

NAVSHIPS 93241

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TECHNICAL MANUAL

*for*

TELETYPEWRITERS

TT-47C/UG, TT-47D/UG, TT-47E/UG,  
TT-48B/UG, TT-48C/UG,  
TT-69B/UG, TT-69C/UG,  
TT-70C/UG, TT-70D/UG,  
TT-171A/UG, TT-176A/UG, TT-234/SGA-3

TELETYPE CORPORATION  
SKOKIE, ILLINOIS

DEPARTMENT OF THE NAVY  
BUREAU OF SHIPS

★

*Contract: NObsr* { 71788  
75250  
Modification 1 to 85307

*Approved by BuShips: 12 December 1961*

## LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT
Title Page.....	1
i to x.....	1
xA to xB.....	1
xi.....	1
1-0 to 1-6.....	1
1-7.....	Original
1-8 to 1-9.....	1
1-10.....	Original
1-11 to 1-14.....	1
1-14A to 1-14B..	1
1-15.....	1
2-0 to 2-2.....	1
2-3.....	Original
2-4.....	1
2-4A/Blank.....	1
2-5 to 2-6.....	1
3-1 to 3-2.....	1
3-2A/Blank.....	1
3-3.....	1
3-4.....	Original
3-5 to 3-7.....	1
4-0 to 4-2.....	1
4-3 to 4-6.....	Original
4-7 to 4-8.....	1
4-8A to 4-8B....	1
4-9 to 4-10.....	1
4-10A/Blank.....	1
4-11 to 4-14.....	1
4-15 to 4-17.....	Original
4-18 to 4-19.....	1
4-20 to 4-23.....	Original
4-24.....	1
4-25 to 4-27.....	Original
4-28.....	1
4-29 to 4-32.....	Original
4-33 to 4-34.....	1
4-34A to 4-34B..	1
4-35 to 4-40.....	1
4-40A/Blank.....	1
4-41.....	1
5-0.....	Original
5-1.....	1
5-2.....	Original
5-3 to 5-7.....	1

PAGE NUMBERS	CHANGE IN EFFECT
5-8 to 5-13.....	Original
5-14.....	1
5-14A to 5-14J..	1
5-15 to 5-25.....	Original
5-26.....	1
5-27 to 5-37.....	Original
5-38.....	1
6-1.....	1
6-2.....	Original
6-3.....	1
6-4 to 6-5.....	Original
6-6 to 6-8.....	1
6-8A/Blank.....	1
6-9 to 6-10.....	Original
6-11 to 6-12.....	1
6-12A to 6-12B..	1
6-13 to 6-16.....	1
6-16A to 6-16B..	1
6-17 to 6-18.....	1
6-18A to 6-18B..	1
6-19 to 6-20.....	1
6-20A to 6-20B..	1
6-21 to 6-22.....	1
6-22A to 6-22B..	1
6-23 to 6-30.....	1
6-30A to 6-30B..	1
6-31 to 6-47.....	1
6-48.....	Original
6-49 to 6-51.....	1
6-52.....	Original
6-53 to 6-54.....	1
6-55 to 6-60.....	Original
6-61.....	1
6-62 to 6-63.....	Original
6-64.....	1
6-64A to 6-64D..	1
6-65 to 6-66.....	Original
6-66A to 6-66D..	1
6-67.....	1
6-68.....	Original
6-68A to 6-68D..	1
6-69.....	1
6-70.....	Original
6-71.....	1

PAGE NUMBERS	CHANGE IN EFFECT
6-72 to 6-74.....	Original
6-75 to 6-76.....	1
6-76A to 6-76D..	1
6-77.....	Original
6-78 to 6-79.....	1
6-80.....	Original
6-81 to 6-84.....	1
6-85 to 6-86.....	Original
6-87.....	1
6-88 to 6-95.....	Original
6-96.....	1
6-96A to 6-96B..	1
6-97 to 6-99.....	1
6-100.....	Original
6-100A to 6-100E /Blank.....	1
6-101 to 6-103...	1
6-104.....	Original
6-105.....	1
6-106.....	Original
6-107 to 6-110...	1
6-111.....	Original
6-112 to 6-114...	1
6-115.....	Original
6-116 to 6-117...	1
6-118.....	Original
6-119 to 6-122...	1
6-123.....	Original
6-124 to 6-125...	1
6-126 to 6-129...	Original
6-130 to 6-132...	1
6-133.....	Original
6-134.....	1
6-135.....	Original
6-136 to 6-138...	1
6-139 to 6-141...	Original
6-142 to 6-152...	1
7-1 to 7-40.....	1
7-40A/Blank.....	1
7-41 to 7-62.....	1
7-62A to 7-62P..	1
7-63 to 7-64.....	1
i-1 to i-10.....	Original
i-11/i-12.....	1

TEMPORARY CORRECTION T-7 TO TECHNICAL MANUAL FOR TELE-TYPEWRITERS TT-47C/UG, TT-47D/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, TT-234/SGA-3

Temporary Correction T-7, when used with NAVSHIPS 93241, covers the 195415 Modification Kit to provide three speed gear shift at 60, 67, 100 wpm for Teletypewriters TT-47( )/UG, TT-69( )/UG furnished on Contract N600(24)61552.

Make the following pen and ink corrections. Insert Temporary Correction T-7 in the manual immediately under the front cover and on top of Temporary Correction T-6.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
2-6	CHANGE 1	2-15	Immediately after this paragraph add "See T-7" for reference to the following information.

2-15. Modification for three speed gear shift at 60, 67, 100 wpm for Teletypewriters TT-47( )/UG, TT-69( )/UG.

a. GENERAL

(1) The 195415 Modification Kit provides a Model 28 KSR or RO with a three speed gear shift. The kit is mounted on a keyboard or base in place of the intermediate gear assembly. Shifting is done by a lever mounted on the base to the left side of the gear shift.

(2) The 195415 Modification Kit provides a three speed gear shift to operate a Model 28 Page Printer (LP) and Keyboard (LK) at 45.5, 50 and 74.2 baud, 7.42 unit code (60, 67, 100 wpm). The manual movement of a lever mounted on the keyboard or base operates the gear shift. Speed selections can be made while the motor is running but it is necessary to open the cabinet to reach the shift lever.

(3) When the 195415 Modification Kit is to be installed on a keyboard which is equipped with either 152916 or 154145 Local Reverse Line Feed Modification Kit, two of the local reverse line feed parts must be replaced. These replacement parts are not supplied with the 195415 Modification Kit but should be ordered as Modification Kit 149896.

(4) The 195415 Modification Kit is not compatible with an LD mounted on the keyboard or base, the 164848 Modification Kit to provide parallel output contacts, or with the 163146 Modification Kit to provide universal contact on a printer. It is also incompatible with the wall mounted printer.

(5) The 195415 Modification Kit consists of:

7	2191	Washer, Lock	5	151631	Screw
5	2669	Washer, Lock	1	151658	Screw
1	3598	Nut	1	152441	Washer, Flat
2	6970	Nut	1	159287	Retainer, Pinion
2	7002	Washer, Flat	2	161301	Post
4	34432	Washer, Flat	2	192025	Washer, Flat
2	44035	Screw	1	195163	Bracket
1	97393	Screw, Shoulder	1	195167	Lever
1	98502	Washer, Flat	1	195168	Bracket
1	119652	Ring, Retaining	1	195169	Bracket
5	125009	Nut	1	195170	Gear Bracket Assembly, Speed Shift
1	145365	Gear, Helical	1	195420	Pawl
1	145366	Gear w/Insert	1	198679	Bracket, Bolt Retaining
2	145393	Bushing	3	198680	Screw, Clamping
1	149881	Cover, Gear			
2	151630	Screw			

b. INSTALLATION

(1) Remove Printer (LP) and Motor Unit (LMU) and remove the keyboard or base from cabinet.

(2) Remove from the keyboard and discard the following items:

(a) Intermediate gear assembly and associated mounting facilities. Save one of the two 151712 Pivot Buttons.

(b) Connector and motor terminal block mounting bracket. Retain all connector and terminal block mounting hardware.

(c) Motor pinion.

(3) Insert two 198680 Clamping Screws through the 198679 Bracket. (See Figure 2.) Fasten the bracket to the top of the keyboard or base. Place the bracket mounting screws through the slots at the rear of the keyboard or base, vacated by the intermediate gear assembly. Position bracket at forward edge of slots, toward the printer, and tighten.

(4) Place 195170 Gear Bracket Assembly over clamping screws. Assemble remaining 198680 Clamping Screw and associated hardware through the remaining slot vacated by the intermediate gear assembly.

(5) Position 151245 Felt Washer on 145386 Sleeve Assembly. See Figure 1.

(6) Insert 145383 Key into keyway of 195417 Shaft with 145385 Spring and 145384 Pin in place. Hold 145385 Spring depressed. See Figure 1.

(7) With the left end of the 145383 Key extending beyond the left end of the 195417 Shaft, position the extension of the left end of the key, in the hole on the inner bearing surface of the sleeve assembly and slide the sleeve assembly onto the 195417 Shaft. Care must be taken that the spring and pin at the right end of the key remain in alignment as the key slides into the bearing in the 195158 Bracket. The 145386 Sleeve Assembly should be assembled on the 195417 Shaft with the 151245 Felt Washer nearest the 195158 Bracket Casting.

(8) Assemble the 195167 Lever to the 195163 Bracket. (See Figure 2.) Assemble the 195163 Bracket to the gear shift casting. Fasten the lower end of the 195167 Lever to the 145386 Collar.

(9) Mount the connector to the 195168 Bracket using retained hardware and following reverse of removal procedure.

(10) Fasten the 195168 Bracket and 195169 Terminal Block Bracket to the bracket mounted to the gear shift casting. Place the 195169 Bracket between the 195168 Bracket and the gear shift bracket. Use two each 151630 Screw and 2191 Lock Washer. See Figure 3.

(11) Fasten the motor terminal block to the 195169 Bracket using retained hardware.

(12) Fasten the 145365 Motor Pinion to the motor with a 159287 Retainer and two 161301 Posts.

(13) When a time delay mechanism is to be used, insert the 195420 Pawl into the gear bracket assembly. The open end of the pawl fits on the eccentric hub of the 195418 Gear as shown in Figure 4. Discard the pawl and eccentric supplied with the time delay mechanism.

(14) Mount 149881 Cover on top of terminal block as shown in Figure 4. Replace the original screws in the 151335 Posts with two 151631 Screws. Add two 7002 Flat Washers.

(15) Replace keyboard or base in cabinet and install Printer (LP) and Motor Unit (LMU) in accordance with standard practice.

#### NOTE

Upon completion of installation of this modification kit it should be shifted through its three speed selections while the motor is running to assure interference free operation of the shift linkage. When 7.42 unit code, 45.5, 50, and 75 baud transmission lines are available the printer associated with this gear shift should be connected to these signal lines to check proper speed of operation. When a time delay mechanism is used with this kit it should be checked to assure proper operation.

c. ADJUSTMENT AND LUBRICATION

(1) For standard adjustments and lubrication procedure refer to Section 6.

(2) Gear shift assembly adjustment to driven gear, motor pinion and time delay mechanism. (Refer to Figure 2).

(a) Requirement - There should be .004 to .008 inch backlash between the motor pinion and its driven gear and between the speed shift gear bracket assembly idler and its driven gear on the Printer (LP).

(b) Requirement - The 195420 Pawl should be positioned relative to the associated parts of the time delay mechanism so that it rides freely without binding on the 195418 Gear and Eccentric.

(c) Requirement - There should be some clearance between the motor and bell and the 145366 Gear Shift Input Gear.

To Adjust - Loosen the three screws which mount the speed shift gear assembly and loosen the two lock nuts which lock the adjusting bushings at the rear of the assembly. Position the assembly and adjust the height at the rear by means of the adjusting bushing nearest to the motor. The other bushing should be backed out for clearance. After correct adjustment has been obtained, lock the adjusting bushing nut. Turn the other bushing with the fingers until it touches the base and tighten the lock nut. Tighten all mounting screws and recheck requirements.

(3) Shift Lever Bracket Adjustment (Refer to Figure 3).

Requirement - The 195167 Shift Lever should be positioned within the detent notches in the 195163 Bracket.

To Adjust - Loosen the three 151631 Screws which mount the 195163 Bracket and reposition the bracket. Tighten the mounting screws.

(4) Terminal Block Mounting Bracket Adjustment (Refer to Figures 3 and 4)

(a) Requirement - There should be a .062 minimum clearance between the 195169 Terminal Block Mounting Bracket and each of the three gears below the bracket.

(b) Requirement - The formed tab on the 149881 Cover should rest securely on the gear bracket so as to prevent rattling.

To Adjust - Loosen the two 151630 Screws which mount the 195169 Bracket to the 195163 Shift Bracket. Raise or lower the free end of the 195169 Bracket and tighten the mounting screws.

(5) Key Spring

Requirement - It requires 25 to 40 ounces applied above the spring to depress the key to its lowermost position in the slot.

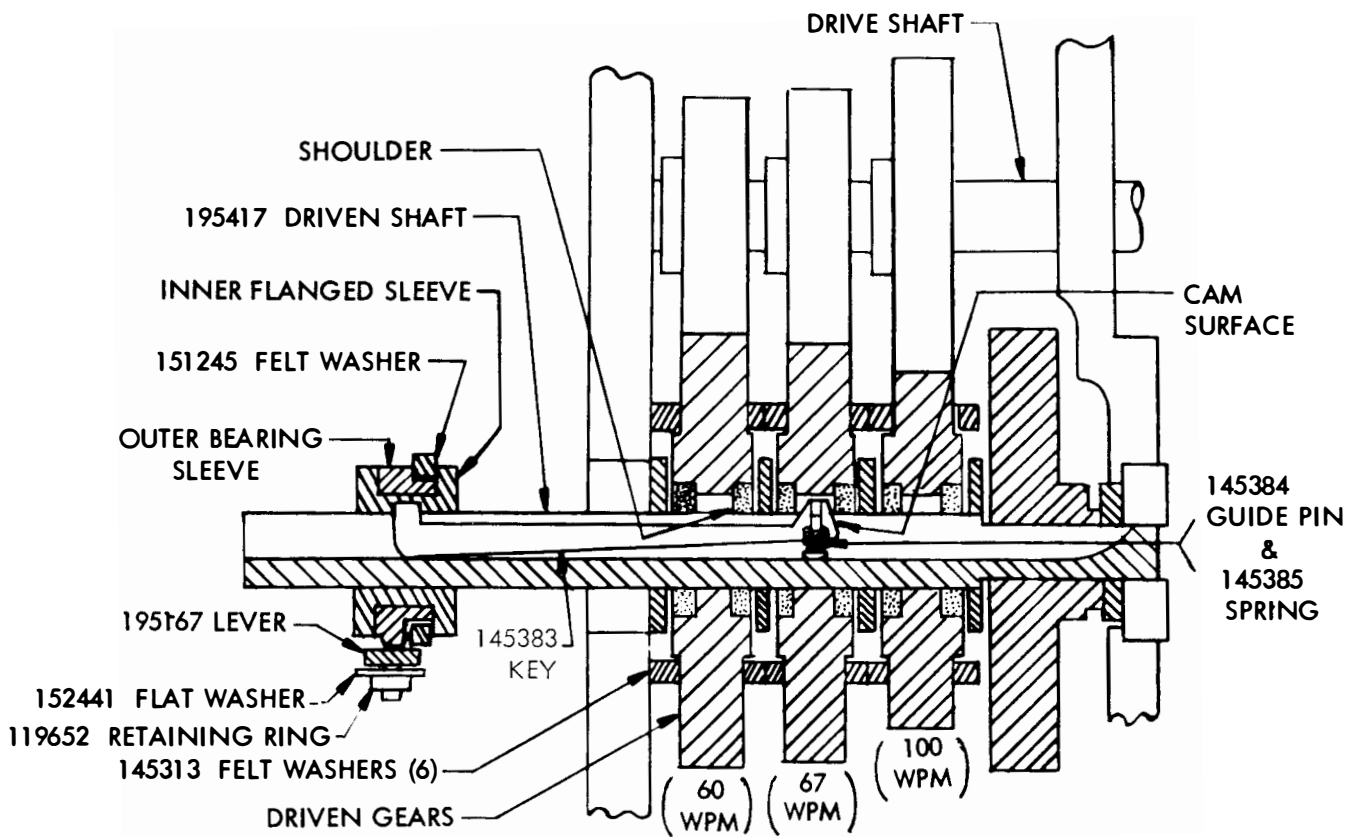
To Adjust - To measure, disconnect the operating linkage by removing the retaining ring and moving the operating end of the key out from under the gears. Use care to avoid loss of pin and spring.

(6) Lubrication

(a) Use Teletype KS7471 Grease on the periphery of all gears.

(b) Use Teletype KS7470 Oil on the following:

1. One or two drops on both pivot points of shift lever.
2. Saturate all felt washers.
3. One or two drops on bronze casting bearings.
4. A light coat on the flanged sleeve and bearing, key, and spring.
5. One or two drops on the eccentric bearing and surface of the eccentric follower pawl.



OPERATION OF SPEED SHIFT GEAR BRACKET ASSEMBLY AND ASSOCIATED PARTS

NOT TO SCALE

FIGURE 1



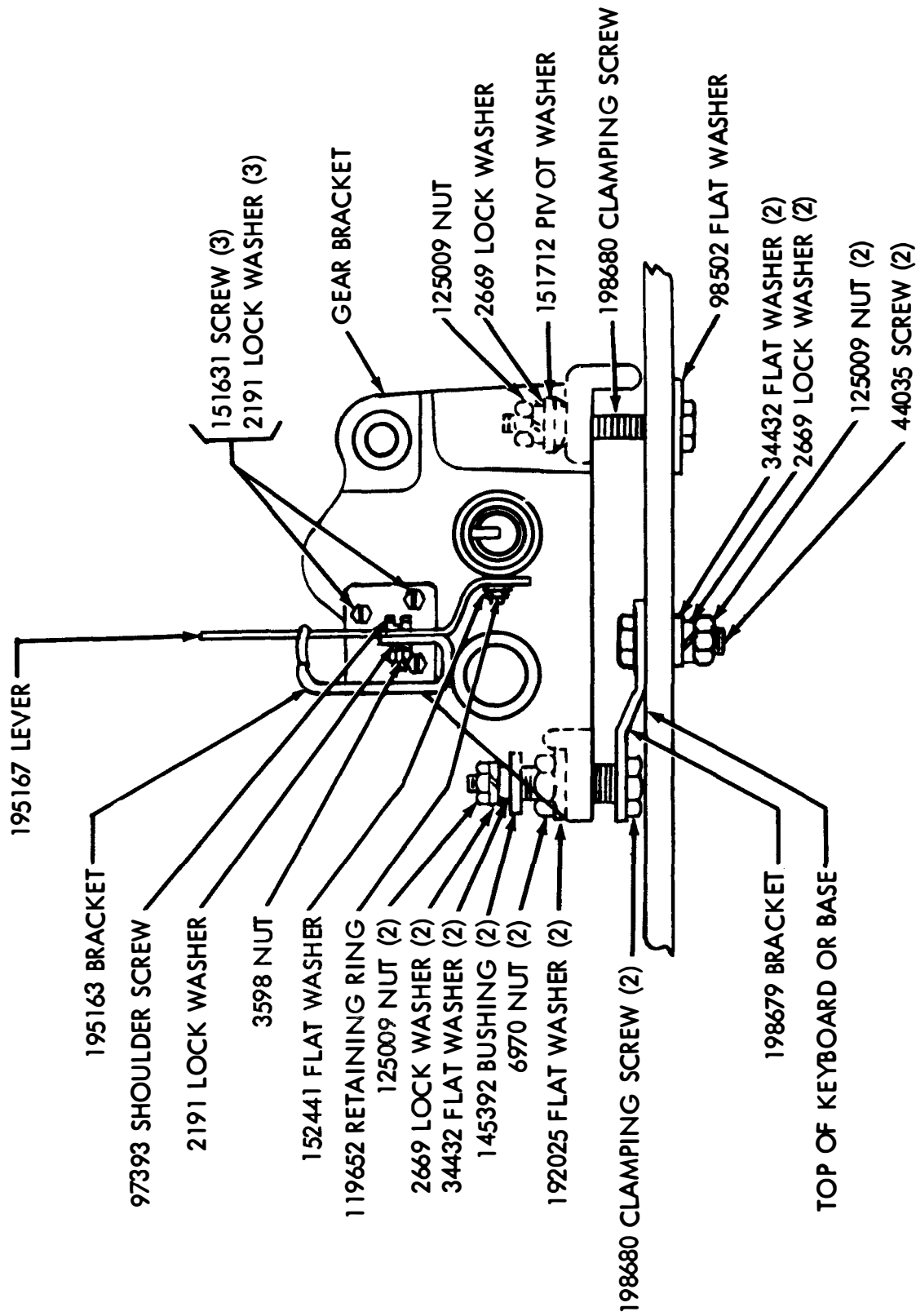


FIGURE 2

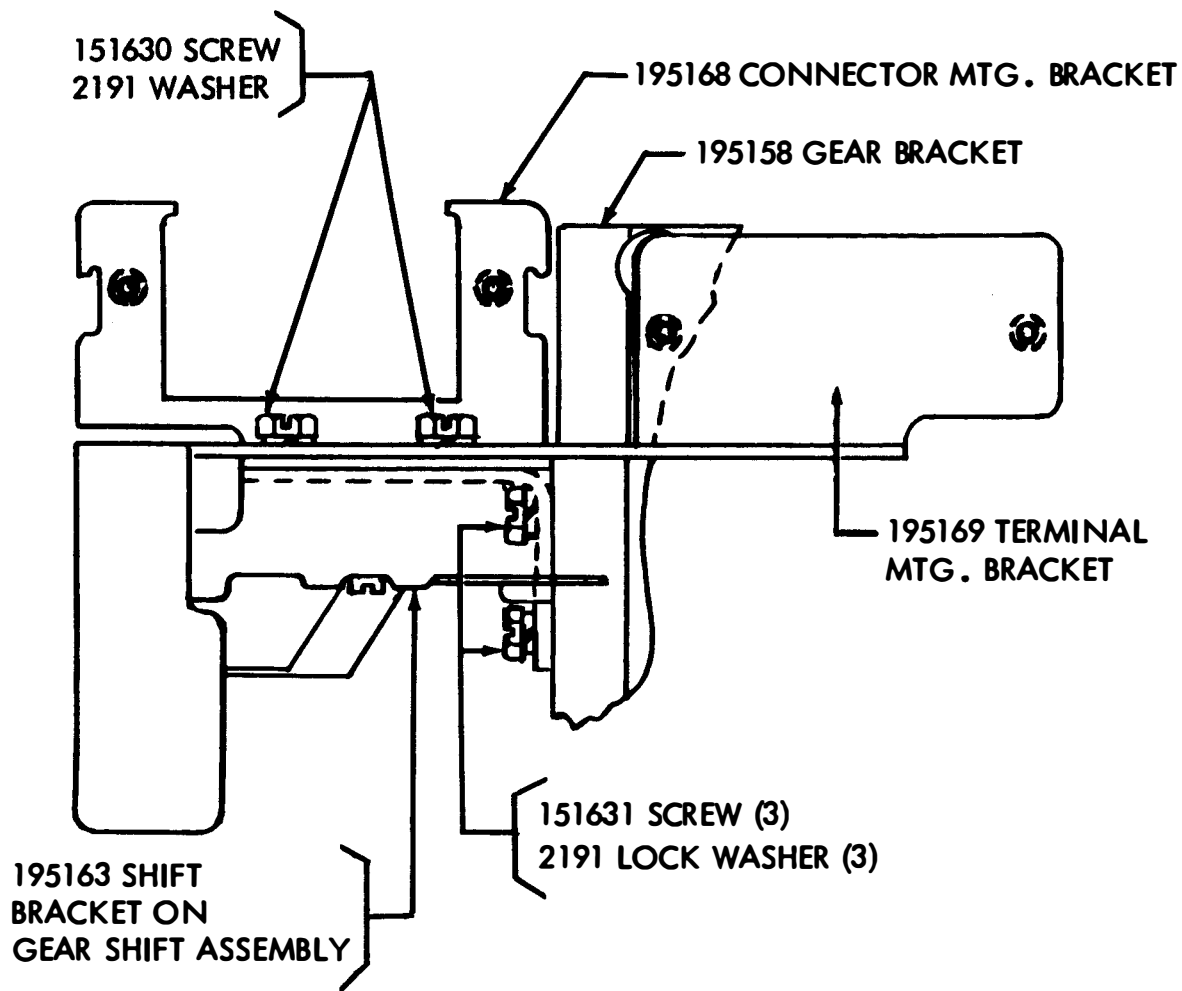


FIGURE 3

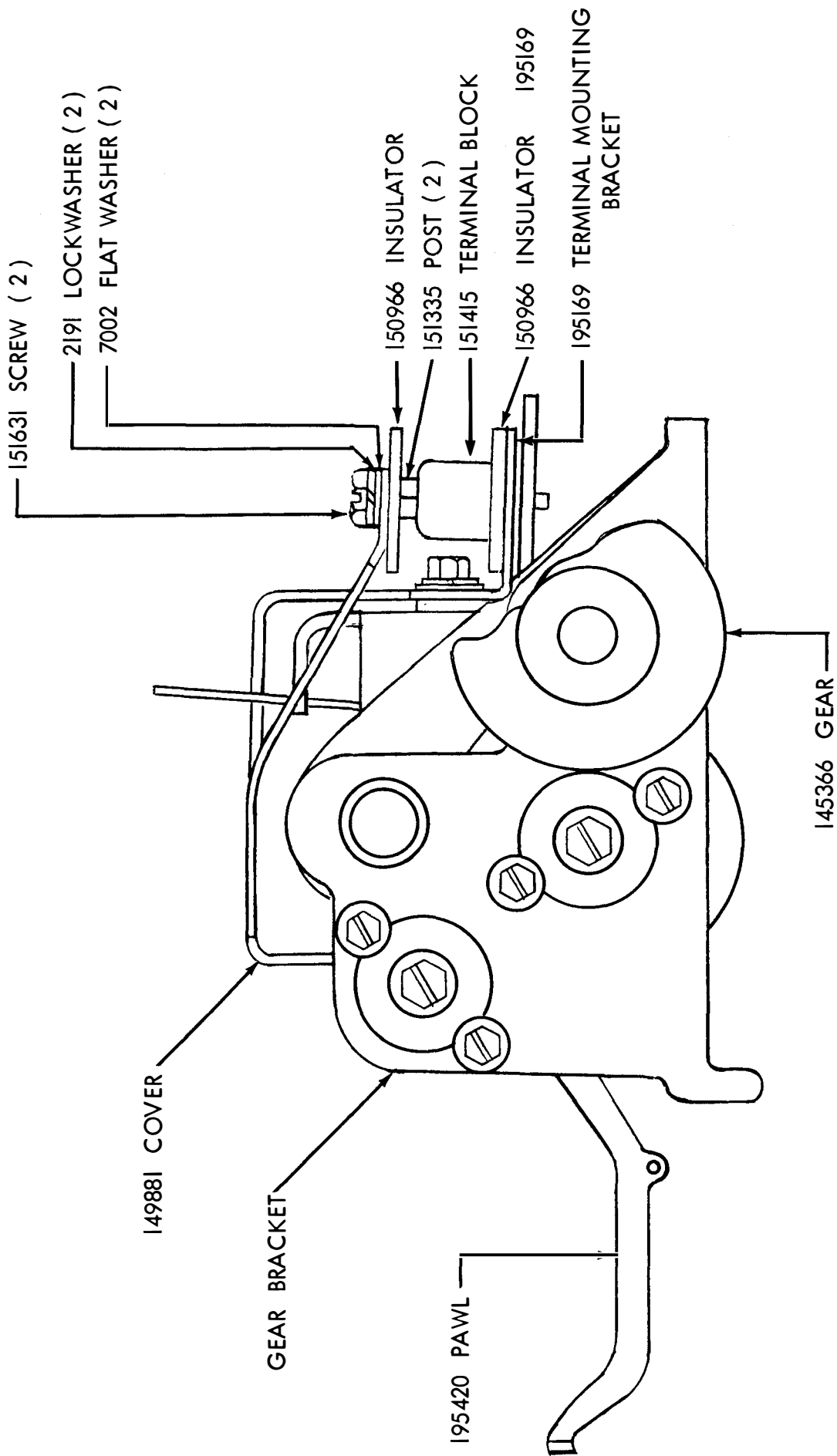


FIGURE 4



CHANGE (1) to Technical Manual for TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, TT-234/SGA-3 NAVSHIPS 93241

This permanent change revises the book to reflect equipment changes described in Temporary Corrections T-1 and T-2.

Maintenance Support Activities shall insert this Change in the technical manual immediately upon receipt.

1. Remove superseded pages and insert revised pages as indicated below:

<u>Page</u>	<u>Remove</u>	<u>Insert</u>	<u>Page</u>	<u>Remove</u>	<u>Insert</u>
T.P./ii	Orig/Orig	Ch. 1/Ch. 1	5-25/5-26	Orig/Orig	Orig/Ch. 1
thru			5-37/5-38	Orig/Orig	Orig/Ch. 1
ix/x			6-1/6-2	Orig/Orig	Ch. 1/Orig
xA/xB	-/-	Ch. 1/Ch. 1	6-3/6-4	Orig/Orig	Ch. 1/Orig
xi/1-0	Orig/Orig	Ch. 1/Ch. 1	6-5/6-6	Orig/Orig	Orig/Ch. 1
1-1/1-2	Orig/Orig	Ch. 1/Ch. 1	6-7/6-8	Orig/Orig	Ch. 1/Ch. 1
1-3/1-4	Orig/Orig	Ch. 1/Ch. 1	6-8A/Blank	-/-	Ch. 1/Blank
1-5/1-6	Orig/Orig	Ch. 1/Ch. 1	6-11/6-12	Orig/Orig	Ch. 1/Ch. 1
1-7/1-8	Orig/Orig	Orig/Ch. 1	6-12A/6-12B	-/-	Ch. 1/Ch. 1
1-9/1-10	Orig/Orig	Ch. 1/Orig	6-13/6-14	Orig/Orig	Ch. 1/Ch. 1
1-11/1-12	Orig/Orig	Ch. 1/Ch. 1	6-15/6-16	Orig/Orig	Ch. 1/Ch. 1
1-13/1-14	Orig/Orig	Ch. 1/Ch. 1	6-16A/6-16B	-/-	Ch. 1/Ch. 1
1-14A/1-14B	-/-	Ch. 1/Ch. 1	6-17/6-18	Orig/Orig	Ch. 1/Ch. 1
1-15/2-0	Orig/Orig	Ch. 1/Ch. 1	6-18A/6-18B	-/-	Ch. 1/Ch. 1
2-1/2-2	Orig/Orig	Ch. 1/Ch. 1	6-19/6-20	Orig/Orig	Ch. 1/Ch. 1
2-3/2-4	Orig/Orig	Orig/Ch. 1	6-20A/6-20B	-/-	Ch. 1/Ch. 1
2-4A/Blank	-/-	Ch. 1/Blank	6-21/6-22	Orig/Orig	Ch. 1/Ch. 1
2-5/2-6	Orig/Orig	Ch. 1/Ch. 1	6-22A/6-22B	-/-	Ch. 1/Ch. 1
3-1/3-2	Orig/Orig	Ch. 1/Ch. 1	6-23/6-24	Orig/Orig	Ch. 1/Ch. 1
3-2A/Blank	-/-	Ch. 1/Blank	thru		
3-3/3-4	Orig/Orig	Ch. 1/Orig	6-29/6-30		
3-5/3-6	Orig/Orig	Ch. 1/Ch. 1	6-30A/6-30B	-/-	Ch. 1/Ch. 1
3-7/4-0	Orig/Orig	Ch. 1/Ch. 1	6-31/6-32	Orig/Orig	Ch. 1/Ch. 1
4-1/4-2	Orig/Orig	Ch. 1/Ch. 1	thru		
4-7/4-8	Orig/Orig	Ch. 1/Ch. 1	6-45/6-46		
4-8A/4-8B	-/-	Ch. 1/Ch. 1	6-47/6-48	Orig/Orig	Ch. 1/Orig
4-9/4-10	Orig/Orig	Ch. 1/Ch. 1	6-49/6-50	Orig/Orig	Ch. 1/Ch. 1
4-10A/Blank	-/-	Ch. 1/Blank	6-51/6-52	Orig/Orig	Ch. 1/Orig
4-11/4-12	Orig/Orig	Ch. 1/Ch. 1	6-53/6-54	Orig/Orig	Ch. 1/Ch. 1
4-13/4-14	Orig/Orig	Ch. 1/Ch. 1	6-61/6-62	Orig/Orig	Ch. 1/Orig
4-17/4-18	Orig/Orig	Orig/Ch. 1	6-63/6-64	Orig/Orig	Orig/Ch. 1
4-19/4-20	Orig/Orig	Ch. 1/Orig	6-64A/6-64B	-/-	Ch. 1/Ch. 1
4-23/4-24	Orig/Orig	Orig/Ch. 1	6-64C/6-64D	-/-	Ch. 1/Ch. 1
4-27/4-28	Orig/Orig	Orig/Ch. 1	6-66A/6-66B	-/-	Ch. 1/Ch. 1
4-33/4-34	Orig/Orig	Ch. 1/Ch. 1	6-66C/6-66D	-/-	Ch. 1/Ch. 1
4-34A/4-34B	-/-	Ch. 1/Ch. 1	6-67/6-68	Orig/Orig	Ch. 1/Orig
4-35/4-36	Orig/Orig	Ch. 1/Ch. 1	6-68A/6-68B	-/-	Ch. 1/Ch. 1
4-37/4-38	Orig/Orig	Ch. 1/Ch. 1	6-68C/6-68D	-/-	Ch. 1/Ch. 1
4-39/4-40	Orig/Orig	Ch. 1/Ch. 1	6-69/6/70	Orig/Orig	Ch. 1/Orig
4-40A/Blank	-/-	Ch. 1/Blank	6-71/6-72	Orig/Orig	Ch. 1/Orig
4-41/5-0	Orig/Orig	Ch. 1/Orig	6-75/6-76	Orig/Orig	Ch. 1/Ch. 1
5-1/5-2	Orig/Orig	Ch. 1/Orig	6-76A/6-76B	-/-	Ch. 1/Ch. 1
5-3/5-4	Orig/Orig	Ch. 1/Ch. 1	6-76C/6-76D	-/-	Ch. 1/Ch. 1
5-5/5-6	Orig/Orig	Ch. 1/Ch. 1	6-77/6-78	Orig/Orig	Orig/Ch. 1
5-7/5-8	Orig/Orig	Ch. 1/Orig	6-79/6-80	Orig/Orig	Ch. 1/Orig
5-13/5-14	Orig/Orig	Orig/Ch. 1	6-81/6-82	Orig/Orig	Ch. 1/Ch. 1
5-14A/5-14B	-/-	Ch. 1/Ch. 1	6-83/6-84	Orig/Orig	Ch. 1/Ch. 1
thru			6-87/6-88	Orig/Orig	Ch. 1/Orig
5-14I/5-14J			6-95/6-96	Orig/Orig	Orig/Ch. 1

CHANGE (1) to Technical Manual for TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, TT-234/SGA-3  
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<u>Page</u>	<u>Remove</u>	<u>Insert</u>	<u>Page</u>	<u>Remove</u>	<u>Insert</u>
6-96A/6-96B	-/-	Ch. 1/Ch. 1	6-131/6-132	Orig/Orig	Ch. 1/Ch. 1
6-97/6-98	Orig/Orig	Ch. 1/Ch. 1	6-133/6-134	Orig/Orig	Orig/Ch. 1
6-99/6-100	Orig/Orig	Ch. 1/Orig	6-135/6-136	Orig/Orig	Orig/Ch. 1
6-100A/6-100B	-/-	Ch. 1/Ch. 1	6-137/6-138	Orig/Orig	Ch. 1/Ch. 1
6-100C/6-100D	-/-	Ch. 1/Ch. 1	6-141/6-142	Orig/Orig	Orig/Ch. 1
6-100E/Blank	-/-	Ch. 1/Blank	6-143/6-144	Orig/Orig	Ch. 1/Ch. 1
6-101/6-102	Orig/Orig	Ch. 1/Ch. 1	thru		
6-103/6-104	Orig/Orig	Ch. 1/Orig	6-151/6-152		
6-105/6-106	Orig/Orig	Ch. 1/Orig	7-1/7-2	Orig/Orig	Ch. 1/Ch. 1
6-107/6-108	Orig/Orig	Ch. 1/Ch. 1	thru		
6-109/6-110	Orig/Orig	Ch. 1/Ch. 1	7-39/7-40		
6-111/6-112	Orig/Orig	Orig/Ch. 1	7-40A/Blank	-/-	Ch. 1/Blank
6-113/6-114	Orig/Orig	Ch. 1/Ch. 1	7-41/7-42	Orig/Orig	Ch. 1/Ch. 1
6-115/6-116	Orig/Orig	Orig/Ch. 1	thru		
6-117/6-118	Orig/Orig	Ch. 1/Orig	7-61/7-62		
6-119/6-120	Orig/Orig	Ch. 1/Ch. 1	7-62A/7-62B	-/-	Ch. 1/Ch. 1
6-121/6-122	Orig/Orig	Ch. 1/Ch. 1	thru		
6-123/6-124	Orig/Orig	Orig/Ch. 1	7-62O/7-62P		
6-125/6-126	Orig/Orig	Ch. 1/Orig	7-63/7-64	Orig/Orig	Ch. 1/Ch. 1
6-129/6-130	Orig/Orig	Orig/Ch. 1	i-11/i-12	Orig/Orig	Ch. 1/Ch. 1

2. There are no pen-and-ink corrections to be made.
3. Destroy superseded pages but not until the complete manual has been checked against the "List of Effective Pages."
4. Remove and destroy the superseded Temporary Corrections, and then insert this Instruction Sheet just behind the front cover.

TEMPORARY CORRECTION T-6 TO TECHNICAL MANUAL FOR TELE-TYPEWRITERS TT-47C/UG, TT-47D/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, TT-234/SGA-3

Temporary Correction T-6, when used with NAVSHIPS 93241 (original pages cover information for weather units) covers equipment furnished on Contracts N600(24)60878, N600(24)60972, and N600(24)60553.

Make the following pen and ink corrections. Insert Temporary Correction T-6 in the manual immediately under the front cover and on top of Temporary Correction T-5.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
1-2	CHANGE 1	Table 1-1	To this table add "See T-6" for reference to Table 1-1.
1-5	CHANGE 1	1-3a(3)B	After this paragraph add "See T-6" for reference to the following paragraph.
			(3)G. Keyboard (LK48ARN). This keyboard is similar to Keyboard MX-1677A/UG except incorporates a modified signal generating mechanism.
			(3)H. Keyboard (LK49ARE). This keyboard is identical to Keyboard TT-387/UG except that certain keytops include aerological weather symbols in place of standard communication symbols.
1-6	CHANGE 1	1-3b(5)B	After this paragraph add "See T-6" for reference to the following paragraphs.
			(5)F. Automatic Typewriter LP14RN/AJG is similar to Automatic Typewriter MX-1115B/UG except that it is equipped with the 193936 Restricted Line Feed Modification Kit.
			(5)G. Automatic Typewriter LP65RN/AJD is similar to Automatic Typewriter MX-3080/UG except that it is equipped with the 193936 Restricted Line Feed Modification Kit.
			(5)H. Automatic Typewriter LP14RE/AJF is similar to Automatic Typewriter MX-1115B/UG except that it is equipped with a type box which includes aerological weather symbols in place of standard communication symbols and the 193936 Restricted Line Feed Modification Kit.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
		Section 2, Installation, last paragraph	Immediately after this paragraph add "See T-6" for the following information.

2-14. Modification Kit MK-764/UG (193936) For Restricted Line Feed on any typing Unit (Teletype Corporation Model 28 non-selective calling LP6 and up), covered in NAVSHIPS 981719.

a. Modification Kit MK-764/UG (193936) provides facilities for line feed on a CR code and blocks line feed for the following two operations. This kit permits only one line feed operation in a CR-CR-LF sequence. The 193936 Modification Kit is for use on non-selective calling Model 28 Typing Units (LP6 and up), and does not interfere with the normal line feed operation.

b. The 193936 Modification Kit consists of:

3	3599	Nut	1	152668	Bar, Function: LF
4	4703	Spring	2	152704	Bar, Function: Univ.
4	72522	Wick	1	153598	Pawl
4	90517	Spring	2	153601	Spacer
2	95428	Spring	1	153602	Plate
4	103863	Bushing	1	153604	Pawl
3	110743	Washer, Lock	1	153609	Roller
4	125011	Washer, Flat	2	153644	Stud
2	151688	Screw	1	153670	Lever
1	152089	Latch	1	154613	Latch
1	152121	Lever	2	155933	Plate, Guide
1	152298	Lever	1	155934	Plate
1	152357	Stud	1	155938	Slide
1	152641	Lever	4	157240	Spring
2	152653	Pawl	2	157274	Clip
2	152660	Plate, Spring	1	193937	Plate, Shift, w/Post
2	152667	Bar, Function: CR	1	193938	Slide, Blocking
			1	199823	Plate, Identification

c. Install the kit as follows:

- (1) Remove the stunt box from the unit in accordance with standard practice.
- (2) Remove the 153435 - PLF Function Bar from Slot 40 and replace with 152668 - LF Function Bar.
- (3) Remove one 152671 ACR - LF Function Bar and one 4703 Spring from Slot 39. (Retain).



T-6 to NAVSHIPS 93241

- (4) Remove one 152668 - LF Function Bar and one 4703 Spring from Slot 38. (Retain).
- (5) Remove and retain two 152653 Function Pawls, two 72522 Wicks, and two 157240 Springs from Slots 38 and 39.
- (6) Install one 153604 Function Pawl in Slot 38. Secure with one 72522 Wick and one 157240 Spring.
- (7) Install one 153598 Function Pawl in Slot 39. Secure with one 72522 Wick and one 157240 Spring.
- (8) Install one 152671 ACR - LF Function Bar in Slot 38. Secure with one 4703 Spring.
- (9) Install one 152667 CR Function Bar in Slot 39. Secure with one 4703 Spring.
- (10) Place a 152653 Pawl, 72522 Wick, 157240 Spring, 152121 Function Lever, 90517 Spring, 154613 Latch, 152704 Universal Function Bar, and 4703 Spring in Slot 12.
- (11) Install a 152653 Pawl, 72522 Wick, 157240 Spring, 153670 Function Lever, 90517 Spring, 152660 Plate, 152704 Universal Function Bar, and 4703 Spring in Slot 13.
- (12) Insert a 152357 Stud with the threaded portion facing in the direction of the lowered number slots, through the hole of the 153670 Function Lever. Secure with a 110743 Lock Washer and a 3599 Nut.
- (13) Install a 152653 Function Pawl, 157240 Spring, 72522 Wick, 152298 Function Lever, 90517 Spring, 152089 Latch, 152667 - CR Function Bar and 4703 Spring in Slot 14.
- (14) Install a 152653 Function Pawl, 157240 Spring, 72522 Wick, 152641 Function Lever, 90517 Spring, 152660 Spring Plate, 152668 - LF Function Bar, and 4703 Spring in Slot 37.
- (15) Assemble and mount the following shift slide parts between Slots 13 and 14, in accordance with standard practice: 153644 Stud (2), 155933 Plate (1), 103863 Spacer (2), 155938 Slide (1), 155934 Plate (1), 103863 Spacer (2), 153609 Roller (1), 193937 Shift Plate W/Post (1), and 155933 Plate (1), secure with the 125011 Flat Washers (2), 110743 Lock Washers (2), and the 3599 Nuts (2).
- (16) Remove and retain the 151637 Mounting Screw and 110743 Lock Washer from the 152651 Guide Plate (third screw from left) (See Figure 6-28A).
- (17) Place the 153602 Plate over the center guide pin and secure the plate with the 151637 Screw and 110743 Lock Washer (See Figure 6-28A).

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
		(18)	Remove and discard two 151637 Screws from the extreme left and right ends of the guide plate. Retain the two 110743 Lock Washers.
		(19)	Install the 193938 Blocking Slide placing one 153601 Spacers over each hole of the two previously removed screws. Secure the blocking slide with two 151688 Screws, two 125011 Flat Washers, and two 110743 Lock Washers.
		(20)	Secure the two 95428 Springs as shown in Figure 6-28A.
		(21)	Reinstall the stunt box in the typing unit.
		(22)	Make the Shift Slide Assembly adjustment in Figure 6-131A.
6-36	CHANGE 1	6-28	To Figure 6-28 add "See T-6" for information in Table 6-3, and Figure 6-28A.
6-134	CHANGE 1	6-131	To Figure 6-131 add "See T-6" for reference to Figure 6-131A.

TABLE 1-1. TELETYPEWRITER COMPONENTS

COMPONENT			TELETYPEWRITER (*NOT ASSIGNED)																												
MANUFACTURERS DESIGNATION	NAME	NAVY NOMENCLATURE	TT-47J/UG	TT-48 *	TT-48E/UG	TT-48F/UG	TT-70E/UG	TT-171 *	TT-128C/UG	TT-130B/UG	TT-130C/UG	TT-171C/UG	TT-176 *	TT-176C/UG	AN/UG-C-22	TT-261B/UG	TT-283/UG	TT-283A/UG	TT-69E/UG												
			LAC204BR237	CABINET	CY-2538/UG	X	X	X	X		X	X			X	X				X	X										
LAC203BR236	CY-2539/UG						X			X	X					X		X													
LPC202BR120	COVER	CW-354/UG											X	X	X																
LKBARN	KEYBOARD	MX-1677A/UG													X																
LK10ARN		MX-1114C/UG			X																										
LK44ARN LK7449S LK49ARN		TT-387/UG	X	X		X	X													X											
LK35ARE		TT-389/UG																													
LK10ARE		TT-435/UG										X																			
LK48ARN		TT-434/UG												X	X																
LK49ARE		TT-442/UG								X	X																				
LB4/161		BASE	NT-1443/UG						X				X				X	X	X												
LMU3	AC MOTOR	SYNC PD-17A/U	X						X	X	X	X		X		X	X	X													
LMU4		SERIES PD-18/U			X	X	X								X		X														
LMU38		SYNC		X				X					X																		
LPI4RN/AY	AUTOMATIC TYPER	MX-1115B/UG															X														
LPI4RN/AGH		MX-2984/UG			X																										
LP65RN/AGB		MX-3080/UG														X															
LPI4RN/AJG		TT-437/UG	X	X		X	X	X					X					X	X												
LP65RN/AJD		TT-438/UG												X	X																
LPI4RE/AJF		TT-443/UG								X	X																				
LPI4RE/ACX(A Y)		MX-1422A/UG										X																			
LESU7/147	POWER DISTRIBUTION PANEL	SB-964/UG	X	X	X	X	X	X	X	X	X	X				X	X	X													
LESU6/119		SB-408/UG												X	X	X															
104986	SPEED INDICATOR				X	X						X							X												
152766	GEAR SET (SEE TABLE 2-1)		X		X	X			X	X	X	X	X	X	X	X	X	X													
161293			X		X	X	X			X	X	X	X	X	X	X	X	X	X												
161295			X		X	X	X			X	X	X	X	X	X	X	X	X	X												
161294					X											X															
159660				X					X					X																	
159770				X					X					X																	

TABLE 6-3. STUNT BOX ARRANGEMENTS

(A) ASR LP14RN/AJE 197843	(B) KSR-ASR LP14RN/AJG LP14RE/AJG 197845	(C) KSR LP65RN/AJD 197842	(D) KSR LP14RE/AJF 197844
Position	Bar	Lever	Spring Plate or Latch
1	155129	152642	152660
2	152666	152641	152660
3	152665	152641	152660
4	152671	152641	152660
5	152667	162059	154613
6	(D) 152675	(D) 152641	(D) 152660
12	152704	152121	154613
13	152704	153670	152660
14	152667	152298	152089
15	(A) 152683	(A) 152121	(A) 154613
16	—	(A) 152121	(A) 154613
17	—	(A) 152121	(A) 154613
18	(A) 152683	(A) 153670	(A) 152660
19	(A) 152678	(A) 152121	(A) 154613
20	(A) 152678	(A) 152121	(A) 154613
21	(A) 152678	(A) 152121	(A) 154613
22	(A) 152678	(A) 152298	(A) 152089
23	(A) 152683	(A) 152121	(A) 154613
24	—	(A) 152121	(A) 154613
25	—	(A) 152121	(A) 154613
26	(A) 152683	(A) 153670	(A) 152660
27	—	—	—
28	(B)(D)(A) 153437	152641	152660
28	(C) 152672	152641	152660
31	—	—	—
32	—	—	—
33	—	—	—
34	—	—	—
35	(B)(A)(C) 152669	(B)(A)(C) 152659	(B)(A)(C) 154613
36	(B)(A)(C) 152669	(B)(A)(C) 152642	(B)(A)(C) 152660
37	152688	152641	152660
38	152671	152641	152660
39	152667	152641	152660
40	152688	152642	152660

Same as basic parts except for particular "Arrangements".

All positions common to all unless otherwise indicated.

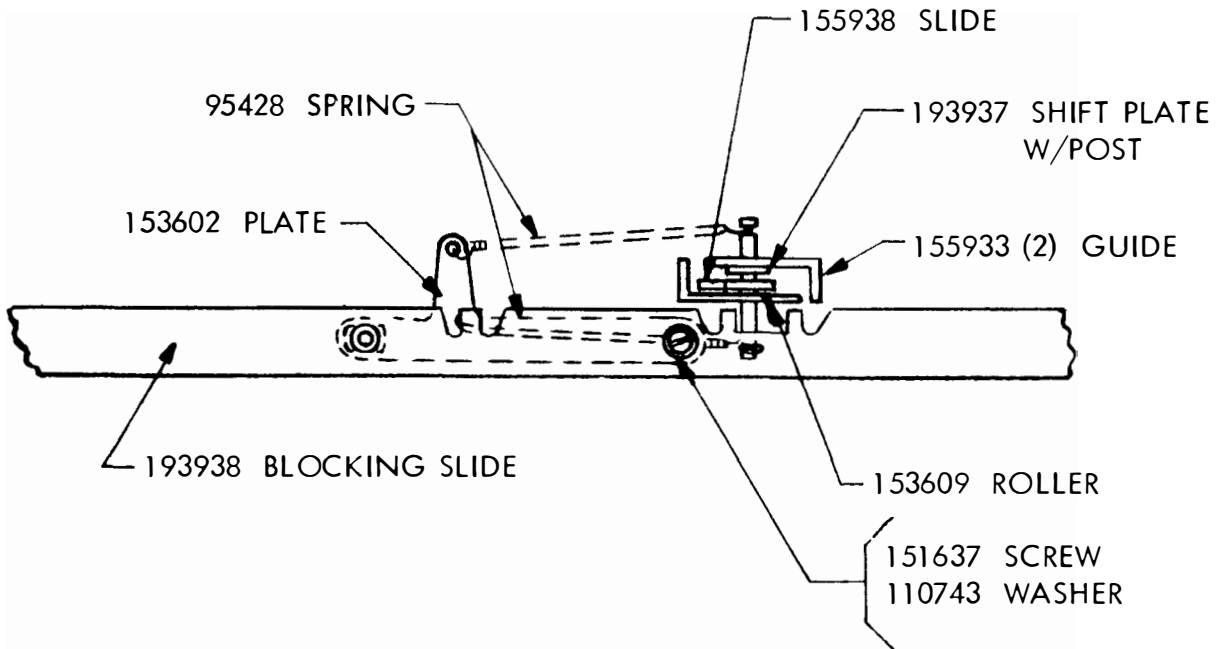
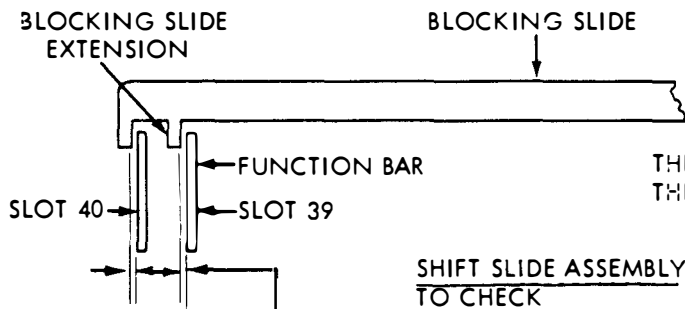


FIGURE 6-28A



NOTE:

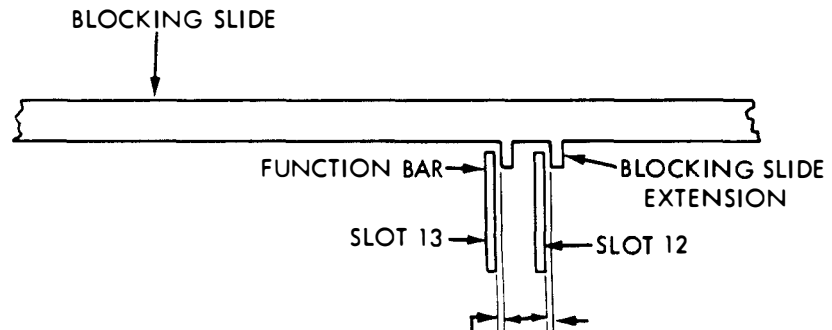
THE FOLLOWING ADJUSTMENTS ARE MADE WITH THE STUNT BOX REMOVED FROM ITS TYPING UNIT.

SHIFT SLIDE ASSEMBLY  
TO CHECK

SHIFT SLIDE SECURING NUTS FRICTION TIGHT AND FUNCTION LEVER ASSOCIATED WITH SHIFT SLIDE IN NORMAL UNOPERATED POSITION.

(1) REQUIREMENT

FULLY DEPRESS FUNCTION BARS IN SLOTS 12, 13, 39 AND 40. RELEASE FUNCTION BARS AND ADJUST SHIFT SLIDE  
MIN. 0.010 INCH  
MAX. 0.015 INCH  
BETWEEN RIGHT SIDE OF BLOCKING SLIDE EXTENSIONS AND LEFT SIDE OF FUNCTION BARS LOCATED IN SLOTS 39 AND 40. FUNCTION BARS IN SLOTS 12 AND 13 MUST BE BLOCKED IN THIS POSITION.



(2) REQUIREMENT

MANUALLY LATCH FUNCTION LEVER IN SLOT 14. DEPRESS FUNCTION BARS IN SLOTS 39 AND 40, THEN DEPRESS FUNCTION BARS IN SLOTS 12 AND 13 UNTIL THE BLOCKING SLIDE SHIFTS. RELEASE FUNCTION BARS. MIN. 0.006 INCH BETWEEN LEFT SIDE OF BLOCKING SLIDE EXTENSIONS AND RIGHT SIDE OF FUNCTION BARS LOCATED IN SLOTS 12 AND 13. FUNCTION BARS IN SLOTS 39 AND 40 SHALL BE BLOCKED IN THIS POSITION. REFINE REQUIREMENT (1) IF NECESSARY.

AUTOMATIC TYPER, RESTRICTED LINE  
FIGURE 6 -131A. FEED MECHANISM

10 February 1963

TEMPORARY CORRECTION T-5 TO TECHNICAL MANUAL FOR TELE-  
TYPEWRITERS TT-47C/UG, TT-47D/UG, TT-48B/UG, TT-48C/UG,  
TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG,  
TT-176A/UG, TT-234/SGA-3

This temporary correction, when used with NAVSHIPS 93241, and temporary correction T-4 covers the 194264 Modification Kit to convert Teletypewriters TT-47H/UG, TT-48D/UG, TT-69D/UG, TT-128B/UG and TT-176B/UG from 7.00 unit code to 7.42 unit code non-polar operation and the 194029 Modification Kit to convert Teletypewriters TT-47D/UG, TT-47E/UG, TT-48C/UG, TT-69C/UG, TT-70D/UG, TT-234 ( )/SGA-3 and Modification Kit MK-698/UG to convert Teletypewriters TT-47C/UG, TT-48B/UG, TT-69B/UG, TT-70C/UG, and Modification Kit MK-699/UG to convert Teletypewriter TT-176A/UG from 7.42 unit code to 7.00 unit code synchronous pulsed transmission.

Make the following pen and ink corrections. Insert this temporary correction in the manual immediately under the front cover and on top of temporary correction T-4.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
2-5	CHANGE 1	2-7j	After this paragraph add "See T-5" for reference to the following paragraph.
		j.A.	On keyboards equipped with synchronous pulse, to make keyboard operable without <del>electrical</del> pulse to operate stepping magnet, loosen screw and rotate clamp counter-clockwise to hold the armature in the operating position. Retighten screw.
2-6	CHANGE 1	2-10c(13)	Immediately after this paragraph add "See T-5" for reference to the following paragraphs.
2-11.			Modification for 7.42 Unit Code covered in NAVSHIPS 981562.

a. Modification Kit 194264 provides parts for conversion of teletypewriter equipment to 7.42 unit code non-polar operation. An identification plate will appear beside the set name plate on equipment so modified.

b. The 194264 Modification Kit consists of:

1	150441	Gear	1	161295	Gear Set
1	154032	Sleeve, Gear	1	163440	Gear
1	154154	Cam	1	163590	Gear
1	161293	Gear Set	1	194269	Plate, Identification
1	161294	Gear Set			

c. Install the modification kit as follows:

T-5 to NAVSHIPS 93241

(1) On Keyboard LK35ARN (TT-388/UG), LK35ARE (TT-389/UG), LK30ARN (TT-357/UG) replace:

- (a) 163519 Gear Sleeve with 154032 Gear Sleeve.
- (b) 163368 Cam with 154154 Cam.
- (c) 163460 Gear with 163440 Gear.
- (d) Present gear set with 161293 (60 WPM), 161294 (75 WPM), or 161295 (100 WPM) Gear Set.

(2) On Automatic Typewriter LP108RN/AY (TT-372/UG), LP108RE/ACX (TT-378/UG), LP105RN/AGB (TT-358/UG) replace:

- (a) 163503 Gear with 150441 Gear.
- (b) 163459 Gear and 150440 Hub (if present) with 163590 Gear.

(3) Remove backing from the 194269 Identification Plate and apply plate (on clean surface) next to the set name plate on the cabinet.

2-12. Modification for 7.00 Unit Code covered in NAVSHIPS 981560.

a. Modification Kit 194029 provides parts for conversion of teletypewriter equipment to 7.00 unit code, synchronous pulsed transmission. An identification plate will appear beside the set name plate on equipment so modified.

b. The 194029 Modification Kit consists of:

3	2191	Washer, Lock	1	163505	Gear Set
1	150440	Hub	1	163519	Sleeve Assembly, Gear
3	151693	Screw	1	173795	Gear
1	163368	Cam w/Bushing	1	194424	Modification Kit listed in
1	163459	Gear			paragraph 2-12c
1	163460	Gear	1	194342	Plate, Identification
1	163503	Gear			
1	163504	Gear Set			

c. The 194424 Modification Kit consists of:

1	49420	Spring	1	164656	Bar Assembly, Clutch
1	164485	Bail W/Hub	1	179988	Modification Kit (listed in
1	164652	Bar Assembly, Universal			paragraph 2-12d)



d. The 179988 Modification Kit consists of:

1	263M	Magnet - 50MA	1	151657	Screw
14	2191	Washer, Lock	6	155750	Sleeve, Insulating
1	2481	Washer, Flat	1	158753	Armature
1	3598	Nut	1	158754	Core, Magnet
2	3640	Washer, Lock	1	158859	Spring, Post
12	7002	Washer, Flat	1	164644	Post
1	88891	Spring, Armature	1	164645	Post
1	121125	Washer, Spring	1	164646	Plate, Nut
2	121242	Clamp, Cable	1	164647	Bracket
1	121243	Clamp, Cable	1	164649	Plate, Mounting
2	151073	Screw	1	164650	Contact Assembly
1	151442	Screw	1	164651	Armature Assembly
3	151630	Screw	1	179362	Cable Assembly
5	151631	Screw	1	179363	Cable Assembly
4	151632	Screw	1	193564	Clamp

e. Install the modification kit as follows:

(1) Keyboard MX-1114C/UG

(a) Install the 194424 Modification Kit as follows:

1. Remove the signal generator from the keyboard in accordance with standard practice.
2. Disassemble and replace the 154053 Clutch Trip Bail with the 164485 Bail.
3. Replace the 154129 Clutch Trip Bar in its slot with the 164652 Universal Bar.
4. Install the 164656 Clutch Bar in the slot just in front of the universal bar. Attach the 49420 Spring between the clutch bar and the code bar spring bracket.
5. Reinstall the signal generator in accordance with standard practice.
6. Install the 164650 Contact Assembly on the signal generator frame using the 151631 Screws, 2191 Lock Washers and 7002 Flat Washers.
7. Assemble the 263M Magnet, 158754 Magnet Core, 121125 Spring Washer, 164651 Armature Assembly, 158753 Armature and associated parts (see Figure 6-14D) to the 164649 Mounting Plate and install on the keyboard.

NOTE

To make keyboard operable without electrical pulse to operate stepping magnet, loosen the 151632 Screw and rotate the 193654 Clamp Counter-Clockwise to hold the armature in the operating position. Re-tighten the 151632 Screw.

8. Route the 179363 Cable along the right and rear inside surfaces of the keyboard. Mount the 179363 Cable to the keyboard with the 121242 Clamp, 151442 Screw and 7002 Washer. See Figure 4-32A. The 179362 Cable mates with the 179363 Cable and mounts to two open cabinet terminals. Tie up slack in 179362 Cable. Attach the leads from the contact assembly to the keyboard next to the keyboard identification screw using the 121242 Cable Clamp, 151631 Screw, 2191 Lock Washer, and 7002 Flat Washer. Attach the leads from the contact and magnet assemblies to the keyboard using the 121243 Cable Clamp, 151632 Screw, 2191 Lock Washer, 7002 Flat Washer, and 3598 Nut; mount the clamp to an existing hole near the magnet armature.

(b) Replace the 151129 Gear with the 163460 Gear.

(c) Replace the 154032 Gear Sleeve and 154154 Cam with the 163519 Gear Sleeve and 163368 Cam respectively.

(d) Replace the present gear set with the 173795 (45.5 Baud), 163504 (50 Baud), or 163505 (75 Baud) Gear Set.

(2) Typing Unit (LP).

(a) Replace the 150441 and 150439 Gears with the 163503 and 163459 Gears respectively.

(b) Install the 150440 Hub, 151693 Screw, and 2191 Lock Washer if not present on unit.

(3) Remove backing from the 194342 Identification Plate and apply plate (on clean surface) next to the set name plate.

(4) For adjustments and lubrication procedure refer to Temporary Correction T-4.

(a) Make the adjustments in T-4 and the following adjustments.

Clutch Trip Bar Spring Tension  
Code Bar Spring Tension  
Perforator Clutch Release Trip

(b) Lubricate in accordance with T-4.

2-13. Modification Kit MK-698/UG, MK-699/UG (includes 194033 Modification Kit).

a. The 194033, MK-698/UG, MK-699/UG Modification Kits consists of:

			194033	MK-698/UG	MK-699/UG
1	152465	Connector	X		
1	163459	Gear	X		
1	163503	Gear	X		
1	163504	Gear Set		X	X
1	163505	Gear Set		X	X
1	173595	Gear Set		X	X
1	194033	Modification Kit (listed herein)		X	X
1	194342	Plate, Identification	X		
1	LK30ARN	(TT-357/UG) Keyboard			X
1	LK35ARN	(TT-388/UG) Keyboard		X	
1	50122S	(NAVSHIPS 981560) Specification		X	X

b. Replace the present keyboard with Keyboard LK30ARN (TT-357/UG) or LK35ARN (TT-388/UG).

c. Remove the AC Motor and install it on the keyboard supplied.

d. Replace the present gear set with the 173795 (45.5 Baud), 163504 (50 Baud), 163504 (50 Baud), or 163505 (75 Baud) Gear Set.

e. For aerological weather service keyboards.

(1) Remove the keyboard arrangement 151739\*\*\* screw (located on the right side of the keyboard, just above the keyboard keys). Install this screw on the keyboard supplied in place of the present screw.

(2) Use a keylever remover to remove the weather aerological keylevers and install these on the keyboard supplied in place of the present keylevers.

f. Replace the 150441 and 150439 Gears with the 163503 and 163459 Gears respectively.

g. For electrical service unit not equipped with the 152465 Connector replace the 151815 Connector with the 152465 Connector. This connector is not required with these sets.

h. Remove backing from the 194342 Identification Plate and apply plate (on clean surface) next to the set name plate on the cabinet.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
6-146	ORIGINAL	6-143A	Change the title of this figure to read:

Figure 6-143A. Schematic Wiring Diagram, TT-176A/UG, TT-176B/UG (TT-357/UG additional wiring shown on Wiring Diagram 4718WD)

1-1	CHANGE 1	1-2a(4)	Immediately after this paragraph add "See T-5" for reference to the following paragraph.
-----	----------	---------	--

(5) Teletypewriters TT-47E/UG, TT-47H/UG, TT-48D/UG, TT-69D/UG, TT-128B/UG, TT-176B/UG utilize a 7.00 unit transmission pattern, geared to operate at a selected baud (45.5, 50, or 75) as determined by the requirements of the set, and are equipped with the synchronous pulse mechanism. TT-171B/UG utilizes a 7.00 unit transmission pattern. TT-261/UG, TT-261B/UG receive only page messages and are for bulkhead shelf mounting. TT-47F/UG, TT-47G/UG utilize the 7.42 unit transmission pattern and are equipped with the synchronous pulse mechanism. In all other respects they are similar to the other teletypewriters.

1-6	CHANGE 1 and T-4	1-3b(5)E	Delete this paragraph and add "See T-5" for reference to the following:
-----	---------------------	----------	---

(5)E. Automatic Typewriter TT-358/UG - This automatic typewriter is equipped for 7.00 unit code operation, for use with Teletypewriter TT-176B/UG. It is equipped for local back-space and local reverse line feed initiated by mechanical linkage with Keyboard TT-357/UG.

TEMPORARY CORRECTION T-4 TO TECHNICAL MANUAL  
FOR TELETYPEWRITERS TT-47C/UG, TT-47D/UG, TT-  
48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG,  
TT-70D/UG, TT-171A/UG, TT-176A/UG, TT-234/SGA-3

This temporary correction, when used with NAVSHIPS 93241, covers Teletypewriters listed in Table 1-1 and their components. Basically all references presently in the manual apply equally to Teletypewriters covered herein except where indicated.

Make the following pen and ink corrections. Insert this temporary correction in the manual immediately under the front cover.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
1-1	CHANGE 1	1-2b	Delete this paragraph and add "See T-4" for reference to the following paragraph.
			<p>b. Transmission between stations is accomplished electrically by use of the five-unit stop-start signaling code and utilizes a transmission pattern listed in paragraph 1-4h(1). The operating speed may be changed by changing gears, which are either supplied with the teletypewriters or available as optional components.</p>
1-2	CHANGE 1	Table 1-1	Delete this table and add "See T-4" for reference to Table 1-1.
1-5	CHANGE 1	1-3a(3)B	After this paragraph add "See T-4" for reference to the following paragraph.

(3)C. Keyboard TT-388/UG - This keyboard is similar to Keyboard MX-1114C/UG with the addition of synchronous pulsed transmission mechanism, radio frequency (RF) filtering suppression, and is geared for 7.00 unit code operation.

(3)D. Keyboard TT-389/UG - This keyboard is identical to Keyboard TT-388/UG except that certain keytops include aerological weather symbols in place of standard communication symbols.

(3)E. Keyboard (Teletype No. LK30ARN) - This keyboard is similar to Keyboards TT-388/UG and MX-1677A/UG and used only with Automatic Typer (Teletype No. LP105RN/AGB).

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
		(3)F. Keyboard (Teletype No. LK7449S) - This keyboard is similar to Keyboard MX-1114C/UG, with the addition of synchronous pulsed transmission mechanism.	
		1-3a(4)	After this paragraph add "See T-4" for reference to the following paragraph.
		(4)A. Base MT-2787/UG - This base is similar to Base NT-1443/UG except that it is equipped for 7.00 unit code operation.	
1-6	CHANGE 1	1-3b(5)B	After this paragraph add "See T-4" for reference to the following paragraphs.
		(5)C. Automatic Typewriter TT-372/UG - This automatic typewriter is similar to Automatic Typewriter MX-1115C/UG except that it is equipped for 7.00 unit code operation.	
		(5)D. Automatic Typewriter TT-378/UG - This automatic typewriter is identical to Automatic Typewriter TT-372/UG except that it is equipped with a type box which includes aerological weather symbols in place of standard communication symbols, and it is not equipped with the function bar, lever, pawl, and springs associated with the "keyboard lock on double blank" feature.	
		(5)E. Automatic Typewriter (Teletype No. LP105RN/AGB) - This automatic typewriter is similar to Automatic Typewriters TT-372/UG and MX-3080/UG.	
1-14B	CHANGE 1	1-4h(1)	In this paragraph delete lines 5 through 8 inclusive and add "See T-4" for reference to Table 1-5.
2-4	CHANGE 1	2-5b(1)	Delete the first sentence in this paragraph and add "See T-4" for reference to the following:
		(1) Select the intermediate gear and motor pinion required (see Table 2-1) for the desired operating speed.	
4-1	CHANGE 1	4-1a	In this paragraph delete lines 14 through 24 inclusive and add "See T-4" for reference to the following:

The signals transmitted and received on the local loop by these teletypewriters

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
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are of the neutral type (open and close) D. C. - 7.00 or 7.42 unit start stop transmission pattern (See Table 1-5). Teletypewriter TT-234( )/SGA presently is used at a speed of 460 opm only. The equipments are adaptable to various speeds of operation by gearing changes (See Table 2-1). The main transmitting or receiving channel may carry any standard type of 7.00 or 7.42 unit start-stop telegraph signals and may be keyed by any conventional method.

4-2

Delete this paragraph and add "See T-4" for reference to the following:

#### 4-2. SIGNALING CODE (Figure 4-2)

a. Information is sent and received by the equipment in the form of a five-unit, start-stop signaling code in which each character or function is represented by a sequential combination of current and no-current time intervals. Intervals during which current flows in the signal circuit are referred to as marking elements and during which no current flows as spacing elements. Every combination includes five elements that carry intelligence, each of which may be either marking or spacing. The intelligence elements are preceded by a start element (always spacing) and are followed by a stop element (always marking). The start and stop elements ensure synchronism between the transmitting and receiving equipment by bringing the receiving equipment to complete stop at the end of each combination. The letter "Y" is usually used for testing and illustrating purposes because each of its alternate intelligence elements is different.

b. Telegraph systems employ a 7.00 unit transmission pattern in which the stop element is equal to each of the other elements or a 7.42 unit transmission pattern in which the stop element is 1.42 times as long as each of the other elements. (See Paragraph 4.2.a. above). Interoperation between 7.42 and 7.00 apparatus is satisfactory providing the operating speeds selected yield identical unit pulse lengths. The signaling frequency is expressed in maximum dot cycles per second. One cycle consists of one current pulse followed by a no-current pulse. The equipment speed in baud (common in international usage) is equal to twice the frequency. Table 1-5 shows the relationships between the transmission patterns, pulse lengths and operating speed (in operations per minute, baud, and characters per second). Speed in words per minute is roughly equivalent to one sixth the operations per minute.

4-3	ORIGINAL	4-4	After figure 4-4, add "See T-4" for reference to Figures 4-4A, 4-4B.
4-10	CHANGE 1	4-3g	Immediately after this paragraph add "See T-4" for reference to the following.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
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g.A SYNCHRONOUS PULSED TRANSMISSION MECHANISM (Figure 4-4B, 4-4C) - The synchronous pulsed transmission mechanism provides a means of initiating signal transmission from the keyboard, at a predetermined rate, upon reception of a 0.050 ampere external clocking pulse of 20 millisecond duration.

(1) When any green key on the keyboard is depressed, the reset bail moves right and releases all selected code bars as described in paragraph 4-3c. Also released is the universal code bar which moves right and closes the clutch magnet conditioning contacts setting up the clutch trip magnet to receive the external clocking pulse (See Figure 4-4A).

(2) Upon reception of the external clocking pulse, the clutch trip magnet energizes and unblocks the clutch trip bar. As the clutch trip bar moves to the right it engages the clutch trip bail extension and trips the signal generator clutch allowing the signal generator cam shaft to rotate and transmit the proper sequential signal. After one complete revolution of the signal generator cam shaft, the reset bail returns to its starting position resetting all code bars and the clutch trip bar as explained in paragraph 4-3e(10).

4-11	CHANGE 1	4-32	To this figure add "See T-4" for reference to Figure 4-32A.
5-14	CHANGE 1	5-8	To this figure add "See T-4" for reference to Figure 5-8. 1.
6-6	CHANGE 1	6-3b	After this paragraph add "See T-4" for reference to the following paragraph.

b.A. SYNCHRONOUS PULSED MAGNET ASSEMBLY (See Figure 6-14D)

1. Remove the two 151630 and one 151632 Screws, and associated washers, which secure the 164649 Mounting Bracket to the keyboard.

#### CAUTION

Do not loosen the three 151631 Screws holding the 164646 Adjusting Plate.

2. To remove the assembly from the keyboard, loosen the two 81778 Screws on the 263M magnet and detach the 173124 Cable Terminals from the magnet.

3. Disassemble the synchronous pulsed magnet assembly as shown in Figure 6-14D.



T-4 to NAVSHIPS 93241

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
	<u>4.</u>	To reassemble and install the assembly, reverse disassembly procedure.	
6-15	CHANGE 1	6-4A, 05108	To symbol designation "05108" add "See T-4" for reference to the following.  05108 (Teletype No. 154129) not used when parts in Figure 6-14D are used.
6-16	CHANGE 1	6-5, 0257	To symbol designation "0257" add "See T-4" for reference to the following:  0257 (Teletype No. 163440 for 7.42 unit code, No. 163460 for 7.00 unit code).
		6-6	To this figure add "See Table 2-1".
6-19	CHANGE 1	6-11A, 05354	To symbol designation "05354" add "See T-4" for reference to the following:  05354 not used when parts in Figure 6-14D are used. (Teletype No. 164485) used when parts in Figure 6-14D are used.
6-20A	CHANGE 1	6-12A	To symbol designations "05385" and "05390" add "See T-4" for reference to the following:  05385 (Teletype No. 154154 for 7.42 unit code, No. 163368 for 7.00 unit code). 05390 (Teletype No. 154032 for 7.42 unit code, No. 163519 for 7.00 unit code).
6-22B	CHANGE 1	6-14C	To this figure add "See T-4" for reference to Figure 6-14D.
6-46	CHANGE 1	6-38	To symbol designations "01842" and "01840" add "See T-4" for reference to the following:  01842 (Teletype No. 163590 for 7.42 unit code, No. 163459 for 7.00 unit code). 01840 (Teletype No. 150441 for 7.42 unit code, No. 163503 for 7.00 unit code).

T-4 to NAVSHIPS 93241

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA. &amp; LINE OR FIG. &amp; LOCATION</u>	<u>ACTION</u>
6-80	ORIGINAL	6-75	To this figure add "See T-4" for reference to Figures 6-75A, 6-75B, and 6-75C.
6-149, 6-150	CHANGE 1	6-145	To this figure add "See T-4" for reference to Wiring Diagram 4718WD.

TABLE 1-1. TELETYPEWRITER COMPONENTS (\*DESIGNATION NOT AVAILABLE)

Manufacturers Designation	NAME	COMPONENT	TYPE																						
			TT-47C/UG	TT-47D/UG	TT-47E/UG	TT-47H/UG	TT-48B/UG	TT-48C/UG	TT-48D/UG	TT-69B/UG	TT-69C/UG	TT-69D/UG	TT-70C/UG	TT-70D/UG	TT-128B/UG	TT-171A/UG	TT-171B/UG	TT-176A/UG	TT-234/SGA-3	TT-261/UG	TT-261B/UG	TT-47F/UG	TT-47G/UG	TT-176B/UG	TT-234*/SGA-3
LAC204BR237	Cabinet	CY-2538/UG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X			
		CY-2539/UG								X	X	X	X	X						X	X				
LAC207BR248		CY-2320/SGA-3																	X						X
LPC202BR120	Cover	CW-354/UG																X					X	X	
LESU7/147	Power Distribution Panel	SB-964/UG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LESU6/119		SB-408/UG																X						X	X
LK4RN126	Keyboard	MX-1114B/UG	X				X		X		X							X							
LK10ARN		MX-1114C/UG		X	X			X		X		X													X
LK8ARN		MX-1667A/UG																X							
LK35ARN		TT-388/UG				X			X		X														
LK35ARE		TT-389/UG													X										
LK74495		TT-387/UG																				X	X		
LK30ARN		TT-357/UG																						X	X
LB4/161		Base	NT-1443/UG													X				X	X				
LB29/000	MT-2787/UG																X								
LMU3	AC motor (sync) (Series)	PD-17A/U	X	X	X	X			X	X	X			X	X	X	X	X	X	X	X	X	X	X	
LMU4		PD-18/U					X	X	X			X	X												X
LP14RN/AY	Automatic Typewriter	MX-1115B/UG	X	X			X	X	X	X	X	X	X	X			X	X	X	X	X			X	
LP14RN/AGH		MX-2984/UG			X															X	X				
LP65RN/AGB		MX-3080/UG																X							
LP108RN/AY		TT-372/UG				X			X		X					X									
LP108RE/ACX		TT-378/UG													X										
LP105RN/AGB		TT-358/UG																						X	X
151060	GEAR SET (See Table 2-1)	60 WPM	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
152766		67 WPM			X																X	X	X		
151075		75 WPM																	X						X
151100		100 WPM			X																X	X	X		X
173795		45.5 BAUD				X			X		X		X	X									X	X	
163504		50 BAUD				X			X		X		X	X									X	X	
163505		75 BAUD				X			X		X		X	X									X	X	
104986		SPEED INDICATOR							X																X

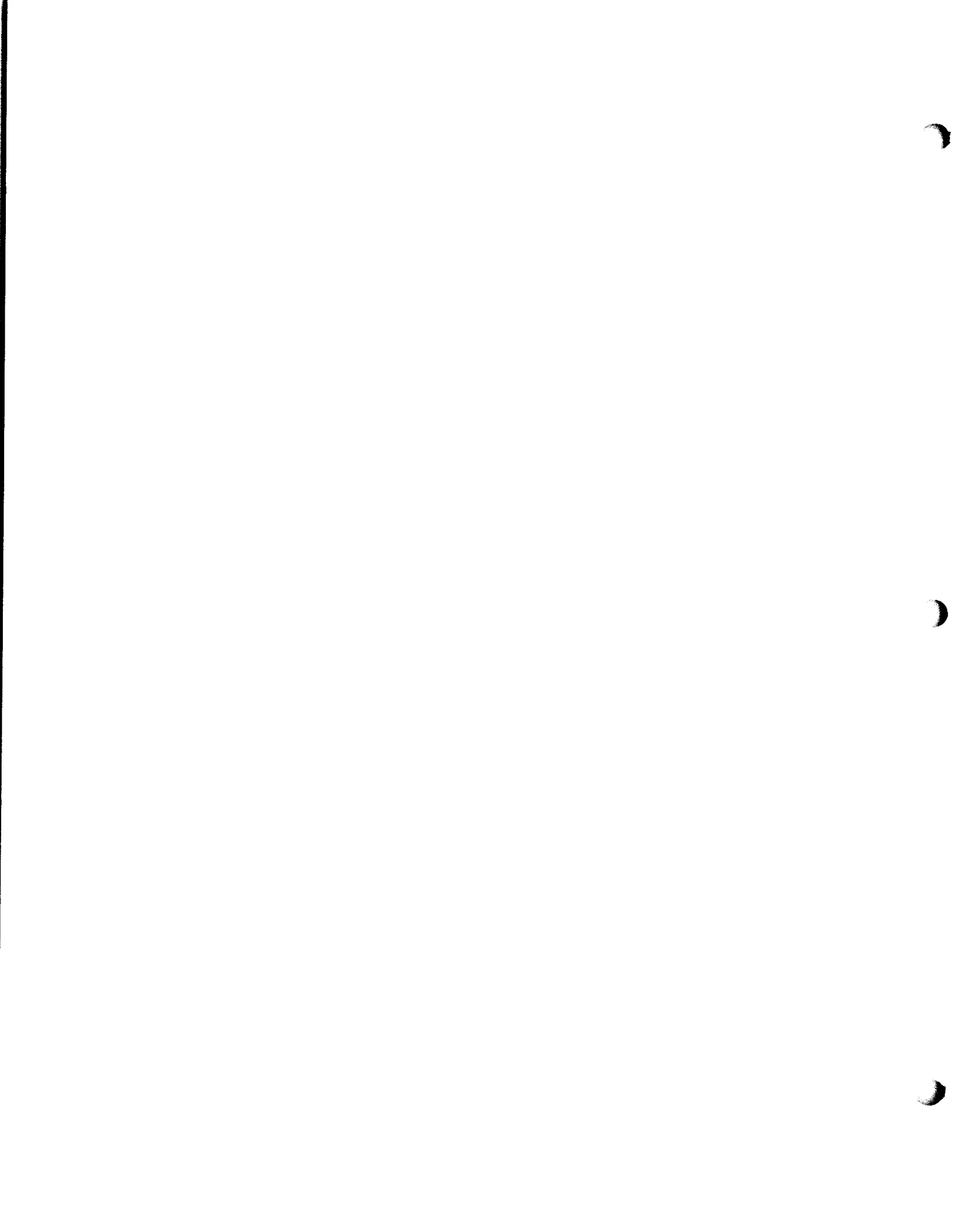
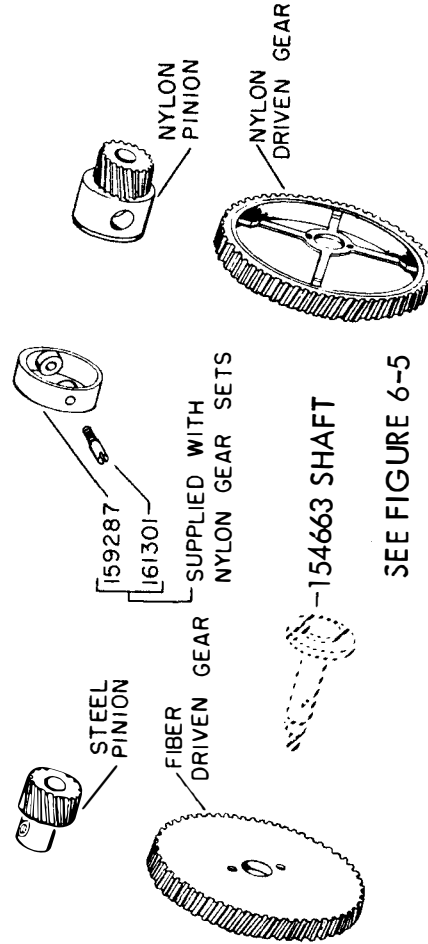


TABLE 1-5. TRANSMISSION PATTERNS

TRANSMISSION PATTERN	OPERATIONS PER MINUTE	BAUD	PULSE LENGTH (SECONDS)	FREQUENCY (CYCLES PER SECOND)	CHARACTERS PER SECOND
7.42	368	45.5	0.022	22.75	6
7.00	390	45.5	0.022	22.75	6.5
7.42	404	50	0.020	25	6.7
7.00	428	50	0.020	25	7.1
7.42	460	56.9	0.0175	28.45	7.7
7.42	600	74.2	0.0135	37.1	10
7.00	636	74.2	0.0135	37.1	10.6

TABLE 2-1. MOTOR AND KEYBOARD OR BASE GEAR SETS FOR VARYING OPERATING SPEEDS

WPM	OPM	BAUD	UNIT CODE	GEAR SETS - 5 LEVEL CODE				PINION			GEAR		
				SET		NUMBER	TEETH	STEEL	NYLON	TEETH	FIBER	NYLON	
				FIBER	NYLON	NYLON	NYLON	NYLON	NYLON	NYLON	FIBER	NYLON	
60	368	45.45	7.42	151060	161293	14	151130	159278	96	151131	159279		
65	390	45.45	7.00		173795			173794			173793		
67	404	50	7.42	152766		13	152765		81	152764			
71	428	50	7.00		163504	18		163461	117		163462		
75	460	56.88	7.42	151075	161294	17	151132	159281	93	151133	159282		
100	600	74.2	7.42	151100	161295	20	151134	159284	84	151135	159285		
107	643	75	7.00		163505	24		163463	104		163464		



SEE FIGURE 6-5

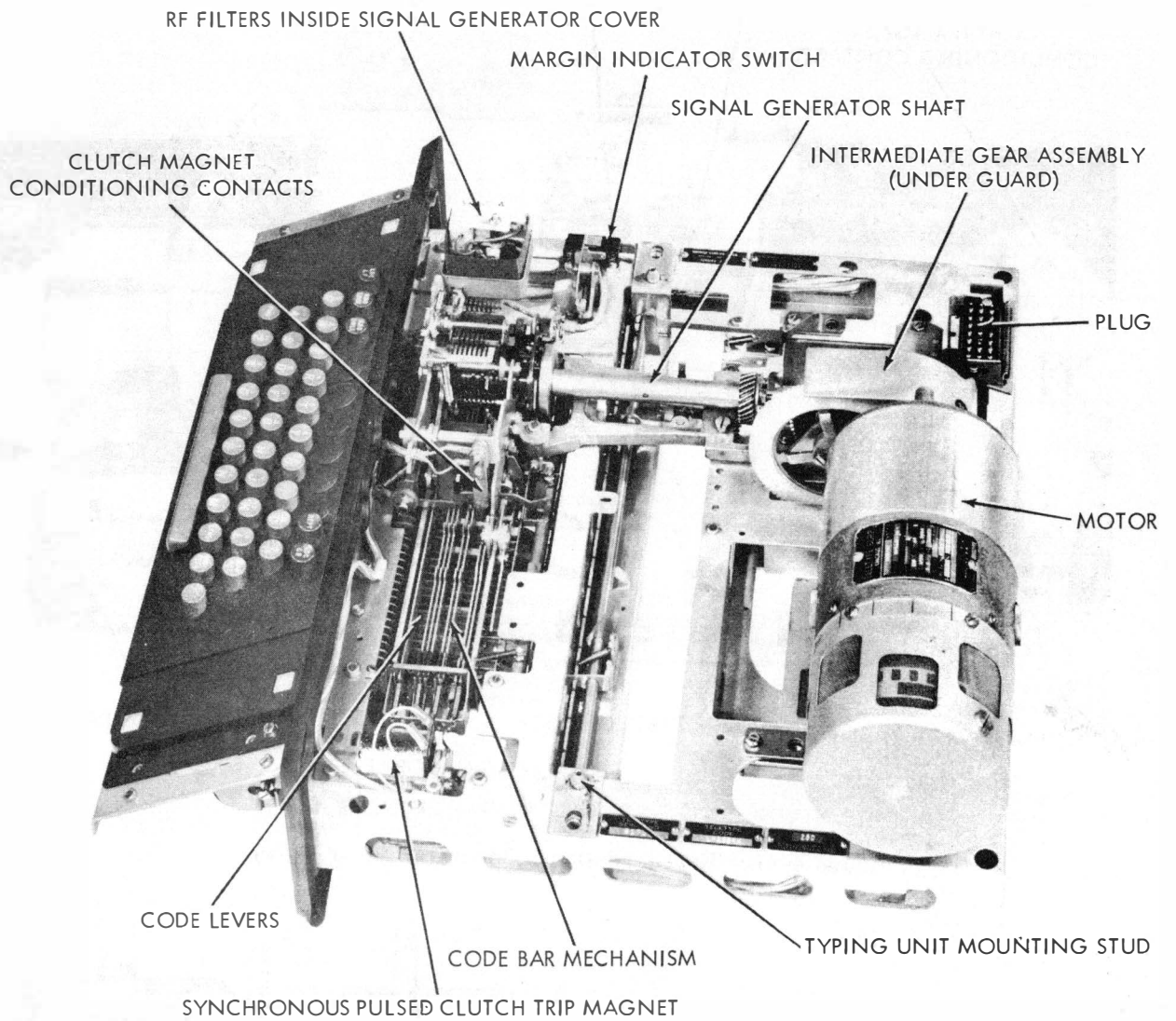


Figure 4-4A. Keyboard (Right View)

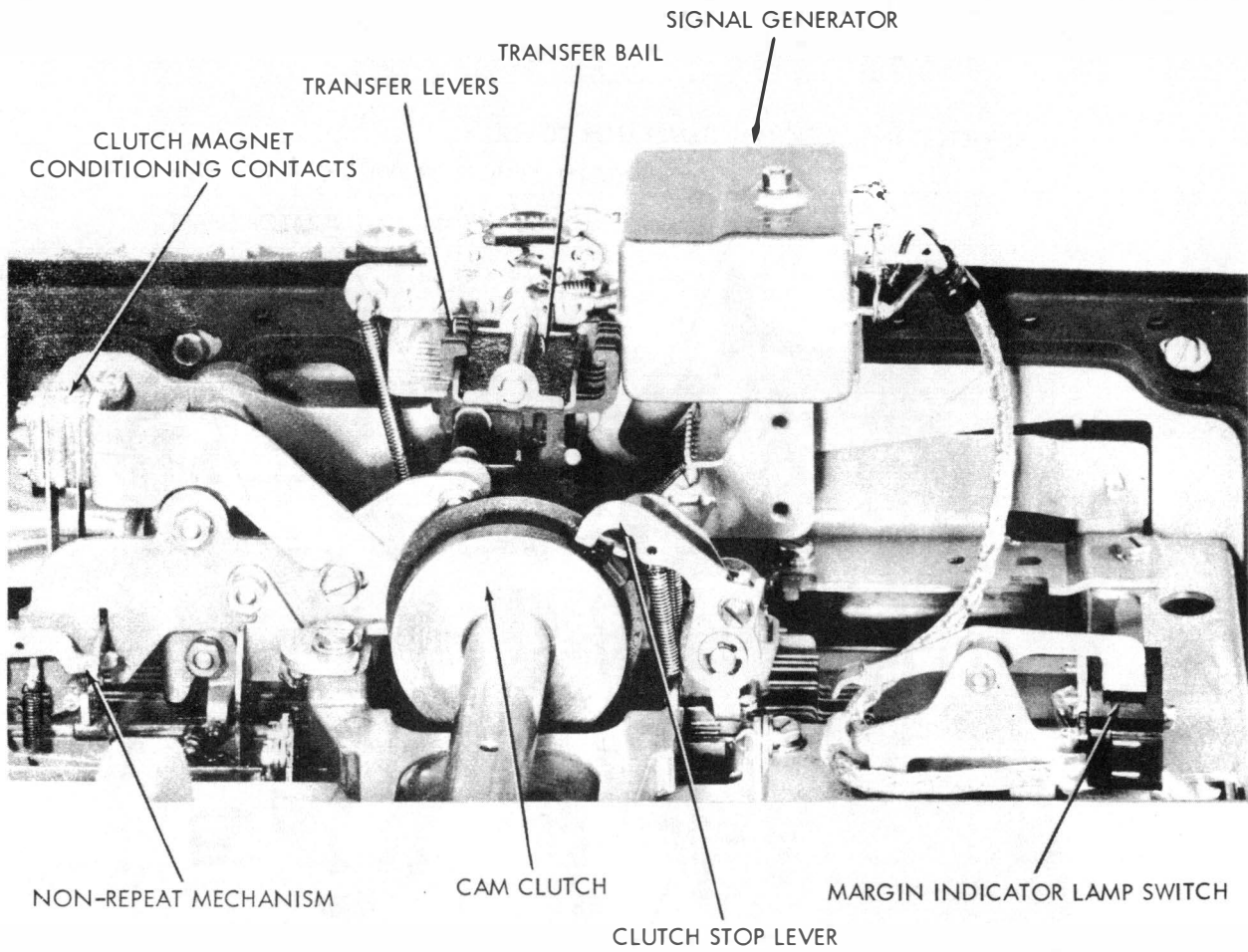


Figure 4-4B. Keyboard Signal Generator (Rear View)

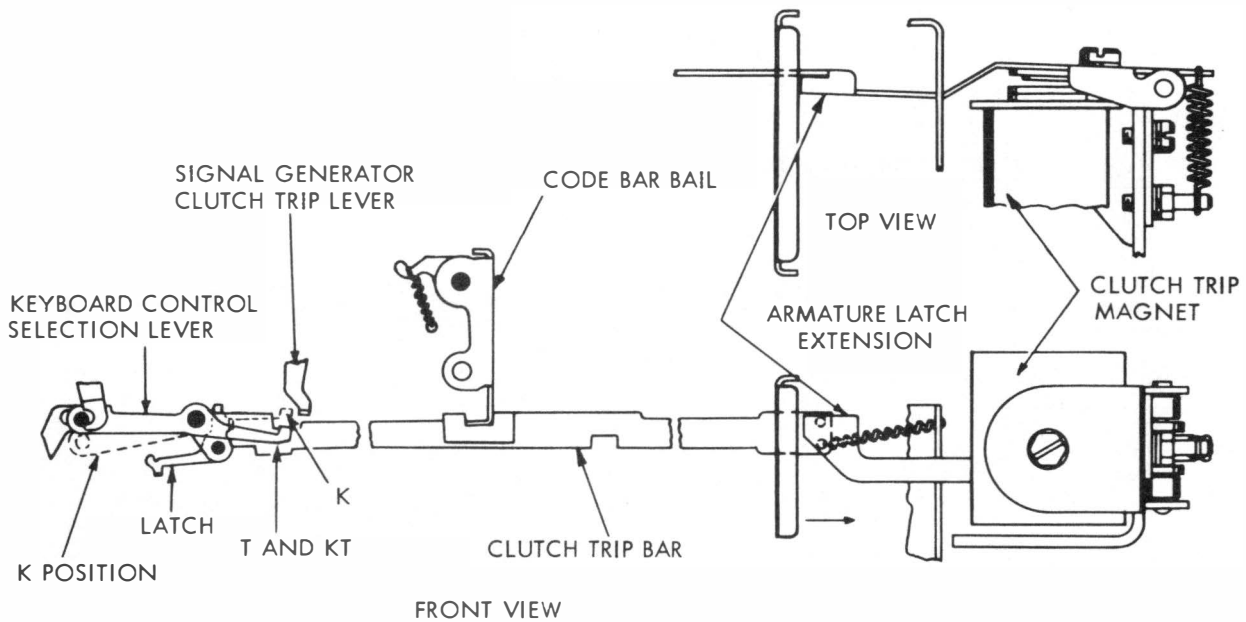


Figure 4-4C. Signal Generator Clutch Trip Bar and Synchronous Pulsed Magnet



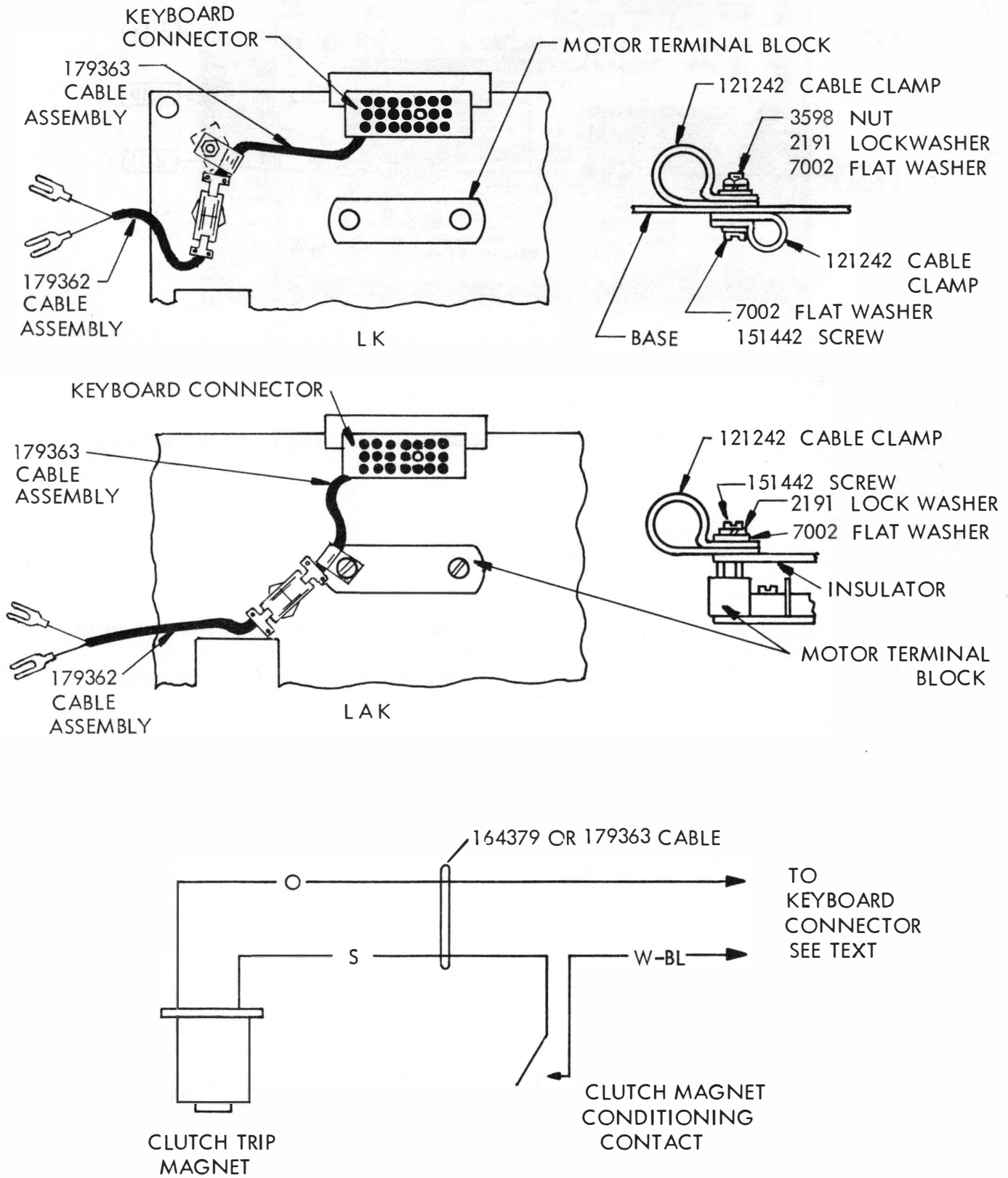
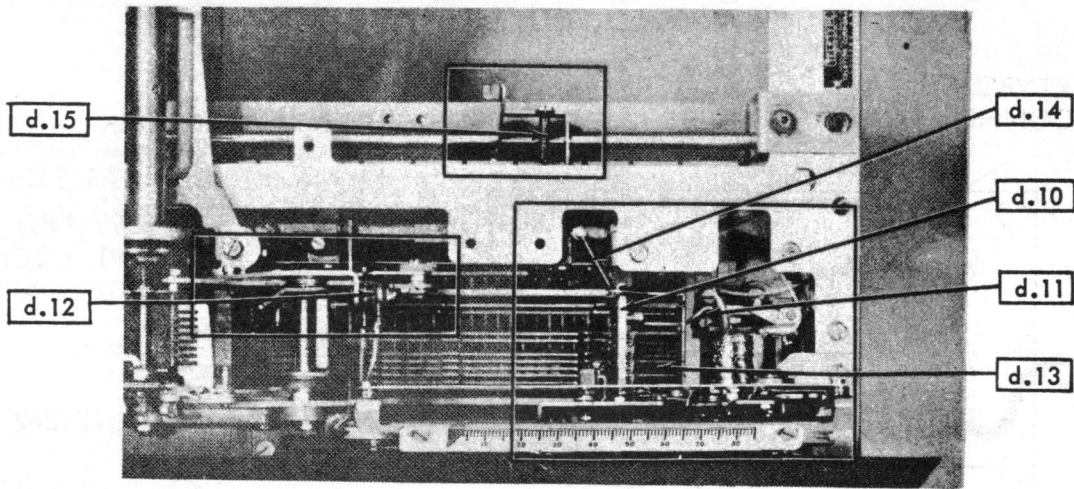
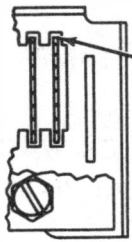


Figure 4-32A.



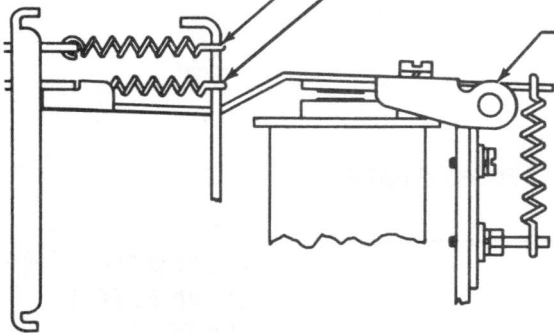
FRONT

d.10 CODE BAR GUIDE



○ GUIDE SLOTS (LEFT, RIGHT, TOP AND BOTTOM)

d.11 SYNCHRONOUS PULSED  
MAGNET MECHANISM

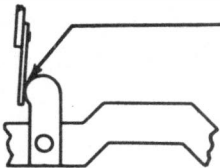


○ HOOKS-EACH END UNIVERSAL CODE BAR SPRING

○ HOOKS-EACH END CLUTCH TRIP BAR SPRING

SAT FELT WASHERS ARMATURE-PIVOT

d.12 CONTACT SWINGER



G ENGAGING SURFACE

Figure 5-8.1

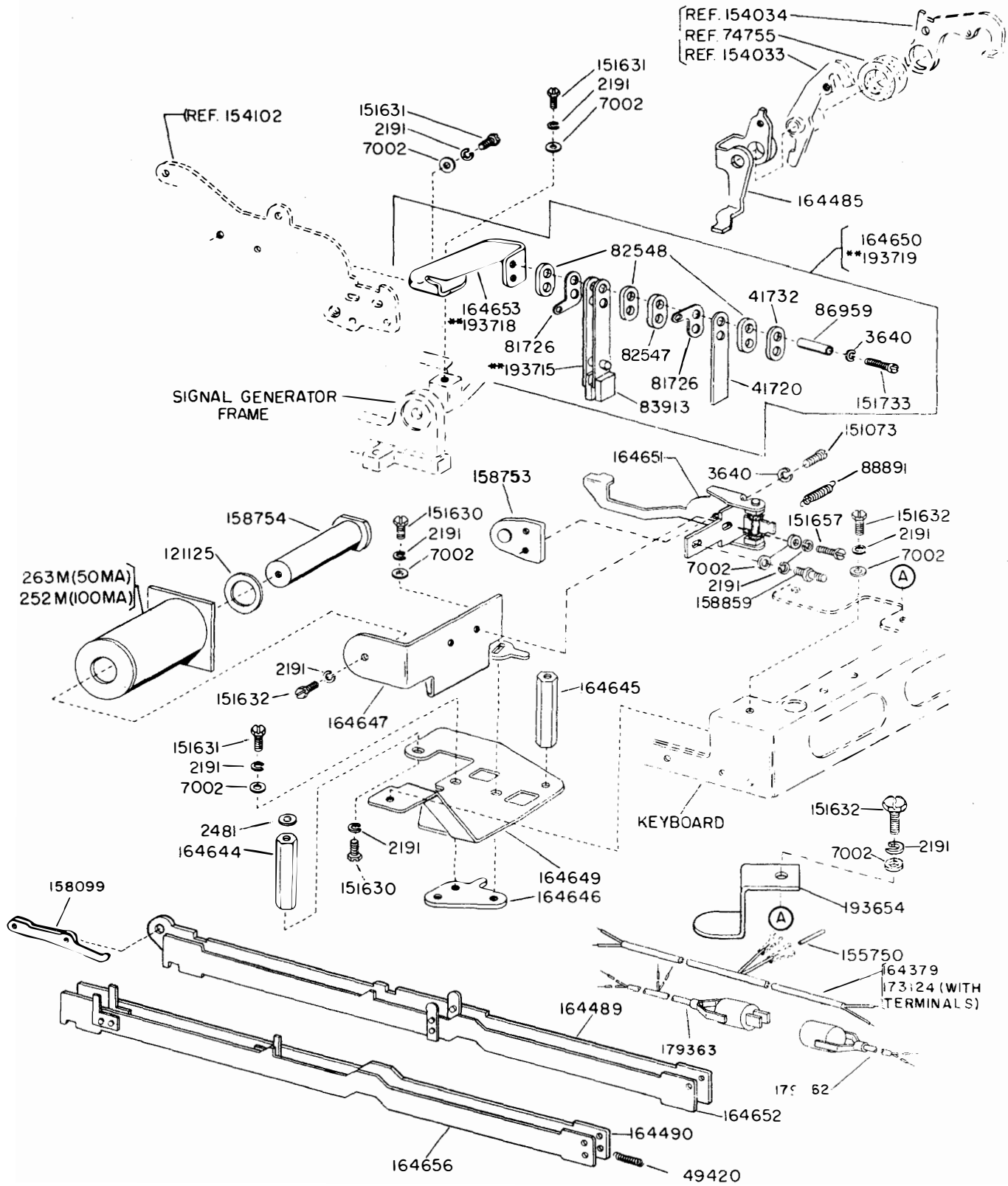


FIGURE 6-14D. MODIFICATION KIT TO PROVIDE SYNCHRONOUS PULSED TRANSMISSION

T-4 to NAVSHIPS 93241

MOUNTING BRACKET (A)

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

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

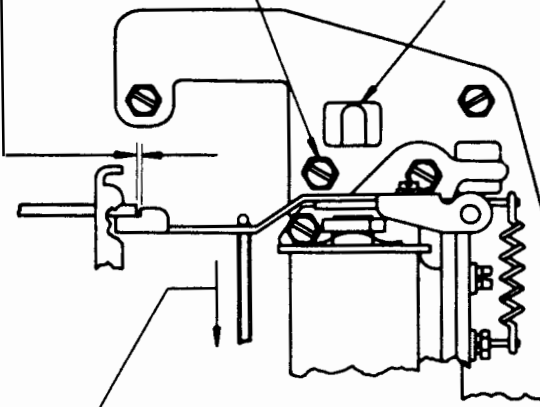
TO ADJUST  
POSITION MOUNTING BRACKET WITH THREE MOUNTING SCREWS LOOSE BY MEANS OF PRY POINT.

NOTE

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

REAR LEFT MOUNTING SCREW

PRY POINT



MAGNET ARMATURE

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

REQUIREMENT  
MIN. 3 OZS. --- MAX. 5 OZS.  
TO PULL ARMATURE LEVER FROM CLUTCH TRIP BAR.

ARMATURE HINGE

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

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

MOUNTING BRACKET (B)

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

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

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

MOUNTING SCREWS

PRY POINT

CLUTCH TRIP BAR

ARMATURE LEVER

SPRING POST

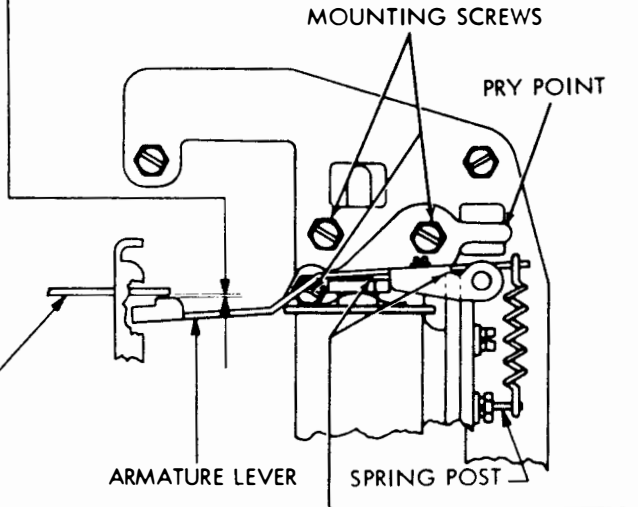


Figure 6-75A. Keyboard, Synchronous Pulsed Magnet Mechanism

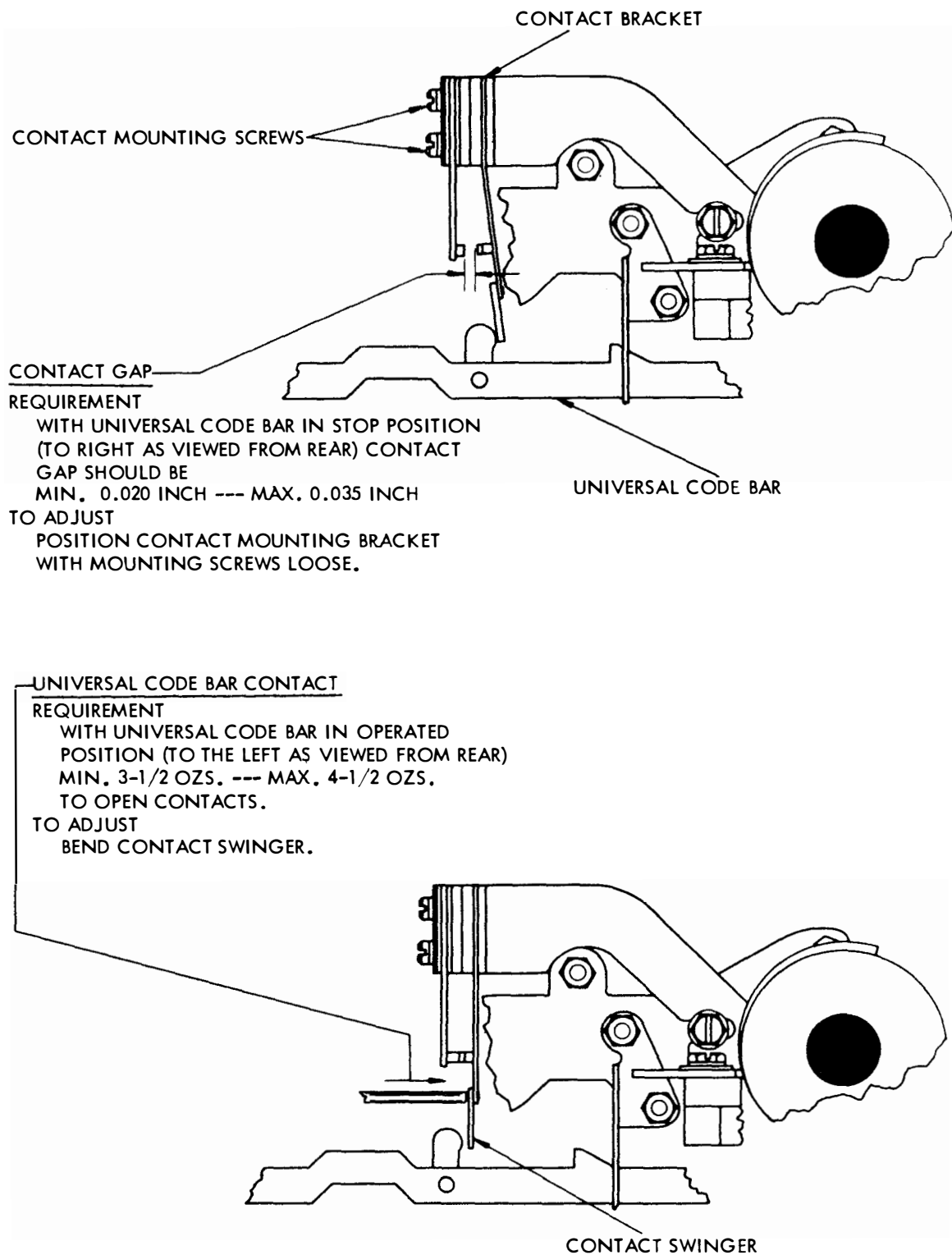


Figure 6-75B. Keyboard, Conditioning Contact Mechanism

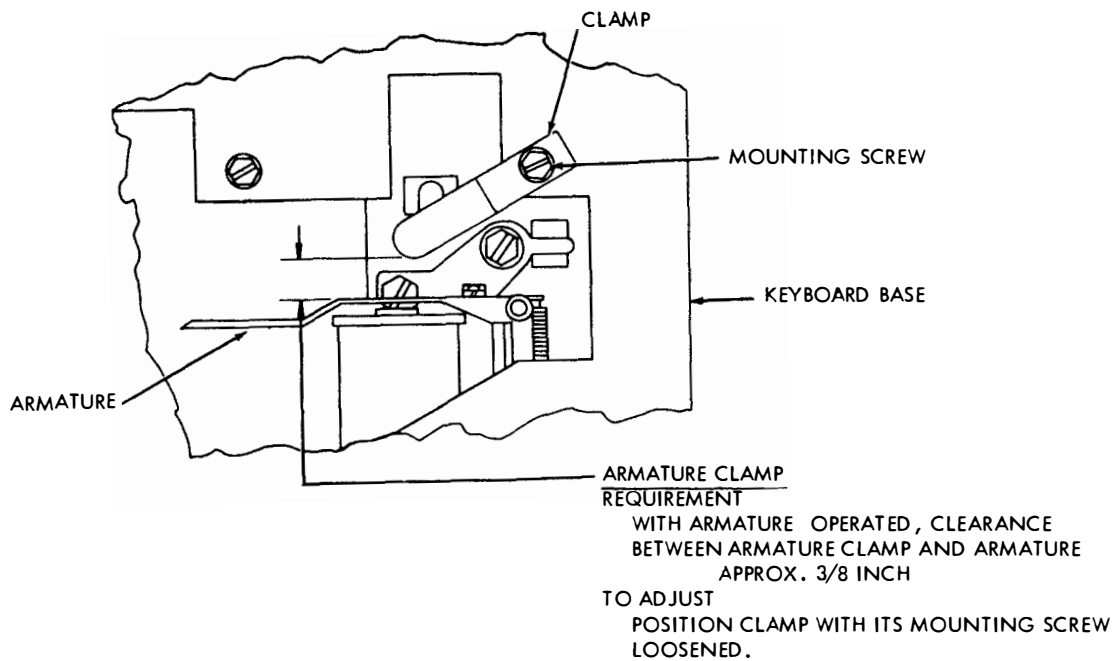
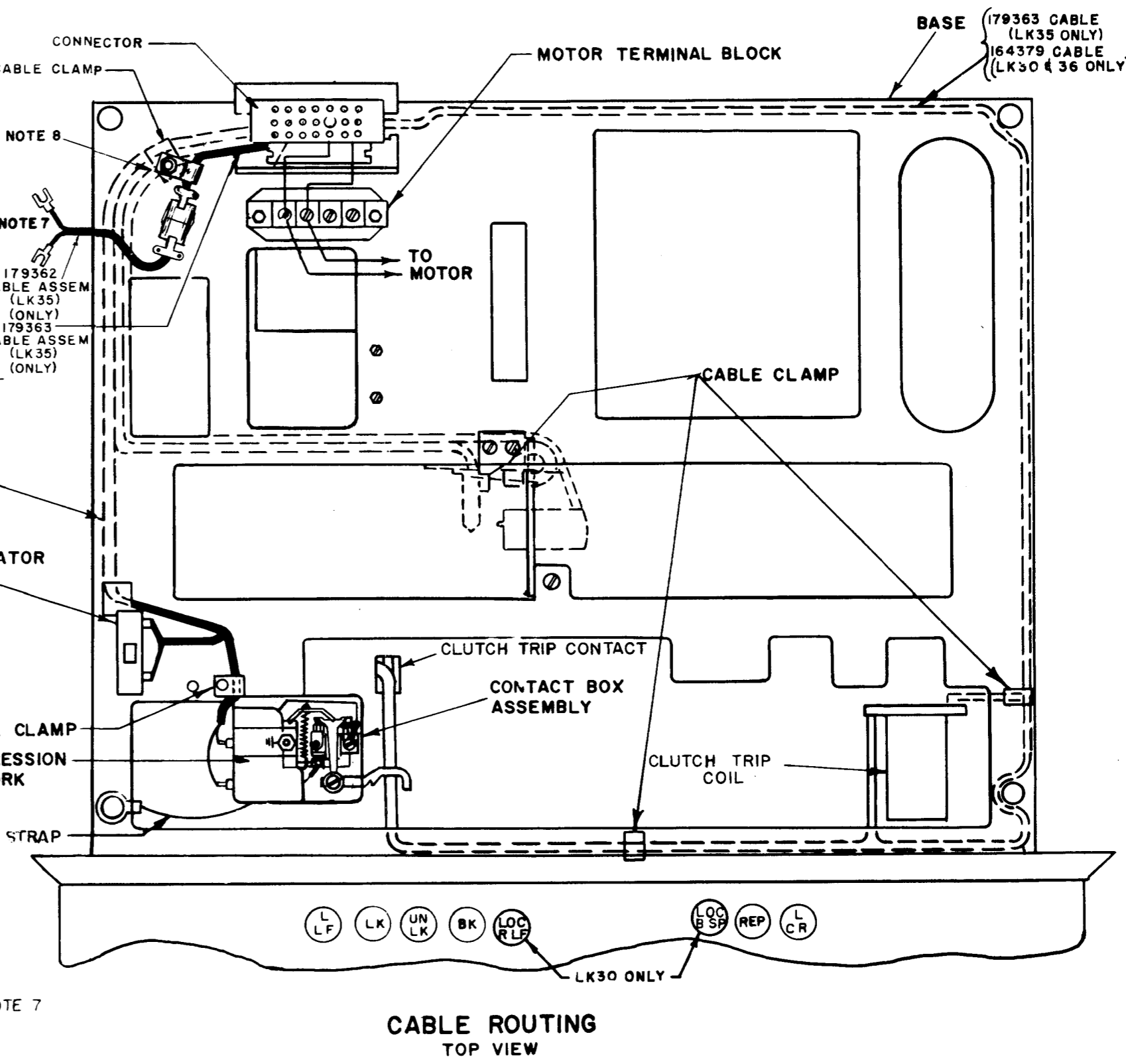
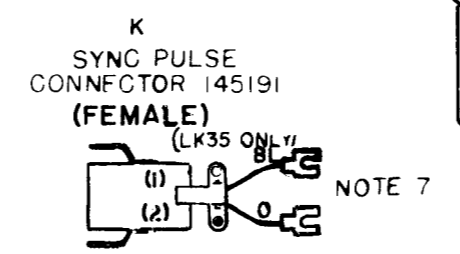
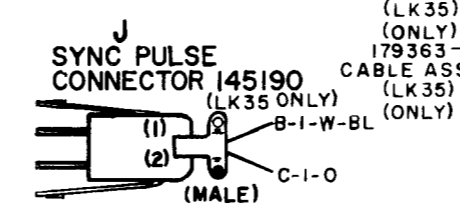
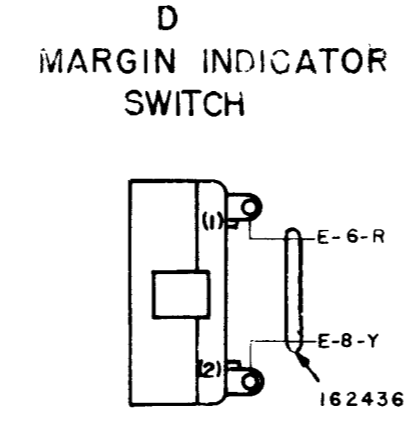
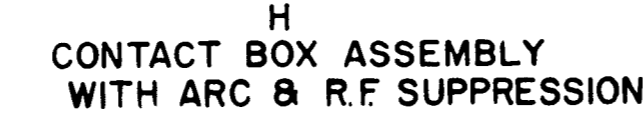
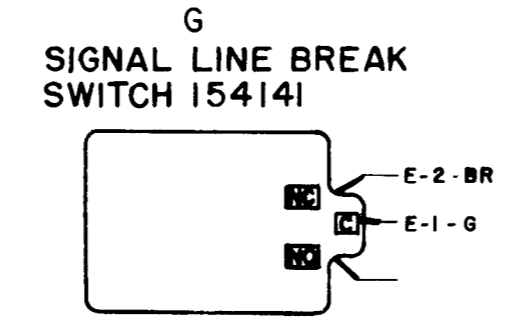
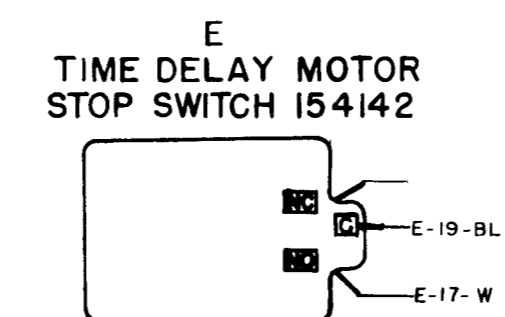
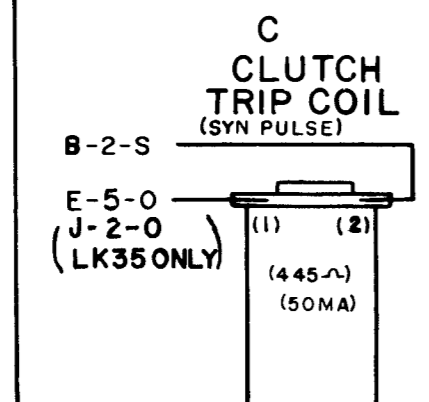
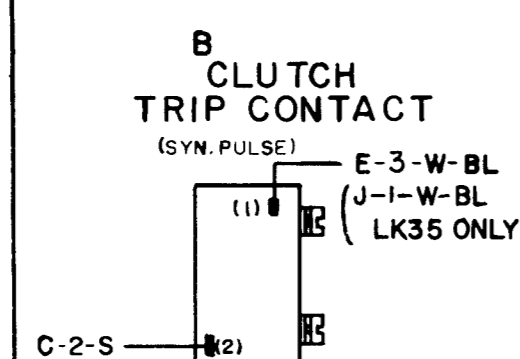
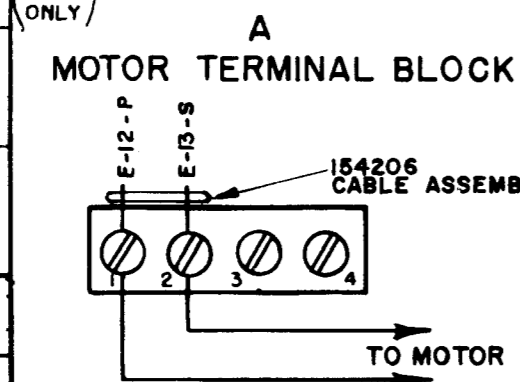
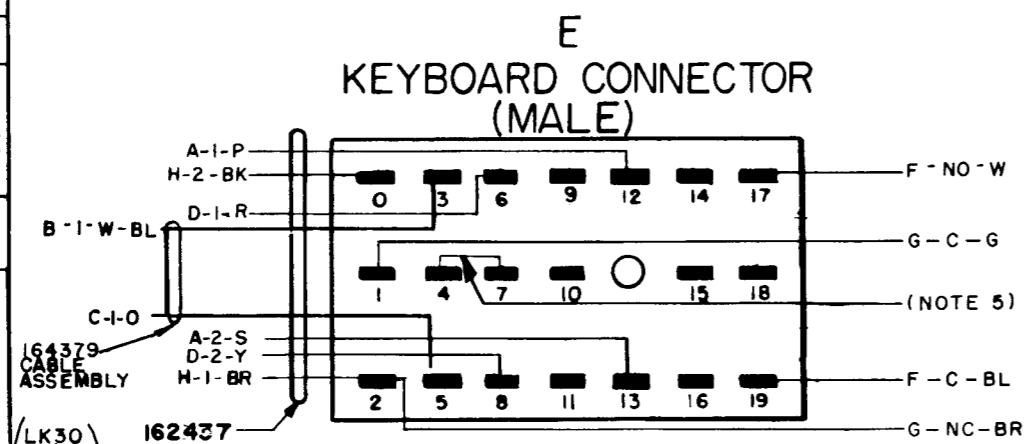


Figure 6-75C.

NO		NOTES	
1	POWER CIRCUITS WIRED FOR 115V. AC OR DC OPERATION.		
2	WIRE COLOR CODE		
	BK BLACK R RED P PURPLE G GREEN	BL BLUE Y YELLOW O ORANGE W WHITE	BR BROWN S SLATE W BL WHITE BLUE
3	CONNECTORS VIEWED FROM SOLDER TERMINAL ENDS.		
4	WIRING LEGEND		
	— DISTANT TERMINATING AREA		
	— DISTANT TERMINAL DESIGNATION		
	— WIRE COLOR CODE		
5	STRAP NECESSARY FOR OPERATION WITH LESU 7.		
6	GROUND STRAP TERMINATES AT TOP OF KEYBOARD BASE LOWER PLATE BY MEANS OF LEFT FRONT 151549 KEYBOARD SPECIAL MOUNTING SCREW.		
7	(LK35 ONLY) UNCOIL, ROUTE, AND CONNECT 179362 CABLE TO TWO OPEN CABINET TERMINALS, TYING UP ANY SLACK.		
8	MOUNT THE 179363 CABLE TO THE KEYBOARD WITH THE 121242 CABLE CLAMP (LK 35 ONLY)		



4718WD		
REVISIONS		
ISSUE	DATE	AUTH. NO.
A	4-10-62	73052
B	8-29-62	74368

APPROVALS	
R AND D	E OF M
E-NUMBER	
PROD. NUMBER 4718WD	
ACTUAL WIRING DIAGRAM FOR MODEL 28 KEYBOARD LK30,35,36	
DATE 12-4-61	
PD. FILE NO. 218.63AA	
DRAWN G.F.M. CHKD	
ENG. DAK	APPD. [Signature]
TELETYPE CORPORATION	
4718 WD	

TEMPORARY CORRECTION T-3 TO TECHNICAL MANUAL  
FOR TELETYPEWRITERS TT-47C/UG, TT-48B/UG, TT-69B/UG,  
TT-70C/UG, TT-128A/UG, TT-129A/UG, TT-130A/UG, TT-  
131A/UG, TT-171A/UG, TT-234/SGA-3 NAVSHIPS 93241

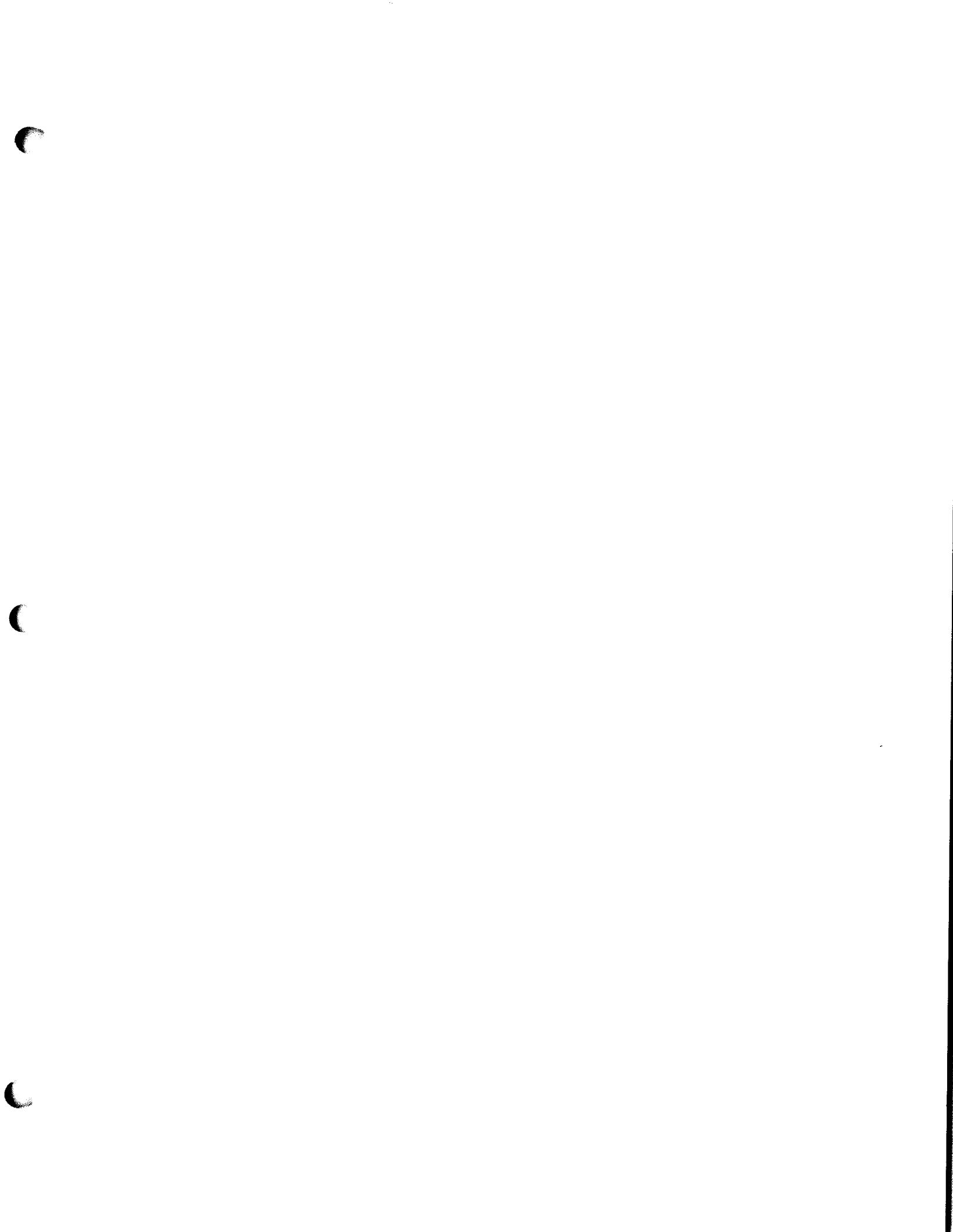
This temporary correction revises the manual to reflect the equipment changes made by Field Change 1-TT-47C, -47D, -47E/UG; 1-TT-48B, -48C/UG; 1-TT-69B, -69C/UG; 1-TT-70C, -70D/UG; 1-TT-171A/UG; 1-TT-234/SGA-3; NAVSHIPS 981424. The purpose of this field change is to change teletypewriters for communication service to teletypewriters for aerological weather service.

The changing of teletypewriters used for communication service to teletypewriters used for aerological weather service does not affect the installation instructions, or the maintenance practice of the equipment. Weather aerological service information is already included in the manual.

Make the following pen and ink corrections. Insert this temporary correction in the manual immediately after the front cover and preceding T-2.

1. Delete all references to "TT-128A/UG, TT-129A/UG, TT-130A/UG, TT-131A/UG, MX-1421A/UG and MX-1422A/UG" add instead: applicable weather aerological service units.





NAVSHIPS 93241

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TECHNICAL MANUAL

*for*

TELETYPEWRITERS

TT-47C/UG, TT-47D/UG, TT-47E/UG,  
TT-48B/UG, TT-48C/UG,  
TT-69B/UG, TT-69C/UG,  
TT-70C/UG, TT-70D/UG,  
TT-171A/UG, TT-176A/UG, TT-234/SGA-3

TELETYPE CORPORATION  
SKOKIE, ILLINOIS

DEPARTMENT OF THE NAVY  
BUREAU OF SHIPS

★

Contract: NObsr

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75250  
Modification 1 to 85307

*Approved by BuShips: 12 December 1961*

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DEPARTMENT OF THE NAVY  
BUREAU OF SHIPS  
WASHINGTON 25, D. C.

IN REPLY REFER TO  
Code 242-10C

From: Chief, Bureau of Ships  
To: All Activities concerned with the Installation, Operation,  
and Maintenance of the Subject Equipment  
Subj: Technical Manual for Teletypewriters TT-47C/UG, TT-47D/UG,  
TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG,  
TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, TT-234/SGA-3,  
NAVSHIPS 93241

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3. Extracts from this publication may be made to facilitate the preparation of other Department of Defense publications.
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R. K. JAMES  
Chief of Bureau

### RECORD OF CORRECTIONS MADE

CHANGE NO.	DATE	FIELD CHANGE NO.	SIGNATURE
1	12 December 1961		

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Teletypewriter TT-234/SGA-3



Teletypewriter TT-69B/UG  
 Teletypewriter TT-69C/UG  
 Teletypewriter TT-70C/UG  
 Teletypewriter TT-70D/UG



Teletypewriter TT-176A/UG



Teletypewriter TT-47C/UG  
 Teletypewriter TT-47D/UG  
 Teletypewriter TT-47E/UG  
 Teletypewriter TT-48B/UG  
 Teletypewriter TT-48C/UG



Teletypewriter TT-171A/UG

Figure 1-1. Teletypewriter Complete

## SECTION 1

### GENERAL INFORMATION

#### 1-1. SCOPE OF INSTRUCTION BOOK.

This instruction book describes the TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, and TT-234/SGA-3 Teletypewriters, illustrated in figure 1-1. It includes information concerning their installation, adjustment, operation, and maintenance. All references to basic units covered or to components thereof apply equally to all equipment unless specific exception is indicated. Specific references to and illustrations of variations on basic units have been made only to the extent necessary for clarity.

#### 1-2. PURPOSE OF THE EQUIPMENT.

a. The teletypewriters described herein are used as follows:

(1) TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, and TT-70D/UG exchange typewritten page messages between two or more ships or stations connected to a radio or wire telegraph channel.

(2) TT-171A/UG receives only typewritten page messages from a ship or station with which it is connected by means of a radio or wire telegraph channel.

(2)A. TT-176A/UG exchanges typewritten page messages between two or more ships or stations connected to a radio or wire telegraph channel. This teletypewriter, when on a local circuit and equipped with Power Supply PP-1010/UG (not supplied with the teletypewriter), may be used as an all-capital letters printing typewriter for correspondence or for recording of telegraphic communications received by audible (Morse) means.

(3) TT-171A/UG, receive only typewritten page messages from a ship or station with which it is connected by means of a radio or wire telegraph channel.

(4) TT-234/SGA-3, to receive the output of a Code Converter TSEC/HL-2 in typewritten page form. The keyboard provides a source for the preparation of perforated tape on a typing reperforator.

b. Signaling between stations is accomplished electrically by use of the five-unit stop-start permutation code and utilizes the 7.42 unit transmission pattern. On this signal, the nominal operating speed is 368 o.p.m. (operations per minute), which is 60 words per minute speed. The speed may be increased by changing gears, which are not supplied with

the teletypewriters but are available as optional components, to 460 or 600 o.p.m., which is 75 or 100 words per minute.

c. The components comprising teletypewriters described herein are as shown in table 1-1.

d. The apparatus is equipped with a motor control feature which stops the motor every time the signal line becomes idle for a period not longer than approximately two minutes. The motors start in response to a momentary opening of the signal line at any point on the circuit, or to the reception of code signals. This feature may be readily disabled when not required.

e. The equipment is wired for operation of 0.060 ampere signal line current at the factory, but, by making a convenient wiring change in the power distribution panel and readjusting the selector armature spring, it may be adapted for operation on 0.020 ampere signal line current.

f. Messages are ordinarily typed on single-copy paper eight and one-half inches wide. However, paper of lesser varying widths (minimum three inches) may be used.

g. The following components in Teletypewriters TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, and TT-234/SGA-3 differ from the corresponding ones in earlier teletypewriters.

(1) POWER DISTRIBUTION PANEL SB-964/UG.— This component differs from SB-154A/UG in the elimination of one of two a.c. power fuses and a copy light switch. Two terminal boards have been added, and some wiring modifications are required. Connectors on the ends of the cables leading to the keyboard and to the automatic typer are the same as used on SB-154/UG, but differ from SB-154/UG. Therefore neither SB-964/UG nor SB-154A/UG can be connected to the Keyboard MX-1114/UG or to the Automatic Typer MX-1115/UG.

(1)A. POWER DISTRIBUTION PANEL SB-408/UG. This component is adapted for use in Teletypewriter TT-176A/UG. It is equipped with two a.c. power fuses, a power switch, a motor control relay, a radio interference suppressor, and a signal bell.

(2) KEYBOARD MX-1114B/UG. — Only minor differences, primarily in cable routing, distinguish these from Keyboard MX-1114A/UG. The latter differ in several respects from MX-1114/UG. Later models have a 20 terminal receptacle which cannot be connected to Power Distribution Panel SB-154/UG.



TABLE 1-1. TELETYPEWRITER COMPONENTS

NAME	TYPE	COMPONENTS																				
TELETYPEWRITERS	TT-47C/UG																					
	TT-47D/UG																					
	TT-47E/UG																					
	TT-48B/UG																					
	TT-48C/UG																					
	TT-69B/UG																					
	TT-69C/UG																					
	TT-70C/UG																					
	TT-70D/UG																					
	TT-171A/UG																					
	TT-176A/UG																					
TT-234/SGA-3																						
CABINET	CY-2538/UG					X												X	X	X	X	X
CABINET	CY-2539/UG							X	X	X	X											
CABINET	CY-2320/SGA-3	X																				
COVER	CW-354/UG			X																		
POWER DISTRIBUTION PANEL	SB-964/UG SB-408/UG	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEYBOARD	MX-1114B/UG	X						X		X		X										X
KEYBOARD	MX-1114C/UG							X		X		X							X	X		
KEYBOARD	MX-1677A/UG			X																		
BASE	NT-1443/UG					X																
MOTOR (SYNC.) (SERIES)	PD-17A/U PD-18/U	X	X	X			X	X			X	X					X	X		X	X	X
AUTOMATIC TYPERS	MX-1115B/UG MX-2984/UG MX-3080/UG	X		X	X	X	X	X	X	X	X	X					X		X	X		X
GEARS 60 WPM	TELETYPE PART NO. 151066			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GEARS 75 WPM	TELETYPE PART NO. 151075	X																				
GEARS 100 WPM	TELETYPE PART NO. 151100																					

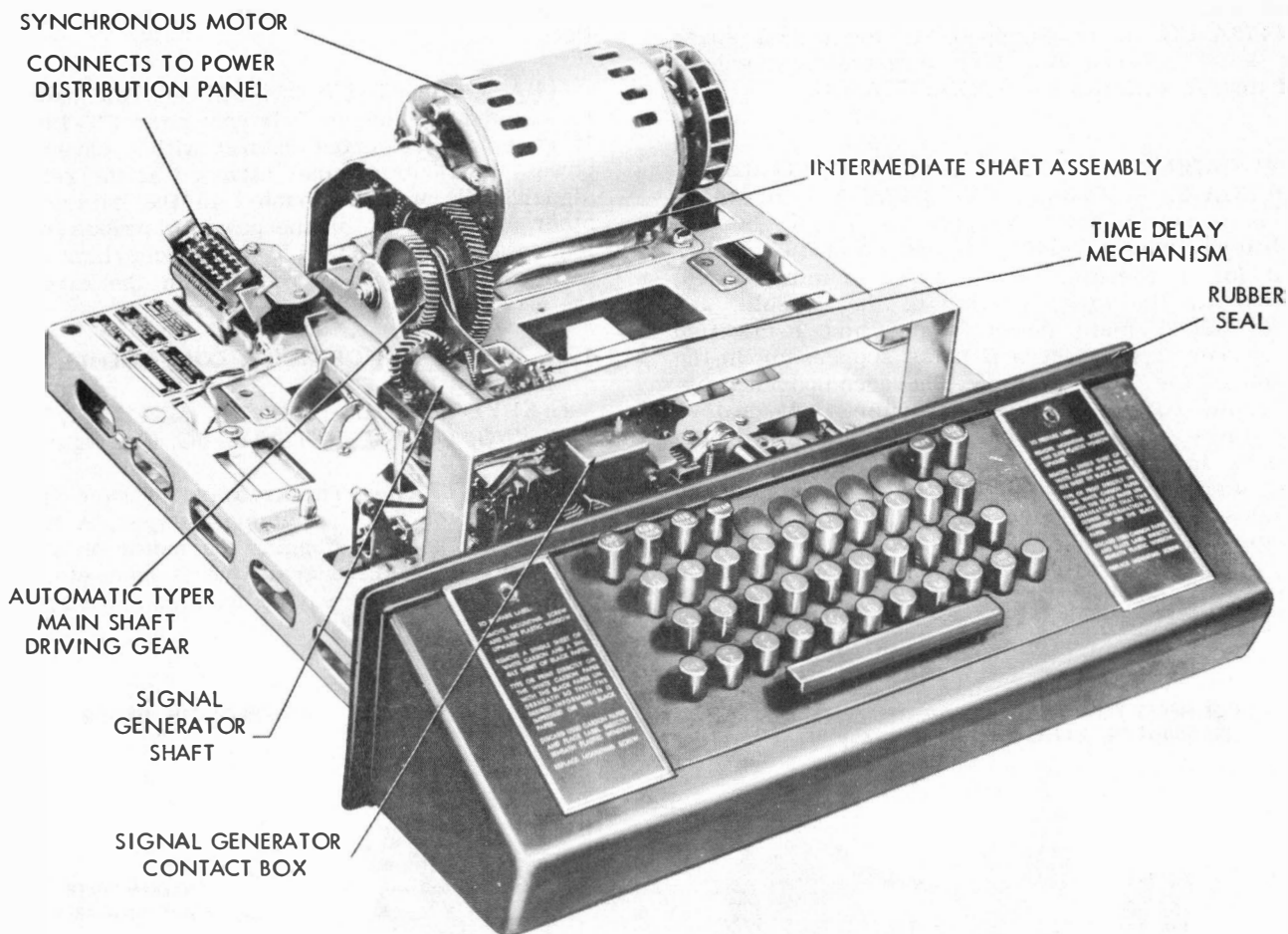


Figure 1-2. Keyboard MX-1114B/UG with Motor

The spring powered throwout mechanism has been removed from the clutch, position of the repeat key has been shifted to the right, and the repeat mechanism has been redesigned. These changes, and several changes in adjustments and lubrication procedure, were apparent in Keyboard MX-1114A/UG.

(2)A. KEYBOARDS MX-1114C/UG OR MX-1677A/UG. — A new style signal generator mechanism is incorporated in Keyboard MX-1114C/UG. The adaptation of the keyboard to the cabinet is also different than in Keyboard MX-1114B/UG. Keyboard MX-1677A/UG is similar to MX-1114B/UG, utilizing the older style signal generator. It is designed for adaptation to Teletypewriter TT-176A/UG.

(3) AUTOMATIC TYPER MX-1115B/UG. — This component differs from MX-1115/UG in several major respects and in numerous minor details. Since the changes in adjustments are many and varied, the adjustment requirements specified in Section 6 of this instruction book must be adhered to. Because of a change from a 14 terminal receptacle to a 20 terminal receptacle in Automatic

Typers MX-1115B/UG, these components and subsequent models cannot be connected to Power Distribution Panel SB-154/UG. Other modifications in these components include a new main shaft, main shaft clutch modifications, a redesigned selector mechanism, with an improved method for orienting the range finder, and a new selector armature. The ribbon feed and printing mechanisms have been revised. The range of the automatic carriage return-line feed arm on the spacing drum has been increased to accommodate a maximum of 85 characters per line. Several ratchet teeth have been removed from the spacing drum to prevent over spacing in the event of spacing clutch stop failure or spacing suppression failure. Changes have been made in the function pawl stripper mechanism and the function contact switch. The code bar shift mechanism has been modified. Changes in the lubrication procedure are few.

(3)A. AUTOMATIC TYPER MX-2984/UG. — This component is comparable to Automatic Typer MX-1115B/UG. The function box has been modified to provide automatic sequential signal control of optional external circuits.

(3)B. AUTOMATIC TYPER MX-3080/UG. — This component is adapted for use in Teletypewriter TT-176A/UG. It is equipped for local back space and local reverse line feed initiated by mechanical linkage with Keyboard MX-1677A/UG.

(4) CABINETS CY-2538/UG, CY-2539/UG and CY-2320/SGA-3. — Cabinet CY-2320/SGA-3 (figure 1-14) is a new cabinet designed for TT-234/SGA-3. It differs from CY-2538/UG and CY-2539/UG in a shelf for a rectifier and an added terminal board, located in the lower portion of the console, and in an added main power switch and a modified a.c. power input electrical noise suppressor in the bottom of the upper portion. These components differ from earlier cabinets providing two, rather than three, terminal boards at the back of the cabinet, in a 60 volt margin indicator lamp system, and in a 5.5 volt copylight system, which includes a transformer. There have also been changes in the design of the shock mounts. Among the wiring changes in these components is the addition of a "MAINT. ON" position in the copylight

switch, replacing a switch which formerly was located on the Power Distribution Panel SB-154A/UG.

(4)A. CABINET CW-354/UG. — This component is adapted for use in Teletypewriter TT-176A/UG. It is a table mounted cabinet with a cover for the power distribution panel attached at the rear. The signal bell is not mounted in the cabinet, as in other models, but on the power distribution panel. It is equipped with a 120 V a.c. copylight system, with a line balancing resistor in the circuit for the margin indicator lamp.

### 1-3. DESCRIPTION OF MAJOR COMPONENTS.

a. KEYBOARD MX-1114B/UG, MX-1114C/UG, MX 1677A/UG, OR BASE NT-1443/UG. (See figures 1-2, 1-3.)

(1) GENERAL — The keyboard or base supports the a.c. motor and the automatic typer. A time delay mechanism for stopping the motor on extended idle periods of the signal line is connected in the keyboard or base but may be disabled if not required.

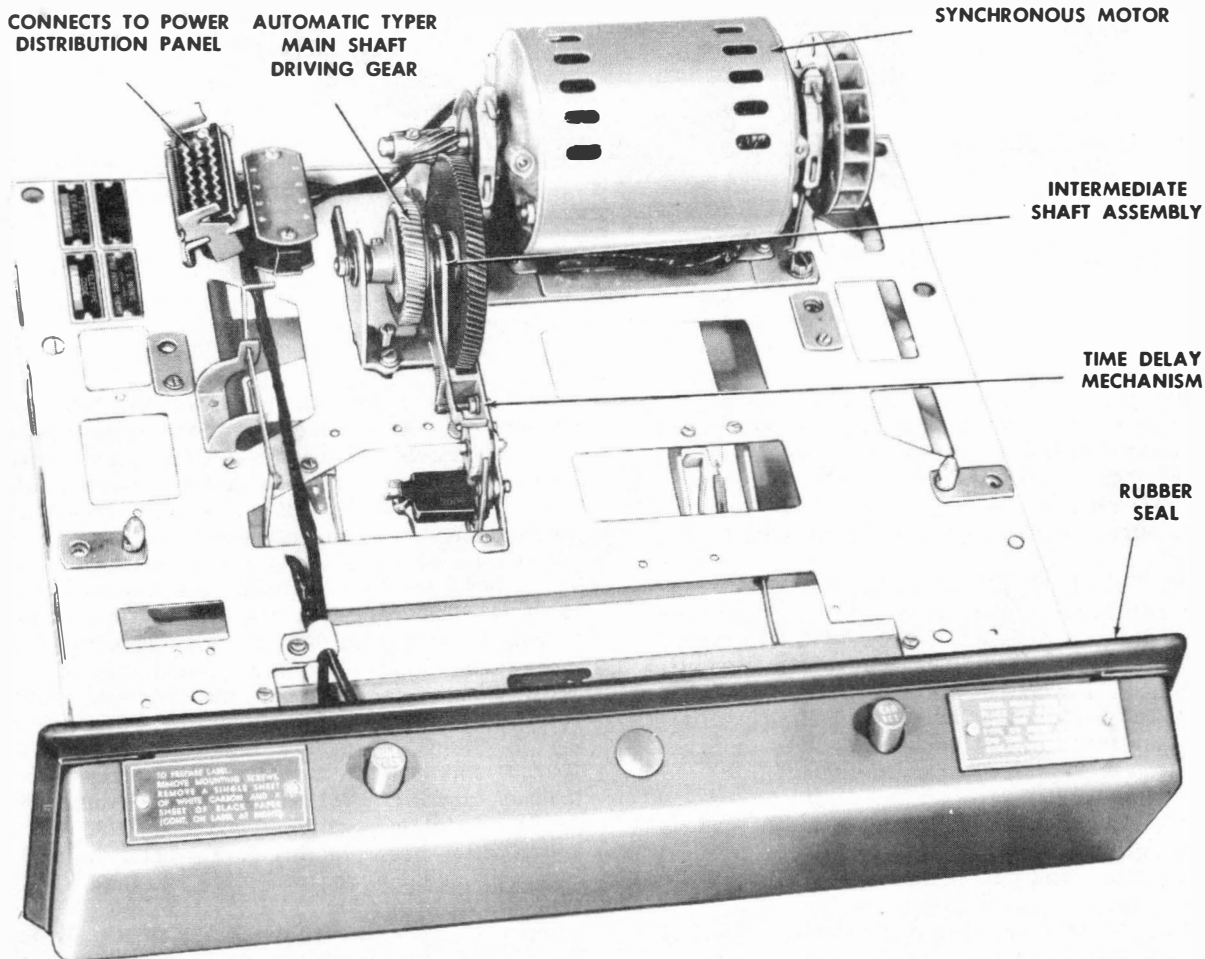


Figure 1-3. Base NT-1443/UG

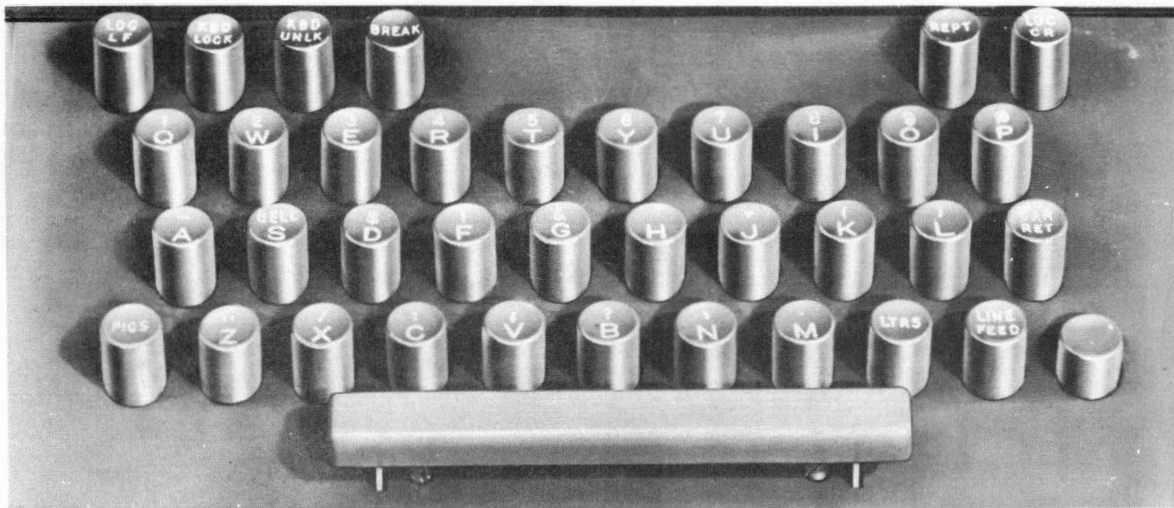


Figure 1-4. Keyboard MX-1115B/UG or MX-2984B/UG

The keyboard or base with the automatic typer and a.c. motor mounted in position is placed upon rails within the cabinet. The front of the keyboard or base protrudes beyond the cabinet and is fitted with a rubber pad that seals the edges of the aperture for a silencing effect. Motive force for activating the keyboard or base is derived from the a.c. motor by way of the automatic typer.

(2) **KEYBOARD MX-1114B/UG.** (See figure 1-2.)—The keyboard incorporates code selecting and signal generating mechanisms. Signal line and power line circuits are also included. The keys are positioned in the conventional three-bank arrangement with numerals, punctuation marks and special symbols available in upper case positions (figure 1-4). Special keys (red) for line break, keyboard lock and unlock, repeat operation, and local carriage return and line feed are located directly above the standard keys (green) for facility of operation.

(3) Paragraph Deleted.

(3)A. **KEYBOARD MX-1114C/UG.** — This keyboard incorporates a modified signal generating mechanism.

(3)B. **KEYBOARD MX-1677A/UG.** — This keyboard is similar to Keyboard MX-1114B/UG, with the addition of mechanical provisions and keys for local back space and local reverse line feed. The added keys are colored red and located in the top row on the keyboard. The LOC R LF key is in the center of the keyboard, and the LOC B SP is adjacent to the BREAK key (figure 1-4).

(4) **Base NT-1443/UG.** (See figure 1-3.) — The base is provided with two green keys to control the local carriage return and line feed off-line functions.

b. **AUTOMATIC TYPER MX-1115B/UG, MX2984/UG, OR MX3080/UG.** (See figures 1-5 and 1-6.)

(1) The automatic typer incorporates the necessary electrical and mechanical features for trans-

lating the code signals into mechanical action in order to record the message and perform the usual functions incident thereto.

(2) Code signals are applied to a two-coil magnet associated with selecting mechanism which interprets the signal and controls the motions involved in typing a character or performing a required function. Means is provided for orienting the selector to the received signal. The a.c. motor is geared to the main shaft (figure 1-7) of the automatic typer which, in turn, extends motion to the keyboard mechanism. The typing and various functional sections of the automatic typer are activated by individual clutches that completely disengage at the termination of each operating cycle and thus reduce the motor load to the minimum when idling.

(3) Paper feeds from a five inch (maximum) diameter roll mounted on the automatic typer and passes around a stationary platen. Provisions are made for readily converting to sprocket type feed for fanfold forms which may be used optionally in conjunction with friction feed paper. Interchanging of automatic typer sub-assemblies involves the minimum in readjusting procedure (figures 1-5, 1-6, 1-7). Type pallets are arranged in a compact, lightweight type box which may be readily detached for cleaning or for quick replacement by another type box. In operation, the type box keeps step with a printing carriage and presents the proper type pallets to the printing hammer to receive its strokes as the printing carriage advances along the line. Combined automatic carriage return and line feed functions operate to return the carriages in case over-printing occurs at the end of a line.

(4) In addition to the conventional functions common to teletypewriters, built-in facilities in the function box (figure 1-8) permit the addition of selective station call or recognition functions with electrical circuits associated therewith available for remote extension. In such applications the automatic

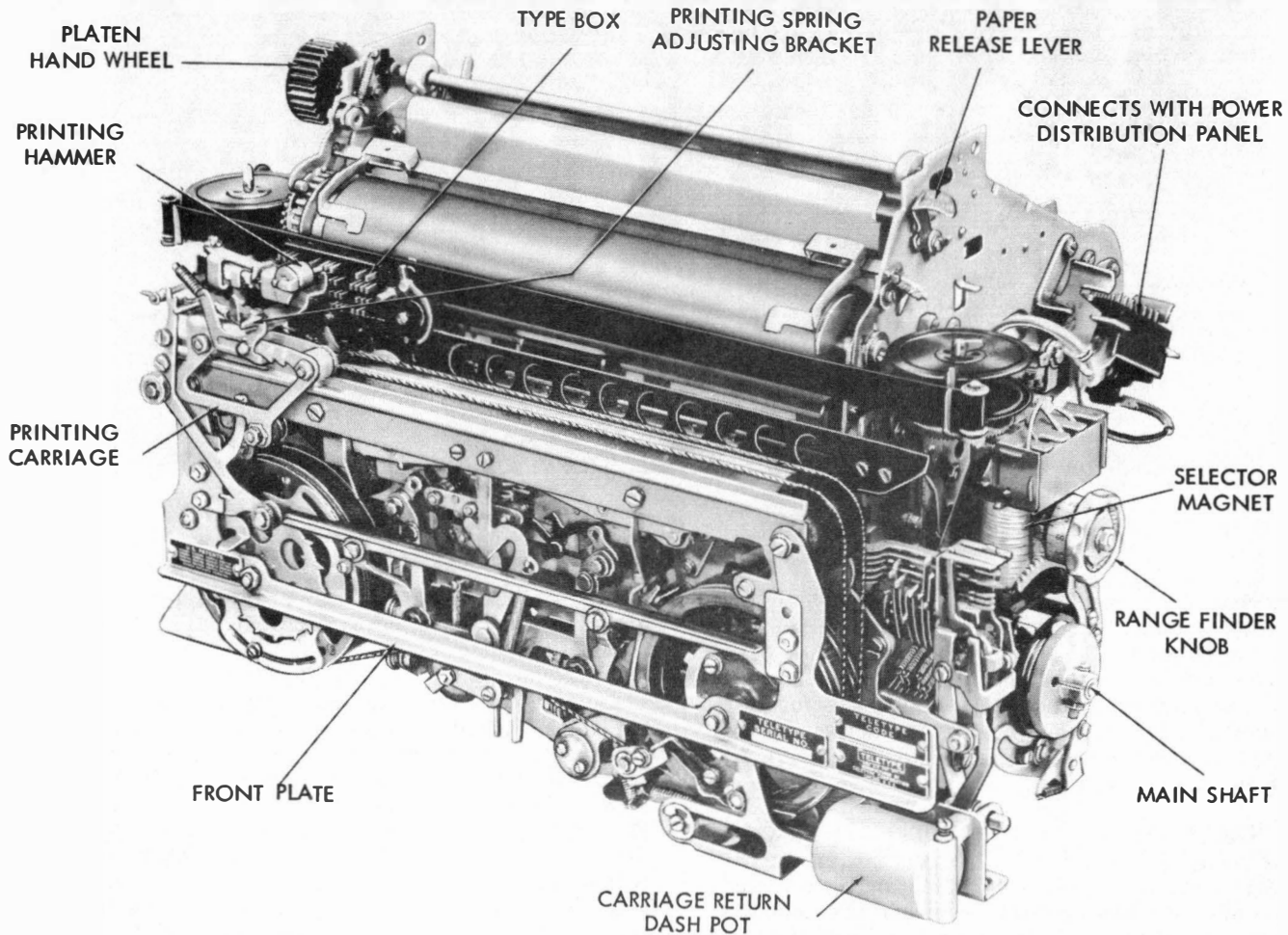


Figure 1-5. Automatic Typewriter MX-1115B/UG, Front View

typewriter may be stripped of all typing and paper feeding mechanisms and utilized for circuit switching or similar applications.

(5) Paragraph deleted.

(5)A. Automatic Typewriter MX-2984/UG is equipped for sequential switching activated by repeated transmission of predetermined characters. It types standard communications symbols and is in all other respects identical to Automatic Typewriter MX-1115B/UG.

(5)B. Automatic Typewriter MX-3080/UG is equipped for local back space and local reverse line feed. It is similar in other respects to Automatic Typewriter MX-1115B/UG, except that the function box is not arranged for space suppression on upper case "S" and on line feed, and the printing mechanism operates on receipt of the signal for these characters.

c. MOTORS — The motors are self-contained components that mount on the rear of the Keyboard or Base and have characteristics adaptable to standard power supplies.

(1) AC MOTOR (SYNCHRONOUS) PD-17A/U. (See figure 1-9.)

(a) The AC Motor, PD-17A/U, is a wound stator, two pole, single phase, capacitor start, synchronous motor. A combination handwheel and fan is mounted on one end of the motor shaft. A motor-starting relay and capacitor, together with a thermal cutout switch, are mounted in a compartment on the underside of the motor. The thermal cutout switch (manually reset) serves to protect the motor windings from excessive heating.

(b) The motor proper is supported by a cradle to which it is held by straps at each end. Resilient mounts on the hubs of the motor end bells reduce transmission of vibration to the Keyboard or Base.

(2) AC MOTOR (GOVERNED) PD-18/U. (See figure 1-10.)

(a) The AC Motor, PD-18/U, is series wound and is similar to the synchronous motor in its mounting arrangement.

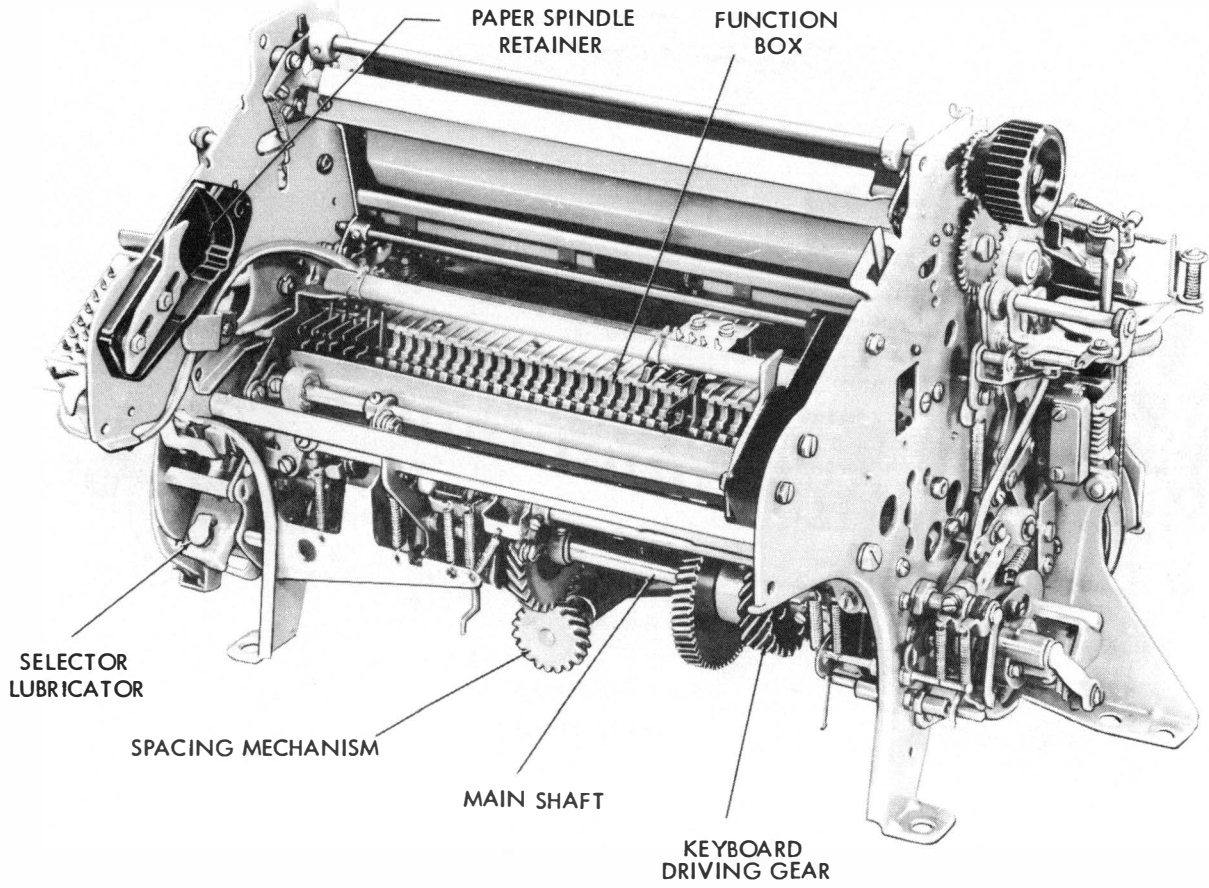


Figure 1-6. Automatic Typewriter MX-1115B/UG, Rear View

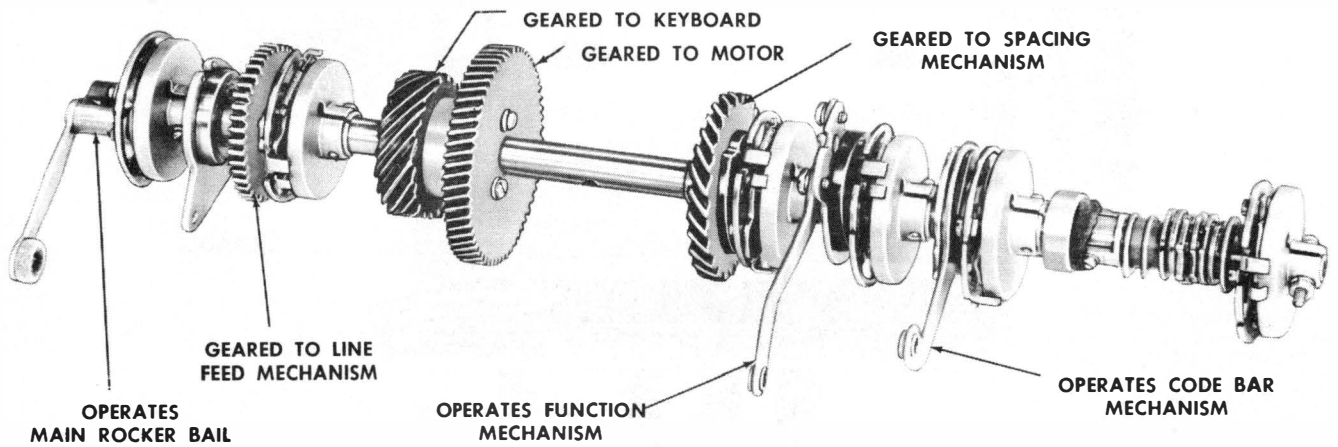


Figure 1-7. Automatic Typewriter Main Shaft

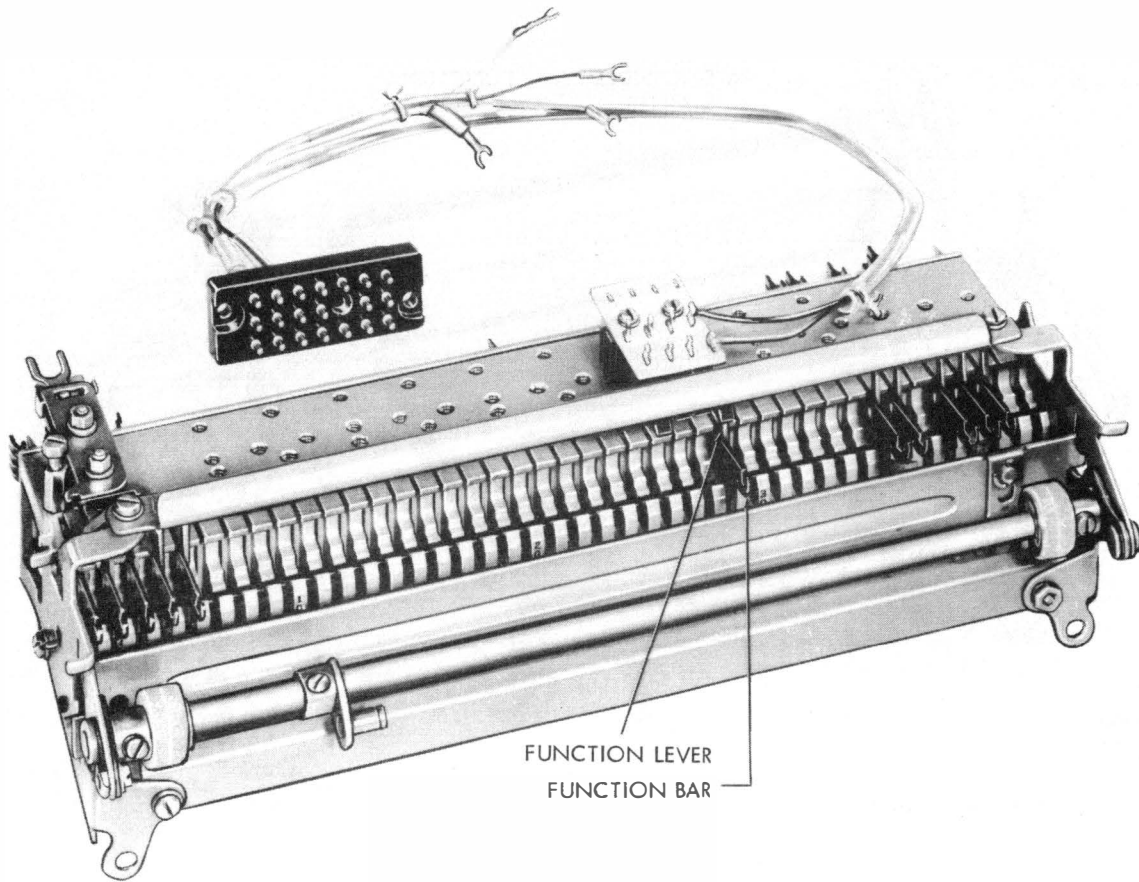


Figure 1-8. Automatic Typewriter MX-1115 B/UG Function Box

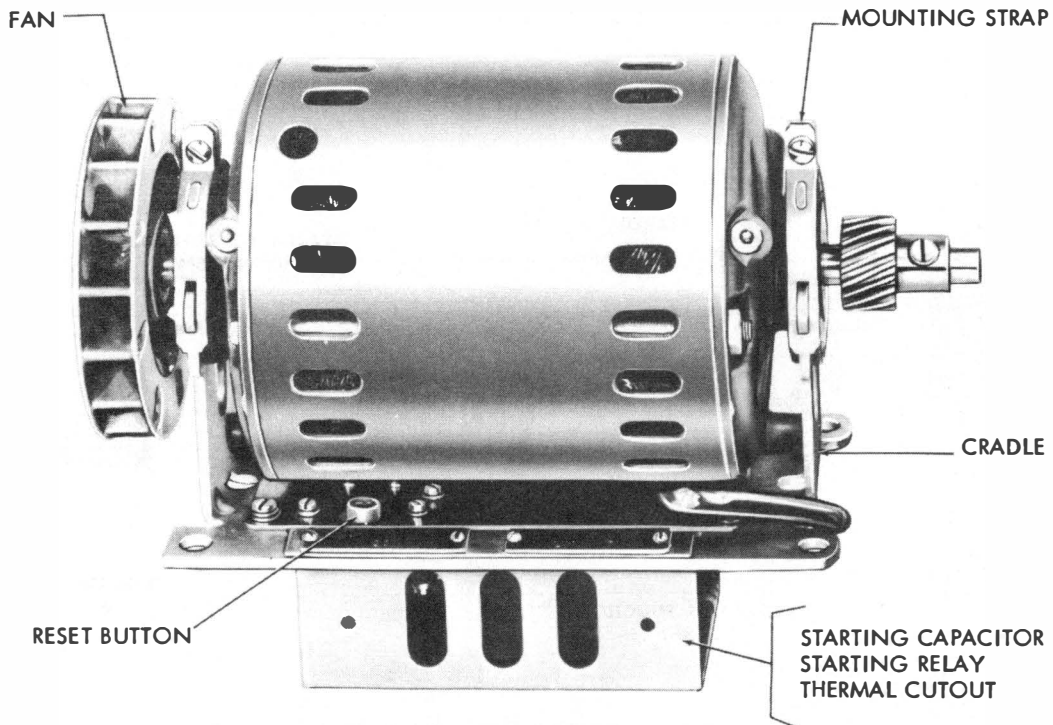


Figure 1-9. AC Motor PD-17A/U, Synchronous

(b) A combined governor and fan are positioned on the motor shaft extension. The fan aids in controlling the temperature rise by drawing cooling air through the motor. A target for speed-checking purpose is painted on the governor cover. The cover also serves to protect the governor mechanism. A screw driver opening is provided in the cover to facilitate speed adjustments. Brush filter capacitors are provided within the motor end bells.

(c) The entire AC Motor, PD-18/U, is shielded to minimize radio interference. A shielded compartment on the underside of the motor houses the governor resistor and capacitor, as well as a power leads electrical noise suppressor. A number of screened cutouts are provided in the motor shield housing through which air may circulate and the target may be viewed. A threaded plug in the housing may be removed to permit entry of a screwdriver when making speed adjustments.

d. CABINETS AND COVER CW-354/UG.

(1) GENERAL. — Cabinets are of three types. The CY-2538/UG and the CY-2320/SGA-3 are for deck mounting, and the CY-2539/UG for bulkhead shelf mounting. They are of sheet metal construction and are finished internally and externally in baked enamel.

Cabinet CY-2538/UG (figure 1-12) is approximately 40-1/2 inches high (including shock mounts), 20-1/2 inches wide and 18-1/2 inches deep. The upper portion forms a compartment for housing the mechanical units and Power Distribution Panel. Cabinet CY-2320/SGA-3 (figure 1-14) includes a shelf in the lower section designed to support a Rectifier (not furnished as part of these teletypewriters). Cabinet CY-2539/UG (TT-69B/UG or TT-70C/UG figure 1-1) has no lower section, but is otherwise practically identical with the other models. It has a height of 16 inches. The top of each cabinet forms a dome that is hinged at the rear. The dome is unlatched by a pushbutton and is counterbalanced by a mechanism that aids in raising it and then supports it in the open position. A copyholder is attached to the front of the dome. A window through which the message may be read while printed is located in the upper portion of the dome. This window is positioned horizontally to avoid reflection from ceiling lights. A hinged door in the dome is unlatched by a push button to permit access to the printed copy. The copy is illuminated by incandescent lamps located under the dome. Rubber sealing strips are applied to the edges of both the dome and the door for silencing purposes. The cradles, listed below as accessories, include a tilting arrangement which permits the assembled units to be tilted forward and supported when the

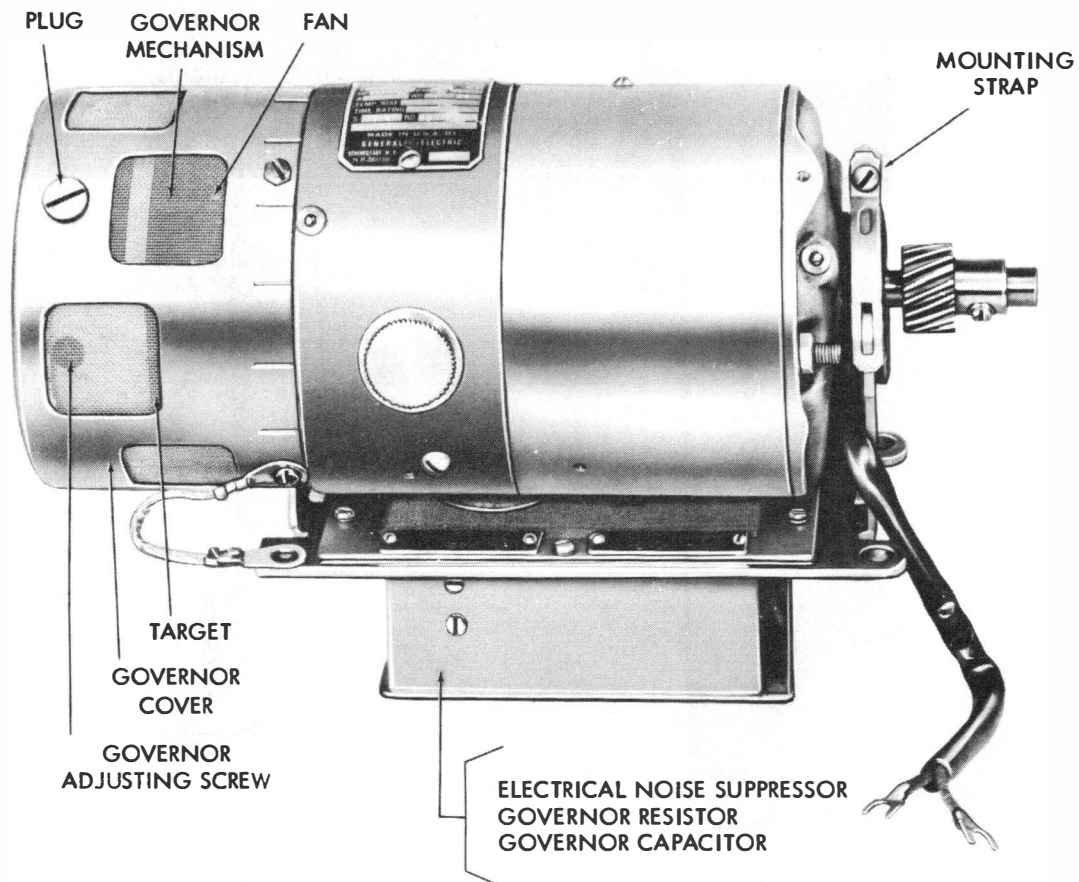


Figure 1-10. AC Motor PD-18/U, Governed



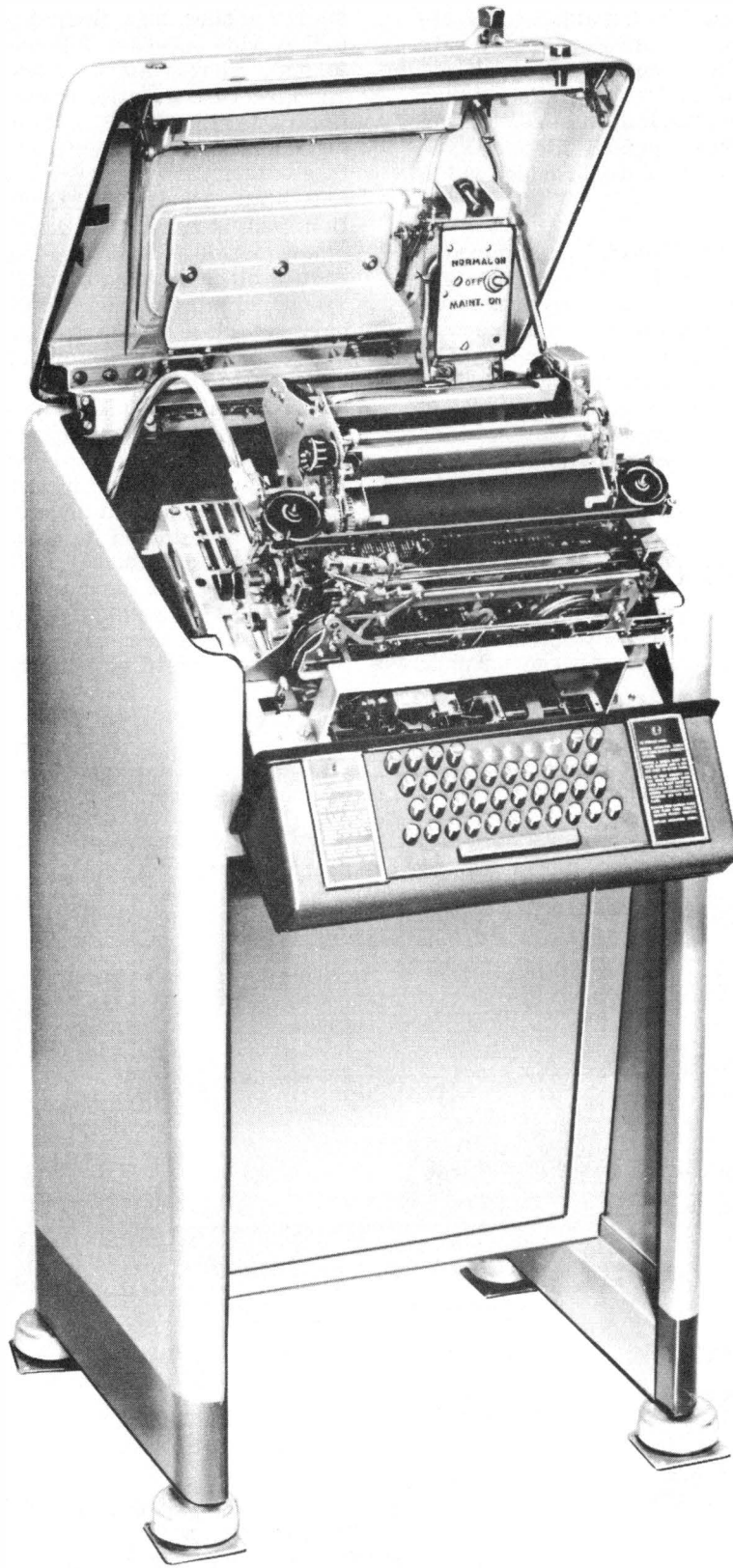


Figure 1-11. Tilting Arrangement

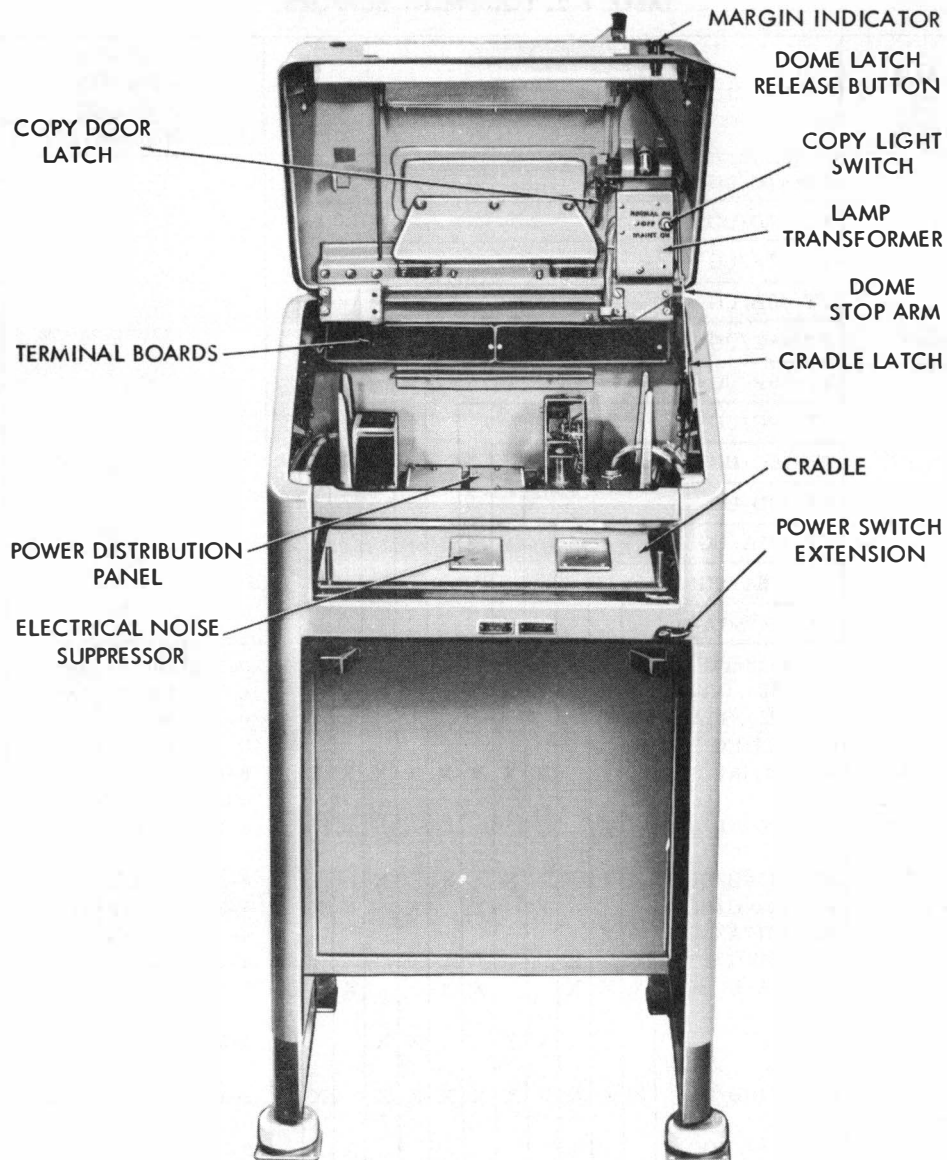


Figure 1-12. Cabinet CY-2538/UG,  
with Power Distribution Panel

dome is open (figure 1-11). This provides maximum accessibility to the mechanism while servicing. Terminal boards for power and signal line connections are located on the inner rear wall (figure 1-12). A third terminal board for electrical connections with Code Converter equipment is mounted at the rear of the lower section of Cabinet CY-2320/SGA-3. The Power Distribution Panel is placed to the rear of the Keyboard. Its power switch is controllable from a switch lever at the lower right front of the Cabinet. A master switch for control of Code Converter equipment is located in the bottom of the upper section of Cabinet CY-2320/SGA-3. It is controllable by an identical switch lever at the lower left of the front of that Cabinet.

(2) ACCESSORIES. — Accessories to the cabinets consist of the following:

(a) A signal bell to make audible those signals that are transmitted for supervisory purposes. This is incorporated in all Cabinets.

(b) A rubber mounted cradle assembly used only in the shelf mounting Cabinet CY-2539/UG.

(c) A steel mounted cradle assembly used only in the deck mounting Cabinets CY-2538/UG and CY-2320/SGA-3.

(d) Shock mounts for mounting the Cabinets CY-2538/UG and CY-2320/SGA-3 to the deck.

TABLE 1-2. EQUIPMENT SUPPLIED.

QUANTITY PER EQUIPMENT	NAME OF UNIT	NAVY DESIGNATION	OVER-ALL DIMENSIONS (IN INCHES)			VOL. CU. FT.	WT. LBS.
			HEIGHT	WIDTH	DEPTH		
	Teletype- writers	TT-47C/UG					
		TT-47D/UG					
		TT-47E/UG					
		TT-48B/UG					
		TT-48C/UG					
		TT-69B/UG					
		TT-69C/UG					
		TT-70C/UG					
		TT-70D/UG					
		TT-171A/UG					
		TT-176A/UG					
	TT-234/SGA-3						
1	Cabinet	CY-2538/UG	X				
1	Cabinet	CY-2539/UG		X X X X			
1	Cabinet	CY-2320/SGA-3	X				
1	Cover	CW-354/UG	X				
1	Power Distri- bution Panel	SB-964/UG	X	X X X X X X X X X			
1	Power Distri- bution Panel	SB-408/UG	X				
1	Keyboard	MX-1114B/UG	X	X X X X			
1	Keyboard	MX-1114C/UG		X X X X			
1	Keyboard	MX-1677A/UG	X				
1	Base	NT-1443/UG	X	X			
1	AC Motor (Synchronous)	PD-17A/U	X X X	X X			
1	AC Motor (Governed)	PD-18/U		X X X X			
1	Automatic Typewriter	MX-1115B/UG	X	X X X X X X X X			
1	Automatic Typewriter	MX-2984/UG			X		
1	Automatic Typewriter	MX-3080/UG	X				
1	Set of Gears (60)		X X X X X X X X X X X				
1	Set of Gears (75)		X				
TOTAL						10.86	125
						10.86	125
						10.86	125
						10.86	126
						10.86	126
						5.55	114
						5.55	114
						5.55	115
						5.55	115
						10.83	120-1/2
6.92	81						
10.86	125						

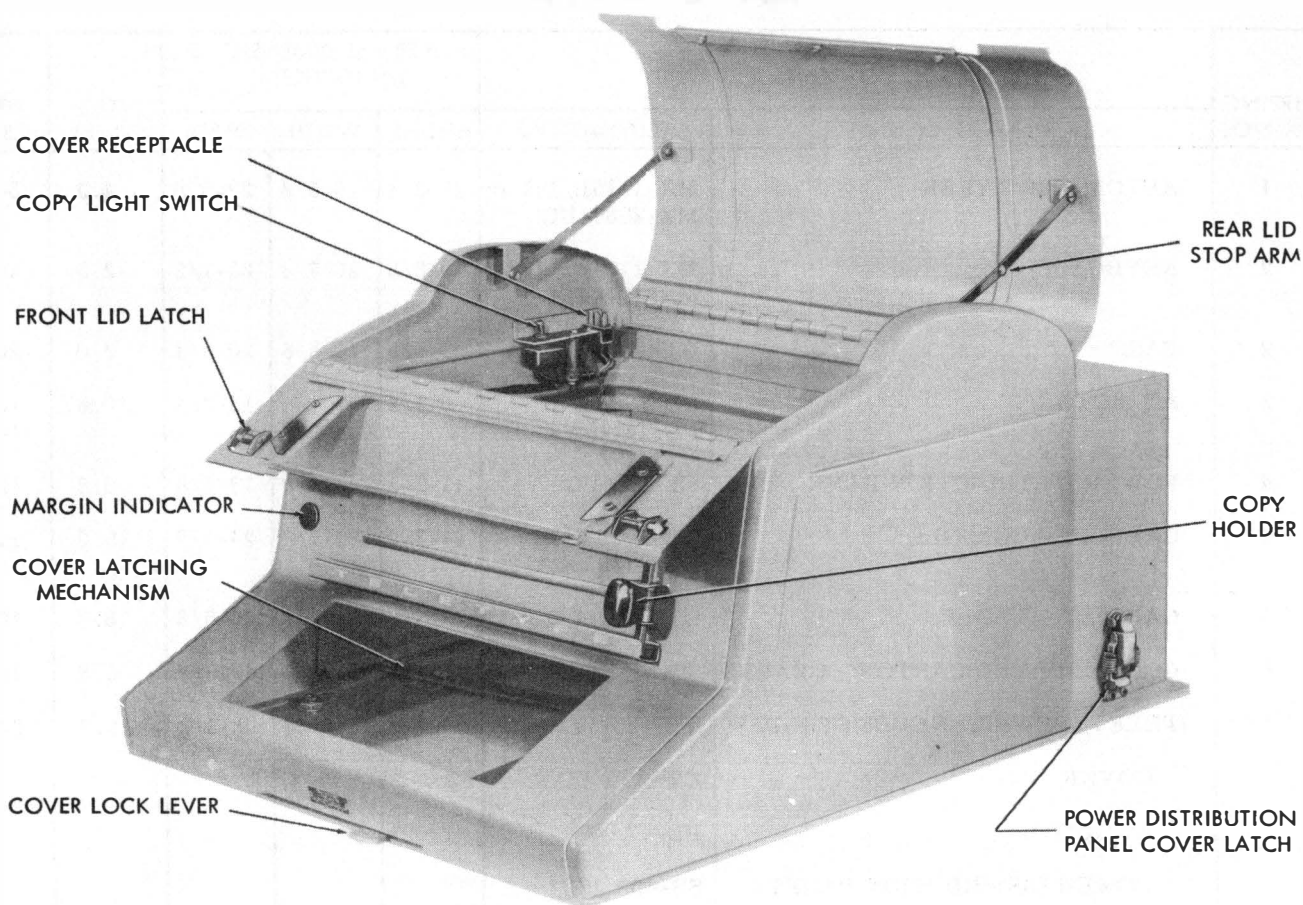


Figure 1-12A. Cover CW-354/UG

(e) Stop arm assemblies for supporting the dome and copy door in their open positions where the Cabinets are subject to tilting.

(f) A metal panel for reinforcing the lower section of the deck mounting Cabinets CY-2538/UG and CY-2320/SGA-3.

(g) A six volt copy light assembly which is used in Cabinets CY-870/UG and CY-871/UG and a transformer assembly to supply six volts to all lamps.

(h) A 5.5 volt copy light assembly which includes a transformer and a 60 volt margin indicator lamp assembly.

(i) Two electrical noise suppressor assemblies which minimize electromagnetic radiation from the power and signal lines. The power and signal lines are external to the cabinets.

(j) A 120 V a.c. copylight system for Teletypewriter TT-176A/UG, including a line balancing resistor for the margin indicator lamp.

(3) COVER CW-354/UG. (See figure 1-12A.) Teletypewriter TT-176A/UG is contained in a lightweight, dust-free, noise reducing sheet metal cover. A copylight switch is located beneath the upper of two doors. The lower door is fitted with a transparent panel through which the message being printed may be read. An enclosure at the rear of the cover houses the power distribution panel.

e. POWER DISTRIBUTION PANEL SB-964/UG OR SB-408/UG. (See figures 1-13 and 1-13A.) — The power distribution panel is located in the upper compartment of the cabinet or at the rear of the cover. It incorporates motor control circuit elements, receptacles, fuses, switches, etc., which are associated with the power and signal line circuits.

#### 1-4. REFERENCE DATA.

a. NOMENCLATURE. — Teletypewriter

TT-47C/UG  
TT-47D/UG  
TT-47E/UG  
TT-48B/UG

TABLE 1-3. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS		OVER-ALL DIMENSIONS (IN INCHES)			VOL. CU. FT.	WT. LBS.
	NAME OF UNIT	DESIGNATION	HEIGHT	WIDTH	DEPTH		
1	AUTOMATIC TYPER	MX-1115B/UG or MX-2984/UG	21-3/4	16-5/8	22-5/8	4.3	54
2	KEYBOARD	MX-1114B/UG or MX-1114C/UG	9-3/8	20-7/8	23-1/2	2.3	40
2	BASE	NT-1443/UG	9-1/8	19-3/8	20-3/4	2.0	28
3	AC MOTOR	PD-17A/U or PD-18/U	9-3/4	7	13-3/4	0.6	15 16
4	POWER DISTRIBUTION PANEL	SB-964/UG	11-3/8	6-5/8	19-5/8	0.8	12
5	CABINET - CONSOLE	CY-2538/UG or CY-2320/SGA-3	44-3/4	22-7/8	24-7/8	15.0	178 181
5	CABINET - TABLE	CY-2539/UG	23-5/8	22-3/8	24-5/8	8.0	100
6	CONSOLIDATED CARTON - GEARS		11-3/8	6-5/8	19-5/8	0.8	16
1	TELETYPEWRITER CONSISTING OF:	TT-176/UG	26-1/2	29-1/2	43-1/2	19.7	230
	COVER	CW-354/UG					
	AC MOTOR	PD-17A/U					
	POWER DISTRIBUTION PANEL	SB-408/UG					
	KEYBOARD	MX-1677/UG					
	AUTOMATIC TYPER	MX-1676/UG					
	SET OF GEARS (151060)						
	SPARE PARTS KIT						

TABLE 1-4. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QUANTITY PER EQUIPMENT	NAME OF UNIT
1	Set of tools as listed in Section 7, Paragraph 5.
1	NAVSHIPS 92142 Instruction Book for Teletypewriter Rectifier and cable assembly PP1010-UG (Optional).
1	NAVSHIPS 98363 Change 1 to tool Equipment TE-50-A.

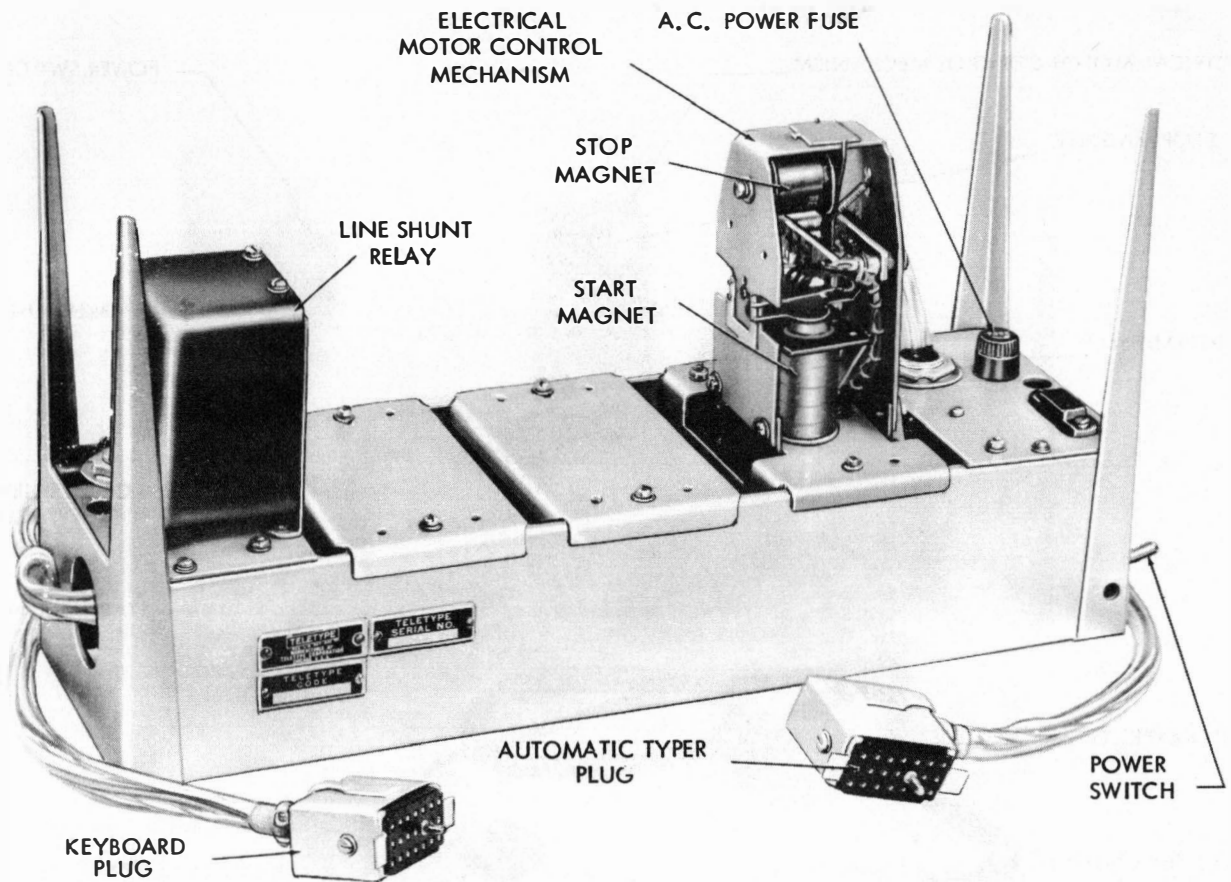


Figure 1-13. Power Distribution Panel SB-964/UG

- TT-48C/UG
- TT-69B/UG
- TT-69C/UG
- TT-70C/UG
- TT-70D/UG
- TT-171A/UG
- TT-176A/UG, or
- TT-234/SGA-3

b. CONTRACT DATA. — NObsr 71788, 75250, and modification 1 to NObsr 85707.

c. CONTRACTOR. — Teletype Corporation, Skokie, Illinois.

d. COGNIZANT NAVAL INSPECTOR. — Inspector of Naval Materiel, Chicago 6, Illinois.

e. NUMBER OF PACKAGES INVOLVED IN COMPLETE SHIPMENT OF EQUIPMENT (INCLUDING EQUIPMENT SPARES) . . . . . 6 boxes

f. TOTAL CUBICAL CONTENTS OF EQUIPMENT (INCLUDING EQUIPMENT SPARES).

- (1) Teletypewriters TT-47C/UG
- TT-47D/UG
- TT-47E/UG
- TT-48B/UG
- TT-48C/UG
- TT-171A/UG, or
- TT-234/SGA-3

- (a) Crated . . . . . 24.09 cu. ft.
- (b) Uncrated . . . . . 12.52 cu. ft.
- (2) Teletypewriters TT-69B/UG
- TT-69C/UG
- TT-70C/UG, or
- TT-70D/UG
- (a) Crated . . . . . 18.88 cu. ft.
- (b) Uncrated . . . . . 7.36 cu. ft.
- (3) Teletypewriter TT-176A/UG
- (a) Crated . . . . . 19.70 cu. ft.
- (b) Uncrated . . . . . 6.92 cu. ft.

g. TOTAL WEIGHT OF EQUIPMENT (INCLUDING EQUIPMENT SPARES).

