

14 TRANSMITTER-DISTRIBUTOR
REQUIREMENTS AND ADJUSTMENTS

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL	2	Stoplever spring (on units equipped with friction clutch)	5
2. STOP MAGNET AND MAIN-SHAFT CLUTCH	2	Two-coil dc magnet	10
Armature backstop (on units equipped with all-steel clutch)	8	3. TAPE FEED MECHANISM	
Armature lever spring	5	Adjustable tape guide	18
Armature plate	4	Contact tongues alignment	21
Bail spring (on units equipped with all-steel clutch)	8	Detent bracket	20
Clutch-shoe lever (on units equipped with all-steel clutch)	7	Detent-lever spring	16
Clutch-shoe lever spring (on units equipped with all-steel clutch)	8	Feed-lever adjusting screw	21
Clutch-shoe spring (on units equipped with all-steel clutch)	7	Feed-lever stop	21
Gear guard (on units equipped with all-steel clutch)	8	Feed-pawl spring clearance	20
Latchlever spring (on units equipped with all-steel clutch)	7	Feed-wheel shaft	16
Latchlever stop (on units equipped with all-steel clutch)	7	Operating lever adjusting screw	21
Magnet core	2	Retaining lid latch	16
Main shaft	2	Retaining lid latch spring	21
Motor position	2	Tape feed-pawl spring tension	16
Operating lever spring (on units equipped with all-steel clutch)	8	Tape guide	18
Reset cam (on units equipped with all-steel clutch)	7	Tape retaining lid plate	20
Single-coil universal magnet	10	Tape space	17
Start magnet bracket	5	4. TRANSMITTER CONTACTS	
Stop mechanism on machines driven by ac-governed motors	12	Contact-lever movement	26
Stop mechanism with TP106976 make-start contact assembly	12	Contact-lever springs	24
Stoparm pilot screws	12	Feed-lever spring	26
Stoparm spring	12	Lower contact screws	24
Stoplever (and latchlever) pilot screws (on units equipped with all-steel clutch)	5	Transmitter contacts	23
Stoplever pilot screws (on units equipped with all-steel clutch)	5	Upper contact screws	24
Stoplever pilot screws (on units equipped with friction clutch)	4	5. TAPE-FEED WITHHOLD MECHANISM	
Stoplever spring (on units equipped with all-steel clutch)	5	Armature air gap	26
		Armature spring	26
		Blocking plate clearance	27
		Feed-pawl clearance	27
		Feed-pawl spring	27
		6. TIGHT-TAPE STOP MECHANISM	27
		7. DISTRIBUTOR BRUSHES (CARBON)	30
		8. OPERATING CAM	33

CONTENTS	PAGE
9. MAIN-SHAFT CLUTCH TORQUE (FRICTION FEED)	34
10. TAPE-OUT MECHANISM (6TH PIN)	34
11. TORN-FEED-HOLE TAPE-STOP ASSEMBLY	
End-of-tape stop contact spring . .	35
Tape finger	35
Tape retaining lid plate	35
12. AUXILIARY CONTACTS (14W ONLY)	37
13. SLIP CONNECTION CONTACTS . . .	37
14. 100-WPM OPERATION	38
15. SINGLE-STEP TAPE-FEED SUPPRESSION MECHANISM	
Nonrepeat-lever spring	42
Restoring bail spring	42
Restoring lever eccentric	41
Restoring lever plate	42
Restoring lever spring	42
Tape feed-lever latch	40
Tape feed-lever latch spring	42
Trip-off latch eccentric	41
Trip-off latch spring	42
Trip-off lever spring	42
 1. GENERAL	
1.01 This section contains the requirements and adjusting procedures for maintenance of the 14 transmitter-distributor and applicable modification kits.	
1.02 This section is reissued to add the re- quirements and adjusting procedures for the single-step tape-feed suppression mechan- ism, to bring the adjusting procedures generally up to date, and to incorporate the addendum.	
1.03 Do not cause the distributor shaft to rotate in a counterclockwise direction, as this may mutilate the distributor brushes. To avoid this, the brush holder clamp screw may be loosened, and the brush holder turned so as to lift the brushes from the commutator rings.	

2. STOP MAGNET AND MAIN-SHAFT CLUTCH

Note: Because of the variety of combinations of stop magnet (also called start magnet, re-lease magnet, tape-stop magnet, or clutch magnet) and main-shaft clutch (either friction or all-steel), it has not been feasible to give here an unbroken sequence of adjustments for any one situation. Therefore it is suggested that the section be followed from beginning to end, skipping the inapplicable requirements and identifying the applicable requirements by their associated figure drawings.

2.01 Main Shaft: Rotate the main shaft until the operating lever roller just starts to ride up the high part of the cam. Position the main shaft so that there is some clearance between the lower surface of the cam and the upper surface of the operating lever when all the play of the operating lever is taken up in a direction to make the clearance a minimum. When the play in the operating lever is taken up in the direction to make the clearance a maximum, this clearance shall not exceed 0.040 inch. (See Figure 1.)

To Adjust: Loosen the main-shaft bearing cap screws and raise or lower the main shaft. Tighten the screws.

2.02 Motor Position: There shall be barely perceptible backlash between the motor pinion and the main-shaft gear at their closest point.

To Adjust: Loosen the motor mounting screws and position the motor. Tighten the screws.

Note: 2.03 through 2.09 apply to transmitter-distributors equipped with the TP104669 start magnet (part of Figure 2), such as the 14AA, AB, ABM, AD, AP, AR, and AS transmitter-distributors.

2.03 Magnet Core: The armature shall strike both pole faces simultaneously and any air gap between the armature and the pole faces (when the armature is held against the pole faces) shall not exceed 0.005 inch. See Figure 2 for location of parts.

To Adjust: Loosen the start magnet core mounting screws and position the core. Tighten the screws.

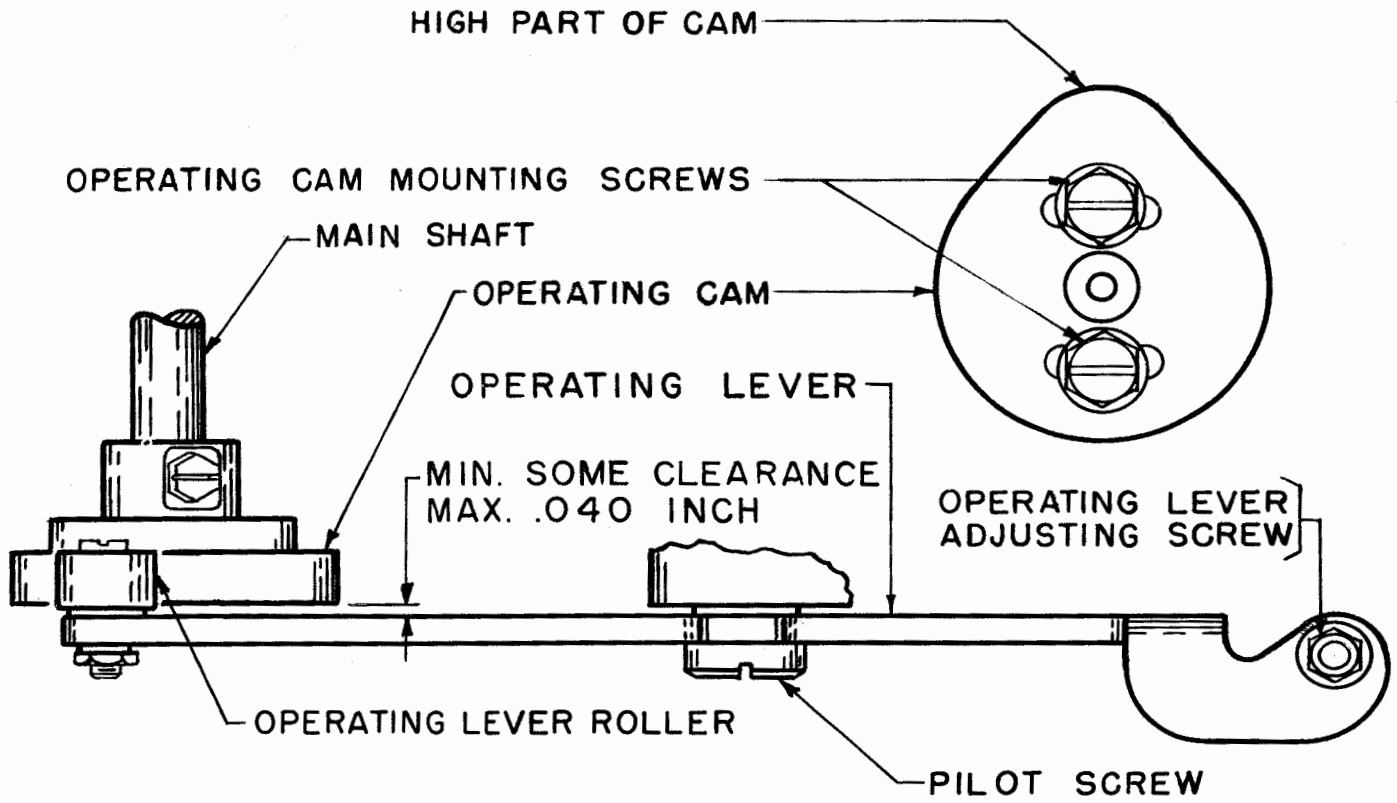


Figure 1

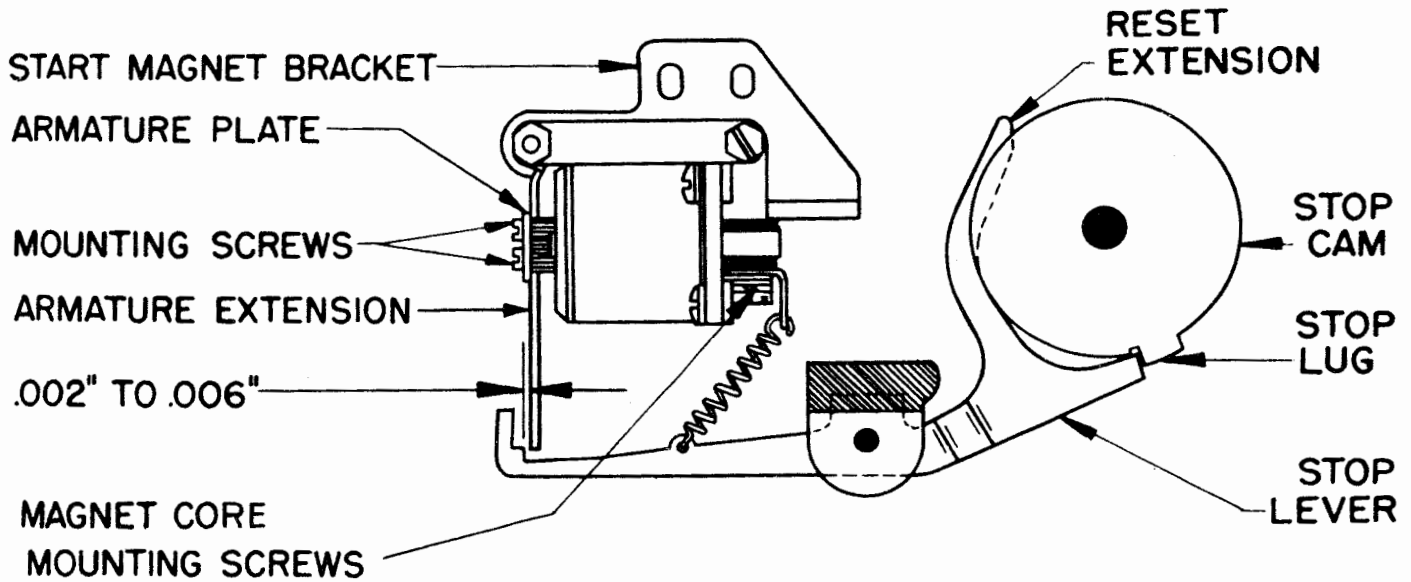


Figure 2

Note: For dc operation the chrome plated side of the magnet armature stamped C should be next to the magnet core. For ac operation the C side should be away from the magnet core in order to reduce chatter and ac hum.

2.04 Armature Plate: The armature plate shall fully cover the pole faces. See Figure 2 for location of parts.

To Adjust: Loosen the armature plate mounting screws and position the plate.

2.05 Stoplever Pilot Screws (On units equipped with friction clutch):

(a) Requirement for type of stop cam shown in Figure 3A: With the reset extension resting on the high part of the stop lug, there shall be minimum 0.010, maximum 0.020 inch clearance between the top surface of the stoplever and the lower surface of the stop cam at the closest point.

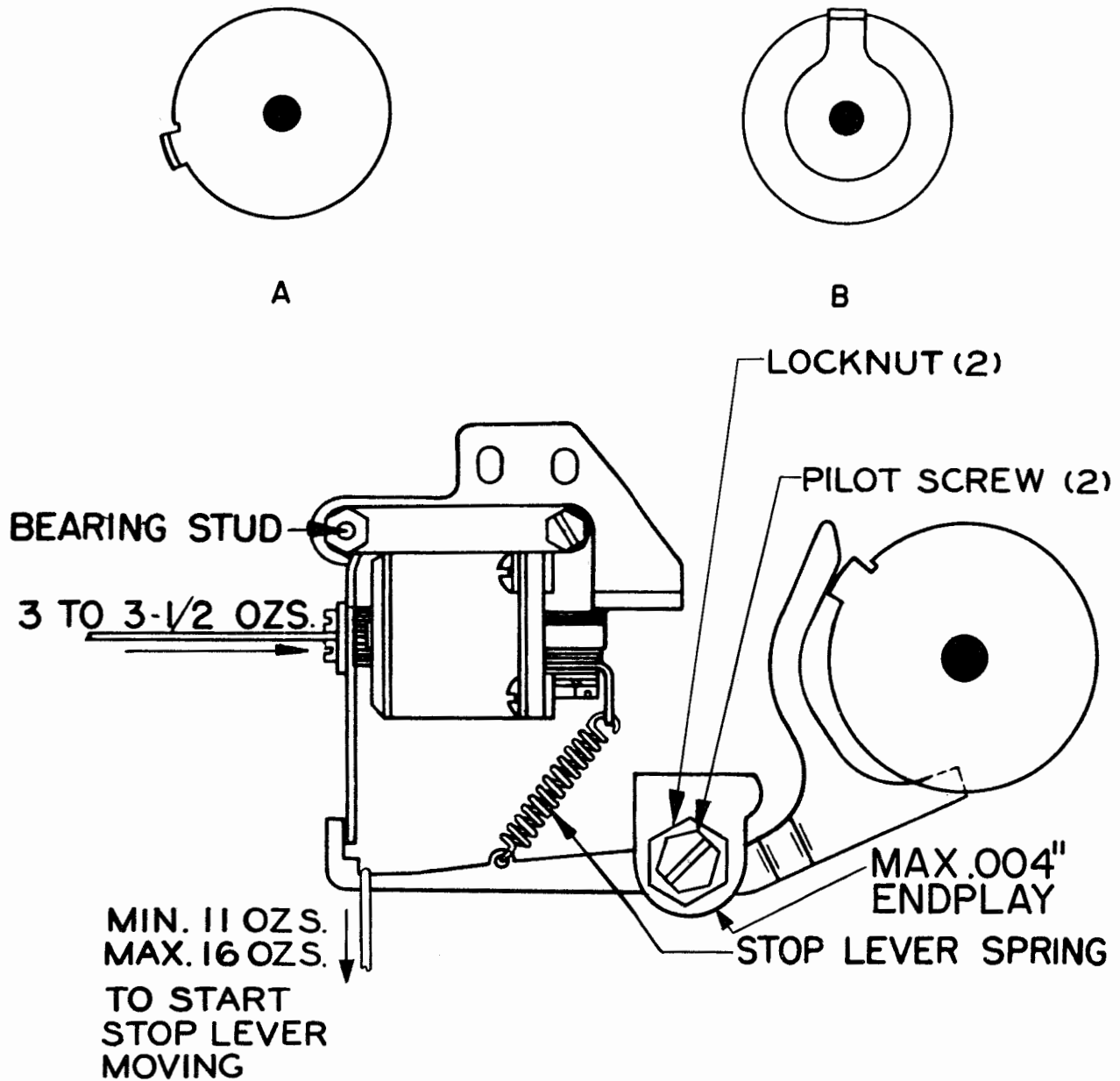


Figure 3

(b) Requirement for type of stop cam shown in Figure 3B: With the stop lug cam against the end of the stoplever, the stoplever shall fully engage the stop lug below its radius and the latching portion of the stoplever shall engage the armature extension between its upper and lower edges.

(c) The stoplever shall have some vertical play, not more than 0.004 inch without bind, between the pilot screws. Gauge by feel.

To Adjust: Loosen the stoplever pilot screw locknuts and position the lever by means of the pilot screws. Tighten the locknuts.

2.06 Stoplever (and Latchlever) Pilot Screws
(On units equipped with all-steel clutch):
With the start magnet de-energized and the end of the clutch-shoe lever against the stoplever, the top of the stoplever shall be flush with the top of the clutch-shoe lever within 0.010 inch. See Figure 10 for location of parts. Make certain that there is some, not more than 0.004 inch, endplay between the pilot screws. Gauge by eye.

To Adjust: Loosen the locknuts and move the stoplever up or down as required by turning pilot screws. Tighten locknuts securely.

2.07 Start Magnet Bracket

(a) When the armature is resting against the pole pieces and the armature extension is resting on the bottom of the unlatch step of the stoplever, there shall be minimum 0.002, maximum 0.006 inch clearance between the right edge of the unlatch step and the left edge of the armature extension at the closest point. (See Figure 2.)

(b) The right edge of the latch step of the stoplever shall be parallel to the left edge of the armature extension in its latched position. (See Figure 3.)

(c) For units equipped with friction clutch:
With the armature in the latched position, the rear edge of the stoplever shall be flush with, or not more than 0.010 inch in front of, the rear edge of the stop lug. See Figure 2 for location of parts.

(d) For units equipped with all-steel clutch:
When the cam is holding the stoplever at its greatest distance from the armature extension the latching step shall be minimum 0.001, maximum 0.005 inch away from the end of the armature extension. (See Figure 4.)

To Adjust: Reposition the whole start magnet bracket by means of the bracket mounting screws.

2.08 Armature Lever Spring: With the armature extension in its latched position (armature not attracted) and the stoplever held away from the end of the armature extension, it shall require a pressure of minimum 3 ounces, maximum 3-1/2 ounces to start the armature moving when the push end of an 8-ounce scale is applied horizontally to the armature between the screws. (See Figure 3.)

To Adjust: Tighten or loosen the armature torsion spring by means of the bearing stud.

2.09 Stoplever Spring: With the armature latched in its unoperated position, hook a 32-ounce scale over the left end of the stoplever and pull horizontally at right angle to the stoplever. It shall require minimum 11 ounces, maximum 16 ounces to start the stoplever moving. When measuring this tension the stoplever should not touch the stop lug. (See Figure 3.)

Note: 2.10 to 2.21 inclusive apply to transmitter-distributors equipped with the all-steel internal expansion clutch.

2.10 Stoplever Spring

(a) On units equipped with the TP136154 modification kit: Hold the armature against the magnet poles, making sure that the reset cam will not touch the camming leg of the stoplever, and hook an 8-ounce scale over the armature end of the stoplever. It shall require minimum 3 ounces, maximum 6 ounces to start the stoplever moving. (See Figure 5.)

(b) On units with other than the TP104669 start magnet: With the clutch magnet de-energized and the stoplever not in contact with the clutch disc stop lug, it shall require minimum 1-1/2 ounces, maximum 2-1/4 ounces to start the stoplever moving when an 8-ounce scale is hooked over its right end. See Figure 10 for location of parts.

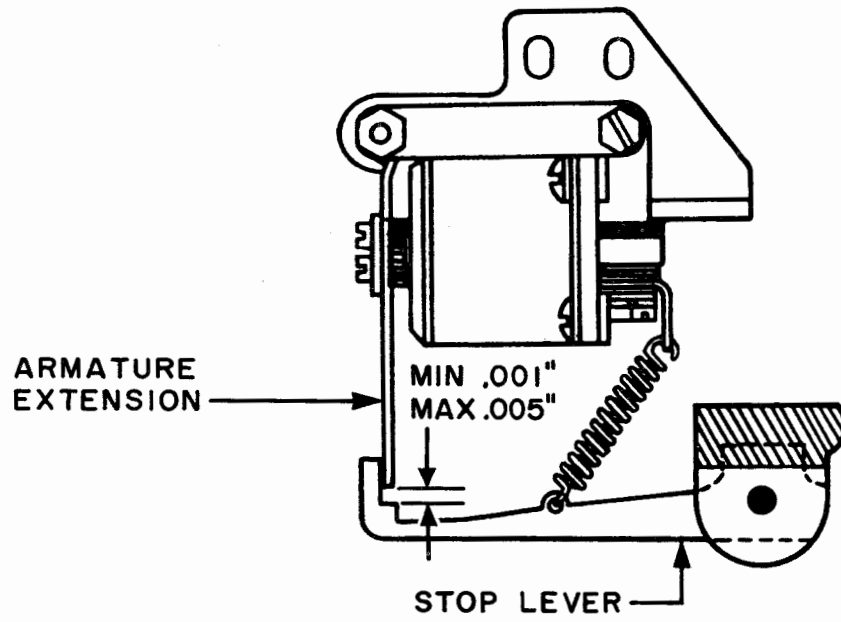


Figure 4

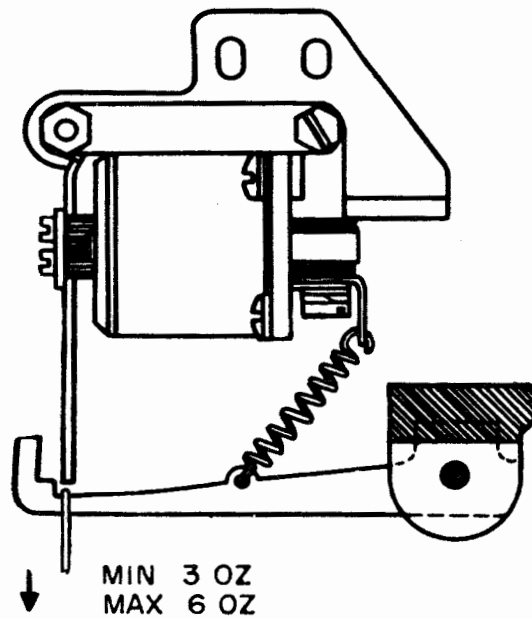


Figure 5

To Adjust: Loosen the bracket mounting screw so that it is friction tight and position the spring bracket in its mounting hole. Tighten the mounting screw. Check the latchlever spring tension.

