TELETYPE model 28

THE LEADERSHIP LINE

BULLETIN 235B

ADJUSTMENTS, LUBRICATION, DISASSEMBLY AND REASSEMBLY TRANSMITTER (LX) AND TRANSMITTER-DISTRIBUTOR (LXD) SETS

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2-1 to 2-18	Change 2
3-1 to 3-2	Change 2

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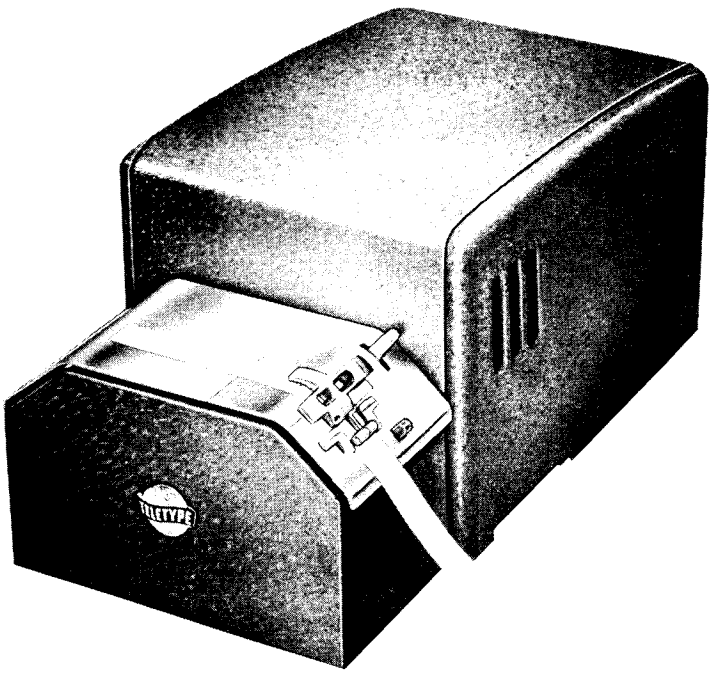
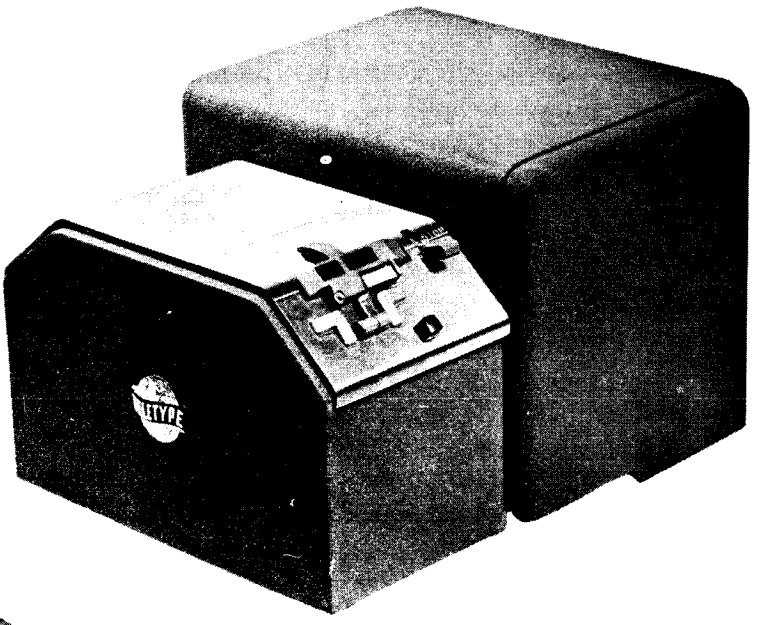
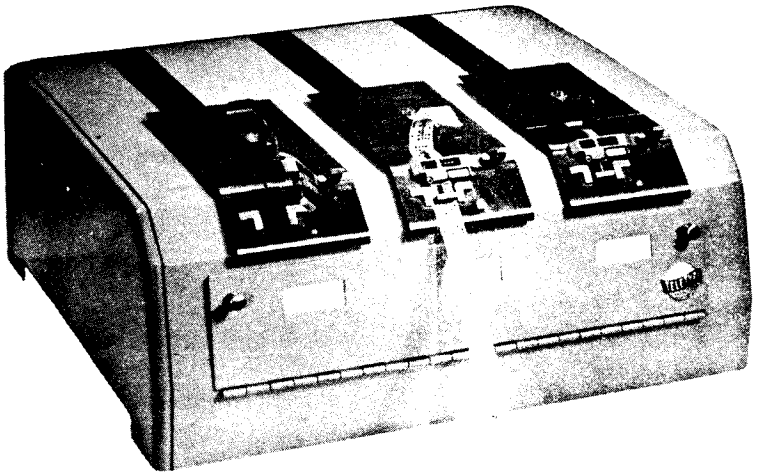


TRANSMITTER (LX) SET
OR
TRANSMITTER DISTRIBUTOR (LXD) SET
WITH
STANDARD BASE AND COVER



TRANSMITTER (LX) SET
OR
TRANSMITTER DISTRIBUTOR (LXD) SET
WITH
MINIATURE BASE AND COVER



MULTIPLE TRANSMITTER (LX) SET
OR
MULTIPLE TRANSMITTER DISTRIBUTOR (LXD) SET

CONTENTS

SECTION 1

ADJUSTMENTS AND SPRING TENSIONS

CONTENTS	PAGE
1. GENERAL	1-1
2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS	1-2
BASIC UNITS	1-2
A. Initial Adjustments	1-2
Armature Bail Spring	1-22
Clutch Latch Lever Spring	1-3
Clutch Magnet	1-22
Clutch Shoe Lever	1-3
Clutch Shoe Lever Spring	1-2
Clutch Shoe Spring	1-2
Clutch Trip Lever	1-3
Clutch Trip Lever Spring	1-3
Cover Plate	1-9
Cover Plate Detent Spring	1-23
Depressor Bail Torsion Spring	1-12
Feed Pawl	1-17
Feed Pawl Spring	1-17
Feed Ratchet Detent Spring	1-15
Feed Wheel Detent	1-16
Intermediate Tape-Out Bail Spring	1-12
Locking Bail Spring	1-18
Main Bail	1-19
Main Bail Latch Spring	1-22
Main Bail Spring	1-15
Main Bail Trip Lever	1-15
Sensing Finger Spring	1-16
Signal Contact	1-21
Signal Contact Link Spring	1-21
Signal Contact Spring	1-21
Stabilizer Spring	1-20
Start-Stop Detent Bail Spring	1-6
Start-Stop Switch Bracket	1-13
Tape Guide	1-5
Tape Guide Plate	1-7
Tape Lid	1-4
Tape Lid Release Plunger Spring	1-6
Tape Lid Spring	1-6
Tape-Out Contact Assembly	1-10
Tape-Out Contact Bracket	1-11
Tape-Out Sensing Pin	1-12
Tape-Out Sensing Pin Spring	1-11
Tight Tape Intermediate Arm	1-14
Tight Tape Intermediate Arm Spring	1-14
Tight Tape Start-Stop Contact Spring	1-13
Top Plate	1-8
Transfer Bail Stabilizer	1-20
Transfer Lever Spring	1-18
B. Strobing	1-24
General	1-24
Five-Level Units, 7.00 Unit Code	1-25
Five-Level Units, 7.42 Unit Code	1-26
Six-Level Units, 8.50 Unit Code	1-27
Seven-Level Units, 9.50 Unit Code	1-28
Eight-Level Units, 11.00 Unit Code	1-28
VARIABLE FEATURES	1-29
A. Tight Tape and Tape Shoe	1-29
Tape Shoe	1-29
Tight Tape Switch	1-29
Torsion Spring Tension	1-29
B. Tape Feed Assurance Mechanism	1-30
Detent Lever Spring Tension	1-30
Tape Motion Contact Gap	1-30
Tape Motion Contact Swinger	1-30
Tape Sensing Feed Wheel Phasing	1-30
C. Tape-Out Sensing Lever	1-31
Tape-Out Bail Torsion Spring	1-31
Tape-Out Contact	1-31
Tape-Out Pin	1-31
Tape-Out Pin Spring	1-31
D. Code Reading Contacts	1-32
Initial Adjustments	1-32
Normally Closed Contacts - Back-stop	1-32

Normally Closed Contacts - Spring Tension 1-32
Normally Open Contacts - Gap . . 1-32
Normally Open Contacts - Spring Tension 1-32
Secondary Adjustments 1-33
Contact Assembly Positioning . . . 1-33
Contact Sensing Arm, Up Stop Adjustment 1-34
Contact Swinger, Sensing Arm Clearance 1-33
Sensing Arm Spring 1-34
Split Bail Eccentric 1-34
Final Adjustments (Strobing) 1-35
Contact Swinger - Sensing Arm Clearance 1-35

E. Auxiliary Contacts 1-36

Initial Adjustments 1-36
Normally Closed Contacts 1-36
Normally Open Contacts 1-36
Secondary Adjustments 1-37
Auxiliary Contact Operating Bail Spring 1-37
Contact Sensing Arm 1-37
Final Adjustments (Strobing) 1-38
Contact Swinger - Operating Bail Clearance 1-38

F. Tape Lid Sensing Lever 1-39

Switch Lever 1-39
Switch Lever Spring 1-39

G. Tape Deflector 1-40

Tape Deflector Bracket 1-40
Tape Deflector Spring 1-40

H. Start-Stop Pulse Contact 1-41

Initial Adjustments 1-41
Contact Bracket 1-41
Contact Gap 1-41
Contact Lever 1-41
Final Adjustments (Strobing) 1-42
Contact Bracket 1-42

I. Rub-Out Deleter 1-43

Rub-Out Deleter Bail Guide 1-43
Rub-Out Deleter Bail Spring 1-43
Sensing Pin Spring 1-43

J. Tape Notch Sensing Mechanism . . . 1-44

Inital Adjustment 1-44
Tape Notch Sensing Contact 1-44
Tape Notch Sensing Finger Spring 1-44
Final Adjustment (Strobing) 1-45
Contact Bracket 1-45

K. Transmitter Stop Mechanism 1-46

Start-Stop Contact Gap 1-46
Timing Bail Spring 1-46

L. Tape Slack Arm 1-47

Tape Slack Contacts 1-47

M. Tape Withold Mechanism 1-48

Blocking Bail Arm Eccentric 1-48
Blocking Bail Eccentric Pivot 1-48
Magnet Armature Gap 1-48

EARLY MODELS 1-49

Tape Lid 1-49
Tape Lid Release Plunger Spring 1-50

3. SINGLE UNIT BASES 1-51

BASIC UNITS 1-51

Intermediate Gear - Transmitter - Distributor Gear Backlash 1-51
Motor Pinion - Intermediate Gear Backlash 1-51

VARIABLE FEATURES 1-52

Line Shunting Switch 1-52
Tight Tape Contact 1-52

4. MULTIPLE UNIT BASES (COMMON SPEED) 1-53

Belt Tension 1-53
Line Shunting Switch 1-54
Motor Pinion - Intermediate Gear Backlash 1-53
Transmitter - Distributor Positioning 1-54

5. MULTIPLE UNIT BASES (VARIABLE SPEED) 1-55

Belt Tension 1-55
Line Shunting Switch 1-56
Intermediate Gear - Counter Shaft Backlash 1-55
Transmitter - Distributor Positioning 1-56

6. SYNCHRONOUS MOTORS 1-57

STANDARD SIZE 1-57

Oiler Position 1-57
Thrust Spring Compression 1-57

MINIATURIZED 1-58

Bracket, Duct 1-58

7. GOVERNED MOTORS 1-59

Governor Brush Spring Tension . . 1-60
Governor Contact 1-60
Governor Contact Backstop 1-60
Motor Position 1-59
Motor Speed 1-61
Thrust Spring Compression 1-59

SECTION 2

LUBRICATION

1. GENERAL 2-1

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS 2-2

BASIC UNITS 2-2

Bottom View 2-2
Center Plate Assembly 2-8
Clutch Trip Assembly 2-5
Front Oblique View 2-2
Front Oblique View (Covers Removed) 2-6
Front Plate Assembly 2-10
Main Shaft 2-7
Oil Reservoir 2-7
Rear Oblique View 2-9
Sensing and Feed Assembly 2-10
Signal Contact Assembly 2-4
Tape Guide Plate 2-3
Transfer Mechanism 2-12

VARIABLE FEATURES 2-13

Code Reading Contacts 2-14
Rub-Out Deleter 2-16
Start-Stop Pulse Contacts 2-16
Tape Deflector 2-15
Tape Feed Assurance Mechanism 2-13
Tape Lid Sensing Lever 2-15
Tape-Out Sensing Mechanism 2-13
Tape Withold Mechanism 2-17
Transmitter Stop Mechanism 2-17

3. BASES 2-18

Gear Train 2-18

4. MOTORS 2-18

Motor Bearings (Standard Size Motors) 2-18
Motor Bearings (Miniaturized Motors) 2-18

SECTION 3

DISASSEMBLY AND REASSEMBLY

1. GENERAL 3-1

2. REMOVAL OF TRANSMITTER UNIT FROM BASES 3-1

SINGLE UNIT BASES 3-1

MULTIPLE UNIT BASES 3-1

3. DISASSEMBLY OF TRANSMITTER UNIT 3-1

TOP PLATE 3-1

TAPE GUIDE PLATE 3-1

OIL RESERVOIR 3-1

REAR PLATE ASSEMBLY 3-2

MAIN SHAFT ASSEMBLY 3-2

CENTER PLATE ASSEMBLY 3-2

FIGURE 3-1, PLATE ASSEMBLIES 3-2

4. MOUNTING 3-2

SECTION 1

ADJUSTMENTS AND SPRING TENSIONS

1. GENERAL

1.01 This section presents adjustment information for the following Model 28 equipment groups: Transmitters (LX), Transmitter-Distributor (LXD), Single Unit Bases (LXDB), Multiple Unit Bases (LMXB), and Motor Units (LMU). Information regarding lubrication and disassembly and reassembly is covered in Sections 2 and 3, respectively.

1.02 Adjustment information for each equipment group is divided into BASIC UNIT adjustments (common to all units) and VARIABLE FEATURES adjustments (adjustments which may vary from unit to unit). A third EARLY MODEL division covers adjustments of early model features which differ from those found in the BASIC UNIT adjustments.

1.03 References made to left, right, up, down, front, or rear, etc., apply to the set when it is in its operating position, being viewed from the position normally taken by the operator (i.e., reader head to the operator's right).

WARNING: IF MORE THAN MINOR REPAIRS OR INSPECTION ARE TO BE MADE, DISCONNECT POWER FROM THE SET.

1.04 Tools required to make adjustments and check spring tensions are not supplied with the equipment, but are listed in Teletype Bulletin 1124B.

1.05 If parts are removed for any reason, check those adjustments which may have been affected. When a part mounted on shims is removed, the number of shims at each mounting screw should be noted so that the identical shim pile-up can be made when the part is remounted.

1.06 Unless stated otherwise, all nuts and screws loosened to make an adjustment should be tightened when the adjustment has been completed.

1.07 Line drawings and photographs aid in locating parts, clearances, points of scale application and proper scale angles. The complete procedure should be read, however, before making any adjustment or spring tension measurement. Adjustments are arranged in a sequence which would be followed were a complete adjustment of the unit undertaken. Spring tensions given are correct only when the spring scale is applied at the point and angle designated by the associated drawing. Springs which do not meet specified requirements, and for which there is no adjustment, should be replaced.

1.08 All contact points should meet squarely. In contacts having the same diameter, misalignment should not exceed 25 per cent of the contact diameter. Avoid sharp bends or kinks in the contact springs.

1.09 When the requirement calls for the 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 rotating the main shaft by hand, the clutch does not fully DISENGAGE upon reaching its stop position. To relieve the drag on the clutch and permit the main shaft to rotate freely, apply pressure on a lug of the clutch disk with a screw driver to cause it to engage its latch lever and thus DISENGAGE the internal expansion clutch shoes from the clutch drum.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments

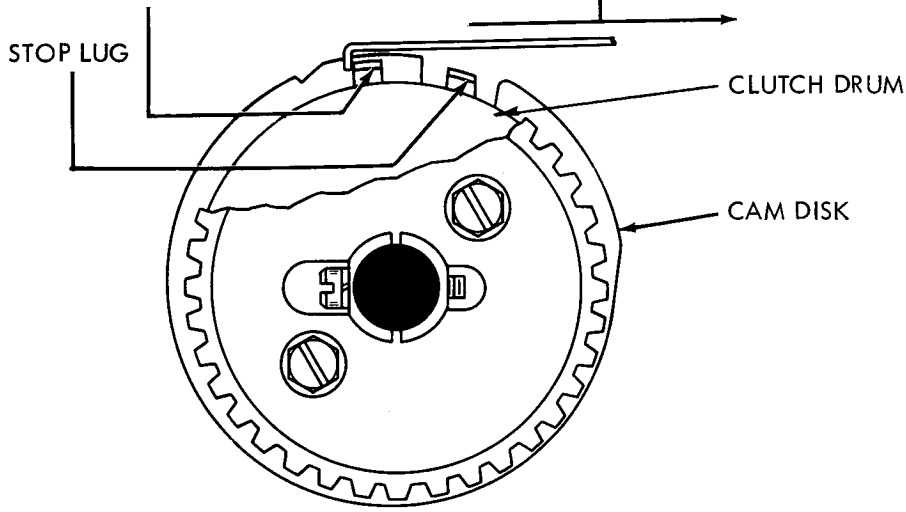
NOTE

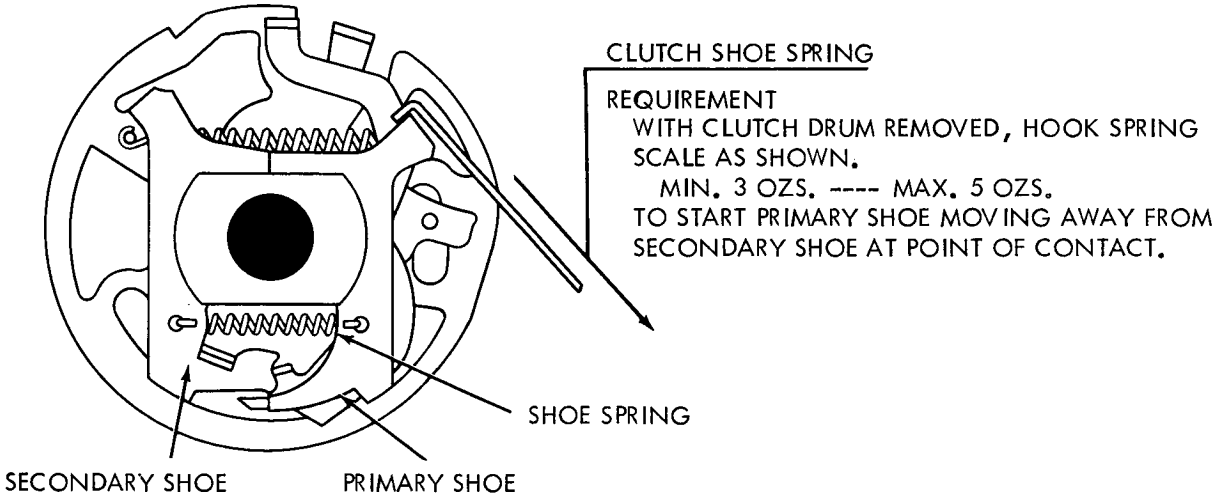
REMOVE TRANSMITTER-DISTRIBUTOR FROM ITS BASE PRIOR TO MAKING TENSION CHECKS. (SEE SECTION 3). INVERT UNIT AND ROTATE MAIN SHAFT UNTIL CLUTCH SHOE LEVER AND STOP LUG ARE UP.

CLUTCH SHOE LEVER SPRING

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

REQUIREMENT (WHERE SET IS EQUIPPED WITH TAPE SLACK MECHANISM)
MIN. 9 OZS. ---- MAX. 11 OZS.





2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

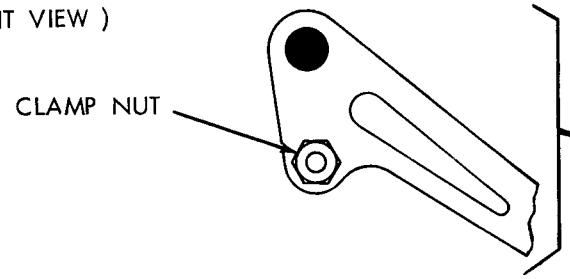
A. Initial Adjustments (Continued)

loosen locknut on front
adjust eccentric on Back

NOTE

REMOVE TRANSMITTER-DISTRIBUTOR FROM ITS BASE PRIOR TO ADJUSTMENT. (SEE SECTION 3.)

MAIN BAIL
(FRONT VIEW)



CLUTCH LATCH LEVER SPRING

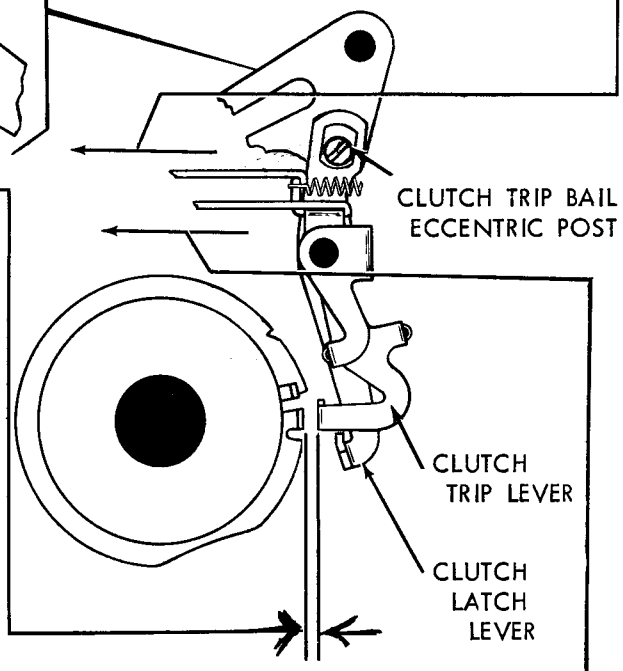
REQUIREMENT
CLUTCH ENGAGED AND ROTATED UNTIL LATCH LEVER IS ON LOW PART OF DISK.
MIN. 3 OZS. ---- MAX. 5-1/2 OZS. TO START LATCH MOVING.

CLUTCH TRIP LEVER

REQUIREMENTS
(REMOVE COVER PLATE. SEE SECTION 3.)
WITH CLUTCH DISK STOP LUG OPPOSITE CLUTCH TRIP LEVER, CLEARANCE BETWEEN INNER SURFACE OF LUG AND LEVER
(1) PLAY TAKEN UP TO MAKE CLEARANCE MAX.
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) PLAY TAKEN UP TO MAKE CLEARANCE MIN.
SOME CLEARANCE.

TO ADJUST
REFINE REQUIREMENT (1).



CLUTCH TRIP LEVER SPRING

REQUIREMENT
WITH CLUTCH ENGAGED
MIN. 7 OZS. ---- MAX. 10-1/2 OZS. TO START CLUTCH LEVER MOVING.

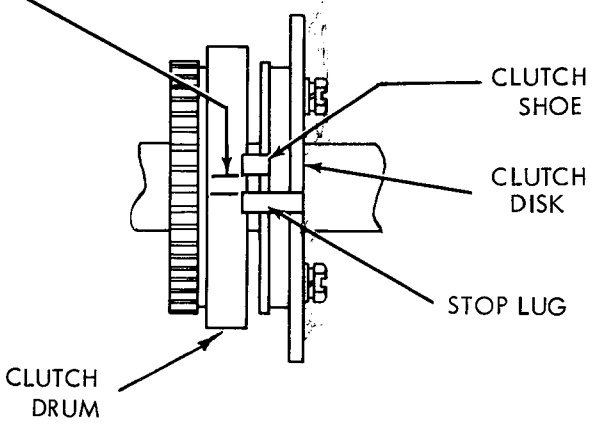
CLUTCH SHOE LEVER

REQUIREMENT
CLEARANCE AS SHOWN SHOULD BE
0.055 INCH ---- TO ---- 0.085 INCH GREATER WITH CLUTCH ENGAGED* THAN WITH CLUTCH DISENGAGED.
* (PULL SHOE LEVER WITH FORCE OF 32 OZS. AND AND RELEASE SLOWLY TO ENGAGE CLUTCH SHOES.)

TO ADJUST
WITH CLUTCH DISK CLAMPING SCREWS LOOSENED, PLACE WRENCH OVER STOP LUG AND MOVE DISK.

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.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

TAPE LID (REFER TO DRAWING ON THE FOLLOWING PAGE, KEYED WITH CIRCLED REFERENCE NUMBERS TO CORRESPOND TO REQUIREMENTS ON THIS PAGE. ALSO SEE "EARLY MODELS" PARAGRAPH.)

REQUIREMENTS
(REMOVE TOP AND TAPE GUIDE PLATES. SEE SECTION 3. LUBRICATE PRIOR TO ADJUSTMENT. SEE SECTION 2.)

(1) PRELIMINARY
WITH TAPE LID HELD AGAINST NOTCH IN TAPE GUIDE PLATE
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
SOME ---- TO ---- 0.010 INCH MAX.

TO ADJUST
WITH TAPE LID BRACKET MOUNTING NUTS FRICTION TIGHT, INSERT TIP OF APPROPRIATE GAUGE (NOTE 1) THROUGH SLOT AND INTO GROOVE OF LID. POSITION TAPE LID BRACKET. TIGHTEN NUTS.

(2) TAPE LID FRONT BEARING SURFACE (A) SHOULD TOUCH TAPE GUIDE PLATE. CLEARANCE (B) MEASURED AT FIN OF TAPE LID WHICH IS IN LINE WITH REAR TAPE GUIDE (SEE NOTE 2)
MIN. 0.010 INCH ---- MAX. 0.018 INCH
NOTE 3: WHEN BOTH PLATES ARE ASSEMBLED ON UNIT, LEFT EDGE OF LID MAY TOUCH TOP PLATE AND SOME CHANGE IN CLEARANCE MAY BE EXPECTED.

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

(3) RELEASE PLUNGER SHOULD HAVE SOME END PLAY WHEN LID IS LATCHED AGAINST TAPE GUIDE PLATE. HIGH PART OF ECCENTRIC SHOULD BE TOWARD BRACKET.

TO ADJUST
WITH ECCENTRIC MOUNTING POST LOCK NUT FRICTION TIGHT AND TAPE LID RAISED, ROTATE HIGH POINT OF ECCENTRIC TOWARD TAPE LID BEARING BRACKET. CLOSE TAPE LID AND ROTATE ECCENTRIC IN COUNTERCLOCKWISE DIRECTION (AS VIEWED FROM SLOTTED END OF ECCENTRIC) UNTIL THE FLAT OF THE TAPE LID POST IS FULLY ENGAGED BY THE FLAT OF THE LATCH BAIL. ROTATE ECCENTRIC IN CLOCKWISE DIRECTION TO TAKE UP PLAY IN PARTS SO AS TO FIRMLY SEAT TAPE LID AGAINST TAPE GUIDE PLATE. TIGHTEN NUT. RECHECK BY DEPRESSING PLUNGER. WITH LID HELD DOWN, TIP OF LATCH SHOULD CLEAR POST AS PLUNGER IS OPERATED. WITH TAPE LID LATCHED, ROUNDED TIP OF LATCH SHOULD PROJECT JUST BEYOND FLAT OF TAPE LID POST AND RELEASE PLUNGER SHOULD HAVE SOME END PLAY. IF NECESSARY, REFINE THE ADJUSTMENT TO MEET THESE REQUIREMENTS.

NOTE 1

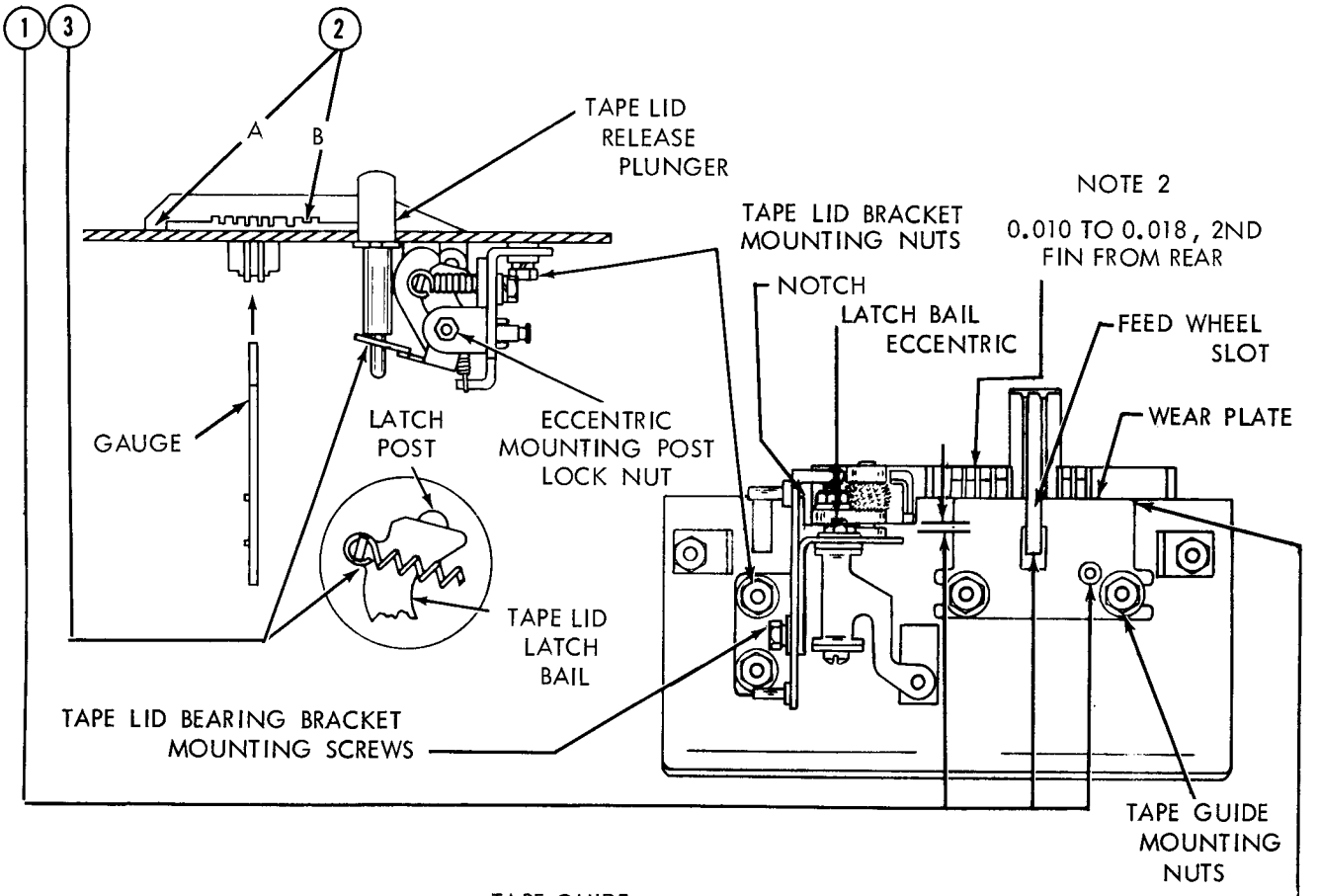
TAPE	GAUGE
5 LEVEL	156473
6 or 7 LEVEL	170311 (IN-LINE FEED HOLE)
6 or 7 LEVEL	173503 (ADVANCE FEED HOLE)
8 LEVEL	170283

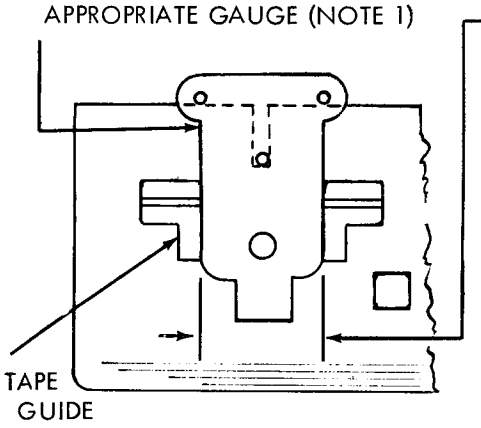
2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

TAPE LID (Continued) (REFER TO TEXT ON PRECEDING PAGE, KEYED WITH CIRCLED REFERENCE NUMBERS TO CORRESPOND TO DRAWING ON THIS PAGE. ALSO SEE "EARLY MODELS" PARAGRAPH.)





TAPE GUIDE

REQUIREMENTS----WITH TAPE GAUGE POSITIONED AS SHOWN

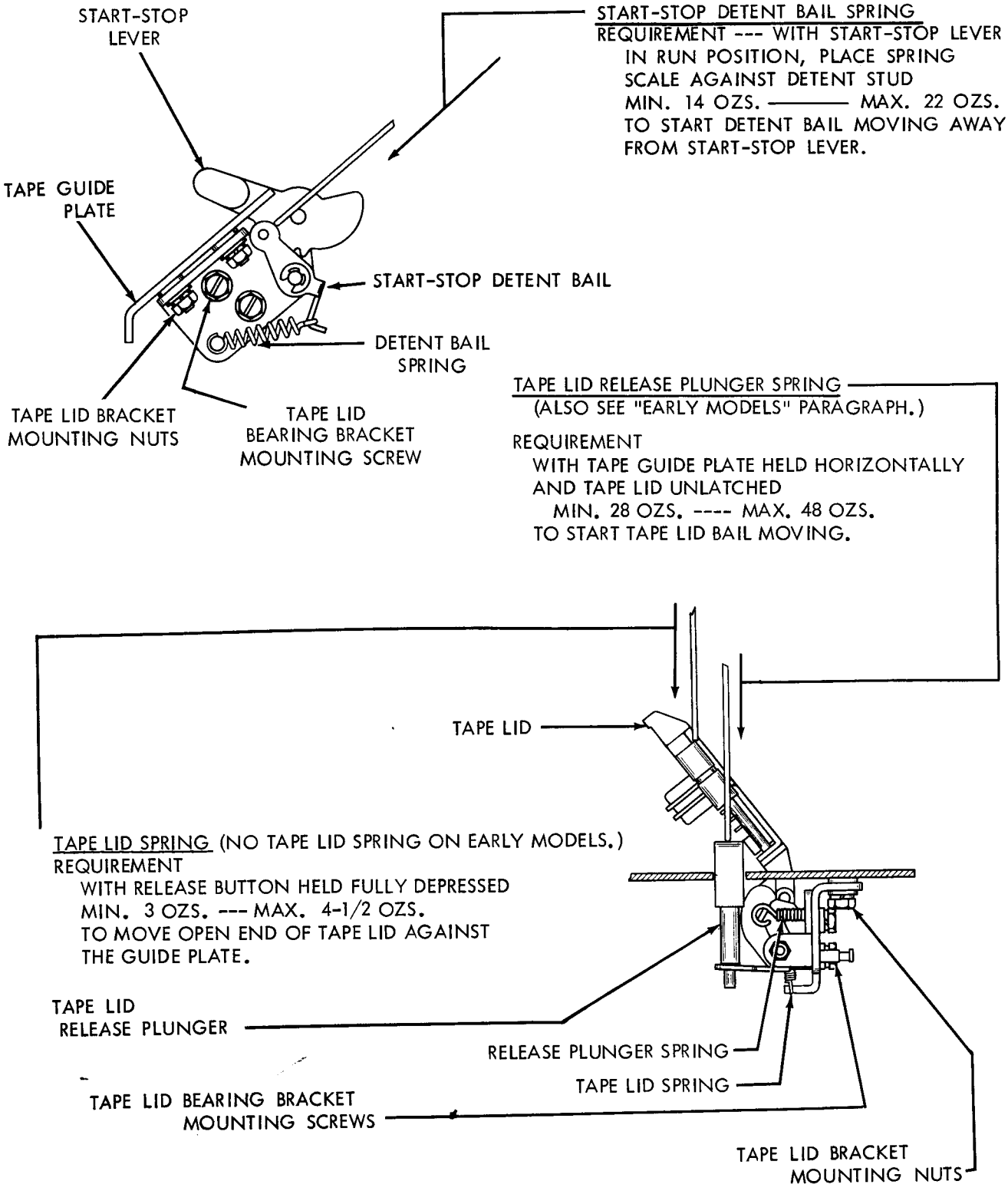
1. CLEARANCE BETWEEN RIGHT AND LEFT TAPE GUIDE AND GAUGE SOME TO 0.003 INCH.
2. EDGE OF WEAR PLATE SHOULD BE FLUSH WITH EDGE OF TAPE GUIDE PLATE.

TO ADJUST----WITH EACH TAPE GUIDE MOUNTING NUT FRICTION TIGHT, MOVE WEAR PLATE UPWARD UNTIL IT OVERHANGS EDGE OF TAPE GUIDE PLATE. PLACE GAUGE IN POSITION AND MOVE GAUGE AND WEAR PLATE DOWNWARD UNTIL BOTH STUDS ENGAGE EDGE OF TAPE GUIDE PLATE TO ALIGN COMMON EDGES. 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.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

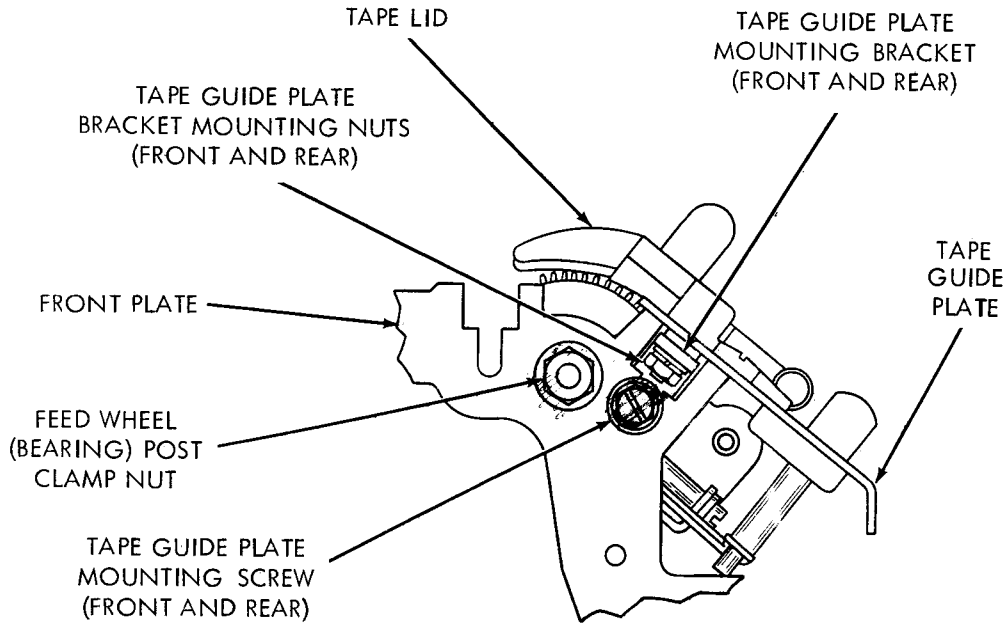
A. Initial Adjustments (Continued)



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)



TAPE GUIDE PLATE

REQUIREMENTS

(1) SHOULDER OF FEED WHEEL POST SHOULD NOT INTERFERE WITH TOP PLATE OR TAPE GUIDE PLATE MOUNTING BRACKETS.

TO ADJUST---- SEE NOTE 1. WITH (FEED WHEEL) BEARING POST CLAMP NUT FRICTION TIGHT, POSITION THE POST.

(2) TAPE GUIDE PLATE SHOULD REST FIRMLY AGAINST AT LEAST THREE PROJECTIONS OF FRONT AND REAR PLATE.

TO ADJUST---- SEE NOTE 1. WITH CLAMP NUT THAT SECURES TAPE GUIDE PLATE MOUNTING BRACKET (FRONT & 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 GUIDE PLATE INTO POSITION WHILE GUIDING MOUNTING SCREWS INTO NOTCH OF FRONT AND REAR PLATE. ENGAGE TIP OF TAPE OUT PIN WITH HOLE IN TAPE GUIDE PLATE.

(3) OUTER EDGE OF FRONT AND REAR MOUNTING BRACKET SHOULD BE LOCATED FLUSH WITH SHOULDER OF MOUNTING STUD SO THAT EDGE OF TAPE GUIDE PLATE PROJECTS OVER FRONT AND REAR PLATE BY AN EQUAL AMOUNT. (GAUGE BY EYE).