- (1) Teletypewriters TT-47C/UG
- TT-47D/UG
- TT-47E/UG
- TT-48B/UG
- TT-48C/UG
- TT-171A/UG, or
- TT-234/SGA-3
- (a) Crated . . . . . 315 lbs.
- (b) Uncrated . . . . . 130 lbs.
- (2) Teletypewriters TT-69B/UG
- TT-69C/UG
- TT-70C/UG, or
- TT-70D/UG

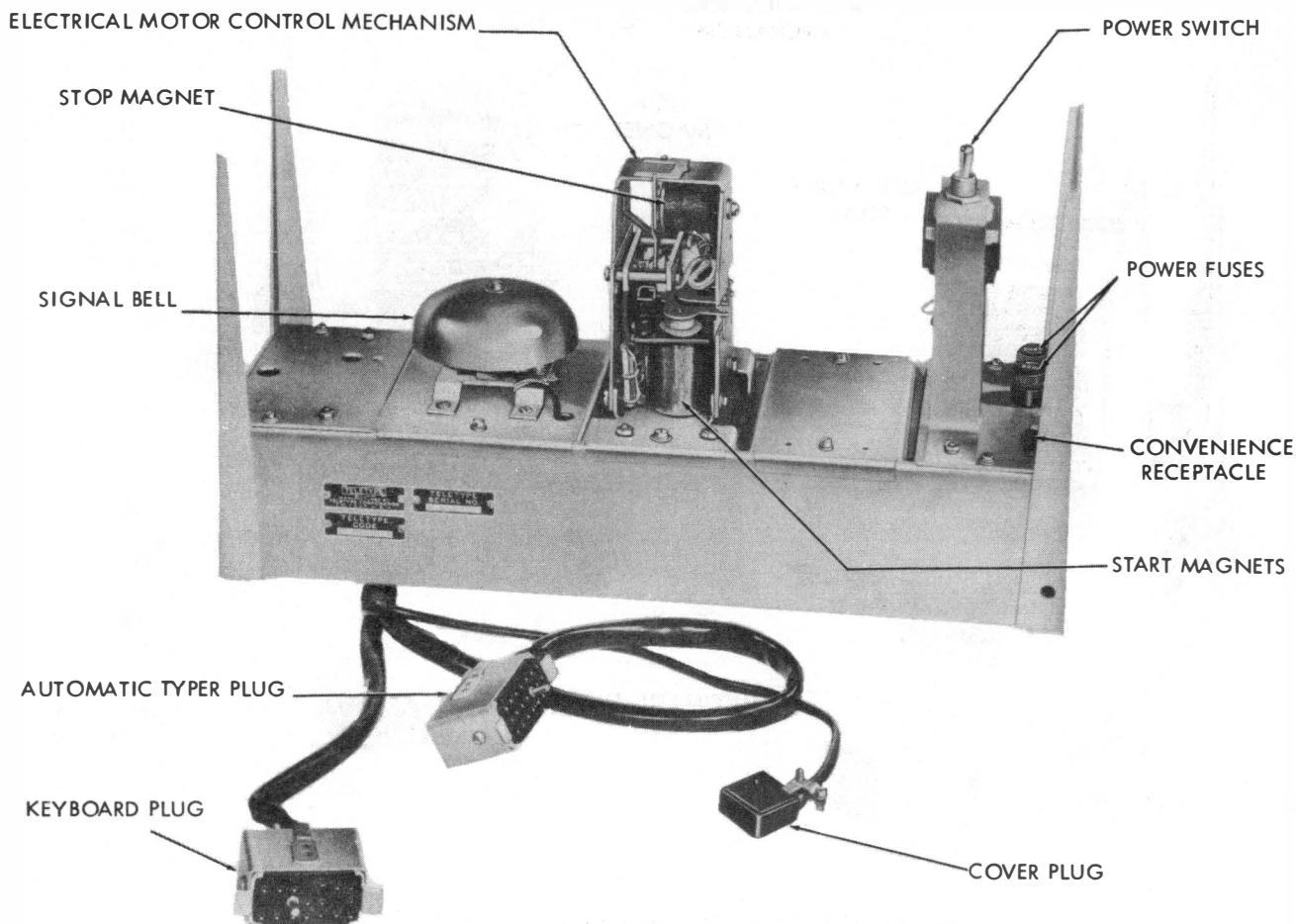


Figure 1-13A. Power Distribution Panel SB-408/UG

- (a) Crated . . . . . 250 lbs.
- (b) Uncrated . . . . . 119 lbs.
- (3) Teletypewriter TT-176A/UG
  - (a) Crated . . . . . 230 lbs.
  - (b) Uncrated . . . . . 81 lbs.

**NOTE**

Volume and weight data for equipment furnished are tabulated in tables 1-2 and 1-3.

**h. ELECTRICAL CHARACTERISTICS.**

(1) The SIGNALING FREQUENCY of the telegraph output signal is in maximum dot cycle (one cycle is one current impulse followed by one no-current impulse) per second:

Speed:

- 60 words per minute — 22.8 cycles
- 75 words per minute — 28.5 cycles
- 100 words per minute — 37.1 cycles

(2) The FREQUENCY CONTROL depends on the use of either a synchronous motor or a governed motor.

(3) The OUTPUT TELEGRAPH SIGNAL must be on-off direct current, nominally 0.060 ampere from an external source of either positive or negative polarity or from a 115 volt source at a rectifier in the Cabinet.

(4) The INPUT TELEGRAPH SIGNAL applied to the selector magnet must be on-off direct current, nominally 0.060 ampere (or 0.020 ampere) from an external source of either positive or negative polarity.

(5) SIGNAL LINE CURRENT must be furnished from an external rectifier.

**NOTE**

Provisions are made in the power distribution panel for a line relay assembly and for a small rectifier (0.120 ampere, 115 VDC) to supply the selector magnets and the relay bias winding circuits. However, this rectifier does not have sufficient capacity to also supply the signal line current. Neither the line relay assembly nor the rectifier are supplied with the teletypewriters.

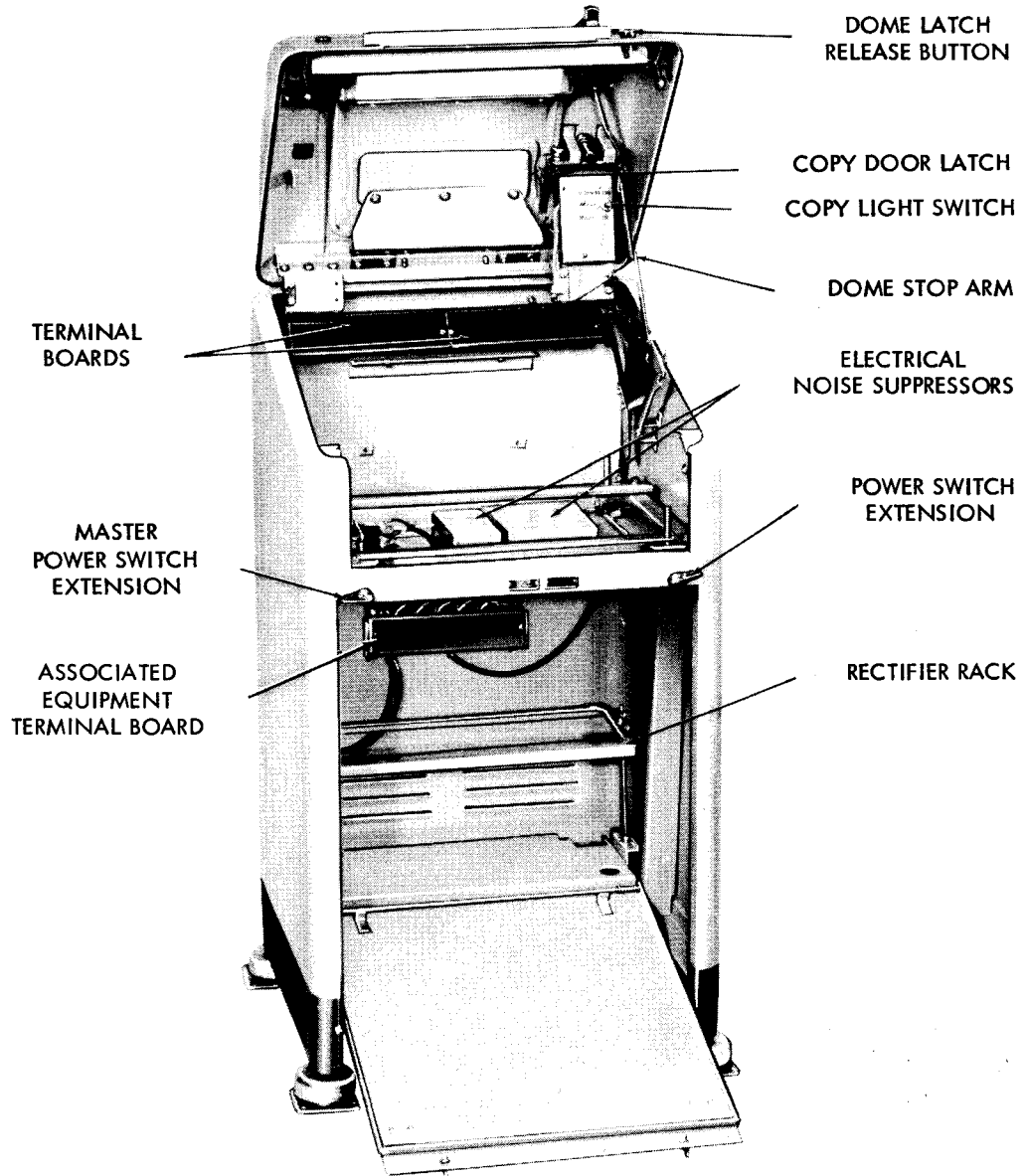


Figure 1-14. Cabinet CY-2320/SGA-3

(6) POWER SUPPLY REQUIREMENTS.

(a) AC MOTOR (SYNCHRONOUS) PD-17A/U.

1. Input voltage: 115 volts  $\pm$ 10 percent a-c.
2. Phase: Signal phase.
3. Frequency: 60 cycles  $\pm$ 0.5 cycle.
4. Input current:
  - Starting . . . . . 9 amps
  - Running . . . . . 1.85 amps
5. Power factor: 0.30
6. Wattage: 65 watts
7. Heat Dissipation: 50 watts

(b) AC MOTOR (GOVERNOR) PD-18/U.

1. Input voltage: 115 volts  $\pm$ 10 percent a-c.
2. Phase: Single phase.
3. Frequency: 50 to 60 cycles.
4. Input current:
  - Starting . . . . . 1.75 amps
  - Running . . . . . 1 amp
5. Power factor: 0.83
6. Wattage: 95 watts
7. Heat Dissipation: 75 watts

(c) PERMISSIBLE TEMPERATURES.

1. Ambient:  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F.}$ ) to  $+50^{\circ}\text{C.}$  ( $+122^{\circ}\text{F.}$ )
2. Temperature rise: Not in excess of  $+40^{\circ}\text{C.}$  ( $+104^{\circ}\text{F.}$ ) above ambient.



TELETYPEWRITER	MOUNTING DIMENSION (INCHES)						
	A	B	C	D	E	F	G
TT-47A/UG TT-47D/UG TT-47E/UG	20-1/2	40-1/2	53-1/2	23-1/2	1-1/2	18-5/8	15-5/8
TT-48B/UG TT-48C/UG	21-1/2	40-1/2	53-1/2	23-1/2	1-1/2	18-5/8	15-5/8
TT-69B/UG TT-69C/UG	20-1/2	16	29	20-1/2	1-1/2	17-13/16	12-15/16
TT-70D/UG TT-70E/UG	20-1/2	16	29	20-1/2	1-1/2	17-13/16	12-15/16
TT-171A/UG	20-1/2	16	29	20-1/2	1-1/2	17-13/16	12-15/16
TT-176A/UG	17	12	18-1/2	24-1/4	1-1/2	14	15
TT-234/SGA-3	21-1/2	40-1/2	53-1/2	23-1/2	1-1/2	18-5/8	15-5/8

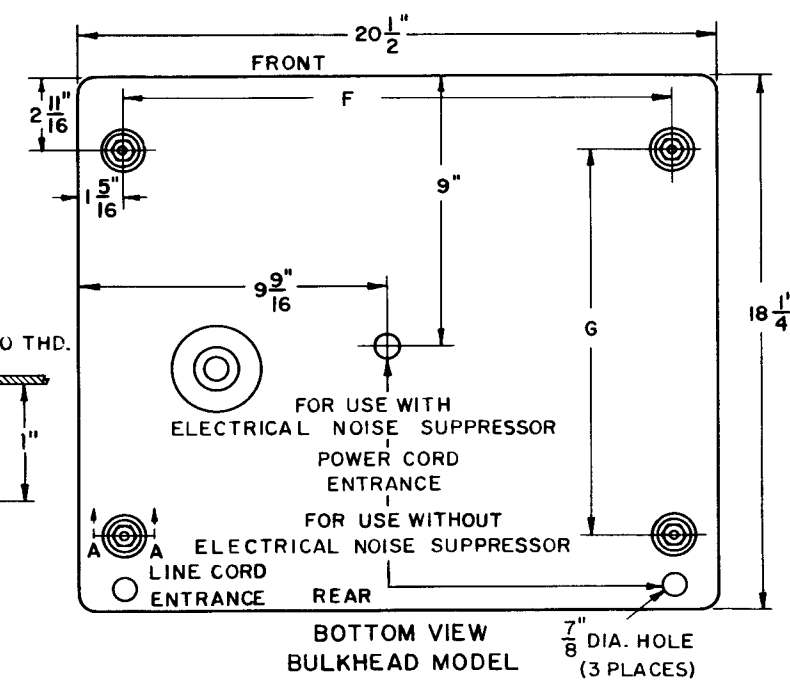
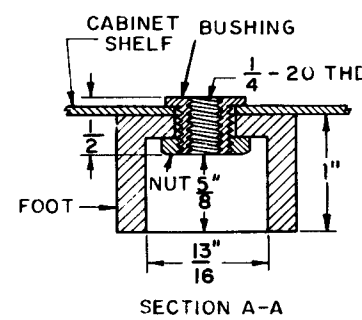
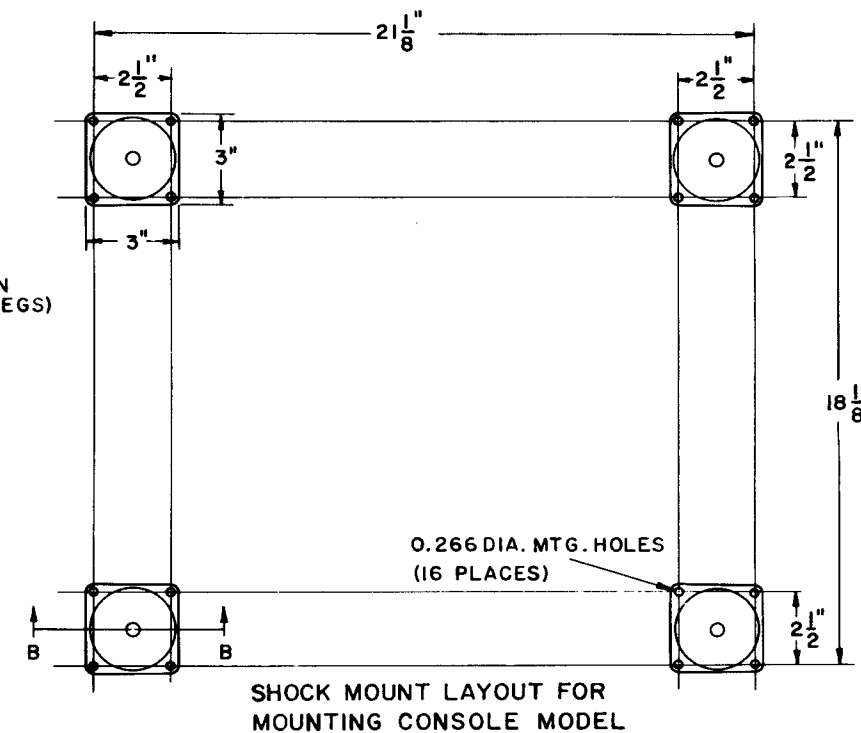
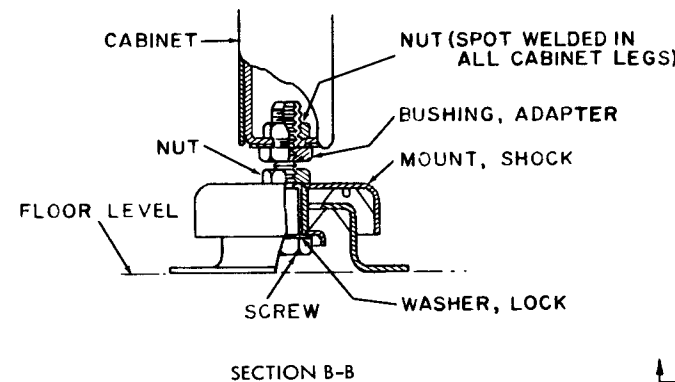
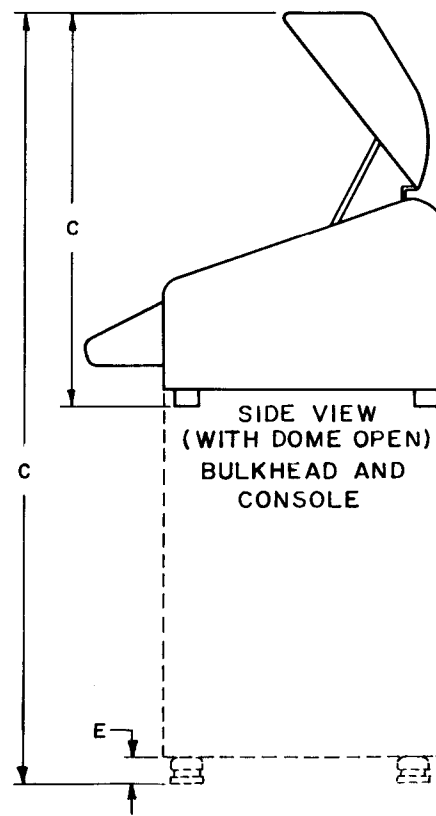
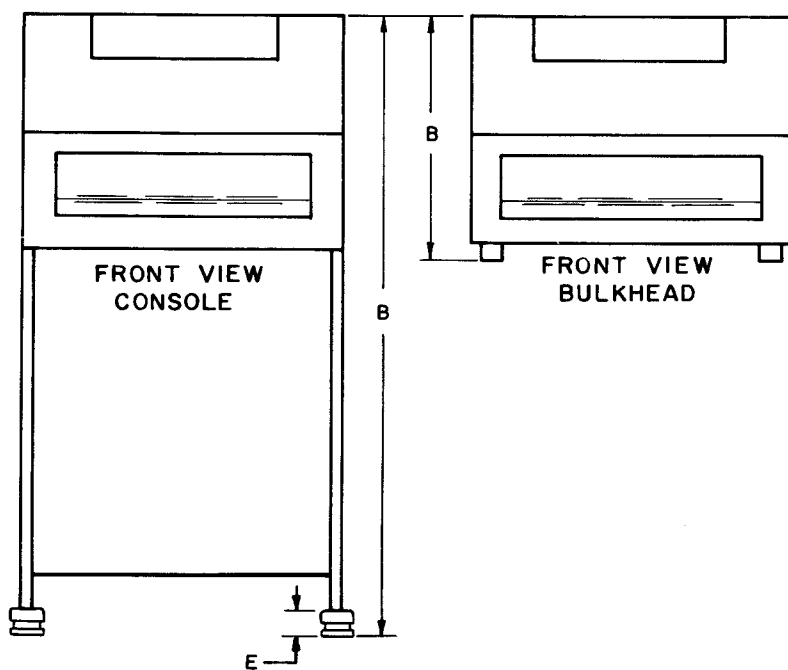
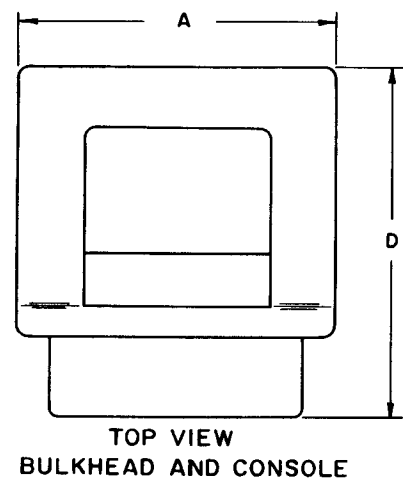


Figure 2-1. Outline and Mounting Dimensions

## SECTION 2

# INSTALLATION

### 2-1. GENERAL.

a. Teletypewriters TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, or TT-234/SGA-3 are each packed in six cardboard cartons. (See table 1-3.) Five of these contain one of the following items: automatic typer, keyboard or base, power distribution panel, a.c. motor, and either a shelf-type or console-type cabinet. The sixth carton contains spare parts, instruction books, sets of gears, and accessories.

b. Teletypewriter TT-176A/UG is packed in a single crate containing all components, spare parts, instruction books, and accessories.

### 2-2. UNPACKING THE EQUIPMENT.

Cut the steel strapping along the top edge of the crate, and carefully pry the lid off the box (TT-176A/UG). Tear the waterproof barrier. Open the cardboard cartons, carefully observing all cautions for keeping the right side up. Tear open the waterproof foil barrier, and remove the intermediate cardboard carton in each packing carton. Open the intermediate carton and tear the moisture vapor barrier to remove the inner carton contents. Open the inner cartons and remove the cartons.

### 2-3. INSTALLING THE CABINETS.

a. Four tapped bushings are provided in the feet of the cabinet to secure the shelf model. In selecting the bolts to be used, make certain to choose a length that will not extend through the top of the bushing. Thread size and necessary dimensions are shown in figure 2-1.

#### NOTE

The signal line and power cables must be installed before securing the shelf-type cabinet. (See paragraph 2-4b.) Make sure external signal line and power voltage are off.

b. The shock mounts for the console model are packed in a carton which is taped to the rail inside the cabinet and stamped 154793. Hardware for securing the shock mounts to the floor is not furnished with the equipment. To assemble the shock mounts to the cabinet proceed as follows:

(1) Set the cabinet on its back, on a support, and remove the mounting feet. Thread the adapter bushings into the mounting holes and tighten

(2) Assemble a screw, lock washer and nut to each shock mount as shown in figure 2-1. Tighten the nut. Thread one of these assemblies into each of the adapter bushings previously installed.

(3) Set the cabinet in an upright position and level the cabinet by adjusting the shock mounts.

### 2-4. POWER AND LINE CONNECTIONS.

a. CABINET CY-2538/UG. (See figure 2-4.)

(1) Lower the panel that extends across the front of the lower section of the cabinet. Remove the insulator covers from the two terminal boards located in the upper rear portion of the cabinet. Insert an a-c power cable through the opening in the left rear corner of the lower shelf and up through the right BX connector in the center of the upper shelf. Connect the leads to the electrical noise suppressor as shown in figure 2-2. See figure 6-143 for a diagram of primary power distribution. (For any specific installation refer to the applicable installation drawing.)

(2) Insert the signal line cable through the same opening in the lower shelf but through the left BX connector in the center of the upper shelf. Connect the positive (+) lead to the upper terminal and the negative (-) lead to the lower terminal of the electrical noise suppressor as shown in figure 2-2.

(3) To relieve tension on the terminal connections, clamp the cables in place by means of the BX connectors. If additional thickness is required, friction tape may be wound around the cables at the clamping point.

(4) Raise the panel across the front of the lower section.

b. CABINET CY-2539/UG. — Insert the power and signal line cables into the right and left BX connectors respectively. The connections are the same as described in paragraphs 2-4a(1) and 2-4a(2).

c. CABINET CY-2320/SGA-3. — Insert the power line in the same manner as described in paragraph 2-4a(1). Insert the SEND signal line through the opening in the lower shelf and up through the left BX connector. Connect the positive (+) lead to the upper terminal and the negative (-) lead to the lower terminal of the electrical noise suppressor as shown in figure 2-2. Insert the RECEIVE line through the hole in the lower shelf and up through the opening in the upper shelf. Connect the positive (+) lead to terminal 7 and the negative (-) lead to terminal 8 on terminal board TB701 as shown in figure 2-3.

cA. POWER DISTRIBUTION PANEL SB-408/UG. — When installing Teletypewriter TT-176A/UG, place the power distribution panel on the rear of the base plate with the legs extending downward and the name plate and serial numbers facing the front. Remove the small plate from the bottom of the electrical noise suppressor. Insert the power and signal line cables into the shielding tube attached to the suppressor and clamp in place with the cable clamp provided; leave sufficient slack to make connections to the terminals. Connect the leads to the electrical noise suppressor as shown in figure 2-2A. (For any specific installation, refer to the applicable installation drawing.)

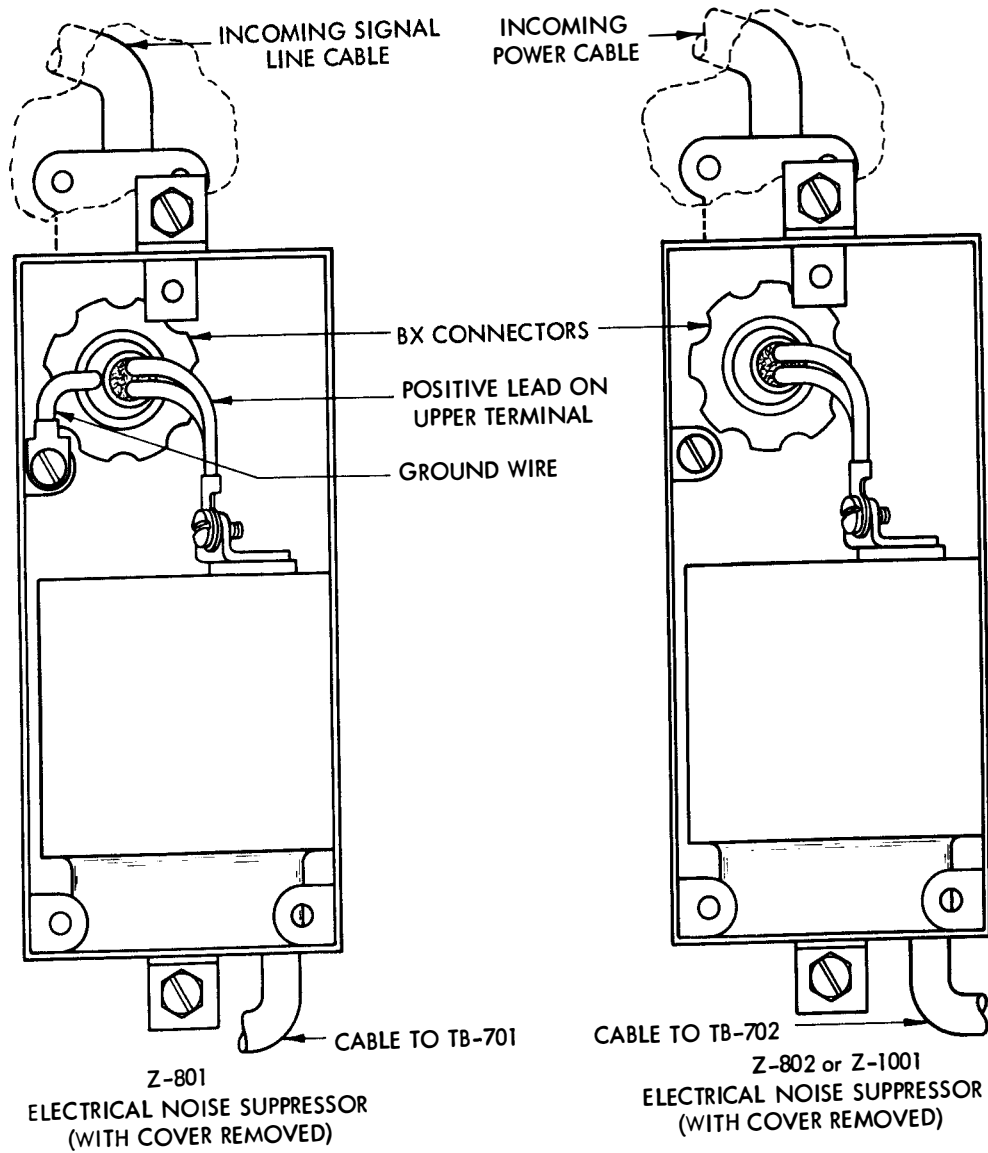


Figure 2-2. Cabinet Suppressor Power and Signal Line Connections

d. When installing any of the above sets, a ground wire should be brought in and connected to the cabinet ground screw located just above terminal board TB702, as shown in figure 2-3. The ground wire should also be connected to the signal line electrical noise suppressor ground terminal, as shown in figures 2-2 and 2-2A.

**CAUTION**

A good ground is important for satisfactory operation of the equipment.

**2-5. ASSEMBLY OF EQUIPMENT.**

a. POWER DISTRIBUTION PANEL SB-964/UG.

(1) With the dome raised, place the power distribution panel in the rear of the cabinet with the legs extending upward and name plate and serial number plate facing the front of the cabinet. Secure the panel to the shelf by means of two studs furnished in the muslin bag tied to the panel. Drop the studs through the holes located at each end of the panel and screw them into the nuts welded to the underside of the shelf.

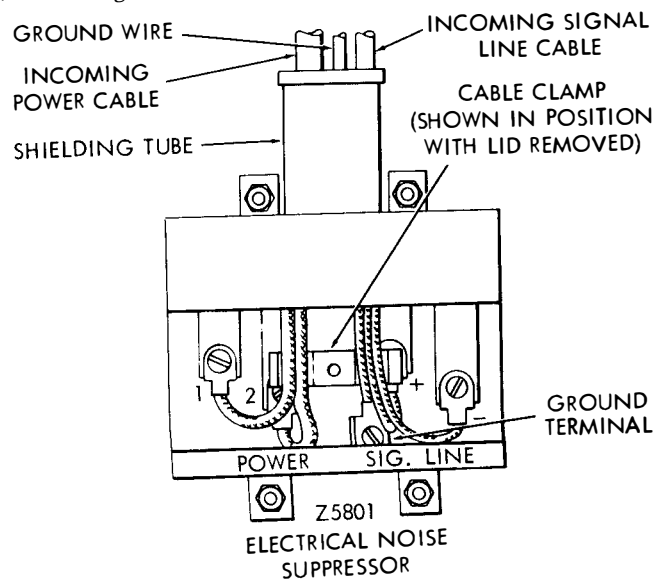


Figure 2-2A. Power Distribution Panel Noise Suppressor Connections

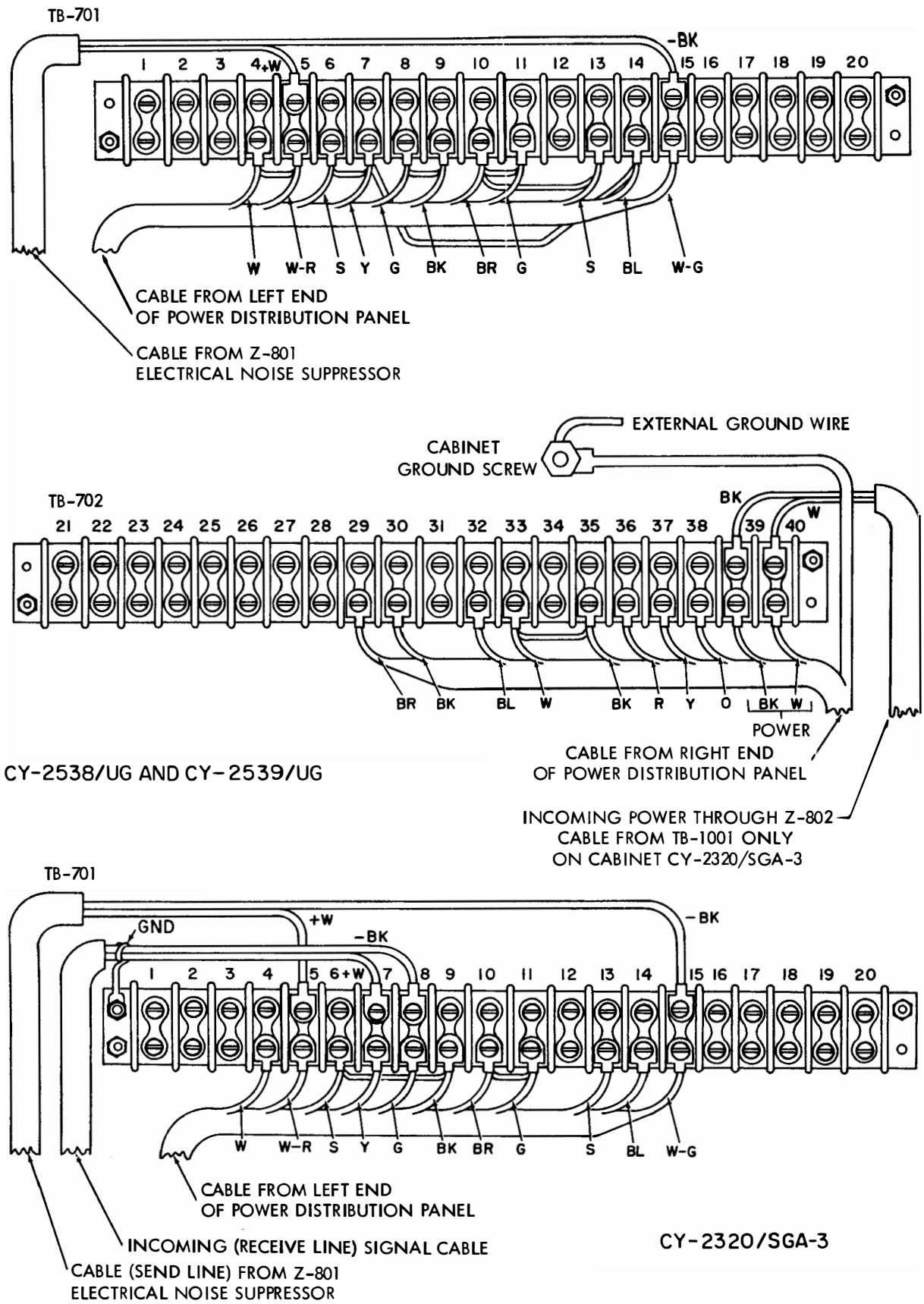


Figure 2-3. Power Distribution Panel Connections

(2) Connect the leads of the cables from the power distribution panel to terminal boards TB701 and TB702 as shown in the applicable portions of figure 2-3. For Cabinets CY-2538/UG and CY-2539/UG only, remove the black straps from the cloth bag tied to the power distribution panel and connect to terminal board TB701 as shown on figure 2-3.

(3) The unit is wired for 0.060 ampere operation at the factory. If 0.020 ampere operation is desired, change wiring as shown in NOTE 3 on wiring diagram (figure 6-145).

**NOTE**

Provisions have been made in the power distribution panel for installing a signal line relay assembly next to the line shunt relay mounting plate, and a small rectifier assembly next to the fuse mounting plate. These assemblies, which are normally used together, are not furnished with the teletypewriters.

(4) Remove the rear cross bar of the cradle assembly by removing its two mounting screws, lock washers and flat washers.

(5) Untie the power switch extension shaft from the hinge bar and bracket. Remove the knob from the shaft by loosening the two set screws. Insert the shaft, from inside of cabinet, through the hole located at the right end of the front panel. Push the shaft through far enough to allow the rear end of the shaft to enter the locating hole in the power distribution panel, and at the same time place the slotted extension of the shaft over the toggle switch which is mounted on the right side of the power distribution panel. Replace the knob on the end of the shaft which protrudes through the cabinet, and keep the narrow portion of the knob to the right. Tighten the set screws. Hook one end of the spring (furnished) around the switch extension shaft and hook the other end into the hole in the right arm of the cradle assembly.

(6) On Cabinet CY-2320/SGA-3, remove the power switch extension shaft knob from the cloth bag tied to the shaft and assemble the knob to the shaft extension that extends through the left front corner of the cabinet. The narrow portion of the knob should extend toward the left.

b. AC MOTORS PD-17A/U AND PD-18/U.

(1) Remove the motor gear and intermediate driven gear from the small cardboard box stamped 151060 (furnished with teletypewriters), 151075, or 151100. Remove the screw and lock washer in the left end of the motor shaft. Place the motor gear on the motor shaft with geared end toward the motor. Secure the gear with the screw and lock washer just removed. Remove the two screws and lock washers from the hub on the right end of the intermediate gear shaft. Mount the intermediate driven gear on the shaft with the flat side of the gear to the right. Secure the gear with the two screws and lock washers just removed.

(2) Remove the 8 1/4-32 hex head screws and lock washers from the cloth bag tied to the keyboard, and remove the gear guard from the cloth bag tied to the keyboard or base. Place the motor in position on the keyboard or base and secure it with the four screws

and lock washers just removed. Secure gear guard under the left rear motor mounting screw so that the formed ears of the guard are positioned over the rear surface of the keyboard or base. Before tightening the mounting screws make certain that the motor gear and intermediate driven gear are properly meshed.

(3) Remove the insulator cover from terminal board TB101 just to the left of the motor. Connect the motor leads to terminals 1 and 2 of this terminal board. When installing a governed motor, connect the ground strap to the right rear motor mounting screw. Replace the insulator cover with the No. 1 stamping toward the rear.

c. AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG, OR MX-3080/UG.

(1) Place the automatic typer on the keyboard or base. Make certain that the front feet on the typer are placed over the locating studs provided on the keyboard. Rotate motor by hand to insure proper meshing of the gears. Secure automatic typer with the four screws removed from the cloth bag tied to keyboard.

(2) INITIAL ADJUSTMENTS. — The following two adjustments, shown in section 6, should be made before placing the component in the cabinet.

(a) Keyboard or Base and Motor Gearing (figure 6-73).

(b) Time Delay Mechanism (figure 6-69).

(c) Back Space Transfer Mechanism, Adjusting Lever Horizontal Adjustment (figure 6-76B).

d. KEYBOARD MX-1114B/UG, MX-1114C/UG, MX-1677A/UG, OR BASE NT-1443/UG.

(1) Remove the cross bar from the front of the cabinet by loosening the two knurled thumb screws that secure it.

(2) Remove the two studs from the rear cross bar previously removed from the cradle assembly. With the centerline of the tapped holes to the rear of the center line of the elongated holes in the rear cross bar, secure the keyboard or base, with motor and typer, to the rear cross bar by means of the two studs just removed.

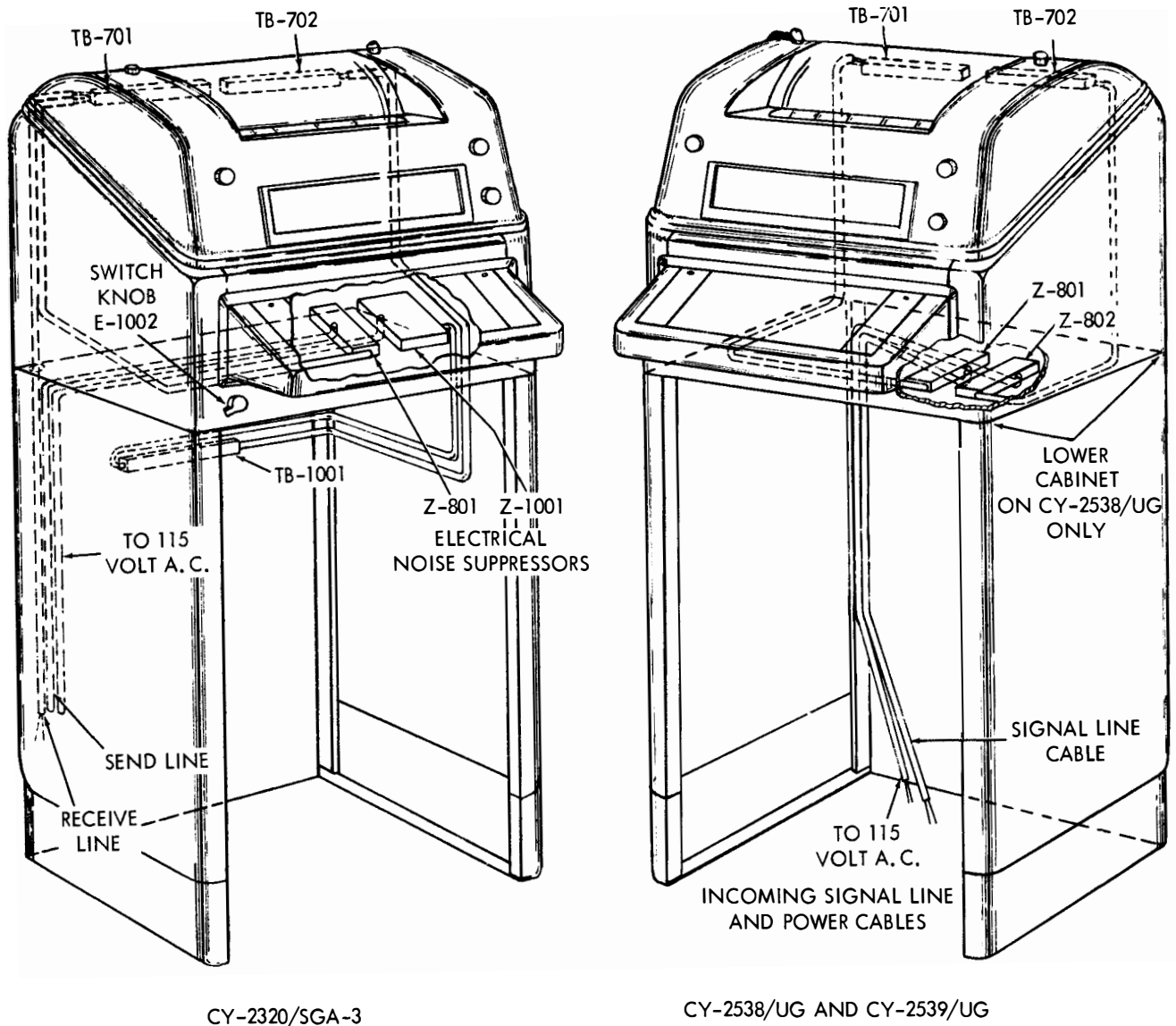
(3) Remove the two studs from the front cross bar hinge. Place the keyboard or base on the cradle assembly in the cabinet. Loosen the two front cross bar mounting screws and position the bar in its elongated mounting holes so that the holes in the keyboard and the tapped holes in the hinge are in alignment. Secure the keyboard or base to the front cross bar hinge by means of the two studs just removed.

(4) Place the front cabinet cross bar, in its mounting slots with the wider side of the bar downward. Be careful not to jam the bar against the keyboard contact box. Tighten the two knurled thumb screws.

(5) To seal the rubber sealing plate around the keyboard or base against the cabinet, push the keyboard or base toward the rear of the cabinet as far as possible. Hold it in this position and tighten the two front cross bar mounting screws.

(6) Secure the rear cross bar to the cradle assembly by means of the two screws, lock washers, and flat washers previously removed.

(7) Insert the plug on the cable from the right end of the power distribution panel into the receptacle on the right side of the automatic typer until it is latched in position.



CY-2320/SGA-3

CY-2538/UG AND CY-2539/UG

Figure 2-4. System Pictorial Diagram

(8) Insert the plug on the cable from the left end of the power distribution panel into the receptacle on the left rear corner of the keyboard or base until it is latched in position.

e. COVER. — Before mounting the cover (Teletypewriter TT-176A/UG), lay the plug end of the cover power cable over the top of the automatic typer. Lower the cover in place carefully so as not to damage the keyboard and automatic typer components which are adjacent to the cover. When in position, the opening in the cover for the keytop guide plate should just touch or have a slight clearance on all sides of the keytop guide plate.

(1) Insert the plug of the cover power cable into the receptacle at the upper left rear side of the cover. The copylight switch adjacent to the receptacle should be in the ON (rearward) position.

(2) Latch the cover in place by moving the LOCK lever at the front of the cover in the direction of its arrow to the end of its travel.

**2-6. MECHANICAL CHECKING OF EQUIPMENT.**

a. A visual check of the fuses, all plugs, screw terminal connections, and lamps for loosening or breakage should be made before putting the equipment into operation.

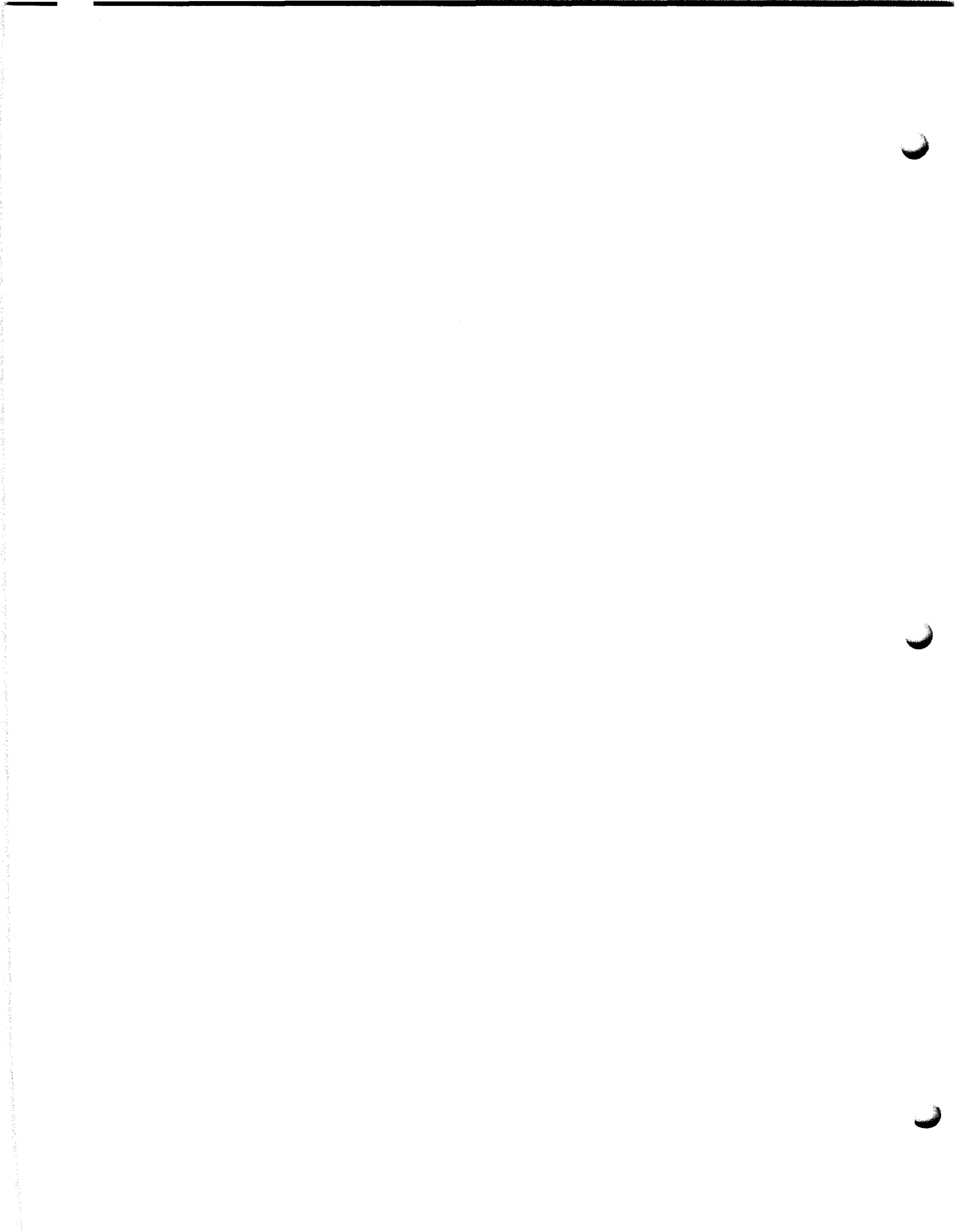
b. Make certain that the power knob or lever is downward in its OFF position before closing the main power line to the equipment.

c. The light switch (NORMAL, ON, OFF, MAINT ON) should be in the NORMAL ON position.

d. Refer to section 3, paragraph 5, for instructions on installing paper and ribbon.

**2-7. OPERATING TESTS.**

a. Type several lines of a test sentence such as "The quick brown fox . . . . . etc." and check for accuracy.



b. The local line feed key (LOC LF—Keyboard) (LINE FEED—Base), when depressed, shall cause paper to feed out of the machine at approximately three times the speed obtained when the line feed key is repeatedly operated.

c. The keyboard lock key (KBD LOCK), when depressed, shall prevent operation of any other key except the local line feed, keyboard unlock, break, and local carriage return keys. It shall remain depressed until released by the keyboard unlock key.

d. The keyboard unlock key (KBD UNLK), when depressed, shall unlock the keyboard. The BREAK key, when depressed, shall hold the transmitting line open. If the duration of the open-line interval is greater than two character cycles the keyboard lock shall be caused to operate.

e. The repeat key (REPT), when depressed together with any other key except the local keys, shall cause repeat transmissions of the signal.

f. The local carriage return key (LOC CR—Keyboard) (CAR RET—Base), when depressed shall cause the carriage to be returned.

g. The bell shall ring clearly on single or repeated operations of the BELL key.

h. Determine that operation of the FIGS key conditions the machine for the typing of upper case characters and that operation of the LTRS keys conditions it for the typing of lower case characters.

i. Determine that operation of the SPACE BAR conditions the machine for the typing of lower case characters where this feature is desirable. If not desirable, disable by adjusting the function pawl disabling screw (section 6, figure 6-132).

iA. Operation of any local keys (LOC) should not interfere with the transmission or reception of signals, except that it may cause typing to occur in odd positions on the paper. Normally, these keys (on Teletypewriter TT-176A/UG) are to be used only between messages.

(1) The local back space key (LOC B SP), when depressed, should cause the carriage to be moved one space to the left.

(2) The local reverse line feed key (LOC R LF), when depressed, should cause the paper to be fed downward one full line of copy. When the LOC R LF key and the local line feed key (LOC LF) are depressed simultaneously, reverse line feeding should be continuous.

j. Determine that the Motor shuts off after an idle period of from one-half to two minutes where this feature is desirable, and restarts when the break key is depressed or when the selector starts to receive signals. If this feature is not desirable, disable the delay mechanism on the Keyboard or Base as indicated in section 6, figure 6-71.

k. If irregularities in operation are observed, notify authorized maintenance personnel. (In any case of failure of a part, complete ELECTRONIC FAILURE REPORT form DD787 and forward to BuShips.)

CHANGE 1

**2-8. MARGIN INDICATING LAMP.**

The margin indicating lamp should illuminate between the 66th and 68th space from the beginning of a line. Adjust if necessary by positioning the margin indicator cam disk on the spring drum with its three screws loosened (section 6, figure 6-134).

**2-9. FINAL CHECKS.**

The equipment has been thoroughly tested and adjusted at the factory and should not require further adjusting. However, it is recommended that the setting of the range scale and the motor speed (governed type) be checked. Refer to section 6, paragraph 6-4g, for the procedure to be followed in checking the motor speed and to section 6, paragraph 6-4k, for the procedure in checking the orientation range.

**NOTE**

Under certain conditions, filter Z101 located in the keyboard, may contribute to signal distortion in the signal line circuit. At the time of installation, the signals should be checked for excessive distortion. When present, it should be compensated for in order to retain the desired quality of the signals. This may be accomplished by the addition of wave shaping elements in the signal line circuit.

**2-10. MODIFICATION FOR TYPING AEROLOGICAL WEATHER DATA.**

a. Modification Kit MK-599/UG provides parts for conversion of conventional communication type teletypewriter equipment to transmit and/or receive weather aerological information. An identification plate (item 22 below) will appear beside the set name plate on equipment so modified.

b. Parts furnished in the modification kit and their reference designation symbol (see section 7) are:

- (1) RING, RETAINER ..... H1448
- (2) BAR, FUNCTION ..... Teletype part  
No. 150610
- (3) PALLET SET, TYPE ..... O2200
- (4) SCREW ..... Teletype part  
No. 151739AE
- (5) SCREW ..... Teletype part  
No. 151739ARE
- (6) KEYLEVER ..... O420
- (7) KEYLEVER ..... O433
- (8) KEYLEVER ..... O431
- (9) KEYLEVER ..... O421
- (10) KEYLEVER ..... O422
- (11) KEYLEVER ..... O423
- (12) KEYLEVER ..... O424
- (13) KEYLEVER ..... O425



(14) KEYLEVER .....	O426
(15) KEYLEVER .....	O427
(16) KEYLEVER .....	O434
(17) KEYLEVER .....	O432
(18) KEYLEVER .....	O430
(19) KEYLEVER .....	O435
(20) BAR, FUNCTION .....	O1446
(21) PLATE, RETAINER .....	O1474
(22) PLATE, IDENTIFICATION . . .	Teletype part No. 174493

c. Install the modification kit as follows:

**CAUTION**

Observe all safety regulations. Do not make field change with high voltage supply on. Under certain conditions dangerous potentials may exist in circuits with power controls in the off position, due to charges retained by capacitors. To avoid casualties, always remove power and ground the circuits prior to touching them.

- (1) Remove the automatic typer from the keyboard (see Section 6 for steps in removal and replacement of components).
- (2) Replace type pallet set O1943 with O2200.
- (3) Remove the function box. Retainer ring H1448 is furnished as a replacement part in case one is lost.
- (4) Remove plate O1474 and shaft O1472 (see figure 6-28).
- (5) From slot 36, remove the following:
  - (a) O1432 function bar
  - (b) O1451 pawl
  - (c) O1462 lever
  - (d) O1467 plate
  - (e) O1470 spring
  - (f) O1436 spring
  - (g) O1469 spring

(6) From slot 35, remove the following and replace as indicated:

- (a) Remove O1431 function bar and replace O1446.
- (b) Remove O1466 lever and replace O1462.
- (c) Remove O1468 latch and replace O1467 plate.

(7) Replace the function box identification screw with modification kit part item 4 (screw, 151739AE).

(8) Replace shaft and plate O1474, and replace function box on automatic typer.

(9) Remove the keyboard from the cabinet (Teletypewriter TT-176A/UG only, remove Cover CW-354/UG).

(10) Replace the keyboard identification screw with modification kit part item 5 (screw, 151739 ARE).

(11) Remove and replace keylevers as indicated below:

- (a) Remove O231, replace O420.
- (b) Remove O233, replace O421.
- (c) Remove O234, replace O422.
- (d) Remove O235, replace O423.
- (e) Remove O236, replace O424.
- (f) Remove O237, replace O425.
- (g) Remove O238, replace O426.
- (h) Remove O239, replace O427.
- (i) Remove O242, replace O430.
- (j) Remove O244, replace O431.
- (k) Remove O245, replace O432.
- (l) Remove O246, replace O433.
- (m) Remove O247, replace O434.
- (n) Remove O251, replace O435.

(12) Remove the protective back from the identification plate, and place the plate (modification kit item 22) next to the set name plate.

(13) Replace the keyboard. Replace the automatic typer on the keyboard. Replace the cover.

## SECTION 3 OPERATOR'S SECTION

### 3-1. INTRODUCTION.

a. Teletypewriters TT-47C/UG, TT-48B/UG, TT-69B/UG, or TT/70C/UG provide means for exchanging typewritten page messages between two or more ships or stations which are similarly equipped and connected by a telegraph or radio channel. The Keyboard of the Teletypewriter is essentially similar to the keyboard of a conventional typewriter. However, the following differences should be noted: The Keyboard of the Teletypewriter has only three rows of conventional keys. The platen is held stationary while the type box carriage and printing carriage advance from left to right during the typing process. Non-typing functions such as the return of the carriage for starting a new line, the shifting operations, and line feeding are performed automatically as a result of signals that originate either at a distant station or at the local Keyboard. The Teletypewriter is arranged for operation on five-unit start-stop permutation code and prints the alphabet in capitals only. It is designed to operate at nominal speeds of 368, 460 or 600 (o.p.m.) operations per minute. Conversion from one speed to another necessitates a change in the driving gears. The Keyboard must be operated with a uniform rhythm in order to prevent omission errors in the copy due to speed in excess of that for which the machine is adjusted. The action performed by the function keys (figure 3-1) is detailed in paragraphs 2 and 3 below.

b. Teletypewriter TT-171A/UG is similar to TT-47C/UG described above except that parts required for transmitting messages have not been provided.

Typewritten page messages can only be received on the TT-171A/UG. In contrast to the number of functions that can be performed by a sending and receiving Teletypewriter, only two off-line functions can be performed by Teletypewriter TT-171A/UG. These non-typing functions (Carriage Return and Line Feed) are provided so that they can be performed locally when required.

c. Teletypewriter TT-234/SGA-3 is similar to TT-47C/UG described above except that it has separate SEND and RECEIVE lines, and an extra switch and terminal board for the control and distribution of power to associated equipment.

d. Paragraph deleted.

e. Teletypewriter TT-176A/UG is similar to other equipment covered in this manual but is enclosed in a cover more compact than the other cabinets. It is intended for off-line use as an all-capital letter typing machine equipped with local back space and local reverse line feed features for this purpose.

### 3-2. ON-LINE FUNCTIONS.

a. SPACE BAR.—This bar, located at the front of the Keyboard, is used to send spaces (as between words).

b. CARRIAGE RETURN.—The carriage return key is used to return both the type box carriage and the printing carriage to the left to start a new line of typing.

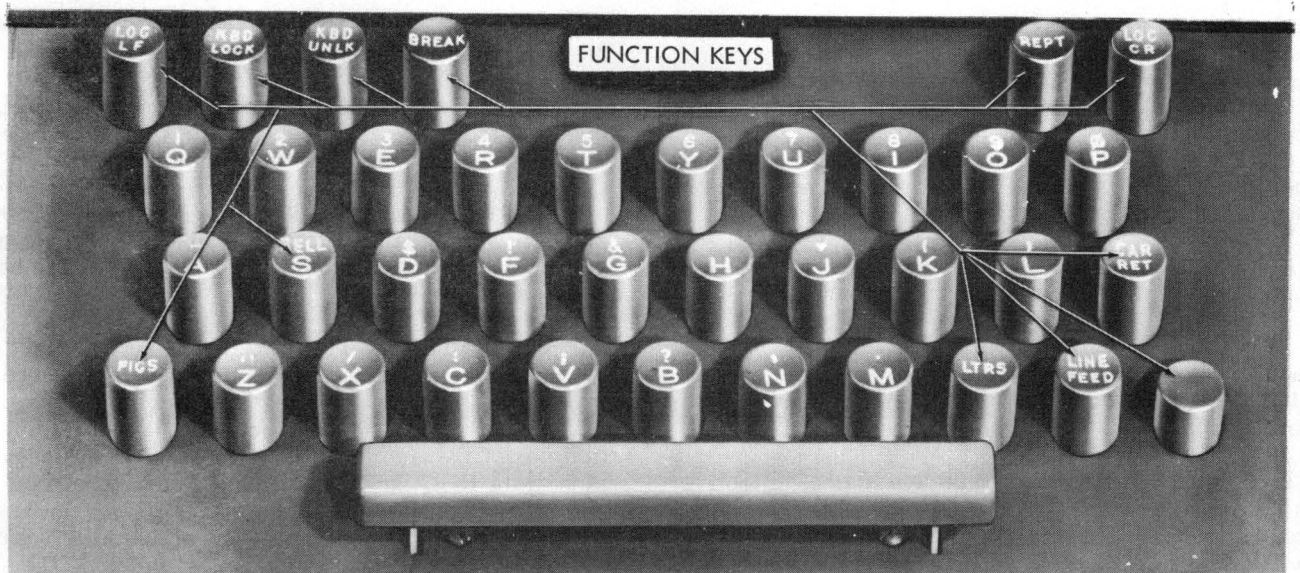


Figure 3-1. Keyboard MX-1114B/UG Keys

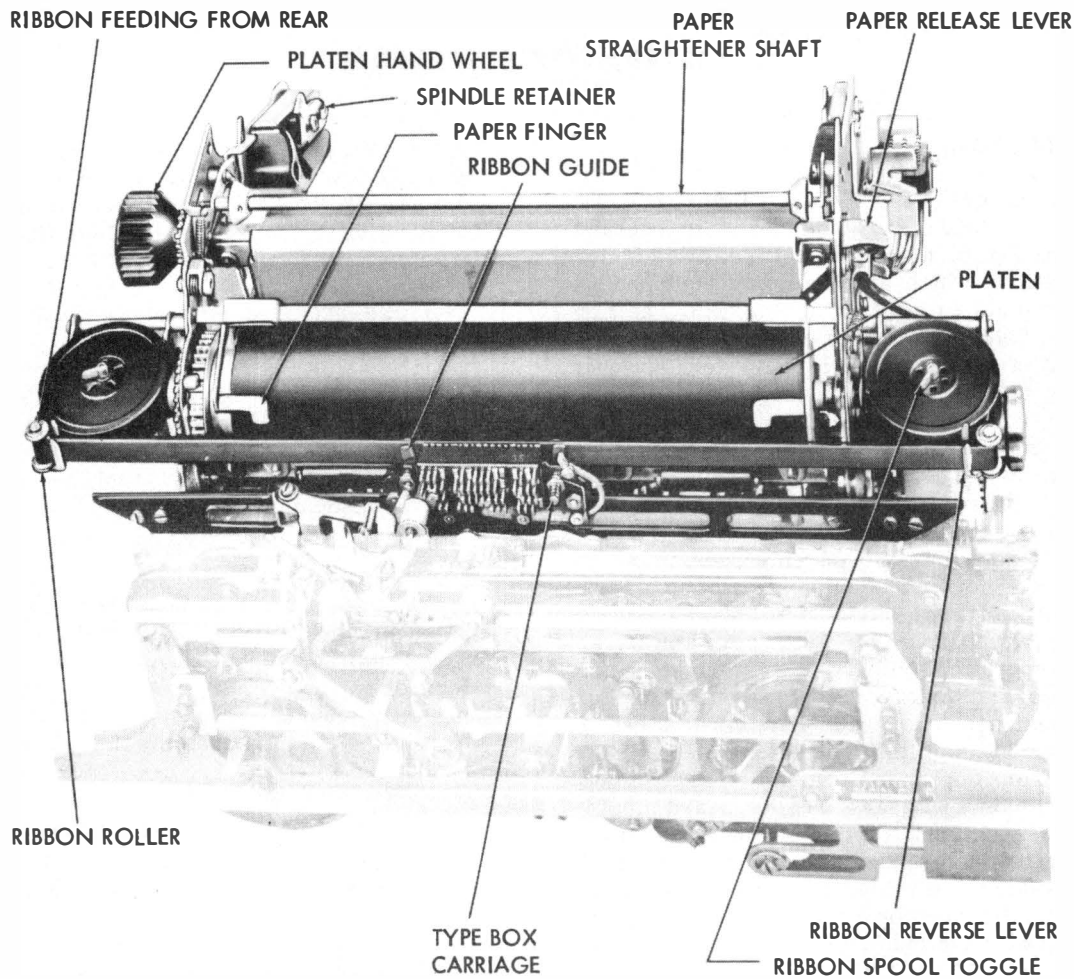


Figure 3-2. Automatic Typer MX-1114B/UG

c. **LINE FEED.**—This key, when depressed, causes the paper to feed upward one or two spaces depending upon the position of a single-double line feed lever located on the Automatic Typer (figure 3-2).

d. **FIGURES.**—The figures key is used to condition the machine for printing of figures, punctuation marks or other upper-case symbols.

e. **LETTERS.**—The letters key is used to condition the machine for printing of letters characters.

f. **BELL.**—Operation of this key (which is upper-case action of the S key) subsequent to pressing the FIGS key, will cause a signal bell (if provided) to ring locally and at the distant stations.

g. **BLANK.**—Depressing this key twice (effective in either upper or lower case) will lock all Keyboards in the circuit and render them inoperative by setting up the RECEIVE condition. Restoration to the SEND condition is accomplished, under individual circumstances, through operation of a KEYBOARD

UNLOCK (KBD UNLK) key by the operator who desires to send from his Keyboard.

h. **BREAK.**—This key is used to interrupt transmission from a distant station or to lock all Keyboards prior to initiating transmission.

i. **REPEAT (REPT).**—This key is used in conjunction with other keys or the space bar to accomplish repeat transmission while the two keys are held depressed.

j. **SEQUENTIAL SWITCHING.**—Teletypewriter TT-47E/UG is equipped for sequential switching for controlling optional auxiliary features in response to signal line impulses. The feature is a part of the function box of the automatic typer. The signal necessary to initiate the sequence switching is a repetition of four "C" character impulses either on the local or the remote keyboard. Repetition of four "H" characters will close the switch. The effect of the sequence switching on teletypewriter components depends on the optional wiring of the function box

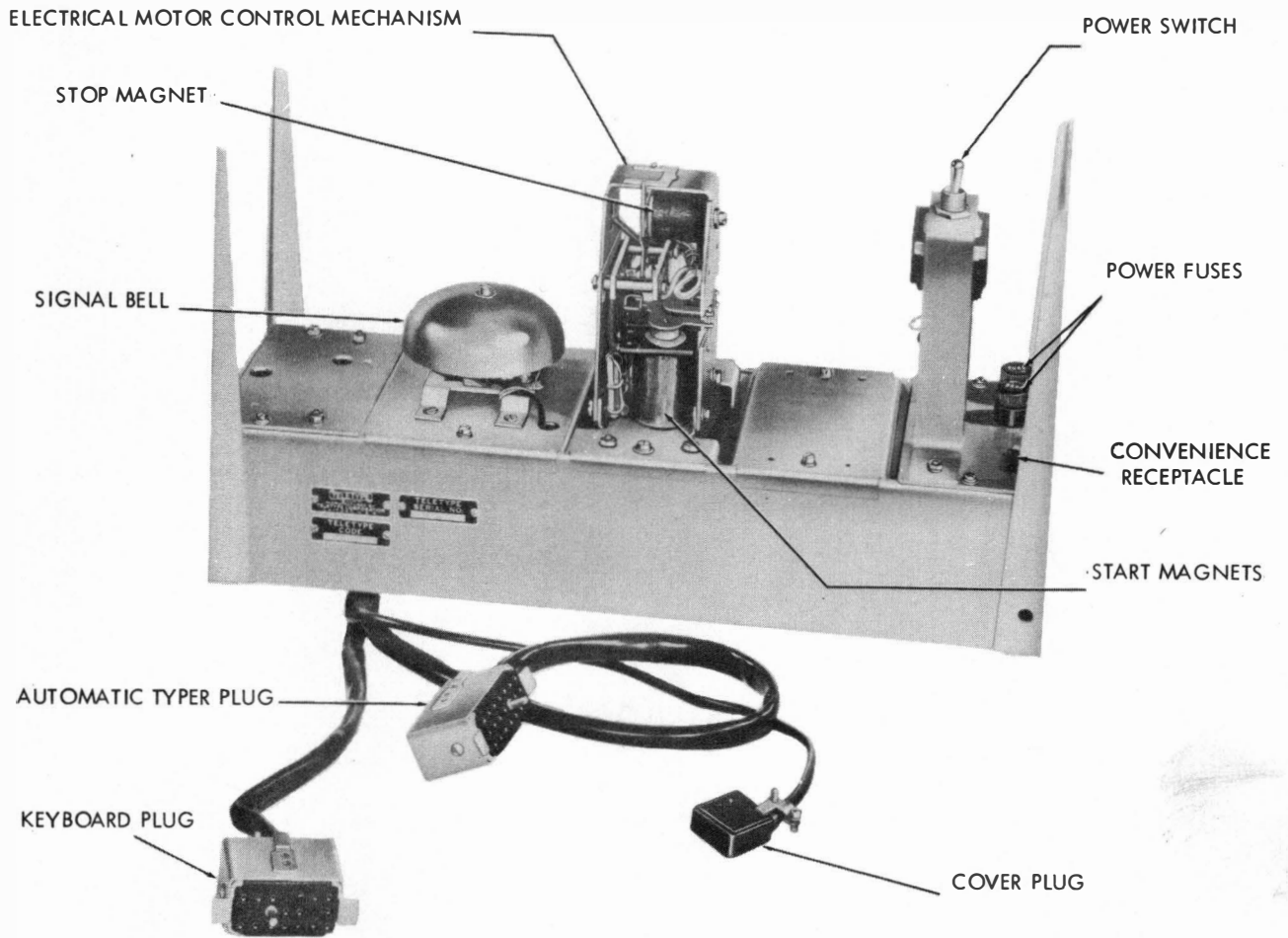


Figure 3-2A. Power Distribution Panel SB-408/UG

switch, or the switch can be wired to external auxiliary components that have no effect on teletypewriter components whatsoever.

### 3-3. OFF-LINE FUNCTIONS.

When it is desirable to apply certain functions to the local equipment only, the operator may utilize special keys, which are identified as follows:

a. LOCAL LINE FEED (LOC LF - Keyboard)(LINE FEED - Base). - This key is used to feed the paper upward on the local machine only.

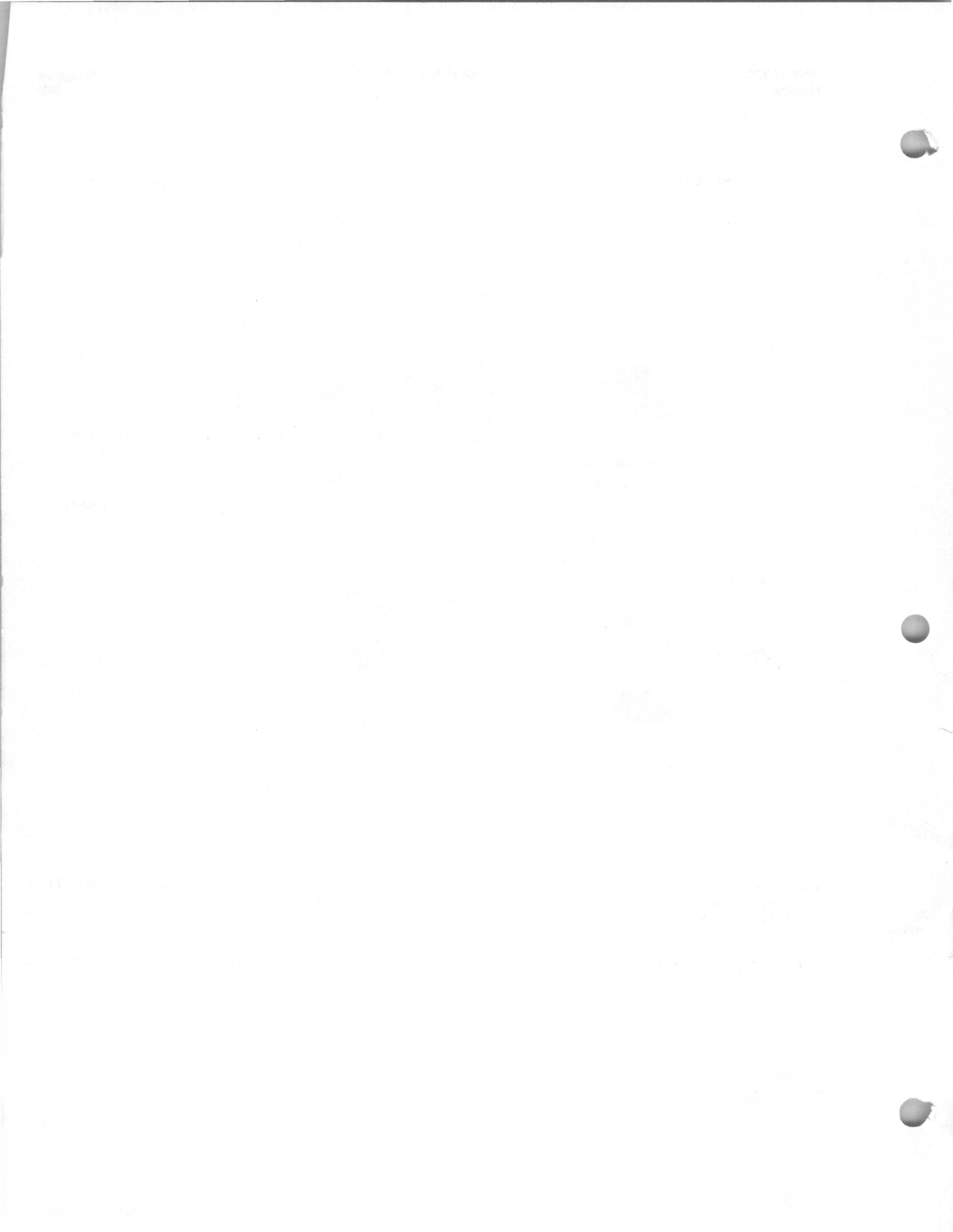
b. LOCAL CARRIAGE RETURN (LOC CR - Keyboard) (CAR RET - Base). - This key is used to

return the carriages to the beginning of the line on the local machine only.

c. KEYBOARD LOCK (KBD LOCK). - Operation of this key conditions local equipment for receiving only by locking the keyboard.

d. KEYBOARD UNLOCK (KBD UNLK). - This key is used to condition the local keyboard prior to starting transmission.

e. LOCAL BACK SPACE (LOC B SP). - This key is used to move the carriage one space to the left on the local machine only each time it is depressed.



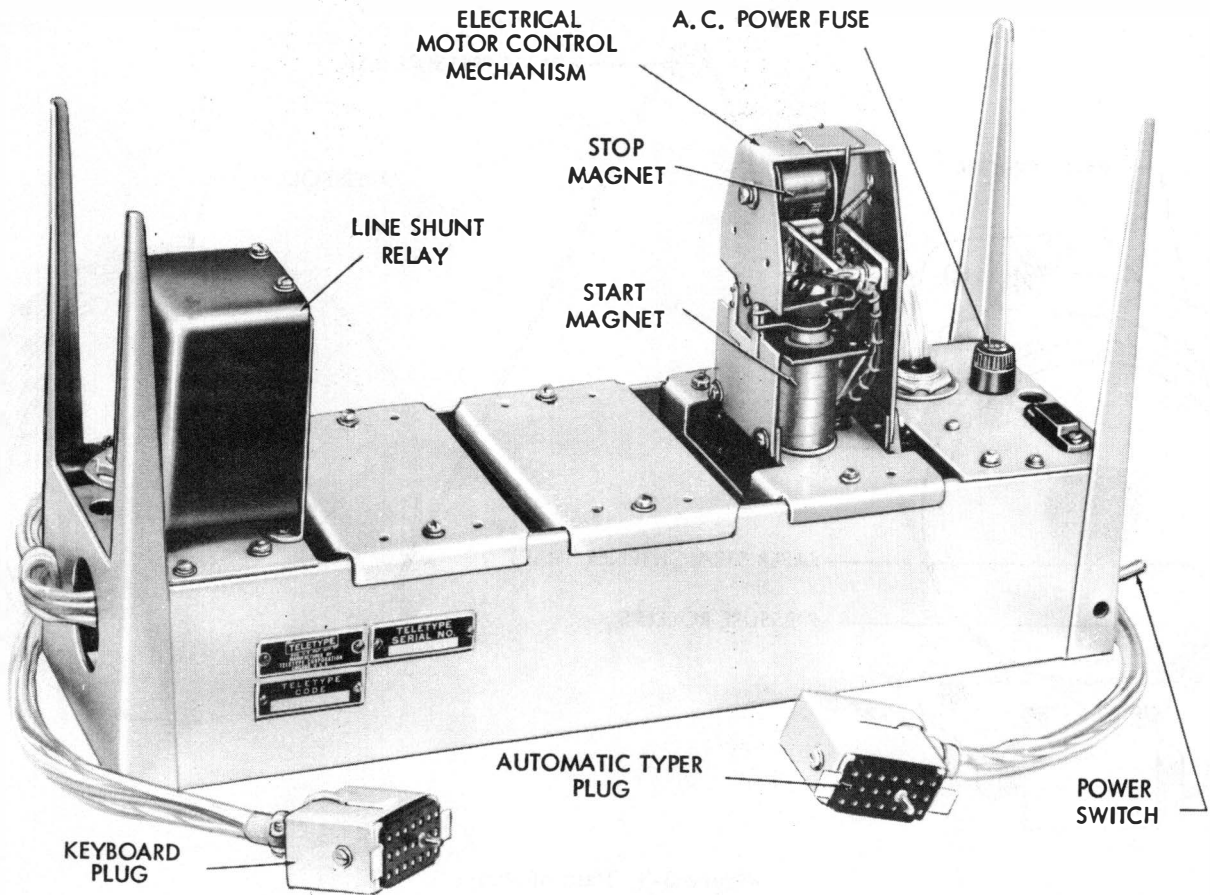


Figure 3-3. Power Distribution Panel SB-964/UG

f. LOCAL REVERSE LINE FEED (LOC R LF).— This key is used to feed the paper downward on the local machine only.

#### 3-4. CHARACTERS PER LINE.

a. The margin indicator lamp located to the right of the copyholder is illuminated six characters before the end of the line. Care should be exercised not to overtype the last character. In case overtyping should occur, the automatic typer is arranged to carriage return and line feed automatically when it reaches an adjustable setting somewhere between the 66th and 73rd character.

b. The margin lamp illuminates on the 66th printed character (spaces included) for lines of 72 character length (standard communications practice).

#### CAUTION

The left and right margins of teletypewriters are adjusted as directed in section 6. The

operator is not authorized to make these adjustments.

#### 3-5. PAPER AND RIBBON.

(See figures 3-2, 3-4 and 3-5.)

a. To replenish the supply of paper, open the dome of the cabinet, move the paper release lever (figure 3-2) on the automatic typer toward the rear, slide one of the spindle retainers toward the rear and remove the paper spindle. Insert the spindle in a fresh roll of paper and remount it so that the paper unwinds from underneath. Feed the paper over the paper straightener shaft and fold the end of the paper backward to square it off. With the paper release lever toward the rear, start the paper feeding around the platen and then restore the release lever to its forward position. Depress the platen handwheel, and continue to feed the paper upward. Do not disturb the ribbon. Make certain that the paper passes under the paper fingers, which may be raised temporarily to facilitate the operation. Momentary oper-

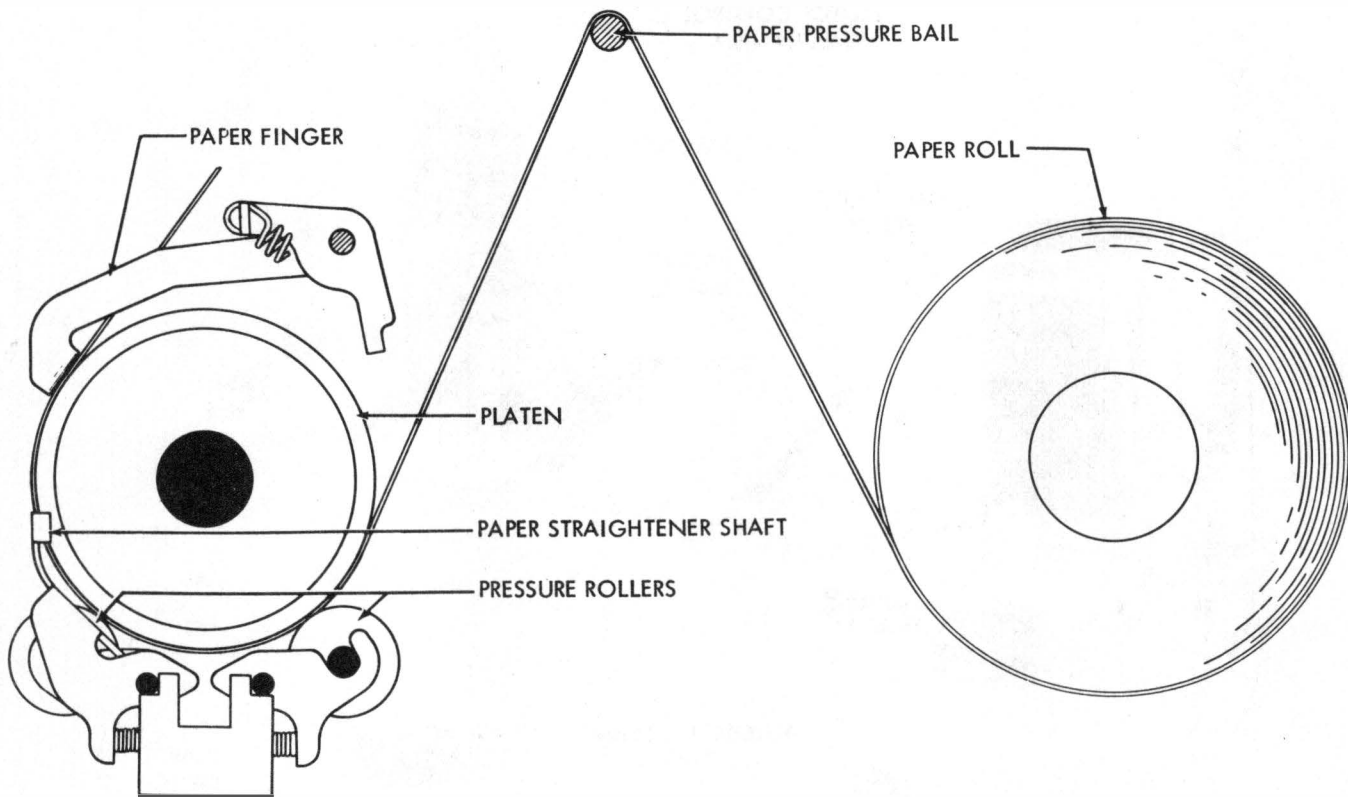


Figure 3-4. Path of Paper

ation of the paper release lever may be necessary when finally straightening the paper.

b. To replace the ribbon, open the hinged door in the dome, raise the ribbon spool toggles (figure 3-2) to the vertical position and remove both spools. Engage the hook that is on the end of the new ribbon in the hub of the empty spool. Wind a few turns of the ribbon onto the empty spool to make sure that the reversing eyelet has been wound upon the spool. Place the spools on the ribbon spool shafts in such a manner that the ribbon feeds from the rear of each spool without twisting. Turn each spool shaft slightly until the driving pins on the spool shafts engage the holes in the spools. Thread the ribbon forward around both ribbon rollers, through the slots in the ribbon reverse levers, and through the ribbon guide on the type box carriage. Make certain that the ribbon remains in the guide slots and that both reversing eyelets are between the ribbon spools and the reverse levers. Eliminate any slack in the ribbon.

### 3-6. MULTIPLE COPIES.

The printing blow should not be heavier than that required to produce satisfactory copies. The printing spring adjusting bracket (figure 1-5) may be readily moved to any one of three notches. Use notch "1" for printing one to three copies with paper of usual weight, notch "2" for four or five copies, and notch "3" for six or more copies.

### 3-7. STARTING PROCEDURE.

Controls which are frequently used are external to the Cabinet while those infrequently used are located on the Power Distribution Panel (figure 3-3) within the Cabinet, and on the inside of the cabinet dome (figure 1-12). Make sure that the cables from the Power Distribution Panel are plugged into their respective receptacles on the Automatic Typewriter and Keyboard.

a. The POWER SWITCH (figure 3-3), when thrown to the upper position, applies power to the Teletypewriter, and likewise to a Rectifier, when used.

#### NOTE

Where delay mechanism on the Keyboard base is used to stop the motor on extended idling periods, the operator must press the BREAK key prior to transmission in order to restart the Motors.

b. Cabinet CY-2320/SGA-3 is equipped with a switch identical to the power switch but located on the left side of the Cabinet. The purpose of this switch is to control power supplied to a Code Group system, of which the Teletypewriter is a part. When in the upper position, this switch applies power to the Teletypewriter and Code Group system.

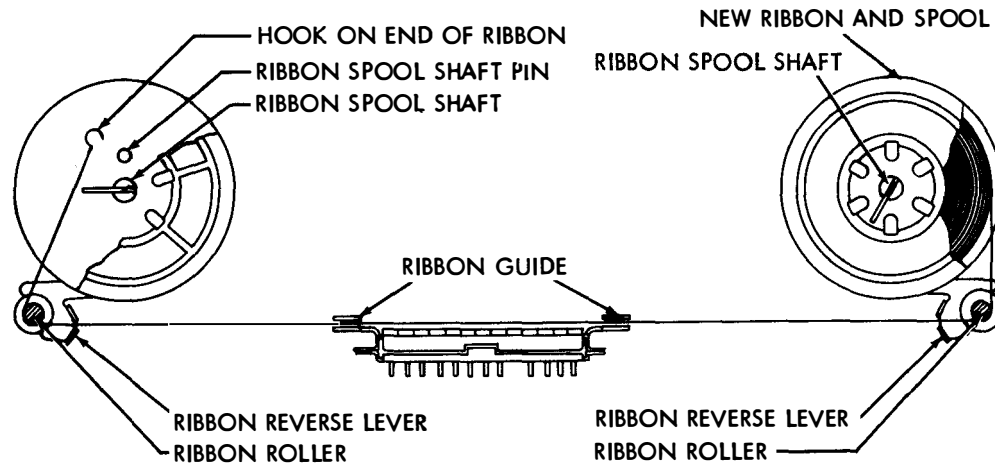


Figure 3-5. Path of Ribbon

**3-8. SPEED SETTING.**

Motor speed requires attention only when a governed Motor PD-18A/UG is used. Notify authorized maintenance personnel if adjustment is required. Motor speed adjustment procedures are described in section 6, paragraph 6-4g. As an aid in checking motor speed, hold the repeat key and a character key simultaneously operated. At 60-word speed, 70 characters should be typed in ten seconds; 57 characters in five seconds for 100-word speed.

**3-9. ORIENTATION RANGE.**

In order to utilize the receiver margin of the selecting mechanism to the best advantage, the starting position of the selector cam-clutch must be located at the most favorable angle. This is accomplished by positioning the clutch stop arm (figure 6-82) by means of the range finder knob. The adjustment will be made by authorized maintenance personnel following procedures outlined in section 6, paragraph 6-4k.

**3-10. SUMMARY OF OPERATION.**

a. Throw the POWER switch to the ON position. Allow several seconds to elapse in order for the motor to attain running speed and for the rectifier, if used, to deliver current.

(1) On Teletypewriter TT-176A/UG, the power switch is located at the top of the power distribution panel, accessible through an aperture in the cover. It is moved toward the rear to ON position, toward the front to OFF position.

(2) On Teletypewriter TT-234/SGA-3, there are two power switches, both of which must be in ON (upward) position for operating. The switches are located below and at both sides of the keyboard.

(3) On all other units, the power switch is located below and to the right of the keyboard. It is moved upward to ON position and downward to OFF position.

b. Hold the BREAK key depressed for at least two seconds to insure starting of the motors (when controlled by a delay feature) and to lock the keyboards on the circuit prior to starting transmission.

c. Press the KEYBOARD UNLOCK key to unlock the local keyboard.

d. Press the CARRIAGE RETURN key to bring the carriages on all machines to the beginning of the line.

e. If the motor is subject to stops by the delay feature, press the BREAK key prior to transmission in each instance where the circuit has been idle for one minute regardless of whether the motor on the local machine has stopped or not.

eA. For sequence switching (Teletypewriter TT-47E/UG) repeat transmission of "C" character four times consecutively to operate similarly equipped sets on the line. To close the switch, depress the "H" key four times consecutively.

**3-11. OVERLOAD CUTOUT.**

The Synchronous Motor PD-17A/U is equipped with a thermal cutout element to protect the motor against any excessively high temperature which might develop in case of a prolonged overload that would be insufficient to stall the motor and blow the protecting fuses. Once operated, this cutout device must be reset manually by pressing a reset button (figure 1-9) (to the rear of the motor on the motor plate) before it can be restarted.

**CAUTION**

If the motor stops and does not restart in response to regularly operated controls, check fuse F1102 in the power distribution panel. If the fuse has not blown, check the motor for excessive temperature. Where excessive temperature is indicated, rotate the motor by hand to determine whether any abnormal mechanical condition is present.



TABLE 3-1. ROUTINE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	REMARKS
Each Watch		
1. General operation	Apply operating tests as detailed in section 2 paragraph 2-7.	If irregularities occur notify authorized maintenance personnel.
Daily Routines		
2. Paper supply	Replace roll if only a few turns remain on the spindle.	Be sure that paper is straight under paper fingers, and that release lever is forward.
3. Condition of ribbon	Change if copy is too light.	Be sure that ribbon is in guides on type box and ribbon reversing levers.
4. Condition of type	If smudging is evident, remove the type box and clean the type by means of a stiff brush.	Be sure that type box is securely attached and that ribbon is not disturbed.
5. Condition of cover glass	Clean if required by means of soft cloth.	Make sure that paper or ribbon is not disturbed.
Quarterly Routines		
6. Orientation range	Note should be made of the pointer setting on the range scale so that if it is disturbed for any reason it can be repositioned conveniently. If a further check is necessary see section 6 paragraph 6-4k.	Abnormal signal line conditions may require changes in the setting as an expediency. When normal line conditions are restored, normal setting should be re-established.
7. Motor speed	With REPEAT key and any character key depressed simultaneously, 60 characters should be typed in 10 seconds at 60 words per minute (at 75 speed, 44 characters in 5 seconds; at 100 speed, 57 characters in 5 seconds).	Applies to governed motors only. To adjust, turn the governor adjusting screw (fig. 1-10) in the direction indicated by the stamping on the governor cover. See section 6 paragraph 6-4g.

If the load appears normal, leave the cabinet dome raised and permit the temperature to drop before resetting the cutout feature. If the motor continues to cutout or if any abnormal load conditions cannot be readily corrected turn the equipment over to authorized maintenance personnel.

**3-12. ROUTINE CHECKS.**

During normal operation, the printed copy of the message should be observed from time to time for indications of failure in the communication system. Additional checks should be made as indicated in table 3-1.

**NOTICE TO OPERATORS**

Operators shall not perform any of the following emergency procedures without proper authorization.

**3-13. EMERGENCY MAINTENANCE.**

a. FUSE LOCATION AND SYMPTOMS OF FAILURE. — A cartridge-type fuse is located in the power distribution panel and is accessible when the cabinet dome is raised. The fuse designation, current rating, and symptoms of failure are listed in table 3-2. Fuse location appears in table 3-3.

**WARNING**

Never replace a fuse with one of higher rating unless continued operation of the equipment is more important than probable damage. If a fuse burns out immediately after replacement, do not replace it a second time until the cause has been corrected.

b. **REPLACEMENT OF LAMPS.**—The end-of-line indicator lamp and the two lamps in the copy light assembly, all of which are mounted in the front of the

cabinet dome, have the conventional miniature bayonet type base. All are accessible when the dome is raised.

**TABLE 3-2. SYMPTOMS OF FUSE FAILURE**

MOTOR	MAINTENANCE LIGHT	BLOWN FUSE	VALUE (AMPS.)	COMMENTS
OFF	OUT	F1102	4	In Power Distribution Panel
OFF	OUT	F5801	10	In Power Distribution Panel
OFF	OUT	F5802	10	In Power Distribution Panel

**TABLE 3-3. FUSE LOCATION**

SYMBOL	LOCATION	PROTECTS	AMPS.	VOLTS
F1102	Power Distribution Panel	AC Supply	4	250
F5801	Power Distribution Panel	AC Supply	10	250
F5802	Power Distribution Panel	AC Supply	10	250

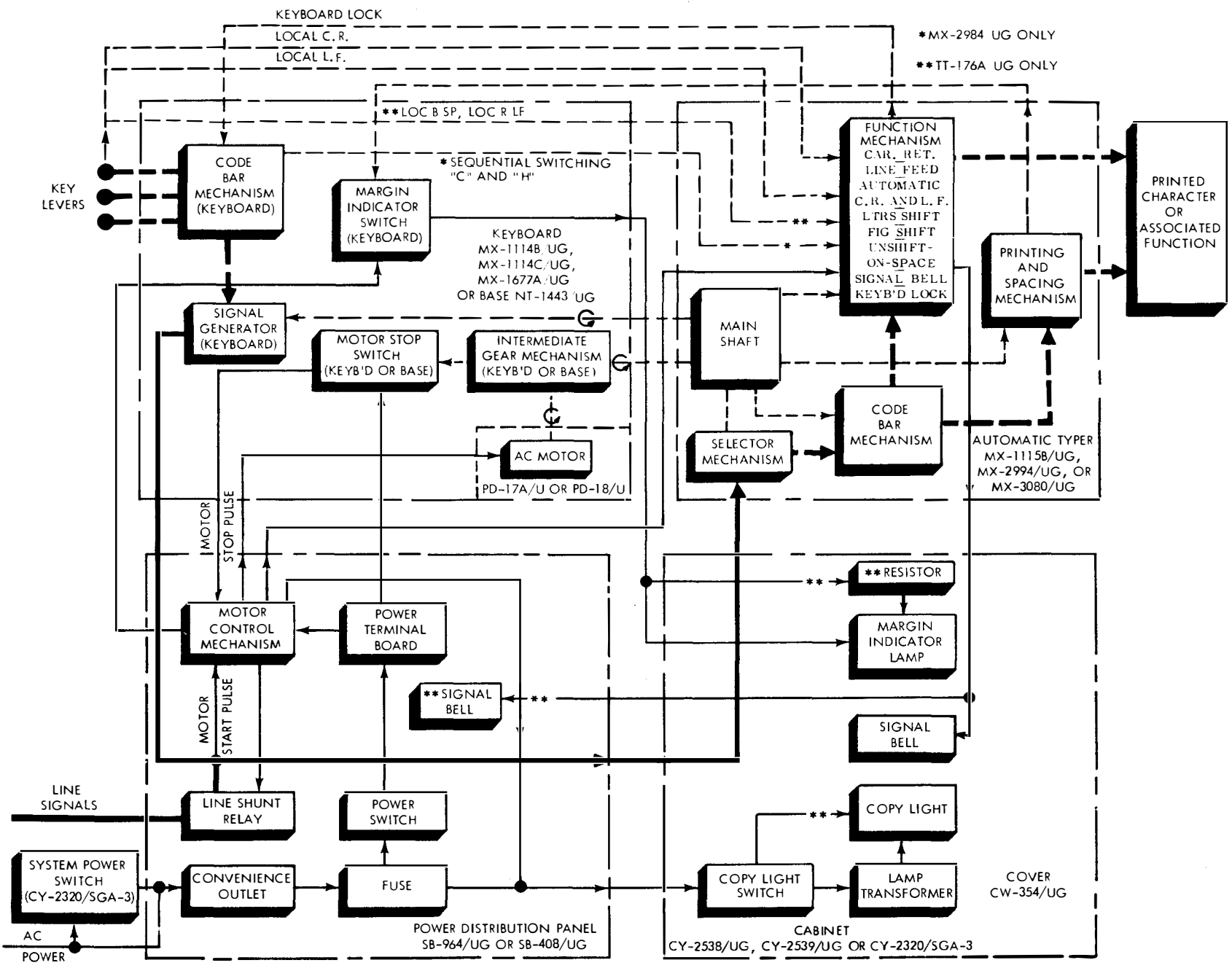


Figure 4-1. Teletypewriters TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, and TT-234/SGA-3, Functional Block Diagram

## SECTION 4 THEORY OF OPERATION

### 4-1. GENERAL.

a. This section covers the operating principles and circuit descriptions of Teletypewriters TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, TT-176A/UG, and TT-234/SGA-3. Except TT-171/UG, which receives only, and TT-234/SGA-3, which is part of an AN/SGA/3 Code Group, each equipment serves as a transmitting or receiving page printing telegraph set when connected to the terminal facilities of a wire or radio telegraph channel, and will operate on signal line current of either 20 or 60 milliamperes without a line relay (direct selector magnet operation). The signals transmitted and received on the local loop by these teletypewriters are of the neutral type (open and close) D.C. — 7.42 unit start-stop transmission pattern with a nominal speed of 368 (o.p.m.) operations per minute. TT-234/SGA-3 operates at a speed of 460 o.p.m. only. The equipments also are adaptable to speeds of 460 or 600 o.p.m. by gearing changes. The main transmitting or receiving channel may carry any standard type of 7.42 unit start-stop telegraph signals and may be keyed by any conventional method. Synchronous motors require a power supply of 115 volts (plus or minus 10 per cent) 60 cycle, single phase alternating current. To avoid loss in receiving margin with this type of motor, the frequency regulation must be within plus or minus one-half cycle. Governed motors require a like power supply, except that the frequency may be from 50 to 60 cycles.

b. The general electrical and mechanical relationships of the units which make up the teletypewriters are shown in figure 4-1, a functional block diagram.

### 4-2. SIGNALING CODE.

a. The signaling code is an electrical code of current and no-current intervals. Impulses which energize the selector magnets are known as marking impulses and those which do not are known as spacing.

b. This five unit code is composed of five selecting intervals which may be either marking (current) or spacing (no-current) according to the code sequence of the character to be transmitted. Each group of five selecting intervals is preceded by a start interval (no-current) and is followed by a stop impulse (current), both of which are used to maintain synchronism between the transmitting and receiving apparatus. Figure 4-2 shows graphically the code used.

### 4-3. KEYBOARD MX-1114B/UG, MX-1114C/UG, MX-1677A/UG, AND BASE NT-1443/UG.

#### a. GENERAL.

(1) The keyboard consists essentially of an intermediate gear, code bar, signal generator, local carriage return, local line feed, break, repeat, keyboard lock, keyboard unlock, margin indicator, and time delay mechanism.

(a) Keyboards MX-1114C/UG and MX-1677A/UG are equipped with new style signal generators which operates through a transfer bail (paragraph 4-3dA).

(b) Keyboard MX-1677A/UG differs from other similar components in provision for local back space and local reverse line feed (paragraphs 4-3fA and fB).

(2) The base consists essentially of an intermediate gear, carriage return (local), line feed (local), and time delay mechanism. It has no code-selecting or signal generating mechanisms.

(3) The keyboard or base provides mounting facilities for the automatic typer and for either the PD-17A/UG or PD-18U A.C. Motor. At the time the keyboard or base is installed in its cabinet, a connector P1101 or P5801 on the end of a rubber covered cable which emanates from the power distribution panel on SB-964/UG or SB-408/UG (figure 1-13 or 1-13A) is plugged into a receptacle J101 or J5001, mounted on the top left rear corner of the keyboard or base (figures 1-2, 1-3, and 1-11). See figure 4-3 for schematic wiring. In operation, the motor drives the intermediate shaft assembly, which furnishes motive power to the automatic typer shaft (figures 1-6 and 1-7). This, in turn, drives the signal generator helical driven gear which is connected to the keyboard clutch drum by a sleeve. Thus, the keyboard clutch drum is caused to rotate continually while

FIGURES	-	?	:	\$	3	!	&	8	'	(	.	,	9	0	1	4	BELL	5	7	;	2	/	6	"	BLANK	LETTERS	FIGURES	SPACE	C.R.	L.F.		
LETTERS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	BLANK	LETTERS	FIGURES	SPACE	C.R.	L.F.
NUMBERS INDICATE MARKING IMPULSES	1	1		1	1	1			1	1					1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2		2				2	2	2	2				2	2	2			2	2	2					2	2				2	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			3			3	3	3		3		3	3		3	3		3		3	3		3	3		3		3				
		4	4	4		4	4		4	4		4	4	4		4		4		4		4	4		4	4		4				
	5						5	5			5	5	5	5		5		5		5		5	5	5	5		5					

Figure 4-2. Signal Code

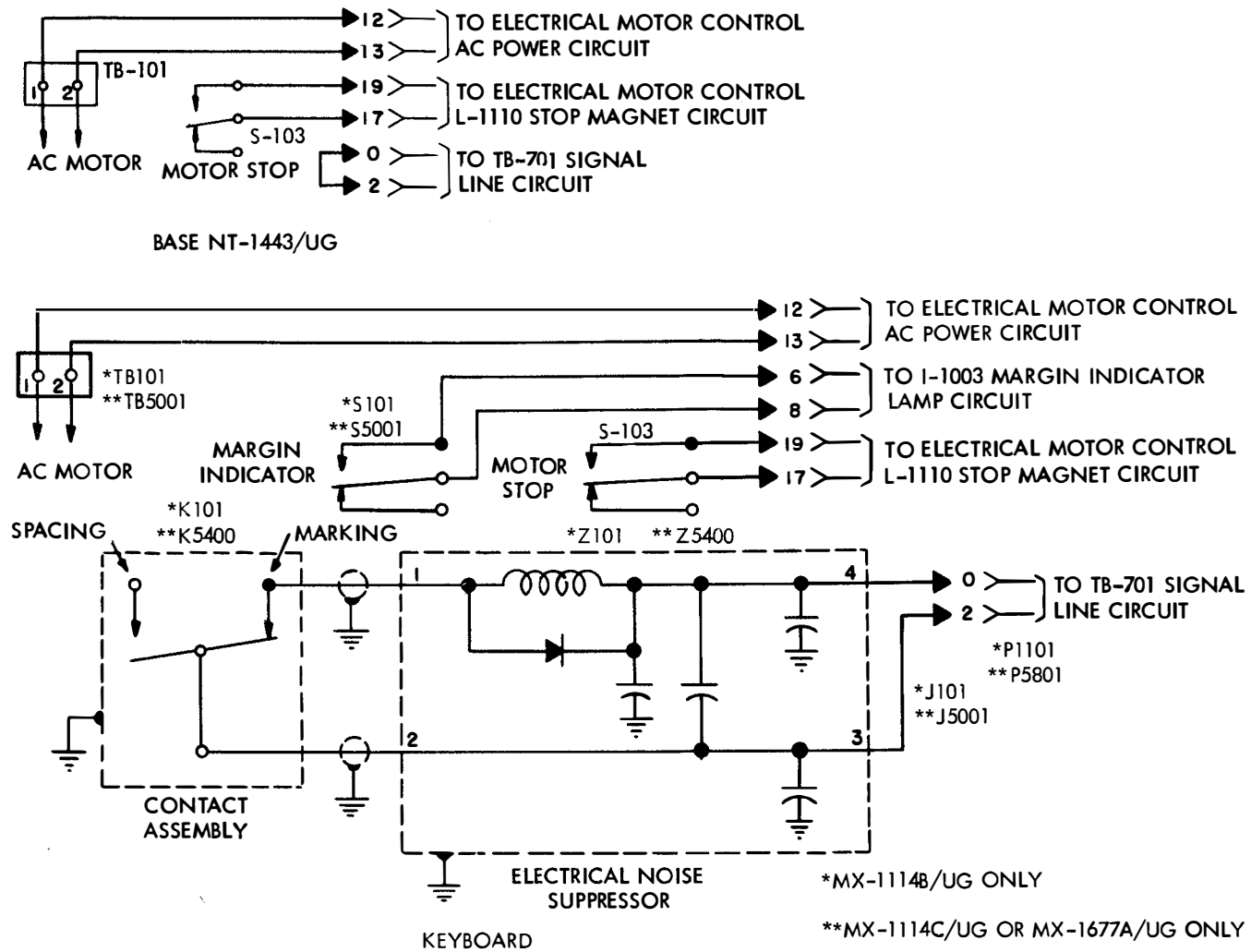


Figure 4-3. Keyboard MX-1114B/UG, MX-1114C/UG, or MX-1667A/UG, and Base NT-1443/UG Schematic Wiring Diagram

the Motor is running. On the Keyboard, the transmitting cam-clutch assembly of the signal generator mechanism remains stationary except when motion is extended to it from the keyboard clutch drum. Engagement of the clutch is brought about by the operation of any key in the lower three rows (green), or the space bar, and a transmitting cycle is then initiated.

b. INTERMEDIATE GEAR MECHANISM. The intermediate gear mechanism, located in the rear central portion of the Keyboard or Base (figure 1-2), mounts two helical gears and an eccentric cam. When the AC Motor and the Automatic Typewriter are in place on the Keyboard or Base, the intermediate shaft helical driving gear on the motor engages with and drives the intermediate helical driven gear and its attached intermediate shaft assembly. This shaft assembly and helical gear transfers the motive force to the automatic typewriter main shaft, and the eccentric bushing which drives the eccentric follower pawl on the time delay mechanism. The gear ratio between

the intermediate shaft helical driving gear on the motor, and the helical driven gear on the intermediate shaft, determines the maximum speed (operations per minute) at which the equipment will operate. These gears are readily replaceable with gears which will furnish other operating speeds.

c. CODE BAR MECHANISM.—The code bar mechanism is located in the front underside portion of the Keyboard. Each keylever in the lower three rows (green) and the space bar is connected to a code lever and each keylever in the upper row (red) is connected to a function lever. The code and function levers pivot about points near their midportions (figure 4-4). Located above the rear half of the code levers and running parallel with the front of the Keyboard are, from rear to front, the clutch trip bar, the numbers 1, 2, 3, 4, and 5 code bars, and the lock bar. The rear portion of each code or function lever normally is held downward by a spring so that the front end with its attached keylever is held upward. A locking wedge is mounted on the projection

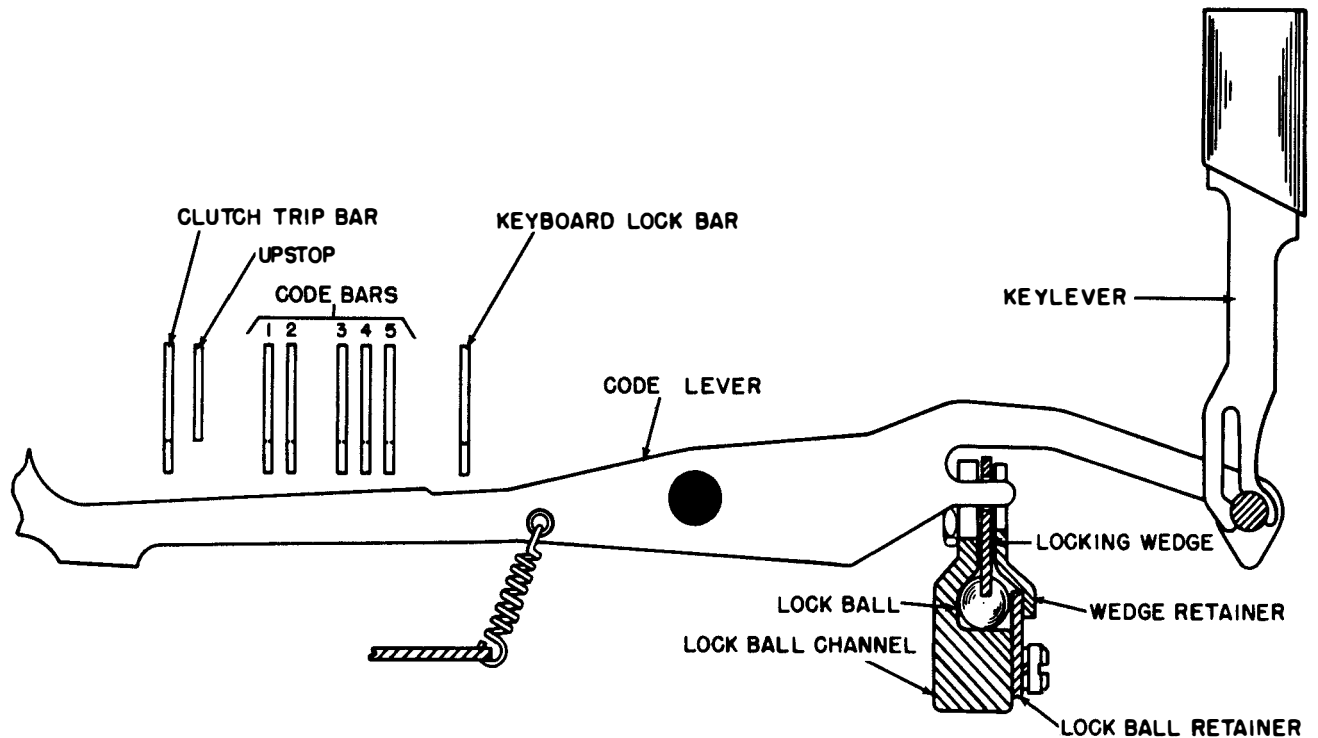


Figure 4-4. Code Bar Arrangement

of the lower front portion of all code levers, the local line feed function lever, and the local carriage return function lever (figures 4-4 and 4-5). If one of these levers is operated, its locking wedge moves downward between the lock balls in the lock ball channel, and crowds them together. This prevents any other lever with a locking wedge from being operated at the same time. With the keyboard shaft in its stop position, the clutch trip bar and the five code bars are held toward the left (front view), against the tension of their springs, by the latched-up code bar bail. When any green keylever or the space bar is depressed, the rear end of the associated code lever engages and lifts the front edge of the code lever bail (figure 4-6). An extension of the code lever bail disengages the code lever bail latch lever and permits it to drop. As the front edge of the code lever bail rises, the back edge rotates around the rear end of the operated code lever and locks it in position. As the code lever bail latch lever drops, it depresses the code bar bail latch lever and releases the code bar bail (figure 4-7). Upon being freed, the code bar bail, the clutch trip bar, and the five code bars are pulled toward the right by their springs, until the code bar bail strikes its bumper. As the five code bars shift, code projections on unselected code bars engage the operated code lever (figure 4-8). Code bars which are permitted to move to the extreme right become selected and carry with them their respective transfer levers. By means of the clutch trip bail and the clutch stop lever, the clutch trip bar releases the keyboard cam-clutch which rotates on the shaft. During the time in which the cam-clutch makes

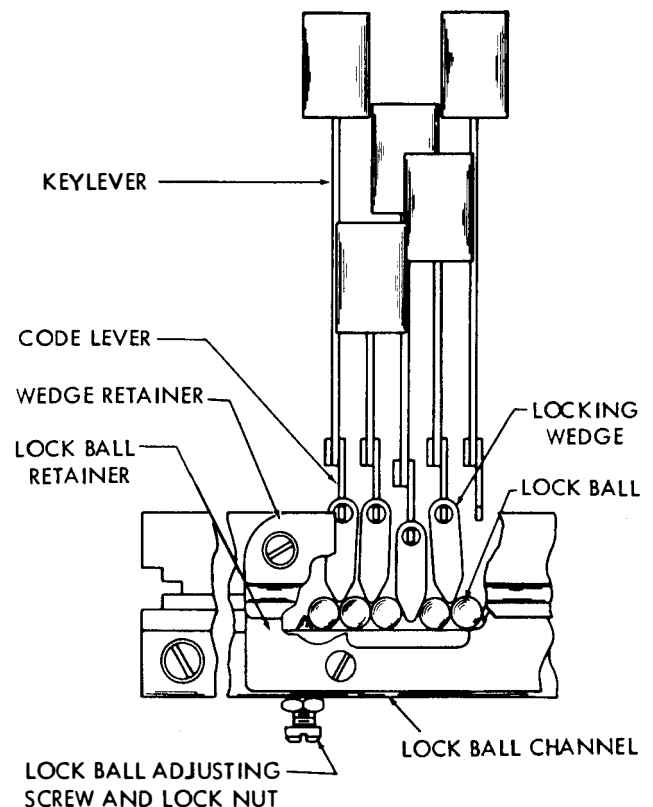


Figure 4-5. Keylever Lock Ball Mechanism

a revolution, an eccentric cam and its follower cause the code bar bail, the five code bars, and the clutch trip bar to be returned to their original positions (figures 4-9 and 4-10). As the code bar bail moves to the left, it carries with it the non-repeat lever (figure 4-11). This in turn rotates the non-repeat bell crank about its pivot point until it lifts the

code lever bail latch lever out of engagement with the code lever bail extension. While a spring then returns the code lever bail to its normal position, the code lever bail extension drops on the non-repeat lever to disengage it from the code bar bail. The spring then resets the non-repeat mechanism. As the code lever bail returns to its normal position,

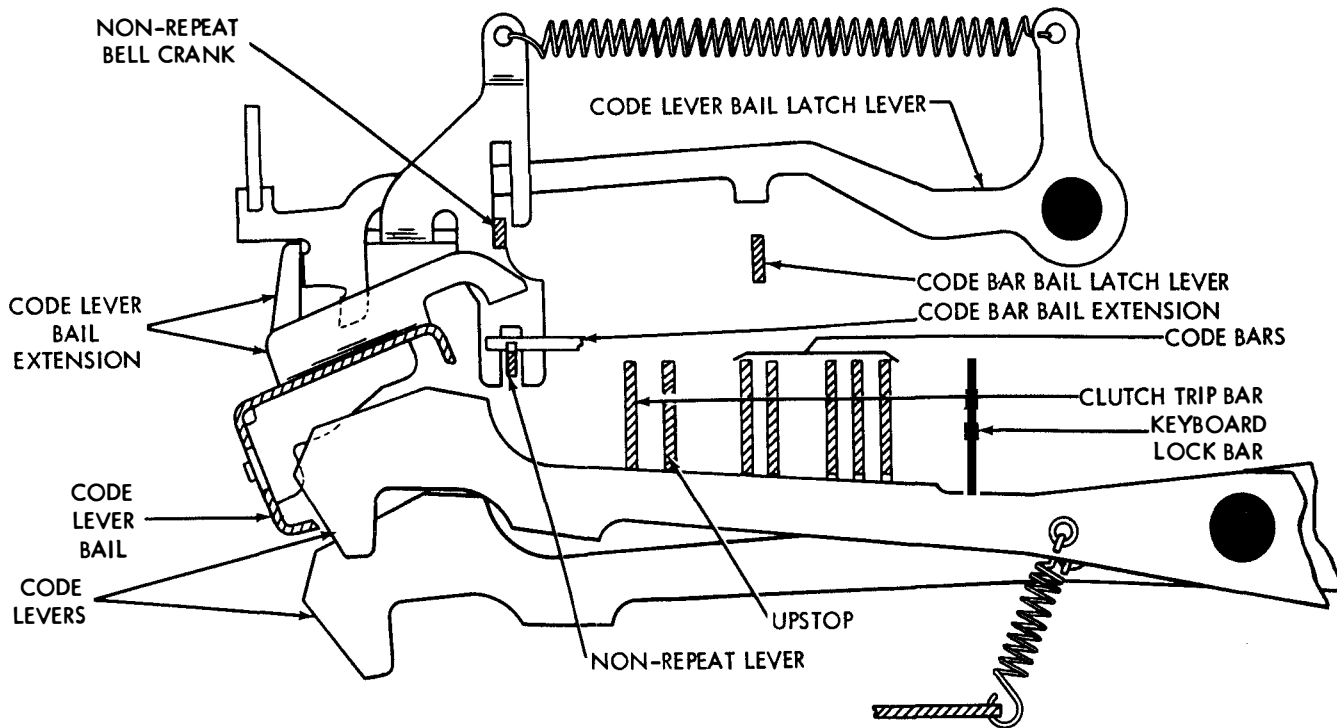


Figure 4-6. Keylever Mechanism, Selected Position

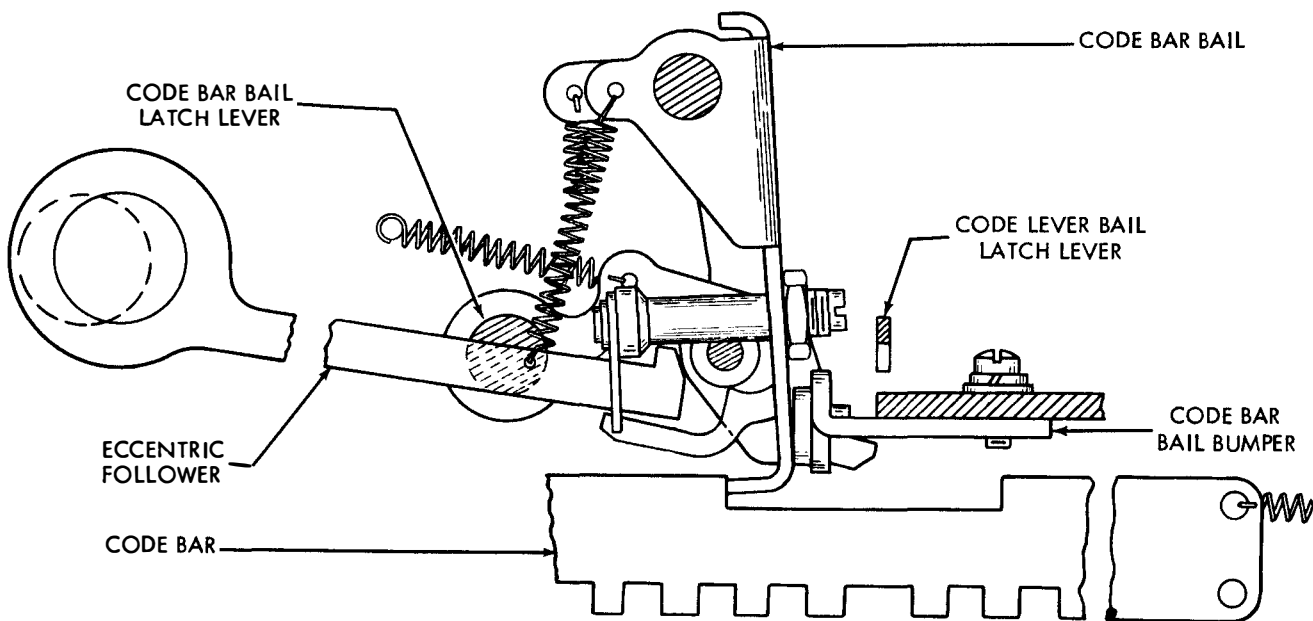


Figure 4-7. Code Bar Bail Mechanism, Released Position

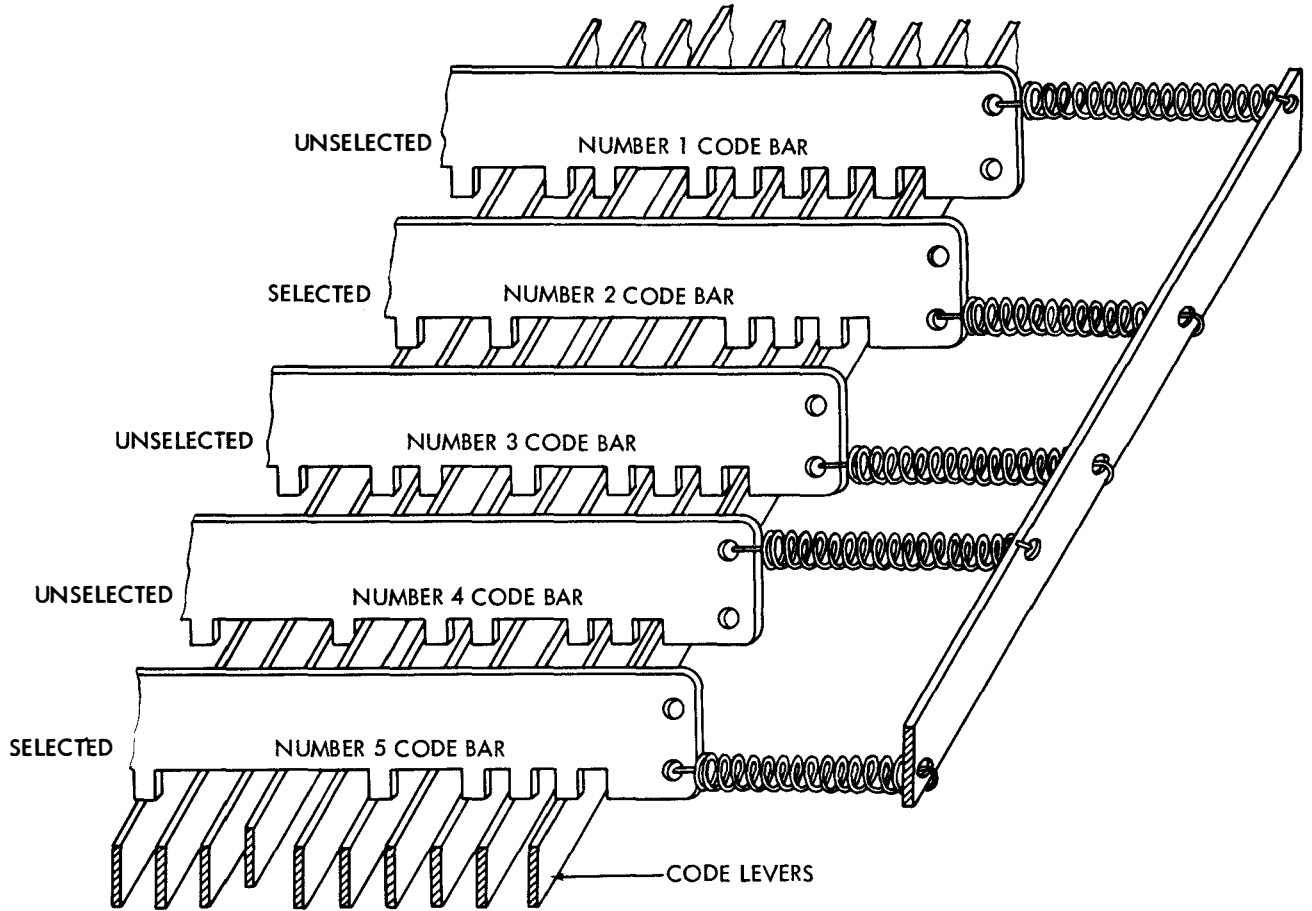


Figure 4-8. Code Bar Selection

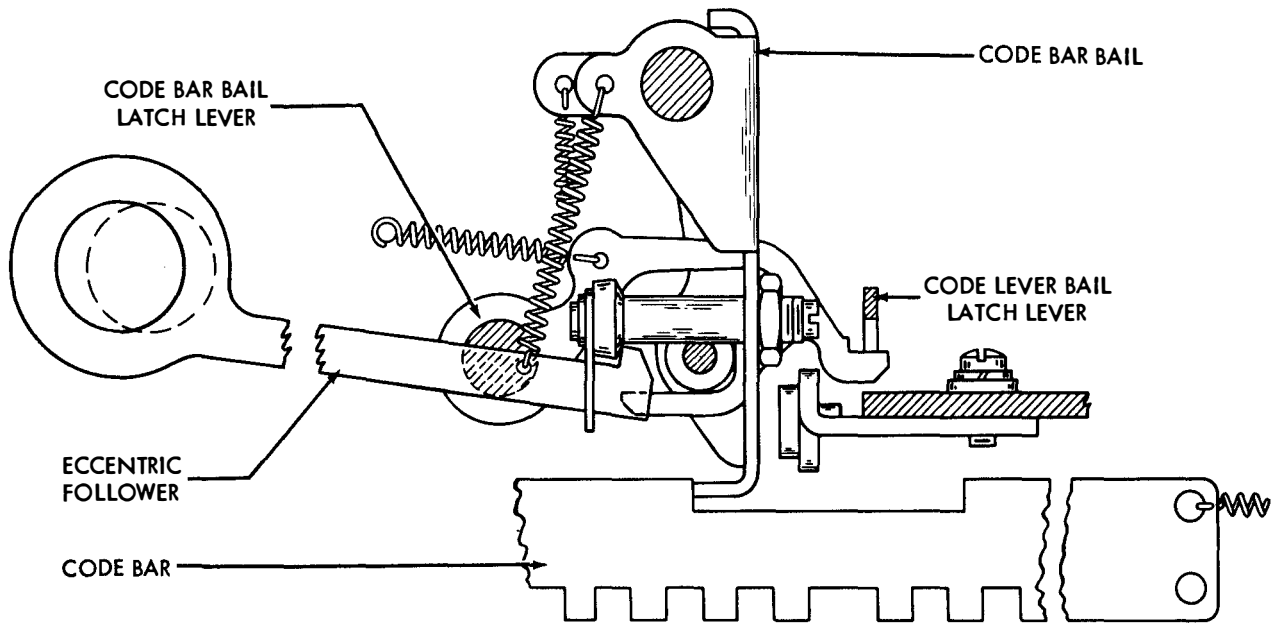


Figure 4-9. Code Bar Bail Mechanism, Reset Position



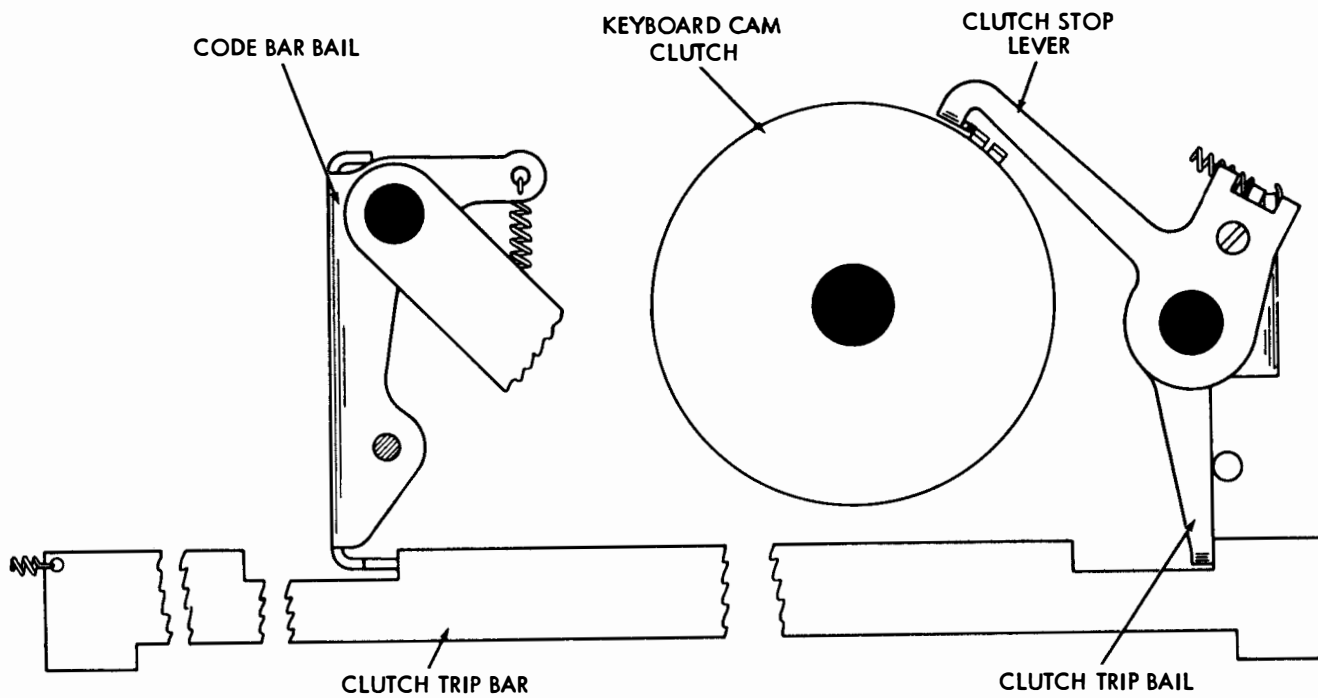


Figure 4-10. Clutch Trip Mechanism, Rear View

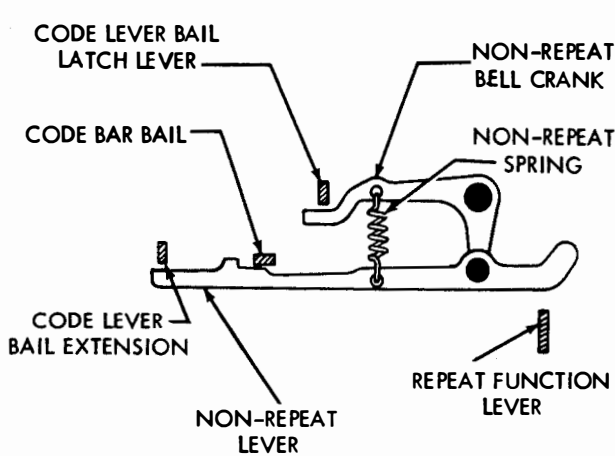


Figure 4-11. Non-Repeat Lever Mechanism

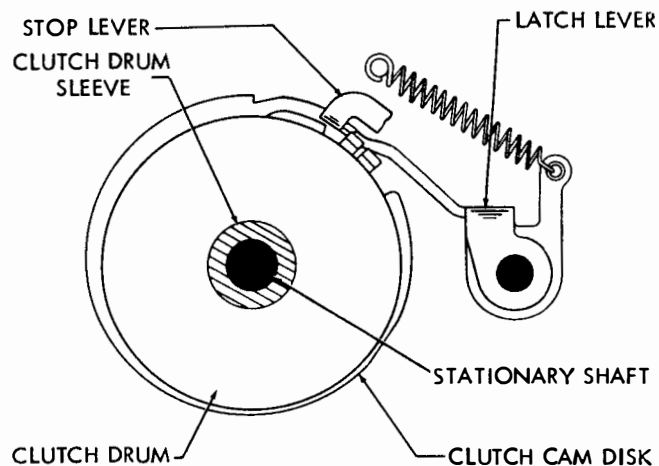


Figure 4-12. Keyboard Clutch Latch Mechanism

it releases the operated code lever and its keylever. As the cam-clutch nears the end of its revolution, the clutch shoe lever strikes the stop lever, and the inertia of the cam disk assembly causes it to continue to turn until its lug makes contact with the lug on the clutch shoe lever. At this point the latch lever drops into the indent in the cam disk and the clutch is held disengaged until the stop lever is again operated (figure 4-12). For detailed information on the operation of the clutch shoes, see paragraph 4-4b(3) of this section.

d. SIGNAL GENERATOR MECHANISM.—The signal generator mechanism is located on the top front part

of the keyboard chassis. As was shown in paragraph 4-3c, each of the five code bars operates its own transfer lever (figure 4-13). In addition to these five transfer levers, there are two others which are not associated with code bars and which are used to originate the start and stop pulses. The stop pulse transfer lever (seventh from the rear and located next to the fifth pulse transfer lever) is permanently positioned so that its upper end and its associated selector lever are toward the left or selected position. The start pulse transfer lever (third from rear and located between the second and third pulse transfer levers) is permanently positioned so that its upper end and its associated selector lever are

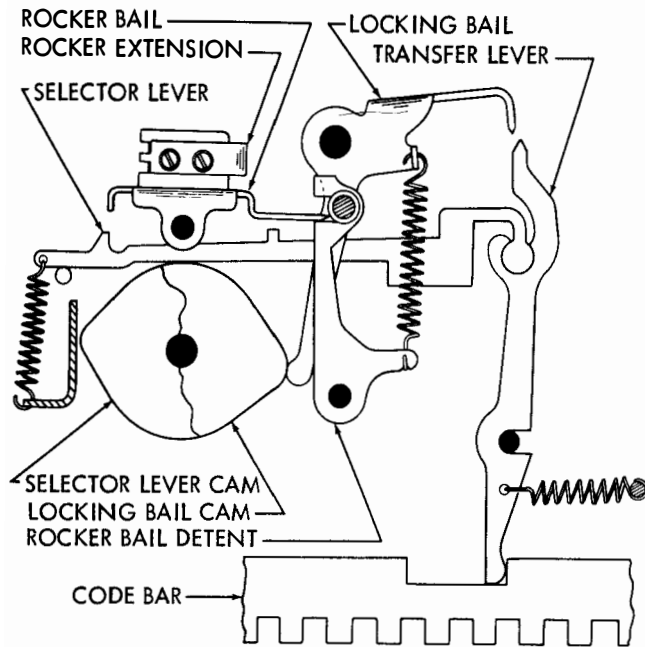


Figure 4-13. Signal Generator Mechanism, Front View

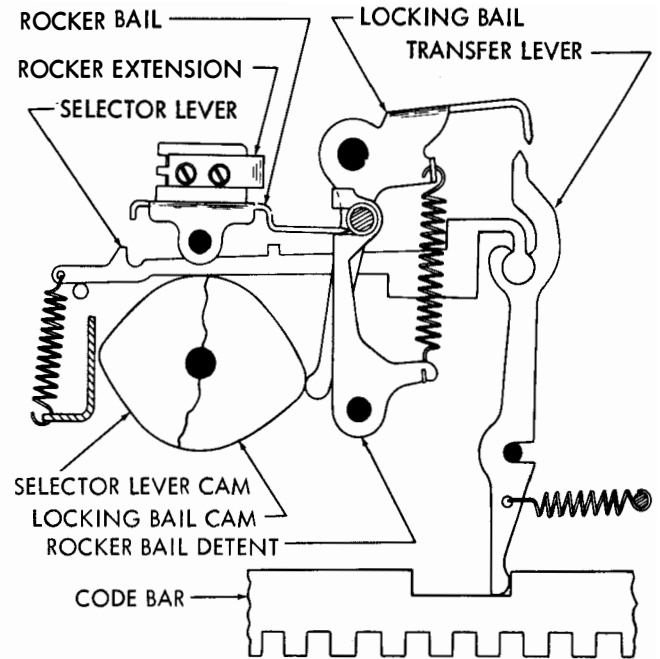


Figure 4-14. Signal Generator Mechanism, Front View

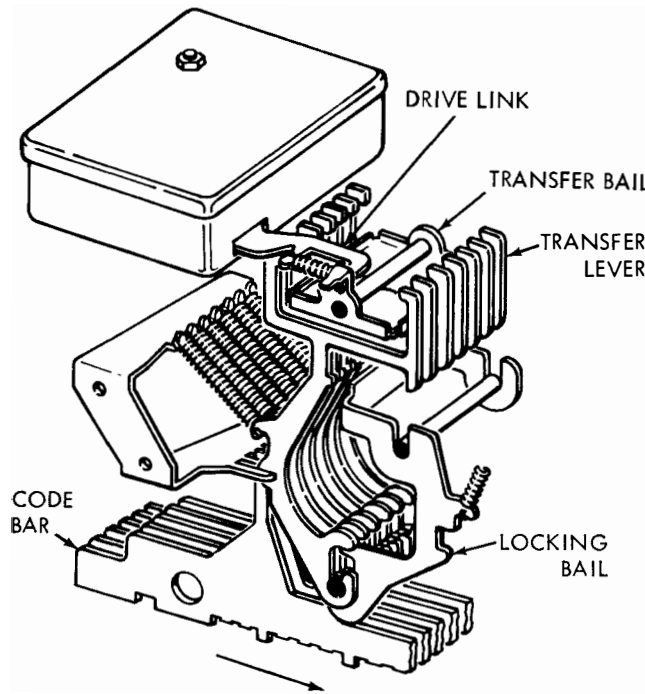


Figure 4-14A. MX-1114C/UG or MX-1677A/UG Signal Generator Mechanism

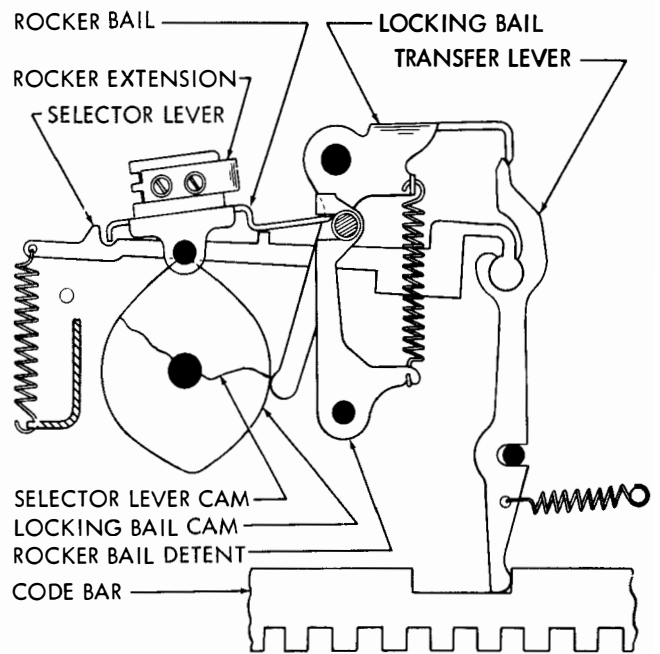


Figure 4-15. Signal Generator Mechanism, Front View

to the right or unselected position. When a code bar is unselected, the upper end of its transfer lever and its associated selector lever are positioned toward the right (figure 4-13). When a code bar is selected, the upper end of its transfer lever and its associated selector lever are positioned toward the left (figure 4-14). After the code bars have

positioned their transfer levers and selector levers, the locking bail which is operated by a cam on the keyboard cam-clutch assembly drops downward between the lock projections on the upper ends of the transfer levers (figure 4-15). When the selected code bars are reset by the code bar bail, the upper ends of their transfer levers are held toward the left by

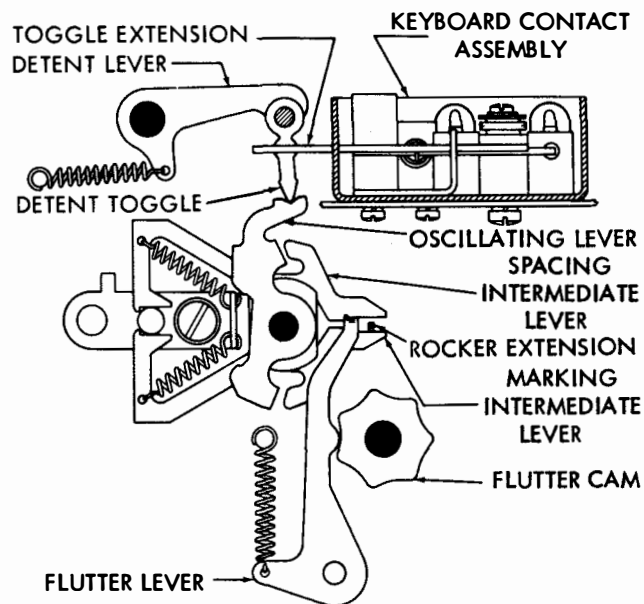


Figure 4-16. Signal Generator, Rear View, Stop Position

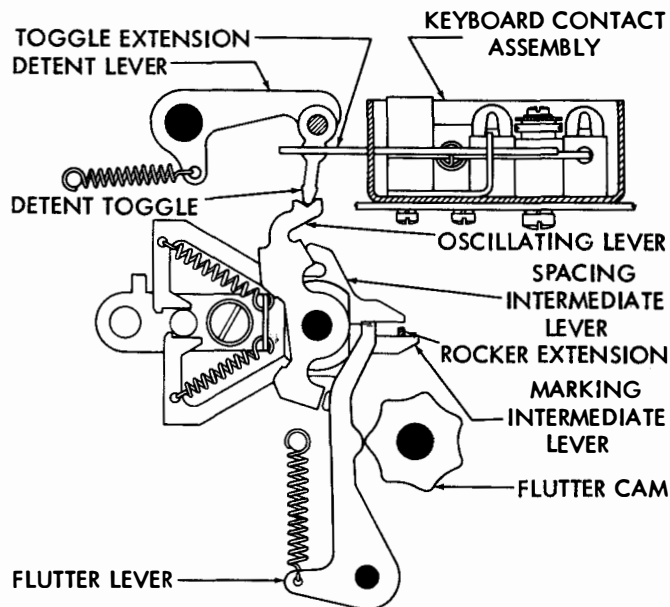


Figure 4-17. Signal Generator, Rear View, Spacing Position

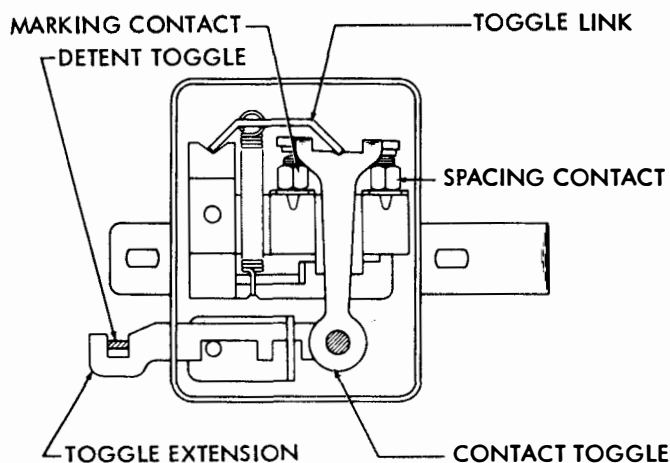


Figure 4-18. Contact Assembly, Spacing Position

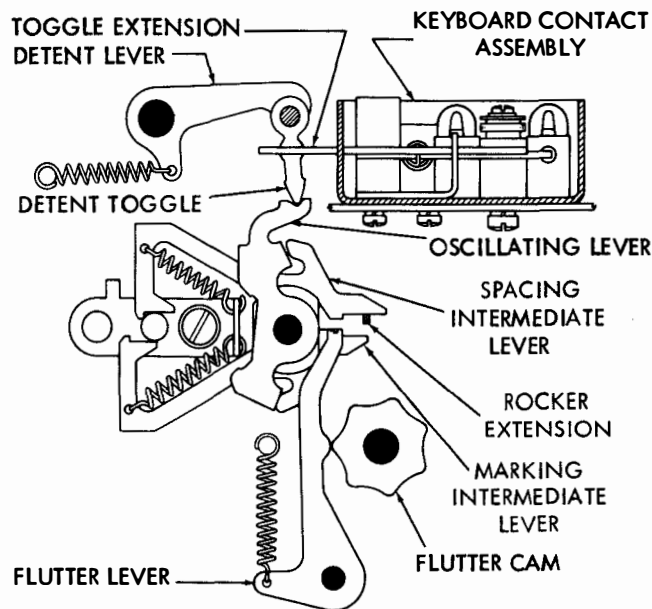


Figure 4-19. Signal Generator, Rear View, Marking Position

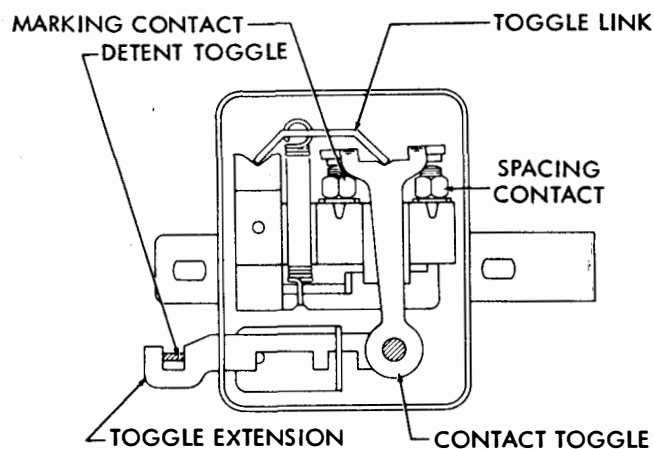


Figure 4-20. Contact Assembly, Marking Position

the locking bail. The slotted bearings at their pivot points permit the transfer levers to shift to the left without disturbing the selection set up on the selector levers. Each of the seven selector levers is associated with a cam on the cam-clutch assembly. These cams push the levers upward briefly in the order: start, 1, 2, 3, 4, 5, and stop. A rocker bail is located above the selector levers and is actuated by them. A rocker bail detent holds the bail in either of the two positions it can assume. When a selector lever which is in the unselected position (toward the right) is pushed upward by its cam, it rotates the rocker bail clockwise (figure 4-13). When a selector lever which is in the selected position (toward the

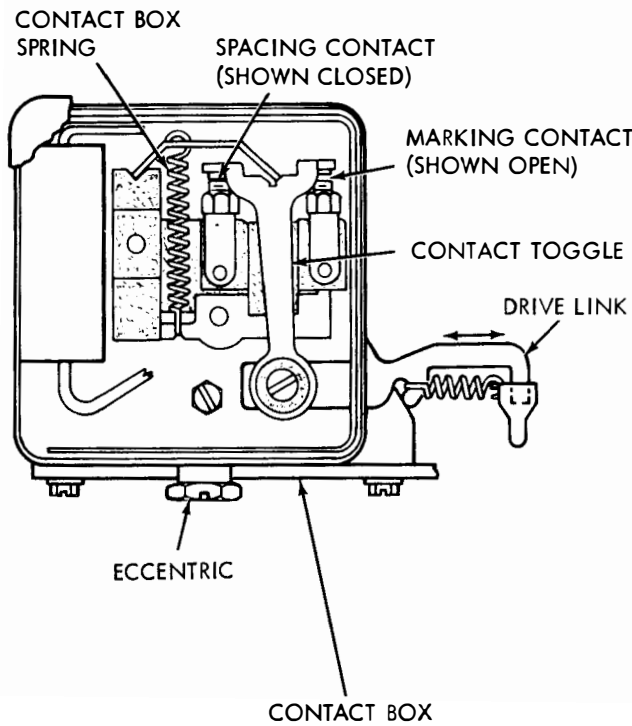


Figure 4-20A. MX-1114C/UG or MX-1677A/UG Contact Box

left) is pushed upward by its cam, it rotates the rocker bail counterclockwise (figure 4-15). An extension on the rocker bail is moved downward or upward respectively with clockwise or counterclockwise rotations of the bail. On the rear side of the signal generator mechanism are located the upper or spacing intermediate lever, the lower or marking intermediate lever, the oscillating lever, the flutter lever, the detent toggle, and the detent lever. In the stop position, the rocker extension holds the marking intermediate lever downward and out of engagement with the flutter lever (figure 4-16). As the flutter cam on the keyboard cam-clutch assembly rotates,

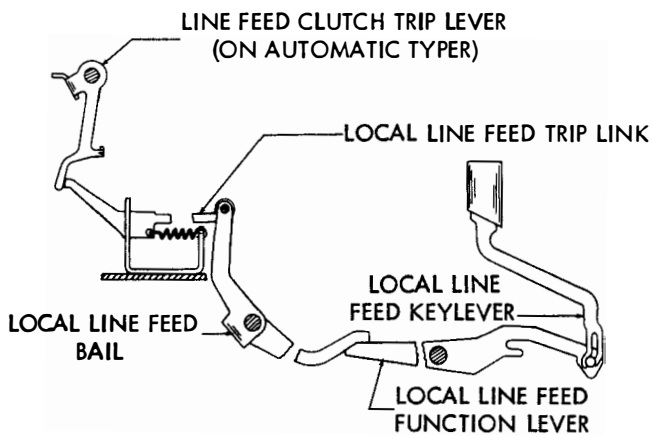


Figure 22. Local Line Feed Mechanism

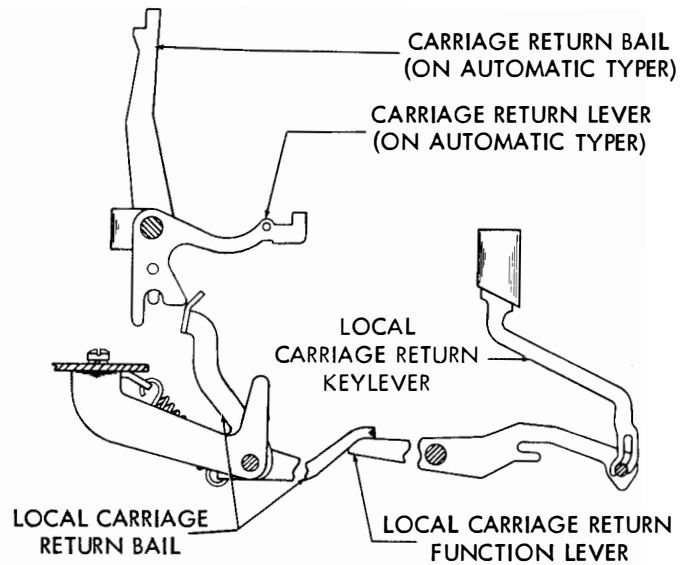


Figure 4-21. Local Carriage Return Mechanism

it moves the flutter lever and the spacing intermediate lever toward the left as viewed from the rear (figure 4-17). The spacing intermediate lever bears on the upper part of the oscillating lever and rotates it counterclockwise so that the detent toggle is shifted toward the left where it is held by the detent lever. The detent toggle moves the toggle extension in the contact assembly K101 (on the top side of signal generator mechanism) toward the left and causes the contact toggle to pivot on the spacing contact and break the marking contact (figure 4-18). This breaks the line circuit which passes through the contact toggle and the marking contact and originates a start or spacing element of the signaling code. When the rocker extension is in its upward position, it holds the spacing intermediate lever upward out of engagement with the flutter lever (figure 4-19). Further rotation of the flutter cam moves the flutter lever and the marking intermediate lever toward the left. The marking intermediate lever bears on the lower part of the oscillating lever and rotates it clockwise so that the detent toggle is shifted to the right where again it is held by the detent lever. The detent toggle moves the toggle extension in the contact assembly toward the right and causes the contact toggle to close with the marking contact and pivot on it (figure 4-20). This closes the line circuit and originates a marking element of the signaling code. The electrical noise suppressor Z101 is in the line circuit to aid in the suppression of undesirable radiation when the circuit is broken.

dA. SIGNAL GENERATOR (MX-1114C/UG or MX-1677A/UG). — The signal generator is located on the top of the front part of the keyboard. A drive shaft is geared at the rear to the main shaft of the automatic typer. A cam-clutch assembly is mounted on the forward end of the shaft.

(1) Each of the five code bars operates its own transfer lever (figure 4-14A). In addition to these five transfer levers, there are two others which are

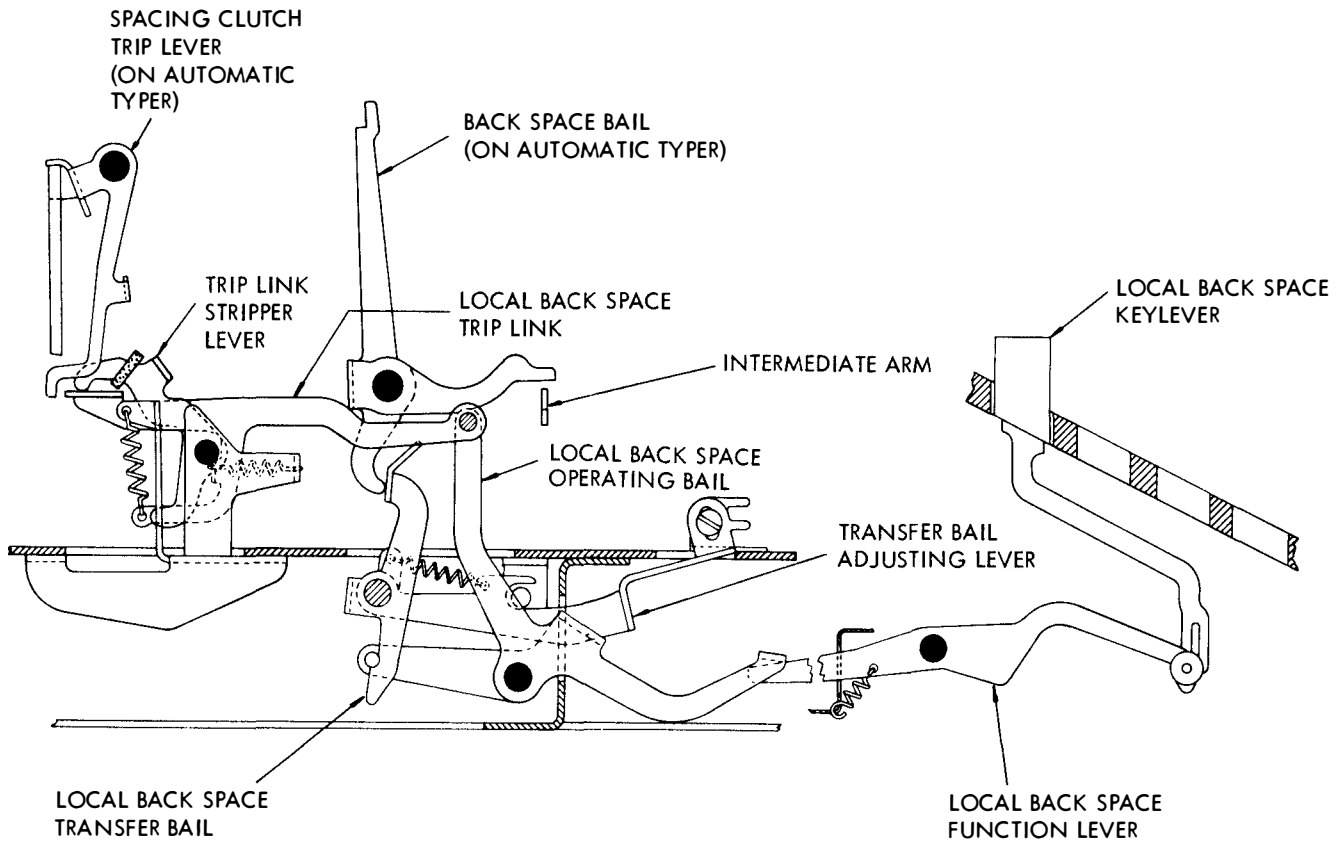


Figure 4-22A. Local Back Space Mechanism (MX-1677A/UG)

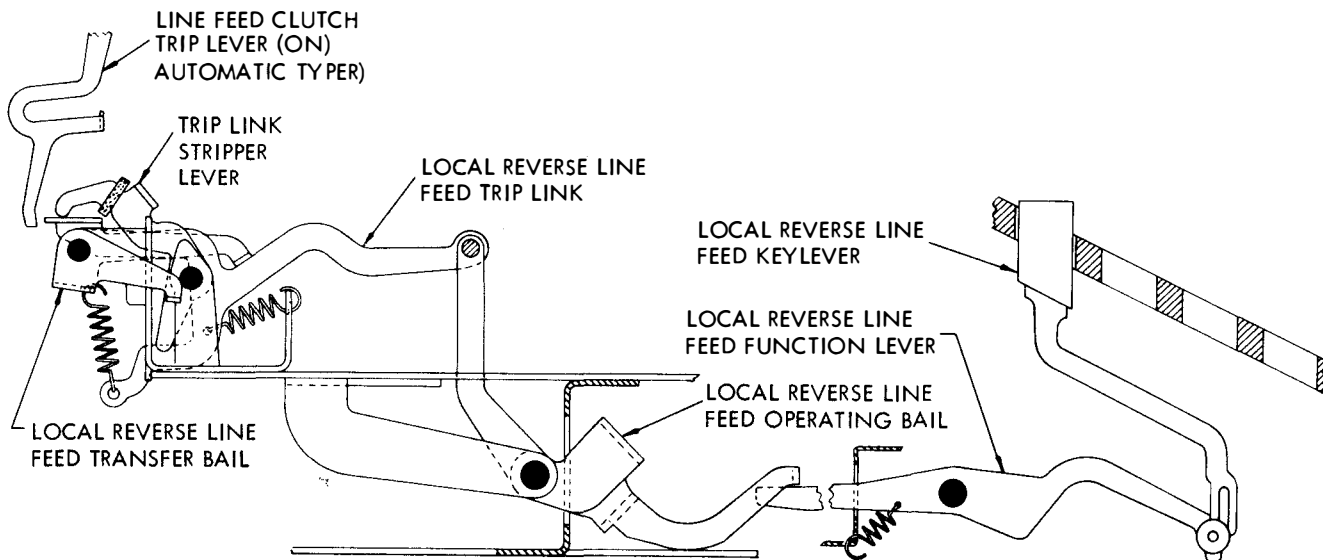


Figure 4-22B. Local Reverse Line Feed Mechanism (MX-1677A/UG)

not associated with code bars. These originate start and stop pulses.

(2) The cam lobes are numbered from 1 through 8 from rear to front. There are seven signal pulse lobes on the cam (one for each transfer lever). The eighth cam lobe is used to actuate the locking bail.

(3) The cam lobes are so arranged that when the cam rotates, lobe 3 engages its transfer lever first and moves it downward. Almost at the same time, the eighth lobe from the rear begins to move the locking bail upward. A blade on the locking bail engages in slots on the selected transfer lever and locks them in

position. Unselected transfer levers are locked in the left position as the blade blocks their movement. Thus, in the first few degrees of cam rotation, the permuted position of the transfer lever is locked, and the code bars are free to be reset in their normal latched positions.

(4) Transfer lever 3 is the start pulse transfer lever. There is no code bar to engage this lever, hence it is always held to the left by its own spring. As cam lobe 3 moves this lever down, the hook on the upper right of the lever engages the right hand side of the transfer bail. This trips the transfer bail to the right and pulls the contact drive link (figure 4-14A) to the right. The resulting action of the contact toggle is such that the marking contacts open and the spacing contacts close. Under this condition, there is "no current" in the signal circuit. This is known as a spacing pulse. Thus, the first pulse (or start pulse) of any character is a spacing (no current) pulse.

(5) Lobe 1 and its transfer lever move downward next. In turn, the upper right hook of this lever pulls downward on the transfer bail, rotating it clockwise. This pushes the drive link (figure 4-20A) to the right, thereby opening the marking contacts and allowing a spacing (no current) pulse to be transmitted.

(6) When lobe 2 and its transfer lever move downward, transfer lever 2 is positioned to the right. The upper right hook pulls downward on the bail, rotating it clockwise, pushing the drive link to the left and closing the marking contacts, allowing a marking pulse to be transmitted.

(7) Similarly, transfer levers 4, 5, and 6 are pulled down by their respective cam lobes. The resulting pulse will be marking if the transfer lever is to the right, or spacing if it is to the left.

(8) Transfer lever 7 is the stop pulse transfer lever. This lever is permanently held to the right by a stop pin; therefore, the resulting pulse, the stop pulse, is always marking (current on).

(9) The locking bail holds the transfer levers in their permuted positions until after the beginning of the fifth pulse. Then cam lobe 8 pulls the bail down out of locking position, and all selected transfer levers are free to return to their left position.

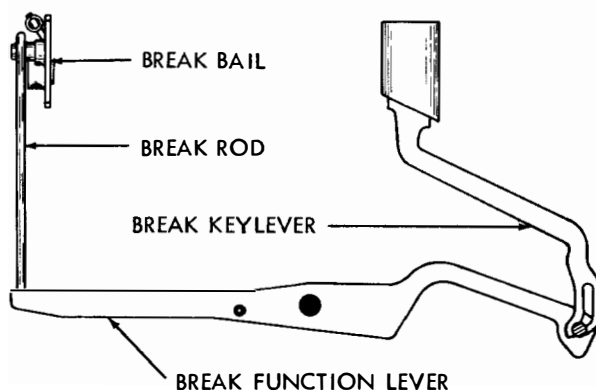


Figure 4-23. Break Mechanism

e. LOCAL CARRIAGE RETURN MECHANISM. — Operation of the local carriage return keylever (LOC CR — Keyboard) (CAR RET — Base) causes its function lever to raise the forward end of the local carriage return bail (figure 4-21). The bail rotates about its pivot point until the upper end engages the carriage return lever on the automatic typer. Thus, the carriage return mechanism on the local automatic typer is made to operate without disturbing the line circuit. The carriage return mechanism is fully described in paragraph 4-4i(4) of this section.

f. LOCAL LINE FEED. — Operation of the local line feed keylever (LOC LF — Keyboard) (LINE FEED — BASE) causes its function lever to raise the forward end of the local line feed bail (figure 4-22). The bail rotates about its pivot point and the upper end pushes the trip line until the link engages the line feed clutch trip lever on the automatic typer. Thus, the line feed mechanism on the local automatic typer is made to operate without disturbing the other automatic typers on the same circuit. The line feed mechanism is fully described in paragraph 4-4i(5) of this section.

fA. LOCAL BACK SPACE MECHANISM. — When the local back space keylever (figure 4-22A) is depressed, the associated function lever lifts the front extension of the local back space operating bail. The pin on the rear extension of the bail is moved downward against the camming surface on the lower end of the local back space transfer bail. The upper end of the transfer bail moves toward the rear and engages the lower extension of the back space bail on the automatic typer. When no message is being received, the carriage may be back spaced one space at a time without disturbing the line circuit. Refer to paragraph 4-4i(5)A of this section for a detailed description of the associated mechanism on the automatic typer.

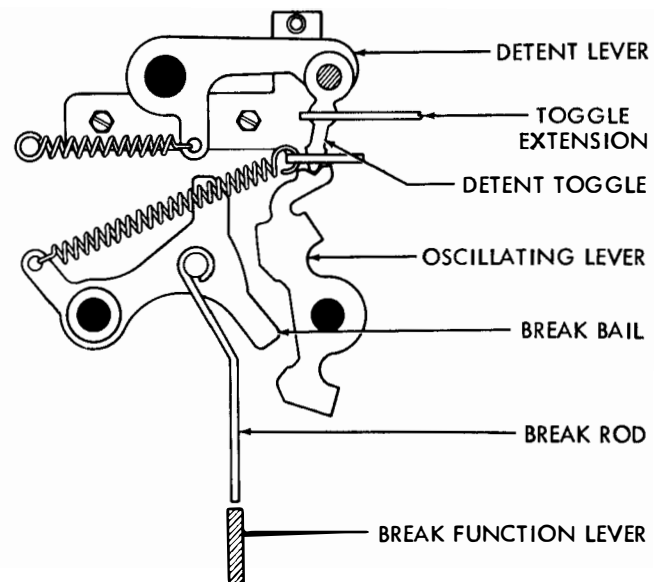


Figure 4-24. Break Mechanism

fB. LOCAL REVERSE LINE FEED MECHANISM. — When the local reverse line feed keylever (figure 4-22B) is depressed, the associated function lever raises the front extension of the local reverse line feed operating bail and moves the attached local reverse line feed trip link to the rear. The upper arm of the upper arm of the transfer bail rides up the slope of the line feed trip link as the link is moved to the rear. The other arm of the transfer bail lists the slide link on the automatic typer (figure 4-71A) to its operated position, so that the projection is moved in front of the lower end of the line feed bar. The reverse line feed operation will then occur when the line feed clutch trip lever on the automatic typer is tripped. Thus, the reverse line feed mechanism is made to operate without disturbing the other automatic typers in the same line circuit. Refer to paragraph 4-5i(5)B of this section for a detailed description of the associated mechanism on the automatic typer.

g. BREAK MECHANISM. — Operation of the break keylever (red) causes its function lever to raise the break rod and shift the break bail (figure 4-23). As the break bail moves upward, its lower end engages the lower end of the oscillating lever to rotate the lever counterclockwise as viewed from the rear (figure 4-24). The oscillating lever shifts the detent toggle toward the left where it is held by the detent lever. The detent toggle moves the toggle extension in the contact assembly toward the left and causes the contact toggle to pivot on the spacing contact and break the marking contact (figure 4-18). This breaks the line circuit until the break keylever is released. When the keylever is released, a spring on the break bail moves it downward. The upper end of the bail engages the upper end of the oscillating lever to rotate it clockwise and close the contacts in the contact assembly.

h. REPEAT MECHANISM. — Operation of the repeat keylever (red) simultaneously with one of the green keylevers or the space bar, disables the non-repeat mechanism and causes the character or function selected to be repeated as long as the repeat keylever is held operated. The operated repeat keylever causes its function lever to raise the right

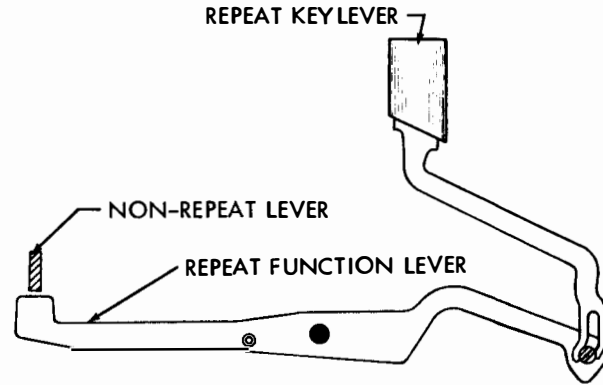


Figure 4-25. Repeat Mechanism

end of the non-repeat lever (figures 4-11 and 4-25), and rotate it about its pivot point. In this position, the non-repeat keylever cannot be engaged and operated by the code bar bail. Therefore, the non-repeat bell crank will not reset the operated code lever bail latch lever which then maintains both the code lever bail and the code bar bail latch lever in their operated positions until the repeat keylever is released.

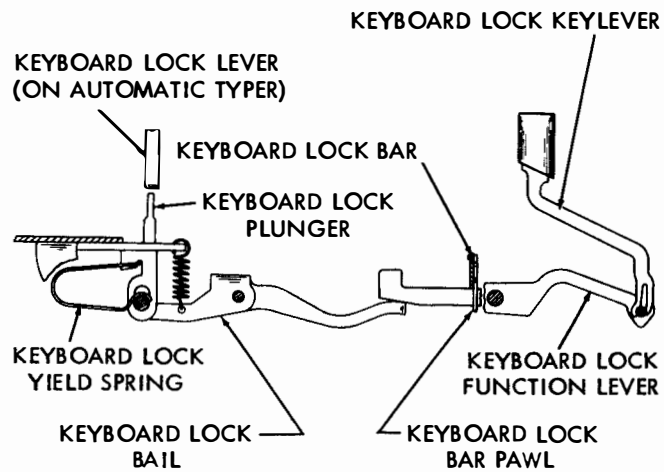


Figure 4-26. Keyboard Lock Mechanism

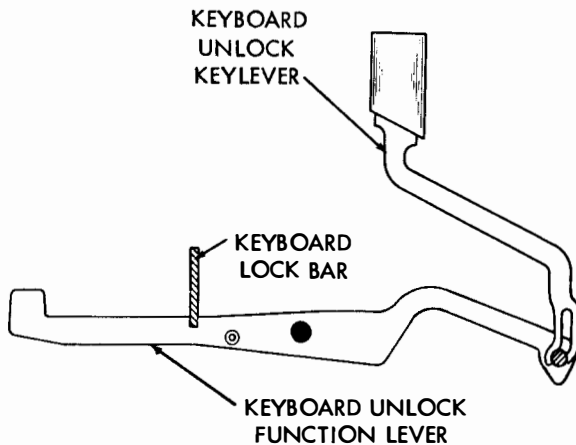


Figure 4-27. Keyboard Unlock Mechanism

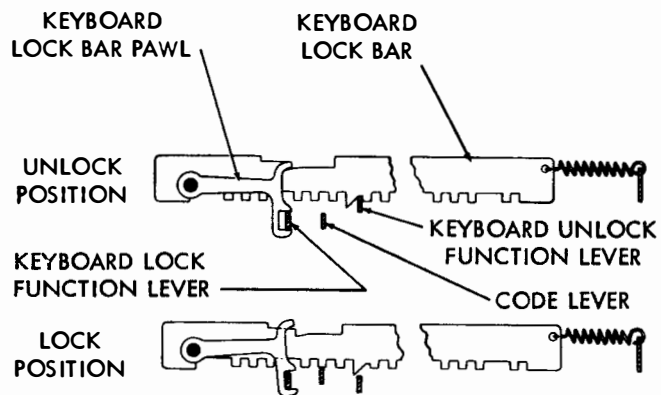


Figure 4-28. Keyboard Lock Mechanism

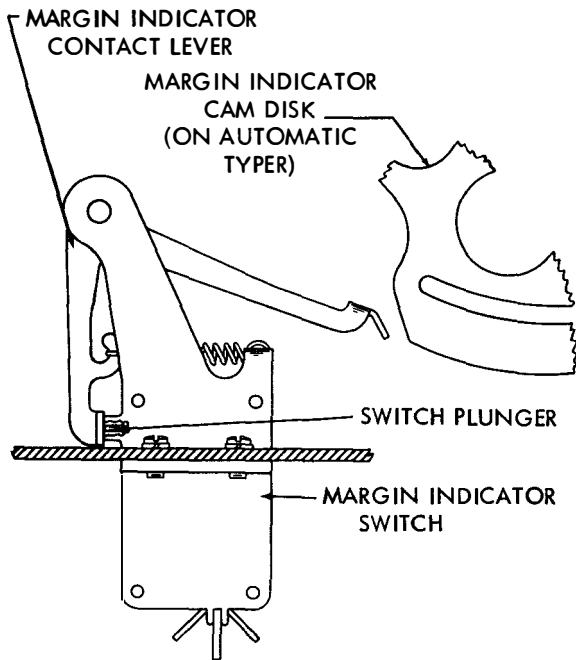


Figure 4-29. Margin Indicator Mechanism

i. **KEYBOARD LOCK MECHANISM.**—Operation of the keyboard lock keylever (red) causes its function lever to raise the keyboard lock bar pawl (figure 4-26). As shown in paragraph 4-4i(8) of this section, the reception of two consecutive blank code signals by the automatic typer results in its driving its keyboard lock lever downward. The lock lever makes contact with the lock plunger on the keyboard and also pushes it downward. As the plunger moves, it exerts pressure on the yield spring which connects it with the keyboard lock bail. The bail rotates about its pivot point to engage the keyboard lock function lever and causes the lever to raise the lock bar pawl. Thus, the pawl may be raised either by local operation of the keyboard lock keylever, or by operation of the blank or break keylevers on any keyboard in the line circuit. In its upper position, the pawl releases the keyboard lock bar and a spring pulls the bar toward the right (figure 4-28). In this position, projections on the lower side of the bar block the upward movement of any code lever and the repeat function lever.

j. **KEYBOARD UNLOCK MECHANISM.**—Operation of the keyboard unlock keylever (red) causes its function lever to rise against a camming surface on the keyboard lock bar and drive the bar toward the left until the lock bar pawl drops into a notch in the lock bar (figures 4-27 and 4-28). In this position, the projections on the lock bar lie between the code levers and offer no interference with their operation.

k. **MARGIN INDICATOR MECHANISM.**—The margin indicator cam disk on the automatic typer spring drum rotates with the drum as printing or spacing occur. See paragraph 4-4g(1) of this section. As the end of each line is approached, the cam surface of

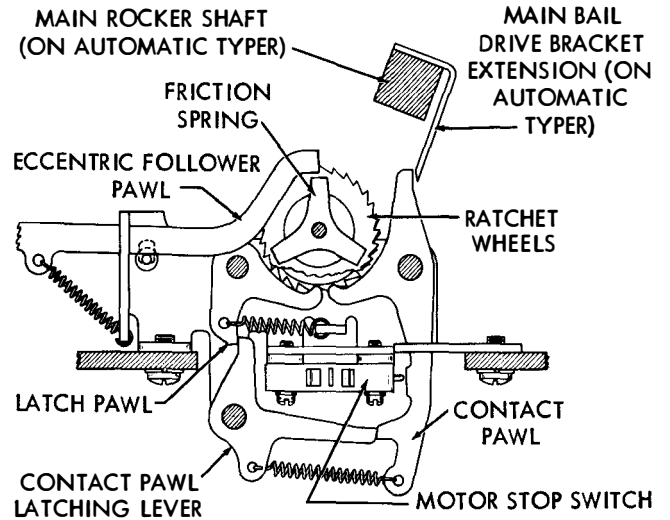
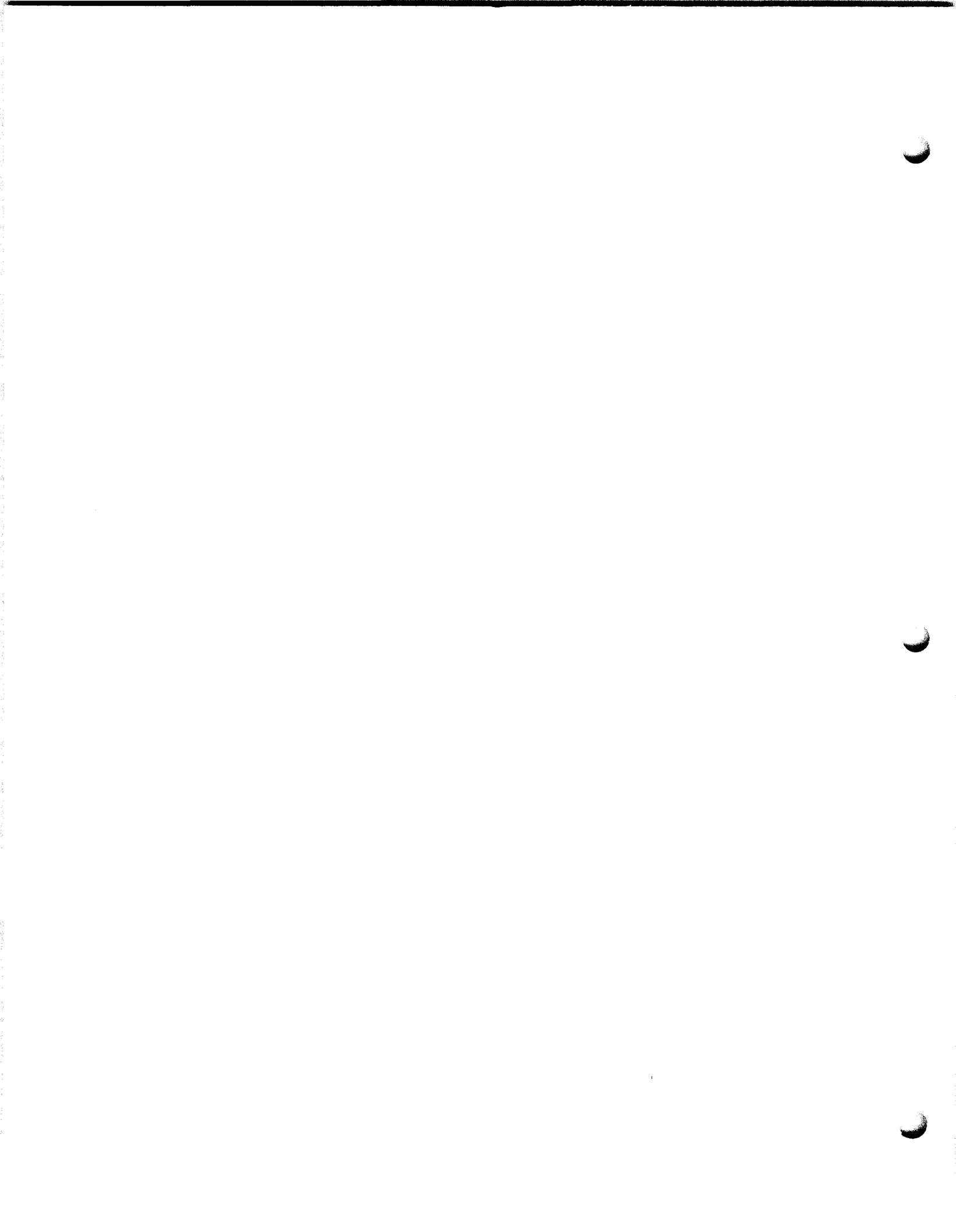


Figure 4-30. Time Delay Mechanism

the disk makes contact with the margin indicator contact lever and rotates it clockwise about its pivot point (figure 4-29). When the contact lever leaves the switch plunger, the switch S101 operates and closes the circuit to a margin indicator light I1003 in the cabinet (figures 4-3 and 4-80). A carriage return cycle returns the cam disk to its starting position and the margin indicator light switch opens.

l. **TIME DELAY MECHANISM.**—As shown in paragraph 4-6c of this section, the electrical motor control mechanism in the power distribution panel must receive an electrical pulse to stop the a.c. motor. This pulse is supplied by the base or keyboard time delay mechanism, which contains two ratchet wheels—one with 27 teeth, and one with 28 teeth. The reciprocating eccentric follower pawl, powered by the intermediate shaft, drives the ratchet wheels one tooth at a time (figure 4-30). Therefore, the ratchet wheel with 27 teeth turns a little faster than the one with 28 teeth. The latch pawl rides the inside flanges of the ratchet wheels. The contact pawl is held away from the flanges by the contact pawl latching lever which is controlled by the latch pawl. Each ratchet wheel has an indentation in its inside flange. After a maximum of 756 revolutions of the intermediate shaft, these indentations are adjacent for nearly one revolution. When the adjacent indentations pass over the latch pawl, it drops into them briefly and disengages the contact pawl latching lever from the contact pawl. This allows the contact pawl to ride the flanges of the ratchet wheels until either one of two things occurs (figure 4-31). If a line signal is received before 756 revolutions of the intermediate shaft have taken place, the main bail drive bracket extension on the automatic typer engages the upper end of the contact pawl and causes it to again be latched by the contact





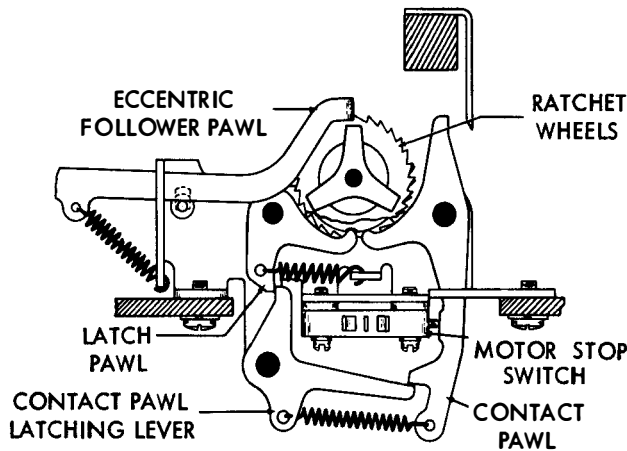


Figure 4-31. Time Delay Mechanism

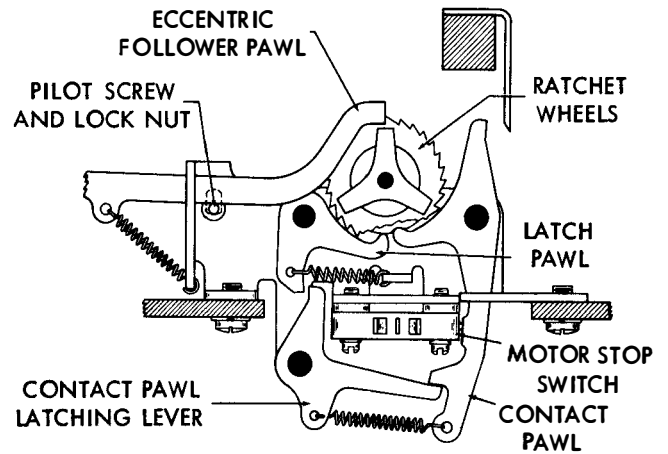


Figure 4-32. Time Delay Mechanism

pawl latching lever. If a line signal is not received before 756 revolutions of the intermediate shaft occur, the indentations in the flanges of the ratchet wheels again become adjacent so as to permit the contact pawl to drop into them briefly, and pulses the motor stop switch S103 (figure 4-32). This pulse is applied to the electrical motor control mechanism in the power distribution panel to shut down the motor. The time lapse between the reception of the last line signal and the shutting down of the motor varies from 86 to 172 seconds for 60 words per minute operation, and from 53 to 106 seconds for 100 words per minute operation. If it is not desirable to have the Motor shut down automatically, the time delay mechanism may be disabled. To accomplish this, loosen the nut on the pilot screw, raise it to the top of its slot, and tighten the nut. When the pilot screw is in this position, the eccentric follower pawl is held out of engagement with the ratchet wheels.

**4-4. AUTOMATIC TYPER MX-1115B/UG OR MX-1422A/UG.**

**a. GENERAL.**

(1) The receiving circuit for the Automatic Typer (figure 4-33) consists of two 132 ohm selector magnet coils L1308 and L1309 wired to a receptacle J1301 which is mounted on the automatic typer right frame (figure 1-5). At the time the Automatic Typer is installed in its Cabinet, connector P1102 on the end of a rubber covered cable which emanates from the Power Distribution Panel SB-964/UG (figure 1-13), is plugged into this receptacle. A terminal board TB 1102 in the power distribution panel provides for the connection of the selector magnet coils in series for 0.020 ampere line current operation, or in parallel for 0.060 ampere line current operation.

(2) The automatic typer also has a switch assembly S1401 connected to the receptacle J1301 on its right frame. It is used to pulse a signal bell magnet E802 in the cabinet and is operated by a mechanism described in paragraph 4-4i(7).

(3) Automatic typer MX-2984/UG has an additional function box switch S1402 actuated on receipt of predetermined sequential codes. The application of this switch is optional.

**b. MAIN SHAFT. (See figure 4-34).**

(1) The main shaft is located in the lower rear portion of the automatic typer and extends the full length of the unit. It is supported by ball type bearings mounted in each side frame.

(2) At the time the automatic typer is mounted on a keyboard, the keyboard helical driving gear on its main shaft meshes with the signal generator helical driven gear. The main shaft helical driven

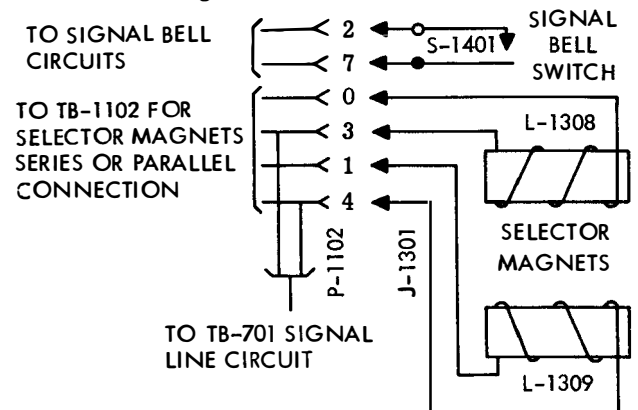


Figure 4-33. Automatic Typer MX-1115B/UG Schematic Wiring Diagram

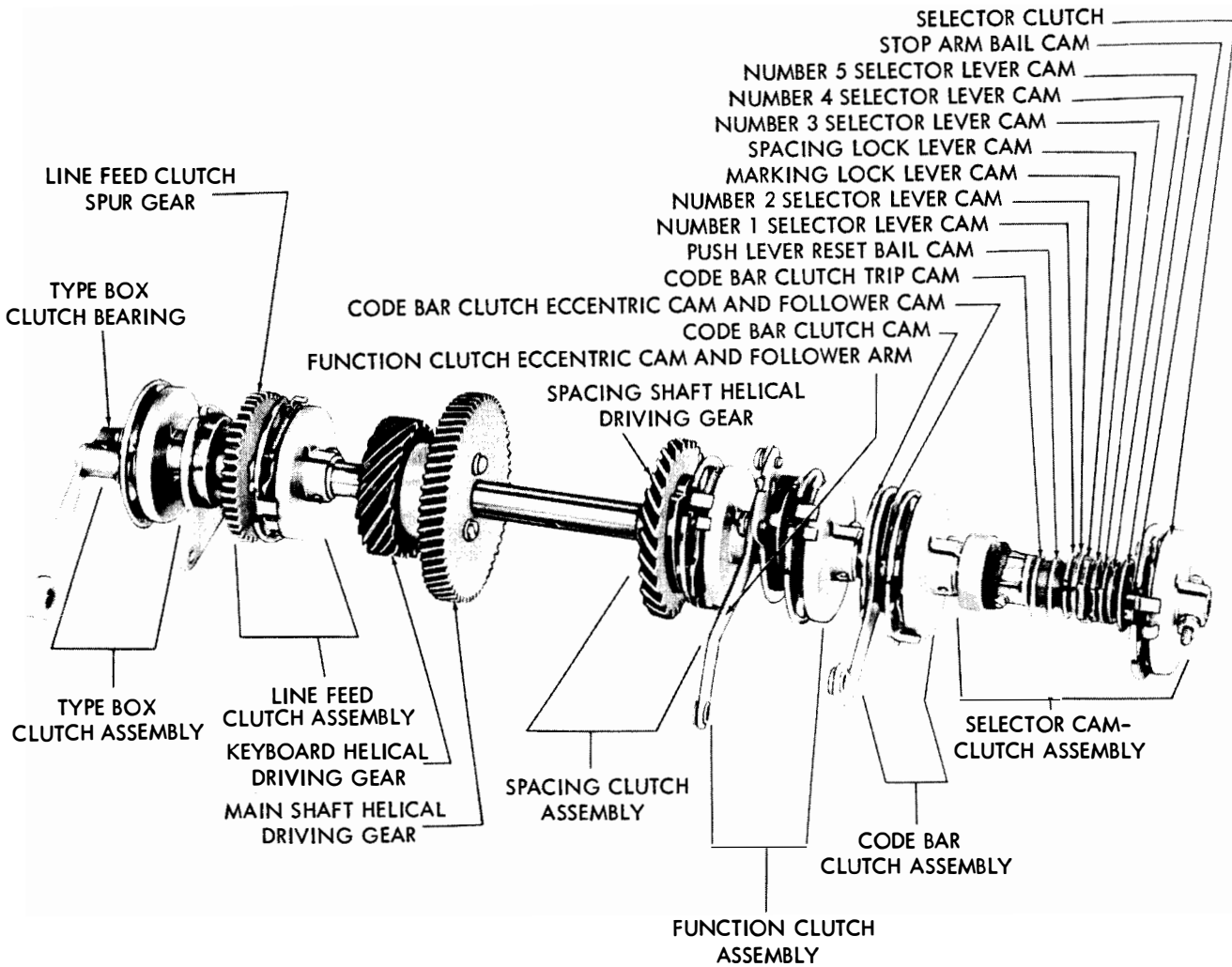


Figure 4-34. Automatic Typewriter Main Shaft

gear meshes with the main shaft helical driving gear on the motor driven intermediate shaft on the keyboard. Thus, motive force is extended from the motor to the main shaft which in turn drives the keyboard mechanism.

(3) The main shaft carries six clutches each of which, when tripped, drives its associated mechanism. These clutches have two shoes which bear against the inside surface of a drum, which in turn is keyed to the main shaft. They operate as follows:

(a) Figure 4-35 shows a clutch disengaged. Disengagement is accomplished by bringing together lug A on the clutch cam disk, and the lower end of clutch shoe lever B. The upper end of lever B pivots about its ear C and allows its other ear D to move toward the right. The upper spring then pulls the two shoes together and away from the drum.

(b) Figure 4-36 shows the same clutch engaged. This is accomplished by releasing the lower end of lever B. The upper end of lever B pivots about its ear C (which bears against the upper end of the secondary shoe) and moves its ear D, and the upper end of the primary shoe, toward the left until the shoe makes contact with the drum at point E. As the drum turns counterclockwise, it drives the primary shoe downward, so that it again makes contact with the drum, this time at point F. There, the combined forces acting on the primary shoe cause it to push against the secondary shoe at point G. The lower end of the secondary shoe then bears against the drum at point H. The revolving drum acts to drive this shoe upward so that it again makes contact with the drum at point I. Since the forces involved are multiplied at each of the preceding steps, the final force developed at point I

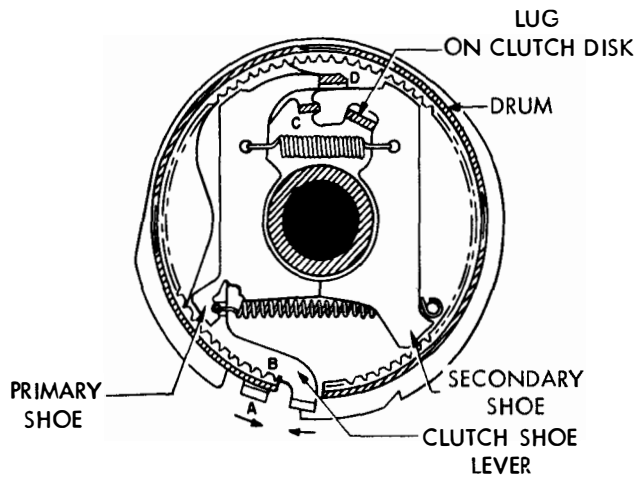


Figure 4-35. Clutch Disengaged

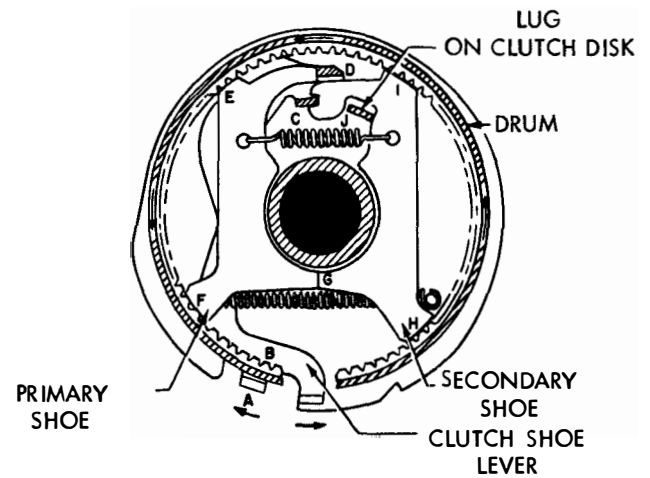


Figure 4-36. Clutch Engaged

is very great. This force is applied to the lug J on the clutch cam disk to cause it to turn in step with the drum. The cam disk on each clutch is connected with the particular mechanism involved.

(c) Two of the clutches (namely, the line feed and the spacing clutches) have three sets of lugs equally spaced about their periphery for controlling the engagement and disengagement of the clutch shoes with the drum. Thus, these clutches may turn only one-third of a revolution when tripped. The remaining clutches have one set of lugs, and must turn a complete revolution when tripped.

#### c. SELECTING MECHANISM.

(1) The selecting mechanism consists of the selector magnet coils L1308 and L1309 and armature, a selector cam-clutch and the associated levers, arms, bails, and slides necessary to convert the electrical elements of the start-stop code to the mechanical arrangements which govern the characters to be printed and the functions to be performed.

(2) The selector cam-clutch comprises, from right to left (figure 4-34), the clutch, the stop arm bail cam, the fifth, the fourth, and the third selector lever cams, the cam for the spacing and the marking lock levers, the second and the first selector lever cams, the push lever reset bail cam, and the code bar clutch trip cam.

(3) During the time in which a closed line circuit (marking) condition exists, the selector magnet coils

are energized and hold the selector armature against the selector magnet pole pieces. In this stop position, the selector armature blocks the start lever (figure 4-37). While the signal for any character or function is being received, the start (spacing) element releases the selector armature which, under the tension of its spring, moves away from the magnet cores and thus unlatches the start lever. The start lever turns clockwise under the tension of its spring, to move the stop arm bail into the indent of its cam. As the stop arm bail rotates about its pivot point, the attached stop arm is moved out of engagement with the clutch shoe lever. The selector cam-clutch engages and begins to rotate. The stop arm bail immediately rides to the high point of its cam where it remains to hold the start lever away from the selector armature during the signaling time. When the stop element at the end of the signal is received, the selector armature is pulled up to block the start lever. Thus, the stop arm bail is prevented from dropping onto the low part of its cam (stop position of cam-clutch), and the attached stop arm is held so as to stop the clutch shoe lever. The selector clutch one-stop cam disk upon which the latch lever rides has an indent at its stop position. When the clutch shoe lever strikes the stop arm, the inertia of the cam disk assembly causes it to continue to turn until its lug makes contact with the lug on the clutch shoe lever. At this point, the latch lever drops into the indent in the cam disk, and the clutch is held disengaged until the next start element is received.

(4) The series of five selecting levers and a marking lock lever ride their respective cams on the

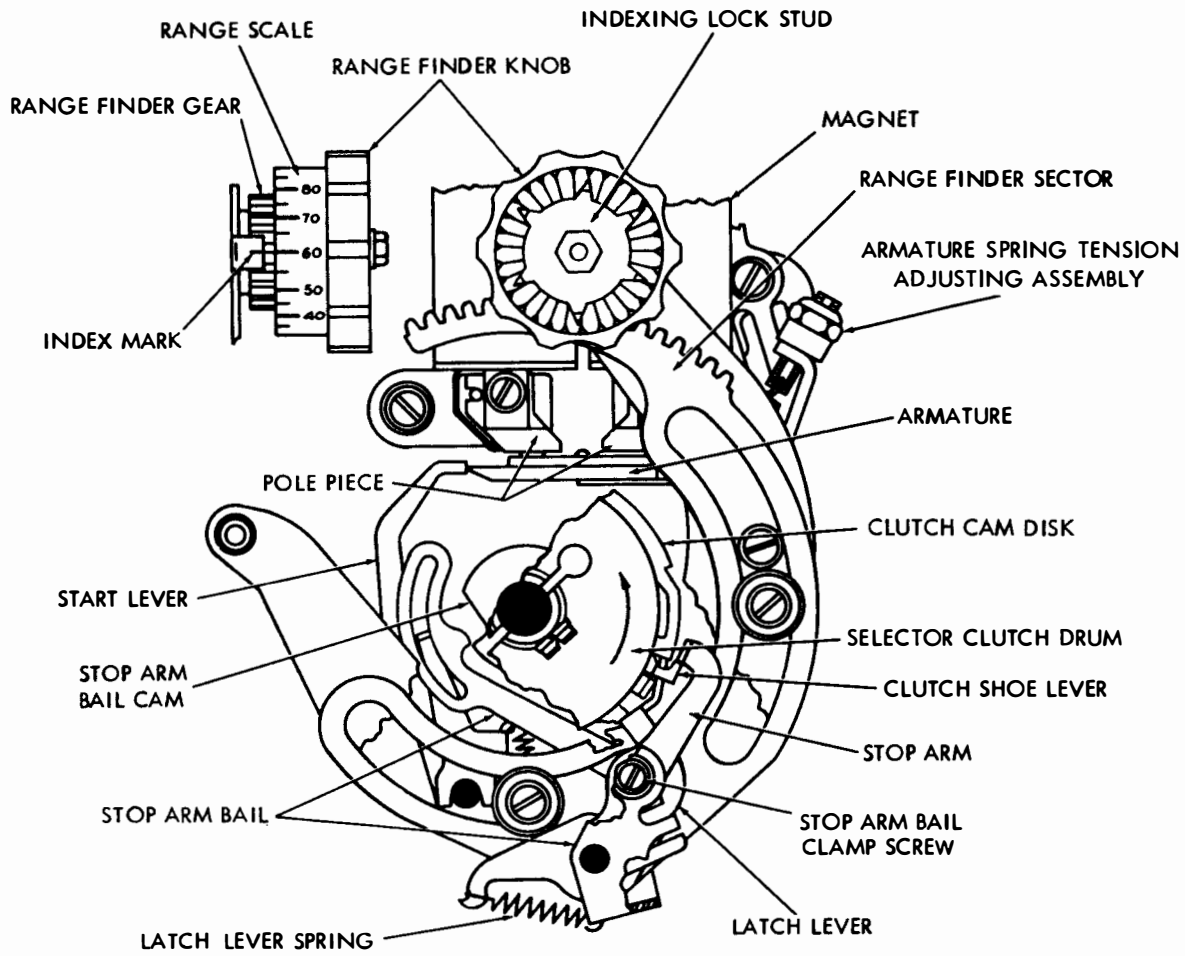


Figure 4-37. Selector Cam Clutch Trip Mechanism

selector cam-clutch. As the marking and spacing signal elements are applied to the selector magnet, the selector cam-clutch rotates and actuates the selector levers. When a spacing impulse is received, the marking lock lever is blocked by the end of the armature and the spacing lock lever swings toward the right (right end view) above the armature and locks it in the spacing position until the next signal transition is due. Extensions on the marking lock lever prevent the selector levers from following their cams (figure 4-38). When a marking element of the signal is received, the spacing lock lever is blocked by the end of the armature and the marking lock lever swings to the right below the armature to lock it in the marking position until the next signal transition is due. During this marking condition, the selector levers are not blocked by the marking lock lever extensions but are permitted to move against their respective cams. The selecting lever that is opposite the indent in its cam, while the armature maintains a marking condition, swings to the right or selected position momentarily. Each selecting lever has an associated push lever which drops into a notch on the top of the selecting lever when it falls into its cam indent. As the selector cam-clutch turns, each selecting lever together with its latched push lever is moved toward the left and held there until all five code impulses have been received. At that time, all selected push levers are positioned to the left and all unselected push levers are positioned to the right, in which positions they are held until the next start element is received. When the subsequent start element again causes the selector cam-clutch to rotate, the push lever reset bail, in following its cam, unlatches the selected push levers. The push levers then return to the unselected (right) position under their spring tension.

#### d. ORIENTATION.

(1) In order to establish the operating margins for the Automatic Typewriter, it is necessary that the sampling of the signal by the selecting mechanism occur at the most favorable portion of the signal elements. This is referred to as orientation.

(2) When the range finder knob (figure 4-37) is pushed inward and rotated, its attached range finder gear moves the range finder sector (which mounts the stop arm bail, stop arm and latch lever), either clockwise or counterclockwise about the selector cam-clutch. This changes the angular position at which the selector cam-clutch stops with respect to the selecting levers. When an optimum setting is obtained, the range finder knob is released. Its inner teeth engage the teeth of the indexing lock stud to lock the range finder mechanism in position. The setting may be read on the range scale opposite the fixed index mark.

#### e. PRINTING MECHANISM.

##### (1) CODE BAR MECHANISM.

(a) GENERAL.—The character which is to be printed is determined basically by the combination set up on the six coding bars which are operated by the code bar positioning mechanism. In order to

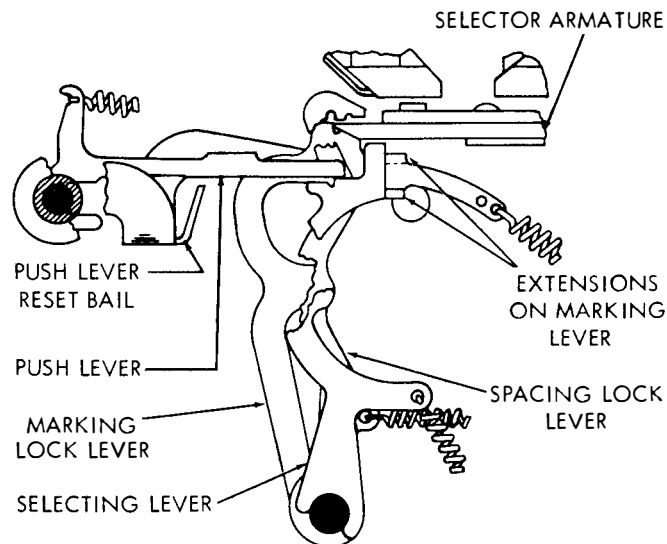


Figure 4-38. Selecting Mechanism,  
Right End View

position the code bars, their associated shift bars must first be individually thrown toward the front or rear of the Automatic Typewriter by transfer levers which respond to action of the selecting mechanism. While held in these positions, the code bar shift bars are acted upon by code bar shift levers to which motion is extended from the code bar clutch when activated by the code bar clutch trip cam. Detailed functioning of the coordinated mechanism follows.