2.11 Latchlever Spring: With the latching edge of the clutch disc away from the latchlever (when used with the TP104669 start magnet) or with the latchlever on the low portion of the clutch disc (when used with other type magnets) hook an 8-ounce scale over the end of the latchlever and pull at a right angle to the lever. It shall require minimum 2 ounces, maximum 3 ounces to start the latchlever moving. See Figure 10 for location of parts.

To Adjust: Loosen the bracket mounting so that it is friction tight and position the spring bracket in its mounting hole. Tighten the mounting screw. Check the stoplever spring tension.

2.12 Latchlever Stop: With the magnet de-energized and the brushes rotated 180 degrees from the stop position there shall be minimum 0.020, maximum 0.030 inch gap between the outer circumference of the clutch disc and the tip of the latchlever. See Figure 10 for the location of parts.

To Adjust: Loosen the latchlever adjusting screw and rotate it in or out to meet the requirement. Tighten the TP3599 locknut securely.

2.13 Reset Cam (On units equipped with the TP136154 modification kit): The peak of the reset cam shall just pass the end of the

camming leg on the stoplever as the clutch-shoe lever comes in contact with the stoplever. The reset cam shall ride in the center of the camming leg on the stoplever.

To Adjust: Loosen the clamp screw on the reset cam and position the cam. Tighten the clamp screw.

2.14 Clutch-shoe Lever: With the clutch in its latched position (clutch disengaged) measure the gap between the clutch-shoe lever and the clutch disc stop lug. With the clutch engaged and with the shaft rotated until the clutch-shoe lever and the stop lug are easily accessible (and the stoplever not engaging the clutch-shoe lever) again measure the gap between the shoe lever and the stop lug. This gap shall be minimum 0.055, maximum 0.085 inch greater than the one previously measured. (See Figure 6.)

To Adjust: Loosen the two clamp screws in the clutch disc and rotate the adjusting plate by engaging a wrench on the adjusting plate extension. Tighten the clamp screws.

Note: After the above adjustment is made disengage the clutch and rotate the clutch drum. There should be no drag on the drum. If necessary, refine the above adjustment so that the allowable gap is obtained.

2.15 Clutch-shoe Spring: With the clutch drum removed and an 8-ounce scale applied to the primary shoe at tangent to the friction surface it shall require minimum 3 ounces, maximum 5 ounces to start primary shoe moving away from secondary shoe at point of contact. (See Figure 7.)

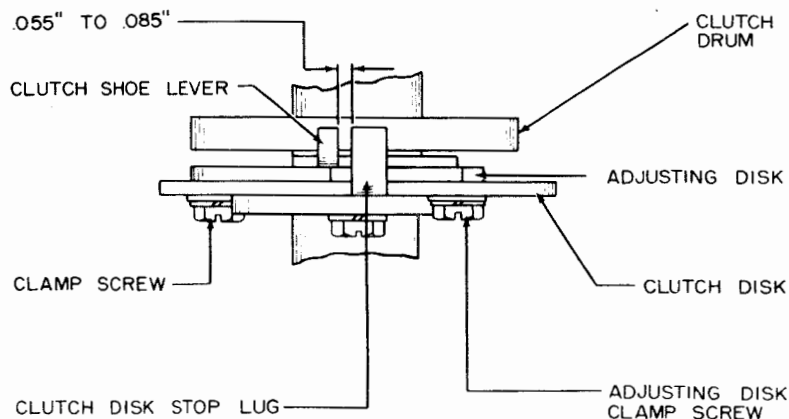


Figure 6

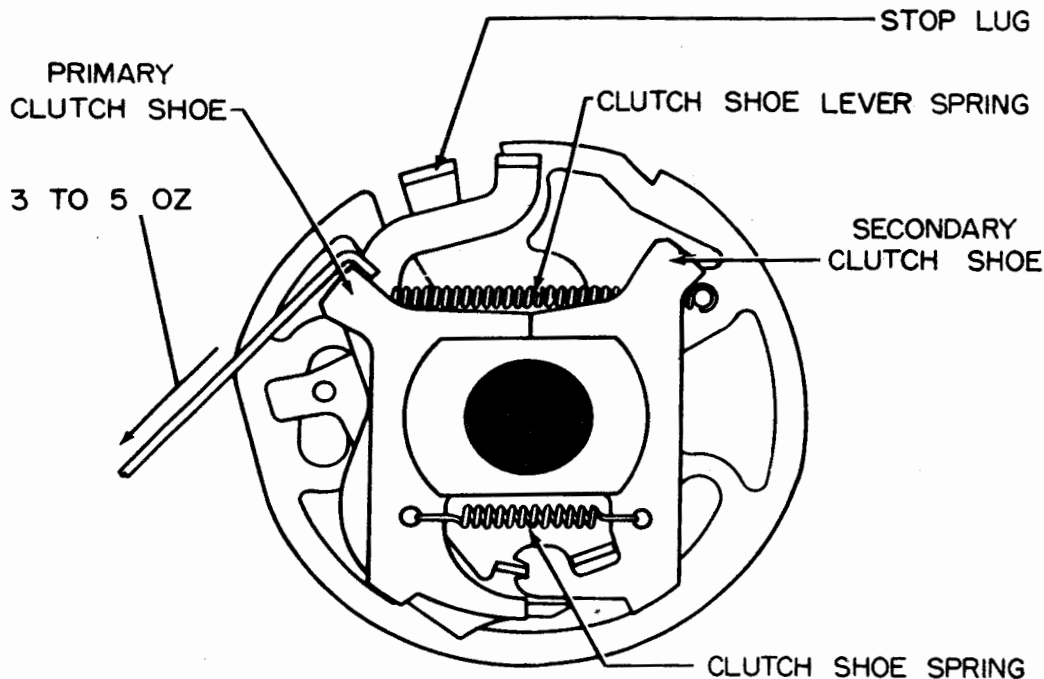


Figure 7

Note: In order to check this tension it is necessary to remove the clutch from the main shaft. Therefore, it should not be checked unless there is good reason to believe that it does not meet its requirement.

2.16 Clutch-shoe Lever Spring: With the clutch engaged and the clutch disc held to prevent it from turning, it shall require minimum 16 ounces, maximum 20 ounces to move the shoe lever in contact with the stop lug. (See Figure 8.)

2.17 Gear Guard: Make certain that the gear guard does not interfere with the gear.

2.18 Operating Lever Spring (100 wpm operation): With the operating lever roller on the low part of its cam, it shall require minimum 3-1/2 ounces, maximum 6-1/2 ounces to stretch the operating lever spring to its position length. (See Figure 9.)

To Adjust: Reposition the bracket by means of its mounting screws.

2.19 Bail Spring (100 wpm operation): It shall require minimum 2 ounces, maximum 3 ounces to stretch the bail spring to its position length. (See Figure 9.)

Note: The adjustments in 2.20 and 2.21 should be made in conjunction with each other.

2.20 Stoplever Pilot Screws (On units equipped with other than TP104669 start magnet): With the clutch magnet de-energized, the top surface of the latchlever shall be flush to within 0.015 inch above the top surface of the disc, when the play in the latchlever is taken up in an upward direction. (See Figure 10.)

To Adjust: Loosen the pilot-screw locknuts and position the latchlever by means of the pilot screws. Tighten the locknuts. Check to see that the stoplever is free on its bearings, but it should not have perceptible play. The extension of the armature backstop bracket should be against the main-shaft casting when the locknuts are tightened.

2.21 Armature Backstop (On units equipped with other than TP104669 start magnet): With the clutch magnet de-energized and the clutch disengaged, the inner surface of the stoplever and the inner surface of the clutch-shoe lever shall be approximately flush. (See Figure 10.)

To Adjust: Loosen backstop-screw locknut and position the backstop screw. Tighten the locknut.

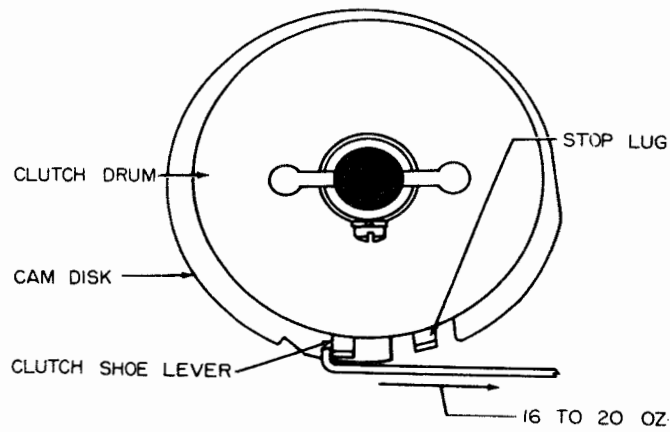


Figure 8

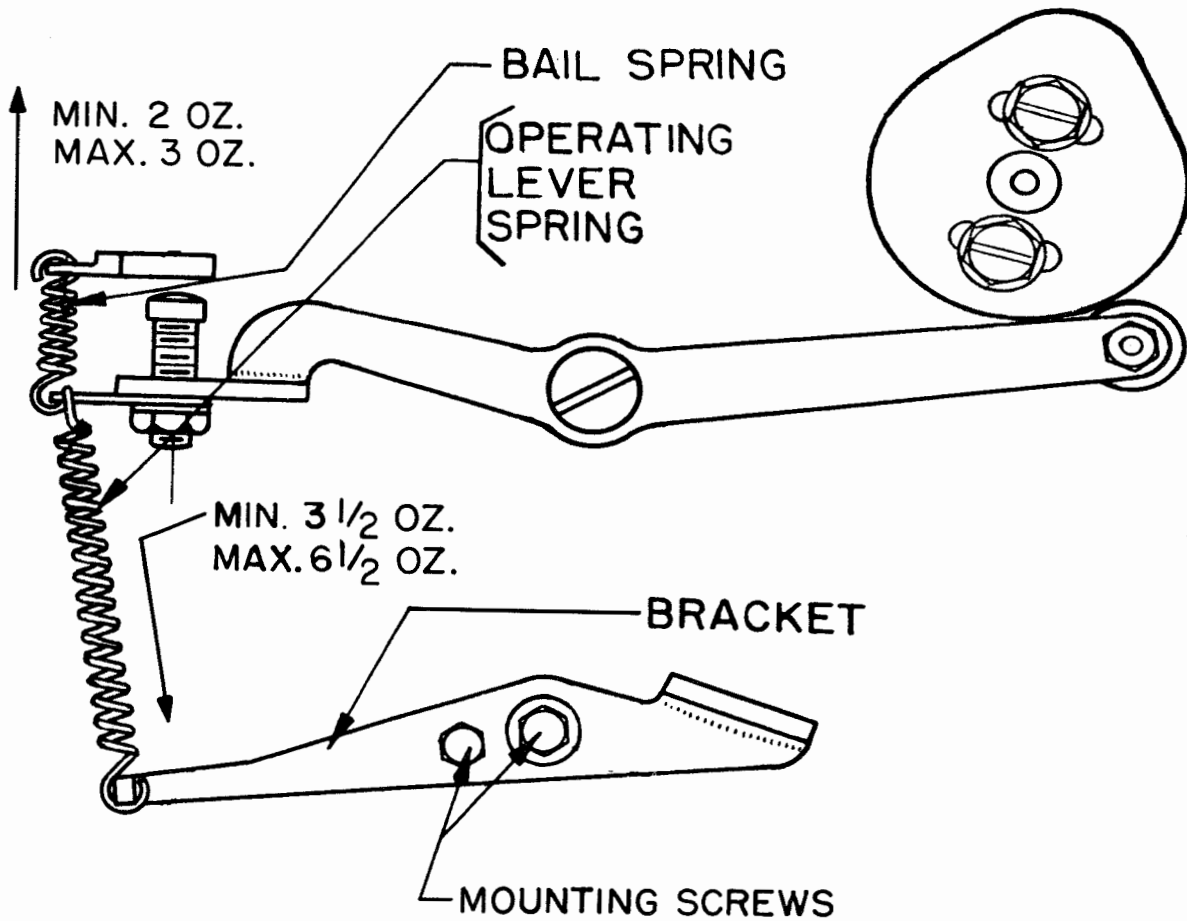


Figure 9

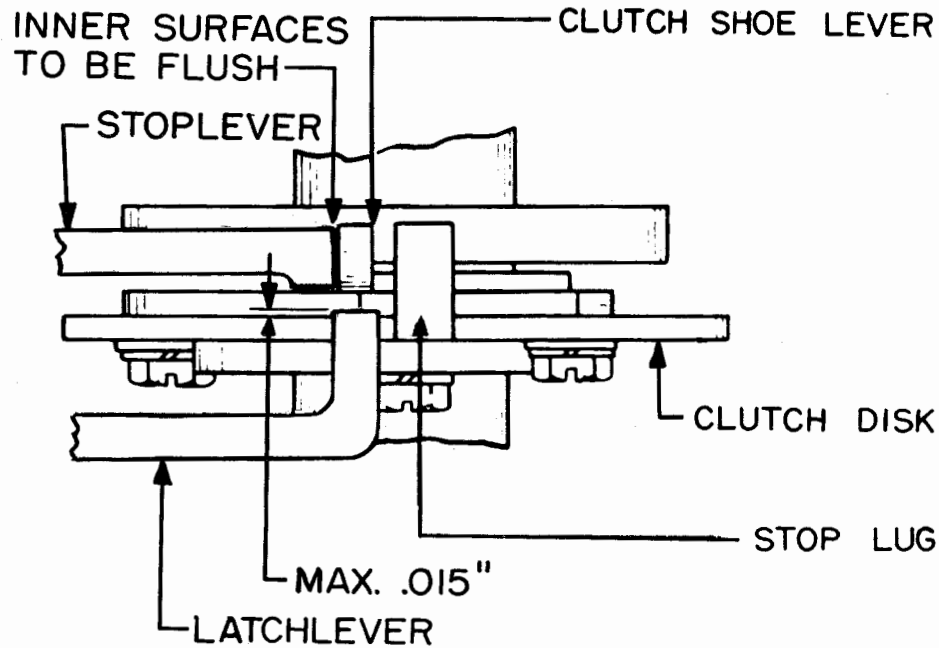


Figure 10

2.22 Single-coil Universal Magnet:

Note: The chrome-plated side of the magnet armature is stamped with a C or notched with a V-notch. For dc operation the C or notch should be turned toward the magnet core; for ac operation, away from it.

(a) The air gap between the upper and lower pole faces of the magnet yoke shall be approximately equal and minimum 0.010, maximum 0.020 inch when the armature is resting against the magnet core. (See Figure 11.)

To Adjust: For equal air gap, increase or decrease the number of TP8896 shims between the magnet bracket and the yoke. To adjust for 0.010 to 0.020 inch clearance, use TP8896 shims between the magnet core and the yoke.

Note: If the magnet hums when energized with ac, turn the bracket in a counterclockwise direction slightly to decrease the clearance between the armature and the part of the center pole encircled by the copper slug. Under this condition the maximum gap should be increased from 0.020 to 0.025 inch.

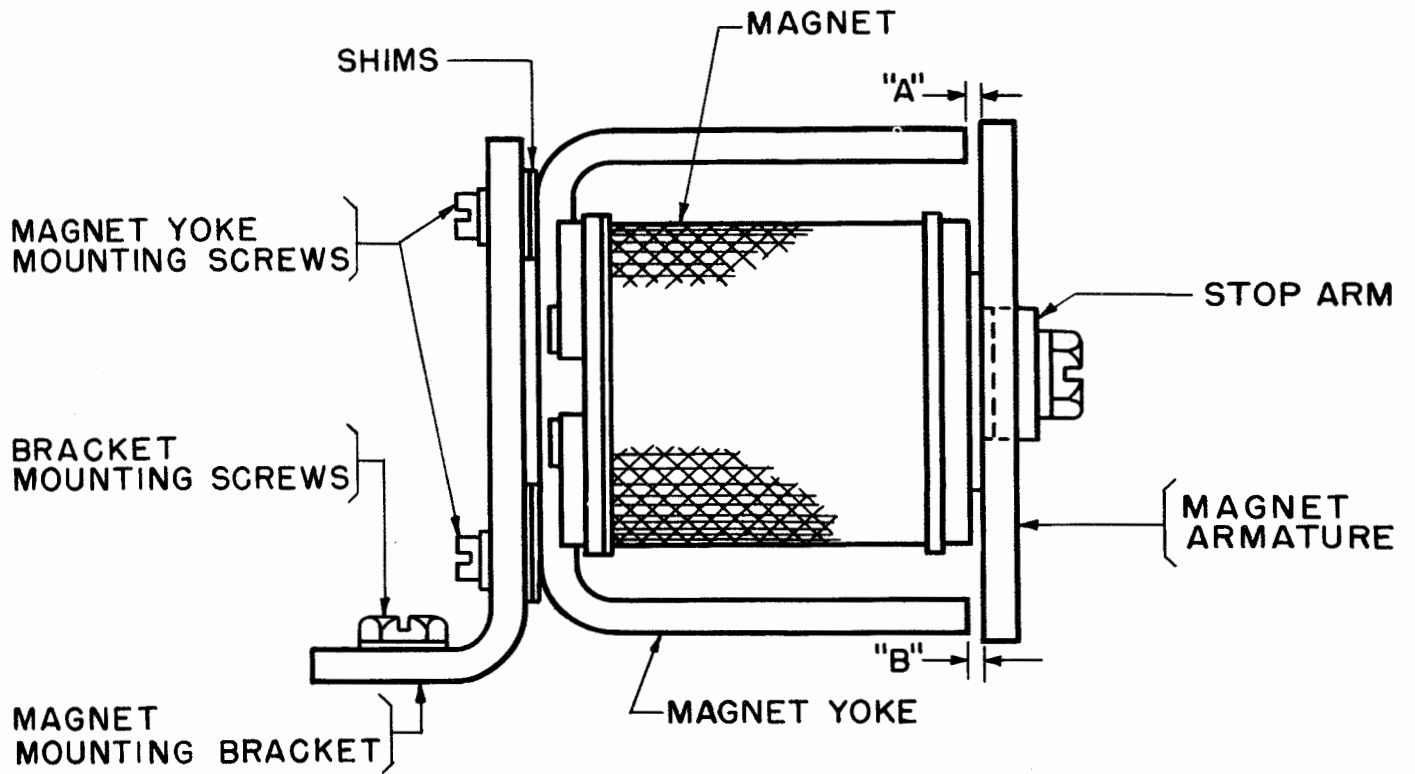
(b) When the armature is resting against the magnet core and the stop-cam lug is opposite the end of the stoparm, there shall be minimum 0.004, maximum 0.012 inch clearance (1) between the end of the stoparm and the stop-cam lug for units equipped with friction clutch (Figure 12), and (2) between the stoplever and the clutch-shoe lever or the clutch disc stop lug, whichever is closest, at point of minimum clearance for units equipped with all-steel clutch. (See Figure 10 for location of parts.) Also, the magnet yoke ends shall be parallel to the armature face and shall not extend beyond the armature edges (Figures 11 and 12).

To Adjust: Reposition the magnet bracket by means of its mounting screws.

2.23 Two-coil DC Magnet:

(a) The magnet cores shall not extend beyond the sides of the armature.

(b) When the armature is resting on one magnet core there shall not be more than 0.010 inch space between the armature and the other magnet core. (See Figure 13.)



"A" & "B" TO BE APPROX. EQUAL, .010" MIN., .020" MAX.

Figure 11

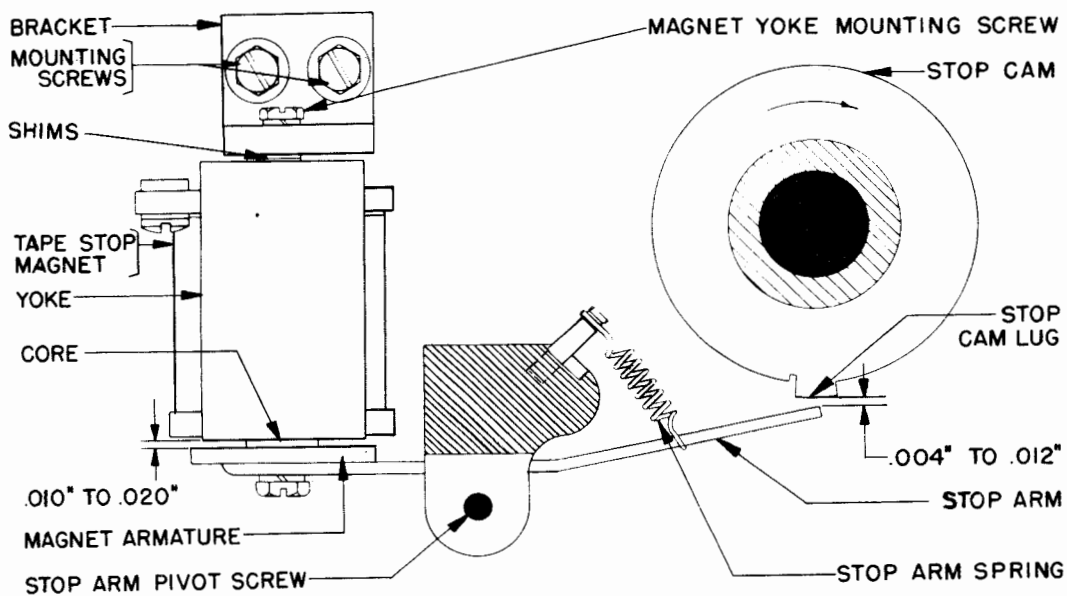


Figure 12

(c) When the magnet armature is held against the magnet cores and the stop-cam lug is opposite the end of the stoparm, there shall be minimum 0.004, maximum 0.012 inch clearance between the stop-cam lug and the end of the stoparm. (See Figure 13.)