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

NOTE 1 ---- POSITION TAPE-OUT SENSING PIN STOP ARM (TAPE-OUT SENSING PIN ADJUSTMENT) IN ITS LOWEST POSITION AND HOLD START-STOP BAIL EXTENSION FROM RATCHET WHEEL.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNIT

A. Initial Adjustments (Continued)

TOP PLATE

LOOSEN (FRICTION TIGHT) NUTS THAT SECURE MOUNTING BRACKETS TO PLATE. PRESS TOP PLATE INTO POSITION WHILE GUIDING TOP PLATE MOUNTING SCREWS INTO NOTCH OF FRONT AND REAR PLATE. MAKE SURE THAT TOP PLATE SEATS FIRMLY AGAINST PROJECTIONS OF FRONT AND REAR PLATE (5 OF 6 PROJECTIONS SHOULD ENGAGE) AND TIGHT TAPE ARM EXTENSION IS UNDER TOP PLATE.

REQUIREMENTS

(1) MATING EDGE OF TOP PLATE SHOULD BE FLUSH TO 0.003 INCH UNDER FLUSH WITH EDGE OF TAPE GUIDE PLATE (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 GUIDE PLATE MOUNTING BRACKETS. (SEE TAPE GUIDE PLATE ADJUSTMENT.)

(2) FEED WHEEL SLOT SHOULD ALIGN WITH SLOT IN TAPE GUIDE PLATE SO THAT FEED WHEEL ROTATES FREELY WITH DETENTS AND FEED PAWL DISENGAGED (FREE WHEELING).

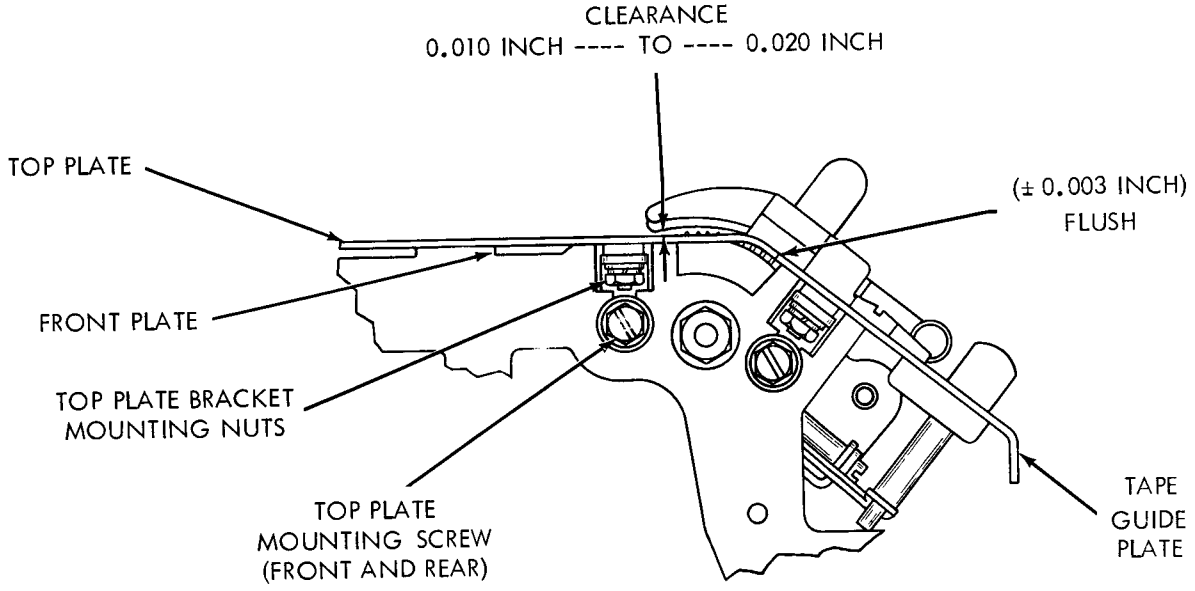
TO ADJUST

POSITION TOP PLATE TOWARD FRONT OR REAR TO ALIGN SLOT.

(3) CLEARANCE BETWEEN PROJECTION OF TAPE LID AND TOP PLATE (TAPE LID LATCHED)
MIN. 0.010 INCH ---- MAX. 0.020 INCH AT CURVED PORTION,
MIN. 0.010 INCH ---- MAX. 0.025 INCH AT FLAT PORTION.

TO ADJUST

IF NECESSARY, LOOSEN TAPE LID BEARING BRACKET MOUNTING SCREWS (SEE TAPE GUIDE PLATE) AND POSITION TAPE LID. RETIGHTEN SCREWS AND RECHECK REQUIREMENTS.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

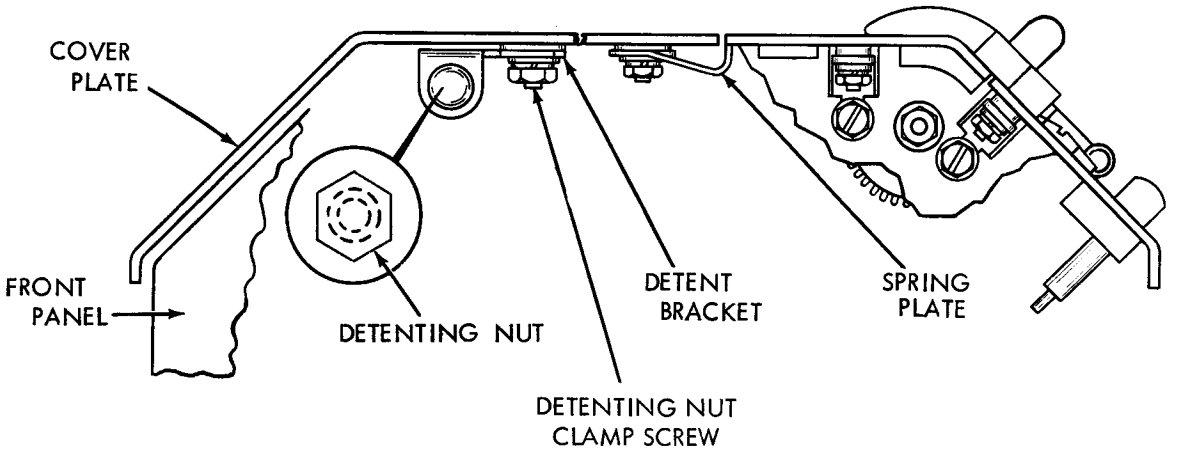
A. Initial Adjustments (Continued)

COVER PLATE

REQUIREMENT

1. RIGHT EDGE OF COVER PLATE SHOULD BE HELD FLUSH AGAINST LEFT EDGE OF TOP PLATE BY THE COVER PLATE DETENTS.
2. COVER PLATE SHOULD REST AGAINST AT LEAST THREE OF THE FOUR PROJECTIONS (FRONT & REAR PLATE).
3. FRONT EDGE OF COVER PLATE AND TOP PLATE SHOULD ALIGN.

TO ADJUST----WITH DETENTING NUT CLAMP SCREW (FRONT & REAR PLATE) FRICTION TIGHT, MOVE CLAMP SCREWS 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.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

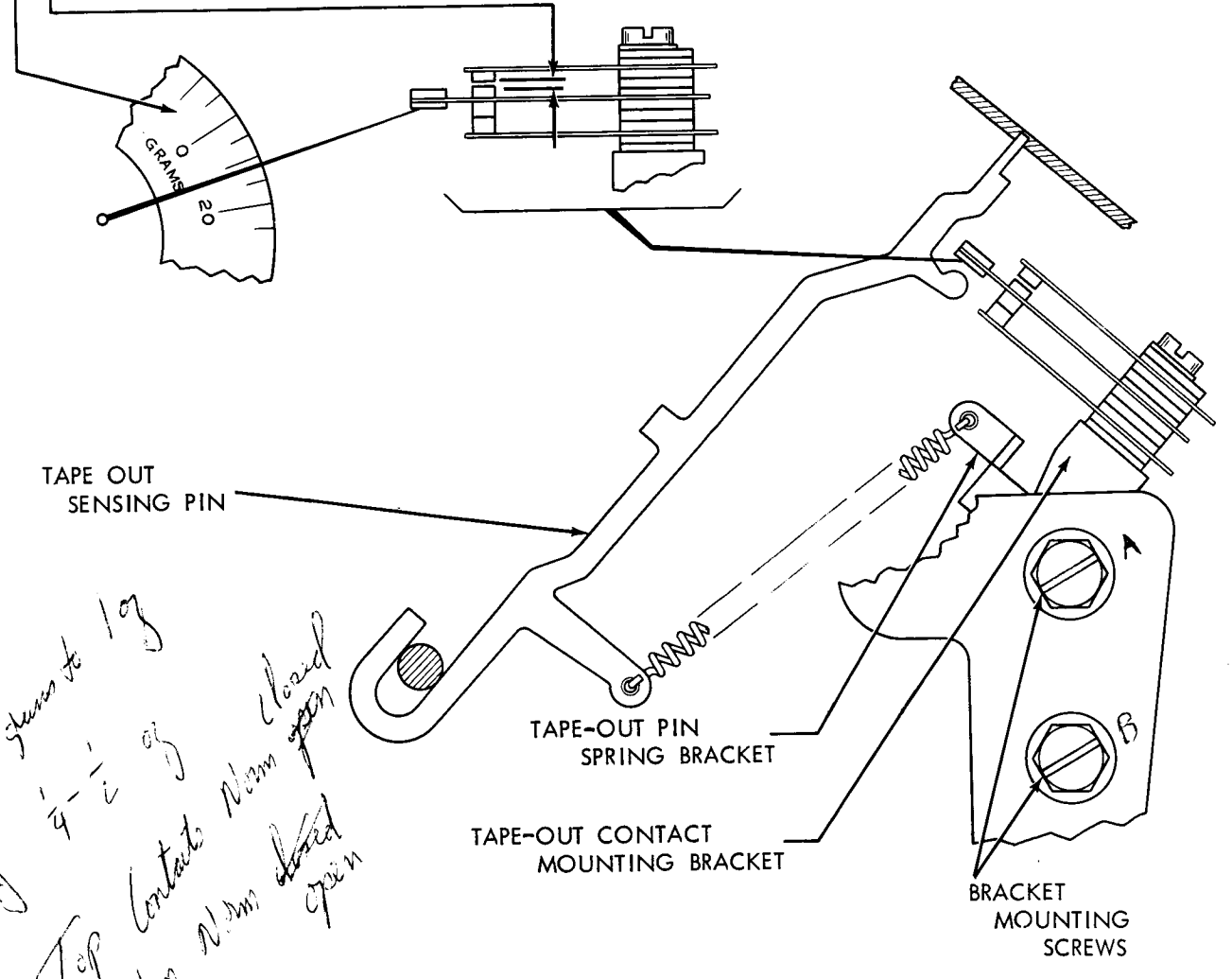
TAPE-OUT CONTACT ASSEMBLY

REQUIREMENT

(COVER PLATE AND TOP PLATE REMOVED. REMOVAL OF TAPE GUIDE PLATE OPTIONAL.)
WITH TAPE-OUT SPRING BRACKET FRICTION TIGHT, MOVE BRACKET DOWNWARD
UNTIL TAPE-OUT PIN EXTENSION CLEARS INSULATED PORTION OF CONTACT SWINGER.

1. 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 110445 SPRING BENDER.

2. CLEARANCE BETWEEN NORMALLY OPEN CONTACTS
   MIN. 0.008 INCH ——— MAX. 0.015 INCH
   TO ADJUST----FORM UPPER CONTACT SPRING USING THE 110445 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.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

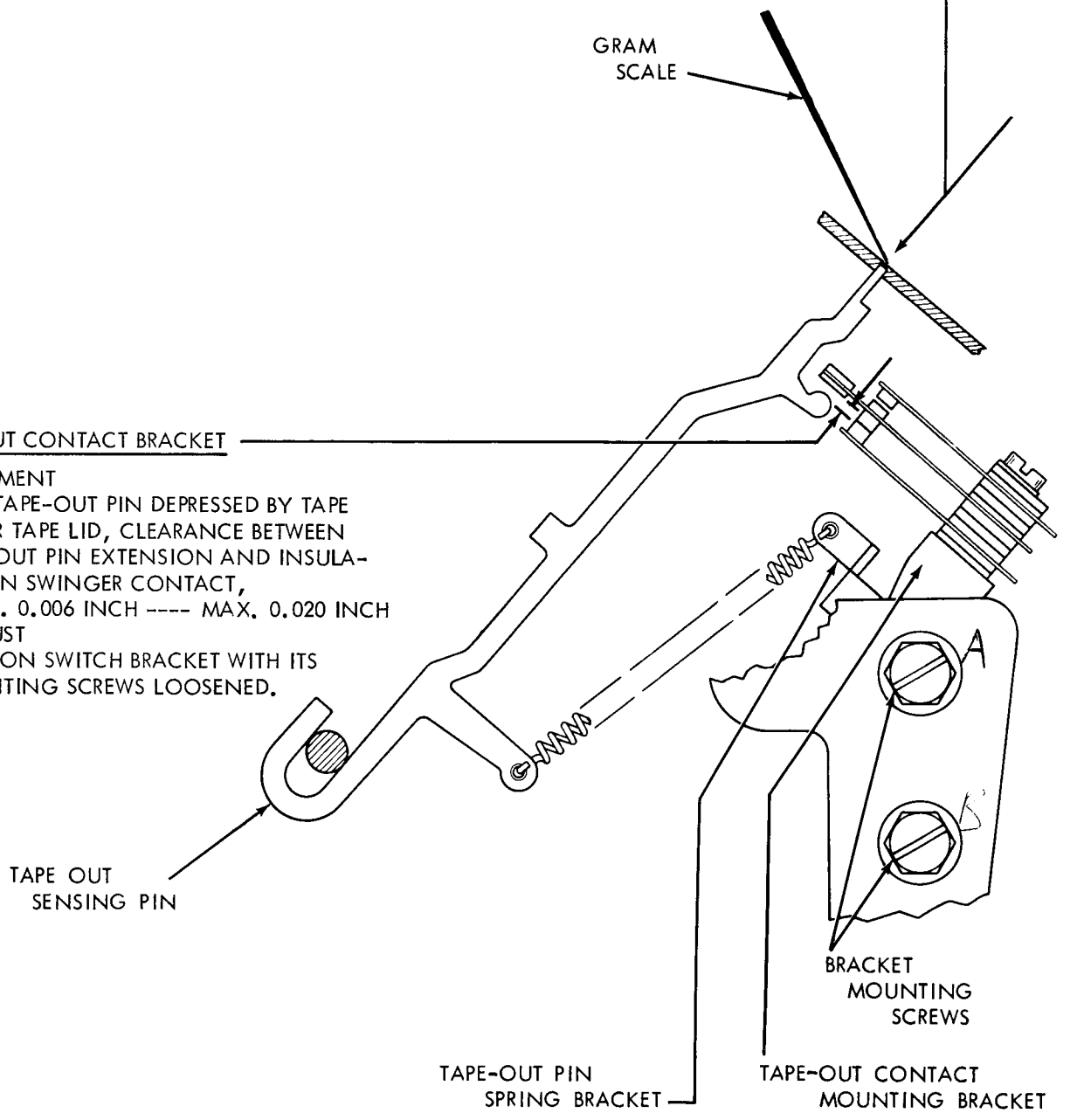
BASIC UNITS

A. Initial Adjustments (Continued)

B

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 GUIDE PLATE
TO ADJUST --- WITH CONTACT BRACKET LOWER MOUNTING SCREW LOOSENED POSITION THE SPRING BRACKET.



1st A

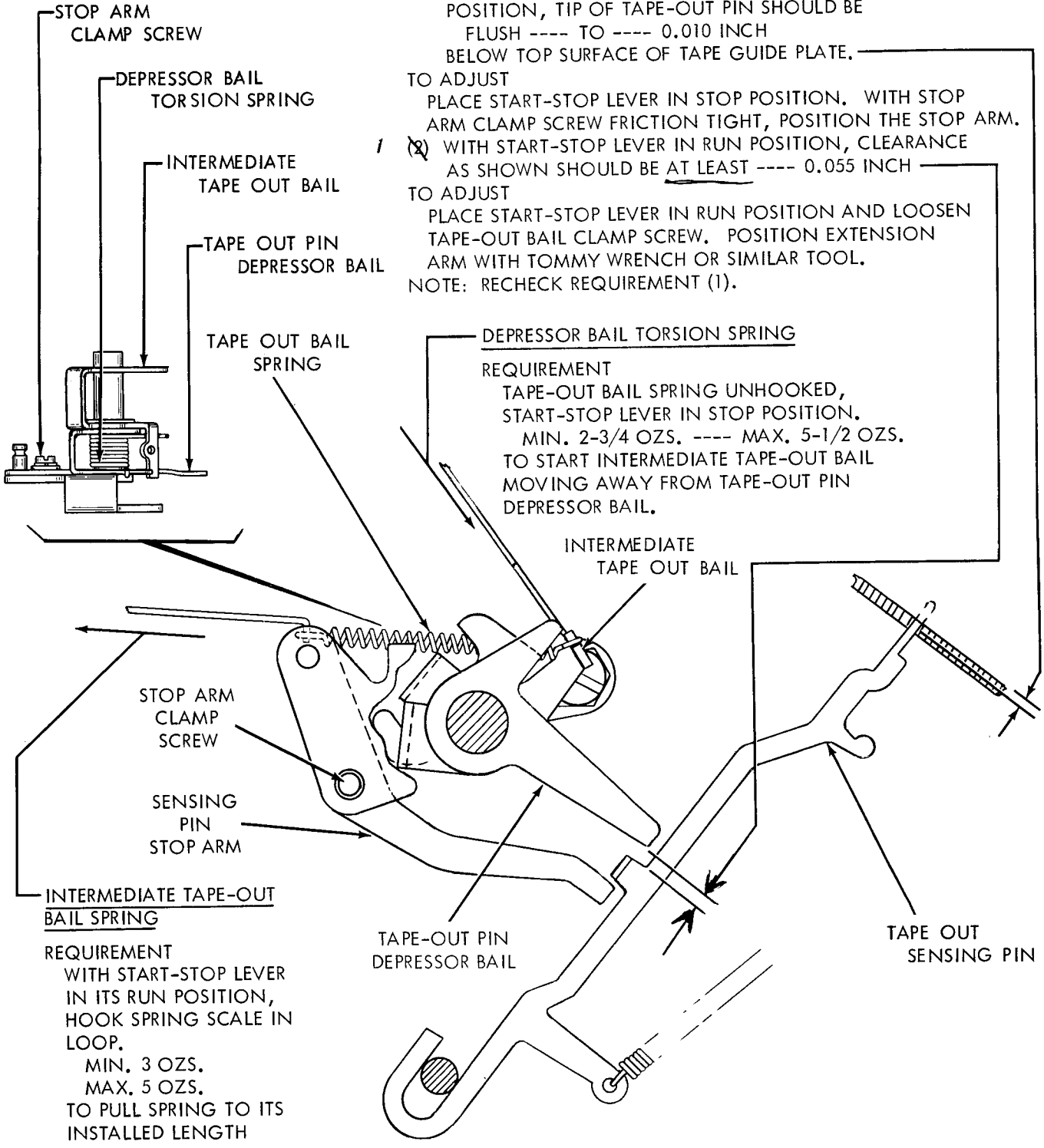
TAPE-OUT CONTACT BRACKET

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. 0.020 INCH
TO ADJUST
POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)



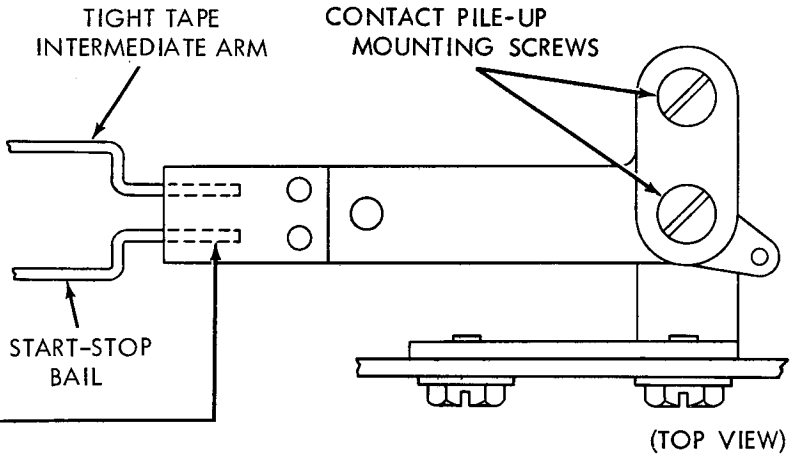
2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

START-STOP SWITCH BRACKET

REQUIREMENT
(CLUTCH DISENGAGED)
(1) 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
(WHERE UNITS ARE EQUIPPED WITH TAPE LID SENSING LEVER, MIN. 0.030 INCH ---- MAX. 0.045 INCH)
TO ADJUST
WITH SWITCH BRACKET MOUNTING SCREWS LOOSENED, POSITION THE BRACKET.
(2) START-STOP BAIL EXTENSION SHOULD FULLY ENGAGE INSULATED PORTION OF SWITCH SWINGER.
TO ADJUST
LOOSEN CONTACT PILE-UP MOUNTING SCREWS AND ALIGN CONTACT ASSEMBLY.

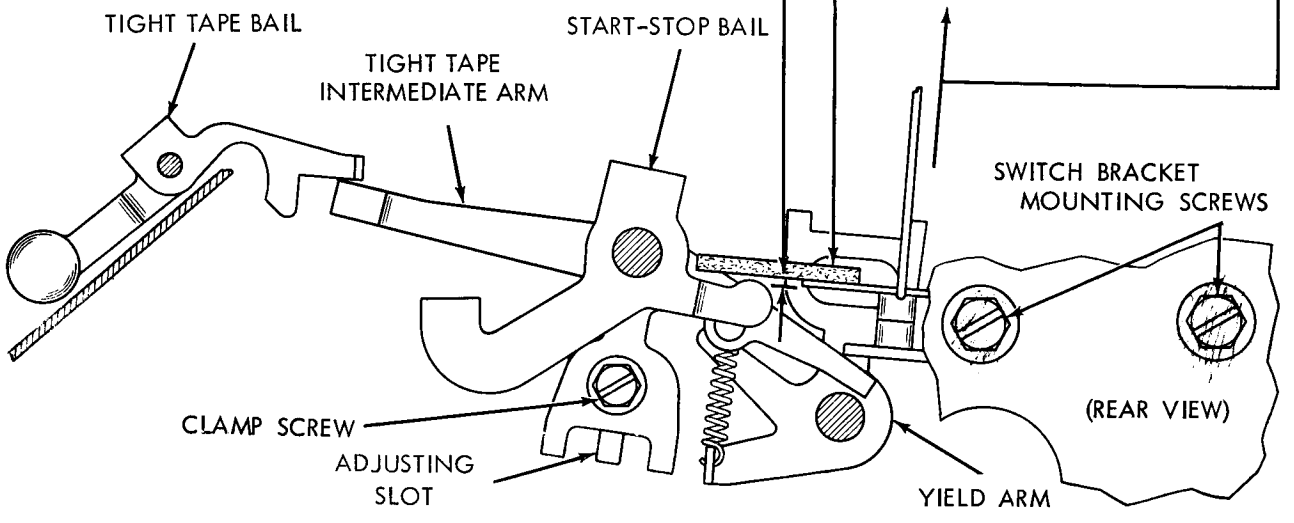


(TOP VIEW)

TIGHT TAPE; START-STOP CONTACT SPRING

REQUIREMENT----WITH START-STOP LEVER IN RUN POSITION.
MIN. 3 OZS.
MAX. 4 OZS.
TO SEPARATE CONTACTS.
TO ADJUST----FORM SWINGER WITH #110455 SPRING BENDER.

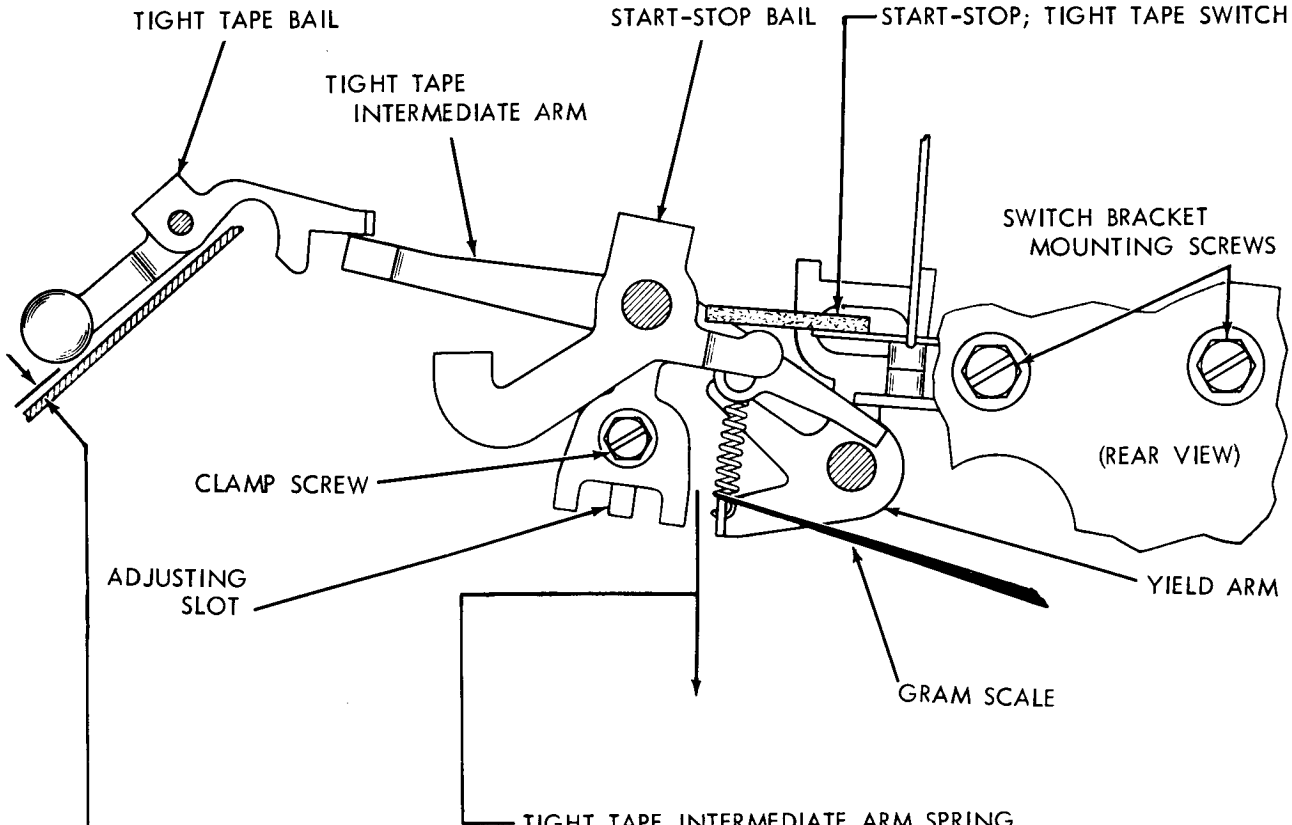
NOTE: RECHECK REQUIREMENTS FOR START-STOP SWITCH BRACKET AND TIGHT TAPE INTERMEDIATE ARM.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)



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 OZS.) TO START INTERMEDIATE ARM MOVING AWAY FROM ITS YIELD ARM

TIGHT TAPE INTERMEDIATE ARM

REQUIREMENT

WITH START-STOP LEVER IN RUN POSITION, TIGHT TAPE; START-STOP CONTACTS SHOULD FUNCTION AS FOLLOWS:

(1) REMAIN CLOSED WHEN TIGHT TAPE BAIL IS RAISED 0.045 INCH.

(2) OPEN AS BAIL IS RAISED TO HEIGHT OF 0.075 INCH.

TO ADJUST

WITH TIGHT TAPE INTERMEDIATE ARM CLAMP SCREW LOOSENED, POSITION THE ARM AT ITS ADJUSTING SLOT.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

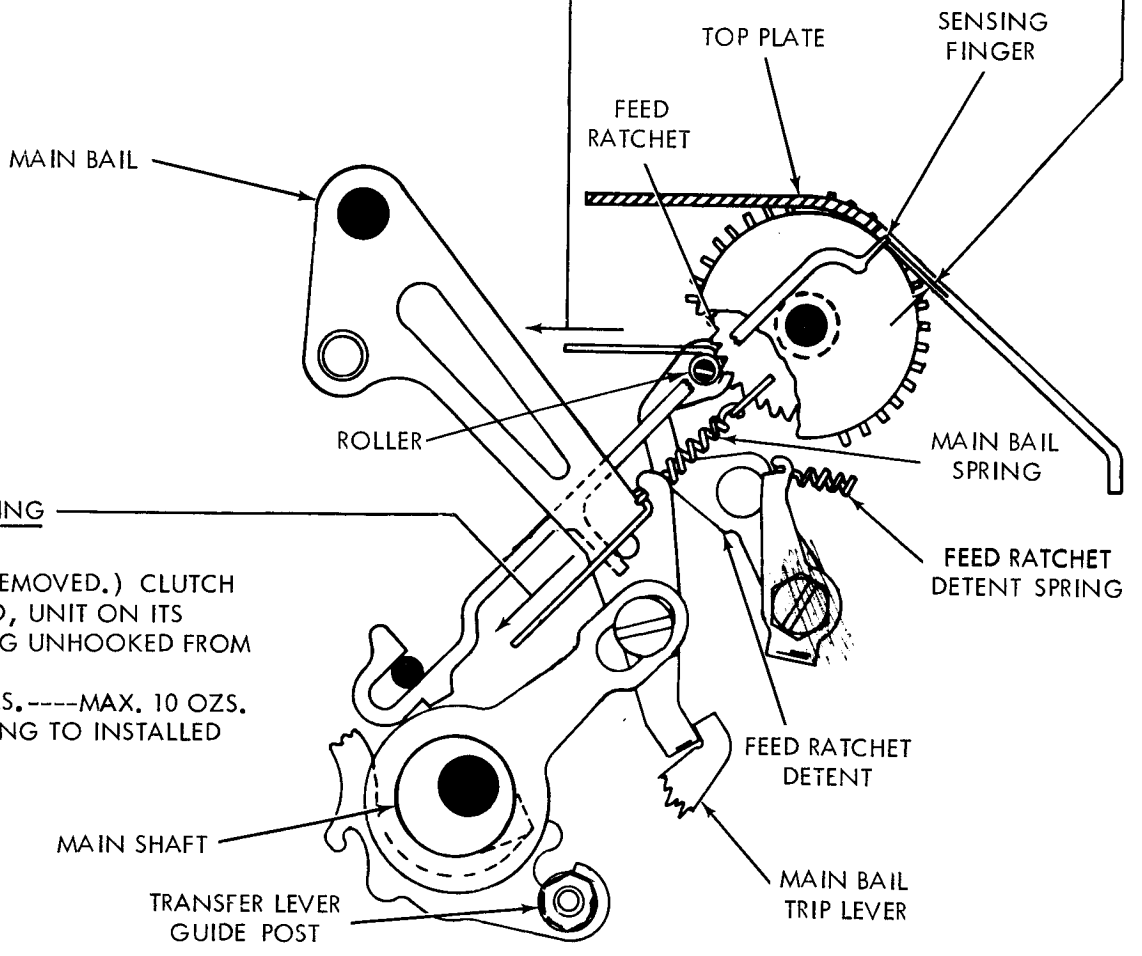
MAIN BAIL TRIP LEVER

REQUIREMENT
(TOP PLATE REPLACED) - WITH CLUTCH DISENGAGED AND MAIN SHAFT IN ITS STOP POSITION, TIP OF HIGHEST SENSING FINGER SHOULD BE FLUSH ---- TO ---- 0.005 INCH BELOW TOP SURFACE OF TAPE GUIDE PLATE.

TO ADJUST
WITH CLAMP NUTS (FRONT AND REAR) THAT SECURE THE TRANSFER LEVER GUIDE POST LOOSENED, ROTATE POST SO THAT ITS ECCENTRIC (REAR END OF POST) POSITIONS THE TRIP LEVER TO MEET REQUIREMENT.

FEED RATCHET DETENT SPRING

REQUIREMENT
WITH MAIN SHAFT IN STOP POSITION AND FEED PAWL HELD AWAY FROM FEED RATCHET,
MIN. 8 OZS. ---- MAX. 13 OZS.
TO START FEED RATCHET DETENT ROLLER MOVING AWAY FROM RATCHET.



MAIN BAIL SPRING

REQUIREMENT
(TOP PLATE REMOVED.) CLUTCH DISENGAGED, UNIT ON ITS BACK, SPRING UNHOOKED FROM MAIN BAIL
MIN. 6 OZS.----MAX. 10 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

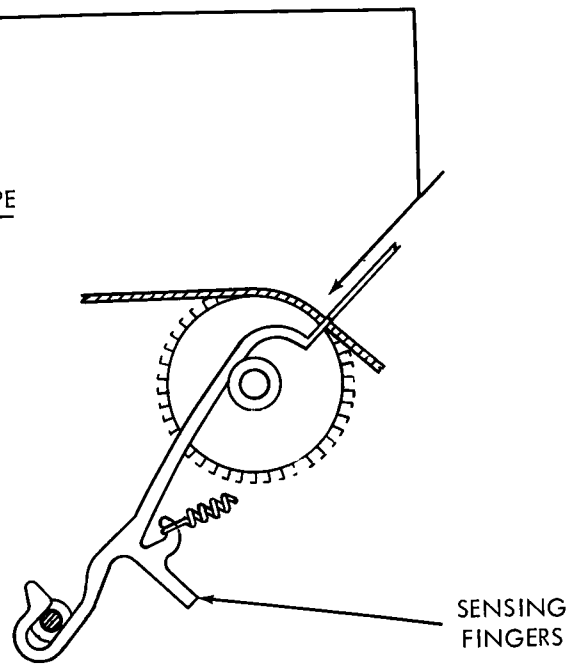
SENSING FINGER SPRING

REQUIREMENT

UNIT IN UPRIGHT POSITION, SENSING FINGERS IN THEIR UPPERMOST POSITION, AND RUB-OUT DELETER BAIL (IF PRESENT) HELD AWAY FROM THE SENSING FINGER

	CHADLESS TAPE	FULLY PERFORATED TAPE
MIN.	3 OZS.	2 OZS.
MAX.	5 OZS.	3 OZS.

TO MOVE A SENSING FINGER TO A POSITION FLUSH WITH THE TAPE GUIDE PLATE



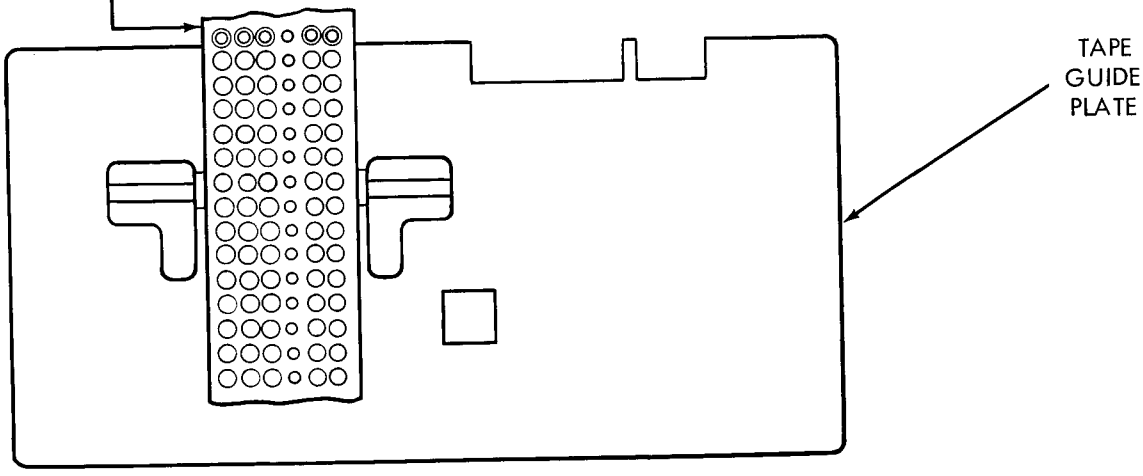
FEED WHEEL DETENT

REQUIREMENT

WITH TAPE LID RAISED, SENSING FINGERS DOWN, HIGH PART OF FEED WHEEL DETENT ECCENTRIC TOWARD THE RIGHT, TAPE (PERFORATED IN ALL LEVELS) BETWEEN TAPE GUIDES, AND PLAY IN TAPE TAKEN LIGHTLY TOWARD THE RIGHT. TIP OF EACH SENSING FINGER SHOULD BE CENTRALLY LOCATED IN THE CODE HOLES

TO ADJUST

HOLD FEED PAWL AWAY AND ROTATE THE FEED WHEEL DETENT ECCENTRIC SCREW.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

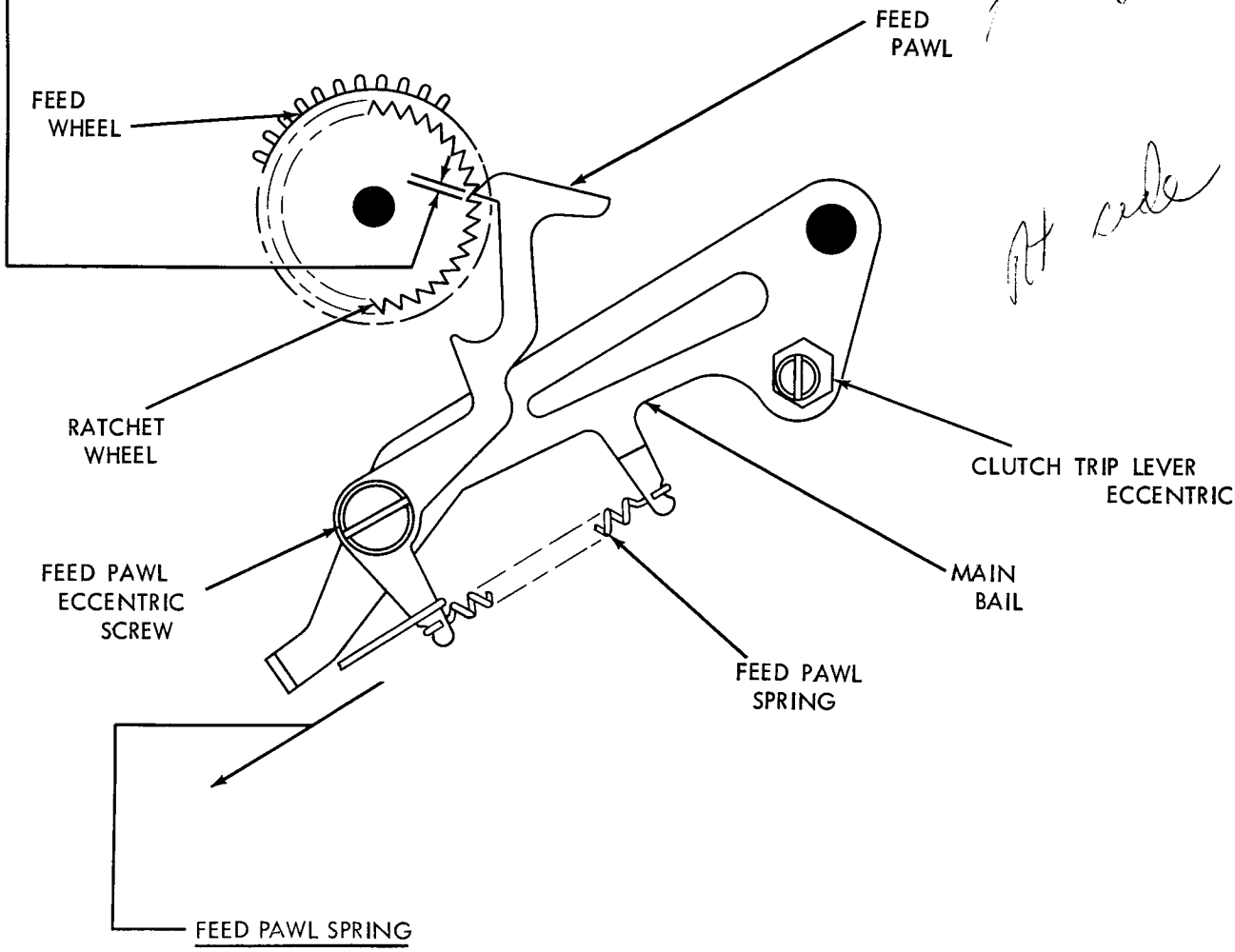
BASIC UNITS

A. Initial Adjustments (Continued)

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
SOME ---- TO ---- 0.003 INCH
(FOR UNITS WITH TAPE WITHHOLD FEATURE:
SOME ---- TO ---- 0.002 INCH)

TO ADJUST
WITH ECCENTRIC SCREW LOCK NUT LOOSENED, POSITION THE SCREW. RECHECK REQUIREMENT AT FOUR POSITIONS OF RATCHET APPROXIMATELY 90 DEGREES APART.



