35 TRANSMITTER DISTRIBUTOR

ADJUSTMENTS

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section provides adjustment information for the 35 transmitter distributor (Figure 1). It is reissued to include recent engineering changes, additional information on the timing contact mechanism, code reading assembly, auxiliary contact assembly, and the adjustment requirements. Since this is a general revision, marginal arrows ordinarily used to indicate changes and additions are omitted.

1.02 This section contains the requirements and adjusting procedures for the maintenance of the 35 transmitter distributor.

1.03 The adjustment of the 35 transmitter distributor is arranged in a sequence that would be followed if a complete readjustment of the unit were undertaken.

1.04 When an adjustment is completed, tighten loosened nuts or screws.

1.05 The covers may be removed for inspection and minor repair of the unit.

CAUTION: DISCONNECT THE UNIT FROM ITS POWER SOURCE AS A SAFETY PRECAUTION WHEN MORE EXTENSIVE MAINTENANCE IS UNDERTAKEN.

1.06 The adjusting illustrations indicate adjusting tolerances, positions of moving parts, spring tensions, and angle at which to apply the scale when measuring spring tensions.

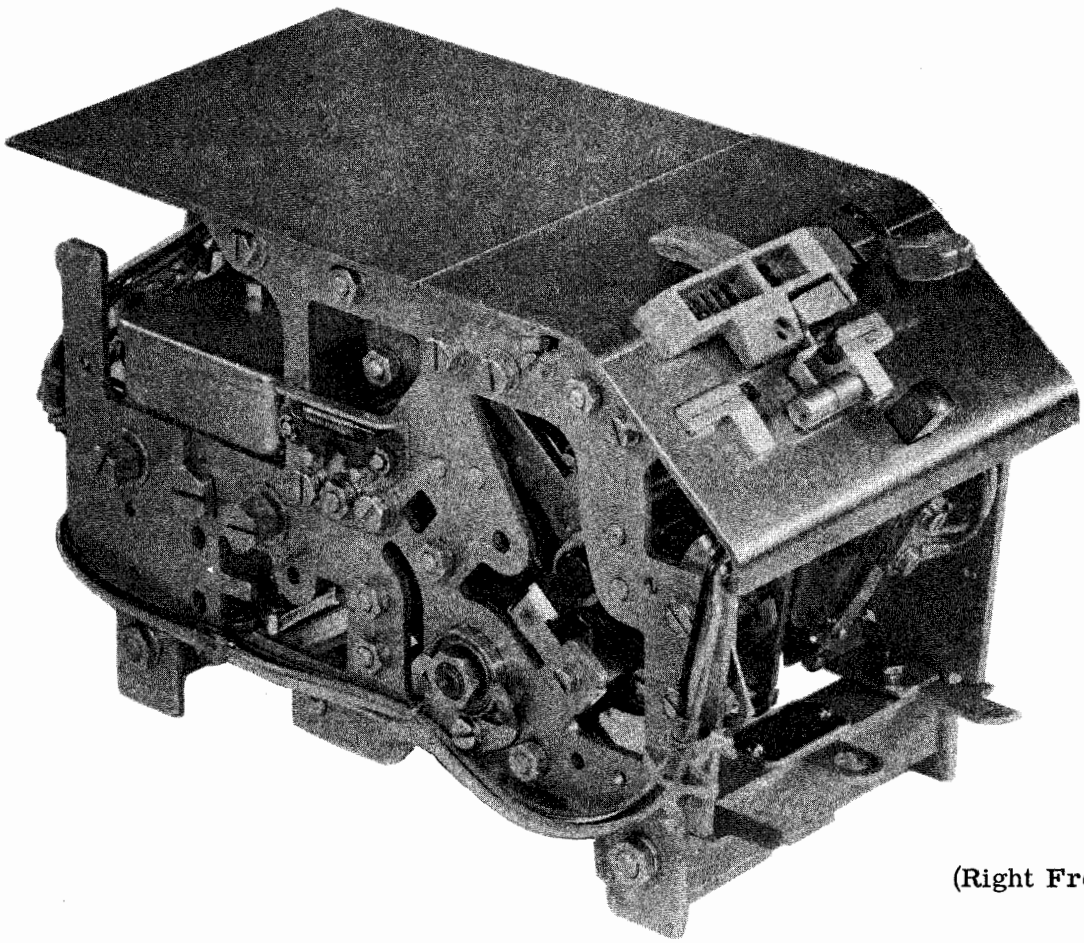
1.07 If a part mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that shim pile-up may be replaced when part is remounted.

1.08 If parts or assemblies are removed for readjustment and subsequently replaced, recheck any adjustment that may have been affected by removal of these parts or assemblies.

1.09 The spring tensions given in this section are indications (not exact values) and should be checked with proper spring scales in the position indicated. Replace springs which do not meet the requirements and for which no adjusting procedure is given.

1.10 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 operator's position.

1.11 When a 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. To accomplish this, rotate the main shaft by hand until the clutch reaches its stop position, then apply a screwdriver to the cam disc stop-lug and push the disc in its normal direction of shaft rotation until the latchlever seats in its notch in the disc.



(Right Front View)

Figure 1 - 35 Transmitter Distributor

2. ADJUSTMENTS

2.01 Cover Assemblies

(A) REMOVING FRONT PANEL

Pull outward on lower right and left rear corner of front panel and slide panel toward the front. Replace in reverse order.

(B) REMOVING COVERPLATE

Lift left end of coverplate to disengage detents then slide plate toward the left to disengage spring plate. Replace in reverse order.

(C) REMOVING TOP PLATE

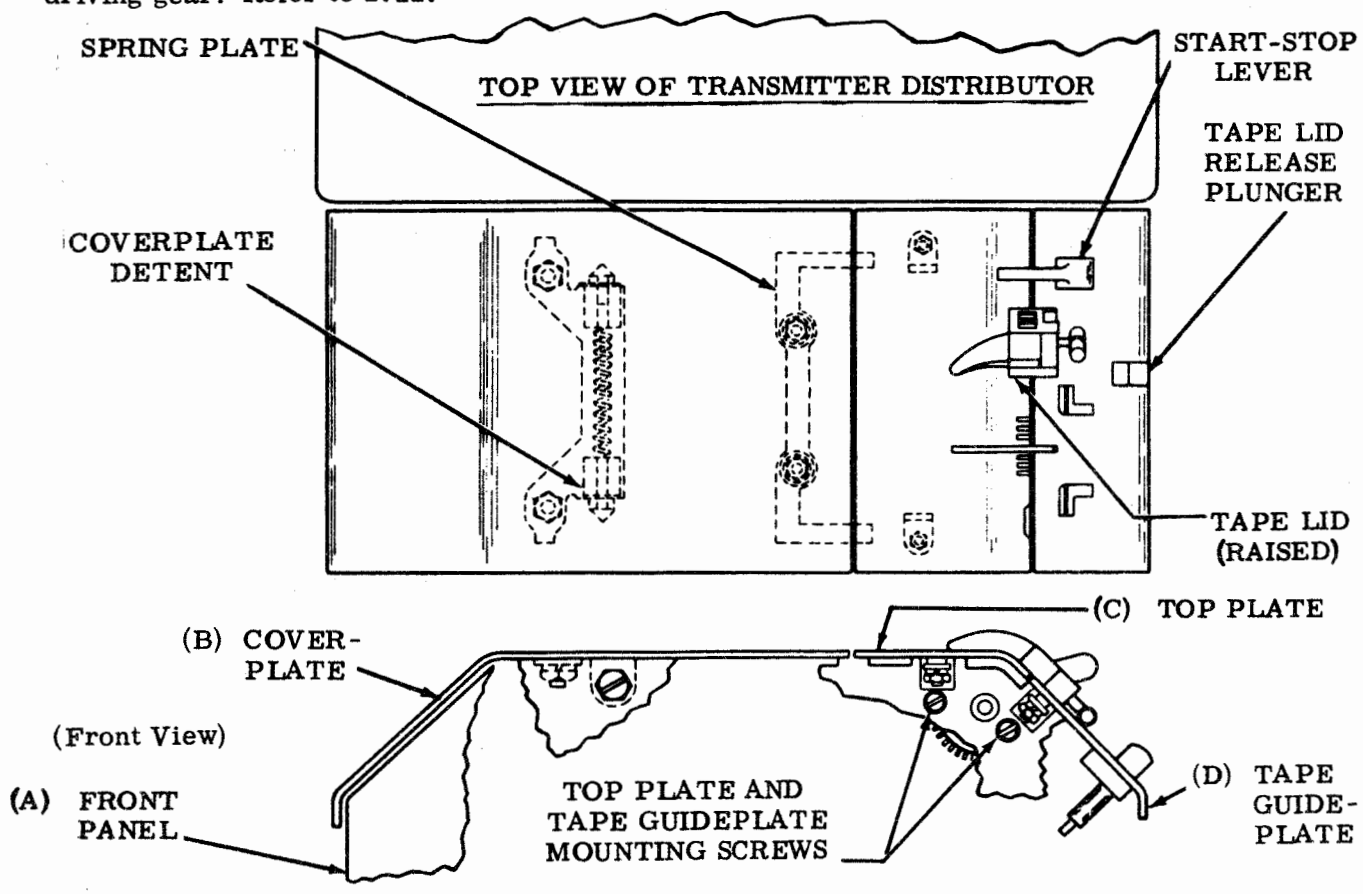
With front and rear mounting screws loosened (do not disturb mounting nuts) and tape lid raised, lift plate upward. Refer to 2.07 when replacing the plate.

(D) REMOVING TAPE GUIDEPLATE

With front and rear mounting screws loosened (do not disturb mounting nuts) and tape lid raised, lift plate upward. Refer to 2.04 when replacing the plate.

(E) REMOVING TRANSMITTER DISTRIBUTOR ASSEMBLY

Remove right and left mounting screws attached to base and lift assembly upward to disengage main shaft gear. Transmitter is equipped with plug that mates with connector in base. After unit is plugged in, insert mounting screws (3). Check alignment of main shaft gear with driving gear. Refer to 2.22.



2.02 Clutch Mechanism

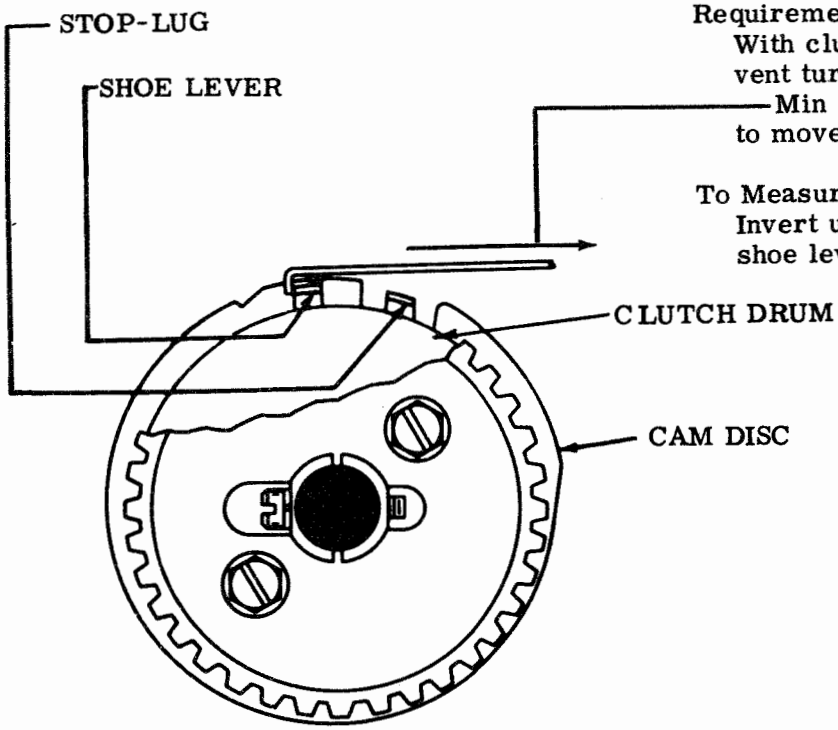
Note 1: Requirements (A) and (B) are adjusted at the factory and should not be disturbed unless associated mechanisms have been removed for servicing or there is reason to believe that the requirements are not met.

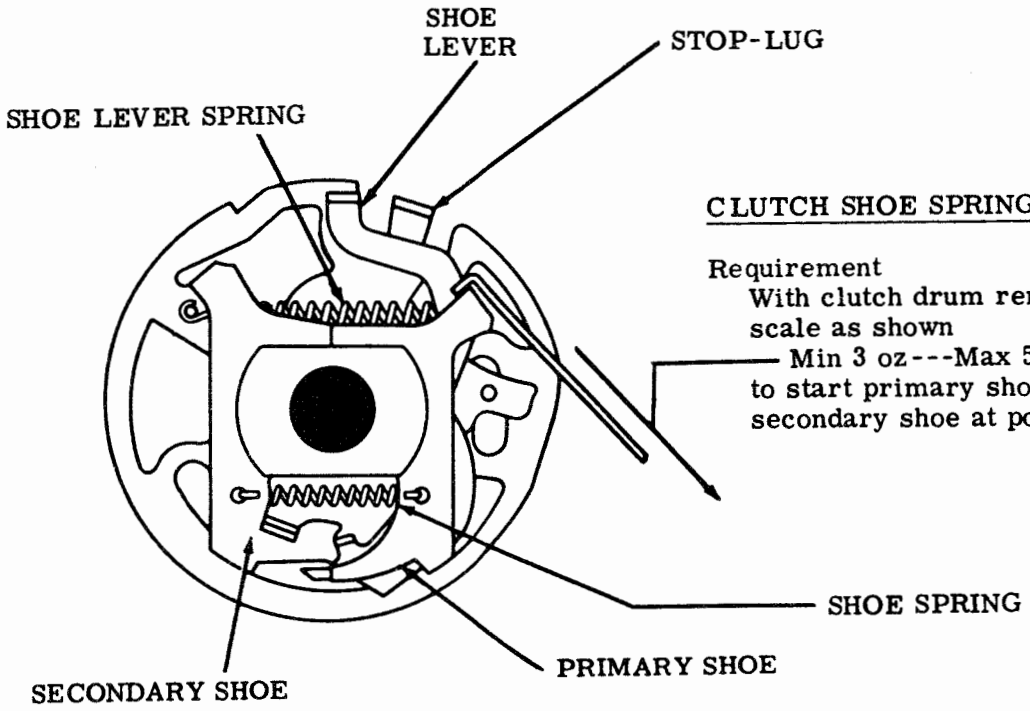
Note 2: Remove transmitter distributor from its base prior to adjustment. See 2.01 (E).

CLUTCH SHOE LEVER SPRING

Requirement
With clutch engaged, hold cam disc to prevent turning.
Min 15 oz---Max 20 oz
to move shoe lever in contact with stop-lug.

To Measure
Invert unit. Rotate main shaft until clutch shoe lever and stop-lug are up.

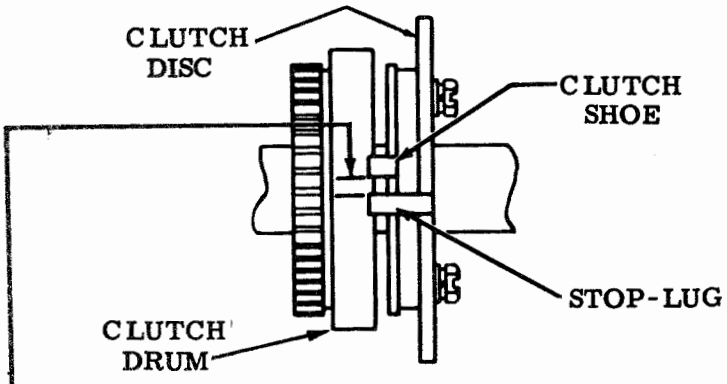




CLUTCH SHOE SPRING

Requirement
With clutch drum removed, hook spring scale as shown
Min 3 oz---Max 5 oz
to start primary shoe moving away from secondary shoe at point of contact.

2.03 Clutch Trip Mechanism



(B) CLUTCH SHOE LEVER

Requirement
Clearance as shown should be
Min 0.055 inch---Max 0.085 inch
greater with clutch engaged than with clutch disengaged.
(Pull shoe lever with force of 32 oz and release slowly to engage clutch shoes.)

To Adjust
With clutch disc clampscrews loosened, place wrench over stop-lug and move disc.

CAUTION: MAKE SURE THAT DRUM DOES NOT DRAG ON SHOES WHEN CLUTCH IS DISENGAGED AND DRUM IS ROTATED IN ITS NORMAL DIRECTION. REFINE ABOVE ADJUSTMENT TO CORRECT SHOE DRAG.

(A) CLUTCH TRIP LEVER

(1) Requirement
(Remove coverplate, 2.01).
With clutch disc stop-lug opposite clutch trip lever, clearance between inner surface of lug and lever, play taken up to make clearance maximum
Min 0.012 inch---Max 0.025 inch.

To Adjust
Loosen clamp nut on clutch trip bail eccentric (friction tight) and rotate eccentric to its lowest point. Position eccentric to meet requirement.

(2) Requirement
Play taken up to make clearance minimum
Some clearance

To Adjust
Refine (1) Requirement.

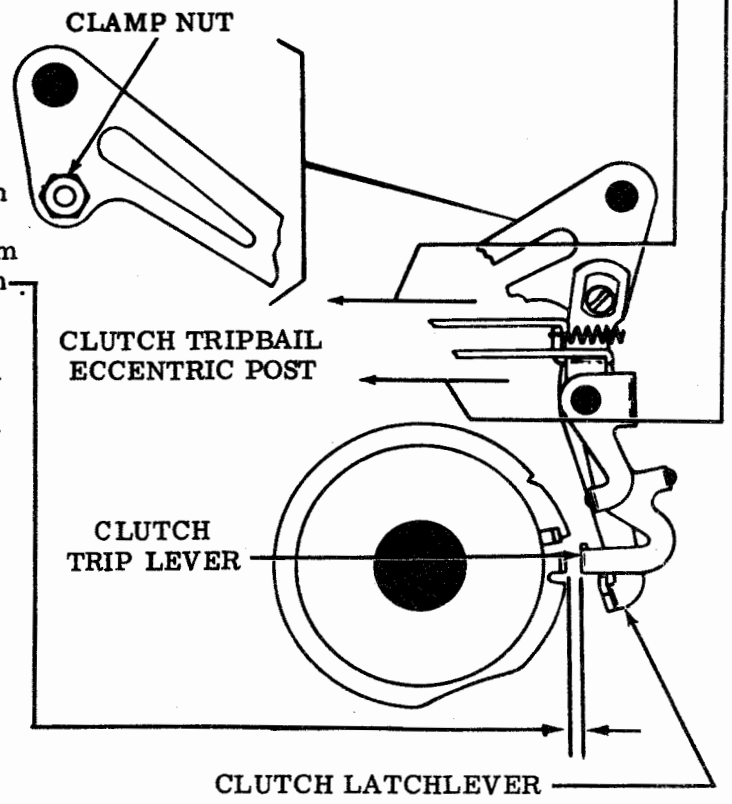
Note: Remove transmitter distributor from its base prior to adjustment. See 2.01 (E).