To Adjust: For the 0.004 to 0.012 inch clearance, loosen the bracket mounting screws and position the bracket. Tighten the screws.

2.24 Stoparm Pilot Screws: With the stoparm engaging the stop-cam lug, the stoparm shall project above the upper edge and below

the lower edge of the stop-cam lug. There shall be some vertical play, not more than 0.004 inch, without bind between the stoparm pilot screws. Gauge by eye and feel. (See Figure 14.)

To Adjust: Loosen the stoparm pilot-screw locknuts and position the arm by means of the pilot screws. Tighten the locknuts.

2.25 Stoparm Spring

(a) Units equipped with ac synchronous or dc motors (TP55669 spring): The stoparm spring tension shall be minimum 5 ounces, maximum 7 ounces. (See Figure 15.)

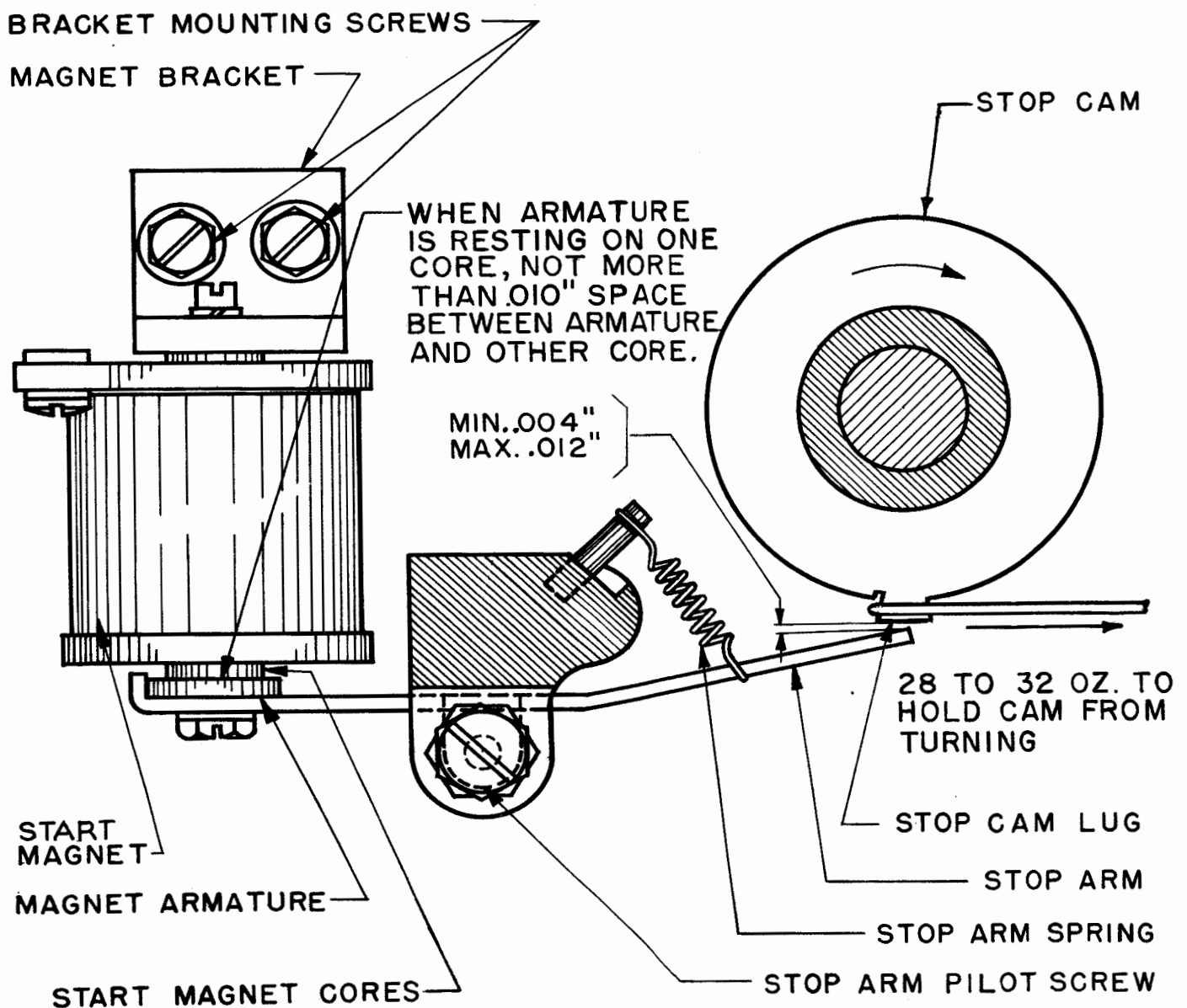


Figure 13

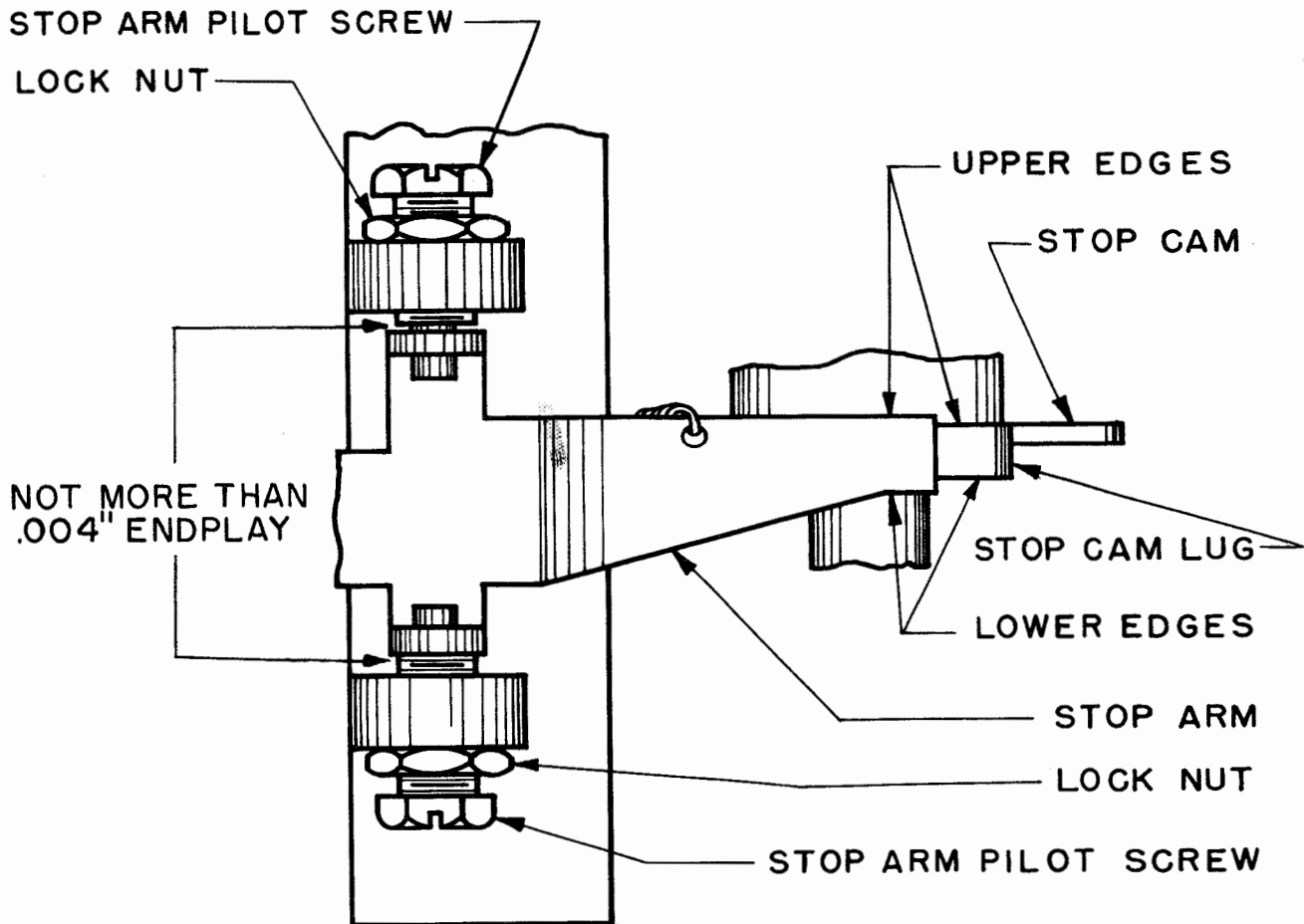


Figure 14

(b) Units equipped with ac governed motors and the TP86960 contact assembly shown in Figure 17: The stoparm spring tension shall be minimum 2-3/4 ounces, maximum 3-3/4 ounces (Figure 15). The contact spring (Figure 17) shall be held away from the stoparm when this tension is measured.

2.26 Stop Mechanism with TP106976 Make-start Contact Assembly:

Note: This mechanism, which includes make-start contacts directly above the magnet, is used on the 14B, BE, BF, and BG transmitter-distributors in the 81C1 switching system. The contacts close to lock up the stop magnet when the magnet is energized by momentary closure of the start contacts of the associated SOTUS. A subsequent momentary open of the stop contacts of the SOTUS, in series with these make-start contacts, stops the transmitter.

(a) The stoparm spring tension shall be minimum 5 ounces, maximum 7 ounces. Measure as in Figure 15, holding off the long contact spring.

(b) With the armature held against the magnet core:

- (1) There shall be some clearance between the magnet armature and the insulator. (See Figure 16.)

To Adjust: Position the spring assembly by means of the upper bracket mounting screws.

- (2) The contact springs and stop spring (stiffener) shall be in line and the whole contact assembly shall be vertical to the base casting. (See Figure 16.)

To Adjust: Reposition by means of the spring assembly mounting screws.

(3) The short contact spring shall bear against its stop spring (stiffener) with perceptible pressure.

To Adjust: Bend the short contact spring.

(4) With an 8-ounce scale hooked over the long contact spring at the contact point and pulled at a right angle to the spring, it shall require minimum 1 ounce, maximum 1-1/2 ounces to break the contact. (See Figure 16.)

To Adjust: Bend the long contact springs.

(c) With the armature released and the stop-arm on the low part of the stop cam: There shall be a gap of minimum 0.015 inch, maximum 0.020 inch between the contact points. (See Figure 16.)

To Adjust: Bend the contact points.

2.27 Stop Mechanism on Machines Driven by AC Governed Motors:

Note: The TP83844 modification kit, which includes the TP86960 contact assembly (Figure 17), provides governor spark protection for machines driven by ac governed motors. The contacts insert a 20-ohm resistor in series with the motor when the distributor starts.

(a) Stoparm Spring: See 2.25 (b).

(b) Contact Spring: It shall require minimum 2 ounces, maximum 2-3/4 ounces to just separate the contact points. When checking this requirement, make sure that the bakelite extension on the contact does not touch the stoparm. [See Figure 17(A)]

To Adjust: Bend the contact spring. If necessary, shift the contact bracket.

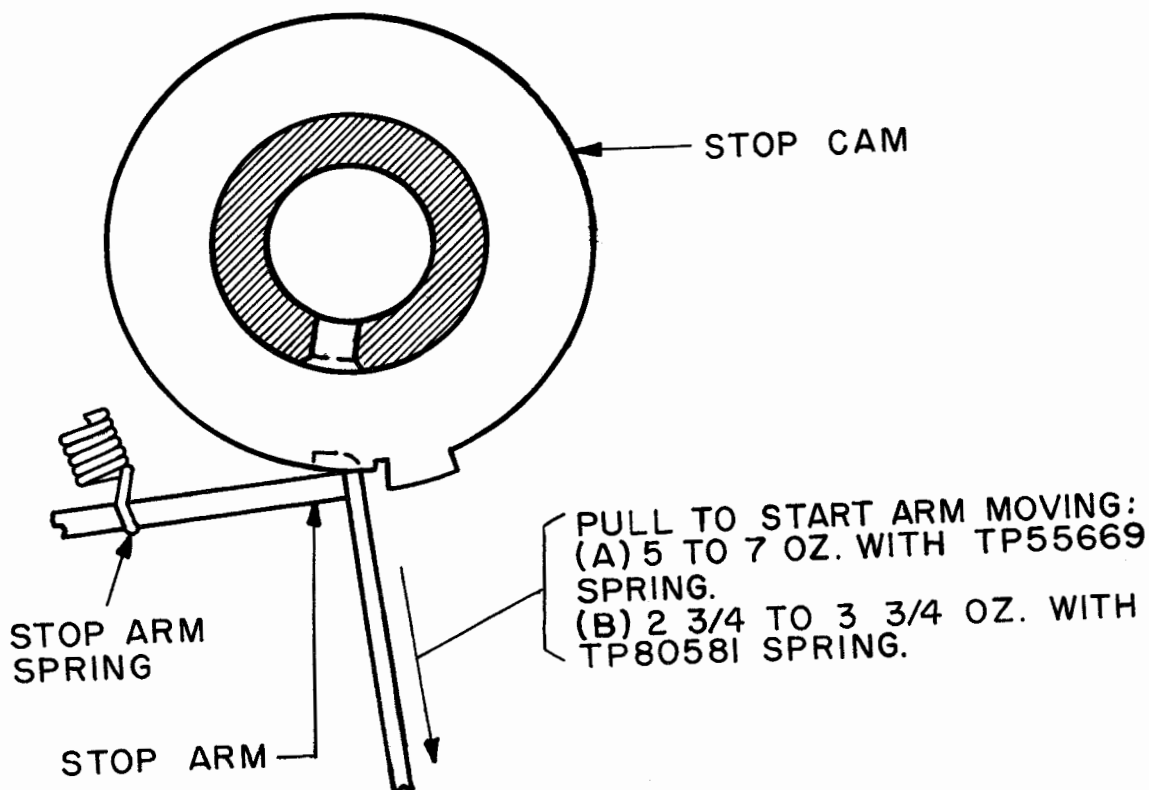
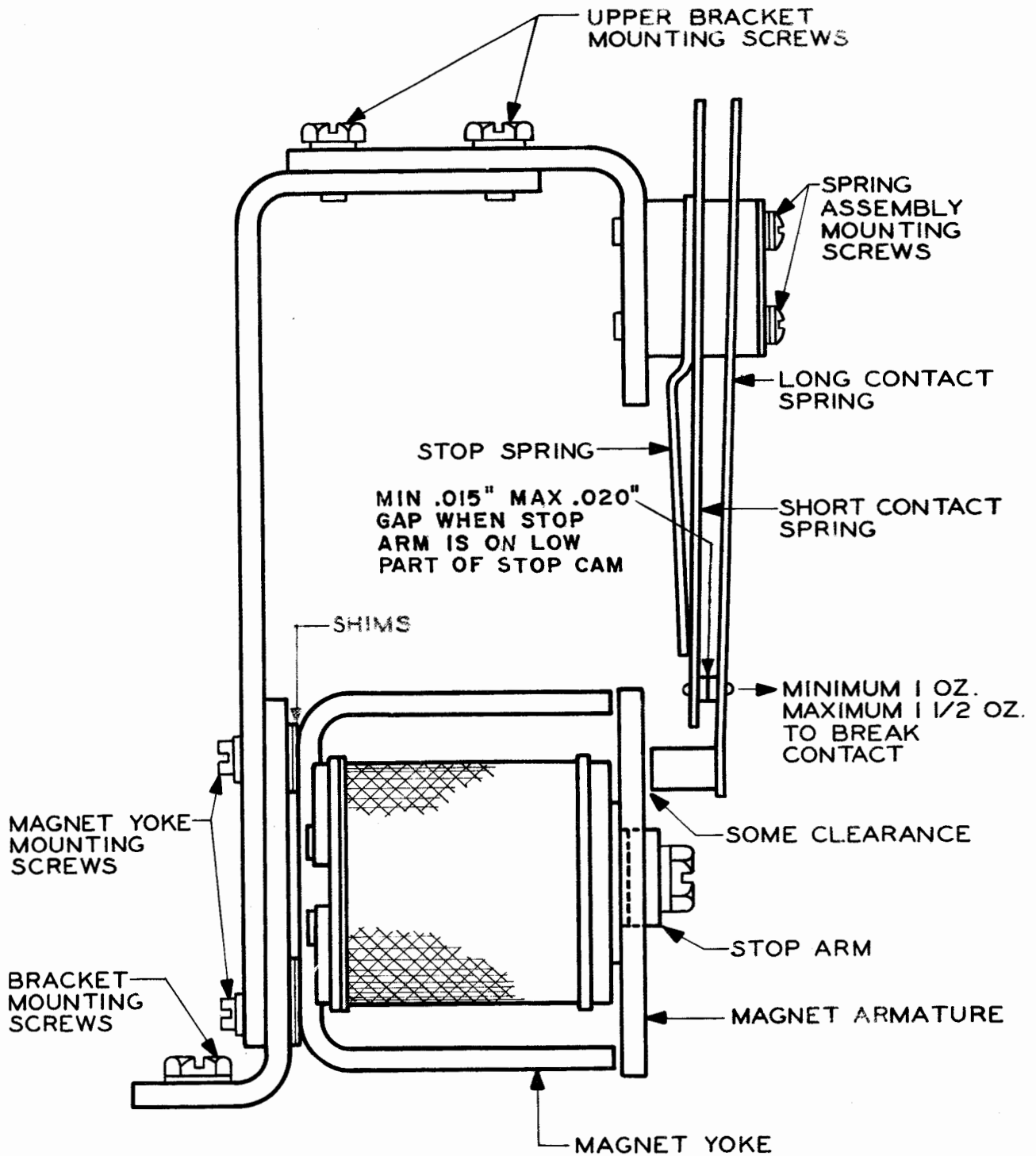


Figure 15



(ARMATURE HELD AGAINST MAGNET CORE)

Figure 16

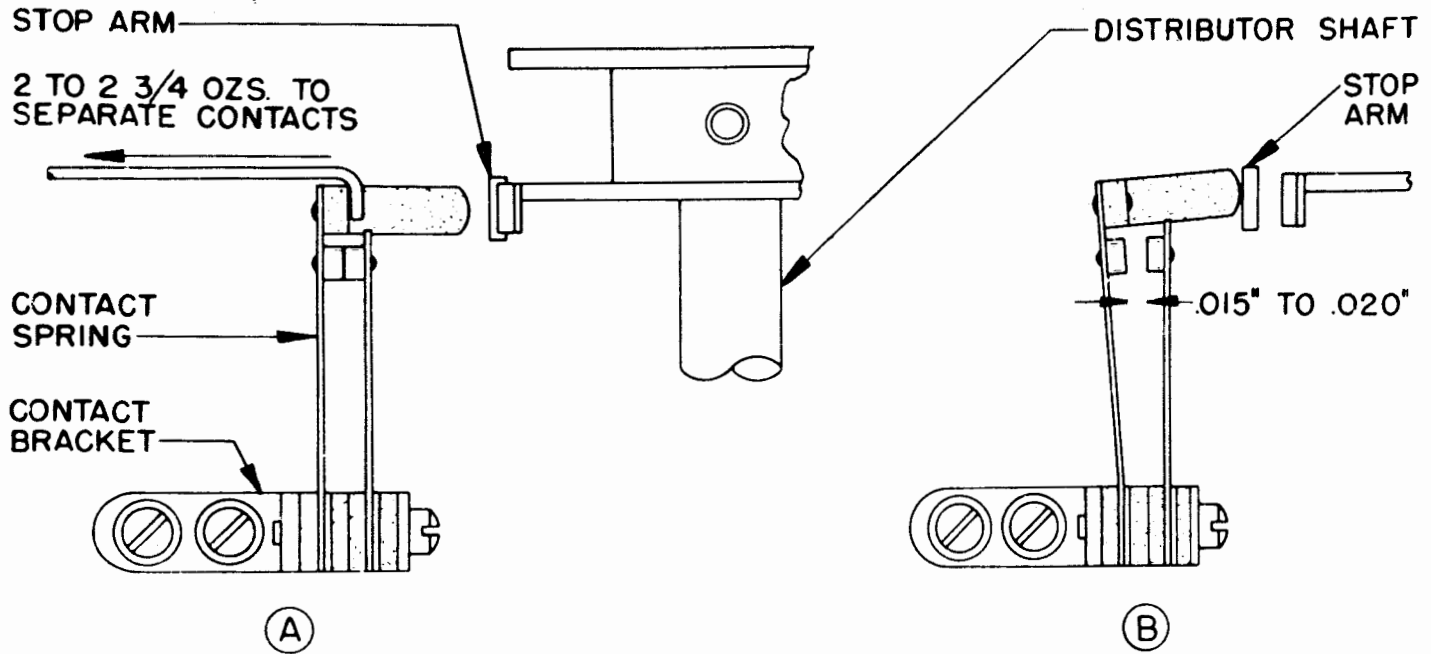


Figure 17

(c) Contact gap shall be minimum 0.015, maximum 0.020 inch when the stop-magnet armature is held against the magnet cores. [See Figure 17(B).]

To Adjust: Reposition the contact bracket by its mounting screws. Recheck (b).