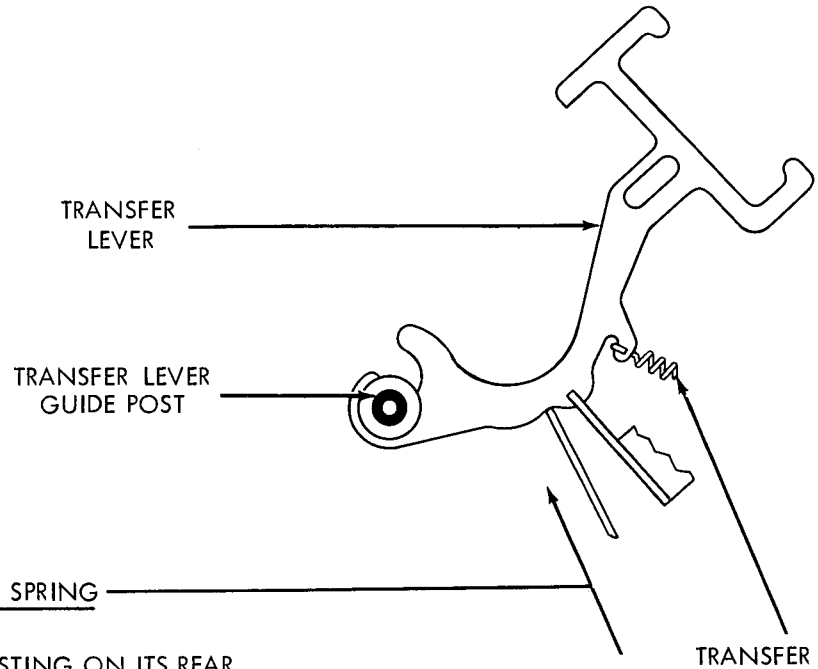
FEED PAWL SPRING

REQUIREMENT
WITH UNIT TILTED TOWARD THE LEFT AND MAIN SHAFT IN ITS STOP POSITION,
MIN. 2 OZS. ---- MAX. 3-1/2 OZS.
TO START PAWL MOVING.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

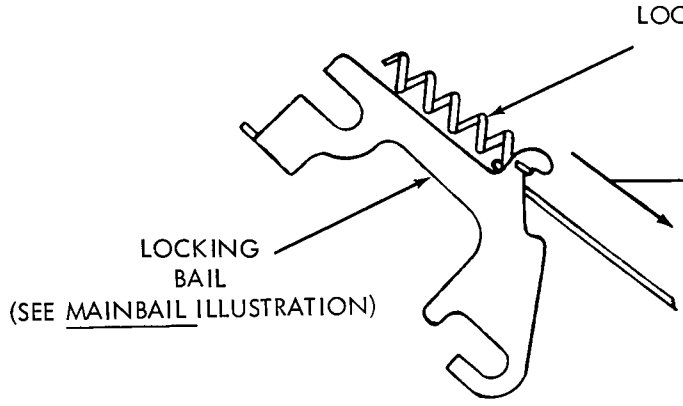
BASIC UNITS

A. Initial Adjustments (Continued)



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 OZS.
TO START EACH LEVER MOVING.



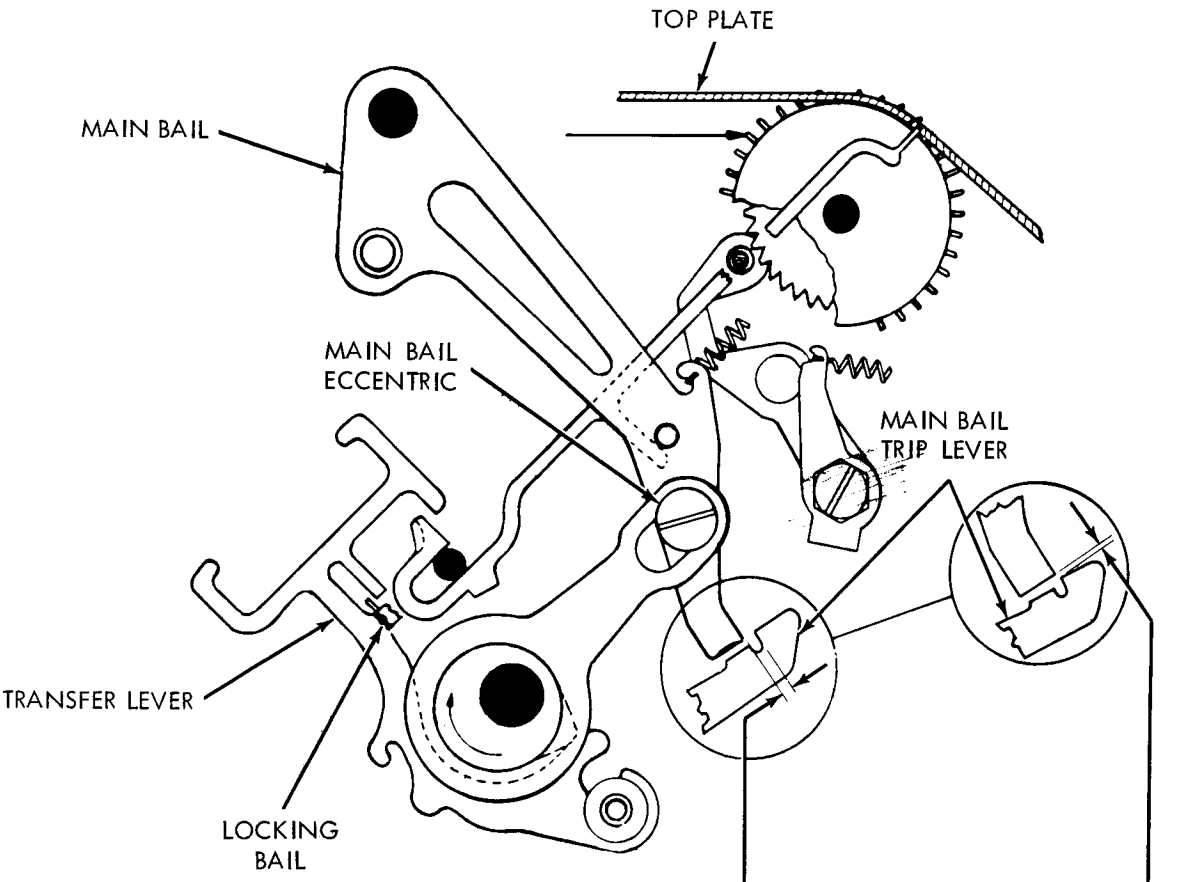
LOCKING BAIL SPRING

REQUIREMENT
WITH UNIT TILTED TOWARD THE LEFT AND IN STOP POSITION,
MIN. 10 OZS. ---- MAX. 14 OZS.
TO START BAIL MOVING, OR TO PULL SPRING TO POSITION LENGTH IF UNIT IS EQUIPPED WITH A START-STOP PULSE CONTACT ASSEMBLY.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)



MAIN BAIL

REQUIREMENT

(REPLACE TOP PLATE)

(1) MAIN BAIL IN LOWEST POSITION, HORIZONTAL CLEARANCE BETWEEN MAIN BAIL ARM AND MAIN BAIL TRIP LEVER, SOME ---- TO ---- 0.015 INCH

(2) MAIN BAIL IN LOWEST POSITION AND CLUTCH MAGNET OPERATED, CLEARANCE BETWEEN VERTICAL SURFACES, MIN. 0.005 INCH

TO ADJUST

POSITION MAIN BAIL ECCENTRIC WITH NUT ON ECCENTRIC SCREW LOOSENED. CHECK AND REFINE MAIN BAIL TRIP LEVER ADJUSTMENT IF NECESSARY.

Page 1-15

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

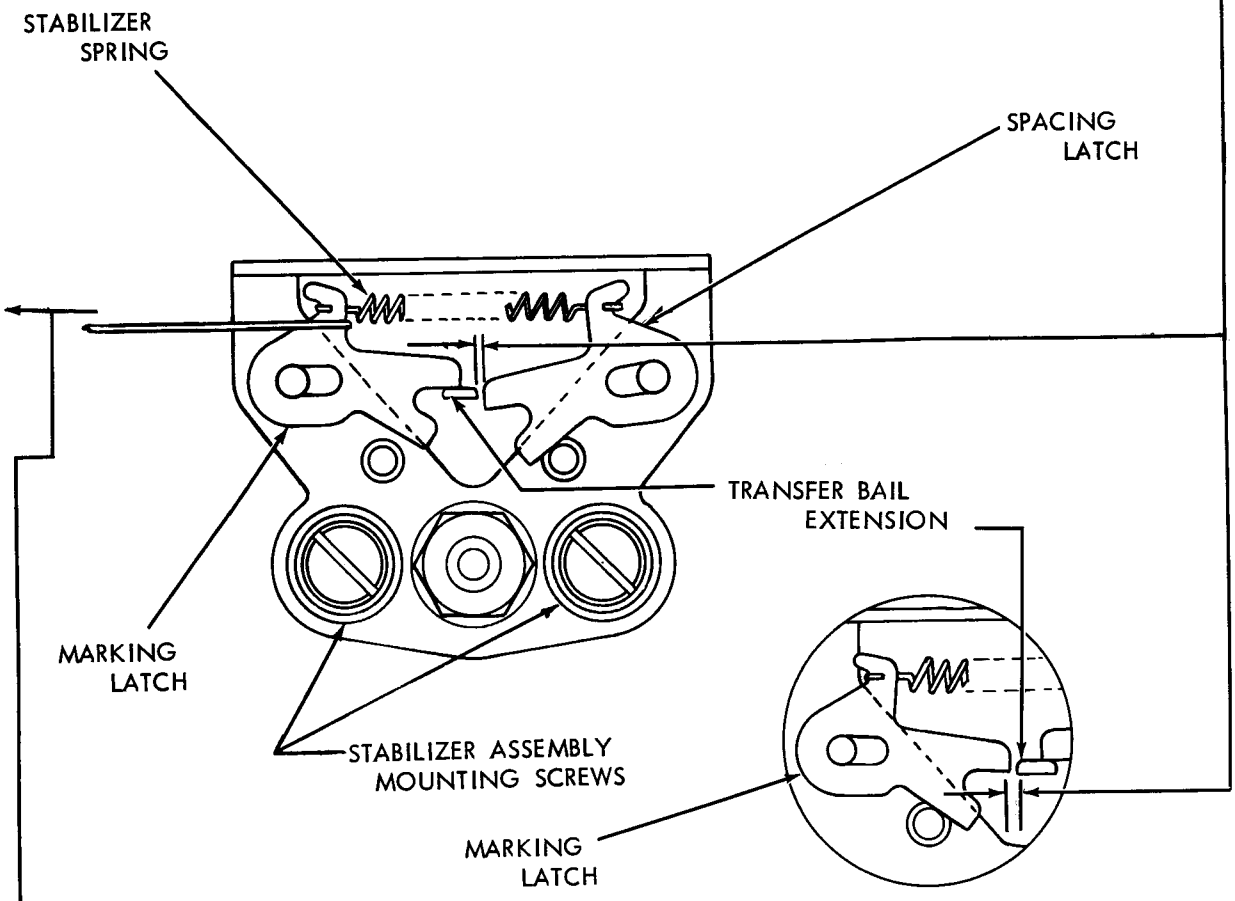
A. Initial Adjustments (Continued)

TRANSFER BAIL STABILIZER

REQUIREMENT --- (1) WITH A "LETTERS" COMBINATION SELECTED, ROTATE MAINSHAFT UNTIL #3 TRANSFER LEVER IS ON HIGH PART OF ITS CAM. CHECK CLEARANCE BETWEEN SIDE OF TRANSFER BAIL EXTENSION AND ITS LATCH. (2) REPEAT ABOVE PROCEDURE WITH A "BLANKS" 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.

NOTE --- LATCHES SHOULD DROP IN PLACE AS OTHER TRANSFER LEVERS CAM THE TRANSFER BAIL.



STABILIZER SPRING

REQUIREMENT----WITH UNIT UPRIGHT AND MAINSHAFT IN STOP POSITION.
MIN. 2-1/2 OZS. —— MAX. 5 OZS.
TO START STABILIZER LATCH MOVING.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

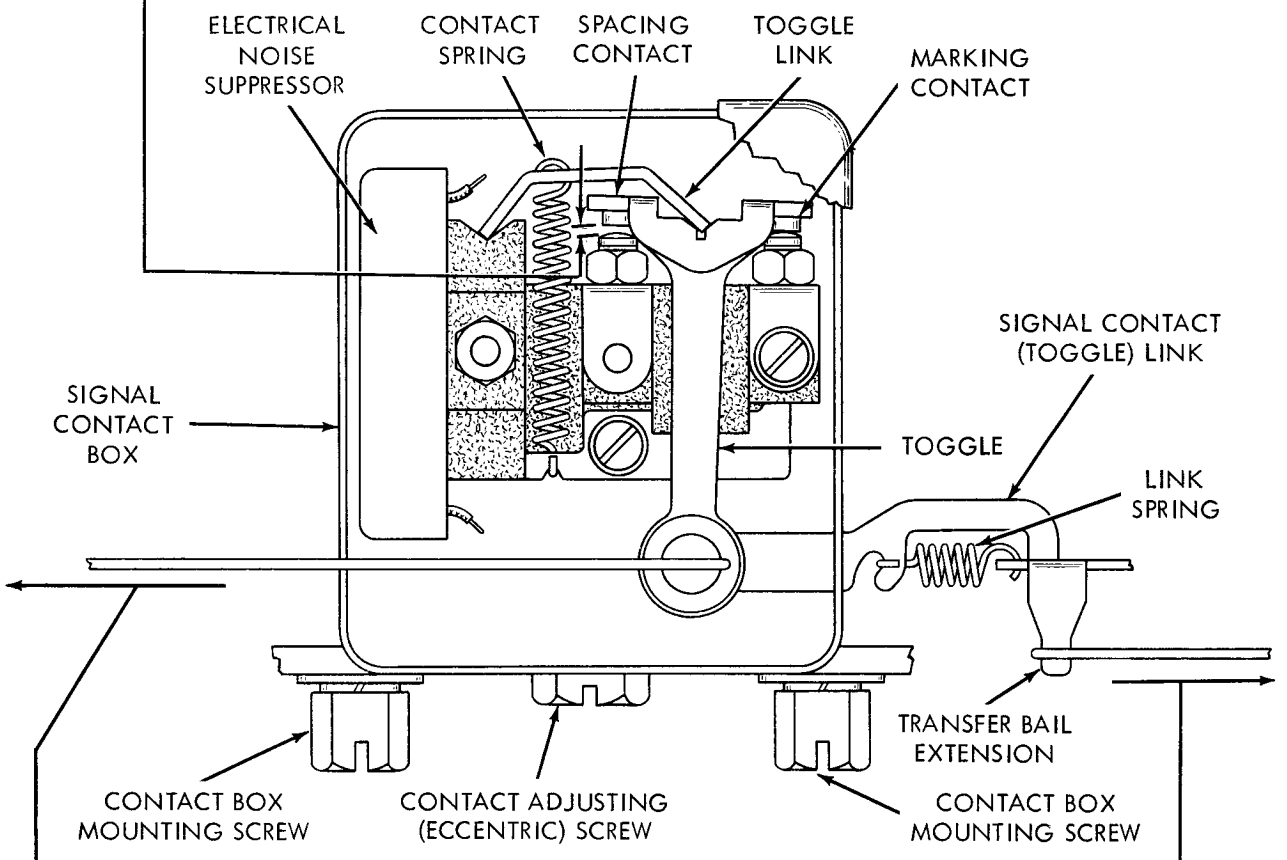
A. Initial Adjustments (Continued)

SIGNAL CONTACTS (TRANSMITTER-DISTRIBUTOR SETS ONLY)

REQUIREMENT
(COVER PLATE AND CONTACT BOX COVER REMOVED.) CONTACT GAP IN THE MARKING POSITION AND THE SPACING POSITION SHOULD BE EQUAL WHEN CLEARANCE BETWEEN RESPECTIVE CONTACT IS MAXIMUM. (ENGAGE CLUTCH AND ROTATE MAIN SHAFT SLOWLY.)

TO ADJUST
WITH CONTACT BOX MOUNTING SCREWS FRICTION TIGHT, POSITION BOX WITH ITS ECCENTRIC.

NOTE: USE TEST SET SUCH AS DXD WHERE POSSIBLE TO REFINE ADJUSTMENT. (SEE SIGNAL PULSE.)



SIGNAL CONTACT SPRING (TRANSMITTER - DISTRIBUTOR SETS ONLY)

REQUIREMENT----WITH MAINSHAFT IN STOP POSITION AND STABILIZER SPRING UNHOOKED, MOVE LATCHES AWAY FROM TRANSFER BAIL EXTENSION (FIGURE 1-15). HOLD TOGGLE FIRMLY AGAINST CONTACTS. MIN. 6 OZS. --- MAX. 12 OZS. TO START TRANSFER BAIL EXTENSION MOVING.

SIGNAL CONTACT LINK SPRING (TRANSMITTER-DISTRIBUTOR SETS ONLY)

REQUIREMENT
WITH MAIN SHAFT IN STOP POSITION AND STABILIZER SPRING UNHOOKED, MOVE LATCHES AWAY FROM TRANSFER BAIL EXTENSION. HOLD TOGGLE FIRMLY AGAINST CONTACTS. MIN. 6 OZS. ---- MAX. 12 OZS. TO START TRANSFER BAIL EXTENSION MOVING.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)

CLUTCH MAGNET

REQUIREMENT

(1) WITH ARMATURE IN ENERGIZED POSITION, ARMATURE SHOULD CONTACT CORE OF MAGNET FARTHEST AWAY FROM ARMATURE HINGE. CLEARANCE BETWEEN ARMATURE AND CORE NEAREST HINGE,
SOME----TO----0.004 INCH
(SETS WITH TAPE SHOE AND TAPE FEED ASSURANCE MECHANISM ONLY,
MIN. 0.004 INCH----MAX. 0.007 INCH)

TO ADJUST

WITH MAGNET ASSEMBLY MOUNTING SCREWS REMOVED, LIFT ASSEMBLY FROM UNIT. INVERT ASSEMBLY, LOOSEN HINGE BRACKET MOUNTING SCREWS AND POSITION BRACKET.

(2) WITH ARMATURE IN ENERGIZED POSITION AND HIGH PART OF BACKSTOP ECCENTRIC UPWARD, CLEARANCE BETWEEN ARMATURE BAIL AND BACKSTOP,
MIN. 0.045 INCH----MAX. 0.055 INCH

TO ADJUST

LOOSEN BACKSTOP CLAMP NUT AND POSITION ECCENTRIC.

(3) MAGNET ASSEMBLY REPLACED. CLUTCH DISENGAGED. CLEARANCE BETWEEN END OF BAIL EXTENSION AND MAIN BAIL LATCH,
MIN. 0.007 INCH----MAX. 0.015 INCH

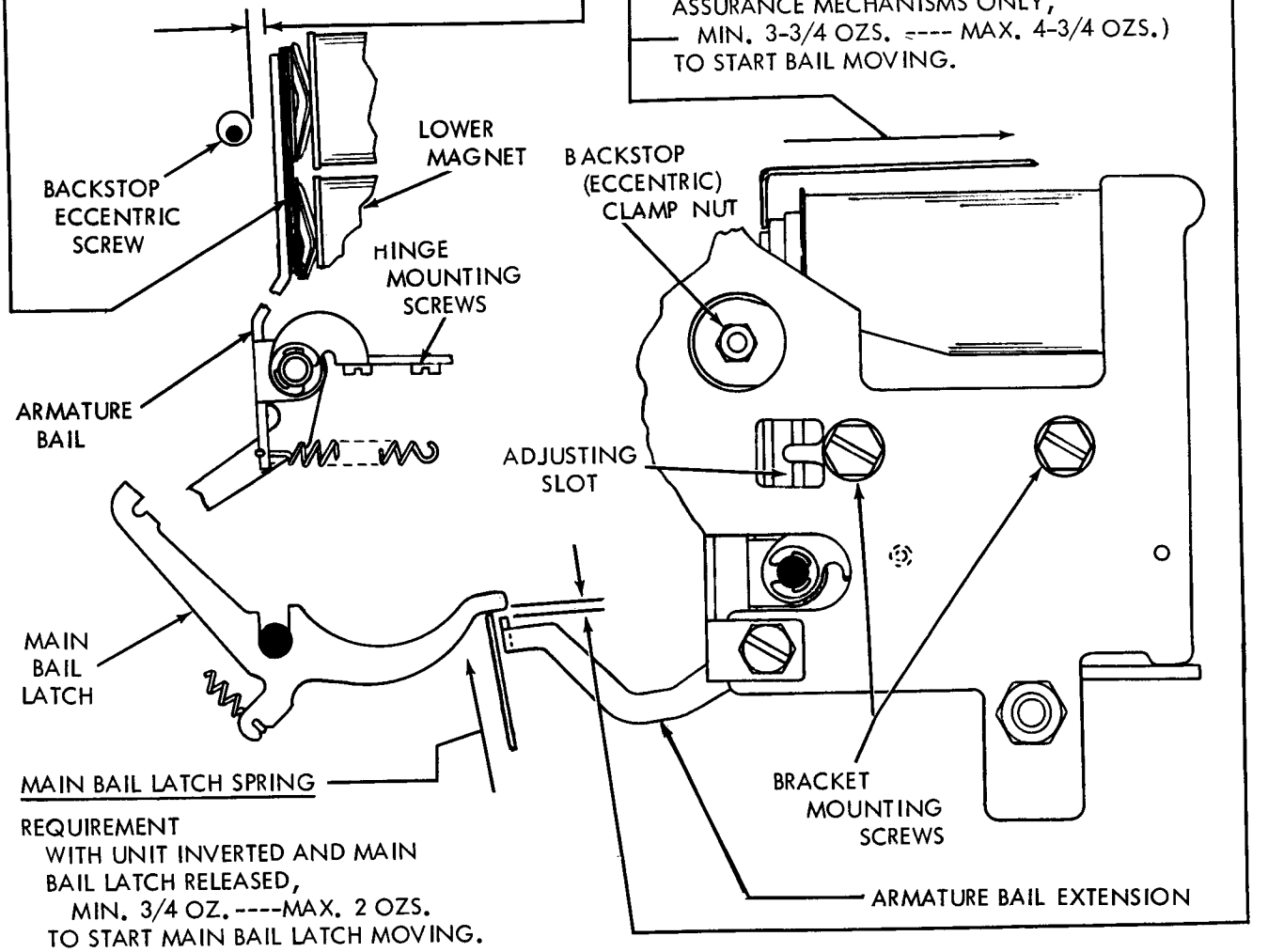
TO ADJUST

WITH BRACKET MOUNTING SCREWS FRICTION TIGHT, MOVE ASSEMBLY TO LOWERMOST POSITION. POSITION BRACKET BY ADJUSTING SLOT. REFINE REQUIREMENTS IF NECESSARY.

ARMATURE BAIL SPRING

REQUIREMENT

ARMATURE IN DE-ENERGIZED POSITION AND MAIN BAIL LATCH LEVER HELD AWAY,
MIN. 1 OZ. ---- MAX. 2 OZS.
(SETS WITH TAPE SHOE AND TAPE FEED ASSURANCE MECHANISMS ONLY,
MIN. 3-3/4 OZS. ---- MAX. 4-3/4 OZS.)
TO START BAIL MOVING.



MAIN BAIL LATCH SPRING

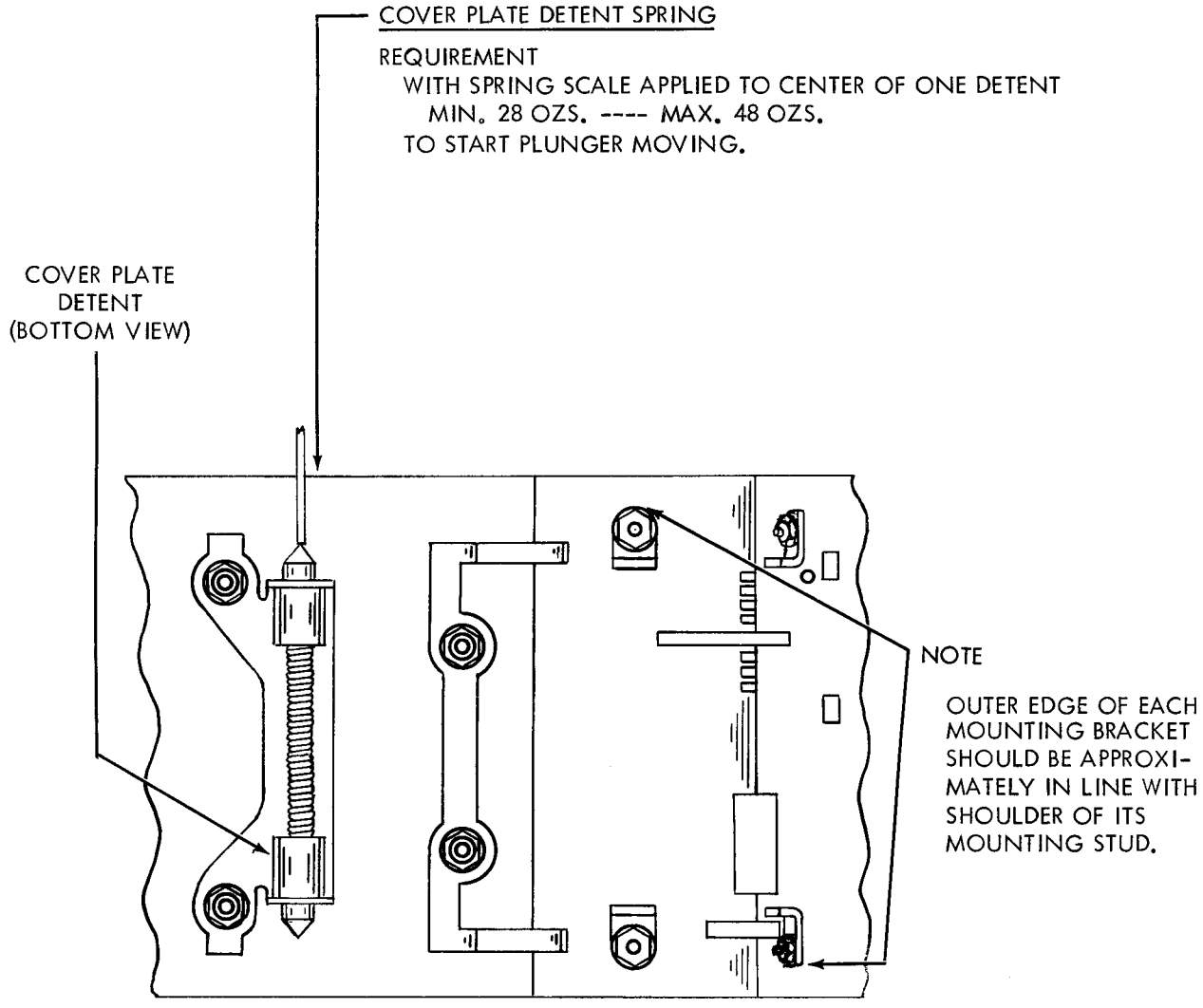
REQUIREMENT

WITH UNIT INVERTED AND MAIN BAIL LATCH RELEASED,
MIN. 3/4 OZ. ----MAX. 2 OZS.
TO START MAIN BAIL LATCH MOVING.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

A. Initial Adjustments (Continued)



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

B. Strobing

General

Note: The general marking pulse and spacing pulse strobing adjustment procedure is the same for all levels and unit codes. Differences do 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 2.01 and 2.02 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.

2.01 Marking Pulse Adjustments:

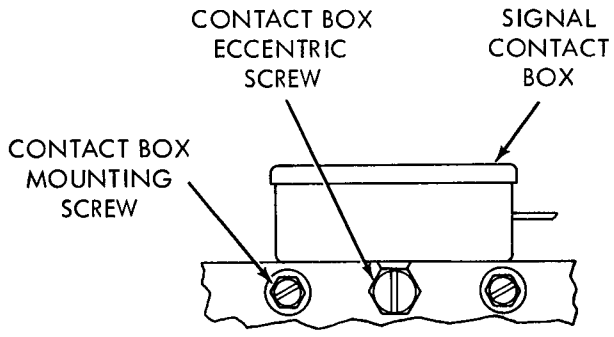
a. Plug a signal distortion test set having the appropriate scale (e.g. 7.42) into the signal line so that the marking contacts of the transmitter-distributor unit under test will interrupt the current to the stroboscopic lamp within the DXD. Have the transmitter-distributor transmitting "Y" or "R" continuously and the test set and transmitter-distributor operating at the same speed. Rotate the test scale to align the O-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 O-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 (e.g. 15 div.)

Note: Each marking code pulse may have one break, provided the break is not longer than the allowable break width specified (e.g. 1 div.) and the break comes within the tolerance range (e.g. 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.



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.

2.02 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.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

B. Strobing (Continued)

Five-Level Units, 7.00 Unit Code

2.03 Follow the general procedure outlined in paragraphs 2.01 and 2.02, 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. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

B. Strobing (Continued)

Five-Level Units, 7.42 Unit Code

2.04 Follow the general provisions outlined in paragraphs 2.01 and 2.02, 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. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

B. Strobing (Continued)

Six-Level Units, 8.50 Unit Codes

2.05 Follow the general provisions outlined in paragraphs 2.01 and 2.02, 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. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

B. Strobing (Continued)

Seven-Level Units, 9.50 Unit Code

2.06 Follow the general procedures outlined in paragraphs 2.01 and 2.02, substituting the appropriate data from the following table.

PULSE DATA TABLE
SEVEN-LEVEL UNITS, 9.50 UNIT CODE

PULSE	MARKING & SPACING	
RANGE	NOMINAL	TOLERANCE
STOP PULSE	0 (STOP) TO 0 (START)	BEGIN ±8 DIV END ±1 DIV
START PULSE	0 (START) TO 0 (ONE)	BEGIN ±8 DIV END ±8 DIV
PULSE 1	0 (ONE) TO 0 (TWO)	BEGIN ±8 DIV END ±8 DIV
PULSE 2	0 (TWO) TO 0 (THREE)	BEGIN ±8 DIV END ±8 DIV
PULSE 3	0 (THREE) TO 0 (FOUR)	BEGIN ±8 DIV END ±8 DIV
PULSE 4	0 (FOUR) TO 0 (FIVE)	BEGIN ±8 DIV END ±8 DIV
PULSE 5	0 (FIVE) TO 0 (SIX)	BEGIN ±8 DIV END ±8 DIV
PULSE 6	0 (SIX) TO 0 (SEVEN)	BEGIN ±8 DIV END ±8 DIV
PULSE 7	0 (SEVEN) TO 0 (STOP)	BEGIN ±8 DIV END ±8 DIV
ALLOWABLE BREAK WIDTH	2 DIV	MUST LIE WITHIN TOLERANCE RANGE

Eight-Level Units, 11.00 Unit Code

2.07 Follow the general procedures outlined in paragraphs 2.01 and 2.02, substituting the appropriate data from the following table.

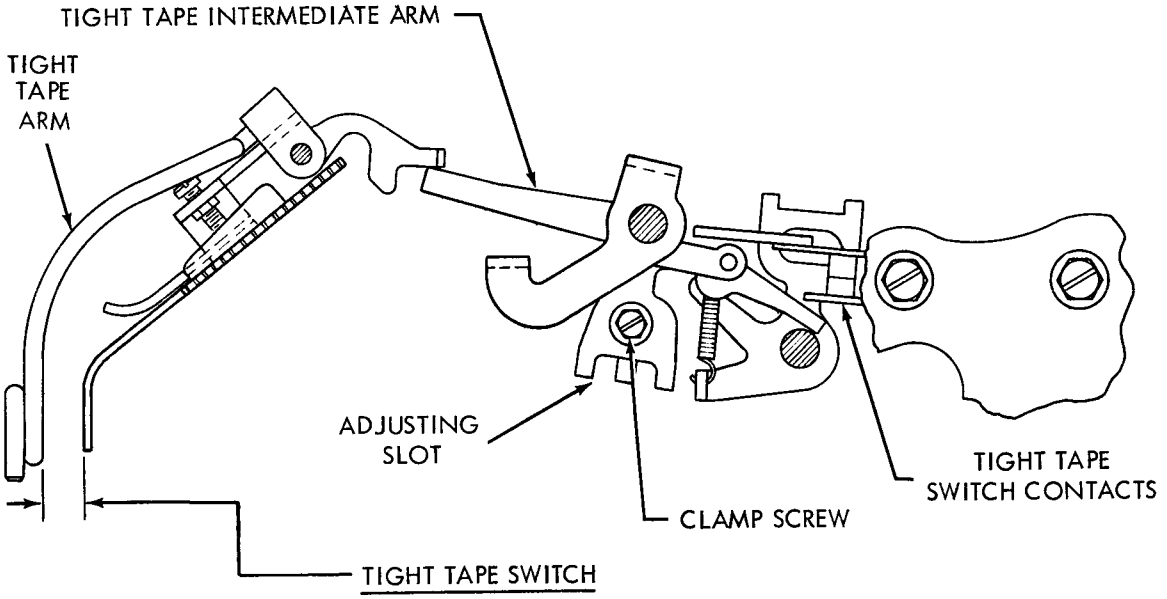
PULSE DATA TABLE
EIGHT-LEVEL UNITS, 11.00 UNIT CODE

PULSE	MARKING & SPACING	
RANGE	NOMINAL	TOLERANCE
STOP PULSE	0 (STOP) TO 0 (START)	BEGIN ±8 DIV END ±1 DIV
START PULSE	0 (START) TO 0 (ONE)	BEGIN ±8 DIV END ±8 DIV
PULSE 1	0 (ONE) TO 0 (TWO)	BEGIN ±8 DIV END ±8 DIV
PULSE 2	0 (TWO) TO 0 (THREE)	BEGIN ±8 DIV END ±8 DIV
PULSE 3	0 (THREE) TO 0 (FOUR)	BEGIN ±8 DIV END ±8 DIV
PULSE 4	0 (FOUR) TO 0 (FIVE)	BEGIN ±8 DIV END ±8 DIV
PULSE 5	0 (FIVE) TO 0 (SIX)	BEGIN ±8 DIV END ±8 DIV
PULSE 6	0 (SIX) TO 0 (SEVEN)	BEGIN ±8 DIV END ±8 DIV
PULSE 7	0 (SEVEN) TO 0 (EIGHT)	BEGIN ±8 DIV END ±8 DIV
PULSE 8	0 (EIGHT) TO 0 (STOP)	BEGIN ±8 DIV END ±8 DIV
ALLOWABLE BREAK WIDTH	3 DIV	MUST LIE WITHIN TOLERANCE RANGE

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

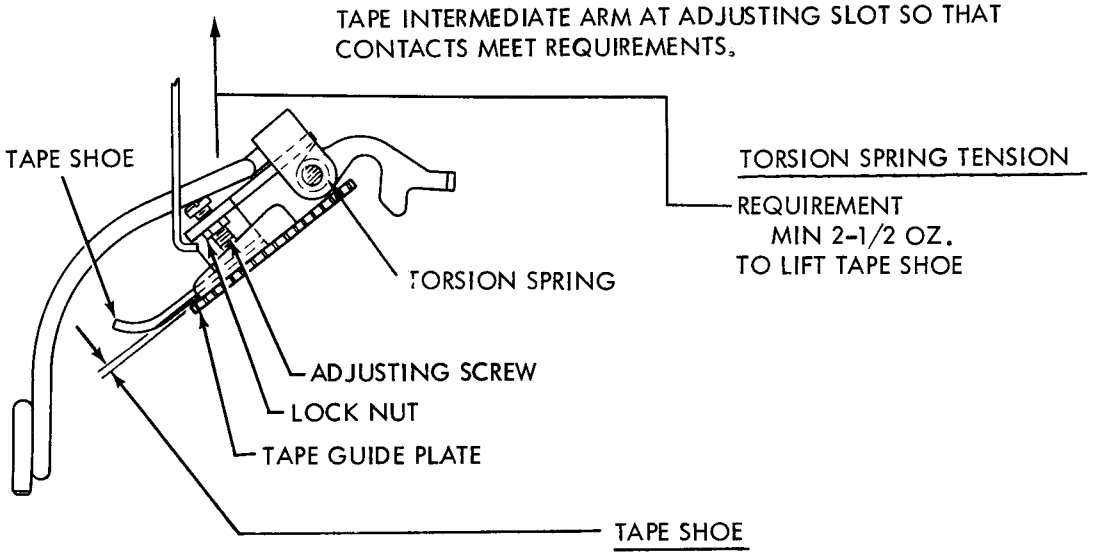
VARIABLE FEATURES

A. Tight Tape and Tape Shoe Adjustment



REQUIREMENT
WITH START-STOP LEVER IN RUN POSITION, CONTACTS SHOULD OPEN WHEN TIGHT TAPE ARM IS RAISED BETWEEN 9/32 INCH ---- AND ---- 13/32 INCH.

TO ADJUST
LOOSEN THE CLAMP SCREW AND POSITION THE TIGHT TAPE INTERMEDIATE ARM AT ADJUSTING SLOT SO THAT CONTACTS MEET REQUIREMENTS.



REQUIREMENT
MIN 2-1/2 OZ. TO LIFT TAPE SHOE

REQUIREMENT
WITH TAPE LID LATCHED IN POSITION, CLEARANCE BETWEEN TAPE GUIDE PLATE AND TAPE SHOE
MIN. 0.005 INCH ---- MAX. 0.008 INCH

TO ADJUST
ROTATE THE ADJUSTING SCREW WITH ITS LOCK NUT LOOSENED.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

B. Tape Feed Assurance Mechanism

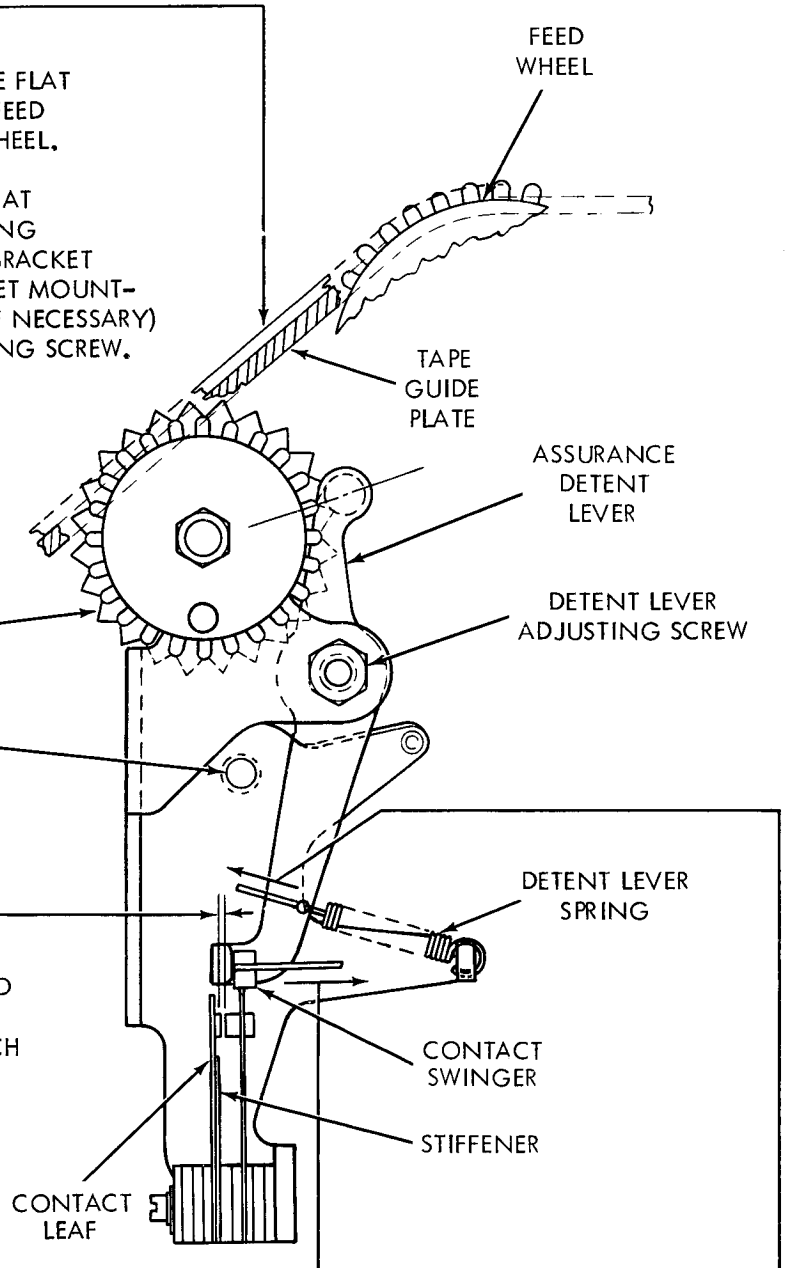
TAPE SENSING FEED WHEEL PHASING

REQUIREMENT
TAPE WITH 10 HOLES PER INCH SHOULD LIE FLAT ON THE TAPE GUIDE PLATE BETWEEN THE FEED WHEEL AND THE TAPE FEED ASSURANCE WHEEL.