(b) CODE BAR POSITIONING.—Each push lever (paragraph 4-4c(4) of this section) has an associated intermediate arm, transfer lever, and code bar shift bar (figure 4-39). In addition, there is a "common" transfer lever with its code bar shift bar. When a push lever is toward the right (space position) its associated intermediate arm and transfer lever are pulled toward each other by a spring. This causes the transfer lever to turn counterclockwise about its pivot point (right end view) and position its code bar shift bar toward the front of the Automatic Typewriter (space position). When a push lever is to the left (mark position), it moves the intermediate arm toward the left. This causes the transfer lever to turn clockwise about its pivot point and position its code bar shift bar toward the rear of the Automatic Typewriter (mark position). The common transfer lever (front view—third from the left) has an extension which passes behind the number 1 and number 2 transfer levers (figures 4-40 and 4-41). When either or both of these transfer levers are moved to the rear (mark position), they move the common transfer lever to the rear. This, in turn, moves the common code bar shift bar toward the rear of the Automatic Typewriter (mark position). As the selector cam-clutch completes its revolution, the trip shaft operating lever (fastened to the code bar clutch trip shaft) rides to the peak of the code bar clutch trip cam (figure 4-34). This causes the shaft to turn slightly and its attached code bar clutch trip lever

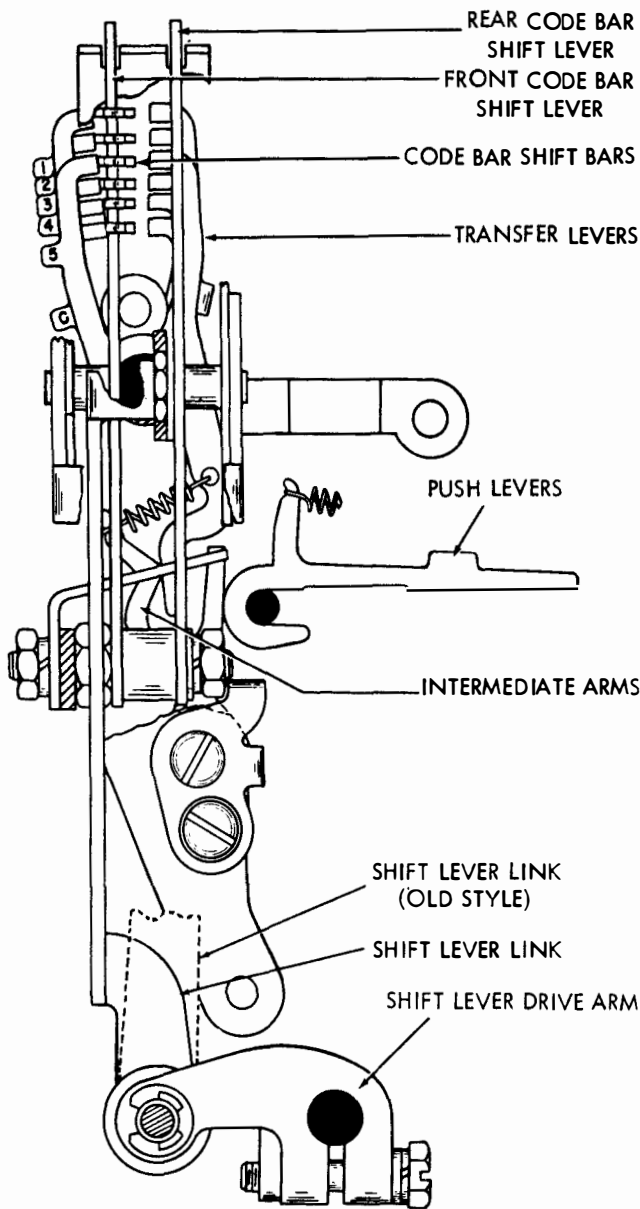


Figure 4-39. Code Bar Positioning Mechanism

releases the code bar clutch. Rotation of the clutch actuates the code bar shift levers through the intervening shift lever drive shaft, drive arm, and shift lever link (figure 4-40). Code bar shift bars which have been moved toward the rear position by their transfer levers are engaged by the rear code bar shift lever and are shifted to the left. Code bar shift bars which have been moved toward the front position are engaged by the front code bar shift lever and are shifted toward the right (figure 4-41). Thus, the six code bar shift bars shift their respective

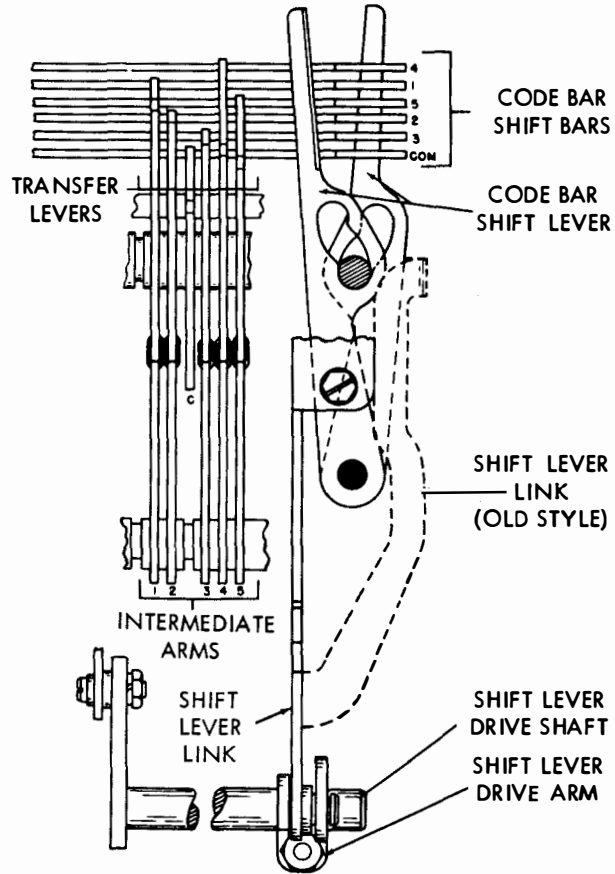
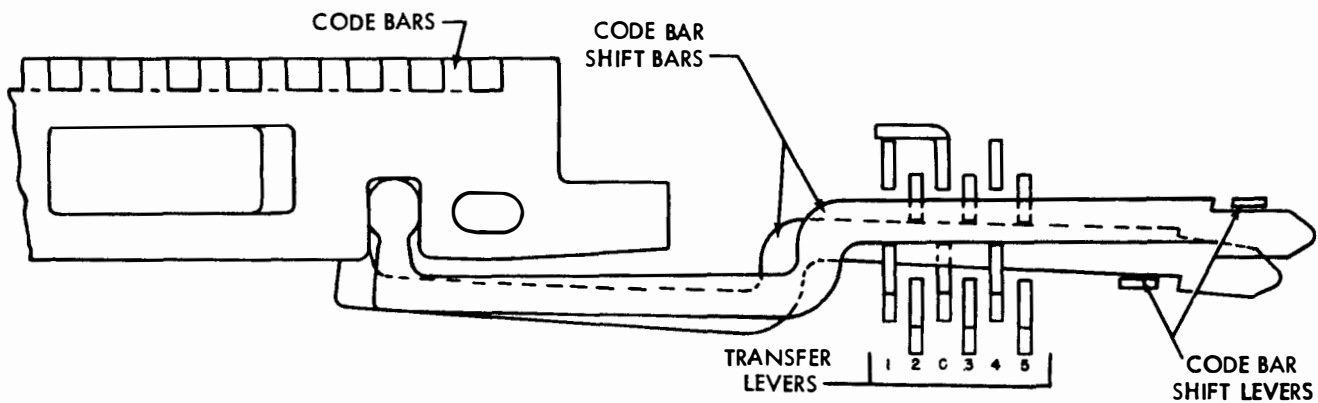


Figure 4-40. Code Bar Positioning Mechanism, Front View



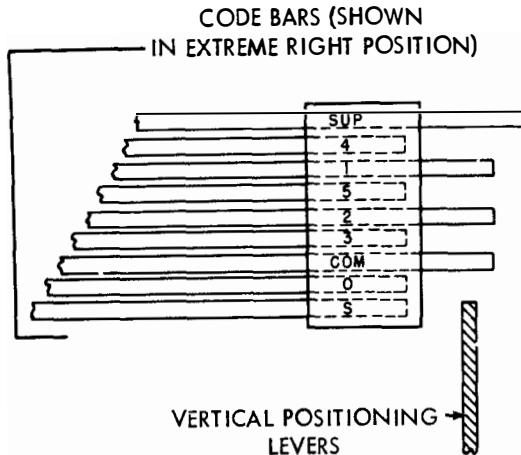


Figure 4-42. Code Bar Arrangement

code bars toward the right or left where they are retained by a detenting mechanism. The code bar clutch one-stop cam disk upon which the latch lever rides has an indent at its stop position. When the clutch shoe lever strikes the code bar clutch trip lever, the inertia of the cam disk assembly causes it to continue to turn until its lug makes contact with the lug on the clutch shoe lever. At this point the latch lever drops into the indent in the cam disk and the clutch is held disengaged until the trip lever is again operated.

(c) ARRANGEMENT OF CODE BARS.—Three additional code bars bring the total number of code bars to nine. They are arranged from top to bottom as follows: Suppression, number 4, number 1, number 5, number 2, number 3, common, automatic carriage return and line feed, and shift-unshift (figure 4-42). In the equipment as furnished, the suppression code bar has no connection with a shifting mechanism. The automatic carriage return and line feed code bar and the shift-unshift code bar are actuated by mechanism which will be discussed under FUNCTIONS, paragraph 4-4i of this section.

(2) TYPE BOX AND TYPE BOX CARRIAGE.

(a) GENERAL.—All of the characters that may be printed by the Automatic Typewriter are formed by type pallets which are arranged in a type box. The type box is mounted in a carriage from which it may be removed for cleaning or replacement. In order to print any selected character, the type box carriage is so positioned that the character on the pallet is directly over the required location on the paper. Since the pallets are arranged in four horizontal rows and sixteen vertical rows, it is necessary to position the type box carriage both horizontally and vertically. See figure 4-43 for character arrangement. The type box carriage rides on rollers over a track which is moved vertically for positioning in that particular plane. The carriage is positioned horizontally on its track by the oscillating rail slide and type box carriage link. The slide rides the oscillating rail and is clamped to the rear section of the upper draw wire rope. The link provides a flexible connection to permit the type box carriage to follow both the vertical movement of the type box

carriage track and the horizontal movement of the oscillating rail slide. The lower right rear end of the upper draw wire rope is fastened to the spacing drum. From this point, it passes part way around the spacing drum, upward and around the right oscillating rail pulley, over to the left oscillating rail pulley, and downward to the spring drum. After passing part way around the spring drum, the upper draw wire rope is doubled backward around it and passes upward to the left printing carriage rail pulley over to the right printing carriage rail pulley, and downward to the spacing drum to which it is again fastened. The lower draw wire rope is fastened at its left end to the spring drum and, at its right end, to the spacing drum. It acts in opposition to the upper draw wire rope and holds the two drums in phase (figure 4-44). A tensioning pulley rides the under side of the lower draw wire rope, to take up any slack which may occur due to stretching of the upper and lower draw wire ropes. The oscillating rail is supported by pivoted arms at each end. These arms which extend downward are pivoted on the Automatic Typewriter frame at their lower ends. Thus, the oscillating rail and draw wire rope that it carries may be shifted to the left or right with no change in position relative to each other. The oscillating rail shift slide and the two oscillating rail shift links are used to accomplish the horizontal positioning of the oscillating rail and also connect it with the oscillating rail shift slide. The links are pivoted and are of such a length that only one at a time may be fully extended. As will be shown later under FUNCTIONS, the oscillating rail shift links are used to position the oscillating rail and thus the type box, so that either the left side (letters characters), or the right side (figures characters), of the type box is selected.

(b) POSITIONING.—The selection of the various characters from the four horizontal rows and the eight vertical rows in either the left (LTRS) side or the right (FIGS) side of the type box, and the printing of those characters take place as follows:

1. Briefly, the number 1 and number 2 code bars determine the selection of the horizontal row. The number 3 code bar determines whether the selection is to be made from the left four vertical rows or right four vertical rows (in either the letters or figures side). The number 4 and number 5 code bars determine the selection of one row from the four vertical rows predetermined by the number 3 code bar.

2. Four code bars (longer than the others), extend through the right code bar bracket and serve as stops for the right "knee action" vertical positioning levers. They are (from top to bottom), suppression, number 1, number 2, and common (figure 4-42). Notches are arranged in the left ends of the code bars so that the left side "knee action" vertical positioning levers are stopped, in each case, by the same code bar that blocks the right side levers. After all the code bars have been positioned by the code bar positioning mechanism, the code bar clutch follower arm and its roller, in traversing the sloping indent on the code bar clutch cam, rotates the clutch trip lever shaft. As the shaft turns, it first causes the function clutch trip lever to release the function clutch (figure 4-45) and then causes the type box clutch trip arm to



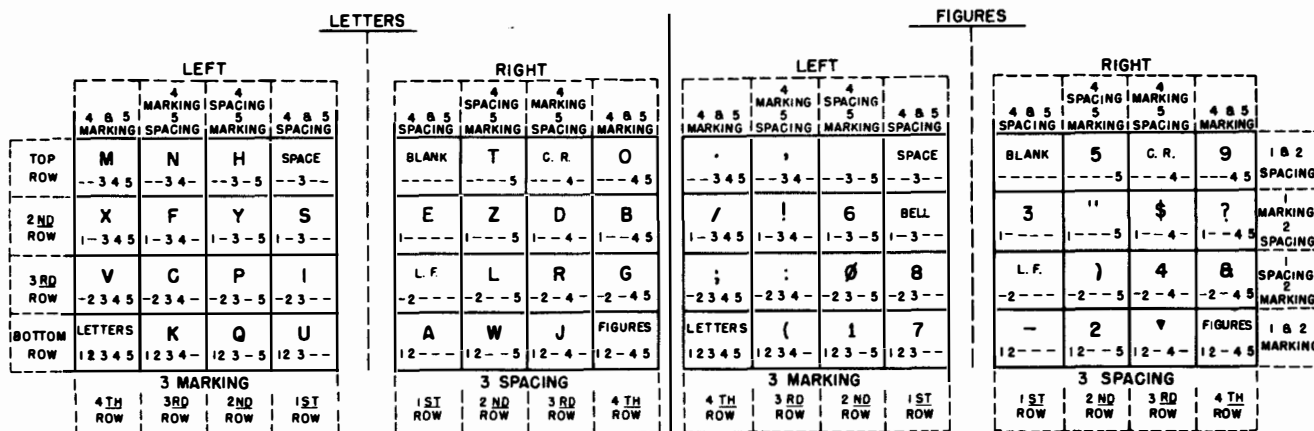


Figure 4-43. Type Box Arrangement, Viewed from Front of Automatic Typewriter

engage its trip lever and release the type box clutch. When the type box clutch completes its revolution, it is disengaged by its trip lever and latch lever in the same manner as was the code bar clutch, described in paragraph 4-4e(1)(b) of this section. During its rotation, the type box clutch operates a drive link and a bracket to cause the main rocker shaft to oscillate. This, in turn, through its left and right brackets and the main side drive links, extends the motion to the main side lever to operate the "knee action" vertical positioning levers (figure 4-46). These levers are driven upward until they strike a projecting code bar which causes them to buckle. The type box carriage track is mounted between the vertical positioning levers and its vertical motion is controlled by them. When the number 1 and number 2 code bars are toward the right (spacing), the common code bar is also toward the right where it blocks the vertical positioning

levers. The top row of pallets in the type box are then in line for printing. When the number 1 code bar is toward the left (marking), and the number 2 code bar it toward the right (spacing), the common code bar is toward the left. The number 2 code bar blocks the vertical positioning levers, and the second row of pallets in the type box are then in line for printing. When the number 1 code bar is toward the right (spacing), and the number 2 code bar is toward the left (marking), the common code bar is toward the left. The number 1 code bar blocks the vertical positioning levers and the third row of pallets in the type box are then in line for printing. When the number 1 and number 2 code bars are toward the left (marking), the common code bar is also toward the left. The suppression code bar blocks the vertical positioning levers, and the fourth or bottom row of pallets in the type box are then in line for printing. At each of the

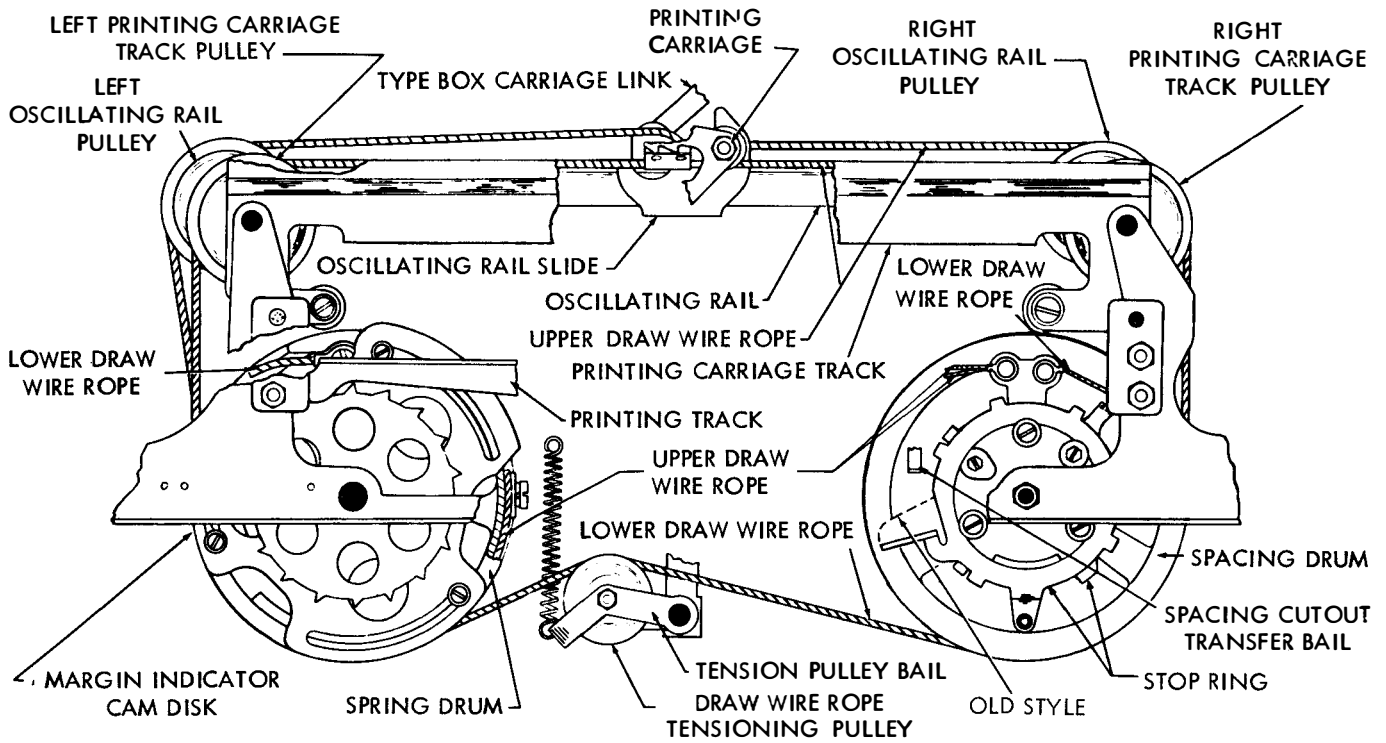


Figure 4-44. Draw Wire Rope Mechanism

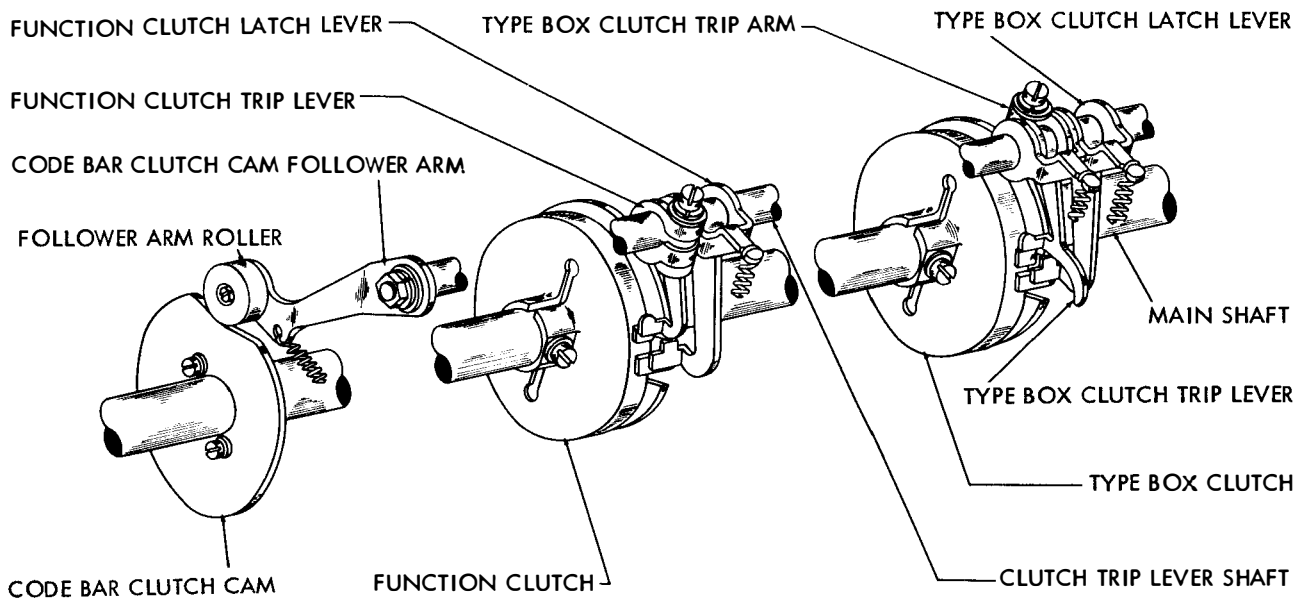


Figure 4-45. Trip Mechanism for Function and Type Box Clutches

four levels at which the vertical positioning levers may be stopped, they are locked momentarily by lock levers which are controlled by the main side lever follower arms.

3. A bracket attached to the main rocker shaft applies vertical motion to the main bail by means of two main bail links (figure 4-47). Attached to each end of the oscillating rail shift slide, are pivoted "buckling" type drive links which extend downward to each

end of the main bail. As the main bail moves downward, the left shift slide drive links, if not buckled, will try to shift the oscillating rail shift slide toward the right while the right shift slide drive links, if not buckled, will try to shift the oscillating rail shift slide toward the left. When the number 3 code bar is shifted toward the left (marking), the horizontal motion reversing slide is shifted toward the left by the reversing slide shift lever, and is held there by detent levers.

A bracket near the right end of the reversing slide will then make contact with the right shift slide drive links and cause them to buckle. As the main bail is driven downward, the unbuckled left shift slide drive links will start to shift the oscillating rail shift slide toward the right. This positions the type box so that the character to be printed will be found in the left half of the LTRS or FIGS side. In a similar manner, when the number 3 code bar is shifted toward the right (spacing) the horizontal motion reversing slide is also shifted toward the right by the shift lever and is held there by the detent levers. A bracket near the left end of the horizontal motion reversing slide then makes contact with the left shift slide drive links and causes them to buckle. As the main bail is driven downward, the unbuckled right shift slide drive links will start to shift the oscillating rail shift slide toward the left. This positions the type box so that the character to be printed will be found in the right half of the LTRS or FIGS side.

4. After it has been thus determined in which group of four vertical rows the character to be printed

is located, the number 4 and number 5 code bars operate three horizontal motion stop slides to determine the row in that group in which the character is to be found (figure 4-47). A wedge shaped horizontal positioning lock lever which is pulled downward by the main bail through a yield spring, bears against the horizontal positioning lock lever arm. This arm drives the oscillating rail shift slide in the direction in which it was started (by the number 3 code bar selection) until one of the two decelerating slides which are mounted on the oscillating rail shift slide strikes an unselected horizontal motion stop slide. A camming surface on the unbuckled shift slide drive links makes contact with and rolls down the face of the decelerating slide and causes the drive links to buckle. The oscillating rail shift slide finally comes to rest when it strikes the blocked decelerating slide. This in turn ends the downward excursion of the lock lever, and the yield spring extends until the main bail reaches the lowest point of its oscillation. As the main bail returns upward, it centers the oscillating rail shift slide. It is during this time that the horizontal

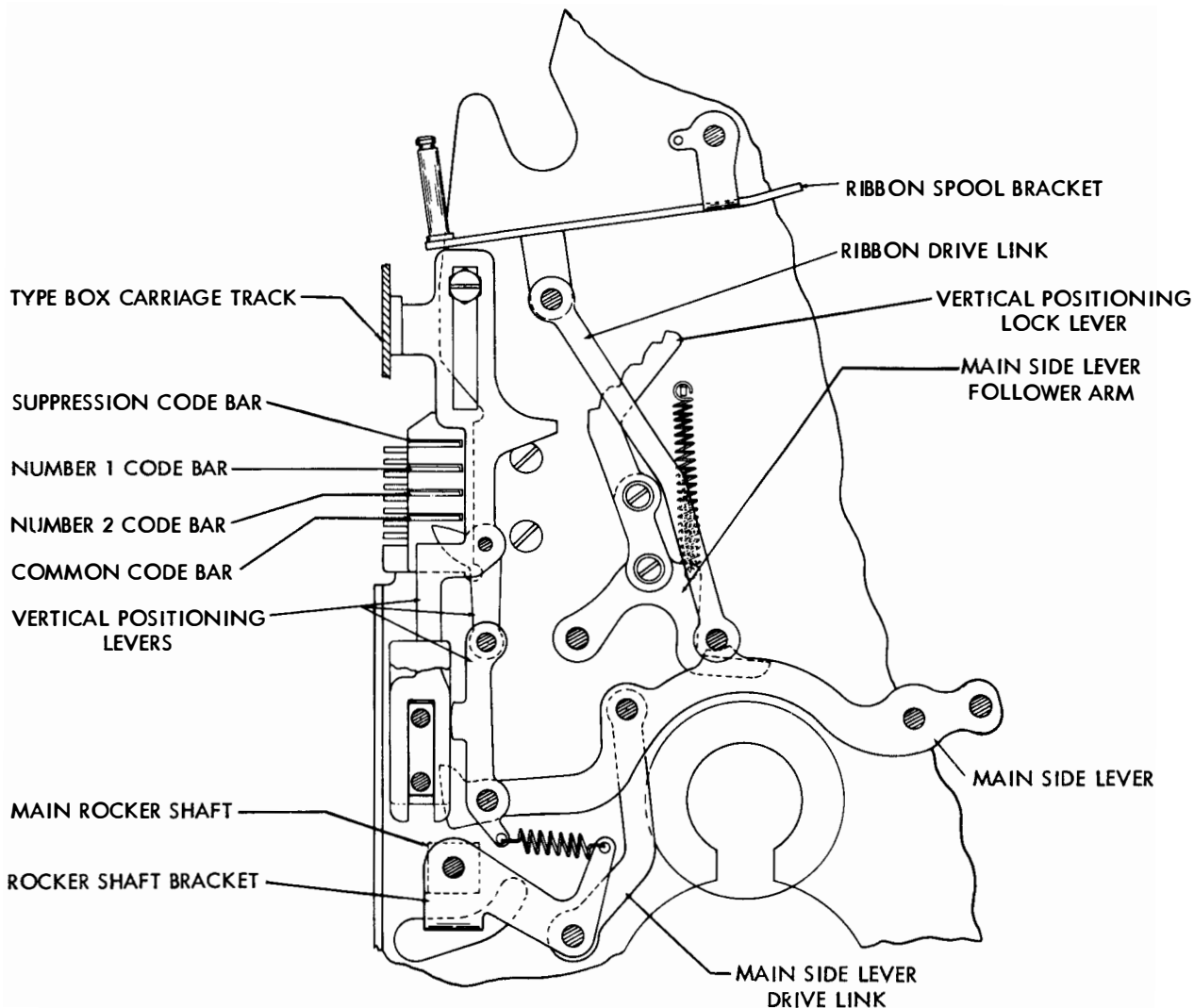


Figure 4-46. Right Side Mechanism

motion stop slides are positioned for the selection of the next character. The number 4 and number 5 code bars each operate a code bar bell crank. Each, in turn, moves a horizontal motion stop slide toward the front (marking), or toward the rear (spacing) (figure 4-48). A third (common) stop slide (spring tensioned toward the rear) is located between the upper and lower stop slides and has projections which pass across the front edges of these slides (figure 4-47). Each stop slide is of a different length. The common stop slide which is the longest stop has an additional stop on its shank so that it serves as the shortest stop when all the slides are moved forward. The upper slide (operated from the number 4 code bar) is the second longest stop, and the lower slide (operated from the number 5 code bar) is the third longest stop.

5. When both the number 4 and number 5 code bars are toward the right (spacing), their respective horizontal motion stop slides and the common stop slide are toward the rear. The oscillating rail shift slide is moved to the right or left of its central position (determined by the number 3 code bar) until it is stopped by one end of the common horizontal motion stop slide. This positions the first vertical row (right or left of FIGS center or LTRS center) in line for printing. When the number 4 code bar is toward the right (spacing), and the number 5 code bar is toward the left (marking), the lower and the common stop slides are toward the front, and the upper stop slide is toward the rear. The oscillating rail shift slide is moved to the right or left of its central position until it is stopped by one end of the upper stop slide. This positions the second vertical row (right or left of FIGS center or LTRS center) in line for printing. When the number 4 code bar is toward the left (marking), and the number 5 code bar is toward the right (spacing), the upper and the common stop slides are toward the front and the lower stop slide is toward the rear. The oscillating rail shift slide is moved toward the right or left of its central position until it is stopped by one end of the lower stop slide. This positions the third vertical row (right or left of FIGS center or LTRS center) in line for printing. When both the number 4 and number 5 code bars are toward the left (marking), their respective horizontal motion stop slides and the common stop slide are toward the front. The oscillating rail shift slide is moved toward the right or left of its central position until it is stopped by one side of the shank of the common stop slide. This positions the fourth vertical row (right or left of FIGS center or LTRS center) in line for printing.

#### (3) PRINTING HAMMER AND PRINTING CARRIAGE.

(a) GENERAL.—After the type box has been moved so that the selected type pallet is in its proper position, it must be struck by a printing hammer in order to print. This is accomplished by the action of the printing carriage located on the printing carriage track.

(b) POSITIONING.—The printing carriage rides (on rollers) on the printing carriage track which is rigidly attached to the automatic typer front plate. The carriage is clamped to the forward section of the upper draw wire rope. This moves the carriage along

its track in such a manner that the hammer advances to the next printing position.

(c) PRINTING.—The printing track which is located on the front of the Automatic Typer (figure 4-49) is fastened to an extension at each end of the main bail. As the main bail reciprocates vertically, it extends the motion through the printing track which travels in guides located at each end of the track. The printing arm, which extends downward from the printing carriage, rides the printing track. As the arm follows the reciprocating motion of the track, its upper end moves first toward the left and then toward the right. When the upper end of the arm moves toward the left, it rotates the printing hammer operating bail clockwise against its spring tension until it becomes latched by the operating bail latch (figure 4-50). The printing hammer operating bail draws the printing hammer bail away from the type box by means of the printing hammer bail spring. When the upper end of the printing arm moves to its extreme right position, it makes contact with the latch and causes it to release the printing hammer operating bail. The operating bail is swung in a counterclockwise direction by the operating bail spring until it strikes its stop. The printing hammer bail, in being driven by the operating bail, is swung toward the type box. When the operating bail is stopped, momentum causes the printing hammer bail to continue its travel against the tension of the printing hammer bail spring until the printing hammer strikes the selected type pallet.

#### f. SPACING.

(1) GENERAL.—To space the printed character properly, the type box and printing carriages must be advanced with each character printed. As was shown in paragraph 4-4e(2)(a) of this section and in figure 4-44, the carriages are connected to a draw wire rope which, in turn, is fastened to the spring drum and the spacing drum. The purpose of the spring drum which contains a torsion spring is to tension the draw wire rope, and thus the carriages, to the left. The spacing drum has ratchet teeth about its perimeter which are engaged by the eccentric driven spacing drum feed pawls (figure 4-51). The spacing shaft which mounts the spacing eccentrics is driven through its helical gear by the helical driving gear attached to the three-stop spacing clutch on the main shaft. The gear ratio of 1-1/2 to 1 causes the spacing shaft to turn one-half a revolution each time the spacing clutch is tripped. This allows the feed pawls to advance the spacing drum by the amount of one ratchet tooth. As shown earlier, each time the Automatic Typer operates, the main rocker shaft is made to oscillate about its center. A cam plate which is fastened to the lower side of the rocker shaft is in its lowest position during the rest time. During the time that printing is to take place, the cam plate is moved upward by the shaft and operates the spacing trip lever bail. As this bail is rotated about its pivot point, it raises the spacing trip lever until it latches onto the spacing clutch trip lever arm (figure 4-52). As the rocker shaft reverses its direction of rotation, the spacing trip lever bail and the trip lever move downward, thus causing the latched up spacing clutch trip lever

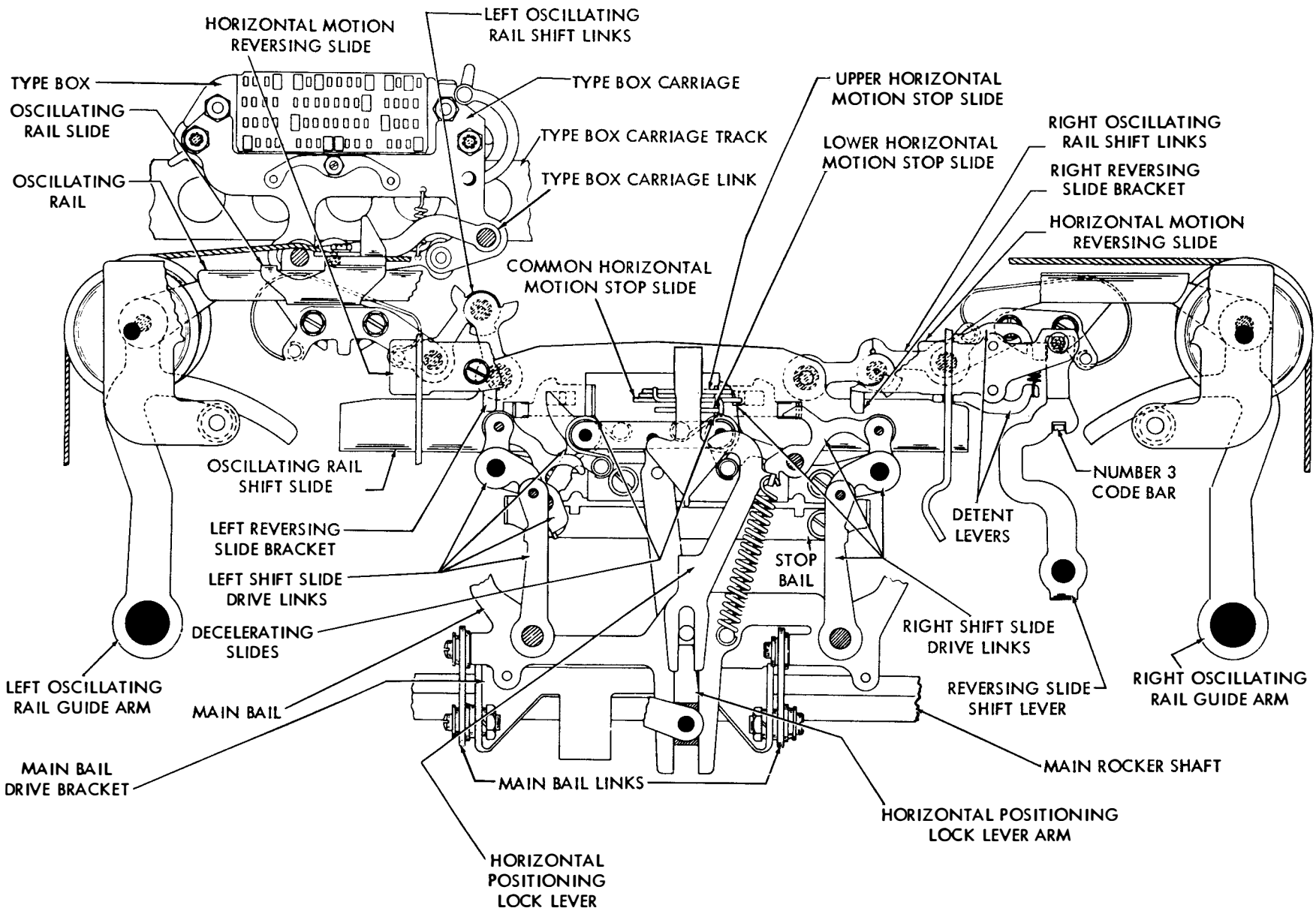


Figure 4-47. Front Plate Horizontal Positioning Mechanism

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THEORY OF OPERATION

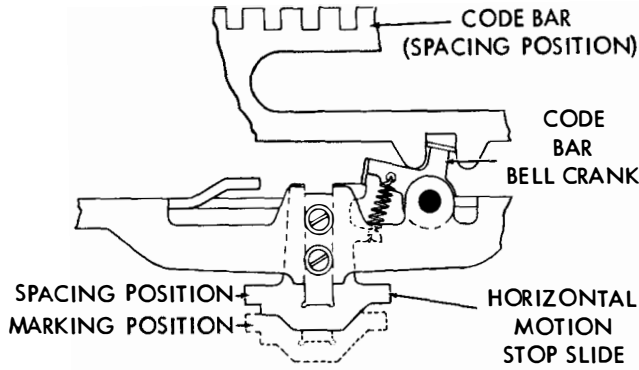


Figure 4-48. Stop Slide Positioning

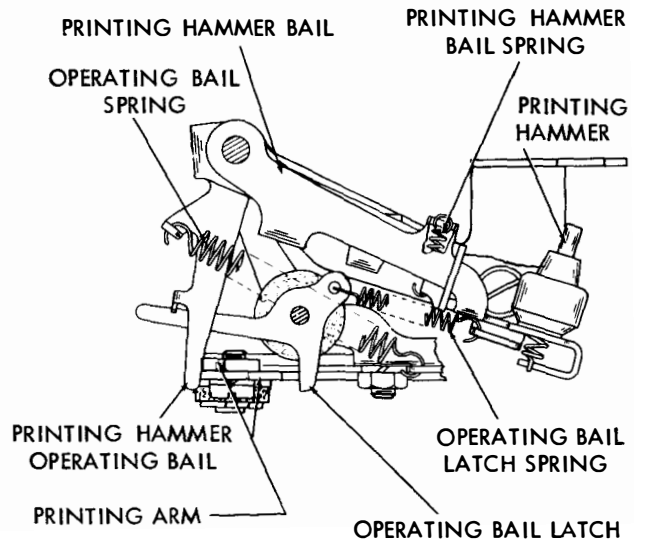


Figure 4-50. Printing Hammer Mechanism, Top View

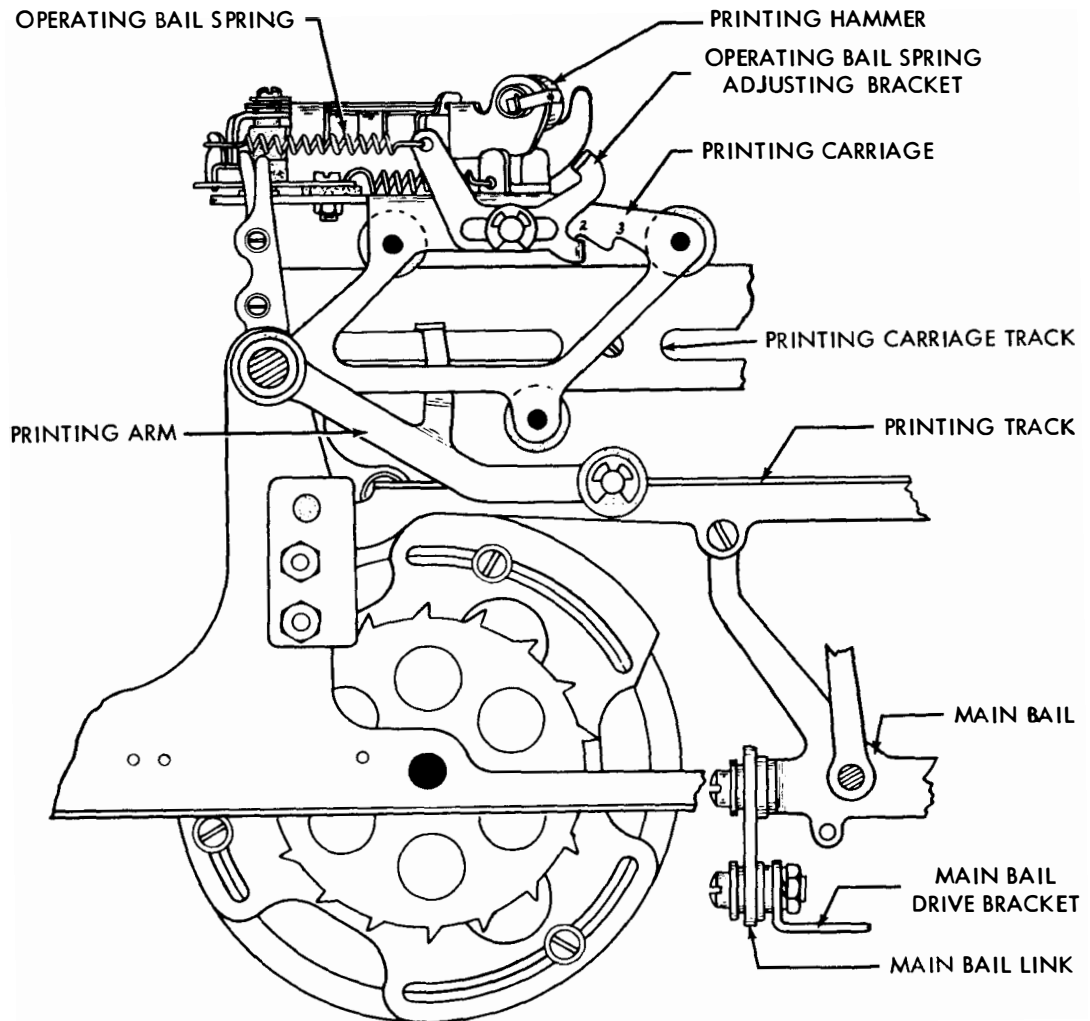


Figure 4-49. Printing Hammer Mechanism, Front View

arm to operate the spacing clutch trip lever and re-lease the spacing clutch. Before the spacing clutch completes one-third of a revolution, its restoring cam moves the spacing trip lever about its pivot point until it releases the spacing clutch trip lever arm. This, in turn, releases the spacing clutch trip

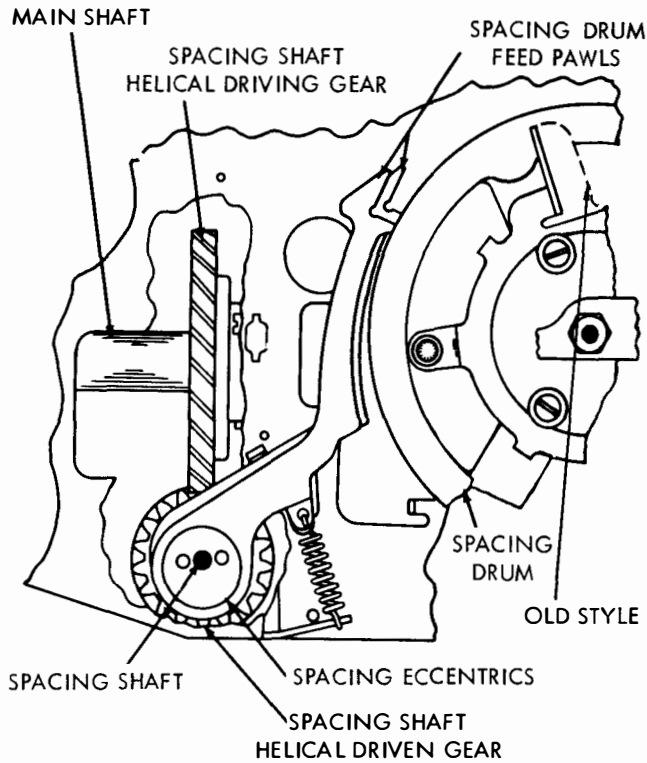


Figure 4-51. Spacing Drum Drive Mechanism

lever which returns to its normal position in time to stop the spacing clutch after one-third of a revolution. The spacing clutch three-stop cam disk upon which the latch lever rides has an indent at each stop position. When one of the three lugs on the clutch shoe lever disk strikes the spacing clutch trip lever, the inertia of the cam disk assembly causes it to continue to turn until its lugs make contact with the lugs on the clutch shoe lever disk. The latch lever drops into an indent in the cam disk and the clutch is held disengaged until the trip lever is again operated.

(2) SPACING SUPPRESSION.—When certain functions are selected or when the carriages reach their extreme right position, it is necessary to suppress spacing. This is accomplished by moving the spacing suppression slide forward. In this position it will hold the upper end of the spacing trip lever forward and prevent it from engaging the spacing clutch trip lever arm. In the case of spacing suppression of functions, the spacing suppression slide is shifted by means of the spacing suppression bail. The manner in which this bail is operated will be discussed under FUNCTIONS, paragraph 4-4i of this section. When the carriages are near their extreme right position, an adjustable cut-out ring on the spacing drum engages the spacing cut-out transfer bail, which in turn operates the spacing cut-out bail. The adjustable ring and the end of the spacing cut-out transfer bail are shown in figure 4-44. The spacing cut-out bail shifts the spacing suppression slide and prevents spacing until the carriages are returned. The maximum number of characters which the Automatic Typewriter may print is eighty-five. In order to prevent spacing beyond this point with subsequent damage to the machine, several teeth are omitted from the spacing drum ratchet wheel.

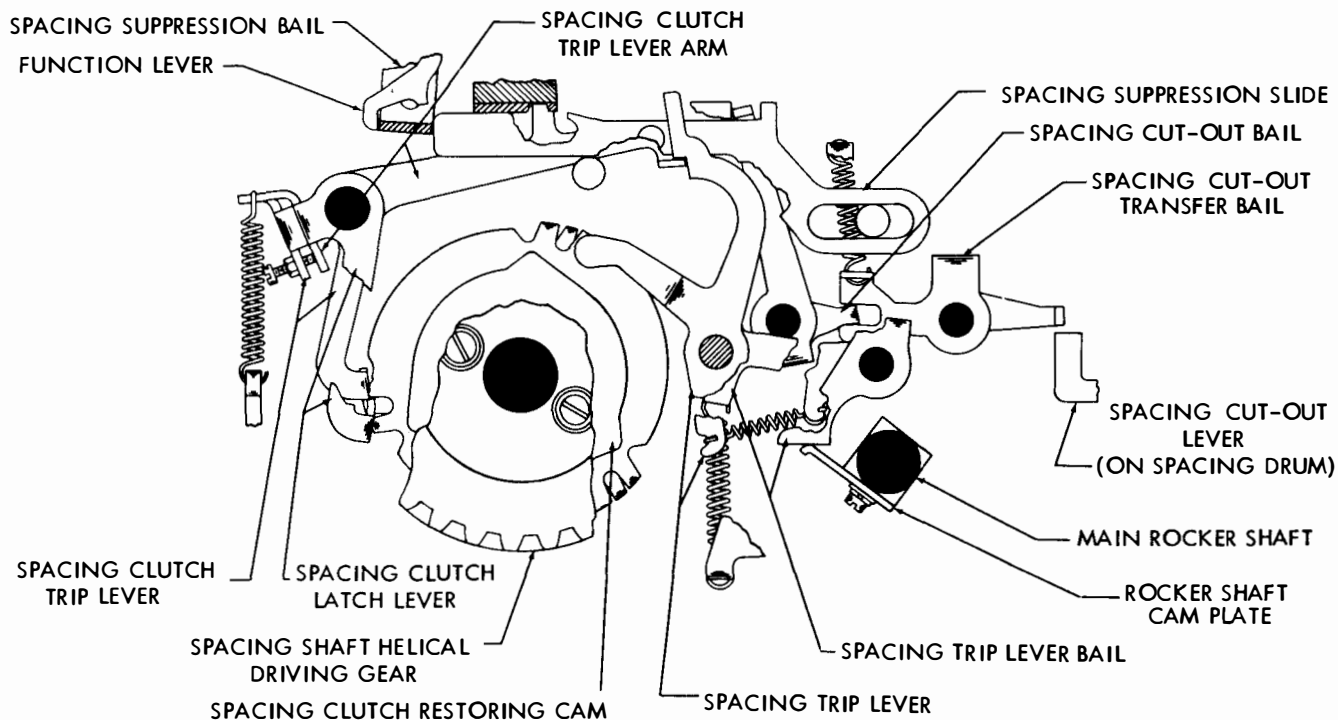


Figure 4-52. Spacing and Spacing Suppression Mechanisms

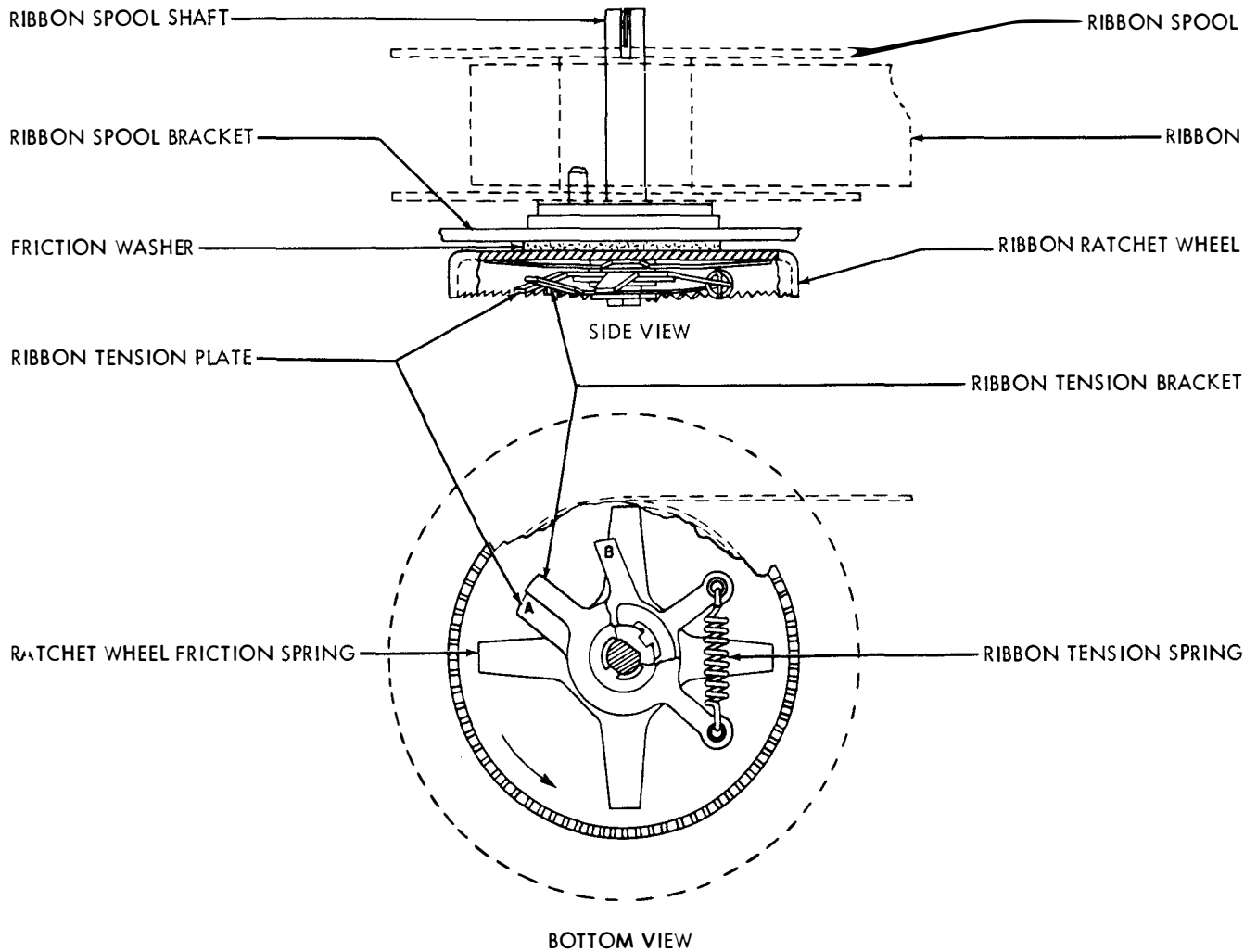


Figure 4-53. Ribbon Tension Mechanism

g. **MARGIN INDICATOR.**—Before the type box carriage and the printing carriage reach the end of their travel, the margin indicator light I1003 in the Cabinet is illuminated. The contact mechanism which controls the lamp circuit is mounted on the Keyboard and is fully described in paragraph 4-3k of this section. The actuator of this contact mechanism is a disk which is mounted on the spring drum of the Automatic Typewriter (figure 4-44). The angular position of this cam disk with respect to the spring drum may be altered to change the point at which the indicator will light.

#### h. **RIBBON MECHANISM.**

(1) **POSITIONING.**—The left and right ribbon feed mechanisms oscillate in a vertical plane with each revolution of the type box clutch. They are driven by ribbon drive links which are attached to the main side levers (figure 4-54). At their uppermost position, the ribbon mechanisms position the ribbon relative to the line which is being printed. After each character is printed, the ribbon mechanisms are dropped downward together with the type box, in order that the last character printed may be viewed. The ribbon is held

in place at the point of printing by a ribbon guide which is fastened to the rear of the type box carriage.

(2) **FEEDING.**—Each of the ribbon mechanisms consists of a bracket which is hinged at its rear end, and upon which is mounted a ribbon spool shaft (figures 4-53 and 4-54). A ribbon tension bracket is keyed to the lower end of the ribbon spool shaft. A ribbon ratchet wheel is mounted freely on the ribbon spool shaft just below the ribbon spool bracket, from which it is separated by a friction washer. The ratchet wheel friction spring on the under side of the ribbon ratchet wheel causes the ratchet wheel to bear against the felt friction washer. This applies a constant drag to the ratchet wheel. A ribbon tension plate which is keyed to the hub of the ribbon ratchet wheel has two projecting lugs (A and B in figure 4-53) that straddle the lug on the ribbon tension bracket. A ribbon tension spring tends to maintain the ribbon tension bracket against lug A of the ribbon tension plate. In operation the ribbon spool bracket, driven by the ribbon drive link, pivots about point A in figure 4-54. The ratchet feed and ratchet detent levers pivot about points B and C respectively, and are held against the saw tooth shaped teeth on the ribbon ratchet wheel by



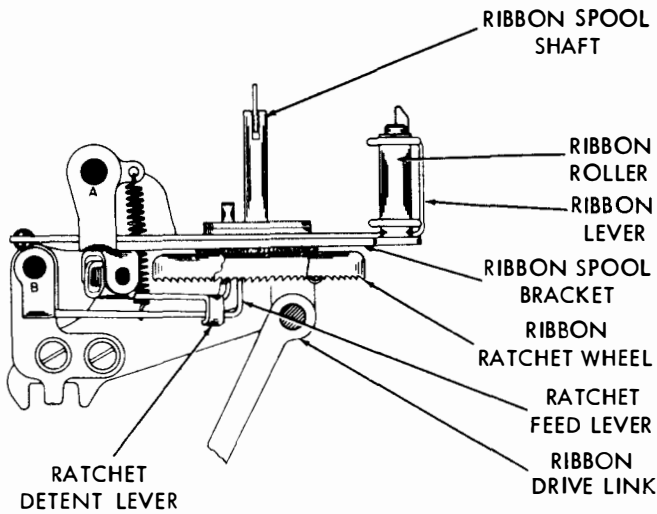


Figure 4-54. Ribbon Mechanism, Left Side

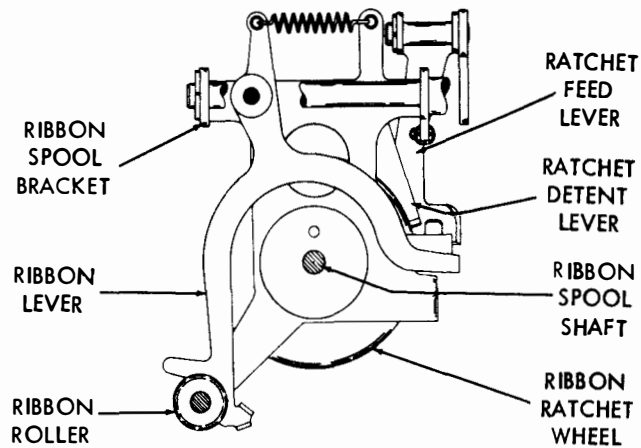


Figure 4-55. Ribbon Mechanism, Left Top View

their springs. As the ribbon spool bracket is moved upward, the ratchet wheel feed lever skips over one tooth, while the ratchet detent lever holds the ribbon ratchet wheel from turning backward. When the ribbon spool bracket is moved downward, the ratchet feed lever engages a ratchet tooth and pushes the ratchet wheel. A tooth on the ribbon ratchet wheel then skips over the ratchet detent lever. The teeth on the left and right ribbon ratchet wheels face in opposite directions so that, when their feed levers are engaged, the left ribbon ratchet wheel turns clockwise, and the right ribbon ratchet wheel turns counterclockwise (viewed from the top). In order for the ribbon to be pulled from one ribbon spool to the other, only one of the ribbon mechanisms can have its ratchet feed and ratchet detent levers engaged with its ribbon ratchet wheel at a time. As the ribbon ratchet wheel turns (figure 4-53), the ribbon tension plate also turns, and extends the ribbon tension spring. When the lug B of the ribbon tension plate makes contact with the ribbon tension bracket, the ribbon spool shaft is made to turn and the ribbon is thus wound on the ribbon spool. When the ribbon has become completely unwound from one spool, it is necessary to reverse its direction so it can rewind. This is accomplished automatically by disengaging one set of ratchet feed and ratchet detent levers and engaging the other set. While the ribbon is passing from the left spool to the right spool, the right set of levers are engaged. The left set are held disengaged against the tension of their springs by the left ribbon feed reverse lever which is in its downward position (figure 4-56). The lever is held in this position by means of the ribbon reverse detent lever through the intervening ribbon reverse detent cam, ribbon reverse shaft and ribbon reverse spur gear. As the ribbon unwinds from the ribbon spool, it passes around the ribbon roller (figure 4-55) and through the slot in the end of the ribbon lever. When the ribbon nears its end of the ribbon spool, an eyelet which is fastened to the ribbon catches in the ribbon lever slot and pulls the lever toward the right. The next time the ribbon mechanism is moved upward, the displaced ribbon lever engages the end of the

ribbon reversing lever and causes it to move to the dashed position shown in figure 4-56. As the lever moves, its teeth rotate the left spur gear which, through the ribbon reverse shaft, turns the detent cam and the right spur gear. As the right spur gear moves the right ribbon reversing lever downward, a pin on the lever drives the right ribbon feed reverse lever downward to disengage the ratchet feed and ratchet detent levers from the right ribbon ratchet wheel. At the same time a pin on the left ribbon reversing lever moves the left ribbon feed reverse lever upward to permit the left ratchet feed and

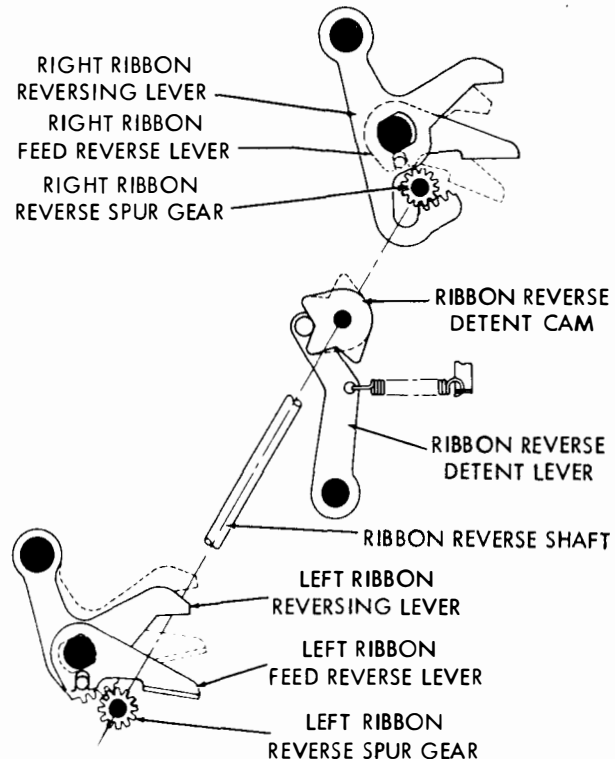


Figure 4-56. Ribbon Reversing Mechanism

detent levers to engage the left ribbon ratchet wheel. Thus, the ribbon mechanisms are positioned to rewind the ribbon on the left ribbon spool. When it nears its end on the right ribbon spool, the ribbon is again reversed in a manner similar to that just described. During the reversing cycle the ribbon is maintained taut by the previously extended ribbon tension spring (figure 4-53).

#### i. FUNCTIONS.

##### (1) GENERAL.

(a) There are two types of operations which can be performed by the Automatic Typer. The first embodies those mechanical actions which are directly necessary to the actual printing of a character. The second embodies mechanical action which is supplementary to the printing of a character, or which alters the positions of the various mechanisms, and is known as a function.

(b) As in printing, the reception of function codes results in the positioning of the code bars. The back edges of the code bars are notched. Positioned directly behind the code bars is a function box, which contains the function bars for the various functions (figure 4-57 and 4-58). Each function bar has a series of tines on its end offset to one side or the other to correspond with the marking and spacing elements of the particular code to which it is to respond. When the function clutch is tripped (paragraph 4-4e(2)(b)2 of this section, and figure 4-45), it rotates and extends motion to the function bar reset bail (through the intervening cam and follower arm and function rocker shaft) to cause the function bar reset bail with its attached reset bail blade to release the function bars momentarily (figure 4-59). As the spring tensioned function bars are released, they move forward to bear against the code bars. If the code bars are positioned for a function, each tine on the function bar for that function will be opposite a notch in a code bar. This will permit the selected function bar to move forward into the code bars while the other function bars are blocked by one or more code bars (figure 4-60). Associated with each function bar in the function box is a function pawl and a function lever. In the unselected position, the function bar is not latched with its function pawl (figure 4-61). When the function bar reset bail blade releases the function bars, any bar which may be selected will move sufficiently far forward (to the left in the figure) to permit it to engage its function pawl. Then, as the reset bail blade returns the function bar to its initial position, the function bar carries the function pawl to the rear (to the right in figure 4-62). The function pawl, in turn, moves the function lever clockwise about its pivot point. A projection at the lower end of most function levers operates the spacing suppression bail (paragraph 4-4f(2) of this section) and either the upper or lower ends of the levers operate the various functions. Near the completion of the function cycle, a stripper blade (operated by a cam on the function clutch assembly, rises to engage any selected function pawl and strip it from its function bar (figure 4-63). Springs return the released function pawl and the function lever to their original position. It should be noted here that, to prevent printing during the function cycle,

whenever a function selection occurs the type box is positioned such that the printing hammer will strike where there is no type pallet. The function clutch is disengaged upon completion of one revolution as described in paragraph 4-4e(1)(b).

##### (2) LETTERS AND FIGURES SHIFT FUNCTION.—

The letters and figures function bars, pawls and levers which are located near the right end of the function box operate on letters and figures codes, respectively. The upper ends of the function levers engage the letters and figures function slides (figure 4-64 and 4-65). The front ends of these function slides have camming surfaces which, when a slide is shifted to the rear by its function lever, move the letters-figures code bar fork to the right (letters position - figure 4-64) or to the left (figures position - figure 4-65). The letters-figures code bar fork engages a pin on the bracket which is fastened to the letters-figures shift code bar, and positions the code bar toward the right for letters function or toward the left for figures function (figure 4-66). A slotted extension of the code bar engages a tongue from the right end of the letters-figures shift slide and causes the shift slide to follow the movements of the code bar. Pins at the end of the shift slide serve as lower guides for the right and left shift link breaker slides. Pins which project from the front plate serve as upper guides and pivot points. Mounted on the ends of the main bail are the left and right breaker slide bails. When letters function code is received, the shift slide is shifted to the right as shown. This places the left shift link breaker slide in a vertical position with its lower end over the left breaker slide bail. The right breaker slide is positioned such that its lower end is to the right of the right breaker slide bail. As the main bail moves upward, the right breaker slide bail clears the right breaker slide while the left breaker slide bail engages the left breaker slide and moves it upward. This action causes the left oscillating rail shift links to break and shift the oscillating rail to the right for the printing of LTRS characters. In a similar manner, when figures function code is received, the right oscillating rail shift links are broken and the rail is shifted to the left for the printing of FIGS characters.

##### (3) SPACING FUNCTION.

(a) SPACING.—For spacing between words or any spacing other than that which accompanies printing, the operator uses the space bar which is attached to the space key lever on the Keyboard. The function operates in the manner described under SPACING, paragraph 4-4f(1) of this section. However, as in all the functions printing does not occur.

(b) UNSHIFT ON SPACE.—A function bar which operates on spacing code is located at the right end of the function box. Its associated function lever engages an extension of the letters function slide (figure 4-67). Thus, when a spacing function occurs, letters shift will take place in the manner described in paragraph 4-4i(2). The projection at the lower end of the spacing function lever is removed in order not to operate the spacing suppression bail which would suppress spacing. When it is undesirable to use the unshift on space

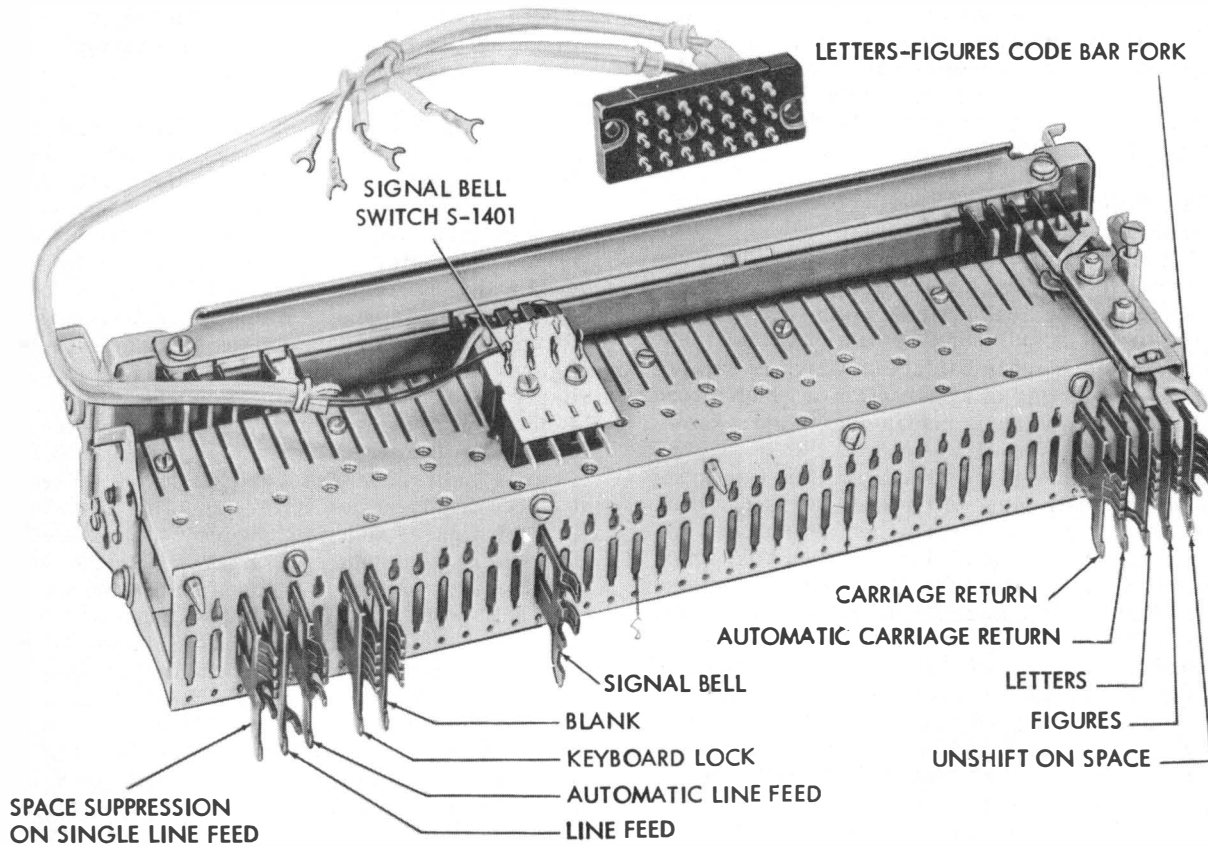


Figure 4-57. MX-1115B/UG Function Box, Front View, Showing Function Bars

feature, the mechanism may be disabled. This is accomplished by turning a screw (located over the front end of the function pawl) downward until the rear end of the pawl is raised to clear the function bar.

**NOTE**

The space function bar must be in its rear-most position when turning the screw down.

**(4) CARRIAGE RETURN FUNCTION.**

(a) The carriage return function mechanism is located in the right end of the Automatic Typewriter. Reception of the carriage return code causes the carriage return function bar, pawl and lever to operate (figure 4-68). The lower end of the function lever engages the carriage return slide arm and pushes it forward (toward the left in the figure). The slide arm, in turn, moves the carriage return bail and its lever about their pivot point. As the front portion of the lever moves downward, it takes with it the lower section of the spacing drum feed pawl release link. This causes the upper portion of the link to turn and disengage the spacing drum feed pawls from the spacing drum (figure 4-69). When the carriage return lever

reaches the lowest point, the carriage return latch bail locks it there. The disengagement of the spacing drum feed pawls from the spacing drum permits the spring drum to return the printing and type box carriages toward the left side of the Automatic Typewriter. As the spacing drum nears the end of its counterclockwise rotation, the roller on its stop arm contacts the transfer slide which, in turn, drives the dashpot piston into the dashpot cylinder. A small passageway with an inlet from the inside of the cylinder and three outlets to the outside is incorporated in the end of the cylinder. Two of the openings to the outside are closed by a steel ball which is held in its seat by means of a compression spring. A set screw which may be locked in place with a nut is used to regulate the spring pressure on the ball. The rate of deceleration provided by the cushioning effect of the trapped air is automatically regulated for various lengths of lines by means of the ball valve. This, together with the direct opening to the outside, determines the rate at which the air may escape from the cylinder. When the spacing drum reaches its extreme counterclockwise position, an extension on the stop arm trips the carriage return latch bail plate which is fastened to the carriage return lever and the feed pawls are again permitted to engage the spacing drum.

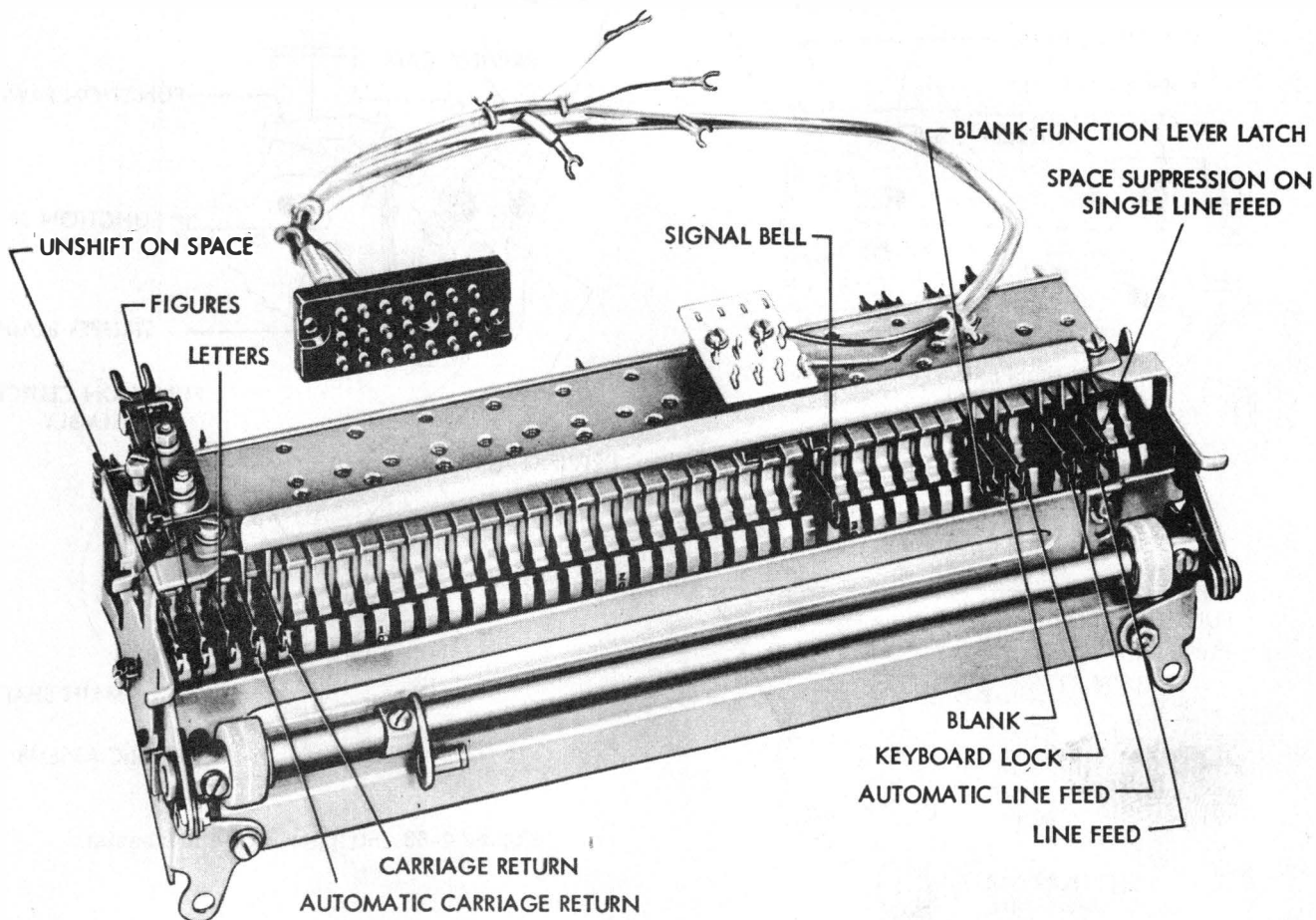


Figure 4-58. Function Box, Rear View, Showing Function Levers

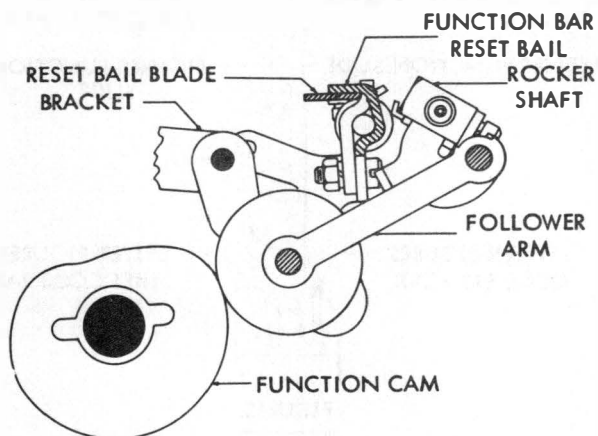


Figure 4-59. Function Reset Bail Mechanism

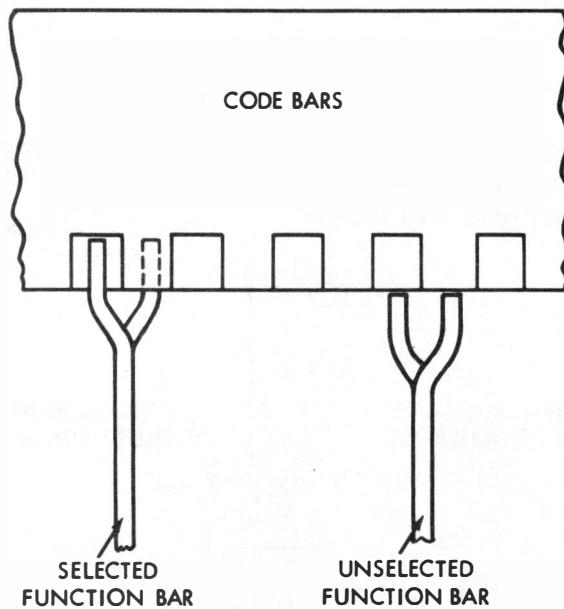


Figure 4-60. Function Selection, Top View

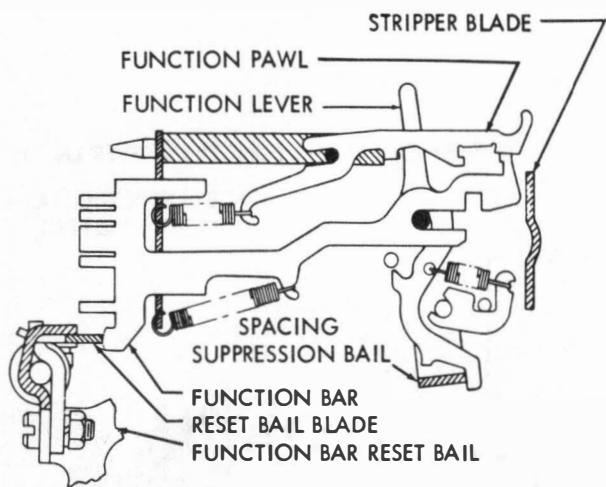


Figure 4-61. Typical Function Box Mechanism, Unselected

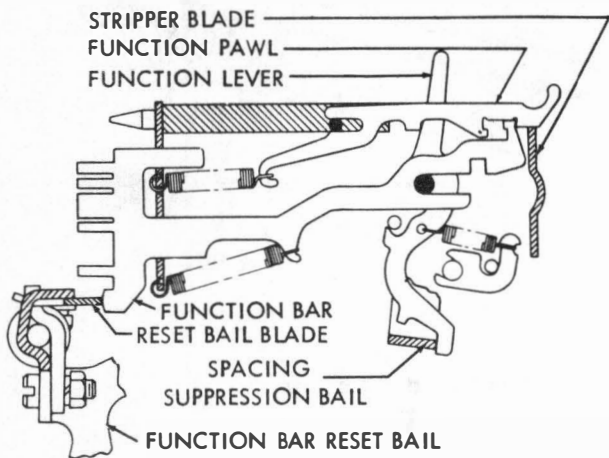


Figure 4-62. Typical Function Box Mechanism, Selected

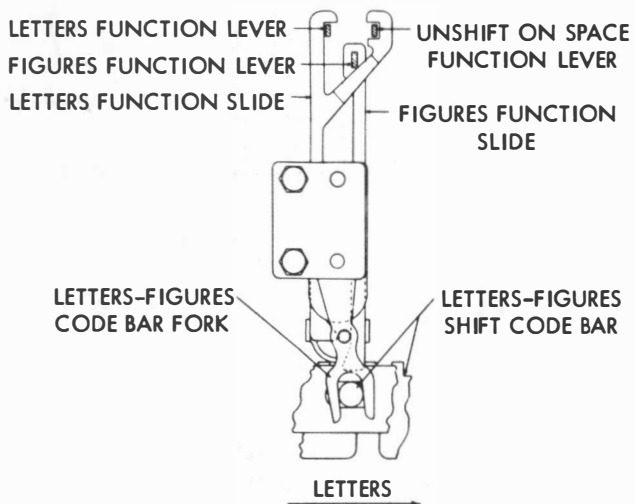


Figure 4-64. Letters-Figures Function Slides, Letters Position

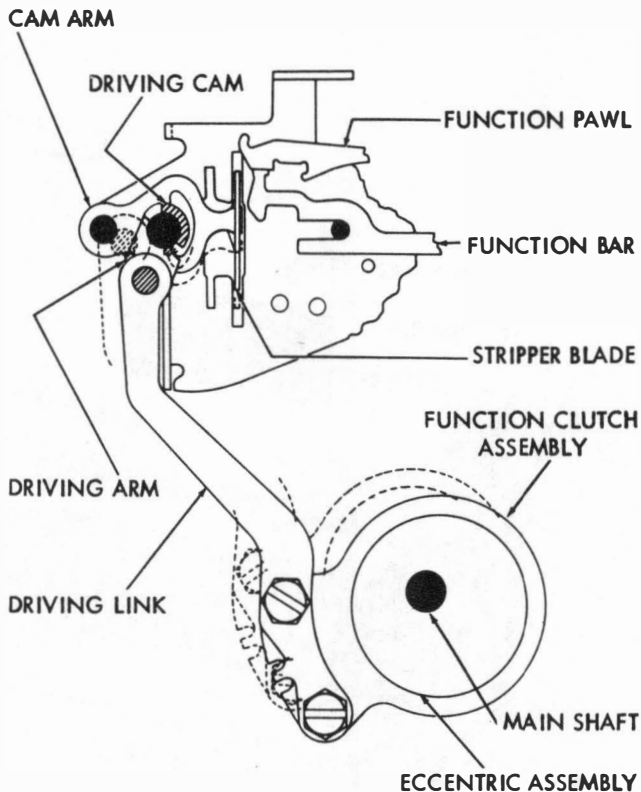


Figure 4-63. Stripper Blade Mechanism

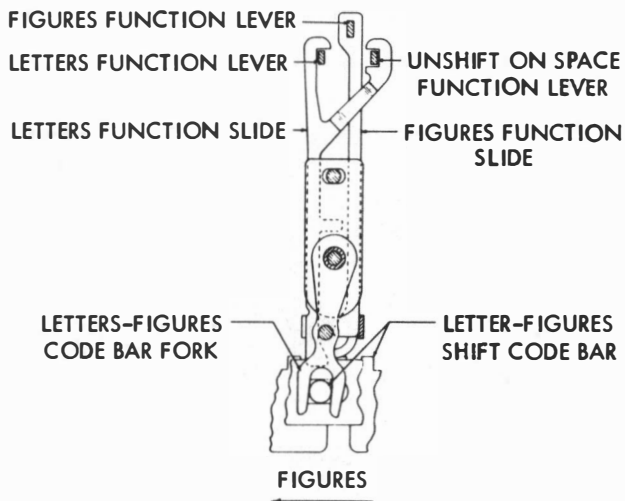


Figure 4-65. Letters-Figures Function Slides, Figures Position

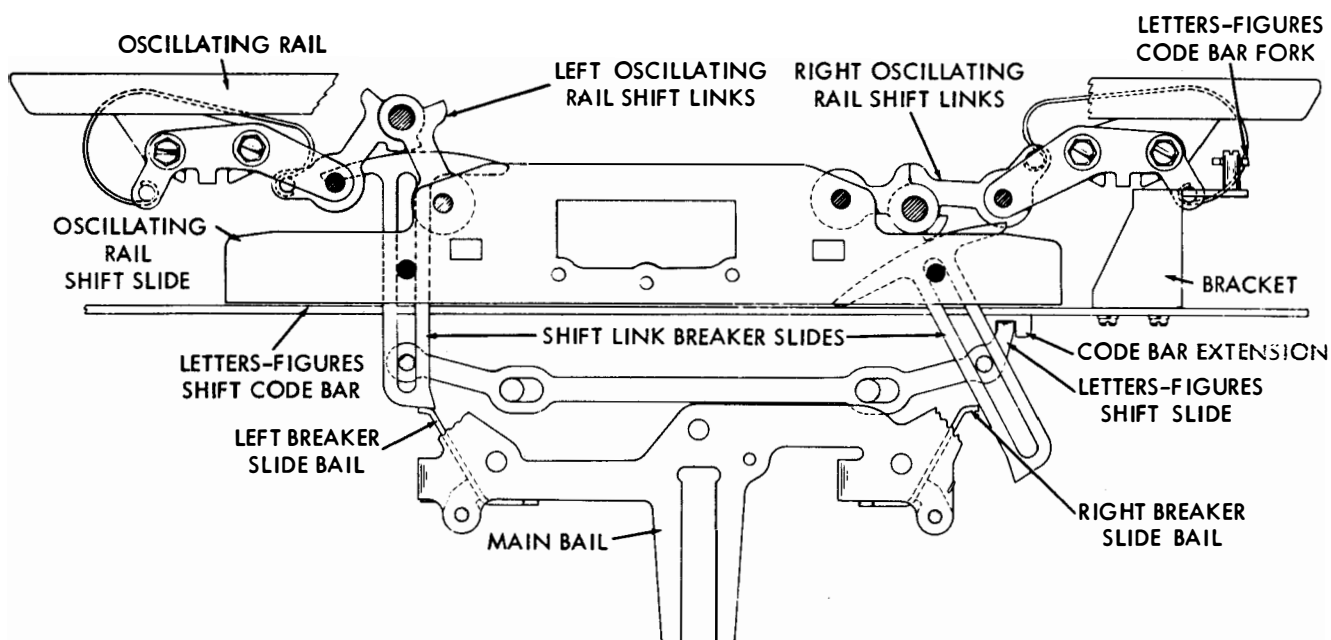


Figure 4-66. Letters-Figures Shift Mechanism, Letters Position

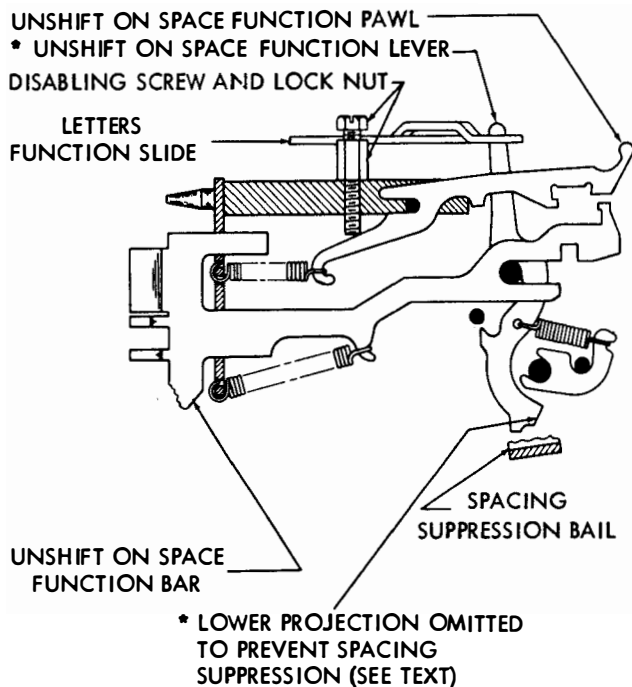


Figure 4-67. Unshift-On-Space Function Mechanism, Disabled Position

(b) Local (off-line) operation of the carriage return mechanism may be obtained from the Keyboard or Base. The Keyboard or Base mechanism, described in paragraph 4-3e of this section, engages a projection on the carriage return lever, and causes

the operations described in the preceding paragraph to take place.

(5) LINE FEED FUNCTION.

(a) The line feed function mechanism is located in the left end of the Automatic Typewriter. The reception of the line feed code causes the line feed function bar, pawl and lever to operate (figure 4-70). The lower end of the line feed function lever engages the line feed slide arm and pushes it forward (to the left of the figure). The slide arm, in turn, moves the line feed clutch trip arm and the trip lever above their pivot point until the trip lever releases the three-stop line feed clutch. The line feed gearing is such that each one-third revolution of the clutch will advance the platen by one line. Therefore, the length of time that the line feed clutch trip lever is held away from the clutch will determine the number of line feeds that occur. The timing relationship between the stripper blade cycle and the main shaft rotation is such that the function pawl is not stripped from a function bar until after more than one-third of a revolution of the clutch has occurred. Thus, the line feed clutch trip lever will stop the clutch after two-thirds of a revolution, or double line feed has occurred. When single line feed is desired, it is necessary to strip the function pawl from the line feed function bar before the line feed clutch completes one-third of a revolution. This is accomplished by the use of an auxiliary line feed function pawl stripper which is attached to the stripper bail. The cam disk on the three-stop line feed clutch furnishes the motive force to operate the stripper bail once each one-third revolution of the line feed clutch. The stripper blade on which the slotted line feed function pawl stripper rides may be shifted toward the right or left by the camming

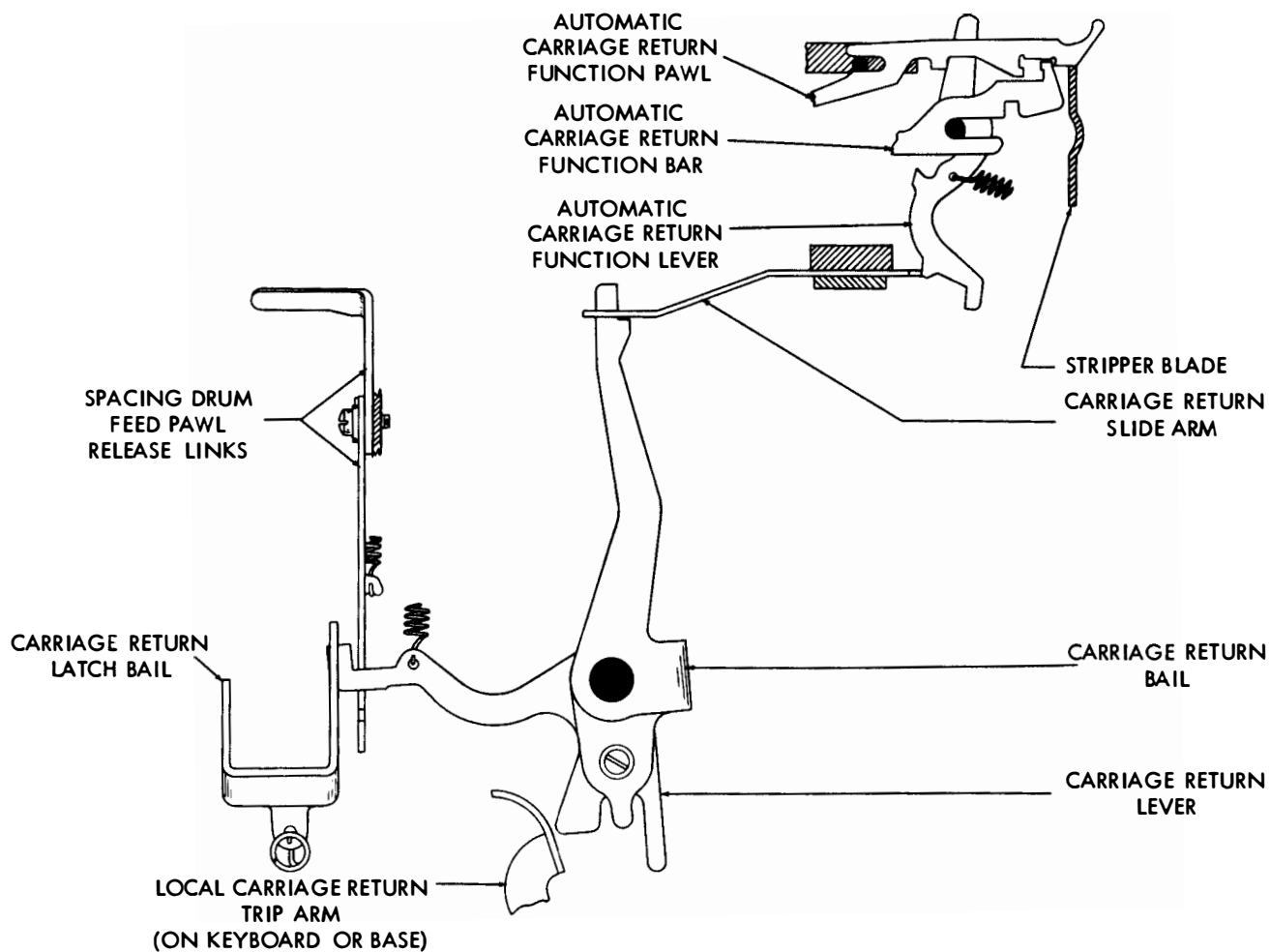


Figure 4-68. Carriage Return Function Mechanism

action of the single or double line feed lever (figure 4-71). The upper end of the pivoted single or double line feed lever protrudes from the upper left rear portion of the Automatic Typewriter where it rides in the two position side frame detent extension. When the lever is in position 1 (toward the front of the Automatic Typewriter) the stripper blade is positioned such that the two ears at the upper end of the line feed function pawl stripper are under the line feed and automatic line feed function pawls. When the lever is in position 2 (toward the rear of the Automatic Typewriter), the stripper blade is positioned such that the ears on the line feed function pawl stripper are between the function pawls. All the other function pawls are stripped with the stripper blade in either position. When single line feed is being used, the line feed function lever is released too soon (by the line feed function pawl stripper) to prevent spacing. Therefore, an additional line feed function bar, pawl, and lever are installed in the extreme left end of the function box for the sole purpose of suppressing spacing on single line feed function (figure 4-57). This mechanism, which always operates on the line feed function code, is

released only by the stripper blade, and therefore holds the spacing suppression bail operated until the spacing cycle is completed. After the line feed clutch is stopped by its trip lever, it is disengaged by the trip lever and latch lever in the same manner as the three-stop spacing clutch.

(b) Each one-third revolution of the line feed clutch causes its attached spur gear to rotate the line feed eccentric spur gear and its attached eccentrics one-half of a revolution (figure 4-72). The eccentrics which are offset in opposite directions each carry a line feed bar. These bars guided by the line feed bar bell crank alternately engage the line feed spur gear on the platen and advance the platen one line for each one-half turn of the eccentrics. A platen detent bail engages the line feed spur gear to retain the platen at each setting.

(c) When it is desired to position the platen manually, this may be accomplished by bearing down on and turning the platen handwheel. This causes the platen handwheel spur gear to engage the

platen idler spur gear which in turn is engaged with the platen spur gear on the platen shaft. At the same time the line feed bar release lever bears on the line feed bar bell crank and causes it to disengage the line feed bars from the line feed spur gear.

(d) Local (off-line) operation of the line feed mechanism may be obtained from the keyboard or base. A base or keyboard mechanism, described in paragraph 4-3f of this section, engages a projection on the line feed clutch trip lever and may hold the clutch engaged to provide continuous line feeding (figure 4-70).

(5)A. LOCAL BACK SPACE MECHANISM (MX-3080/UG). — Attached to the upper extension of Keyboard MX-1677A/UG local back space operating bail (figure 4-22A) is a trip link which moves toward the rear to operate the space clutch trip lever. It will be noted that the positioning of the back space camming bail (figure 4-69A) is completed before the spacing clutch is tripped. As the eccentric assembly rotates, the feed pawl that is moving up is prevented from engaging the teeth on the spacing drum by the action of the eccentric and the pivoting of the feed pawl on the back space cam bail. The spacing drum rotates backward (one space) under spring tension,

following the feed pawl that is moving down. As the spacing clutch rotates, the trip link stripper riding on the clutch cam disk (figure 4-22A) disengages the trip link from the clutch trip lever, allowing the trip lever to block further rotation of the clutch. This prevents more than one back space operation from occurring each time the local back space key-lever is operated.

(5)B. LOCAL REVERSE LINE FEED MECHANISM (MX-1115B/UG). — The reverse line feed feature is an arrangement which will provide an alternate pivot point below the line feed eccentric for reversing the action of the line feed bars. A detailed description of the keyboard linkage which moves the lower pivot into its operated position is contained in paragraph 4-3fB of this section.

(a) As the reverse line feed trip link continues to move up to the rear, it engages and trips the line feed clutch trip lever, allowing the clutch to rotate and drive the line feed eccentric assembly. The reverse feeding action of the line feed bars occurs as follows: With the bar nearest the left side frame in its up position, the other feed bar is down (figure 4-71A), and the motion of the lower feed bar at the eccentric assembly is forward (left) and upward. The lower end of the feed bar moves in the same

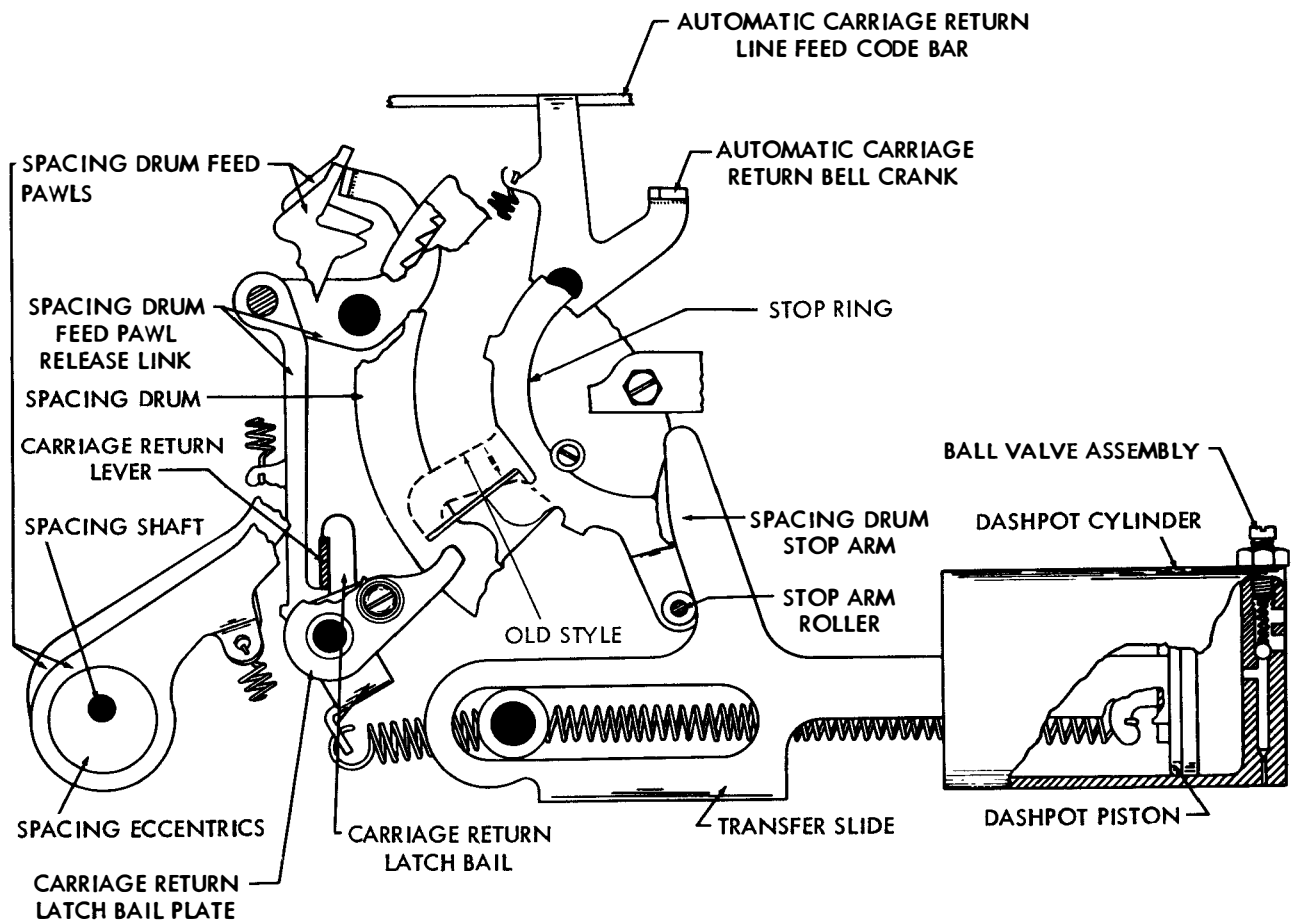


Figure 4-69. Carriage Return Mechanism



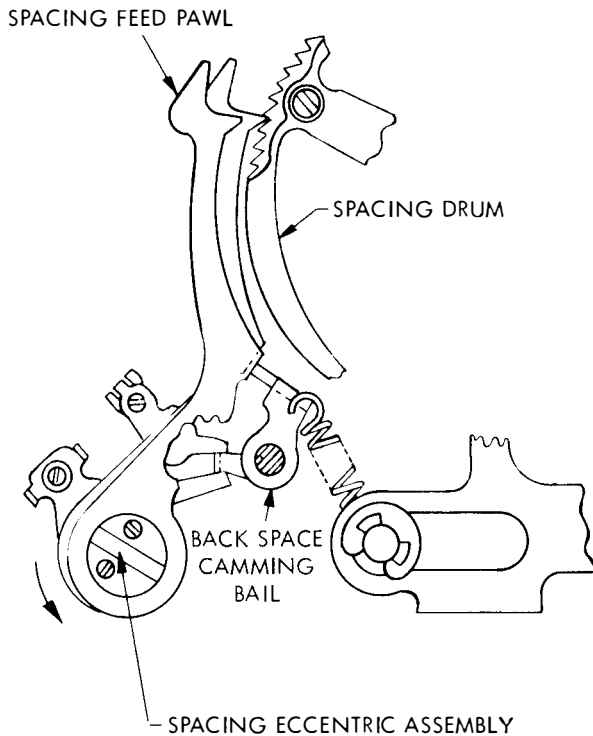


Figure 4-69A. Back Space Camming Bail (MX-3080/UG)

direction as its eccentric and, in turn, carries the slide link forward. The rear projection on the slide link engages and pushes the intermediate arm against the notched projection on the lower end of the upper feed bar. Therefore, as the lower end of the lower feed bar moves forward, the lower end of the upper feed bar is also moved forward. The motion of the upper bar at its eccentric is to the rear and downward. The resulting motion of the upper feed bar at its upper end is toward the rear and downward, which disengages the upper end from the platen gear. The lower bar which remains engaged rotates the platen as the eccentric assembly continues its rotation. When the eccentric completes 180° of rotation, the reverse feeding cycle is completed, and the platen is rotated back one line.

(b) As the line feed clutch rotates, the trip link stripper lever riding on the clutch cam disk disengages the trip link from the clutch trip lever, allowing the trip lever to block further rotation of the clutch. This prevents more than one line feed operation from occurring each time the reverse line feed keylever is depressed.

(c) Continuous reverse line feeding is obtained by depressing both the local reverse line feed and the local (forward) line feed keylevers at the same time. During the forward line feed operation, the slide link (figure 4-71A) is not operated, and the motion of the lower ends of the feed bar is not affected. The bars alternately engaged and disengaged the platen gear due to the action of the eccentric assembly and the bell crank roller, which acts as a pivot point for the line feed bars.

(6) **AUTOMATIC CARRIAGE RETURN — LINE-FEED FUNCTION.** — If an operator fails to send the carriage return and line feed functions before the carriages are within one character of the right end of the line, the automatic carriage return arm on the spacing drum trips the automatic carriage return bell crank (figure 4-68). As the bell crank turns clockwise, it shifts the automatic carriage return-line feed code bar to the right. Located adjacent to the carriage return and line feed function bars in the function box are automatic carriage return and line feed functions bars (figure 4-57). These two function bars are identical and have only one code projection. This projection is located opposite the automatic carriage return-line feed code bar which normally blocks the automatic carriage return and line feed function bars. When the code bar is shifted to the right, these function bars and their associated function pawls and levers are operated. The automatic carriage return and line feed function levers operate the carriage return slide arm and the line feed slide arm, respectively, and thereby cause the carriage return and line feed functions to occur simultaneously.

(7) **SIGNAL BELL FUNCTION.** — For signaling purposes, a bell is located in the Cabinets CY-2538/UG, CY-2539/UG and CY-2320/SGA-3. The circuit to the bell magnet E802 is controlled by a switch assembly S1401 mounted on the function box (figures 4-33 and 4-73). The signal bell function bar has six code lugs — five for the signal code and one for the letters-figures shift code bar (figure 4-57). In order to select the signal bell function, the letters-figures shift code bar must first be shifted to figures position. Then, each time the signal code for the letter S is received, the function lever will pulse the upper signal bell contact once (figure 4-74). If the signal code for the letter S is received when the letters-figures shift code bar is in the letters position, the signal bell function bar will be blocked by the shift code bar.

(8) **BLANK FUNCTION.** — Near the left end of the function box are two identical function bars coded to operate when the signal code for blank function is received (figure 4-57). If, at any time, two consecutive blank signal codes are received, the mechanism operated by these two function bars will lock up the keyboard. The single-blank function lever has a projection which reaches over to engage the notch in the keyboard lock function bar and prevent the function bar from moving forward even though a blank signal code is received (figure 4-58). Therefore, the first blank signal code received will operate only the blank function bar. This function bar moves its function pawl which, in turn, operates the blank function lever and causes it to move out of engagement with the keyboard lock function bar and to be latched in place by the blank function lever latch (figure 4-75). If the next consecutive signal code is not a blank, the keyboard lock function bar will be blocked by the code bars, and the lower edge of the stripper blade will trip the blank function lever latch. The latch will release the blank function lever and permit it to re-engage the keyboard lock function bar and reset the mechanism. If, however, the next consecutive signal code is a blank, the keyboard lock function bar

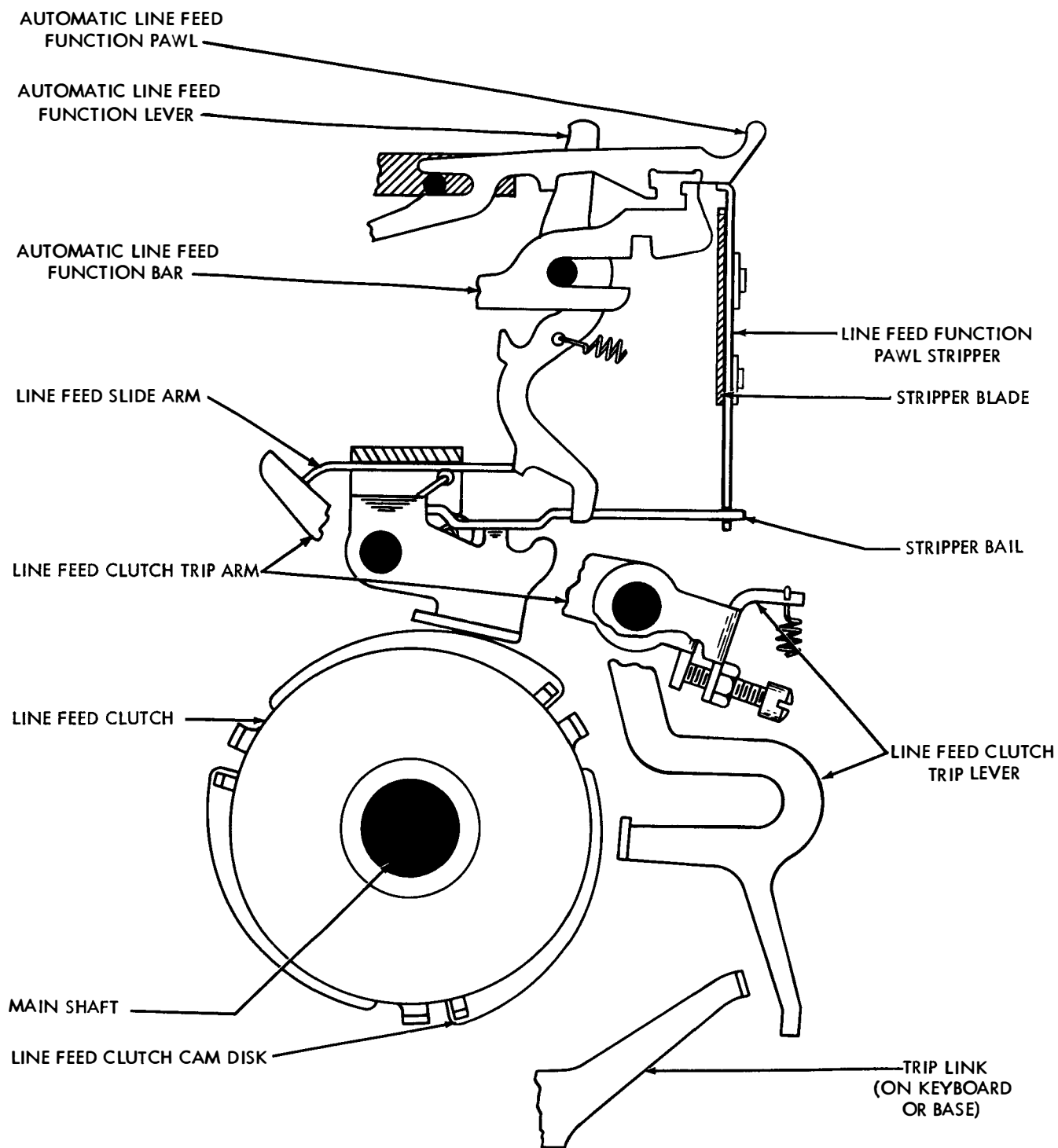


Figure 4-70. Line Feed Function and Clutch Mechanism

will move forward before the stripper blade can trip the blank function lever latch and release the blank function lever. The keyboard lock function bar operates its function pawl which in turn operates the keyboard lock function lever (figure 4-76). The keyboard lock function lever moves the keyboard lock slide arm forward (toward the left in the figure). This, in turn, actuates the keyboard lock levers and causes them to push downward on a plunger (which projects upward from the keyboard) and lock the keyboard. The operation of the keyboard lock mechanism in the keyboard is described in paragraph 4-3i of this section.

(9) SEQUENTIAL SWITCHING. — Teletypewriter

TT-47E/UG is equipped with twelve additional function bars. Eight of these are operated by the signal code for the "H" character and four by the "C" character. Selection and latching of these function bars is as described in paragraph 4-4i(8) of this section, except that four consecutive repetitions of the required signal code are accumulated before the function is performed. On the fourth consecutive character, the associated function bar closes the normally open switch S1402 and thereby completes an external circuit, such as a remote reperforator motor control. The contacts remain closed until the reception of four consecutive "H" characters at which time the associated function bar allows the contacts to open. Equipment affected by the sequential switching is optional.

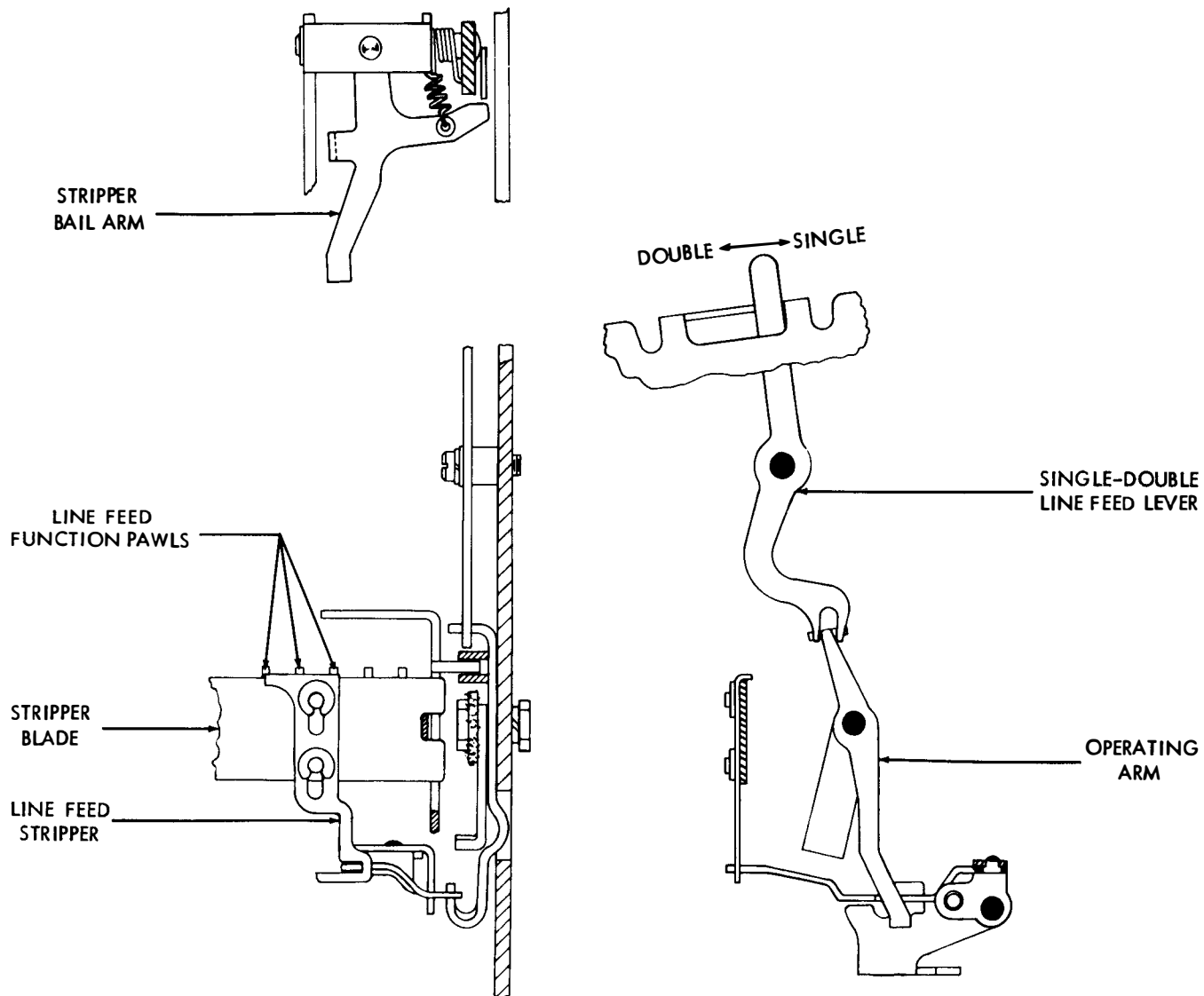


Figure 4-71. Positioning Mechanism for Single or Double Line Feed

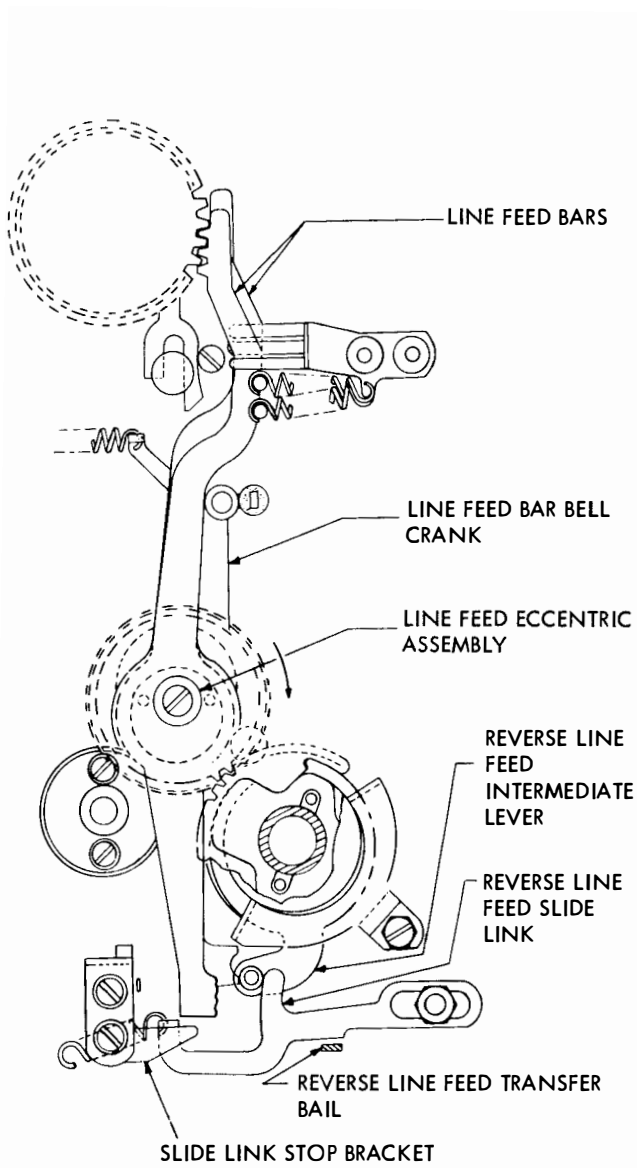


Figure 4-71A. Line Feed Bar Mechanism (MX-3080/UG)

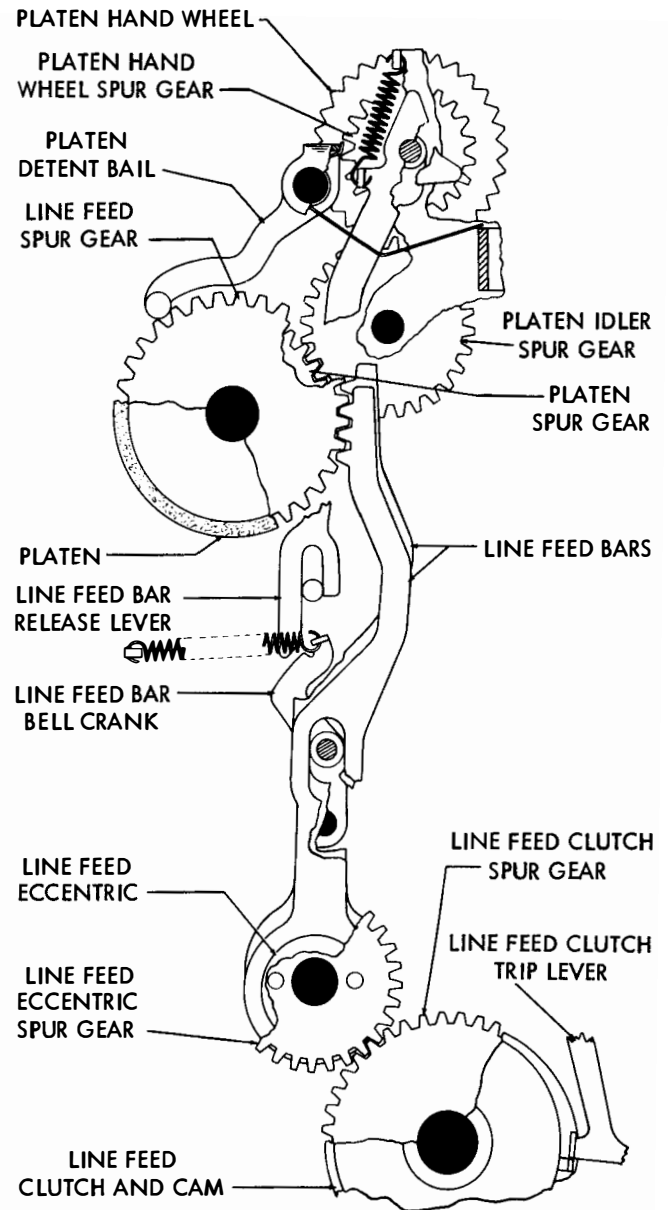


Figure 4-72. Line Feed Mechanism

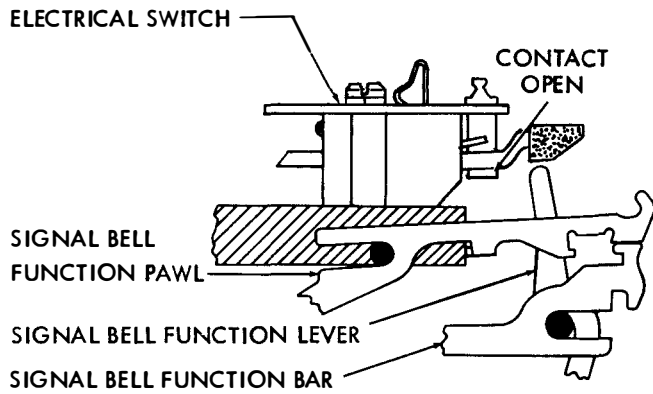


Figure 4-73. Signal Bell Contact Mechanism, Unselected

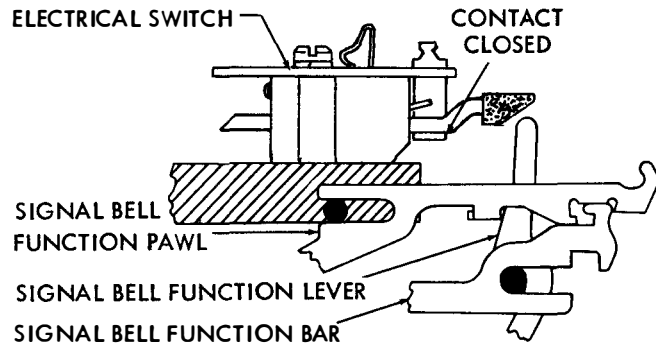


Figure 4-74. Signal Bell Contact Mechanism, Selected

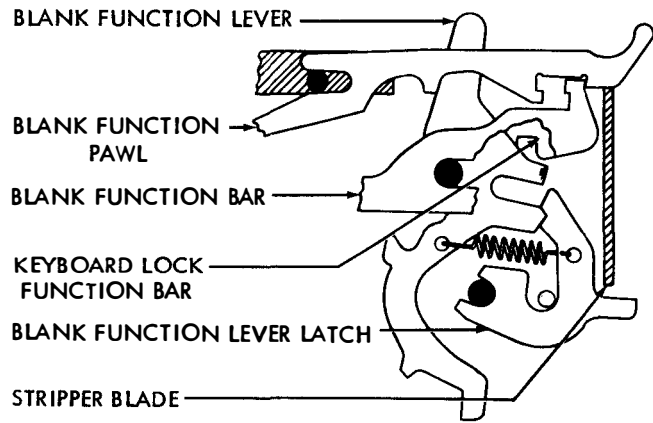


Figure 4-75. Keyboard Lock Priming Mechanism

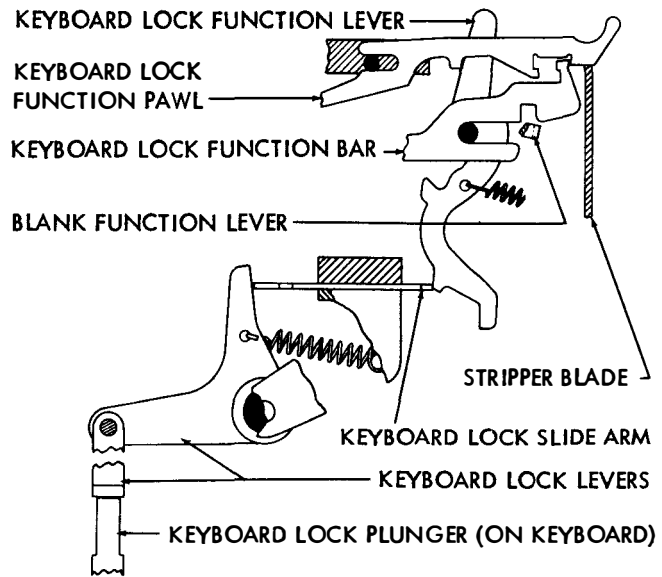


Figure 4-76. Keyboard Lock Mechanism

## 4-5. MOTORS.

a. AC MOTOR (SYNCHRONOUS) PD-17A/U. (See figures 1-9 and 4-77.)—The synchronous Motor is for use with single phase, 115 volt (plus or minus 10 percent) alternating current, at a frequency of 60 cycles per second (plus or minus 0.5 cycle). It is a 1/20 horsepower, 3600 rpm, two pole, wound stator, ball bearing Motor, with a squirrel cage type rotor. The stator has two windings, a main operating winding, and an auxiliary winding. The auxiliary winding is in series with a 43 mf a.c. electrolytic capacitor C501, and with a current operated motor starting relay K501. The initial starting current causes the relay to pull up and its contacts close the auxiliary winding circuit. As the rotor gains speed, the current flowing through the Motor (and also the relay coil) decreases. When a predetermined current value is reached the relay armature is released, the relay contacts are opened, and the auxiliary winding circuit is disconnected from the line. The rotor E501 continues to accelerate until it reaches synchronous speed (3600 rpm). The Motor is wired in such a manner that the rotor rotates counterclockwise when viewed from the fan end. The starting relay and capacitor together with a thermal cut-out switch S501 are mounted in a compartment on the underside of the Motor. The thermal cut-out switch is in series with both the main and auxiliary motor windings, and if excessive current is drawn by the motor (due, for example, to a blocked rotor), the switch will open the circuit. This is to prevent overheating and possible damage to the Motor if it is stalled. The switch may be manually reset if tripped, by depressing its red button which projects upward through the motor mounting plate. There are two fans located within the motor housing, one at each end of the rotor. These draw cooling air in through the slots in the end bells and exhaust it through the slots in the motor housing. The end bells have rubber vibration mounts by means of which the Motor sets in the ends of its mounting bracket. The rubber mounts are held in the bracket by means of mounting straps. The motor shaft has a tapped hole for use in fastening the intermediate shaft driving helical gear. All end play is taken up by means of a conical shaped spring which bears against the outer race of one of the ball bearings. The motor mounting bracket is fastened to the Keyboard by means of four screws and lock washers.

b. AC MOTOR (GOVERNED) PD-18/U. (See figures 1-10 and 4-78.)—The series governed Motor is for use with single phase, 115 volt (plus or minus 10 percent) alternating current, at a frequency of 50 to 60 cycles per second. It is a 1/20 horsepower, 3600 rpm ball bearing Motor which depends on an electromechanical governor for its speed regulation. The armature E601 with a 48 segment commutator is wired in series with the two field windings, and the governor contacts E611 and E612. Two 500 ohm, 40 watt resistors R601 and R602 and a 0.5 mf capacitor C603, are connected in parallel with the governor contacts. When the contacts are closed the resistor is shorted out. When the contacts are open the resistor is

in series with the Motor, to limit its operating current, and thus reduce its speed. The capacitor serves as a spark suppressor for the governor contacts. The combination fan and governor is mounted on one end of the motor shaft. The fan draws cooling air through the motor housing, and also serves as a mounting plate for the governor slip rings and for the governor contact mechanism (mounted on opposite sides of the fan). Connections to the two slip rings, which are wired to the governor contacts, are made by means of two brushes E604, and E605, mounted on the ends of the motor housing. Normally the governor contact spring holds the governor contact E611 against the contact screw E612 (figure 4-79). When the motor shaft exceeds a predetermined speed, the centrifugal force developed on the governor contact overcomes briefly the pull of the governor spring, and the governor contact leaves the contact screw until the Motor slows down. The tension on the contact spring may be adjusted to maintain the motor speed at 3600 rpm. In order to make this adjustment, means are provided to compare the motor speed with a standard. An aluminum cover fits against the side of the fan and encloses the governor contact mechanism. The outside of the cover is finished in white, with four black stripes equally spaced about its periphery. This serves as a target which should appear to stand almost still

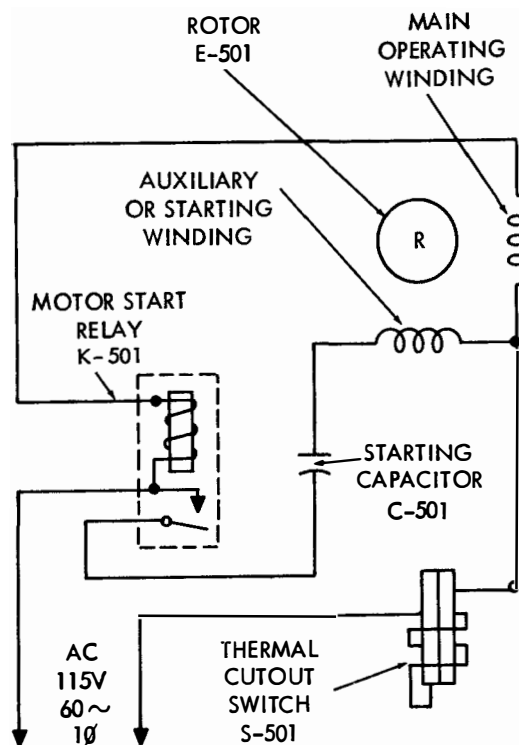


Figure 4-77. AC Motor (Synchronous) PD-17A/U, Schematic Wiring Diagram

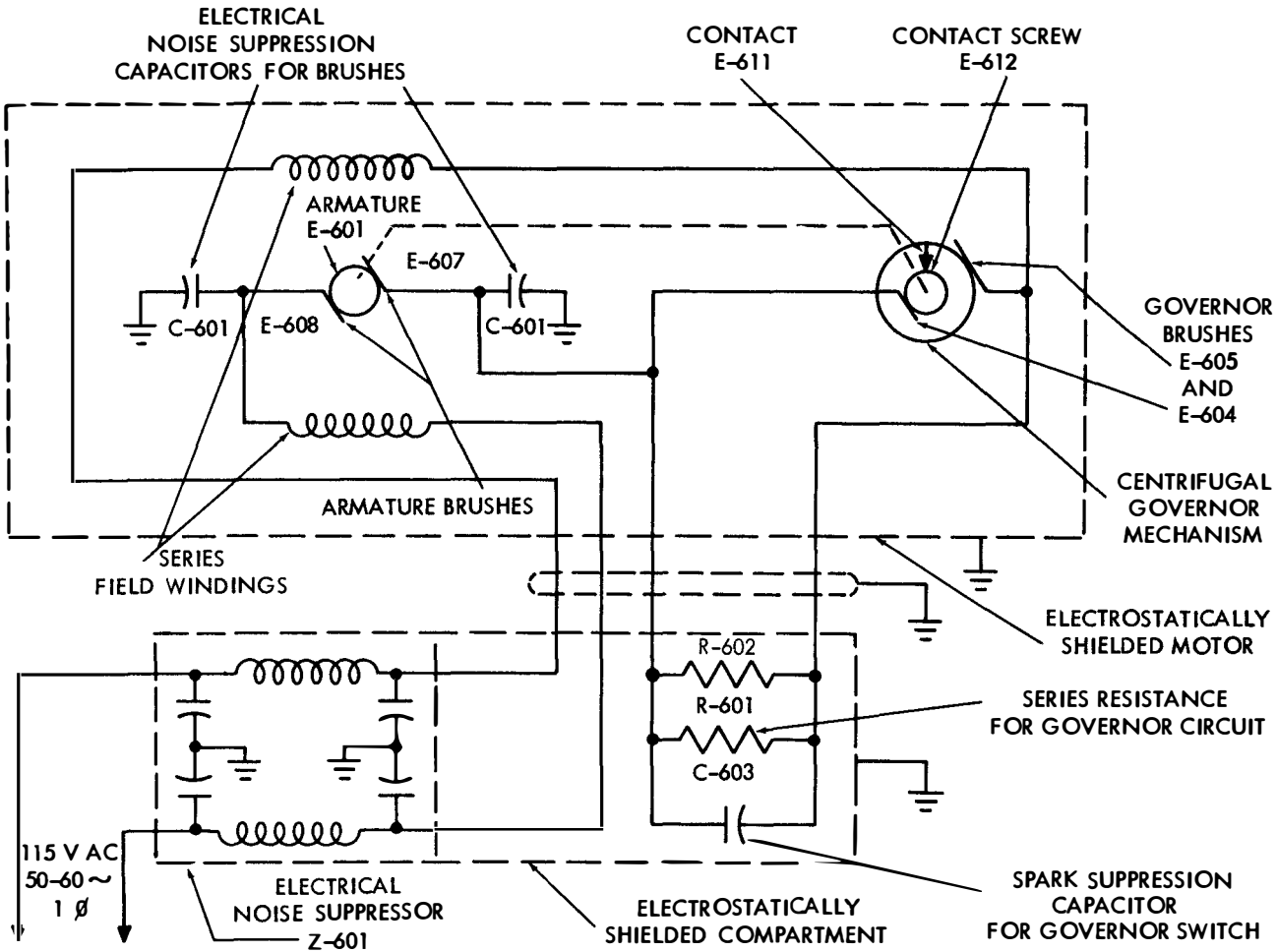


Figure 4-78. AC Motor (Governed) PD-18/U, Schematic Wiring Diagram

at 3600 rpm, when viewed through the moving shutter of a 120 vibrations per second tuning fork. The two motor brushes E608 and E607 are protected by 8000 mmf capacitors C601 connected between the brushes and the grounded frame of the Motor. These tend to by-pass any electrical noise created by the brushes as they make and break contact with the various segments of the armature commutator. The Motor is wired in such a manner that the armature rotates counterclockwise when viewed from the governor end. The method of mounting the series Motor is similar to the method of mounting the synchronous motor. The housing provided on the underside of the mounting bracket contains both the 250 ohm resistor and 0.5 mf capacitor in the governor circuit as well as an electrical noise suppressor. The purpose of the electrical noise suppressor in the motor input circuit is to prevent any radio interference which may be generated by the Motor from being radiated by the motor power leads. To prevent this disturbance from being radiated directly from any of the motor components or wiring, the entire AC Motor PD-18A/U is enclosed by grounded metal housings with screened openings. The screening is to permit the circulation of cooling air through the Motor and across the governor resistor and also to permit the

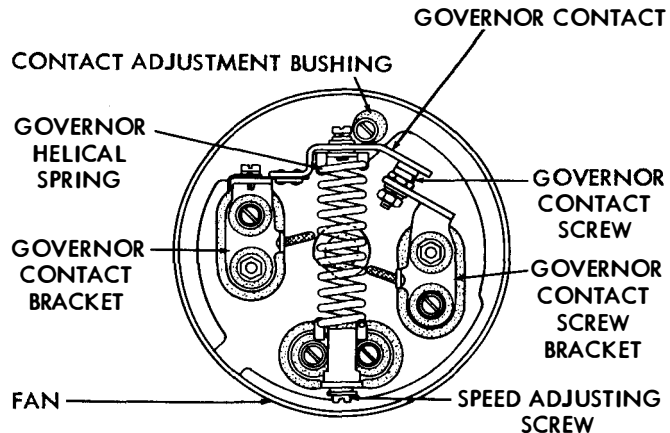


Figure 4-79. Governor for Motor PD-18/U

target to be viewed when checking motor speed. A threaded plug which is provided in the governor shield housing may be removed to permit the insertion of a screwdriver when necessary to adjust the motor speed. Access to the compartment on the underside of the Motor may be gained by removing a screw and lock washer and sliding the bottom cover plate aside.

4-6. CABINETS CY-2538/UG, CY-2539/UG, AND CY-2320/SGA-3, COVER CW-354/UG, AND POWER DISTRIBUTION PANELS SB-964/UG and SB-408/UG. (See figures 1-12, 1-12A, 1-13, 1-13A, 1-14, 4-80, and 4-80A.)

a. GENERAL.—The principal purpose of the Cabinets is to house the Keyboard, AC Motor, Automatic Typer, and Power Distribution Panel. In addition, the Cabinet contains certain electrical accessories. Two terminal boards, TB701 and TB702, are mounted in the upper rear portion of the Cabinet. The signal bell is located on the underside of the Cabinet shelf and its magnet E802 connects to terminal board TB702. The copy light lamps I1001 and I1002 and its three position switch S1002, the margin indicator lamp I1003, and the lamp transformer T1001 are located in the cabinet dome and connect to terminal boards TB701 and TB702. Two electrical noise suppressors (Z801 and Z802 in Cabinets CY-2538/UG and CY-2539/UG, and Z801 and Z1001 in Cabinet CY-2320/SGA-3) are mounted to the Cabinet shelf. In Cabinets CY-2538/UG and CY-2539/UG, suppressor Z802 is in series with the a-c power input which is then brought to terminal board TB702. Suppressor Z801 is in series with the signal line which is then brought to terminal board TB701. In Cabinet CY-2320/SGA-3, suppressor Z801 is in series with the a-c power input which is then brought to switch S1001. From switch S1001 the power is routed to terminal board TB1001 and then to TB702. Terminal board TB1003, located on the back wall of the Cabinet under the Cabinet shelf, is a power distribution point for all equipment used in the Code Group system of which Cabinet CY-2320/SGA-3 is a part. In Cabinet CY-2320/SGA-3, suppressor Z801 is in series with the send line, while the receive line is brought directly to terminal board TB701. The Power Distribution Panel is located behind the Keyboard inside the Cabinet, and is held in place by two studs. The power switch, located in the lower right front corner of the chassis, is engaged by the fork on the power switch extension shaft. This shaft extends through the front of the Cabinet below the right end of the Keyboard and is equipped with a knob so that the Teletypewriter may be turned "on" or "off" from outside the Cabinet. Cabinet CY-2320/SGA-3 is equipped with an additional extension shaft and knob in the left corner of the Cabinet, so that power to the associated equipment in the system may be controlled at this point. The Power Distribution Panel is equipped with four legs which project upward for use when the Panel is turned upside down for servicing. The complete Power Distribution Panel is composed of the basic panel plus an electrical motor control accessory.

b. BASIC PANEL.—The basic part of the Power Distribution Panel consists of a chassis upon which is mounted all of the cabling that interconnects the Keyboard and the Automatic Typer, together with necessary plug connectors, fuse, switch, terminal boards, convenience receptacle, and line shunt relay. The cable assemblies and connectors which connect to the Keyboard and the Automatic Typer

pass through the left and right ends, respectively, of the chassis. The cable with lug terminations which enters the left end of chassis connects with terminal board TB701 in the Cabinet to bring all signal line circuits into the panel chassis. The cable with lug terminations which enters the right end of the chassis connects with terminal board TB702 in the Cabinet. This cable brings AC power into the panel chassis, and completes the circuits to the various electrical accessories in the Cabinet. Upon entering the chassis, the ungrounded side of the power is fused by a 4 ampere fuse F1102 before it reaches the power switch S1101. When S1101 is ON, the power input is applied to power terminal board TB1101 and to the magnet coil of the signal line shunt relay K1101. In the de-energized position of K1101, its contacts shunt the signal line at TB701 in the Cabinet. When K1101 is energized by operation of S1101, the contacts open to remove the shunt. The circuit from the margin indicator switch S101 in the Keyboard connects with the margin indicator lamp circuit in the Cabinet at terminal boards TB702. The circuit from the motor stop switch S103 on the time delay mechanism in the Keyboard picks up power at TB1101 and connects with the stop magnet L1110 in the electrical motor control mechanism at terminal board TB1105. The circuit from the signal bell switch S1401 in the automatic typer picks up power at TB1101 and connects with the circuit to the signal bell magnet L802 at TB701, in the cabinet. The a.c. motor circuit from TB1101 in the keyboard picks up power at TB1101 and connects with the motor power switch S1105 in the electrical motor control at TB1105. The signal line circuits from both the keyboard and the automatic typer connect with TB701, where they may be arranged for either single or double loop operation. In addition, wires from the selector magnets, L1308 and L1309 in the automatic typer, connect with terminal board TB1102 in the power distribution panel. Two strap wires on TB1102 which connect L1308 and L1309 in parallel for 0.060 ampere signal line current may be rearranged (dashed lines in figure 4-80) to connect the magnets in series for 0.020 operation.

bA. PANEL SB-408/UG AND COVER CW-354/UG. — To accommodate the more compact enclosure used on Teletypewriter TT-176A/UG, a modified power distribution panel and a cover are provided. These components are similar in function to those described in paragraphs 4-6a and b. The panel does not include the line shunt. Line shunting is accomplished by the main power switch S5801, which closes the signal circuit in its OFF position (See figure 4-80A). The signal bell is located on the power distribution panel, but its connections are similar to other teletypewriters. The cabinet copylight system is a 120 V a.c. circuit, incorporating a line balancing relay R5701 for the margin indicator lamp. There are two power fuses, F5801 and F5802. The main power switch is bracket mounted to permit access through an aperture in the cover.

c. ELECTRICAL MOTOR CONTROL MECHANISM. — The electrical motor control mechanism is mounted



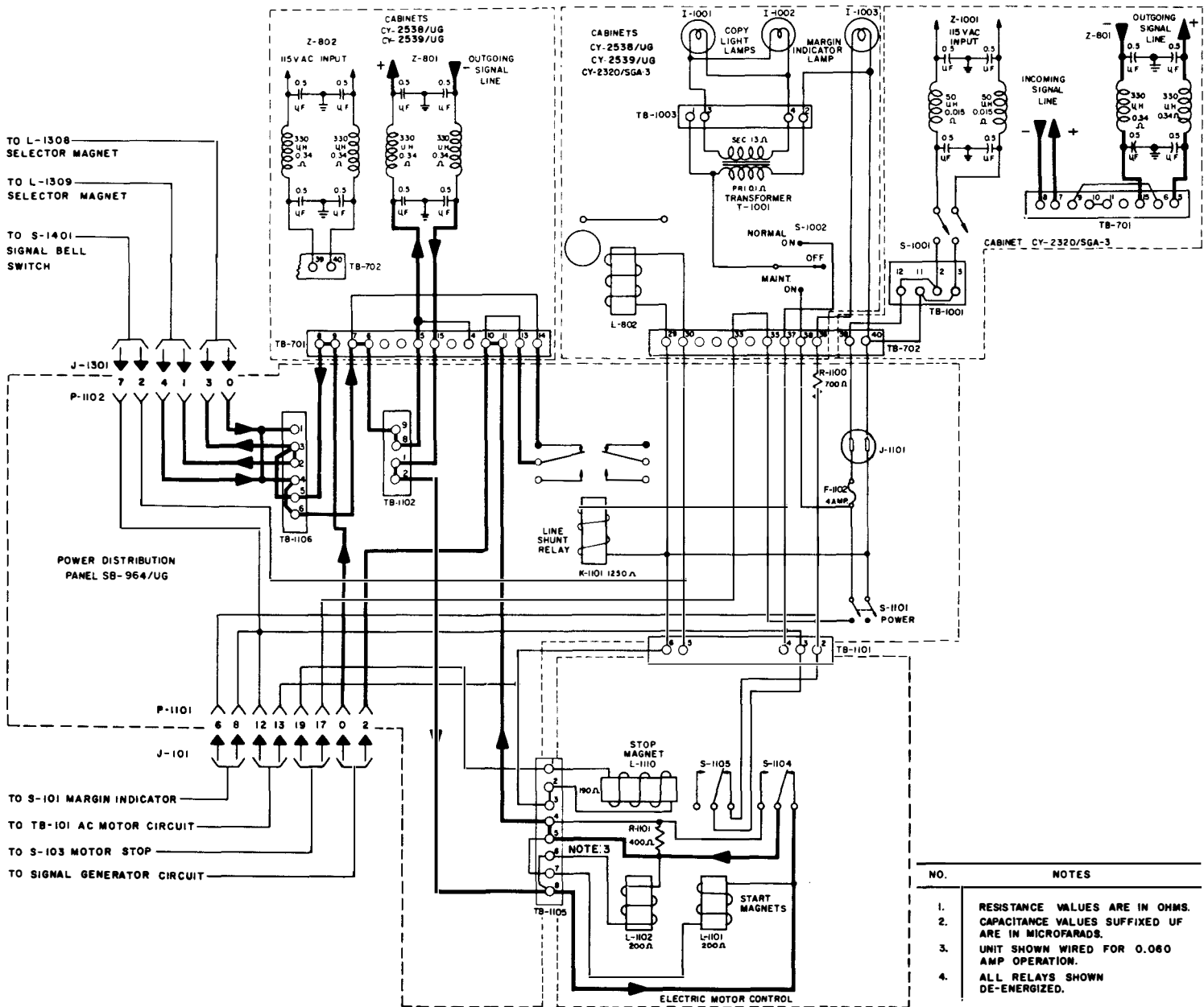


Figure 4-80. Power Distribution Panel SB-964/UG and Cabinets CY-2538/UG, CY-2539/UG and CY-2320/SGA-3, Schematic Wiring Diagram

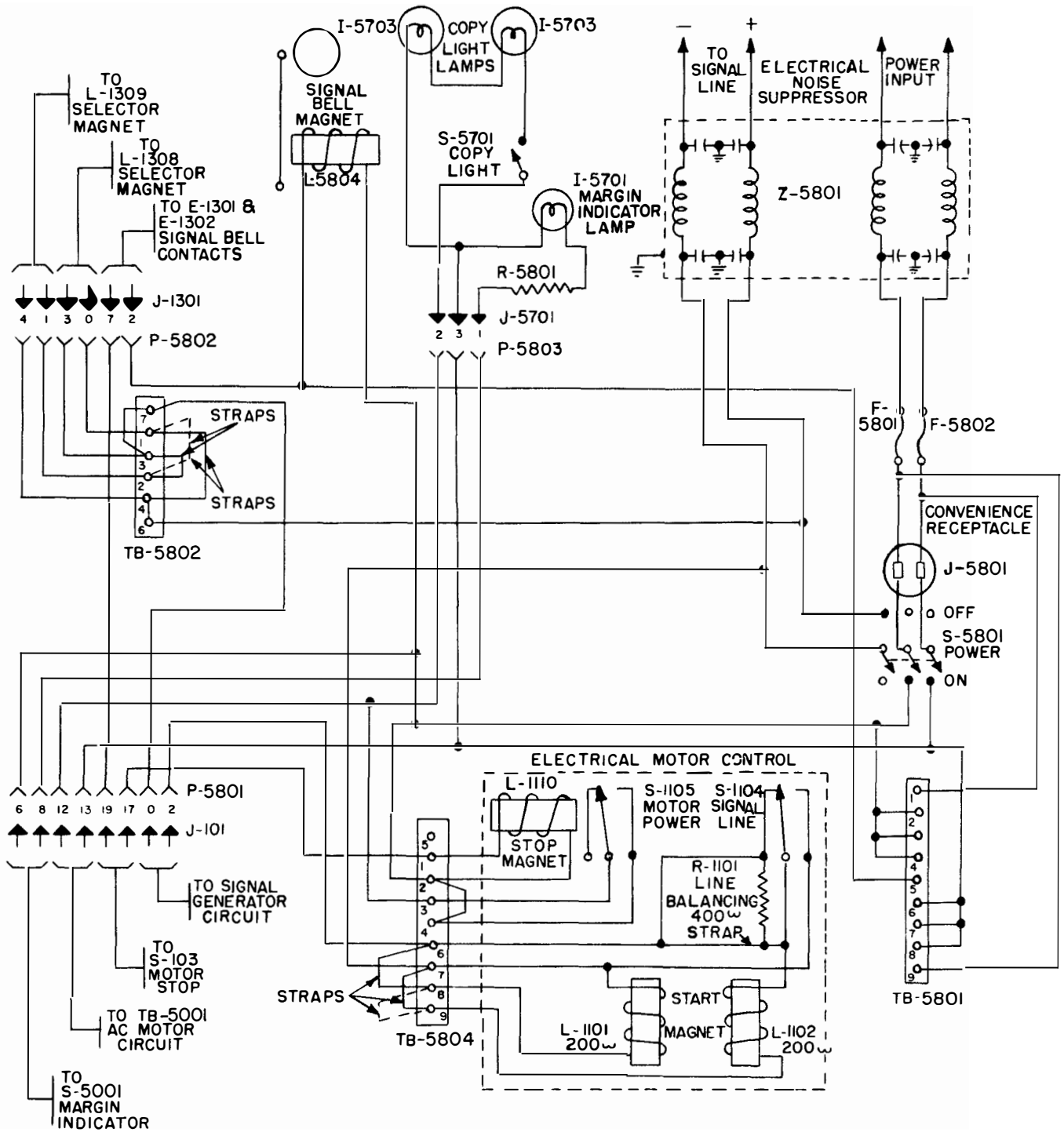
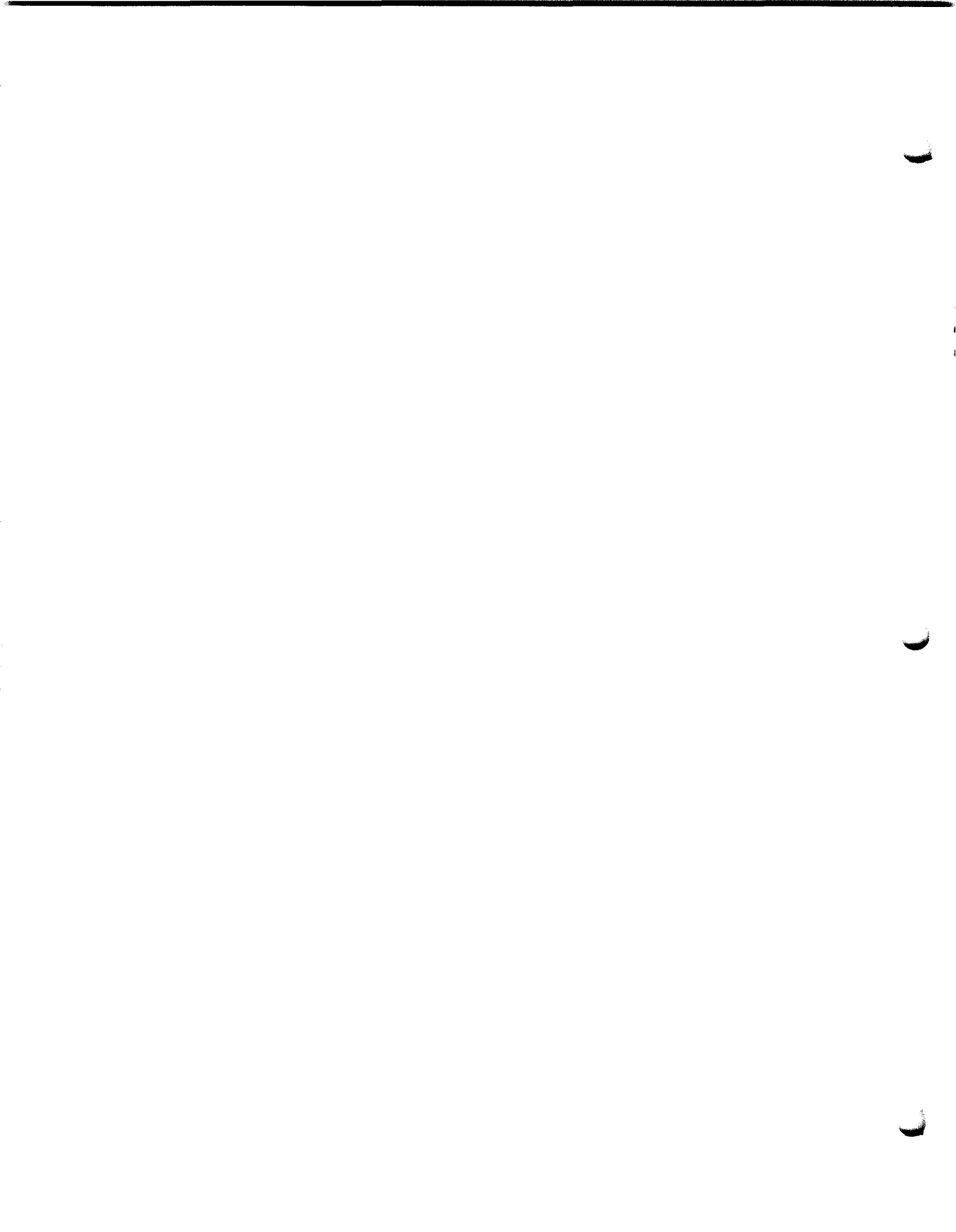


Figure 4-80A. Power Distribution Panel SB-408/UG and Cover CW-354/UG, Schematic Wiring Diagram

in the center of the Power Distribution Panel. All connections to this mechanism are made through its terminal board TB1104. The purpose of the mechanism is to start the AC Motor when the signal line current is interrupted, and, in conjunction with the time delay mechanism in the Keyboard, to stop the AC Motor if the signal line becomes idle for a period of not longer than approximately two min-

utes. In the equipment as furnished, the start magnets L1101 and L1102 in the electrical motor control mechanism are wired in parallel for 0.060 ampere signal line current operation. For 0.020 ampere operation, the strap wires on TB1104 may be rearranged (dashed lines in figure 4-80) to connect L1101 and L1102 in series. Also, the strap across the line balancing resistor R1101 must be removed



for 0.020 ampere operation. The resistor R1101 is switched into the line circuit by S1104 when the start magnet coils are switched out, in order to compensate for the loss of their resistance and to minimize unbalance in the line circuit. The following paragraphs describe the operation of the electrical motor control mechanism through a complete cycle.

(1) STOP POSITION. (See figure 4-81.)—In this position the AC Motor is shut down, and the steady signal line current holds the start magnets, L1101 and L1102, energized. The start magnet armature is pulled downward and the stop magnet armature is positioned to the right where it is held by the latch lever. The motor switch S1105, operated by the stop magnet armature, is open and the signal line switch S1104 completes the start magnet circuit.

(2) START POSITION. (See figure 4-82.)—In this position the signal line has been opened, the start magnets L1101 and L1102 are de-energized and the start magnet armature is released. When the start magnet armature moves upward, it carries the latch lever with it. The latch lever in turn releases the stop magnet armature. The stop magnet armature swings to the left to close contacts 4 and 6 of S1104

and contacts 1 and 2 of S1105. When contacts 4 and 6 are closed the start magnets are shunted from the signal line circuit. If the mechanism is connected for 0.020 ampere operation and contacts 5 and 6 are opened, a 400 ohm resistor is inserted in the line circuit to compensate for the resistance of the start magnets. When contacts 1 and 2 of S1105 were closed the power circuit was completed for the starting of the Motor and lighting the copy light lamps.

(3) STOP POSITION. (See figure 4-81.)—In order for the electrical motor control mechanism to return to the stop position and shut down the Motor, an electrical impulse is received from the time delay mechanism S103 on the Keyboard. This pulse energizes the stop magnet briefly and causes the stop magnet armature to swing to the right and again operate switches S1104 (to open contacts 4 and 6) and S1105 (to open contacts 1 and 2). As S1104 was operated, the start magnet coils were replaced in the signal line circuit where they became energized to pull the start magnet armature downward. This allowed the latch lever to engage the stop magnet armature and hold it in the stop position. As S1105 was operated the circuits to the AC Motor and copy light lamps were opened.

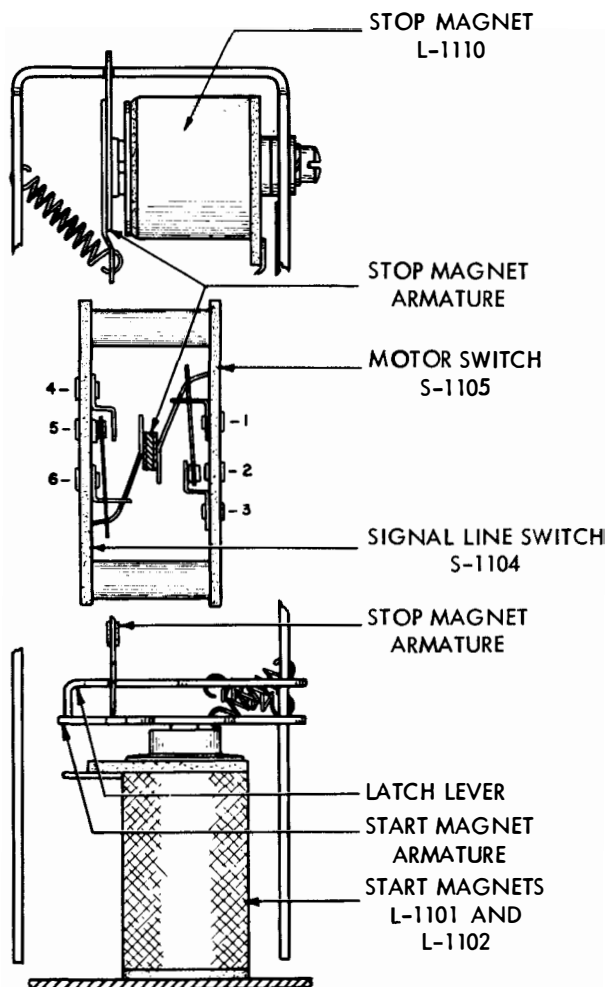


Figure 4-81. Electrical Motor Control Mechanism, Stop Position

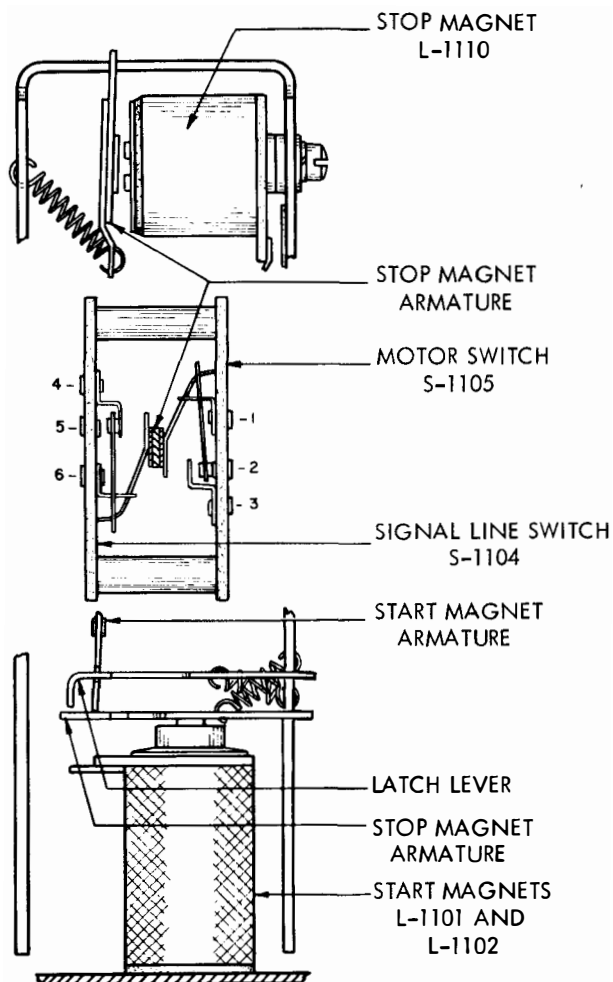


Figure 4-82. Electrical Motor Control Mechanism, Start Position

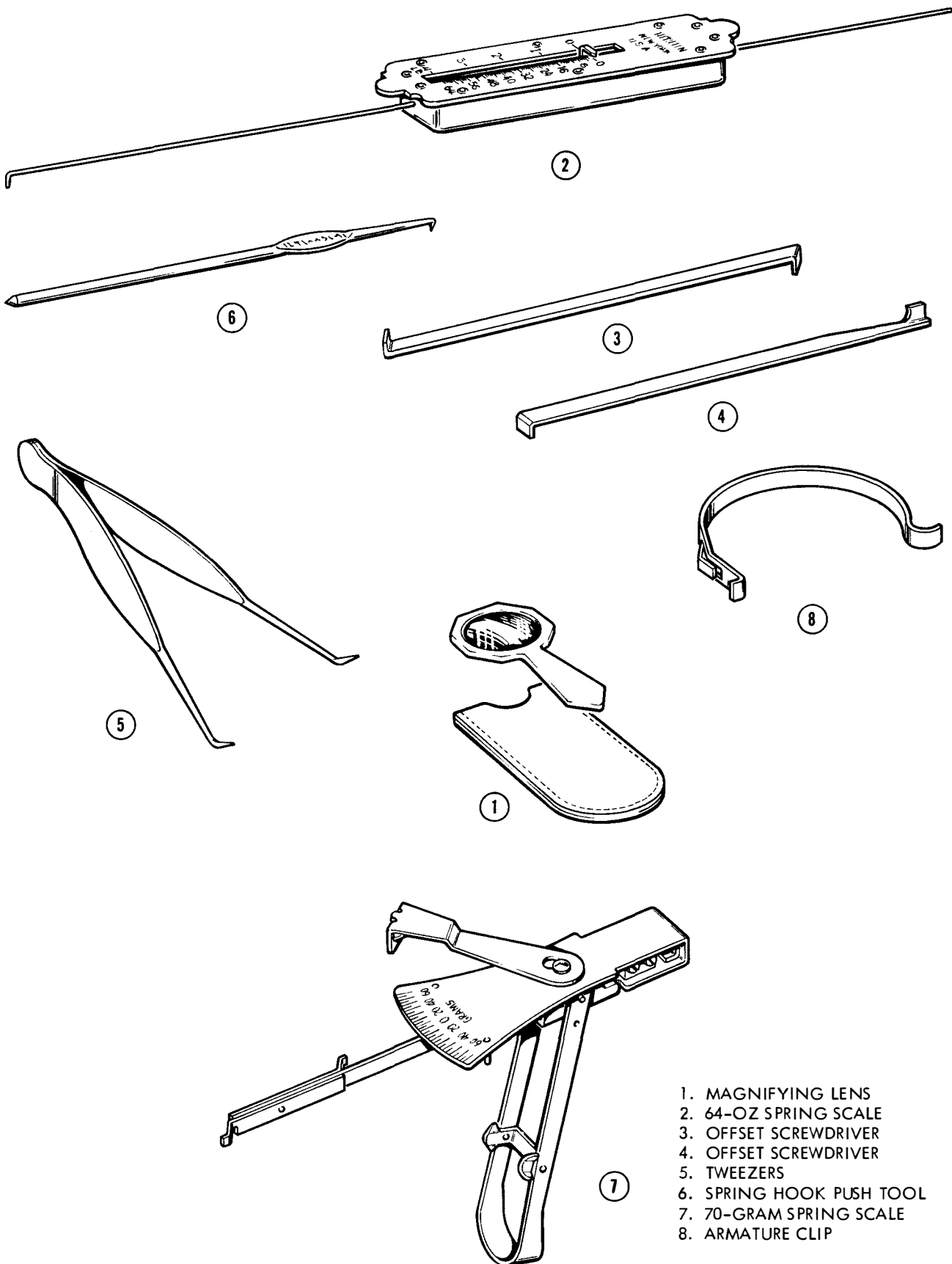


Figure 5-1. Tools

**SECTION 5**

**TROUBLE SHOOTING AND PREVENTIVE MAINTENANCE**

**5-1. GENERAL.**

a. Preventive maintenance is applied for the purpose of detecting and correcting troubles before they develop to the point of interference with the satisfactory operation of the equipment. Use care to prevent the introduction of trouble when work on the equipment is necessary. Do not disturb the adjustments unnecessarily.

b. A thorough visual examination of the equipment during periodic checks may uncover conditions that could possibly cause trouble later. The appearance of oxidized (red) metal dust adjacent to any bearing surface may indicate insufficient lubrication. The adjustable clearances of working parts should also be observed. A visual examination should be accompanied by a manual one. Connections at terminal board should be tested for tightness. Nuts and screws that lock adjustable features should be carefully observed for looseness and tightened if necessary. While cleaning the units, care should be exercised to avoid damage or distortion to delicate springs that might weaken their tension.

**NOTE**

The attention of maintenance personnel is invited to the requirements of Chapter 67 of the Bureau of Ships Manual, of the latest issue.

**5-2. TOOLS.**

Tool equipment TE-50-A and Field Change No. 1-TE-50-A, and the tools listed in table 5-1 (figure 5-1), are required for maintenance of Teletypewriters TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG,

TT-70D/UG, TT-171A/UG, TT-176A/UG, and TT-234/SGA-3. These are not supplied as parts of the equipments.

**5-3. ROUTINE MAINTENANCE CHECK CHART.**

Routine maintenance shall be performed as directed in table 5-2.

**5-4. TROUBLE SHOOTING.**

a. GENERAL.— Failures of the equipment can be traced functionally by means of the chart, table 5-3. By following the appropriate leads as manifested by the behavior of the equipment, a block will be found which will provide index numbers to a group of probable faults tabulated in paragraph 5-4b. An elimination process relative to these probabilities should greatly facilitate the clearing of trouble. (In every case where a part fails, an ELECTRONIC FAILURE REPORT form DD787 should be made and forwarded to BuShips. See section 6.)

b. TABULATION OF FAULTS INDICATED IN TROUBLE SHOOTING CHART (TABLE 5-3).

(1) MOTOR DOES NOT START.

(a) Power failure—check for 115 volt, 60 cycle applied voltage between terminals 39 and 40 on Cabinet.

(b) Fuse failure—check Power Distribution Panel fuse F1102 or F5801 and F5802. If open, rotate the Motor by hand and check for excessive load. Refer to Primary Power Distribution Diagram, figure 6-143, and Wiring Diagram, figure 6-145, and check the following items for possible failure.

**TABLE 5-1. LIST OF TOOLS**

ITEM NUMBER	TELETYPE PART NUMBER	DESCRIPTION	STANDARD NAVY STOCK NUMBER
1	73408	Lens, magnifying; w/case	N17-T-350007-817
2	82711	Scale, spring: 64 oz.	N17-T-350013-212
3	94644	Screwdriver, offset	N17-T-350012-559
4	94645	Screwdriver, offset	N17-T-350012-560
5	151392	Tweezers	
6	152223	Tool, spring hook; push	
7	152223	Scale, spring; 70 grams	
8	152292	Clip, armature	

TABLE 5-2. ROUTINE MAINTENANCE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
1. Accumulation of dust and dirt.	Check for dust from paper beneath its path through typer and for dust and dirt on other parts of the equipment. Clean by wiping with a soft lint-free cloth. Cleaning with an air hose should be avoided.	Be sure that springs are not disengaged or other parts disturbed in cleaning. Avoid getting dust or dirt into bearings or other moving parts.
2. Selector response.	If the selector responds to distorted signals in the manner specified in section 6, paragraph 6-4k, no maintenance is required. See section 3, paragraph 3-9. If the requirements are not met, the following routine should be observed: a. Clean the magnet pole faces by running a clean piece of paper between them and the armature. b. Examine selector parts for wear and replace if worn. c. Check adjustment of selector mechanism. See figures 6-77, 6-78, 6-79. d. Check selector mechanism springs and replace if necessary.	
3. Adjustments.	Most adjustments will remain within specification limits for the life of the equipment and, therefore, do not require checking unless trouble occurs. The following adjustments should be checked and remade if necessary. a. Dashpot, figure 6-111. b. Carriage wire rope, figure 6-108. c. Signal generator contact, figure 6-56. d. All clutches, figure 6-94, 6-95.	Exercise extreme precaution to guard against overtightening screws which might result in stripping.
4. Motor brushes.	Remove and replace if length is less than 3/8 inch. Wipe and blow off the accumulation of carbon dust.	Relationship of brush to armature should be maintained (governed motors only).
5. Governor brushes.	Examine length and replace if less than 3/8 inch remains. Wipe and blow off accumulation of carbon dust.	Be sure brush springs are in place (governed motors only).
6. Governor contacts.	Replace if badly burned.	Be sure that contacts are properly aligned.
7. Governor speed.	See section 6, paragraph 6-9.	Applies to governed motor only. Motor may be considered on-speed if not more than 12 target spots pass a given point in ten seconds.
8. Lubrication.	For disassembly prior to lubrication, see instructions in section 6, paragraph 6-3. Remove the typer from the keyboard. Examine all of its mechanism for signs of lubrication failure, usually evidenced by the presence of red powdery substance at point of failure. If failure is observed, parts should be examined and if damaged they should be replaced. Lubricate the equipment in accordance with figures 5-2 through 5-33, and wipe off excessive lubricant with a clean cloth.	Be sure that springs are not disengaged and that other parts are not disturbed during examination and lubrication.

**TABLE 5-3. TROUBLE SHOOTING CHART**

STEP AND INDICATION	TROUBLE	CORRECTION
1. Motor stops and starts	Does not start Does not stop	paragraph 4-b(1) paragraph 4-b(2)
2. Motor runs	Speed incorrect Speed uncontrollable	paragraph 4-b(3) paragraph 4-b(4)
3. Signal generated	No signal from keyboard - runs open No signal from keyboard - runs closed	paragraph 4-b(5)(a) paragraph 4-b(5)(b)
4. Local transmission produces typed copy	Short on margin Intermittent errors Gaining or losing a pulse Garbling	paragraph 4-b(6) paragraph 4-b(7) paragraph 4-b(8) paragraph 4-b(9)
5. Local transmission initiates automatic type function	Spacing failure Failure on letters - figures shift Failure on carriage return Failure on line feed Failure on local back space Failure on local reverse line feed Failure on signal bell Failure on sequential switching Ribbon fails to feed or reverse Failure to position Failure to print	paragraph 4-b(10) paragraph 4-b(11) paragraph 4-b(12) paragraph 4-b(13) paragraph 4-b(13)A paragraph 4-b(13)B paragraph 4-b(14) paragraph 4-b(14)A paragraph 4-b(15) paragraph 4-b(16) paragraph 4-b(17)

1. Stop magnet L1110, line shunt relay K1101, and signal bell magnet L802 or L5804 - shorted windings.

2. Motor - shorted windings.

(c) Motor control assembly - not functioning properly. Check requirements in figure 6-138.

(d) Open windings - start magnets L1101 and L1102.

(e) Motor - brushes not making contact (governed motor only).

(f) Governor - contact open, dirty (governed motor only).

**(2) MOTOR DOES NOT STOP.**

(a) Motor stop switch S103 not closing - check requirements in figures 6-68, 6-69, and 6-70.

(b) Motor control mechanism not functioning properly - check requirements in figure 6-138.

(c) Stop magnet L1110 - open windings.

**(3) INCORRECT MOTOR SPEED.**

(a) Incorrect voltage (governed motor only).

(b) Incorrect frequency (synchronous motor only).

(c) Governor adjustment - check requirements in figure 6-136 (governed motor only).

(d) Governor - contacts burnt (governed motor only).

(e) Open resistor R601 or R602 - check resistors (governed motor only).

(f) Poor brush contact (governed motor only).

**(4) UNCONTROLLABLE MOTOR SPEED.**

(a) Shorted capacitor C803 - check capacitor.

(b) Shorted resistors R601 or R602 - check resistors.

(c) Governor contacts stuck - burnish and re-adjust.

**(5) NO SIGNALS FROM KEYBOARD.**

(a) OPEN SIGNAL LINE.

1. Contacts dirty - burnish.

2. Contacts incorrectly adjusted - check adjustment, figure 6-56.

3. Open electrical noise suppressor Z101 or Z5400.

4. Flutter lever out of adjustment, figure 6-52.



5. Binding mechanism — check freeness of moving parts.

(b) SIGNAL LINE NOT OPENING.

1. Shorted contacts.
2. Shorted electrical noise suppressor Z101 or Z5400.
3. Contact fails to open — check adjustment in figures 6-52 and 6-56.
4. Binding mechanism — check chain of linkage for freeness.

(6) SHORT ON MARGIN.

- (a) Line current — inadequate or excessive.
- (b) Shorted selector magnet coils L1308 and L1309.
- (c) Incorrect motor speed — see paragraphs 5-4b(3) and 5-4b(4).
- (d) Armature dirty or oily — drag thin piece of clean paper between armature and magnet core.
- (e) Binds in moving parts of code bar linkage — check for freeness.

(f) Incorrect adjustment — check following:

1. Selector magnet, figure 6-78.
2. Selector armature, figure 6-77.
3. Selector armature spring, figure 6-79.
4. Selector clutch lever spring, figure 6-81.
5. Start lever spring, figure 6-83.

(7) INTERMITTENT ERRORS.

- (a) Range finder set beyond range limits.
- (b) Line current — inadequate or excessive.
- (c) Shorted selector magnet coils L1308 or L1309.
- (d) Incorrect motor speed — see paragraphs 5-4b(3) and 5-4b(4).
- (e) Armature dirty — drag thin piece of clean paper between armature and magnet core.
- (f) Binds in moving parts of selector and code bar linkage — check for freeness.

(g) Incorrect adjustment — check following:

1. Selector magnet bracket, figure 6-78.
2. Code bar shift lever link guide, figure 6-87.
3. Code bar detent, figure 6-133.
4. Selector push lever spring, figure 6-80.
5. Transfer lever spring, figure 6-84.

(8) GAINING OR LOSING A PULSE.

- (a) Binds in moving parts of selector and code bar linkage on particular pulse in trouble — check for freeness.

(b) Incorrect adjustment — check following adjustments on particular pulse in trouble:

1. Selector magnet bracket, figure 6-78.
2. Code bar shift lever guide, figure 6-87.
3. Code bar detent, figure 6-133.
4. Selector push lever spring, figure 6-80.
5. Transfer lever spring, figure 6-84.

(9) GARBLING.

- (a) Incorrect line current.
- (b) Defective selector coils.
- (c) Incorrect motor speed — see paragraphs 5-4b(3) and 5-4b(4).
- (d) Range finder setting out of range.
- (e) Armature dirty — drag thin piece of clean paper between armature and magnet core.
- (f) Binds in moving parts of selector and code bar linkage — check following for freeness:

1. Selector magnet bracket, figure 6-78.
2. Code bar detent, figure 6-133.
3. Selector armature spring, figure 6-79.
4. Selector clutch latch lever spring, figure 6-81.

(10) SPACING FAILURE OR MULTIPLE SPACING.

(a) Binds in moving parts of spacing chain of linkage, figures 6-96 and 6-102 — check for freeness.

(b) Incorrect adjustment — check following:

1. Spacing trip lever bail cam plate, figure 6-102.
2. Spacing clutch trip lever, figure 6-91.
3. Carriage return lever, figure 6-110.
4. Spacing trip lever spring, figure 6-102.
5. Spacing trip lever bail spring, figure 6-102.
6. Spacing feed pawl spring, figure 6-101.
7. Clutch trip shaft set collar, figure 6-90.
8. Function stripper blade arm, figure 6-125.
9. Function bar spring, figure 6-123.

(11) FAILURE ON LETTERS — FIGURES SHIFT.

(a) Binds in moving parts of letters — figures shift linkage — check for freeness of selector and code bar linkage, and letters and figures function slide, (figure 6-103).

(b) Incorrect adjustment — check following:

1. Function stripper blade arm, figure 6-125.
2. Shift code bar mechanism, figure 6-103.
3. Function lever, function pawl, and function bar springs, figure 6-123.

**(12) FAILURE ON CARRIAGE RETURN.**

(a) Binds in moving parts of linkage for carriage return function. Check for freeness of selector and code bar linkage, function bar reset bail and function bar linkage in function box and carriage return bail and slide.

(b) Incorrect adjustment — check following:

1. Function reset bail blade, figure 6-104.
2. Function lever, function pawl, and function bar springs, figure 6-123.

**(13) FAILURE ON LINE FEED.**

(a) Binds in moving parts of linkage for line feed function — check for freeness of selector and code bar linkage, function bar reset bail and function bar linkage in function box, line feed function slide arm and line feed clutch trip lever, figure 6-92, line feed bars figure 6-97, and line feed stripper and stripper bail, figure 6-127 — check position of single-double line feed lever.

(b) Incorrect adjustments — check following:

1. Line feed clutch trip lever eccentric post, figure 6-92.
2. Line feed clutch trip lever adjusting screw, figure 6-92.
3. Line feed clutch trip lever spring, figure 6-91.
4. Function reset bail blade, figure 6-104.
5. Function bar, function pawl, function lever springs, figure 6-123.

**(13)A. FAILURE ON LOCAL BACK SPACE.**

(a) Incorrect adjustment — check following:

1. Camming bail stop arm, figure 6-96A.
2. Transfer bail adjusting lever, vertical, figure 6-71A.
3. Transfer bail adjusting lever, horizontal, figure 6-71B.
4. Back space camming bail spring, figure 6-96B.
5. Back space trip link vertical spring, figure 6-71A.
6. Back space trip link horizontal spring, figure 6-71A.
7. Back space transfer bail spring, figure 6-71A.

**(13)B. FAILURE ON LOCAL REVERSE LINE FEED.**

(a) Binds in moving parts of linkage for reverse line feed — check for freeness, figure 6-96D.

(b) Incorrect adjustment — check following:

1. Line feed clutch spur gear, figure 6-96C.
2. Reverse line feed slide link stop bracket, figure 6-96D.

3. Reverse line feed slide link spring, figure 6-96D.

4. Line feed bar spring — figure 6-96E.

5. Line feed bar bell, crank spring — figure 6-96E.

6. Reverse line feed trip vertical spring — figure 6-71C.

7. Reverse line feed trip link horizontal spring — figure 6-71C.

**(14) FAILURE ON SIGNAL BELL.**

(a) Electrical contacts on function box — dirty or burnt.

(b) Open magnet L802 or L5804 in signal bell.

(c) Low voltage.

(d) Bell armature dirty.

(e) Binds in moving parts of linkage for signal bell function — check for freeness of selector and code bar linkage, function bar reset bail, function bar linkage in function box, and armature in signal bell assembly.

(f) Incorrect adjustment — check following:

1. Function reset bail blade, figure 6-104.
2. Bell function contact, figure 6-131.
3. Remote signal bell, figure 6-139.
4. Remote signal bell armature spring, figure 6-139.
5. Function bar, function pawl, and function lever springs, figure 6-123.

**(14)A. SEQUENTIAL SWITCHING FAILURE.**

(a) Check function box adjustments, figure 6-123.

(b) Check S1403 contacts, figure 6-131.

**(15) RIBBON FAILS TO FEED OR REVERSE.**

(a) Binds in moving parts of ribbon feeding or reversing mechanism—check for freeness of ribbon feed levers, ribbon lever, ribbon reversing lever, and ribbon reverse detent lever.

(b) Detent cam loose—check set screws and ribbon reverse detent adjustment, figure 6-120.

(c) Eyelet missing from ribbon.

(d) Incorrect adjustment—check following:

1. Ribbon feed lever bracket, figure 6-121.
2. Ribbon reverse spur gear, figure 6-120.
3. Ribbon reverse detent, figure 6-120.
4. Ribbon feed lever spring, figure 6-121.
5. Ribbon ratchet wheel friction spring, figure 6-121.
6. Ribbon lever spring, figure 6-122.
7. Ribbon reverse detent lever spring, figure 6-120.

(16) FAILURE TO POSITION.

(a) Binds in moving parts of linkage for type bar positioning mechanism—check freeness of main rocker shaft; vertical positioning linkage, figure 6-99 and 6-100; SUP., 1, 2, 3, and COM code bars; reversing slide, shift slide drive linkage and oscillator rail linkage, figure 6-106.

(b) Incorrect adjustment—check following:

1. Rocket shaft left bracket, figure 6-97.
2. Right and left vertical positioning lever eccentric stud, figures 6-99 and 6-100.
3. Shift slide drive linkage, figure 6-106.
4. Vertical positioning lever spring, figure 6-99.
5. Shift linkage spring, figure 6-116.
6. Vertical positioning lock lever spring, figure 6-100.

(17) FAILURE TO PRINT.

(a) Binds in printing carriage assembly—check for freeness in moving parts, and for missing springs.

(b) Ribbon not properly installed.

(c) Incorrect adjustments—check following:

1. Printing track, figure 6-117.
2. Printing arm, figure 6-118.
3. Printing hammer plunger springs, figure 6-117.

**5-5. LUBRICATION.**

a. Lubricate the teletypewriter as directed in figures 5-2 through 5-33, inclusive. These figures indicate the points to be lubricated, and the type and quantity of lubricant to be used. Lubricate the teletypewriter just prior to placing it in service. After a few weeks in service, relubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:

OPERATING SPEED (Words per Minute)	LUBRICATING INTERVAL (Whichever Occurs First)
60	3,000 hours or 1 year
75	2,400 hours or 9 months
100	1,500 hours or 6 months

b. For normal or high temperatures—5° to 55°C. (41° to 131°F.) use Teletype KS-7470 oil at all locations where the use of oil is indicated. For lower temperatures dilute the KS-7470 oil with kerosene

(half and half). Use type MIL-G-3278 grease on all surfaces where grease is indicated except the motor bearings. Apply two drops of KS-7470 oil to motor bearings every four months (depress oiler with metal object). If the motor is disassembled at any time, repack the bearings with MIL-C-3278 grease.

c. All springs, wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Overlubrication, however, which will permit oil or grease to drip or be thrown on other parts, should be avoided. Special care must be taken to prevent any oil or grease from getting between the selector armature E1310 and its magnet pole faces L1308 and L1309, or between electrical contacts.

d. Apply a thick film of grease to all gears and the spacing clutch reset cam plate.

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

f. For visual identification, each lubrication instruction has been keyed to a photograph of the equipment. The first key digit is a hyphenated numeral corresponding to the lubrication section figure on which the photograph will be found. The second digit in the key is a letter to indicate the reference point on photograph.

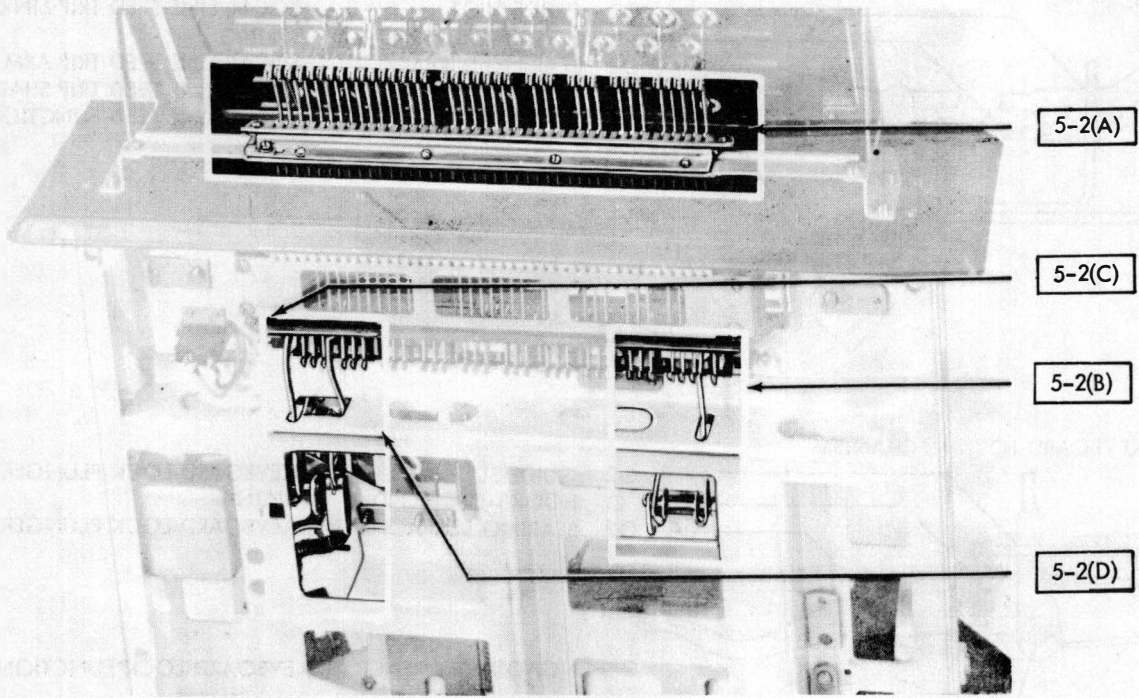
g. Illustration symbols indicate the following lubrication directions:

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

**NOTE**

During each lubrication period, check the following adjustments:

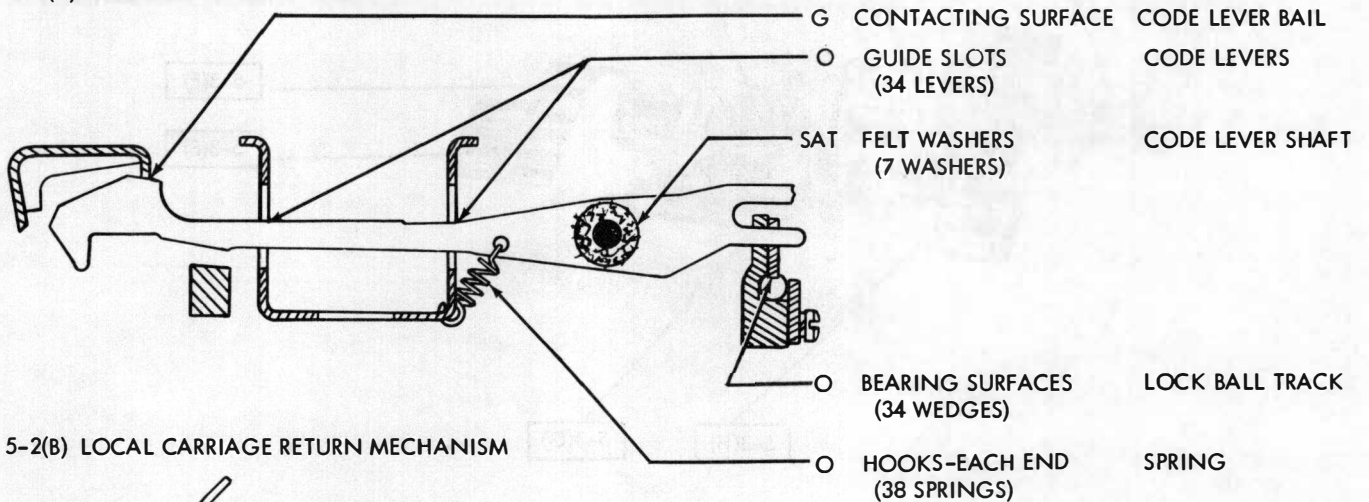
- Printing carriage position, figure 6-114.
- Printing hammer bearing stud, figure 6-115.
- Printing hammer stop bracket, figure 6-118.
- Printing arm, figure 6-118.
- Carriage wire rope, figure 6-108.



(BOTTOM VIEW)  
KEYBOARD (FIGURES 5-2 TO 5-8F)

(REST KEYBOARD BOTTOM SIDE UP)

5-2(A) CODE LEVER MECHANISM



5-2(B) LOCAL CARRIAGE RETURN MECHANISM

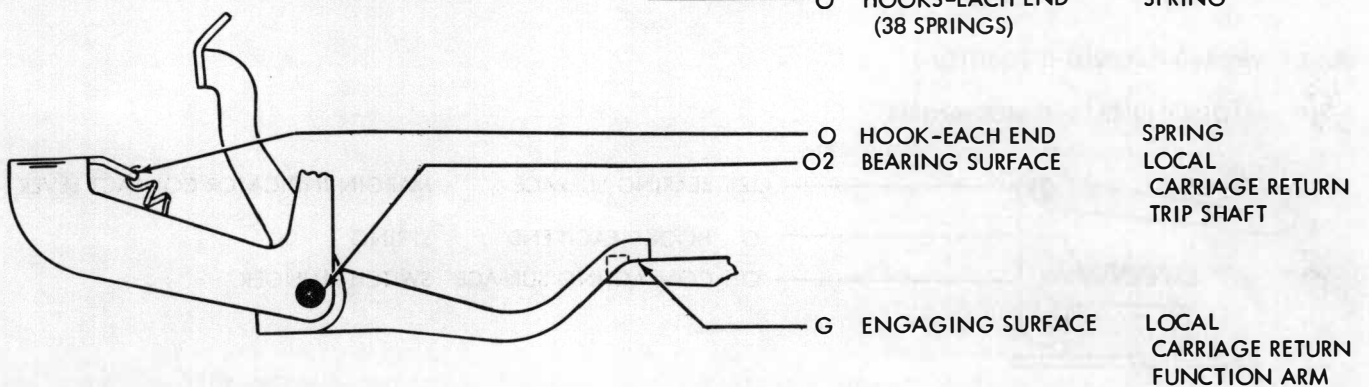


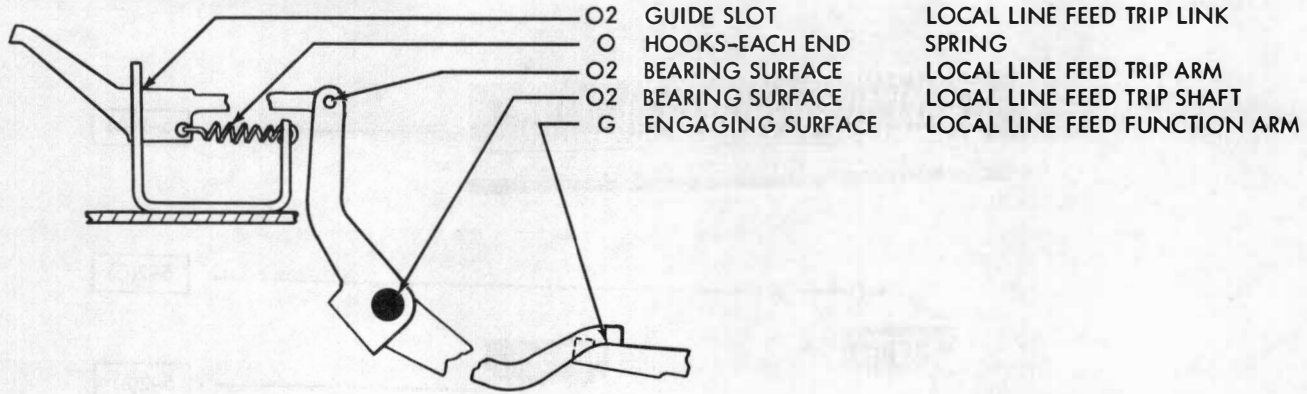
Figure 5-2. Keyboard Lubrication — Code Lever and Local Carriage Return Mechanisms

Figure 5-3

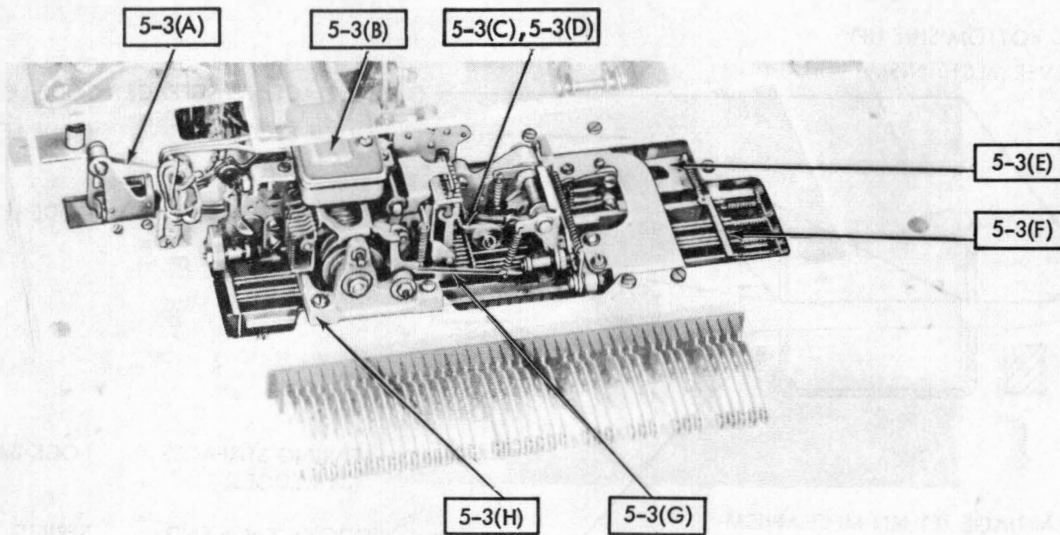
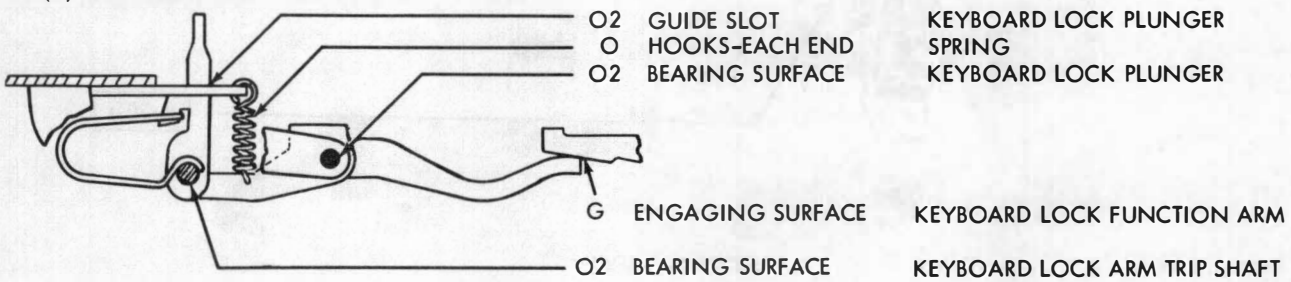
NAVSHIPS 93241

TRUBLE SHOOTING AND PREVENTIVE MAINTENANCE

5-2(C) LOCAL LINE FEED MECHANISM



5-2(D) KEYBOARD LOCK MECHANISM



(REST KEYBOARD IN UPRIGHT POSITION)

5-3(A) MARGIN INDICATING MECHANISM

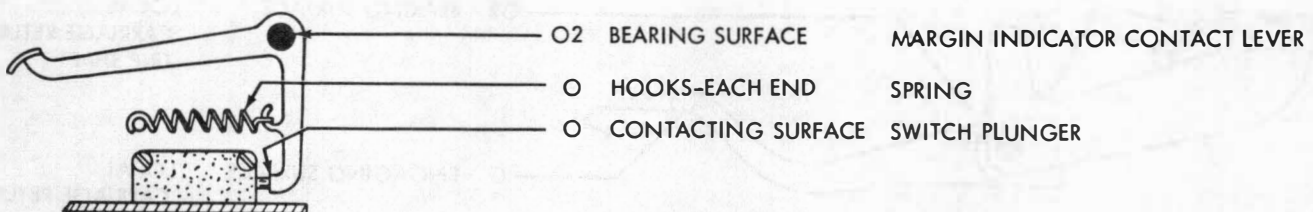
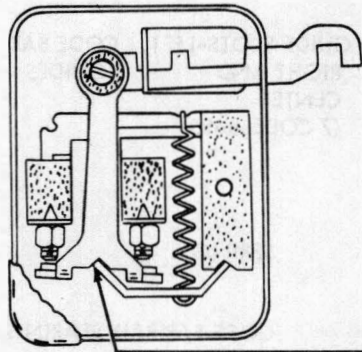


Figure 5-3. Keyboard Lubrication — Line Feed, Keyboard Lock and Margin Indicating Mechanisms

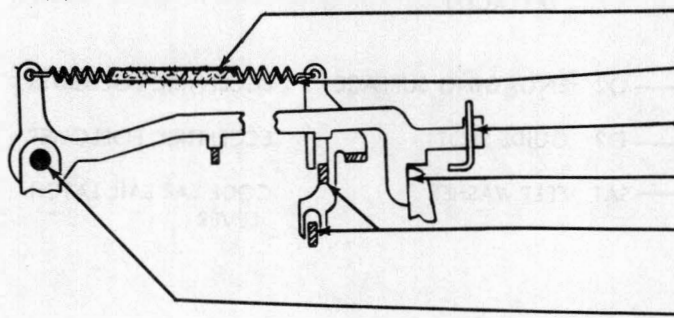
5-3(B) CONTACT BOX



DISASSEMBLY: REMOVE NUT AND LOCK WASHER SECURING CONTACT BOX COVER AND REMOVE COVER.