3. TAPE FEED MECHANISM

Note: Remove the transmitter top plate for 3.01 through 3.07. The adjustments in 3.01 through 4.06 are interrelated and must be made in the order given. If it becomes necessary to change any adjustment all subsequent adjustments must be rechecked.

3.01 Tape Feed-pawl Spring Tension: Rotate the motor shaft until the feed pawl is in its uppermost position. It shall require minimum 1 ounce, maximum 2 ounces to hold the pawl in a vertical position. (See Figure 18.)

To Adjust: Loosen the feed-pawl screw and reposition the spring. Tighten the screw.

3.02 Detent-lever Spring: With the top plate held upside down and the detent roller in the hollow between two ratchet teeth, it shall

require minimum 15 ounces, maximum 18 ounces to start older style detent lever moving (Figure 19B); and minimum 12 ounces, maximum 15 ounces to start newer style detent lever moving (Figure 19A).

3.03 Feed-wheel shaft shall be free in its bearings and shall have some endplay, not over 0.002 inch.

To Adjust: Loosen the feed-wheel shaft bearing mounting screws and position the bearings.

3.04 Retaining Lid Latch: With the tape retaining lid held against the front guide rail on the tape-guide plate, the retaining lid latch shall operate freely under its own spring tension. The latch shall not close freely under these conditions when a 0.003-inch thickness gauge is placed between the retaining lid and the front guide rail. See Figure 23 for location of parts.

To Adjust: Increase or decrease the number of TP72069 shims between the latch wearing strip and the top plate.

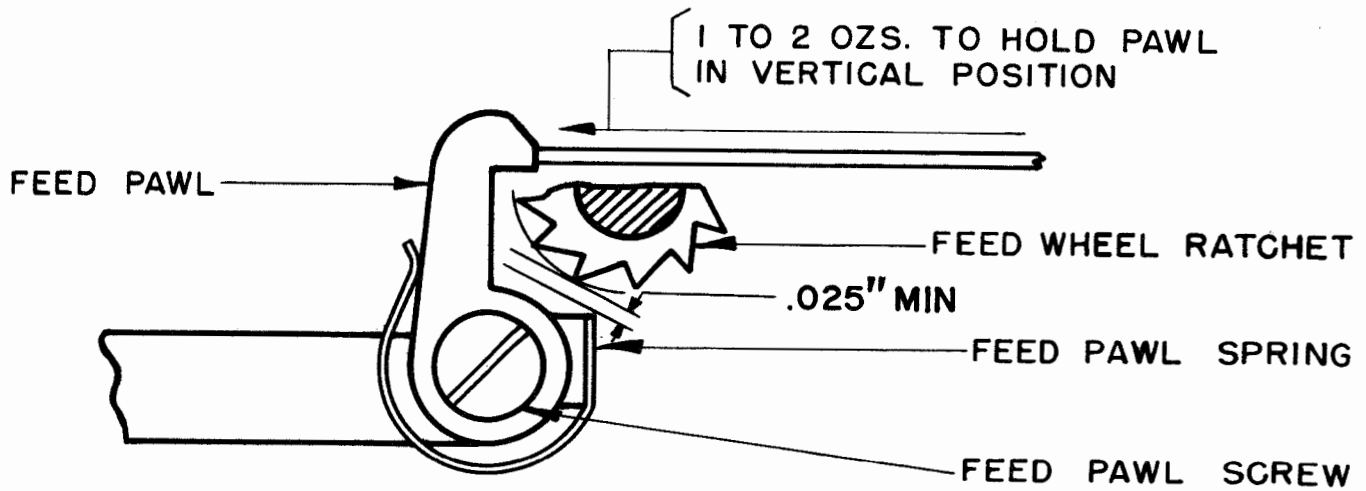


Figure 18

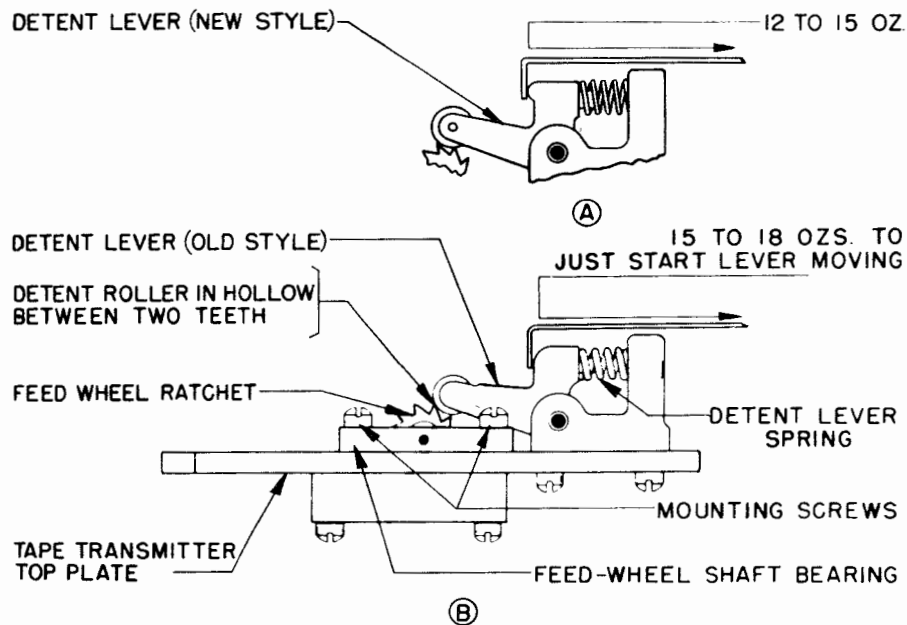


Figure 19

3.05 Tape Space

(a) On units designed to handle only regular tape [retaining lid plate has individual holes for the tape pins (Figure 22C)], the clearance between the tape guide and the retaining lid plate shall be minimum 0.006, maximum 0.008 inch throughout the area of

the retaining lid plate when the retaining lid is latched closed and the play is taken up in a direction to make this clearance a minimum. [See Figure 20(A)]

(b) On units designed to handle chadless tape [retaining lid plate has slots, either two crosswise or 5 lengthwise (Figure 22A and B)],

this clearance shall be minimum 0.011, maximum 0.014 inch. If spliced chadless tape is used the clearance shall be minimum 0.014, maximum 0.016 inch, and a check shall be made for closure of the spacing contacts with blank tape in the transmitter. [See Figure 20(B).]

To Adjust: Increase or decrease the number of shims between the retaining lid and the retaining lid plate.

3.06 Tape Guide: When a piece of perforated tape is engaged with the pins of the feed

wheel, there shall be equal clearances between edges of the tape and the tape guide. (See Figure 21.)

To Adjust: Reposition the tape guide by means of its mounting screws.

3.07 Adjustable Tape Guide: (TP105056 modification kit used with the 14AA, AB, ABM, and AD transmitter-distributors.) With tape held centrally in the tape guide, the front and rear adjustable eccentric posts shall be positioned so that the high part of each eccentric is

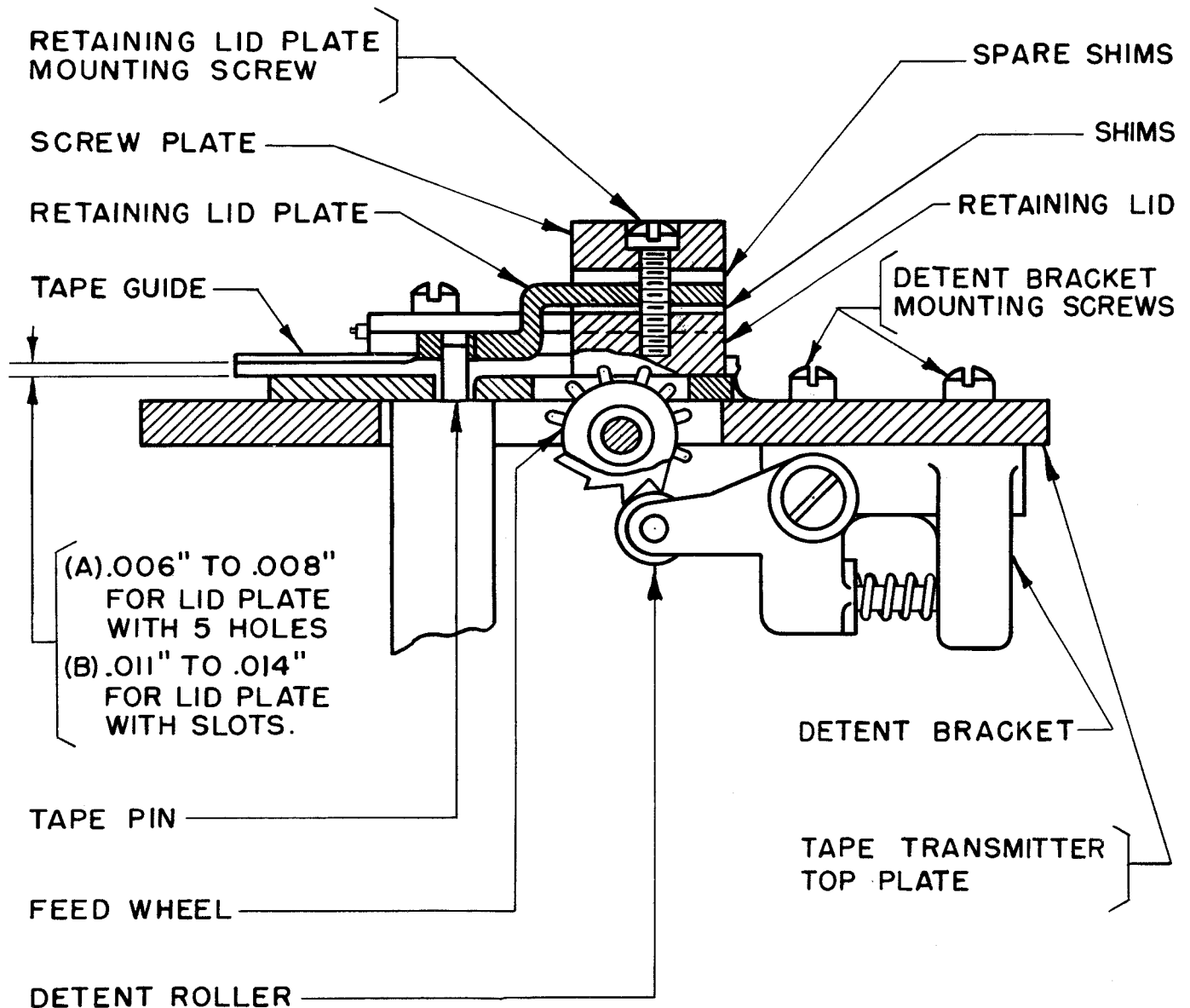


Figure 20

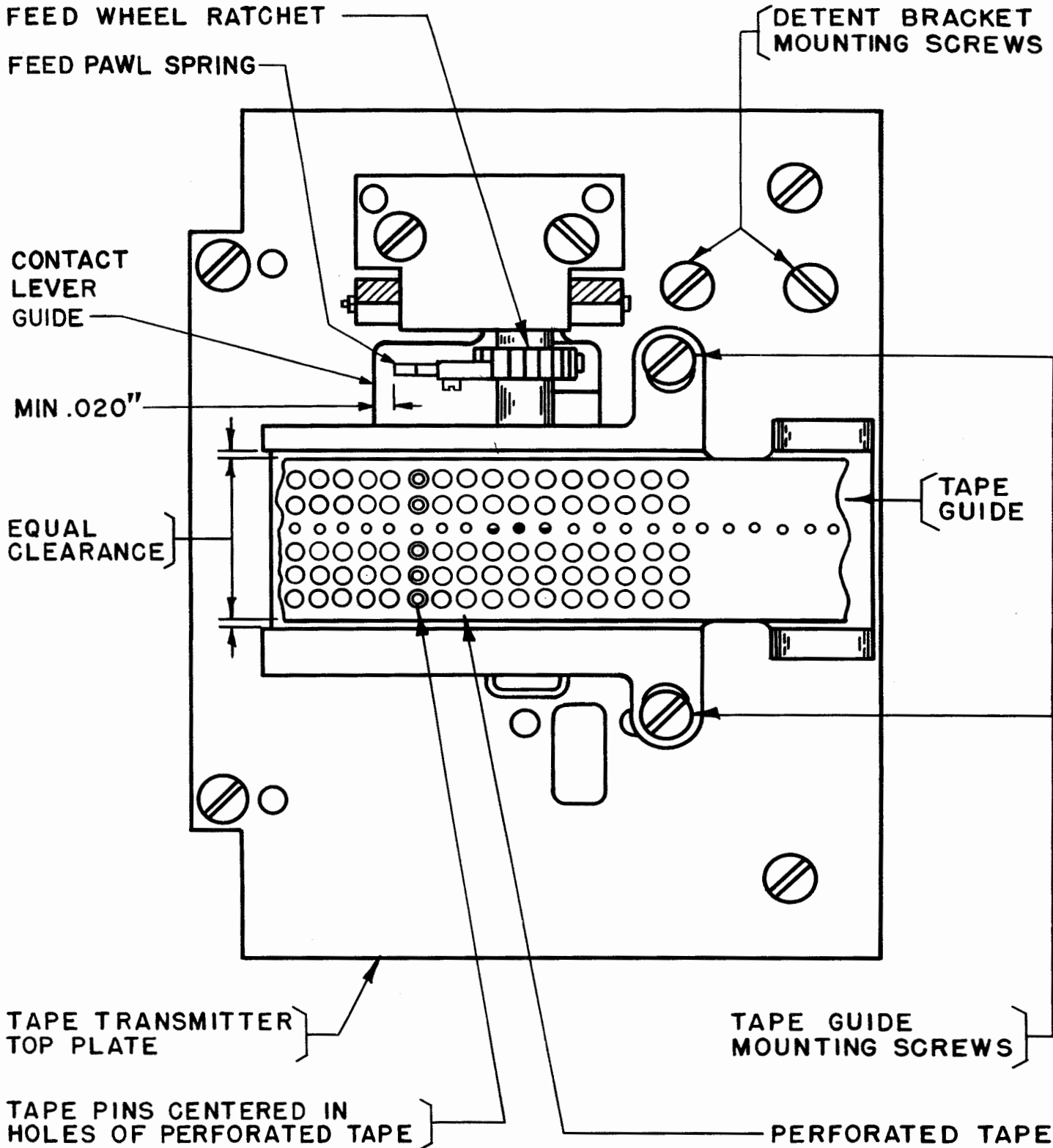


Figure 21

to the left and so that the posts barely clear the edges of the tape. When the tape is held against one post, it shall clear the other post by approximately 0.002 inch. If after making the adjustment the head of the TP1303 screw overhangs the eccentric post, the overhanging portion shall be stoned down to avoid the possibility of tape damage when the tape is removed from the transmitter.

Note 1: Make the single-step tape-feed suppression mechanism adjustments in part 15 if the unit is so equipped.

Note 2: Replace the transmitter top plate. When doing this, hold up the feed pawl so that it engages the feed-wheel ratchet. If the unit is equipped with the end-of-tape stop-contact mechanism, hold the contact operating pin to prevent it from falling out of its guide.

3.08 Feed-pawl Spring Clearance: There shall be minimum 0.020 inch clearance between the side of the feed-pawl spring and the contact-lever guide (Figure 21). There shall also be minimum 0.025 inch clearance between the feed-pawl spring and the feed-wheel ratchet when the feed pawl is in its uppermost position (Figure 18).

To Adjust: If these clearances do not exist, modify the tape-feed-pawl spring tension (3.01) within its specified limits to obtain the required clearance.

3.09 Detent Bracket: Use a tape gauge to check a piece of tape that has been perforated with a series of the LTRS combination to see that it meets the ten-holes-to-the-inch requirement. If chadless tape is used, fold the lids of one set of perforations backward so that the lids do not obstruct the holes. Engage the feed perforations with the feed wheel so that the unobstructed perforations are directly over the

tape pins. Disengage the stoparm or stoplever from the stop cam, rotate the governor or fan in a clockwise direction (when the unit is viewed from the front) until the tape pins are flush with the bottom of the tape. Check to see that the detent roller is resting in an indent between two teeth of the feed-wheel ratchet. When the play of the tape on the feed wheel is taken up toward the left, the tape pin farthest to the right shall just clear the right edge of its associated code hole. See Figures 20 and 21 for location of parts.

To Adjust: Reposition the detent bracket by means of its mounting screws.

3.10 Tape Retaining Lid Plate: The three types of plates in use on tape retaining lids are shown in Figure 22. Either regular or chadless perforated tape may be used with the types shown at A or B, but only regular perforated tape can be used with the type shown at C. Type A can also accommodate spliced chadless tape.

(a) Types A, B, and C shall all be positioned so that the edges of the plate are parallel to the tape guide. When the main shaft is rotated, type A or B retaining lid plate shall not interfere with the lids of chadless tape when the lids are raised by the tape pins. In checking the adjustment of type B, take up the play of the tape on the feed-wheel pins toward the right with the feed-wheel detent resting in an indent between two teeth on the ratchet.

(b) If regular tape is to be used exclusively, type A, B, or C shall be adjusted so that the openings in the plate are centrally located with respect to the pins when the pins are in their uppermost position.

To Adjust: Reposition the retaining lid plate by means of its mounting screws.

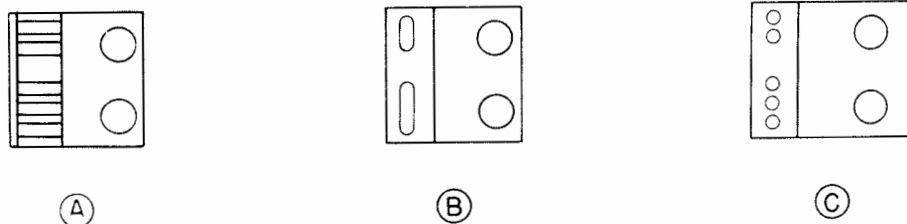


Figure 22

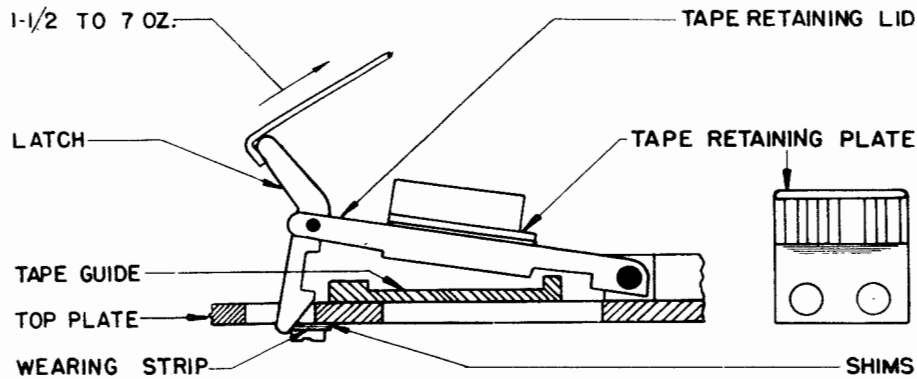


Figure 23

3.11 Retaining Lid Latch Spring: With the slope of the latch resting against the top plate (not latched), it shall require minimum 1-1/2 ounces, maximum 7 ounces to start the latch moving on its pivot.

3.12 Feed-lever Adjusting Screw: When the contact-lever bail is slowly operated by hand, the feed pawl shall just engage the first tooth above the horizontal center of the feed-wheel ratchet when the tape pins are flush with the upper surface of the tape guide on which the tape rests. (See Figure 24.)

To Adjust: Reposition the feed-lever adjusting screw until the feed wheel just starts to move when the tops of the tape pins are flush with the surface of the tape guide on which the tape rests. Check that when the brush arm is in the stop position, the feeding of the wheel has been completed and the detent has been bottomed between two teeth.

3.13 Operating Lever Adjusting Screw: When the operating lever roller (Figure 1) is on the highest part of its cam and the detent roller rests between two teeth on the feed-wheel ratchet, there shall be some clearance, maximum 0.010 inch, between the face of a tooth on the ratchet wheel and the face of the feed pawl. (See Figure 25.)

To Adjust: Loosen the operating-lever adjusting screw locknut and reposition the adjusting screw. Tighten the locknut and recheck the clearance.

Note: The following adjustment is made during the initial assembly of the unit and should require attention only if the parts have been damaged or dismantled.

3.14 Contact Tongues Alignment: The contact tongues shall be straight and parallel (both crosswise and lengthwise) to the upper contact screw bridge. The variation in alignment shall not exceed 0.030 inch. To check, back off contact screws. (See Figure 26.)

To Adjust: Bend the contact tongues.

3.15 Feed-lever Stop

Note: The feed-lever stop and an operating cam identified by a stamped letter X or XX are provided to handle chadless tape.

(a) With the operating lever roller on the low part of the operating cam and the detent roller resting in the notch between two teeth of the feed-wheel ratchet, there shall be minimum 0.050, maximum 0.070 inch clearance between the face of the feed pawl and the face of the first tooth above the horizontal center line of the feed-wheel ratchet. The feed lever shall be in contact with the blocking surface of the feed-lever stop. (See Figure 27.)

To Adjust: Reposition the feed-lever stop by means of its mounting screw.