TO ADJUST
SET THE DETENT LEVER ADJUSTING SCREW AT MID-RANGE. LOOSEN BRACKET MOUNTING SCREWS FRICTION TIGHT AND POSITION BRACKET TO MEET REQUIREMENT. TIGHTEN BRACKET MOUNTING SCREWS AND REFINE ADJUSTMENT (IF NECESSARY) BY ROTATING THE DETENT LEVER ADJUSTING SCREW.

NOTE

THIS ADJUSTMENT SHOULD BE MADE WITH FRESH, FULLY PERFORATED TAPE. IF THIS TAPE IS NOT AVAILABLE, USE GAGE NO. 165800.



TAPE MOTION CONTACT GAP

REQUIREMENT
WITH DETENT LEVER HELD IN ITS DETENTED POSITION, THERE SHOULD BE
MIN. 0.005 INCH ---- MAX. 0.010 INCH
GAP BETWEEN THE NORMALLY CLOSED CONTACTS.

TO ADJUST
BEND CONTACT LEAF AND STIFFENER TO MEET REQUIREMENT.

TAPE MOTION CONTACT SWINGER

REQUIREMENT
WITH DETENT LEVER HELD AWAY FROM CONTACT SWINGER, IT SHOULD TAKE
MIN. 15 GRAMS ---- MAX. 25 GRAMS
TO SEPARATE CONTACTS.

TO ADJUST
BEND SWINGER TO MEET REQUIREMENT.
(RECHECK TAPE MOTION CONTACT GAP.)

DETENT LEVER SPRING TENSION

REQUIREMENT
WITH CONTACT SWINGER HELD AWAY FROM THE DETENT LEVER, IT SHOULD TAKE
3 OZS. ---- TO ---- 4 OZS.
TO MOVE THE ROLLER FROM THE RATCHET.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

C. Tape-Out Pin

TAPE-OUT CONTACT

REQUIREMENT

(1) MIN. 0.015 INCH ---- MAX. 0.025 INCH GAP BETWEEN NORMALLY OPEN (TOP) CONTACT POINTS.

TO CHECK

LOOSEN CONTACT BRACKET MOUNTING SCREWS AND PIVOT CONTACT ASSEMBLY UNTIL THE PAD ON THE TAPE-OUT PIN EXTENSION IS NOT TOUCHING THE SWINGER PAD. CHECK CONTACT GAP.

TO ADJUST

BEND THE UPPER CONTACT SPRING TO MEET REQUIREMENT.

(2) WITH ASSEMBLY STILL IN POSITION OUTLINED IN REQUIREMENT (1)

MIN. 8 GRAMS ---- MAX. 15 GRAMS TO JUST SEPARATE THE NORMALLY CLOSED (LOWER) CONTACTS

TO ADJUST

BEND CONTACT SWINGER. RECHECK REQUIREMENT (1).

(3) WITH TAPE-OUT PIN HELD DOWN, SOME CLEARANCE BETWEEN TAPE-OUT PIN EXTENSION AND UNDER SIDE OF CONTACT SWINGER. WITHOUT TAPE, TAPE LID CLOSED, AND UNIT IN RUN POSITION,

MIN. 0.008 INCH----MAX. 0.018 INCH GAP BETWEEN NORMALLY CLOSED CONTACTS.

TO ADJUST

WITH BRACKET MOUNTING SCREWS LOOSENED, ADJUST CONTACT MOUNTING BRACKET TO MEET REQUIREMENT.

TAPE-OUT PIN SPRING

REQUIREMENT

WITH TAPE REMOVED AND TAPE LID OPEN

MIN. 38 GRAMS ---- MAX. 45 GRAMS TO PRESS PIN FLUSH WITH TAPE GUIDE PLATE.

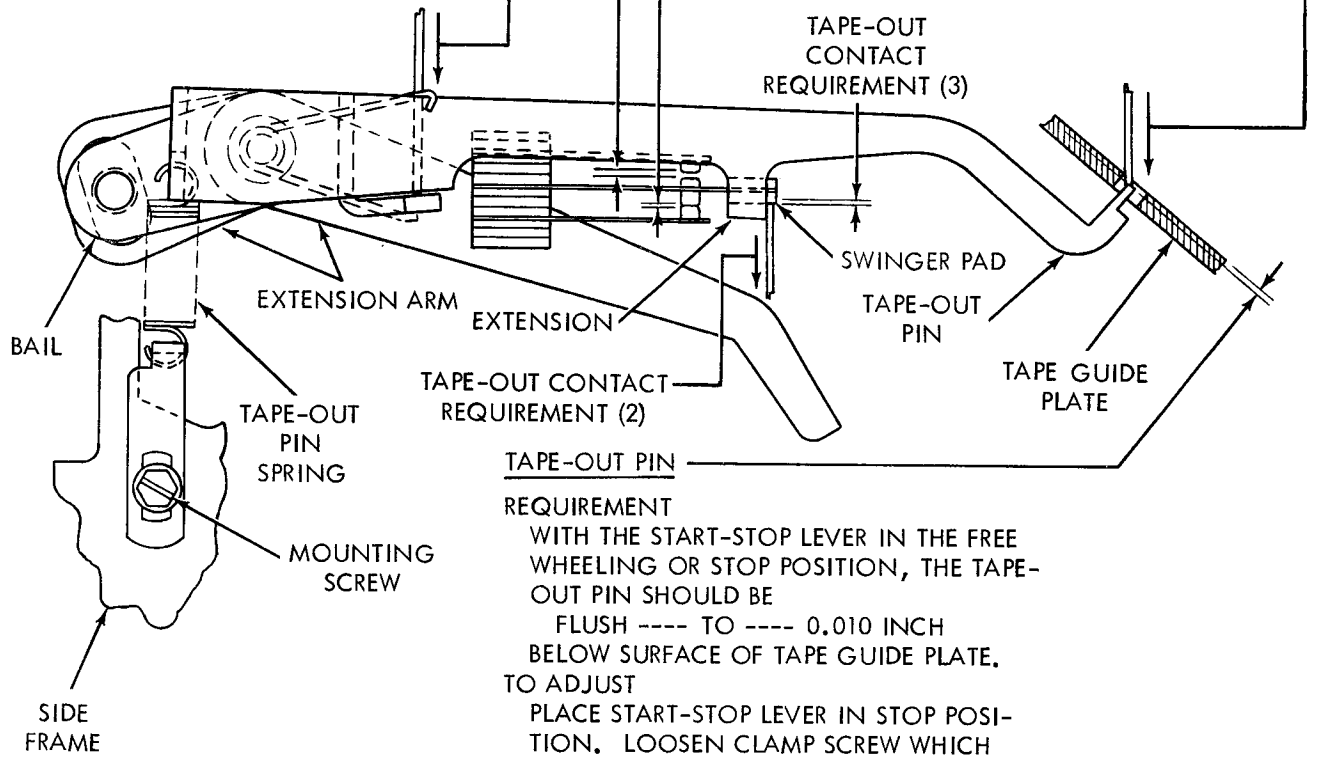
TO ADJUST

LOOSEN THE TAPE-OUT SPRING BRACKET MOUNTING SCREW AND ADJUST SPRING TENSION TO MEET REQUIREMENT.

TAPE-OUT BAIL TORSION SPRING

REQUIREMENT

MIN. 8 OZS. ---- MAX. 12 OZS. TO SEPARATE BAIL FROM TAPE-OUT PIN.



TAPE-OUT PIN

REQUIREMENT

WITH THE START-STOP LEVER IN THE FREE WHEELING OR STOP POSITION, THE TAPE-OUT PIN SHOULD BE

FLUSH ---- TO ---- 0.010 INCH BELOW SURFACE OF TAPE GUIDE PLATE.

TO ADJUST

PLACE START-STOP LEVER IN STOP POSITION. LOOSEN CLAMP SCREW WHICH SECURES EXTENSION ARM TO TAPE-OUT PIN.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS
VARIABLE FEATURES
D. Code Reading Contacts

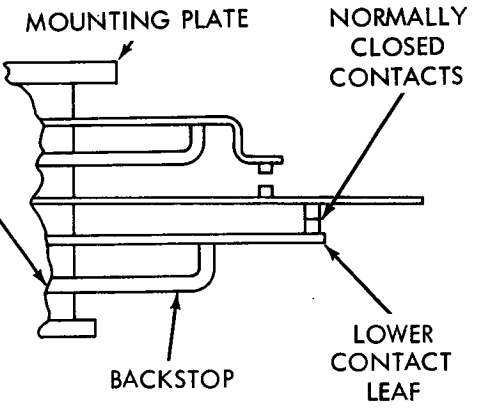
Initial Adjustments

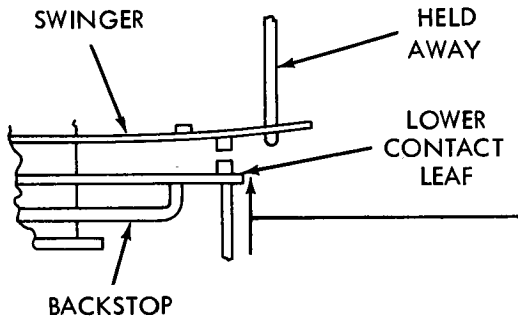
NOTE

INITIAL ADJUSTMENTS SHOULD BE MADE WITH THE CODE READING CONTACT ASSEMBLY REMOVED FROM THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR UNIT.

NORMALLY CLOSED CONTACTS - BACKSTOP

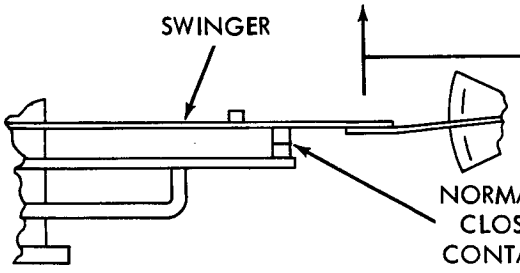
REQUIREMENT
THE LOWER CONTACT LEAVES FOR ALL LEVELS SHOULD BE PARALLEL TO THE MOUNTING PLATE AND IN LINE WITH ONE ANOTHER.
TO ADJUST
BEND BACKSTOP TO MEET REQUIREMENT.





NORMALLY CLOSED CONTACTS - SPRING TENSION

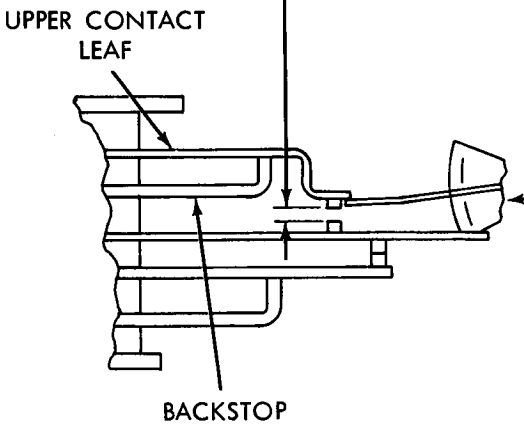
REQUIREMENT
(1) WITH SWINGER HELD AWAY
MIN. 2 OZS. ---- MAX. 6 OZS.
TO MOVE LOWER CONTACT LEAF AWAY FROM BACKSTOP.
TO ADJUST
BEND LOWER LEAF. IF IT IS NECESSARY TO BEND BACKSTOP TO OBTAIN REQUIRED TENSION, REPOSITION BACKSTOP TO MEET NORMALLY CLOSED CONTACTS - BACKSTOP REQUIREMENT.



(2) MIN. 30 GRAMS ---- MAX. 40 GRAMS
TO OPEN NORMALLY CLOSED CONTACTS.
TO ADJUST
BEND SWINGER.

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.



NORMALLY OPEN CONTACTS - SPRING TENSION

REQUIREMENT
MIN. 30 GRAMS ---- MAX. 40 GRAMS
TO MOVE NORMALLY OPEN CONTACT 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 - GAP REQUIREMENT.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

D. Code Reading Contacts

Secondary Adjustments

NOTE

THE SECONDARY ADJUSTMENTS SHOULD BE MADE WITH THE CODE READING CONTACT ASSEMBLY INSTALLED IN THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR, WITH THE CONTACT ASSEMBLY BRACKET APPROXIMATELY CENTERED IN ITS ADJUSTMENT RANGE (REMOVE THE CONTACT BOX TO FACILITATE ADJUSTMENT).

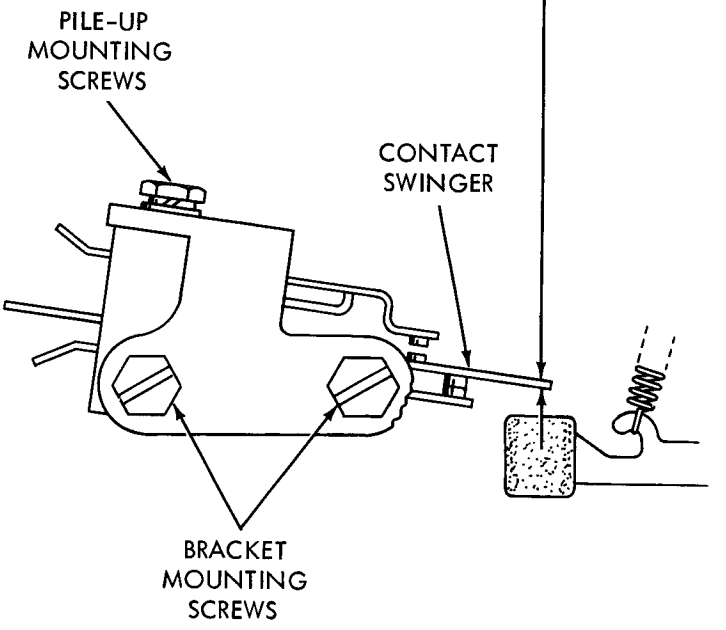
CONTACT ASSEMBLY POSITIONING

REQUIREMENT

THE SWINGER OF EACH CONTACT PILE-UP SHOULD BE ALIGNED WITH ITS ASSOCIATED SENSING ARM, AS GAGED BY EYE.

TO ADJUST

LOOSEN THE SCREWS WHICH MOUNT THE CONTACT ASSEMBLY TO THE CONTACT BRACKET, AND POSITION THE ASSEMBLY TO MEET REQUIREMENT.



CONTACT SWINGER, SENSING ARM CLEARANCE

REQUIREMENT

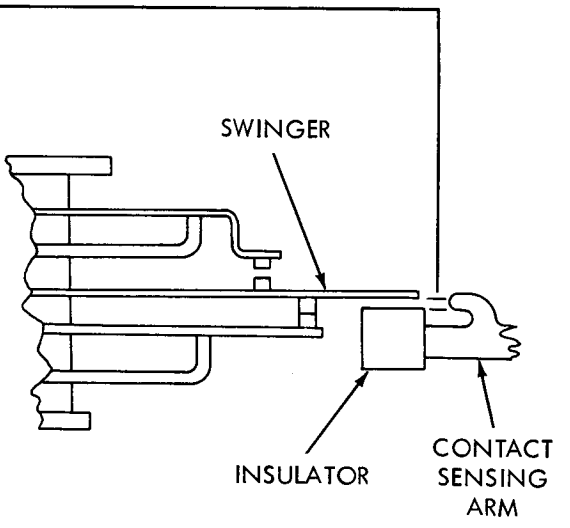
WITH THE BLANK COMBINATION SELECTED AND THE UP-STOP POST OUT OF THE WAY

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 AND POSITION THE BRACKET TO MEET REQUIREMENTS.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

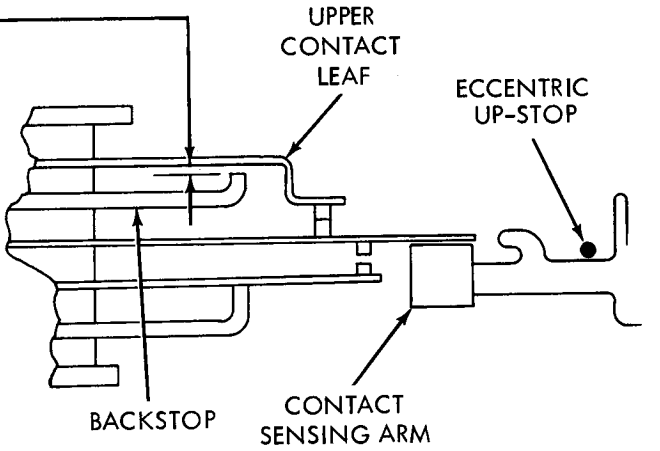
D. Code Reading Contacts

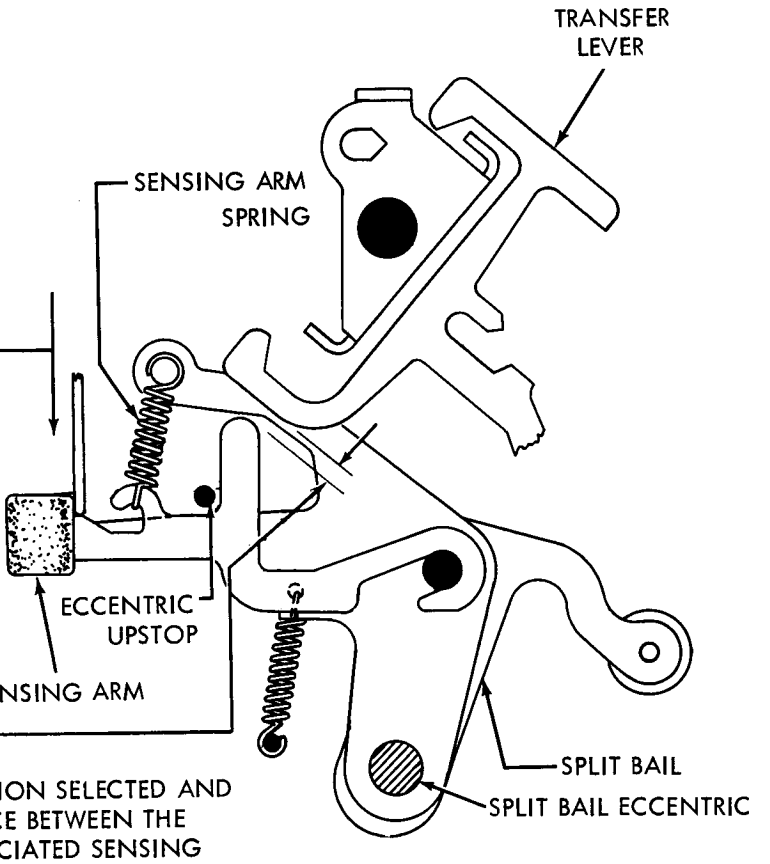
Secondary Adjustments (Continued)

CONTACT SENSING ARM, UP-STOP ADJUSTMENT

REQUIREMENT
WITH LETTERS COMBINATION SELECTED, CLUTCH ENGAGED, AND MAIN SHAFT ROTATED UNTIL THE SENSING ARMS ARE IN THEIR UPPERMOST POSITION, THERE SHALL BE
SOME ---- TO ---- 0.008 INCH
CLEARANCE BETWEEN THE UPPER CONTACT LEAF AND ITS BACKSTOP.

TO ADJUST
LOOSEN THE NUT THAT SECURES THE ECCENTRIC UP-STOP TO THE FRONT PLATE AND TURN THE ECCENTRIC UNTIL THE REQUIREMENT IS SATISFIED. THE HIGH PART OF THE ECCENTRIC SHOULD BE TOWARD LEFT.





SENSING ARM SPRING

REQUIREMENT
WITH CLUTCH DISENGAGED
MIN. 2-1/2 OZS.
MAX. 3-1/2 OZS.
TO START SENSING ARM MOVING.

NOTE
IF THE UNIT IS EQUIPPED WITH HORIZONTAL AND VERTICAL TABULATOR TIMING SET OF PARTS, REMOVE THE TIMING BAIL SPRING BEFORE CHECKING THE SENSING ARM SPRING.

SPLIT BAIL ECCENTRIC

(1) REQUIREMENT
WITH THE BLANK COMBINATION SELECTED AND CLUTCH TRIPPED. CLEARANCE BETWEEN THE TRANSFER LEVERS AND ASSOCIATED SENSING ARMS.
MIN. 0.020 INCH
MAX. 0.030 INCH

TO ADJUST
ROTATE THE SPLIT BAIL ECCENTRIC WITH ITS LOCK NUT LOOSENED.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

D. Code Reading Contacts

Final Adjustments (Strobing)

CONTACT SWINGER - SENSING ARM CLEARANCE

NOTE

WHEN STROBING THE CODE READING CONTACTS USE A DXD SCALE WHOSE UNIT CODE CORRESPONDS TO THAT OF THE UNIT BEING CHECKED. SEE OPERATING REQUIREMENTS TABLE. THE SIGNAL GENERATOR ON THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR SHALL 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. NORMAL SIGNAL LINE CURRENT OF 60 MA. ± 10 PER CENT, OR 20 MA. ±10 PER CENT SHALL BE USED TO STROBE THE CONTACTS. CURRENT APPLIED TO THESE CONTACTS IS D.C.

REQUIREMENT

(1) THE CONTACTS SHALL OPEN AND CLOSE WITHIN THE RANGE SPECIFIED ON THE OPERATING REQUIREMENTS TABLE.

(2) BREAKS IN THE PULSES SHALL BE CONFINED TO THE FIRST AND LAST 10 DIVISIONS OF THE TRACE.

TO ADJUST

LOOSEN CONTACT BRACKET MOUNTING SCREWS AND POSITION BRACKET TO MEET REQUIREMENTS.

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
8	11.00	PULSE 1	95	± 30	PULSE 8	60	± 30	5

NOTE

AFTER THE ADJUSTMENT HAS BEEN MADE, CHECK CLEARANCE BETWEEN THE CONTACT SWINGER AND THE INSULATOR ON THE CONTACT SENSING ARM WHEN A BLANK COMBINATION HAS BEEN SELECTED AND THE MAIN SHAFT HAS BEEN ROTATED TO PLACE THE SENSING ARMS IN THEIR MAXIMUM UPWARD TRAVEL. THERE SHALL BE SOME CLEARANCE.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

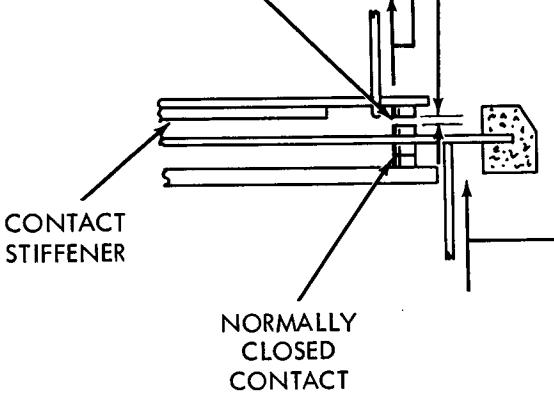
VARIABLE FEATURES

E. Auxiliary Contacts

Initial Adjustments

NOTE

THE INITIAL ADJUSTMENTS SHOULD BE MADE WITH THE AUXILIARY CONTACTS REMOVED FROM THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR UNIT.



NORMALLY OPEN CONTACTS

REQUIREMENT

(1) MIN. 5-1/2 OZS. ---- MAX. 6 OZS. TO MOVE NORMALLY OPEN CONTACT AWAY FROM STIFFENER.

TO ADJUST

BEND THE NORMALLY OPEN CONTACT LEAF TO MEET REQUIREMENT.

(2) MIN. 0.015 INCH ---- MAX. 0.020 INCH GAP BETWEEN NORMALLY OPEN CONTACTS.

TO ADJUST

BEND THE CONTACT STIFFENER TO MEET REQUIREMENT.

NORMALLY CLOSED CONTACT

REQUIREMENT

IT SHALL REQUIRE MIN. 4 OZS. ---- MAX. 5 OZS. TO OPEN THE NORMALLY CLOSED CONTACT.

TO ADJUST

BEND THE SWINGER CONTACT TO MEET REQUIREMENT

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

E. Auxiliary Contacts

Secondary Adjustments

NOTE

THE SECONDARY ADJUSTMENTS SHOULD BE MADE WITH THE AUXILIARY CONTACTS INSTALLED.

CONTACT SENSING ARM

REQUIREMENT

(1) WITH CLUTCH DISENGAGED AND LATCHED, CLEARANCE BETWEEN THE INSULATOR ON THE SWINGER AND THE BAIL
MIN. 0.040 INCH ---- MAX. 0.050 INCH

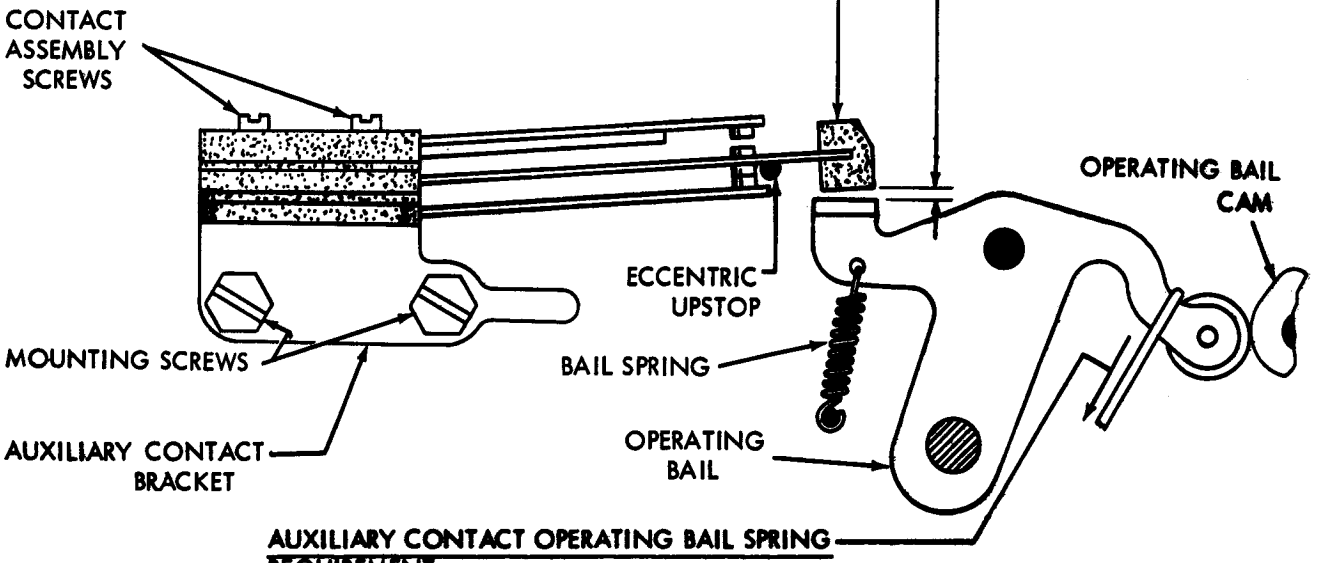
TO ADJUST

POSITION THE CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

(2) 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.



AUXILIARY CONTACT OPERATING BAIL SPRING

REQUIREMENT

CLUTCH DISENGAGED
MIN. 5 OZS.
MAX. 7 OZS.
TO MOVE FOLLOWER ROLLER AWAY FROM LOW PART OF ITS CAM.

NOTE

REMOVE TIMING BAIL SPRING BEFORE CHECKING THIS SPRING TENSION, IF THE UNIT IS EQUIPPED WITH HORIZONTAL AND VERTICAL TABULATOR TIMING SET OF PARTS.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

E. Auxiliary Contacts

Final Adjustments (Strobing)

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. (SEE OPERATING REQUIREMENTS TABLE.) THE SIGNAL GENERATOR OF THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR SHOULD 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. NORMAL SIGNAL LINE CURRENT OF 60 MA ±10% OR 20 MA ±10% SHALL BE USED TO STROBE THE CONTACTS. CURRENT APPLIED TO THESE CONTACTS IS D.C.

REQUIREMENT

THE CONTACTS SHALL OPEN AND CLOSE WITHIN THE RANGE SPECIFIED ON THE OPERATING REQUIREMENTS TABLE.

TO ADJUST

LOOSEN THE CONTACT BRACKET MOUNTING SCREWS AND POSITION THE CONTACTS TO MEET REQUIREMENTS.

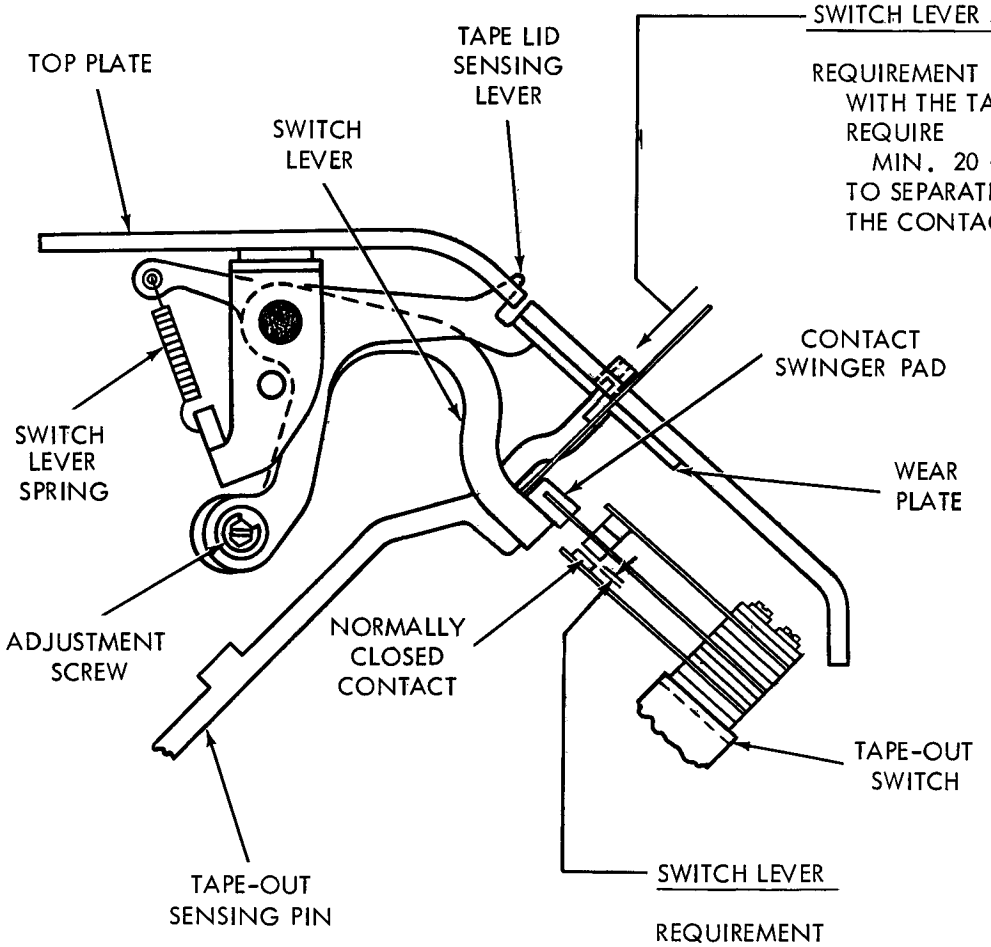
CONTACT OPERATING REQUIREMENTS TABLE

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
8	11.00	PULSE 2	60	± 25	PULSE 7	30	± 25

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

F. Tape Lid Sensing Lever



SWITCH LEVER SPRING

REQUIREMENT
WITH THE TAPE LID OPEN IT SHALL REQUIRE
MIN. 20 --- MAX. 35 GRAMS
TO SEPARATE THE SWITCH LEVER FROM THE CONTACT SWINGER PAD

SWITCH LEVER

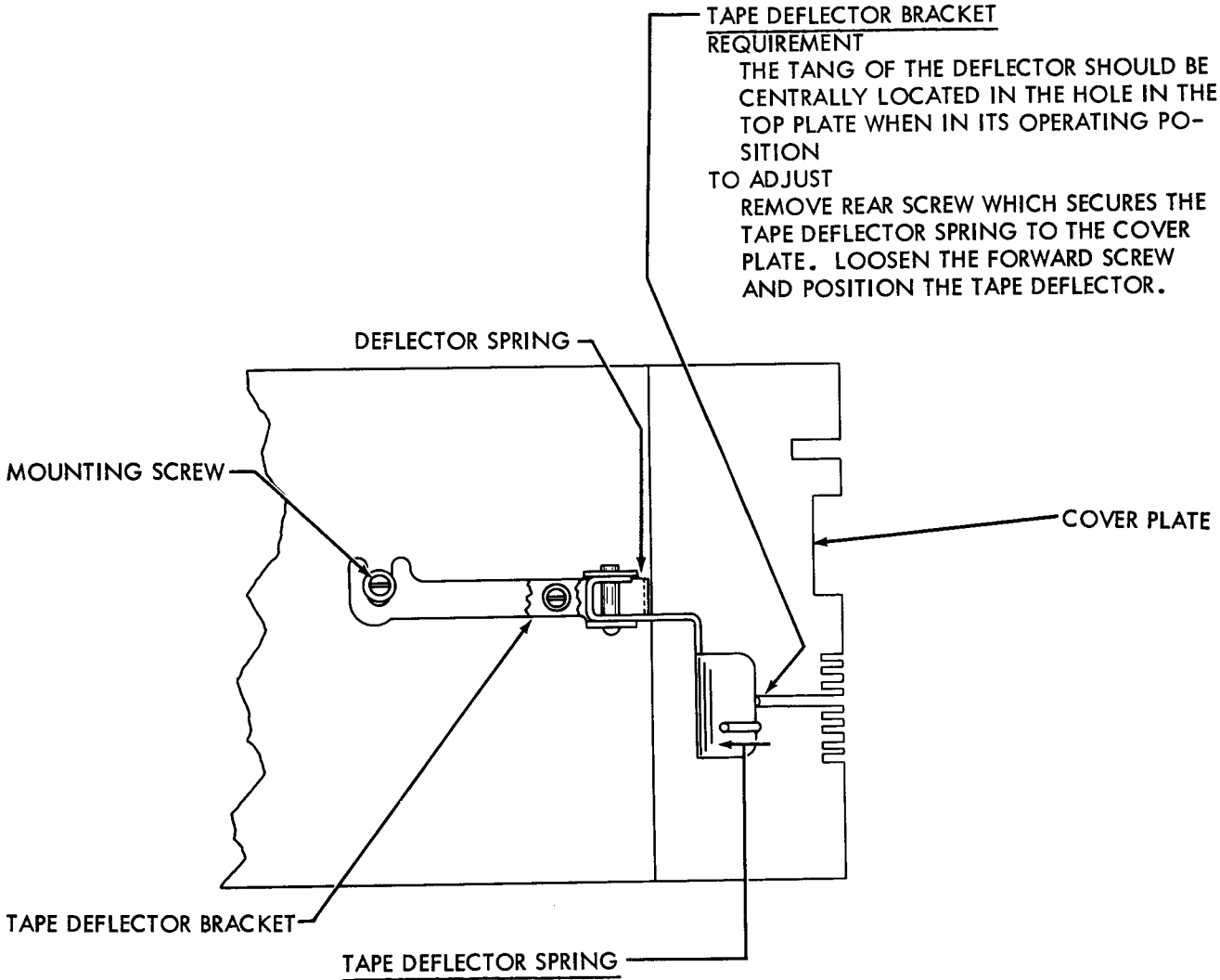
REQUIREMENT
WITH THE TAPE LID OPEN AND THE TAPE OUT SENSING PIN DEPRESSED, THERE SHOULD BE
MIN. 005 IN. --- MAX. 015 IN.
BETWEEN THE NORMALLY CLOSED TAPE OUT SWITCH CONTACTS

TO ADJUST
WITH THE ADJUSTMENT SCREW LOOSENED AND THE TAPE LID SENSING LEVER FIRMLY SEATED AGAINST THE WEAR PLATE, ROTATE THE SWITCH LEVER CLOCKWISE OR COUNTER-CLOCKWISE TO MEET REQUIREMENT.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

G. Tape Deflector

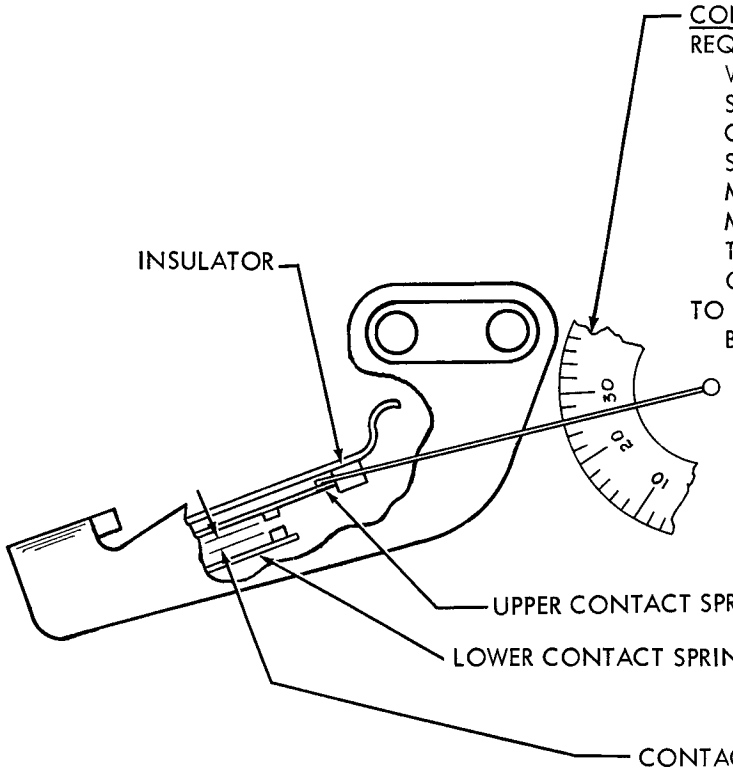


2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

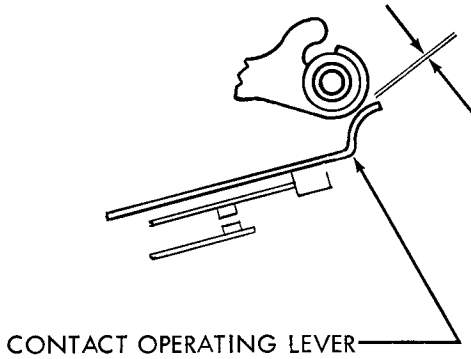
H. Start-Stop Pulse Contact

Initial Adjustments



CONTACT LEVER
REQUIREMENT
WITH CONTACT ASSEMBLY OFF UNIT, THERE SHOULD BE NO CLEARANCE BETWEEN THE CONTACT LEVER AND INSULATOR AND IT SHOULD REQUIRE
MIN. 20 GRAMS
MAX. 30 GRAMS
TO MOVE INSULATOR FROM CONTACT OPERATING LEVER.
TO ADJUST
BEND UPPER CONTACT SPRING

CONTACT GAP (BOTH START AND STOP CONTACTS)
REQUIREMENT
MIN. 0.012 INCH
MAX. 0.018 INCH
TO ADJUST
BEND LOWER CONTACT SPRING



CONTACT BRACKET
REQUIREMENT
WITH UNIT IN STOP POSITION AND CLUTCH LATCHED. CLEARANCE BETWEEN CONTACT OPERATING LEVER AND TRANSFER LEVER
MIN. 0.012 INCH
MAX. 0.018 INCH
TO ADJUST
POSITION CONTACT ASSEMBLY WITH ITS BRACKET MOUNTING SCREWS LOOSENED.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

H. Start-Stop Pulse Contact

Final Adjustment (Strobing)

CONTACT BRACKET

NOTE

WHEN STROBING THE AUXILIARY CONTACTS, USE A 7.42 UNIT DXD SCALE. THE SIGNAL GENERATOR OF THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR SHOULD 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. NORMAL SIGNAL LINE CURRENT OF 60 MA ± 10 % OR 20 MA ± 10 % SHALL BE USED TO STROBE THE CONTACTS. CURRENT APPLIED TO THESE CONTACTS IS D.C.