G ENGAGING SURFACE CONTACT TOGGLE

5-3(C) CODE BAR MECHANISM



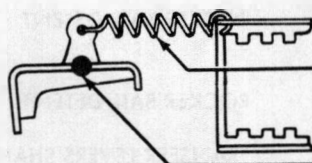
SAT FELT WICK SPRING WICK  
O HOOKS-EACH END SPRING  
O2 GUIDING SURFACE CODE LEVER BAIL LATCH LEVER  
G ENGAGING SURFACE CODE LEVER BAIL  
O2 GUIDING SURFACES (2 PLACES) NON-REPEAT BELL CRANKS  
O2 BEARING CODE LEVER BAIL LATCH LEVER

5-3(D)



O2 BEARING SURFACES (2 PLACES) NON-REPEAT BELL CRANKS  
O HOOKS-EACH END SPRING

5-3(E)

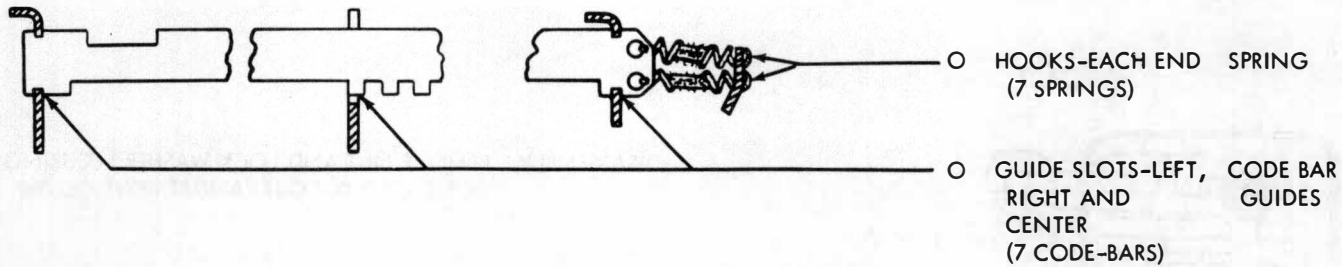


O HOOKS-EACH END SPRING  
O2 BEARING SURFACES (RIGHT AND LEFT) CODE LEVER BAIL

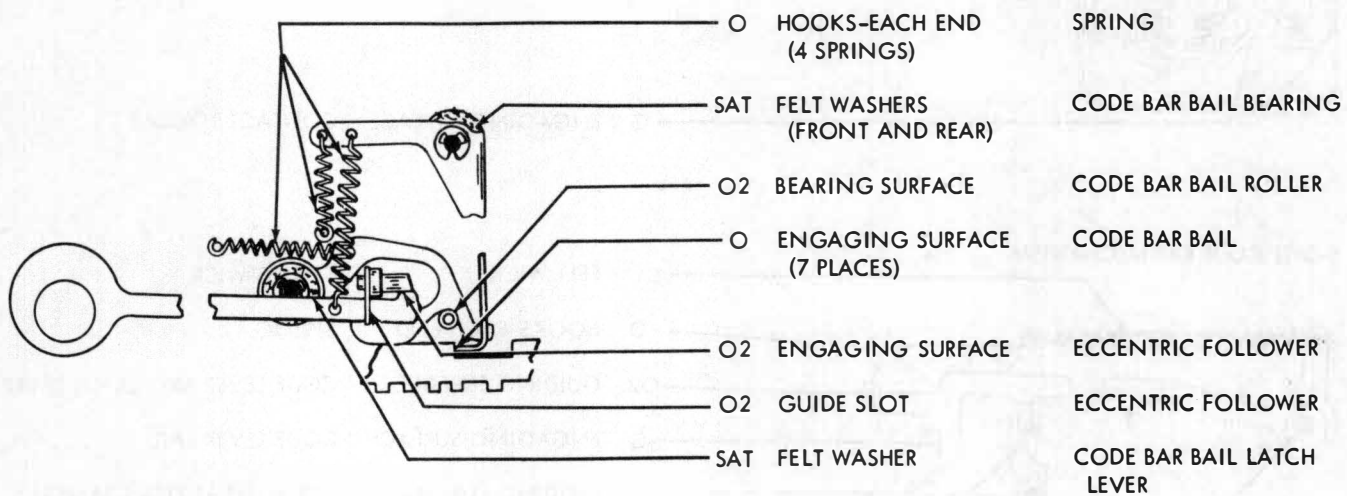
Figure 5-4. Keyboard Lubrication — Contact Box and Code Bar Mechanisms

CODE BAR MECHANISM (Continued)

5-3(F)



5-3(G)



5-3(H) KEYBOARD SELECTOR MECHANISM

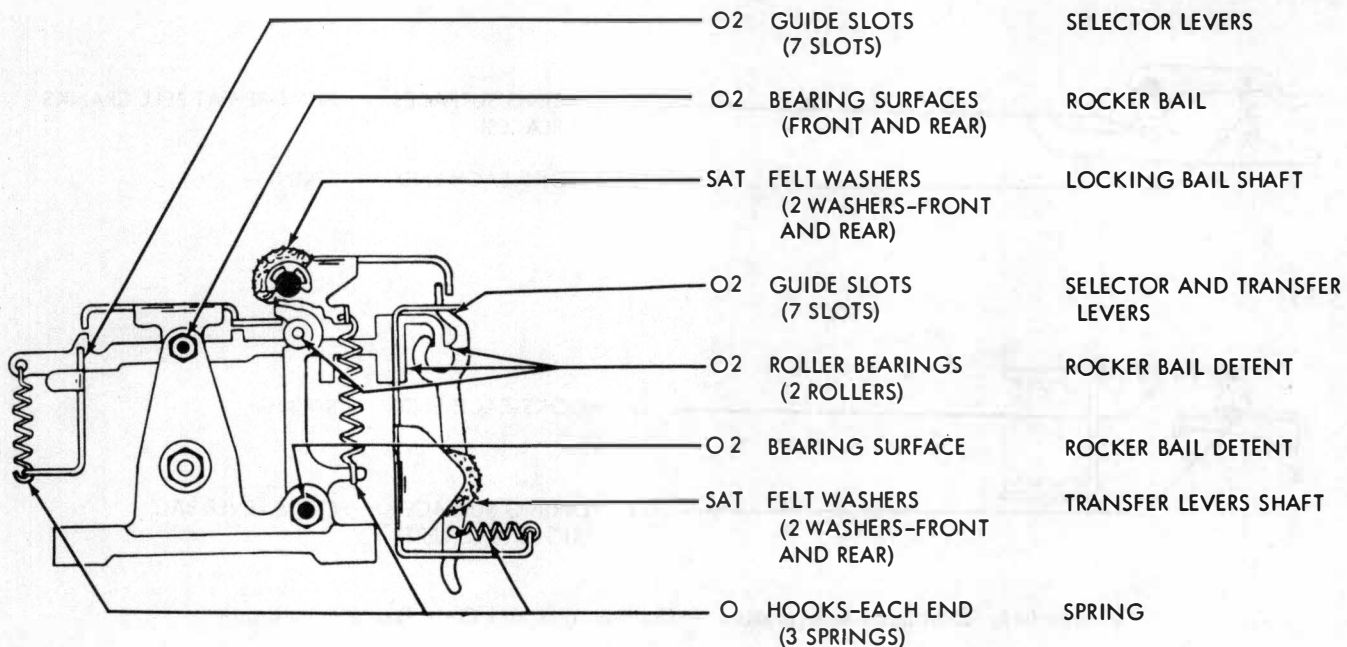
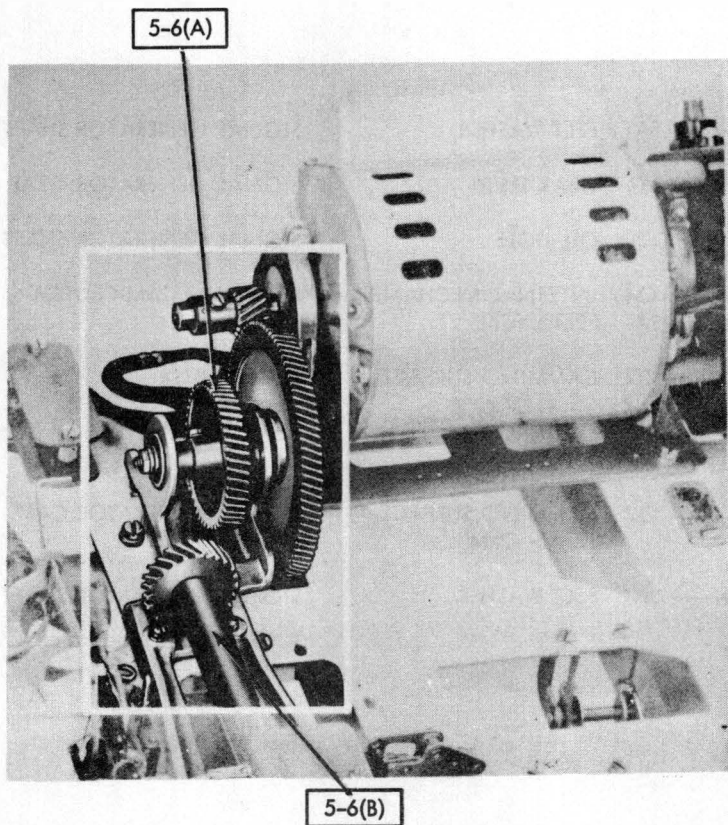
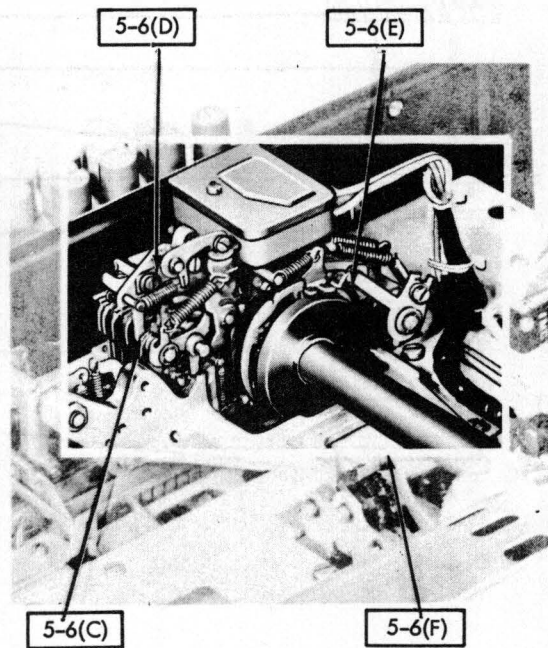


Figure 5-5. Keyboard Lubrication -- Code Bar and Selector Mechanisms



(FRONT VIEW)



(REAR VIEW)

SIGNAL GENERATOR MECHANISM

5-6(A) INTERMEDIATE GEARS

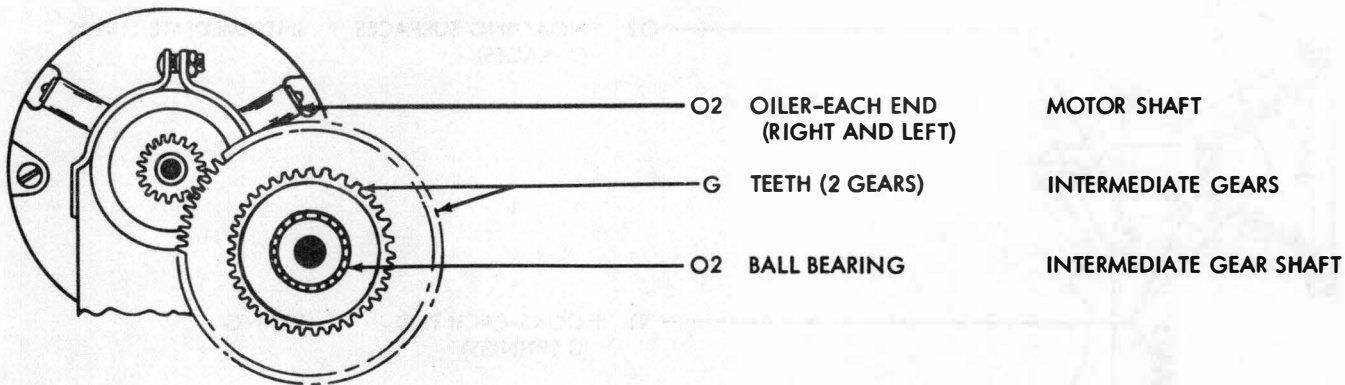
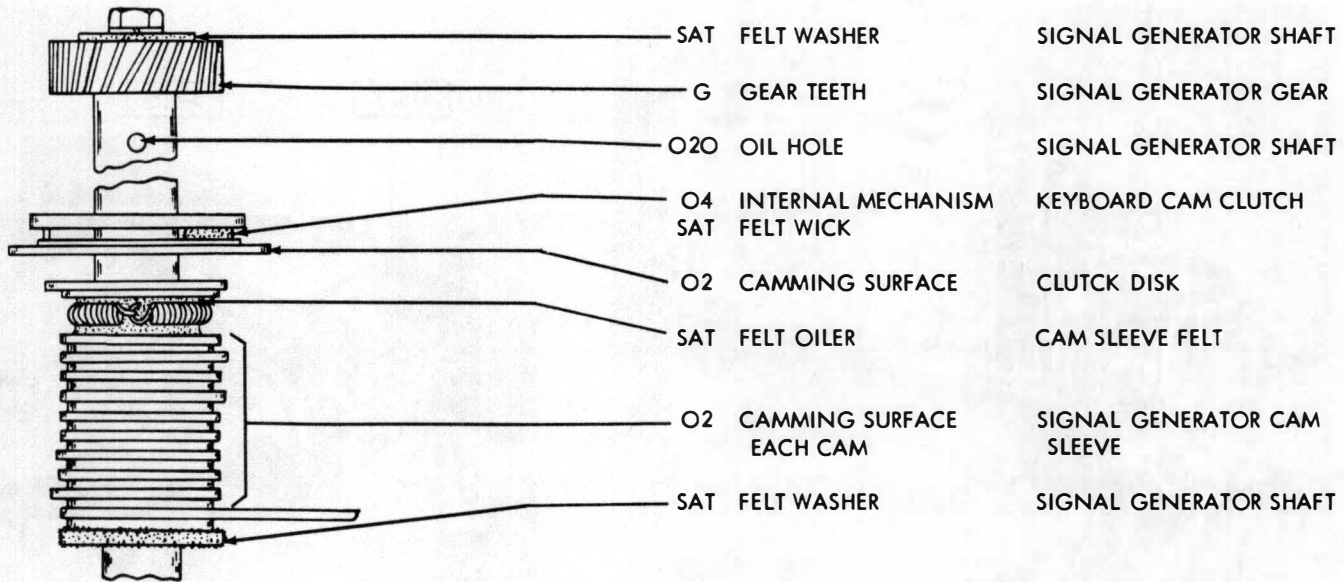


Figure 5-6. Keyboard Lubrication - Intermediate Gears



SIGNAL GENERATOR MECHANISM (Continued)

5-6(B)



5-6(C)

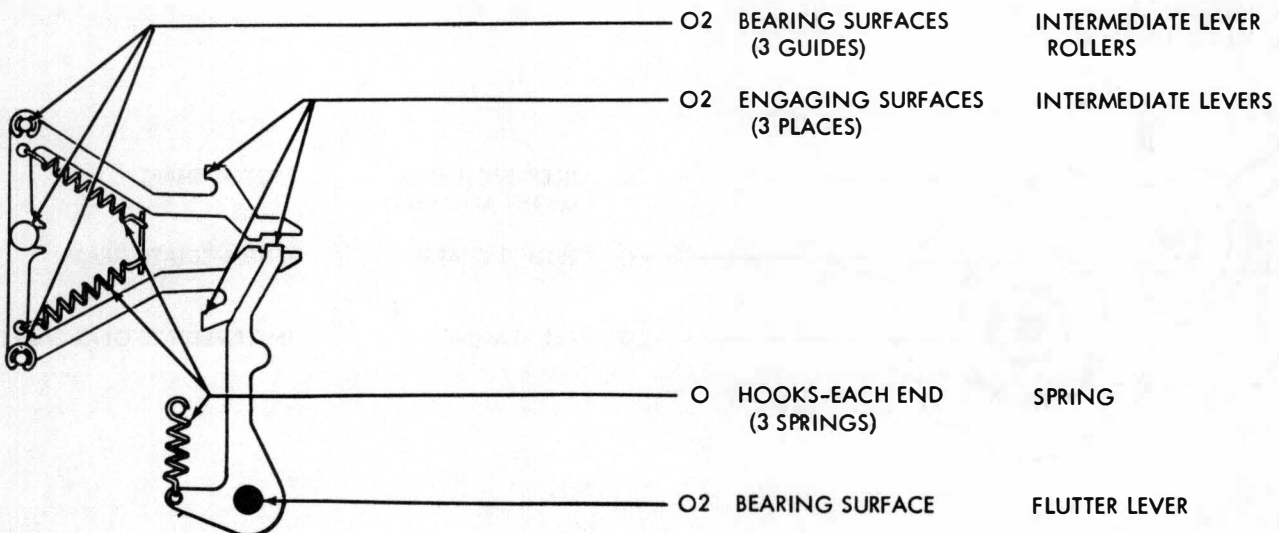
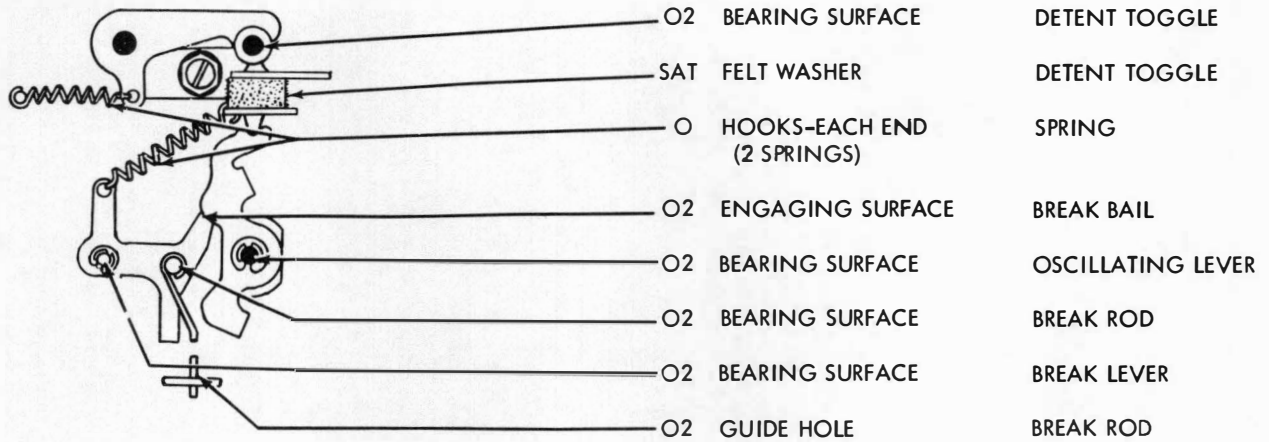


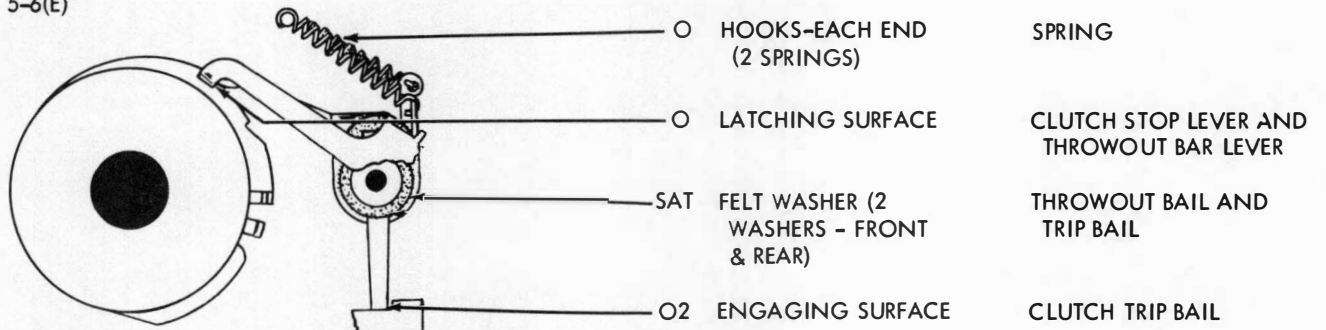
Figure 5-7. Keyboard Lubrication - Signal Generator Mechanism

SIGNAL GENERATOR MECHANISM (Continued)

5-6(D)



5-6(E)



5-6(F) TIME DELAY MECHANISM

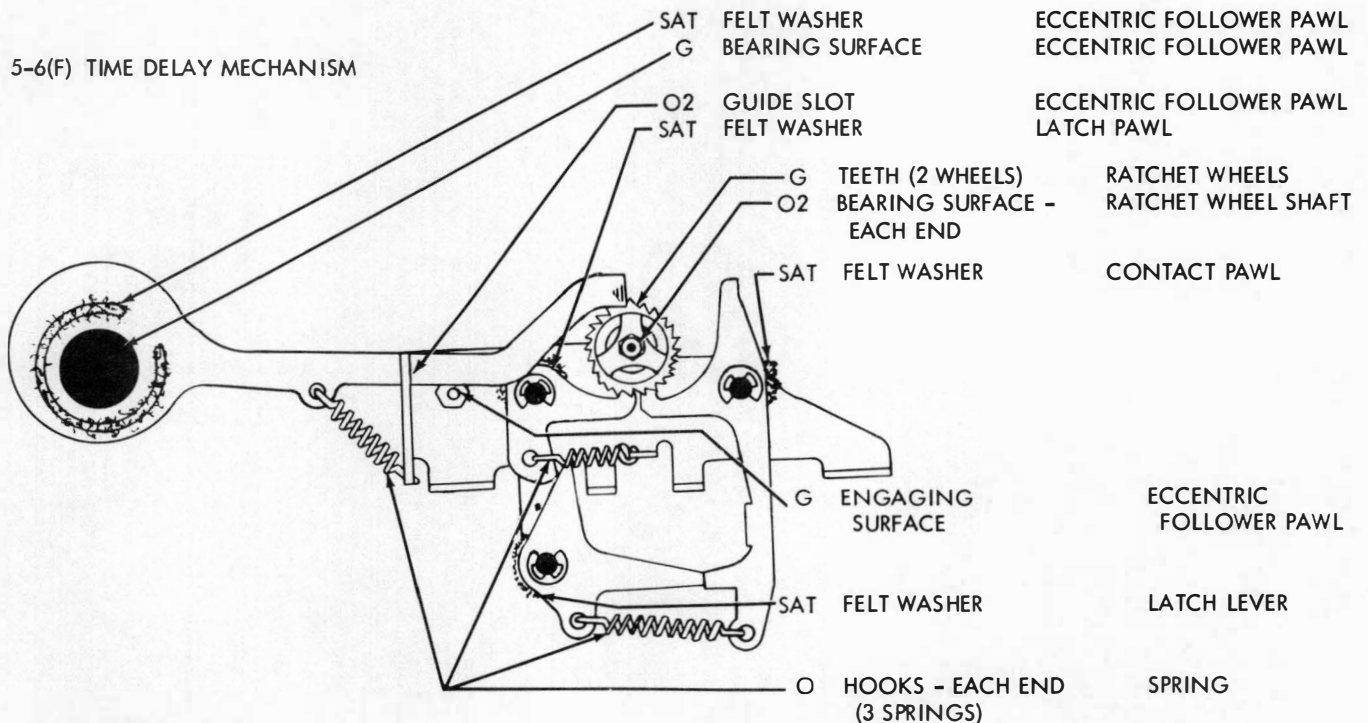
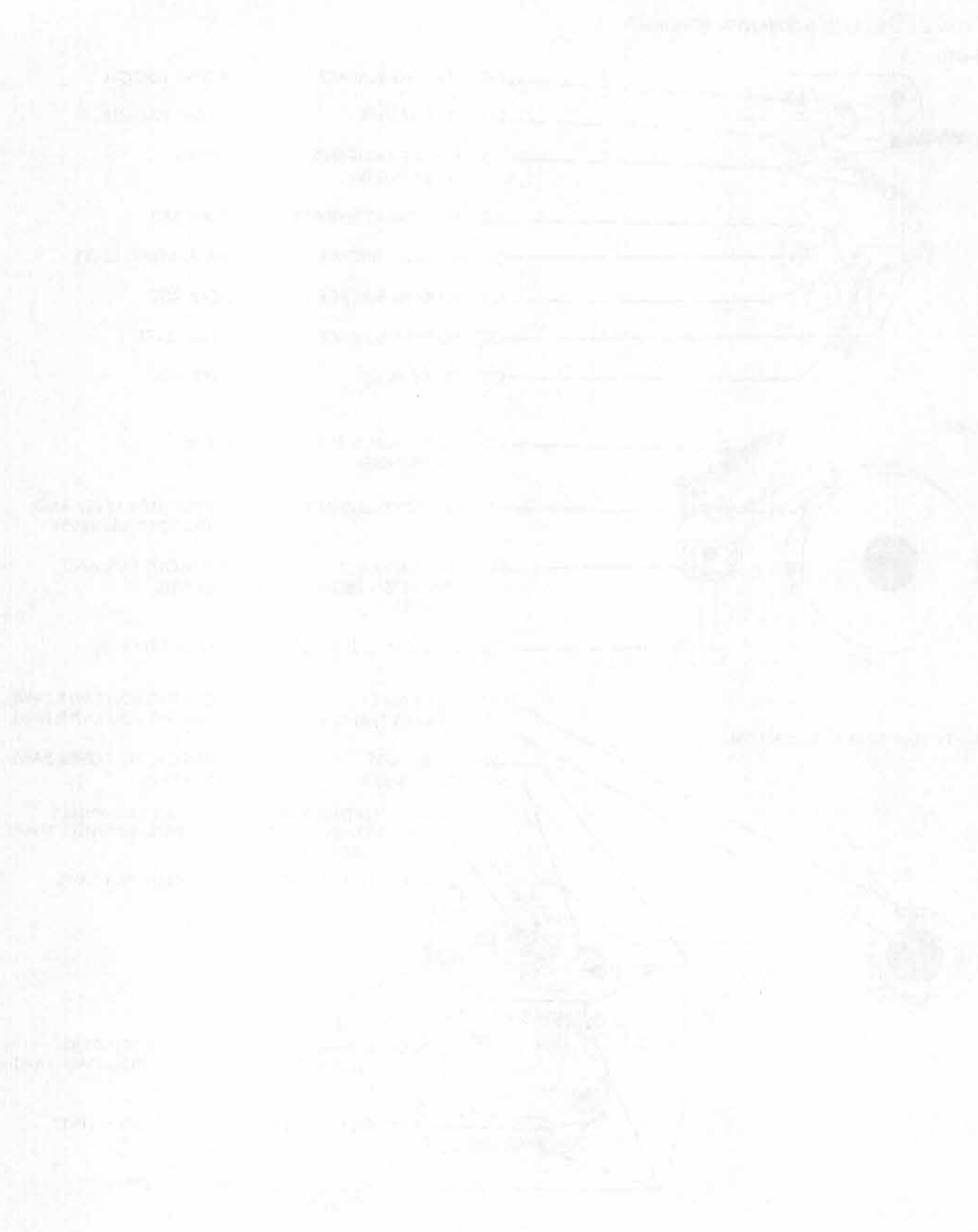
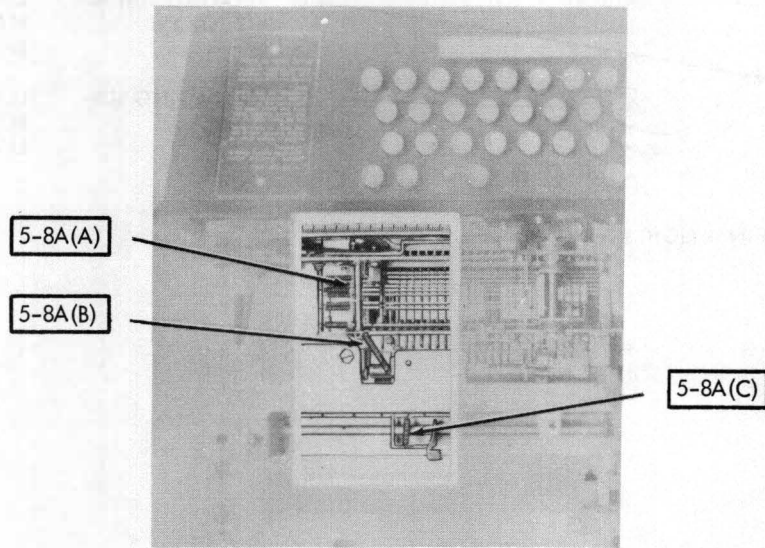


Figure 5-8. Keyboard Lubrication -- Signal Generator and Time Delay Mechanisms

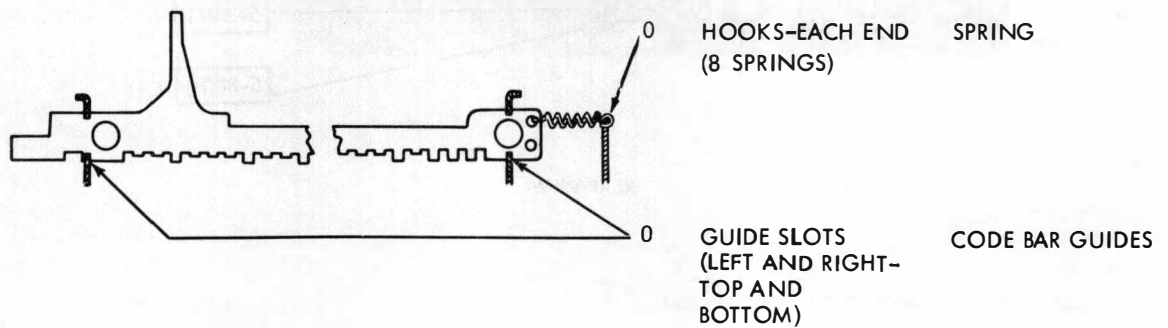


(REST KEYBOARD IN UPRIGHT POSITION)



(TOP VIEW)

5-8A(A) CODE BAR MECHANISM



5-8A(B) CODE LEVER UNIVERSAL BAIL MECHANISM

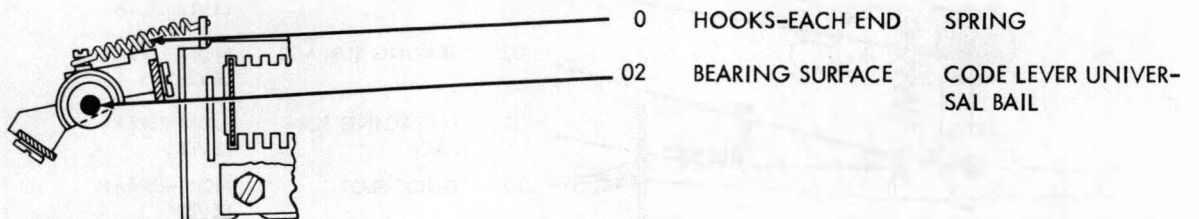
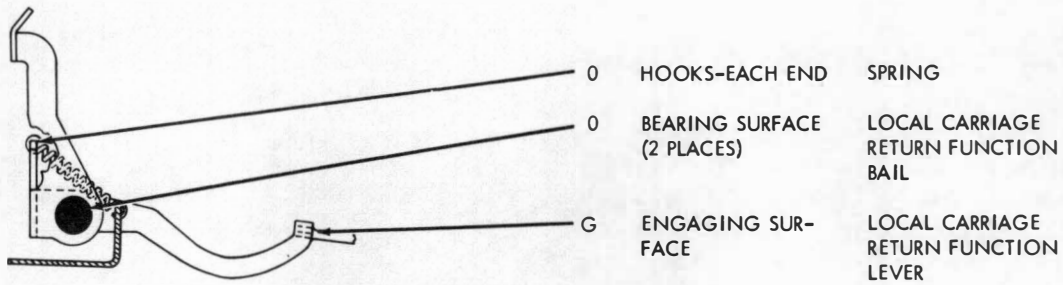
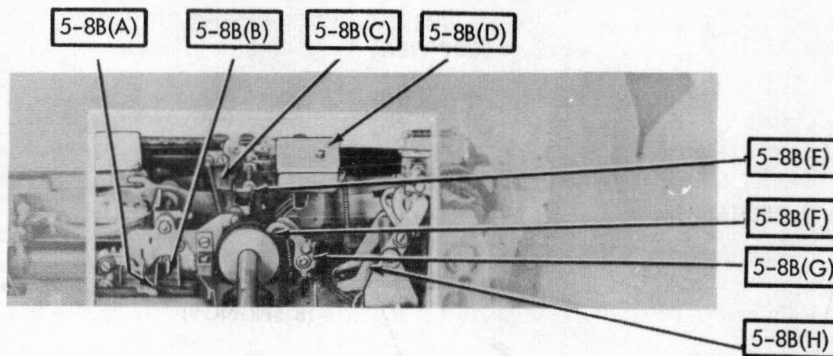


Figure 5-8A. Keyboard MX-1114C/UG or MX-1677A/UG Lubrication — Code Bar and Code Lever Universal Bail Mechanism

5-8A(C) LOCAL CARRIAGE RETURN MECHANISM



(REST KEYBOARD IN UPRIGHT POSITION)



(REAR VIEW)

5-8B(A) NON-REPEAT LEVER MECHANISM

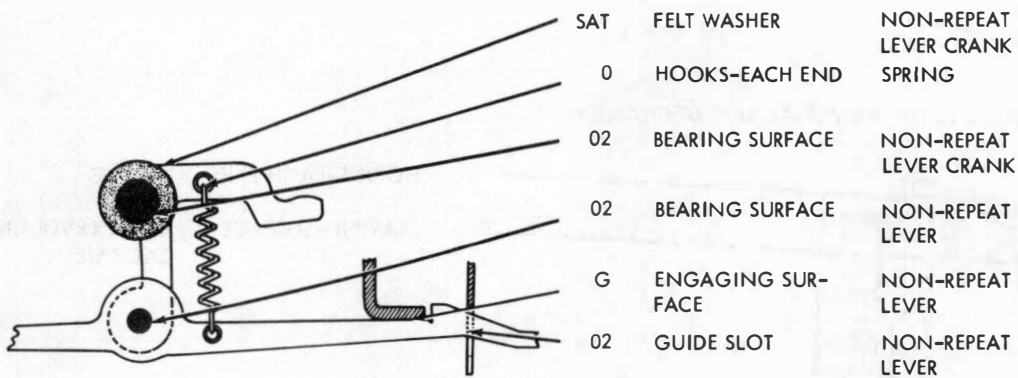
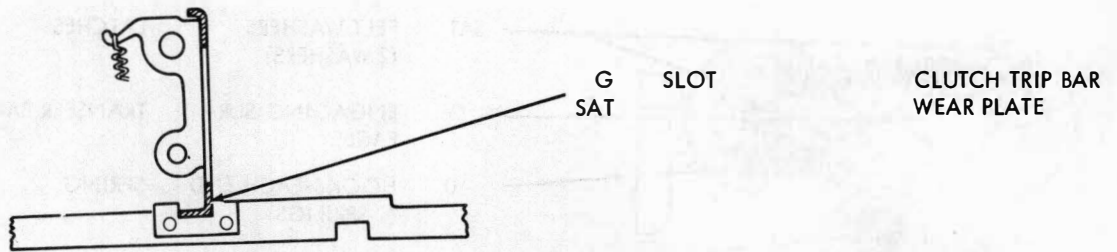
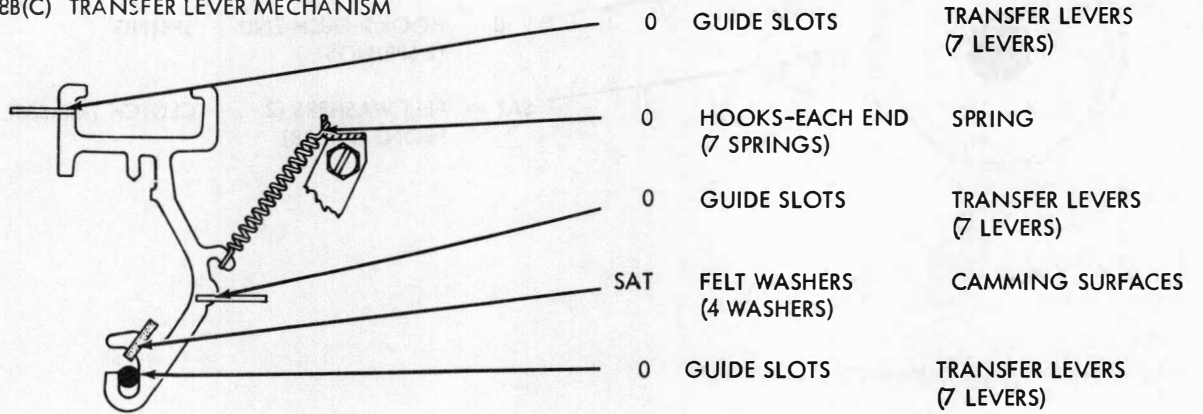


Figure 5-8B. Keyboard MX-1114C/UG or MX-1677A/UG Lubrication - Carriage Return and Non-Repeat Lever

5-8B(B) CLUTCH TRIP BAR MECHANISM



5-8B(C) TRANSFER LEVER MECHANISM



5-8B(D) CONTACT BOX

**DISASSEMBLY:** REMOVE NUT AND LOCK WASH-  
ER SECURING CONTACT BOX  
COVER AND REMOVE COVER.

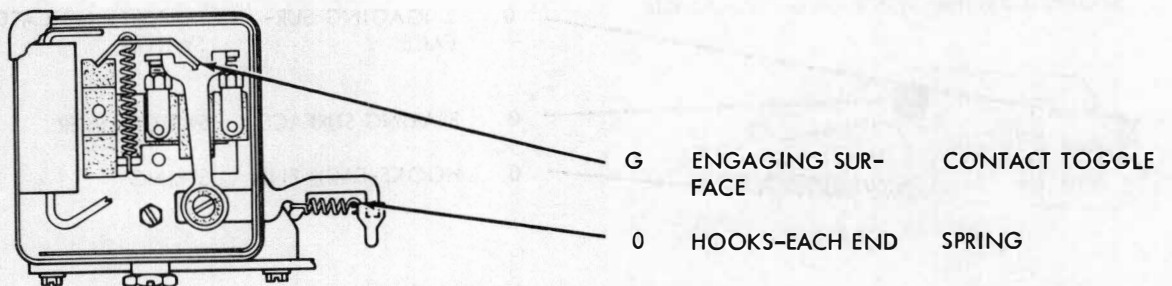
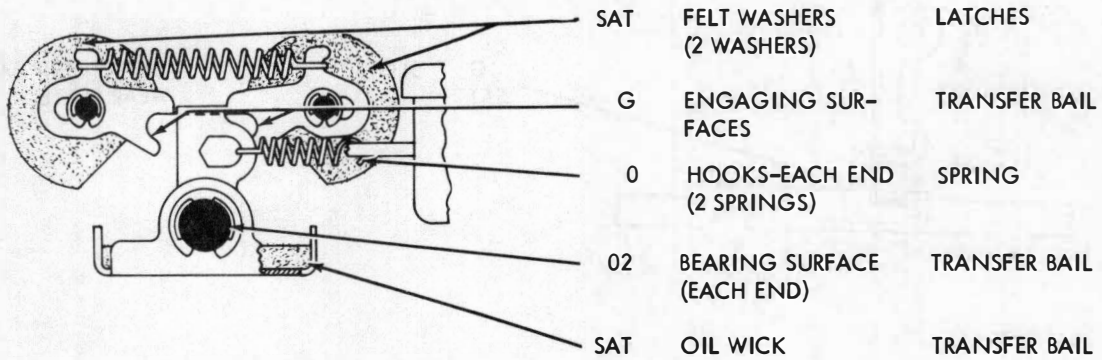
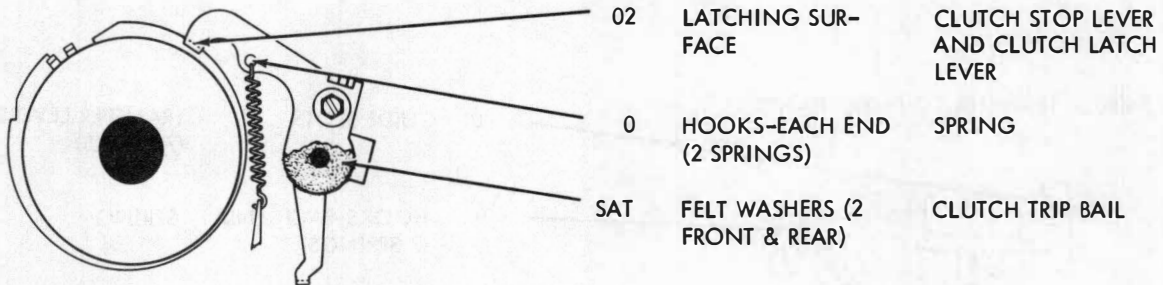


Figure 5-8C. Keyboard MX-1114C/UG or MX-1677A/UG Lubrication — Clutch Trip Bar, Transfer Lever, and Contact Box Mechanisms

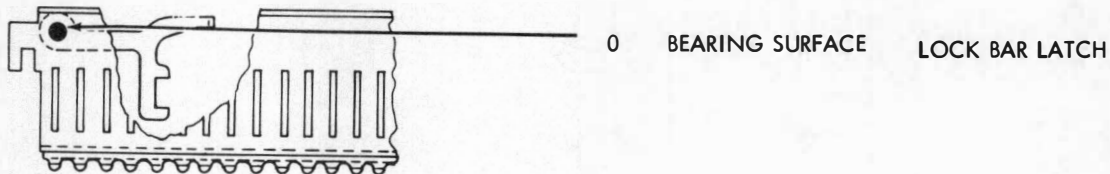
5-8B(E) TRANSFER BAIL MECHANISM



5-8B(F) KEYBOARD CLUTCH MECHANISM



5-8B(G) LOCK BAR LATCH MECHANISM



5-8B(H) MARGIN INDICATING MECHANISM

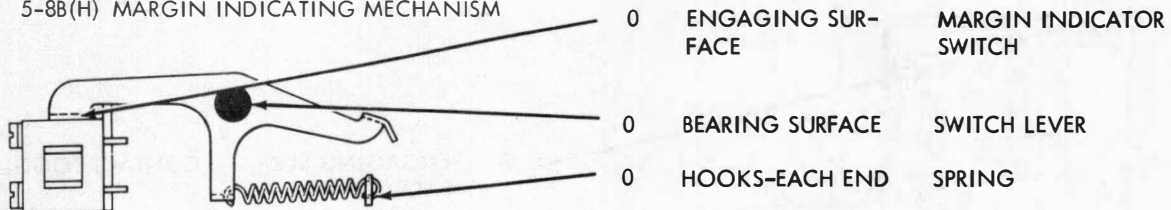
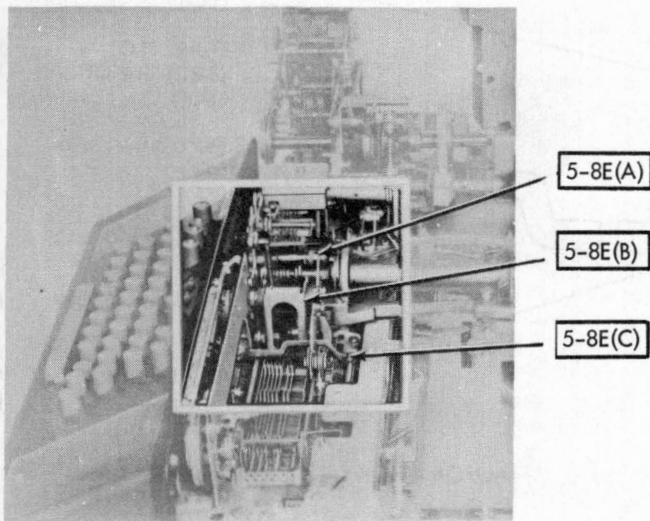


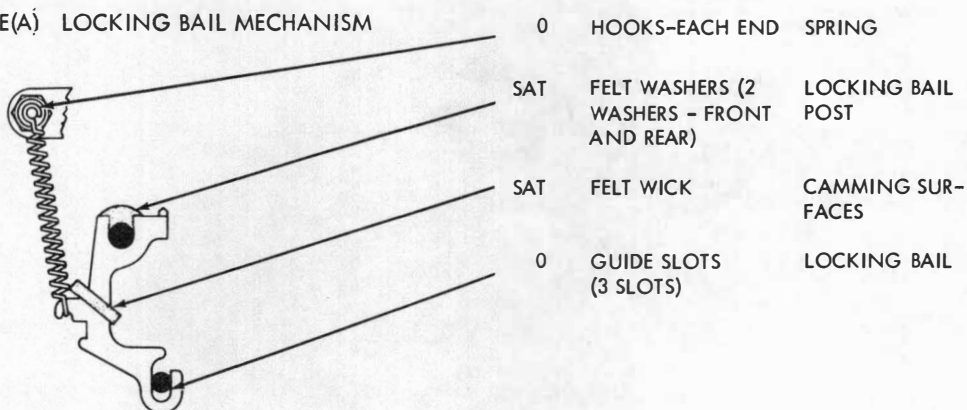
Figure 5-8D. Keyboard MX-1114C/UG or MX-1677A/UG Lubrication — Transfer Bail, Clutch, Lock Bar Latch, and Margin Indicating Mechanisms

(REST KEYBOARD IN UPRIGHT POSITION)



(RIGHT SIDE VIEW)

5-8E(A) LOCKING BAIL MECHANISM



5-8E(B) CODE BAR BAIL MECHANISM

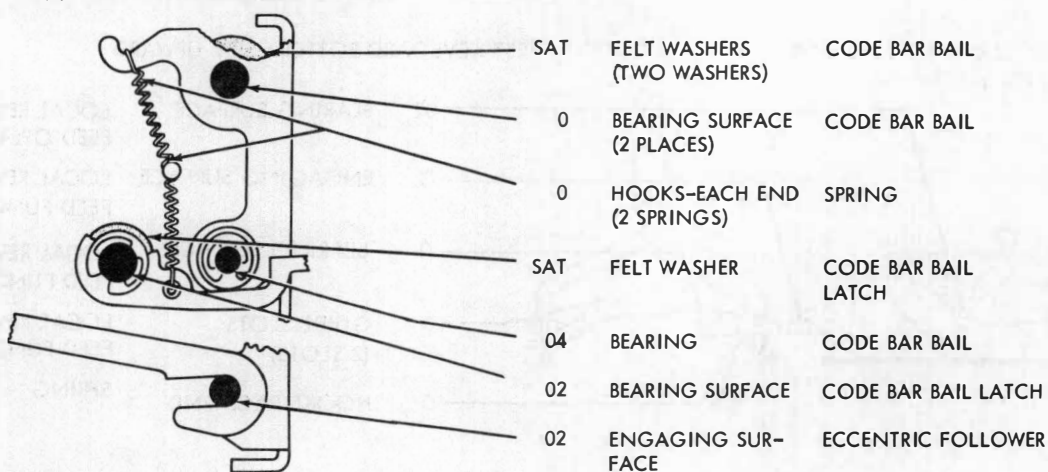
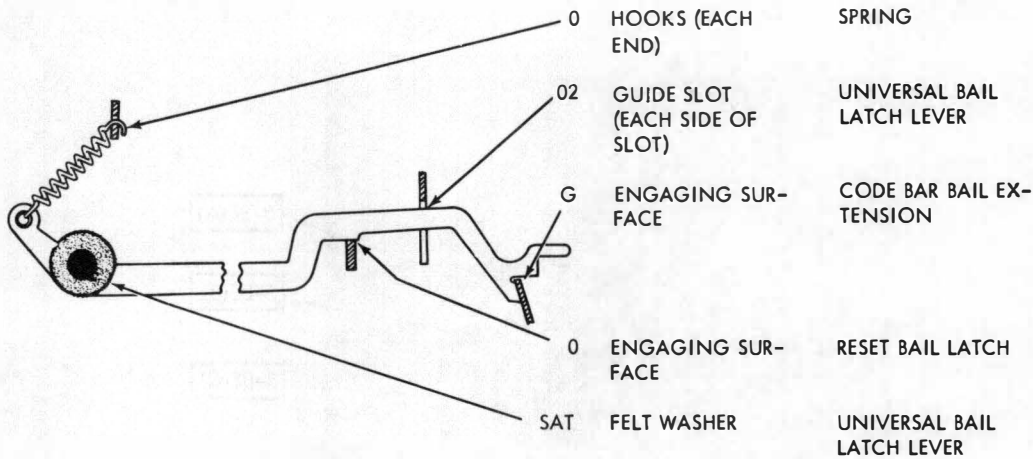


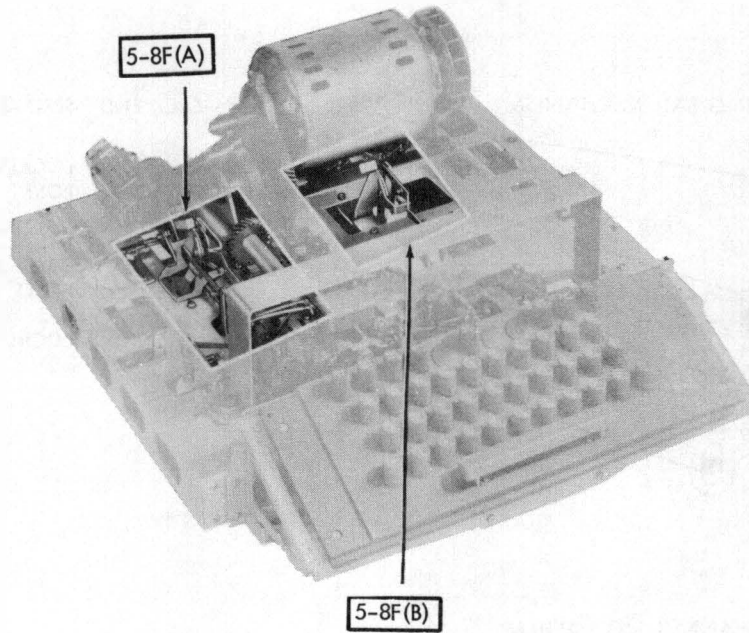
Figure 5-8E. Keyboard MX-1114C/UG or MX-1677A/UG Lubrication — Locking Bail and Code Bar Mechanisms



5-8E(C) UNIVERSAL BAIL LATCH LEVER MECHANISM



AUTOMATIC TYPER MX-3080/UG



5-8F(A) LOCAL REVERSE LINE FEED MECHANISM

REST KEYBOARD BOTTOM SIDE UPWARD

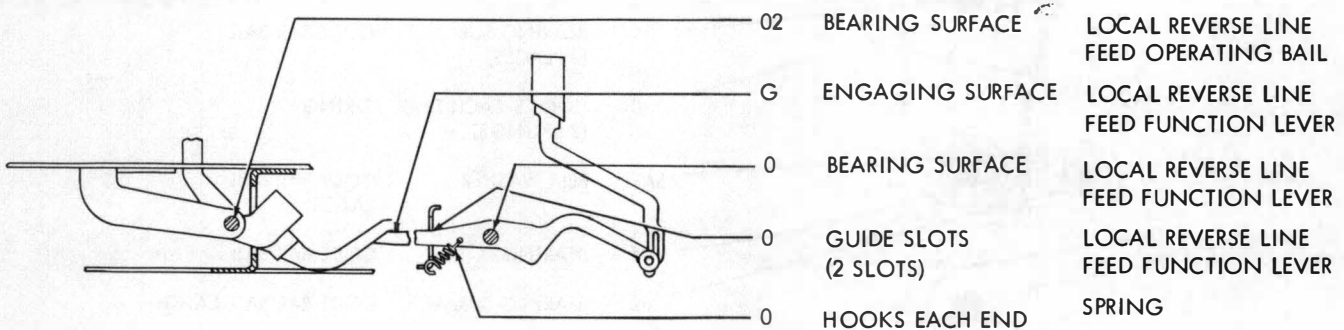
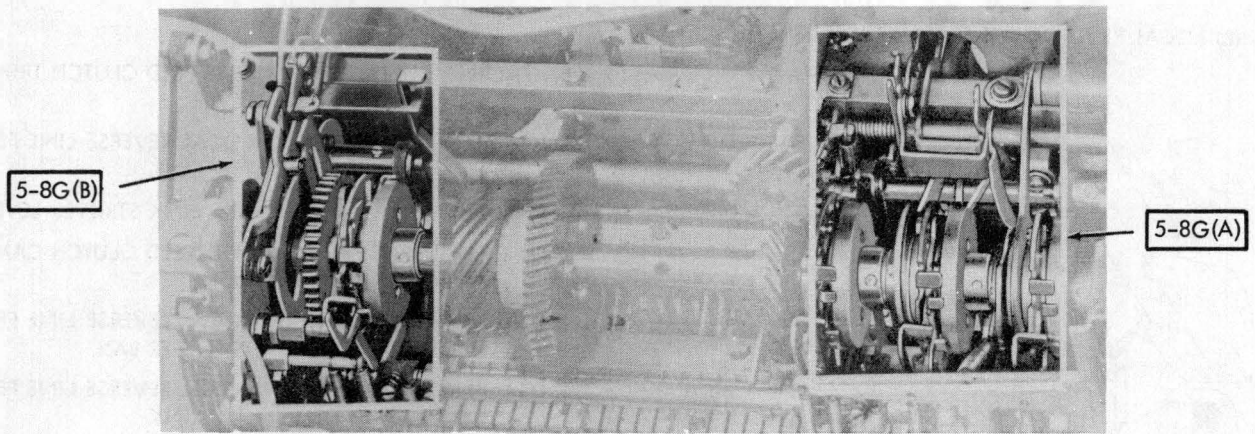
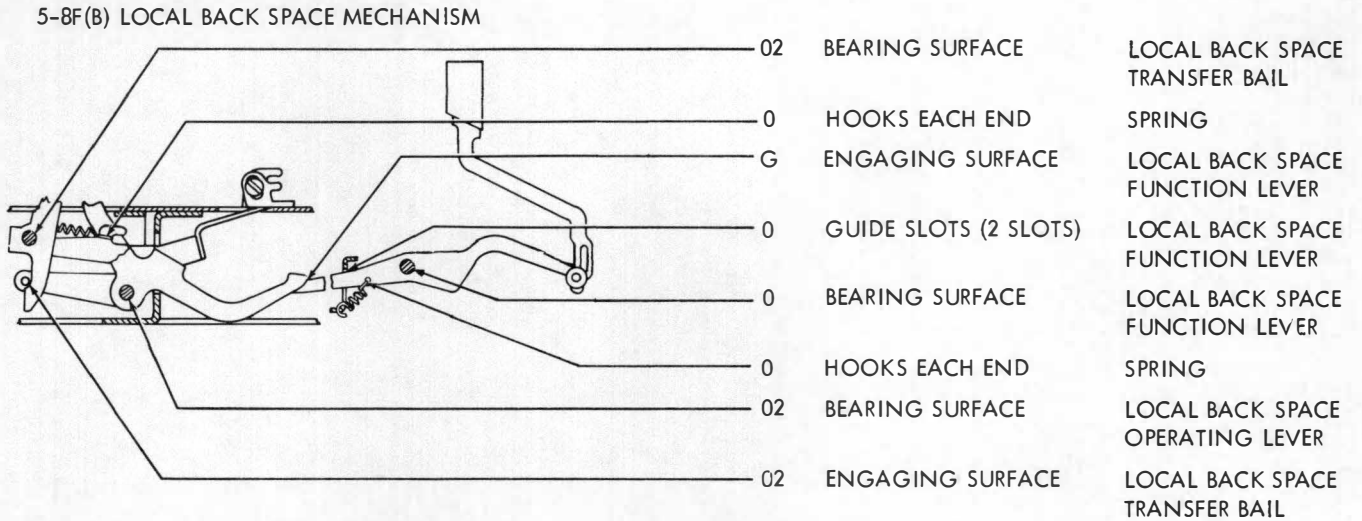


Figure 5-8F. Keyboard MX-1114C/UG or MX-1677A/UG Lubrication — Universal Bail Latch Lever and Local Reverse Line Feed Mechanisms



AUTOMATIC TYPER (FIGURES 5-8G TO 5-32)

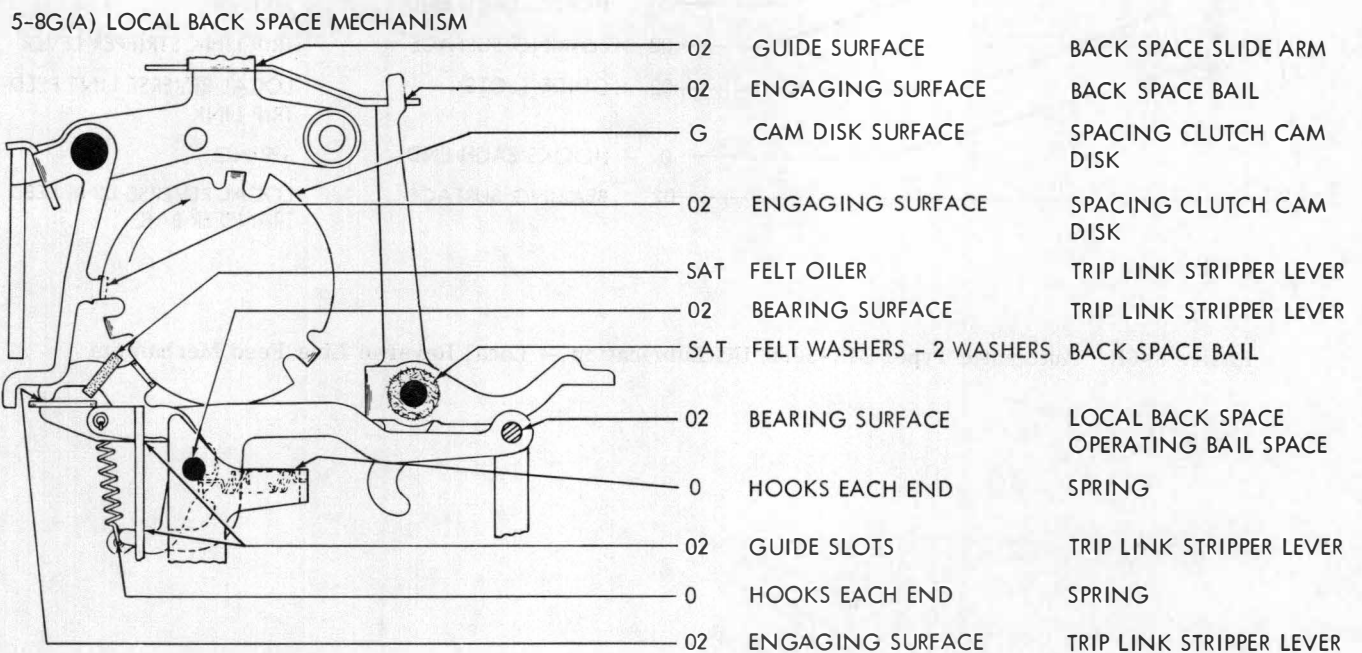


Figure 5-8G. Keyboard MX-1677A/UG or Automatic Typewriter MX-3080/UG Lubrication —  
Local Back Space Mechanism

5-8H(B) LOCAL REVERSE LINE FEED MECHANISM

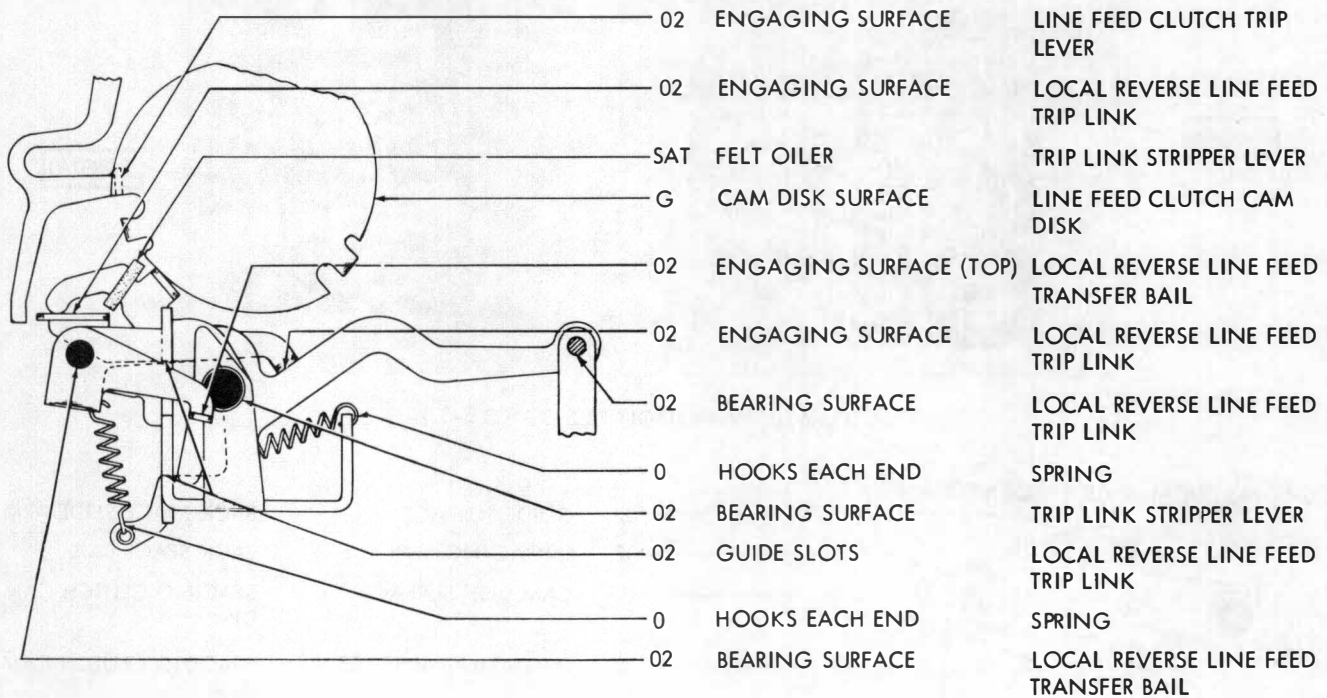
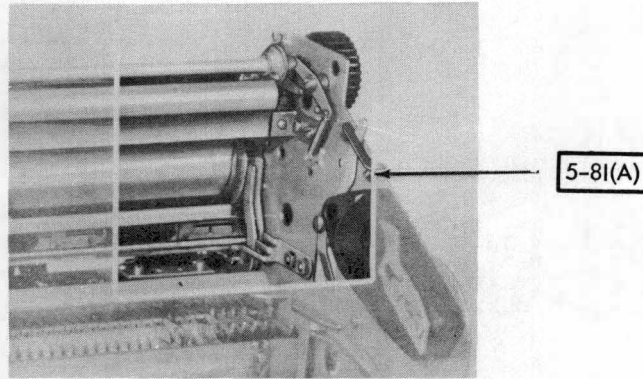


Figure 5-8H. Automatic Typewriter MX-3080/UG Lubrication — Local Reverse Line Feed Mechanism



5-81(A) LOCAL REVERSE LINE FEED MECHANISM

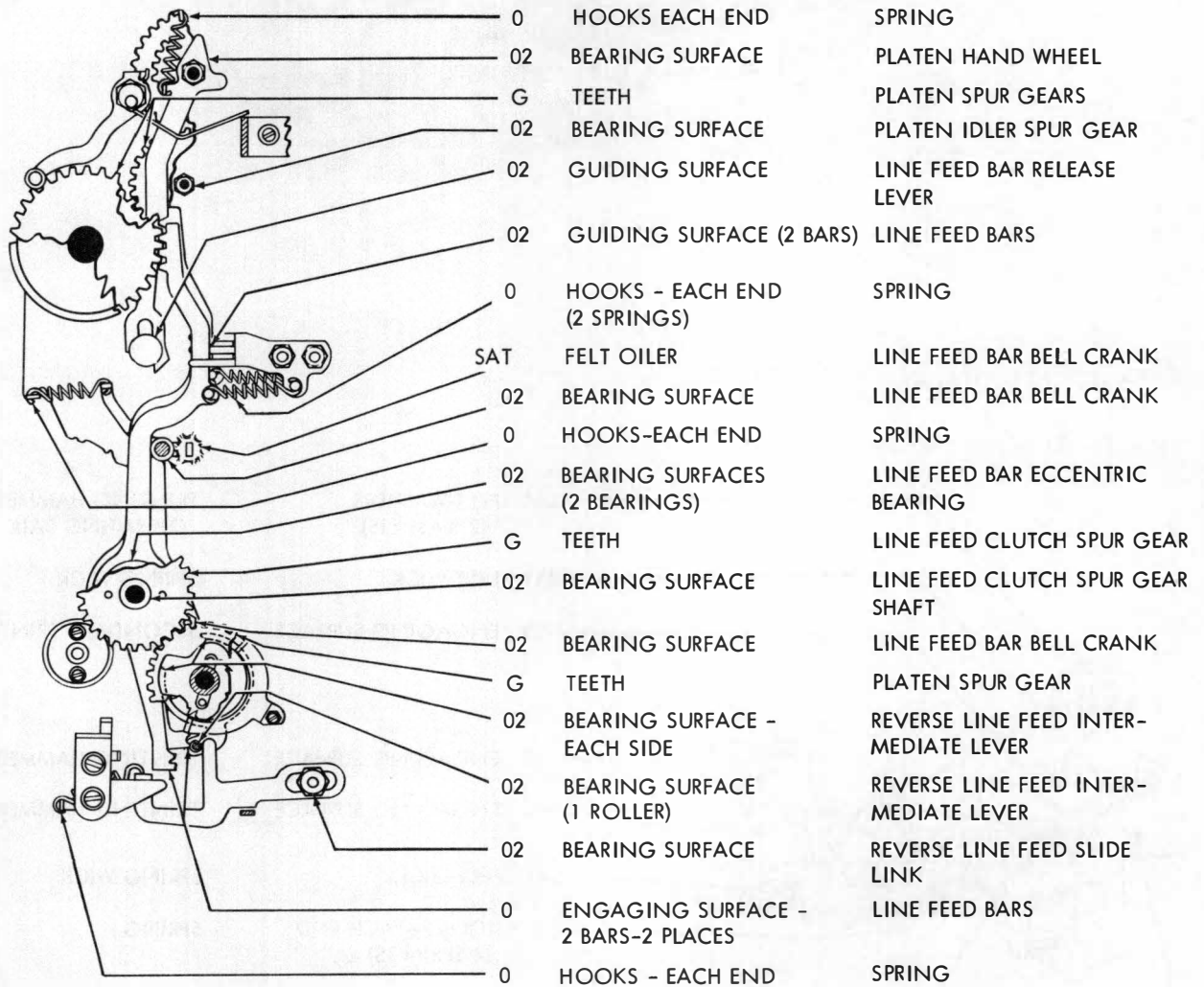
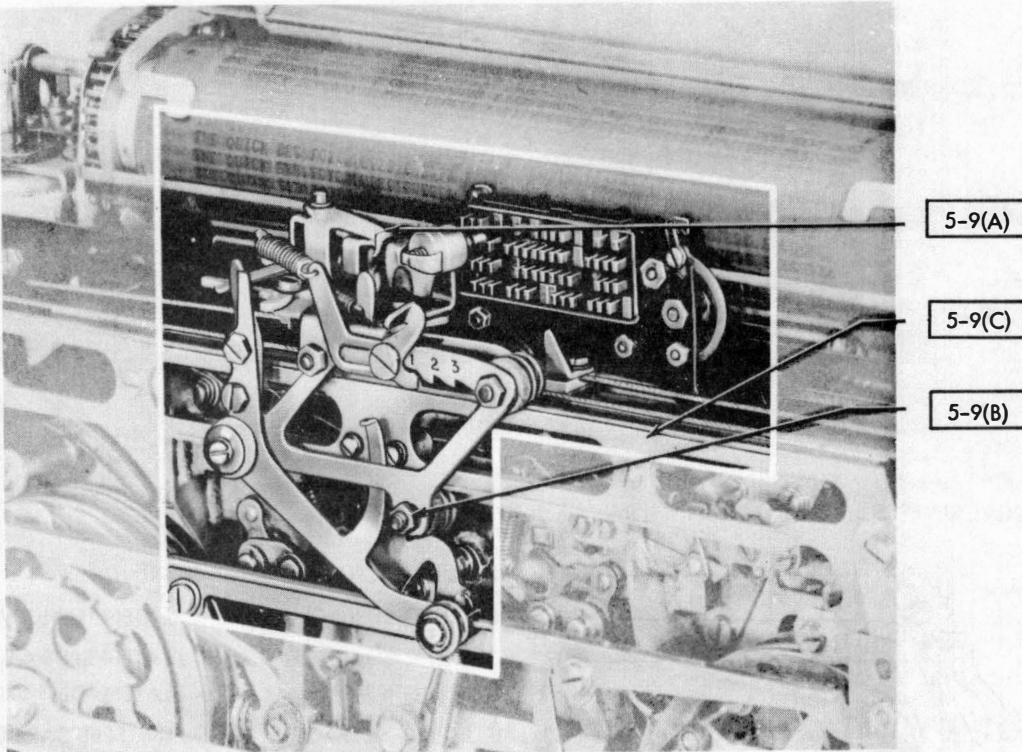


Figure 5-81. Automatic Typewriter MX-3080/UG Lubrication - Local Reverse Line Feed Mechanism

Figure 5-9



(REST AUTOMATIC TYPER IN UPRIGHT POSITION)

5-9(A) PRINTING MECHANISM

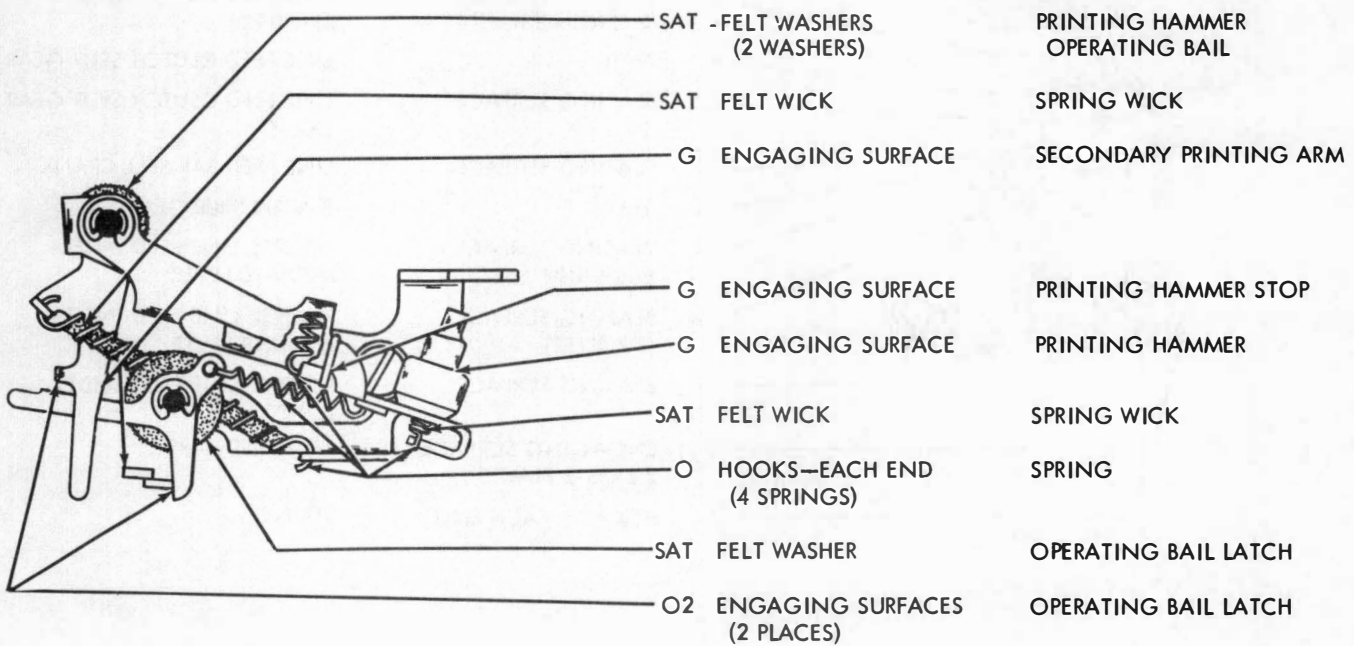
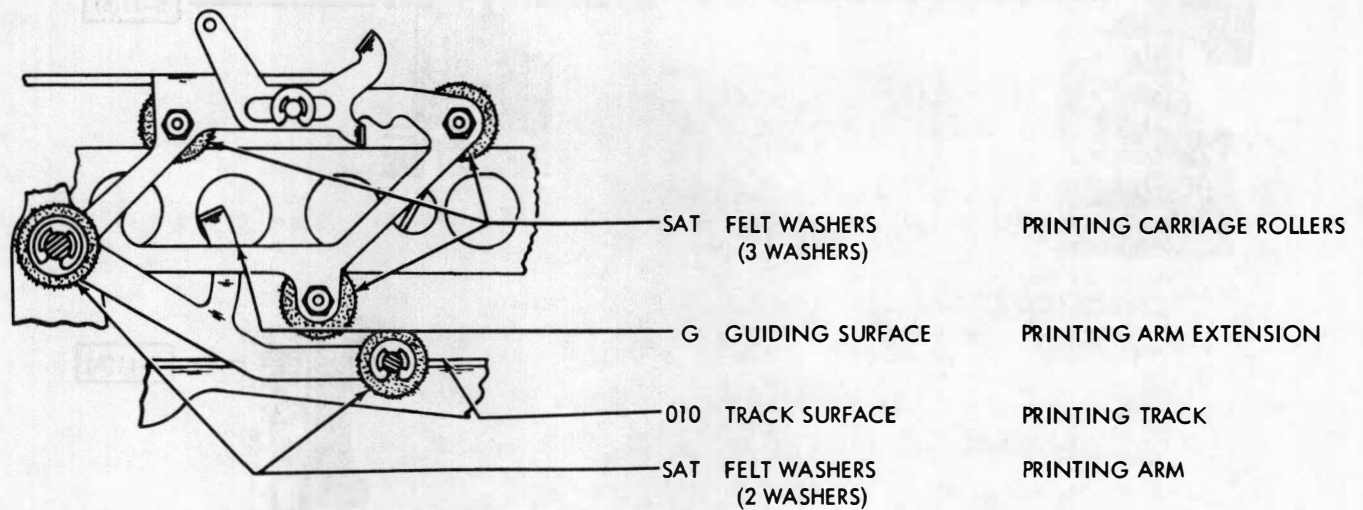


Figure 5-9. Automatic Typewriter Lubrication — Printing Mechanism

5-9(B) PRINTING MECHANISM (Continued)

5-9(B)



5-9(C) TYPE BOX CARRIAGE MECHANISM

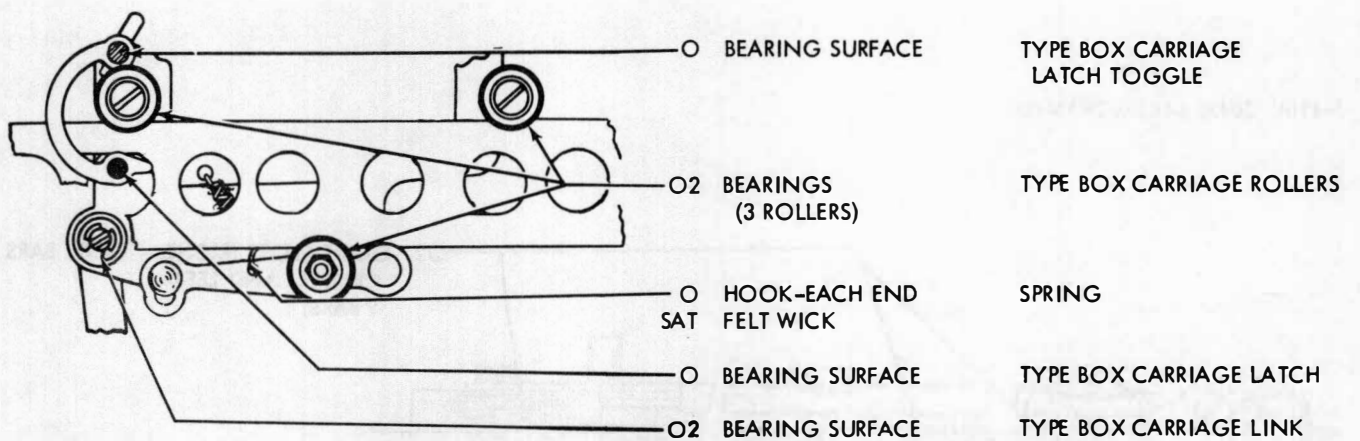
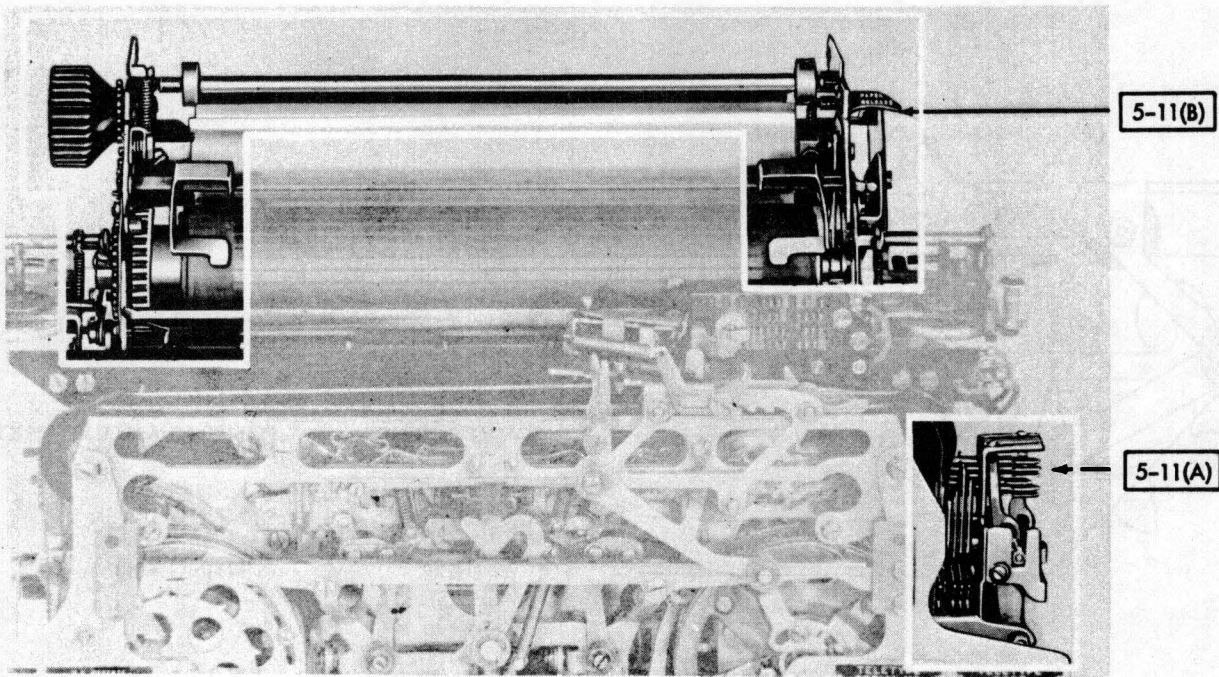


Figure 5-10. Automatic **Typex** Lubrication – Printing Mechanism and Type Box Carriage



(FRONT VIEW)

5-11(A) CODE BAR MECHANISM

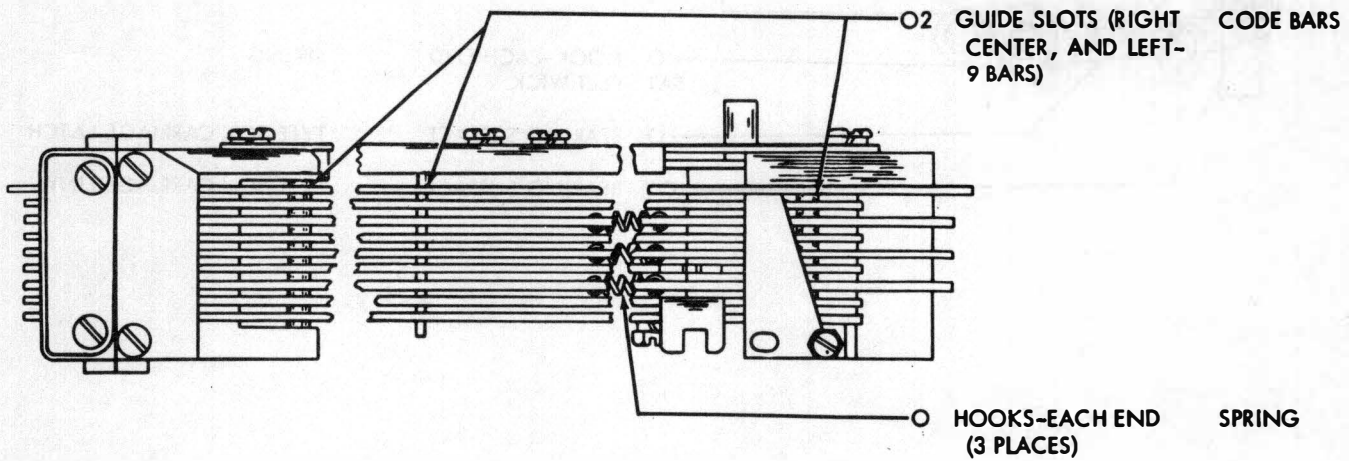
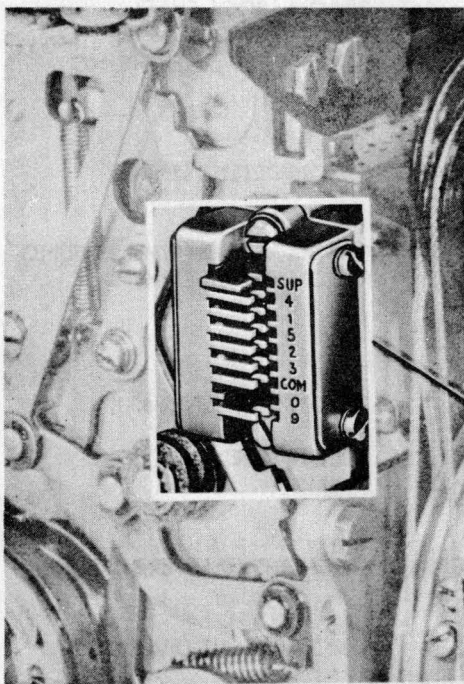
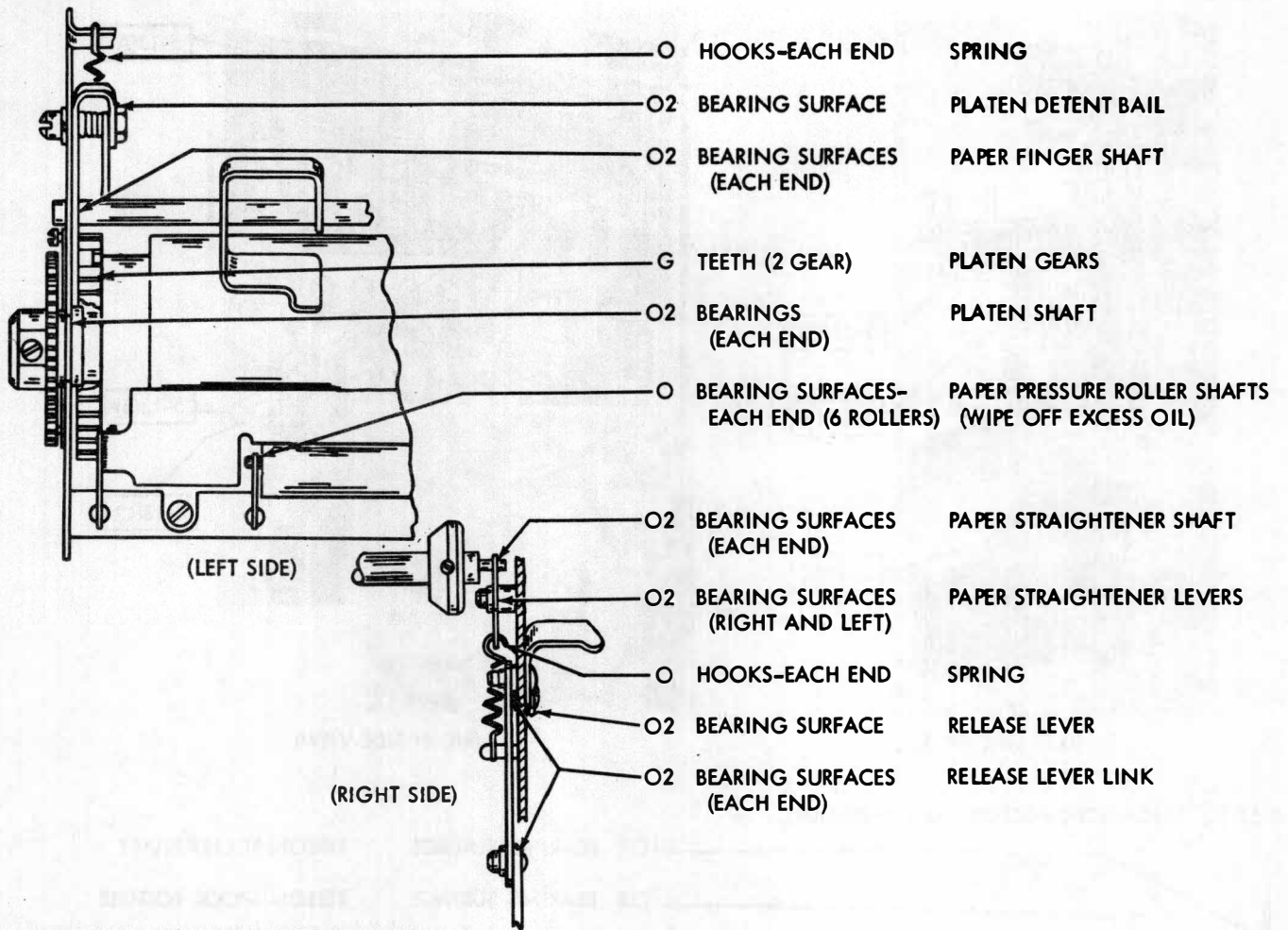


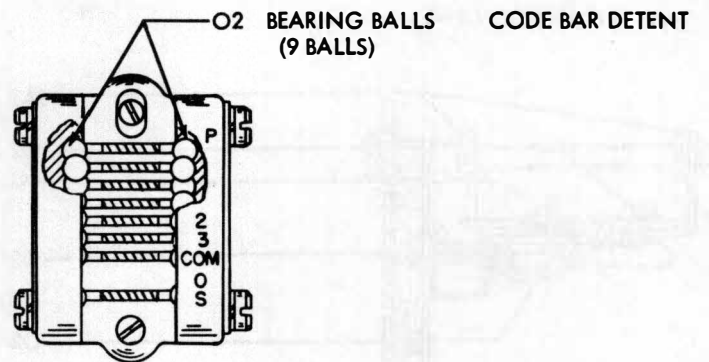
Figure 5-11. Automatic Typewriter Lubrication - Code Bar Mechanism

**5-11(B) PAPER FEED MECHANISM (FRONT VIEW)**



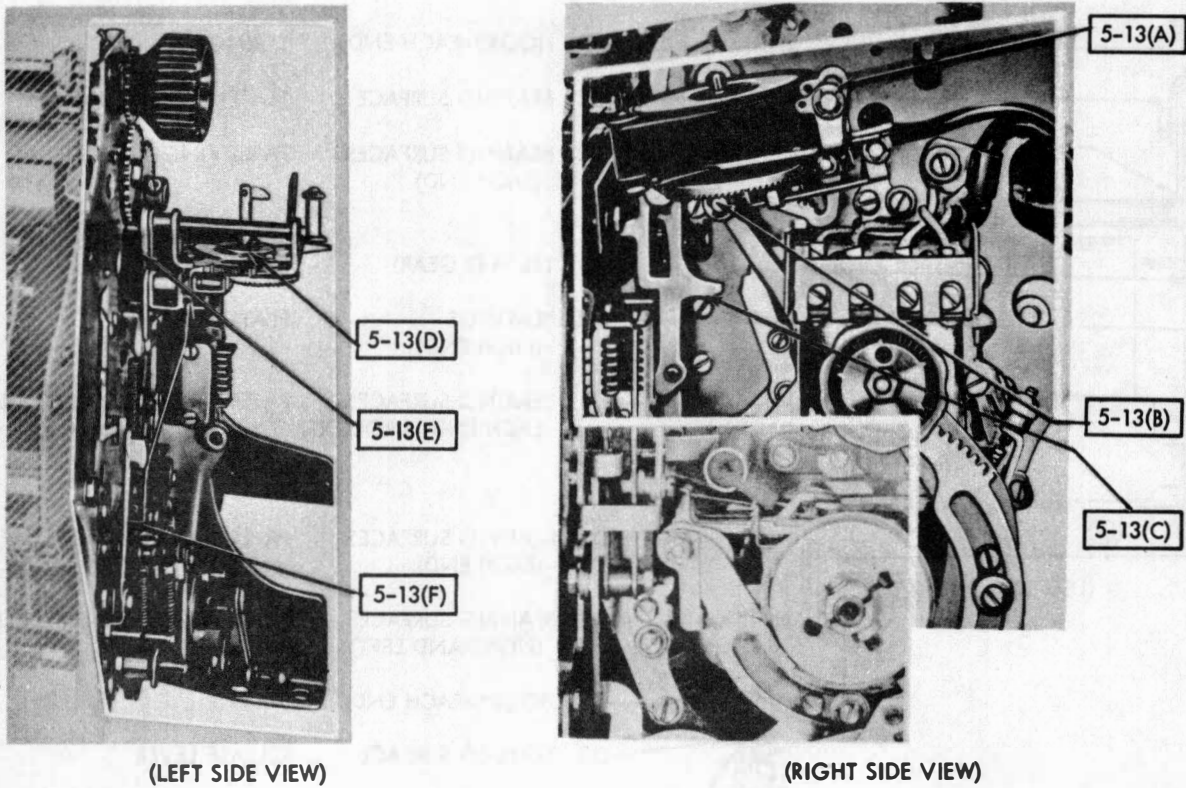
(LEFT SIDE VIEW)

**5-12(A) CODE BAR MECHANISM (Continued-  
see figure 5-11.)**

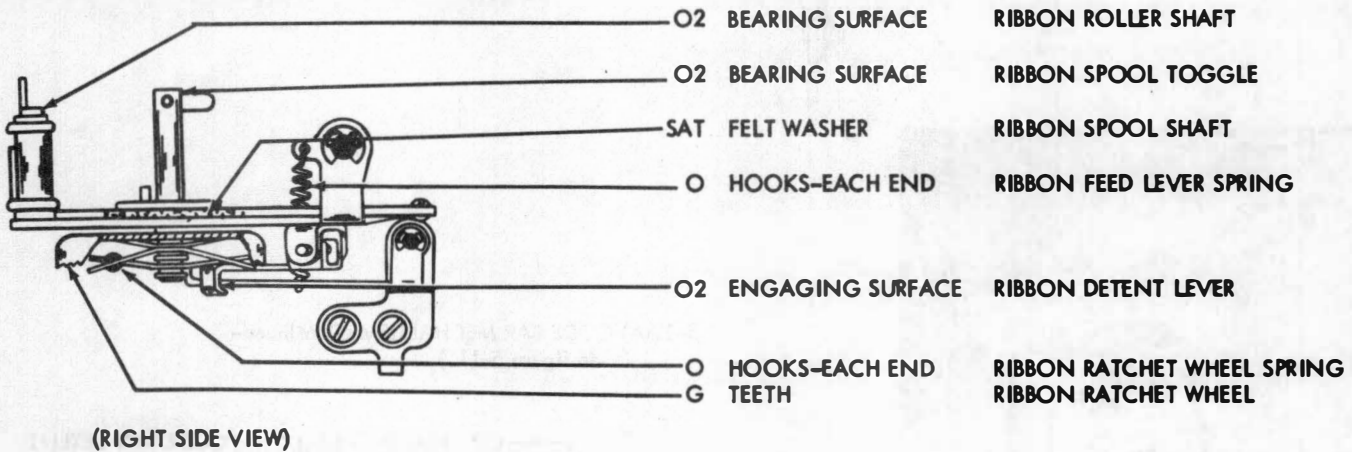


**Figure 5-12. Automatic Typewriter Lubrication – Code Bar and Paper Feed Mechanisms**

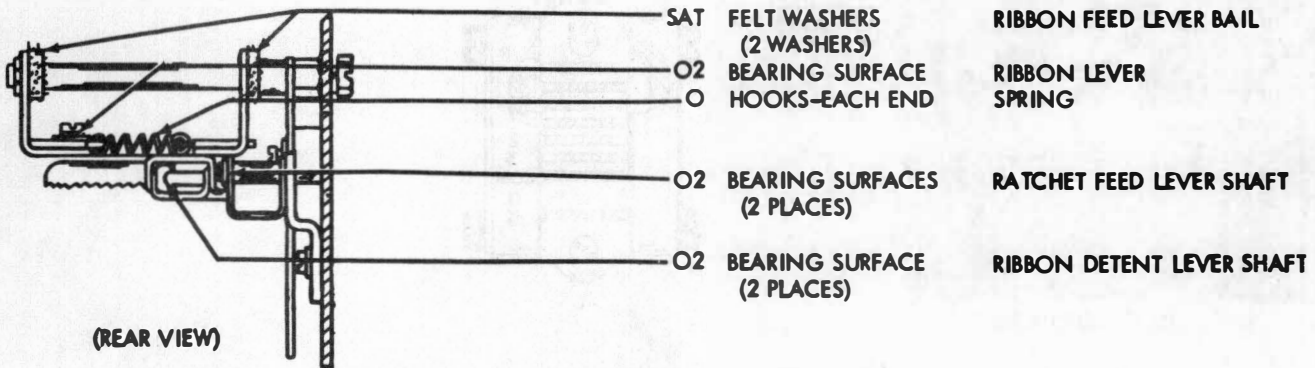




5-13 (A) RIBBON FEED MECHANISM (RIGHT SIDE)



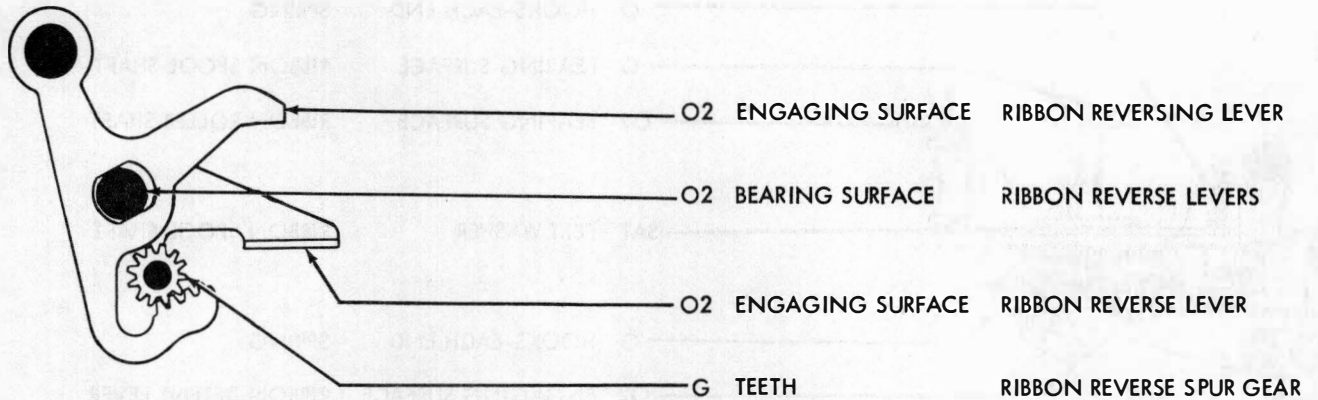
(RIGHT SIDE VIEW)



(REAR VIEW)

Figure 5-13. Automatic Typewriter Lubrication - Ribbon Feed Mechanism, Right Side

5-13(B) RIBBON REVERSE MECHANISM



5-13(C) VERTICAL POSITIONING MECHANISM (RIGHT SIDE)

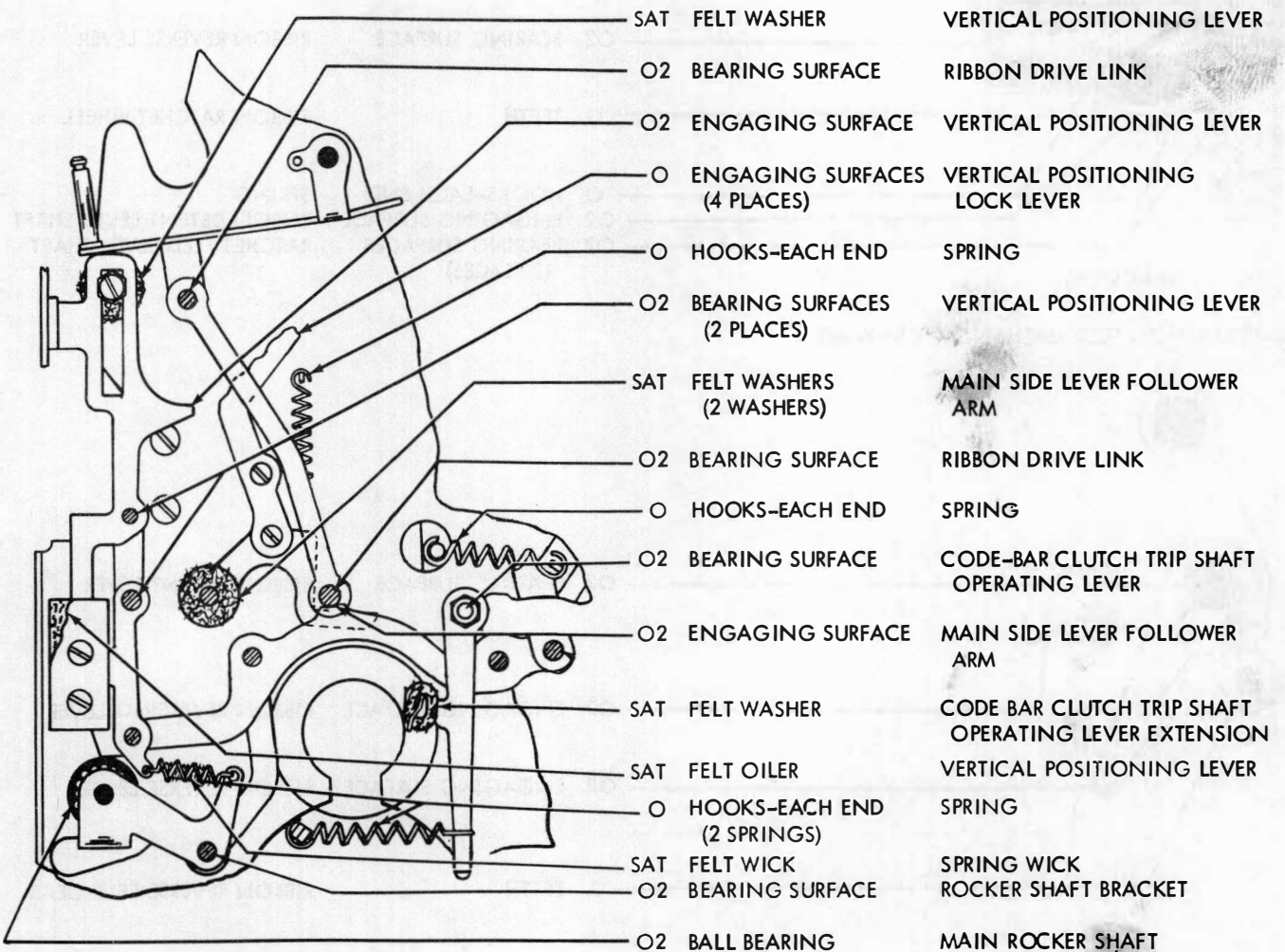
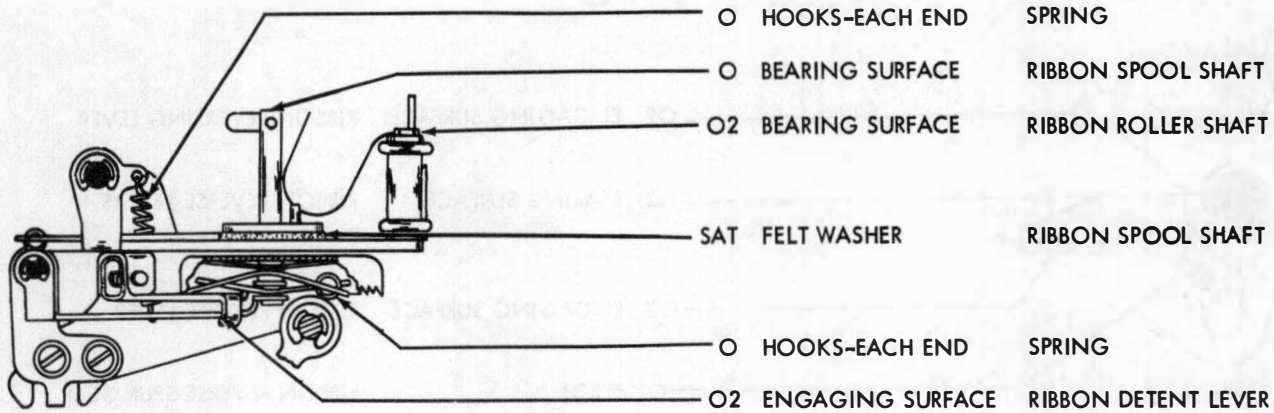
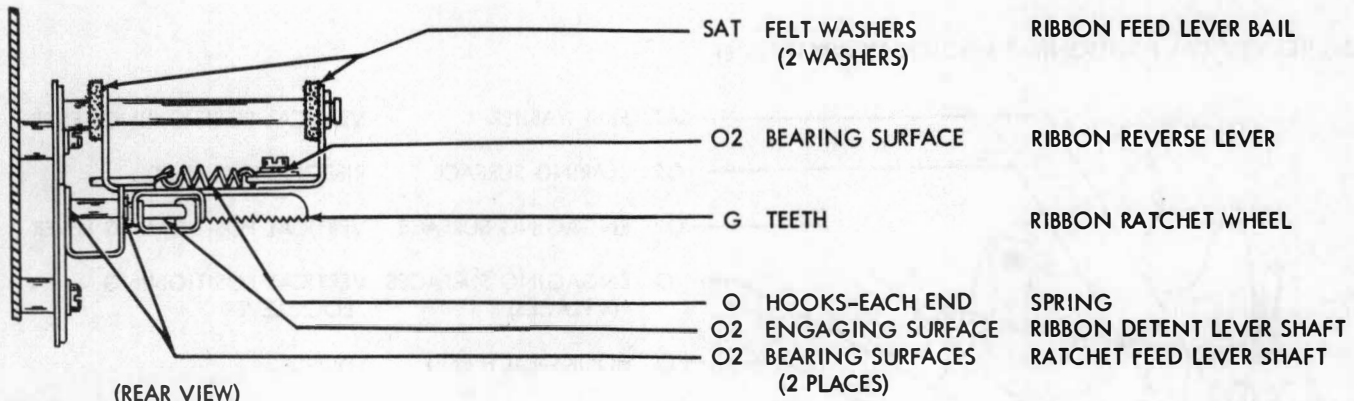


Figure 5-14. Automatic Typewriter Lubrication -- Ribbon Reverse and Vertical Positioning Mechanisms, Right Side

5-13(D) RIBBON FEED MECHANISM (LEFT SIDE)



(LEFT SIDE VIEW)



(REAR VIEW)

5-13(E) RIBBON FEED MECHANISM (Continued)

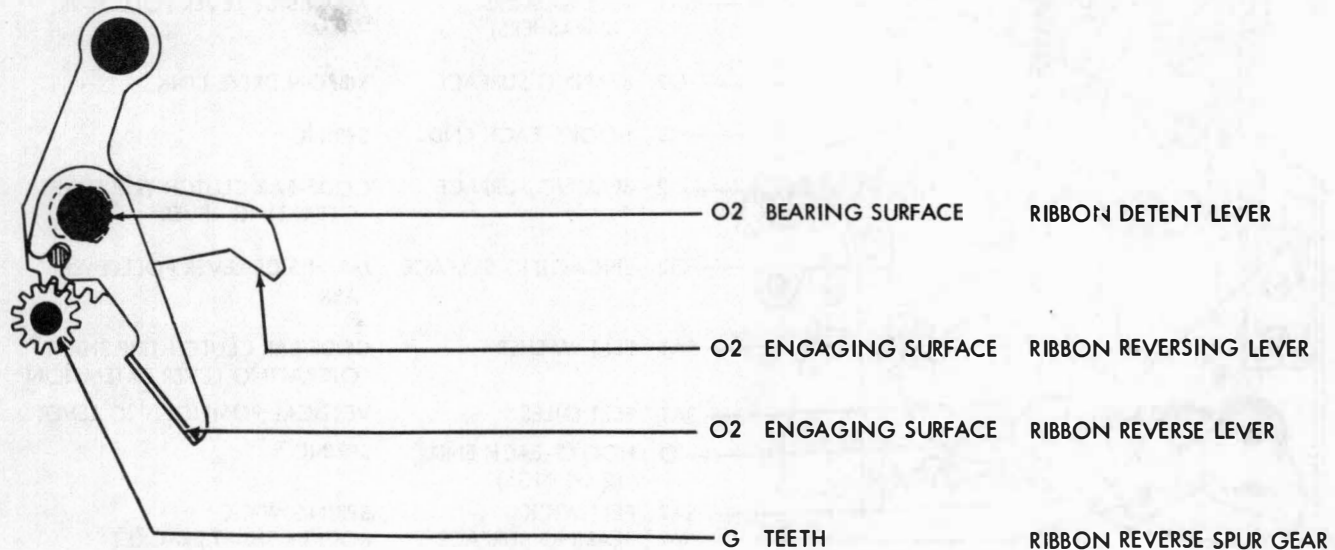
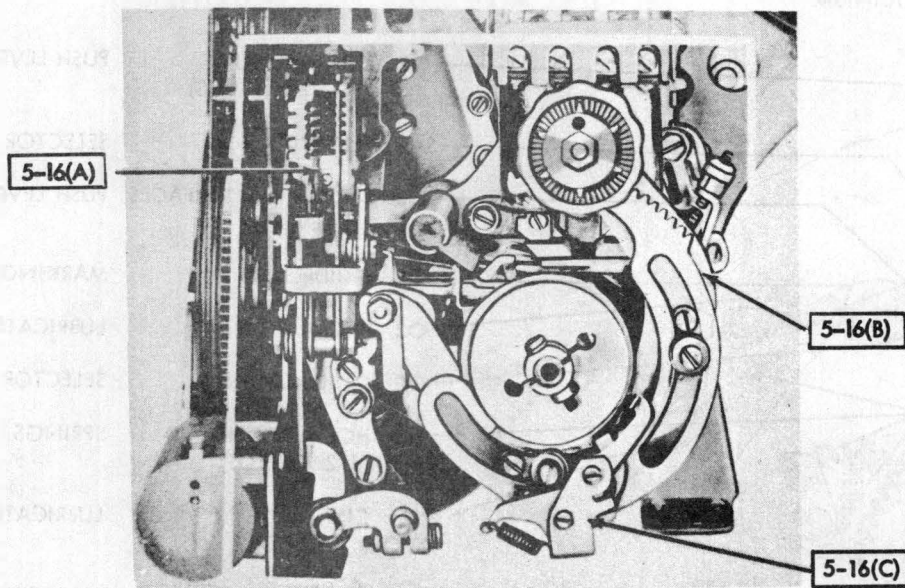
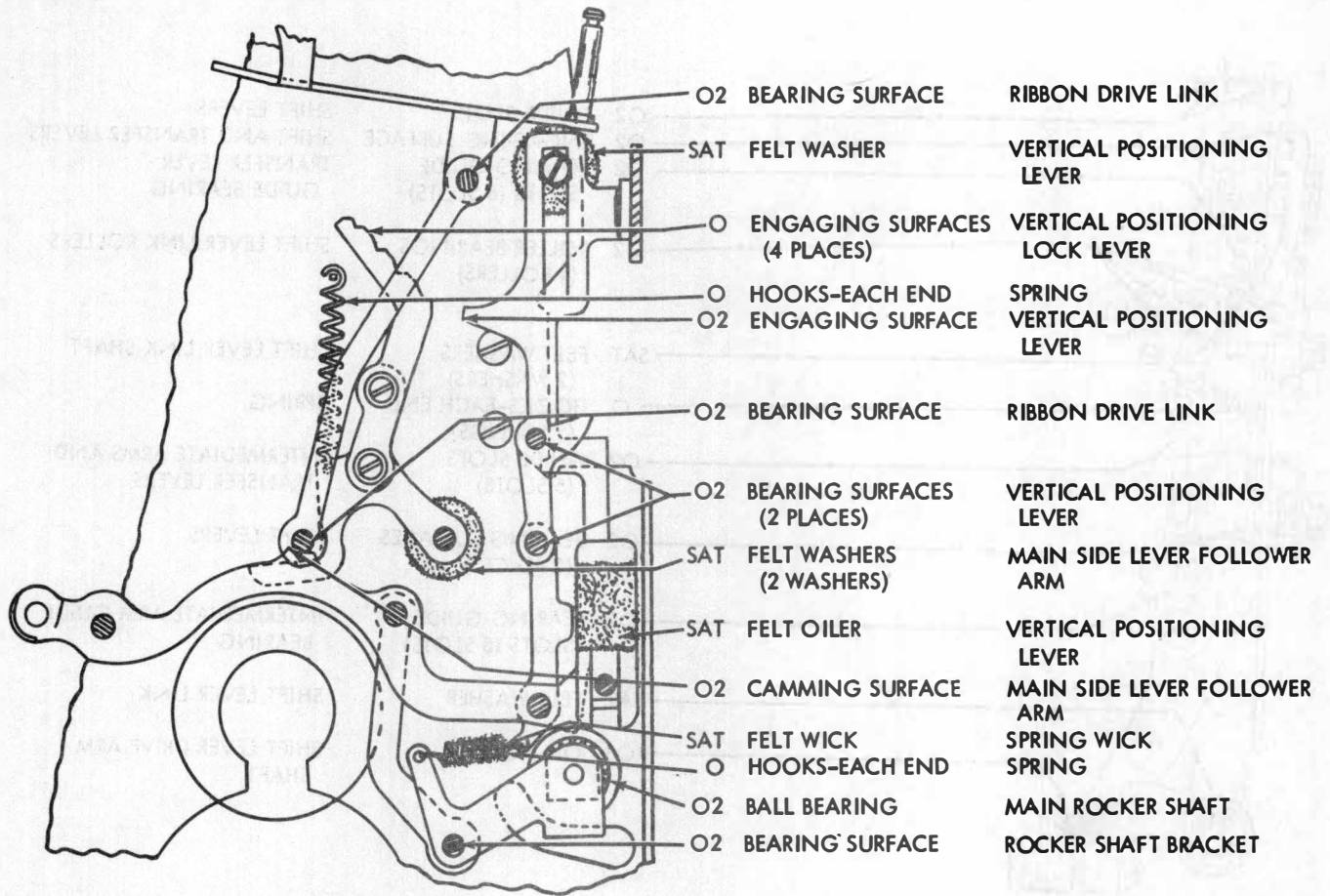


Figure 5-15. Automatic Typewriter Lubrication - Ribbon Feed Mechanism, Left Side

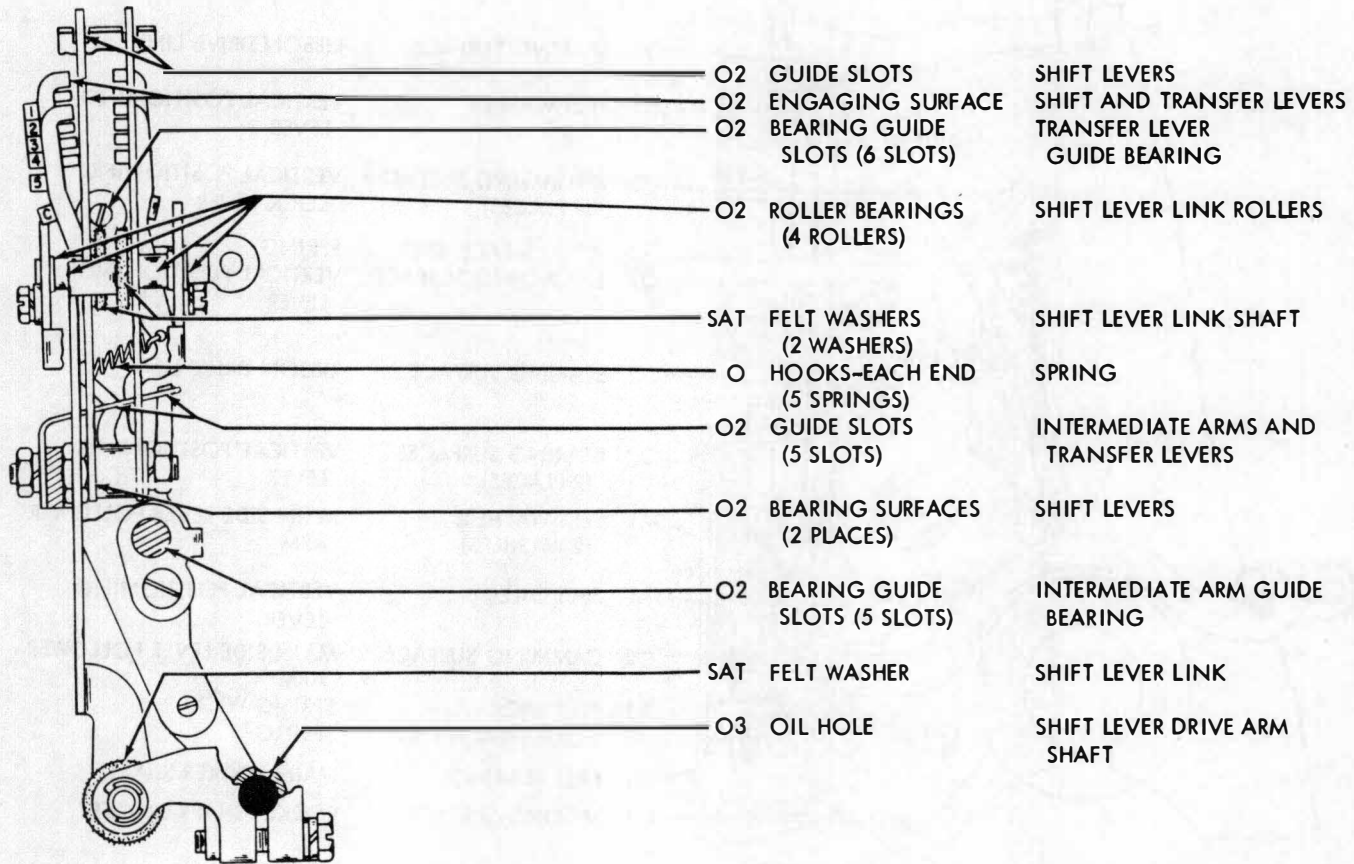
5-13(F) VERTICAL POSITIONING MECHANISM (LEFT SIDE)



(RIGHT SIDE VIEW)

Figure 5-16. Automatic Typewriter Lubrication – Vertical Positioning, Left Side, and Selector Mechanisms

5-16(A) CODE BAR MECHANISM



5-16(B) SELECTOR MECHANISM

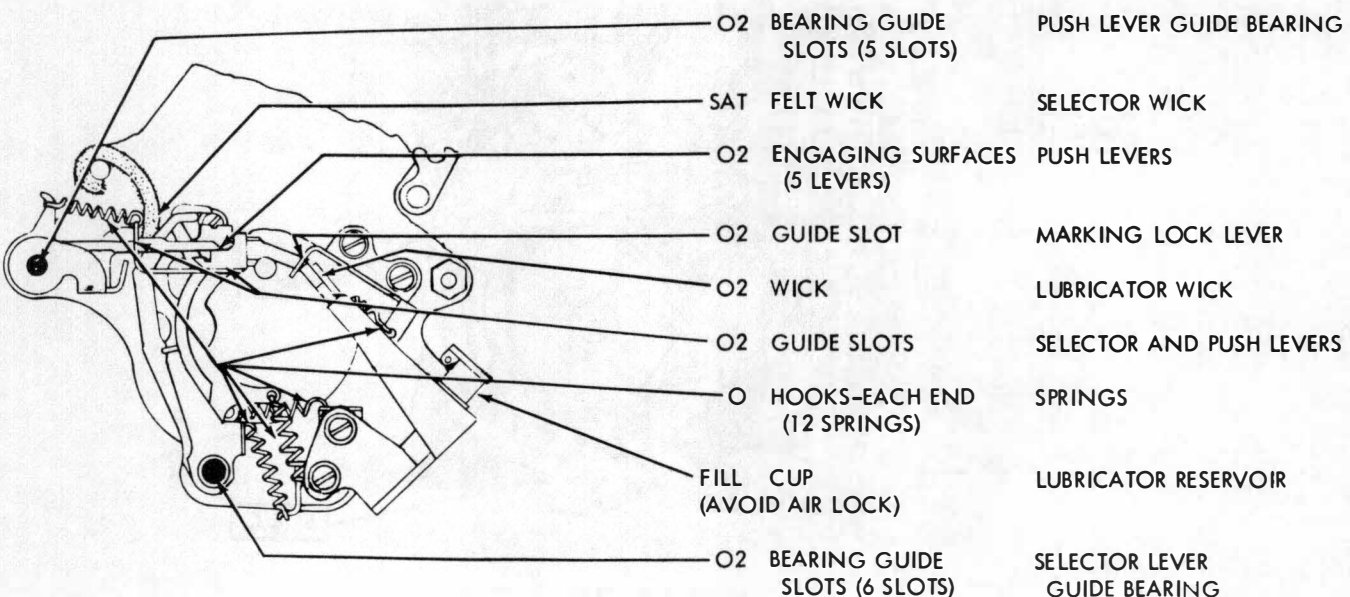
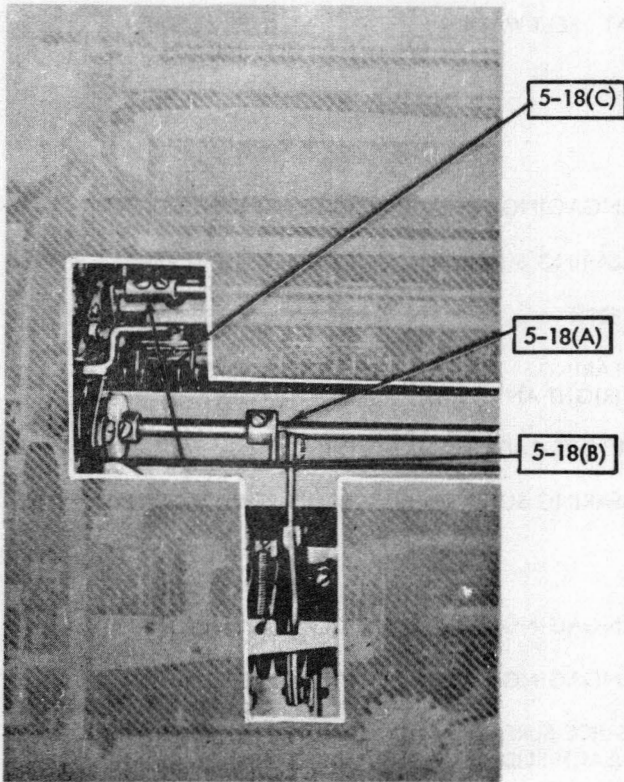
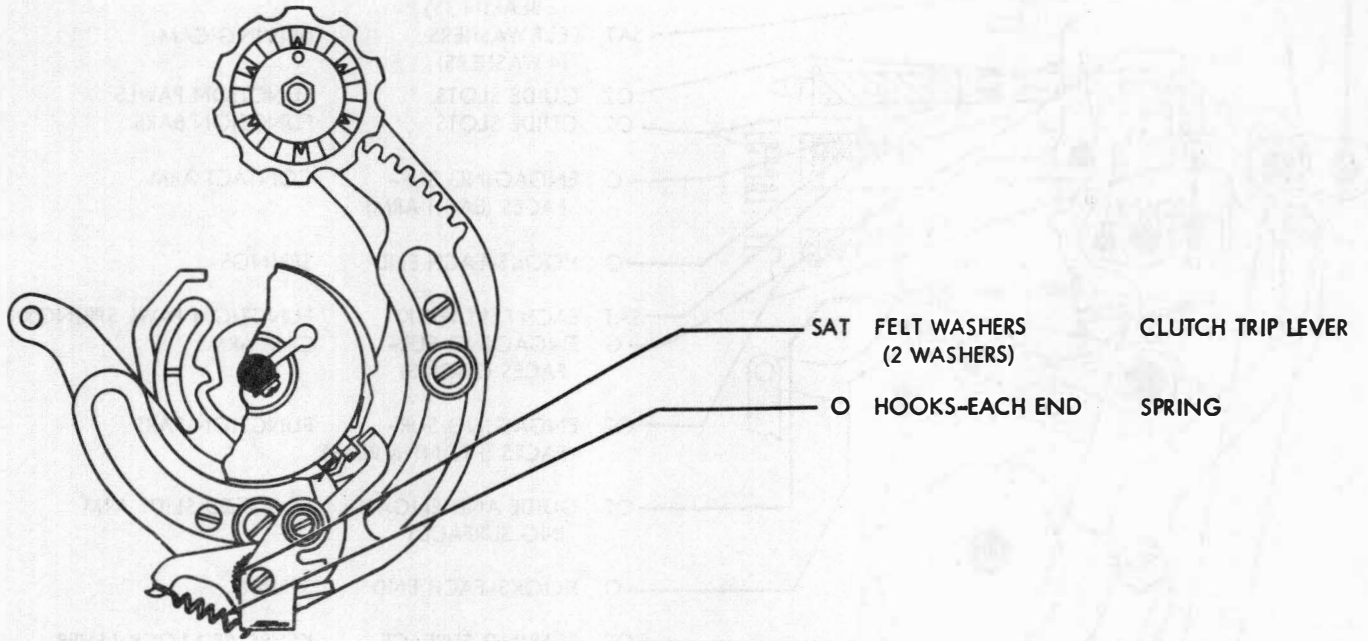
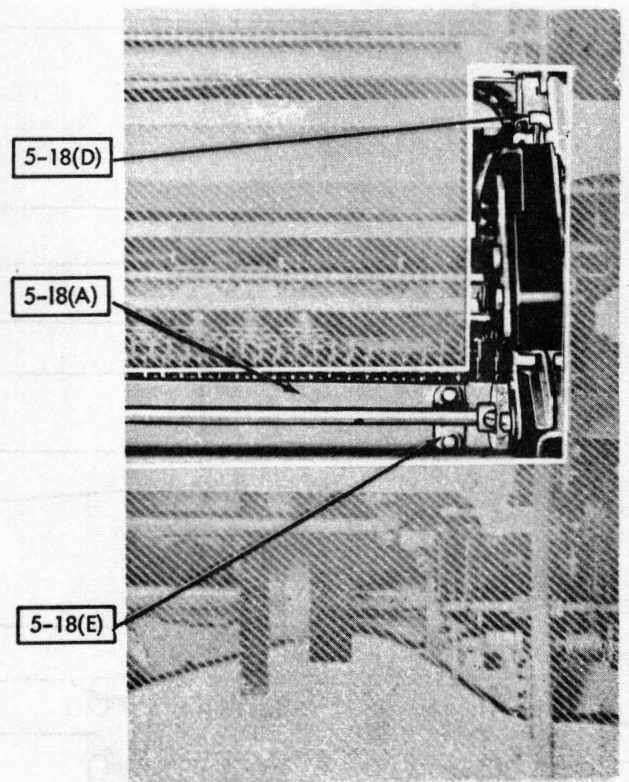


Figure 5-17. Automatic Typewriter Lubrication — Code Bar and Selector Mechanisms

5-16(C) SELECTOR MECHANISM (Continued)



(REAR VIEW)



(REAR VIEW)

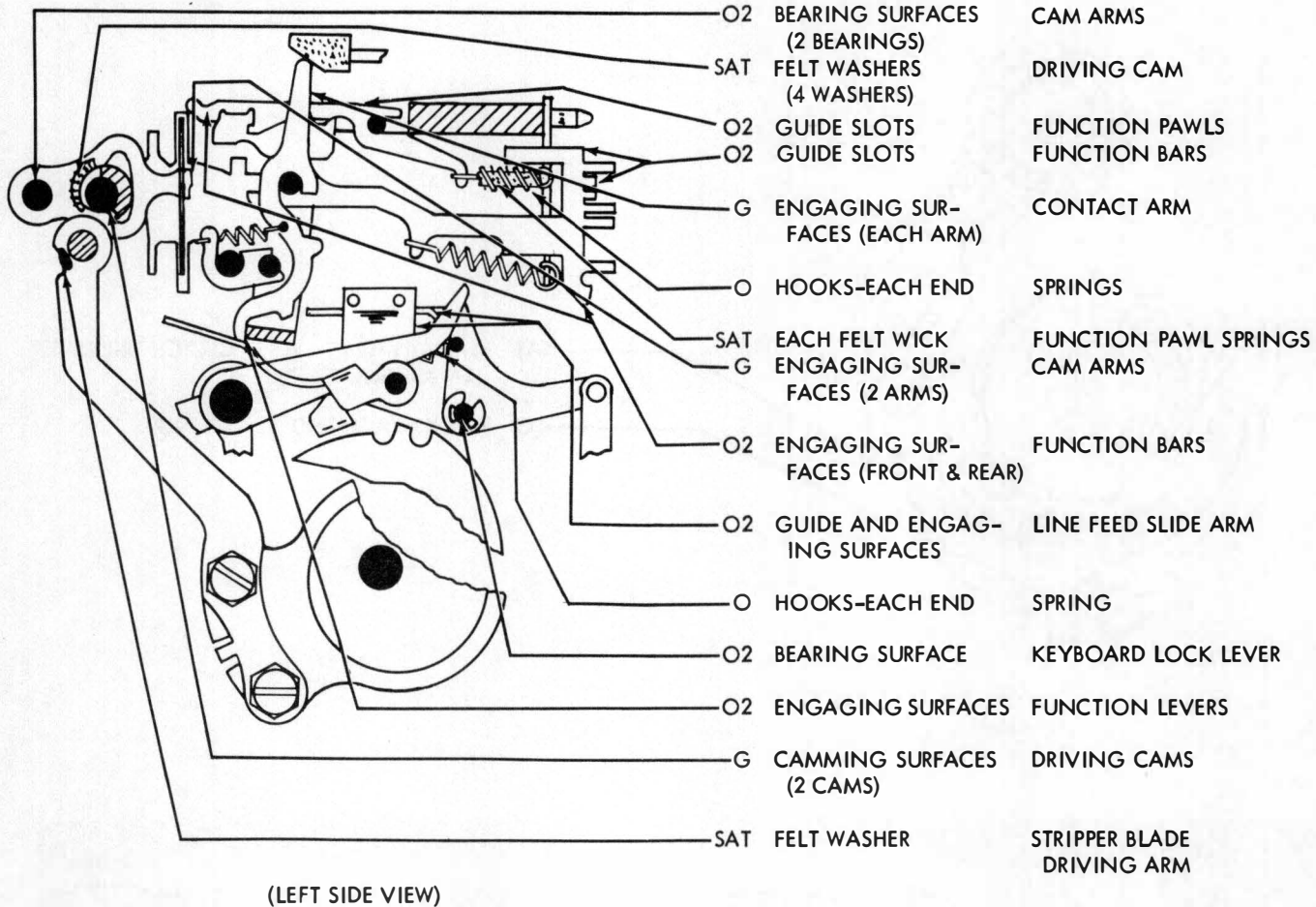
Figure 5-18. Automatic Typewriter Lubrication - Selector Mechanism

Figure 5-19

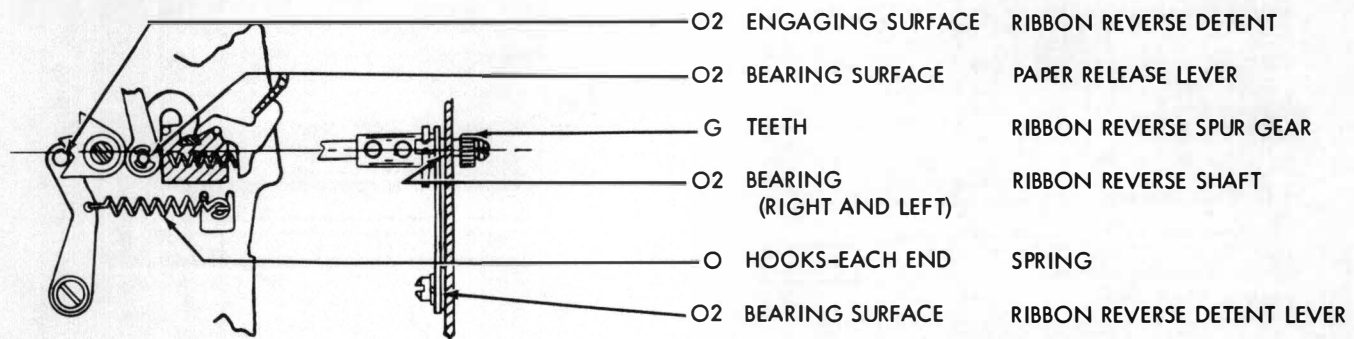
NAVSHIPS 93241

TRUBLE SHOOTING AND PREVENTIVE MAINTENANCE

5-18(A) STUNT BOX MECHANISM



5-18(B) RIBBON REVERSE MECHANISM



5-18(C) SHIFT MECHANISM

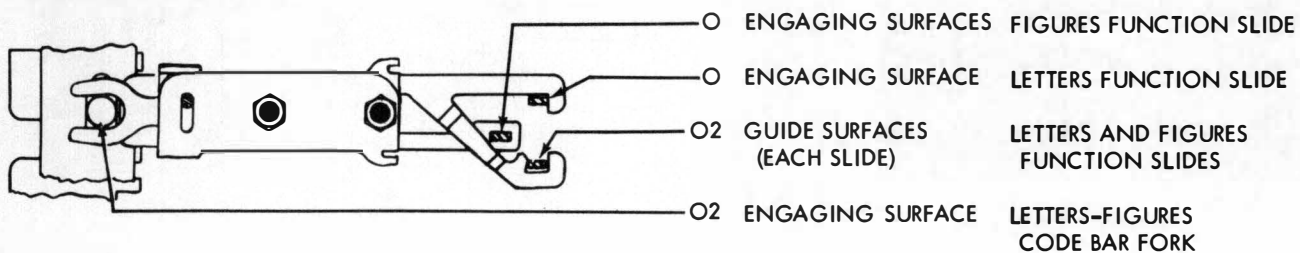
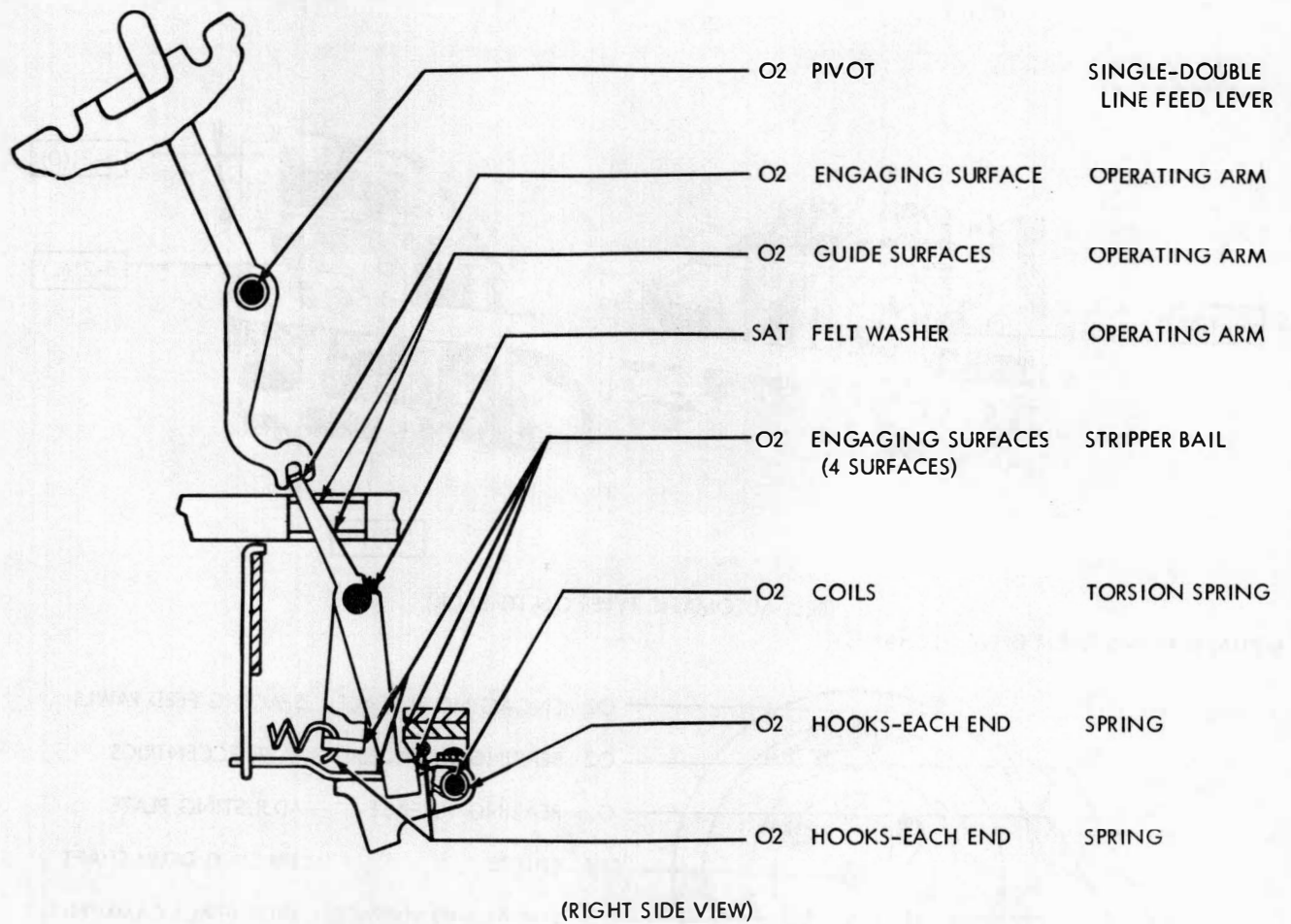


Figure 5-19. Automatic Typewriter Lubrication - Function Box and Ribbon Reverse and Shift Mechanisms

5-18(D) SINGLE - DOUBLE LINE FEED MECHANISM



5-18(E) STRIPPER BLADE MECHANISM

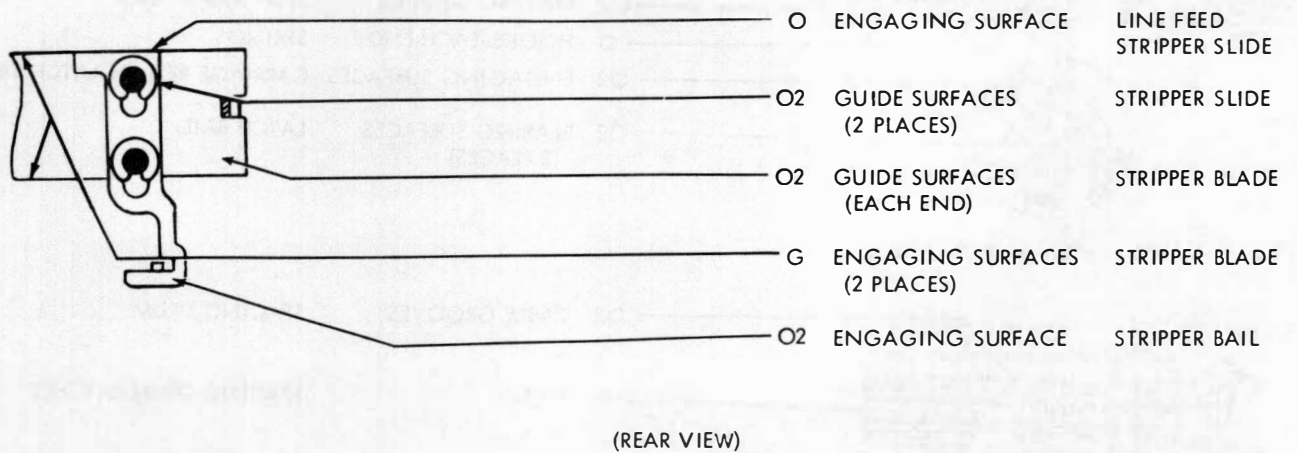
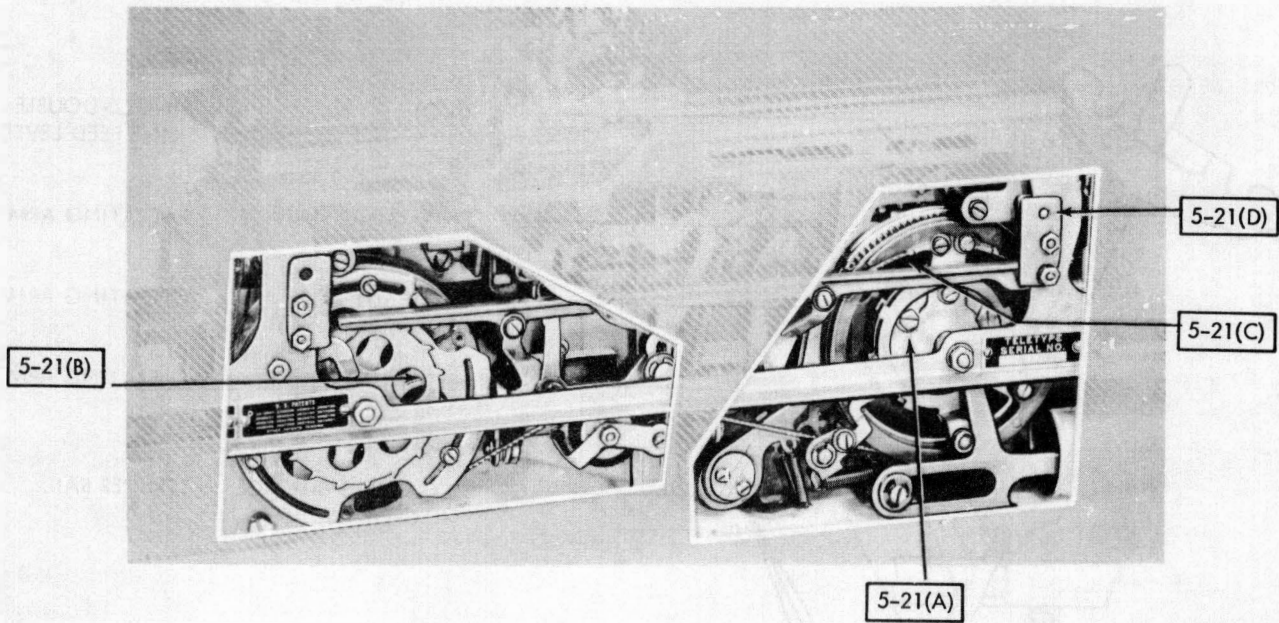


Figure 5-20. Automatic Typewriter Lubrication - Single-Double Line Feed and Stripper Blade Mechanisms





(REST AUTOMATIC TYPER ON ITS BACK)

5-21(A) SPACING DRUM DRIVE MECHANISM

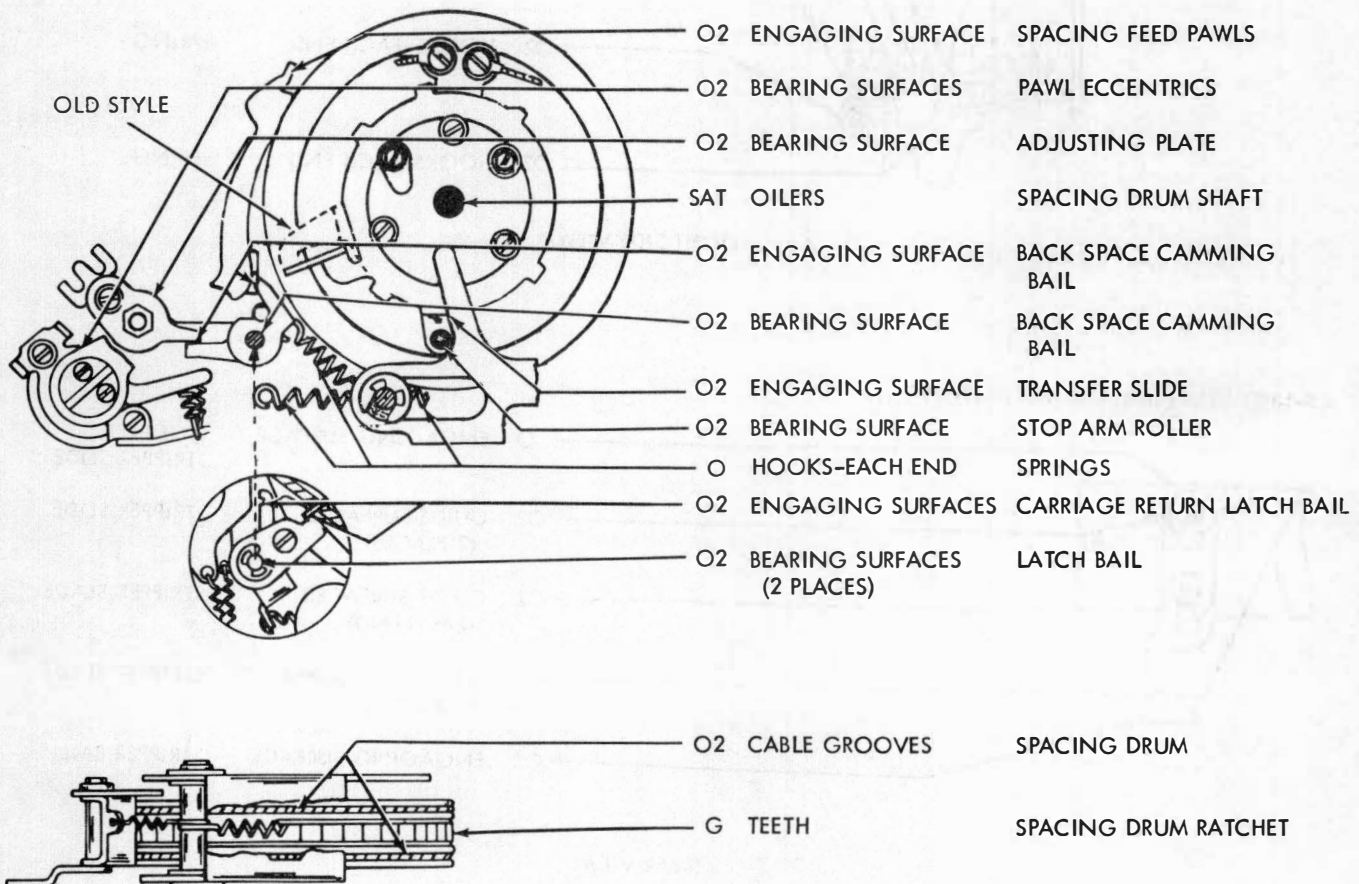
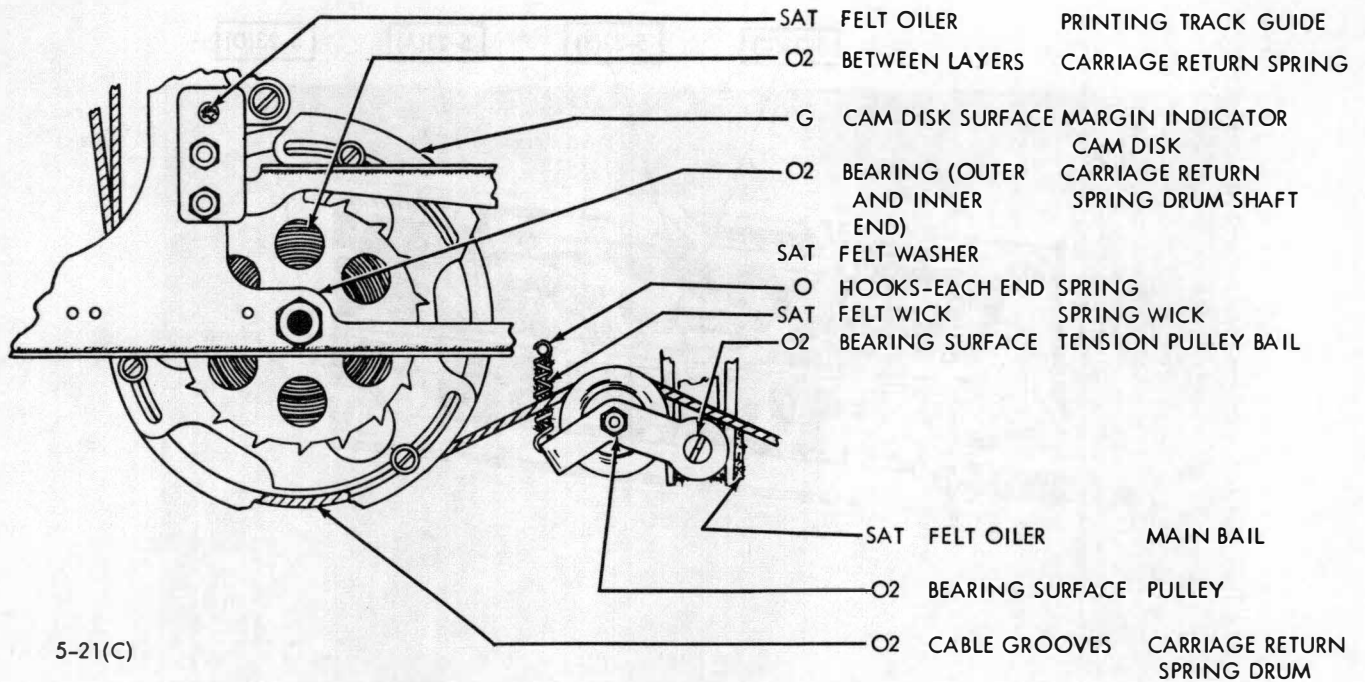
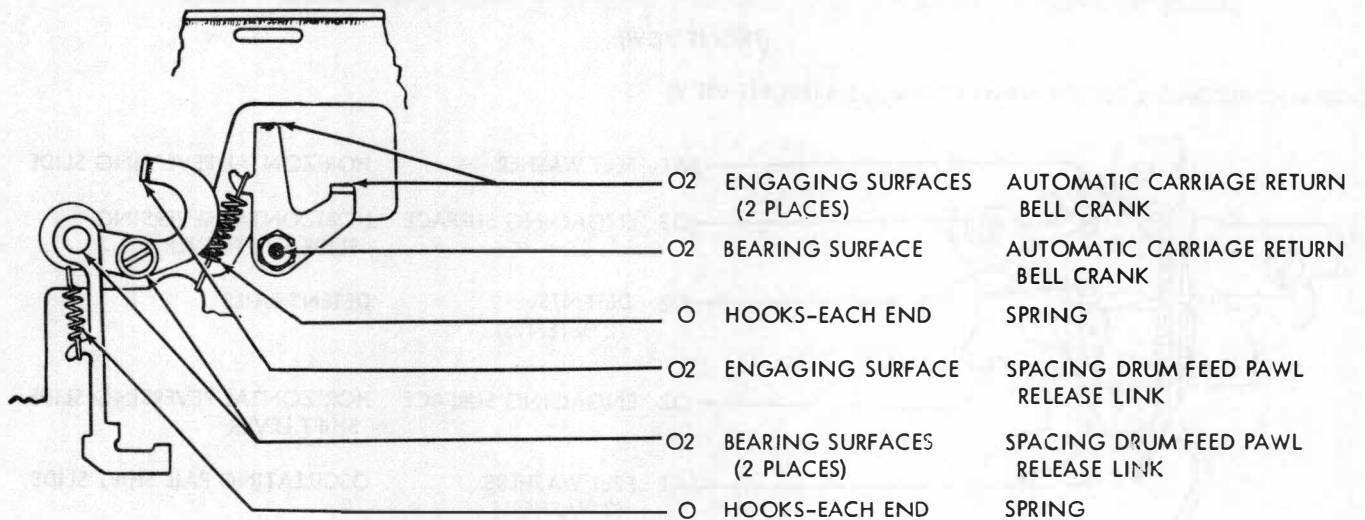


Figure 5-21. Automatic Typewriter Lubrication - Spacing Drum Drive Mechanism

5-21(B) CARRIAGE RETURN MECHANISM



5-21(C)



5-21(D)

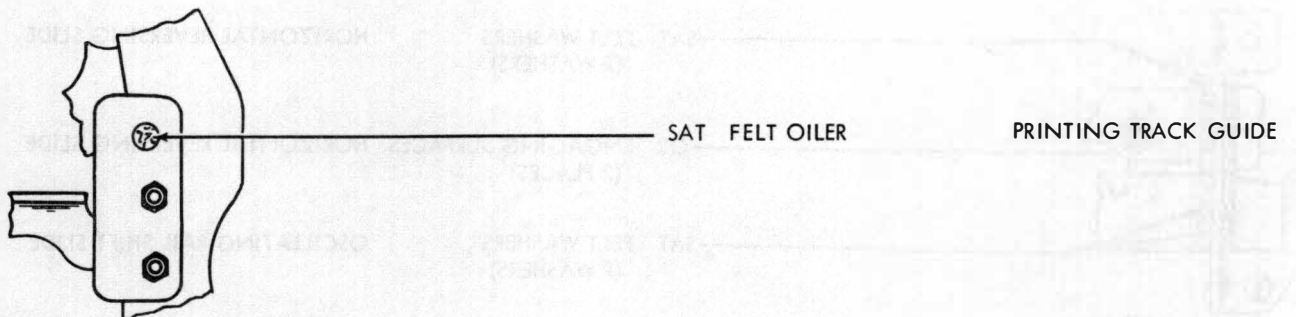
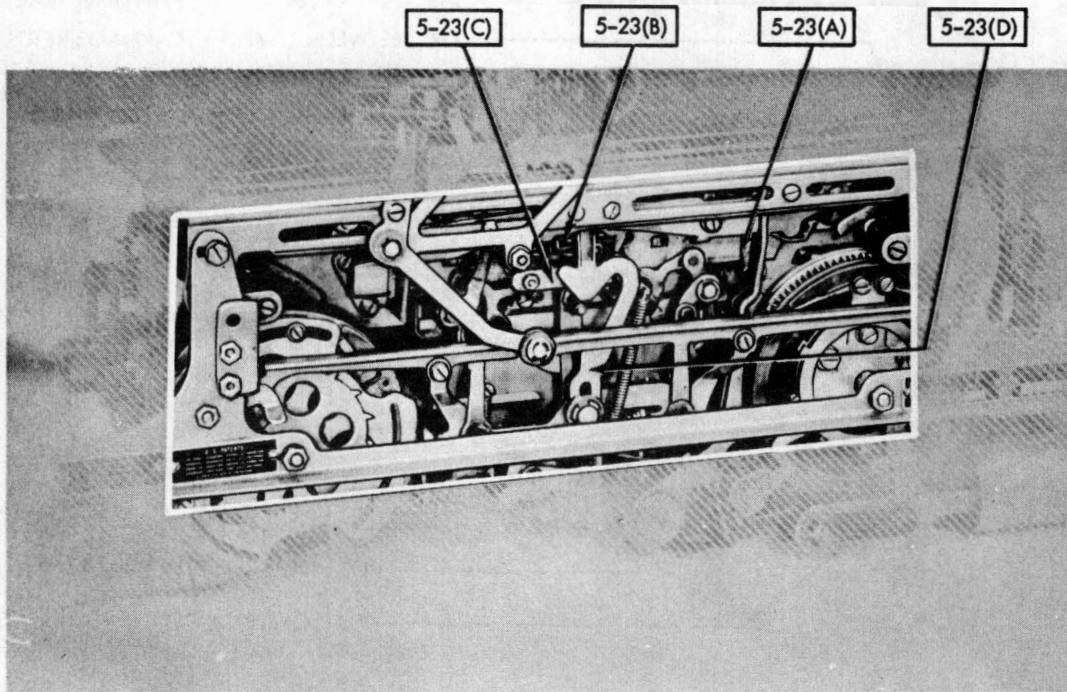


Figure 5-22. Automatic Typewriter Lubrication — Carriage Return Mechanism



(FRONT VIEW)

5-23(A) HORIZONTAL POSITIONING MECHANISM (FRONT VIEW)

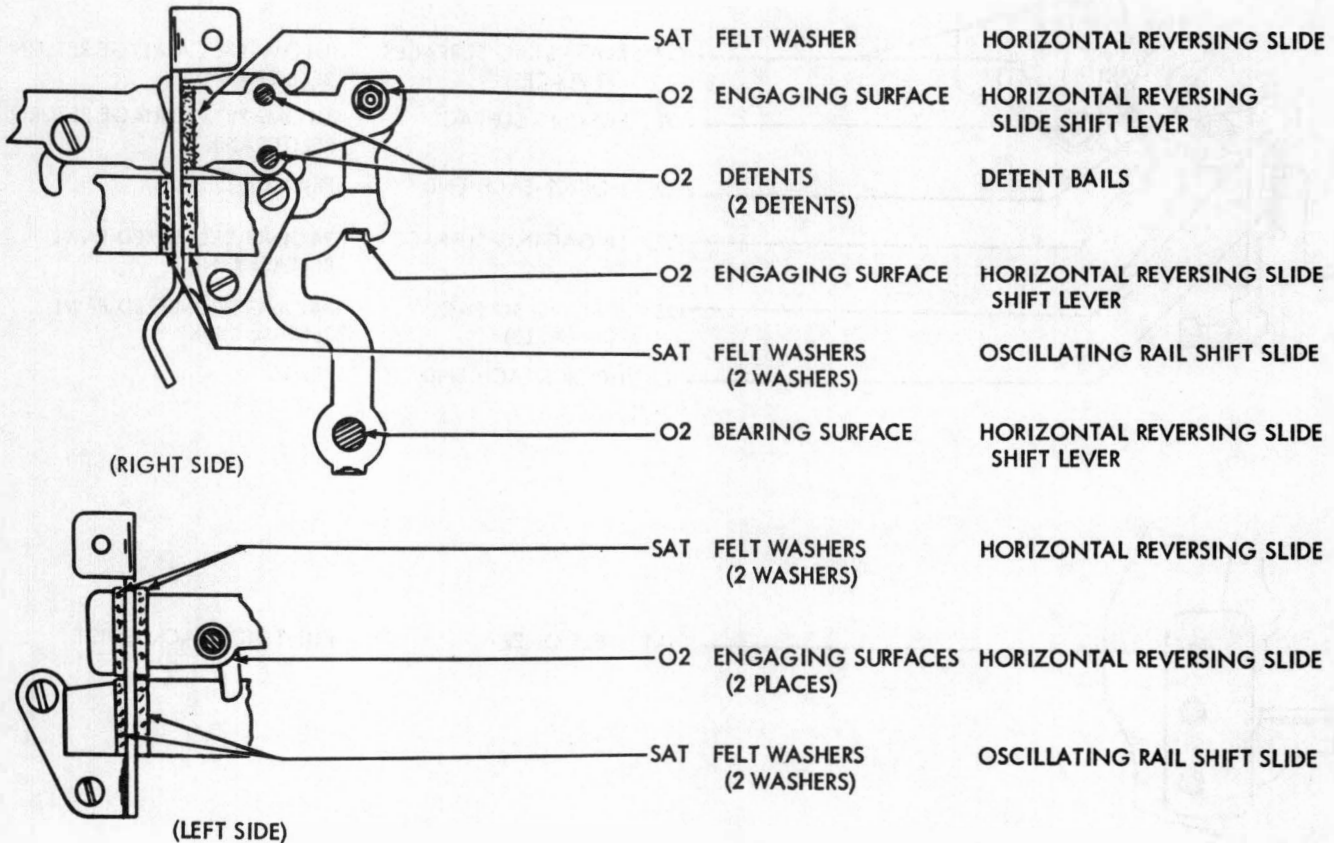
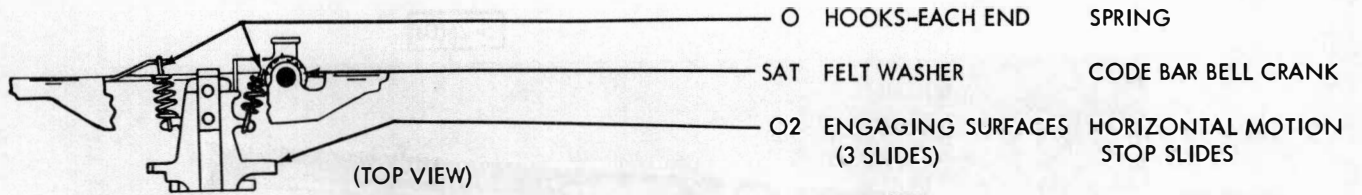
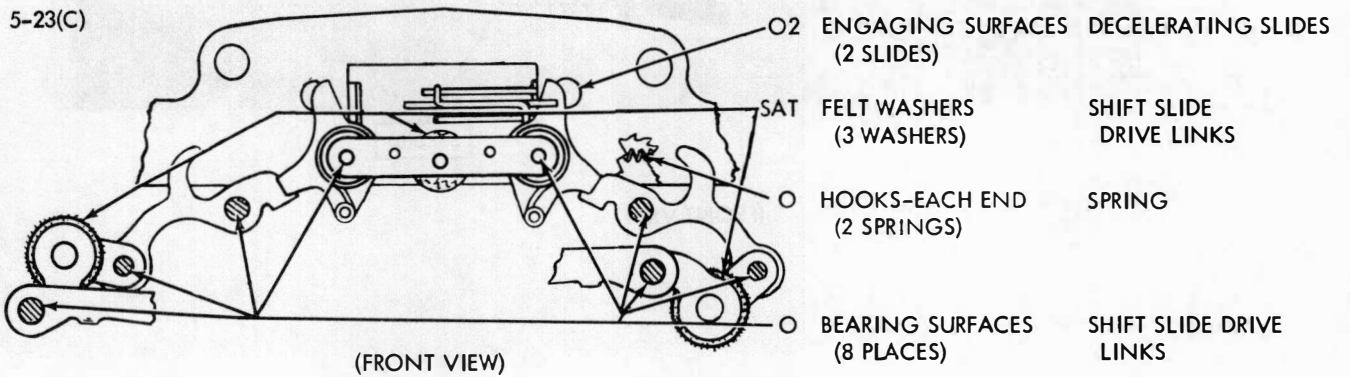


Figure 5-23. Automatic Typewriter Lubrication — Horizontal Positioning Mechanism, Front View

5-23(B) HORIZONTAL POSITIONING MECHANISM (Continued)



5-23(C)



5-23(D) HORIZONTAL POSITIONING MECHANISM (Continued)

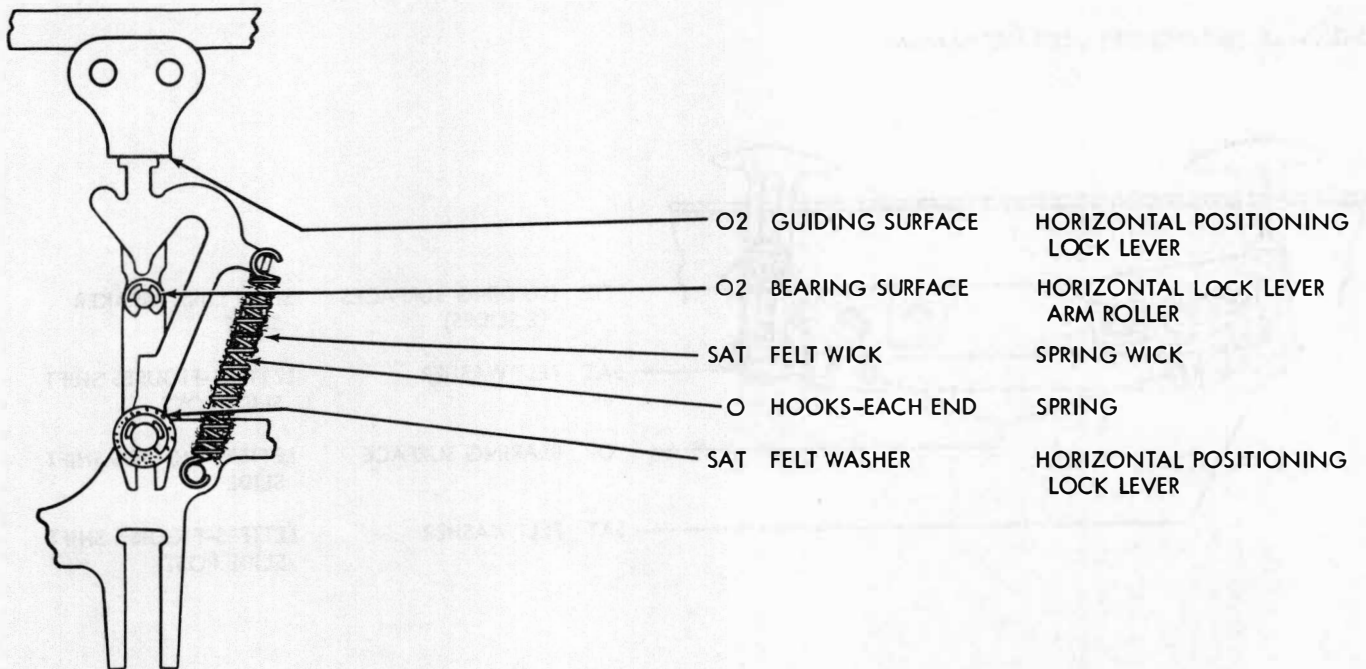
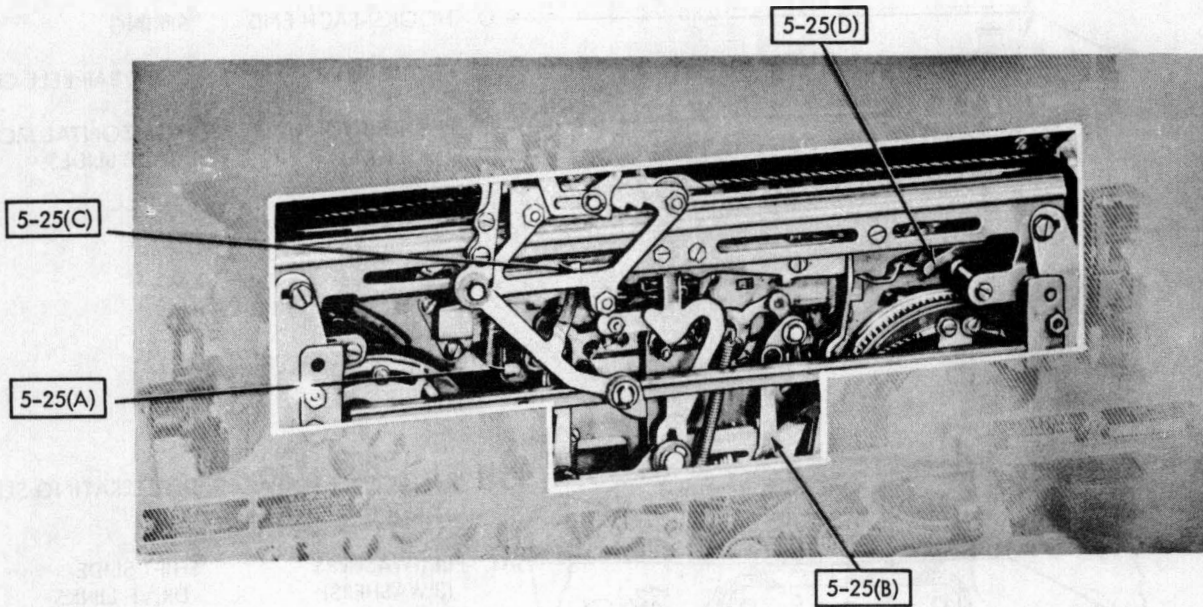


Figure 5-24. Automatic Typewriter Lubrication — Horizontal Positioning Mechanism



(FRONT VIEW)

(REST AUTOMATIC TYPER IN UPRIGHT POSITION)

5-25(A) LETTERS-FIGURES SHIFT MECHANISM

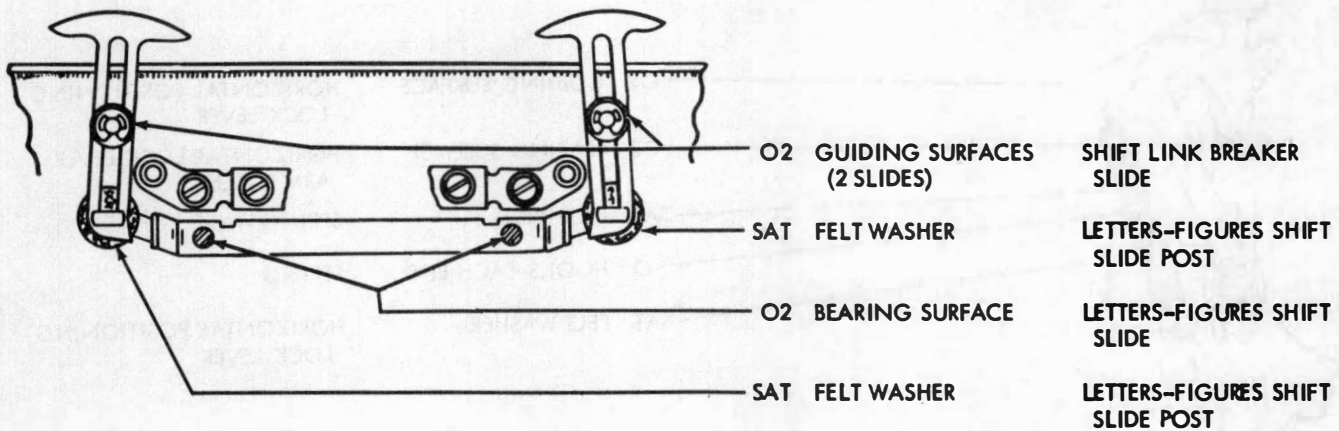
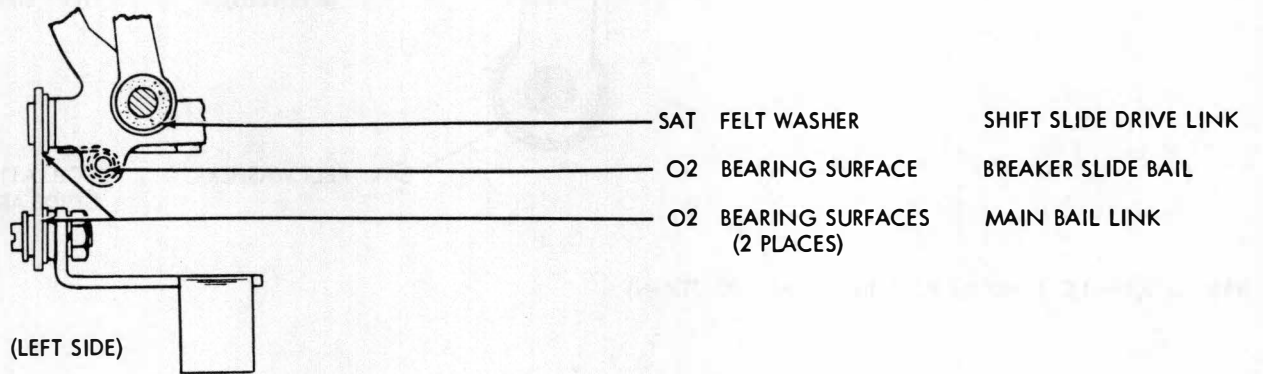
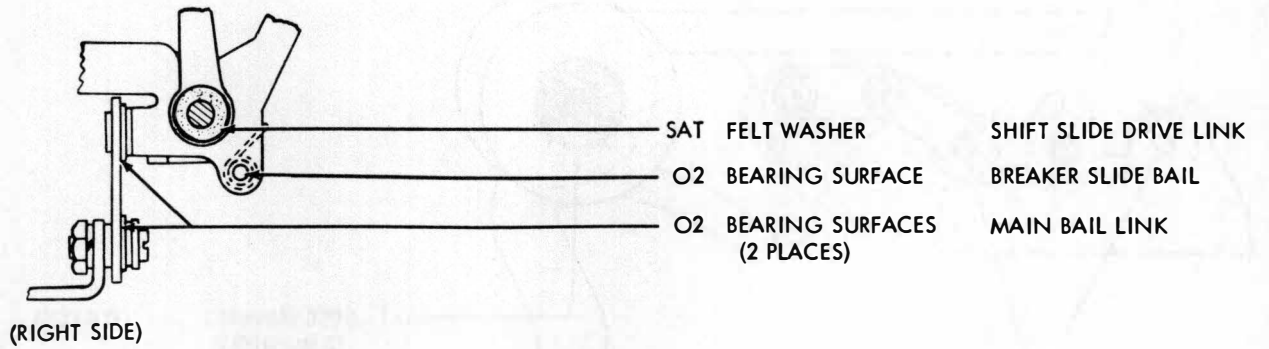


Figure 5-25. Automatic Typewriter Lubrication – Letters-Figures Shift Mechanism

5-25(B) LETTERS FIGURES SHIFT MECHANISM (Continued)



5-25(C) OSCILLATING MECHANISM

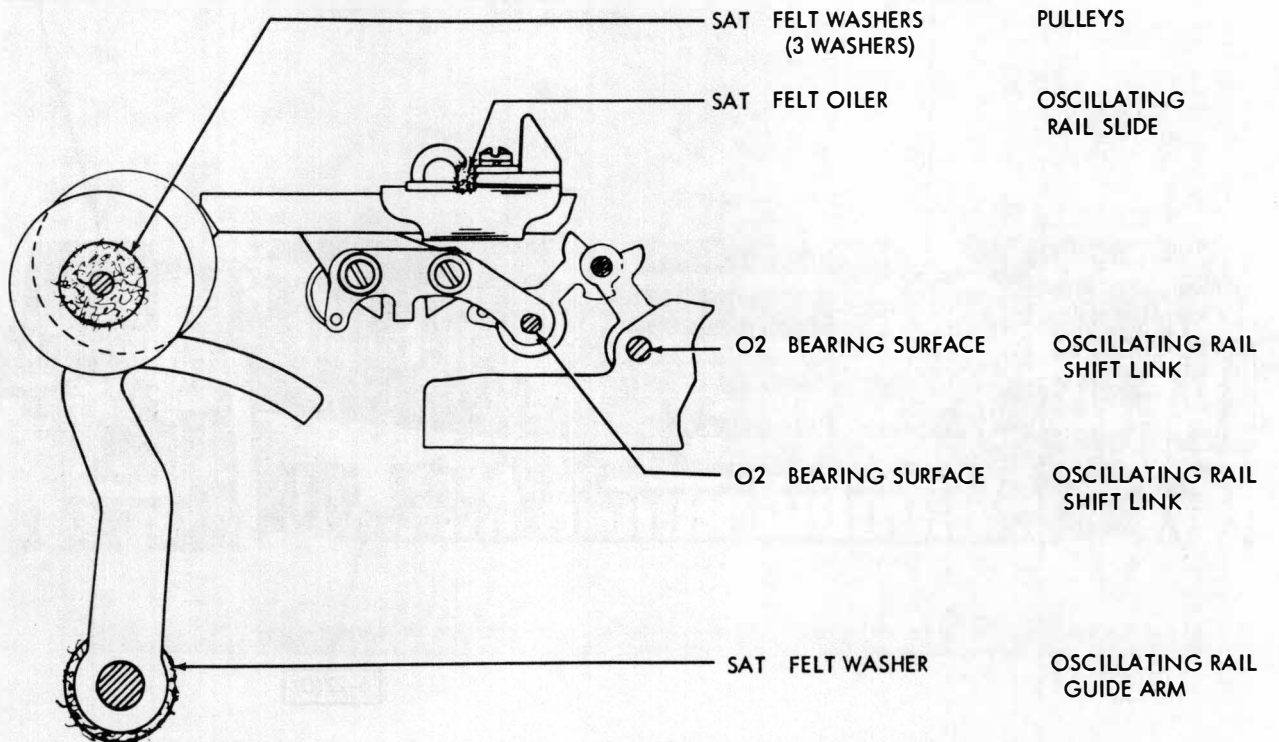
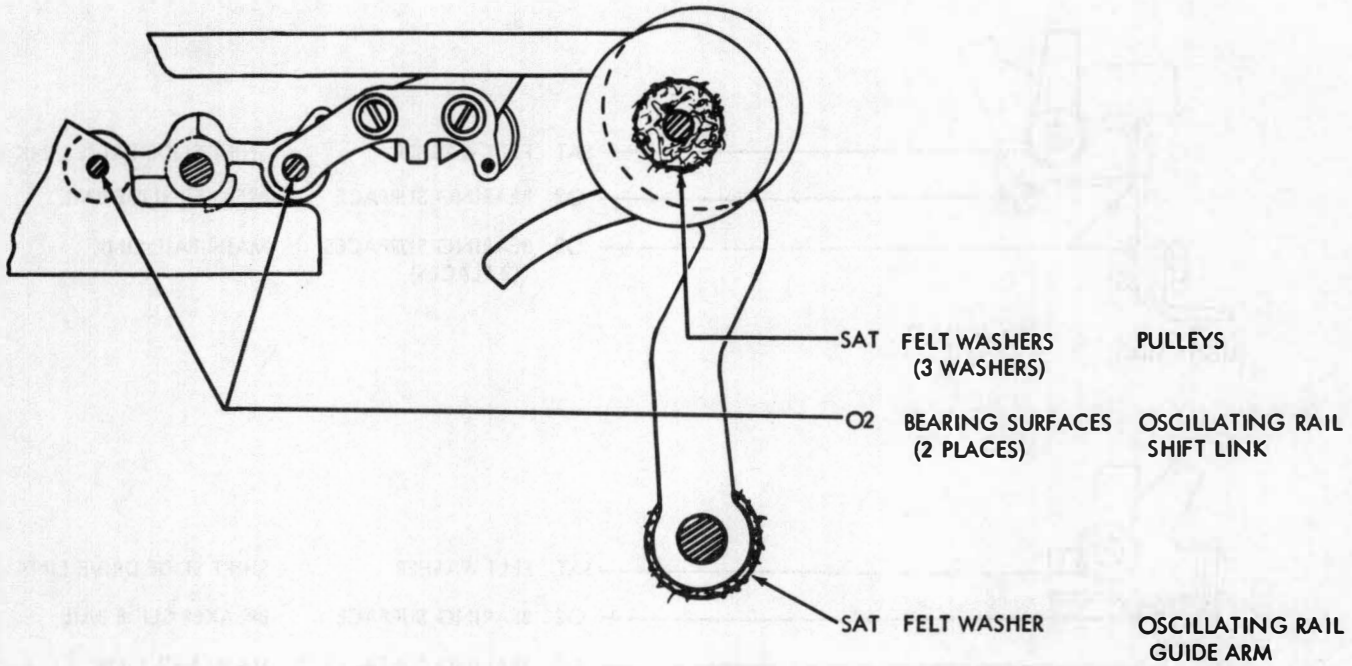
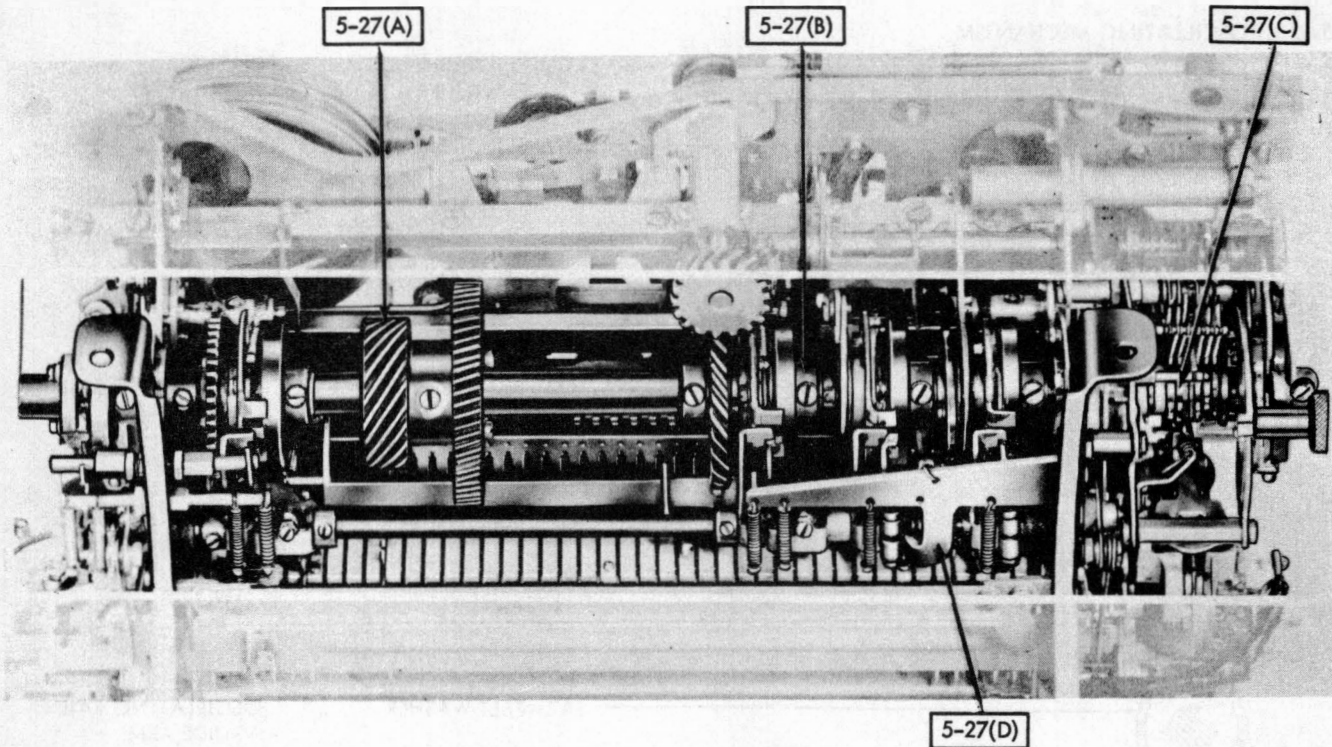


Figure 5-26. Automatic Typewriter Lubrication - Letters-Figures Shift and Oscillating Mechanisms

5-25(D) OSCILLATING MECHANISM (Continued)



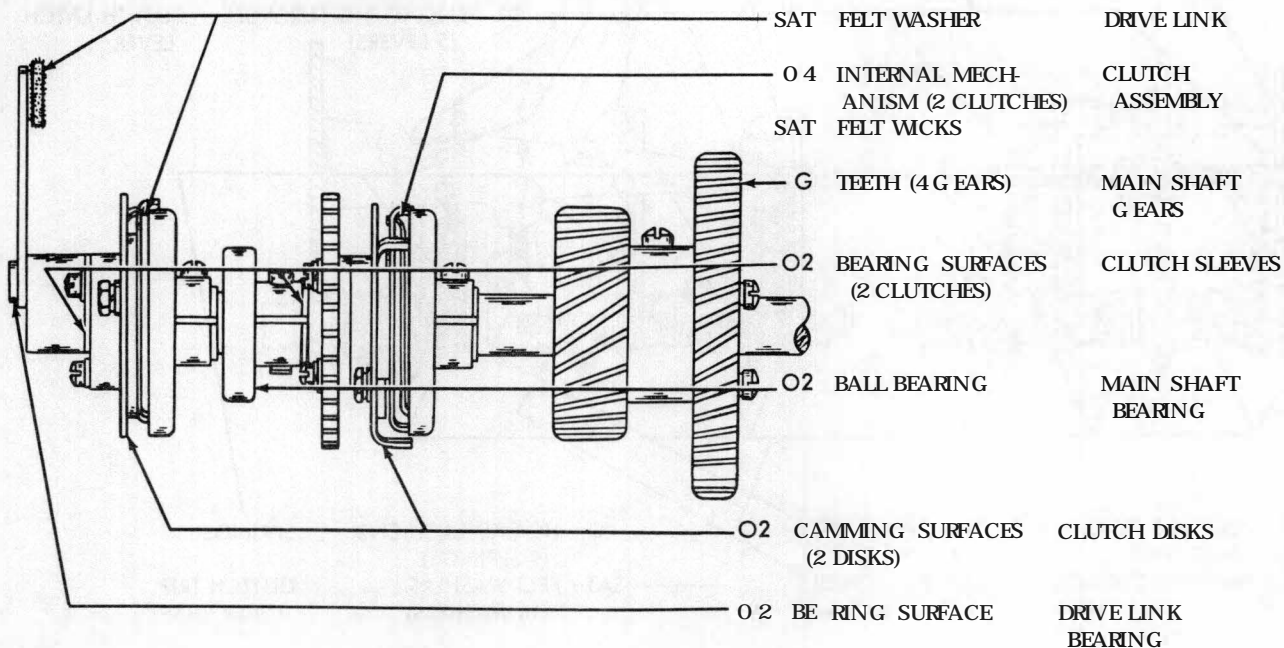
(REST AUTOMATIC TYPER IN BOTTOM UPWARD POSITION)



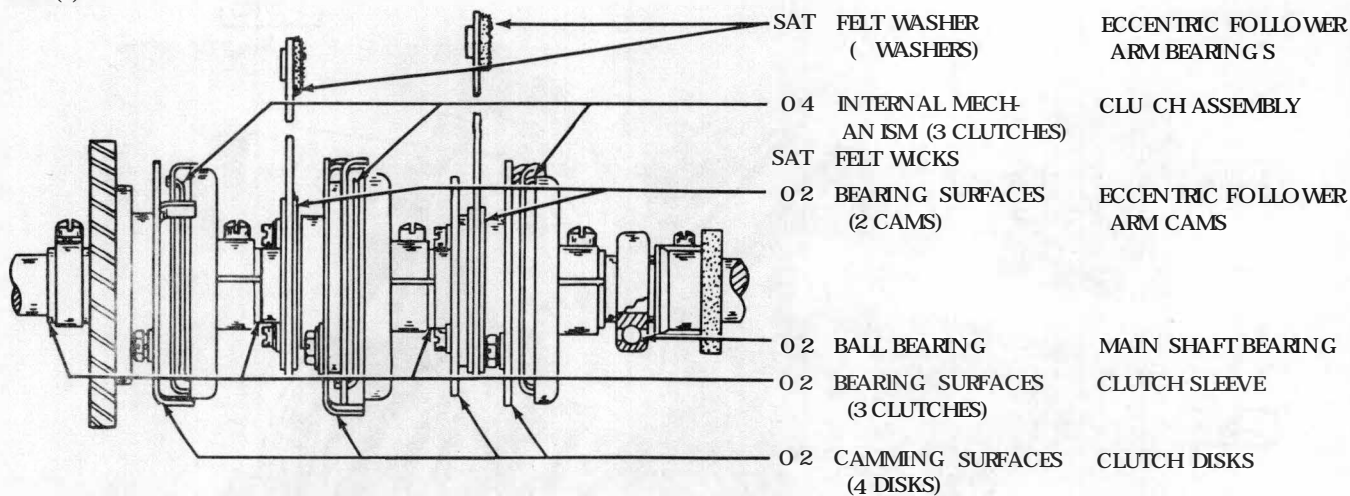
(BOTTOM VIEW)

Figure 5-27. Automatic Typewriter Lubrication — Oscillating Mechanism and Main Shaft

5-27(A) MAIN SHAFT (CLUTCHES, G EARS)



5-27(B)



5-27(C) SELECTOR CAM CLUTCH ASSEMBLY

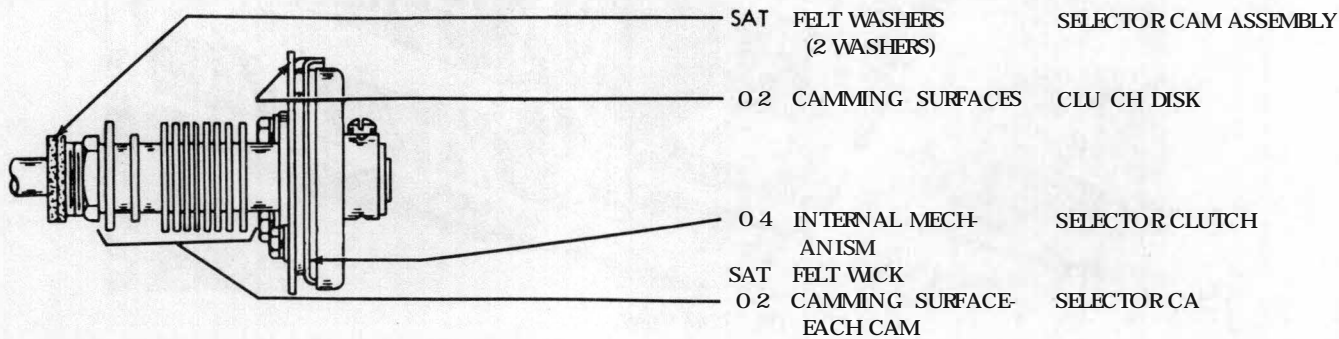
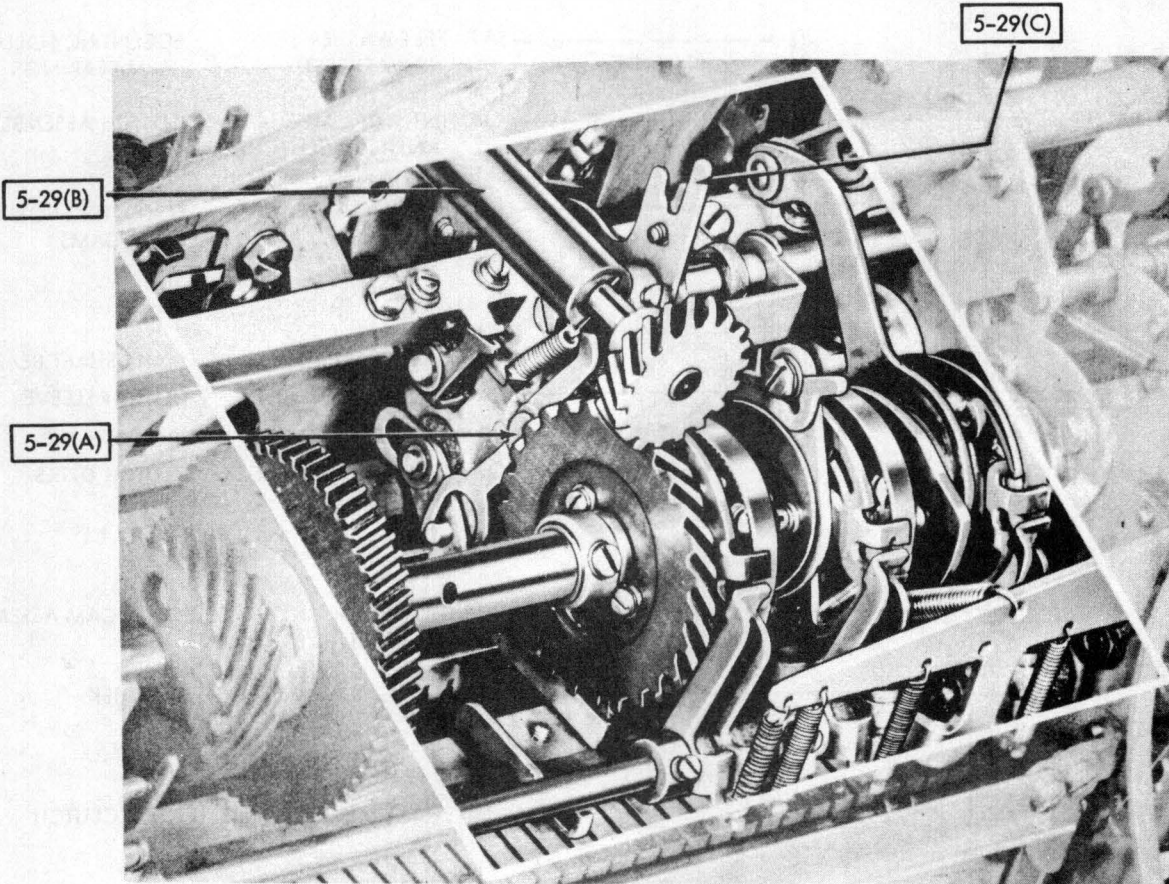
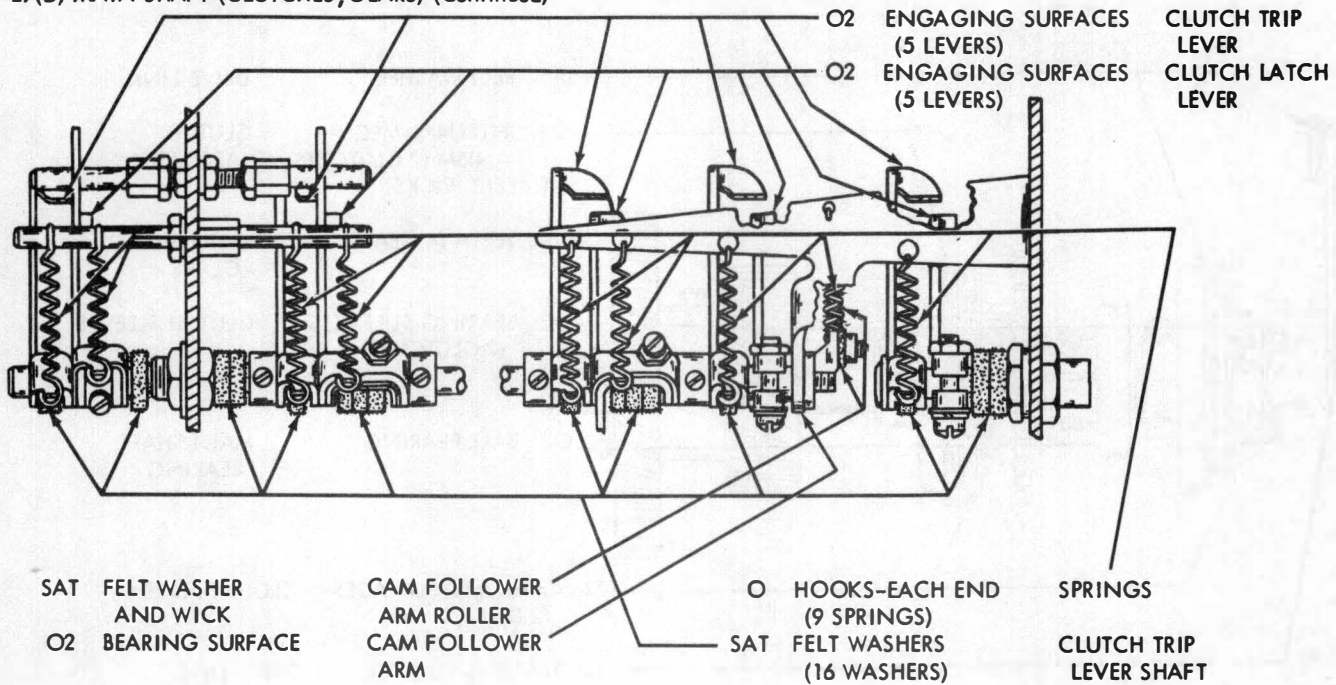


Figure 5-28. Automatic Typewriter Lubrication - Main Shaft, Clutches and Gears



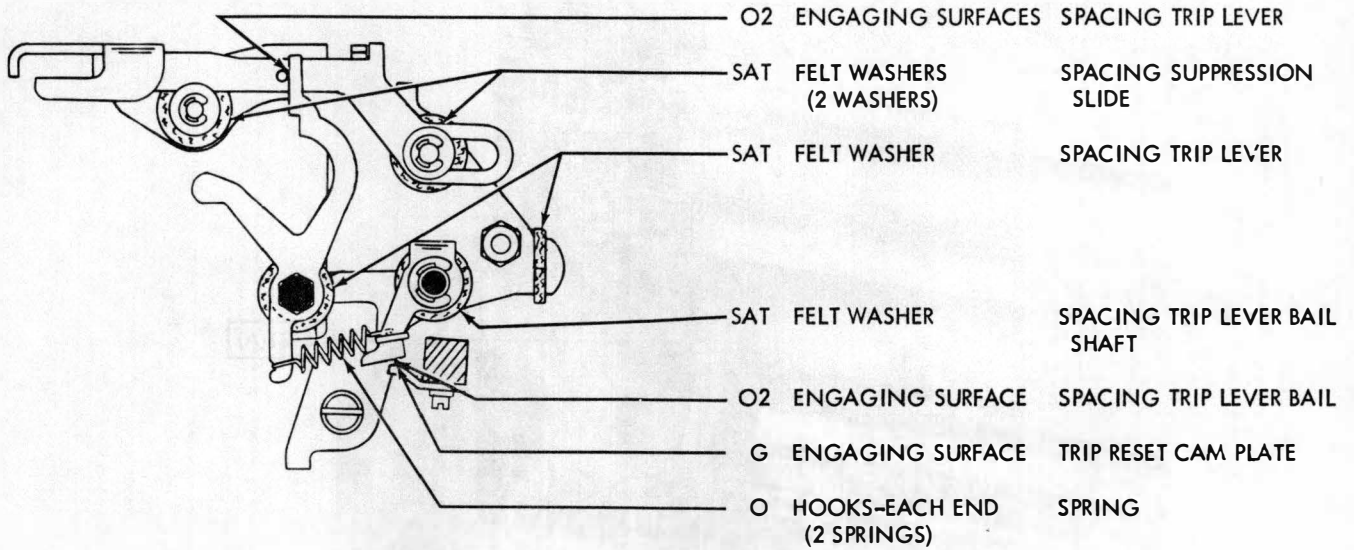
5-27(D) MAIN SHAFT (CLUTCHES, GEARS) (Continued)



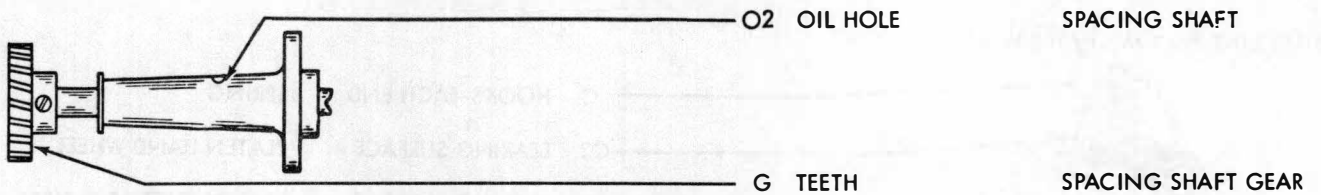
(BOTTOM VIEW)

Figure 5-29. Automatic Typewriter Lubrication - Main Shaft, Clutches and Gears

5-29(A) SPACING MECHANISM



5-29(B)



5-29(C) SPACING MECHANISM (Continued)

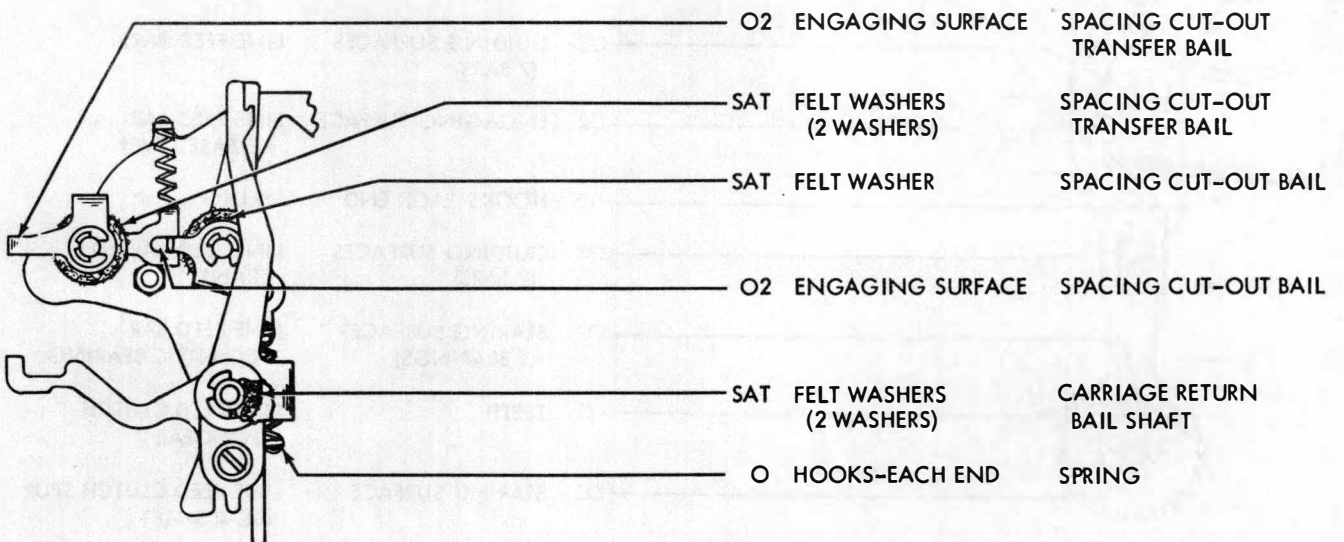
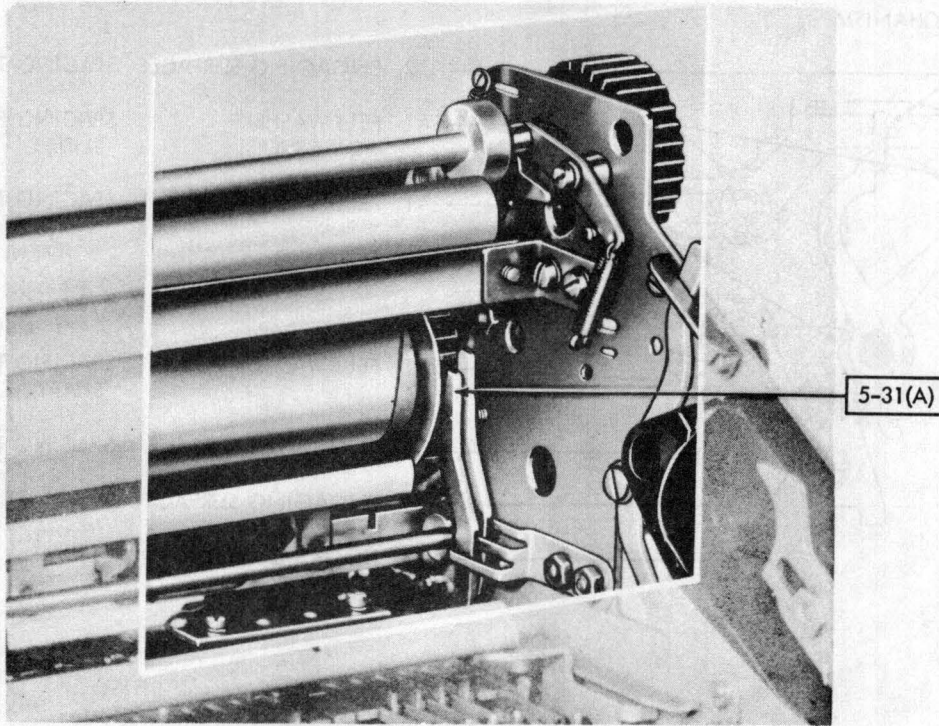


Figure 5-30. Automatic Typewriter Lubrication — Spacing Mechanism



(REST AUTOMATIC TYPER IN UPRIGHT POSITION) (REAR VIEW)

5-31(A) LINE FEED MECHANISM

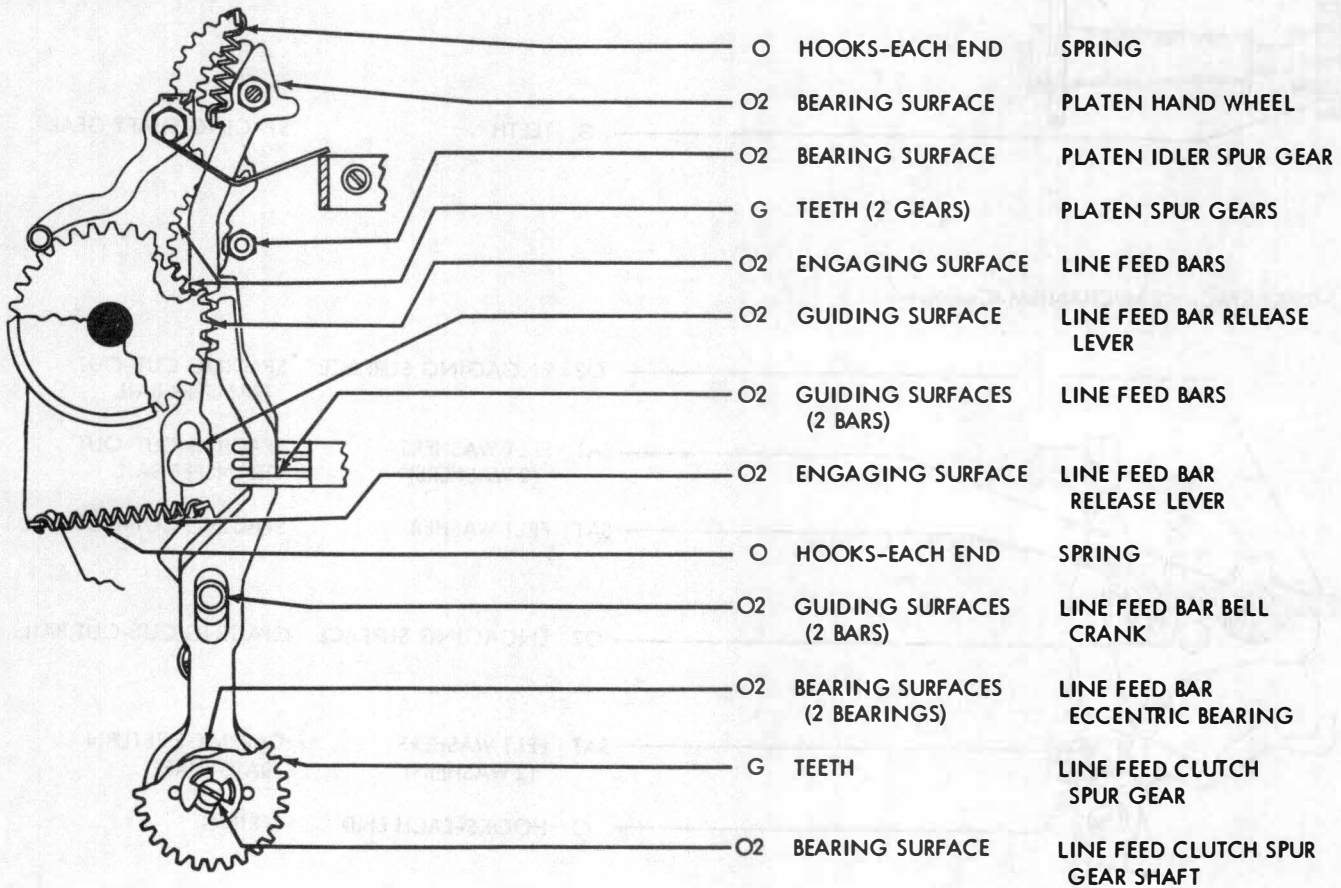
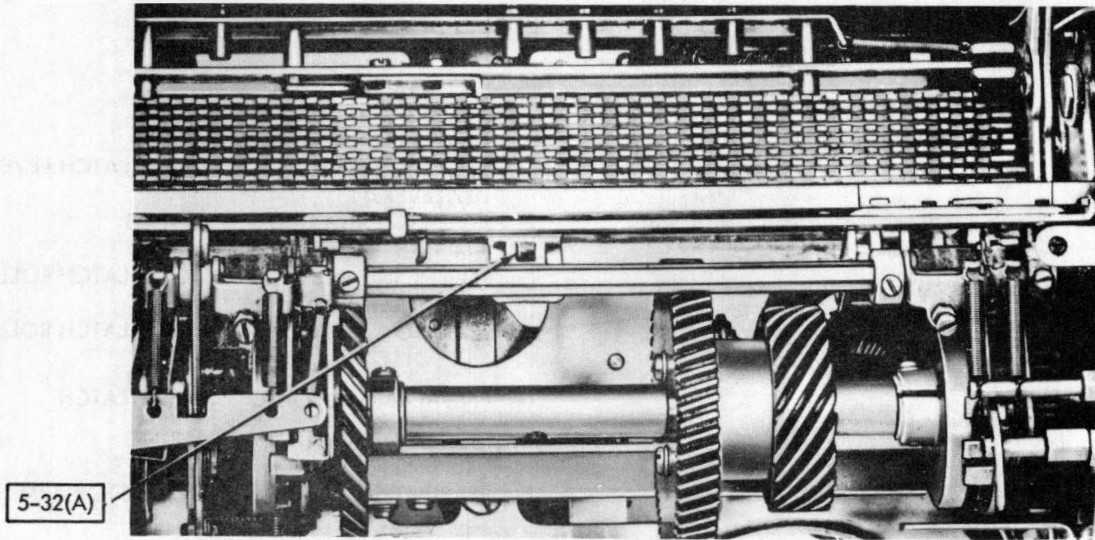
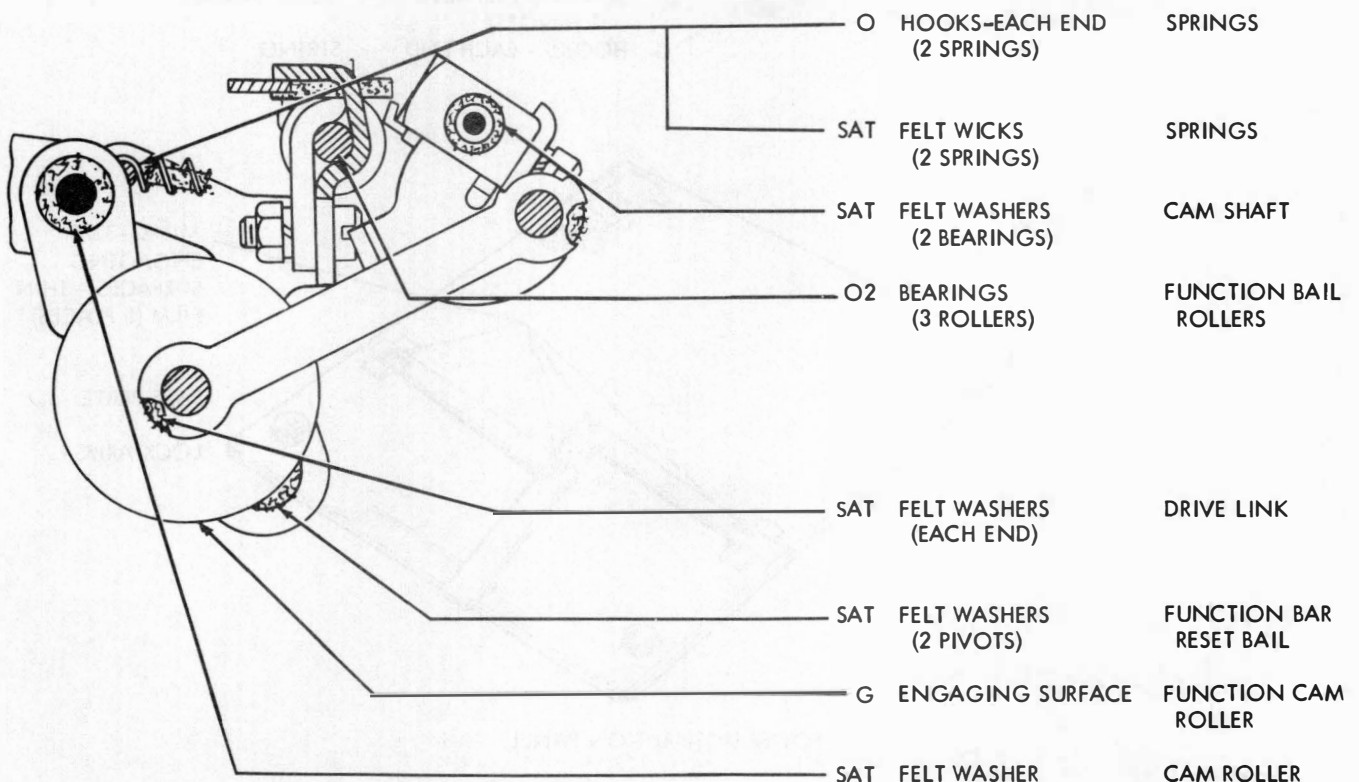


Figure 5-31. Automatic Typewriter Lubrication — Line Feed Mechanism



(LEFT SIDE VIEW)

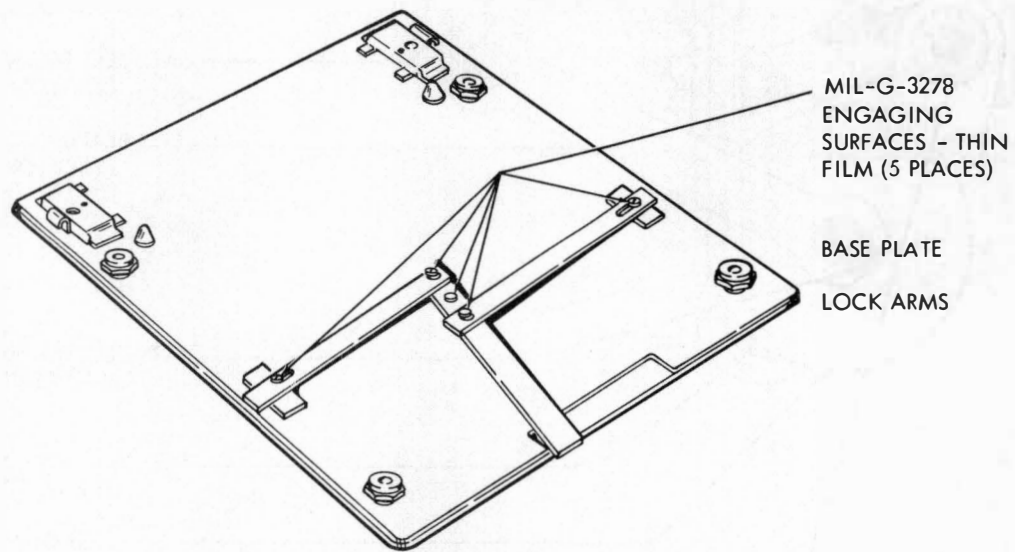
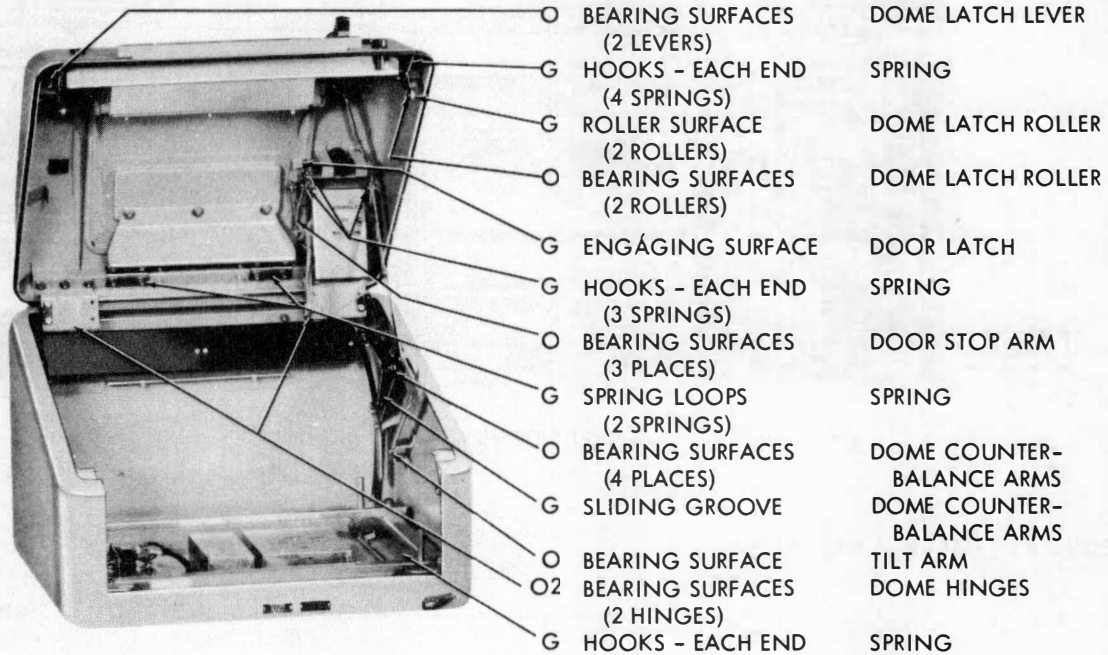
5-32(A) FUNCTION RESET BAIL MECHANISM



(LEFT SIDE VIEW)

Figure 5-32. Automatic Typewriter Lubrication — Function Reset Bail Mechanism

CABINET



POWER DISTRIBUTION PANEL

(ELECTRICAL MOTOR CONTROL)

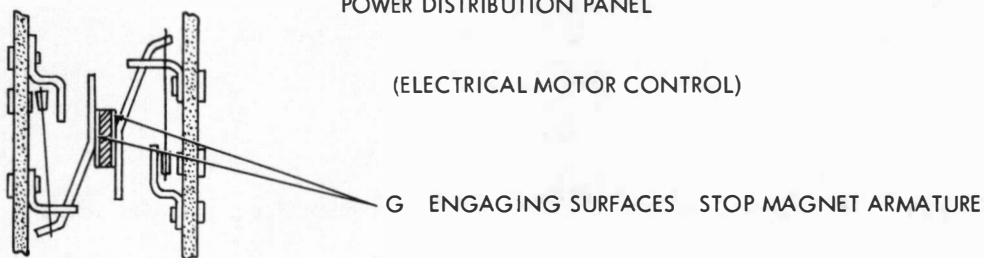


Figure 5-33. Cabinet, Cover and Power Distribution Panel Lubrication

## SECTION 6 SERVICE AND REPAIR

### 6-1. FAILURE REPORT.

Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONIC FAILURE REPORT form DD787. Each pad of the forms includes full instructions for filling out the forms and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include model number and serial number of the equipment (from the equipment identification plate), the type number and serial number of the major unit (from the major unit identification plate), and the type number and reference designation of the particular defective part (from the technical manual). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity. And remember — there are two sides to the failure report —

**YOUR SIDE**

Every FAILURE REPORT is a boost for you:

1. It shows that you are doing your job.
2. It helps make your job easier.
3. It insures available replacements.
4. It gives you a chance to pass your knowledge to every man on the team.