(b) Rotate the motor manually until the adjusting lever (Figure 24) just contacts the lobe on the feed lever. With the contact-lever bail

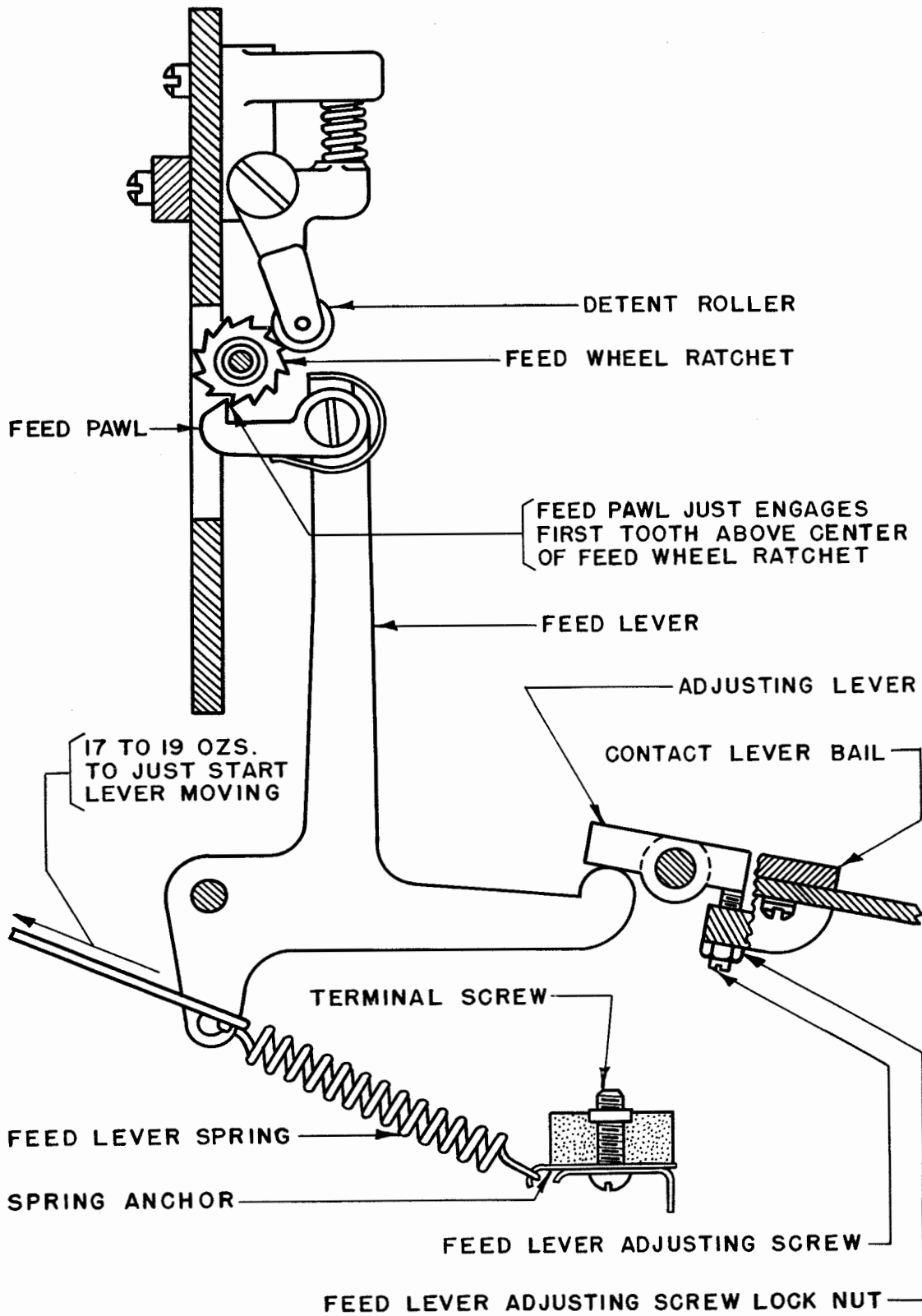


Figure 24

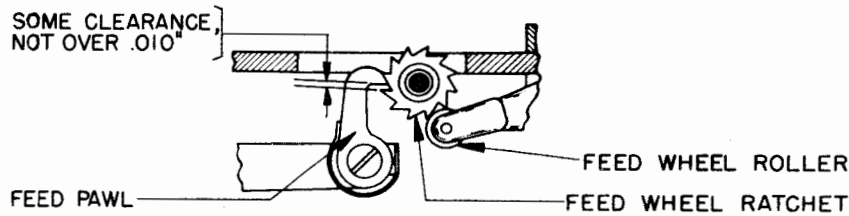


Figure 25

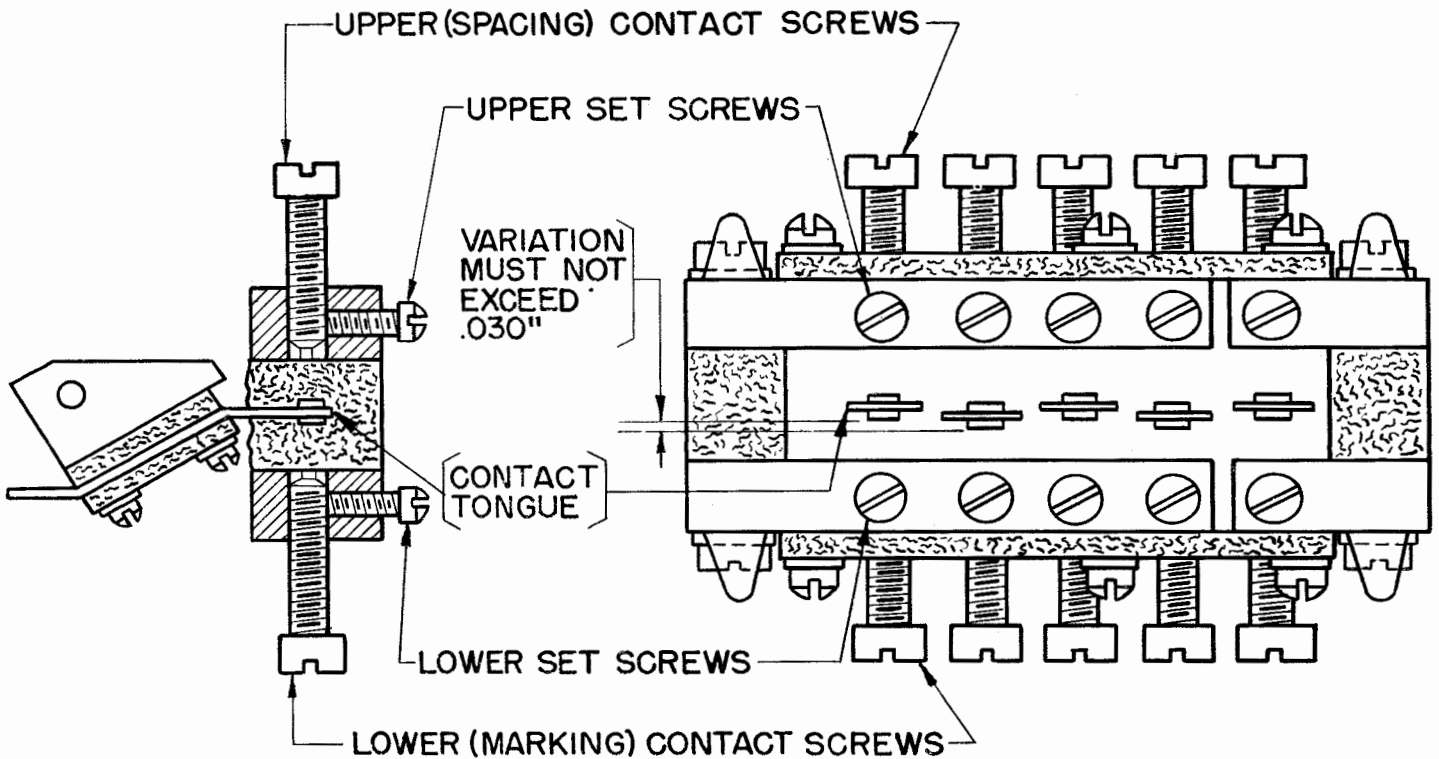


Figure 26

in this position there shall be minimum 0.002 inch clearance between the bail and each contact-lever lobe (Figure 28). If necessary refine the feed-lever stop adjustment.

(c) With the operating lever on the low part of the operating cam, there shall be minimum 0.010 inch clearance between the radius of the feed pawl or the feed-pawl spring and

the feed-wheel ratchet. If this clearance does not exist, refine the feed-lever stop adjustment. See Figure 27 for location of parts.

4. TRANSMITTER CONTACTS

4.01 Transmitter contacts shall be clean. A TP88993 contact burnisher may be used for this purpose.

4.02 Lower Contact Screws:

- (a) For Units Designed to Use Chadless Tape:
Rotate the main shaft until the operating-lever roller is resting on the low part of its cam. There shall be a minimum 0.020, maximum 0.025 inch clearance between the bottom of the straightedge and the top of each tape pin. (See Figure 28.)

To Adjust: Loosen the upper and lower setscrews and back off the upper contact screws (Figure 26). Then adjust the lower contact screws to meet the requirement. Tighten the lower setscrews. Recheck the minimum 0.002 inch clearance [3.15(c)] between the contact-lever bail and the lobe of each contact lever. If this clearance does not exist, refine the lower contact screw adjustments within the specified limits to obtain the desired clearance.

- (b) For Units Designed to Use Regular Tape Only: In order to check this adjustment it is necessary to remake it. With the contact setscrews loosened, and the upper and lower contact screws backed off, rotate the main shaft until the operating lever roller is on the low part of its cam. Advance the lower contact screws until their contact points just touch

the points on the contact tongues. To determine this point, use a lamp, buzzer, or ohmmeter. Then advance the lower contact screws an additional full turn and tighten their setscrews.

- 4.03 Upper Contact Screws: With the operating lever on the low part of its cam, there shall be a minimum 0.006, maximum 0.010 inch gap between the contact point of each upper contact screw and its associated contact tongue. (See Figure 28.)

Note: If the upper (spacing) contacts are used (14W, 14AA, and others), tolerance to 0.008 inch is not permitted. The requirement is met if a slight drag is felt when a 0.006-inch gauge is introduced between the contact points. The gauge should be removed from the nest and held carefully parallel to the contact surfaces.

To Adjust: Loosen the upper contact setscrews and adjust the upper contact screws. Tighten the setscrews.

- 4.04 Contact-lever Springs: With the operating lever roller on the low part of the cam, it shall take an upward pull of minimum 3 ounces, maximum 4 ounces to separate the contacts on units designed for use with regular tape only,

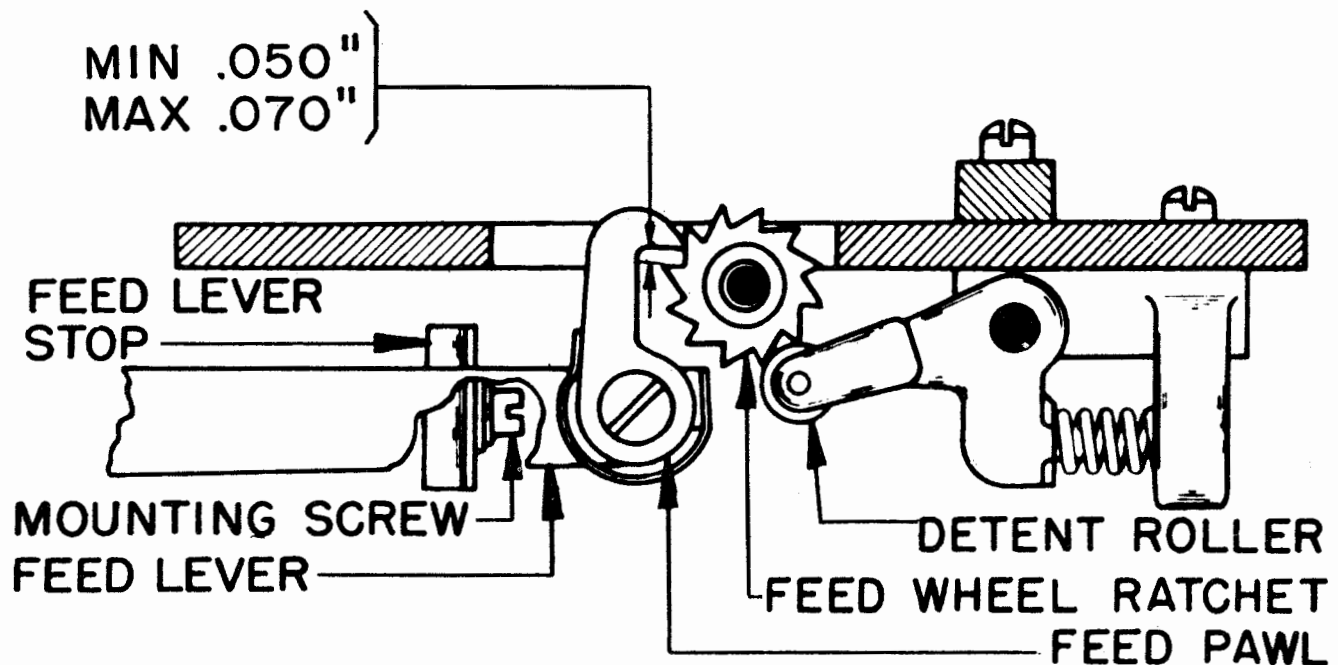
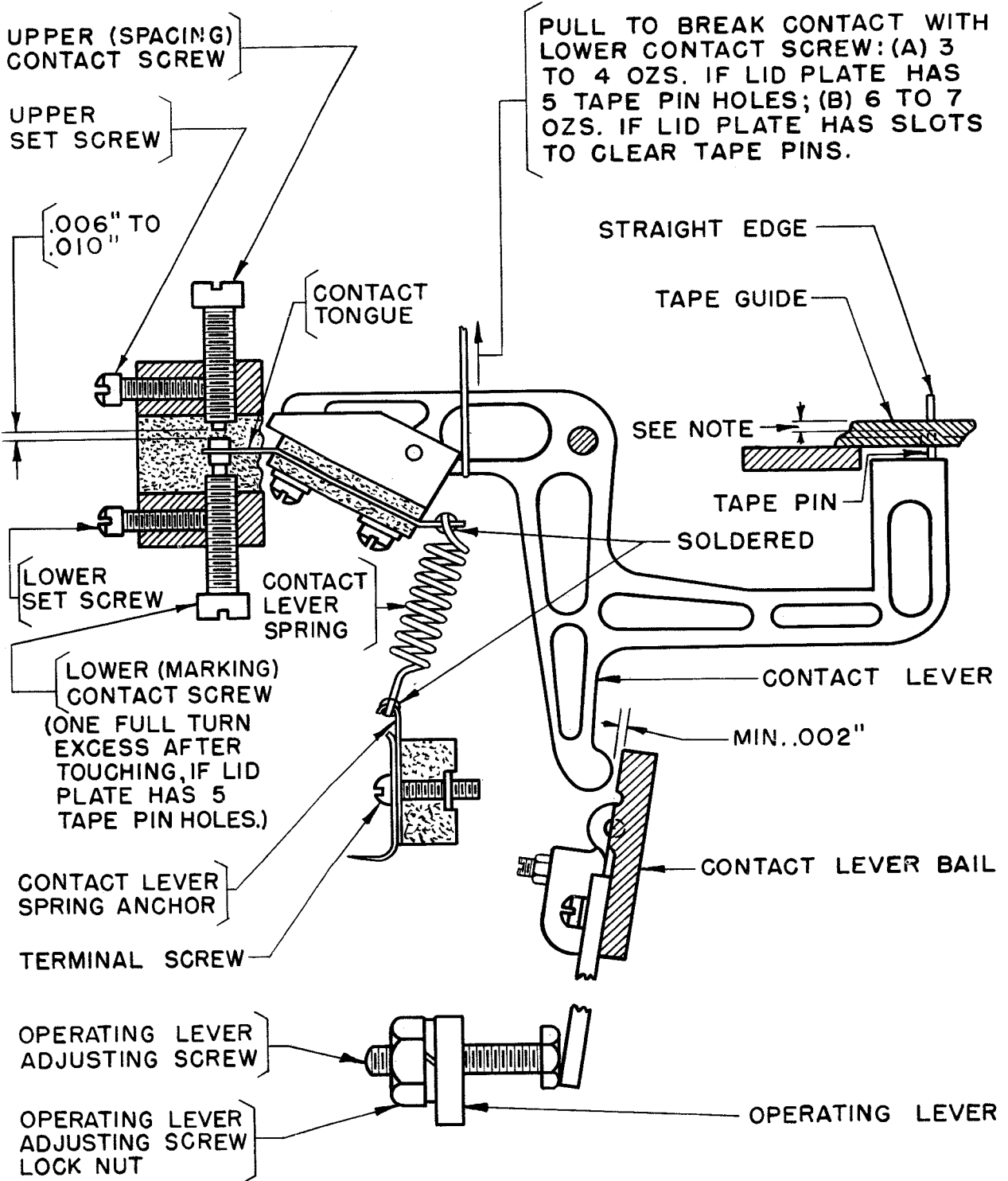


Figure 27



NOTE: .020 TO .025 IF LID PLATE HAS SLOTS TO CLEAR TAPE PINS.

Figure 28

and minimum 6 ounces, maximum 7 ounces on units designed to use chadless tape. Use a lamp, buzzer, or ohmmeter to determine when contacts break. (See Figure 28.)

To Adjust: Reposition the contact-lever spring anchors by their terminal screws.

4.05 Contact-lever Movement: The contact levers shall move freely to permit the lower contacts to close. This can be determined when, in making the measurement in 4.04, the pull on the scale is gradually reduced until the contacts close. The scale reading should not drop more than 3/4 ounce.

To Adjust: Remove the contact lever, clean the lever and the guide slot. Stone down any burrs on the lever and in the guide slot. If the bind has not been eliminated, replace the contact lever with a new one. Check the alignment of the contact-lever spring. If it is sufficiently out of line with the plane of the contact lever to cause a side pull, so that the lever binds in its slot, resolder the spring firmly but take care not to damage the spring or terminal block by too much heat.

4.06 Feed-lever Spring: With the operating lever roller on the low part of its cam, it shall require an upward pull of minimum 17 ounces, maximum 19 ounces to start the feed lever moving. (See Figure 24.)

To Adjust: Reposition the spring anchor by its terminal screw.

5. TAPE-FEED WITHHOLD MECHANISM

Note: The TP97460 magnet assembly (Figures 29 and 30), which is part of the TP136149 modification kit, stops the feeding of tape without stopping the brush arm.

5.01 Armature Air Gap: With the armature released, the air gap, measured at the top edge of the core, shall be minimum 0.030, maximum 0.040 inch. (See Figure 29.)

To Adjust: Reposition the armature backstop screw.

5.02 Armature Spring: With the armature released, the spring tension shall be minimum 1-1/2 ounces, maximum 3 ounces. To measure, unhook the spring from the backstop bracket and pull to position length. (See Figure 29.)

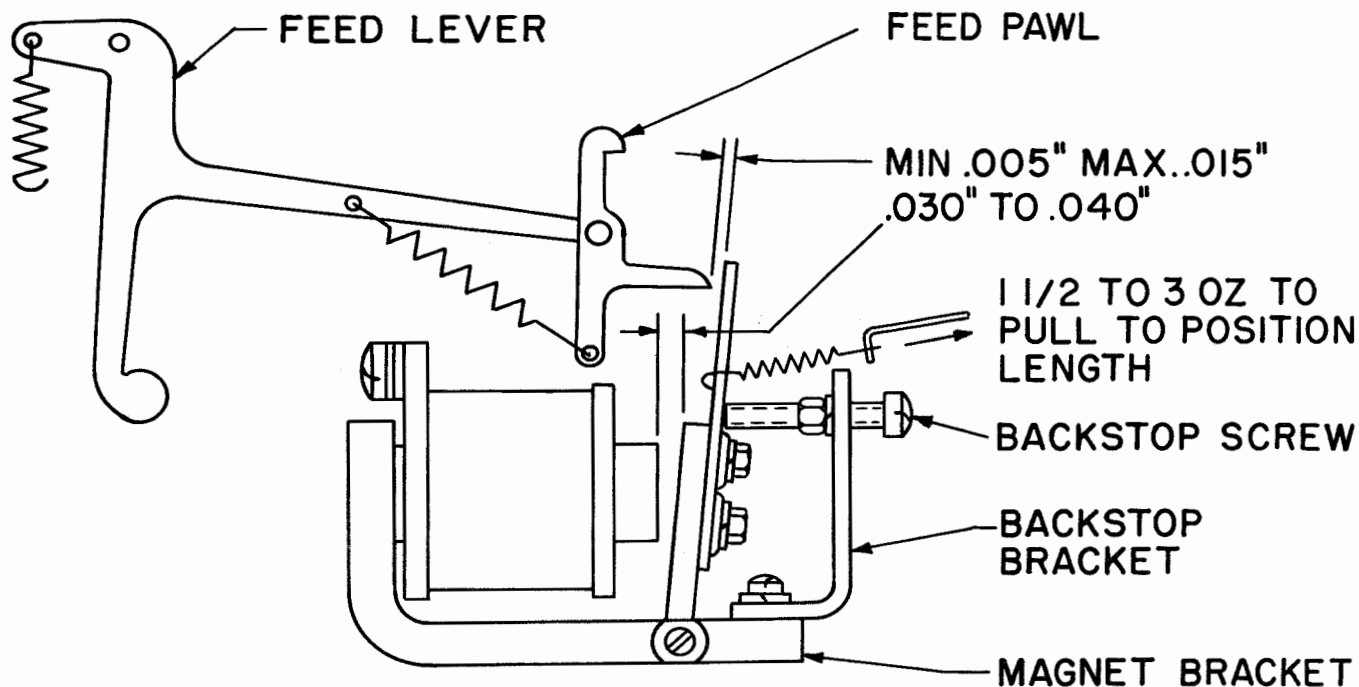


Figure 29

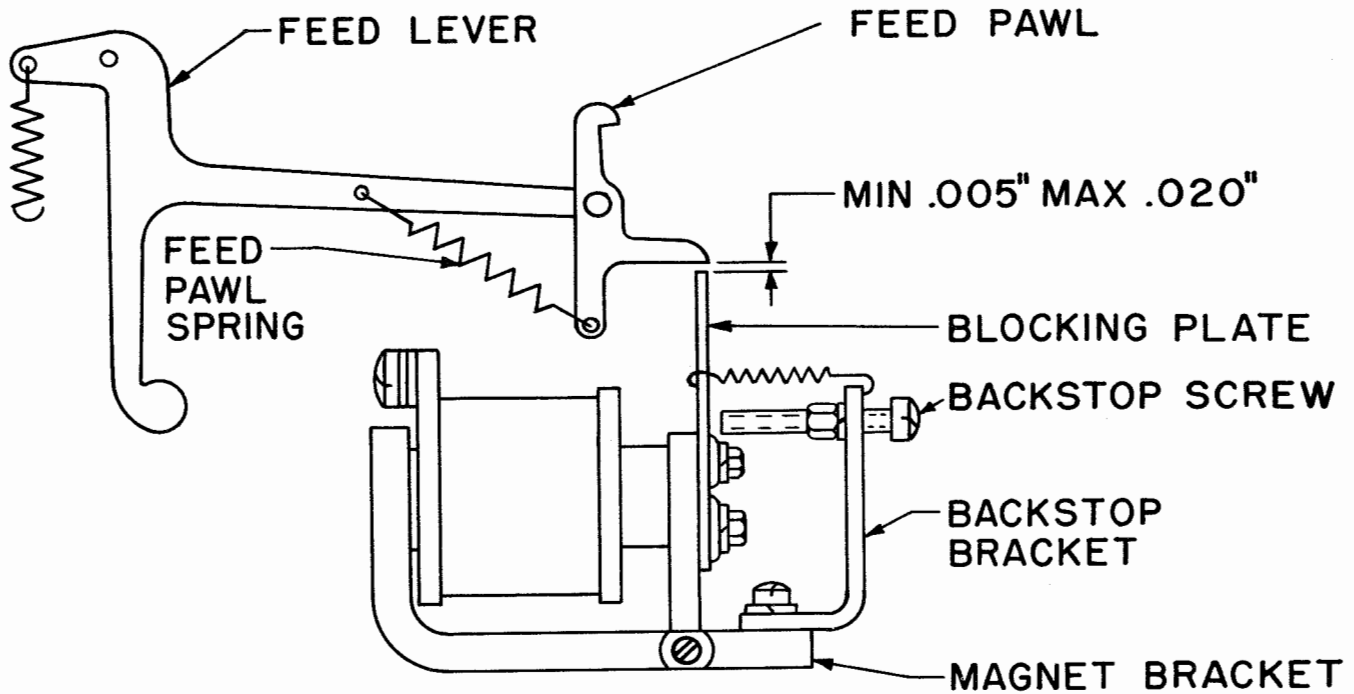


Figure 30

5.03 Feed-pawl Spring tension shall be minimum 1 ounce, maximum 2 ounces measured as in Figure 18. In this case the spring is not adjustable. (See Figure 30.)