REQUIREMENT

THE CONTACTS SHALL 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

BREAKS ARE PERMITTED WITHIN 5 DIVISIONS OF THE BEGINNING OR END OF A TRACE

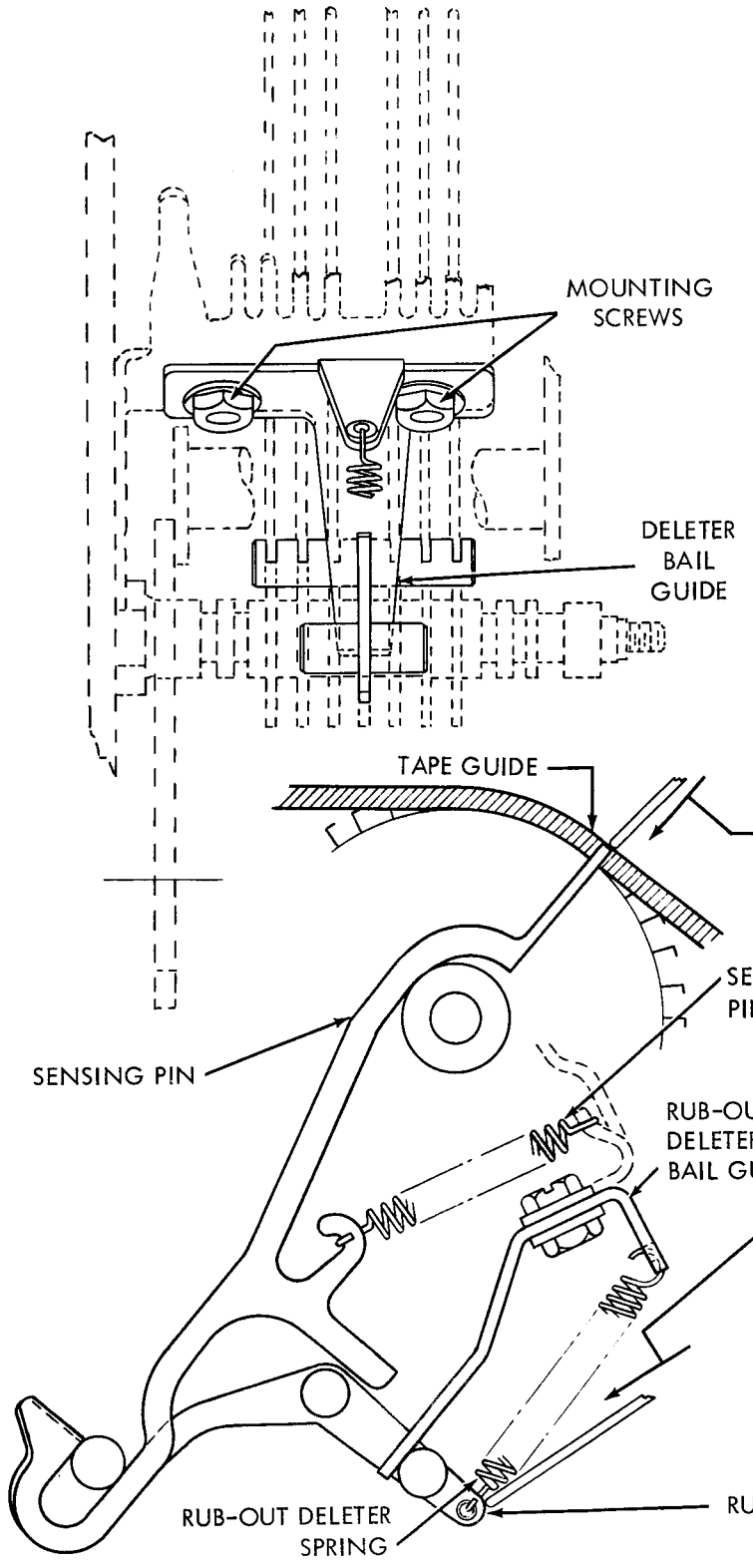
TO ADJUST

LOOSEN THE CONTACT BRACKET MOUNTING SCREWS AND POSITION THE CONTACT BRACKET TO MEET REQUIREMENTS.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

I. Rub-Out Deleter



RUB-OUT DELETER BAIL GUIDE

REQUIREMENT

WITH THE SENSING PINS IN THEIR UPPERMOST POSITION AND SENSING THE RUB-OUT PERMUTATION CODE, THE RUB-OUT DELETER BAIL SHOULD REST AGAINST THE LOWER PROJECTION OF THE SENSING PIN. THE DELETER BAIL SHOULD MOVE FREELY IN ITS GUIDE.

TO ADJUST

POSITION THE GUIDE WITH ITS MOUNTING SCREWS FRICTION TIGHT.

SENSING PIN SPRING

REQUIREMENT

SENSING PIN IN UPPERMOST POSITION, AND RUBOUT DELETER BAIL HELD AWAY FROM THE PIN.

MIN. 3 OZS.

MAX. 5 OZS.

TO MOVE PIN FLUSH WITH TAPE GUIDE.

RUB-OUT DELETER BAIL SPRING

REQUIREMENT

WITH THE SENSING PIN IN THEIR UPPERMOST POSITION

MIN. 1-1/2 OZS.

MAX. 3-1/2 OZS.

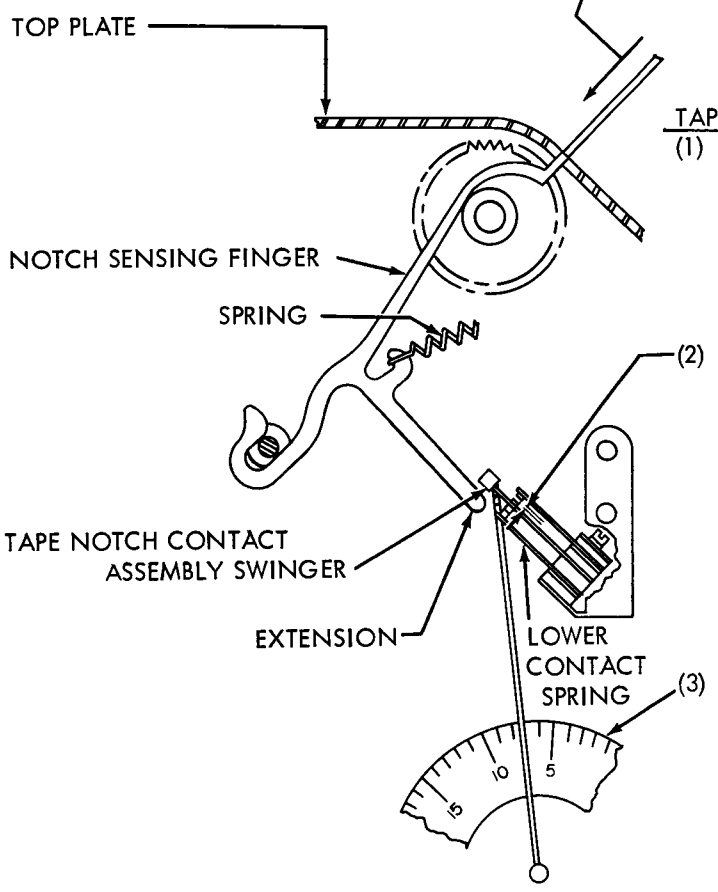
TO MOVE THE BAIL AWAY FROM THE SENSING PIN

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

J. Tape Notch Sensing Mechanism

Initial Adjustments



TAPE NOTCH SENSING FINGERS SPRING

REQUIREMENT
WITH THE SENSING FINGER IN ITS UPPERMOST POSITION
MIN. 1 OZ. ---- MAX. 3 OZS.
TO PUSH SENSING FINGER FLUSH WITH SURFACE OF TOP PLATE.

TAPE NOTCH SENSING CONTACT

(1) REQUIREMENT
THE INSULATOR ON THE SWINGER SHOULD BE CENTRALLY LOCATED WITH RESPECT TO THE EXTENSION ON THE SENSING FINGER.
TO ADJUST
POSITION THE CONTACT ASSEMBLY WITH ITS MOUNTING SCREWS LOOSENED.

(2) REQUIREMENT
WITH SENSING FINGER FLUSH WITH THE TOP PLATE, THERE SHOULD BE SOME CLEARANCE BETWEEN SENSING FINGER EXTENSION AND INSULATOR OF THE CONTACT SWINGER, AND THE CLEARANCE BETWEEN THE NORMALLY OPEN CONTACTS
MIN. 0.008 INCH
MAX. 0.015 INCH
TO ADJUST
BEND THE SWINGER

(3) REQUIREMENT
WITH SENSING FINGER EXTENSION HELD AWAY FROM THE SWINGER
MIN. 8 GRAMS
MAX. 15 GRAMS
TO JUST SEPARATE THE NORMALLY CLOSED CONTACTS.
TO ADJUST
BEND THE LOWER CONTACT SPRING.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

J. Tape Notch Sensing Mechanism

Final Adjustments (Strobing)

CONTACT BRACKET

NOTE

WHEN STROBING THE TAPE NOTCH SENSING CONTACTS USE A 7.42 UNIT DXD SCALE. THE SIGNAL GENERATOR OF THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR SHOULD 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. NORMAL SIGNAL LINE CURRENT OF 60 MA ± 10% OR 20 MA ± 10% SHALL BE USED TO STROBE THESE CONTACTS. CURRENT APPLIED TO THESE CONTACTS IS D.C.

REQUIREMENT

(FOR UNITS WITH TAPE SLACK ARM)

(1) THE CONTACT SHALL OPEN NO EARLIER THAN THE 15 MARK OF THE FIRST PULSE AND OPEN NO LATER THAN THE 55 MARK OF THE FIRST PULSE.
(2) THE CONTACT SHALL CLOSE NO EARLIER THAN THE 15 MARK OF THE FIFTH PULSE AND CLOSE NO LATER THAN THE 55 MARK OF THE FIFTH PULSE.
(3) 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.

(FOR UNITS WITHOUT TAPE SLACK ARM)

(1) THE CONTACT SHALL CLOSE NO EARLIER THAN THE 15 MARK OF THE FIRST PULSE AND CLOSE NO LATER THAN THE 55 MARK OF THE FIRST PULSE.
(2) THE CONTACT SHALL OPEN NO EARLIER THAN THE 15 MARK OF THE FIFTH PULSE AND OPEN NO LATER THAN THE 55 MARK OF THE FIFTH PULSE.
(3) 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

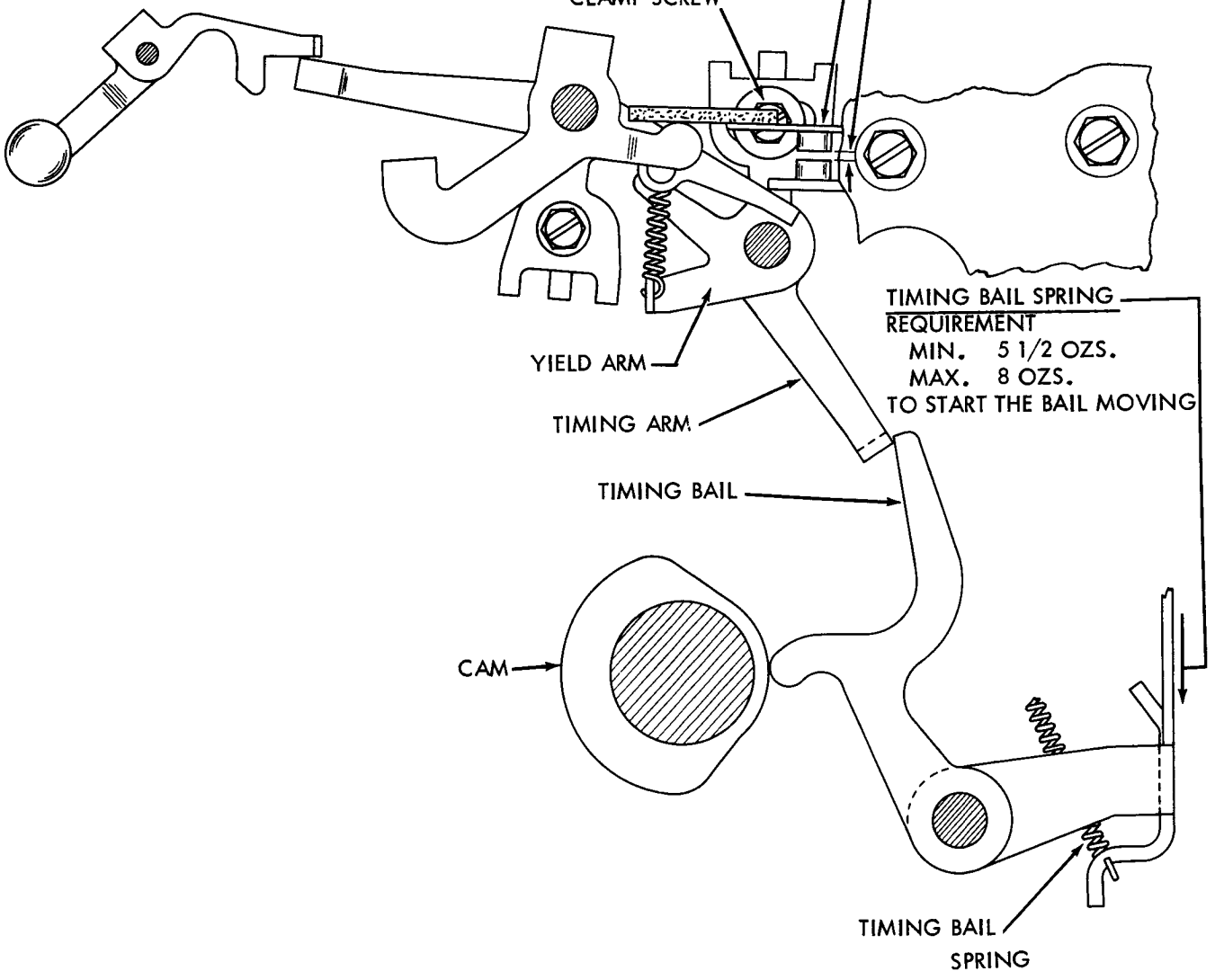
POSITION BRACKET WITH CONTACT MOUNTING SCREWS LOOSENED.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

K. Transmitter Stop Mechanism

START-STOP CONTACT GAP (FOR TABULATOR CONTROL)
REQUIREMENT
WITH THE TIMING BAIL ON THE LOW PART OF ITS CAM, THE START-STOP CONTACT GAP SHOULD BE
MIN. 0.008 INCH
MAX. 0.015 INCH
TO ADJUST
POSITION THE TIMING ARM ON THE YIELD ARM WITH ITS CLAMP SCREW FRICTION TIGHT.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

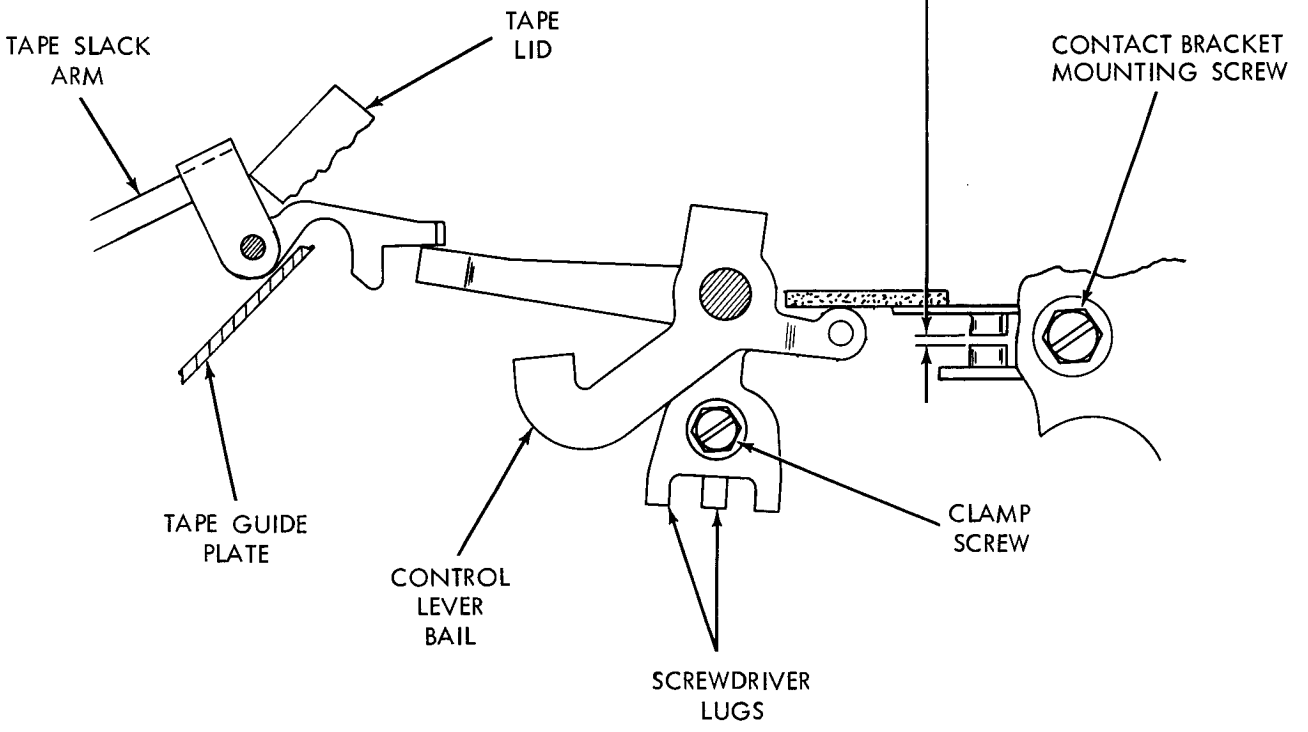
VARIABLE FEATURES

L. Tape Slack Arm

TAPE SLACK CONTACTS

REQUIREMENT
WITH TAPE LID CLOSED,
CONTROL LEVER IN RUN POSITION
MIN. 0.010 INCH ---- MAX. 0.020 INCH
CLEARANCE BETWEEN CONTACTS WHEN
TAPE SLACK ARM IS RAISED TO ITS
MAXIMUM HEIGHT.

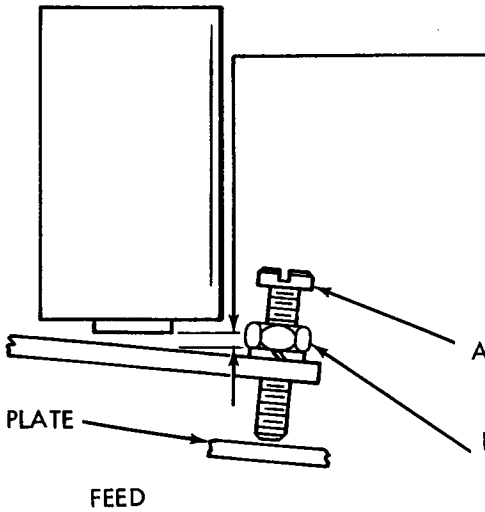
TO ADJUST
WITH CLAMP SCREW LOOSENED, SET
CONTACT GAP BY POSITIONING
SCREWDRIVER LUGS.



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES

M. Tape Withold Mechanism



MAGNET ARMATURE GAP

REQUIREMENT

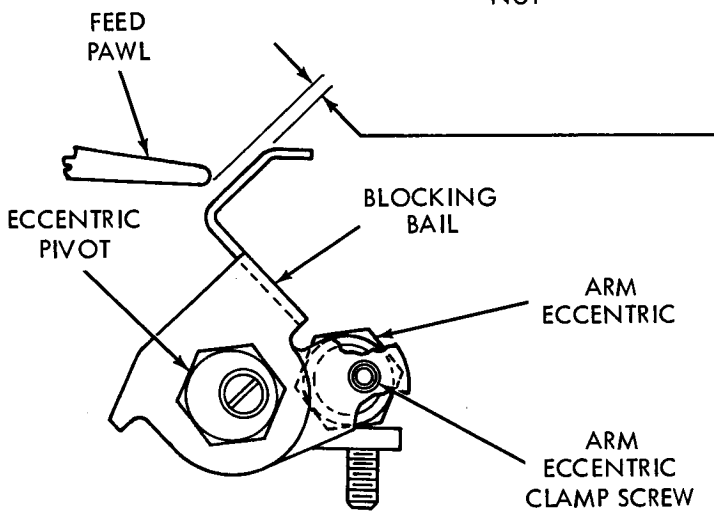
THE GAP BETWEEN THE MAGNET CORE AND THE ARMATURE, AT THE FRONT OF THE CORE SHALL BE

MIN. 0.015 INCH ---- MAX. 0.020 INCH

WITH ADJUSTING SCREW AGAINST PLATE

TO ADJUST

WITH THE ARMATURE ADJUSTING SCREW LOCK NUT FRICTION TIGHT, ROTATE ADJUSTING SCREW TO MEET REQUIREMENT.



BLOCKING BAIL ARM ECCENTRIC

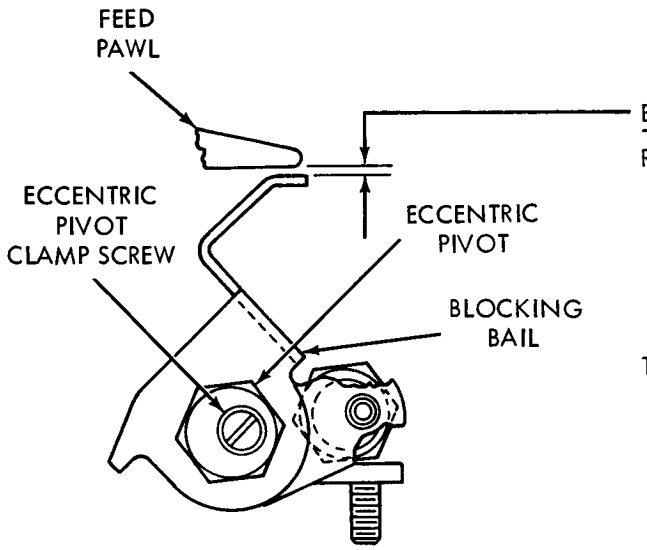
REQUIREMENT

WITH CLUTCH LATCHED, HIGH PART OF BLOCKING BAIL ARM ECCENTRIC TO THE LEFT, AND THE BLOCKING BAIL ECCENTRIC PIVOT TO THE RIGHT

MIN. 0.005 INCH ---- MAX. 0.015 INCH CLEARANCE BETWEEN THE EXTENSION ON THE BLOCKING BAIL AND THE TAIL OF THE FEED PAWL.

TO ADJUST

LOOSEN ARM ECCENTRIC CLAMP SCREW AND ROTATE ARM ECCENTRIC CLOCKWISE TO MEET REQUIREMENT.



BLOCKING BAIL ECCENTRIC PIVOT

REQUIREMENT

WITH MAIN SHAFT LOCKED IN STOP POSITION, CLUTCH TRIPPED, AND ARMATURE HELD AGAINST MAGNET POLE PIECE

MIN. 0.005 INCH ---- MAX. 0.015 INCH CLEARANCE BETWEEN BLOCKING BAIL EXTENSION AND FEED PAWL.

TO ADJUST

WITH THE ECCENTRIC PIVOT CLAMP SCREW FRICTION TIGHT, ROTATE THE ECCENTRIC PIVOT CLOCKWISE TO MEET REQUIREMENT. CHECK BLOCKING BAIL ARM ECCENTRIC ADJUSTMENT PRECEDING AND REFINE IF NECESSARY.

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

EARLY MODELS

TAPE LID (FOR TAPE LID ASSEMBLY WITHOUT TAPE LID SPRING)

REQUIREMENT----(REMOVE TOP AND TAPE GUIDE PLATES. LUBRICATE ASSEMBLY PRIOR TO ADJUSTMENT.)

(1) WITH TAPE HELD AGAINST NOTCH IN TAPE GUIDE PLATE:
- 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 SHOULDER AND TAPE LID BEARING,
  SOME ---- TO ---- 0.010 INCH

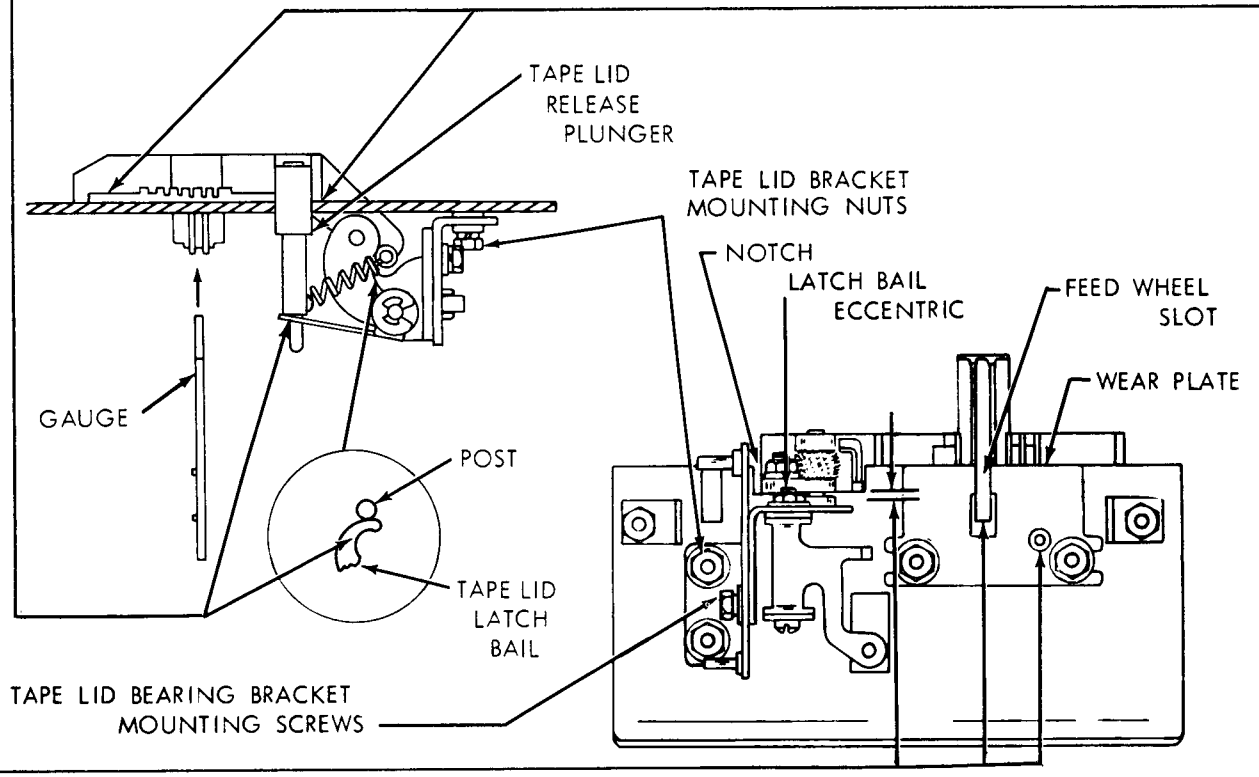
TO ADJUST
WITH TAPE LID BRACKET MOUNTING NUTS (2) FRICTION TIGHT (INSERT TIP OF NO. 156743 GAUGE THROUGH SLOT AND INTO GROOVE OF LID), POSITION TAPE LID BRACKET. RETIGHTEN NUTS.

(2) TAPE LID FRONT BEARING SURFACE SHOULD REST SQUARELY AGAINST TAPE GUIDE PLATE; REAR BEARING SURFACE MAY HAVE SOME CLEARANCE, BUT NOT MORE THAN
MAX. 0.003 INCH (GAUGE BY EYE)
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.

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

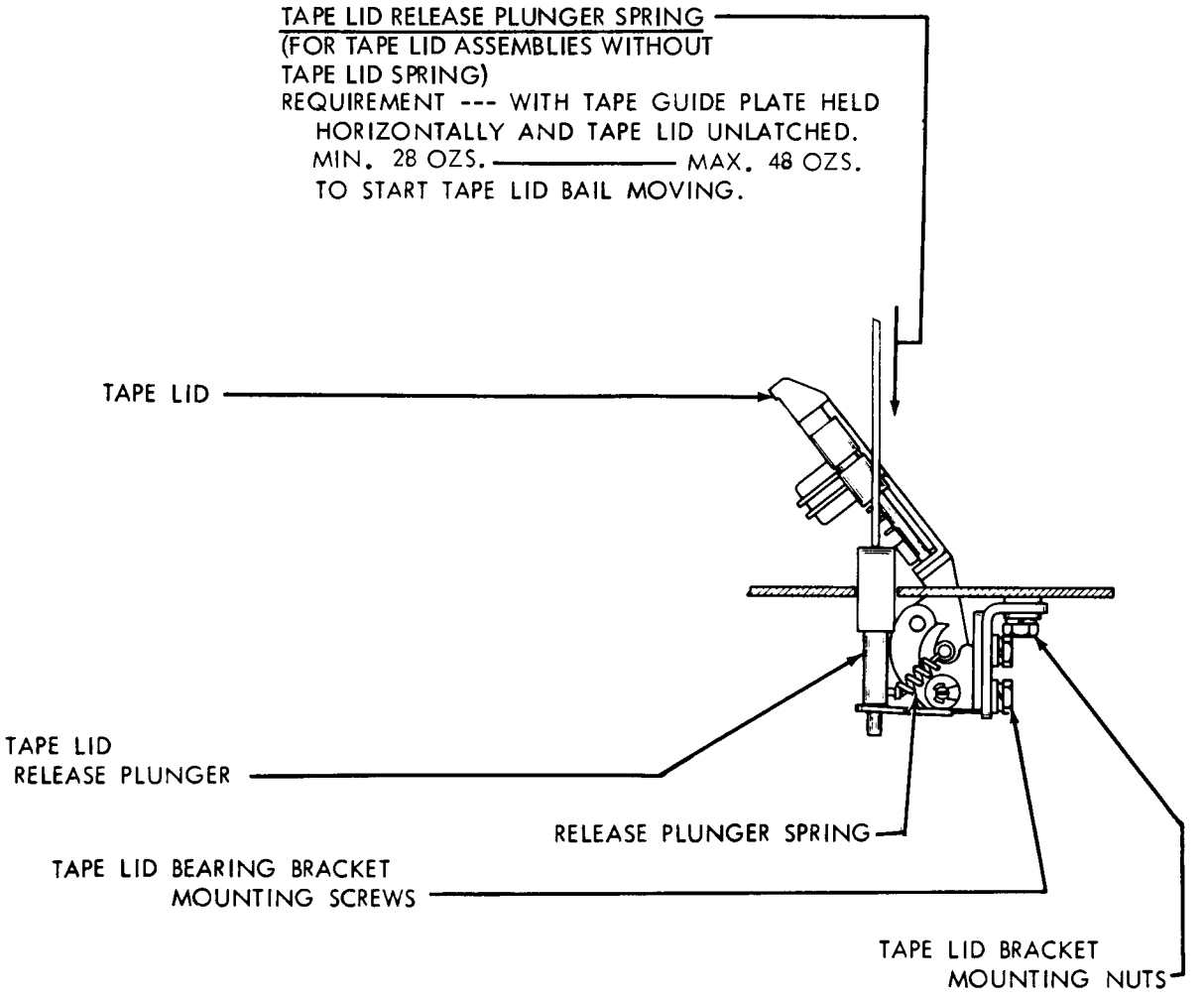
(3) RELEASE PLUNGER SHOULD HAVE SOME END PLAY WHEN LID IS LATCHED AGAINST TAPE GUIDE PLATE.

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



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

EARLY MODELS (Continued)



3. SINGLE UNIT BASES

BASIC UNITS

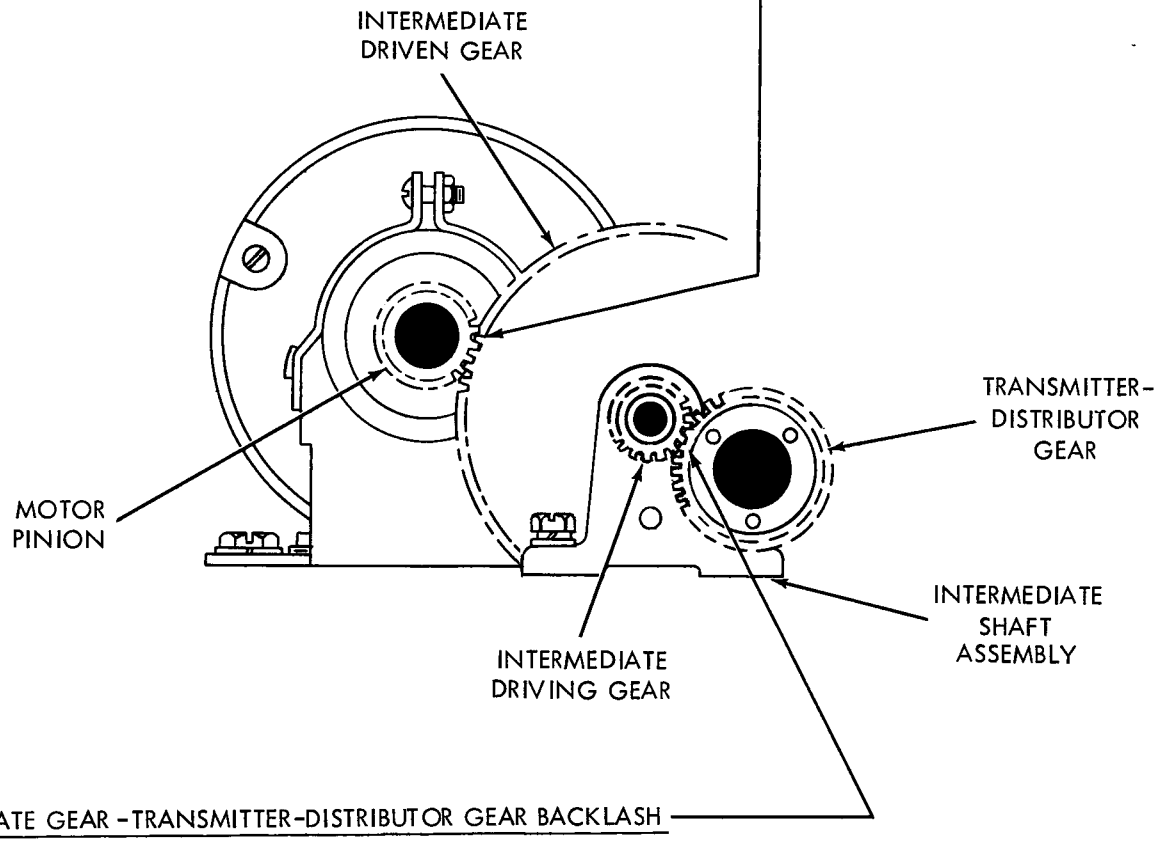
MOTOR PINION - INTERMEDIATE GEAR BACKLASH

REQUIREMENT

THERE SHOULD BE ONLY A PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE MOTOR PINION AND THE INTERMEDIATE DRIVEN GEAR.

TO ADJUST

LOOSEN THE TWO SCREWS WHICH SECURE THE INTERMEDIATE SHAFT ASSEMBLY TO THE FORWARD PLATE AND POSITION THE SHAFT ASSEMBLY TO OBTAIN THE REQUIRED BACKLASH.



INTERMEDIATE GEAR - TRANSMITTER-DISTRIBUTOR GEAR BACKLASH

REQUIREMENT

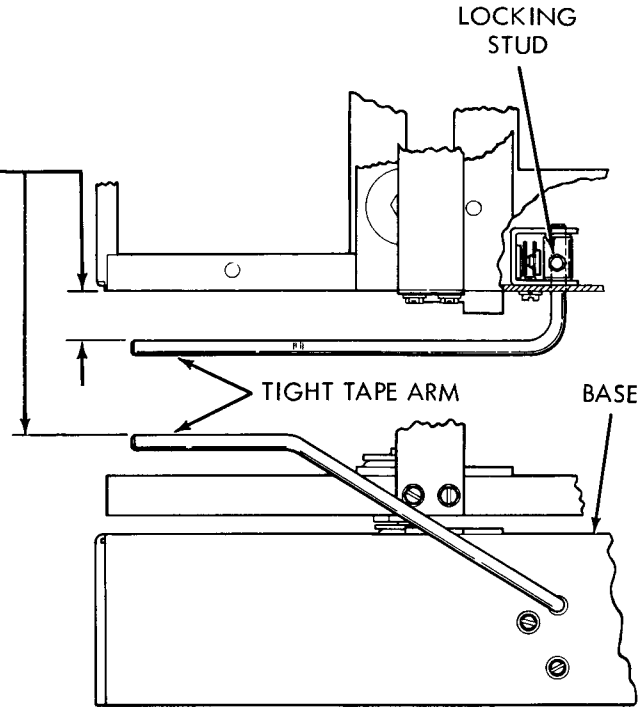
THERE SHOULD BE ONLY A PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE INTERMEDIATE DRIVING GEAR AND THE TRANSMITTER-DISTRIBUTOR GEAR.

TO ADJUST

LOOSEN THE THREE SCREWS WHICH SECURE THE TRANSMITTER-DISTRIBUTOR UNIT TO THE BASE. POSITION THE TRANSMITTER-DISTRIBUTOR UNIT TO OBTAIN THE REQUIRED BACKLASH.

3. SINGLE UNIT BASES

VARIABLE FEATURES



TIGHT TAPE CONTACT

REQUIREMENT

WHEN THE TIGHT TAPE CONTACTS ARE CLOSED, THE TIGHT TAPE ARM SHOULD BE PARALLEL TO THE BASE PLATE AND

MIN. 25/64 INCH ---- MAX. 27/64 INCH

FROM THE RIGHT SIDE OF THE BASE.

TO ADJUST

LOOSEN THE STUD WHICH HOLDS THE TIGHT TAPE ARM IN ITS COLLAR. POSITION THE ARM AND TIGHTEN THE STUD.

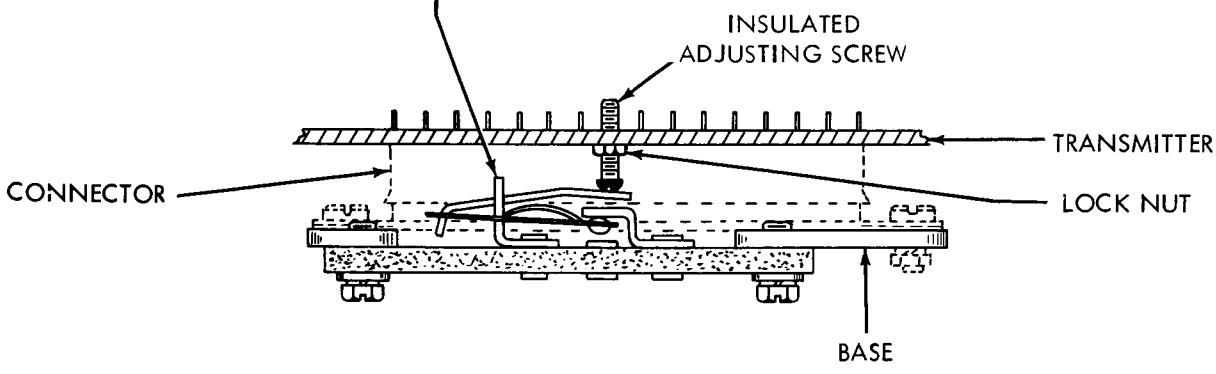
LINE SHUNTING SWITCH

REQUIREMENT

THE LINE SHUNTING SWITCH SHOULD OPEN WHEN A TRANSMITTER-DISTRIBUTOR IS PLACED IN POSITION ON THE BASE. THE CONTACTS SHOULD CLOSE BEFORE THE TRANSMITTER-DISTRIBUTOR CONNECTOR HAS COMPLETED MORE THAN ONE-HALF OF ITS DISCONNECT TRAVEL.

TO ADJUST

LOOSEN THE WHITE NYLON LOCKNUT WHICH SECURES THE INSULATED ADJUSTING SCREW AT THE BOTTOM OF THE TRANSMITTER-DISTRIBUTOR. ADJUST THE SCREW TO OPEN THE CONTACTS WHEN THE TRANSMITTER-DISTRIBUTOR IS CORRECTLY POSITIONED. TIGHTEN THE LOCKNUT.