(C) CLUTCH LATCHLEVER SPRING

Requirement
Clutch engaged and rotated until latch-lever is on low part of disc
Min 3 oz---Max 5-1/2 oz
to start latch moving.

(D) CLUTCH TRIP LEVER SPRING

Requirement
With clutch engaged
Min 7 oz---Max 10-1/2oz
to start clutch trip lever moving.



2.04 Tape Guideplate

(A) TAPE LID

Note 1: Remove top and tape guideplates, lubricate prior to adjustment.

(1) Requirement (Preliminary)

With tape lid held against notch in tape guideplate

(a) Feed wheel groove in tape lid should align with slot in plate.

(b) Hole in tape lid for tape-out pin should align with hole in plate. (Gauge by eye.)

(c) Clearance between pivot shoulder and tape lid

Min some---Max 0.010 inch

To Adjust

With tape lid bracket mounting nuts (2) loosened, insert tip of TP170283 gauge through slot and into groove of lid; position tape lid bracket. Retighten nuts.

(2) Requirement

Tape lid front bearing surface, A, should touch tape guideplate. Clearance, B, measured at fin of tape lid which is in line with rear tape guide. (See Note 3.)

Min 0.010 inch---Max 0.018 inch For fixed width tape guides

Min 0.015 inch---Max 0.018 inch For variable width tape guides

Note 2: When both plates are assembled on unit, left edge of lid may touch top plate and some change in this clearance may be expected.

To Adjust

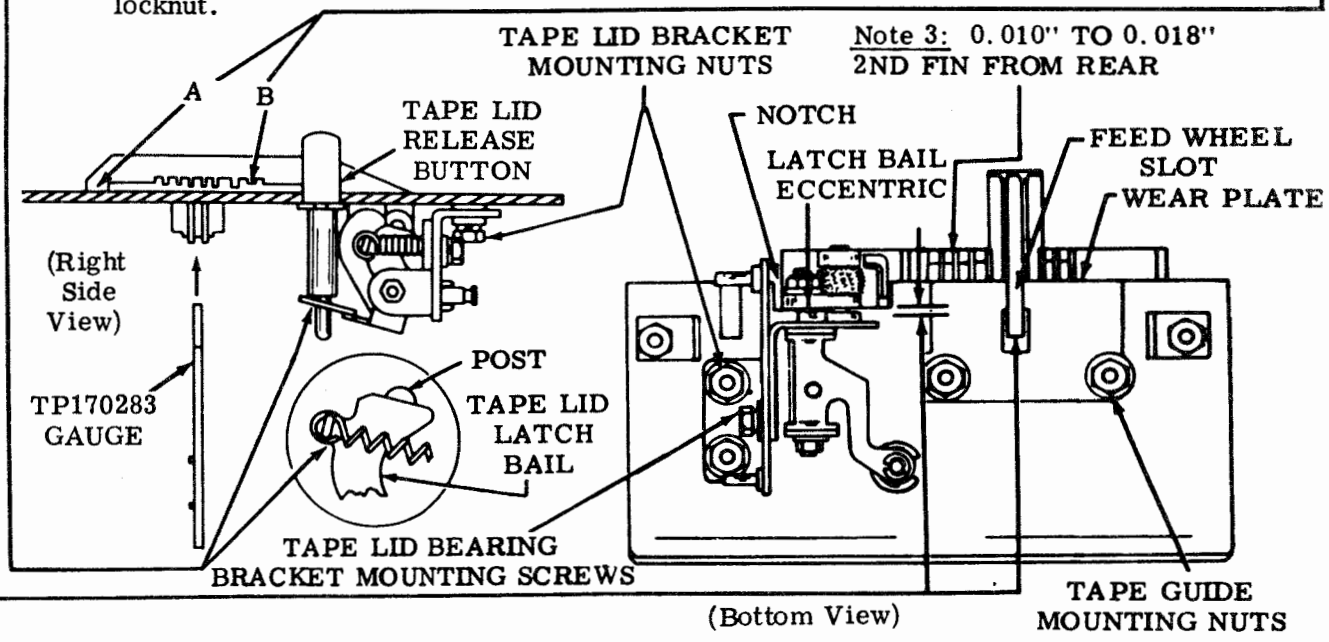
With tape lid bearing bracket mounting screws friction tight and tape lid pressed against tape guideplate, position bearing bracket. Recheck (1) Requirement. Tighten screws.

(3) Requirement

Release button should have some endplay when lid is latched against tape guideplate.

To Adjust

With eccentric mounting post locknut friction tight and tape lid raised, 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 button. With lid held down, tip of latch should clear post as button is operated. Tighten locknut.



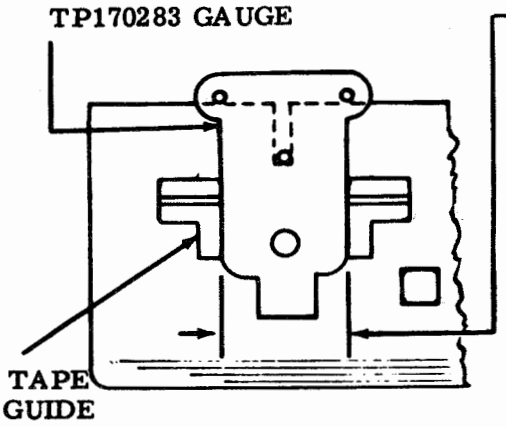
2.05 Tape Guideplate (continued)

(B) TAPE GUIDE

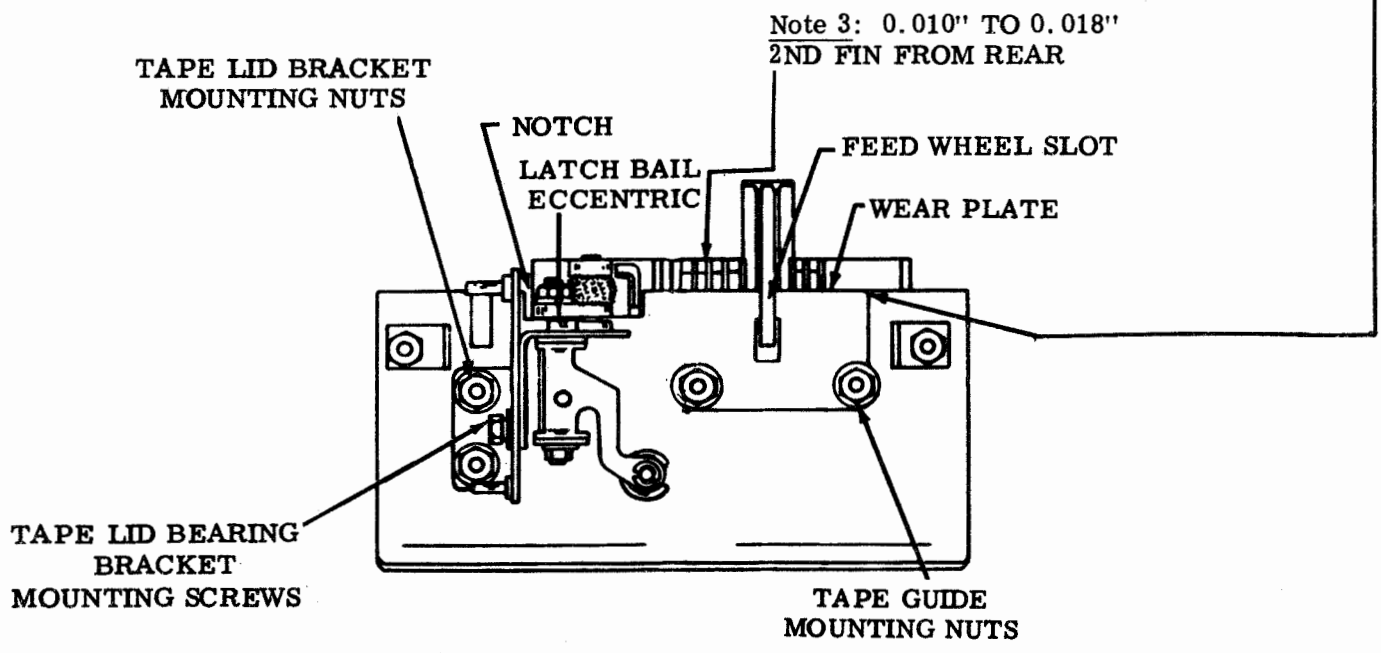
(1) Requirement
With tape gauge positioned as shown, clearance between right and left tape guide and gauge
Min some---Max 0.003 inch

(2) Requirement
Edge of wear plate should be flush with edge of tape guideplate.

To Adjust
With each tape guide mounting nut friction tight, move wear plate upward until it overhangs edge of tape guideplate. Place gauge in position and move gauge and wear plate downward until both studs engage edge of tape guideplate to align common edge. Hold gauge and wear plate and position each guide. (Gauge may touch but not bind.) The tape should not ride on the side of either tape guide. Tighten nuts.

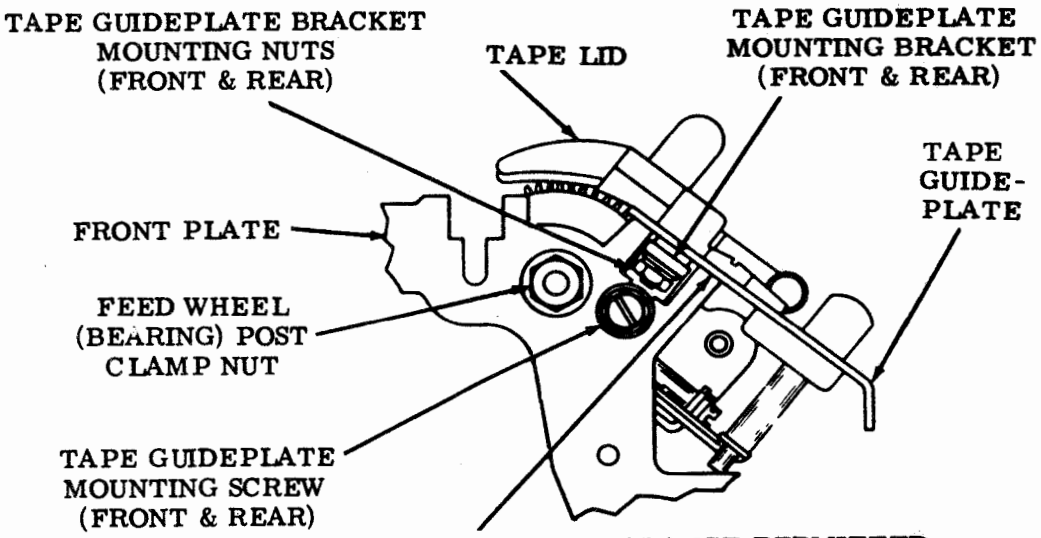


(Top View)



(Bottom View)

2.06 Tape Guide Mounting Plate



REPLACING AND POSITIONING TAPE GUIDEPLATE

Note: Position tape-out sensing pin stop arm (2.10) in its lowest position and hold start stop bail extension from ratchet wheel.

(1) Requirement
Shoulder of feed wheel post should not interfere with top plate or tape guideplate mounting brackets.

To Adjust
See Note. With feed wheel bearing post clamp nut friction tight, position the post. Tighten clamp nut.

(2) Requirement
Tape guideplate should rest firmly against at least three projections of front and rear plate.

To Adjust
See Note. With clamp nut that secures tape guideplate mounting bracket (front and rear) friction tight, trip clutch, and rotate shaft until sensing pins are in their uppermost position. With tape lid raised and start-stop lever in RUN position, press guideplate into position while guiding mounting screws into notch of front and rear plate. Engage tip of tape-out pin with hole in tape guideplate.

(3) Requirement
Outer edge of front and rear mounting bracket should be located flush with shoulder of mounting stud so that edge of tape guideplate projects over front and rear plate by an equal amount. Gauge by eye. See 2.21.

To Adjust
Move tape guideplate toward the front or rear. Tighten nuts only after top plate (2.07) is adjusted.

2.07 Top Plate and Coverplate Mounting

REPLACING AND POSITIONING TOP PLATE

To Check

Loosen nuts (friction tight) that secure mounting screws to plate. Press top plate into position while guiding top plate mounting screws into notch of front and rear plate. Position each sensing pin in its slot. Make sure that top plate seats firmly against projections of front and rear plate (3 projections should engage) and tight-tape arm extension is under top plate.

(1) Requirement

Mating edge of top plate should be flush to 0.003 under flush with edge of tape guideplate (within area of tape lid) when plate engages at least 5 projections.

To Adjust

Position top plate, tighten mounting screws, and then tighten nuts that secure tape guideplate mounting brackets (2.06).

(2) Requirement

Feed wheel slot should align with slot in tape guideplate so that feed wheel rotates freely with detents and feed pawl disengaged (freewheeling).

To Adjust

Position top plate toward front or rear to align slot.

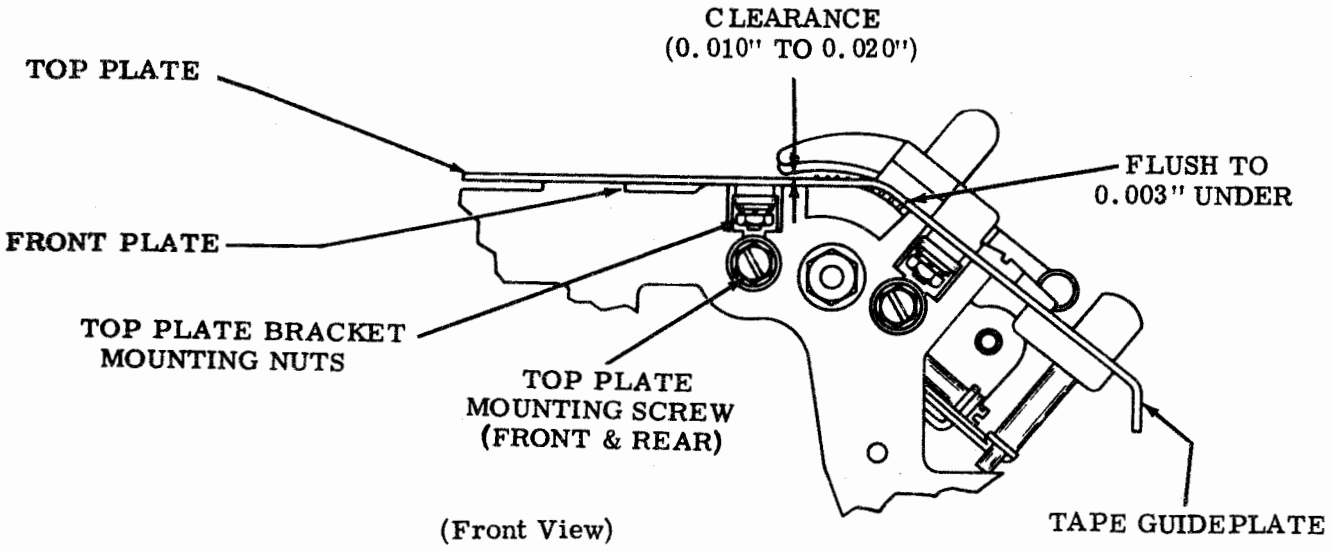
(3) Requirement

Clearance between projection of tape lid and top plate (tape lid latched)

Min 0.010 inch---Max 0.020 inch at curved portion } For fixed width tape guides
Min 0.010 inch---Max 0.018 inch at flat portion }
Min 0.015 inch---Max 0.018 inch at flat portion — For variable width tape guides

To Adjust

If necessary, loosen tape lid bearing bracket mounting screw (2.04) and position tape lid. Retighten screws and recheck requirements in 2.04.



(Front View)

2.08 Top Plate and Coverplate Mounting (continued)

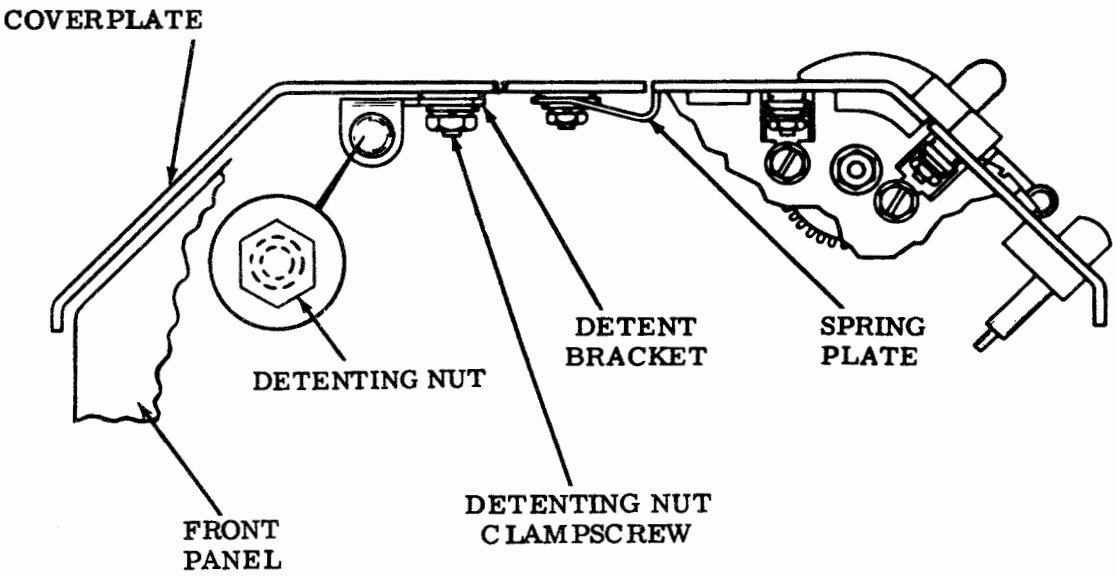
REPLACING AND POSITIONING COVERPLATE

(1) Requirement
Right edge of coverplate should be held flush against left edge of top plate by the coverplate detents.