Always keep a supply of failure report forms on board. You can get them from the nearest District Publications and Printing Office.

**BUREAU SIDE**

The Bureau of Ships uses the information to:

1. Evaluate present equipment.
2. Improve future equipment.
3. Order replacements for stock.
4. Prepare field changes.
5. Publish maintenance data.

### 6-2. GENERAL.

a. The information contained in this section is planned so as to provide maintenance personnel with effective means for locating and clearing trouble. It is necessary that the technicians be thoroughly familiar with the theory of operation of the equipment and with the adjusting routine (paragraph 6-4) before attempting any maintenance procedures.

b. Exploded illustrations, figures 6-1 through 6-46, are grouped on a functional basis, insofar as is practicable, and are keyed to the Maintenance Parts List, table 7-2, by their reference designations. See table 7-1 for the component numbering system. Figures are arranged as follows:

Component	Figure
Keyboard MX-1114B/UG, MX-1114C/UG, or MX-1677A/UG, and Base NT-1443/UG	.6-1 to 6-14C
AC Motor PD-17A/UG (Synchronous)	. . . . . 6-15
AC Motor PD-18/U (Governed)	. . . . . 6-16 to 6-17
Cabinet CY-2538/UG	. . . . . 6-18 to 6-21
Cabinet CY-2539/UG	. . . . . 6-18 to 6-21
Cabinet CY-2320/SGA-3	. . . . . 6-18 to 6-21
Cover CW-354/UG	. . . . . 6-21A
Power Distribution Panel SB-408/UG	. 6-21A and 6-23
Power Distribution Panel SB-964/UG	. . 6-22 to 6-23
Automatic Typewriter MX-1115B/UG, MX-2984/UG, or MX-3080/UG	. . . . . 6-24 to 6-36

c. Tools required are listed in table 5-1 but are not supplied as part of the equipment.

### 6-3. REMOVAL AND REPAIR.

**NOTE**

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

a. AUTOMATIC TYPER. (See figures 6-1 and 6-72.) —To remove the Automatic Typewriter from the base proceed as follows: Remove the four H107 screws that secure the Typewriter to the base. Remove the P1102 cable plug from the right side frame. Lift the Typewriter from the base.

(1) TYPE BOX. (See figure 6-39.)

(a) To remove the type box, proceed as follows:

1. Trip the O1905 type box latch toggle (figure 6-39) to the right.

2. Lift the right end of the type box upward to an angle of approximately 45° and pull the type box toward the right to disengage it from the left hand bearing stud.

3. The disassembly of the type box is shown in figure 6-39.

(b) To reinstall the type box, reverse the procedure used in removing it. The type box should be firmly seated on the bearing studs and the point of the latch toggle should be placed in the notch of the type box plate before moving the toggle to its latched position.

(2) PRINTING CARRIAGE. (See figure 6-24.)

(a) To remove the printing carriage, proceed as follows:

1. Loosen the two H1308 screws and H1310 washers (figure 6-24) which clamp the O1315 plate to the wire rope, and disengage the carriage from the wire rope.

2. Move the carriage to the left end of its track and tilt the lower part forward to disengage the rollers from the track.

3. The disassembly of the printing carriage is shown in figure 6-24.

(b) To reinstall the carriage, reverse the procedure used in removing it. Make certain that the O1323 printing arm is correctly re-engaged with the A1348 printing track.

(c) Position the carriage clamp on the wire rope for correct printing position as specified in figure 6-115.

(3) TYPE BOX CARRIAGE. (See figure 6-39.)

(a) To remove the type box carriage, proceed as follows:

1. Move the type box carriage to its extreme right hand position.

2. Hold the O1336 to O1338 and O1351 to O1353 (figure 6-25) code bar shift bars in the marking position and rotate the main shaft so that the type box is in its uppermost position.

3. Remove the H1911 retainer ring (figure 6-39) from the stud in the right hand end of the O1905 type box carriage link and disengage the link from the carriage.

4. Hold the O1907 ribbon guide forward and the O1409 ribbon reverse lever (figure 6-27) back and pull the carriage toward the right to disengage it from the carriage track.

5. The disassembly of the type box carriage is shown in figure 6-39.

(b) To reinstall the carriage, reverse the procedure used in removing it. See figure 6-114 for adjustment.

(4) PALLETS OR PALLET SPRINGS IN TYPE BOX.

(a) Remove the type box from its carriage (see paragraph 6-3a(1), instructions for removing the type box from its carriage).

(b) Remove both screws and nuts that secure the front plate to the rear plate assembly. Separate the two plates.

(c) Remove the spring from the pallet by compressing the spring slightly and pulling the formed end out of the slot in the pallet.

**NOTE**

This spring should be discarded once it has been removed from its assembly.

(d) Replace pallet (omit this step if replacing spring only).

(e) Install new pallet spring making sure that the formed end of the spring extends through the slot in the pallet.

(f) Line up the front plate with the rear plate assembly and draw the two plates together until the head of the pallet leaves the rear plate by approximately 1/16 in. This may be accomplished by using two 6-40 screws (at least 11/32 in. long) and nuts in place of the screws and nuts removed in step (b) and tightening them only enough to hold the pallets as specified above. Do not clamp the plates together until all pallets have been moved into their correct position.

(g) Manipulate the pallets until they fall into their respective openings in the front plate and press plates together.

(h) Replace screws and nuts used in step (f) with screws and nuts removed in step (b).

(5) FRONT PLATE. (See figures 6-32, 6-33, and 6-34.)

(a) To remove the front plate, proceed as follows:

1. Remove the Automatic Typewriter from the Keyboard or Base.

2. Remove the H1911 retainer ring from the O1905 type box carriage link right hand stud and disengage the link from the carriage. See instructions for removing the link retainer in paragraph 3a(3).

3. Remove the two H2009 screws, figure 6-40, which secure the A1349 main bail drive bracket (figure 6-32) to the O2017 rocker shaft.

4. Remove the O1669 spacing shaft gear.

5. Remove the four H1640 screws which secure the front plate assembly to the typer side frames.

6. Pull the front plate assembly forward to disengage it from its connecting parts in the Typer.

7. The disassembly of the front plate is shown in figures 6-32 to 6-34.

(b) To reinstall the front plate assembly, reverse the procedure used in removing it. Make certain that the O1661 and O1659 code bar bell cranks (figure 6-33), the O1650 letters-figures shift slide, the O1664 reversing slide shift lever (figure 6-33), the O1617 automatic C.R.-L.F. bell crank, and the O2118 carriage return lever extension are properly engaged with their mating parts before tightening the front plate mounting screws. Replace the O1669 spacing shaft gear. See figure 6-96 for adjustment on phasing the spacing gears.

(6) FUNCTION BOX. (See figure 6-28.)

(a) To remove the function box, proceed as follows:

1. Remove the automatic typer from the keyboard or base.

2. Remove the O2067 rear tie bar (figure 6-42) from the automatic typer side frames.

3. -6. Paragraphs deleted.

7. Remove the H1440 and H1442 screws which secure the function box assembly in the automatic typer (figure 6-28).

7A. Remove the H1445 screw and H1444 washer from the O1480 cam shaft drive arm, and slide the drive arm to the left, out of engagement with the O1821 stripper blade drive arm.

8. Lift the function box assembly upward to disengage it from its locating brackets, and pull toward the rear to disengage the O1439 letters-figures code bar fork from the code bars. Remove the switch assembly S1401 and/or S1402 and S1403 and the cable clamp from the function box. Remove the function box.

9. Disassembly of the function box is shown in figure 6-28. (Replace the switch assembly and cable clamp before reinstalling the function box.)

9A. To replace the contact arm spring in the function box switch assembly, proceed as follows:

a. Remove the two H1413 screws and H1414 and H1415 washers and nuts that hold the E1301 or E1405 contact plate to the E1301 or E1406 block.

b. Carefully unsolder the wire from the E1304 contact arm spring. (It is not necessary to unsolder the contact arm spring wire from switches having the E1407 contact spring.)

c. Remove the contact plate assembly from the contact block.

d. Remove the E1302 contact arm(s) from the contact plate assembly.

e. Slip the E1304 contact arm spring from the contact plate on switches of earlier design. On later design, slip the E1407 contact arm spring out of engagement with the center lug of the section being replaced.

f. Place the new spring in position on the contact plate.

g. Before mounting the contact plate on the block, make sure the end of the spring rests on top of the formed-over portion of the contact clip. There should be some clearance between the low end of the spring (front) and the upper edge of the contact arm to avoid interference with the normal movement of the contact arm.

h. Replace the contact plate assembly, with the contact arms removed, into the contact block. Mount the contact block in the required location with two H1413 screws friction tight.

i. Carefully resolder any leads that may have been removed, being careful to avoid overheating.

j. Insert the pointed end of contact arm, notch downward, between bent up end of the spring and formed-over portion of contact clip. Push the arm into its operating position in the contact block.

k. Before tightening the contact plate screws check adjustment. See figure 6-131 for requirements.

(b) To reinstall the function box assembly, push it forward in its guide rails to within 1/8 inch of its final position. Then, manually disengage the function pawls from their function bars, and push the function box assembly forward and downward until it is latched in place on its locating brackets.

(7) FUNCTION BAR. (See figure 6-28.)

(a) To remove a function bar, proceed as follows:

1. Remove the function box from the automatic typer. See paragraph 6-3a(6).

2. Unhook the O1436 function bar spring.

3. Hold the function bar toward the rear of the function box and disengage its function pawl from the function bar.

4. Pull the function bar toward the front to remove it from the function box.

5. Disassembly of the function box is shown in figure 6-28.

(b) To replace the function bar, reverse the procedure used in removing it.

(8) CODE BARS. (See figure 6-25.)

(a) To remove the code bar assembly, proceed as follows:

1. Remove the automatic typer from the keyboard or base.

2. Remove the function box assembly. See paragraph 6-3a(6).

3. Remove the front plate assembly. See paragraph 6-3a(5).

4. Remove the H1344, H1345, H1353, and H1354 screws and washers (figures 6-25) which secure the code bar assembly to the side frame.

5. Remove O1357 code bar shift bar retainer plate from A1307 right hand code bar casting.

6. Remove the O1336 to O1338, O1351 and O1353 code bar shift bars from the code bars and pull the code bar assembly forward and to the left.

7. Disassembly of the code bars is shown in figure 6-25.

(b) To install the code bar assembly, reverse the procedure used in removing it, except do not tighten the mounting screws. Loosen the two H1337



code bar assembly tie bar (O1340) screws and hold the code bar castings back and downward firmly against their locating surfaces on the side frame and tighten the four mounting screws. Tighten the two tie bar screws.

(9) MAIN SHAFT. (See figures 6-37 and 6-38.)

(a) To remove the main shaft, proceed as follows:

1. Remove the Automatic Typer from the Keyboard or Base.

2. Remove the selector cam-clutch assembly. See paragraph 6-3a(13).

3. Set the Automatic Typer upside down.

4. Return the carriage to its left hand position.

5. Remove the H1653 screw (figure 6-33) which secures the O1668 spacing shaft in the O1626 spacing pawl hub.

6. Remove the spacing shaft with gear.

7. Remove the H1846 screw (figure 6-37) which secures the O1819 collar and the H1845 clamp from the right end of main shaft. Remove the O1818 main shaft right hand bearing retainer plate.

8. Remove the O1882 retainer plate (figure 6-38) at the O1881 clutch bearing and remove the O1879 link.

9. Remove the two H1873 screws from the H1872 main shaft left hand bearing clamp.

10. Unhook the O1775, O1772, O1766, O1763, O1779, O1743, O1748, O1751, O1755, O1732 and O1738 springs (figure 6-36) from the trip levers and latch levers associated with all clutches. Position the code bar clutch so that the low part of the clutch cam clears the spring arm on the cam follower.

11. Move the main shaft assembly toward the left to disengage the code bar clutch and function clutch links from their connecting pins.

12. Lift the left end of the shaft assembly out of the side frame and position the shaft so that the function clutch link passes the suppression assembly bracket and remove the shaft assembly from the Automatic Typer.

13. When assembling the clutches which have cams and disks marked "O" for identification, the marked side of the parts should face away from the clutch side of the assembly. The function and code bar clutches should have their driving links assembled so that the larger end of the hub faces away from the clutch side of the assembly.

14. Disassembly of the main shaft and clutches is shown in figures 6-37 and 6-38.

(b) To reinstall the shaft assembly, reverse the procedure used in removing it.

(c) To phase the spacing gears and the line feed gears, see figures 6-96 and 6-97, respectively.

(10) UPPER DRAW WIRE ROPE. (See figure 6-35.)

(a) To remove the upper draw wire rope, proceed as follows:

1. Return the carriage to the left hand position.

2. Loosen the H1756 nut on the front end of the H1742 springs drum bearing post (figure 6-35). Operate the O1675 ratchet escapement lever (figure 6-34) to unwind the O1719 carriage return spring (figure 6-35).

3. Remove the W1307 wire rope from the O1315 clamp plate on the printing carriage (figure 6-24), and the O1705 clamp on the O1697 oscillating rail slide (figure 6-34).

4. Loosen the H1747 clamp screw (figure 6-35) which secures the wire rope to the O1715 spring drum, and remove the wire rope from the drum.

5. Remove the H1770 screw in the spacing drum which secures the ends of the wire rope, and remove the rope from the drum.

6. Disassembly of the wire rope, spring drum and spacing drum is shown in figure 6-35.

(b) To replace the upper draw wire rope, reverse the procedure used in removing it.

(11) LOWER DRAW WIRE ROPE. (See figure 6-35.)

(a) To remove the lower draw wire rope, proceed as follows:

1. Remove the H1765 screw which secures the W1306 lower draw wire rope to the O1772 spacing drum, and remove the end of the rope from the drum.

2. Loosen the H1752 screws which secure the O1720 margin indicator cam disk on the spring drum and position the disk to expose the wire rope mounting screw.

3. Remove the H1749 lower draw wire rope screw and remove the W1306 rope from the spring drum.

4. Loosen the two H1697 screws (figure 6-34) in the H1706 bearing studs which mount the O1677 printing carriage pulleys and move the studs toward the center of the Automatic Typer.

5. Disassembly of the lower draw wire rope is shown in figure 6-35.

(b) To replace the wire rope, reverse the procedure used in removing it. Make certain that each rope is in its correct track around the drums.

(c) Adjust the position of the type box, the printing carriage, and the wire rope tension as specified in the figures 6-112, 6-114 and 6-108.

(12) PLATEN. (See figure 6-41.)

(a) To remove the platen, proceed as follows:

1. Remove the O2033 line feed spur gear.
2. Remove the O2050 and O2051 platen bearing retainers.
3. Remove the O2129 paper finger shaft (figure 6-44).
4. Hold off the O2156 detent (figure 6-46) and lift the platen out of the side frame.
5. Disassembly of the platen is shown in figure 6-41.

(b) To replace the platen, reverse the procedure used in removing it. When replacing each platen bearing retainer, put its upper screw in first. Leave the screw slightly loose. Press the lower end of the retainer downward and hook it into the elongated hole in the side frame. Replace the lower screw. Tighten both screws.

(13) SELECTOR CAM-CLUTCH. (See figures 6-30 and 6-37.)

(a) To remove the selector cam-clutch, proceed as follows:

1. Lift the O1498 push lever reset bail cam follower (figure 6-30) from its cam and latch it in its raised position on the A1335 push lever guide by pushing it toward the left. Lift the selector levers and the marking lock lever from their cams by moving the marking lock lever forward until the armature drops behind it.

2. Remove the H1854 screw (figure 6-37) which mounts the O1839 selector clutch drum and position the cam clutch so that the stop lug on the O1827 disk is in the uppermost position.

3. Hold the O1508 start lever (figure 6-30) and the O1509 spacing lock lever away from their cams with the thumb and forefinger of the left hand. Withdraw the cam clutch assembly by pulling forward while rocking it back and forth slightly.

4. Disassembly of the selector cam clutch is shown in figure 6-37.

(b) To replace the cam-clutch assembly, reverse the procedure used in removing it except as follows:

1. As the cam-clutch approaches its fully installed position, move the trip shaft lever and the cam clutch latch lever so that they ride on their respective cams.

2. Restore the push lever reset bail and the armature to their operating position.

(14) SELECTOR MECHANISM. (See figures 6-30 and 6-37.)

(a) To remove the selector mechanism proceed as follows:

1. In order to remove the selector mechanism from the Automatic Typewriter the selector cam-clutch assembly must be removed. See paragraph 6-3a(13).

2. Remove the O1561 felt wick (figure 6-31). Remove the H1571 screw which secures the selector mechanism to the A1346 bracket on the code bar positioning mechanism.

3. Remove from the selector mechanism the O1553 spring which connects with the O1552 common transfer lever on the code bar positioning mechanism.

4. Remove the remaining three H1515 selector mounting screws (figure 6-30) and lift the selector from the main shaft bearing housing.

5. Disassembly of the selector mechanism is shown in figure 6-30.

(b) To replace the selector mechanism, reverse the procedure used in removing it.

(c) To readjust the selector mechanism see the adjusting figures 6-77, 6-79 and 6-85 to 6-87.

(15) CODE BAR POSITIONING MECHANISM. (See figure 6-25.)

(a) To remove the code bar positioning mechanism, proceed as follows:

1. Remove from the selector the O1553 spring (figure 6-31) attached to the common transfer lever and restore any operating push levers to the spacing position by raising the O1498 reset bail (figure 6-30).

2. Loosen the H1552 clamp screw (figure 6-31) on the O1544 shift lever drive arm, and remove the two screws which mount the mechanism — the H1567 to the side frame and the H1571 to the A1338 selector plate.

3. Manipulate the O1547 to O1552 transfer levers (figure 6-31) and O1336 to O1338 and O1351 to O1353 code bar shift bars (figure 6-25) while gently twisting the mechanism so as to slide the mechanism off the code bar shift bars.

4. Disassembly of the code bar positioning mechanism is shown in figure 6-25.

(b) To replace the mechanism on the automatic typer, reverse the procedure used in removing it, except for the following: With the main shaft in the stop position, push the code bar shift bars to the marking position (left front view). Manipulate the code bar shift bars and transfer levers so that the shift bars line up with their respective slots in the A1344 bracket (figure 6-31), and slide the shift bars through the slots, one at a time (leave the bottom slot vacant).

(16) SELECTOR MAGNET ASSEMBLY. (See figure 6-29.)

(a) To remove the selector magnet assembly proceed as follows:

1. Remove the two H1492 screws (figure 6-30) and H1491 nut which mount the range finder to the selector.
2. Remove the W1302 cable (figure 6-29) from the H1458 coil terminal screws.
3. Remove the two H1484 magnet assembly mounting screws and lift the assembly out.
4. Disassembly of the selector magnet assembly is shown in figure 6-29.

(b) To replace the magnet assembly, reverse the procedure used in removing it.

b. KEYBOARD OR BASE. (See figure 6-1.) — Remove the four H101 screws at each corner of the keyboard or base that secure the keyboard or base to the cradle. Remove the P1101 plug from its receptacle J101 at the left rear corner of the keyboard or base. Lift the keyboard or Base from the cradle.

(1) SIGNAL GENERATOR. (See figure 6-11.)

(a) To remove the signal generator from the keyboard, proceed as follows:

1. Remove the two H420 screws (figure 6-14) located to the right and left of the contact box, and raise the A138 contact box.

**NOTE**

Do not unsolder connections.

2. Remove the four H351 mounting screws (figure 6-11) which mount the signal generator casting A132, two at the front end of the casting, and two at the rear.

3. Lift the signal generator upward from the keyboard.

4. Disassembly of the signal generator is shown in figures 6-11 through 6-14.

(b) To replace the signal generator, reverse the procedure used in removing it.

(1)A. KEYBOARDS MX-1114C/UG OR MX-1677A/UG SIGNAL GENERATOR. (See figures 6-11A, 6-12A, 6-14A, 6-14B, and 6-14C.)

a. To remove the signal generator from the keyboard proceed as follows:

1. Remove the A5400 contact box cover, and disconnect the signal line leads from the E5404 contact terminals.
2. Remove the two H5369 screws and H5370 lock washers at the front of the A5351 signal generator frame, and the H5371 screw and H5372 washer at the right rear of the frame.
3. Lift the signal generator carefully, while holding the universal bail back so that the non-repeat lever clears and its spring will not be excessively stretched.
4. Disassembly of the signal generator is as shown in figures 6-14C, 6-14B, 6-14A, 6-12A, and 6-11A.

**CAUTION**

If the non-repeat lever is pulled down approximately 90 degrees from its normal position, its spring might be stressed beyond the limits of its elasticity, possibly resulting in malfunction of the assembly.

b. To replace the signal generator, reverse the procedure used in removing it.

(2) KEYBOARD SELECTOR CAM ASSEMBLY. (See figure 6-12.)

(a) To remove cam assembly from signal generator, proceed as follows:

1. Remove signal generator from keyboard. See paragraph 6-3b(1) above.
2. Disconnect the O311 clutch latch lever spring (figure 6-11).
3. Disconnect the O317 clutch stop lever spring.
4. Disconnect the O372 lever spring (figure 6-13).
5. Remove the H360 front nut of the O347 stationary shaft (figure 6-12).
6. Remove the two H361 screws that hold the O346 rear plate to casting.
7. Remove the shaft assembly by lifting it upward and pulling to the rear simultaneously.

8. Disassembly of the cam assembly is shown in figure 6-12.

(b) To replace the keyboard selector cam assembly, reverse the procedure used in removing it.

(3) KEYBOARD LABEL. (See figure 6-9.)

(a) To remove the labels, proceed as follows:

1. Remove the H294 plastic cover mounting screw and remove the plastic cover.

2. Pick up plastic cover at top edge first.

3. See figure 6-9 for disassembly.

(b) To replace the keyboard label, reverse the procedure used in removing it.

(4) KEYLEVER COVER. (See figure 6-9.)

(a) To remove cover, proceed as follows:

1. Remove the H293 label covers and labels. See paragraph 6-3b(3) above.

2. Remove the four H291 screws located under the labels, two at the extreme right side and two at the extreme left side.

3. Pull keylever cover forward to remove.

4. See figure 6-9 for disassembly.

(b) To replace the keylever cover, reverse the procedure used in removing it.

(5) KEYLEVER. (See figure 6-4.)

(a) To remove keylever, proceed as follows:

1. Use keylever remover tool No. 151383 (included in TE-50-A, not supplied as part of the equipment). Insert the smaller lug of the keylever remover in the slot of the keylever and engage the shoulder of the larger lug on the top of the code lever. Pry upward to unsnap keylever from code lever. The plastic keytop should not be removed from any keylever to change a character.

2. See figure 6-4 for disassembly.

(b) To replace the keylever, place the fork of the keylever over the stud on the code lever. Support the code lever from underneath and press the keylever into position.

(6) SPACE BAR. (See figure 6-9.)

(a) To remove space bar, proceed as follows:

1. Remove the keylever cover. See paragraph 6-3b(4) above.

2. Remove the two H290 pivot shoulder screws on left and right sides of the O294 space bar assembly.

3. See figure 6-9 for disassembly of the space bar.

(b) To replace the space bar, reverse the procedure used in removing it.

(7) KEYLEVER GUIDE PLATE. (See figure 6-9.)

(a) To remove keylever guide plate, proceed as follows:

1. Remove the keylever cover. See paragraph 6-3b(4) above.

2. Remove the six H292 mounting screws on top side of O295 guide plate.

3. See figure 6-9 for disassembly.

(b) To replace the keylever guide plate, reverse the procedure used in removing it.

(8) KEYBOARD LOCKBALL CHANNEL. (See figure 6-9.)

(a) To remove lockball channel proceed as follows:

1. Remove the keylever cover. See paragraph 6-3b(4) above.

2. Remove the two H278 channel mounting screws at the left and right ends.

3. Pull channel forward with caution to avoid dropping the O289 wedges that are located on the code levers. Wedges must be replaced separately when re-assembling.

4. See figure 6-9 for disassembly.

(b) To replace the keyboard lockball channel, reverse the procedure used in removing it.

(8)A. KEYBOARD MX-1677A/UG KEYBOARD LOCK, LOCAL LINE FEED, AND LOCAL REVERSE LINE FEED. (See figure 6-8A.)

(a) To remove the keyboard lock, local line feed, and local reverse line feed mechanism, proceed as follows:

1. Remove the signal generator from the keyboard. (See paragraph 6-3b(1)A.)

2. Remove the H257 and H5249 retaining rings from the O283 and O5242 line feed bails.

3. Remove the two H5044 mounting screws and remove the line feed mechanism attached to the top side of the base.

4. Remove the two H262 mounting screws and remove the line feed mechanism attached to the underside of the base through the hole in the bottom of the base.

5. See figure 6-8A for disassembly.

(b) To replace the keyboard lock, local line feed, and local reverse line feed mechanisms, reverse the procedure used in removing it.

(8)B. KEYBOARD MX-1677A/UG CARRIAGE RETURN AND LOCAL BACK SPACE. (See figure 6-8A.)

(a) To remove the carriage return and local back space mechanism, proceed as follows:

1. Remove the H5239 retaining ring from the O5235 operating bail.

2. Remove the two H5266 mounting screws and remove the portion of the back mechanism located above the base.

3. Unhook the O5234 spring from the O5232 transfer bail adjusting lever.

4. Remove the H5236 retaining ring and remove the O5233 transfer bail.

5. Remove the three H244 screws that secure the A119 bracket to the base.

6. Remove the H5233 screw that secures the O5232 transfer bail adjusting lever to the A5228 adjusting lever bracket.

7. Remove the O5232 transfer bail adjusting lever by disengaging it from its guide stud on the A119 bracket.

8. Remove the carriage return and back space mechanism through the hole in the bottom of the base.

9. See figure 6-8A for disassembly.

(b) To replace the carriage return and local back space mechanism, reverse the procedure used in removing it.

(c) To readjust the transfer bail adjusting lever, see figures 6-71A and 6-71B for requirements.

(9) KEYBOARD SEALING PLATE. (See figure 6-9.)

(a) To remove sealing plate, proceed as follows:

1. Remove the keylever cover. See paragraph 6-3b(4) above.

2. Remove the keylevers. See paragraph 6-3b(5).

3. Disconnect the O293 space bar link at its snap connection.

4. Remove ten mounting screws, two H264 and two H268 at extreme right and left sides and two H264 at bottom edge of the sealing plate.

5. See figure 6-9 for disassembly.

(b) To replace the keyboard sealing plate reverse the procedure used in removing it.

(10) KEYBOARD LOCK-LOCAL FINE FEED MECHANISM. (See figure 6-8.)

(a) To remove keyboard lock-local line feed mechanism proceed as follows:

1. Remove the signal generator from the keyboard. See paragraph 6-3b(1) above.

2. Unhook the O134 code lever bail spring (figure 6-3) from the O138 code lever bail.

3. Loosen the two H179 pilot screws and remove the O138 code lever bail.

4. Remove the H257 retainer (figure 6-8) from the O284 local line feed extension link.

5. Remove the two H262 mounting screws and remove the mechanism through the hole in the bottom of the base.

6. See figure 6-8 for disassembly.

(b) To replace the keyboard lock-local line feed mechanism, reverse procedure used in removing it.

(11) KEYBOARD CODE BAR ASSEMBLY. (See figure 6-3.)

(a) To remove code bar assembly, proceed as follows:

1. Remove the keylever cover. See paragraph 6-3b(4) above.

2. Remove the keylevers. See paragraph 6-3b(5).

3. Disconnect the O293 space bar link (figure 6-9) at its snap connection.

4. Remove the signal generator. See paragraph 6-3b(1).

5. Remove the two H200 and H208 code bar assembly mounting screws (figure 6-3) located on top of base.

6. Remove the two H244 mounting screws (figure 6-7) and remove the A119 local carriage return bracket.

7. Remove the keyboard lock-local line feed mechanism. See paragraph 6-3b(10) above.

8. Remove the H199 nut (figure 6-3) and the O153 code lever bail latch lever with spring. Remove the three H184 screws which mount the O152 non-repeat bell crank plate assembly. Remove the plate assembly. Remove code bar assembly through the opening in top side of the base.

9. The disassembly of the keyboard code bar assembly is shown in figure 6-3.

(b) To replace the keyboard code bar assembly, reverse the procedure used in removing it.

(12) CODE BAR. (See figure 6-3.)

(a) To remove a code bar from the keyboard code bar assembly, proceed as follows:

1. Remove the signal generator from the keyboard. See paragraph 6-3b(1) above.

2. Remove the two H192 mounting screws and remove the A111 non-repeat bracket.

3. Remove the three H184 mounting screws and remove the O152 non-repeat assembly mounting plate.

4. Disconnect the O147 code bar springs.

5. Remove the H216 mounting screw (figure 6-4) and remove the O174 latch from the O145 lock bar (figure 6-3) if the lock bar is to be removed.

6. Loosen the H174 mounting screws for the left and right code bar guides until they are friction tight and lift the O135 and O132 guides to their extreme upward position.

7. Remove code bar by sliding it to the left or right to get one end of the code bar out of its guide.

8. Disassembly of the code bar mechanism is shown in figure 6-3.

(b) To replace a code bar, reverse the procedure used in removing it. When reinstalling the non-repeat bracket, the O150 non-repeat bell crank should be under the O153 code lever bail latch lever, and the O149 non-repeat lever under the O159 code lever bail adjustable extension.

c. MOTOR. (See figure 6-15 or 6-16.) — Remove the four H135 screws (figure 6-1) that secure the A501 or A609 motor base plate (figure 6-15 or 6-16) to the

base. Remove the H113 screws (figure 6-1) that secure the E102 cover and remove the motor leads from terminals 1 and 2 of the TB101 terminal board.

(1) SYNCHRONOUS. — Disassembly of the synchronous motor is shown in figure 6-15.

(2) GOVERNED.

(a) Disassembly of the governed motor is shown in figure 6-16.

(b) In order to prolong the life of governor slip ring brushes, the slip rings are machined to close concentricity requirements after assembly. These slip rings should not be replaced unless facilities for machining operation are available.

(c) After the governor parts are assembled, the governor is carefully balanced to reduce vibration; therefore, when it becomes necessary to replace contacts, only the parts being replaced should be moved.

d. POWER DISTRIBUTION PANEL. (See figure 6-22.) — In order to remove the power distribution panel completely from the cabinet, it will be necessary to remove the wires from the TB701 and TB702 terminal boards. However the panel may be turned bottom side upward for maintenance purposes by removing the two H1148 studs.

e. BASE. (See figure 6-1.) — Remove the four H101 screws at each corner of the base that secure the base to the cradle. Remove the P1101 plug from its receptacle J101 at the left rear corner of the base. Lift the base from the cradle.

(1) BASE LABEL. (See figure 6-10.)

(a) To remove the labels, proceed as follows:

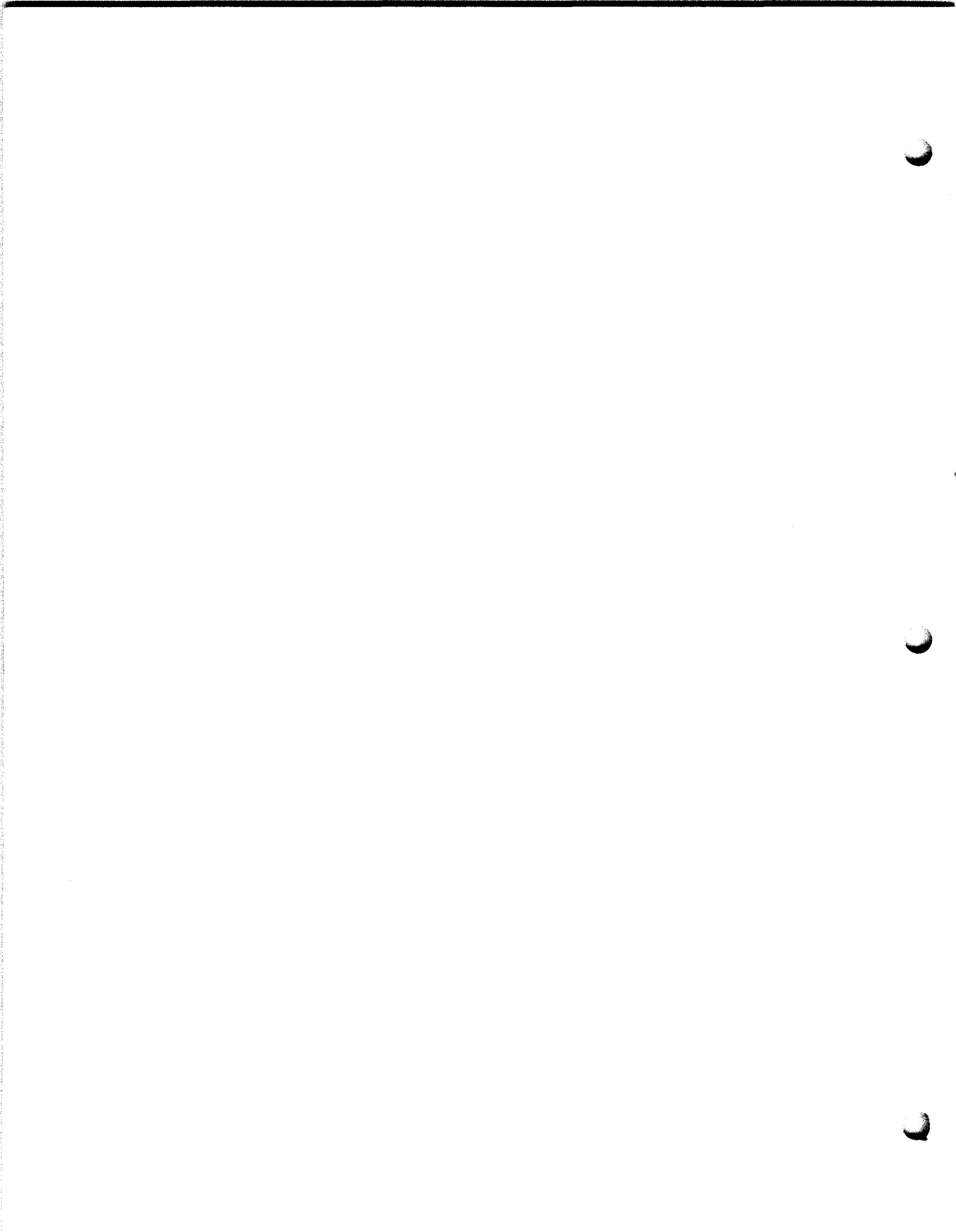
1. Remove the H463 plastic cover mounting screw and remove the H462 plastic window.

2. See figure 6-10 for disassembly.

(b) To replace the keyboard label reverse the procedure used in removing it.

(2) KEYLEVER COVER. (See figure 6-10.)

(a) To remove cover proceed as follows:



1. Remove the two H467 end screws at the top rear of the A455 seal plate.

2. Push the A453 cover down until it clears the two H461 studs on the A452 cover retaining brackets. Pull the cover out to clear the brackets and lift up until it clears the local O451 and O454 function keys.

3. See figure 6-10 for disassembly.

(b) To replace the keylever cover, reverse the procedure used in removing it.

(3) KEYLEVER. (See figure 6-10.)

(a) To remove the keylever, proceed as follows:

1. Remove the keylever cover; see paragraph 6-3e(2) above.

2. Remove H456 shoulder screw pivot.

3. See figure 6-10 for disassembly.

(b) To replace the keylever, reverse the procedure used in removing it.

(4) BASE SEALING PLATE. (See figure 6-10.)

(a) To remove the sealing plate, proceed as follows:

1. Remove the keylever cover; see paragraph 6-3e(2) above.

2. Remove the four H460 screws, two at lower left and two at lower right, front of sealing plate.

3. See figure 6-9 for disassembly.

(b) To replace the sealing plate, reverse the procedure used in removing it.

(5) LOCAL LINE FEED OR CARRIAGE RETURN OPERATING LEVER. (See figure 6-10.)

(a) To remove the local line feed or carriage return operating lever, proceed as follows:

1. Remove the keylevers; see paragraph 6-3e(3).

2. Remove the four H451 mounting screws that retain the A451 operating levers guide bracket.

3. Remove the A451 bracket.

4. Remove the H453 lever pivot stud.

5. See figure 6-10 for disassembly.

(b) To replace the local carriage return or operating lever, reverse procedure used in removing it.

## 6-4. ADJUSTMENTS.

### a. GENERAL.

(1) The adjustments of each unit are arranged in a sequence that would be followed if a complete re-adjustment of the unit were undertaken. Tools and spring scales required to perform the adjustments are listed in table 5-1 but are not supplied as part of the equipment. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened. The adjusting illustrations, in addition to indicating the adjusting tolerances, positions of moving parts, and spring tensions, also show the angle at which the scale should be applied when measuring spring tensions. If a part that is mounted on shims is to be removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

(2) The spring tensions given in this specification are indicated values and should be checked with proper spring scales in the position indicated.

### NOTE

When rotating the main shaft of the Automatic Typewriter by hand, the clutches do not fully disengage upon reaching their stop positions. In order to relieve the drag on the clutches and permit the main shaft to rotate freely, apply pressure on the lug of each clutch disk (figure 6-88) with a screwdriver to cause it to engage its latch lever. This procedure should always be followed prior to placing the Automatic Typewriter on the Base or Keyboard and switching on the power.

(3) References made to "Left" or "Right", "Up" or "Down", "Front" or "Rear", etc., apply to the unit in its normal operating position as viewed from the operator's position in front of the unit.

(4) When the requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch lever so that the clutch shoes (figure 6-95) release their tension on the clutch drum. When engaged the clutch shoe lever is unlatched and the clutch shoes are wedged firmly against the clutch drum.

(5) The Automatic Typewriter may be safely placed in any one of three positions for servicing: (1) in upright position on its four feet, (2) tilted backward so that it rests on its rear feet and rear points of side frames, (3) bottom upwards so that it rests on two upper points of each side frame.

(6) Reference made to KEYBOARD means keyboard base or sending and receiving base. Reference to BASE means receiving only base.

(7) Where instructions call for the removal of parts or subassemblies, refer to Removal and Repair paragraph 6-3.

b. MANUAL SELECTION OF CHARACTERS OR FUNCTIONS.—To operate the Automatic Typewriter manually while removed from the Keyboard or Base, hold



the selector magnet armature (figure 6-77) operated by means of an armature clip and rotate the main shaft in a counterclockwise direction (by means of the handwheel included in TE-50-A, not supplied as part of the equipment), to bring all clutches to their positions.

**NOTE**

The armature clip is attached to the armature by carefully inserting the flat-formed end of the clip over the top of the armature between the pole pieces and hooking the extruded projection under the edge of the armature. The top end of the clip should then be hooked over the top of the selector coil terminal bakelite guard. The spring tension of the clip will hold the armature in the marking (attracted) position.

Fully disengage all clutches as described in the preceding note. Release the armature momentarily to permit the selector clutch to engage. Turn the main shaft slowly until the No. 5 selector lever has just moved to the peak of its cam. Strip from the selector levers the push levers which are spacing in the code combination of the character or function that is being selected. It should be noted that the selector levers (figure 6-84) move in succession starting with the inner lever (number one). Continue to rotate the main shaft until all operations initiated by selector action clear through the unit.

c. TILT OPERATION.—If the equipment is installed in a location where operation in a tilt position may be required, the following adjustments should be refined:

Transfer lever eccentric . . . . .	figure 6-84
Intermediate arm backstop bracket. . . . .	figure 6-85
Code bar shift lever drive arm . . . . .	figure 6-86
Code bar shift lever link guide . . . . .	figure 6-87
Spacing clutch trip lever. . . . .	figure 6-91
Dashpot vent screw . . . . .	figure 6-111
Left margin . . . . .	figure 6-112
Automatic carriage return . . . . .	figure 6-112
Right margin . . . . .	figure 6-113
Code bar detent . . . . .	figure 6-133.

d. KEYBOARD MX-1114B/UG OR MX-1421A/UG ADJUSTMENTS.—The standard Keyboard adjustments are described in figures 6-47 through 6-76.

e. The following standard keyboard adjustments constitute the adjustment for Base NT-1443/UG:

Intermediate gear bracket. . . . .	figure 6-73
Mounting Typer on Base. . . . .	figure 6-72
Time delay disabling device . . . . .	figure 6-71
Time delay mechanism position . . . . .	figure 6-71
Time delay switch position . . . . .	figure 6-68
Contact latch pawl spring . . . . .	figure 6-70
Contact pawl spring . . . . .	figure 6-70
Local carriage return bail spring. . . . .	figure 6-74
Local line feed trip link spring . . . . .	figure 6-74
Time delay ratchet wheel spring . . . . .	figure 6-68.

f. AUTOMATIC TYPER MX-1115B/UG OR MX-1422A/UG ADJUSTMENTS.—The standard Automatic Typer adjustments are described in figures 6-77 through 6-134. When making a complete adjustment of the Automatic Typer, the following conditioning operations should be performed to prevent damage to the unit.

- (1) Loosen the shift lever drive arm clamp screw (figure 6-86).
- (2) Move the right and left vertical positioning lever eccentric studs (figures 6-99 and 6-100) in the rocker shaft brackets to their lowest position.
- (3) Loosen the two bearing stud mounting screws and the two connecting strip clamp screws in the horizontal drive linkage (figure 6-106).
- (4) Loosen the clamp screws and move the reversing slide brackets to their uppermost position (figure 6-105).
- (5) Loosen the function reset bail blade mounting screws (figure 6-104).
- (6) Loosen the carriage return lever clamp screw (figure 6-110).
- (7) Loosen the clamp screws on the oscillating rail slide (figure 6-101).
- (8) Loosen the reversing slide adjusting stud (figure 6-105).
- (9) Loosen the shift code bar guide plate mounting nuts (figure 6-103).

g. MOTOR PD-17A/U OR PD-18A/U.—The standard synchronous Motor adjustment is described in figure 6-135. The standard governed Motor adjustments are described in figures 6-136 and 6-137.

- (1) Motor speed requires attention only when a governed Motor PD-18A/U is used, in which case adjustments described in figure 6-137 may be required. A speed indicator (120 vps tuning fork) is used for checking the motor speed. The rotating spots on the governor target appear stationary when viewed through the shutters of the vibrating tuning fork if the Motor is on speed.
- (2) If the Motor is not on speed it may be adjusted as follows:
  - (a) Stop the Motor and remove the plug from the governor cover.
  - (b) Rotate the Motor shaft until the opening in the target lines up with the opening in the governor cover.
  - (c) Turn the adjusting screw clockwise to increase the speed or counterclockwise to decrease the speed.
- (3) The Motor may be considered on speed if not more than 12 spots pass a given point in ten seconds. An operational check on motor speed is outlined in section 3, paragraph 3-8.

h. POWER DISTRIBUTION PANEL SB-964/UG.—The standard Power Distribution Panel adjustments are described in figure 6-138.

i. CABINETS CY-2538/UG, CY-2539/UG AND CY-2320/SGA-3.—The standard Cabinet adjustments are described in figures 6-139 through 6-142.

j. FINAL TEST.—After all adjustments have been made and the equipment is assembled, apply the operating tests indicated in section 2, paragraph 2-7.

k. ORIENTATION RANGE.—When a signal distortion test set TS-652/GG is used (in accordance with procedures outlined in NAVSHIPS 91654) for determining the receiving margins of the selector, and where the condition of the components is equivalent to that of new equipment, the range and distortion tolerances tabulated in table 6-1 should be met. To adjust, refine the selector armature spring tension (figure 6-79).

(1) When a signal distortion test set is not available, the orientation range can be best determined while receiving the characters RY from the distant station. Rotate the range finder knob (figure 6-82) in one direction until errors appear in the typed copy, and then retract it slowly until the errors disappear. After noting this position, rotate the range finder knob in the opposite direction and determine the

other limit in a similar manner. The final setting should be midway between the determined limits.

(2) When it is not feasible to determine the range scale setting by either the use of distortion test set or signals received from a distant station, it will be necessary to utilize transmission from the local Keyboard. In so doing, strike the R and Y keys alternately and determine the overall orientation range. Nominal range is 72 points. The final setting should be midway between the determined limits. Where no distortion set is available, this overall orientation range is the only means for determining the efficiency of the selector with regard to its adjustments.

#### 6-5. WIRING DIAGRAMS.

Figures 6-143 through 6-145 are system wiring diagrams. Winding data for components of the system is contained in table 6-2.

TABLE 6-1. SELECTOR MARGIN MINIMUM REQUIREMENTS

CURRENT	SPEED IN W. P. M.	POINTS RANGE WITH ZERO DISTORTION	PERCENTAGE OF MARKING AND SPACING BIAS TOLERATED	END DISTORTION TOLERATED WITH SCALE AT BIAS OPTIMUM SETTING
0.060 amp. (windings parallel)	60	72	40	35
	75			
	100			
0.020 amp. (windings series)	60	72	40	35
	75			
	100	72	35	35

TABLE 6-2. WINDING DATA

DESIGNATION	TELETYPE PART NUMBER	MFG. PART NUMBER	WINDING	WIRE SIZE	TURNS	D-C RESISTANCE (OHMS)	HIPOT AC VOLTS	REMARKS
L-802 L-1110 L-5801	247M	Teletype Part No. 247M	Single	No. 34	4000	190	500	115 V. a-c magnet
L-1101 L-1102	252M	Teletype Part No. 252M	Single	No. 33	3600	200	500	115 V. d-c magnet
L-1308 L-1309	254M	Teletype Part No. 254M	Single	No. 33	3600	132	500	115 V. d-c magnet
K-1101	151808	Potter and Brumfield Mfg Co. MR11A	Single	No. 39	600	1250	500	115 V. a-c magnet

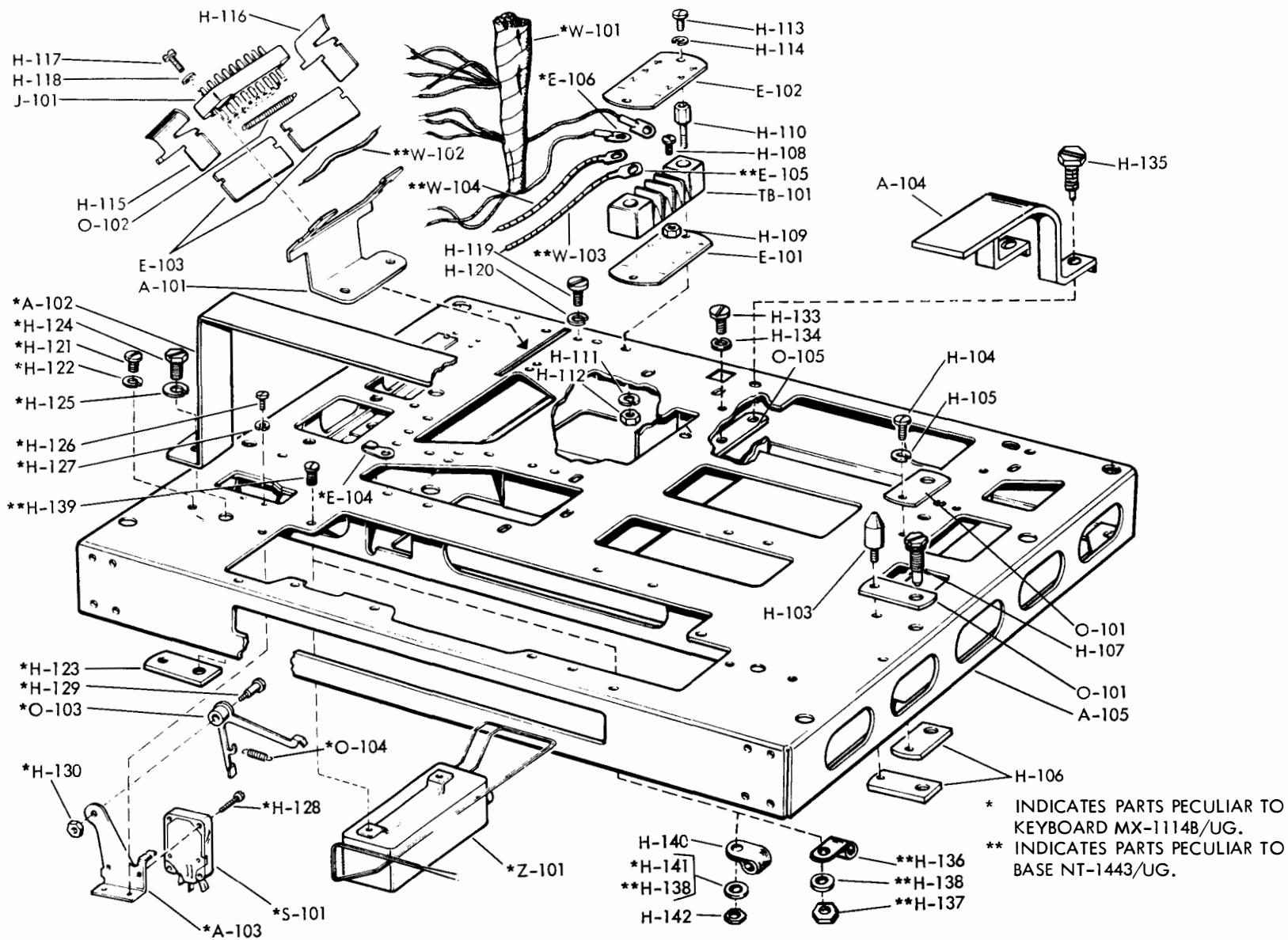


Figure 6-1. Keyboard and Base Mechanism, MX-1114B/UG, NT-1443/UG

NAVSHIPS 93241

SERVICE AND REPAIR

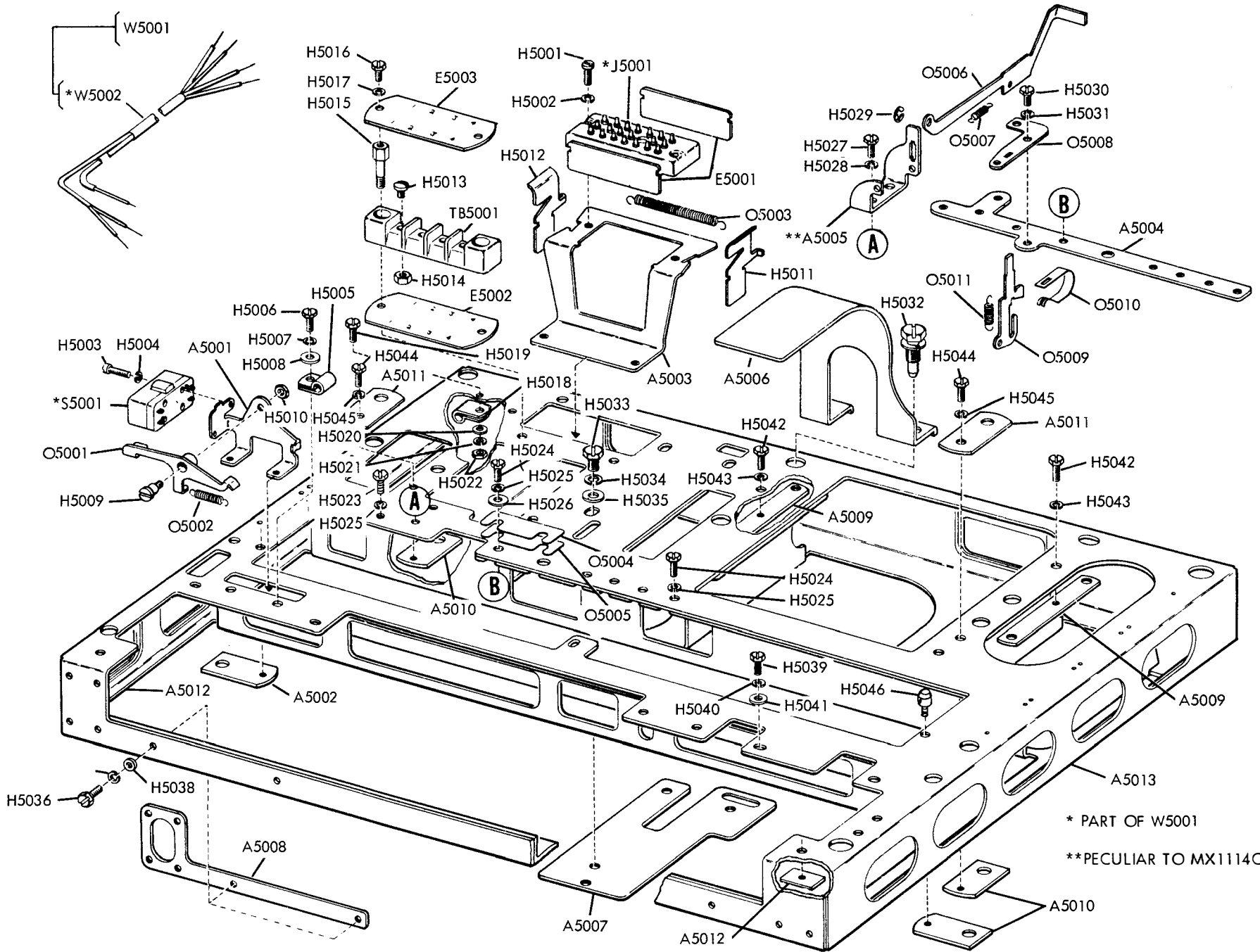


Figure 6-1A. Keyboard MX-1114C/UG and MX-1677A/UG

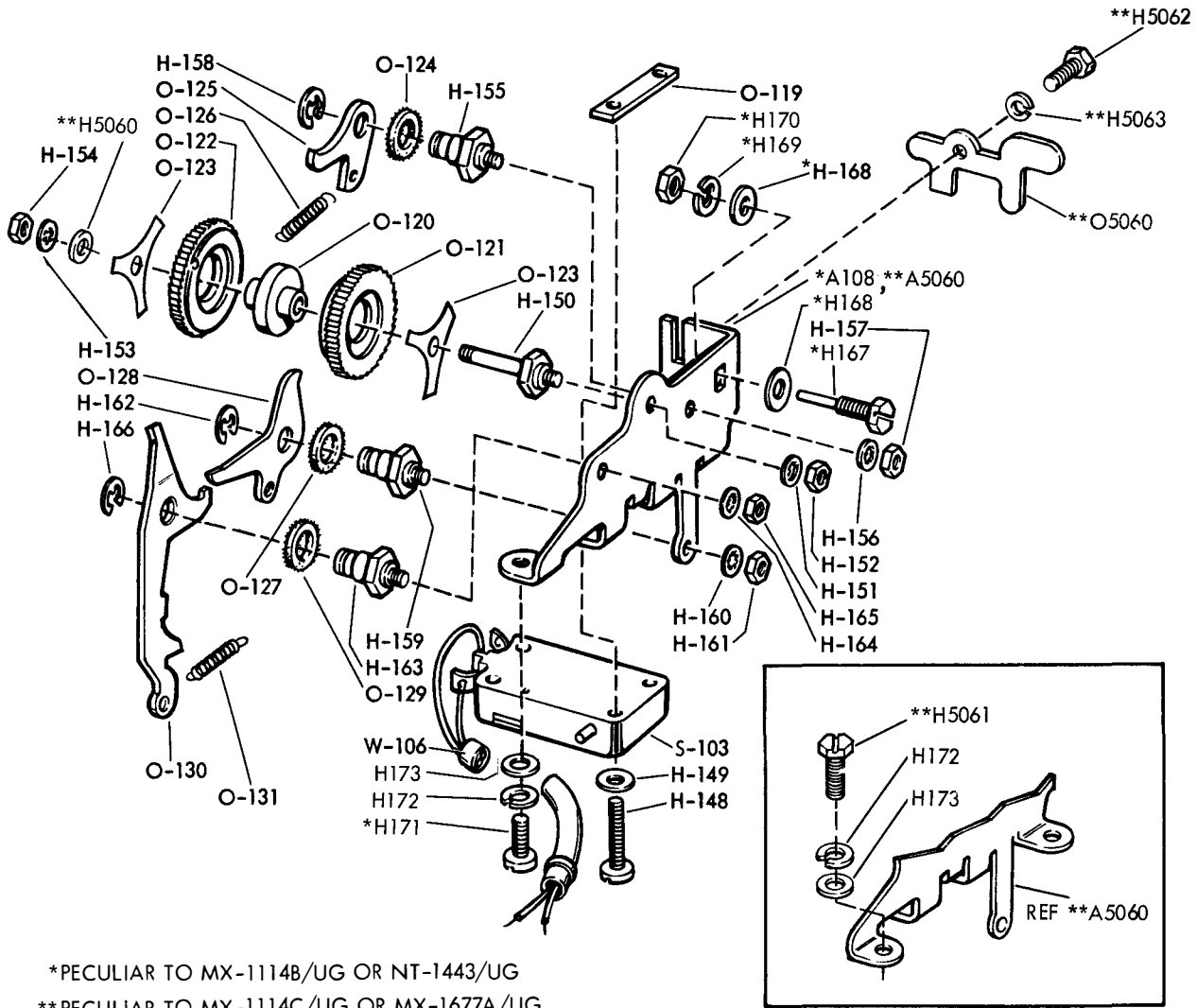


Figure 6-2. Keyboard and Base, Time Delay Mechanism

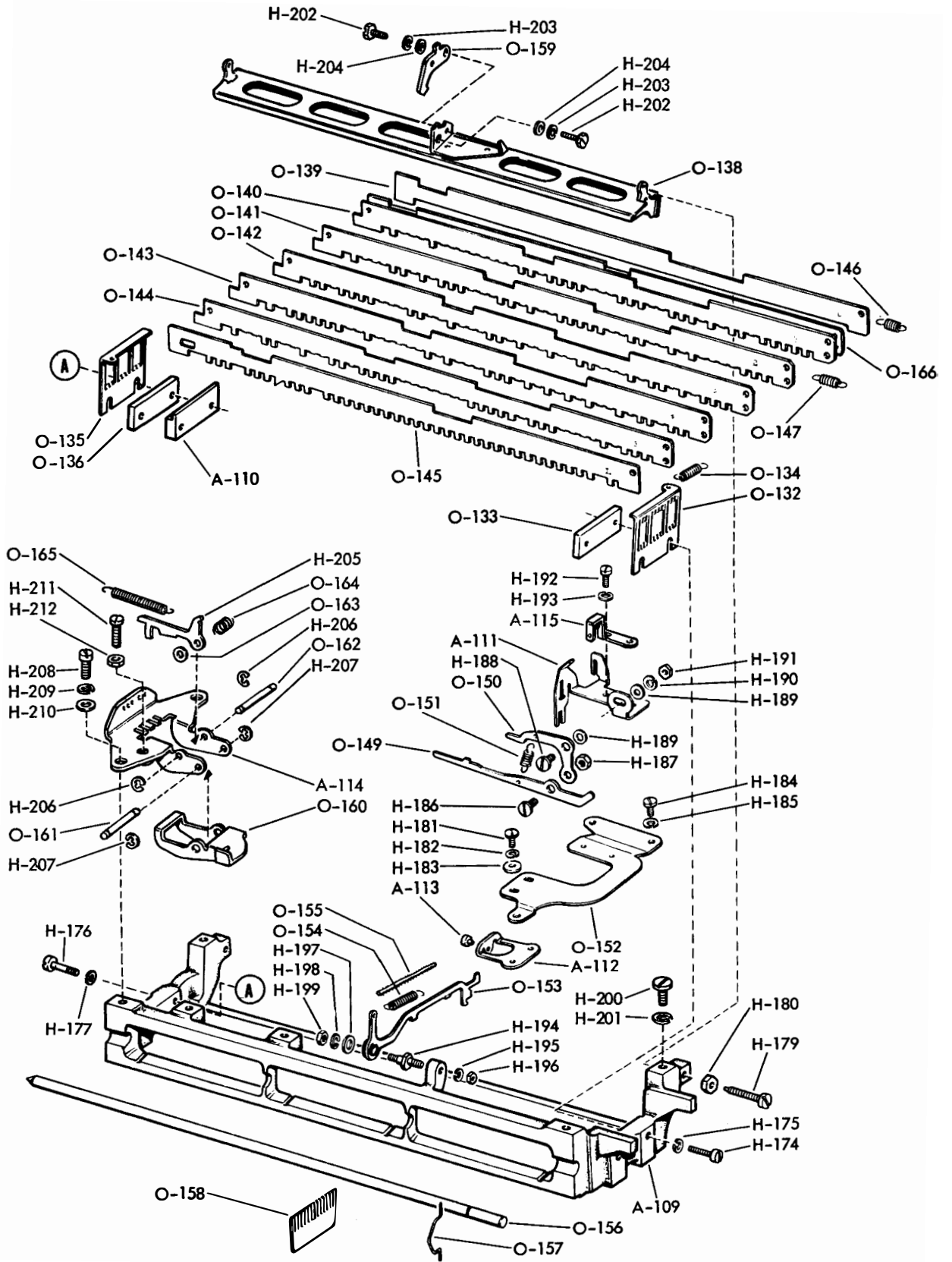


Figure 6-3. Keyboard MX-1114B/UG Code Bar Mechanism

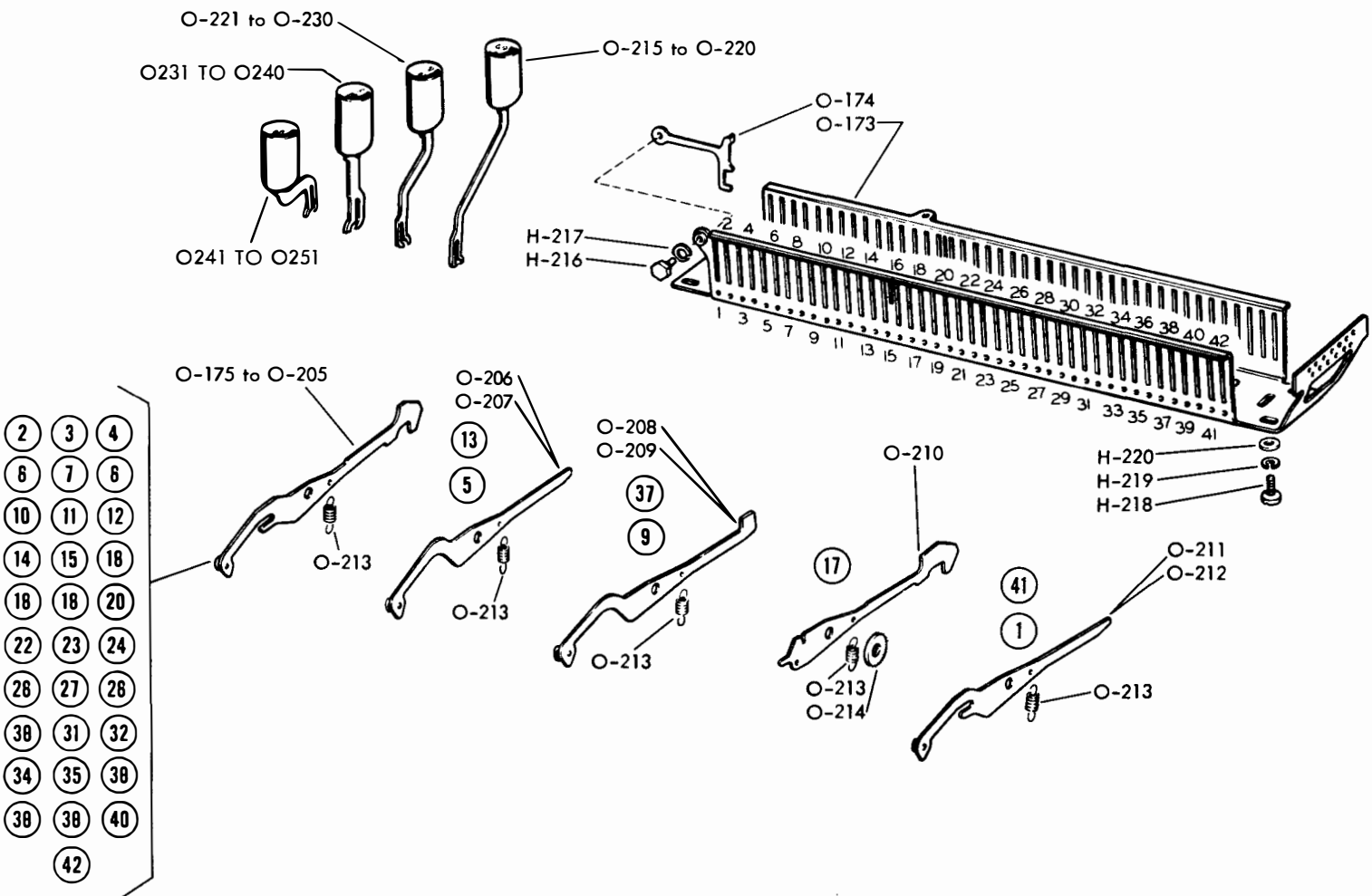


Figure 6-4. Keyboard, Keylevers and Code Levers, MX-1114B/UG

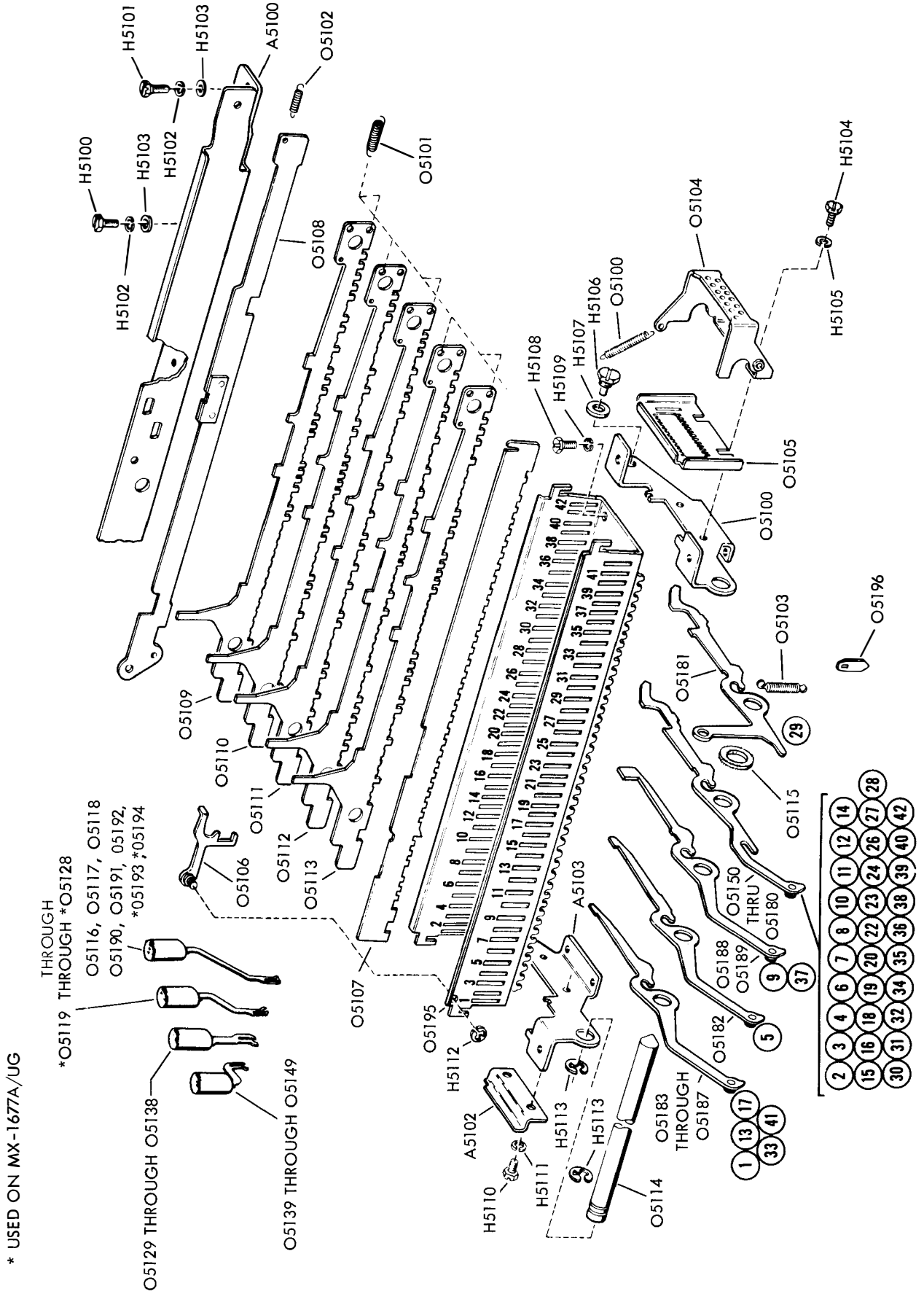


Figure 6-4A. Keyboards MX-1114C/UG and MX-1677A/UG, Code Bar Mechanism



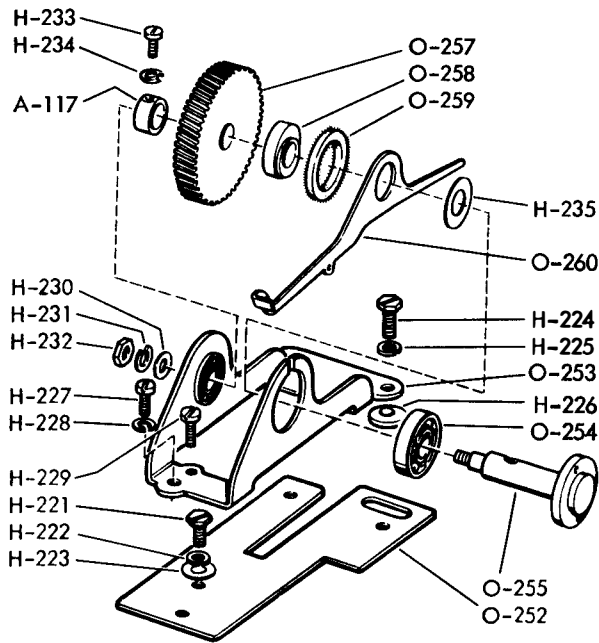


Figure 6-5. Keyboard and Base, Intermediate Gear Mechanism

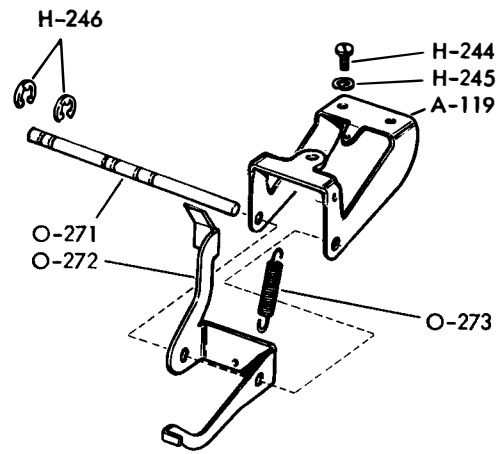


Figure 6-7. Keyboard MX-1114B/UG and Base NT-1443/UG, Carriage Return Mechanism

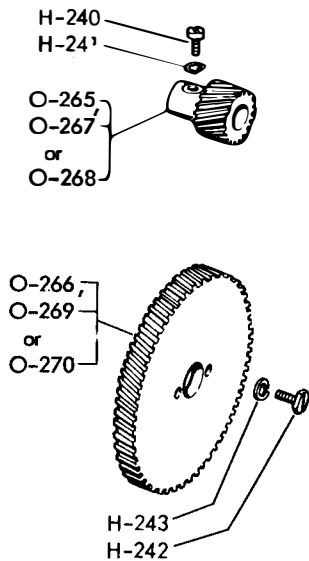


Figure 6-6. Gear Sets

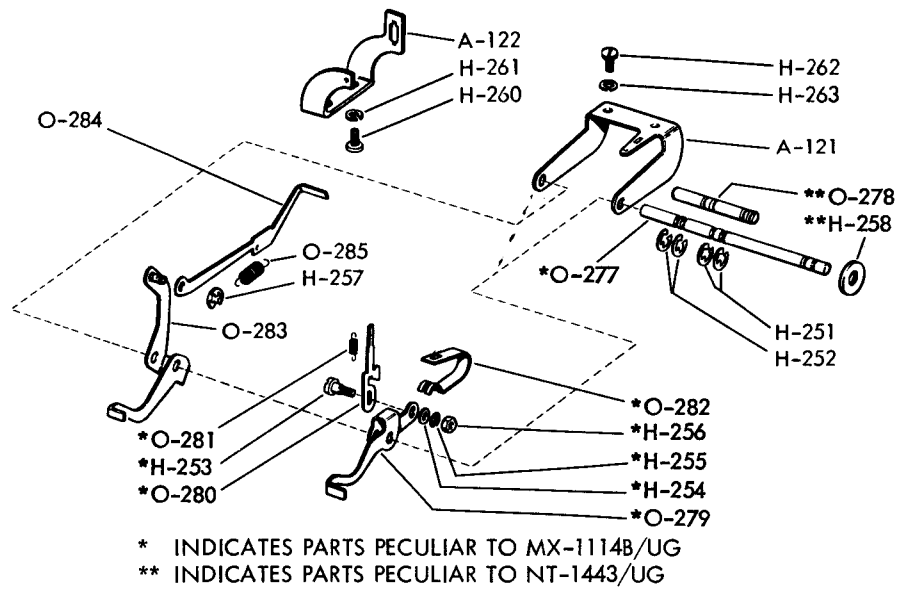


Figure 6-8. Keyboard MX-1114B/UG and Base MT-1443/UG, Keyboard Lock and Local Line Feed Mechanisms

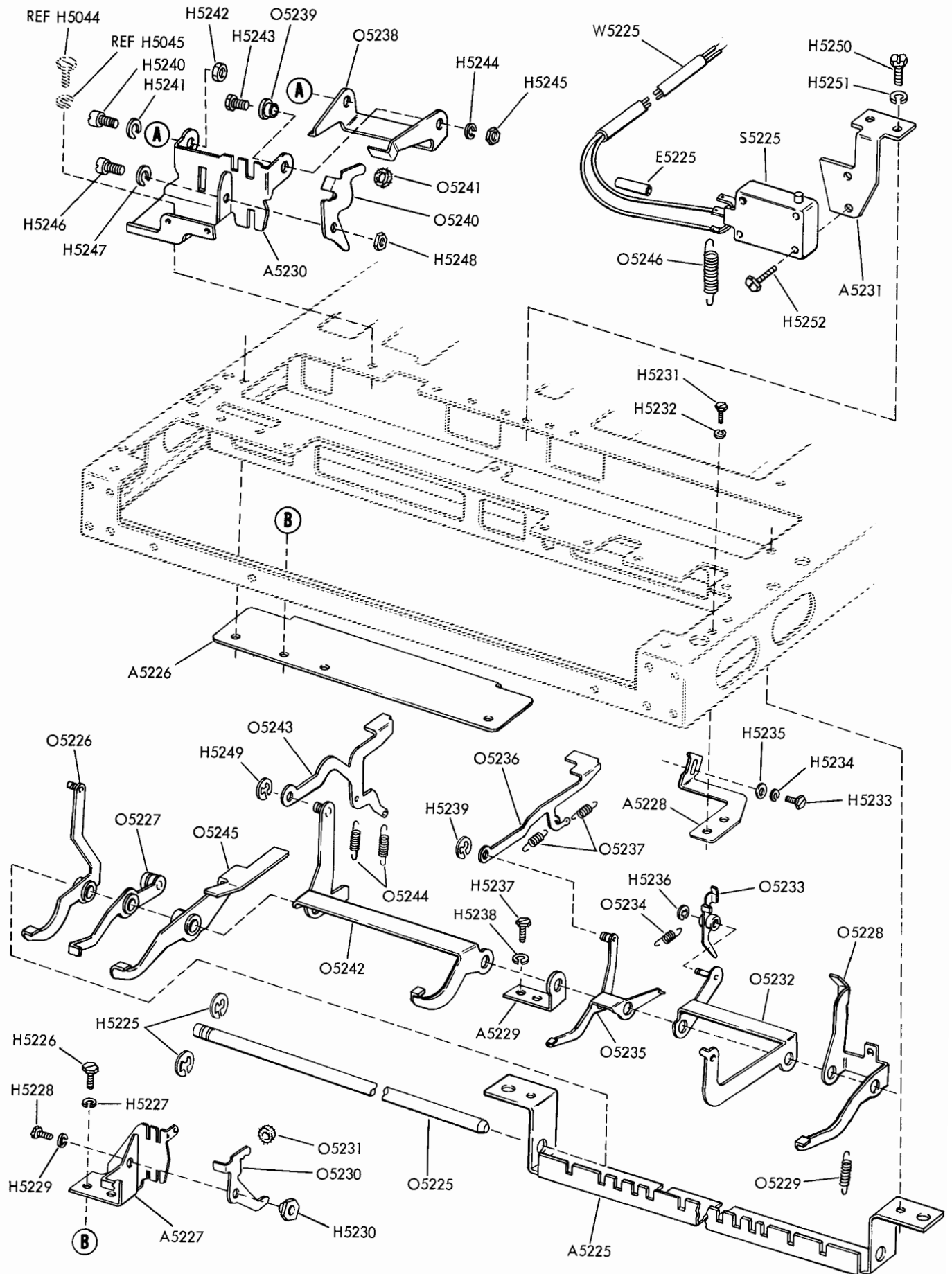


Figure 6-8A. Keyboard MX-1114C/UG or MX-1677A/UG, Function Bail Mechanisms, Local Back Space, Local Reverse Line Feed, and Electrical Signal Line Break

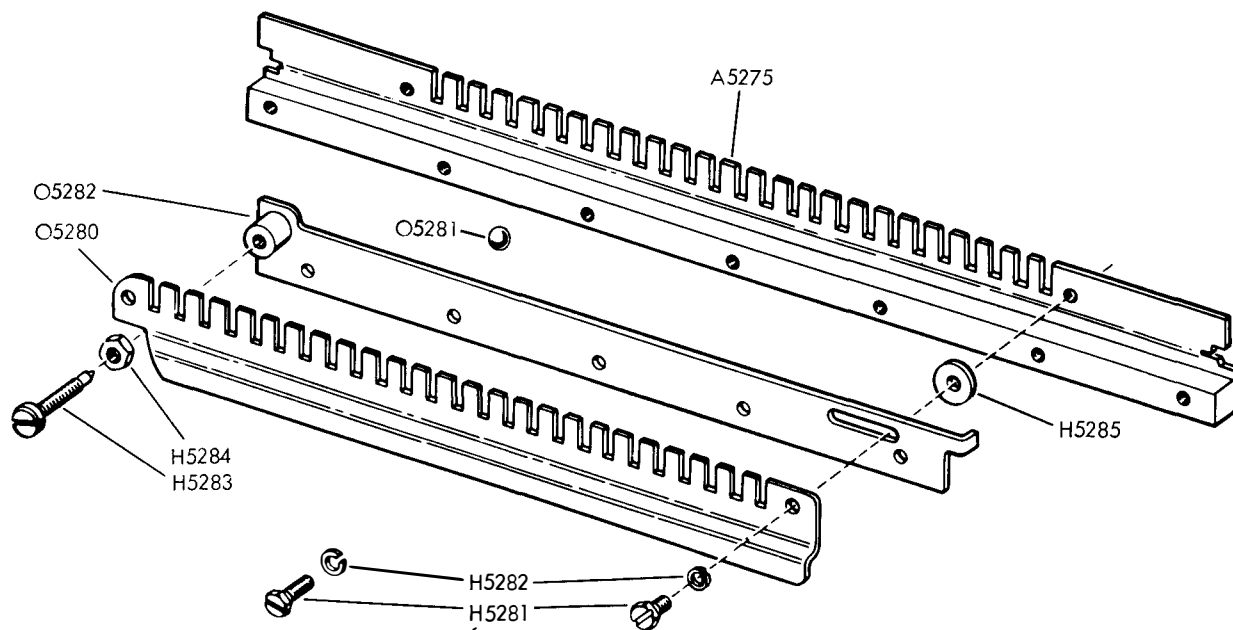
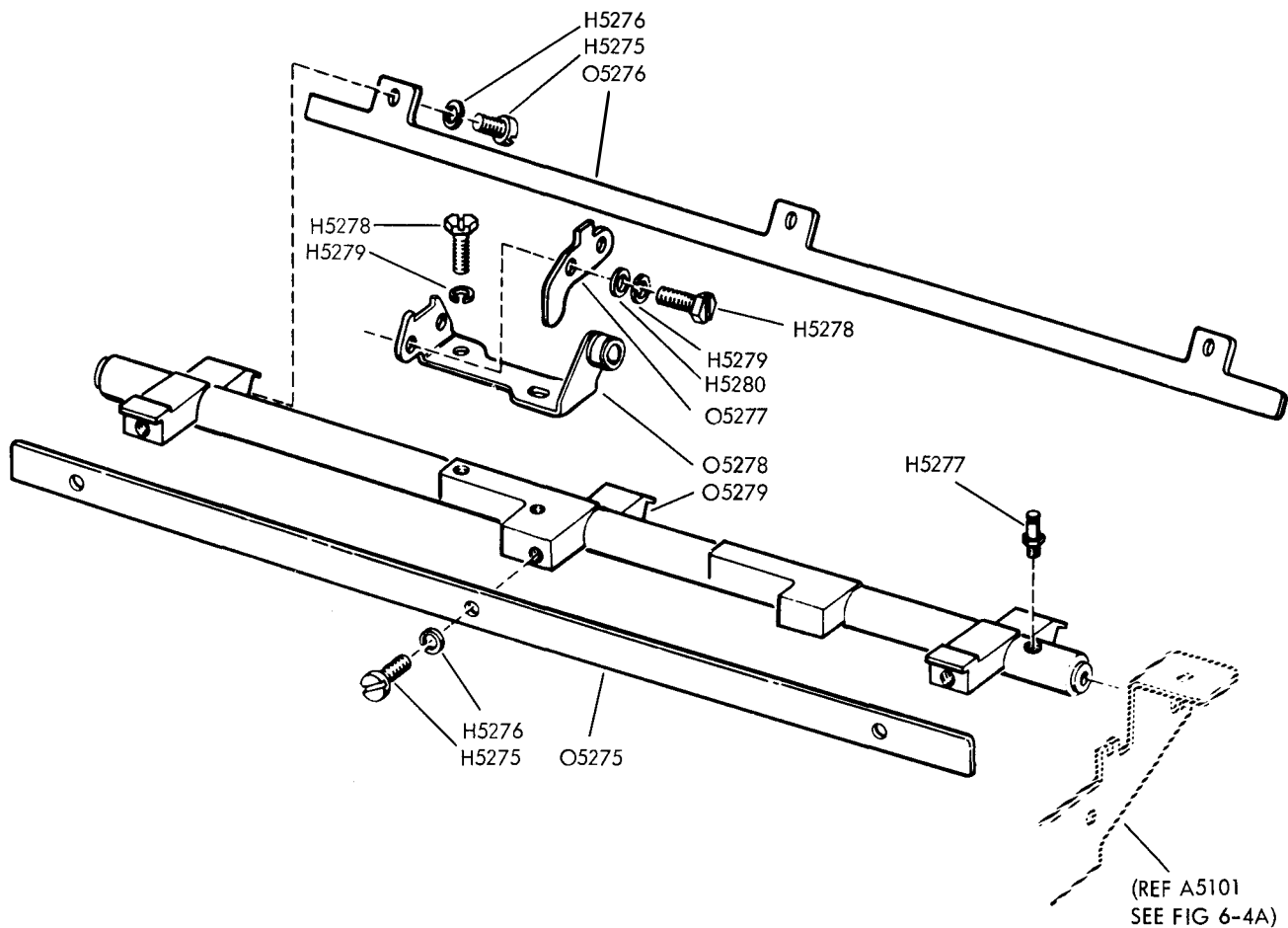


Figure 6-8B. Keyboard MX-1114C/UG or MX-1677A/UG, Universal Bail and Wedglock Mechanisms

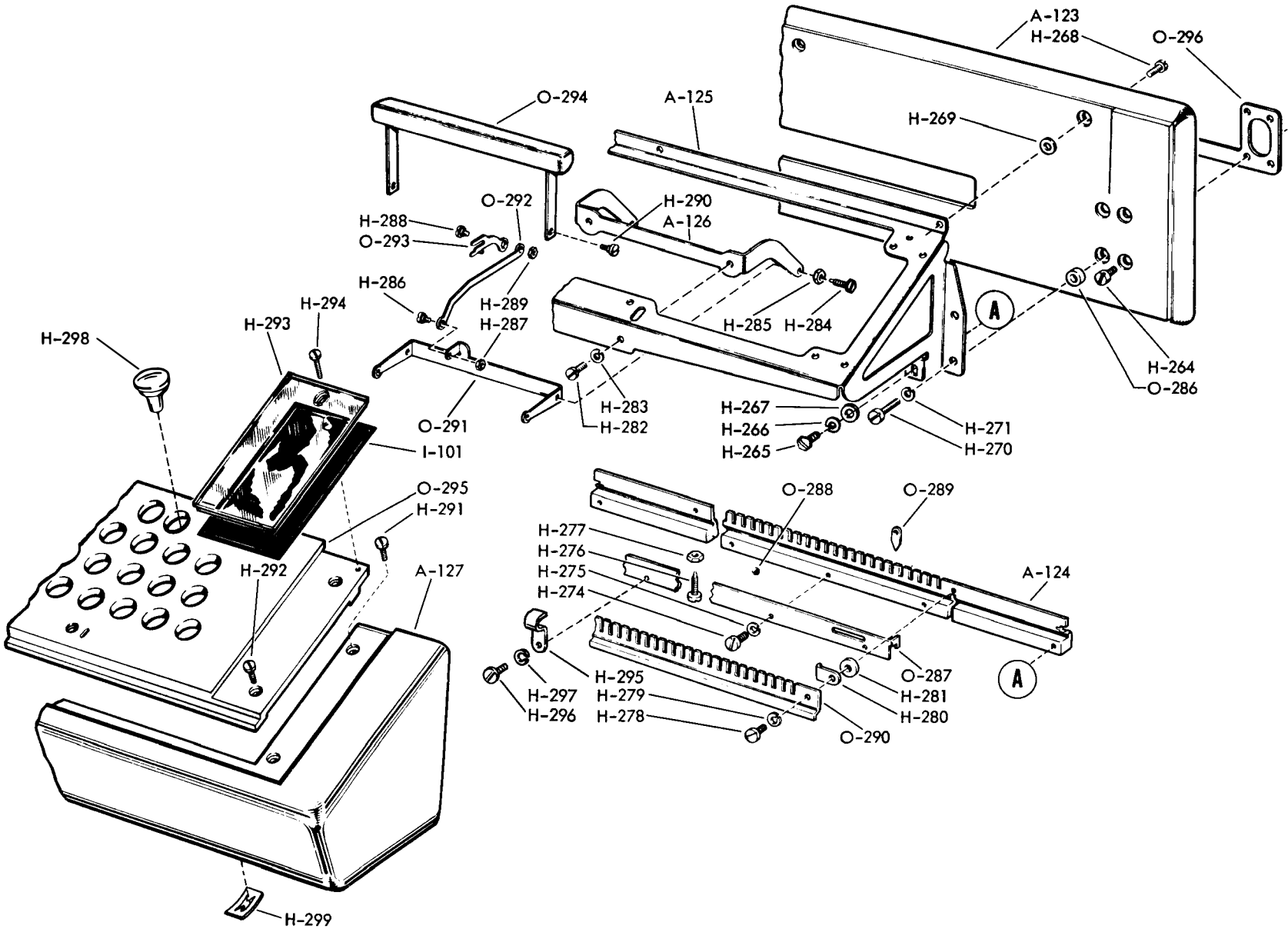


Figure 6-9. Keyboard Mechanism, MX-1114B/UG

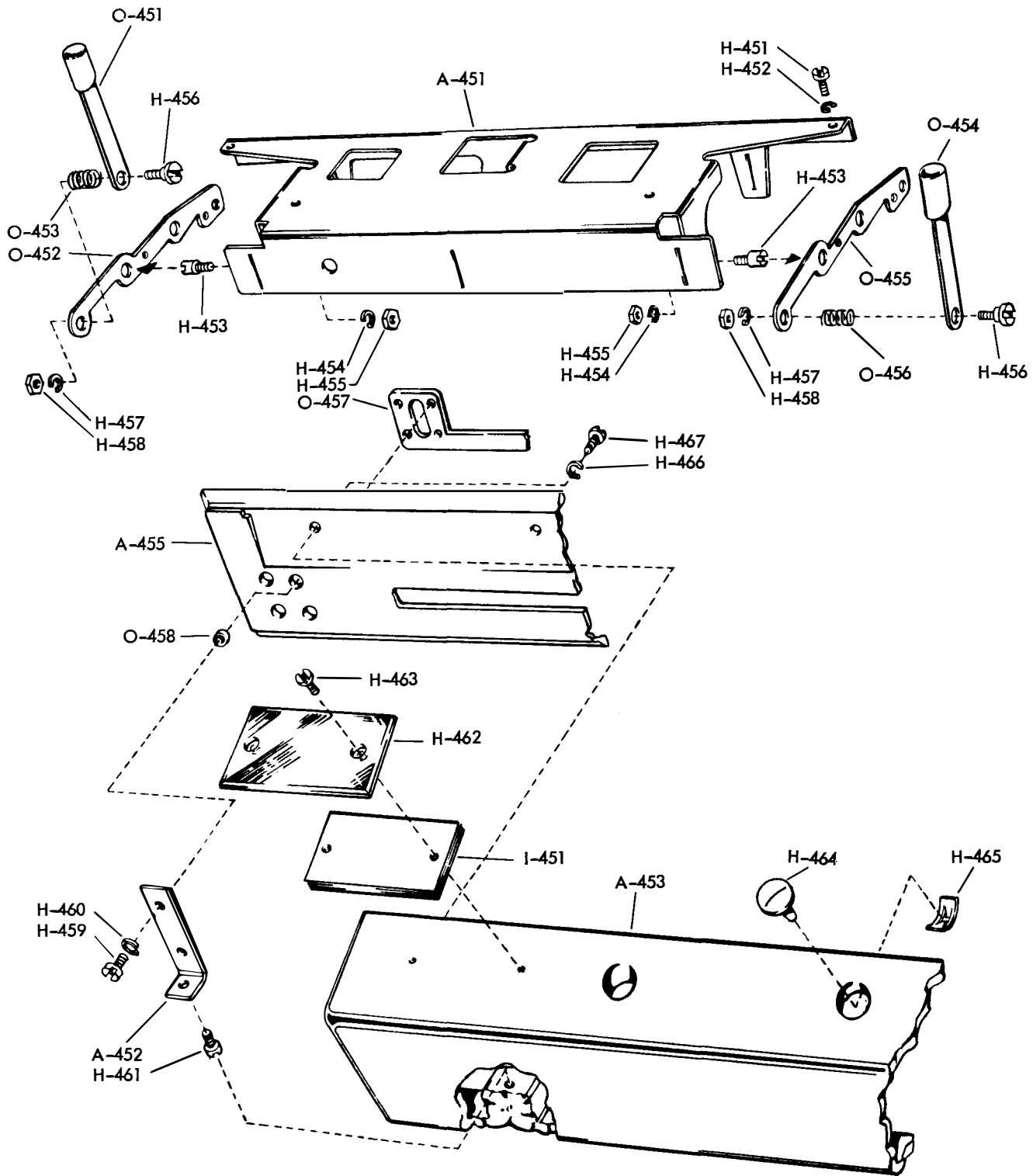


Figure 6-10. Base Mechanism, NT-1443/UG

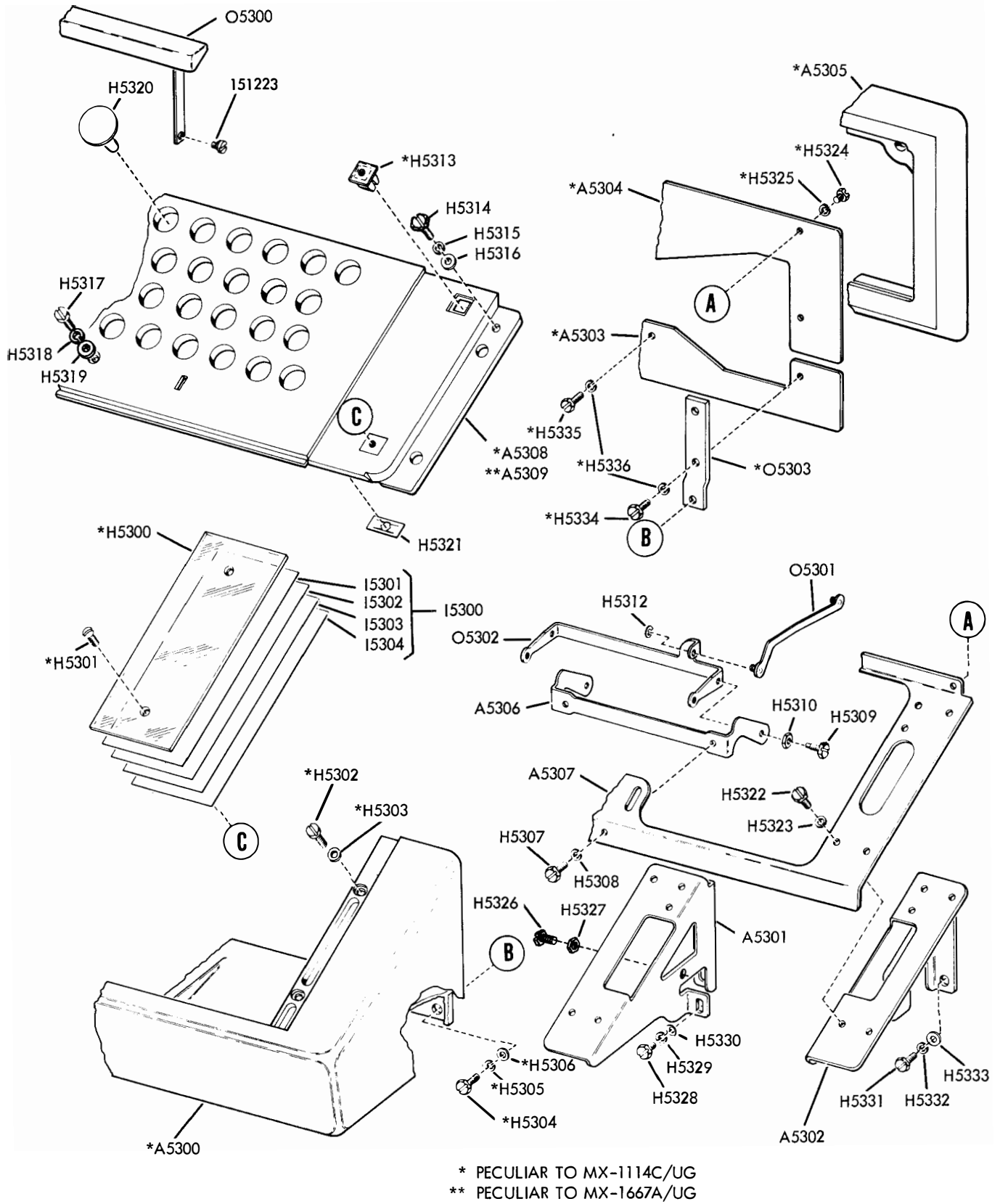


Figure 6-10A. Keyboard Mechanism MX-1114C/UG and MX-1677A/UG

Figure 6-11

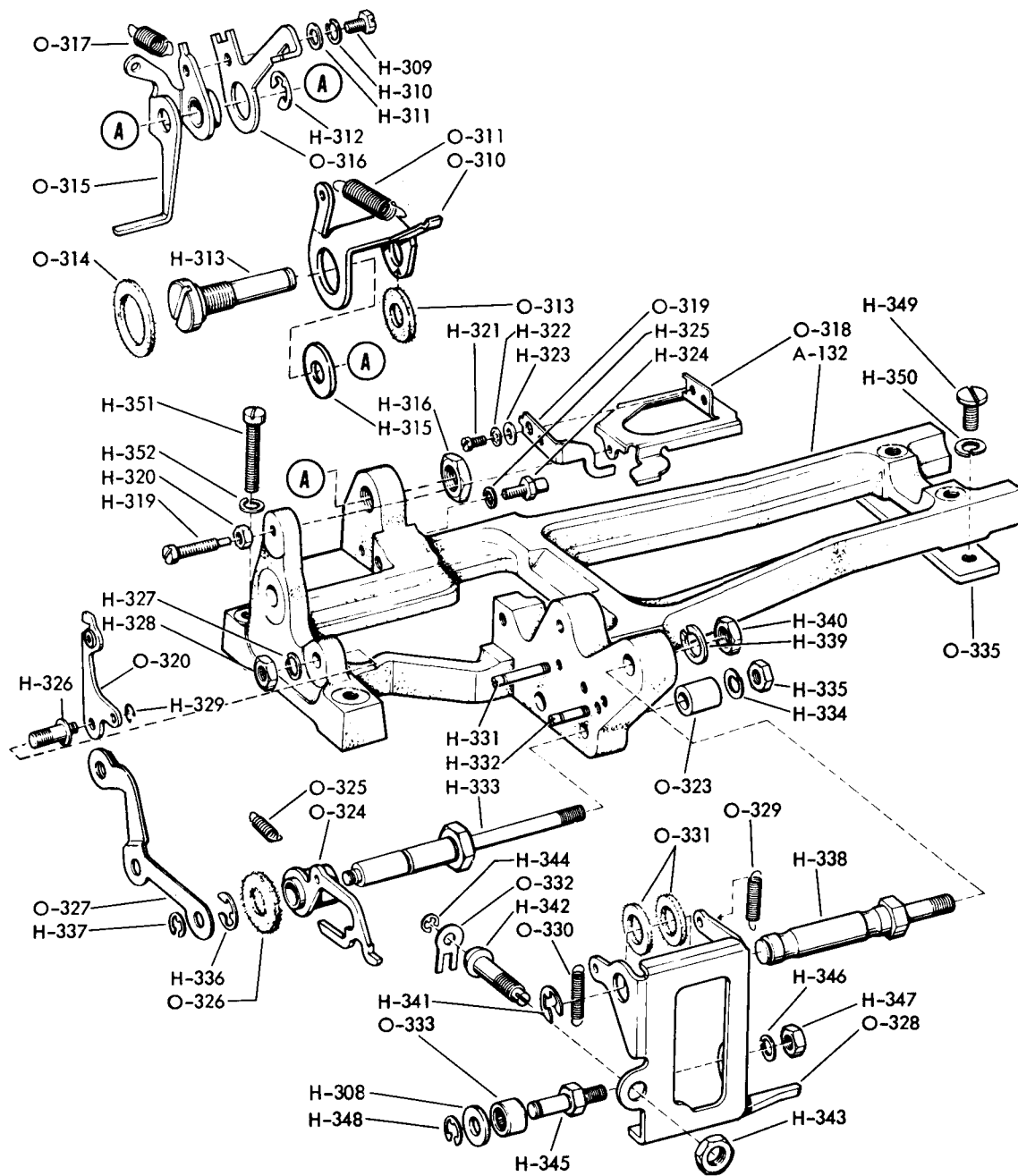


Figure 6-11. Keyboard MX-1114B/UG, Signal Generator Mechanism

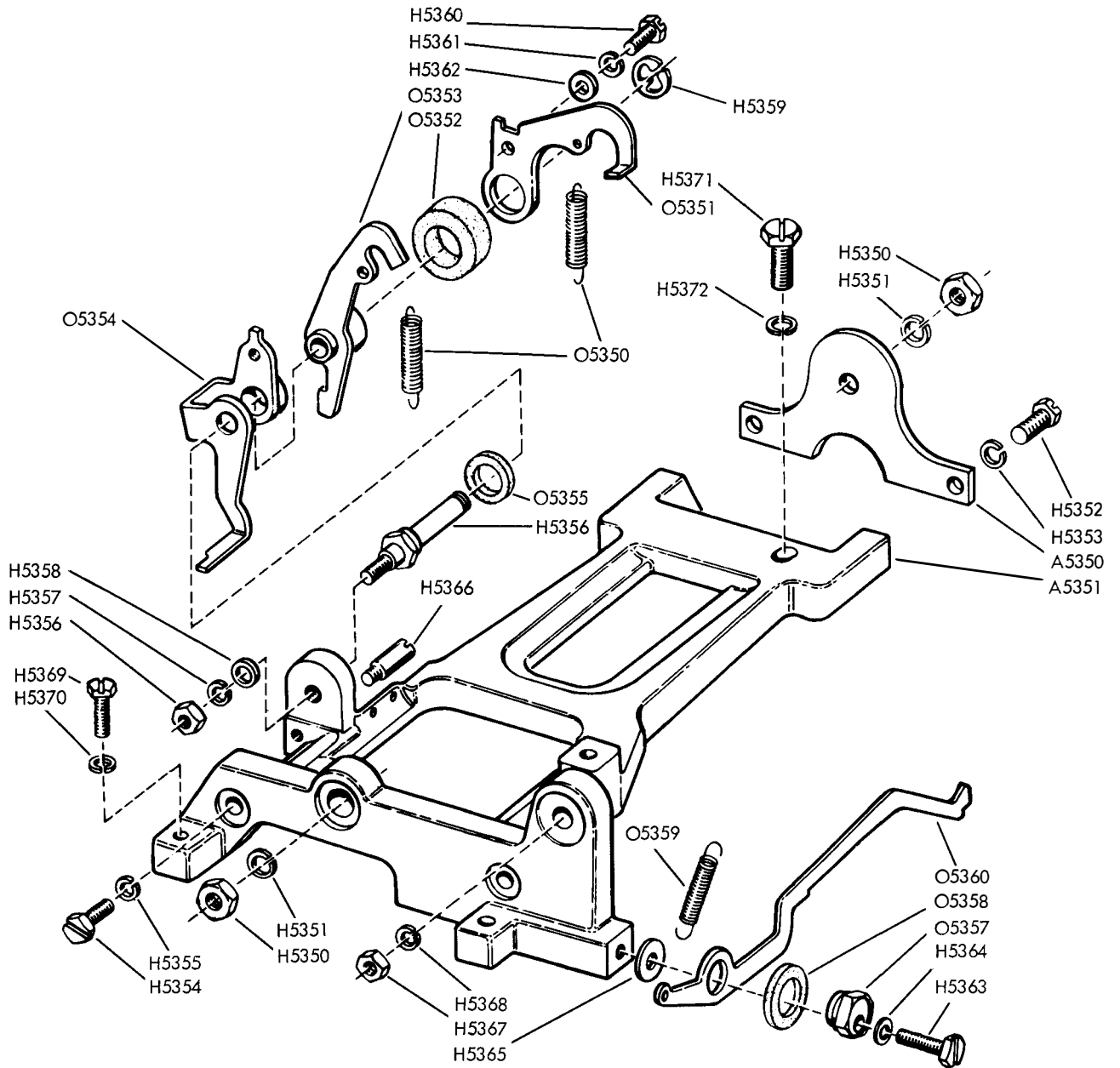


Figure 6-11A. Keyboard MX-1114C/UG or MX-1677A/UG, Signal Generator Mechanism



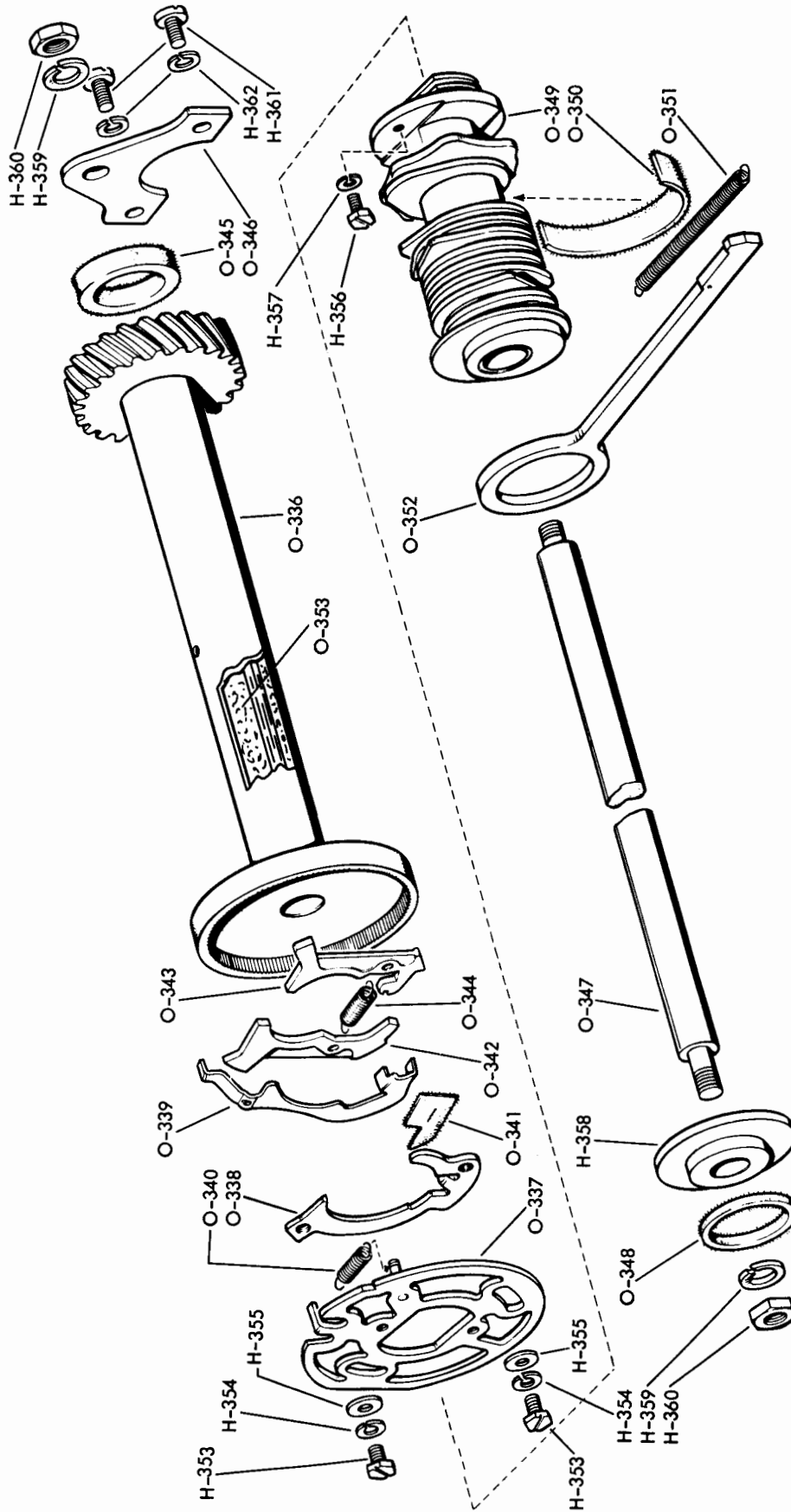


Figure 6-12. Keyboard MX-1114B/UG, Signal Generator Mechanism

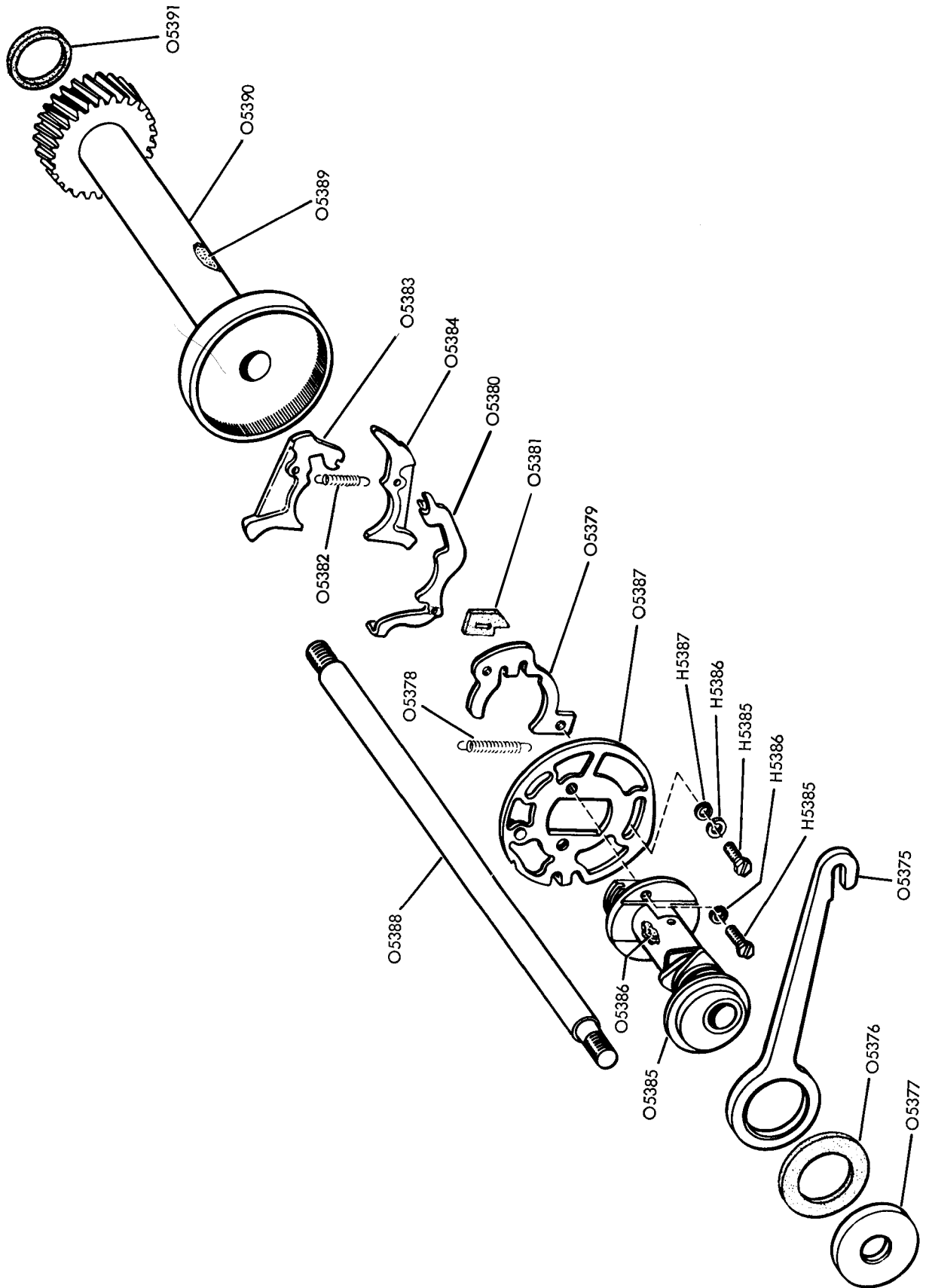


Figure 6-12A. Keyboard MX-1114C/UG or MX-1677A/UG, Signal Generator Mechanism

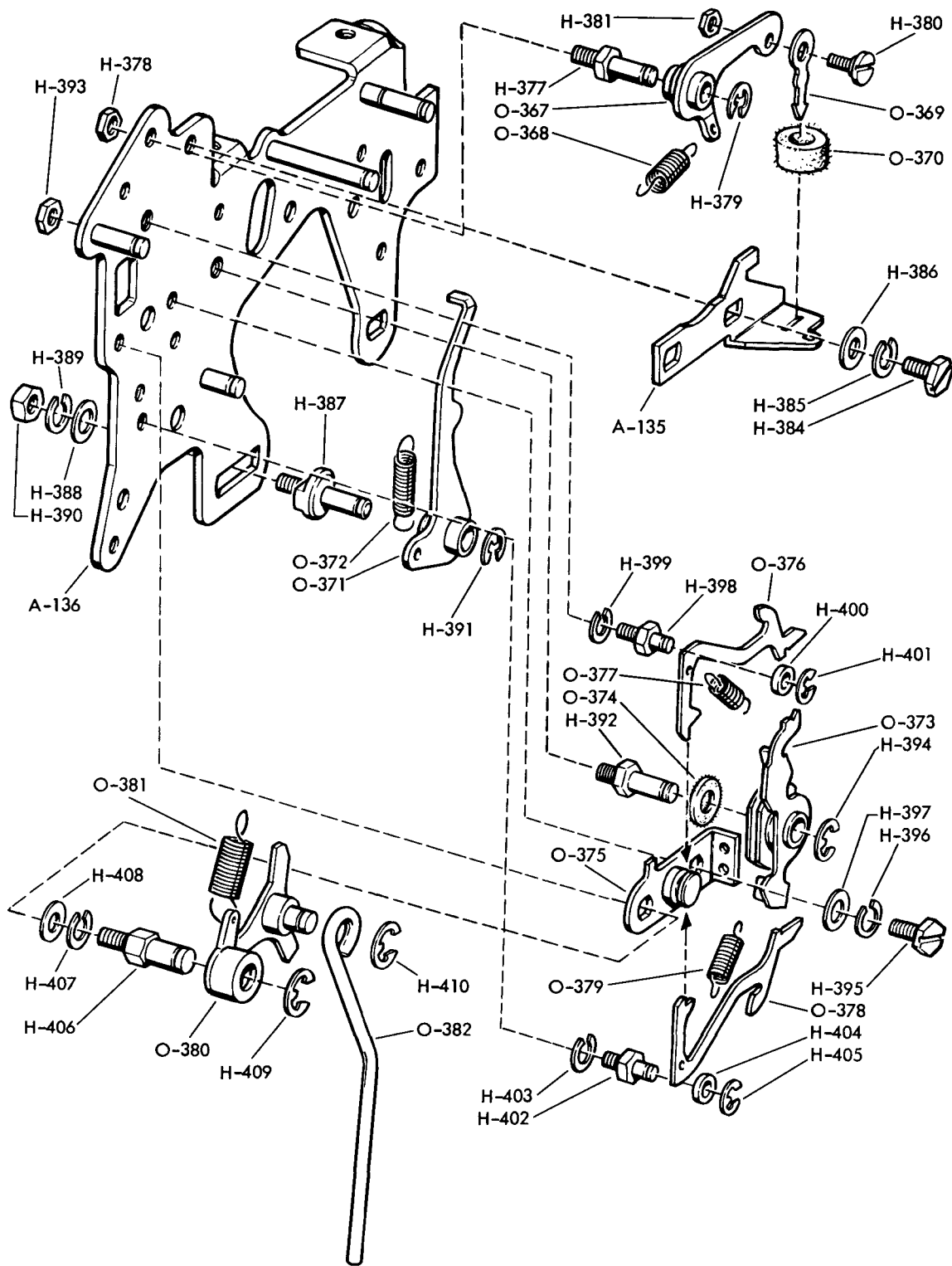


Figure 6-13. Keyboard MX-1114B/UG, Signal Generator Mechanism

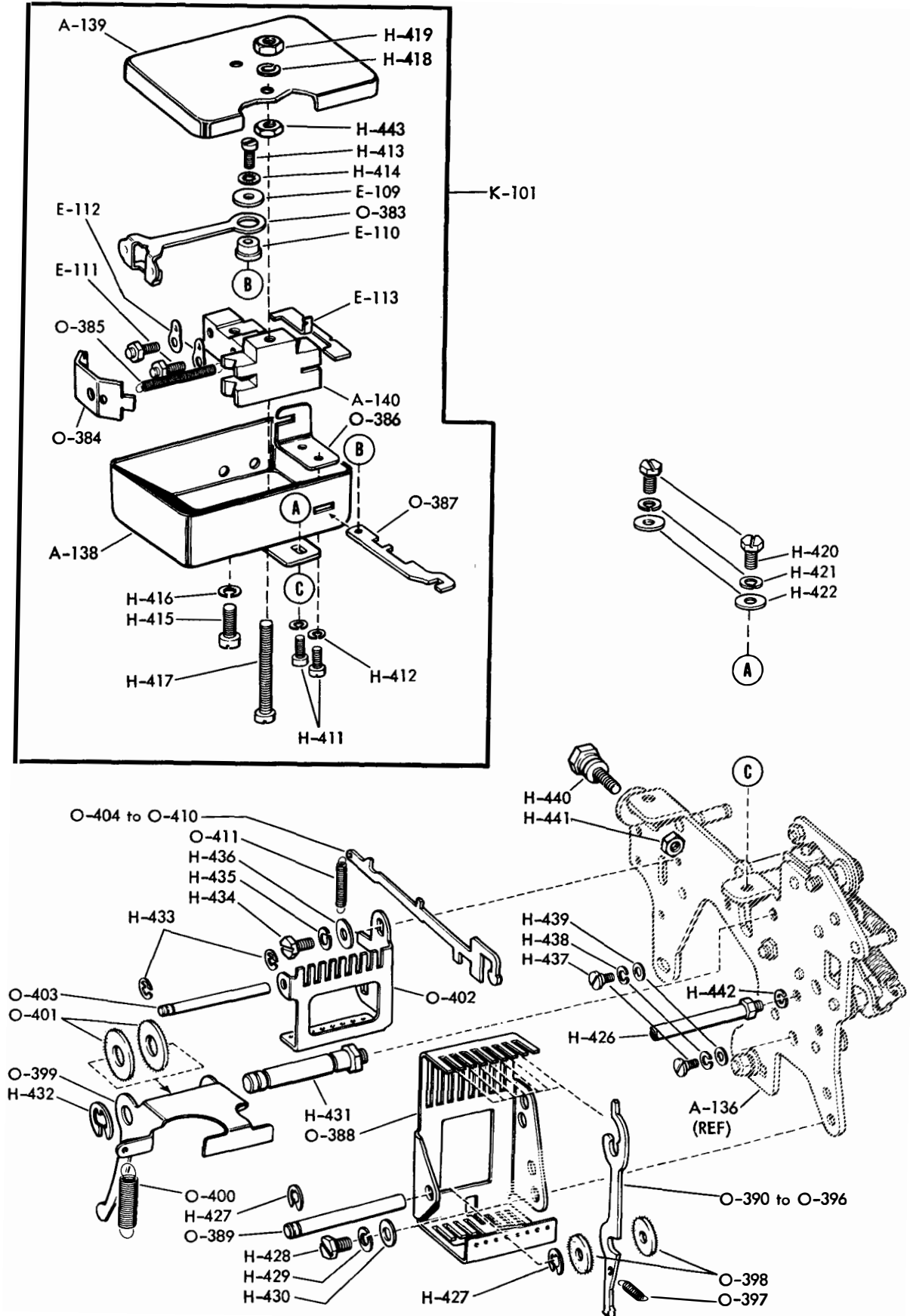


Figure 6-14. Keyboard MX-1114B/UG, Signal Generator Mechanism

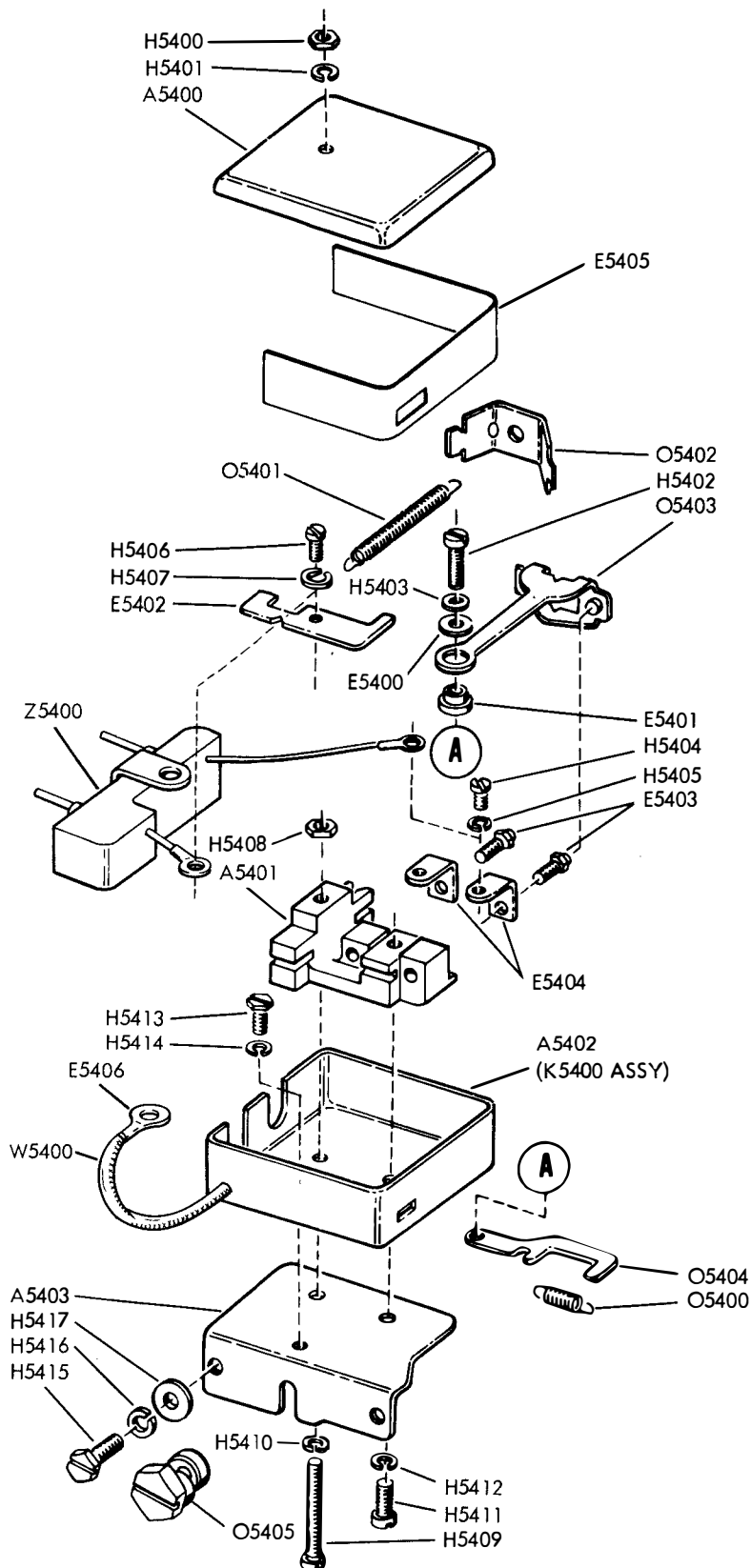


Figure 6-14A. Keyboard MX-1114C/UG or MX-1677A/UG, Contact Box Mechanism

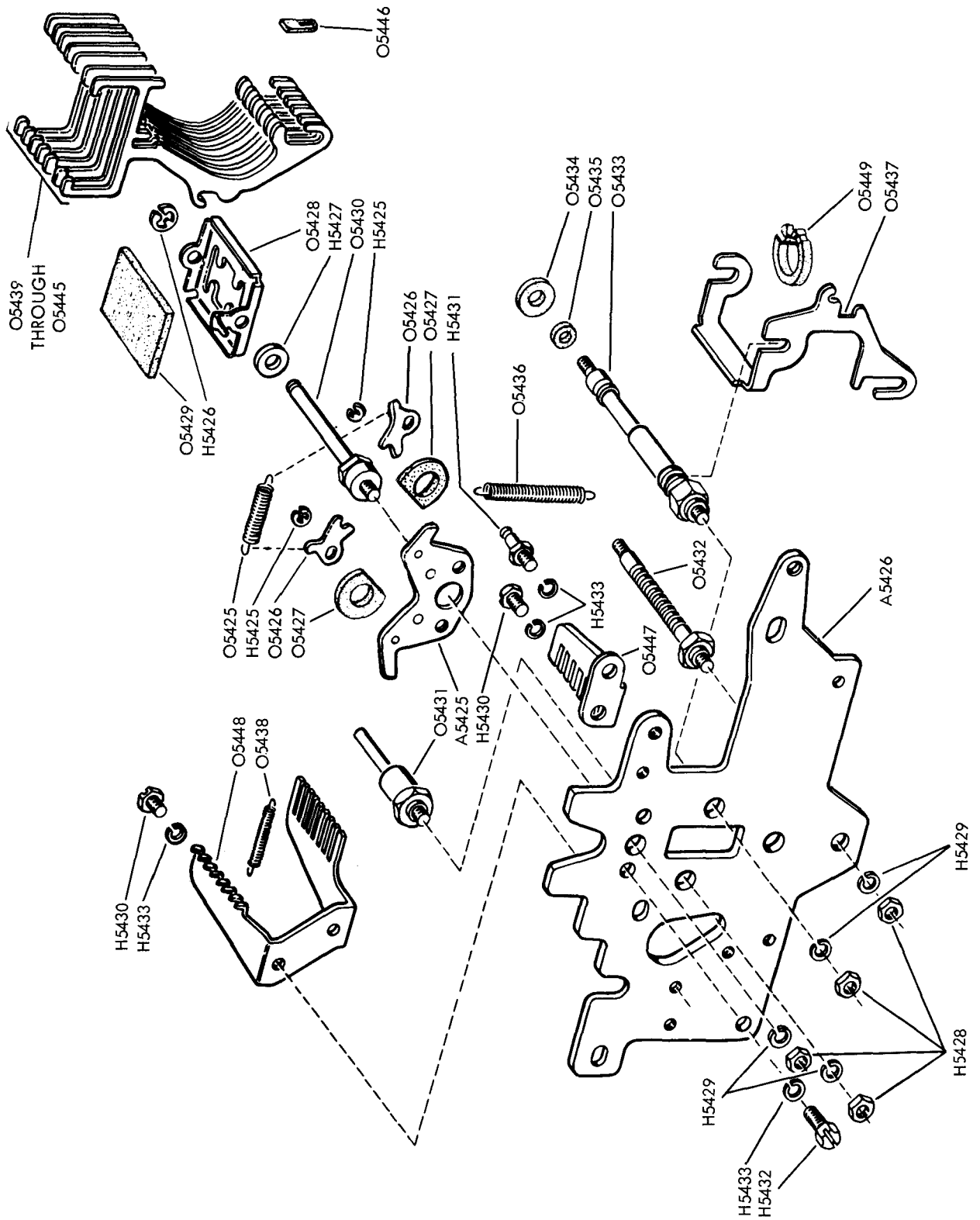


Figure 6-14B. Keyboard MX-1114C/UG or MX-1677A/UG, Signal Generator Front Plate Mechanism

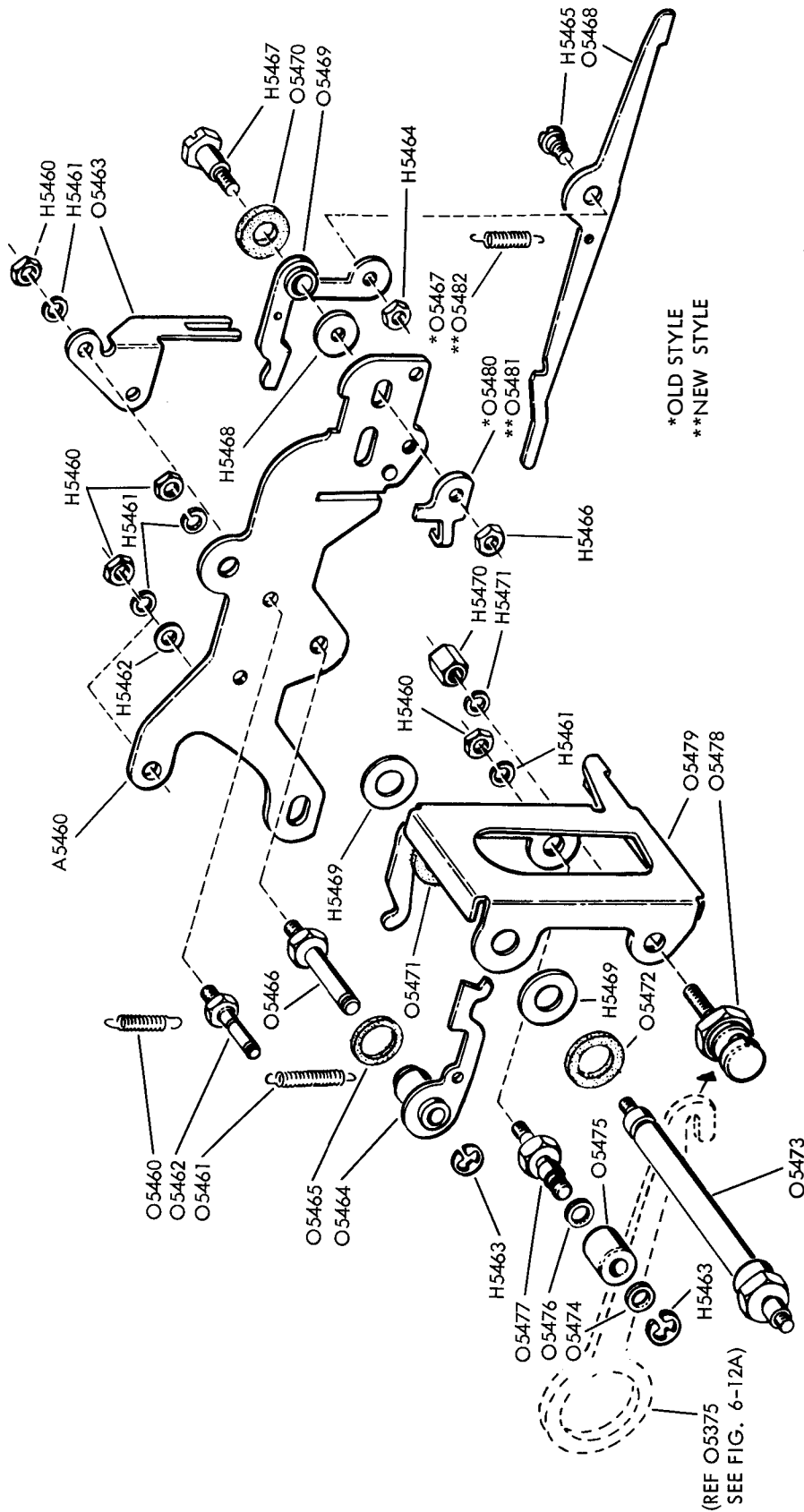


Figure 6-14C. Keyboard MX-1114C/UG or MX-1677A/UG, Signal Generator Rear Plate Mechanism

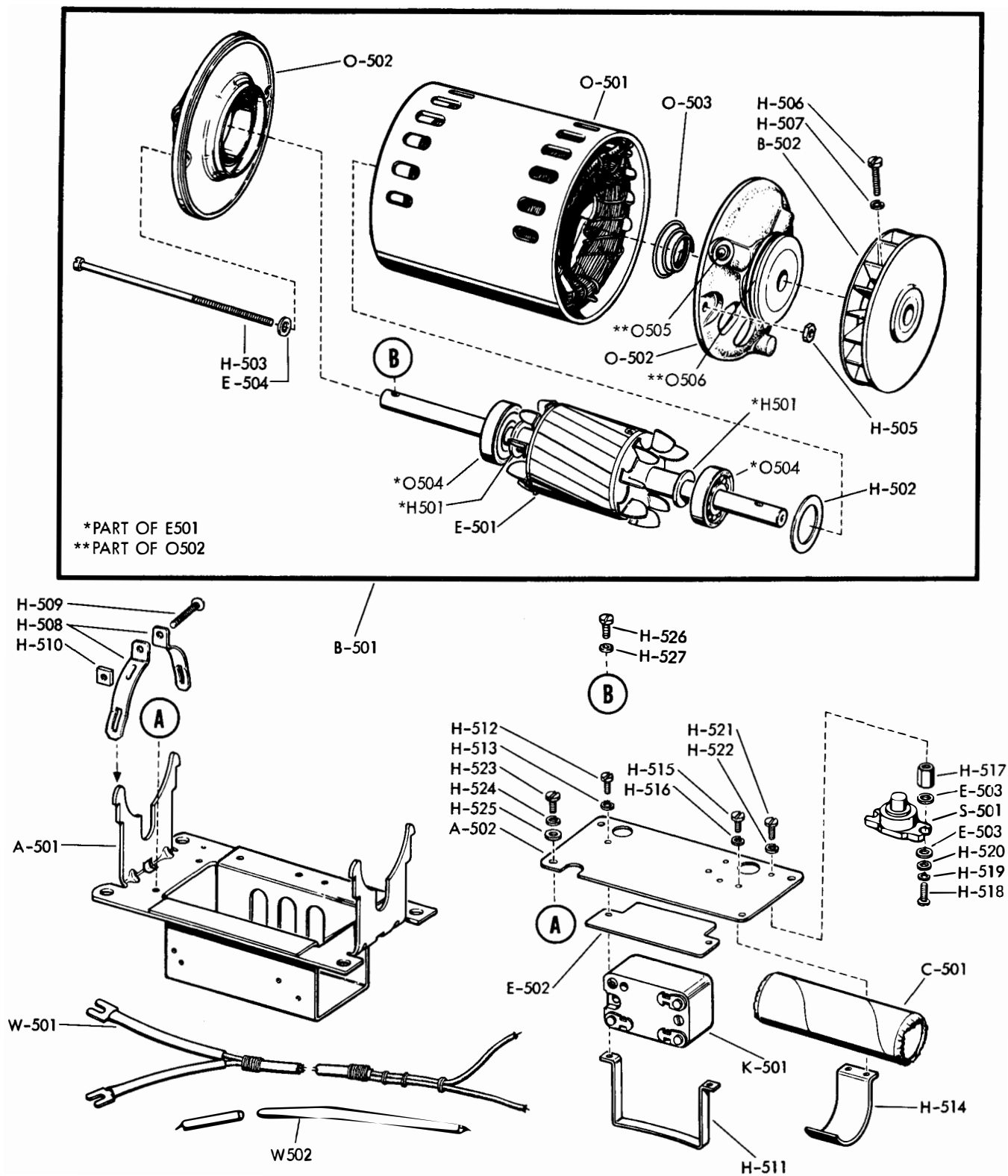


Figure 6-15. Synchronous Motor



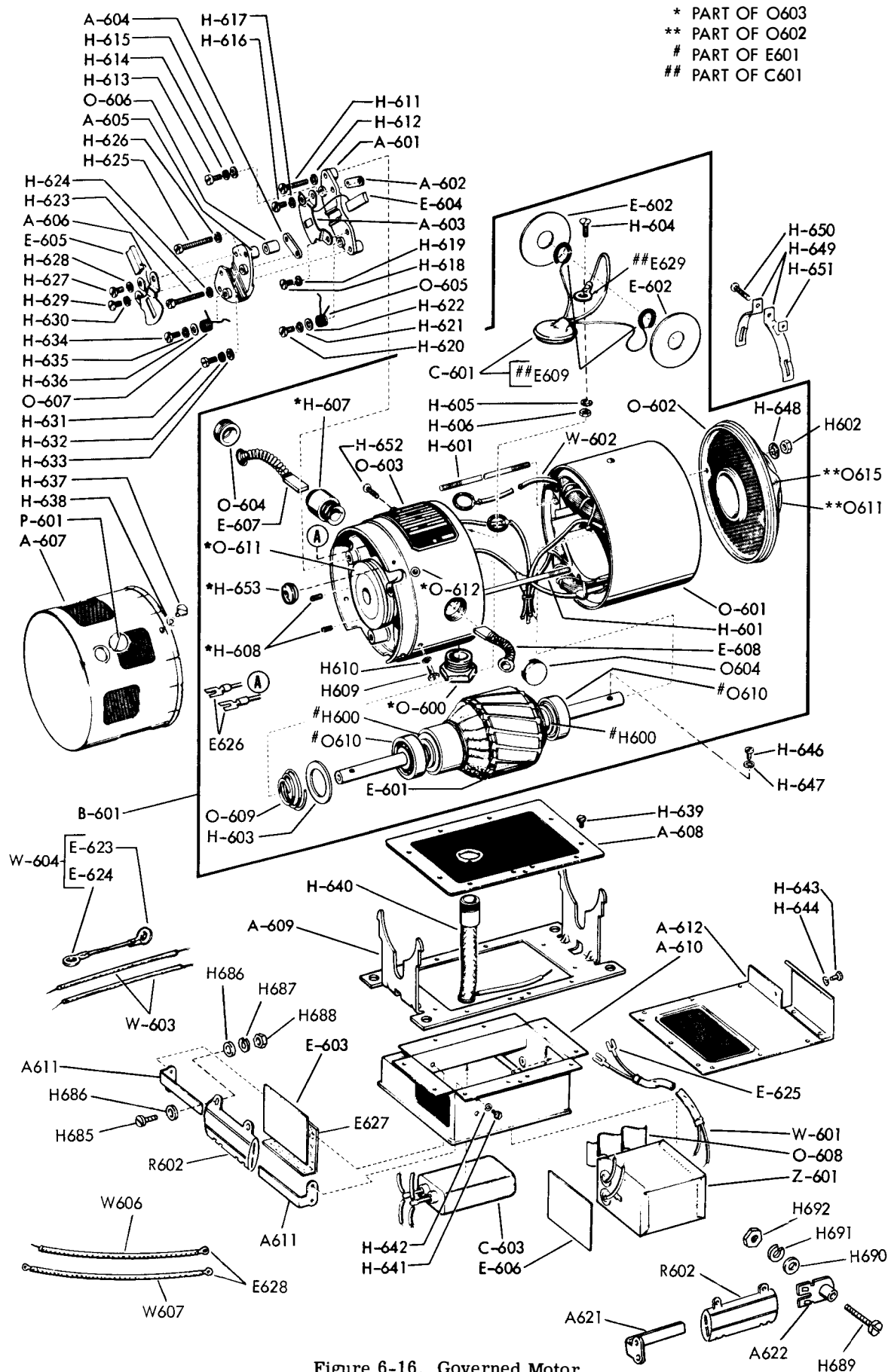


Figure 6-16. Governed Motor

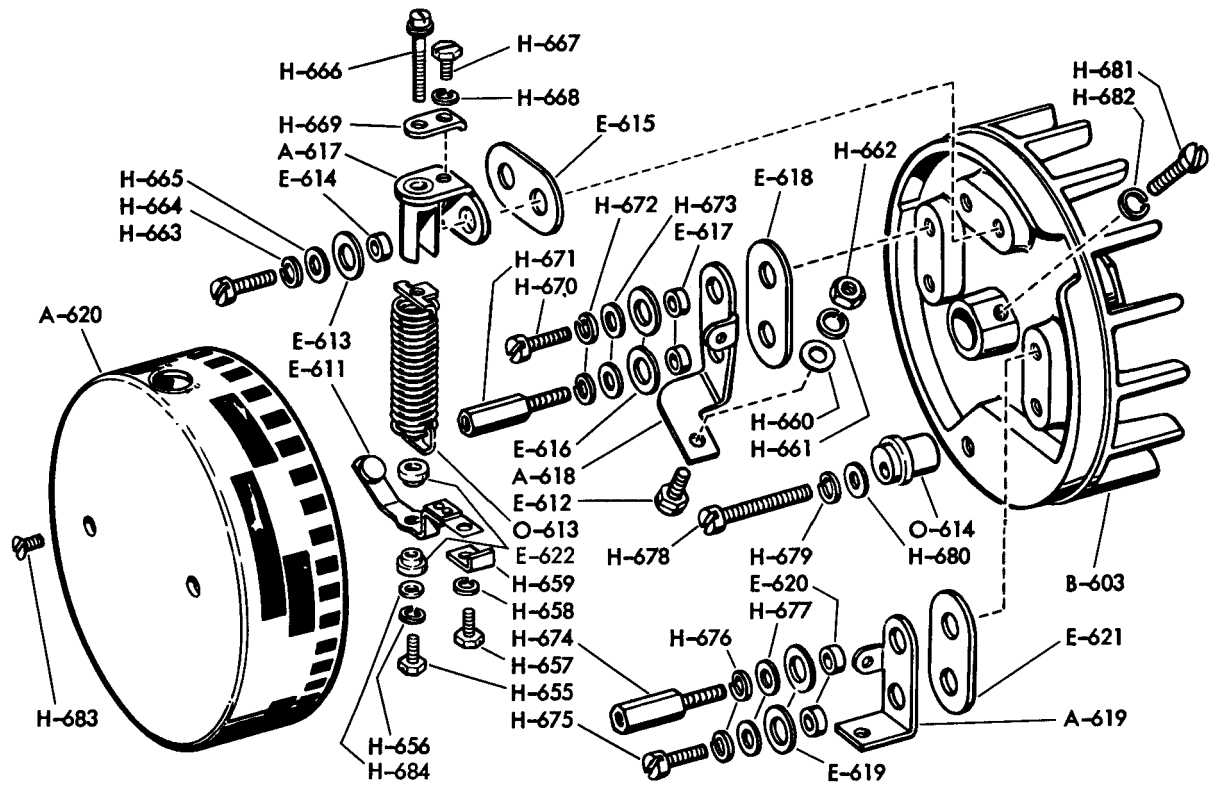


Figure 6-17. Governed Motor, Governor Mechanism

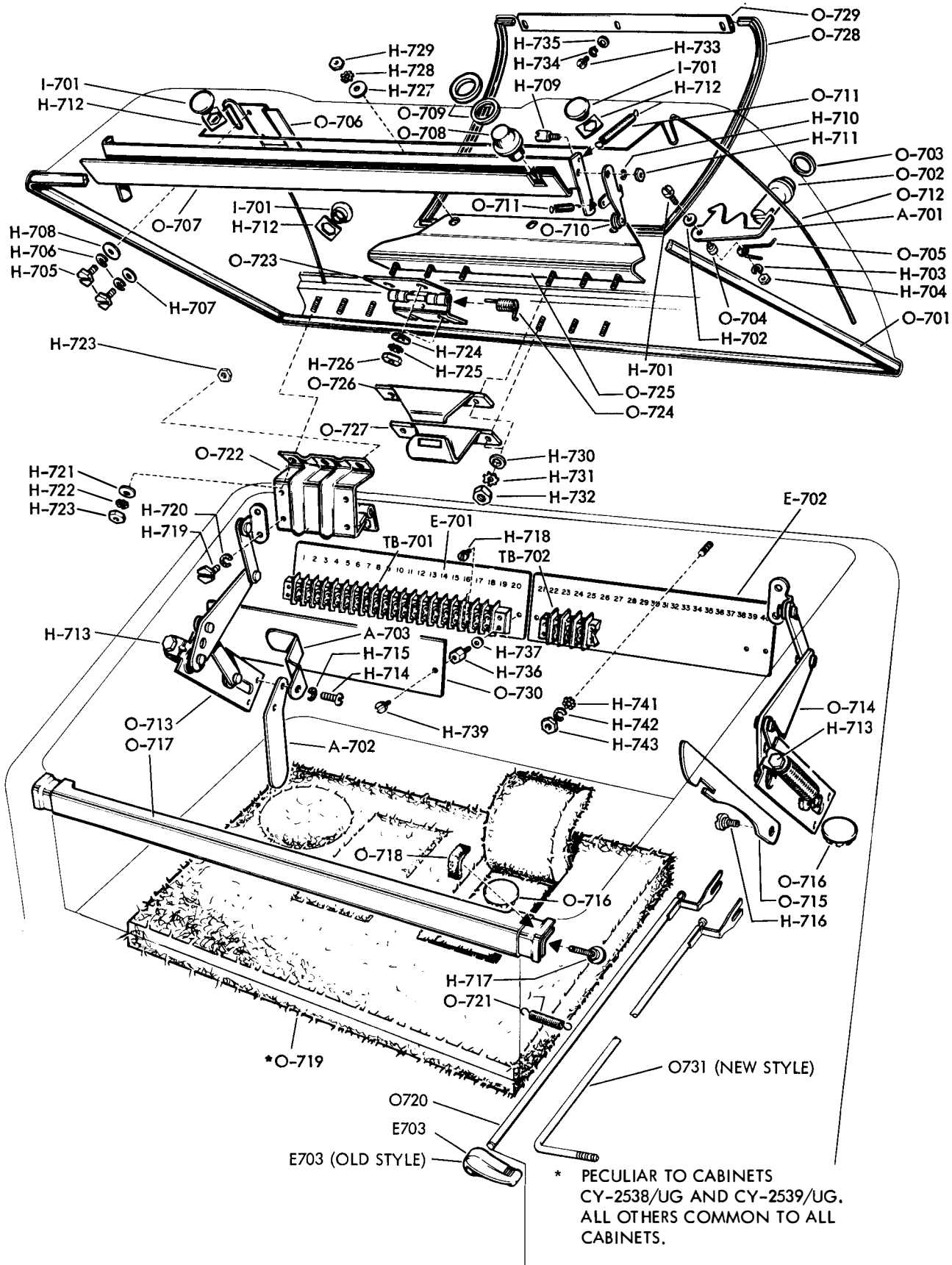


Figure 6-18. Cabinet, CY-2539/UG and Common Features of Cabinets CY-2538/UG and CY-2320/SGA-3

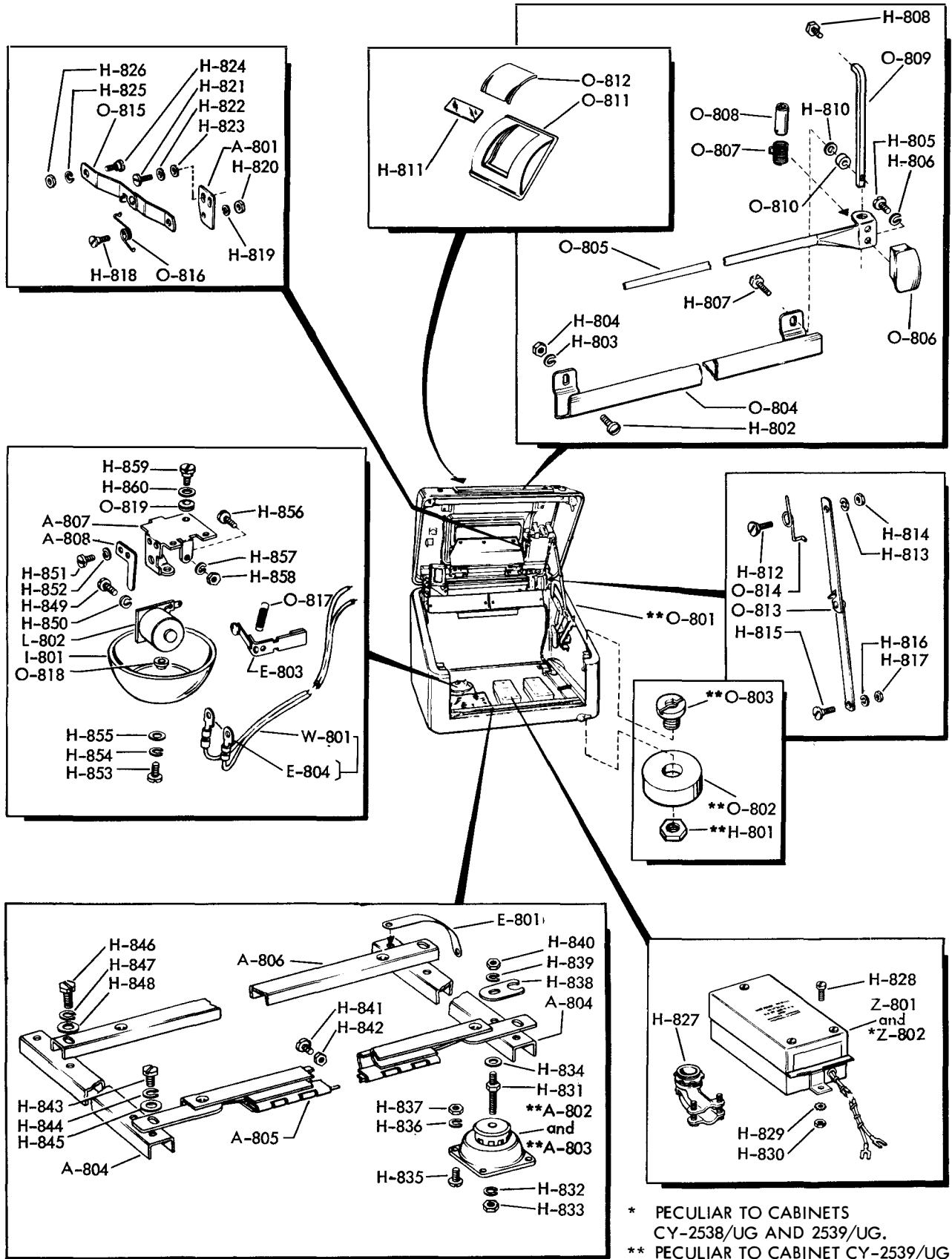


Figure 6-19. Cabinet, CY-2538/UG and CY-2539/UG, and CY-2320/SGA-3, Variable Features

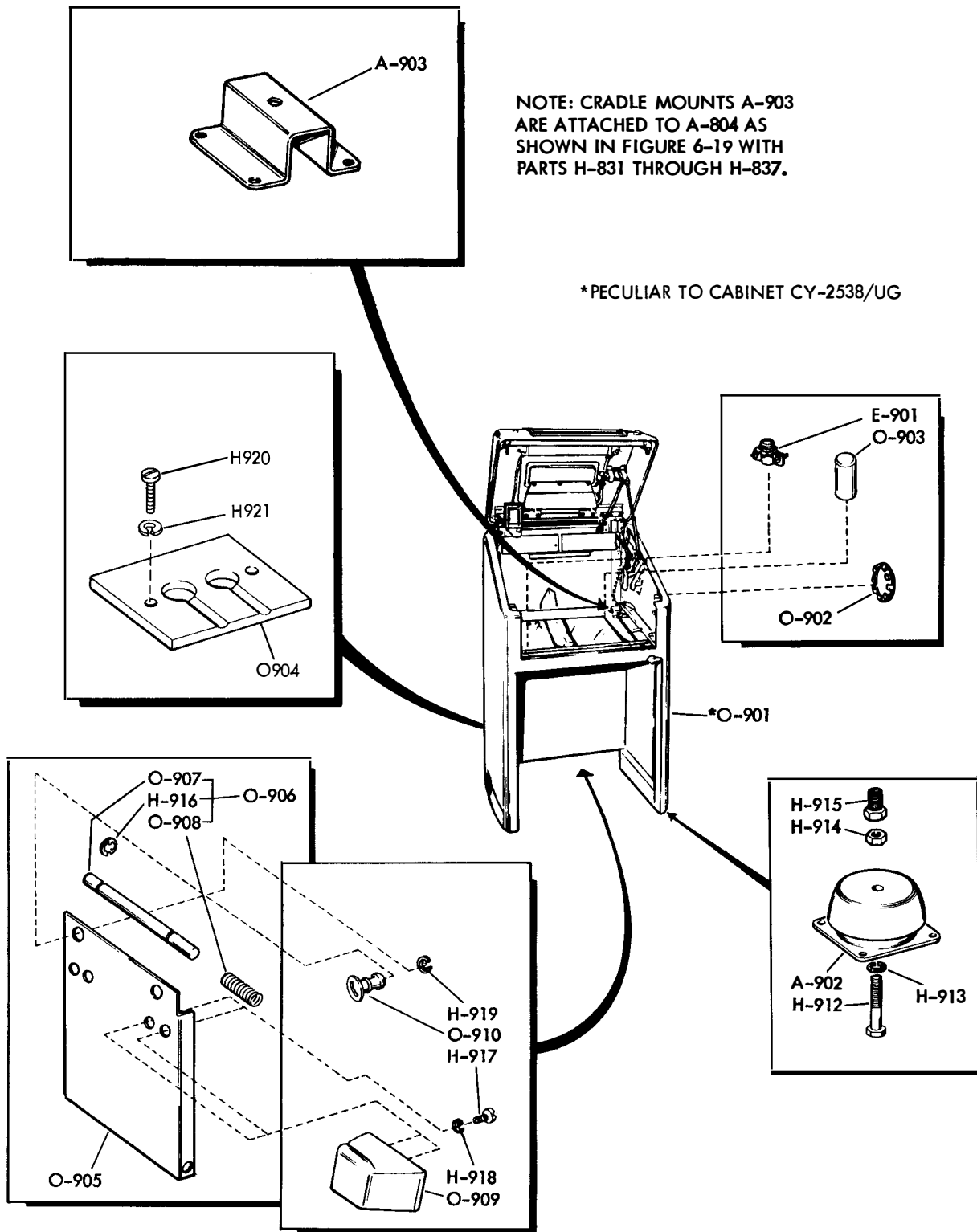


Figure 6-20. Cabinet, CY-2538/UG, CY-2539/UG and CY-2320/SGA-3, Variable Features

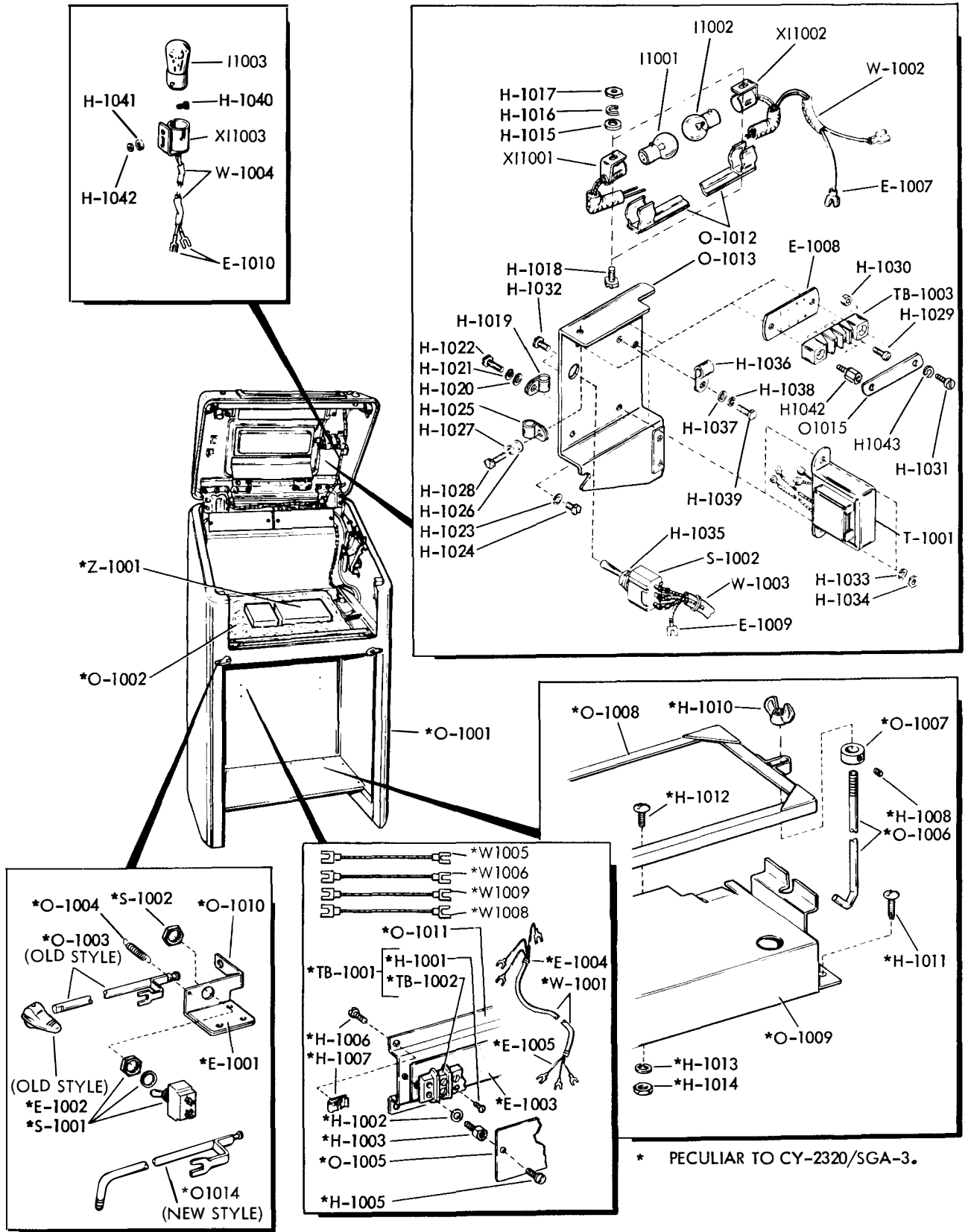
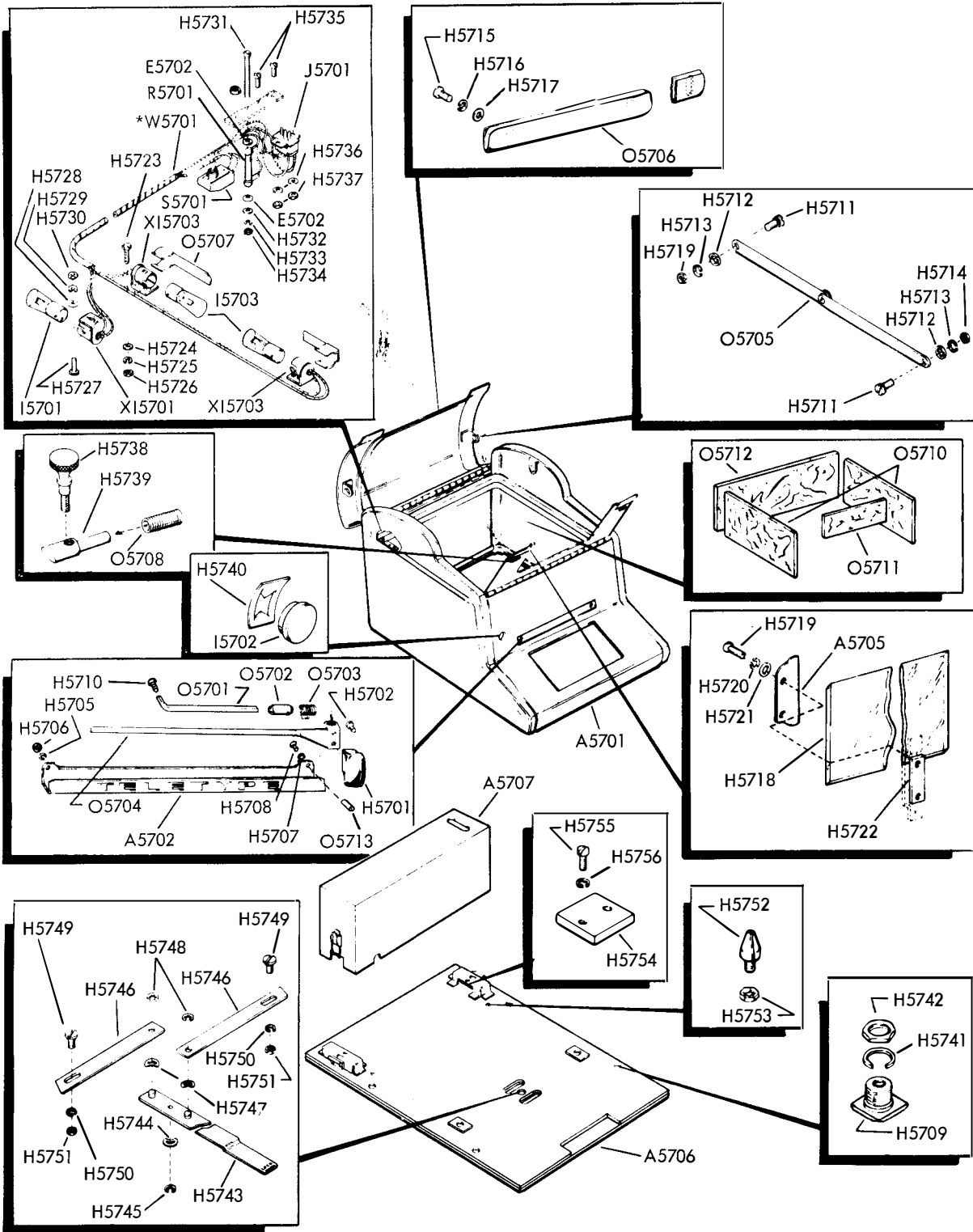
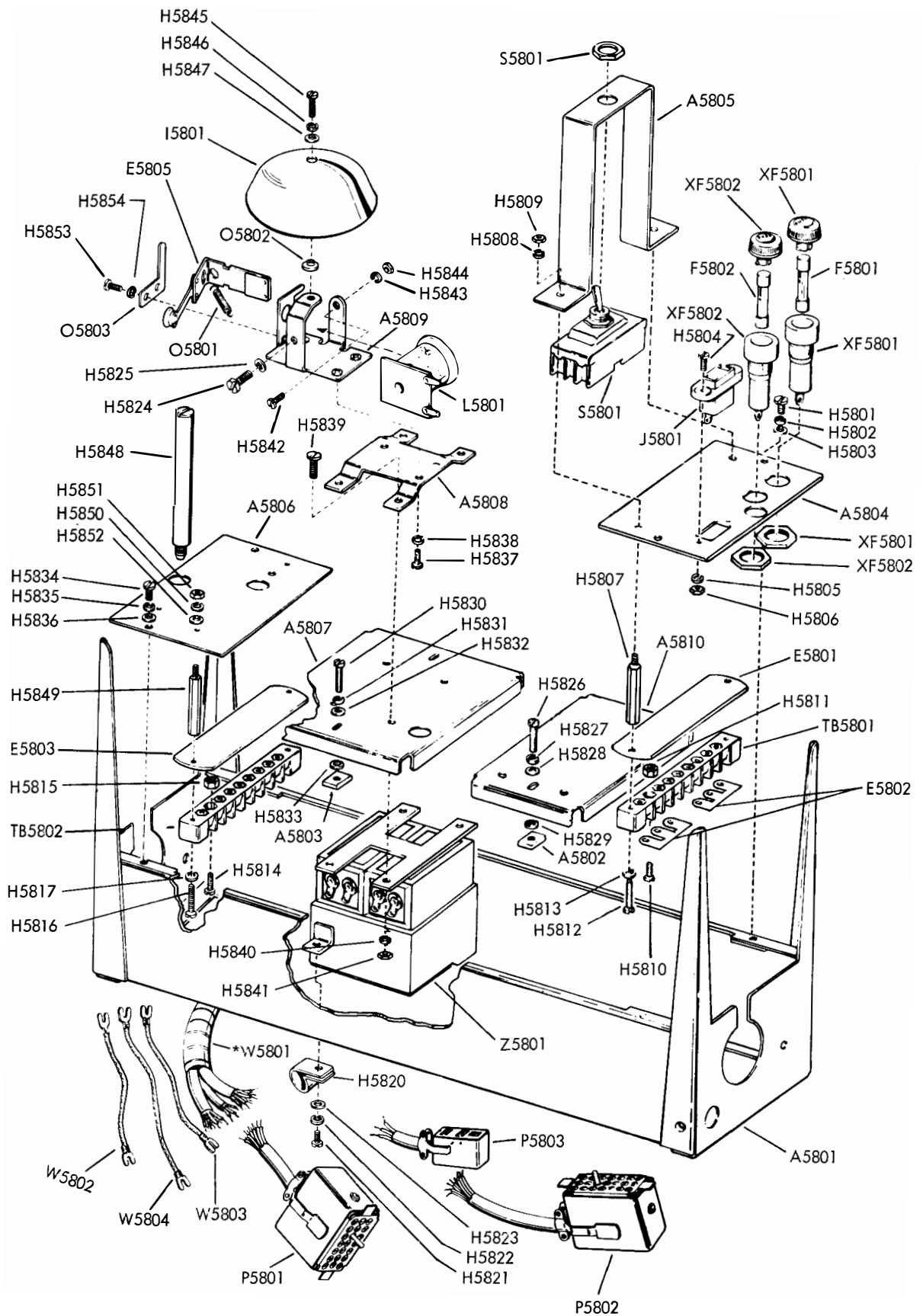


Figure 6-21. Cabinet CY-2538/UG, CY-2539/UG and CY-2320/SGA-3



\* INCLUDES SYMBOLS J5701, R5701, S5701, X15701 AND X15703

Figure 6-21A. Cabinet CW-354/UG, Cover and Base Plate Assemblies



\*INCLUDES SYMBOLS P5801, P5802 AND P5803

Figure 6-21B. Power Distribution Panel, SB-408/UG



NOTE:  
E-1107 AND E-1108  
TERMINALS ( NOT  
ILLUSTRATED ) ARE  
USED ON W-1101

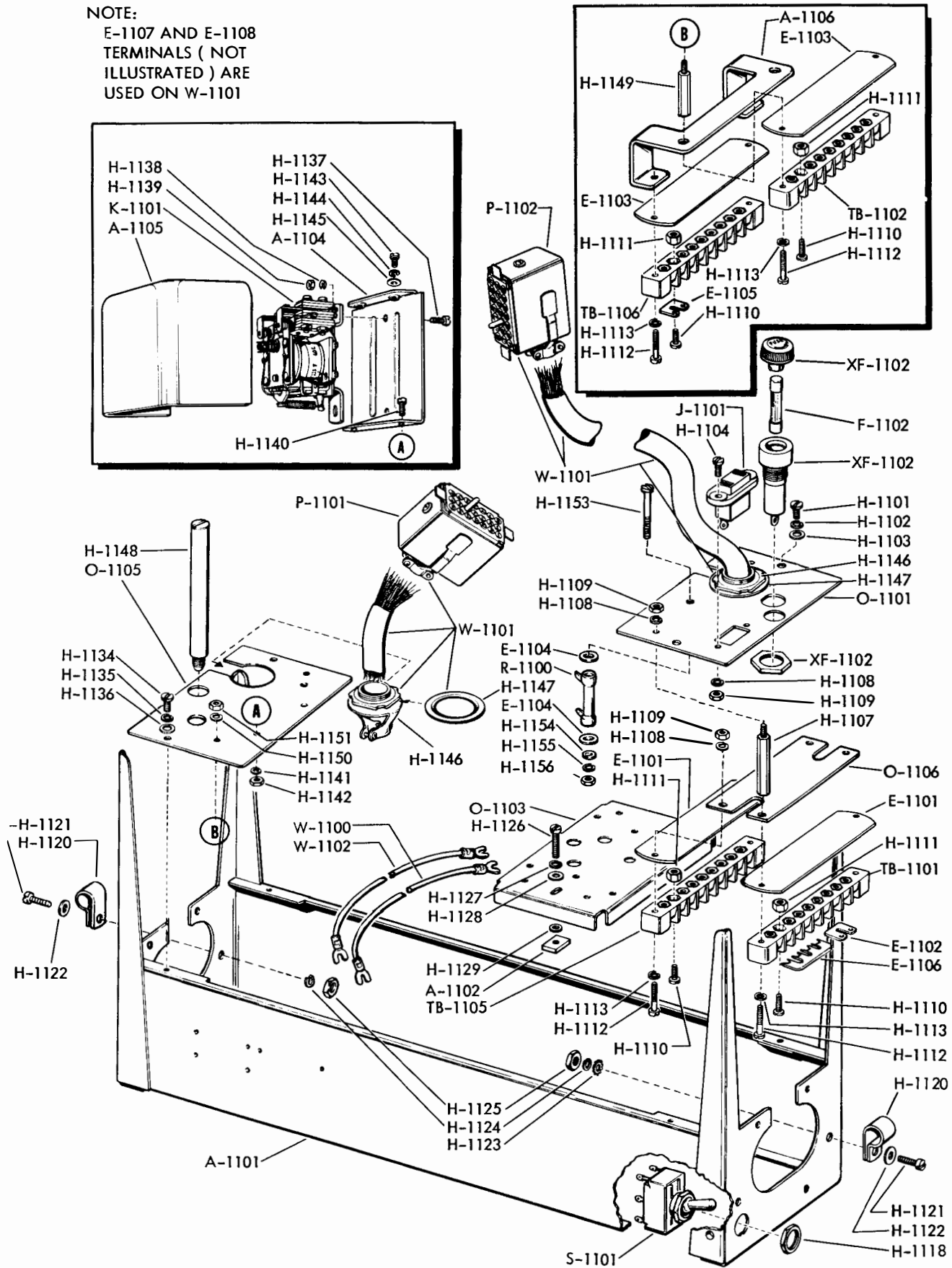


Figure 6-22. Power Distribution Panel, SB-964/UG

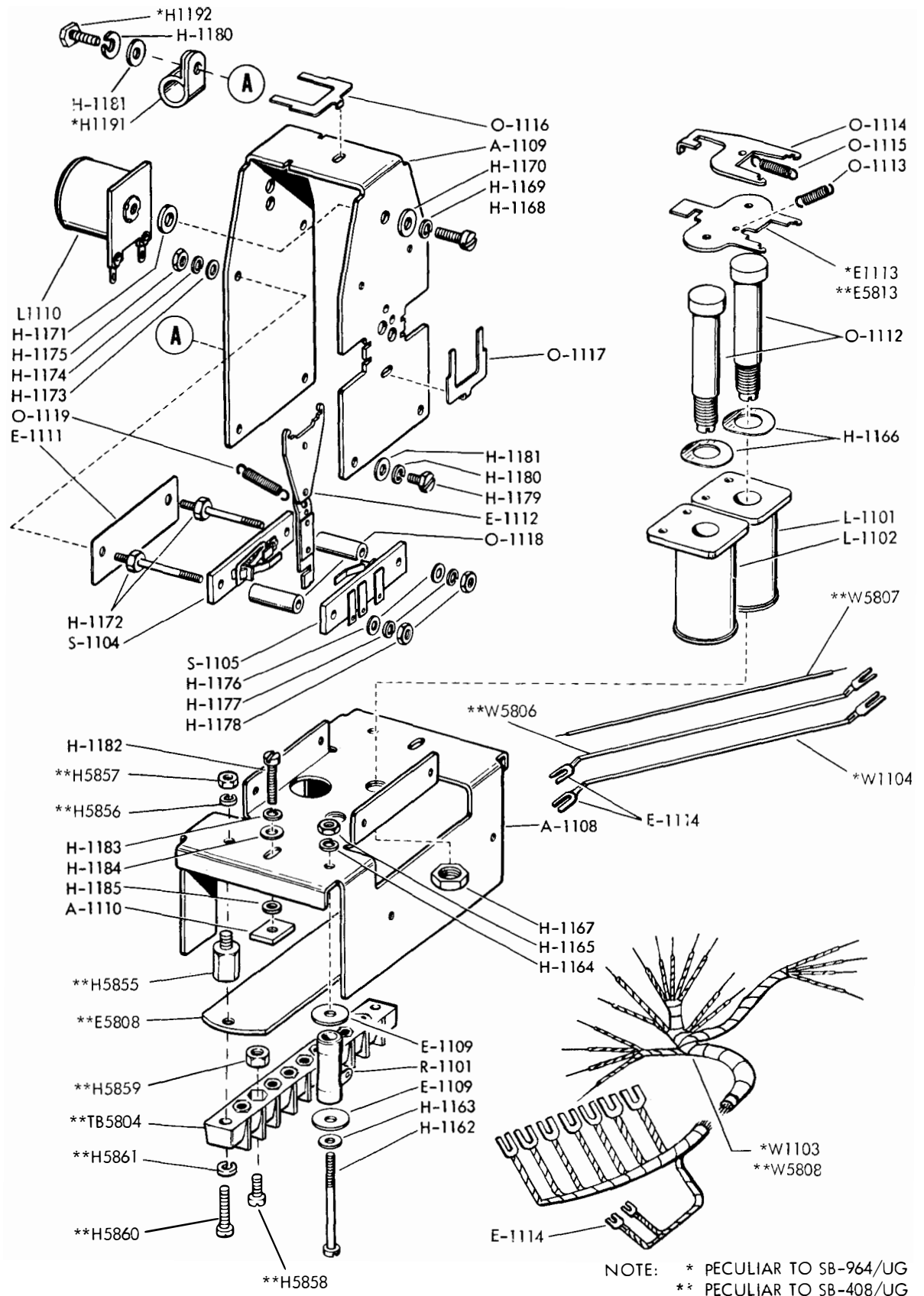


Figure 6-23. Power Distribution Panel SB-408/UG and SB-964/UG, Motor Control Mechanism

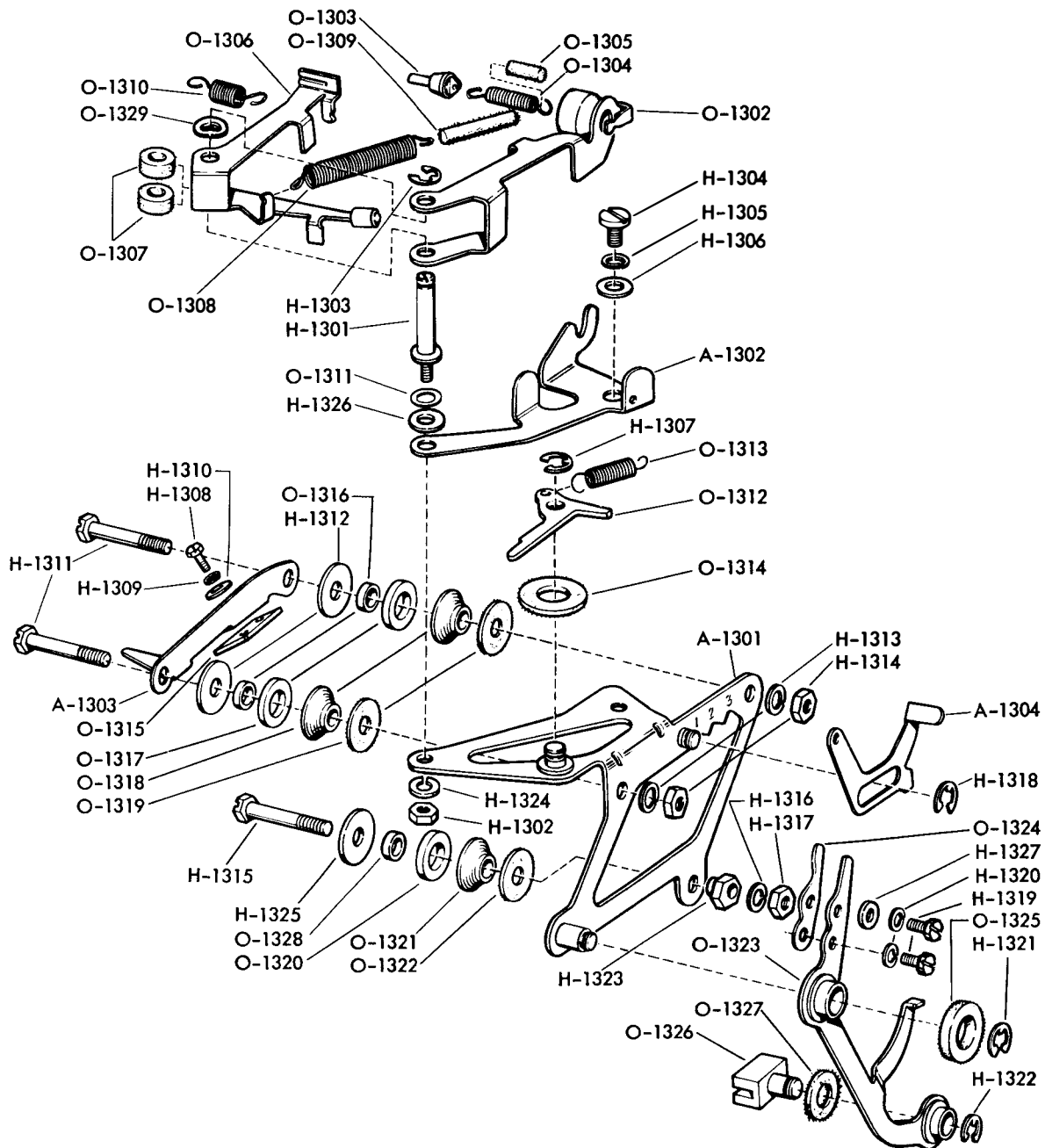


Figure 6-24. Automatic Typewriter, Printing Carriage Mechanism

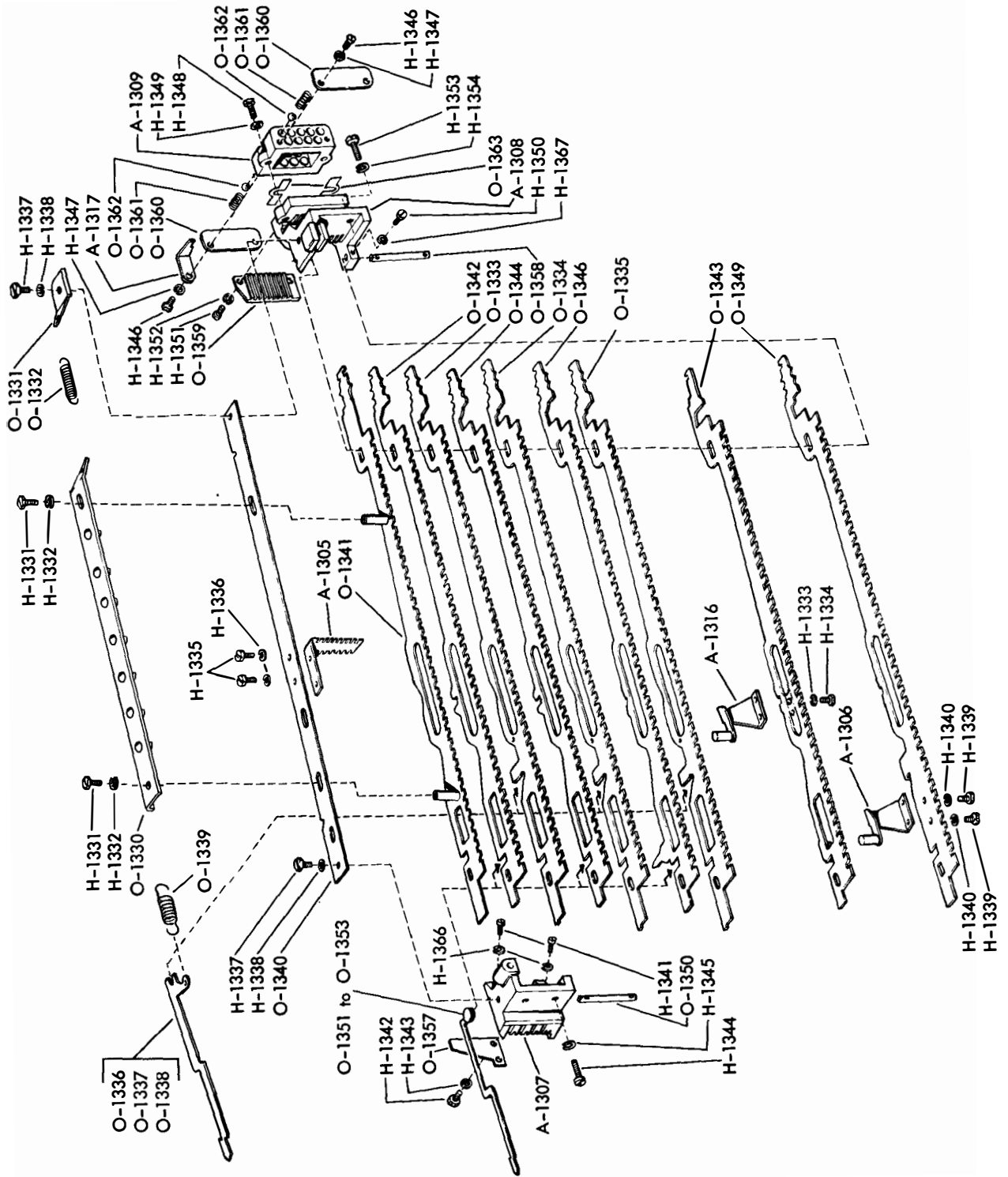


Figure 6-25. Automatic Typewriter, Code Bar Mechanism

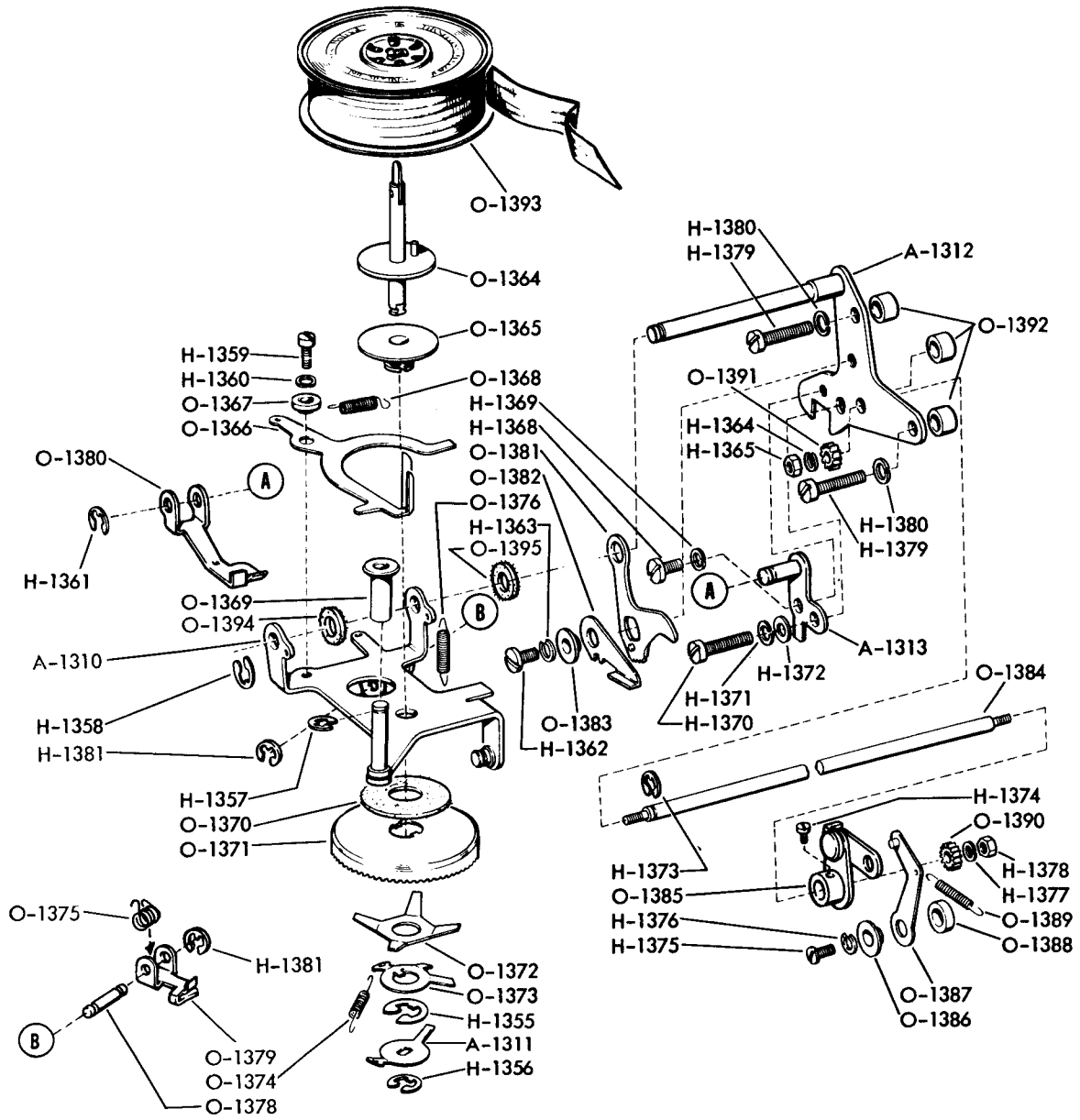


Figure 6-26. Automatic Typewriter, Left Ribbon Feed Mechanism

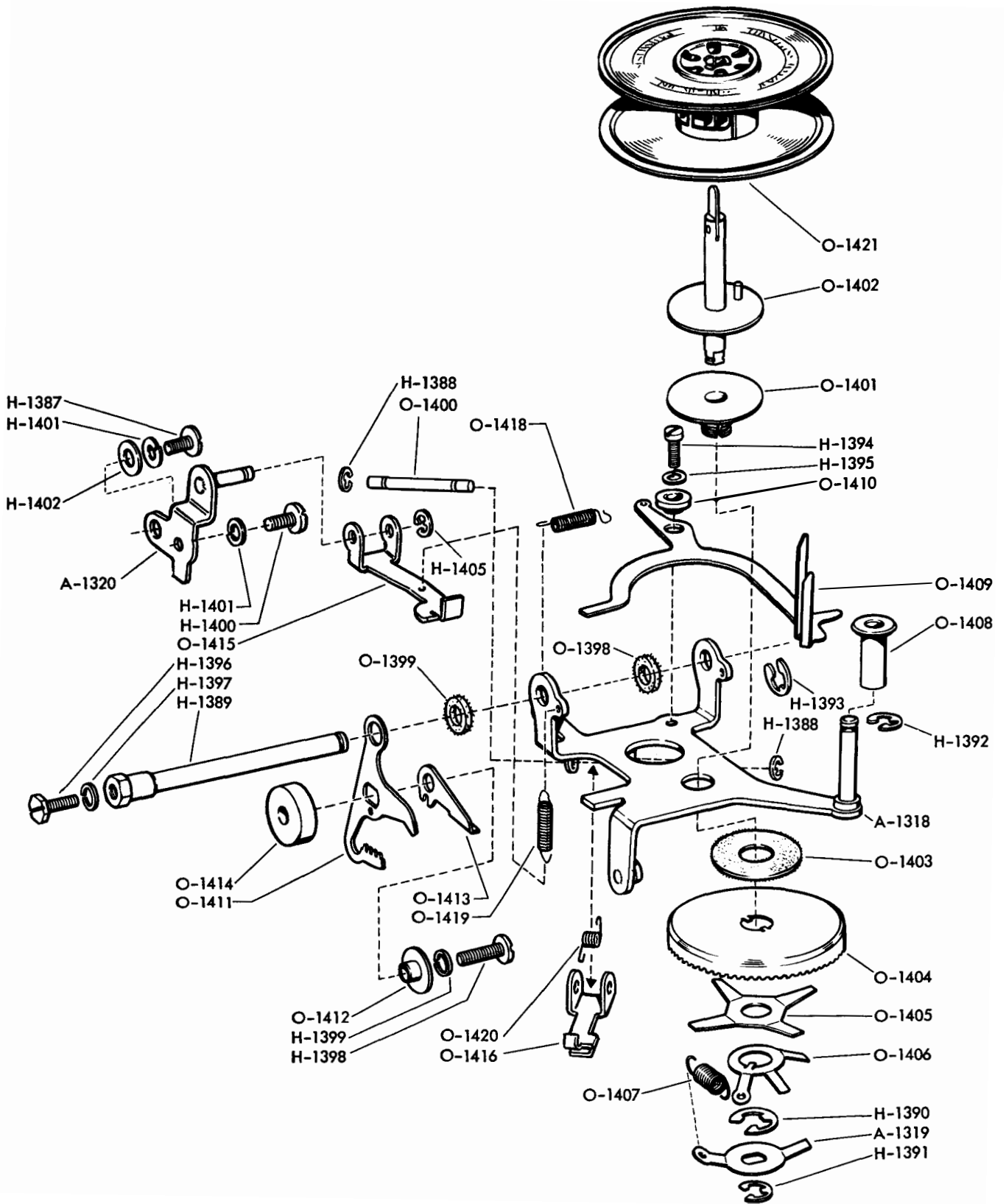


Figure 6-27. Automatic Typewriter, Right Ribbon Feed Mechanism

① O1425	④ O1429	***⑮ O1434	***⑲ O1438	***⑳ O1442	⑳ O1447	⑳ O1430
② O1427	⑤ O1431	***⑯ O1435	***⑳ O1439	***㉑ O1443	㉑ O1448	**㉒ O1450
③ O1428	***⑬ O1432	***⑰ O1436	***㉑ O1440	*㉒ O1444	㉒ O1449	*㉓ O1451
	***⑭ O1433	***⑱ O1437	***㉒ O1441	**㉓ O1445		

SYMBOL ABOVE DESIGNATES FUNCTION BAR.  
 DASH NUMBERS (SEE SECTION 7) APPLY AS  
 FOLLOWS: -1, LEVER: -2, LATCH

\* PECULIAR TO MX-1115B/UG  
 AND MX-2984/UG  
 \*\*PECULIAR TO MX-3080/UG  
 \*\*\*PECULIAR TO MX-2984/UG  
 # OLD STYLE  
 ## NEW STYLE

