15 TELETYPEWRITER

(AUXILIARY FEATURES)

REQUIREMENTS AND ADJUSTMENTS

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1. GENERAL

1.01 This section contains the requirements and adjustments for the auxiliary features of the 15 typing unit and related mechanisms. This section, the section covering teletypewriter general requirements and adjustments, and sections referred to in this section provide the necessary information for the maintenance of the 15 typing unit auxiliary features.

1.02 This section is reissued to include the automatic carriage return and line feed feature and to revise various adjustments so as to bring the section generally up to date.

1.03 References and supplementary information formerly shown in this section is now listed in the Numerical Index.

2. SWITCHING CONTACTS TO CLOSE AND OPEN AN EXTERNAL CIRCUIT (TP96807—For Units without Horizontal Tabulator or TP115889 — For Units with Horizontal Tabulator)

2.01 These sets of parts provide the 15 typing unit with a mechanism for remotely controlling an operation by a contact mounted on a special send-receive-break-mechanism plate. One selected upper-case character closes the contact. Another upper-case character opens it. The universal function-levers can be modified to operate on any selected characters. See Figures 1 and 2.

2.02 Sixth-vane Detent Spring: For this requirement, see the section covering 15 typing unit requirements and adjustments.

2.03 Send-receive T-Lever Friction Washer: For this requirement, see the section covering 15 typing unit requirements and adjustments.

2.04 Send-receive-break-mechanism Plate

(a) On units not equipped with universal function-levers, the send-receive-mechanism plate should clear the function-lever-spring plate by minimum 0.020 inch, maximum 0.030 inch at both ends. See Figure 1.

(b) On units equipped with double-blank break, the send-receive T-lever should clear the universal function-lever by maximum 0.008 inch when:

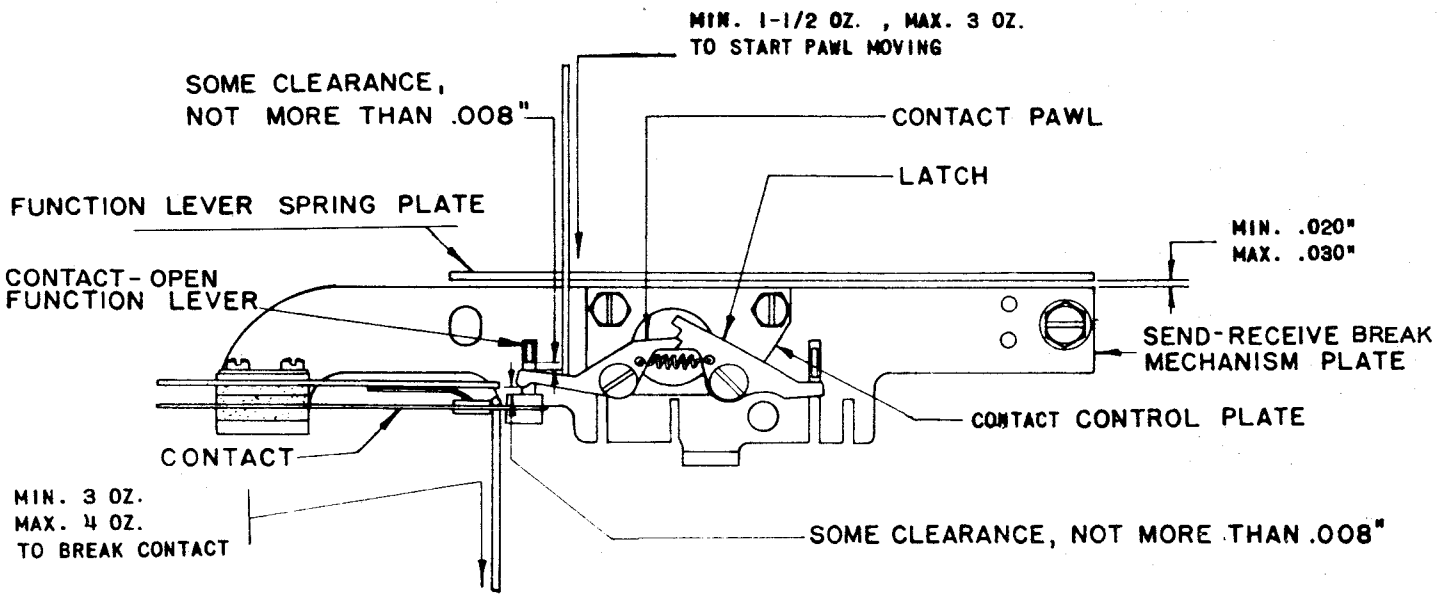


Figure 1

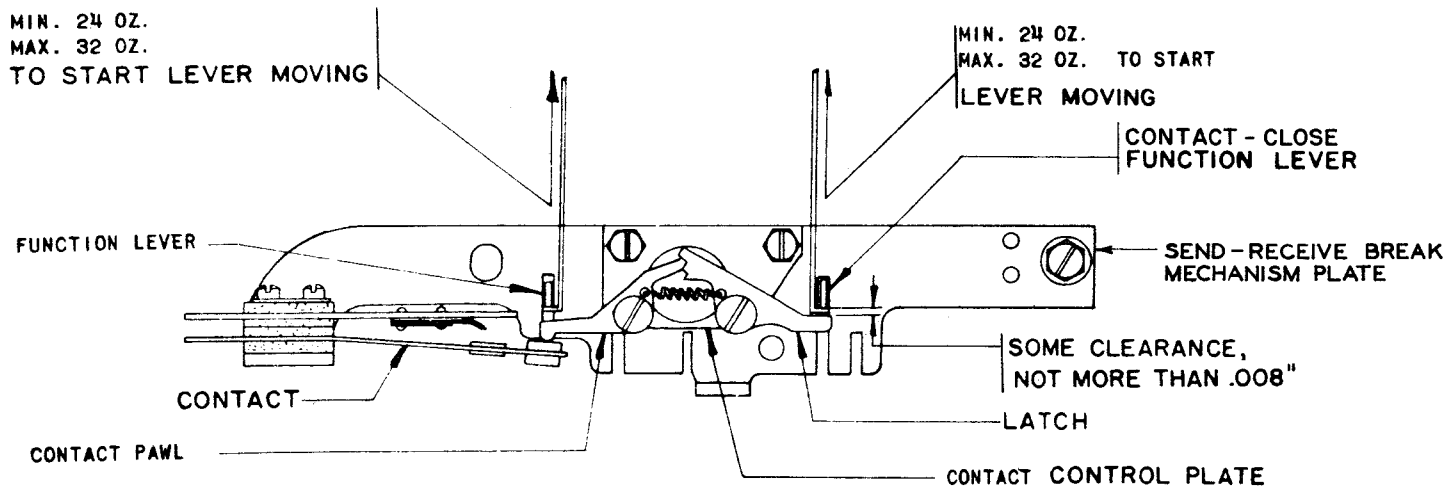


Figure 2

(1) The left arm of the T-lever is in contact with the Blank function-lever extension.

(2) The Blank combination is set up.

(3) The main shaft is rotated until the Blank function-lever is completely selected and the function-bail roller is just leaving the cam surface of the Blank function-lever.

To Adjust: Position the send-receive-mechanism mounting plate. When making this adjustment, the intermediate lever should be clear of the Blank function-lever extension.

Note: On units equipped with Blank printing-spacing cut-out function-lever, the main shaft should be rotated, until the function-lever bail rests on top of the Blank printing-spacing cut-out function-lever.

2.05 Send-receive Reset-lever Upper-adjusting Screw: For this requirement, see the section covering 15 typing unit requirements and adjustments.

2.06 Tabulator Bar (TP115889 Set of Parts): For this requirement, see the section covering 15 teletypewriter tabulator mechanism.

2.07 Tabulator Latch (TP115889 Set of Parts): For this requirement, see the section covering 15 teletypewriter tabulator mechanism requirements and adjustments.

2.08 Tabulator Latch-bar Extension (TP115889 Set of Parts): For this requirement, see the section covering 15 teletypewriter tabulator mechanism requirements and adjustments.

2.09 Tabulator Stops (TP115889 Set of Parts): For this requirement, see the section covering 15 teletypewriter tabulator mechanism requirements and adjustments.

2.10 Contact-control Plate: Set up the Blank selection on the vanes (all spacing) and rotate the main shaft until the function-levers rest against the vanes. There should be some clearance, not more than 0.008 inch as shown in Figure 1, between the horizontal arm of the contact-pawl and its function-lever when the pawl is in the lower notch of the latch. There should be some clearance, not more than 0.008 inch as shown in Figure 2, between the horizontal arm of the latch and its function-lever when the contact-pawl is in the upper notch of the latch.

To Adjust: Position the contact-control plate bearing the pawl and latch.

2.11 Contact-springs

(1) There should be some clearance, not more than 0.008 inch between the bakelite insulator on the lower contact-spring and the contact-pawl, with the pawl in the lower notch of the latch. See Figure 1.

To Adjust: Bend contact-spring.

(2) A pull of minimum 3 ounces, maximum 4 ounces should be required at the contact-point to open the contact under the same conditions as in (1). See Figure 1.

To Adjust: Bend contact-spring.

2.12 Contact-pawl Spring tension should be minimum 1-1/2 ounces, maximum 3 ounces, to just start the pawl moving, pushing down with the scale at the right-hand end of the horizontal portion of the pawl, holding the contact clear of the contact-pawl and with the horizontal arm of the contact-pawl in its upper position. See Figure 1.

2.13 Function-lever Springs: Set up the Blank selection on the vanes (all spacing) and rotate the main shaft until the function-levers rest against the vanes. It should require minimum 24 ounces, maximum 32 ounces to start the function-lever in slot 13 moving, measured by hooking the scale under the forward extension of the lever, just to the rear of the lobe and pulling upward. Check the spring tension on the function-lever in slot 6 or 7, whichever applies, in the same manner. See Figure 2.

2.14 Function-lever Bail and Blocking Plate: The function-lever bail should be blocked by the selected function-lever and the front edge of the right blocking surface of the bail should be flush within 0.005 inch of the top front edge of the rear prong of the carriage-return function-lever, gauged by eye, when CAR RET combination is set up and the main shaft is rotated until the carriage-return function-lever is drawn completely into selection with the vanes.

To Adjust the One-piece Bail: Position the right end of the function-lever bail; to adjust the two-piece bail, position the right end of the blocking plate.

Note: If necessary to adjust the one-piece bail, check the function-lever bail adjustments. See the section covering 15 typing unit requirements and adjustments.

3. CONTACTS FOR 81-TYPE SWITCHING SYSTEMS (TP113660)

3.01 The 15 AB and 15 AD typing units have 3 sets of contacts which are used for certain switching operations in the 81-type systems, as described below. The TP113660 set of parts includes all three contact assemblies, together with two function-levers and a blocking bail.

A. FIGS Contact and Bell-hammer Backstop-bracket Assembly (TP101930)

3.02 This set of parts provides a contact which is closed on receipt of a FIGS signal, for performing switching or signaling. It mounts in the position otherwise occupied by the signal-bell backstop-bracket. (The contact arrangements for the remote signal bell, shown in Figures 3 and 6, are similar in appearance though the adjusting requirements differ.)

3.03 Bell-hammer Backstop-bracket: The shift pushbar should engage the contact-lever at approximately the center of the engaging section of the contact-lever and there should be at least 0.015 inch clearance between the bell-hammer backstop-bracket and the spacing shaft.

To Adjust: Position the backstop-bracket by means of its mounting screws.

3.04 FIGS Contact Assembly: Select the FIGS combination and rotate the main shaft until the FIGS contact-lever just touches the bakelite extension on the long FIGS contact-spring. The lobe of the contact-lever should contact the bakelite extension approximately in the center.

To Adjust: Position the backstop-bracket by means of its mounting screw.

Note: See that the lobe of the contact-lever stays within 1/16 inch of the edge of the bakelite extension when the contact-lever is fully operated.

3.05 Upper FIGS Contact-spring: With the Blank combination fully selected, there should be minimum 0.005 inch, maximum 0.010 inch clearance between the bakelite extension of the upper FIGS contact-spring and the lobe on the FIGS contact-lever.

To Adjust: Bend upper contact-spring.

3.06 Lower FIGS Contact-spring should require minimum 2 ounces, maximum 3 ounces, measured at the contact-point, to start the spring moving away from its stiffener.

To Adjust: Bend lower contact-spring.

3.07 The FIGS Contact Gap should be minimum 0.020 inch, maximum 0.025 inch when the printing-bail is in its extreme rear position.

To Adjust: Bend lower contact stiffener. Recheck 3.05.

3.08 FIGS Contact-lever Spring: With the printing-bail in its extreme position, it should require minimum 5 ounces, maximum 7 ounces to start the FIGS contact lever moving.

To Gauge: Hook the pull-end of the scale over the spring post of the FIGS contact-lever and pull horizontally toward the front of the unit.

B. FIGS H Contact Assembly (TP101760)

3.09 This device provides switching contacts mounted on the send-receive-mechanism plate which are closed momentarily by the H function-lever in slot 13 when a FIGS H signal is received. While the contact assembly and the adjustments are different, the location of the contact assembly is the same as the location of the contact assembly shown in Figure 1.

3.10 The Long Contact Spring clearance should not exceed more than 0.008 inch, between the bakelite tip on the spring and the H function-lever in slot 13, with the main shaft rotated until the Blank function-lever is fully selected.

To Adjust: Bend the long contact-spring stiffener.

3.11 The Long Contact-spring should require minimum 1/2 ounce, maximum 1-1/2 ounces, measured with the push-end of the scale applied to the bakelite tip on the spring, to start the spring moving away from its stiffener.

To Adjust: Bend the long contact-spring.

3.12 The Contact Gap between the points of the long and short contact-spring should be minimum 0.015 inch, maximum 0.020 inch.

To Adjust: Bend the short contact-spring stiffener.