(2) Requirement
Coverplate should rest against at least three of the four projections (front and rear plate).

(3) Requirement
Front edge of coverplate and top plate should 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 the requirements. Retighten mounting nuts.



(Front View)

2.09 Tape-Out Contact Mechanism

TAPE-OUT CONTACT ASSEMBLY

(1) Requirement

Coverplate and top plate removed; start-stop lever in STOP position; removal of tape guideplate optional. With tape-out spring bracket friction tight, move bracket downward until tape-out pin extension clears insulated portion of contact swinger. With gram scale applied as shown

Min 8 grams---Max 15 grams

to separate normally closed contacts.

To Adjust

Remove bail spring and contact assembly. Form the contact swinger with the TP110445 spring bender.

(2) Requirement

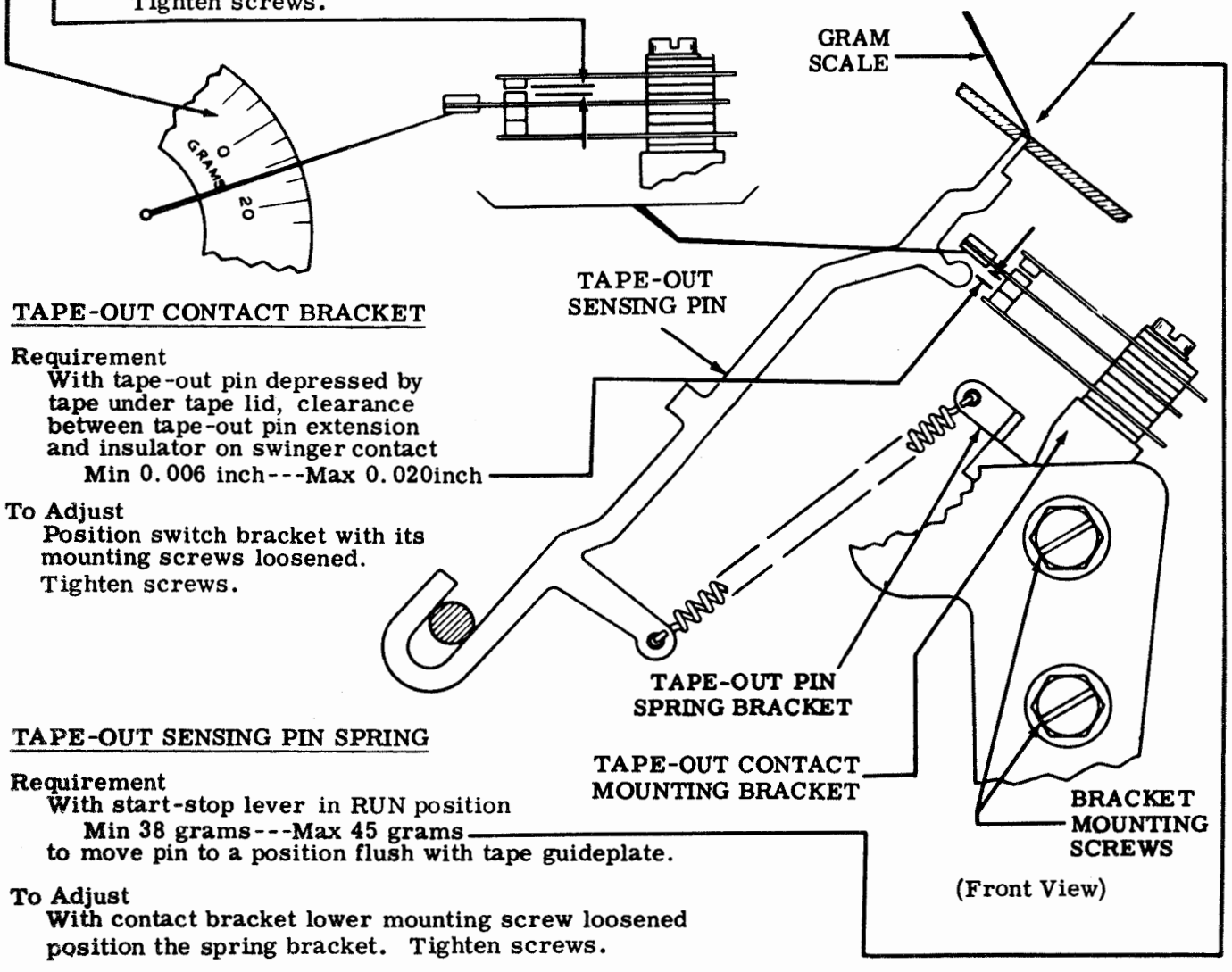
Clearance between normally open contacts

Min 0.008 inch---Max 0.015 inch

To Adjust

Form upper contact spring using the TP110445 spring bender.

Note: 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. Tighten screws.



TAPE-OUT CONTACT BRACKET

Requirement

With tape-out pin depressed by tape under tape lid, clearance between tape-out pin extension and insulator on swinger contact

Min 0.006 inch---Max 0.020inch

To Adjust

Position switch bracket with its mounting screws loosened. Tighten screws.

TAPE-OUT SENSING PIN SPRING

Requirement

With start-stop lever in RUN position

Min 38 grams---Max 45 grams

to move pin to a position flush with tape guideplate.

To Adjust

With contact bracket lower mounting screw loosened position the spring bracket. Tighten screws.

2.10 Tape-Out Sensing Pin Mechanism

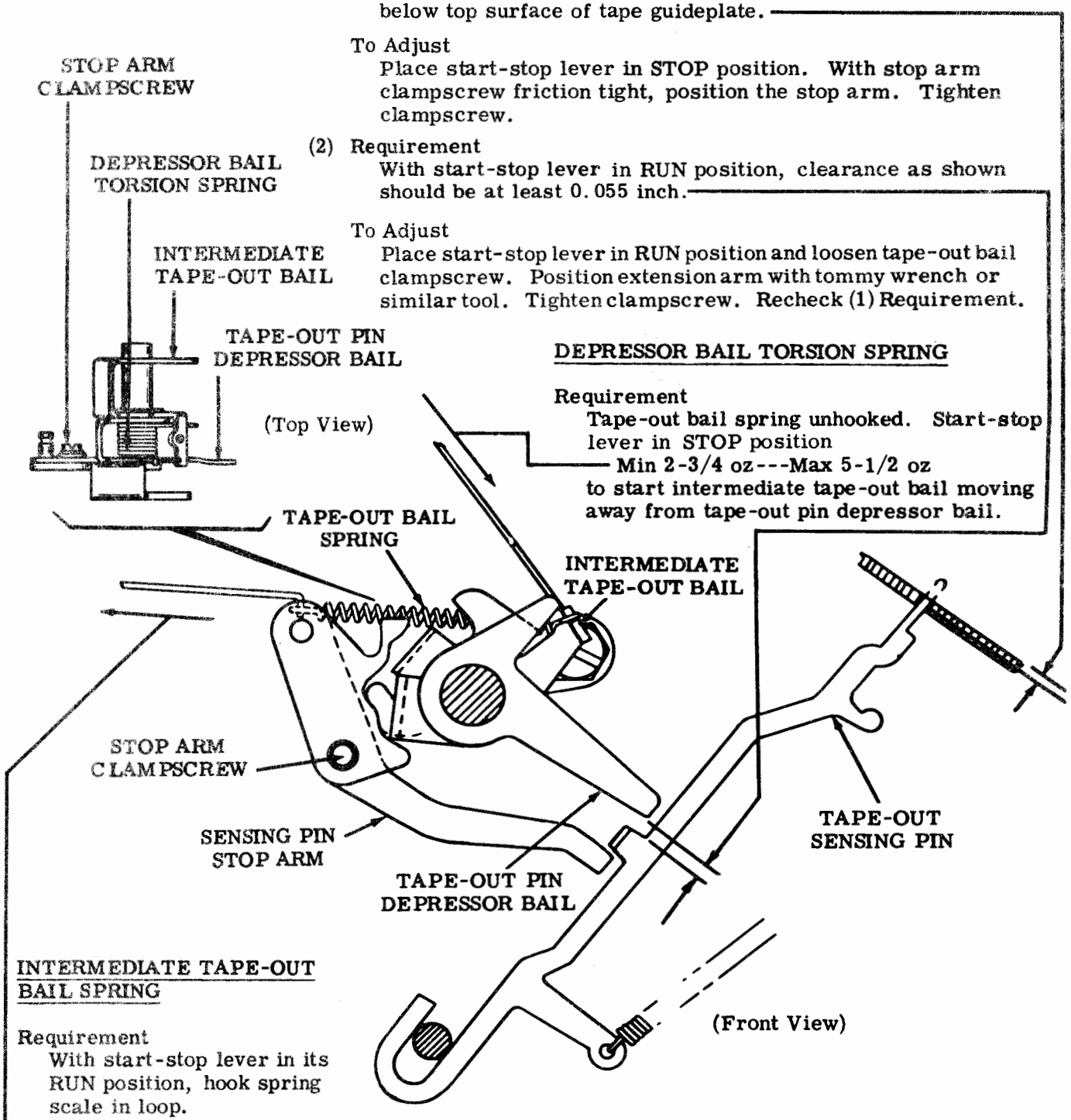
TAPE-OUT SENSING PIN

(1) Requirement
With start-stop lever in **FREE** wheeling or **STOP** position, tip of tape-out pin should be flush to 0.010 inch under flush below top surface of tape guideplate.

To Adjust
Place start-stop lever in **STOP** position. With stop arm clampscrew friction tight, position the stop arm. Tighten clampscrew.

(2) Requirement
With start-stop lever in RUN position, clearance as shown should be at least 0.055 inch.

To Adjust
Place start-stop lever in RUN position and loosen tape-out bail clampscrew. Position extension arm with tommy wrench or similar tool. Tighten clampscrew. Recheck (1) Requirement.



DEPRESSOR BAIL TORSION SPRING

Requirement
Tape-out bail spring unhooked. Start-stop lever in STOP position
Min 2-3/4 oz---Max 5-1/2 oz
to start intermediate tape-out bail moving away from tape-out pin depressor bail.

INTERMEDIATE TAPE-OUT BAIL SPRING

Requirement
With start-stop lever in its RUN position, hook spring scale in loop.
Min 3 oz---Max 5 oz
to pull spring to its installed length.

2.11 Start-Stop Switch Assembly

(A) START-STOP SWITCH BRACKET

(1) Requirement

With start-stop lever in RUN position and clutch in its disengaged position, clearance between start-stop bail extension and insulator on start-stop switch swinger

Min 0.006 inch---Max 0.015 inch

To Adjust

With switch bracket mounting screws loosened, position the bracket. Tighten screws.

(2) Requirement

Start-stop bail extension should fully engage insulated portion of switch swinger.

To Adjust

Loosen contact pile-up mounting screws and align contact assembly. Tighten screws.

(B) TIGHT-TAPE START-STOP CONTACT SPRING

Requirement

With start-stop lever in RUN position

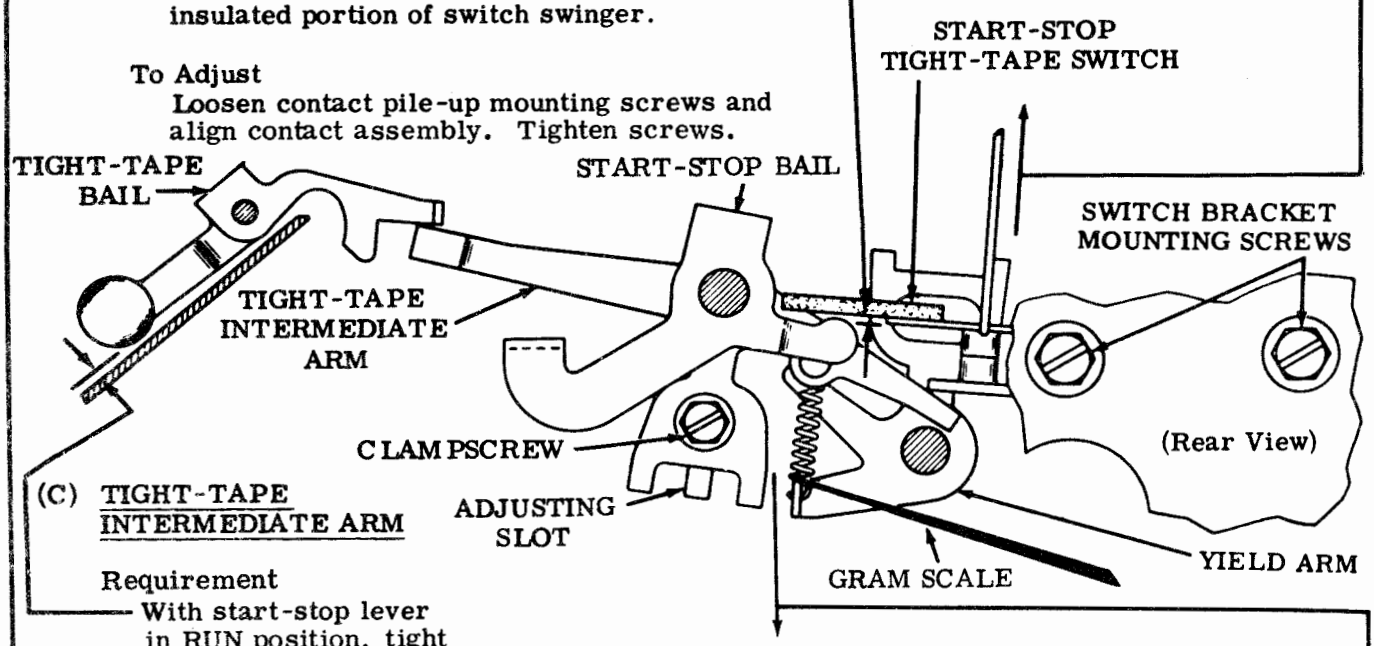
Min 3 oz---Max 4 oz

to separate contacts.

To Adjust

Form swinger with TP110445 spring bender.

Note: Recheck Adjustments (A) and (C).



(C) TIGHT-TAPE INTERMEDIATE ARM

Requirement

With start-stop lever in RUN position, tight tape start-stop contacts should function as follows.

(a) Remain closed when tight tape bail is raised 0.045 inch.

(b) Open as bail is raised to height of 0.075 inch.

To Adjust

With tight-tape intermediate arm clampscrew loosened, position the arm at its adjusting slot. Tighten clampscrew.

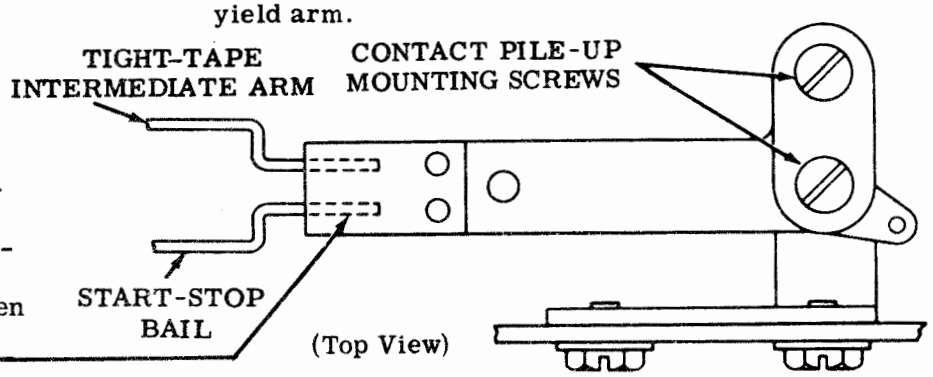
(D) TIGHT-TAPE INTERMEDIATE ARM SPRING

Requirement

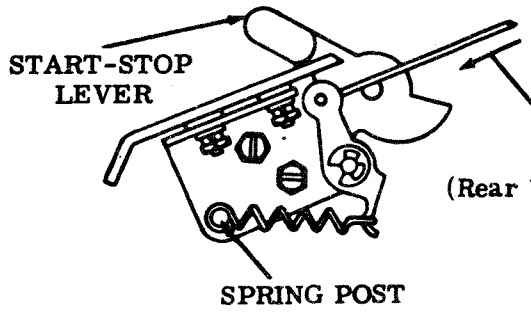
With start-stop lever in RUN position,

Min 20 grams (3/4 oz)---Max 40 grams (1-1/2 oz)

to start intermediate arm moving away from its yield arm.



2.12 Main Bail Assembly



(C) START-STOP LEVER DETENT SPRING
(Not on relay controlled unit)

Requirement
Start-stop lever in RUN position
Min 14 oz---Max 22 oz
to start detent bail moving away from start-stop lever detent.

