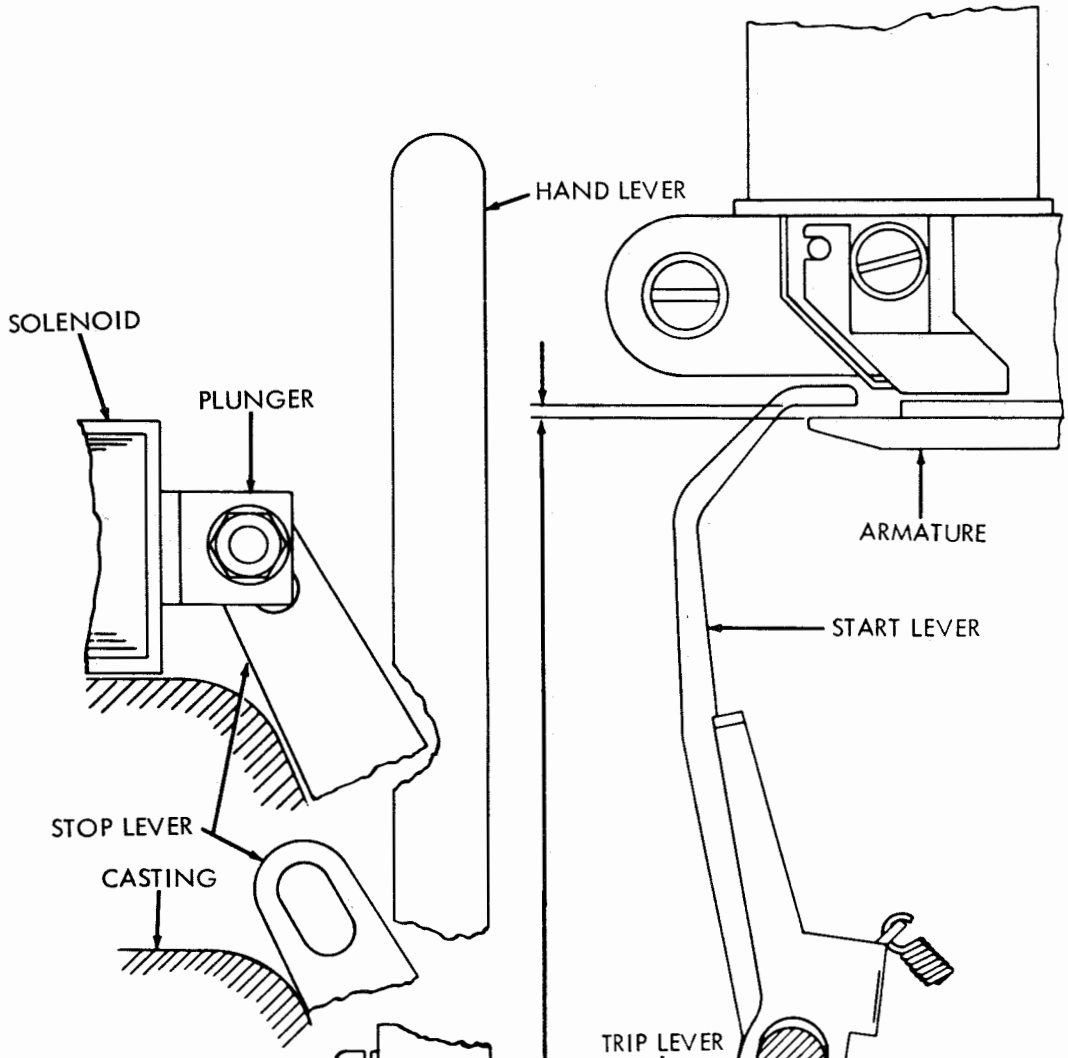
TO ADJUST

WITH MOUNTING SCREWS LOOSENED POSITION CONTACT BRACKET.

3.50 Manual- and Solenoid-Operated Interfering LTRS Tape Feed-Out Mechanisms



3.51 Manual- and Solenoid-Operated Interfering LTRS Tape Feed-Out Mechanisms continued

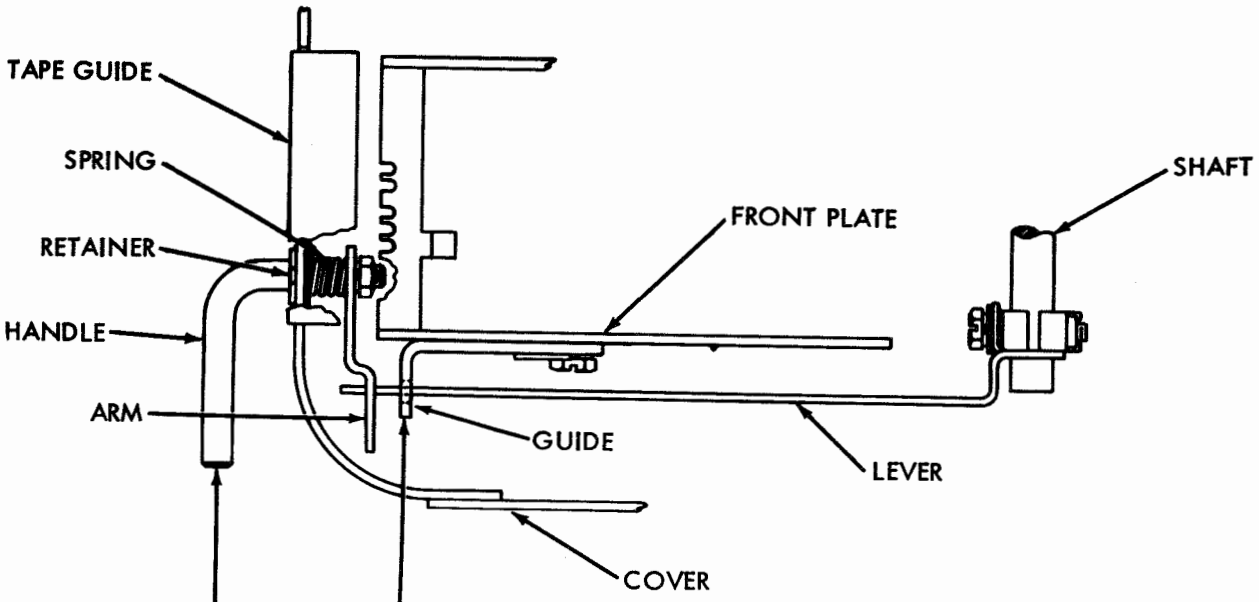


(B)
TRIP LEVER - MANUALLY OPERATED
TO CHECK
WITH UNIT IN STOP POSITION, TRIP SELECTOR CLUTCH BY POSITIONING HAND LEVER TO LEFT UNTIL STOP LEVER RESTS AGAINST CASTING.
REQUIREMENT
(1) MIN. SOME---MAX. 0.015 INCH BETWEEN START LEVER AND ARMATURE AT POINT OF MIN. CLEARANCE.
(2) START LEVER ENGAGING APPROX. CENTER OF TRIP LEVER'S OPERATING SURFACE.
TO ADJUST
WITH CLAMP SCREW LOOSENED, POSITION TRIP LEVER ON SHAFT.

(C)
TRIP LEVER SPRING
REQUIREMENT
MIN. 3 4 OZS.
MAX. 2 OZ.
TO PULL SPRING TO ITS INSTALLED LENGTH.

(A)
TRIP LEVER - SOLENOID OPERATED
TO CHECK
WITH UNIT IN STOP POSITION, TRIP SELECTOR CLUTCH BY ENERGIZING SOLENOID. TAKE UP PLAY IN STOP LEVER TO RIGHT (I.E., PLAY BETWEEN STOP LEVER AND PLUNGER).
REQUIREMENT
(1) MIN. SOME---MAX. 0.008 INCH BETWEEN START LEVER AND ARMATURE AT POINT OF MIN. CLEARANCE.
(2) START LEVER ENGAGING APPROX. CENTER OF TRIP LEVER'S OPERATING SURFACE.
TO ADJUST
WITH CLAMP SCREW LOOSENED, POSITION TRIP LEVER ON SHAFT.

3.52 External Manual Interfering LTRS Tape Feed-Out Mechanism



(A) LEVER

REQUIREMENT

LEVER SHOULD NOT TOUCH SIDES OF GUIDE.

TO ADJUST

BEND LEVER.

NOTE 1:

RECHECK MANUALLY OPERATED TRIPLEVER AND TRIPLEVER SPRING ADJUSTMENTS.

(B) ARM

REQUIREMENT

WITH COVER PROPERLY POSITIONED AS SPECIFIED IN SECTION CONTAINING REQUIREMENTS AND ADJUSTMENTS FOR TYPING REPERFORATOR COVER, AND ARM JUST TOUCHING LEVER, THE HANDLE SHOULD BE APPROXIMATELY HORIZONTAL.

TO ADJUST

WITH ARM ADJUSTING NUT FRICTION TIGHT, POSITION ARM.

NOTE 2:

REMOVE COVER TO SIMPLIFY TIGHTENING AND LOOSENING THE ADJUSTING NUT.

3.53 Timing Contact Mechanism (Operated by Selector)

SEE NOTE BELOW

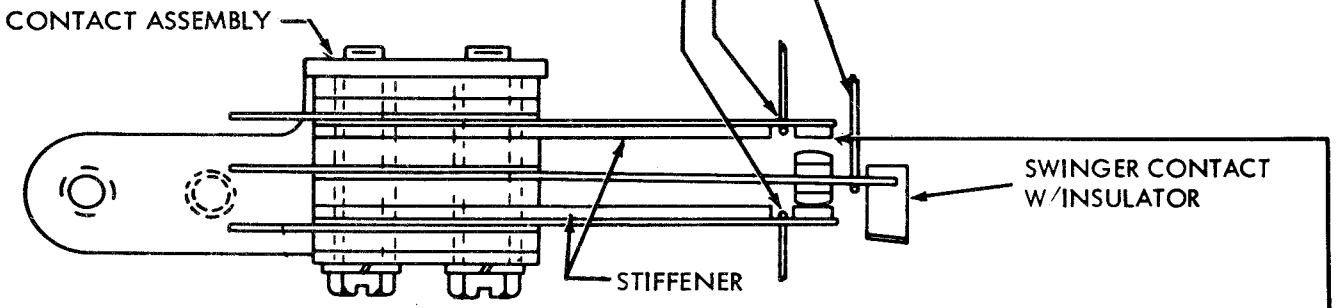
(A) "M" CONTACT SPRINGS
REQUIREMENT
MIN. 4 OZS.
TO MOVE CONTACT SPRING AWAY FROM ITS STIFFENER.
TO ADJUST
BEND CONTACT SPRING.

NOTE

PARTS SHOULD BE WELL ALIGNED AND FREE OF SHARP BENDS. CONTACT POINTS MISALIGNAMENT SHALL NOT EXCEED 1/4 THE DIAMETER OF POINTS.

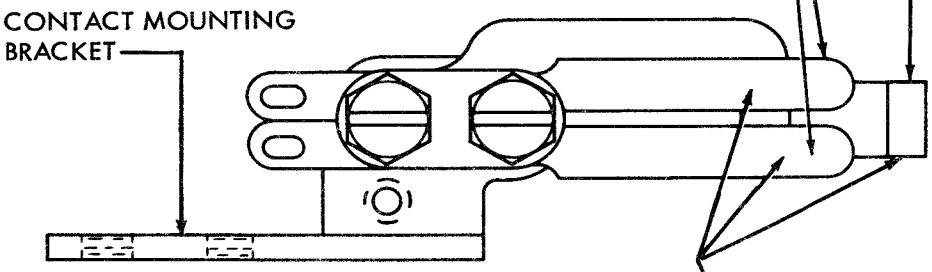
(B) "B" CONTACT SPRINGS
REQUIREMENT
MIN. 4 OZS.
TO MOVE CONTACT SPRING AWAY FROM ITS STIFFENER.
TO ADJUST
BEND CONTACT SPRING.

(C) "S" - "B" CONTACT SPRINGS
REQUIREMENT
MIN. 3-1/2 OZS.
MAX. 4-1/4 OZS.
TO MOVE SWINGER CONTACT AWAY FROM NORMALLY BREAK CONTACT.
TO ADJUST
BEND SWINGER CONTACT SPRING.



(D) TWIN "B" CONTACT SPRINGS
(1) REQUIREMENT
BOTH CONTACTS SHOULD OPEN AT THE SAME TIME.
(2) REQUIREMENT
THE INSERTION OF AN 0.008 INCH GAUGE BETWEEN ONE PAIR OF POINTS SHOULD NOT CAUSE THE OTHER PAIR TO SEPARATE.
TO ADJUST
BEND SPRINGS OR SLIGHTLY TWIST STIFFENER.
RECHECK CONTACT PRESSURE.

(E) "S" - "M" CONTACT GAP
REQUIREMENT
MIN. 0.012 INCH
MAX. 0.020 INCH
TO ADJUST
BEND STIFFENER.

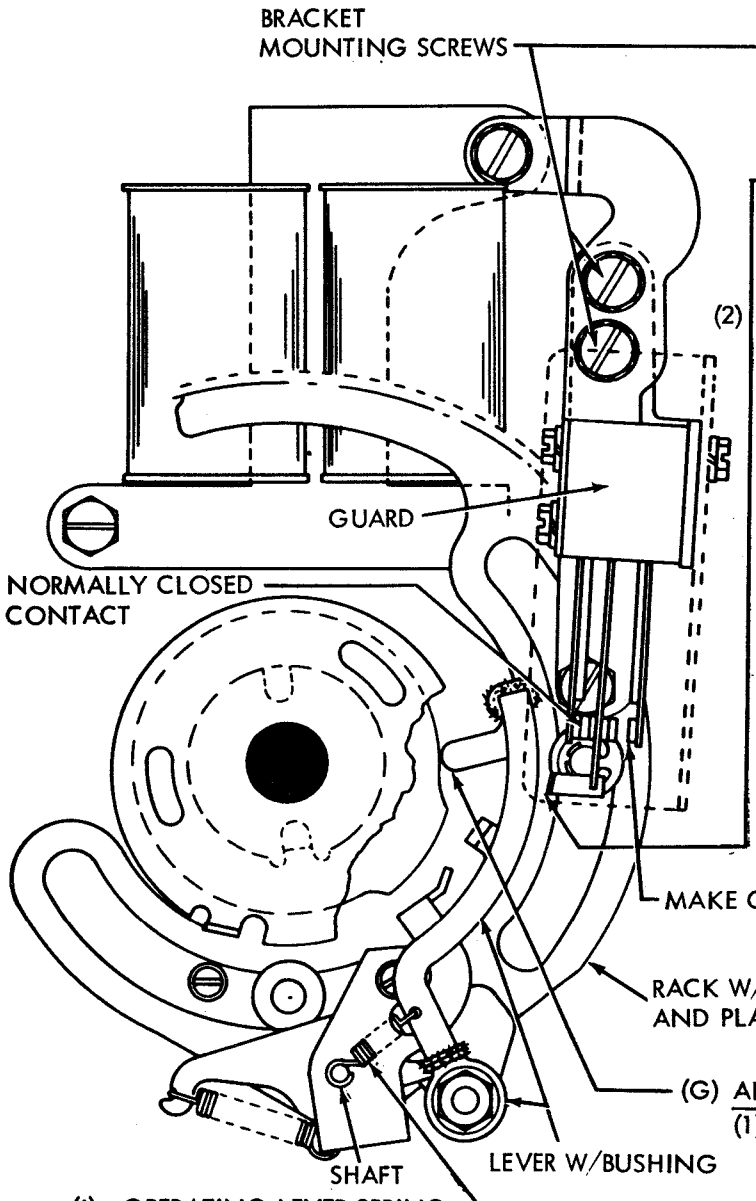


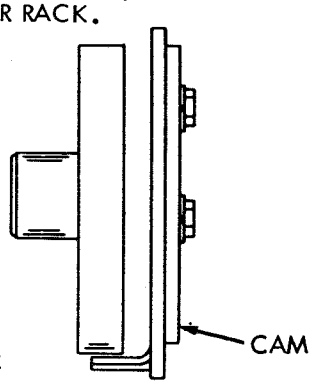
(F) TWIN SPRINGS ("M" CONTACTS)
REQUIREMENT
BOTH BREAK AND SWINGER CONTACTS SHOULD MAKE APPROXIMATELY THE SAME TIME.
TO ADJUST
BEND BREAK CONTACT SPRINGS OR SLIGHTLY TWIST STIFFENER.

NOTE 1:
IN THIS TEXT, THE LETTERS S, B AND M ARE USED TO DENOTE RESPECTIVELY THE "SWINGER", "BREAK" (NORMALLY CLOSED WITH LEVER RIDING CAM DEPRESSION) AND "MAKE" (NORMALLY OPEN; CLOSED ONLY WITH LEVER RIDING CAM PEAK) CONTACT SPRINGS.

NOTE 2:
WHEN MAKING ADJUSTMENTS (F) THROUGH (H) MAKE CERTAIN THE "S" SPRING INSULATOR IS CLEAR OF THE OPERATING LEVER.

3.54 Timing Contact Mechanism (Operated by Selector) continued





(H) CONTACT ASSEMBLY POSITION

(1) REQUIREMENT

SET RANGE SCALE AT 50 (IMPORTANT). ROTATE SHAFT SO OPERATING LEVER IS ON LOWEST PART OF CAM.

TO ADJUST

WITH MOUNTING SCREWS LOOSENED POSITION CONTACT ASSEMBLY BY MEANS OF ITS OVERSIZE MOUNTING HOLES SO LEVER CAN BE MOVED

MIN. 0.002 INCH
MAX. 0.006 INCH

BEFORE IT TOUCHES THE SWINGER SPRING, AND SO FIRST TOUCH IS ON LOWER HALF OF SPRING STUD WEARING PLATE.

(2) REQUIREMENT

(AT HIGHER SETTINGS, MOVEMENT WILL BE LARGER; DISREGARD). TIGHTEN SCREWS AND RECHECK. ROTATE SHAFT AND NOTE THE HIGH PART OF CAM CAUSES BOTH "M" CONTACTS TO MOVE AT LEAST, MIN. 0.012 INCH

IF THIS CONTACT MOVEMENT IS NOT MET AT SETTING 60 AND 90, CHECK FOR INSECURE PARTS AND REFINE CONTACT GAP BETWEEN SWINGER AND MAKE CONTACT. IF STILL NOT MET, REPLACE RANGE SCALE SELECTOR RACK.

(G) ALIGNMENT OF OPERATING LEVER WITH CAM

(1) REQUIREMENT

OPERATING LEVER'S FULL THICKNESS SHOULD RIDE CAM.

TO CHECK

TAKE UP ALL CAM END PLAY TOWARD SELECTOR CLUTCH DRUM, ALL OPERATING LEVER END PLAY (AT ITS BEARING) IN OPPOSITE DIRECTION. OBSERVE LEVER AND CAM FOR FULL ENGAGEMENT.

(2) REQUIREMENT

LEVER SHOULD NOT EXERT PRESSURE AGAINST FACE OF CLUTCH DISC.

TO ADJUST

REFINE CLUTCH DRUM END PLAY.

(I) OPERATING LEVER SPRING

REQUIREMENT

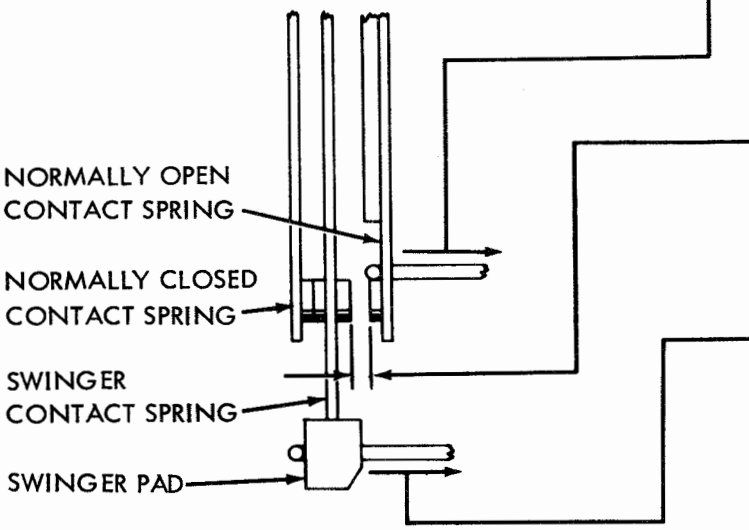
THE SPRING SHOULD HOLD OPERATING LEVER AGAINST CAM WITH LIGHT PRESSURE. WITH SPRING REMOVED.

MIN. 2 OZS.
MAX. 3 OZS.

TO STRETCH SPRING 5/8 INCH LENGTH.

3.55 Auxiliary Contact Assembly

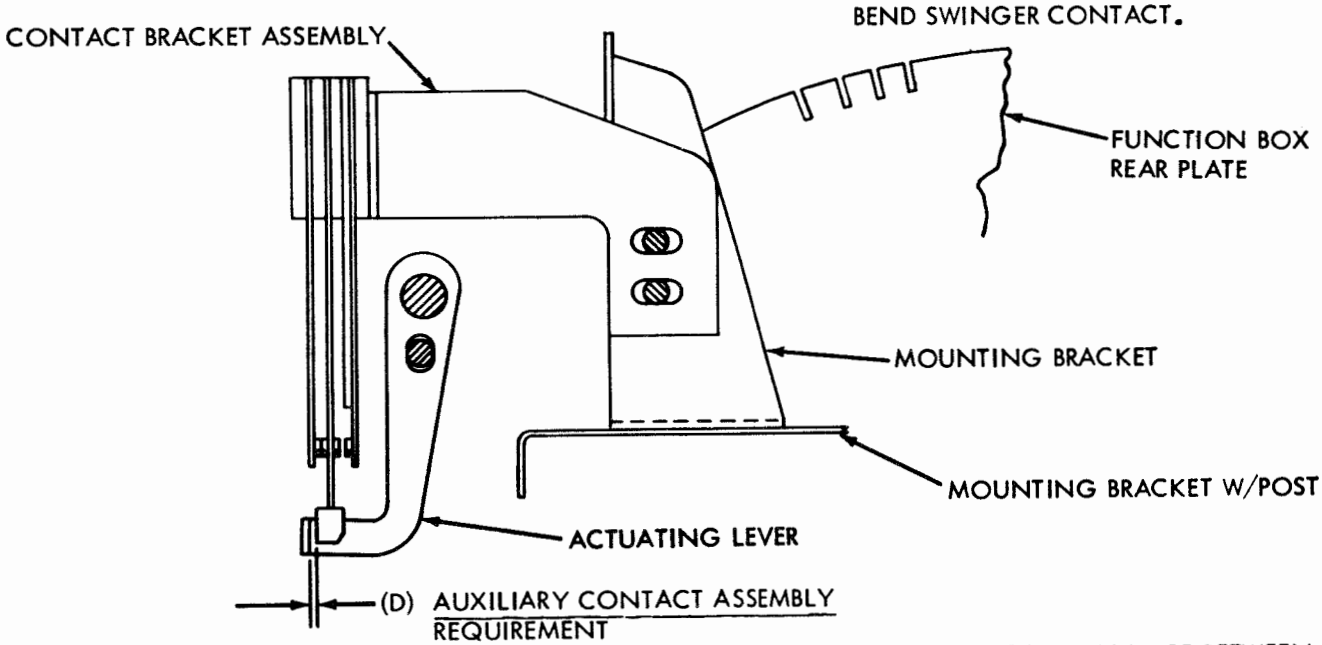
NOTE:
THE FOLLOWING ADJUSTMENTS SHOULD BE MADE PRIOR TO INSTALLATION OF CONTACT BRACKET ASSEMBLY ON THE UNIT.



(A) NORMALLY OPEN CONTACT SPRING
REQUIREMENT
MIN. 4-1/2 OZS.
MAX. 5-1/2 OZS.
TO MOVE CONTACT SPRING AWAY FROM ITS STIFFENER.
TO ADJUST
BEND CONTACT SPRING. RECHECK CONTACT GAP.

(B) NORMALLY OPEN CONTACT GAP
REQUIREMENT
MIN. 0.020 INCH
MAX. 0.025 INCH
TO ADJUST
BEND STIFFENER.

(C) NORMALLY CLOSED CONTACT
REQUIREMENT
MIN. 3 OZS.
MAX. 4 OZS.
TO MOVE SWINGER CONTACT AWAY FROM NORMALLY CLOSED CONTACT.
TO ADJUST
BEND SWINGER CONTACT.



(REAR VIEW)

(D) AUXILIARY CONTACT ASSEMBLY
REQUIREMENT
TRIP FUNCTION CLUTCH AND ROTATE UNTIL CLEARANCE BETWEEN PAD AND ACTUATOR IS MAXIMUM.
MIN. SOME
MAX. 0.008 INCH
CLEARANCE BETWEEN SWINGER PAD AND ACTUATING LEVER WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE A MINIMUM.
TO ADJUST
LOOSEN MOUNTING SCREWS AND POSITION CONTACT BRACKET ASSEMBLY ON MOUNTING BRACKET. IT MAY BE NECESSARY TO REPOSITION MOUNTING BRACKET TO MEET REQUIREMENT.

3.56 Multiple Mounted Function Blade Contact Mechanism

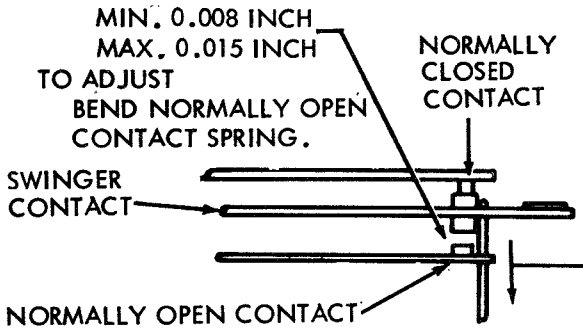
Note: For early design see par 4.21.

NOTE 1:

THE FOLLOWING ADJUSTMENTS SHOULD BE MADE PRIOR TO INSTALLING THE CONTACT BRACKET ASSEMBLY ON UNIT.

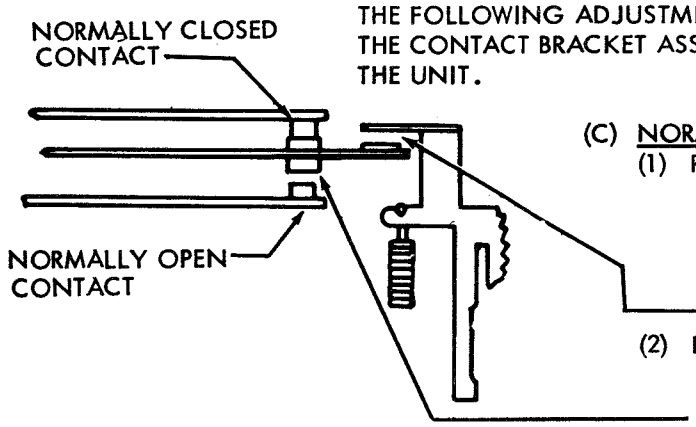
(A) NORMALLY OPEN CONTACT GAP
REQUIREMENT
MIN. 0.008 INCH
MAX. 0.015 INCH
TO ADJUST
BEND NORMALLY OPEN CONTACT SPRING.

(B) NORMALLY CLOSED CONTACT
REQUIREMENT
MIN. 8 GRAMS
MAX. 15 GRAMS
TO MOVE THE SWINGER CONTACT AWAY FROM THE NORMALLY CLOSED CONTACT.
TO ADJUST
BEND NORMALLY CLOSED CONTACT SPRING.

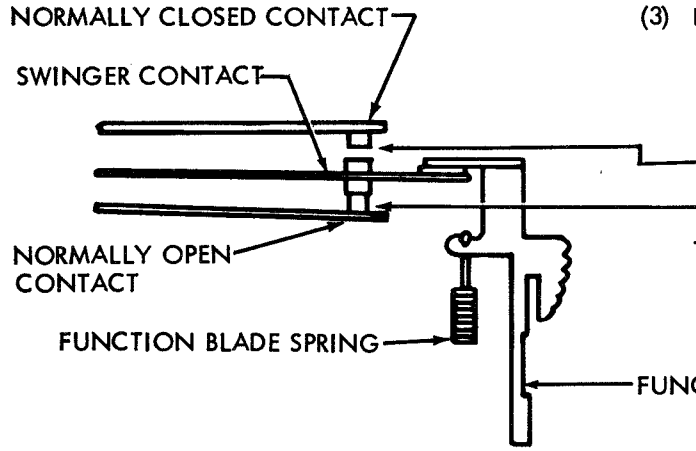


NOTE 2:

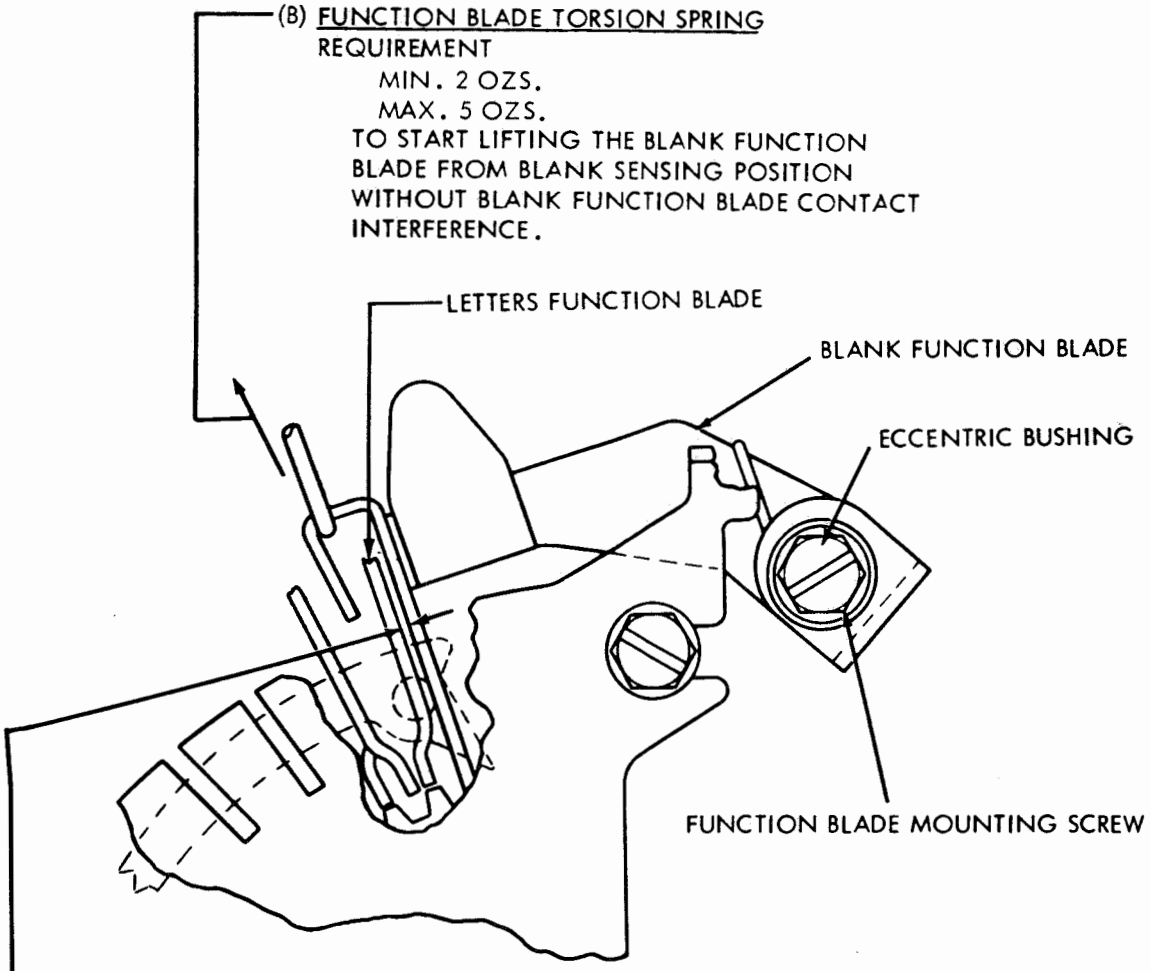
THE FOLLOWING ADJUSTMENTS SHOULD BE MADE AFTER THE CONTACT BRACKET ASSEMBLY IS MOUNTED TO THE UNIT.



(C) NORMALLY OPEN CONTACT GAP
(1) REQUIREMENT
WITH THE FUNCTION BLADE IN ITS LOWEST POSITION IN THE NON-SELECTED CONDITION. CLEARANCE BETWEEN THE CONTACT SWINGER INSULATOR BUTTON AND THE FUNCTION BLADE:
MIN. SOME
(2) REQUIREMENT
CONTACT GAP
MIN. 0.008 INCH
MAX. 0.015 INCH
TO ADJUST
BEND NORMALLY CLOSED CONTACT SPRING.
(3) REQUIREMENT
WITH THE FUNCTION BLADE IN ITS LOWEST POSITION IN THE SELECTED CONDITION. GAP BETWEEN THE SWINGER CONTACT AND NORMALLY CLOSED (NOW OPEN) CONTACT
MIN. 0.015 INCH
AND SOME OVERTRAVEL OF THE NORMALLY OPEN CONTACT.
TO ADJUST
BEND NORMALLY CLOSED CONTACT SPRING.
REFINE PREVIOUS ADJUSTMENTS TO MAINTAIN REQUIREMENTS.



3. 57 Blank Delete Mechanism



3.58 Blank Delete Mechanism continued

FEED PAWL READJUSTMENT

REQUIREMENT

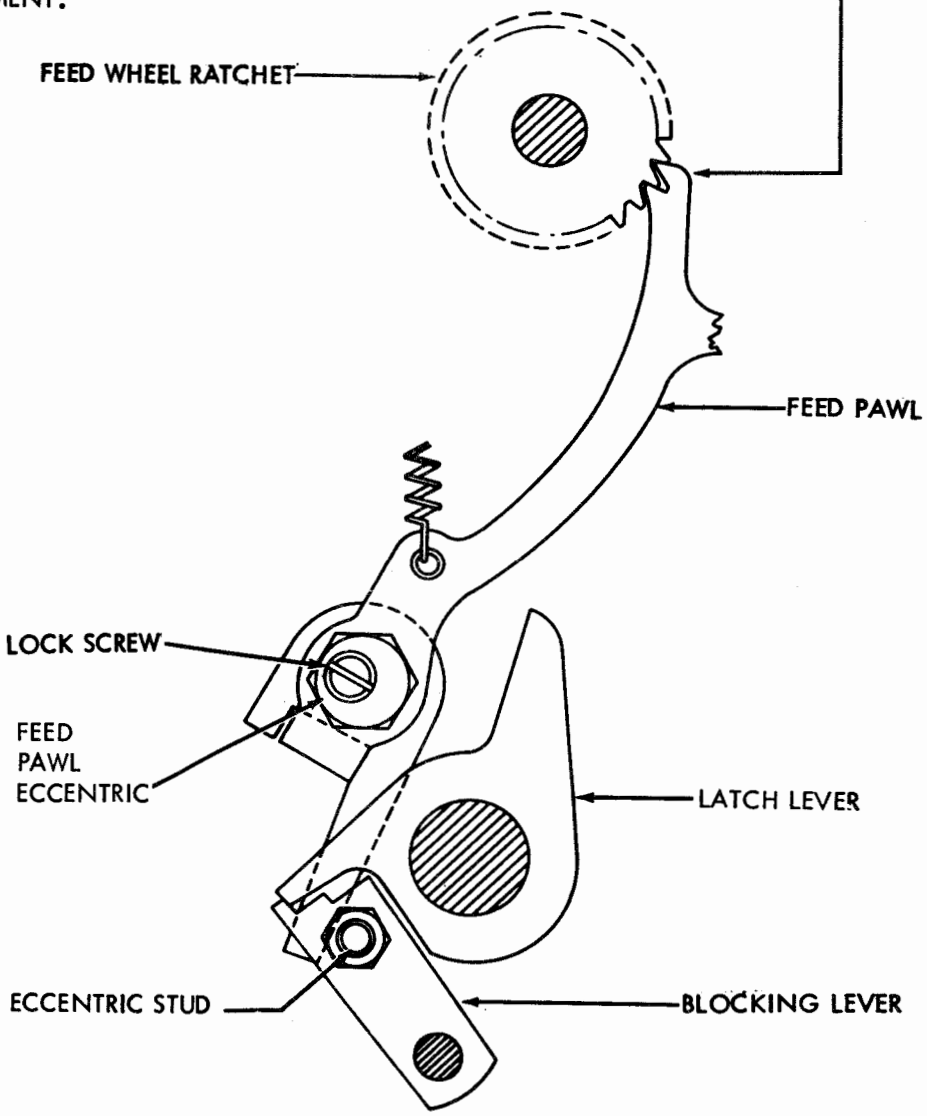
WITH FEED WHEEL RATCHET IN ITS FULLY DETENTED POSITION, THE FEED PAWL IN ITS UPPERMOST POSITION MUST JUST TOUCH THE LOWER PART OF A TOOTH ON THE RATCHET.

TO ADJUST

WITH LOCK SCREW FRICTION TIGHT, ROTATE THE FEED PAWL ECCENTRIC, KEEPING HIGH PART OF ECCENTRIC TO RIGHT OF LOCK SCREW.

NOTE:

THE ECCENTRIC STUD SHOULD BE BACKED OFF TO ELIMINATE ANY INTERFERENCE WITH THIS ADJUSTMENT.



3.59 Blank Delete Mechanism continued

BLOCKING LEVER WITH SHAFT MOUNTING PLATE

REQUIREMENT

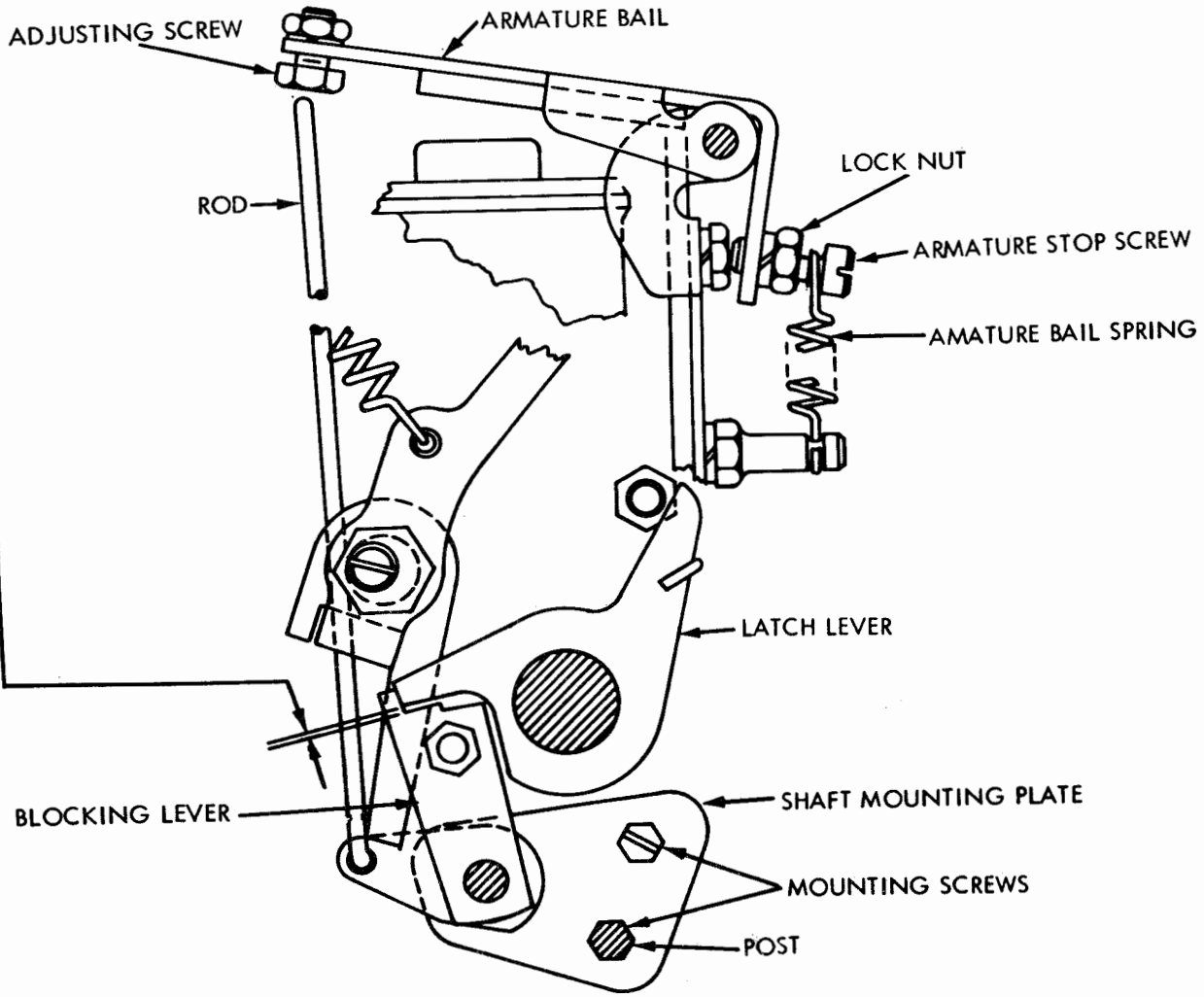
WITH THE UNIT IN THE STOP POSITION, (ALL CLUTCHES LATCHED)

MIN. 0.015 INCH--MAX. 0.030 INCH CLEARANCE BETWEEN THE BLOCKING LEVER AND THE LATCH LEVER.

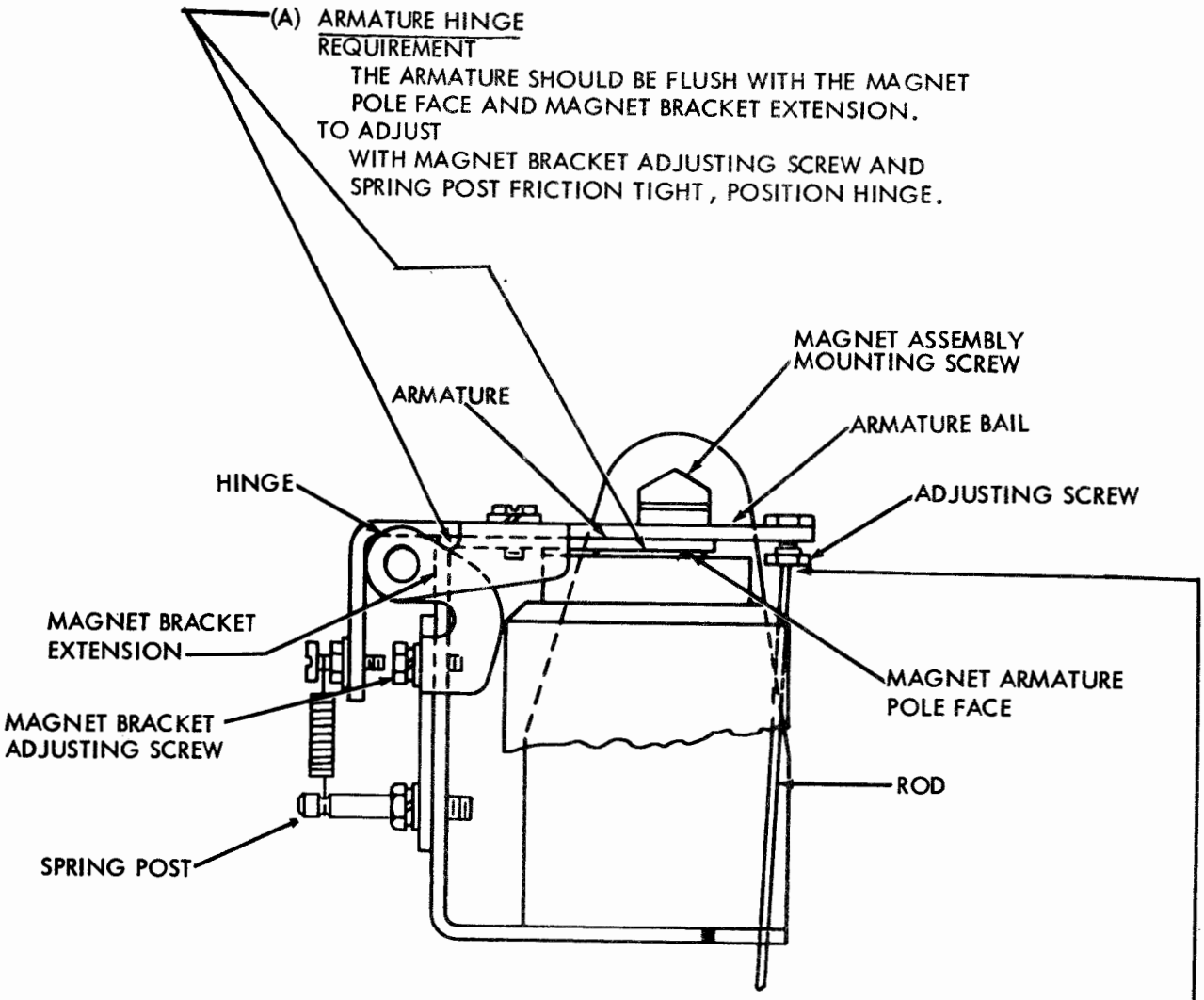
TO ADJUST

LOOSEN MOUNTING SCREWS AND POSITION THE BLOCKING LEVER WITH SHAFT MOUNTING PLATE.

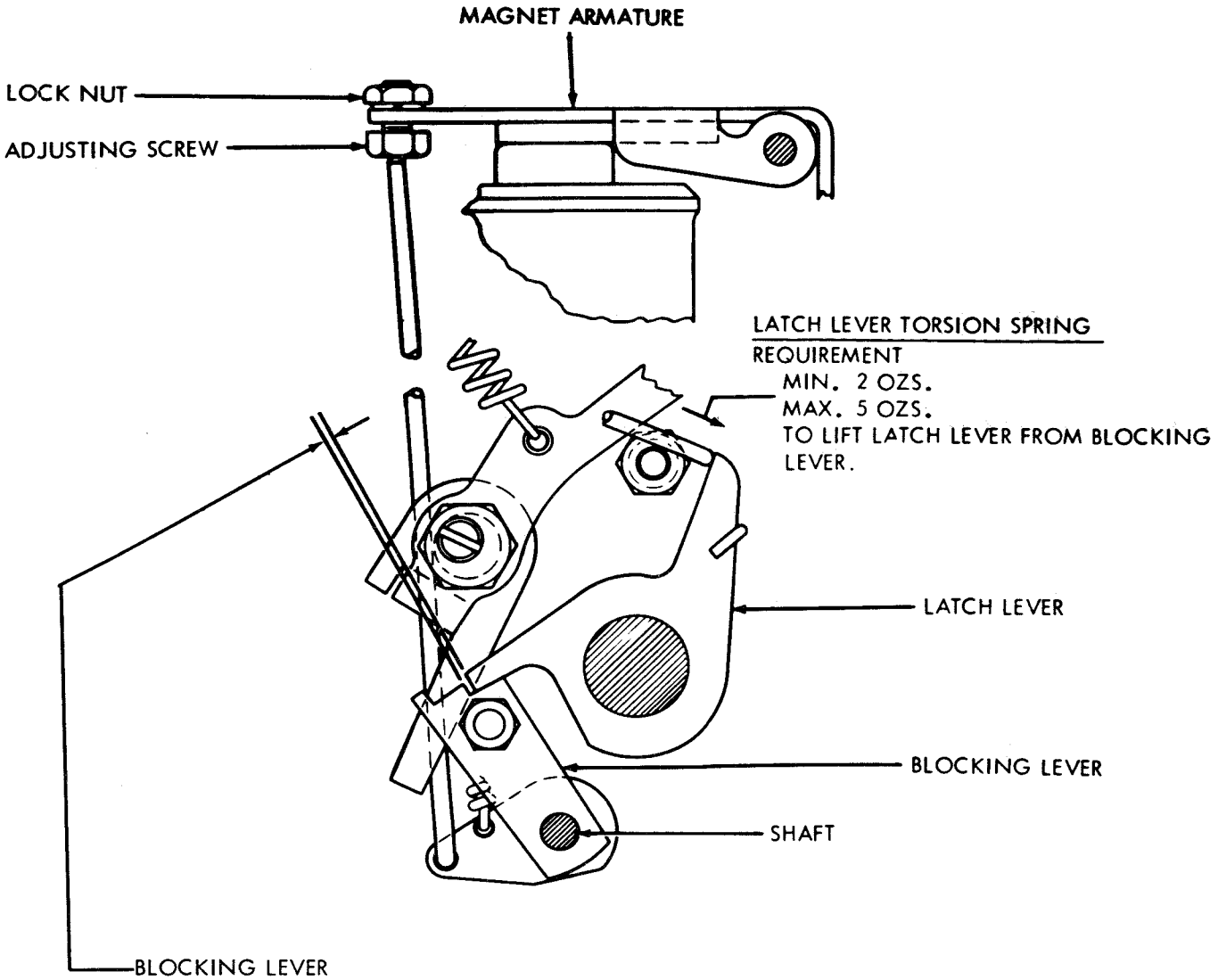
NOTE: CHECK THAT THE HUB ON THE STUD WITH BUSHING DOES NOT RUB AGAINST THE REAR PUNCH PLATE CAUSING THE BLOCKING LEVER SHAFT TO BIND.



3.60 Blank Delete Mechanism continued



3.61 Blank Delete Mechanism continued



BLOCKING LEVER

REQUIREMENT

WITH FUNCTION BLADES IN SENSING POSITION AND MAGNET ARMATURE MANUALLY HELD OPERATED, CLEARANCE BETWEEN BLOCKING LEVER AND LATCH LEVER

MIN. SOME

MAX. 0.005 INCH

TO ADJUST

WITH MAGNET ARMATURE MANUALLY HELD OPERATED AND LOCKNUT ON ADJUSTING SCREW LOOSENED, ROTATE ADJUSTING SCREW TO MEET THE REQUIREMENT.

RECHECK

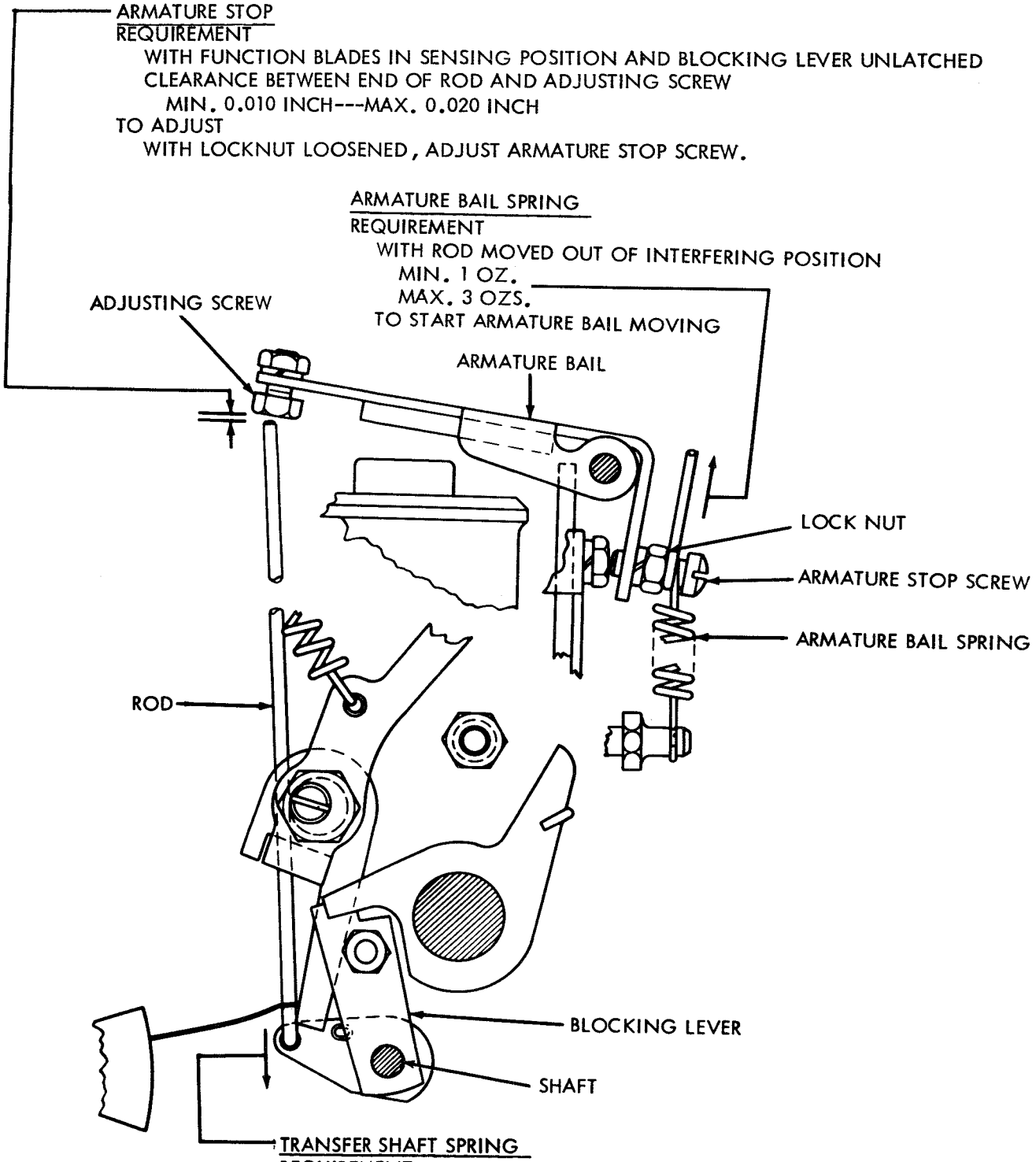
TIGHTEN LOCK NUT ON ADJUSTING SCREW AND RECHECK ADJUSTMENT.

NOTE: IF UNIT IS EQUIPPED WITH FEED SUPPRESSION, THE LEVER ON TAPE SHOE ARM SHOULD BE PIVOTED OUT OF POSITION WHEN MAKING THIS ADJUSTMENT.

3.62 Blank Delete Mechanism continued

ARMATURE STOP
REQUIREMENT
WITH FUNCTION BLADES IN SENSING POSITION AND BLOCKING LEVER UNLATCHED
CLEARANCE BETWEEN END OF ROD AND ADJUSTING SCREW
MIN. 0.010 INCH---MAX. 0.020 INCH
TO ADJUST
WITH LOCKNUT LOOSENED, ADJUST ARMATURE STOP SCREW.

ARMATURE BAIL SPRING
REQUIREMENT
WITH ROD MOVED OUT OF INTERFERING POSITION
MIN. 1 OZ.
MAX. 3 OZS.
TO START ARMATURE BAIL MOVING



TRANSFER SHAFT SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION, AND FEED PAWL EXTENSION HELD AWAY FROM INTERFERING, IT SHOULD REQUIRE
MIN. 20 GRAMS
MAX. 50 GRAMS
TO START SHAFT MOVING.

3.63 Blank Delete Mechanism continued

ECCENTRIC STUD

REQUIREMENT

WITH LATCH LEVER AND BLOCKING LEVER IN LATCHED POSITION AND FEED PAWL IN ITS UPWARD TRAVEL, CLEARANCE BETWEEN TIP OF ENGAGING FEED WHEEL RATCHET TOOTH AND FEED PAWL TOOTH AT ITS CLOSEST POINT

MIN. 0.010 INCH

MAX. 0.020 INCH

TO ADJUST

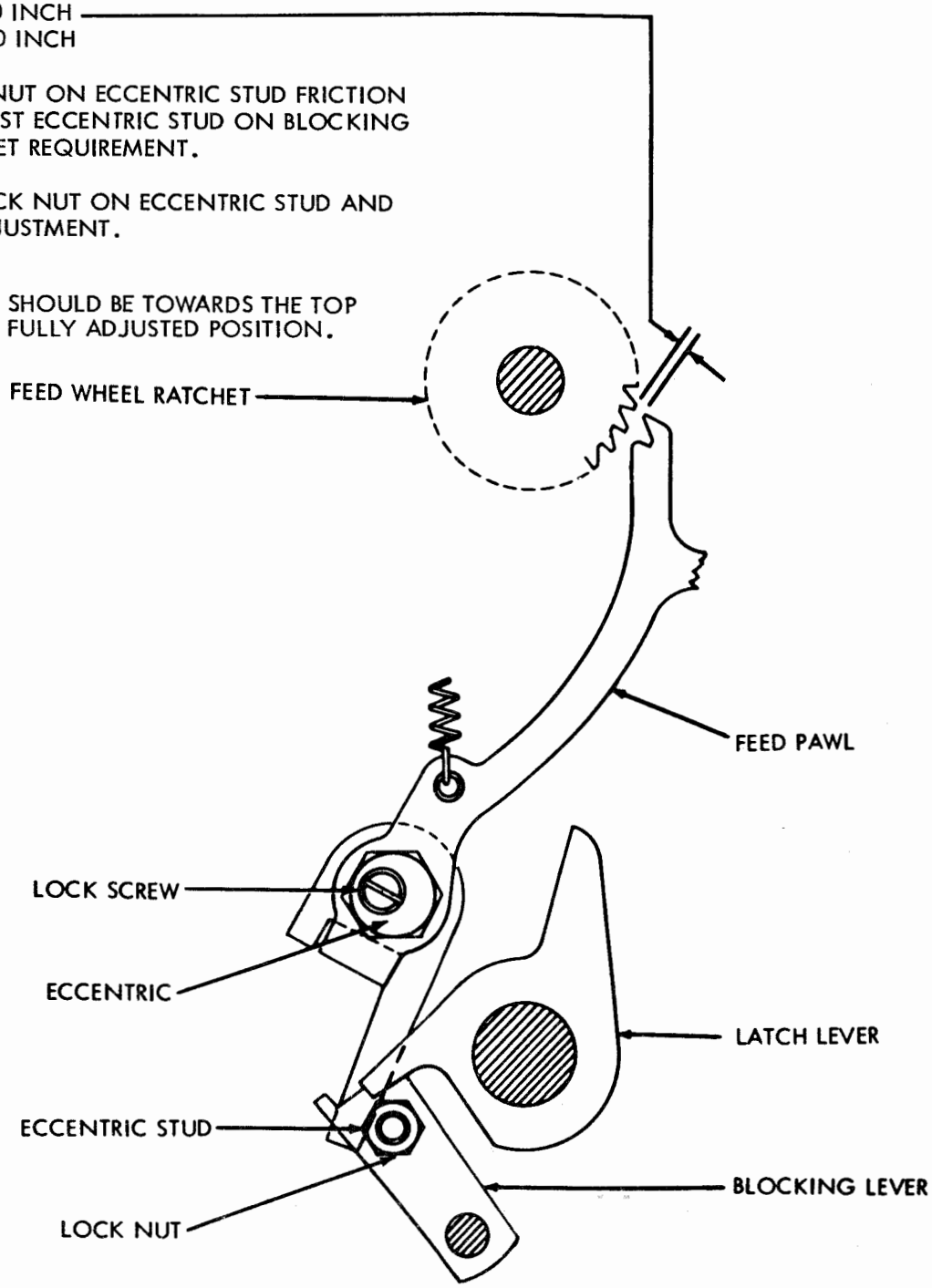
WITH LOCK NUT ON ECCENTRIC STUD FRICTION TIGHT, ADJUST ECCENTRIC STUD ON BLOCKING LEVER TO MEET REQUIREMENT.

RECHECK

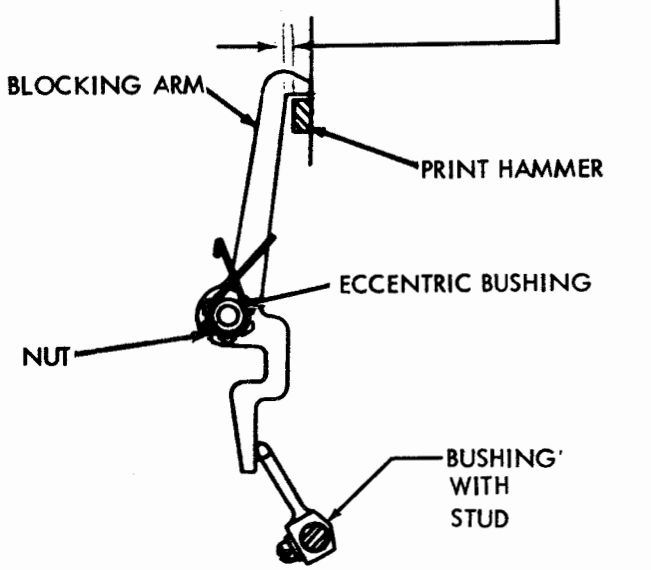
TIGHTEN LOCK NUT ON ECCENTRIC STUD AND RECHECK ADJUSTMENT.

NOTE:

THE ECCENTRIC SHOULD BE TOWARDS THE TOP OF UNIT IN ITS FULLY ADJUSTED POSITION.



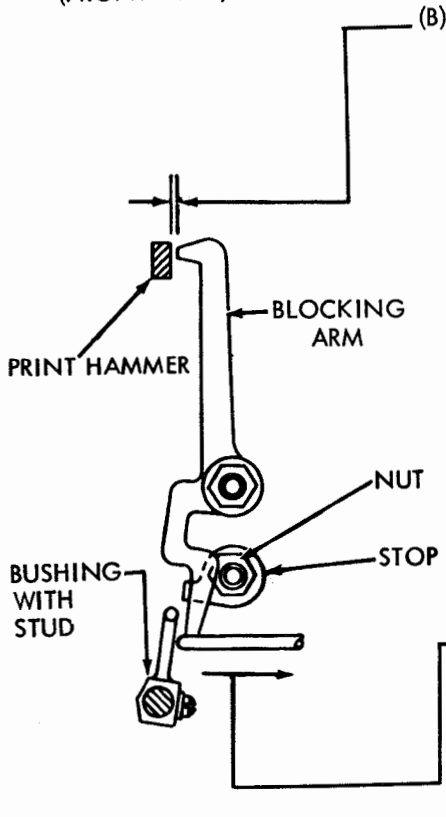
3.64 Blank Delete Mechanism continued



(FRONT VIEW)

(A) PRINT SUPPRESSOR BLOCKING ARM
REQUIREMENT
WITH FUNCTION BLADES IN SENSING POSITION, BLOCKING LEVER LATCHED, AT THE CLOSEST POINT THERE SHALL BE
MIN. 0.003 INCH---MAX. 0.015 INCH
CLEARANCE BETWEEN THE LEFT SIDE OF THE PRINT HAMMER LEVER AND BLOCKING ARM WHEN ALL THE PLAY IN THE PRINT HAMMER LEVER IS TAKEN UP IN A DIRECTION TO MAKE THE CLEARANCE MINIMUM.
TO ADJUST
LOOSEN NUT FRICTION TIGHT AND ADJUST ECCENTRIC SHOULDER SCREW TO MEET REQUIREMENT.

NOTE: IT MAY BE NECESSARY TO FAVOR THE POSITION OF THE ECCENTRIC SHOULDER SCREW IN ITS MOUNTING HOLE TO MEET THE REQUIREMENT.



(REAR VIEW)

(B) PRINT SUPPRESSOR STOP
REQUIREMENT
WITH BLOCKING LEVER IN UNLATCHED POSITION
CLEARANCE BETWEEN BLOCKING ARM AND PRINT HAMMER
MIN. SOME
MAX. 0.015 INCH
WHEN PLAY IN PRINT HAMMER IS TAKEN UP IN A DIRECTION TO MAKE THE CLEARANCE A MINIMUM.
TO ADJUST
WITH LOCK NUT FRICTION TIGHT, POSITION STOP TO MEET REQUIREMENT.
RECHECK
PRINT SUPPRESSOR BLOCKING ARM ADJUSTMENT.

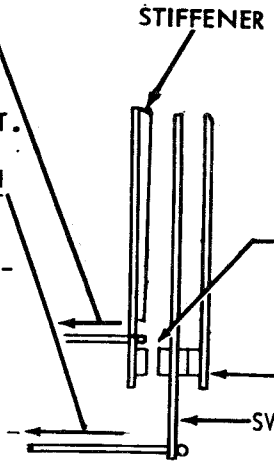
(C) BLOCKING ARM SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION
MIN. 10 GRAMS
MAX. 50 GRAMS
TO START MOVING THE BLOCKING ARM AWAY FROM STOP.

3.65 Blank Delete Mechanism continued

CONTACT SPRING TENSION
REQUIREMENT
MIN. 4-1/2 OZS.
MAX. 5-1/2 OZS.
TO MOVE THE CONTACT SPRING AWAY FROM ITS STIFFENER.
TO ADJUST
BEND CONTACT SPRING TO MEET REQUIREMENT.
RECHECK
OPEN CONTACT GAP ADJUSTMENT.

SWINGER CONTACT SPRING TENSION
REQUIREMENT
MIN. 2 OZS.---MAX. 3 OZS.
TO JUST MOVE THE SWINGER CONTACT SPRING AWAY FROM THE NORMALLY CLOSED CONTACT.
TO ADJUST
BEND CONTACT SPRING TO MEET REQUIREMENT.

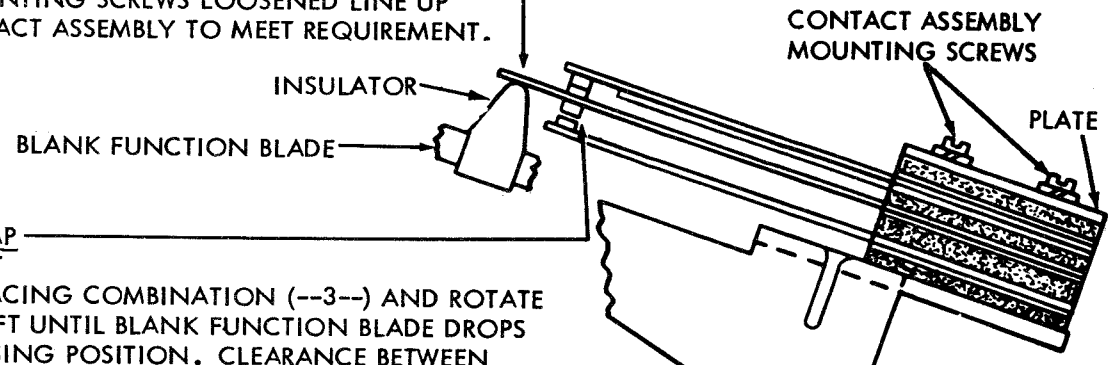
BLANK CONTACT
(THE FOLLOWING ADJUSTMENTS SHOULD BE MADE PRIOR TO INSTALLING THE CONTACT BRACKET ASSEMBLY ON THE UNIT.)



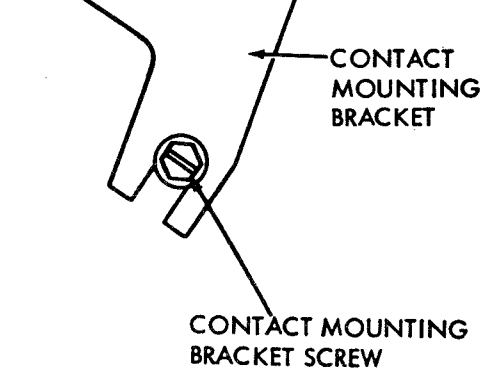
OPEN CONTACT GAP
REQUIREMENT
NORMALLY OPEN CONTACT GAP
MIN. 0.010 INCH
MAX. 0.015 INCH
BEND STIFFENER TO MEET REQUIREMENT.

NOTE:
THE FOLLOWING ADJUSTMENTS SHOULD BE MADE AFTER CONTACT BRACKET ASSEMBLY IS MOUNTED ON UNIT.

CONTACT ASSEMBLY (EARLIER DESIGN)
REQUIREMENT
CONTACT ASSEMBLY SHOULD LINE UP CENTRALLY WITH INSULATOR ON BLANK FUNCTION BLADE.
TO ADJUST
WITH MOUNTING SCREWS LOOSENED LINE UP THE CONTACT ASSEMBLY TO MEET REQUIREMENT.



CONTACT GAP
REQUIREMENT
SELECT SPACING COMBINATION (--3--) AND ROTATE MAIN SHAFT UNTIL BLANK FUNCTION BLADE DROPS INTO SENSING POSITION. CLEARANCE BETWEEN CONTACT SPRINGS.
MIN. 0.010 INCH
MAX. 0.015 INCH
TO ADJUST
WITH MOUNTING SCREWS LOOSENED, POSITION CONTACT MOUNTING BRACKET.



CONTACT ASSEMBLY (LATER DESIGN)
THIS CONTACT ASSEMBLY SHOULD BE EQUIPPED WITH A GUARD LOCATED UNDER THE PLATE TO ELIMINATE A SHOCK HAZARD.

3.66 Manual Print Suppression Mechanism

MANUAL PRINT SUPPRESSION MECHANISM

THE MANUAL PRINT SUPPRESSION MECHANISM CONSISTS OF A BLOCKING ARM WHICH CAN BE LOCKED IN A PRINT OR NON-PRINT CONDITION AT THE TIME OF UNIT INSTALLATION.

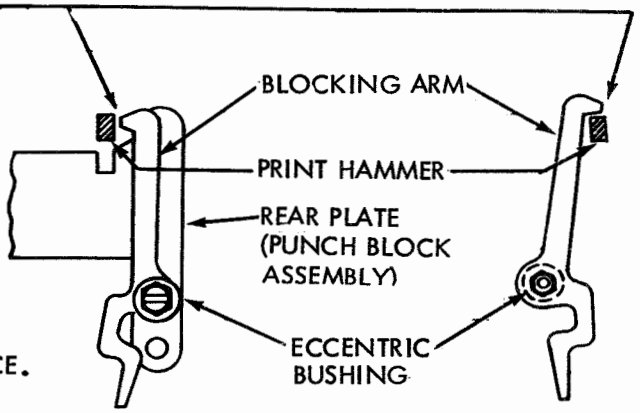
REQUIREMENT

(1) BLOCKING ARM TO BE ADJUSTED IN NON-PRINT CONDITION TO ASSURE THAT PRINT HAMMER ARM IS BLOCKED BY BLOCKING ARM.

(2) THE BLOCKING ARM SHOULD BE READJUSTED TO THE PRINT CONDITION AND LOCKED IN PLACE.

TO ADJUST

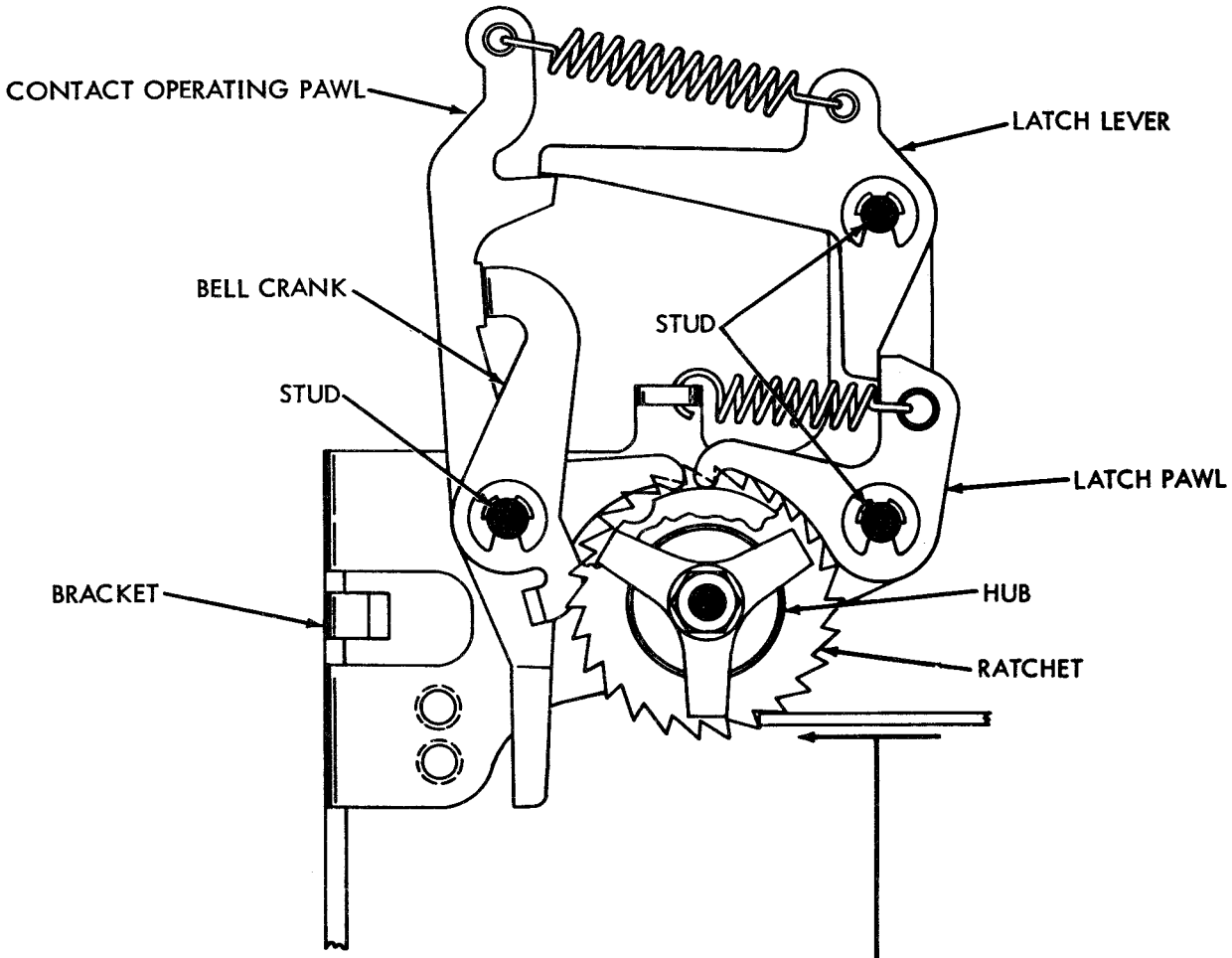
WITH MOUNTING SCREW FRICTION TIGHT, ROTATE ECCENTRIC BUSHING AND MANUALLY POSITION BLOCKING ARM TO NON-PRINT OR PRINT CONDITION.



REAR VIEW
ARM IN PRINT POSITION

(FRONT VIEW)
ARM IN NON-PRINT POSITION

3.67 Time Delay Motor Stop Mechanism



(A) TIME DELAY RATCHET WHEEL TENSION

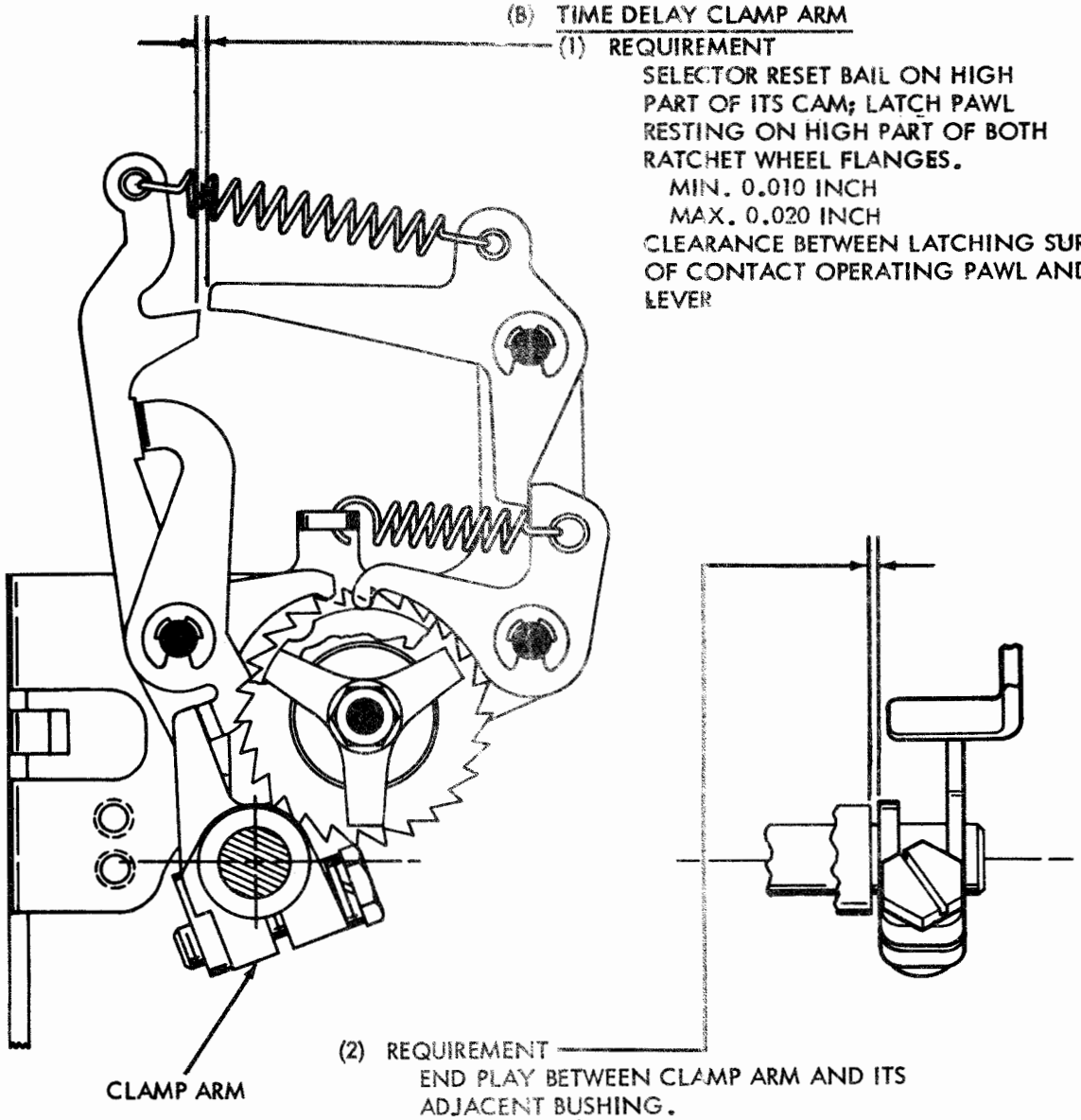
REQUIREMENT

HOLD ALL PAWLS OFF RATCHET WHEELS.
MIN. 2 OZS.
MAX. 8 OZS.
TO MOVE EACH RATCHET WHEEL.

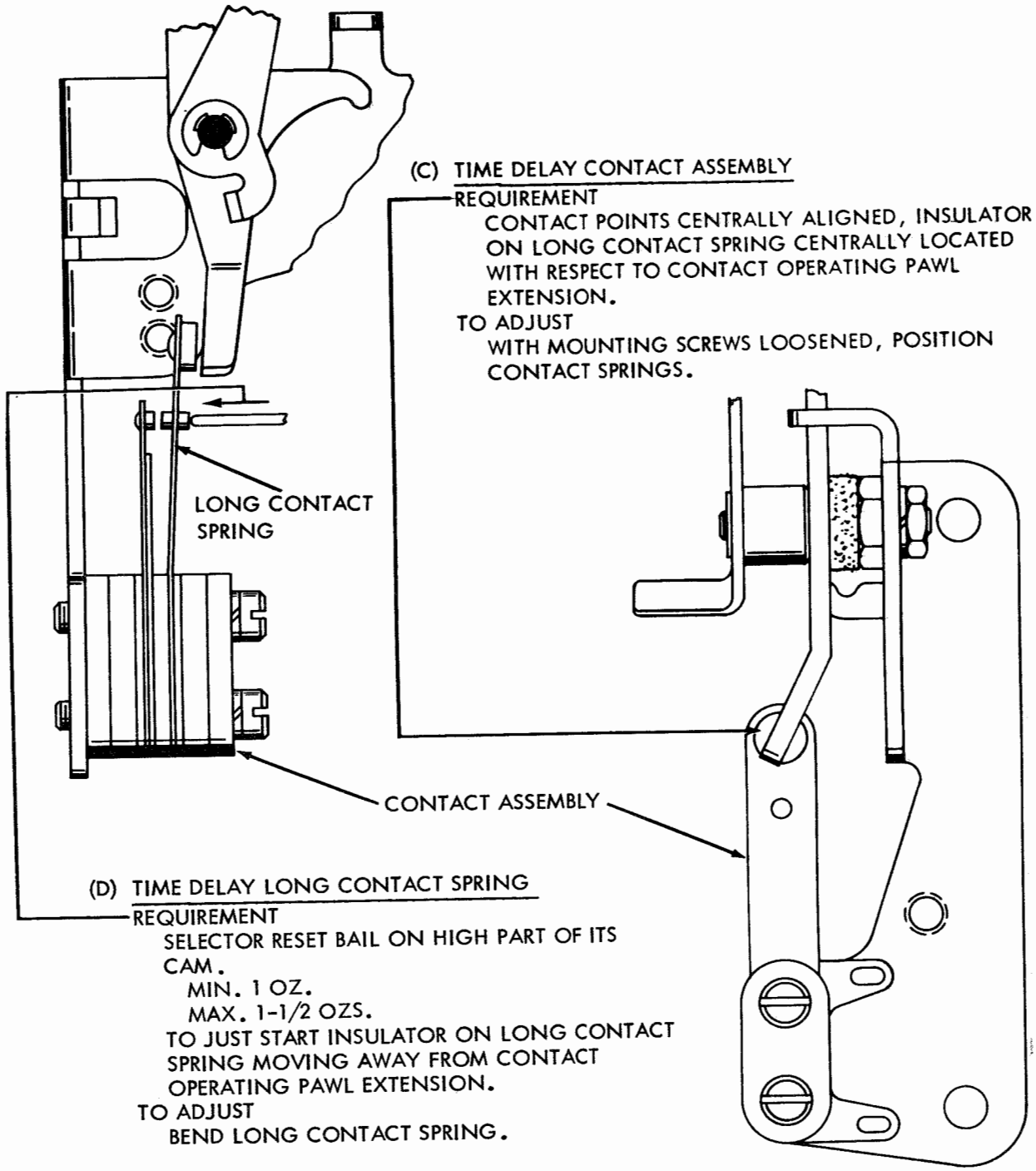
TO ADJUST

REMOVE AND BEND FRICTION SPRINGS OF RATCHET WHEEL.

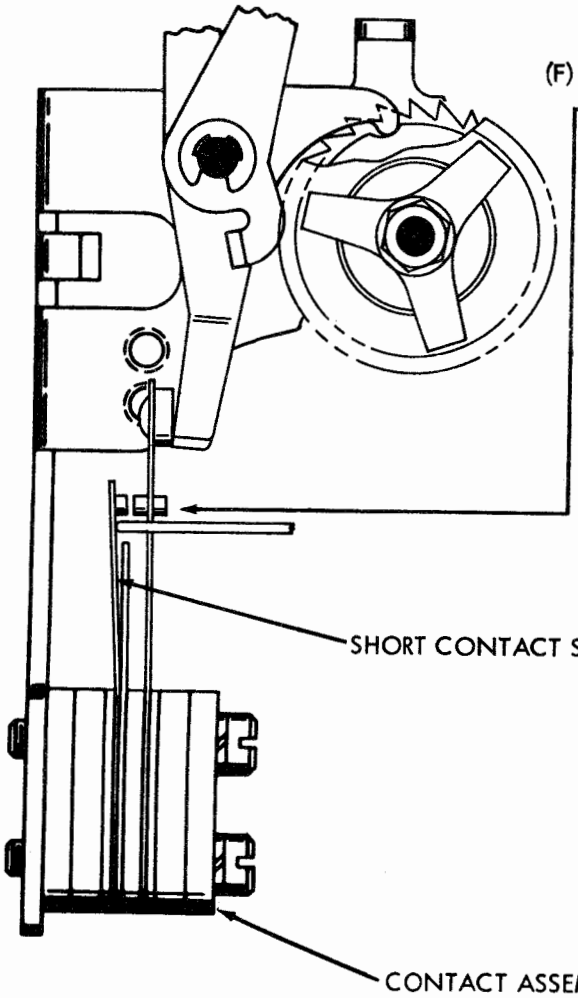
3.68 Time Delay Motor Stop Mechanism continued



3.69 Time Delay Motor Stop Mechanism continued



3.70 Time Delay Motor Stop Mechanism continued



(F) TIME DELAY SHORT CONTACT SPRING

REQUIREMENT

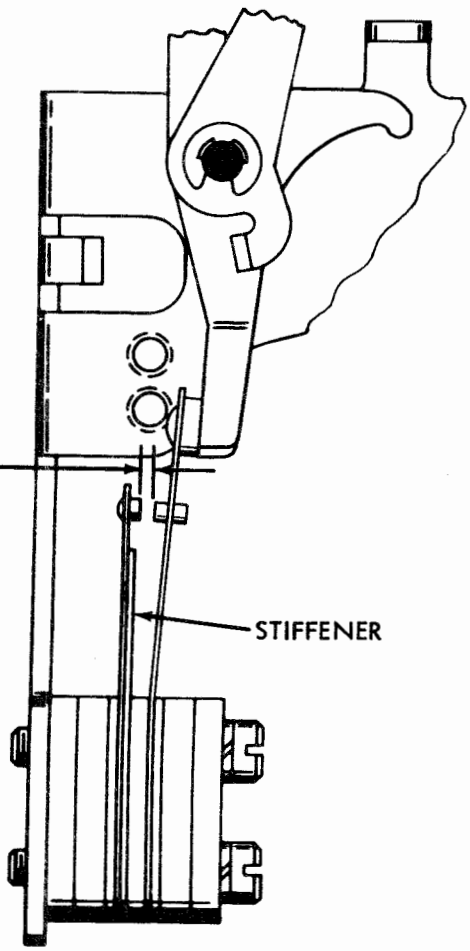
SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED; CONTACT OPERATING PAWL IN INDENTATIONS OF BOTH RATCHET WHEEL FLANGES.

MIN. 2 OZS.
MAX. 3 OZS.

TO JUST SEPARATE CONTACT POINTS OF LONG AND SHORT CONTACT SPRINGS.

TO ADJUST

BEND SHORT CONTACT SPRING.



(E) TIME DELAY CONTACT GAP

REQUIREMENT

SELECTOR AND FUNCTION CLUTCHES DISENGAGED AND LATCHED; CONTACT OPERATING PAWL RESTING ON HIGH PART OF BOTH RATCHET WHEEL FLANGES.

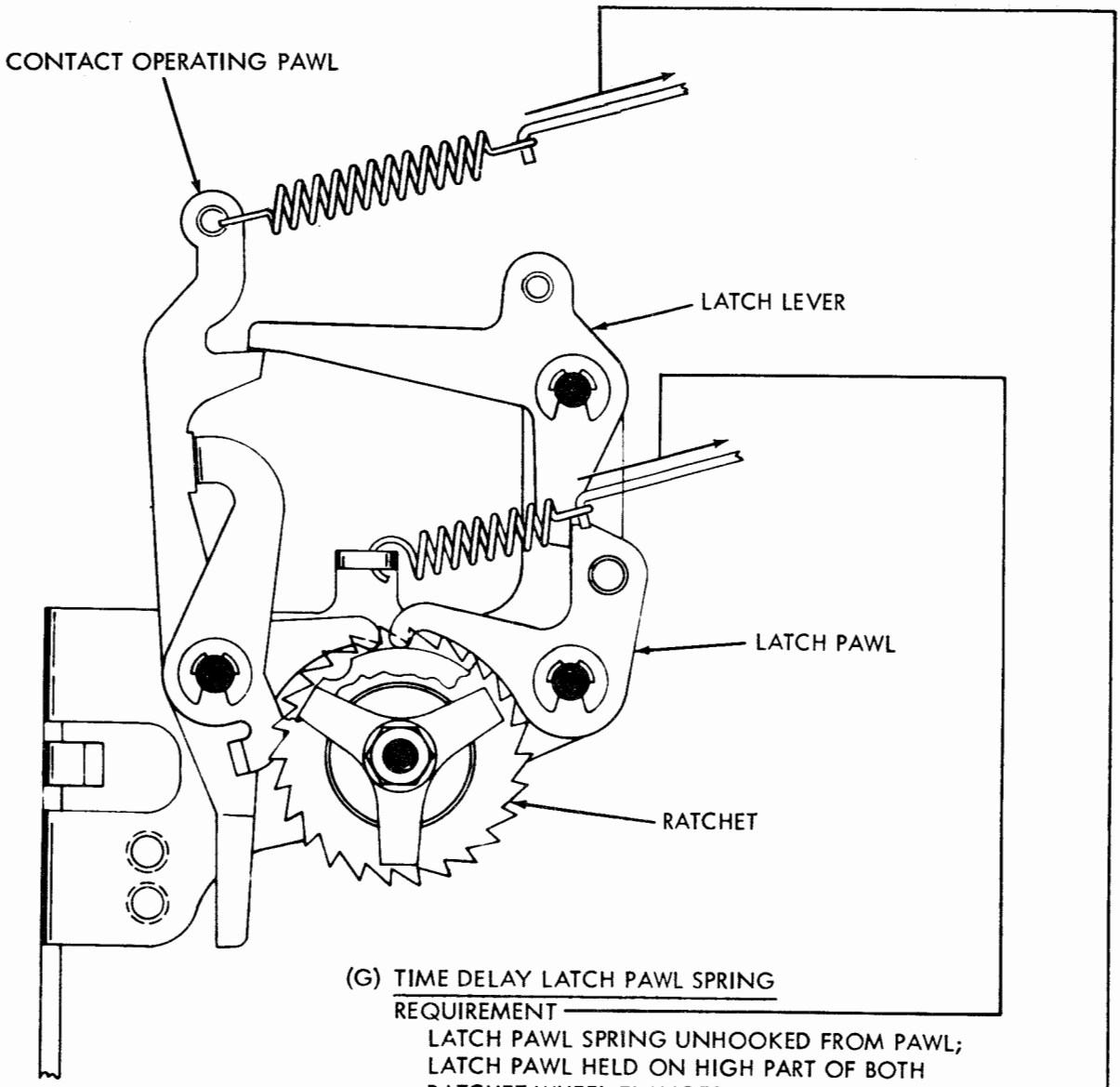
MIN. 0.010 INCH
MAX. 0.015 INCH

CLEARANCE BETWEEN CONTACT POINTS OF LONG AND SHORT CONTACT SPRINGS.

TO ADJUST

BEND SHORT CONTACT SPRING STIFFENER.

3.71 Time Delay Motor Stop Mechanism continued



(G) TIME DELAY LATCH PAWL SPRING

REQUIREMENT

LATCH PAWL SPRING UNHOOKED FROM PAWL; LATCH PAWL HELD ON HIGH PART OF BOTH RATCHET WHEEL FLANGES.

MIN. 12 OZS.
MAX. 15 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

(H) TIME DELAY CONTACT OPERATING PAWL SPRING

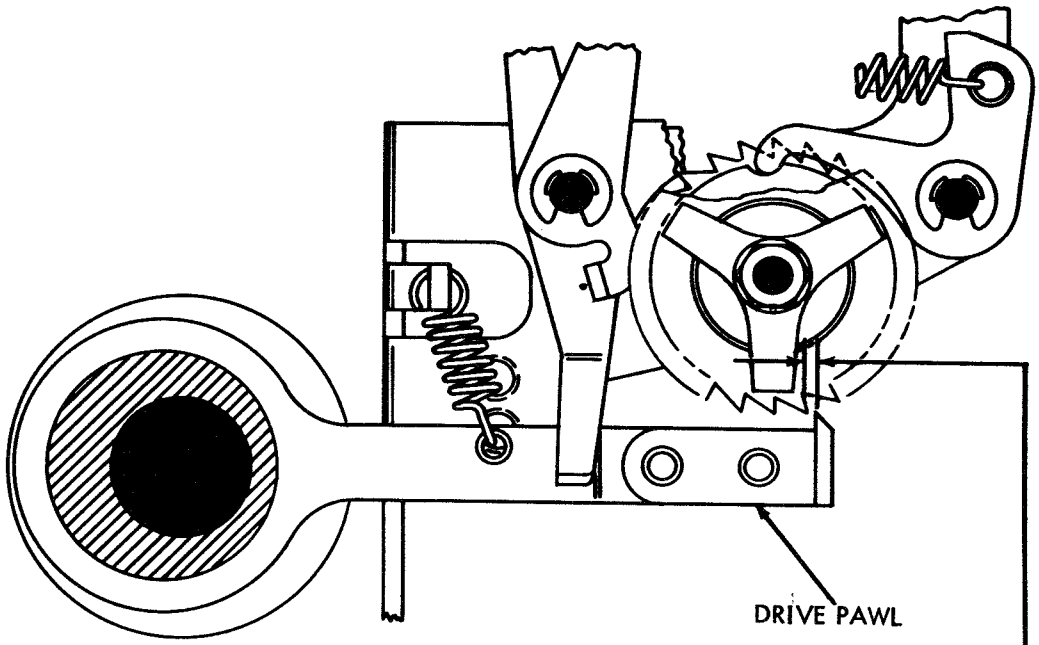
REQUIREMENT

CONTACT OPERATING PAWL SPRING UNHOOKED FROM LATCH LEVER; CONTACT OPERATING PAWL HELD BLOCKED BY LATCH LEVER.

MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.

TO PULL SPRING TO INSTALLED LENGTH.

3.72 Time Delay Motor Stop Mechanism continued



(l) TIME DELAY DRIVE PAWL

REQUIREMENT

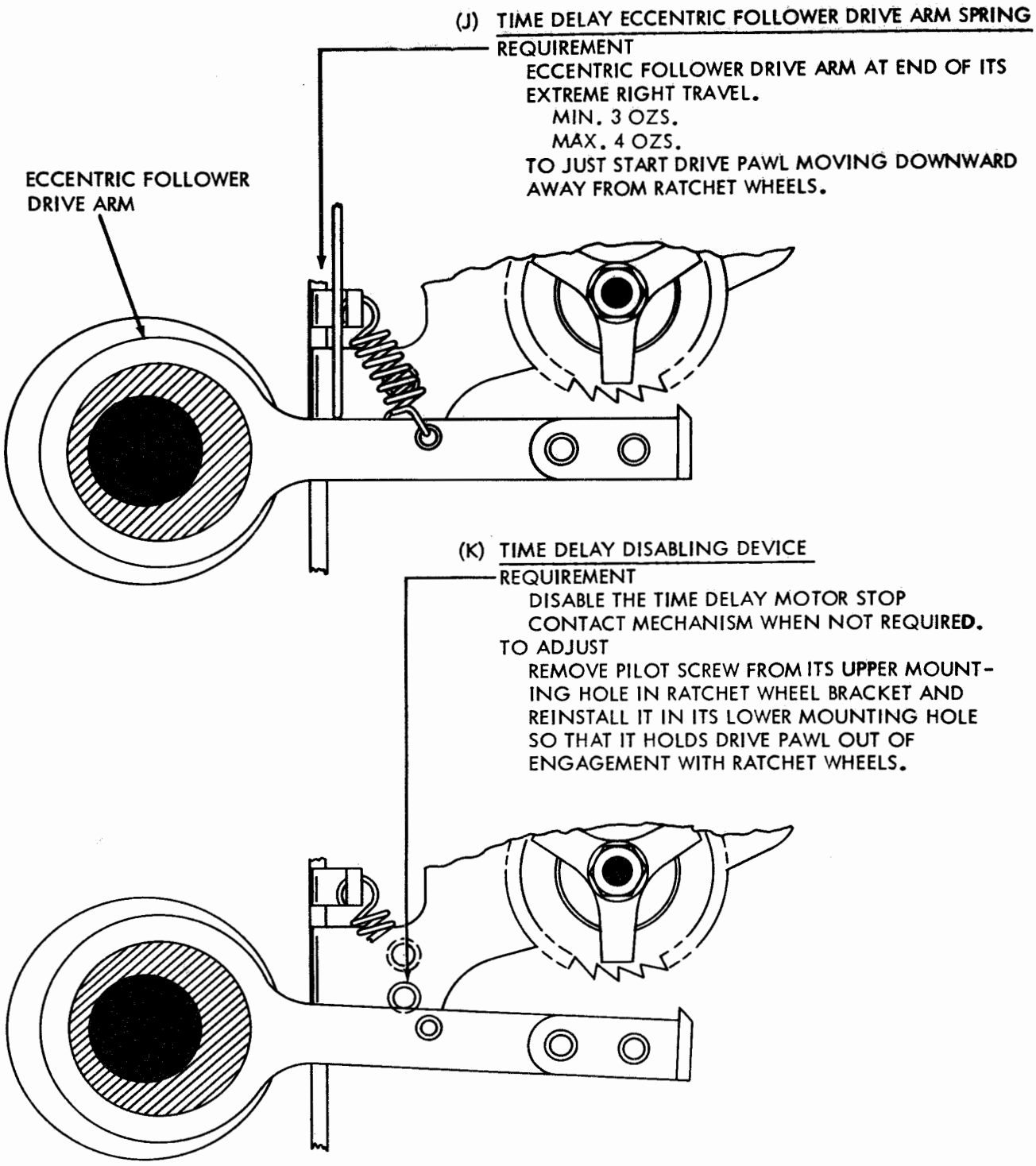
ROTATE BOTH RATCHET WHEELS UNTIL LATCH PAWL DROPS INTO INDENTATIONS OF BOTH RATCHET WHEEL FLANGES. DEPRESS DRIVE PAWL DOWNWARD OUT OF ENGAGEMENT WITH RATCHET TEETH AND TAKE UP PLAY BETWEEN LATCH PAWL AND RATCHET WHEELS BY MOVING RATCHET WHEELS BACKWARD (COUNTER-CLOCKWISE). WITH ECCENTRIC FOLLOWER DRIVE ARM AT END OF ITS EXTREME LEFT TRAVEL, POSITION DRIVE PAWL ON DRIVE ARM SO POINT OF UPPER BEVELED EDGE OF PAWL RESTS ON PEAK OF FIRST RATCHET WHEEL TOOTH TO RIGHT OF VERTICAL CENTERLINE THROUGH RATCHET WHEELS OR OVERTRAVELS PEAK.

MIN. SOME
MAX. 0.010 INCH

TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION DRIVE PAWL ON ITS DRIVE ARM.

3.73 Time Delay Motor Stop Mechanism continued



3.74 Vacuum Chad Removal (Send-Receive Typing Reperforator Set)

VACUUM CHAD REMOVAL (SEND-RECEIVE TYPING REPERFORATOR SET)

REQUIREMENTS

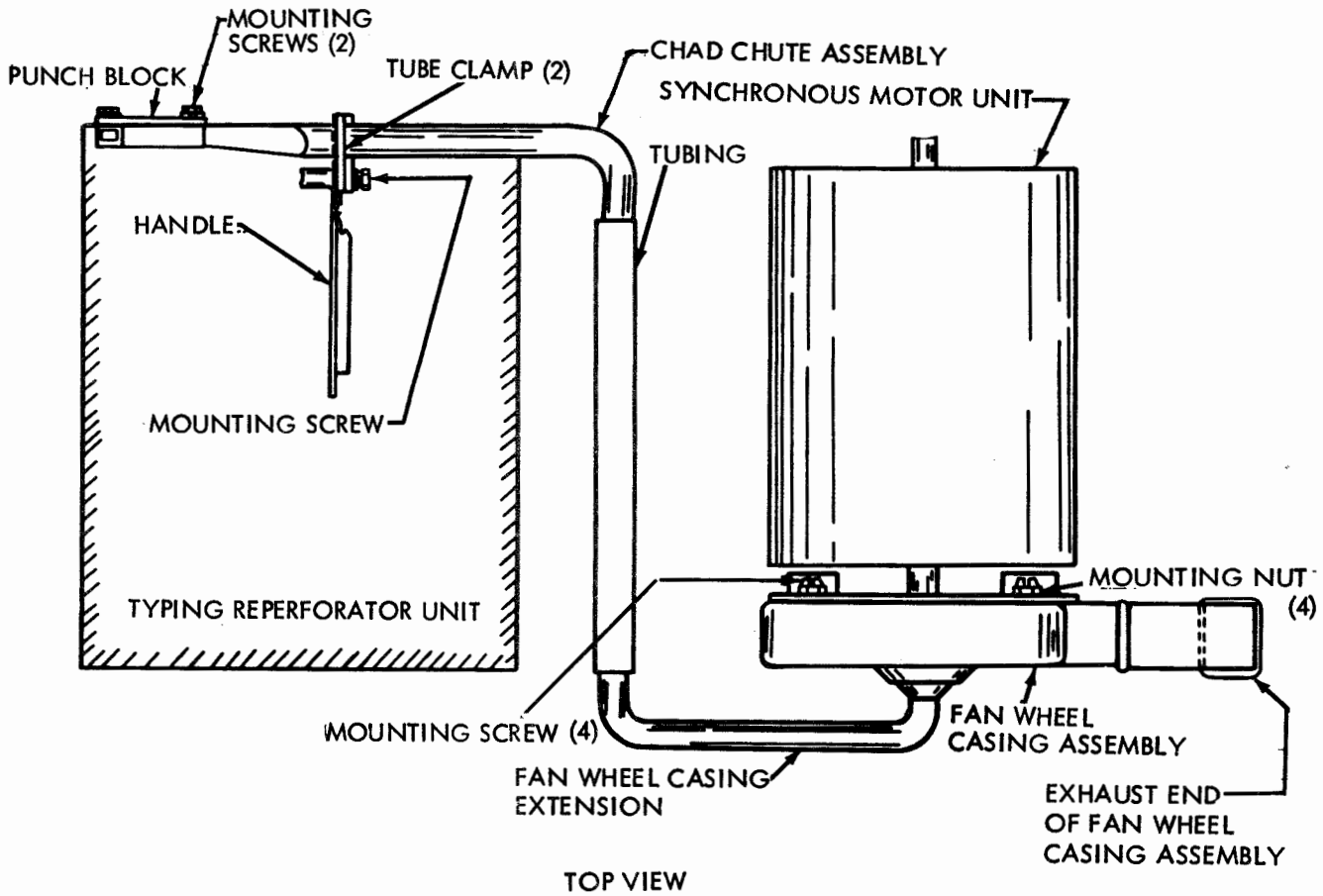
(1) DIRECTS THE PUNCHED CHAD TO A CONVENIENT DISPOSAL OUTSIDE THE SET.

(2) SYNCHRONOUS MOTOR WITH OPEN TINES OF THE FAN WHEEL FACING AWAY FROM THE MOTOR PROVIDES POWER FOR CHAD DISPOSAL.

(3) A NYLON BAG OR A NYLON CHUTE ATTACHED TO EXHAUST END OF FAN WHEEL ASSEMBLY FURNISHED AS ALTERNATE MEANS OF CHAD DISPOSAL OUTSIDE OF CABINET.

TO ADJUST

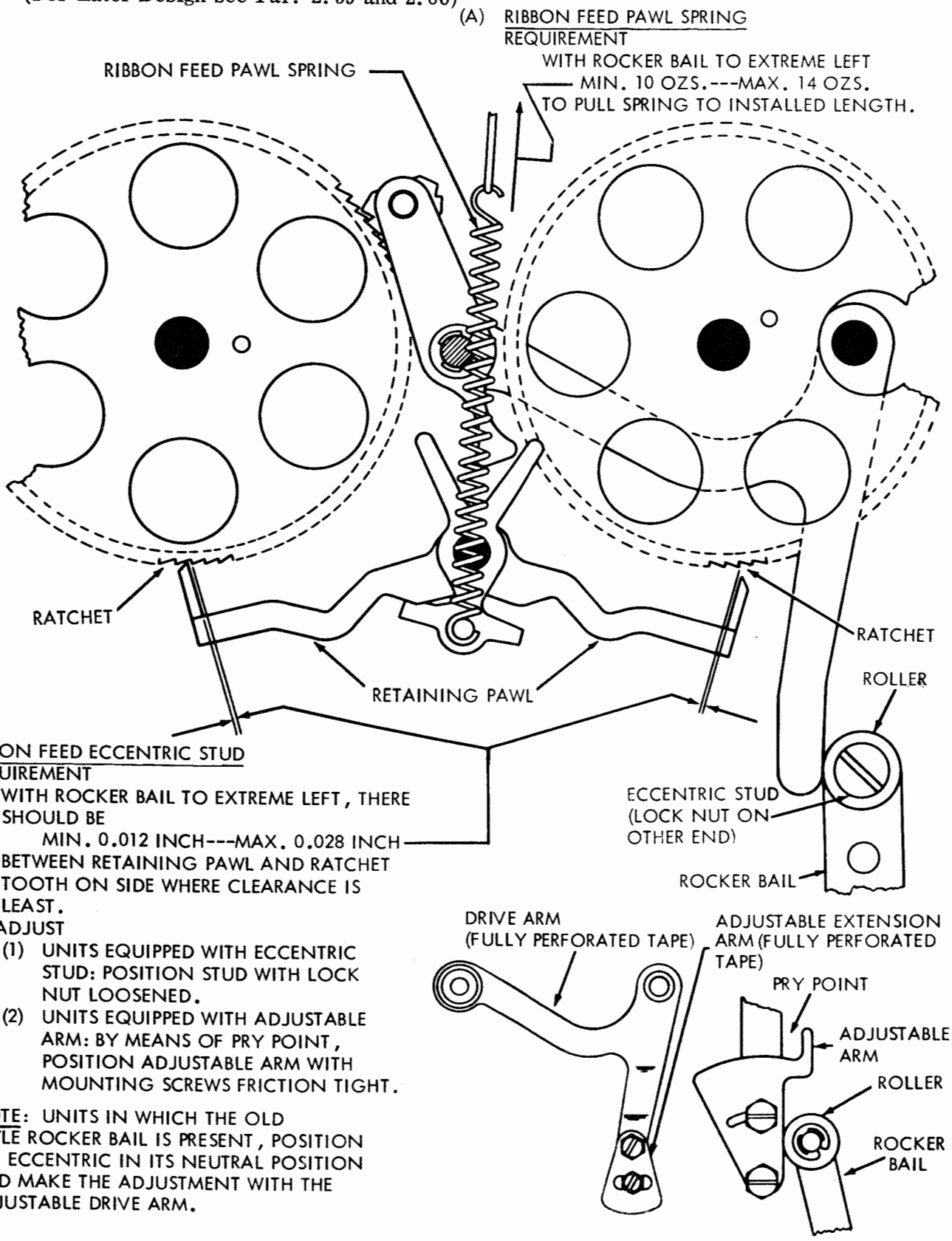
WITH MOUNTING HARDWARE FRICTION TIGHT POSITION CHAD CHUTE ASSEMBLY, TUBING, AND FAN WHEEL CASING ASSEMBLY SO THERE IS NO INTERFERENCE WITH ADJACENT UNITS.



TOP VIEW

4. EARLIER DESIGN MECHANISMS ADJUSTMENTS

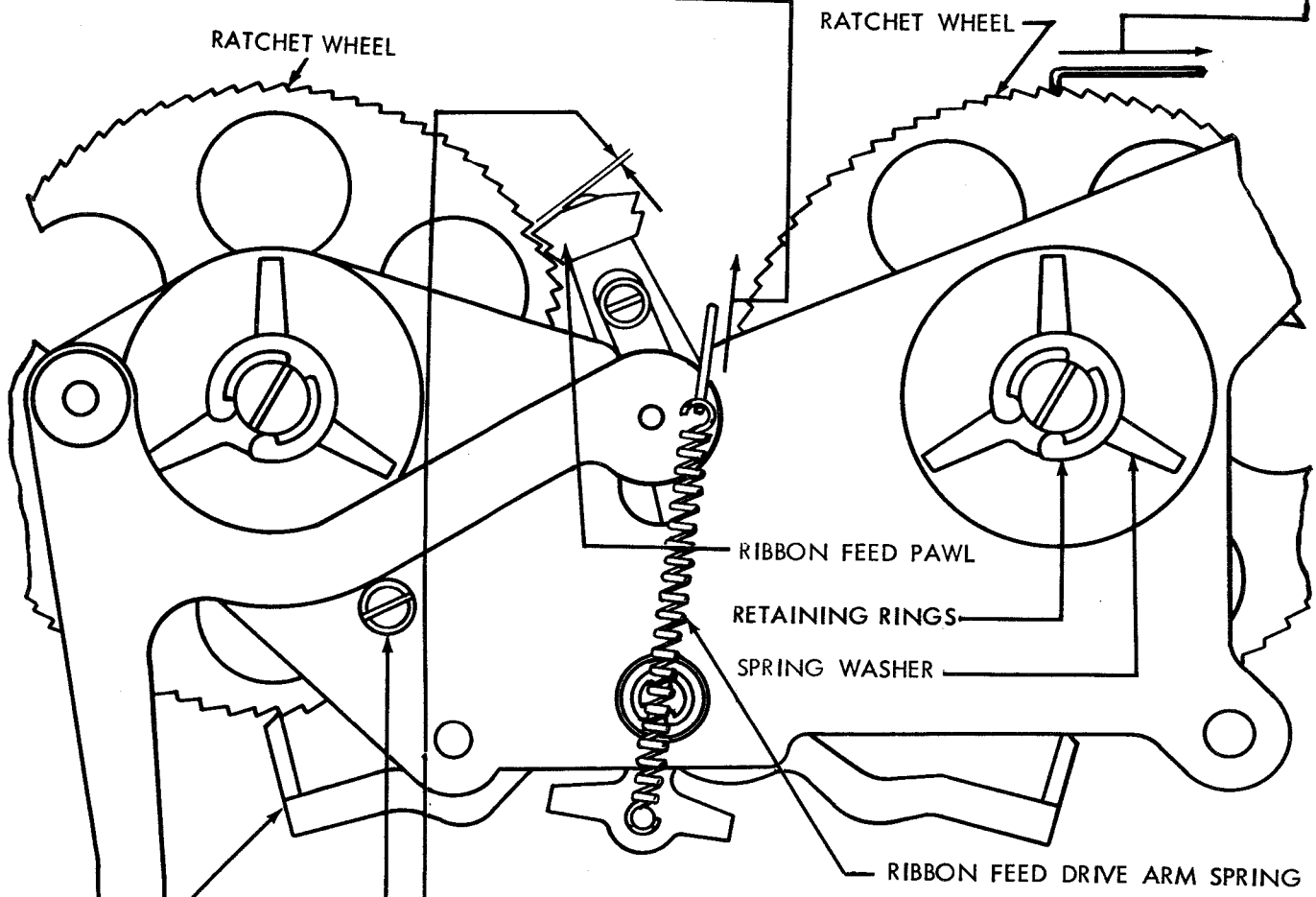
4.01 Ribbon Feed Mechanism for Chadless Tape and Fully Perforated Tape (For Later Design see Par. 2.59 and 2.60)



4.02 Ribbon Feed Mechanism for Chadless Tape and Fully Perforated Tape continued

(A)
RIBBON FEED DRIVE ARM SPRING
REQUIREMENT
WITH UNIT IN STOP POSITION
MIN. 3 OZS.---MAX. 5 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(C) RIBBON RATCHET WHEEL SPRING WASHERS
REQUIREMENT
WITH FEED PAWL AND RETAINING PAWL SHIFTED TO OPPOSITE RATCHET WHEEL
MIN. 1 OZ.---MAX. 2-1/2 OZS.
TO START WHEEL TURNING.
TO ADJUST
REMOVE RETAINING RING AND BEND SPRING WASHER.
NOTE:
MAKE THIS ADJUSTMENT FOR BOTH RATCHET WHEELS.



(B) RIBBON FEED PAWL DOWNSTOP ECCENTRIC
TO CHECK
DISENGAGE FUNCTION CLUTCH. TAKE UP BACKLASH IN RATCHET WHEEL SO THAT CLEARANCE BETWEEN FEED PAWL AND RATCHET TOOTH IS AT MINIMUM. MEASURE CLEARANCE. REPEAT FOR OTHER RATCHET WHEEL.
REQUIREMENT
(1) CLEARANCE BETWEEN FEED PAWL AND RATCHET TOOTH
MIN. 0.020 INCH---MAX. 0.040 INCH
ON SIDE WHERE CLEARANCE IS LEAST.
(2) PAWL SHOULD FEED ONE TOOTH AT A TIME.
TO ADJUST
POSITION DOWNSTOP ECCENTRIC WITH LOCK NUT LOOSENED.

4.03 Ribbon Feed Mechanism for Chadless Tape and Fully Perforated Tape continued

(A) RIBBON REVERSING PLATE

TO CHECK

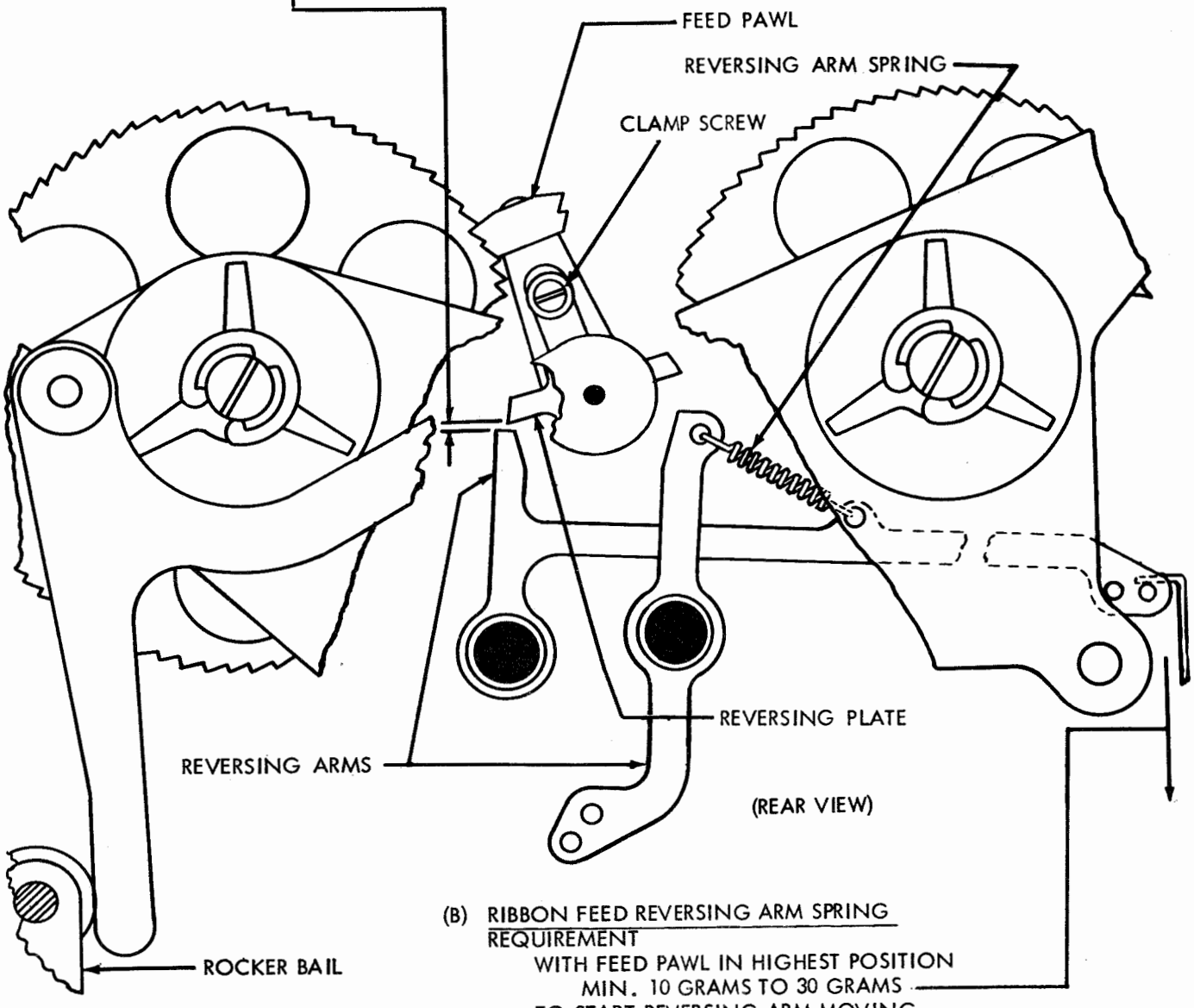
POSITION ROCKER BAIL TO EXTREME LEFT. HOLD REVERSING ARM UNDER REVERSING PLATE AND MEASURE CLEARANCE. WITH FEED PAWL AGAINST OTHER RATCHET, REPEAT PROCEDURE FOR OTHER REVERSING ARM.

REQUIREMENT

CLEARANCE BETWEEN REVERSING ARM AND REVERSING PLATE
MIN. 0.010 INCH---MAX. 0.020 INCH
AT REVERSING ARM WHERE CLEARANCE IS LEAST.

TO ADJUST

POSITION REVERSING PLATE WITH CLAMP SCREW LOOSENED.

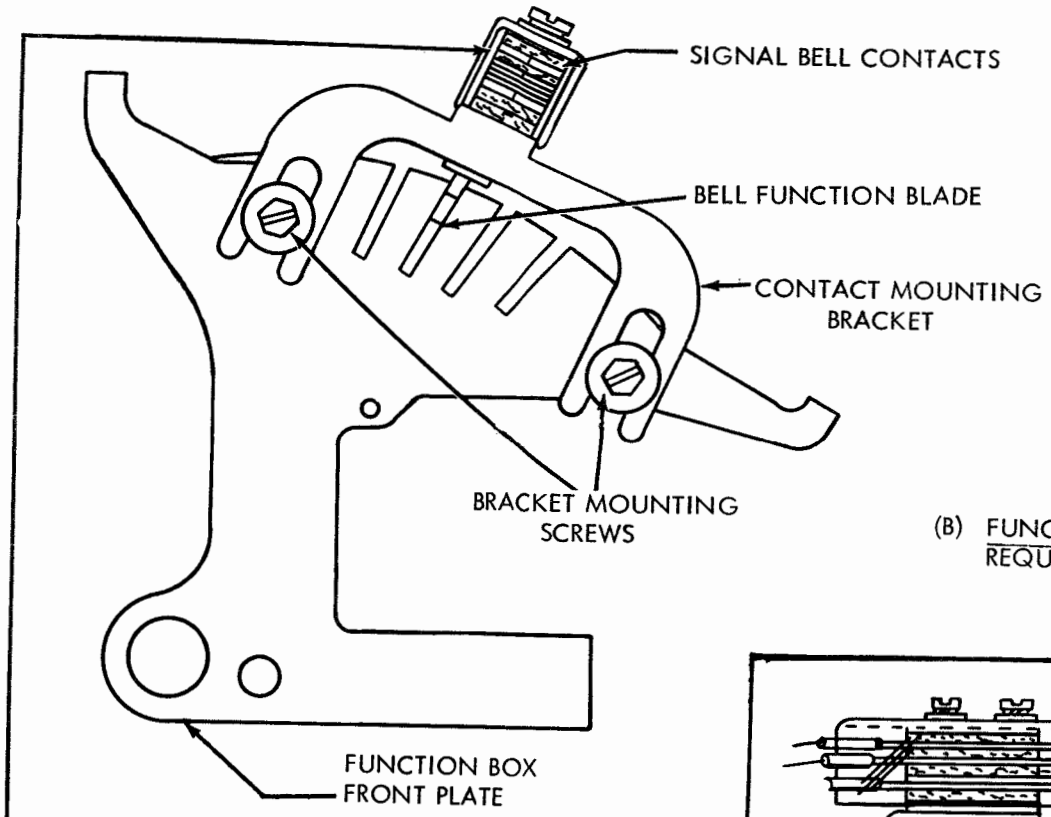


(B) RIBBON FEED REVERSING ARM SPRING

REQUIREMENT

WITH FEED PAWL IN HIGHEST POSITION
MIN. 10 GRAMS TO 30 GRAMS
TO START REVERSING ARM MOVING.

4.04 Signal Bell Contact Mechanism (For Later Design see Par. 3.02)



(A) CONTACT MOUNTING BRACKET

(1) TO CHECK

DISCONNECT CONTACT. SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL BELL FUNCTION BLADE IS IN LOWEST POSITION (RESTING ON BELL CRANKS).

REQUIREMENT

NORMALLY OPEN CONTACT OPEN.

(2) TO CHECK

SELECT BELL CODE COMBINATION AND ROTATE MAIN SHAFT UNTIL BELL FUNCTION BLADE IS IN LOWEST POSITION.

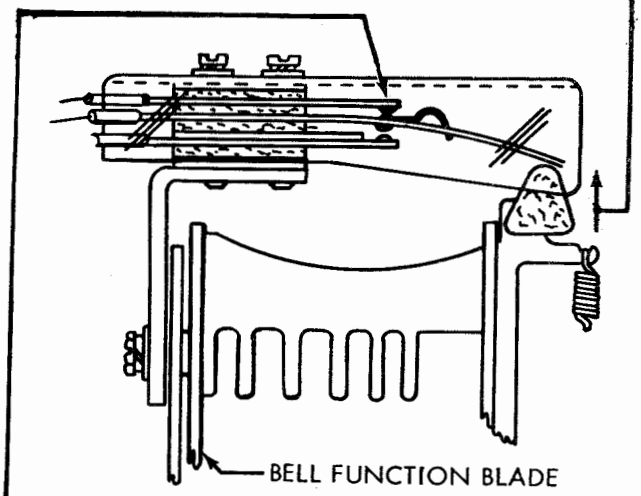
REQUIREMENT

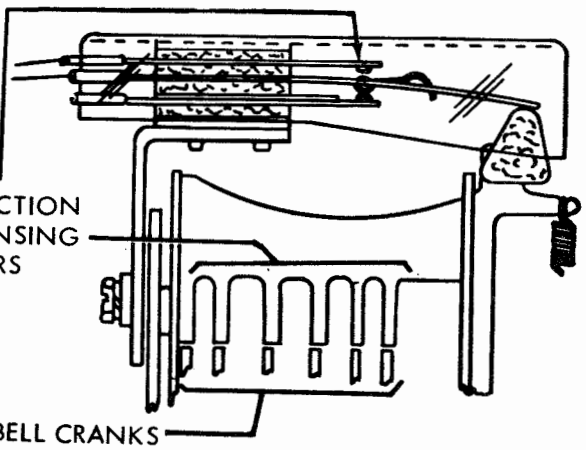
BELL FUNCTION BLADE IN SLOTS OF BELL CRANKS AND NORMALLY OPEN CONTACT CLOSED.

TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION CONTACT MOUNTING BRACKET.

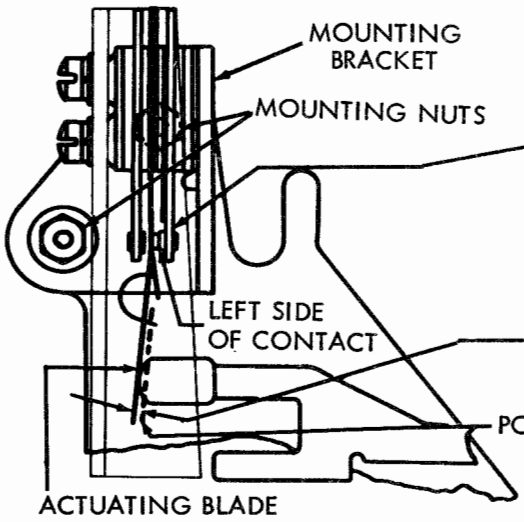
(B) FUNCTION BLADE SPRING REQUIREMENT --- REFER TO



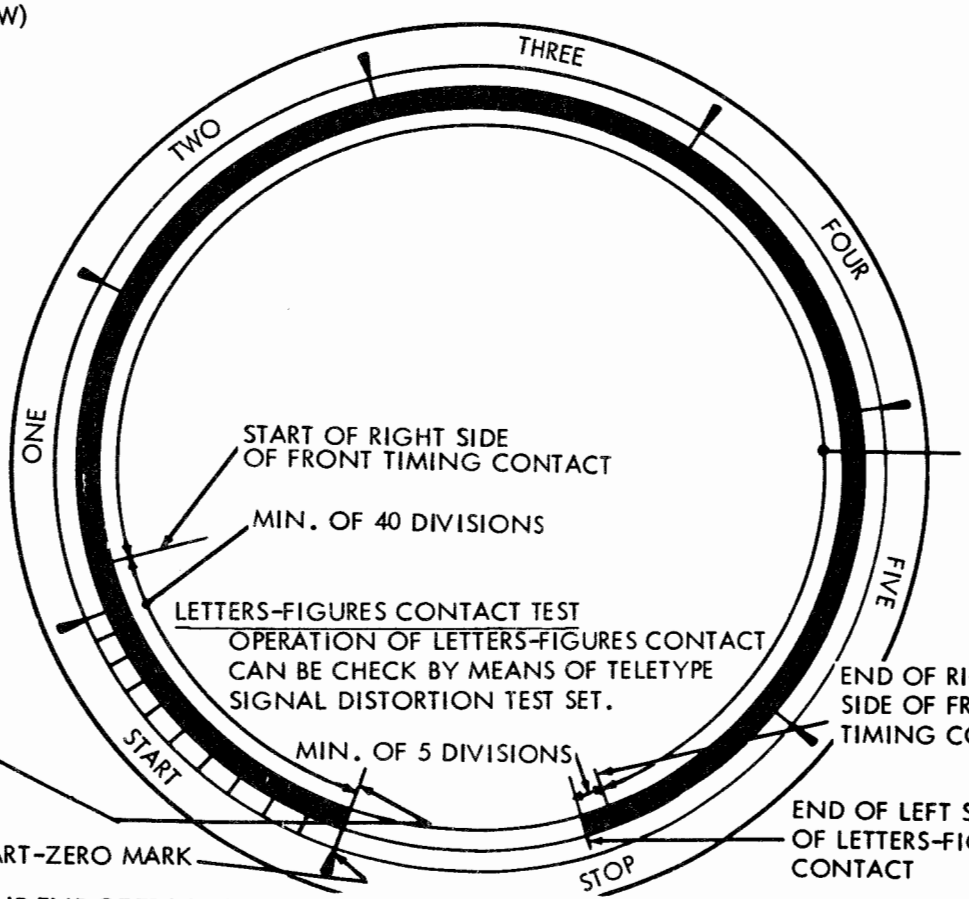


CAUTION: THERE SHOULD BE SOME CLEARANCE BETWEEN RIBBON FEED DRIVE ROLLER AND CONTACT MOUNTING BRACKET WHEN UNIT IS IN STOP POSITION. IF NECESSARY, REFINE ABOVE ADJUSTMENT.

4.05 Letters - Figures Contact Mechanism
(For Later Design see Par. 3.12 and 3.16)



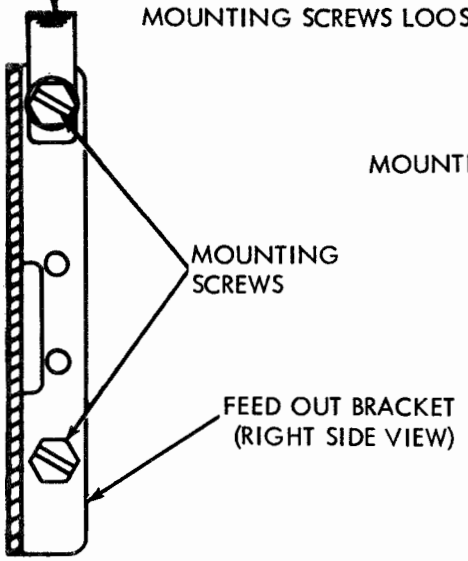
MOUNTING BRACKET
REQUIREMENT
WITH UNIT IN LETTERS CONDITION AND FUNCTION CLUTCH DISENGAGED, LEFT SIDE OF CONTACT SHOULD BE CLOSED.
TO ADJUST
WITH MOUNTING NUTS LOOSENED, ROTATE MOUNTING BRACKET UNTIL LEFT SIDE OF CONTACT JUST CLOSES AND NOTE POSITION OF ACTUATING BLADE. ROTATE BRACKET FURTHER UNTIL ACTUATING BLADE IS APPROXIMATELY 0.020 INCH BEYOND NOTED POSITION.



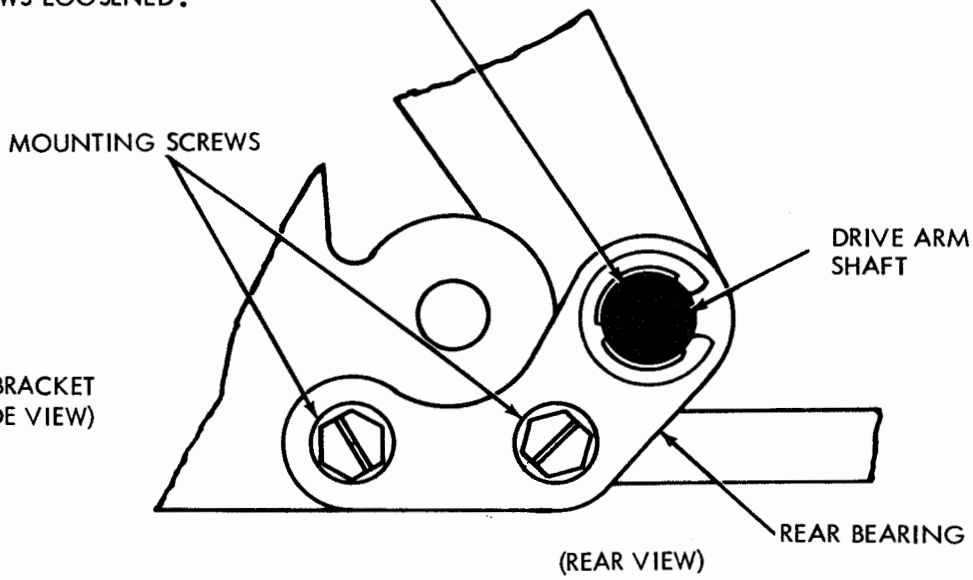
TO CHECK
RECORD START AND END OF TRACE OF RIGHT SIDE OF FRONT TIMING CONTACT. CONNECT NEON TRACE LAMP ACROSS LEFT SIDE OF LETTERS-FIGURES CONTACT. ALTERNATELY SELECT LETTERS (12345) AND FIGURES (12-45) CODE COMBINATIONS AND OBSERVE TRACE. SET START-ZERO MARK OF TEST SET SCALE AT START OF TRACE.
REQUIREMENT
(1) LEFT SIDE OF LETTERS-FIGURES CONTACT SHOULD CLOSE BEFORE RIGHT SIDE OF TIMING CONTACTS CLOSE AND SHOULD OPEN AFTER RIGHT SIDE OF TIMING CONTACTS OPEN.
(2) NO BOUNCE OR CHATTER OF LETTERS-FIGURES CONTACT DURING PART OF FUNCTION CYCLE WHEN RIGHT SIDE OF TIMING CONTACTS ARE CLOSED.

4.06 Noninterfering BLANK Tape Feed-Out Mechanism (Earlier Design)
(For Later Design see Par. 3.36)

(A) FEED OUT BRACKET
REQUIREMENT
OUTER RATCHET CHECK PAWL RIDING FULLY ON RATCHET WHEN PLAY IS TAKEN UP IN EITHER DIRECTION.
TO ADJUST
POSITION FEED OUT BRACKET WITH MOUNTING SCREWS LOOSENED.

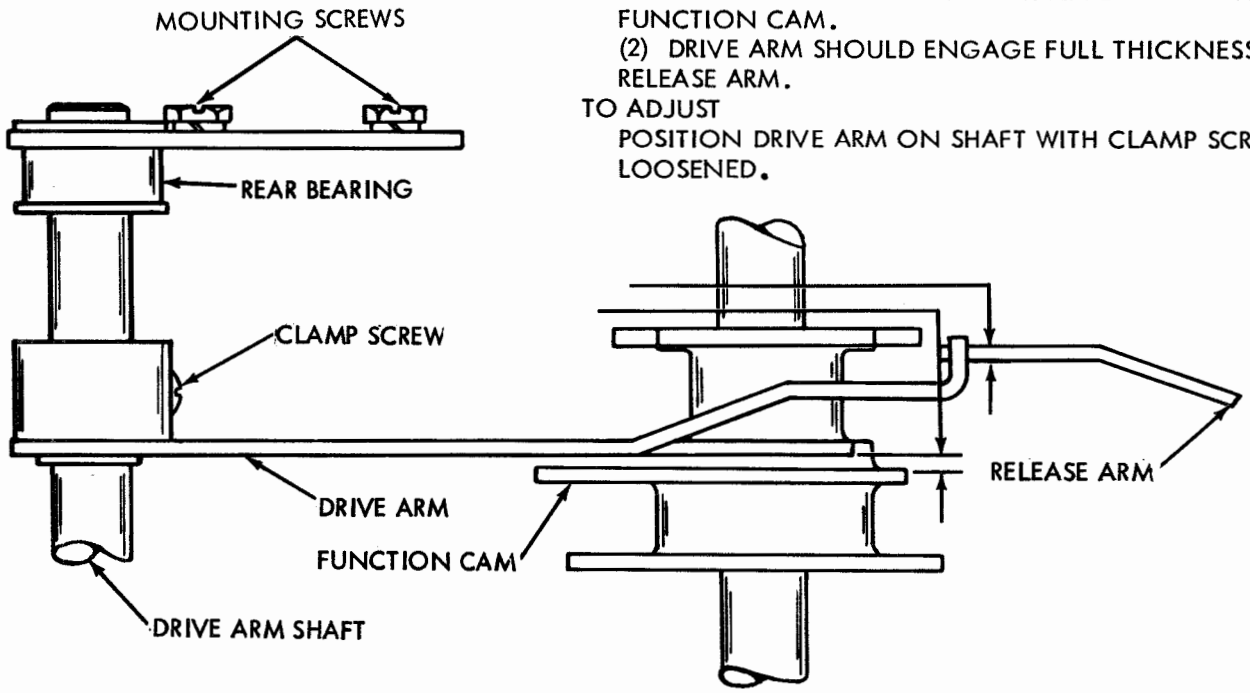


(B) DRIVE ARM SHAFT REAR BEARING
REQUIREMENT
DRIVE ARM SHAFT FINGER FREE IN ITS BEARINGS.
TO ADJUST
POSITION REAR BEARING WITH MOUNTING SCREWS LOOSENED.