3.13 The Short Contact-spring should require minimum 2 ounces, maximum 3 ounces to start the spring moving away from its stop.

To Gauge: Hook the pull-end of the scale over the end of the spring and pull away from the stop.

To Adjust: Bend the short contact-spring and recheck 3.11.

3.14 H Function-lever Spring: With the H function-lever resting against the rear edges of the vanes, but not in selection, it should require minimum 24 ounces, maximum 32 ounces to start the lever moving.

C. Universal Switching Contact Assembly (TP101921)

3.15 This mechanism provides a universal contact which operates with every operation of the printing-bail of the typing unit. It consists of two sets of contacts, one a transfer and the other a make. It is mounted at the left end of the printing-bail and is operated by a contact-lever connected to the printing-bail arm.

Note: Contact-springs are numbered 1, 2, 3, 4, and 5 counting in from the heads of the pile-up mounting screws.

3.16 No. 4 Universal Contact-spring Stiffener: There should be a clearance of minimum 0.005 inch, maximum 0.010 inch between the No. 4 contact-spring and the end of its stiffener, with the main shaft rotated until the printing-bail is in its extreme forward position.

To Adjust: Bend the stiffener.

3.17 Gap between Contact-points of the No. 4 and No. 5 Contact-springs should be minimum 0.015 inch, maximum 0.020 inch, with the main shaft rotated until the printing-bail is in its extreme rear position.

To Adjust: Bend the No. 5 spring.

3.18 The No. 4 Contact-spring should require minimum 2 ounces, maximum 3 ounces, measured with the scale hooked over the end of the spring, to just start the spring moving away from its stiffener.

To Adjust: Bend the No. 4 spring.

3.19 No. 3 Contact-spring Stiffener: There should be some clearance, not more than 0.008 inch, between the bakelite extension on the No. 2 contact-spring and the No. 5 contact-spring.

To Adjust: Bend the stiffener.

3.20 No. 3 Contact-spring: With printing selection set up in the vanes and the main-bail in its forward (unblocked) position, it should require minimum 3 ounces, maximum 4 ounces to start the contact-spring moving away from its stop.

To Gauge: Hook the scale over the end of the spring and pull away from the stop.

To Adjust: Bend the No. 3 spring.

3.21 No. 2 Contact-spring: With the main-bail in its rear position, it should require minimum 2 ounces, maximum 3 ounces to start the contact-spring moving away from its stop.

To Gauge: Hook the scale over the end of the spring and pull away from the stop.

To Adjust: Bend the No. 2 spring.

3.22 Gap between Contact-points of No. 1 and No. 2 Contact-springs should be minimum 0.010 inch, maximum 0.015 inch.

To Adjust: Bend No. 1 spring stiffener.

3.23 No. 1 Contact-spring should require minimum 2 ounces, maximum 3 ounces measured with scale hooked over the end of the spring at the contact-point to just start the spring moving away from its stiffener.

To Adjust: Bend the No. 1 spring.

3.24 Contact-operating Lever: Between the contact-operating lever engaging surface and the bakelite cam on the 5 contact-spring there should be minimum 0.020 inch, maximum 0.025 inch clearance when the FIGS H combination is selected and the main shaft rotated slowly until the H contacts just close.

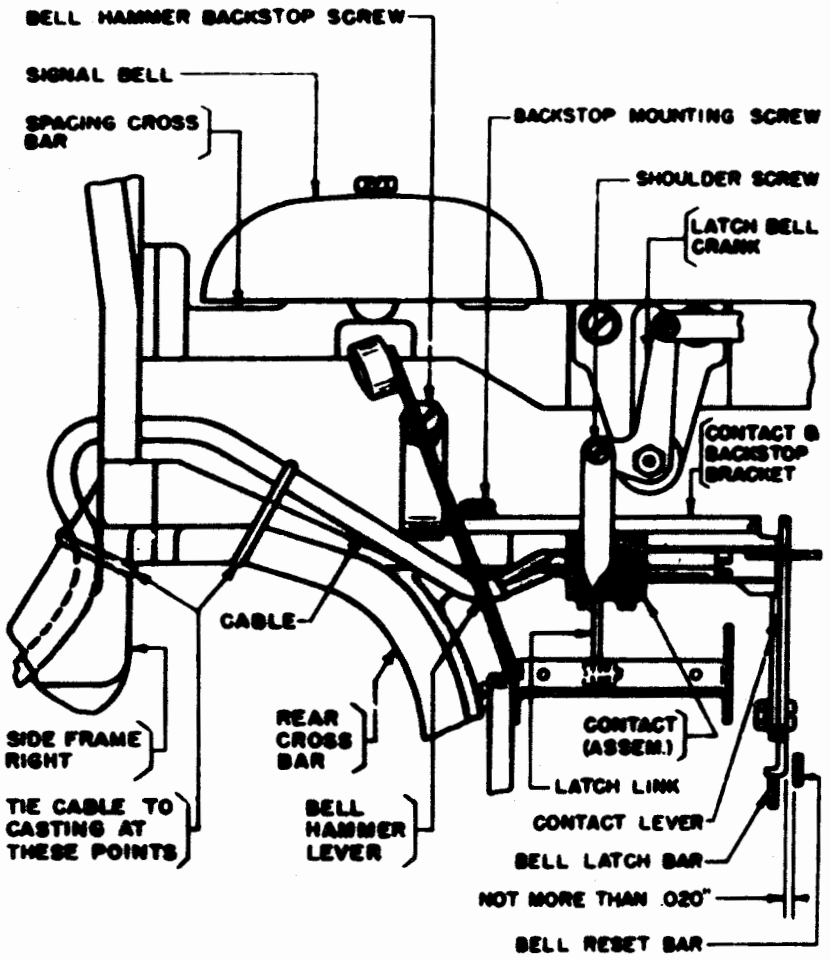
To Adjust: Position the contact-operating lever by means of its clamping screws.

3.25 Contact-operating-lever Spring: With the printing-bail in its extreme rear position and the contact-operating-spring unhooked from the spring post, it should require minimum 22 ounces, maximum 26 ounces to pull the spring to position length.

To Gauge: Unhook the spring from the spring post and hook the pull-end of the scale through the eye of the spring and pull the spring to position length. Rehook the spring.

4. REMOTE SIGNAL-BELL CONTACT MECHANISM

4.01 The requirements in this part apply for the following sets of parts: TP91159 Set of Parts with Latch; TP95088 Set of Parts without Latch; TP80956 Set of Parts (Same as TP95088 but with Cable, Plug and Receptacle). On receipt of the bell combination (FIGS S) the bell function-lever is selected. The bell latch-bar rises, rotating the contact-lever to close the contact. (See Figure 3.) The contact opens again as the bell latch-bar lowers. The TP91159 set of parts holds the contact closed until the next character or space is sent and provides for



NOTE: CABLING APPLIES ONLY TO SEPARABLE CORD AND PLUG ARRANGEMENT (TP 80956 SET OF PARTS)

Figure 3

continuous ringing of the remote bell. The TP95088 set of parts closes the contact momentarily and provides for a chime or a single stroke bell.

Note: As indicated, some of the requirements apply only to units equipped with the latch.

4.02 Contact-lever should clear the bell reset-bar by not more than 0.020 inch when the play in the lever is taken up to make the clearance a minimum. (See Figure 3.) The contact and backstop-bracket should clear the spacing-shaft by at least 0.015 inch. (See Figure 4.)

Note: On units equipped with a latch, the latch adjusting screw should also engage the rear spacing-escapement pawl squarely. See Figure 4.

To Adjust: Position contact and backstop-bracket.

Note: Place typing unit on right side.

4.03 Contact-lever-latch Shoulder nearest the pivot-screw should clear the contact-lever stud by minimum 0.008 inch, maximum 0.015 inch when the platen is in the FIGS position, BELL combination is set up on the vanes, the main shaft has been rotated until the bell latch-bar is moved off its latch and the contact-lever is held against the bell latch-bar. See Figure 4.

To Adjust: Reposition the latch mounting (pivot) screw.

4.04 Contact-lever Latch should clear the stud on the contact-lever by minimum 0.010 inch, maximum 0.025 inch when any printing combination is set up on the vanes and the main shaft is rotated until the printing-bail is in its extreme forward position. See Figure 5.

To Adjust: Reposition contact-lever latch adjusting screw.

4.05 Contact-lever-latch Spring should have a tension of minimum 2-1/2 ounces, maximum 3-1/2 ounces when the contact-lever latch starts to move from its unlatched position. See Figure 5.

4.06 Upper Contact-spring Insulator should press against the contact-lever with a force of minimum 1 ounce, maximum 2 ounces, when the bell latch-bar is in its unoperated position and the lower contact-spring is held clear of the upper contact. See Figure 6.

Note: On units equipped with a latch, the contact-lever should be in its unlatched position.

To Adjust: Bend upper contact-spring.

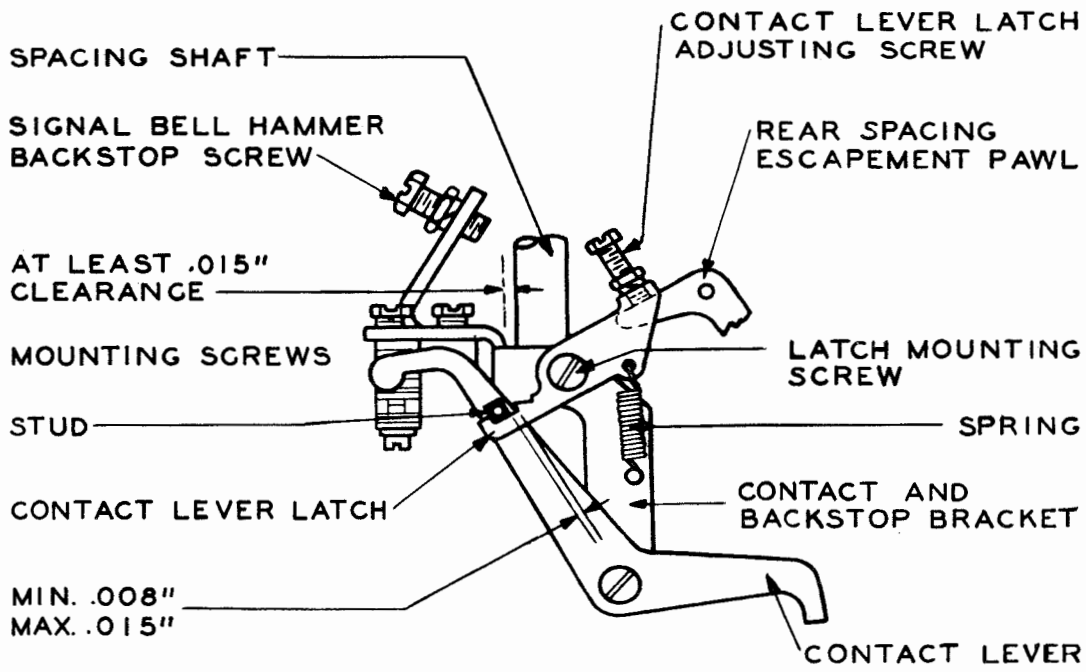


Figure 4

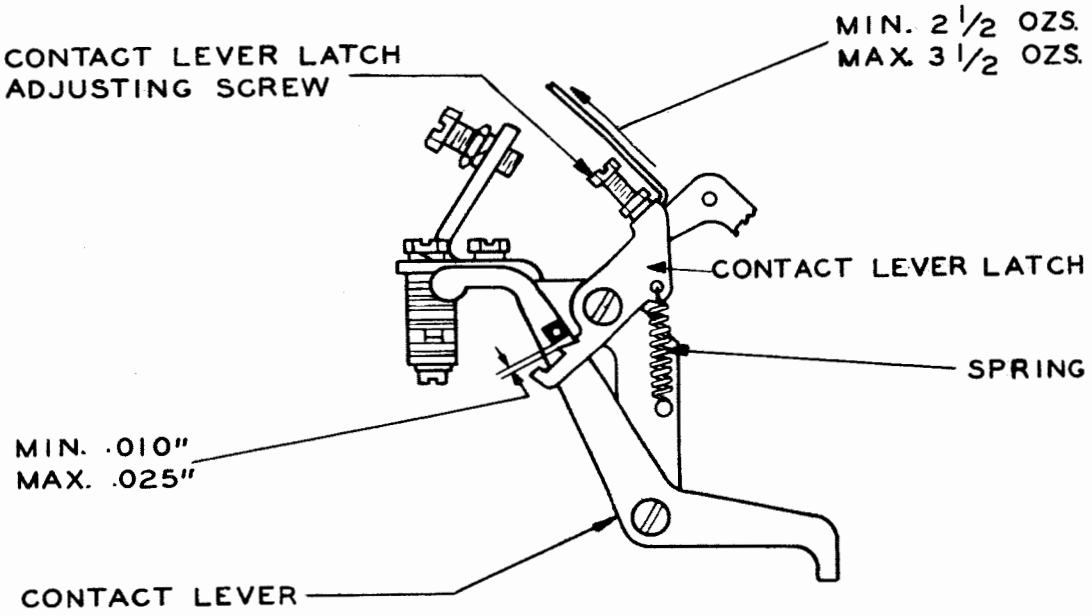


Figure 5

4.07 Lower Contact-spring should press against its stiffener with a force of minimum 2-1/2 ounces, maximum 3-1/2 ounces. See Figure 6.

To Adjust: Bend lower contact-spring.

4.08 Contact Gap between the springs should be minimum 0.015 inch, maximum 0.025 inch, with the printing-bail in the extreme rear position. See Figure 6.

Note: On units equipped with a latch, the contact-lever should be in its unlatched position.

To Adjust: Bend lower contact-spring stiffener and then recheck lower contact-spring.

4.09 Signal Bell-hammer-arm Extension should clear bell operating-lever by minimum 0.020 inch, maximum 0.040 inch when bell latch-bar is in latched position. See Figure 7.

To Adjust: Position bell-hammer backstop.