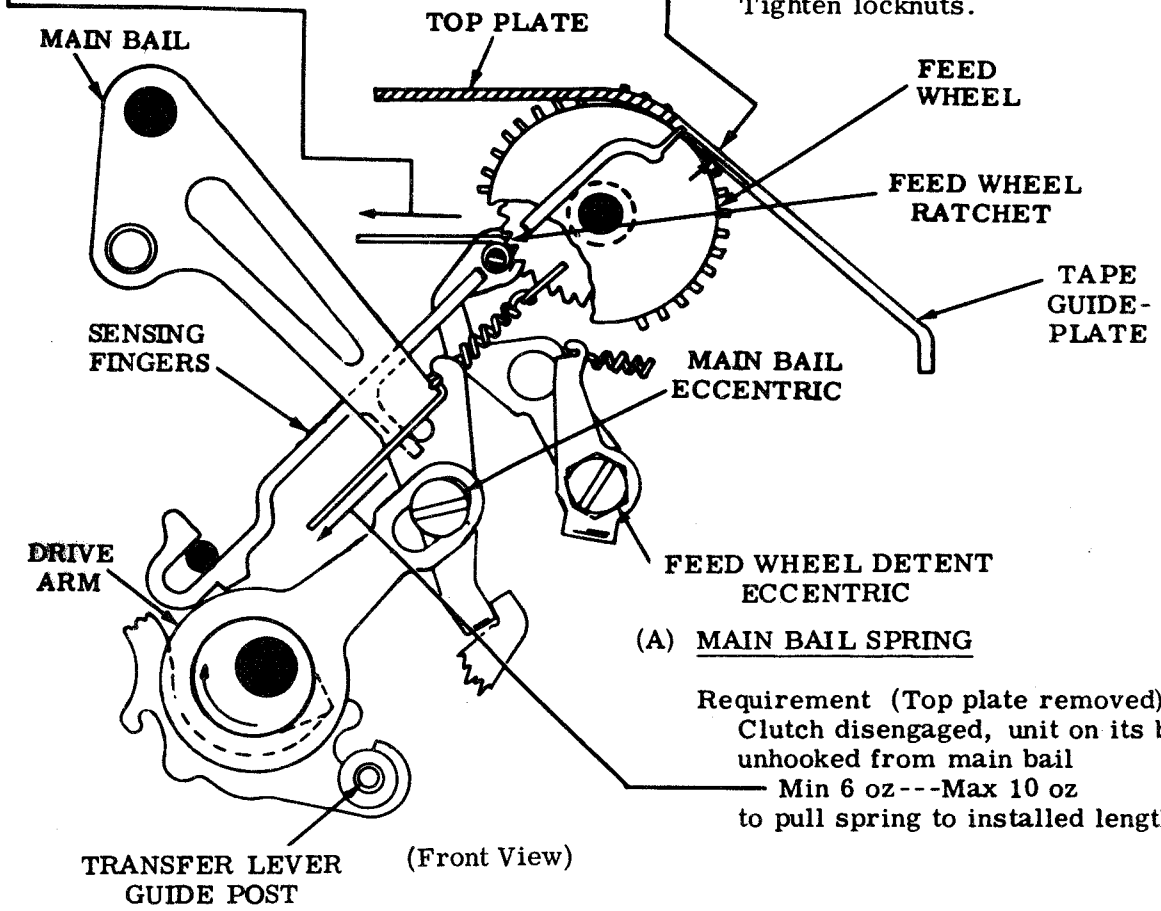
(D) MAIN BAIL TRIP LEVER

Requirement (Replace top plate)
Unit in stop position, clearance between tip of highest sensing pin and top surface of tape guideplate should be flush to 0.005 inch below.

To Adjust
With clutch disengaged, loosen front and rear transfer lever guide eccentric post locknuts. Position highest point of eccentric post (as indicated by dot on end of post) toward left and rotate post so that its eccentric positions trip lever. Tighten locknuts.

(B) FEED RATCHET DETENT SPRING

Requirement
With main shaft in stop position and feed pawl held away from its ratchet
Min 8 oz---Max 13 oz
to start roller moving away from ratchet.



(A) MAIN BAIL SPRING

Requirement (Top plate removed)
Clutch disengaged, unit on its back. Spring unhooked from main bail
Min 6 oz---Max 10 oz
to pull spring to installed length.

2.13 Main Bail Trip Assembly

(A) MAIN BAIL

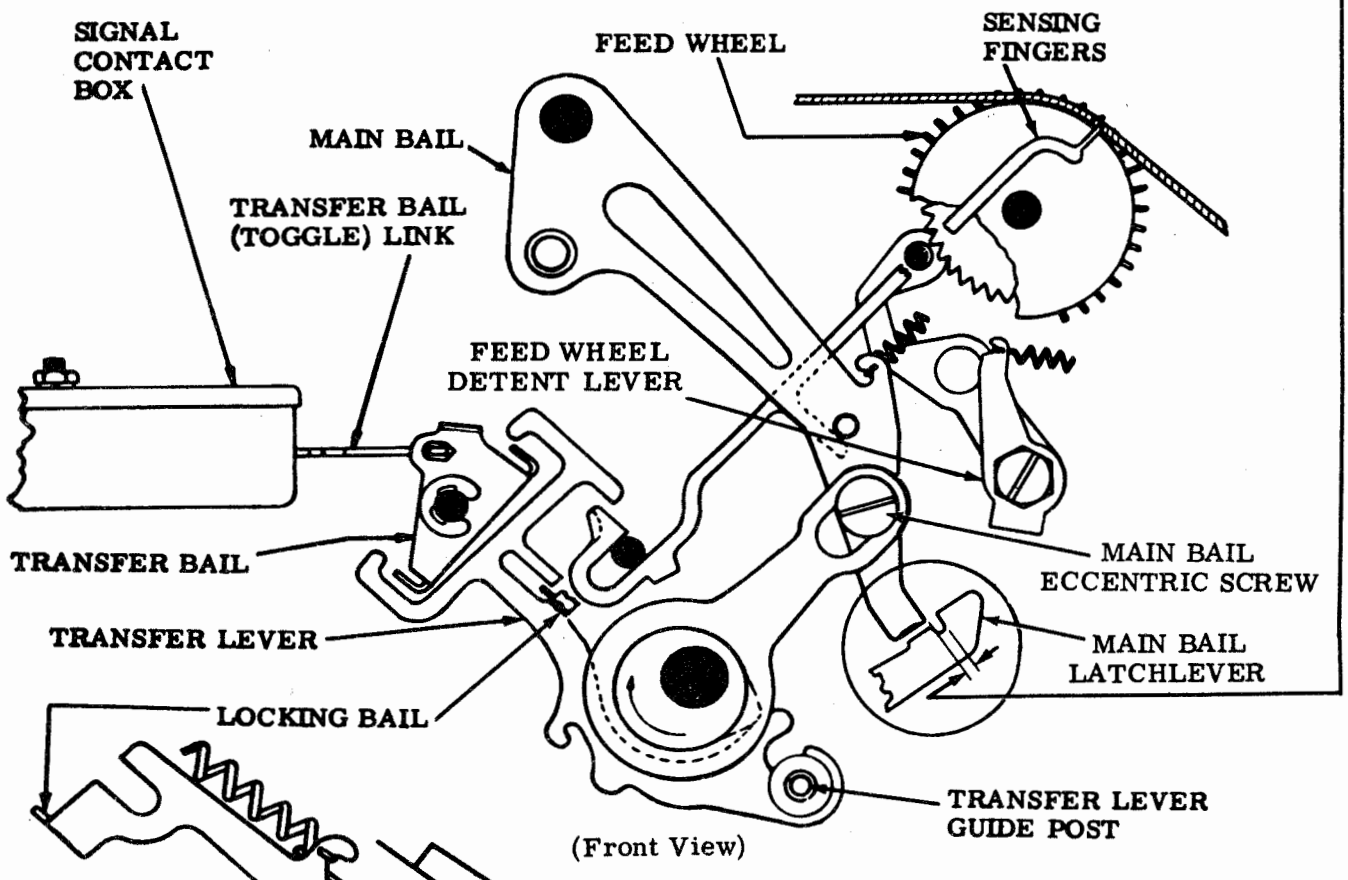
Requirement

Main bail in lowest position, horizontal clearance between main bail arm and main bail latchlever should be

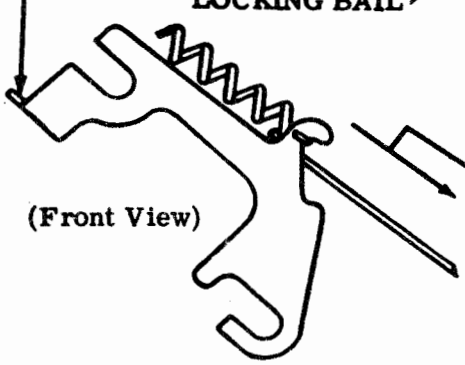
Min some---Max 0.015 inch (11 unit)

To Adjust

Position main bail eccentric screw with nut on eccentric screw loosened (and high part of eccentric screw to the right). Tighten nut. Check and refine, if necessary, MAIN BAIL TRIP LEVER (2.12).



(B) LOCKING BAIL SPRING



Requirement

With unit tilted toward the left and in stop position

Min 10 oz---Max 14 oz to start bail moving.

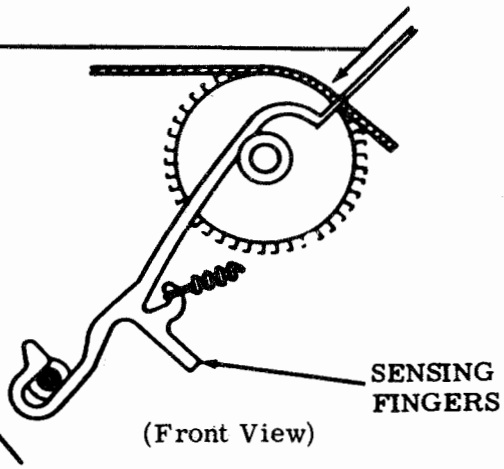
2.14 Code Sensing Fingers

(A) SENSING FINGER SPRING

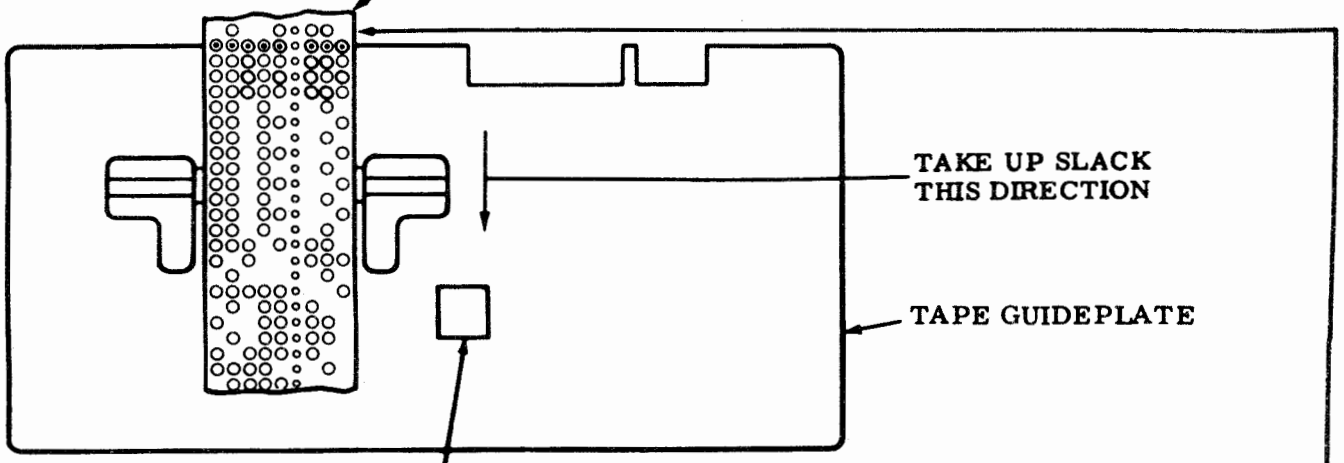
Requirement

Unit in upright position, sensing fingers in their uppermost position, and rubout delete bail (if present) held away from the sensing finger

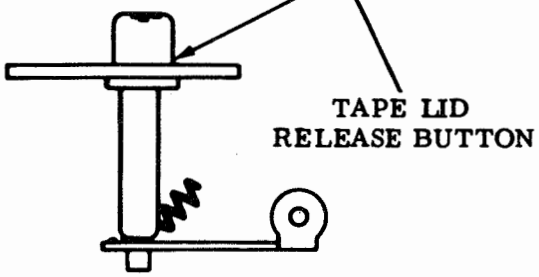
Min 2 oz---Max 3 oz to move a sensing finger to a position flush with the tape guideplate.



(Front View)



(Top View)



(Rear View)

(B) FEED WHEEL DETENT

Requirement

With tape lid raised, sensing fingers down, high part of feed wheel detent eccentric toward the right, rubout perforated tape between tape guides, and play in tape taken up lightly toward the right. Tip of each sensing finger should be centrally located in the code holes.

To Adjust

Hold feed pawl away and position feed wheel detent eccentric screw with nut on eccentric screw friction tight. Tighten nut. See figure of 2.12.

2.15 Feed Pawl Mechanism

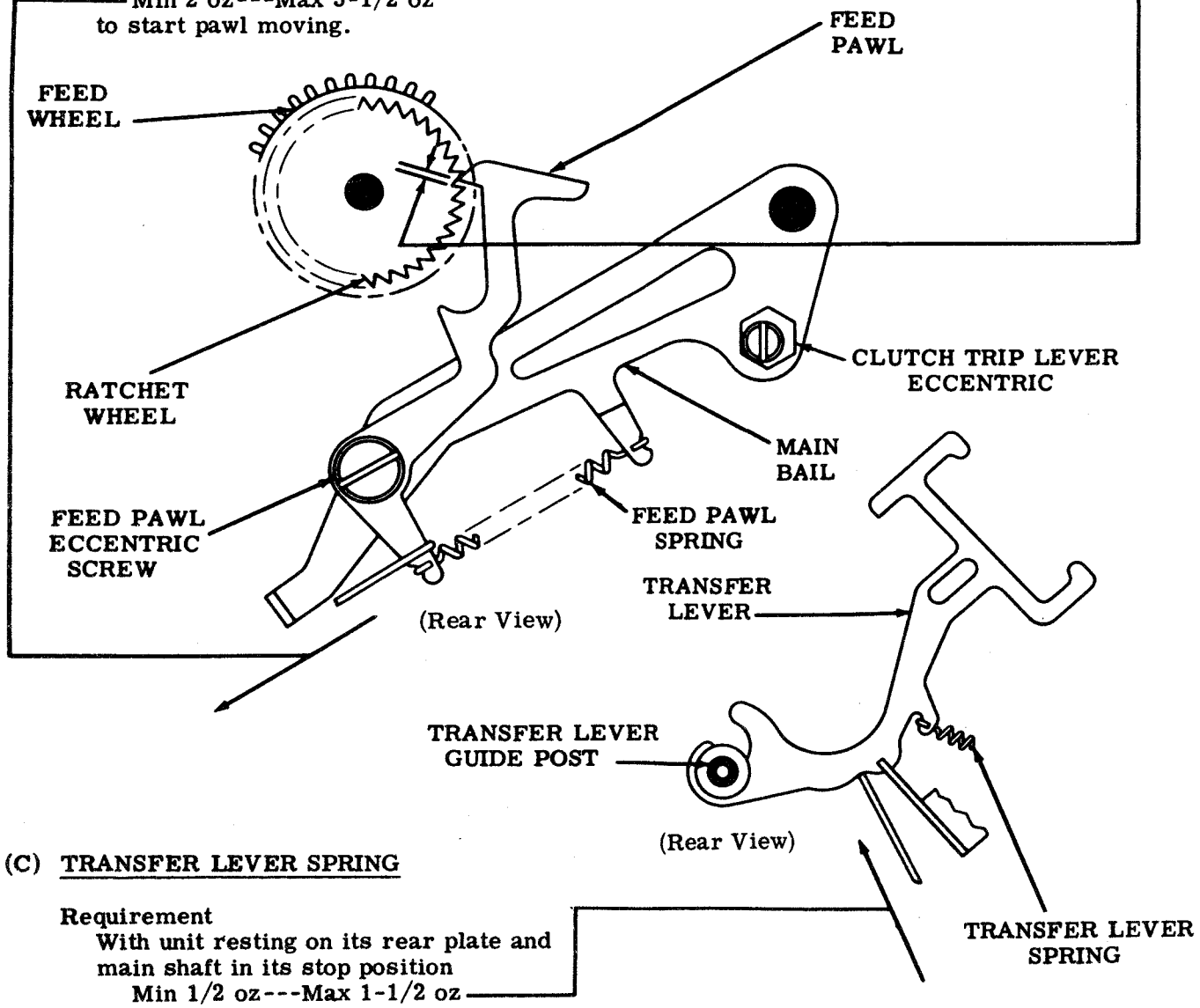
(A) FEED PAWL

Requirement (Top plate removed)
With high part of eccentric toward the right and sensing fingers in their lowermost position, clearance between feed pawl and ratchet tooth just engaged.
Min some---Max 0.003 inch

To Adjust
With eccentric screw locknut loosened, position the screw. Tighten locknut. Recheck requirement at four positions of ratchet approximately 90 degrees apart. Replace top plate.

(B) FEED PAWL SPRING

Requirement
With unit tilted toward the left and main shaft in its stop position
Min 2 oz---Max 3-1/2 oz
to start pawl moving.



(C) TRANSFER LEVER SPRING

Requirement
With unit resting on its rear plate and main shaft in its stop position
Min 1/2 oz---Max 1-1/2 oz
to start each lever moving.