5.04 Feed-pawl Clearance: With the armature released and the feed lever in its lowest position, there shall be minimum 0.005, maximum 0.015 inch clearance between the blocking plate and the extension of the feed pawl. (See Figure 29.)

To Adjust: Reposition the armature back-stop screw. Recheck 5.01.

5.05 Blocking Plate Clearance: With the magnet energized and the feed lever in its uppermost position, there shall be minimum 0.005, maximum 0.020 inch clearance between the blocking plate and the extension of the feed pawl. (See Figure 30.)

To Adjust: Reposition blocking plate by means of the two screws which fasten it to the armature.

6. TIGHT-TAPE STOP MECHANISM

Note: Requirements are given here for several types of tight-tape stop (sometimes called auto-stop) mechanisms. The types can be identified by reference to the figures.

6.01 When the contacts are held closed by the contact operating post, the tight-tape stop-lever shall be horizontal (or one inch below the horizontal when the transmitter-distributor operates at a faster speed than the unit preparing the tape) and the tight-tape stop shaft shall protrude approximately 1/16 inch beyond the stop-lever clamp. [See Figure 31(A)].

To Adjust: Reposition the stoplever clamp.

6.02 For units equipped with a tape guide wire (not pictured), the following applies: With the tight-tape stoplever horizontal, the bottom of the tape guide wire shall be even with the bottom of the stoplever and there shall be minimum 0.020, maximum 0.080 inch between them.

To Adjust: Reposition the tape guide wire by its mounting screws, bending it if necessary.

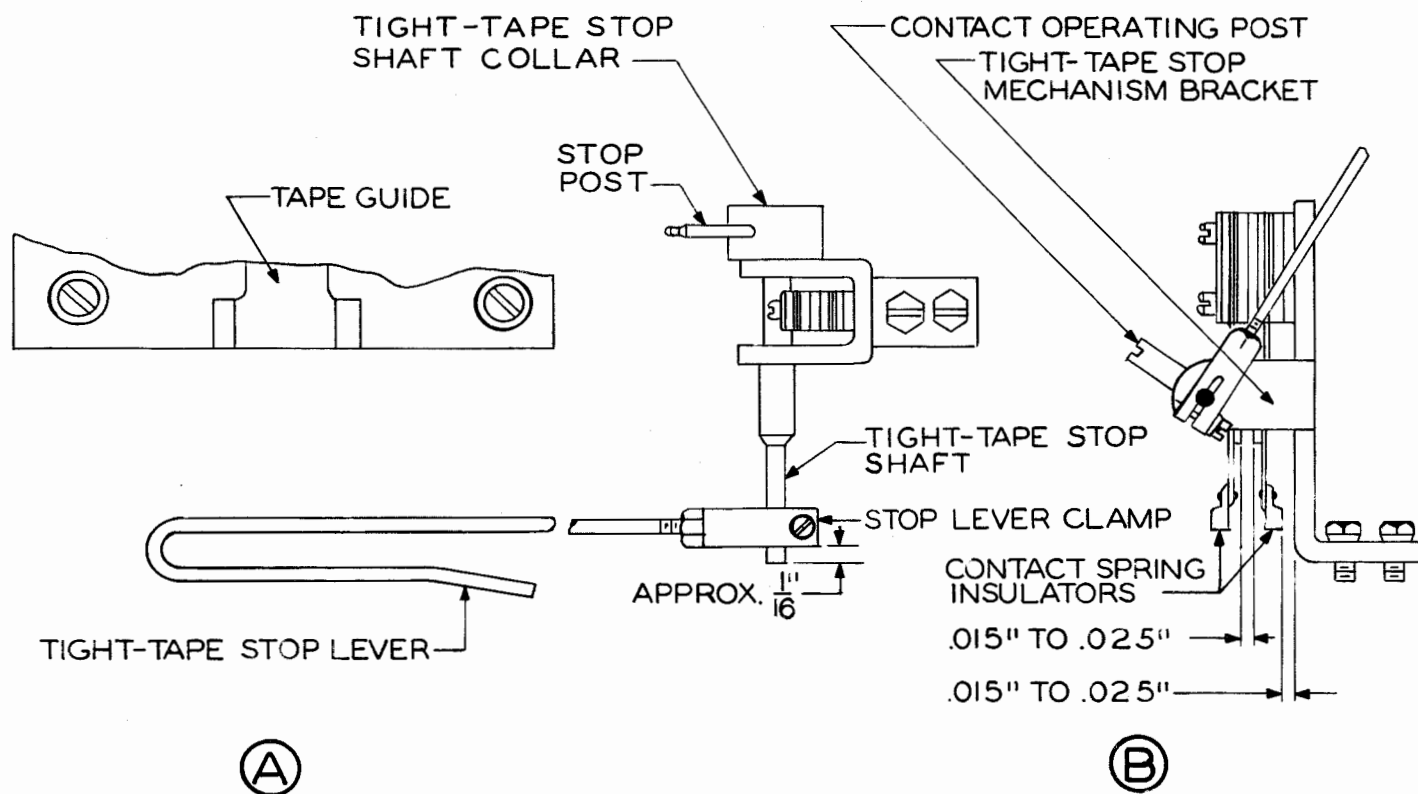


Figure 31

6.03 When the contact operating post is held away from the left contact-spring insulator, there shall be minimum 0.015, maximum 0.025 inch clearance between the contact points, and minimum 0.015, maximum 0.025 inch clearance between the right contact-spring insulators and the tight-tape mechanism bracket. [See Figure 31(B).]

To Adjust: Bend the contact springs.

Note: These requirements apply also to the type illustrated in Figure 33.

6.04 The loop of the tape-stop rod shall be positioned to the right and downward (when viewing the machine from the front or transmitter end) so that it will make an angle of approximately 45 degrees with the horizontal plane. (See Figure 32.)

To Adjust: Reposition tape-stop rod by means of the setscrew and locknut in the tape-stop rod clamp.

6.05 The tight-tape stop shaft shall protrude approximately $\frac{1}{16}$ inch beyond the tape-stop rod clamp. (See Figure 32.)

6.06 When the contacts are held closed by the contact operating post, the distance between the top surface of the transmitter top plate and the middle of the bend in the tape-stop rod shall be $1\text{-}\frac{3}{4}$ inch $\pm\frac{1}{16}$. (See Figure 33.)

Note: 6.06 and 6.07 apply to units with the TP104720 tape-stop assembly (not pictured), which delays the restart of the transmitter until at least 14 characters have been perforated. (Refer to other instructions for piece part and installation information.)

6.07 When the tape-stop lever is lowered until the switch just closes, there shall be a clearance of minimum 0.030, maximum 0.080 inch between the lower post on the shaft collar and the post on the mounting bracket. Check closing of the switch with buzzer, lamp, or ohmmeter.

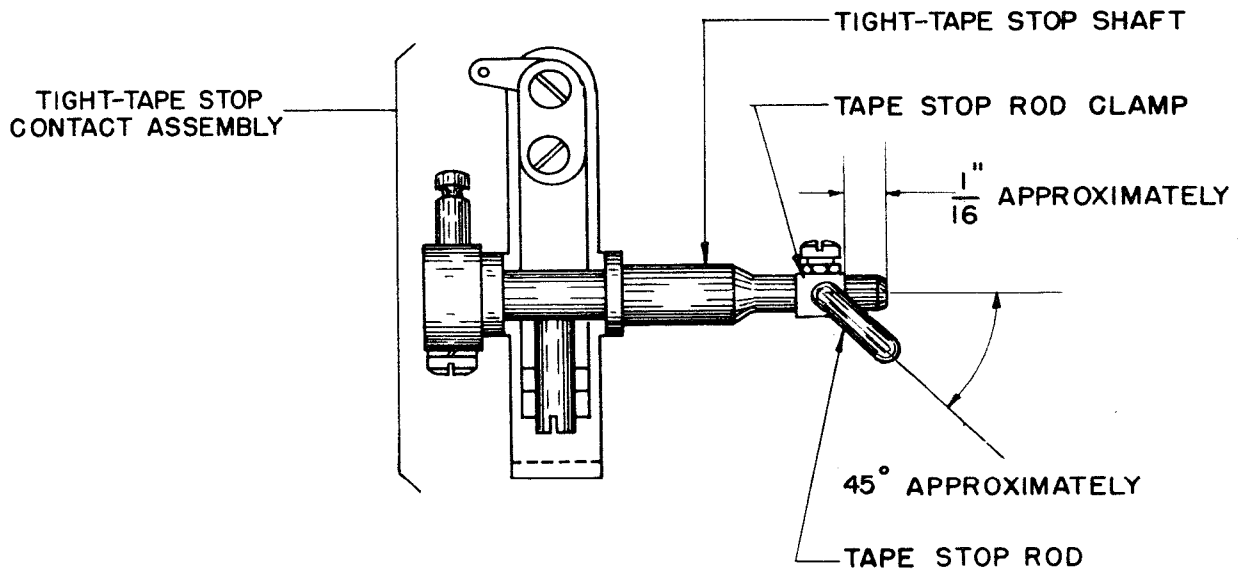


Figure 32

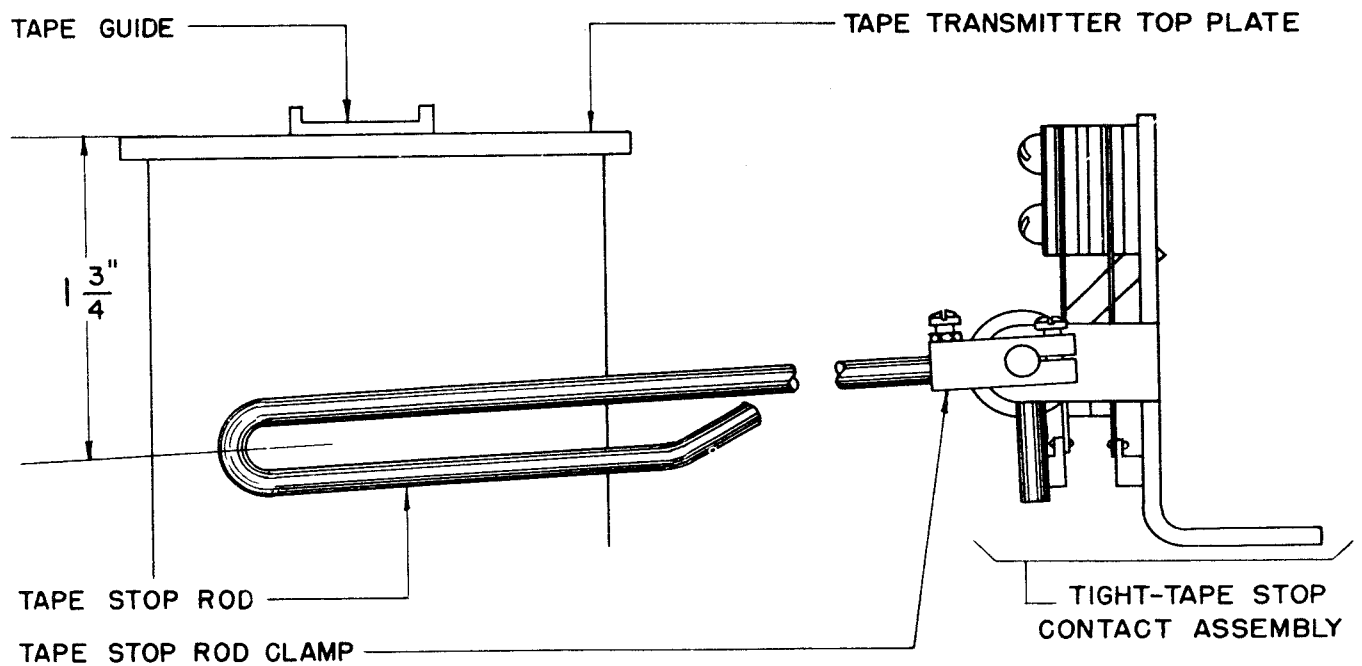


Figure 33

To Adjust: With a 0.055-inch gauge held between the lower post on the shaft collar and the mounting bracket post, and with the eccentric setscrew loosened, move the high part of the eccentric downward against the switch plunger until the switch opens. Then move the eccentric upward until the switch

just closes and tighten the setscrew, taking care that there is no bind between the eccentric and the sides of the bracket.

6.08 The tape-stop lever shall be approximately horizontal when the end of the rod is raised until the switch just opens. Gauge by eye.

To Adjust: Position the lever on its shaft by means of its clamping screw.

6.09 Range of Movement: The tight-tape stop mechanism is normally assembled so that the tight-tape stoplever can be swung up, past the vertical, until it stands slanting toward the motor, held there by the stop post. In this position the mechanism is disabled and the stop contacts remain permanently open. For some applications, particularly in 81-type switching system operation, it is desirable to prevent this from happening and to make sure that the tape-stop contacts always remain under control of the tape. This may be accomplished by reversing the position of the tape-stop-shaft collar on the shaft from position A of Figure 34 to position B. With the collar (and the stop post) in position B, the stop lever cannot be lifted more than about 30 degrees above the horizontal. Thus the contact mechanism cannot be disabled.

To Adjust:

- (1) Remove the stop post from the collar.
- (2) Rotate the stoplever until the mounting screw in the collar is upward. See position A, Figure 35, which shows the stop collar as it would appear viewed from the stoplever end of the tape-stop shaft.

- (3) Remove the mounting screw and lock washer from the collar.
- (4) Remove the collar from the shaft and remount it so that the mounting screw hole is still upward but now the stop-post hole is (downward) toward the front. See position B, Figure 35.
- (5) Restore the mounting screw and lock washer.
- (6) Rotate the stoplever to its normal position.
- (7) Replace the stop post. (See Figures 34 and 35.)

Note: When the stoplever is in its normal position the stop post will point upward and to the rear and the mounting screw in the collar will be downward. (See Figure 34B.)

- (8) Check that the movement of the tight-tape stop lever upward from its normal position does not exceed about 30 degrees.

7. DISTRIBUTOR BRUSHES (CARBON)

7.01 The contact pressure of carbon brushes shall be readjusted occasionally to compensate for brush wear. This is done by rotating the brush holder and resurfacing the brushes. (See Figure 36.)

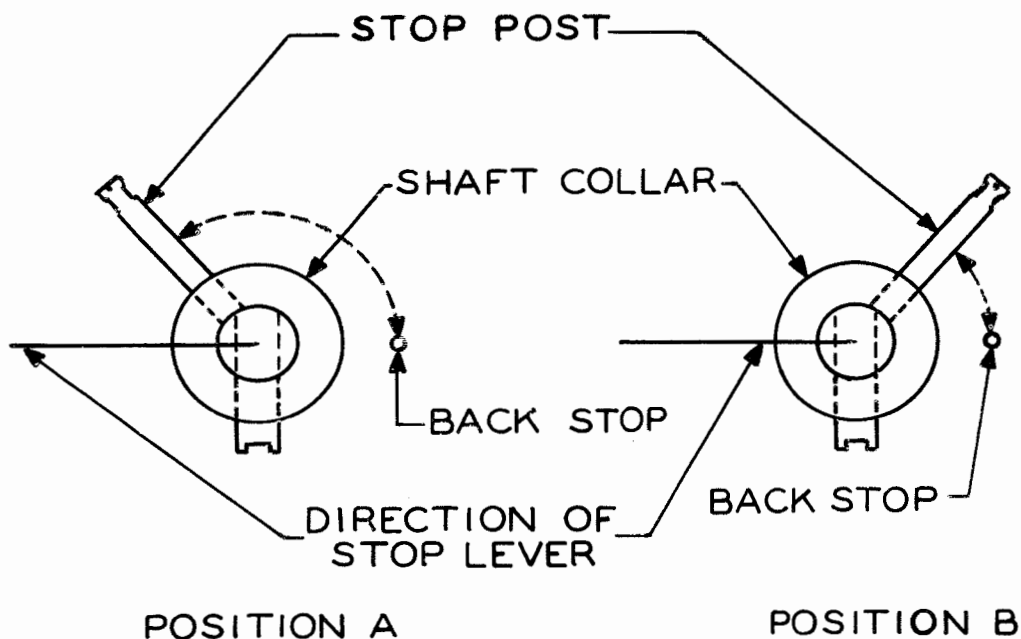


Figure 34

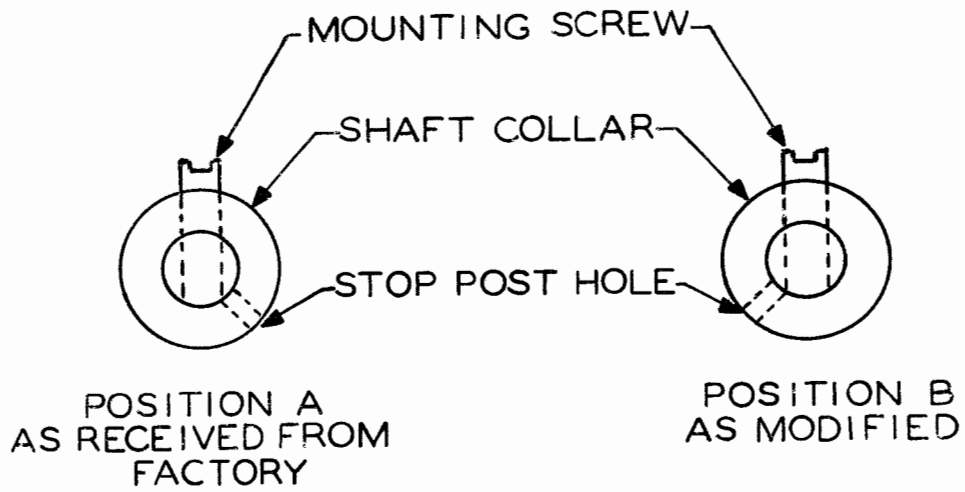


Figure 35

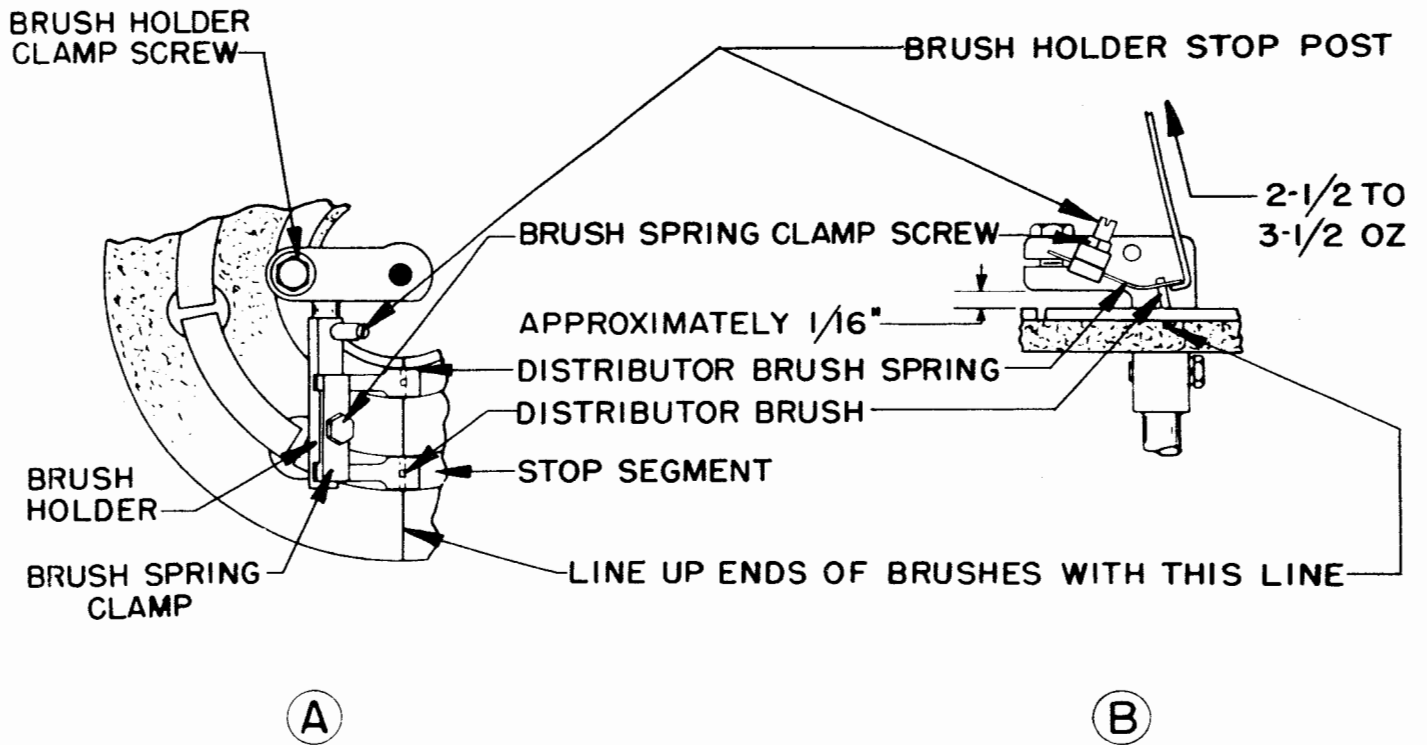


Figure 36

7.02 Brush Position: (1) With the main shaft in the stop position (the lug on the stop cam against the blocking edge of the stop arm or stop lever), the trailing edge of the brushes shall make contact with their associated segments at a point in line with the line impressed on the commutator disc. [For 100-wpm operation the brushes shall be cocked or slanted as in 14.01(b).] (2) The brushes shall also remain within the edges of the rings throughout a complete revolution of the main shaft. [See Figure 36(A).]