5. PRINTING-SUPPRESSING MECHANISM

5.01 On typing units equipped with motor stop, a function-lever selectable on FIGS H blocks full movement of the printing-bail, preventing printing and spacing when a motor-stop signal is received.

5.02 FIGS H Function-lever Spring: With the printing-bail in its extreme rear position, the function-lever spring unhooked from its spring plate and the function-lever held against its pivoting shaft, it should require minimum 40 ounces, maximum 50 ounces to pull the spring to position length.

To Gauge: Unhook the spring from the spring plate and hook the pull-end of the scale through the eye of the spring and pull to position length. Rehook the spring.

6. PRINTING AND SPACING CUT-OUT MECHANISM (TP92784)

6.01 This set of parts provides for suppressing printing and spacing beyond a point on the line for which the apparatus is adjusted. This arrangement is for a private-line network where it is desired to suppress the typing of certain information at some machines, and have typing continue at other machines.

Note: Remove the typebar carriage for 6.02 and 6.03.

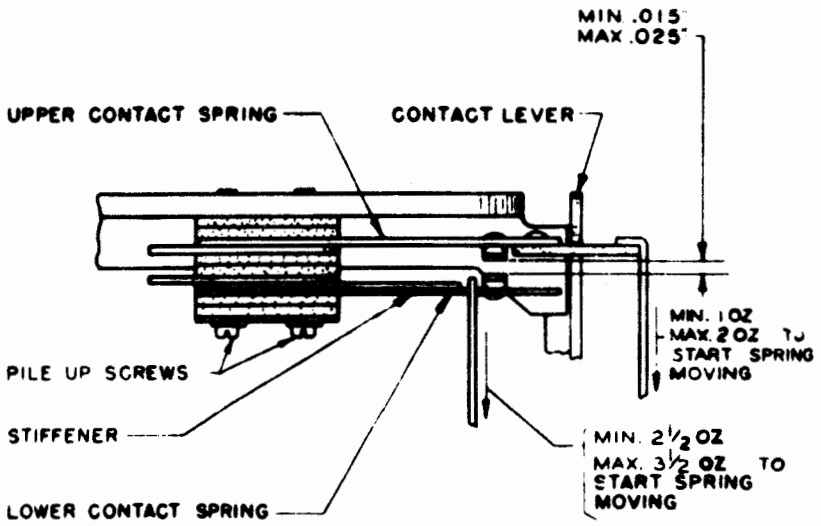


Figure 6

6.02 The Printing and Spacing Cut-out Mechanism Bracket should be positioned horizontally so that there is minimum 0.020 inch, maximum 0.040 inch clearance between the spacing stoplever and the spacing stop-sleeve.

6.03 Printing Cut-out-latch Eccentric: Set up the FIGS combination on the vanes and rotate the main shaft until the function-lever bail is stopped by the shift function-lever. Push the printing-bail toward the rear of the machine manually and raise the printing cut-out latch into engagement with it. Adjust the printing cut-out-latch eccentric, using the upper half of the adjustment, so that there is some clearance, not more than 0.015 inch, between the rear extension of the FIGS function-lever and the blocking surface of the function-lever bail. Rotate the main shaft until the printing-bail is in the rear position. Raise the printing cut-out latch. There should be clearance between the front printing-bail blade and the latch.

Note: Replace the typebar carriage.

6.04 Right-hand margin-adjusting Screw: With the printing-bail in the extreme rear position and with the typebar carriage one space to the right of that in which the last character is to be printed, push the spacing stop-sleeve backward just enough to permit the spacing cut-out arm to pass in front of it. Advance the right-hand margin adjusting screw on the typebar carriage until there is minimum 0.010 inch, maximum 0.020 inch clearance between the printing cut-out latch and the lower edge of the rear printing-bail blade.

6.05 Printing Cut-out-latch Downstop Eccentric: With the printing-bail blade in its extreme forward position, adjust the printing cut-out-latch downstop eccentric so that there is minimum 0.008 inch, maximum 0.015 inch clearance between the lower edge of the rear printing-bail blade and the printing cut-out latch. Use only the rear half of adjustment of the eccentric.

6.06 Spacing Cut-out Lever: With a 32-ounce scale held in a horizontal position, and hooked over the upper end of the spacing cut-out lever, pull toward the right. It should require minimum 8 ounces, maximum 12 ounces to start the lever moving.

6.07 Printing Cut-out Latch: With the printing-bail in its extreme forward position hook an 8-ounce spring balance under the printing cut-out latch just to the rear of the spring hole and pull upward as nearly vertically as possible. It should require minimum 1 ounce, maximum 2-1/2 ounces to start the latch moving.

7. TWO-COLOR PRINTING

7.01 The requirements in this part apply for the following sets of parts: Manual Control - TP123525; Automatic Control - TP99502; Auxiliary Set of Parts for Sprocket-Feed Units - TP113699; Switching Contacts to Close and Open

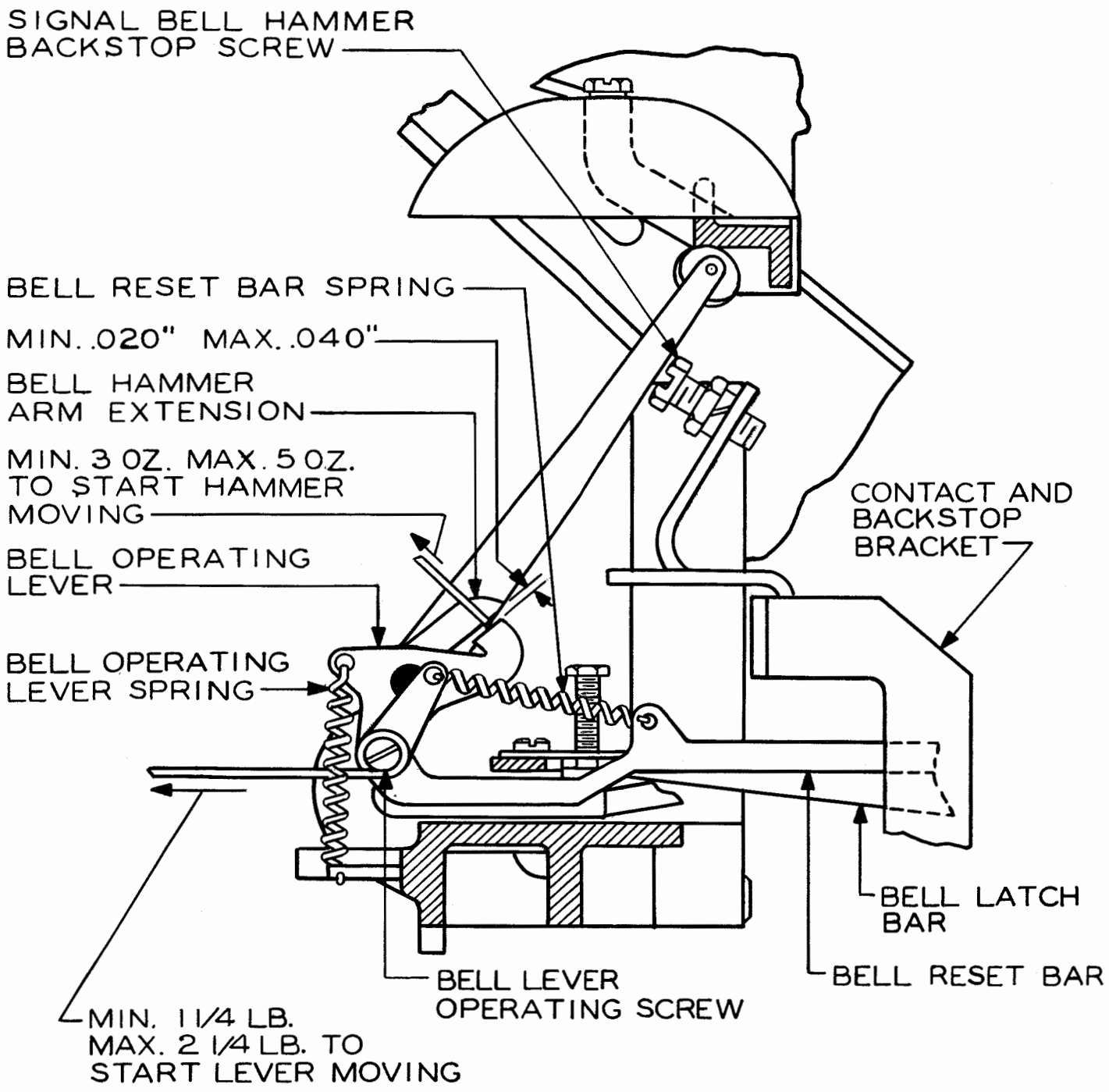

SIGNAL BELL HAMMER BACKSTOP SCREW
BELL RESET BAR SPRING
MIN. .020" MAX. .040"
BELL HAMMER ARM EXTENSION
MIN. 3 OZ. MAX. 5 OZ. TO START HAMMER MOVING
BELL OPERATING LEVER
BELL OPERATING LEVER SPRING
CONTACT AND BACKSTOP BRACKET
BELL LATCH BAR
BELL RESET BAR
BELL LEVER OPERATING SCREW
MIN. 1 1/4 LB. MAX. 2 1/4 LB. TO START LEVER MOVING

Figure 7

an External Circuit - TP113700. The two-color printing mechanism is under control of a magnet which is actuated either by a manual switch on the machine or automatically by the transmission of an upper-case character from a distant machine. The ribbon may be, for example, either black and red or black and hecto (for duplicating). For automatic operation, the selected upper-case character operates a function-lever to actuate the magnet. This changes the ribbon color, say from black to red. Another selected upper-case character changes the ribbon back to black. Any two upper-case characters may be selected by the customer. The signal for printing red must be sent at the start of each new line as CAR RET restores the ribbon to black.

7.02 The adjustments of 7(A) are common to both manual and automatic mechanisms. 7(B) gives added adjustments peculiar to the automatic mechanism.

A. Adjustments

7.03 Ribbon-oscillator Lever: Select any character which types and turn the main shaft until the printing-bail is in its full forward position, then with the platen in the upper-case position, and the ribbon-oscillator lever toward the front of the typing unit (not held by its latch), check to see that the ribbon-oscillator is not resting against the ribbon-oscillator-lever adjustable stop. If necessary, loosen the screws and move the stop out of the way. (Adjustable stop is shown in Figure 9.) Manually place the ribbon oscillator lever in its latched position. Then with the comma type-pallet pushed tightly against the ribbon there should be some clearance, maximum 0.025 inch, between the bottom edge of the imprint made by the comma and the top edge of the red portion of the ribbon. See Figure 8.

To Adjust: Position the ribbon-oscillator lever by means of the slotted hole and the ribbon-oscillator lever clamping screw and nut.

Note: Remove the typebar carriage before making the adjustments of 7.04 to 7.07, inclusive.

7.04 Ribbon-oscillator-lever Latch-bracket: With the ribbon-oscillator lever held to the rear of the type basket so that it just touches either the carriage-frame casting or the lock-nut for the upper-carriage-track roller, there should be at least 0.030 inch clearance between the latch and the ribbon-oscillator lever. See Figure 8.

To Adjust: Position the latch-bracket by means of its elongated mounting holes.

7.05 Ribbon-oscillator-latch Spring: With the ribbon-oscillator lever held away from its latch, hook the scale over the latch where the spring is hooked and pull in line with spring. It should require a pull of minimum 1/2 ounce, maximum 2 ounces to just start the latch moving. See Figure 8.

7.06 Ribbon-oscillator-lever Adjustable Stop: With the pullbar-bail plunger held so that there is minimum 0.010 inch, maximum 0.050 inch clearance between the pullbars and the codebars, the ribbon-oscillator lever should overtravel the latching surface of the latch by

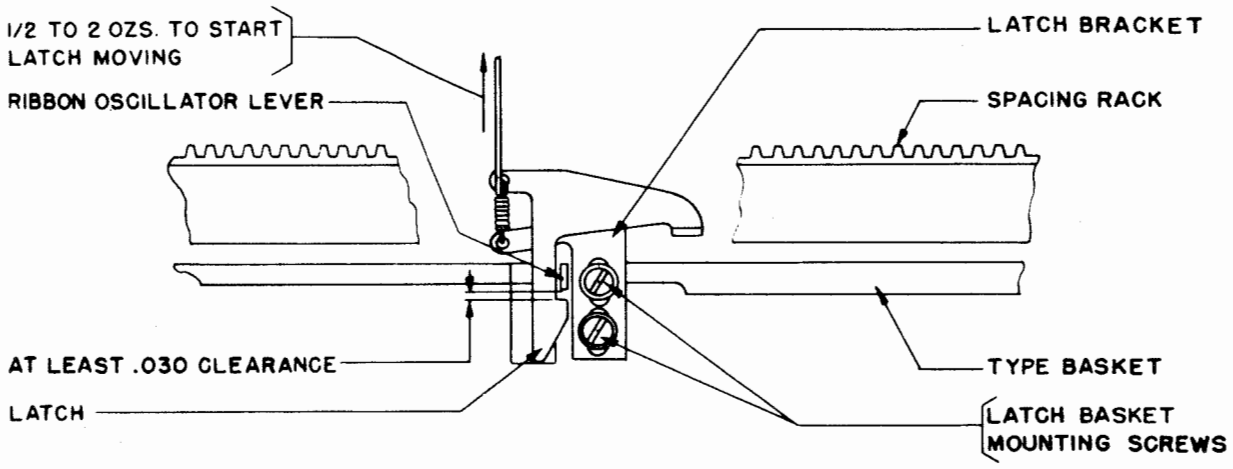


Figure 8

minimum 0.012 inch, maximum 0.020 inch. See Figure 9.

To Adjust: Position the adjustable stop by means of its elongated mounting hole.

7.07 Parallelogram-bar Brackets: With the magnet de-energized and with the armature backstop-eccentric positioned to give maximum travel of the armature, the front edge of the parallelogram bar should be parallel with the front edge of the upper track and its front edge should not project beyond the front edge of the upper track by more than 0.030 inch. See Figure 10.