2.16 Transfer Bail Stabilizer Mechanism

(A) TRANSFER BAIL STABILIZER

Requirement

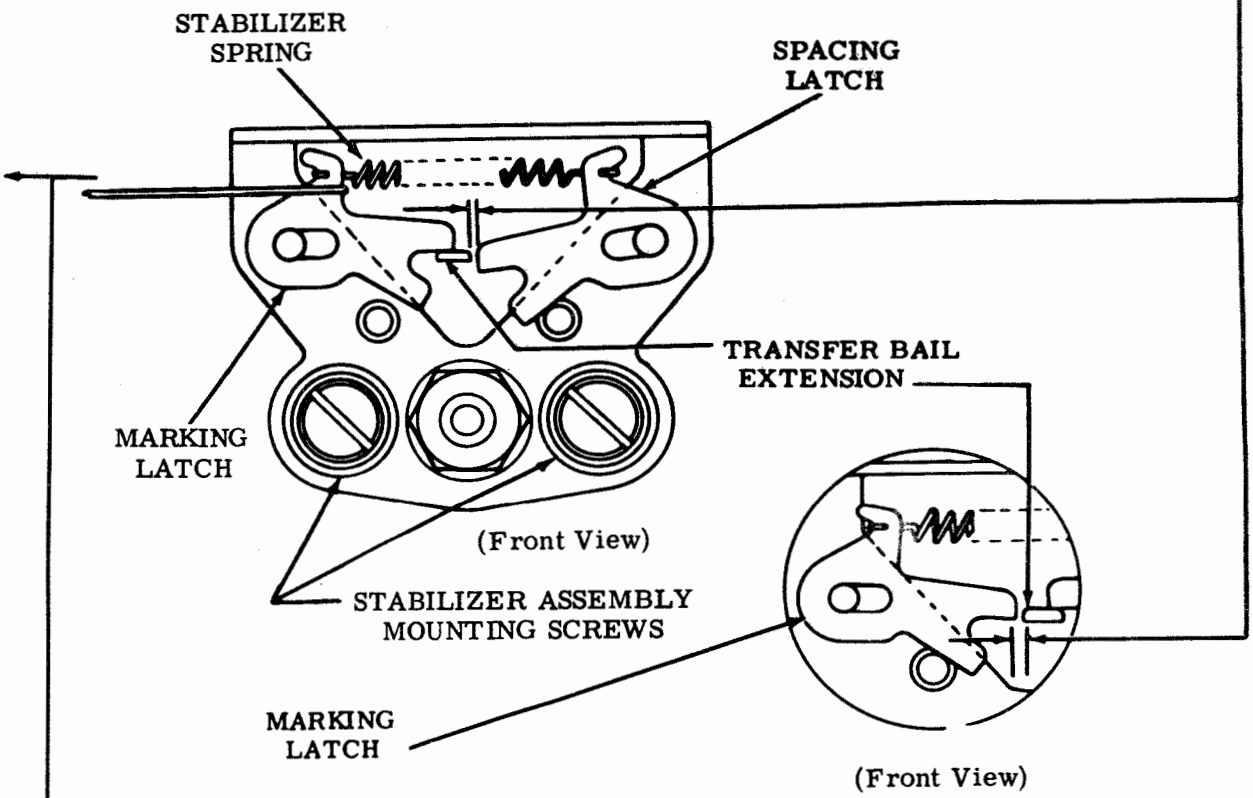
(a) With the RUBOUT combination selected, rotate main shaft until no. 3 transfer lever is on high part of its cam. Check clearance between side of transfer bail extension and its latch.

(b) Repeat above procedure with a NULL combination selected and check the clearance on other latch. Clearance in marking and spacing position should be equal within 0.002 inch.

To Adjust

With stabilizer assembly mounting screws friction tight, position the assembly. Tighten screws.

Note: Latches should drop in place as other transfer levers cam the transfer bail. Where possible, use a signal checking device to refine this adjustment following SIGNAL CONTACT (2.17).



(B) STABILIZER SPRING

Requirement

With unit upright and main shaft in stop position

Min 2-1/2 oz---Max 5 oz

to start stabilizer latch moving.

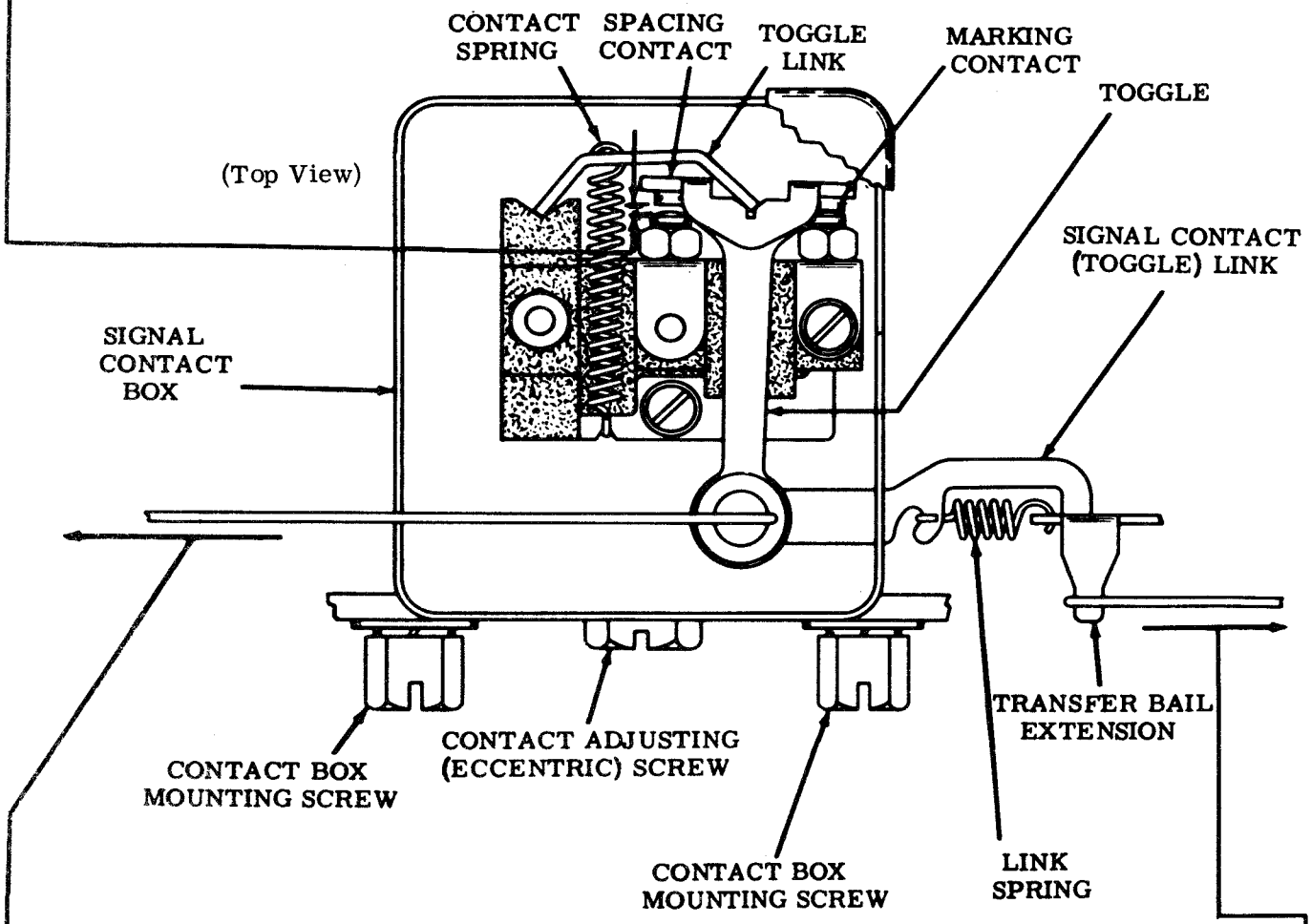
2.17 Signal Contact Assembly

(A) SIGNAL CONTACT

Requirement (Coverplate and contact box cover removed)
Contact gap in the marking position and the spacing position should be equal when clearance between respective contacts is maximum. (Engage clutch and rotate main shaft slowly.)

To Adjust
With contact box mounting screws friction tight, position box with its eccentric. Tighten screws.

Note: Use test set such as DXD where possible to refine adjustment. Refer to 2.23.



(B) SIGNAL CONTACT SPRING

Requirement
With main shaft in stop position and cover of contact box removed, unhook toggle link spring and move transfer bail to spacing position (right)
Min 2 oz---Max 3-1/2 oz
to open spacing contacts (left).

(C) SIGNAL CONTACT LINK SPRING

Requirement
With main shaft in stop position and stabilizer spring unhooked, move latches away from transfer bail extension (2.16). Hold toggle firmly against contacts.
Min 6 oz---Max 12 oz
to start transfer bail extension moving.

2.18 Clutch Trip Magnet Assembly

CLUTCH MAGNET ASSEMBLY — PRELIMINARY

(1) Requirement

In energized position armature should contact top core face and should have clearance at bottom core face at point of least clearance when play is taken up to make clearance a maximum.

Min some---Max 0.004 inch (11 unit)

To Adjust

Remove magnet bracket mounting screws and magnet assembly from unit. Loosen two screws on bottom of magnet assembly and position mounting hinge until required condition is obtained. Tighten screws.

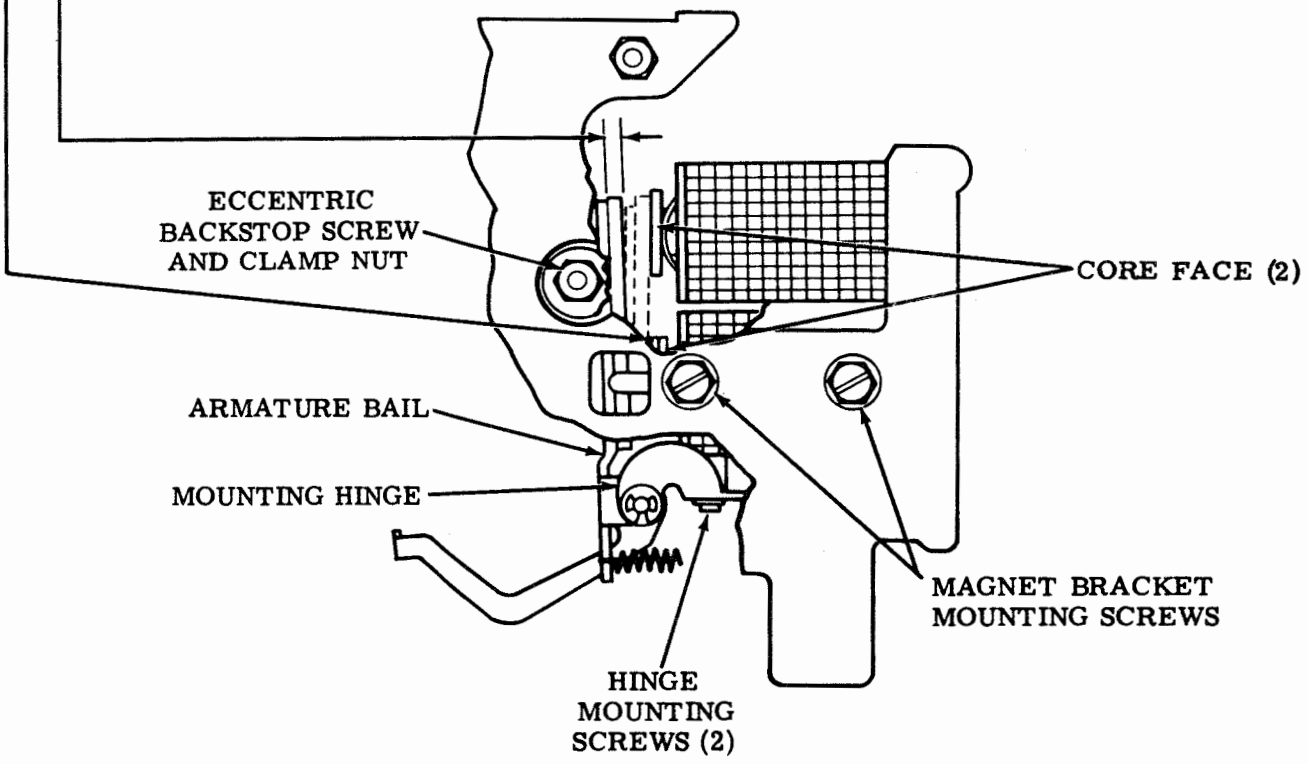
(2) Requirement

With high part of eccentric toward top of assembly, clearance between armature bail and eccentric backstop when armature is held in energized position should be

Min 0.045 inch---Max 0.055 inch

To Adjust

Loosen eccentric backstop screw clamp nut. With high part of eccentric toward top of assembly, position screw. Tighten clamp nut.



(Rear View)

2.19 Clutch Trip Magnet Assembly (continued)

CLUTCH MAGNET ASSEMBLY — PRELIMINARY (Continued)

(3) Requirement

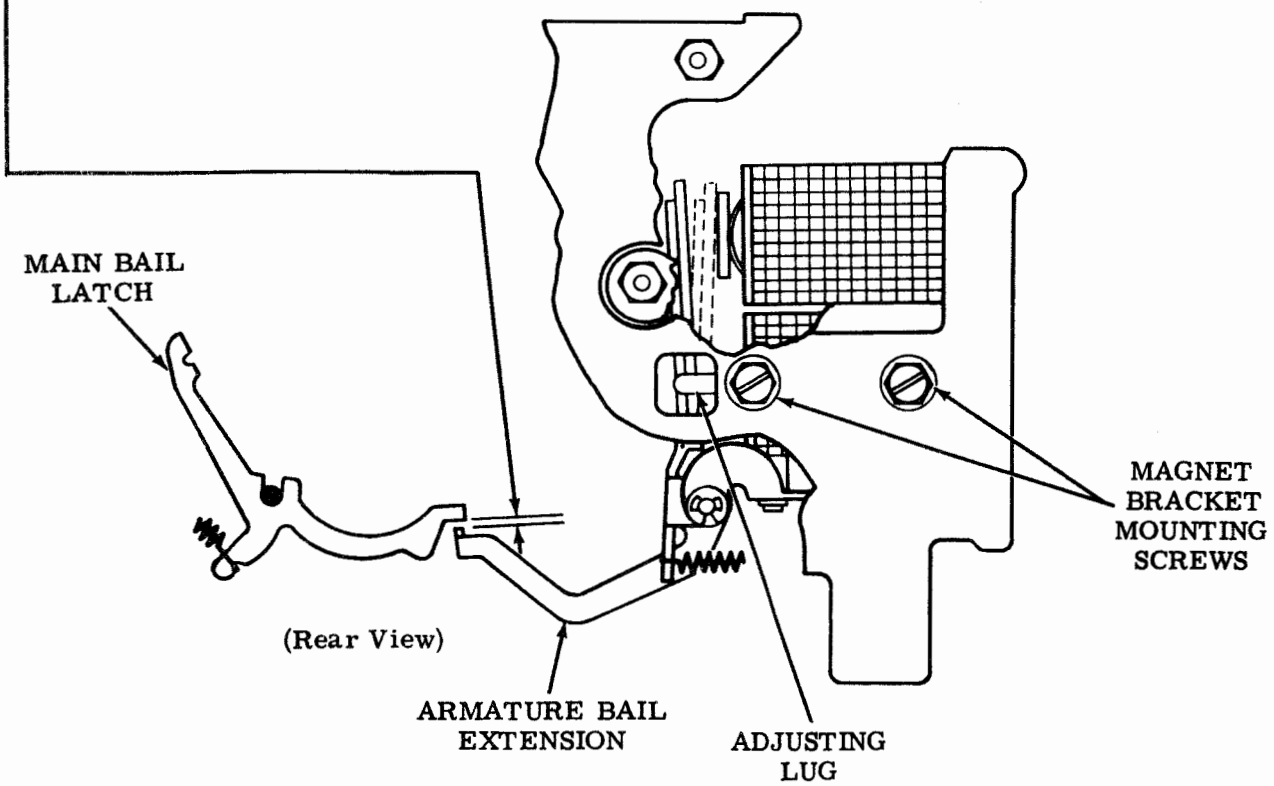
With magnet assembly replaced and clutch disengaged, clearance between end of armature bail extension and main bail latch

Min 0.007 inch---Max 0.015 inch (11 unit)

To Adjust

With magnet bracket mounting screws friction tight, move bracket to its lowermost position, then position bracket by means of adjusting lug on bracket (visible through hole in rear plate). Tighten screws. Refine requirements if necessary.

Note: The above adjustments may be considered final unless ac power is used, a check should be made to insure that the chatter is at a minimum. If excessive chatter is present, Requirement (1) will have to be refined and Requirements (2) and (3) rechecked.

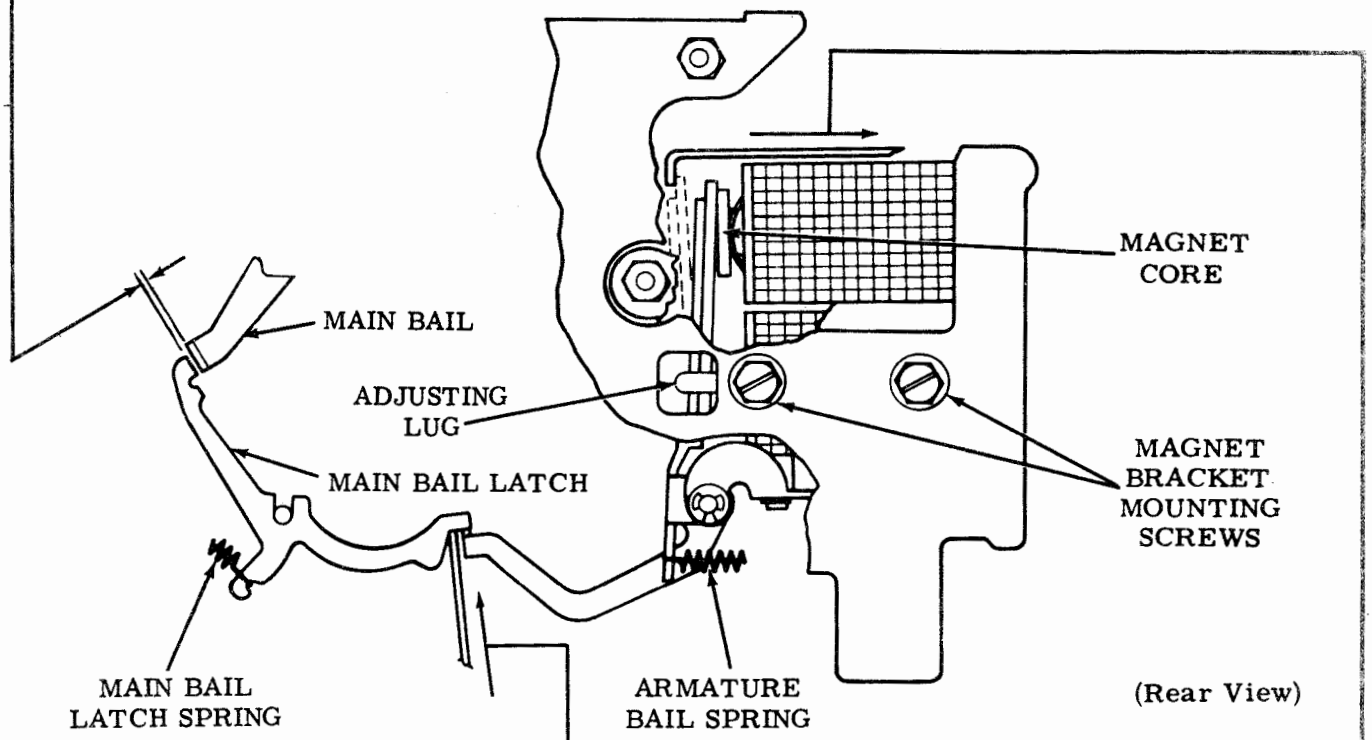


2.20 Clutch Trip Magnet Assembly (continued)

CLUTCH MAGNET ASSEMBLY — PRELIMINARY (Continued)

(4) Requirement
With armature electrically held against its magnet core, clearance between vertical surfaces of the main bail and its latchlever
Min some

To Adjust
With magnet bracket mounting screws friction tight, move bracket to its lowermost position, then position bracket by means of adjusting lug on bracket (visible through hole in rear plate). Tighten screws. Refine requirement if necessary.