To Adjust: For the first requirement, loosen the brush-spring clamp screw and reposition the brushes. Tighten the clamp screw so that the brush springs are friction tight. To meet the second requirement, loosen the brush-holder clamp screw and position the brush holder, or utilize the play of the brush springs in their slots to position the springs sideways. Tighten both clamp screws.

Note: For the 14AA, AB, ABM, and AD transmitter-distributors, substitute the following adjustment for 7.02, To Adjust.

7.03 With the main shaft in its stop position, and with the leading edge of the No. 5 segment in line with point 60 of the orientation scale, adjust the brushes so that they are in line with the inscribed line on the commutator disc.

7.04 Brush Spring Tension, 60 or 75 wpm: It shall require minimum 2-1/2 ounces, maximum 3-1/2 ounces to lift brush from segment. Gauge the contact break with a lamp, buzzer, or ohmmeter. [See Figure 36(B).]

To Adjust: Loosen the brush-holder clamp screw so that the brush holder is friction tight. Rotate the brush holder counterclockwise until the brushes are lifted from their segments and adjust the brush springs by bending them slightly, if necessary, so that the contact surfaces of the brushes are equidistant from and parallel to the segments. Then rotate the brush holder clockwise until the brushes rest against the segments with the desired pressure. Place a flat piece of 0000 sandpaper about 1 by 2 inches face up on the distributor disc and draw the brushes across it two or three times or until the bottoms of the brushes are parallel to the surfaces of the segments. Recheck the spring tension.

7.05 Brush Spring Tension, 100 wpm: TP81814 brush spring stiffeners are used with 100-wpm operation to eliminate brush bounce. They shall be clamped in the brush holder directly on top of the brush springs with their ends clearing by 1/16 inch the part of the carbon brushes which projects through the brush springs. The brush stiffeners shall be straight and flat before being clamped over the brush springs, which shall be slanted or cocked as explained in 14.01(b). It shall require minimum 3 ounces, maximum 4 ounces to lift brush from segment. Gauge as in 7.04. (See Figure 37.)

7.06 Resurfacing Distributor Segments: The distributor segments and ring shall be flat and free from grooves and irregularities. Gauge by eye. If resurfacing is required proceed as follows:

(1) Remove the brush-holder-arm assembly and carefully place a clean cloth under the distributor face and between the wires to prevent particles from dropping into the distributor gears and bearings.

(2) If necessary, take out the three TP2191 lockwashers while resurfacing the face to avoid striking the heads of the TP8539 mounting screws.

(3) If the grooves and raised portions are prominent, start the resurfacing with the coarse side of the TP101424 tool and rub with a lateral circular motion (not rotation around the center of the disc) bearing substantially and evenly against the segments and the ring, and continue with the coarse sanding until the grooves are removed and the segments are even at adjacent ends.

(4) For final dressing use the face of the tool having the fine sandpaper, continuing only until the marks resulting from the coarse sandpaper disappear.

(5) Before removing the cloth, brush out the slots between the segments, and then clean off the commutator disc.

(6) Clean the distributor face with KS-2423 cloth dampened with KS-7860 petroleum spirits and then wipe it with a dry cloth.

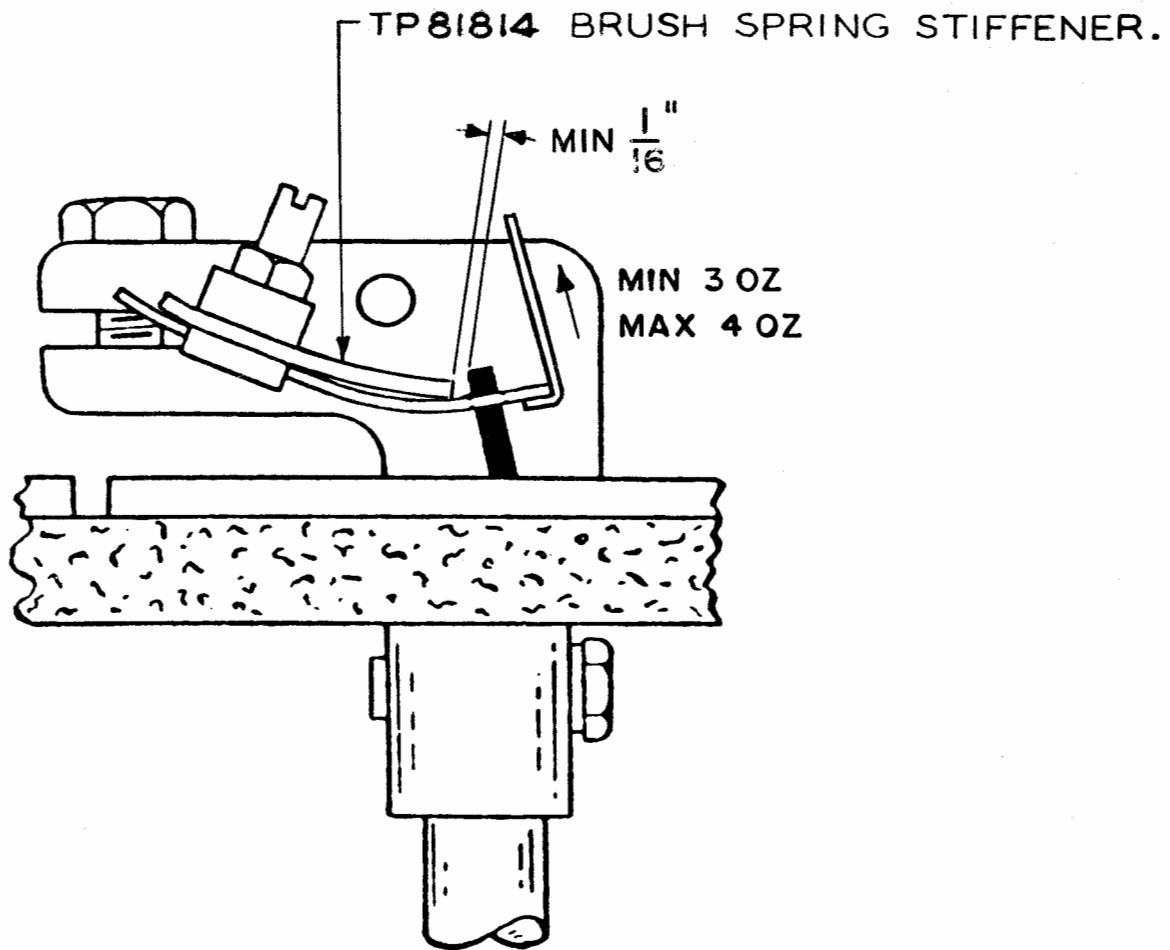


Figure 37

(7) Turn the distributor on its side and carefully remove the cloth, taking care not to drop particles into the distributor mechanism, and inspect to see that the bearings and gears are clean.

Note: If the top surfaces of the segments are worn down to within 0.015 inch of the top of the disc replace the disc assembly instead of resurfacing.

8. OPERATING CAM

8.01 For 60 or 75 wpm operation the operating cam shall be positioned so that the No. 5 transmitter contact tongue leaves the lower (MARKING) contact screw when the trailing edge of the carbon distributor brush has passed on to the STOP segment by minimum $\frac{1}{32}$, maximum $\frac{1}{16}$ inch. For 100 wpm operation see 14.01(b). See Figures 28 and 36 for location of parts.

To Adjust: Reposition the operating cam by means of its mounting screws (Figure 1). To adjust carbon brushes, loosen brush-holder clamp screw, utilize the play of the springs in their slots, and tighten clamp screw. Recheck the carbon brush adjustment. (See Figures 1 and 36.)

8.02 For the 14AA, AB, ABM, and AD transmitter-distributors, substitute the following adjustment for the operating cam adjustment in 8.01.

- (1) Orient the face of the distributor so that when the brush arm is in the stop position it is in the middle of the rest segment (the third segment following the No. 5 select segment).
- (2) Orient the operating cam so that all the transmitter marking contacts close by the time the leading edge of the brush reaches

SECTION 572-103-700

the middle of the segment following the start segment (the start segment is intersected by the impressed line on the commutator face) and so that none of the marking contacts open until the trailing edge of the brush has passed at least 1/16 inch beyond the end of the No. 5 select segment.

9. MAIN-SHAFT CLUTCH TORQUE (FRICTION FEED)

Note: This measurement should be made when the unit is warm from recent operation; otherwise, the unit should be operated for at least 10 minutes with the friction clutch slipping before the measurement is made. The operating cam should be relieved of the operating arm load during torque measurement. This may be done by removing the base plate and the operating arm.

9.01 With the motor running, it shall require a pull of minimum 28 ounces, maximum 32 ounces to hold the brush arm stationary. (See Figure 13.)

To Adjust: Loosen the adjustable clutch disc locknut and turn the disc clockwise to increase the torque, or counterclockwise to decrease it. Hold the disc and tighten the locknut.

9.02 For the 14AA, AB, ABM, and AD transmitter-distributors, substitute the following adjustment for 9.01: With the motor running, it shall require a pull of minimum 32 ounces, maximum 36 ounces to hold the brush stationary when a 64-ounce scale is hooked over the stop cam lug. See Figure 2 for location of parts.

Adjust as in 9.01.

10. TAPE-OUT MECHANISM (6TH PIN)

Note: Requirements are given here for units equipped with the end-of-tape stop pin (6th pin) which closes a contact when tape is inserted in the transmitter and opens it when the end of the tape passes by.

10.01 Adjustments depend on which combination of old and/or new retainer lid and tape-guide plate is used.

(a) If the unit is equipped with the old-style (TP97445) retainer lid and the old-style (TP97468) tape-guide plate, there shall be minimum 0.010, maximum 0.020 inch clearance between the end-of-tape stop pin and the shoulder of the tape-guide plate when the side play of the pin is taken up in a direction to make this clearance a minimum. (See Figure 38.)

(b) If the unit is equipped with the new-style (TP111628) retainer lid and the new-style (TP111627) tape-guide plate, the end-of-tape stop pin shall be centrally located in the stop-pin guide clearance hole of the retainer lid. Gauge by eye.

(c) If the unit is equipped with the old-style (TP97445) retainer lid and the new-style (TP111627) tape-guide plate, there shall be minimum 0.010, maximum 0.020 inch clearance between the end-of-tape stop pin and the side of a straightedge which is placed on the front shoulder of the tape-guide plate so that it lines up with the inner edge of the shoulder. (See Figure 38.)

To Adjust: Loosen to friction tight the feed-wheel shaft bearing mounting screws and reposition the stop-pinguide. When tightening the mounting screws, preserve the feed-wheel shaft endplay (maximum 0.002 inch).

10.02 End-of-tape Stop-pin shall be minimum 0.020, maximum 0.025 inch from straight-edge laid across the top of the tape guide plate. (See Figure 38.)

To Adjust: Bend the upper contact spring.

10.03 Contact Gap shall be minimum 0.008, maximum 0.012 inch when the lower contact spring is resting against its stiffener and the tape stop pin is not depressed. (See Figure 38.)

To Adjust: Bend the lower contact spring stiffener.

10.04 Place a piece of tape in the guide and close the tape retainer lid. Using a 70-gram gauge, it shall require minimum 20 grams, maximum 25 grams, applied at the contact point of the lower contact spring, to just open the contact points.

To Adjust: Bend the lower contact spring. Remove the tape and recheck the contact gap adjustment.

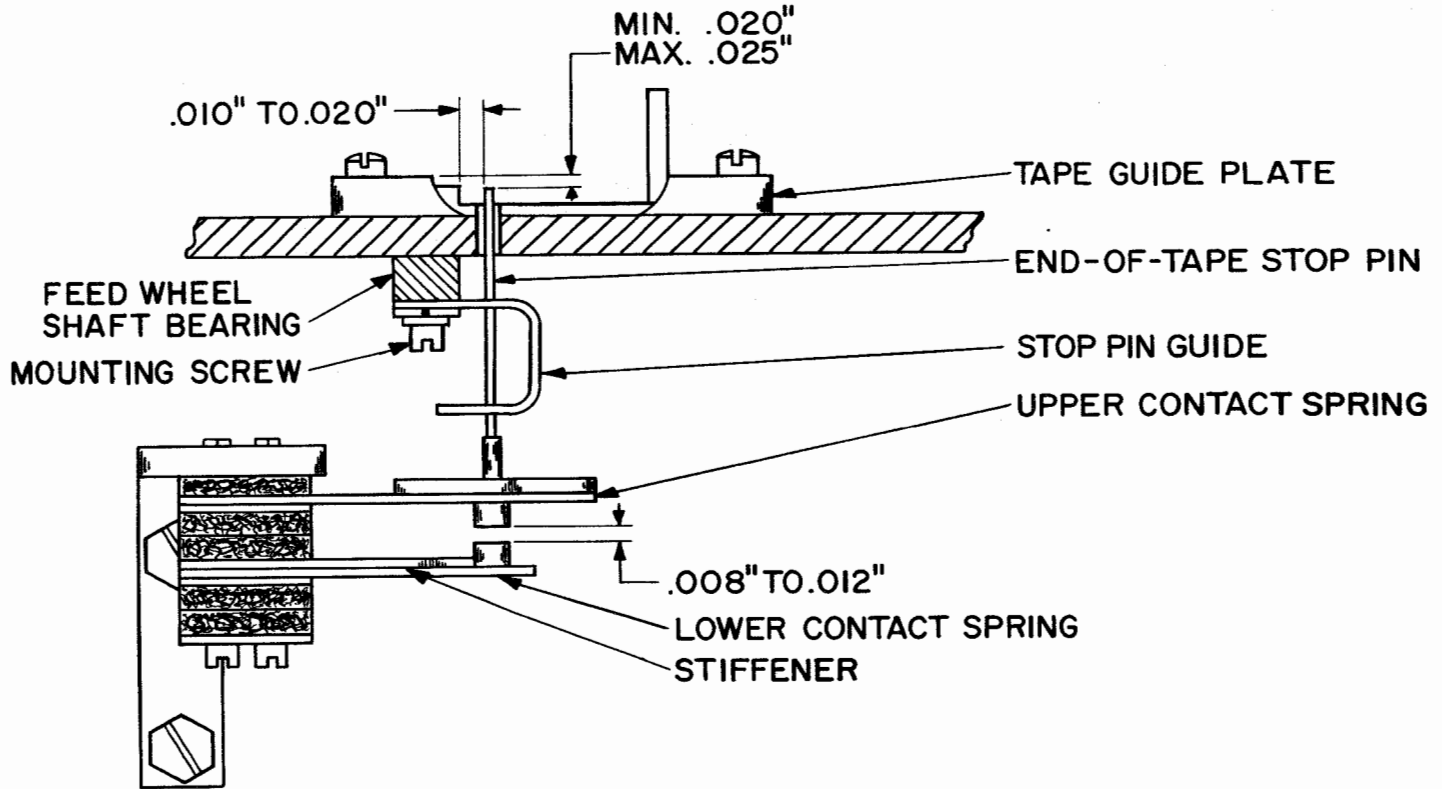


Figure 38

11. TORN-FEED-HOLE TAPE-STOP ASSEMBLY

Note: The adjustments for units equipped with the torn-feed-hole tape-stop assembly are the same as the standard adjustments except for the following:

11.01 Tape Finger: When the retaining lid is latched and play taken up in a direction for minimum clearance, the clearance between the tape finger and the tape-guide plate shall be minimum 0.011, maximum 0.016 inch. (See Figure 39.)

To Adjust: Remove or add shims between the tape finger and the retaining lid plate. The finger may be bent if necessary.

11.02 Tape Retaining Lid Plate: With a piece of chadless tape in the tape guide, and the feed holes in the tape engaged on the pins of the feed roll and the feed wheel, close the lid. The edges of the plate shall be parallel to the shoulders of the tape guide and when the feed roll is rotated the retaining lid plate shall not interfere

with the lids of the chadless tape when the lids are raised. The feed wheel shall be centered in the slot of the tape finger so that chad lids are free of interference from sides of slots of the tape finger. See Figure 20 for location of parts.

To Adjust: Reposition the retaining lid plate and the tape finger by means of their mounting screws.

11.03 End-of-tape Stop Contact Spring:

(a) With the contact operating arm on the low part of its cams (notches in cams aligned), hold contact operating arm against cam. It shall require minimum 6 grams, maximum 15 grams applied to the end of the insulator of the upper contact spring to move insulator away from the arm. (See Figure 14.)

To Adjust: Bend the upper contact spring.

(b) With the contact operating arm on the low part of its cams and the lower contact spring resting against its stiffener, there shall be minimum 0.025, maximum 0.040 inch gap between the contacts. (See Figure 40.)

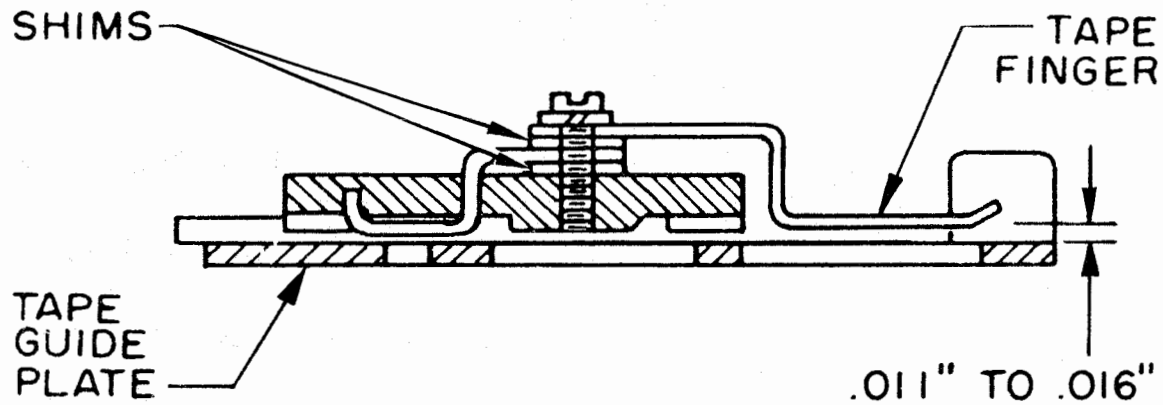


Figure 39

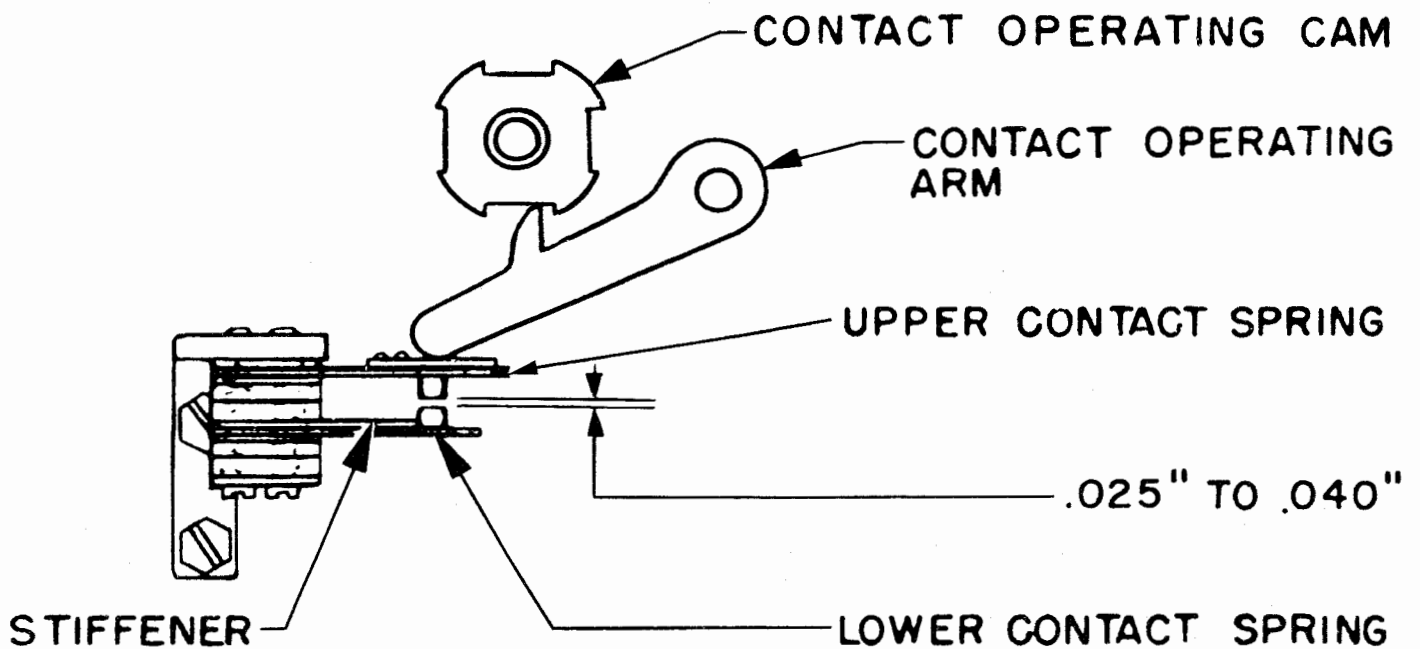


Figure 40

To Adjust: Bend the lower contact spring stiffener.