To Adjust: Position the bracket mounted on the right end of the upper track and the magnet-bracket mounted on the left end of the upper track by means of their large mounting holes.

Note: Replace the typebar carriage before making the adjustments of 7.08 to 7.10, inclusive. Check ribbon-oscillator-lever adjustable stop adjustment of minimum 0.012 inch, maximum 0.020 inch overtravel, with the main shaft in its stop position and the platen in the LTRS (down) position. There should also be a clearance of minimum 0.006 inch between the oscillator lever and either the carriage-frame casting or the locknut for the upper carriage-track roller, whichever is closer. If necessary, remake this adjustment.

7.08 Magnet-yoke:

(1) With the magnet-armature held against the core of the magnet there should be minimum 0.010 inch, maximum 0.020 inch clearance between the end of the yoke and the magnet-armature. See Figure 11.

Adjust by adding or removing shims between the magnet-core and the yoke.

(2) The above clearance should not vary between the two ends of the yoke by more than 0.010 inch.

Adjust: To obtain this adjustment, tilt yoke by adding or removing shims between the yoke and the magnet-bracket. Recheck (1).

(3) With the armature held against the core of the magnet, the ribbon-oscillator lever should clear the latch by minimum 0.008 inch, maximum 0.020 inch. See Figure 10.

To Adjust: Position the magnet-yoke by means of its mounting screws and the elongated holes in the magnet-brackets. At the same time the yoke should be positioned so that the ends of the yoke are parallel to the armature. Check this clearance with the typebar carriage at both ends of the typing unit.

7.09 Armature-backstop: Set up any selection that prints and rotate the main shaft until the printing-bail is in its full-forward position. With the ribbon-oscillator lever in its unlatched position, and the magnet-armature in its released position resting against the eccentric backstop, there should be some clearance, maximum 0.015 inch, between the rear surface of the ribbon-oscillator-lever latch projection and the front edge of the parallelogram bar. Check this clearance with the typebar carriage at both ends of the typing unit. See Figure 12.

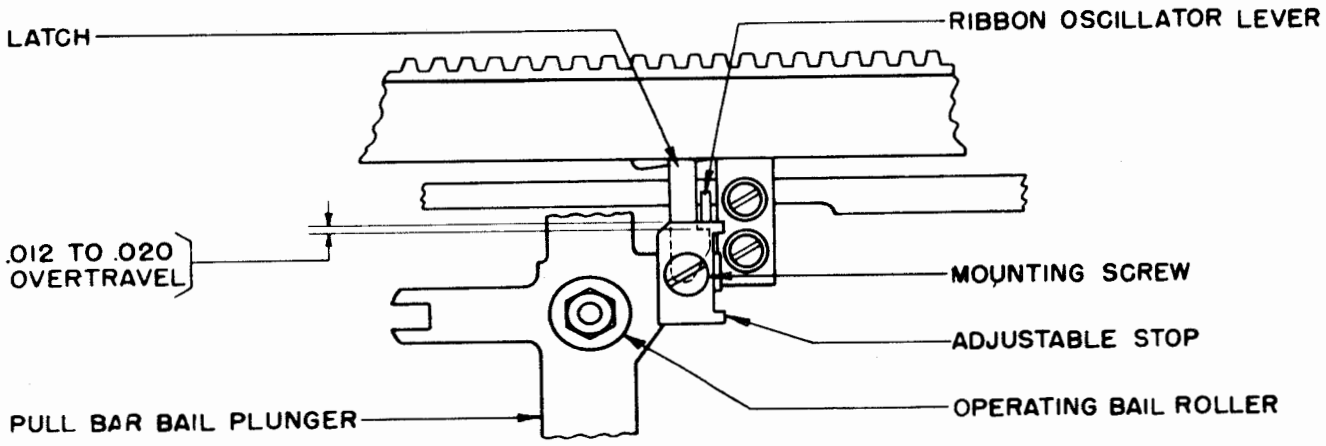


Figure 9

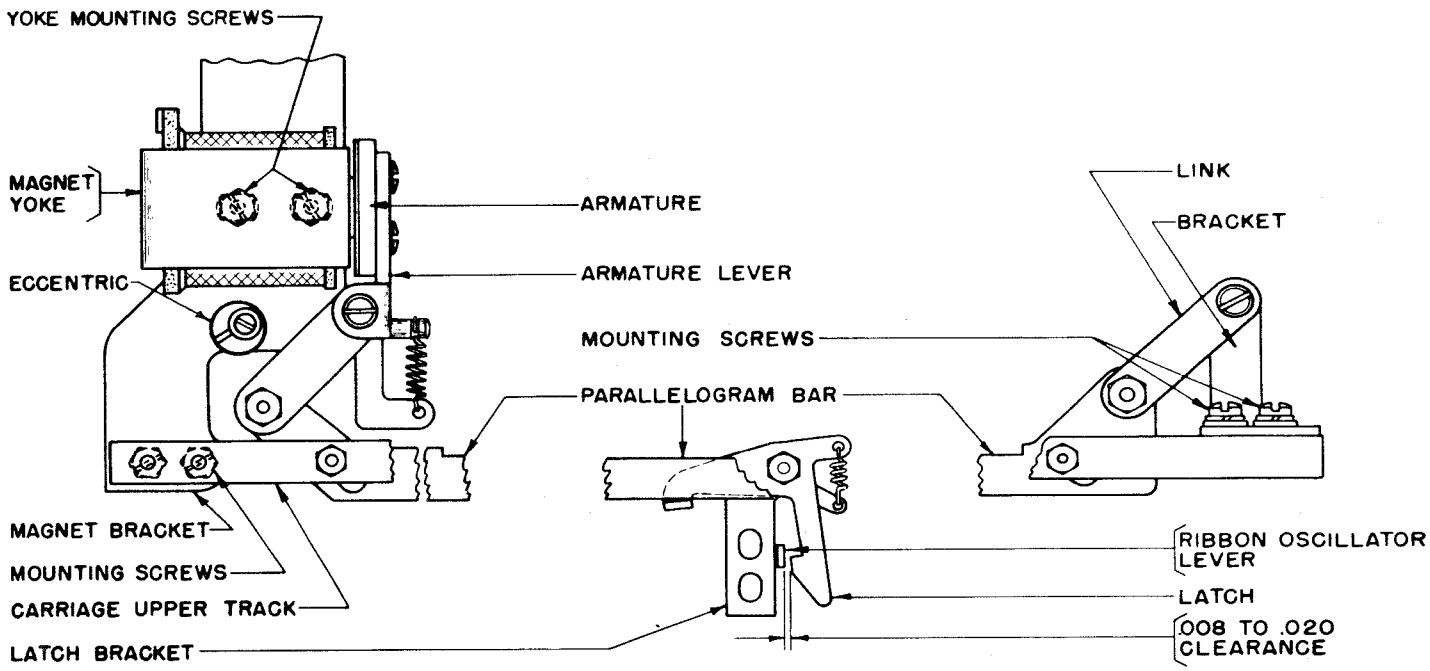


Figure 10

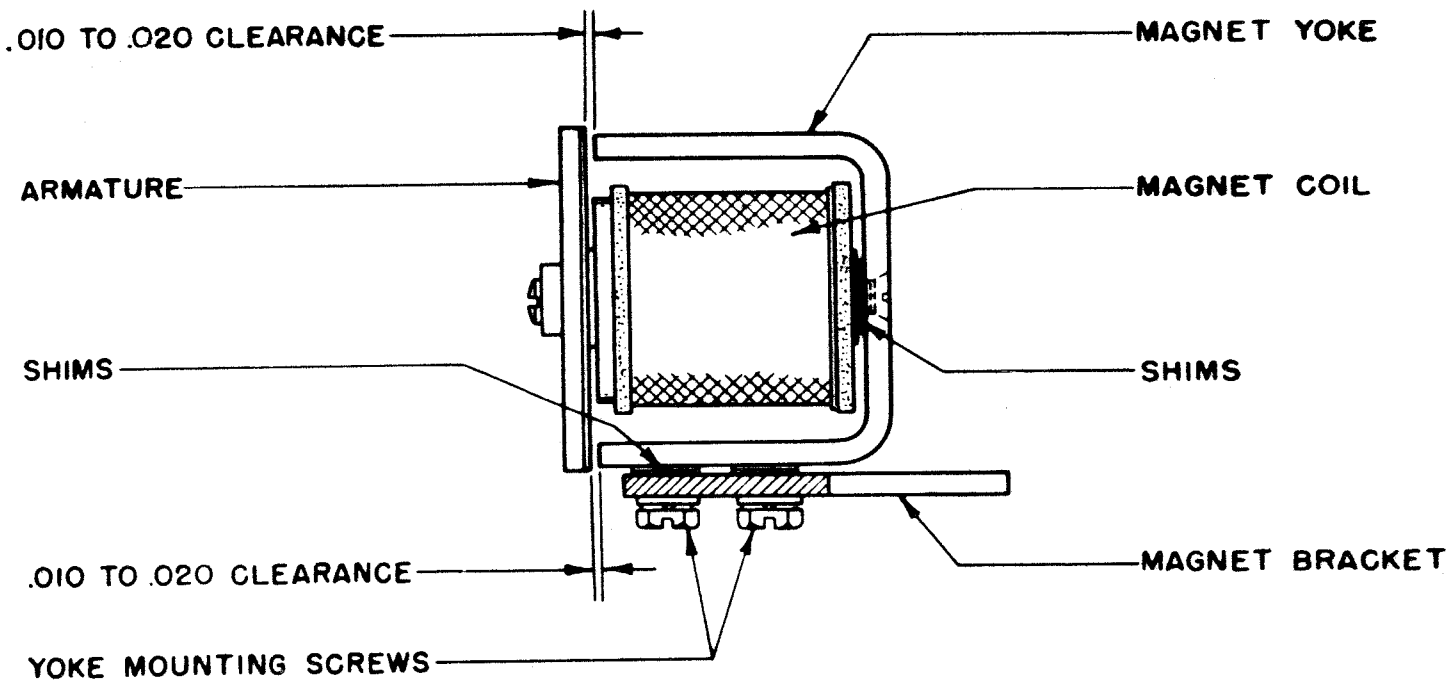


Figure 11

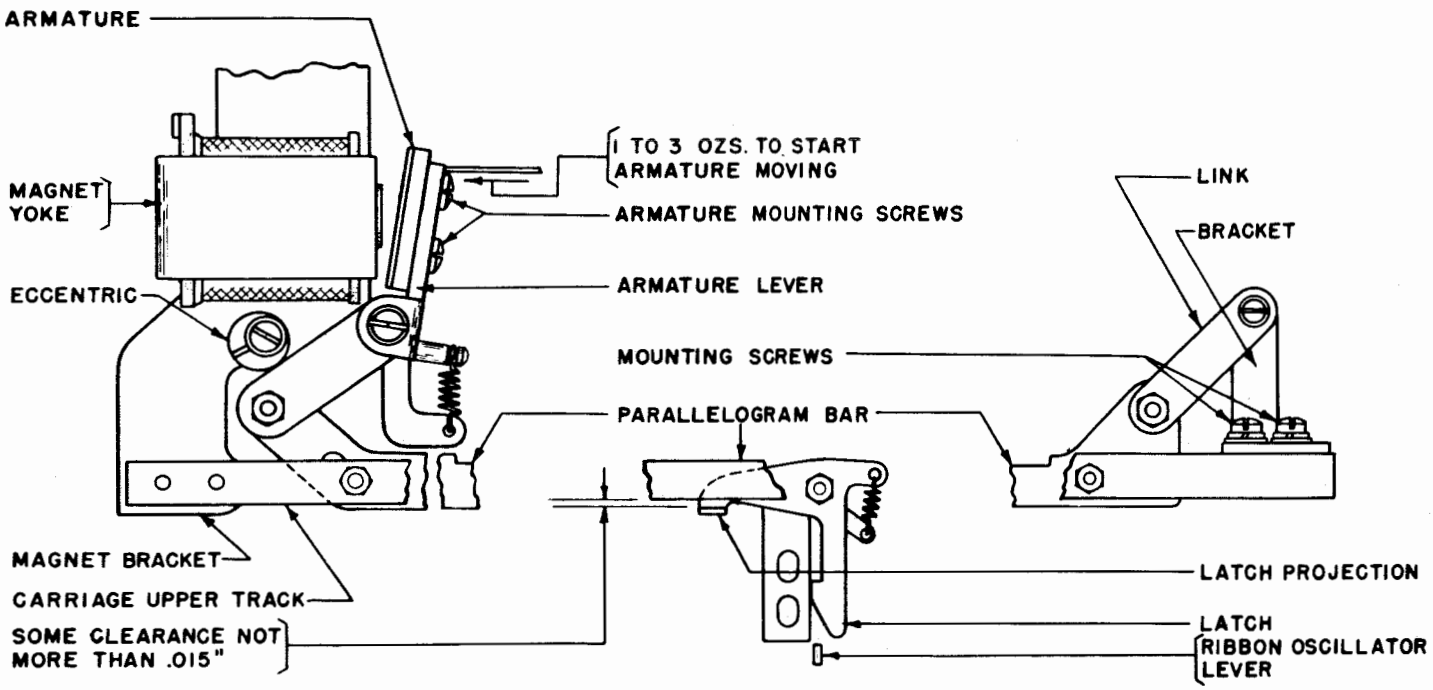


Figure 12

To Adjust: Rotate the eccentric back-stop with its mounting screw loosened friction-tight.

7.10 Armature-spring: Unhook the armature-spring and check the magnet-armature and parallelogram bar for binds. Rehook the spring. Apply the push-end of the scale to the armature just above the armature mounting screws. It should require minimum 1 ounce, maximum 3 ounces to start the armature moving. See Figure 12.

Note: The adjustments of 7.11 and 7.12 apply only to the sprocket-feed typing unit.