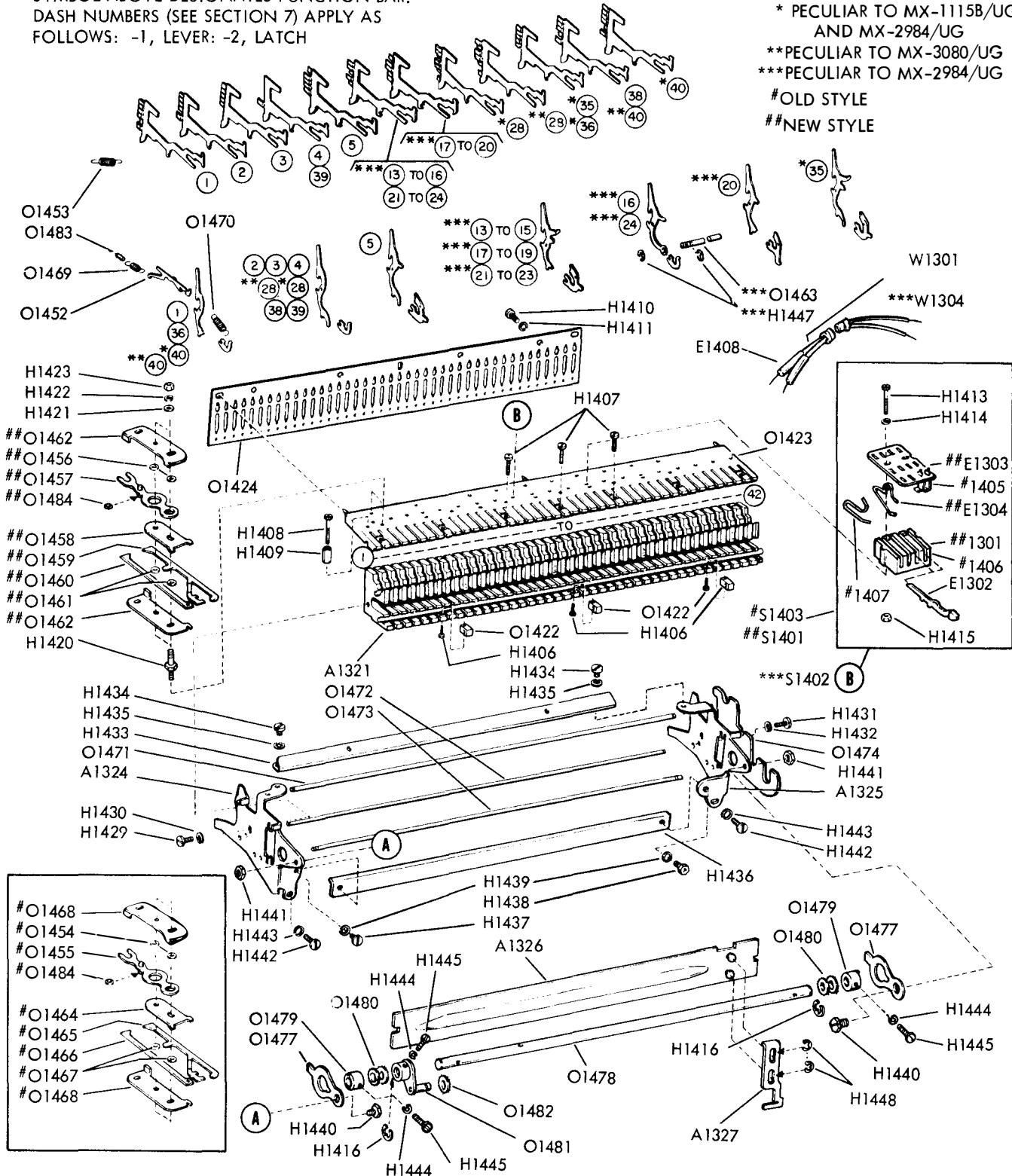


Figure 6-28. Automatic Typewriter, Function Box Mechanism

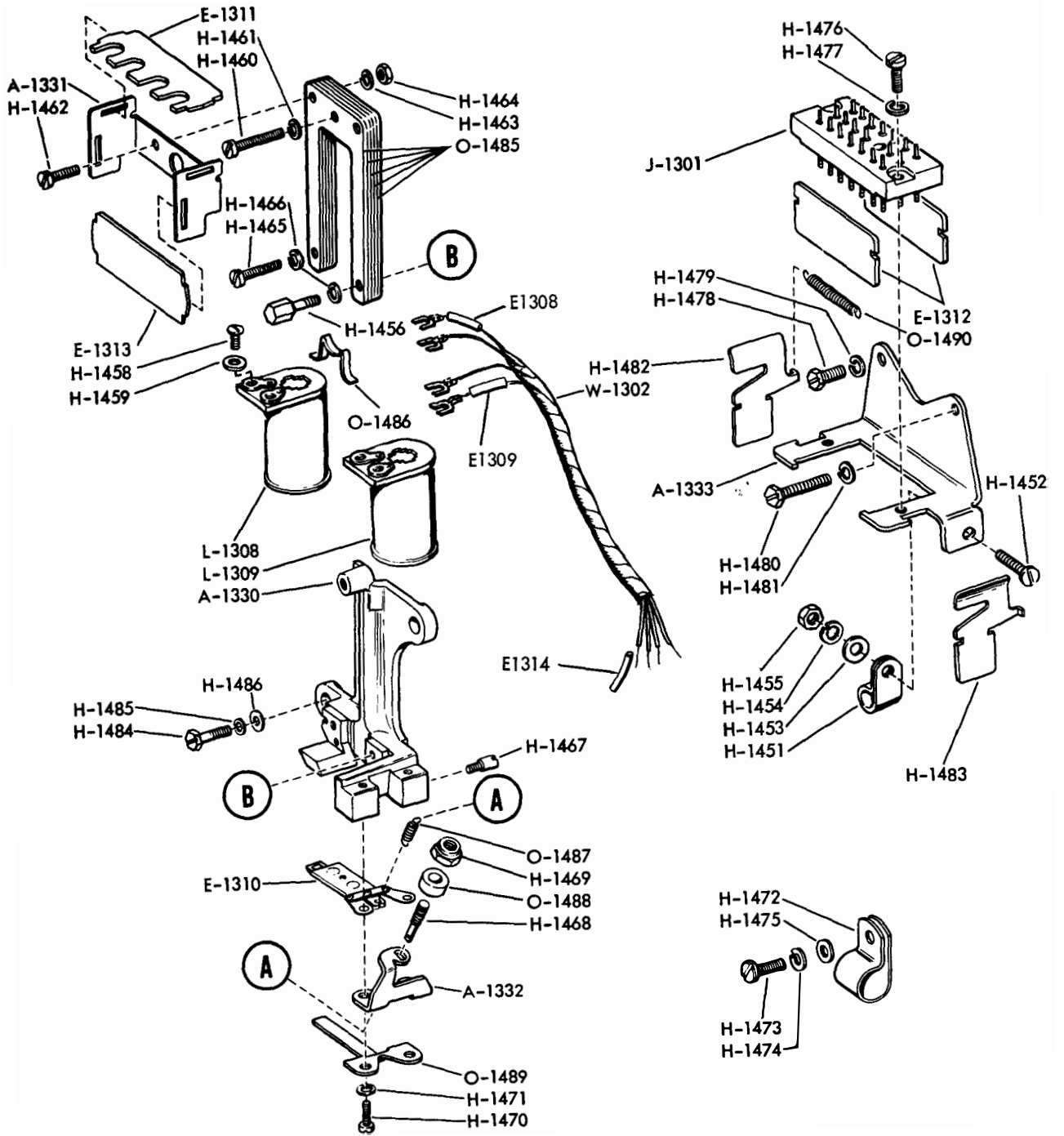


Figure 6-29. Automatic Typewriter, Selector Magnet Mechanism





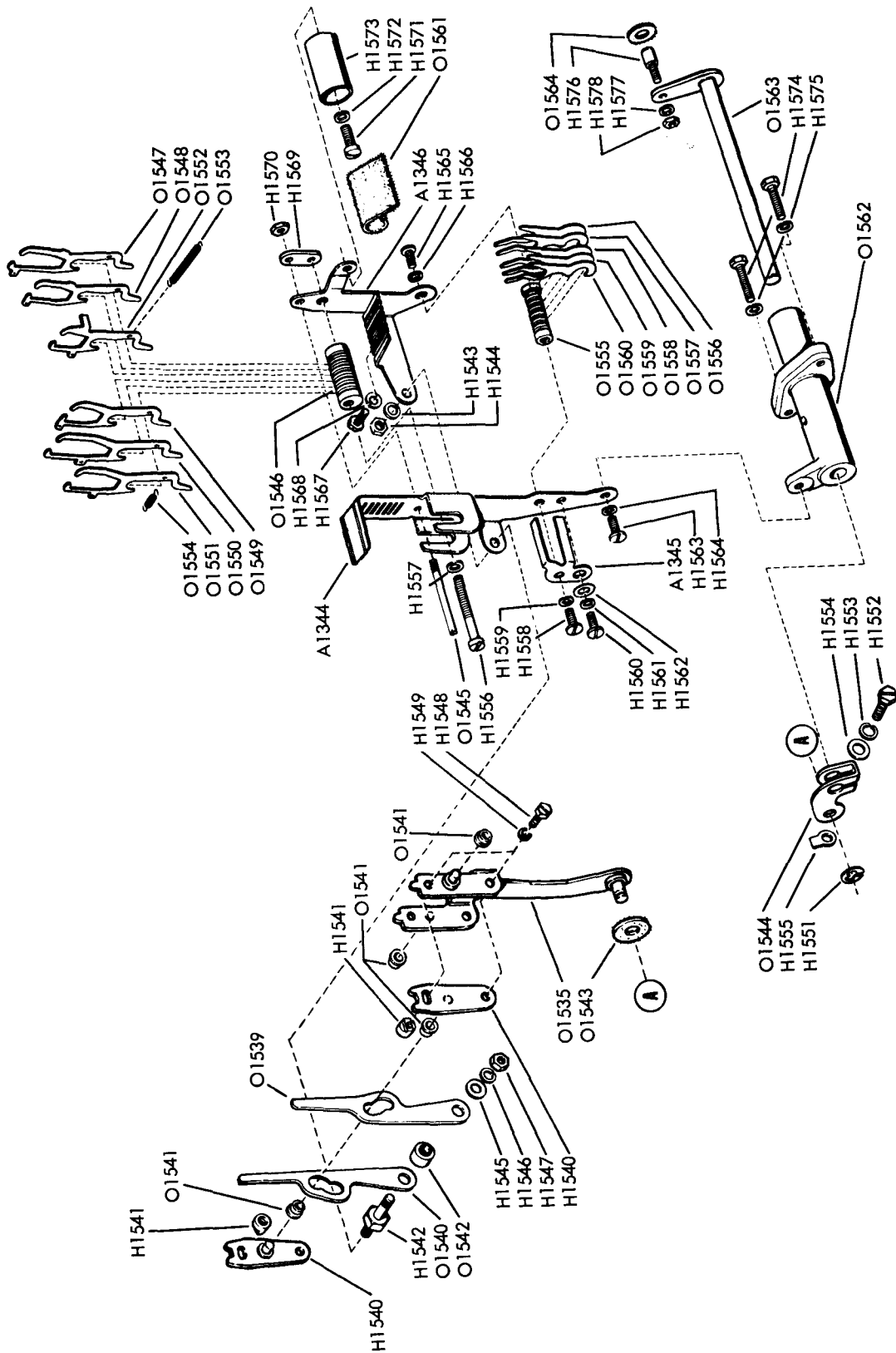


Figure 6-31. Automatic Typewriter, Code Bar Positioning Mechanism

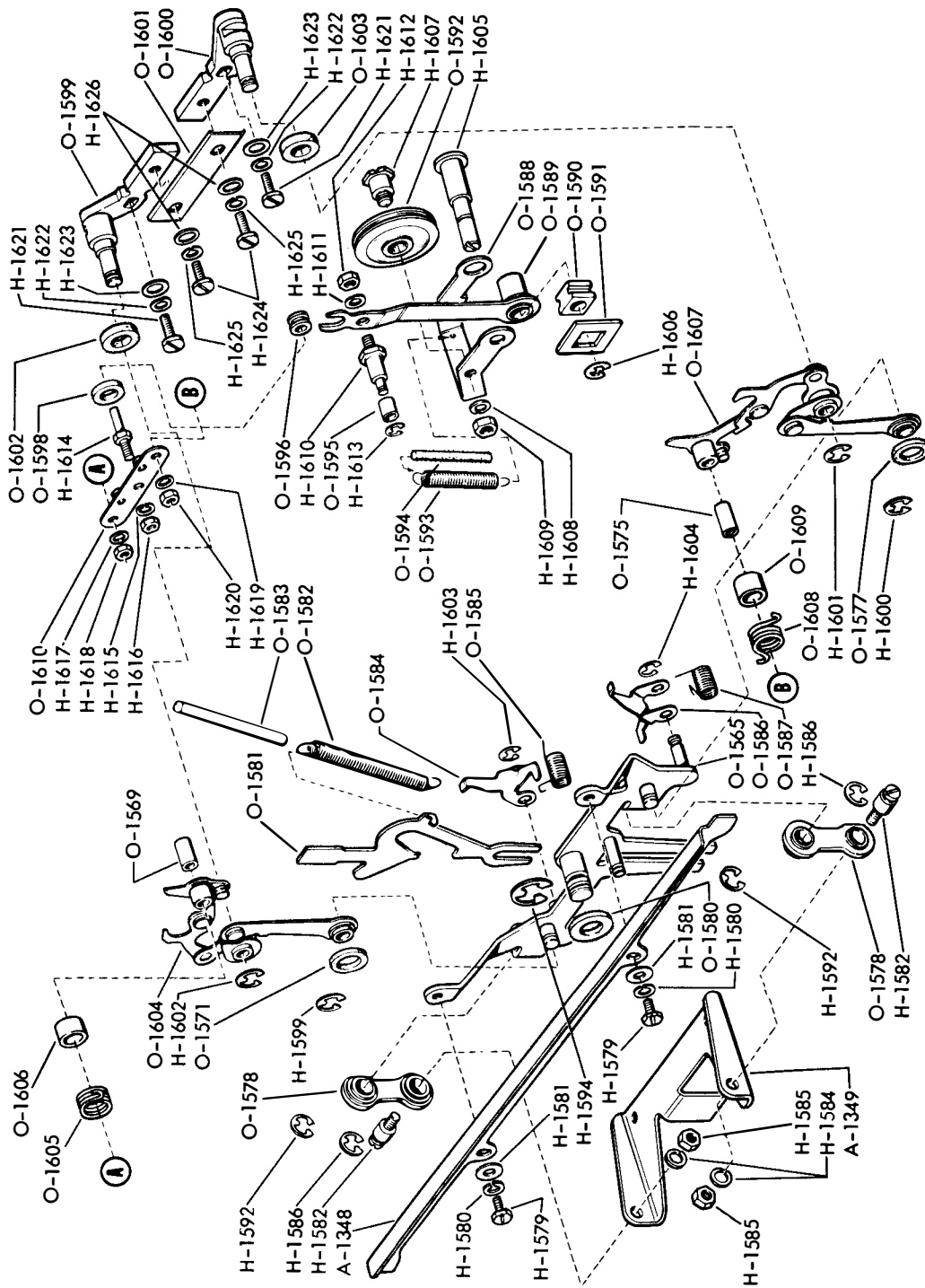


Figure 6-32. Automatic Typewriter, Front Plate Mechanism



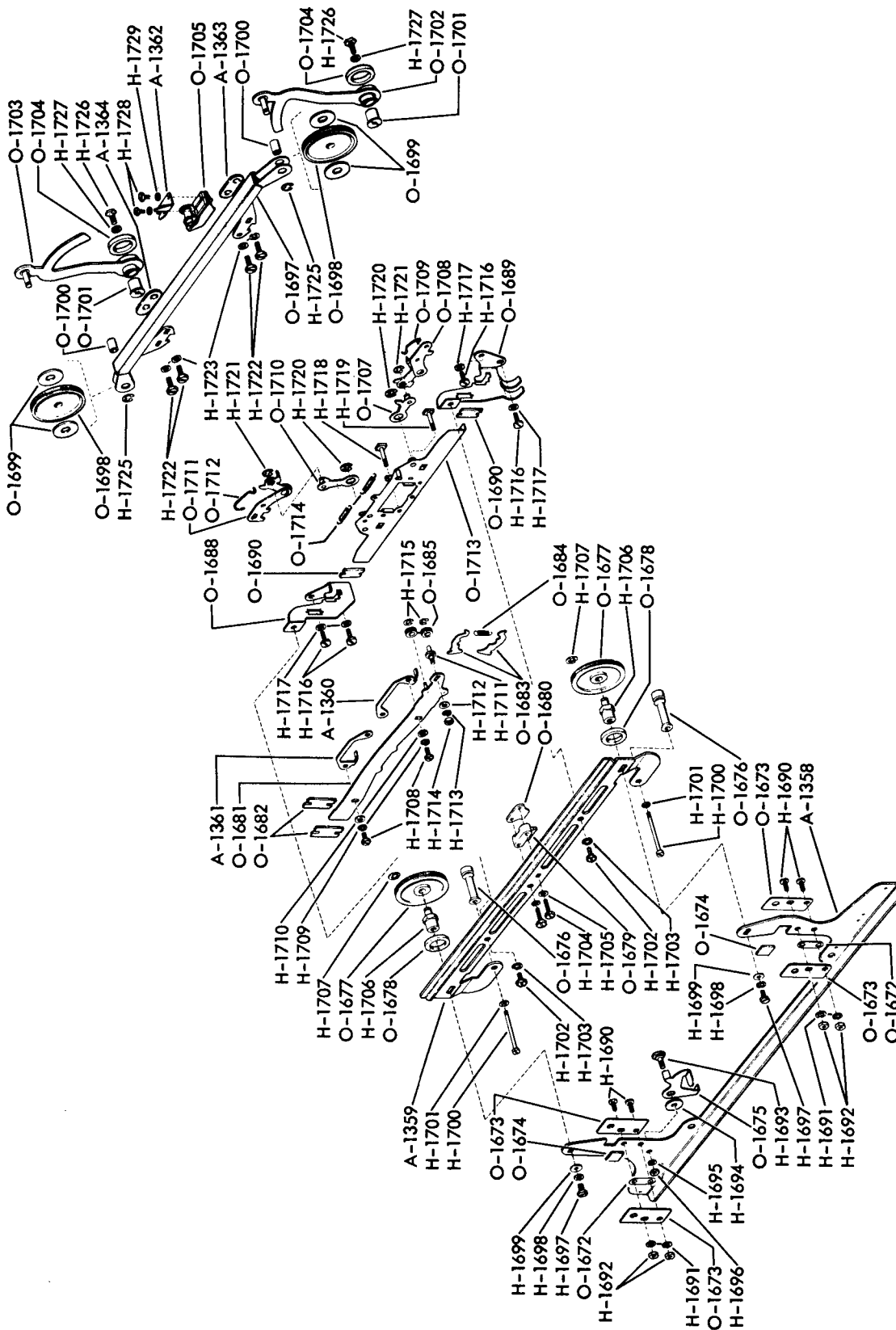


Figure 6-34. Automatic Typewriter, Front Plate Mechanism

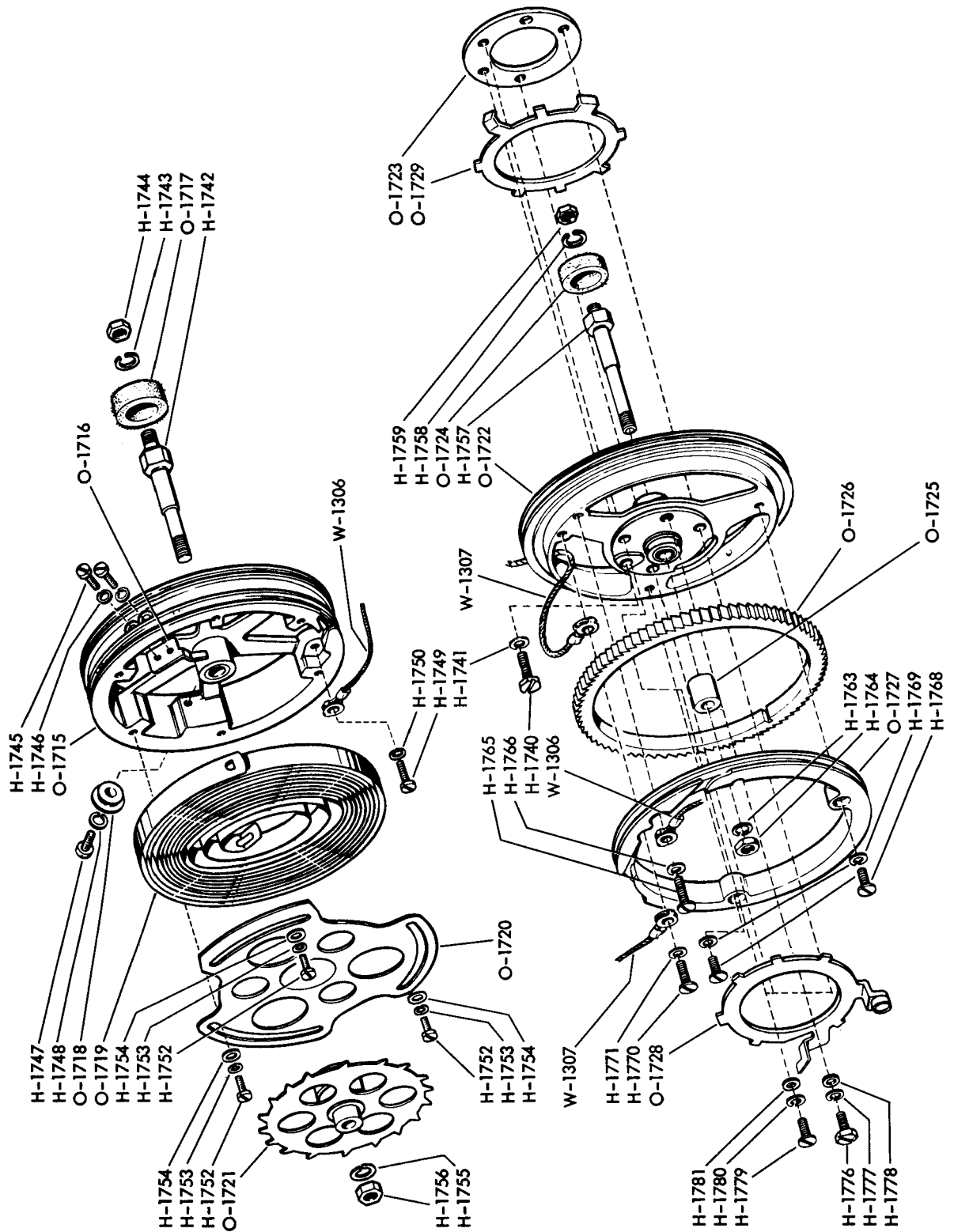


Figure 6-35. Automatic Typewriter, Spring Drum Mechanism

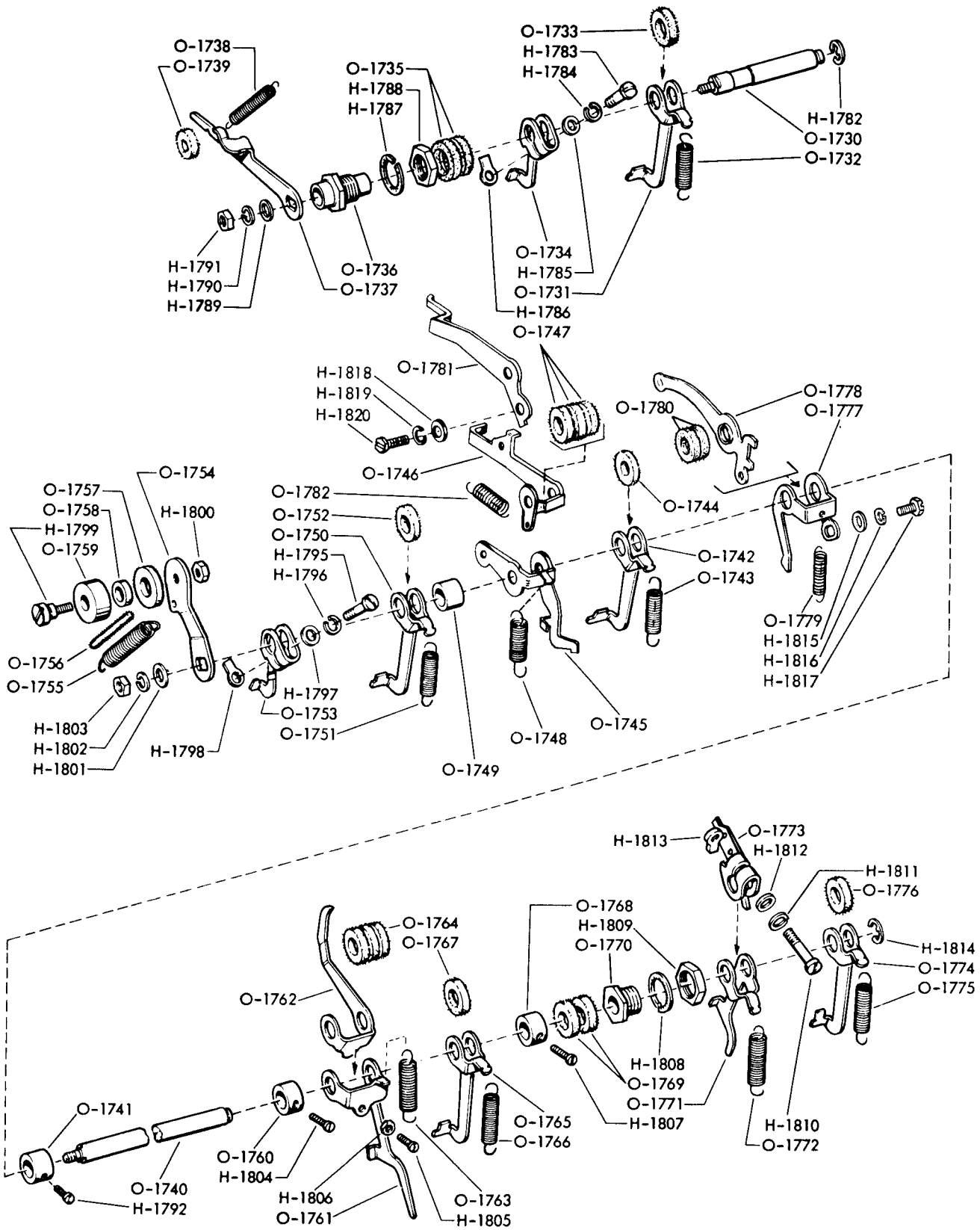


Figure 6-36. Automatic Typewriter, Trip Shaft Mechanism

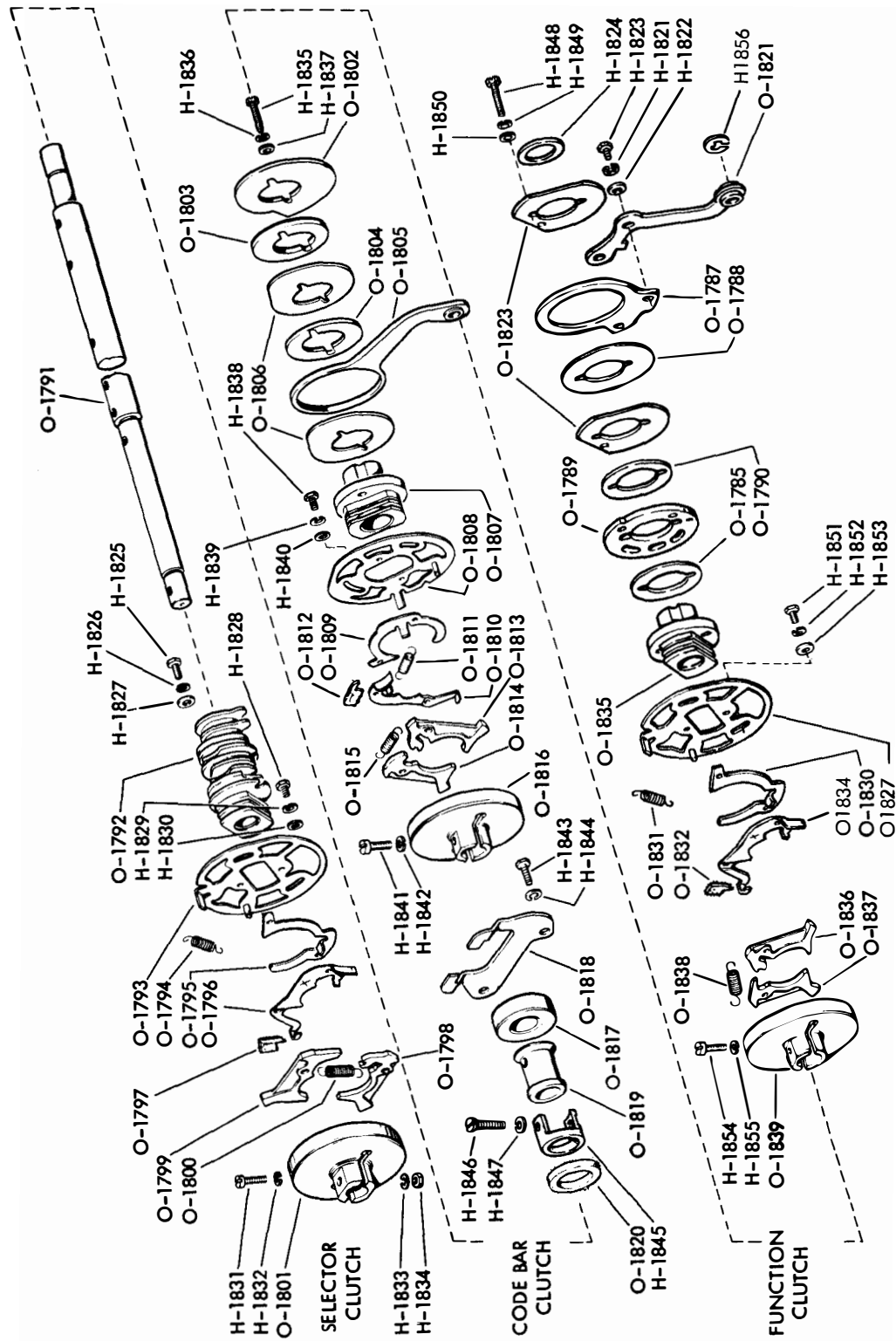


Figure 6-37. Automatic Typewriter, Main Shaft Mechanism



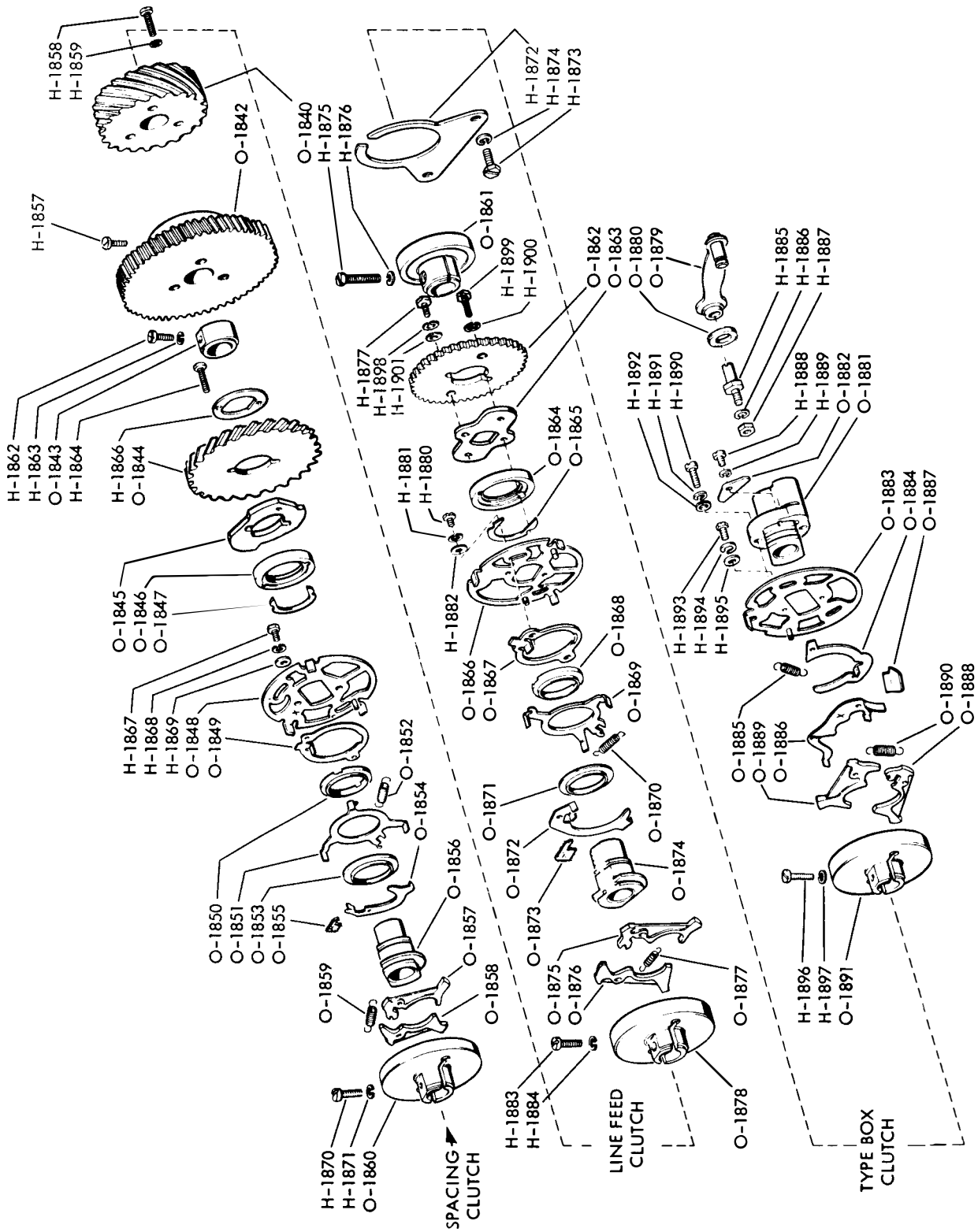


Figure 6-38. Automatic Typewriter, Main Shaft Mechanism

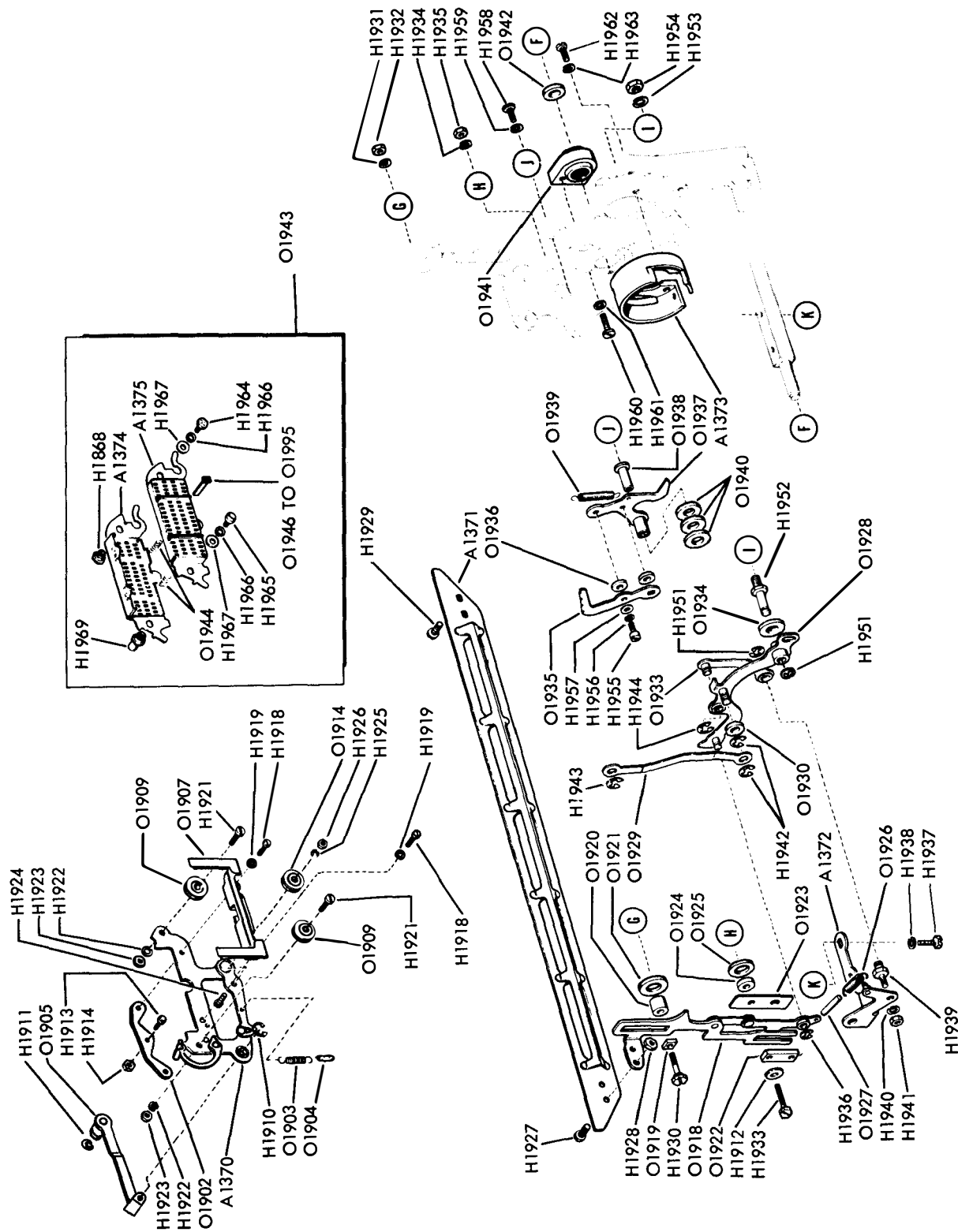


Figure 6-39. Automatic Typewriter, Right Side Linkage and Type Box Mechanism

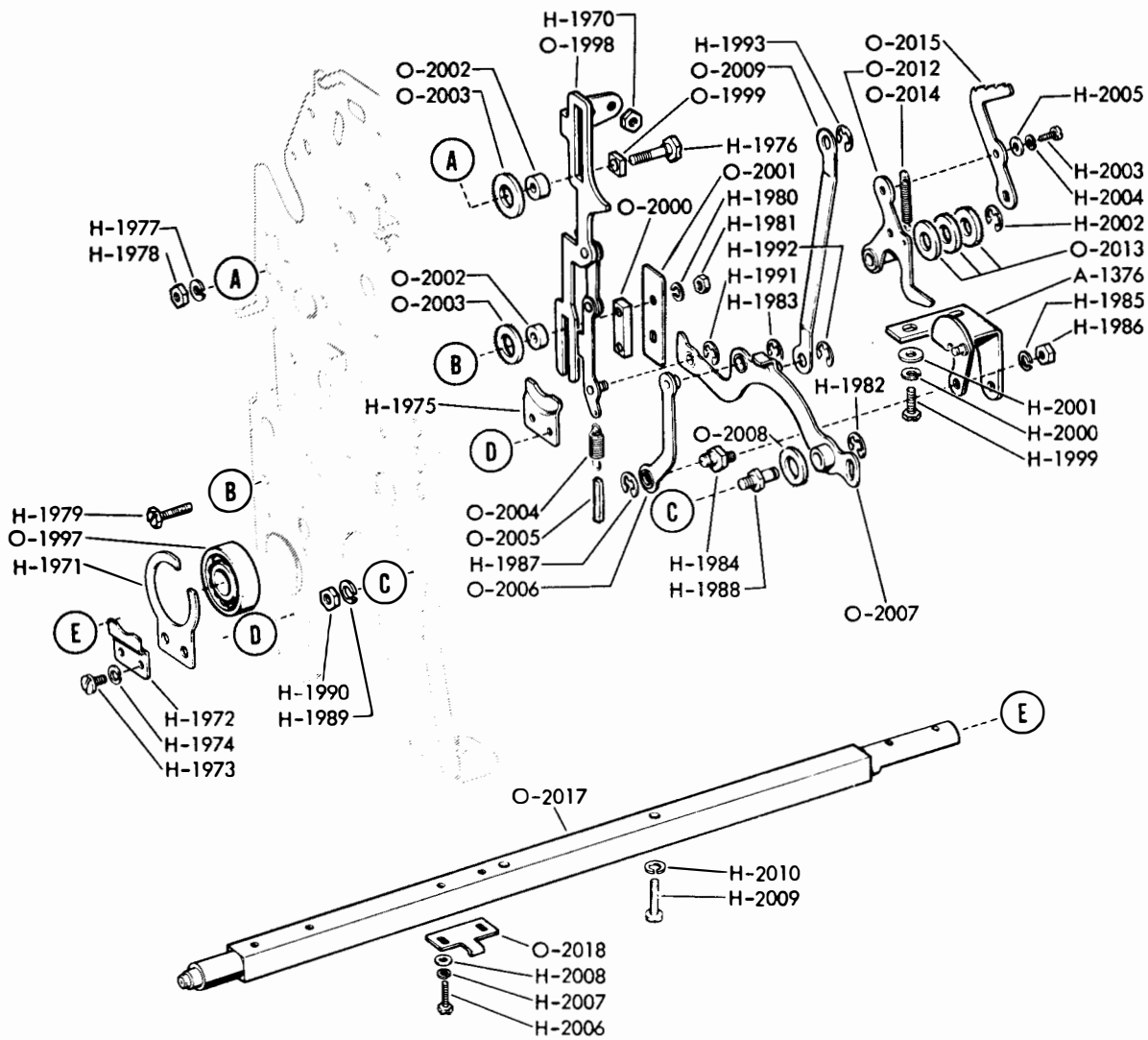


Figure 6-40. Automatic Typewriter, Left Side Linkage and Stripper Blade Mechanism

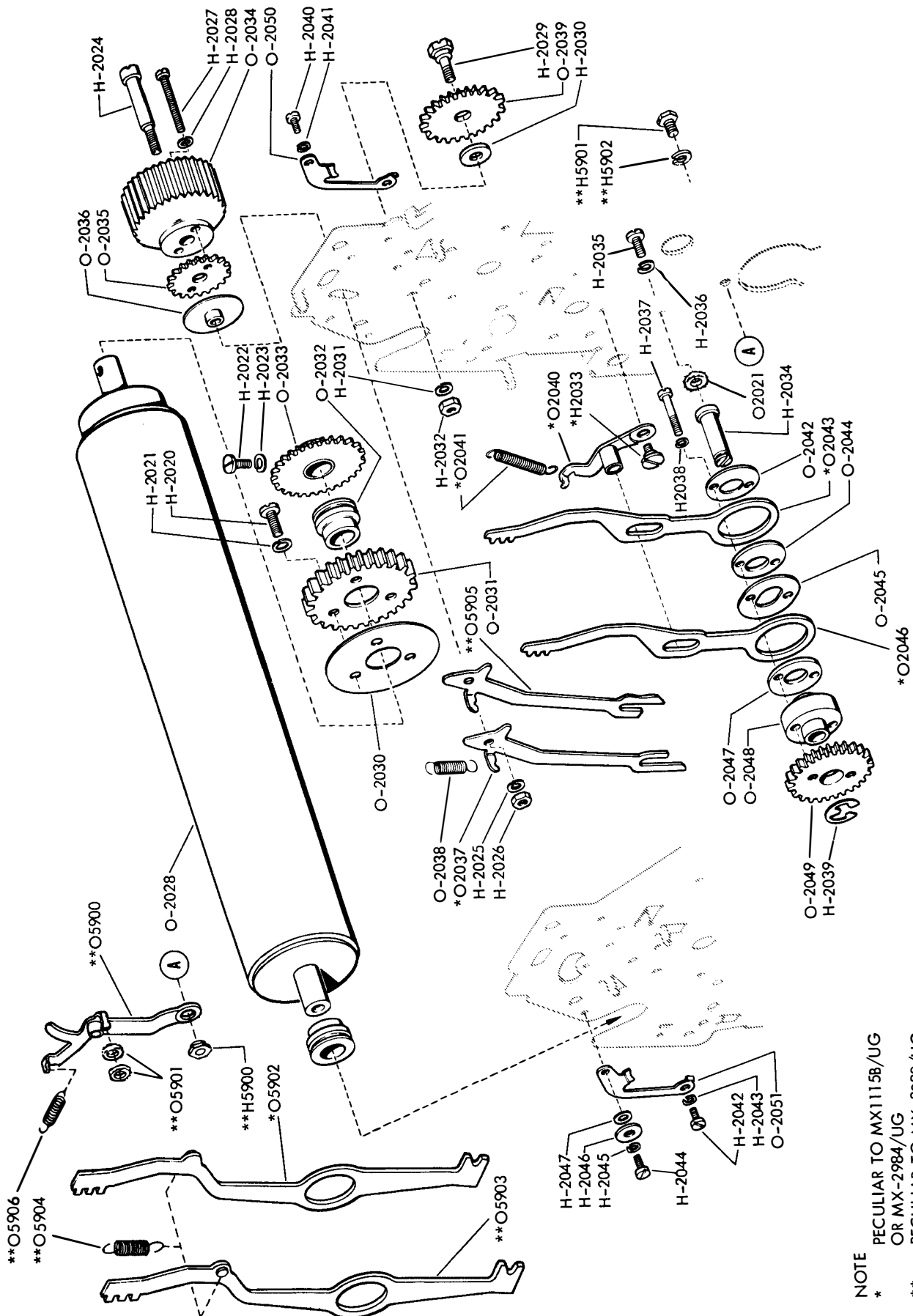


Figure 6-41. Automatic Typewriter, Line Feed and Platen and Local Reverse Line Feed Mechanisms

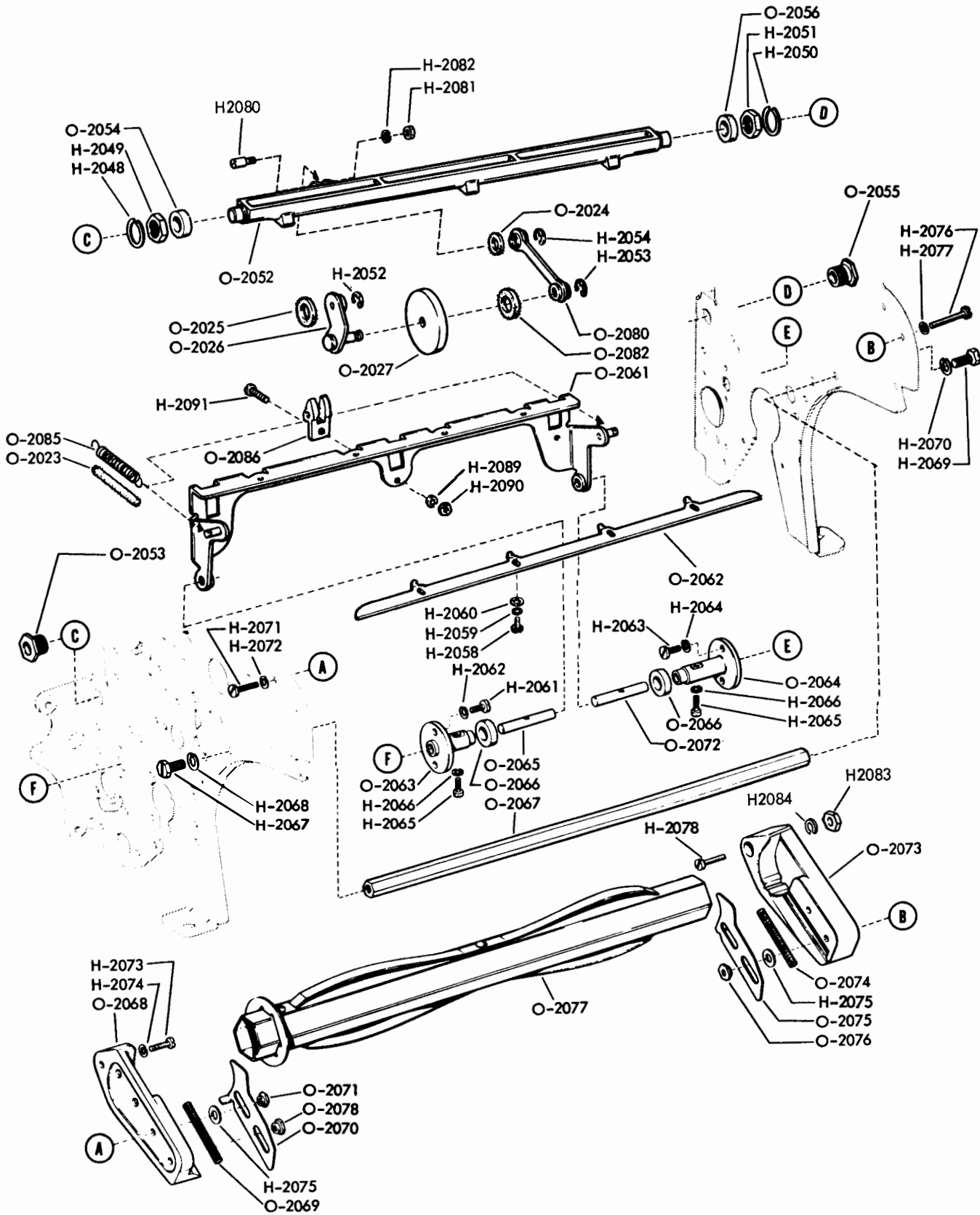


Figure 6-42. Automatic Typewriter, Paper Spindle and Reset Bail Mechanism



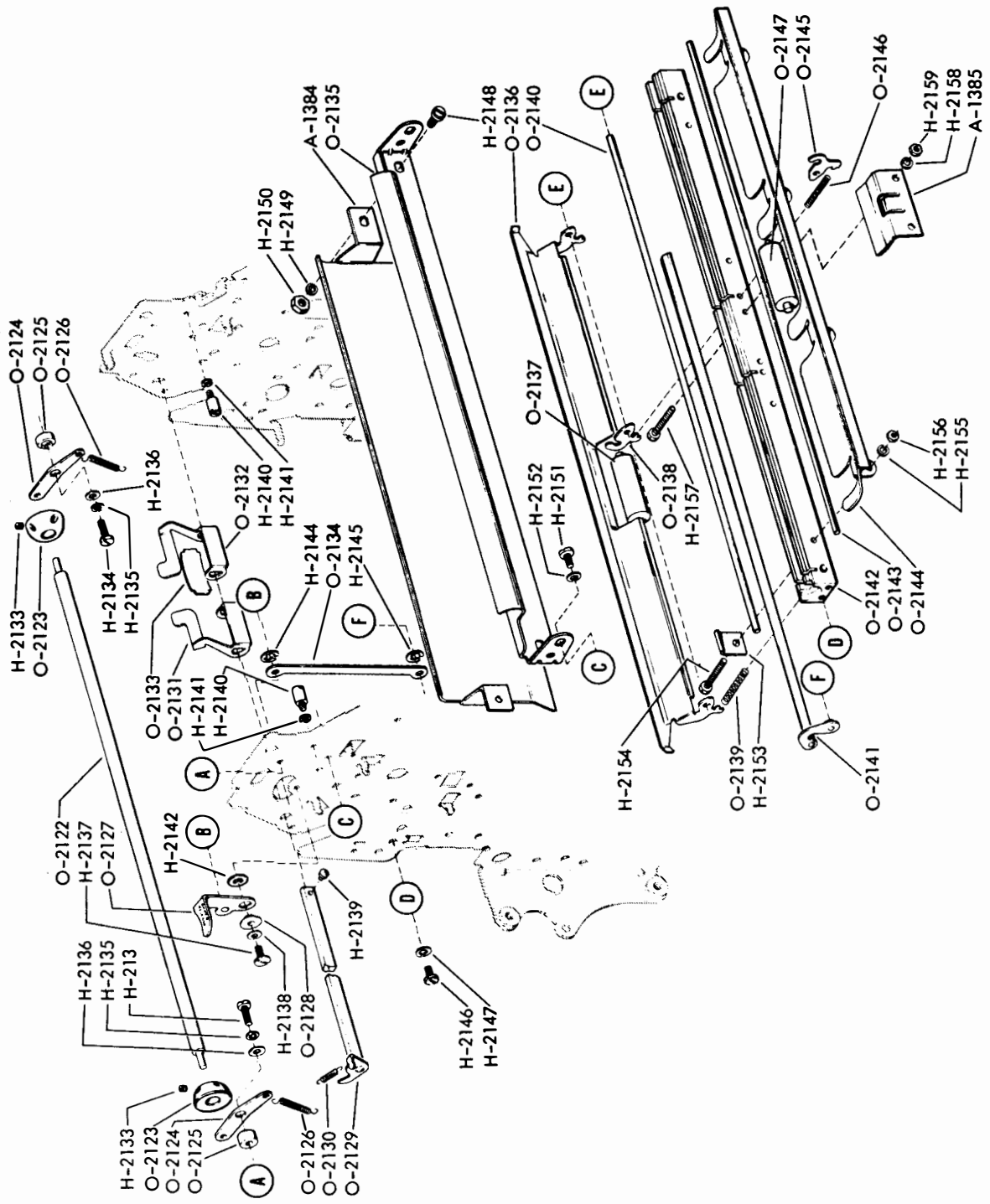


Figure 6-44. Automatic Typewriter, Pressure Roller Mechanism

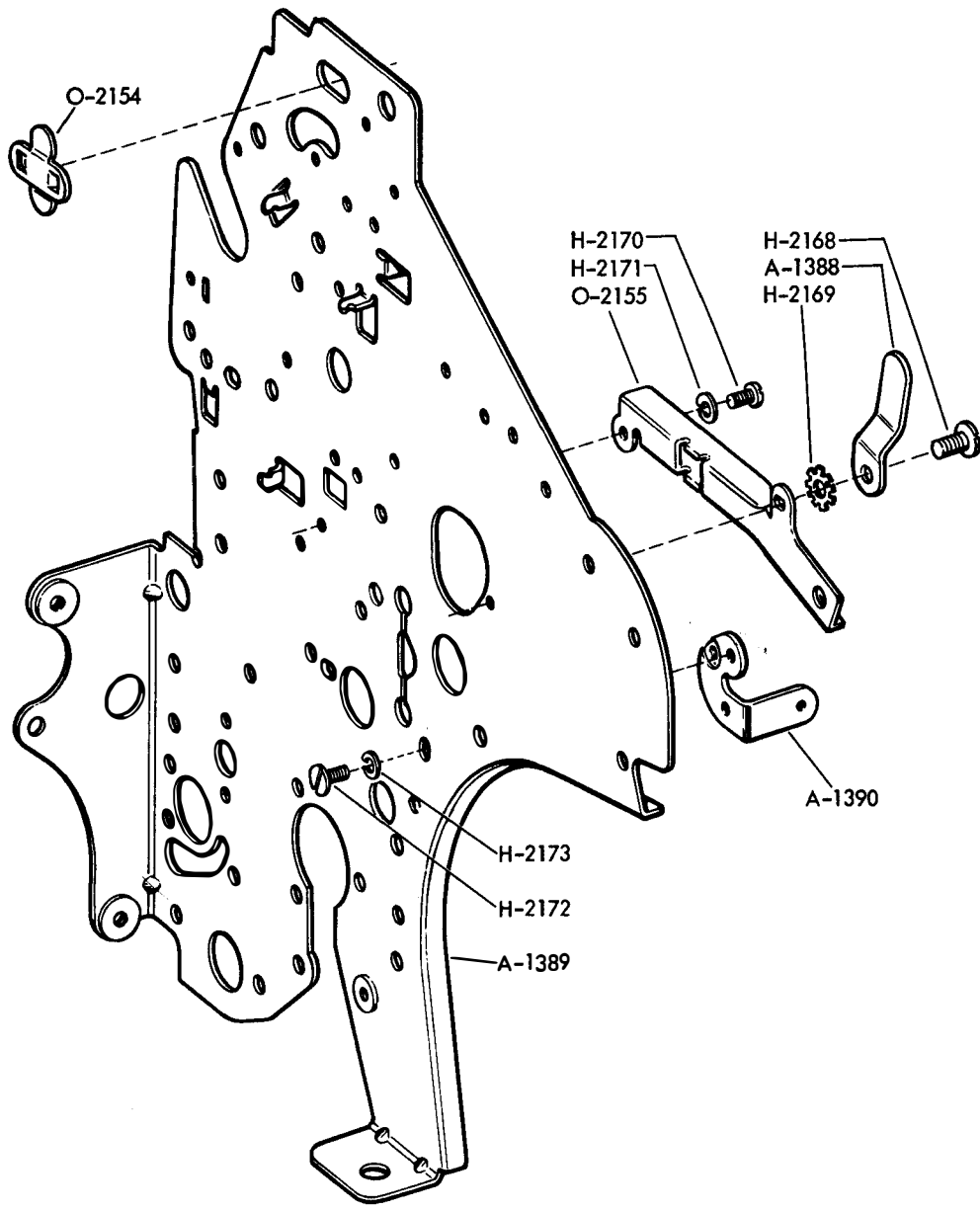


Figure 6-45. Automatic Typewriter, Right Side Frame



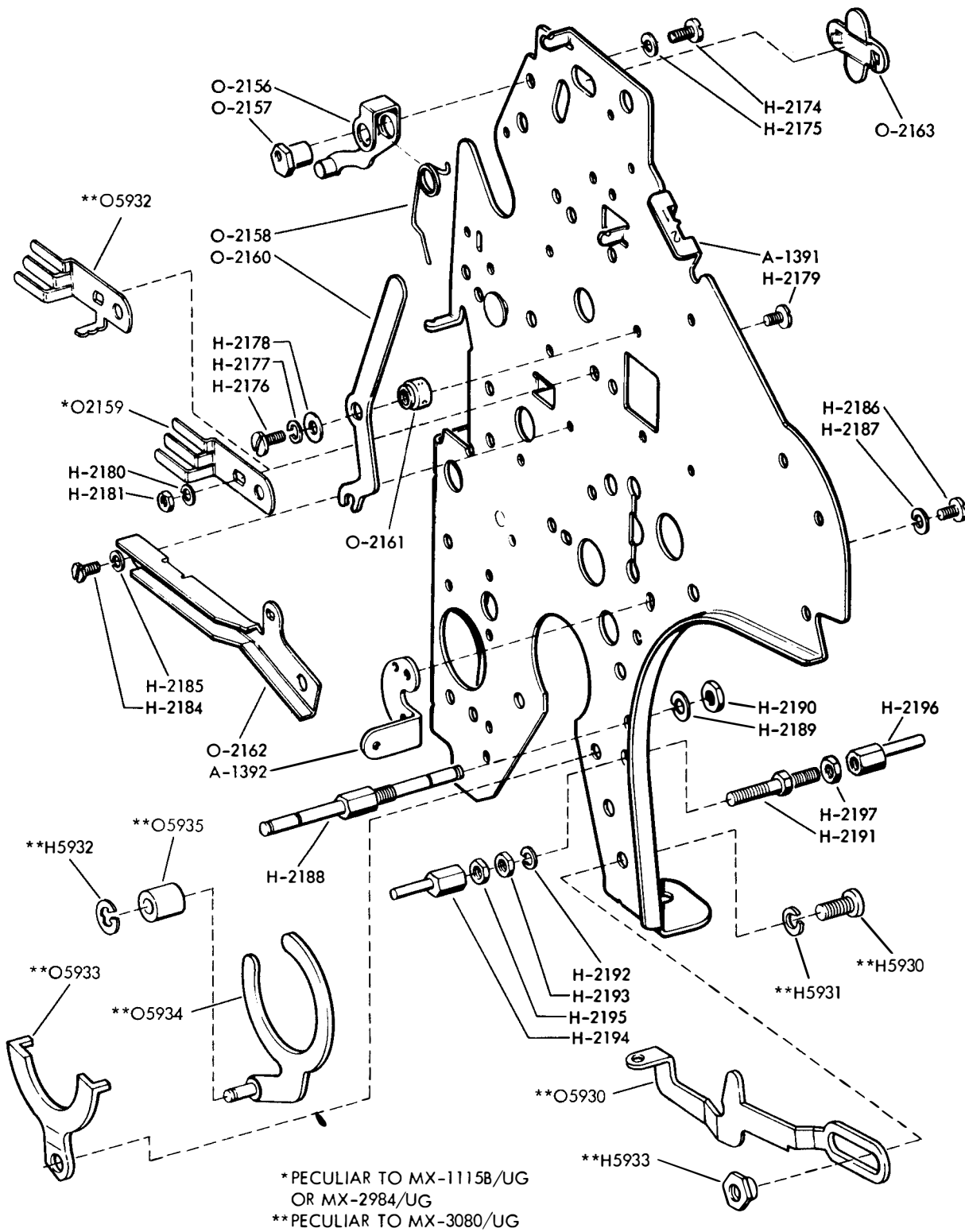


Figure 6-46. Automatic Typewriter, Left Side Frame

NOTE

IN ORDER TO PERFORM ALL SIGNAL GENERATOR ADJUSTMENTS, IT WILL BE NECESSARY TO REMOVE THE GENERATOR FROM THE KEYBOARD. SEE PARAGRAPH 6-3b(1)

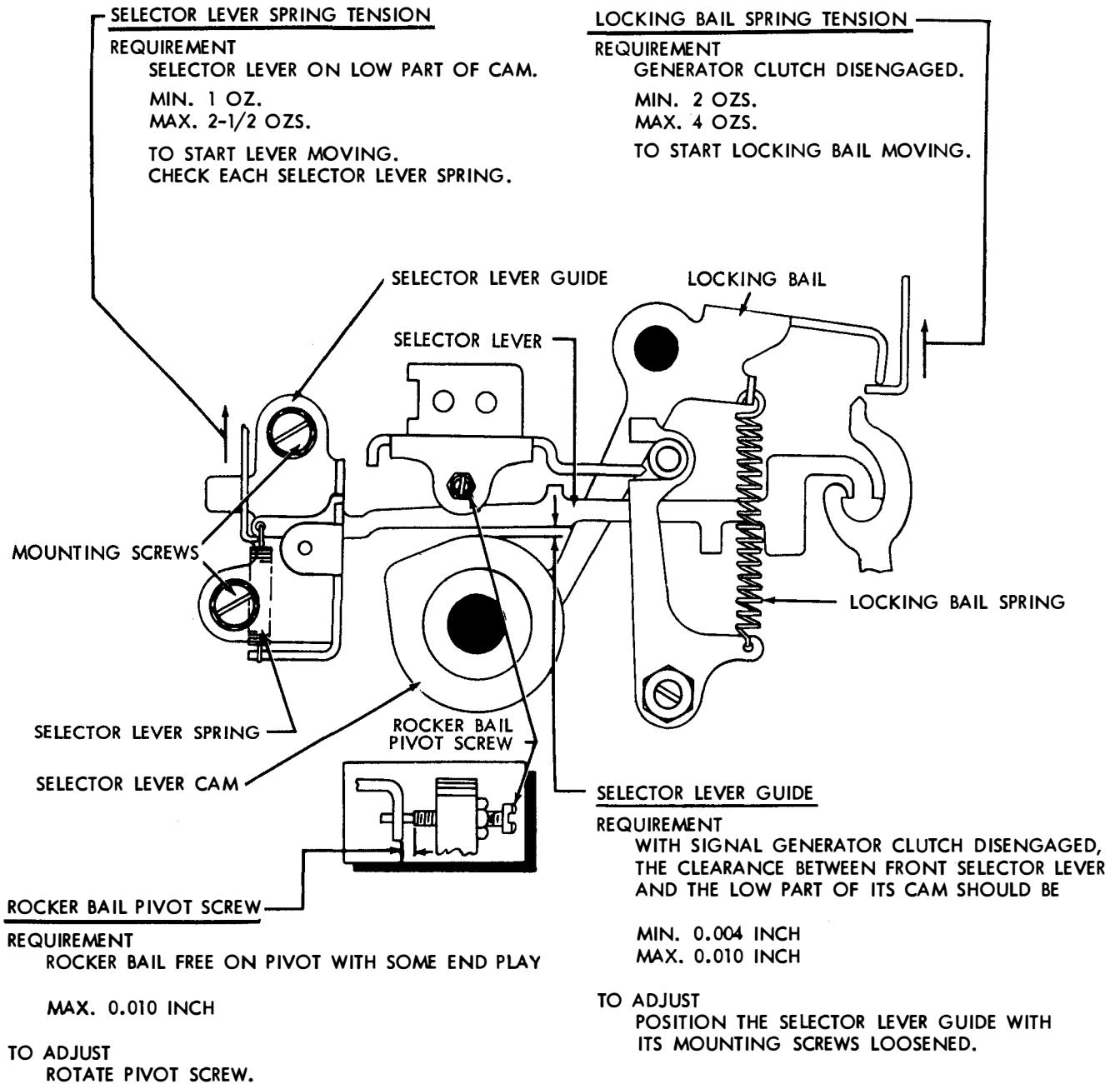


Figure 6-47. Keyboard, Signal Generator, Front View

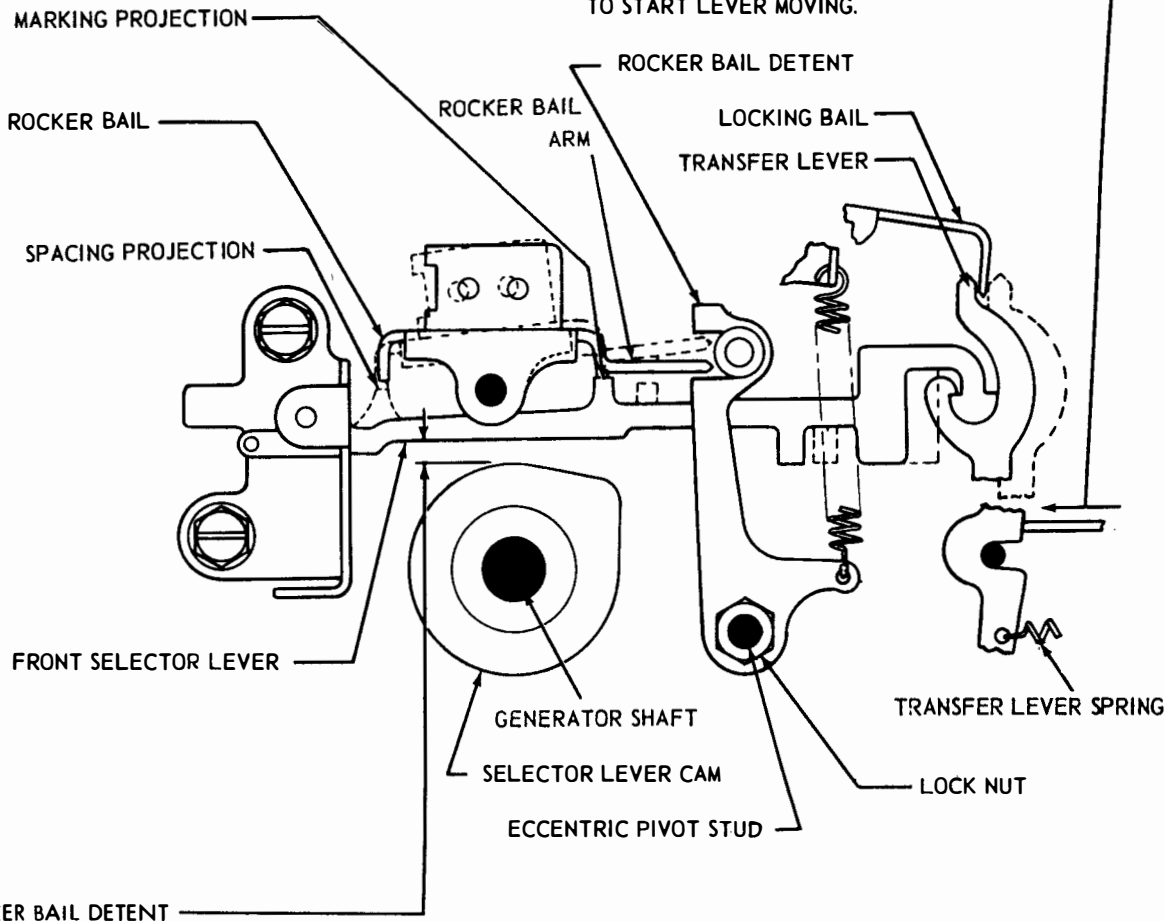
TRANSFER LEVER SPRING TENSION

REQUIREMENT

TRANSFER LEVERS IN MARKING POSITION.  
CODE BAR BAIL LATCH SPRING REMOVED.  
START TRANSFER LEVER (5TH FROM FRONT)  
MANUALLY MOVED TO MARKING POSITION.

	TRANSFER LEVERS	START LEVER
MIN.	5 1/2 OZS.	7 1/2 OZS.
MAX.	8 OZS.	10 OZS.

TO START LEVER MOVING.



ROCKER BAIL DETENT

REQUIREMENT

CLEARANCE BETWEEN THE ROCKER BAIL ARM AND BOTH THE MARKING AND THE SPACING PROJECTIONS OF THE SELECTOR LEVERS SHOULD BE EQUAL WITHIN 0.005 INCH.

TO CHECK

ROTATE THE CAM SLEEVE UNTIL THE FRONT SELECTOR LEVER HAS COME DOWN OFF THE PEAK OF ITS CAM AND IS OPPOSITE THE LOW PART OF ITS CAM. WITH THE FRONT SELECTOR LEVER IN THE MARKING (LEFT) POSITION, AND THE ROCKER BAIL ARM AGAINST THE LOWER STOP OF ITS DETENT, HOLD THE SELECTOR LEVER LIGHTLY UP AGAINST THE ROCKER BAIL AND GAUGE THE CLEARANCE BETWEEN THE SELECTOR LEVER AND THE CAM. SHIFT THE ROCKER BAIL ARM AGAINST THE UPPER STOP OF ITS DETENT AND HOLD FRONT SELECTOR LEVER TO THE RIGHT AND UP SO THAT THE SPACING PROJECTION TOUCHES THE ROCKER BAIL. GAUGE THE CLEARANCE BETWEEN THE SELECTOR LEVER AND THE CAM. THESE TWO CLEARANCES SHOULD BE EQUAL WITHIN 0.005 INCH.

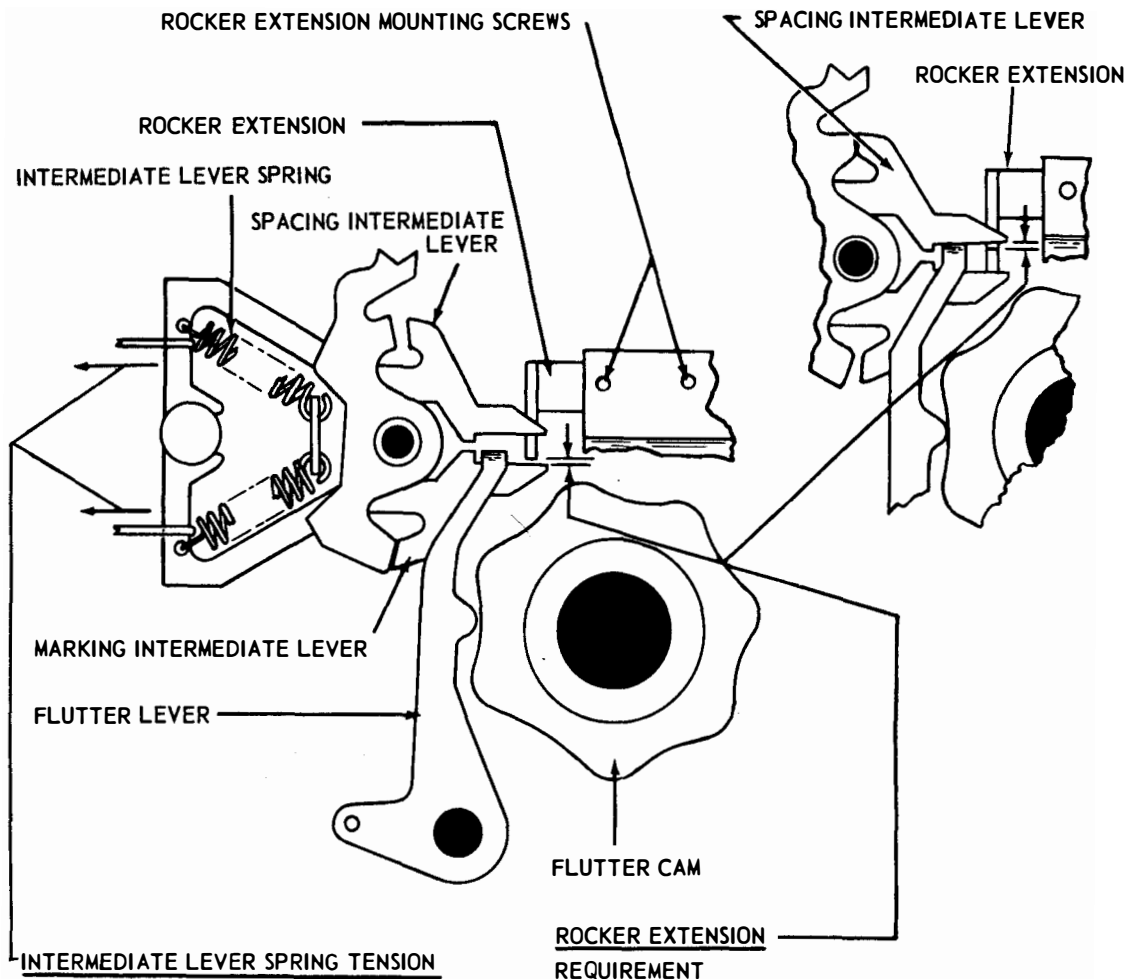
TO ADJUST

EQUALIZE CLEARANCES BY ROTATING THE ECCENTRIC PIVOT STUD OF THE DETENT WITH ITS LOCK NUT LOOSENED. KEEP THE HIGH PART OF THE ECCENTRIC TOWARD THE GENERATOR SHAFT.

Figure 6-48. Keyboard, Signal Generator, Front View

NOTE

REMOVE MECHANICAL BREAK LEVER SPRING. SEE FIG. 6-51.



INTERMEDIATE LEVER SPRING TENSION

REQUIREMENT

CLUTCH DISENGAGED. PULL HORIZONTALLY, PARALLEL TO INTERMEDIATE LEVER'S PATH  
MIN. 2 OZS.  
MAX. 4 OZS.  
TO START LEVER MOVING.  
CHECK SPACING AND MARKING LEVERS.

ROCKER EXTENSION REQUIREMENT

EQUAL CLEARANCE ( WITHIN 0.005 INCH) BETWEEN THE ROCKER EXTENSION AND BOTH THE MARKING AND THE SPACING INTERMEDIATE LEVERS WHEN SELECTED INDIVIDUALLY.

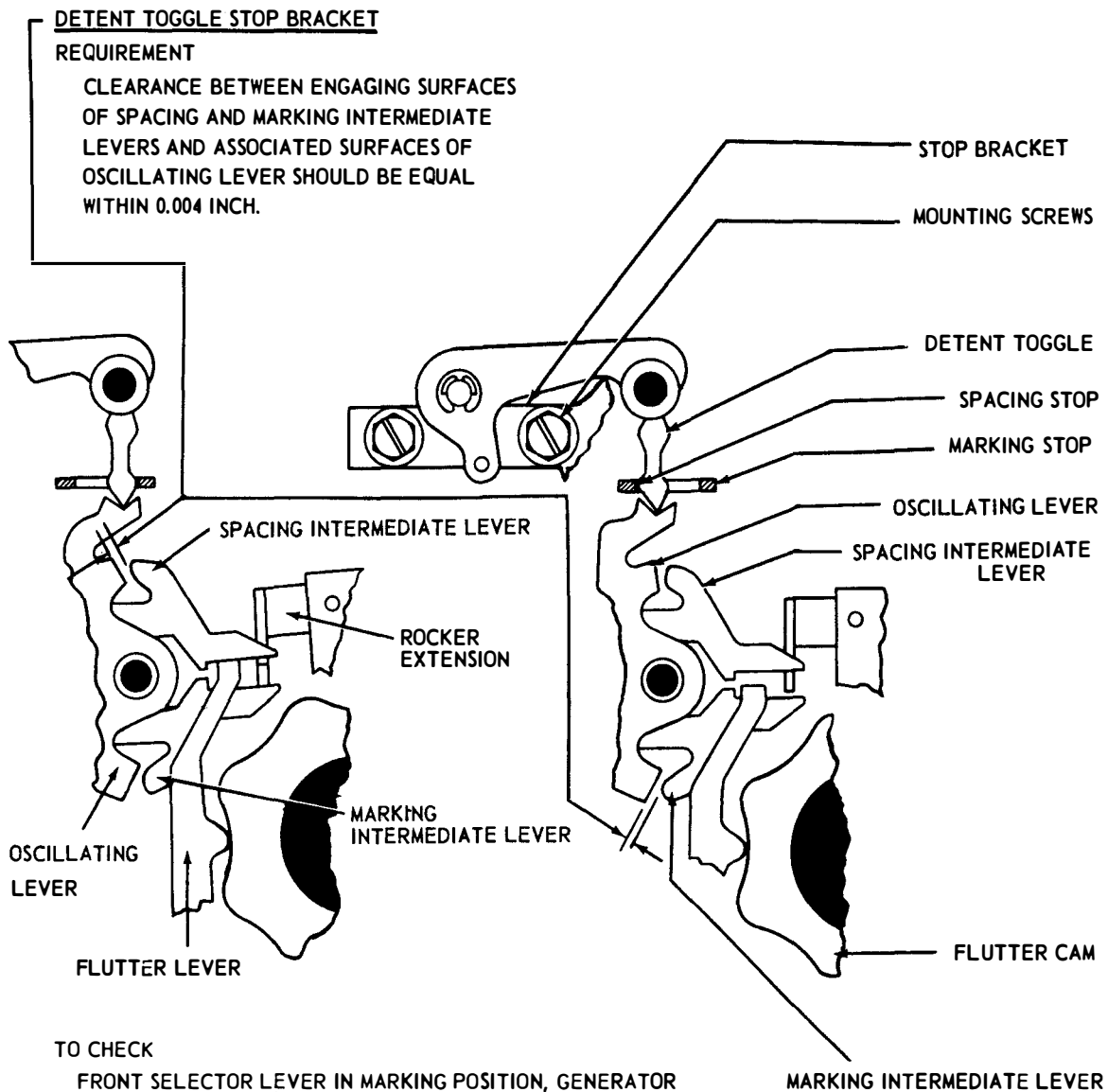
TO CHECK

ROTATE THE SHAFT UNTIL THE MARKING INTERMEDIATE LEVER IS SELECTED AND THE FLUTTER LEVER IS ON LOW PART OF CAM. GAUGE CLEARANCE IN LEFT FIG. REPEAT PROCEDURE FOR SPACING INTERMEDIATE LEVER. GAUGE CLEARANCE IN RIGHT FIGURE.

TO ADJUST

EQUALIZE CLEARANCES BY POSITIONING THE ROCKER EXTENSION WITH ITS MOUNTING SCREWS LOOSENED.

Figure 6-49. Keyboard, Signal Generator, Rear View



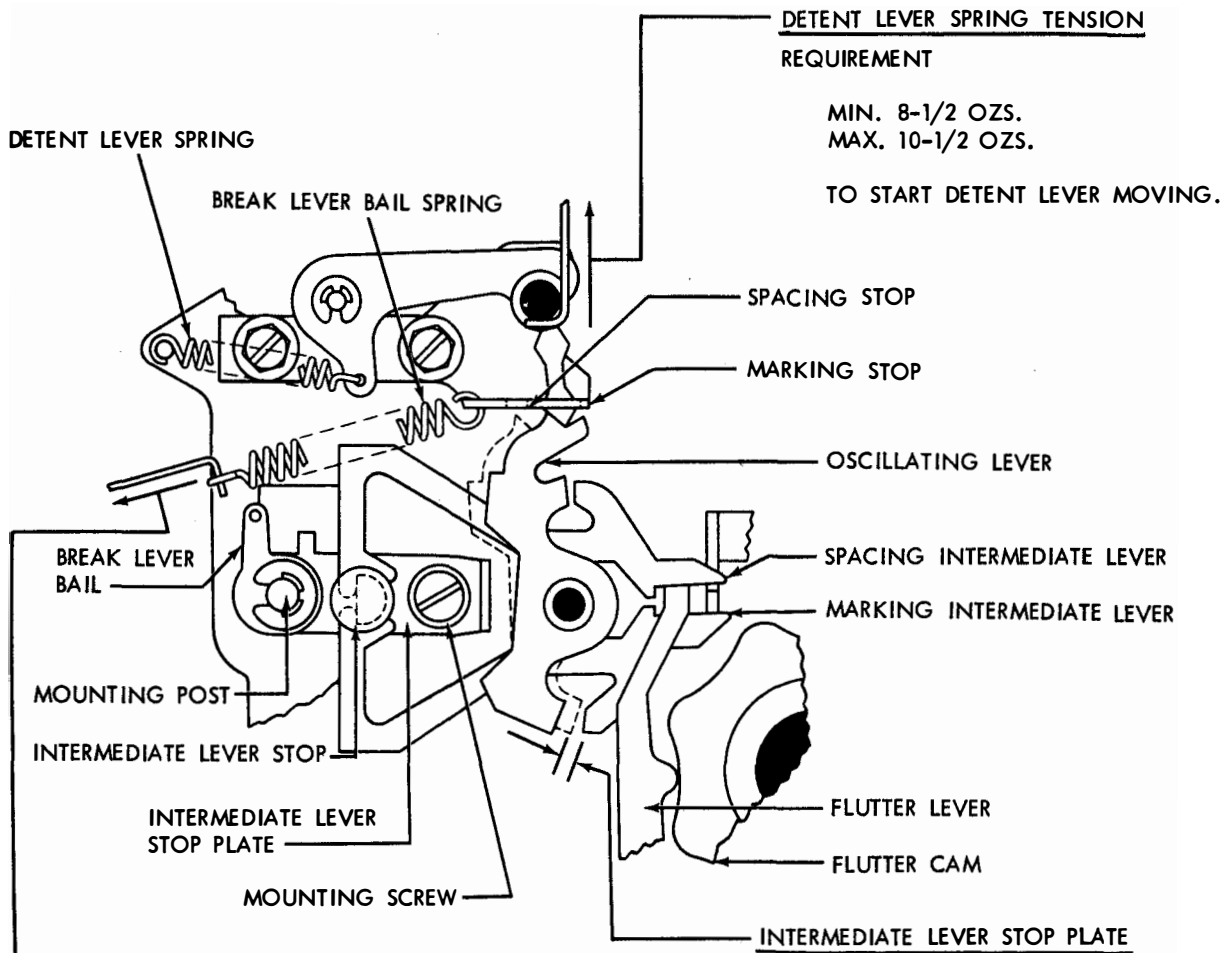
**TO CHECK**

FRONT SELECTOR LEVER IN MARKING POSITION, GENERATOR SHAFT ROTATED UNTIL FRONT SELECTOR LEVER IS ON PEAK OF ITS CAM. MOVE OSCILLATING LEVER TOWARD MARKING INTERMEDIATE LEVER AND GAUGE THE GAP. THEN WITH FRONT SELECTOR LEVER IN SPACING POSITION AND ON PEAK OF ITS CAM, MOVE OSCILLATING LEVER TOWARD SPACING INTERMEDIATE LEVER AND CHECK GAP.

**TO ADJUST**

EQUALIZE THE CLEARANCES BY POSITIONING THE STOP BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

Figure 6-50. Keyboard, Signal Generator, Rear View



DETENT LEVER SPRING TENSION REQUIREMENT

MIN. 8-1/2 OZS.  
 MAX. 10-1/2 OZS.  
 TO START DETENT LEVER MOVING.

BREAK LEVER BAIL SPRING TENSION REQUIREMENT

WITH SPRING UNHOOKED  
 MIN. 5 OZS.  
 MAX. 7 OZS.  
 TO STRETCH SPRING TO INSTALLED LENGTH.

INTERMEDIATE LEVER STOP REQUIREMENT

SOME CLEARANCE NOT MORE THAN 0.006 INCH, BETWEEN THE ENGAGING SURFACES OF THE INTERMEDIATE LEVERS AND THE OSCILLATING LEVERS.

TO CHECK

WITH THE FRONT SELECTOR LEVER IN ITS MARKING POSITION, ROTATE THE GENERATOR SHAFT UNTIL THE FRONT SELECTOR LEVER IS ON THE PEAK OF ITS CAM. MOVE THE OSCILLATING LEVER TOWARD THE MARKING INTERMEDIATE LEVER AND GAUGE THE GAP. WITH THE FRONT SELECTOR LEVER IN ITS SPACING POSITION AND ON THE PEAK OF ITS CAM, MOVE THE OSCILLATING LEVER TOWARD THE SPACING INTERMEDIATE LEVER AND GAUGE THE GAP.

TO ADJUST

REMOVE THE BREAK BAIL AND POSITION THE INTERMEDIATE LEVER STOP PLATE WITH ITS MOUNTING POST AND MOUNTING SCREW LOOSENED.

NOTE: REPLACE THE BREAK BAIL AND ITS SPRING.

Figure 6-51. Keyboard, Signal Generator, Rear View

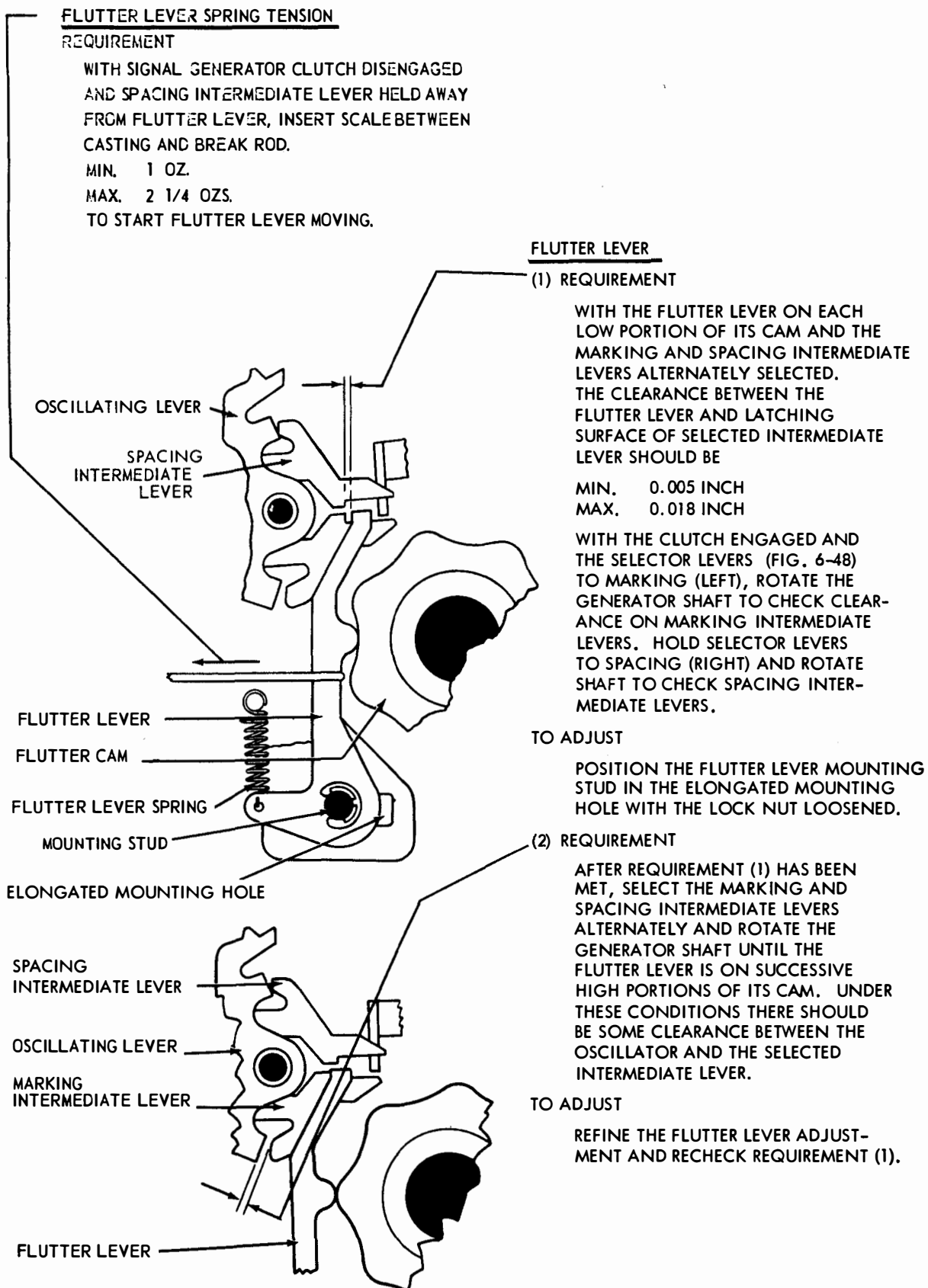
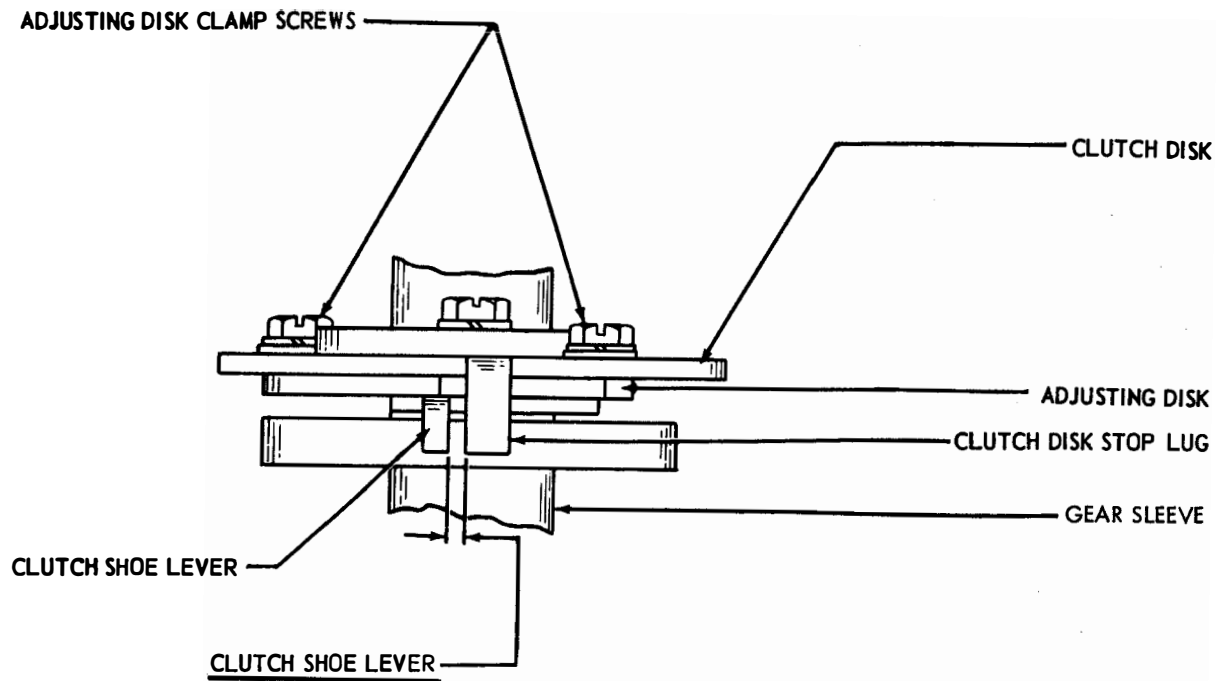


Figure 6-52. Keyboard, Signal Generator, Rear View

FOR CLUTCH SHOE LEVER SPRING TENSION AND CLUTCH SHOE SPRING TENSION SEE FIG. 6-95.



**REQUIREMENT**

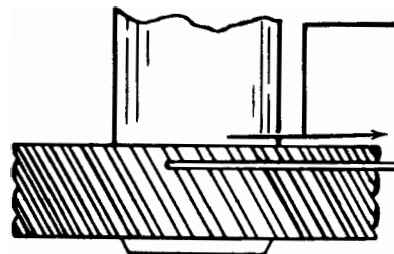
CLEARANCE WHEN CLUTCH IS DISENGAGED SHOULD BE 0.055 INCH TO 0.085 INCH LESS THAN WHEN CLUTCH IS ENGAGED.

**TO CHECK**

LATCH CLUTCH IN DISENGAGED POSITION AND MEASURE CLEARANCE. ROTATE GEAR UNTIL OIL HOLE IS UPWARD. ENGAGE CLUTCH AND MEASURE CLEARANCE.

**TO ADJUST**

LOOSEN THE TWO ADJUSTING DISK CLAMP SCREWS TO POSITION DISK.



**NOTE**

AFTER ABOVE ADJUSTMENT IS MADE, CHECK FOR DRAG ON DRUM AS FOLLOWS:  
DISENGAGE CLUTCH. HOOK SPRING SCALE ON TOP TOOTH OF GEAR AND PULL AT RIGHT ANGLES TO RADIUS OF GEAR.  
(IF PULL OF MORE THAN 12 OZS. MOVES THE DRUM, REFINE ABOVE ADJUSTMENT.)

Figure 6-53. Keyboard, Clutch Mechanism, Top View



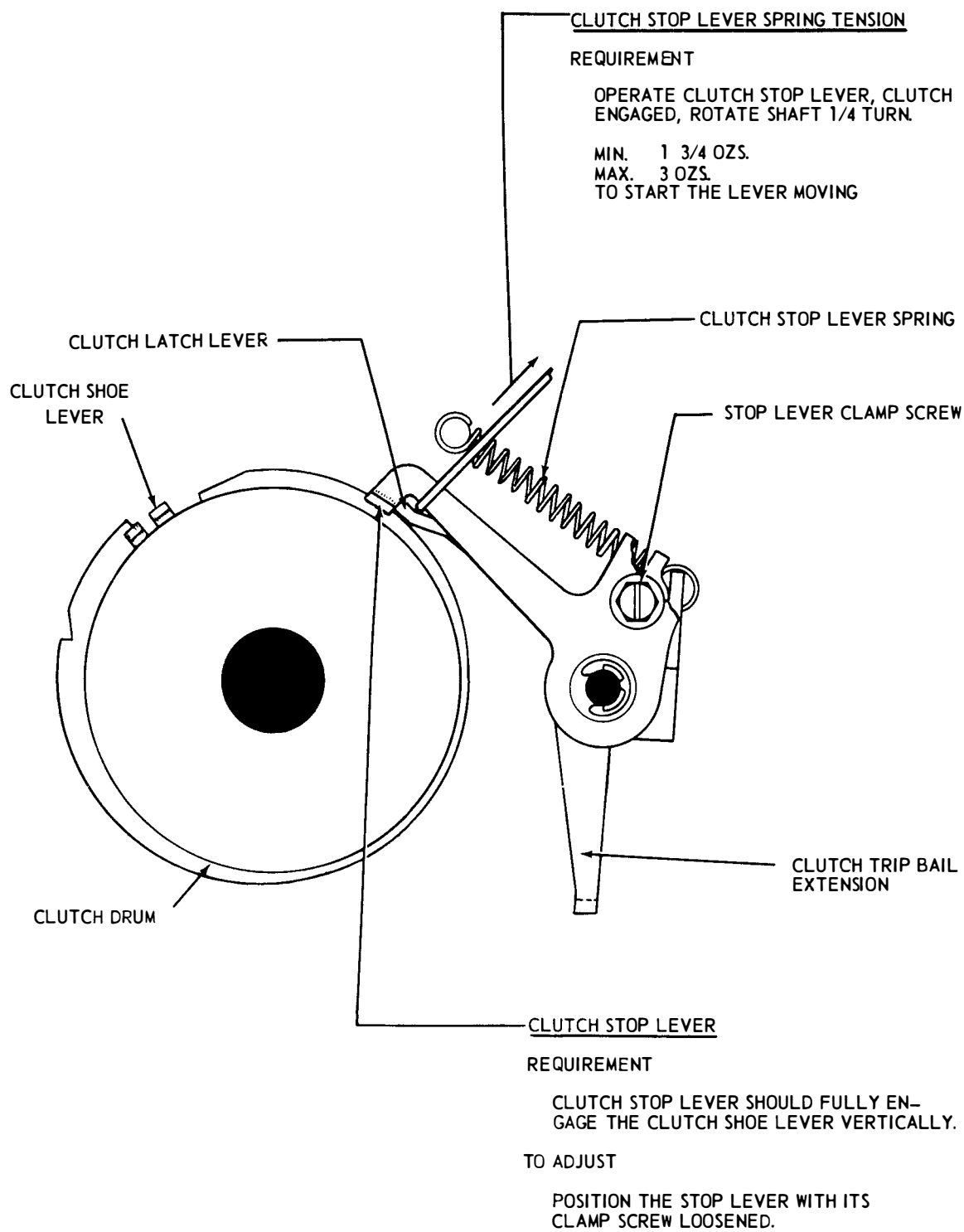
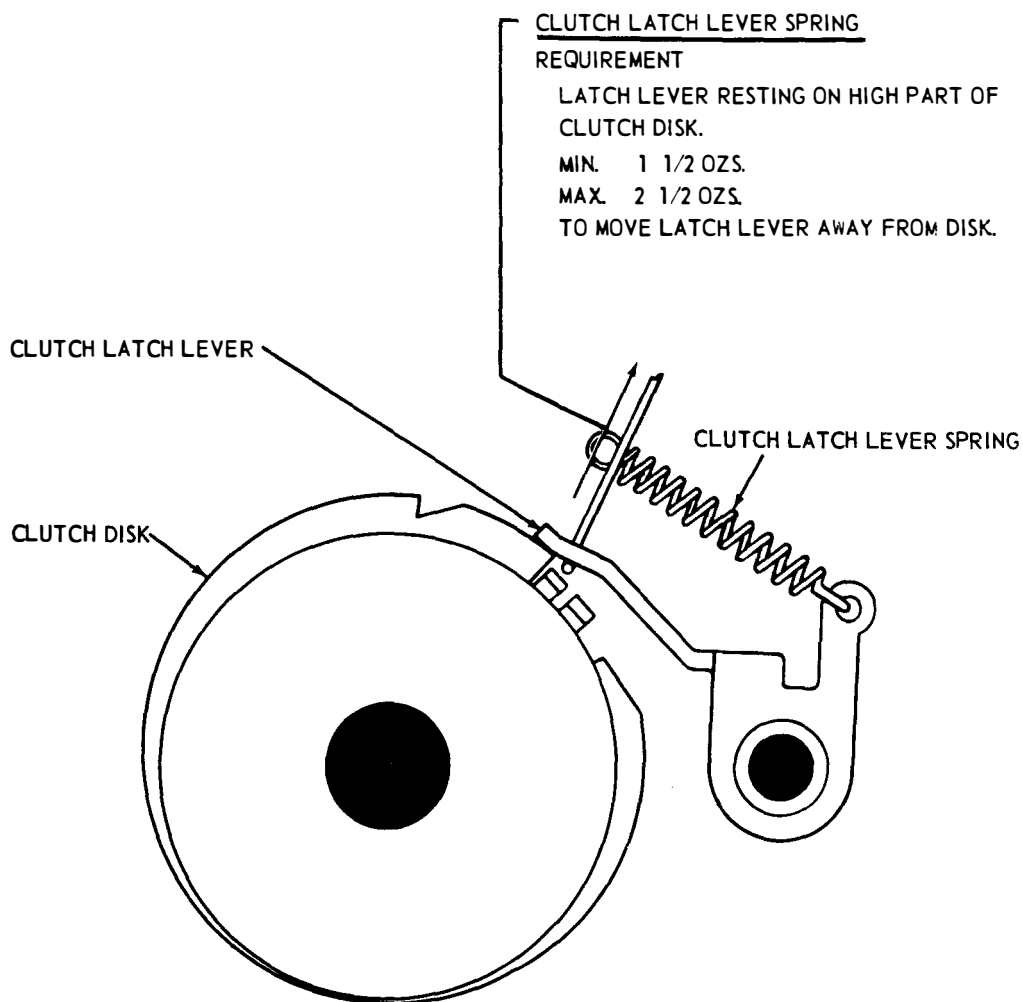


Figure 6-54. Keyboard, Clutch Mechanism



## NOTE

REPLACE SIGNAL GENERATOR ON THE KEYBOARD. MAKE CERTAIN THAT THE CODE BAR BAIL LATCH LEVER (FIG. 6-57) IS UNDER CODE LEVER BAIL LATCH LEVER (FIG. 6-59), THAT BREAK KEY ROD, ATTACHED TO BREAK BAIL (FIG. 6-51) IS IN ITS GUIDE HOLE IN CODE LEVER GUIDE, AND THAT THE CLUTCH TRIP BAIL EXTENSION (FIG. 6-54) IS IN THE NOTCH PROVIDED IN THE CLUTCH TRIP BAR (REAR) AND THAT THE CODE BAR BAIL (FIG. 6-57) IS RESTING IN THE NOTCHES OF THE FIVE CODE BARS, THE CLUTCH TRIP BAR AND THE KEYLEVER UPSTOP BAR. SEE PARAGRAPH 6-3b (1).

Figure 6-55. Keyboard. Clutch Mechanism

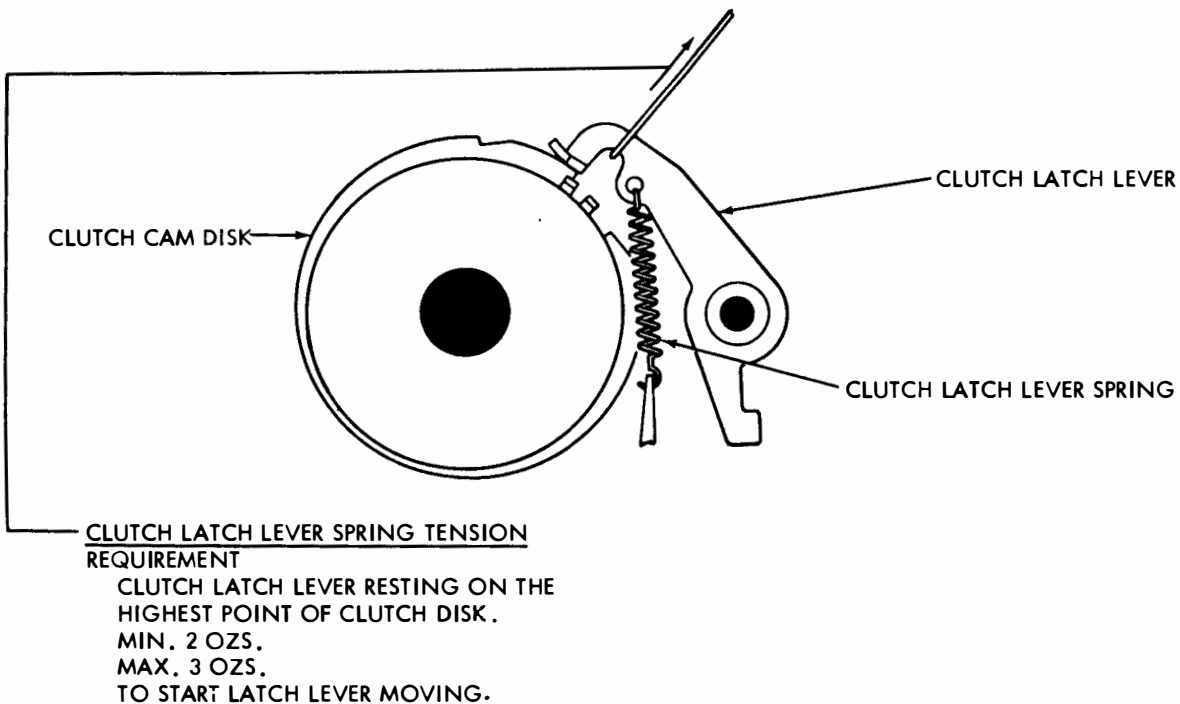
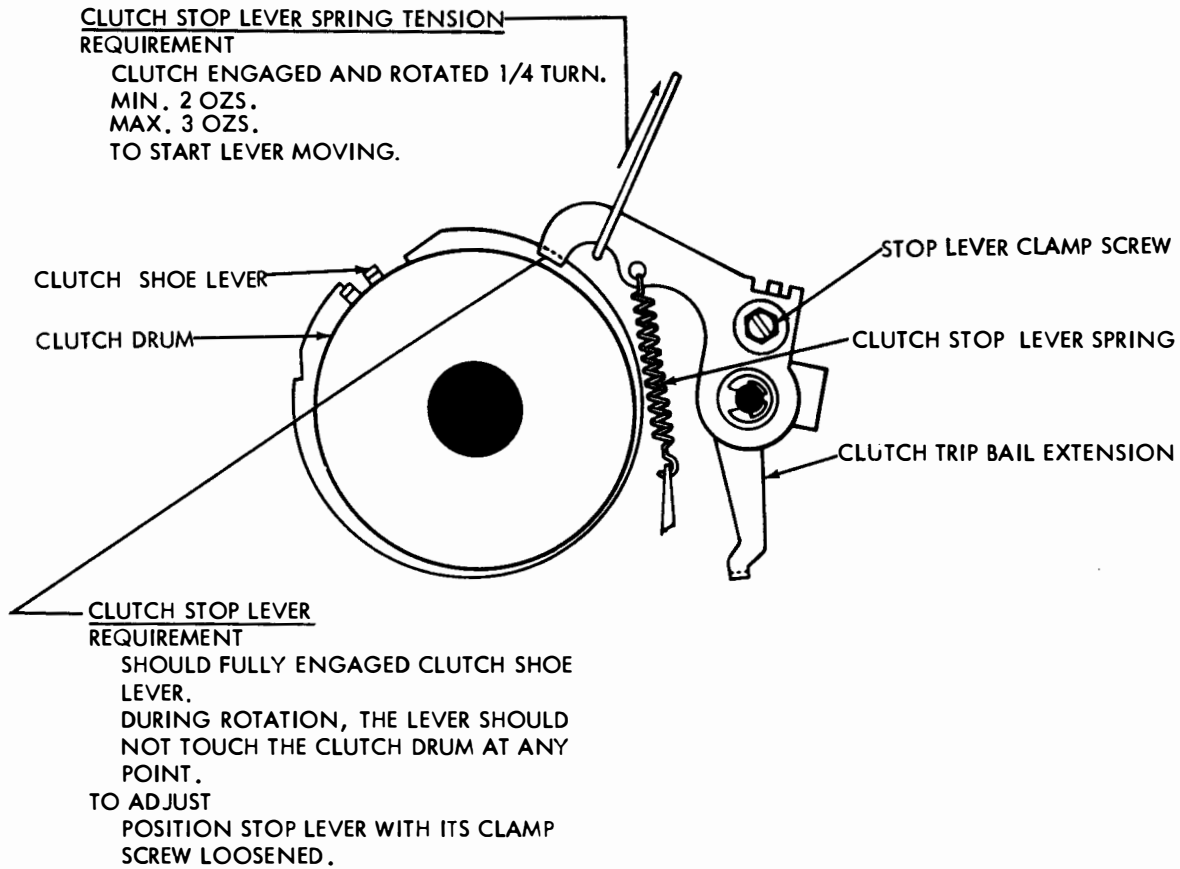
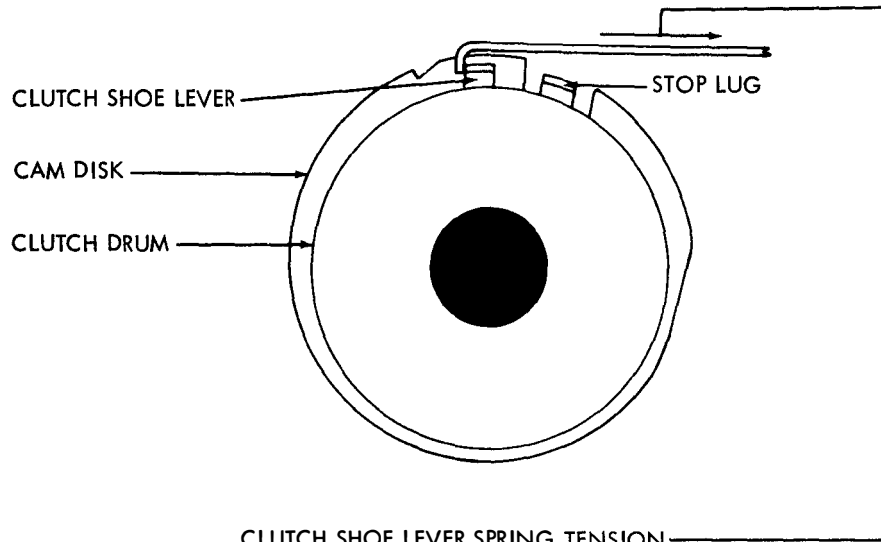
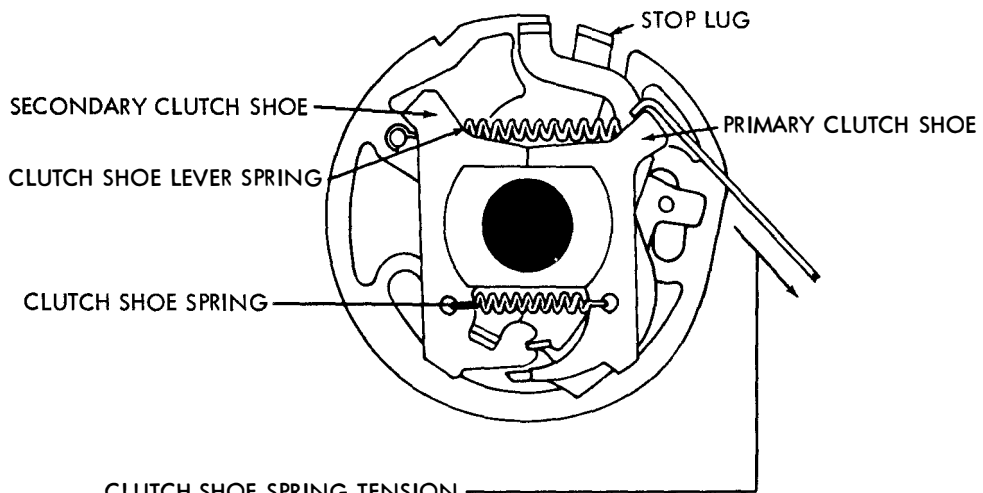


Figure 6-55A. Keyboard MX-1114C/UG or MX-1677A/UG, Signal Generator Clutch and Lever Mechanism



CLUTCH SHOE LEVER SPRING TENSION REQUIREMENT

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

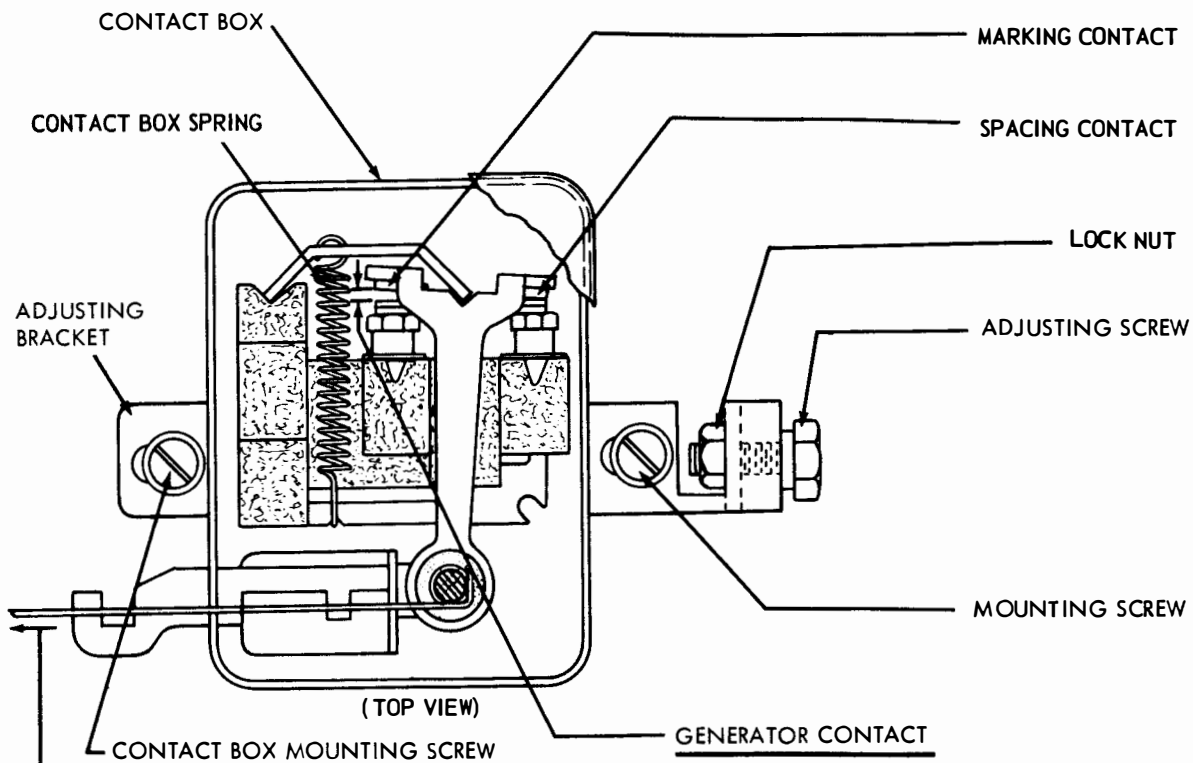


CLUTCH SHOE SPRING TENSION NOTE

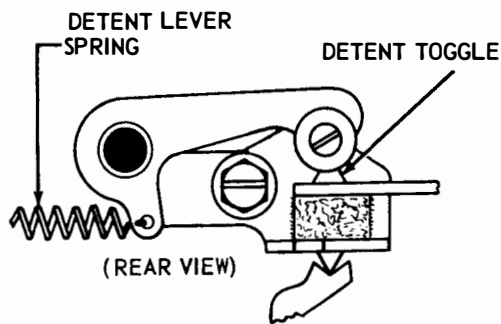
IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SIGNAL GENERATOR DRIVE SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO BELIEVE THAT IT DOES NOT MEET ITS REQUIREMENT.

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

Figure 6-55B. Keyboard MX-1114C/UG or MX-1677A/UG, Signal Generator Clutch Mechanism



(TOP VIEW)  
CONTACT BOX MOUNTING SCREW



(B) CONTACT BOX SPRING TENSION  
REQUIREMENT

CONTACT BOX COVER REMOVED. DETENT  
LEVER SPRING DISCONNECTED.

MIN. 2 OZS.

MAX. 4 OZS.

TO BREAK CONTACT

GENERATOR CONTACT  
REQUIREMENT

THE MARKING AND SPACING CONTACT  
GAPS SHOULD BE EQUAL

TO CHECK  
REMOVE THE COVER FROM THE CONTACT  
BOX. FIRST, MOVE THE DETENT TOGGLE  
AGAINST ITS SPACING STOP AND GAUGE  
THE MARKING CONTACT GAP. THEN MOVE  
THE DETENT TOGGLE AGAINST ITS MARKING  
STOP AND GAUGE SPACING CONTACT GAP.

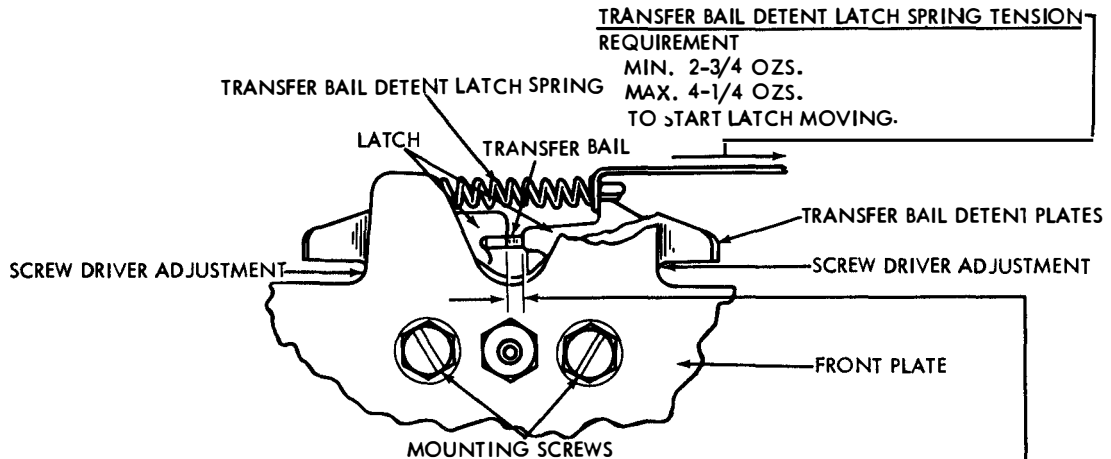
TO ADJUST

ROTATE THE CONTACT BOX ADJUSTING  
SCREW WITH ITS LOCK NUT LOOSENED  
AND WITH THE CONTACT BOX MOUNTING  
SCREWS FRICTION TIGHT. REPLACE  
CONTACT BOX COVER.

NOTE

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

Figure 6-56. Keyboard, Contact Assembly



**TRANSFER BAIL DETENT LATCH SPRING TENSION REQUIREMENT**

MIN. 2-3/4 OZS.  
 MAX. 4-1/4 OZS.  
 TO START LATCH MOVING.

**TRANSFER BAIL DETENT PLATE REQUIREMENT**

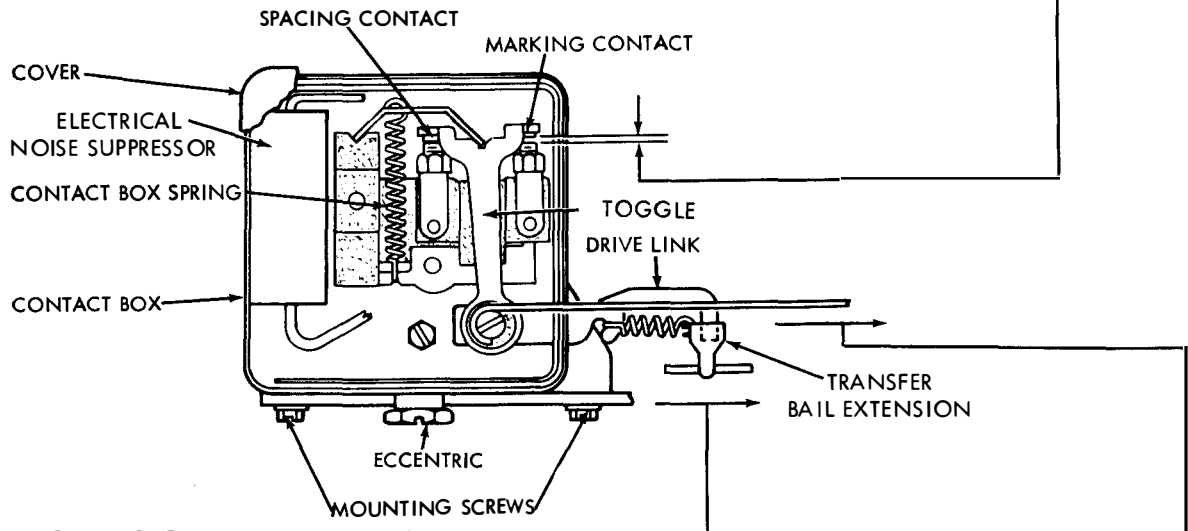
EQUAL L.H. AND R.H. CLEARANCE WITHIN 0.002  
 TO ADJUST  
 ROTATE DETENT PLATE RIGHT OR LEFT BY MEANS OF SCREW DRIVER WITH MOUNTING SCREWS LOOSENED.

**SIGNAL BOX CONTACT CLEARANCE REQUIREMENT**

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

**NOTE**

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



**SIGNAL CONTACT DRIVE LINK SPRING TENSION REQUIREMENT**

WITH MAIN SHAFT IN STOP POSITION AND TRANSFER BAIL DETENT LATCH SPRING UNHOOKED (See figure top of page), MOVE LATCHES AWAY FROM TRANSFER BAIL EXTENSION. HOLD THE TOGGLE FIRMLY AGAINST THE CONTACTS.  
 MIN. 6 OZS. MAX. 9 OZS.  
 TO START TRANSFER BAIL EXTENSION MOVING.

**SIGNAL CONTACT SPRING TENSION REQUIREMENT**

WITH MAIN SHAFT IN STOP POSITION AND COVER OF CONTACT BOX REMOVED, UNHOOK THE DRIVE LINK SPRING AND HOLD TRANSFER BAIL CLEAR OF DRIVE LINK.  
 MIN. 2 OZS.  
 MAX. 3 OZS.  
 TO START LINK MOVING.

Figure 6-56A. Keyboard MX-1114C/UG or MX-1677A/UG, Transfer Bail and Contact Box Mechanism

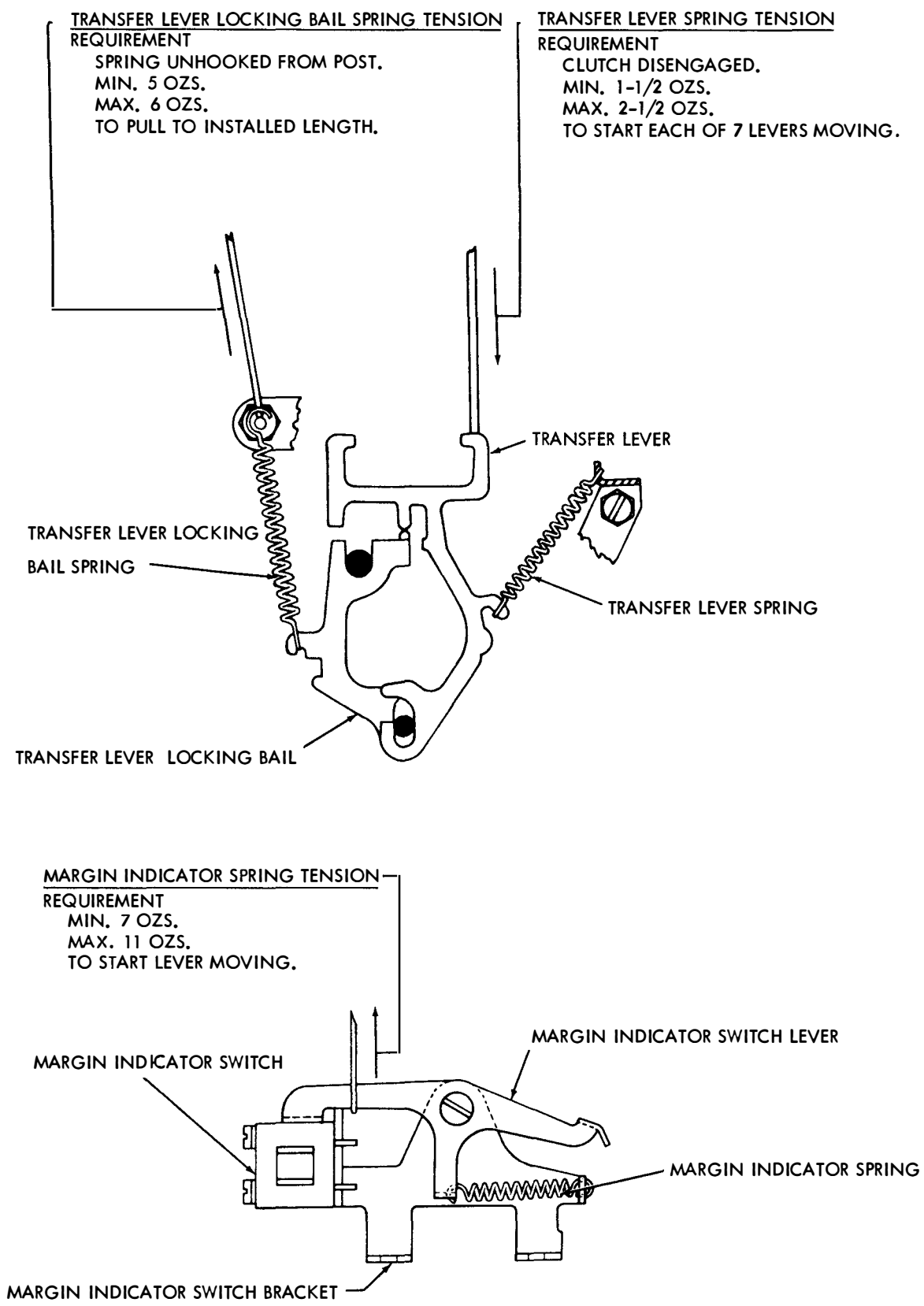
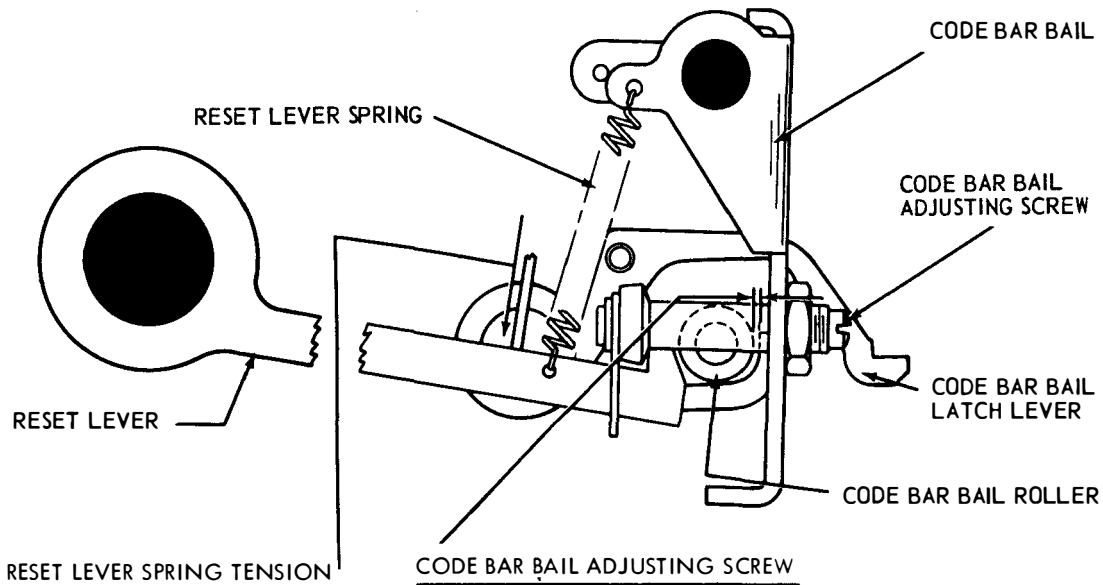


Figure 6-56B. Keyboard MX-1114C/UG or MX-1677A/UG, Transfer Lever and Margin Indicator Mechanisms



RESET LEVER SPRING TENSION

REQUIREMENT

CLUTCH DISENGAGED.

MIN. 2 OZS.  
MAX. 4 OZS.

TO START THE RESET LEVER MOVING.

CODE BAR BAIL ADJUSTING SCREW

CLUTCH ENGAGED. LTRS. COMBINATION SELECTED. CLUTCH ROTATED 1/2 TURN UNTIL RESET LEVER IS IN EXTREME LEFT HAND POSITION. CLEARANCE BETWEEN THE CODE BAR BAIL LATCH LEVER AND CODE BAR BAIL ROLLER.

MIN. 0.004 INCH                      MAX. 0.008 INCH

TO ADJUST

POSITION THE CODE BAR BAIL ADJUSTING SCREW WITH ITS LOCK NUT LOOSE.

Figure 6-57. Keyboard, Code Bar Bail Mechanism, Front View

CODE BAR BAIL SPRING TENSION

REQUIREMENT

GENERATOR CLUTCH DISENGAGED  
SPRING UNHOOKED.

MIN. 6 OZS.  
MAX. 8 OZS.

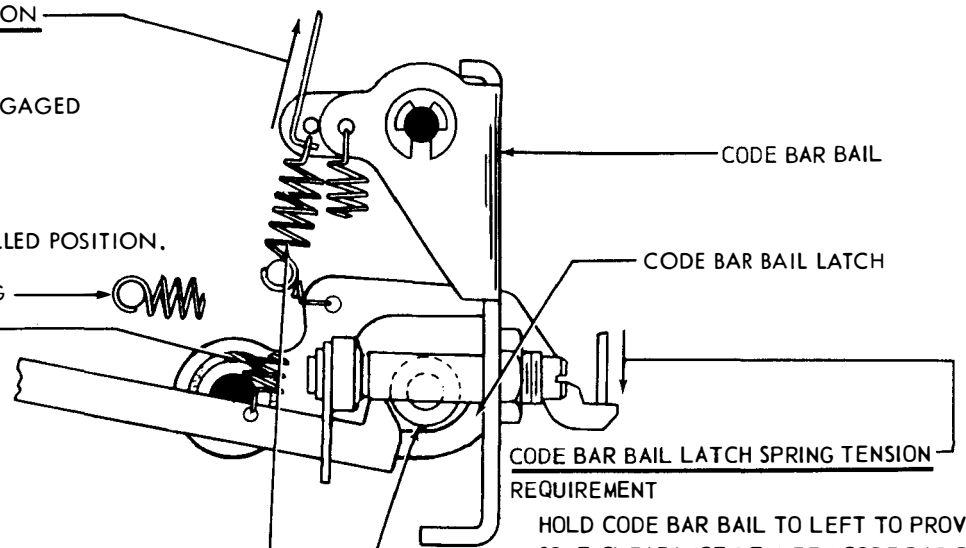
TO PULL SPRING TO INSTALLED POSITION.

CODE BAR BAIL LATCH SPRING

RESET LEVER SPRING

CODE BAR BAIL SPRING

CODE BAR BAIL ROLLER



CODE BAR BAIL LATCH SPRING TENSION

REQUIREMENT

HOLD CODE BAR BAIL TO LEFT TO PROVIDE SOME CLEARANCE BETWEEN CODE BAR BAIL ROLLER AND LATCHING SURFACE OF THE CODE BAR BAIL LATCH

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

TO START THE LATCH MOVING.

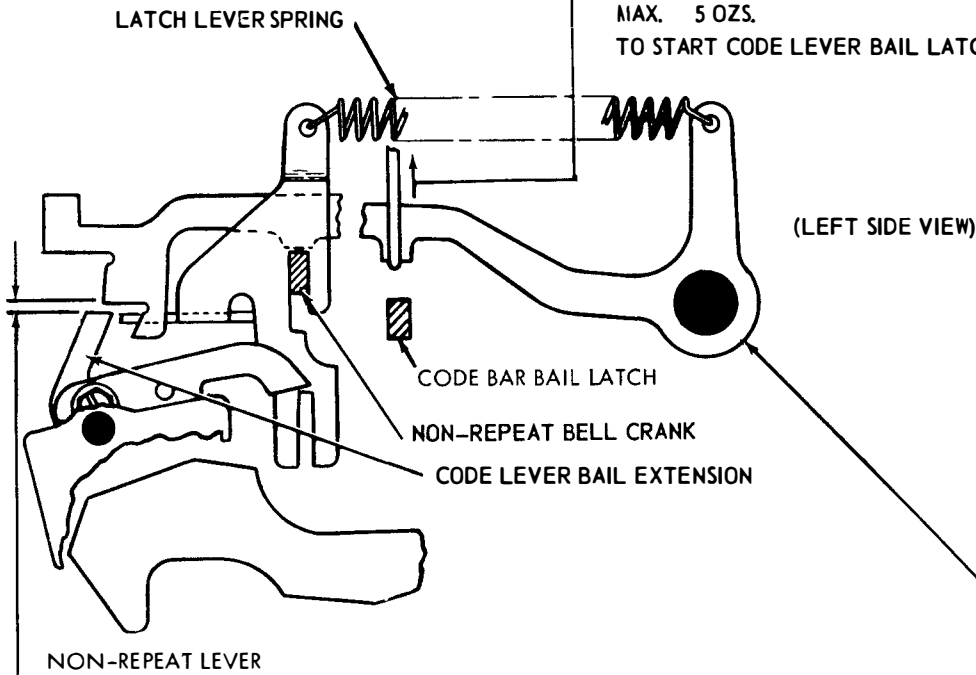
Figure 6-58. Keyboard, Code Bar Bail Mechanism, Front View



CODE LEVER BAIL LATCH LEVER SPRING

REQUIREMENT

SIGNAL GENERATOR CLUTCH DISENGAGED CODE  
BAR BAIL LATCH TRIPPED. CODE LEVER BAIL  
EXTENSION HELD AWAY FROM LATCHING SURFACE  
OF CODE LEVER BAIL LATCH LEVER.  
MIN. 3 OZS.  
MAX. 5 OZS.  
TO START CODE LEVER BAIL LATCH LEVER MOVING.



NON-REPEAT LEVER

REQUIREMENT

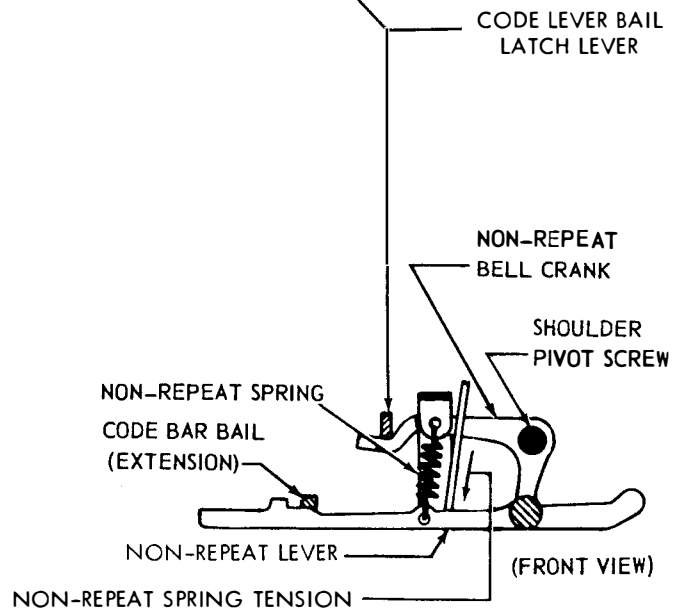
ANY KEYLEVER DEPRESSED, SIGNAL GENERATOR  
SHAFT ROTATED UNTIL CLUTCH IS DISENGAGED.  
CLEARANCE BETWEEN CODE LEVER BAIL EXTENSION  
AND CODE LEVER BAIL LATCH LEVER

MIN. 0.020 INCH  
MAX. 0.030 INCH

LET UP ON KEYLEVER UNTIL SURFACES TO BE  
MEASURED ARE IN LINE.

TO ADJUST

POSITION NON-REPEAT BELL CRANK SHOULDER  
PIVOT SCREW IN ITS ELONGATED HOLE WITH  
LOCK NUT LOOSENED.



NON-REPEAT SPRING TENSION

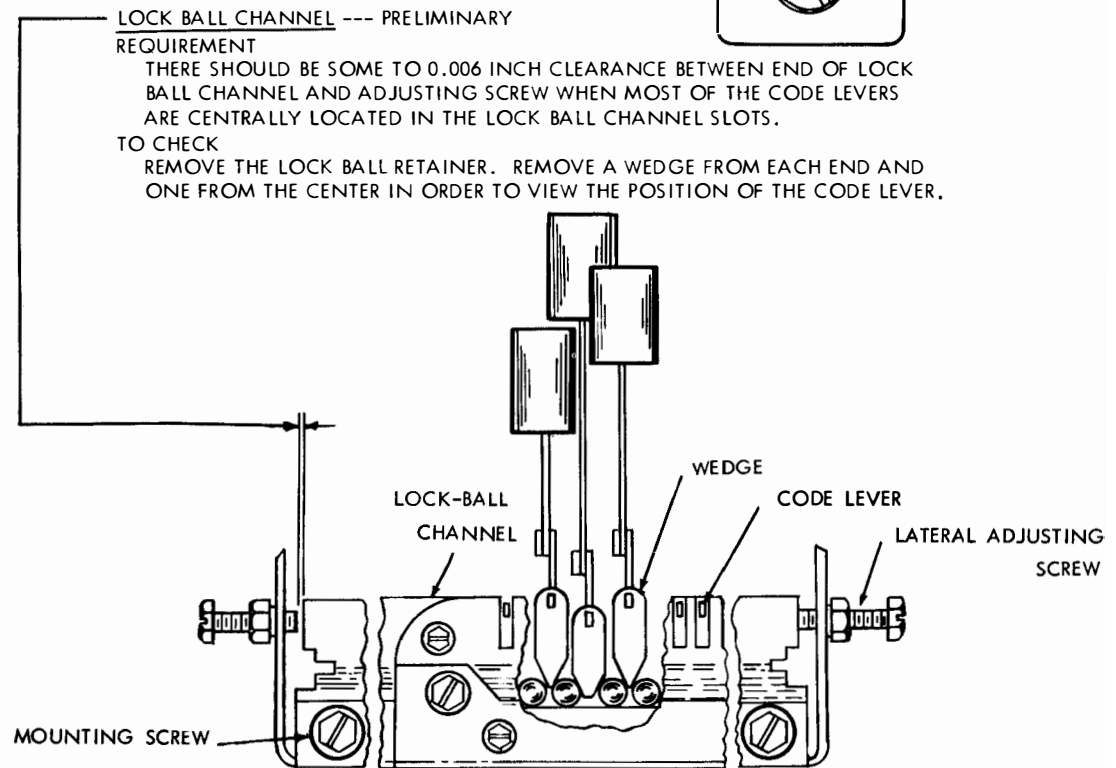
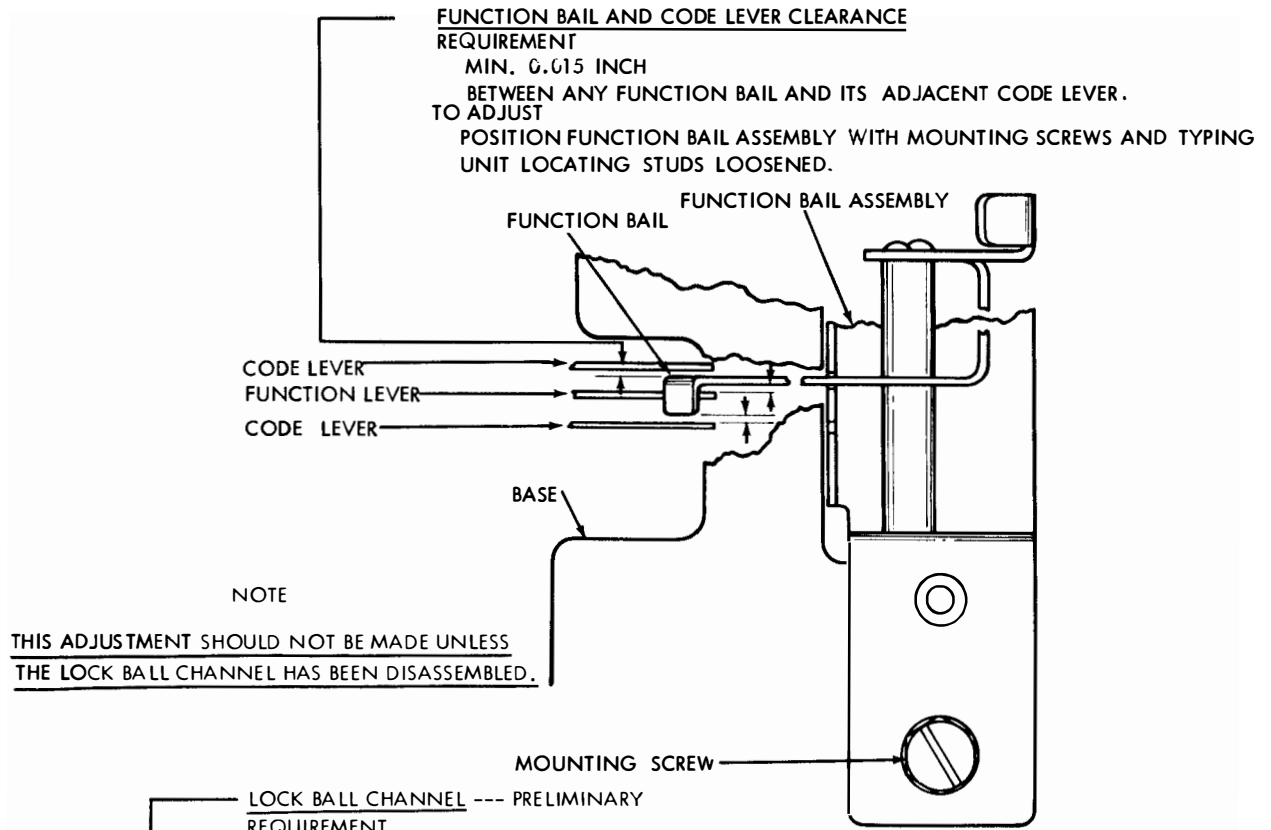
REQUIREMENT

GENERATOR CLUTCH DISENGAGED.  
ANY KEYLEVER DEPRESSED.

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

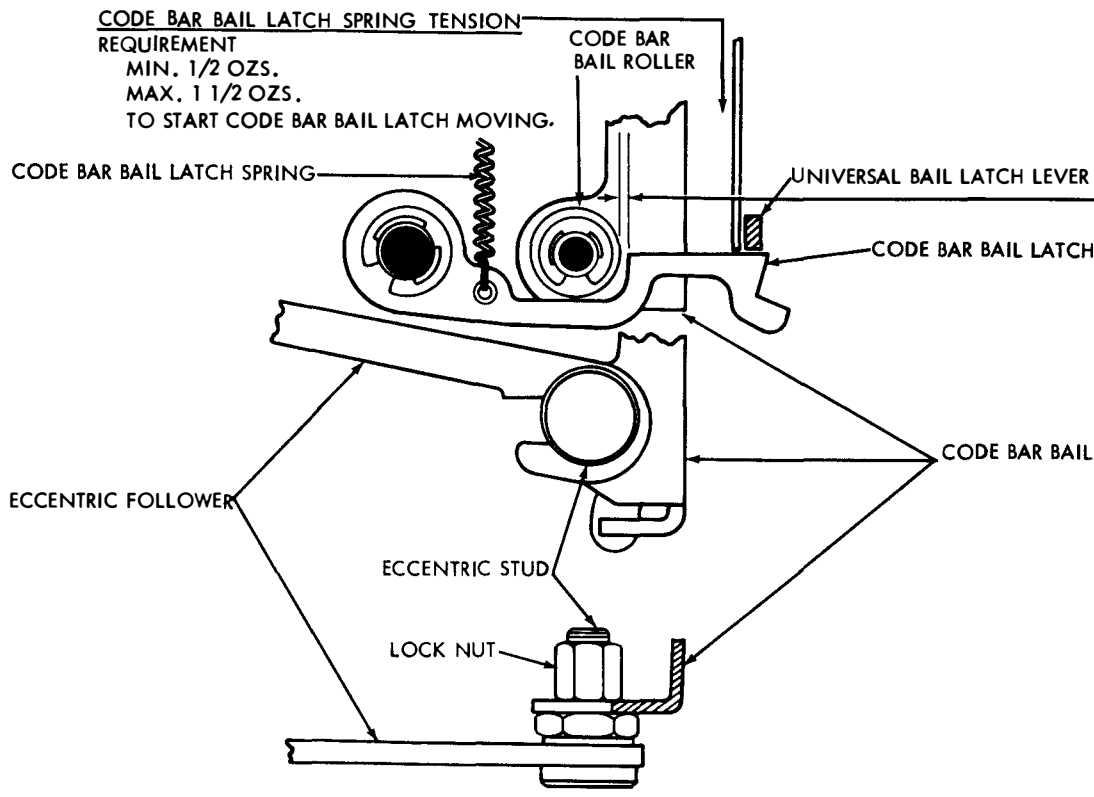
TO START NON-REPEAT LEVER  
MOVING DOWNWARD.

Figure 6-59. Keyboard, Non-Repeat Mechanism



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

Figure 6-59A. Keyboard MX-1114C/UG or MX-1677A/UG, Function Bail and Lock Ball Track Mechanisms



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

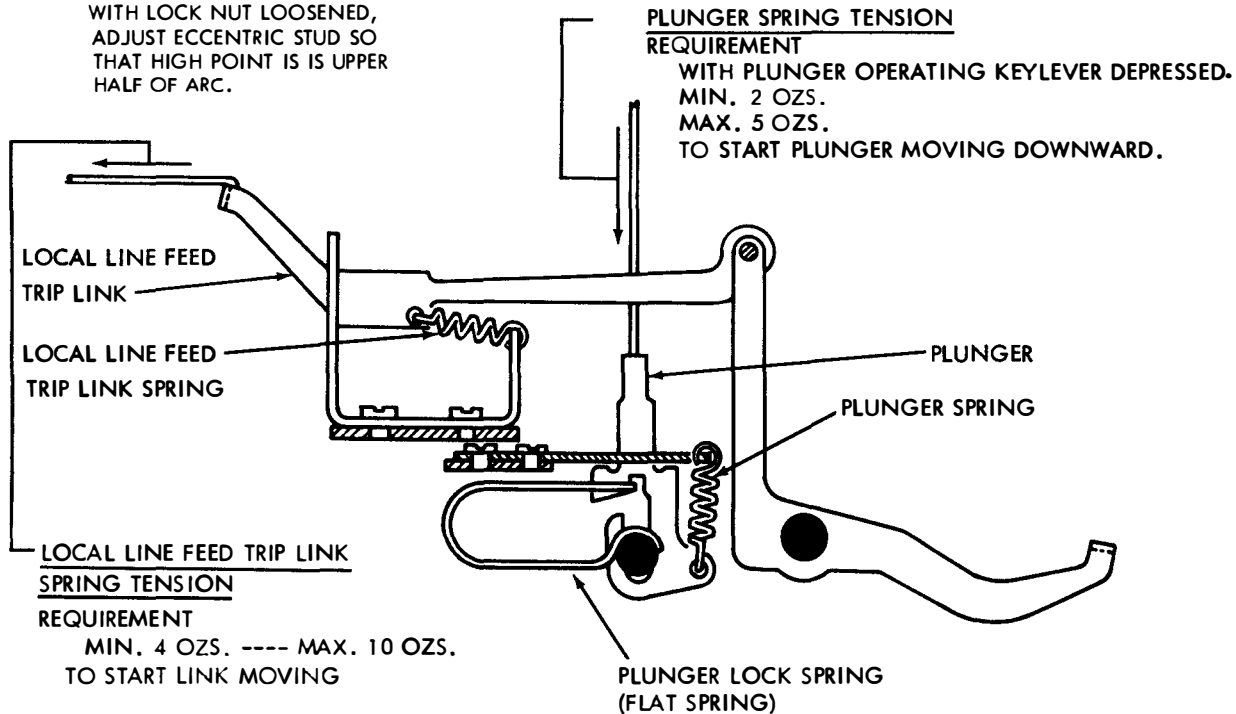


Figure 6-59B. Keyboard MX-1114C/UG or MX-1677A/UG, Code Bar Bail and Local Line Feed Trip Link Mechanisms

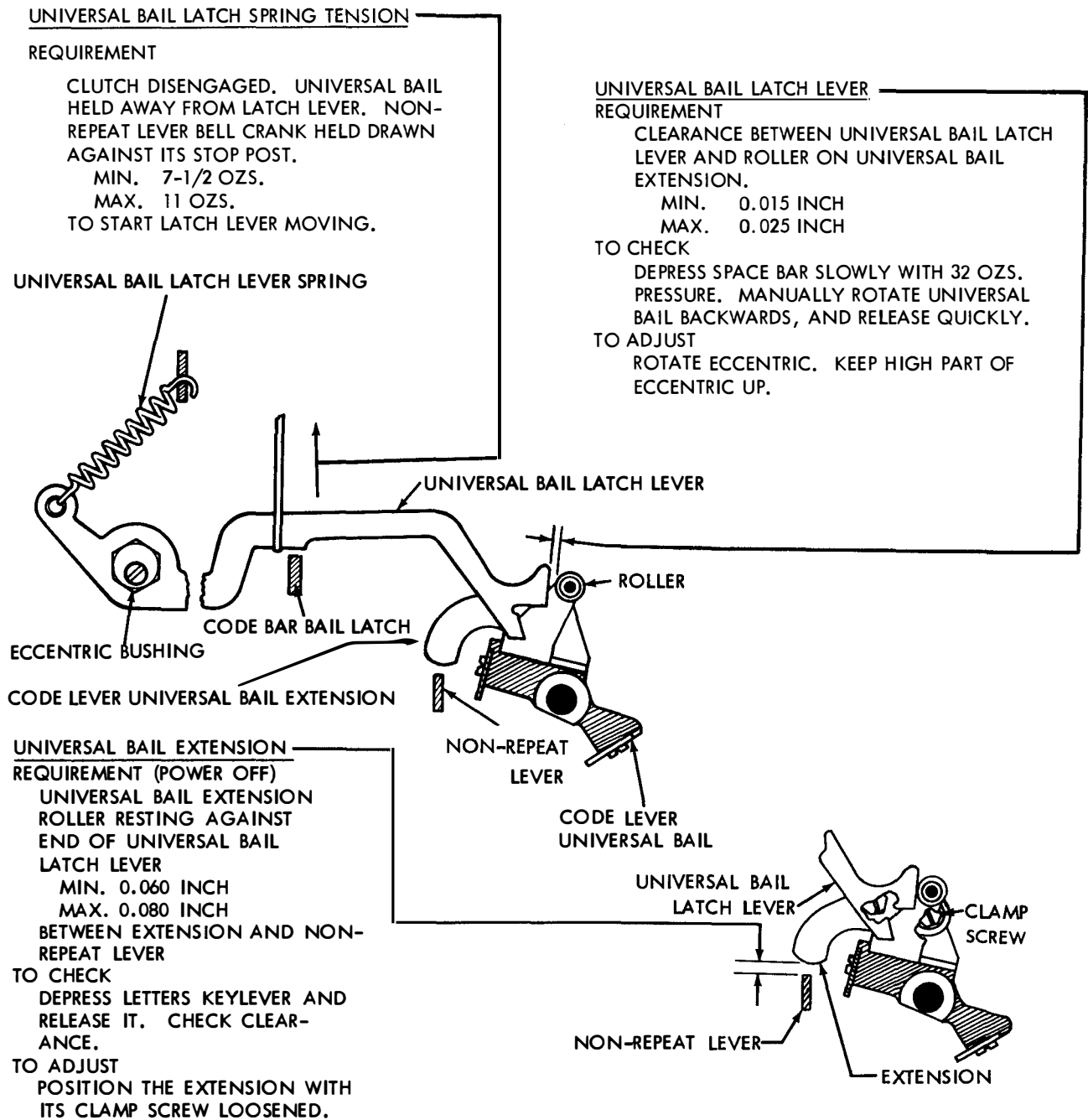


Figure 6-59C. Keyboard MX-1114C/UG or MX-1677A/UG, Universal Bail Latch Lever Mechanism

LOCK BALL END PLAY  
REQUIREMENT (UNDER POWER)

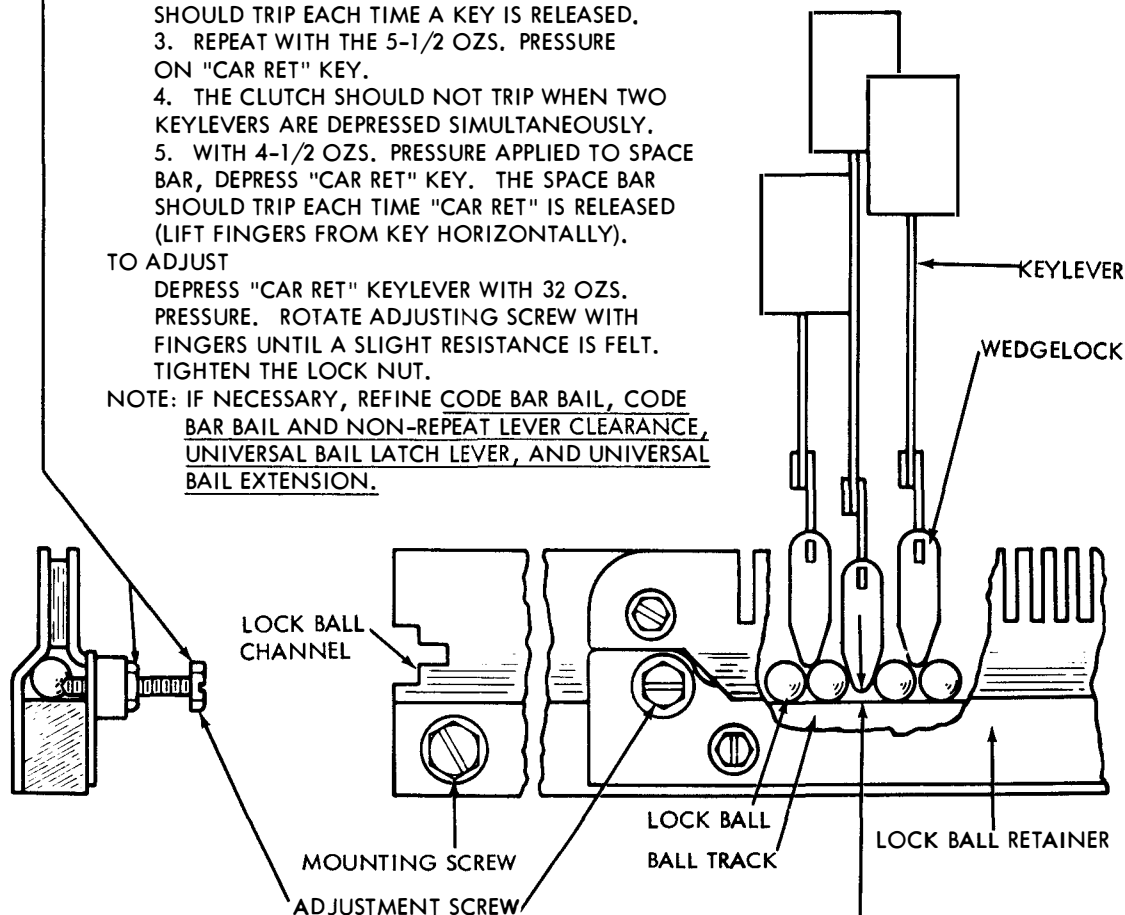
1. THE TRIP-OFF PRESSURE OF ANY CENTER ROW KEYLEVER SHOULD BE  
MIN. 2 OZS.  
MAX. 5 OZS.
2. WITH 5-1/2 OZS. PRESSURE APPLIED PERPENDICULAR TO THE "A" KEYLEVER, DEPRESS EACH KEY IN THE THIRD ROW. THE "A" KEY SHOULD TRIP EACH TIME A KEY IS RELEASED.
3. REPEAT WITH THE 5-1/2 OZS. PRESSURE ON "CAR RET" KEY.
4. THE CLUTCH SHOULD NOT TRIP WHEN TWO KEYLEVERS ARE DEPRESSED SIMULTANEOUSLY.
5. WITH 4-1/2 OZS. PRESSURE APPLIED TO SPACE BAR, DEPRESS "CAR RET" KEY. THE SPACE BAR SHOULD TRIP EACH TIME "CAR RET" IS RELEASED (LIFT FINGERS FROM KEY HORIZONTALLY).

TO ADJUST

DEPRESS "CAR RET" KEYLEVER WITH 32 OZS. PRESSURE. ROTATE ADJUSTING SCREW WITH FINGERS UNTIL A SLIGHT RESISTANCE IS FELT. TIGHTEN THE LOCK NUT.

NOTE: IF NECESSARY, REFINE CODE BAR BAIL, CODE BAR BAIL AND NON-REPEAT LEVER CLEARANCE, UNIVERSAL BAIL LATCH LEVER, AND UNIVERSAL BAIL EXTENSION.

NOTE: REMOVE KEYBOARD KEYLEVER COVER IN ORDER TO MAKE THIS ADJUSTMENT. SEE DISASSEMBLY AND REASSEMBLY, PARAGRAPH 6-3b(4).



BALL WEDGELOCK AND BALL TRACK CLEARANCE  
REQUIREMENT

ADJUSTMENT SCREW BACKED OUT TO PERMIT MAXIMUM BALL MOVEMENT WITHOUT THE BALLS ROLLING OUT OF THE TRACK. "Q" AND "P" KEYLEVERS ALTERNATELY DEPRESSED WITH 32 OZS. PRESSURE

MIN. 0.005 INCH  
MAX. 0.015 INCH

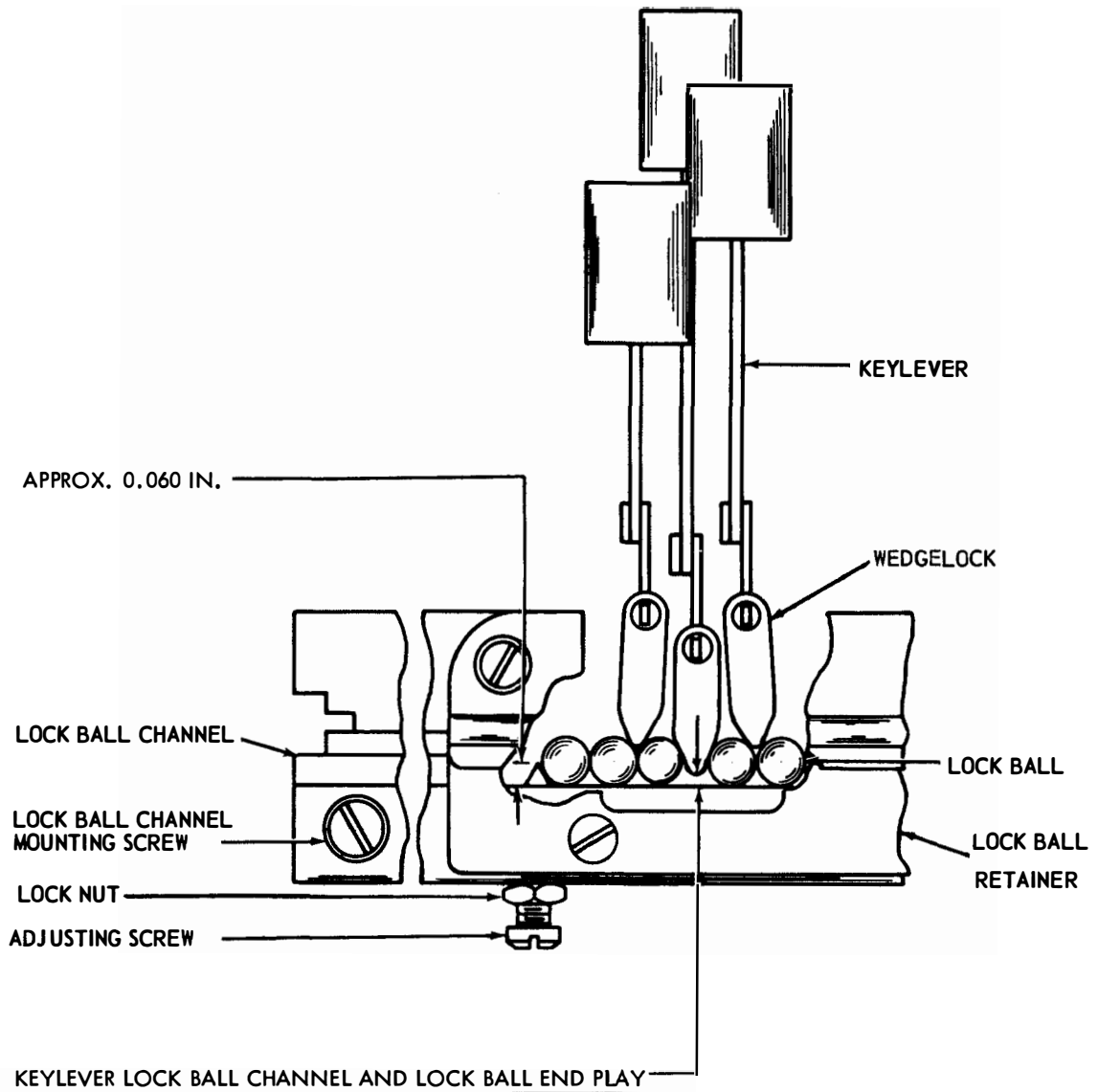
AND EQUAL WITHIN 0.005 INCH BETWEEN THE TIP OF THE WEDGELOCK AND THE BALL TRACK.

TO ADJUST

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

NOTE: A TOTAL OF 43 BALLS ARE REQUIRED IN THE BALL TRACK ASSEMBLY.

Figure 6-59D. Keyboard MX-1114C/UG or MX-1677A/UG, Wedge lock and Ball Track Mechanism



**REQUIREMENT**

GENERATOR SHAFT ROTATING, CLUTCH SHOULD TRIP CONSISTENTLY WHEN TWO KEYLEVERS ARE DEPRESSED ALTERNATELY. CLUTCH SHOULD NOT TRIP WHEN TWO KEYLEVERS ARE DEPRESSED SIMULTANEOUSLY. WHEN EITHER Q OR P KEYLEVER IS FULLY DEPRESSED, CLEARANCE SHOULD BE

MIN. SOME CLEARANCE  
MAX. 0.020 INCH

BETWEEN TIP OF WEDGELOCK AND BOTTOM OF CHANNEL.

**TO ADJUST**

POSITION CHANNEL WITH MOUNTING SCREWS LOOSENED. POSITION LOCK BALL ADJUSTING SCREW

APPROXIMATELY 0.060 INCH ABOVE BOTTOM OF BALL CHANNEL.

Figure 6-60. Keyboard, Keylever Locking Mechanism

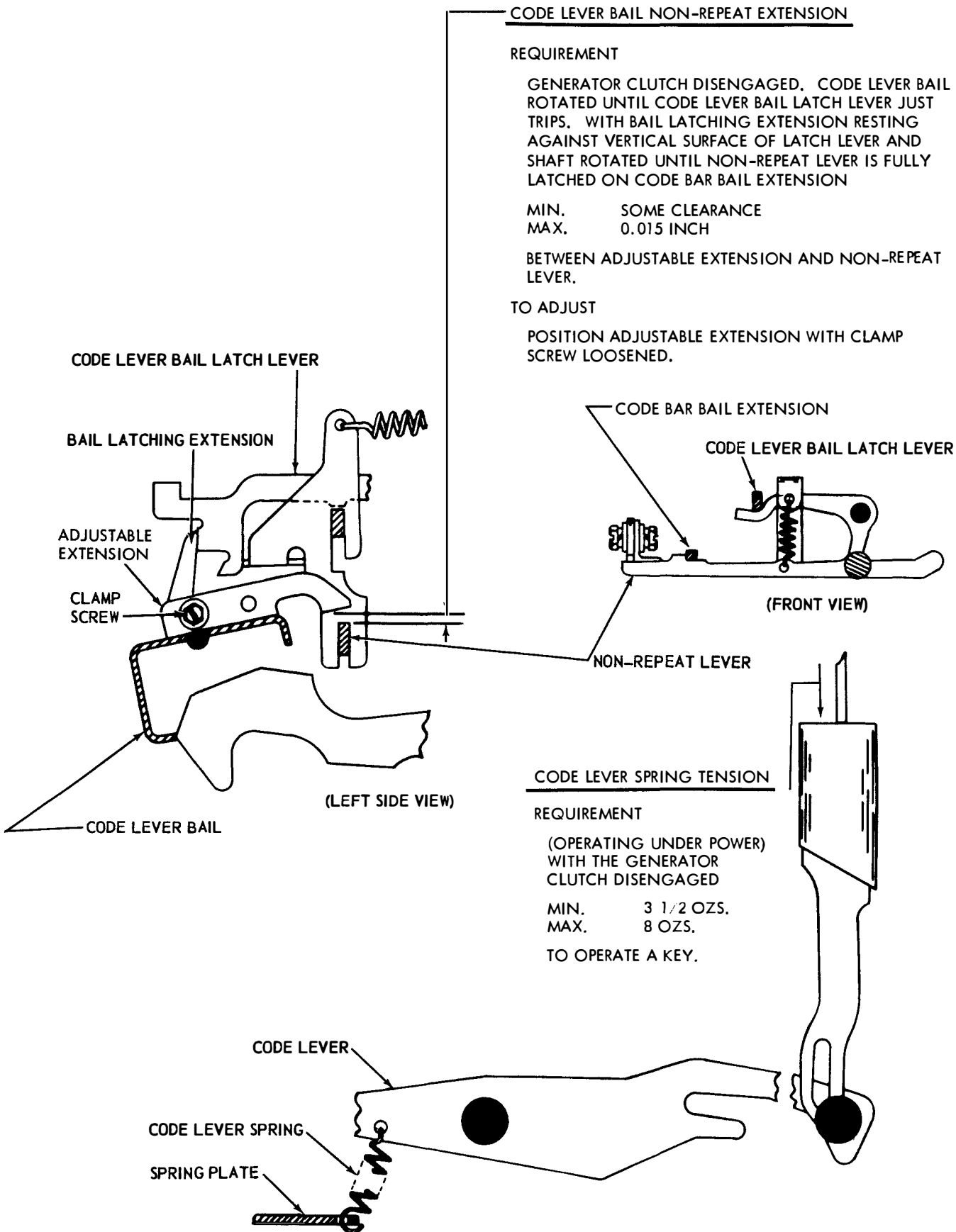
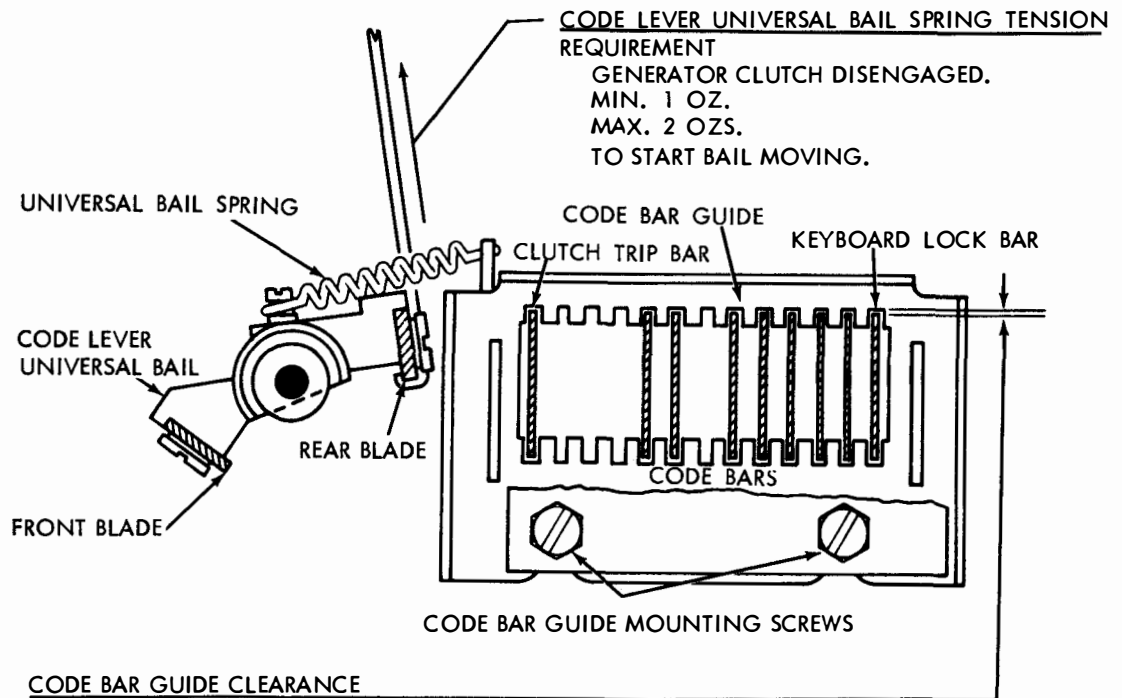


Figure 6-61. Keyboard, Non-Repeat Mechanism



**CODE BAR GUIDE CLEARANCE REQUIREMENT**  
 MIN. SOME CLEARANCE.  
 MAX. 0.006 INCH.  
 ALL CODE BARS SHOULD MOVE FREELY WITHOUT BIND.  
 TO ADJUST  
 LOOSEN MOUNTING SCREWS AND POSITION CODE BAR GUIDE.

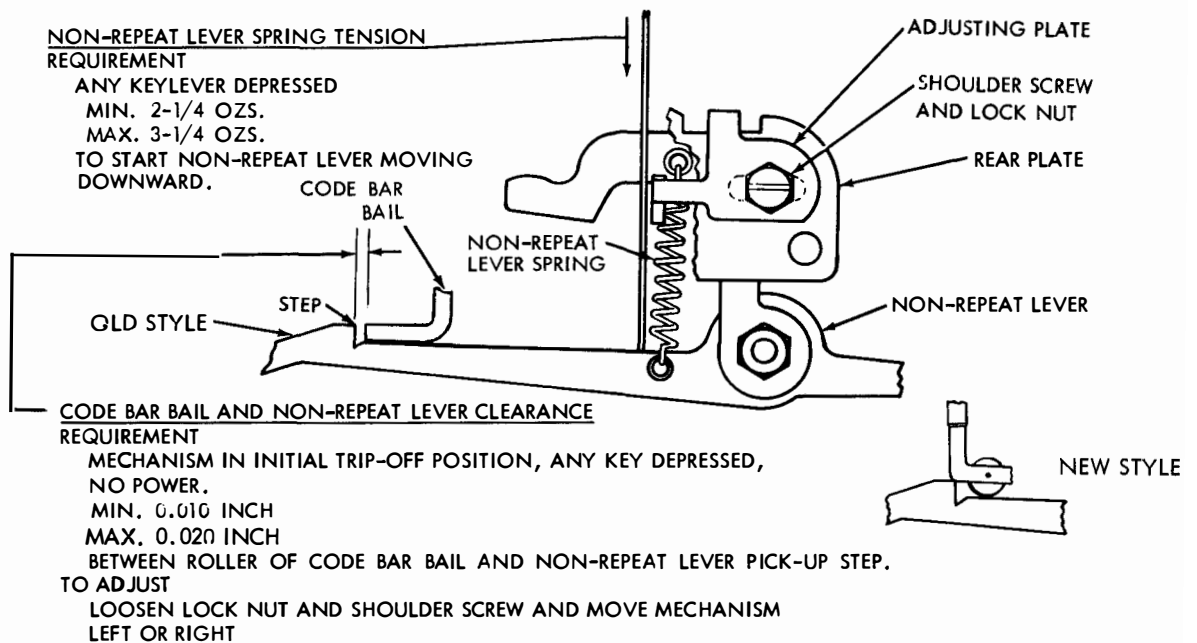
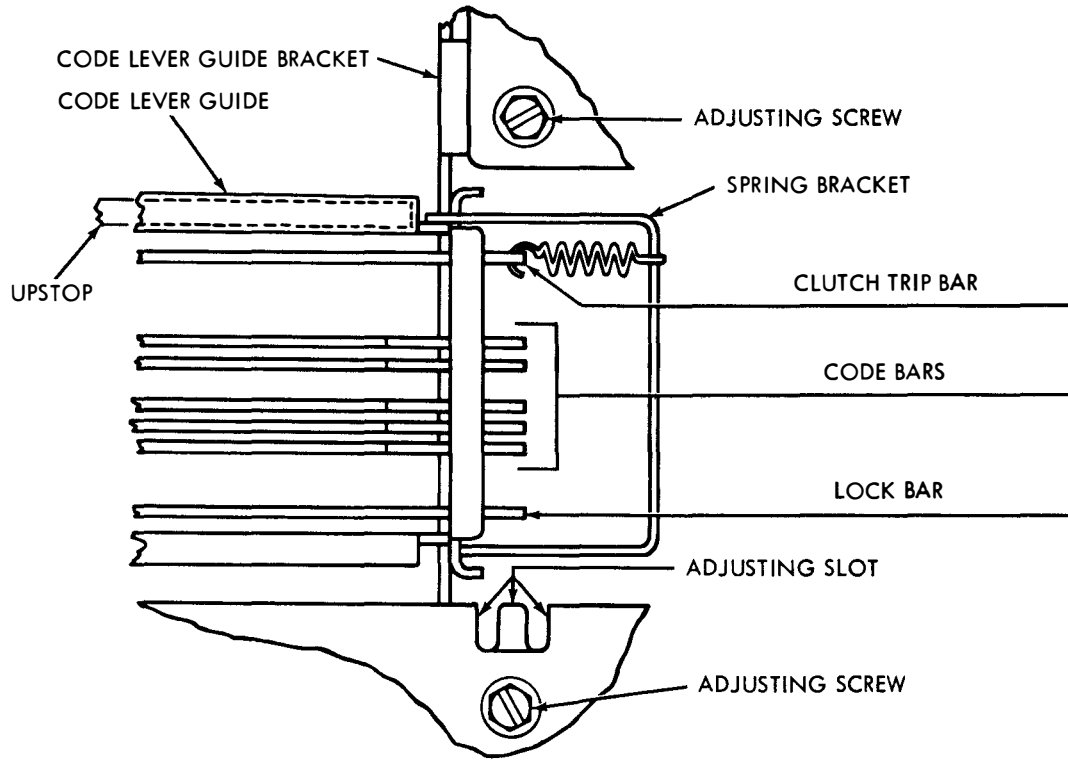


Figure 6-61A. Keyboard MX-1114C/UG or MX-1677A/UG, Code Bar and Non-Repeat Lever Mechanisms





CLUTCH TRIP BAR SPRING TENSION  
REQUIREMENT

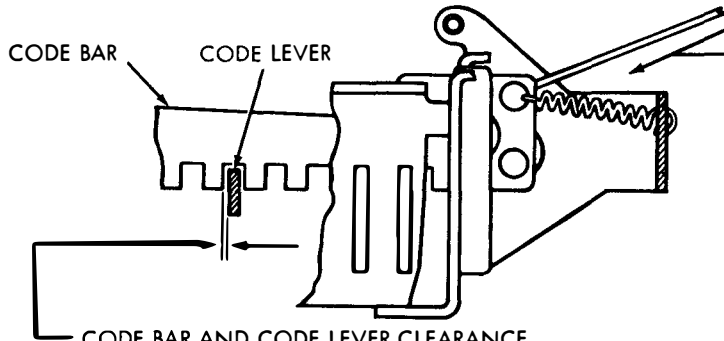
CLUTCH DISENGAGED, POWER OFF.  
MIN. 9 OZS.  
MAX. 12 OZS.  
TO MOVE BAR.

CODE BAR SPRING TENSION  
REQUIREMENT

LETTERS KEYLEVER DEPRESSED.  
MIN. 3 OZS.  
MAX. 5 OZS.  
TO START CODE BAR MOVING.

LOCK BAR SPRING TENSION  
REQUIREMENT

CLUTCH DISENGAGED. KEYBOARD LOCK KEYLEVER DEPRESSED.  
MIN. 2-1/2 OZS.  
MAX. 6 OZS.  
TO START LOCK BAR MOVING.



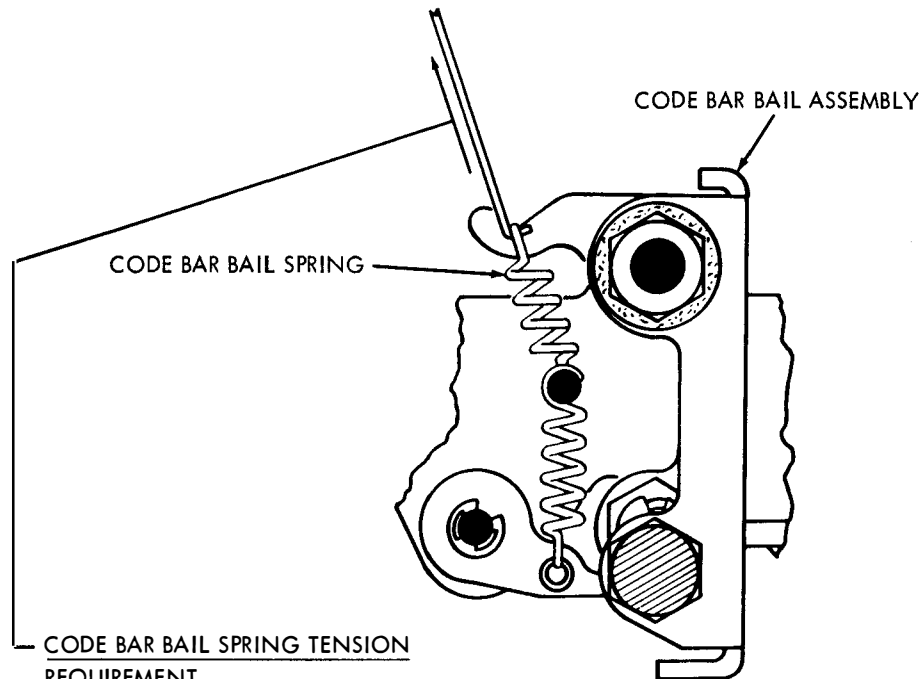
CODE BAR AND CODE LEVER CLEARANCE  
REQUIREMENT

CARRIAGE RETURN KEY DEPRESSED BUT NOT ENOUGH TO TRIP OFF  
UNIVERSAL BAIL LATCH OR CLUTCH BAR.  
MIN. 0.006 INCH.  
MAX. 0.017 INCH.  
MEASURED AT CODE BAR #3

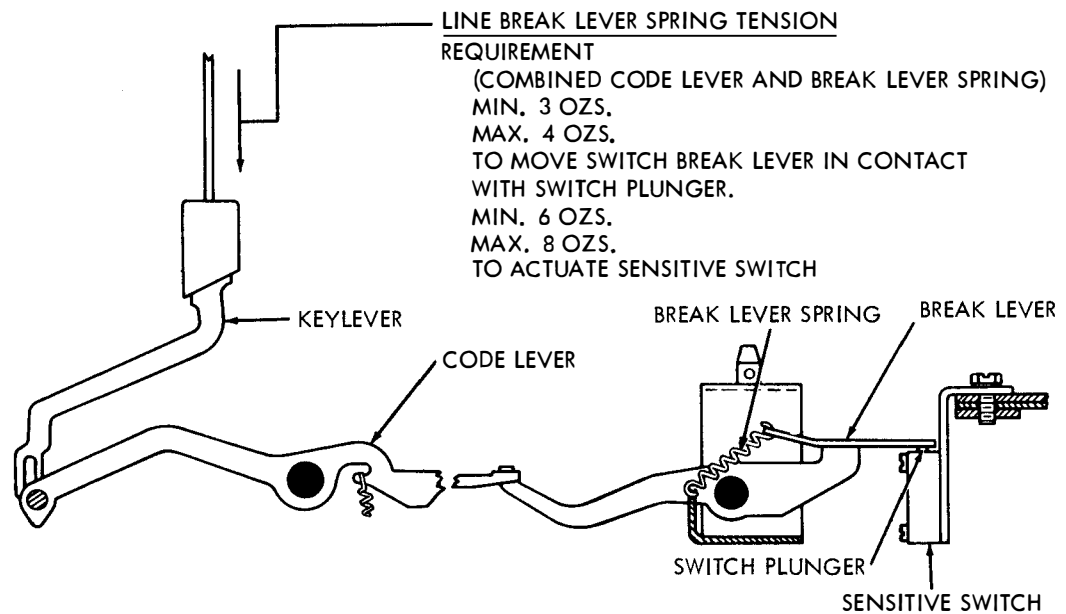
TO ADJUST

POSITION GUIDE BY ADJUSTING SLOT WITH (4) MOUNTING SCREWS LOOSENED.

Figure 6-61B. Keyboard MX-1114-C/UG or MX-1677A/UG, Code Bar and Code Lever Mechanism



**CODE BAR BAIL SPRING TENSION REQUIREMENT**  
 CLUTCH DISENGAGED. SPRING UNHOOKED FROM ARM.  
 MIN. 9 OZS.  
 MAX. 11 OZS.  
 TO PULL TO INSTALLED LENGTH.



**LINE BREAK LEVER SPRING TENSION REQUIREMENT**  
 (COMBINED CODE LEVER AND BREAK LEVER SPRING)  
 MIN. 3 OZS.  
 MAX. 4 OZS.  
 TO MOVE SWITCH BREAK LEVER IN CONTACT WITH SWITCH PLUNGER.  
 MIN. 6 OZS.  
 MAX. 8 OZS.  
 TO ACTUATE SENSITIVE SWITCH

Figure 6-61C. Keyboard MX-1114C/UG or MX-1677A/UG, Code Bar Bail and Line Break Lever

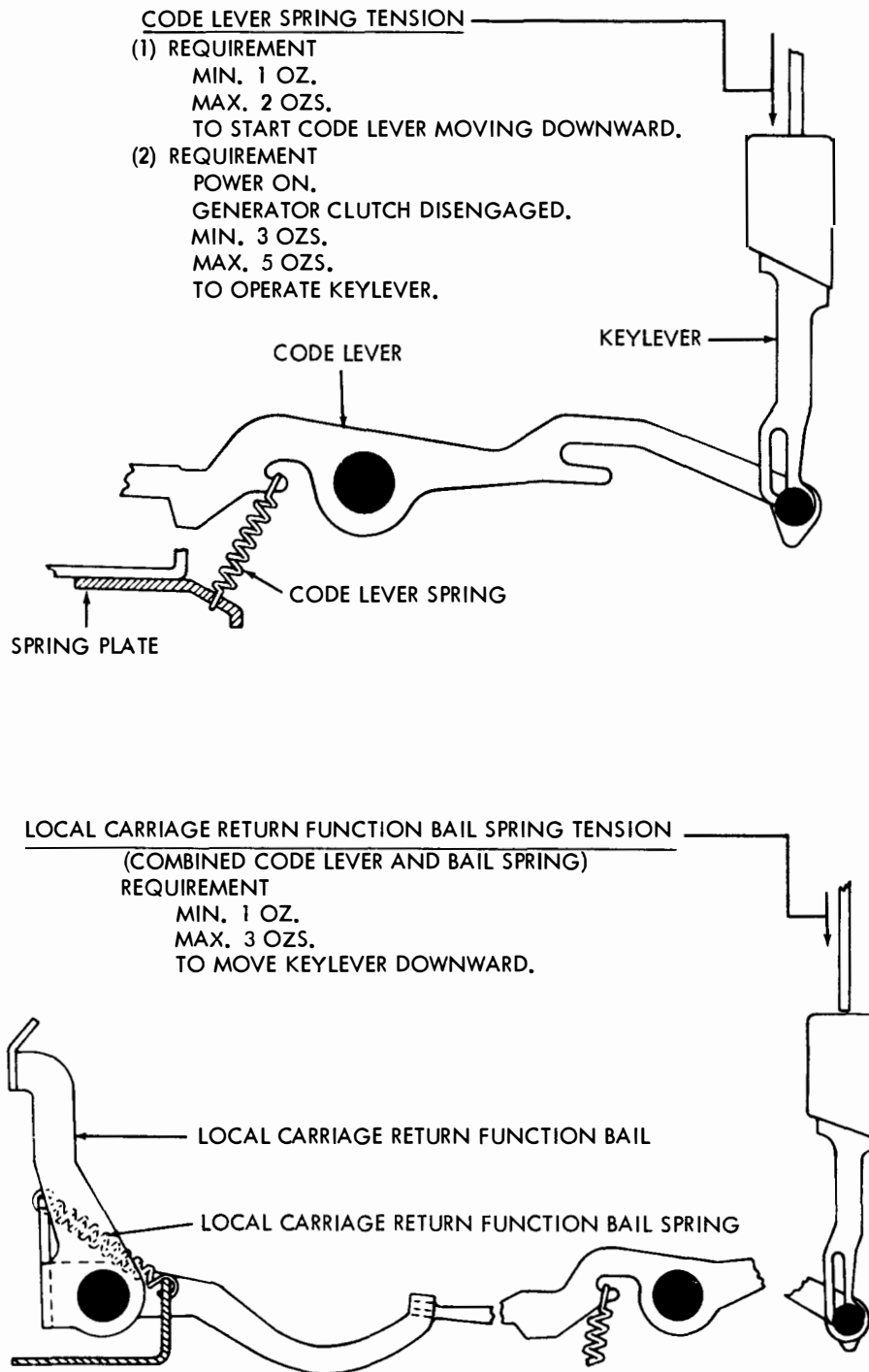


Figure 6-61D. Keyboard MX-1114C/UG or MX-1677A/UG, Code Lever and Local Carriage Return Function Bail Mechanisms

CODE LEVER BAIL LATCH LEVER ECCENTRIC

(1) REQUIREMENT

KEYLEVER WITH SHORTEST DOWNWARD STROKE FULLY DEPRESSED. CLEARANCE BETWEEN FRONT VERTICAL SURFACE OF THE CODE LEVER BAIL EXTENSION AND THE STOP ON THE REAR END OF THE CODE LEVER BAIL LATCH LEVER.

MIN. 0.025 INCH  
MAX. 0.040 INCH

(2) REQUIREMENT

GENERATOR CLUTCH DISENGAGED. CLEARANCE BETWEEN CODE LEVER BAIL LATCH LEVER AND THE CODE BAR BAIL LATCH

MIN. 0.005 INCH  
MAX. 0.035 INCH

TO ADJUST

ROTATE THE CODE LEVER BAIL LATCH LEVER ECCENTRIC.

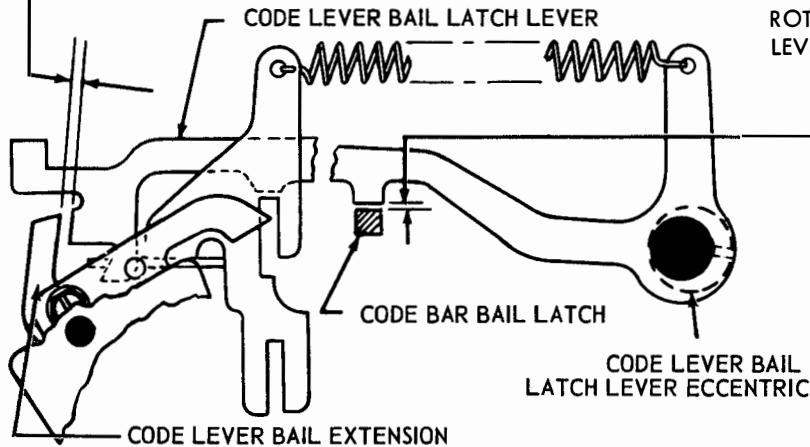


Figure 6-62. Keyboard, Code Lever Bail Latch Mechanism, Left Side View

CODE LEVER BAIL SPRING TENSION

REQUIREMENT

GENERATOR CLUTCH DISENGAGED. NON-REPEAT LEVER HELD AWAY.

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

TO START THE BAIL MOVING.

CODE LEVER BAIL EXTENSION  
CODE LEVER BAIL SPRING

CODE BAR GUIDES

REQUIREMENT

CLEARANCE BETWEEN CODE BARS AND CODE BAR GUIDES

MIN. SOME CLEARANCE  
MAX. 0.010 INCH

TO ADJUST

POSITION THE TWO CODE BAR GUIDES WITH THEIR MOUNTING SCREWS LOOSENED.

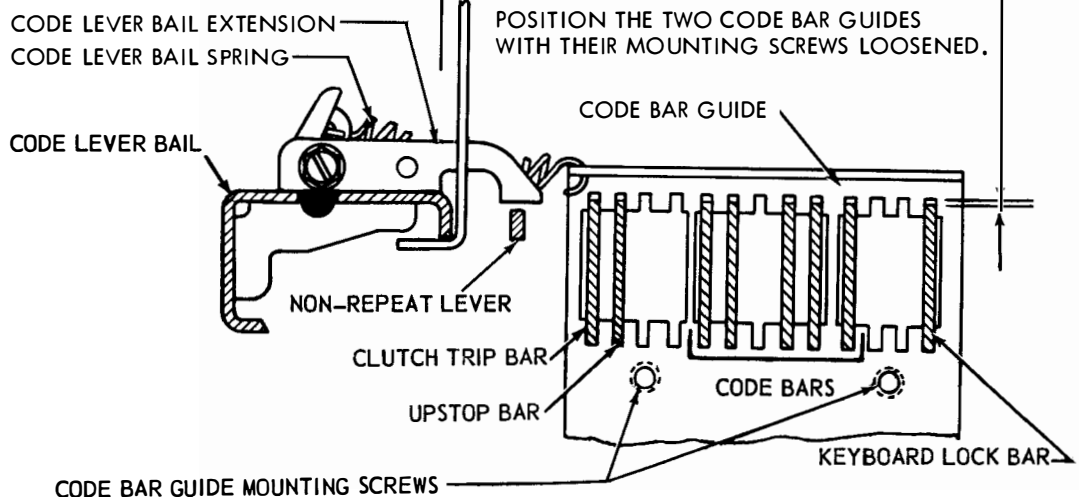


Figure 6-63. Keyboard, Code Bar Mechanism, Left Side View

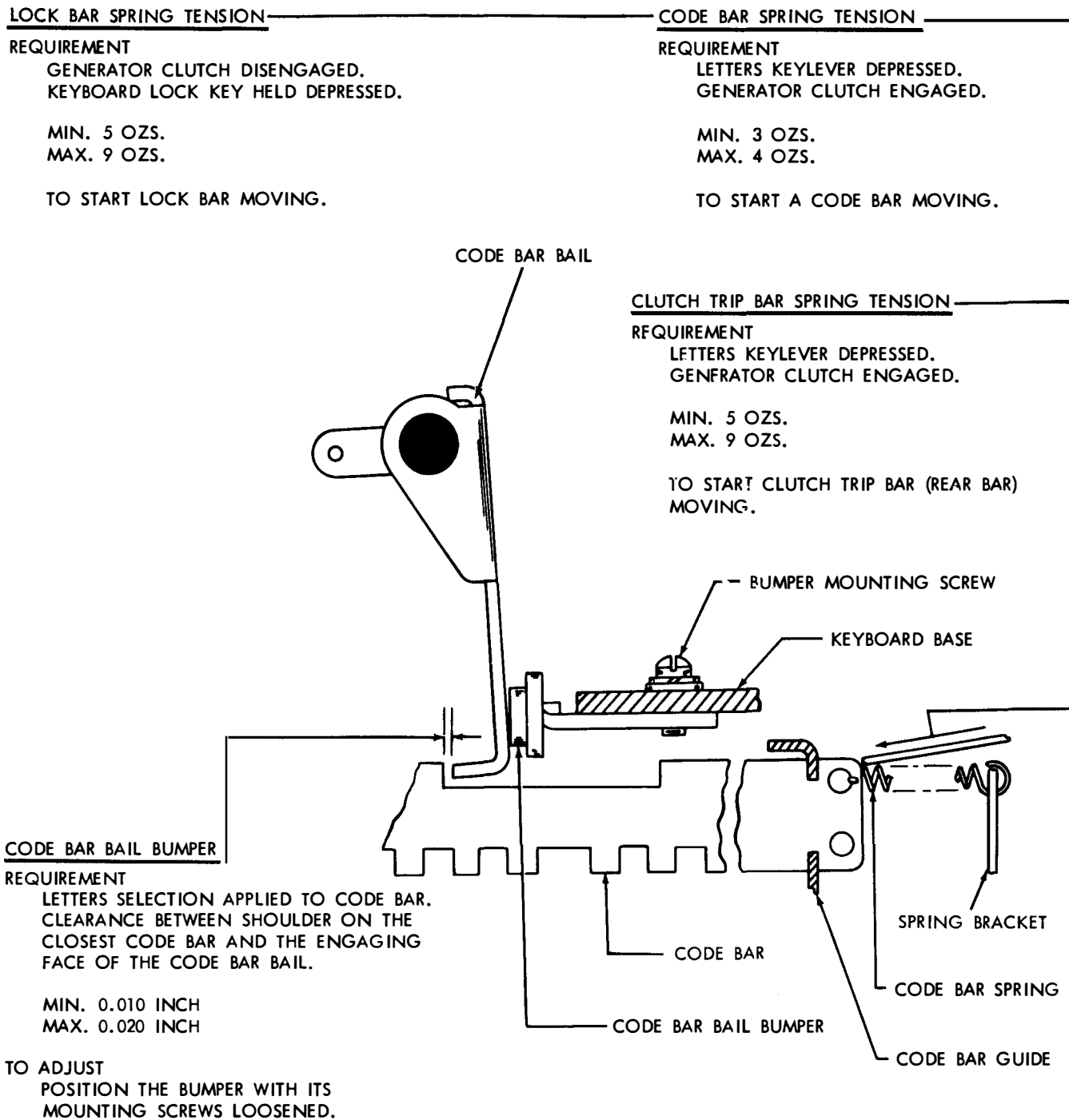


Figure 6-64. Keyboard, Code Bar Mechanism

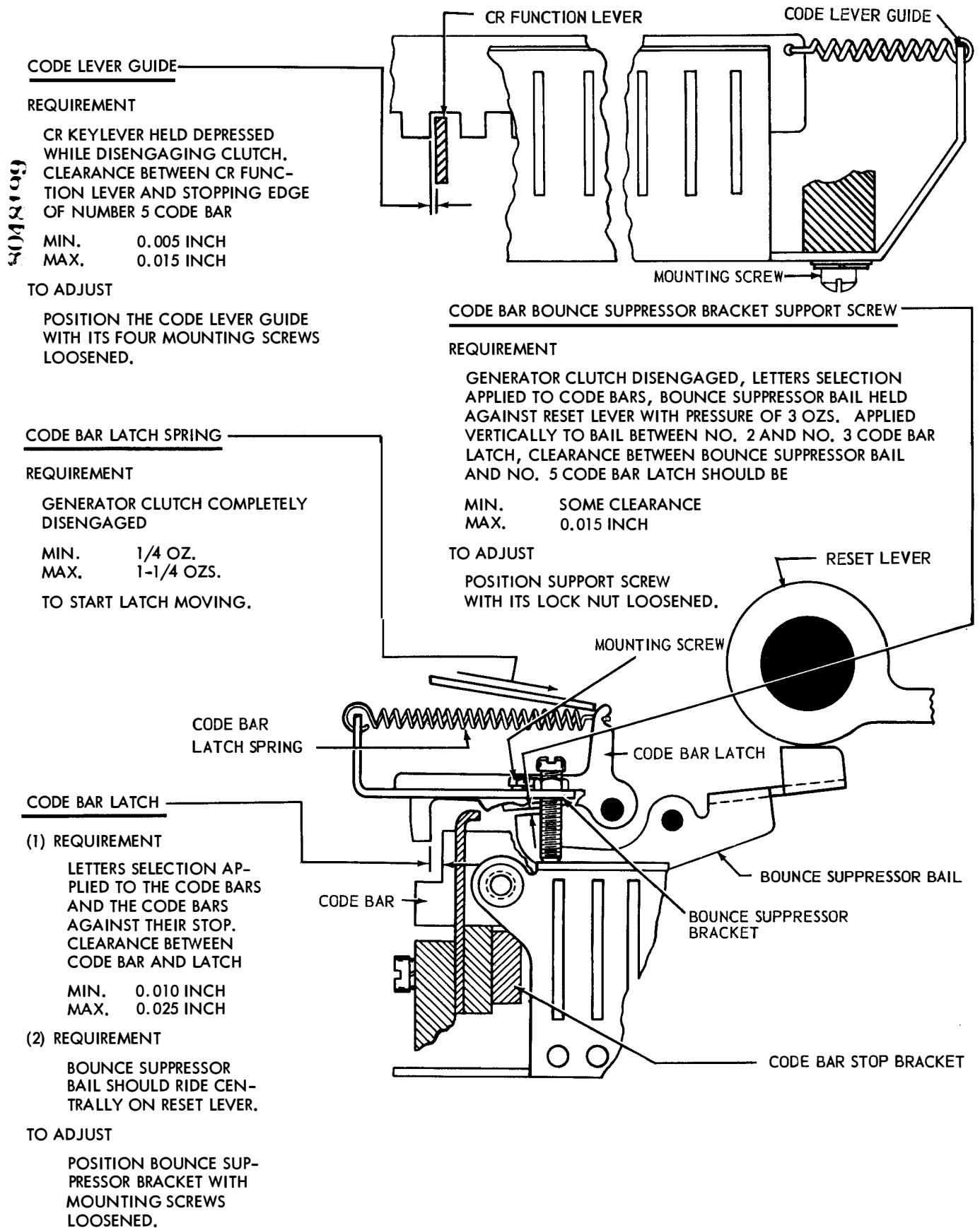


Figure 6-65. Keyboard, Code Bar Mechanism, Front View

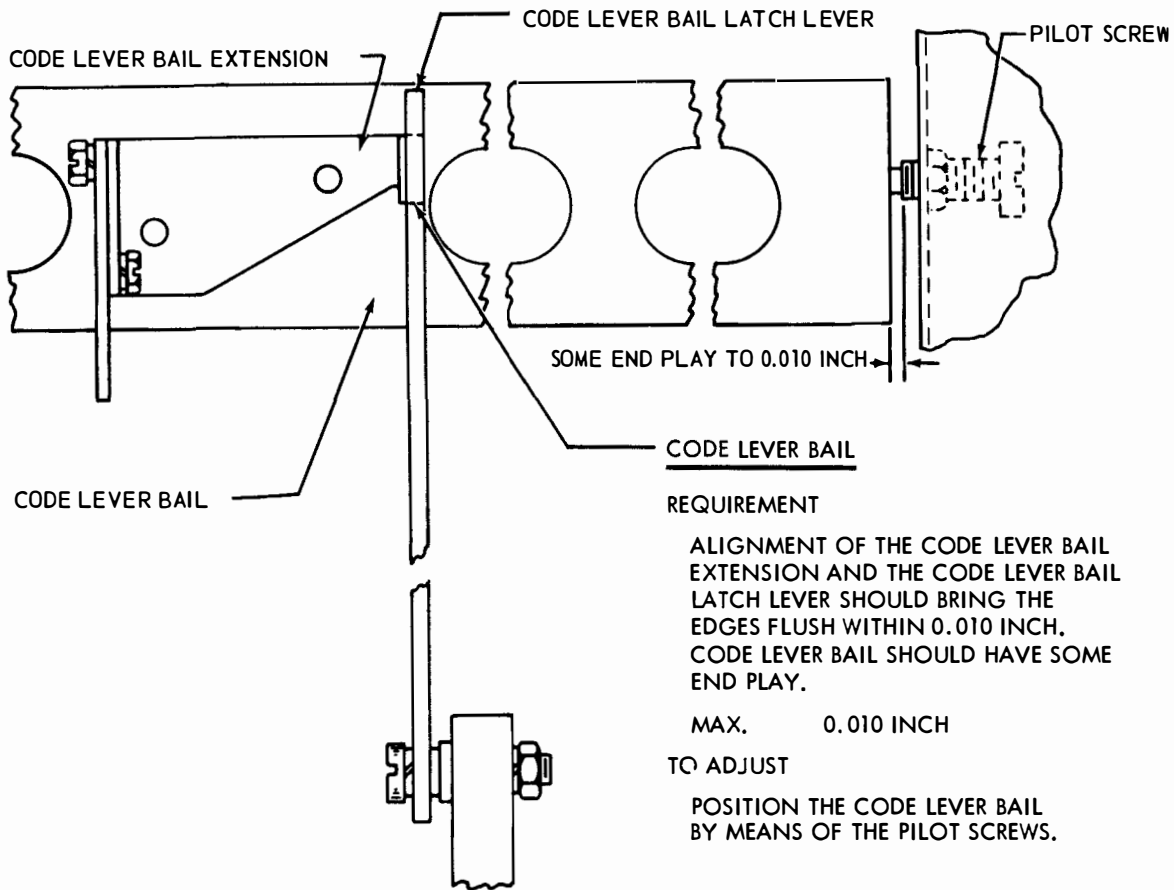


Figure 6-66. Keyboard, Code Lever Bail

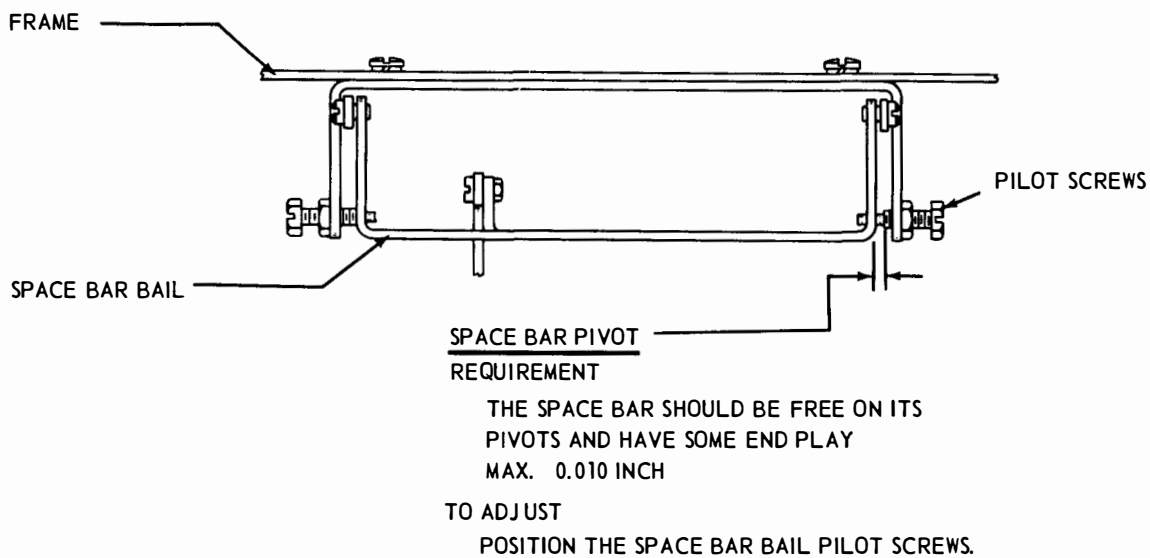


Figure 6-67. Keyboard, Space Bar

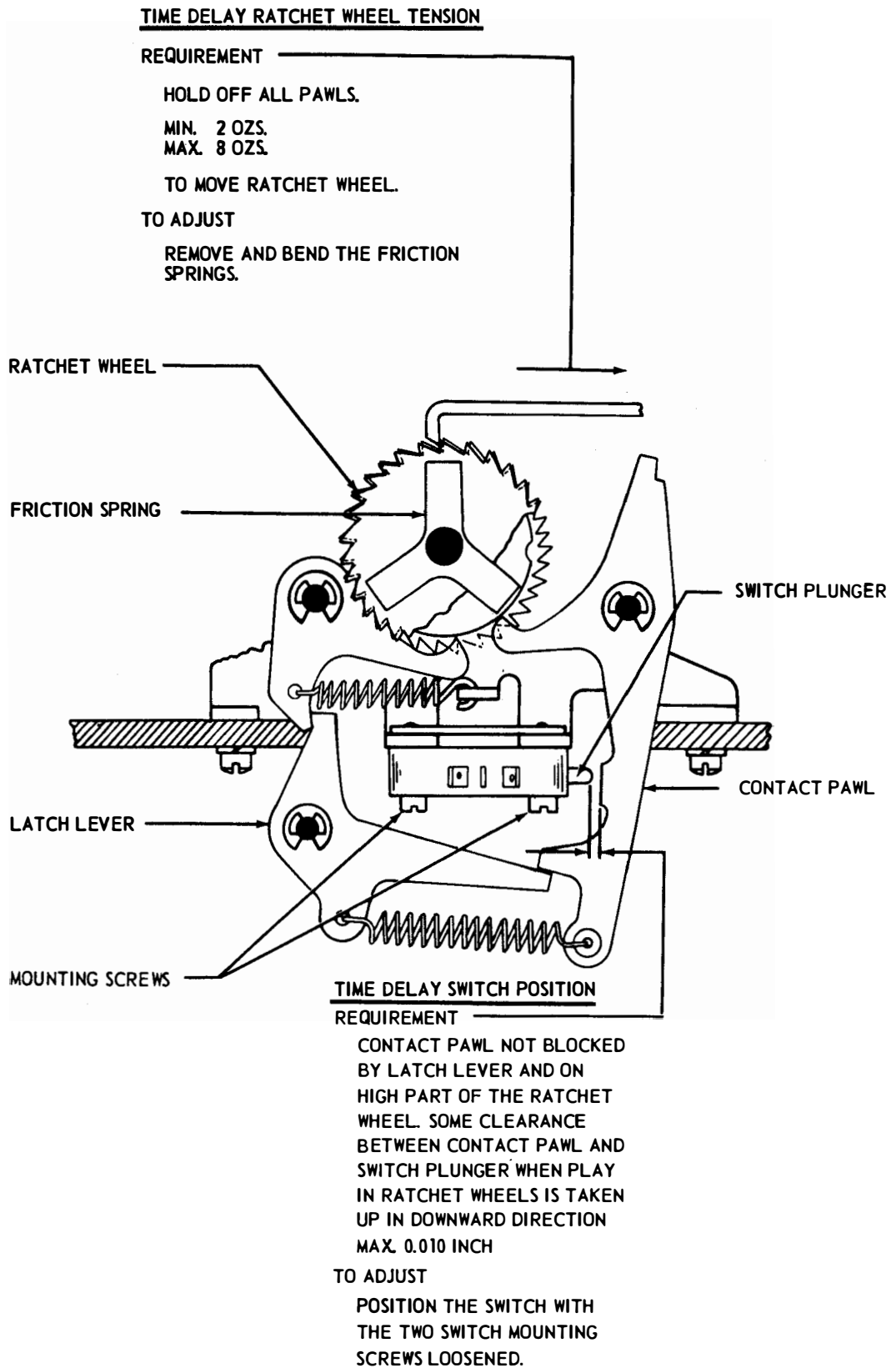


Figure 6-68. Keyboard or Base, Time Delay Mechanism



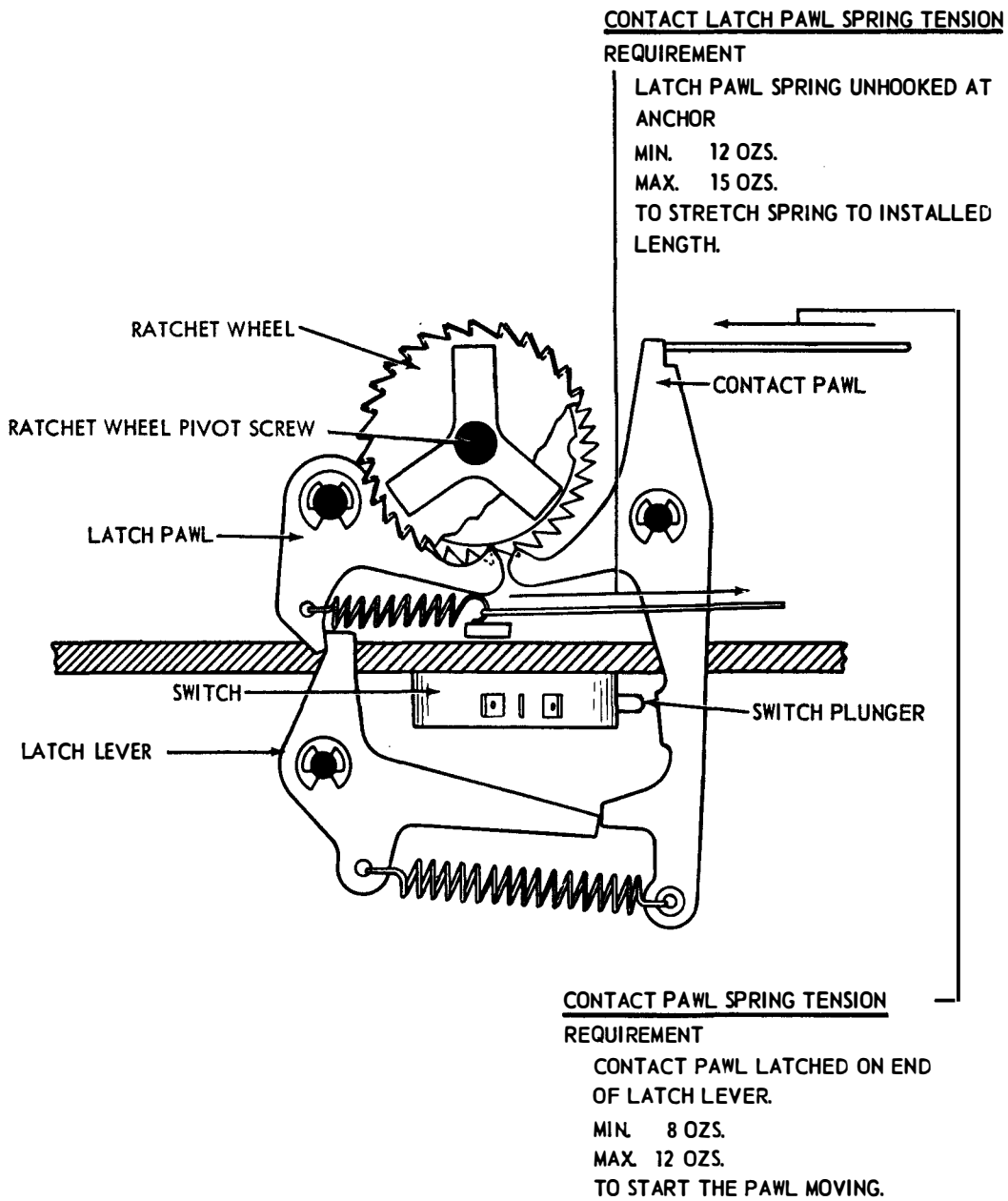
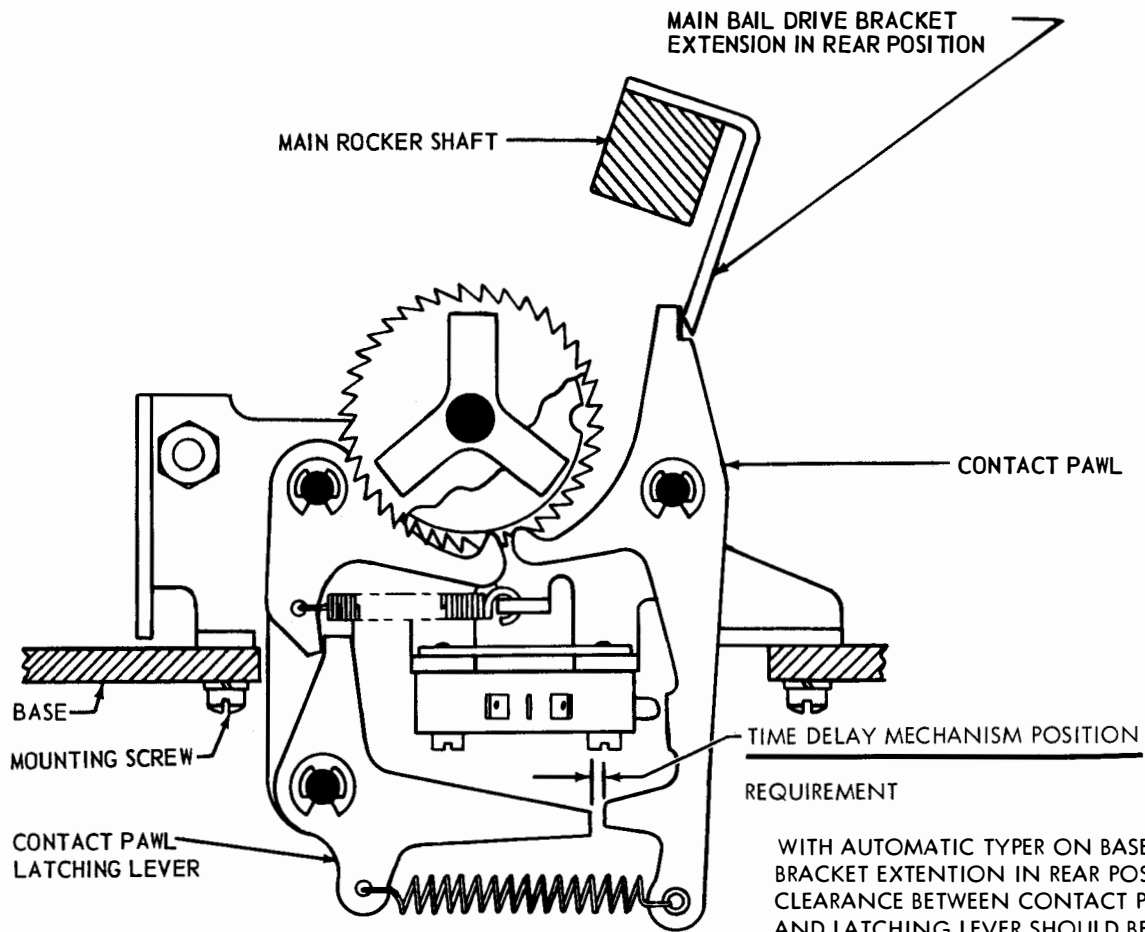


Figure 6-69. Keyboard or Base, Time Delay Mechanism, Left Side View



REQUIREMENT

WITH AUTOMATIC TYPER ON BASE, DRIVE BRACKET EXTENSION IN REAR POSITION, CLEARANCE BETWEEN CONTACT PAWL AND LATCHING LEVER SHOULD BE

MIN. 0.020 INCH

TO ADJUST

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

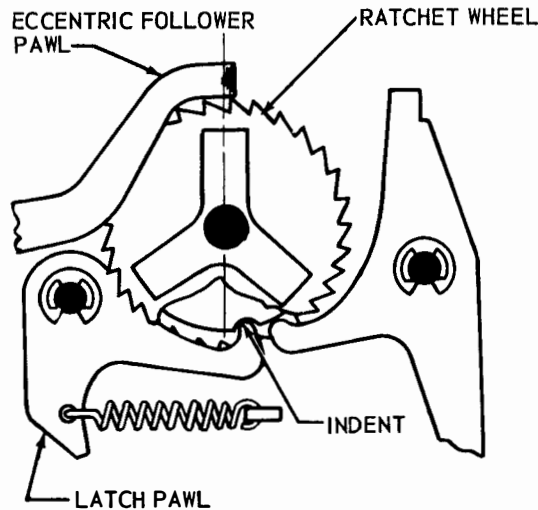
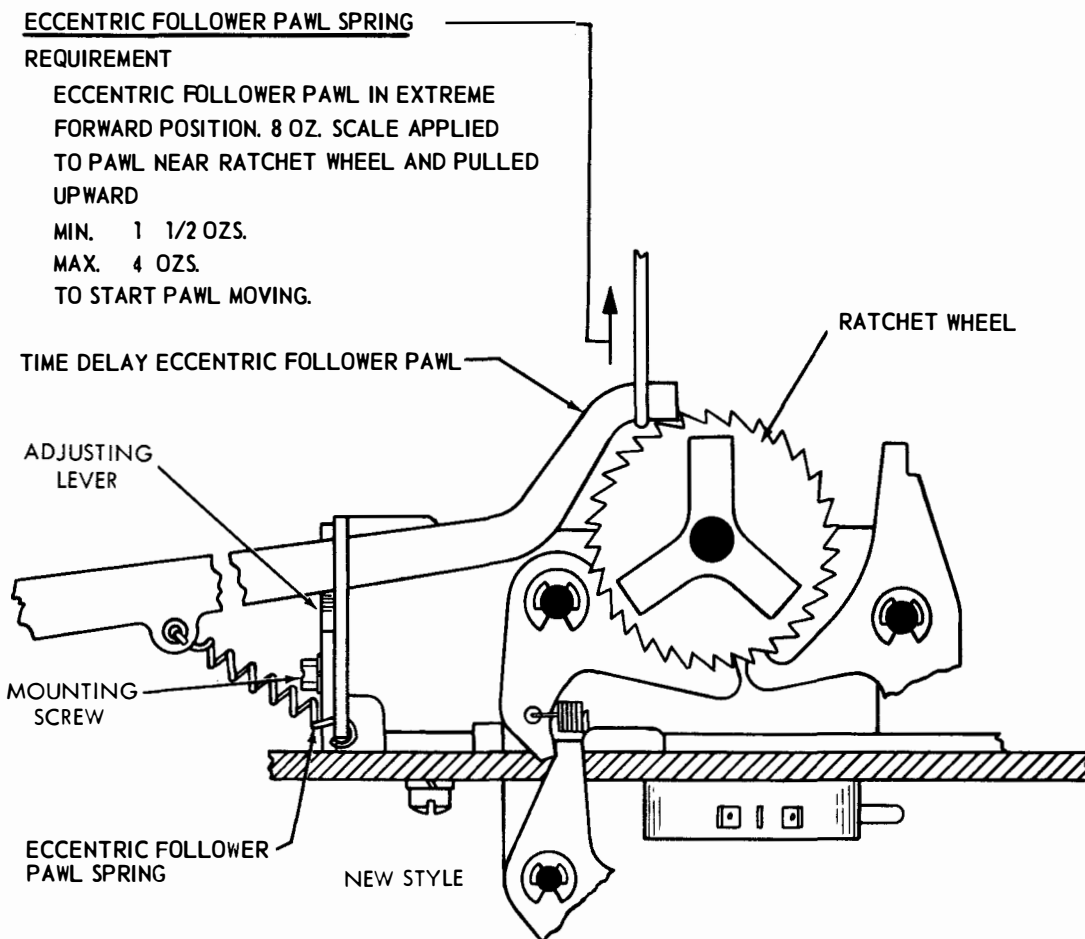


Figure 6-70. Keyboard or Base, Time Delay Mechanism, Left Side View



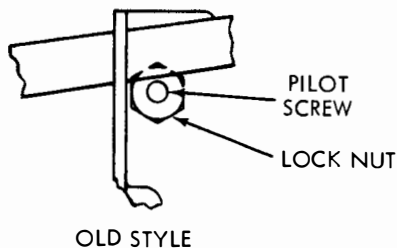
TIME DELAY DISABLING DEVICE (NEW STYLE)

REQUIREMENT

DISABLE THE TIME DELAY MECHANISM WHEN NOT DESIRED

TO ADJUST

LOOSEN THE ADJUSTING LEVER MOUNTING SCREW AND PRESS DOWNWARD ON THE LEVER TO RAISE ECCENTRIC FOLLOWER OUT OF ENGAGEMENT WITH ITS RATCHET WHEEL.