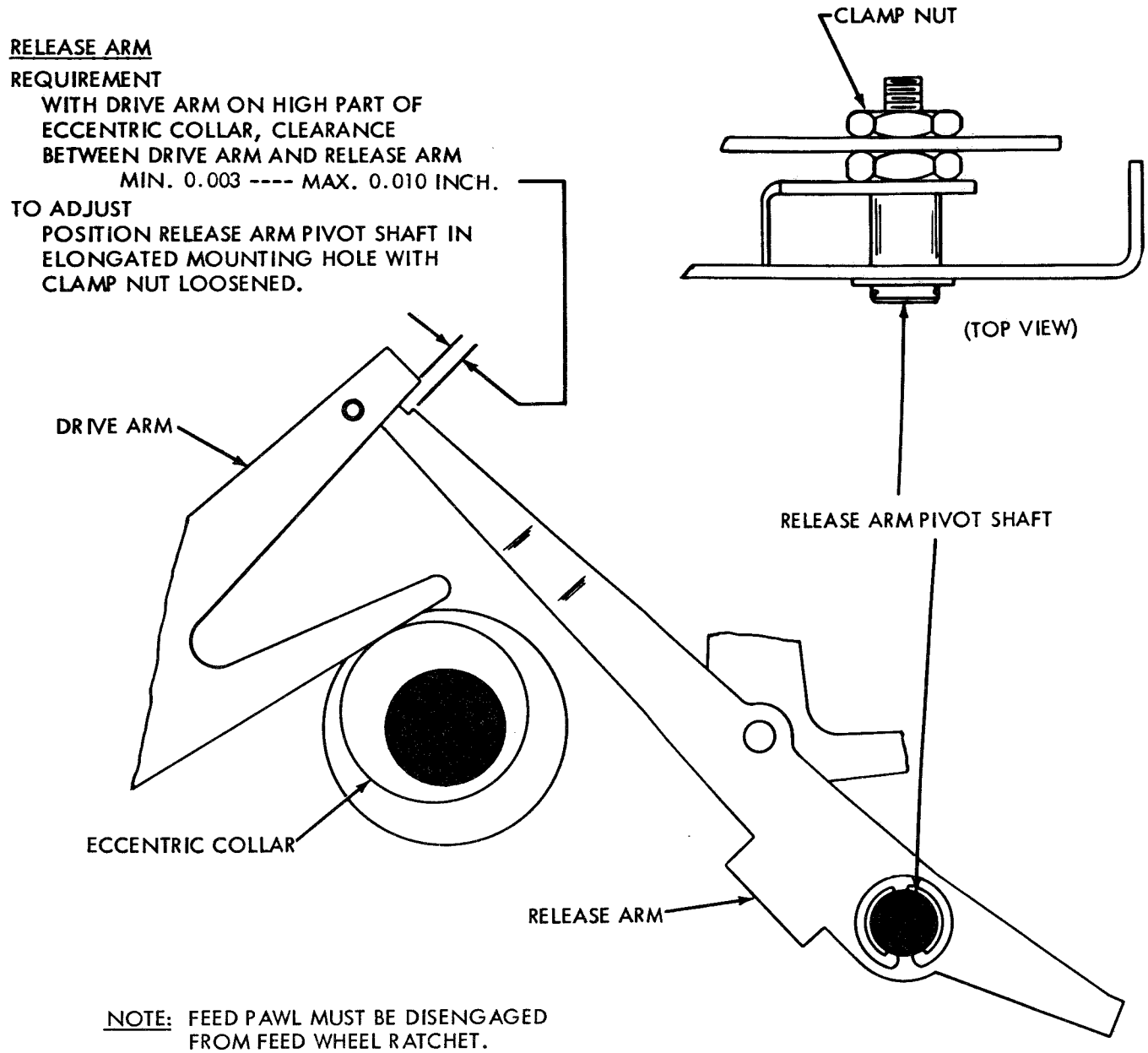
(REAR VIEW)

(C) DRIVE ARM
REQUIREMENT
(1) WHEN PLAY IS TAKEN UP TO MAKE IT MINIMUM, AT LEAST SOME CLEARANCE BETWEEN DRIVE ARM AND FUNCTION CAM.
(2) DRIVE ARM SHOULD ENGAGE FULL THICKNESS OF RELEASE ARM.
TO ADJUST
POSITION DRIVE ARM ON SHAFT WITH CLAMP SCREW LOOSENED.



(TOP VIEW)

4.07 Noninterfering BLANK Tape Feed-Out Mechanism continued



NOTE: FEED PAWL MUST BE DISENGAGED FROM FEED WHEEL RATCHET.

4.08 Noninterfering BLANK Tape Feed-Out Mechanism continued

(A) FEED OUT PAWL

TO CHECK

WITH UNIT OPERATING UNDER POWER, ALLOW FEED OUT OPERATION TO BE INTERRUPTED BY AN INCOMING MESSAGE.

REQUIREMENT

FEED HOLE AND CODE HOLES OF FIRST CHARACTER ON SAME CENTER LINE.

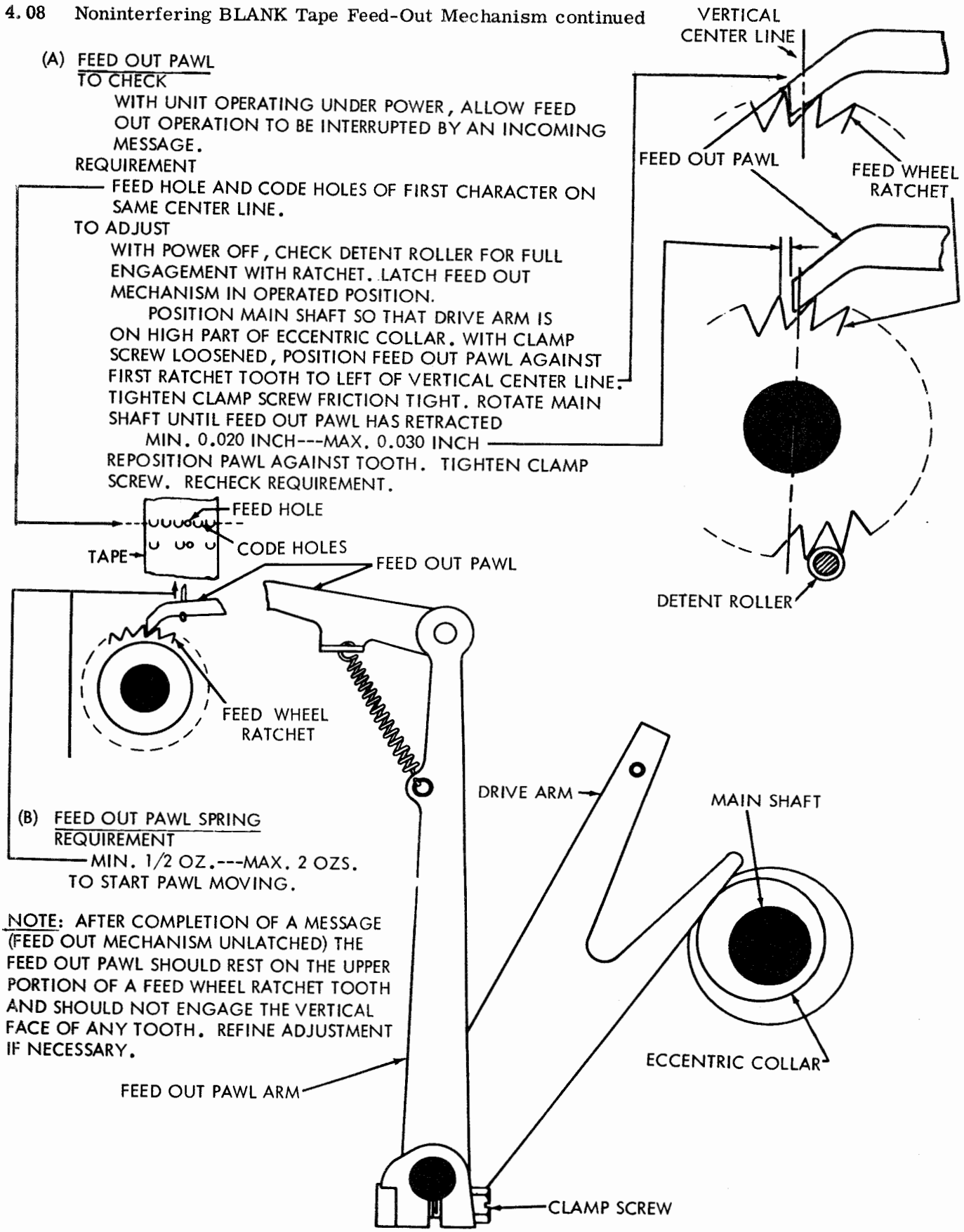
TO ADJUST

WITH POWER OFF, CHECK DETENT ROLLER FOR FULL ENGAGEMENT WITH RATCHET. LATCH FEED OUT MECHANISM IN OPERATED POSITION.

POSITION MAIN SHAFT SO THAT DRIVE ARM IS ON HIGH PART OF ECCENTRIC COLLAR. WITH CLAMP SCREW LOOSENED, POSITION FEED OUT PAWL AGAINST FIRST RATCHET TOOTH TO LEFT OF VERTICAL CENTER LINE. TIGHTEN CLAMP SCREW FRICTION TIGHT. ROTATE MAIN SHAFT UNTIL FEED OUT PAWL HAS RETRACTED

MIN. 0.020 INCH---MAX. 0.030 INCH

REPOSITION PAWL AGAINST TOOTH. TIGHTEN CLAMP SCREW. RECHECK REQUIREMENT.

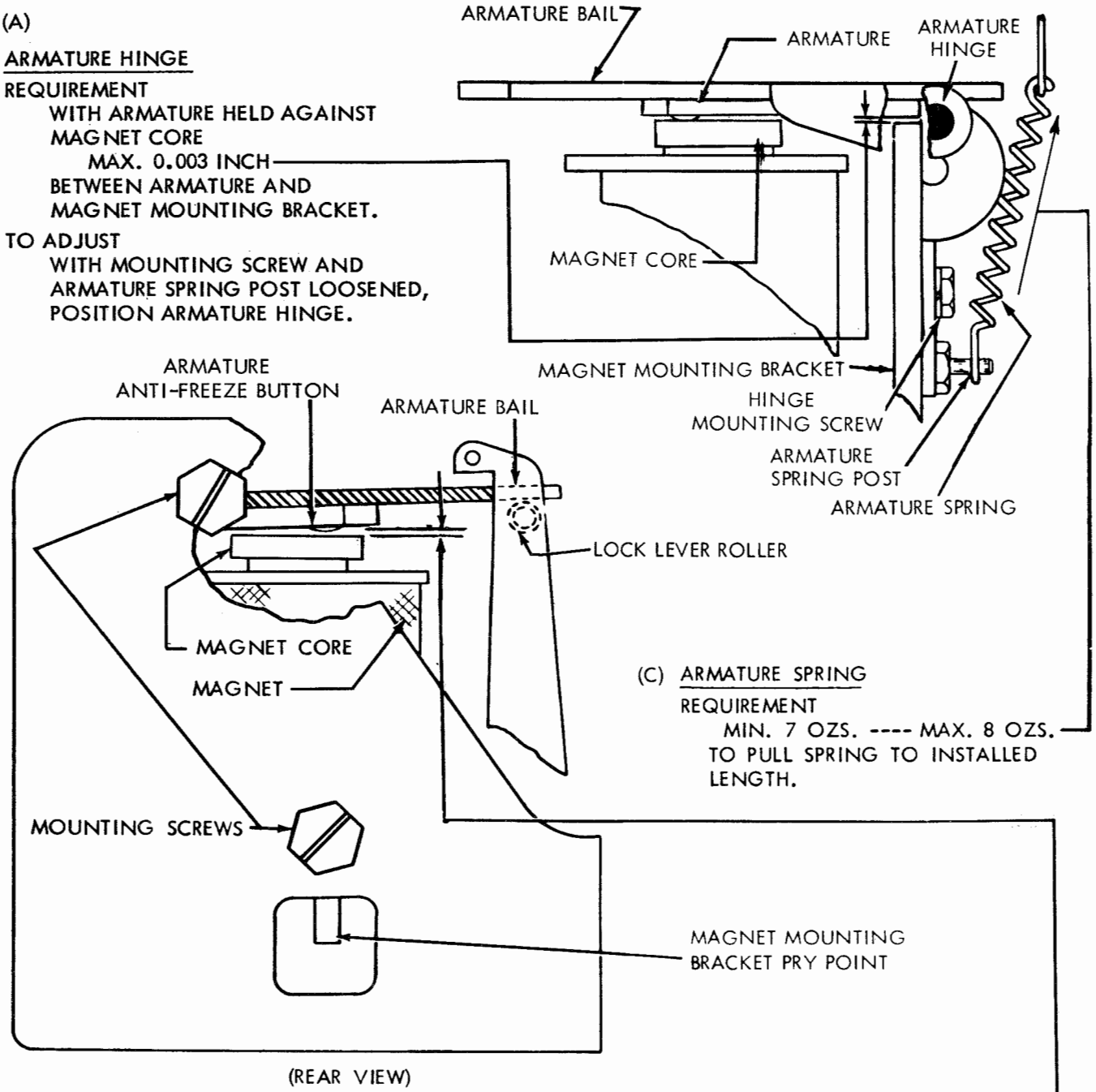


(B) FEED OUT PAWL SPRING REQUIREMENT

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

NOTE: AFTER COMPLETION OF A MESSAGE (FEED OUT MECHANISM UNLATCHED) THE FEED OUT PAWL SHOULD REST ON THE UPPER PORTION OF A FEED WHEEL RATCHET TOOTH AND SHOULD NOT ENGAGE THE VERTICAL FACE OF ANY TOOTH. REFINE ADJUSTMENT IF NECESSARY.

4.09 Noninterfering BLANK Tape Feed-Out Mechanism continued



(A) ARMATURE HINGE

REQUIREMENT

WITH ARMATURE HELD AGAINST MAGNET CORE

MAX. 0.003 INCH BETWEEN ARMATURE AND MAGNET MOUNTING BRACKET.

TO ADJUST

WITH MOUNTING SCREW AND ARMATURE SPRING POST LOOSENED, POSITION ARMATURE HINGE.

(C) ARMATURE SPRING

REQUIREMENT

MIN. 7 OZS. ---- MAX. 8 OZS. TO PULL SPRING TO INSTALLED LENGTH.

(REAR VIEW)

(B) MAGNET MOUNTING BRACKET

TO CHECK

PLACE TAPE-OUT MECHANISM IN UNOPERATED CONDITION (MAGNET DE-ENERGIZED AND DRIVE ARM LATCHED BY RELEASE ARM). TAKE UP ALL CLEARANCE BETWEEN LOCK LEVER ROLLER AND ARMATURE BAIL.

REQUIREMENT

CLEARANCE BETWEEN MAGNET CORE AND ARMATURE ANTI-FREEZE BUTTON

MIN. 0.020 INCH---MAX. 0.025 INCH

TO ADJUST

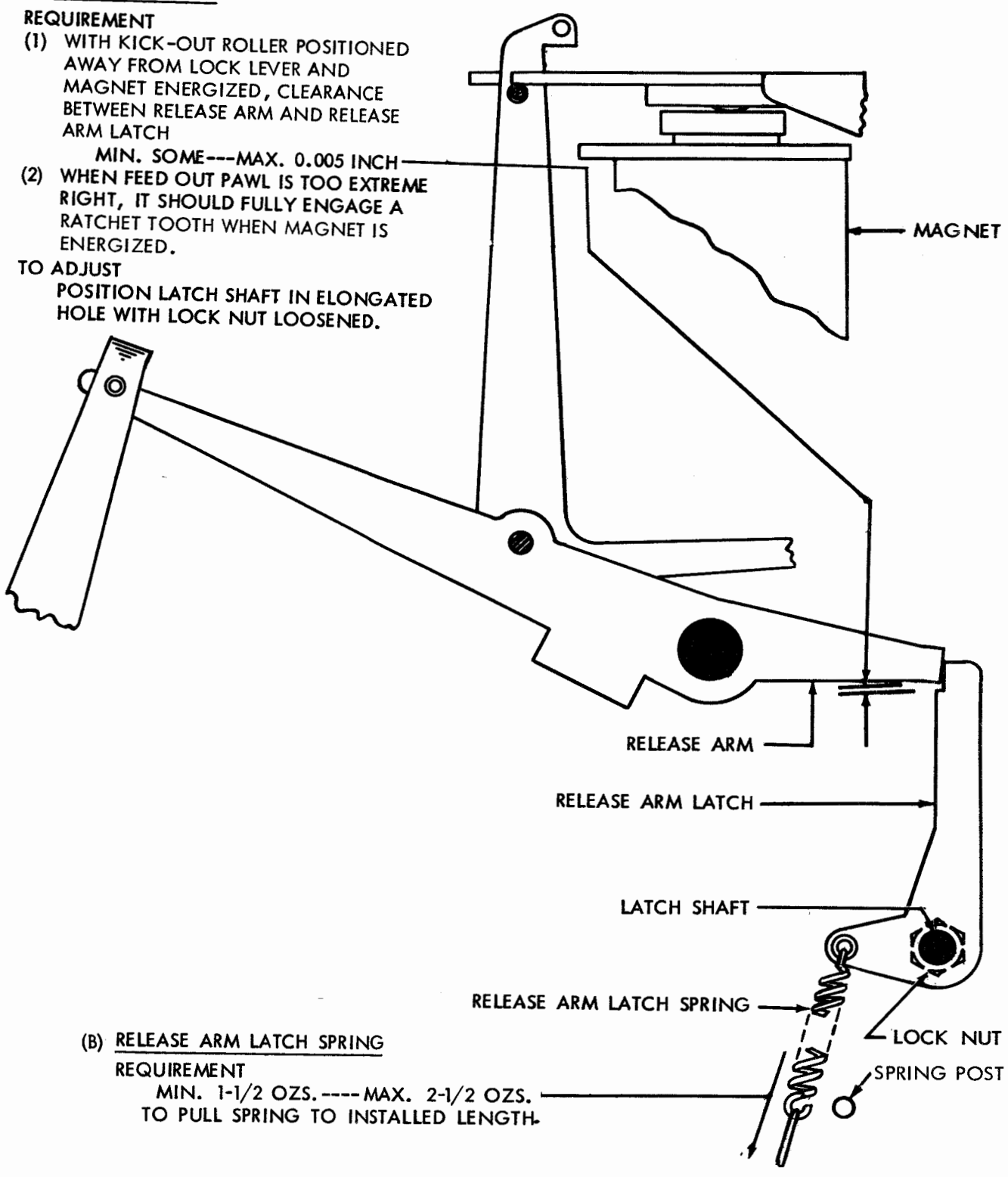
BY MEANS OF PRY POINT, POSITION MAGNET MOUNTING BRACKET WITH MOUNTING SCREWS LOOSENED.

4.10 Noninterfering BLANK Tape Feed-Out Mechanism continued

(A)
RELEASE ARM LATCH

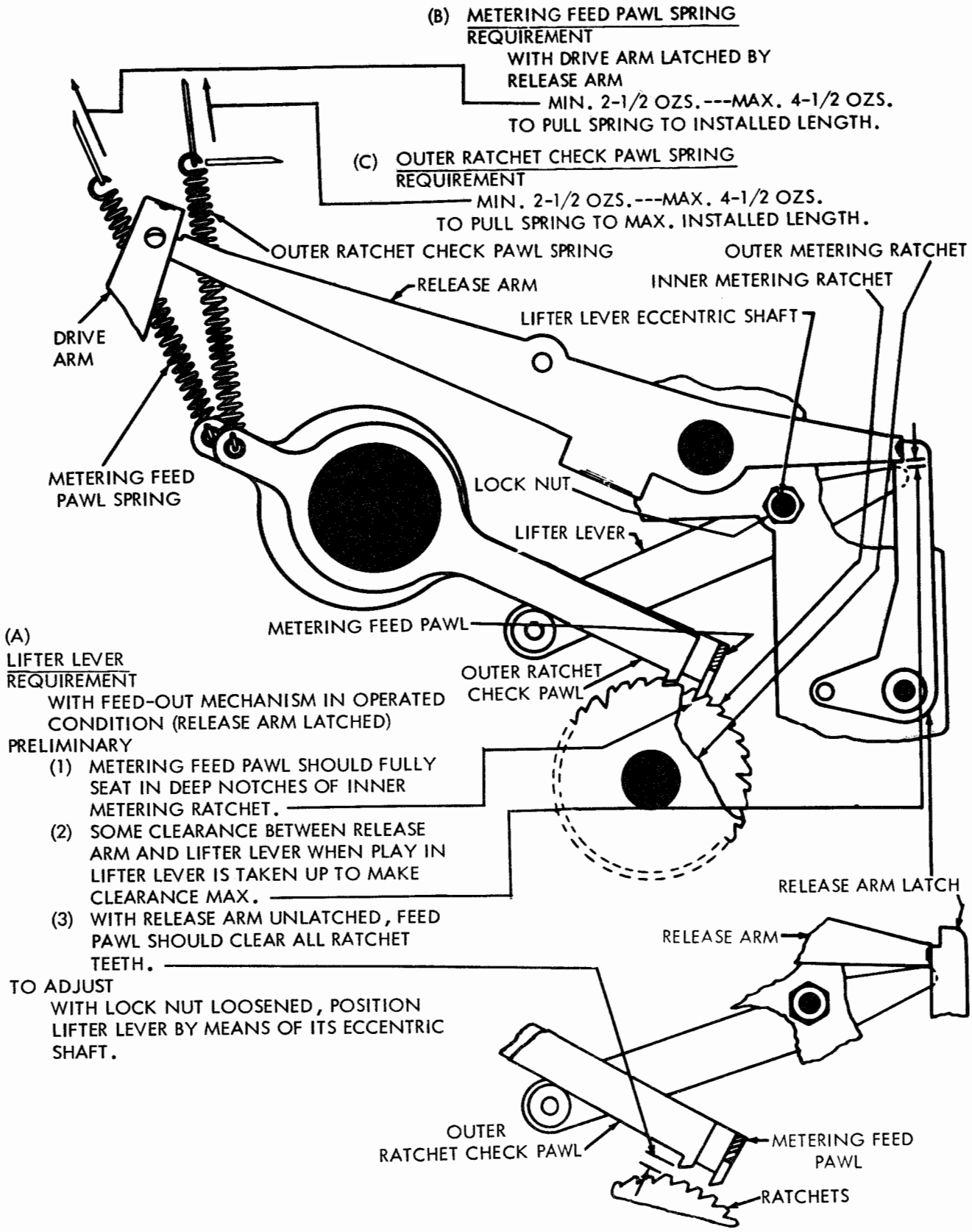
REQUIREMENT
(1) WITH KICK-OUT ROLLER POSITIONED AWAY FROM LOCK LEVER AND MAGNET ENERGIZED, CLEARANCE BETWEEN RELEASE ARM AND RELEASE ARM LATCH
MIN. SOME---MAX. 0.005 INCH
(2) WHEN FEED OUT PAWL IS TOO EXTREME RIGHT, IT SHOULD FULLY ENGAGE A RATCHET TOOTH WHEN MAGNET IS ENERGIZED.

TO ADJUST
POSITION LATCH SHAFT IN ELONGATED HOLE WITH LOCK NUT LOOSENED.



(B) RELEASE ARM LATCH SPRING
REQUIREMENT
MIN. 1-1/2 OZS.----MAX. 2-1/2 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

4.11 Noninterfering BLANK Tape Feed-Out Mechanism continued



4.12 Noninterfering BLANK Tape Feed-Out Mechanism continued

(A) INNER RATCHET CHECK PAWL

TO CHECK

WITH FEED-OUT MECHANISM IN OPERATED CONDITION (DRIVE ARM UNLATCHED), PRESENT A DEEP NOTCH OF BOTH RATCHETS TO METERING FEED PAWL AND POSITION PAWL TO EXTREME LEFT.

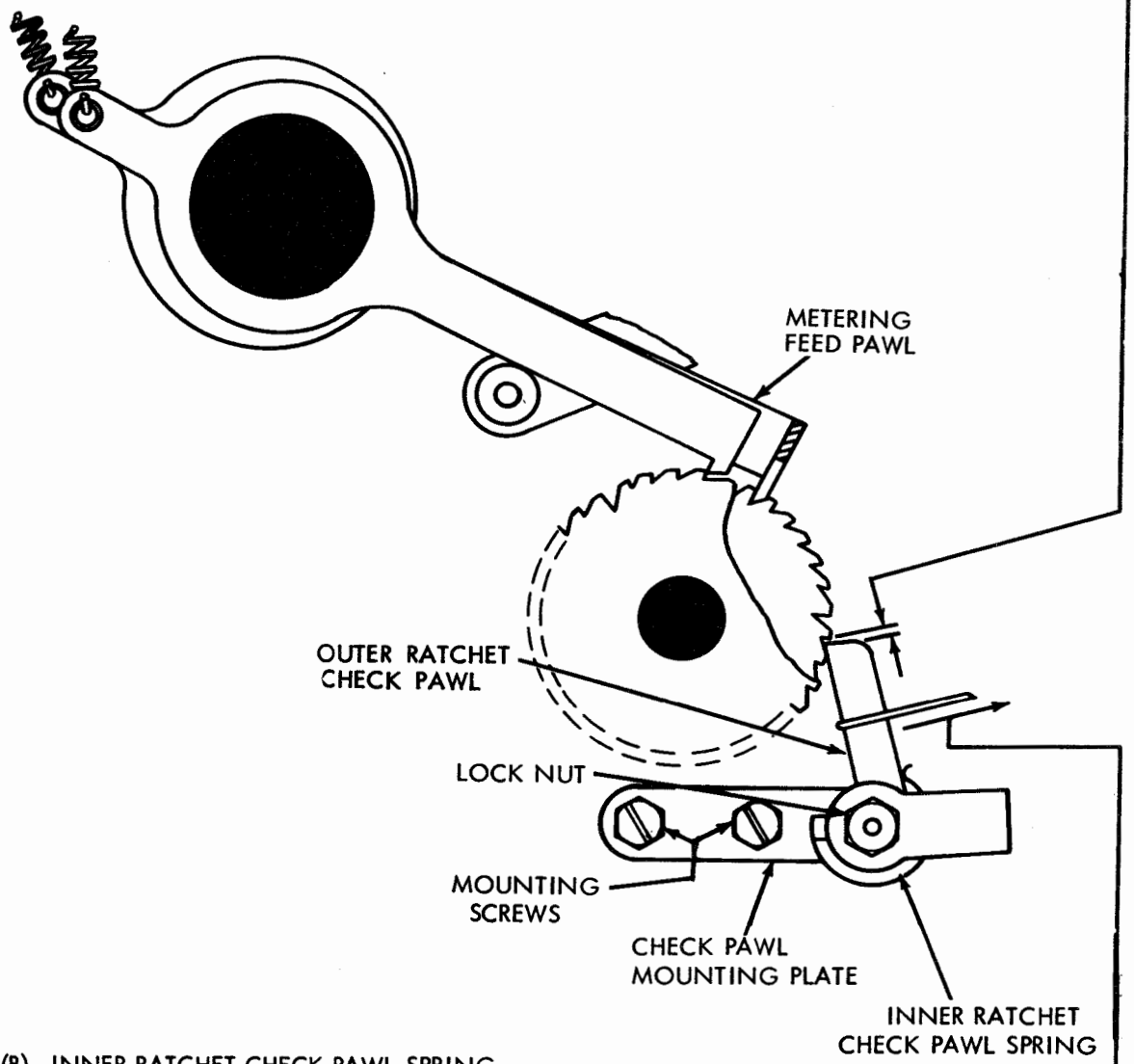
REQUIREMENT

CLEARANCE BETWEEN INNER RATCHET CHECK PAWL AND RATCHET TOOTH

MIN. 0.005 INCH---MAX. 0.015 INCH

TO ADJUST

POSITION CHECK PAWL MOUNTING PLATE WITH MOUNTING SCREWS LOOSENED.



(B) INNER RATCHET CHECK PAWL SPRING

REQUIREMENT

MIN. 1/2 OZ.---MAX. 1-1/2 OZS.

TO PULL CHECK PAWL AWAY FROM RATCHET.

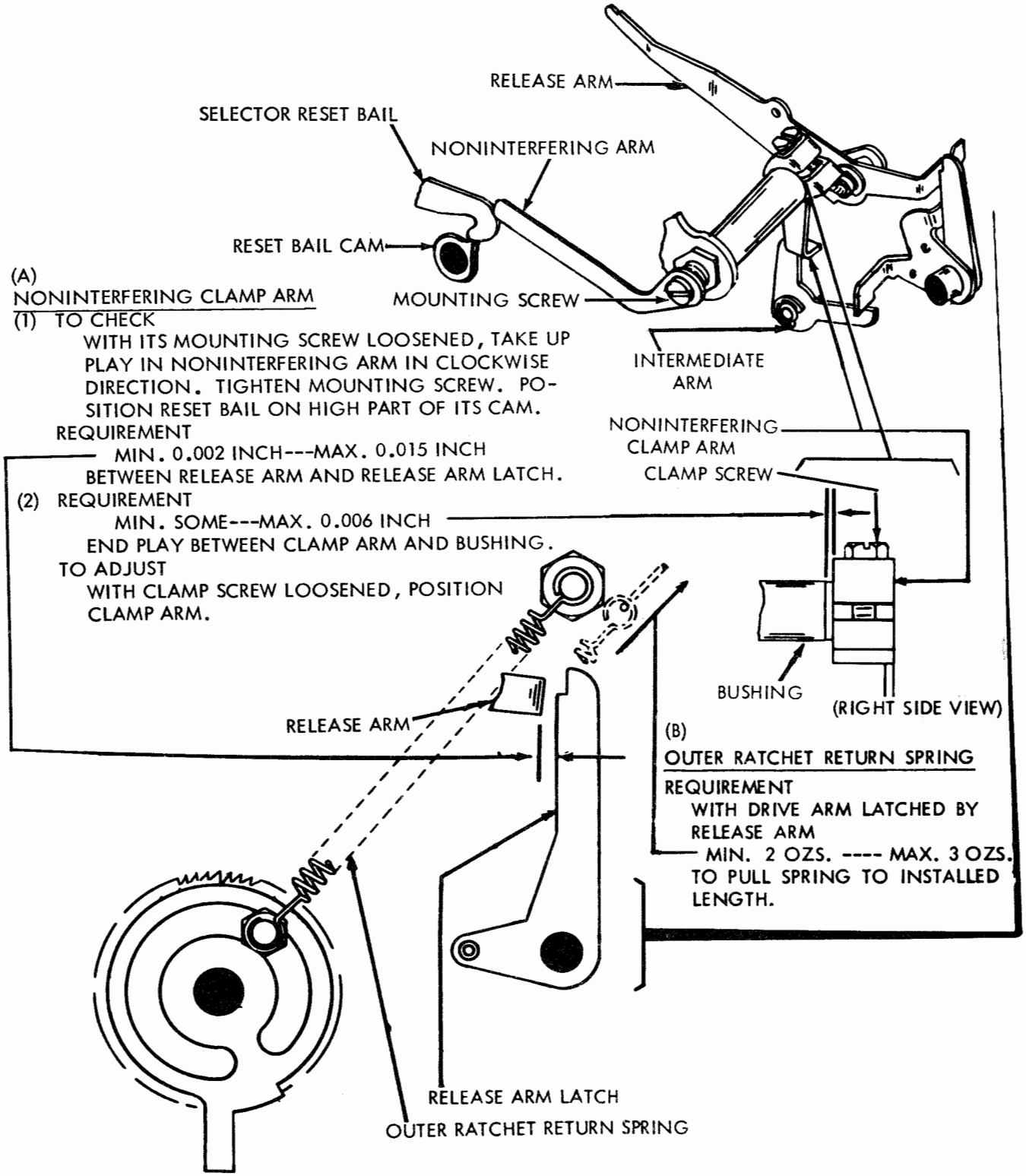
TO ADJUST

POSITION SPRING WITH LOCK NUT LOOSENED. ROTATING SPRING CLOCKWISE INCREASES TENSION; ROTATING SPRING COUNTERCLOCKWISE DECREASES TENSION.

4.13 Noninterfering BLANK Tape Feed-Out Mechanism continued

NOTE

LOOSEN THE STRIPPER BAIL CLAMP SCREW AND TAKE UP THE PLAY BETWEEN THE STRIPPER BAIL AND THE SHAFT IN A CLOCKWISE DIRECTION BEFORE MAKING THE FOLLOWING ADJUSTMENT. TIGHTEN THE STRIPPER BAIL CLAMP SCREW.



(A)

NONINTERFERING CLAMP ARM

(1) TO CHECK

WITH ITS MOUNTING SCREW LOOSENED, TAKE UP PLAY IN NONINTERFERING ARM IN CLOCKWISE DIRECTION. TIGHTEN MOUNTING SCREW. POSITION RESET BAIL ON HIGH PART OF ITS CAM.

REQUIREMENT

MIN. 0.002 INCH---MAX. 0.015 INCH BETWEEN RELEASE ARM AND RELEASE ARM LATCH.

(2) REQUIREMENT

MIN. SOME---MAX. 0.006 INCH END PLAY BETWEEN CLAMP ARM AND BUSHING.

TO ADJUST

WITH CLAMP SCREW LOOSENED, POSITION CLAMP ARM.

(B)

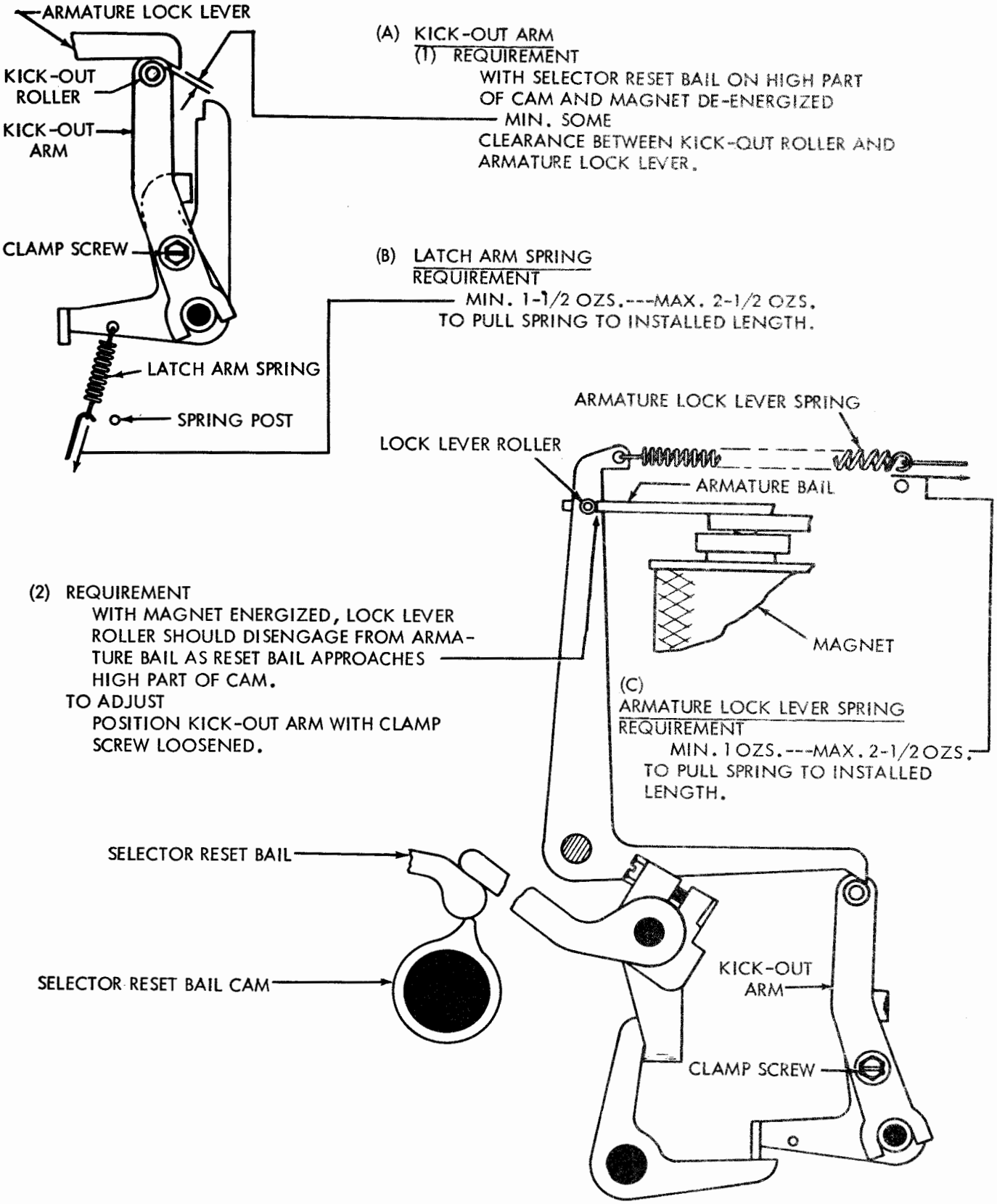
OUTER RATCHET RETURN SPRING

REQUIREMENT

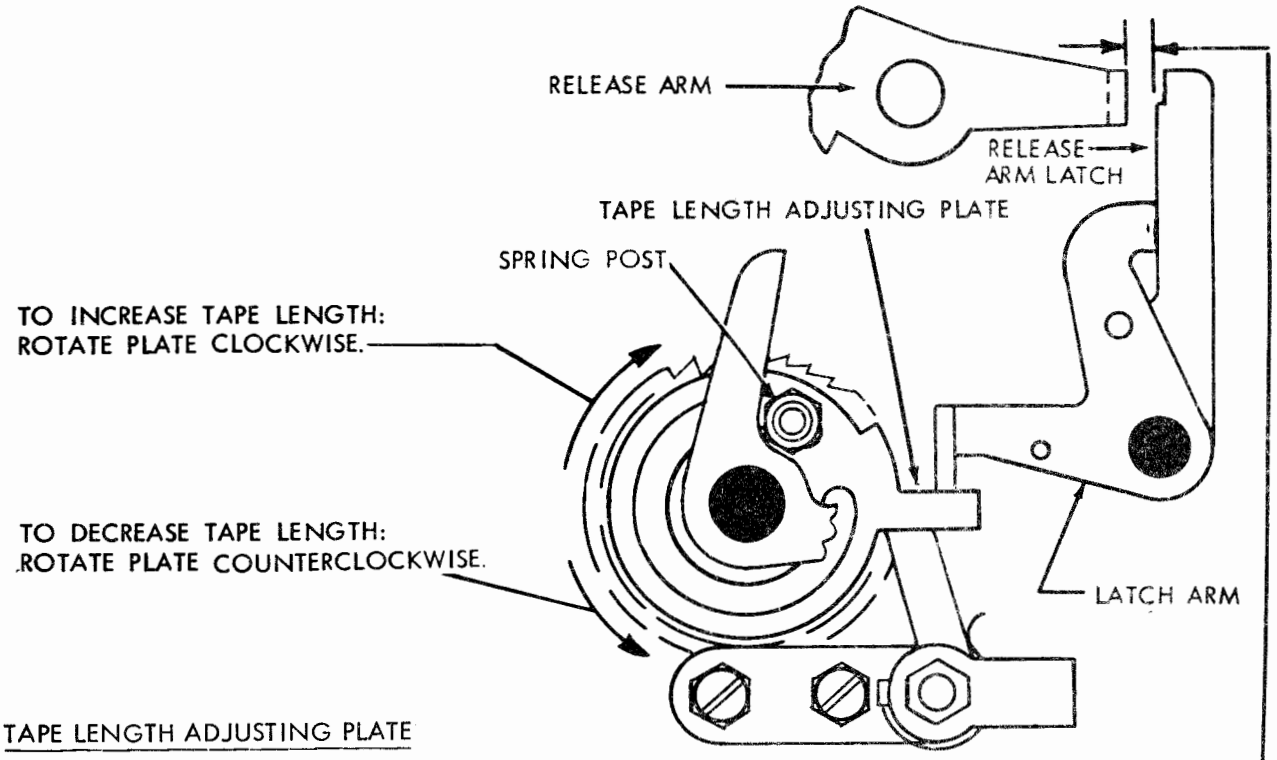
WITH DRIVE ARM LATCHED BY RELEASE ARM

MIN. 2 OZS. ---- MAX. 3 OZS. TO PULL SPRING TO INSTALLED LENGTH.

4.14 Noninterfering BLANK Tape Feed-Out Mechanism continued



4. 15 Noninterfering BLANK Tape Feed-Out Mechanism continued



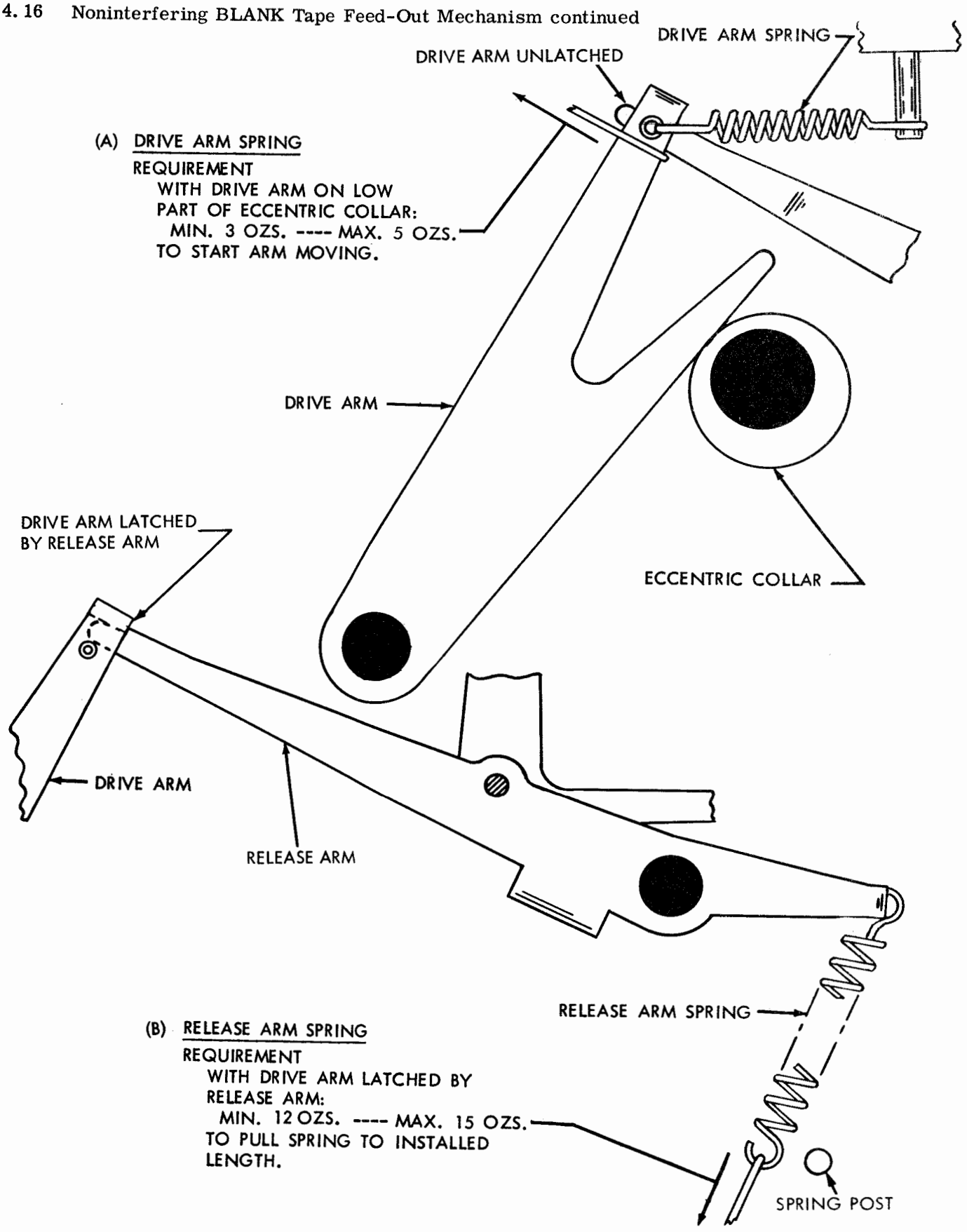
TAPE LENGTH ADJUSTING PLATE

NOTE:
AMOUNT OF TAPE FED OUT CAN BE SET FOR ANY LENGTH UP TO 17 INCHES.

REQUIREMENT
(1) WHEN UNIT IS OPERATING UNDER POWER AND FEED-OUT MAGNET IS ENERGIZED, CORRECT LENGTH OF TAPE SHOULD BE FED OUT.
(2) WHEN UNIT IS NOT OPERATING UNDER POWER AND THE FEED-OUT MECHANISM IN ITS LATCHED POSITION, MANUALLY POSITION RATCHET SO THE NEXT FEED-OUT CYCLE WILL CAUSE FEED-OUT MECHANISM TO STOP. MANUALLY HOLDING FEED PAWL AGAINST THE RATCHET, ROTATE MAIN SHAFT UNTIL RELEASE ARM LATCH RELEASES RELEASE ARM AND FEED PAWL IS IN ITS EXTREME LEFT POSITION. CLEARANCE BETWEEN RELEASE ARM AND THE RELEASE ARM LATCH
MIN. SOME---MAX. 0.080 INCH

TO ADJUST
WITH SPRING POST LOOSENED, POSITION TAPE LENGTH ADJUSTING PLATE.

4.16 Noninterfering BLANK Tape Feed-Out Mechanism continued



4.17 Noninterfering BLANK Tape-Feed-Out Mechanism continued

NOTE:

(1) FOR UNITS EQUIPPED WITH SWITCH IN PLACE OF CONTACTS (SEE PAR. 4.19).

(2) IN THIS FIGURE, REFERENCES TO LEFT OR RIGHT INDICATE THE VIEWERS LEFT OR RIGHT AS HE FACES THE REAR OF THE EQUIPMENT.

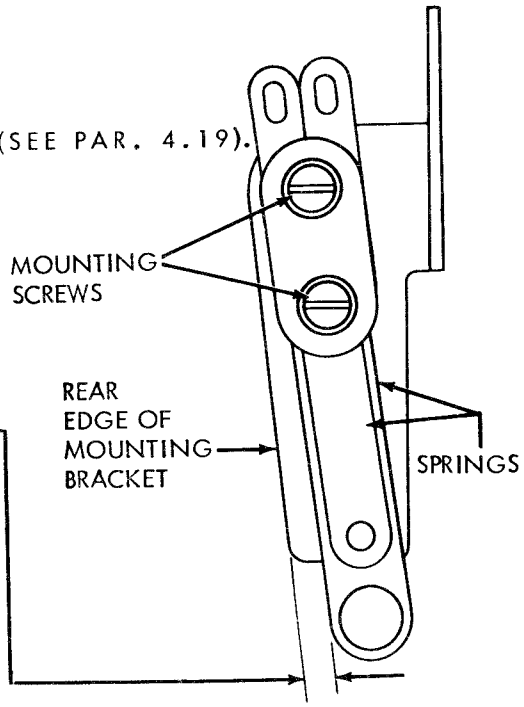
CONTACT SPRINGS

(1) REQUIREMENT

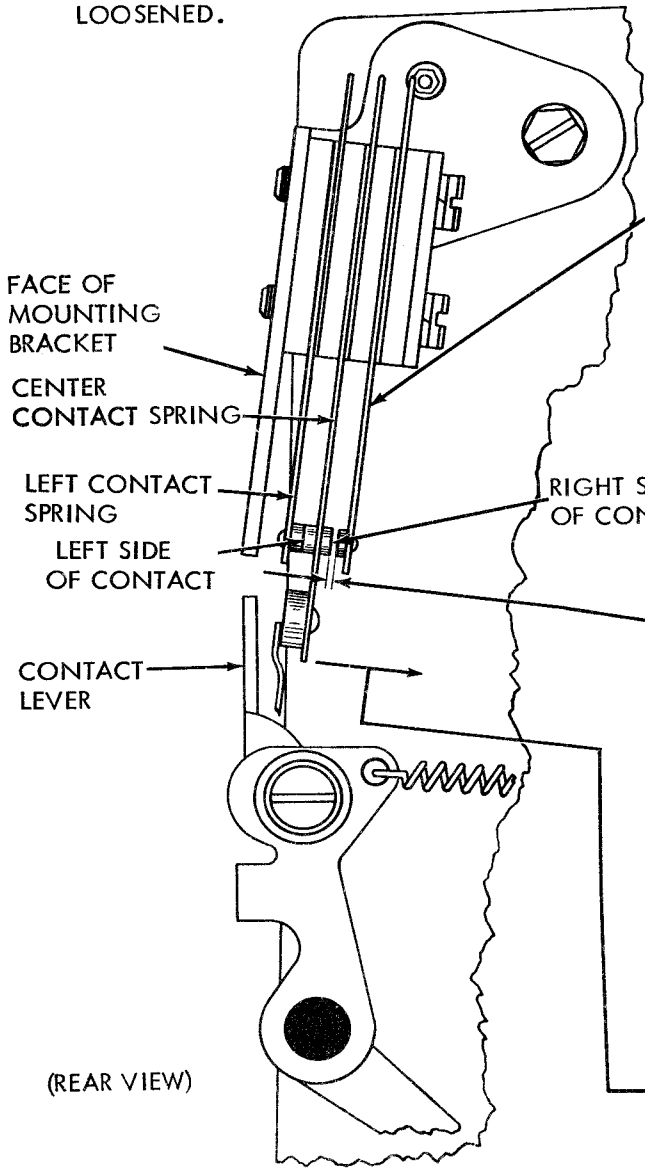
ALL SPRINGS PARALLEL TO REAR EDGE OF MOUNTING BRACKET AND CONTACT ACTUATING LEVER ENGAGE CONTACT BUTTON BY A MINIMUM OF 75% OF THE CONTACT BUTTON.

TO ADJUST

POSITION SPRINGS WITH MOUNTING SCREWS LOOSENED.



(LEFT SIDE VIEW)



(REAR VIEW)

(2) REQUIREMENT

LEFT CONTACT SPRING APPROXIMATELY PARALLEL TO FACE OF MOUNTING BRACKET.

TO ADJUST

BEND LEFT CONTACT SPRING.

(3) REQUIREMENT

WITH CONTACT LEVER FREE OF CENTER CONTACT SPRING

MIN. 20 GRAMS---MAX. 40 GRAMS

TO JUST OPEN LEFT SIDE OF CONTACT.

TO ADJUST

BEND CENTER CONTACT SPRING.

(4) REQUIREMENT

WITH CONTACT LEVER AWAY FROM CENTER CONTACT SPRING

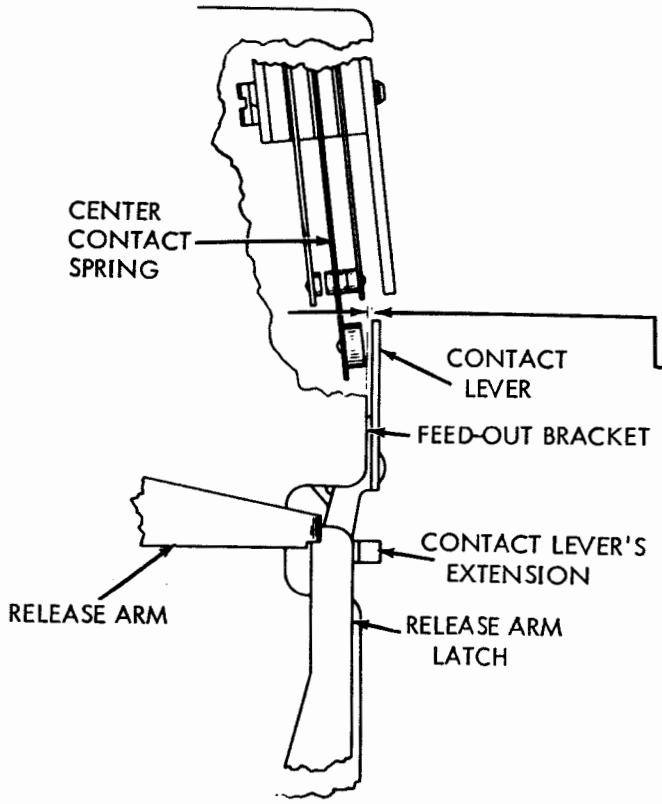
MIN. 0.010 INCH---MAX. 0.018 INCH

GAP AT RIGHT SIDE OF CONTACT.

TO ADJUST

BEND CONTACT SPRING.

4. 18 Noninterfering BLANK Tape-Feed-Out Mechanism continued



(A) CONTACT LEVER

TO CHECK

FULLY LATCH RELEASE ARM ON RELEASE ARM LATCH. HOLD CENTER CONTACT SPRING AWAY FROM CONTACT LEVER. ALLOW CONTACT LEVER'S EXTENSION TO REST AGAINST LATCH. MEASURE CLEARANCE BETWEEN FEED-OUT BRACKET AND CONTACT LEVER AT TOP OF LEVER.

REQUIREMENT

MIN. SOME---MAX. 0.020 INCH

TO ADJUST

POSITION CONTACT LEVER WITH CLAMP SCREW LOOSENED. (FOR POSITION OF CLAMP SCREW SEE ILLUSTRATION BELOW.)

(B) CONTACTING MOUNTING BRACKET

REQUIREMENT

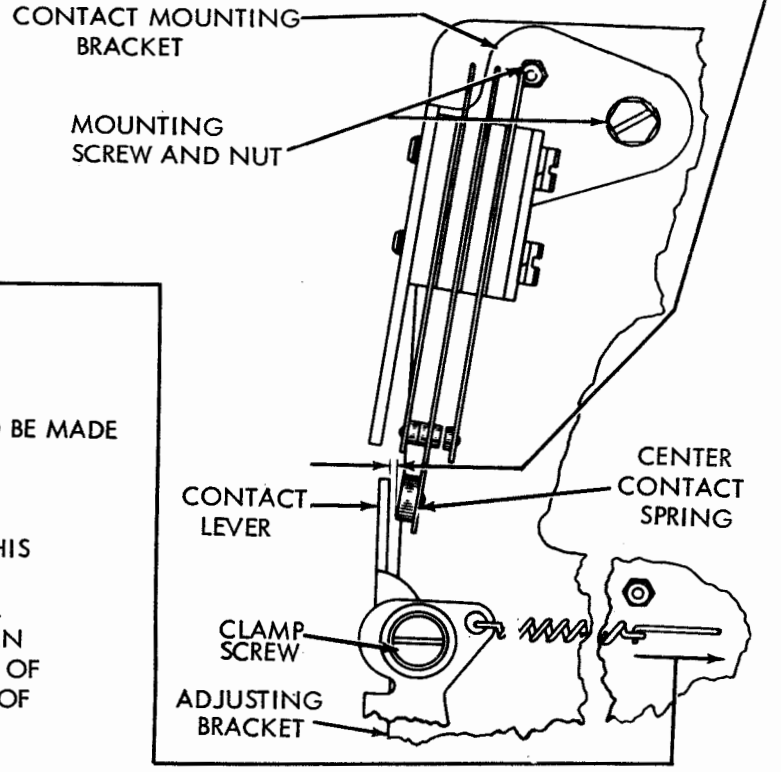
WITH RELEASE ARM UNLATCHED

MIN. 0.010 INCH---MAX. 0.040 INCH BETWEEN CONTACT LEVER AND CENTER CONTACT SPRING.

TO ADJUST

POSITION MOUNTING BRACKET WITH MOUNTING SCREW AND NUT LOOSENED.

NOTE: BY MEANS OF TEST LAMP, CHECK CONTINUITY OF CONTACT WITH CONTACT LEVER IN EACH POSITION.



(C) CONTACT LEVER SPRING

REQUIREMENT

MIN. 3 OZS.---MAX. 6 OZS. TO PULL TO INSTALLED LENGTH.

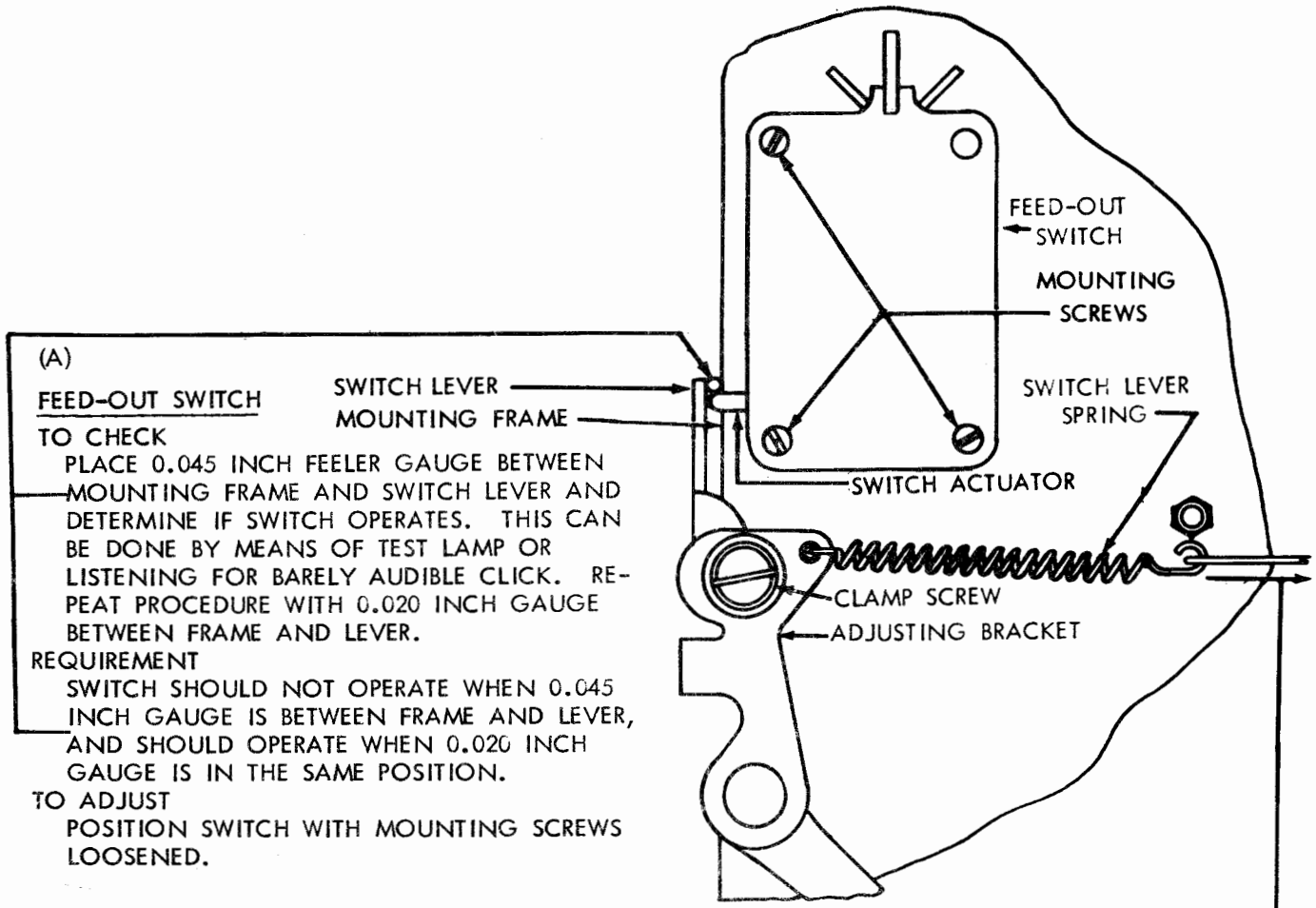
(D) CONTACT PULSE CLOSURE

NOTE: PRECEDING ADJUSTMENTS SHOULD BE MADE PRIOR TO THIS ADJUSTMENT.

EXTERNAL CIRCUITRY MAY REQUIRE A PULSE AT END OF FEED-OUT OPERATION. TO OBTAIN THIS CONDITION, REMOVE CLAMP SCREW AND ADJUSTING BRACKET AND HOOK CONTACT LEVER SPRING IN TAPPED HOLE. CONTACTS WILL THEN BE OPEN OR CLOSED, DEPENDING ON CHOICE OF CONTACT, EXCEPT FOR SHORT PERIOD AT END OF FEED-OUT OPERATION.

4.19 Noninterfering BLANK Tape Feed-Out Mechanism continued

(For Units Equipped with Contacts in Place of Switch see Par. 4.17)



(A)

FEED-OUT SWITCH

TO CHECK

PLACE 0.045 INCH FEELER GAUGE BETWEEN MOUNTING FRAME AND SWITCH LEVER AND DETERMINE IF SWITCH OPERATES. THIS CAN BE DONE BY MEANS OF TEST LAMP OR LISTENING FOR BARELY AUDIBLE CLICK. REPEAT PROCEDURE WITH 0.020 INCH GAUGE BETWEEN FRAME AND LEVER.

REQUIREMENT

SWITCH SHOULD NOT OPERATE WHEN 0.045 INCH GAUGE IS BETWEEN FRAME AND LEVER, AND SHOULD OPERATE WHEN 0.020 INCH GAUGE IS IN THE SAME POSITION.

TO ADJUST

POSITION SWITCH WITH MOUNTING SCREWS LOOSENED.

(B)

SWITCH LEVER SPRING

REQUIREMENT

MIN. 3 OZS.---MAX. 6 OZS. TO PULL SPRING TO INSTALLED LENGTH.

4.20 Noninterfering BLANK Tape Feed-Out Mechanism continued

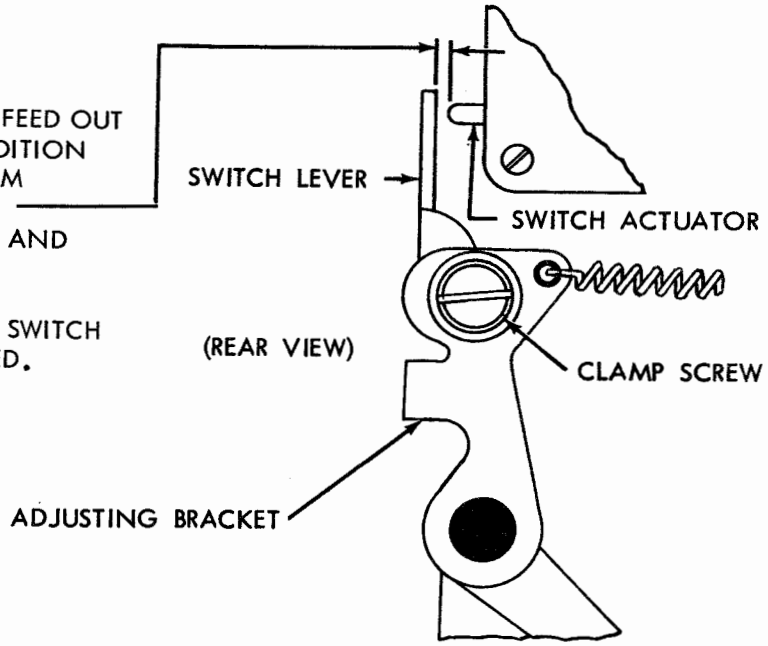
(A) SWITCH LEVER ADJUSTING BRACKET

REQUIREMENT

WITH CLUTCHES DISENGAGED AND FEED OUT MECHANISM IN UNOPERATED CONDITION (DRIVE ARM LATCHED BY RELEASE ARM MIN. SOME---MAX. 0.010 INCH CLEARANCE BETWEEN SWITCH LEVER AND SWITCH ACTUATOR.

TO ADJUST

POSITION ADJUSTING BRACKET ON SWITCH LEVER WITH CLAMP SCREW LOOSENED.



(B) FEED OUT SWITCH (WITH PULSE CLOSURE)

NOTE: EXTERNAL CIRCUITRY MAY REQUIRE A PULSE AT END OF FEED-OUT OPERATION: TO OBTAIN THIS CONDITION, REMOVE ADJUSTING BRACKET AND HOOK SPRING IN TAPPED HOLE IN SWITCH LEVER. SWITCH WILL THEN BE CLOSED EXCEPT FOR SHORT PERIOD AT END OF FEED-OUT OPERATION. FOR REVERSE CONDITION---I.E. SWITCH OPEN EXCEPT FOR SHORT PERIOD AT END OF OPERATION---REMOVE WHITE AND BLUE LEAD AND SOLDER TO SPARE TERMINAL.

TO CHECK

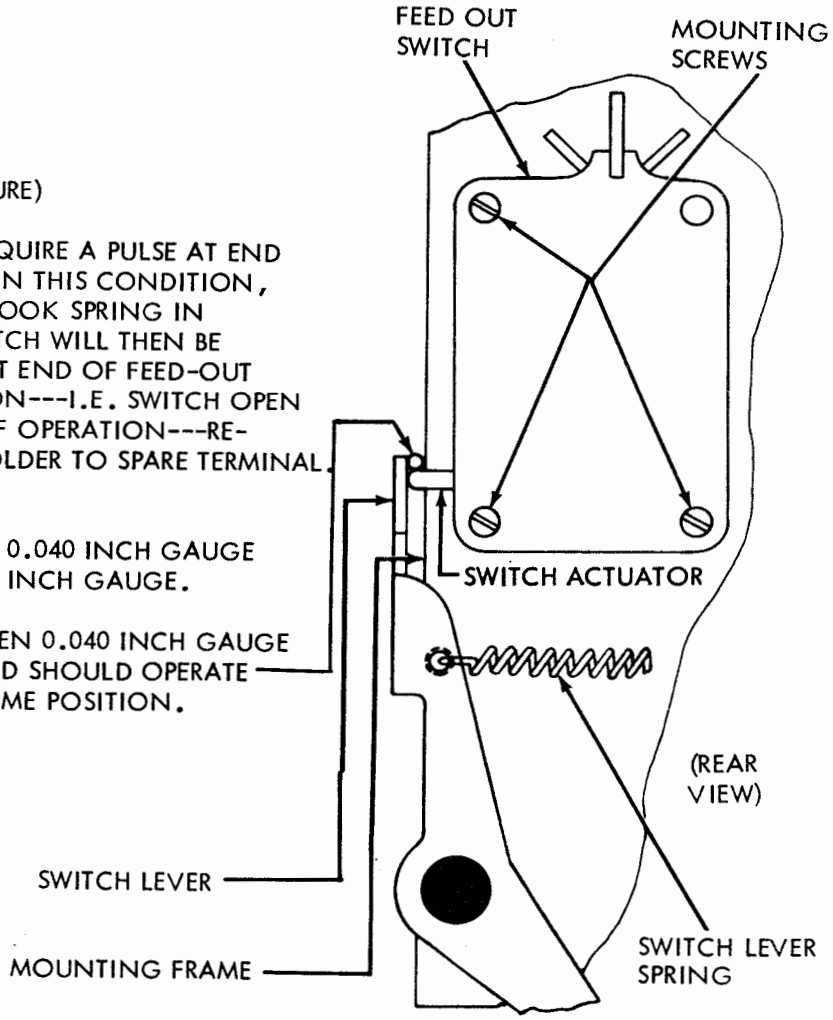
SAME AS FEED OUT SWITCH EXCEPT 0.040 INCH GAUGE SHOULD BE SUBSTITUTED FOR 0.045 INCH GAUGE.

REQUIREMENT

SWITCH SHOULD NOT OPERATE WHEN 0.040 INCH GAUGE IS BETWEEN FRAME AND LEVER, AND SHOULD OPERATE WHEN 0.020 INCH GAUGE IS IN SAME POSITION.

TO ADJUST

SAME AS FEED OUT SWITCH.



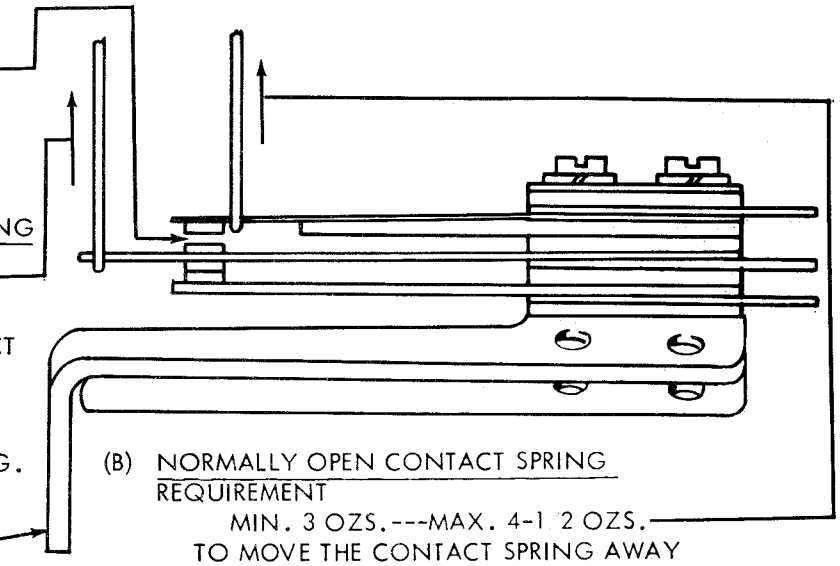
4.21 Multiple Mounted Function Blade Contacts
(For later design see par 3.56)

NOTE 1:
THE FOLLOWING ADJUSTMENTS SHOULD BE MADE PRIOR TO INSTALLING THE CONTACT BRACKET ASSEMBLY ON UNIT.

(A) NORMALLY OPEN CONTACT GAP
REQUIREMENT
MIN. 0.010 INCH
MAX. 0.020 INCH
TO ADJUST
BEND STIFFENER.

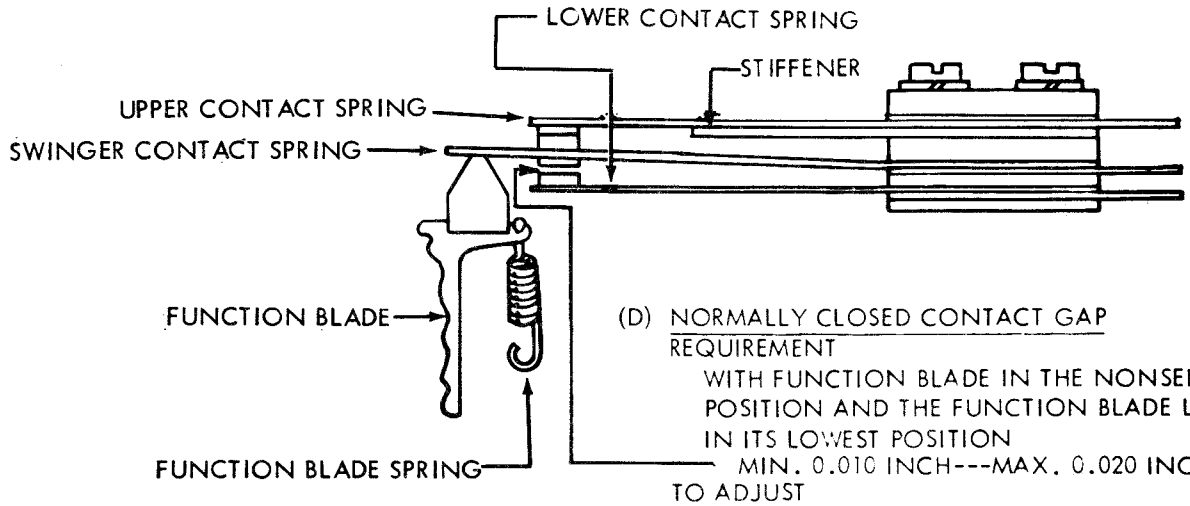
(C) NORMALLY CLOSED CONTACT SPRING
REQUIREMENT
MIN. 2-1/2 OZS.
MAX. 3-1/2 OZS.
TO MOVE THE SWINGER CONTACT AWAY FROM THE NORMALLY CLOSED CONTACT.
TO ADJUST
BEND SWINGER CONTACT SPRING.

CONTACT MOUNTING BRACKET



(B) NORMALLY OPEN CONTACT SPRING
REQUIREMENT
MIN. 3 OZS.---MAX. 4-1/2 OZS.
TO MOVE THE CONTACT SPRING AWAY FROM ITS STIFFENER.
TO ADJUST
BEND CONTACT SPRING. RECHECK CONTACT GAP.

NOTE 2:
THE FOLLOWING ADJUSTMENTS SHOULD BE MADE AFTER THE CONTACT BRACKET ASSEMBLY IS MOUNTED ON THE UNIT.



(D) NORMALLY CLOSED CONTACT GAP
REQUIREMENT
WITH FUNCTION BLADE IN THE NONSELECT POSITION AND THE FUNCTION BLADE LIFTER IN ITS LOWEST POSITION
MIN. 0.010 INCH---MAX. 0.020 INCH
TO ADJUST
BEND LOWER CONTACT SPRING.

NOTE 3:
SELECT EACH FUNCTION BLADE IN TURN AND DETERMINE THAT THERE IS A DEFINITE TRANSFER FROM MAKE TO BREAK CONTACTS. REFINE ABOVE ADJUSTMENT.

28 REPERFORATOR AND TAPE PRINTER BASES

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section contains the sepcific adjustments for the following 28 reperforator and tape printer bases:

(a) Receive-only base

(b) Multiple receive-only base

(c) Auxiliary receive-only base

(d) Receive-only miniaturized tape printer base

(e) Receive-only miniaturized typing reperforator base

(f) Sliding subbase

Note: Remove power from set (or unit) before making adjustment.

1.02 This section has been revised to include recent engineering changes and additions, and to rearrange the text so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.03 Maintenance procedures which apply only to mechanisms of a particular design, or to certain models of 28 bases, are so indicated in the titles of the paragraphs which contain these particular adjustment requirements.

1.04 The adjustments are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tension. If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same number is replaced when the part is remounted.

1.05 References made to left or right, up or down, front or rear, etc apply to the unit as viewed from the front (Figures 1, 2, 3 and 4).

1.06 All electrical contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 per cent of the contact diameter. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustment or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

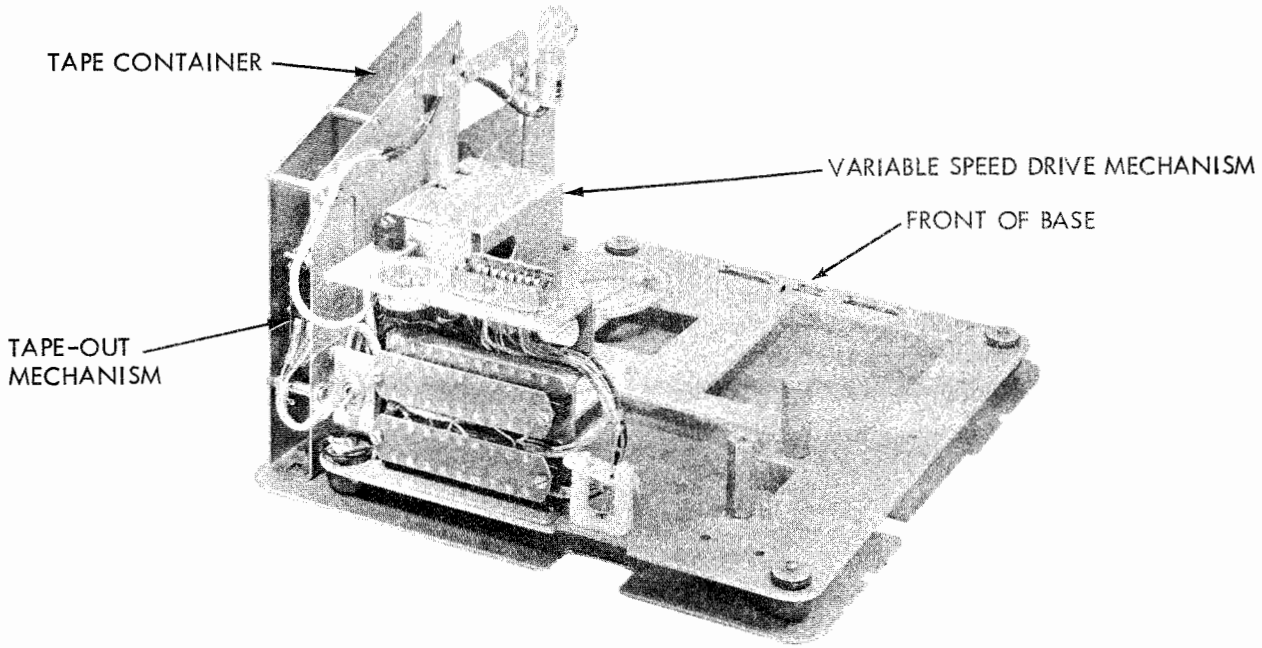


Figure 1 - 28 Receive-Only Reperforator Base (Rear View)

2. RECEIVE-ONLY BASES

2.01 Tape-Out Mechanism

(A) TAPE-OUT LEVER

REQUIREMENT

TAPE-OUT LEVER SHOULD BE ABLE TO PUSH BOTH SWITCH LEVERS AWAY FROM SWITCH ACTUATORS BUT SHOULD NOT BE ABLE TO LIFT WOOD FILLER WITH DEPLETED TAPE ROLL OUT OF SLOTS IN TAPE CONTAINER.

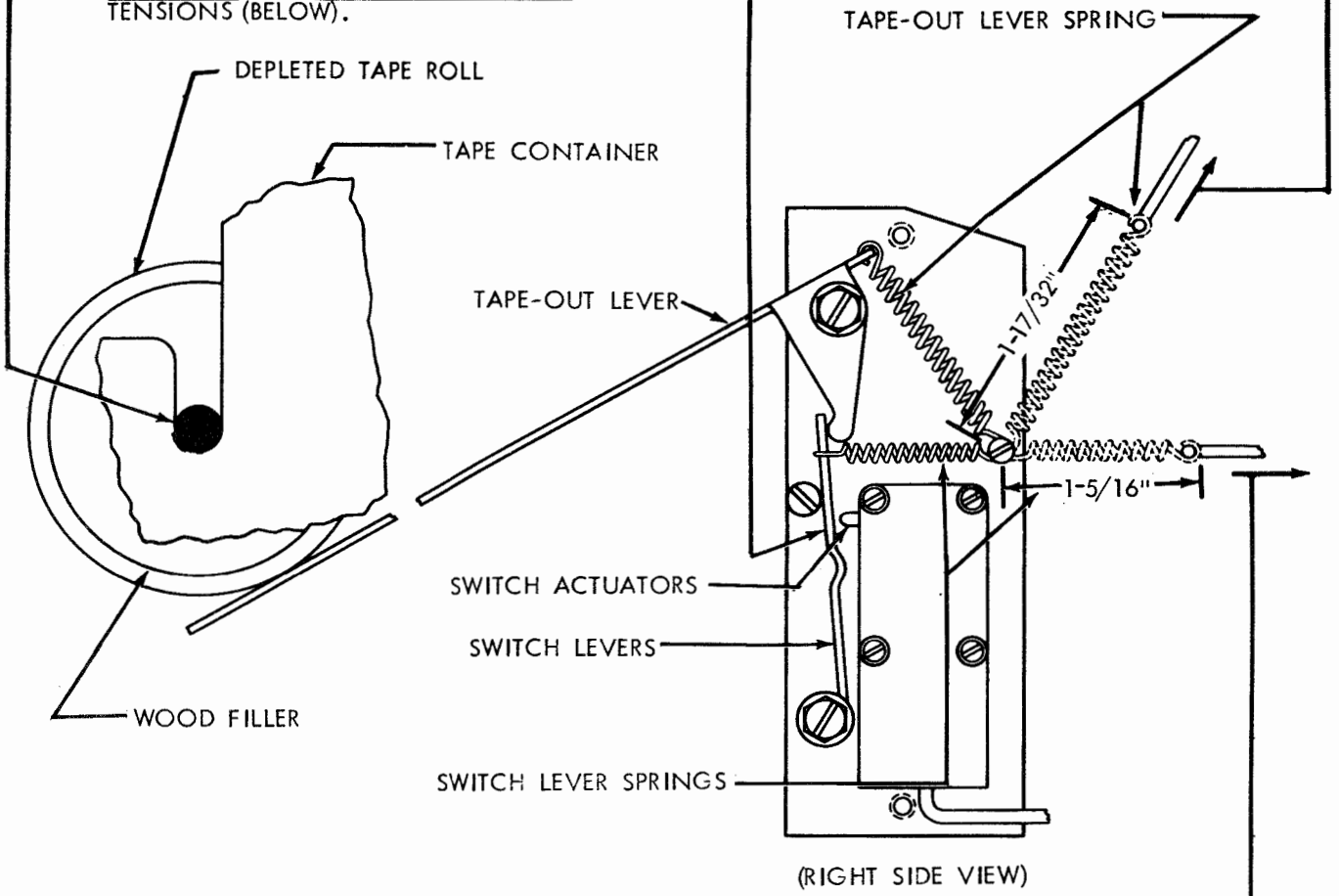
TO ADJUST

IF REQUIREMENT IS NOT MET, CHECK TAPE-OUT LEVER AND SWITCH LEVER SPRING TENSIONS (BELOW).

(B) TAPE-OUT LEVER SPRING

REQUIREMENT

MIN. 6 OZS.-----MAX. 8 OZS. TO PULL SPRING TO LENGTH OF 1-17/32 INCHES.



(RIGHT SIDE VIEW)

(C) SWITCH LEVER SPRINGS (2)

REQUIREMENT

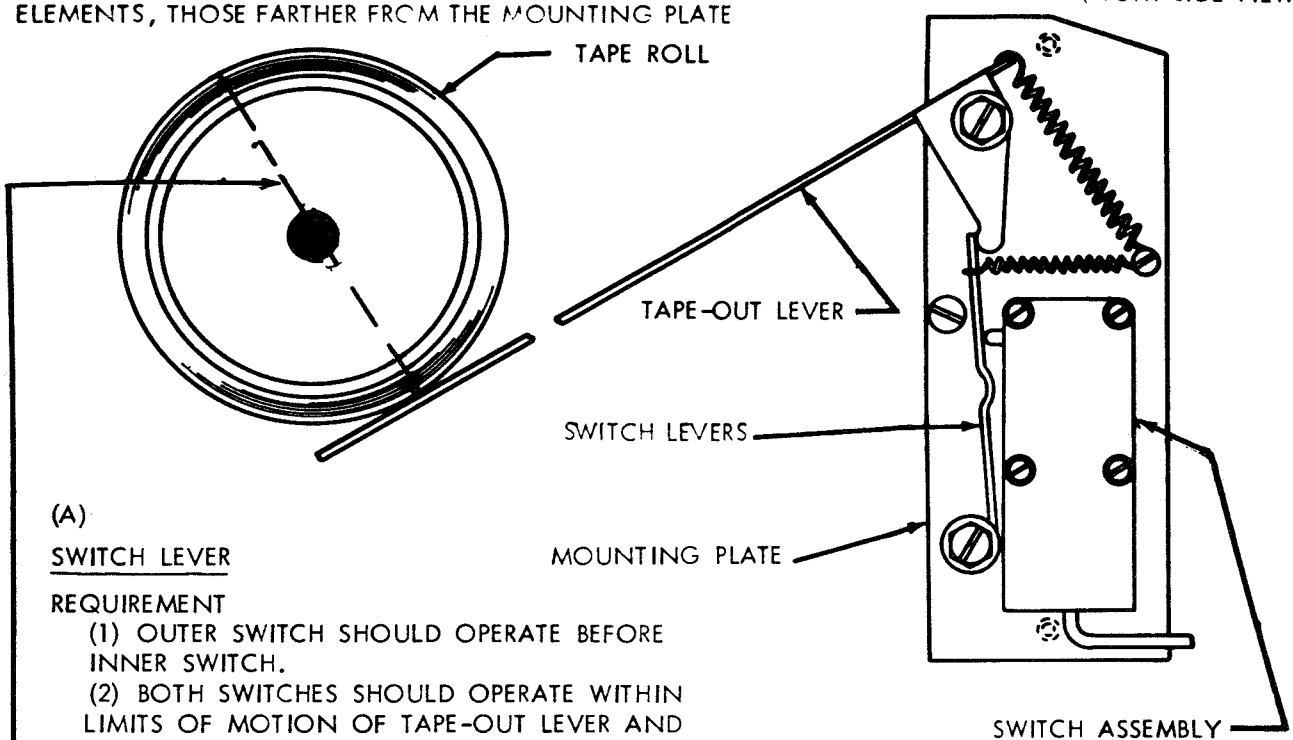
MIN. 1-3/4 OZS.----MAX. 2-1/4 OZS. TO PULL SPRING TO LENGTH OF 1-5/16 INCHES.

2.02 Tape-Out Mechanism continued

NOTE 1:

THE INNER ELEMENTS ARE THESE NEARER THE MOUNTING PLATE; THE OUTER ELEMENTS, THOSE FARTHER FROM THE MOUNTING PLATE

(RIGHT SIDE VIEW)



(A)

SWITCH LEVER

REQUIREMENT

(1) OUTER SWITCH SHOULD OPERATE BEFORE INNER SWITCH.

(2) BOTH SWITCHES SHOULD OPERATE WITHIN LIMITS OF MOTION OF TAPE-OUT LEVER AND WHEN DIAMETER OF TAPE ROLL IS REDUCED TO

FIRST 1-5/16 INCHES DIAMETER, THEN TO 1-3/16 INCHES DIAMETER (WHEN USING A 1 INCH DIAMETER CORE)

FIRST 2-7/16 INCHES DIAMETER, THEN TO 2-5/16 INCHES DIAMETER (WHEN USING A 2 INCH DIAMETER CORE)

TO ADJUST

BEND OUTER SWITCH LEVER TOWARD SWITCH ASSEMBLY.

NOTE 2:

ADJUSTMENT CAN BE FACILITATED BY REMOVING SWITCH MECHANISM FROM TAPE CONTAINER.

(B)

SWITCH MECHANISM MOUNTING PLATE

REQUIREMENT

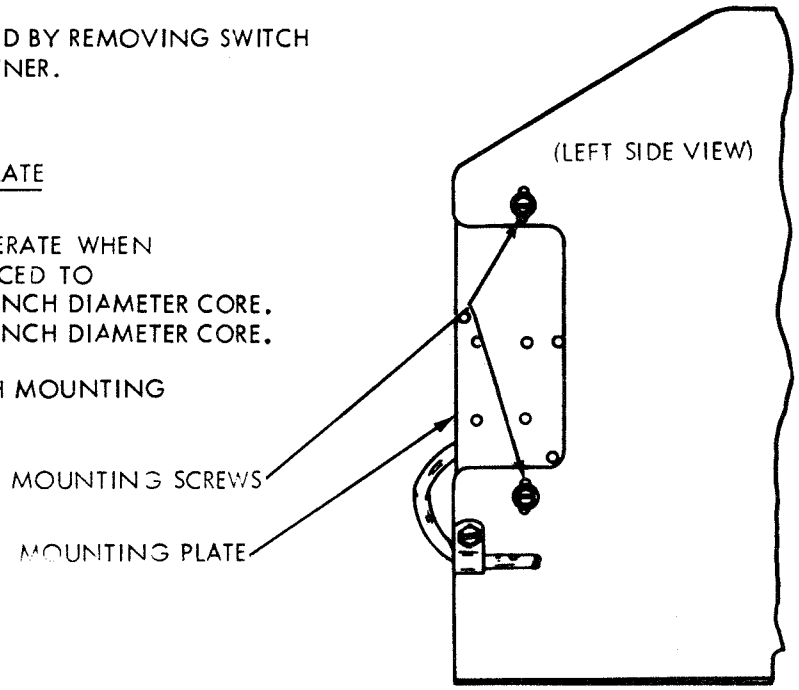
OUTER SWITCH SHOULD JUST OPERATE WHEN DIAMETER OF TAPE ROLL IS REDUCED TO

1-5/16 INCHES WHEN USING A 1 INCH DIAMETER CORE.

2-3/8 INCHES WHEN USING A 2 INCH DIAMETER CORE.

TO ADJUST

POSITION MOUNTING PLATE WITH MOUNTING SCREWS LOOSENED.



2.03 Intermediate Drive Mechanism

(A) TIMING BELT

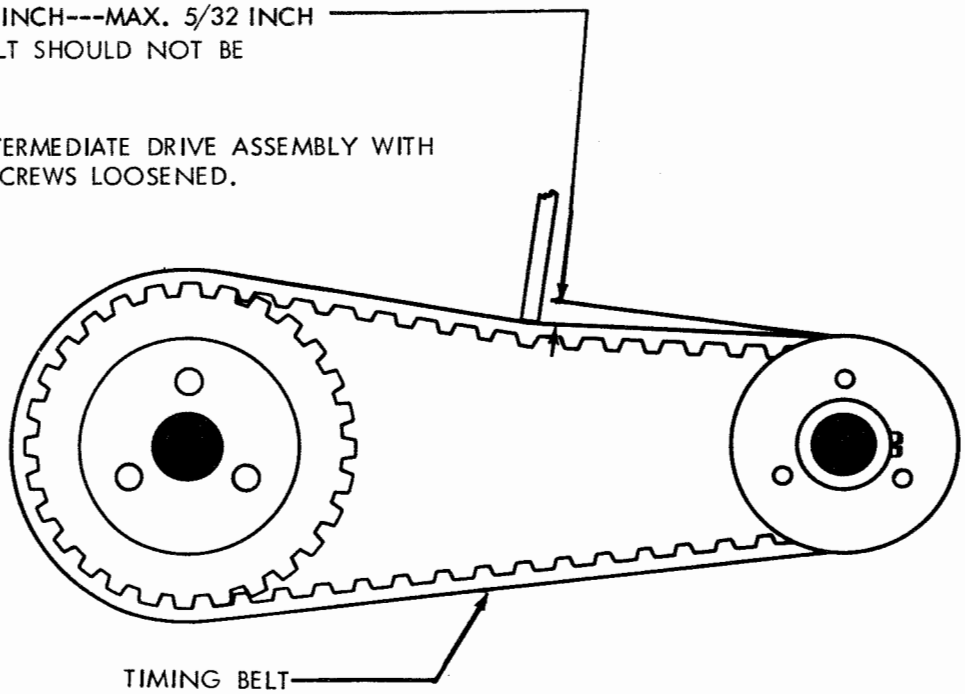
REQUIREMENT

SLIGHT PRESSURE (8 ± 1 OZ.) AT CENTER OF SPAN SHOULD DEFLECT BELT:
MIN. 3/32 INCH---MAX. 5/32 INCH

CAUTION: BELT SHOULD NOT BE TIGHT.

TO ADJUST

POSITION INTERMEDIATE DRIVE ASSEMBLY WITH MOUNTING SCREWS LOOSENED.



(B) GEAR MESH

REQUIREMENT

MOTOR DRIVE GEAR AND INTERMEDIATE SHAFT DRIVEN GEAR SHOULD MESH AT RIGHT ANGLES.

TO ADJUST

POSITION DRIVE ASSEMBLY WITH MOUNTING SCREWS LOOSENED. RE-CHECK TIMING BELT ADJUSTMENT (ABOVE).

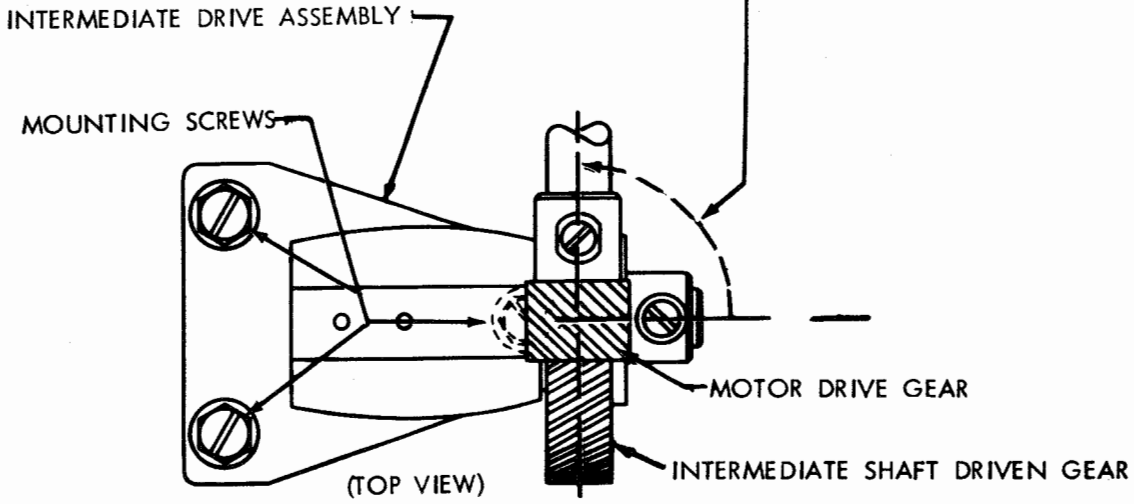
(C)
WIRE TAPE GUIDE

REQUIREMENT

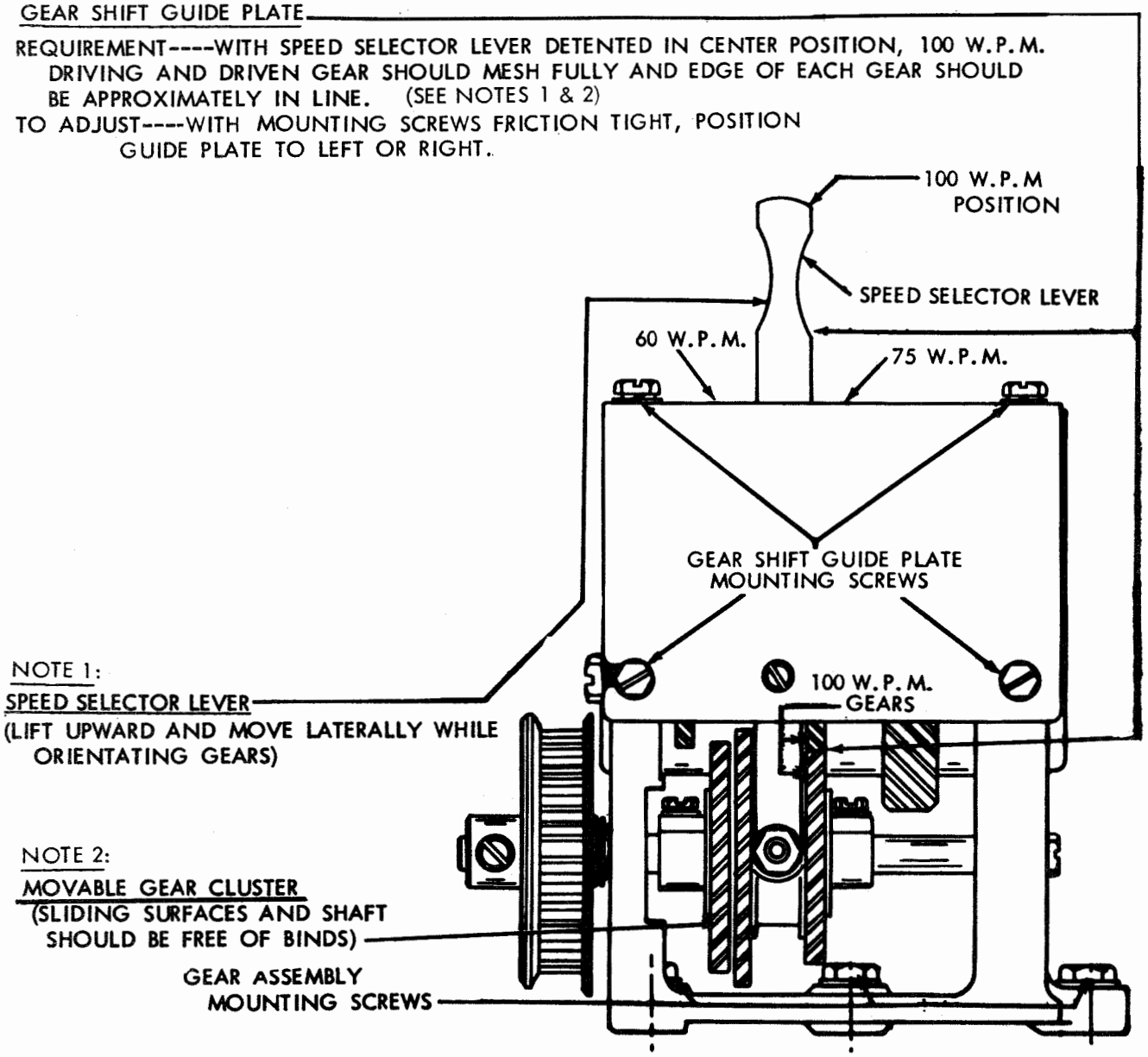
TAPE SHOULD PASS FREELY THROUGH WIRE GUIDE AND BE ALIGNED WITH PERFORATOR GUIDE ASSEMBLY.

TO ADJUST

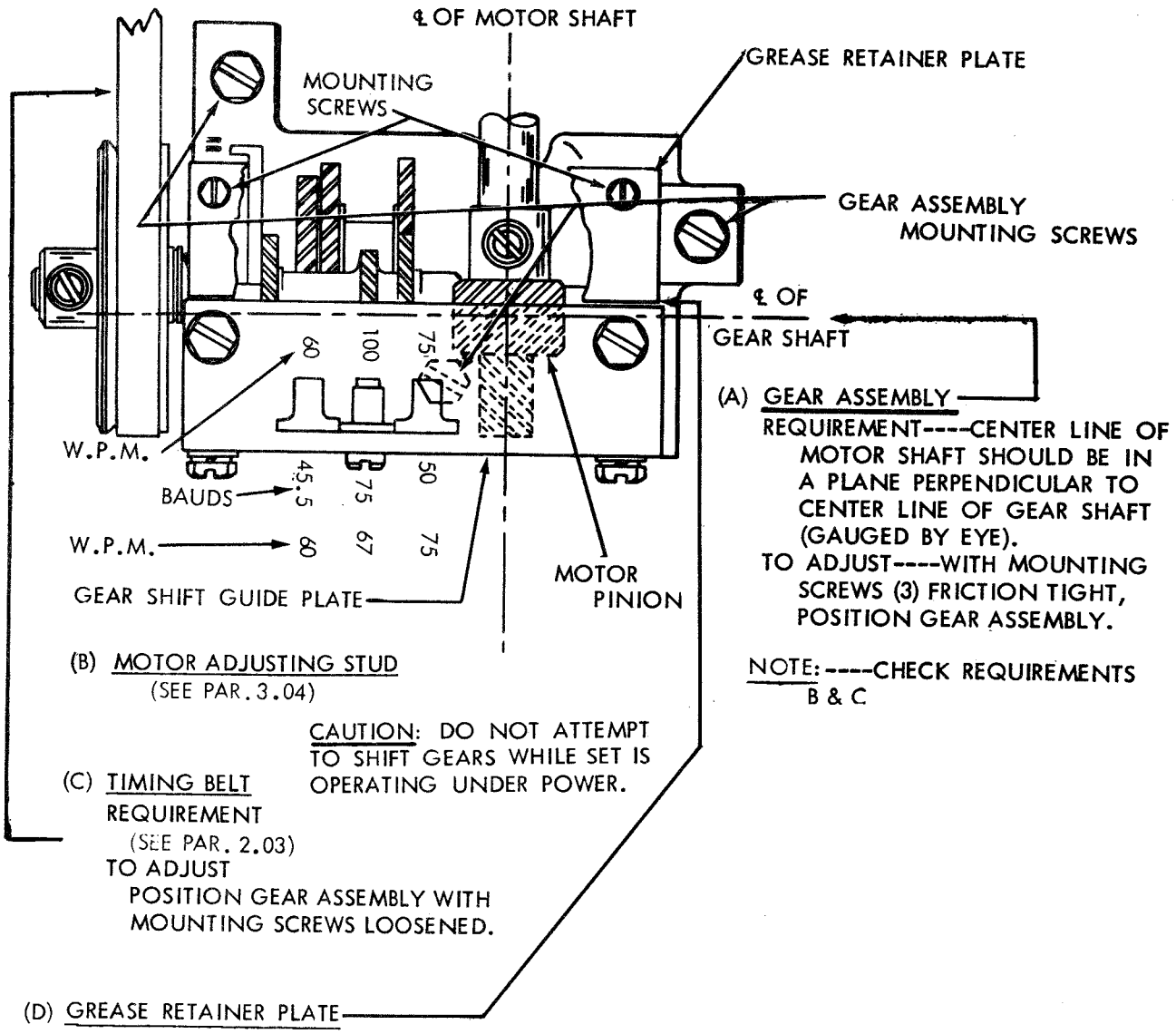
BEND OR POSITION WIRE GUIDE



2.04 Variable Speed Drive Mechanism



2.05 Variable Speed Drive Mechanism continued



(A) GEAR ASSEMBLY

REQUIREMENT----CENTER LINE OF MOTOR SHAFT SHOULD BE IN A PLANE PERPENDICULAR TO CENTER LINE OF GEAR SHAFT (GAUGED BY EYE).

TO ADJUST----WITH MOUNTING SCREWS (3) FRICTION TIGHT, POSITION GEAR ASSEMBLY.

NOTE: ----CHECK REQUIREMENTS B & C

(B) MOTOR ADJUSTING STUD
(SEE PAR. 3.04)

CAUTION: DO NOT ATTEMPT TO SHIFT GEARS WHILE SET IS OPERATING UNDER POWER.

(C) TIMING BELT

REQUIREMENT
(SEE PAR. 2.03)

TO ADJUST
POSITION GEAR ASSEMBLY WITH MOUNTING SCREWS LOOSENED.

(D) GREASE RETAINER PLATE

REQUIREMENT
GREASE RETAINER PLATE SHOULD ALIGN WITH GEAR SHIFT GUIDE PLATE.

TO ADJUST----POSITION PLATE WITH ITS MOUNTING SCREWS LOOSENED.

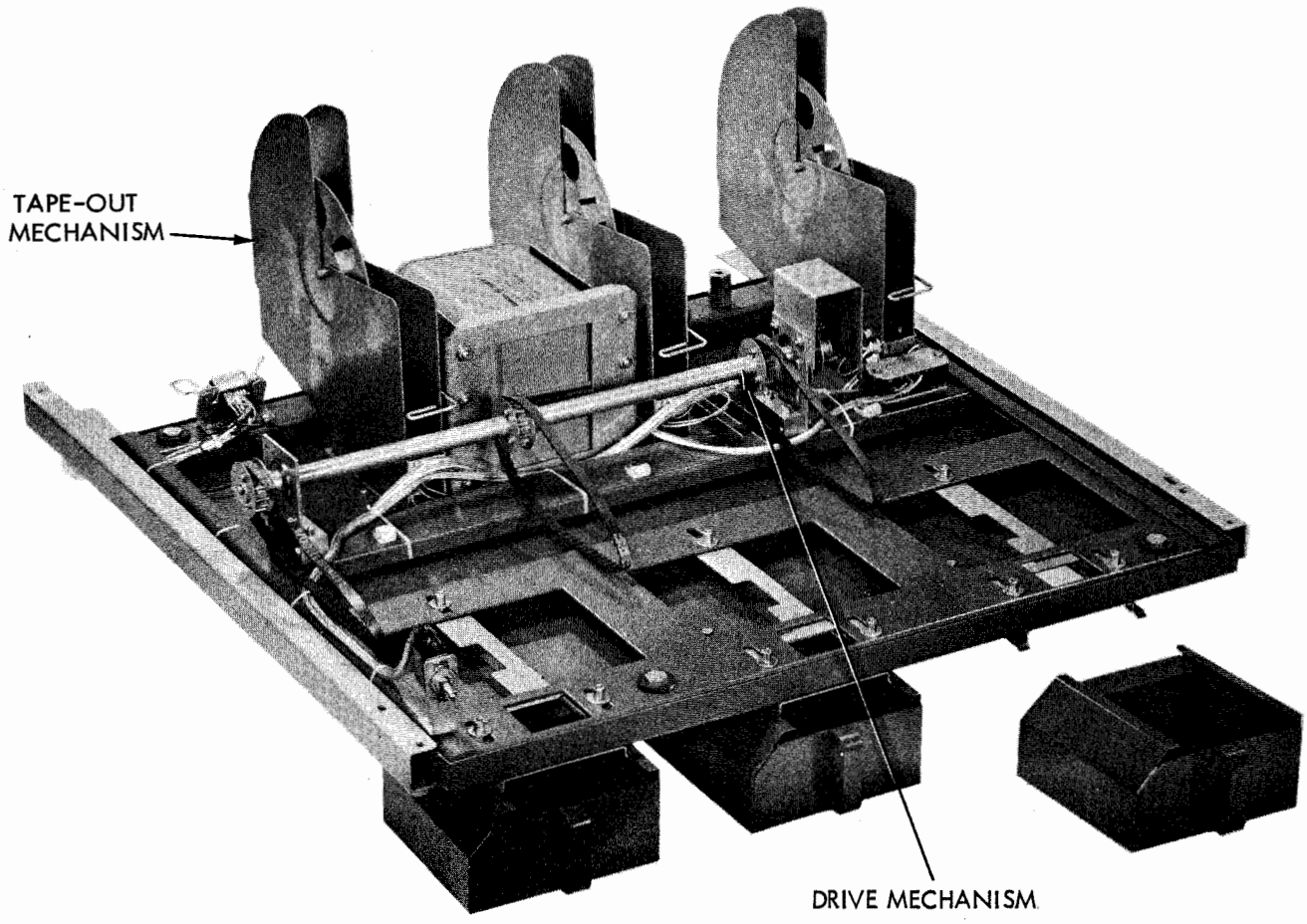
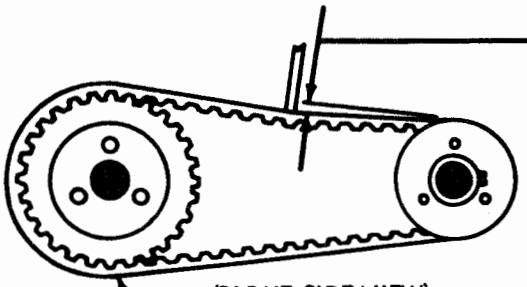


Figure 2 - 28 Multiple Reperforator Receive-Only Base (Front View)

3. MULTIPLE RECEIVE-ONLY BASES

3.01 Drive Mechanism

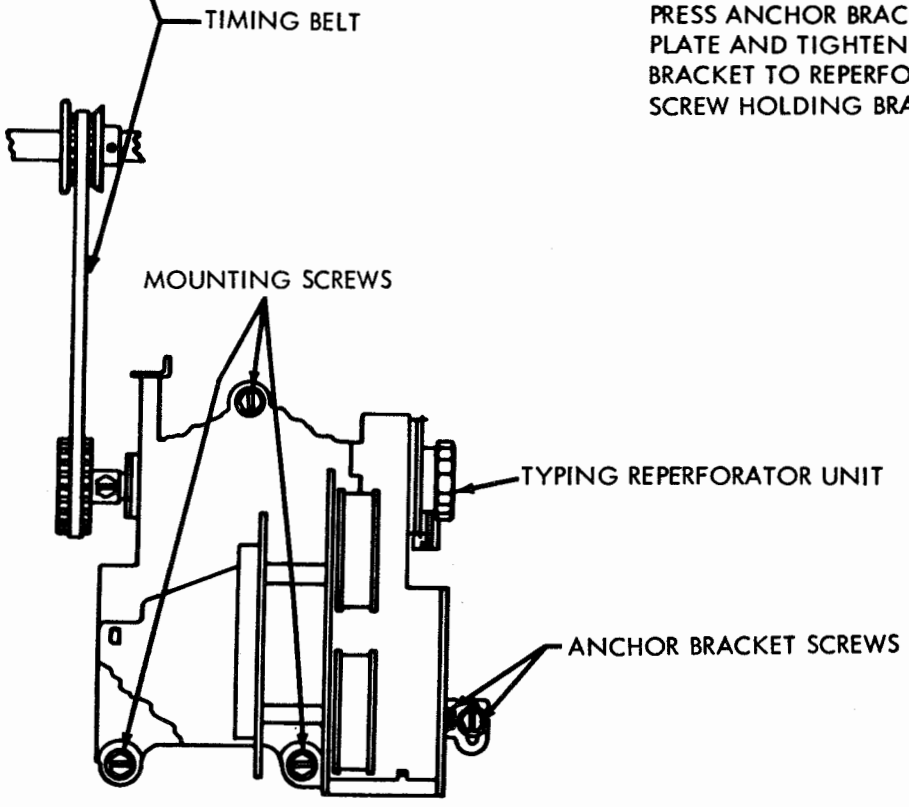
NOTE: THIS ADJUSTMENT SHOULD BE MADE FOR EACH TYPING REPERFORATOR UNIT.



(RIGHT SIDE VIEW)

REQUIREMENT
SLIGHT PRESSURE AT CENTER OF SPAN (8 ± 1 OZ.) SHOULD DEFLECT BELT.
MIN. 3/32 INCH ---MAX. 5/32 INCH
CAUTION: BELT SHOULD NOT BE TIGHT.

TO ADJUST:
WITH TWO ANCHOR BRACKET SCREWS AND THREE MOUNTING SCREWS LOOSENED, POSITION TYPING REPERFORATOR UNIT. TIGHTEN THREE MOUNTING SCREWS. PRESS ANCHOR BRACKET AGAINST BASE PLATE AND TIGHTEN SCREW HOLDING BRACKET TO REPERFORATOR. TIGHTEN SCREW HOLDING BRACKET TO BASE.



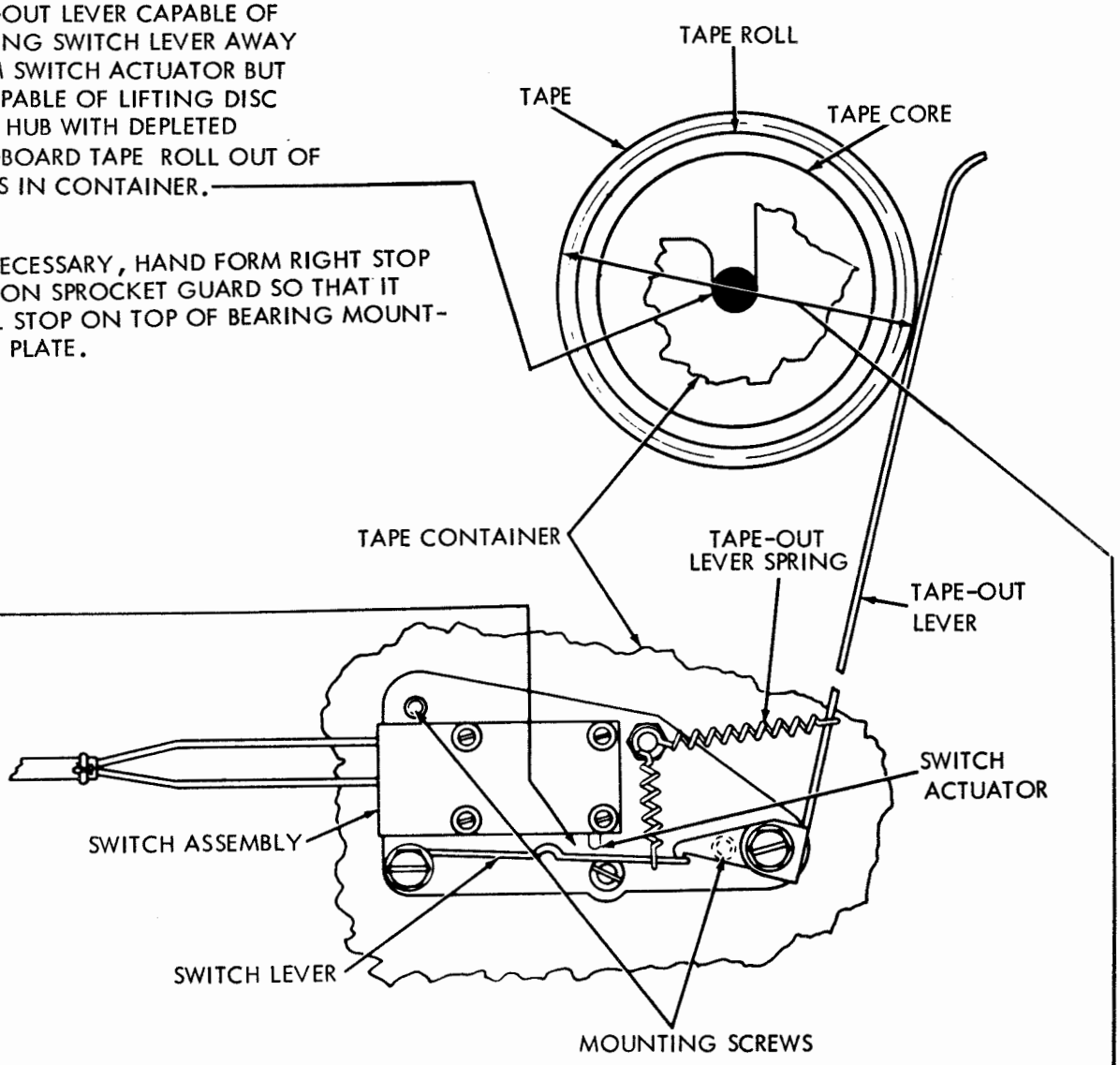
(TOP VIEW)

3.02 Tape-Out Mechanism

TAPE-OUT LEVER SPRING

REQUIREMENT
TAPE-OUT LEVER CAPABLE OF PUSHING SWITCH LEVER AWAY FROM SWITCH ACTUATOR BUT INCAPABLE OF LIFTING DISC WITH HUB WITH DEPLETED CARDBOARD TAPE ROLL OUT OF SLOTS IN CONTAINER.

NOTE: IF NECESSARY, HAND FORM RIGHT STOP TAB ON SPROCKET GUARD SO THAT IT WILL STOP ON TOP OF BEARING MOUNTING PLATE.



TAPE-OUT SWITCH ASSEMBLY

REQUIREMENT
SWITCH SHOULD OPERATE WHEN DIAMETER OF TAPE ROLL IS
MIN. 2-3/8 INCH---MAX. 2-5/8 INCH
(CHECK WITH TEST LAMP.)

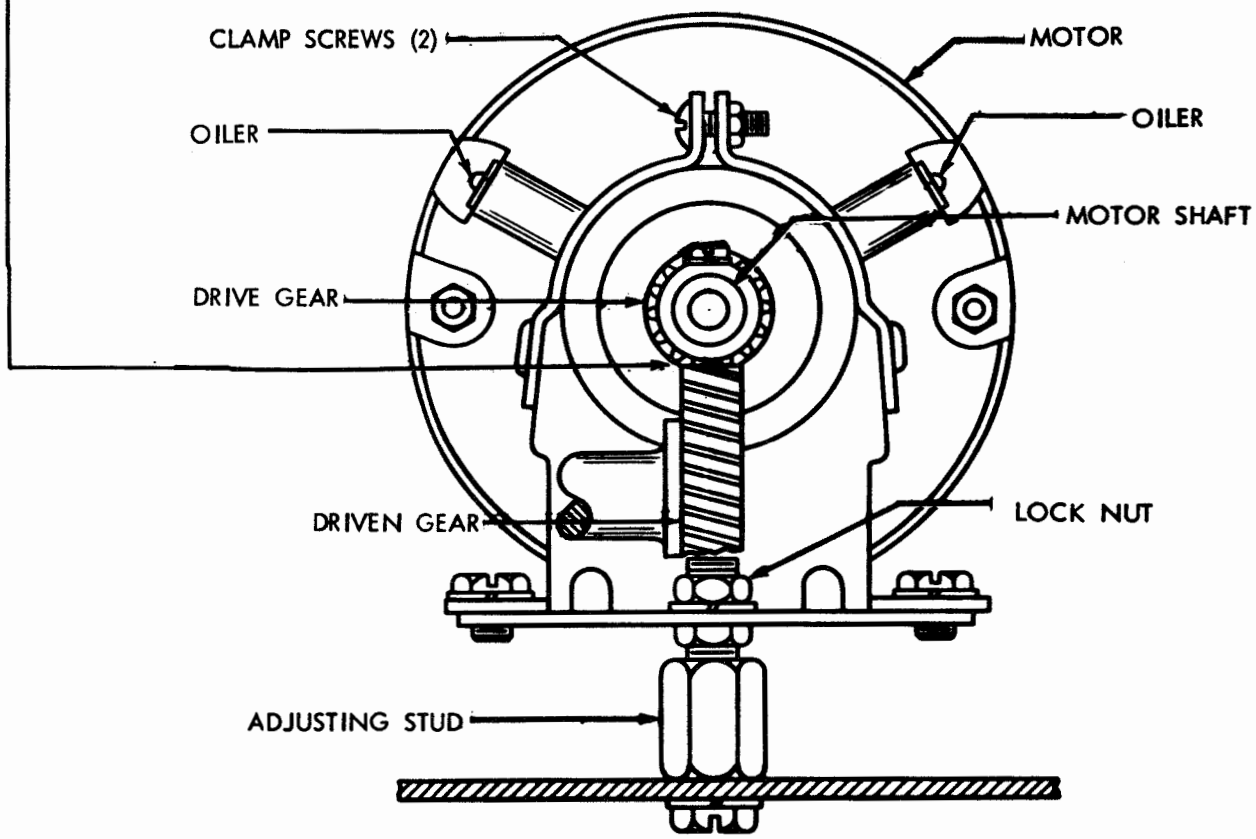
TO ADJUST
WITH TWO MOUNTING SCREWS LOOSENED, POSITION SWITCH ASSEMBLY ON TAPE CONTAINER.

3.03 Motor Adjusting Stud

MOTOR ADJUSTING STUD

REQUIREMENT
BARELY PERCEPTIBLE BACKLASH BETWEEN DRIVE GEAR AND DRIVEN GEAR AT THEIR CLOSEST POINT.

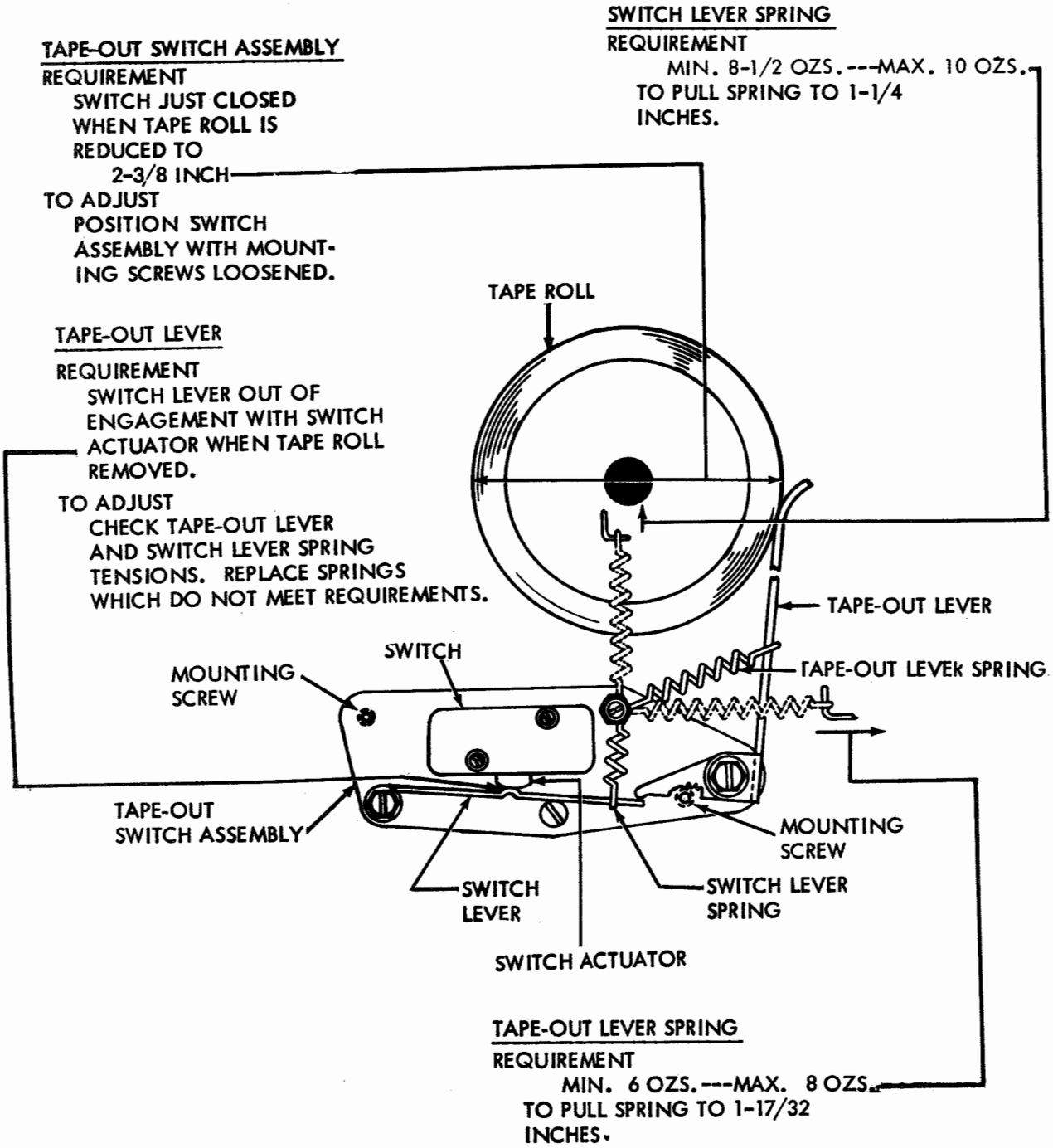
TO ADJUST
WITH LOCK NUT LOOSENED, POSITION ADJUSTING STUD. TIGHTEN NUT WHILE HOLDING STUD IN POSITION.



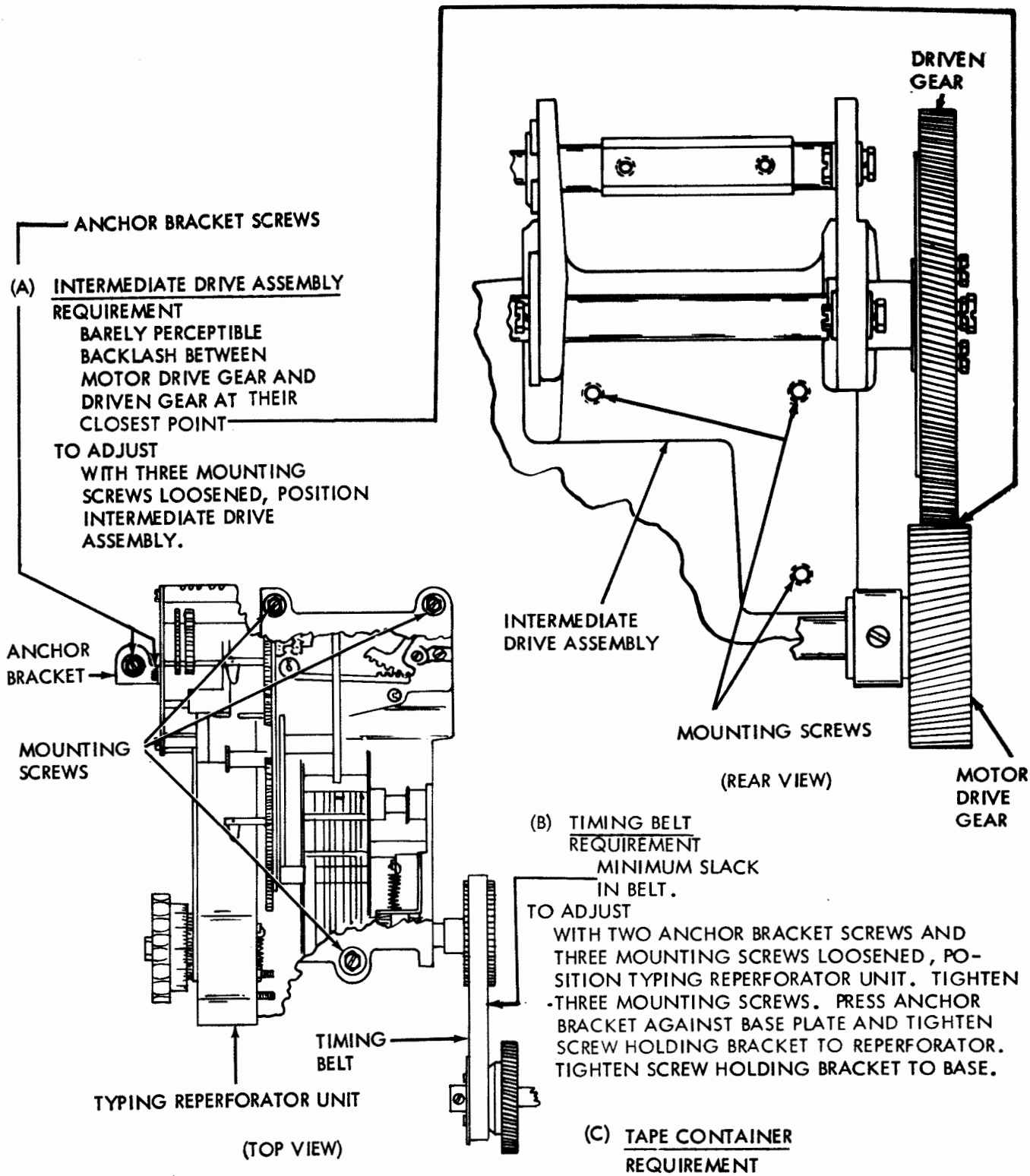
CAUTION:
IF MOTOR BECOMES BLOCKED FOR SEVERAL SECONDS, THERMAL CUT-OUT SWITCH WILL BREAK CIRCUIT. SHOULD THIS HAPPEN, ALLOW MOTOR TO COOL AT LEAST 5 MINUTES BEFORE DEPRESSING RED RESET BUTTON. CHECK UNIT TO SEE WHY MOTOR WAS BLOCKED.

4. AUXILIARY RECEIVE-ONLY BASE

4.01 Tape-Out Mechanism



4.02 Drive Mechanism



5. RECEIVE-ONLY MINIATURIZED TAPE PRINTER BASE

5.01 Pinion and Gear

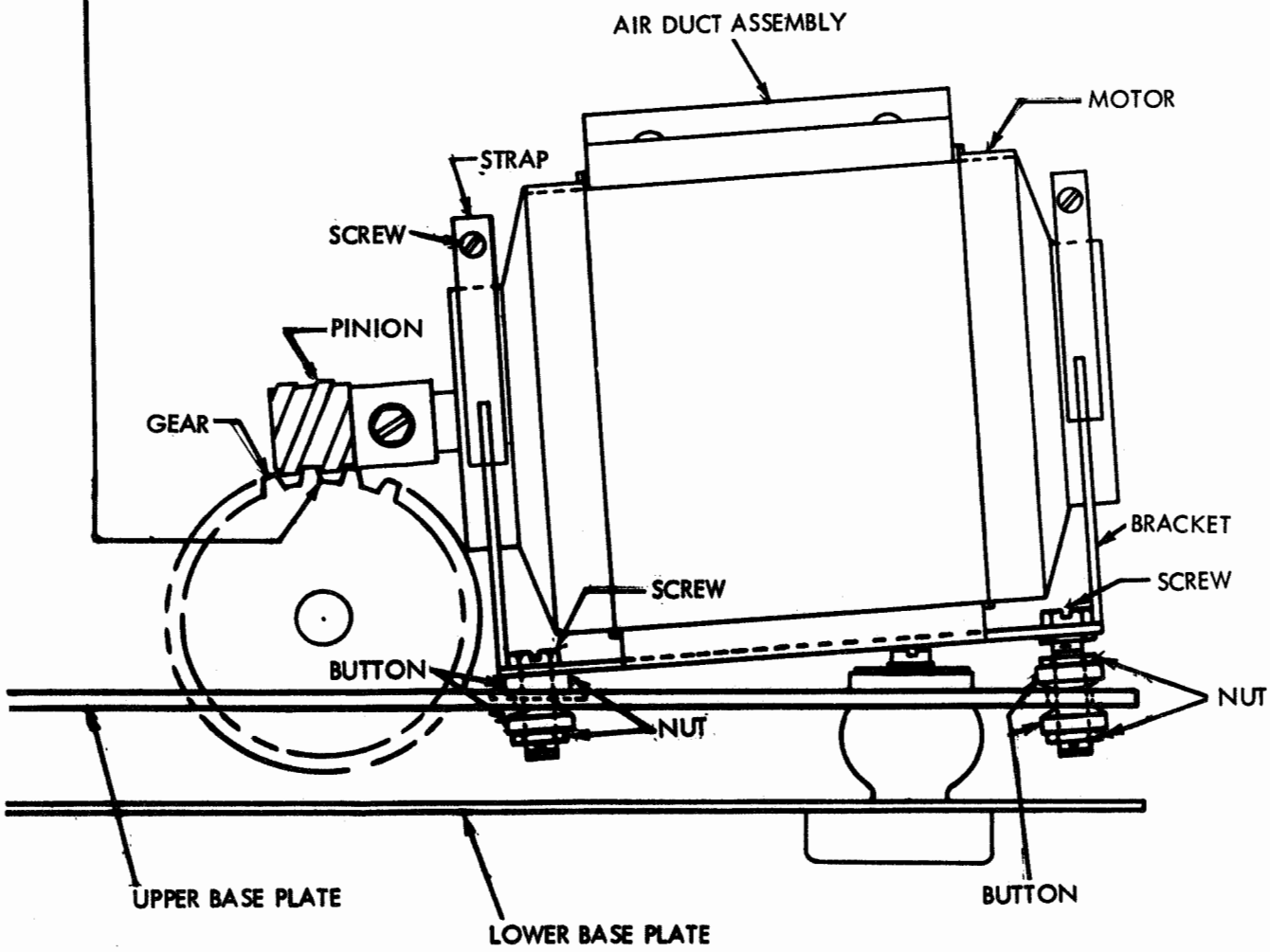
PINION-GEAR (FOR RECEIVE-ONLY MINIATURIZED TAPE PRINTER SET)

REQUIREMENT

BARELY PERCEPTIBLE BACKLASH BETWEEN MOTOR PINION AND DRIVEN GEAR MOUNTED IN SINGLE SPEED DRIVE ASSEMBLY.

TO ADJUST

LOOSEN FOUR MOUNTING SCREWS SECURING MOTOR TO UPPER BASE PLATE. INCREASE OR DECREASE BACKLASH BY ROTATING MIDDLE NUTS ON MOUNTING SCREWS OPPOSITE PINION END. TO INSURE MOTOR IS PROPERLY ALIGNED WITH DRIVEN GEAR, THE BOTTOM EDGE OF THE MOTOR MOUNT BRACKET OPPOSITE THE PINION END SHALL BE PARALLEL WITH UPPER BASE PLATE.