7.11 Loading-plate: To overcome any interference between the loading-plate and the ribbon carrier, bend the front edge of the loading-plate slightly upward.

7.12 Ribbon Carrier should clear the sprocket pins by approximately 0.025 inch.

To Adjust: Bend type-guide forward.

B. Additional Adjustments for Automatic Two-color Printing

7.13 Contact-operating-lever Bracket: With the contact-operating lever in its latched position, the contact rail operating and releasing function-levers and the carriage-return function-lever resting against the selector vanes, but not selected, there should be minimum 0.004 inch, maximum 0.020 inch clearance between the latch extension and the releasing function-lever and carriage-return function-lever extensions. See Figure 13A.

To Adjust: Position the bracket by means of its elongated mounting holes.

7.14 Contact-springs:

CAUTION: TURN MOTOR POWER SWITCH TO OFF POSITION WHEN CHECKING THIS ADJUSTMENT.

(1) With the pull-end of the scale hooked over the short contact-spring, near the contact-point, it should require minimum 3 ounces, maximum 4 ounces to start the spring moving away from the stiffener when the contact-operating lever clears the bakelite tip on the long contact-spring. See Figure 13B.

To Adjust: Remove the spring from the assembly and bend.

(2) There should be minimum 0.015 inch, maximum 0.025 inch clearance between

the contact-points of the short and long contact-springs when the contact-operating lever clears the bakelite tip on the long contact-spring. See Figure 13B.

To Adjust: Bend the long contact-spring.

(3) With the contact-operating lever in its latched position, there should be some clearance, maximum 0.010 inch, between the short contact-spring and the contact-spring stiffener at its extreme end. See Figure 13A.

To Adjust: Position the contact-bracket horizontally by means of its elongated mounting holes.

7.15 The Contact-operating Lever should overtravel its latch by minimum 0.004 inch, maximum 0.015 inch when the contact-operating-function lever is in its operated position. See Figure 13C.

To Adjust: Set up the contact-make combination and turn the main shaft until the contact-make function-lever is in its full operated position. Then position the contact-operating lever by means of its elongated hole and the mounting screw in the link.

7.16 Contact-operating-lever Spring: With the contact-operating lever in its latched position, unhook the contact-operating-lever spring from the contact-operating lever. With the scale hooked in the spring eye, it should require minimum 2 ounces, maximum 4-1/2 ounces to pull the spring to position length. See Figure 13A.

7.17 Contact-operating and Release Function-lever Springs: With the function-levers for operating the mechanism resting against the selector vanes but not selected, hook the scale over the bottom of the function-lever extension and pull upward. It should require minimum 24 ounces, maximum 32 ounces to start each function-lever moving.

C. Additional Adjustments for Two-color Printing on Units with Switching Contacts to Close and Open an External Circuit

7.18 The following additional adjustments should be remade in the sequence indicated and in accordance with 2, Switching Contacts to Close and Open an External Circuit. See Figures 1 and 2.

(1) Send-receive-break-mechanism Plate
(2) Contact-control Plate
(3) Contact-springs
(4) Contact-pawl Spring
(5) Function-lever Springs
(6) Function-lever Bail and Blocking Plate

8. MECHANICAL WORD COUNTER (TP94663)

8.01 This mechanism consists of a linkage and a counter, installed under the teletypewriter cover. The printing-bail blade operates a lever which, through the medium of a link, actuates a 5-digit counter. The counter registers once in response to every sixth printing or spacing operation when the counter operating lever, which is actuated by the printing bail blade, is installed to pivot about its outer mounting screw hole. The counter registers once in response to every sixth operation,

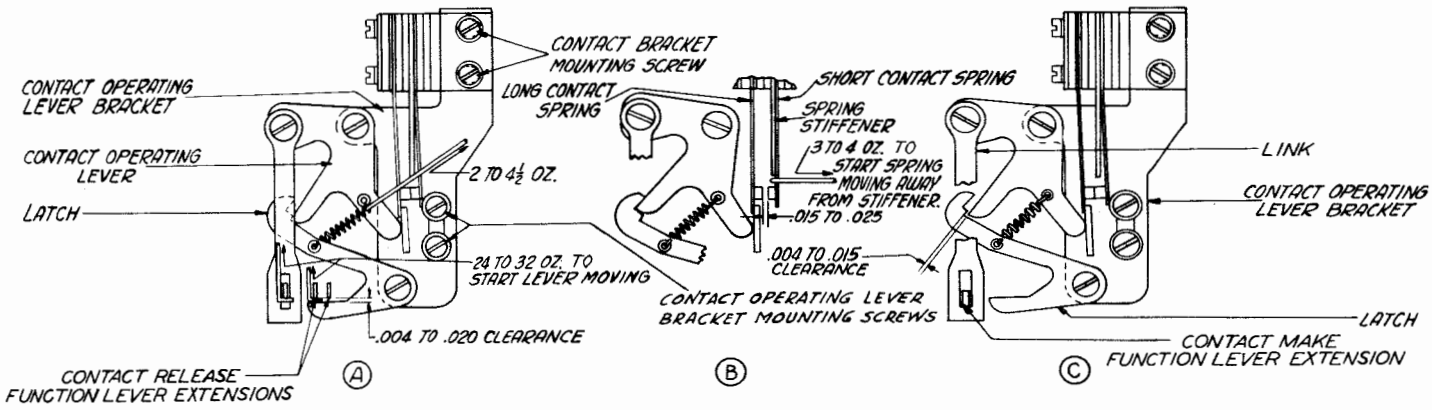


Figure 13

whether the operation is a printing, nonprinting, or spacing operation, when the operating lever is installed to pivot about its inner mounting screw hole. The counter may be read by lifting the cover lid. The register may be reset to zero by turning a knob on the counter.

8.02 The Star Wheel should be rotated manually until a number has just been registered on the counter, and then rotated at least 1/4 turn more so that one side of a tooth on the star wheel is vertical. With a scale hooked over the vertical face of this tooth, approximately 1/16 inch, and pulled horizontally, it should require a tension of minimum 3 ounces, maximum 7 ounces to start the star wheel rotating.

To Adjust:

(1) On counters without the TP119651 retainer ring, position the star wheel either toward or away from the hub of the counter to change the compression of the spring washer. (This adjustment may be made before the counter is installed.)

(2) On counters with the TP119651 retainer ring, usually no adjustment is required. However, if requirement 8.02 cannot be met because of variations in the retainer slot position, it may be necessary to add TP96874 shims between the retainer ring and the washer. If shims are added, they should be positioned so that they do not interfere with the repositioning of the retainer ring in the retainer-ring slot.

8.03 Operating Lever Position:

(a) When the counter is required to register on all printing and spacing operations only, position the operating lever so that it pivots about its outer (right-hand) mounting screw hole.

(b) When the counter is required to register on all printing, spacing, and functional operations, position the operating lever so that it pivots about its inner (left-hand) mounting screw hole.

8.04 The Counter Assembly should be positioned so that (1) the pins in the slide-bar properly engage the teeth on the star wheel, and (2) the star wheel does not bear against the slide-bar.

To Adjust: Loosen the counter mounting screws and turn the typing-unit main shaft until the printing-bail moves to its extreme forward position (for typing a character). Make sure that the slide-bar stops against the spring post in the counter mounting-bracket when in its upward position. Then push the slide-bar downward and allow its spring to return it quickly. Operate the slide-bar slowly by hand downward and position the counter away from or toward the typing unit so that the upper pin in the slide-bar engages a tooth on the star wheel midway between the peak and bottom of the tooth. Position the counter away from or toward the typing unit so that this requirement is met. Slightly tighten the mounting screws.

With the play in the slide-bar and the counter shaft taken up so that the clearance between the end of the star wheel and the slide-bar is a minimum, position the counter so that there is some clearance, not more than 0.025 inch between the slide-bar and the star wheel. Recheck To Adjust if the counter is moved and tighten the counter mounting screws. Check for proper feeding of the star wheel as the slide-bar is operated.

8.05 Counter Linkage: Rotate the main shaft until the printing-bail is in its extreme rear position. Adjust the counter linkage by means of the eccentric shoulder-screw in the end of the operating-lever so that upper pin in the slide-bar just bottoms between two teeth on the star wheel and so that with the pin in this position, the star wheel will have a barely perceptible amount of back-lash. Check for this back-lash during a complete revolution of the star wheel. If this adjustment cannot be made by means of the eccentric screw in the operating-lever, adjust this shoulder-screw to its most favorable position and then adjust the eccentric shoulder-screw in the bell crank. If the adjustment still cannot be met, vary the height of the counter mounting-bracket utilizing the clearance in the mounting holes.

8.06 The Slide-bar Spring should be unhooked at the bottom end, with the typing unit standing on its left side. Hook a 64-ounce scale in the spring eye; pulling in line with the slide-bar, it should require minimum 34 ounces, maximum 42 ounces to stretch the spring to position length when the printing-bail is in its rearmost position.

8.07 The Link-yield Spring is unhooked from the link arm and a 64-ounce scale is hooked in the spring eye. Pulling in line with the link, it should require minimum 54 ounces, maximum 64 ounces to stretch the spring to position length.

9. ELECTRICAL WORD COUNTER CONTACT. ASSEMBLY (AC Unit TP95216) (DC Unit TP95217)

9.01 These sets of parts, arranged for mounting on a 15 typing unit and base, are for the purpose of closing a pair of contacts, by means of which an external Veeder-Root electromagnetic counter may be operated from ac or dc power supplies, respectively. The contacts are closed by the operation of a linkage assembly which is actuated by the printing-bail. Both sets of parts are identical mechanically and differ only in the contact spark-protection feature. The contact assembly may be adjusted to provide for closing the contacts to meet one of three requirements:

(a) A count on every sixth operation, printing or spacing.

(b) A count on every sixth operation, printing, spacing or nonspacing.

(c) A count on every single operation, printing, spacing or nonspacing.

9.02 The Star Wheel should be rotated until the contact-spring operating screw (which also secures the star wheel to its shaft) points downward and so that one side of a tooth on the star wheel is vertical. Hook an 8-ounce scale over the vertical face of this tooth approximately 1/16 inch and pull horizontally. It should require minimum 4 ounces, maximum 6 ounces to start the star wheel rotating. If necessary, this tension may be varied by loosening the star-wheel clamping-screw and positioning the star wheel either toward or away from the star-wheel bearing so as to change the compression of the spring washer. (This adjustment may be made before the contact bracket is installed in the machine.)

9.03 Operating Lever Position:

(a) When it is required that the counter register on all printing and spacing operations only, position the operating lever so that it pivots about its outer mounting screw hole.

(b) When it is required that the counter register on all printing, spacing, and functional operations, position the operating lever so that it pivots about its inner mounting screw hole.

9.04 Word Counter Contacts:

(a) For operation of the contacts on every printing, spacing, and functional operation of the printer, the following requirements should be met:

(1) There should be 0.050- to 0.055-inch clearance between the insulator on the lower contact spring and the peak of a tooth on the star wheel.

To Adjust: Bend the lower contact spring.

(2) There should be 0.015- to 0.025-inch clearance between the contacts when the slide lever is held down against its stop.

To Adjust: Bend the upper contact spring.

(b) For operation of the contacts on every sixth printing spacing and functional operation of the printer, the following requirements should be met:

(1) There should be 0.050- to 0.055-inch clearance between the insulator on the lower contact spring and the peak of a tooth on the star wheel.

To Adjust: Bend the lower contact spring.

(2) There should be 0.015- to 0.025-inch clearance between the contacts when the pin in the star wheel is pointing downward.

To Adjust: Bend the upper contact spring.

9.05 The Star-Wheel Bearing should be positioned to left or right so that (1) the pins in the slide-bar properly engage the teeth on the star wheel, and also should be positioned to front or rear so that (2) the star wheel does not bear against the slide-bar.

To Adjust: Loosen the star-wheel bearing mounting screws. Then rotate the typing-unit mainshaft until the printing-bail moves to its extreme forward position (for typing a character). Make sure that the slide-bar stops against the spring post in the contact mounting bracket when in its

upward position. Then push the slide-bar downward and allow its spring to return it quickly. Operate the slide-bar slowly by hand downward and position the star-wheel bearing away from or toward the typing unit so that the upper pin in the slide-bar engages a tooth on the star wheel midway between its peak and bottom. Slightly tighten the mounting screws.

With the play in the slide-bar and the star-wheel shaft taken up so that the clearance between the end of the star wheel and the slide-bar is a minimum, position the star-wheel bearing so that there is some clearance, not more than 0.025 inch between the slide-bar and the star wheel. Recheck To Adjust if the star-wheel bearing is moved. Check for proper feeding of the star wheel as the slide-bar is operated.

9.06 Contact-operating Linkage: Rotate the main shaft until the printing-bail is in its extreme rear position. Adjust the contact-operating linkage by means of the eccentric shoulder-screw in the end of the operating lever so that the upper pin in the slide-bar just bottoms between two teeth on the star wheel, and so that with the pin in this position, the star wheel will have a barely perceptible amount of free movement. Check this free movement during a complete revolution of the star wheel. If this adjustment cannot be made by means of the eccentric screw in the operating-lever, adjust this shoulder-screw to its most favorable position and then adjust the eccentric shoulder-screw in the bell crank. If the adjustment still cannot be met, vary the height of the counter mounting-bracket utilizing the clearance in the mounting holes.

9.07 The Slide-bar Spring should be unhooked at the bottom end, with the typing unit on its left side. Hook a 64-ounce scale in the spring eye and pull in line with the slide-bar. It should require minimum 34 ounces, maximum 42 ounces to stretch the spring to position length when the printing-bail is in its rearmost position.

9.08 The Yield Spring should be unhooked from the link arm. Hook a 64-ounce scale in the spring eye and pull in line with the link. It should require minimum 54 ounces, maximum 64 ounces to stretch to position length.