4. MULTIPLE UNIT BASES (COMMON SPEED)

BELT TENSION

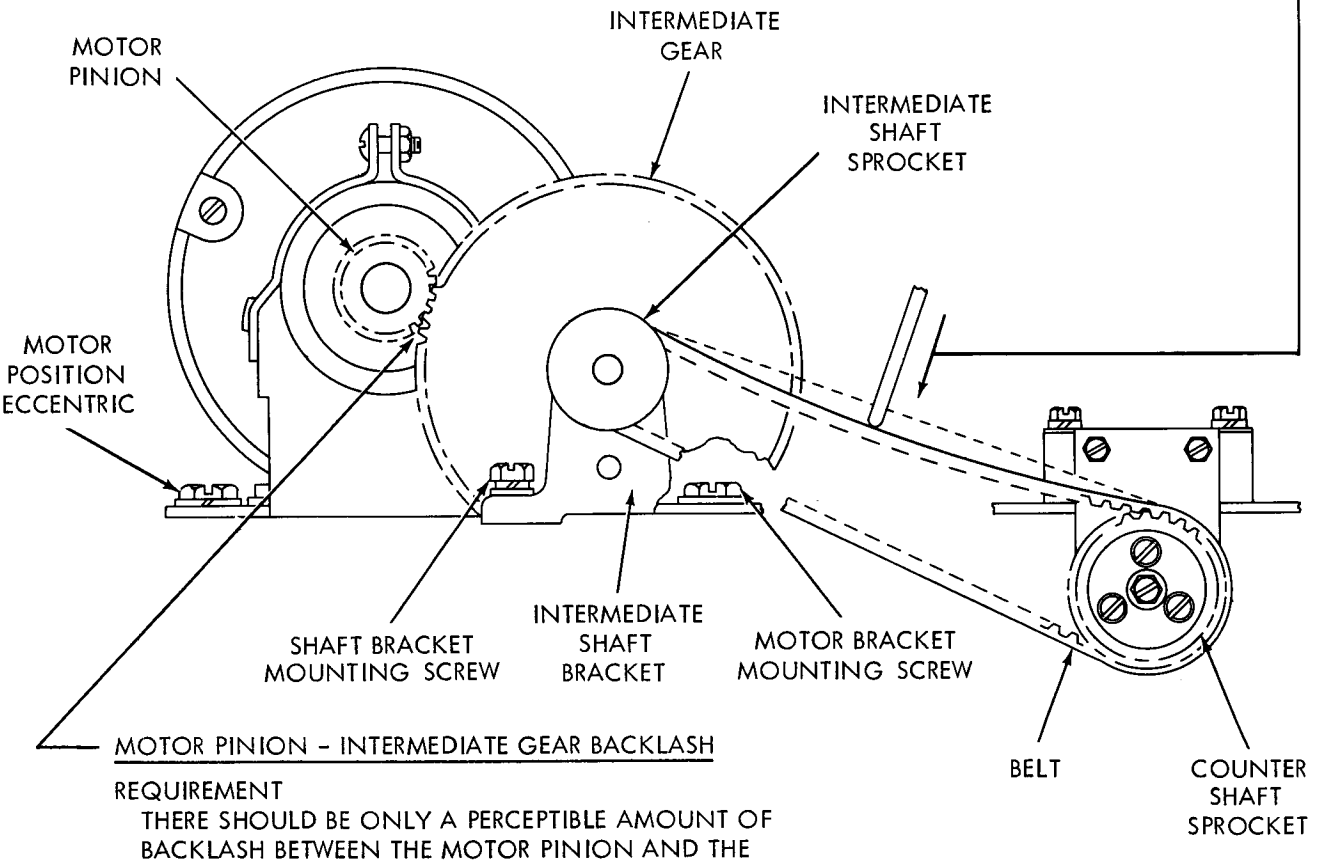
REQUIREMENT

PLACE A SPRING SCALE PERPENDICULAR TO THE BELT ABOUT MIDWAY BETWEEN THE TWO SPROCKETS, AND PUSH DOWN. A FORCE OF 5 OUNCES SHOULD DEFLECT THE BELT APPROXIMATELY 1/4 INCH FROM A STRAIGHTEDGE PLACED ACROSS THE TOP OF THE TWO SPROCKETS.

TO ADJUST

LOOSEN THE TWO SCREWS WHICH SECURE THE INTERMEDIATE SHAFT BRACKET. POSITION THE INTERMEDIATE SHAFT BRACKET TO MEET THE REQUIREMENT.

NOTE: IT MAY BE NECESSARY TO MOVE THE MOTOR TO THE REAR TO PERMIT ADJUSTMENT OF THE INTERMEDIATE SHAFT BRACKET. IF SO, LOOSEN THE FOUR MOTOR MOUNTING SCREWS AND THE ECCENTRIC LOCKING SCREW AT THE REAR MOTOR MOUNT. IT WILL BE NECESSARY TO REPOSITION THE MOTOR AS INDICATED IN THE ADJUSTMENT FOLLOWING.



MOTOR PINION - INTERMEDIATE GEAR BACKLASH

REQUIREMENT

THERE SHOULD BE ONLY A PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE MOTOR PINION AND THE INTERMEDIATE GEAR AT THEIR CLOSEST POINT.

TO ADJUST

LOOSEN THE FOUR MOTOR MOUNTING BRACKET SCREWS AND ECCENTRIC LOCKING SCREW AT THE REAR MOTOR MOUNTING BRACKET.

4. MULTIPLE UNIT BASES (COMMON SPEED) (Continued)

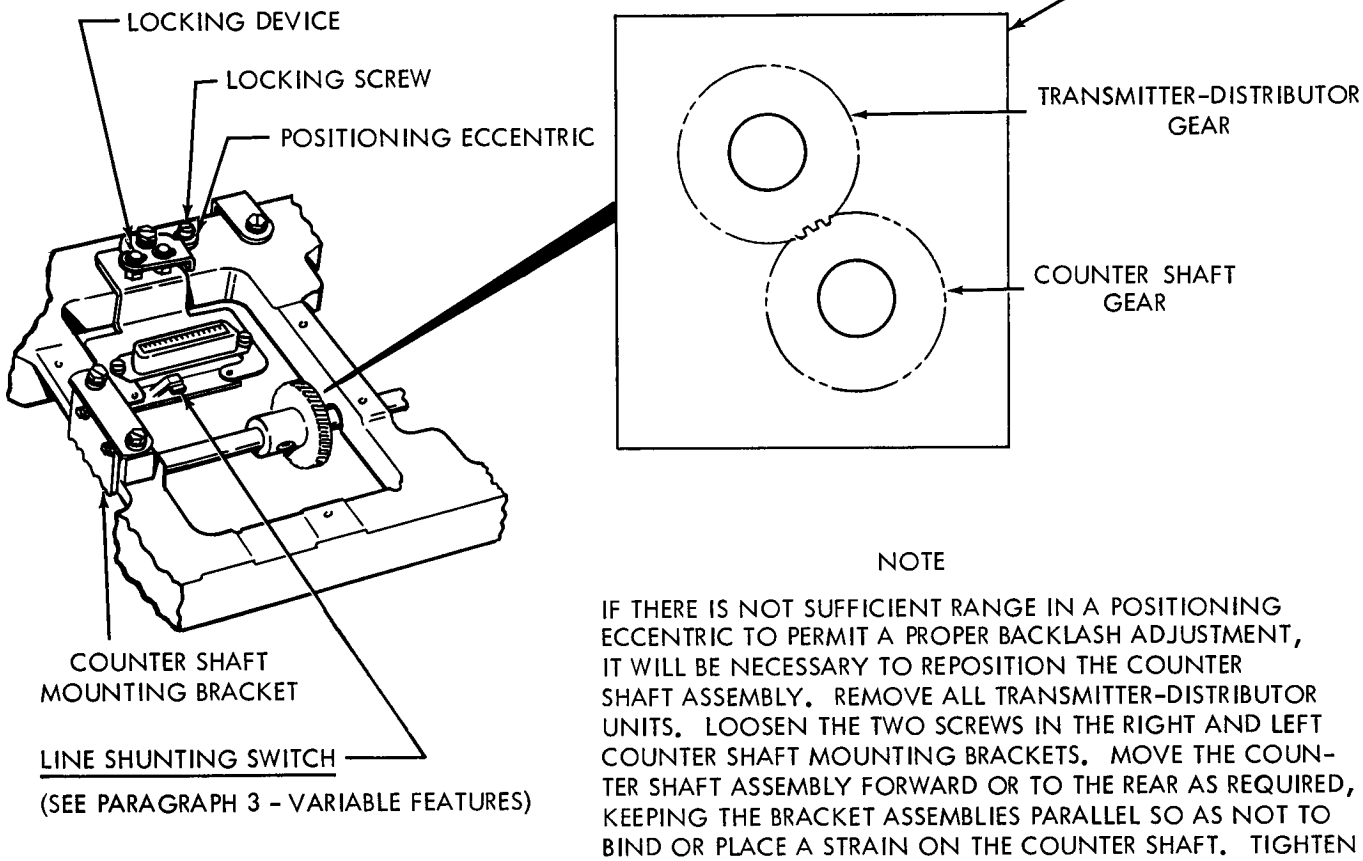
TRANSMITTER-DISTRIBUTOR POSITIONING

REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE BACKLASH BETWEEN THE TRANSMITTER-DISTRIBUTOR GEAR AND THE COUNTER SHAFT GEAR AT THE POINT OF MINIMUM CLEARANCE.

TO ADJUST

LOOSEN THE POSITIONING ECCENTRIC LOCKING SCREW AND POSITION THE LOCKING DEVICE TO THE LEFT. PLACE THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR SUCCESSIVELY IN EACH OF THE THREE MOUNTING POSITIONS AND ADJUST IN THE FOLLOWING MANNER. ENGAGE THE CONNECTOR ON THE TRANSMITTER-DISTRIBUTOR WITH ITS MATING CONNECTOR ON THE BASE, AND MESH THE TRANSMITTER-DISTRIBUTOR GEAR WITH THE COUNTER SHAFT GEAR. HOLD THE TRANSMITTER-DISTRIBUTOR AGAINST ITS POSITIONING ECCENTRIC AND ADJUST THE ECCENTRIC TO MEET THE REQUIREMENT. TIGHTEN THE ECCENTRIC LOCKING SCREW.

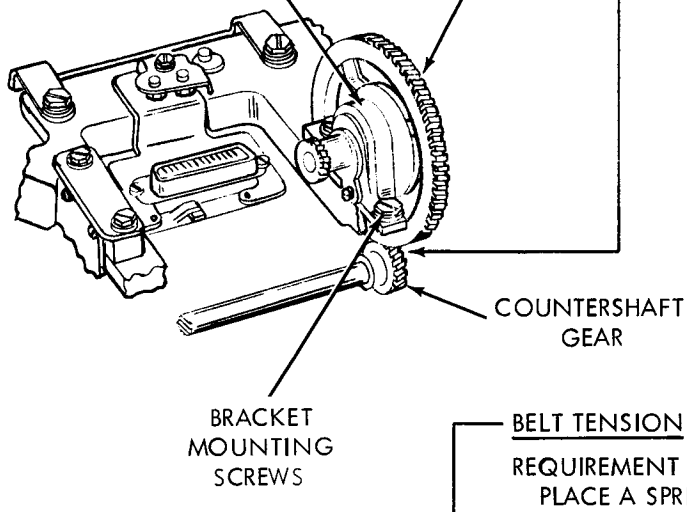


(SEE PARAGRAPH 3 - VARIABLE FEATURES)

NOTE

IF THERE IS NOT SUFFICIENT RANGE IN A POSITIONING ECCENTRIC TO PERMIT A PROPER BACKLASH ADJUSTMENT, IT WILL BE NECESSARY TO REPOSITION THE COUNTER SHAFT ASSEMBLY. REMOVE ALL TRANSMITTER-DISTRIBUTOR UNITS. LOOSEN THE TWO SCREWS IN THE RIGHT AND LEFT COUNTER SHAFT MOUNTING BRACKETS. MOVE THE COUNTER SHAFT ASSEMBLY FORWARD OR TO THE REAR AS REQUIRED, KEEPING THE BRACKET ASSEMBLIES PARALLEL SO AS NOT TO BIND OR PLACE A STRAIN ON THE COUNTER SHAFT. TIGHTEN THE BRACKET MOUNTING SCREWS. ALL PRIOR ADJUSTMENTS WILL HAVE TO BE REPEATED.

5. MULTIPLE UNIT BASES (VARIABLE SPEED)



INTERMEDIATE GEAR - COUNTER SHAFT GEAR BACKLASH

REQUIREMENT

THERE SHOULD BE ONLY A PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE INTERMEDIATE GEAR AND ITS ASSOCIATED COUNTER SHAFT GEAR AT THE POINT OF MINIMUM CLEARANCE.

TO ADJUST

LOOSEN THE TWO SCREWS HOLDING THE INTERMEDIATE SHAFT BRACKET AND POSITION THE BRACKET TO MEET THE REQUIREMENTS. TIGHTEN THE BRACKET MOUNTING SCREWS

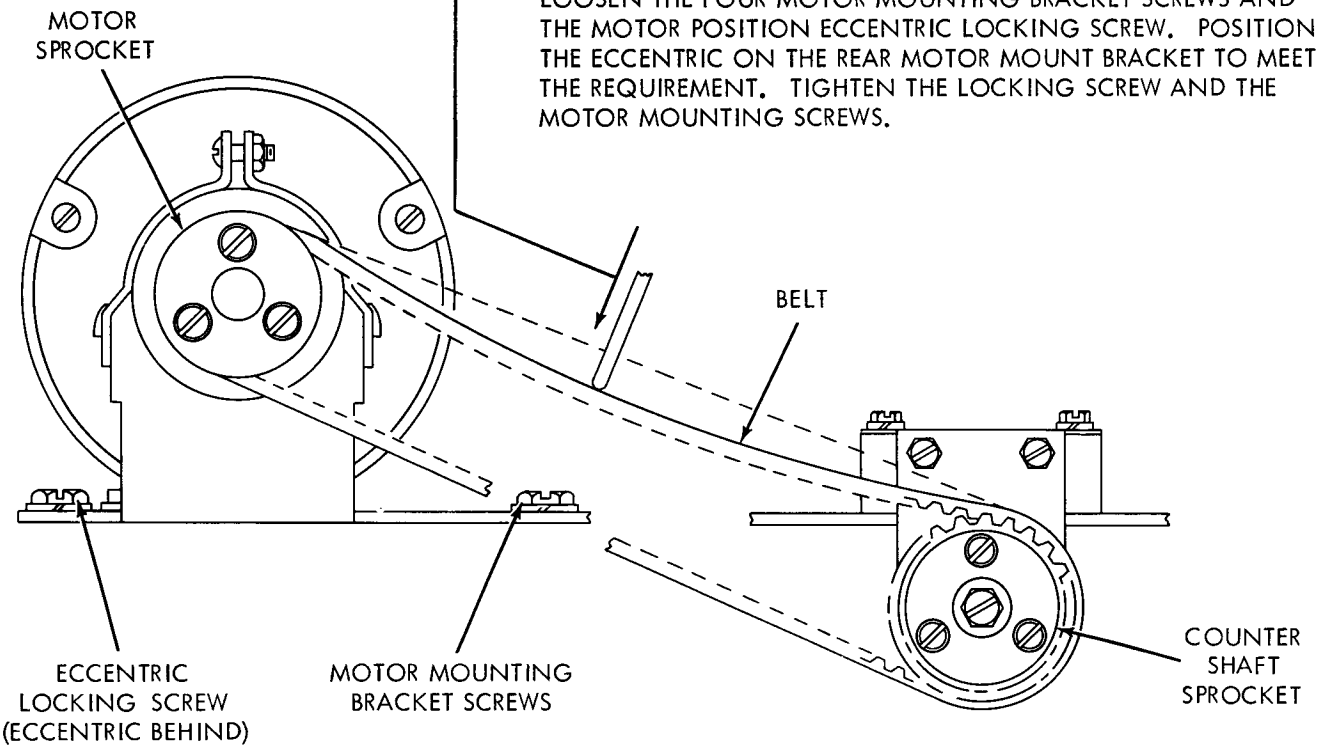
BELT TENSION

REQUIREMENT

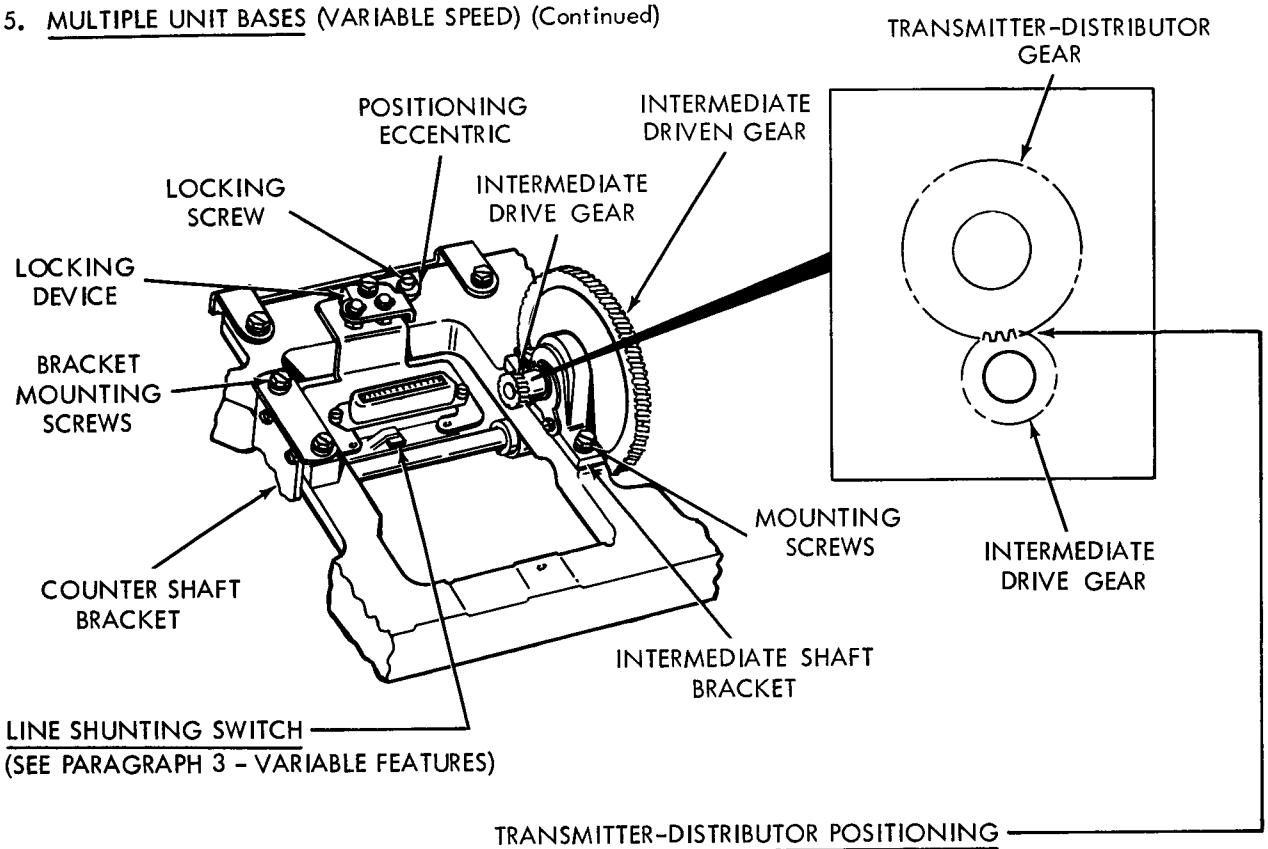
PLACE A SPRING SCALE PERPENDICULAR TO THE BELT ABOUT MIDWAY BETWEEN THE TWO SPROCKETS, AND PUSH DOWN WITH A FORCE OF 5 OUNCES. THE BELT SHOULD DEFLECT APPROXIMATELY 3/8 INCH FROM A STRAIGHTEDGE PLACED ACROSS THE TOP OF THE TWO SPROCKETS.

TO ADJUST

LOOSEN THE FOUR MOTOR MOUNTING BRACKET SCREWS AND THE MOTOR POSITION ECCENTRIC LOCKING SCREW. POSITION THE ECCENTRIC ON THE REAR MOTOR MOUNT BRACKET TO MEET THE REQUIREMENT. TIGHTEN THE LOCKING SCREW AND THE MOTOR MOUNTING SCREWS.



5. MULTIPLE UNIT BASES (VARIABLE SPEED) (Continued)



TRANSMITTER-DISTRIBUTOR POSITIONING

REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE BACKLASH BETWEEN THE TRANSMITTER-DISTRIBUTOR GEAR AND ITS ASSOCIATED INTERMEDIATE GEAR AT THE POINT OF MINIMUM CLEARANCE.

TO ADJUST

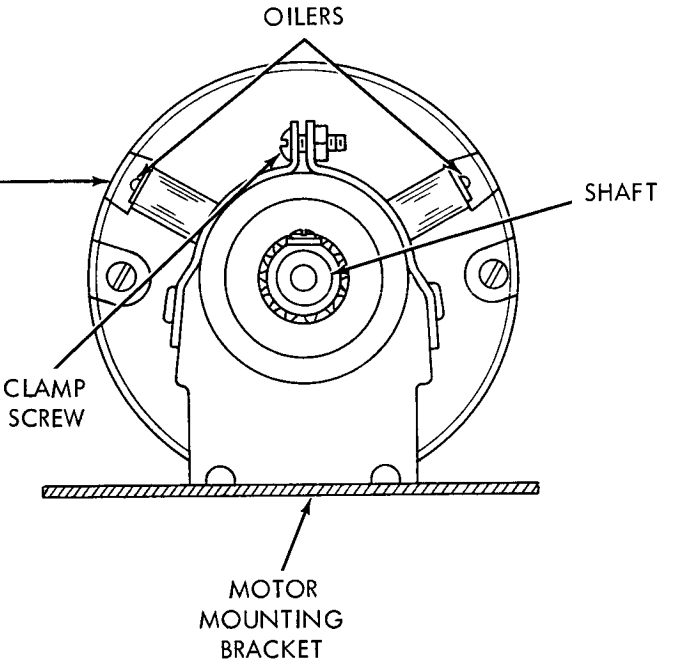
LOOSEN THE POSITIONING ECCENTRIC LOCKING SCREW AND POSITION THE LOCKING DEVICE TO THE LEFT. PLACE THE TRANSMITTER OR TRANSMITTER-DISTRIBUTOR SUCCESSIVELY IN EACH OF THE THREE MOUNTING POSITIONS AND ADJUST IN THE FOLLOWING MANNER. ENGAGE THE CONNECTOR ON THE TRANSMITTER-DISTRIBUTOR WITH ITS MATING CONNECTOR ON THE BASE, AND MESH THE TRANSMITTER-DISTRIBUTOR GEAR WITH THE INTERMEDIATE GEAR. HOLD THE TRANSMITTER-DISTRIBUTOR AGAINST ITS POSITIONING ECCENTRIC AND ADJUST THE ECCENTRIC TO MEET THE REQUIREMENT. TIGHTEN THE ECCENTRIC LOCKING SCREW.

NOTE

IF THERE IS NOT SUFFICIENT RANGE IN A POSITIONING ECCENTRIC TO PERMIT A PROPER BACKLASH ADJUSTMENT, IT WILL BE NECESSARY TO REPOSITION THE COUNTERSHAFT ASSEMBLY. REMOVE ALL TRANSMITTER-DISTRIBUTOR UNITS. LOOSEN THE TWO SCREWS IN THE RIGHT AND LEFT INTERMEDIATE SHAFT BRACKETS, AND THE TWO SCREWS IN EACH COUNTER SHAFT BRACKET. MOVE THE COUNTER SHAFT ASSEMBLY FORWARD OR TO THE REAR AS REQUIRED, KEEPING THE BRACKET ASSEMBLIES PARALLEL SO AS NOT TO BIND OR PLACE A STRAIN ON THE COUNTER SHAFT. TIGHTEN THE COUNTER SHAFT BRACKET MOUNTING SCREWS. THE ADJUSTMENTS PRECEDING WILL NOW HAVE TO BE PERFORMED.

6. SYNCHRONOUS MOTORS

STANDARD SIZE



OILER POSITION

REQUIREMENT

OILER SHOULD ANGLE UPWARD WHEN THE MOTOR UNIT IS IN ITS NORMAL OPERATING POSITION. WHENEVER POSSIBLE, THE OILERS SHOULD BE EQUIDISTANT FROM A VERTICAL CENTERLINE PASSING THROUGH THE SHAFT.

TO ADJUST

LOOSEN MOTOR CLAMP SCREWS AND ORIENT THE MOTOR TO MEET THE REQUIREMENT.

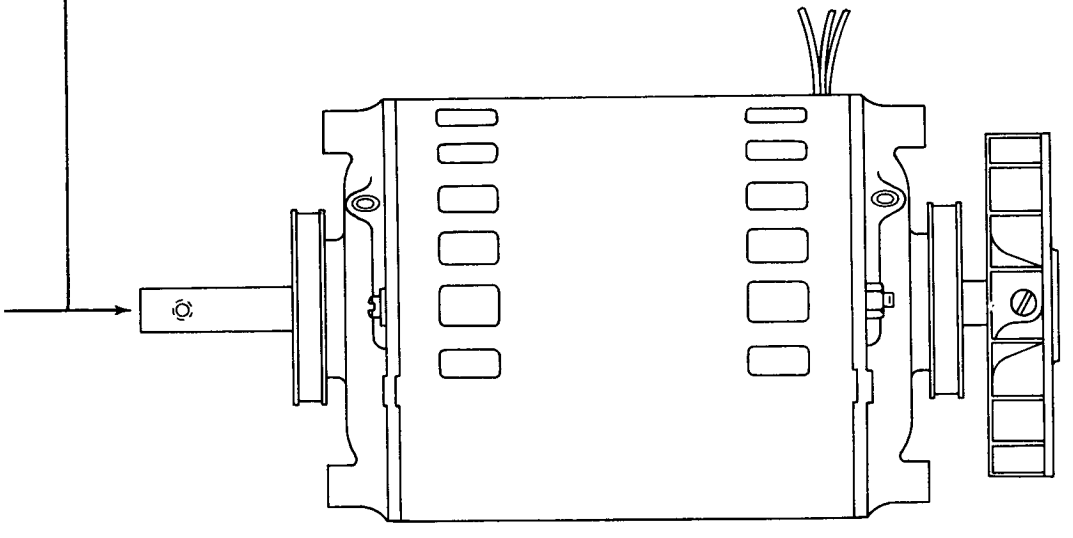
THRUST SPRING COMPRESSION

REQUIREMENT

A MINIMUM OF 7 LBS APPLIED TO THE SHAFT SHOULD BE REQUIRED TO START THE SHAFT MOVING.

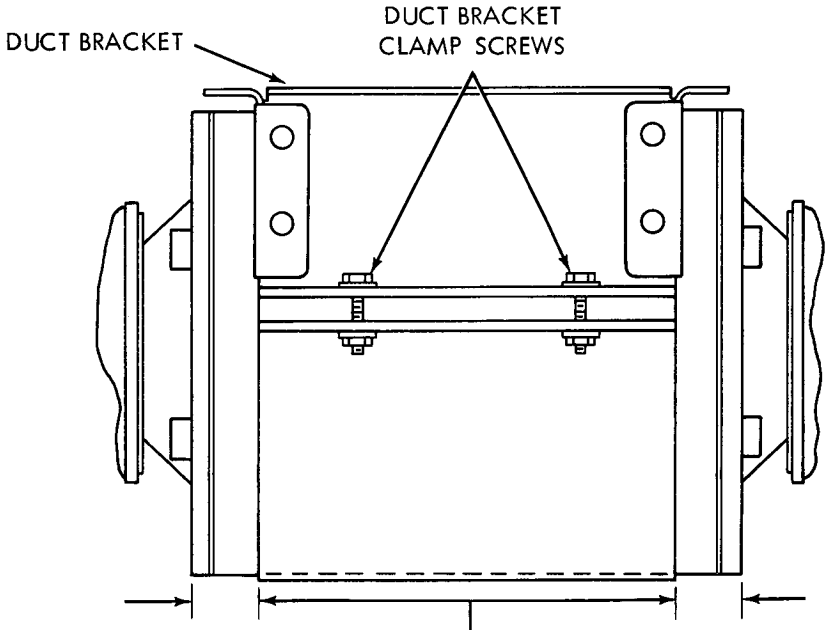
NOTE

THE THRUST SPRING IS LOCATED AT THE END OF THE MOTOR HAVING THE SHORTER SHAFT EXTENSION.



6. SYNCHRONOUS MOTORS

MINIATURIZED



BRACKET, DUCT

REQUIREMENT

(1) THE MOTOR LEADS SHOULD BE CENTERED IN THE DUCT BRACKET CUTOUT, AND THERE SHOULD BE EQUAL CLEARANCE BETWEEN EITHER EDGE OF THE DUCT BRACKET AND THE ENDS OF THE MOTOR.

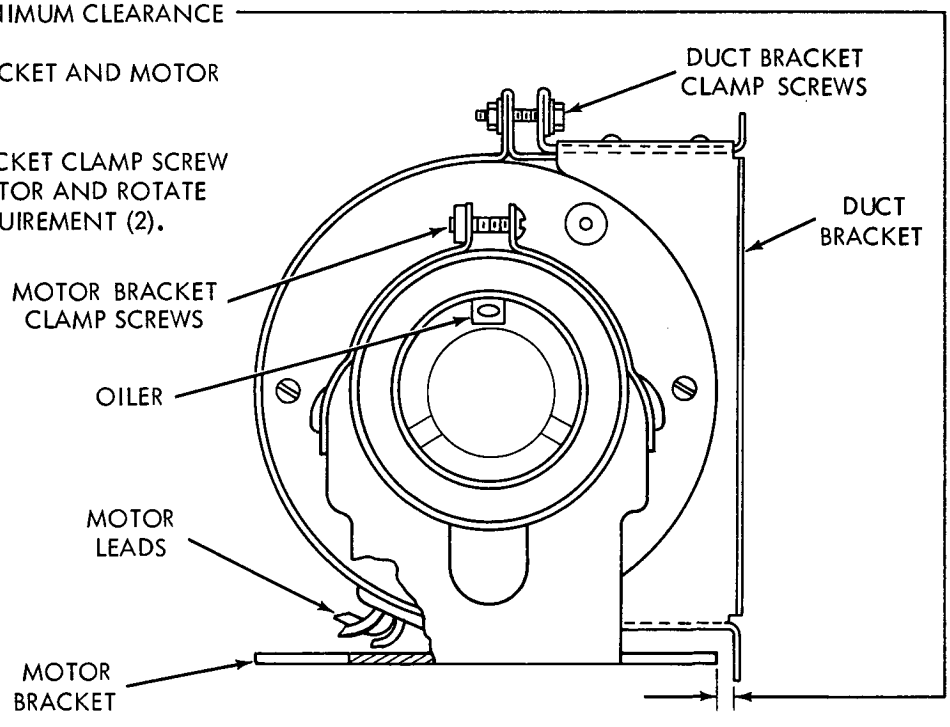
TO ADJUST

LOOSEN THE TWO DUCT BRACKET CLAMP SCREWS AND POSITION BRACKET TO MEET REQUIREMENT (1).

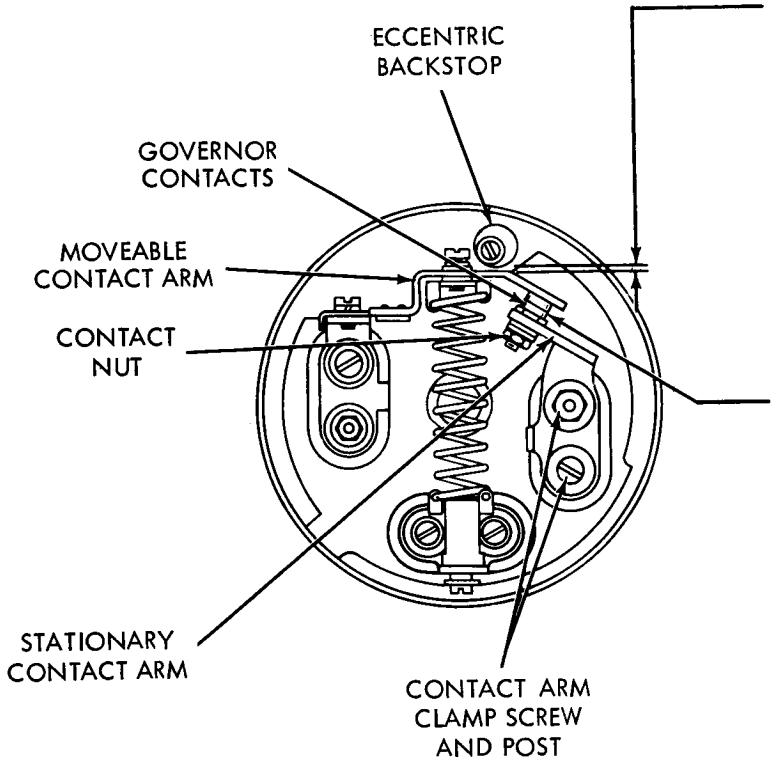
(2) THERE SHOULD BE A MINIMUM CLEARANCE OF 0.062 INCH BETWEEN THE DUCT BRACKET AND MOTOR MOUNTING BRACKET.

TO ADJUST

LOOSEN THE MOTOR BRACKET CLAMP SCREW AT EACH END OF THE MOTOR AND ROTATE THE MOTOR TO MEET REQUIREMENT (2).



7. GOVERNED MOTORS (Continued)

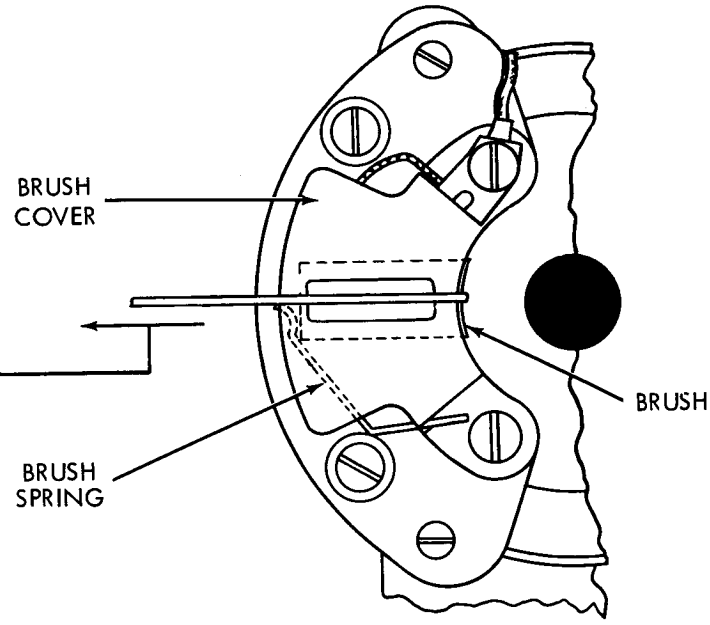


GOVERNOR CONTACT BACKSTOP

REQUIREMENT
THERE SHOULD BE AN
0.020 INCH ---- TO ---- 0.040 INCH
CLEARANCE BETWEEN THE MOVEABLE CONTACT ARM AND ITS ECCENTRIC BACKSTOP
TO ADJUST
LOOSEN THE CLAMPING SCREW HOLDING THE ECCENTRIC GOVERNOR CONTACT BACKSTOP. ADJUST BACKSTOP TO MEET REQUIREMENT.

GOVERNOR CONTACT

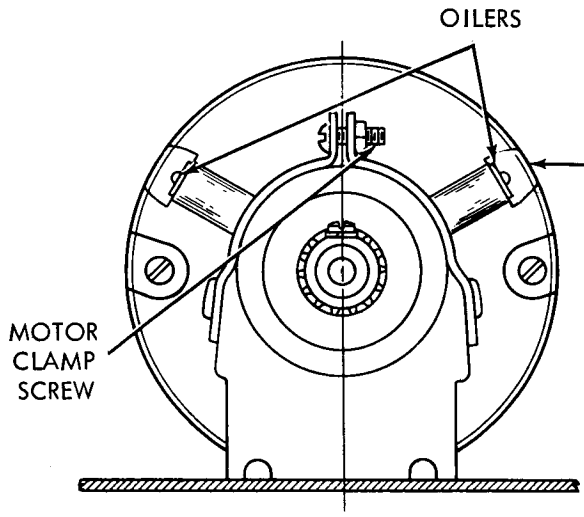
REQUIREMENT
THE CONTACTS SHOULD MEET SQUARELY AND NOT OVERLAP MORE THAN
0.010 INCH.
TO ADJUST
LOOSEN THE CONTACT ARM CLAMP SCREW AND POST AND POSITION THE STATIONARY CONTACT.



GOVERNOR BRUSH SPRING TENSION

REQUIREMENT
REMOVE THE GOVERNOR FAN AND APPLY AN 8 OUNCE SCALE AS SHOWN.
IT SHOULD REQUIRE
4 OZS ---- TO ---- 6 OZS
TO PULL THE INNER END OF THE BRUSH FLUSH WITH THE BRUSH COVER.

7. GOVERNED MOTORS



MOTOR POSITION

REQUIREMENT

THE MOTOR SHOULD BE CENTRALLY POSITIONED ON THE MOUNTING BRACKET SO THAT IT MAY BE ROTATED AN EQUAL DISTANCE CLOCKWISE OR COUNTERCLOCKWISE. THIS REQUIREMENT FIXES THE OILERS IN THEIR PROPER POSITION, ANGLING UPWARD.

NOTE

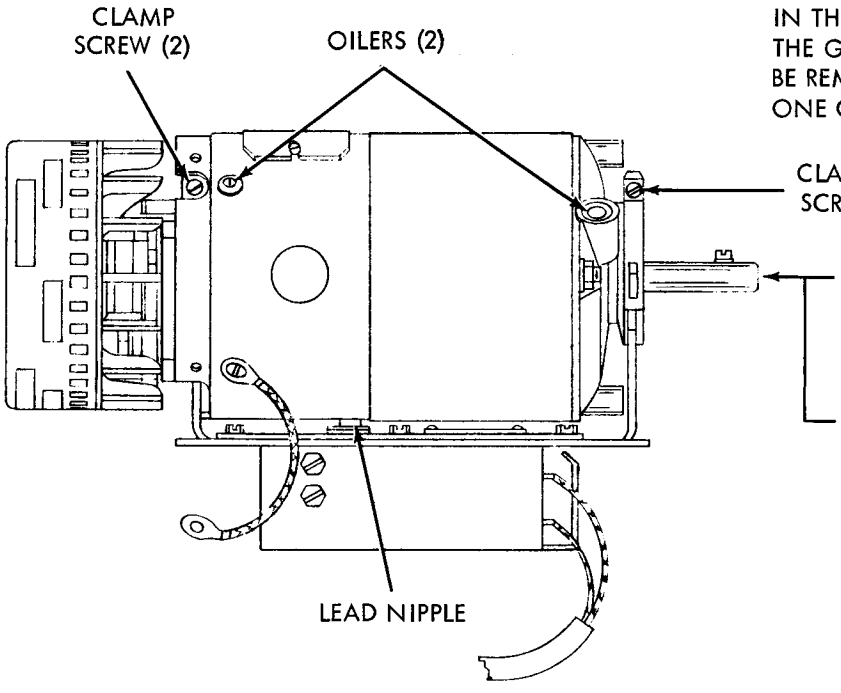
IN THE CASE OF FULLY SHIELDED MOTORS, THE MOTOR LEADS ARE ROUTED THROUGH A NIPPLE ASSEMBLY, VIA A HOLE IN THE SHIELD PLATE MOUNTED ON THE MOTOR BRACKET. WHEN THE MOTOR IS CORRECTLY POSITIONED, THE NIPPLE WILL PASS THROUGH THE CENTER OF THE HOLE.

TO ADJUST

LOOSEN THE CLAMP SCREWS AT EACH END OF THE MOTOR AND ORIENT THE MOTOR TO MEET THE REQUIREMENT.

NOTE

IN THE CASE OF SHIELDED MOTORS, THE GOVERNOR SHIELD COVER MUST BE REMOVED TO GAIN ACCESS TO ONE CLAMP SCREW.



THRUST SPRING COMPRESSION

REQUIREMENT

A MINIMUM FORCE OF 7 LBS APPLIED TO THE DRIVE SHAFT END SHALL BE REQUIRED TO START THE SHAFT MOVING.

NOTE

THE THRUST SPRING IS LOCATED INSIDE THE END SHIELD AT THE SAME END OF THE MOTOR AS THE GOVERNOR ASSEMBLY.

7. GOVERNED MOTORS (Continued)

MOTOR SPEED

REQUIREMENT

START THE MOTOR AND VIEW THE TARGET THROUGH THE VIBRATING SHUTTERS OF A 120 VPS TUNING FORK. THE FOUR SPOT (OUTSIDE) ROW ON THE TARGET SHOULD APPEAR STATIONARY. VIEWING THROUGH AN 87.5 VPS TUNING FORK THE 35 SPOT INSIDE ROW SHOULD APPEAR STATIONARY.

NOTE

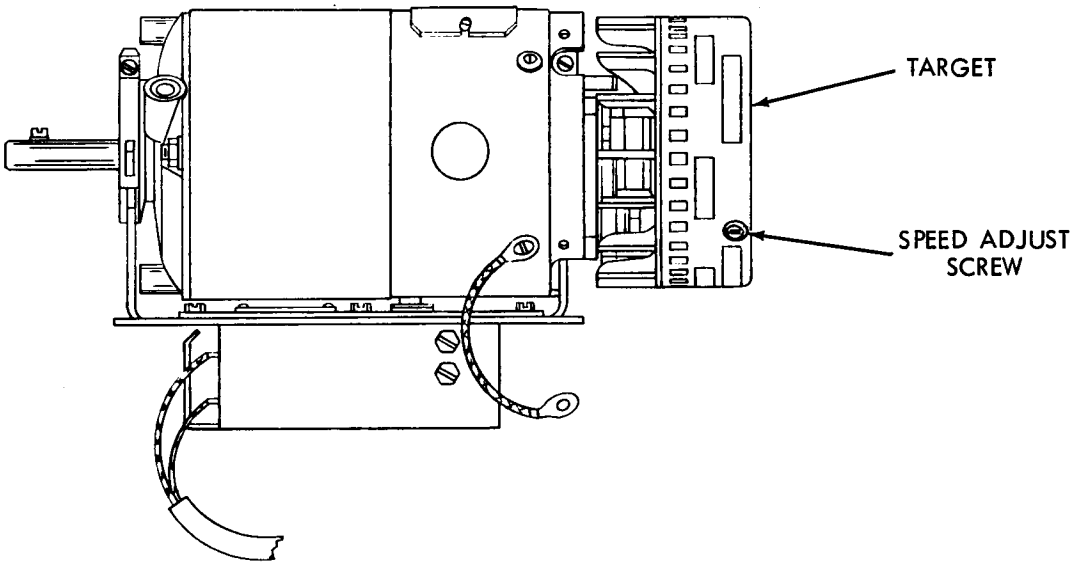
THE SIX SPOT MIDDLE ROW IS PROVIDED AS AN AID WHEN USING AN 87.5 VPS TUNING FORK. THE SPOTS WILL APPEAR TO ROTATE MORE SLOWLY AS THE CORRECT SPEED IS APPROACHED.