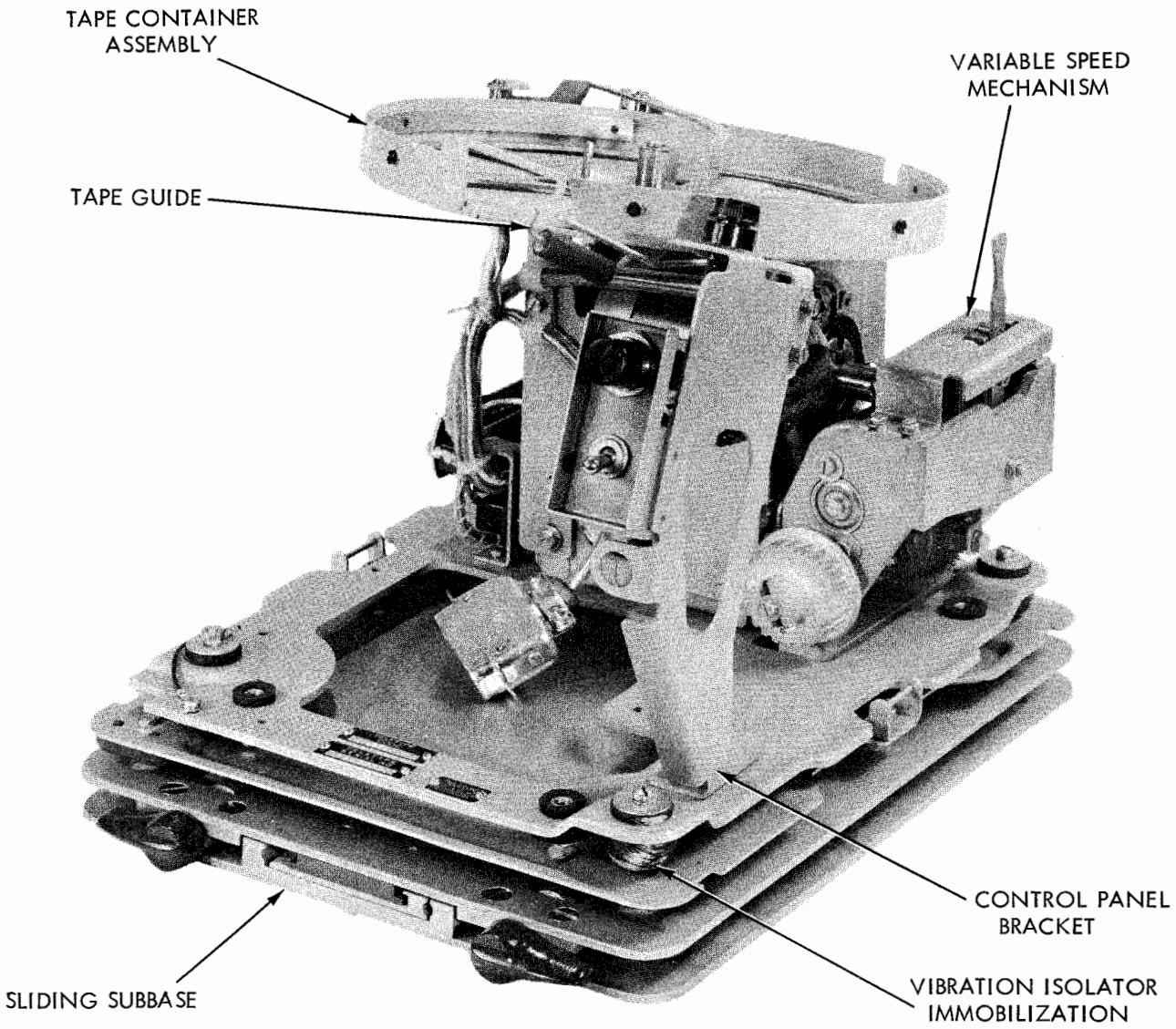
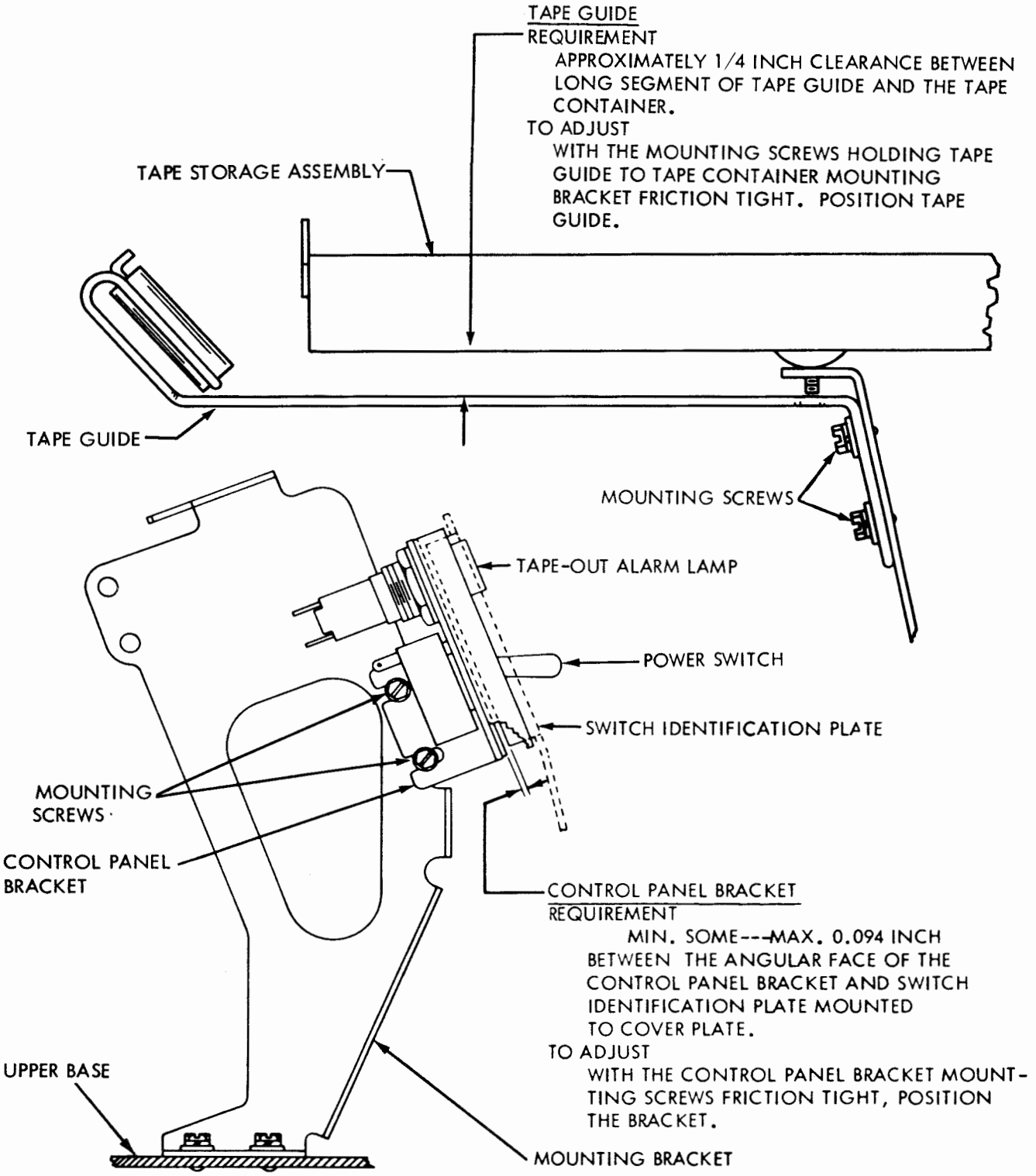


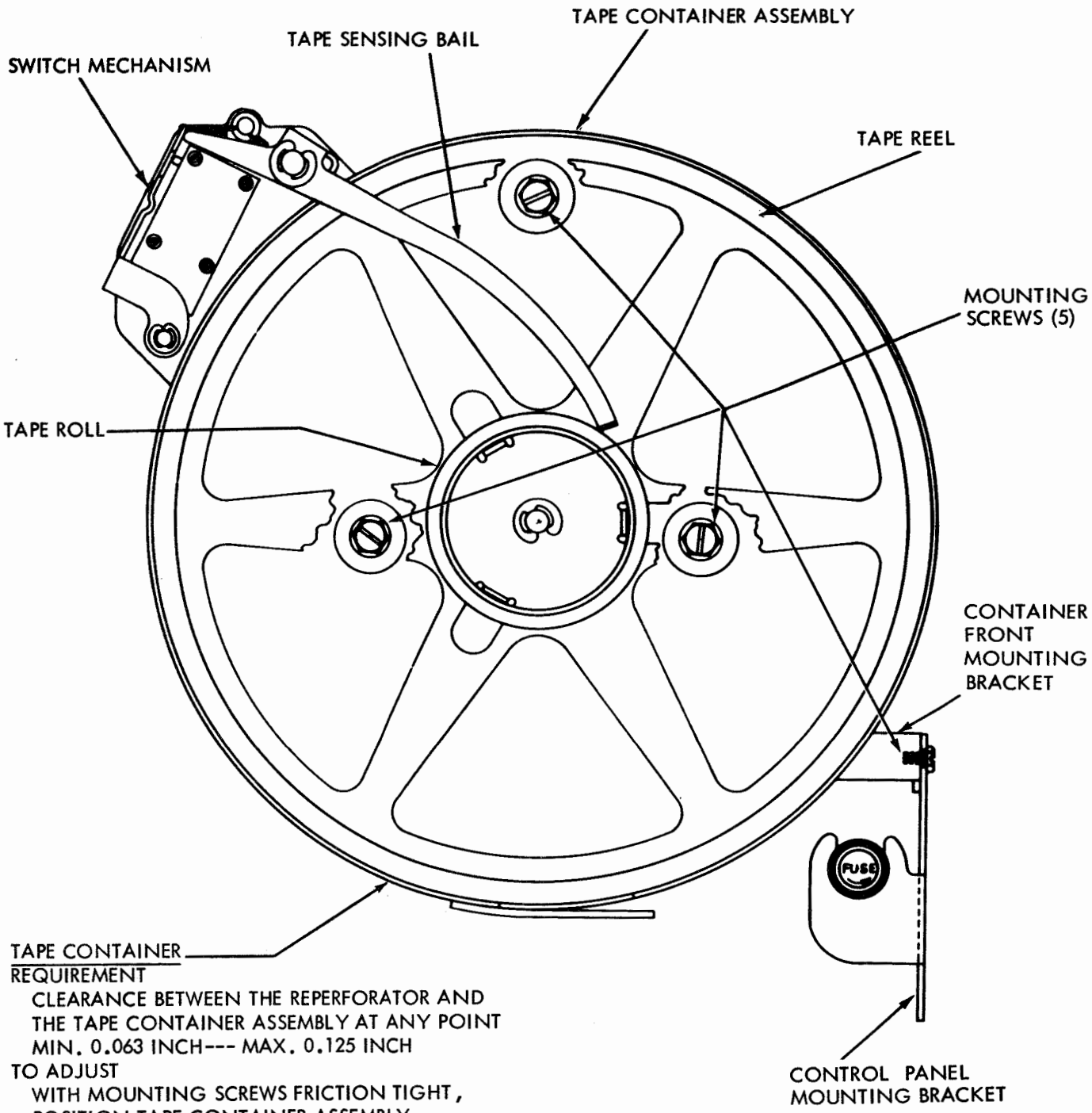
Figure 3 - 28 Receive-Only Miniaturized Base with Motor and Subbase (Front View)

6. RECEIVE-ONLY MINIATURIZED TYPING REPERFORATOR BASE

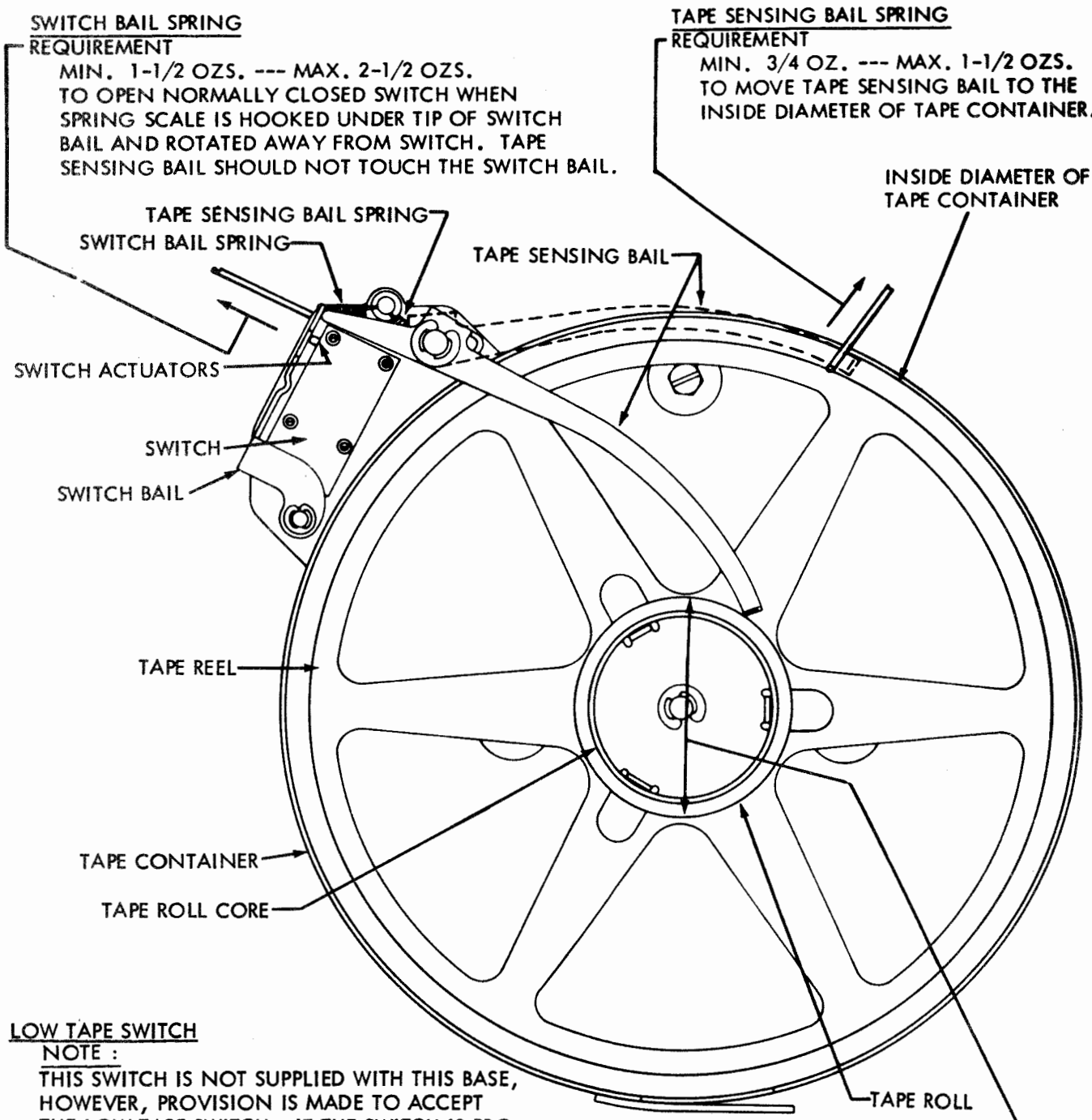
6.01 Tape Guide and Control Panel Bracket



6.02 Tape Container Assembly



6.03 Tape Container Assembly continued



LOW TAPE SWITCH

NOTE :

THIS SWITCH IS NOT SUPPLIED WITH THIS BASE, HOWEVER, PROVISION IS MADE TO ACCEPT THE LOW TAPE SWITCH. IF THE SWITCH IS PROVIDED THE ADJUSTMENT IS AS FOLLOWS:

REQUIREMENT

THE SECOND OR TOP SWITCH LOCATED ON THE TAPE CONTAINER ASSEMBLY SHOULD OPERATE WHEN THE TAPE ROLL IN THE CONTAINER IS REDUCED TO 2-7/16 INCHES.

TO ADJUST

BEND THE UPPER PRONG OF SWITCH BAIL. RECHECK TAPE OUT SWITCH ADJUSTMENT.

TAPE-OUT SWITCH

REQUIREMENT

THE SWITCH SHOULD OPERATE WHEN THE TAPE ROLL IN THE CONTAINER IS REDUCED IN DIAMETER TO 2-5/16 INCHES.

TO ADJUST

BEND THE LOWER PRONG OF THE SWITCH BAIL.

6.04 Base Assembly and Variable Speed Mechanism

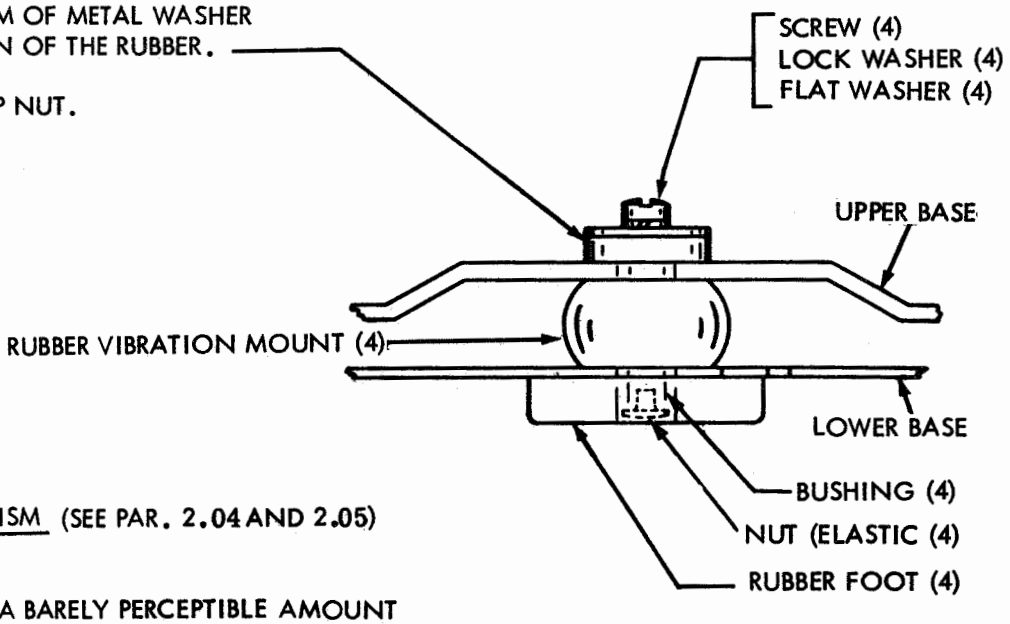
VIBRATION ISOLATOR IMMOBILIZATION

REQUIREMENT

NO CLEARANCE BETWEEN TOP OF RUBBER ISOLATOR AND BOTTOM OF METAL WASHER WITH NO COMPRESSION OF THE RUBBER.

TO ADJUST

TURN THE ELASTIC STOP NUT.



VARIABLE SPEED MECHANISM (SEE PAR. 2.04 AND 2.05)

(1) REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE MOTOR PINION AND THE DRIVEN GEAR AT THEIR CLOSEST POINT.

TO ADJUST

WITH THE FOUR MOUNTING SCREWS FASTENING THE VARIABLE SPEED DEVICE TO THE VIBRATION ISOLATORS FRICTION TIGHT, POSITION THE VARIABLE SPEED ASSEMBLY.

(2) REQUIREMENT

WITH SPEED SELECTOR LEVER DETENTED IN CENTER POSITION 100 W.P.M. THERE SHALL BE FULL MESH BETWEEN GEARS.

TO ADJUST

WITH THE GEAR SHIFT BRACKET MOUNTING SCREWS FRICTION TIGHT, POSITION GEAR SHIFT BRACKET.

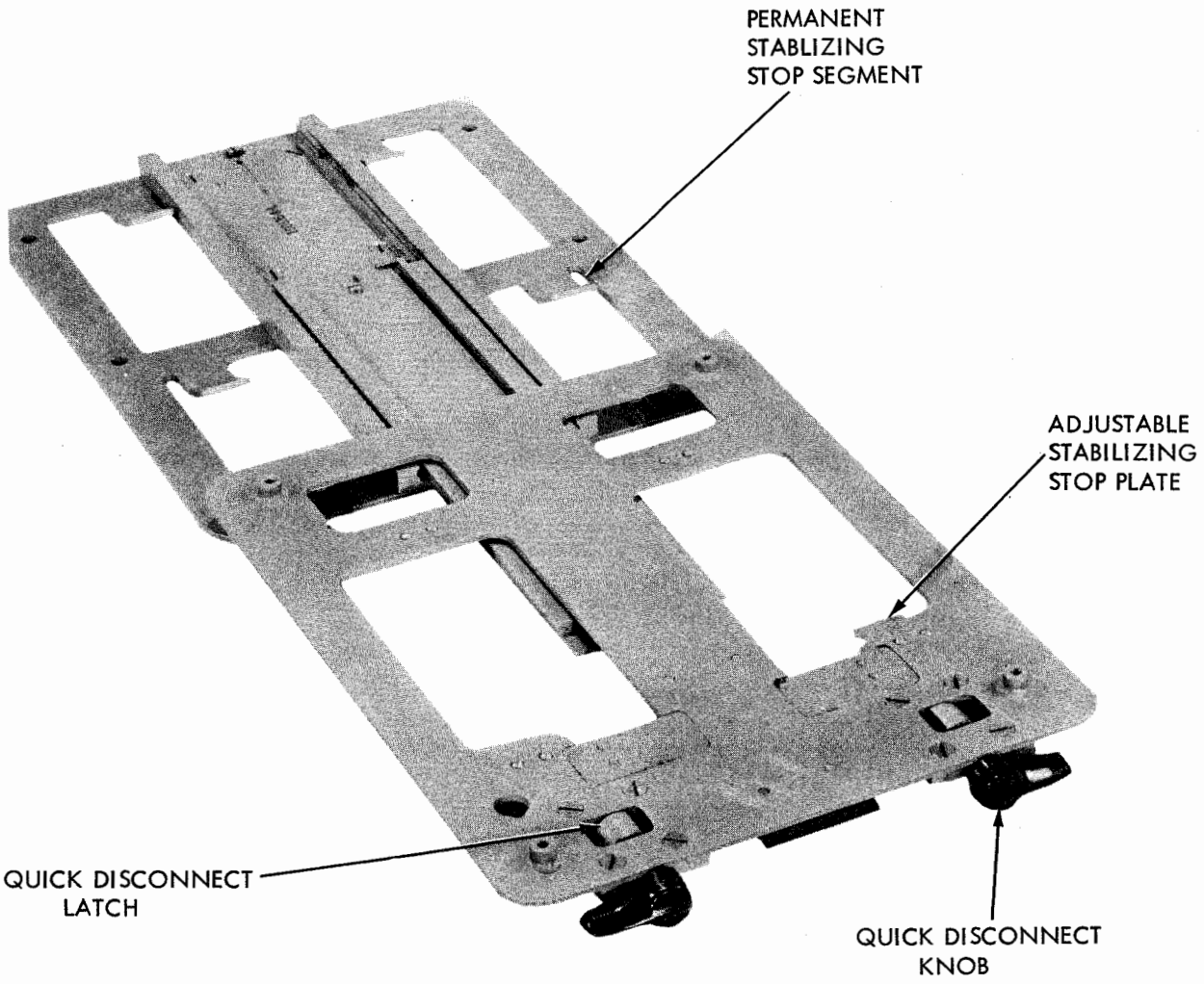
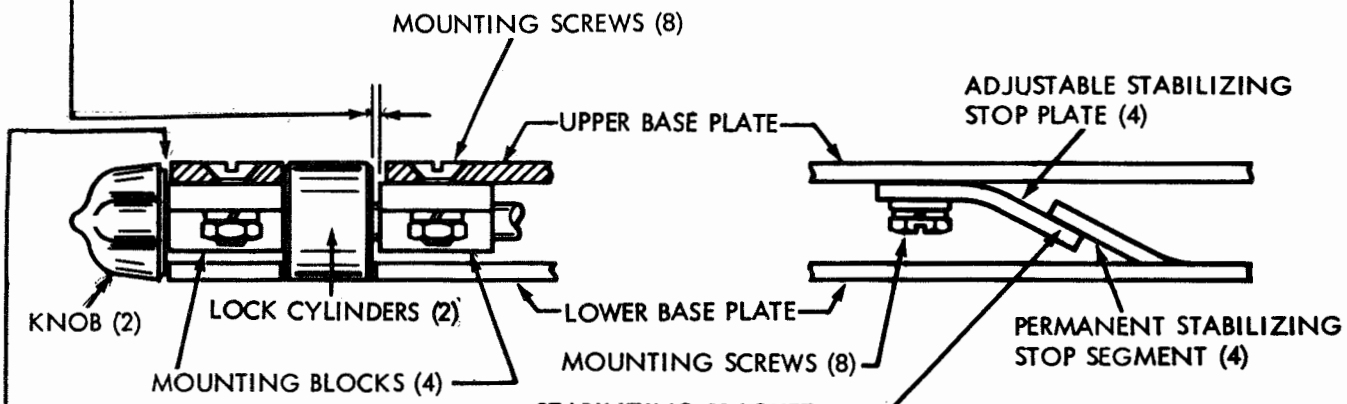


Figure 4 - 28 Sliding Subbase Assembly For Miniaturized Receiving-Only Typing Reperforator Set (Extended - Front View)

7. SLIDING SUBBASE FOR MINIATURIZED RECEIVING-ONLY TYPING REPERFORATOR SET

7.01 Sliding Subbase

QUICK DISCONNECT LATCH
REQUIREMENT
WITH SLIDE IN THE FULLY RETRACTED POSITION THE LOCKING CYLINDER OF THE QUICK - DISCONNECT DEVICE SHALL BE FIRMLY SEATED AGAINST THE STOP SURFACE OF THE BOTTOM PLATE:
MIN. 0.002 INCH --- MAX. 0.012 INCH
END PLAY BETWEEN LOCKING CYLINDER AND THE TWO MOUNTING BLOCKS.
TO ADJUST
WITH THE MOUNTING SCREWS OF THE TWO BLOCKS FRICTION TIGHT AND THE SLIDE FULLY DEPRESSED, POSITION THE TWO BLOCKS.



STABILIZING BRACKET
REQUIREMENT
NO CLEARANCE BETWEEN THE PERMANENT STABILIZING SEGMENT OF LOWER BASE PLATE AND THE ADJUSTABLE STABILIZING STOP PLATE OF THE UPPER BASE PLATE WHEN THE SLIDE IS IN THE FULLY RETRACTED LOCKED POSITION.
TO ADJUST
WITH MOUNTING SCREWS OF EACH OF THE FOUR STABILIZING STOP PLATES FRICTION TIGHT, POSITION EACH STABILIZING STOP PLATE.
CHECK
TO INSURE THAT THERE IS NO ROTATION WHEN THE TOP AND BOTTOM PLATES ARE "ROTATED" TOWARD EACH OTHER WITHOUT BENDING EITHER OF THE PLATES.

QUICK DISCONNECT KNOB
REQUIREMENT
WITH KNOBS IN THE OPEN POSITION:
MIN. 0.093 INCH --- MAX. 0.140 INCH
CLEARANCE BETWEEN COVER AND LOCKING DEVICE KNOBS.
TO ADJUST
WITH THE TWO SET SCREWS IN EACH KNOB FRICTION TIGHT, POSITION KNOBS.

NOTE:
THE KNOB LOCKING CYLINDER ASSEMBLY MUST SNAP INTO THE LOCKED POSITION WHEN THE KNOBS ARE RELEASED FROM AN ANGULAR DISPLACEMENT OF APPROXIMATELY 45° FROM THE HORIZONTAL.

28 TRANSMITTER DISTRIBUTOR UNIT (LXD)

ADJUSTMENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section provides specific adjustments for the single contact 28 transmitter distributor. It reflects 5- and 6-level operation for LXD unit.

1.02 The adjustments are arranged in a sequence that should be followed if a complete readjustment is undertaken. The tools and spring scales required to perform these adjustments are found in tool section 570-005-800TC. A complete adjusting procedure should be read before attempting to make the adjustment. After an adjustment is completed, be sure to tighten any nuts or screws that may have been loosened. Where an illustration shows interrelated parts, the sequence that should be followed in checking the requirements and making the adjustments is indicated by the letters, (A), (B), (C), etc.

1.03 The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions, and the angle at which scales should be applied. Coil springs which do not meet the requirements, and for which there are no adjusting procedures, should be discarded and replaced with new springs. If a part mounted on shims is removed, the number of shims used at each mounting screw should be noted so that the same number is replaced when the part is remounted.

Note: Remove power from unit before making adjustments.

1.04 When the requirement calls for the clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever 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. When the main 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 from the clutch drum.

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 disconnected from its source of power as a safety precaution.

1.06 References made to left, right, up, down, front, or rear, apply to the set in its operating position, as viewed from the operator's position.

1.07 All electrical contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 percent of the contact diameter. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustment or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

1.08 Units may have signal contacts made of either unplated or gold-plated tungsten. If in doubt as to the type of contacts, remove contact box cover and inspect contacts for gold plating. Do not use burnishers, files, etc which will remove gold plating.

1.09 Use twill jean cloth (KS2423) (TP107162) to clean gold-plated contacts. Open contacts. Allow contacts to close on surface of twill jean. Draw twill jean part way through. Open contacts and withdraw twill jean.

1.10 This procedure prevents small fibers at edges of twill jean strip from becoming lodged between contacts.

1.11 Clean unplated tungsten contacts in accordance with standard procedures (Paragraph 1.07).

Servicing For Certain Low-Voltage Applications

1.12 For standard applications, including those with data sets, observe standard maintenance procedures and intervals. Certain low-voltage applications are covered below.

1.13 For optimum reliable operation in these low-voltage applications, clean gold-plated contacts with twill jean, as instructed above, at intervals of approximately 50 hours of actual contact operation. Since maintenance interval and life expectancy of the contacts are dependent on the signal circuit, maintenance interval may be lengthened for specific applications.

Note 1: Applying operating voltage of standard Distortion Test Set directly to contacts may damage gold plating and impair low-voltage operation. When electrically adjusting or testing contacts (2.23), use an intermediate device, keyed by the contacts, to interrupt current to stroboscopic lamp of test set. This intermediate device must be capable of being keyed by a 3 to 20 volt change at maximum of 20 milliamperes.

Note 2: Normally for low-voltage applications, contacts should be used in circuits operating between 3 and 20 volts dc at a current level not to exceed 60 milliamperes. Between 20 and 70 volts dc the current should be adjusted so as not to exceed a 120 milliwatt power level. The contacts are not normally intended for use with voltages above 70 volts dc. Exceeding this level for an appreciable length of time may result in damage to the gold plating and make them unfit for low-voltage applications.

2. BASIC UNITS

2.01 Clutch Mechanism

Note 1: Remove the transmitter distributor from its base before making a complete re-adjustment or spring tension checks.

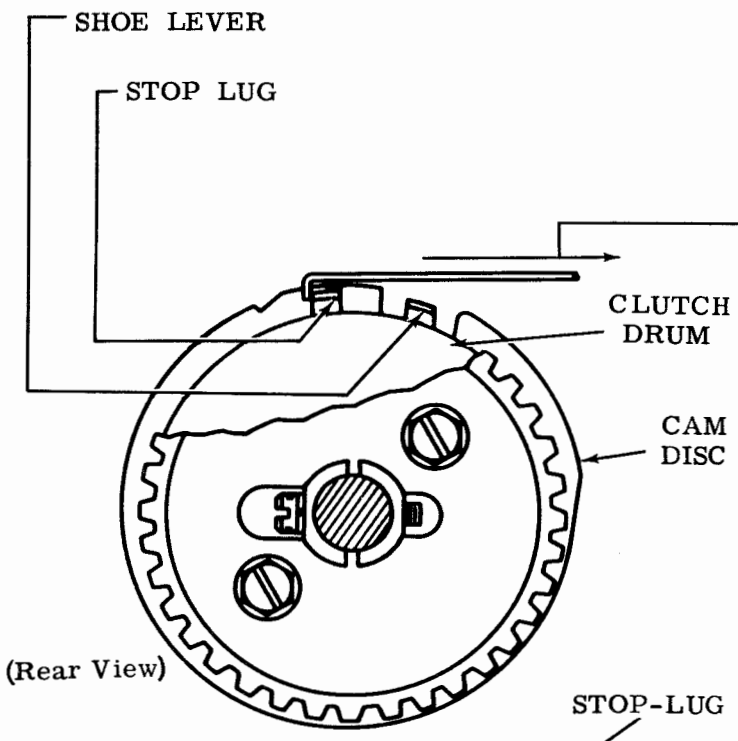
Note 2: Adjustments (A) and (B) are made at the factory and should not be disturbed unless good reasons exist that the requirements are not met.

(A) CLUTCH SHOE LEVER SPRING

To Check
Invert unit and rotate main shaft until clutch shoe lever and stop lug are up. With clutch engaged, hold cam disc to prevent turning.

Requirement
Min 15 oz---Max 20 oz
to move shoe lever in contact with stop lug.

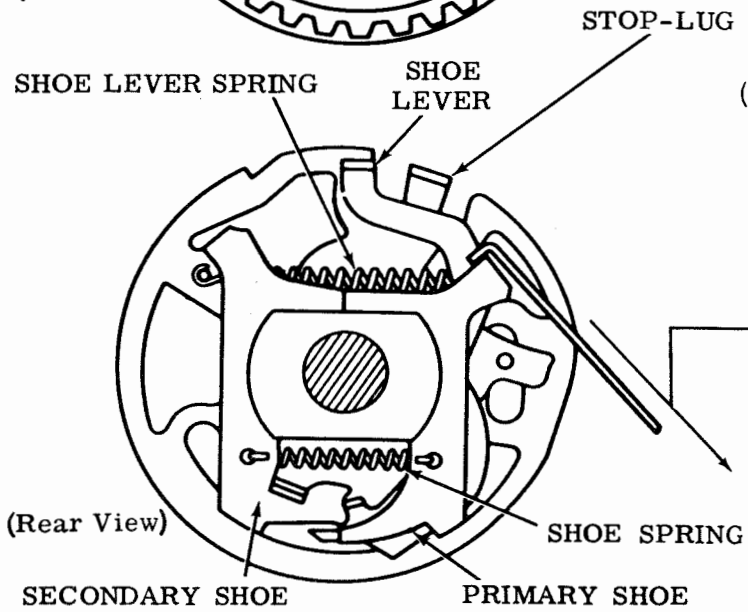
(Where set is equipped with tape slack mechanism)
Min 9 oz---Max 11 oz



(B) CLUTCH SHOE SPRING

To Check
Remove the clutch from the main shaft. With the clutch drum removed, hook spring scale as shown.

Requirement
Min 3 oz---Max 5 oz
to start primary shoe moving away from secondary shoe at point of contact.



2.02 Clutch Mechanism (continued)

Note: Remove transmitter distributor from base before making adjustments.

(A) CLUTCH SHOE LEVER

To Check

Trip transmitter distributor clutch. Pull shoe lever opposite the stop lug with a force of 32 oz. Release the force slowly to engage clutch shoes. Note clearance between clutch shoe lever and stop lug. Disengage the clutch, and again pull the lever opposite the stop lug with a force of 32 oz. Release the force slowly. Note clearance between the shoe lever and the stop lug.

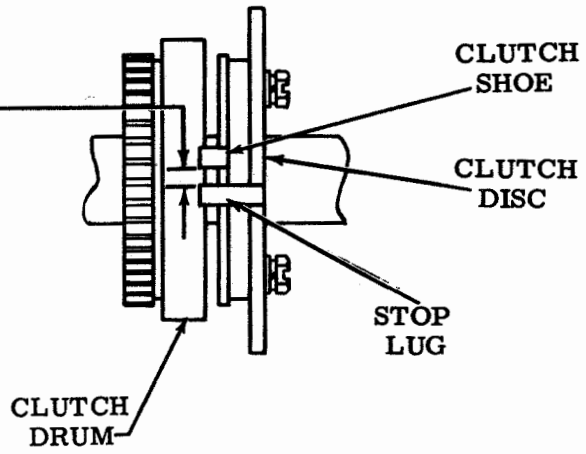
Requirement

Min 0.055 inch---Max 0.085 inch greater clearance with clutch engaged than with clutch disengaged.

To Adjust

Loosen clutch disc clampscrews. Place wrench over stop lug and move disc. Retighten screws.

Note: Drum must not drag on shoes when clutch is disengaged and rotated in its normal direction. Refine CLUTCH SHOE LEVER adjustment to correct shoe drag.



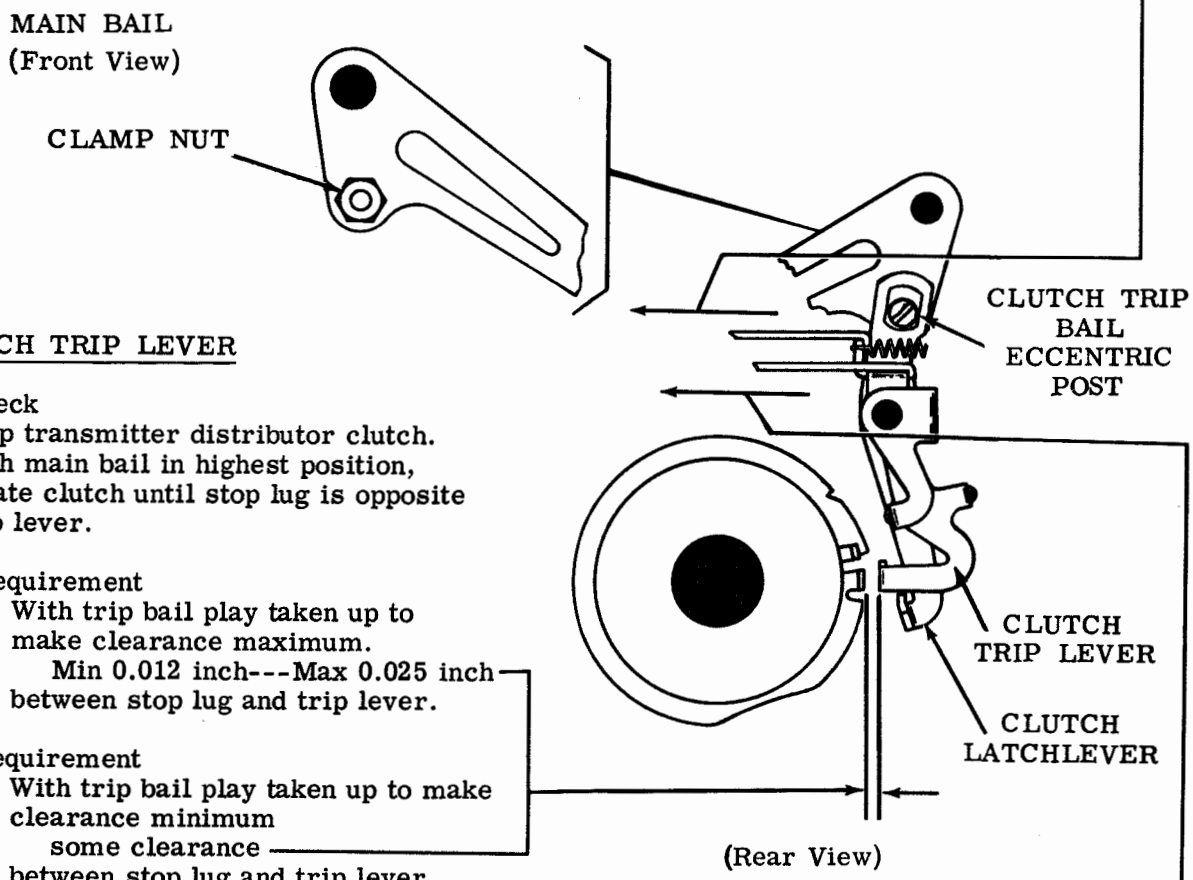
(Left Side View)

2.03 Clutch Mechanism (continued)

(D) CLUTCH LATCHLEVER SPRING

To Check
Trip clutch and rotate until latchlever is on low part of disc.

Requirement
Min 3 oz---Max 5 oz
to start clutch latchlever moving.



(B) CLUTCH TRIP LEVER

To Check
Trip transmitter distributor clutch. With main bail in highest position, rotate clutch until stop lug is opposite trip lever.

(1) Requirement
With trip bail play taken up to make clearance maximum.
Min 0.012 inch---Max 0.025 inch
between stop lug and trip lever.

(2) Requirement
With trip bail play taken up to make clearance minimum
some clearance
between stop lug and trip lever.

To Adjust
Loosen clamp nut friction tight and rotate trip bail eccentric post. Check Requirement (1). Retighten clamp-screw.

(C) CLUTCH TRIP LEVER SPRING

Requirement
With clutch engaged
Min 7 oz---Max 10-1/2 oz
to start clutch trip lever moving.

2.04 Clutch Mechanism (continued)

(A) CLUTCH MAGNET ASSEMBLY

(1) To Check

Place armature in attracted (energized) position.

Requirement

Armature to contact core face of top magnet with

Min some---Max 0.004 inch between armature and core face of bottom magnet at point of least clearance. (Sets with Tape Shoe and Tape Feed Assurance Mechanisms Min 0.004 inch---Max 0.007 inch)

To Adjust

Remove magnet mounting bracket screws and lift clutch magnet assembly from the unit. Loosen mounting screws and position hinge.

(2) To Check

Place high part of backstop eccentric toward top of unit. Hold armature in attracted (energized) position.

Requirement

Min 0.045 inch---Max 0.055 inch between armature bail and backstop eccentric.

To Adjust

Loosen backstop clamp nut and position eccentric. Retighten backstop clamp nut.

(3) To Check

If clutch magnet assembly was removed in (1) To Check, replace it in unit to its lowest position. Tighten magnet mounting bracket screws friction tight. Disengage clutch.

Requirement

Min 0.007 inch---Max 0.015 inch between end of armature bail extension and main bail latch.

To Adjust

Position clutch magnet assembly using adjusting slot.

Note: Under ac power, armature "chatter" must be at a minimum. If excessive "chatter" is present, refine requirement under (1) To Check, and recheck requirements under (2) and (3) To Check.

(B) ARMATURE BAIL SPRING

To Check

Place armature in de-energized position and hold main bail latchlever away from armature bail extension.

Requirement

Min 1 oz---Max 2 oz (Sets with Tape Shoe and Tape Feed Assurance Mechanisms only Min 3-3/4 oz---Max 4-3/4 oz) to start bail moving.

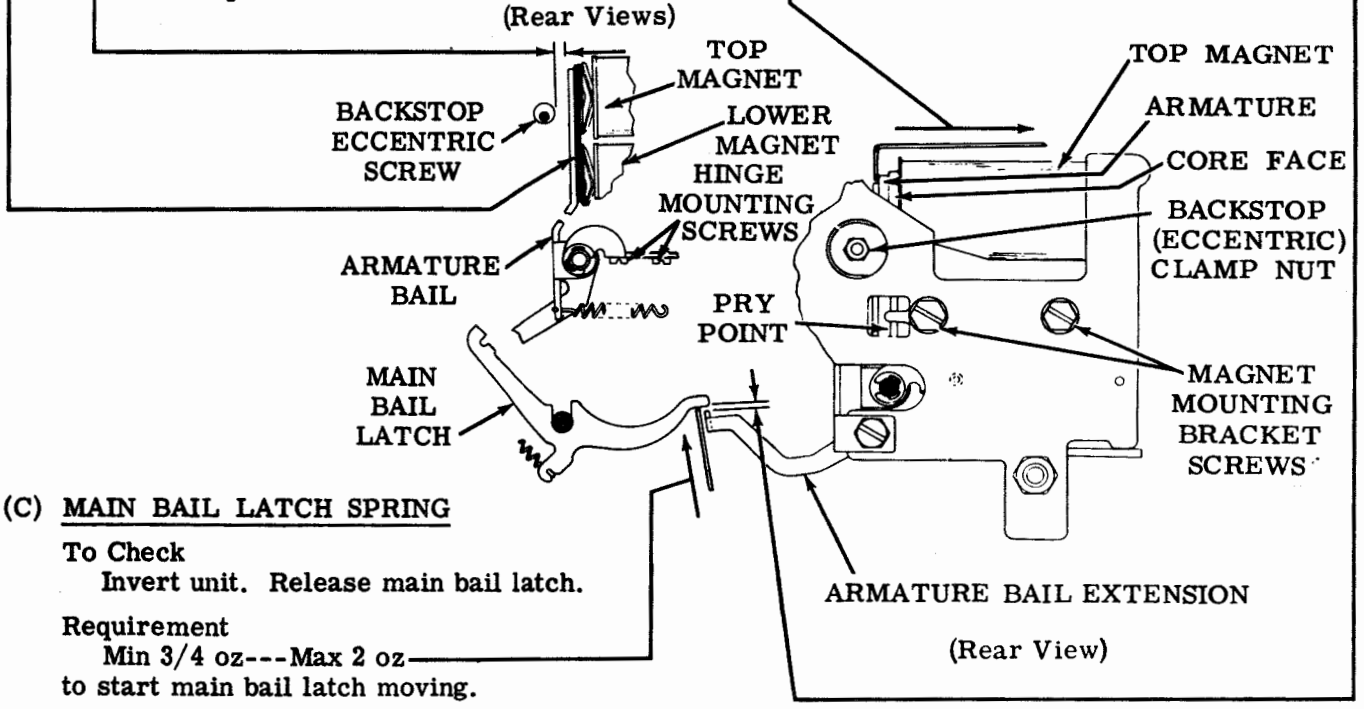
(C) MAIN BAIL LATCH SPRING

To Check

Invert unit. Release main bail latch.

Requirement

Min 3/4 oz---Max 2 oz to start main bail latch moving.



2.05 Tape Lid

TAPE LID

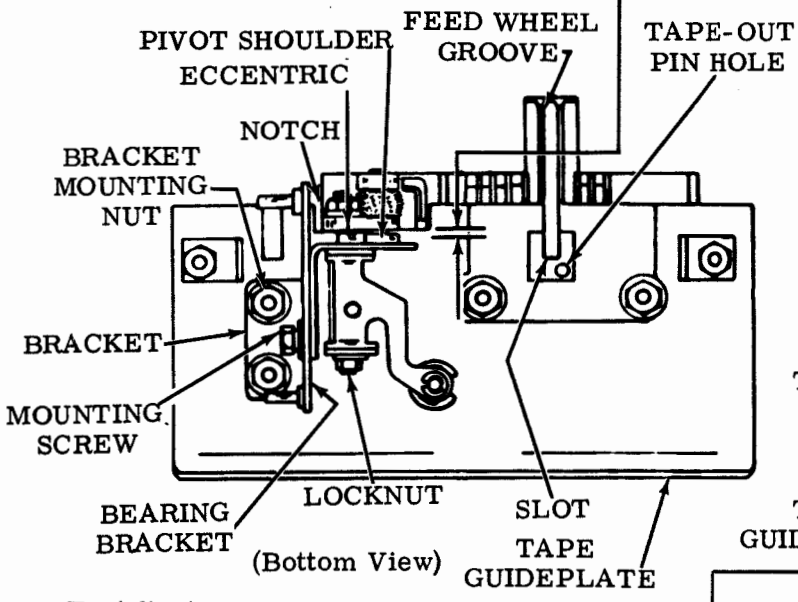
To Check

Remove top plate and tape guideplate. Lubricate before adjustment.

(1) Requirement

With tape lid held against notch in tape guideplate, feed wheel groove lined up with slot in tape guideplate, and tape-out pin holes lined up

Min some---Max 0.010 inch between tape lid and pivot shoulder.



To Adjust

Loosen bracket mounting nuts. Insert tip of appropriate gauge (Note 1) through slot in tape guideplate and into feed wheel groove. Position bracket. Tighten nuts.

Note 1: Use one of the following three gauges in making this adjustment:

TAPE	GAUGE
5-Level	TP156743
6-Level	TP170311 (In-Line Feed Hole)
6-Level	TP173503 (Advance Feed Hole)

(2) Requirement

With front bearing surface of tape lid touching tape guideplate

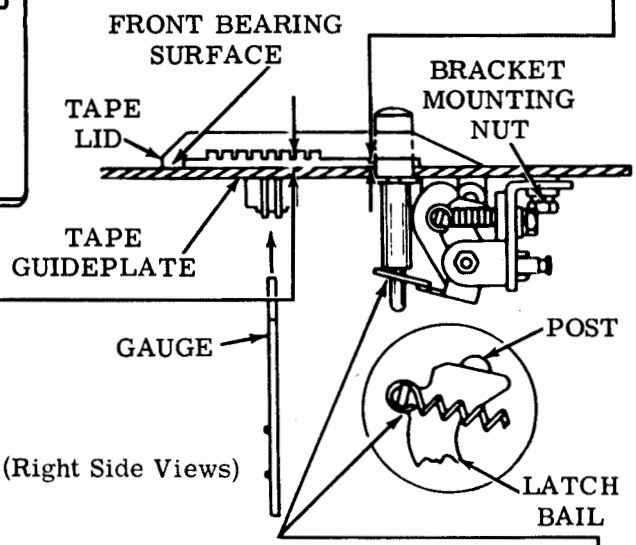
Min 0.010 inch---Max 0.018 inch between fin indicated and tape guideplate.

To Adjust

Loosen bearing bracket mounting screws. While pressing tape lid against tape guideplate, position bearing bracket. Recheck Requirement (1).

Note 2: If Requirement (2) cannot be met, position bearing bracket so that its mounting screws are located in centers of holes in bracket. Repeat Requirements (1) and (2).

Note 3: When tape guideplate and top plate are assembled to reader, tape lid may touch top plate, and a different clearance from that specified in Requirement (2) can be expected. However, with tape lid closed, there must always be at least 0.002 inch clearance between tape guideplate and heel pad.



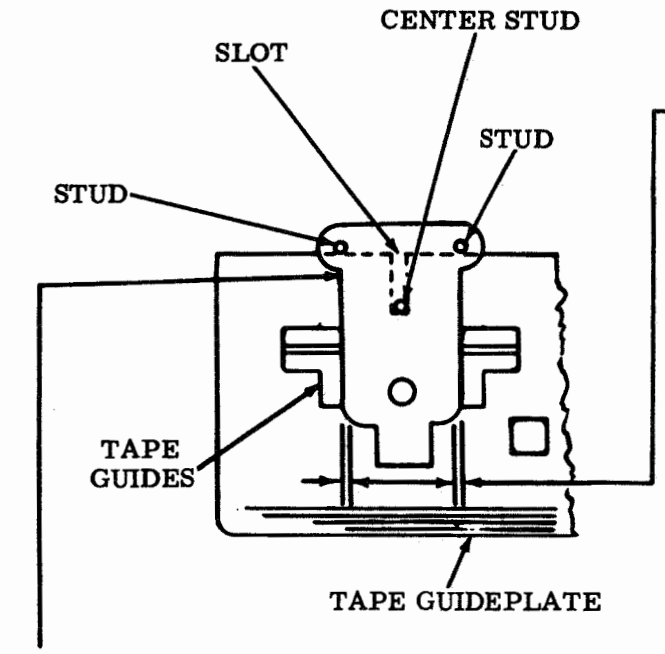
(3) Requirement

With tape lid latched against tape guideplate, release plunger must have some endplay.

To Adjust

Loosen locknut. Raise tape lid and rotate high part of eccentric towards bearing bracket. Close tape lid and continue rotating high part of eccentric towards bearing bracket until latch bail just falls under flat on post. Recheck operation of latch bail by depressing release plunger with tape lid held down.

2.06 Tape Lid (continued)



(Top View)

TAPE GUIDE

To Check

Unlatch tape lid and position gauge as illustrated.

(1) Requirement

Min some---Max 0.003 inch between gauge and each tape guide.

(2) Requirement

Edge of wear plate flush with edge of tape guideplate.

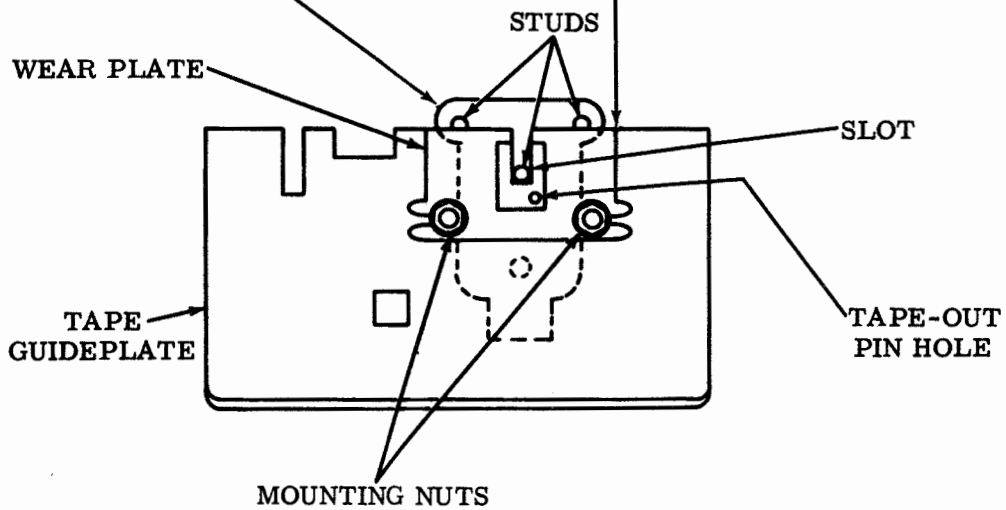
(3) Requirement

Tape must not ride up the sides of the tape guides.

To Adjust

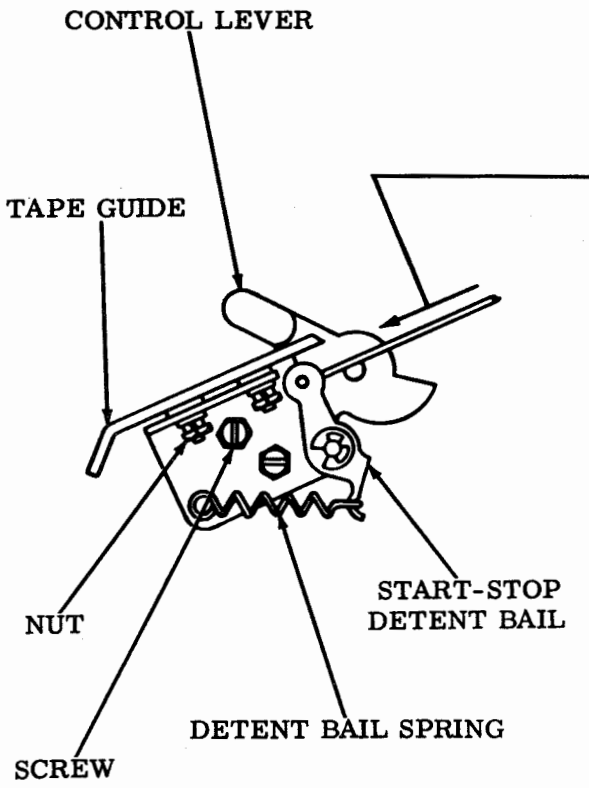
Loosen mounting nuts. Position wear plate until it overhangs tape guideplate. Push gauge down until top two studs butt up against tape guideplate thus positioning edge of wear plate flush with edge of tape guideplate. Hold gauge and wear plate and position each tape guide to meet Requirement (1). Tighten mounting nuts.

Note: Tape guides may touch gauge, but they must not bind against gauge when it is removed.



(Bottom View)

2.07 Tape Lid (continued)



(Rear View)

(A) START-STOP DETENT BAIL SPRING

To Check
Place control lever in run position.

Requirement
Min 14 oz---Max 22 oz
to start detent bail moving away from control lever.

(B) TAPE LID RELEASE PLUNGER SPRING

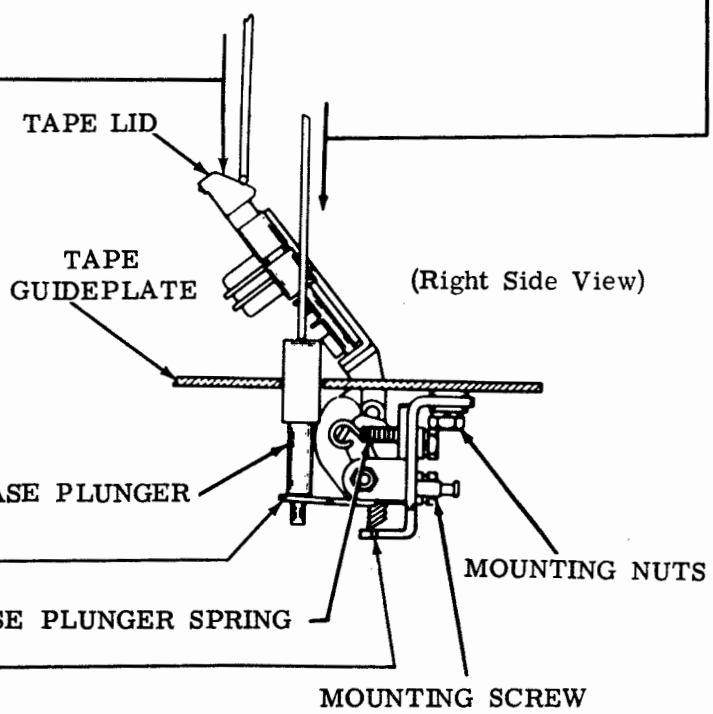
To Check
Unlatch tape lid. Place tape guideplate in a horizontal position and hold it there.

Requirement
Min 28 oz---Max 48 oz
to start tape lid bail moving.

(C) TAPE LID SPRING

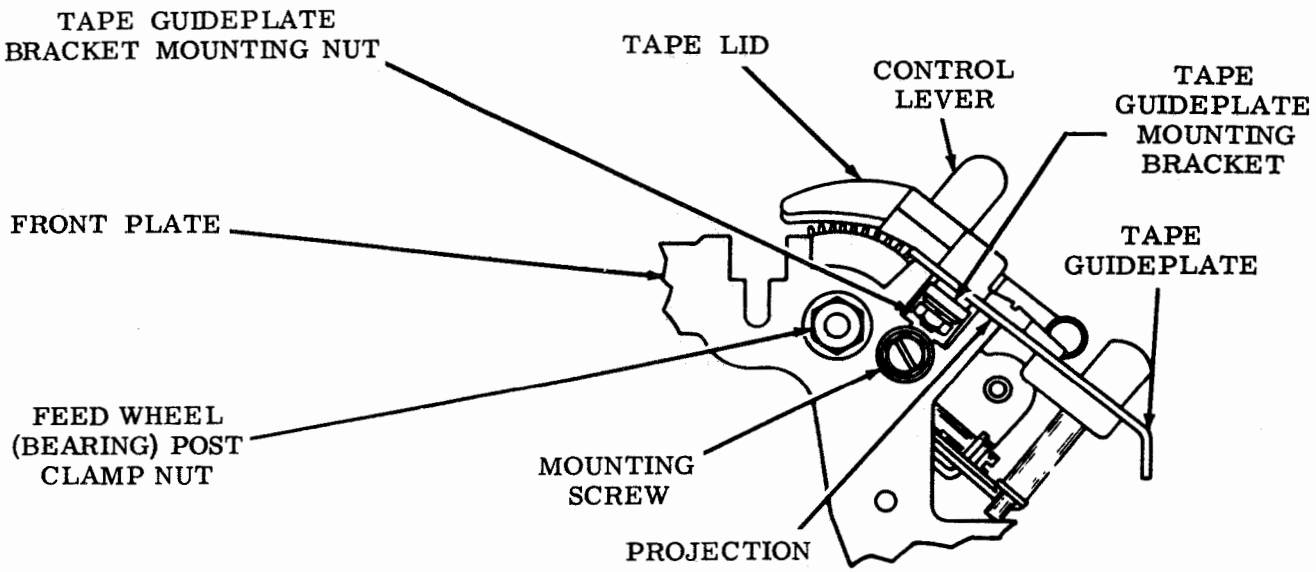
To Check
Hold release plunger fully depressed. Hold tape guideplate in horizontal position.

Requirement
Min 2-1/2 oz---Max 4-1/2 oz
to move open end of tape lid against tape guideplate.



(Right Side View)

2.08 Tape Lid (continued)



(Front View)

Note 1: To prevent damage to the tape-out pin, position stop arm to its lowest position and hold control lever bail extension from feed wheel ratchet.

TAPE GUIDEPLATE

(1) Requirement
Feed wheel post is not to interfere with mounting brackets of top plate and tape guideplate.

To Adjust
Loosen clamp nut and rotate feed wheel post.

(2) Requirement
Tape guideplate to rest firmly against a minimum of three of the four projections on side plates.

To Adjust
Rotate unit clutch to its stop position. Trip clutch to put sensing pins in their highest positions. Unlatch tape lid and place control lever to run position. Loosen mounting screws and mounting nuts. Position tape guideplate on reader to meet Requirement (2). Position tape-out pin into hole in tape guideplate. Tighten mounting screws.

Note 2: Mounting nuts loosened in Requirement (2) are tightened after performing Requirement (3) and TOP PLATE adjustment.

(3) Requirement
Edge of tape guideplate to project over side plates by equal amounts as gauged by eye.

To Adjust
Position type guideplate.

Note 3: Tight-tape bail extension must be under top plate.

2.09 Top Plate

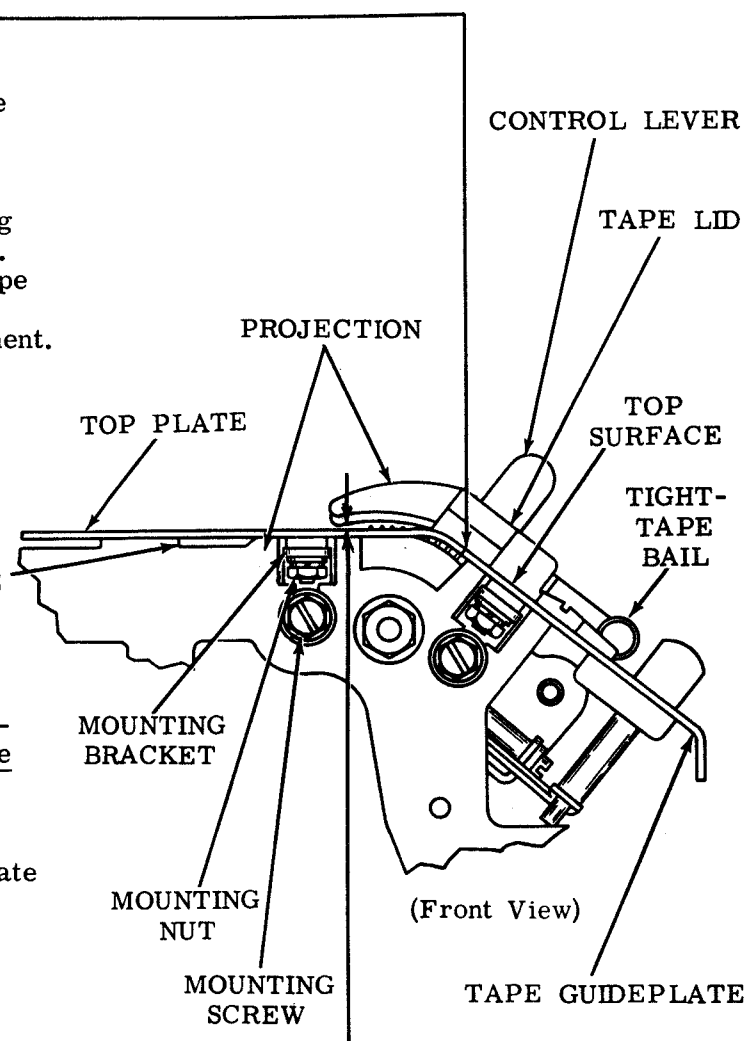
TOP PLATE

To Check
Remove cover plate and unlatch the tape lid.

(1) Requirement
Min flush---Max 0.003 inch below top surface of tape guideplate along width of tape lid when top plate is resting on a minimum of five of the six projections on side plates.

To Adjust
Loosen mounting screws and mounting nuts friction tight. Position top plate. Tighten mounting screws. Tighten tape guideplate mounting nuts left friction tight in TAPE GUIDEPLATE adjustment.

Note: Mounting nuts loosened in Requirement (1) above are tightened after performing Requirement (2) below.



(2) Requirement
Feed wheel slot to align with slot in tape guideplate so that feed wheel rotates freely with control lever in free position.

To Adjust
Position top plate toward one side plate or the other. Tighten mounting nuts left friction tight in Requirement (1) above.

(3) Requirement
With tape lid latched
Min 0.010 inch at end of extension covering feed wheel slot
Min 0.010 inch---Max 0.018 at tape guideplate adjacent to sensing pins
Min 0.010 inch---Max 0.025 at all other areas
between tape lid projection and top plate with play taken up toward tape guideplate.

To Adjust
Loosen tape lid bearing bracket mounting screws. Position tape lid. Recheck TAPE LID adjustment, Requirements (1) and (2).

2.10 Cover Plate

(A) COVER PLATE

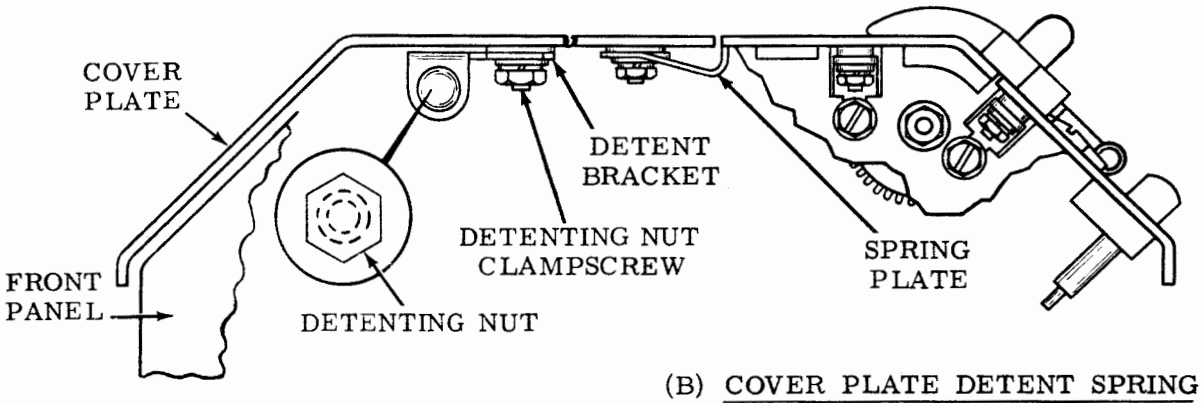
(1) Requirement
Right edge of cover plate holds flush against left edge of top plate by the cover plate detents.

(2) Requirement
Cover plate rests against at least three of the four projections (front and rear plate).

(3) Requirement
Front edge of cover plate and top plate align.

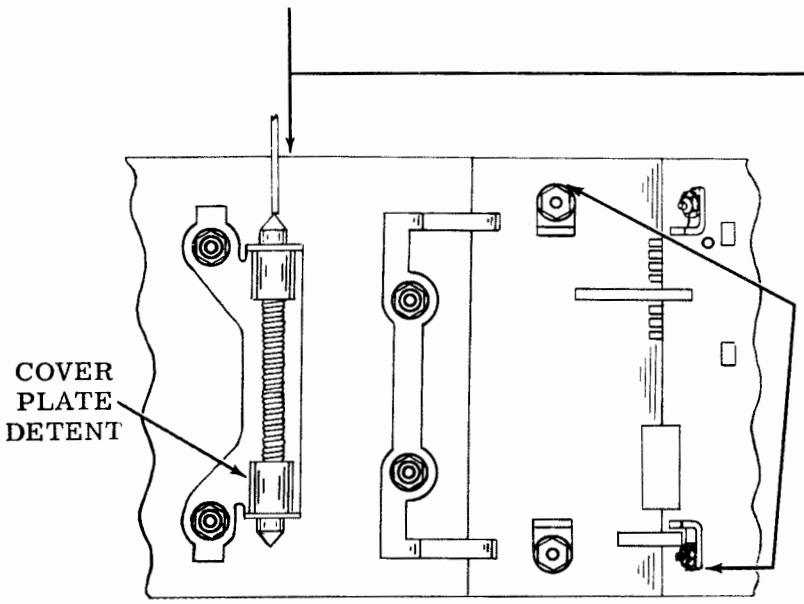
To Adjust
With detenting nut clampscrew (front and rear plate) friction tight, move clampscrews to their extreme lower right position, then tighten screws. Loosen detent bracket and spring plate mounting nuts. Place cover on unit and position horizontally to meet requirements. Retighten mounting nuts.

(Front View)



(B) COVER PLATE DETENT SPRING

Requirement
With spring scale applied to center of one detent
— Min 28 oz---Max 48 oz
to start plunger moving.



Note: Outer edge of each mounting bracket should be approximately in line with shoulder of its mounting stud. Replace tape guideplate, tape-out tension spring, top plate, and cover plate.

(Bottom View)

2.11 Tape-Out Switch Assembly

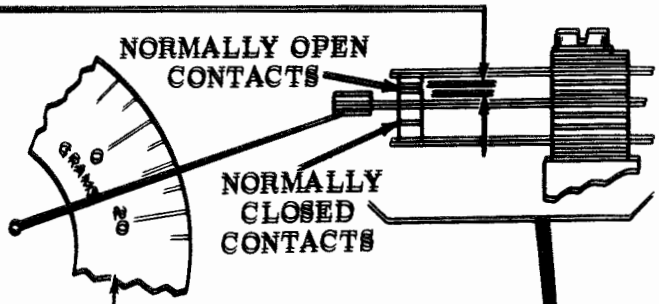
(A) TAPE-OUT CONTACT ASSEMBLY

To Check
Loosen spring bracket and move downward until tape-out pin extension no longer touches insulation on contact swinger.

(1) Requirement
Min 8 grams---Max 15 grams to separate normally closed contacts.

(2) Requirement
Min 0.008 inch---Max 0.015 inch between normally open contacts.

To Adjust
Remove tape-out contact assembly from unit by unhooking tape-out pin spring and removing bracket mounting screws. Form contact swinger using TP110445 spring bender. Replace contact assembly with swinger over tape-out pin extension. Place spring bracket shoulder bushing on upper hole and the washer on lower mounting hole. Rehook tape-out pin spring.



(B) TAPE-OUT SENSING PIN SPRING

To Check
Place control lever in run position.

Requirement
Min 38 grams---Max 45 grams to move tape-out pin to a position flush with tape guideplate.

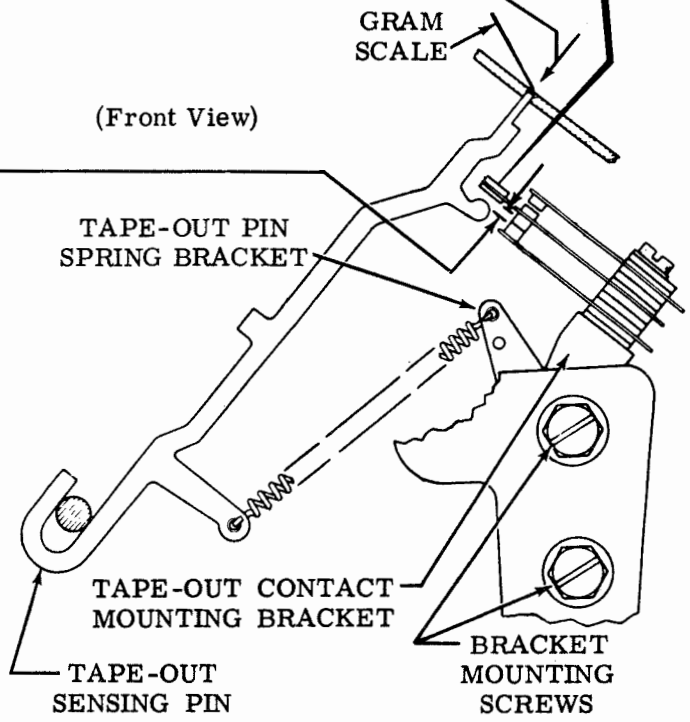
To Adjust
Loosen lower bracket mounting screw and position spring bracket to meet requirement. Retighten bracket mounting screw.

(C) TAPE-OUT CONTACT BRACKET

To Check
Insert tape under tape lid to hold tape-out pin down.

Requirement
Min 0.006 inch---Max 0.020 inch between tape-out pin upper extension and underside of insulation on swinger contact.

To Adjust
Loosen bracket mounting screws and adjust bracket. Retighten mounting bracket screws.



2.12 Tape-Out Switch Assembly (continued)

(B) DEPRESSOR BAIL TORSION SPRING

To Check
Place control lever in stop position. Unhook one end of intermediate tape-out bail spring.

Requirement
Min 2-3/4 oz---Max 5-1/2 oz to start tape-out bail moving away from tape-out pin depressor bail.

(C) INTERMEDIATE TAPE-OUT BAIL SPRING

To Check
Place control lever in run position. Unhook intermediate tape-out bail spring at post end.

Requirement
Min 3 oz---Max 5 oz
*Min 2 oz---Max 3 oz
to pull intermediate tape-out bail to its installed length.
*5-level only

(A) TAPE-OUT SENSING PIN

(1) To Check
Place control lever in stop position.

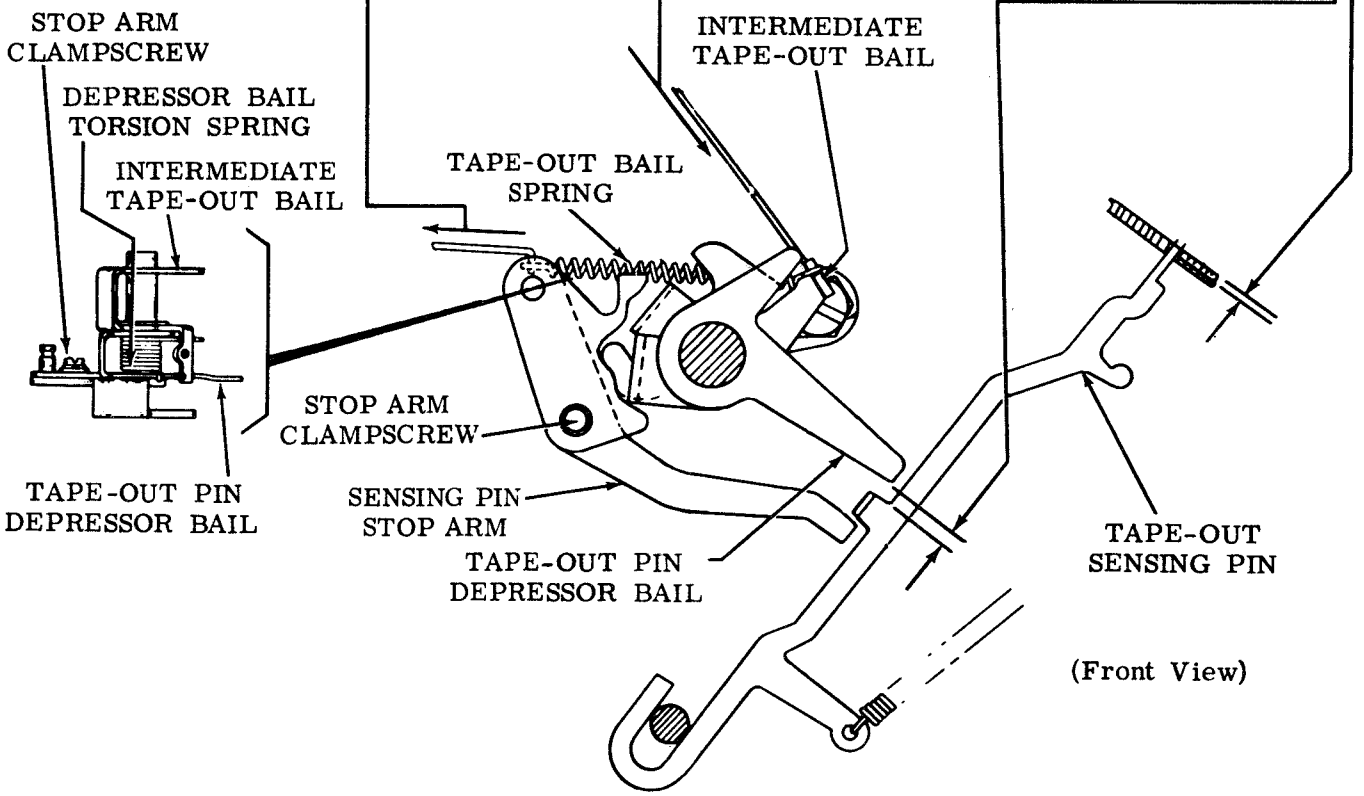
Requirement
Top of pin to be
Min flush---Max 0.010 inch below surface of tape guideplate.

To Adjust
Loosen stop arm clampscrew. friction tight. Position stop arm to meet requirement. Retighten clampscrew.

(2) To Check
Place control lever in run position.

Requirement
Clearance as shown should be
Min 0.055 inch

To Adjust
Loosen tape-out bail clampscrew. Position extension arm to meet requirement. Retighten clamp screw. Recheck requirement under (1) To Check.



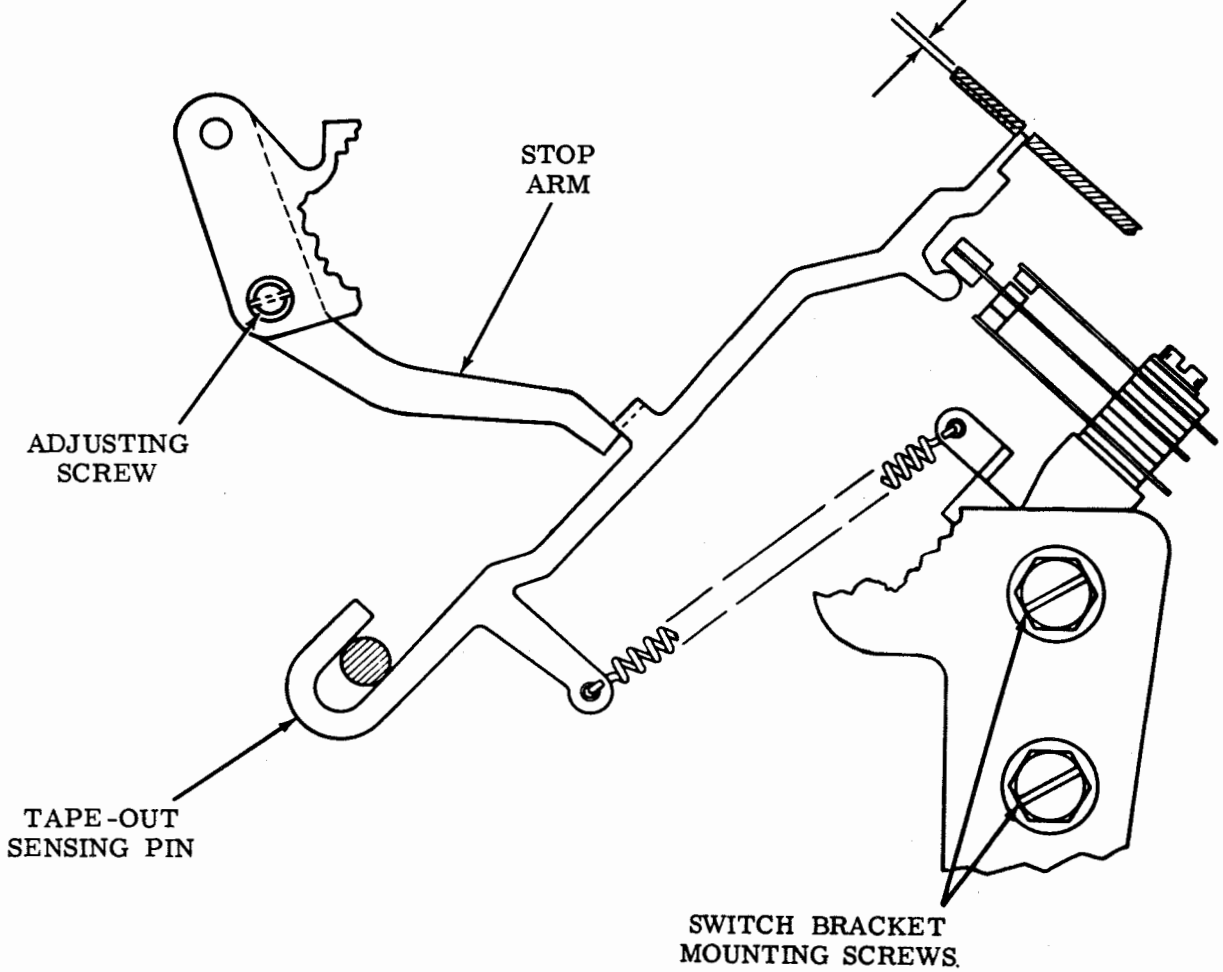
2.13 Tape-Out Switch Assembly (continued)

TAPE-OUT SENSING PIN (For Units Equipped with Tape Lid Sensing Lever)

To Check
Hold tape-out pin manually against stop arm.

Requirement
Top of pin to be
Min flush---Max 0.010 inch
below top surface of guideplate.

To Adjust
Loosen switch bracket mounting screws. Position switch bracket to meet requirement. Retighten mounting screws.



(Front View)

2.14 Start-Stop Switch Assembly

(A) START-STOP SWITCH BRACKET

To Check
Place control lever in run position.
Disengage clutch.

(1) Requirement
Min 0.006 inch---Max 0.015 inch between start-stop bail extension and insulator on start-stop switch swinger.

To Adjust
Loosen switch bracket mounting screws. Position switch bracket to meet requirement. Retighten bracket mounting screws.

(2) Requirement
Start-stop bail extension and contact arm to fully engage insulated portion of start-stop switch swinger.

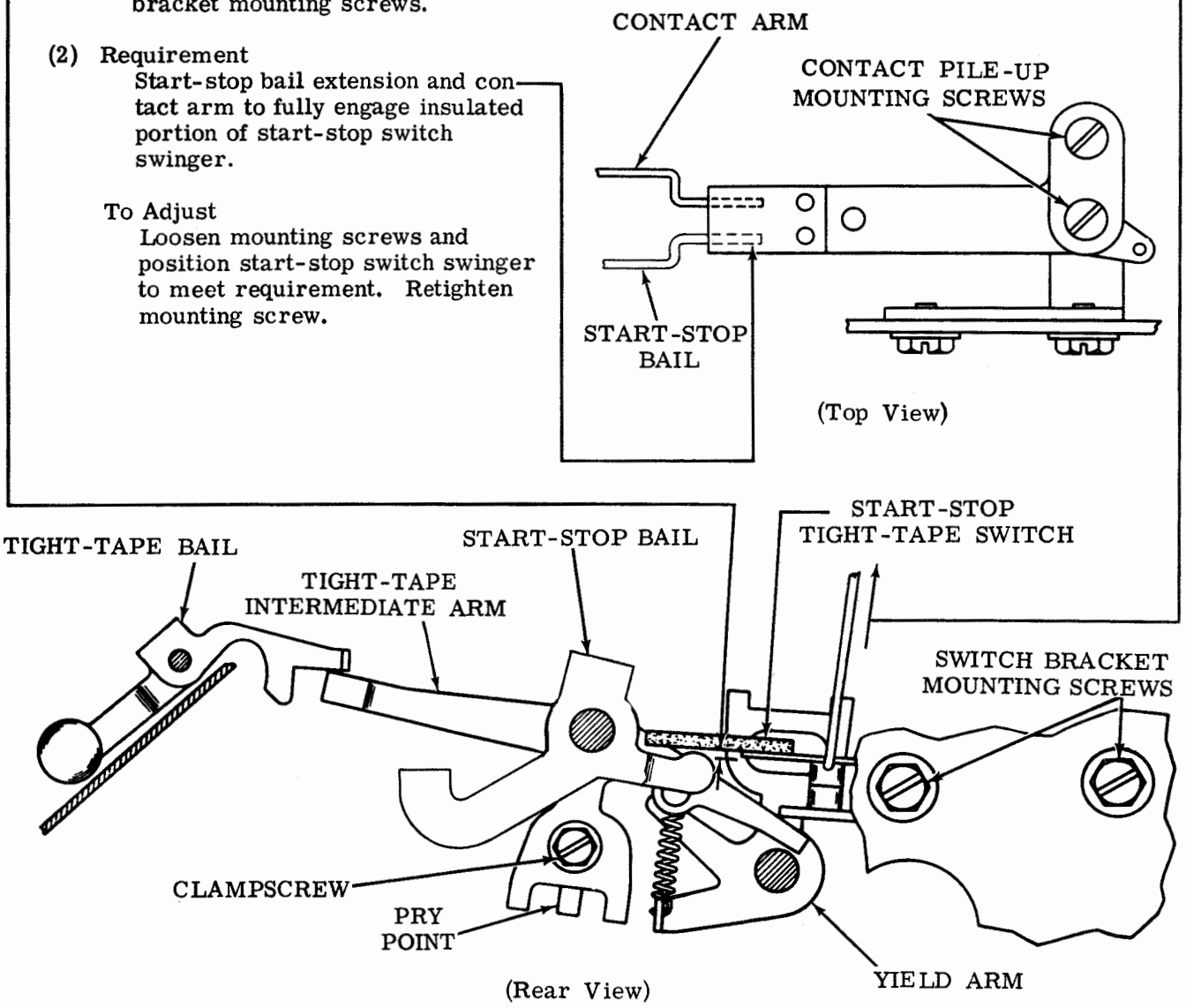
To Adjust
Loosen mounting screws and position start-stop switch swinger to meet requirement. Retighten mounting screw.

(B) TIGHT-TAPE START-STOP CONTACT SPRING

To Check
Place control lever in run position.

Requirement
Min 3 oz---Max 4 oz to separate contacts.

To Adjust
Bend break contact spring with TP110445 bending tool. Recheck START-STOP SWITCH BRACKET adjustment.



2.15 Tight-Tape Mechanism

START-STOP SWITCH BRACKET (For Units Equipped with Tape Lid Sensing Lever)

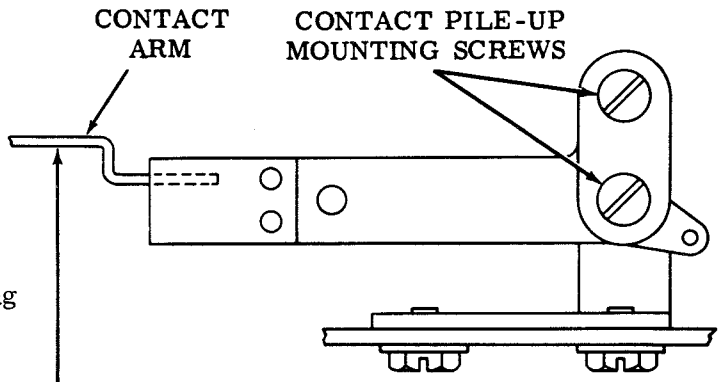
To Check
Place intermediate tight-tape arm to center of its adjusting range with the contact arm.

(1) Requirement
Tight-tape start-stop contacts to:
(a) Remain closed when tight-tape bail is raised 0.045 inch
(b) Open as bail is raised to 0.075 inch.

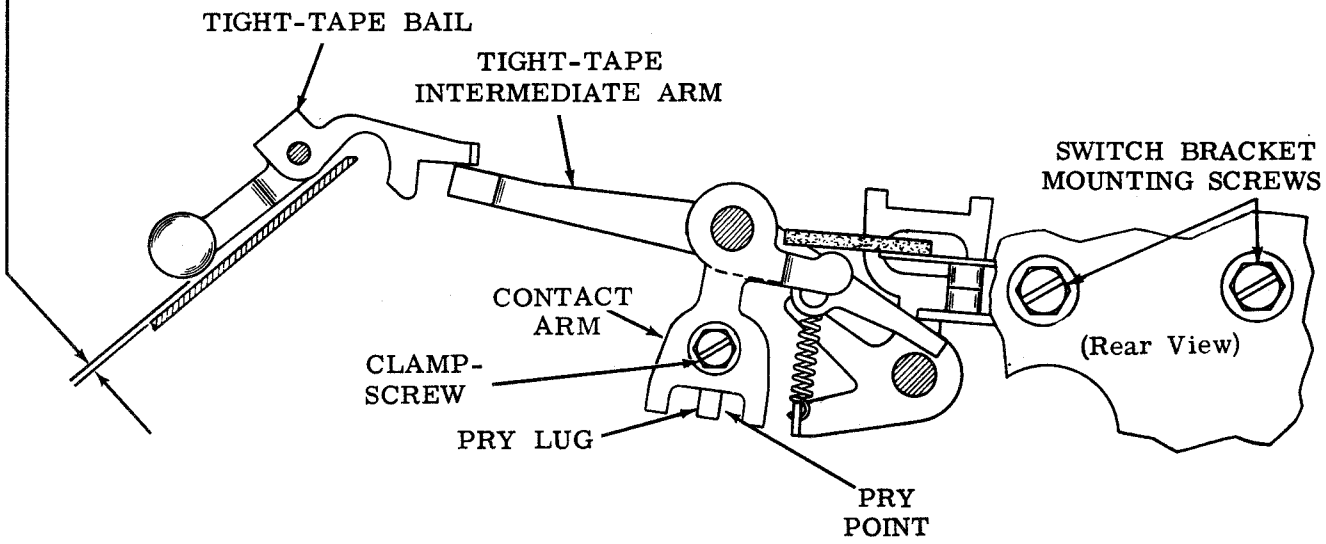
To Adjust
(a) Loosen tight-tape intermediate arm clampscrew. Position pry point midway in contact operating arm adjusting slot. Retighten clampscrew.
(b) Loosen switch bracket screws friction tight. Position contact pile-up to meet requirement.

(2) Requirement
Contact arm to fully engage insulated part of switch swinger.

To Adjust
Loosen contact pile-up mounting screws. Position contact pile-up mounting bracket. Retighten mounting screws.



(Top View)



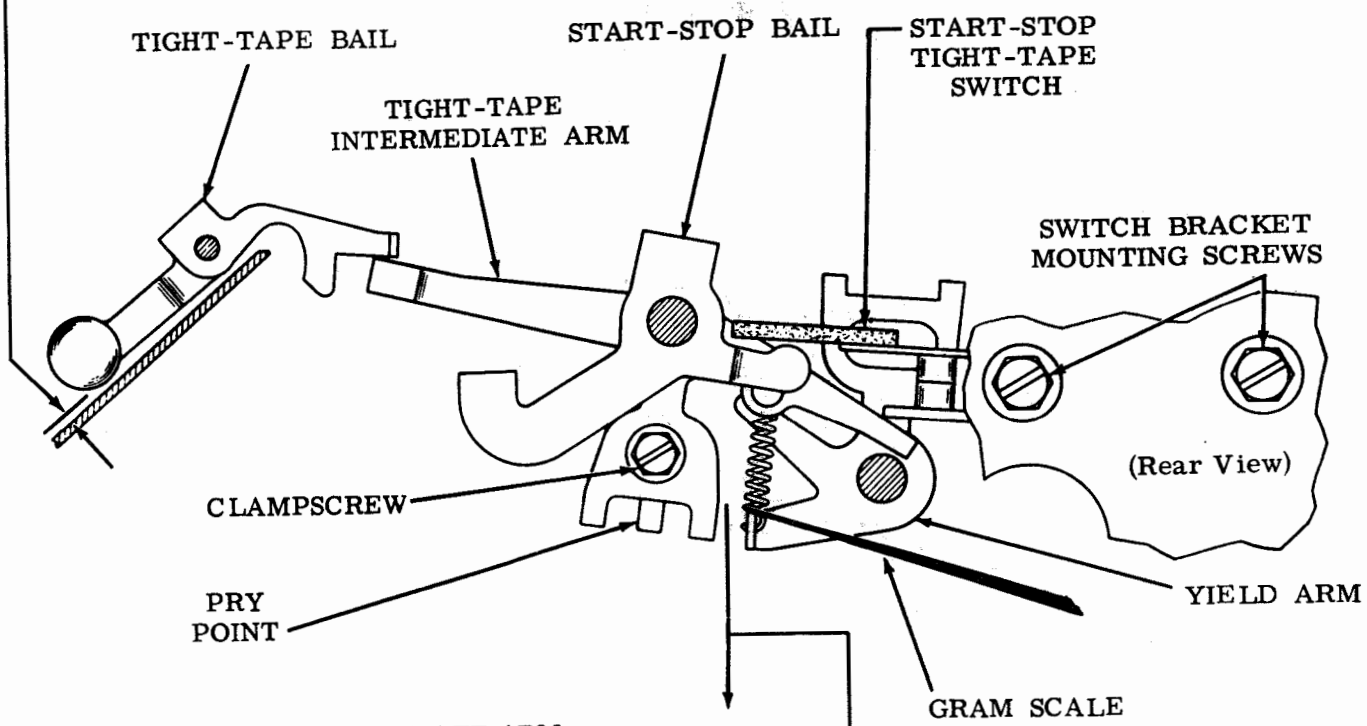
2.16 Tight-Tape Mechanism (continued)

(A) TIGHT-TAPE INTERMEDIATE ARM

To Check
Place control lever in run position.

Requirement
Start-stop contacts when tight-tape bail is raised away from tape guideplate:
(a) Remain closed when bail is raised 0.045 inch.
(b) Open as bail is raised to 0.075 inch.

To Adjust
Loosen clampscrew and position tight-tape intermediate arm using pry points. Retighten clampscrew.



(B) TIGHT-TAPE INTERMEDIATE ARM SPRING

To Check
Place control lever in run position.

Requirement
Min 20 grams (3/4 oz)---Max 40 grams (1-1/2 oz) to start yield arm moving.

2.17 Feed Wheel Mechanism

(D) MAIN BAIL

To Check
Place sensing pins in their lowest position.

Requirement
Highest sensing pin should be
Min 0.010---Max 0.020 inch
below surface of tape guideplate.

To Adjust
Loosen nut on main bail eccentric. Keeping high part towards right, adjust eccentric to meet this requirement. Retighten nut on main bail eccentric.

(C) MAIN BAIL TRIP LEVER

To Check
Replace top plate. Disengage unit clutch.

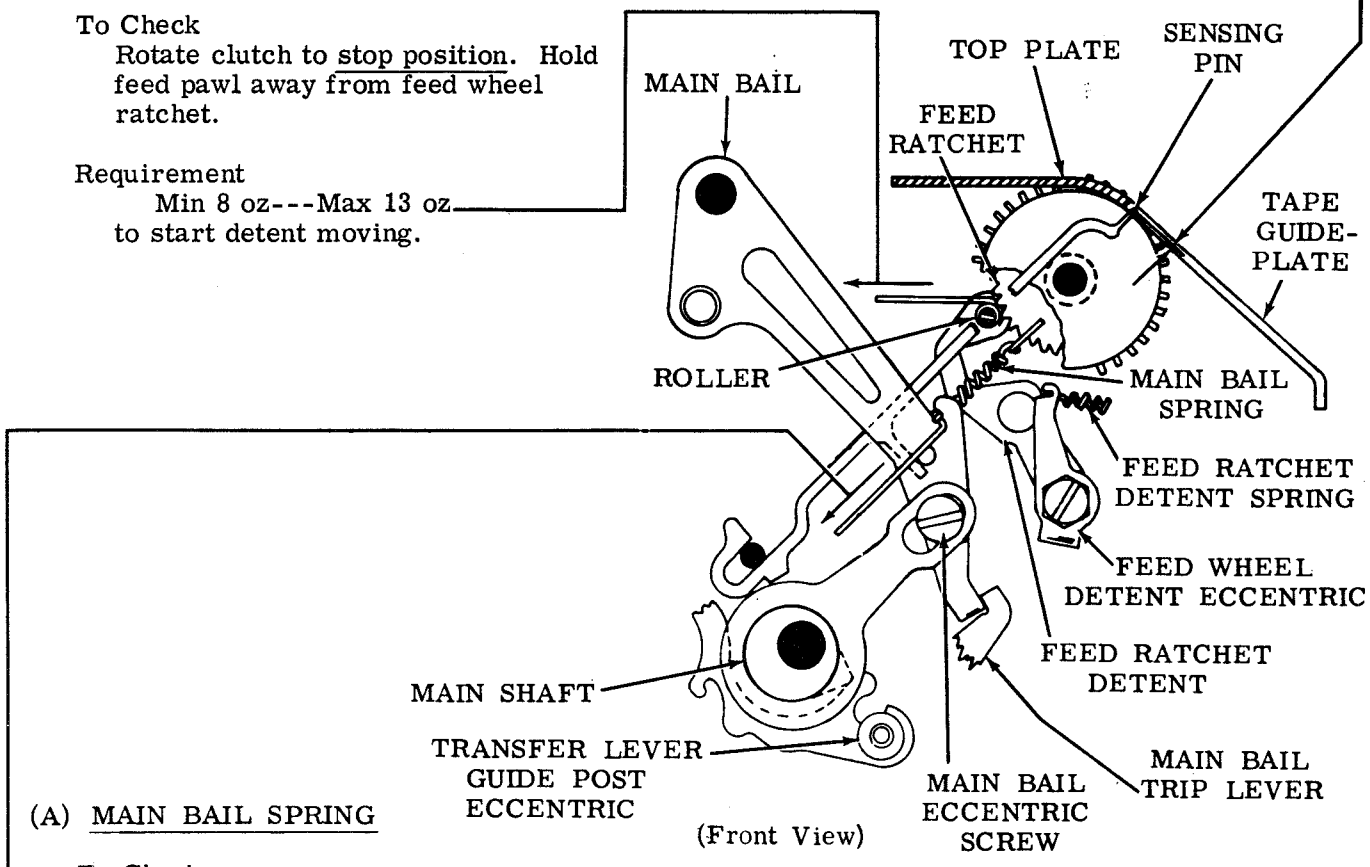
Requirement
Tip of highest sensing pin to be
Min flush---Max 0.005 inch
below top surface of tape guideplate.

To Adjust
Loosen nuts which secure transfer lever guide post and rotate it so that guide post eccentric positions main bail trip lever to meet requirement. Tighten nuts. Trip clutch and rotate it while checking operation of moving parts.

(B) FEED RATCHET DETENT SPRING

To Check
Rotate clutch to stop position. Hold feed pawl away from feed wheel ratchet.

Requirement
Min 8 oz---Max 13 oz
to start detent moving.



(A) MAIN BAIL SPRING

To Check
Remove top plate. Disengage clutch. Unhook spring end from main bail.

Requirement
Min 6 oz---Max 10 oz
to pull main bail to installed length.

2.18 Feed Wheel Mechanism (continued)

(A) SENSING PIN SPRING

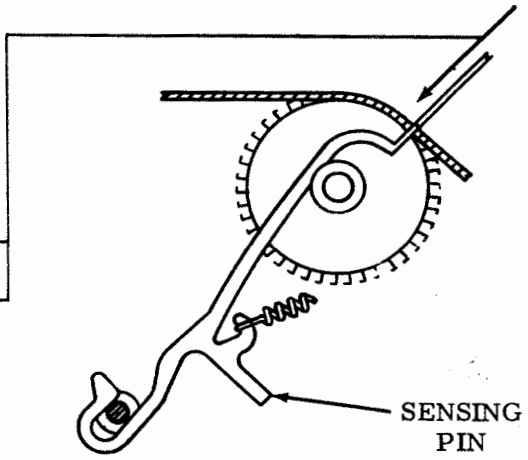
To Check

Open tape lid, and disengage unit clutch. Then hold armature in the attracted position to unlatch main bail and place sensing pins in their uppermost position. Hold rub-out deleter bail (if present) away from the sensing pins.

Requirement

*Chadless tape
Min 3 oz---Max 5 oz
**Perforated tape
Min 2 oz---Max 3 oz
to move each sensing pin flush with tape guide plate.

*For units using TP154349 spring — 5-level units
**For units using TP151103 spring — 6-level units



(Front View)

(B) FEED WHEEL DETENT

To Check

Open tape lid. Disengage the unit clutch to place sensing pins in their lowest position. Place high part of feed wheel ratchet detent eccentric toward the right. With an all marking code combination punched into a new piece of tape, place the tape on the feed wheel and over the sensing pins. Take up play in tape lightly toward the right.

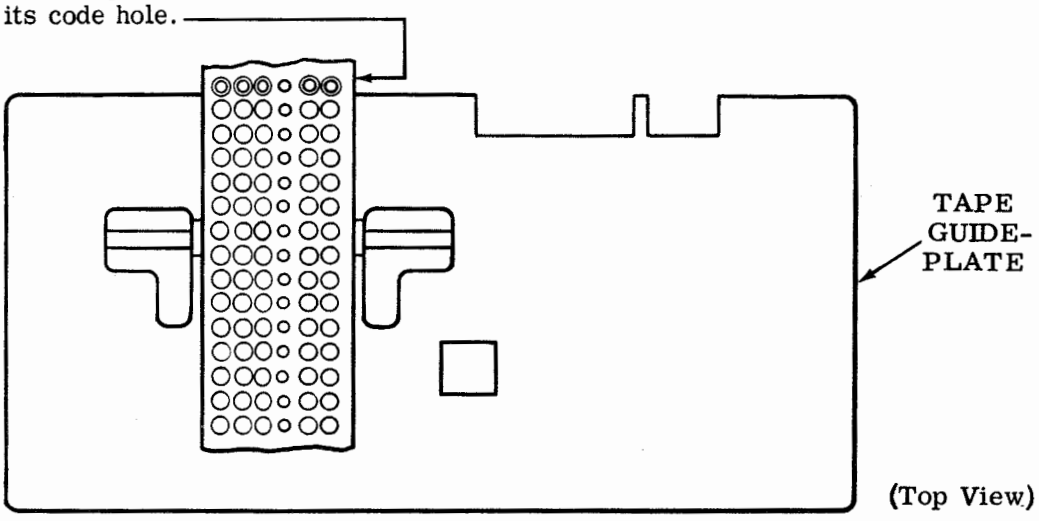
Requirement

Tip of each sensing pin to be centrally located in its code hole.

To Adjust

Loosen feed wheel ratchet detent eccentric friction tight and hold feed pawl away from feed wheel ratchet. Rotate feed wheel ratchet detent eccentric, keeping high part of eccentric towards the right.

Note: When unit is used to read chadless spliced tape, the sensing pins should be made to favor the trailing edge of the code hole.



(Top View)

2.19 Feed Wheel Mechanism (continued)

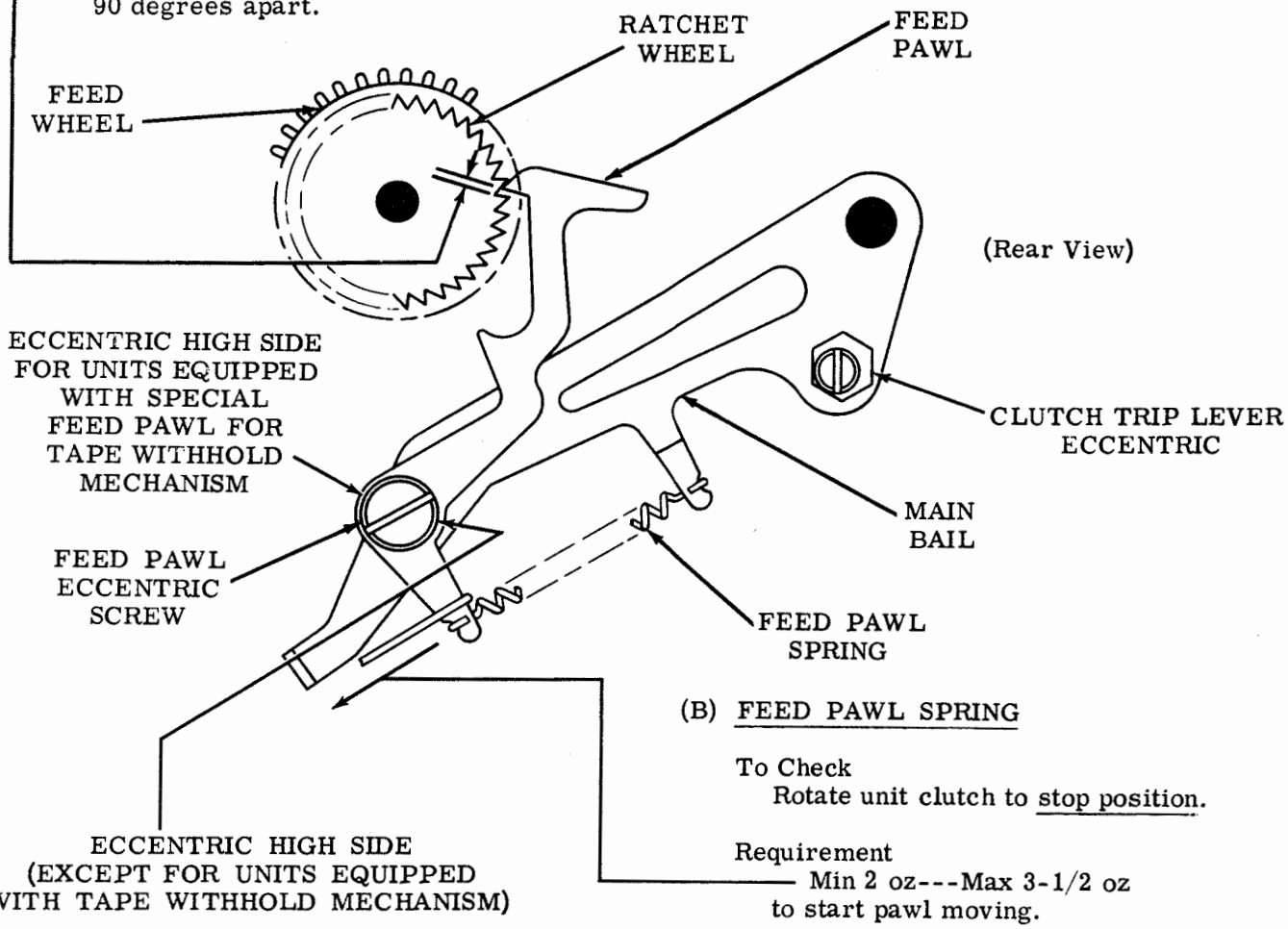
(A) FEED PAWL

To Check
Remove the top plate. With the high part of the feed pawl eccentric towards the right,* (viewed from rear plate) disengage the clutch to place the sensing pins in their lowest position.

*Left for units equipped with tape withhold mechanism.

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

To Adjust
Loosen feed pawl eccentric locknut, and position feed pawl eccentric. Recheck requirement at four positions on feed wheel ratchet approximately 90 degrees apart.

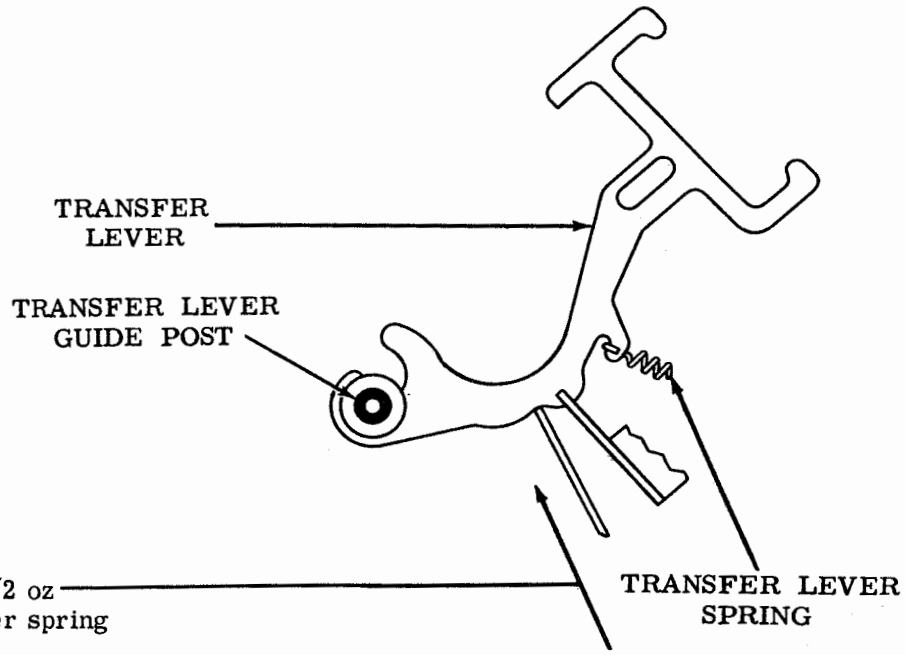


(B) FEED PAWL SPRING

To Check
Rotate unit clutch to stop position.

Requirement
Min 2 oz---Max 3-1/2 oz to start pawl moving.

2.20 Transfer Mechanism

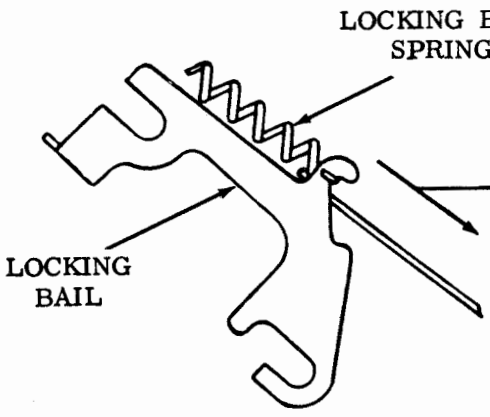


(A) TRANSFER LEVER SPRING

To Check
Disengage unit clutch.

Requirement
Min 1/2 oz---Max 1-1/2 oz to start each transfer lever spring moving.

(Rear View)

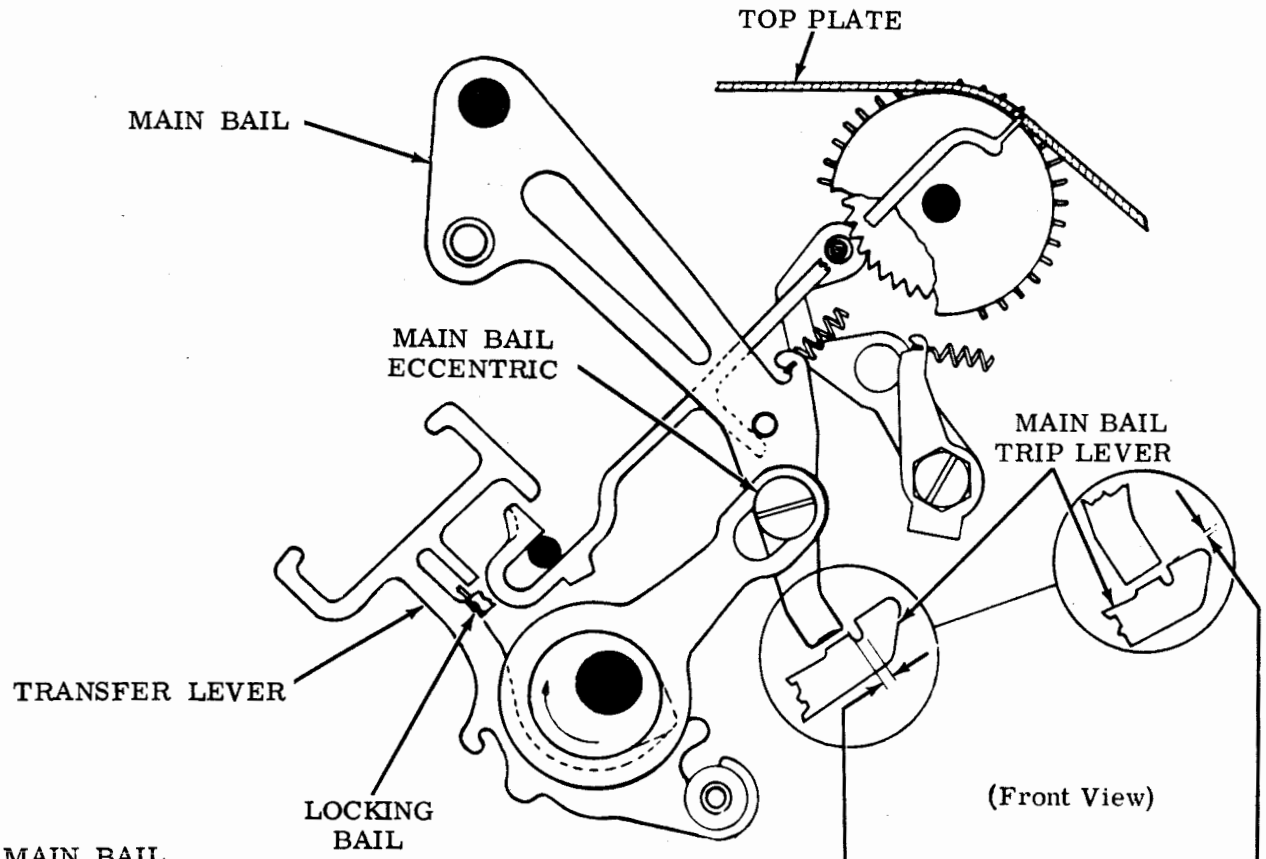


(B) LOCKING BAIL SPRING

Requirement
Min 10 oz---Max 14 oz to pull locking bail spring to its installed length.

(Front View)

2.21 Main Bail



MAIN BAIL

(1) To Check
Hold armature in its attracted (energized) position and rotate clutch until main bail is on its lowest position.

Requirement
Min 0.005 inch---Max 0.015 inch between main bail and main bail trip lever.

(2) To Check
Hold armature in its attracted (energized) position and rotate clutch until main bail is in its highest position.

Requirement
Min 0.005 inch between vertical surfaces of main bail and main bail trip lever.

To Adjust
Loosen nut on main bail and position main bail eccentric. Retighten nut. Check MAIN BAIL TRIP LEVER adjustment. Refine, if necessary.

2.22 Transfer Bail

(A) TRANSFER BAIL STABILIZER

(1) To Check
Select a LETTERS combination. Rotate main shaft until #3 transfer lever is on high part of its cam. Check clearance between side of transfer bail extension and marking latch.

(2) To Check
Select a BLANKS combination. Rotate main shaft until #3 transfer lever is on high part of its cam. Check clearance between side of transfer bail extension and spacing latch.

Requirement
Clearance in marking and spacing positions should be equal within 0.002 inch.

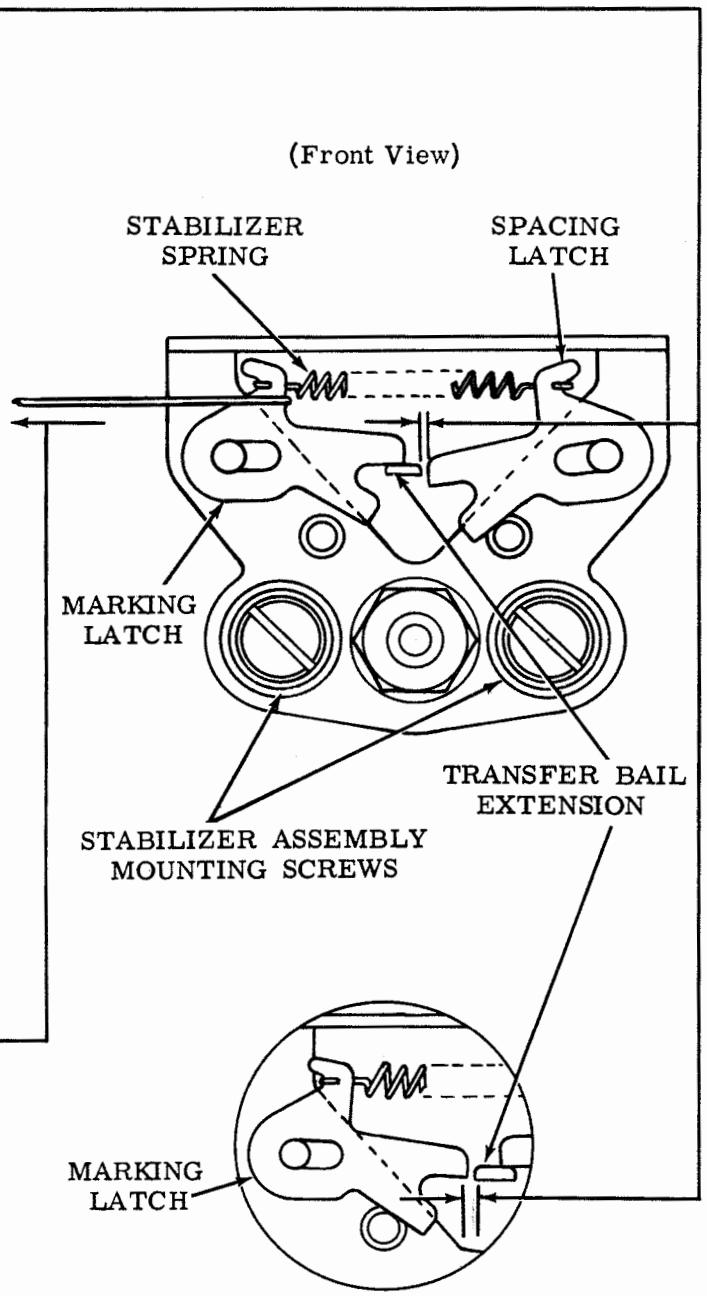
To Adjust
Loosen stabilizer assembly mounting screws friction tight, and position the assembly. Retighten assembly mounting screws.

(B) STABILIZER SPRING

To Check
Rotate clutch to stop position.

Requirement
Min 2-1/2 oz---Max 5 oz to start stabilizer latch moving.

Note: Latches should drop in place as other transfer levers cam the transfer bail.



2.23 Signal Contacts

(A) SIGNAL CONTACT CLEARANCE

To Check

Remove cover plate and signal contact box cover. Engage the unit clutch and rotate main shaft slowly until spacing contact is fully open. Measure the gap. Continue rotating the main shaft until marking contact is fully open. Measure the gap.

Requirement

Marking and spacing contact gaps measured in To Check to be equal within 0.001 inch.

To Adjust

Loosen mounting screws and position contact box using eccentric.

Note: Before operating, refine SIGNAL CONTACT CLEARANCE adjustment in accordance with Signal Contacts — Electrical.

CAUTION: IF CONTACTS ARE GOLD PLATED, CLEAN THEM BY PARTIALLY DRAWING A STRIP OF TP107162 TWILL JEAN BETWEEN THEM.

(B) DRIVE LINK SPRING

To Check

Trip clutch and rotate main shaft to stop position. Unhook stabilizer spring, and move latches away from transfer bail extension. Hold toggle firmly against spacing contact.

Requirement

Min 6 oz---Max 12 oz to start transfer bail extension moving.

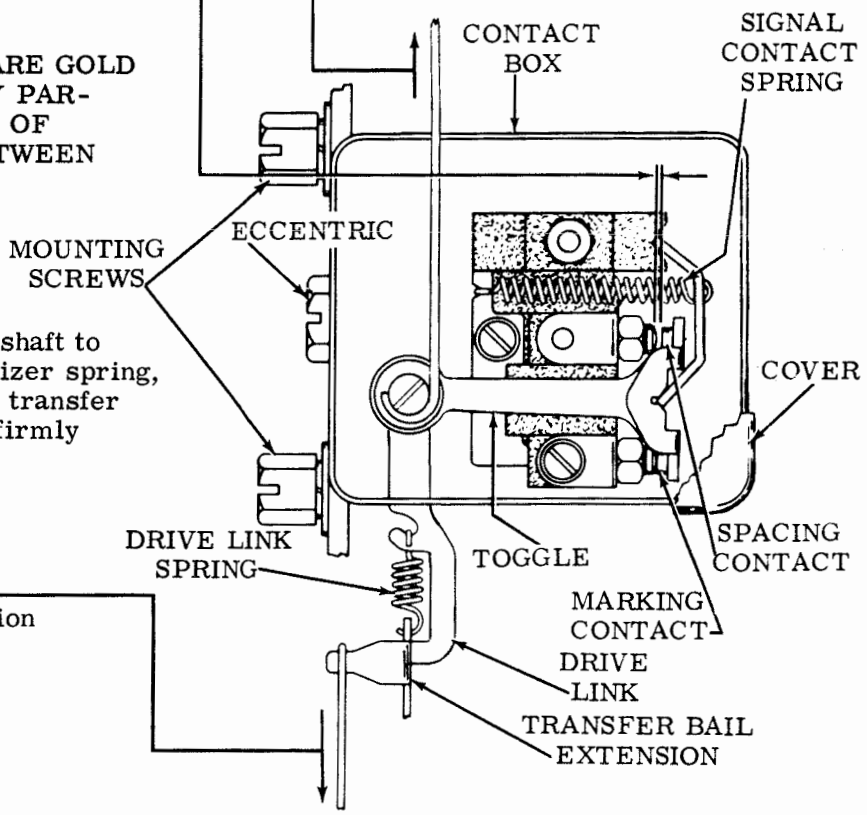
(C) SIGNAL CONTACT SPRING (TRANSMITTER DISTRIBUTOR SETS ONLY)

To Check

Place transmitter in stop position. Remove contact box cover, and toggle drive link spring from its link end. Move transfer bail towards the right (spacing) position, so that both toggle contacts are closed. Hook an 8-oz scale over the pivot screw and pull horizontally to the left.

Requirement

Min 2 oz---Max 3-1/2 oz to open left-hand contact. Replace toggle drive link spring to its link.



(Top View - Right Side)

Signal Contacts — Electrical

2.24 The strobing adjustment procedure is used for checking and adjusting signal contacts electrically, and at the same time, refining the mechanical adjustments for the transmitter distributor. The same procedure is used for checking both the marking and spacing pulses for both 5 and 6 level, and all unit codes. Differences exist, however, in the number, width, and tolerance of pulses, and in the allowable break width. The data appropriate to each level and unit code is tabulated on the associated Pulse Data Table. By following the general procedures given in Paragraphs 2.25 and 2.26 following, and using data from the appropriate table, the marking and spacing pulse adjustment can be made for all units. To illustrate the procedure further, the data appropriate to a 5-level, 7.42 unit code is added parenthetically as an example in the general adjustment procedure following.

Note: Gold-plated signal contacts should not be electrically adjusted unless there is an intermediate device available which, when keyed by the signal contacts, will interrupt the current to the stroboscopic test set. The intermediate device must be capable of being keyed by a 3- to 20-volt change in voltage at a current not in excess of 20 milliamperes. The standard stroboscopic test set operating voltage must not be applied directly to the signal contacts because of the possibility of damaging the contacts' gold plating and thus impairing their operating efficiency in this low-energy level application. (Refer to Paragraphs 1.08 through 1.13.)

2.25 Marking Pulse Adjustments

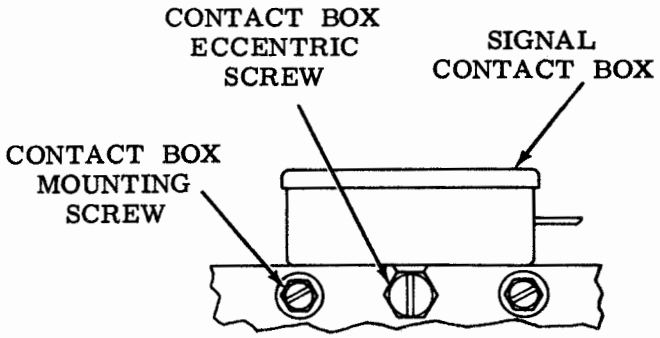
(a) Plug a signal distortion test set having the appropriate scale (eg, 7.42) into the signal line so that the marking contacts of the transmitter-distributor unit under test will interrupt the current to the stroboscopic lamp within the DXD. Have the transmitter-distributor transmitting "Y" or "R" continuously and the test set and transmitter-distributor operating at the same speed (100 wpm). Rotate the test scale to align the 0-scale mark of the START segment (end of STOP segment) with the end of the stop pulse image indicated by the rotating strobe light.

Note: The end of the stop pulse image should not vary more than one division in either direction when the scale is positioned so that the variation is centered about the 0-scale mark of the START segment.

(b) Check the position of each of the pulses against the position tabulated. Each pulse should be in its designated segment on the test scale, within the specified tolerance figure (eg, 15 div).

Note: Each marking code pulse may have one break, provided the break is not longer than the allowable break width specified (eg, 1 div) and the break comes within the tolerance range (eg, 5 div) and the end of the pulse.

(c) To adjust, loosen the two contact box mounting screws until they are friction tight. Rotate the eccentric of the contact box mounting bracket toward the right or left until the requirements are met. Tighten the mounting screws and recheck the adjustment.



(Front View)

Note: If these signal requirements cannot be met, refine the TRANSMITTER DISTRIBUTOR GEAR BACKLASH adjustment (See BASES) and the TRANSFER BAIL STABILIZER adjustment, viewing the signal on the test set.

2.26 Spacing Pulse Adjustments: The general procedure for adjusting the spacing pulse is identical to that outlined for marking pulses. The tolerances for spacing pulses may not be the same as for marking pulses however. Refer to the appropriate Pulse Data Table when making adjustments.

Note: On units equipped with signal regenerators, remove regenerator circuit card before applying test set probes to contact access terminals.

CAUTION: APPLYING OPERATING VOLTAGE OF DISTORTION TEST SET DIRECTLY TO GOLD-PLATED CONTACTS MAY MAKE THEM UNSUITABLE FOR LOW-VOLTAGE APPLICATIONS. REFER TO 1.12 FOR SERVICING INSTRUCTIONS.

2.27 Follow the general procedure outlined in Paragraphs 2.25 and 2.26 substituting the appropriate data from the following table.

PULSE DATA TABLE
FIVE-LEVEL UNITS, 7.00 UNIT CODE

PULSE	MARKING		SPACING	
RANGE	*NOMINAL	TOLERANCE	*NOMINAL	TOLERANCE
STOP PULSE	36 (STOP) TO 142 (STOP)	BEGIN ±5 DIV END ±1/2 DIV	36 (STOP) TO 142 (START)	BEGIN ±6 DIV END ±1/2 DIV
START PULSE	142 (STOP) TO 6 (ONE)	BEGIN ±5 DIV END ±5 DIV	142 (STOP) TO 6 (ONE)	BEGIN ±6 DIV END -5, ±6 DIV
PULSE 1	6 (ONE) TO 12 (TWO)	BEGIN ±5 DIV END ±5 DIV	6 (ONE) TO 12 (TWO)	BEGIN ±6 DIV END -5, ±6 DIV
PULSE 2	12 (TWO) TO 18 (THREE)	BEGIN ±5 DIV END ±5 DIV	12 (TWO) TO 18 (THREE)	BEGIN ±6 DIV END -5, ±6 DIV
PULSE 3	18 (THREE) TO 24 (FOUR)	BEGIN ±5 DIV END ±5 DIV	18 (THREE) TO 24 (FOUR)	BEGIN ±6 DIV END -5, ±6 DIV
PULSE 4	24 (FOUR) TO 30 (FIVE)	BEGIN ±5 DIV END ±5 DIV	24 (FOUR) TO 30 (FIVE)	BEGIN ±6 DIV END -5, ±6 DIV
PULSE 5	30 (FIVE) TO 36 (STOP)	BEGIN ±5 DIV END ±5 DIV	30 (FIVE) TO 36 (STOP)	BEGIN ±6 DIV END -5, ±6 DIV
ALLOWABLE BREAK WIDTH	1 DIV	MUST FALL WITHIN PULSE TOLERANCE	1 DIV	MUST FALL WITHIN PULSE TOLERANCE

*Ranges specified apply only for test sets (DXD) having a 7.42 unit code scale.

2.28 Follow the general provisions outlined in Paragraphs 2.25 and 2.26 substituting the appropriate data from the following table.

PULSE DATA TABLE
FIVE-LEVEL UNITS, 7.42 UNIT CODE

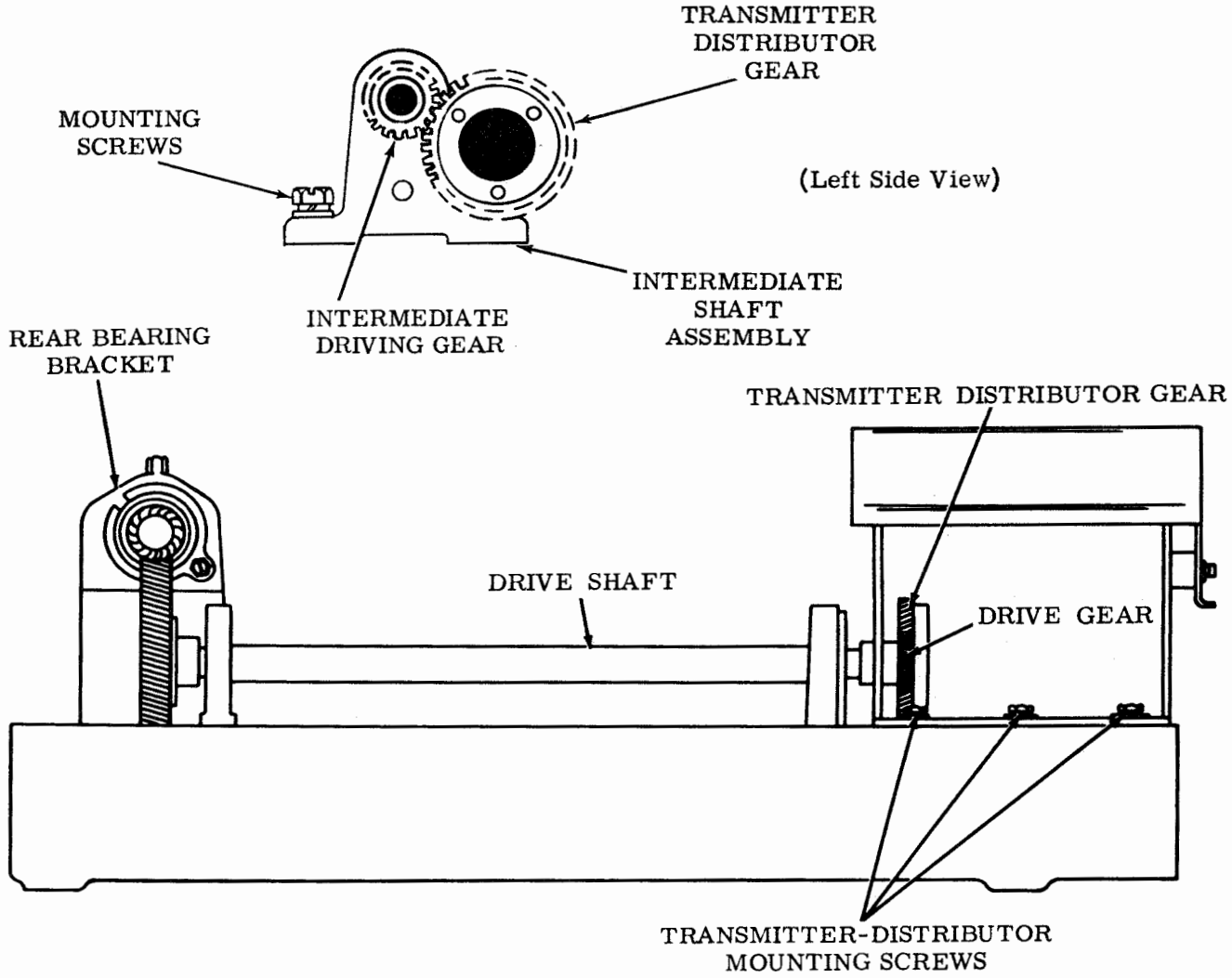
PULSE	MARKING		SPACING	
RANGE	NOMINAL	TOLERANCE	NOMINAL	TOLERANCE
STOP PULSE	0 (STOP) TO 0 (START)	BEGIN ±5 DIV END ±1/2 DIV	0 (STOP) TO 0 (START)	BEGIN ±6 DIV END ±1/2 DIV
START PULSE	0 (START) TO 0 (ONE)	BEGIN ±5 DIV END ±5 DIV	0 (START) TO 0 (ONE)	BEGIN ±6 DIV END ±6 DIV
PULSE 1	0 (ONE) TO 0 (TWO)	BEGIN ±5 DIV END ±5 DIV	0 (ONE) TO 0 (TWO)	BEGIN ±6 DIV END ±6 DIV
PULSE 2	0 (TWO) TO 0 (THREE)	BEGIN ±5 DIV END ±5 DIV	0 (TWO) TO 0 (THREE)	BEGIN ±6 DIV END ±6 DIV
PULSE 3	0 (THREE) TO 0 (FOUR)	BEGIN ±5 DIV END ±5 DIV	0 (THREE) TO 0 (FOUR)	BEGIN ±6 DIV END ±6 DIV
PULSE 4	0 (FOUR) TO 0 (FIVE)	BEGIN ±5 DIV END ±5 DIV	0 (FOUR) TO 0 (FIVE)	BEGIN ±6 DIV END ±6 DIV
PULSE 5	0 (FIVE) TO 0 (STOP)	BEGIN ±5 DIV END ±5 DIV	0 (FIVE) TO 0 (STOP)	BEGIN ±6 DIV END ±6 DIV
ALLOWABLE BREAK WIDTH	±1 DIV	MUST FALL WITHIN TOLERANCE LIMITS	±1 DIV	MUST FALL WITHIN TOLERANCE LIMITS

2.29 Follow the general provisions outlined in Paragraphs 2.25 and 2.26 substituting the appropriate data from the following table.

PULSE DATA TABLE
SIX-LEVEL UNITS, 8.50 UNIT CODE

PULSE	MARKING		SPACING	
RANGE	NOMINAL	TOLERANCE	NOMINAL	TOLERANCE
STOP PULSE	0 (STOP) TO 0 (START)	BEGIN ±7 DIV END ±1/2 DIV	0 (STOP) TO 0 (START)	BEGIN ±8 DIV END ±1/2 DIV
START PULSE	0 (START) TO 0 (ONE)	BEGIN ±7 DIV END ±7 DIV	0 (START) TO 0 (ONE)	BEGIN ±8 DIV END ±8 DIV
PULSE 1	0 (ONE) TO 0 (TWO)	BEGIN ±7 DIV END ±7 DIV	0 (ONE) TO 0 (TWO)	BEGIN ±8 DIV END ±8 DIV
PULSE 2	0 (TWO) TO 0 (THREE)	BEGIN ±7 DIV END ±7 DIV	0 (TWO) TO 0 (THREE)	BEGIN ±8 DIV END ±8 DIV
PULSE 3	0 (THREE) TO 0 (FOUR)	BEGIN ±7 DIV END ±7 DIV	0 (THREE) TO 0 (FOUR)	BEGIN ±8 DIV END ±8 DIV
PULSE 4	0 (FOUR) TO 0 (FIVE)	BEGIN ±7 DIV END ±7 DIV	0 (FOUR) TO 0 (FIVE)	BEGIN ±8 DIV END ±8 DIV
PULSE 5	0 (FIVE) TO 0 (SIX)	BEGIN ±7 DIV END ±7 DIV	0 (FIVE) TO 0 (SIX)	BEGIN ±8 DIV END ±8 DIV
PULSE 6	0 (SIX) TO 0 (STOP)	BEGIN ±7 DIV END ±7 DIV	0 (SIX) TO 0 (STOP)	BEGIN ±8 DIV END ±8 DIV
ALLOWABLE BREAK WIDTH	1 DIV	MUST LIE WITHIN TOLERANCE LIMITS	1 DIV	MUST LIE WITHIN TOLERANCE LIMITS

2.30 Basic Gear Adjustments



INTERMEDIATE GEAR — TRANSMITTER DISTRIBUTOR GEAR BACKLASH

To Check

With the MOTOR POSITION and TRANSMITTER DISTRIBUTOR POSITION adjustments completed, check the backlash between the gears.