TIME DELAY DISABLING DEVICE

REQUIREMENT

DISABLE THE TIME DELAY MECHANISM WHEN NOT REQUIRED.

TO ADJUST

RAISE THE PILOT SCREW (LOCK NUT LOOSENED) AND ECCENTRIC FOLLOWER PAWL UNTIL THE PAWL CLEARS THE RATCHET WHEEL.

Figure 6-71. Keyboard or Base, Time Delay Disabling Device

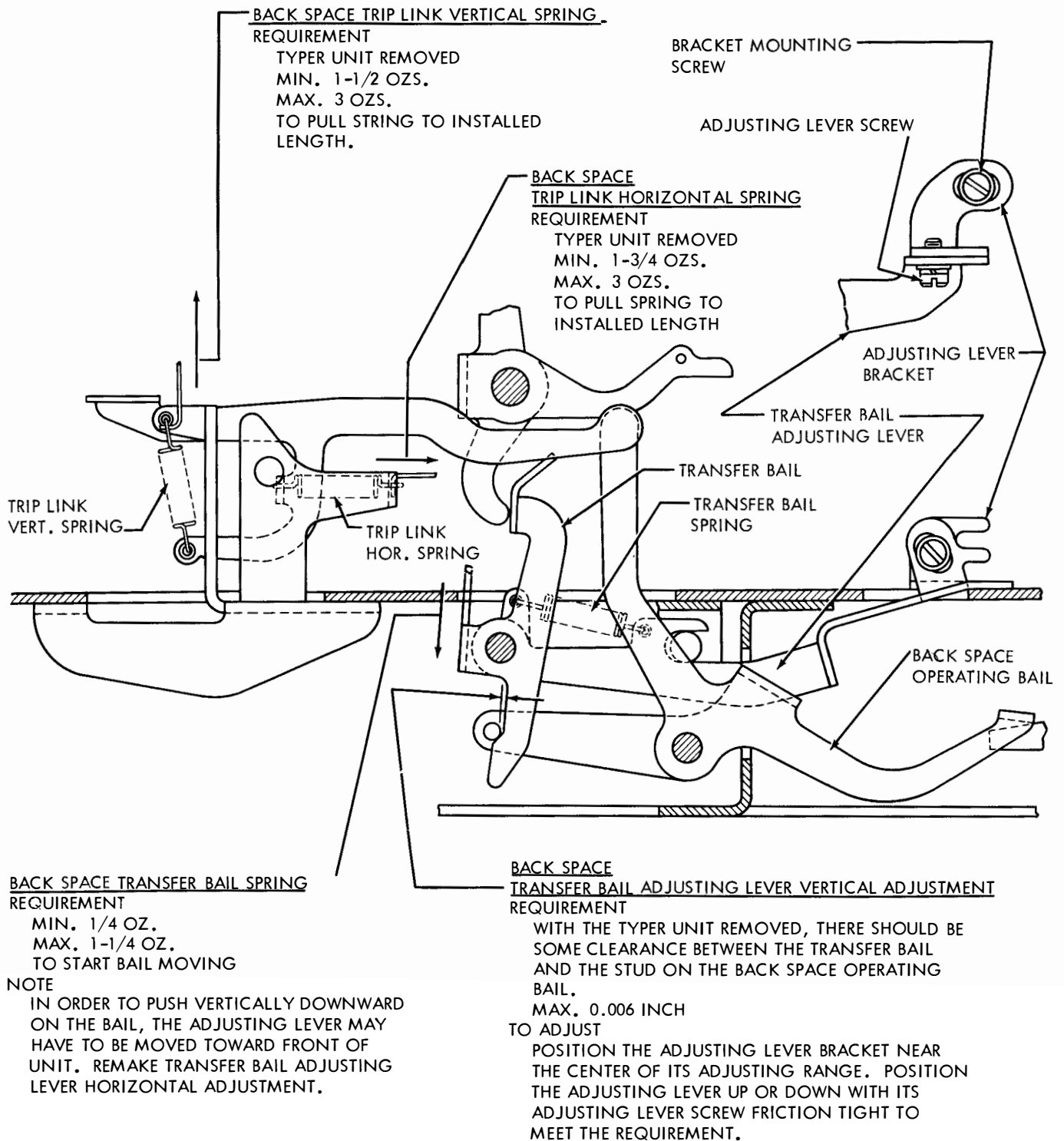


Figure 6-71A. Keyboard MX-1677A/UG, Back Space Mechanism

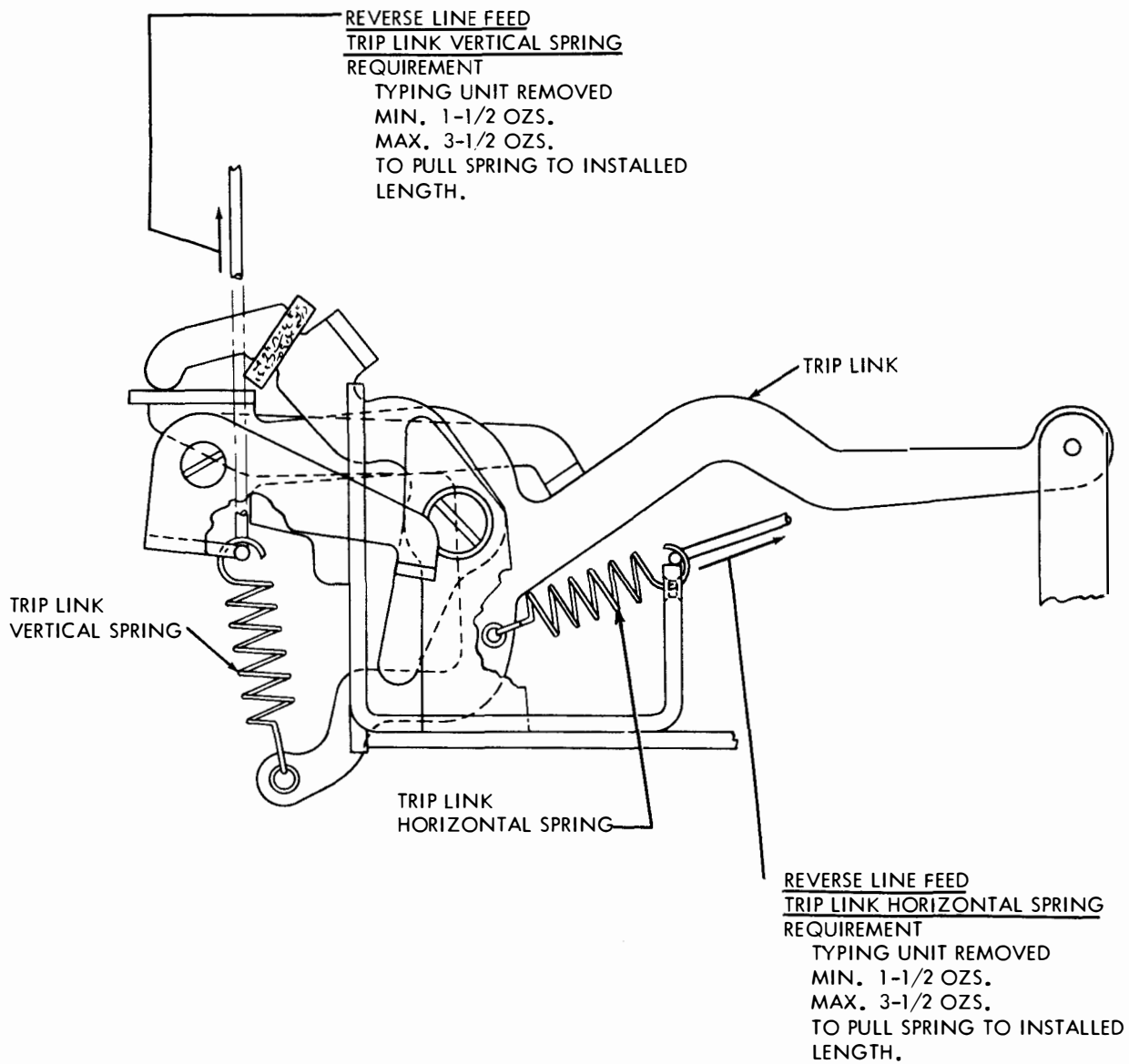
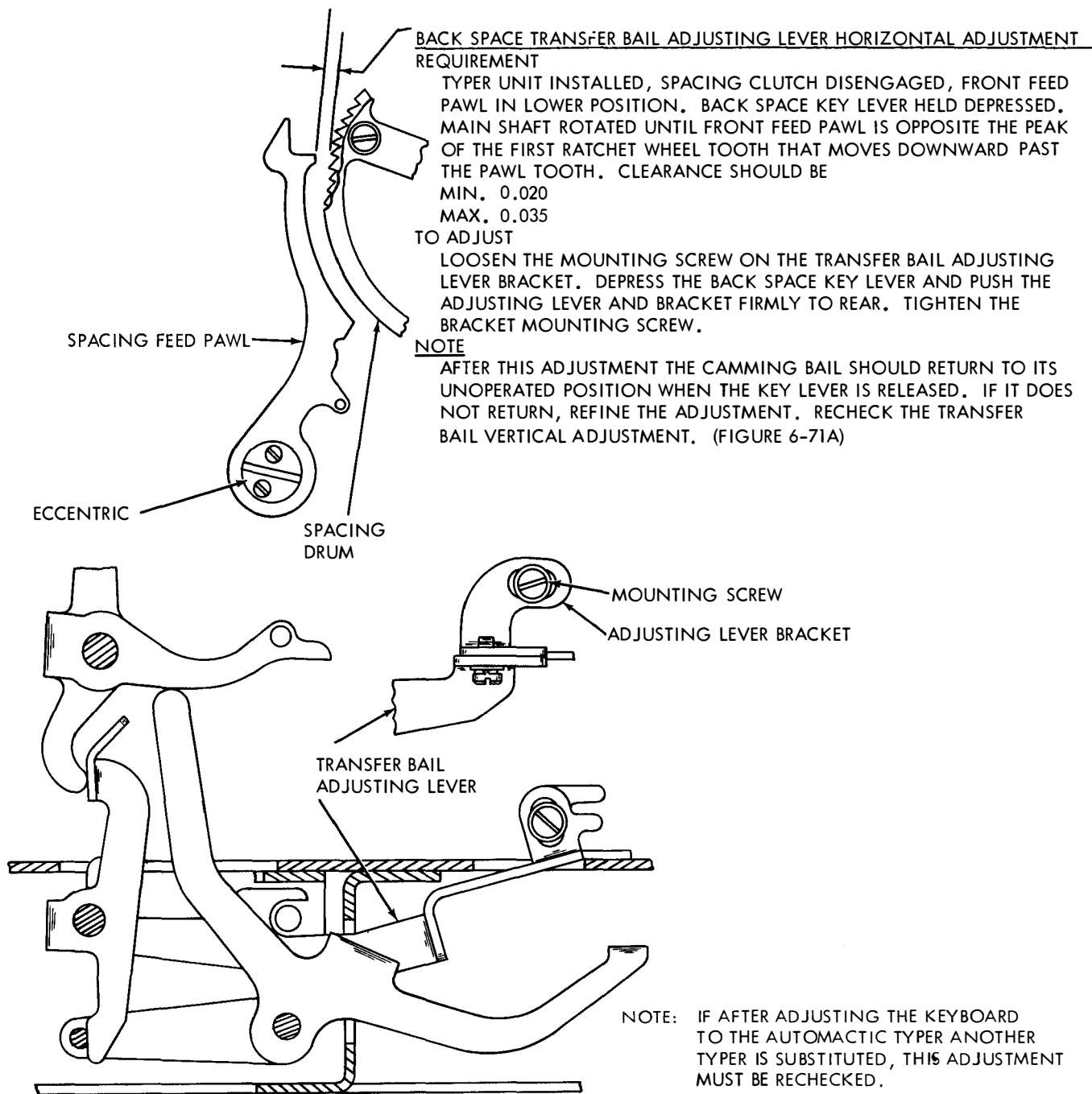


Figure 6-71B. Keyboard MX-1677A, Local Reverse Line Feed Mechanism



WHEN MAKING A COMPLETE ADJUSTMENT OF THE AUTOMATIC TYPER, THE FOLLOWING CONDITIONING OPERATIONS SHOULD BE PERFORMED TO PREVENT DAMAGE TO THE UNIT.

- (1) LOOSEN THE SHIFT LEVER DRIVE ARM CLAMP SCREW (FIGURE 6-86).
- (2) MOVE THE RIGHT AND LEFT VERTICAL POSITIONING LEVER ECCENTRIC STUD (FIGURES 6-99 & 6-100) IN THE ROCKER SHAFT BRACKETS TO THEIR LOWEST POSITION (DOT ON ECCENTRIC TOWARD BOTTOM OF UNIT).
- (3) LOOSEN THE TWO BEARING STUD MOUNTING SCREWS AND THE TWO CONNECTING STRIP CLAMP SCREWS IN THE HORIZONTAL POSITIONING DRIVE LINKAGE (FIGURE 6-106).
- (4) LOOSEN THE CLAMP SCREWS AND MOVE THE REVERSING SLIDE BRACKETS TO THEIR UPPERMOST POSITION (FIGURE 6-104).
- (5) LOOSEN THE FUNCTION RESET BAIL BLADE MOUNTING SCREWS (FIGURE 6-105).
- (6) LOOSEN THE SHOULDER BUSHINGS ON THE FUNCTION STRIPPER BLADE ARMS AND MOVE THE STRIPPER BLADE AND ARMS TO THEIR LOWEST POSITION (FIGURE 6-126).
- (7) LOOSEN THE CARRIAGE RETURN LEVER CLAMP SCREW.

Figure 6-71C. Keyboard MX-1677A, Back Space Mechanism

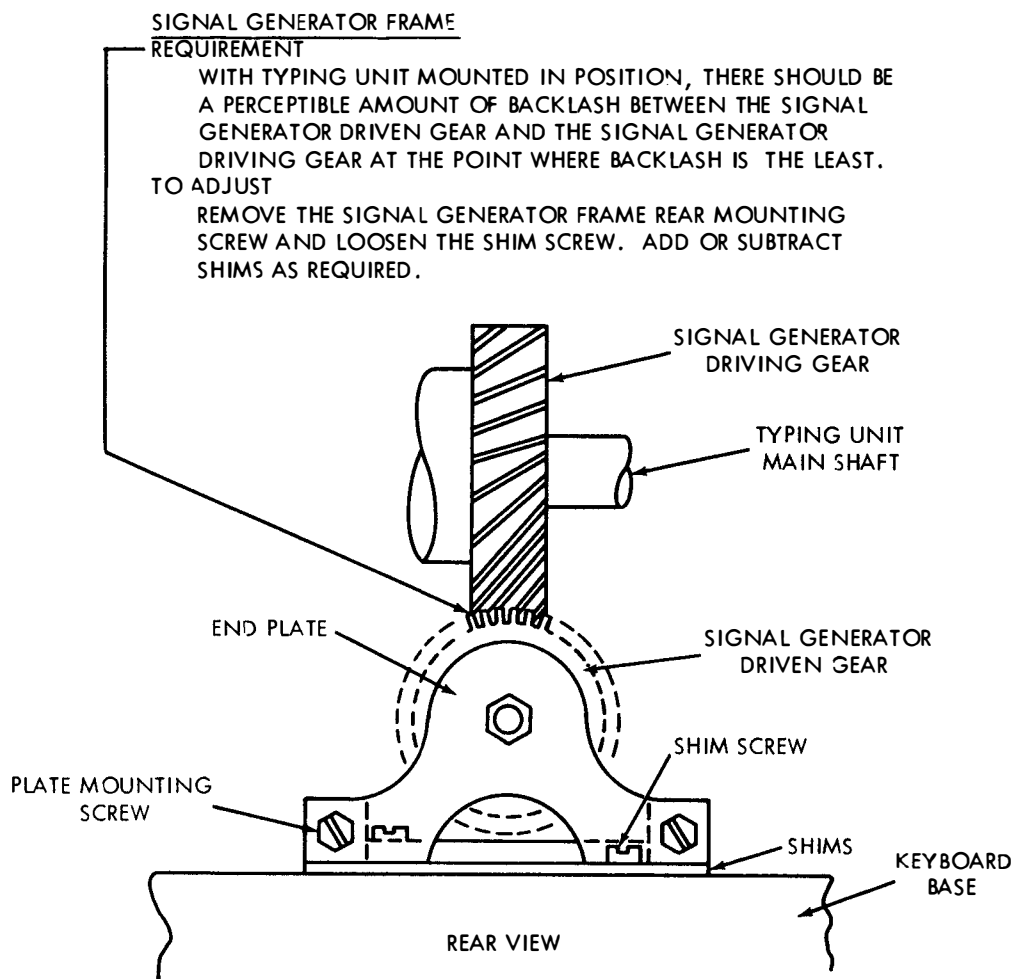


Figure 6-71D. Keyboard MX-1114C/UG and MX-1677A/UG and Automatic Typewriter, Signal Generator Frame Mechanism

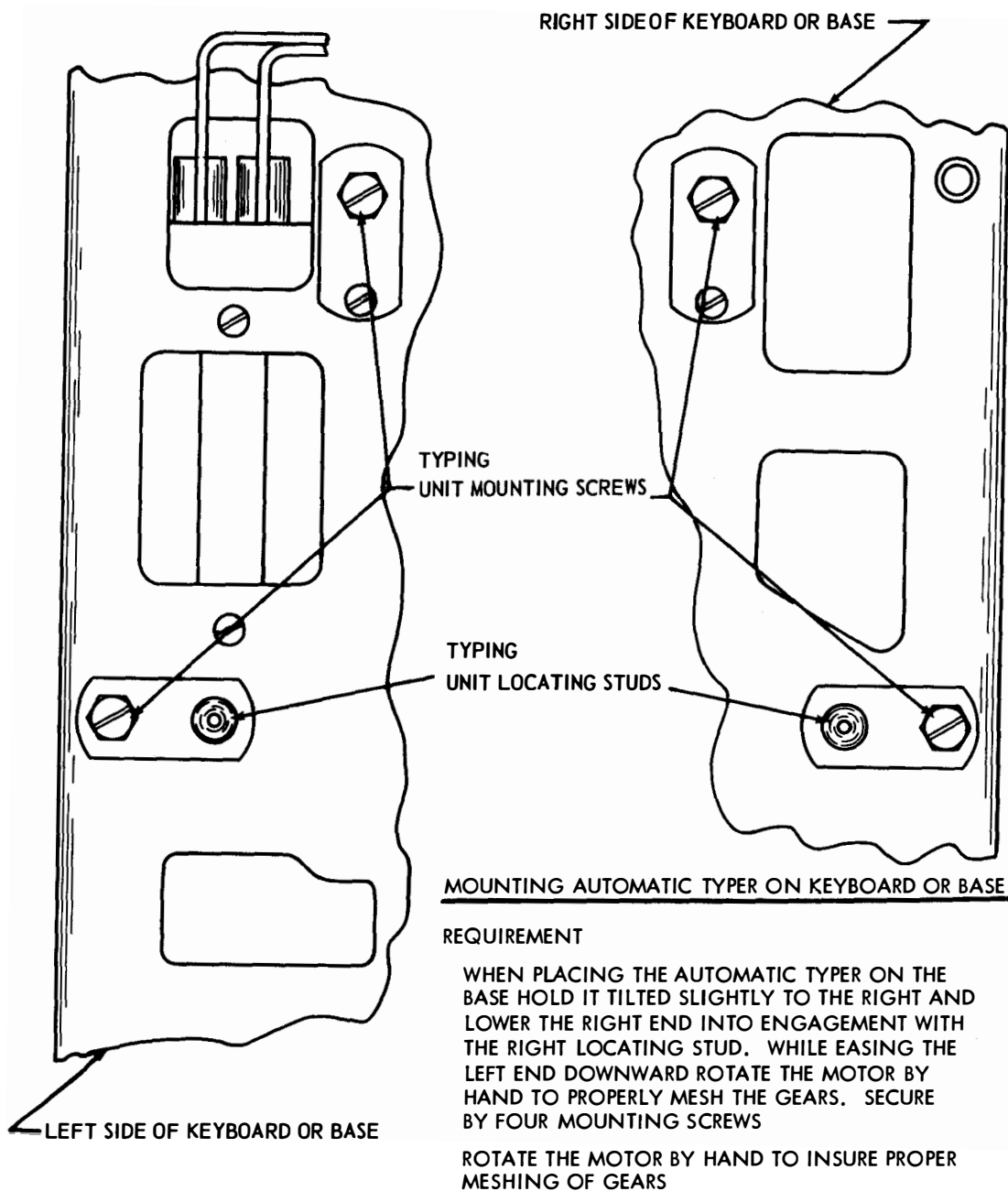


Figure 6-72. Mounting Automatic Typewriter on Keyboard or Base, Top View



(2) REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE INTERMEDIATE DRIVING GEAR AND THE INTERMEDIATE DRIVEN GEAR AT THE POINT WHERE THE BACKLASH IS THE LEAST.

TO ADJUST

RAISE OR LOWER THE FRONT END OF THE INTERMEDIATE GEAR BRACKET BY MEANS OF THE FILLISTER HEAD ADJUSTING AND CLAMPING SCREWS LOCATED AT THE FRONT END OF THE BRACKET. REFINE REQUIREMENT (1) IF NECESSARY.

INTERMEDIATE GEAR BRACKET

(1) REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE AUTOMATIC TYPER DRIVEN GEAR AND THE AUTOMATIC TYPER DRIVING GEAR AT THE POINT WHERE BACKLASH IS THE LEAST.

TO ADJUST

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

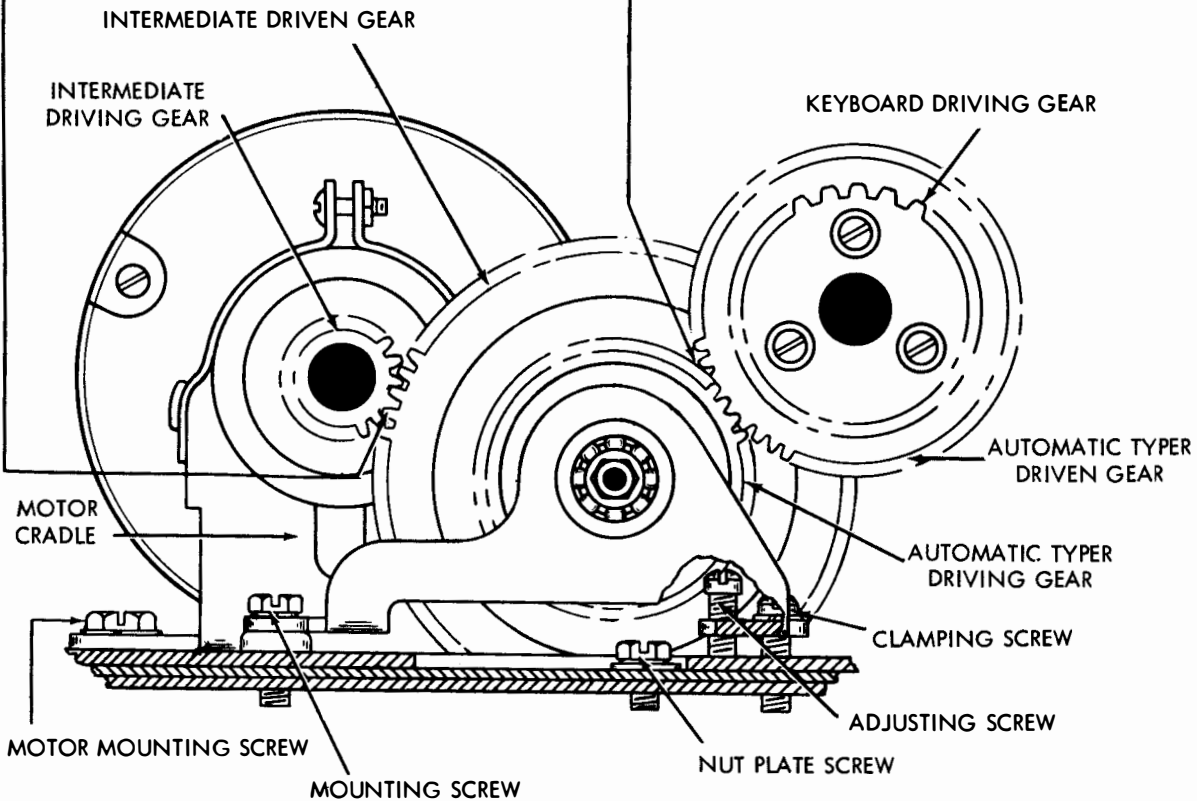
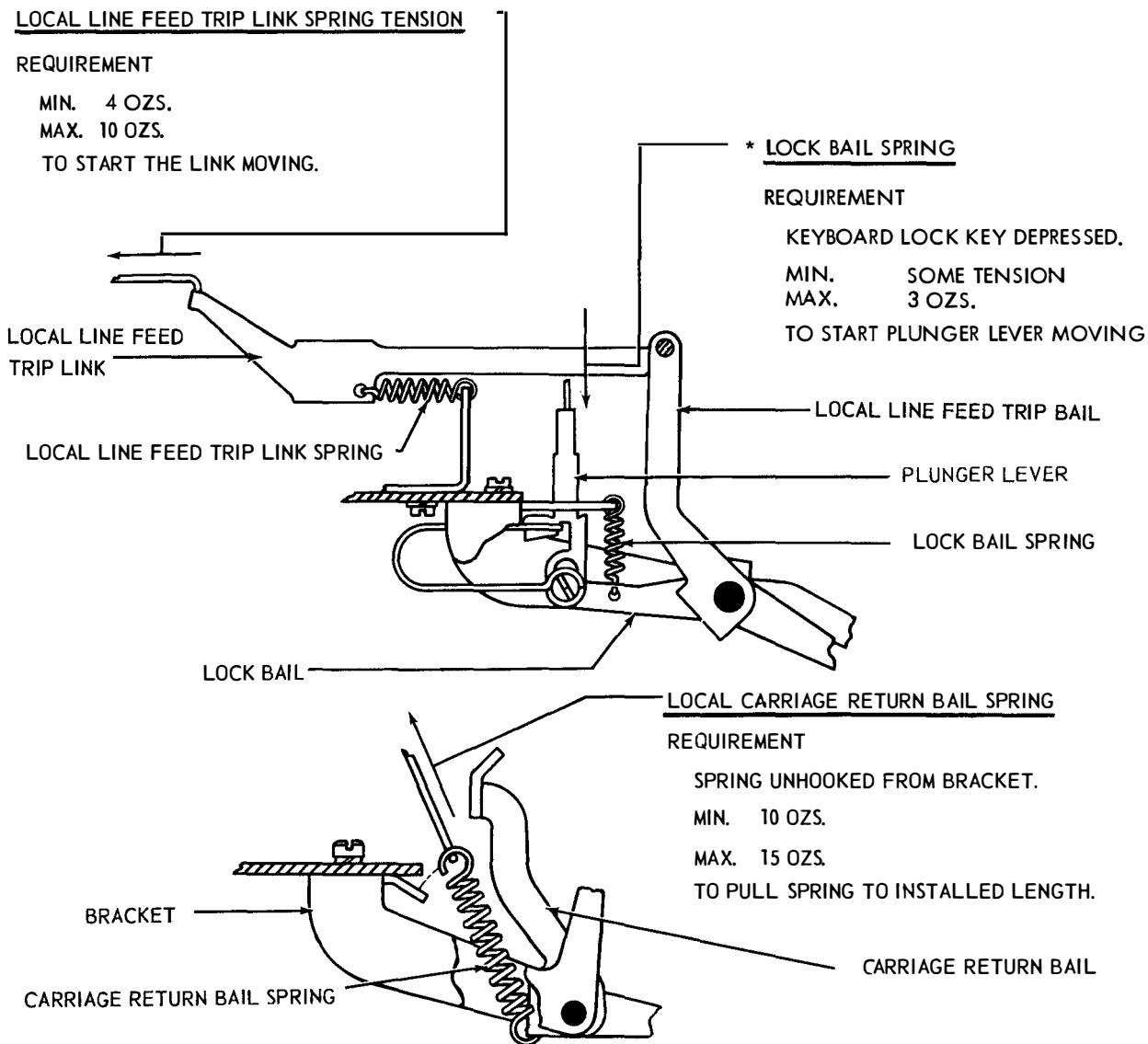
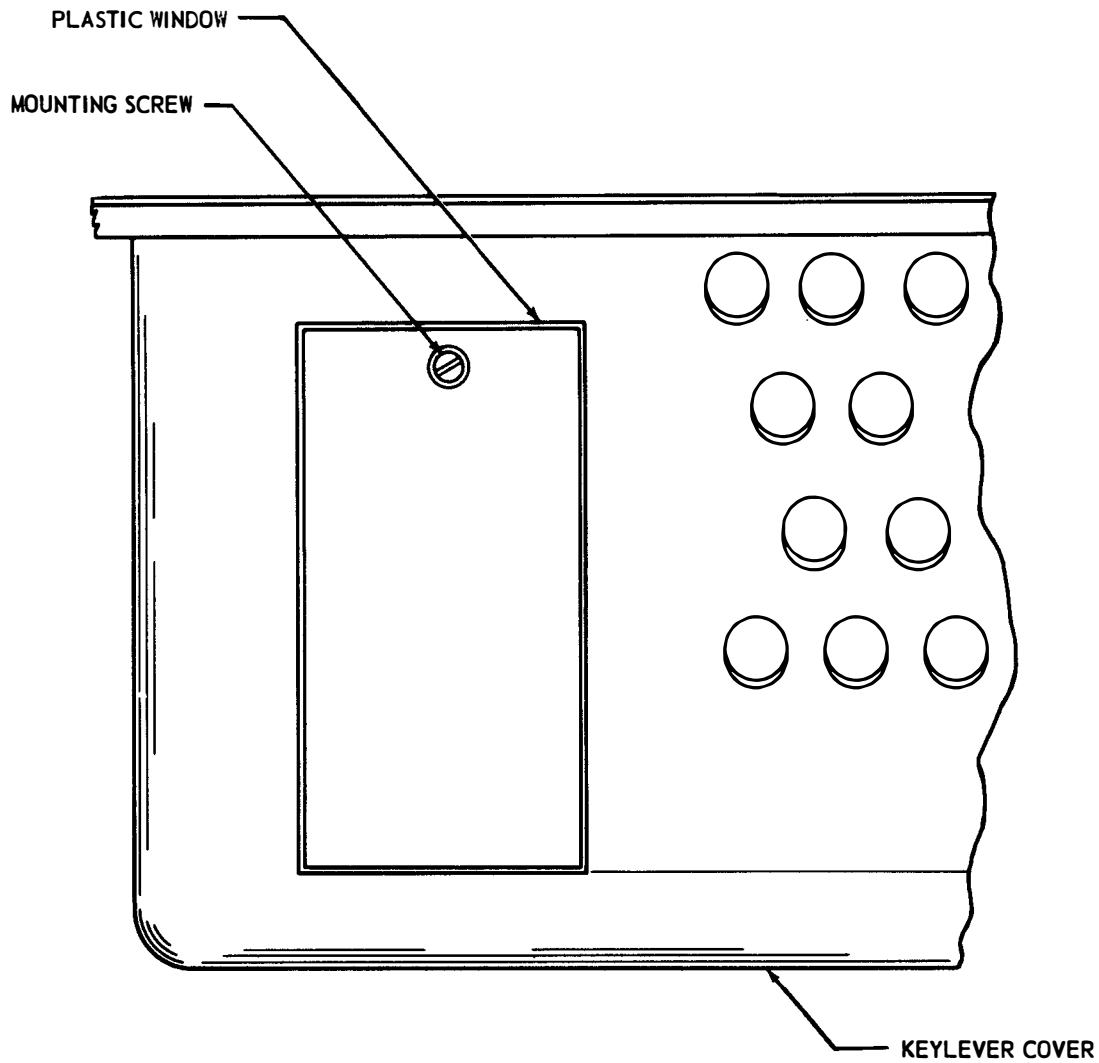


Figure 6-73. Keyboard or Base, Motor and Automatic Typer Gearing, Left Side View



\*APPLIES TO KEYBOARD ONLY

Figure 6-74. Keyboard Lock, Local Line Feed and Carriage Return Mechanism, Left Side View



PLASTIC WINDOW

REQUIREMENT

PLASTIC WINDOW SHOULD BE FULLY SEATED IN POSITION BEFORE TIGHTENING MOUNTING SCREW.

TO ADJUST

POSITION WINDOW WITH MOUNTING SCREW LOOSENED.

Figure 6-75. Keyboard, Label Cover (Plastic Window)

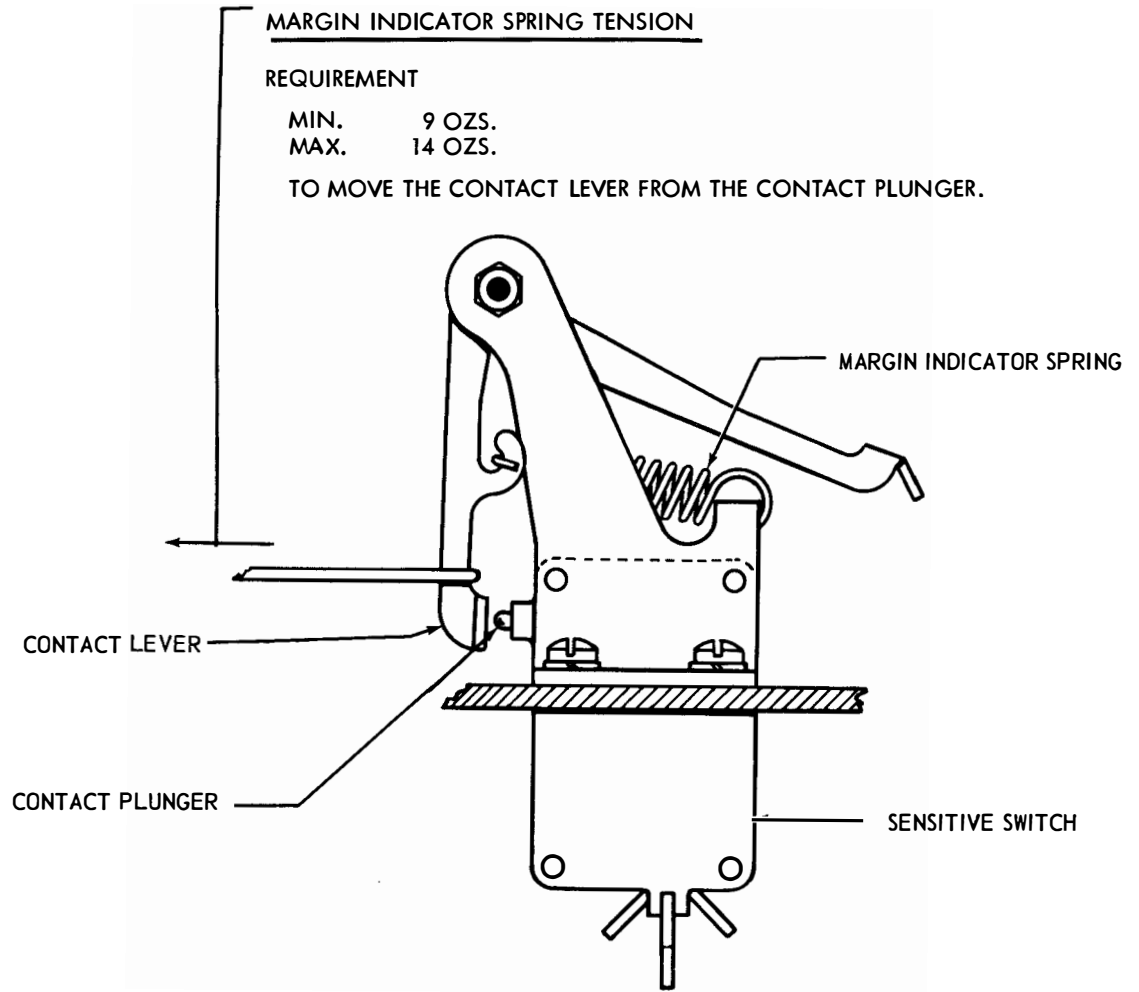


Figure 6-76. Keyboard, Margin Indicating Mechanism, Front View

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

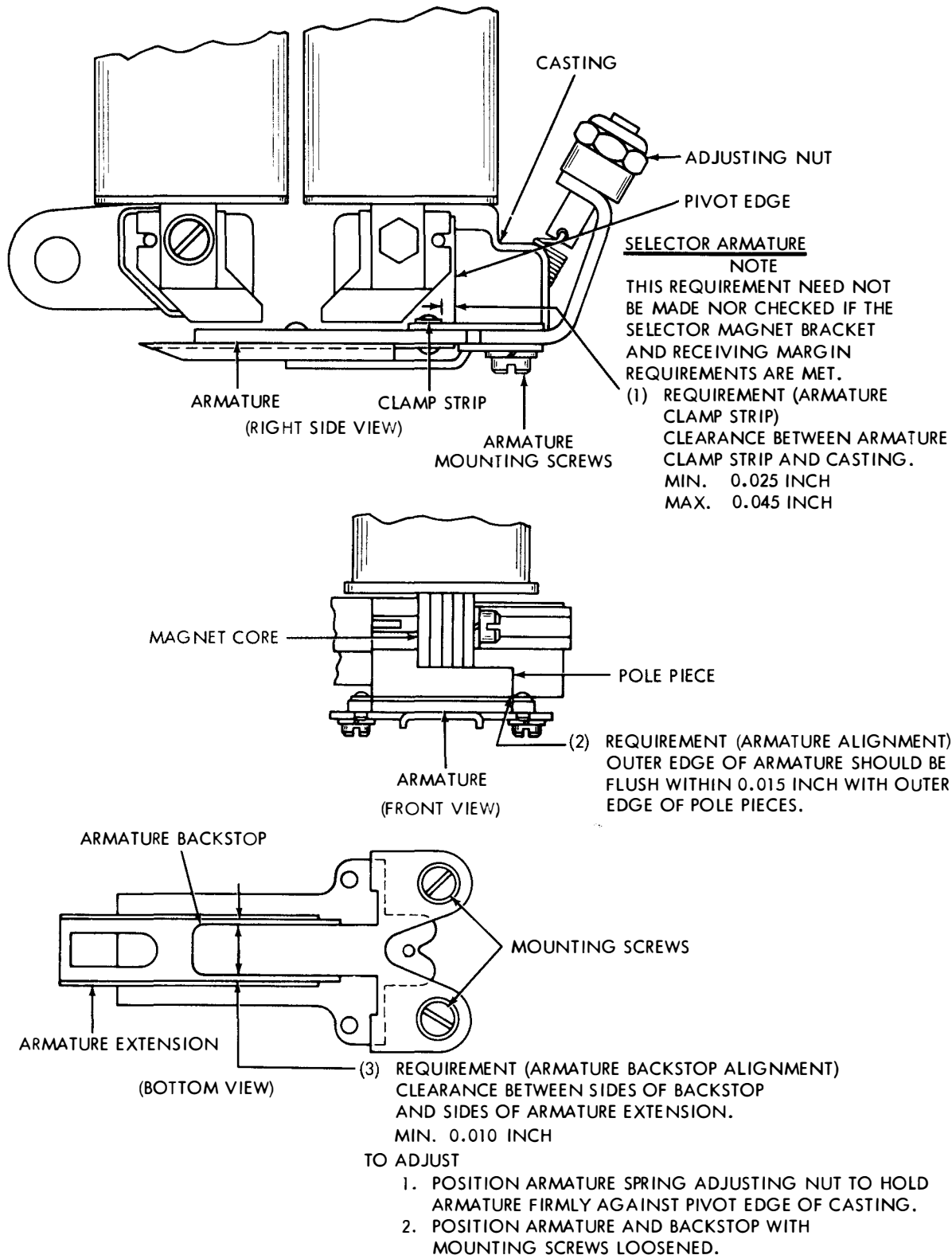


Figure 6-77. Automatic Typewriter, Selector Magnet

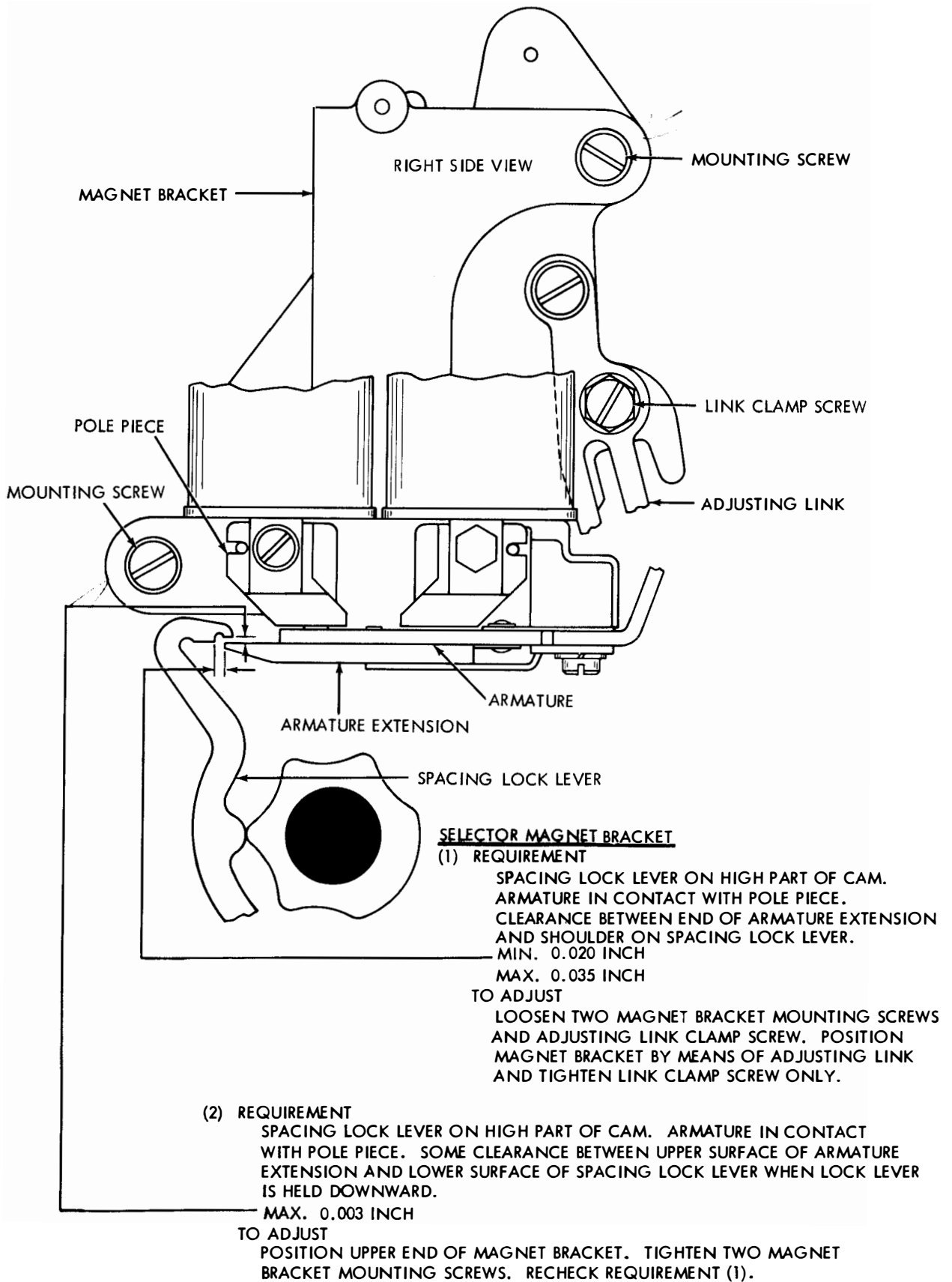


Figure 6-78. Automatic Typewriter, Selector Magnet Right Side View

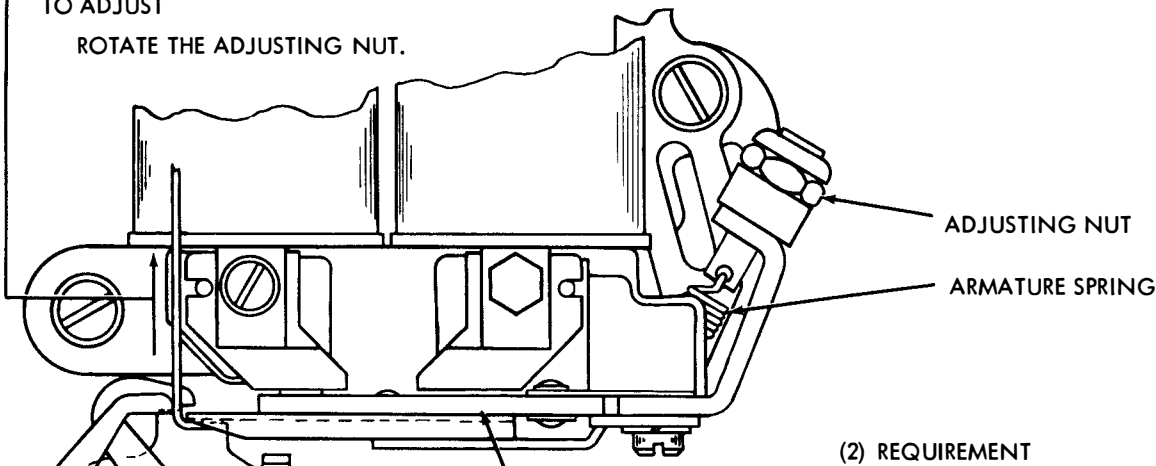
SELECTOR ARMATURE SPRING TENSION

(1) REQUIREMENT (WHEN NO DISTORTION TEST SET IS AVAILABLE)

WITH THE MARKING LOCK LEVER, SPACING LOCK LEVER, AND START LEVER ON HIGH PART OF THEIR CAMS. SCALE APPLIED AS NEARLY VERTICAL AS POSSIBLE AT END OF ARMATURE EXTENSION. IT SHOULD REQUIRE APPROXIMATELY 3 OZS. TO PULL ARMATURE TO MARKING POSITION.

TO ADJUST

ROTATE THE ADJUSTING NUT.



(2) REQUIREMENT

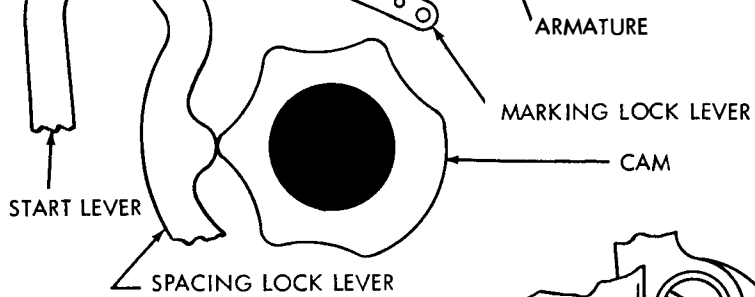
(USING DISTORTION TEST SET) SELECTOR SHOULD BE RELATIVELY FREE OF INTERNAL BIAS WHEN CHECKED AS SPECIFIED IN TEST SET DIRECTIONS.

TO ADJUST

VARY TENSION OF ARMATURE SPRING BY ROTATING ADJUSTING NUT.

NOTE

SEE TABLE 6-1 FOR SELECTOR MARGIN ADJUSTMENT (FINAL)



MARKING LOCK LEVER SPRING TENSION

REQUIREMENT

LETTERS COMBINATION SELECTED, MAIN SHAFT ROTATED UNTIL SELECTOR CLUTCH IS DISENGAGED, PUSH SCALE APPLIED HORIZONTALLY TO LOWER HORIZONTAL EXTENSION OF LOCK LEVER.

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

TO START LEVER MOVING.

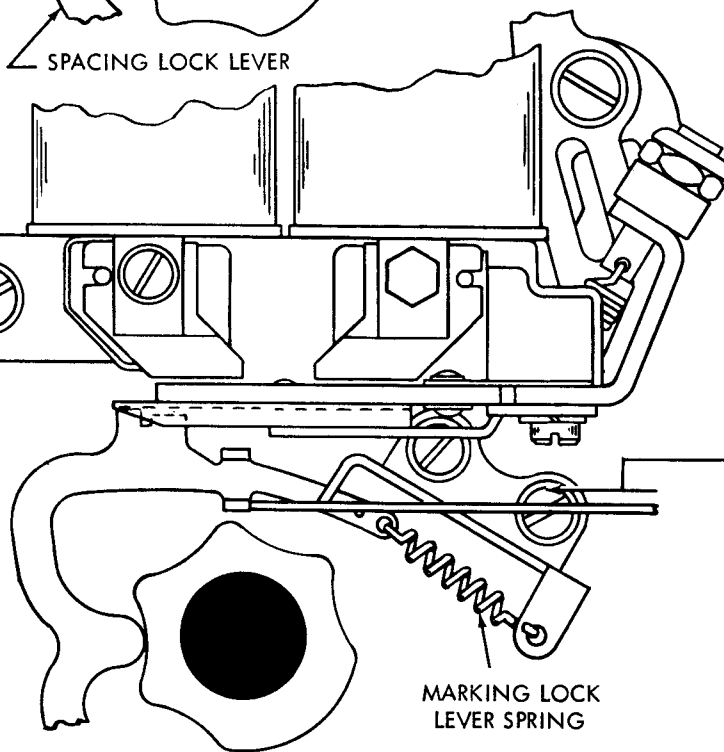


Figure 6-79. Automatic Typewriter, Selector Mechanism, Right Side View

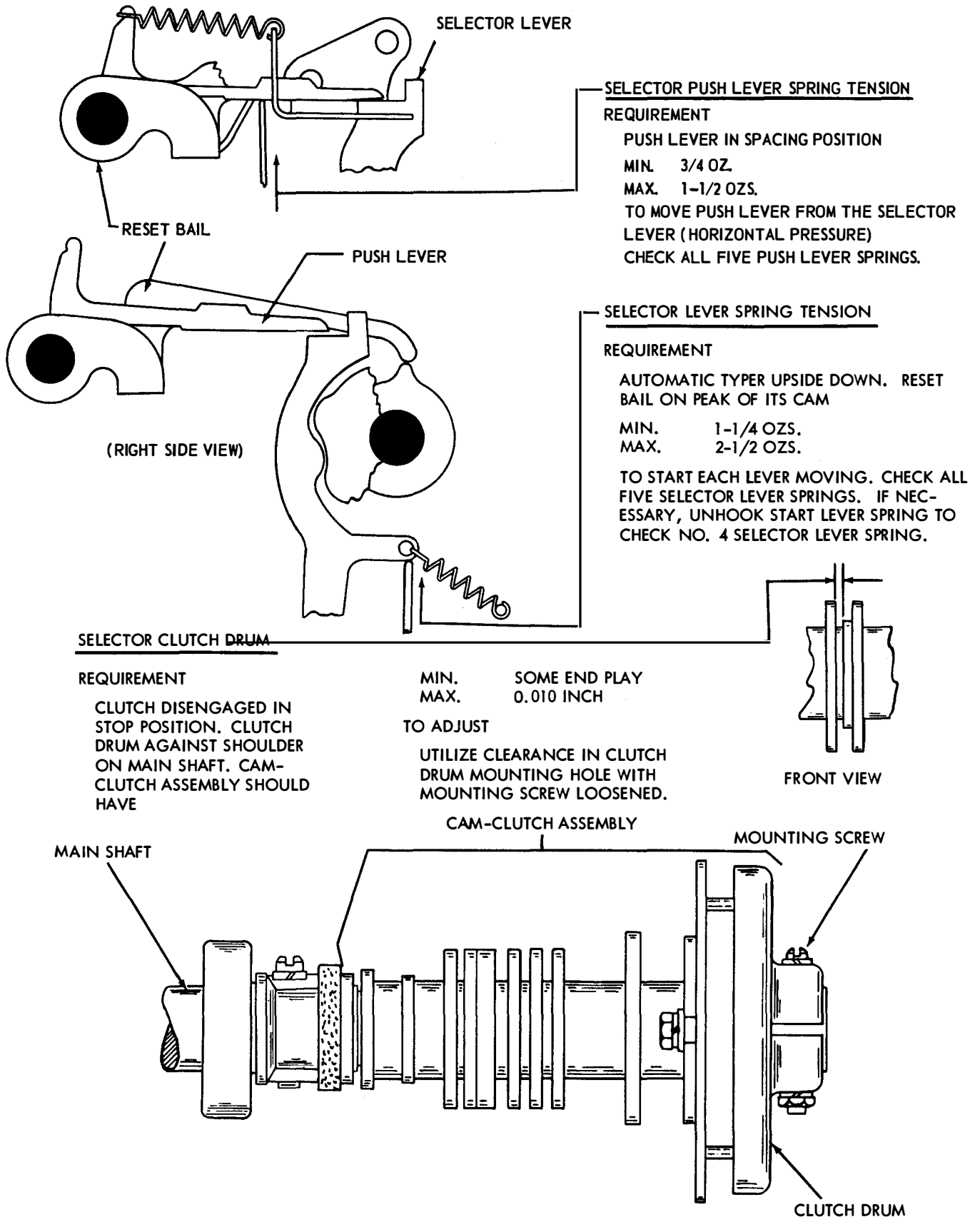


Figure 6-80. Automatic Typewriter, Selector Cam Clutch



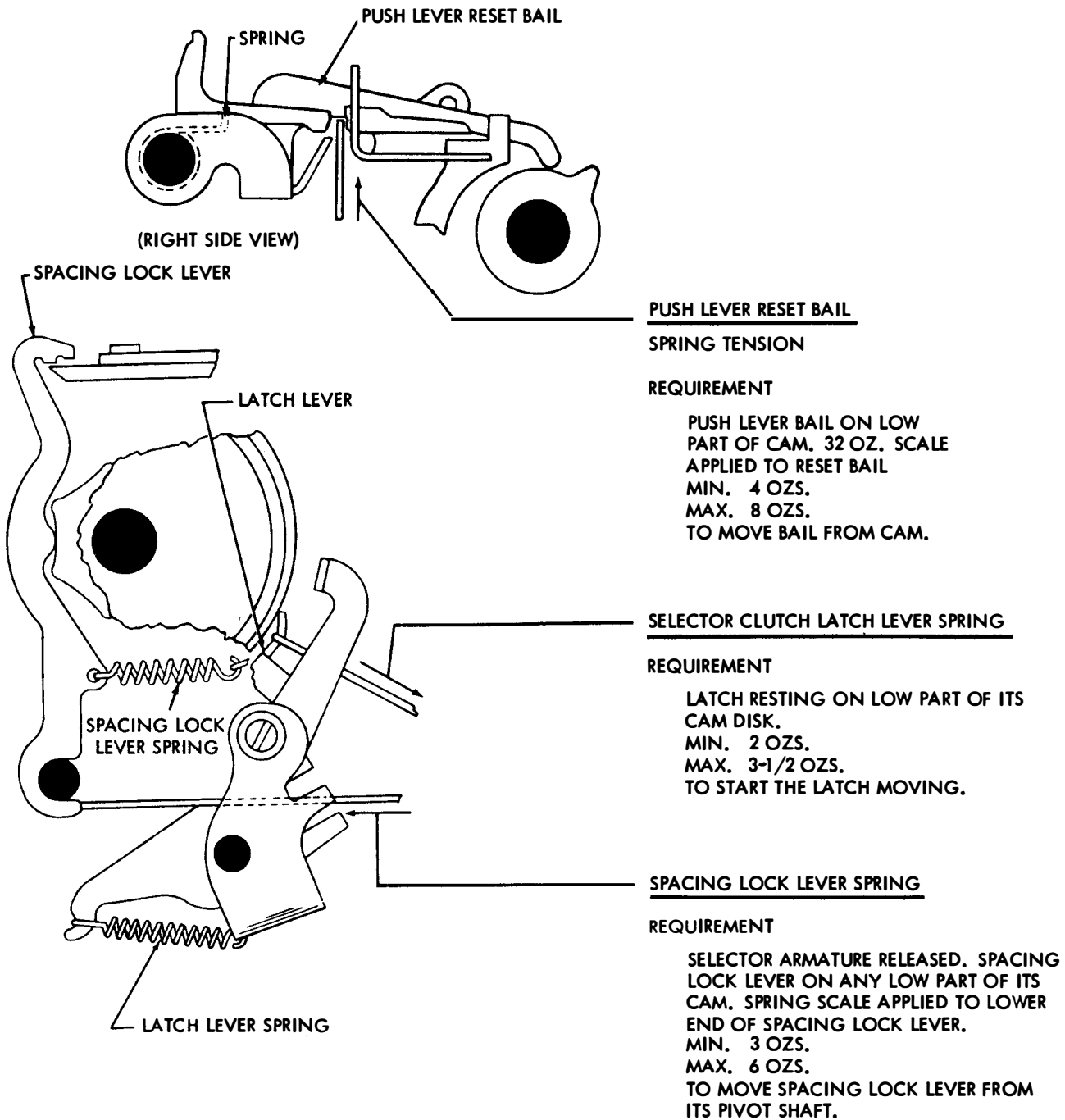


Figure 6-81. Automatic Typewriter, Selector Clutch Mechanism, Right Side View

NOTE: REPLACE RANGE FINDER AND SELECTOR MAGNET ASSEMBLY

RANGE FINDER KNOB PHASING

REQUIREMENT

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

TO ADJUST

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

SELECTOR CLUTCH STOP ARM

REQUIREMENT

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

TO ADJUST

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

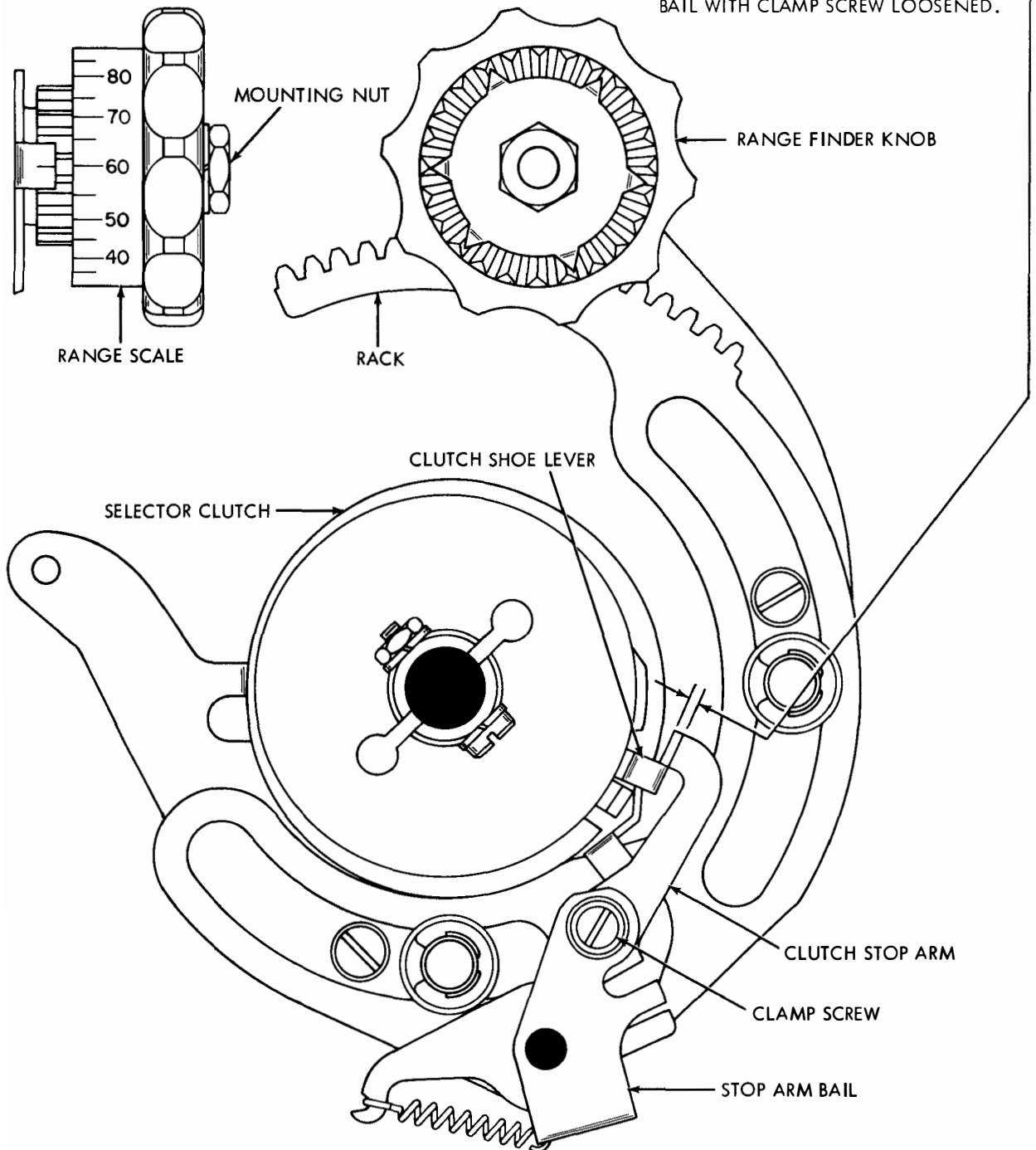


Figure 6-82. Automatic Typewriter, Range Finder Mechanism, Right Side View

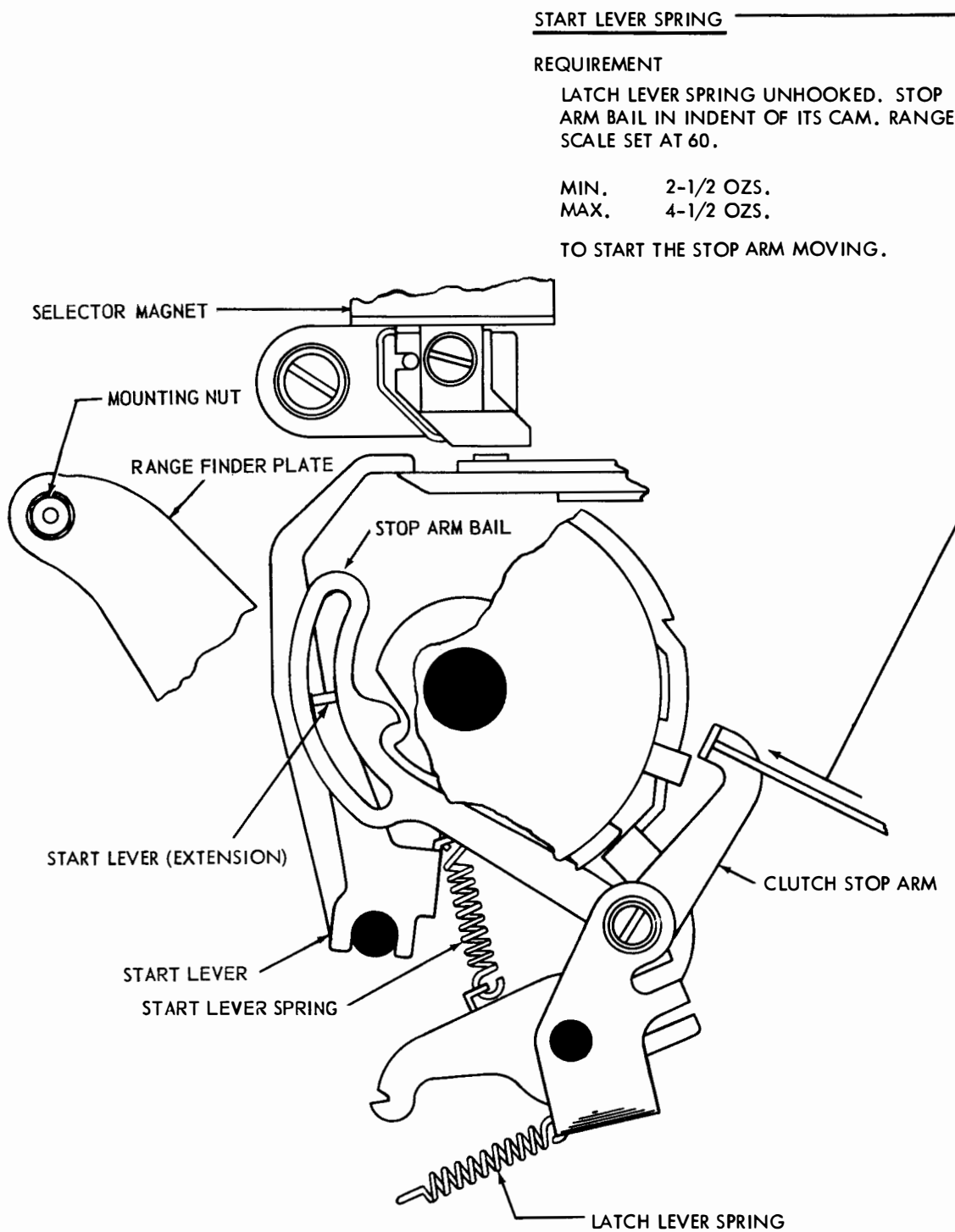


Figure 6-83. Automatic Typewriter, Selector Clutch Mechanism, Right Side View

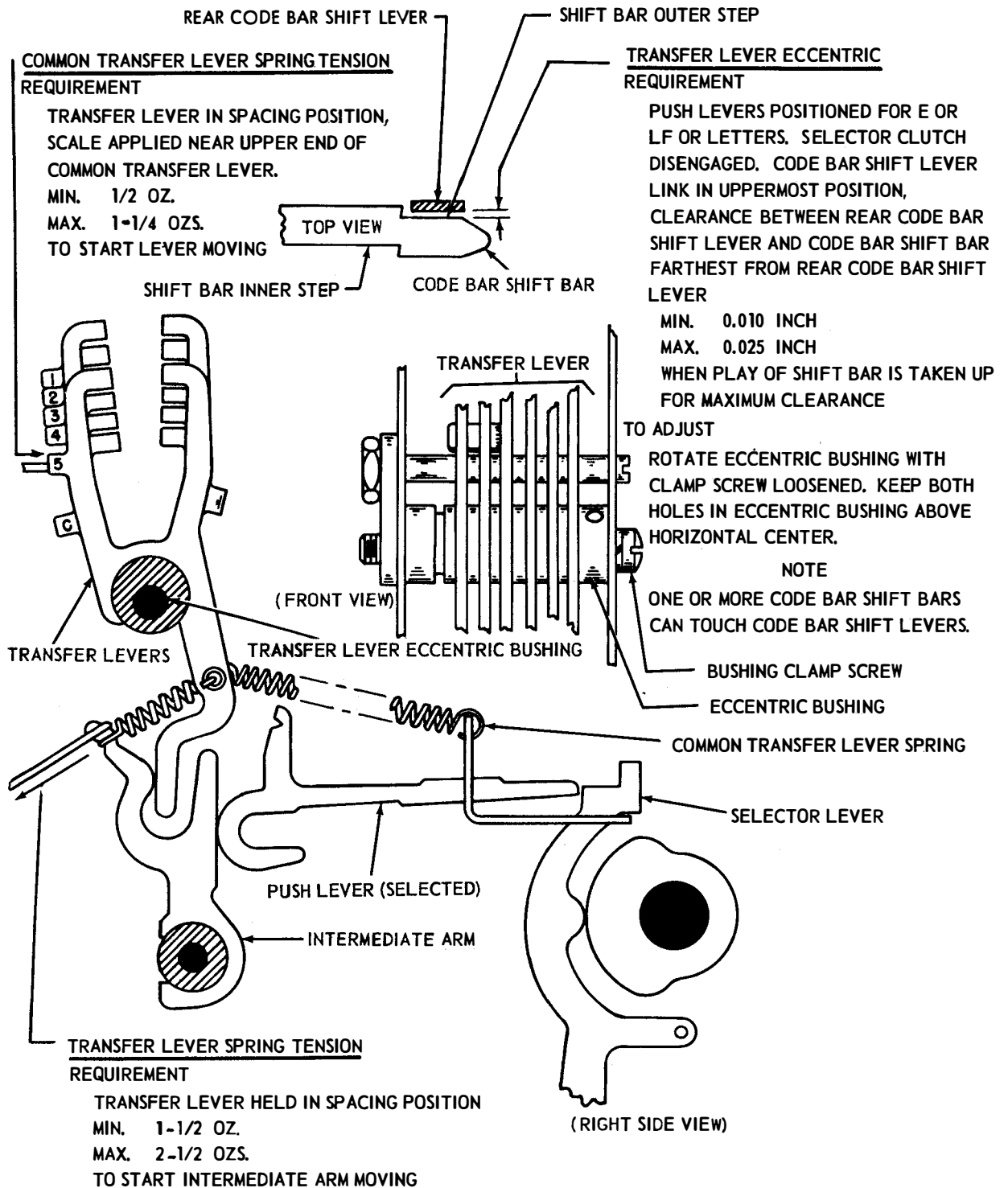


Figure 6-84. Automatic Typewriter, Code Bar Shift Mechanism

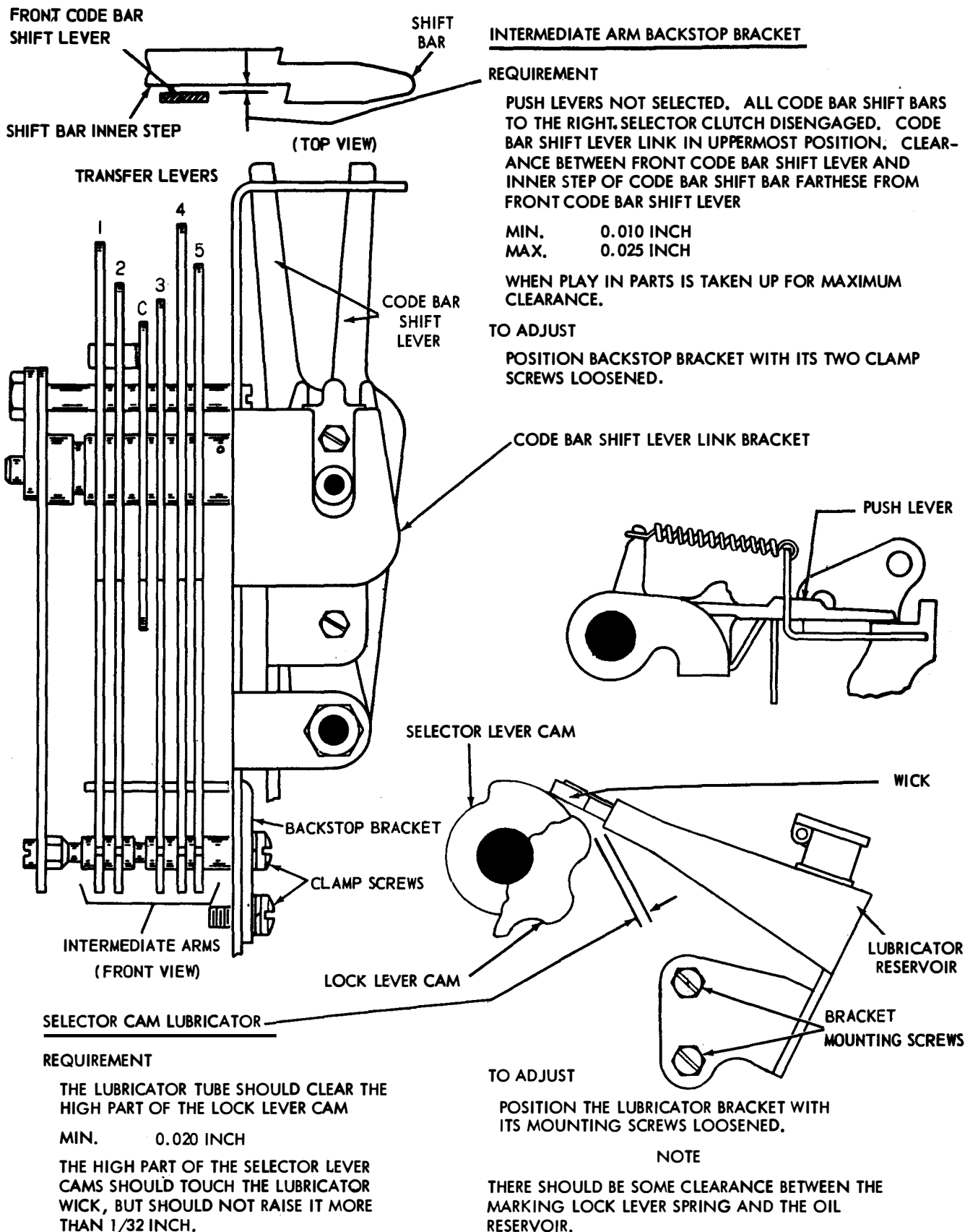


Figure 6-85. Automatic Typer, Code Bar Shift Mechanism

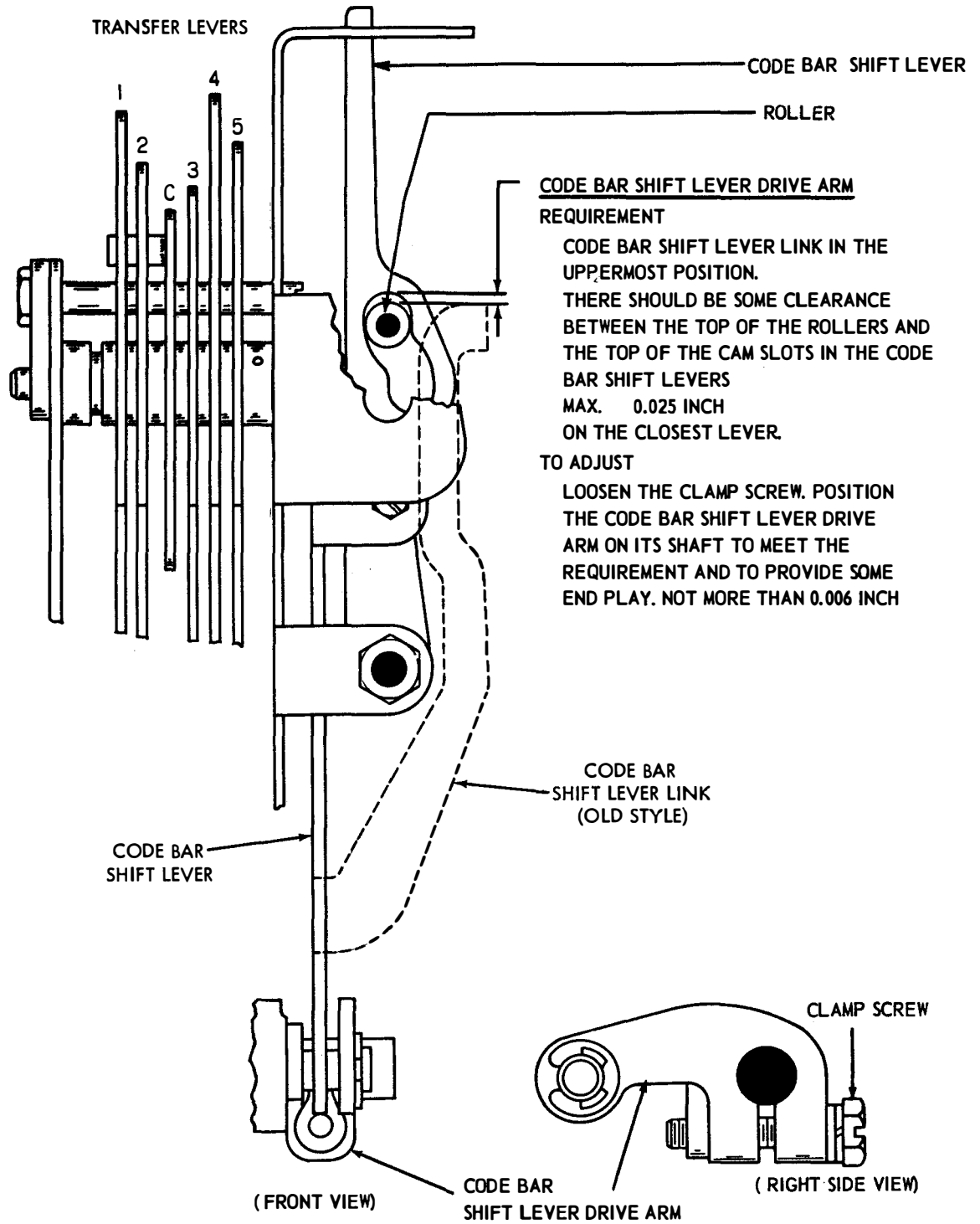
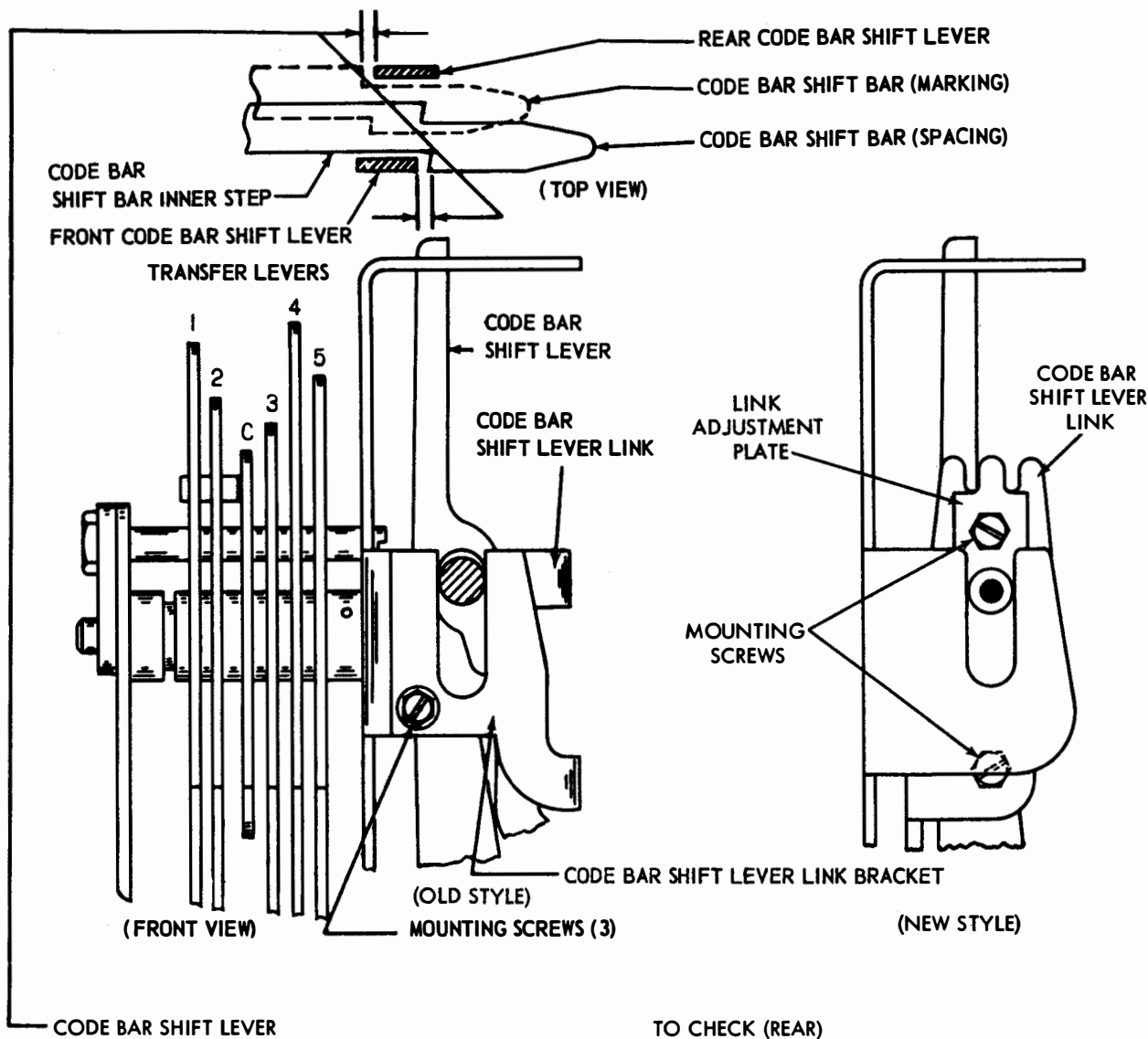


Figure 6-86. Automatic Typewriter, Code Bar Shift Mechanism



CODE BAR SHIFT LEVER

**REQUIREMENT**

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

**TO CHECK (FRONT)**

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

MIN. 0.002 INCH  
MAX. 0.025 INCH

**TO CHECK (REAR)**

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

MIN. 0.002 IN.  
MAX. 0.025 IN.

**TO ADJUST**

OLD STYLE - POSITION CODE BAR SHIFT LEVER LINK BRACKET WITH MOUNTING SCREWS LOOSENED.

NEW STYLE - POSITION CODE BAR SHIFT LEVER LINK ADJUSTMENT PLATE BY MEANS OF SCREW DRIVER WITH MOUNTING SCREWS LOOSENED.

Figure 6-87. Automatic Typewriter, Code Bar Shift Mechanism

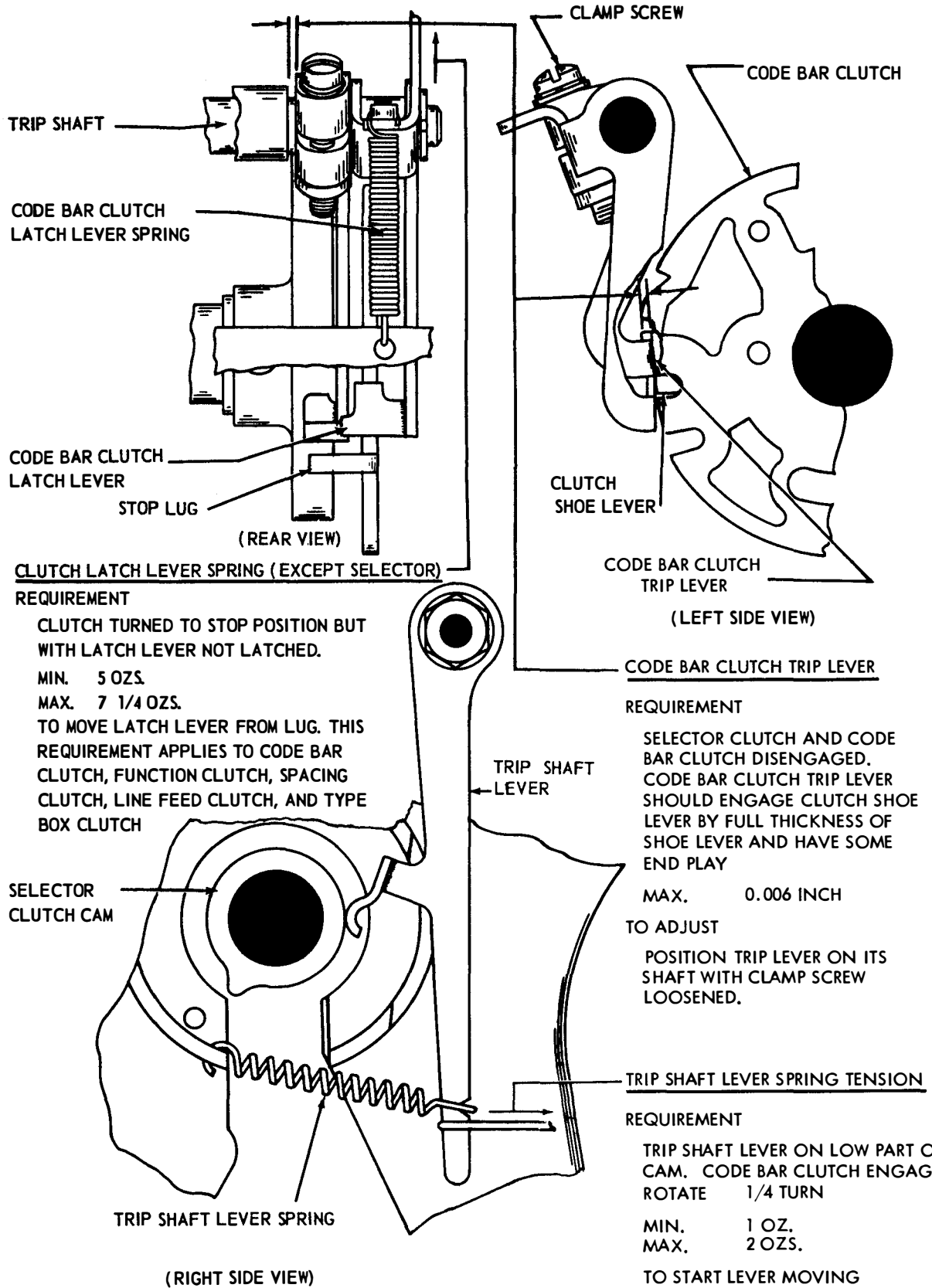


Figure 6-88. Automatic Typewriter, Code Bar Clutch Trip Shaft Mechanism



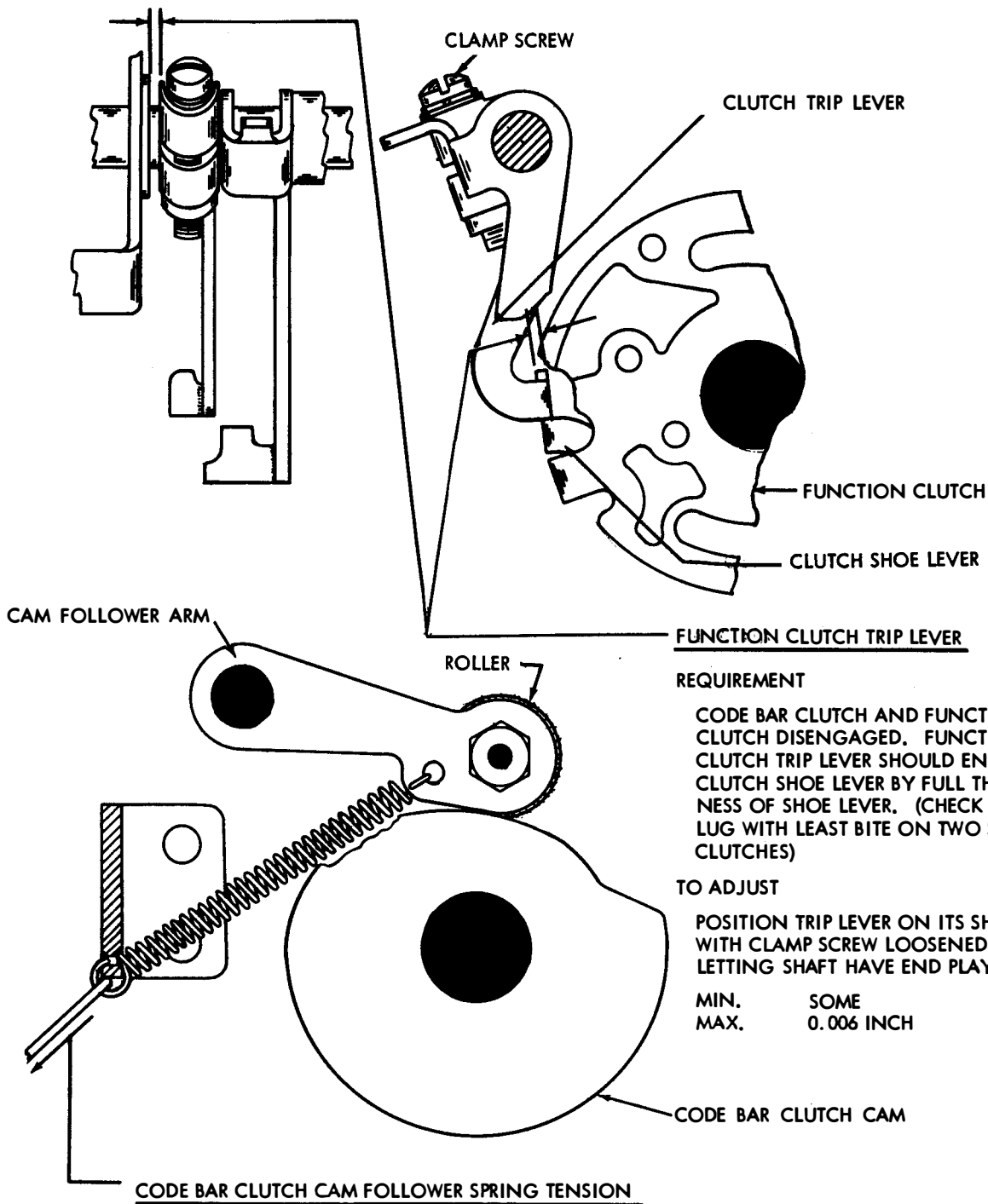


Figure 6-89. Automatic Typewriter, Function Clutch Mechanism

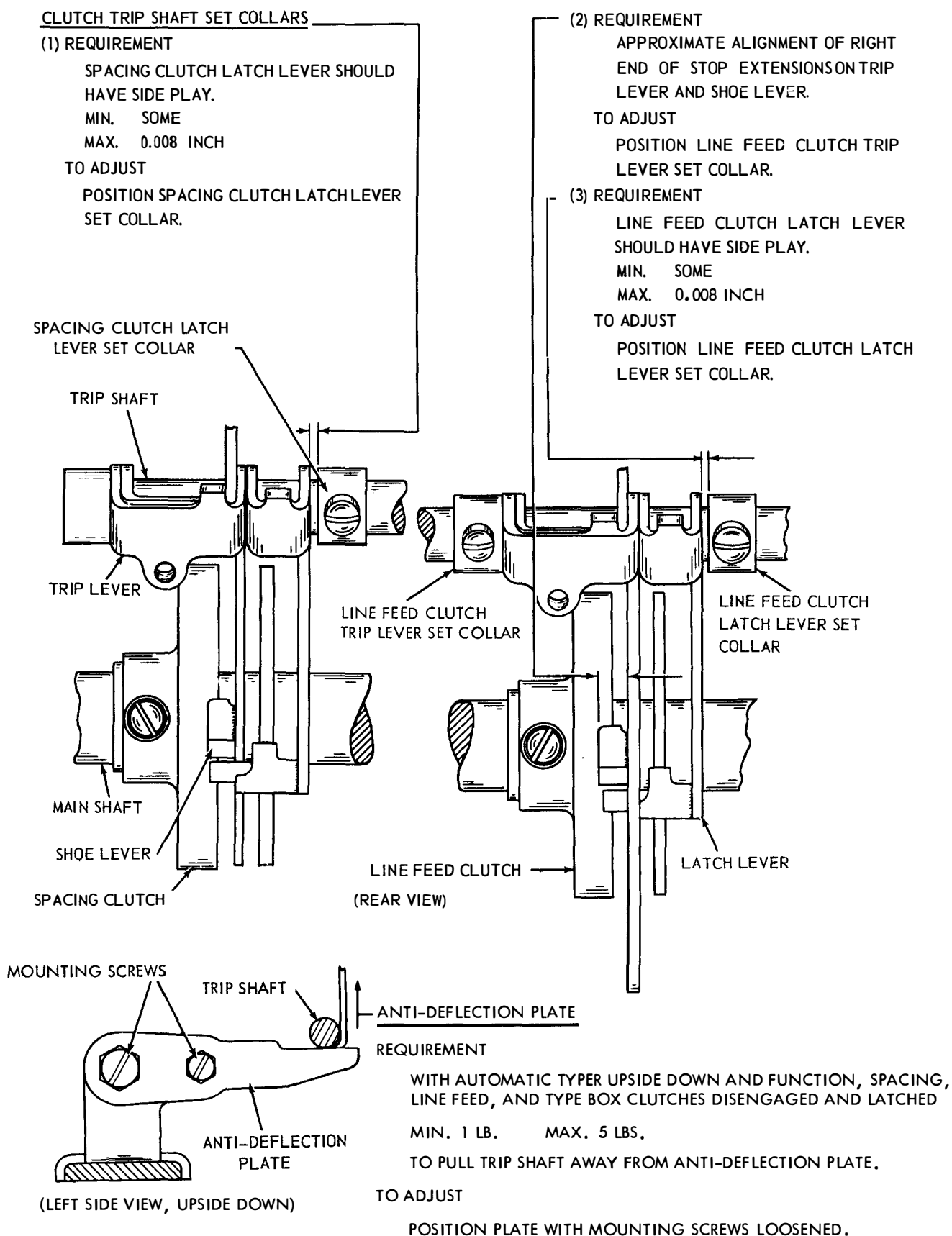


Figure 6-90. Automatic Typewriter, Trip Latch Mechanism

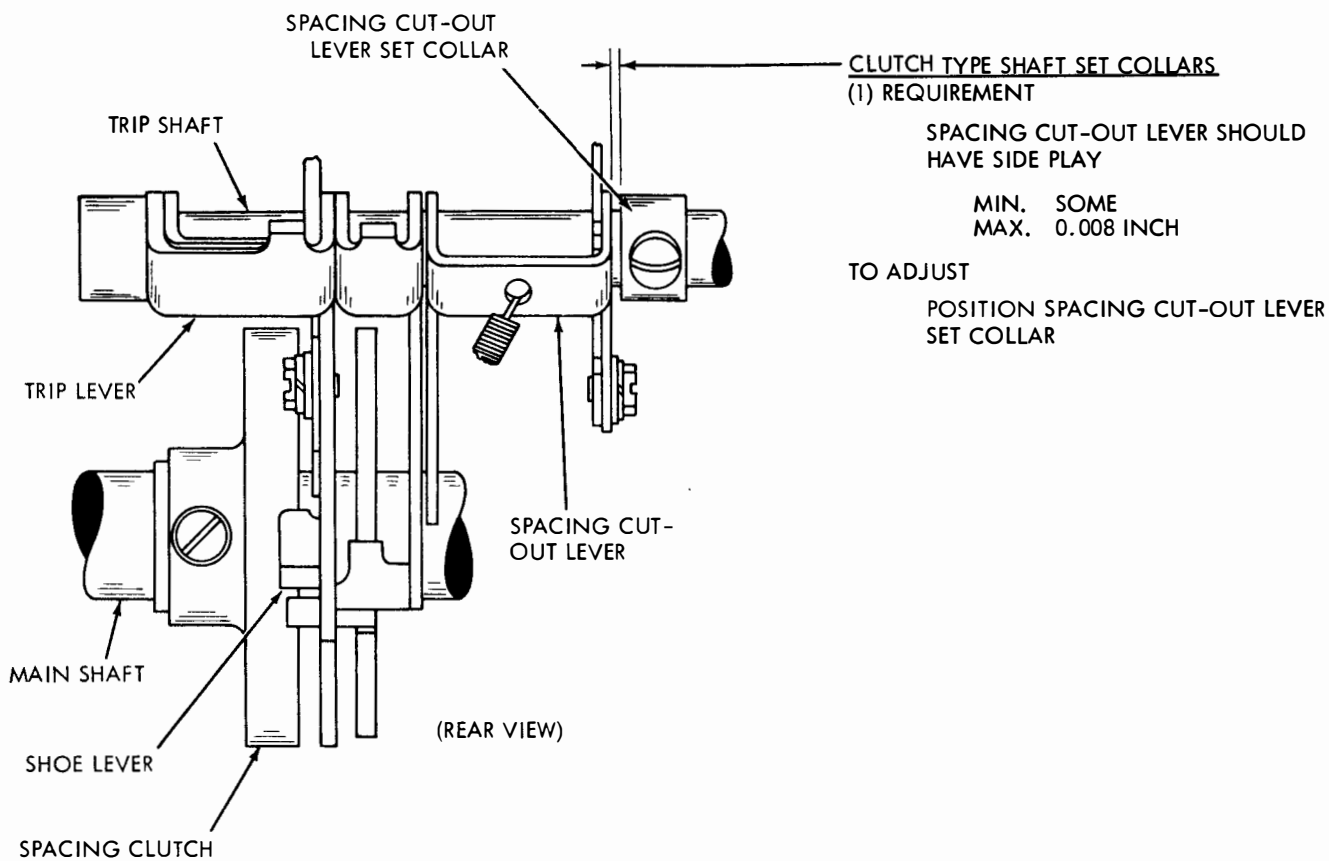
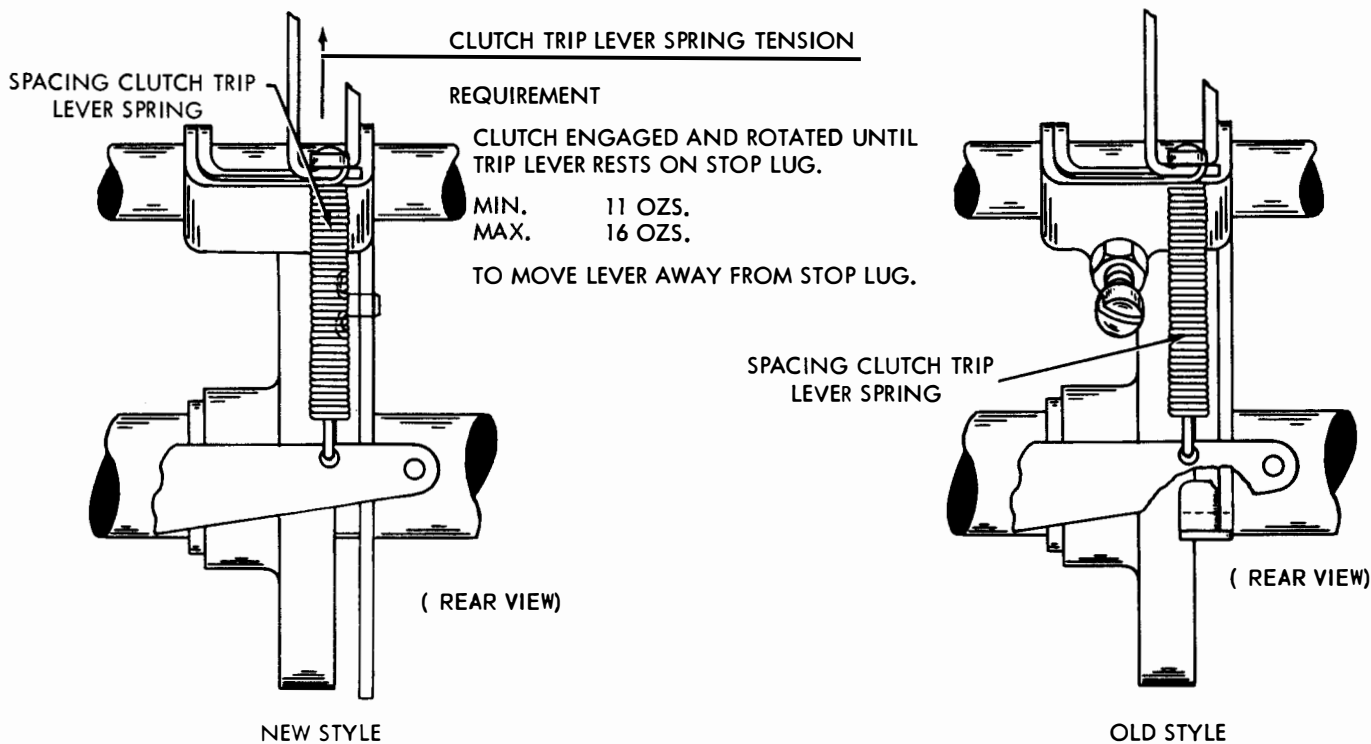


Figure 6-90A. Automatic Typewriter, Spacing Clutch Mechanism

SPACING CLUTCH TRIP LEVER

REQUIREMENT

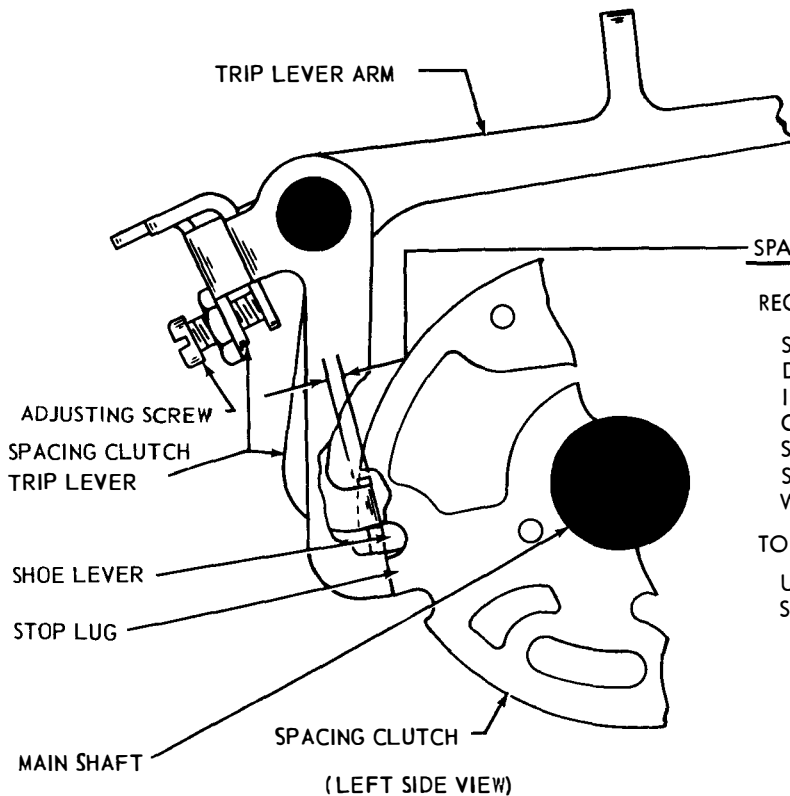
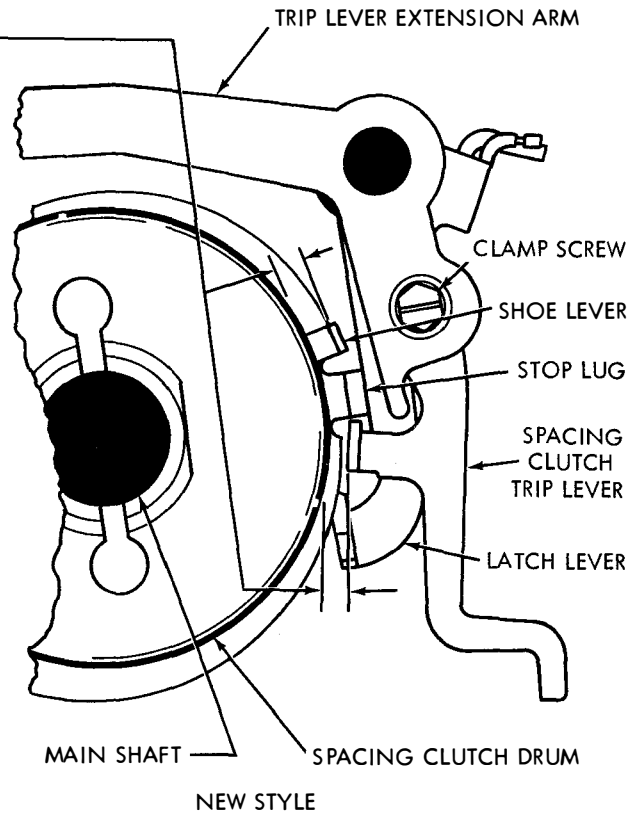
CLEARANCE BETWEEN TRIP LEVER AND CLUTCH DRUM SHOULD BE 0.018 TO 0.035 INCH LESS THAN CLEARANCE BETWEEN SHOE LEVER AND DRUM AT STOP SHOWING GREATEST CLEARANCE. THERE SHOULD BE SOME OVERBITE ON ALL STOP LUGS. GAUGE BY EYE.

TO CHECK

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

TO ADJUST

POSITION THE TRIP LEVER BY MEANS OF ITS CLAMP SCREW.



REQUIREMENT

SPACING AND TYPE BOX CLUTCHES DISENGAGED, TRIP LEVER ARM IN UPWARD POSITION. SPACING CLUTCH TRIP LEVER SHOULD ENGAGE SHOE LEVER BY FULL THICKNESS OF SHOE LEVER. CHECK AT STOP LUG WITH LEAST BITE.

TO ADJUST

USE ADJUSTING SCREW TO POSITION SPACING CLUTCH TRIP ARM.

OLD STYLE

Figure 6-91. Automatic Typewriter, Spacing Clutch Mechanism

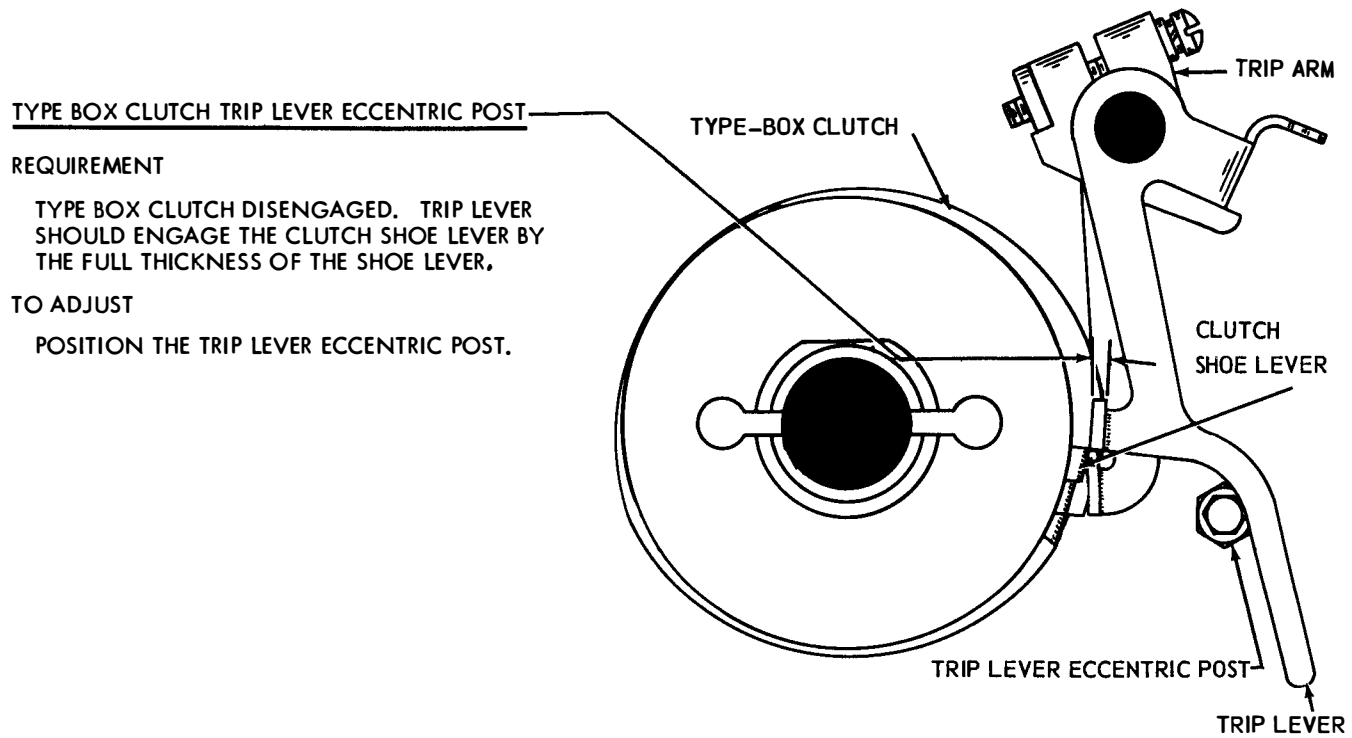


Figure 6-91A. Automatic Typewriter, Type Box Clutch

LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW

REQUIREMENT

LINE FEED FUNCTION SLIDE ARM IN REAR POSITION.  
CLUTCH TRIP LEVER AGAINST ITS ECCENTRIC POST.  
TRIP ARM HELD AGAINST ITS FUNCTION SLIDE ARM.  
SOME CLEARANCE BETWEEN THE END OF THE TRIP LEVER ADJUSTING SCREW AND THE TRIP ARM.

MAX. 0.006 INCH

TO ADJUST

POSITION THE ADJUSTING SCREW.

LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST

REQUIREMENT

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

TO CHECK

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

TO ADJUST

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

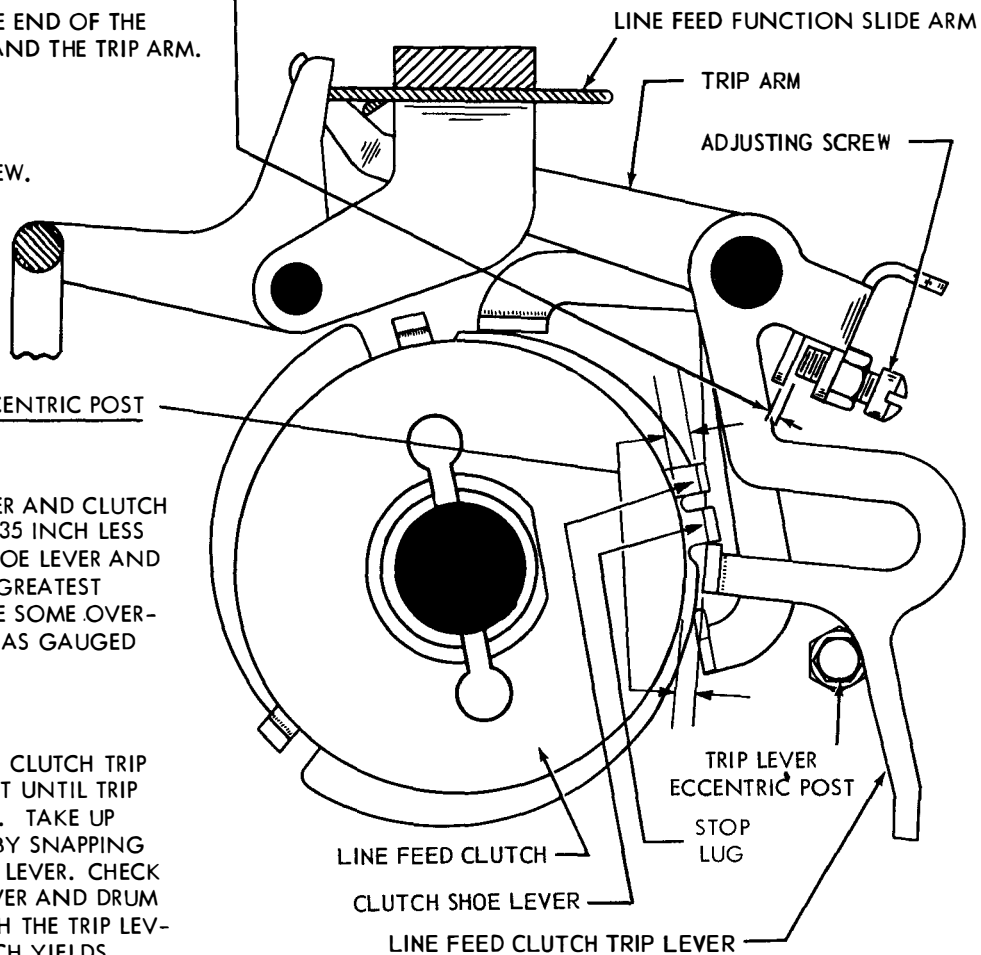


Figure 6-92. Automatic Typewriter, Line Feed Clutch Mechanism

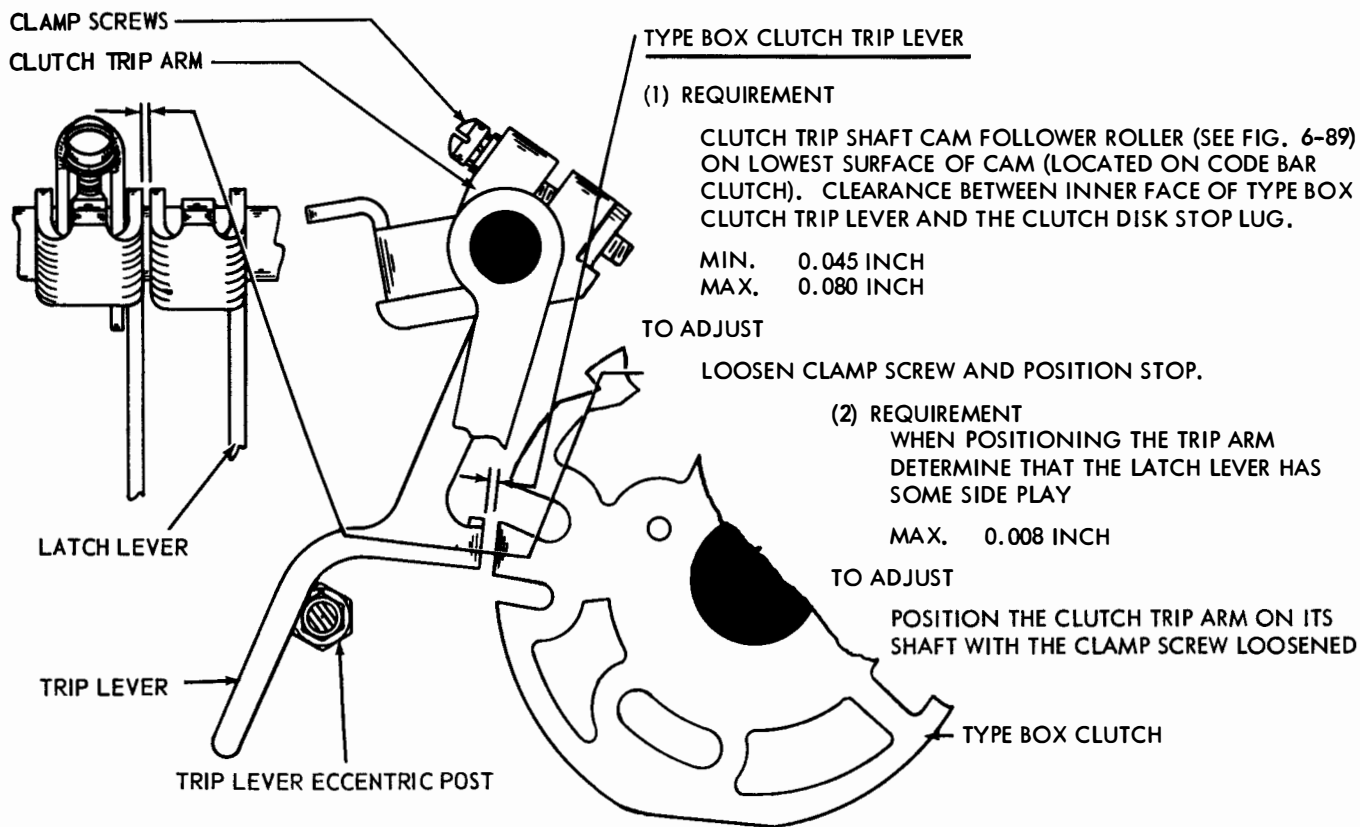
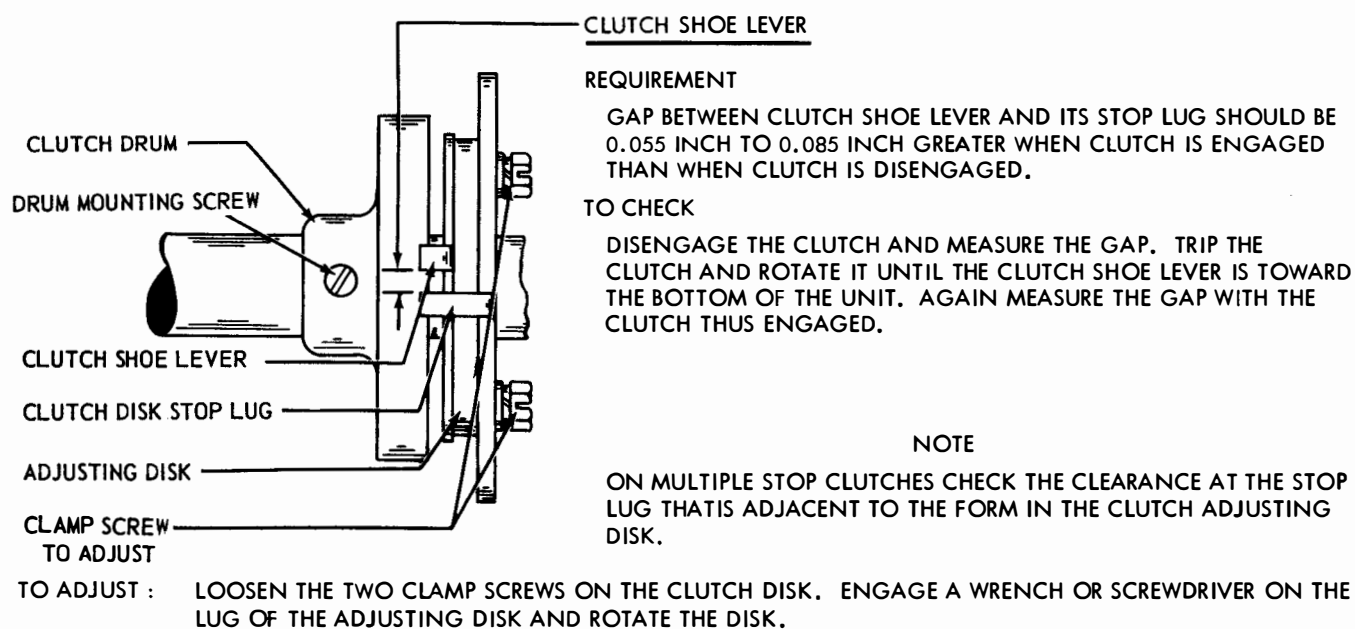


Figure 6-93. Automatic Typewriter, Type Box Clutch Mechanism



NOTE  
AFTER THE ABOVE ADJUSTMENT IS MADE, DISENGAGE THE CLUTCH, REMOVE THE DRUM MOUNTING SCREW AND ROTATE THE DRUM IN ITS NORMAL DIRECTION OF ROTATION TO MAKE CERTAIN THAT IT DOES NOT DRAG ON THE SHOE. IF THE DRUM DRAGS, REFINE THE ABOVE ADJUSTMENT.

Figure 6-94. Automatic Typewriter, Clutch Shoe Mechanism (All Clutches)

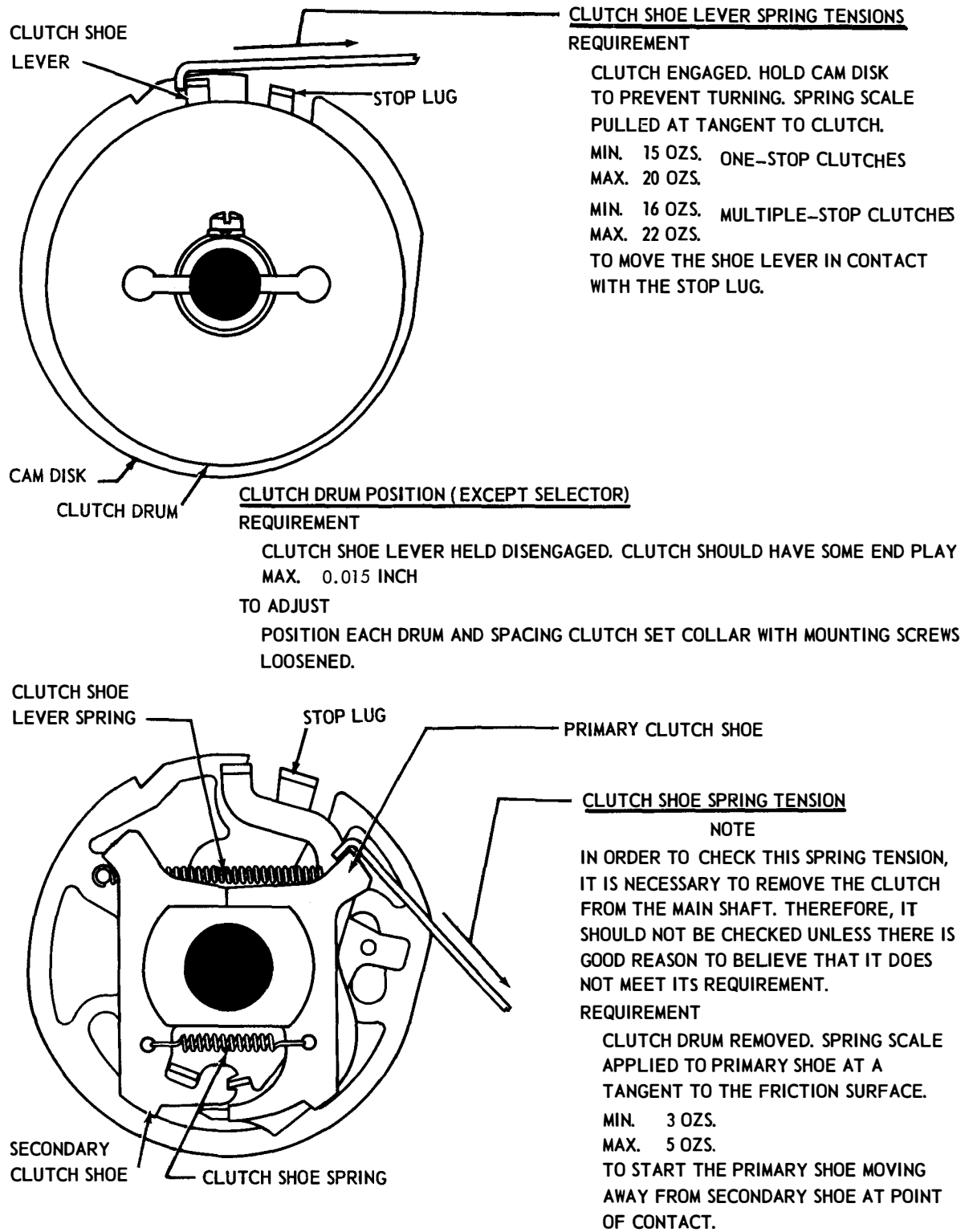


Figure 6-95. Automatic Typewriter, Clutch Mechanism, Left Side View



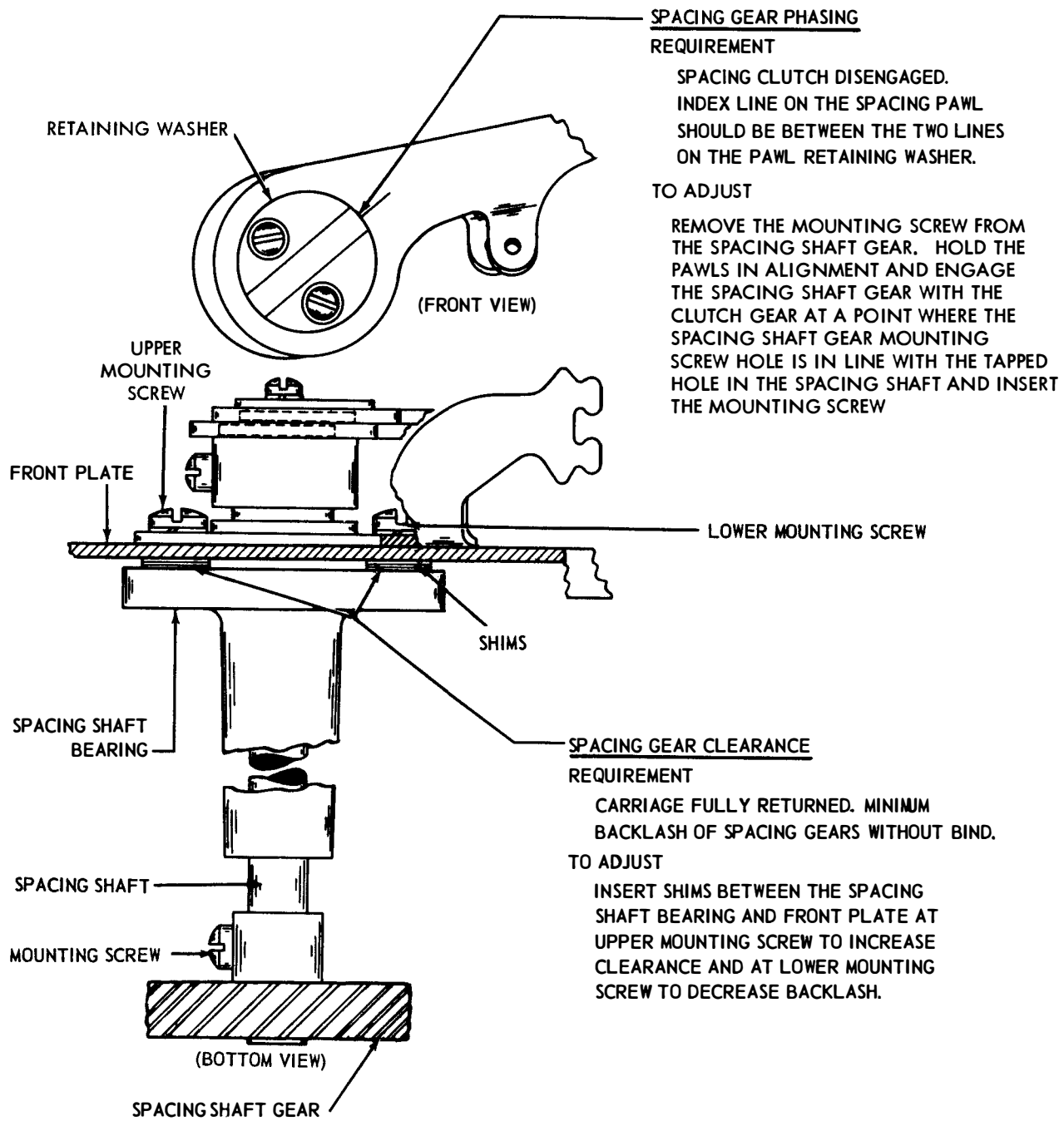


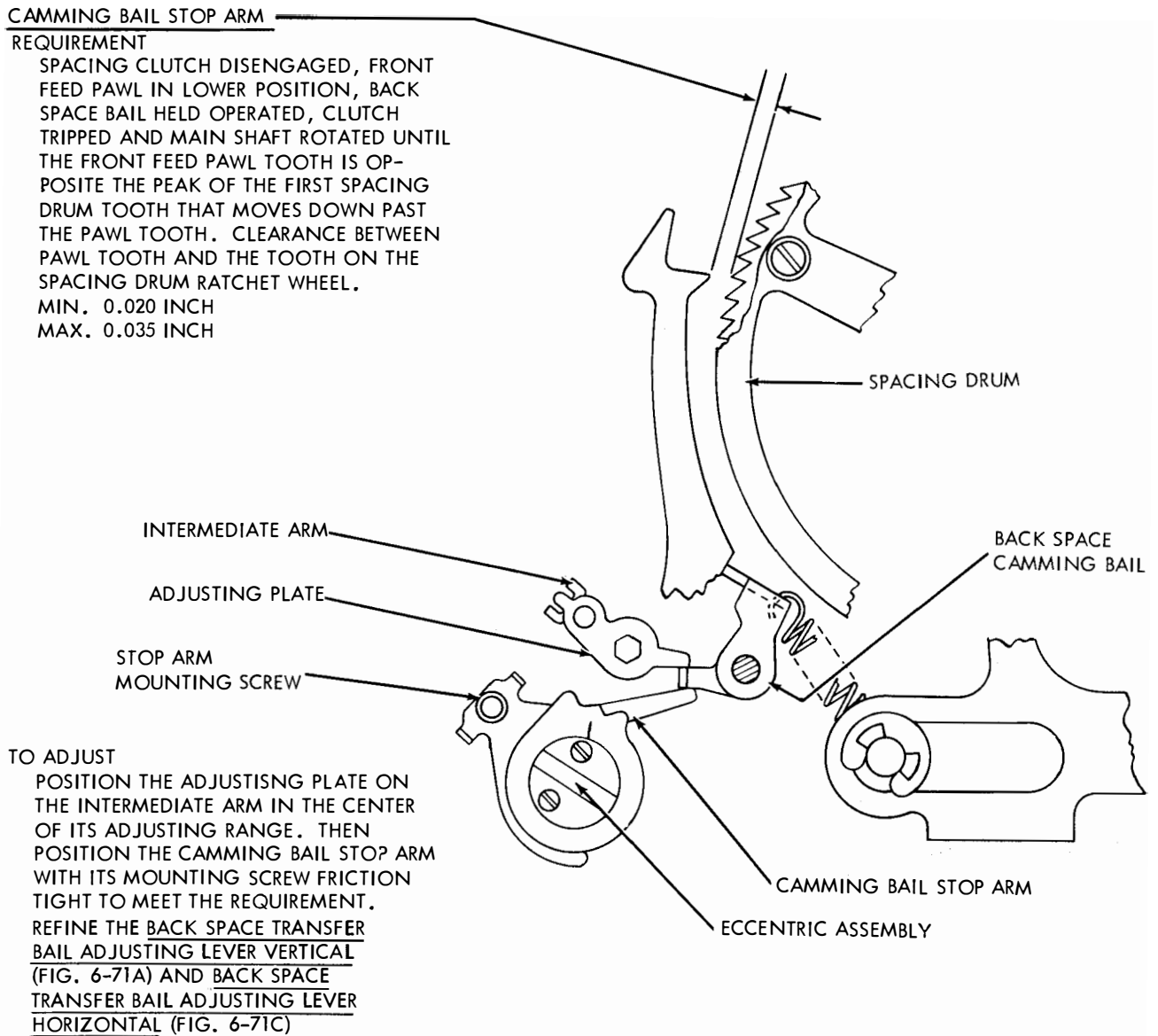
Figure 6-96. Automatic Typewriter, Spacing Mechanism

CAMMING BAIL STOP ARM

REQUIREMENT

SPACING CLUTCH DISENGAGED, FRONT FEED PAWL IN LOWER POSITION, BACK SPACE BAIL HELD OPERATED, CLUTCH TRIPPED AND MAIN SHAFT ROTATED UNTIL THE FRONT FEED PAWL TOOTH IS OPPOSITE THE PEAK OF THE FIRST SPACING DRUM TOOTH THAT MOVES DOWN PAST THE PAWL TOOTH. CLEARANCE BETWEEN PAWL TOOTH AND THE TOOTH ON THE SPACING DRUM RATCHET WHEEL.

MIN. 0.020 INCH  
MAX. 0.035 INCH



TO ADJUST

POSITION THE ADJUSTING PLATE ON THE INTERMEDIATE ARM IN THE CENTER OF ITS ADJUSTING RANGE. THEN POSITION THE CAMMING BAIL STOP ARM WITH ITS MOUNTING SCREW FRICTION TIGHT TO MEET THE REQUIREMENT. REFINE THE BACK SPACE TRANSFER BAIL ADJUSTING LEVER VERTICAL (FIG. 6-71A) AND BACK SPACE TRANSFER BAIL ADJUSTING LEVER HORIZONTAL (FIG. 6-71C)

Figure 6-96A. Automatic Typewriter MX-3080/UG, Back Space Mechanism

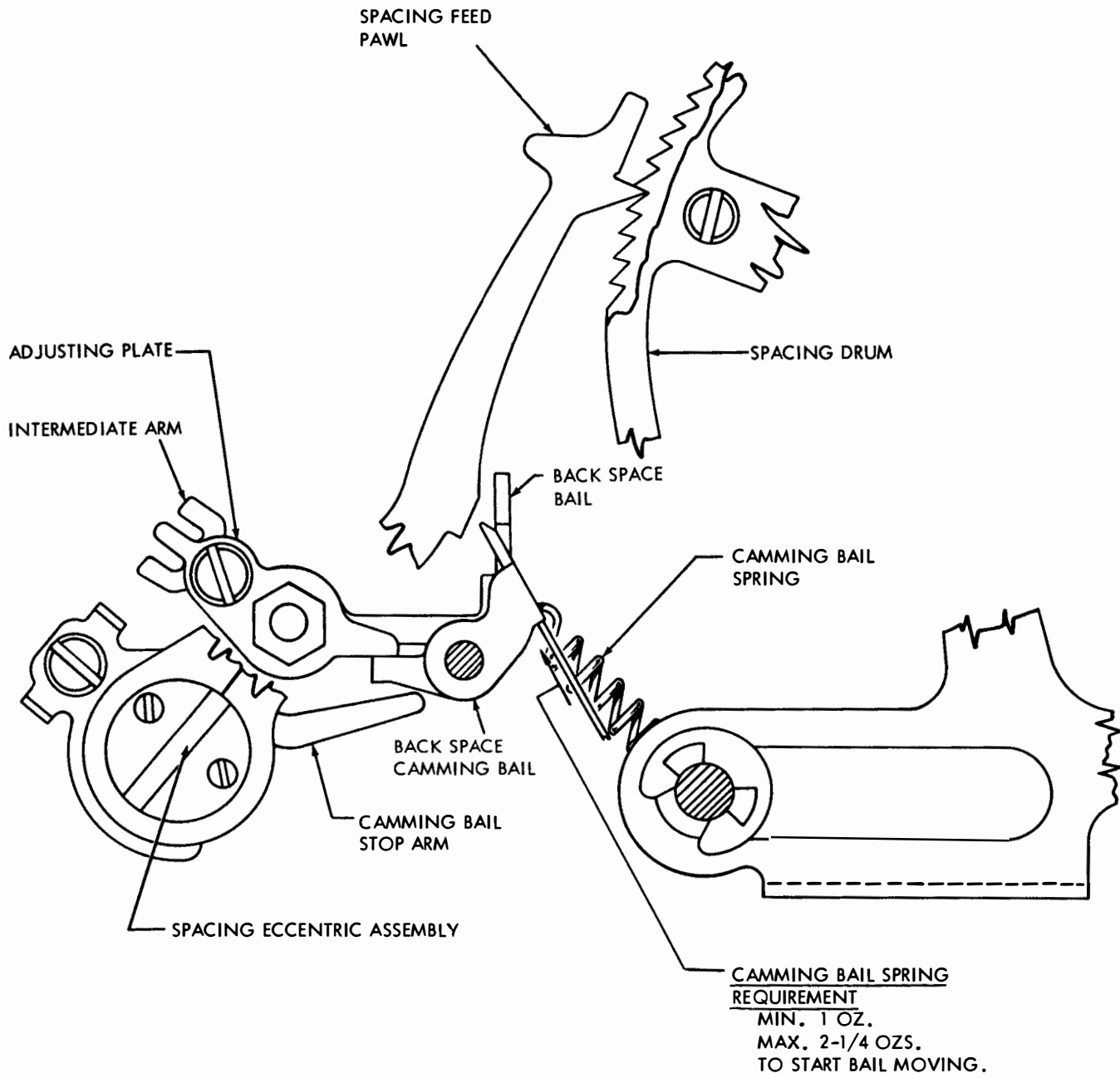


Figure 6-96B. Automatic Typewriter MX-3080/UG, Back Space Mechanism

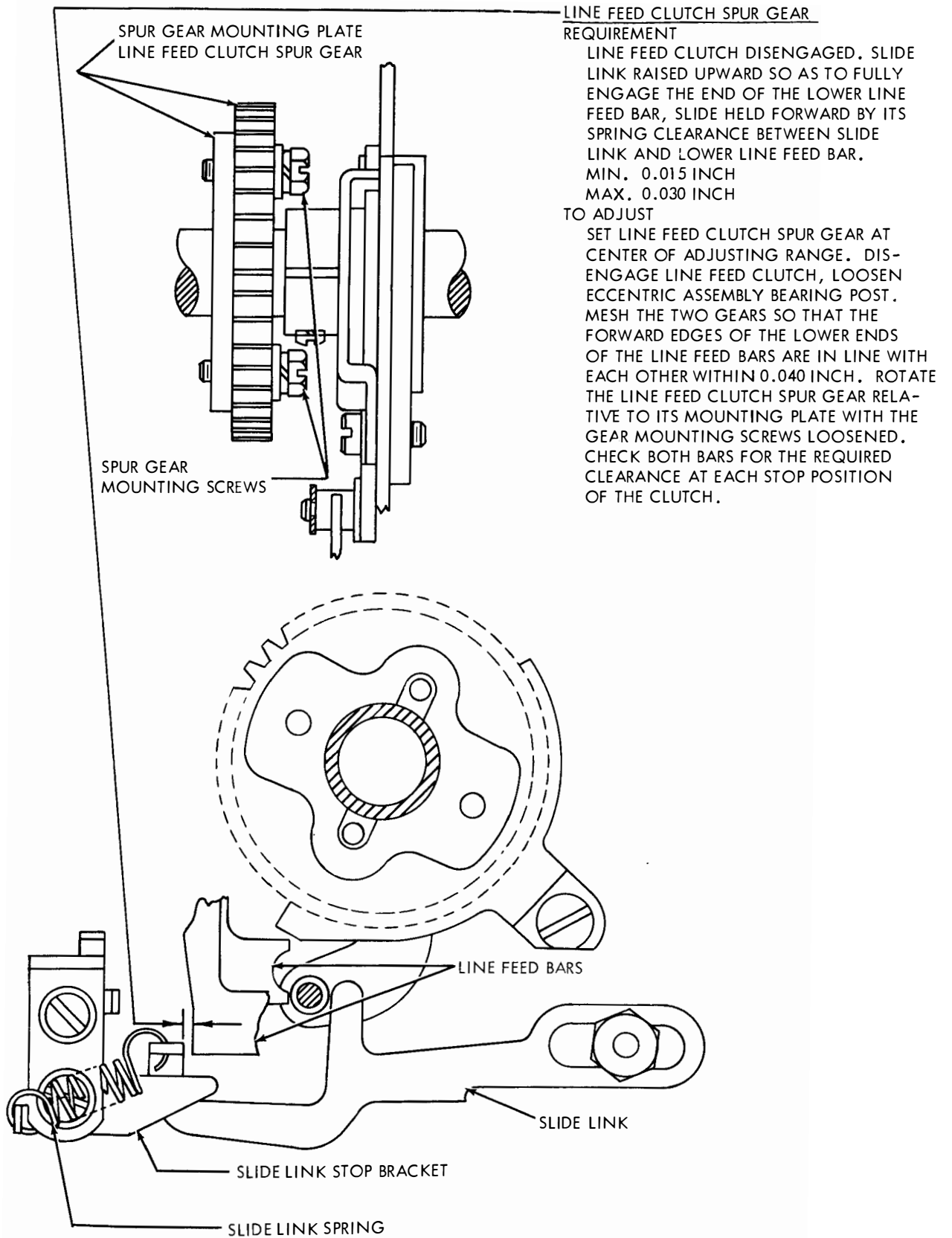


Figure 6-96C. Automatic Typewriter MX-3080/UG, Reverse Line Feed Mechanism

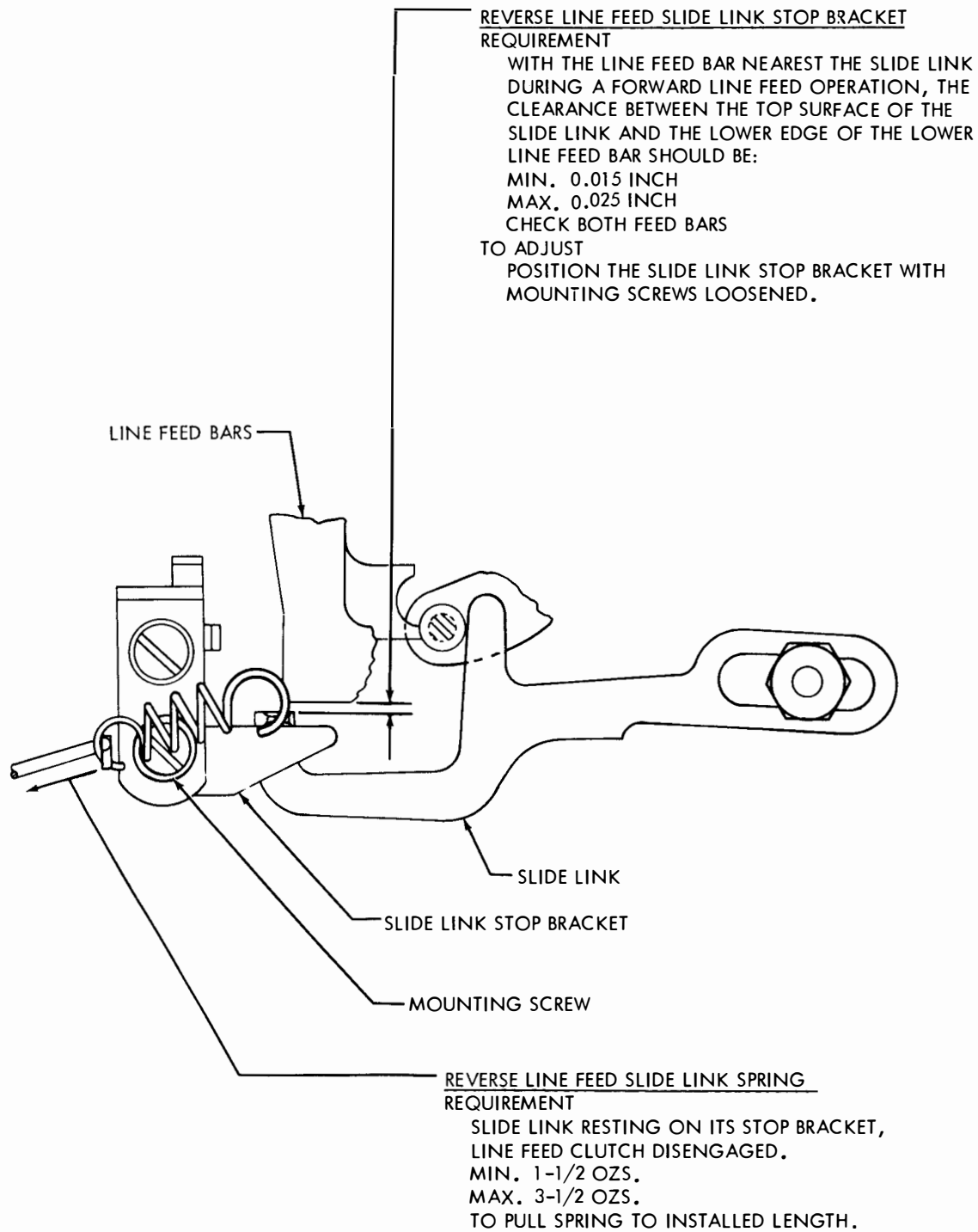


Figure 6-96D. Automatic Typewriter MX-3080/UG, Reverse Line Feed Mechanism

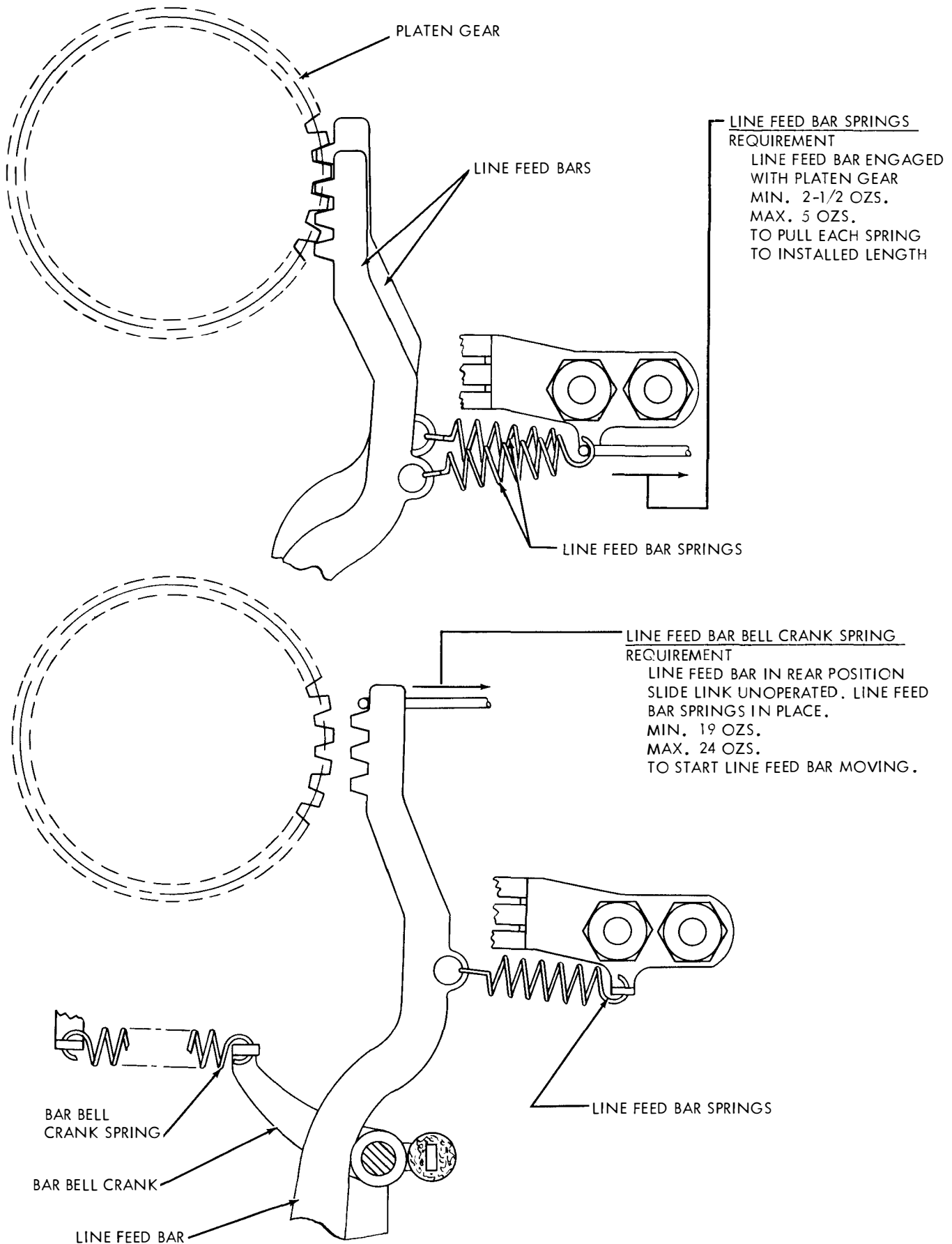


Figure 6-96E Automatic Typewriter MX 3080/UG. Reverse Line Feed Mechanism



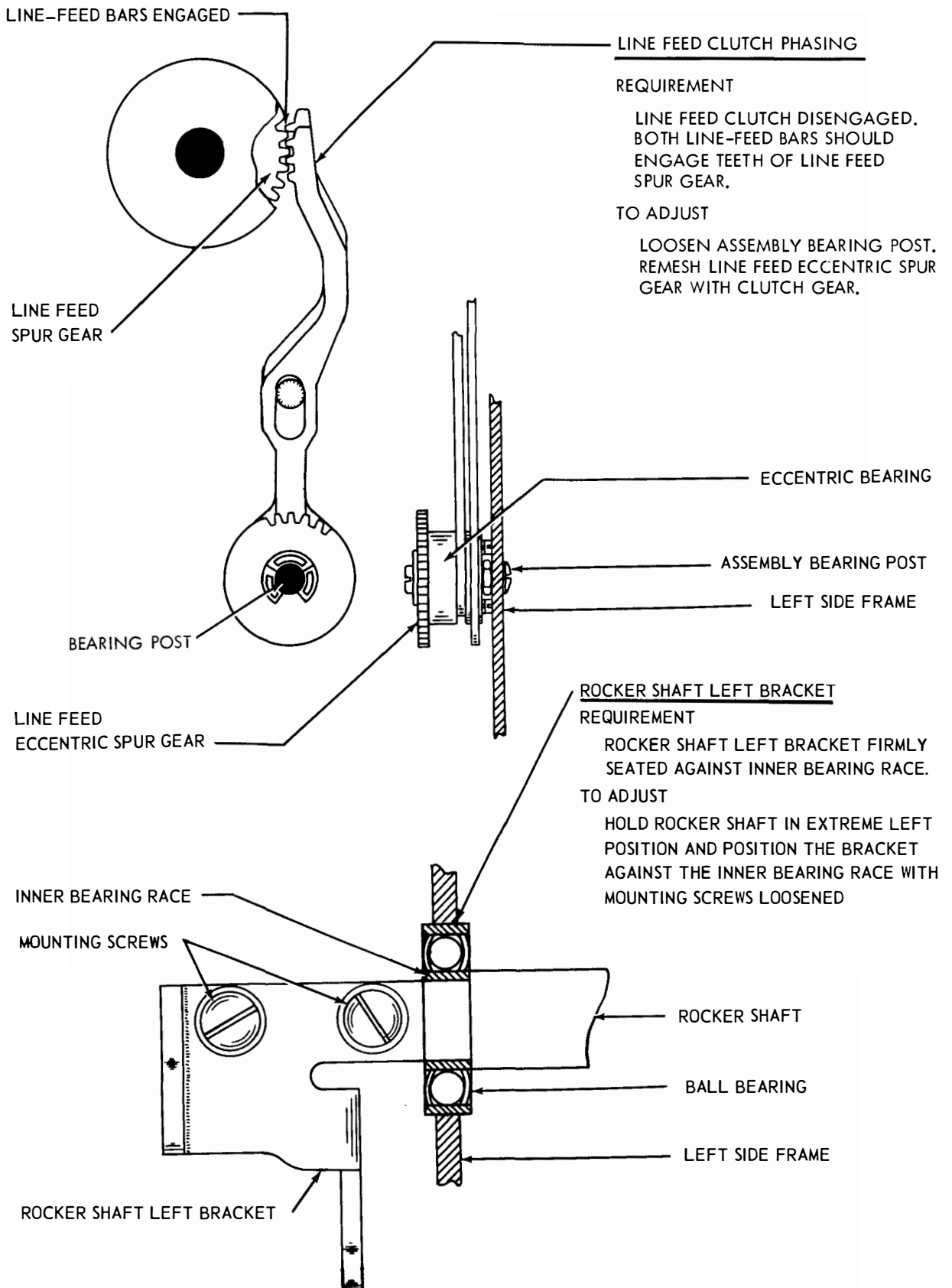


Figure 6-97. Automatic Typewriter, Line Feed and Rocker Shaft Mechanisms



ROCKER SHAFT ECCENTRIC STUD

REQUIREMENT

TYPE BOX CLUTCH DIENGAGED. PLAY IN LOCKING ARM TAKEN TOWARDS FRONT. GAP BETWEEN LOWER SIDE OF LOCK LEVER ROLLER AND TOP EDGE OF SHOULDER ON HORIZONTAL POSITIONING LOCK LEVER.

MIN. 0.055 INCH  
MAX. 0.090 INCH

TO ADJUST

POSITION ECCENTRIC STUD IN LOWER END OF ROCKER SHAFT LEFT BRACKET. KEEP HIGH PART OF ECCENTRIC (MARKED WITH DOT) BELOW CENTER LINE OF DRIVE LINK.

NOTE

ANY CHANGE IN THIS ADJUSTMENT WILL REQUIRE A RECHECKING OF THE FOLLOWING ADJUSTMENTS:  
HORIZONTAL POSITIONING DRIVE LINK (FIG. 6-106)  
RIGHT VERTICAL POSITIONING LEVER  
ECCENTRIC STUD (FIG. 6-99)  
LEFT VERTICAL POSITIONING LEVER  
ECCENTRIC STUD (FIG. 6-100)  
VERTICAL POSITIONING LOCK LEVER (FIG. 6-107)  
RIBBON FEED LEVER STOP BRACKET (FIG. 6-121)  
SPACING TRIP LEVER BAIL CAM PLATE (FIG. 6-102)  
PRINTING TRACK (FIG. 6-117)  
PRINTING ARM (FIG. 6-118)  
REVERSING SLIDE BRACKETS (FIG. 6-106)  
RIBBON REVERSE SPUR GEAR (FIG. 6-120)

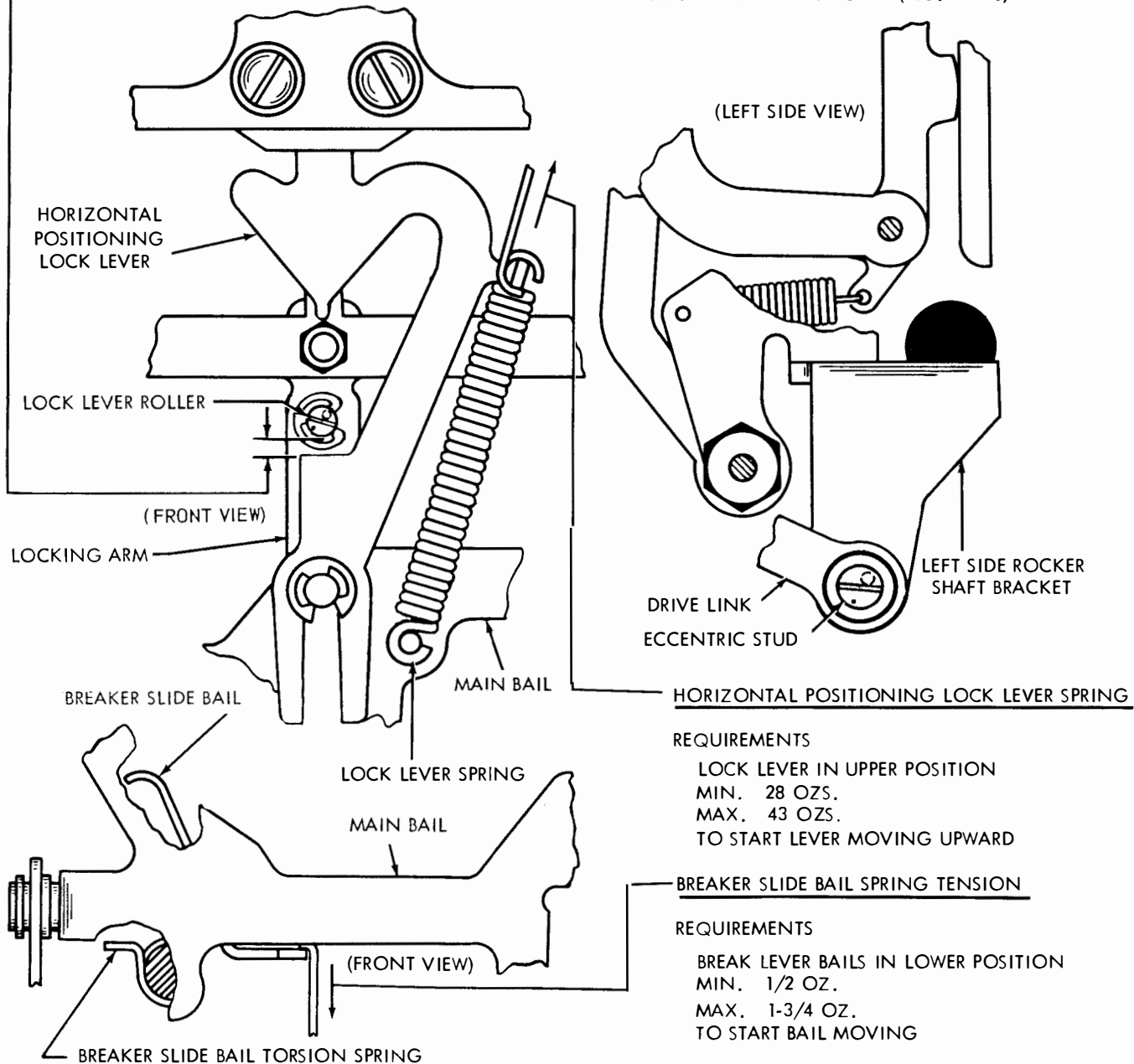


Figure 6-98. Automatic Typewriter, Shift and Positioning Mechanisms

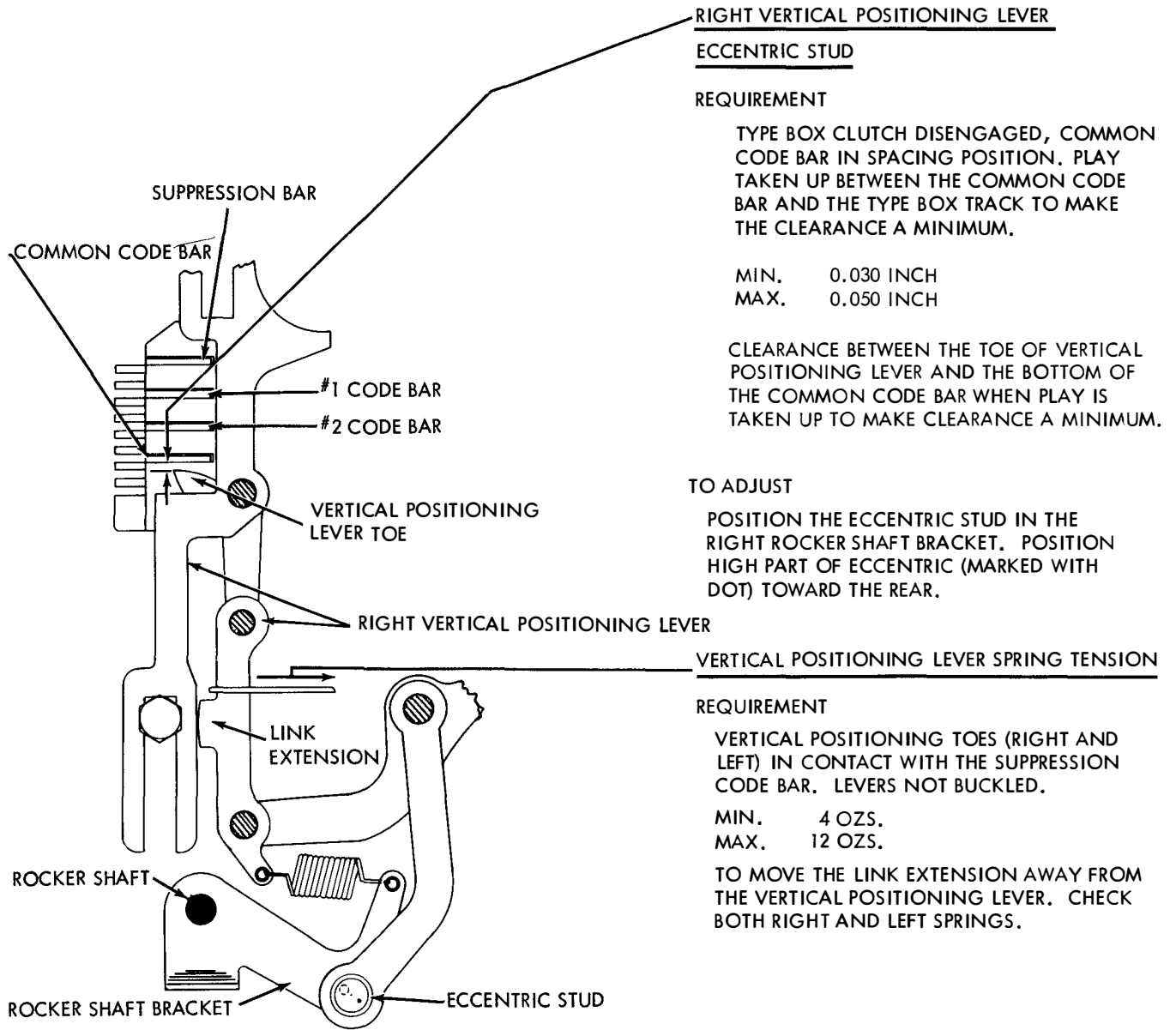


Figure 6-99. Automatic Typewriter, Vertical Positioning Mechanism, Right Side

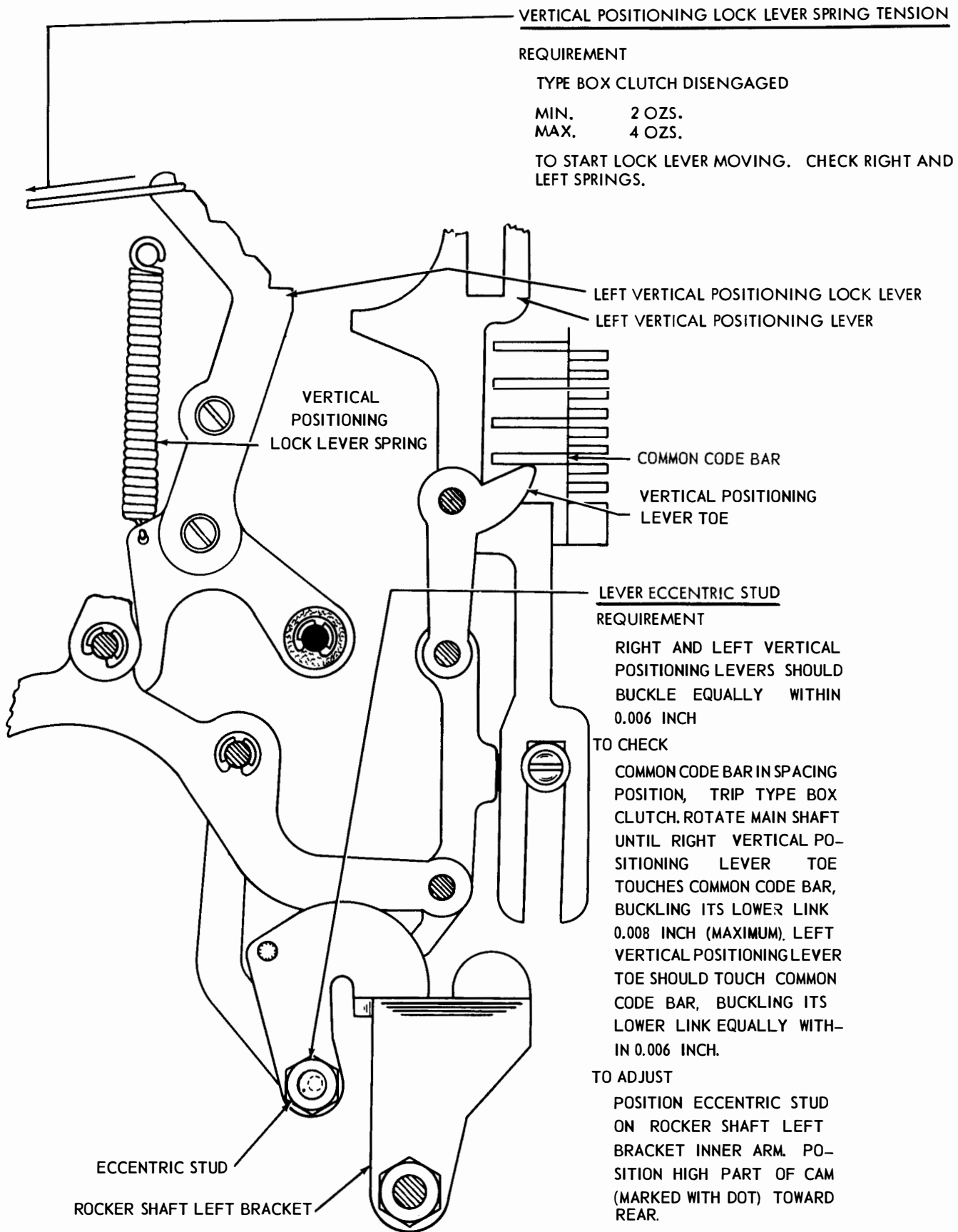


Figure 6-100. Automatic Typewriter, Vertical Positioning Mechanism, Left Side

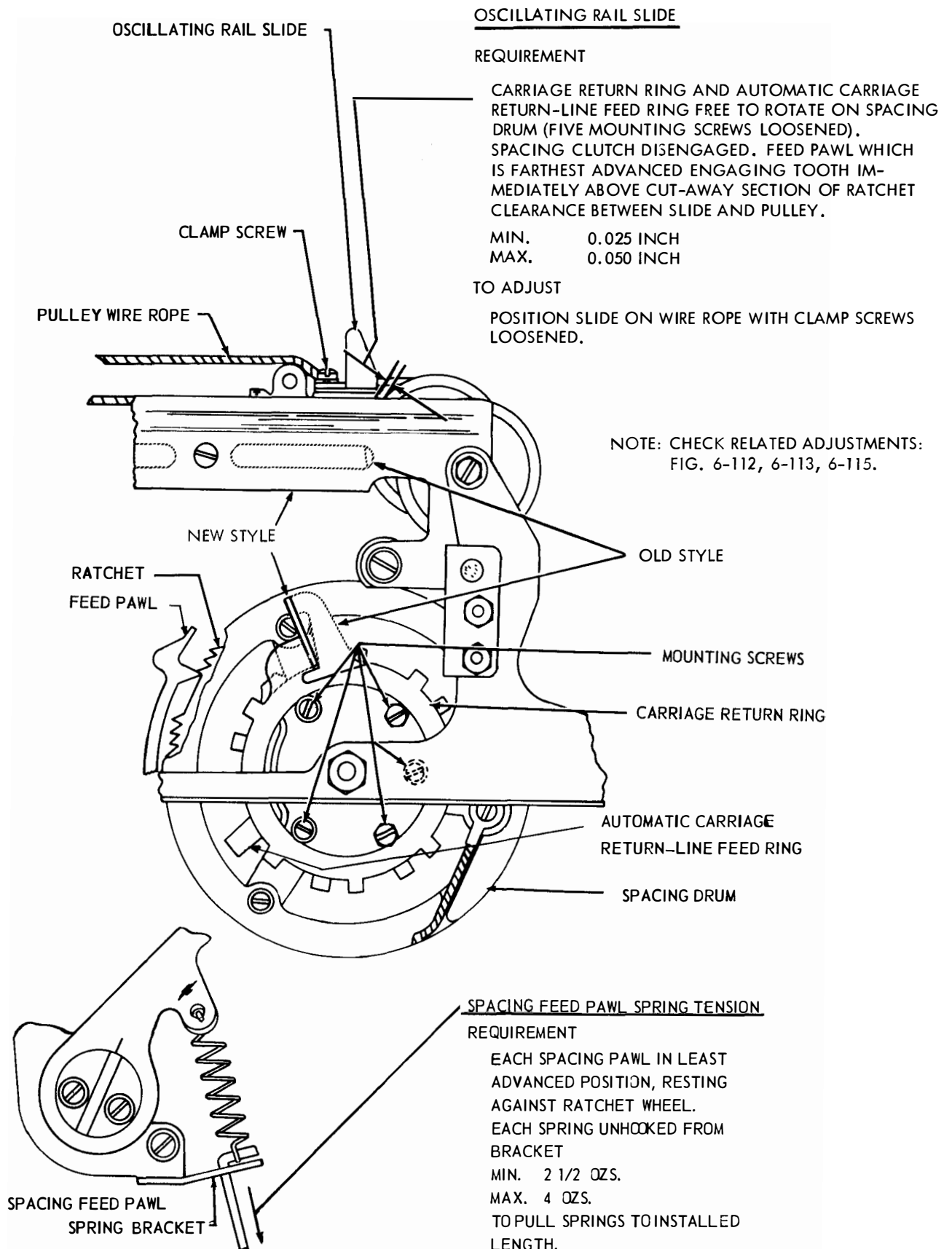


Figure 6-101. Automatic Typewriter, Spacing Mechanism

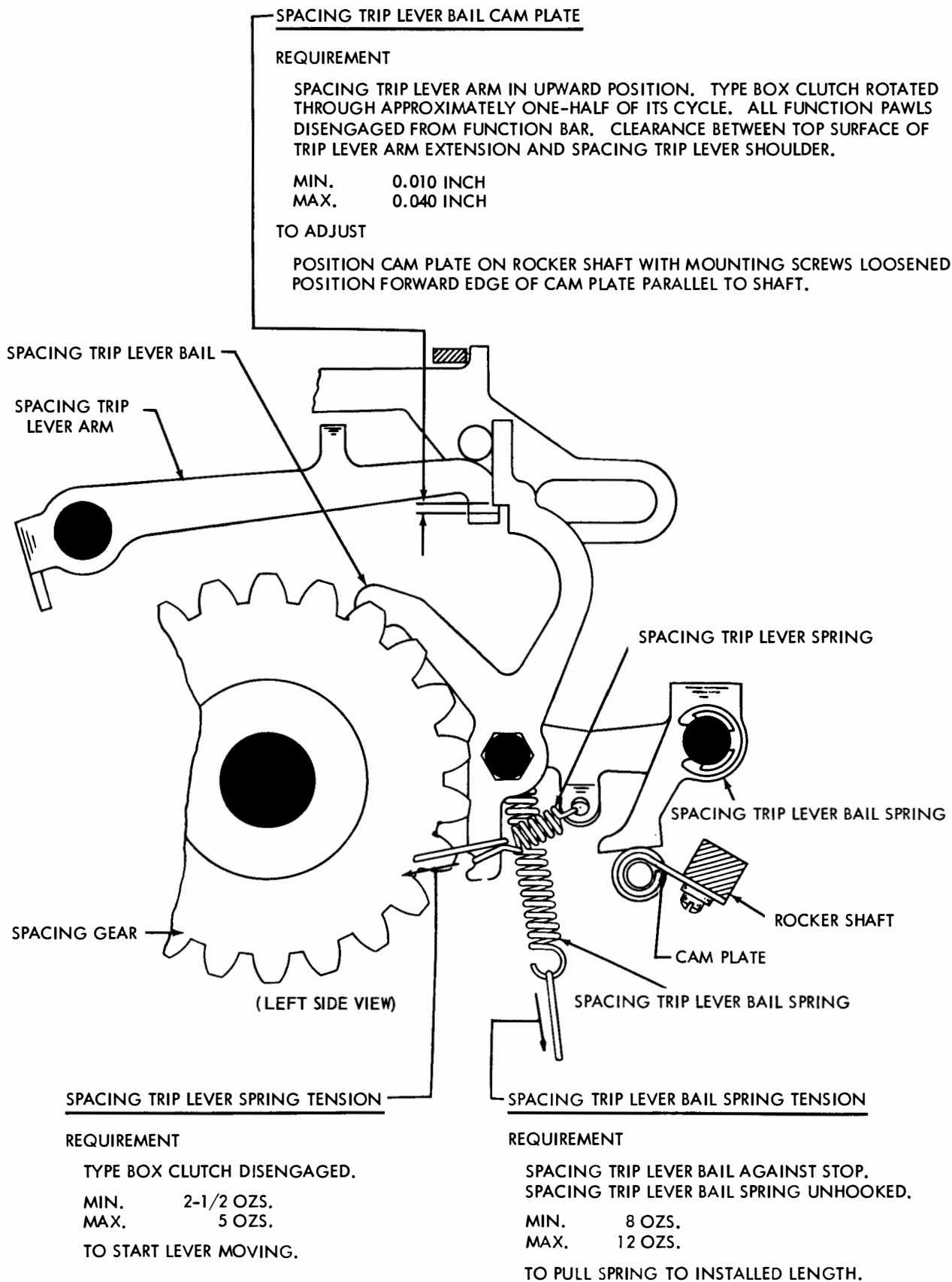


Figure 6-102. Automatic Typewriter, Spacing Mechanism

FIGS-LTRS SHIFT CODE BAR OPERATING MECHANISM

(1) REQUIREMENT

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

(2) REQUIREMENT

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

(3) REQUIREMENT

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

TO ADJUST

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

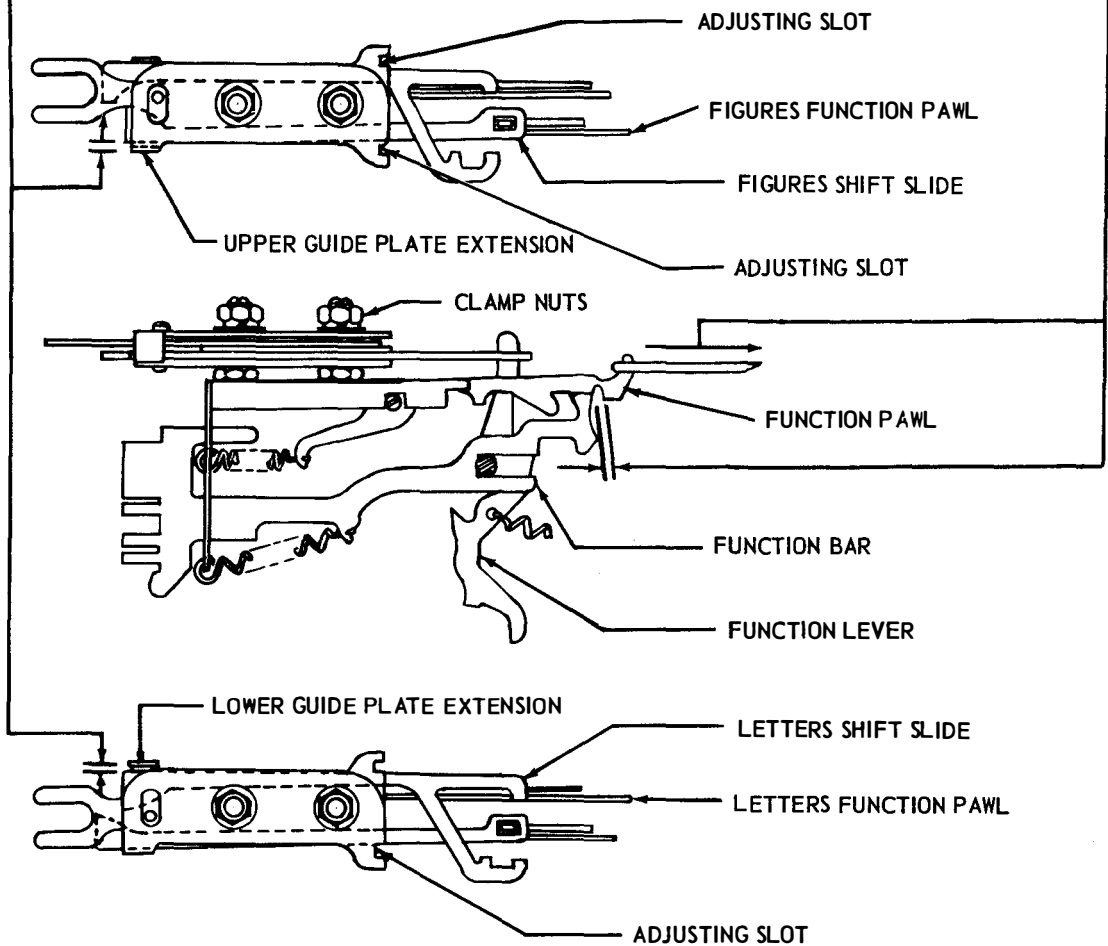


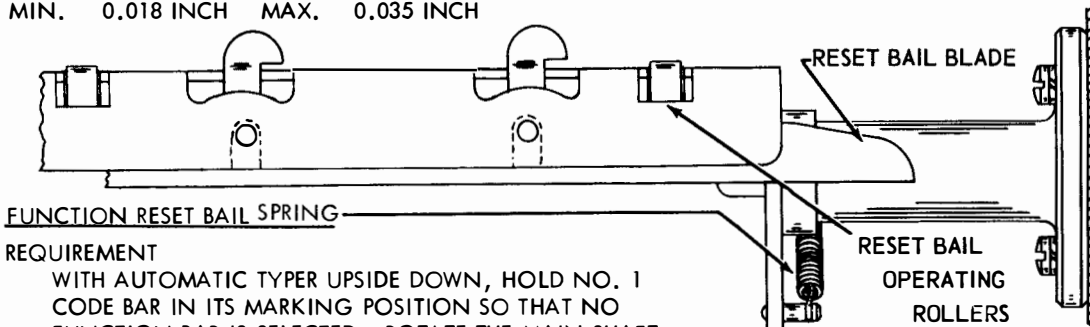
Figure 6-103. Automatic Typewriter, Shift Code Bar Operating Mechanism

FUNCTION RESET BAIL BLADE

(1) REQUIREMENT

FUNCTION AND TYPE BOX CLUTCHES DISENGAGED. FUNCTION PAWLS UNLATCHED. FUNCTION BAR HELD IN MAXIMUM REARWARD POSITION. CLEARANCE BETWEEN FUNCTION BAR AND RESET BAIL BLADE:

MIN. 0.018 INCH MAX. 0.035 INCH



REQUIREMENT

WITH AUTOMATIC TYPER UPSIDE DOWN, HOLD NO. 1 CODE BAR IN ITS MARKING POSITION SO THAT NO FUNCTION BAR IS SELECTED. ROTATE THE MAIN SHAFT UNTIL THE FUNCTION RESET BAIL SPRINGS ARE IN THEIR MINIMUM LENGTH POSITION. PLACE PULL ROD OF 32 OZS. SCALE BETWEEN CLUTCH TRIP SHAFT AND SPACE SUPPRESSION BAIL, HOOK SCALE ON FRONT EDGE OF RESET BAIL (AT MIDDLE OF BAIL), AND PULL TOWARD REAR.  
MIN. 10 OZS. MAX. 22 OZS. TO START BAIL MOVING

TO CHECK: MEASURE CLEARANCE AT BARS LOCATED IN FUNCTION BOX SLOTS 1, 4, 11, 18, 23, 33, 38, AND 41. IF THERE IS NO BAR IN A DESIGNATED SLOT, USE NEAREST BAR. IF THERE IS A BAR ON EACH SIDE OF A DESIGNATED VACANT SLOT, USE BAR IN HIGHEST NUMBERED SLOT. (NOTE: FACING REAR OF UNIT, SLOTS ARE NUMBERED FROM LEFT TO RIGHT.)

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

(2) REQUIREMENT

FUNCTION PAWL SHOULD OVER TRAVEL FUNCTION BAR BY A MIN OF 0.002 INCH.

TO CHECK: IF CARRIAGE RETURN LEVER ADJUSTMENT HAS NOT BEEN MADE, ITS CLAMP SCREW SHOULD BE LOOSENEED. POSITION FUNCTION CLUTCH SO THAT LUG ON CLUTCH DISK IS TOWARD BOTTOM OF UNIT. STRIP OFF ANY SELECTED FUNCTION PAWLS. HOLD FUNCTION LEVER IN MAXIMUM REARWARD POSITION (DO NOT PUT OVER 2 LBS. OF TENSION ON LEVER.) AND HOLD FUNCTION PAWL TO REAR WITH A TENSION OF 32 OZS. (AS LOAD ON RESET BAIL AFFECTS OVER TRAVEL, DO NOT LATCH MORE THAN ONE PAWL AT A TIME). MEASURE CLEARANCE. REPEAT FOR EACH FUNCTION PAWL ON FUNCTION BOX.

TO ADJUST: IF NECESSARY, REFINE REQUIREMENT (1) WITHIN THE FOLLOWING LIMITS:

MIN. 0.018 INCH MAX. 0.035 INCH

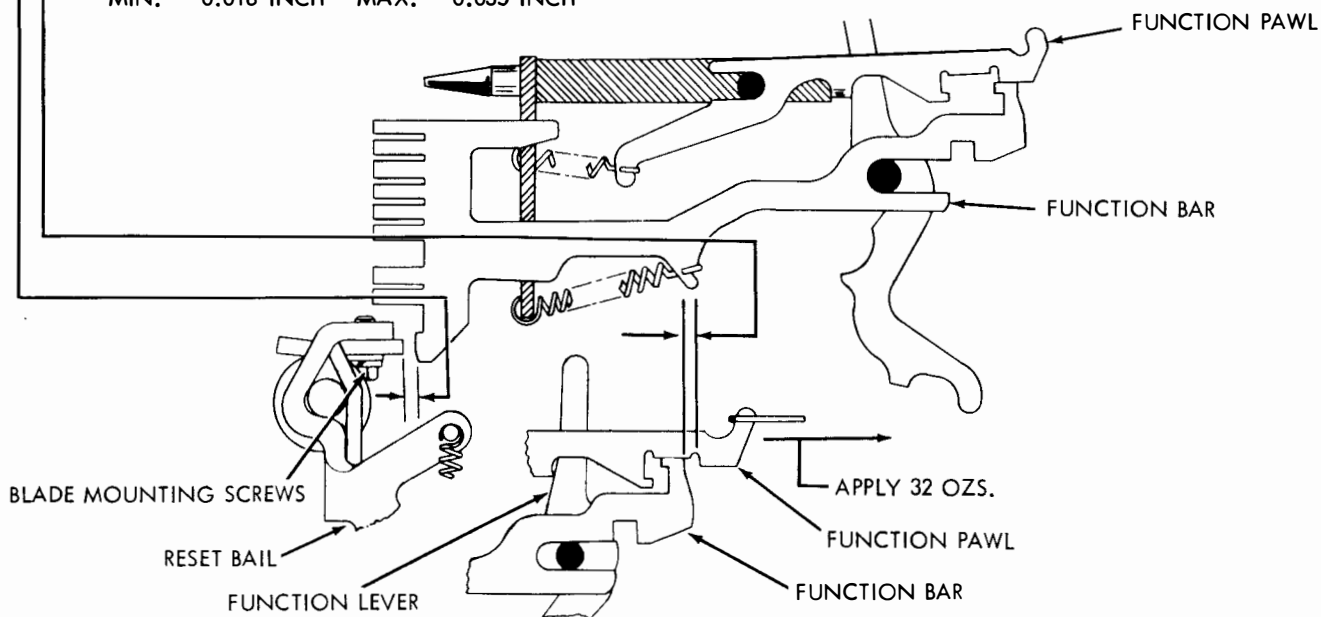
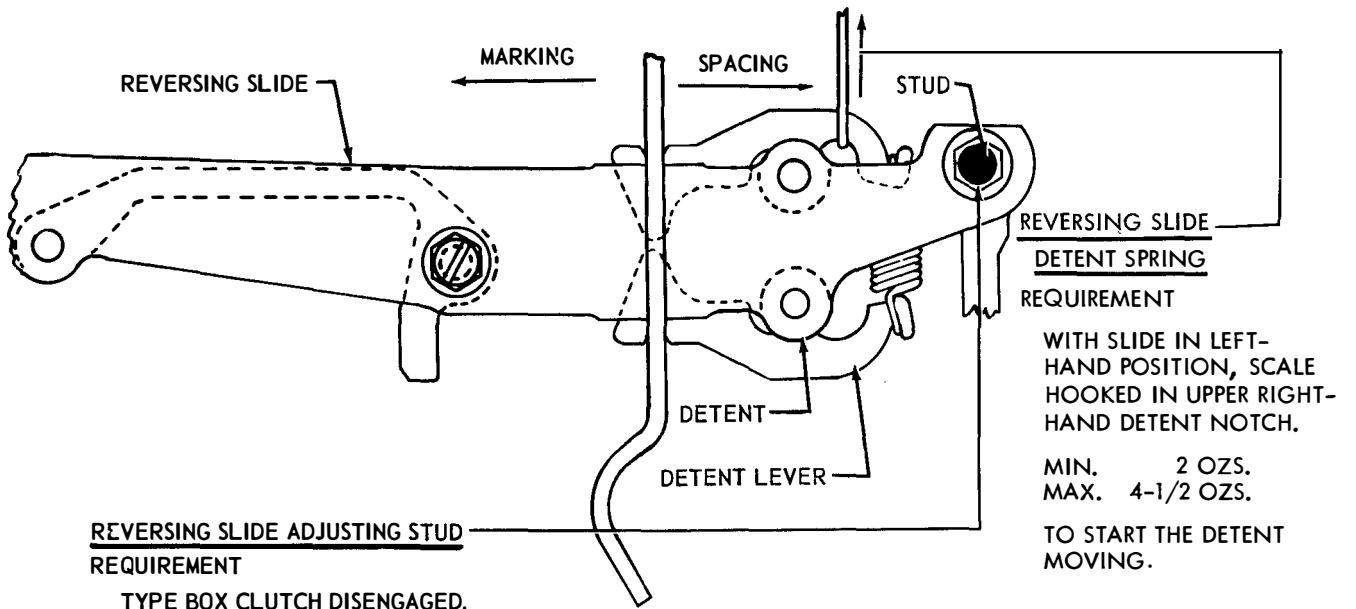


Figure 6-104. Automatic Typewriter, Function Bar Reset Mechanism



REVERSING SLIDE ADJUSTING STUD REQUIREMENT

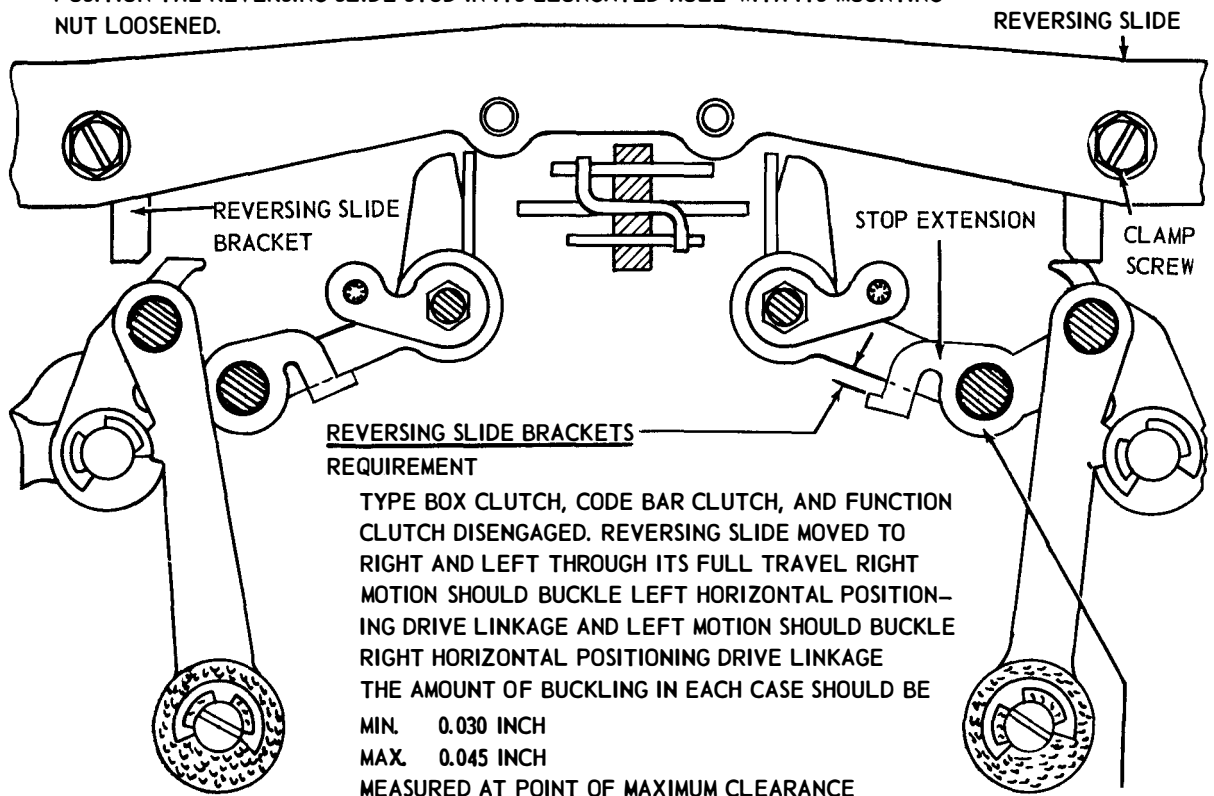
TYPE BOX CLUTCH DISENGAGED.