TO ADJUST

STOP THE MOTOR AND SET THE GOVERNOR ADJUSTING SCREW BY TRIAL AND ERROR UNTIL THE REQUIREMENT IS MET.

NOTE

WHERE THE MOTOR IS SUPPLIED WITH RF SHIELDING, A PLUG IN THE GOVERNOR ASSEMBLY COVER PROVIDES ACCESS TO THE SPEED ADJUST SCREW.



SECTION 2

LUBRICATION

1. GENERAL

1.01 The transmitters, transmitter-distributors, bases, and motor units 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 unit just prior to placing it in service. After a few weeks in service, re-lubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:

OPERATING SPEED (Words per Minute)	LUBRICATING INTERVAL (Whichever Occurs First)
60	3000 hrs. or 1 yr.
75	2400 hrs. or 9 mo.
100	1500 hrs. or 6 mo.

1.02 When lubricating transmitters, transmitter-distributors, or bases, use Teletype KS-7470 oil at all locations where the use of oil is indicated. Use KS-7471 grease on all surfaces where grease is indicated. When lubricating standard size motor units, apply two drops of KS-7470 oil to bearings every four months. In miniaturized motors, use six drops every 750 hours or 3 months. If motors are disassembled at any time, repack the bearings with KS-7471 grease.

Note: Standard size motors are equipped with a ball valve oiler. The ball must be depressed before oil is applied.

CAUTION: NEVER APPLY GREASE THROUGH THE OILER HOLES. THESE HOLES ARE FOR OIL ONLY.

1.03 All spring wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Overlubrication should be avoided. Special care must be taken to prevent any oil or grease from getting between the clutch armature and its magnet pole faces or between electrical contacts.

1.04 Apply a thick film of grease to all gears.

1.05 Apply oil to all cams, including the camming surfaces of the clutch disk.

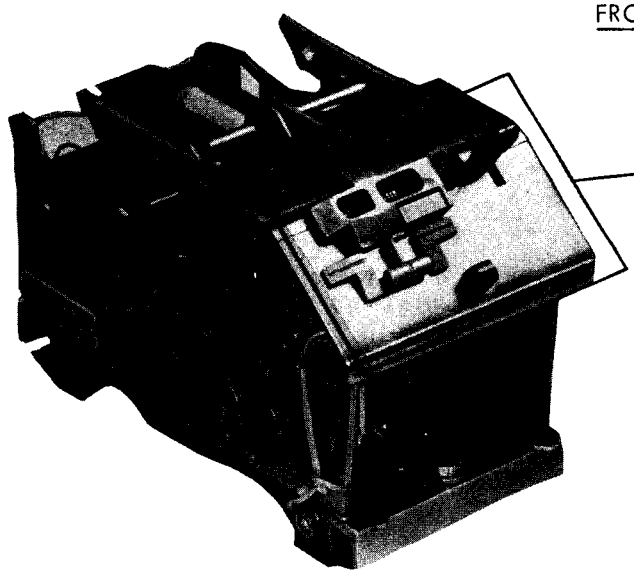
1.06 The location photographs identify a particular mechanism group. The lubrication points within each mechanism group are then called out specifically on line drawings appearing on succeeding pages. The following code is used on the lubrication line drawings.

0	Apply 1 drop of oil.
02	Apply 2 drops of oil.
03	Apply 3 drops of oil.
020	Apply 20 drops of oil.
G	Apply thin film of grease.
SAT	Saturate (felt oilers, washers, wicks) with oil.

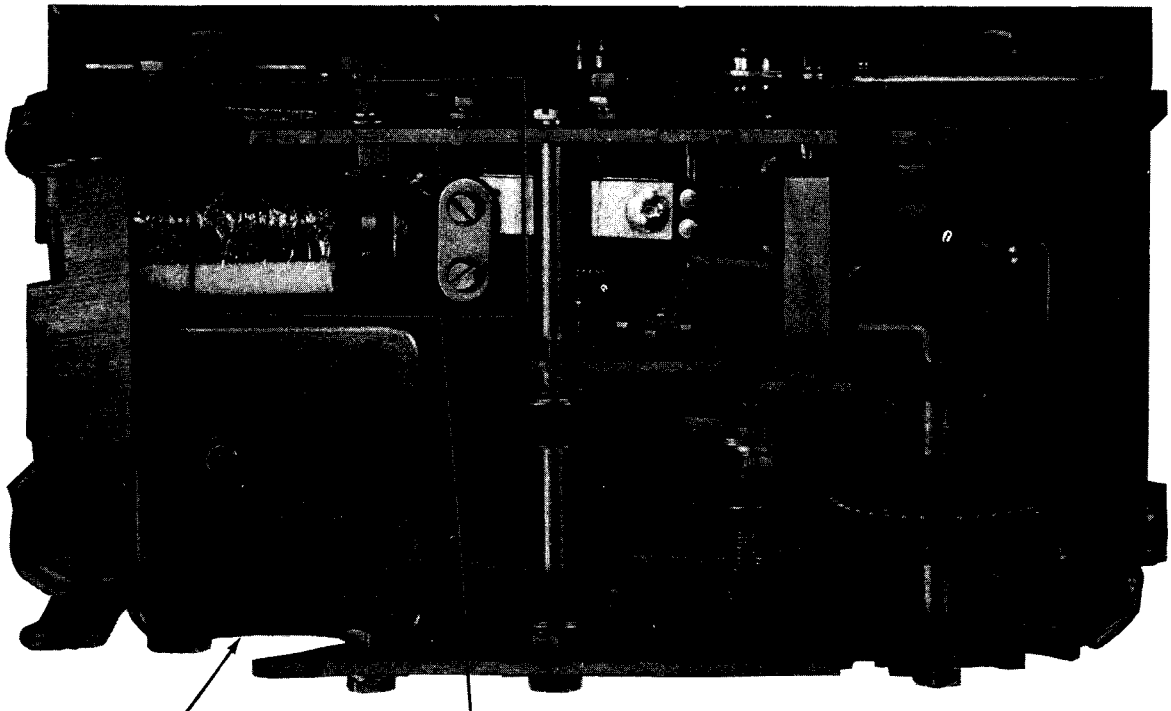
2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

FRONT OBLIQUE VIEW



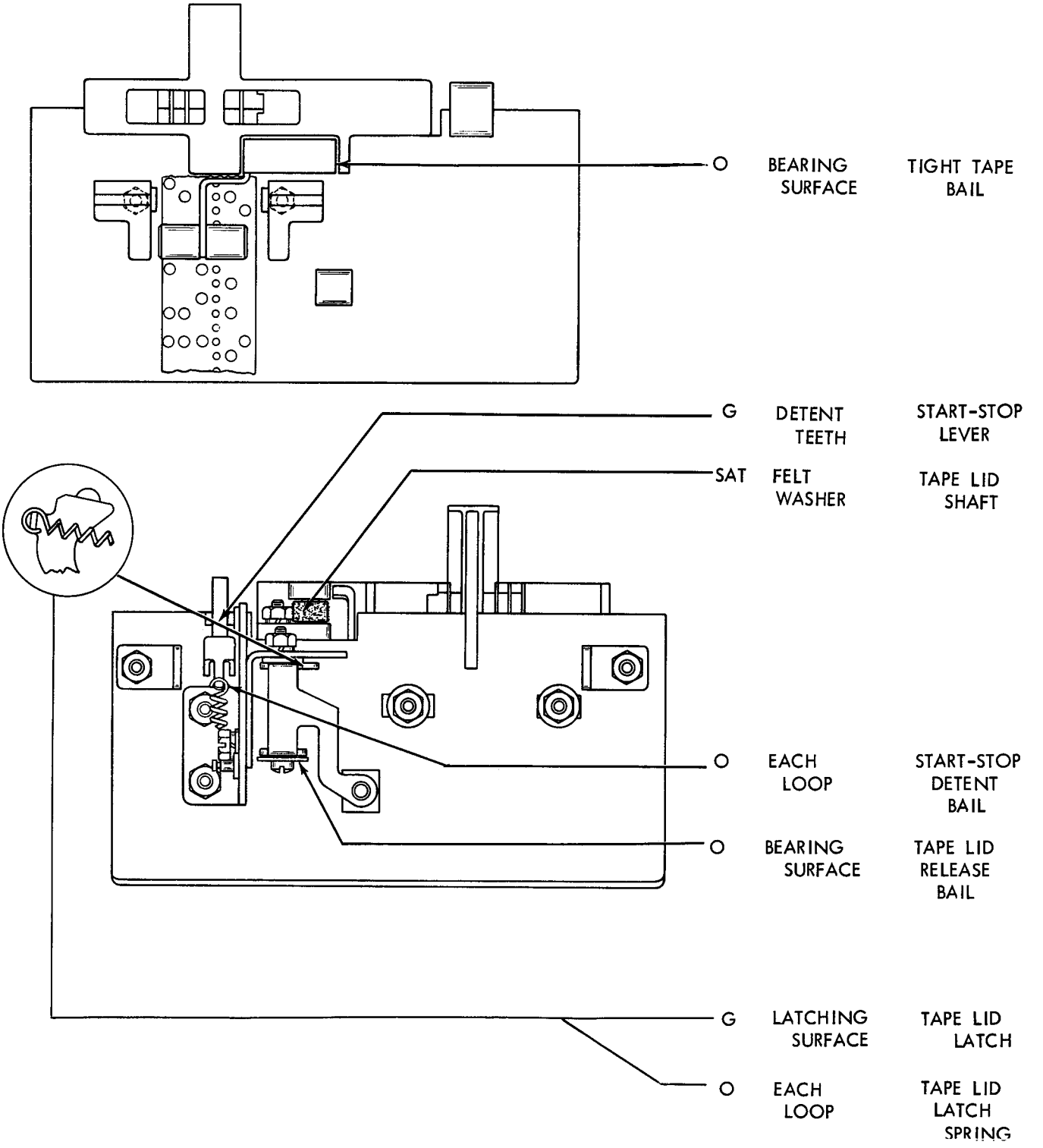
BOTTOM VIEW



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

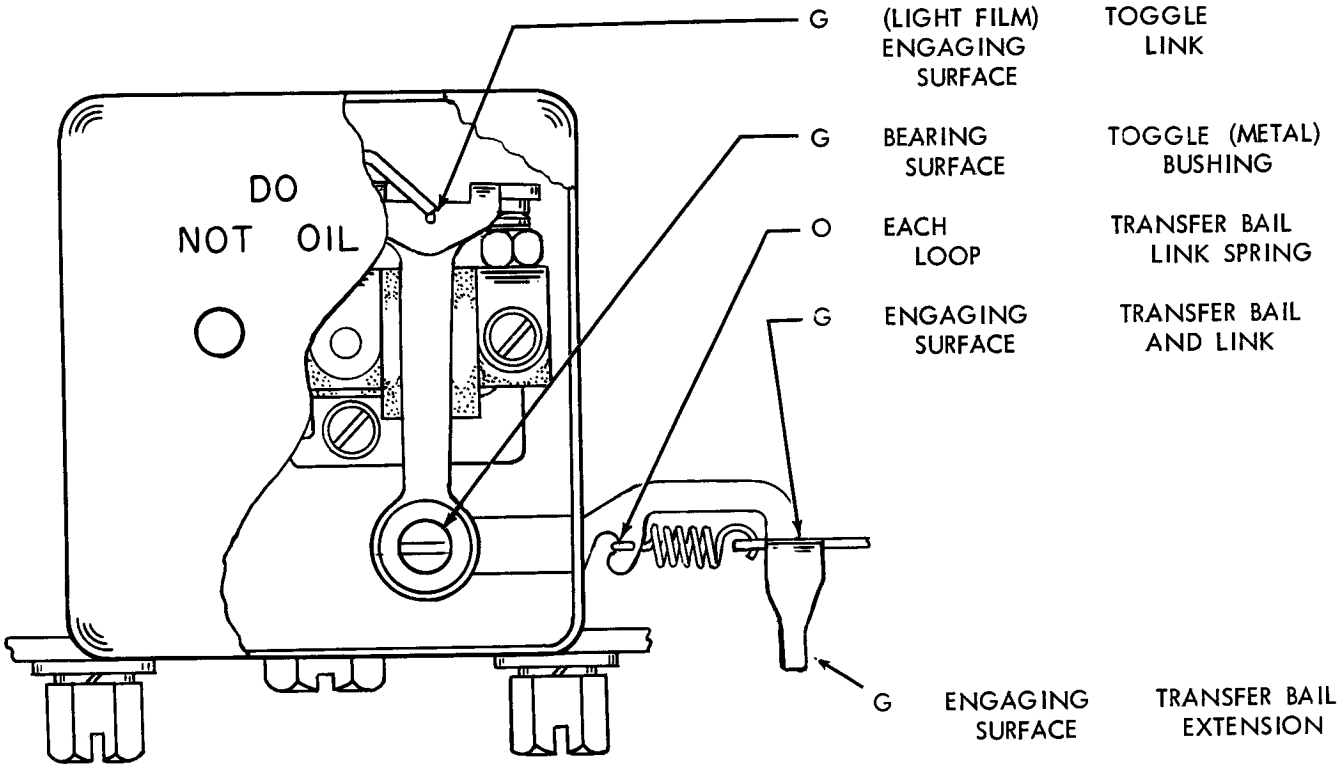
TAPE GUIDE PLATE



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

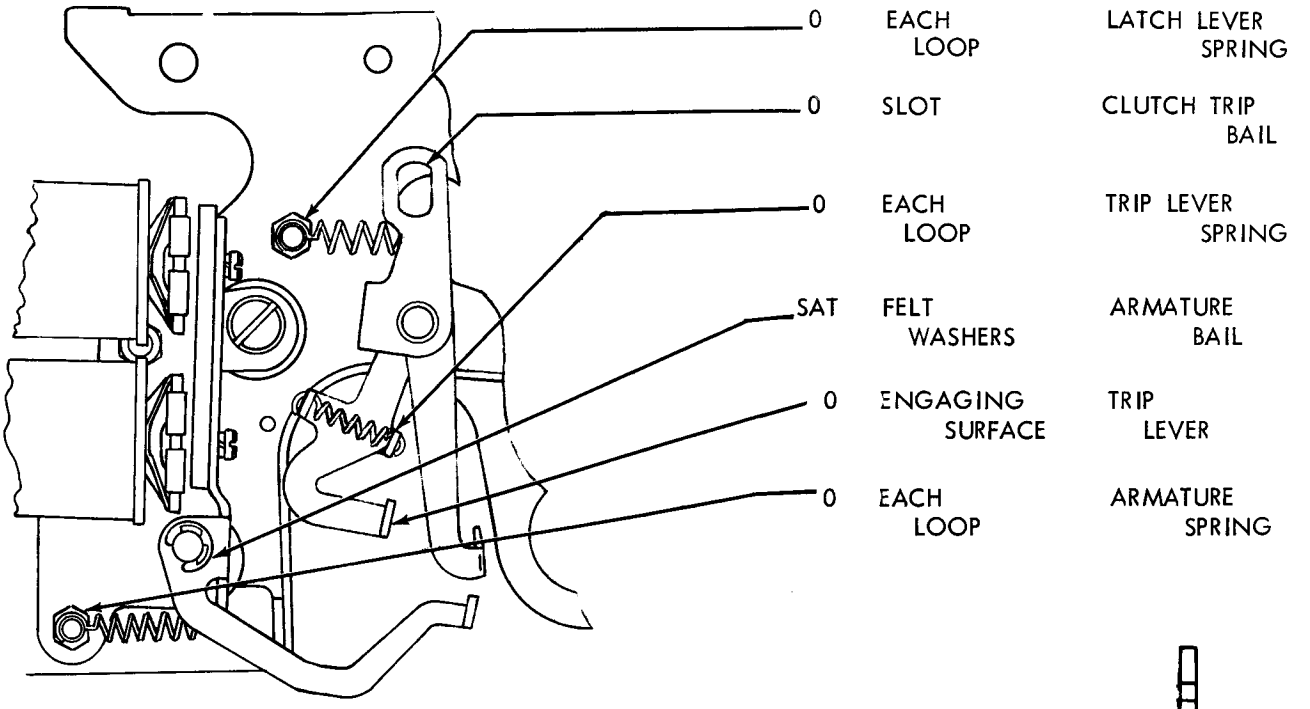
SIGNAL CONTACT ASSEMBLY

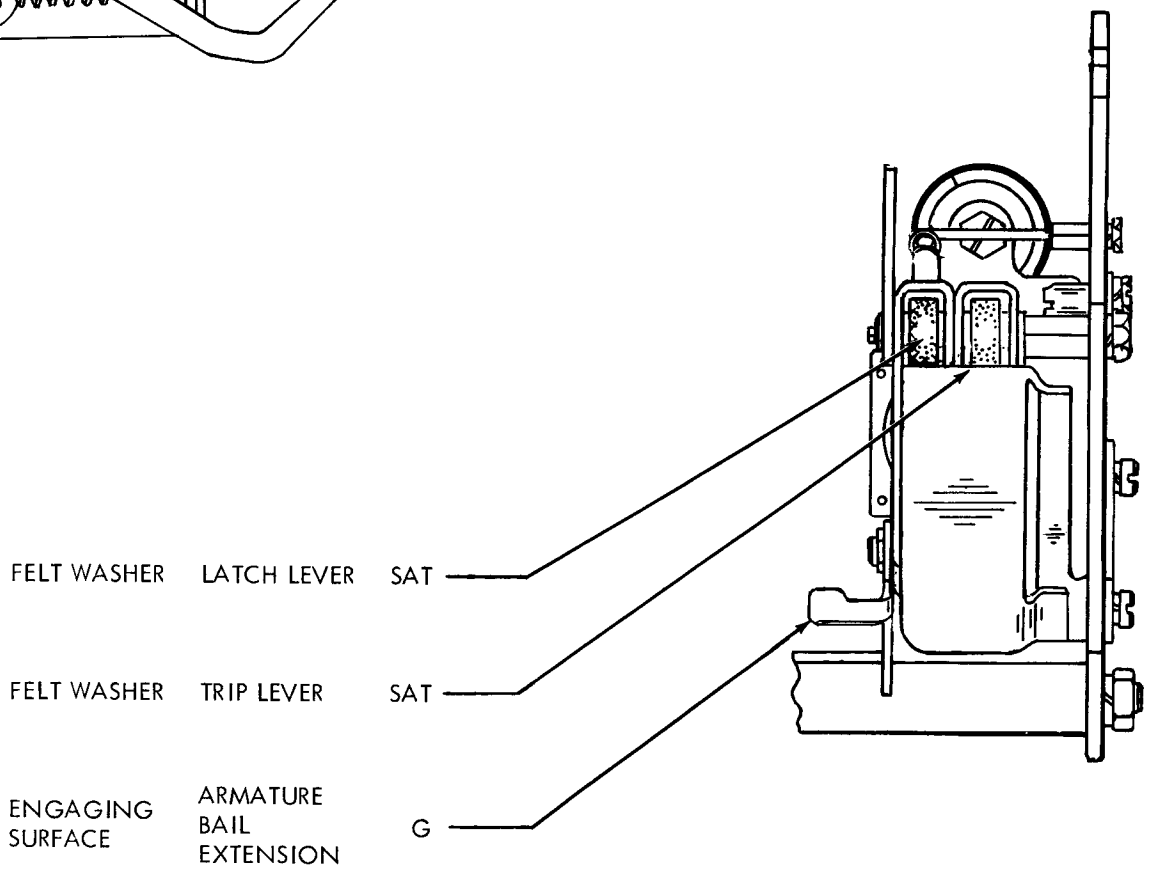


2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

CLUTCH TRIP ASSEMBLY

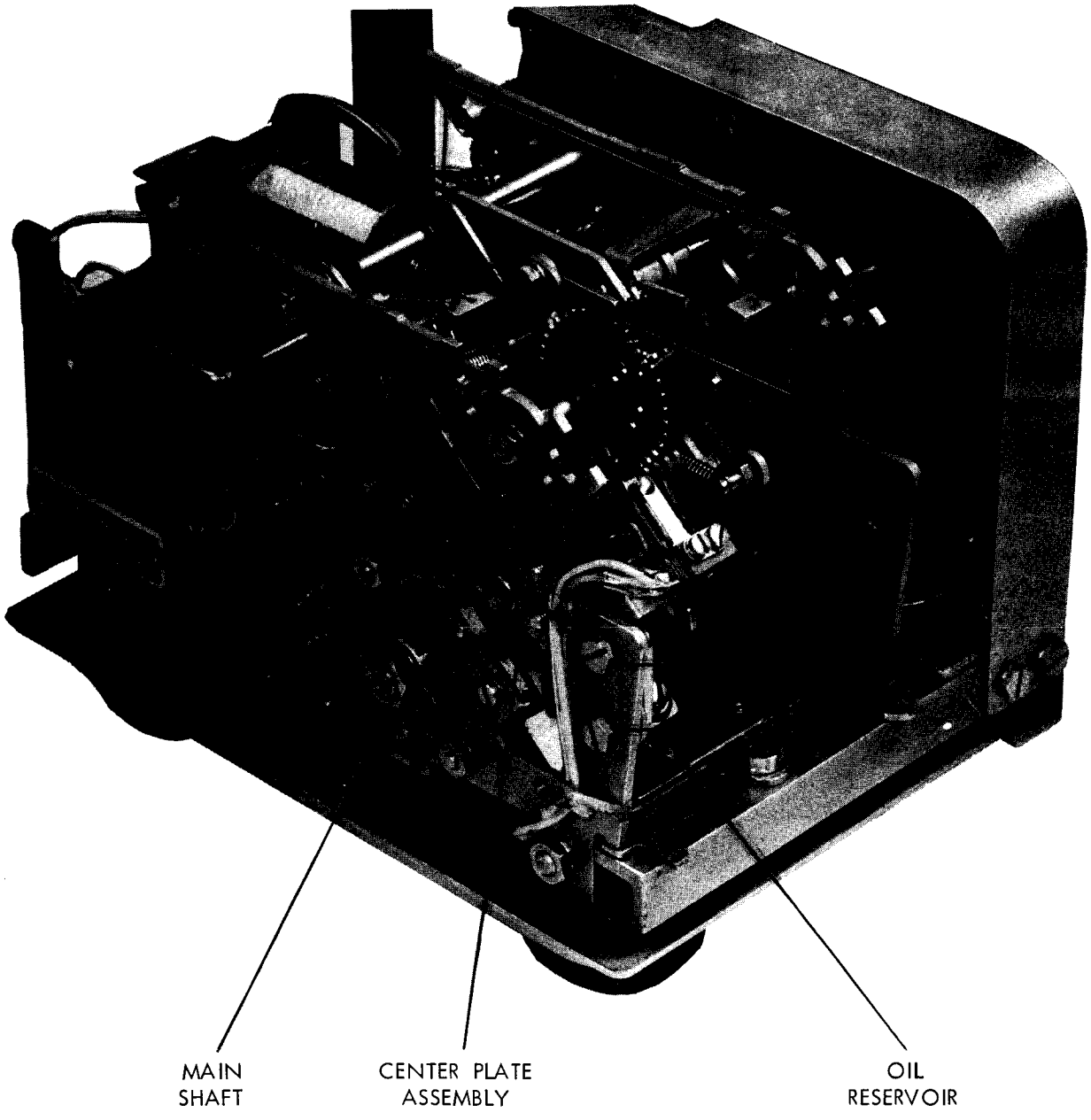




2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

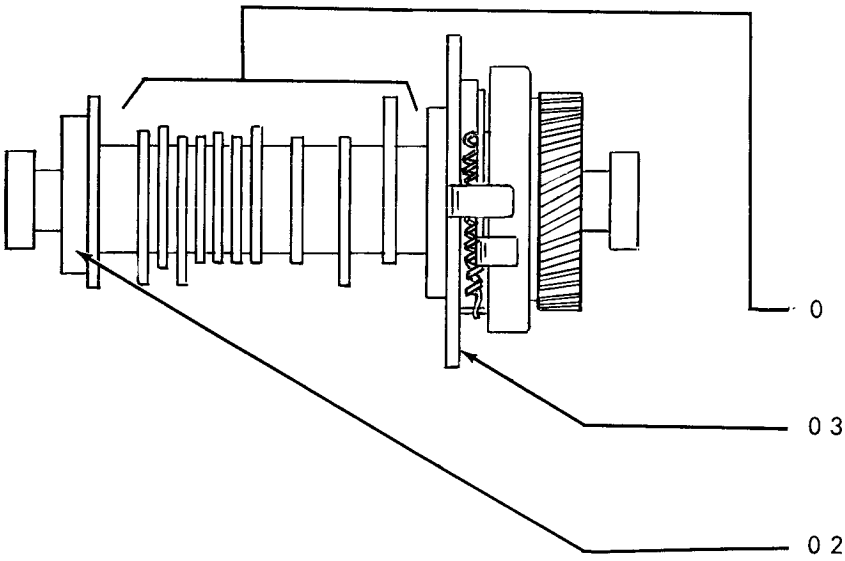
FRONT OBLIQUE VIEW (COVERS REMOVED)



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

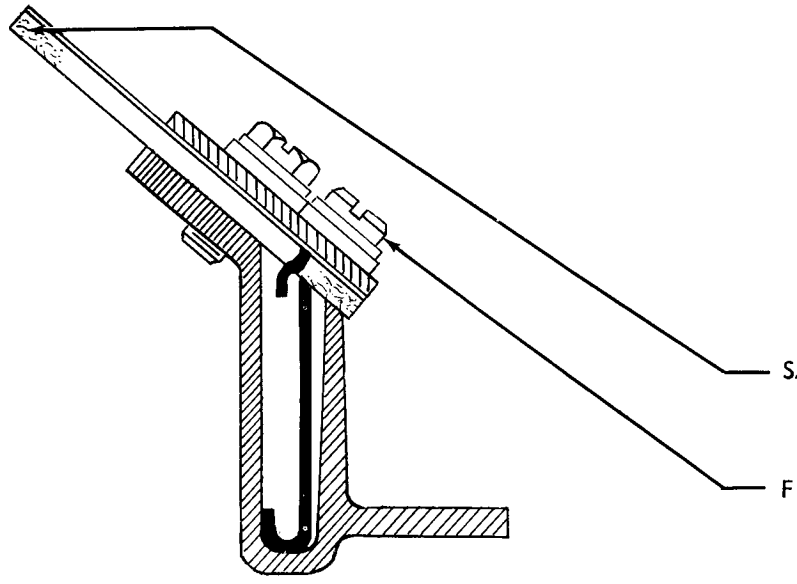
BASIC UNITS (Continued)

MAIN SHAFT



0	CAMING SURFACES	CAM SLEEVE
0 3	CAMING SURFACE	CLUTCH DISK
0 2	CAMING SURFACE	DRIVE ARM CAM

OIL RESERVOIR

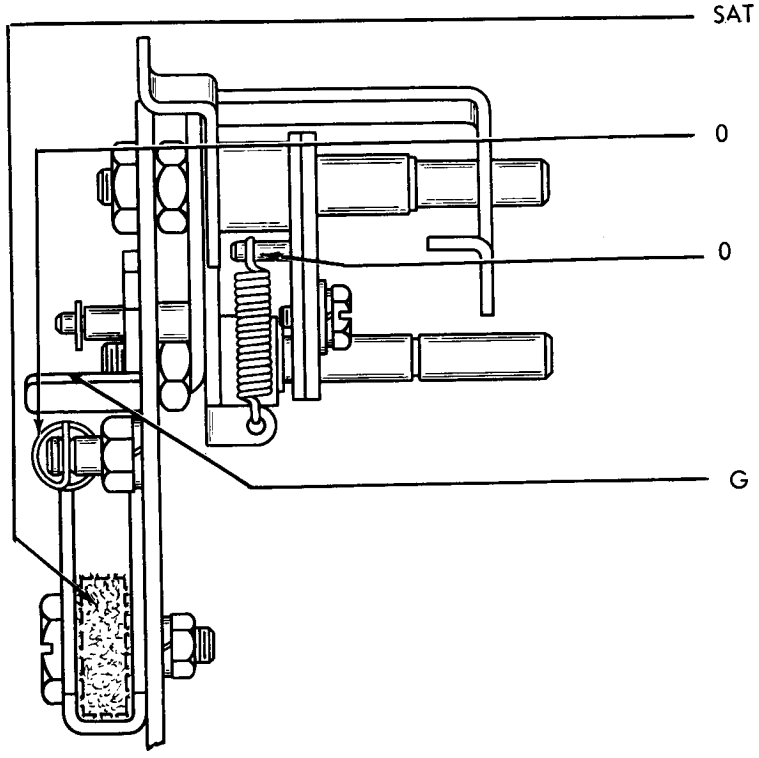


SAT	LEATHER WICK	CAM OILER
FILL	RESERVOIR	CAM OILER

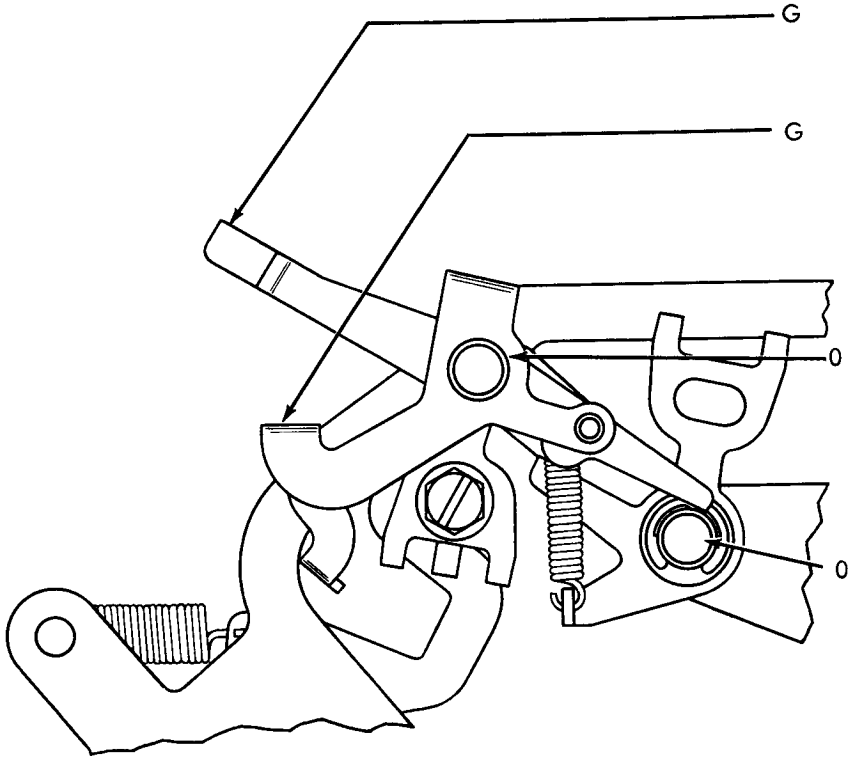
2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS

CENTER PLATE ASSEMBLY



FELT WASHER		RATCHET DETENT BAIL
BOTH LOOPS		DETENT BAIL SPRING
BOTH LOOPS		TIGHT TAPE ARM
ENGAGING SURFACE		START-STOP BAIL EXTENSION

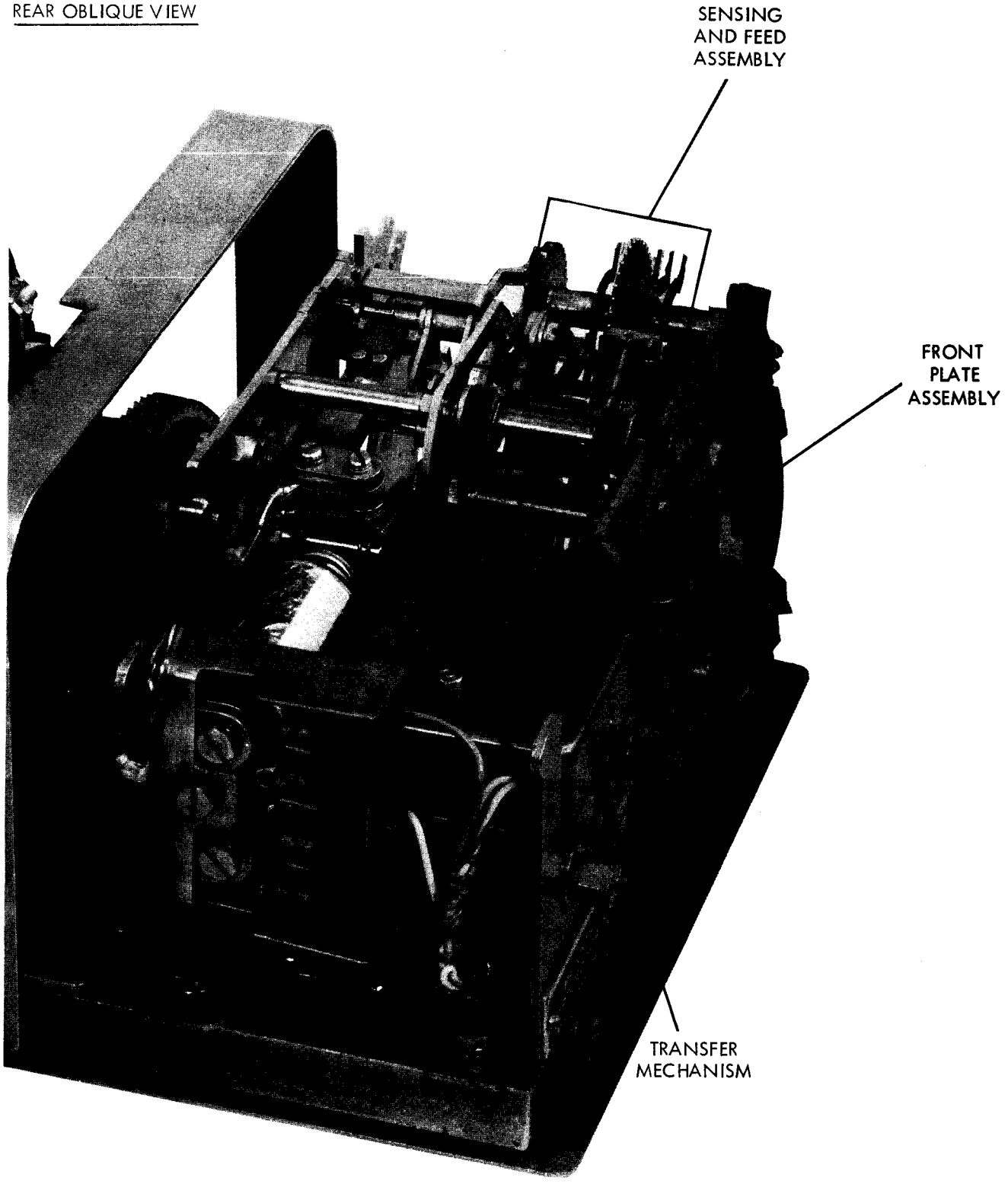


ENGAGING SURFACE		TIGHT TAPE ARM
ENGAGING SURFACE		START-STOP BAIL
BEARING SURFACE		START-STOP BAIL
BEARING SURFACE		YIELD ARM

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

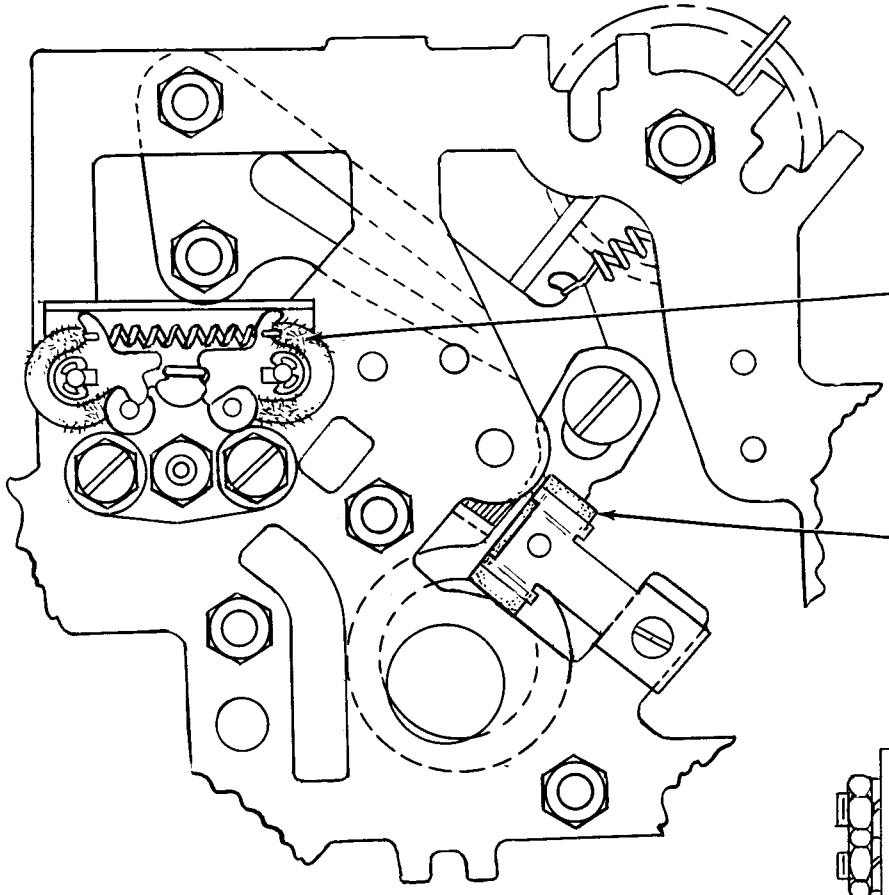
REAR OBLIQUE VIEW



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

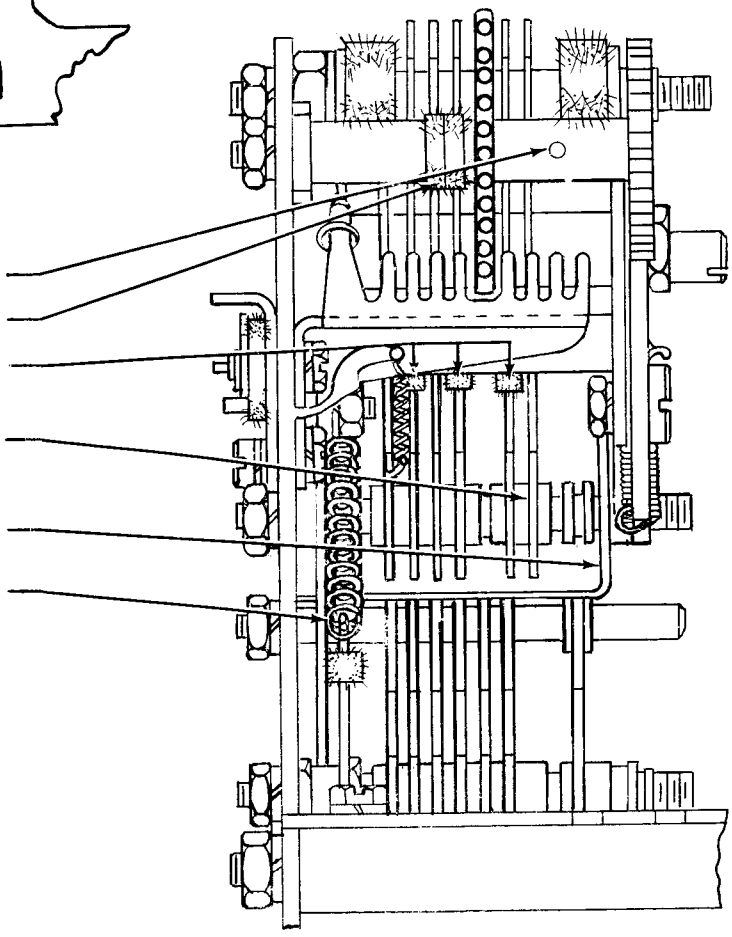
BASIC UNITS (Continued)