(c) With the contact operating arm on the high part of a cam, it shall require minimum 20 grams, maximum 40 grams applied to the end of the lower contact spring to just open the contact points. (See Figure 41.)

To Adjust: Bend the lower contact spring.

Note: Before attempting to start or restart a unit equipped with the torn-feed-hole tape-stop assembly, first turn the clutch magnet switch to the OFF position. Position new tape or reposition the torn tape beyond the damaged section so that the tape feed holes mesh

with both the feed roll and the feed-wheel pins in the tape guide. Latch tape lid. Then reset the mechanism by turning the reset wheel in a counterclockwise direction as far as it will go freely. Turn the clutch switch to ON.

12. AUXILIARY CONTACTS (14W ONLY)

Note: The following applies to the TP84593 set of parts, provided on the 14W transmitter-distributors, for controlling an external circuit.

12.01 It shall require a pull of minimum 3 ounces, maximum 4 ounces to open the auxiliary contacts when the operating lever roller is on the high part of the cam. Gauge contact break with a lamp, buzzer, or ohmmeter. (See Figure 42.)

To Adjust: Bend the long contact spring.

12.02 The auxiliary contacts shall open when the brush has just left the stop segment. Turn the motor by hand and gauge the contact break with a lamp, buzzer, or ohmmeter.

To Adjust: Move the contact bracket.

12.03 When the operating lever roller is on the low part of the cam, the contact gap shall be at least 0.015 inch. (See Figure 43.)

To Adjust: Bend the heavy contact spring.

12.04 The tension of the spring between the operating lever and the contact bracket shall be minimum 3 ounces, maximum 5 ounces when the operating lever roller is on the high part of the cam. To measure, rest the transmitter-distributor on its left side, unhook the spring from the bracket on the operating arm, and pull to position length. (See Figure 44.)

13. SLIP CONNECTION CONTACTS

Note: The following applies to the slip connections of the associated mounting-plate. Remove the contact guard plate and the power and line connections before making these adjustments.

13.01 With the transmitter-distributor removed, the slip-connection contacts shall be closed with a pressure of minimum 16 ounces, maximum 32 ounces, measured by pulling upward at

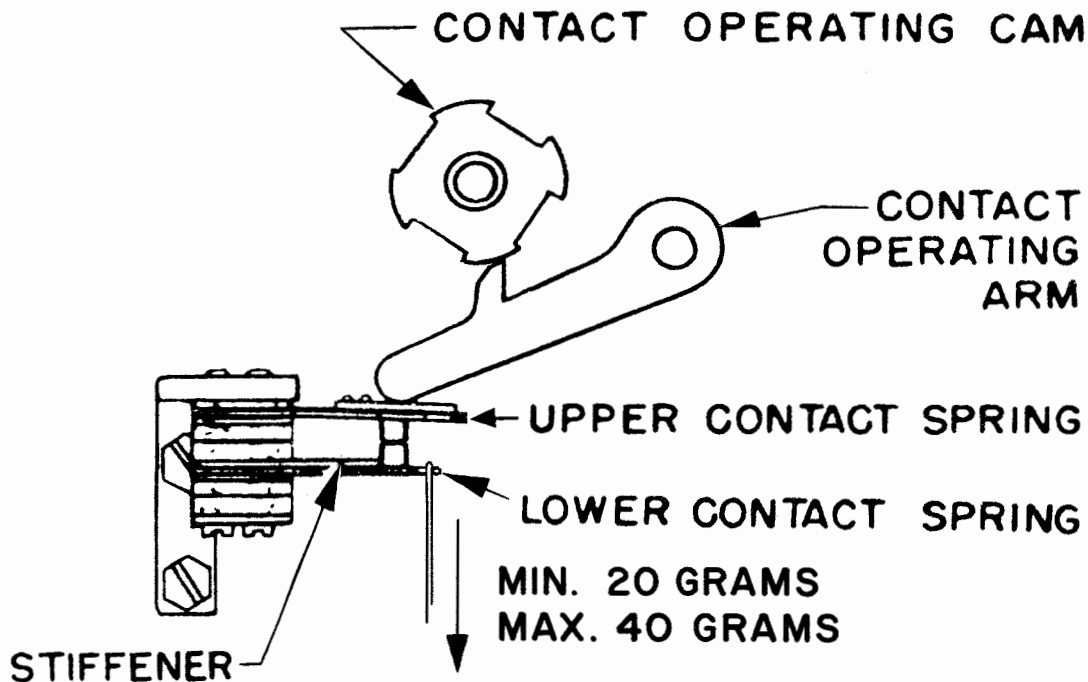


Figure 41

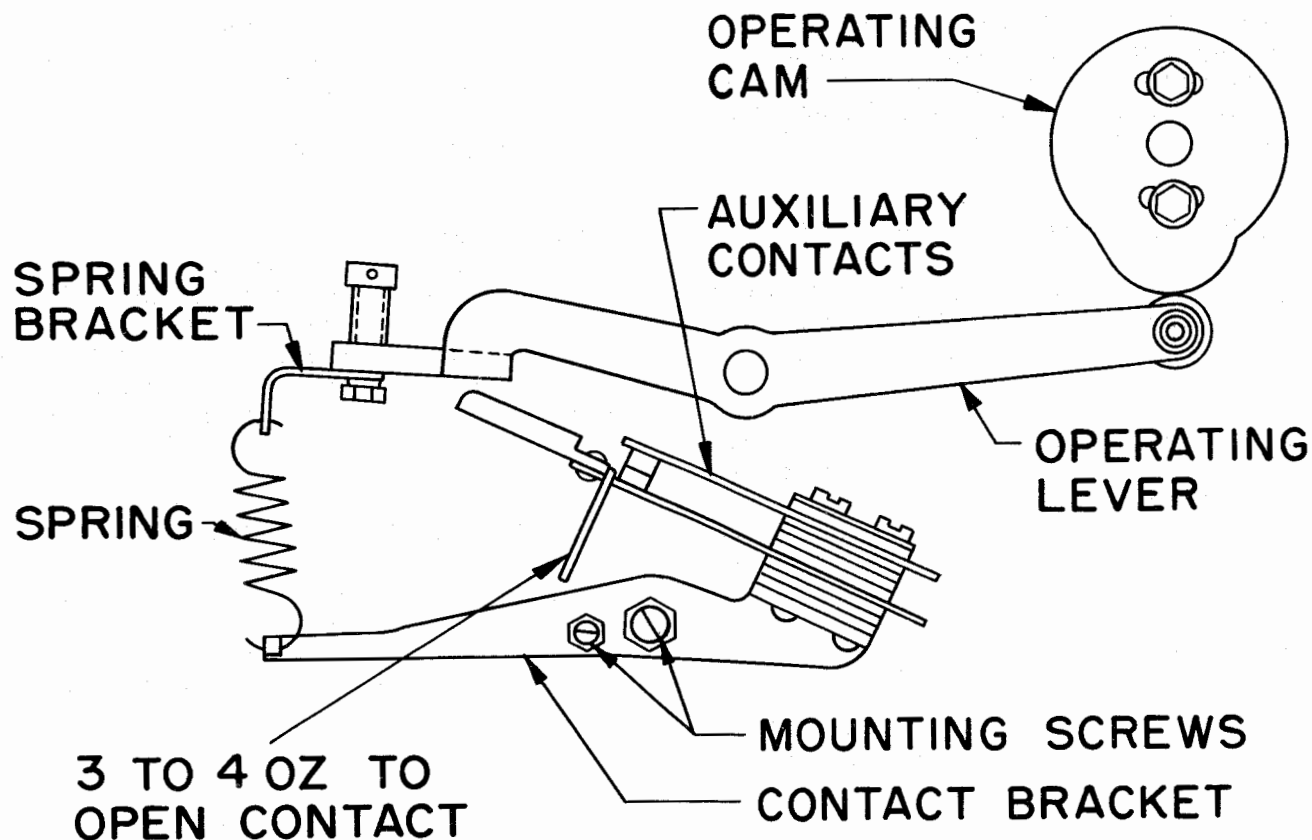


Figure 42

the crimp in the upper spring. To gauge the contact break, use lamp, buzzer, or ohmmeter.

To Adjust: Bend the upper contact springs near the clamped portion.

13.02 With the transmitter-distributor removed, the crimped ends of the extreme right and extreme left upper contact springs shall be in a horizontal plane and the crimped ends of the remaining upper springs shall be within 1/64 inch of this plane and not above it. The plane referred to shall be located so that the transmitter-distributor can be inserted in its proper position. To gauge, place a straightedge across the two end springs and check that the remaining springs are within 1/64 inch of the straightedge. Check to see that the associated transmitter-distributor can be firmly seated in place without interference from the springs.

13.03 When the transmitter-distributor is in place, the contact between the upper and lower contact springs shall be broken. To gauge, use lamp, buzzer, or ohmmeter.

14. 100-WPM OPERATION

14.01 Special adjustments for 100-wpm operation are contained in the following paragraphs in this section: 2.18, 2.19, and 7.05. In addition the following precautions are advised:

- (a) The all-steel clutch must be used for 100-wpm operation. (The friction clutch may be used for 60- or 75-wpm operation only.)
- (b) The brush position specified in 7.02 must be modified so that the trailing edge of the outer brush makes contact on a line which forms a slight angle with the line imprinted on the commutator disc so that the brush will ride over the slots in the distributor ring with a minimum of bounce. This is accomplished by positioning the operating cam so that the No. 5 transmitter contact tongue leaves the lower (MARKING) contact screw when the trailing inside corner of the carbon brush has passed on to the STOP segment by minimum

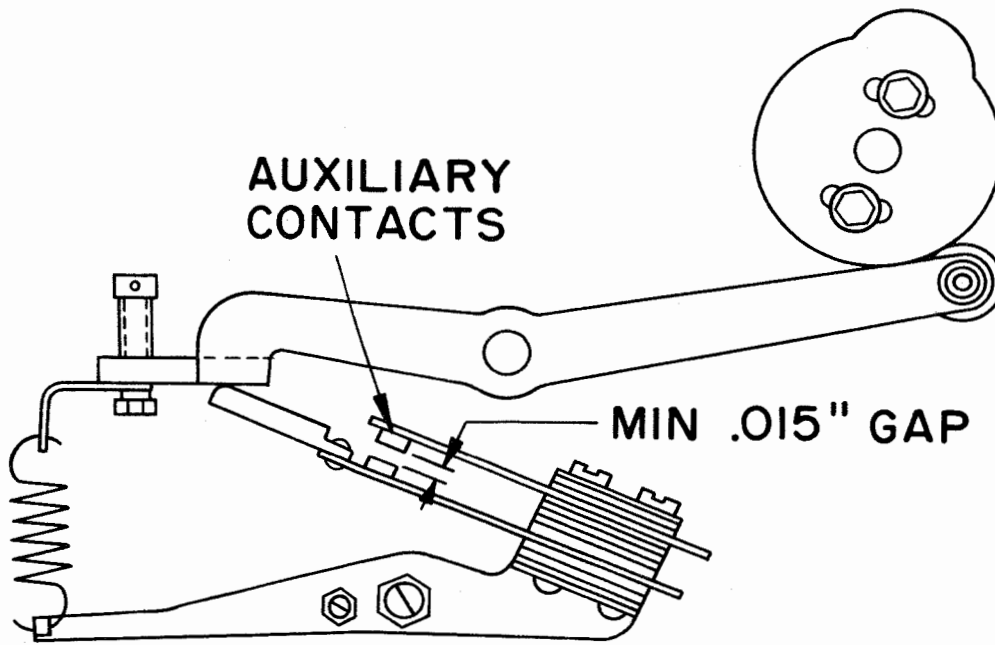


Figure 43

3 TO 5 OZ TO PULL
TO POSITION
LENGTH

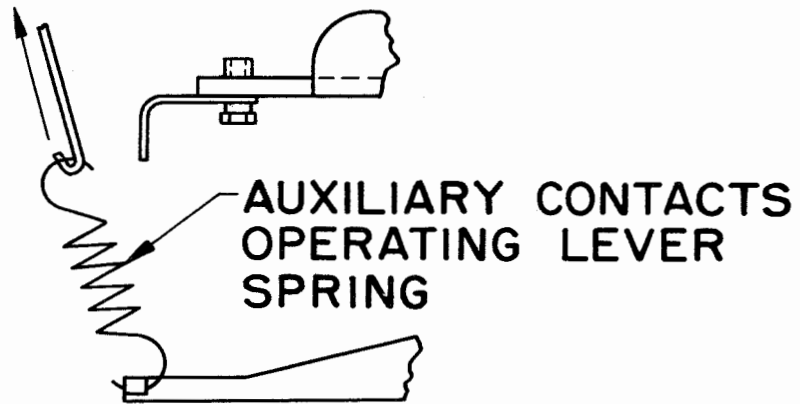


Figure 44

1/32, maximum 1/16 inch, and the trailing outside corner of the carbon brush is maximum 1/32 inch farther from the leading edge of the STOP segment.

(c) The brush tension in 7.05 shall be carefully maintained.

(d) The feed-lever stop (Figure 27) shall be set up so that the contact lever bail strikes the feed lever (Figure 24) before it strikes any contact lever (Figure 28). To check, rotate the shaft until the operating lever (Figure 1) is on the low part of its cam and then move the bail to the left by pressing against it with a finger. The feed pawl shall move before any movement of the sensing fingers takes place.

14.02 Pre-installation Transmission Tests: The following operating tests of 100-wpm units are recommended prior to installation on customer premises. These tests may be made at a shop or telephone company location.

(a) Distortion: The distortion of signals sent into a local resistance shall not exceed 4 percent.

(b) Transmitting Test: Send the test sentence for 4 hours to a monitoring teletypewriter. No typing errors shall occur. Once an hour during the four-hour run, measure the distortion of the signal for a two-minute interval. The total distortion shall not exceed 4 percent.

15. SINGLE-STEP TAPE-FEED SUPPRESSION MECHANISM

Note: The following applies to the TP112119 modification kit which provides a single-step tape-feed suppression mechanism on 14AA, AB, ABM, and AD transmitter-distributors.

15.01 Tape Feed-lever Latch: With the operating lever roller on the peak of its cam and the latching tooth on the tape feed-lever latch held in line with the edge of the tape feed-lever extension, there shall be minimum 0.005, maximum 0.020 inch clearance between the tape feed-lever latch and the tape feed-lever extension. (See Figure 45.)

To Adjust: Increase or decrease the number of shims between the lever mounting bracket and the base casting.

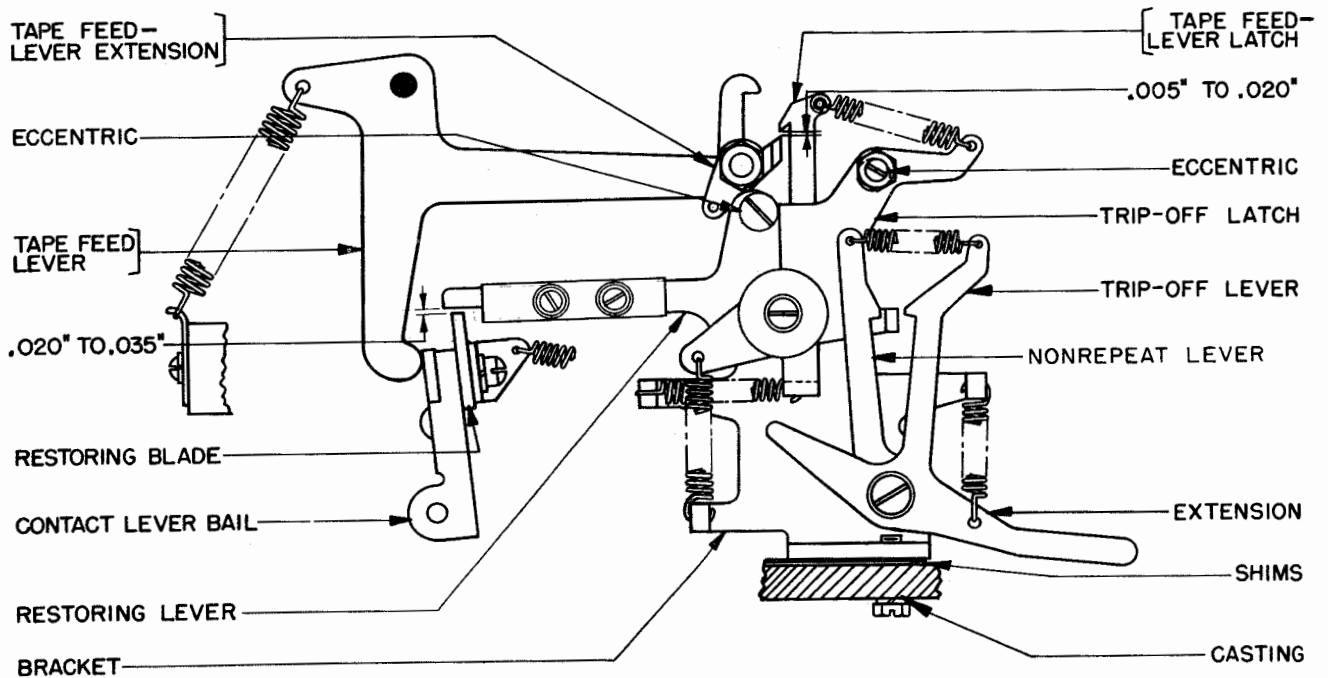


Figure 45

15.10 Restoring Bail Spring: With the transmitter-distributor in the stopped position, unhook the restoring bail spring. It shall require

minimum 28, maximum 32 ounces to pull the spring to position length. (See Figure 49.) Re-hook the spring.

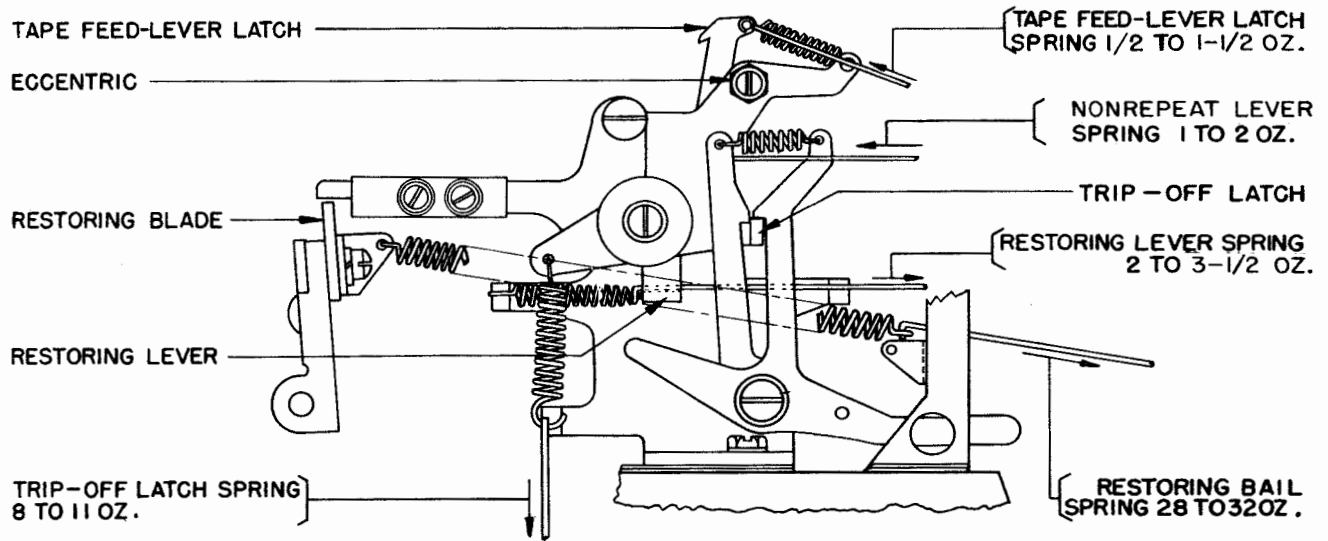


Figure 49