(1) Requirement

Only a perceptible amount of backlash between the intermediate driving gear and the transmitter distributor gear.

To Adjust

Loosen three mounting screws that secure the transmitter distributor unit to its base. Position transmitter distributor to meet the requirement. Retighten the mounting screws.

(2) Requirement

Only a perceptible amount of backlash between the drive gear and the transmitter distributor gear.

To Adjust

Loosen three mounting screws that secure the transmitter distributor to its base. Position transmitter distributor to meet this requirement. Retighten the screws.

3. VARIABLE FEATURES

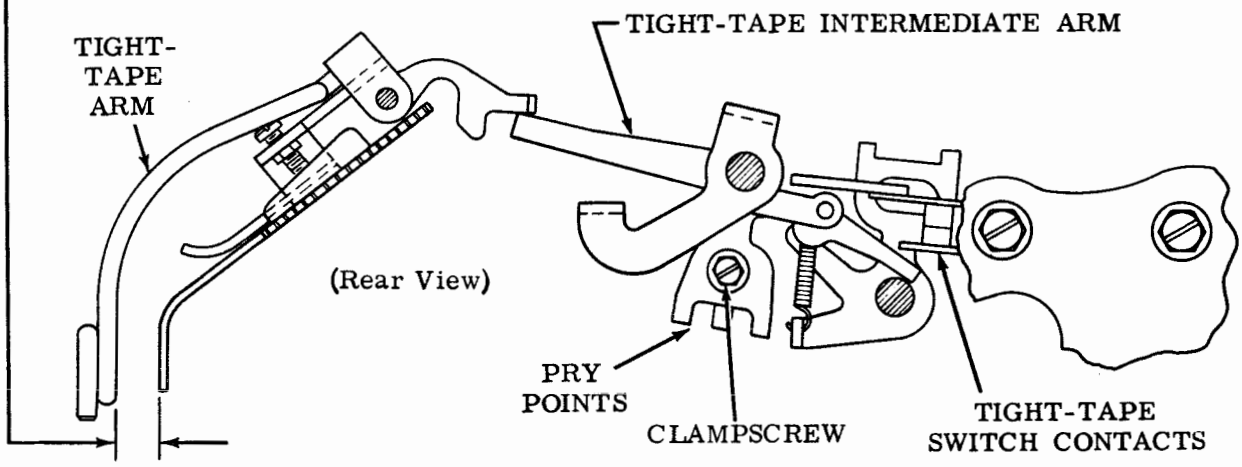
3.01 Tight-Tape and Tape Shoe Mechanism

(A) TIGHT-TAPE SWITCH

To Check
Place control lever in run position.

Requirement
Min 9/32 inch---Max 13/32 inch to open contacts when tight-tape arm is raised.

To Adjust
Loosen clampscrew. Using adjusting slot, position tight-tape intermediate arm to meet this requirement. Retighten clampscrew.



(B) TORSION SPRING

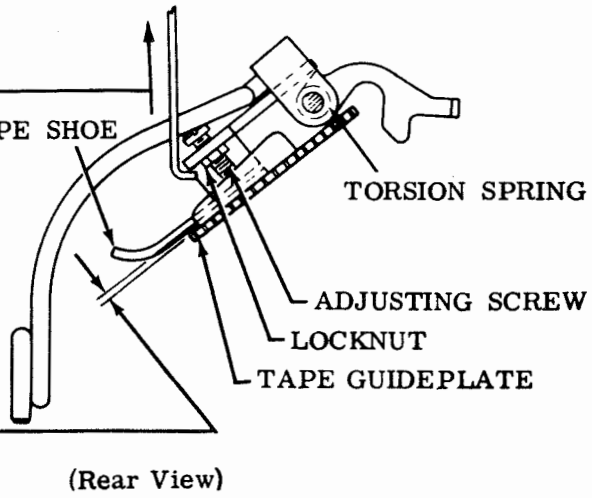
Requirement
Min 2-1/2 oz to lift tape shoe.

(C) TAPE SHOE

To Check
Latch tape lid in position. Check clearance between tape guideplate and tape shoe.

Requirement
Min 0.005 inch---Max 0.008 inch

To Adjust
Loosen locknut. Rotate adjusting screw to meet the requirement. Retighten locknut.



3.02 Tape Feed Assurance Mechanism

(A) TAPE SENSING FEED WHEEL PHASING

To Check
Place fresh, fully perforated tape (10 holes per inch) on tape guideplate across the feed wheel and tape feed assurance wheel. Set detent adjusting lever screw at midrange.

Requirement
Tape must lie flat on tape guideplate between feed wheel and tape feed assurance wheel.

To Adjust
Loosen bracket mounting screws friction tight. Position bracket to meet requirement. Retighten bracket mounting screws. Refine adjustment (if necessary) by rotating the detent lever adjusting screw.

Note: If tape is not available, use TP165800 gauge.

(B) TAPE MOTION CONTACT GAP

To Check
Place detent lever in detented position.

Requirement
Min 0.005 inch---Max 0.010 inch gap between the normally closed contacts.

To Adjust
Bend contact leaf and stiffener to meet requirement.

(C) TAPE MOTION CONTACT SWINGER

To Check
Hold detent lever from contact swinger.

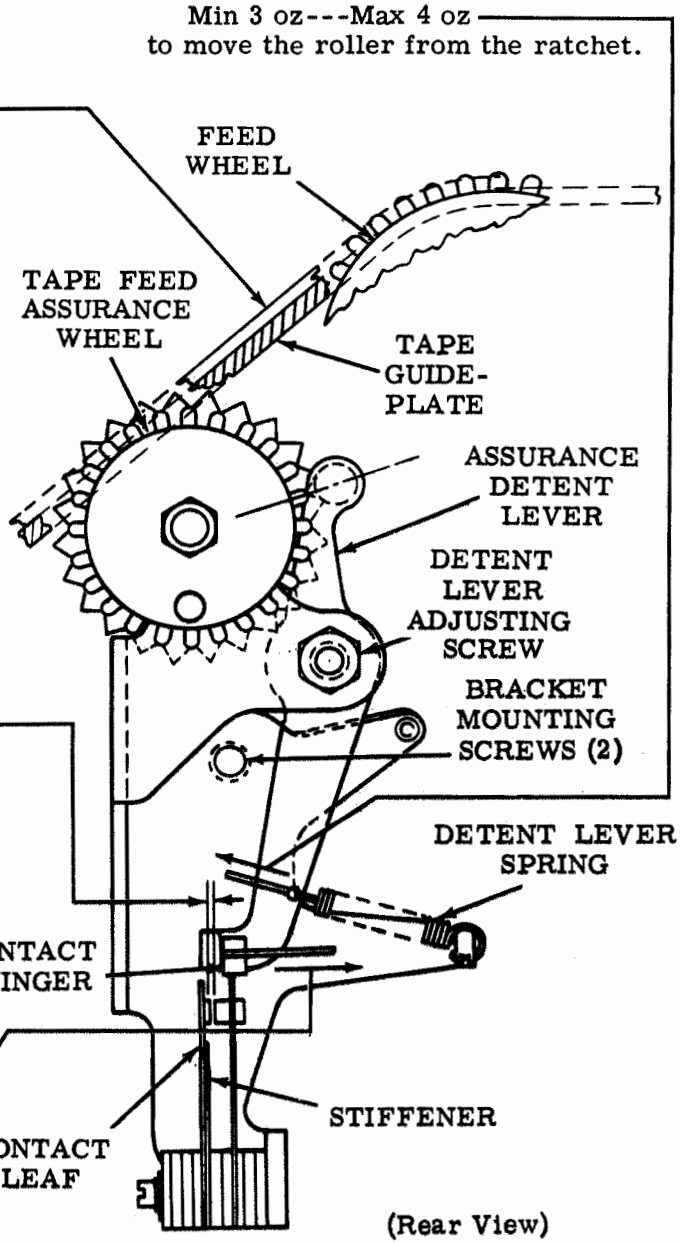
Requirement
Min 15 grams---Max 25 grams to separate contacts.

To Adjust
Bend swinger to meet requirement. Recheck TAPE MOTION CONTACT GAP.

(D) DETENT LEVER SPRING

To Check
Hold contact lever away from detent lever.

Requirement
Min 3 oz---Max 4 oz to move the roller from the ratchet.



3.03 Tape-Out Mechanism

(A) TAPE-OUT CONTACT

(1) To Check
Loosen contact bracket mounting screws. Pivot contact assembly until pad on tape-out pin extension is not touching the swinger pad. Check gap between normally open (top) contact points.

Requirement
Min 0.015 inch---Max 0.025 inch between normally open (top) contacts.

To Adjust
Bend upper contact spring to meet requirement.

(2) To Check
With assembly still in position, check force required to just separate normally closed (lower) contacts.

Requirement
Min 8 grams---Max 15 grams to just separate normally closed (lower) contacts.

To Adjust
Bend contact swinger. Recheck requirement under (1) To Check above.

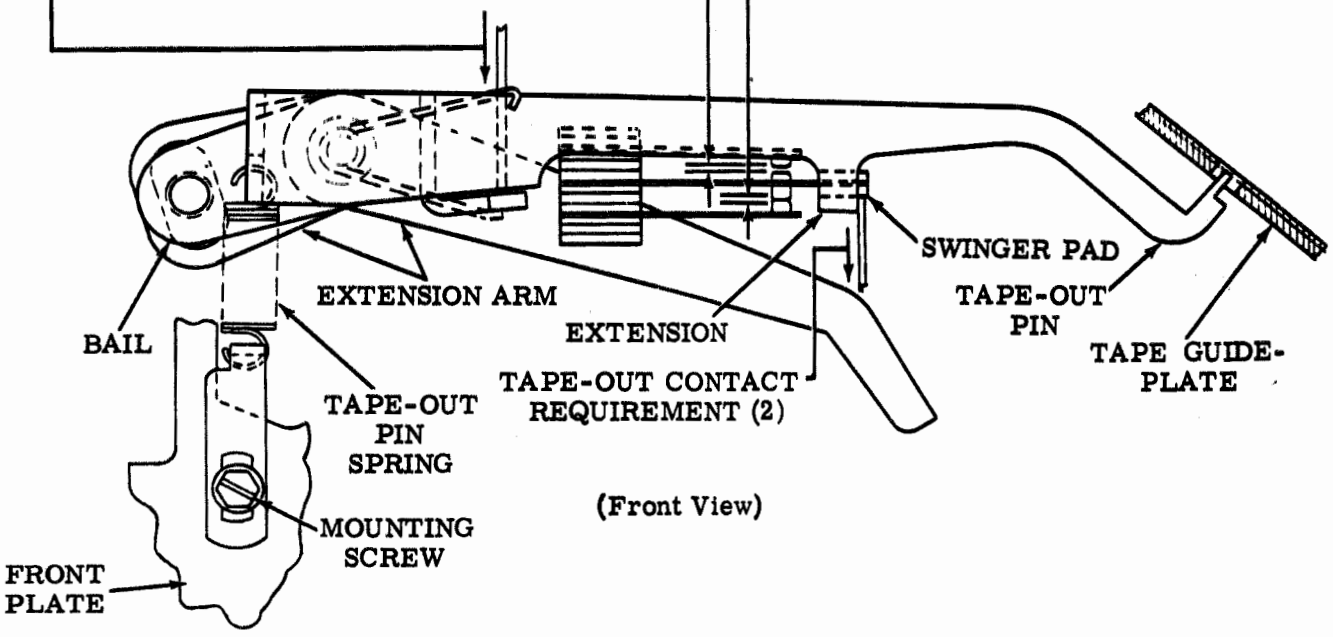
(3) To Check
Hold tape-out pin down. With some clearance between tape-out pin extension and underside of contact swinger, without tape, tape lid closed, and unit in run position, check gap between normally closed contacts.

Requirement
Min 0.008 inch---Max 0.018 inch gap between normally closed contacts.

To Adjust
With contact bracket mounting screws loosened, adjust contact mounting bracket to meet requirement. Retighten contact bracket mounting screws.

(B) TAPE-OUT BAIL TORSION SPRING

Requirement
Min 8 oz---Max 12 oz
to separate bail from tape-out pin.



3.04 Tape-Out Mechanism (continued)

(C) TAPE-OUT PIN SPRING

To Check
Remove tape and open tape lid.

Requirement
Min 38 grams---Max 45 grams to press pin flush with tape guideplate.

To Adjust
Loosen tape-out spring bracket mounting screw and position bracket to meet requirement. Retighten bracket mounting screw.

(D) TAPE-OUT PIN

(1) To Check
Place control lever in free or stop position. Check position of tape-out pin in relation to tape guideplate.

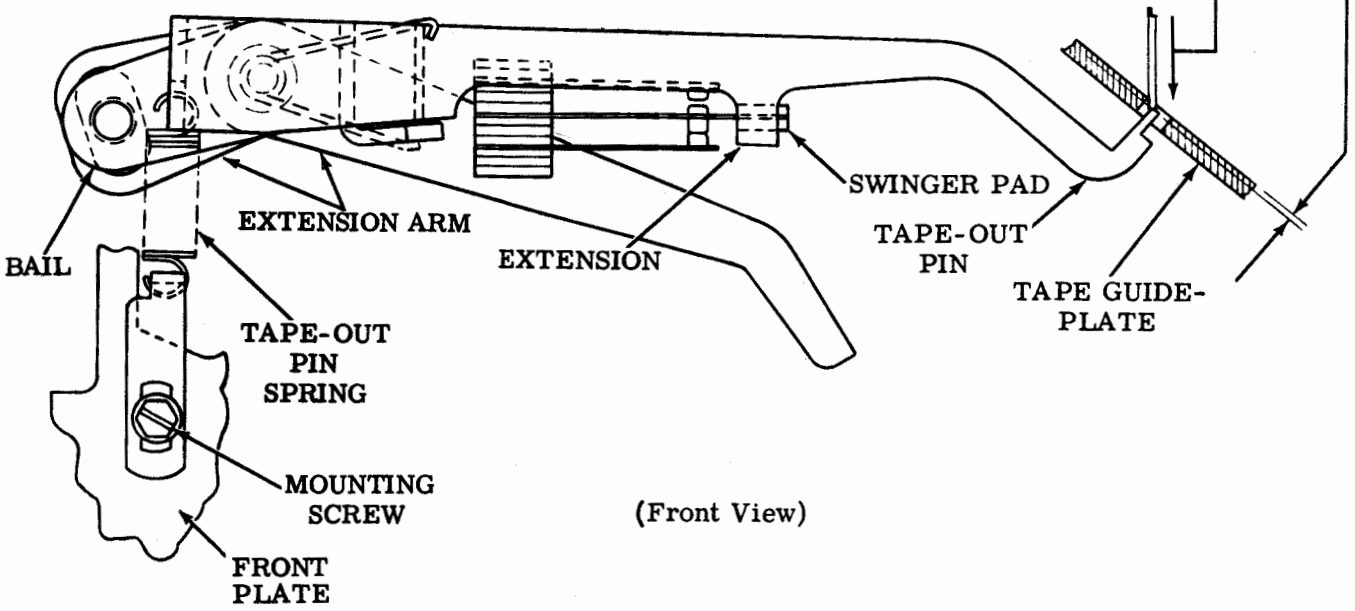
Requirement
Tape-out pin should be
Min flush---Max 0.010 inch
below surface of tape guideplate.

To Adjust
With control lever in stop position, loosen screw which secures the stop arm to the bracket with posts. Adjust stop arm to meet requirement. Tighten screw.

(2) To Check
Place control lever in run position. Check clearance between lower tape-out pin extension and tape-out bail extension.

Requirement
Min 0.055 inch clearance between lower tape-out pin extension and tape-out bail extension.

To Adjust
With control lever in run position, loosen screw which secures the extension arm to the intermediate tape-out bail. Using a tommy wrench or suitable tool, change relative position of extension arm to bail to obtain required clearance. Tighten screw. Check requirement under (1) To Check and refine, if necessary.



(Front View)

3.05 Code Reading Contacts

Note 1: Remove code reading contact assembly from transmitter distributor unit before making initial adjustments.

Note 2: When using the contact spring bender, start with the contact pile-up farthest from the handle of the tool and work toward the handle so as not to disturb adjustments already made.

(A) NORMALLY CLOSED CONTACTS — BACKSTOP

Requirement
Lower contact leaves for all levels should be parallel with the mounting plate and in line with one another.

To Adjust
Bend backstop to meet the requirement.

(B) NORMALLY CLOSED CONTACTS — SPRING

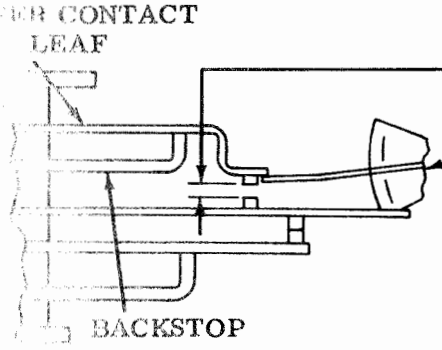
(1) Requirement
With swinger held away
Min 2 oz---Max 6 oz
to move lower contact leaf from backstop.

To Adjust
Bend lower leaf.

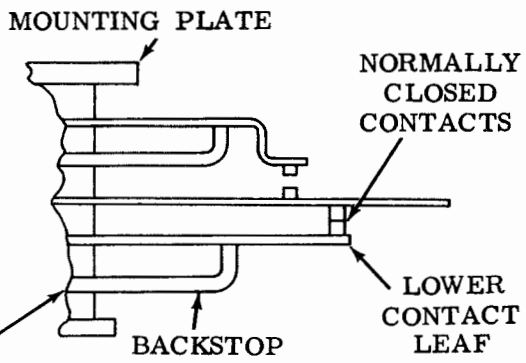
(2) Requirement
Min 30 grams---Max 40 grams
to open normally closed contacts.

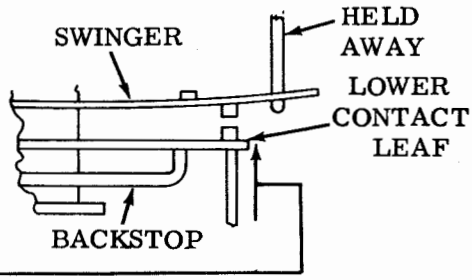
To Adjust
Bend swinger.

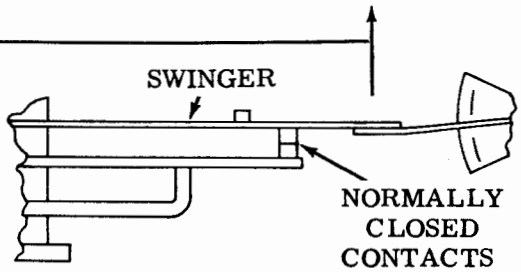
Note 3: If it is necessary to bend backstop to obtain required tension, reposition backstop to meet NORMALLY CLOSED CONTACTS — BACKSTOP requirement.



(Front Views)







(C) NORMALLY OPEN CONTACTS — GAP

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

To Adjust
Bend associated backstop to meet requirement.

(D) NORMALLY OPEN CONTACTS — SPRING

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

To Adjust
Bend upper contact leaf.

Note 4: If it is necessary to bend backstop to obtain required tension, reposition backstop to meet NORMALLY OPEN CONTACTS — GAP requirement.

3.06 Code Reading Contacts (continued)

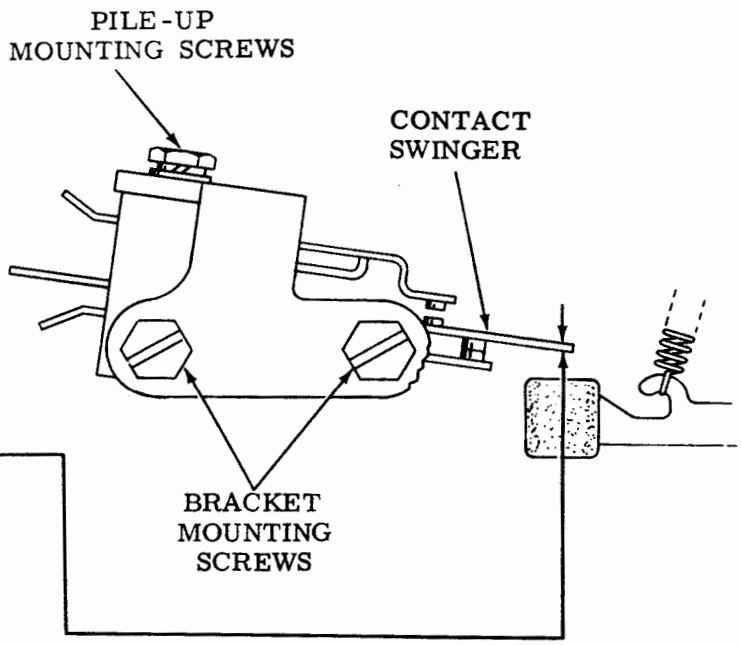
Note: Secondary adjustments should be made with code reading contact assembly installed in the transmitter distributor and with the contact assembly bracket approximately centered in its adjustment range. (Remove contact box to facilitate adjustment.)

(A) CONTACT ASSEMBLY POSITIONING

To Check
Align each swinger with its associated sensing arm. (Gauge by eye.)

Requirement
Swinger to be aligned with its sensing arm.

To Adjust
Loosen screws which mount the contact assembly to the contact bracket. Position the assembly to meet the requirement.



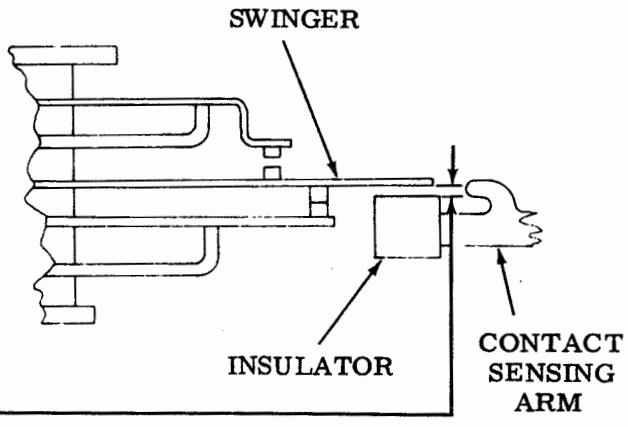
(Front Views)

(B) CONTACT SWINGER — SENSING ARM CLEARANCE

To Check
Place up-stop post out of the way and sensing arms in their uppermost positions. Select a BLANK combination.

Requirement
Min some---Max 0.010 inch gap between contact assembly swinger and insulator on contact sensing arm.

To Adjust
Loosen contact bracket mounting screws. Position bracket to meet the requirement. Tighten contact bracket mounting screws.



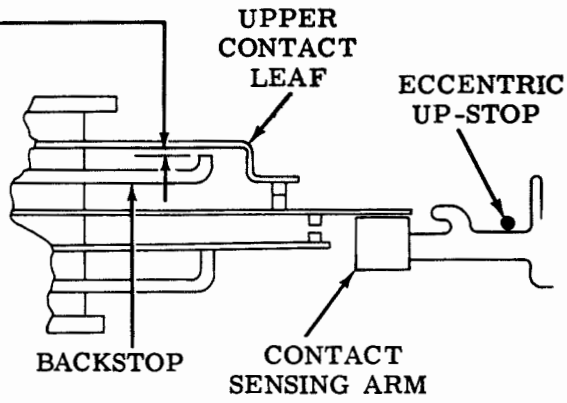
3.07 Code Reading Contacts (continued)

(A) CONTACT SENSING ARM — UP-STOP CLEARANCE

To Check
Rotate main shaft until sensing arms are in their highest positions. Engage clutch. Select a LETTERS combination.

Requirement
Min some---Max 0.008 inch clearance between upper contact leaf and its backstop.

To Adjust
Loosen nut that secures the eccentric up-stop to the front plate. Turn the eccentric to meet requirement. (High part of the eccentric should be toward the left.) Retighten eccentric nut.



(B) SENSING ARM — TRANSFER LEVER ALIGNMENT

To Check
Trip clutch. Select BLANK combination.

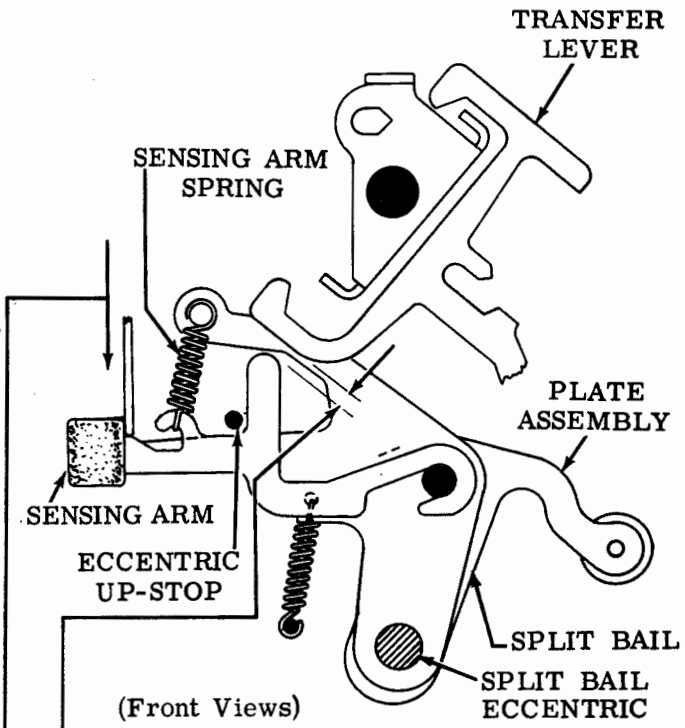
Requirement
Sensing arms must engage a minimum of 2/3 of their respective transfer levers.

To Adjust
Add TP8896 shims between plate assembly and the split bail spacer to meet requirement. (Store remaining shims under flat washer at end of split bail eccentric screw.)

(C) SENSING ARM SPRING

To Check
Disengage clutch.

Requirement
Min 2-1/2 oz---Max 3-1/2 oz to start sensing arm moving.



(Front Views)

(D) SPLIT BAIL ECCENTRIC

To Check
Trip clutch. Select BLANK combination. Check clearance between closest transfer lever and its associated sensing arm.

Requirement
Min 0.005 inch---Max 0.010 inch

To Adjust
Loosen split bail eccentric locknut. Rotate split bail eccentric to meet requirement. Retighten locknut.

3.08 Code Reading Contacts (continued)

CONTACT SWINGER — SENSING ARM CLEARANCE (STROBING)

Note 1: When strobing the code reading contacts, use a DXD scale whose unit corresponds to that of the unit being checked. Refer to Contact Operating Requirements Table. The signal generator on the transmitter distributor must be synchronized with the DXD so that the end of the stop pulse image is in line with the end of the stop pulse on the DXD scale when transmission is continuous. Use a normal signal line direct current of 60 ma ±10% or 20 ma ±10% to strobe the contacts.

(1) Requirement
Contacts must open and close within the range specified on the Contact Operating Requirements Table.

(2) Requirement
Breaks in the pulses must be confined to the first and last 10 divisions of the trace.

CONTACT OPERATING REQUIREMENTS TABLE

Levels	Unit Code	Beginning Pulse			End of Pulse			Max. Pulse Length Osc (Div)
		Scale Segment	Scale Division	Tolerance (Div)	Scale Segment	Scale Division	Tolerance (Div)	
5	7.00	Pulse 1	25	±20	Pulse 5	15	±20	3
5	7.42	Pulse 1	30	±20	Pulse 5	40	±20	3
6	8.50	Pulse 0	45	±25	Pulse 5	5	±25	4

To Adjust
Loosen contact bracket mounting screws. Position bracket to meet requirements. Retighten contact bracket mounting screws.

Note 2: After making the adjustment, check clearance between contact swinger and insulator on the contact sensing arm when a BLANK combination has been selected and the main shaft rotated to place the sensing arms in their highest position. There must be some clearance. If the requirements cannot be met, recheck initial mechanical adjustments.

3.09 Auxiliary Contacts

Note: Make initial adjustments with the auxiliary contacts removed from the transmitter distributor unit.

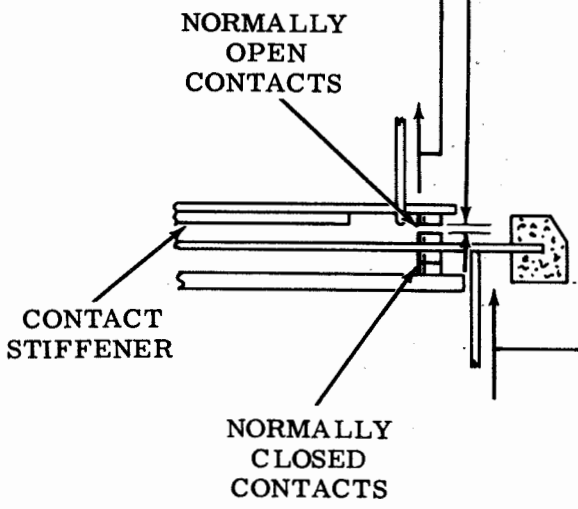
(A) NORMALLY OPEN CONTACTS

(1) Requirement
Min 5-1/2 oz---Max 6 oz
to move normally open contact away from stiffener.

To Adjust
Bend normally open contact leaf to meet requirement.

(2) Requirement
Min 0.015 inch---Max 0.020 inch gap between normally open contacts.

To Adjust
Bend contact stiffener to meet requirements.



(Front View)

(B) NORMALLY CLOSED CONTACTS

Requirement
Min 4 oz---Max 5 oz
to open normally closed contact.

To Adjust
Bend swinger contact to meet requirement.

3.10 Auxiliary Contacts (continued)

Note: Make secondary adjustments with the auxiliary contacts installed in the transmitter distributor.

(A) CONTACT SENSING ARM

(1) To Check
Disengage and latch clutch. Check clearance between insulator on swinger and bail.

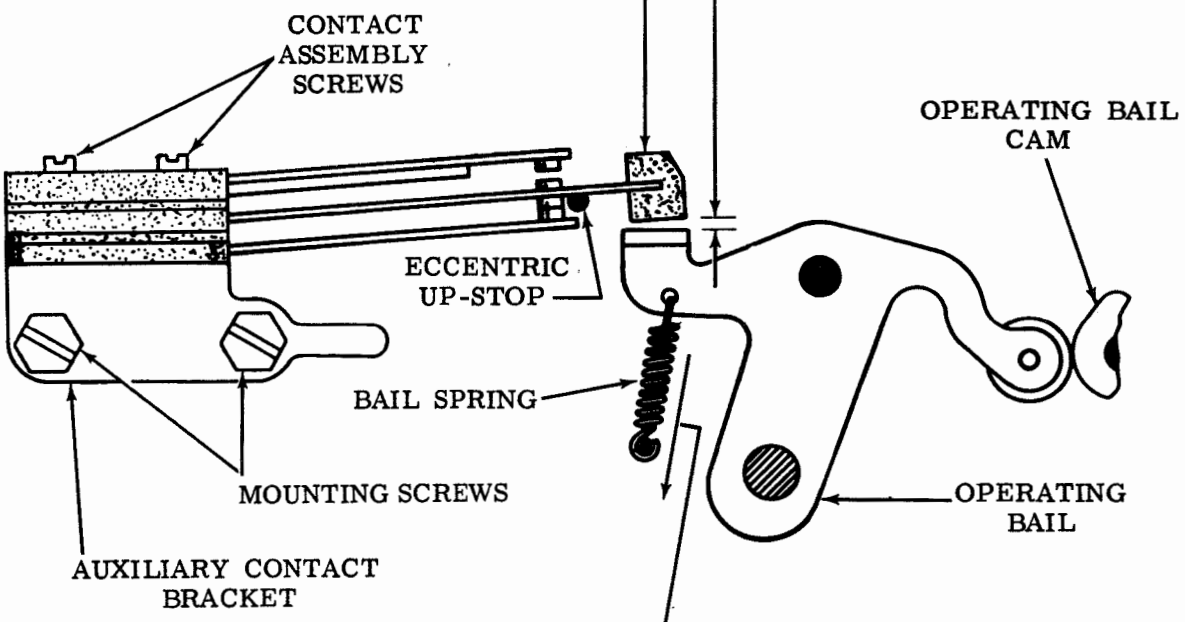
Requirement
Swinger insulator should be centrally located with respect to its operating bail.

To Adjust
Loosen contact assembly screws. Position swinger and contact springs. Retighten contact assembly screws.

(2) To Check
Check position of swinger with respect to its bail.

Requirement
Min 0.040 inch—Max 0.050 inch between insulator on swinger and its bail.

To Adjust
Loosen contact bracket mounting screws. Position contact bracket to meet requirement. Retighten contact bracket mounting screws.



(Front View)

(B) AUXILIARY CONTACT OPERATING BAIL SPRING

To Check
Disengage clutch.

Requirement
Min 5 oz---Max 7 oz to pull spring to its installed length.

3.11 Auxiliary Contacts (continued)

CONTACT SWINGER — OPERATING BAIL CLEARANCE

Note: When strobing the auxiliary contacts, use a DXD scale whose unit code corresponds to that of the unit being checked. (Refer to Contact Operating Requirements Table.) Synchronize the signal generator of the transmitter distributor with the DXD so that the end of the stop pulse image is in line with the end of the stop pulse on the DXD scale when transmission is continuous. Use normal direct current line signal of 60 ma ±10% or 20 ma ±10% to strobe the contacts.

Requirement

The contacts must open and close within the range specified in the Contact Operating Requirements Table.

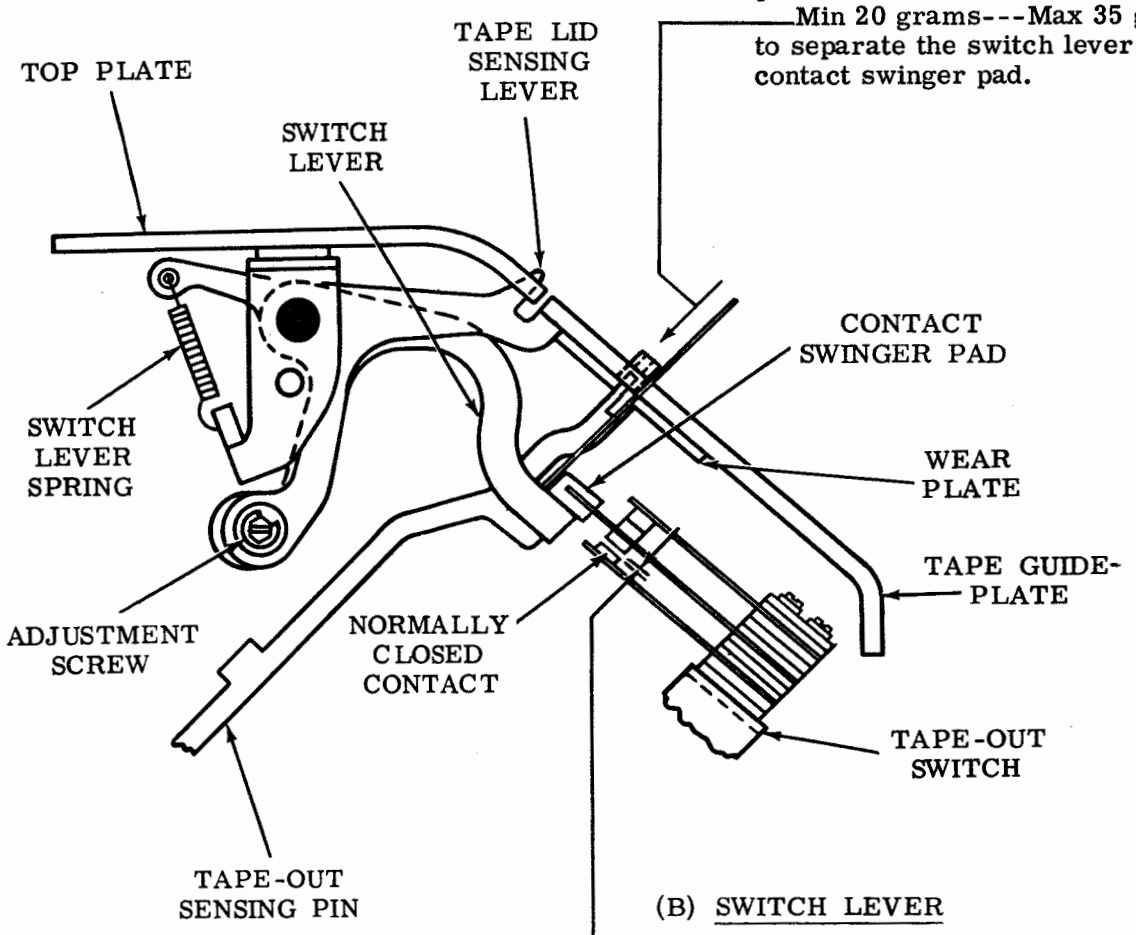
To Adjust

Loosen the contact bracket mounting screws. Position the contacts to meet the requirements. Retighten contact bracket mounting screws.

CONTACT OPERATING REQUIREMENTS TABLE

Levels	Unit Code	Start of Pulse			End of Pulse		
		Scale Segment	Scale Division	Tolerance (Div)	Scale Segment	Scale Division	Tolerance (Div)
5	7.00	Pulse 1	65	±15	Pulse 4	65	±15
5	7.42	Pulse 1	75	±15	Pulse 4	90	±15
6	8.50	Pulse 1	0	±20	Pulse 4	60	±20

3.12 Tape Lid Sensing Lever



(Front View)

(A) SWITCH LEVER SPRING

To Check
Open tape lid.

Requirement
Min 20 grams---Max 35 grams to separate the switch lever from the contact swinger pad.

(B) SWITCH LEVER

To Check
Open tape lid. Depress the tape-out sensing pin.

Requirement
Min 0.005 inch---Max 0.015 inch between the normally closed tape-out switch contacts.

To Adjust
Loosen the adjustment screw. With the tape lid sensing lever seated firmly against the tape guideplate, rotate the switch lever clockwise or counter-clockwise to meet requirement. Re-tighten adjustment screw.

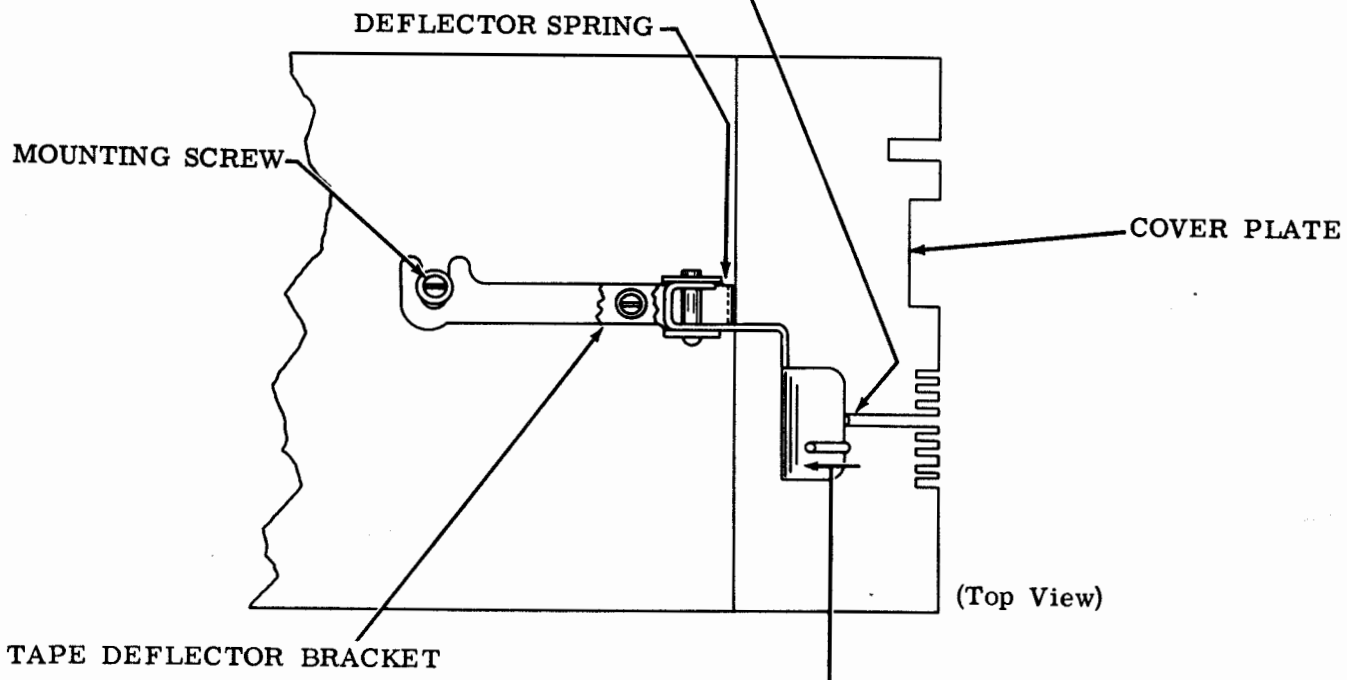
3.13 Tape Deflector

(A) TAPE DEFLECTOR BRACKET

To Check
Check position of deflector tang in relation to its hole in top plate when the unit is in its operating position.

Requirement
Deflector tang should be located centrally in its hole in the top plate.

To Adjust
Remove rear screw which secures tape deflector spring to the cover plate. Loosen forward screw. Position tape deflector. Replace rear screw, and tighten both forward and rear screws.

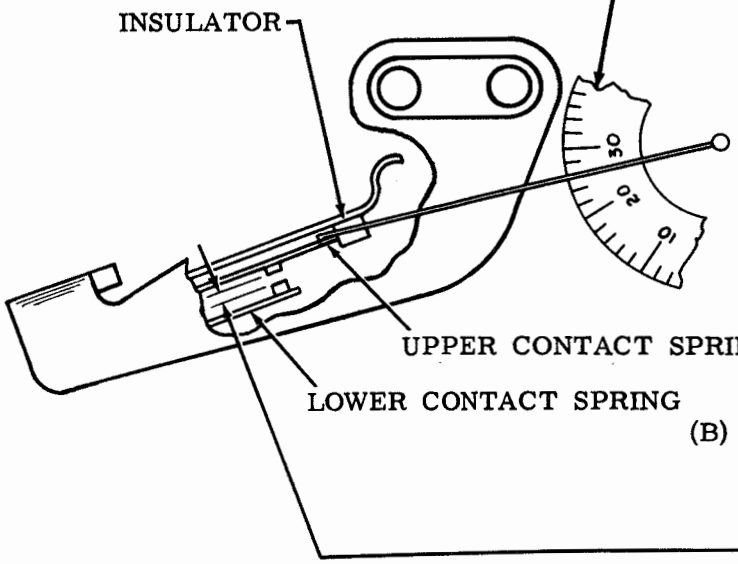


(B) TAPE DEFLECTOR SPRING

Requirement
Min 1-1/2 oz---Max 4 oz to start the deflector moving from its operating position.

To Adjust
Loosen mounting screw. Position the spring using the enlarged mounting slot. Retighten mounting screw.

3.14 Start-Stop Pulse Contact



(Front Views)

(A) CONTACT LEVER

To Check
Remove contact assembly from unit. Insure that no clearance exists between the contact lever and insulator.

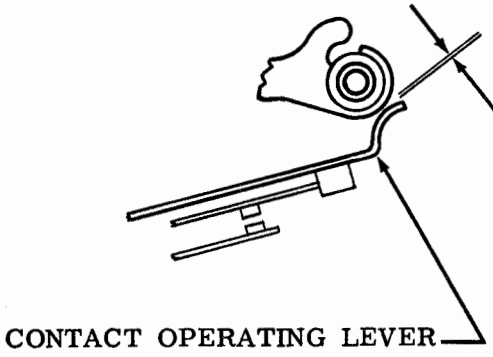
Requirement
Min 20 grams---Max 30 grams to move insulator from contact operating lever.

To Adjust
Bend upper contact spring.

(B) CONTACT GAP (START AND STOP CONTACTS)

Requirement
Min 0.012 inch---Max 0.018 inch

To Adjust
Bend lower contact spring.



(C) CONTACT BRACKET

To Check
Place unit in stop position. Latch clutch. Check clearance between contact operating lever and transfer lever.

Requirement
Min 0.012 inch---Max 0.018 inch

To Adjust
Loosen mounting bracket screws. Position contact assembly to meet requirement. Retighten mounting bracket screws. Replace contact assembly in unit.

3.15 Start-Stop Pulse Contact (continued)

CONTACT BRACKET (STROBING)

Note 1: When strobing auxiliary contacts, use a 7.42 unit DXD scale. Synchronize the signal generator of the transmitter distributor with the DXD so that the end of the stop pulse image is in line with the end of the stop pulse on the DXD scale when transmission is continuous. Use normal signal line direct current of 60 ma ± 10% or 20 ma ± 10% to strobe the contacts.

Requirement
Contacts must close within the following range.

	MIN CLOSURE	CLOSURE RANGE
STOP CONTACT	95 DIV	0 DIV OF STOP SEGMENT TO 142ND DIV OF STOP SEGMENT
START CONTACT	60 DIV	122ND DIV OF STOP SEGMENT TO 95TH DIV OF START SEGMENT

Note 2: Breaks are permissible within 5 divisions of the beginning or end of a trace.

To Adjust
Loosen contact bracket mounting screws. Position the contact bracket to meet requirements. Retighten contact bracket mounting screws.

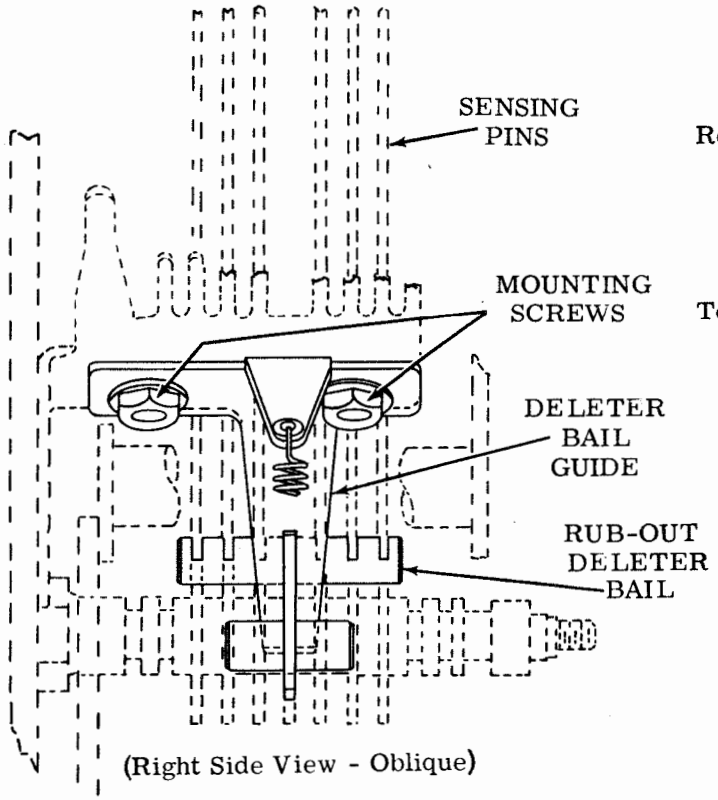
3.16 Rub-Out Deleter

(A) RUB-OUT DELETER BAIL GUIDE

To Check
Place sensing pins in their highest position. Check that deleter bail moves freely in its guide.

Requirement
When the rub-out permutation code is present, the rub-out deleter bail should rest against the lower projection of the sensing pin.

To Adjust
Loosen mounting screws friction tight. Position deleter bail guide. Retighten mounting screws.



(Right Side View - Oblique)

(B) SENSING PIN SPRING

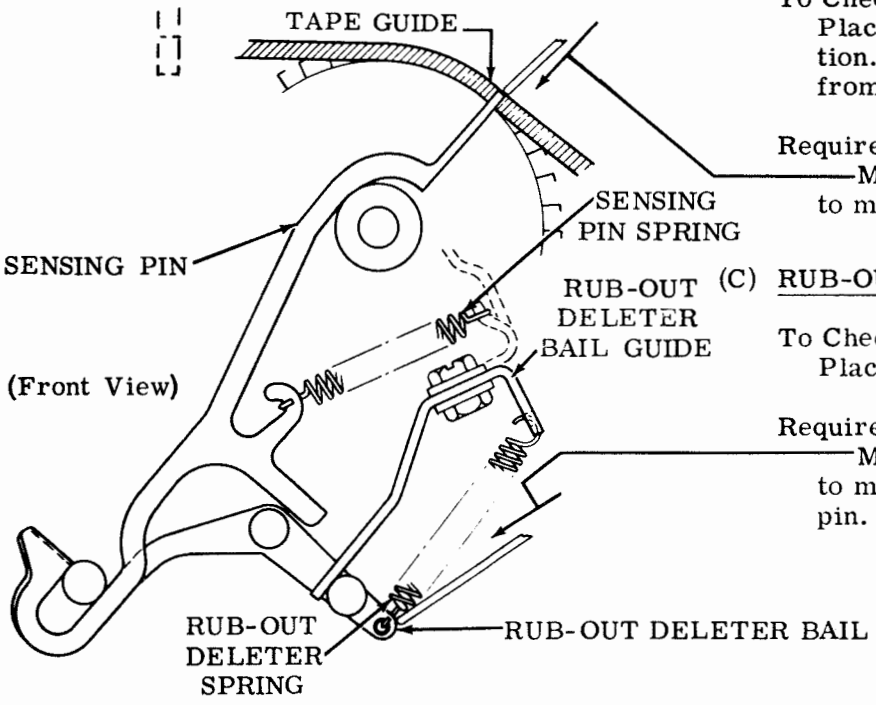
To Check
Place sensing pin in its highest position. Hold rub-out deleter bail away from the pin.

Requirement
Min 3 oz---Max 5 oz
to move pin flush with tape guide.

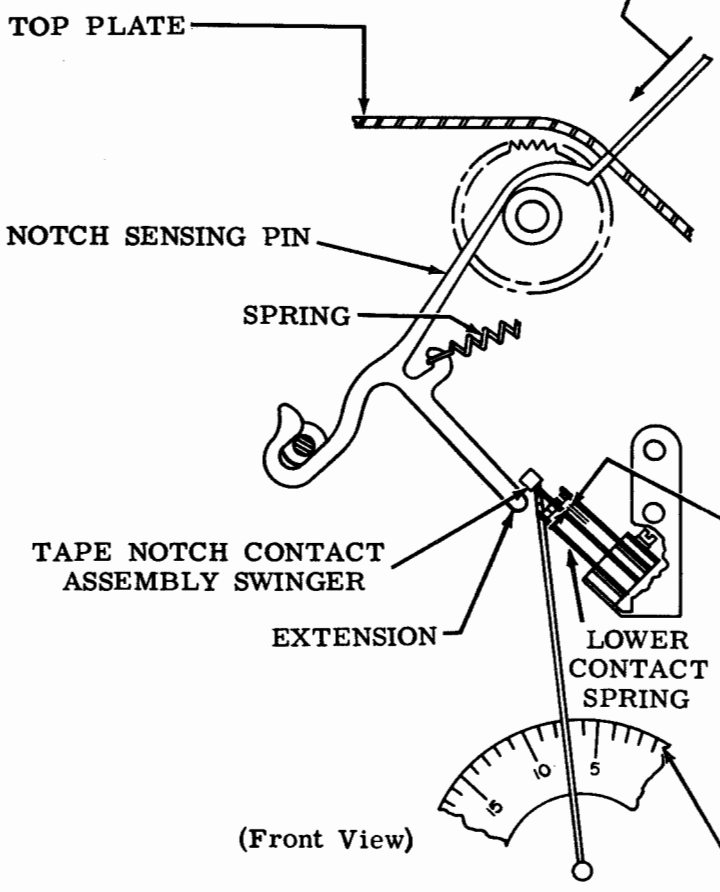
(C) RUB-OUT DELETER BAIL SPRING

To Check
Place sensing pin in highest position.

Requirement
Min 1 oz---Max 2-1/2 oz
to move bail away from the sensing pin.



3.17 Tape Notch Sensing Mechanism



(A) TAPE NOTCH SENSING PIN SPRING

To Check
Place sensing pin in highest position.

Requirement
Min 1 oz---Max 3 oz
to push sensing pin flush with surface of top plate.

(B) TAPE NOTCH SENSING CONTACT

(1) To Check
Check the location of the insulator with relation to the extension on sensing pin.

Requirement
Insulator on swinger should be centrally located with respect to the extension on sensing pin.

To Adjust
Loosen contact assembly mounting screws. Position contact assembly to meet requirement. Retighten mounting screws.

(2) To Check
Place sensing pin flush with top plate. Check clearance between sensing pin extension and insulator of contact swinger. Check gap between normally open contacts.

Requirement
Min 0.008 inch---Max 0.015 inch

To Adjust
Bend swinger to meet requirement.

(3) To Check
Hold sensing pin extension away from swinger.

Requirement
Min 8 grams---Max 15 grams
to just separate normally closed contacts.

To Adjust
Bend lower contact spring to meet requirement.

3.18 Tape Notch Sensing Mechanism (continued)

CONTACT BRACKET (STROBING)

Note: When using the tape notch sensing contacts, use a 7.42 unit DXD scale. Synchronize the transmitter distributor so that the end of the stop pulse image is in line with the end of the stop pulse on the DXD scale when transmission is continuous. Use a normal direct current line signal of 60 ma ±10% or 20 ma ±10% to strobe these contacts.

(FOR UNITS WITH TAPE SLACK ARM)

(1) Requirement
The contact should open no earlier than the 15 mark of the first pulse and open no later than the 55 mark of the first pulse.

(2) Requirement
The contact should close no earlier than the 15 mark of the fifth pulse and close no later than the 55 mark of the fifth pulse.

(3) Requirement
Contact breaks will be permitted between the 15 mark and the 55 mark of the fifth pulse. The magnitude of the breaks must not extend beyond these limits.

To Adjust
Loosen bracket contact mounting screws. Position contact bracket to meet requirements. Retighten mounting screws.

(FOR UNITS WITHOUT TAPE SLACK ARM)

(1) Requirement
The contact should close no earlier than the 15 mark of the first pulse and close no later than the 55 mark of the first pulse.

(2) Requirement
The contact should open no earlier than the 15 mark of the fifth pulse and open no later than the 55 mark of the fifth pulse.

(3) Requirement
Contact breaks will be permitted between the 15 and 55 marks of the first pulse. The magnitude of the breaks must not extend beyond these limits.

To Adjust
Loosen bracket contact mounting screws. Position contact bracket to meet requirements. Retighten mounting screws.

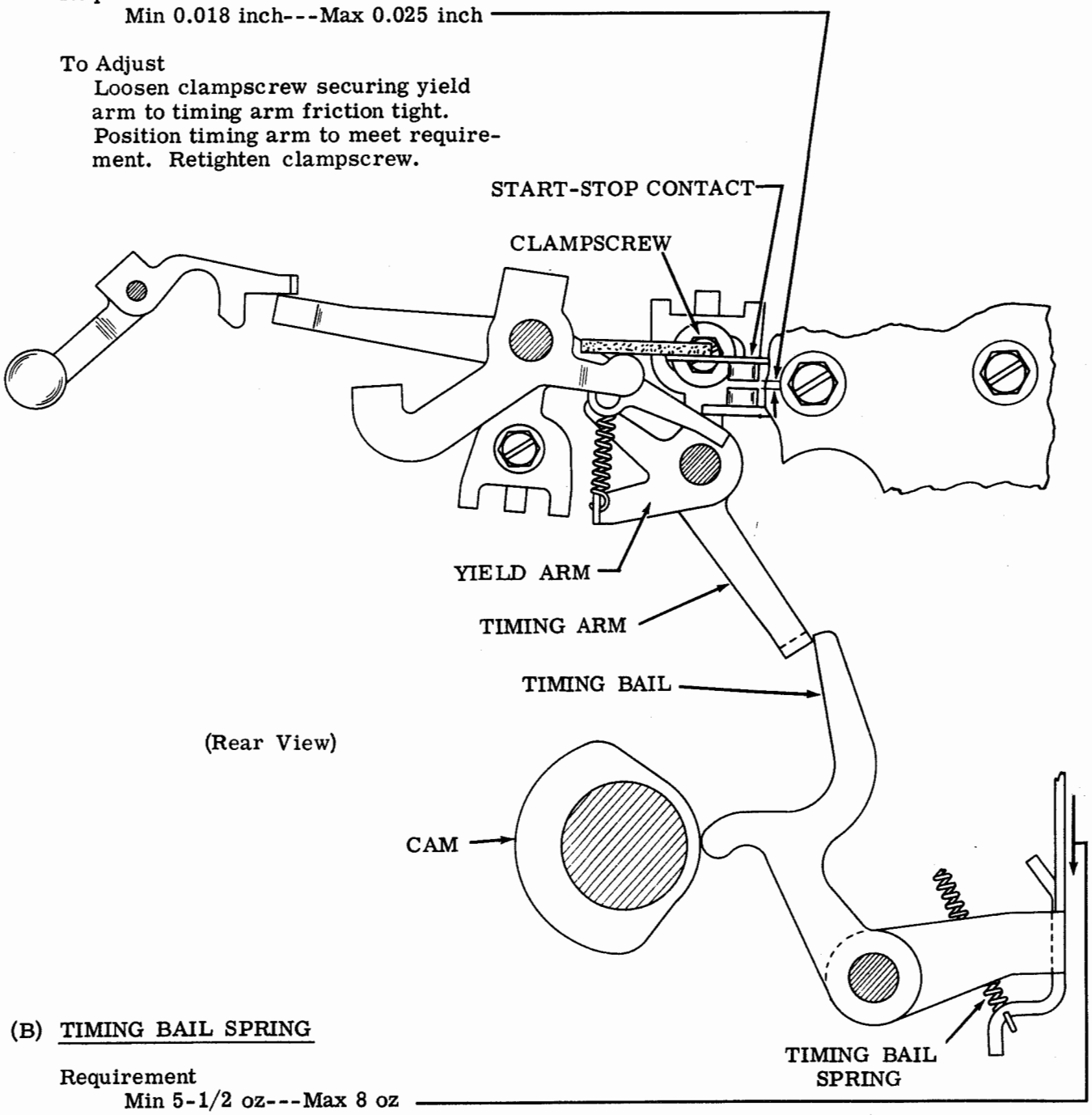
3.19 Transmitter Stop Mechanism

(A) START-STOP CONTACT GAP (FOR TABULATOR CONTROL)

To Check
Place timing bail on lower part of its cam. Check start-stop contact gap.

Requirement
Min 0.018 inch---Max 0.025 inch

To Adjust
Loosen clampscrew securing yield arm to timing arm friction tight. Position timing arm to meet requirement. Retighten clampscrew.



(B) TIMING BAIL SPRING

Requirement
Min 5-1/2 oz---Max 8 oz to start the bail moving.

3.20 Tape Slack Arm

TAPE SLACK CONTACTS

To Check

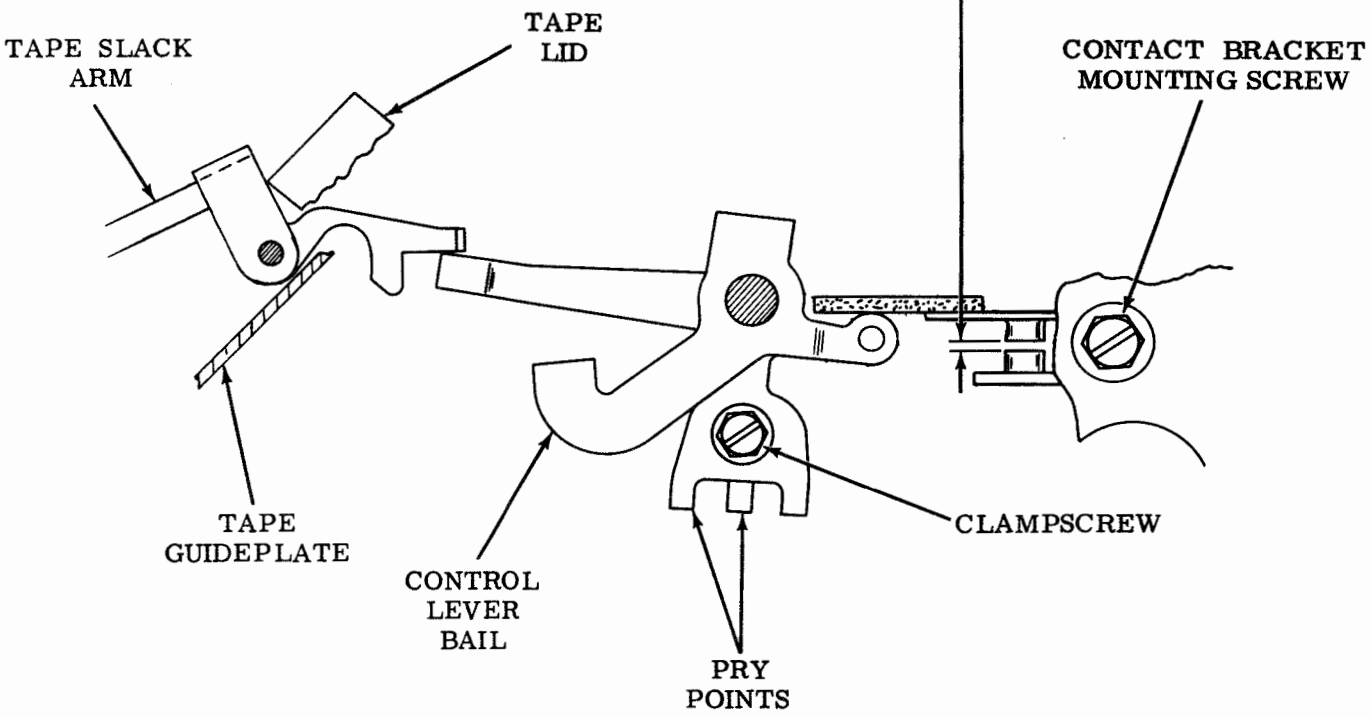
Close tape lid. Place control lever in run position. Check clearance between contacts when tape slack arm is raised to its maximum height.

Requirement

Min 0.010 inch---Max 0.020 inch

To Adjust

Loosen clampscrew. Set contact gap by positioning pry points. Retighten clampscrew.



(Rear View)

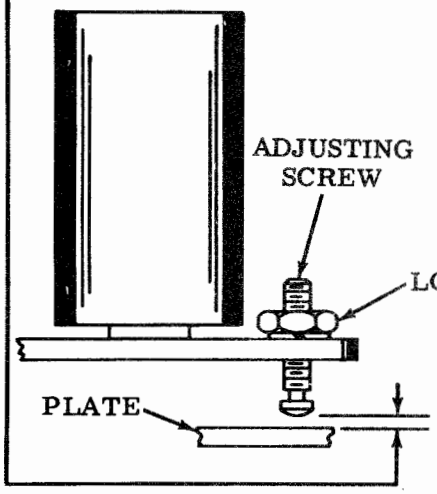
3.21 Tape Withhold Mechanism

(A) MAGNET ARMATURE GAP

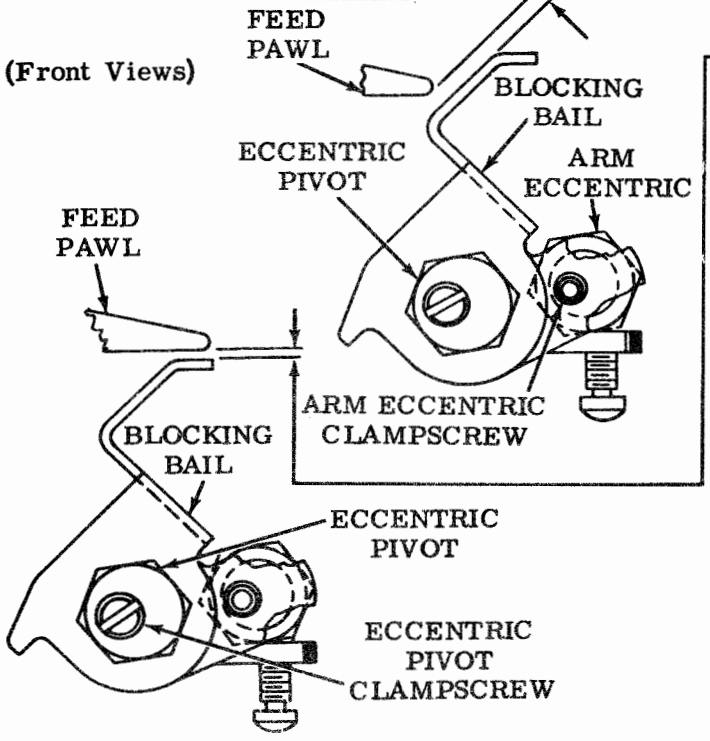
To Check
With the armature attracted, check the gap between the end of the armature adjusting screw and the plate.

Requirement
Min 0.020 inch---Max 0.025 inch

To Adjust
Loosen armature adjusting screw locknut friction tight. Rotate adjusting screw to meet requirement. Retighten locknut.



(Front Views)



(B) BLOCKING BAIL ARM ECCENTRIC

To Check
Place sensing pins in their lowest position. Place high part of block bail arm eccentric pivot to right at approximately the same angular position as the feed pawl eccentric.

Requirement
some clearance between the extension on the blocking bail and the tail of the feed pawl.

To Adjust
Loosen arm eccentric clampscrew. Rotate arm eccentric to meet requirement. Retighten clampscrew.

(C) BLOCKING BAIL ECCENTRIC PIVOT

To Check
Trip clutch. Hold armature attracted. Hold main shaft latched in stop position. Check clearance between blocking bail extension and feed pawl at closest point.

Requirement
Min 0.002 inch---Max 0.035 inch

To Adjust
Loosen eccentric pivot clampscrew friction tight. Rotate eccentric pivot to meet requirement. Retighten clampscrew.

Note 1: Check BLOCKING BAIL ARM ECCENTRIC adjustment, and refine if necessary.

Note 2: As a final check on this adjustment there should be some---to---0.015 inch clearance between the feed pawl and the feed ratchet at the closest point, as the feed pawl is cammed out of the ratchet during the blocking operation (magnet armature attracted). If necessary, refine BLOCKING BAIL ARM ECCENTRIC and BLOCKING BAIL ECCENTRIC PIVOT adjustments to meet this requirement.

4. EARLY MODELS

4.01 Tape Lid Mechanism

Note: Remove top and tape guideplate. Lubricate before adjustment.

TAPE LID

(1) To Check

Hold tape against notch in tape guideplate. Align feed wheel groove in tape lid with slot in plate. Align tape-out pin hole in plate tape lid with hole in plate. Check clearance between tape lid and pivot shoulder.

Requirement

—Min some---Max 0.010 inch clearance between tape lid and pivot shoulder.

To Adjust

Loosen tape lid mounting nuts friction tight. Insert tip of TP156743 gauge through slot and into groove of lid. Position tape lid bracket. Retighten nuts.

(2) To Check

Tape lid front bearing surface should rest squarely against tape guideplate. Check rear bearing surface clearance.

Note: When both plates are assembled on unit, left edge of lid may touch top plate and some change in this clearance may be expected.

Requirement

—Min some---Max 0.003 inch clearance between rear bearing surface and tape guideplate.

To Adjust

Loosen tape lid bracket mounting screws friction tight. Press tape lid against tape guideplate. Position bracket. Recheck requirement. Retighten bracket mounting screws.

(3) To Check

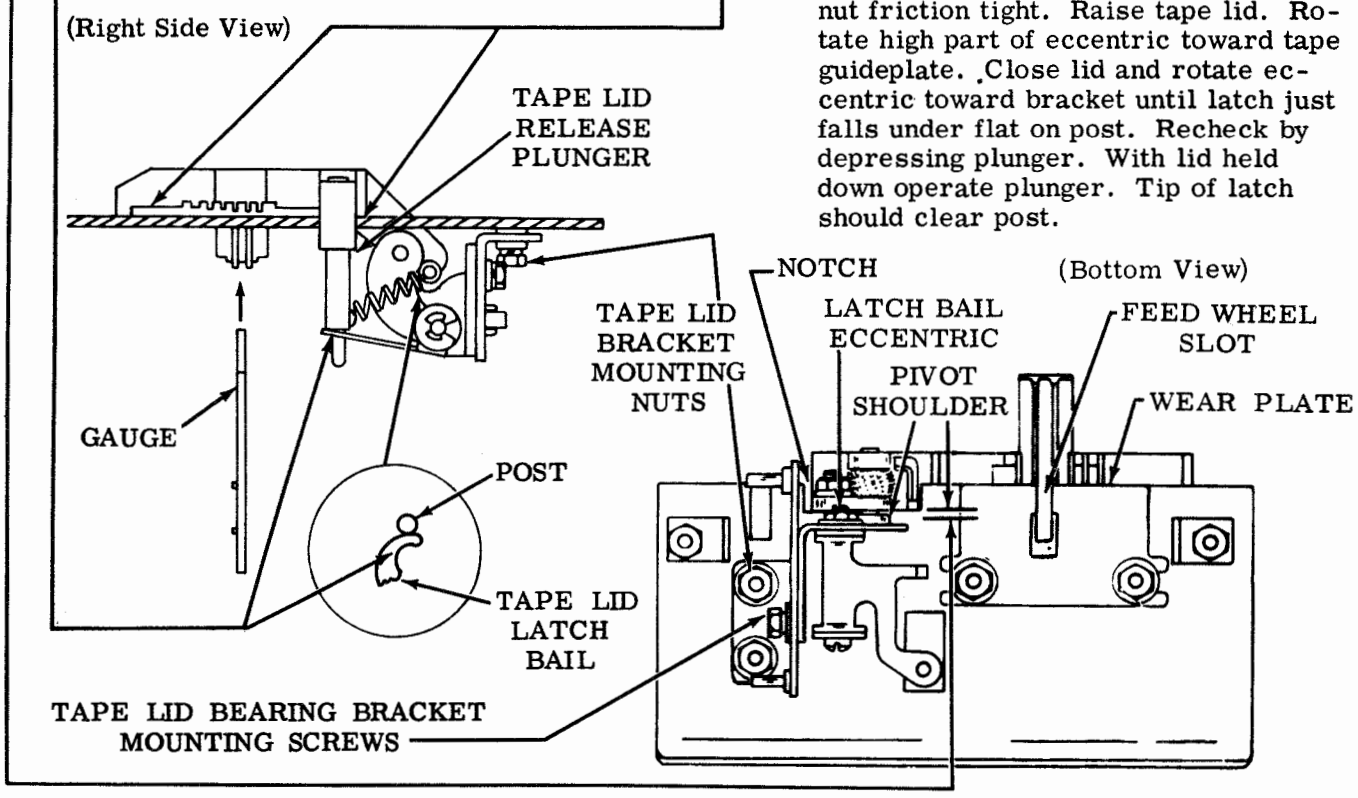
Latch tape lid against tape guideplate. Check release plunger for endplay.

Requirement

—Some endplay when lid is latched against tape guideplate.

To Adjust

Loosen eccentric mounting post locknut friction tight. Raise tape lid. Rotate high part of eccentric toward tape guideplate. Close lid and rotate eccentric toward bracket until latch just falls under flat on post. Recheck by depressing plunger. With lid held down operate plunger. Tip of latch should clear post.

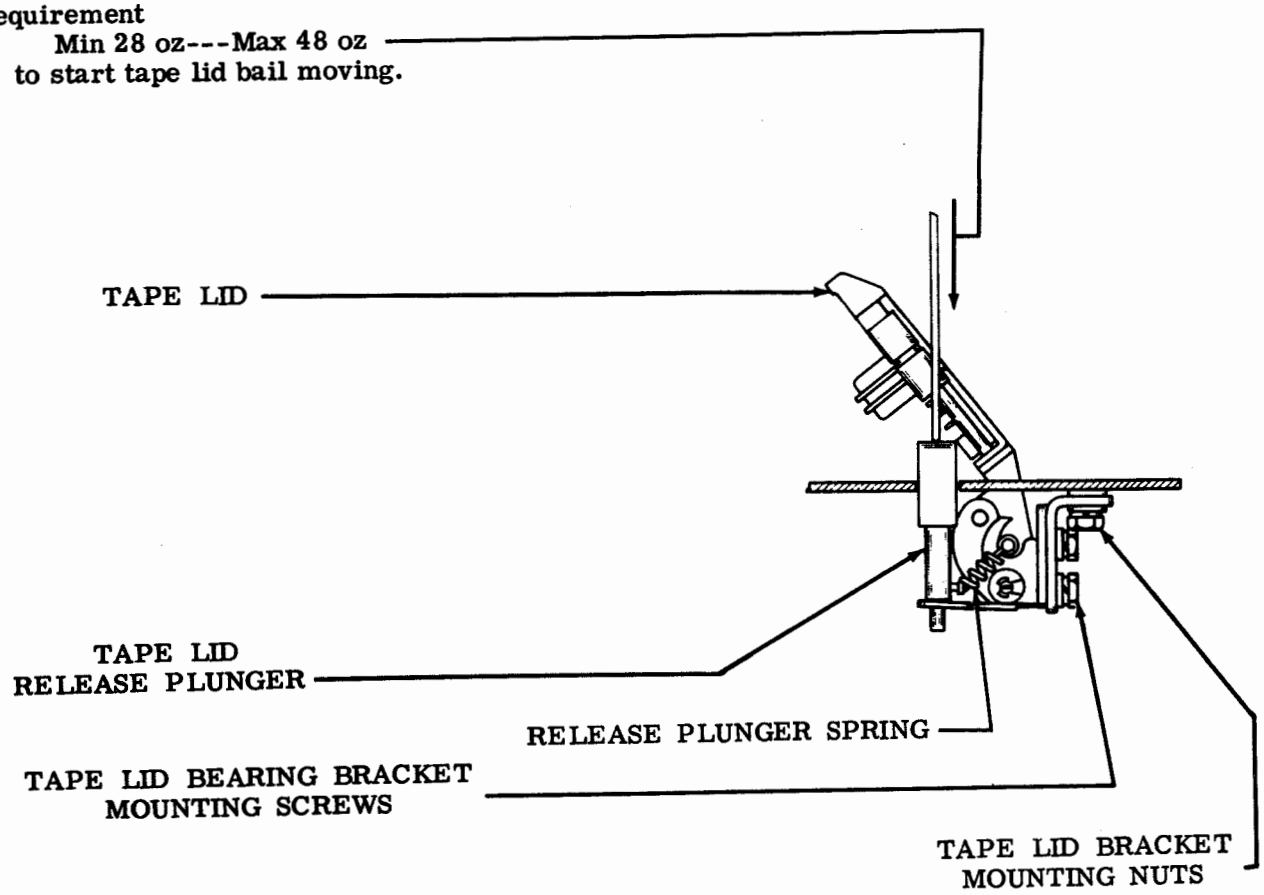


4.02 Tape Lid (continued)

TAPE LID RELEASE PLUNGER SPRING (For Units without Tape Lid Spring)

To Check
Hold tape guideplate horizontally. Unlatch tape lid.

Requirement
Min 28 oz---Max 48 oz to start tape lid bail moving.



(Right Side View)

MOTOR UNITS

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section is reissued to include adjustments formerly given in other sections, to include the latest engineering information, and to change the title. Since this revision is of a general nature, marginal arrows which indicate changes have been omitted.

1.02 The adjustment information given in this section and the section covering general teletypewriter requirements and adjustments provide the information necessary for maintenance of the motor unit.

1.03 The illustrations in this section show the adjusting tolerances, positions of moving parts, and spring tensions.

2. MINIATURIZED SYNCHRONOUS MOTOR UNITS

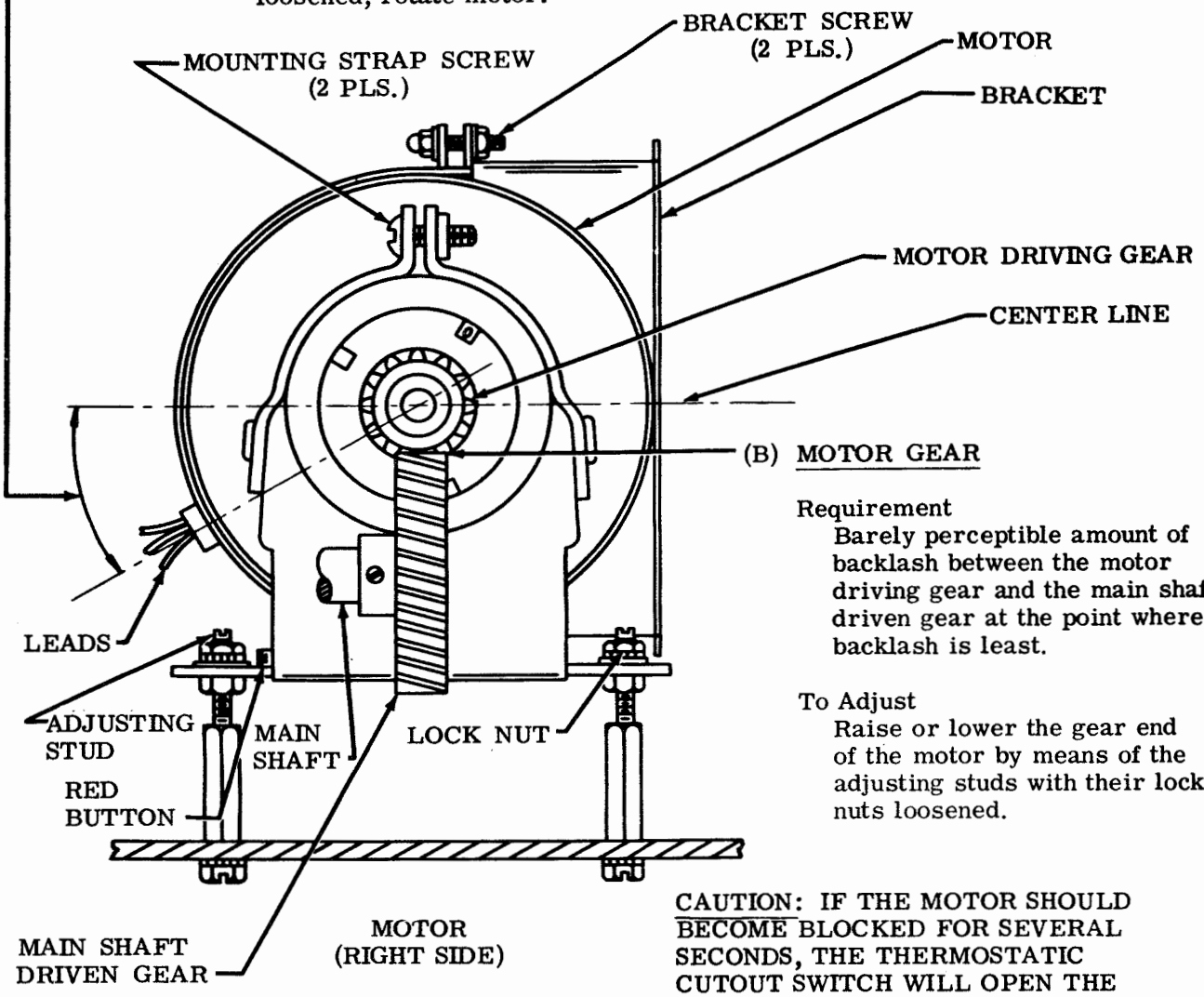
2.01 Motor Positioning

(A) MOTOR POSITIONING

Requirement
Position motor so that leads are approx 30° from center line with oil holes up.

To Adjust
With mounting strap screws loosened, rotate motor.

Note: If necessary, position bracket with bracket screws loosened.



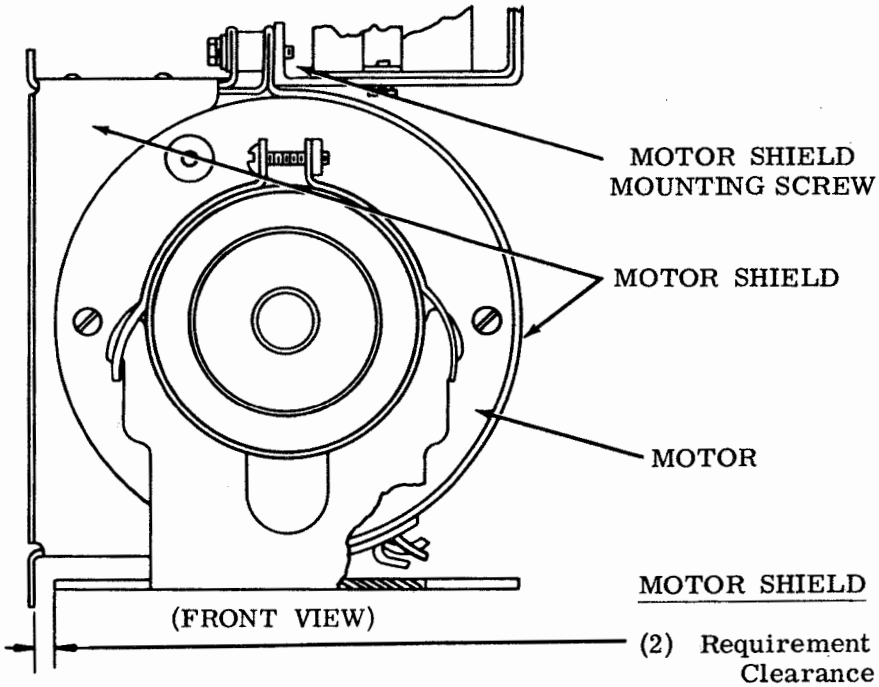
(B) MOTOR GEAR

Requirement
Barely perceptible amount of backlash between the motor driving gear and the main shaft driven gear at the point where backlash is least.

To Adjust
Raise or lower the gear end of the motor by means of the adjusting studs with their lock nuts loosened.

CAUTION: IF THE MOTOR SHOULD BECOME BLOCKED FOR SEVERAL SECONDS, THE THERMOSTATIC CUTOUT SWITCH WILL OPEN THE CIRCUIT. SHOULD THIS HAPPEN, ALLOW MOTOR TO COOL AT LEAST 5 MINUTES BEFORE MANUALLY RESETTING THE SWITCH BY DEPRESSING THE RED BUTTON. AVOID REPEATED RESETTING.

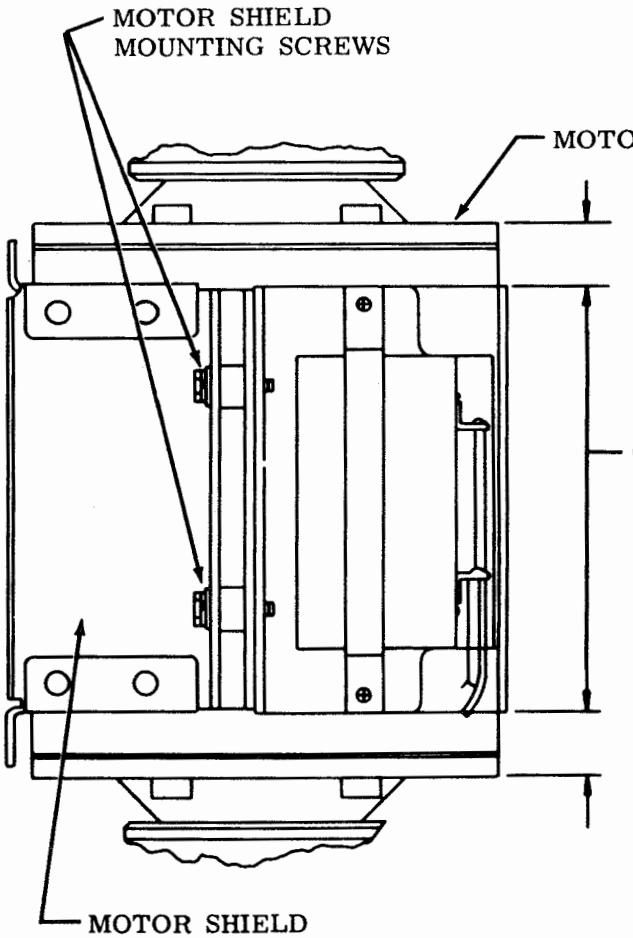
2.02 Motor Shield



MOTOR SHIELD (IF SO EQUIPPED)

(2) Requirement
Clearance between motor shield and motor mounting bracket should be
Min 0.062 inch

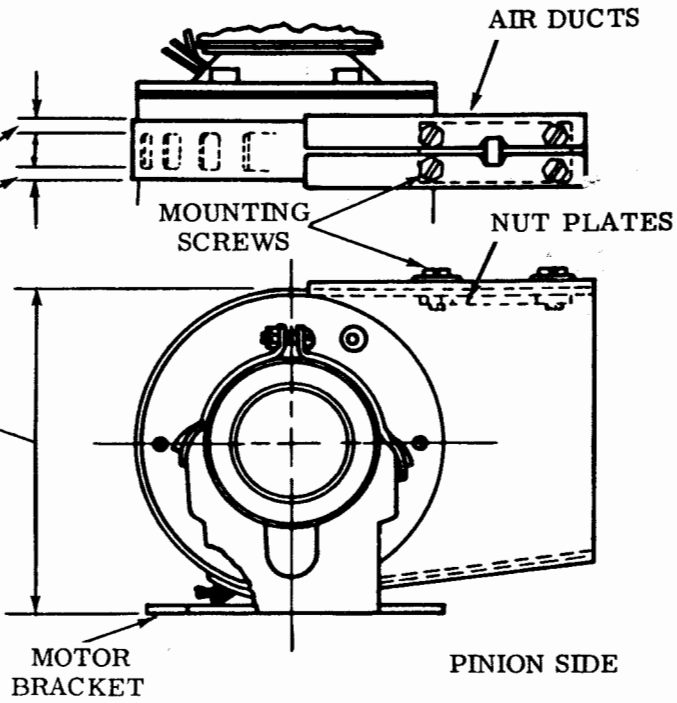
To Adjust
Position motor shield with its mounting screws loosened.



(1) Requirement
Equal clearance between front and rear ends of motor and motor shield.

(TOP VIEW)

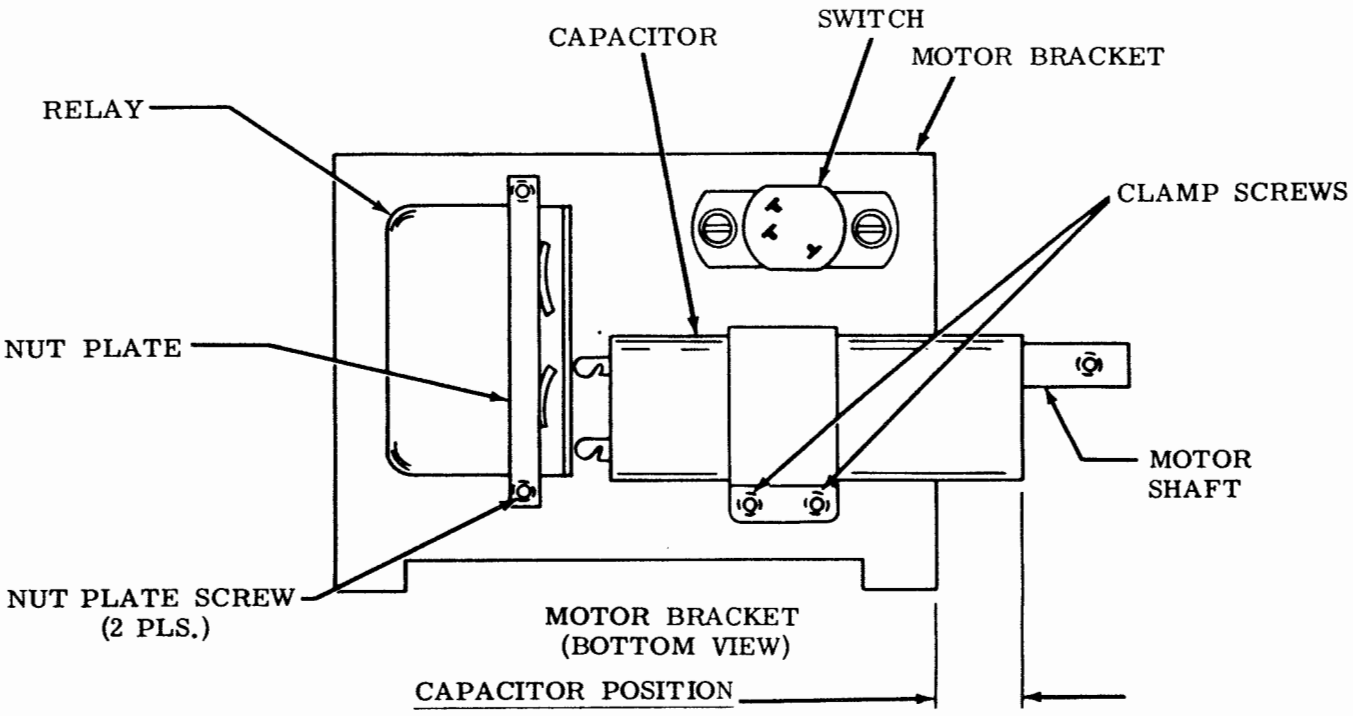
2.03 Air Ducts and Capacitor Position



AIR DUCTS (2) (IF SO EQUIPPED)

Requirement
Equally spaced about exhaust ports.
Top edge of ducts to be parallel with motor bracket.

To Adjust
Loosen mounting screws and position ducts.



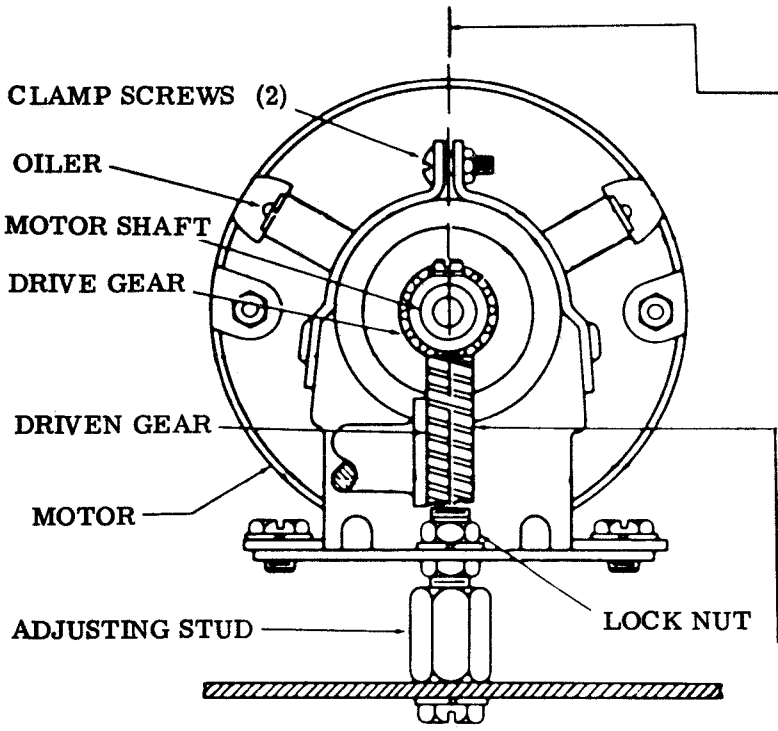
CAPACITOR POSITION

Requirement
Max 1/2 inch between motor bracket and end of capacitor.

To Adjust
Position relay and capacitor with motor removed from motor bracket and nut plate and clamp screws loosened.

3. STANDARD AND HEAVY DUTY SYNCHRONOUS MOTOR UNITS

3.01 Motor Positioning



MOTOR POSITIONING

(1) Requirement (Upright Mounted Motors)
Oilers should be upward and approximately equidistant from a vertical line through motor shaft.

(2) Requirement (Inverted Mounted Motors)
Oilers should be downward and approximately equidistant from a vertical line through motor shaft.

To Adjust
Position motor with clamp screws (2) loosened.

MOTOR ADJUSTING STUD (IF SO EQUIPPED)

Requirement
Barely perceptible backlash between drive gear and driven gear at point where backlash is least.

To Adjust
With lock nut loosened, position adjusting stud. Tighten nut while holding stud in position.

CAUTION: IF MOTOR BECOMES BLOCKED FOR SEVERAL SECONDS, THERMOSTATIC CUTOUT SWITCH (ON UNITS SO EQUIPPED) WILL BREAK CIRCUIT. SHOULD THIS HAPPEN, ALLOW MOTOR TO COOL AT LEAST 5 MINUTES BEFORE DEPRESSING RED RESET BUTTON. AVOID REPEATED RESETTING.

4. SERIES GOVERNED MOTOR UNITS

4.01 Motor Positioning and Governor

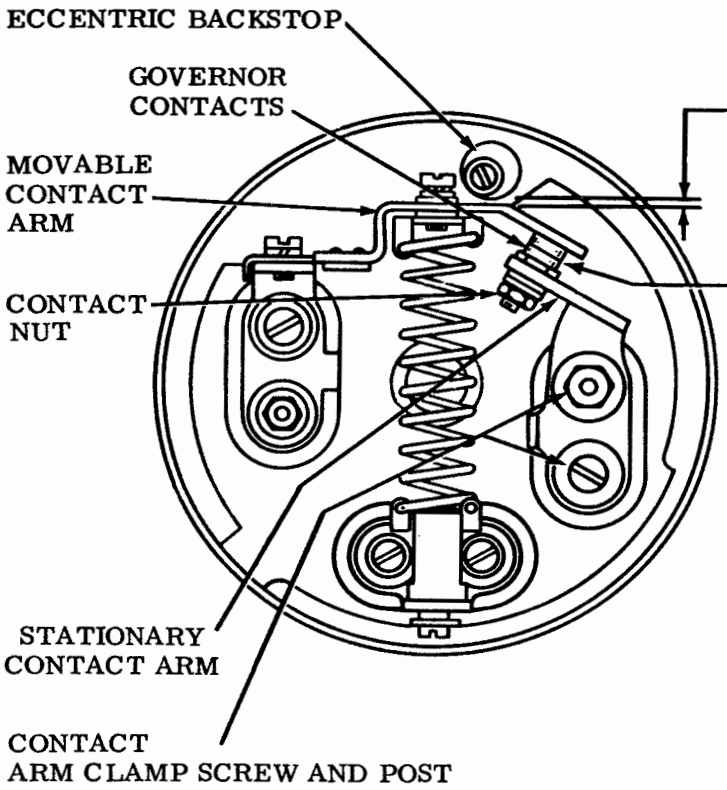
MOTOR POSITIONING (NOT ILLUSTRATED)

Requirement
Motor should be centrally positioned in its rubber mounts so as to provide at least 0.020 clearance between the motor housing and the cradle at the governor end. The cable should also clear the grommet in the screen by at least 0.030 inch.

(A) GOVERNOR CONTACT BACKSTOP

Requirement
Clearance between the movable contact arm and its eccentric backstop.
Min 0.020 inch---Max 0.040 inch

To Adjust
Rotate the eccentric backstop with clamping screw loosened.



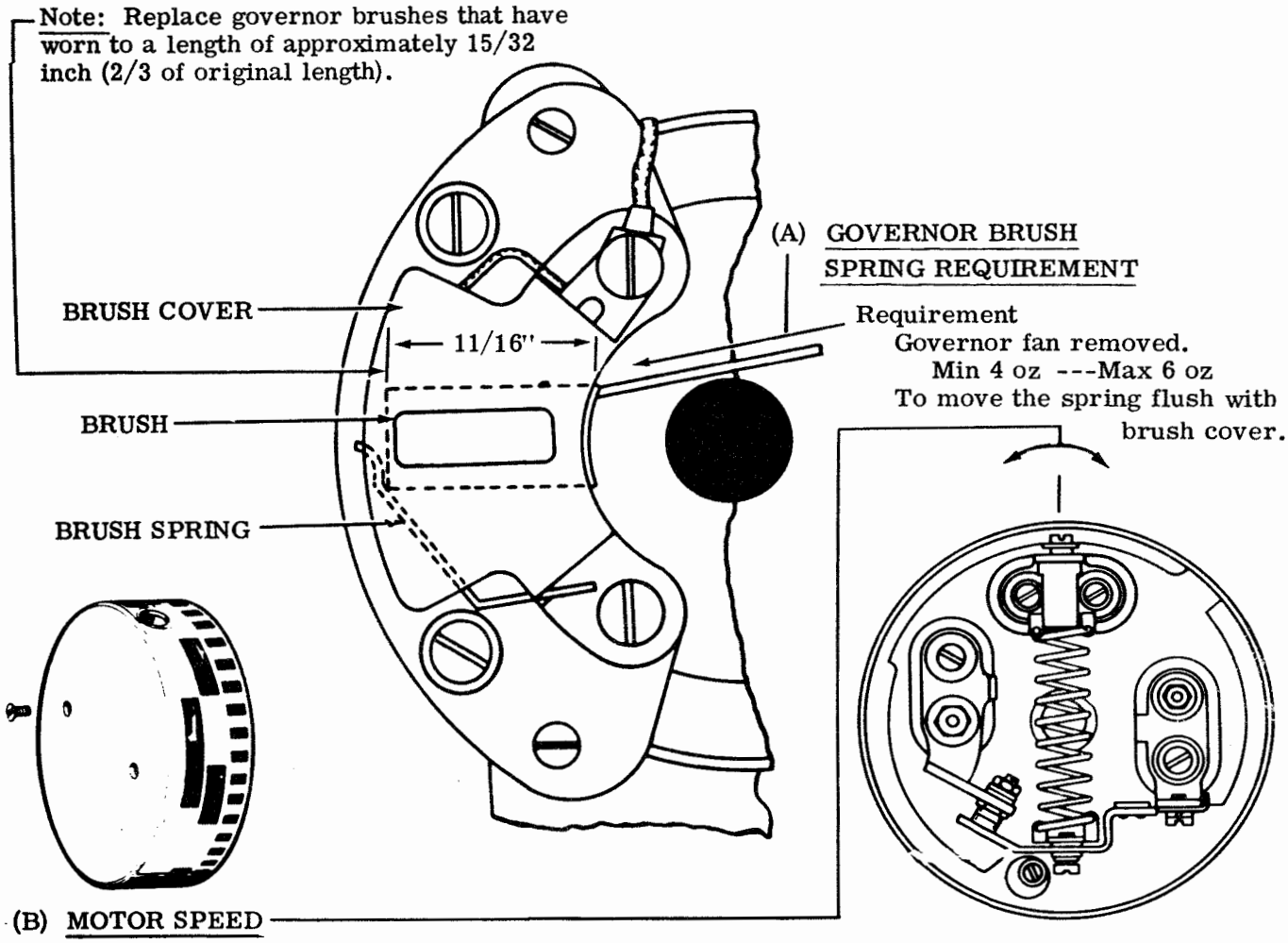
(B) GOVERNOR CONTACT

Requirement
The contacts should meet squarely and not overlap more than 0.010 inch.

To Adjust
Position the stationary contact and contact arm with the clamp screw and post loosened.

CAUTION: EXCESSIVE PRESSURE AGAINST GOVERNOR COVER ASSEMBLY DURING REMOVAL MAY DAMAGE SCREENED WINDOW.

4.02 Motor Governor



Requirement

With target illuminated and viewed through the vibrating shutters of a 120 vps turning fork the spots on the 4-spot target should appear stationary while rotating. With target illuminated and viewed through the vibrating shutters of an 87.6 vps tuning fork the spots on the 6-spot target should appear stationary while rotating and with speed slightly increased the spots on the 35 spot target should appear stationary.

To Adjust

Stop the motor and turn the adjusting screw as indicated on governor cover. For units with screened governor covers, stop the motor, remove the TP152035 plug from cover. Turn adjusting screw as indicated on periphery of target.

Note: It is possible to adjust the motor at some multiple of the correct speed. To check motor speed when used with a page printer, return typebox carriage to left margin, set up any character in selector and manually trip typebox clutch trip lever. Printing should occur as follows:

WPM	PRINTED CHARACTERS	REQUIRED TIME
60	70	10 seconds
75	44	5 seconds
100	57	5 seconds

28 CABINET FOR AUTOMATIC SEND-RECEIVE TELETYPEWRITER SETS

LUBRICATION

CONTENTS PAGE

1. GENERAL

1.01 The 28 Cabinet should be lubricated as directed in this section. The figures indicate the points to be lubricated and the quantity of lubricant to be used. Lubricate the assembly just prior to placing it in service.

1.02 The cabinet should be lubricated after each six months period of time or after each 1500 hours of service when the operating components of the set are serviced.

1.03 Use TP88970 oil at all points requiring oil and TP88973 grease at all points requiring grease.

1.04 The unit should be thoroughly lubricated, but over-lubrication which might allow oil or grease to be thrown to other parts, should be avoided. The following general instructions supplement the specific lubrication points indicated.

a. Apply one drop of oil to all spring hooks.

b. Apply oil to all pivot points.

c. Apply oil to all sliding surfaces.

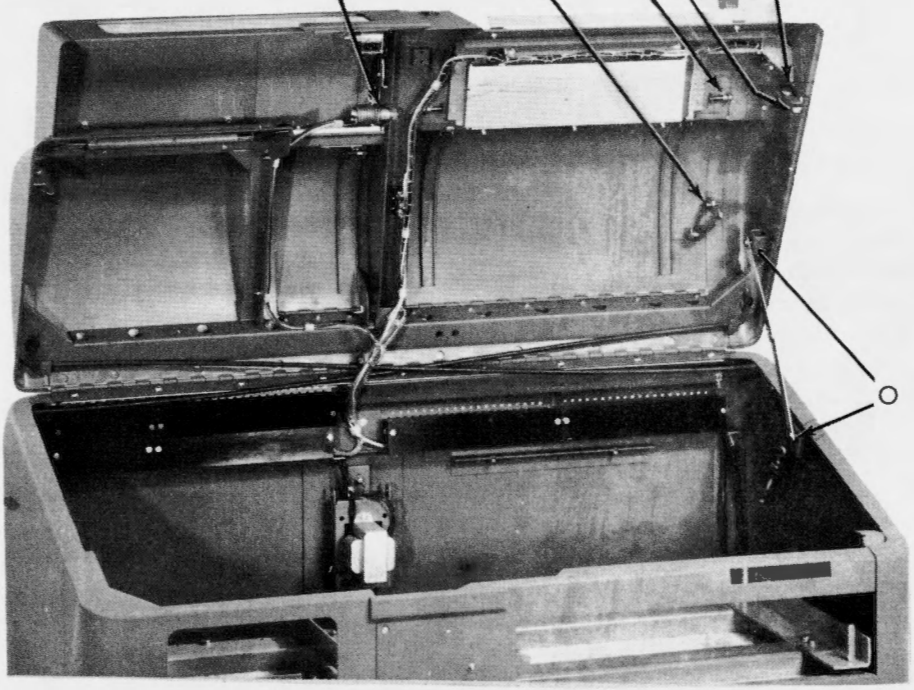
1.05 Specific lubrication requirements and the amount of lubricant are indicated at each lubrication point in accordance with the following code:

O	Apply 1 drop of oil.
O2	Apply 2 drops of oil.
O3	Apply 3 drops of oil.
G	Apply thin film of grease.

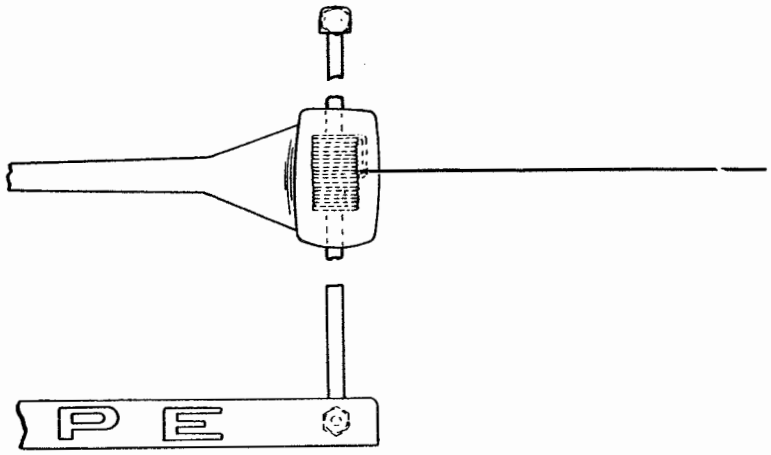
1.06 Remove any oil from finished surfaces with a soft clean cloth.

2. LUBRICATION

2.01 CABINET MECHANISM

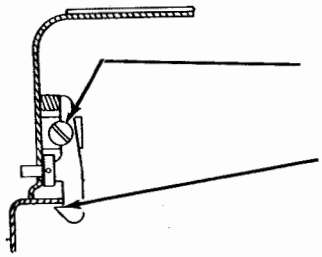


2.02 LINE GUIDE MECHANISM



0 BUSHING LINE GUIDE

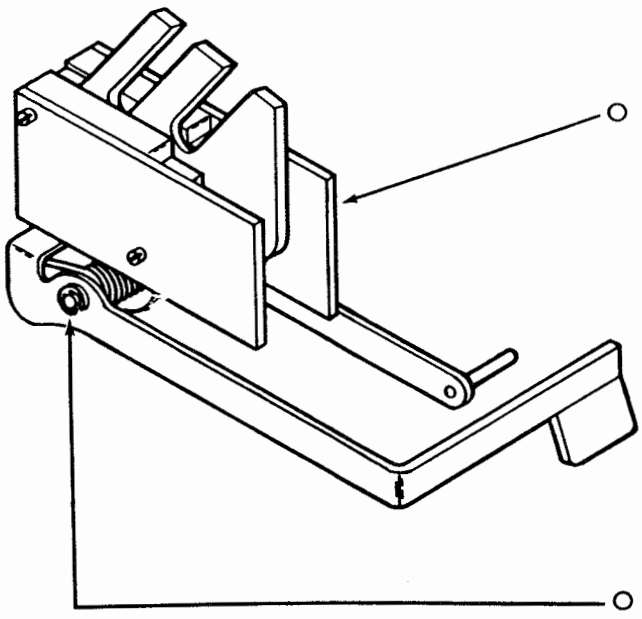
2.03 DOME LATCH MECHANISM



0 PIVOT POINT DOME LATCH

G ENGAGING SURFACE DOME LATCH

2.04 LOW PAPER AND PAPER OUT SWITCH MECHANISM



O PIVOT LOW-PAPER LEVER

O PIVOT PAPER-OUT LEVER

28 ELECTRICAL SERVICE UNIT

LUBRICATION

1. GENERAL

1.01 This section provides specific lubrication procedures for the 28 electrical service units. It is being reissued to conform to more of a standard format. Since this is a general revision marginal arrows used to indicate changes and additions, have been omitted.

1.02 The figure indicates points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the units prior to placing them in service. After that, lubricate as deemed necessary to provide smooth operation.

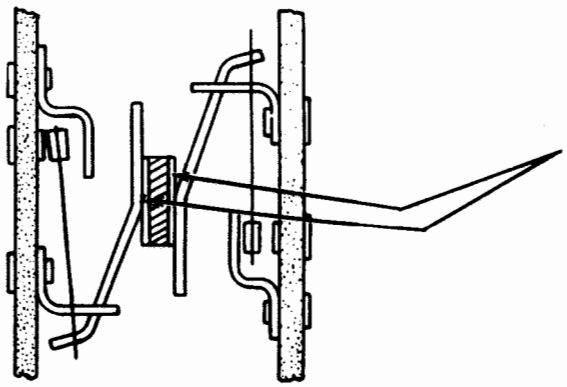
1.03 The lubricating symbol in the text of the figure indicates lubrication directions as follows:

O1	Apply one drop of oil
O2	Apply two drops of oil
O3	Apply three drops of oil
G	Apply thin coat of grease
SAT	Saturate (felt oilers, washers, wicks) with oil

1.04 Use TP88970 (KS7470) oil at all locations where the use of oil is indicated. Use TP88973 (KS7471) grease on all surfaces where grease is indicated.

2. LUBRICATION DETAILS

2.01 Stop Magnet



G Engaging Surfaces Stop Magnet Armature

28 PERFORATOR-TRANSMITTER BASE

LUBRICATION

CONTENTS

1. GENERAL

1.01 This section has been revised to include recent engineering changes and additions, and to rearrange the text so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 The 28 Perforator-Transmitter Base should be lubricated as directed in this section. The figures indicate points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the keyboard just prior to placing it in service. After a few weeks in service, relubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:

OPERATING SPEEDS IN WORDS PER MINUTE	LUBRICATION INTERVAL
60	3000 hr or 1 yr*
75	2400 hr or 9 mo*
100	1500 hr or 6 mo*
150	1000 hr or 6 mo*

*Whichever occurs first.

1.03 Use TP88970 oil at all locations where the use of oil is indicated. Use TP88973 grease on all surfaces where grease is indicated.

1.04 All spring wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Over-lubrication, however, which will permit oil or grease to drip or be thrown on other parts, should be avoided. Special care must be taken to prevent any oil or grease from getting between electrical contacts.

1.05 Apply a thick film of grease to all gears.

1.06 Apply oil to all cams, including the camming surfaces of each clutch disc.

1.07 The photographs show the paragraph numbers referring to particular line drawings of mechanisms and where these mechanisms are located on the unit. Parts in the line drawings are shown in an upright position unless otherwise specified.

1.08 The illustration symbols indicate the following lubrication directions:

O	Apply 1 drop of oil.
O2	Apply 2 drops of oil.
O3	Apply 3 drops of oil.
O20	Apply 20 drops of oil, etc.
G	Apply thin film of grease.
SAT	Saturate (felt oilers, washers, wicks) with oil.

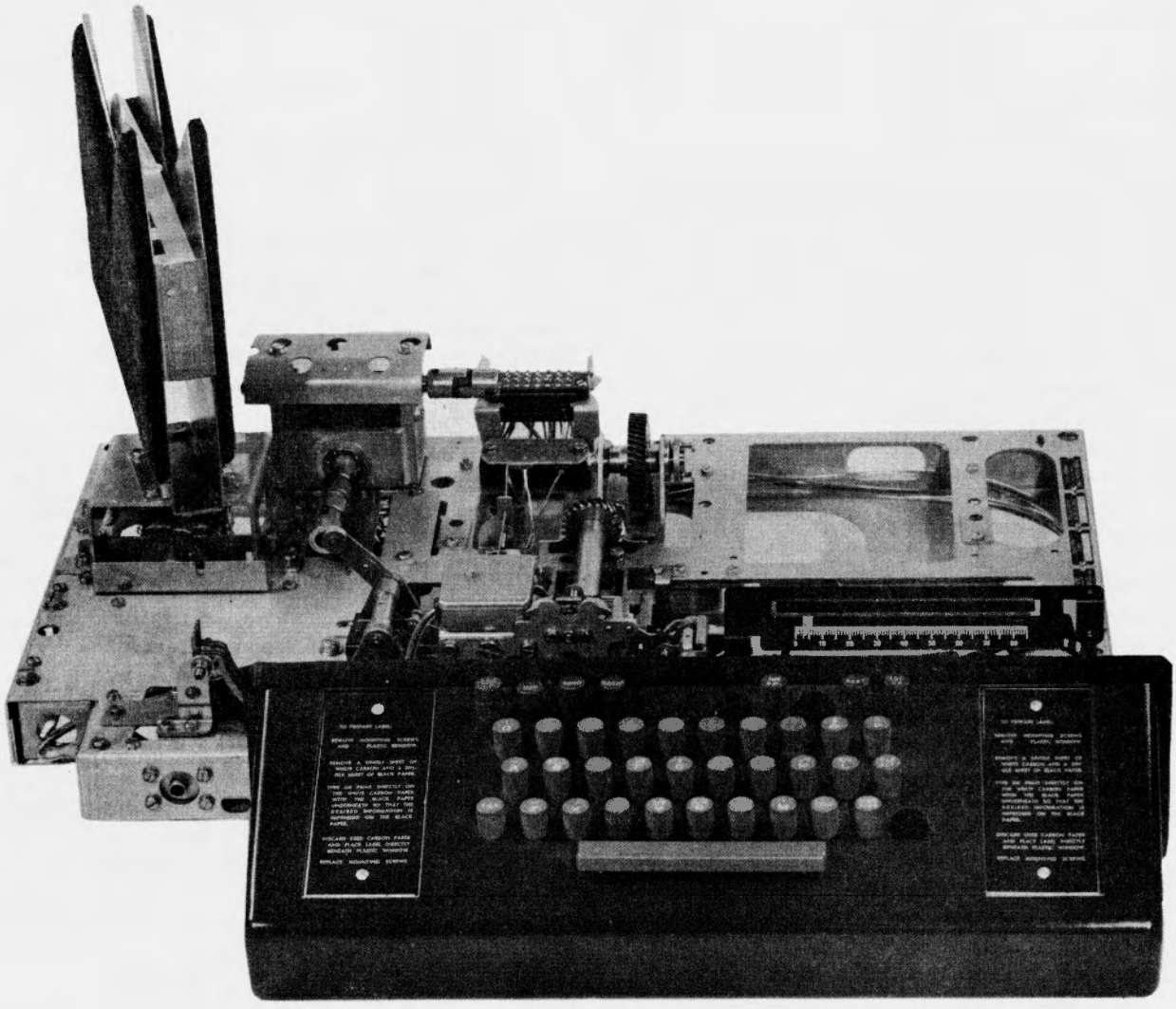
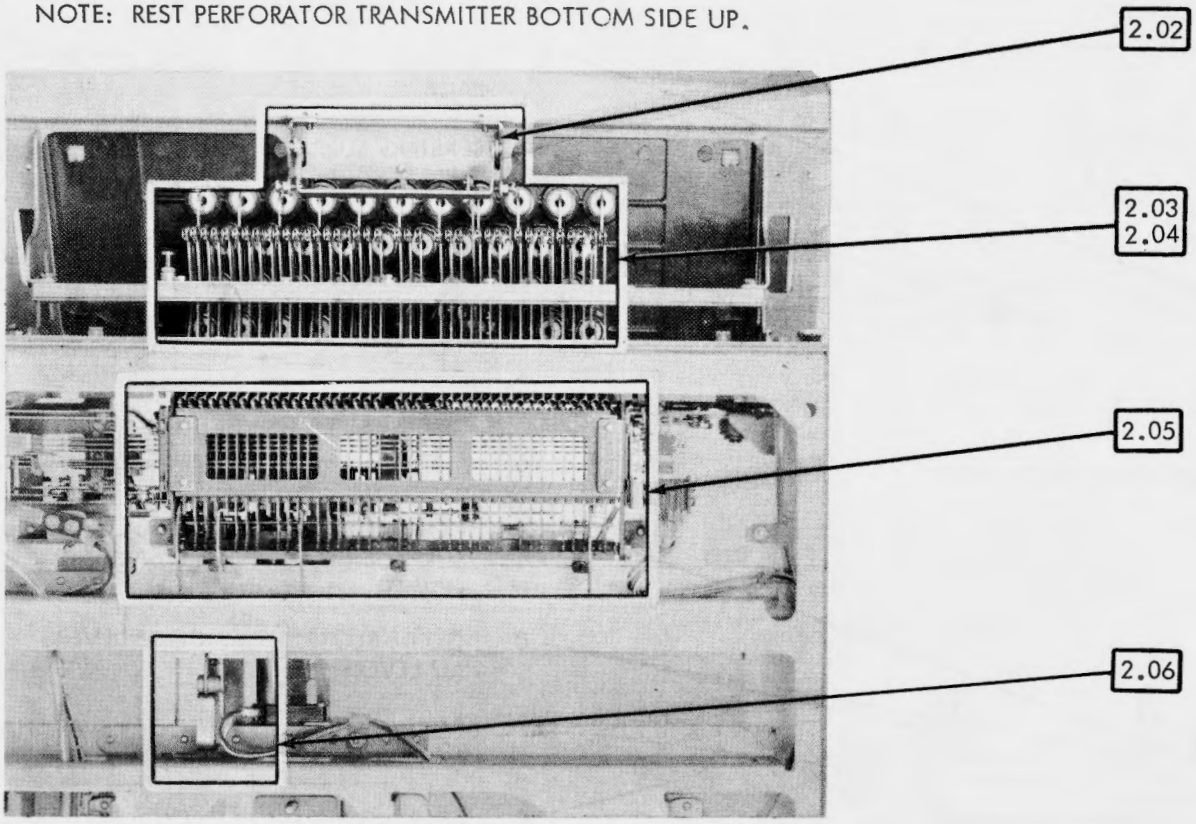


Figure 1 - 28 Perforator-Transmitter Base

2. LUBRICATION

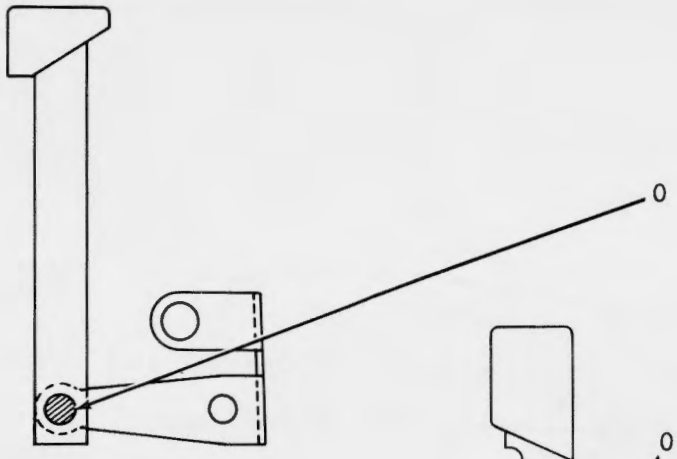
2.01 KEYBOARD

NOTE: REST PERFORATOR TRANSMITTER BOTTOM SIDE UP.

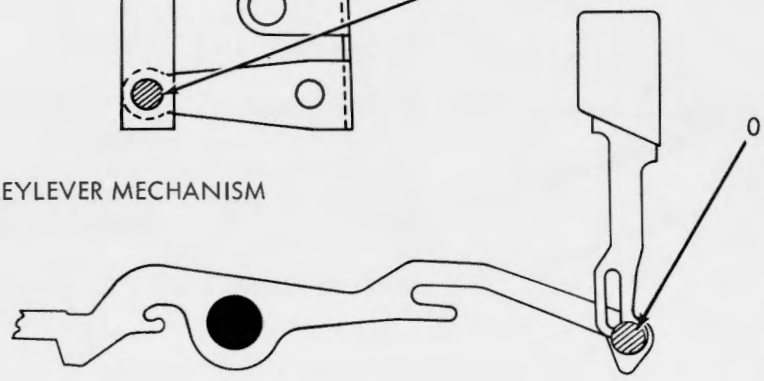


(BOTTOM VIEW)

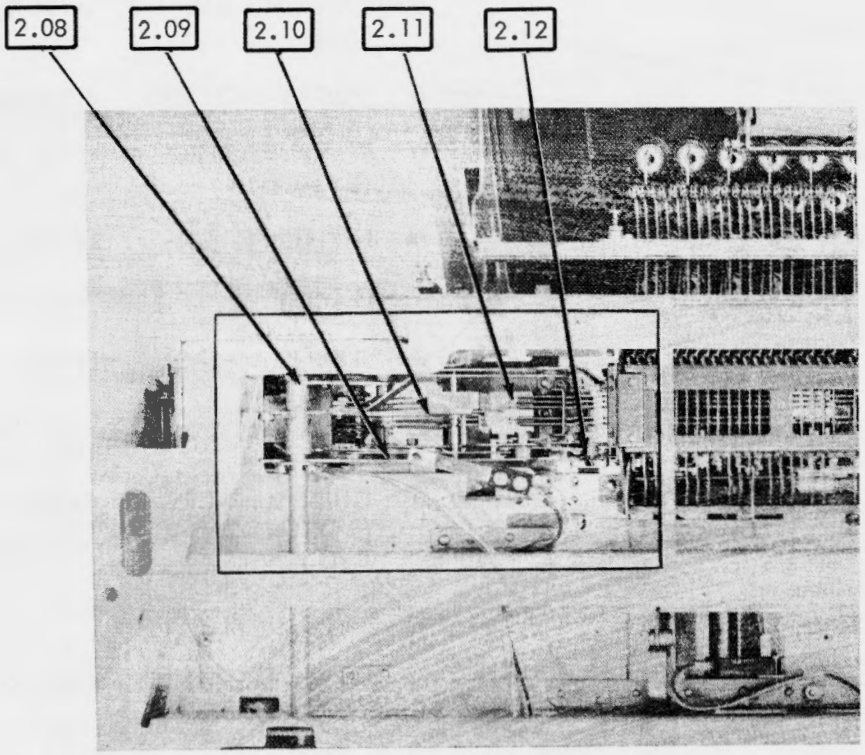
2.02 SPACE BAR MECHANISM



2.03 KEYLEVER MECHANISM

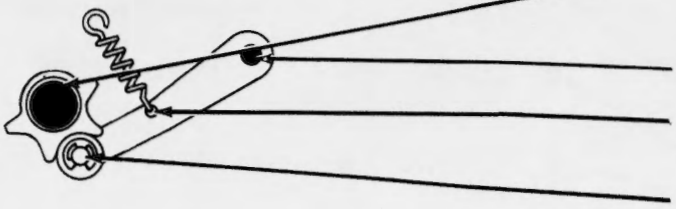


2.07 EXTENSION BASKET MECHANISM
NOTE: REST PERFORATOR TRANSMITTER BOTTOM SIDE UP.



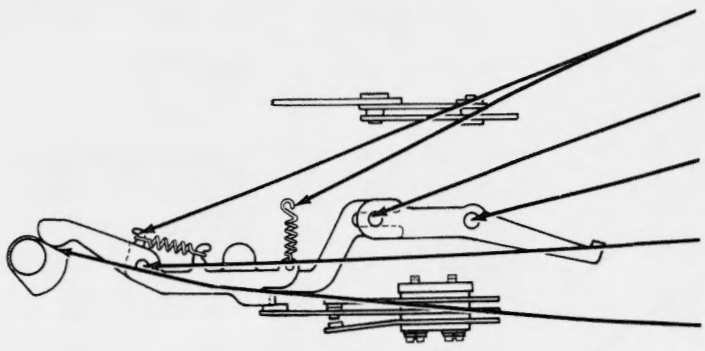
(BOTTOM VIEW)

2.08 DETENT LEVER MECHANISM



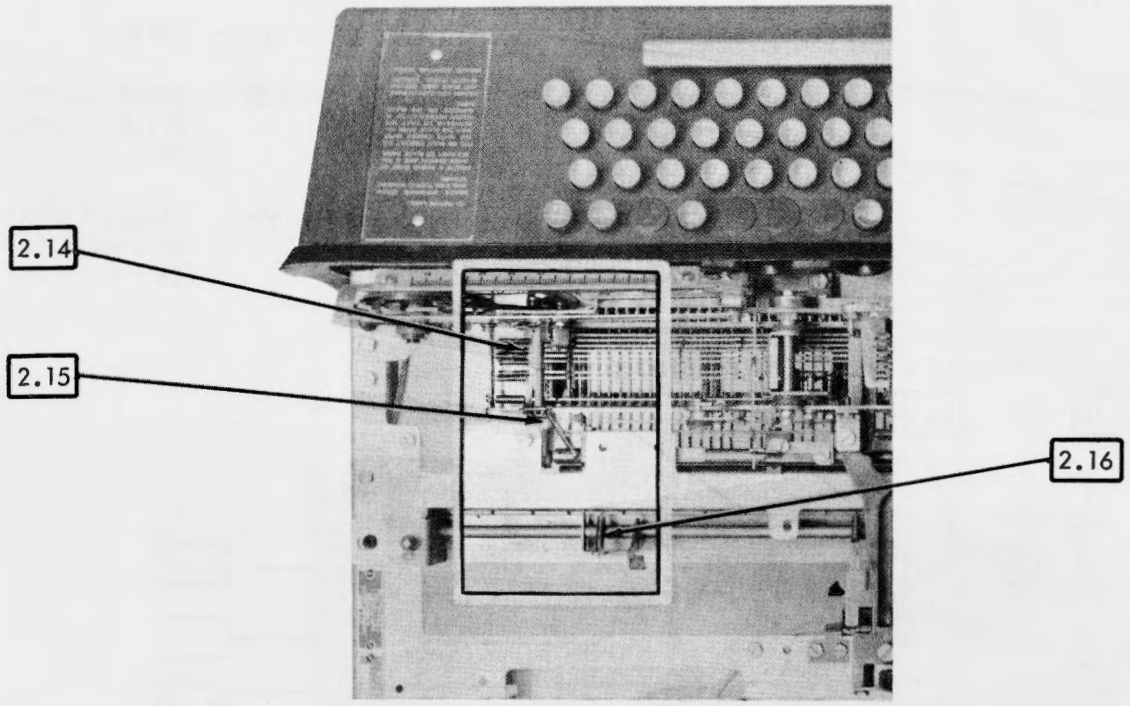
0	BEARING SURFACES (FRONT AND REAR)	CONTROL CAM
0	BEARING SURFACE	DETENT LEVER
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	ROLLER

2.09 SELECTOR LEVER MECHANISM



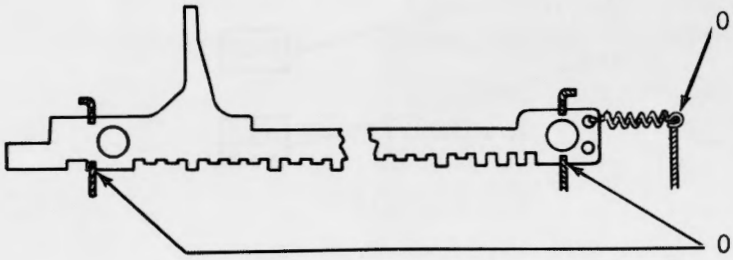
0	HOOKS-EACH END (2 SPRINGS)	SPRINGS
0	SLIDING SURFACE	RESET LEVER
0	BEARING SURFACE	KEYBOARD CONTROL SELECTION LEVER
0	BEARING SURFACE	RESET CAM FOLLOWER AND RESET LEVER
0	CAMMING SURFACE	RESET CAM FOLLOWER

2.13 CODE BAR AND LOCAL LINE FEED MECHANISM
NOTE: REST PERFORATOR IN UPRIGHT POSITION.



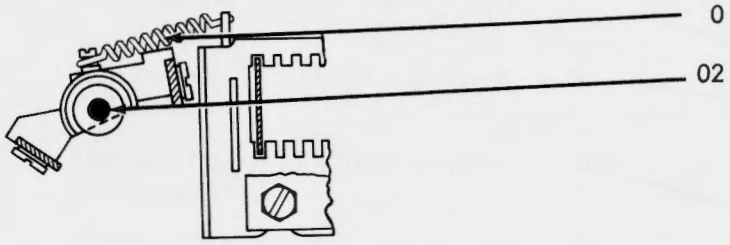
(TOP VIEW)

2.14 CODE BAR MECHANISM



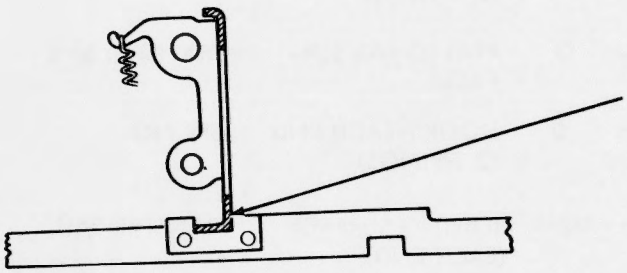
0	HOOKS-EACH END (8 SPRINGS)	SPRING
0	GUIDE SLOTS (LEFT AND RIGHT-TOP AND BOTTOM)	CODE BAR GUIDES

2.15 CODE LEVER UNIVERSAL BAIL MECHANISM



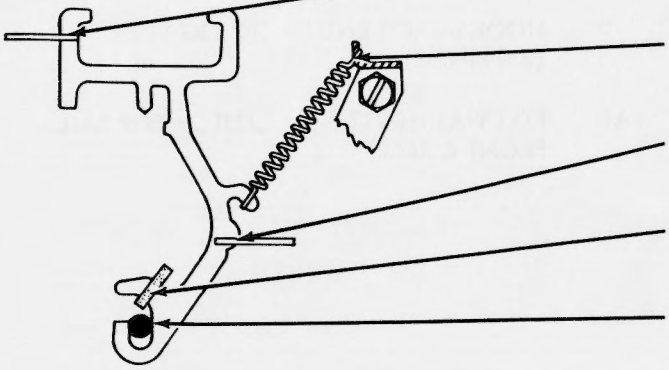
0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	CODE LEVER UNIVERSAL BAIL

2.19 CLUTCH TRIP BAR MECHANISM



G SAT	SLOT	CLUTCH TRIP BAR WEAR PLATE

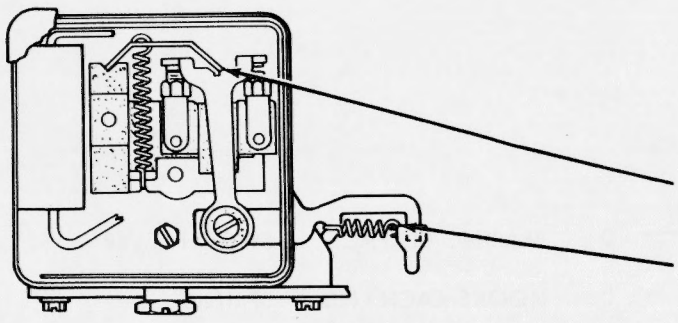
2.20 TRANSFER LEVER MECHANISM



0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)
0	HOOKS-EACH END (7 SPRINGS)	SPRING
0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)
SAT	FELT WASHERS (4 WASHERS)	CAMMING SURFACES
0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)

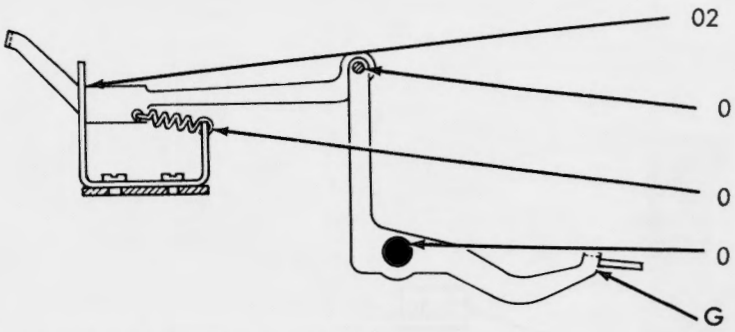
2.21 CONTACT BOX

DISASSEMBLY: REMOVE NUT AND LOCK WASHER SECURING CONTACT BOX COVER AND REMOVE COVER.