MAIN BAIL LATCH SPRING

Requirement
With unit inverted and main bail latch released
Min 3/4 oz---Max 2 oz
to start main bail latch moving.

ARMATURE BAIL SPRING

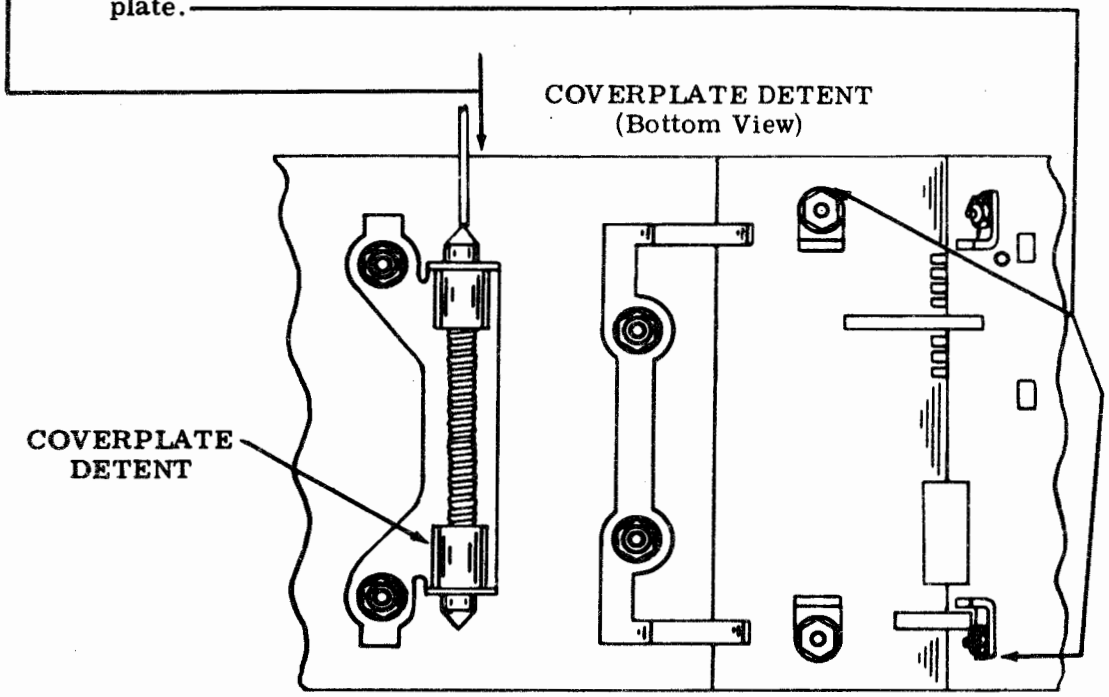
Requirement
With armature in de-energized position and main bail latchlever held away from the armature bail extension
Min 1 oz---Max 2 oz (11 unit)
to start armature moving.

2.21 Tape Lid Assembly

(A) COVERPLATE DETENT SPRING

Requirement
With spring scale applied to center of one detent
Min 28 oz---Max 40 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 coverplate.

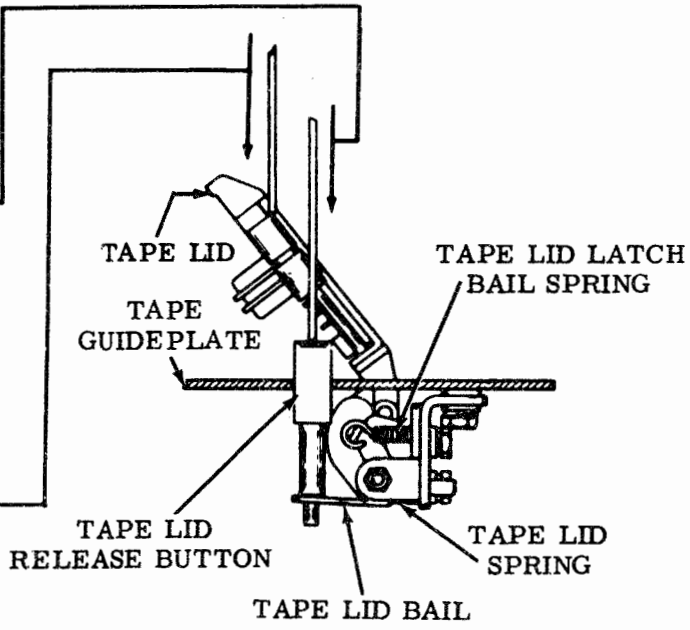


(B) TAPE LID RELEASE BUTTON SPRING

Requirement
With tape guideplate held horizontally and tape lid unlatched
Min 28 oz---Max 48 oz
to start tape lid bail moving.

(C) TAPE LID SPRING

Requirement
With tape lid release button held fully depressed and tape guideplate in horizontal position
Min 2-1/2 oz---Max 4-1/2 oz
to move open end of tape lid against the guideplate.



2.22 Transmitter Distributor Gear

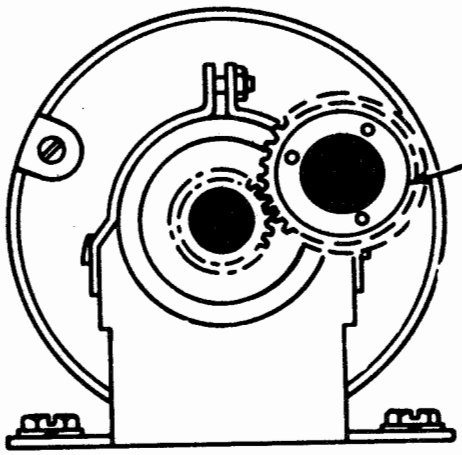
TRANSMITTER DISTRIBUTOR GEAR

Requirement

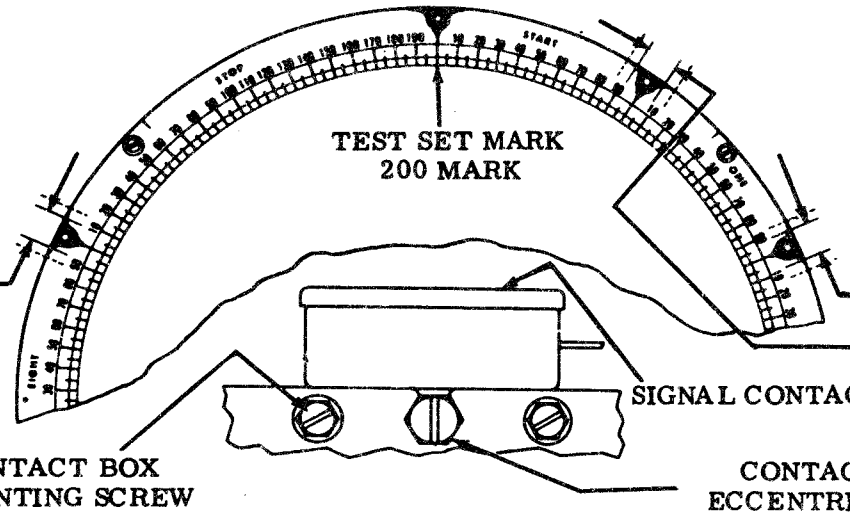
There should be only a perceptible amount of backlash between the intermediate drive gear and transmitter distributor gear. Rotate gears 360 degrees and check every 90 degrees to take care of any gear eccentricity or shaft wobble.

To Adjust

With transmitter distributor mounting screws (3) loosened, position the unit on base. Tighten screws.



2.23 Signal Pulse Refinement



CAUTION: ON ALL UNITS EQUIPPED WITH A SIGNAL REGENERATOR CIRCUIT, REMOVE THE SIGNAL REGENERATOR CARD BEFORE APPLYING DXD TIMING PROBES TO CONTACT ACCESS TERMINALS. FOR SIGNAL GENERATORS EQUIPPED WITH ARC SUPPRESSORS, THE ARC SUPPRESSOR SHOULD BE DISCONNECTED WHEN SIGNAL IS BEING CHECKED. FOR SIGNAL GENERATORS EQUIPPED WITH FILTER NETWORK CIRCUIT CARDS, THE FILTER NETWORK CIRCUIT CARD SHOULD BE REMOVED WHEN THE SIGNAL IS BEING CHECKED.

SIGNAL PULSE REFINEMENT — FINAL ADJUSTMENT WITH DXD OR STROBE
(11.0 Unit Code - Speeds up to and including 100 wpm)

Procedure

Plug signal distortion test set into signal line to view pulse image generated by the marking and spacing contacts. Synchronize signal generator with DXD so that end of stop pulse image aligns with the 200 mark on DXD scale when both units are operated at same speed and transmission is continuous.

Note 1: Figures appearing in ( ) in 2.23 and 2.24 are relaxed requirements for transmitter distributor sets used in circuits that employ a signal regenerator.

Note 2: End of stop pulse image should not vary from the 200 mark by more than one scale division. If a greater variation occurs, move the scale until the variations extend equally on either side of the 200 mark.

(1) Requirement

(a) Each marking code pulse should start no later than the 8th (12th) mark of the pulse under observation and start no earlier than 92nd (88th) mark of the previous pulse.

(b) Each marking code pulse should end no earlier than the 92nd (88th) mark of the pulse under observation and no later than the 8th (12th) mark of the following pulse.

(c) Each marking code pulse may have one break provided the break is not over three divisions wide and provided the break occurs only at the end of the code pulse image between the 92nd (88th) mark and the end of the image.

(d) The stop pulse should start no earlier than the 92nd (88th) mark of the last intelligence pulse and start no later than the 8th (12th) mark of the stop position.

2.24 Signal Pulse Refinement (continued)

(e) The stop image should not change in length or position, when viewed on DXD, to exceed one division while changing from R to Y selection (or equivalent codes). If necessary, reorient 200 mark on stop scale with end of stop pulse image.

To Adjust
With signal contact box mounting screws friction tight, rotate the eccentric (right or left). Tighten mounting screws and recheck adjustment.

(2) Requirement
When the spacing contact of the signal generator is wired the spacing contact should meet the following requirements.

(a) Each spacing code pulse should start no later than the 8th (12th) mark of the pulse under observation and start no earlier than the 92nd (88th) mark of the previous pulse.

(b) Each spacing pulse should end no earlier than the 92nd (88th) mark of the pulse under observation and end no later than the 8th (12th) mark of the following pulse.

(c) Each spacing pulse may have one break provided the break is not over three divisions wide and provided the break occurs only at the end of the code pulse image between the 92nd (88th) mark and the end of the image.

(d) The start pulse should start no earlier than the 192nd (188th) mark of the stop pulse and start no later than the 8th (12th) mark of the start pulse. The start pulse should end no earlier than the 92nd (88th) mark of the start pulse and end no later than the 8th (12th) mark of the number one pulse.

To Adjust
Same as above. Recheck marking contact if a spacing adjustment is made.

Note 3: If the signal requirements cannot be met, refine TRANSMITTER DISTRIBUTOR GEAR (2.22) and TRANSFER BAIL STABILIZER (2.16) with signal viewed on DXD.

2.25 Gold-Plated Signal Contacts

(A) Units may have signal contacts made of either unplated or gold-plated tungsten. If in doubt as to the type of contacts, remove signal generator cover and inspect contacts for gold plating.

(B) Cleaning

(1) Use twill jean cloth (KS2423, TP107162) to clean gold-plated contacts.

(2) Open contacts. Drop strip of twill jean between them. Close contacts. Draw twill jean part way through. Open contacts and withdraw twill jean.

(3) This procedure prevents small fibres at edges of twill jean strip from becoming lodged between contacts.

(4) Clean unplated tungsten contacts in accordance with standard procedures.

(C) Servicing for Low-Voltage Applications

(1) For standard applications including those with data sets, observe standard maintenance procedures and intervals. Low-voltage applications are covered below.

(2) The recommended cleaning interval for gold plated contacts in special low level applications (less than 250 microwatts) having an average weekly use of 60 hours should not exceed 90 days. This interval may be reduced, dependent on the signal circuit configuration, usage, and environment. Contacts should be cleaned as described in (B) Cleaning, above.

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 (2.17) 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 on voltages above 70 volts dc. Exceeding this level for an appreciable length of time may result in damage to gold plating and make them unfit for low-voltage applications.

Note 3: The above information also applies to 2.17, 2.23, and 2.24 of this section.

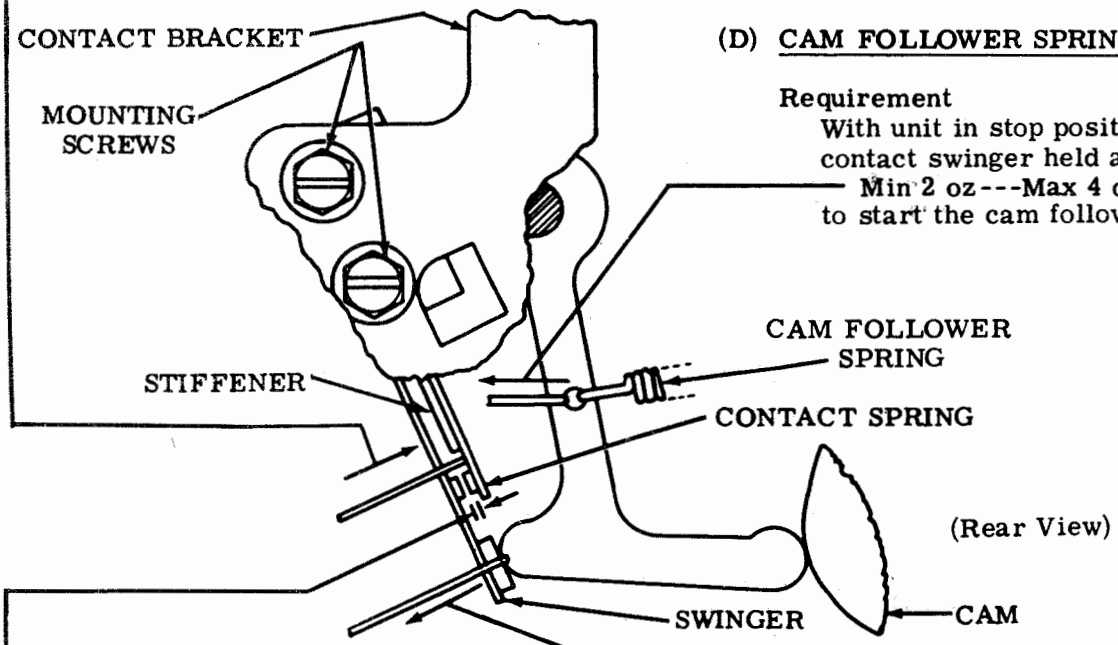
3. VARIABLE FEATURES

3.01 Timing Contact Mechanism (Early Design)

(C) TIMING CONTACT SPRING

Requirement
Min 5 oz---Max 8 oz
to move spring from stiffener.

To Adjust
Remove contact bracket assembly, loosen contact pile-up mounting screws and bend contact spring with bender (TP110445). Retighten pile-up mounting screws and check. Replace contact bracket assembly. Refine adjustments (A) and (B), if necessary.



(D) CAM FOLLOWER SPRING

Requirement
With unit in stop position and timing contact swinger held away
Min 2 oz---Max 4 oz
to start the cam follower moving.

(A) TIMING CONTACT BRACKET

(1) Requirement
With follower on low part of cam contacts should be closed when nylon pad is raised 0.006 inch and open when pad is raised 0.010 inch.

(2) Requirement
With follower on any peak of cam, contact gap should be
Min 0.003 inch
on units prior to serial No. 42200
Min 0.015 inch

To Adjust
Place unit in stop position. Adjust contact bracket by means of screwdriver lug, visible through hole in rear plate, with bracket mounting screws loosened. Tighten screws.

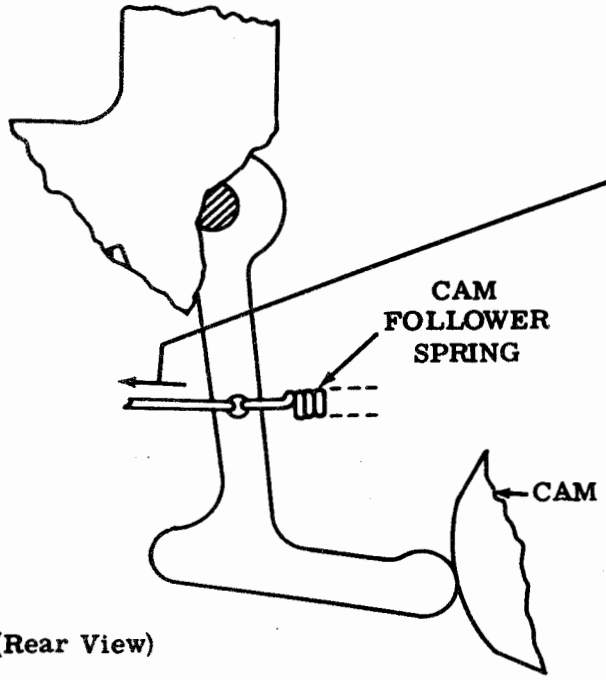
(B) TIMING CONTACT SWINGER

Requirement
With contact closed
Min 2 oz---Max 3 oz
to just separate contacts

To Adjust
Bend swinger with spring bender TP110445.