9.09 Contact-spring Bracket: With the main bail in the rearmost position and the star wheel rotated so that the counter has just counted the preceding character, check that there is some clearance between the contact spring insulator and the operating pin. To adjust, shift the contact-spring bracket. Check that with the main bail in the rearmost position, the contact does not close on the character preceding the one just noted.

9.10 The Contact-assembly Cover should be put in place over the contacts, after the adjustments are made.

10. TABULATION INDICATOR (TP90249)

10.01 On units already equipped with the horizontal tabulating feature, this set of parts faciltiates the transmission of tabulated material by providing a scale for the guidance of the operator. The scale is located under the lower edge of the cover glass, and the indicator is attached to the left ribbon-spool bracket.

10.02 Scale:

(1) The entire length of the scale should lie flat against the teletypewriter cover.

To Adjust: Bend the scale.

(2) The left end of the scale should be in contact with the left-hand clamping-screw, and the numbers should be visible to the operator. The lower edge of the scale should be parallel to the hinged strip and if possible should be in contact with the upper edge of the strip.

To Adjust: Loosen the lower clamping-screws and position the scale.

10.03 Indicator should be parallel to the pull-bar guide and directly in line with one of the graduations marked on the scale.

To Adjust: Loosen the left-hand ribbon-spool-container-bearing hexagonal nut until the indicator bracket can be rotated around the bearing. Adjust the ribbon-spool container, and on units so equipped the TP-110351 backstop, in accordance with the section covering 15 typing unit requirements and adjustments. Then while holding the ribbon-spool container in position, rotate the indicator bracket until the requirement is met and clamp the indicator assembly in place by tightening the hexagonal nut.

10.04 Teletypewriter Cover should be in place over the teletypewriter base and firmly seated in the felt pad all the way around.

To Adjust: Position the cover.

10.05 Left-hand Margin:

(a) Where a left-hand margin not over 3/4 inch is required and stationery 8-1/2 inch wide is used, the indicator should designate the absolute number of spaces from the left-hand margin, when adjusted as follows:

(1) Check that the unit is adjusted so that the first character is typed in the position specified in the section covering requirements and adjustments as required for friction-feed or sprocket-feed units, respectively.

(2) Start the teletypewriter and operate the spacebar 35 times by actual count.

(3) Adjust the indicator horizontally until it is directly in line with the graduation on the scale marked 35.

(4) Operate CR (carriage return) and check to see that the indicator lines up with the 0 (zero) mark on the scale when the typebar carriage is at the beginning of the line.

Note: In making the adjustment specified in 10.06, care must be taken to maintain the preceding adjustments (1) to (4), inclusive.

(b) Where a left-hand margin is required to be over 3/4 inch or where the teletypewriter uses stationery less than 8-1/2 inches wide, the indication on the scale will be relative rather than an absolute indication of the number of spaces from the left-hand margin.

10.06 Clearance between Indicator and Scale: There should be a clearance of minimum 0.015 inch, maximum 0.030 inch between the indicator and the undersurface of the scale, at the point of minimum clearance.

To Adjust: Position the indicator vertically while observing the clearance along the full length of the scale.

10.07 After tightening the mounting screws, recheck requirements 10.04 and 10.05.

11. FORM-ACCUMULATING SHELF

11.01 The following form-accumulating shelf assemblies provide a shelf for a 15 cover to accommodate forms as they emerge from a 15 sprocket-feed teletypewriter:

TP94681 - Replaced by TP115765 and TP115766

TP115723 - For a unit on a table with a paper supply door.

TP115765 - For a unit on a table without a paper supply door (11-inch-fold forms).

TP115766 - For a unit on a table without a paper supply door (14-inch-fold forms).

11.02 Shield: The forms emerging from the teletypewriter should lie flat on the appropriate form-accumulating shelf and should rest against the shield so that the forward ends of the forms will be approximately 3/4 inch from the cover end of the accumulating shelf.

To Adjust: Position the shield, making sure that it is parallel with the rear wall of the teletypewriter cover, and then tighten the thumb screws.

11.03 Forms: The forms should pile up in an orderly fashion as they emerge from the teletypewriter.

To Adjust: If the fold between the first two forms is in a direction tending to bow the paper away from the platen, turn the first form under the succeeding form as it enters the shelf.

12. SIX CHARACTERS PER INCH HORIZONTAL SPACING (TP136074)

12.01 This modification kit converts the horizontal spacing mechanism of a 15 typing unit from ten characters per inch to six characters per inch.

12.02 The following adjustments should be remade in the sequence indicated and, unless otherwise specified, in accordance with the standard procedures in the section covering the 15 typing unit requirements and adjustments.

(1) Mainshaft Selector-cams

(2) Mainshaft-clutch Teeth

(3) Spacing Rack

(4) Carriage-return Lockbar Latch

(5) Carriage-return Lockbar-latch Spring

(6) Carriage-return Operating-lever Stop-screw

(7) Spacing-shaft Gear

(8) Rear Spacing-escapement pawl

(9) Spacing Stoplever

(10) Pullbar Bail

(11) Codebar Bellcranks

(12) Typebar Backstop

(13) Platen-shift Stop Post

(14) LTRS Stopscrew

(15) FIGS Stopscrew

(16) Shift-unshift (formerly Shift-stop Post)

(17) Shift Detent

(18) Line-feed Detent Lever

(19) Line-feed Link Turnbuckle

(20) Line-feed Check-screw (formerly Line-feed Check-screw Head)

(21) Line-feed Check-post Stopscrew (formerly Line-feed Check-screw)

(22) Line-feed Check-lever (formerly Line-feed Check-screw)

(23) Left-hand Margin (See 12.03 of this section)

(24) Right-hand Margin (See 12.04 of this section)

(25) Ribbon-oscillator Lever

(26) Margin Bell (See 12.05 of this section)

12.03 Left-hand Margin: The left edge of the letter M should be typed 11/16 inch ± 1/16 inch from the left edge of the platen.

To Adjust: Place the carriage in position to type the letter M within 1/16 inch of the required 11/16-inch margin and lock the carriage in place by operating the dashpot lever. Check to see that the carriage return clutch is fully engaged. Reposition the left-margin-adjusting screw so that, when the adjusting-screw locknut is slightly tightened to take up the endplay in the threads and a horizontal pull of 8 pounds is exerted on the dashpot lever at right angles to the curved surface 1/32 inch behind the margin-adjusting screw, there is a slight clearance, maximum 0.002 inch, between the end of the screw and the dashpot lever. Then turn the adjusting screw 1/16 turn in a clockwise direction to eliminate the clearance.

Note: The preceding requirement applies to units having the new-style dashpot levers. When making the adjustment on units equipped with old-style dashpot levers having a shoulder to the rear of the left-margin-adjusting screw, a 10-pound pull instead of the 8 specified in To Adjust should be applied at right angles to the surface of the lever just in front of the shoulder.

12.04 Right-hand Margin: The typing unit should print 44 characters before spacing is blocked by the spacing-stop pawl.

To Adjust: Return the carriage to the left end of the line and back off the right-margin-adjusting screw. With the right-margin-adjusting screw arm in engagement with its detent, space the carriage 43 spaces. (The carriage should then be in position to type the last character.) Adjust the setscrew so that the spacing stoplever clears the spacing stopsleeve projection by minimum 0.015 inch, maximum 0.030 inch.

Note: When printing forty-four characters per line, pile-ups should occur on the forty-fifth character.

12.05 Margin Bell should ring when the carriage is on the thirty-ninth typed character (sixth character from the right-hand end of the line).

To Adjust: Return the carriage to the left end of the line. Then space the carriage 39 spaces to the right. Loosen the margin-bell cam thumbscrew and adjust the cam so that its right side is in contact with the margin-bell pawl.

12.06 The following standard adjustments should be checked, or remade if necessary, in the sequence indicated and in accordance with the standard procedures in the section covering the 15 typing unit requirements and and adjustments.

(1) Carriage-return Lockbar-latch Spring

(2) Carriage-return Operating-lever Spring

(3) Carriage-return Clutch Spring

(4) Carriage-return-spring Drum

(5) Spacing-clutch Torque

(6) Line-feed Check-lever Spring

(7) Line-feed Detent-lever Spring

(8) Line-feed Pawl Spring

(9) Dashpot-vent Screw

(10) Mainshaft-clutch Spring

(11) Mainshaft-clutch Throwout-lever Spring

(12) Pullbar Springs

(13) Ribbon-oscillator-lever Spring

(14) Right and Left Pullbar-spring Brackets (formerly Pullbars)

(15) Shift-detent Spring

(16) Single-double Line-feed Detent

(17) Single-double Line-feed Detent Spring

(18) Spacing-stoplever Spring

13. LINE-FEED COUNTING (TP123745) (FORM FEEDOUT)

13.01 This set of parts is intended for use with the 15 sending teletypewriter and provides a means of feeding out sprocket-feed form stationery on the controlled 15 receiving teletypewriter to the next form as soon as a form is completely typed.

13.02 The following adjustments should be made in the sequence indicated and, unless otherwise specified, in accordance with the standard procedures in the section covering the 15 teletypewriter keyboard requirement and adjustments.

(1) Repeat-space Rod

(2) Repeat-space-rod Bracket

(3) Repeat-space-rod Spring

(4) Cam-pulsing Contact Assembly (See 13.03 of this section.)

(5) Lock-loop Backstop Screw (See 13.04 of this section.)

(6) Repeat-lever Extension (See 13.05 of of this section.)

(7) Repeat-line-feed Switch (See 13.06 of this section.)

(8) Repeat-line-feed Spring (See 13.07 of this section.)

(9) Selector Used in Accessory Box (See the section covering teletypewriter selector mechanisms requirements and adjustments.)

13.03 Cam-pulsing Contact Assembly:

(1) The camfollower should ride centrally on cam 2 and the contact points should be in alignment with each other.

To Adjust: Loosen the contact-spring-assembly mounting screws and position the contact-spring assembly.

(2) With the transmitter shaft in its stop position, the camfollower should be on the low part of the cam just at the base of the rise.

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

(3) With the camfollower on the low part of its cam and with the contact springs and stiffeners approximately parallel to the camfollower, there should be a clearance of minimum 0.010 inch, maximum 0.020 inch between the contact points, as shown in Figure 14.

To Adjust: Bend the contact-spring stiffeners and the contact-springs, keeping the contact-springs against their respective stiffeners.

(4) With the camfollower on the low part of its cam and a vertical upward pull applied under the lower contact-spring, it should require a tension of minimum 1 ounce, maximum 2 ounces to start the lower contact-spring moving away from its stiffener, as shown in Figure 14.

To Adjust: Bend the lower contact-spring. Then recheck adjustment (3).

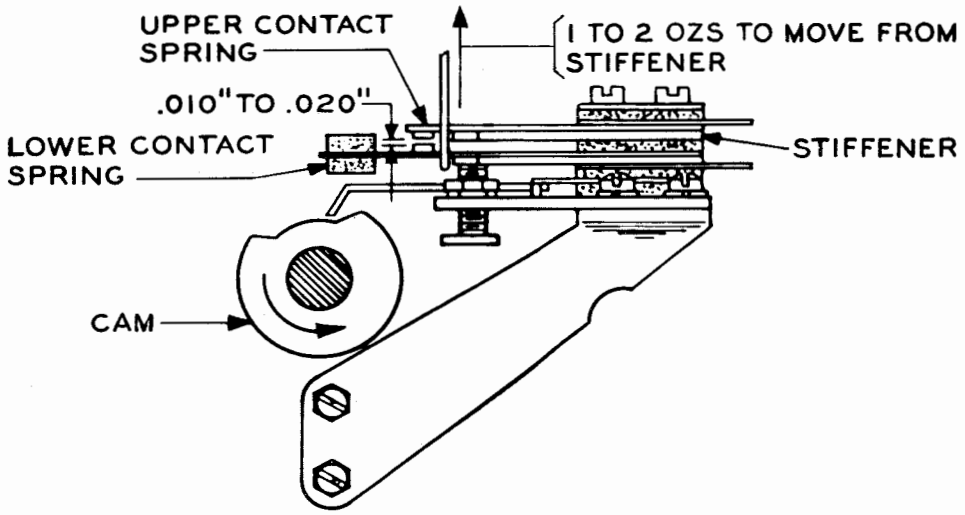


Figure 14

(5) With the transmitting-cam assembly manually rotated until the camfollower is on the high part of its cam and with a vertical upward pull applied under the upper contact-spring at the contact, it should require a tension of minimum 3-1/2 ounces, maximum 4-1/4 ounces to separate the contact-points, as shown in Figure 15.

To Adjust: Bend the upper contact-spring. Then recheck adjustment (3).

(6) When the TP92222 filter assembly is used, there should be some clearance between the filter bracket and the contact pile-up mounting screws.

To Adjust: Take up the play in the filter mounting-bracket holes.

13.04 Lock-loop Backstop Screw: With the lock-loop held against the backstop screw, there should be a clearance of minimum 0.020 inch, maximum 0.060 inch between the lock-loop roller and the lock-loop cam when the transmitting camsleeve is rotated to make this clearance a minimum, as shown in Figure 16.

To Adjust: Position the backstop screw.

13.05 Repeat-lever Extension: With the Form-out keylever depressed, there should be a clearance of minimum 0.010 inch, maximum 0.020 inch between the clutch throwout lever and the high part of the throwout cam.

To Adjust: Position the repeat-lever extension shown in Figure 17.

13.06 Repeat-line-feed Switch

Note: A test lamp is recommended to be used on the switches for this adjustment.

With the transmitting camshaft manually rotated to its stop position and the FORM-OUT keylever depressed, both switches should be actuated just before the transmitting-camshaft clutch is tripped.

To Adjust: Remove the right-hand keyboard plate, loosen the two clamping brackets, and position both switches by means of their lower mounting holes, making sure that the keylevers strike at approximately the center of the high portion of the switch actuators.

13.07 Repeat-line-feed Spring: With the repeat-line-feed spring unhooked from the repeat rod and a scale hooked in the spring eye, it should require a pull of minimum 3 ounces, maximum 5 ounces to stretch the spring to position length.