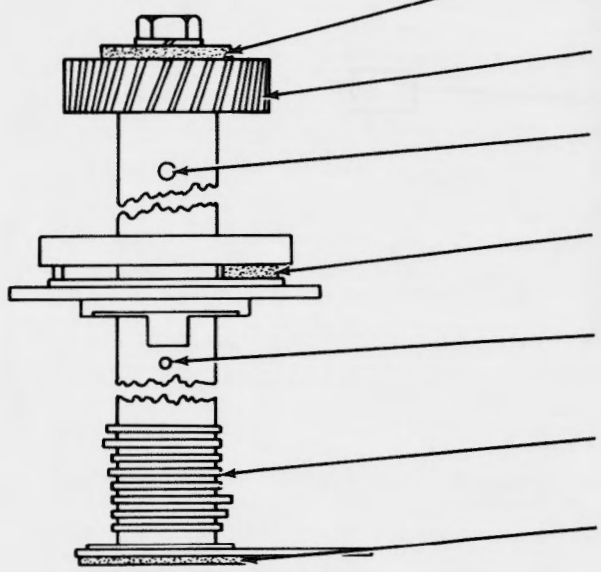
G	ENGAGING SURFACE	CONTACT TOGGLE
0	HOOKS-EACH END	SPRING

2.26 LOCAL LINE FEED MECHANISM



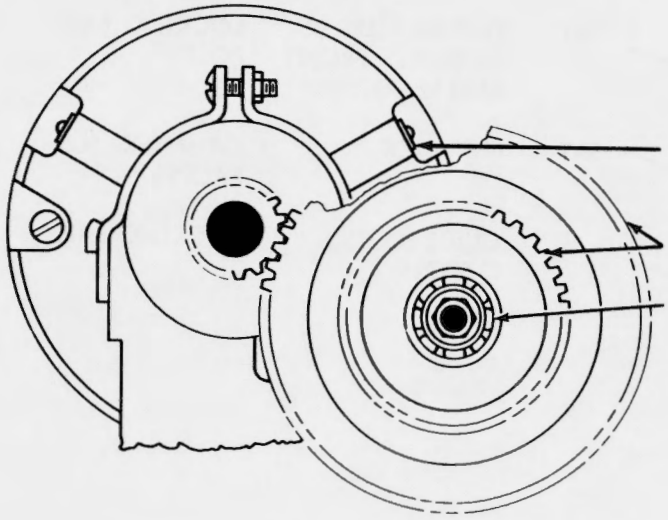
02	GUIDE SLOT	LOCAL LINE FEED TRIP LINK
0	BEARING SURFACE	LOCAL LINE FEED FUNCTION LEVER
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	FUNCTION BAIL
G	ENGAGING SURFACE	LOCAL LINE FEED FUNCTION LEVER

2.27 KEYBOARD SHAFT MECHANISM



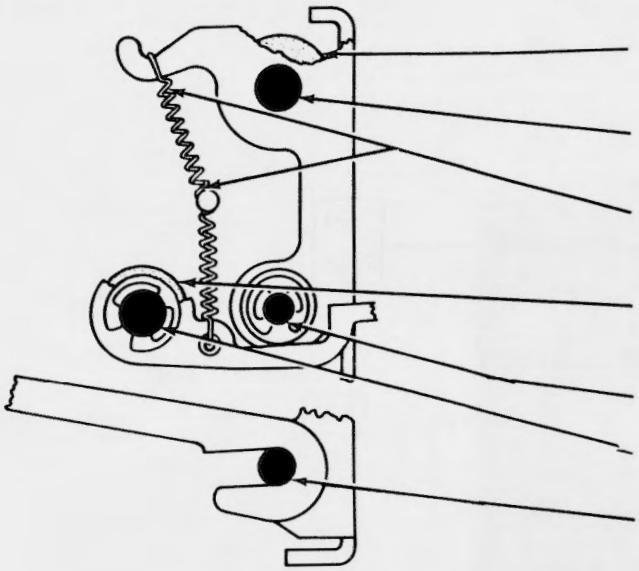
SAT	FELT WASHER	SIGNAL GENERATOR SHAFT
G	GEAR TEETH	SIGNAL GENERATOR SHAFT
020	OIL HOLE	SIGNAL GENERATOR SHAFT
04	INTERNAL MECHANISM	KEYBOARD CLUTCH
SAT	FELT WICK	
020	OIL HOLE	SIGNAL GENERATOR CAM
02	CAMMING SURFACE EACH CAM	SIGNAL GENERATOR CAM
SAT	FELT WASHER	SIGNAL GENERATOR SHAFT

2.28 INTERMEDIATE GEAR MECHANISM



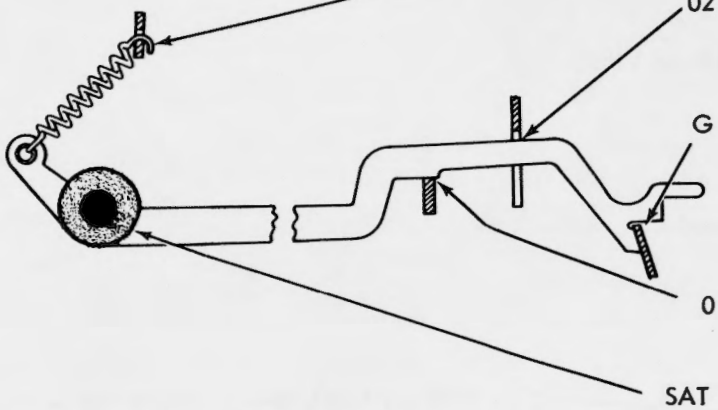
02	OILER-EACH END (RIGHT AND LEFT)	MOTOR SHAFT
G	TEETH (2 GEARS)	INTERMEDIATE GEARS
02	BALL BEARING (2 BEARINGS)	INTERMEDIATE GEAR SHAFT

2.31 CODE BAR BAIL MECHANISM



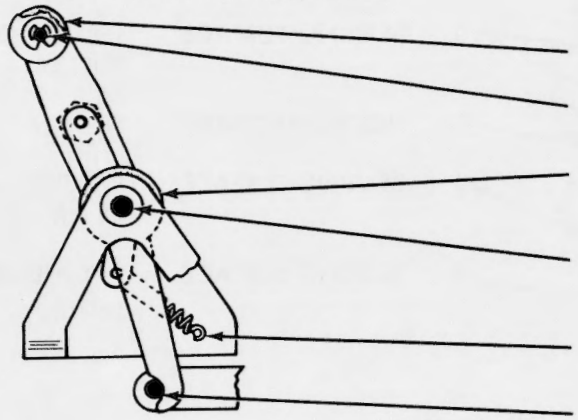
SAT	FELT WASHERS (TWO WASHERS)	CODE BAR BAIL
0	BEARING SURFACE (2 PLACES)	CODE BAR BAIL
0	HOOKS-EACH END (2 SPRINGS)	SPRING
SAT	FELT WASHER	CODE BAR BAIL LATCH
04	BEARING	CODE BAR BAIL
02	BEARING SURFACE	CODE BAR BAIL LATCH
02	ENGAGING SURFACE	ECCENTRIC FOLLOWER

2.32 UNIVERSAL BAIL LATCH LEVER MECHANISM



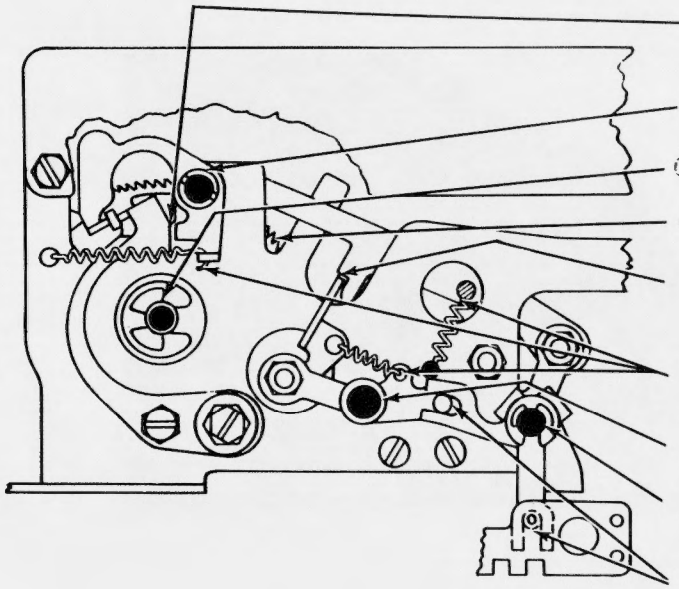
0	HOOKS (EACH END)	SPRING
02	GUIDE SLOT (EACH SIDE OF SLOT)	UNIVERSAL BAIL LATCH LEVER
G	ENGAGING SURFACE	CODE BAR BAIL EXTENSION
0	ENGAGING SURFACE	RESET BAIL LATCH
SAT	FELT WASHER	UNIVERSAL BAIL LATCH LEVER

2.33 RESET CAM FOLLOWER MECHANISM



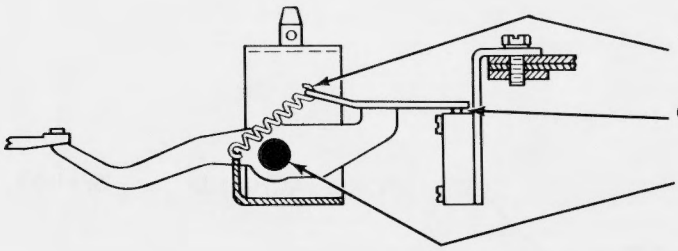
SAT	FELT WASHER	ROLLER
0	BEARING SURFACE	RETAINING RING
SAT	FELT WASHERS (FRONT & REAR)	RESET CAM FOLLOWER SHAFT
05	OIL HOLE	RESET CAM FOLLOWER SHAFT
0	HOOKS-EACH END	SPRING
0	ENGAGING SURFACE	RESET LEVER

2.36 CHARACTER COUNTER MECHANISM continued



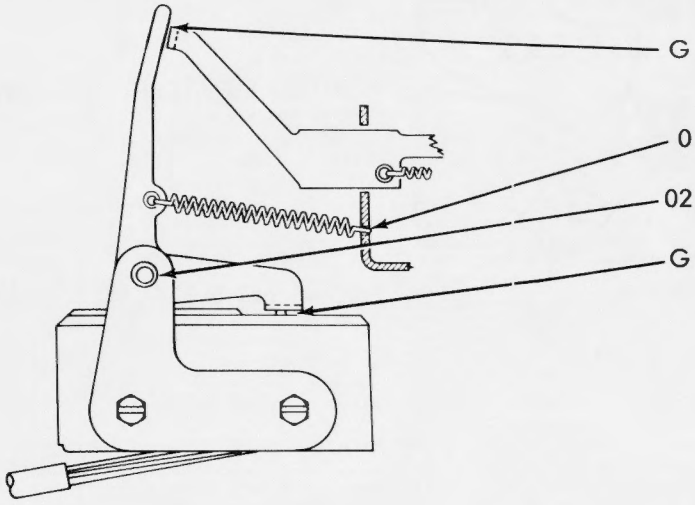
0	CONTACT SURFACE	ANTI-BOUNCE LATCH
0	BEARING SURFACE	ANTI-BOUNCE LATCH
02	BEARING SURFACE	RATCHET DRUM
G	TEETH	RATCHET
0	ENGAGING SURFACES (2 PLACES)	RESET LEVER EXTENSION
0	HOOKS-EACH END (3 SPRINGS)	SPRING
0	BEARING SURFACE	RESET BAIL
0	BEARING SURFACE	DRIVE LEVER FEED BAIL
0	ENGAGING SURFACES (3 SURFACES)	DRIVE LEVER FEED BAIL & RESET BAIL

2.37 ELECTRICAL LINE BREAK MECHANISM



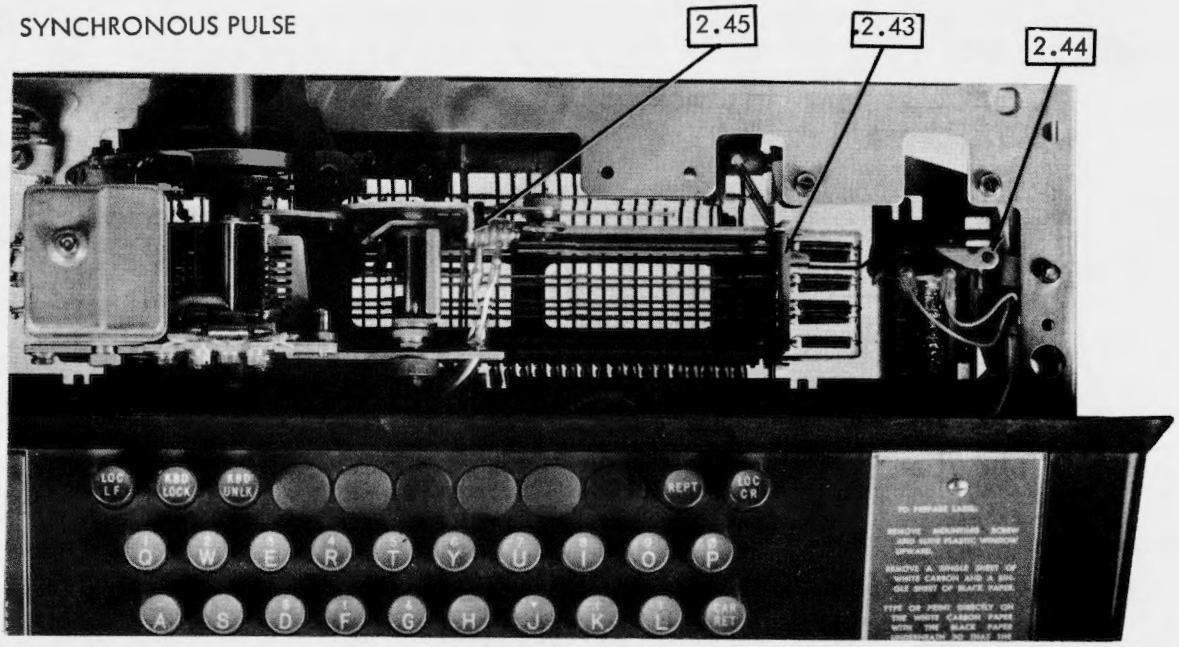
0	HOOKS-EACH END	SPRING
G	CONTACT SURFACE	SENSITIVE SWITCH
0	BEARING SURFACE	BREAK LEVER

2.38 LOCAL PAPER FEED-OUT MECHANISM



G	ENGAGING SURFACE	LOCAL LINE FEED TRIP LINK
0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	LEVER
G	ENGAGING SURFACE	MAGNETIC BLOWOUT SWITCH

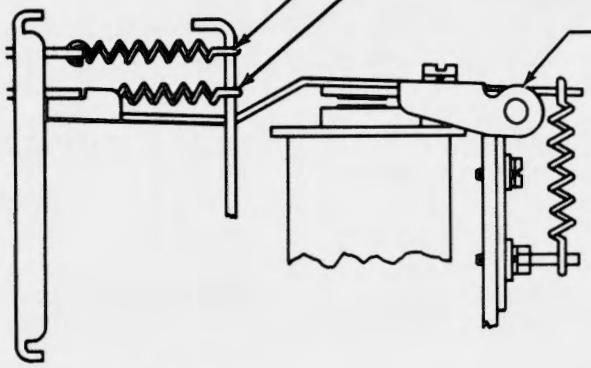
2.41 SYNCHRONOUS PULSE



2.42 CODE BAR GUIDE

O GUIDE SLOTS (LEFT, RIGHT, TOP AND BOTTOM)

2.43 SYNCHRONOUS PULSED MAGNET MECHANISM

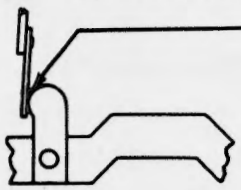


O HOOKS-EACH END UNIVERSAL CODE BAR SPRING

O HOOKS-EACH END CLUTCH TRIP BAR SPRING

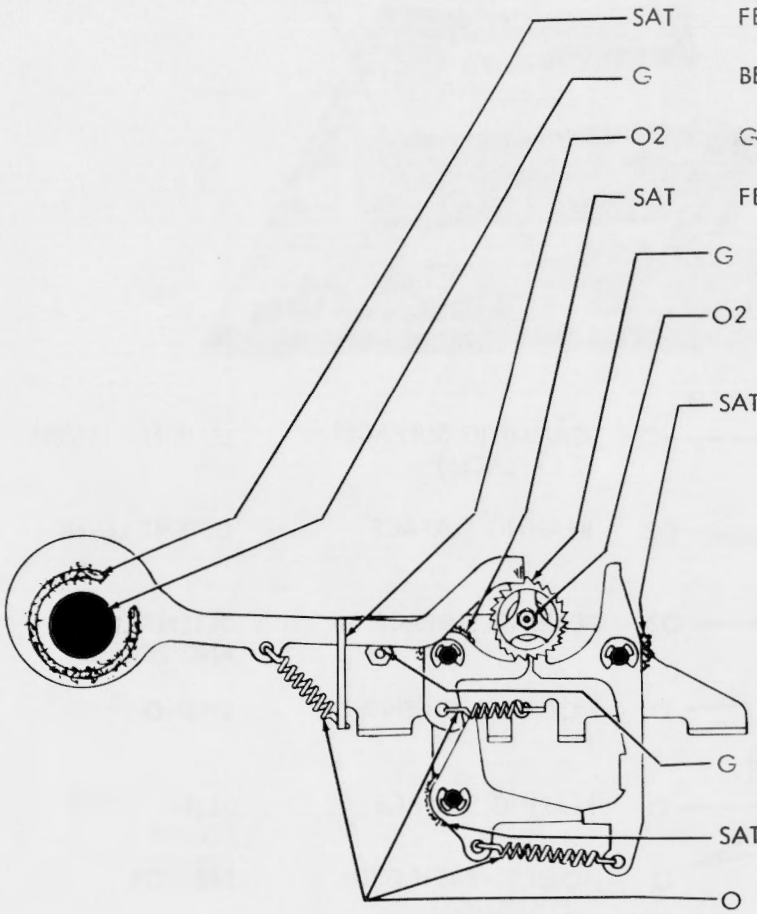
SAT FELT WASHERS ARMATURE-PIVOT

2.44 CONTACT SWINGER



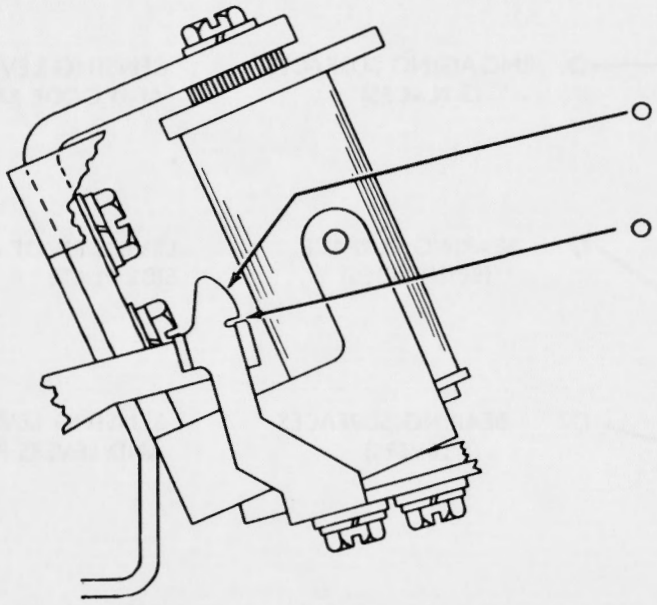
G ENGAGING SURFACE

2.46 TIME DELAY MECHANISM

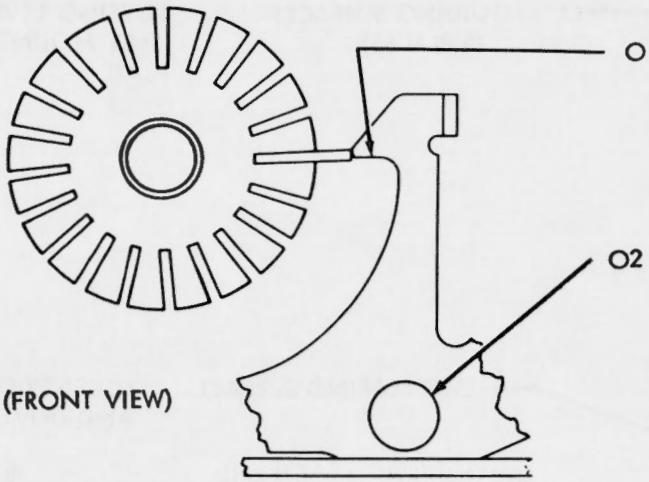


SAT	FELT WASHER	ECCENTRIC FOLLOWER PAWL
G	BEARING SURFACE	ECCENTRIC FOLLOWER PAWL
O2	GUIDE SLOT	ECCENTRIC FOLLOWER PAWL
SAT	FELT WASHER	LATCH PAWL
G	TEETH (2 WHEELS)	RATCHET WHEELS
O2	BEARING SURFACE EACH END	RATCHET WHEEL SHAFT
SAT	FELT WASHER	CONTACT PAWL
G	ENGAGING SURFACE	ECCENTRIC FOLLOWER PAWL
SAT	FELT WASHER	LATCH LEVER
O	HOOKS - EACH END (3 SPRINGS)	SPRING

2.50 ANSWER-BACK — STOP LEVER



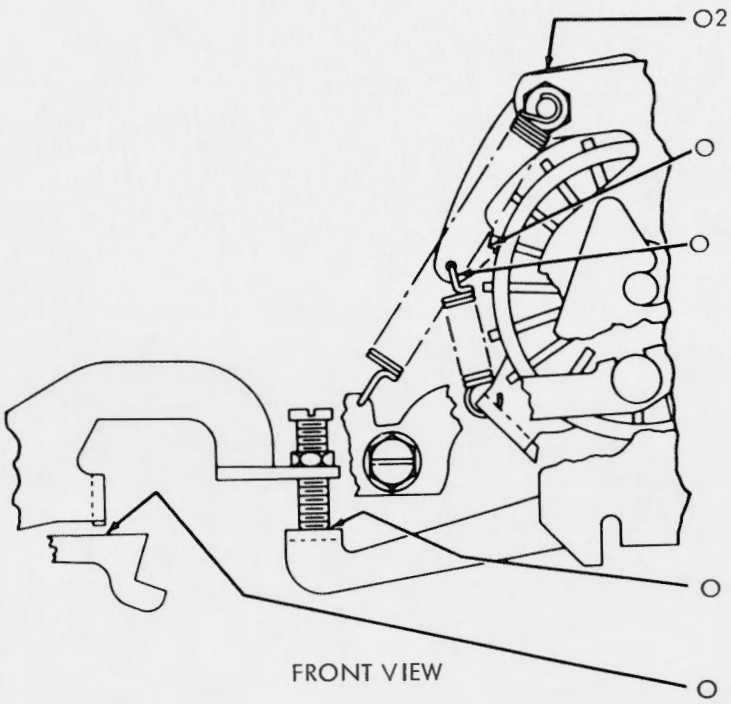
O	CONTACTING SURFACE	LATCH AND STOP LEVER
O	LATCHING SURFACE	LATCH AND STOP LEVER



O	CAMMING SURFACE	STOP LEVER
O2	BEARING SURFACE (2 PLACES)	STOP LEVER AND LEVER PIVOT

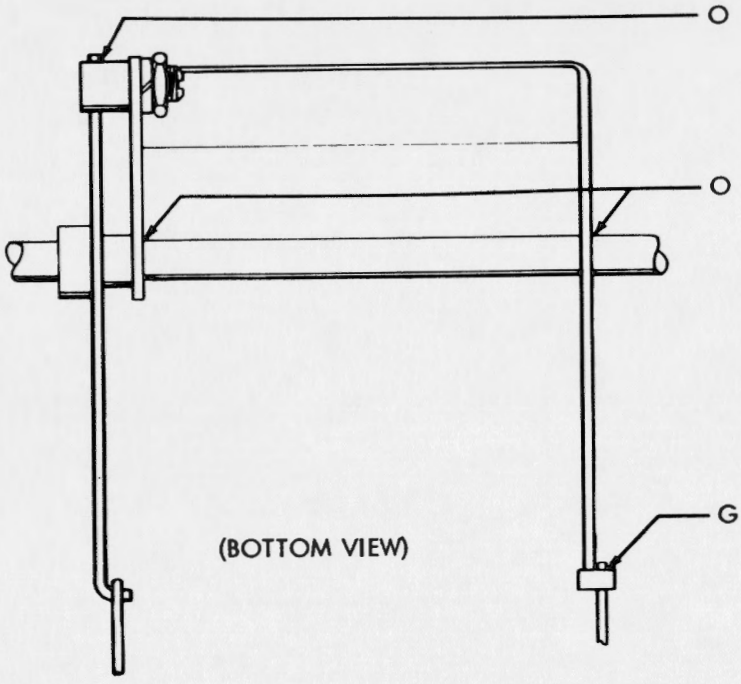
(FRONT VIEW)

2.53 ANSWER-BACK — STEPPING PAWL



O2	BEARING SURFACE	STEPPING PAWL AND ECCENTRIC STUD
O	CONTACTING SURFACES	STEPPING PAWL AND CODE BLADES
O	HOOK - EACH END	SPRING
O	CONTACTING SURFACE	ADJUSTING SCREW
O	CONTACTING SURFACE	LEVER AND LATCH

2.54 ANSWER-BACK — KEYBOARD LOCK BAIL MECHANISM



O	ENGAGING SURFACES	ECCENTRIC AND LOCK LEVER
O	BEARING SURFACES	FUNCTION LEVER AND BAIL
G	CONTACTING SURFACE	"HERE IS" LEVER AND BAIL

28 TYPING UNIT

LUBRICATION

CONTENTS

CAUTION: SPECIAL CARE MUST BE TAKEN TO PREVENT ANY OIL OR GREASE FROM GETTING BETWEEN THE SELECTOR ARMATURE AND ITS MAGNET POLE FACES. KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

1.06 Apply a thick film of grease to all gears and the spacing clutch reset cam plate.

1.07 Apply oil to all cams, including the camming surfaces of each clutch disc.

1.08 The photographs show the paragraph numbers referring to particular line drawings of mechanisms and where these mechanisms are located on the unit. Parts in the line drawings are shown in an upright position unless otherwise specified.

Note: References made to left or right, top or bottom, and front or rear apply to the typing unit in its normal operating position as viewed by the operator facing the unit.

1.09 The following list of symbols apply to the specific lubrication instructions given in each paragraph.

O	Apply 1 drop of oil.
O2	Apply 2 drops of oil.
O3	Apply 3 drops of oil, etc.
G	Apply thin film of grease.
SAT	Saturate (felt oilers, washers, wicks) with oil.

1.10 During each lubrication period, check the following items. Requirements and adjustments are given in Section 573-115-700.

(1) Printing Carriage Position

(2) Printing Hammer Bearing Stud

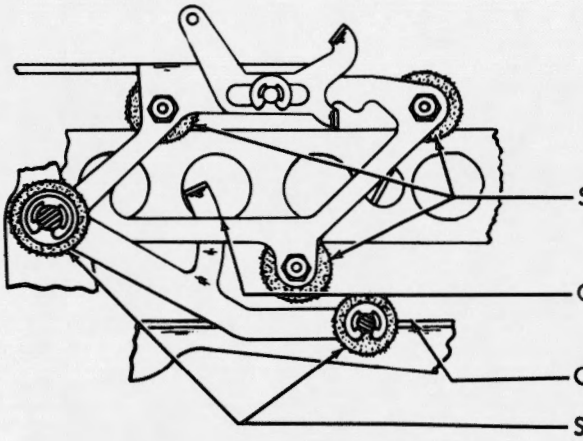
(3) Printing Track

(4) Printing Hammer Stop Bracket (Also see Note 2, Par. 2.48, 573-115-700 which refers to Printing Hammer Operating Bail Spring Bracket Position.)

(5) Carriage Draw Wire Rope

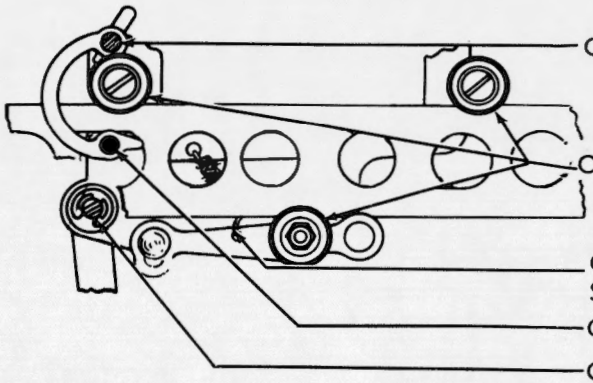
(6) Dashpot Vent Screw (Check dashpot transfer slide for freeness.)

2.03 Printing Mechanism (Cont'd)



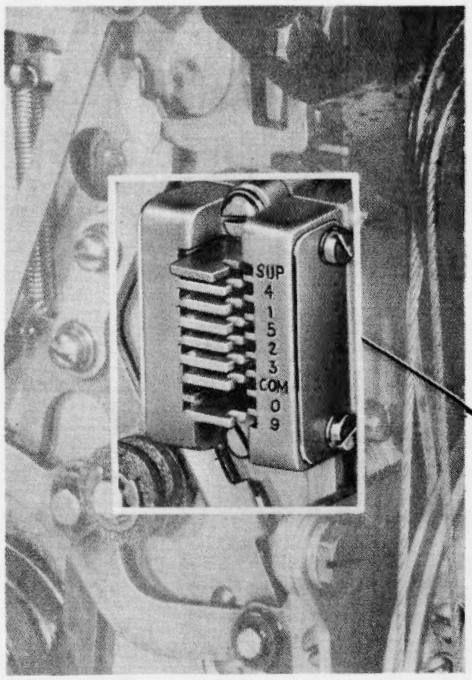
SAT	FELT WASHERS (3 WASHERS)	PRINTING CARRIAGE ROLLERS
G	GUIDING SURFACE	PRINTING ARM EXTENSION
O10	TRACK SURFACE	PRINTING TRACK
SAT	FELT WASHERS (2 WASHERS)	PRINTING ARM

2.04 Type Box Carriage Mechanism

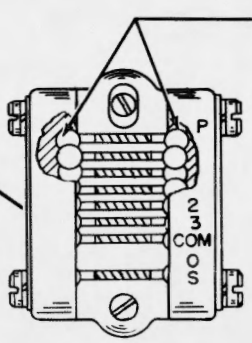


O	BEARING SURFACE	TYPE BOX CARRIAGE LATCH TOGGLE
O2	BEARINGS (3 ROLLERS)	TYPE BOX CARRIAGE ROLLERS
O	HOOK - EACH END	SPRING
SAT	FELT WICK	
O	BEARING SURFACE	TYPE BOX CARRIAGE LATCH
O2	BEARING SURFACE	TYPE BOX CARRIAGE LINK

2.07 Typing Unit - Left Front View

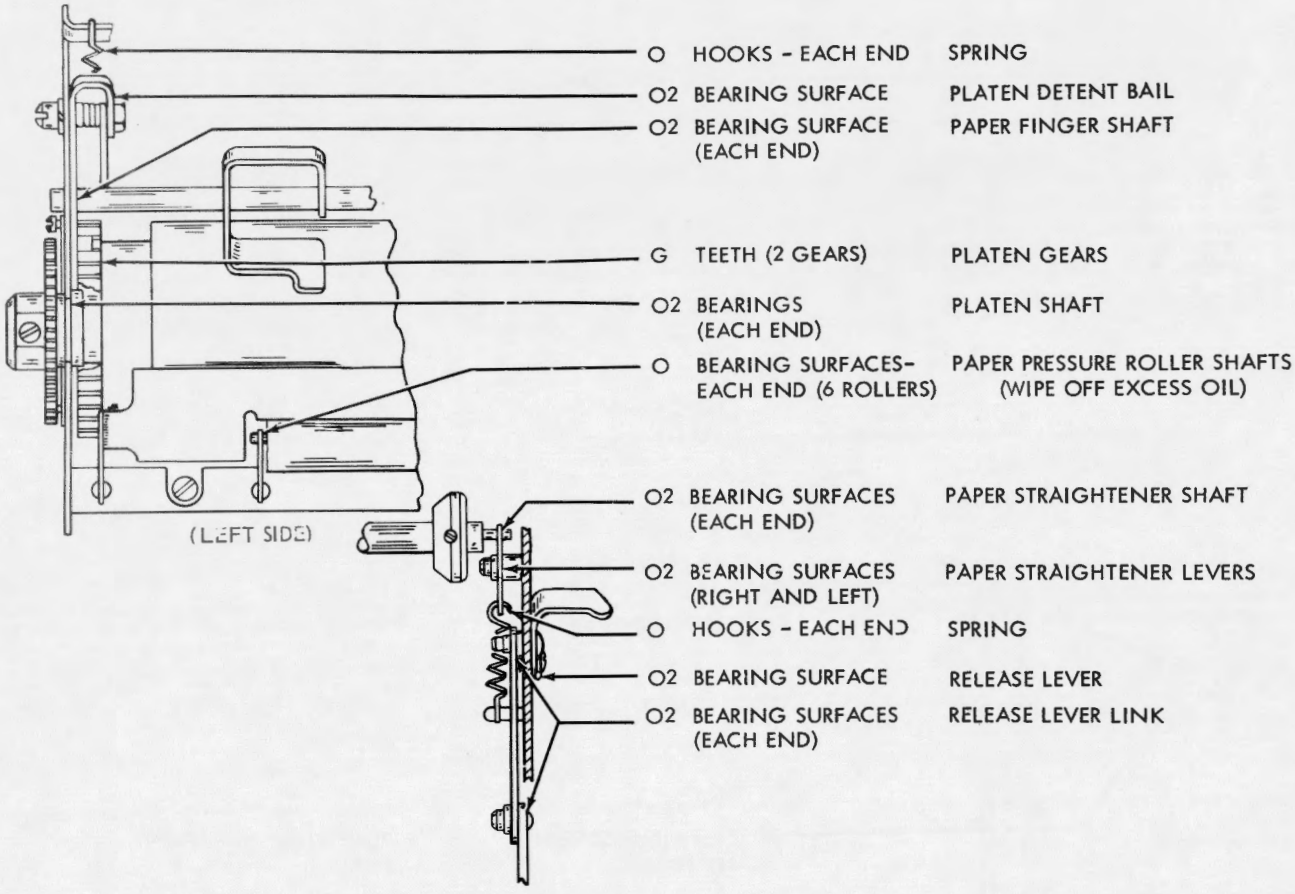


2.08 Codebar Detents



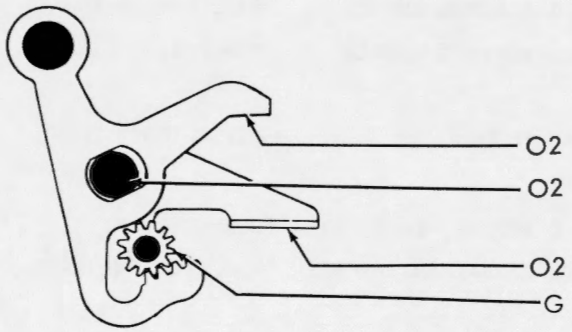
O2	BEARING BALLS (9 BALLS)	CODE BAR DETENT

2.09 Paper Feed Mechanism - Front View



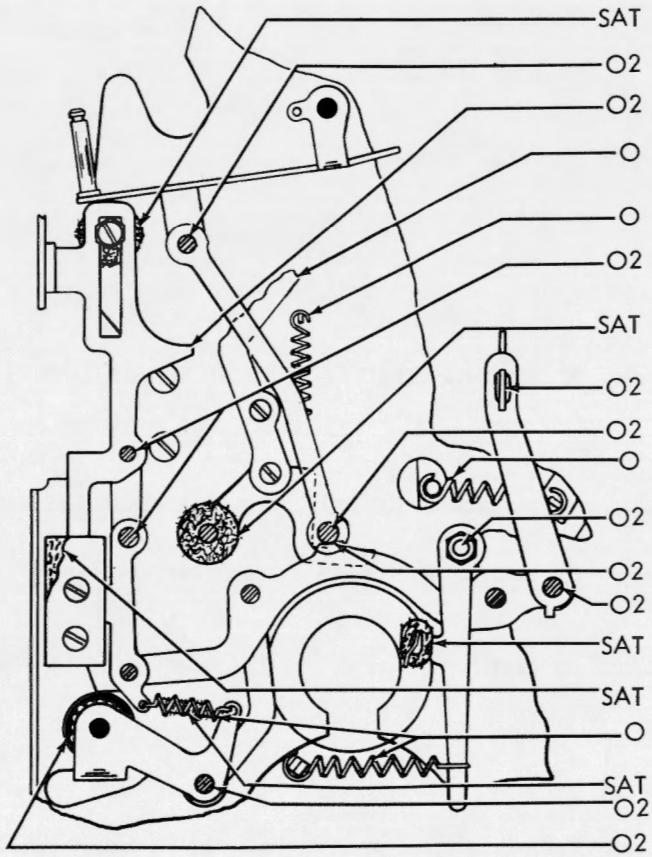
O	HOOKS - EACH END	SPRING
O2	BEARING SURFACE	PLATEN DETENT BAIL
O2	BEARING SURFACE (EACH END)	PAPER FINGER SHAFT
G	TEETH (2 GEARS)	PLATEN GEARS
O2	BEARINGS (EACH END)	PLATEN SHAFT
O	BEARING SURFACES- EACH END (6 ROLLERS)	PAPER PRESSURE ROLLER SHAFTS (WIPE OFF EXCESS OIL)
O2	BEARING SURFACES (EACH END)	PAPER STRAIGHTENER SHAFT
O2	BEARING SURFACES (RIGHT AND LEFT)	PAPER STRAIGHTENER LEVERS
O	HOOKS - EACH END	SPRING
O2	BEARING SURFACE	RELEASE LEVER
O2	BEARING SURFACES (EACH END)	RELEASE LEVER LINK

2.13 Ribbon Feed Mechanism - Right Side (Cont'd)



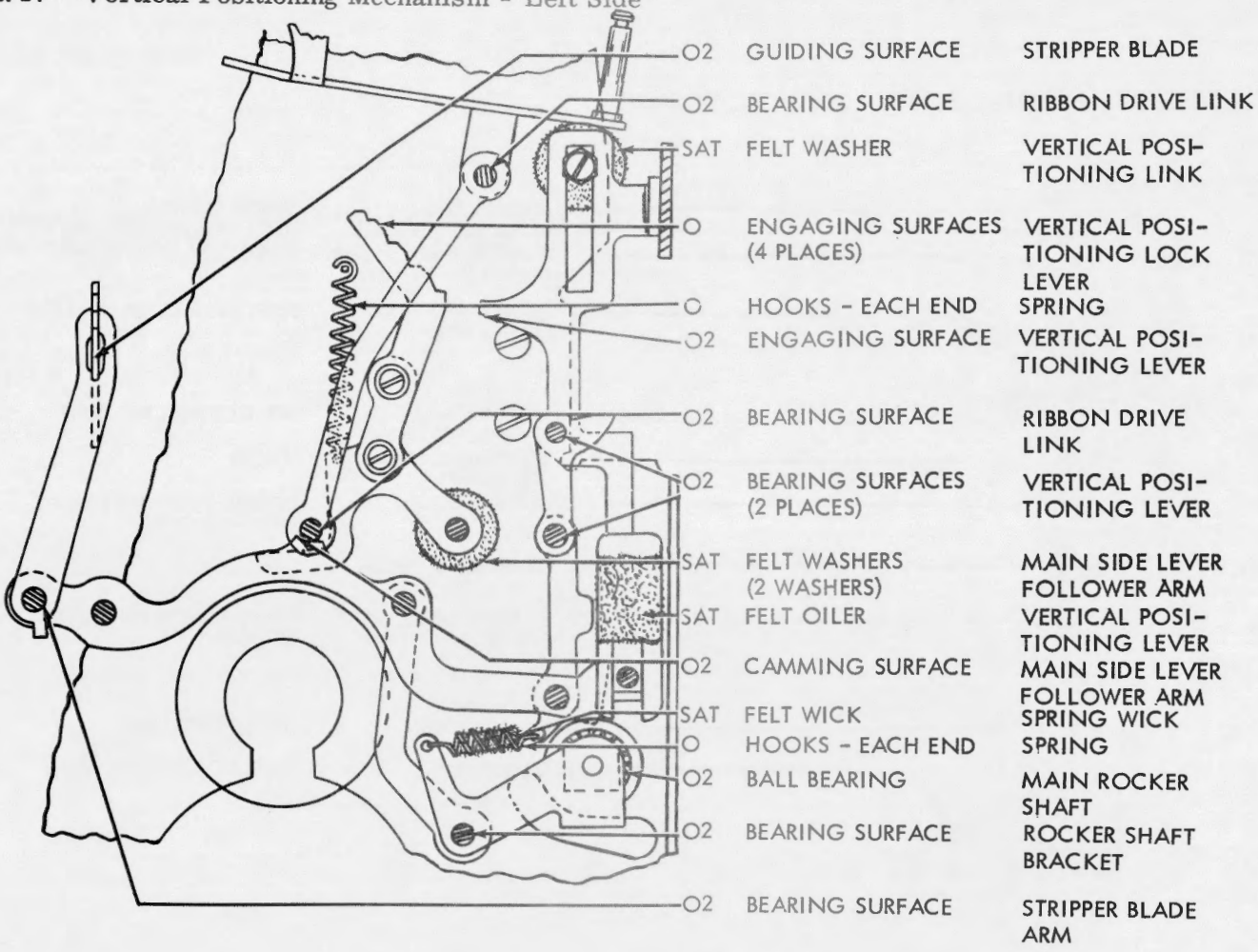
O2	ENGAGING SURFACE	RIBBON REVERSING ARM
O2	BEARING SURFACE	RIBBON REVERSE LEVERS
O2	ENGAGING SURFACE	RIBBON REVERSE LEVER
G	TEETH	RIBBON REVERSE SPUR GEAR

2.14 Vertical Positioning Mechanism - Right Side

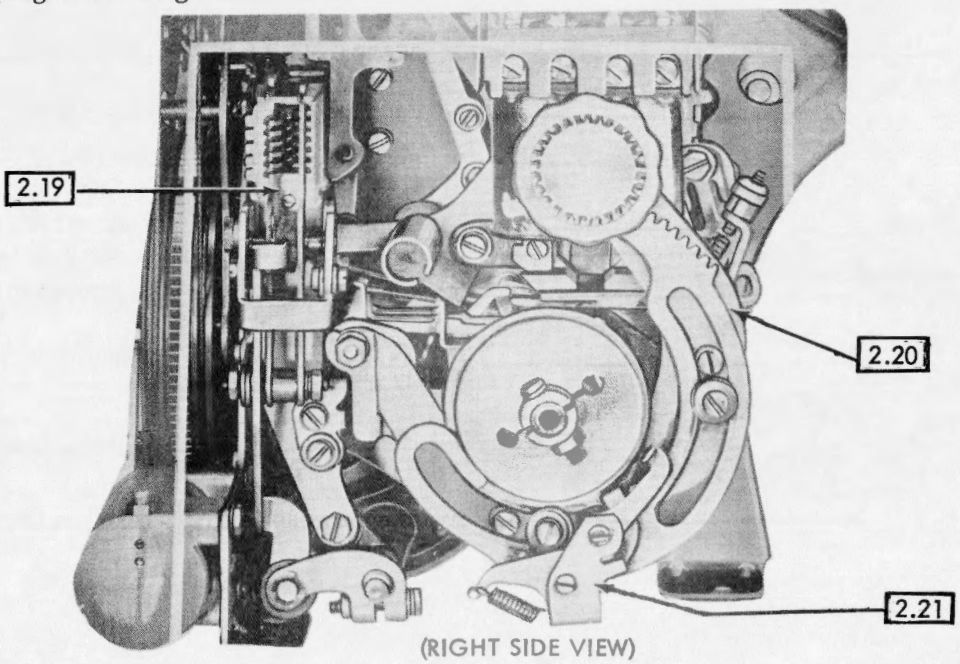


SAT	FELT WASHER	VERTICAL POSITIONING LEVER
O2	BEARING SURFACE	RIBBON DRIVE LINK
O2	ENGAGING SURFACE	VERTICAL POSITIONING LEVER
O	ENGAGING SURFACES (4 PLACES)	VERTICAL POSITIONING LOCK LEVER
O	HOOKS - EACH END	SPRING
O2	BEARING SURFACES (2 PLACES)	VERTICAL POSITIONING LEVER
SAT	FELT WASHERS (2 WASHERS)	MAIN SIDE LEVER FOLLOWER ARM
O2	GUIDING SURFACE	STIRIPPER BLADE
O2	BEARING SURFACE	RIBBON DRIVE LINK
O	HOOKS - EACH END	SPRING
O2	BEARING SURFACE	CODE BAR CLUTCH TRIP SHAFT OPERATING LEVER
O2	ENGAGING SURFACE	MAINSIDE LEVER FOLLOWER AR/
O2	BEARING SURFACE	STRIPPER BLADE ARM
SAT	FELT WASHER	CODE BAR CLUTCH TRIP SHAFT
SAT	FELT OILER	OPERATING LEVER EXTENSION VERTICAL POSITIONING LEVER
O	HOOKS - EACH END (2 SPRINGS)	SPRING
SAT	FELT WICK	SPRING WICK
O2	BEARING SURFACE	ROCKER SHAFT BRACKET
O2	BALL BEARING	MAIN ROCKER SHAFT

2.17 Vertical Positioning Mechanism - Left Side

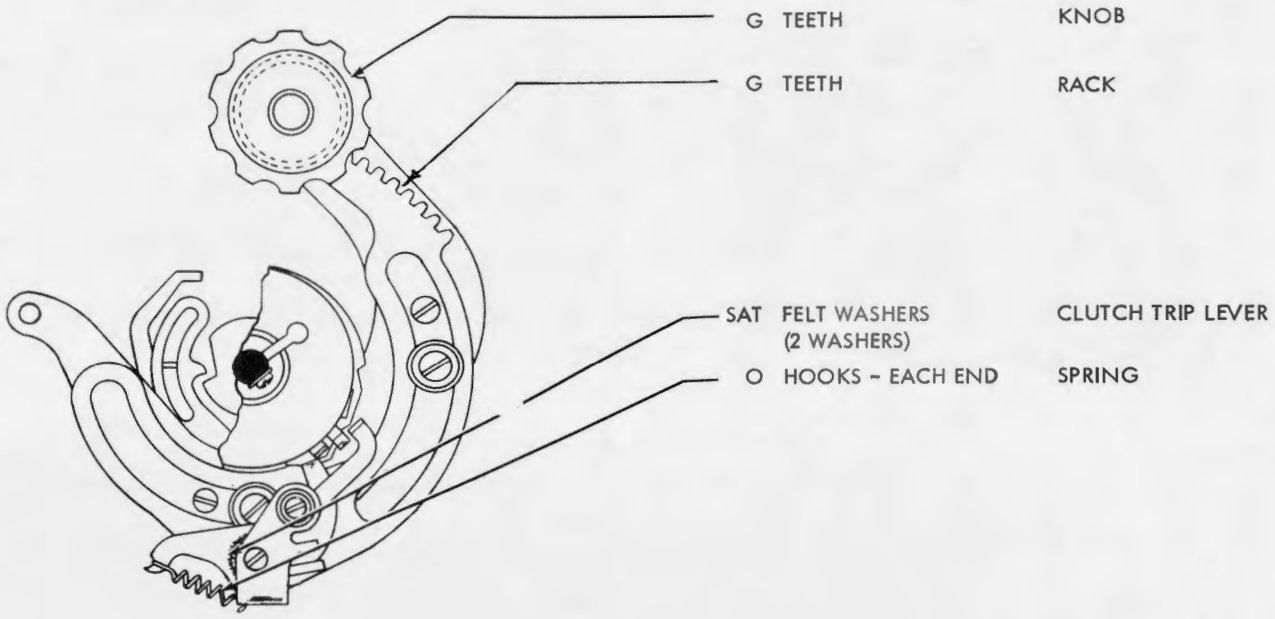


2.18 Typing Unit - Right End View

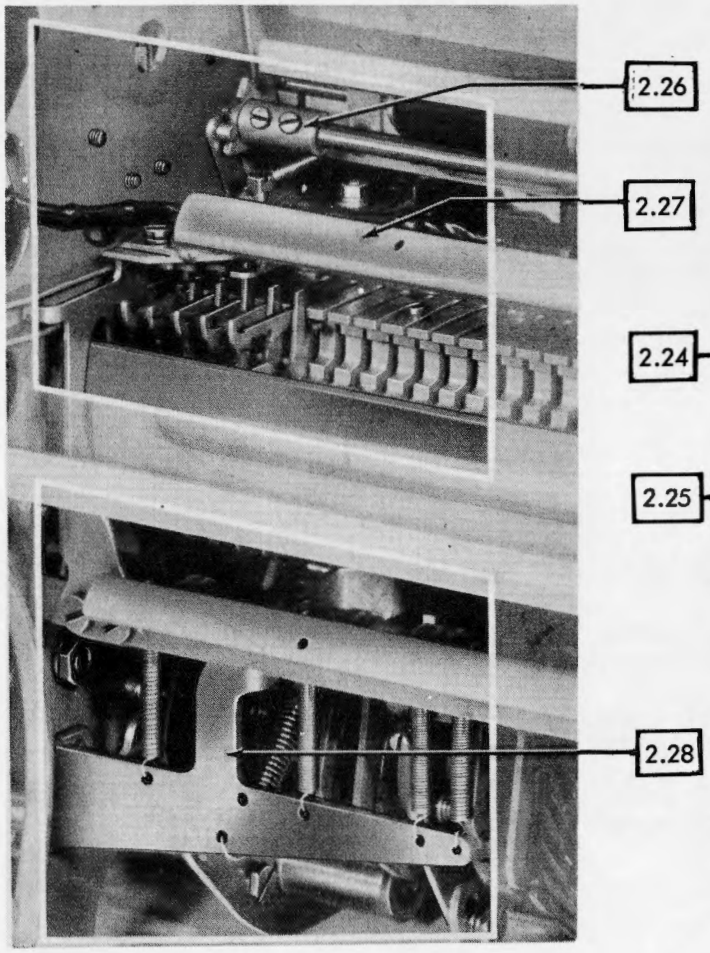


(RIGHT SIDE VIEW)

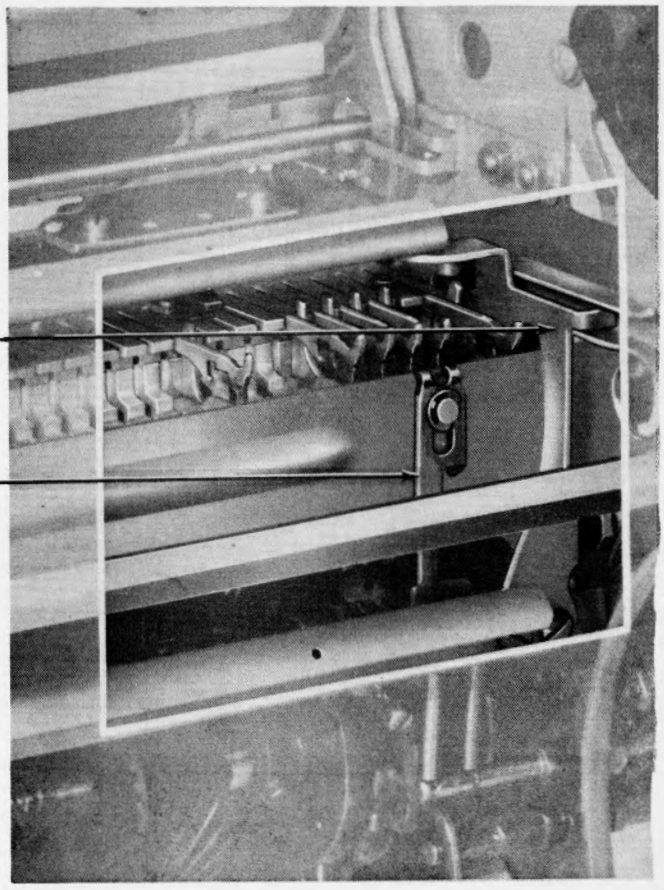
2.21 Selector Mechanism (Cont'd)



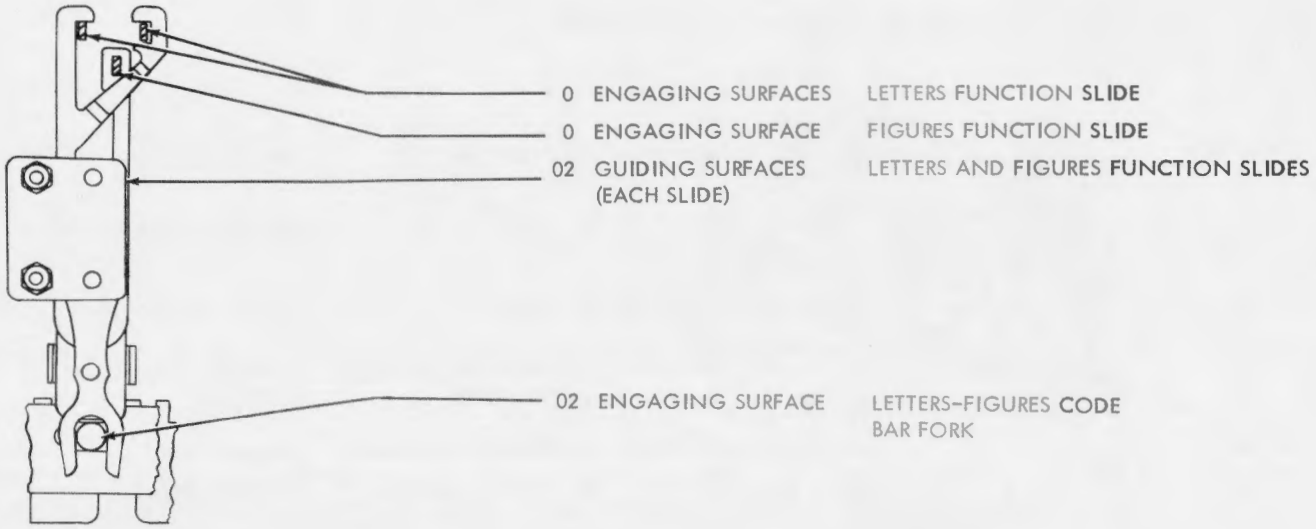
2.22 Typing Unit - Rear View



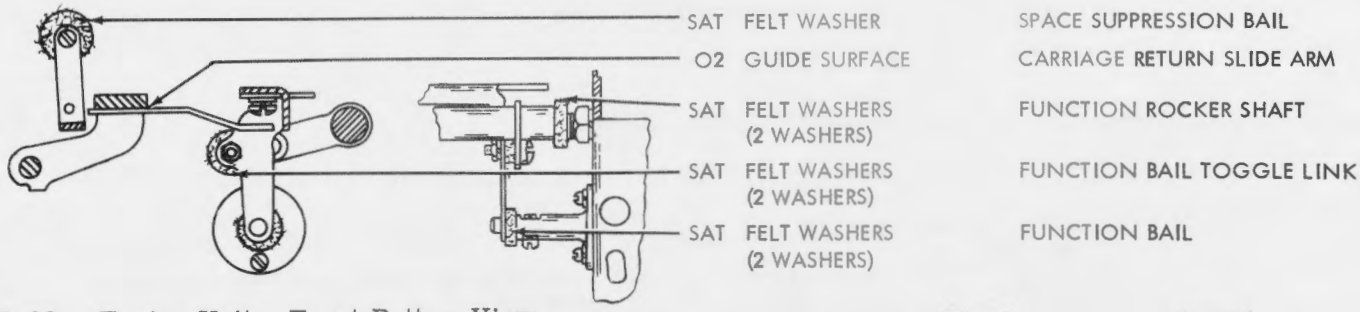
2.23 Typing Unit - Rear View



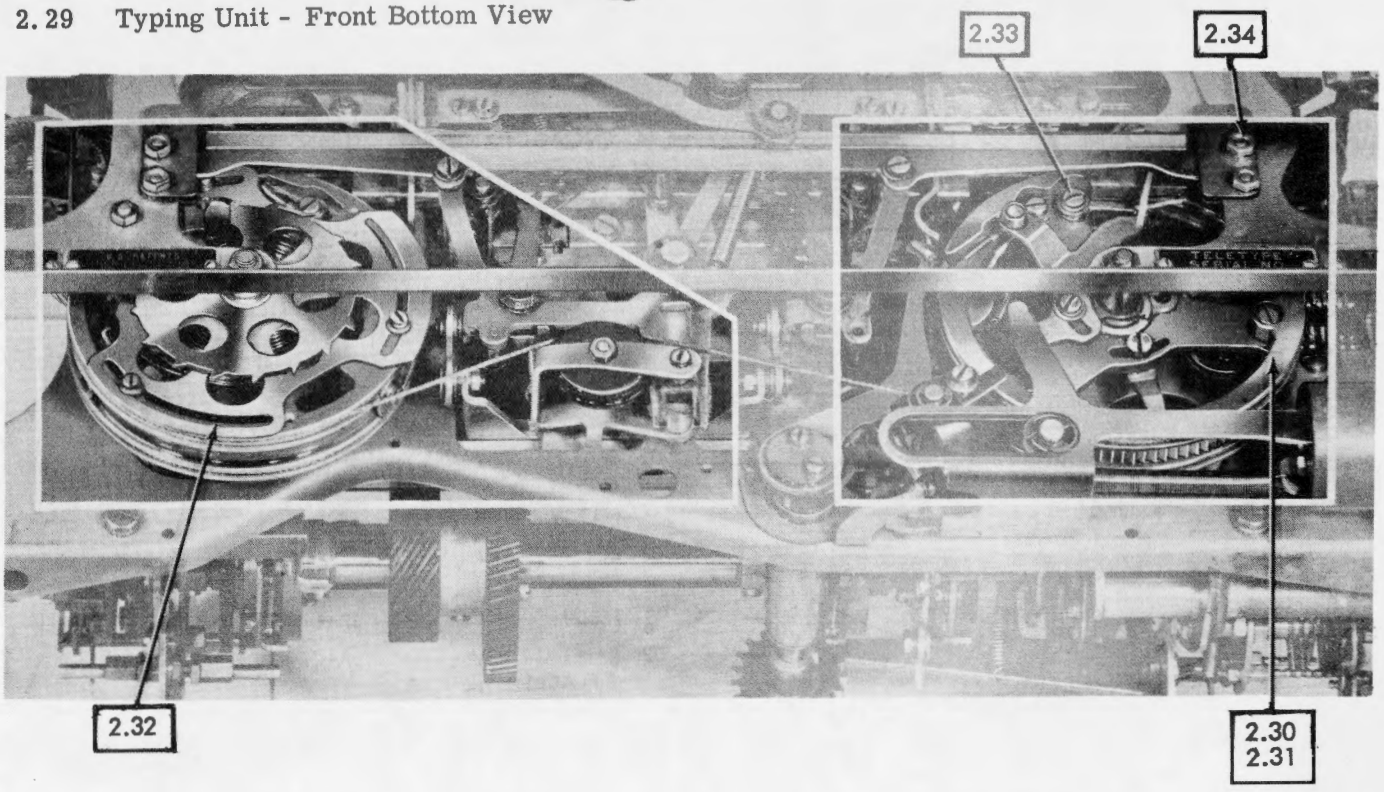
2.27 Shift Mechanism



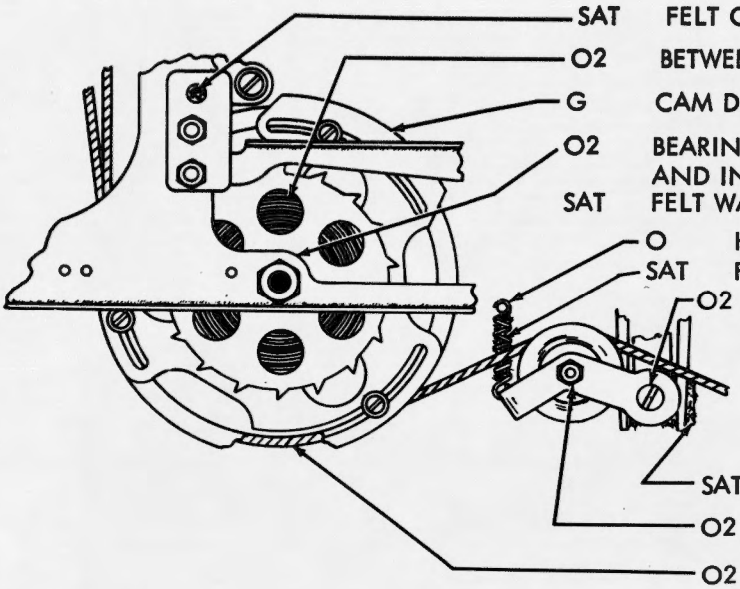
2.28 Function Rocker Shaft Mechanism



2.29 Typing Unit - Front Bottom View

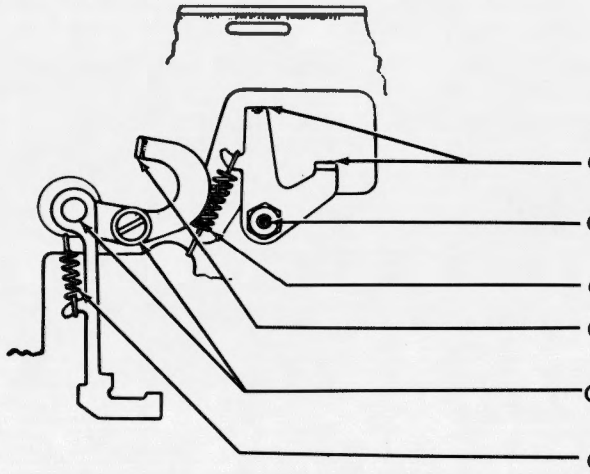


2.32 Carriage Return Mechanism



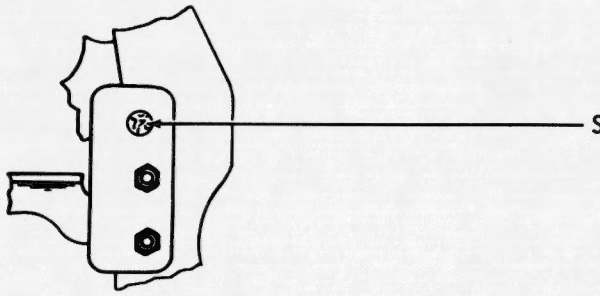
SAT	FELT OILER	PRINTING TRACK GUIDE
O2	BETWEEN LAYERS	CARRIAGE RETURN SPRING
G	CAM DISK SURFACE	MARGIN INDICATOR CAM DISK
O2	BEARING (OUTER AND INNER END)	CARRIAGE RETURN SPRING DRUM SHAFT
SAT	FELT WASHER	
O	HOOKS - EACH END	SPRING
SAT	FELT WICK	SPRING WICK
O2	BEARING SURFACE	TENSION PULLEY BAIL
SAT	FELT OILER	MAIN BAIL
O2	BEARING SURFACE	PULLEY
O2	CABLE GROOVES	CARRIAGE RETURN SPRING DRUM

2.33 Spacing Drum Feed Mechanism



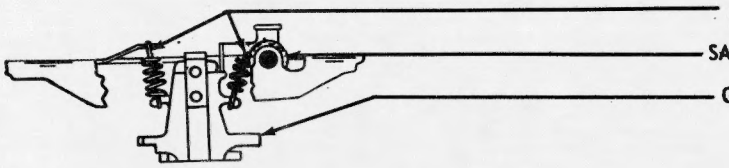
O2	ENGAGING SURFACES (2 PLACES)	AUTOMATIC CARRIAGE RETURN BELL CRANK
O2	BEARING SURFACE	AUTOMATIC CARRIAGE RETURN BELL CRANK
O	HOOKS - EACH END	SPRING
O2	ENGAGING SURFACE	SPACING DRUM FEED PAWL RELEASE LINK
O2	BEARING SURFACES (2 PLACES)	SPACING DRUM FEED PAWL RELEASE LINK
O	HOOKS - EACH END	SPRING

2.34 Track Guide Mechanism



SAT	FELT OILER	PRINTING TRACK GUIDE

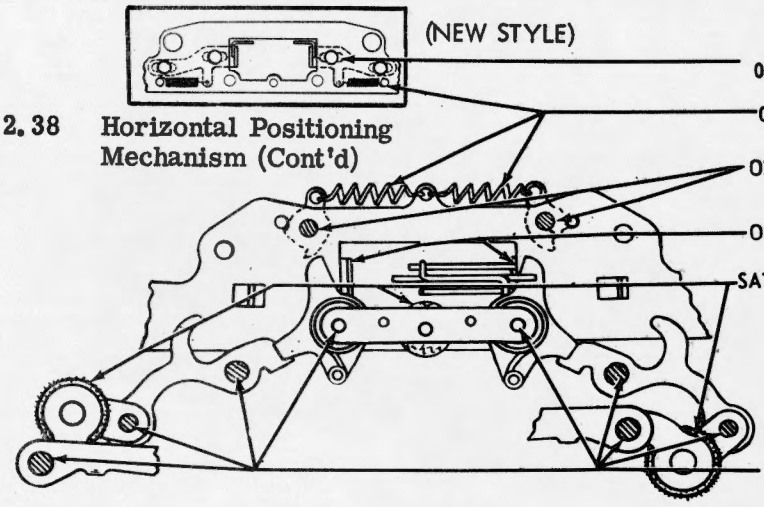
2.37 Horizontal Positioning Mechanism (Cont'd)



O	HOOKS–EACH END	SPRING
SAT	FELT WASHER	CODE BAR BELL CRANK
O2	ENGAGING SURFACES (3 SLIDES)	HORIZONTAL MOTION STOP SLIDES

(TOP VIEW)

2.38 Horizontal Positioning Mechanism (Cont'd)



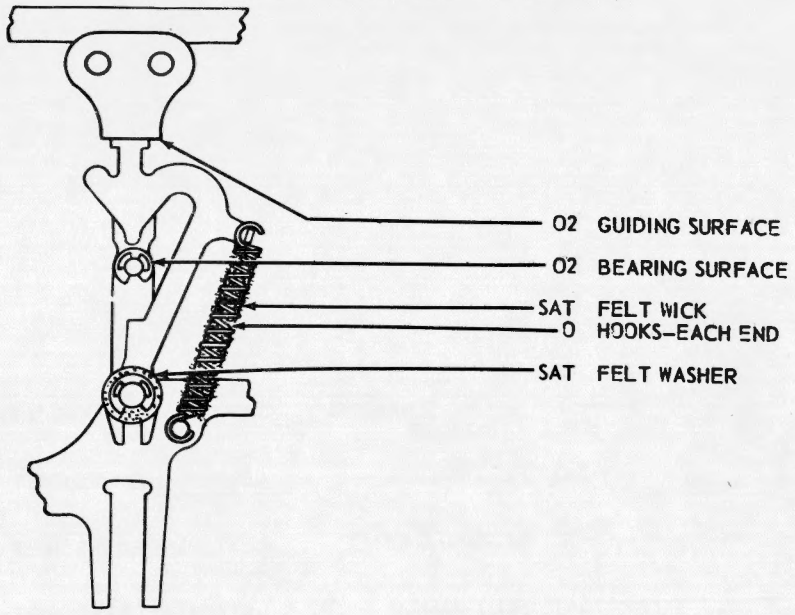
(NEW STYLE)

O2	ENGAGING SURFACES	DECELERATING SLIDE (SEE NOTE 1)
O	HOOKS–EACH END (2 SPRINGS)	SPRING
O2	BEARING SURFACES (2 BELL CRANKS)	DECELERATING SLIDE BELL CRANKS
O2	ENGAGING SURFACES (2 SLIDES)	DECELERATING SLIDES (SEE NOTE 2)
SAT	FELT WASHERS (3 WASHERS)	SHIFT SLIDE DRIVE LINKS
O	BEARING SURFACES (8 PLACES)	SHIFT SLIDE DRIVE LINKS

(FRONT VIEW)

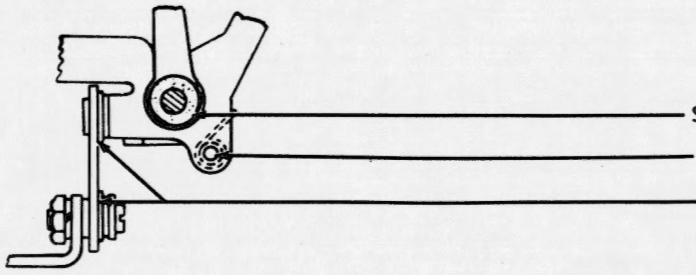
NOTES
1. WITH SPRINGS LOCATED ON REAR SIDE OF SLIDE
2. WITH SPRINGS LOCATED ABOVE THE SLIDE

2.39 Horizontal Positioning Mechanism (Cont'd)



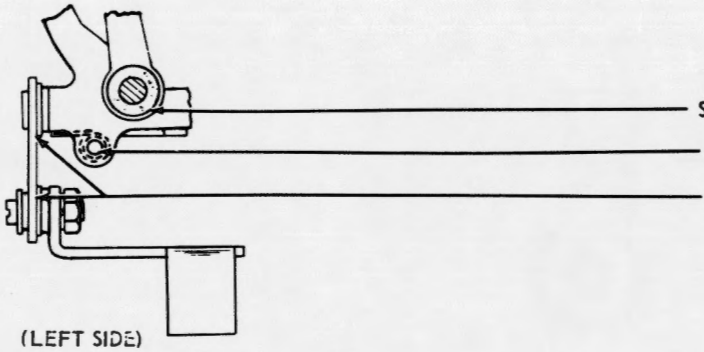
O2	GUIDING SURFACE	HORIZONTAL POSITIONING LOCK LEVER
O2	BEARING SURFACE	HORIZONTAL LOCK LEVER ARM ROLLER
SAT	FELT WICK	SPRING WICK
O	HOOKS–EACH END	SPRING
SAT	FELT WASHER	HORIZONTAL POSITIONING LOCK LEVER

2.42 Letters - Figures Shift Mechanism (Cont'd)



SAT	FELT WASHER	SHIFT SLIDE DRIVE LINK
O2	BEARING SURFACE	BREAKER SLIDE BAIL
O2	BEARING SURFACES (2 PLACES)	MAIN BAIL LINK

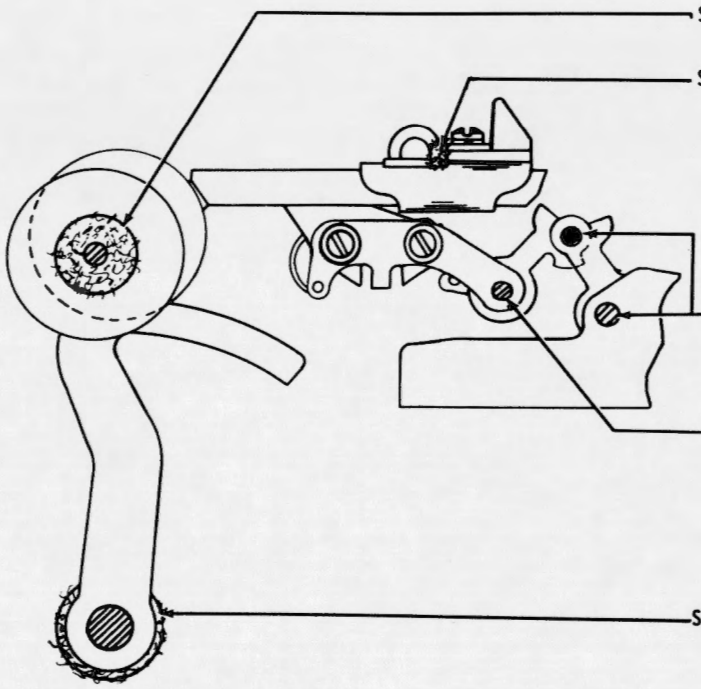
(RIGHT SIDE)



SAT	FELT WASHER	SHIFT SLIDE DRIVE LINK
O2	BEARING SURFACE	BREAKER SLIDE BAIL
O2	BEARING SURFACES (2 PLACES)	MAIN BAIL LINK

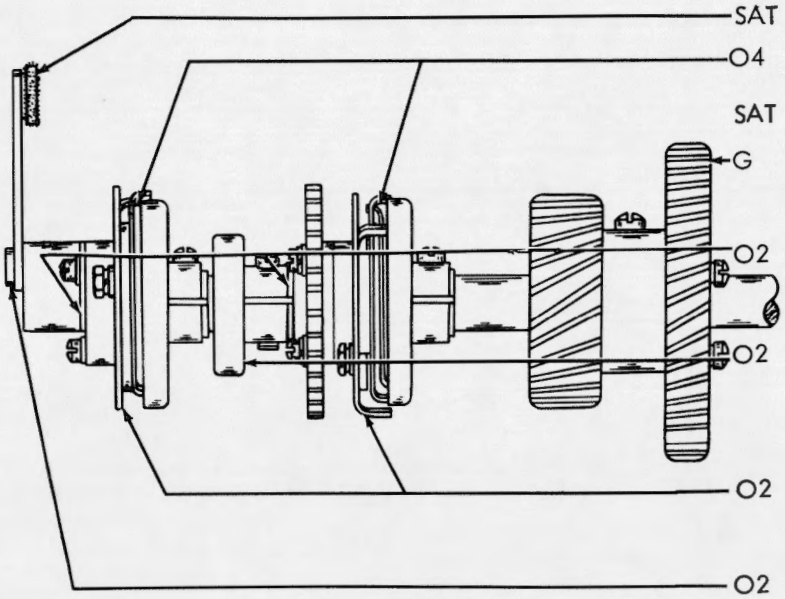
(LEFT SIDE)

2.43 Oscillating Mechanism



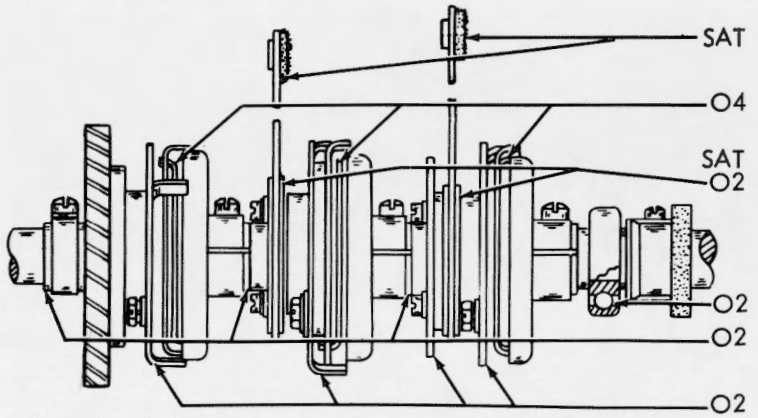
SAT	FELT WASHERS (3 WASHERS)	PULLEYS
SAT	FELT OILER	OSCILLATING RAIL SLIDE
O2	BEARING SURFACE	OSCILLATING RAIL SHIFT LINK
O2	BEARING SURFACE	OSCILLATING RAIL SHIFT LINK
SAT	FELT WASHER	OSCILLATING RAIL GUIDE ARM

2.46 Main Shaft - Clutches, Gears, Etc.



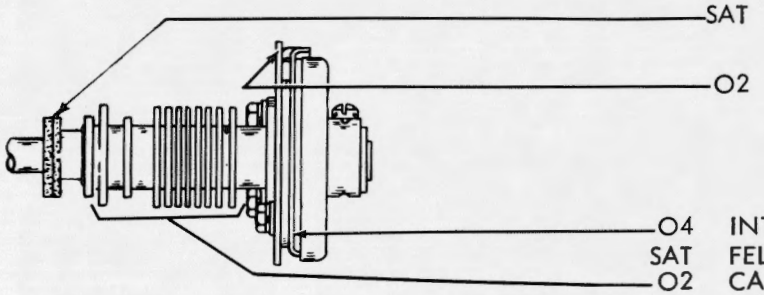
SAT	FELT WASHER		DRIVE LINK
O4	INTERNAL MECHANISM (2 CLUTCHES)		CLUTCH ASSEMBLY
SAT	FELT WICKS		
G	TEETH (4 GEARS)		MAIN SHAFT GEARS
O2	BEARING SURFACES (2 CLUTCHES)		CLUTCH SLEEVES
O2	BALL BEARING		MAIN SHAFT BEARING
O2	CAMMING SURFACES (2 DISKS)		CLUTCH DISKS
O2	BEARING SURFACE		DRIVE LINK BEARING

2.47 Main Shaft Mechanism



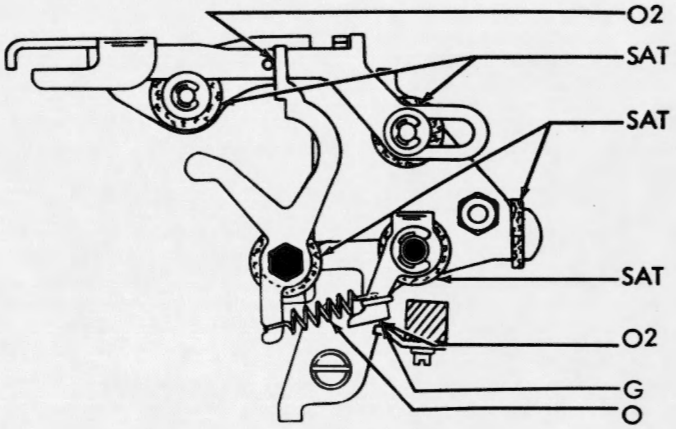
SAT	FELT WASHER (2 WASHERS)	ECCENTRIC FOLLOWER ARM BEARINGS	
O4	INTERNAL MECHANISM (3 CLUTCHES)		CLUTCH ASSEMBLY
SAT	FELT WICKS		
O2	BEARING SURFACES (2 CAMS)	ECCENTRIC FOLLOWER ARM CAMS	
O2	BALL BEARING		MAIN SHAFT BEARING
O2	BEARING SURFACES (3 CLUTCHES)		CLUTCH SLEEVE
O2	CAMMING SURFACES (4 DISKS)		CLUTCH DISKS

2.48 Selector Cam Clutch Assembly



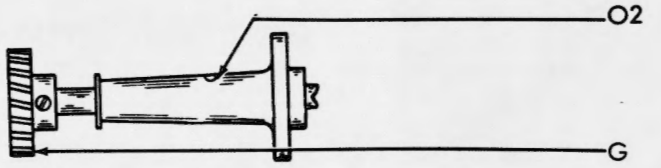
SAT	FELT WASHER (INNER END)		SELECTOR CAM SLEEVE
O2	CAMMING SURFACES		CLUTCH DISK
O4	INTERNAL MECHANISM		SELECTOR CLUTCH
SAT	FELT WICK		
O2	CAMMING SURFACE - EACH CAM		SELECTOR CAM

2.51 Spacing Mechanism



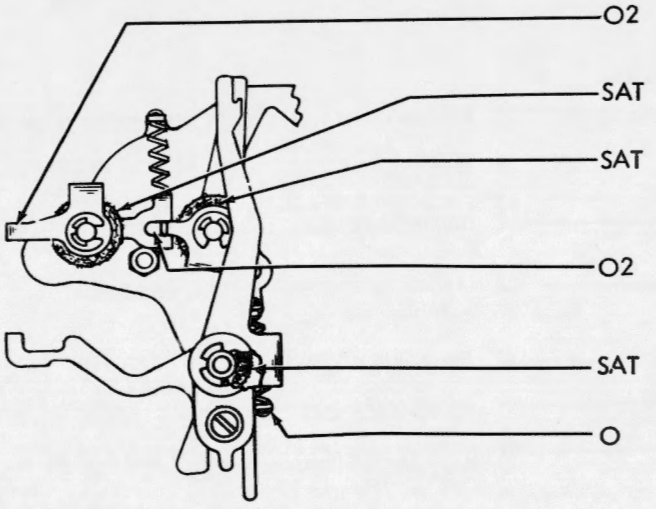
O2	ENGAGING SURFACES	SPACING TRIP LEVER
SAT	FELT WASHERS (2 WASHERS)	SPACING SUPPRESSION SLIDE
SAT	FELT WASHER	SPACING TRIP LEVER
SAT	FELT WASHER	SPACING TRIP LEVER BAIL SHAFT
O2	ENGAGING SURFACE	SPACING TRIP LEVER BAIL
G	ENGAGING SURFACE	TRIP RESET CAM
O	HOOKS - EACH END (2 SPRINGS)	TRIP RESET CAM SPRING PLATE

2.52 Spacing Mechanism (Cont'd)



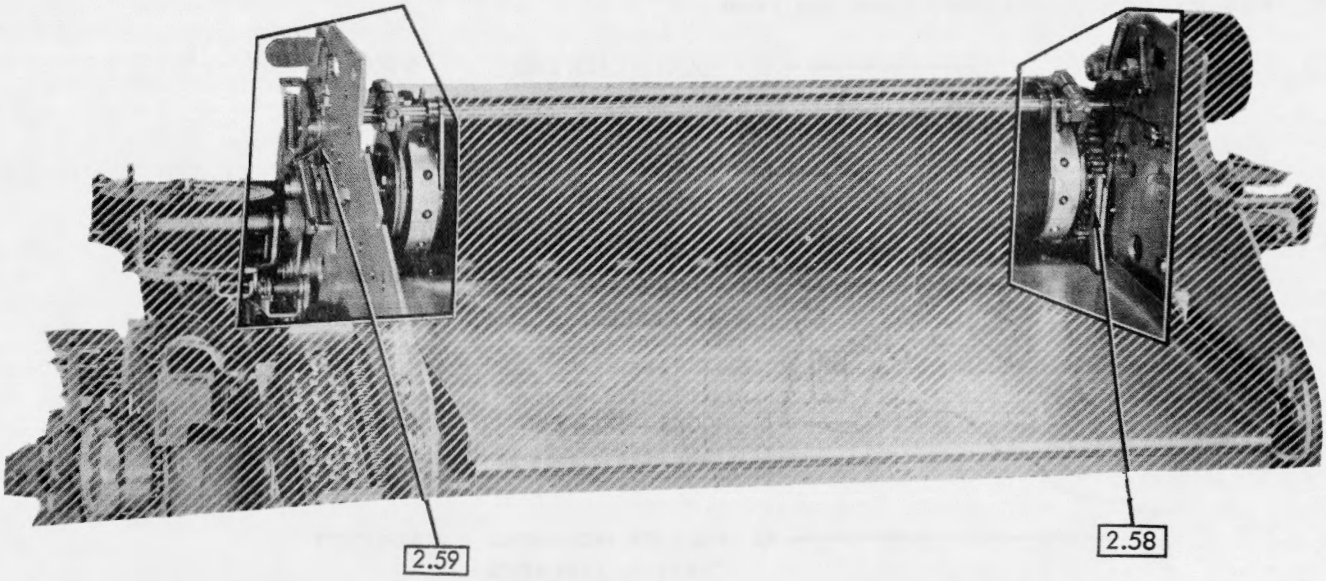
O2	OIL HOLE	SPACING SHAFT
G	TEETH	SPACING SHAFT GEAR

2.53 Spacing Mechanism (Cont'd)

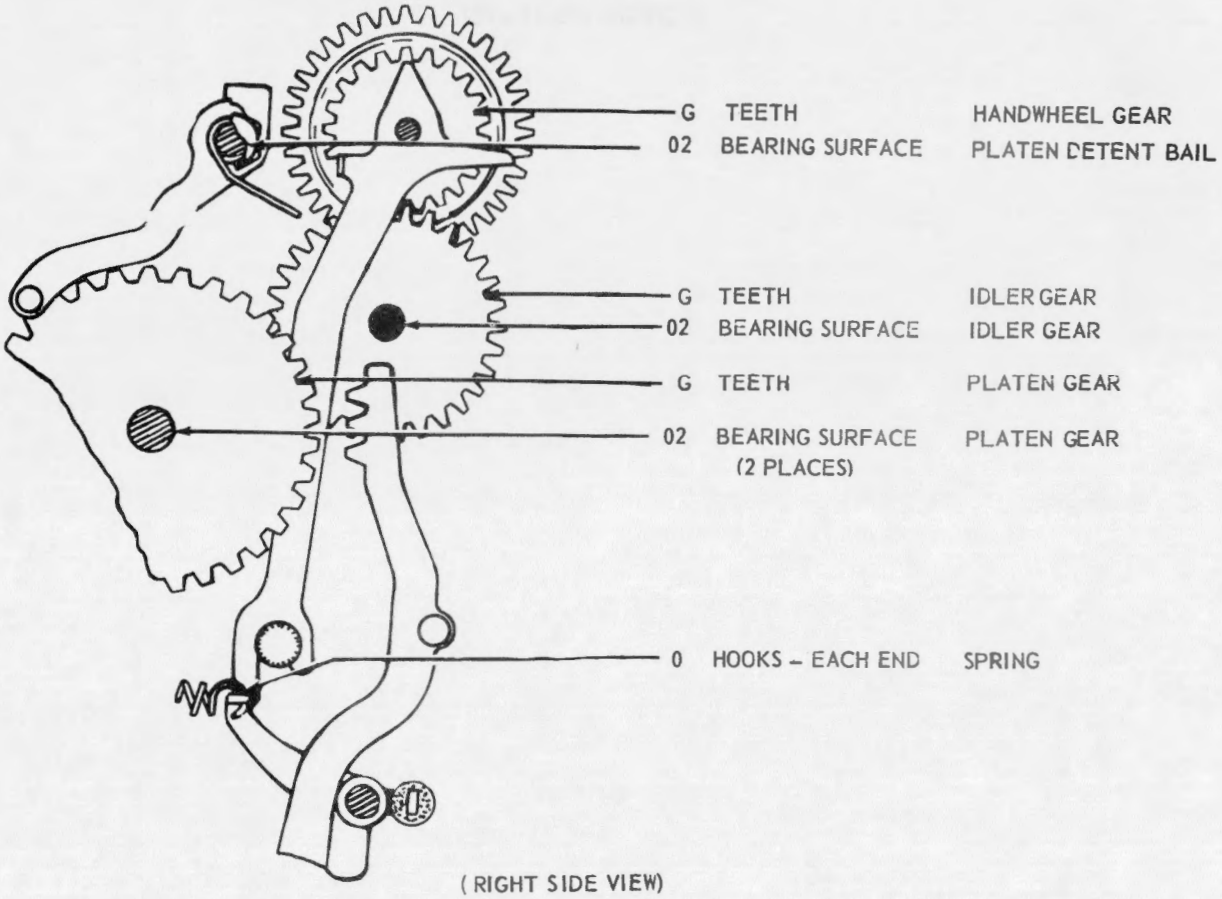


O2	ENGAGING SURFACE	SPACING CUT-OUT TRANSFER BAIL
SAT	FELT WASHERS (2 WASHERS)	SPACING CUT-OUT TRANSFER BAIL
SAT	FELT WASHER	SPACING CUT-OUT BAIL
O2	ENGAGING SURFACE	SPACING CUT-OUT BAIL
SAT	FELT WASHERS (2 WASHERS)	CARRIAGE RETURN BAIL SHAFT
O	HOOKS - EACH END	SPRING

2.57 Typing Unit - Rear Top View



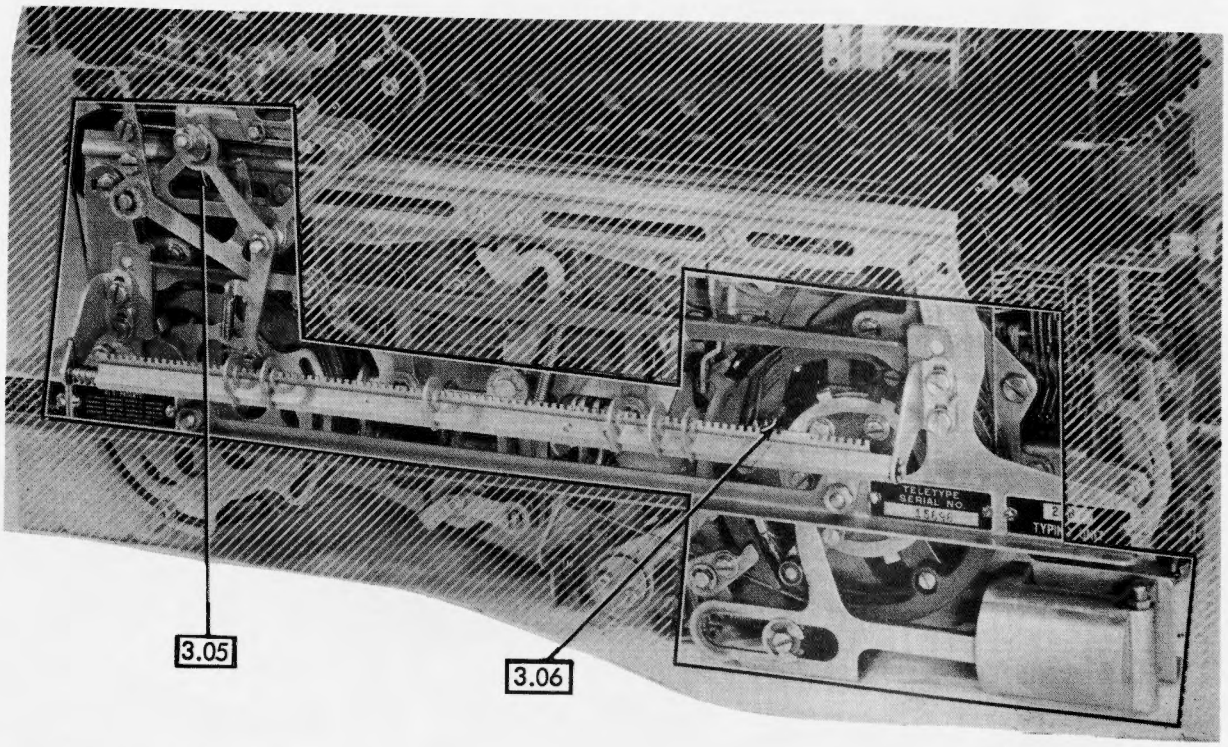
2.58 Line Feed Mechanism - Sprocket Feed



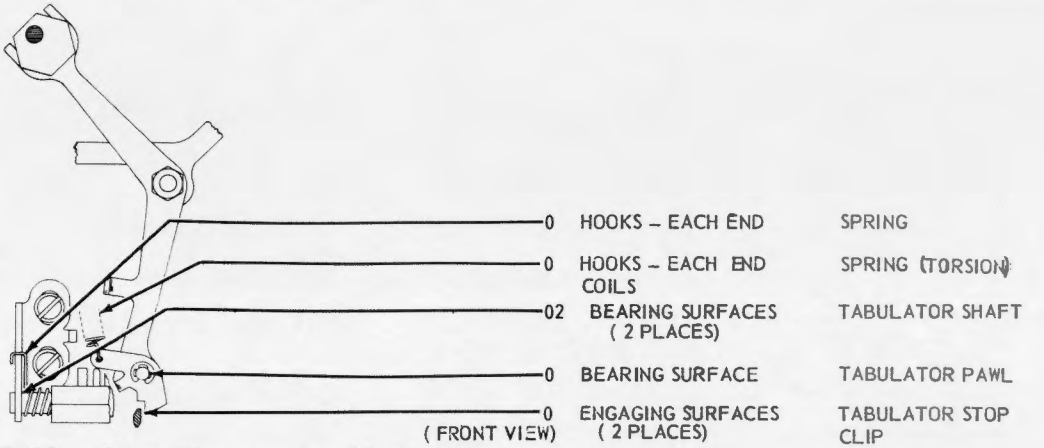
3. VARIABLE FEATURES

HORIZONTAL TABULATOR MECHANISM - EARLIER DESIGN

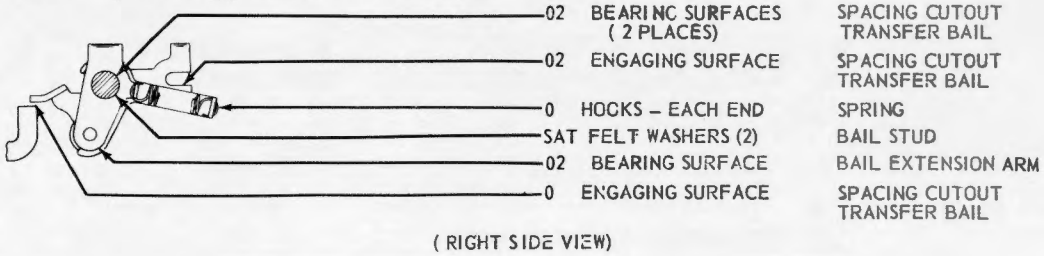
3.01 Typing Unit - Front View



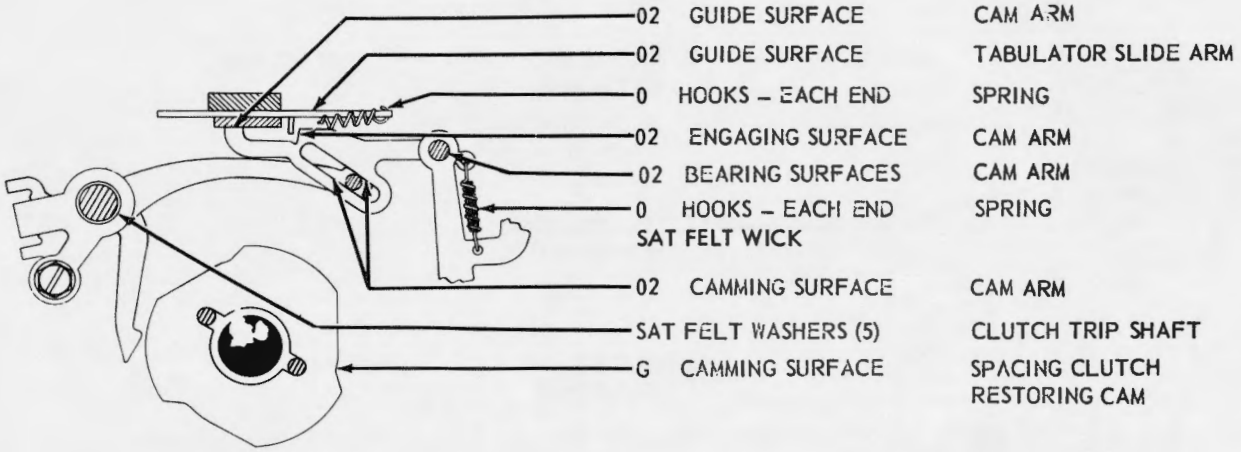
3.02 Tabulator Shaft Mechanism



3.03 Space Suppression Mechanism

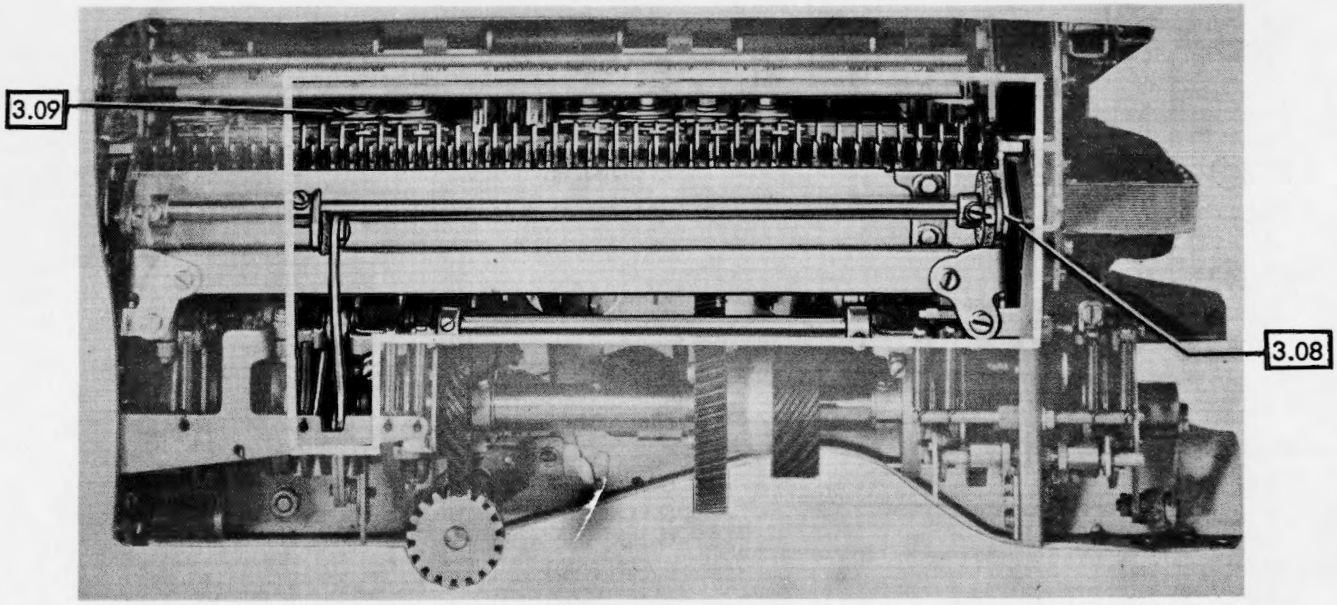


3.06 Spacing Clutch Mechanism

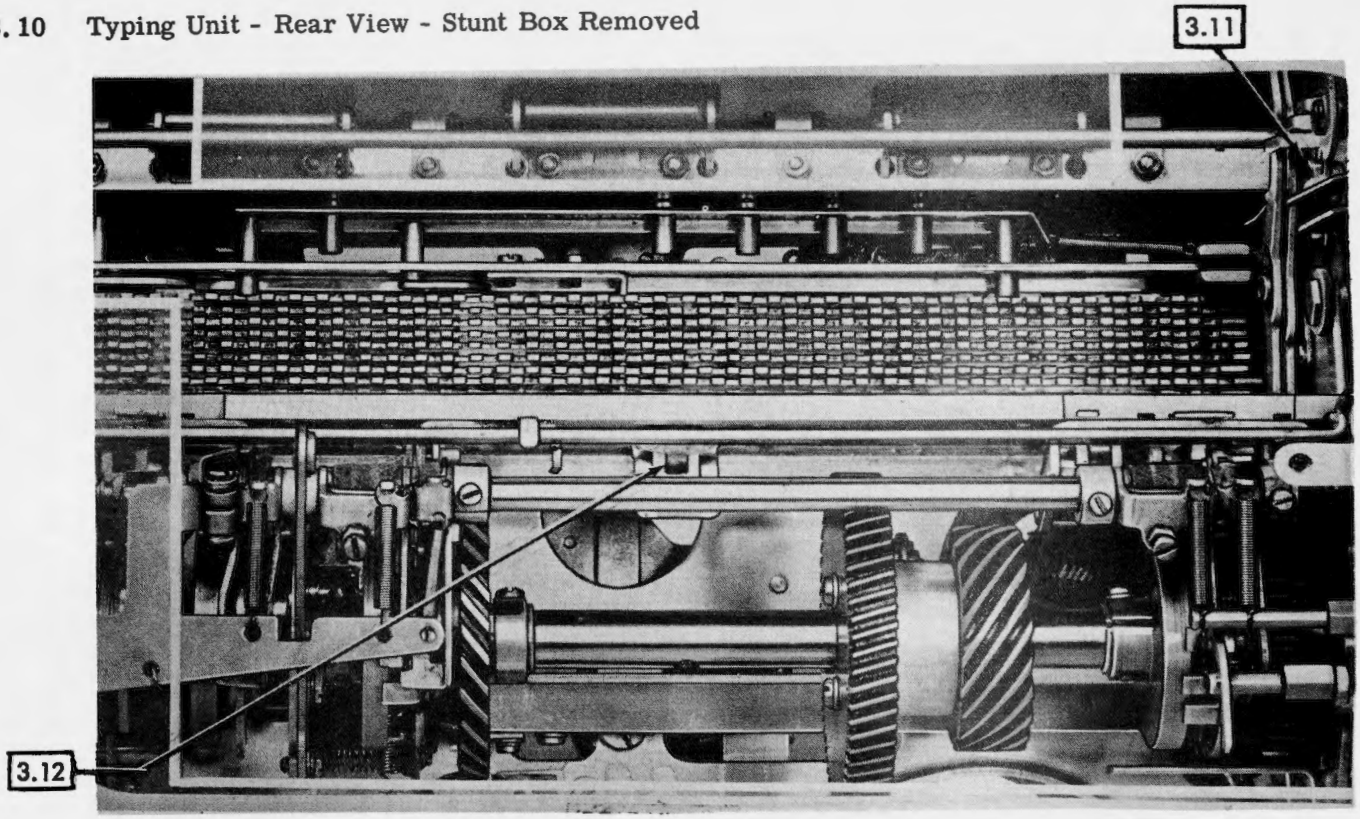


SELECTIVE CALLING MECHANISM

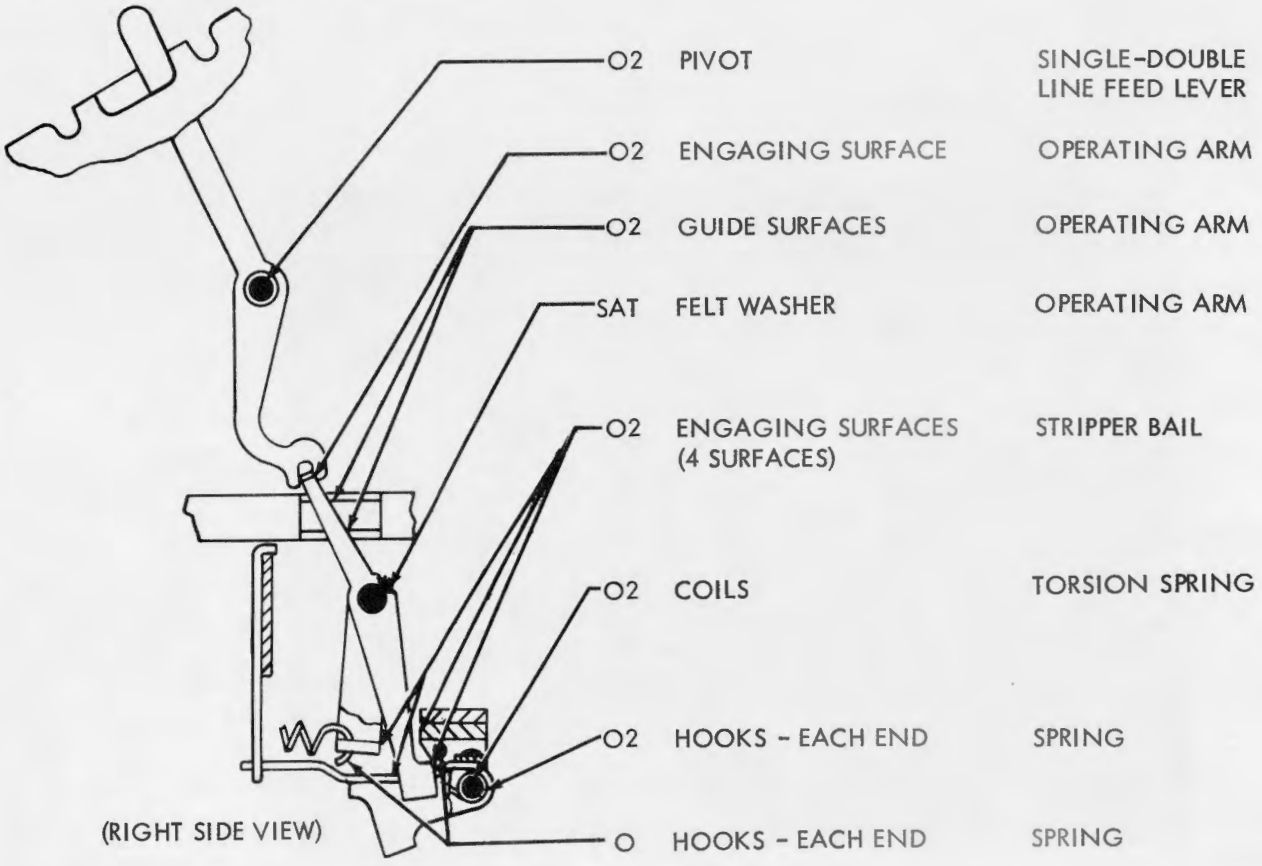
3.07 Typing Unit - Rear View



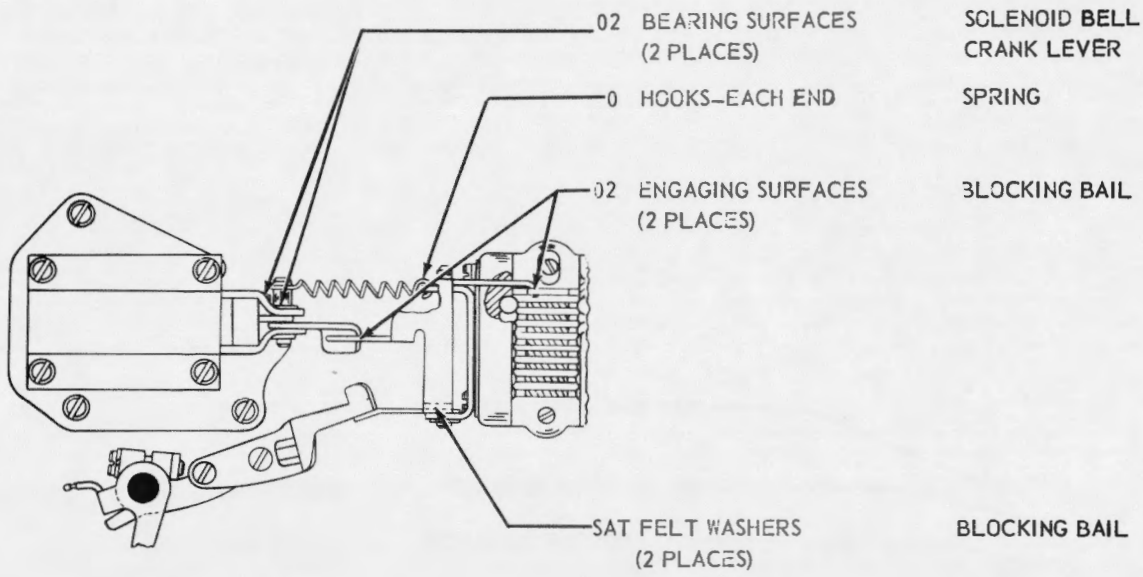
3.10 Typing Unit - Rear View - Stunt Box Removed



3.11 Single-Double Line Feed Mechanism



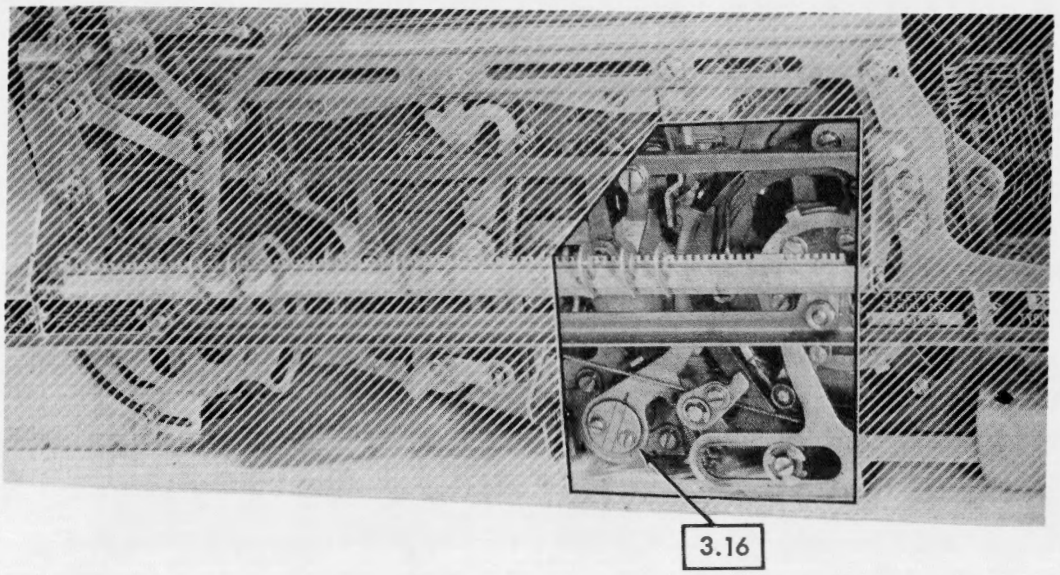
3.14 Clutch Suppression Mechanism



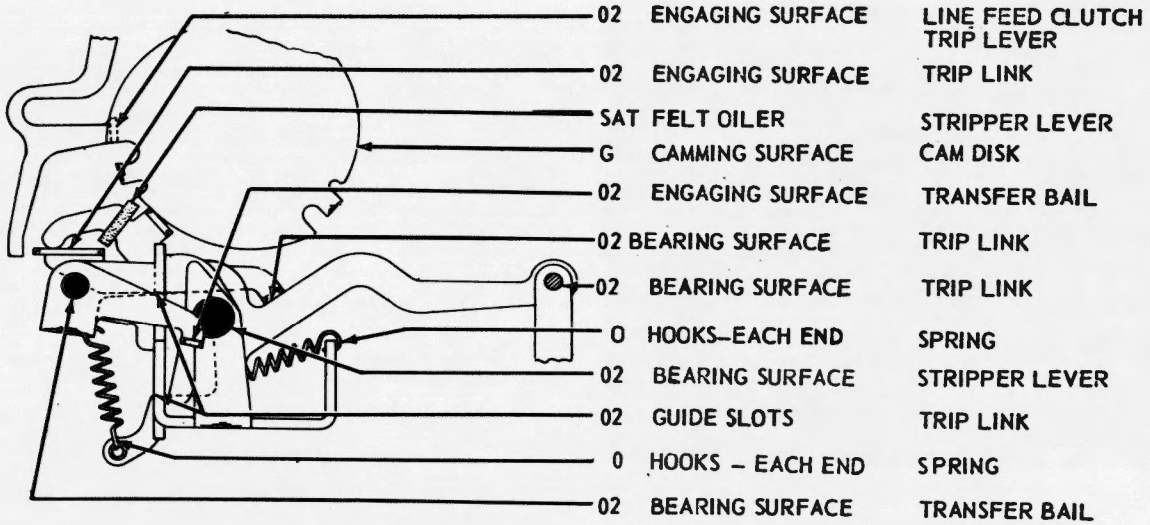
(LEFT SIDE VIEW)

LOCAL BACKSPACE MECHANISM

3.15 Typing Unit - Front View



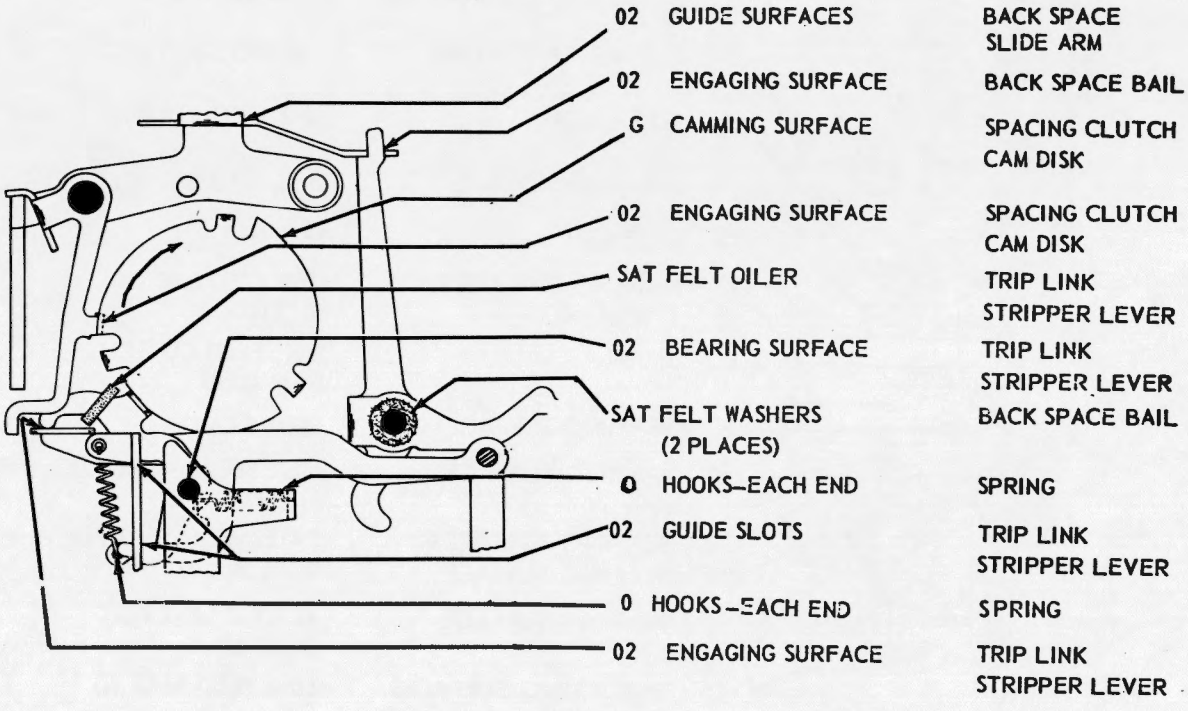
3.18 Trip Mechanism



(LEFT SIDE VIEW)

LOCAL BACKSPACE MECHANISM (Cont'd)

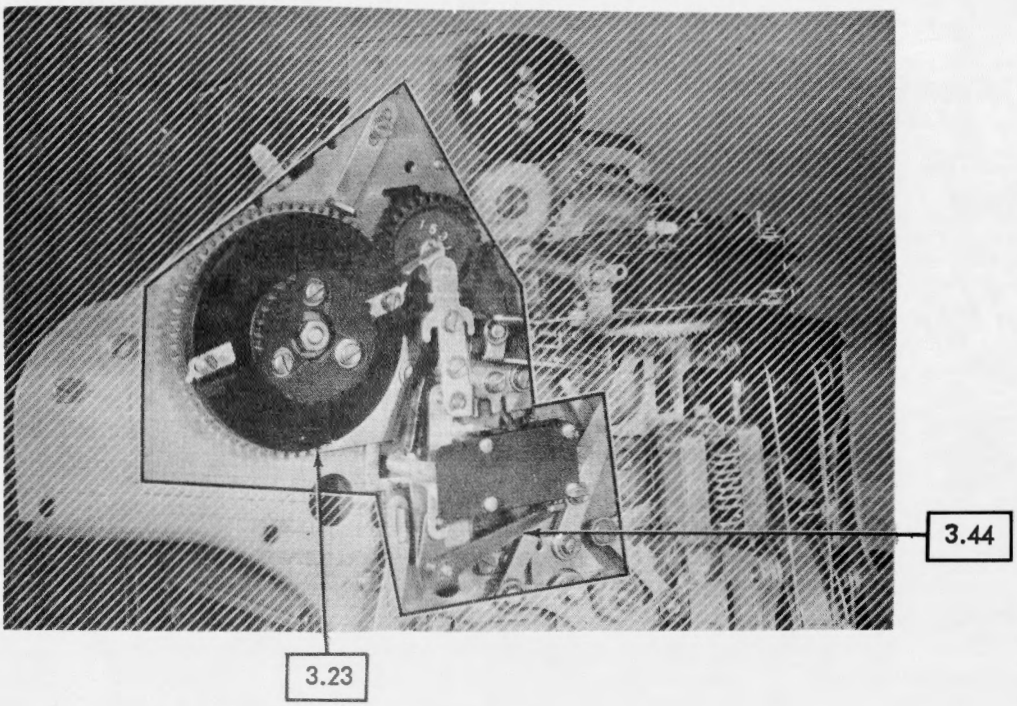
3.19 Trip Mechanism



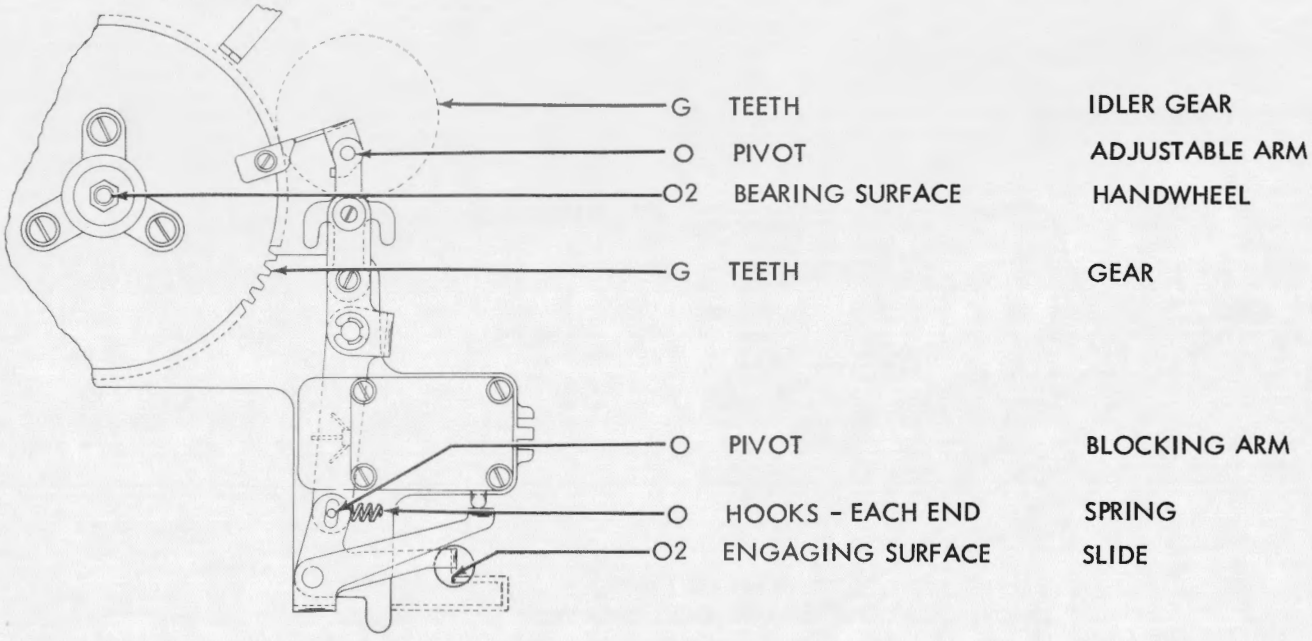
(LEFT SIDE VIEW)

PAGE FEED-OUT MECHANISM

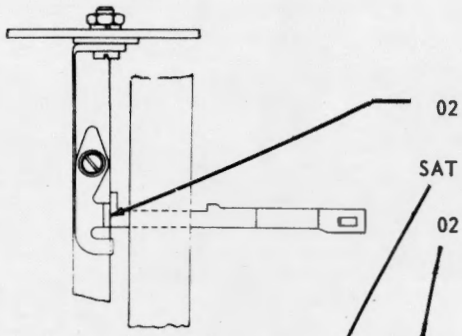
3.22 Typing Unit - Rear Left End View



3.23 Drive Mechanism



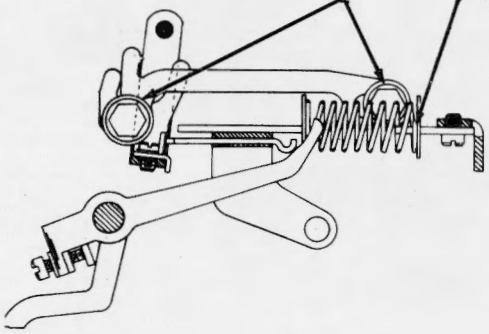
3.26 Slide Arm Bracket



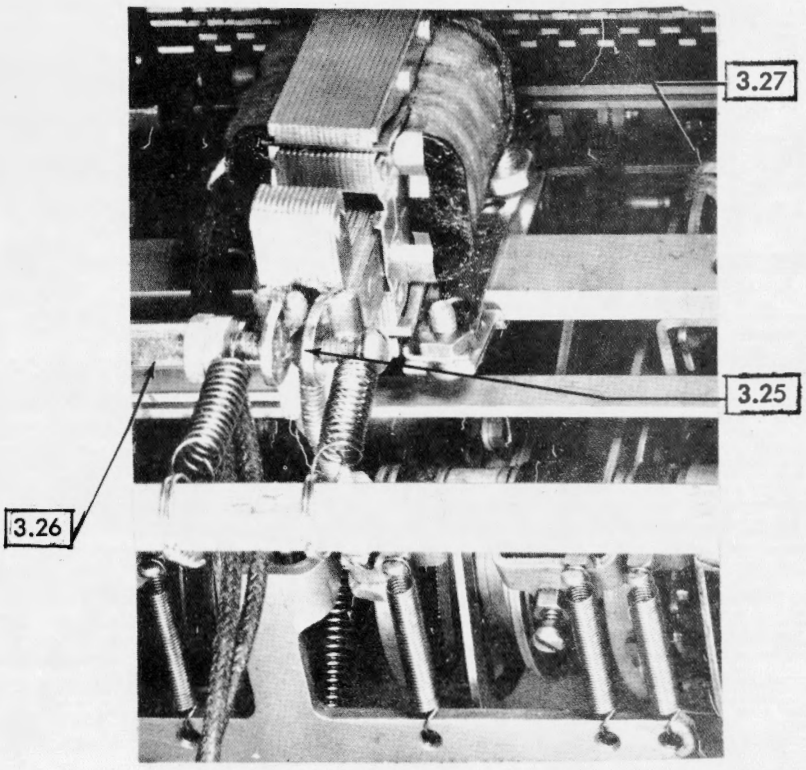
02 ENGAGING SURFACE (TWO BRACKETS)
SAT FELT WASHERS (EACH END)
02 ENGAGING SURFACE (EACH END)

C.R. SLIDE ARM BRACKET
L.F. SLIDE ARM BRACKET
CONNECTING LINK
COMPRESSION SPRING (LP 6 & 9 ONLY)

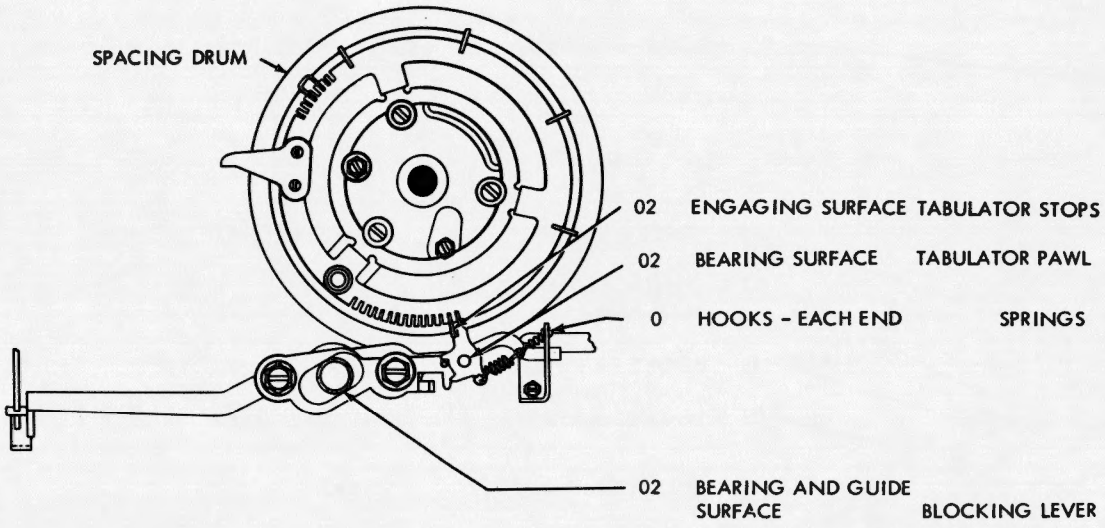
3.27 Compression Spring



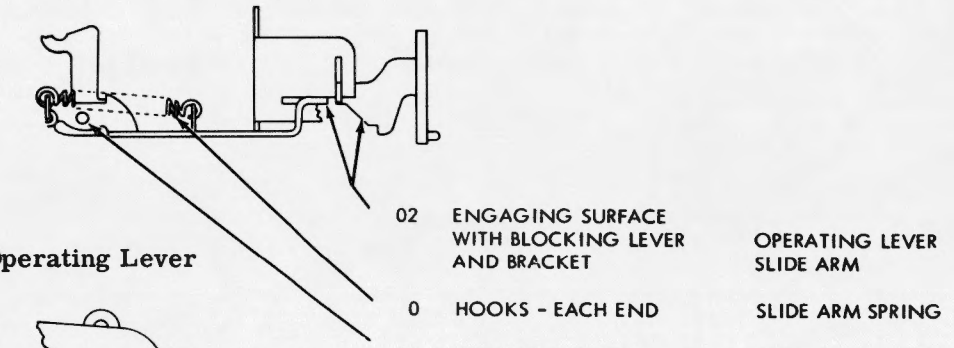
3.28 Typing Unit - Rear View



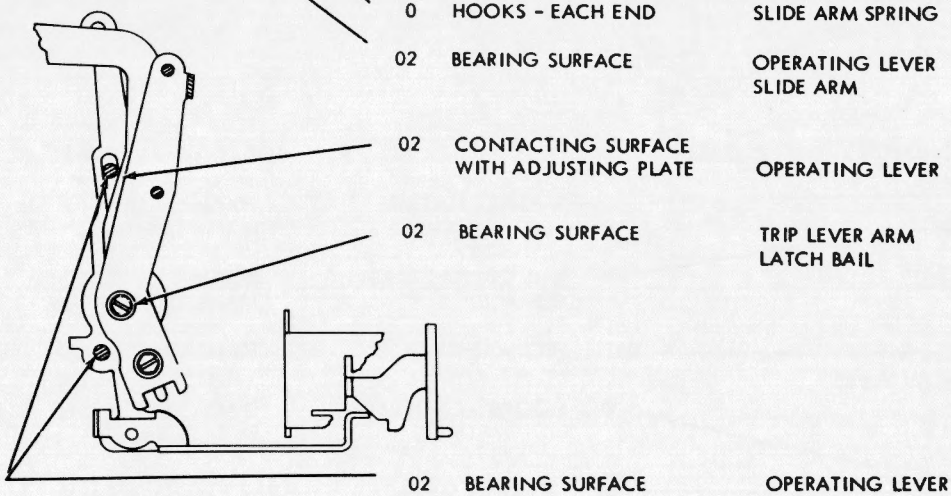
3.31 Blocking Lever



3.32 Slide Arm

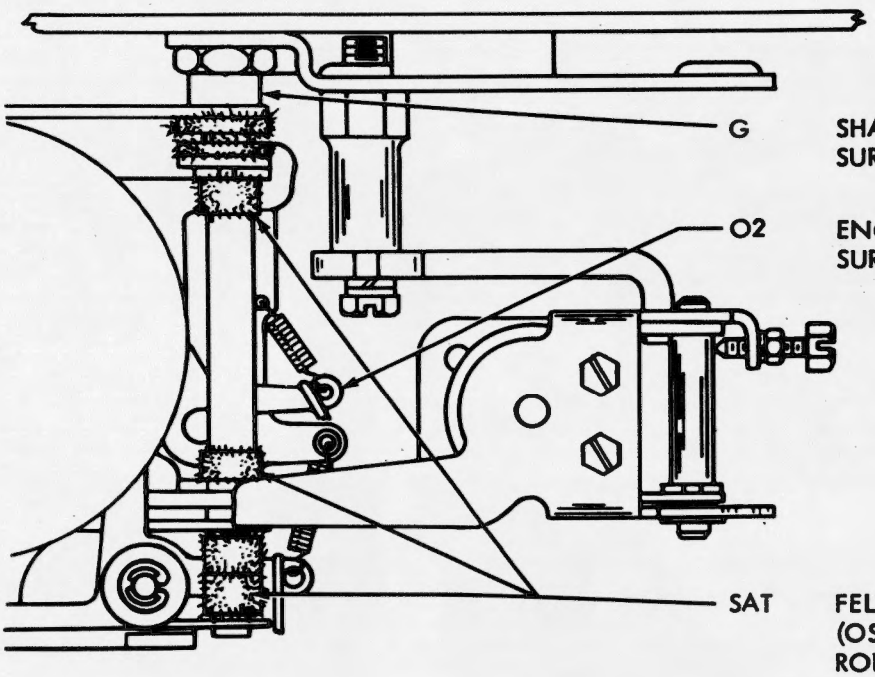


3.33 Operating Lever

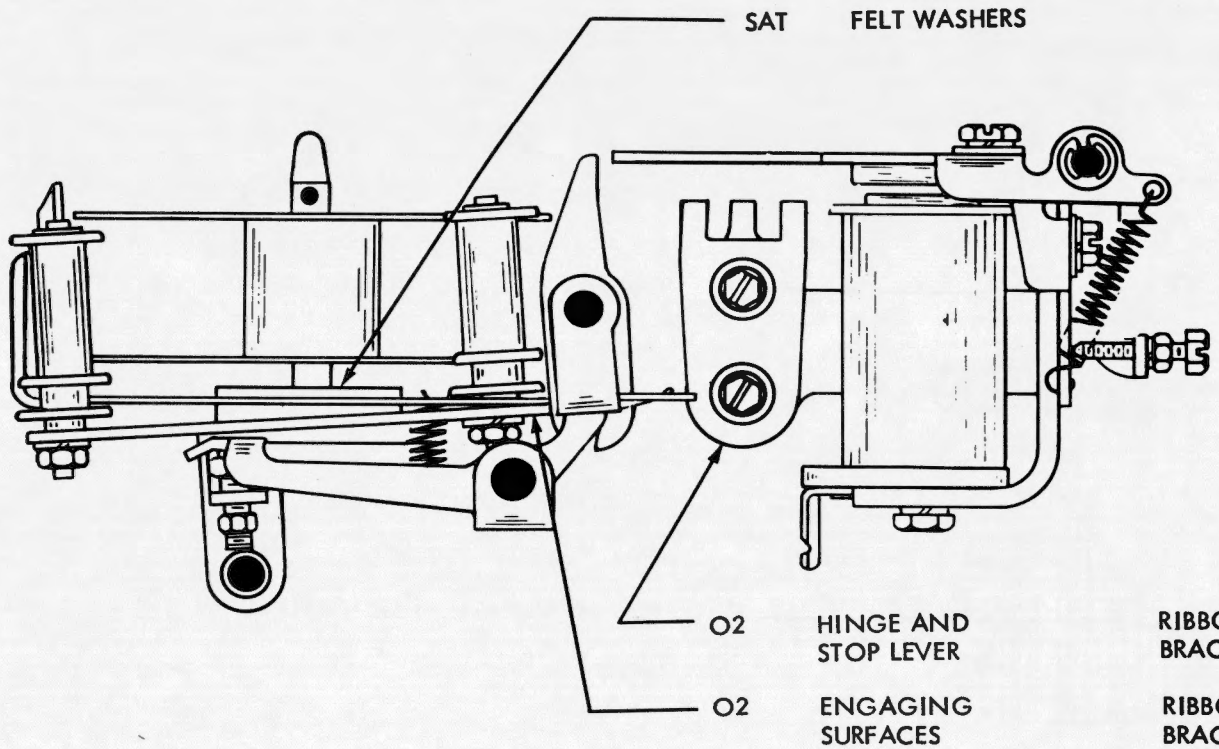


TWO COLOR RIBBON MECHANISM

3.39 Oscillating Lever

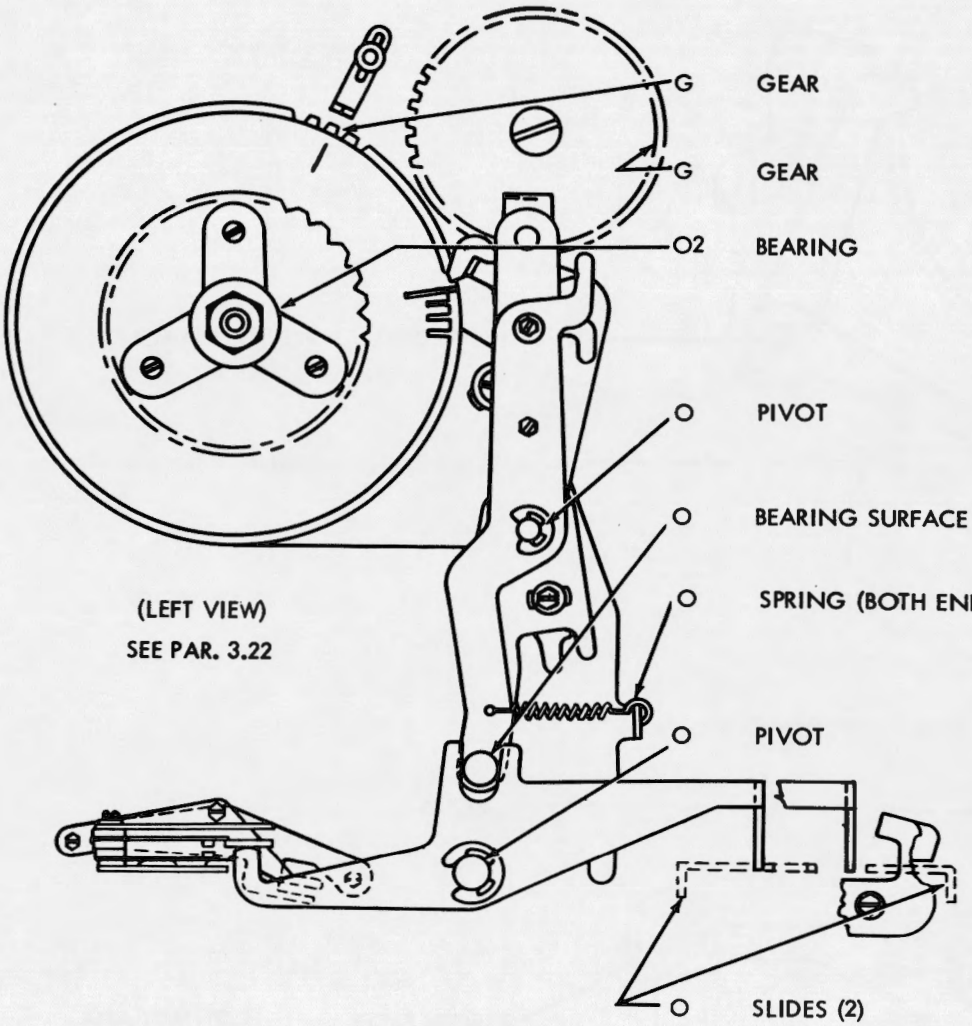


3.40 Ribbon Operating Mechanism



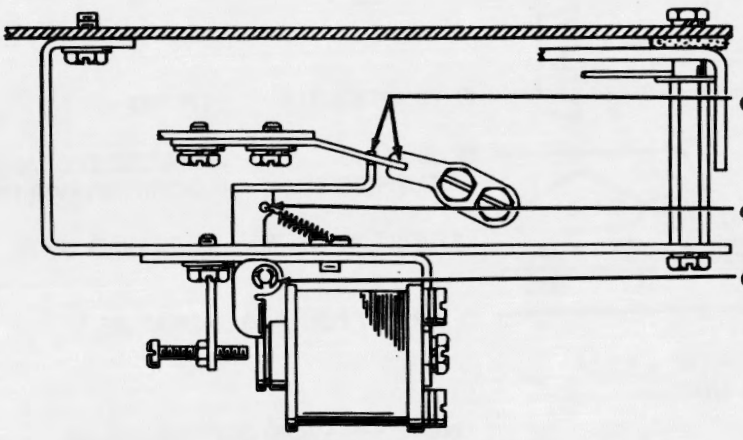
VERTICAL TABULATION AND TRANSMITTER DISTRIBUTOR CONTROL MECHANISM

3.43 Control Mechanism



DC MAGNET OPERATED PRINT SUPPRESSION MECHANISM

3.46 Suppression Mechanism



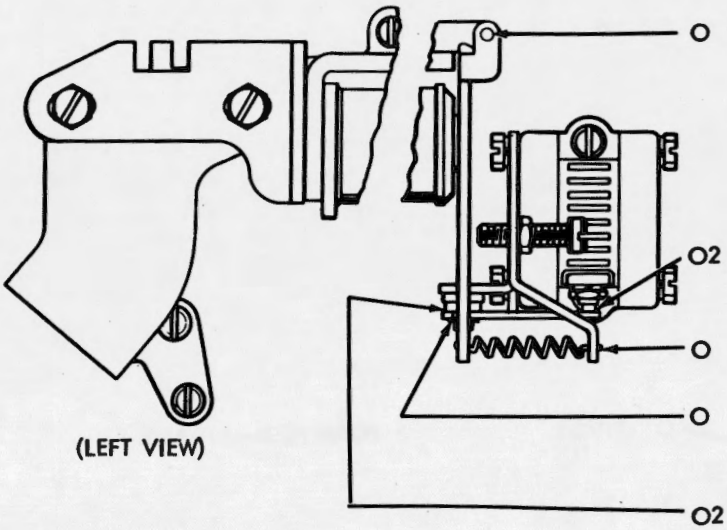
TOP VIEW - LEFT SIDE

G	BLOCKING SURFACE	ARMATURE EXTENSION BLOCKING BAIL EXTENSION SUPPRESSION ARM
O	HOOKS (2)	SPRING
O	PIVOT POINT (2)	ARMATURE

NOTE --- KEEP OIL AND GREASE OFF OF POLE FACE

LETTERS-FIGURES CODEBAR SHIFT MAGNET MECHANISM

3.47 Shift Magnet Mechanism



(LEFT VIEW)

O	PIVOT POINTS (2)	SHIFT MAGNET ARMATURE
O2	ENGAGING SURFACE	TRANSFER LEVER AND CODE BAR PILOT PIN
O	HOOKS	SPRING
O	ENGAGING SURFACE	SHIFT MAGNET ARMATURE AND TRANSFER LEVER
O2	BEARING	TRANSFER LEVER

NOTE --- KEEP OIL AND GREASE OFF OF POLE PIECE

28 TYPING AND NONTYPING PERFORATORS

LUBRICATION

CONTENTS PAGE

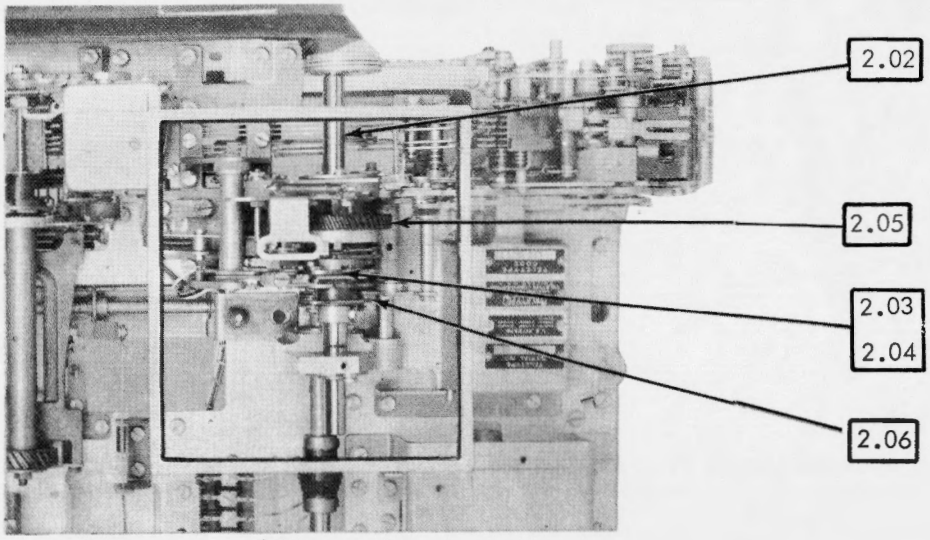
1. GENERAL

1.01 This section contains the specific lubrication procedures for the 28 Typing and Nontyping Perforators. Included in the section are recent engineering changes and additions bringing it generally up-to-date.