3.02 Timing Contact Mechanism (Late Design)

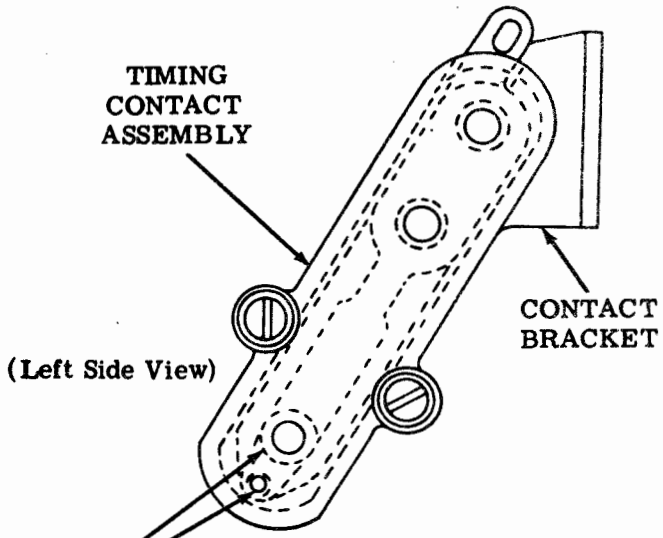
Note: The timing contact assembly must be removed to check the following requirements.



(Rear View)

(A) CAM FOLLOWER SPRING

Requirement
With the unit upright and in the stop position, it should require
Min 2 oz---Max 4 oz
to start the cam follower moving.



(Left Side View)

(B) TIMING CONTACT ALIGNMENT

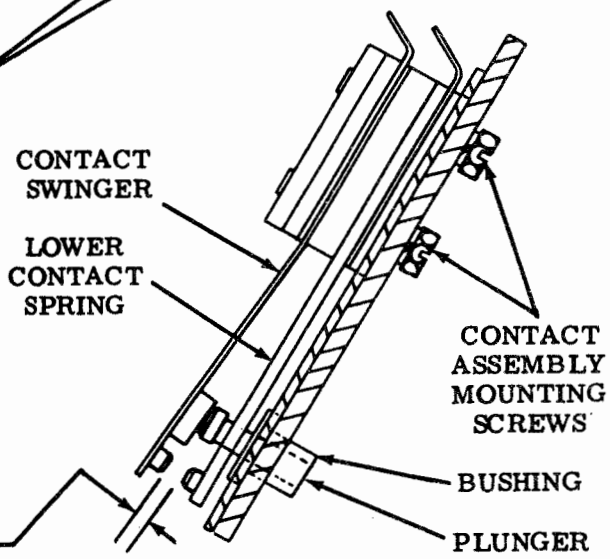
Requirement
The contact points should be in line and the head of the plunger should be centered in the hole in the lower contact spring as gauged by eye.

To Adjust
With the contact assembly mounting screws friction tight, position the contact springs. Tighten screws firmly.

(C) TIMING CONTACT GAP

Requirement
With the plunger depressed flush with the bushing, the contact gap should be
Min 0.045 inch---Max 0.065 inch

To Adjust
Bend the lower contact spring.



(Rear View)

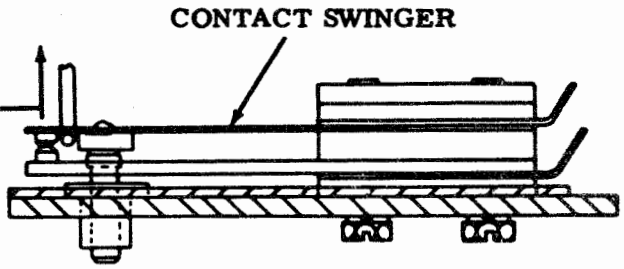
3.03 Timing Contact Mechanism (Late Design)

TIMING CONTACT SPRING

Requirement
Min 3-1/2 oz---Max 4-1/2 oz to open the normally closed contacts.

To Adjust
Bend the contact swinger.

Note: Replace the timing contact assembly at this time.

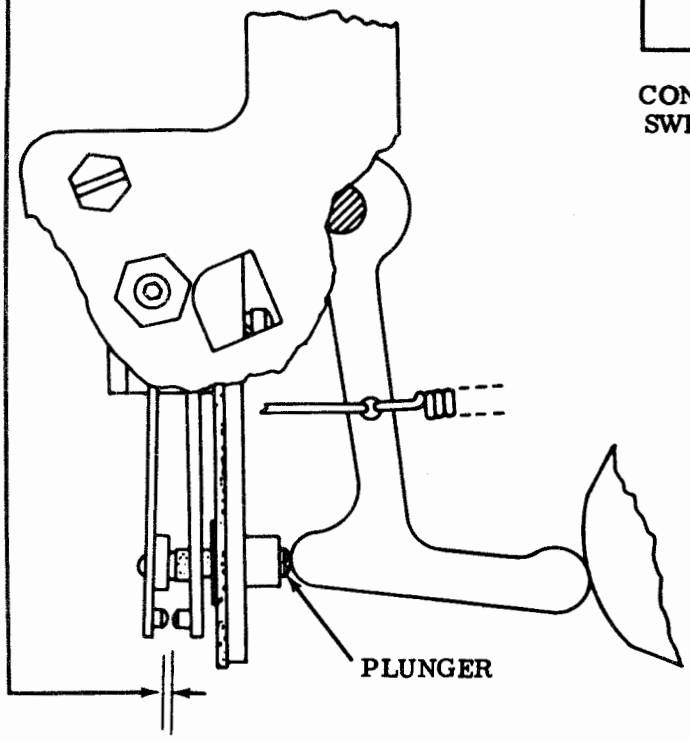


(Rear View)

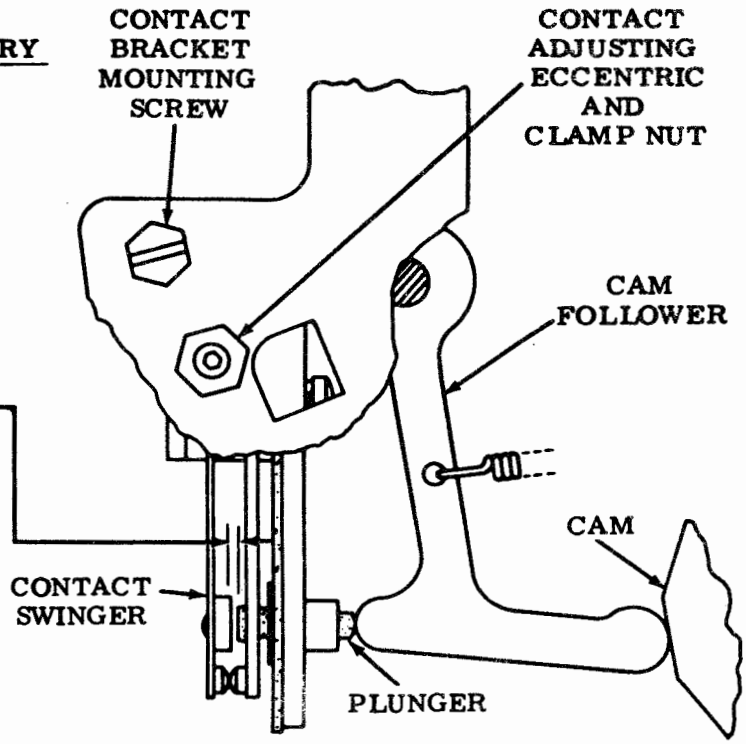
TIMING CONTACT BRACKET — PRELIMINARY

(1) Requirement
With the unit in the stop position
Min 0.008 inch---Max 0.011 inch gap between the contacts.

(2) Requirement
With cam follower on each low part of cam and clearance taken up between plunger and cam follower.
Min some---clearance between plunger and contact swinger.



(Rear View)



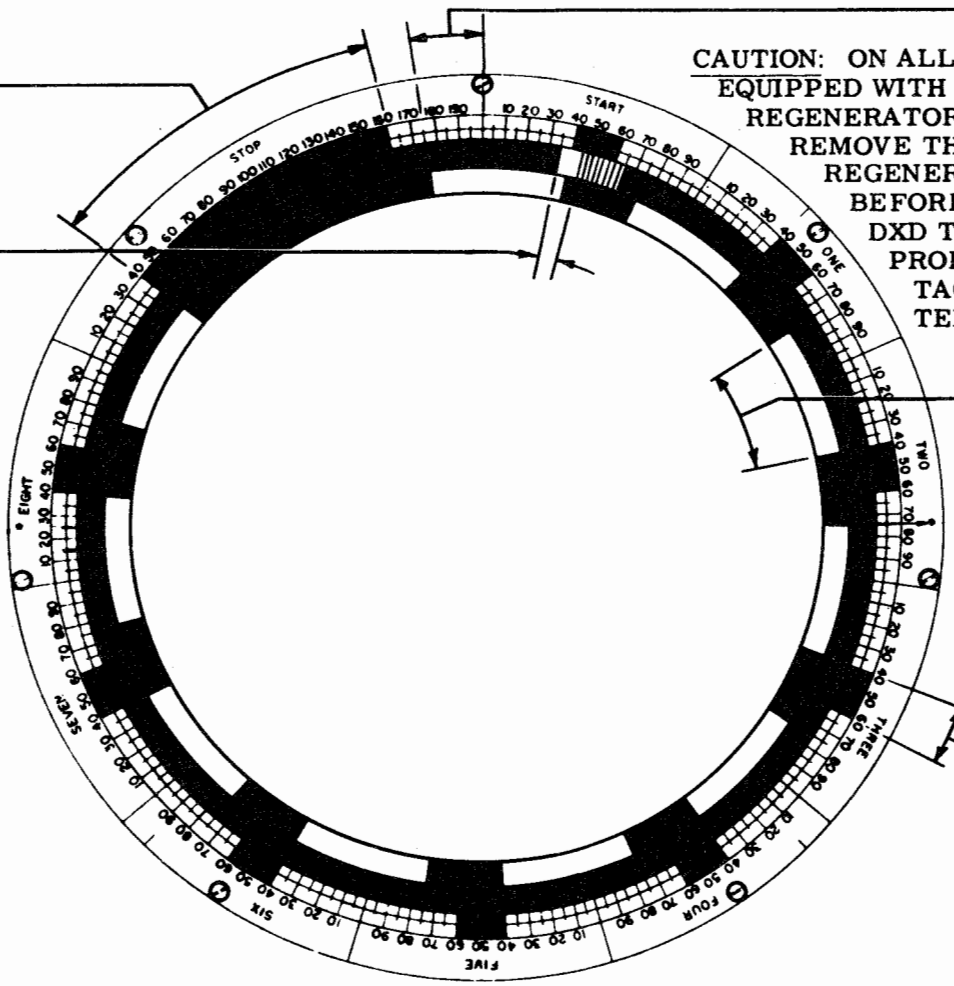
(Rear View)

To Adjust
With unit in the indicated position and the timing contact bracket mounting screw and contact adjusting clamp nut friction tight, position the contact assembly by means of the eccentric to meet Requirements (1) and (2). Tighten the mounting screw and eccentric clamp nut and recheck the adjustments.

Related Adjustment

TIMING CONTACT REQUIREMENTS (3.04)

3.04 Timing Contact Refinement



CAUTION: ON ALL UNITS EQUIPPED WITH A SIGNAL REGENERATOR CIRCUIT, REMOVE THE SIGNAL REGENERATOR CARD BEFORE APPLYING DXD TIMING PROBES TO CONTACT ACCESS TERMINALS.

TIMING CONTACT REQUIREMENTS (STROBE) (Using DXD test set)

(1) Zero the test set as previously described (2.23).

(2) The light image of the timing contacts should meet the following requirements for speeds up to and including 100 wpm.

(a) Open for a minimum of 20 divisions between the 25 division and 75 division points of each 100 division pulse. Open for a minimum of 120 divisions between the 25 division and 175 division points of the stop pulse.

(b) The close to open transitions should be in multiples of 100 divisions ±5 divisions from the close to open transition of the start pulse.

(c) There should be no contact break between the 0 division point and the close to open transition point and no contact break between the 75 division point and 100 division point of each pulse. There should be no contact break between 175 division point and the 200 division point of the stop pulse.

3.05 Timing Contact Refinement (continued)

(d) Check and refine, if necessary, TIMING CONTACT BRACKET (3.01) for early design, or TIMING CONTACT BRACKET-PRELIMINARY (3.03) for later design.

(e) The timing contacts should be open in the rest position of the transmitter distributor.

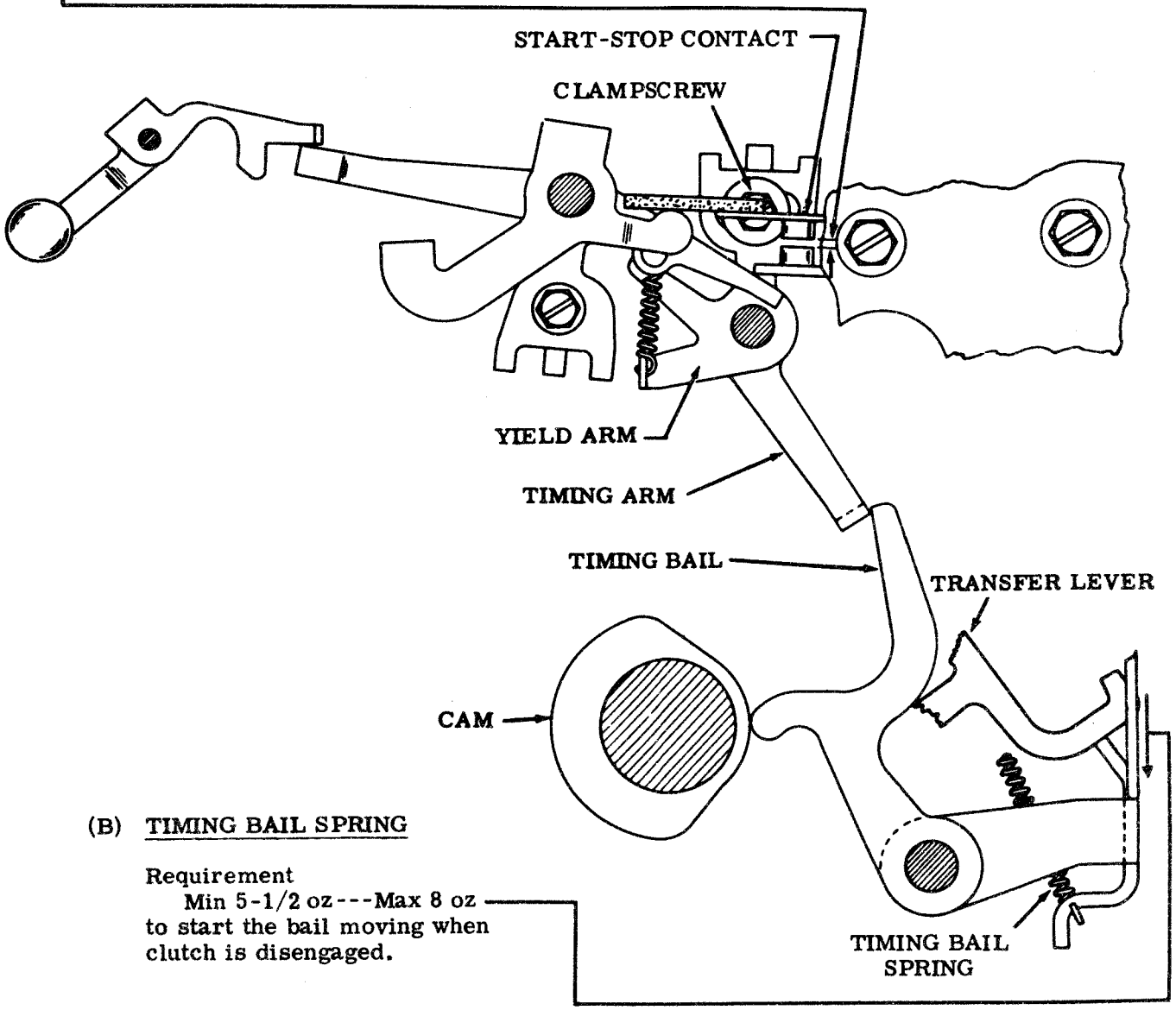
To adjust, loosen the two timing contact bracket mounting screws until they are friction tight. Position the timing contact assembly by means of the screwdriver lug on the bracket visible through a hole in the rear plate so that the requirements are met. Tighten the screws and recheck the image on the DXD stroboscope.

3.06 Rubout Sensing Mechanism

(A) RUBOUT SENSING MECHANISM

Requirement
With RUBOUT code combination selected and timing bail on low part of its cam, the start-stop contact gap should be
Min 0.018 inch---Max 0.025 inch
Use light thumb pressure to hold bail against its cam when checking gap.

To Adjust
Position the timing arm on the yield arm with its clampscrew friction tight.
Tighten screws.



(B) TIMING BAIL SPRING

Requirement
Min 5-1/2 oz---Max 8 oz
to start the bail moving when clutch is disengaged.

3.07 Code Reading Contacts

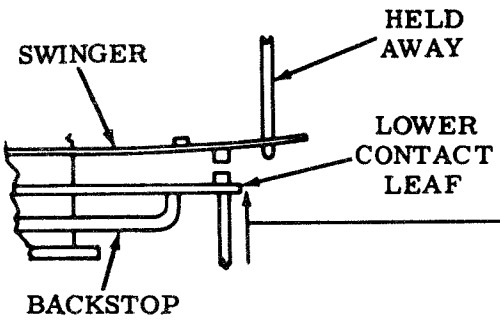
Initial Adjustments

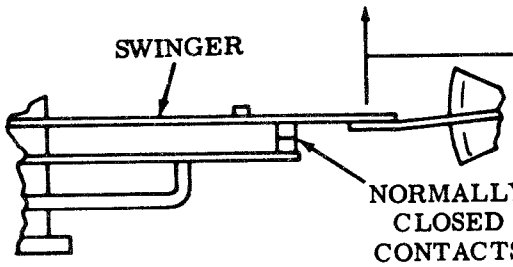
Note: Initial adjustments should be made with the code reading contact assembly removed from the transmitter unit.