14. AUTOMATIC CARRIAGE RETURN AND LINE-FEED

Note: 14.01 and 14.02 apply only to units equipped with the stop bracket shown in Figure 18. If carriage return only is desired upon receipt of the carriage return selection, remove the stop bracket.

14.01 Carriage-return Latch-bar Latch: Remove the spring of the automatic carriage-return and line-feed function lever shown

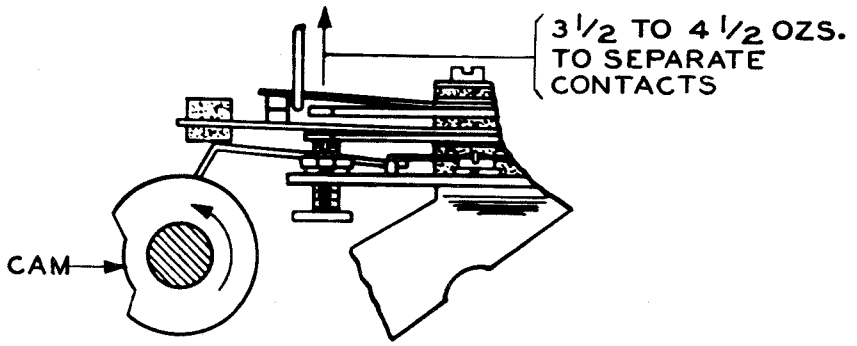


Figure 15

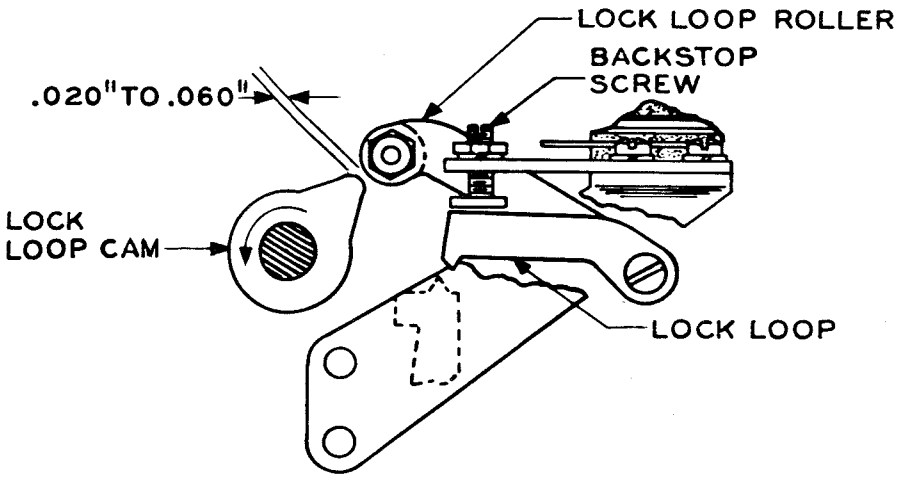


Figure 16

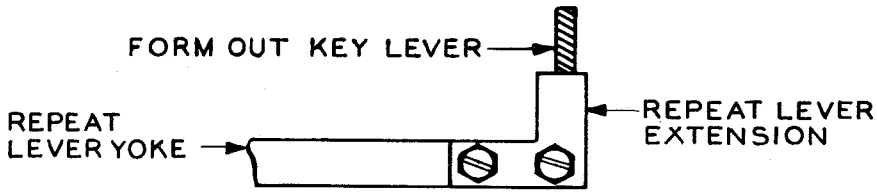


Figure 17

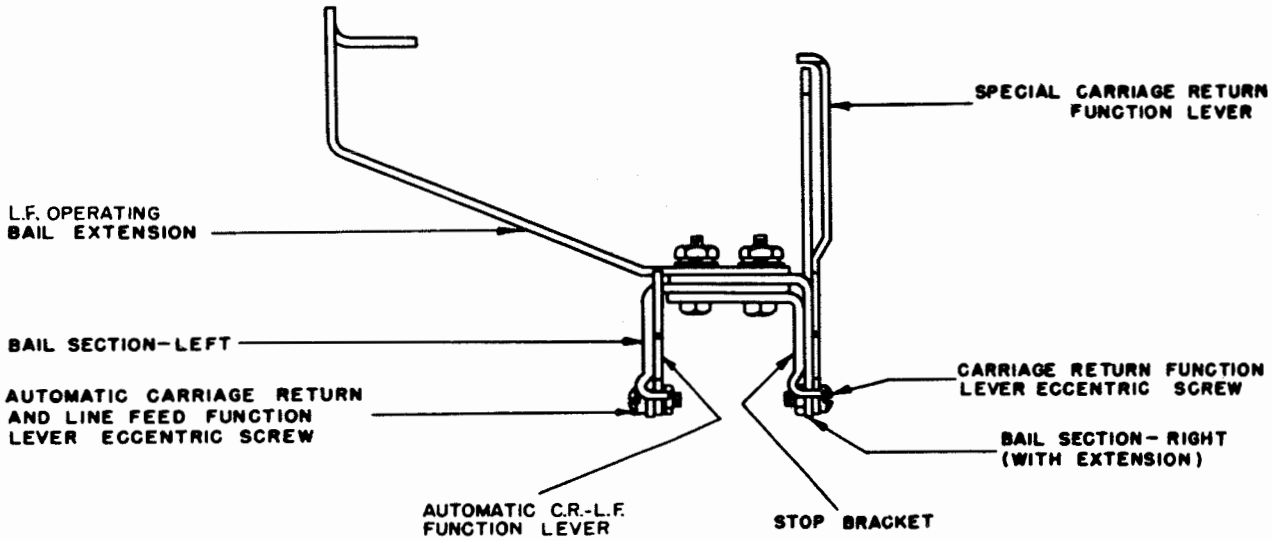


Figure 18

in Figure 23. Set the typing unit on its left side. Rotate the carriage return function lever eccentric so that the high part of the eccentric is away from the casting. With the letter O combination selected and the main shaft rotated until the printing bail is in its extreme forward position, there should be 0.004 inch to 0.010 inch clearance between the carriage-return push bar and the lobe on the carriage-return extension of the bail assembly. When checking this clearance, the shoulder on the carriage-return latch-bar should be fully latched on the latch. See Figure 19.

To Adjust: Add or remove shims between the carriage return latch-bar latch and the function lever comb.

14.02 Carriage Return Function Lever Eccentric Screw: With the letter O combination selected and the main shaft rotated until the printing bail is in its extreme forward position, there should be 0.004 inch to 0.010 inch clearance between the carriage-return push bar and the extension on the carriage-return function lever. When checking this clearance, the shoulder on the carriage-return latch-bar should be fully latched on the latch. See Figure 19.

To Adjust: Position the carriage return function lever eccentric mounting screw. Recheck 14.01.

Note: Replace the automatic carriage-return and line-feed function lever spring.

14.03 Operating Bail Line-feed Extension: With the printing bail in its extreme rear position and the automatic carriage-return trigger held in its operated position, rotate the main shaft until the automatic carriage-return and line-feed function lever just touches the number one vane. There should be some clearance, not more than 0.010 inch between the line feed push bar and the bottom of the function bail blade. See Figure 20.

To Adjust: Position the line feed extension by means of its enlarged mounting holes. Reposition the function bail blade if necessary.

To Check the function bail blade adjustment, select the combination for the letter O when the printing bail is in its rearmost position. Then rotate the main shaft until the printing bail is in its extreme forward position. There should be some clearance between the upper edge of the line-feed extension projection of the bail and the lower edge of the line-feed pushbar. See Figure 21.

14.04 Automatic Carriage-return and Line-feed Function Lever Eccentric Screw: There should be an equal amount of clearance (within 0.010 inch) between the bottom edge of the carriage-return latch-bar and the latch-bar latch when (1) the carriage-return function lever is fully selected, and (2) the automatic carriage-return and line-feed function lever is fully operated. See Figure 19.

To Adjust: Position the automatic carriage-return and line-feed function lever eccentric screw.