1.02 The 28 Typing and Nontyping Perforators should be lubricated as directed in this section. The figures indicate points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the perforators just prior to placing them in service. After a few weeks in service, relubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:

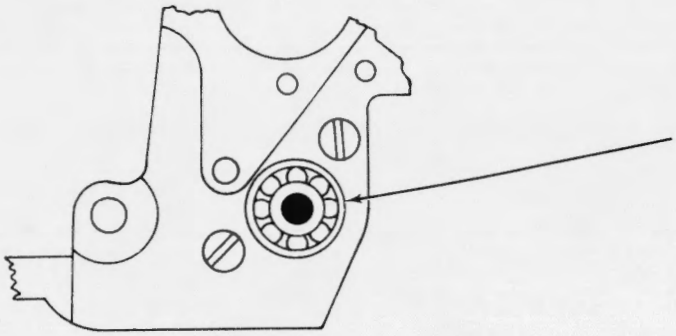
2. LUBRICATION

2.01 PERFORATOR MECHANISM RESET AND PERFORATOR MECHANISM IN UPRIGHT POSITION



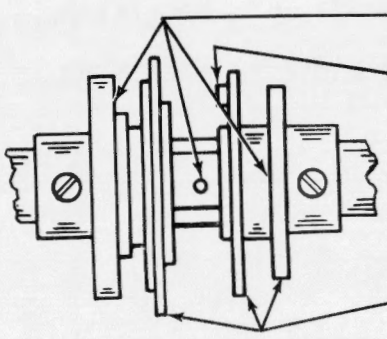
(TOP VIEW)

2.02 PERFORATOR CLUTCH DRIVING SHAFT MECHANISM (NON-TYPING ONLY)



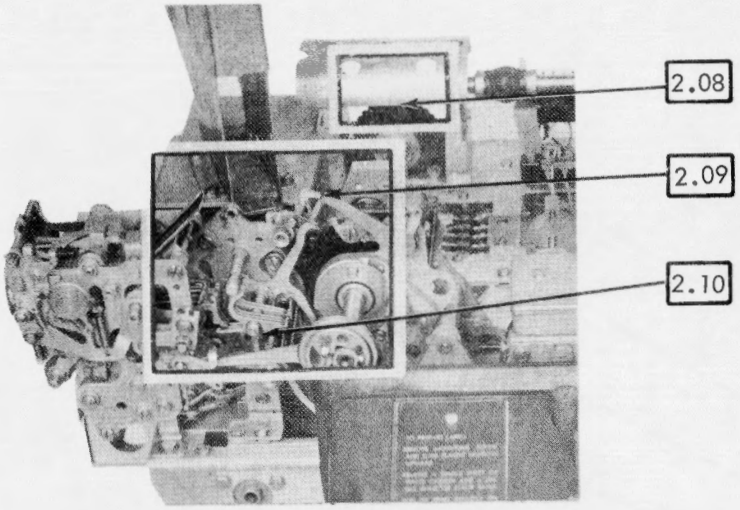
02	BALL BEARING	PERFORATOR CLUTCH DRIVING SHAFT

2.03 PERFORATOR CLUTCH AND RESET CAM MECHANISM



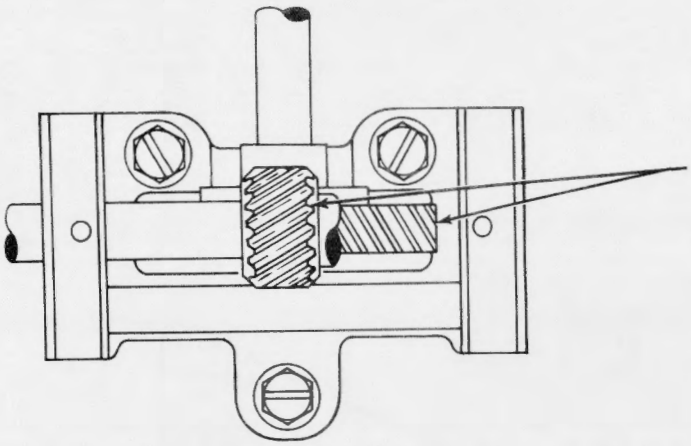
04	FUNCTION CAM NEEDLE BEARING (3)	BOTH ENDS OF SLEEVE AND OIL HOLE IN SLEEVE
02	ROLLER PIVOT	FUNCTION CAM
03	CAMMING SURFACE (EACH CAM)	RESET CAM SLEEVE

2.07 PERFORATOR MECHANISM (continued) REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION



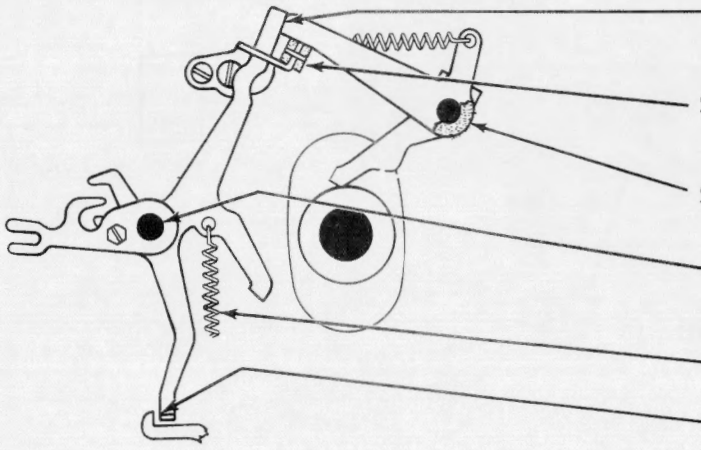
(FRONT VIEW)

2.08 REAR BEARING BRACKET GEAR MECHANISM



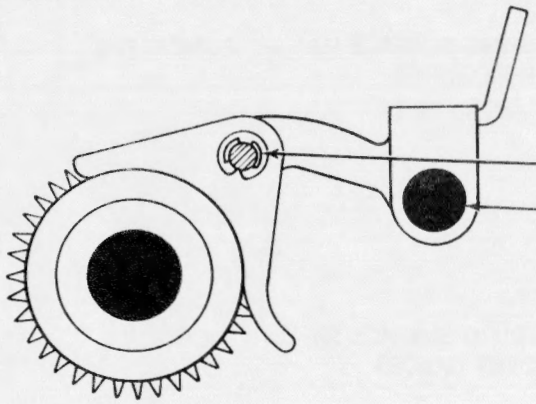
G	GEAR TEETH	REAR BEARING BRACKET GEAR

2.09 PERFORATOR TRIP LEVER MECHANISM (NON-TYPING ONLY)



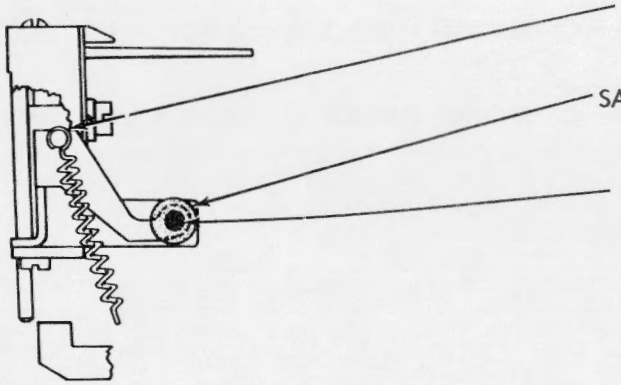
0	CONTACT SURFACE	PERFORATOR TRIP LEVER
SAT	FELT WICK	PERFORATOR TRIP LEVER
SAT	FELT WASHER	CLUTCH RELEASE
0	BEARING SURFACE	PERFORATOR TRIP LEVER
0	HOOKS-EACH END	SPRING
0	ENGAGING SURFACE	PERFORATOR TRIP LEVER LATCH

2.12 TAPE SHOE ARM MECHANISM



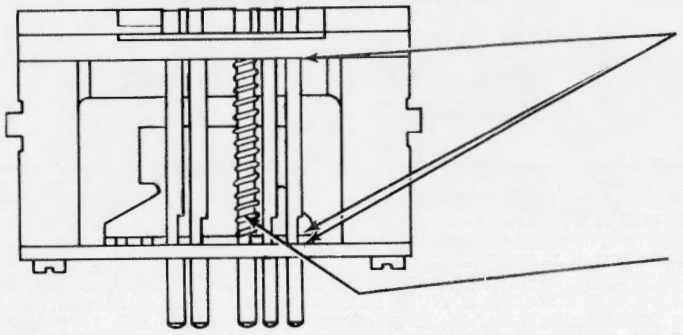
0	BEARING SURFACE	TAPE SHOE
0	BEARING SURFACE (2) (FRONT AND REAR)	TAPE SHOE ARM

2.13 RETRACTOR BAIL MECHANISM



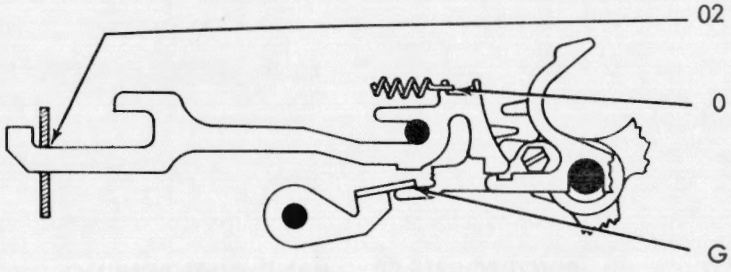
0	HOOKS-EACH END (4 SPRINGS)	ROCKER BAIL SPRING
SAT	FELT WASHERS (2-FRONT & REAR)	RETRACTOR BAIL
0	BEARING SURFACE (2-FRONT & REAR)	RETRACTOR BAIL

2.14 PUNCH PIN MECHANISM



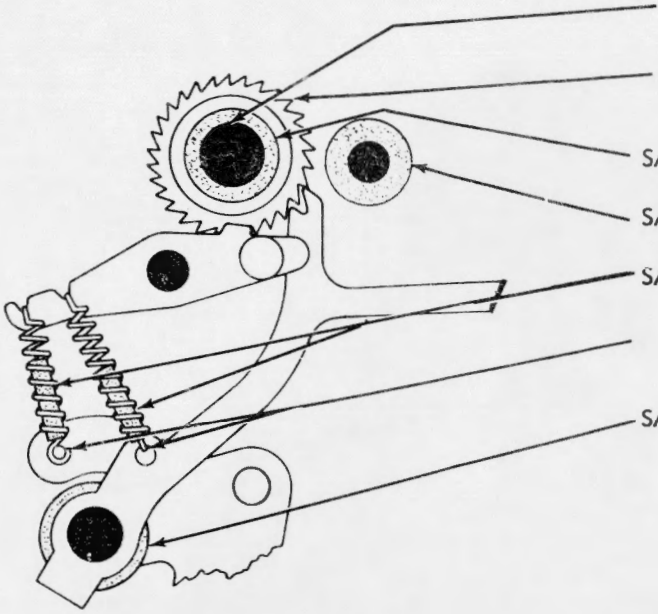
0	GUIDES AND NOTCHES (3 PLACES)	PUNCH PINS
0	SPRING	RETRACTOR SPRING

2.15 PUNCH SLIDE MECHANISM



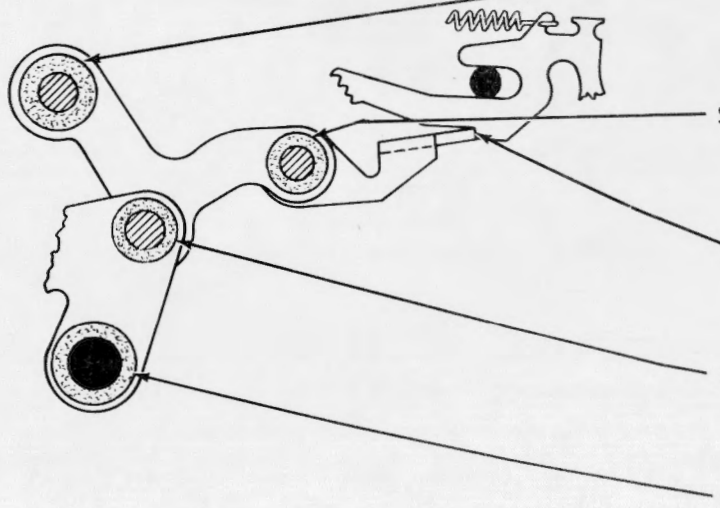
02	ENGAGING SURFACE	PUNCH SLIDE GUIDE
0	HOOKS-EACH END (5 SPRINGS)	SPRINGS
G	ENGAGING SURFACE (5)	RESET BAIL

2.18 FEED WHEEL MECHANISM



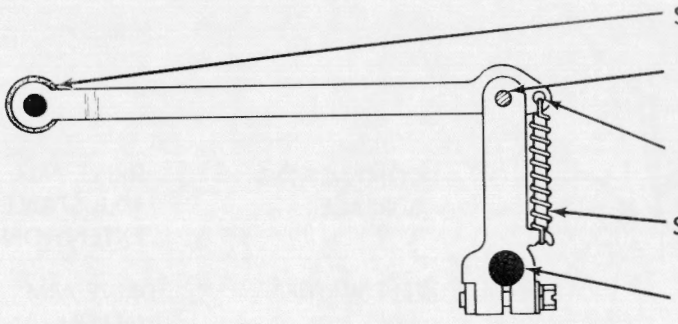
0	BEARING SURFACE	FEED WHEEL KNOB
0	RATCHET TEETH (2 PLACES)	FEED WHEEL
SAT	FELT WASHER	FEED WHEEL
SAT	FELT WASHER	DIE WHEEL
SAT	FELT WICKS (2)	SPRING WICKS
0	HOOKS-EACH END (2 SPRINGS)	SPRING
SAT	FELT WASHER	FEED PAWL

2.19 RESET BAIL MECHANISM



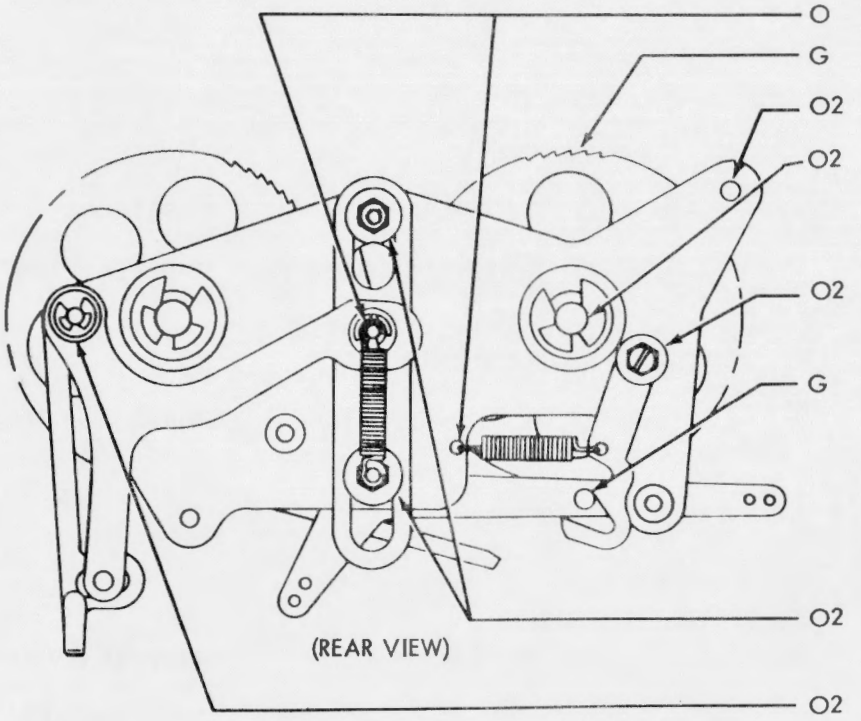
SAT	FELT WASHER (2 WASHERS - FRONT & REAR)	TOGGLE LINKS
SAT	FELT WASHERS (2 WASHERS - FRONT & REAR)	RESET BAIL
0	ENGAGING SURFACE	RESET BAIL
SAT	FELT WASHERS (2 WASHERS - FRONT & REAR)	TOGGLE BAIL
SAT	FELT WASHERS (2 WASHERS - FRONT & REAR)	TOGGLE BAIL

2.20 ROCKER ARM MECHANISM



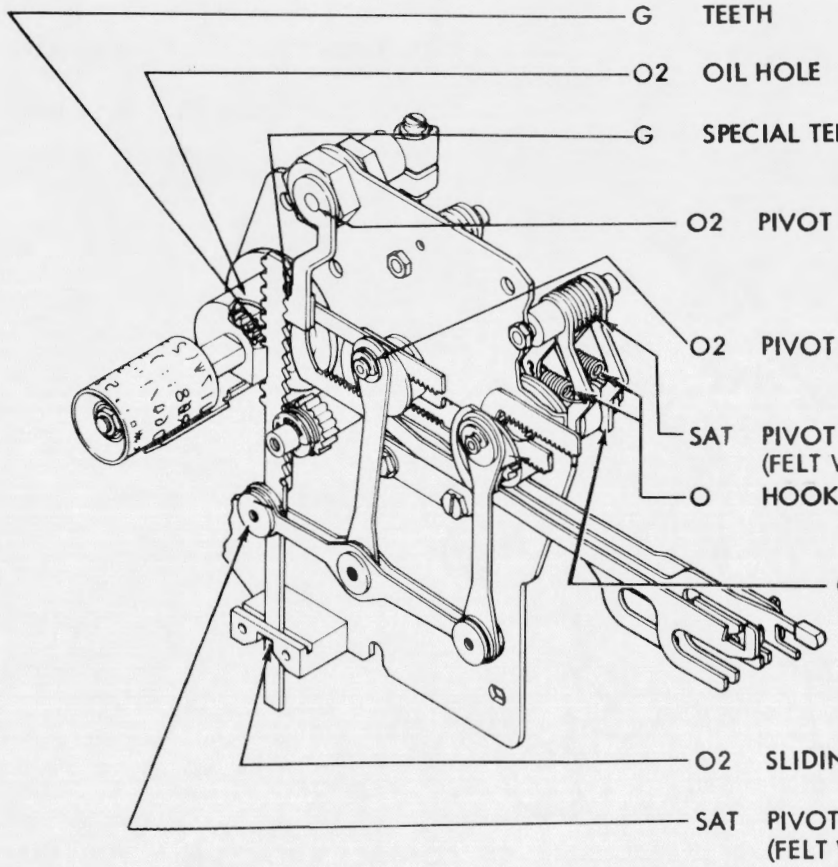
SAT	FELT WASHER	DRIVE LINK
0	ENGAGING SURFACE	ROCKER ARM
0	HOOKS-EACH END	SPRING
SAT	FELT WICK	SPRING WICK
0	BEARING SURFACE	ROCKER ARM

2.23 RIBBON FEED MECHANISM (LATE DESIGN)



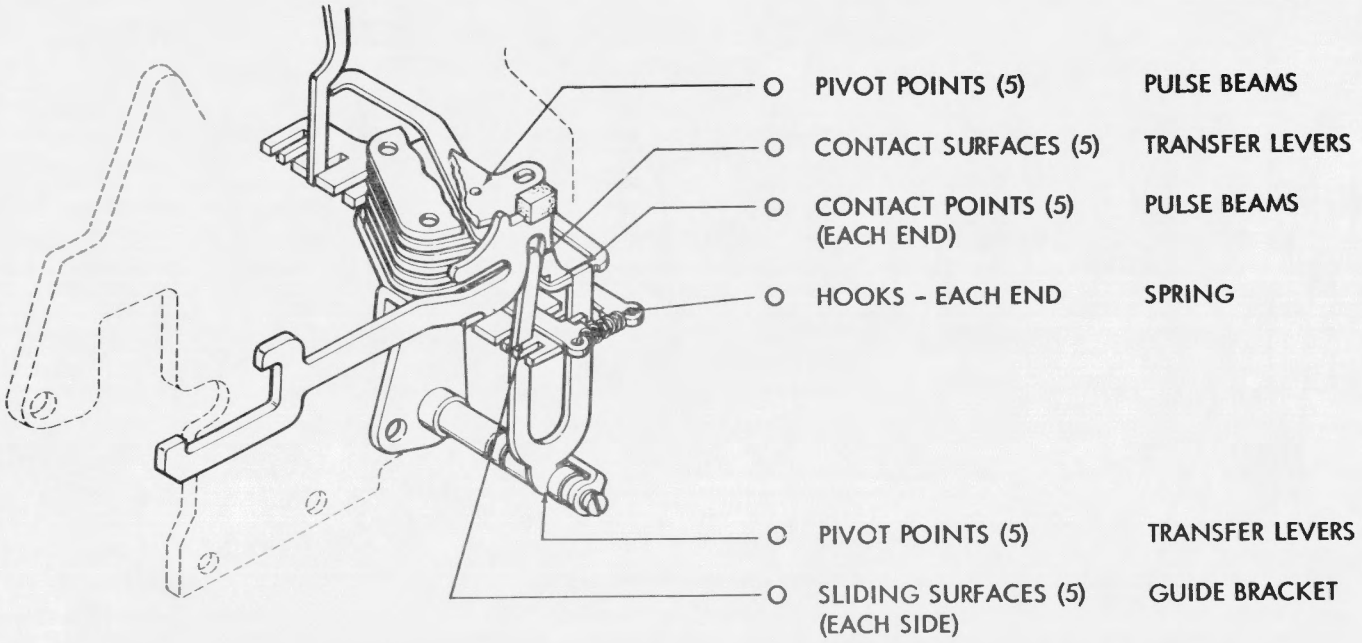
O	HOOKS (2)	SPRINGS (2)
G	TEETH	RATCHET WHEEL
O2	SHAFT	ROLLERS (2)
O2	SHAFT, FELT WASHERS	RATCHET WHEEL
O2	PIVOT	DETENT
G	CONTACTING SURFACES	DETENT
O2	UPPER AND LOWER BUSHING	SLIDE LEVER
O2	PIVOT	DRIVE ARM

2.24 ROTARY POSITIONING MECHANISM (TYPING PERFORATOR ONLY)

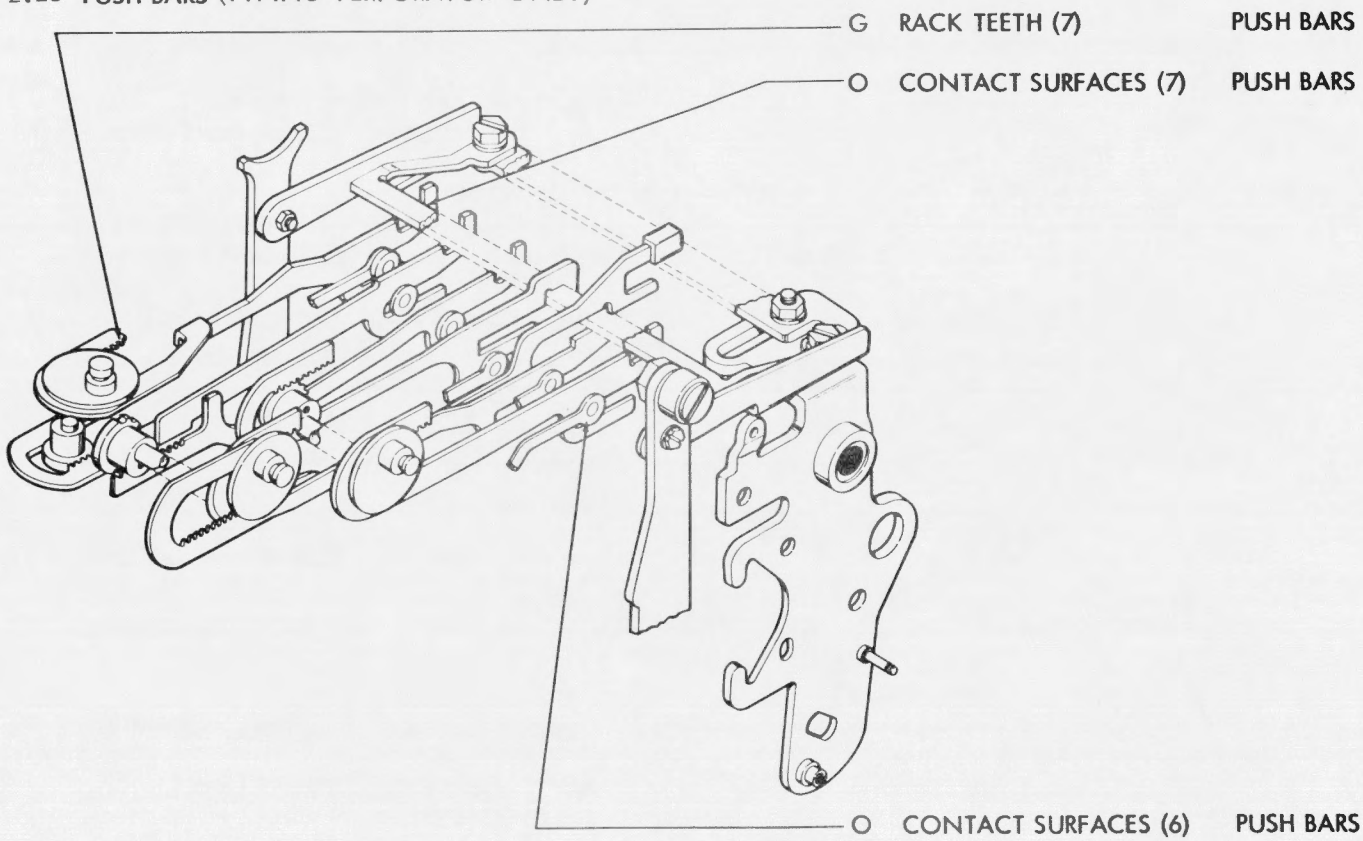


G	TEETH	ROTARY OUTPUT RACK
O2	OIL HOLE	TYPE WHEEL HOUSING
G	SPECIAL TEETH	ROTARY OUTPUT RACK ROTARY CORRECTING LEVER
O2	PIVOT POINT	ROTARY CORRECTING LEVER SHAFT
O2	PIVOT POINTS (2)	CONNECTING RODS
SAT	PIVOT POINTS (FELT WASHERS)	DETENT LEVERS (8)
O	HOOKS - EACH END	SPRINGS (4)
G	CONTACT POINTS	DETENT LEVERS (8)
O2	SLIDING SURFACE	ROTARY OUTPUT RACK
SAT	PIVOT POINTS (3) (FELT WASHERS)	CROSS LINKS

2.25 TRANSFER MECHANISM (TYPING PERFORATOR ONLY)

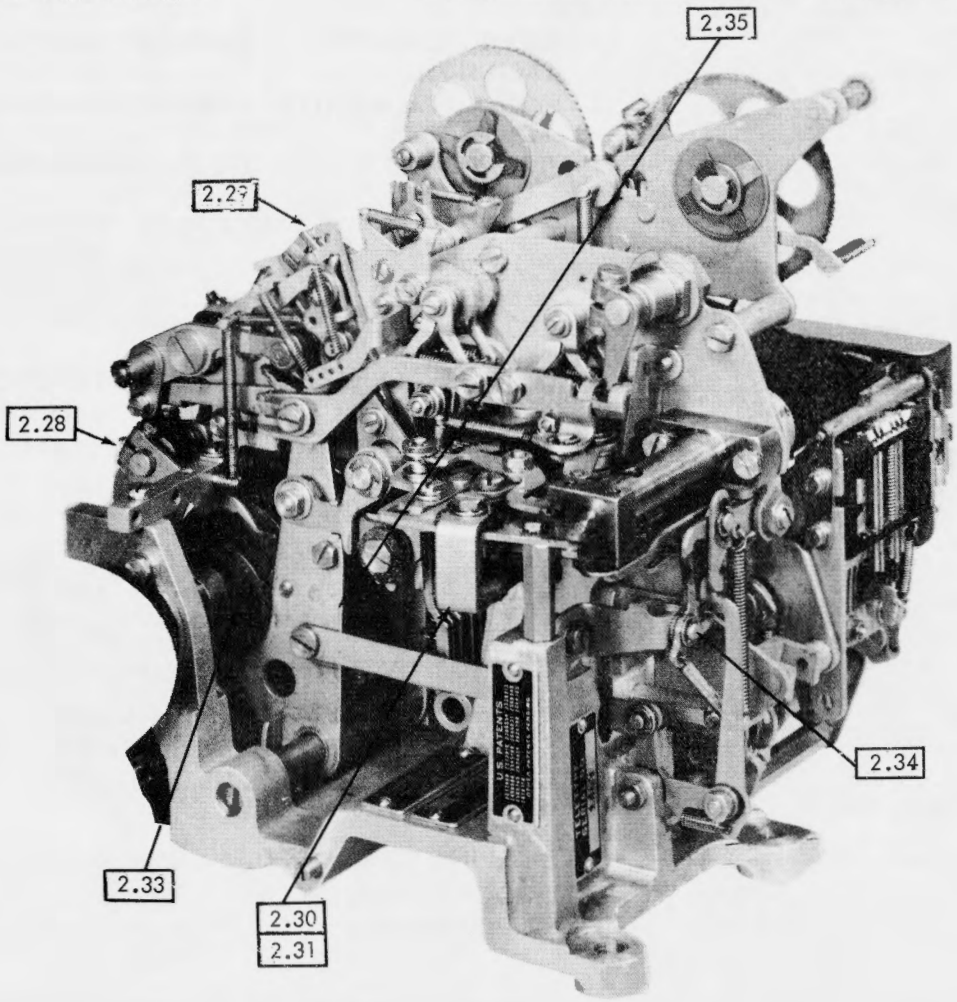


2.26 PUSH BARS (TYPING PERFORATOR ONLY)

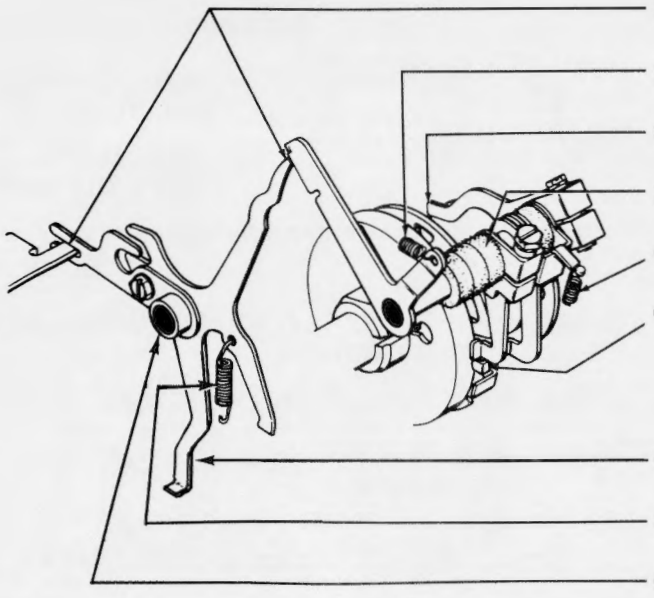


2.27 TYPING PERFORATOR

NOTE: PLACE PERFORATOR IN UPRIGHT POSITION.

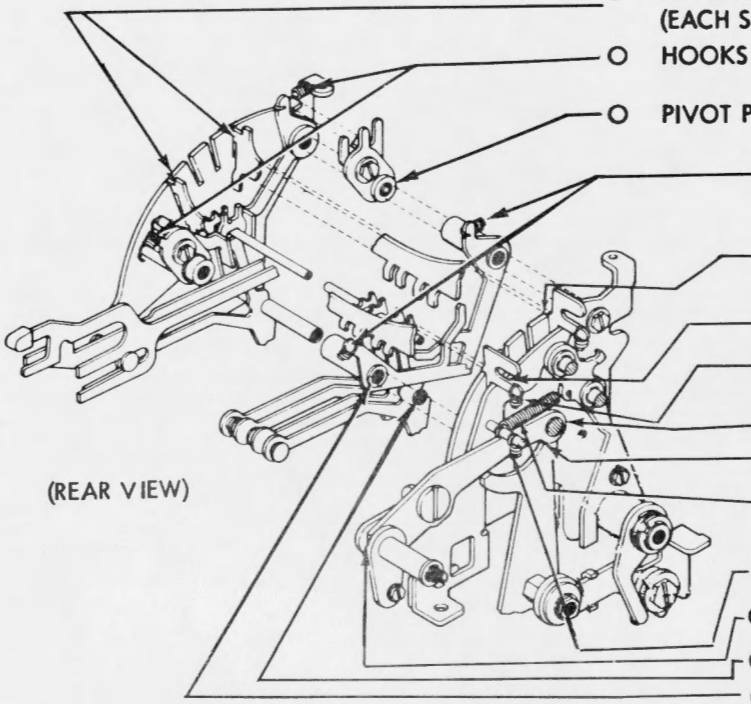


2.28 FUNCTION CAM — CLUTCH TRIP MECHANISM



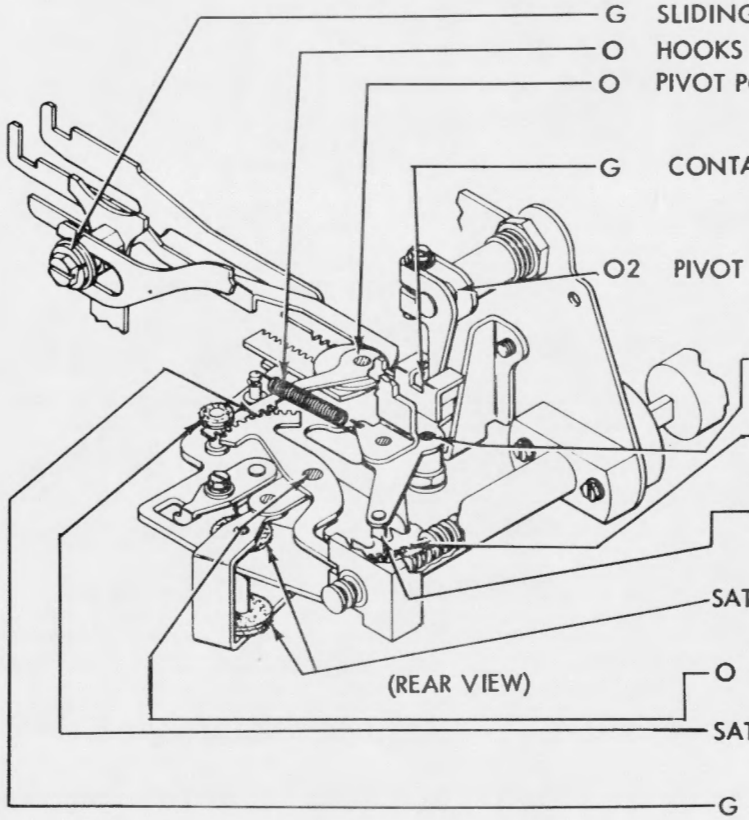
O	CONTACT POINTS (2)	MAIN TRIP LEVER
O	HOOKS - EACH END	CLUTCH RELEASE SPRING
G	CONTACT SURFACE	RESET LEVER
SAT	FELT WASHERS	CLUTCH TRIP SHAFT
O	HOOKS - EACH END	LATCH LEVER SPRING
O	CONTACT SURFACE	CLUTCH STOP LUG
O	CONTACT POINT	MAIN TRIP LEVER
O	HOOKS - EACH END	MAIN TRIP LEVER SPRING
O	PIVOT POINT	MAIN TRIP LEVER

2.29 FUNCTION BOX (TYPING PERFORATOR ONLY)



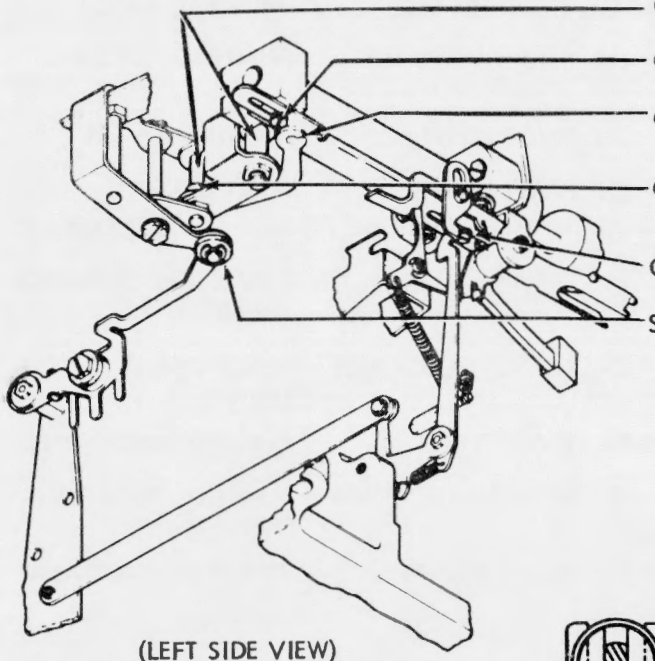
O	SLIDING SURFACES (EACH SIDE)	FUNCTION BLADES
O	HOOKS - EACH END (2)	EXTENSION ARMSPRINGS
O	PIVOT POINTS	FIGURES ARM ASSEMBLY
O	HOOKS - EACH END (2)	LETTERS AND FIGURES ARM ASSEMBLY SPRINGS
O	SLIDING SURFACES (EACH SIDE)	FUNCTION BLADES
G	CONTACT POINTS (2)	FUNCTION BLADES
O	HOOKS - EACH END	FUNCTION BLADE SPRINGS (2)
O	PIVOT POINT	LIFTER ROLLER
G	ROLLER SURFACE	LIFTER ROLLER
O	HOOKS - EACH END	LIFTER TOGGLE LINK SPRING
O	HOOKS - EACH END	LIFTER SPRING
O	PIVOT POINT	FUNCTION BLADE LIFTER
O	PIVOT POINTS (6)	BELL CRANKS
O	PIVOT POINTS	LETTERS ARM ASSEMBLY EXTENSION

2.30 AXIAL POSITIONING MECHANISM (TYPING PERFORATOR ONLY)



G	SLIDING GUIDE SURFACES	CORRECTING DRIVE LINK SPRING
O	HOOKS - EACH END	AXIAL OUTPUT RACK
O	PIVOT POINT	
G	CONTACT POINTS	ROTARY CORRECTING CLAMP
O2	PIVOT POINT	ROTARY CORRECTING LEVER SHAFT
O	PIVOT POINT	AXIAL CORRECTING PLATE
G	TEETH	AXIAL SECTOR TYPEWHEEL SHAFT
G	CONTACT SURFACE	AXIAL CORRECTING PLATE ROLLER
SAT	PIVOT POINTS (FELT WASHERS)	OSCILLATING DRIVE BAIL
O	PIVOT POINT	AXIAL SECTOR
SAT	PIVOT POINT (FELT WASHER)	GUIDE ROLLER
G	TEETH	AXIAL SECTOR AXIAL OUTPUT RACK

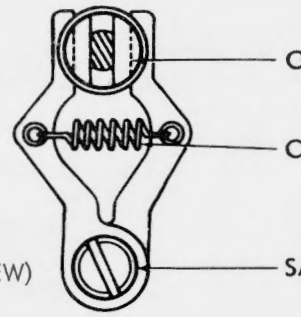
2.31 AXIAL POSITIONING MECHANISM (TYPING PERFORATOR ONLY)



O	PIVOT POINT	OSCILLATING BAIL
O	CONTACT SURFACES	RIBBON CARRIER
O	PIVOT POINTS	RIBBON OSCILLATING LEVER
O	PIVOT POINT (FELT WASHER)	RIBBON OSCILLATING LEVER
O	CONTACT SURFACES	RIBBON CARRIER
SAT	PIVOT POINTS (2) (FELT WASHERS)	OSCILLATING DRIVE LINK

(LEFT SIDE VIEW)

2.32 DETENT ASSEMBLIES (TWO ON AXIAL POSITIONING MECHANISM)

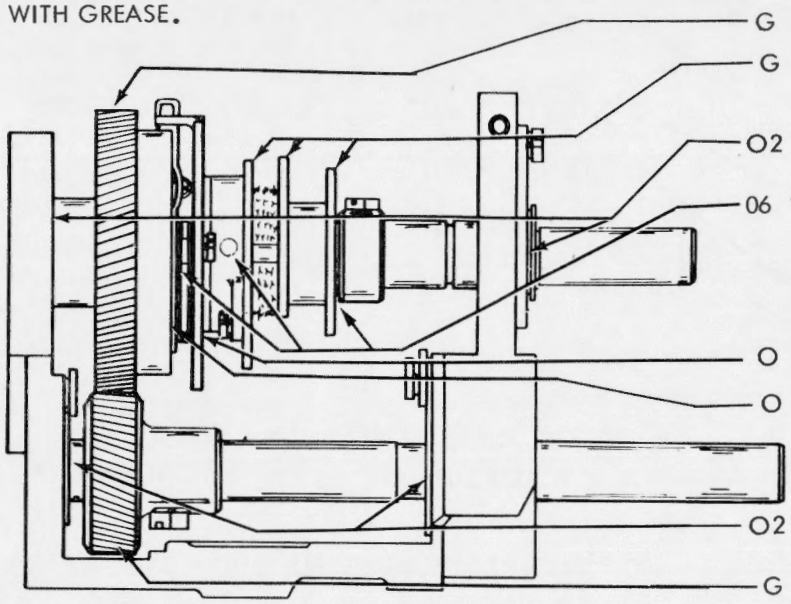


(BOTTOM VIEW)

O	DETENT POINTS	DETENT LEVERS (4)
O	HOOKS - EACH END	DETENT LEVER SPRINGS (2)
SAT	PIVOT POINTS (FELT WASHERS)	DETENT LEVERS (4)

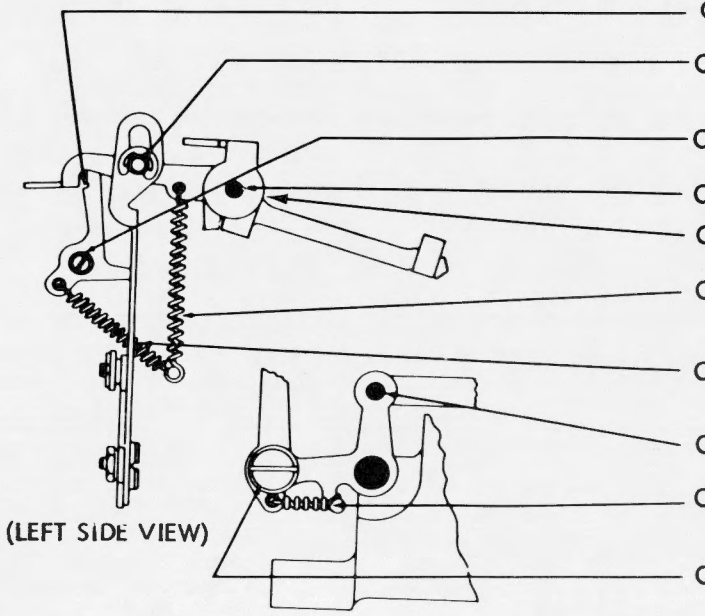
2.33 SHAFT MECHANISMS (TYPING PERFORATOR ONLY)

* IF FUNCTION CAM NEEDLE BEARINGS ARE DISSASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE.



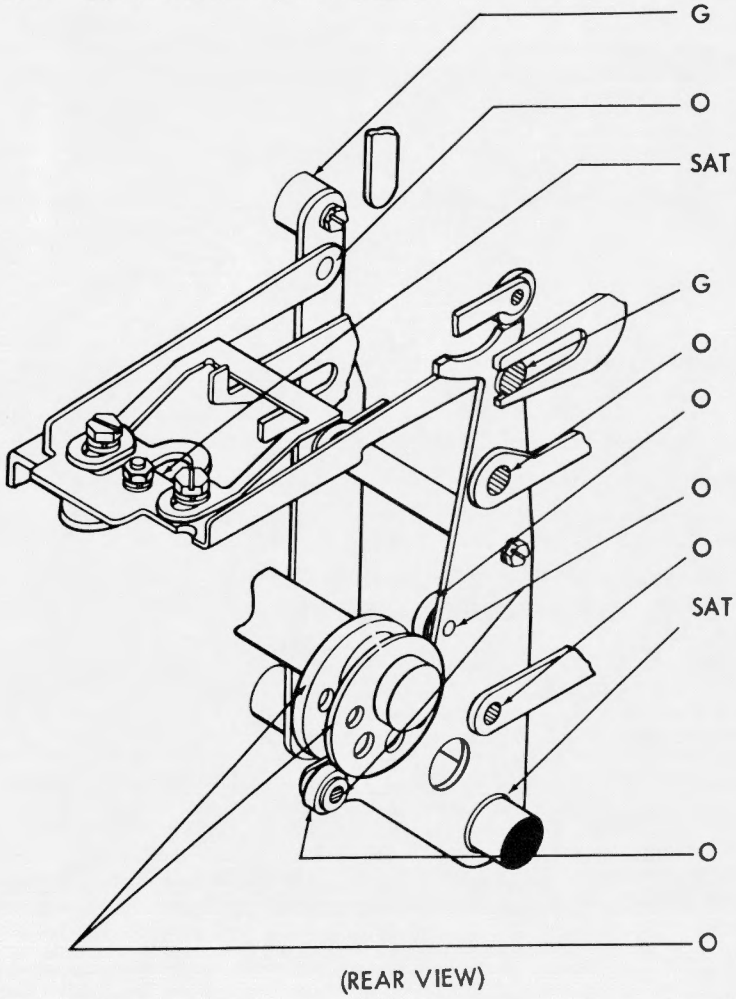
G	TEETH	GEARS
G	CAMMING SURFACES	FUNCTION CAM
O2	BEARING SURFACES	BALL BEARINGS (2)
06	* FUNCTION CAM NEEDLE BEARING SLEEVE (3)	BOTH ENDS OF SLEEVE AND OIL HOLE IN SLEEVE
O	CAMMING SURFACE	CLUTCH CAM DISK
O	BEARING SURFACE	FUNCTION CLUTCH DRUM
O2	BEARING SURFACES	BALL BEARINGS (2)
G	TEETH	GEAR

2.34 PRINTING MECHANISM (TYPING PERFORATOR ONLY)



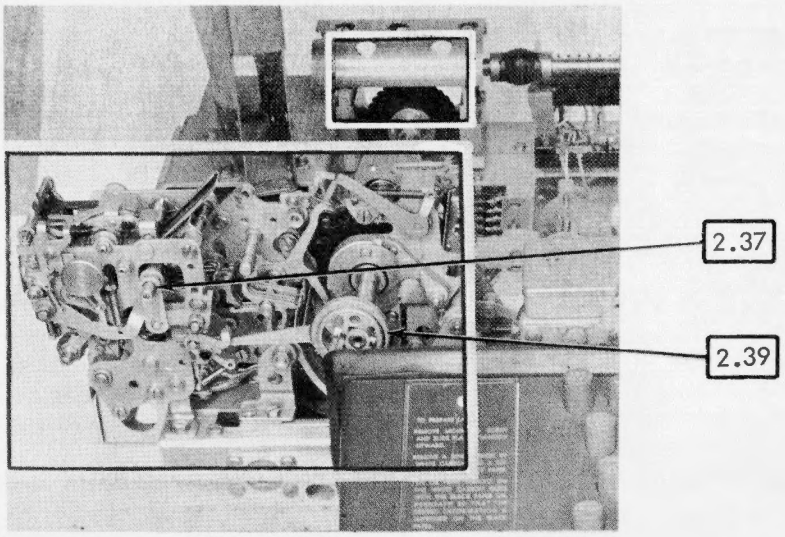
G	CONTACT SURFACE	PRINTING LATCH
O2	SLIDING SURFACE	PRINTING TRIP LINK
O2	PIVOT POINT	PRINTING LATCH
O2	PIVOT POINTS	PRINT HAMMER
O	HOOKS - EACH END	PRINT HAMMER SPRING
O	HOOKS - EACH END	HAMMER ACCELERATOR SPRING
O	HOOKS - EACH END	PRINTING LATCH SPRING
O	PIVOT POINT	PRINTING DRIVE LINK
O	HOOKS - EACH END	PRINTING TRIP LINK SPRING
O	PIVOT POINTS (2)	PRINTING PIVOT ARM

2.35 ROCKER BAIL MECHANISM (TYPING PERFORATOR ONLY)



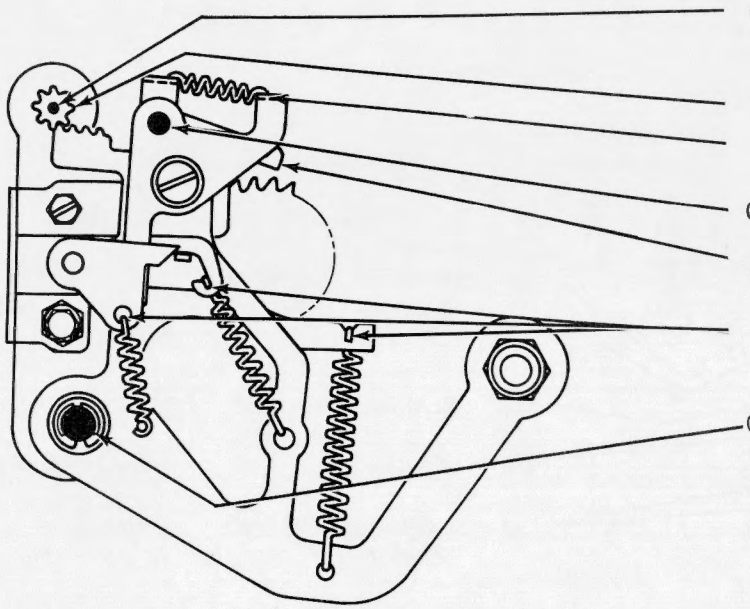
G	CONTACT SURFACE	RIBBON FEED ECCENTRIC STUD
O	PIVOT POINTS	PUSH BAR OPERATING BLADE
SAT	SLIDING SURFACE (FELT WASHER UNDER BLADE)	PUSH BAR OPERATING BLADE
G	PIVOT POINT	CORRECTING DRIVE LINK
O	PIVOT POINT	OSCILLATING DRIVE LINK
O	ROLLER SURFACE	CAM FOLLOWER ROLLER (UPPER AND LOWER)
O	PIVOT POINTS	CAM FOLLOWER ROLLERS
O	PIVOT POINT	PRINTING DRIVE LINK
SAT	PIVOT POINT (FELT STRIP)	ROCKER BAIL
O	ROLLER SURFACE	CAM FOLLOWER ROLLER
O	CONTACT SURFACE	FUNCTION CAM

2.36 MANUAL AND POWER DRIVE BACKSPACE MECHANISM FOR CHADLESS TAPE
NOTE: REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION.



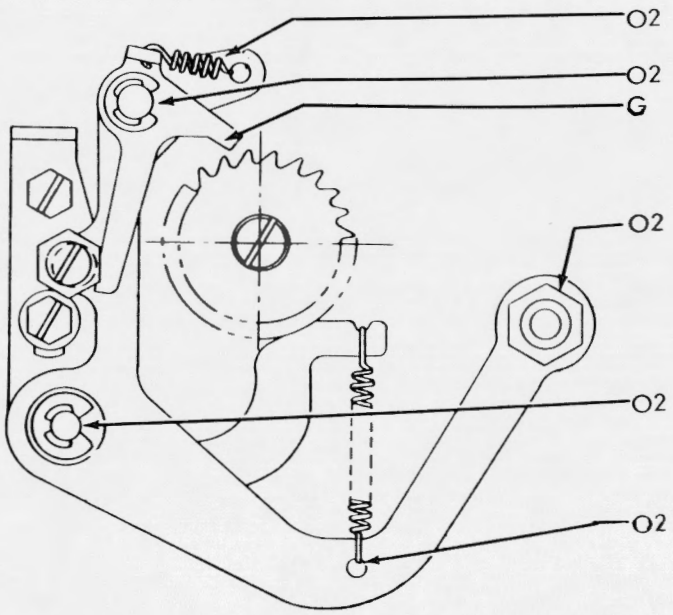
(FRONT VIEW)

2.37 MANUAL AND POWER DRIVE BACKSPACE MECHANISM FOR CHADLESS TAPE



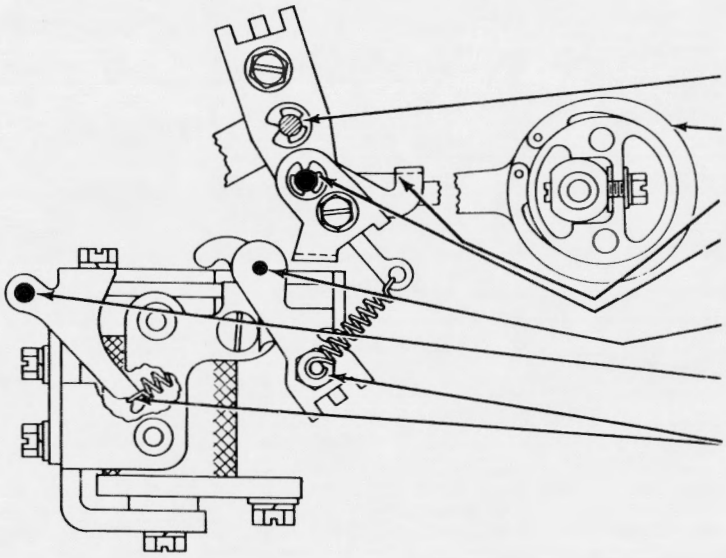
02	BEARING SURFACE (REAR)	RAKE SHAFT
G	GEAR TEETH	GEAR SEGMENT
0	HOOKS-EACH END	PAWL SPRING
02	BEARING SURFACE	FEED PAWL
G	CONTACT SURFACE	FEED PAWL
0	HOOKS-EACH END (3 SPRINGS)	SPRING
02	BEARING SURFACE	BELL CRANK

2.38 MANUAL AND POWER DRIVE BACKSPACE MECHANISM FOR FULLY PERFORATED TAPE



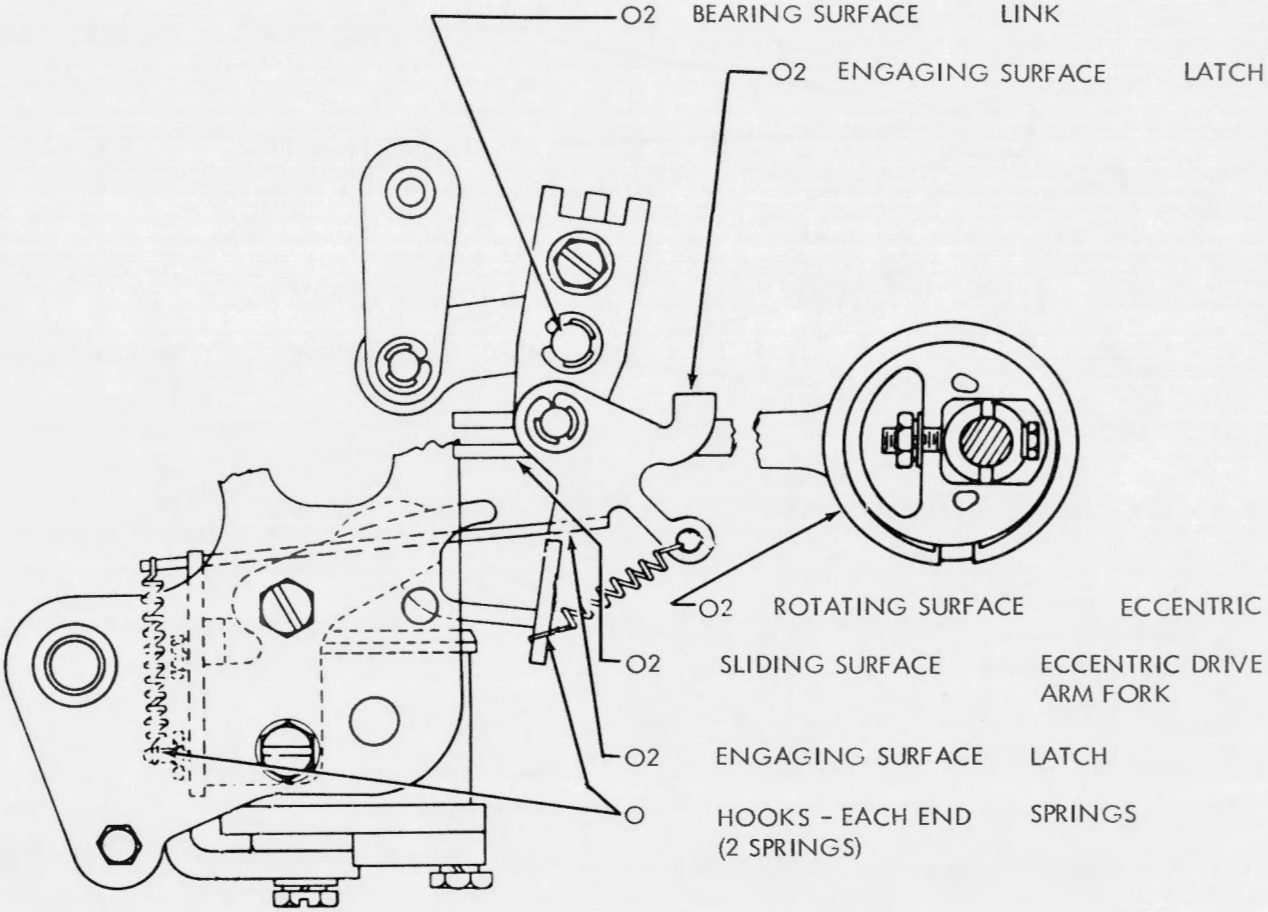
O2	HOOKS - EACH END	BACKSPACE PAWL SPRING
O2	BEARING SURFACE	BACKSPACE PAWL
G	FEEDING SURFACE	BACKSPACE PAWL
O2	BEARING SURFACE	NUT, SHOULDER
O2	BEARING SURFACE	BELL CRANK
O2	HOOKS - EACH END	BELL CRANK SPRING

2.39 POWER DRIVE BACKSPACE MECHANISM (EARLY DESIGN)

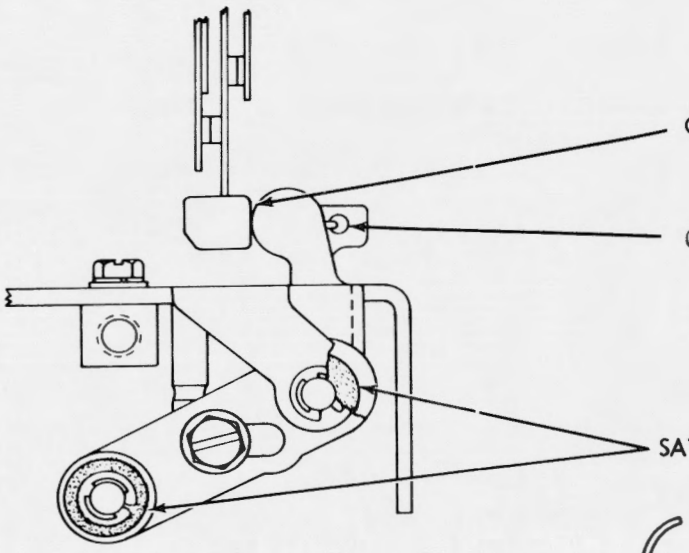


02	BEARING SURFACE	LINK
02	ROTATING SURFACE	ECCENTRIC
02	ENGAGING SURFACE	LATCH
02	SLIDING SURFACE	ECCENTRIC DRIVE ARM FORK
02	BEARING SURFACE	ARM
02	BEARING SURFACE	ARMATURE BAIL
0	HOOKS-EACH END (2 SPRINGS)	SPRINGS

2.40 POWER DRIVE BACKSPACE MECHANISM (LATEST DESIGN)

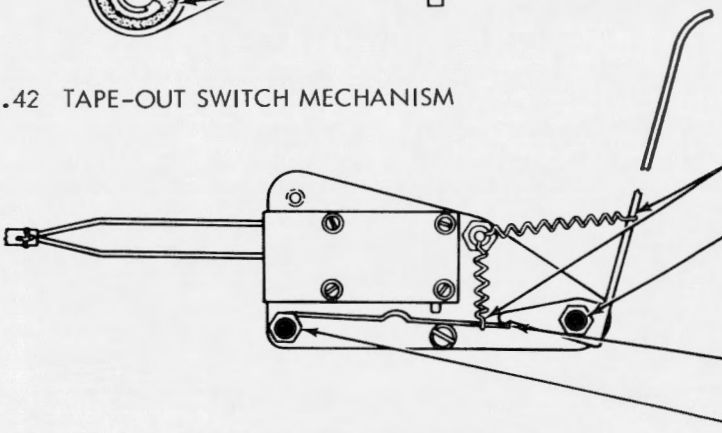


2.41 SINGLE AUXILIARY TIMING CONTACTS MECHANISM



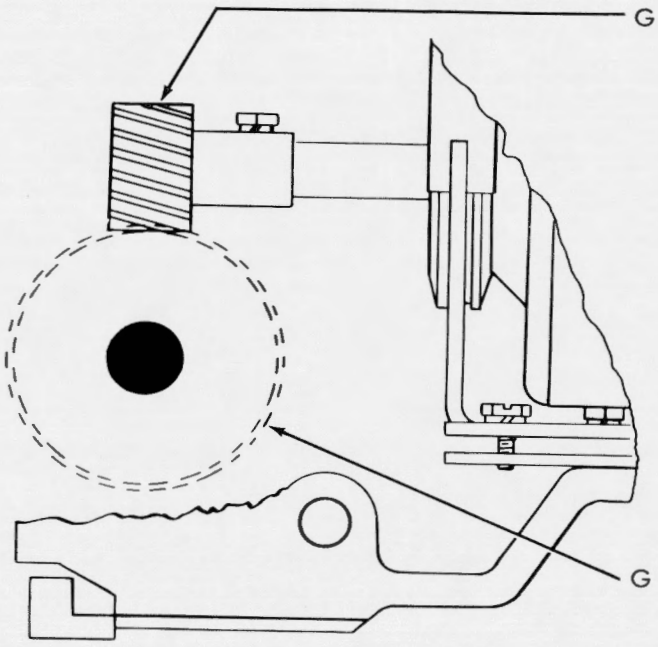
G	CONTACT SURFACE	CONTACT BAIL
0	HOOKS-EACH END	SPRING
SAT	FELT WASHERS	ARM AND CONTACT BAIL

2.42 TAPE-OUT SWITCH MECHANISM



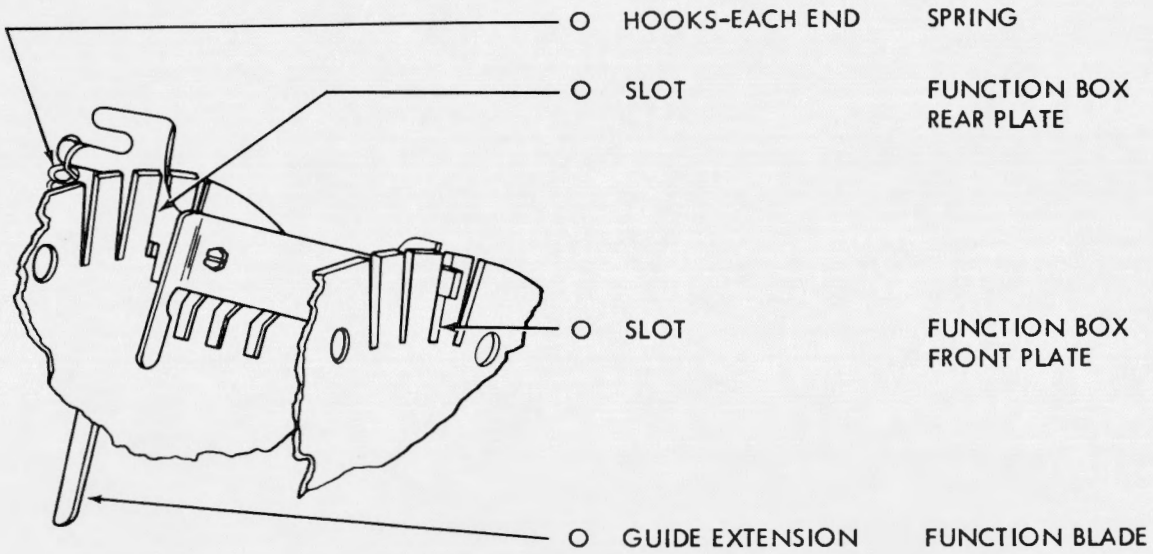
0	HOOKS-EACH END (2 SPRINGS)	SPRINGS
0	BEARING SURFACE (FRONT AND REAR)	TAPE LEVER
G	CONTACT SURFACE	SWITCH LEVER
0	BEARING SURFACE	SWITCH LEVER

2.43 PERFORATOR GEAR AND MOTOR PINION

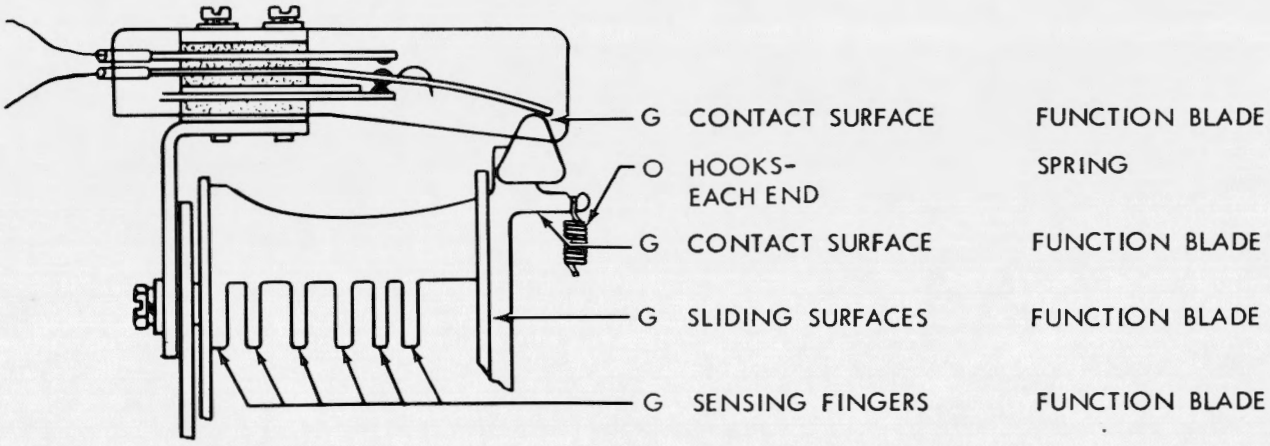


G	GEAR TEETH	REPERFORATOR MOTOR PINION
G	GEAR TEETH	DRIVEN GEAR

2.44 UNSHIFT ON SPACE MECHANISM



2.45 SIGNAL BELL CONTACT MECHANISM



(RIGHT SIDE VIEW)

28 TYPING REPERFORATOR AND TAPE PRINTER

LUBRICATION

CONTENTS PAGE

1. GENERAL

1.01 This section contains the lubrication procedures for the 28 typing reperforator and tape printer units. The section has been revised to include recent engineering changes and additions and to rearrange the text, so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 The figures indicate points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the units just prior to placing them in service. After a few weeks in service, relubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:

OPERATING SPEEDS IN WORDS PER MINUTE	LUBRICATION INTERVAL
60	3000 hours or 1 year*
75	2400 hours or 9 months*
100	1500 hours or 6 months*

*Whichever occurs first.

1.03 Use TP88970 (KS7470) oil at all locations where the use of oil is indicated. Use TP88973 (KS7471) grease on all surfaces where grease is indicated. If the function cam needle bearings are disassembled at any time, repack the bearings with TP195298 grease (Beacon 325 grease or its equivalent).

1.04 All spring wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Over lubrication, however, which will permit oil or grease to drip or be thrown on other parts, should be avoided. Take special care to prevent oil or grease from getting between armatures and pole faces or between electrical contact points. Pull a piece of "BOND" paper between the armature and the pole pieces to remove any oil or foreign matter that may be present. Make certain that no lint or pieces of paper remain between the pole pieces and armature.

1.05 Apply a thick film of grease to all gears.

1.06 Apply oil to all cams, including the camming surfaces of each clutch disc.

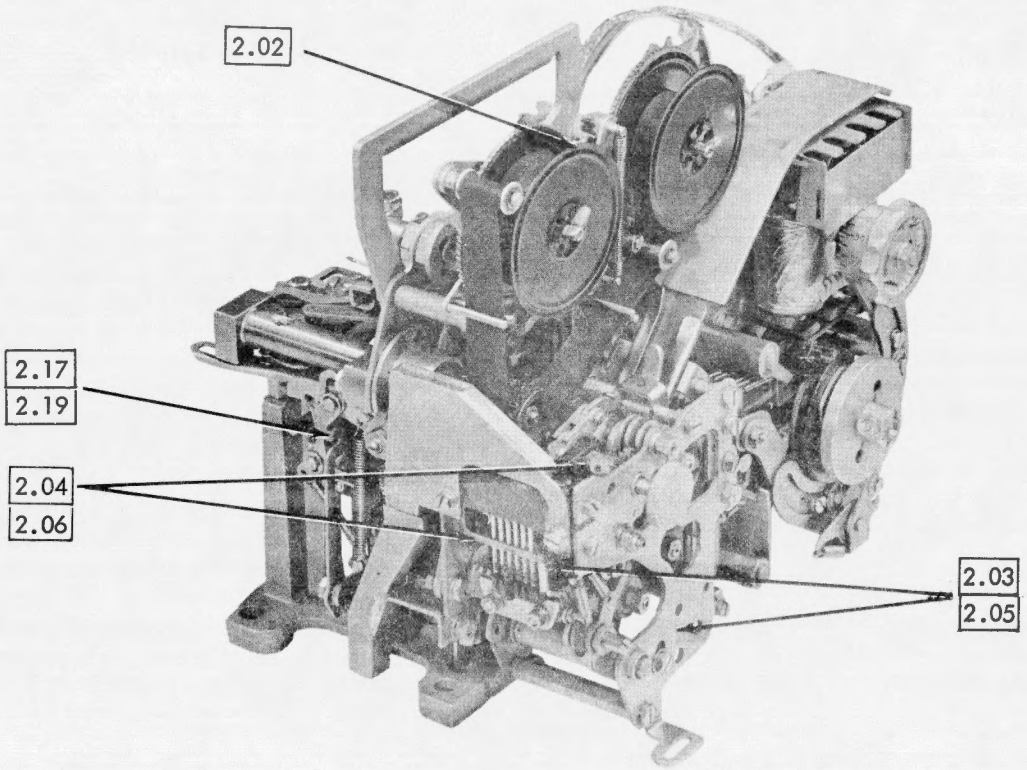
1.07 The photographs show the paragraph numbers referring to particular line drawings of mechanisms and where these mechanisms are located on the unit. Parts in the line drawings are shown in an upright position unless otherwise specified.

1.08 The illustration symbols indicate the following lubrication directions:

O1	Apply 1 drop of oil.
O2	Apply 2 drops of oil.
O3	Apply 3 drops of oil, etc.
G	Apply thin film of grease.
SAT	Saturate (felt oilers, washers, wicks) with oil.

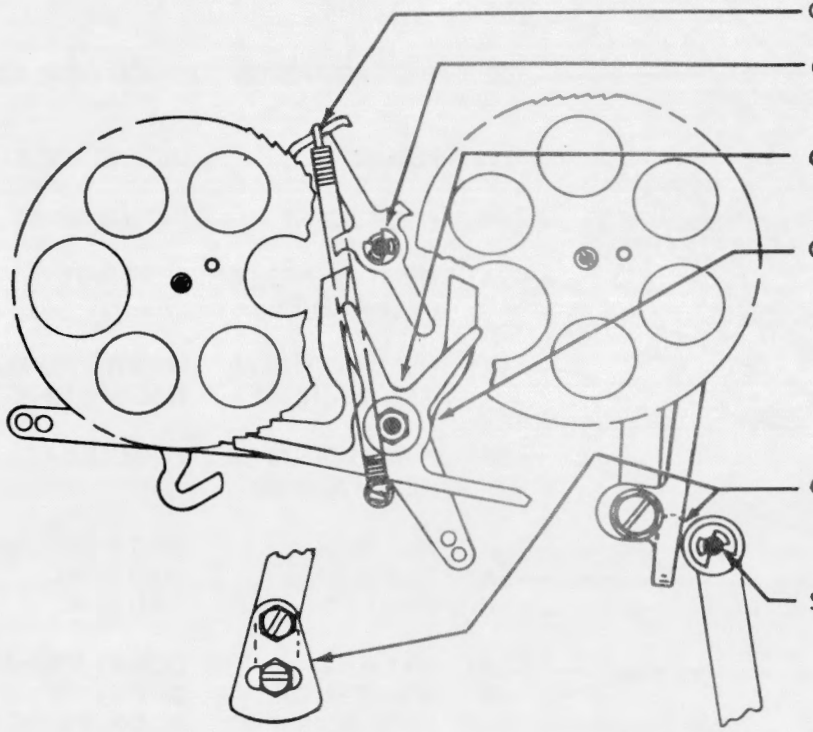
2. BASIC UNITS

2.01 Typing Reperforator Unit



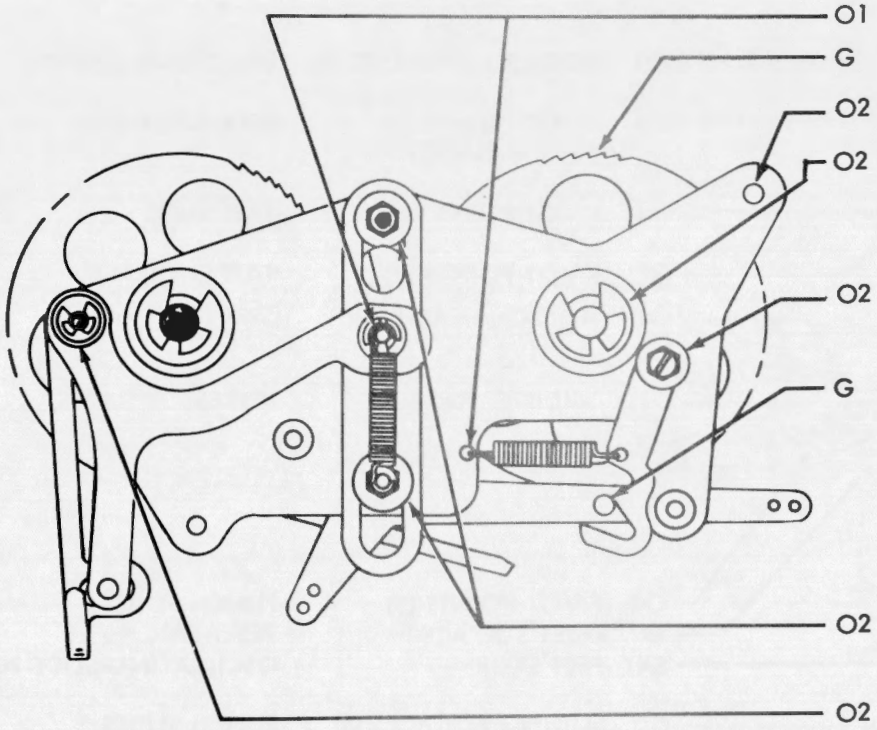
2.02 Ribbon Feed Mechanism (Later Design)

(For Earlier Design
See Part 4.)



O1	HOOKS (2)	SPRING
O2	PIVOT POINT	FEED PAWL
O2	PIVOT	CHECK PAWL
O2	PIVOT POINTS (2)	REVERSING ARM
G	CONTACTING SURFACE	DRIVE ARM ADJUSTABLE EXTENSION
SA1	FELT WASHER	DRIVE ARM ROLLER

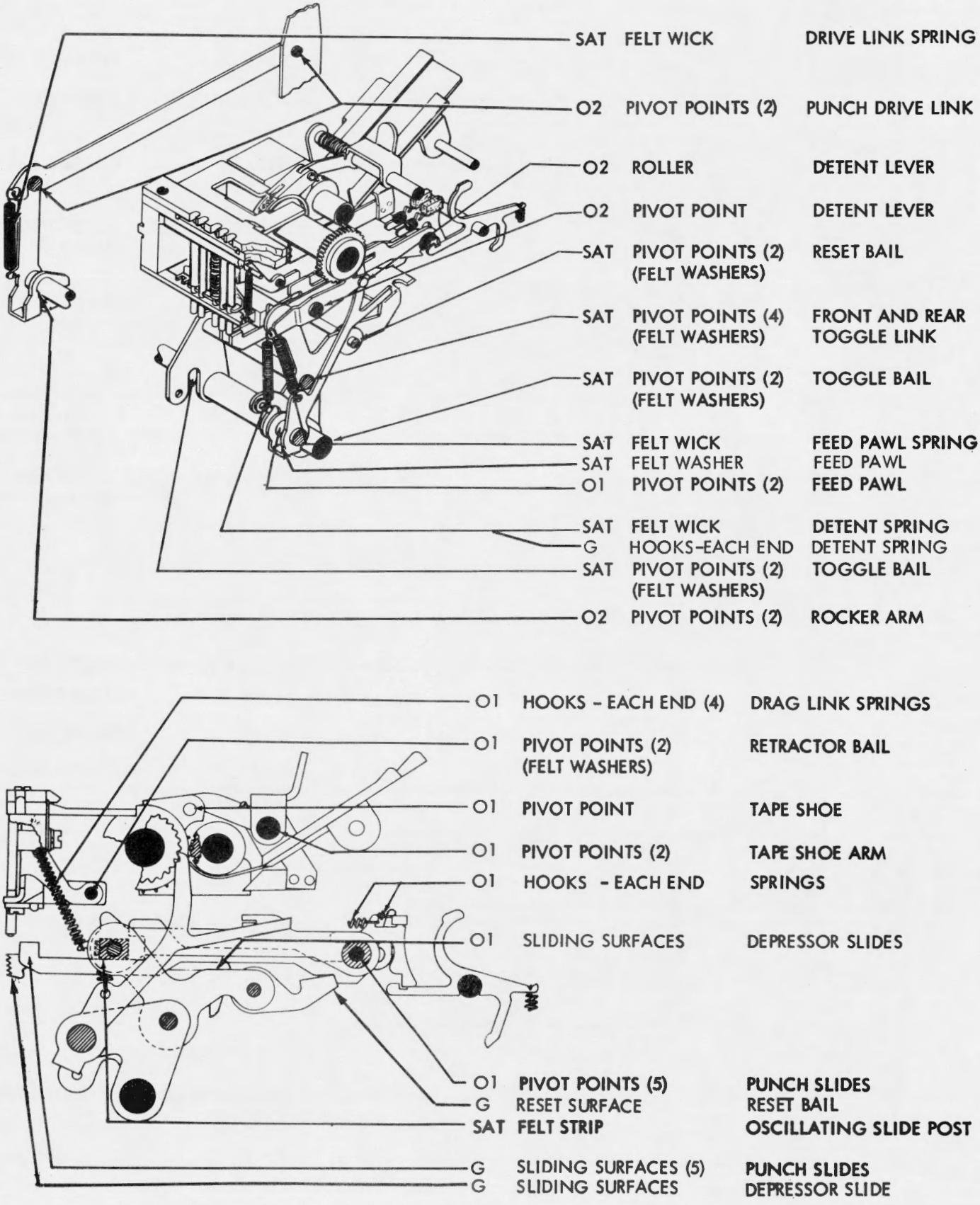
(FRONT VIEW)



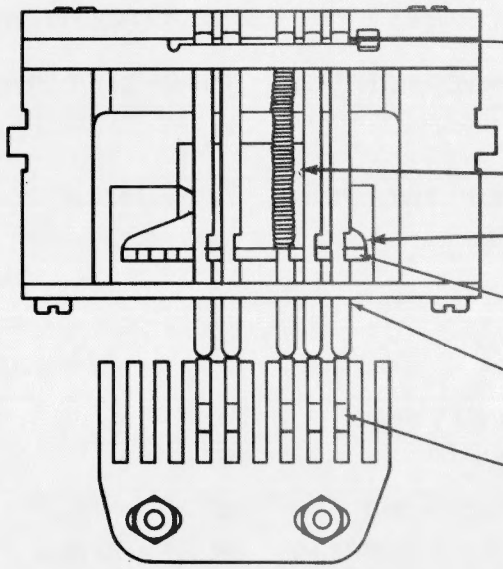
O1	HOOKS (2)	SPRINGS (2)
G	TEETH	RATCHET WHEEL
O2	SHAFT	ROLLERS (2)
O2	SHAFT, FELT WASHERS	RATCHET WHEEL (2)
O2	PIVOT	DETENT
G	CONTACTING SURFACES	DETENT
O2	UPPER AND LOWER BUSHING	SLIDE LEVER
O2	PIVOT	DRIVE ARM

(REAR VIEW)

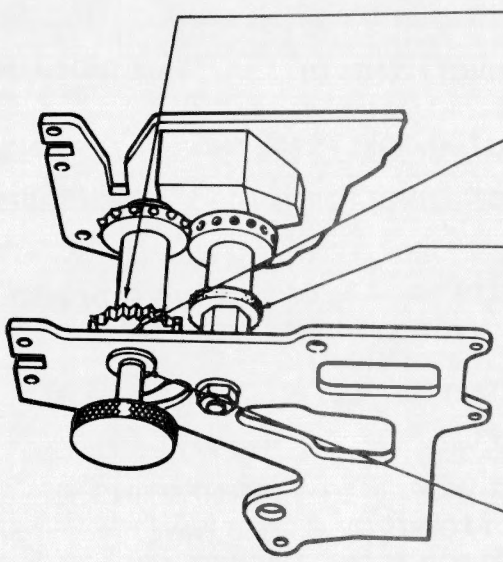
2.03 Punch Mechanism for Chadless Tape



2.04 Punch Mechanism for Chadless Tape continued

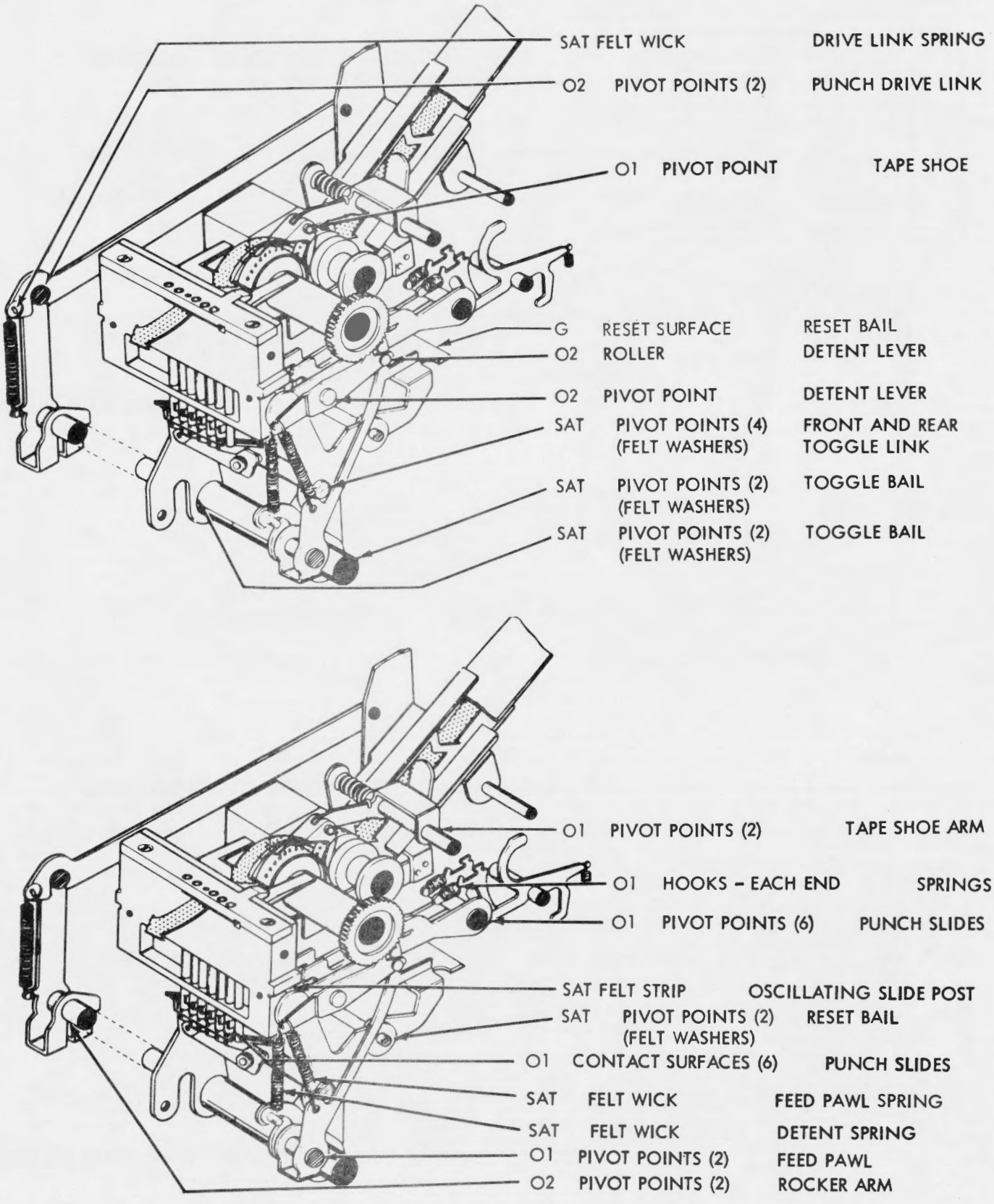


O1	SLIDING SURFACE (5) (UPPER GUIDE)	PUNCH PIN
O1	SPRING-EACH END	RETRACTOR
O1	PIVOT AND FELTS	RETRACTOR BAIL
G	SLIDING SURFACE (5) (RETRACTOR NOTCH)	PUNCH PIN
O1	SLIDING SURFACE (5) (LOWER GUIDE)	PUNCH PIN
O1	SLIDING SURFACE (5)	PUNCH SLIDE GUIDE

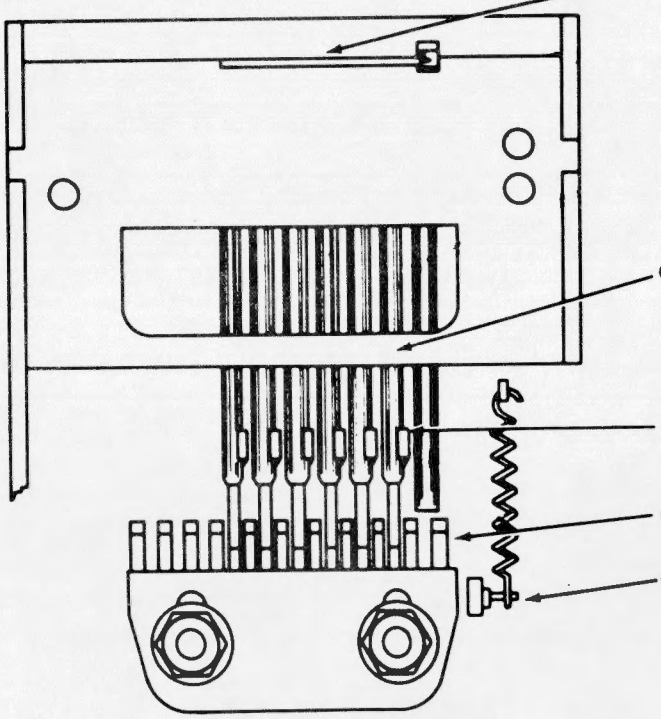


G	RATCHET TEETH	FEED WHEEL
O2	OIL HOLE	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	DIE WHEEL
O2	PIVOT POINTS (2)	HANDWHEEL BEARING

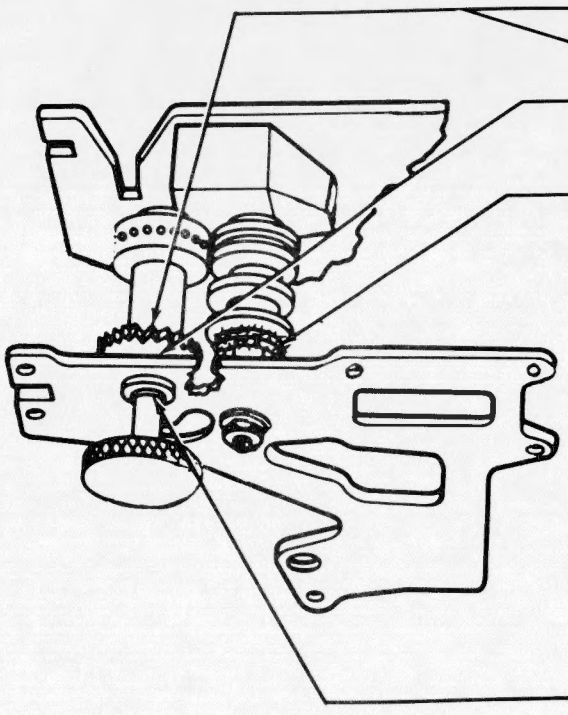
2.05 Punch Mechanism for Fully Perforated Tape



2.06 Punch Mechanism for Fully Perforated Tape continued

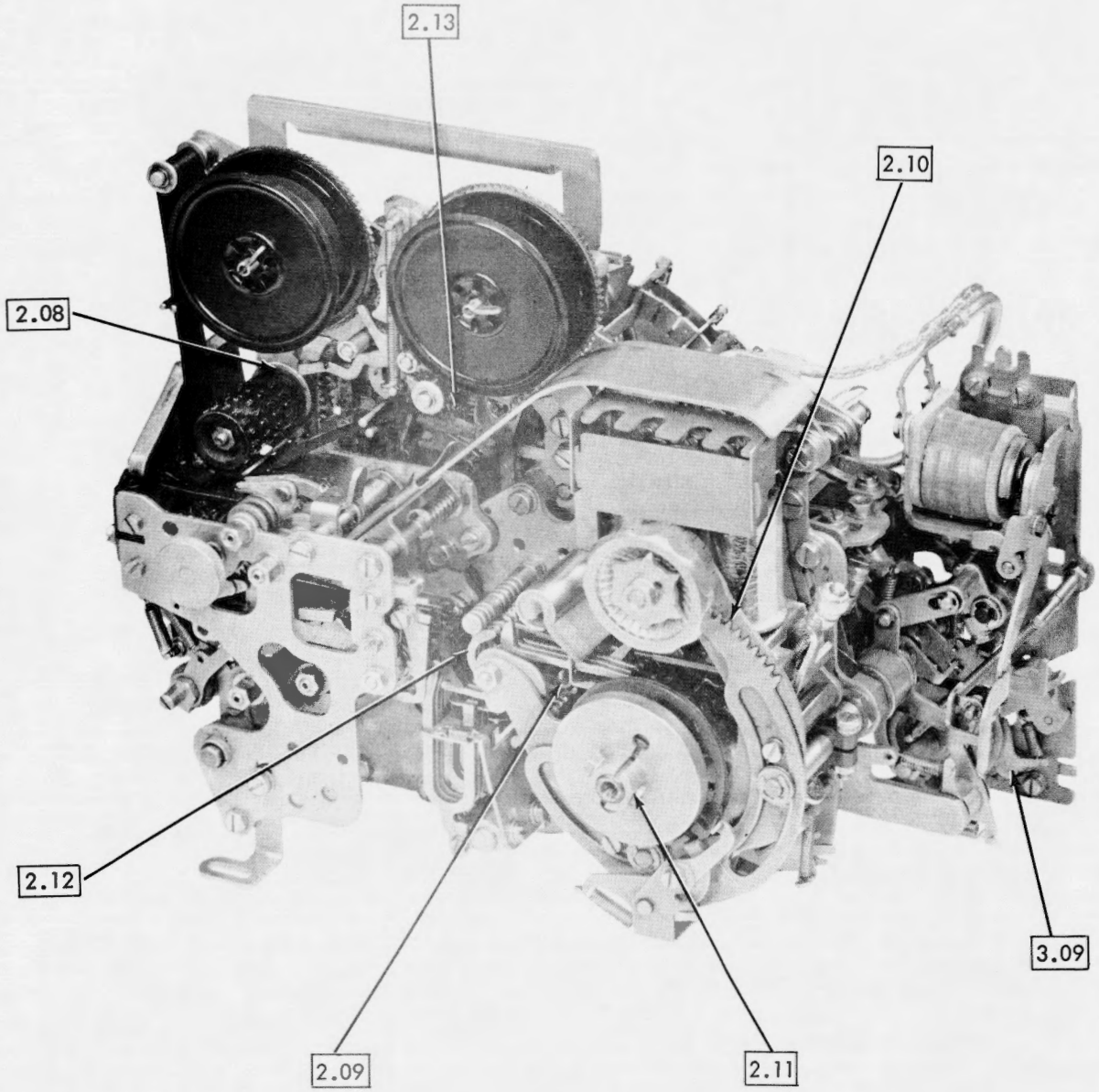


O1 SLIDING SURFACE (6) (UPPER GUIDE)		PUNCH PIN
O1 SLIDING SURFACE (6) (LOWER GUIDE)		PUNCH PIN
O1 SLIDING SURFACE (6)		PUNCH PIN
O1 SLIDING SURFACE (6)		PUNCH SLIDE GUIDE
O1 HOOKS-EACH END		SPRING

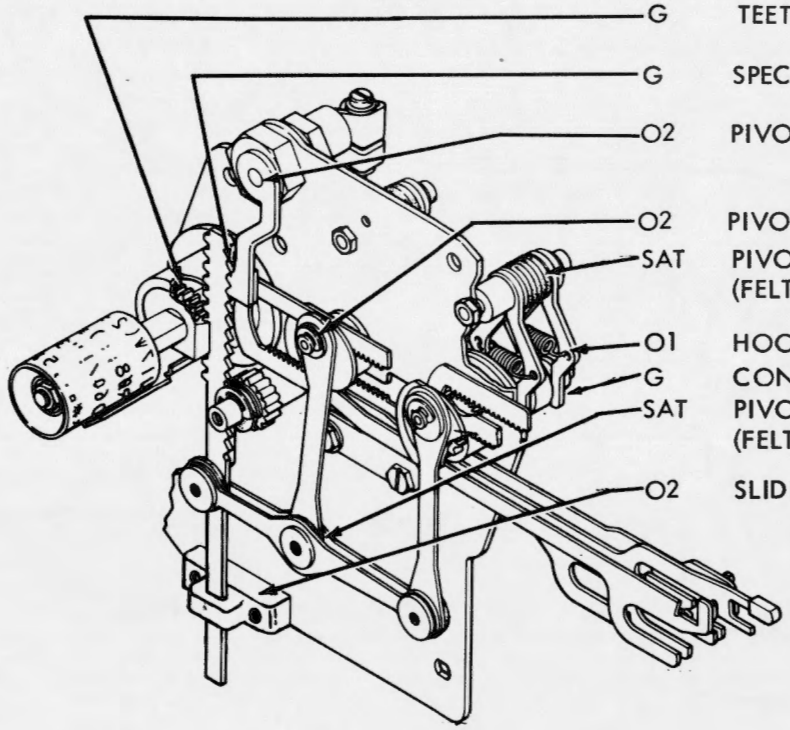


G	RATCHET TEETH	FEED WHEEL
O2	OIL HOLE	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	DIE WHEEL
O2	PIVOT POINTS (2)	HANDWHEEL BEARING

2.07 Typing Reperforator Unit

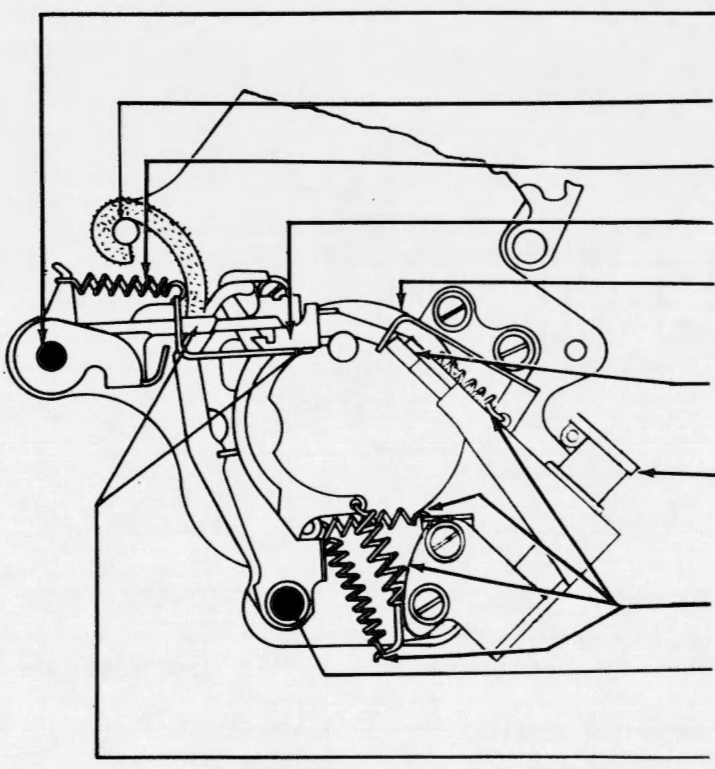


2.08 Rotary Positioning Mechanism



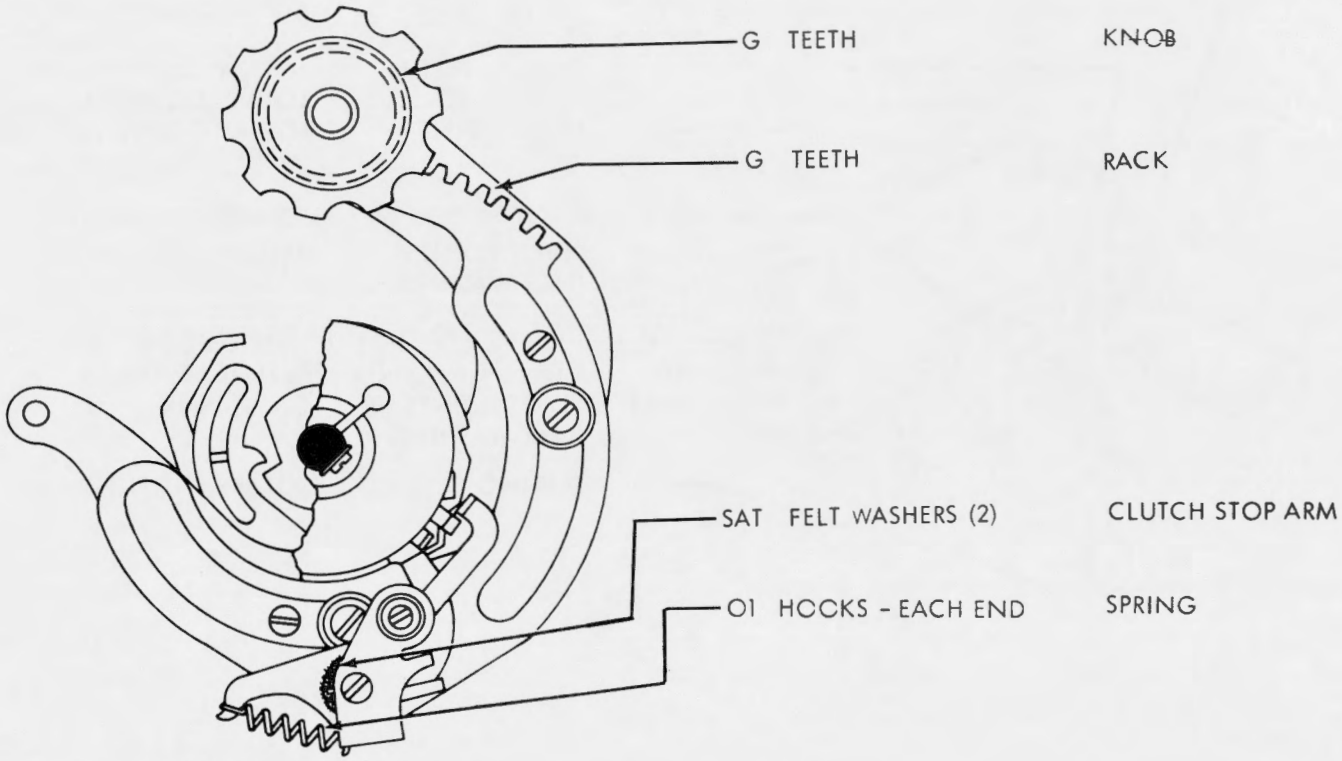
G	TEETH	ROTARY OUTPUT RACK	
G	SPECIAL TEETH	ROTARY OUTPUT RACK ROTARY CORRECTING LEVER	
O2	PIVOT POINT	ROTARY CORRECTING LEVER SHAFT	
O2	PIVOT POINTS (2)	CONNECTING RODS	
SAT	PIVOT POINTS (FELT WASHERS)	DETENT LEVERS (8)	
O1	HOOKS - EACH END	SPRINGS (4)	
G	CONTACT POINTS	DETENT LEVERS (8)	
SAT	PIVOT POINTS (3) (FELT WASHERS)	CROSS LINKS	
O2	SLIDING SURFACE	ROTARY OUTPUT RACK	

2.09 Selector Mechanism



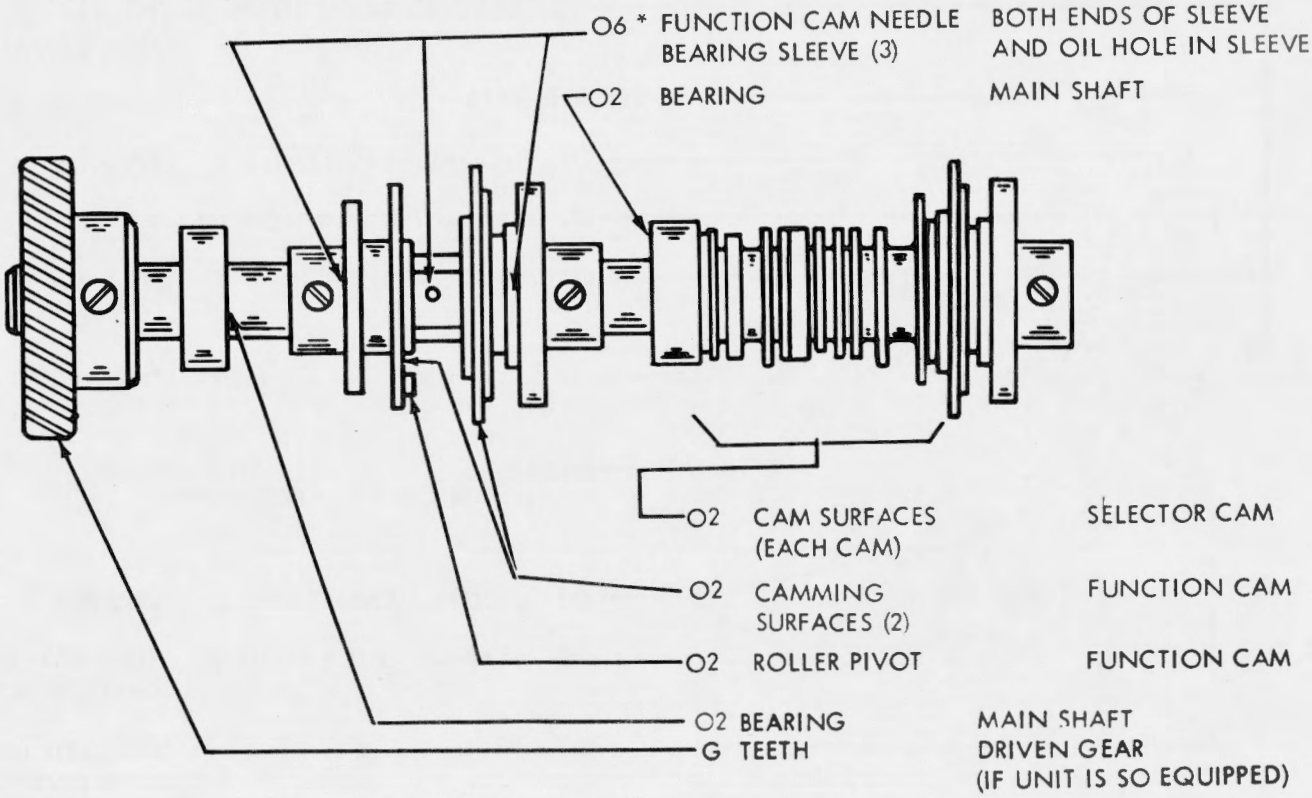
O2	BEARING GUIDE SLOTS (5)	PUSH LEVER GUIDE BEARING	
SAT	FELT WICK	SELECTOR WICK	
O1	HOOKS - EACH END (12)	SPRINGS	
O2	ENGAGING SURFACES (5)	PUSH LEVERS	
O2	GUIDE SLOT	MARKING LOCK LEVER	
O2	WICK	LUBRICATOR WICK	
FILL UP (AVOID AIRLOCK)		LUBRICATOR RESERVOIR	
O1	HOOKS - EACH END (12)	SPRINGS	
O2	BEARING GUIDE SLOTS (6)	SELECTOR LEVER GUIDE BEARING	
O2	GUIDE SLOTS	SELECTOR AND PUSH LEVER GUIDE	

2.10 Range Finder Mechanism

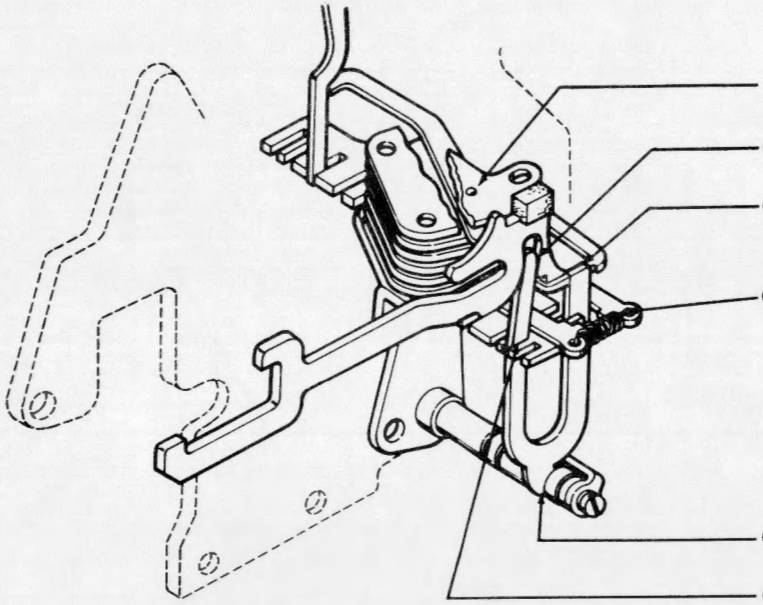


2.11 Main Shaft Mechanism

*IF FUNCTION CAM NEEDLE BEARINGS ARE DISASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE (BEACON 325) (TP195298) OR ITS EQUIVALENT.

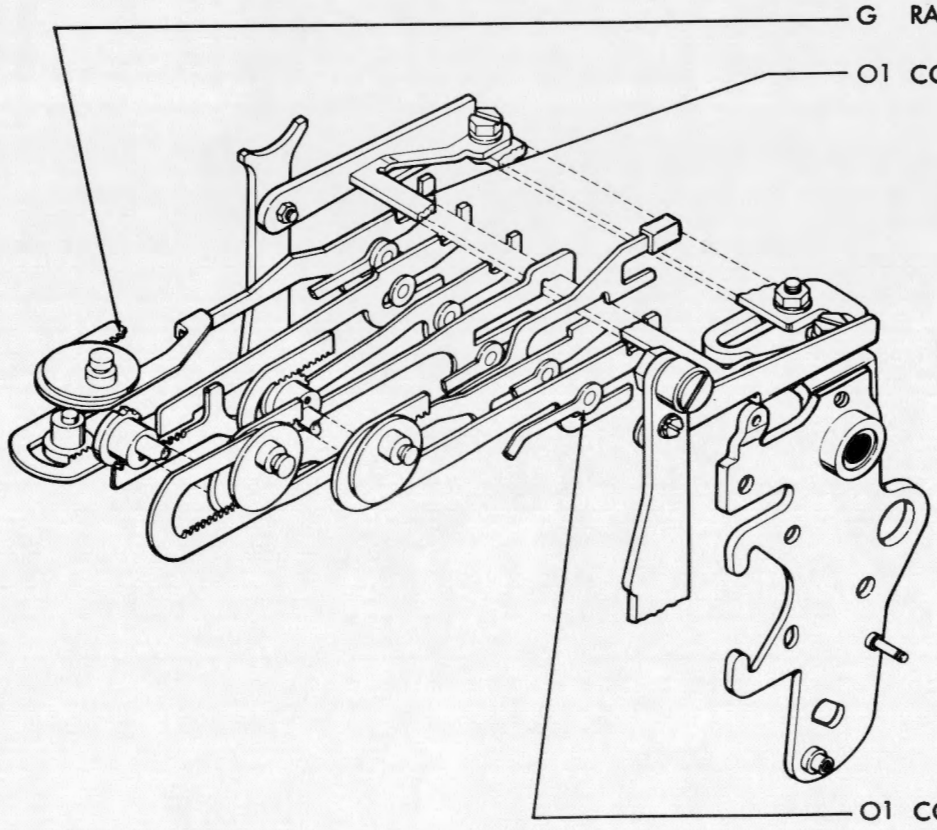


2.12 Transfer Mechanism



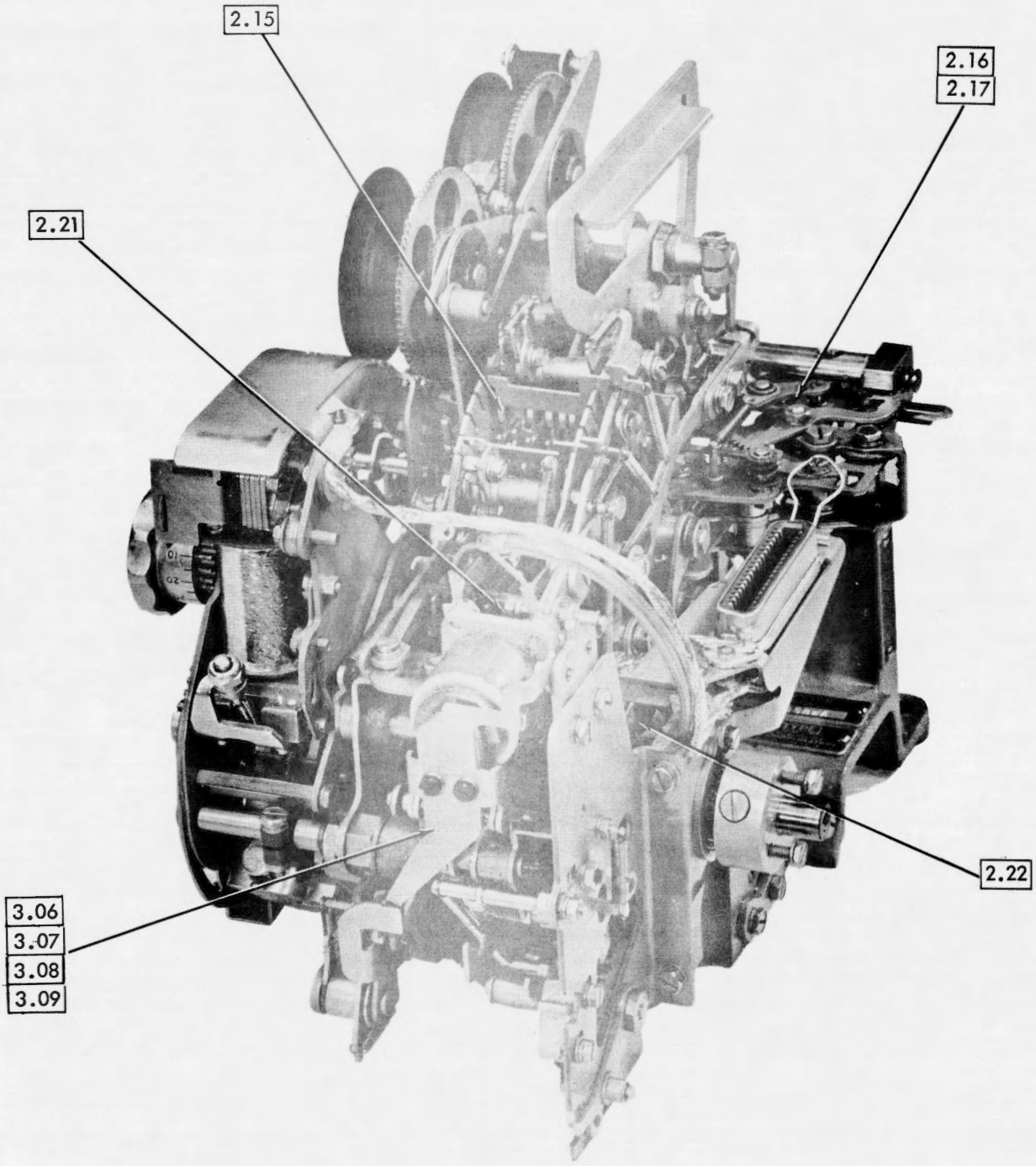
01	PIVOT POINTS (5)	PULSE BEAMS
01	CONTACT SURFACES (5)	TRANSFER LEVERS
01	CONTACT POINTS (5) (EACH END)	PULSE BEAMS
01	HOOKS - EACH END	SPRING
01	PIVOT POINTS (5)	TRANSFER LEVERS
01	SLIDING SURFACES (5) (EACH SIDE)	GUIDE BRACKET

2.13 Push Bars

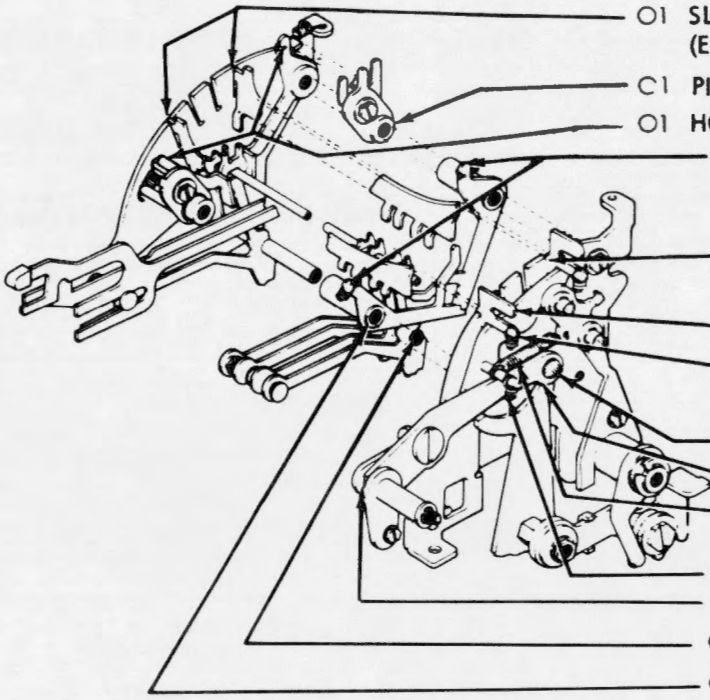


G	RACK TEETH (7)	PUSH BARS
01	CONTACT SURFACES (7)	PUSH BARS
01	CONTACT SURFACES (6)	PUSH BARS

2. 14 Typing Reperforator Unit

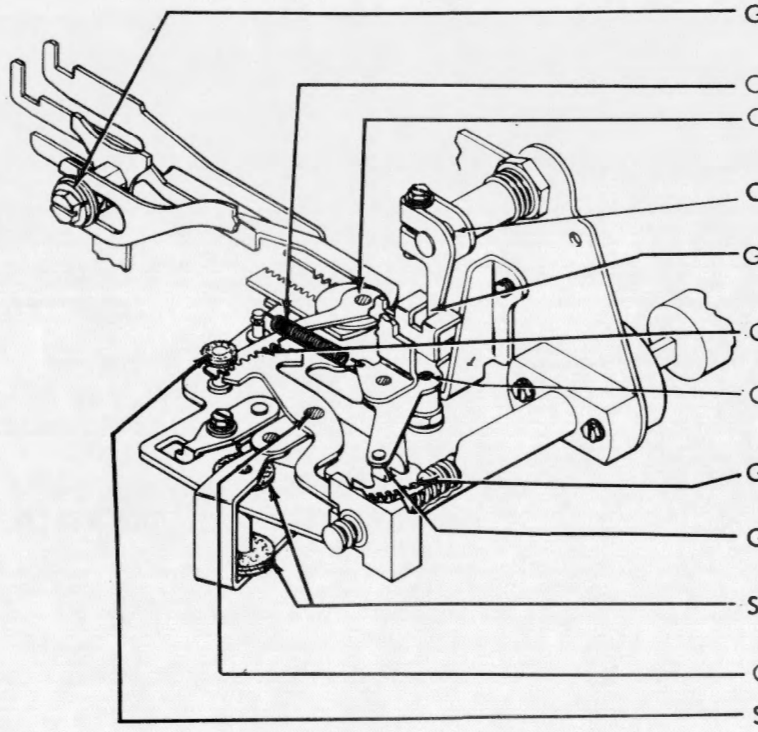


2. 15 Function Box Mechanism



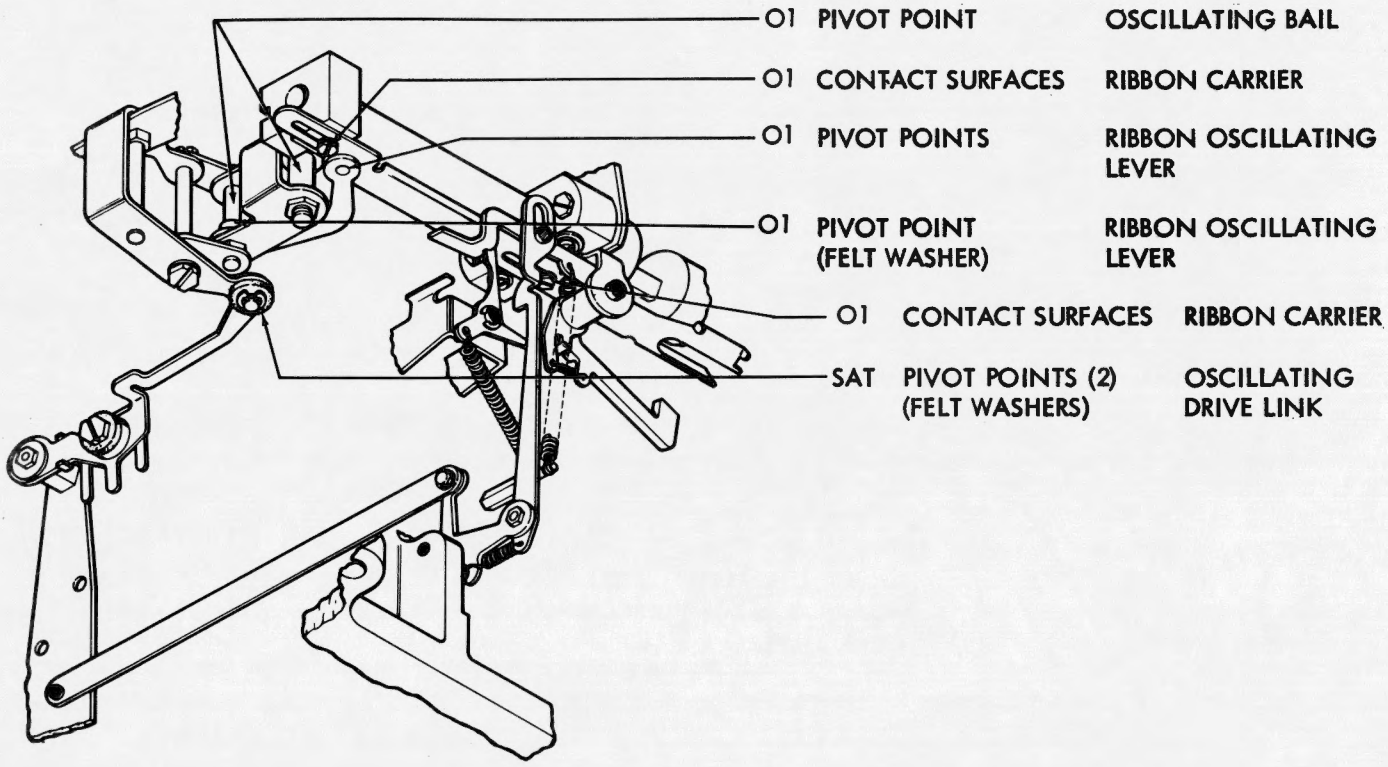
O1	SLIDING SURFACES (EACH SIDE)	FUNCTION BLADES
C1	PIVOT POINTS	FIGURES ARM ASSEMBLY
O1	HOOKS - EACH END (2)	EXTENSION ARM SPRINGS
C1	HOOKS - EACH END (2)	LETTERS AND FIGURES ARM ASSEMBLY SPRINGS
O1	SLIDING SURFACES (EACH SIDE)	FUNCTION BLADES
G	CONTACT POINTS (2)	FUNCTION BLADES
O1	HOOKS - EACH END	FUNCTION BLADE SPRINGS (2)
O1	PIVOT POINT	LIFTER ROLLER
G	ROLLER SURFACE	LIFTER ROLLER
O1	HOOKS - EACH END	LIFTER TOGGLE LINK SPRING
O1	HOOKS - EACH END	LIFTER SPRING
O1	PIVOT POINT	FUNCTION BLADE LIFTER
O1	PIVOT POINTS (6)	BELL CRANKS
O1	PIVOT POINTS	LETTERS ARM ASSEMBLY EXTENSION

2. 16 Axial Positioning Mechanism



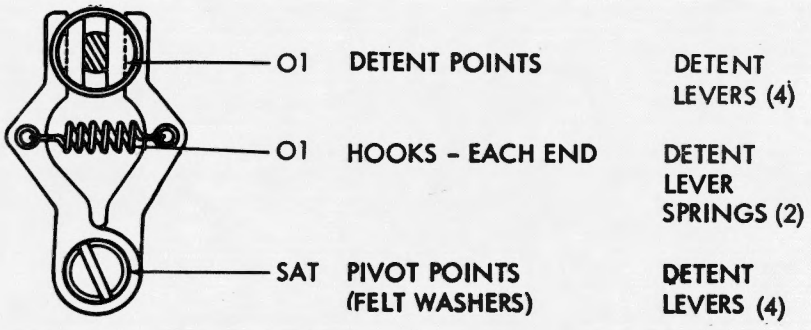
G	SLIDING GUIDE SURFACES	CORRECTING DRIVE LINK
O1	HOOKS - EACH END	SPRING
O1	PIVOT POINT	AXIAL OUTPUT RACK
O2	PIVOT POINT	ROTARY CORRECTING LEVER SHAFT
G	CONTACT POINTS	ROTARY CORRECTING CLAMP
G	TEETH	AXIAL SECTOR AXIAL OUTPUT RACK
O1	PIVOT POINT	AXIAL CORRECTING PLATE
G	TEETH	AXIAL SECTOR TYPEWHEEL SHAFT
G	CONTACT SURFACE	AXIAL CORRECTING PLATE ROLLER
SAT	PIVOT POINTS (FELT WASHERS)	OSCILLATING DRIVE BAIL
O1	PIVOT POINT	AXIAL SECTOR
SAT	PIVOT POINT (FELT WASHER)	GUIDE ROLLER

2.17 Axial Positioning Mechanism continued (Left Side View)

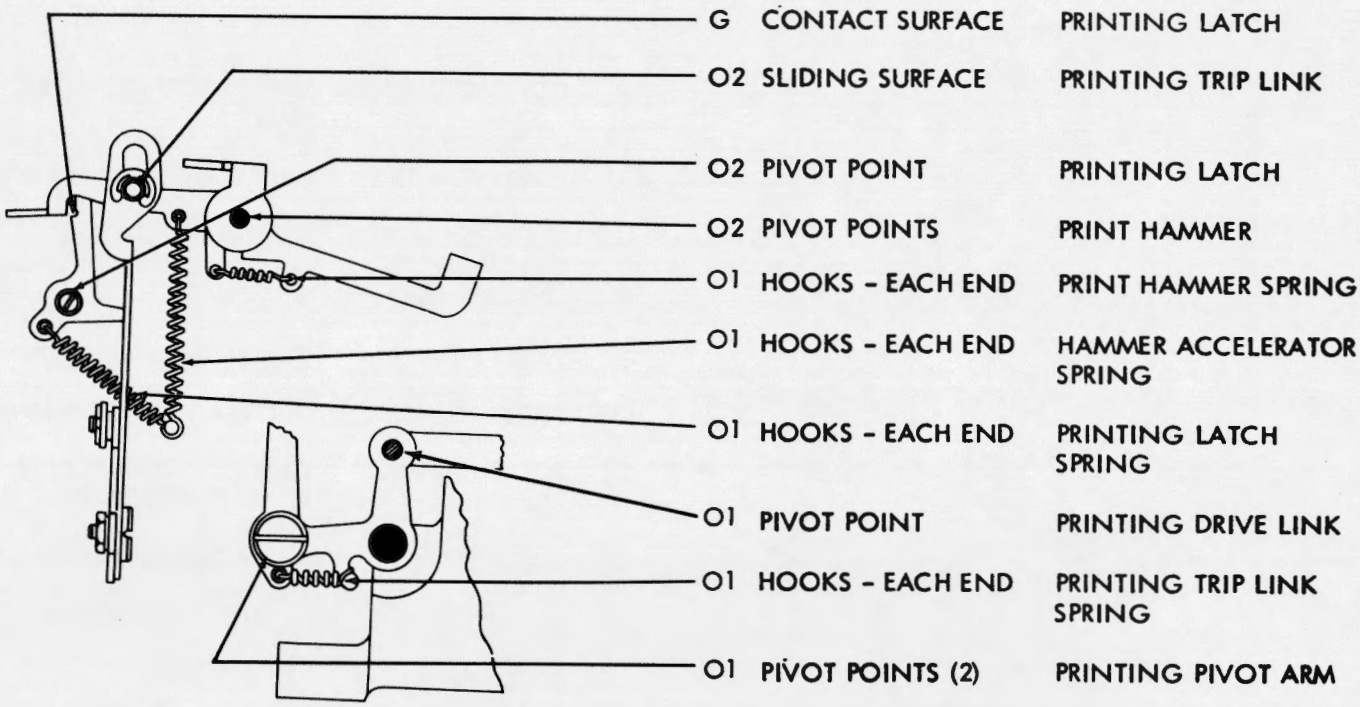


2.18 Detent Assemblies (Bottom View)

NOTE: THERE ARE TWO DETENT ASSEMBLIES ON THE AXIAL POSITIONING MECHANISM.