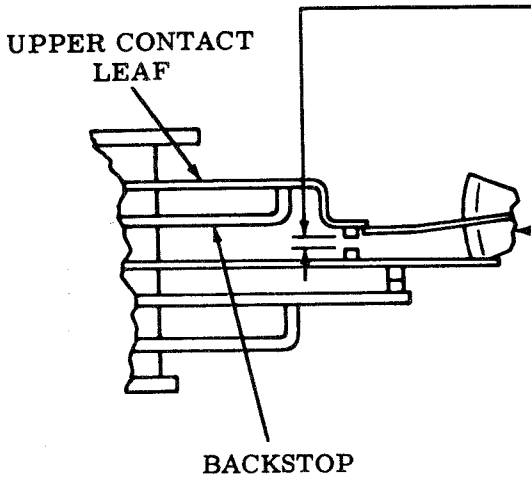
(A) NORMALLY CLOSED CONTACTS — BACKSTOP

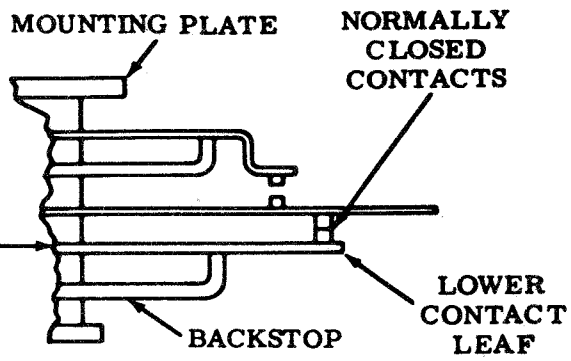
Requirement
The lower contact leaves for all levels should be parallel to the mounting plate and in line with one another.

To Adjust
Bend backstop to meet requirement.









(B) NORMALLY CLOSED CONTACTS — SPRING TENSION

(1) Requirement
With swinger held away
Min 2 oz---Max 6 oz
to move lower contact leaf away from backstop.

To Adjust
Bend lower leaf. If it is necessary to bend backstop to obtain required tension, reposition backstop to meet NORMALLY CLOSED CONTACTS — BACKSTOP adjustment.

(2) Requirement
Min 30 grams---Max 40 grams
to open normally closed contacts.

To Adjust
Bend swinger.

(C) NORMALLY OPEN CONTACTS — BACKSTOP

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 TENSION

Requirement
Min 30 grams---Max 40 grams
to move normally open contacts away from backstop.

To Adjust
Bend upper contact leaf. If it is necessary to bend backstop to obtain required tension, reposition backstop to meet NORMALLY OPEN CONTACTS — BACKSTOP adjustment.

3.08 Code Reading Contacts (continued)

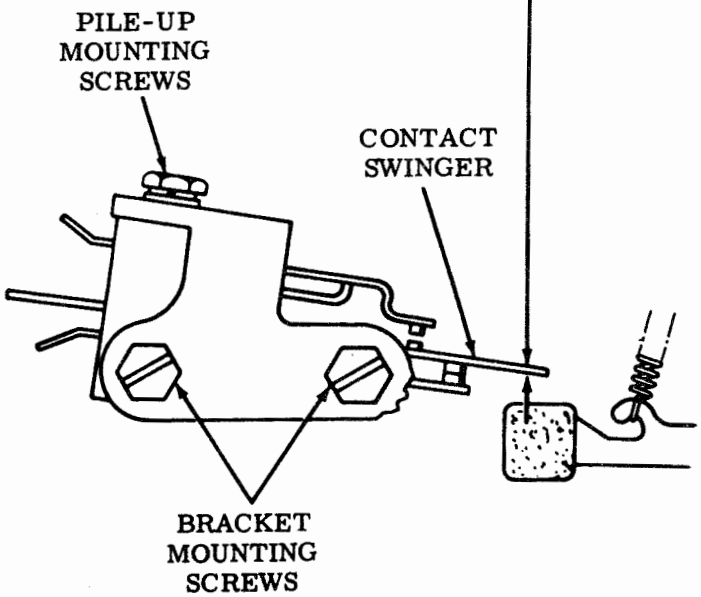
Secondary Adjustments

Note: The secondary adjustments should be made with the code reading contact assembly installed in the transmitter, and with the contact assembly bracket approximately centered in its adjustment range.

(A) CONTACT ASSEMBLY

Requirement
The swinger of each contact pile-up should be aligned with its associated sensing arm, as gauged by eye.

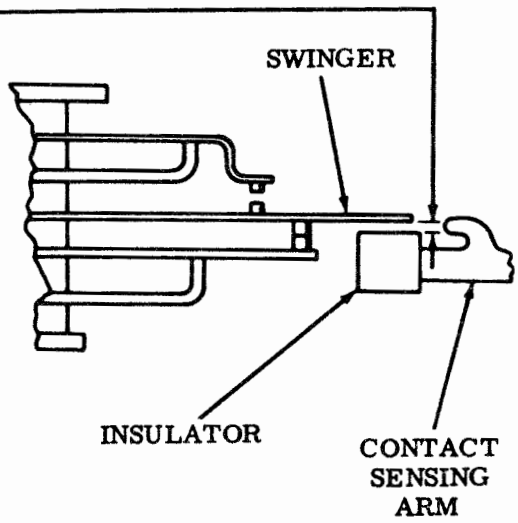
To Adjust
Loosen the screws which mount the contact assembly to the contact bracket, and position the assembly to meet requirement. Tighten screws.



(B) CONTACT BRACKET

Requirement
With the NULL combination selected and the upstop post out of the way
Min 0.015 inch---Max 0.025 inch
gap between contact assembly swingers and insulator on contact sensing arm.

To Adjust
Loosen the contact bracket mounting screws ((A) CONTACT ASSEMBLY) and position the bracket to meet requirements. Tighten screws.



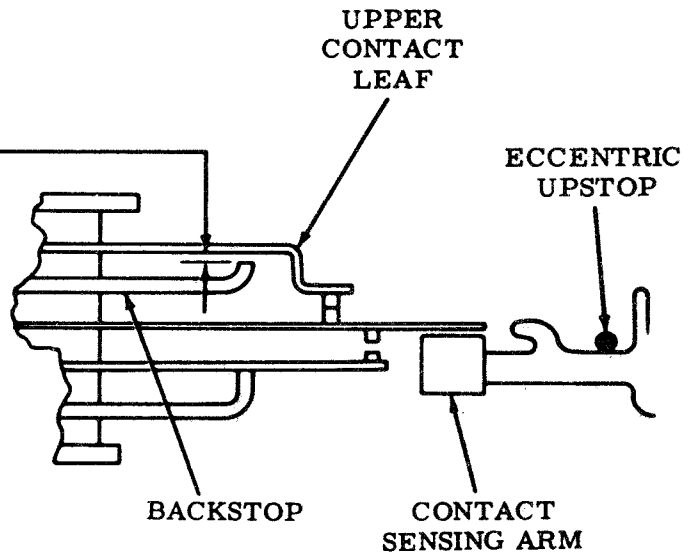
3.09 Code Reading Contacts (continued)

Secondary Adjustments (continued)

(A) ECCENTRIC UPSTOP

Requirement
With RUBOUT combination selected, clutch engaged, and main shaft rotated until the sensing arms are in their uppermost position, there should be
Min some---Max 0.008 inch clearance between the upper contact leaf and its backstop.

To Adjust
Loosen the nut that secures the eccentric upstop to the front plate and turn the eccentric until the requirement is satisfied. The high part of the eccentric should be toward left. Tighten nut.



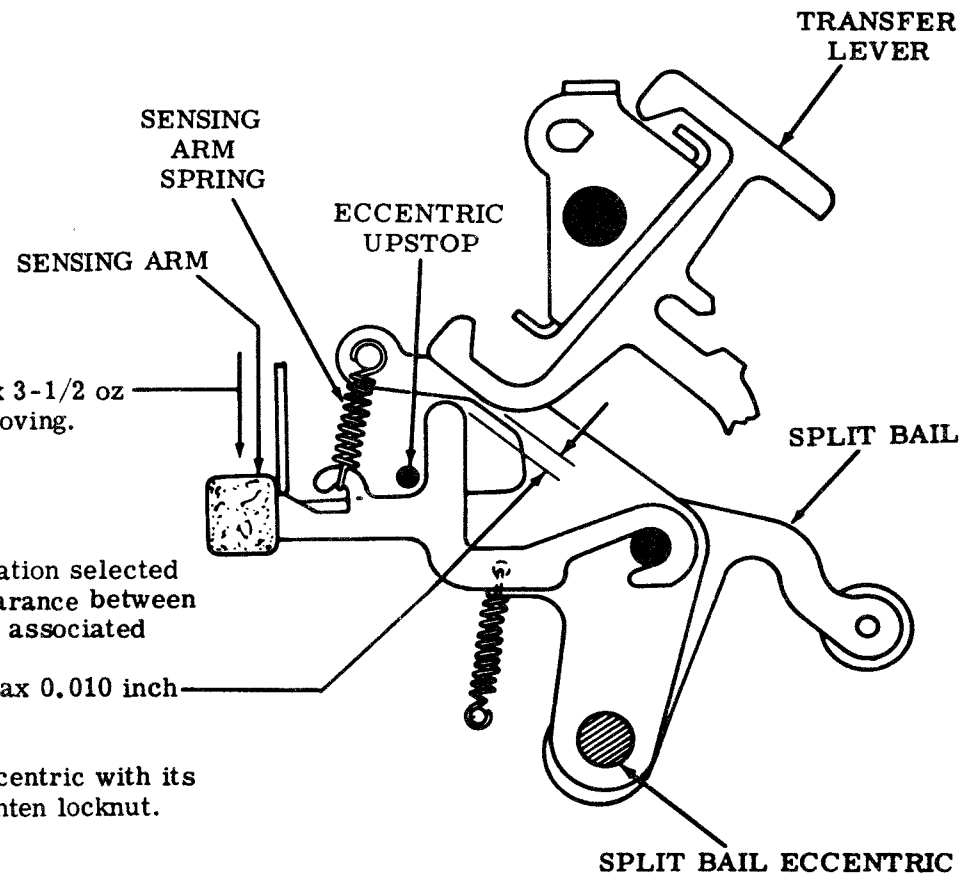
(B) SENSING ARM SPRING

Requirement
With clutch disengaged
Min 2-1/2 oz---Max 3-1/2 oz to start sensing arm moving.

(C) SPLIT BAIL ECCENTRIC

Requirement
With the NULL combination selected and clutch tripped, clearance between the transfer levers and associated sensing arms
Min 0.005 inch---Max 0.010 inch

To Adjust
Rotate the split bail eccentric with its locknut loosened. Tighten locknut.



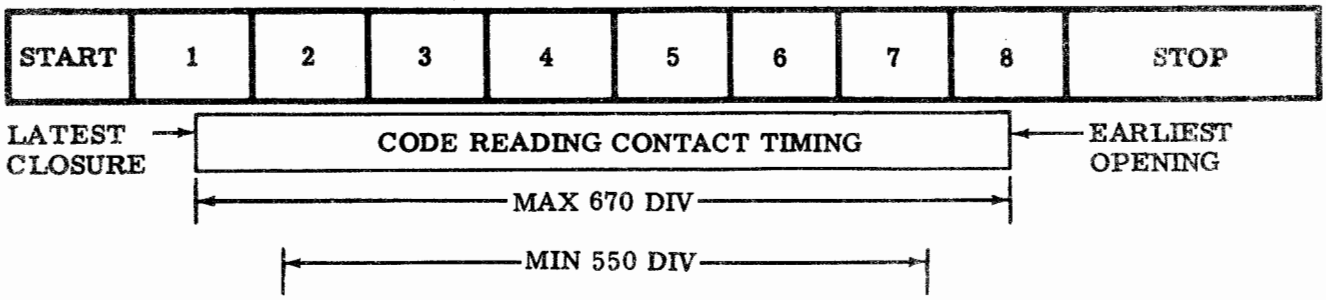
3.10 Code Reading Contacts (continued)

Final Adjustments (Strobing)

CONTACT BRACKET

Note 1: A DXD operating at 600 opm with an applicable 11 unit code scale should be used for strobing.

Requirement (11 unit)
Code reading contact trace should begin at 95 ±30 divisions in the no. 1 pulse and end at 5 ±30 divisions in the no. 8 pulse and have a minimum pulse length of 550 divisions and a maximum pulse length of 670 divisions.



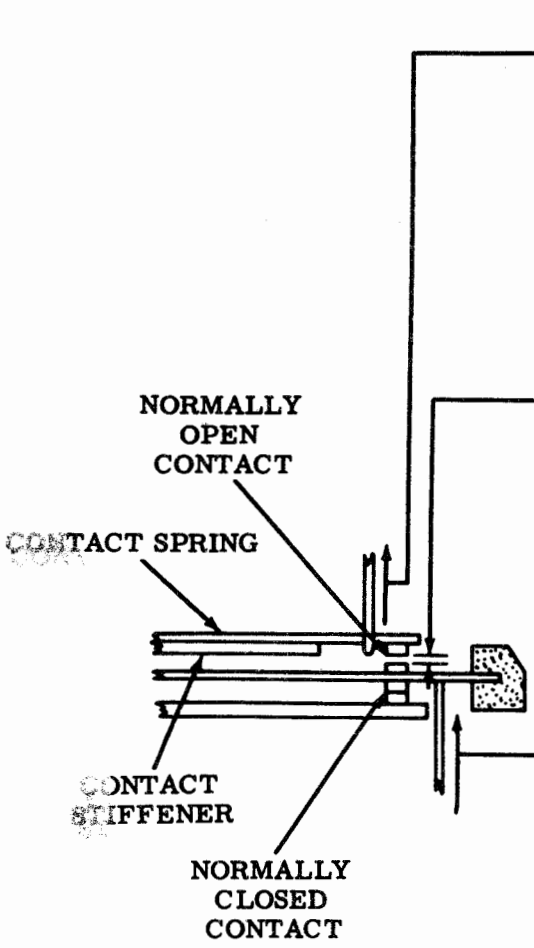
To Adjust
Loosen the contact bracket mounting screws and position bracket to meet requirements. Tighten screws.

Note 2: If requirements cannot be met, recheck Initial and Secondary Adjustments and refine if necessary.

3.11 Auxiliary Contact Assembly (11 Unit)

Initial Adjustments

Note: The initial adjustments should be made with the auxiliary contacts removed from the transmitter unit.



(A) NORMALLY OPEN CONTACT SPRING

Requirement
Min 5-1/2 oz---Max 6 oz
to move normally open contact away from stiffener.

To Adjust
Bend the normally open contact spring to meet requirement.

(B) NORMALLY OPEN CONTACT STIFFENER

Requirement
Min 0.015 inch---Max 0.020 inch
gap between normally open contacts.

To Adjust
Bend the contact stiffener to meet requirement.

(C) SWINGER

Requirement
It should require
Min 4 oz---Max 5 oz
to open the normally closed contact.

To Adjust
Bend the swinger contact to meet requirement.

3.12 Auxiliary Contact Assembly (11 Unit) (continued)

Secondary Adjustments

Note: The secondary adjustments should be made with the auxiliary contacts installed.

(A) CONTACT BRACKET

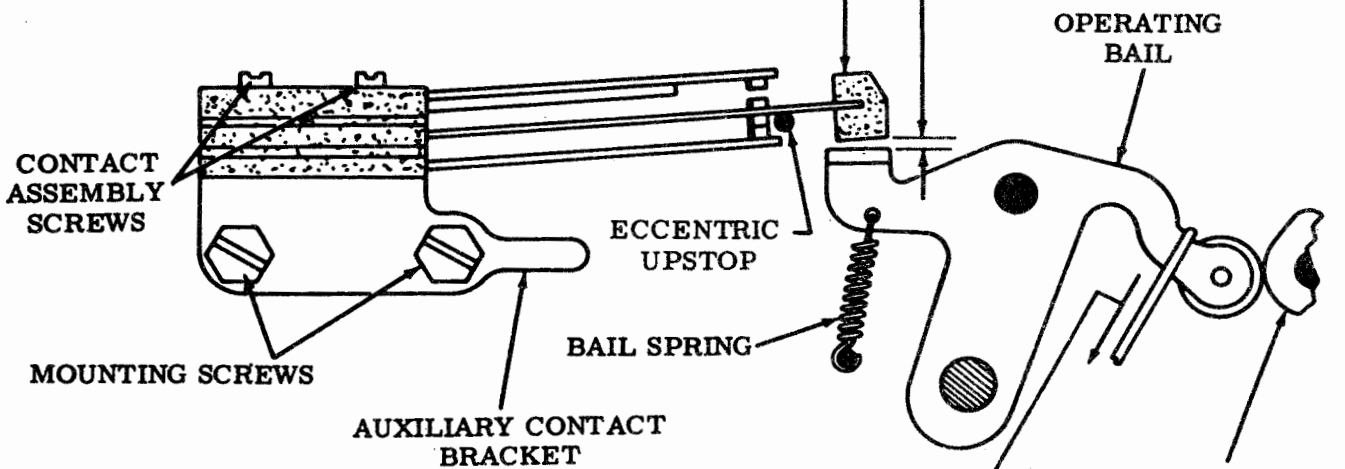
Requirement
With clutch disengaged and latched, clearance between the insulator on the swinger and the bail
Min 0.040 inch---Max 0.050 inch

To Adjust
Position the contact bracket with its mounting screws loosened. Tighten screws.

(B) CONTACT ASSEMBLY

Requirement
The swinger insulator should be centrally located with respect to its operating bail.

To Adjust
Loosen the contact assembly screws and position the swinger and contact springs. Tighten screws.



(C) OPERATING BAIL SPRING

Requirement
Clutch disengaged
Min 5 oz---Max 7 oz
to move follower roller away from low part of its cam.

3.13 Auxiliary Contact Assembly (11 Unit) (continued)

Final Adjustment (Strobing)

CONTACT BRACKET

Note 1: A DXD operating at 600 opm with an 11 unit code scale should be used for strobing.

Requirement

Auxiliary contact trace should begin at 60 ±25 divisions in the no. 2 pulse and end at 30 ±25 divisions in the no. 7 pulse and have a minimum pulse length of 420 divisions and a maximum pulse length of 520 divisions.

To Adjust

Loosen the contact mounting bracket screws and position bracket to meet requirements. Tighten screws.

Note 2: If requirements cannot be met, recheck Initial and Secondary Adjustments.