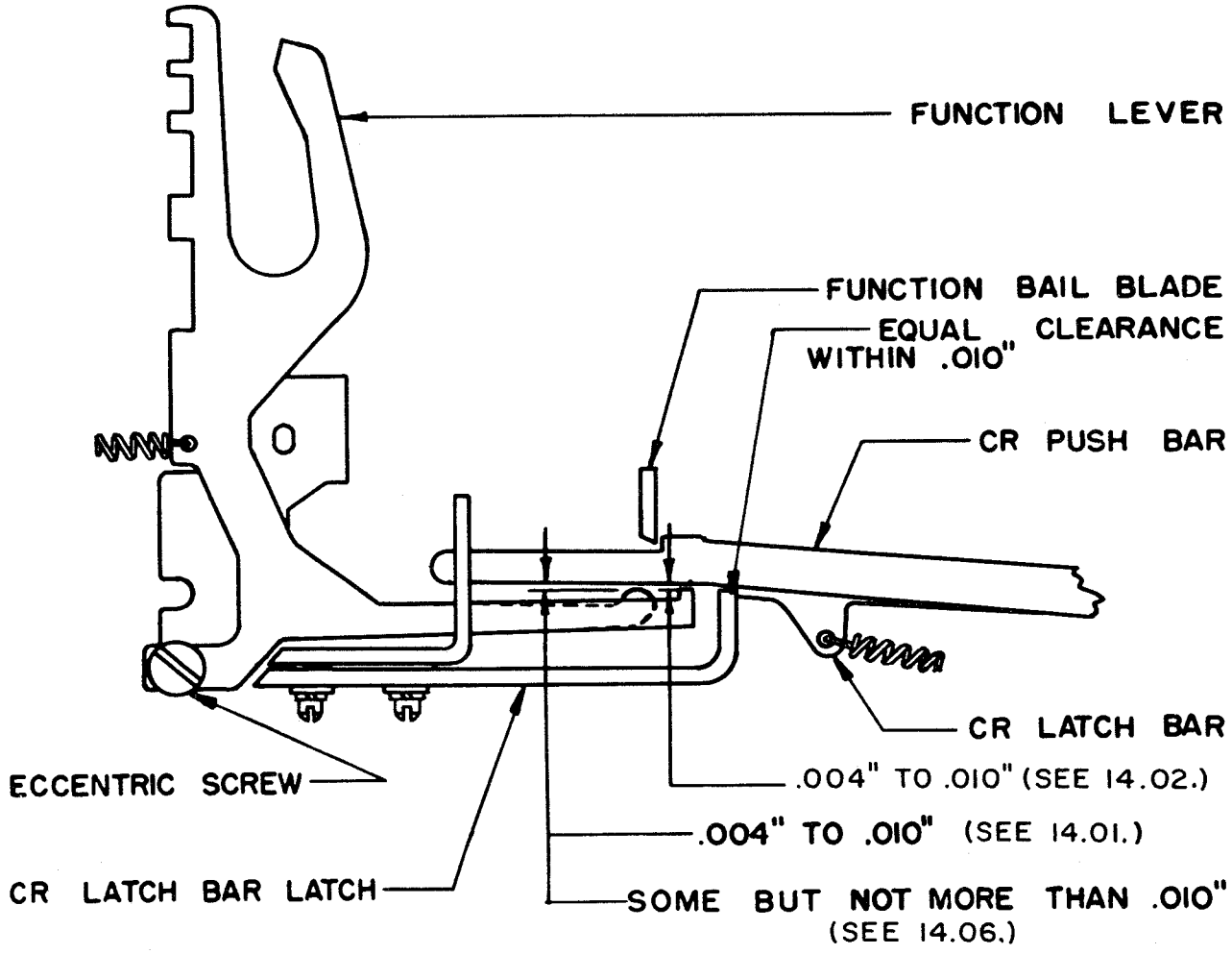


Figure 19

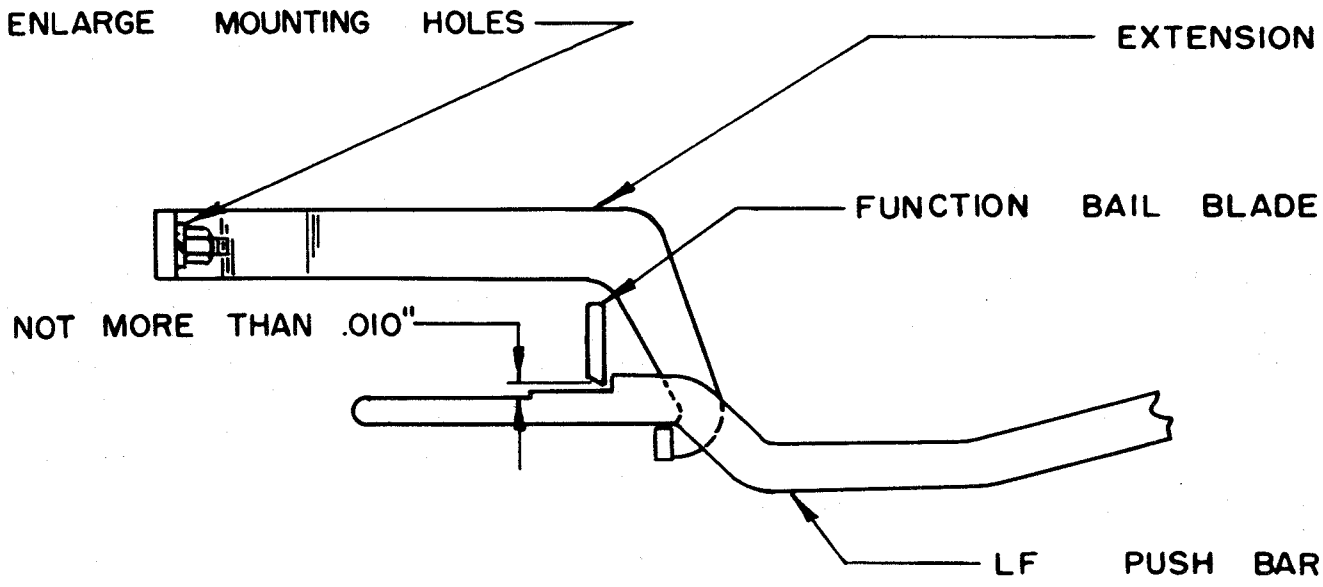


Figure 20

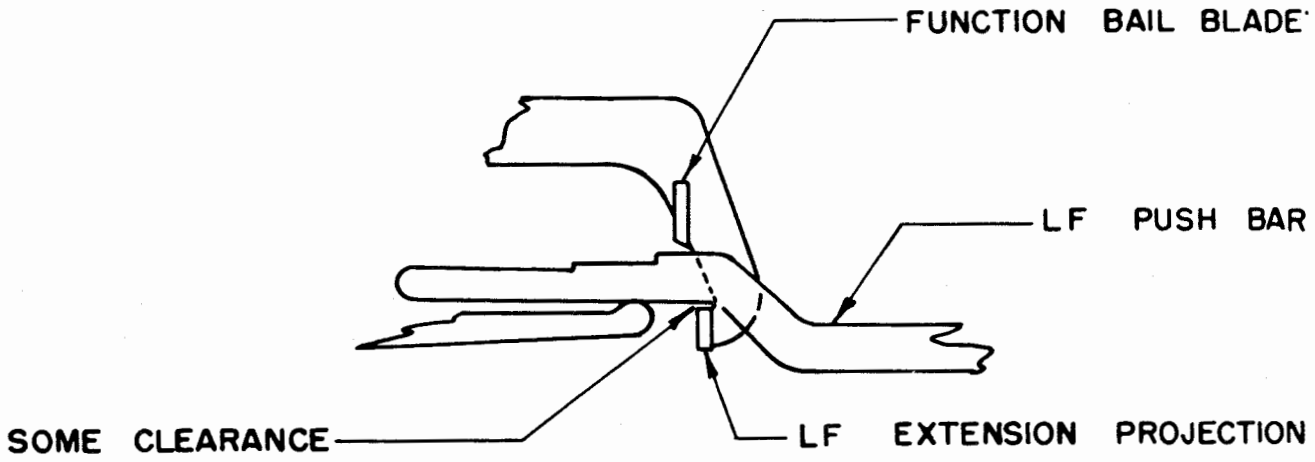


Figure 21

14.05 Mounting Bracket:

Note: If the shift-blank-stop motor control mechanism is not used on the typing unit on which the automatic carriage-return and line-feed mechanism is installed, subsequent references to the motor-stop function-lever blocking-lever may be ignored.

With the trigger guide positioned in approximately the middle of its adjustable range, there should be some but not more than 0.002-inch clearance between the front edge of the motor-stop function lever and the blocking end of the blocking lever when the space combination is selected and the main shaft is rotated until the function lever rests against the vanes. See Figure 22.

To Adjust: Position the mounting bracket approximately parallel to the TP74019 spring plate.

To Check: With the Figure H combination selected and the motor-stop function lever blocked by its blocking lever, the motor-stop function lever should not block the travel of the printing bail.

14.06 Trigger Guide: With the letter O combination selected and the main shaft rotated until the printing bail is in its extreme forward position, there should be some clearance, not more than 0.010 inch, between the carriage-return pushbar and the lobe on the carriage-return extension of the bail assembly. See Figures 19 and 23.

To Adjust: Position the trigger guide by means of its elongated mounting holes.

To Check: With the main shaft in the stop position, there should be at least 0.005 inch clearance between the blocking edge of the trigger extension and the front edge of the automatic carriage-return and line-feed function lever, when the play is taken up to make this clearance a minimum. See Figure 23.

14.07 Trigger Adjustable Screw: The automatic carriage return and line-feed mechanism is designed to operate on a 72-to 76-character range. To check this adjustment, space the carriage one less than the desired number of characters on the line. There should be a clearance of 0.006 inch to 0.020 inch between the left-hand edge of the trigger extension and the right-hand edge of the blocking extension on the automatic carriage-return and line-feed function lever when the play in the function lever is taken up to the left.

To Adjust: Loosen the lock nut of the trigger adjustable screw and position the screw.

14.08 Carriage-return Function Lever Spring Tension: With the carriage-return combination fully selected and with the carriage-return function lever resting against the vanes, unhook the carriage-return function lever spring from the spring plate. It should require 9 to 11 pounds to stretch the spring to its position length. See Figure 23.

14.09 Automatic Carriage-return and Line-feed Function Lever Spring Tension: With the function lever unblocked and resting

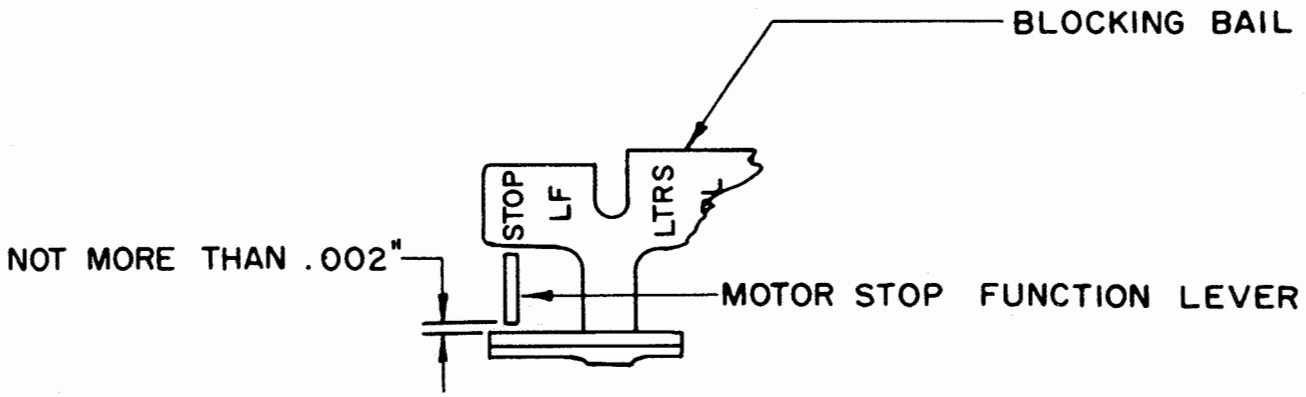


Figure 22

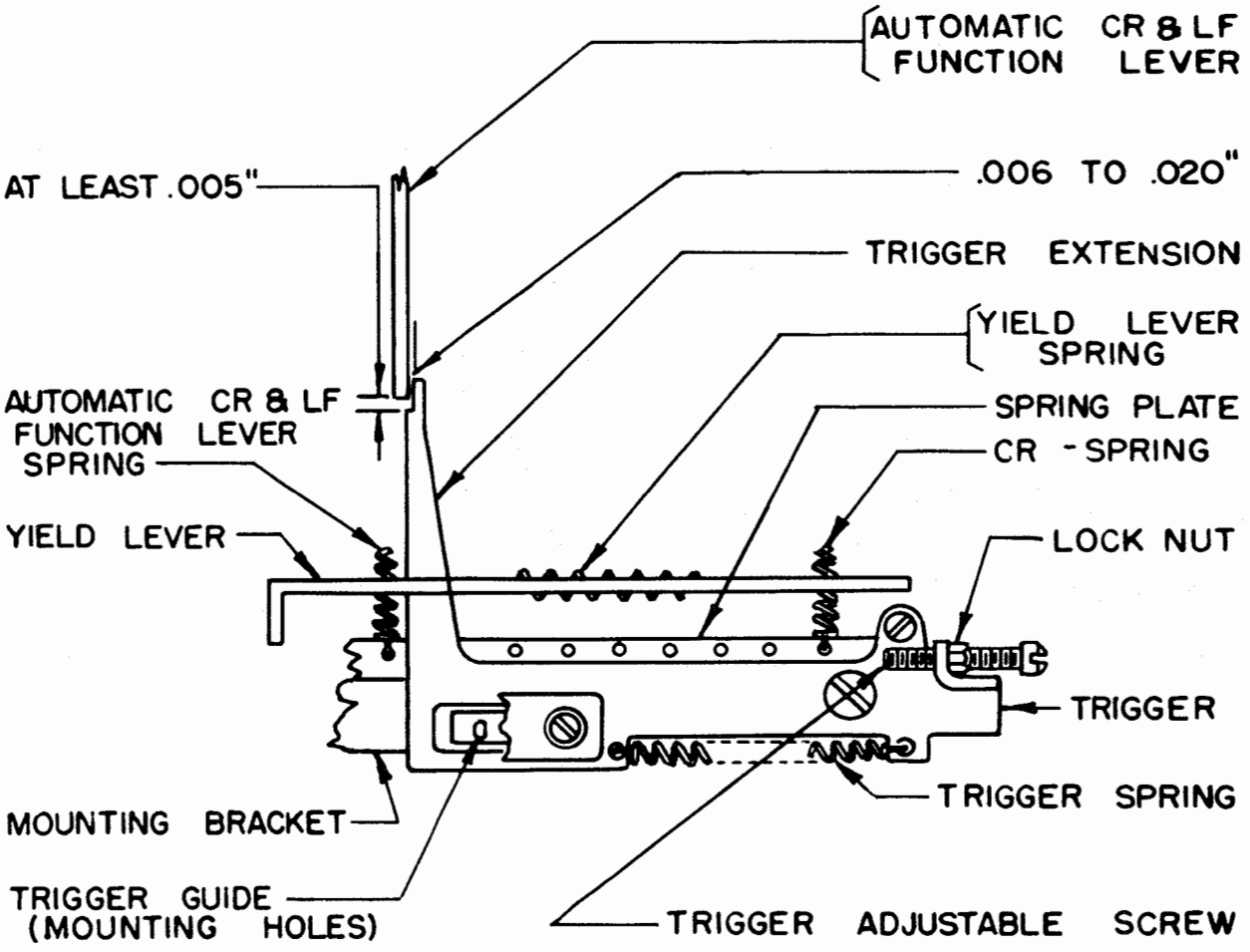


Figure 23

against the vanes, unhook the automatic carriage-return and line-feed function lever spring from the spring plate. It should require 9 to 11 pounds to stretch the spring to its position length. See Figure 23.

14.10 Trigger Spring Tension: Hook a scale over the trigger at the spring hole and pull horizontally in line with the spring. It should require a pull of 3-1/2 to 5 ounces to just start the trigger moving. See Figure 23.

14.11 Bell Crank Retainer Yield Lever Spring Tension: Hook a scale over the end of the yield lever and pull horizontally in line with the spring. It should require 24 to 32 ounces to start the arm moving. See Figure 24.

14.12 Line-feed Link Turnbuckle: With the single-double line-feed lever in the single line-feed position, select the line-feed combination and rotate the main shaft until the function bail is in its extreme rear position.

Adjust the line-feed turnbuckle so that the platen has rotated one line-space, that the detent roller rests in the hollow between two ratchet teeth and that the feed pawl is still in engagement with a ratchet tooth to such an extent that there is no clearance or not more than 0.002-inch clearance between the detent roller and the detenting face of the tooth just above the roller.

Check for this condition at 4 positions on the ratchet approximately 90 degrees apart.

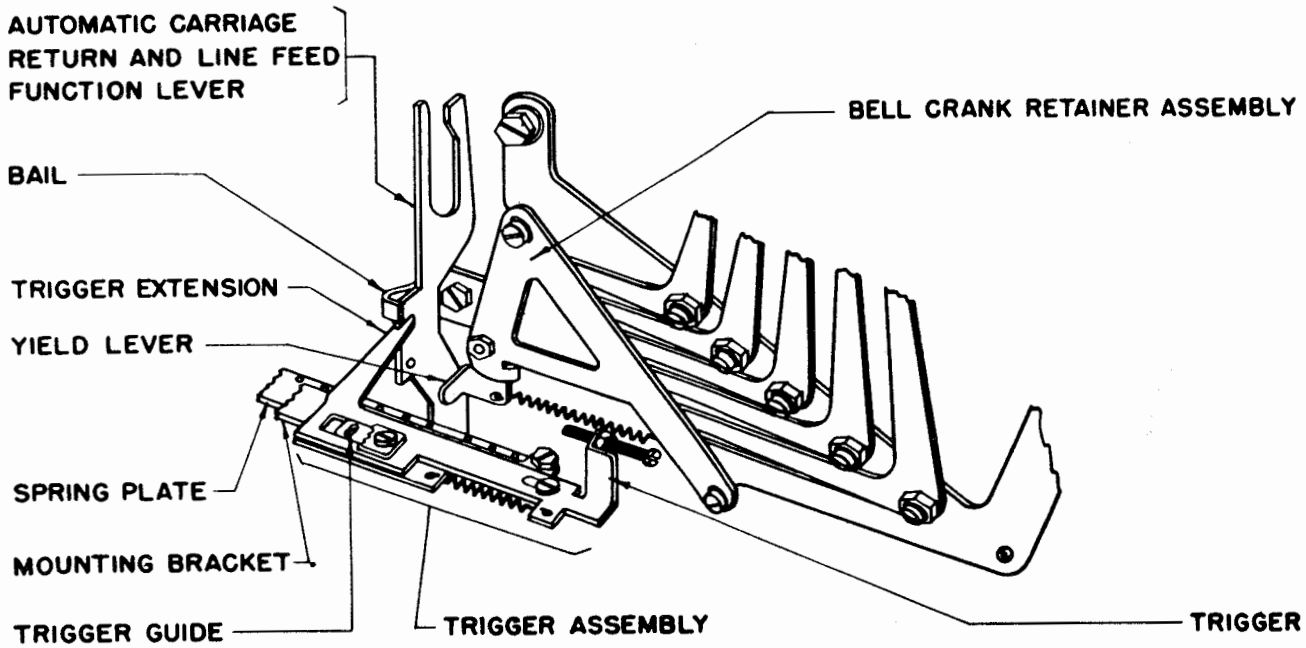


Figure 24