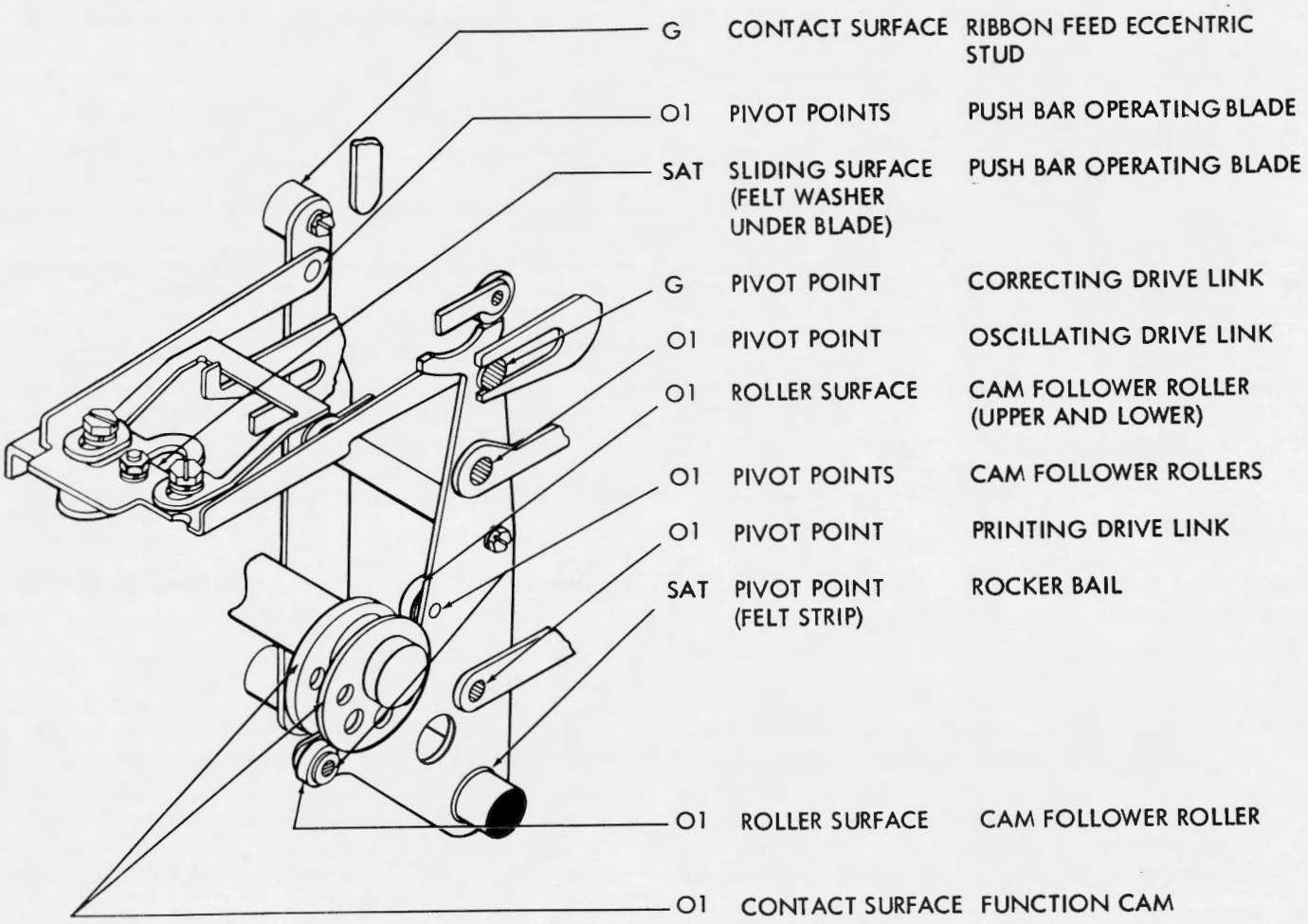


2.19 Printing Mechanism With Steel Print Hammer (Left Side View)

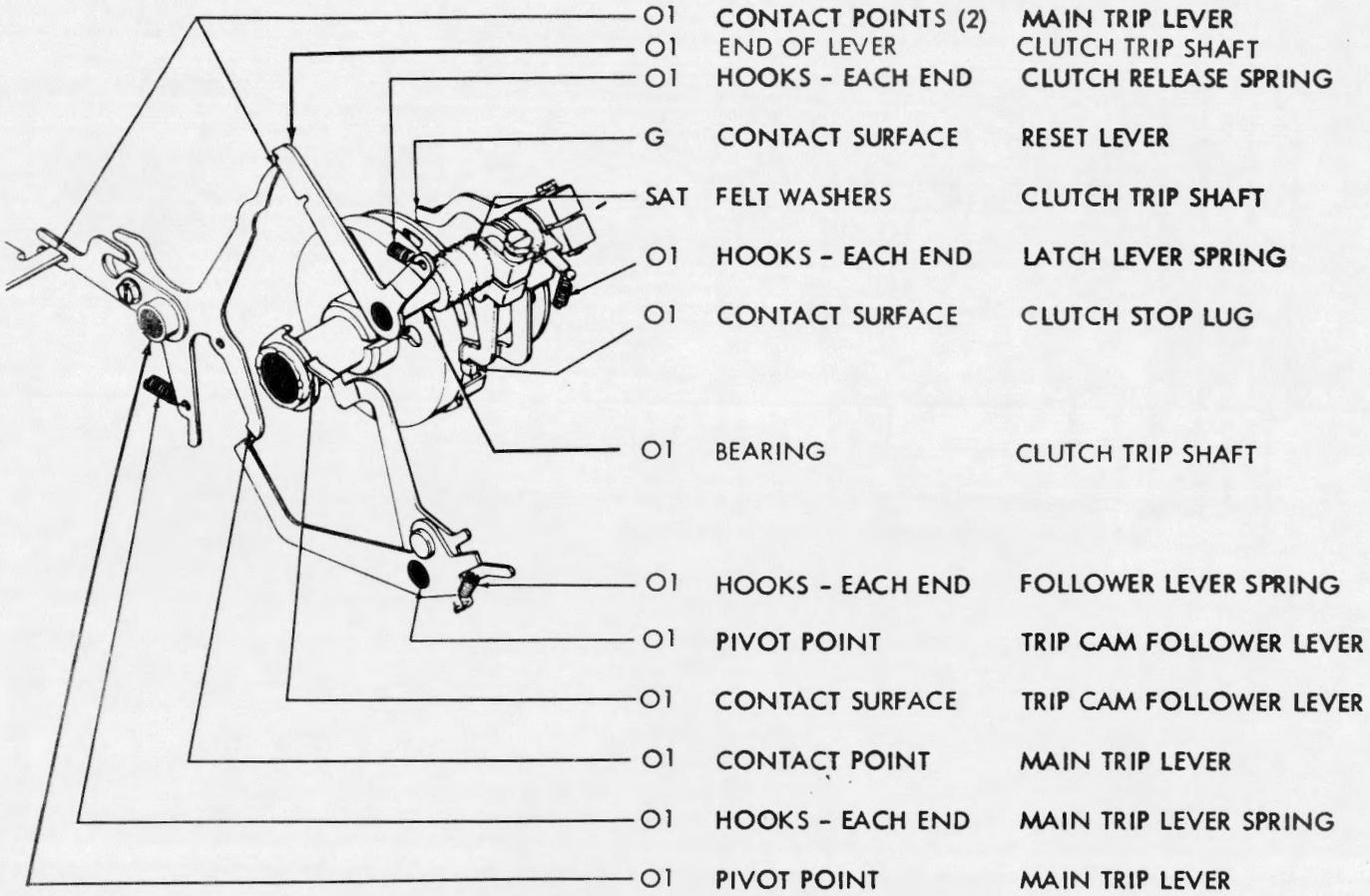


2.20 Printing Mechanism With Resilient Print Hammer (Left Side View): The printing mechanism with resilient print hammer (not illustrated) shall be lubricated in the same manner as the steel print hammer shown in 2.19 but in addition, the felt washer between the resilient print hammer accelerator and the frame shall be saturated with oil in accordance with general lubrication procedures. Where a mechanism is equipped with print suppression parts, a thin film of grease shall be applied on print hammer stop at the point of contact with the print hammer lever.

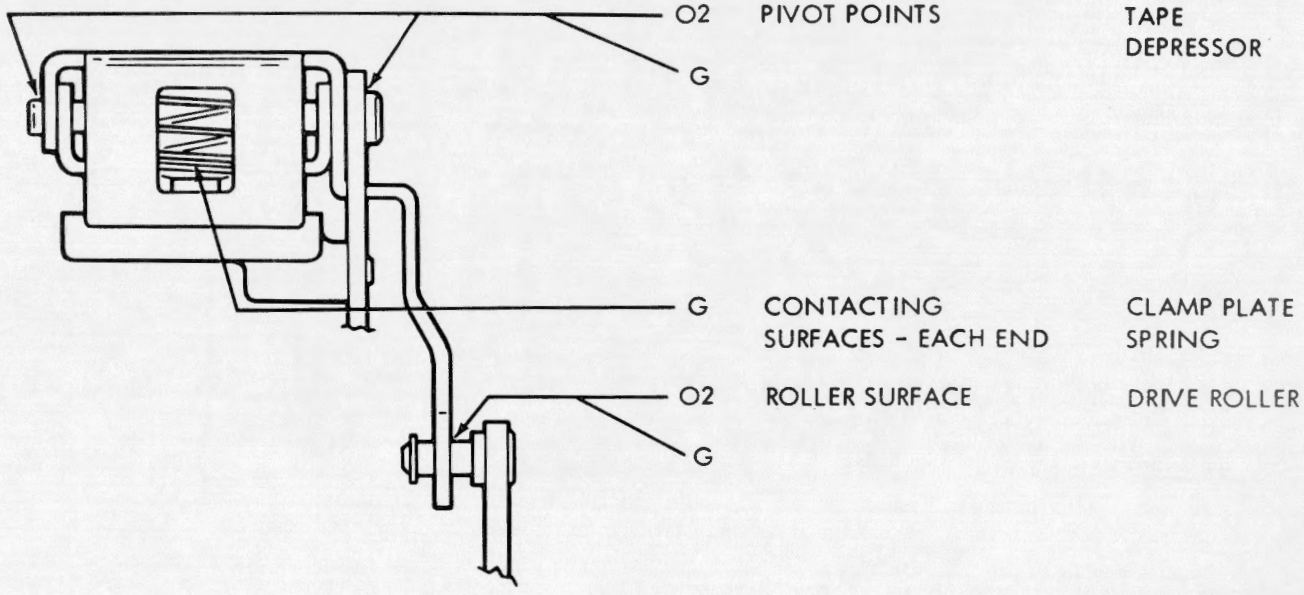
2.21 Rocker Bail Mechanism (Rear View)



2.22 Function Cam Clutch Trip Mechanism

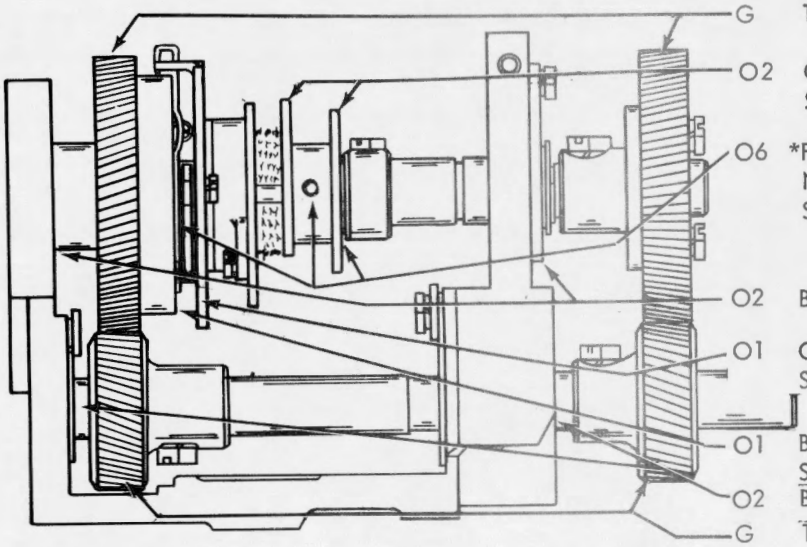


2.23 Slack Tape Mechanism

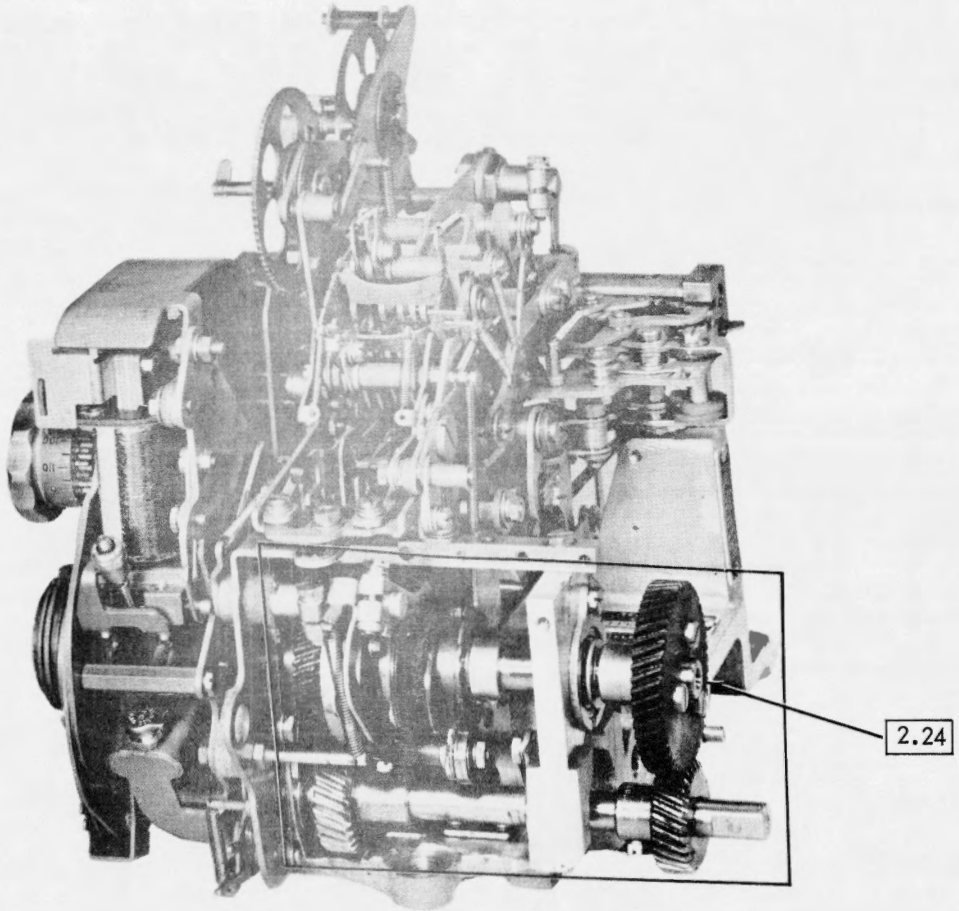


2.24 Main Shaft and Jack Shaft Mechanisms (Two Shaft Unit)

*IF FUNCTION CAM NEEDLE BEARINGS ARE DISASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE (BEACON 325) (TP195298) OR ITS EQUIVALENT.

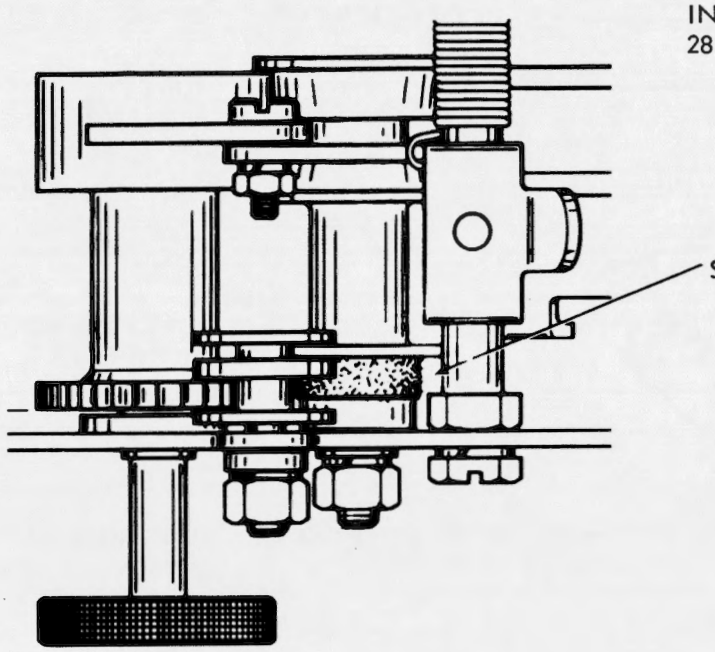


G	TEETH	GEARS (2)
O2	CAMMING SURFACES (2)	FUNCTION CAM
O6	*FUNCTION CAM NEEDLE BEARING SLEEVE (3)	BOTH ENDS OF SLEEVE AND OIL HOLE IN SLEEVE
O2	BEARING (2)	MAIN SHAFT
O1	CAMMING SURFACE	CLUTCH CAM DISK
O1	BEARING SURFACE	FUNCTION CLUTCH DRUM
O2	BEARING (2)	JACK SHAFT
G	TEETH	GEARS (2)



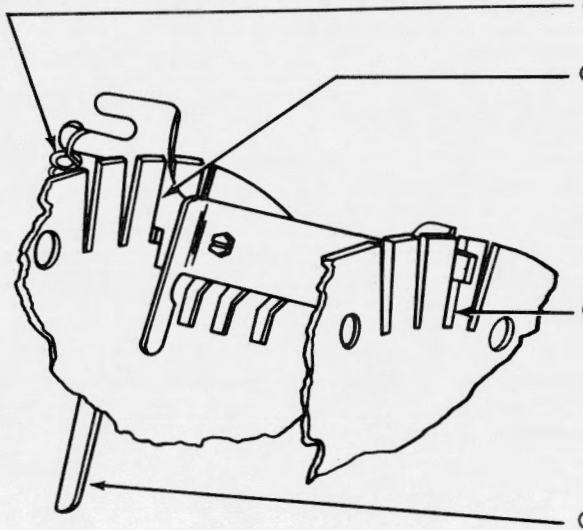
2. 25 Tape Mechanism for 28 Tape Printer Unit

(THIS LUBRICATION INSTRUCTION PLUS APPLICABLE 28 TYPING REPERFORATOR LUBRICATION INSTRUCTIONS ARE REQUIRED TO LUBRICATE THE 28 TAPE PRINTER UNIT)



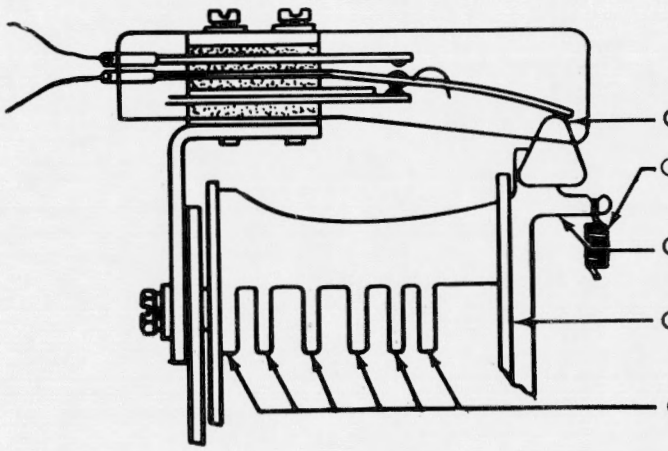
3. VARIABLE FEATURES

3.01 Unshift-On-Space Mechanism



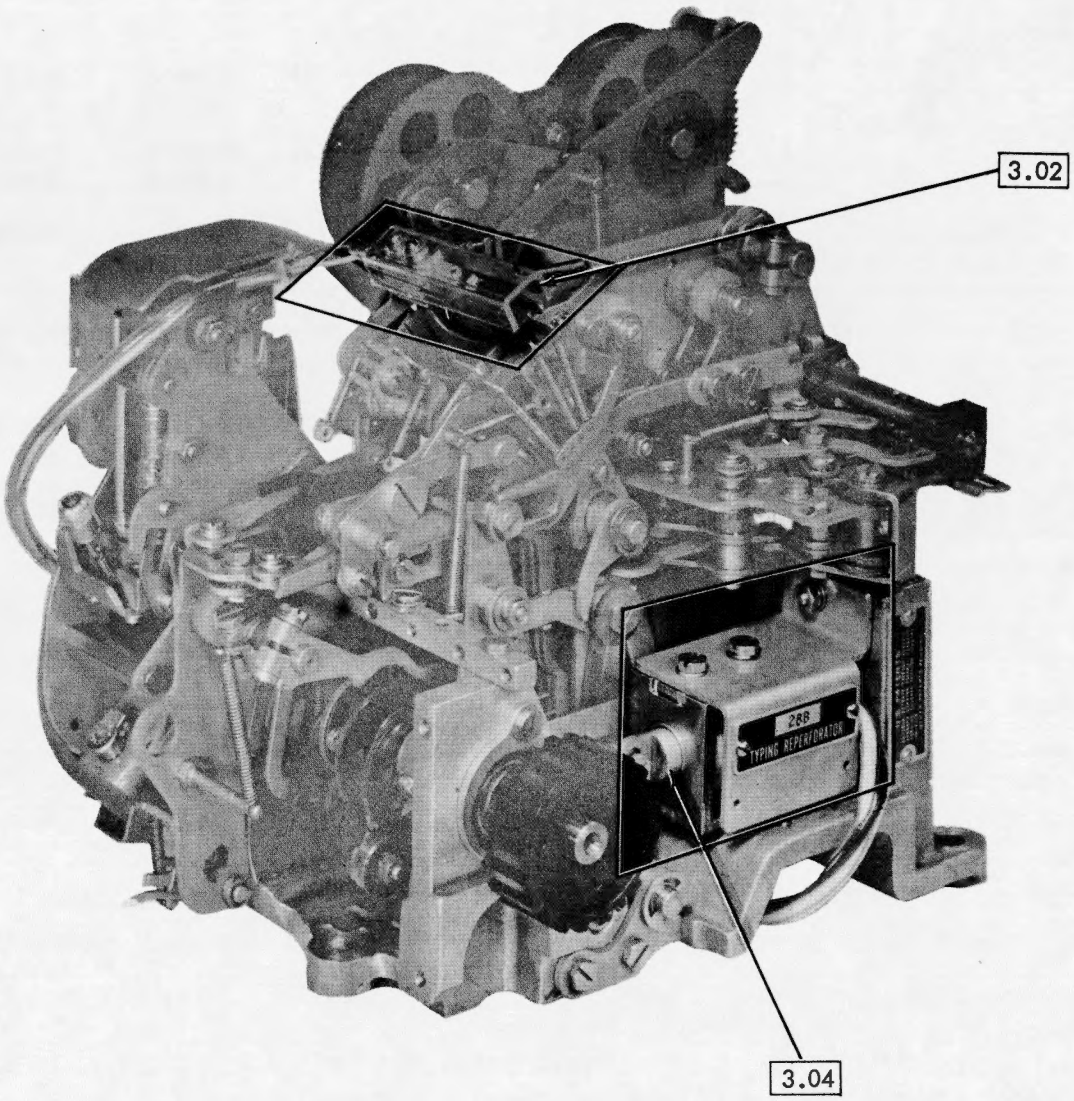
01	HOOKS-EACH END	SPRING
02	SLOT	FUNCTION BOX REAR PLATE
01	SLOT	FUNCTION BOX FRONT PLATE
01	GUIDE EXTENSION	FUNCTION BLADE

3.02 Signal Bell Contact Mechanism (Right Side View)

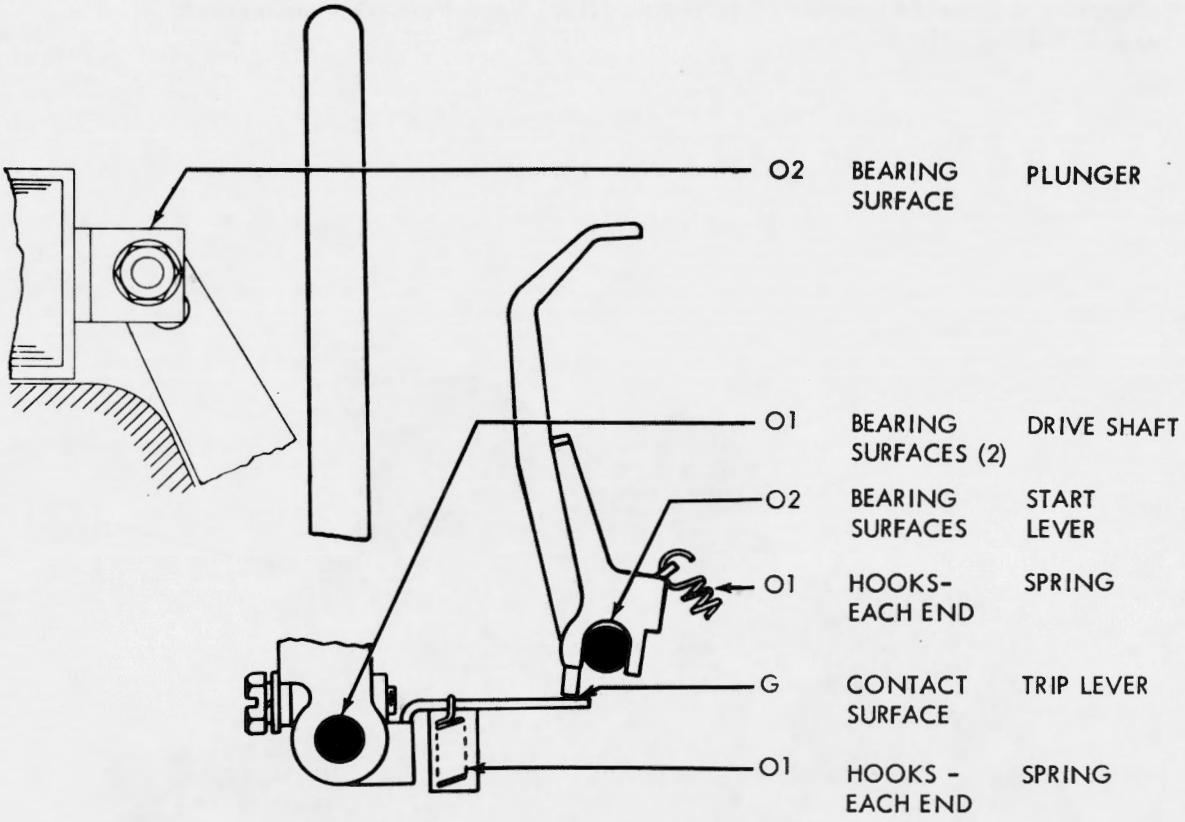


G	CONTACT SURFACE	FUNCTION BLADE
01	HOOKS-EACH END	SPRING
G	CONTACT SURFACE	FUNCTION BLADE
G	SLIDING SURFACES	FUNCTION BLADE
G	SENSING FINGERS	FUNCTION BLADE

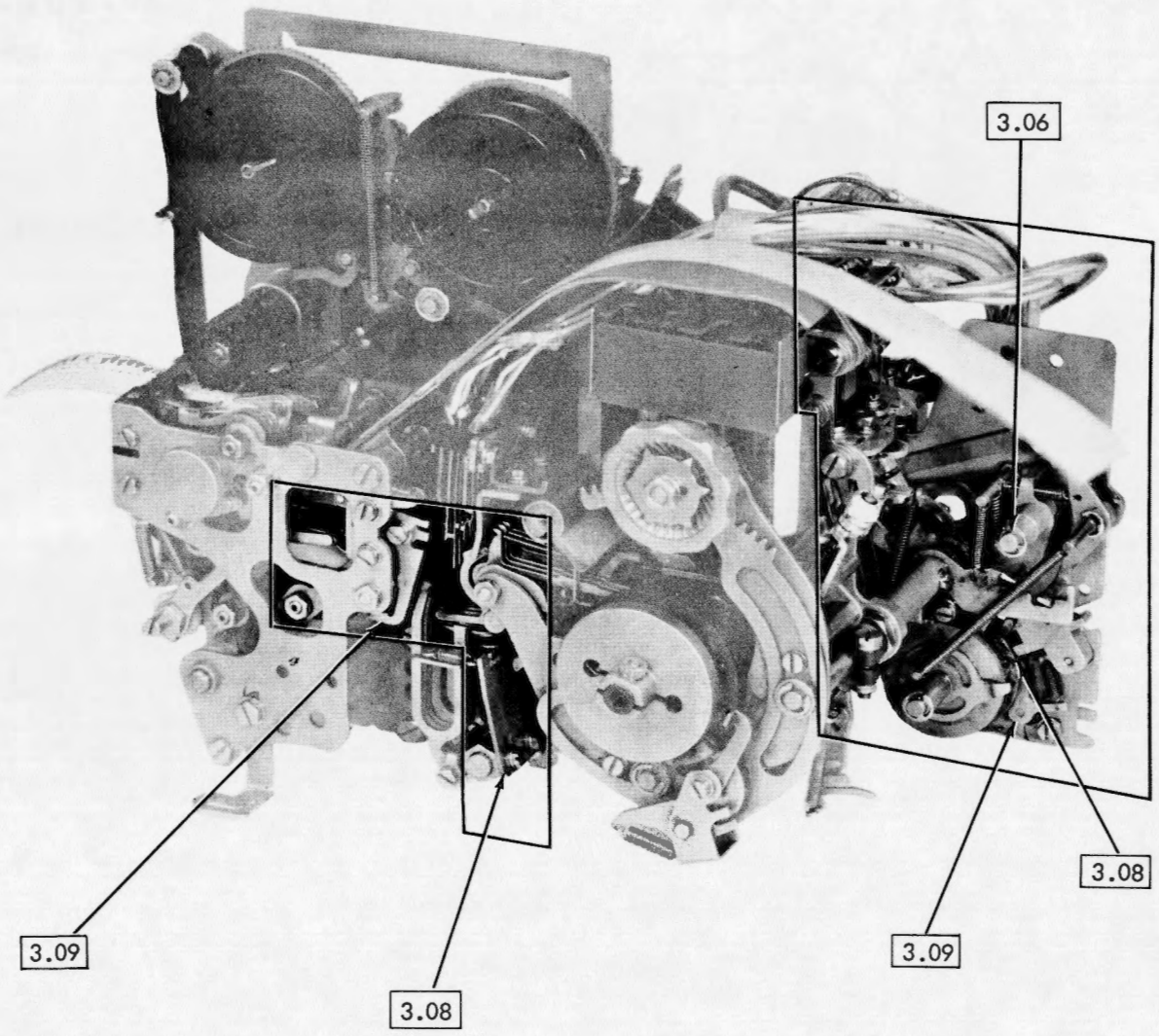
3.03 Manual and Solenoid Operated Interfering LTRS Tape Feed-Out Mechanism and Signal Bell Mechanism



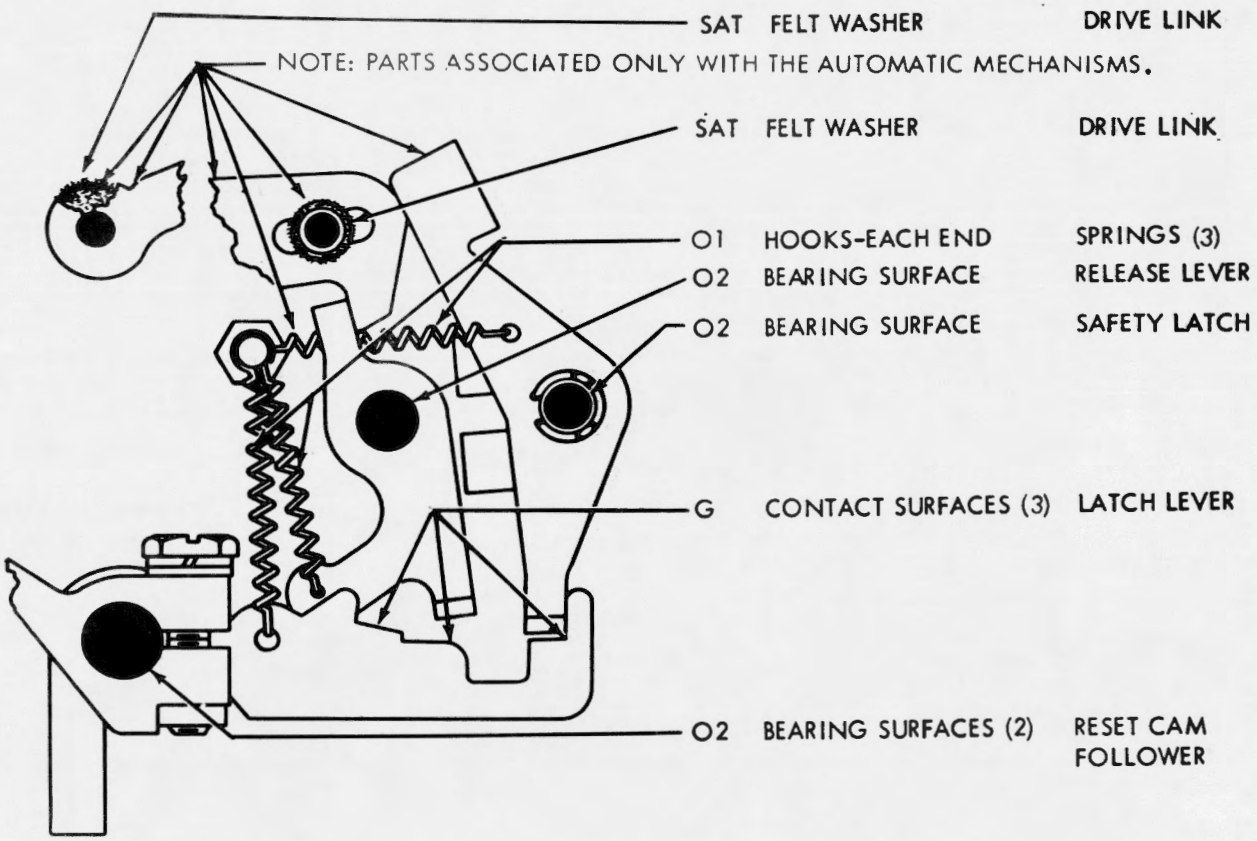
3.04 Manual and Solenoid Operated Interfering LTRS Tape Feed-Out Mechanism



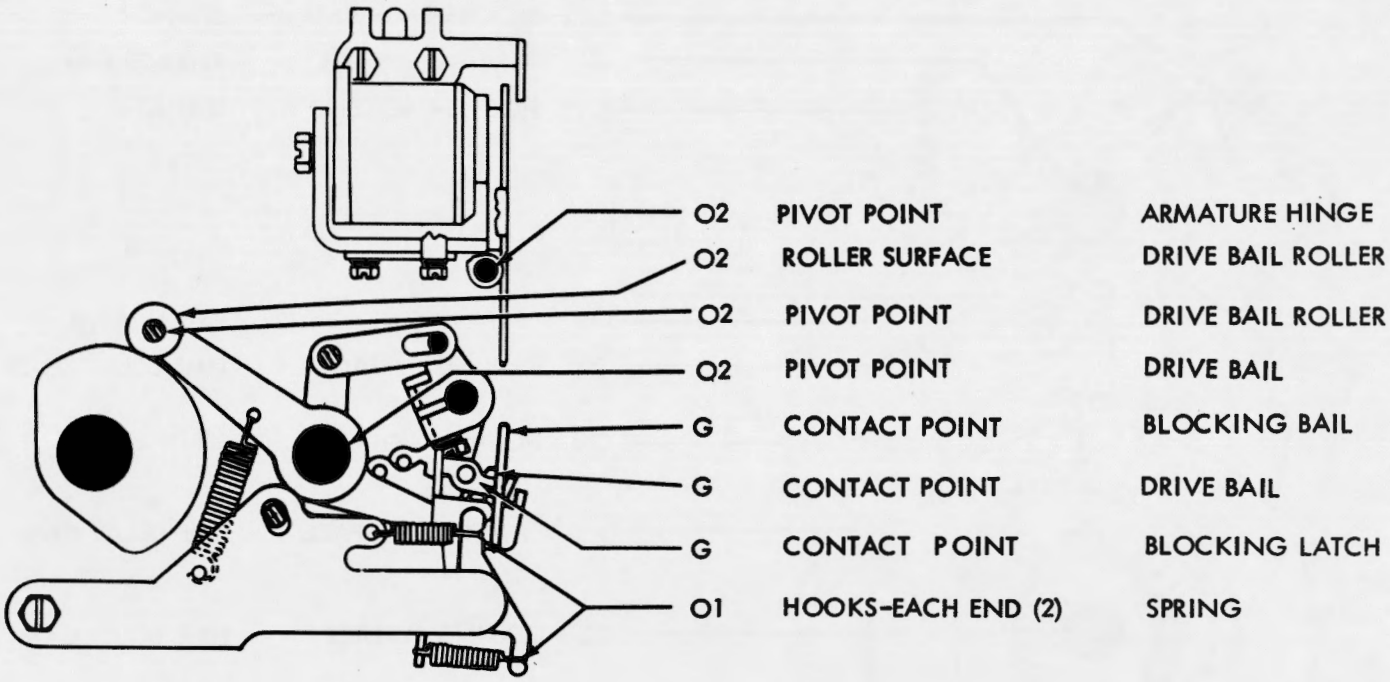
3.05 Automatic and Remote Control Noninterfering LTRS Tape Feed-Out Mechanisms

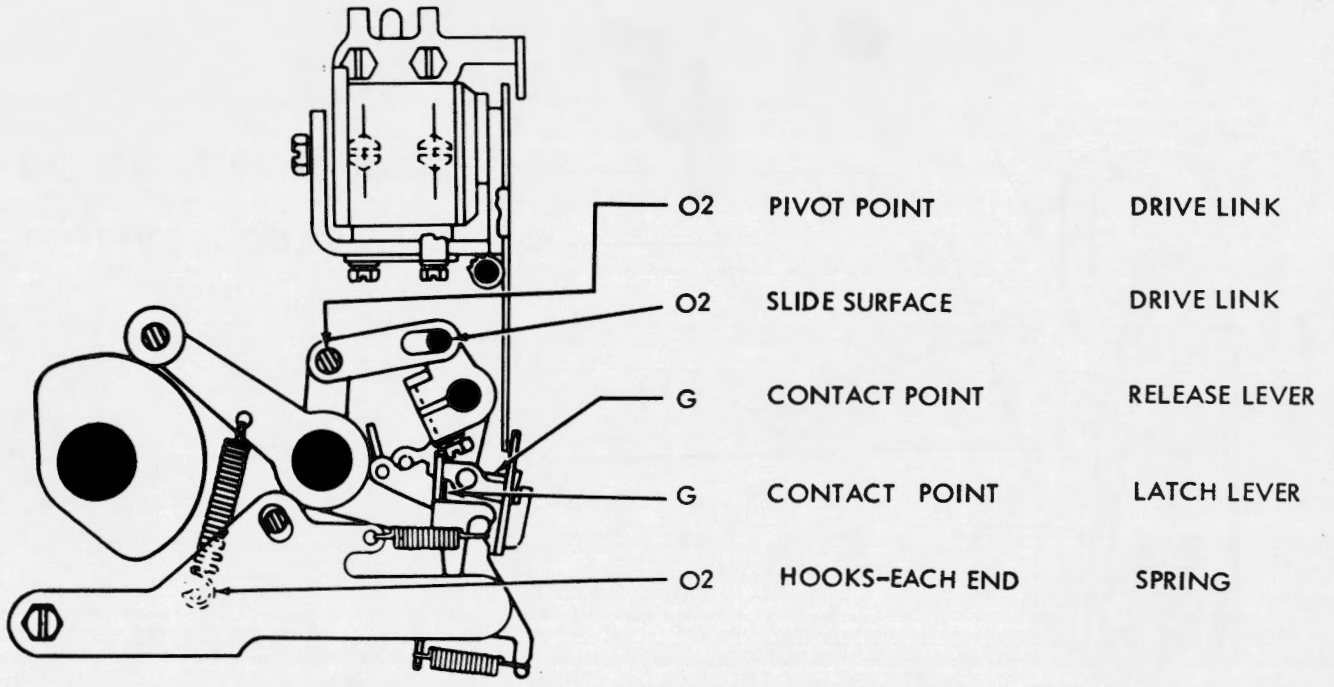


3.06 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms

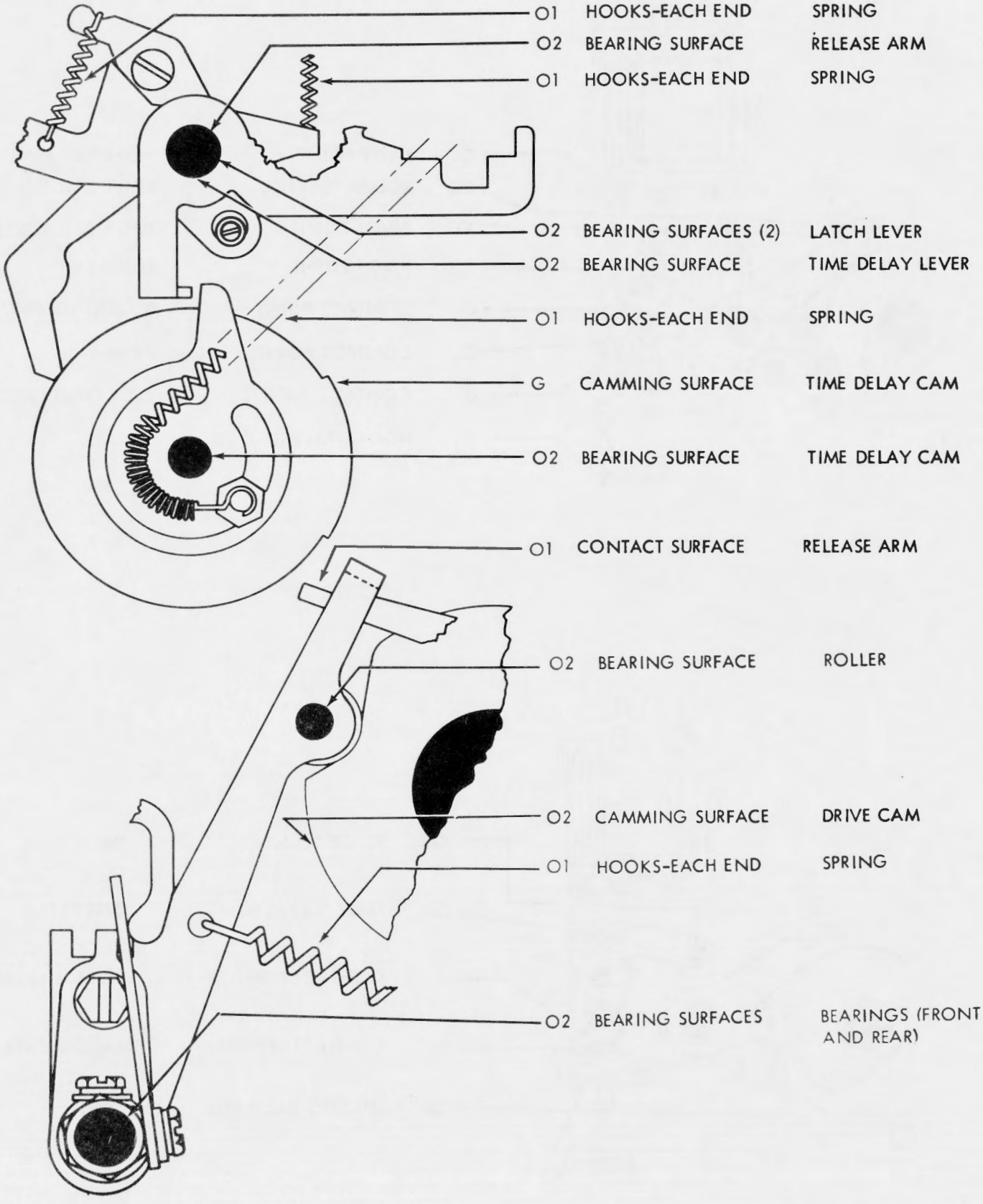


3.07 Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanism

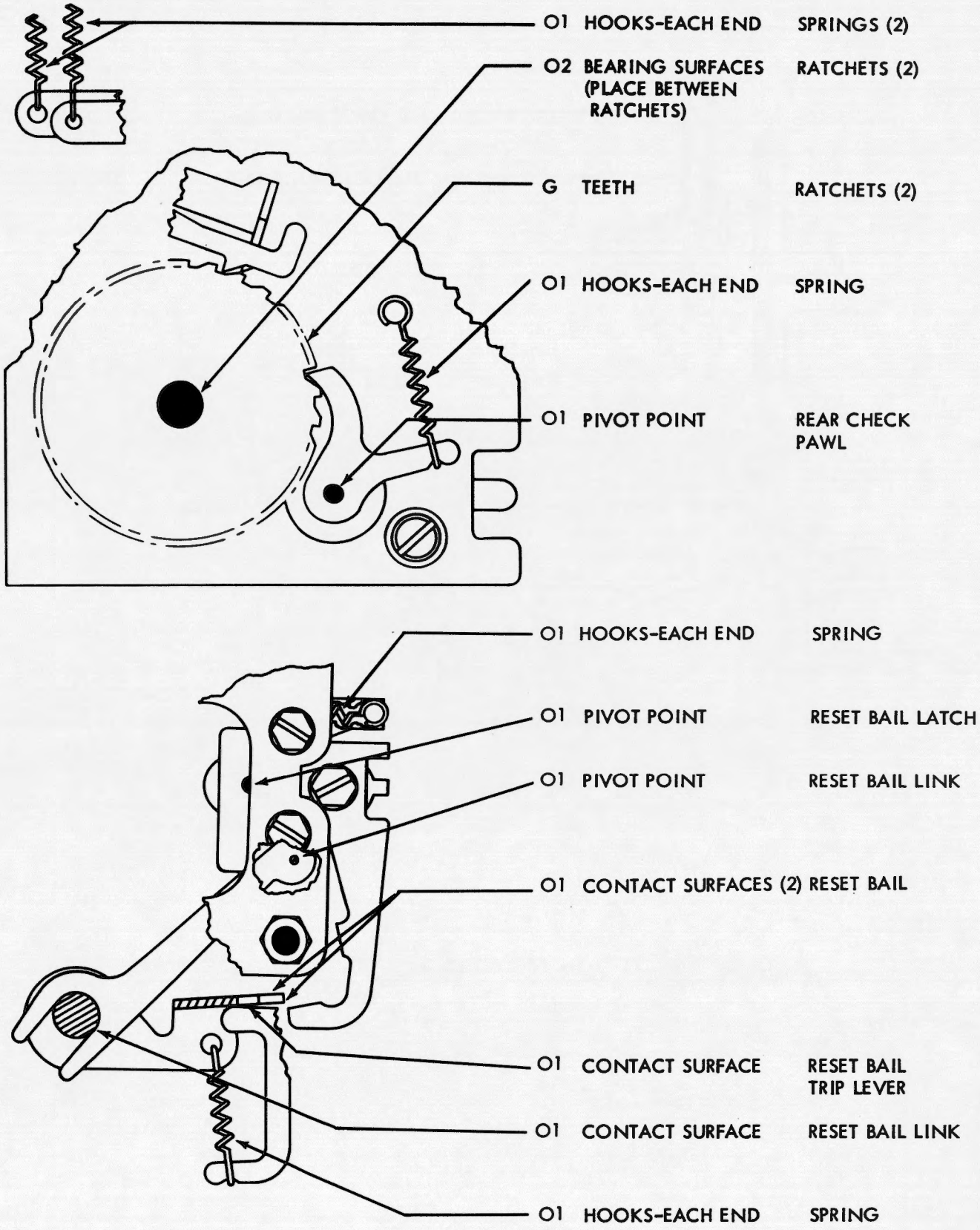




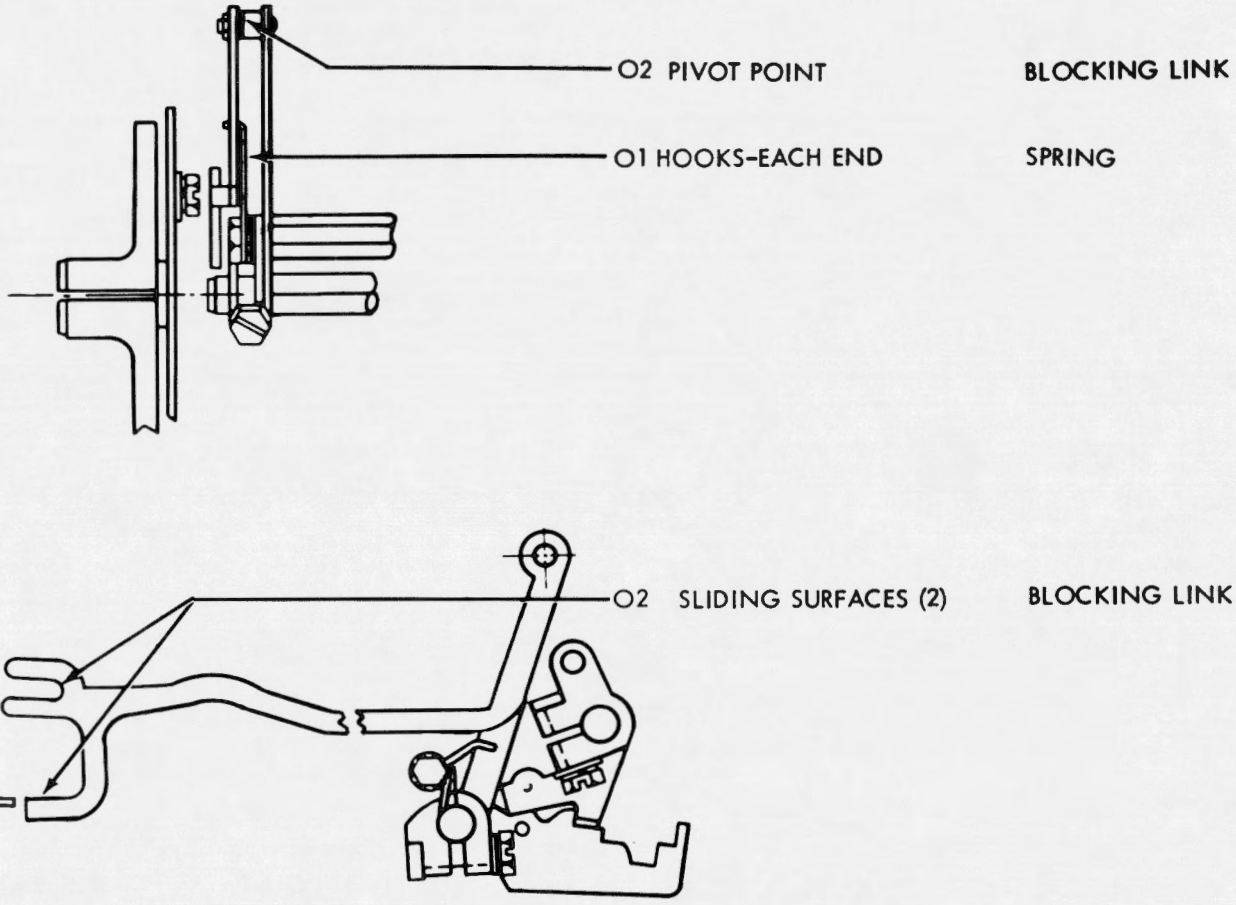
3.08 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



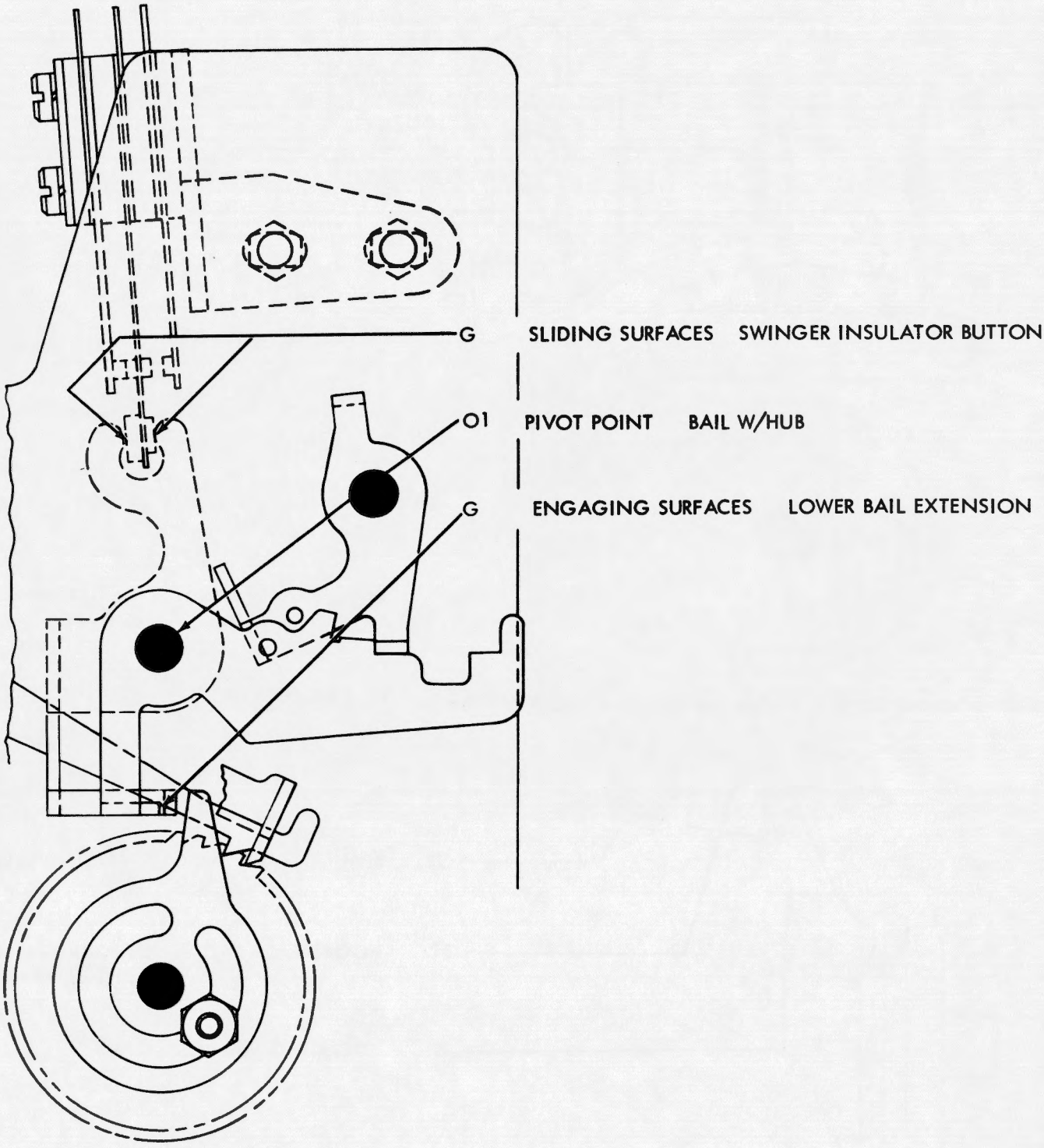
3.09 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



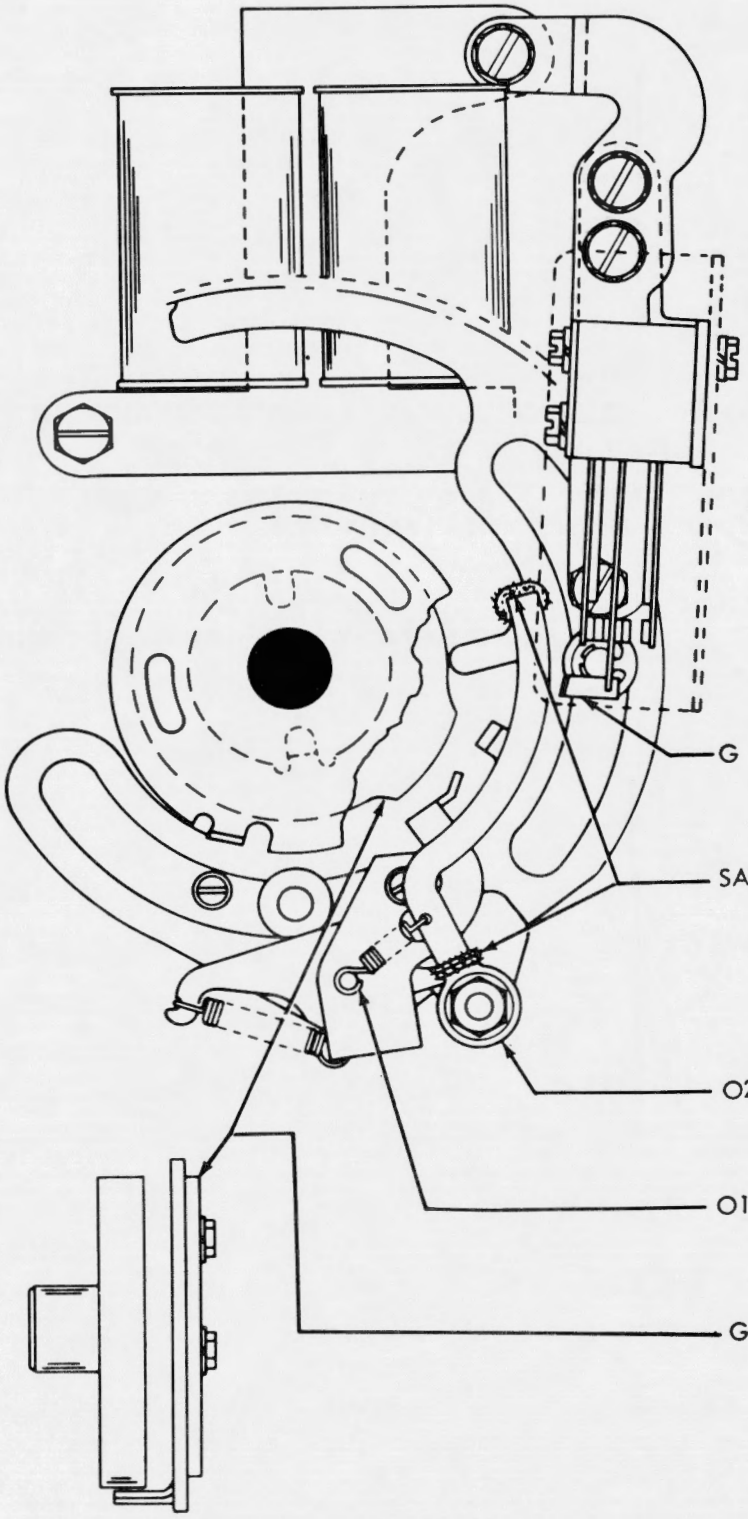
3.10 Automatic and Remote Control Noninterfering BLANK Tape Feed-Out Mechanisms



3.11 End of Tape Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms

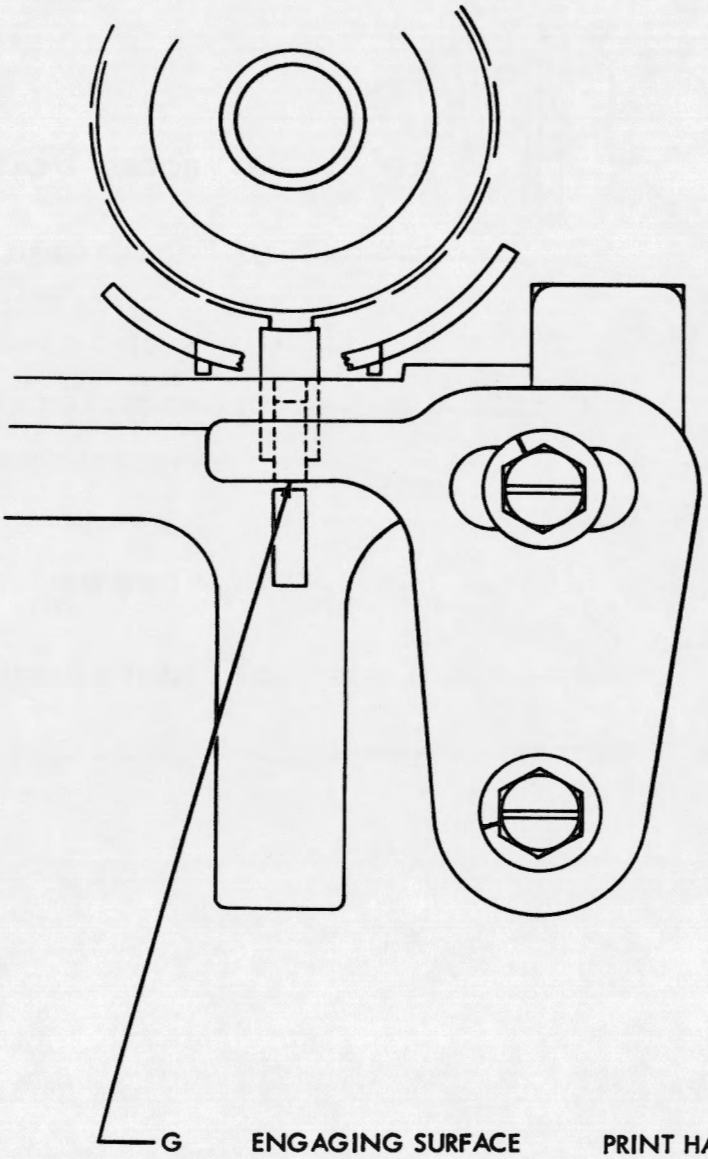


3. 12 Timing Contact Mechanism (Operated by Selector)

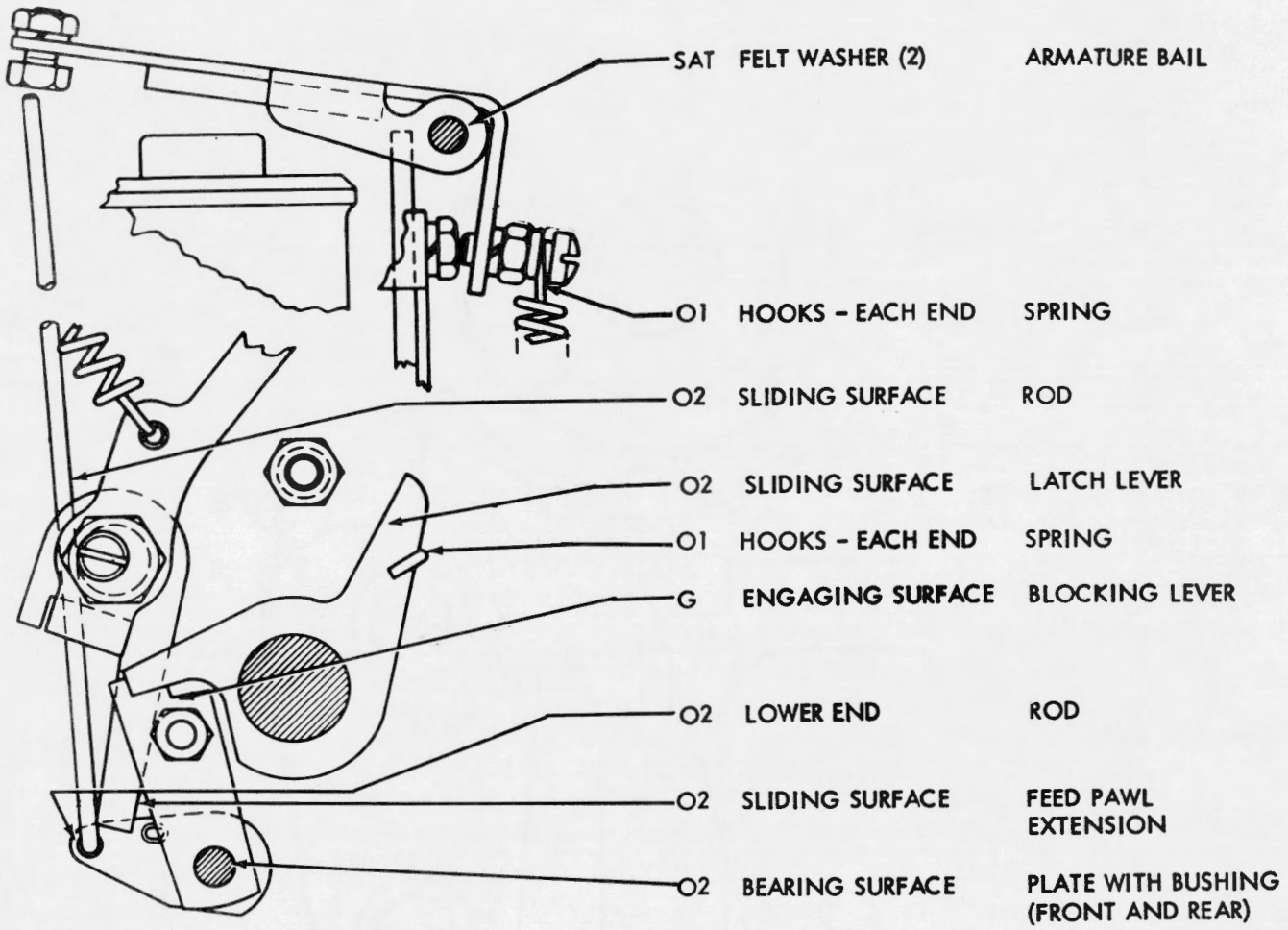


G	METAL FACE TOWARD OPERATING ARM	SWINGER SPRING INSULATOR
SAT	FELT WASHERS (3)	OPERATING LEVER
O2	BEARING-EACH END	OPERATING LEVER
O1	HOOKS-EACH END	OPERATING LEVER COILED SPRINGS
G	OPERATING SURFACE	CAM

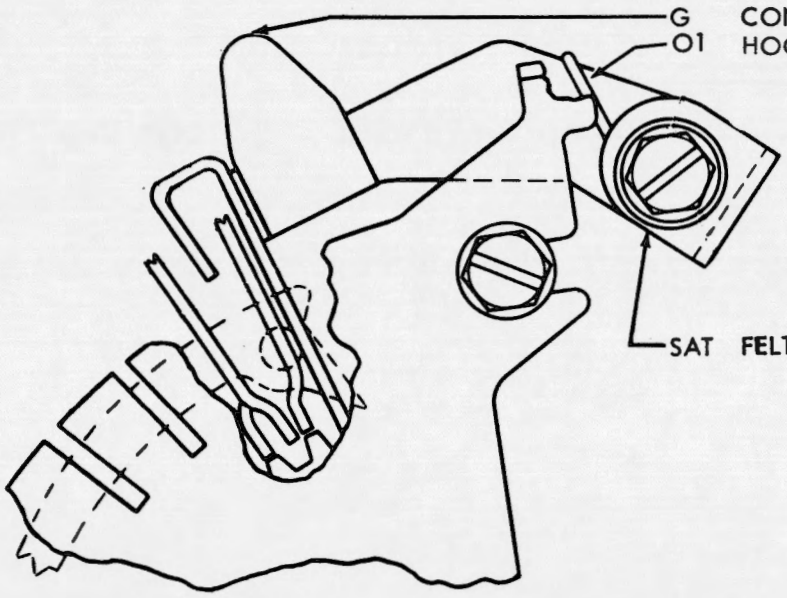
3.13 Print Suppression on Functions

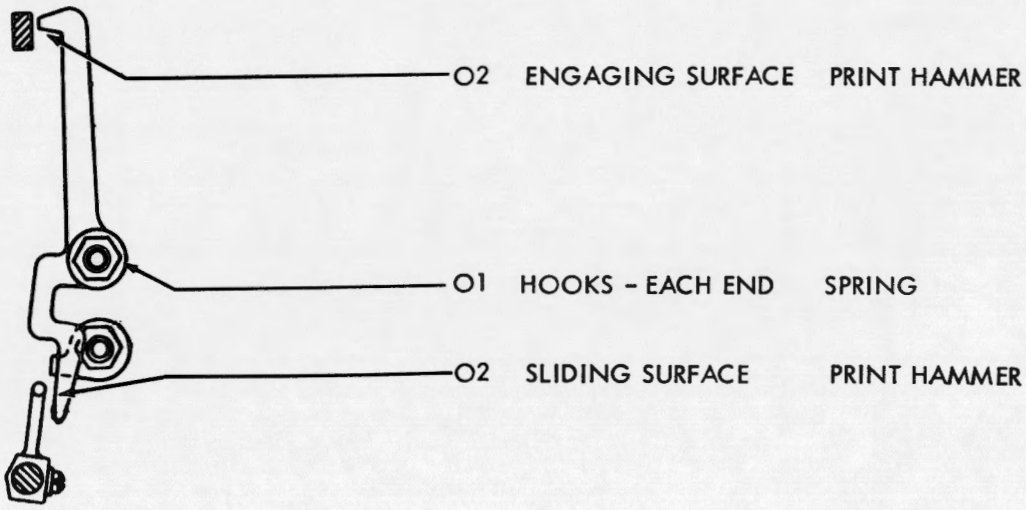


3. 14 Blank Delete Mechanism

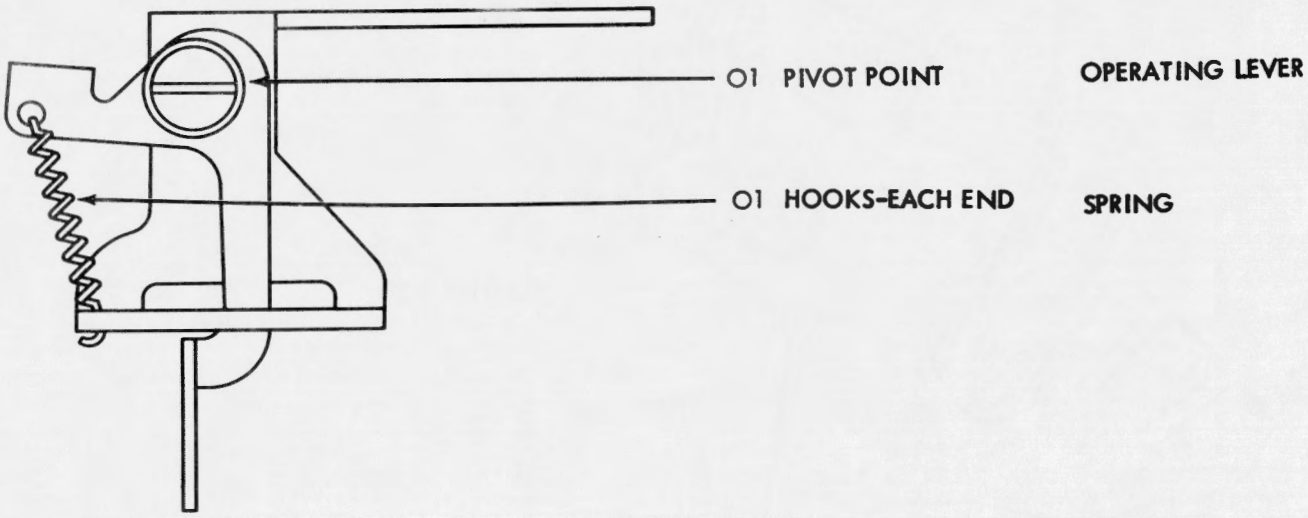


3.15 Blank Delete Mechanism continued

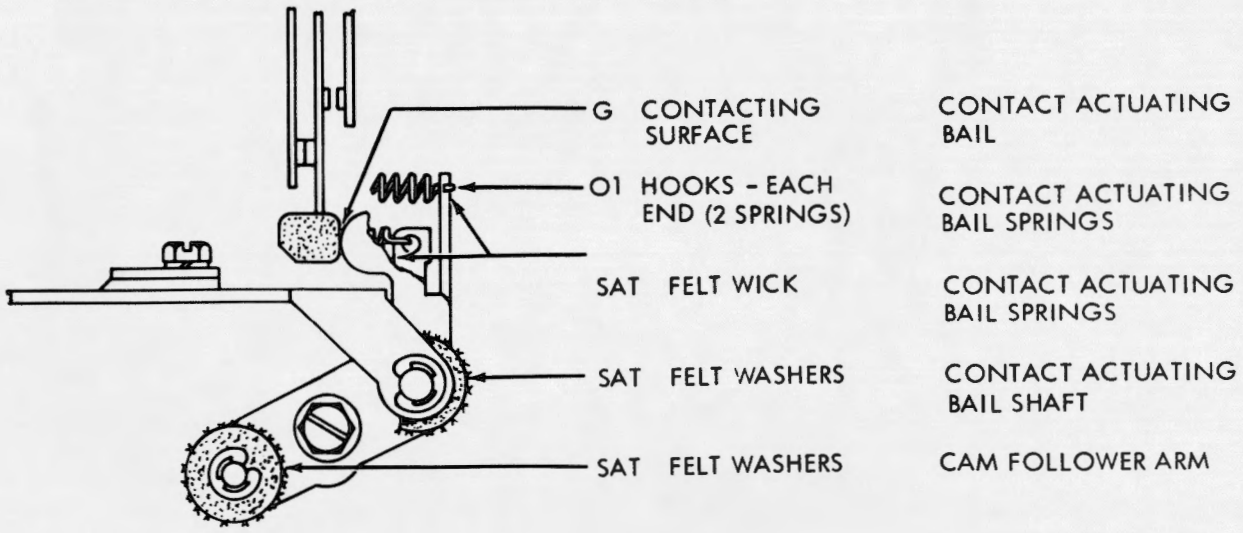




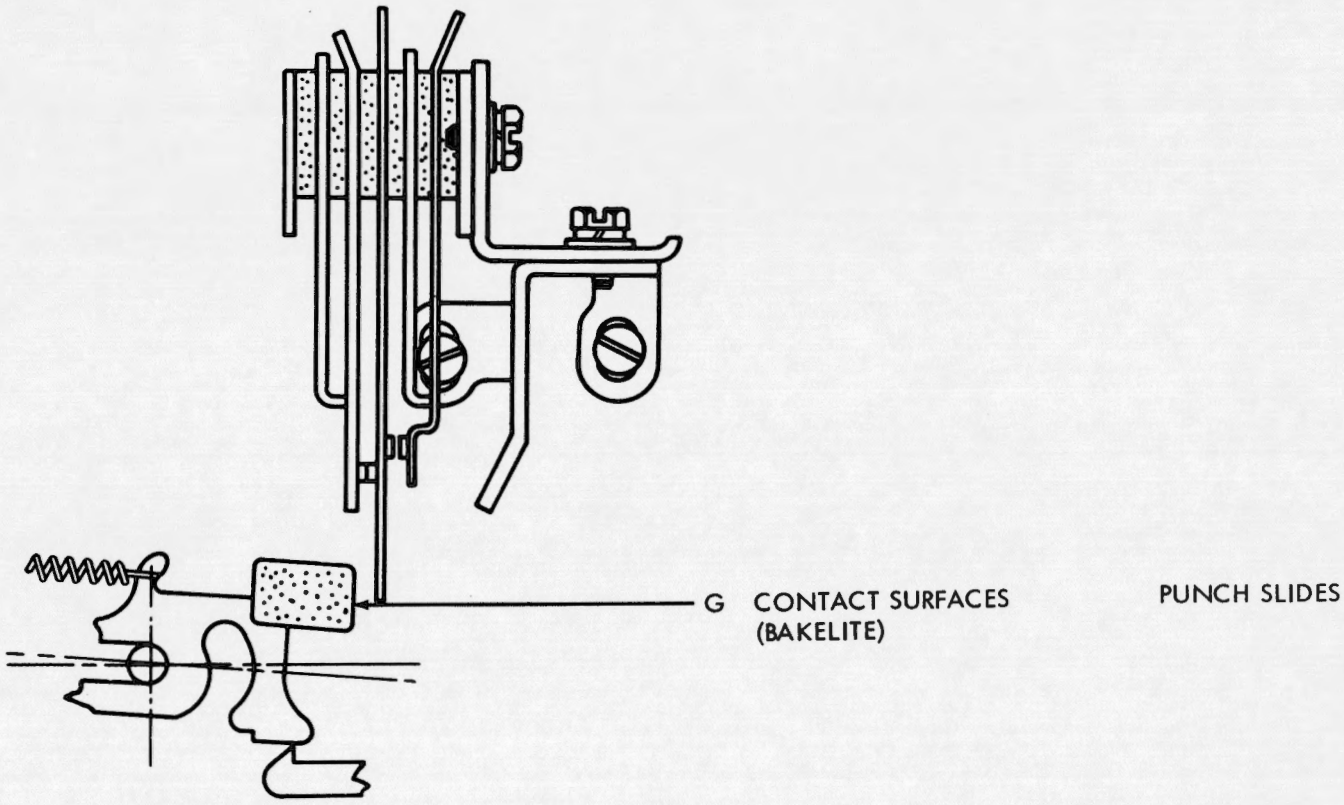
3.16 Letters-Figures Contact Mechanism (Later Design)



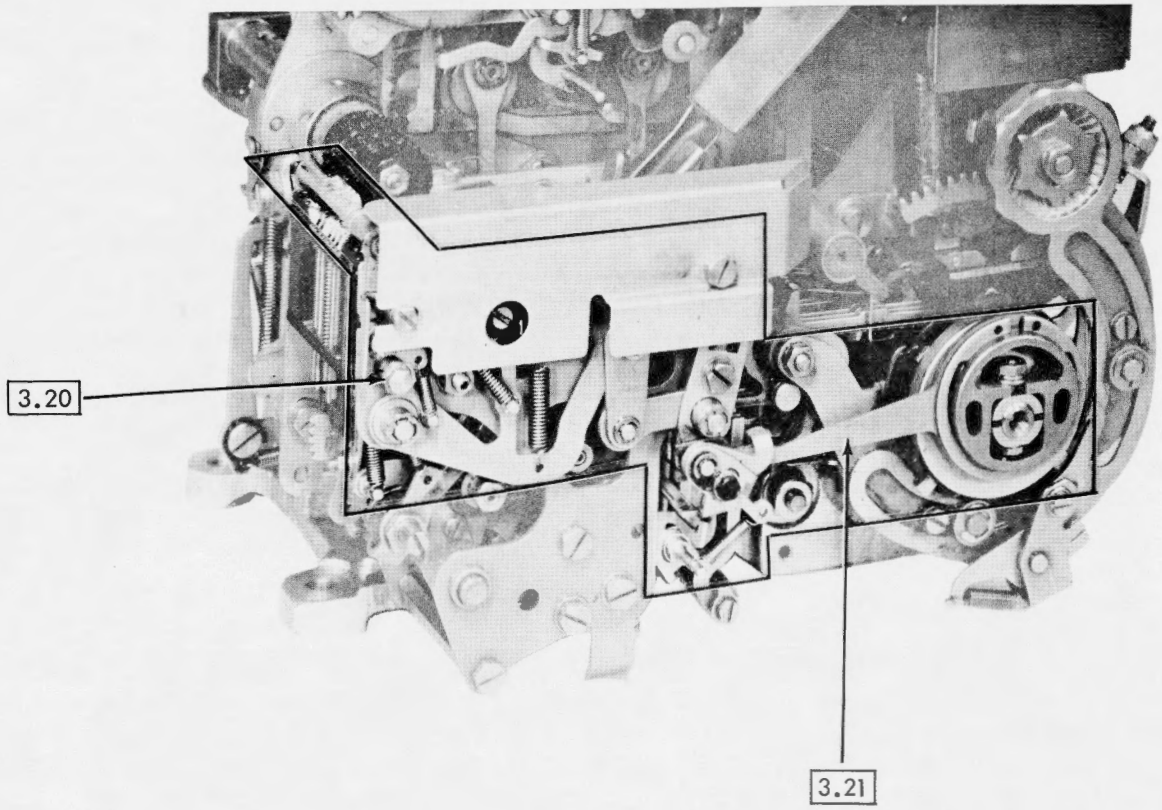
3. 17 Timing Contacts



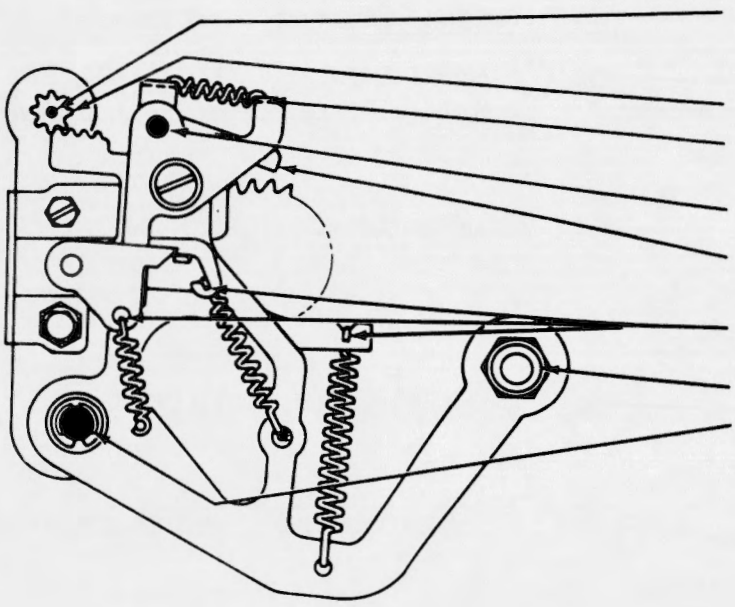
3. 18 Code Reading Contacts



3. 19 Manual and Power Drive Backspace Mechanisms (for Chadless Tape)

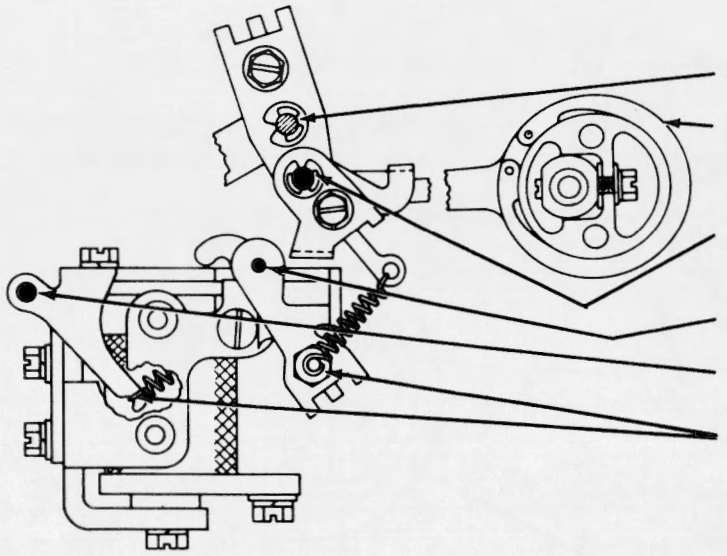


3.20 Backspace Mechanism for Chadless Tape (Manual)



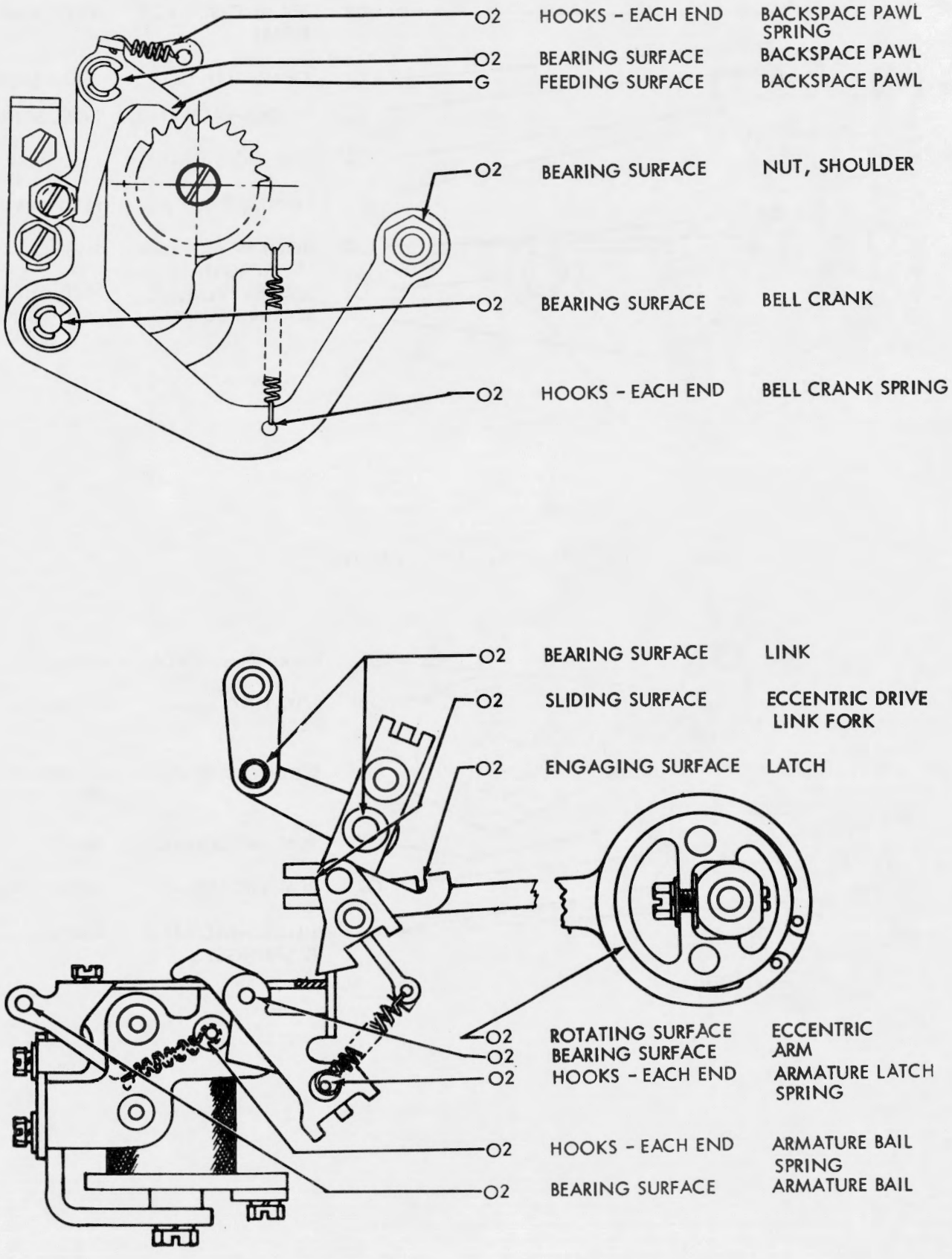
O2	BEARING SURFACE (REAR)	RAKE SHAFT
G	GEAR TEETH	GEAR SEGMENT
O2	HOOKS-EACH END	PAWL SPRING
O2	BEARING SURFACE	FEED PAWL
G	CONTACT SURFACE	FEED PAWL
O2	HOOKS-EACH END (3 SPRINGS)	SPRING
O2	BEARING SURFACE	NUT, SHOULDER
O2	BEARING SURFACE	BELL CRANK

3.21 Backspace Mechanism for Chadless Tape (Power Drive)

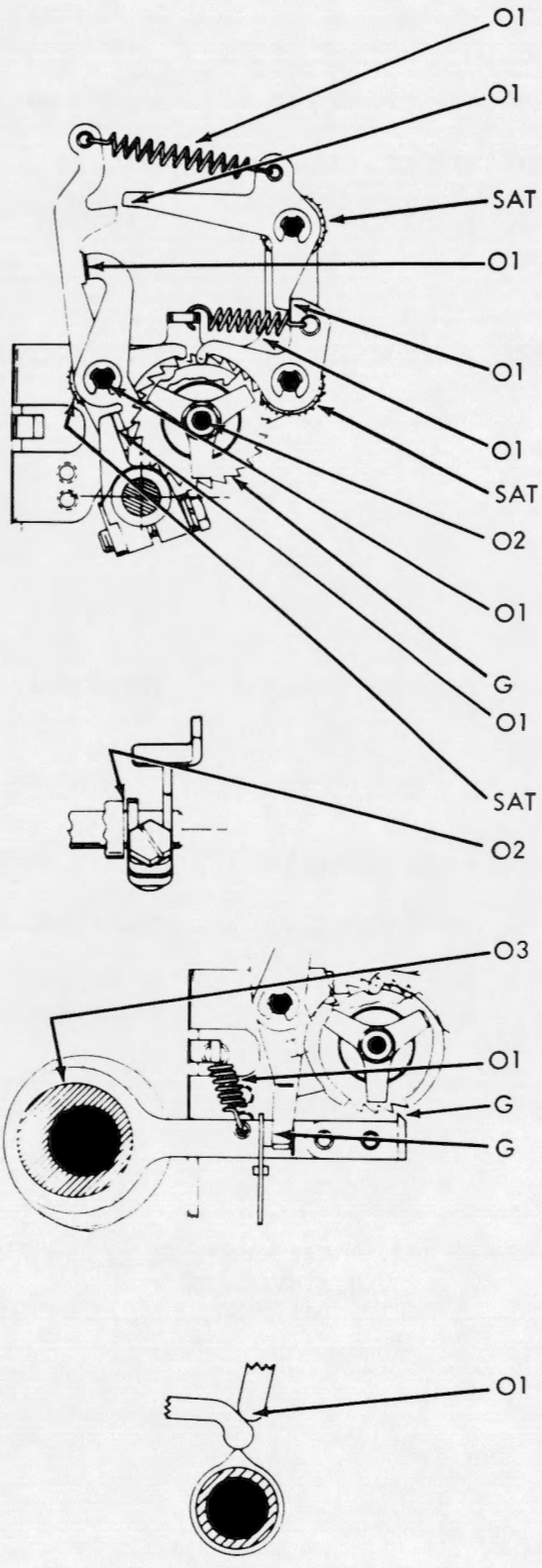


O2	BEARING SURFACE	LINK
O2	ROTATING SURFACE	ECCENTRIC
O2	SLIDING SURFACE	ECCENTRIC DRIVE ARM FORK
O2	BEARING SURFACE	ARM
O2	BEARING SURFACE	ARMATURE BAIL
O2	HOOKS-EACH END (2 SPRINGS)	SPRINGS

3.22 Backspace Mechanism for Fully Perforated Tape (Power Drive)



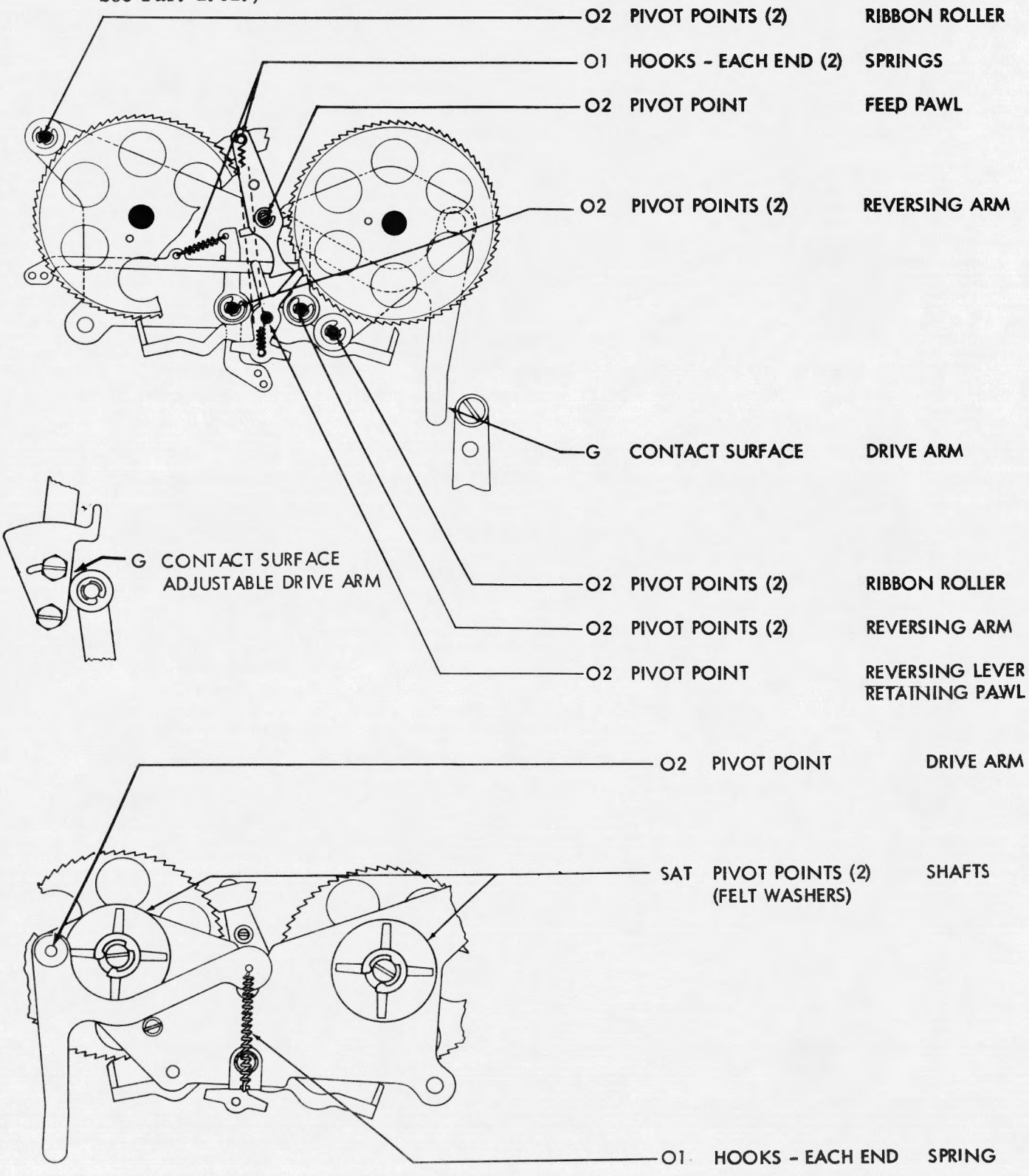
3.23 Time Delay Motor Stop Mechanism



O1	HOOKS-EACH END	SPRING
O1	ENGAGING SURFACE	CONTACT OPERATING PAWL AND LATCH LEVER
SAT	FELT WASHERS	LATCH LEVER
O1	ENGAGING SURFACE	BELL CRANK AND CONTACT OPERATING PAWL
O1	ENGAGING SURFACE	LATCH PAWL AND LATCH LEVER
O1	HOOKS-EACH END	SPRING
SAT	FELT WASHERS	LATCH PAWL
O2	BEARING SURFACE EACH END	RATCHET WHEEL SHAFT
O1	BEARING SURFACE EACH END	BELLCRANK AND SUPPORTING STUD
G	TEETH AND FLANGES	RATCHET WHEELS
O1	ENGAGING SURFACE	CLAMP ARM AND BELLCRANK
SAT	FELT WASHERS	CONTACT PAWL
O2	BEARING SURFACE (2)	TIME DELAY RESET SHAFT BUSHING
O3	BEARING SURFACE	ECCENTRIC FOLLOWER DRIVE ARM AND ECCENTRIC
O1	HOOKS-EACH END	SPRING
G	ENGAGING SURFACE	DRIVE ARM
G	ENGAGING SURFACE	CONTACT OPERATING PAWL AND CONTACT INSULATOR
O1	ENGAGING SURFACE	SELECTOR RESET BAIL TIME DELAY RESET LEVER

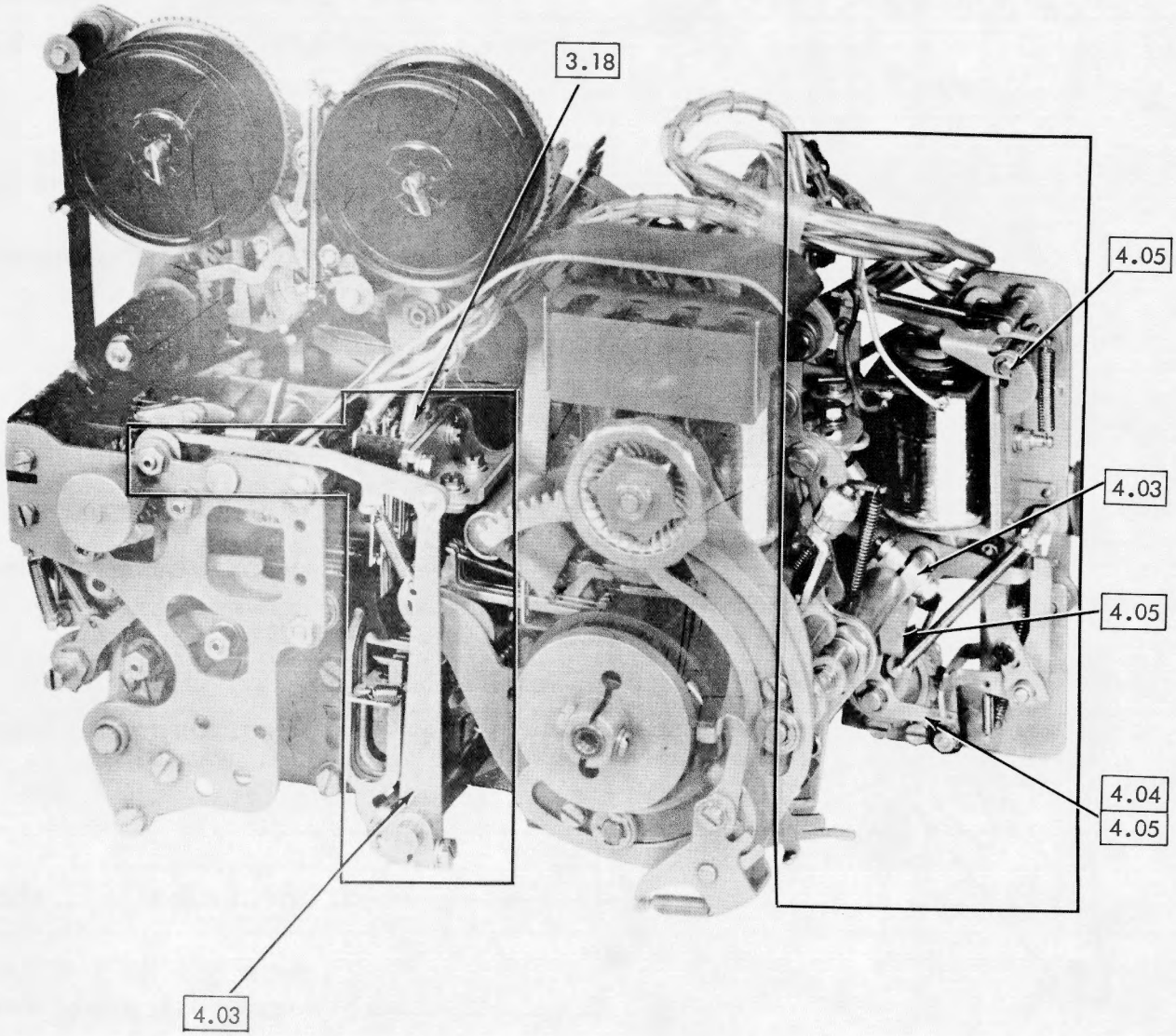
4. EARLIER DESIGN MECHANISMS

4.01 Ribbon Feed Mechanism (For Later Design See Par. 2.02.)

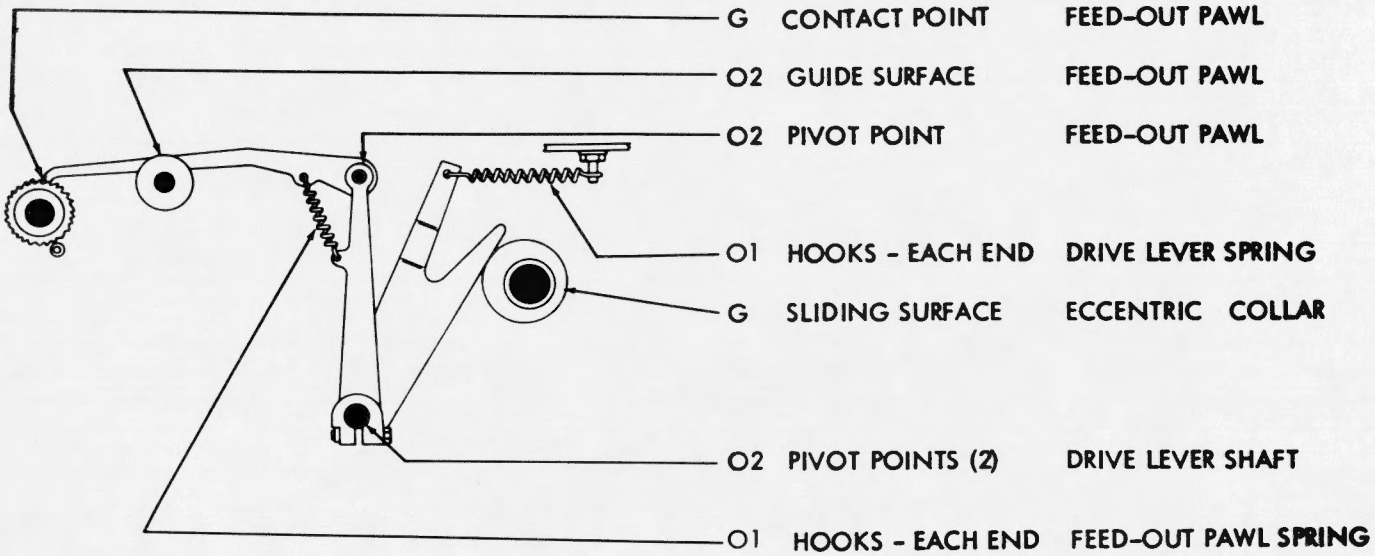


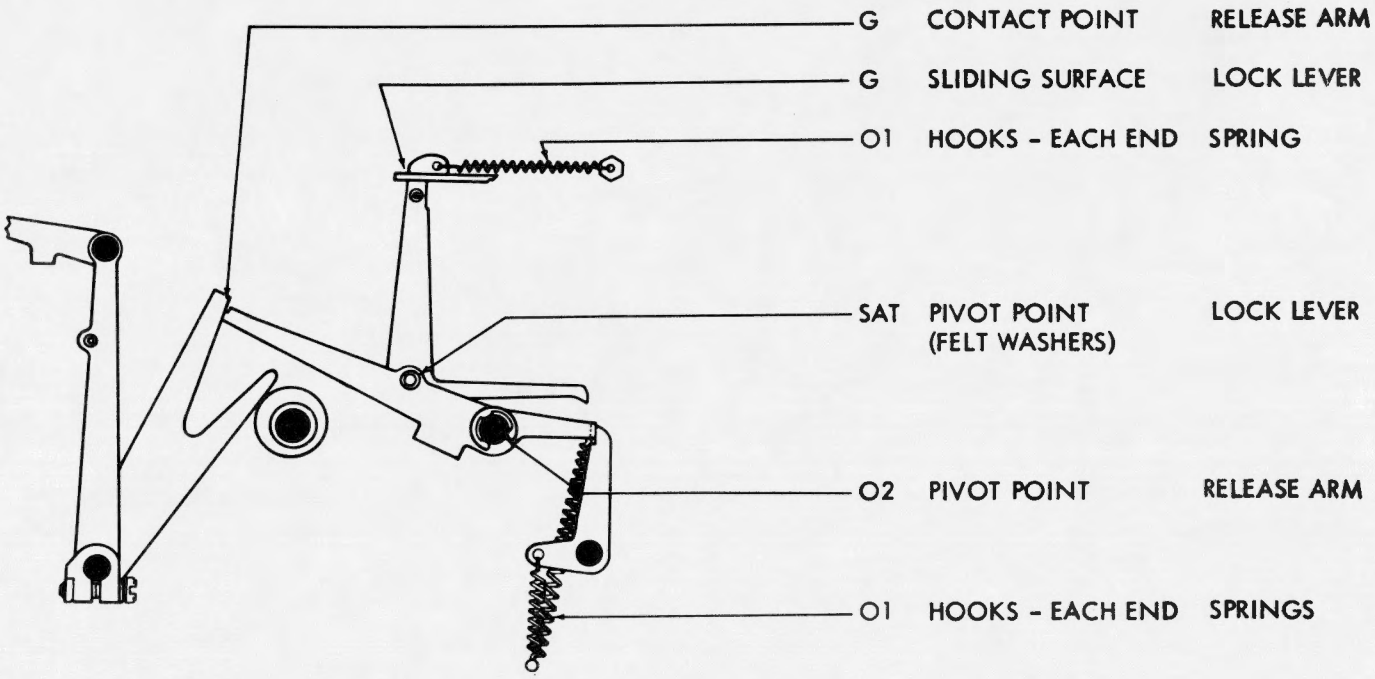
4.02 Remote Control Noninterfering BLANK Tape Feed-Out Mechanism

(For Later Design
See Part 3 Variable Features)

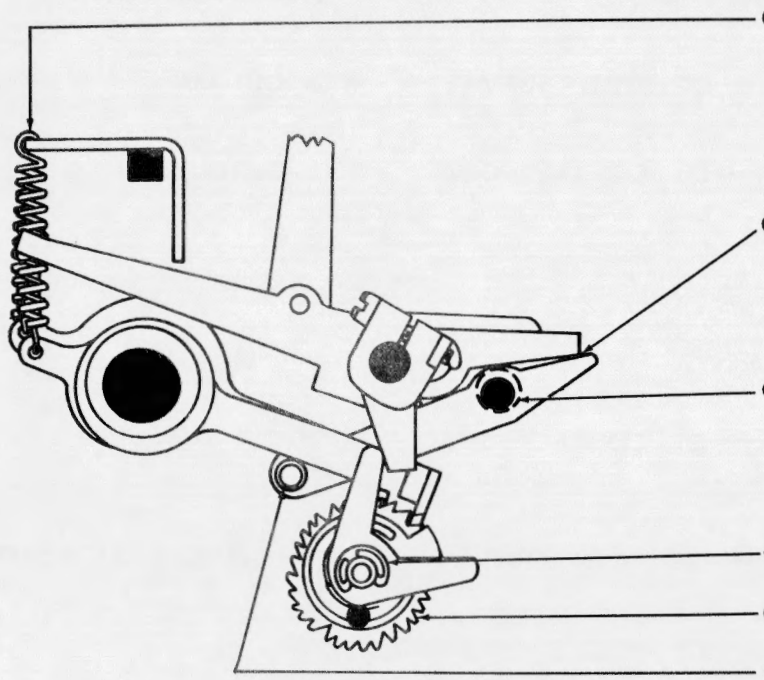


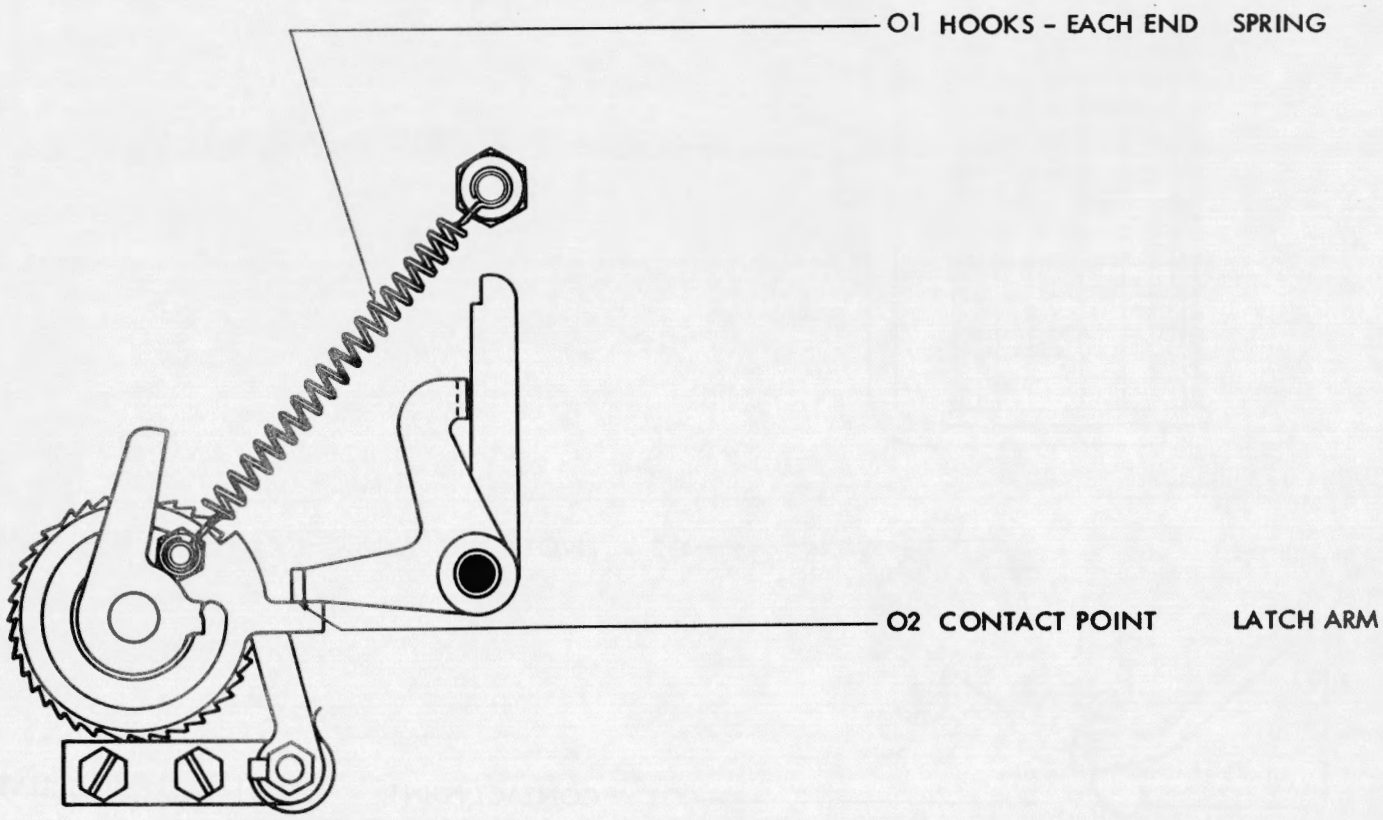
4.03 Remote Control Noninterfering BLANK Tape Feed-Out Mechanism continued
(For Later Design See Part 3 Variable Features)



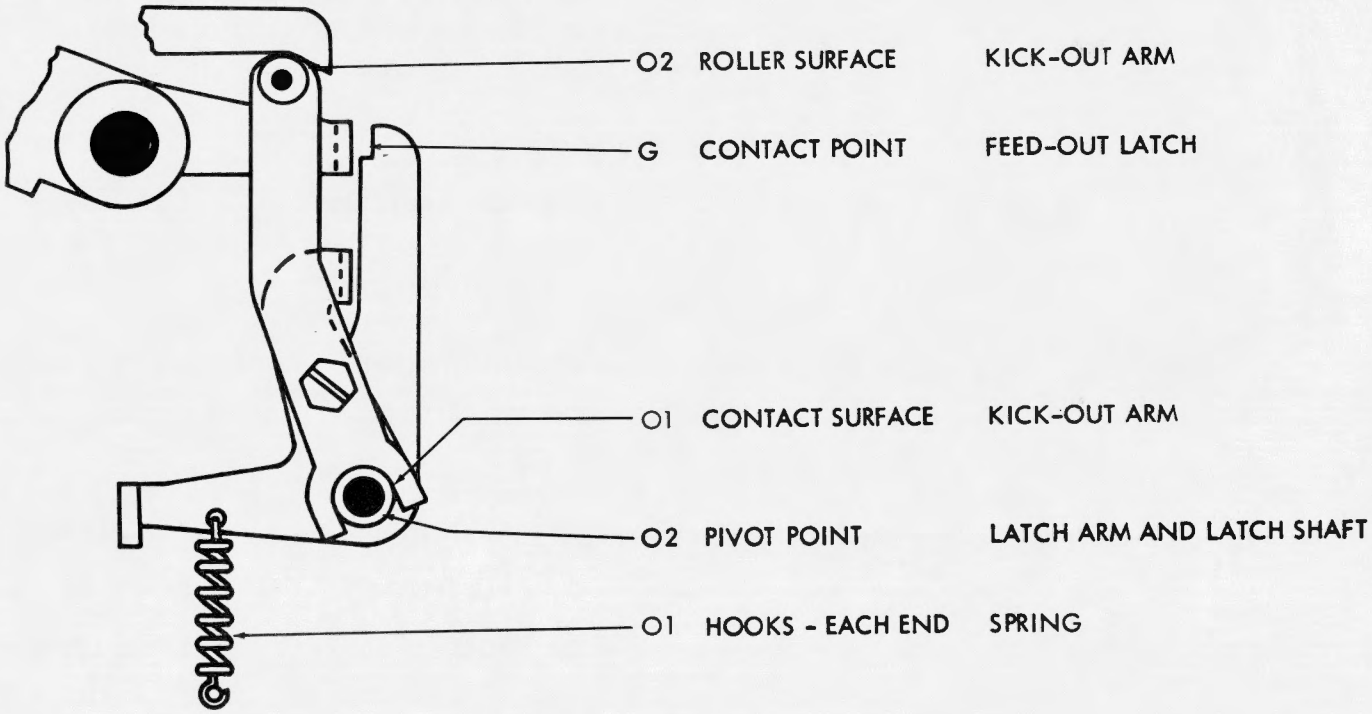


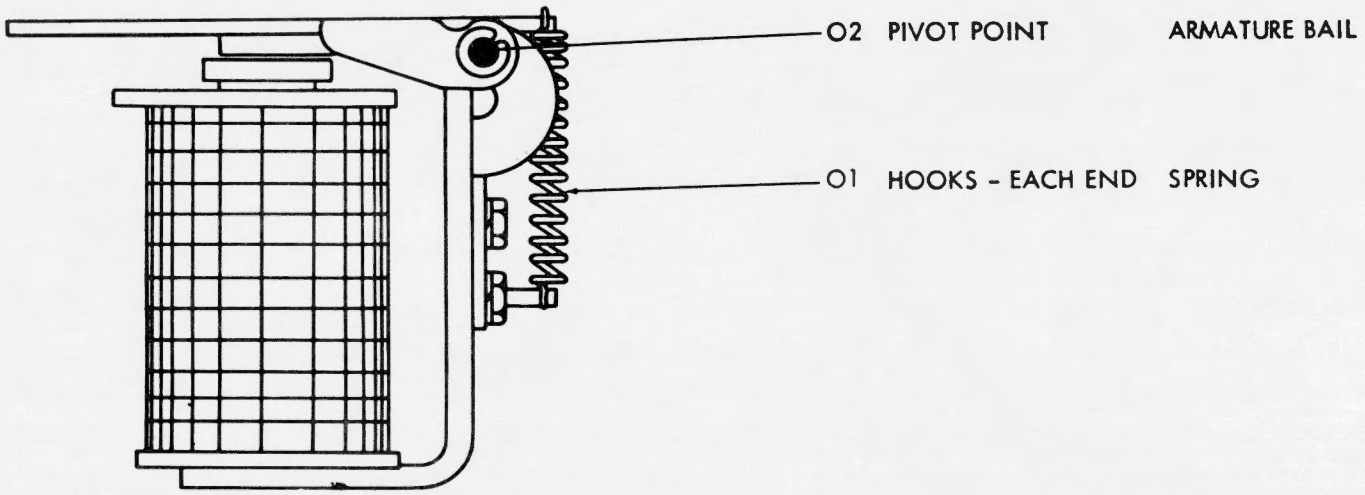
4.04 Remote Control Noninterfering **BLANK Tape Feed-Out Mechanism continued**
(For Later Design
See Part 3 Variable Features)

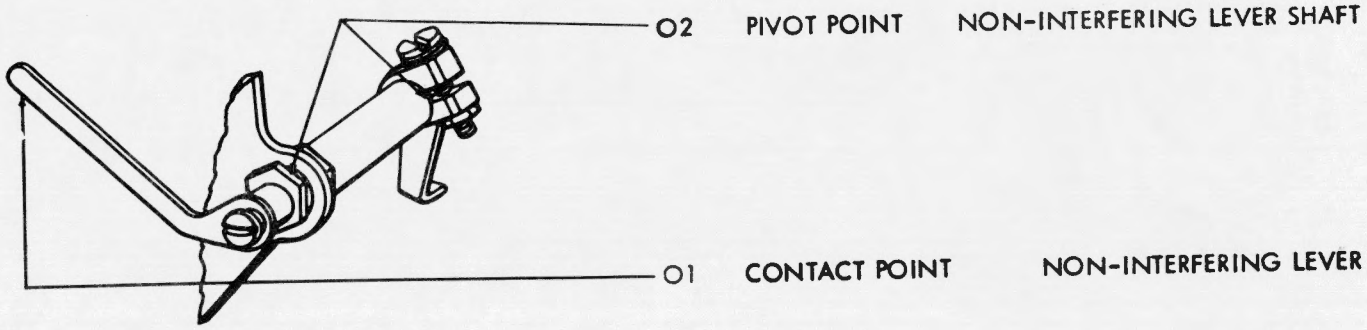




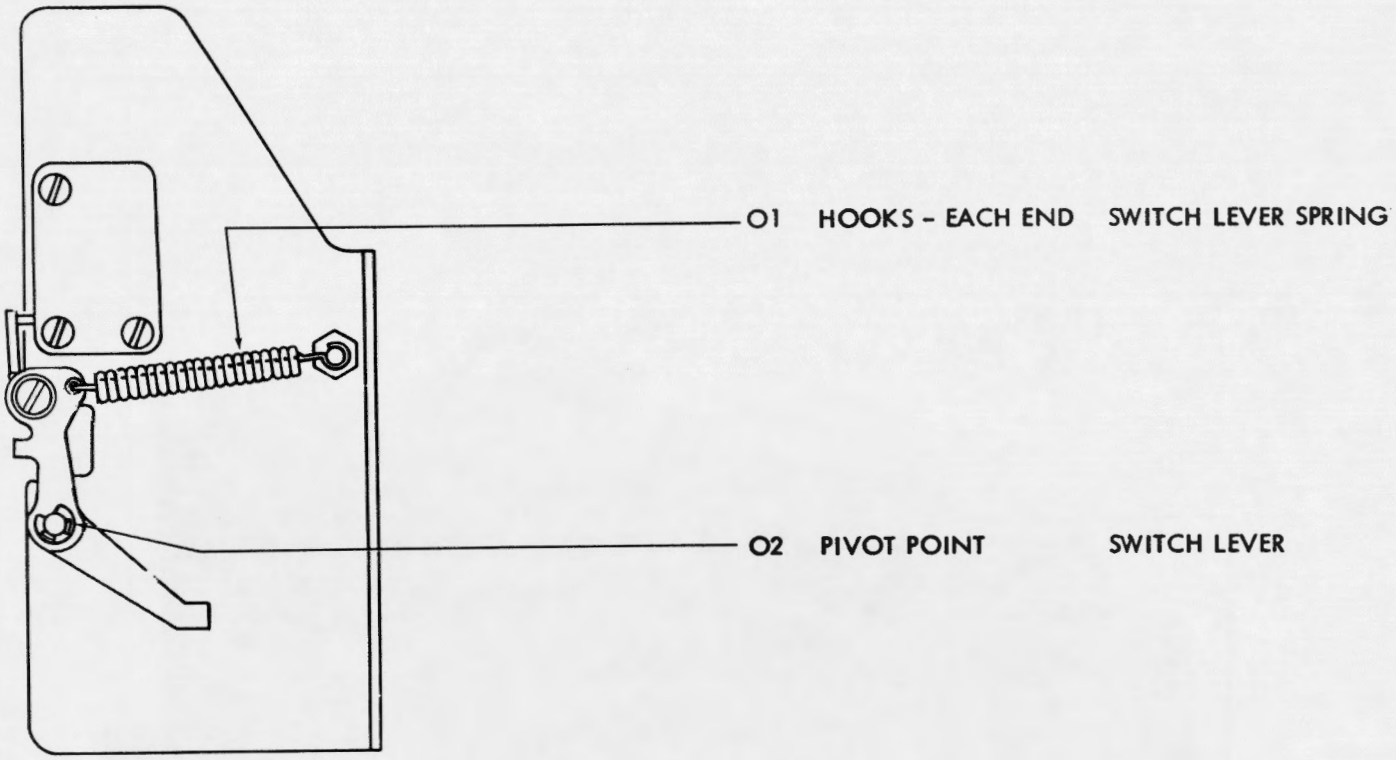
4.05 Remote Control Noninterfering BLANK Tape Feed-Out Mechanism continued
(For Later Design See Part 3 Variable Features)



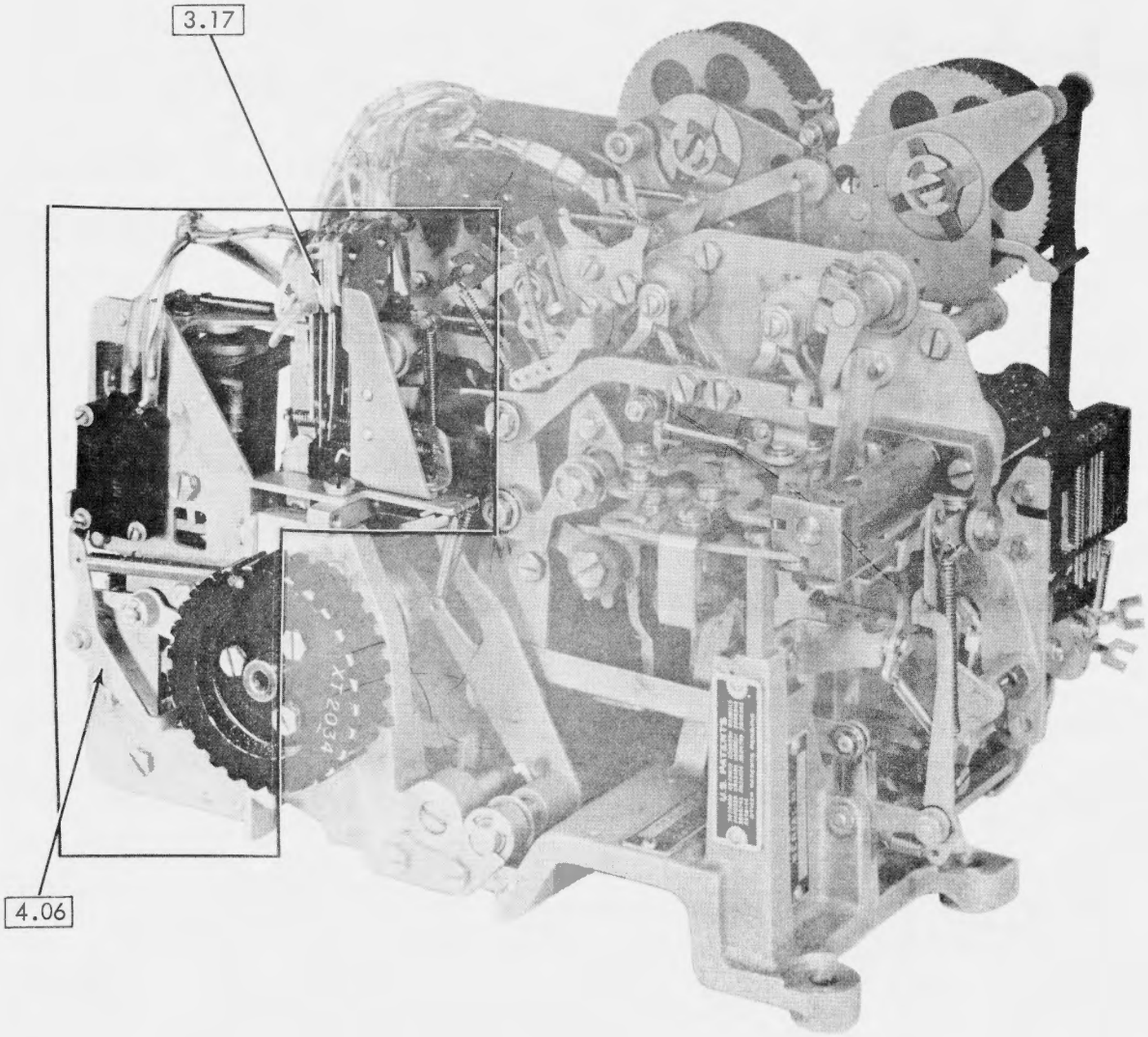




4.06 Remote Control Noninterfering **BLANK** Tape Feed-Out Mechanism continued
(For Later Design See Part 3 Variable Features)



4.07 Remote Control Noninterfering Tape Feed-Out Mechanism continued and Timing Contacts



28 TRANSMITTER-DISTRIBUTOR UNIT (LXD)

LUBRICATION

CONTENTS PAGE

1. GENERAL

1.01 This section provides lubrication information for the 5-level 28 transmitter-distributor unit (single contact).

CAUTION: THE UNIT IS SHIPPED WITH OIL RESERVOIR EMPTY. REMOVE COVER PLATE FOR ACCESS AND FILL OIL RESERVOIR AS INDICATED IN 2.07.

1.02 In this section, the general areas of the unit are shown by photographs. The specific points of lubrication are indicated by line drawings and descriptive text. The symbols in the text indicate the following directions:

O1	Apply one drop of oil.
O2	Apply two drops of oil, etc.
G	Apply thin coat of grease.
SAT	Saturate with oil (felt washers, oilers, etc).

1.03 Use KS7470 oil at all locations where the use of oil is indicated. Use KS7471 grease on all surfaces where grease is indicated.

1.04 The unit should be thoroughly lubricated, but over-lubrication which allows oil to drip or grease to be thrown on other parts, must be avoided. Exercise special care to prevent lubricant from getting between armature and pole faces. Keep all electrical contacts free from oil or grease.

1.05 The following general instructions supplement the specific lubricating points illustrated in this section.

(1) Apply one drop of oil to all spring hooks.

(2) Apply a light film of oil to all cam surfaces.

(3) Apply a coat of grease to all gears.

(4) Saturate all felt washers, oilers, etc.

(5) Apply oil to all pivot points.

(6) Apply oil to all sliding surfaces.

1.06 The transmitter-distributor unit should be lubricated before being placed in service or prior to storage. After a few weeks of service, relubricate to make certain that all specified points have received lubricant. There-

after, the following schedule should be adhered to:

OPERATING SPEED	LUBRICATION INTERVAL
60 wpm	3000 hours or 1 year*
75 wpm	2400 hours or 9 months*
100 wpm	1500 hours or 6 months*

*Whichever occurs first.

1.07 For information pertaining to lubrication of associated parts - ie, motors, bases, etc, refer to the appropriate sections.

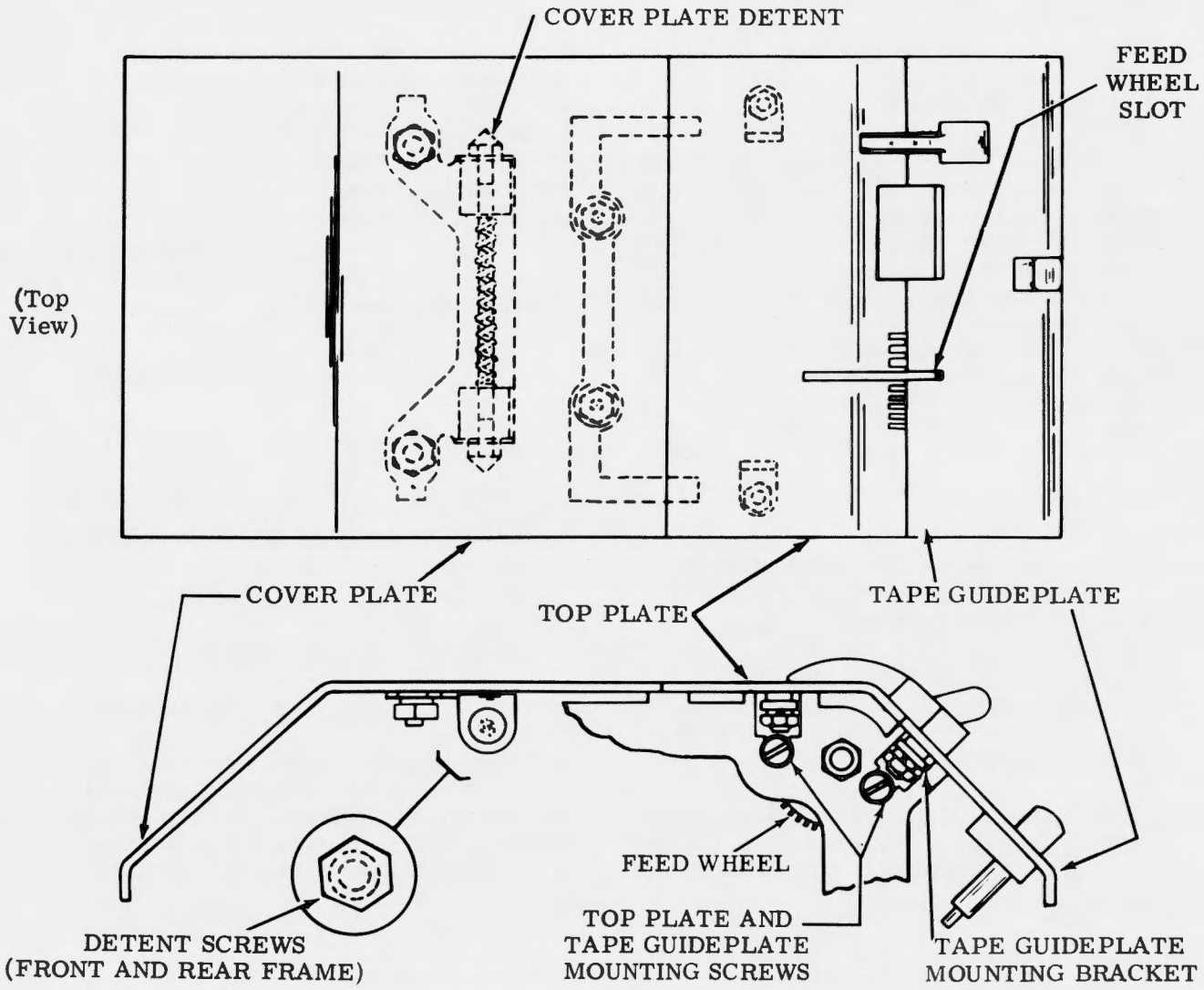
1.08 Instructions

(1) Removing Cover Plate: Lift left end of plate to release the detent fasteners then slide cover plate toward the left. Replace cover in the reverse order.

(2) Removing Top Plate: Loosen the front and rear mounting screws. Lift top plate upward.

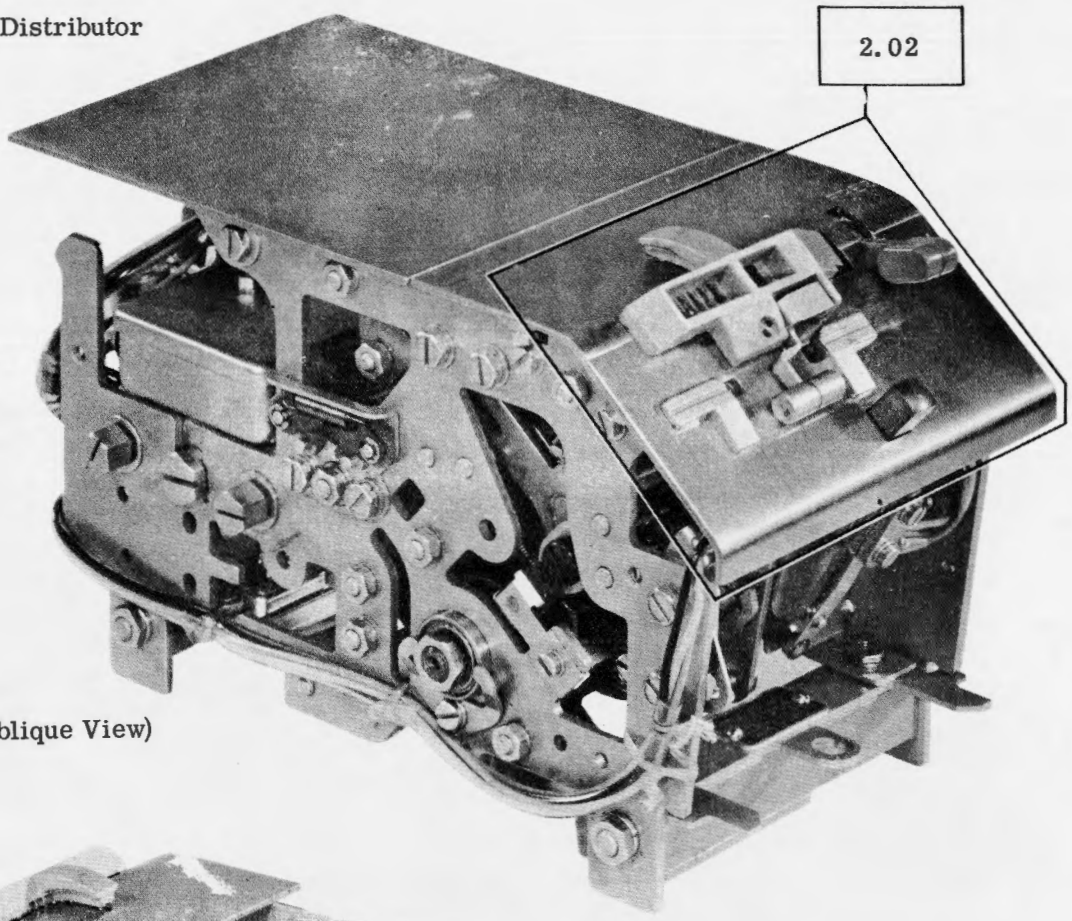
(3) Remaining Tape Guideplate: Loosen the tape guideplate mounting screws. Lift the tape guideplate.

(4) Removing Transmitter-Distributor Assembly: Remove the screws which attach the unit to the base, and lift unit up to disengage the gears. Disconnect electrical plug.