FRONT PLATE ASSEMBLY



SENSING AND FEED ASSEMBLY

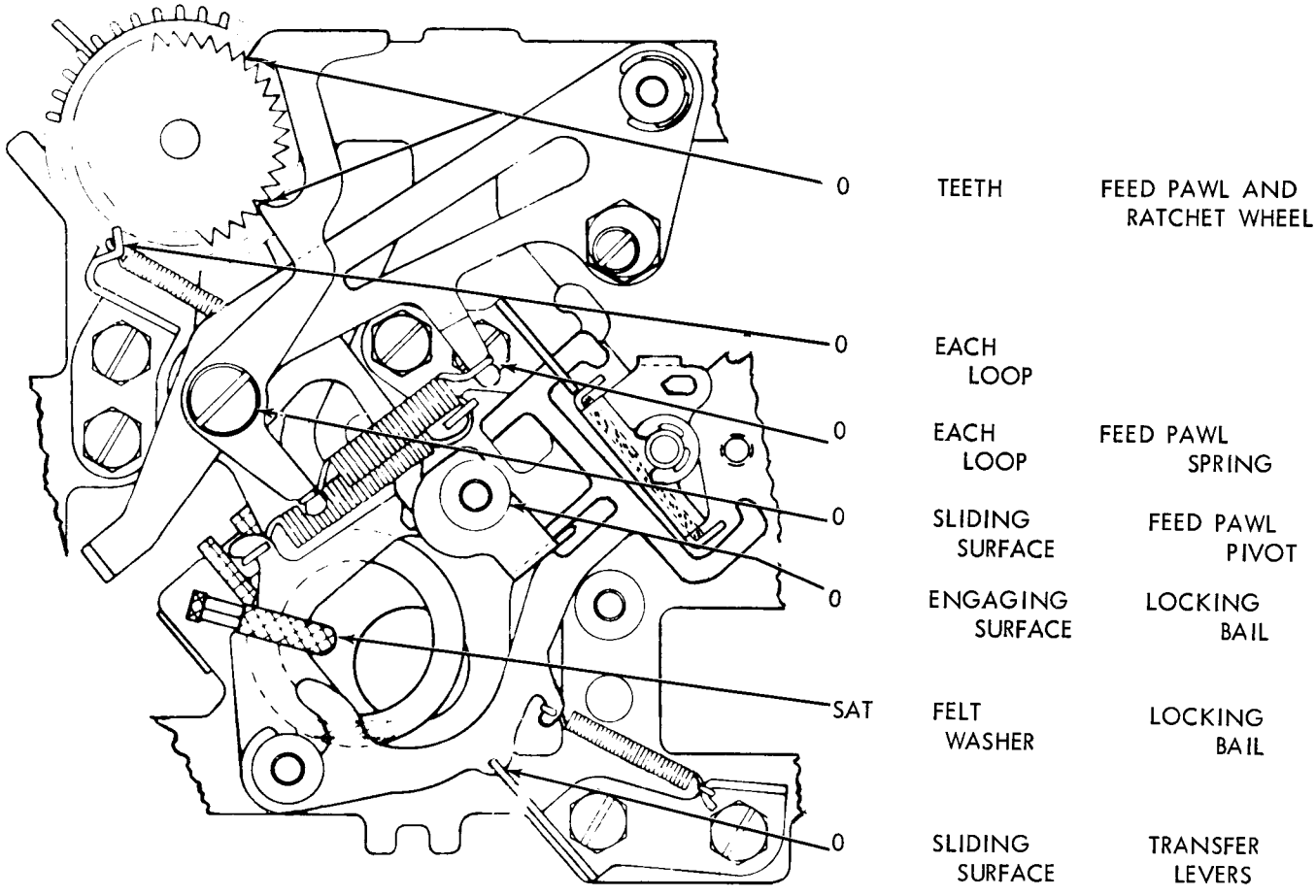
SHAFT	FEED WHEEL	03
FELT WICKS	FEED WHEEL BEARING	SAT
FELT WICKS	SENSING PINS	SAT
SLIDING SURFACE	SENSING PIN GUIDE POST	06
SLIDING SURFACE	LOCKING BAIL	02
BOTH LOOPS	LOCKING BAIL SPRING	02



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

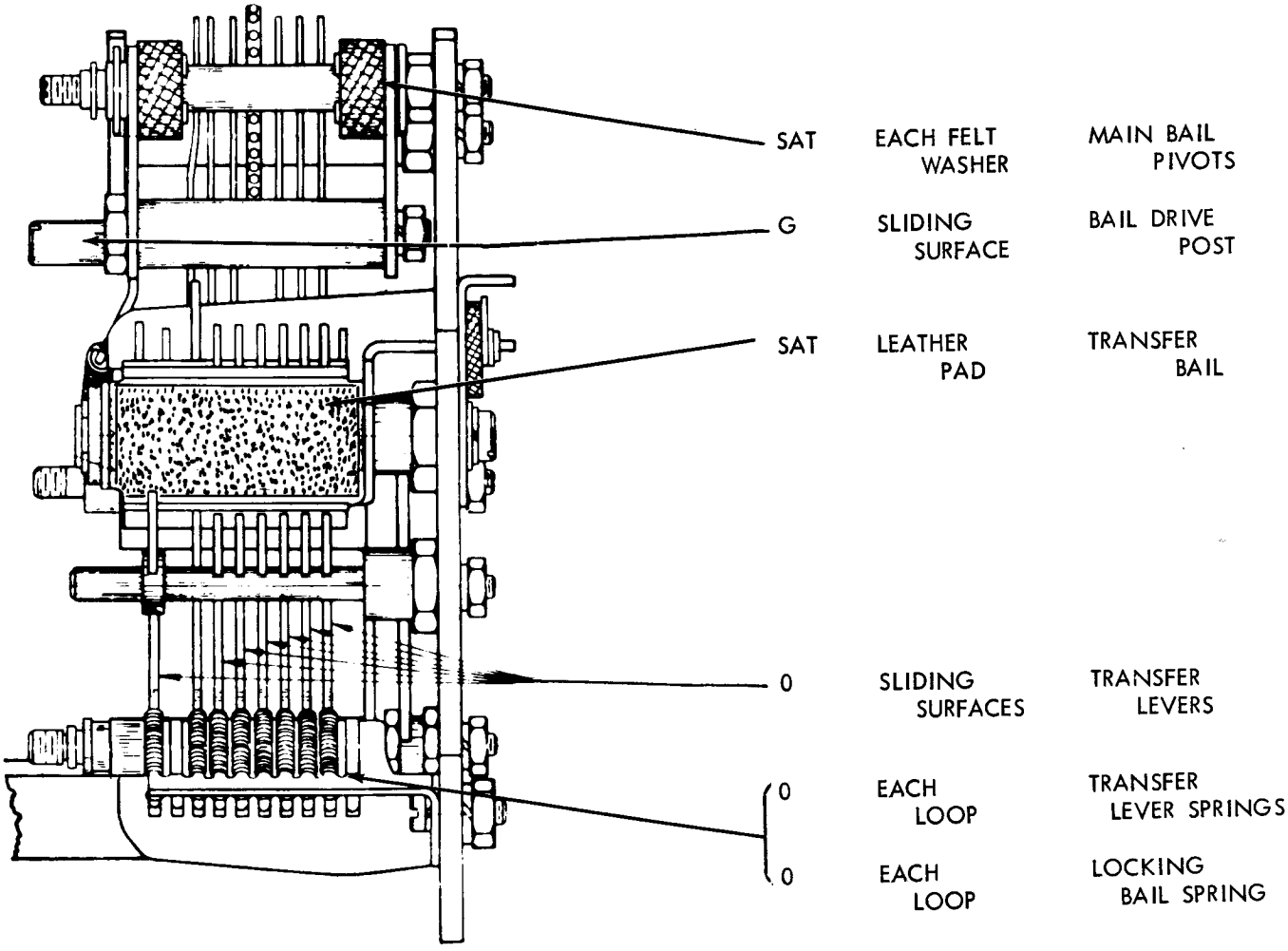
SENSING AND FEED ASSEMBLY (Continued)



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

BASIC UNITS (Continued)

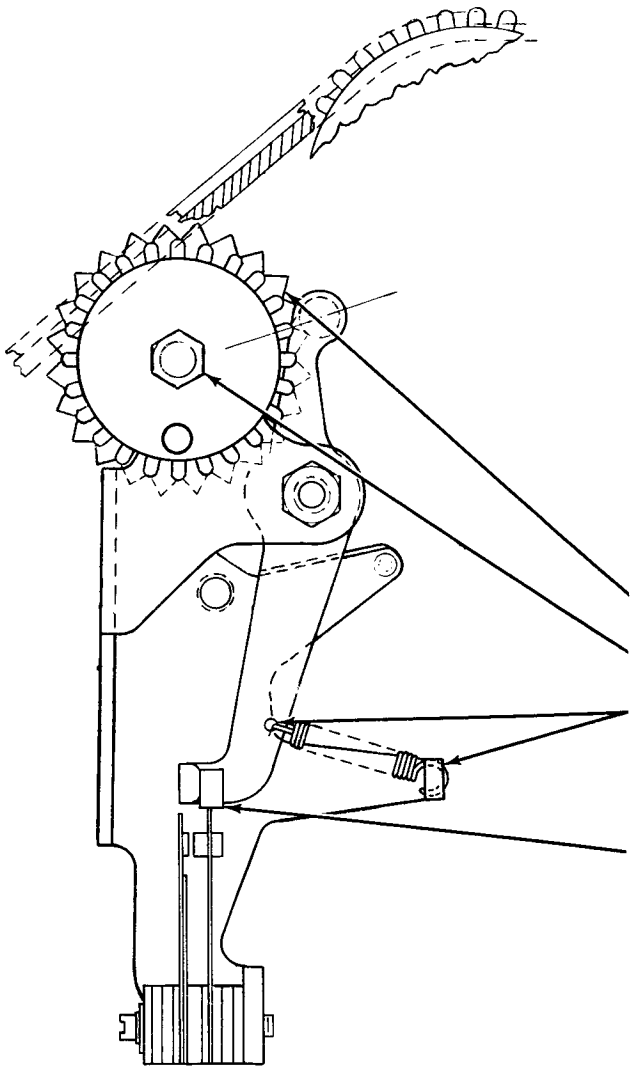
TRANSFER MECHANISM



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

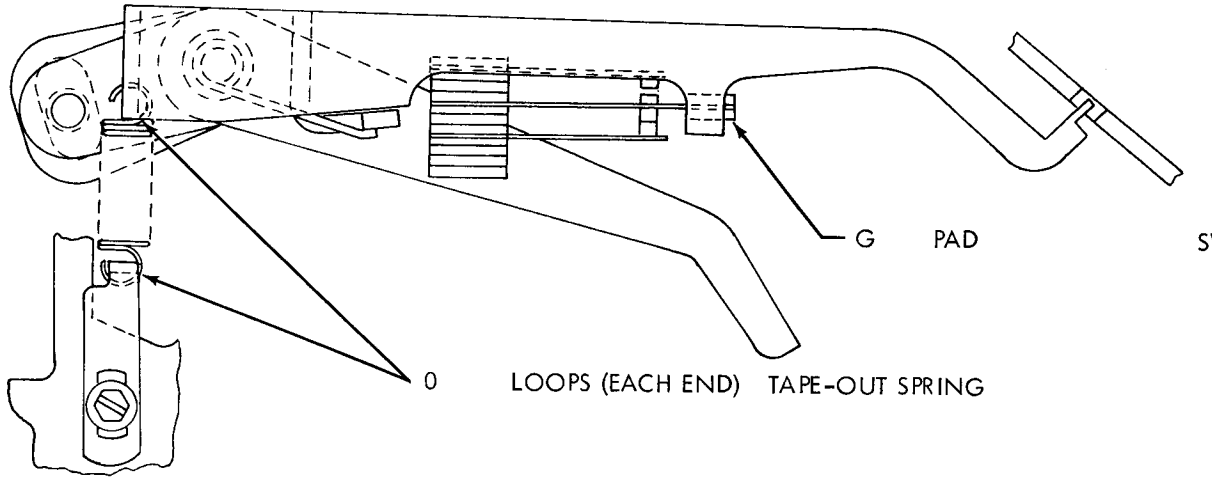
VARIABLE FEATURES

TAPE FEED ASSURANCE MECHANISM



G	TEETH	RATCHET WHEEL
O	BEARING	RATCHET WHEEL
0	LOOPS (EACH END)	DETENT LEVER SPRING
G	PAD	CONTACT SWINGER

TAPE-OUT SENSING MECHANISM

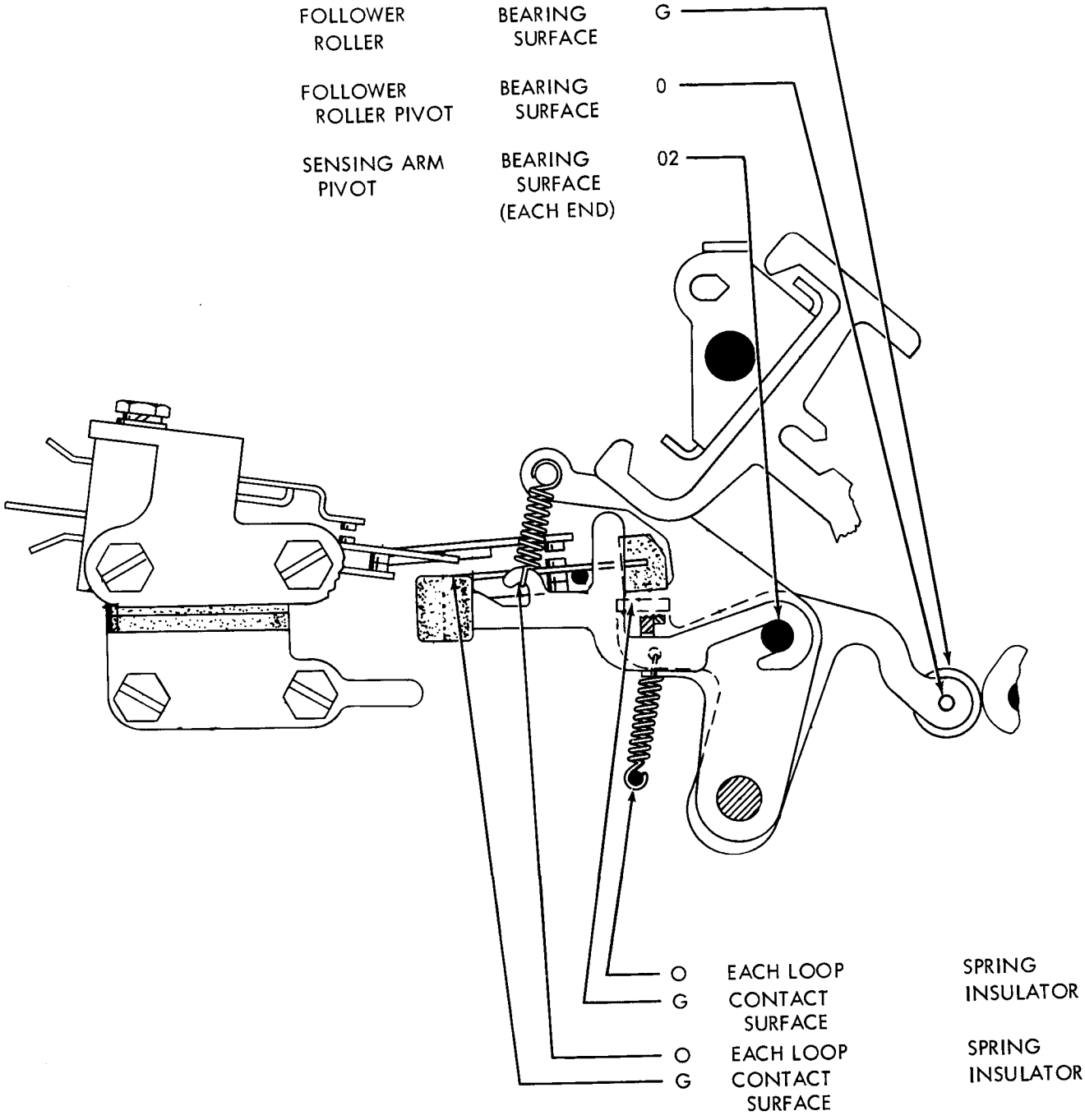


G	PAD		SWINGER
0	LOOPS (EACH END)	TAPE-OUT SPRING	

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES (Continued)

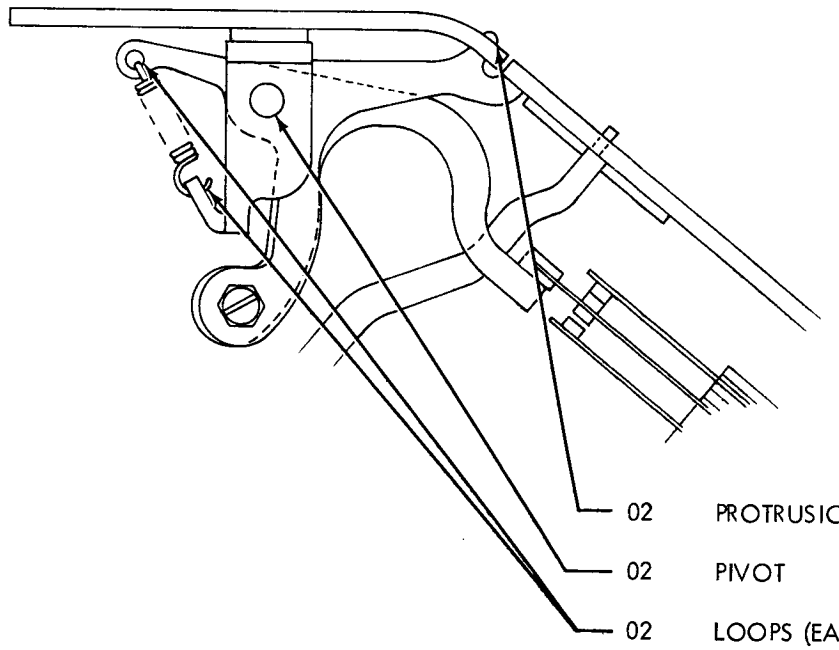
CODE READING CONTACTS



2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

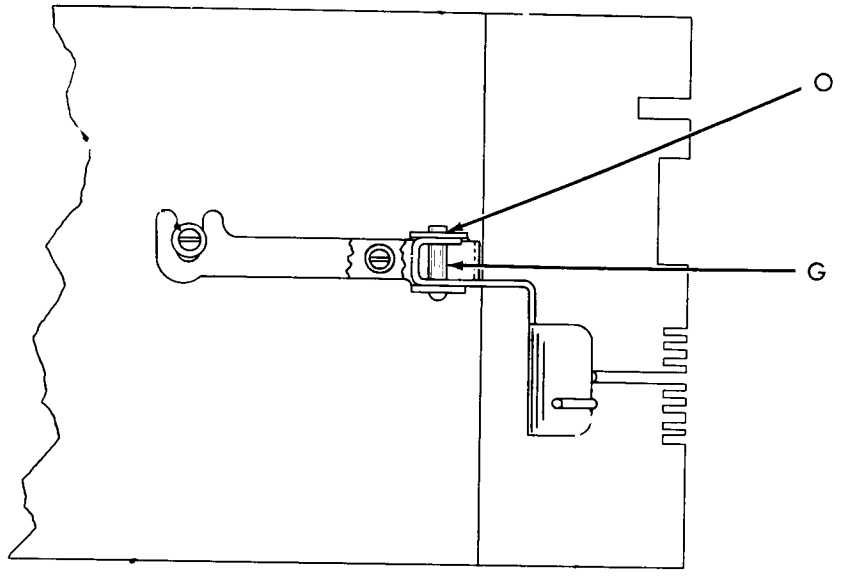
VARIABLE FEATURES (Continued)

TAPE LID SENSING LEVER



02	PROTRUSION	SENSING LEVER
02	PIVOT	SENSING LEVER
02	LOOPS (EACH END)	SENSING LEVER SPRING

TAPE DEFLECTOR

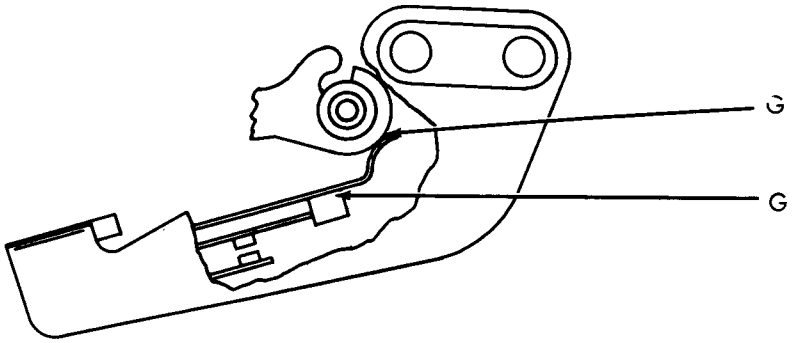


O	BEARING SURFACE (EACH END)	TAPE DEFLECTOR
G	THIN FILM CONTACT SURFACE	DEFLECTOR SPRING

2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES (Continued)

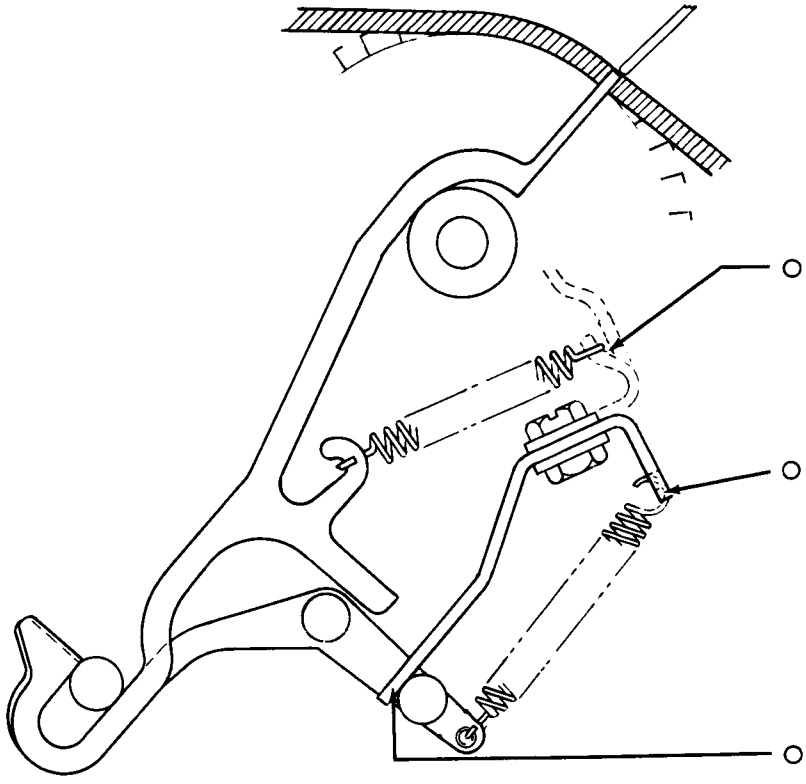
START-STOP PULSE CONTACT



ENGAGING SURFACE — CONTACT LEVER

ENGAGING SURFACE — CONTACT INSULATOR

RUB-OUT DELETER



EACH LOOP — SPRING

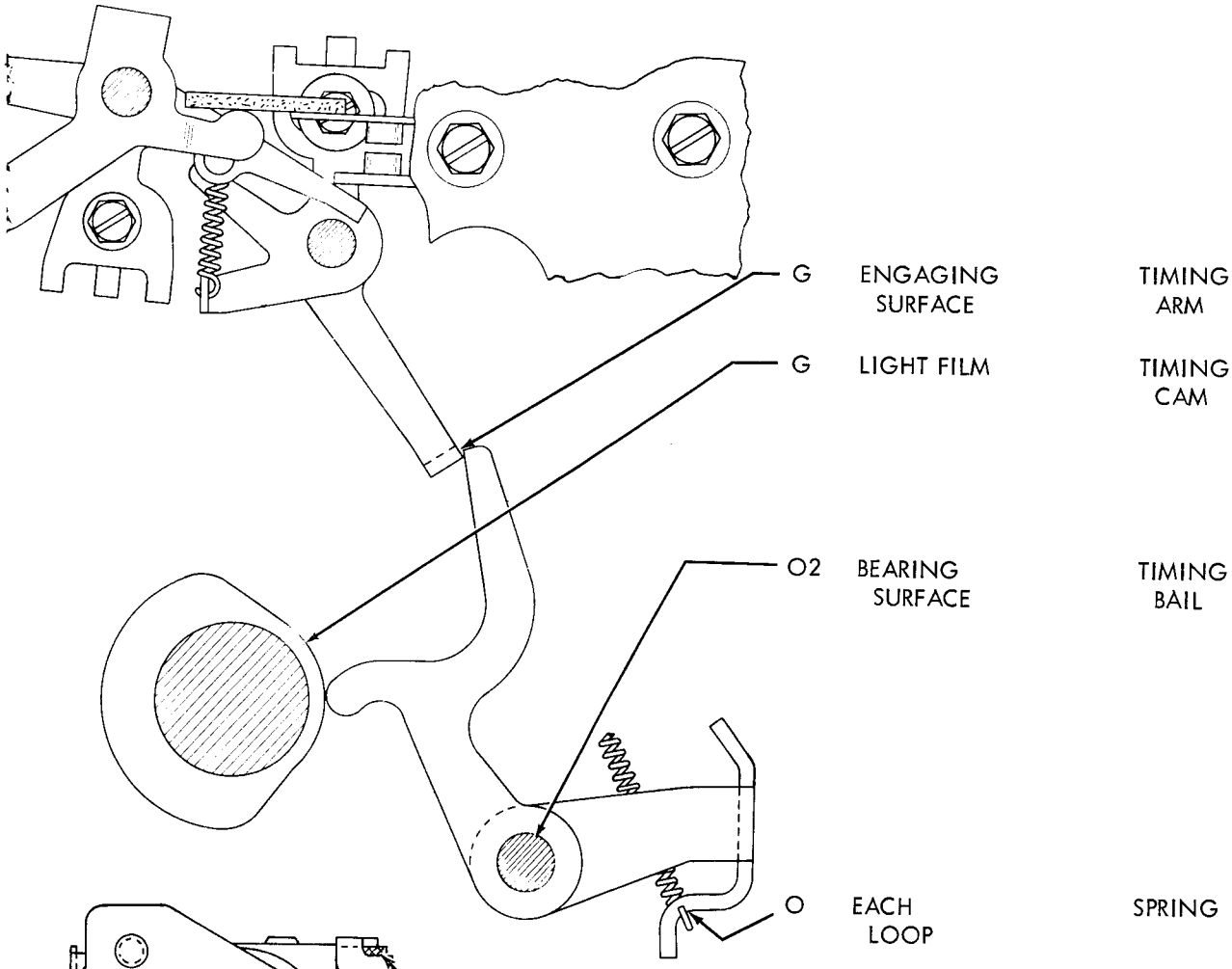
EACH LOOP — SPRING

ENGAGING SURFACE — DEFLECTOR BAIL GUIDE

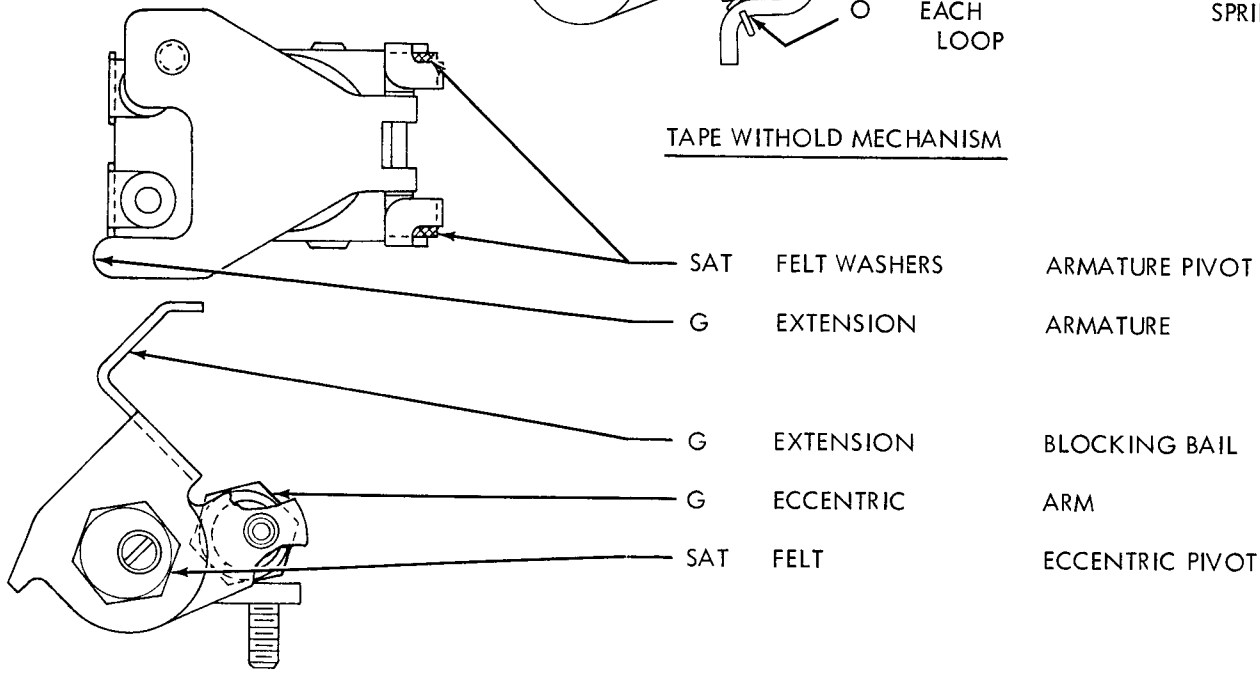
2. TRANSMITTERS AND TRANSMITTER-DISTRIBUTORS

VARIABLE FEATURES (Continued)

TRANSMITTER STOP MECHANISM

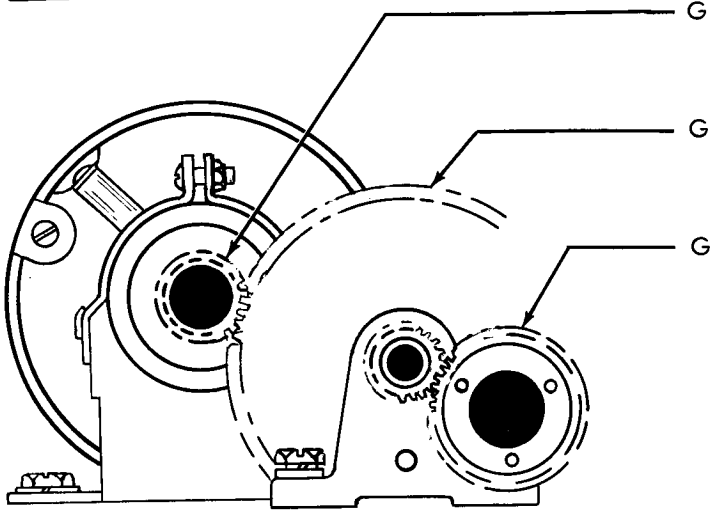


TAPE WITHOLD MECHANISM



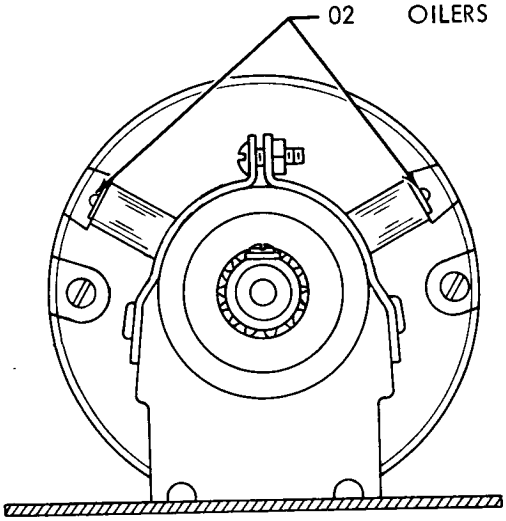
3. BASES

GEAR TRAIN

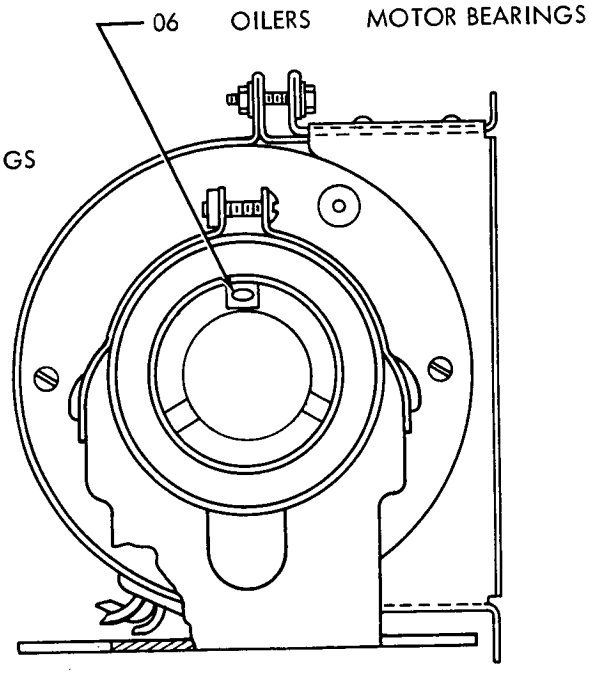


4. MOTORS

MOTOR BEARINGS
(STANDARD SIZE MOTORS)



MOTOR BEARINGS
(MINIATURIZED MOTORS)



SECTION 3

DISASSEMBLY AND REASSEMBLY

1. GENERAL

1.01 The various covers may be removed for inspection, lubrication or minor repair of the unit; however, a complete adjustment will necessitate the removal of the transmitting distributing mechanism from its base. To facilitate adjustments on earlier models, a generous length of cable is provided between the unit and its terminal block in order that the unit may be rotated or inverted. The AC or DC potential should be disconnected from its power source. Later model units plug into position on their bases.

1.02 Care should be exercised when the unit is replaced to keep the cable free of any moving parts. For more detailed illustration of assemblies referred to in the following text, see the Teletype Model 28 Transmitter-Distributor (LXD) Parts Bulletin.

Note: Retaining rings (tru-arc) are of spring steel and have a tendency to release suddenly. Loss of these can be minimized as follows: Hold the ring with your 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 will come off easily without flying.

2. REMOVAL OF TRANSMITTER UNIT FROM BASES

SINGLE UNIT BASES

2.01 Motor Cover: to remove motor cover, lift upward. Replace in reverse order.

2.02 Front (Snap) Panel: to remove the front panel, pull outward on the lower right and left. To replace, mate the slides on the frame and push toward the rear.

2.03 Mounting Screws: remove the three screws which mount the unit to the base. Lift the unit off the base. On earlier model units, remove the cable connections from the terminal board and the cable clamps from the base. On later model units, the electrical connections disconnect when the unit is lifted from the base.

2.04 Cover Plate: to remove cover plate lift up at end opposite tape lid.

MULTIPLE UNITS

2.05 Transmitter-Distributor Unit: to remove units, remove cover plate. Open the hinged panel on the front of the dust cover. Loosen two screws on locking device at right corner of transmitter unit and slide locking device to left. Remove mounting screw which secures unit to base at front of unit. Lift unit out of cover.

2.06 Dust Cover: to remove dust cover from multiple base, lift up.

3. DISASSEMBLY OF TRANSMITTER UNIT

TOP PLATE

3.01 To remove top plate, loosen the front and rear mounting screw (see figure 3-1) and lift the plate upward.

3.02 To replace the top plate, guide the mounting screws into the notch of the front and rear plate. Align the sensing pins and feed wheel with their respective slots. Refer to Top Plate adjusting procedure if the plates do not align.

TAPE GUIDE PLATE

3.03 To remove the tape guide plate, loosen the front and rear mounting screw and slide the plate upward. (See figure 3-1.)

3.04 To replace the tape guide plate, guide the mounting screws into the respective notch of the front and rear plate while guiding the tape-out pin into its notch and locating the sensing pins against the left edge of the tape guide plate. Refer to Tape Guide Plate adjusting procedure.

OIL RESERVOIR

3.05 To remove the oil reservoir, remove the screws that secure the casting and lift the assembly upward and toward the right.

3.06 To replace the oil reservoir, reverse the procedure.

REAR PLATE ASSEMBLY

3.07 Remove cable assembly leads from start-stop contact assembly and magnet assembly.

3.08 Remove right rear and left from 112626 nuts (10-32) and 2669 lockwashers from bottom posts.

3.09 Remove 156588 clamp.

3.10 Remove 151630 screws securing plate to 156622 post.

3.11 Remove the two 151630 screws which secure the 156541 clutch trip magnet to the rear plate and remove clutch trip magnet assembly.

3.12 Remove rear plate assembly from the remainder of the unit.

3.13 To replace, reverse the procedure.

MAIN SHAFT ASSEMBLY

3.14 Remove the 156831 clamp and 156832 plate from the front plate assembly.

3.15 Remove the main shaft assembly.

3.16 Replace in the reverse order.

CENTER PLATE ASSEMBLY

3.17 Remove the 156622 post.

3.18 Remove the two nuts (6-40) which secure the center plate to the two guide posts.

3.19 Remove the 7603 spring.

3.20 Remove the center plate assembly.

3.21 Replace in reverse order.

4. MOUNTING

4.01 When reinstalling the transmitter or transmitter-distributor unit on the base, adjust the gear backlash as outlined in Section 2.

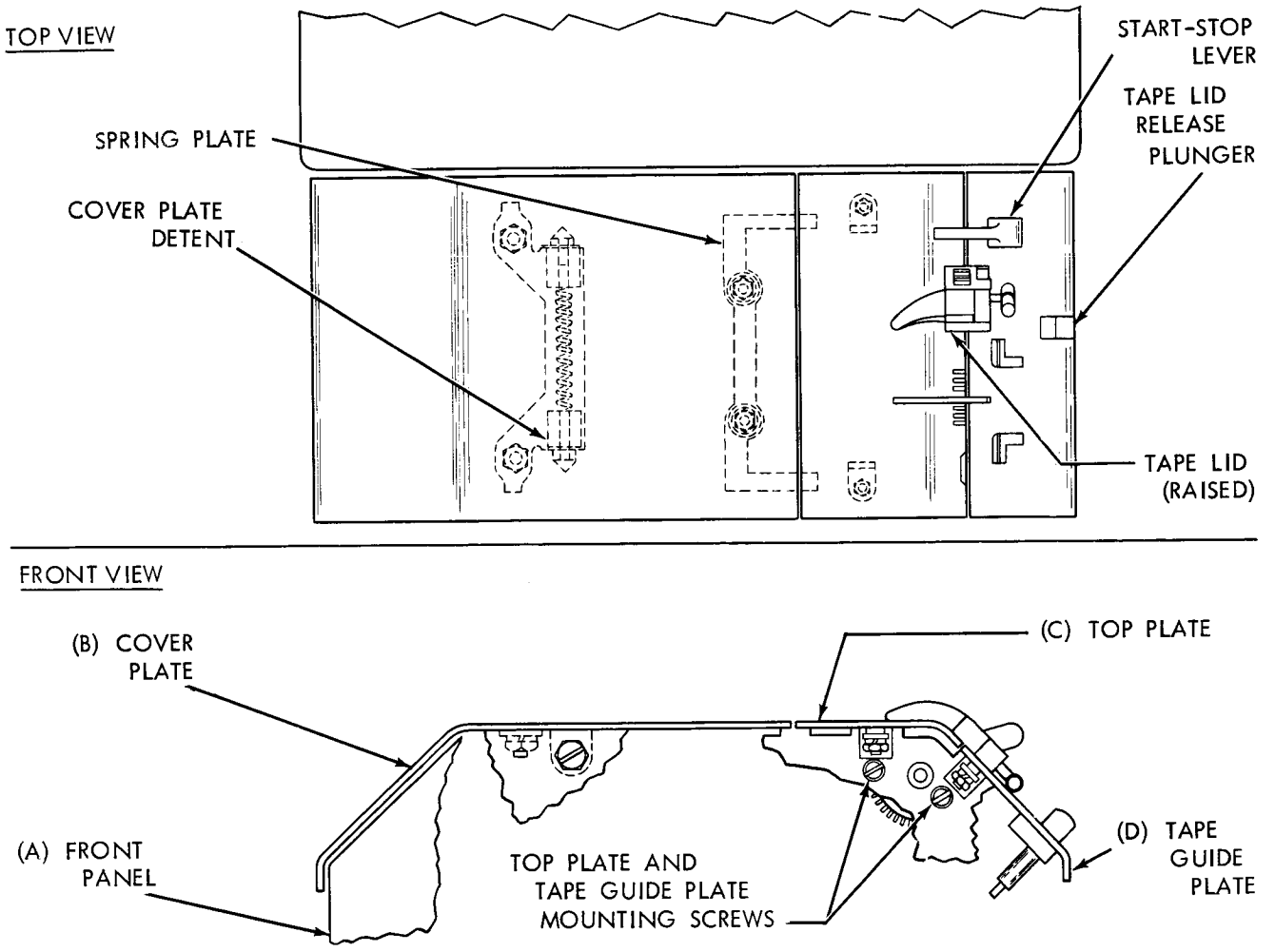


Figure 3-1. Plate Assemblies