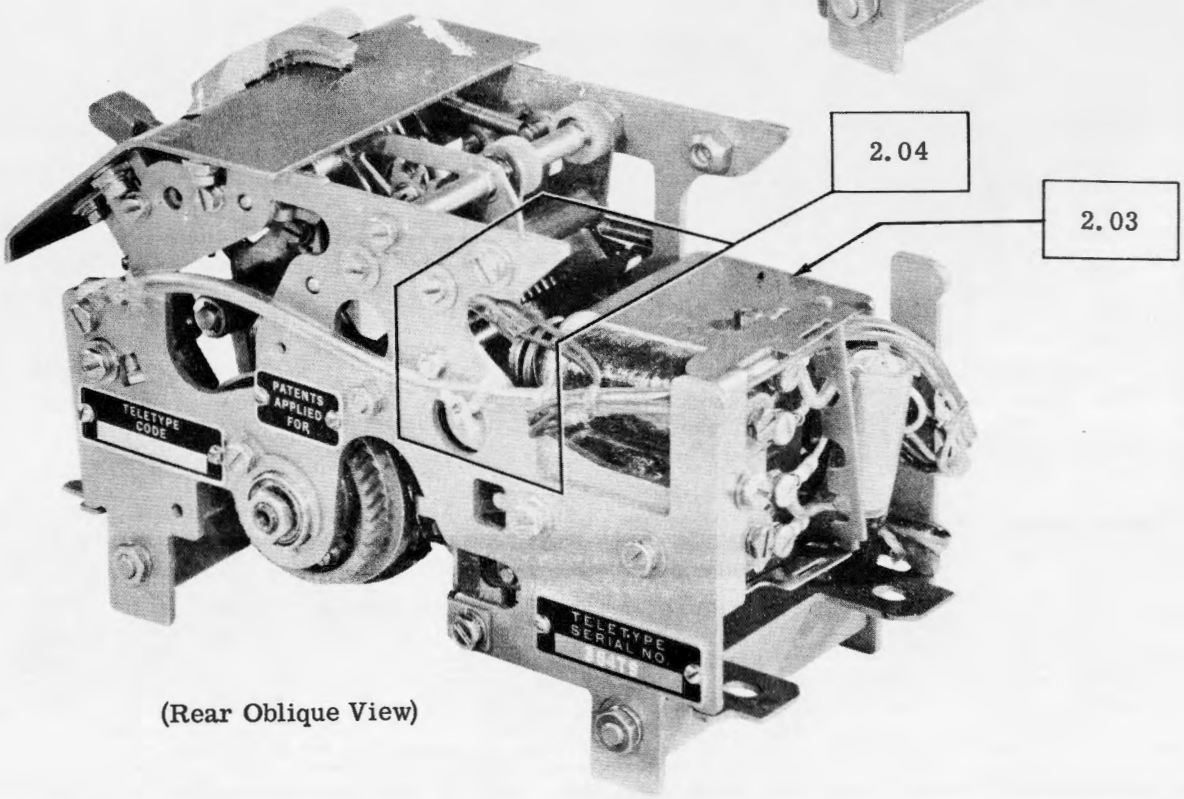


2. BASIC UNIT

2.01 Transmitter Distributor

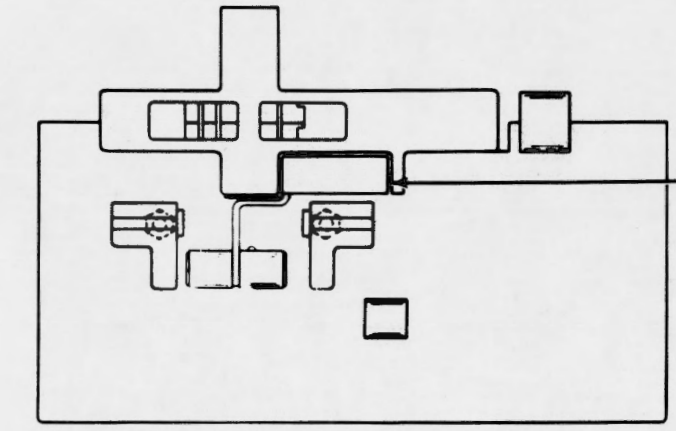


(Front Oblique View)



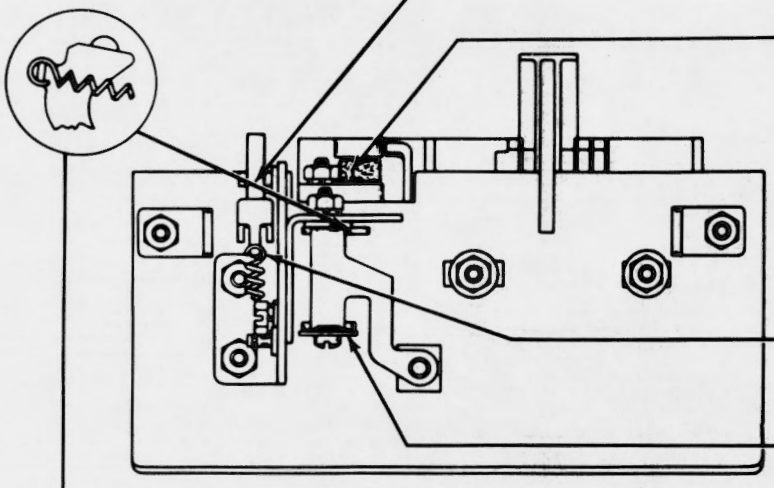
(Rear Oblique View)

2.02 Tape Guideplate



(Right End - Top View)

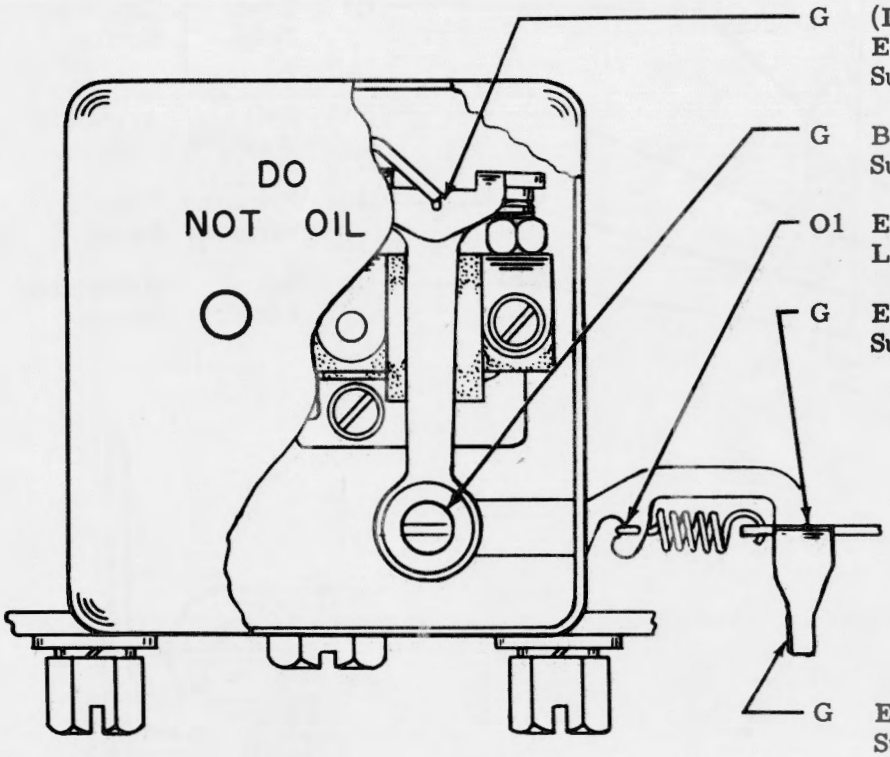
O1	Bearing Surface	Tight Tape Bail



(Right End - Bottom View)

G	Detent Teeth	Control Lever
SAT	Felt Washer	Tape Lid Shaft
O1	Each Loop	Start-Stop Detent Bail
O1	Bearing Surface	Tape Lid Release Bail
G	Latching Surface	Tape Lid Latch
O1	Each Loop	Tape Lid Latch Spring

2.03 Signal Contact Assembly

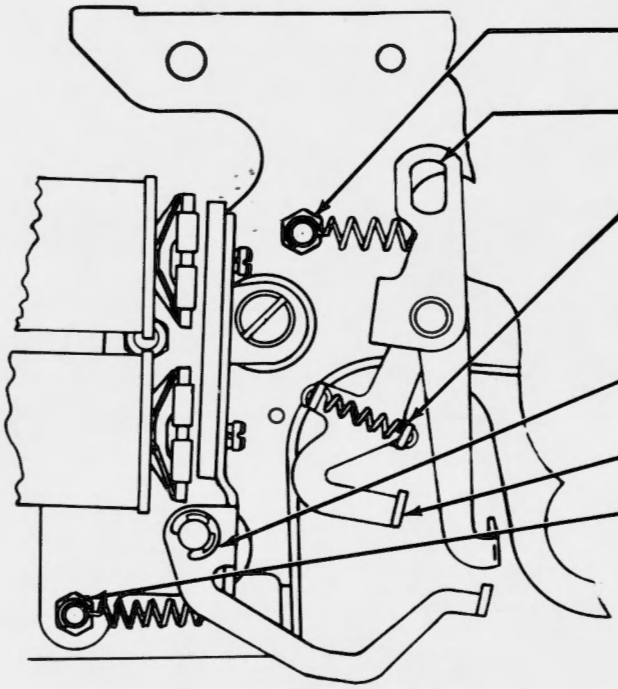


G	(Light Film) Engaging Surface	Toggle Link
G	Bearing Surface	Toggle (Metal) Bushing
O1	Each Loop	Drive Link Spring
G	Engaging Surface	Transfer Bail and Link
G	Engaging Surface	Transfer Bail Extension

(Top View - Cover Plate Removed)

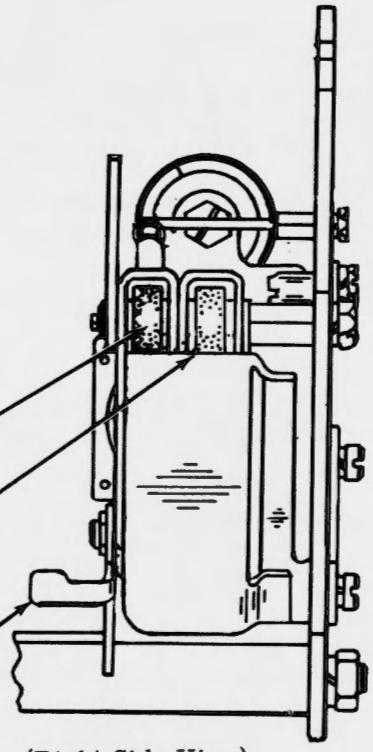
Note: The marking "DO NOT OIL" on the signal contact box should be interpreted literally. Portions of the mechanism should be greased as indicated, but no oil should be used.

2.04 Clutch Trip Assembly



O1	Each Loop	Latchlever Spring
O1	Slot	Clutch Trip Bail
O1	Each Loop	Trip Lever Spring
SAT	Felt Washers	Armature Bail
G	Engaging Surface	Trip Lever
O1	Each Loop	Armature Spring

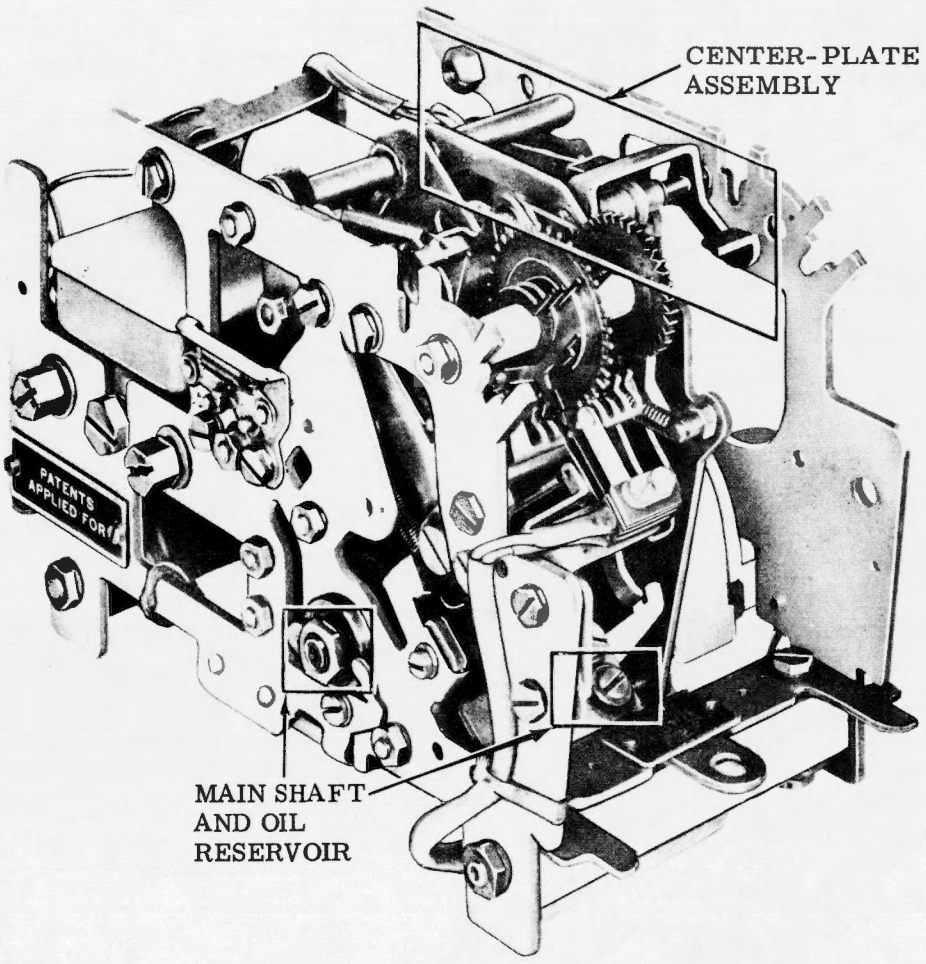
(Front View)



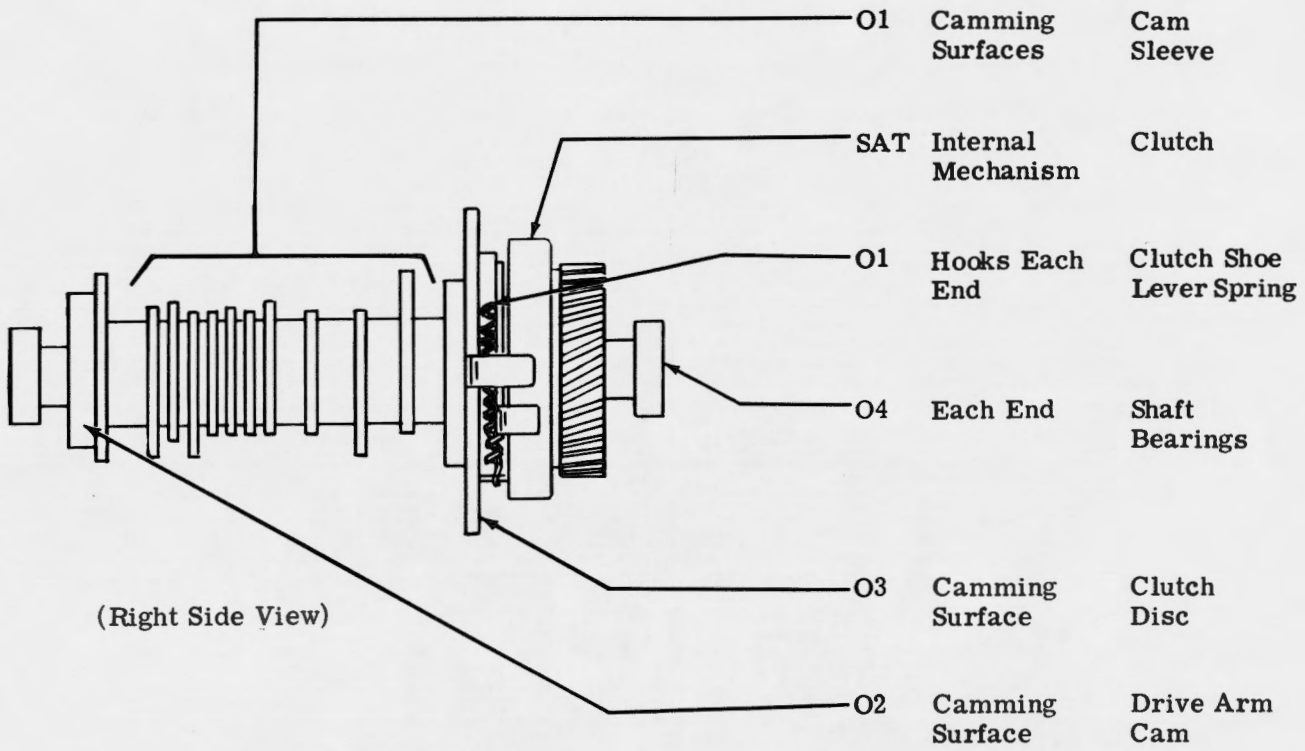
Felt Washer	Latchlever	SAT
Felt Washer	Trip Lever	SAT
Engaging Surface	Armature Bail Extension	G

(Right Side View)

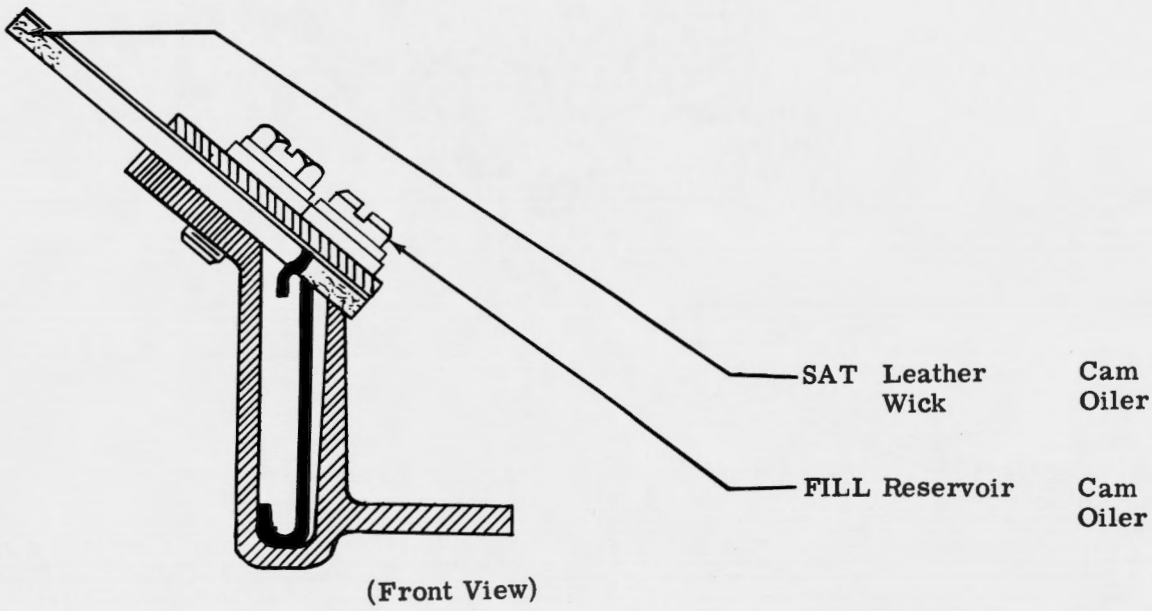
2.05 Main Shaft, Oil Reservoir, and Center-Plate Assembly



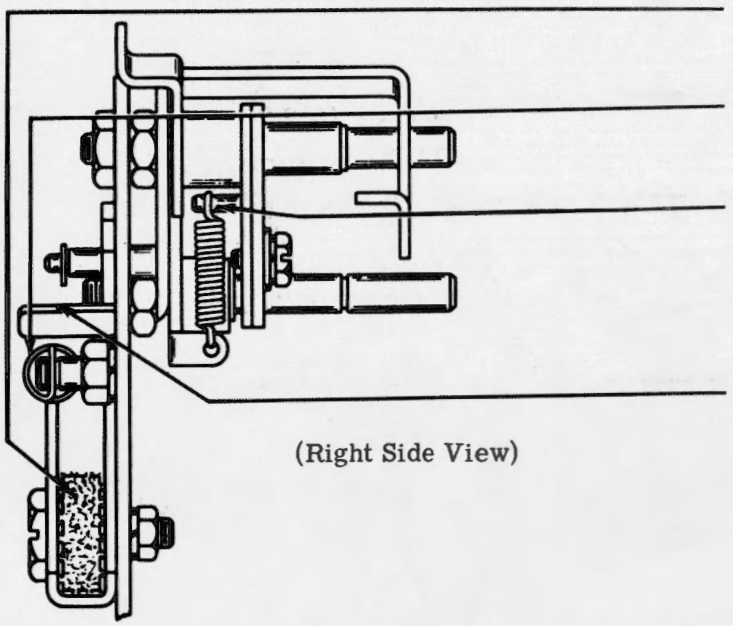
2.06 Main Shaft



2.07 Oil Reservoir

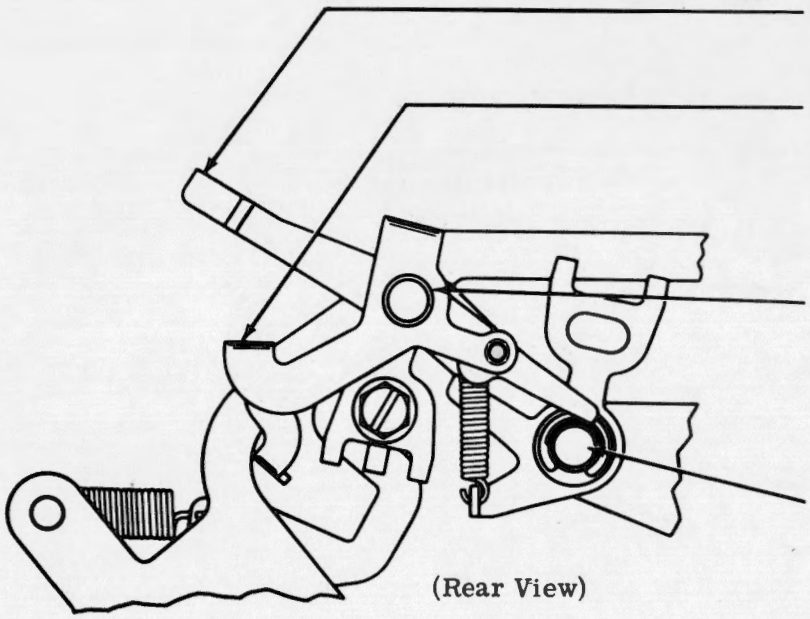


2.08 Center-Plate Assembly



(Right Side View)

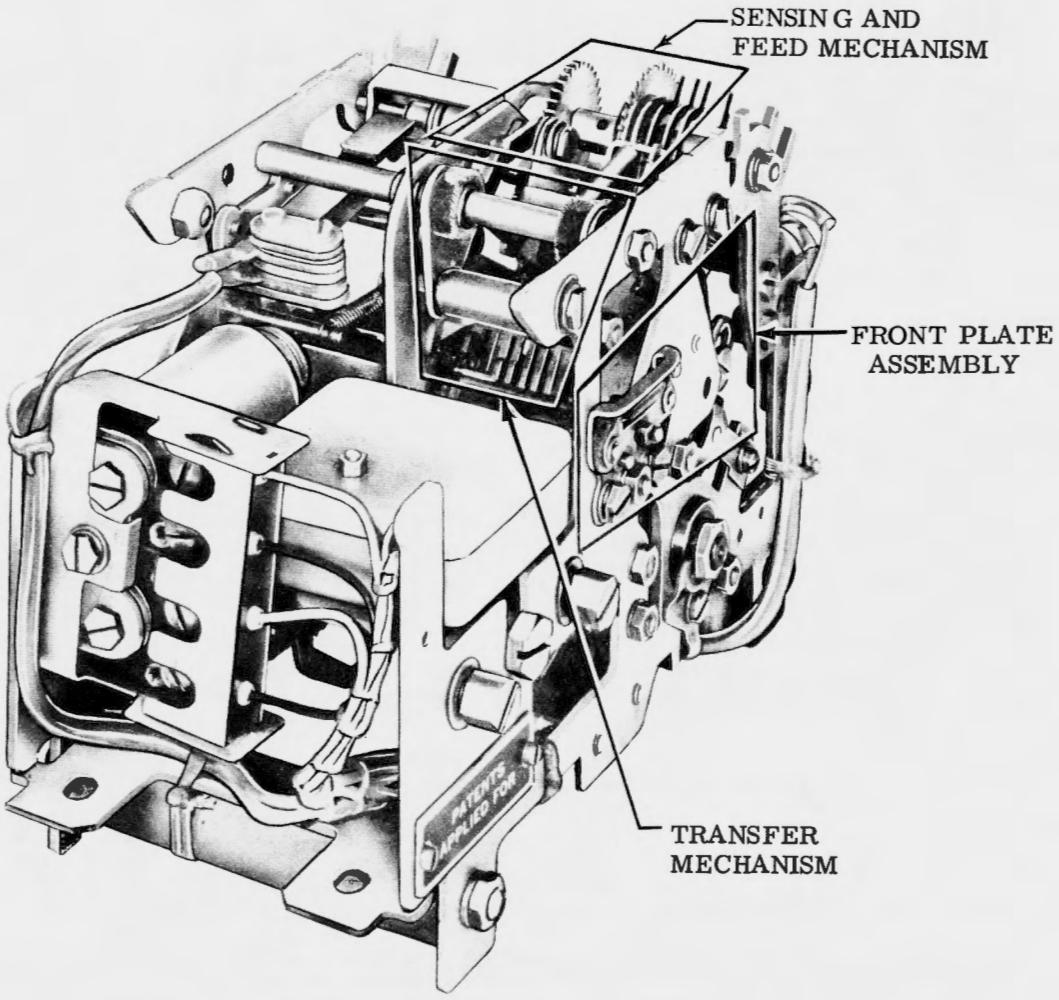
SAT	Felt Washer	Ratchet Detent Bail
O1	Both Loops	Detent Bail Spring
O1	Both Loops	Tight Tape Arm Spring
G	Engaging Surface	Start-Stop Bail Extension



(Rear View)

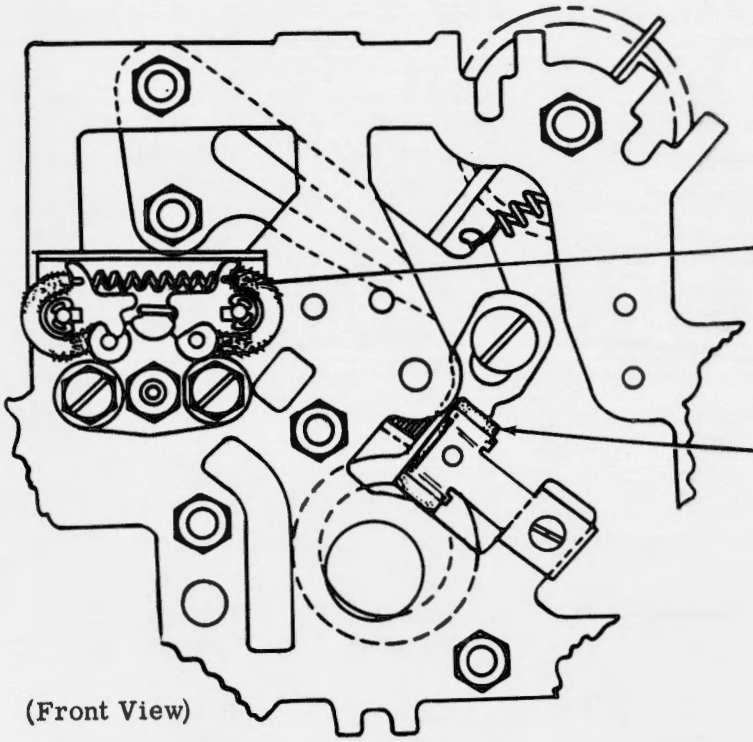
G	Engaging Surface	Tight Tape Arm
G	Engaging Surface	Start-Stop Bail
O1	Bearing Surface	Start-Stop Bail
O1	Bearing Surface	Yield Arm

2.09 Front Plate Assembly, Sensing and Feed Mechanism, and Transfer Mechanism



(Rear Oblique View)

2.10 Front Plate Assembly

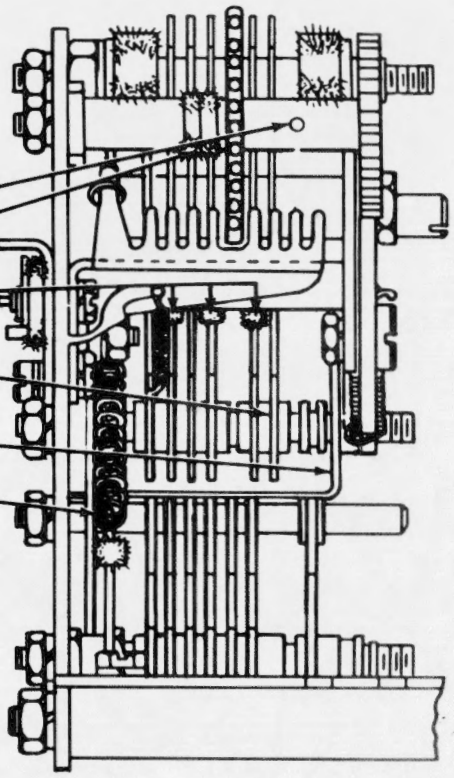


SAT	Felt Wick	Stabilizer Latch
SAT	Leather Wick	Drive Arm Oiler

(Front View)

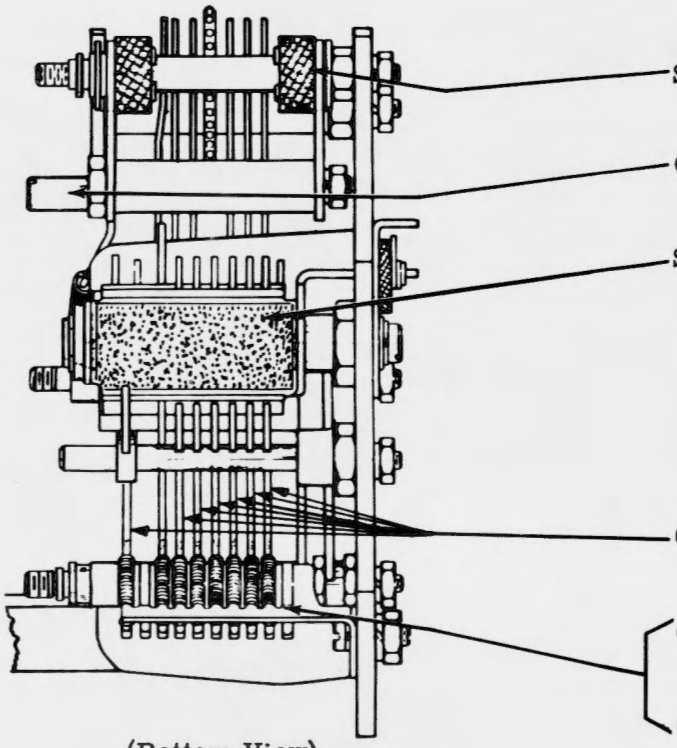
2.11 Sensing and Feed Assembly

Shaft	Feed Wheel	O3
Felt Wicks	Feed Wheel Bearing	SAT
Felt Wicks	Sensing Pins	SAT
Sliding Surface	Sensing Pin Guide Post	O6
Sliding Surface	Locking Bail	O2
Both Loops	Locking Bail Spring	O2



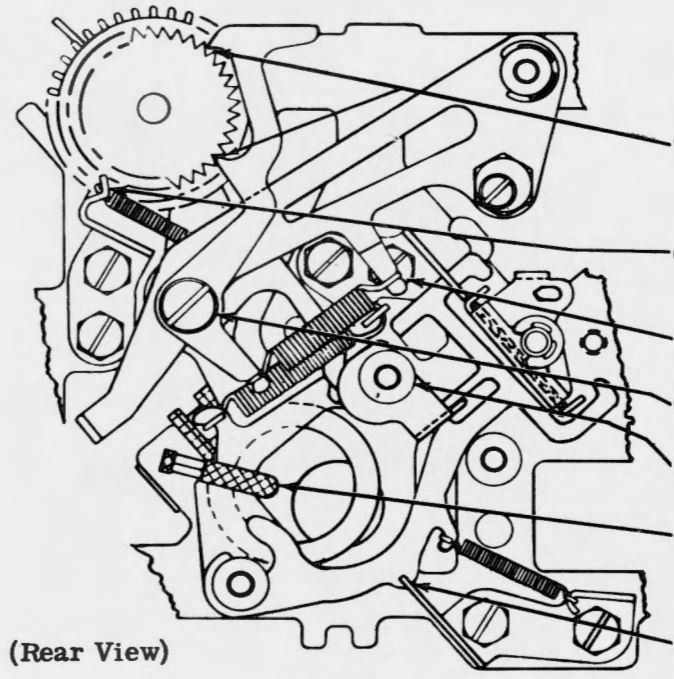
(Bottom View)

2.12 Transfer Mechanism



(Bottom View)

SAT	Each Felt Washer	Main Bail Pivots
G	Sliding Surface	Bail Drive Post
SAT	Leather Pad	Transfer Bail
O1	Sliding Surfaces	Transfer Levers
O1	Each Loop	Transfer Lever Springs
O1	Each Loop	Locking Bail Spring

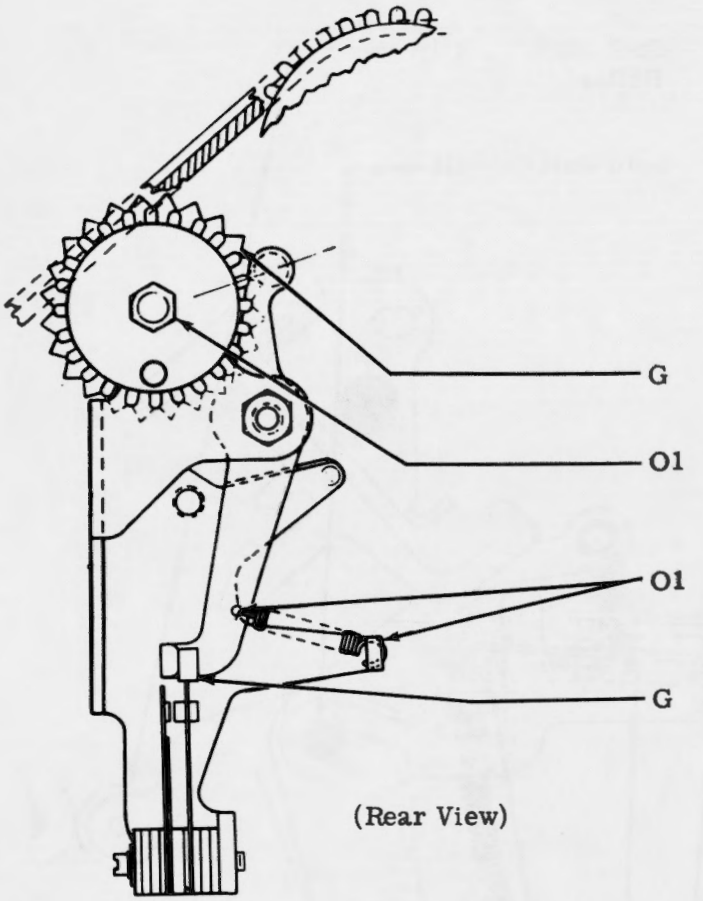


(Rear View)

O1	Teeth	Feed Pawl and Ratchet Wheel
O1	Each Loop	Transfer Lever Springs
O1	Each Loop	Feed Pawl Spring
O1	Sliding Surface	Feed Pawl Pivot
O1	Engaging Surface	Locking Bail
SAT	Felt Washer	Locking Bail
O1	Sliding Surface	Transfer Levers

3. VARIABLE FEATURES

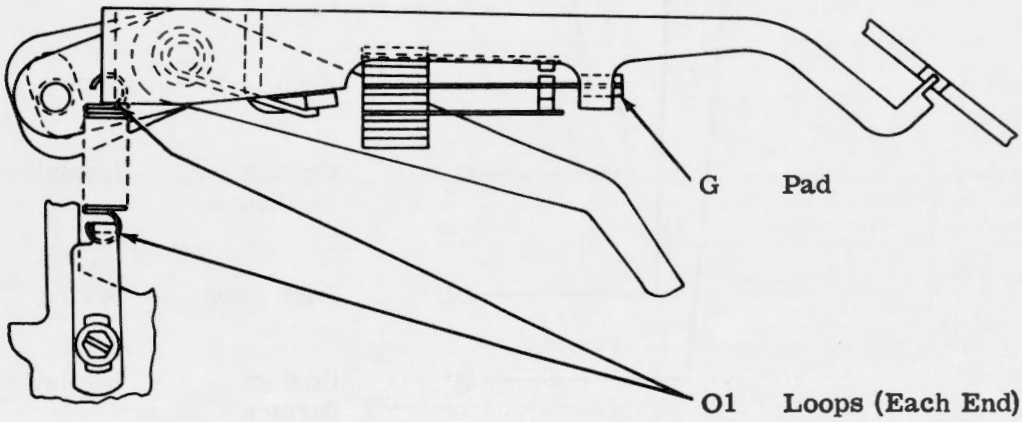
3.01 Tape Feed Assurance Mechanism



G	Teeth	Ratchet Wheel
O1	Bearing	Ratchet Wheel
O1	Loops (Each End)	Detent Lever Spring
G	Pad	Contact Swinger

(Rear View)

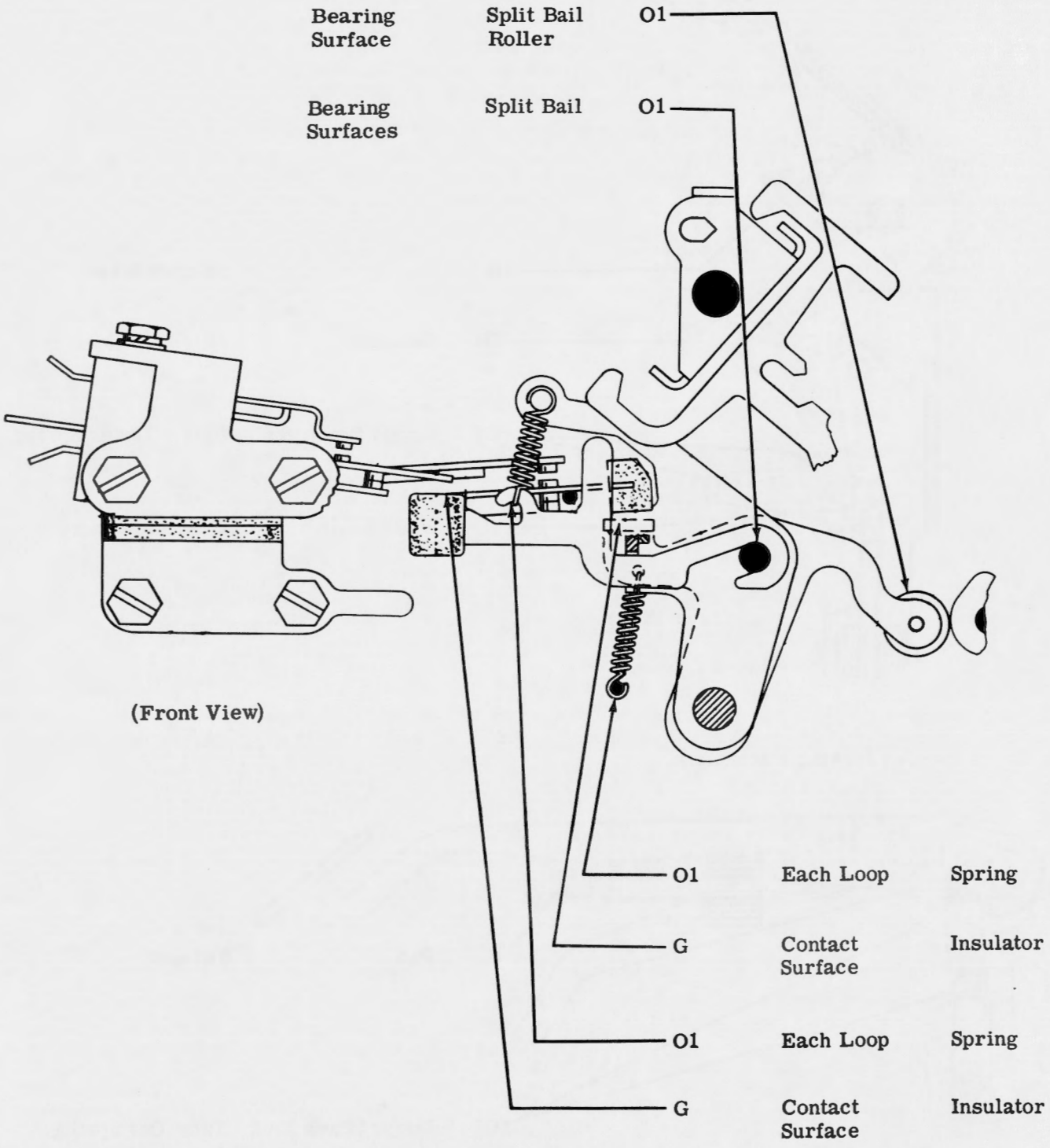
3.02 Tape-Out Sensing Mechanism



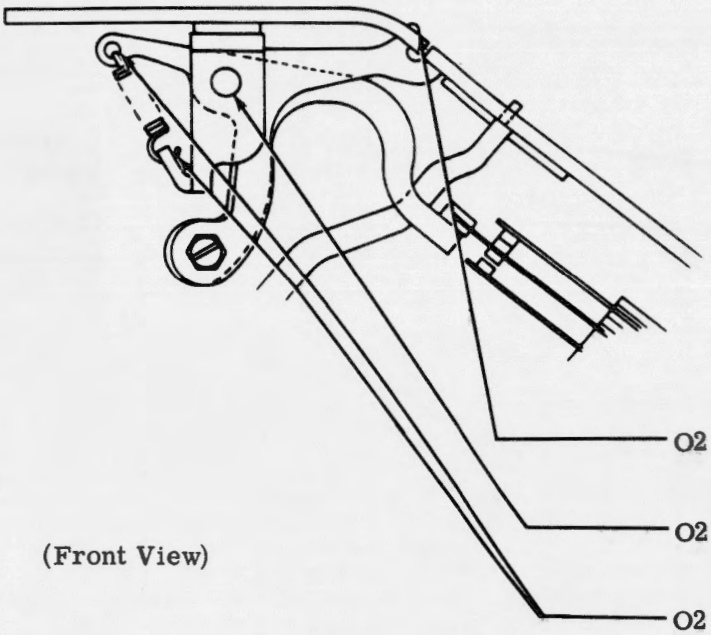
G	Pad	Swinger
O1	Loops (Each End)	Tape-Out Spring

(Front View)

3.03 Code Reading Contacts



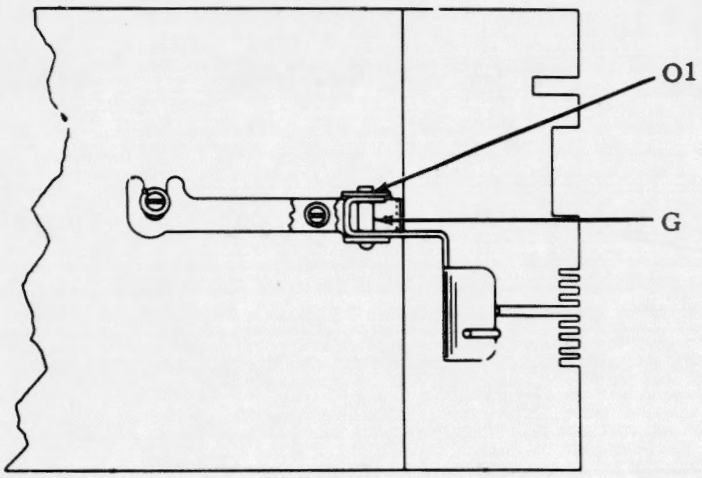
3.04 Tape Lid Sensing Lever



O2	Protrusion	Sensing Lever
O2	Pivot	Sensing Lever
O2	Loops (Each End)	Sensing Lever Spring

(Front View)

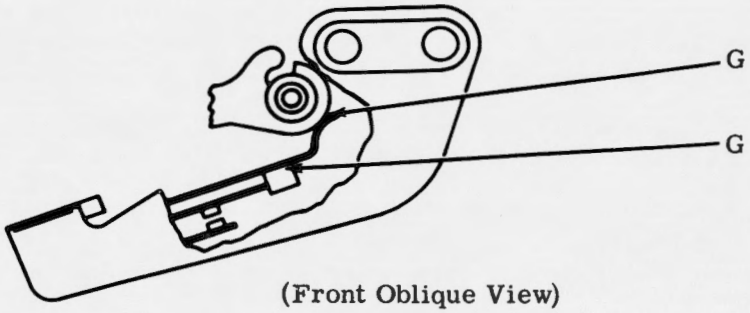
3.05 Tape Deflector



O1	Bearing Surface (Each End)	Tape Deflector
G	Thin Film Contact Surface	Deflector Spring

(Top View)

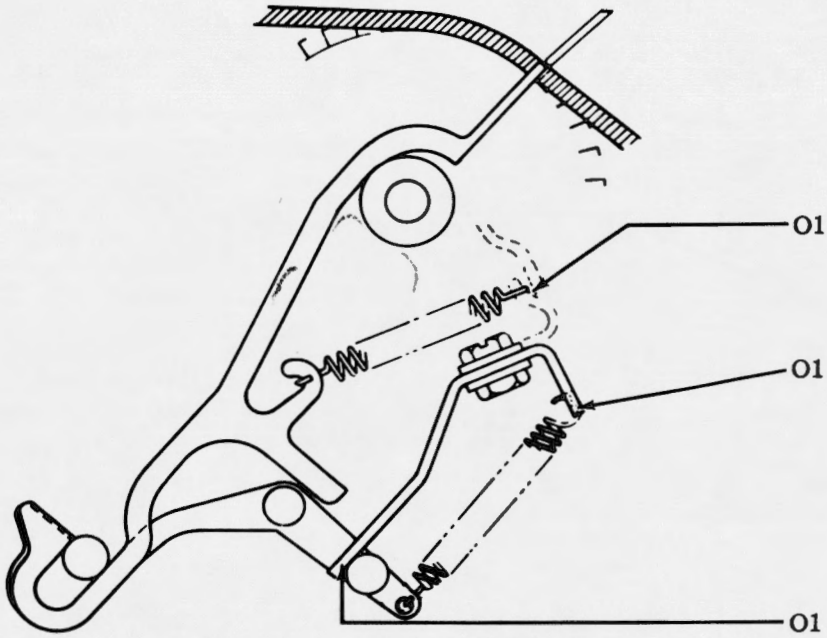
3.06 Start-Stop Pulse Contact



(Front Oblique View)

G	Engaging Surface	Contact Lever
G	Engaging Surface	Contact Insulator

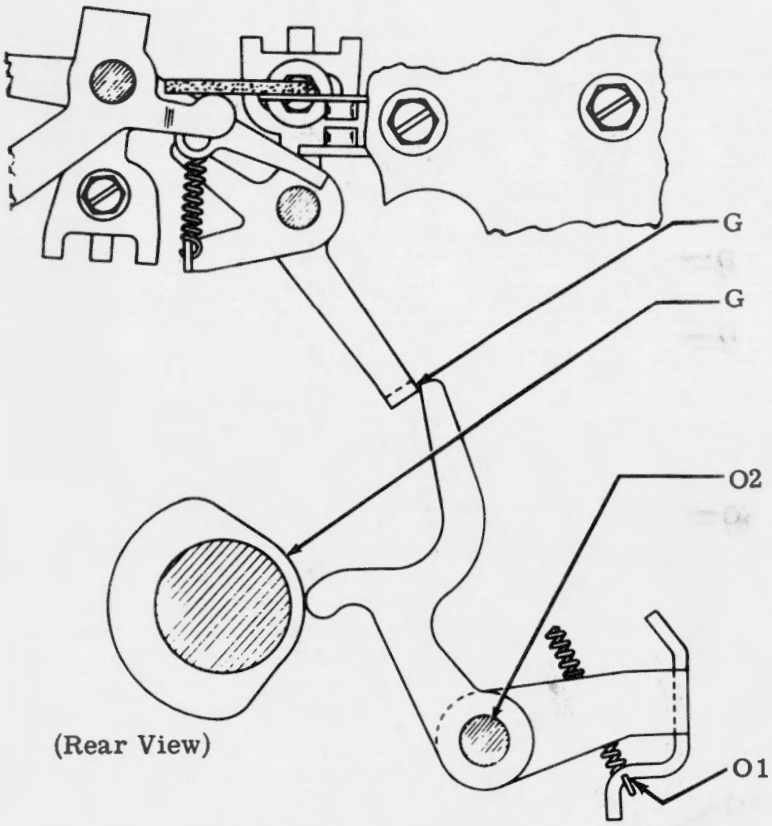
3.07 Rub-Out Deleter



(Front View)

O1	Each Loop	Spring
O1	Each Loop	Spring
O1	Engaging Surface	Deflector Bail Guide

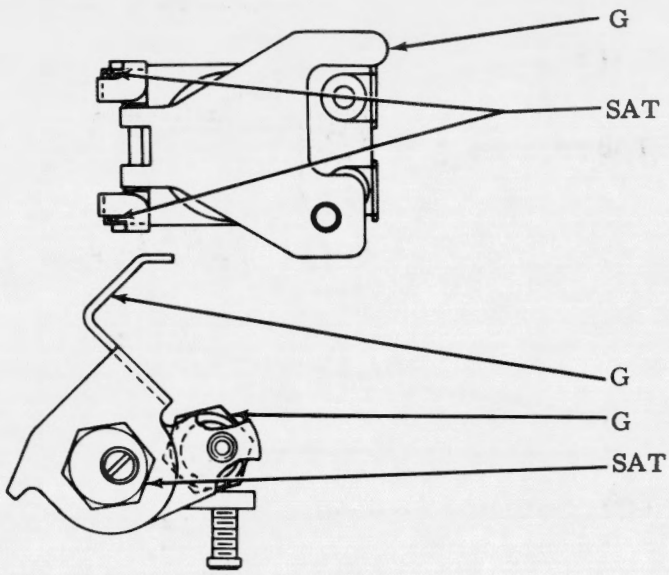
3.08 Transmitter Stop Mechanism



G	Engaging Surface	Timing Arm
G	Light Film	Timing Cam
O2	Bearing Surface	Timing Bail
O1	Each Loop	Spring

(Rear View)

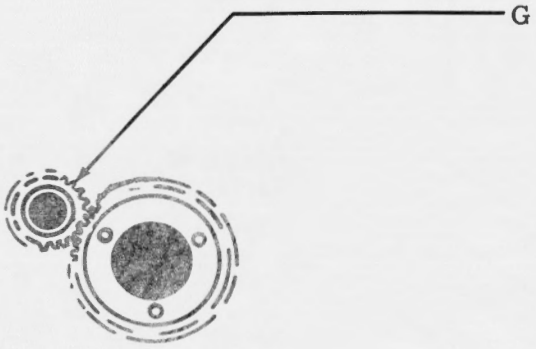
3.09 Tape-Withhold Mechanism



G	Extension	Armature
SAT	Felt Washers	Armature Pivot
G	Extension	Blocking Bail
G	Eccentric	Arm
SAT	Felt Washer	Eccentric Pivot

(Front View)

3.10 All Gears



G	Teeth	All Gears

MOTOR UNITS

LUBRICATION

CONTENTS PAGE

1. GENERAL

1.01 This section has been revised to include additional information for lubricating miniature synchronous motors. Since this issue is a general revision, marginal arrows that indicate changes have been omitted.

1.02 For complete lubrication instructions refer also to the section covering teletypewriter apparatus general lubrication.

1.03 The motor should be lubricated initially, before being placed in service, as specified in the section covering the preparation of teletypewriter apparatus for installation. In the case of a new motor, the information supplied with it pertaining to the amount of lubricant should be used as a guide for further lubrication.

1.04 The suggested lubrication interval is indicated in the chart. However, because of varying conditions of application, the motor should be lubricated as often as specified by local instructions.

1.05 Before lubricating the motor, carefully and thoroughly clean the outer surfaces of the ball oilers with a clean cloth (KS2423) dampened with petroleum spirits (KS7860). Avoid depressing the ball oilers so that grit, dirty grease, or contaminated petroleum spirits do not get into the motor bearings (Par. 2.01).

1.06 Whenever the motor is disassembled the bearings should be repacked with Beacon 325 grease or equivalent.

1.07 The exposed motor shaft should be covered with a thin film of grease to prevent rust.

1.08 Use KS7470 oil where oil is specified.

1.09 The miniature synchronous motor does not contain ball oilers, as in the larger type motors, but has only a single oil hole in each end shield as shown in Par. 2.02.

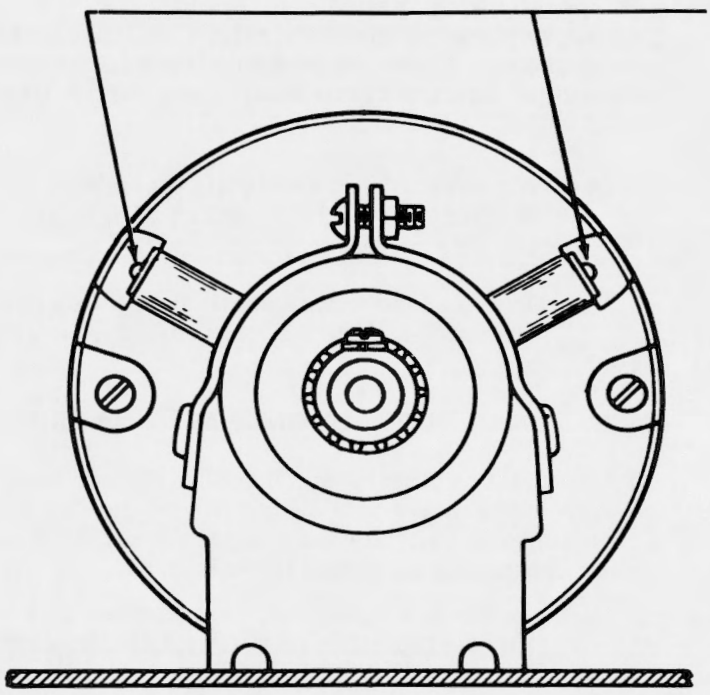
CAUTION: DO NOT USE GREASE GUN ON 28, 32, 33 & 37 MOTOR UNITS.

LUBRICATION INTERVAL

Motor Unit	Interval
Standard and heavy duty units	1500 consecutive operating hours or 6 months, whichever occurs first
Miniature units	750 consecutive operating hours or 3 months, whichever occurs first.

2. LUBRICATION

2.01 Motor Bearings - Standard Motors
Lubrication of motor bearings with ball type oilers.

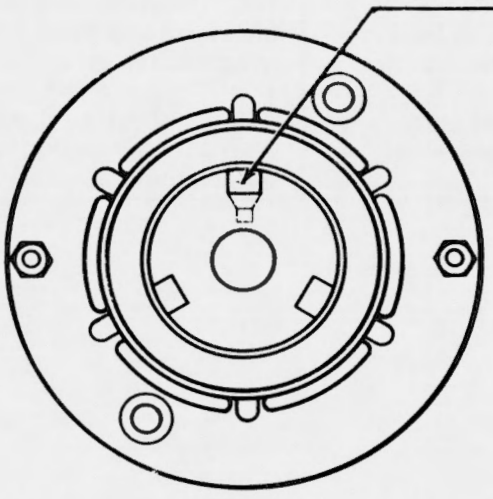


O6 Two Oilers at Each End (Depress Oiler With Metal Object)

Motor Bearings

Note: If motor is disassembled at any time, do not replace bearings until they have been repacked with (Teletype 195298) (Beacon 325 or its equivalent) grease.

2.02 Motor Bearings - Miniature Motors



O6 Oil Hole (2)

Oil Hole (One at Each End of Motor)

28 CABINET FOR AUTOMATIC SEND-RECEIVE TELETYPEWRITER SETS

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL

1.01 This section contains specific routines for disassembling the 28 teletypewriter cabinet, and where necessary provides detailed reassembly information.

1.02 The technician should refer to the exploded views found in appropriate parts literature for an illustration of the mechanism to be disassembled, for location and visual identification of parts and detailed disassembly and reassembly features.

2. DISASSEMBLY AND REASSEMBLY

2.01 In removing a subassembly from the cabinet, the procedure followed and the location from which parts are removed must be carefully noted so that reassembly can be done correctly. Where no specific instructions are given for reassembly, reverse the procedure used in removing it.

2.02 To remove front panel, remove the typing unit in accordance with the section entitled "28 Typing Unit, Disassembly and Reassembly." Taking care not to damage the character counter, remove the front panel from the teletypewriter cabinet by removing the two screws, lockwashers, and washers at the left end of the panel and loosening the thumbscrew (inside of cabinet) at the right end of the panel. Slide the panel out to the left.

2.03 To remove the transmitter-distributor housing (pivoted and fixed head, multi-contact) remove the two screws, lockwashers, and flat washers that mount it.

(a) Remove the screw, lockwasher and flat washer (inside of teletypewriter cabinet) that secure the lower right-hand corner of the crossbar to the teletypewriter cabinet.

CAUTION: DO NOT LOOSEN OR REMOVE THE SCREW, LOCKWASHER, AND FLAT WASHER THAT SECURE THE ADJUSTING PLATE, WHICH IS FACTORY POSITIONED.

(b) Loosen the two screws, lockwashers, and flat washers that secure the left edge of the crossbar (with nut plate) to the left panel of the teletypewriter cabinet.

(c) Remove the crossbar by sliding it out to the left.

2.04 To remove the transmitter-distributor housing (pivoted head, multi-contact), remove the screw, lockwasher, and flat washer (inside of teletypewriter cabinet) that secure the lower right-hand corner of the crossbar to the teletypewriter cabinet.

CAUTION: DO NOT LOOSEN OR REMOVE THE SCREW, LOCKWASHER, AND FLAT WASHERS, THAT SECURE THE ADJUSTING PLATE, WHICH IS FACTORY POSITIONED.

(a) Loosen the two screws, lockwashers, and flat washers that secure the left edge of the crossbar (with nut plate) to the left panel of the teletypewriter cabinet.

(b) Remove the crossbar by sliding it out toward the left.

2.05 To remove the transmitter-distributor housing (fixed head, single contact or fixed head, multi-contact), slide it forward to release it from the detent springs that hold it in place.

(a) Remove the screw, lockwasher, and flat washer (inside of teletypewriter cabinet) that secure the lower right-hand corner of the crossbar to the teletypewriter cabinet.

CAUTION: DO NOT LOOSEN OR REMOVE THE SCREW, LOCKWASHER, AND FLAT WASHER THAT SECURE THE ADJUSTING PLATE, WHICH IS FACTORY POSITIONED.

(b) Loosen the two screws, lockwashers, and flat washers that secure the left edge of the crossbar (with nut plate), to the left panel of the teletypewriter cabinet.

(c) Remove the crossbar by sliding it toward the left and rear to disengage it from the slotted holes in the teletypewriter cabinet.

28 ELECTRICAL SERVICE UNITS

DISASSEMBLY AND REASSEMBLY

1. GENERAL

1.01 This section provides disassembly and reassembly instructions for 28 electrical service units used in teletypewriter sets. It is reissued to provide additional information in a standardized format. Since this is a general revision, marginal arrows ordinarily used to indicate changes and additions have been omitted.

1.02 When it is necessary to remove the various components from the electrical service unit, the appropriate wiring diagrams should be used as a reference.

1.03 After the disassembly procedure has been followed, reassembly procedure for most components is obviously a reversal of the disassembly procedure. Where necessary, reassembly information is given.

Note: Remove power from unit before starting disassembly procedure.

2. DISASSEMBLY AND REASSEMBLY

2.01 Removal of 28 Electrical Service Unit from 28 Teletypewriter Cabinet used with 28 Keyboard Send-Receive (28 KSR) or Receive-Only (28 RO) Teletypewriter.

(1) Raise dome of cabinet and disconnect all plugs and receptacles from the typing unit.

(2) Remove the typing unit in accordance with the section entitled "28 Typing Unit, Disassembly and Reassembly."

(3) Disconnect all plugs and receptacles from the keyboard and remove the keyboard.

(4) Remove the mounting studs from each end of the electrical service unit.

Note: The electrical service unit may now be turned upside down for servicing or unwiring components.

(5) The various components may be removed from the unit by removing their mounting screws on the top side of the unit and disconnecting cabling and wires.

(6) If it is desirable to remove the electrical service unit completely from the cabinet, disconnect the remaining wires and cables.

2.02 Removal of Electrical Service Unit from Skin-Tight KSR Sets (Located behind the typing unit cover):

(1) Unlatch electrical service unit cover at each end and lift cover off.

(2) Remove the mounting studs from each end of the electrical service unit and lift unit off base.

(3) Remove various components from the electrical service unit by removing their mounting screws and disconnecting wire or cable connections as necessary.

2.03 Removal of 28 Electrical Service Unit from 28 Automatic Send-Receive Sets (28 ASR):

(a) Without auxiliary equipment

(1) Raise the dome of the cabinet and disconnect all plugs and receptacles from the typing unit.

(2) Remove the typing unit in accordance with the section entitled "28 Typing Unit, Disassembly and Reassembly."

(3) Disconnect all plugs and receptacles from the perforator-transmitter base.

(4) Remove the mounting studs from each end of the electrical service unit.

(5) Remove the power control switch assembly bracket at the right end of the unit and the line-test-key control assembly at the left end.

(6) Remove various components from the electrical service unit by removing their mounting screws and disconnecting wire or cable connections as necessary.

(7) If it is desirable to remove the electrical service unit completely from the cabinet, disconnect the remaining wires and cables.

Note: On some sets it may be necessary to remove the perforator transmitter in order to completely remove the electrical service unit. If necessary, refer to the appropriate section for removing the equipment from the cabinet.

(b) With auxiliary equipment

Note: When Automatic Send-Receive Sets include an auxiliary typing reperforator, an electrical service unit is used in the lower compartment of the ASR cabinet. To disassemble these units, open the bottom compartment.

(1) Disconnect all plugs and receptacle connections between the electrical service unit and other components and from the cabinet terminal boards.

(2) Remove the studs securing it to the relay rack and lift unit out.

(3) Remove various components from the electrical service unit by removing their mounting screws and disconnecting wire and cable connections as necessary.

28 PERFORATOR-TRANSMITTER BASE

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL

1.01 Disassembly, as outlined in this section, covers a procedure for removing the principle subassemblies which make up the unit.

1.02 The technician should refer to the exploded views found in the appropriate parts literature for an illustration of the mechanism to be disassembled, for location and visual identification of parts and detailed disassembly and reassembly features.

1.03 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

1.04 If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.05 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.06 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

1.07 Raise cabinet lid or enclosure cover and remove the typing unit from its base by removing the four screws that secure it to its keyboard or base. Remove the cable plug connector from the side frame. Lift the typing unit off.

Note: On sets equipped with a form supply container on the rear of the cabinet, rearward foot extensions should be in position to prevent the cabinet from tilting when any of the components are removed.

1.08 Remove the four TP151549 screws that secure the base to the cradle or subbase. Disconnect the cable plug from the connector at the rear of the keyboard base. Remove the base with the motor unit, typing or nontyping perforator still in position.

2. DISASSEMBLY AND REASSEMBLY

2.01 In removing a subassembly from the unit, the procedure followed and the location from which parts are removed must be carefully noted so that reassembly can be done correctly. Where no specific instructions are given for reassembly, reverse the procedure used in removing it.

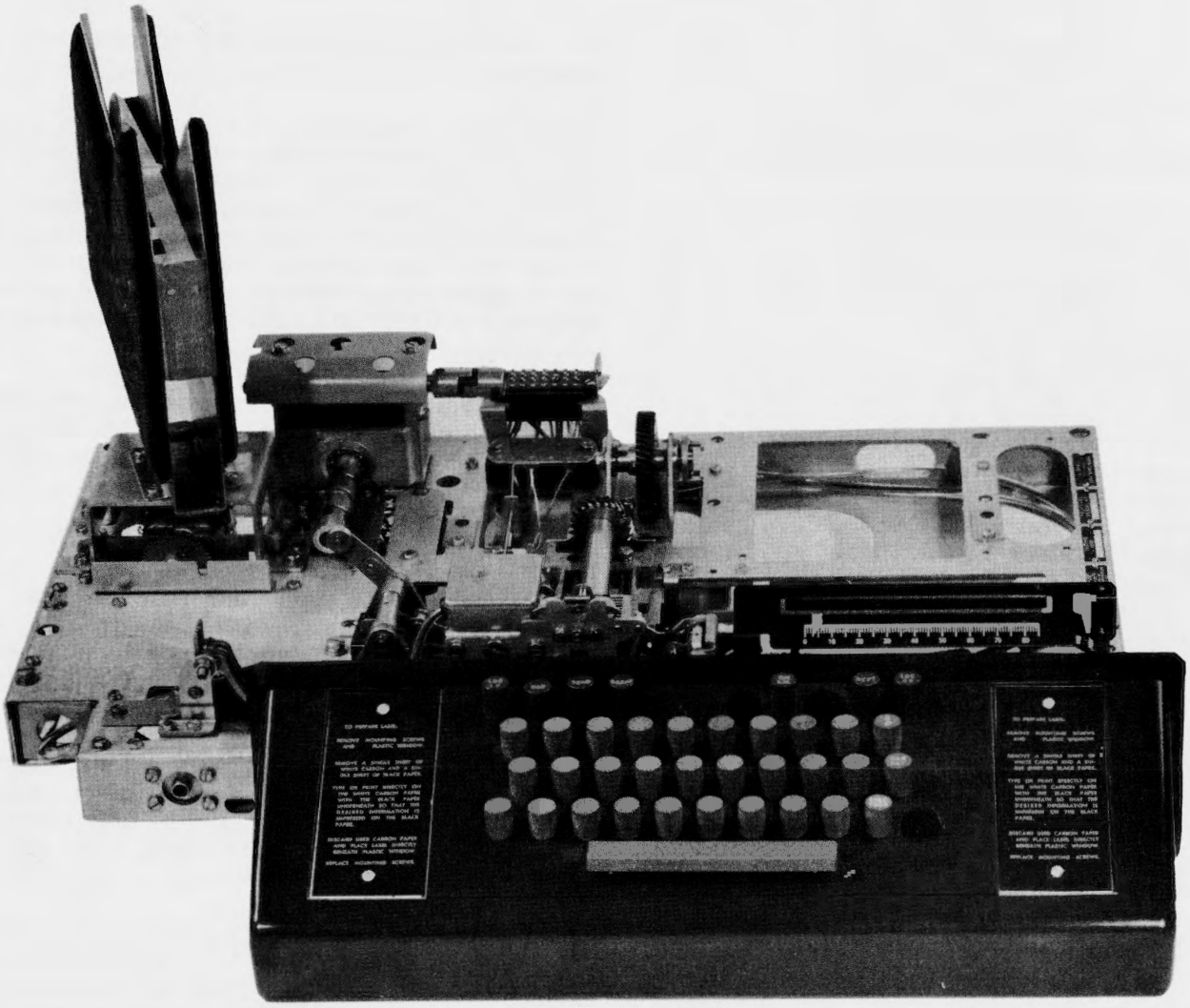


Figure 1 - 28 Perforator-Transmitter Base

CHARACTER COUNTER

2.02 To remove the character counter assembly, remove the two screws that hold the TP179279 character counter bracket to the keyboard base. Raise the character counter and remove the two screws that hold the TP158050 switch to its TP158021 bracket. Remove the character counter assembly.

TAPE CONTAINER

2.03 To remove the tape container assembly, remove the four screws which hold the TP158233 panel mounting bracket to the base.

PERFORATOR (TYPING AND NONTYPING)

2.04 To remove the perforator assembly, loosen the two set screws on the TP193565 coupling located on the TP144992 rear shaft and slide the coupling to the rear to disengage it.

(a) Remove the three screws which hold the TP158169 nontyping or the TP159861 typing perforator frames to the base, and remove the screw which holds the TP156184 bracket to the base. Raise the perforator slightly from the base being careful not to injure the codebar extension or associated springs.

(b) If unit is equipped with power backspace, unscrew the leads from under the magnet assembly before entirely removing the perforator.

MARGIN INDICATOR

2.05 To remove the margin indicator assembly, remove the two screws which hold the TP158162 switch mounting bracket to the TP158160 reset cam follower lever assembly bracket.

RESET CAM FOLLOWER

2.06 To remove the reset cam follower lever assembly, remove the screws which hold the TP158160 reset cam follower lever assembly bracket to the TP158113 basket frame.

(a) Remove the screws that hold bracket to base.

(b) Disengage the follower lever assembly from the selector lever assembly.

AUXILIARY ELECTRICAL SWITCH

2.07 To remove the auxiliary electrical switch and housing assembly, disconnect the cable leads from the TP158250 terminal board located just to the right of the perforator drive shafting.

(a) Remove the three screws which hold the TP158202 auxiliary switch housing to the base.

(b) Slide the housing to the rear and disengage the TP158208 gear from the TP158210 shaft and lift the housing out.

(c) Disengage the drive shaft from the TP158114 extension basket control cam.

CODEBAR EXTENSION BASKET

2.08 To remove the codebar extension basket assembly, remove the screw which holds the left end of the TP158113 extension basket to the base.

Note: For reassembly purposes, observe how the TP158061 link guide pin and the TP158060 trip bar link latch spring which encases it are engaged between the TP158135 clutch trip bar link and the TP158103 trip bar link latch.

Slide the extension basket to the left and disengage the TP158116 reset lever from the TP158099 keyboard control selection lever assembly.

Note: When reassembling, be sure that the selection lever assembly straddles the clutch trip bar extension lever, and that the selection lever fork engages its mating pin.

SIGNAL GENERATOR

2.09 To remove the signal generator assembly, remove the typing unit, if it is present, the TP154131 contact box cover, and disconnect the signal line leads from the TP154042, TP154043 contact terminals.

(a) Remove the two screws at the front of the TP154200 signal generator frame and screw at the right rear of the frame.

(b) Lift the signal generator carefully, while holding the TP154179 universal bail back so that the TP154237 nonrepeat lever clears and its spring will not be excessively stretched.

CAUTION: IF THE NONREPEAT LEVER IS PULLED DOWN APPROXIMATELY 90 DEGREES FROM THE NORMAL POSITION, ITS SPRING MIGHT BE STRETCHED BEYOND ELASTIC LIMITS WHICH WILL RESULT IN ASSEMBLY MALFUNCTION. MAKE SURE THE LEVER IS IN ITS SLOT BEFORE SETTING IT DOWN.

KEYBOARD HOOD

2.10 To remove the plastic windows and labels, hood, seals and seal plates, remove the four screws which secure the TP154198 windows and labels.

(a) Remove the two screws underneath the TP154110 hood which hold the hood to the TP154203 hood mounting bracket; and remove the four screws on top of the hood which hold it to the TP154210, TP154211 left and right frame mounting brackets. Pull the hood forward to remove.

(b) Stretch the TP154020 rubber keyboard seal off its TP154057, TP154058 plates.

(c) Remove four screws and two TP154203 hood mounting brackets.

(d) Remove the TP154058 upper seal plate by removing the three screws at its rear.

(e) Remove the TP154057 lower seal plate by removing the screws at its front.

CONTACT BOX

2.11 To remove the contact box assembly, remove the TP154131 contact box cover and disconnect the signal line leads.

(a) Unhook the TP86304 drive link spring.

(b) Remove the two screws at the front of the TP154009 front plate which hold the contact box assembly.

(c) Disengage the TP156644 drive link from the transfer bail and lift off the assembly. It is more economical to replace the entire contact assembly if the contacts need replacement.

KEYBOARD

2.12 Remove the typing unit, signal generator assembly and keyboard hood assembly.

Note: It is easier to disassemble and reassemble the keyboard assembly with the base standing on its rear.

(a) Remove the four screws which hold the TP154210, 154211 front frames to the front of the TP158000 base.

(b) Remove the two screws which hold the TP154068, TP154069 right and left code-lever guide brackets at the top of the base, and the two screws at the extreme right and left of the TP154055 front bracket which hold it on the base.

(c) When these four screws in front and four on top of the base have been removed, tip up the front of the keyboard assembly and pull it forward, disengaging the function levers.

(d) Note that all function levers are under their corresponding function bails — except the keyboard lock function lever which fits on top of its function bail.

(e) When reassembling, depress the keyboard lock keylever so that the lock function lever will go in over its bail instead of under as the other function levers should.

TRANSFER LEVER LOCKING BAIL

2.13 Remove the signal generator assembly from the keyboard (see 2.09).

(a) Remove the contact assembly (see 2.11).

(b) Remove the TP70388 transfer lever locking bail spring.

(c) To remove the TP151140 locking bail, trip the clutch and rotate the shaft until the cam is positioned so that the bail can be unhooked and dropped from its guide post. Turn the locking bail clockwise until it is at right angles to the guide, and extract it from the bottom of the frame.

Note: It may be necessary to move the shaft back and forth to position the cam for maximum clearance.

SIGNAL GENERATOR SHAFT

2.14 Remove the transfer lever locking bail (see 2.13).

(a) Remove the two screws which mount the TP154101 clutch shaft rear mounting plate to the TP154200 signal generator frame, and remove the nut which locks the shaft to the front of the frame.

(b) Hold the TP154033 clutch latchlever and the TP154034 clutch stop lever away and pull back on the shaft rear mounting plate to disengage the shaft from the front plate.

(c) Remove the entire cam, clutch, and shaft assembly by rotating it to clear the various transfer levers. The TP154019 code bar bail eccentric follower, the TP154138 felt washer and the TP154083 cam spacer will fall free. These must be repositioned before reassembly.

(d) To take the cam (with clutch assembly) off the shaft, disengage the clutch by holding the clutch shoe lever against the stop lug and slide the cam and clutch off.

KEYLEVER GUIDE PLATE

2.15 Remove the keyboard hood assembly (see 2.10).

(a) Remove the TP151045 space bar by unscrewing the two shoulder screws that fasten it to the TP154117 space bar bail.

(b) Remove the screw on the keylever guide plate under the space bar and the two screws in the upper corners of the plate which hold the plate to the frame.

(c) Work the guide plate off the keytops and let them fall free.

(d) To replace the guide plate over the keylevers, flop all levers to the rear. Place the front end of the guide plate down on the frame; push the keylevers into their respective holes starting with the bottom row and proceeding upward to the top row.

28 TYPING UNIT

DISASSEMBLY AND REASSEMBLY

CONTENTS

1. GENERAL

1.01 This section is issued to describe the disassembly and reassembly procedures for the 28 typing unit. Disassembly covers a procedure for removing the principal sub-assemblies which make up the unit.

1.02 Reference should be made to the exploded views found in the appropriate parts literature for an illustration of the mechanism to be disassembled, for location and visual identification of parts, and detailed disassembly and reassembly features.

1.03 Disassembly should be confined to sub-assemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the sub-assemblies, be sure to check all associated adjustments, clearances, and spring tensions.

1.04 If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.05 Retaining rings are made of spring steel and have a tendency to release suddenly when attempting to remove them. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.06 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs when removing them.

1.07 With cabinet lid raised or enclosure cover removed, loosen and remove the four screws that secure the typing unit to its base. Disconnect the cable plug connector from the side frame. Lift the typing unit off.

2. DISASSEMBLY AND REASSEMBLY

2.01 When removing a sub-assembly from the unit, the procedure followed and the location from which parts are removed must be carefully noted so that reassembly can be done correctly. Where no specific instructions are given for reassembly, reverse the procedure used in removing it.

TYPE BOX

2.02 To Remove: Trip the type box latch to the right. Lift the right end of the type box upward to an angle of approximately 45 degrees and pull toward the right to disengage it from the left hand bearing stud.

2.03 To disassemble the type box for replacing type pallet or spring, proceed as follows:

(a) Remove both screws and nuts that secure the front plate to the rear plate assembly. Separate the two plates.

(b) Remove the spring from the pallet by compressing it slightly and pulling the formed end out of the slot in the pallet.

Note: This spring should be discarded once it has been removed from its assembly.

(c) When installing the new spring, make certain that the formed end extends through the slot in the pallet.

(d) To reassemble the type box, line up the front plate with the rear plate assembly and draw the two plates together until the head of the pallet leaves the rear plate by approximately 1/16 inch. This may be accomplished by using two 6-40 screws (at least 11/32 inch long) and nuts in place of the two screws and nuts removed when disassembling, and tighten them only enough to hold the pallets as specified above. Do not clamp the plates together until all pallets have been moved into their correct position.

(e) Manipulate the pallets until they fall into their respective openings in the front plate. Press the plates together.

(f) Replace the screws and nuts used in step (d) with screws and nuts removed in step (a).

2.04 To Replace Type Box: Reverse the procedure used in removing it.

CAUTION: TO AVOID SPRINGING THE TYPE BOX LATCH, THE TYPE BOX SHOULD BE FIRMLY SEATED ON THE BEARING STUD AND THE POINT OF THE LATCH SHOULD BE PLACED IN THE NOTCH OF THE TYPE BOX PLATE BEFORE MOVING THE LATCH TO ITS LOCKED POSITION.

PRINTING CARRIAGE

2.05 To Remove: Loosen the two screws in the printing carriage clamp plate and disengage the carriage from the upper draw-wire rope. Move the carriage to the left of its track and tilt the power part forward to disengage the rollers from the track.

2.06 To Replace: Make certain that the printing arm is correctly re-engaged with the printing track. Position the carriage clamp on the upper draw-wire rope for the correct printing carriage position as specified in the adjustment section.

TYPE BOX CARRIAGE

2.07 To Remove: Move the type box carriage to its extreme right hand position.

(a) Select any character in the bottom row of the type box and rotate the main shaft until the type box carriage is in the uppermost position.

(b) Remove the ribbon from the ribbon guide.

(c) Remove the retainer ring from the stud in the right hand end of the type box carriage link. Disengage the link from the carriage.

(d) Hold the ribbon guide forward and the right ribbon reverse lever back. Pull the carriage toward the right to disengage it from the carriage track.

FRONT PLATE

2.08 To Remove: Manually move the type box carriage to the extreme right. Select any character in the bottom row of the type box and rotate the main shaft until the type box carriage is in its uppermost position.

(a) Remove the retainer ring from the type box carriage link right hand stud and disengage the link from the carriage. (See instructions for removing the link retainer in 2.07(c).)

(b) Remove the three screws which secure the main bail drive bracket to the rocker shaft.

(c) Remove the spacing shaft gear.

(d) Remove the four screws which secure the front plate assembly to the typing unit side frames.

(e) Pull the front plate assembly forward to disengage it from its connecting parts in the typing unit.

2.09 To Replace Front Plate: Make certain that the TP150770 and TP150771 code bar bell cranks, the TP152596 letters-figures shift slide, the TP152522 reversing slide shift lever, the TP150438 automatic CR-LF bell crank, if so equipped, and the TP152545 carriage return lever extension are properly engaged with their mating parts before tightening the front plate mounting screws.

2.10 Replace the spacing shaft gear. See Section 573-115-700 for adjustment on phasing the spacing gears.

STUNT BOX

2.11 To Remove: The procedure for removing the stunt box is as follows:

(a) Remove the TP151627 rear tie bar from the typing unit side frames.

(b) Remove the line feed function pawl stripper from the stripper blade.

(c) Remove the single-double line feed lever screw and disengage the lever from the notch in the stripper blade.

(d) The stripper blade is either removed or disengaged from the typing unit, depending upon the design.

(1) For earlier design: Hold the stripper blade toward the right side of the typing unit and unhook the stripper blade left hand arm from the blade. Pull the stripper blade toward the left side of the typing unit to disengage the stripper blade from the right hand arm. Remove the stripper blade from the typing unit.

(2) For later design: Loosen the screw and remove the retaining ring from the TP153291 camshaft drive arm. Slide the drive arm out of engagement with the stripper blade drive arm.

(e) Remove the screws which secure the stunt box assembly in the typing unit.

(f) Lift the stunt box assembly upward to disengage it from its locating brackets and pull toward the rear to disengage all code bar forks from the code bars. Remove, if present, the contact assembly and cable clamp from the stunt box. Remove the stunt box.

Note: Proceed with 2.12 through 2.16 before replacing stunt box.

STUNT BOX SWITCH

2.12 To replace the contact arm in a stunt box switch, remove the two screws that hold the contact plate to the block.

(a) Carefully unsolder the wire from the TP157889 contact arm spring. (It is not necessary to unsolder the contact arm spring wire from switches having the TP172591 contact spring.)

(b) Remove the contact plate assembly from the contact block.

(c) Remove the contact arm(s) from the contact plate assembly.

(1) For earlier design: Slip the TP157889 contact arm spring from the contact plate.

(2) For later design: Slip the TP172591 contact arm spring out of engagement with the center lug of the section being replaced.

(d) Place the new spring in position on the contact plate.

(e) Before mounting the contact plate on the block, make sure the end of the spring rests on top of the formed-over portion of the contact clip. There should be some clearance between the low end of the spring (front) and the upper edge of the contact arm to avoid in-

terference with the normal movement of the contact arm.

(f) Replace the contact plate assembly, with the contact arms removed, into the contact block. Mount the contact block in the required location with the two screws friction tight.

(g) Carefully resolder any leads that may have been removed, being careful to avoid overheating.

(h) Insert the pointed end of the contact arm, notch downward, between the bent up end of the spring and the formed-over portion of the contact clip. Push the arm into its operating position in the contact block.

(i) Before tightening the contact plate screws, see Section 573-115-700 for adjusting information.

FUNCTION BAR

2.13 To remove a function bar, first unhook the function bar spring.

(a) Hold the function bar toward the rear of the stunt box and disengage its function pawl from the function bar.

(b) Pull the function bar toward the front to remove it from the stunt box.

FUNCTION PAWL

2.14 To remove a function pawl after the function bar has been removed:

(a) Remove the pawl spring.

(b) Hold associated function lever back.

(c) Remove the pawl from top of stunt box.

FUNCTION LEVER

2.15 To remove a function lever after the function bar and function pawl have been removed:

(a) Remove the TP152889 shaft retainer plate.

(b) Remove the TP150547 shaft nearest the front of the stunt box.

(c) Unhook the spring from the function lever and remove the lever through the top of the stunt box.

FUNCTION LEVER SPRING PLATE

2.16 To remove a function lever spring plate or latch after the function bar, function pawl, and function lever have been removed:

(a) Loosen the screws that fasten the three TP150689 guide blocks to the lower side of the guide bar.

(b) Remove the spring from the TP152660 spring plate or TP154613 latch.

(c) Pull downward on the function lever spring plate or latch to snap it out of engagement with the retainer shaft.

2.17 To replace the stunt box, push it forward in its guide rails to within 1/8 inch of its final position.

2.18 Manually disengage the function pawls from their function bars and push the stunt box assembly forward and downward until it is latched in place on its locating brackets.

2.19 Replace the stunt box mounting screws, receptacle, and selector magnet wires.

CODE BARS

2.20 To unblock the suppression code bar, loosen the TP151152 screw that mounts the TP154650 code bar clip and the retaining plate to the left hand code bar guide bracket, and rotate the code bar clip up out of engagement with the suppression code bar. Tighten the TP151152 screw.

2.21 To Remove the Code Bar Assembly: First, remove the stunt box assembly and the front plate assembly as previously described.

(a) Remove the screws and lock washers which secure the code bar assembly to the side frame.

(b) Remove the TP150301 code bar shift bar retainer plate from the right hand code bar guide bracket.

(c) Unblock the suppression code bar as instructed in 2.20. Remove the TP152548 and TP152255 code bar shift bars and springs

from the code bars and pull the code bar assembly forward and to the left.

2.22 To Reinstall Code Bar Assembly: Reverse the procedure used in removing it, except do not tighten the mounting screws.

(a) Hook the short extension of the TP152257 spring in the spring hole of the code bar. The short extension of the spring should be hooked from the bottom of the code bar, and the long extension should be hooked over the top of the code bar shift bar.

(b) Loosen the TP151630 code bar assembly tie bar screws and hold the code bar guide brackets back and downward firmly against their locating surfaces on the side frame and tighten the four mounting screws.

(c) Tighten the two tie bar screws.

MAIN SHAFT

2.23 To Remove Main Shaft: The selector cam-clutch assembly must be removed. See 2.35.

(a) Set the typing unit upside down.

(b) Return the carriage to its left hand position.

(c) Remove the screw that secures the spacing shaft in the spacing collar.

(d) Remove the spacing shaft with gear.

(e) Remove the screw that secures the collar and the clamp to the right end of the main shaft.

(f) Remove the TP152573 main shaft right hand bearing retainer plate.

(g) Remove the TP150010 retainer plate at the TP150046 clutch bearing and remove the TP150244 link.

(h) Remove the two screws from the TP152537 main shaft left hand bearing clamp.

(i) Unhook the springs from the trip levers and latch levers associated with all clutches. Position the code bar clutch so that the low part of the clutch cam clears the spring arm on the cam follower. Unhook the code bar clutch cam follower spring.

(j) Remove the TP153300 function clutch arm by removing two screws and retainer ring if present.

(k) Unhook the spring from the TP153573 function bar reset bail.

(l) Move the main shaft assembly toward the left to disengage the code bar clutch and function clutch links from their connecting pins.

(m) Lift the left end of the shaft assembly out of the side frame. Position the shaft so that the function clutch link passes the suppression assembly bracket, then remove the shaft assembly from the typing unit.

Note: Disassembly of the main shaft and clutch assemblies can be accomplished by referring to the exploded views contained in the appropriate parts literature. It should be noted, that when assembling clutches having cams and discs marked "O" for identification, the marked side of the parts should face away from the clutch side of the assembly. Function and code bar clutches should have their driving links assembled so that the longer end of the hub faces away from the clutch side of the assembly.

2.24 To Reinstall Shaft Assembly: Reverse the procedure used in removing it. The line feed clutch spur gear should be positioned with its flat side toward the line feed clutch spacer and with the indentation in the gear toward the special washer between the gear and the main shaft ball bearing.

2.25 To phase the spacing gears, and remake the stripper blade drive cam position adjustment, refer to Section 573-115-700.

UPPER DRAW WIRE ROPE

2.26 To Remove Upper Draw Wire Rope: Return the carriage to the left hand position.

(a) Loosen the nut on the front end of the spring drum stud. Operate the ratchet escapement lever to unwind the carriage return spring.

(b) Remove the upper draw wire rope from the clamp plate on the printing carriage, and the clamp on the oscillator rail slide.

(c) Loosen the clamp screw that secures the upper draw wire rope to the spring drum. Remove the wire rope from the drum.

(d) Remove the screw in the spacing drum that secures the ends of the wire rope. Remove the rope from the drum.

LOWER DRAW WIRE ROPE

2.27 To Remove Lower Draw Wire Rope: Remove the screw that secures the wire rope to the spacing drum. Remove the end of the rope from the drum.

(a) After loosening the screws that secure the TP150796 margin indicator cam disc on the spring drum, position the disc to expose the lower draw wire rope mounting screw.

(b) Remove the lower draw wire rope screw and rope from the spring drum.

(c) Loosen the screws in the pulley bearing studs that mount draw wire rope pulleys and move the studs toward the center of the typing unit.

2.28 To Replace Draw Wire Rope: Make certain that the lower draw wire rope is in front of the upper draw wire rope in the track around the drums.

2.29 Adjust the position of the type box, the printing carriage, and the wire rope tension as specified in Section 573-115-700.

PLATEN (FRICTION FEED)

2.30 To Remove Platen: Remove the line feed spur gear.

(a) Remove the TP150719 and TP150720 platen bearing retainers.

(b) Remove the TP152832 paper straightener shaft.

(c) Hold off the detent and lift the platen out of the side frame.

2.31 When replacing each platen bearing retainer, put its upper screw in first. Leave the screw slightly loose. Press the lower end of the retainer downward and hook it into the elongated hole in the side frame. Replace the lower screw. Tighten both screws.

PLATEN (SPROCKET FEED)

2.32 To Remove Platen: Remove the paper fingers or guide bracket assembly.

(a) Remove the spur gear from the left end.

(b) Remove the TP150719 and TP150720 platen bearing retainers.

(c) Hold off the detent bail and remove the platen.

(d) Remove the sprocket hub assembly from the platen assembly.

(e) Insert the TP153673 shaft tool into the hub and fasten it with the TP151346 screw.

(f) Remove the TP157286 clamp and TP153699 cam from the assembly.

(g) Insert the hub into the TP153797 retaining tool.

Note: These tools must be used when disassembling the TP153700 platen hub in order to hold the spring loaded pins in place when the feed cam is replaced.

2.33 To Replace a Pin: Rotate the hub assembly within the retaining tool, with a tommy wrench inserted in the shaft tool, until the desired pin is opposite the notch in the retaining tool. A pin may then be removed or replaced. Grease pin cylinder liberally before inserting new pin.

CAUTION: WHILE ROTATING THE HUB, THE NOTCH MUST BE COVERED TO PREVENT THE PINS FROM BEING RELEASED. SINCE THE PINS ARE SPRING LOADED, THEY CAN EJECT WITH CONSIDERABLE FORCE.

2.34 To Replace Platen: Reverse the procedure used in removing it. When replacing the TP153686 right sleeve bearing, the chamfer side or side marked "O" must face the end of the shaft and the wide part placed toward the front of the unit. When replacing each platen bearing retainer, put its upper screw in first. Leave the screw slightly loose. Press the lower end of the retainer downward, and hook it into the elongated hole in the side frame. Replace the lower screw. Tighten both screws.

SELECTOR CAM-CLUTCH

2.35 To Remove Selector-Cam Clutch: Facing the right end of the typing unit, lift the TP152410 push lever reset bail from its cam, and move the push lever reset bail to the rear, latching it in the raised position on the push lever guide. Push the marking lock lever (and the blocked selector levers) to the left until the selector magnet armature latches the marking lock lever.

(a) Remove the screw which secures the selector clutch drum to the main shaft. Position the clutch cam disc so that the stop lug is in the uppermost position.

(b) Hold the start lever and spacing lock lever away from the selector cam-clutch assembly; grasp the selector cam-clutch by the clutch cam disc (not by the drum) and pull forward by rotating the cam-clutch slowly.

CAUTION: THE CAM-CLUTCH SHOULD COME OFF THE MAIN SHAFT EASILY. DO NOT FORCE IT.

2.36 To Replace Cam-Clutch Assembly: Reverse the procedure used in removing it except as the cam-clutch approaches its fully installed position, move the trip shaft lever and the clutch latch lever so that they ride on their respective cams. Restore the push lever reset bail and the armature to their operating positions.

SELECTOR MECHANISM

2.37 To Remove Selector Mechanism: The cam-clutch assembly must first be removed from the main shaft. See 2.35.

(a) Remove the TP151658 screw that secures the selector mechanism to the TP152546 intermediate bracket on the code bar positioning mechanism.

(b) Remove from the selector mechanism the spring which connects with the common transfer lever on the code bar positioning mechanism.

(c) Remove the remaining three selector mounting screws and lift the selector from the main shaft bearing housing.

CODE BAR POSITIONING MECHANISM

2.38 To Remove Code Bar Positioning Mechanism: Unhook from the selector the spring attached to the common transfer lever and restore any operating push levers to the spacing position by raising the TP152410 push lever reset bail.

(a) Loosen the clamp screw on the TP150447 shift lever drive arm, and remove the two screws which mount the mechanism -- one to the side frame and one to the selector mounting plate.

(b) Manipulate the transfer levers and TP152548 or TP152255 code bar shift bars while gently twisting the mechanism off the code bar shift bars.

2.39 To Replace Code Bar Positioning Mechanism on the typing unit: Rotate the main shaft to the stop position; push the code bar shift bars to the marking position. Manipulate the code bar shift bars and transfer levers so that the shift bars line up with their respective slots in the TP150525 bracket, and slide the shift bars through the slots, one at a time, leaving the bottom slot vacant.

RANGE FINDER ASSEMBLY

2.40 To Remove Range Finder Assembly: Remove the two screws and the nut that secure the range finder plate to the selector mounting plate. Move the TP152438 stop arm bail forward so that it disengages from the TP161342 start lever and clears the selector clutch disc, while rocking the range finder assembly back and forth as it is removed.

2.41 To Replace Range Finder Assembly: Reverse the disassembly procedure.

Note: For units equipped with the TP152897 bail lever guide, do not tighten the nut until the bail lever guide adjustment has been checked. See earlier design mechanisms in 573-115-700.

SELECTOR MAGNET ASSEMBLY

2.42 To Remove Selector Magnet Assembly: Remove the two screws and nut which mount the range finder to the selector.

(a) Remove the selector magnet cable from the coil terminal screws.

(b) Remove the two magnet assembly mounting screws and lift the assembly out.

28 TYPING AND NONTYPING PERFORATORS

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL

1.01 Disassembly as outlined in this section covers a procedure for removing the principal subassemblies which make up the unit.

1.02 The technician should refer to the exploded views found in the appropriate parts literature for an illustration of the mechanism to be disassembled, for location and visual identification of parts and detailed disassembly and reassembly features.

1.03 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

1.04 If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.05 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.06 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

1.07 Raise cabinet lid or enclosure cover and remove the typing unit from its base by removing the four screws that secure it to its keyboard or base. Remove the cable plug connector from the side frame. Lift the typing unit off.

Note: On sets equipped with a form supply container on the rear of the cabinet, rearward foot extensions should be in position on the cabinet. This prevents the cabinet from tilting when the typing unit is removed.

1.08 Assuming that the typing unit and keyboard base have been removed from the cabinet, remove the perforator from the base as follows:

(a) Loosen the set screws on the TP193565 coupling located on the rear of the shaft. slide the coupling and/or short shaft so as to disengage it. Remove the screw which fas-

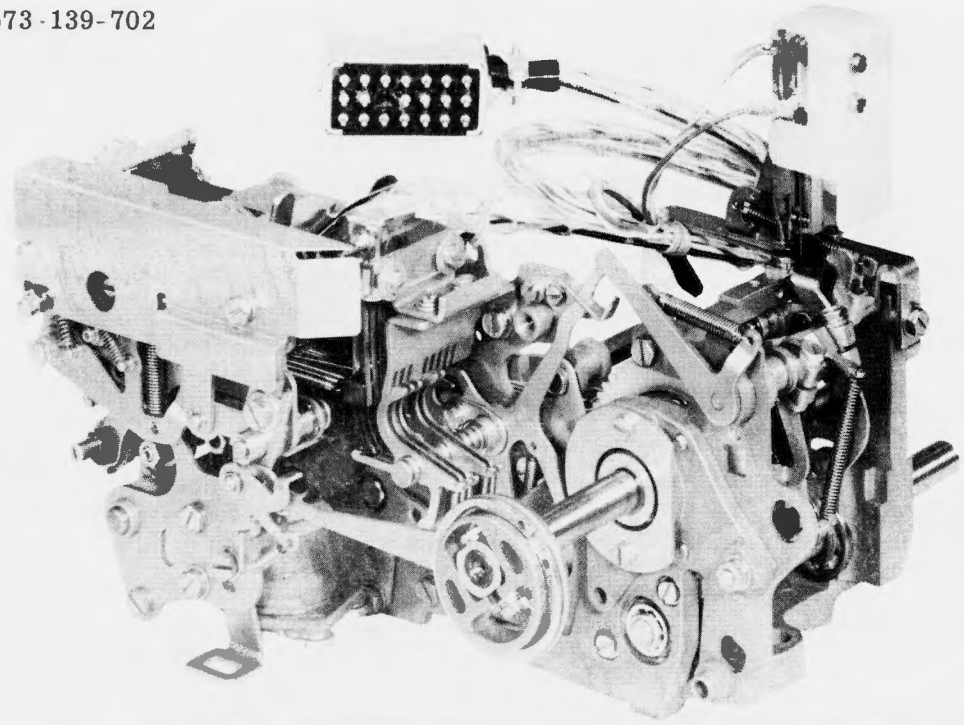


Figure 1 - 28 Non-Typing Perforator - Chadless Tape (With Code Reading Contacts, Timing Contacts and Backspace Mechanism)

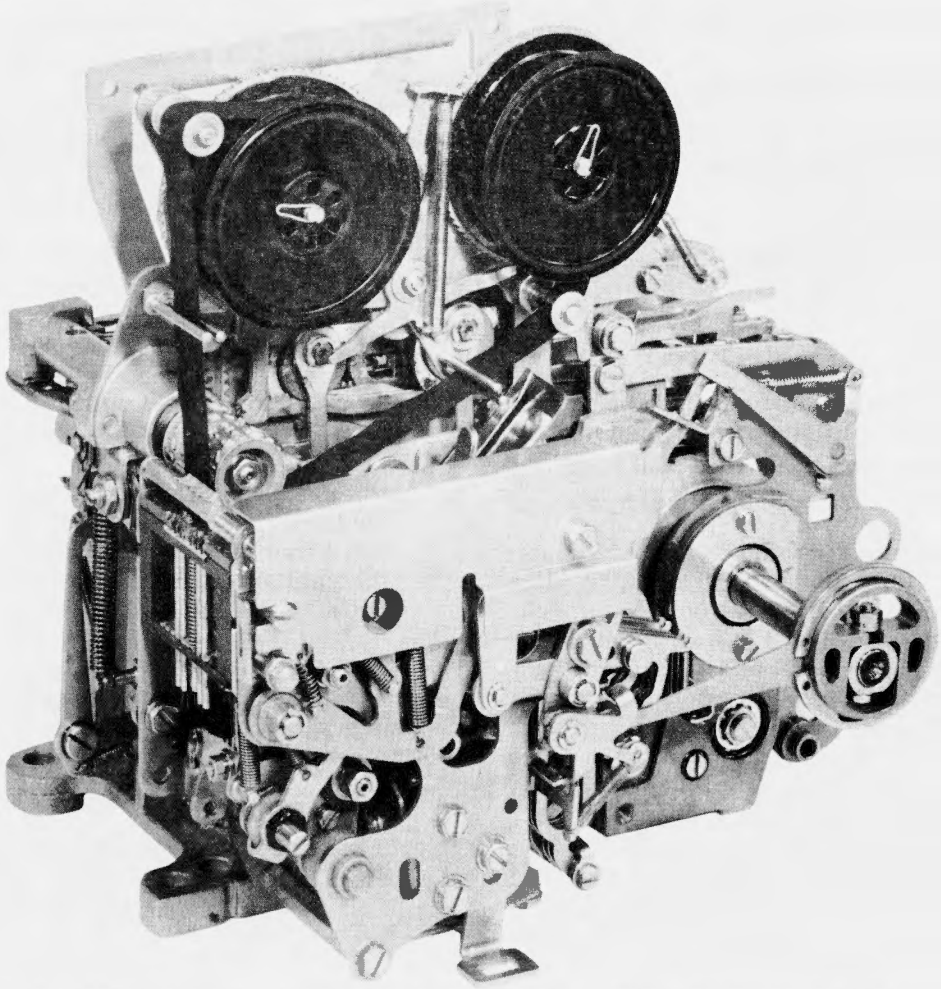


Figure 2 - 28 Typing Perforator - Chadless Tape (With Backspace Mechanism)

tens the TP156184 anchor bracket to the base. Remove the three screws which secure the reperforator to the base. Carefully lift the reperforator upward and tilt to one side.

(b) Disconnect the wires from the backspace magnet, and remove the unit from the base.

2. DISASSEMBLY AND REASSEMBLY

2.01 In removing a subassembly from the unit, the procedure followed and the location from which parts are removed must be carefully noted so that reassembly can be done correctly. Where no specific instructions are given for reassembly, reverse the procedure used in removing it.

PUNCH AND MAGNET ASSEMBLIES AND BACKSPACE MECHANISM

2.02 To remove the punch and magnet assemblies and backspace mechanism unhook the TP90573 perforator drive link spring and disengage the TP192709 link. Remove three mounting screws that fasten the TP156024 rear plate to the TP159472 main plate.

(a) Remove the three screws which hold the TP159472 perforator main plate to either the TP158169, TP159861 nontyping or typing perforator frame, and one screw that anchors unit to base.

(b) Disengage the TP159961 eccentric arm and the assemblies will come free as a unit.

RIBBON FEED MECHANISM (TYPING PERFORATOR ONLY)

2.03 Remove the ribbon and then remove the two mounting screws that hold the ribbon mechanism.

TRANSFER MECHANISM (TYPING PERFORATOR ONLY)

2.04 Remove the TP150241 main trip lever spring and two mounting screws.

TYPING MECHANISM (TYPING PERFORATOR ONLY)

2.05 Remove the TP156872 operating blade from the rocker bail assembly by removing the two mounting screws, lockwashers, washers and shims that hold the mechanism. Disconnect the TP159512 printing trip link by removing the retaining ring that secures it to the hammer accelerator. Remove the nut, lockwasher, washer and TP156936 eccentric on the rocker bail assembly and disconnect the TP159526 oscillating drive link. Remove the TP95378 spring from the TP156478 accelerator and the TP90606 spring from the TP156252 lifter.

2.06 Remove the screw and washer that fasten the TP159434 lifter plate to the TP162862 bar on the frame. Remove the screw and lockwasher that secure the TP159525 axial bracket to the TP159404 post on the frame. Remove the screw, lockwasher and flat washer that fasten the TP159487 function box front plate to the TP159472 main plate. Remove the TP119653 retaining ring from the TP159659 eccentric shaft; and remove the TP151629 nut, TP159536 idler gear, TP159659 shaft and lockwasher by removing the TP159658 mounting screw. Remove the three screws, lockwashers and flat washers that secure the TP159535 front plate to the frame. Remove the typing mechanism from the frame assembly. To remount the typing mechanism, reverse the procedure used to remove it.

2.07 To remove function box mechanism, remove the mounting screw, lockwasher and flat washer from the TP159535 front plate. Remove the function box from the typing mechanism.

2.08 To remove the axial plate assembly, remove the TP3870 correcting drive link spring. Remove the TP156413 correcting drive link by removing the TP119651 retaining ring. Remove the TP119649 retaining ring and disconnect the TP156869 ribbon guide from the TP156870 ribbon oscillating lever.

(a) Remove the three mounting screws and lockwashers from the axial plate assembly. Remove the axial plate assembly.

(b) To remount the axial plate assembly reverse the procedure used to remove it. The rearmost tooth of the rack on the TP156332 typewheel shaft must mesh with the rearmost tooth space in the TP156294 axial sector, and the forward tooth on the sector must mesh with the second tooth space on the shaft; there is an extra tooth space on the forward portion of the shaft's rack.

2.09 After the function box mechanism and axial plate assembly have been removed, the remainder of the typing mechanism is the front plate assembly.

2.10 After the typing mechanism has been removed, the following remain on the frame assembly: The function clutch trip assembly, the two shaft assemblies and the rocker bail assembly (typing perforator only).

2.11 To remove pushbars after removing the typing mechanism, remove the function box mechanism from the typing mechanism. Remove the pushbar by disengaging the pushbar rack from its associated pinion.

2.12 The correct gear tooth engagement of racks for pushbars 1 through 5 is as follows: In assembling the pushbars to the various eccentric assemblies, great care must be exercised to assure the correct rack-pinion gear mesh. The correct mesh is such that the first tooth on the pinion and the first tooth space on the rack are meshed. On later units this is identified by a mark on the pushbar and a mark on the eccentric. The last tooth on the pinion and the last tooth space on the rack should therefore also mesh.

CAUTION: MISALIGNMENT OF THE MESH BY AS LITTLE AS ONE TOOTH WILL PRODUCE A JAM IN THE MACHINE AND CAUSE PART BREAKAGE IF THE MACHINE IS PUT UNDER POWER WHILE THIS CONDITION EXISTS.

2.13 The assembly of the "Letters" and "Figures" pushbars to the left eccentric assembly must follow the assembly of the detents on the same eccentric. Starting with the left eccentric in the lower detented position, locate the gear tooth of the pinion which is at top dead center. (Using the oil hole in the eccentric housing as a reference may help since it is located at top dead center.) The first tooth space of the rack of the "Letters" pushbar must engage the tooth located directly below. This requirement is met when the indicating mark on the pushbar and eccentric shaft are in the line. Pull the "Letters" pushbar all the way on the pinion. The eccentric shaft should now be in the upper detent position. Now locate the tooth at bottom dead center. The first tooth space of the "Figures" pushbar should engage the tooth just located. The full travel of either pushbar should result in the eccentric shaft being rotated from one detented position to the other without jamming. As before, a misalignment of the mesh by one tooth will cause a jam and parts breakage if the machine is put under power while this condition exists.

ROCKER BAIL ASSEMBLY

2.14 Disconnect the TP156937 printing drive link by removing the retaining ring at its left end. Remove the nut, lockwasher, flat washer, felt washer, bushing and screw from the TP156871 operating blade mounting bail.

2.15 Remove the nut, lockwasher and remove the TP156366 rocker bail shaft. Remove the rocker bail.

MAIN SHAFT ASSEMBLY

2.16 Remove the spring from the TP158172 function clutch latchlever. Remove the retaining ring, spring washer and flat washers from the forward end of the TP154397 main shaft.

2.17 Remove the screw and lockwasher from the TP158184 function clutch drum. Remove the screw and lockwasher from the TP173340 collar. Remove the screw and lockwasher from the TP158745 bearing clamp.

2.18 Pull main shaft out of rear of unit, removing the cam-clutch and collar.

CAUTION: NOTE THE LOCATION OF THE MAIN SHAFT NEEDLE ROLLER BEARINGS AS SHOWN ON ILLUSTRATIONS OF PARTS IN APPROPRIATE SECTION. MOVE THE MAIN SHAFT TOWARD THE REAR OF THE UNIT A SMALL AMOUNT AT A TIME AND EXERCISE CARE NOT TO DROP OR CONTAMINATE THE 20 NEEDLE ROLLERS IN EACH RACE. A SMALL SPRING MAY BE STRETCHED AROUND THE SHAFT AND ROLLERS WITH THE ENDS OF THE SPRING HOOKED TOGETHER. THE GARTER SPRING IN CONJUNCTION WITH THE GREASE, WILL HOLD THE ROLLERS IN PLACE. WHEN REPLACING THE MAIN SHAFT, MAKE SURE THE ROLLERS ARE CLEAN. LUBRICATE THE RACE AND BEARINGS WITH TP88973 GREASE. APPLY A LIBERAL AMOUNT OF OIL AT EACH END OF THE BEARING SLEEVE.

Note: When the main shaft is inserted in the cam-clutch, hold the latter firmly so that the drum is not pushed off the clutch. Compress the drum and cam disc together so that holes in the drum and clutch bearings are aligned.

POWER DRIVE BACKSPACE MECHANISM

2.19 To remove the power drive backspace mechanism, unhook the TP84575 spring from the TP159958 drive link latch.

(a) Loosen the screw on the TP159960 eccentric and pull the TP159961 eccentric arm off the TP159963 hub.

(b) Disengage the eccentric arm from its guide between the TP159958 latch and TP159955 drive link.

(c) Unscrew the TP159956 post from between the TP159954 adjusting link and the front punch frame, and remove the link and latch assembly.

(d) Remove the two screws on the front punch frame and extract the magnet assembly.

MANUAL BACKSPACE MECHANISM

2.20 To remove the manual backspace mechanism, unscrew the two screws which hold the TP159900 plate to the rear punch frame and remove the TP159902 rake shaft. Remove the two screws and TP159916 eccentric from the TP159987 bracket on the left side of the punch front plate. Remove the TP159903 crank assembly.

28 TYPING REPERFORATOR AND TAPE PRINTER

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL

1.01 This section provides disassembly and reassembly for the 28 typing reperforator and tape printer units. It is revised to include recent engineering changes, additions, and to rearrange the text. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 Disassembly as outlined in this section covers a procedure for removing the principle subassemblies which make up the unit.

1.03 Refer to the exploded views found in the appropriate parts literature for illustrations of the mechanisms to be disassembled, for location and visual identification of parts and detailed disassembly and reassembly features.

1.04 Most maintenance, lubrication and adjustments can be accomplished simply by removing the unit from the base. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

1.05 If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.06 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.07 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

2. DISASSEMBLY AND REASSEMBLY

2.01 To remove the selector mechanism:

(a) Remove the screw, lockwasher, and nut from the TP150001 selector clutch drum. Place the TP152410 reset bail in its raised position. Holding the TP152432 stop arm and the TP152405 marking locklever to the left, grasp the cam-clutch by the cam disc (not by the drum) and pull forward rotating the cam-clutch slowly. The cam-clutch should come off easily.

CAUTION: DO NOT FORCE.

(b) Unhook the function clutch latchlever spring. Remove the TP156472 spring post by removing its nut and lockwasher. Remove the screw and lockwasher that pass through the TP156867 frame and the TP152400 selector mounting plate into the TP152402 selector lever guide. Remove the TP152457 oil wick, screw, lockwasher, and TP159467 wick holder. Remove the selecting mechanism.

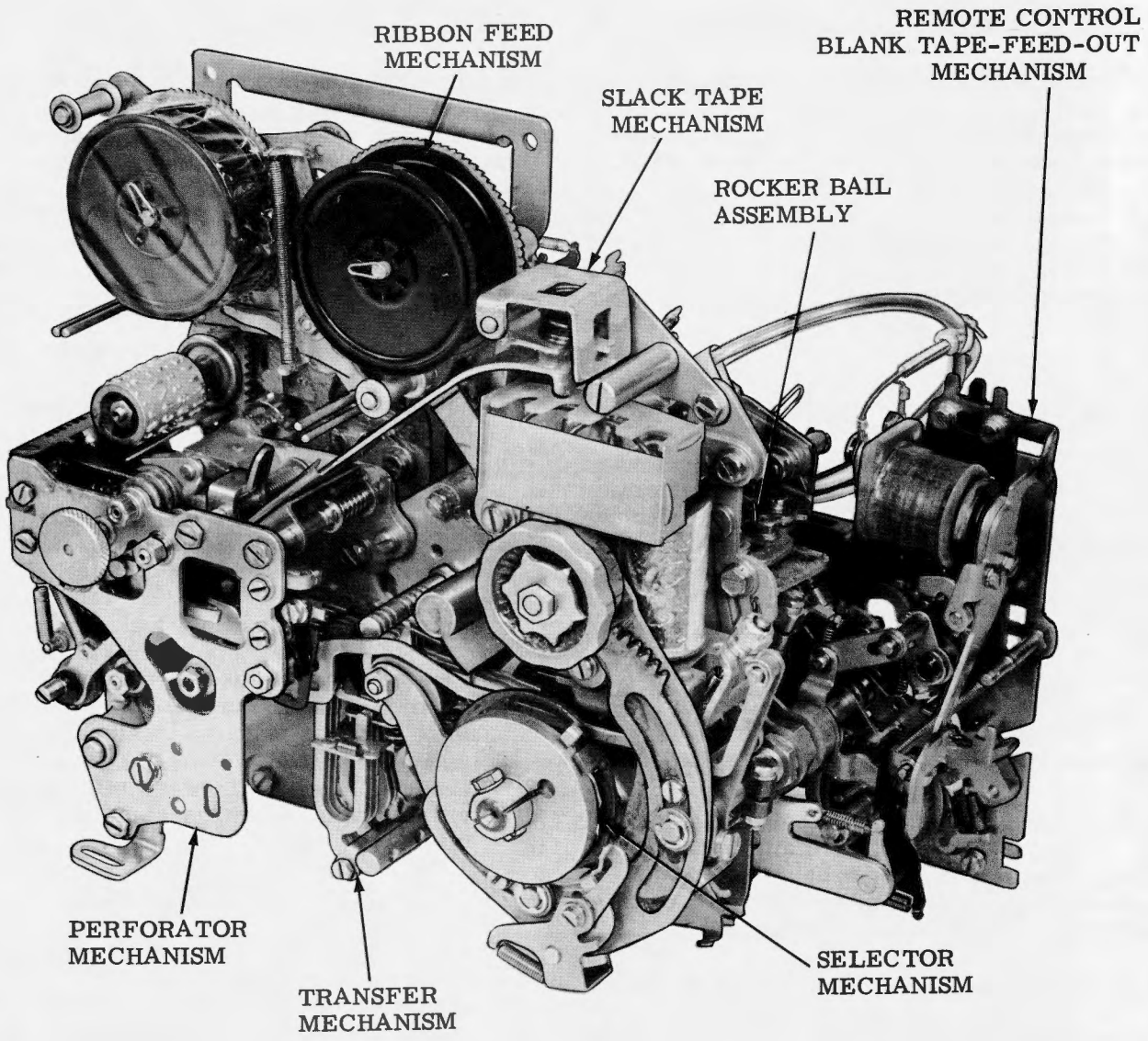


Figure 1 - 28 Typing Reperforator Unit with Remote Control Blank Tape Feed-Out Mechanism (Fully Perforated Tape)

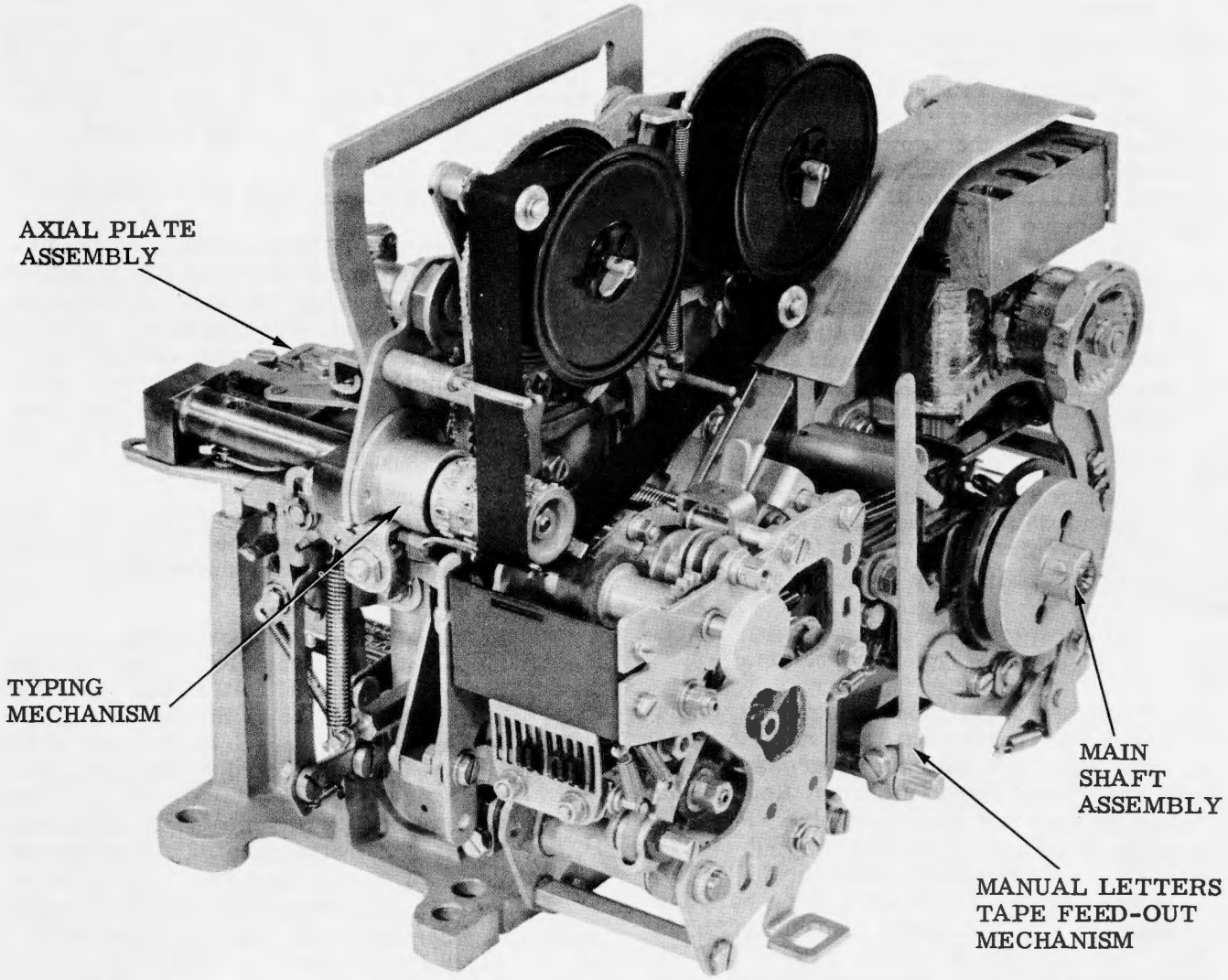


Figure 2 - 28 Tape Printer Unit With Manual Letters Tape Feed-Out Mechanism

2.02 To remove ribbon feed mechanism: Remove the ribbon, two mounting screws and lockwashers; remove the ribbon feed mechanism.

2.03 To remove perforator mechanism:

(a) Remove the TP90573 spring and disconnect the TP192709 perforator drive link from the TP156884 rocker arm.

(b) Remove the TP159621 shoulder screw with lockwasher from the TP159622 clamp. Remove the two mounting screws, lockwashers and flat washers, that fasten the TP156024 rear plate to the TP159472 main plate. Remove the perforator mechanism.

Note: When remounting the perforator mechanism, make certain that the TP156059 reset bail fits in the fork of the TP159430 reset bail trip lever and that the print hammer fits in its slot in the mechanism.

2.04 To remove transfer mechanism: Remove the TP49084 main trip lever spring. Remove the mounting screws, lockwashers and flat washers from the TP159488 transfer mounting bracket. Remove the transfer mechanism.

2.05 To remove the typing mechanism:

(a) Remove the TP156872 operating blade from the rocker bail assembly by removing the two mounting screws, lockwashers, flat washers and shims. Remove the retaining ring and disconnect the TP159512 printing trip link. Remove the nut, lockwasher and flat washer from the TP156396 eccentric on the TP156368 rocker bail and disconnect the TP159526 oscillating drive link. Remove the spring from the TP156478 accelerator and the spring from the TP156252 function blade lifter.

(b) Remove the screw with lockwasher that fastens the TP159434 lifter plate to the TP156474 mounting bar on the frame. Remove the screw and lockwasher that secure the TP159525 axial bracket to the TP159404 post on the frame. Remove the screw, lockwasher and flat washer that fasten the TP159487 function box front plate to the TP159472 main plate. Remove the retaining ring from the TP159659 idler gear eccentric shaft. Remove the eccentric shaft, the TP159536 idler gear, the TP151629 special nut and lockwasher by removing the TP159658 mounting screw. Remove the three screws, lockwashers and flat washers that secure the TP159535 front plate to the frame. Remove the typing mechanism from the frame assembly.

2.06 To remove the function box mechanism: Remove the mounting screw, lockwasher, and flat washer, that pass through the TP156316 function box rear plate and the TP159483 spring bracket into the TP159535 front plate. Remove the function box from the typing mechanism.

2.07 To remove the axial plate assembly:

(a) Remove the TP3870 correcting drive link spring. Remove the TP156413 correcting drive link by removing the retaining ring from the TP156378 axial correcting plate. Remove the retaining ring and disconnect the TP156869 ribbon guide from the TP156870 ribbon oscillating lever. Remove the screw and lockwasher that fastens the TP159525 axial plate to the TP160943 typewheel shaft housing.

(b) Remove the three mounting screws and lockwashers from the TP159525 axial plate. Remove the axial plate assembly.

Note: To remount the axial plate assembly, reverse the procedure used to remove it. The last tooth on the typewheel shaft shall mesh with the last full (there may be a partial space at the rear of the sector, if so, disregard it) tooth space of the TP156294 gear sector. Also, the first tooth of the gear sector shall mesh with the second tooth space on the typewheel shaft. There is an extra tooth space on the forward portion of the typewheel shaft. The correct axial output rack sector engagement is when the last tooth on the TP156313 axial output rack and the last tooth space of the TP156294 gear sector shall mesh. Also, the first tooth of the axial output rack and the first tooth space on the gear sector shall mesh.

2.08 To remove the rocker bail assembly:

(a) Disconnect the TP156937 printing drive-link by removing the retaining ring at its left end. Remove the nut, lockwasher, flat washer, felt washer, bushing, and screw from the TP156871 operating blade mounting bail.

(b) Remove the nut, lockwasher and the TP156921 adjusting lever guide, and remove the TP156366 rocker bail shaft. Remove the rocker bail.

2.09 To remove main shaft assembly:

(a) Remove the spring from the TP150355 clutch latchlever. Remove the retaining ring, spring washer and flat washers from the forward end of the TP154397 main shaft.

(b) Remove the screw and lockwasher (if present) from the TP150000 function clutch drum. Remove the screw and lockwasher from the TP173340 collar. Remove the screw and lockwasher from the TP158745 bearing clamp. Pull the main shaft out of rear of unit, removing the cam clutch and the collar.

(c) Note the location of the main shaft TP154398 needle bearings as shown in the parts section. Move the main shaft toward the rear of the unit a small amount at a time and exercise care not to drop or contaminate the 20 needle bearings in each race. A rubber band, string, or spring may be stretched around the shaft and needle bearings with the ends of the spring hooked together. The spring in conjunction with the grease will hold the needle bearings in place.

(d) To replace this type of main shaft assembly reverse the procedure used to remove it. Make sure the needle bearings are clean. Lubricate the race and bearings with TP195298 (Beacon 325) grease or its equivalent. Apply a liberal amount of KS7470 oil at each end of the bearing sleeve. When the main shaft is inserted into the cam clutch, hold the cam clutch firmly so that the drum is not pushed off the clutch, and compress the drum and cam disc together so that the holes in drum and clutch bearings are aligned.

2.10 To remove pushbars: Remove the typing mechanism. Remove the function box mechanism from the typing mechanism. Remove the pushbar by disengaging the pushbar rack from its associated pinion.

2.11 The correct gear tooth engagement of racks on pushbars is as follows:

(a) When assembling the pushbars (no. 1 to no. 5 inclusive) to the various eccentric assemblies, great care must be exercised to assure the correct rack-pinion gear mesh. The correct mesh is such that the first tooth space on the rack is meshed. On later units this is identified by a mark on the pushbar and a mark on the eccentric. The last tooth on the pinion and the last tooth space on the rack should therefore also mesh. Misalignment of the mesh by as little as one tooth will produce a jam in the machine and cause part breakage if the machine is put under power while this condition exists.

(b) The assembly of the letters and figures pushbars to the left eccentric assembly must follow the assembly of the detents on the same eccentric. Starting with the left eccentric in the lower detented position, locate the gear tooth of the pinion which is at top dead center. (Using the oil hole in the eccentric housing as a reference may help since it also is located at top dead center.) The first tooth space of the rack of the letters pushbar must engage the tooth directly below. This requirement is met when the indicating mark on the pushbar and eccentric shaft are in line. Pull the letters pushbar all the way on the pinion. The eccentric shaft should now be in the upper detented position. Now locate the tooth at bottom dead center. The first tooth space of the rack on the figures pushbar should engage the tooth just located. The full travel of either pushbar should result in the eccentric shaft being rotated from one detented position to the other without jamming. As before, a misalignment of the mesh by one tooth will cause a jam and parts breakage if the machine is put under power while this condition exists.

28 TRANSMITTER DISTRIBUTOR UNIT (LXD)

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL

1.01 This section provides instructions for disassembly and reassembly of the 5- and 6-level, single contact, 28 transmitter distributor unit (Figure 1). These instructions outline a procedure for removing from the unit components or subassemblies, ie, tape guideplate assembly, rear plate assembly, main shaft assembly, and center plate assembly.

1.02 Most maintenance, lubrication, and adjustments can be done by removing the transmitter distributor from its base. If possible disassembly should be confined to the components or subassemblies which can, in most cases, be removed without disturbing the adjustments. However, when reassembling the unit, check all associated adjustments, clearances, and spring tensions.

CAUTION: DISCONNECT EXTERNAL AC OR DC POWER SOURCE BEFORE WORKING ON TRANSMITTER DISTRIBUTOR UNIT.

1.03 To facilitate adjustments on earlier models, a generous length of cable is provided between the unit and its terminal block to allow rotation or inversion of the unit. The ac or dc potential must be disconnected from its power source. Later model units plug into position on their bases.

1.04 Exercise care when replacing the unit to keep the cable free of any moving parts. For a more detailed illustration of the units, refer to the appropriate 28 transmitter distributor parts section.

1.05 Retaining rings are of spring steel and have a tendency to release suddenly. The loss can be minimized by holding the ring with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the ring. Rotate the screwdriver in a direction to increase the diameter of the ring. The retaining rings should come off easily without flying.

1.06 If a shim mounted part is removed, note the number of shims used at each mounting point so that the same shim pile-up can be replaced when the part is reassembled.

1.07 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs while removing them.

1.08 Remove three screws that secure the transmitter distributor unit to the base and lift unit free. On earlier models remove cable connections from the terminal board and cable clamps from the base.

2. DISASSEMBLY AND REASSEMBLY OF UNIT

COVERPLATE

2.01 To remove the coverplate assembly, lift the coverplate from its detented position.

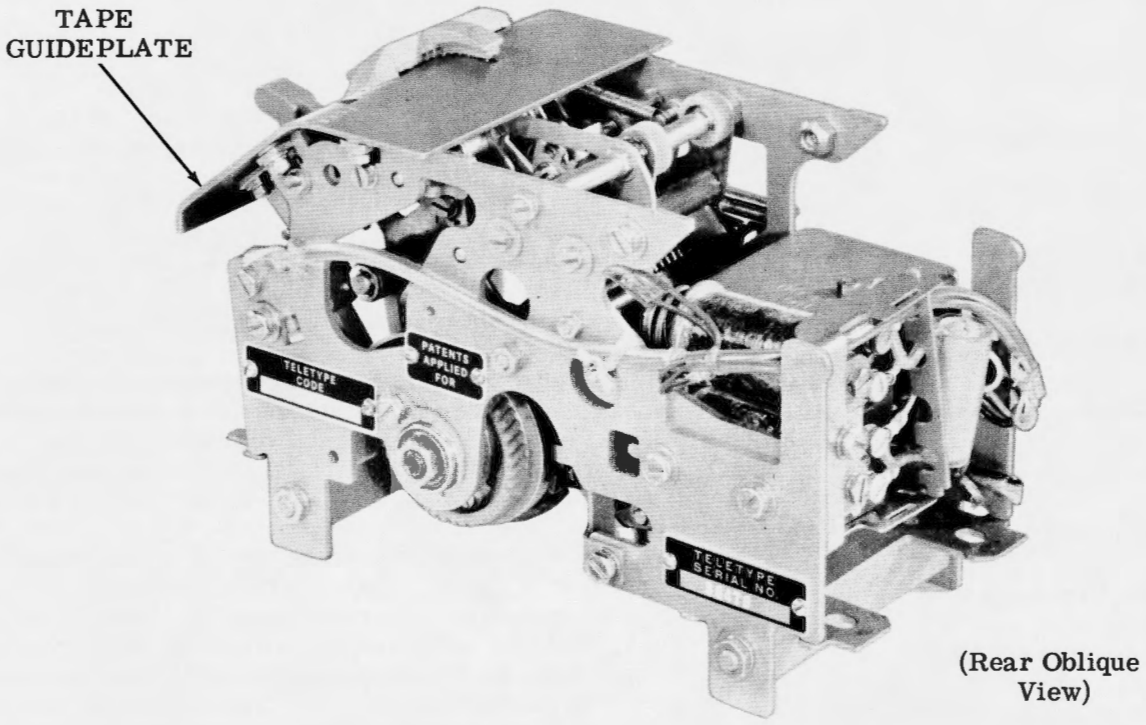


Figure 1 - Typical Transmitter Distributor (Cover Plate Removed)

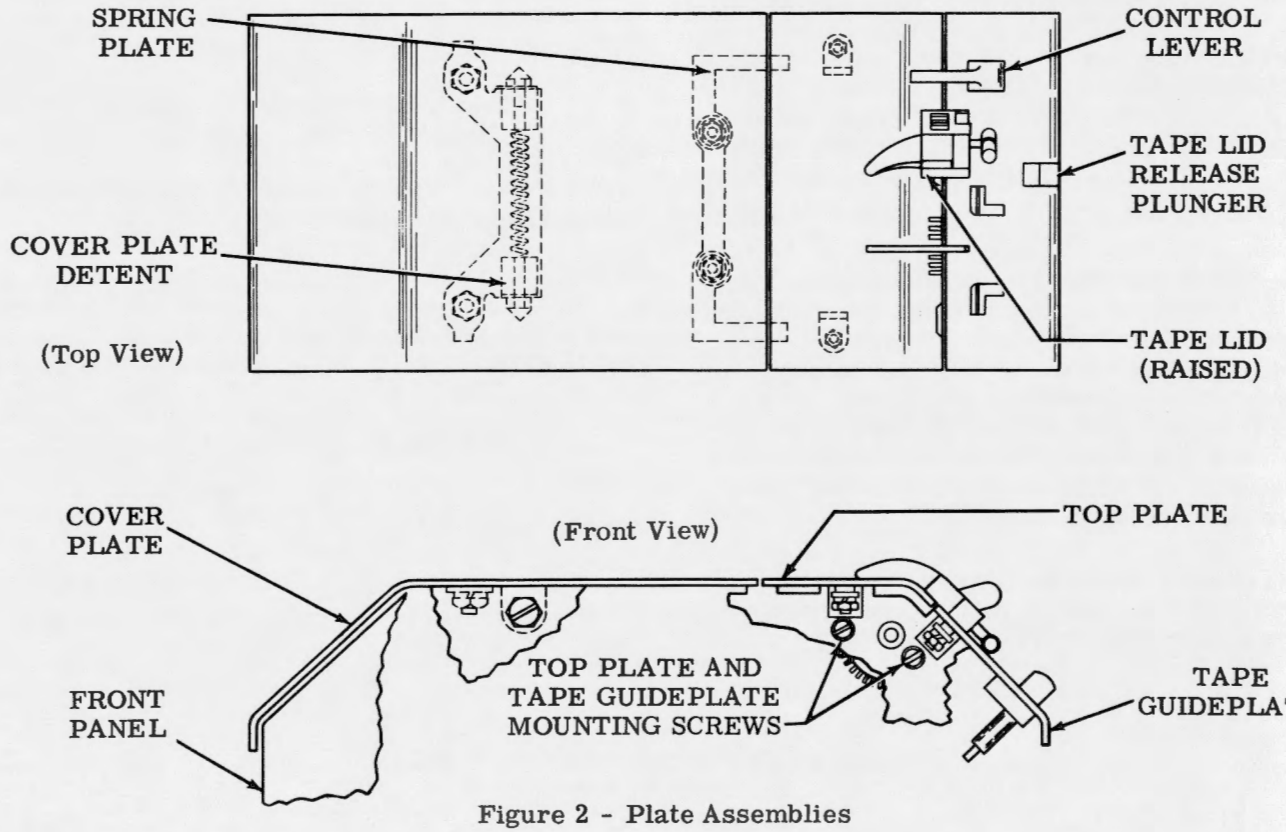


Figure 2 - Plate Assemblies

2.02 To replace the coverplate assembly, align the ends of the coverplate and top plate, slide the tips of the plate spring under the edge of the top plate, and snap the cover plate down into its detented position.

TOP PLATE

2.03 To remove top plate, loosen the front and rear mounting screws (Figure 2) and lift the plate upward.

2.04 To replace the top plate, guide the mounting screws into the notch of the front and rear plates. Align the sensing pins and feed wheel with their respective slots. Refer to TOP PLATE adjusting procedure if the plates do not align.

TAPE GUIDEPLATE

2.05 To remove the tape guideplate, loosen the front and rear mounting screws and slide the plate upward (Figure 2).

2.06 To replace the tape guideplate, guide the mounting screws into the respective notch of the front and rear plates while guiding the tape-out pin into its notch and locating the sensing pins against the left edge of the tape guideplate. Refer to TAPE GUIDEPLATE adjusting procedure.

OIL RESERVOIR

2.07 To remove the oil reservoir, remove the screws that secure the casting and lift the assembly upward and toward the right.

2.08 To replace the oil reservoir, reverse the procedure.

REAR PLATE ASSEMBLY

2.09 To remove the rear plate assembly:

(a) Remove cable assembly leads from start-stop contact assembly and magnet assembly.

(b) Remove hex nuts and lockwashers from bottom posts.

(c) Remove main shaft retaining ring.

(d) Remove screws TP151630 securing plate to post TP156622.

(e) Remove the two screws which secure the clutch trip magnet assembly bracket to the rear plate and remove clutch trip magnet assembly.

(f) Remove rear plate assembly from the remainder of the unit.

2.10 To replace the rear plate assembly, reverse the procedured steps.

MAIN SHAFT ASSEMBLY

2.11 To remove the main shaft assembly:

(a) Remove the clamp TP156831 and plate TP156832 from the front plate assembly.

(b) Remove the main shaft assembly.

2.12 To replace the main shaft assembly, replace in the reverse order.

CENTER PLATE ASSEMBLY

2.13 To remove the center plate:

(a) Remove the post TP156622.

(b) Remove the two nuts which secure the center plate to the two guide posts.

(c) Remove the spring TP7603.

(d) Remove the center plate assembly.

2.14 To replace the center plate assembly, reverse the procedured steps.

2.15 When reinstalling the transmitter or transmitter distributor unit on the base, adjust the gear backlash as outlined in the section, 28 Transmitter Distributor Unit (LXD) — Adjustments.