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

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

TO ADJUST

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



REVERSING SLIDE BRACKETS REQUIREMENT

TYPE BOX CLUTCH, CODE BAR CLUTCH, AND FUNCTION CLUTCH DISENGAGED. REVERSING SLIDE MOVED TO RIGHT AND LEFT THROUGH ITS FULL TRAVEL RIGHT MOTION SHOULD BUCKLE LEFT HORIZONTAL POSITIONING DRIVE LINKAGE AND LEFT MOTION SHOULD BUCKLE RIGHT HORIZONTAL POSITIONING DRIVE LINKAGE

THE AMOUNT OF BUCKLING IN EACH CASE SHOULD BE

MIN. 0.030 INCH

MAX. 0.045 INCH

MEASURED AT POINT OF MAXIMUM CLEARANCE

TO ADJUST

POSITION EACH REVERSING SLIDE BRACKET WITH THEIR CLAMP SCREWS LOOSENED.

Figure 6-105. Automatic Typewriter, Horizontal Motion Reversing Mechanism, Front View



HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

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

MIN. 0.015 INCH  
MAX. 0.040 INCH

TO ADJUST

LOOSEN BEARING STUD MOUNTING SCREWS AND CONNECTING STRIP MOUNTING SCREWS FRICTION TIGHT, POSITION ONE OR BOTH BEARING STUDS ON THE CONNECTING STRIP TO PROVIDE 0.025 INCH TO 0.035 INCH BETWEEN THE CENTER HORIZONTAL STOP SLIDE AND THE DECELERATING SLIDE ON THE SIDE WHERE THE LINKAGE IS NOT BUCKLED. TIGHTEN THE TWO INNER MOUNTING SCREWS. CHANGE POSITION OF REVERSING SLIDE AND CHECK OPPOSITE CLEARANCE. EQUALIZE BY SHIFTING BOTH STUDS AND CONNECTING STRIP AS A UNIT. HOLD THE DRIVE LINKAGE HUB AGAINST THE LOWER VERTICAL LINK OF THE DRIVE LINKAGE. TIGHTEN THE TWO OUTER BEARING STUD MOUNTING SCREWS. CHECK THE LINKAGE FOR FREENESS THROUGHOUT A COMPLETE CYCLE. THE TYPE BOX CLUTCH DISK SHOULD HAVE SOME MOVEMENT IN THE NORMAL DIRECTION OF ROTATION IN THE STOP POSITION.

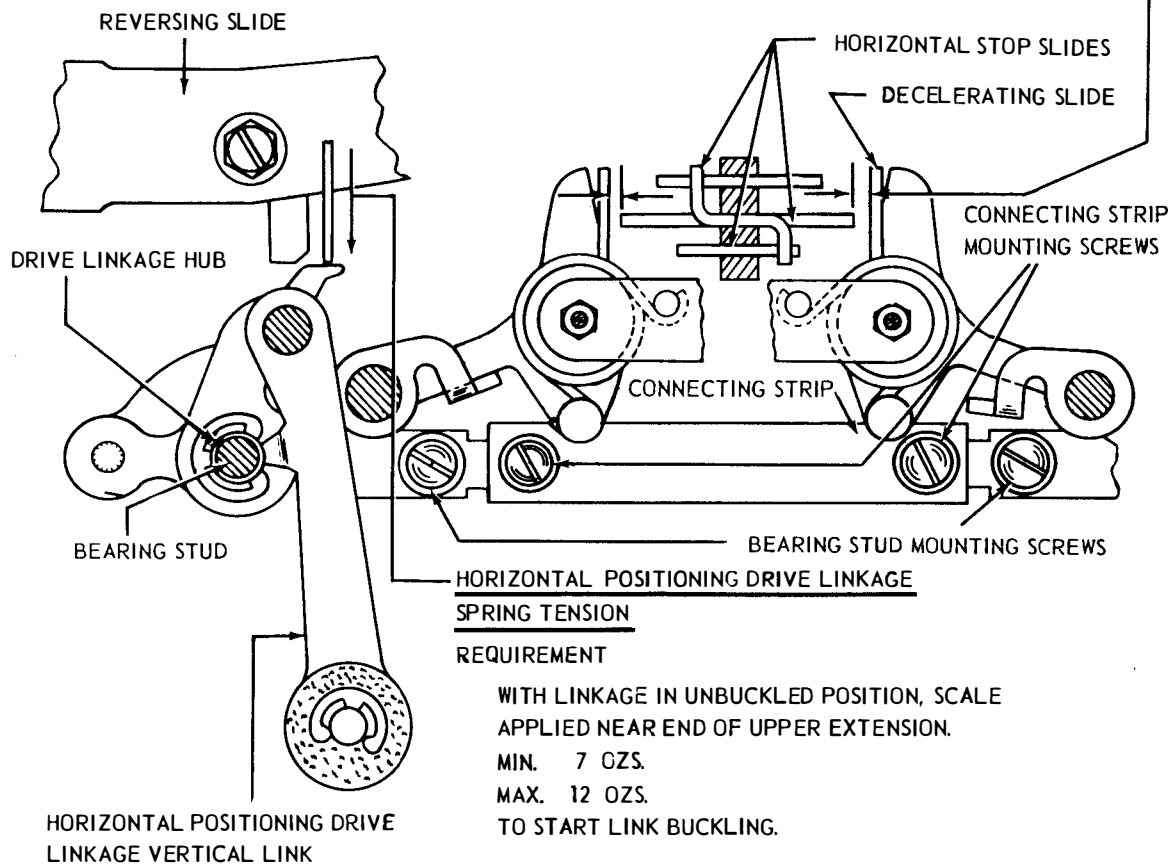


Figure 6-106. Automatic Typewriter, Horizontal Positioning Drive Mechanism, Front View

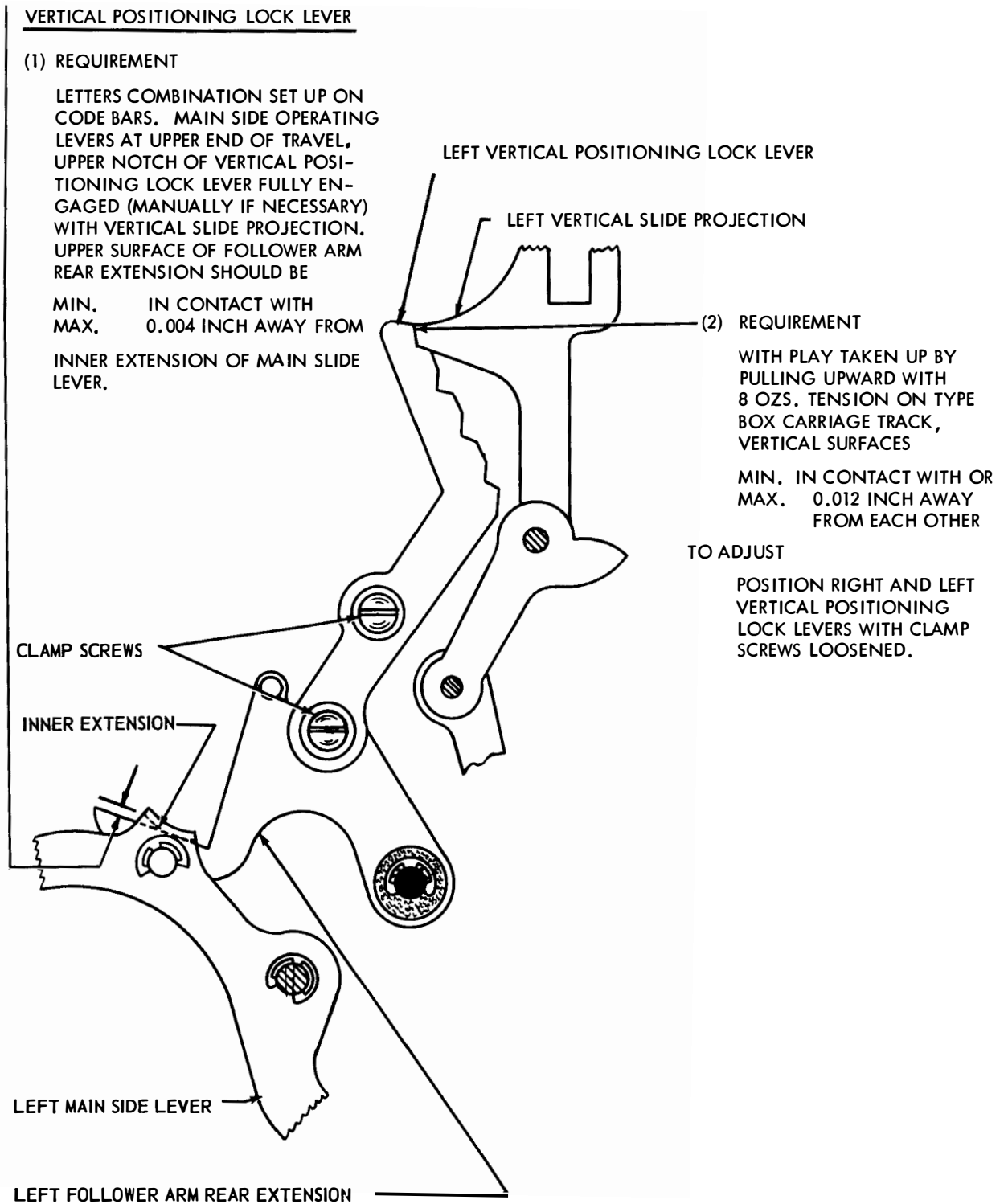
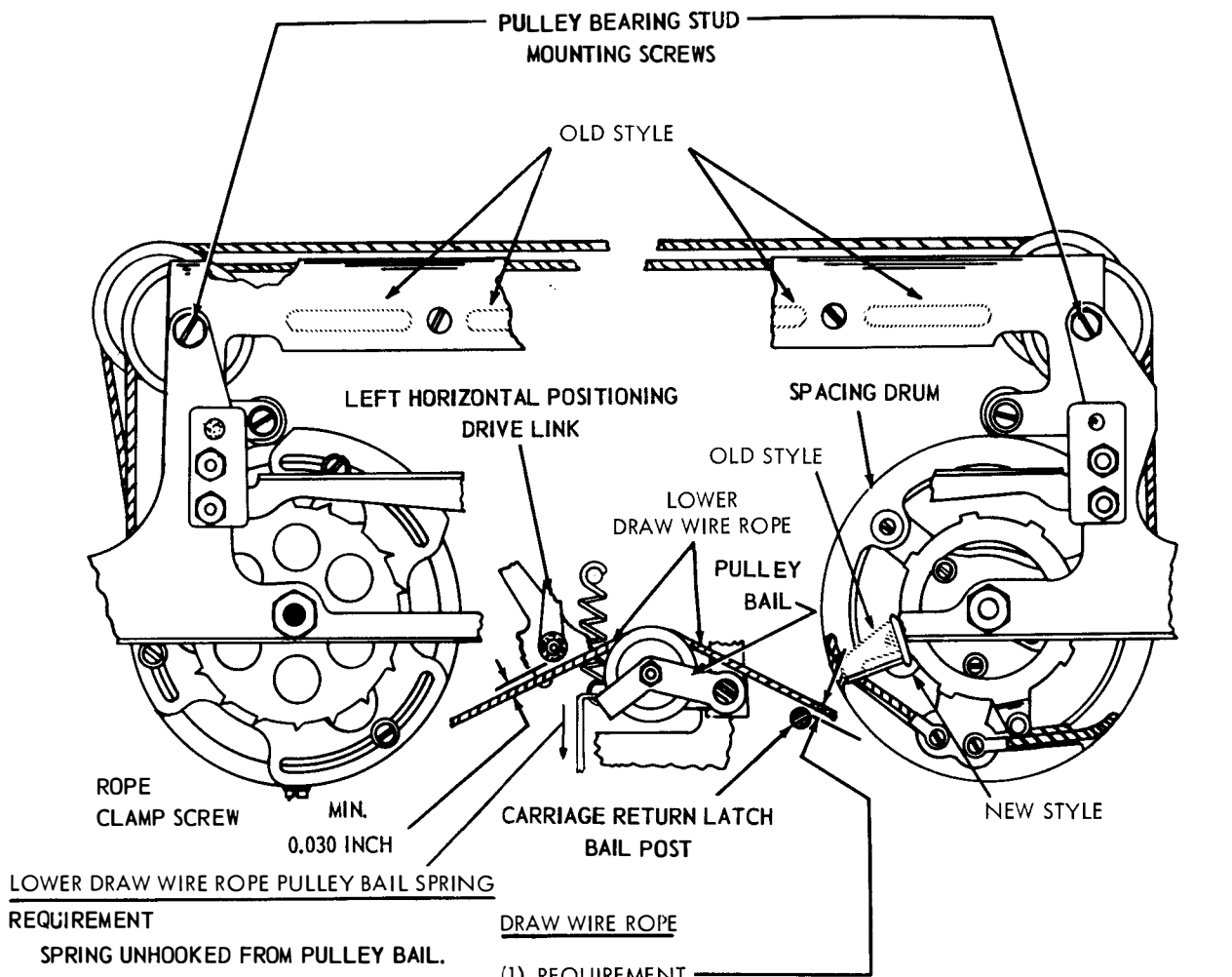


Figure 6-107. Automatic Typewriter, Vertical Positioning Mechanism, Left Side



LOWER DRAW WIRE ROPE PULLEY BAIL SPRING

REQUIREMENT

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

DRAW WIRE ROPE

(1) REQUIREMENT

AT LEAST 0.006 INCH CLEARANCE BETWEEN LOWER DRAW WIRE ROPE CARRIAGE RETURN LATCH BAIL POST.

(2) REQUIREMENT

HORIZONTAL POSITIONING MECHANISM IN ITS LOWEST POSITION. AT LEAST 0.030 INCH CLEARANCE BETWEEN LOWER DRAW WIRE ROPE AND LEFT HORIZONTAL POSITIONING DRIVE LINK.

TO ADJUST

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

Figure 6-108. Automatic Typewriter, Spacing Mechanism, Front View

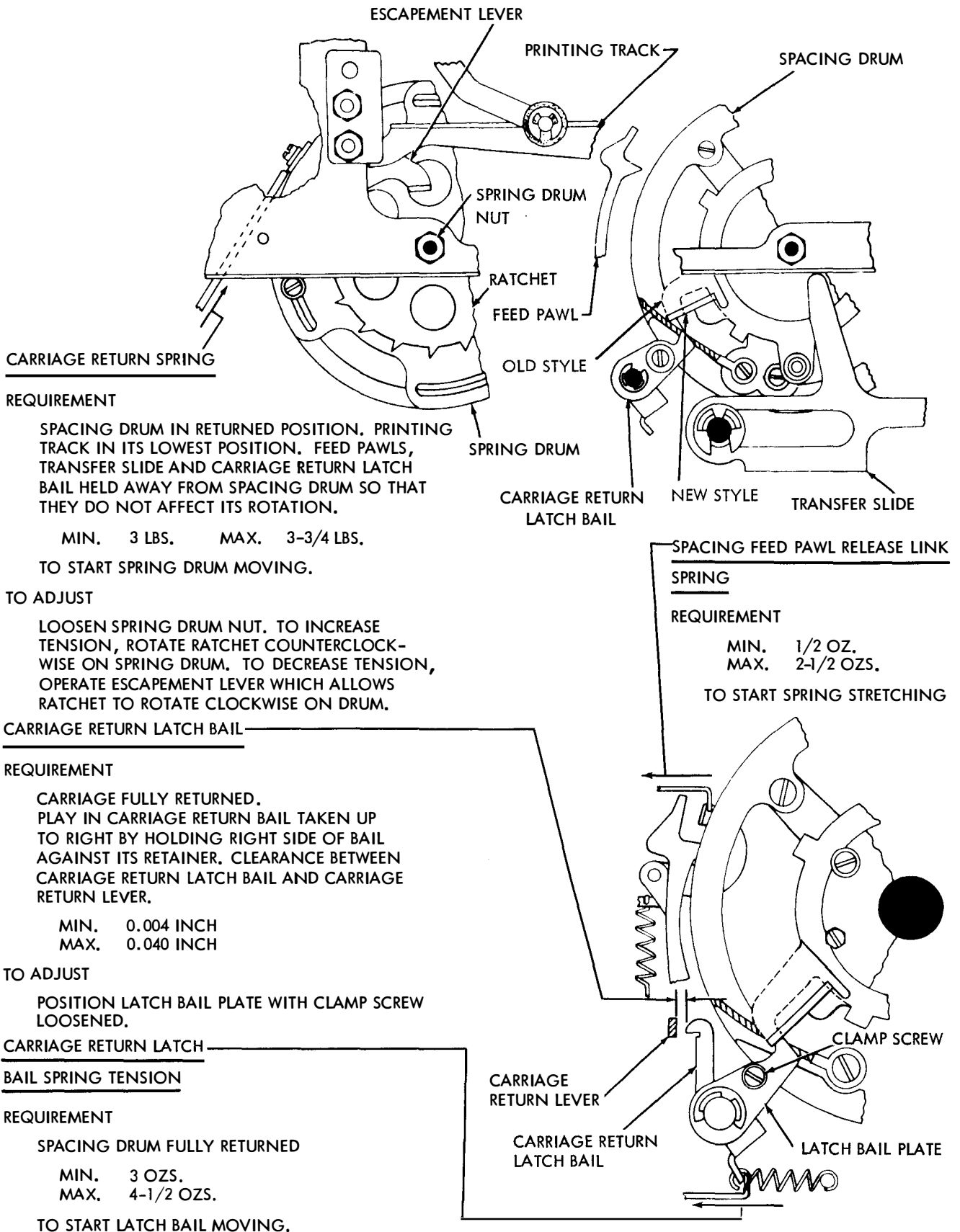


Figure 6-109. Automatic Typewriter, Carriage Return Mechanism

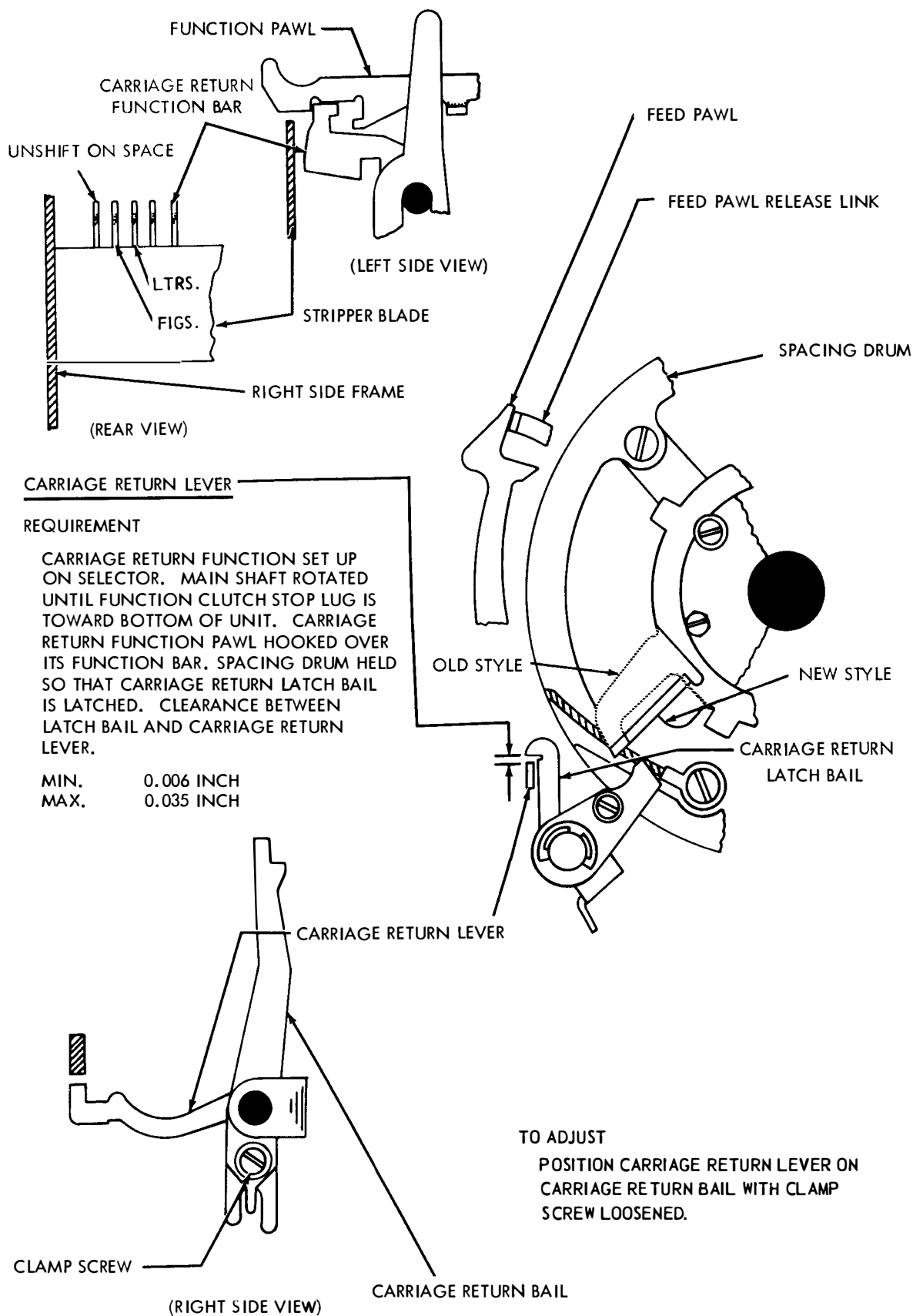
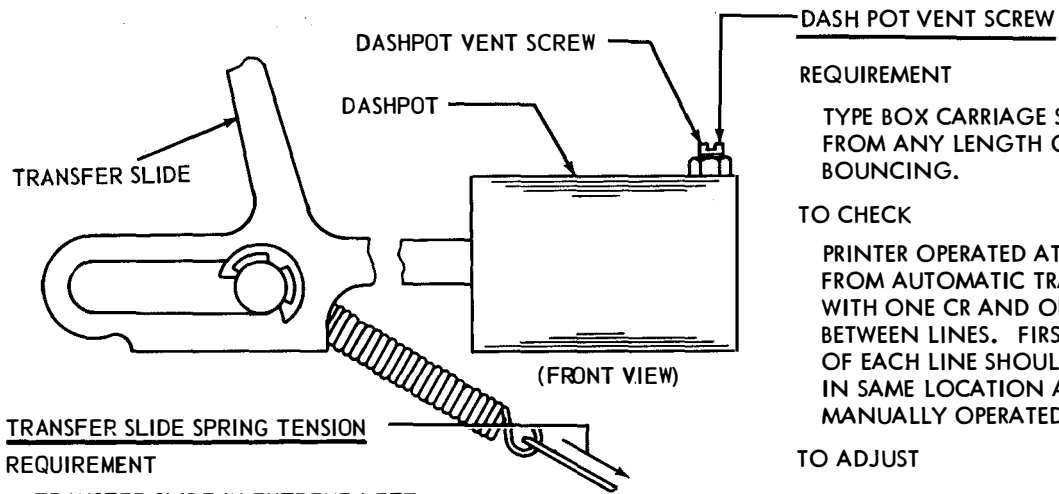


Figure 6-110. Automatic Typewriter, Carriage Return Mechanism



TRANSFER SLIDE SPRING TENSION  
REQUIREMENT

TRANSFER SLIDE IN EXTREME LEFT  
POSITION.  
SPRING UNHOOKED.  
MIN. 3-1/2 OZS.  
MAX. 4-1/2 OZS.  
TO PULL SPRING TO INSTALLED LENGTH.

REQUIREMENT

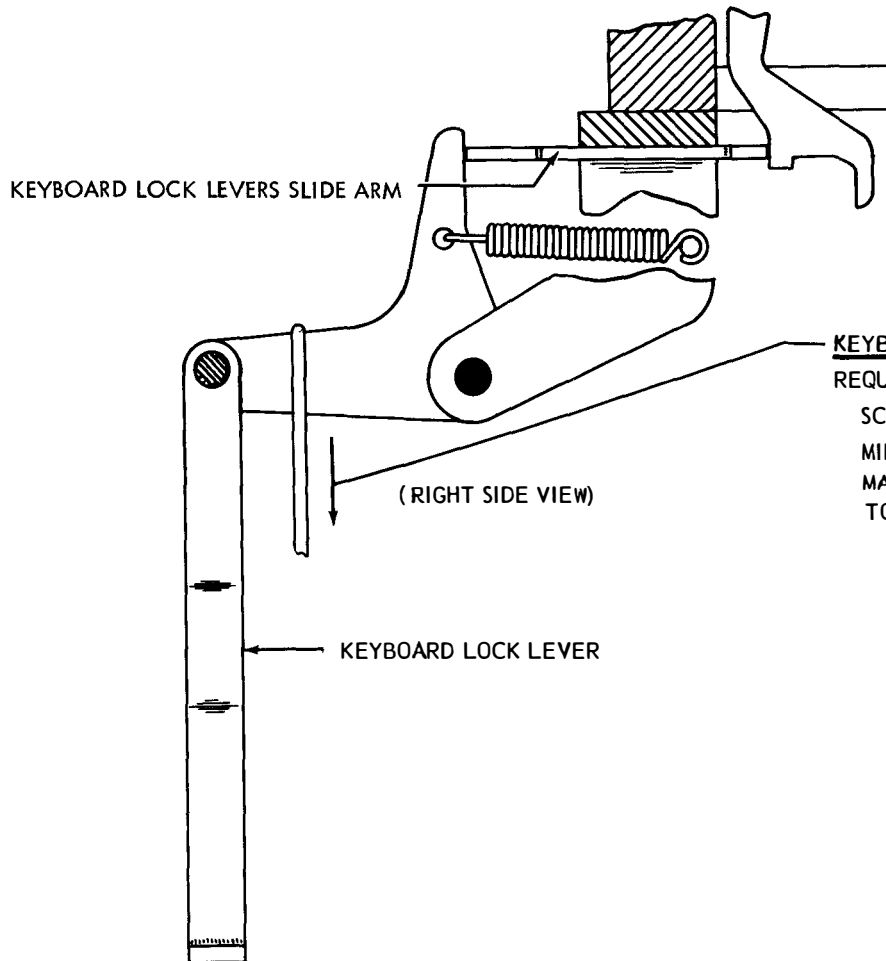
TYPE BOX CARRIAGE SHOULD RETURN  
FROM ANY LENGTH OF LINE WITHOUT  
BOUNCING.

TO CHECK

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

TO ADJUST

TURN DOWN VENT SCREW UNTIL SLIGHT  
PNEUMATIC BOUNCE IS PERCEPTIBLE.  
BACK OFF SCREW UNTIL EFFECT  
DISAPPEARS.  
FOR DASHPOTS WITH ONE VENT HOLE  
THEN BACK SCREW OFF ONE FULL TURN,  
TIGHTEN NUT.  
FOR DASHPOTS WITH TWO VENT HOLES:  
THEN BACK SCREW OFF 1/4 TURN,  
TIGHTEN NUT.



KEYBOARD LOCK LEVER SPRING TENSION  
REQUIREMENT (UNIT UPSIDE DOWN)

SCALE APPLIED TO BELL CRANK.  
MIN. 1/2 OZ.  
MAX. 1-1/2 OZS.  
TO START KEYBOARD LOCK LEVER MOVING.

Figure 6-111. Automatic Typewriter, Dashpot and Keyboard Lock Mechanisms

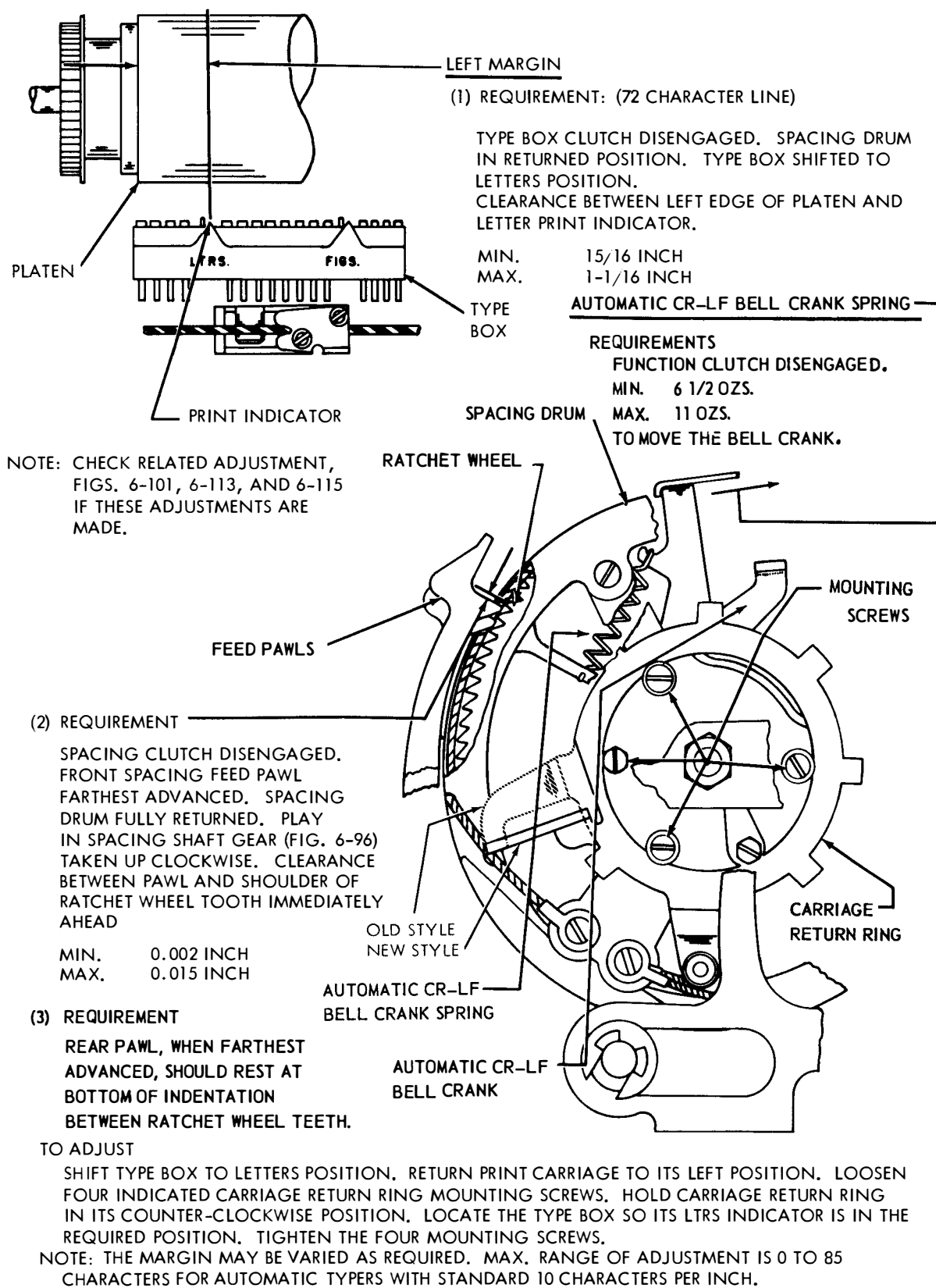


Figure 6-112. Automatic Typewriter, Carriage Return Mechanism

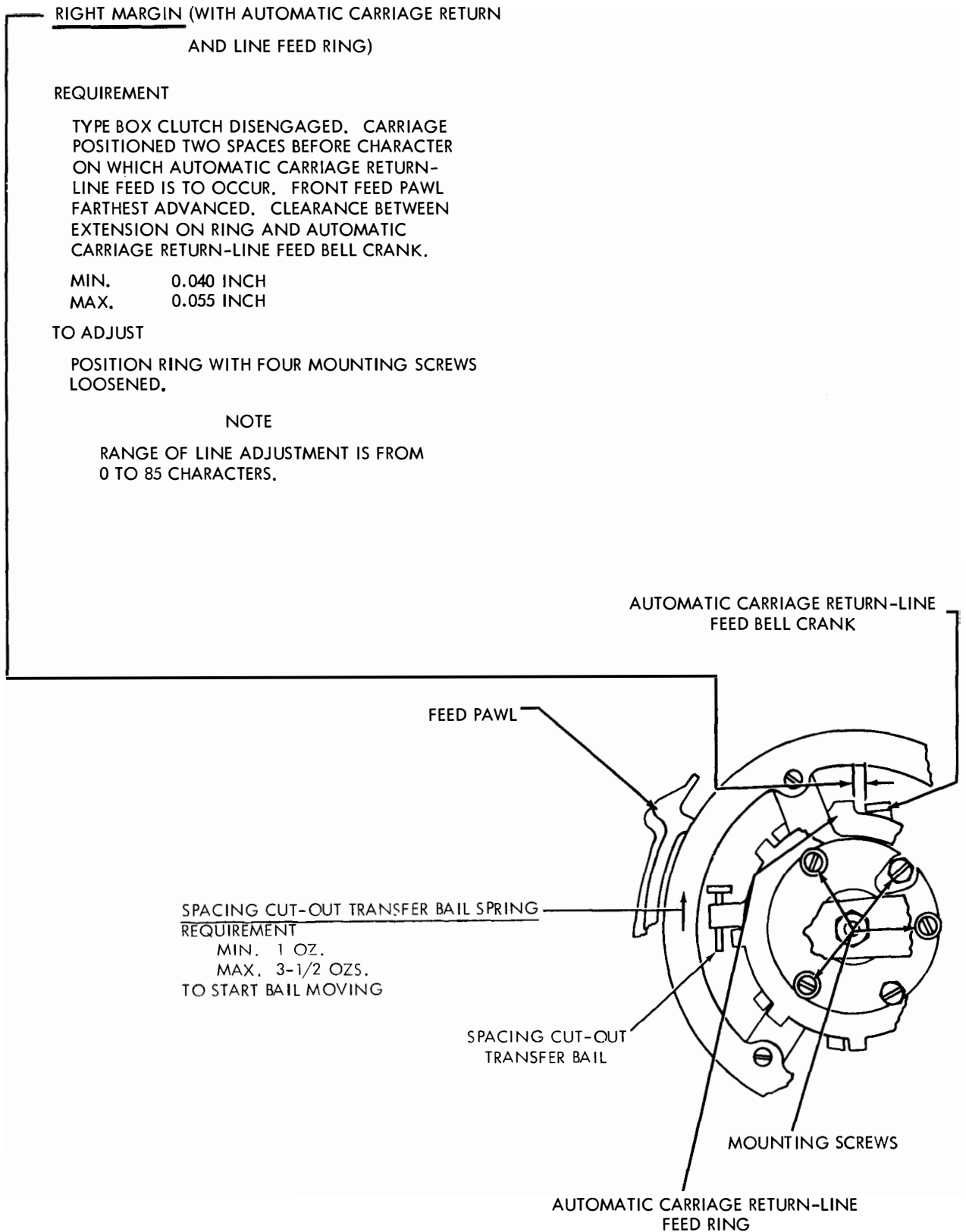
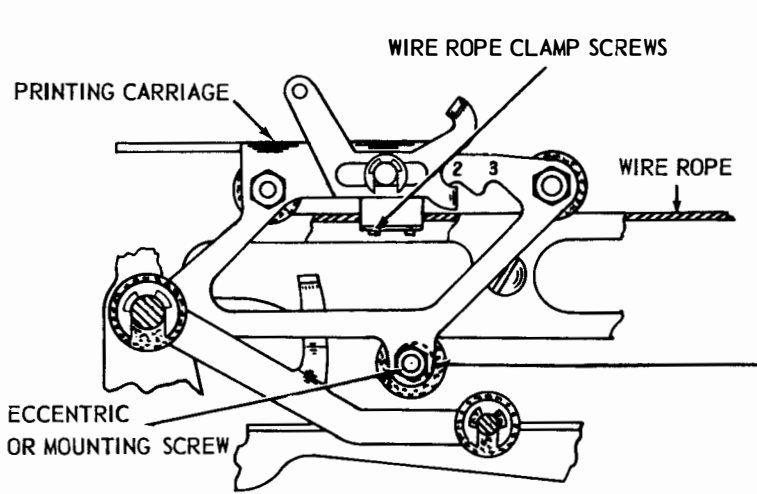


Figure 6-113. Automatic Typewriter, Right Margin, Spacing Suppression and Automatic Carriage Return-Line Feed Mechanisms





PRINTING CARRIAGE LOWER ROLLER

REQUIREMENT

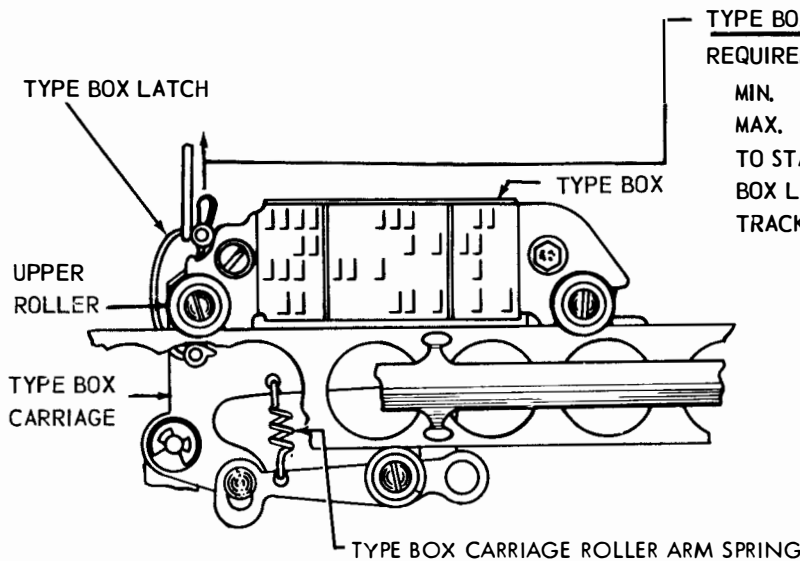
CARRIAGE WIRE ROPE CLAMP SCREWS LOOSENED. PLAY OF CARRIAGE ON TRACK-MIN. WITHOUT BIND, THROUGHOUT TRACK'S FULL LENGTH.

TO ADJUST (ECCENTRIC BUSHING)

POSITION LOWER ROLLER WITH SCREW NUT LOOSENED. KEEP HIGH PART OF ECCENTRIC (CHAMFERED CORNER) TOWARD THE RIGHT.

TO ADJUST (SLIDING SCREW)

POSITION LOWER ROLLER WITH MOUNTING SCREW LOOSENED.



TYPE BOX CARRIAGE ROLLER ARM SPRING

REQUIREMENT

MIN. 28 OZS.

MAX. 36 OZS.

TO START UPPER ROLLER, NEAREST TYPE BOX LATCH, MOVING AWAY FROM CARRIAGE TRACK.

DECELERATING SLIDE SPRING TENSION

REQUIREMENT

PRINTING BAIL IN DOWNWARD POSITION. PRINTING CARRIAGE AND DECELERATING SLIDE ASSEMBLY IN RIGHT HAND POSITION.

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

TO START THE SLIDE MOVING. WITH THE PRINTING CARRIAGE AND DECELERATING SLIDE IN THEIR LEFT HAND POSITION CHECK THE LEFT HAND DECELERATING SLIDE

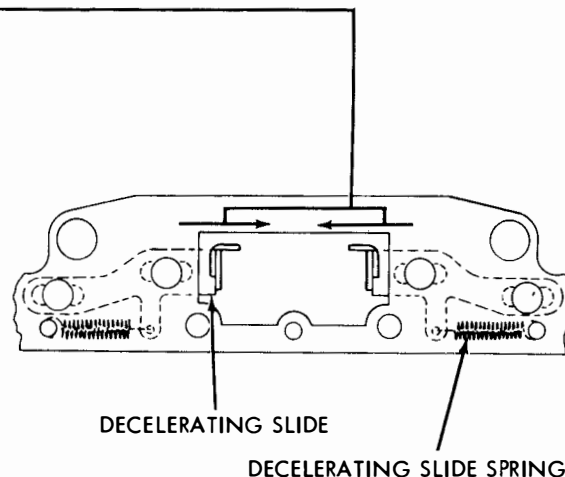
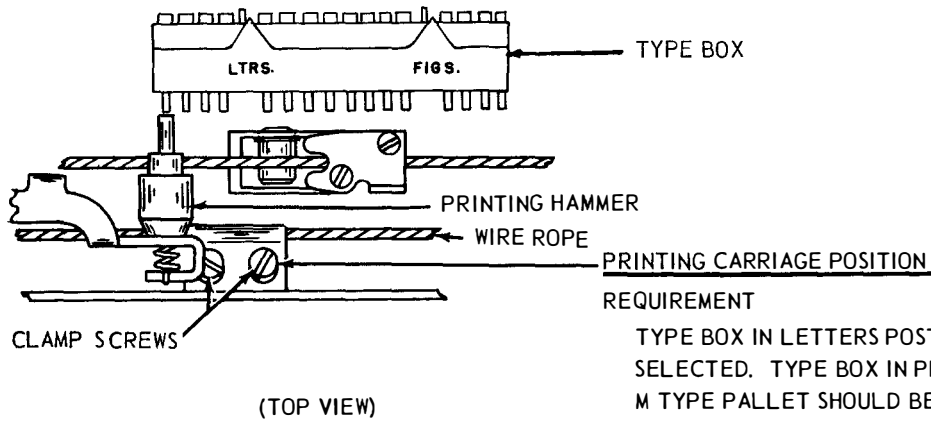


Figure 6-114. Automatic Typewriter, Printing and Type Box Carriage and Decelerating Slide Mechanism



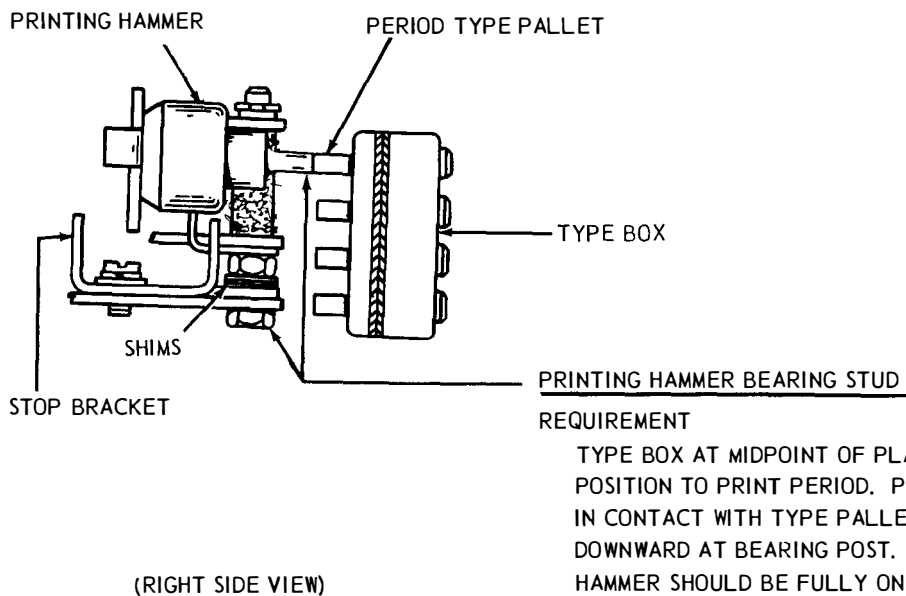
NOTE: CHECK RELATED ADJUSTMENTS, FIGS. 6-101, 6-109, AND 6-113, IF THESE ADJUSTMENTS ARE MADE.

PRINTING CARRIAGE POSITION  
REQUIREMENT

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

TO ADJUST

POSITION PRINTING CARRIAGE ON WIRE ROPE WITH CLAMP SCREWS LOOSENED.



PRINTING HAMMER BEARING STUD  
REQUIREMENT

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

TO ADJUST

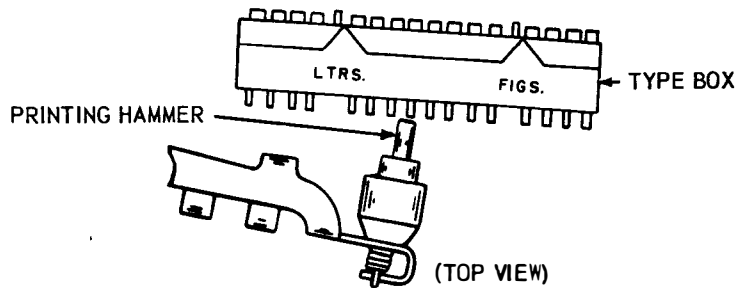
ADD OR REMOVE SHIMS BETWEEN SHOULDER ON BEARING POST AND STOP BRACKET.

Figure 6-115. Automatic Typer, Printing Carriage

SHIFT LINKAGE

REQUIREMENT

CARRIAGE NEAR MIDPOINT OF PLATEN. TYPE BOX IN POSITION TO PRINT 0. MANUALLY BUCKLE RIGHT SHIFT LINKAGE. SHIFT TYPE BOX TO LEFT. FIGURE "9" TYPE PALLET SHOULD BE APPROXIMATELY IN CENTER OF PRINT HAMMER WHEN HAMMER IS JUST TOUCHING "9" TYPE PALLET

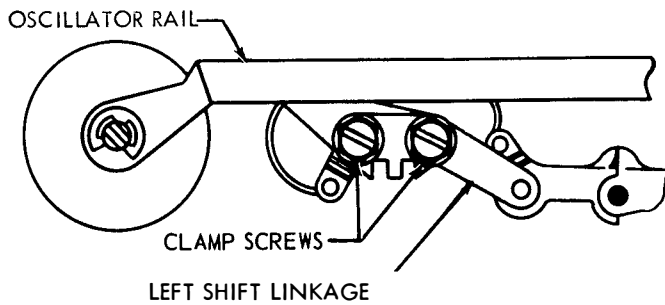


TO ADJUST

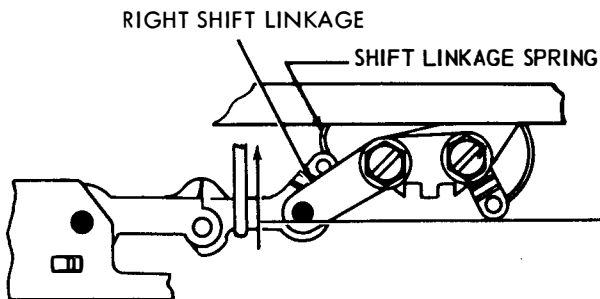
POSITION LEFT SHIFT LINKAGE ON OSCILLATOR RAIL WITH TWO CLAMP SCREWS LOOSENED

TO RECHECK

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



(FRONT VIEW)



SHIFT LINKAGE SPRING TENSION

REQUIREMENT

LINK IN STRAIGHT POSITION

MIN. 6 OZS.

MAX. 14 OZS.

TO START EACH LINK MOVING.

Figure 6-116. Automatic Typer, Shift Mechanism

PRINTING TRACK  
REQUIREMENT

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

MIN. 0.015 INCH MAX. 0.040 INCH

TO ADJUST

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

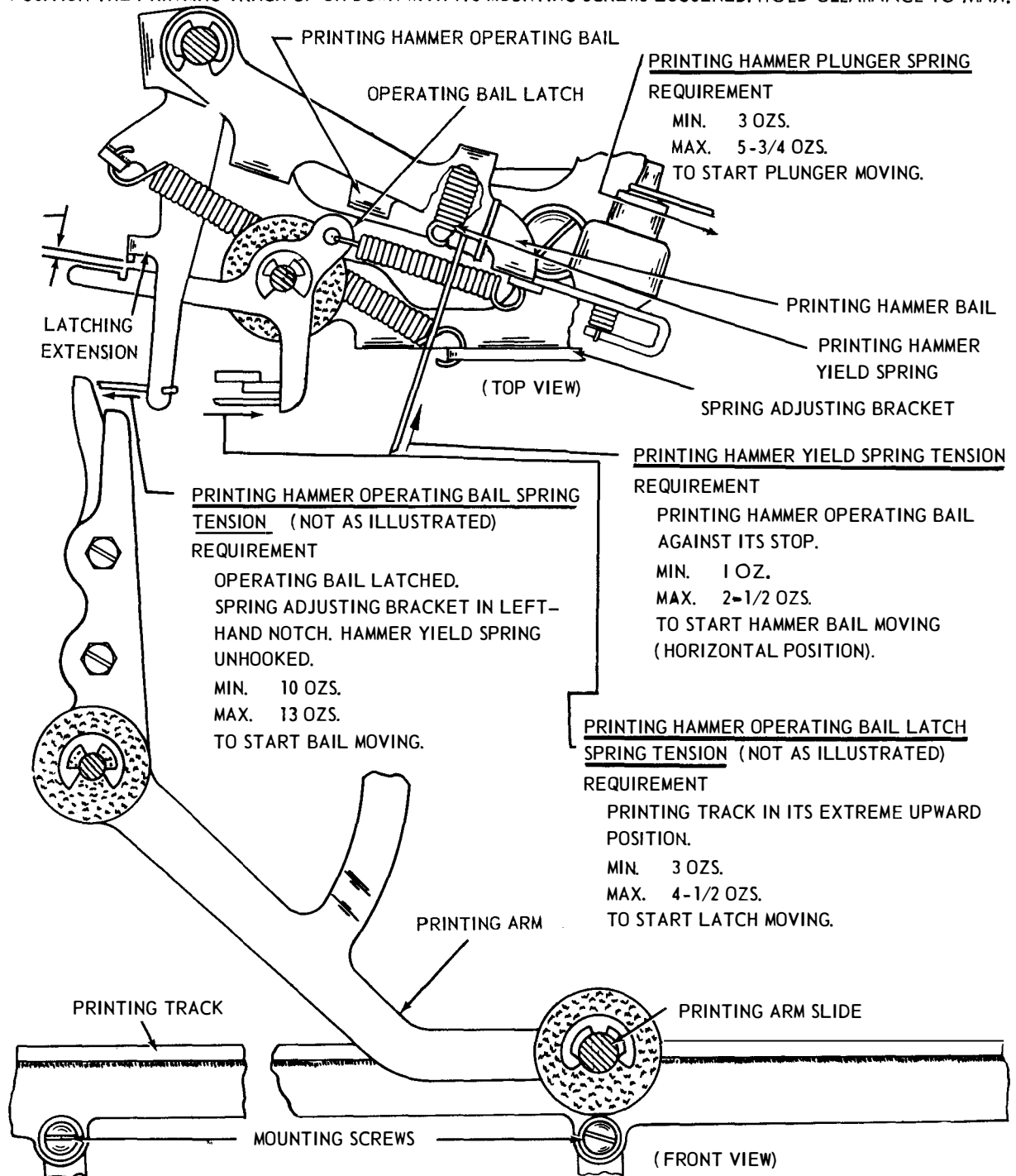


Figure 6-117. Automatic Typewriter, Printing Mechanism

PRINT HAMMER STOP BRACKET ADJUSTMENT

(FOR UNITS EQUIPPED WITH THIN TYPE BOXES — DUMMY TYPE PALLETS OMITTED).

REQUIREMENT

WITH THE TYPE BOX IN THE "M" POSITION AND WITH THE PRINTING BAIL IN ITS MAXIMUM DOWNWARD POSITION, PLACE THE PUSH END OF AN 8 OZ. SCALE TO THE PRINT HAMMER STOP BRACKET AT THE BASE OF THE SPRING EAR FORM AND APPLY A PRESSURE OF 8 OUNCES TOWARD THE PLATEN.

THERE SHOULD BE 0.005 TO 0.035 CLEARANCE BETWEEN THE PRINT HAMMER AND THE "M" TYPE PALLET AT THE END OF THE PLATEN WHICH HAS THE LEAST CLEARANCE.

TO ADJUST

POSITION THE STOP BRACKET BY MEANS OF ITS TWO MOUNTING SCREWS.

PRINT HAMMER STOP BRACKET ADJUSTMENT

(FOR UNITS EQUIPPED WITH THICK TYPE BOXES — DUMMY TYPE PALLETS PRESENT.)

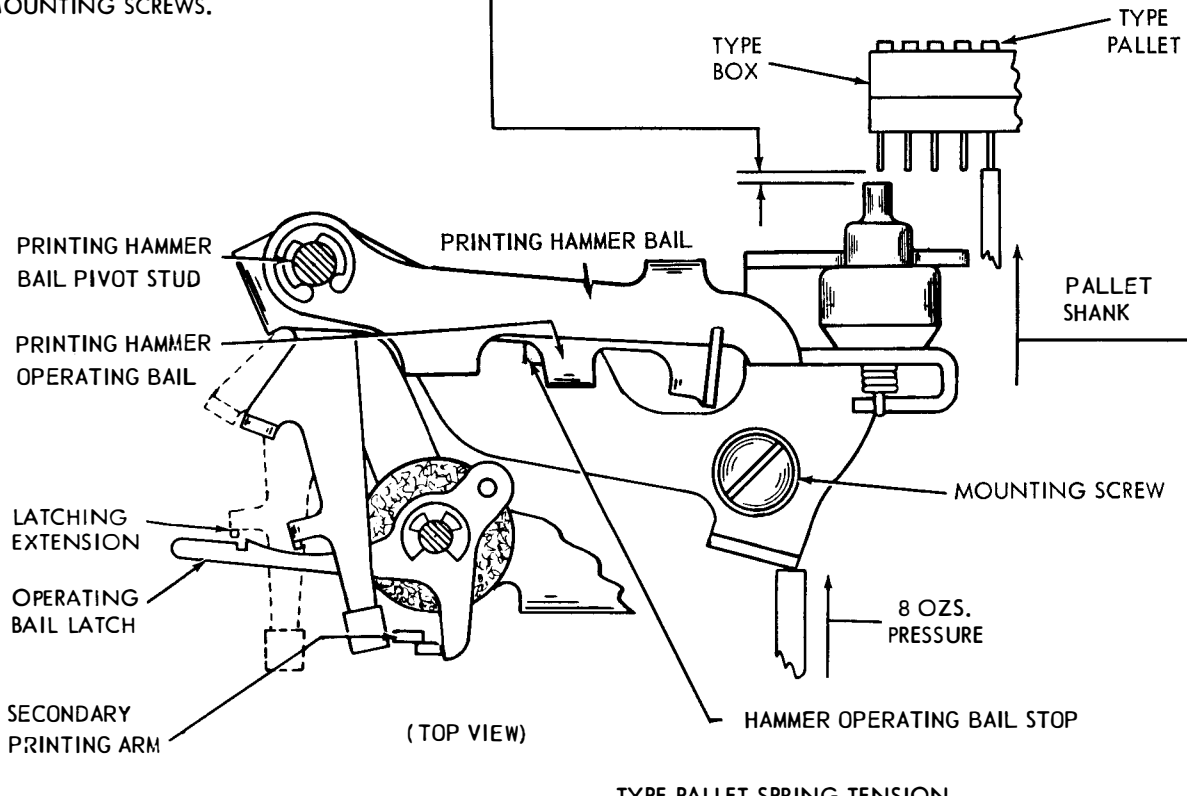
REQUIREMENT

TYPE BOX IN BLANK POSITION AND NEAR CENTER OF PLATEN. PRINTING TRACK IN ITS DOWNWARD POSITION. PRINTING HAMMER HELD AGAINST ITS STOP WITH 8 OZS. OF PRESSURE. CLEARANCE BETWEEN PRINTING HAMMER AND DUMMY TYPE PALLET

MIN. 0.008 INCH  
MAX. 0.020 INCH

TO ADJUST

POSITION THE STOP BRACKET WITH ITS MOUNTING SCREW AND THE PRINTING HAMMER BAIL PIVOT STUD LOOSENED.



TYPE PALLET SPRING TENSION

REQUIREMENT

TYPE BOX REMOVED FROM THE UNIT. 8 OZ. SCALE APPLIED VERTICALLY TO THE END OF THE PALLET SHANK.

MIN. 1/4 OZ.  
MAX. 3/4 OZ.

TO START PALLET MOVING.

Figure 6-118. Automatic Typewriter, Printing Mechanism

NOTE

THE PRINTING ARM ADJUSTMENT SHOULD ALWAYS BE MADE WITH THE PRINTING HAMMER OPERATING BAIL SPRING BRACKET (FIG. 6-117) IN THE NO. 1 POSITION. POSITIONS NO. 2 AND NO. 3 ARE TO BE USED ONLY FOR MAKING MULTIPLE COPIES.

PRINTING ARM

(1) REQUIREMENT

PRINTING TRACK IN MAXIMUM DOWNWARD POSITION.  
 PRINTING HAMMER OPERATING BAIL AGAINST ITS STOP.  
 SOME CLEARANCE BETWEEN SECONDARY PRINTING ARM AND FORWARD EXTENSION OF HAMMER OPERATING BAIL.

MAX. 0.015 INCH

WHEN PRINTING ARM SLIDE IS HELD DOWNWARD OVER EACH PRINTING TRACK MOUNTING SCREW FOR MAXIMUM CLEARANCE

(2) REQUIREMENT

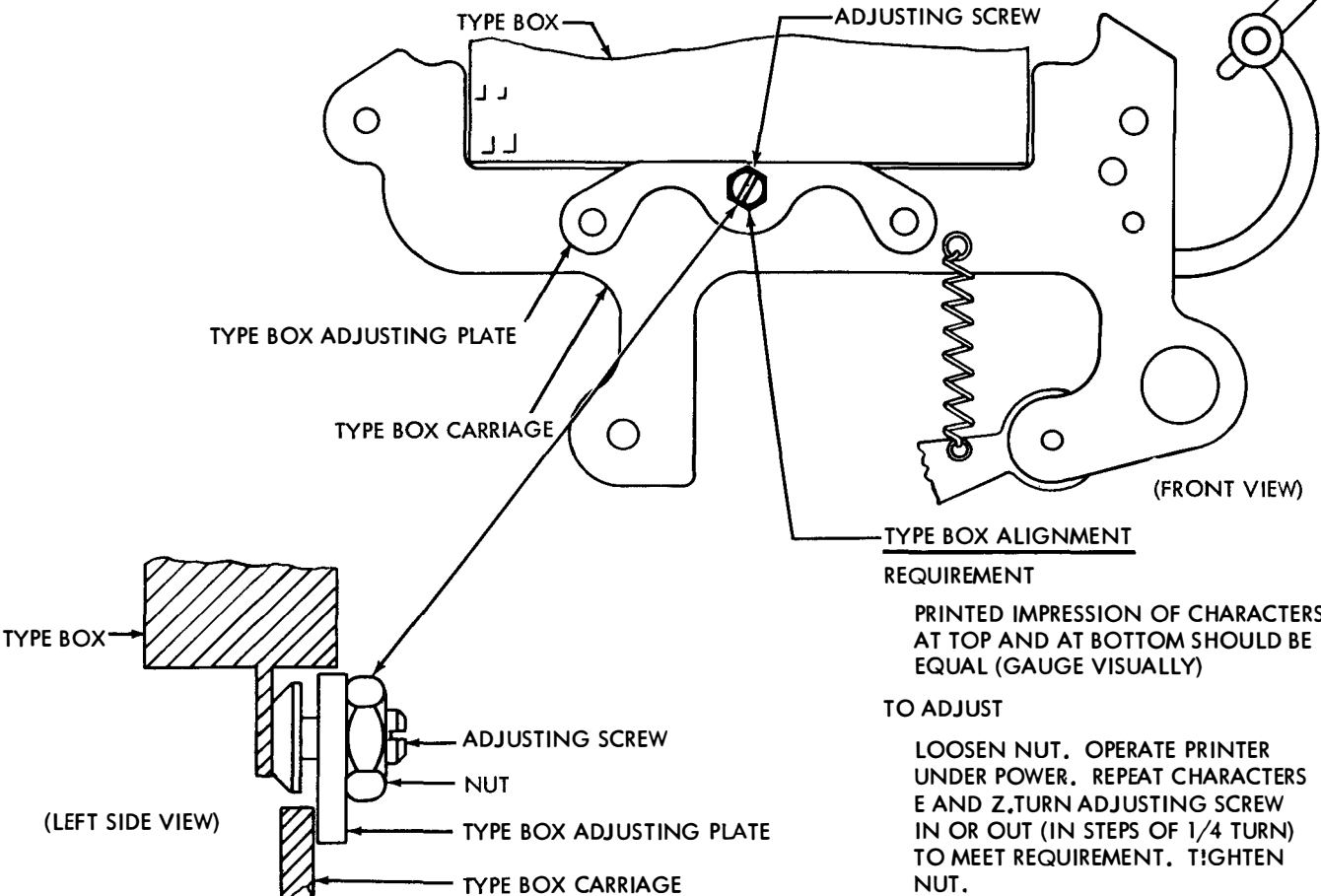
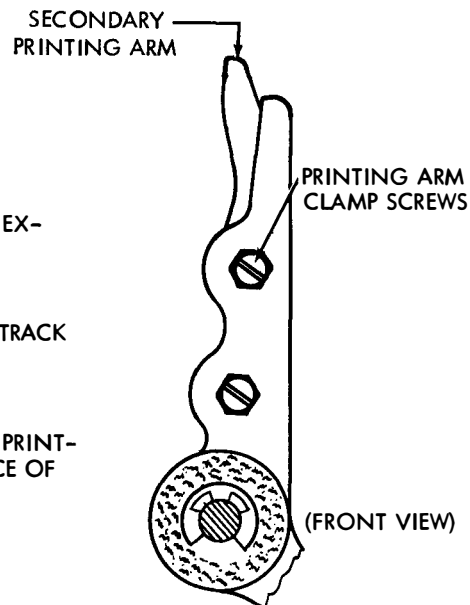
PRINTING TRACK IN UPPERMOST POSITION. LATCHING EXTENSION OF PRINTING HAMMER OPERATING BAIL SHOULD OVER TRAVEL LATCHING SURFACE OF OPERATING BAIL LATCH BY

MIN. 0.006 INCH

CHECK RIGHT AND LEFT POSITION.

TO ADJUST

POSITION SECONDARY PRINTING ARM WITH CLAMP SCREWS LOOSENED



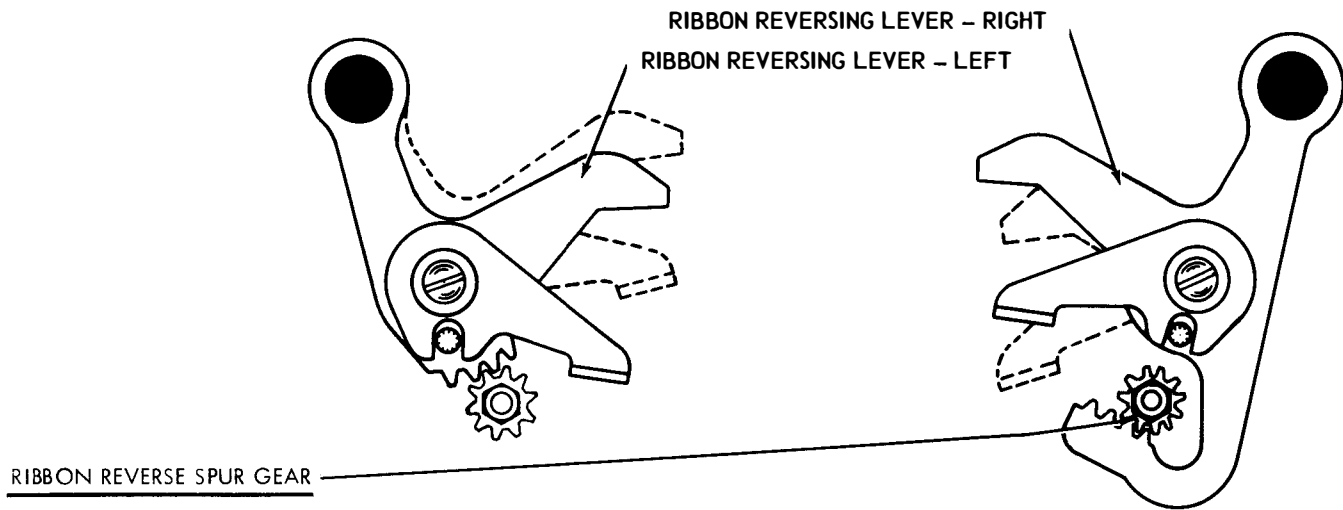
REQUIREMENT

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

TO ADJUST

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

Figure 6-119. Automatic Typewriter, Type Box and Printing Mechanism



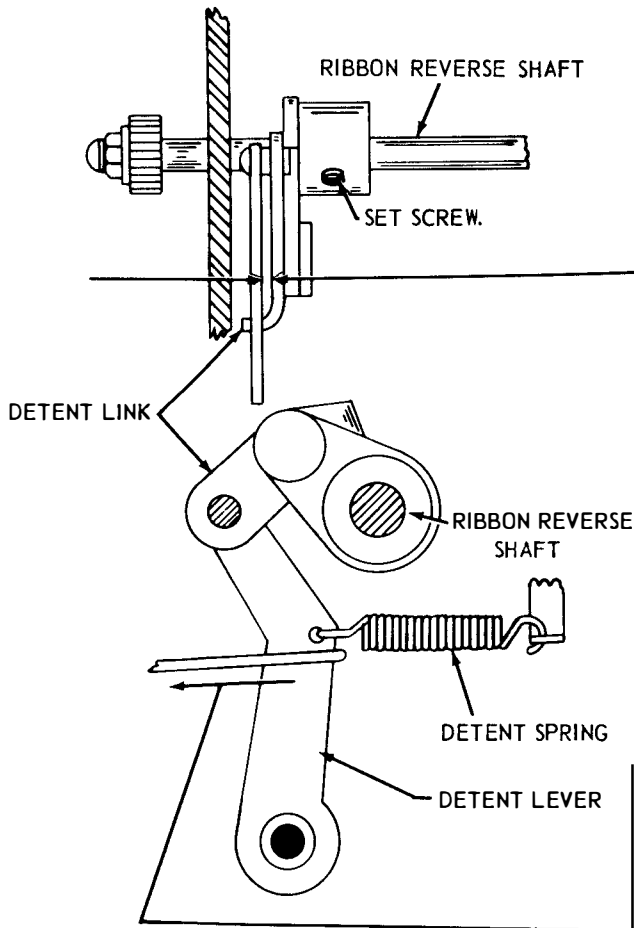
**REQUIREMENT**

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

**TO ADJUST**

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

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



**REQUIREMENT**

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

MIN. SOME - MAX. 0.055 INCH  
WHEN PLAY IN THE LEVER IS TAKEN UP LIGHTLY TOWARD THE RIGHT SIDE OF THE PRINTER.

**TO ADJUST**

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

**REQUIREMENT**

DETENT LINK BUCKLED IN UPWARD POSITION

MIN. 10 OZS. MAX. 18 OZS.

TO START DETENT LEVER MOVING TOWARD REAR.

Figure 6-120. Automatic Typewriter, Ribbon Reverse Mechanism

RIBBON FEED LEVER BRACKET

(1) REQUIREMENT (LEFT-HAND MECHANISM)

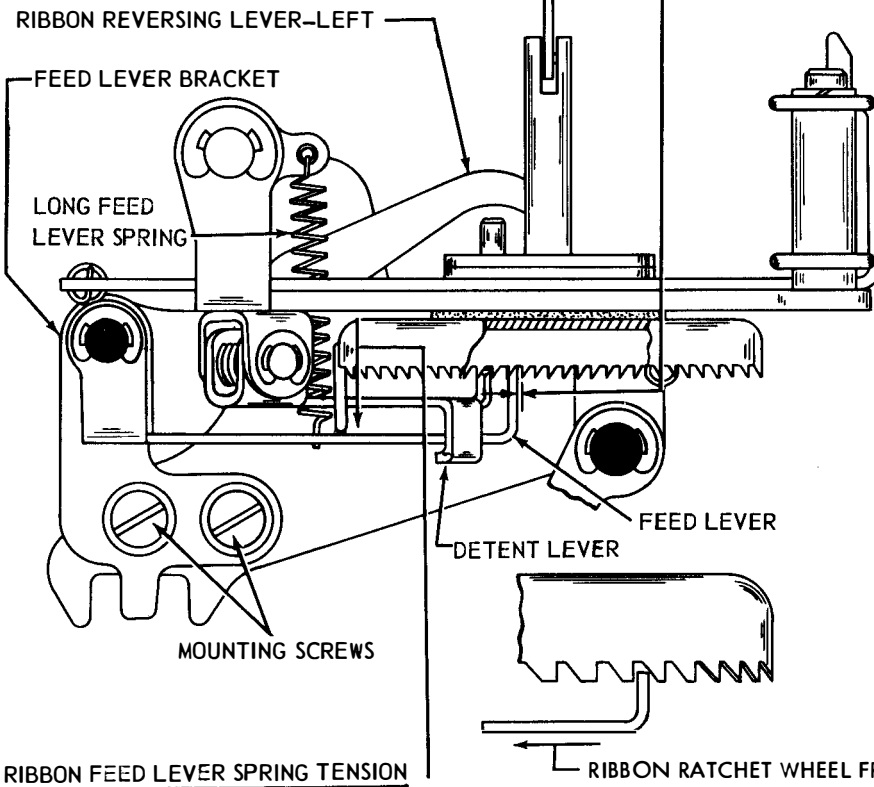
LEFT REVERSING LEVER IN UPWARD POSITION.  
RIBBON MECHANISM IN UPPER POSITION.  
RATCHET WHEEL HELD AGAINST THE DETENT LEVER.  
CLEARANCE BETWEEN THE FRONT FACE OF THE  
FEED LEVER AND THE SHOULDER OF A TOOTH  
ON THE RATCHET WHEEL

MIN. 0.015 INCH

MAX. 0.035 INCH

TO ADJUST

POSITION THE FEED LEVER BRACKET WITH ITS  
MOUNTING SCREWS LOOSENED.



(2) REQUIREMENT (RIGHT-HAND MECHANISM)

RIGHT REVERSING LEVER AND RIBBON  
MECHANISM IN UPWARD POSITION. AD-  
JUST FEED LEVER BRACKET IN THE  
SAME MANNER.

NOTE

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

RIBBON FEED LEVER SPRING TENSION  
REQUIREMENT

RIBBON FEED LEVERS IN UPPERMOST POSITION.  
FOR LONG LEVER: PUSH DOWNWARD NEAR ITS  
SPRING.

FOR SHORT LEVER: PUSH DOWNWARD AT POINT  
NEAR LONG LEVER SPRING.

MIN. 3/4 OZ.

MAX. 2 OZS.

TO START FEED LEVERS MOVING. MEASURE  
ALL FOUR PAWLS.

REQUIREMENT

FEED LEVERS DISENGAGED.

MIN. 3 OZS.

MAX. 7-1/2 OZS.

TO START THE RATCHET WHEEL MOVING.

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

Figure 6-121. Automatic Typewriter, Ribbon Feed Mechanism, Left Side View



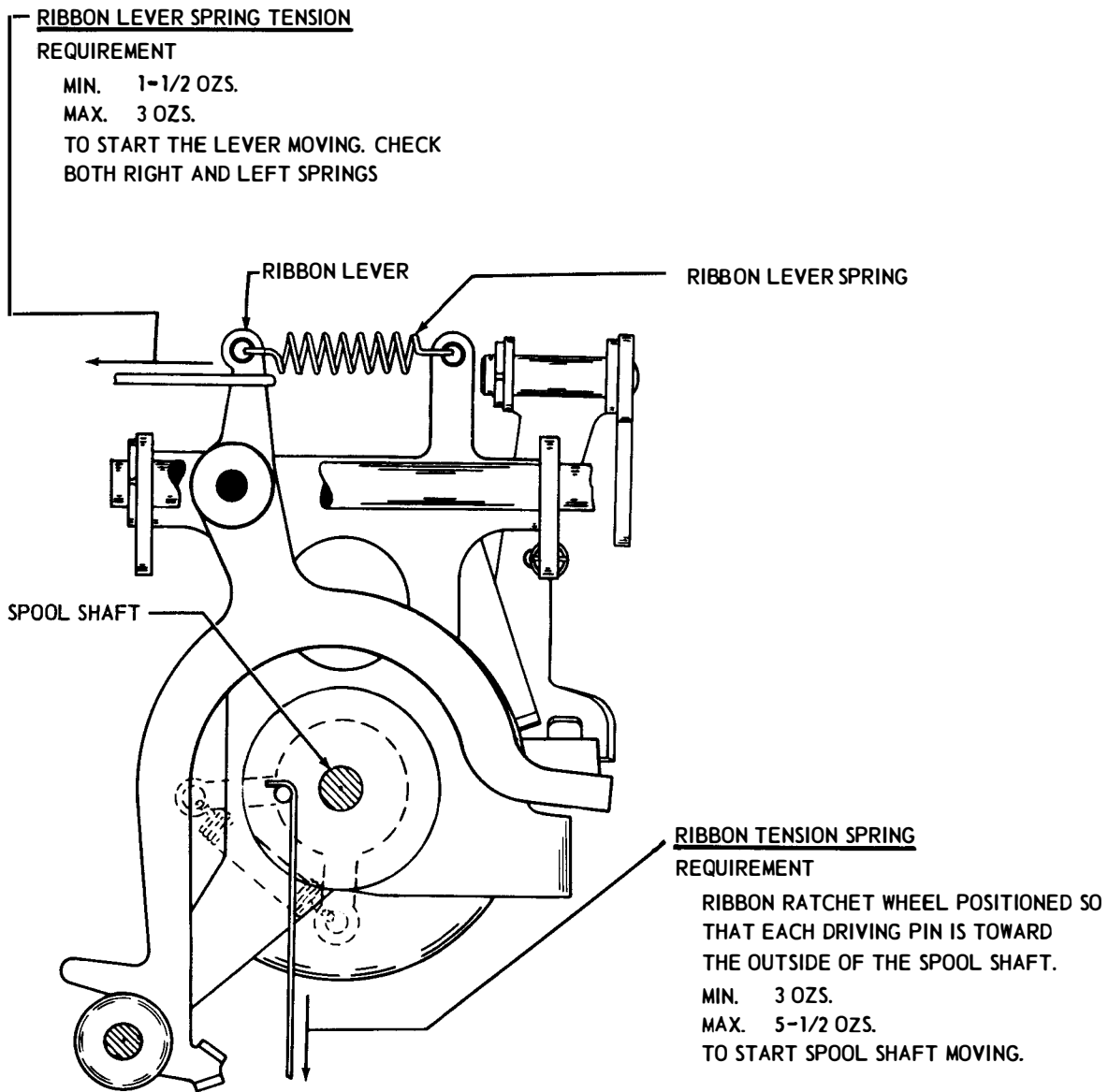


Figure 6-122. Automatic Typewriter, Ribbon Reverse Mechanism, Top View

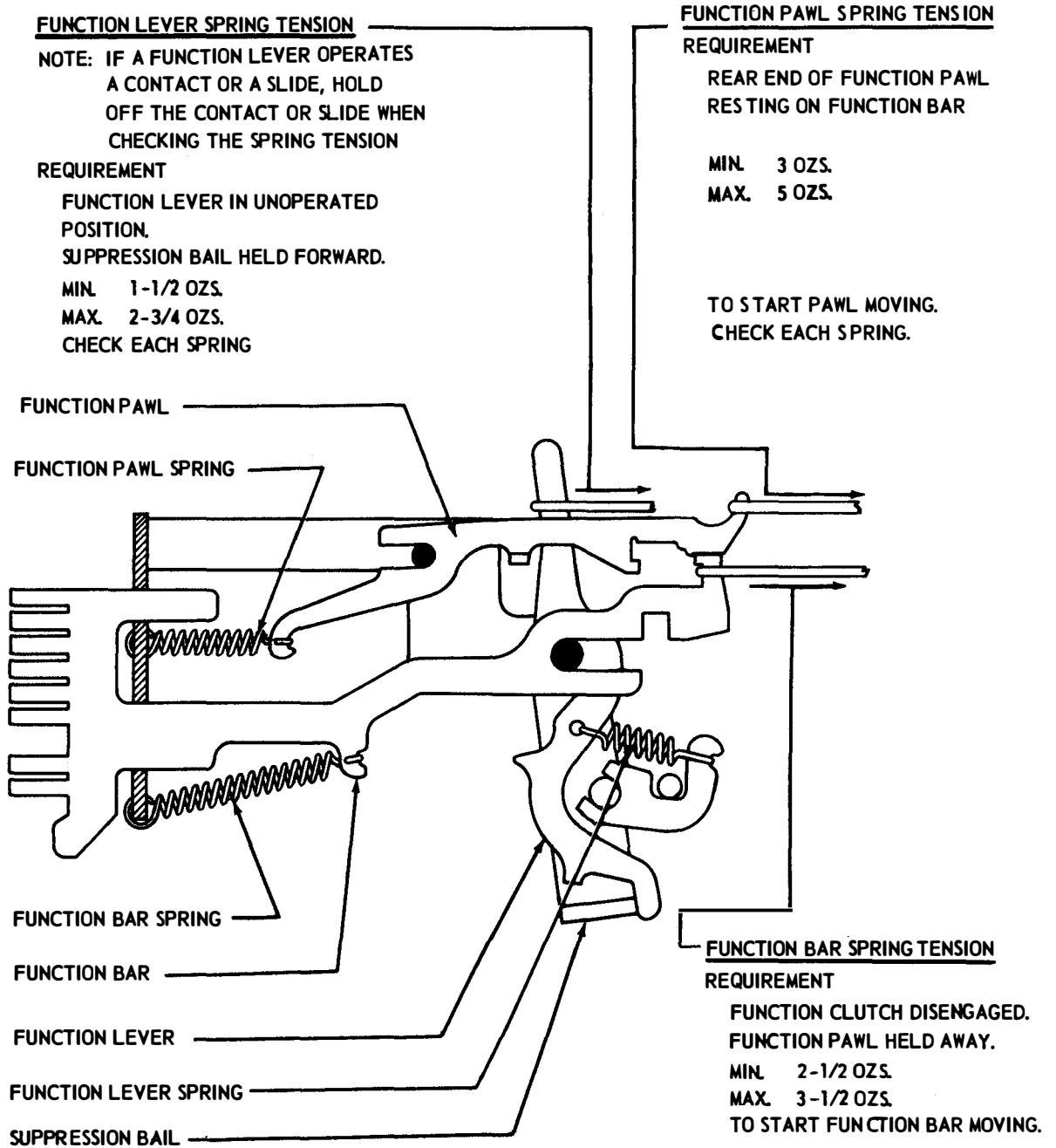


Figure 6-123. Automatic Typewriter, Function Box Mechanism

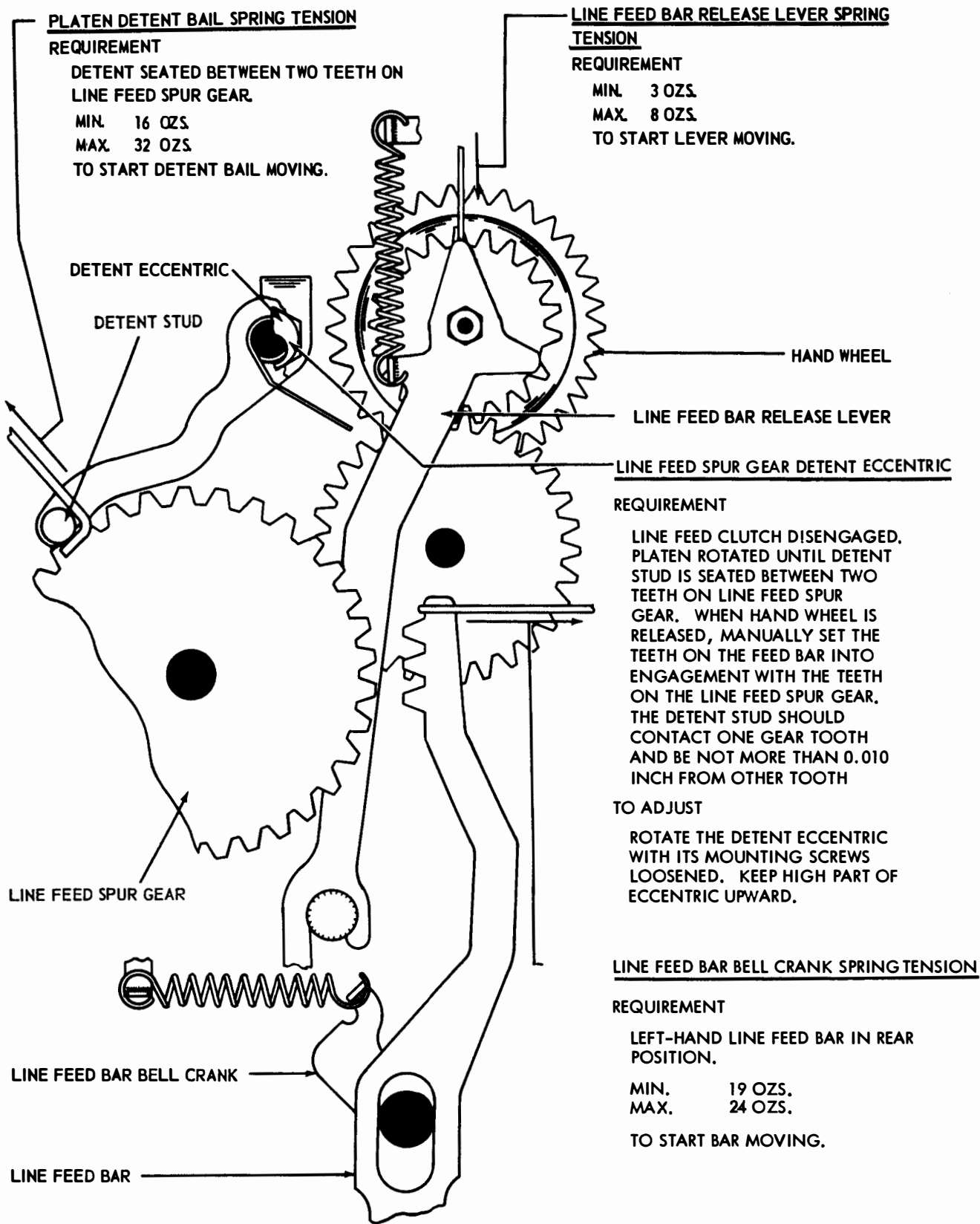


Figure 6-124. Automatic Typewriter, Line Feed Mechanism, Right Side View

STRIPPER BLADE DRIVE CAM POSITION

REQUIREMENT

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

- A. UPWARD DIRECTION
- B. DOWNWARD DIRECTION

TO CHECK

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

TO ADJUST

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

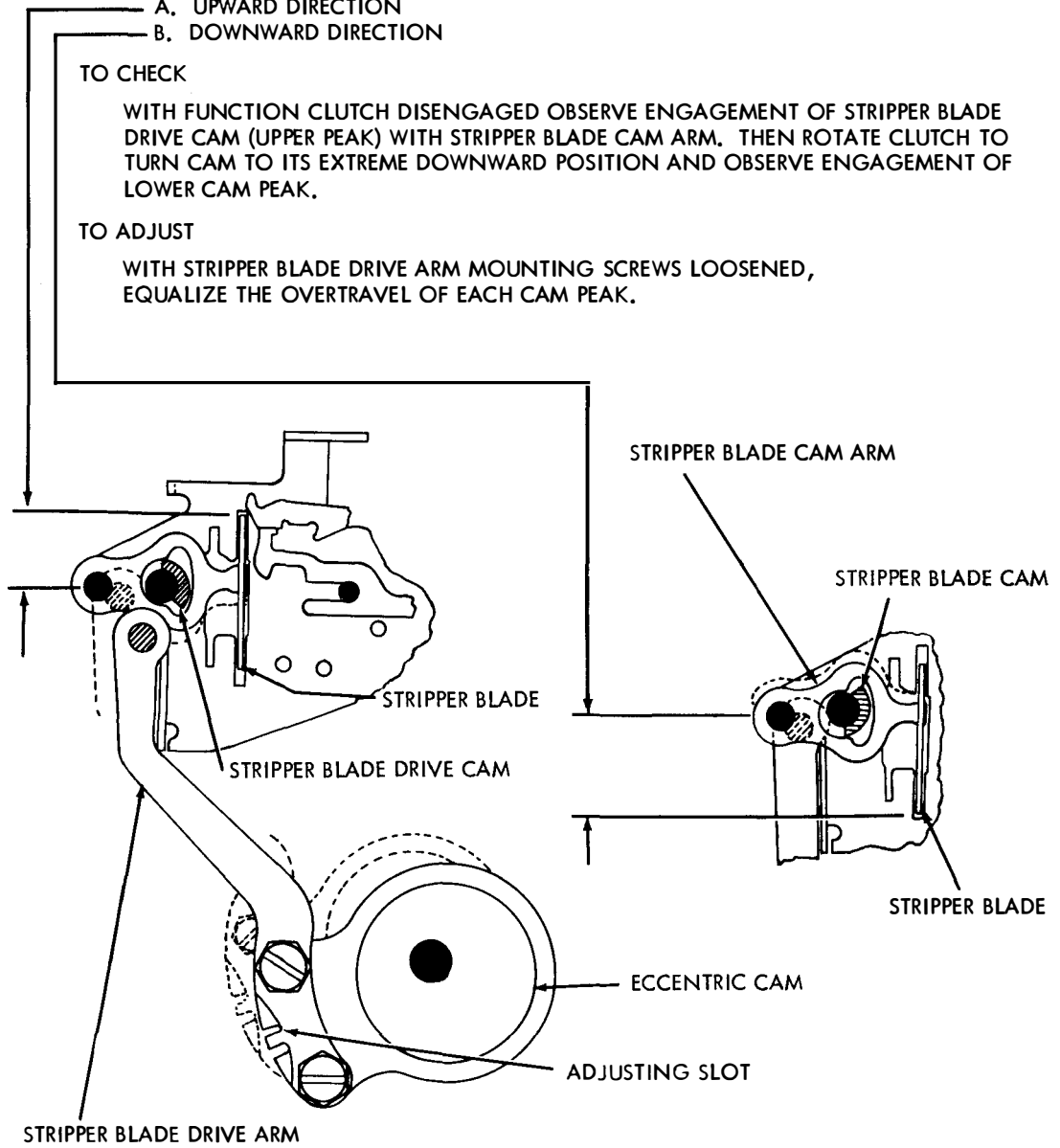


Figure 6-125. Automatic Typewriter, Function Pawl Stripper Mechanism

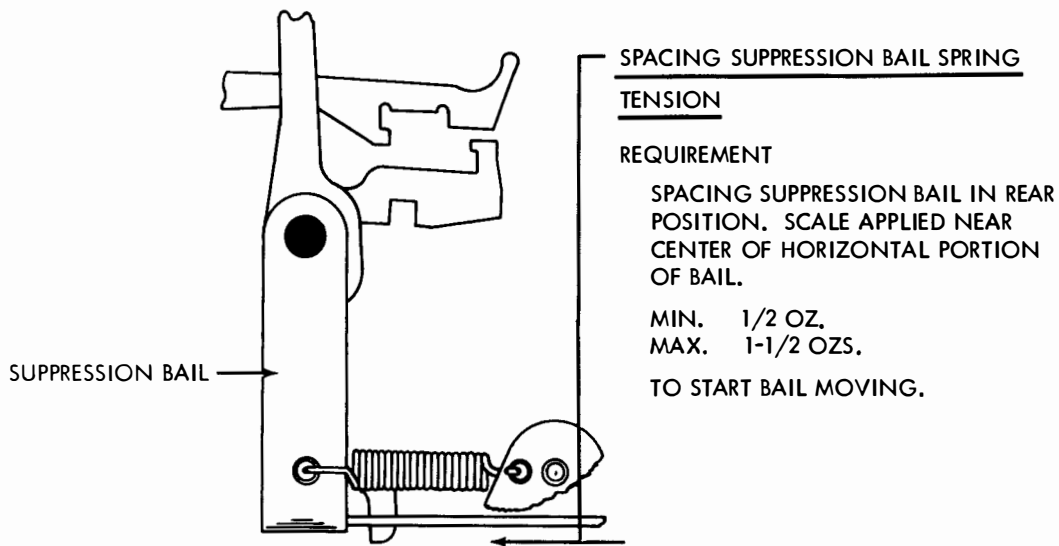


Figure 6-126. Automatic Typewriter, Spacing Suppression Mechanism

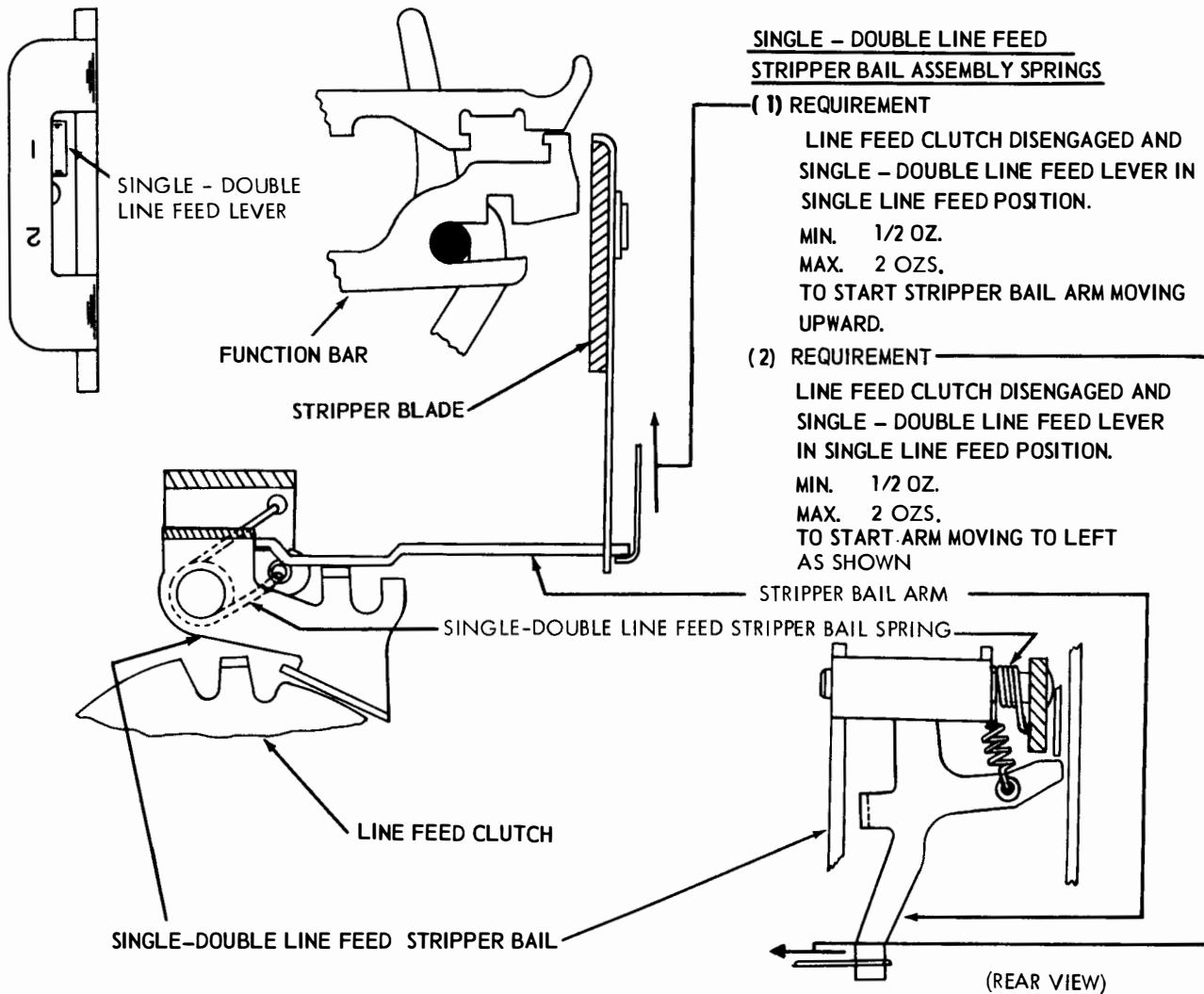
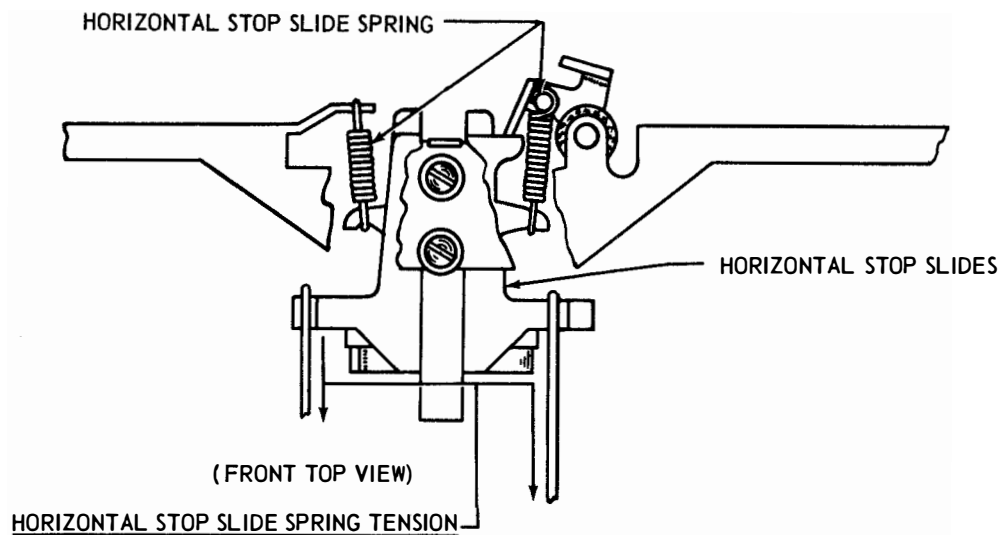


Figure 6-127. Automatic Typewriter, Single-Double Line Feed Mechanism

**REQUIREMENT**

CODE BARS IN MARKING POSITION (LEFT).  
 TYPE BOX CLUTCH ROTATED 1/4 TURN FROM ITS STOP POSITION.  
 HORIZONTAL MOTION DECELERATING SLIDES (FIG. 6-114) HELD AWAY  
 FROM HORIZONTAL STOP SLIDES.

MIN. 1/2 OZ. MAX. 1-1/2 OZS. FOR UPPER AND LOWER SLIDES

MIN. 1-3/4 OZS. MAX. 3 OZS. FOR MIDDLE SLIDE

TO START SLIDE MOVING.

NOTE: WHEN CHECKING UPPER AND LOWER SLIDES, HOLD MIDDLE  
 SLIDE 1/32 INCH FORWARD.

Figure 6-128. Automatic Typewriter, Horizontal Motion Stop and Automatic Carriage Return Mechanism

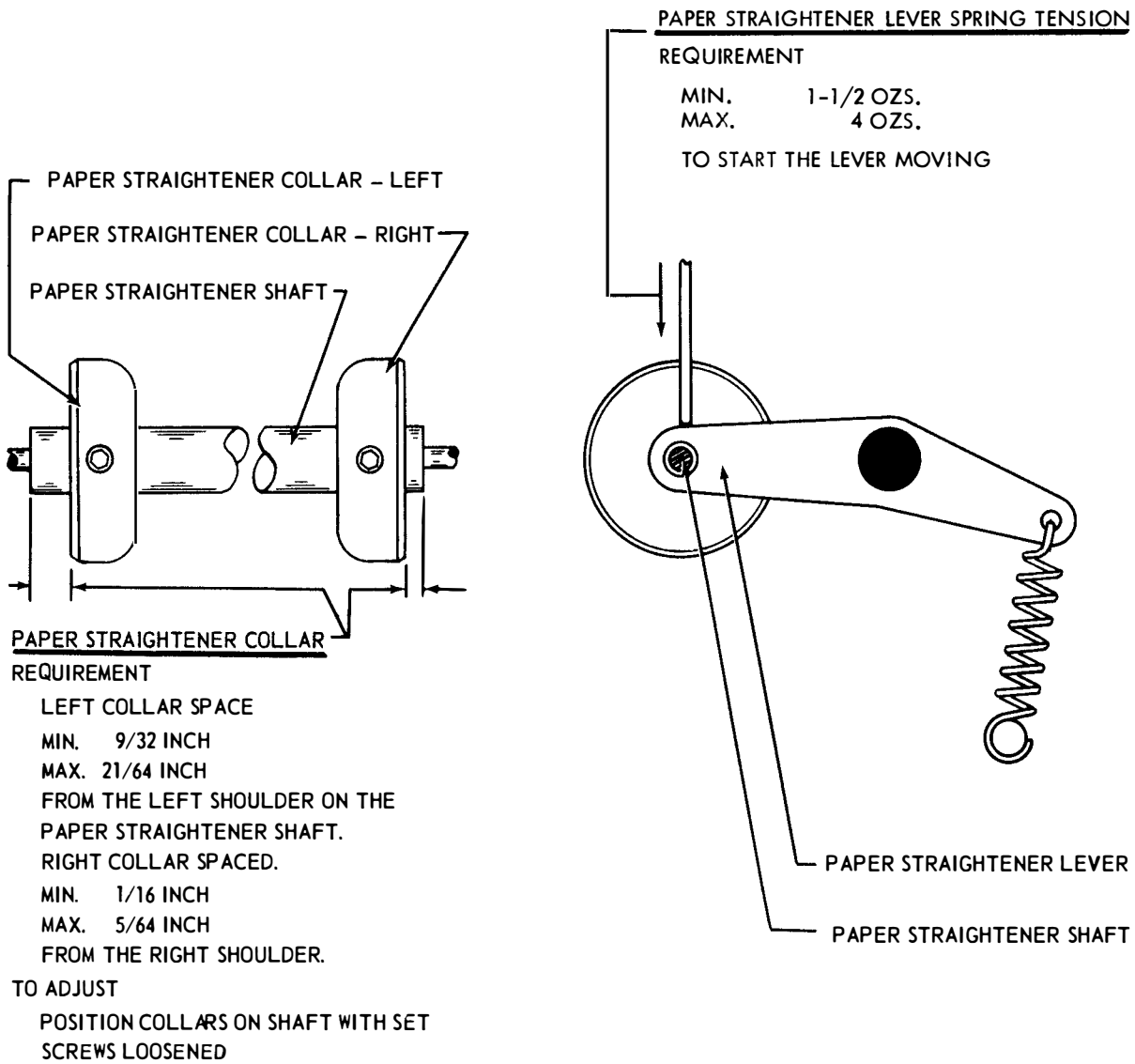


Figure 6-129. Automatic Typewriter, Paper Mechanism

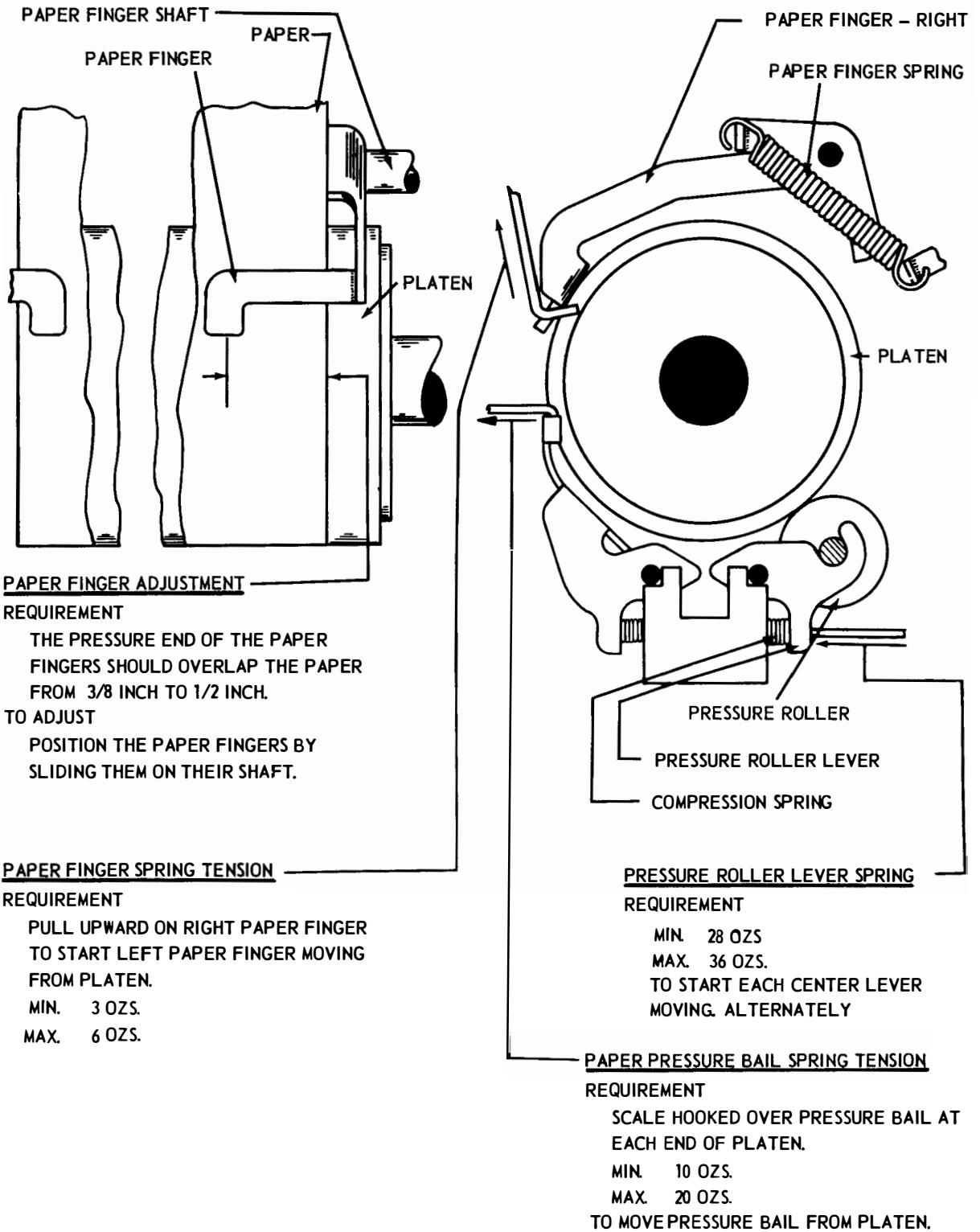
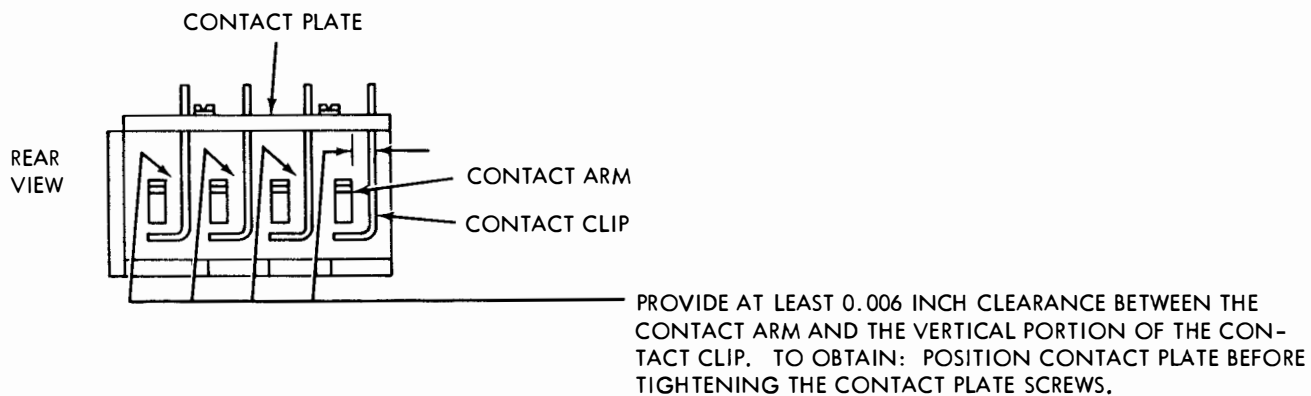


Figure 6-130. Automatic Typewriter, Paper Mechanism

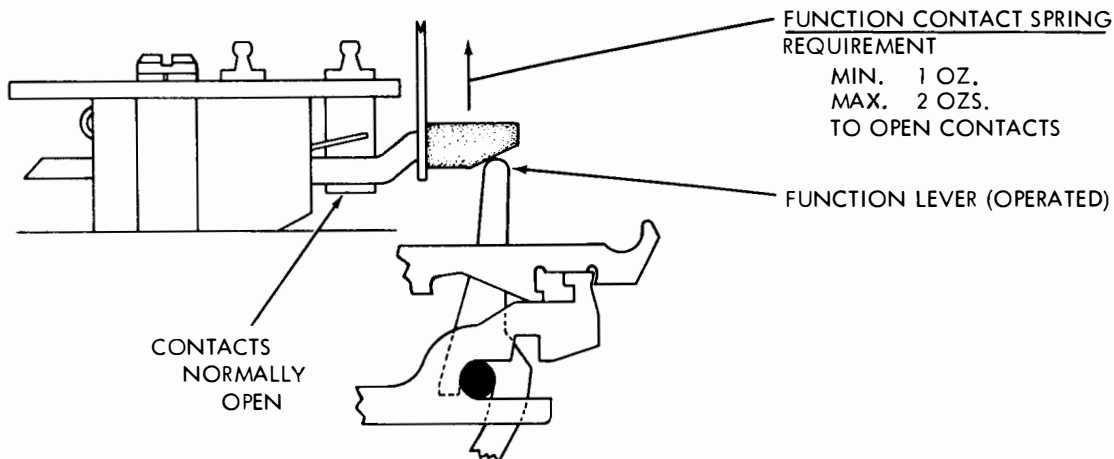
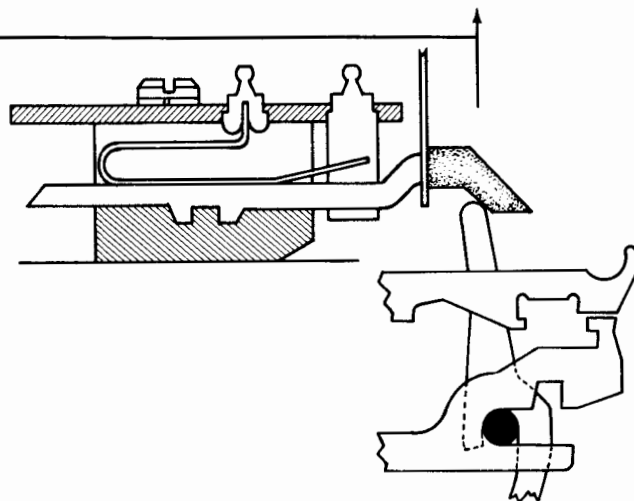




FUNCTION CONTACT SPRING REQUIREMENT

ONE PIECE CONTACT BLOCK

MIN. 1 OZ.  
MAX. 2 OZS.



EARLIER STYLE CONTACT SPRING LUG

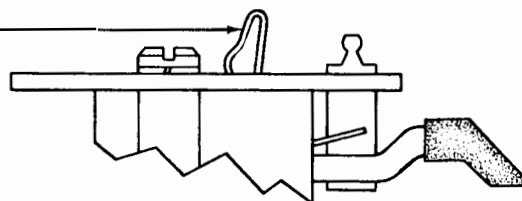


Figure 6-131. Automatic Typer, Function Contacts

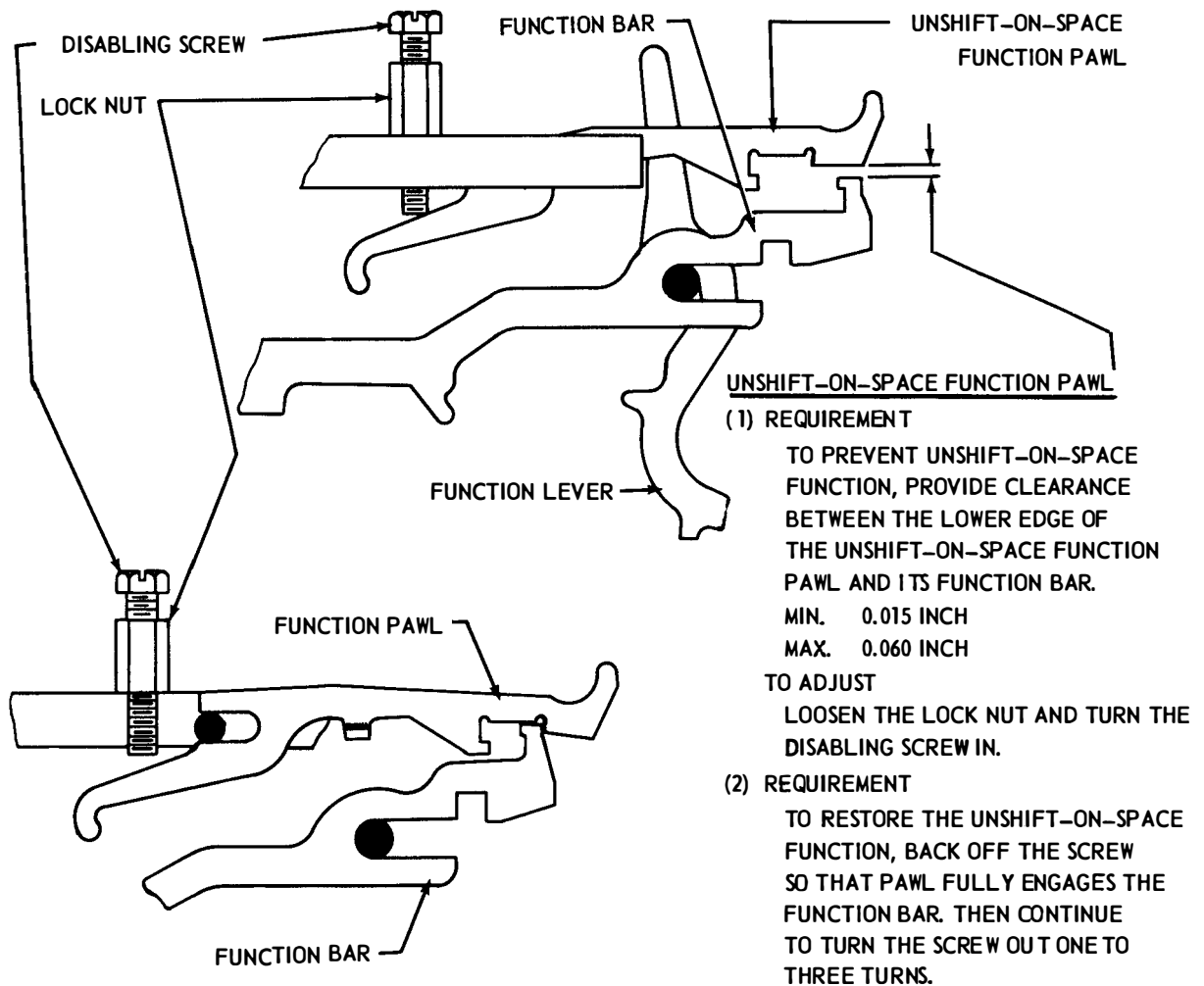


Figure 6-132. Automatic Typewriter, Unshift-on-Space Mechanism, Left Side View

CODE BAR DETENT

REQUIREMENT

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

TO ADJUST

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

CODE BAR DETENT SPRING TENSION

NOTE

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

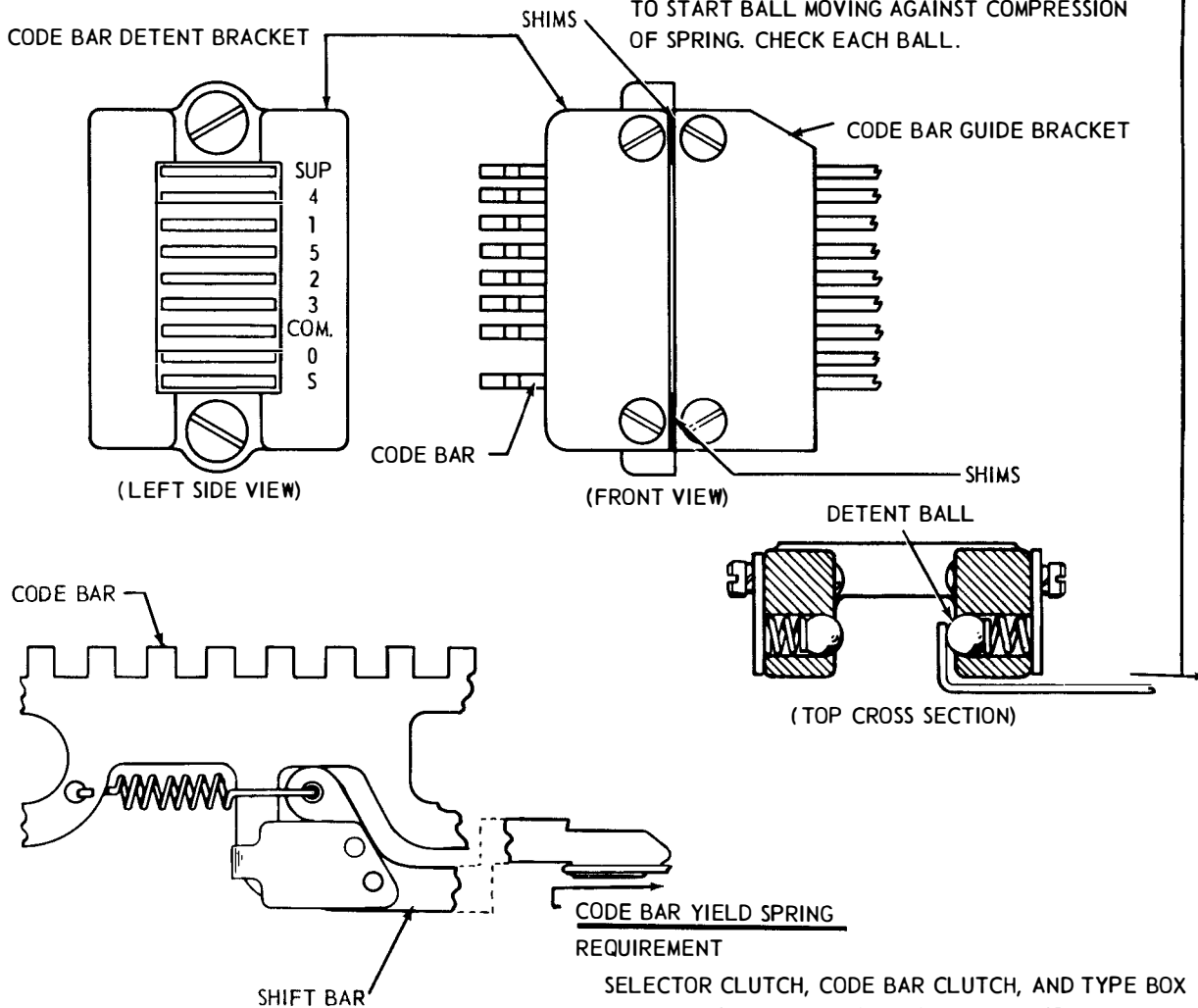
REQUIREMENT

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

MIN. 1-1/2 OZS.

MAX. 3-1/2 OZS.

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



REQUIREMENT

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

MIN. 14 OZS.

MAX. 23 OZS.

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

Figure 6-133. Automatic Typewriter, Code Bar Detent Mechanism

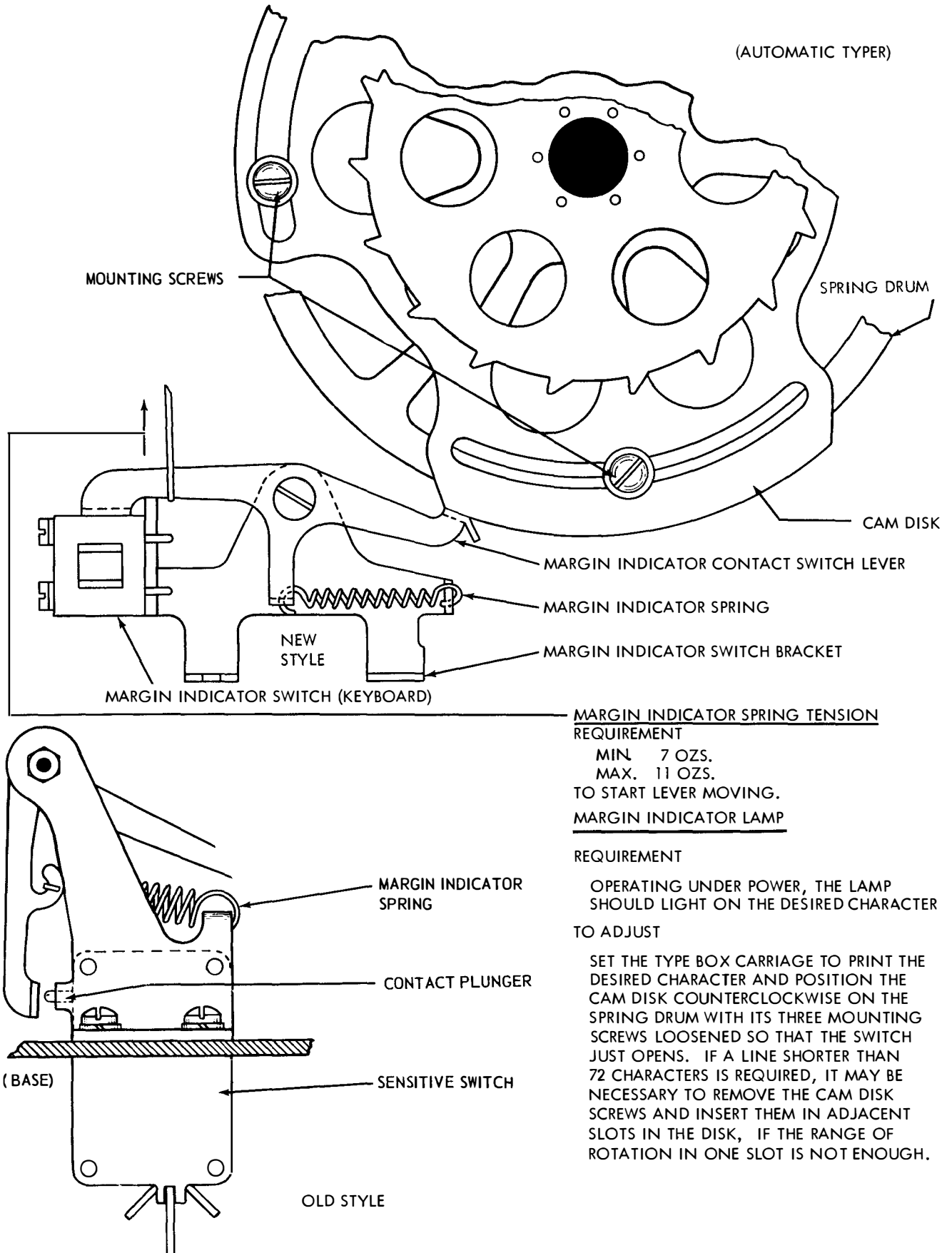
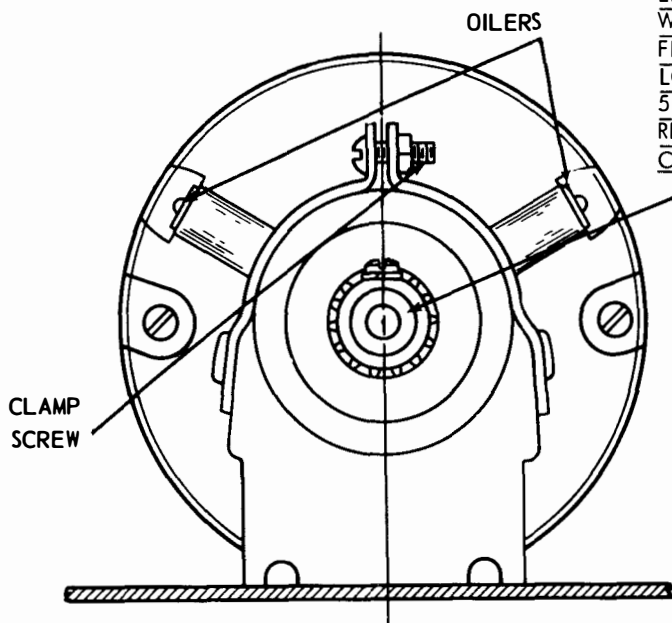


Figure 6-134. Keyboard, Base and Automatic Typewriter, Margin Indicating Mechanism

CAUTION

IF THE MOTOR SHOULD BECOME BLOCKED FOR SEVERAL SECONDS, THE THERMAL CUT-OUT SWITCH WILL BREAK THE CIRCUIT. SHOULD THIS HAPPEN, FIND AND CORRECT THE CAUSE OF THE EXCESS LOAD. ALLOW THE MOTOR TO COOL AT LEAST 5 MINUTES BEFORE MANUALLY DEPRESSING THE RED RESET BUTTON. AVOID REPEATED OPERATION OF BUTTON.



MOTOR SHAFT

SYNCHRONOUS MOTOR POSITIONING REQUIREMENT

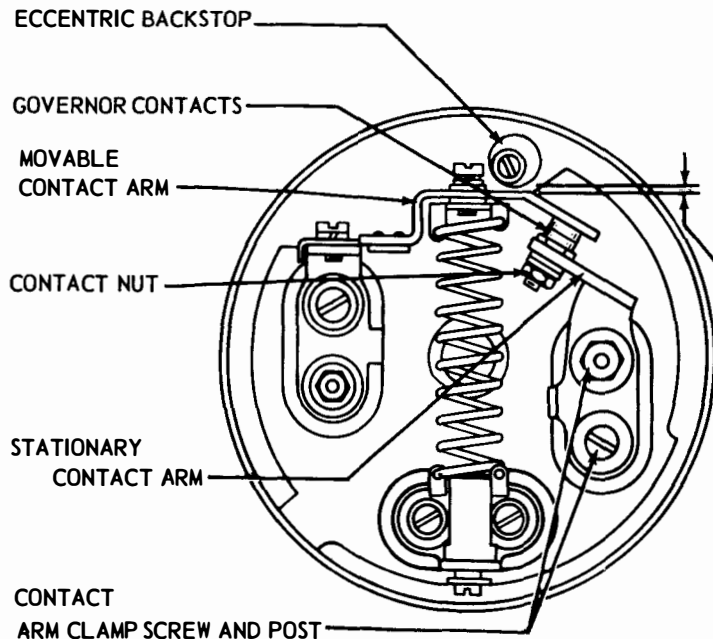
TWO OILERS SHOULD BE UPWARD AND APPROXIMATELY EQUIDISTANT FROM A VERTICAL LINE THROUGH THE MOTOR SHAFT.  
TO ADJUST  
POSITION THE MOTOR WITH THE TWO CLAMPS SCREWS LOOSENED.

Figure 6-135. Synchronous Motor

GOVERNED MOTOR POSITIONING

REQUIREMENT

MOTOR SHOULD BE CENTRALLY POSITIONED IN ITS RUBBERMOUNTS SO AS TO PROVIDE AT LEAST 0.020 CLEARANCE BETWEEN THE MOTOR HOUSING AND THE CRADLE AT THE GOVERNOR END. THE CABLE SHOULD ALSO CLEAR THE GROMMET IN THE SCREEN BY AT LEAST 0.030 INCH.



GOVERNOR CONTACT

REQUIREMENT

THE CONTACTS SHOULD MEET SQUARELY AND NOT OVERLAP MORE THAN 0.010 INCH.

TO ADJUST

POSITION THE STATIONARY CONTACT AND CONTACT ARM WITH THE CLAMP SCREW AND POST LOOSENED.

GOVERNOR CONTACT BACKSTOP

REQUIREMENT

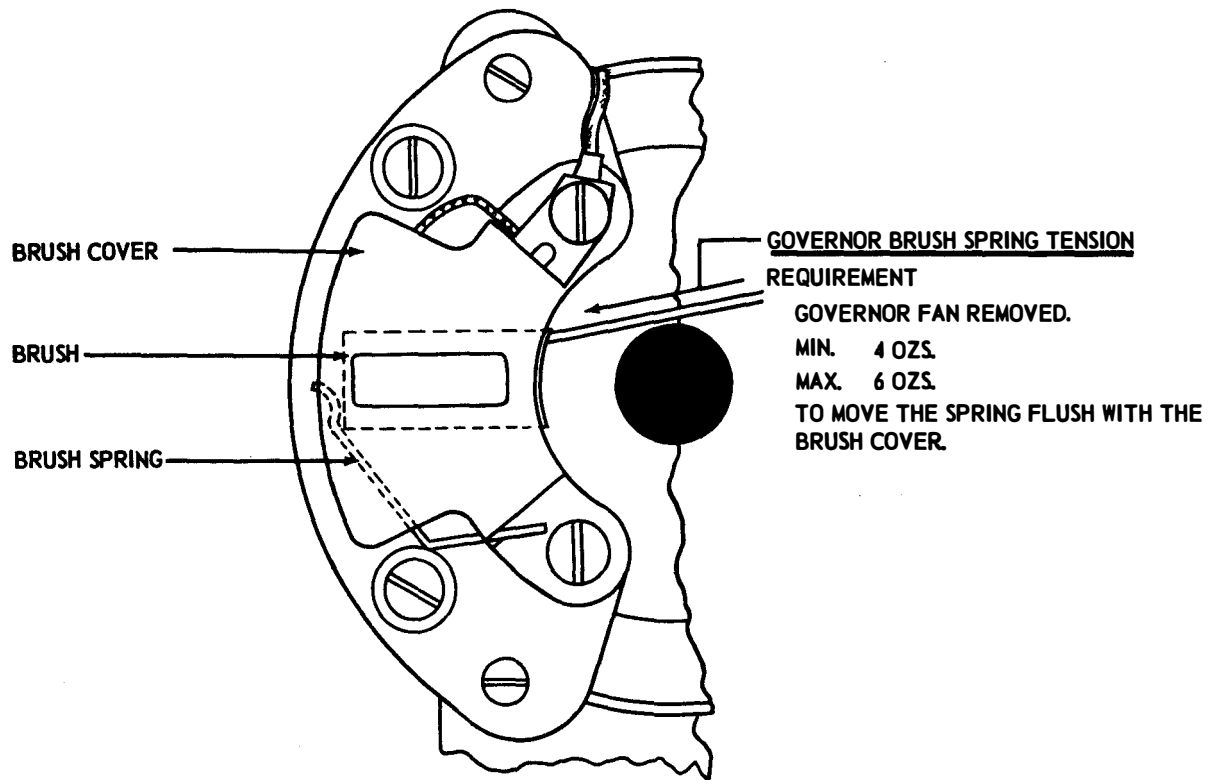
CLEARANCE BETWEEN THE MOVABLE CONTACT ARM AND ITS ECCENTRIC BACKSTOP.

MIN. 0.020 INCH  
MAX. 0.040 INCH

TO ADJUST

ROTATE THE ECCENTRIC BACKSTOP WITH CLAMPING SCREW LOOSENED.

Figure 6-136. Governed Motor



**GOVERNED MOTOR SPEED ADJUSTMENT REQUIREMENT**

WITH THE TARGET ILLUMINATED AND VIEWED THROUGH THE VIBRATING SHUTTERS OF A 120 VPS TUNING FORK, THE SPOTS SHOULD APPEAR STATIONARY WHILE ROTATING

TO ADJUST

STOP THE MOTOR AND TURN THE ADJUSTING SCREW AS INDICATED ON THE GOVERNOR COVER.

**NOTE**

IT IS POSSIBLE TO ADJUST THE MOTOR AT SOME MULTIPLE OF THE CORRECT SPEED. TO CHECK FOR CORRECT SPEED, HAVE THE TYPE BOX CARRIAGE AT THE LEFT MARGIN, SET UP ANY CHARACTER ON THE SELECTOR AND MANUALLY TRIP THE TYPE BOX CLUTCH TRIP LEVER. IF THE UNIT IS EQUIPPED WITH GEAR FOR 60 SPEED OPERATION, IT SHOULD PRINT 70 CHARACTERS IN 10 SECONDS; WITH 75 SPEED GEARS - 44 CHARACTERS IN 5 SECONDS; WITH 100 SPEED GEARS - 57 CHARACTERS IN 5 SECONDS.

Figure 6-137. Motor Governor Brush and Motor Speed

POWER DISTRIBUTION PANEL SB-964/UG

STOP ARMATURE SPRING TENSION

REQUIREMENT

STOP ARMATURE LATCHED  
ON START ARMATURE. STOP  
ARMATURE SPRING UNHOOKED.

MIN. 4-1/2 OZS.

MAX. 6 OZS.

TO PULL SPRING TO INSTALLED LENGTH

STOP ARMATURE SPRING

INTERMEDIATE LEVER SPRING TENSION

REQUIREMENT

WITH THE STOP AND START  
ARMATURES HELD AGAINST  
THEIR CORES, APPLY A GRAM  
SCALE TO THE UNDER SIDE OF  
THE INTERMEDIATE LEVER JUST  
TO THE RIGHT OF ITS DOWNWARD  
EXTENSION AND PUSH UPWARD.

MIN. 10 GRAMS

MAX. 20 GRAMS

TO START THE LEVER MOVING  
UPWARD.

START MAGNET CORE

REQUIREMENT

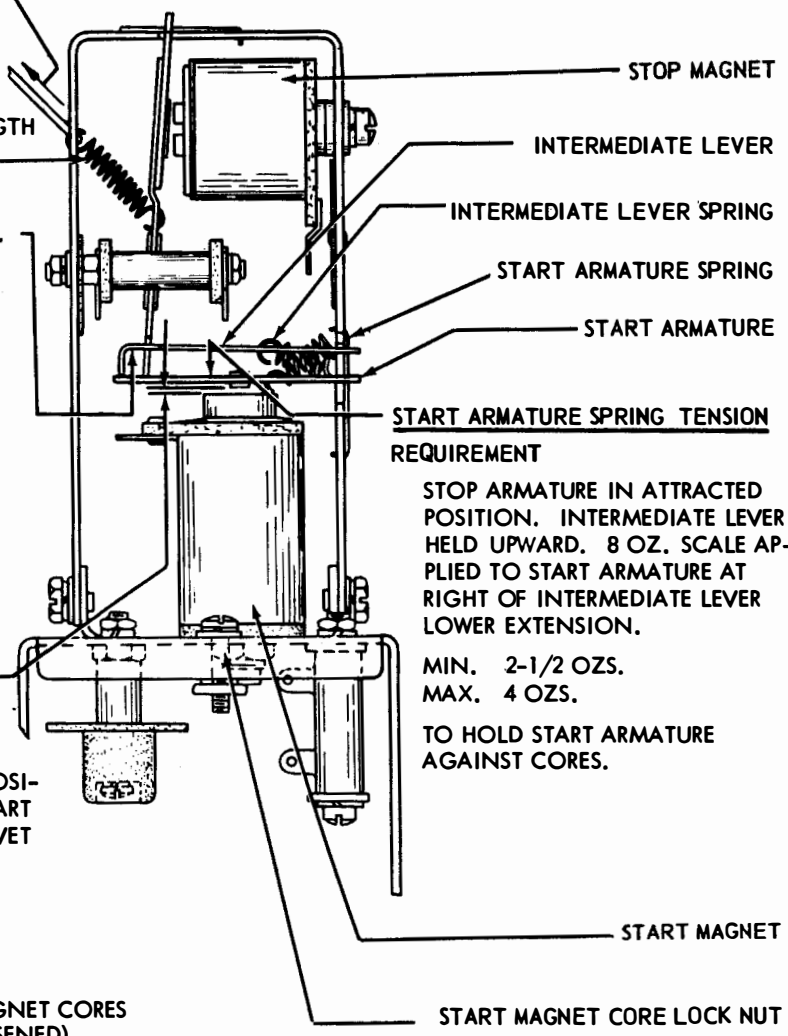
STOP ARMATURE IN UNATTRACTED POSI-  
TION. CLEARANCE BETWEEN THE START  
MAGNET CORE AND ANTI-FREEZE RIVET  
ON THE START ARMATURE.

MIN. 0.010 INCH

MAX. 0.015 INCH

TO ADJUST

ADVANCE OR RETARD THE START MAGNET CORES  
WITH SCREWDRIVER (LOCK NUT LOOSENED).



START ARMATURE SPRING TENSION

REQUIREMENT

STOP ARMATURE IN ATTRACTED  
POSITION. INTERMEDIATE LEVER  
HELD UPWARD. 8 OZ. SCALE AP-  
PLIED TO START ARMATURE AT  
RIGHT OF INTERMEDIATE LEVER  
LOWER EXTENSION.

MIN. 2-1/2 OZS.

MAX. 4 OZS.

TO HOLD START ARMATURE  
AGAINST CORES.

Figure 6-138. Motor Control Assembly

CABINET CY-2538/UG, CY-2539/UG, CY-2320/SGA-3  
(FIGURES 6-139 THROUGH 6-142)

ARMATURE SPRING TENSION

REQUIREMENT

MIN. 1/2 OZ.

MAX. 1 OZ.

TO PUSH THE ARMATURE AGAINST THE CORE (VERTICALLY)

REMOTE SIGNAL BELL

REQUIREMENT

ARMATURE HELD AGAINST THE MAGNET CORE.

CLEARANCE BETWEEN THE ARMATURE BALL AND THE BELL.

MIN. 0.020 INCH

MAX. 0.035 INCH

TO ADJUST

BEND THE ARMATURE EXTENSION JUST BELOW THE ARMATURE SPRING.

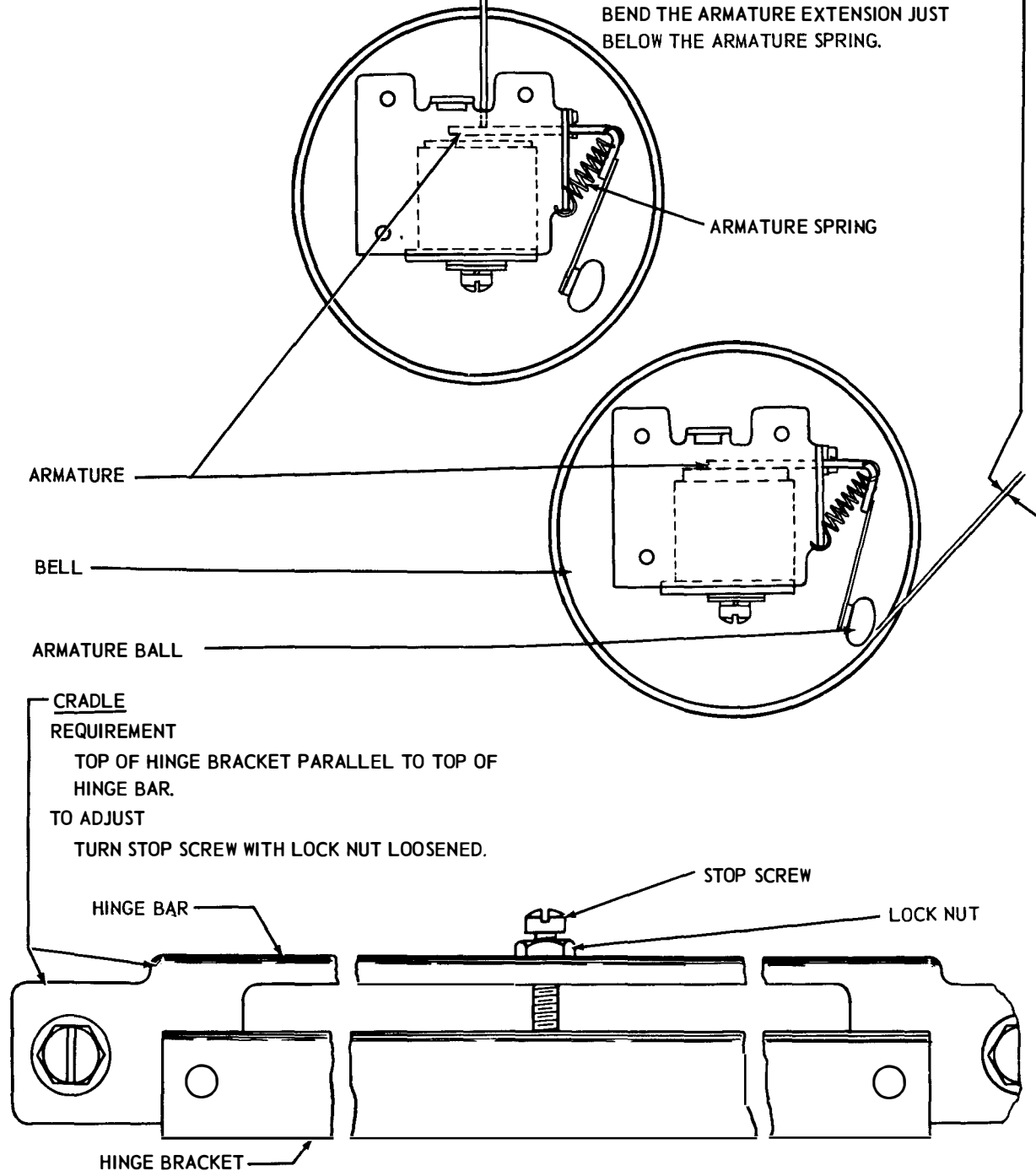
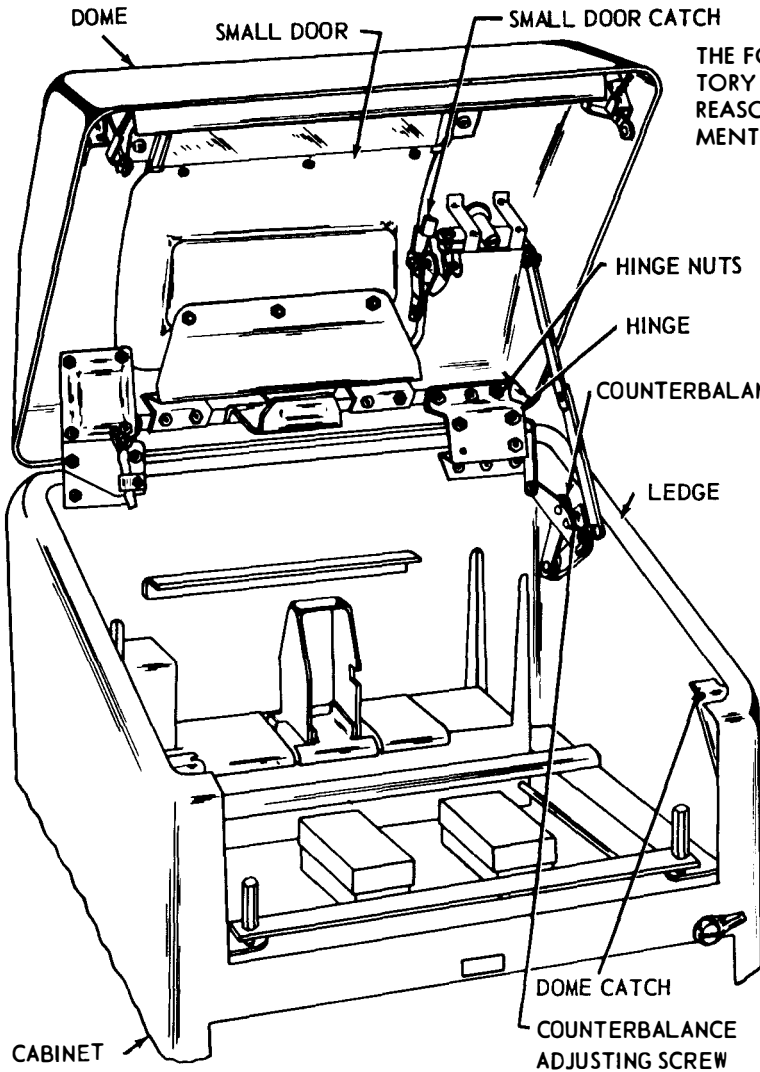


Figure 6-139. Remote Signal Bell and Cradle





**NOTE**

THE FOLLOWING ADJUSTMENTS ARE MADE AT THE FACTORY AND SHOULD NOT BE DISTURBED UNLESS THERE IS REASON TO BELIEVE THAT THE PARTS ARE OUT OF ADJUSTMENT OR HAVE BEEN DISASSEMBLED.

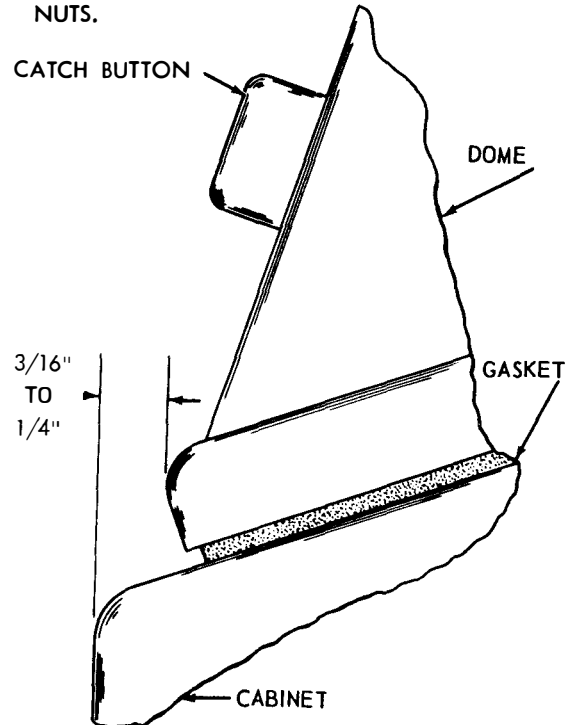
DOME

(1) REQUIREMENT  
THE DOME SHOULD BE CENTERED ON THE CABINET FROM RIGHT TO LEFT AND PLACED  
MIN. 3/16" MAX. 1/4"  
FROM THE FRONT EDGE OF THE CABINET  
TO ADJUST  
POSITION THE DOME WITH THE SIX NUTS WHICH SECURE THE DOME HINGES TO THE DOME LOOSENED. TIGHTEN THE NUTS.

(2) REQUIREMENT  
THERE SHOULD BE A LIGHT-PROOF SEAL AT THE REAR OF THE DOME BETWEEN THE RUBBER GASKET AND THE TOP EDGE OF THE CABINET.

TO ADJUST  
POSITION THE DOME DOWNWARD WITH THE SIX NUTS, WHICH SECURE THE DOME HINGES TO THE CABINET LOOSENED. TIGHTEN THE NUTS.

CATCH BUTTON



DOME CATCH

(1) REQUIREMENT  
THE DOME SHOULD LATCH SECURELY WITH A LIGHT-PROOF SEAL AT THE FRONT OF THE DOME BETWEEN THE RUBBER GASKET AND THE TOP EDGE OF THE CABINET.

(2) REQUIREMENT  
THE DOME CATCH SHOULD UNLATCH WHEN THE CATCH BUTTON IS DEPRESSED NO DEEPER THAN THE OUTER SURFACE OF THE DOME

TO ADJUST  
BEND THE TWO DOME CATCHES

SMALL DOOR CATCH

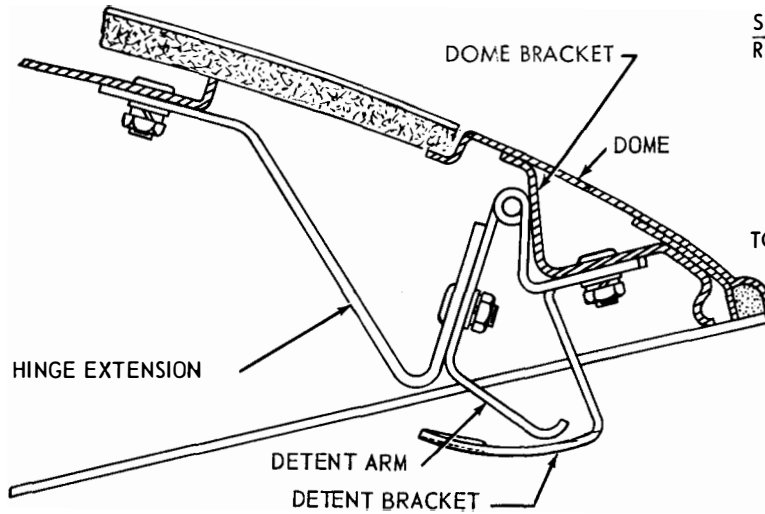
(1) REQUIREMENT  
THE SMALL DOOR SHOULD LATCH SECURELY.

(2) REQUIREMENT  
WHEN THE DOOR IS RELEASED FROM ITS CATCH IT SHOULD SPRING OPEN AT LEAST 1/2 INCH.

TO ADJUST

BEND THE SMALL DOOR CATCH. RECHECK REAR OF DOOR TO MAKE CERTAIN IT IS FLUSH WITH OR SLIGHTLY ABOVE THE DOME.

Figure 6-140. Cabinet



**SMALL DOOR REQUIREMENT**

THE SMALL DOOR SHOULD BE CENTERED FROM RIGHT TO LEFT. IT SHOULD BE POSITIONED SO AS TO PROVIDE A LIGHT TIGHT SEAL BETWEEN THE RUBBER GASKET AND THE EDGE OF THE DOME AT ALL POINTS.

**TO ADJUST**

LOOSEN THE TWO NUTS THAT SECURE DETENT BRACKET TO DOME BRACKET. LOOSEN THE TWO NUTS THAT SECURE DETENT ARM TO HINGE EXTENSION. LOOSEN THE FOUR NUTS THAT SECURE DOOR HINGES TO DOME BRACKET. PUSH HINGES AGAINST DOME BRACKET AND TIGHTEN THE FOUR NUTS THAT SECURE HINGES TO DOME BRACKET. LOOSEN THE THREE NUTS THAT SECURE HINGE EXTENSION TO DOOR. SLIDE DOOR TO ITS EXTREME FORWARD

POSITION AND POSITION CENTRALLY FROM SIDE TO SIDE. TIGHTEN THE THREE NUTS THAT SECURE HINGE EXTENSION TO DOOR. LOOSEN THE FOUR NUTS THAT FASTEN DOOR HINGES TO HINGE EXTENSION. POSITION DOOR FLUSH WITH OR SLIGHTLY ABOVE DOME. TIGHTEN THE FOUR NUTS THAT FASTEN HINGES TO HINGE EXTENSION. AGAIN LOOSEN THE THREE NUTS THAT SECURE HINGE EXTENSION TO DOOR. CLOSE DOOR AND SLIDE IT TOWARD REAR TO PROVIDE A LIGHT TIGHT SEAL AT FRONT CORNERS OF DOOR. TIGHTEN THE THREE NUTS THAT SECURE HINGE EXTENSION TO DOOR.

**DETENT ARM AND DETENT BRACKET**

**(1) REQUIREMENT**

THE DETENT ARM SHOULD BE HORIZONTALLY IN LINE WITH THE UPPER EDGES OF THE TWO HINGES.

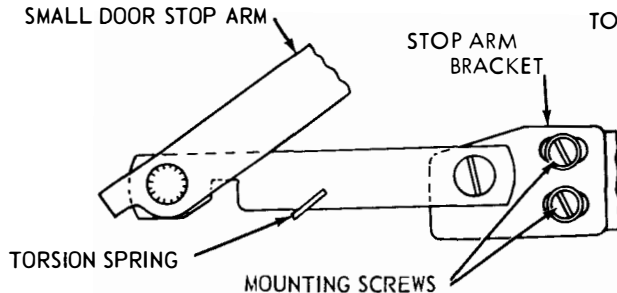
**TO ADJUST**

POSITION THE ARM AND TIGHTEN THE TWO NUTS.

**(2) REQUIREMENT**

WITH THE DOME IN FULLY RAISED POSITION AND THE SMALL DOOR LATCH BUTTON DEPRESSED, THE SMALL DOOR SHOULD NOT OPEN BEYOND ITS DETENT. WITH THE DOME CLOSED, THE SMALL DOOR SHOULD SPRING OPEN AT LEAST 1/2 INCH WHEN RELEASED FROM ITS CATCH:

**SMALL DOOR STOP ARM**



**TO ADJUST**

POSITION THE DETENT BRACKET AND TIGHTEN THE TWO NUTS. IF NECESSARY REPOSITION THE DETENT ARM. RECHECK ALL NUTS FOR TIGHTNESS.

**SMALL DOOR STOP ARM REQUIREMENT**

STOP ARM SHOULD BE FREE OF BINDS WHEN DOOR IS OPENED OR CLOSED.

**TO ADJUST**

LOOSEN THE STOP ARM BRACKET MOUNTING SCREWS. CLOSE THE DOOR. DISCONNECT THE TORSION SPRING. ALIGN STOP ARM FOR FREENESS AND TIGHTEN MOUNTING SCREWS WITH DOOR CLOSED. REPLACE TORSION SPRING.

**COUNTERBALANCE REQUIREMENT**

THE DOME SHOULD REMAIN IN ITS MAXIMUM OPEN POSITION AND NOT CLOSE UNLESS MOVED MANUALLY

**TO ADJUST**

TURN THE SPRING ADJUSTING SCREW. (FIGURE 6-140)

Figure 6-141. Cabinet

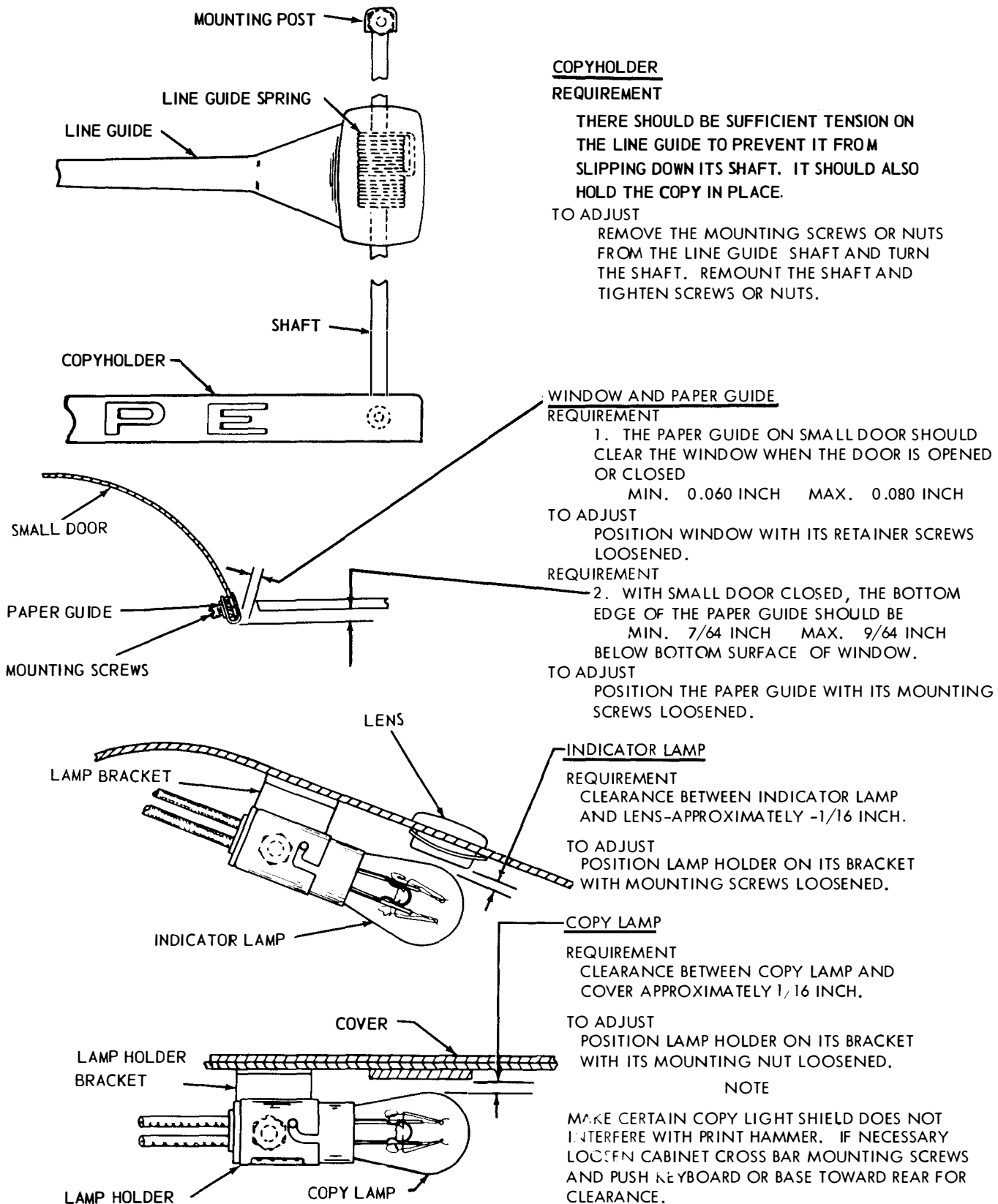


Figure 6-142. Cabinet

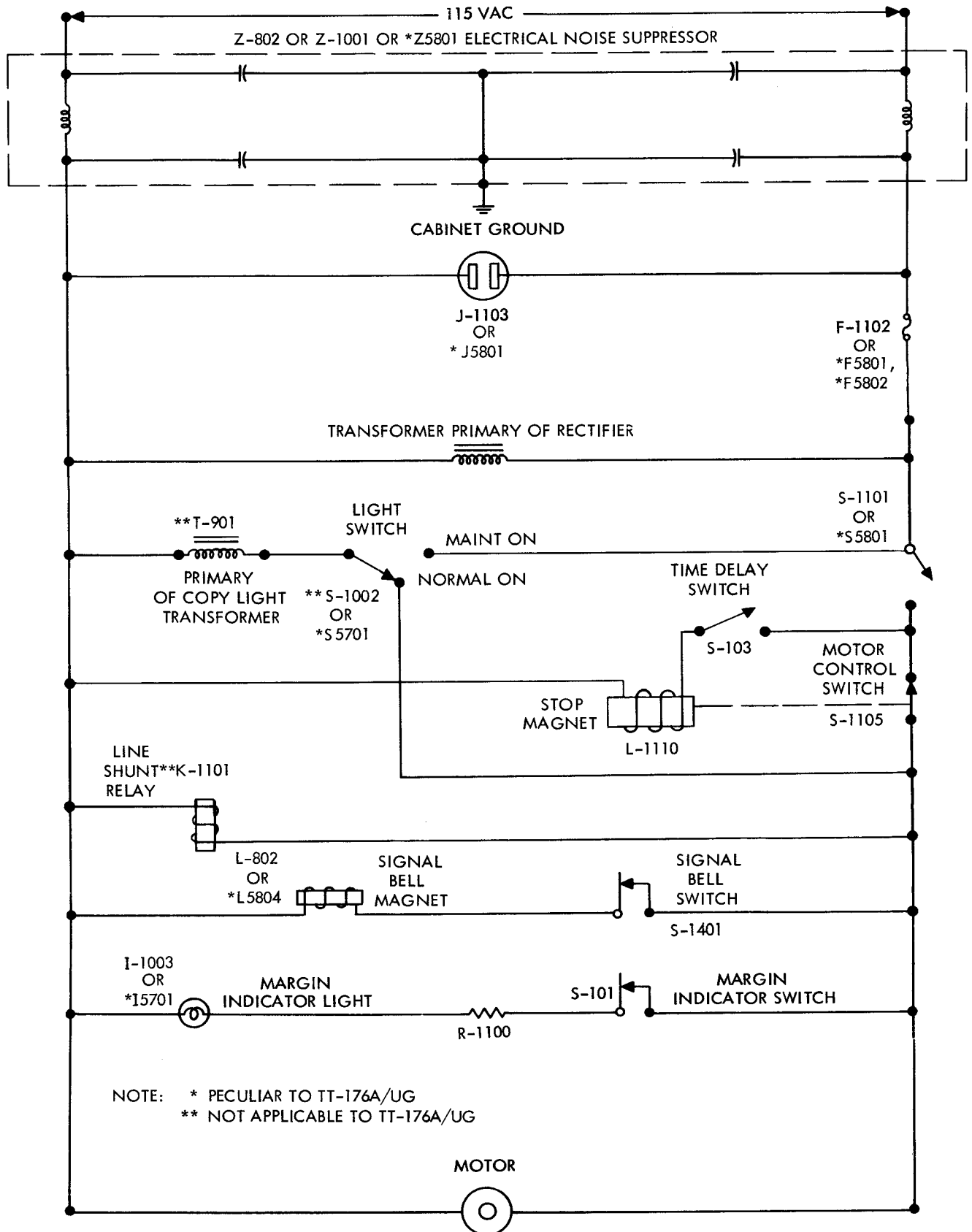


Figure 6-143. Primary Power Distribution Diagram

- NOTES
1. RESISTANCE VALUES IN OHMS.
  2. CAPACITANCE VALUES SUFFIXED WITH "MF" ARE IN MICROFARADS.
  3. INDUCTANCE VALUES SUFFIXED WITH "MH" ARE IN MICROHENRIES.
  4. UNIT SHOWN WIRED FOR .060 AMPERE OPERATION.
  5. STOP MAGNET IN ELECTRICAL MOTOR CONTROL SHOWN AS HAVING RECEIVED A PULSE FROM MOTOR STOP SWITCH S-103 ASSOCIATED WITH TIME DELAY MECHANISM. ALL OTHER CIRCUITS SHOWN DE-ENERGIZED.

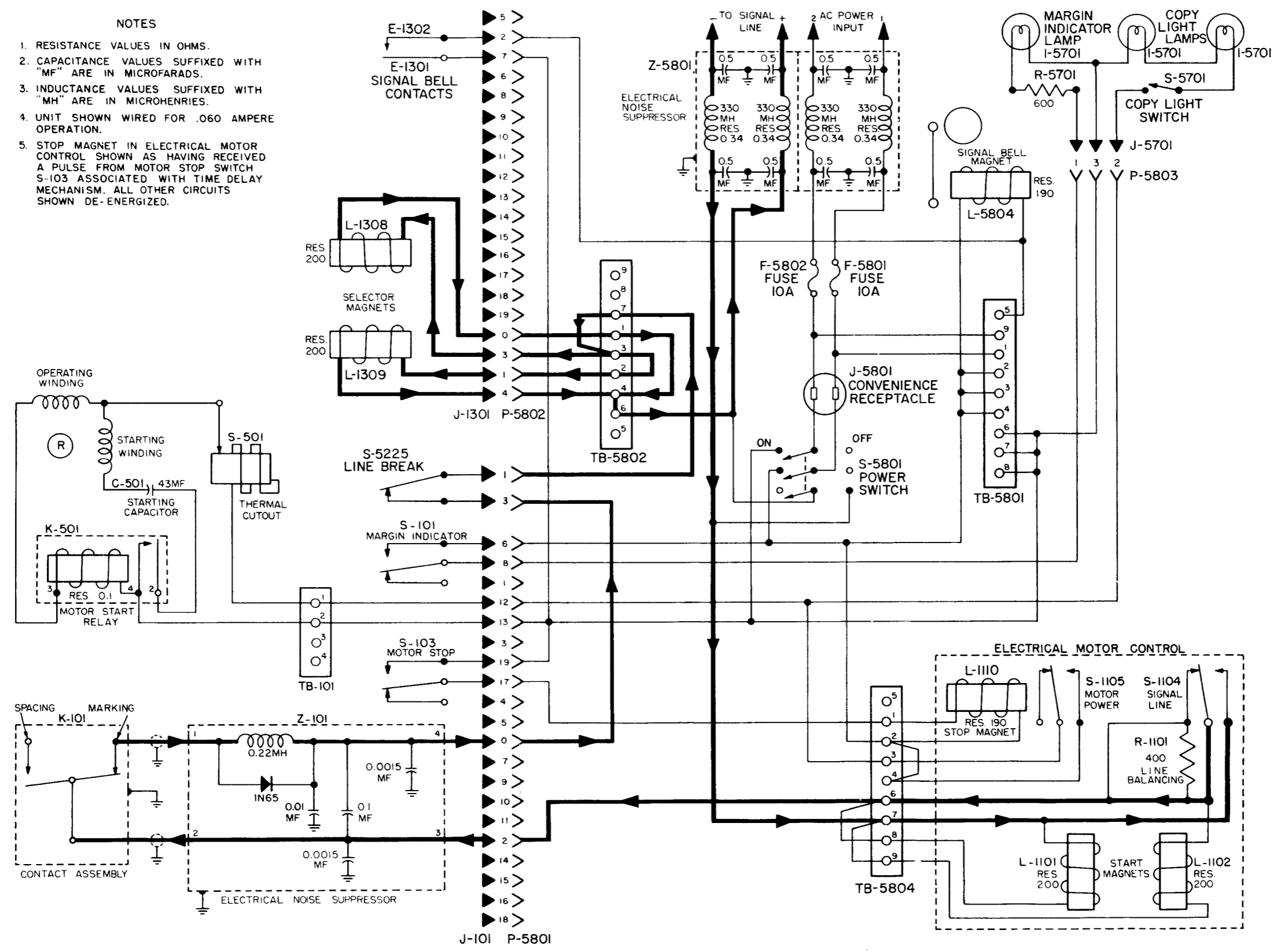


Figure 6-143A. Schematic Wiring Diagram, TT-176A/UG

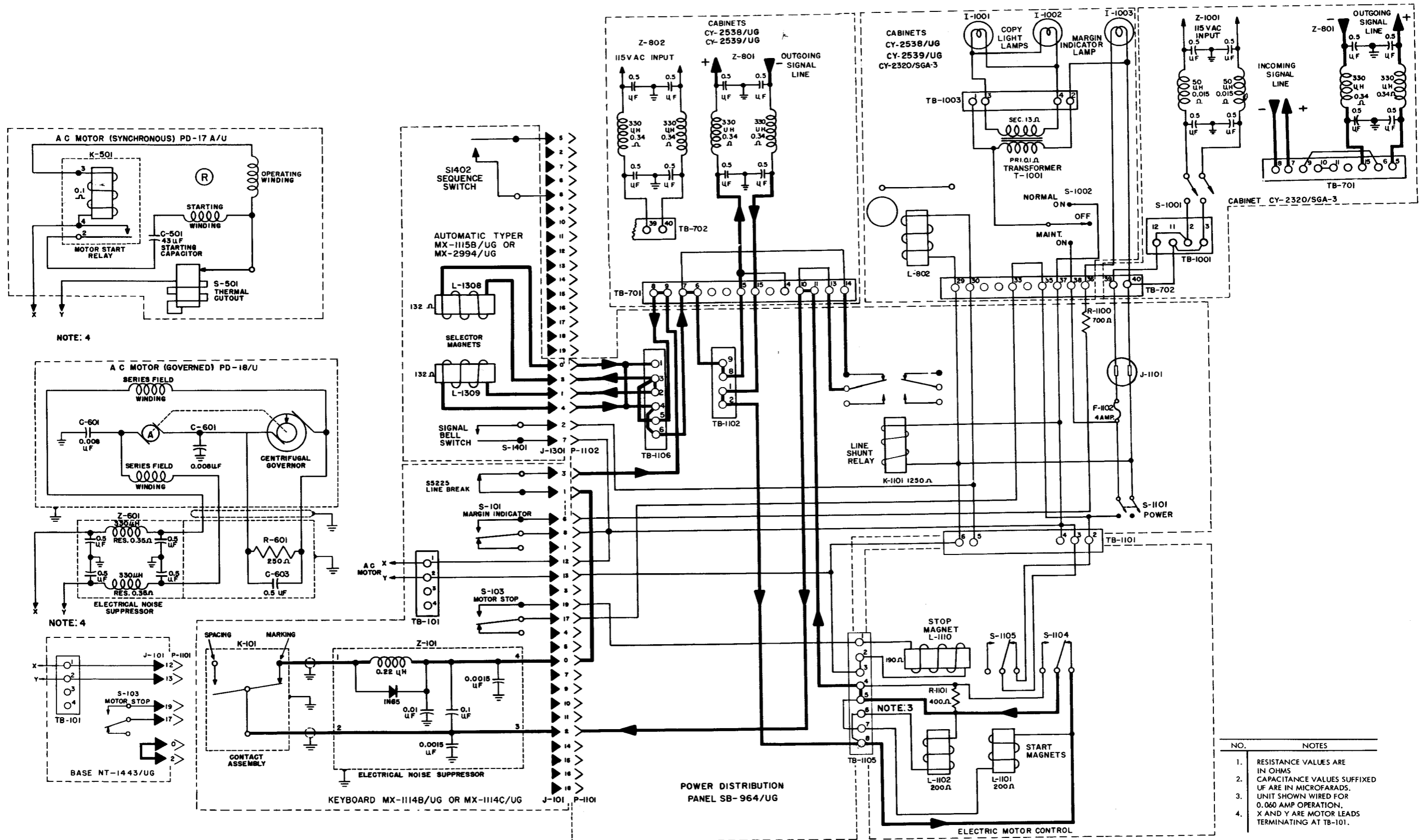
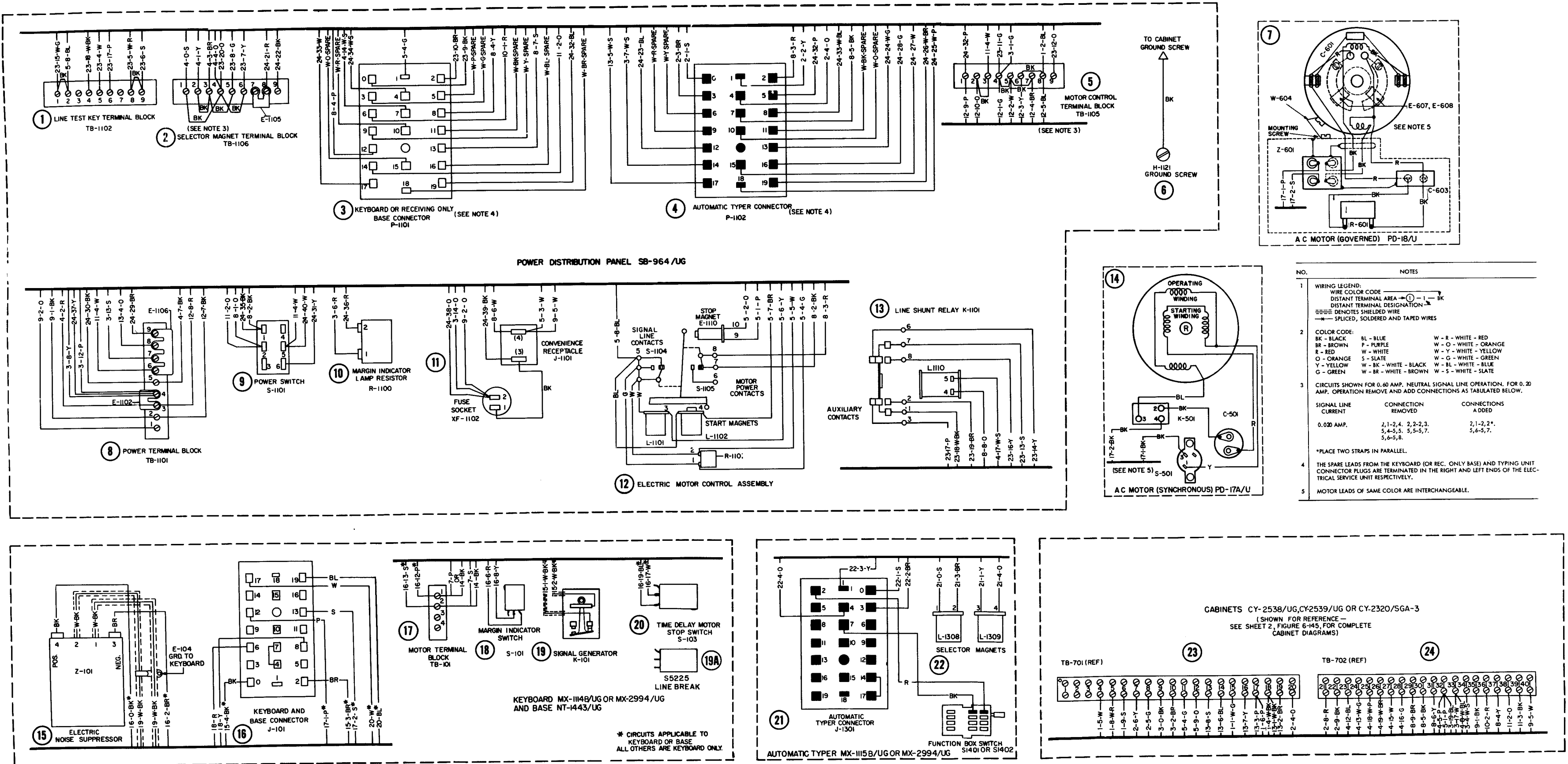


Figure 6-144. Schematic Wiring Diagram, TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70C/UG, TT-70D/UG, TT-171A/UG, and TT-234/SGA-3



- NO. NOTES
- 1 WIRING LEGEND:  
 WIRE COLOR CODE  
 DISTANT TERMINAL AREA → ① - 1 - BK  
 DISTANT TERMINAL DESIGNATION →  
 ≡ ≡ ≡ DENOTES SHIELDED WIRE  
 → → → SPLICED, SOLDERED AND TAPED WIRES
  - 2 COLOR CODE:  
 BK - BLACK    BL - BLUE    W - R - WHITE - RED  
 BR - BROWN    P - PURPLE    W - O - WHITE - ORANGE  
 R - RED        W - WHITE        W - Y - WHITE - YELLOW  
 O - ORANGE    S - SLATE        W - G - WHITE - GREEN  
 Y - YELLOW    W - BK - WHITE - BLACK    W - BL - WHITE - BLUE  
 G - GREEN     W - BR - WHITE - BROWN    W - S - WHITE - SLATE
  - 3 CIRCUITS SHOWN FOR 0.60 AMP. NEUTRAL SIGNAL LINE OPERATION. FOR 0.20 AMP. OPERATION REMOVE AND ADD CONNECTIONS AS TABULATED BELOW.  

SIGNAL LINE CURRENT	CONNECTION REMOVED	CONNECTIONS ADDED
0.020 AMP.	2,1-2,4, 2,2-2,3, 5,4-5,5, 5,5-5,7, 5,6-5,8.	2,1-2,2*, 2,1-2,2*, 5,6-5,7.

\*PLACE TWO STRAPS IN PARALLEL.
  - 4 THE SPARE LEADS FROM THE KEYBOARD (OR REC. ONLY BASE) AND TYPING UNIT CONNECTOR PLUGS ARE TERMINATED IN THE RIGHT AND LEFT ENDS OF THE ELECTRICAL SERVICE UNIT RESPECTIVELY.
  - 5 MOTOR LEADS OF SAME COLOR ARE INTERCHANGEABLE.

Figure 6-145. (Sheet 1 of 2 Sheets) Wiring Diagram, TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70DC/UG, TT-70D/UG, TT-171A/UG, and TT-234/SGA-3

SERVICE AND REPAIR

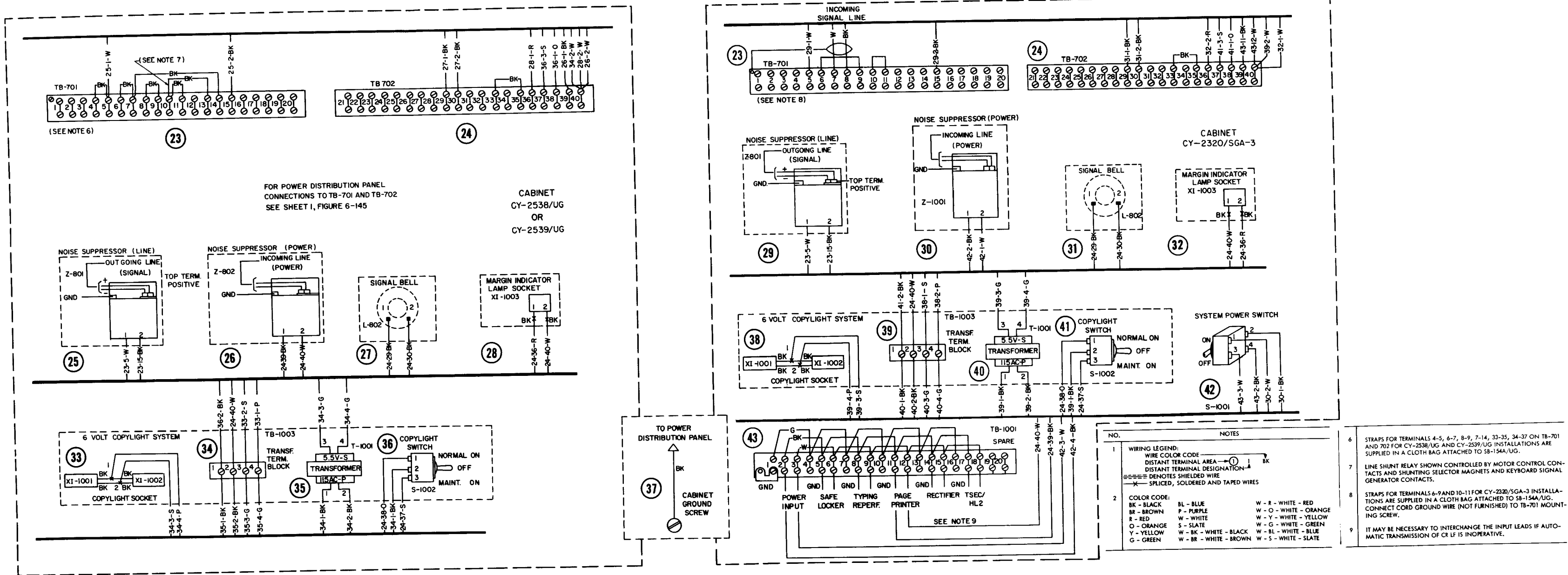


Figure 6-145. (Sheet 2 of 2 Sheets) Wiring Diagram, TT-47C/UG, TT-47D/UG, TT-47E/UG, TT-48B/UG, TT-48C/UG, TT-69B/UG, TT-69C/UG, TT-70DC/UG, TT-70D/UG, TT-171A/UG, and TT-234/SGA-3



## SECTION 7

### PARTS LIST

#### 7-1. INTRODUCTION.

Reference designations have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams and the parts list. The letters of a reference designation indicate the kind of part (generic group). The number differentiates between parts of the same generic group. Parts of the same first major unit are numbered from 101 to 199; parts of the second 201 to 299, etc. Two or more consecutive series of numbers have been assigned to major units in which there are more than 100 parts of the same generic group. Sockets associated with a particular plug-in device, such as a fuse, are identified by a reference designation which includes the reference designation of the plug-in device. For example, the socket for fuse F1102 is designated XF1102.

#### 7-2. LIST OF MAJOR UNITS.

Table 7-1 is arranged by groups of reference designations that apply to a major unit. Thus when the reference designation of a part is known, this table will furnish ready reference to the major unit in which it is used. The table also gives the following information for each major unit: (1) official nomenclature (see columns 3 and 4); (2) quantity in one equipment; (3) location of its parts in table 7-2.

#### 7-3. MAINTENANCE PARTS LIST.

Table 7-2 lists all major units and their maintenance parts. The parts of each major unit are grouped together. Column 1 lists the reference series of each major unit, followed by the reference designations of the various parts in alphabetical and numerical order. Column 2 refers to the explanatory notes that appear in 7-5 below. Column 3 gives the name and describes the various parts. Complete information is given for all key parts (parts differing from any part previously listed in this table) and sub-key parts (parts identical with a key part but appearing for the first time for a major unit). The name and description are omitted for other parts. However, reference is made to the key part or sub-key part

for the data. The contractor (code No. 59433) part/drawing number is furnished in each key and sub-key description and, in the case of vendor parts, has been added for reference in parentheses following the manufacturer's code and part number. The manufacturer's name and address, when other than the contractor, may be found by reference to the List of Manufacturers, table 7-3. Column 4 indicates how the part is used and gives its functional location in the equipment. Column 5 indicates the figure number of the pictorial illustration on which the part is identified.

#### 7-4. LIST OF MANUFACTURERS.

Table 7-3 lists manufacturers of parts used in the equipment. The first column includes the code number used in table 7-2 to identify manufacturers. Manufacturers are listed in the numerical order of their code numbers.

#### 7-5. NOTES.

The following provide additional information about items listed in table 7-2.

1. Used only on MX-1114B/UG.
2. Used only on NT-1443/UG.
3. Used only on MX-1114B/UG and NT-1443/UG.
4. Used only on MX-1114C/UG and MX-1677A/UG.
5. Used only on MX-1114C/UG.
6. Used only on MX-1677A/UG.
7. Used only on CY-2538/UG and CY-2539/UG.
8. Used only on CY-2539/UG.
9. Used only on CY-2538/UG and CY-2320/SGA-3.
10. Used only on CY-2538/UG.
11. Used only on CY-2320/SGA-3.
12. Used only on CW-354/UG.
13. Used only on CY-2538/UG, CY-2539/UG and CY-2320/SGA-3.
14. Used only on SB-408/UG.
15. Used only on SB-964/UG.
16. Used only on MX-1115B/UG and MX-2984/UG.
17. Used only on MX-3080/UG.
18. Used only on MX-1115B/UG.
19. Used only on MX-2984/UG.
20. Old Style parts are not interchangeable with New Style parts. Interchangeable in sets only.

TABLE 7-1. TELETYPEWRITER EQUIPMENT, LIST OF MAJOR UNITS

REF. DES.	QUANTITY	NAME OF MAJOR UNIT	DESIGNATION	PAGE
100 to 499	1	KEYBOARD	MX-1114B/UG	7-3
		KEYBOARD	MX-1114C/UG	7-3
5000 to 5999		KEYBOARD	MX-1677A/UG	7-64
		BASE	NT-1443/UG	7-3
500 to 599	1	AC MOTOR	PD-17A/U	7-16
600 to 699		AC MOTOR	PD-18/U	7-17
700 to 1099	1	CABINET	CY-2538/UG	7-21
		CABINET	CY-2539/UG	7-21
		CABINET	CY-2320/SGA-3	7-21
5000 to 5999		COVER	CW-354/UG	7-64
1100 to 1199	1	POWER DISTRIBUTION PANEL	SB-964/UG	7-27
5000 to 5999	1	POWER DISTRIBUTION PANEL		
1300 to 2299	1	AUTOMATIC TYPER	MX-1115B/UG	7-30
5000 to 5999		AUTOMATIC TYPER	MX-2994/UG	7-64
5000 to 5999		AUTOMATIC TYPER	MX-3080/UG	7-64

8048280

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
100 to 499		KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1433/UG	Mounting support for Motor and Automatic Typer. Generates typing signal (Keyboard only) and on-line and off-line functions	6-1 through 6-14
A101	3	BRACKET: 152460	Support for J101	6-1
A102	1	BRACKET: 151399	Guard for signal generator mechanism	6-1
A103	3	BRACKET: 151342	Support for S101	6-1
A104	3	GUARD: 152045	Guard for symbols O265 through O270	6-1
A105	3	BASE, KEYBOARD AND AUTOMATIC TYPER: 152000	Support for Keyboard mechanism and Automatic Typer	6-1
A108	3	BRACKET: 151884	Support for time delay mechanism	6-2
A109	1	FRAME: 151092	Support for code bar mechanism	6-3
A110	1	BRACKET: 152878	Stop for O139 through O145 and locks O135 and O136 to A109	6-3
A111	1	BRACKET: 151167	Support for O150 and guide for O149, O150 O153	6-3
A112	1	BRACKET: 151191	Support for A113	6-3
A113	1	BUMPER: 151193	Stop for O328	6-3
A114	1	BRACKET: 152876	Support for code bar bounce suppression mechanism	6-3
A115	1	BRACKET: 152296	Anchor for O151	6-3
A117		SPACER: 154662	Spaces O267 and bearing of O253	6-5
A119	3	BRACKET: 153268	Support for O272	6-7
A121	3	BRACKET: 151862	Support for O279 and O283 and guide for O281	6-8
A122	3	BRACKET: 151159	Guide for O284	6-8
A123	3	PLATE, SEALING: 151326	Noise seal and support for A125	6-9
A124	1	CHANNEL, BALL: 151841	Channel for O288 and guide for O289	6-9
A125	1	FRAME: 151833	Support for A124, A126, A127 and O295	6-9
A126	1	BRACKET: 151227	Support for O291	6-9
A127	1	COVER: 151325	Cover for keyboard mechanism	6-9
A132	1	FRAME: 151096	Support for signal generator mechanism	6-11
A135	1	BRACKET: 152894	Guide for O369 and stop for H381	6-13
A136	1	PLATE, MOUNTING: 151140	Support for transmitter mechanism	6-13
A138	1	COVER: 151358	Container for contact mechanism	6-14
A139	1	COVER: 151359	Cover for contact mechanism	6-14
A140	1	BASE: 151176 (Continued. See A400.)	Mounting base for contact mechanism	6-14
E101	3	INSULATOR, PLATE: 150966	Insulates TB101 from A105	6-1
E102	3	Same as E101	Insulates terminals of TB101	6-1
E103	3	INSULATOR, PLATE: 152464	Insulator guard for J101	6-1
E104	1	TERMINAL: 151365	Ground terminal for and holds Z101 to A105	6-1
E105	2	TERMINAL, LUG: 82474	Cable W104 terminals	6-1
E106	1	Same as E105	Cable W101 terminals	6-1
E109	1	WASHER, INSULATING: 151182	Insulates O383 from H414	6-14
E110	1	INSULATOR, BUSHING: 151183	Insulates O383 from H413	6-14
E111	1	SCREW, CONTACT: 4-40 hex 151173	Sends spacing and marking impulses through mating and breaking with O383 and holds E112 to A140	6-14
E112	1	TERMINAL, LUG: 151179	Termination for conductor from Z101	6-14
E113	1	TERMINAL, LUG: 151177	Terminal for O383 and conductor from Z101	6-14
H101		SCREW, MACHINE: 1/4-32 hex 151549	Holds A105 to cabinet	6-1
H102		WASHER, LOCK: 151572	Holds A105 to cabinet	6-1
H103	3	STUD: 162333	Holds H101 to A105 and locating guide for A1389 to A1391	6-1
H104		SCREW, MACHINE: 6-40 fil 151346	Holds H106 and O101 to A105	6-1
H105		WASHER, LOCK: 2191	Holds H106 and O101 to A105	6-1
H106		STRAP, MOUNTING: 151146	Locks A1389 and A1391 to A105	6-1
H107		SCREW, PILOT: 1/4-32 hex 151678	Holds A1389 and A1391 to A105	6-1
H108		SCREW, MACHINE: 6-40 fil 111017	Terminal screw for TB101	6-1

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H109	3	NUT, HEX: 151416	Holds H108 to TB101	6-1
H110	3	STUD: 151335	Holds TB101 to A105 and spaces E102	6-1
H111	3	Same as H105	Holds TB101 to A105	6-1
H112	3	NUT, HEX: 3598	Holds TB101 to A105	6-1
H113	3	SCREW, MACHINE: 6-40 fil 151657	Holds E102 to H110	6-1
H114	3	Same as H105	Holds E102 to H110	6-1
H115	3	LATCH, LEVER: 152463	Latches P1101 to J101	6-1
H116	3	LATCH, LEVER: 152462	Latches P1101 to J101	6-1
H117	3	SCREW, MACHINE: 6-40 fil 151658	Holds J101 to A101	6-1
H118	3	Same as H105	Holds J101 to A101	6-1
H119	3	SCREW, MACHINE: 6-40 fil 151692	Holds A101 to A105	6-1
H120	3	Same as H105	Holds A101 to A105	6-1
H121	1	Same as H113	Holds H123 to A105	6-1
H122	1	Same as H105	Holds H123 to A105	6-1
H123	1	Same As H106	Locks A102 to A105	6-1
H124	1	SCREW, MACHINE: 1/4-32 hex 106047	Holds A102 to A105	6-1
H125	1	WASHER, LOCK: 2449	Holds A102 to A105	6-1
H126	1	SCREW, SET: 4-40 fil 110434	Holds A103 to A105	6-1
H127	1	WASHER, LOCK: 110743	Holds A103 to A105	6-1
H128	1	SCREW, MACHINE: 2-56 fil 125181	Holds S101 to A103	6-1
H129	1	SCREW, MACHINE: 4-40 fil 102057	Bearing for and holds O103 to A103	6-1
H130	1	NUT, HEX: 3599	Holds O103 to A103	6-1
H133	3	Same as H117	Holds O105 to A105	6-1
H134	3	Same as H105	Holds O105 to A105	6-1
H135	3	Same as H107	Holds A501 or A609 to A105	6-1
H136	2	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-3 (code 59433 part No. 121243)	Clamps cable from Z101 to A105	6-1
H137	2	Same as H112	Holds H136 to A105	6-1
H138	2	WASHER: 76099	Holds H136 and H140 to A105	6-1
H139	2	Same as H104	Holds H136 and Z101 to A105	6-1
H140	3	Same as H136	Clamps cable W106 to A105	6-1
H141	1	WASHER, FLAT: 7002	Holds H140 to A105	6-1
H142	3	Same as H112	Holds H140 to A105	6-1
H148		SCREW, MACHINE: 2-56 fil 1178	Holds S103 to A108	6-2
H149		WASHER, FLAT: 71073	Holds S103 to A108	6-2
H150		STUD: 151879	Mounting shaft for O120	6-2
H151		WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1204-00 (code 59433 part No. 90951)	Holds H150 to A108	6-2
H152		Same as H112	Holds H150 to A108	6-2
H153		Same as H151	Holds O120 to H150	6-2
H154		Same as H130	Holds O120 to H150	6-2
H155		STUD: 151886	Bearing for O125	6-2
H156		Same as H151	Holds H155 to A108	6-2
H157		Same as H130	Holds H155 to A108	6-2
H158		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-15 (code 59433 part No. 119651)	Retains O125 on H155	6-2
H159		Same as H155	Bearing for O128	6-2
H160		Same as H151	Holds H159 to A108	6-2
H161		Same as H130	Holds H159 to A108	6-2
H162		Same as H158	Retains O128 on H159	6-2
H163		Same as H155	Bearing for O130	6-2
H164		Same as H151	Holds H163 to A108	6-2

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H165		Same as H130	Holds H163 to A108	6-2
H166		Same as H158	Retains O130 on H163	6-2
H167	3	SCREW, PILOT: 6-40 hex 95499	Stop for O260	6-2
H168	3	Same as H141	Holds H167 to A108	6-2
H169	3	Same as H105	Holds H167 to A108	6-2
H170	3	Same as H112	Holds H167 to A108	6-2
H171	3	Same as H113	Holds A108 to A105	6-2
H172		Same as H141	Holds A108 to A105	6-2
H173		Same as H105	Holds A108 to A105	6-2
H174	1	SCREW, MACHINE: 4-40 fil 150089	Holds O133 to A109	6-3
H175	1	Same as H127	Holds O133 to A109	6-3
H176	1	SCREW, MACHINE: 4-40 fil 151688	Holds O135, O136 and A110 to A109	6-3
H177	1	Same as H127	Holds O135, O136 and A110 to A109	6-3
H179	1	SCREW, PILOT: 6-40 fil 151090	Pivot for and mounts O138 on A109	6-3
H180	1	Same as H112	Locks H179 to A109	6-3
H181	1	Same as H126	Holds A112 to O152	6-3
H182	1	Same as H127	Holds A112 to O152	6-3
H183	1	WASHER, FLAT: 125011	Holds A112 to O152	6-3
H184	1	Same as H113	Holds O152 to A105	6-3
H185	1	Same as H105	Holds O152 to A105	6-3
H186	1	SCREW, SHOULDER: 4-40 fil 151036	Holds O149 to O150	6-3
H187	1	Same as H130	Holds O149 to O150	6-3
H188	1	SCREW, SHOULDER: 4-40 fil 151350	Holds O150 to A111	6-3
H189	1	WASHER, FLAT: 104807	Holds O150 to A111	6-3
H190	1	Same as H127	Holds O150 to A111	6-3
H191	1	Same as H130	Holds O150 to A111	6-3
H192	1	SCREW, MACHINE: 4-40 fil 151637	Holds A111 to O152	6-3
H193	1	Same as H127	Holds A111 to O152	6-3
H194	1	STUD: 152250	Bearing for O153	6-3
H195	1	Same as H127	Holds H194 to A109	6-3
H196	1	Same as H130	Holds H194 to A109	6-3
H197	1	Same as H183	Holds O153 on H194	6-3
H198	1	Same as H127	Holds O153 on H194	6-3
H199	1	Same as H130	Holds O153 on H194	6-3
		(Continued. See H200.)		
I101	1	LABEL SET: 151391	Data sheets	6-9
		(Continued. See I400.)		
J101	3	CONNECTOR, RECEPTACLE: 152467	Termination for W101	6-1
K101	1	CONTACT ASSEMBLY: 151170	Receives incoming signals and sets up selector code on the Automatic Typewriter	6-14
O101	3	PLATE, SPACER: 151118	Spacer for Automatic Typewriter	6-1
O102	3	SPRING: 86835	Applies tension to H115 and H116	6-1
O103	1	LEVER: 151341	Operates S101	6-1
O104	1	SPRING: 55669	Applies tension to O103	6-1
O105	3	STRIP: 151113	Nut plate for A505 or A609	6-1
O119		PLATE, NUT: 151885	Locks S103 to A108	6-2
O120		HUB: 151236	Bearing for O121 and O122	6-2
O121		RATCHET: 151235	Operates O125 and O130	6-2
O122		RATCHET: 151234	Operates O125 and O130	6-2
O123		SPRING: 151237	Applies pressure to O121 and O122	6-2
O124		WASHER, FELT: 109757	Lubricates O125	6-2
O125		PAWL: 151240	Operates O128	6-2
O126		SPRING: 45104	Applies tension to O125	6-2
O127		Same as O124	Lubricates O128	6-2
O128		LEVER: 151241	Stop for O130	6-2
O129		Same as O124	Lubricates O130	6-2
O130		PAWL: 154135	Actuates S103	6-2
O131		SPRING: 31636	Applies tension to O128 and O130	6-2

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O132	1	GUIDE, CODE BAR: 151023	Right end guide for O139 through O145	6-3
O133	1	PLATE: 151043	Locks O132 to A109	6-3
O134	1	SPRING: 7965	Applies tension to O132	6-3
O135	1	Same as O132	Left end guide for O139 through O145	6-3
O136	1	PLATE: 151091	Spaces O135 and A110	6-3
O138	1	BAIL: 151840	Locks code bar levers until operation completed	6-3
O139	1	BAR: CLUTCH TRIP: 151084	Operates O315	6-3
O140	1	CODE BAR: 151089	Operates O390	6-3
O141	1	CODE BAR: 151088	Operates O391	6-3
O142	1	CODE BAR: 151087	Operates O393	6-3
O143	1	CODE BAR: 151086	Operates O394	6-3
O144	1	CODE BAR: 151085	Operates O395	6-3
O145	1	BAR, LOCKING: 151355	Locks O138	6-3
O146	1	SPRING: 7603	Applies tension to O139 and O145	6-3
O147	1	SPRING: 42661	Applies tension to O140 through O144	6-3
O149	1	LEVER: 151845	Operates O150	6-3
O150	1	BELL CRANK: 151032	Operates O153	6-3
O151	1	SPRING: 7655	Applies tension to O149	6-3
O152	1	PLATE: 151367	Supports A111 and A112	6-3
O153	1	LEVER: 151008	Holds O138 in lock position through O159 until operation completed	6-3
O154	1	SPRING: 70388	Applies tension to O153	6-3
O155	1	WICK: 4809	Lubricates O154	6-3
O156	1	SHAFT: 151030	Pivot for O175 through O212	6-3
O157	1	CLIP: 151104	Retains O156 to A109	6-3
O158	1	GUIDE, CODE: BAR: 151101	Guide for code bars	6-3
O159	1	EXTENSION, BAIL: 151889	Provides adjustment for operating O138	6-3
O160	1	BAIL: 152877	Disengages H205 from O140 through O144	6-3
O161	1	SHAFT: 152874	Pivot for O160	6-3
O162	1	Same as O161	Pivot for H205 latches	6-3
O163	1	SPACER: 152875	Spaces H205 latches	6-3
O164	1	SPRING: 7602	Keeps H205 latches in line with respective code bars	6-3
O165	1	SPRING: 152839	Applies tension to H205	6-3
O166	1	BAR, UPSTOP: 151830	Upstop for function levers	6-3
O173	1	GUIDE, CODE LEVER: 151849	Guide for O175 through O212 and anchor for O146 and O147	6-4
O174	1	PAWL: 151102	Latches O145 in lock position	6-4
O175	1	LEVER: 151851	Sets up code for Figs shift	6-4
O176	1	Same as O175	Sets up code for 1 and Q	6-4
O177	1	Same as O175	Sets up code for - and A	6-4
O178	1	Same as O175	Sets up code for " and Z	6-4
O179	1	Same as O175	Sets up code for 2 and W	6-4
O180	1	Same as O175	Sets up code for BELL and S	6-4
O181	1	Same as O175	Sets up code for / and X	6-4
O182	1	Same as O175	Sets up code for 3 and E	6-4
O183	1	Same as O175	Sets up code for \$ and D	6-4
O184	1	Same as O175	Sets up code for : and C	6-4
O185	1	Same as O175	Sets up code for 4 and R	6-4
O186	1	Same as O175	Sets up code for ! and F	6-4
O187	1	Same as O175	Sets up code for ; and V	6-4
O188	1	Same as O175	Sets up code for 5 and T	6-4
O189	1	Same as O175	Sets up code for & and G	6-4
O190	1	Same as O175	Sets up code for ? and B	6-4
O191	1	Same as O175	Sets up code for 6 and Y	6-4
O192	1	Same as O175	Sets up code for blank and H	6-4
O193	1	Same as O175	Sets up code for , and N	6-4

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O194	1	Same as O175	Sets up code for 7 and U	6-4
O195	1	Same as O175	Sets up code for ' and J	6-4
O196	1	Same as O175	Sets up code for . and M	6-4
O197	1	Same as O175	Sets up code for 8 and I	6-4
O198	1	Same as O175	Sets up code for ( and K	6-4
O199	1	Same as O175	Sets up code for LTRS shift	6-4
		(Continued. See O200.)		
S101	1	SWITCH, SENSITIVE: SPDT, 10 amp, 125 v ac, plunger type, 0.007 in. movement differential, 0.040 in. max. pretravel, 0.025 in. max. overtravel, 6 oz. operating pressure, mfg. code No. 70087, part No. IMD12AXX (code 59433 part No. 151329)	Operates end-of-line indicator	6-4
S103		Same as S101	Operates motor control unit	6-2
TB101		BOARD, TERMINAL: 151415	Terminal board for W101	6-1
W101	1	CABLE ASSEMBLY: 153674	Connects J101 with TB101, S101 and Z101	6-1
W102	2	STRAP: 6342	Jumper strap on J101	6-1
W103	2	CABLE ASSEMBLY: 153803	Connects J101 with TB101	6-1
W104	2	CABLE ASSEMBLY: 153622	Connects J101 with TB101	6-1
W106		CABLE ASSEMBLY: 153639	Wire S103 to TB101	6-2
Z101	1	SUPPRESSOR, ELECTRICAL NOISE: 151369	Signal line radio interference suppressor	6-1
H200	1	Same as H117	Holds A109 to A105	6-3
H201	1	Same as H105	Holds A109 to A105	6-3
H202	1	SCREW, MACHINE: 4-40 hex 151152	Holds O159 to O138	6-3
H203	1	Same as H127	Holds O159 to O138	6-3
H204	1	WASHER, FLAT: 42823	Holds O159 to O138	6-3
H205	1	LATCH, LEVER: 152873	Bounce suppression latch for symbols O140 through O144	6-3
H206	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-9 (code 59433 part No. 119648)	Retains H205, O163 and O164 on O162 and retains O162 to A114	6-3
H207	1	Same as H206	Retains O160 on O161 and retains O161 to A114	6-3
H208	1	Same as H104	Holds A109 and A114 to A105	6-3
H209	1	Same as H105	Holds A109 and A114 to A105	6-3
H210	1	Same as H141	Holds A109 and A114 to A105	6-3
H211	1	Same as H174	Adjustment screw for positioning A114	6-3
H212	1	NUT, HEX: 110435	Locks A114 and H211 in adjusted position	6-3
H216	1	SCREW, PILOT: 4-40 hex 151082	Pivot for O174	6-4
H217	1	Same as H127	Locks H216 to O173	6-4
H218	1	Same as H113	Holds O173 to A109	6-4
H219	1	Same as H105	Holds O173 to A109	6-4
H220	1	Same as H141	Holds O173 to A109	6-4
H221		SCREW, MACHINE: 10-32 hex 151723	Holds O252 to A105	6-5
H222		WASHER, LOCK: 2669	Holds O252 to A105	6-5
H223		WASHER, FLAT: 3438	Holds O252 to A105	6-5
H224		SCREW, MACHINE: 10-32 hex 151724	Holds O253 to A105	6-5
H225		Same as H222	Holds O253 to A105	6-5
H226		BUTTON, PIVOT: 151712	Adjustment pivot for O253	6-5
H227		SCREW, MACHINE: 151725	Locks O253 in position	6-5
H228		Same as H222	Locks O253 in position	6-5
H229		Same as H227	Provides adjustment for mating of O257 and O1842 through O253	6-5
H230		Same as H223	Holds O255 to O253	6-5
H231		Same as H222	Holds O255 to O253	6-5
H232		NUT, HEX: 112626	Holds O255 to O253	6-5
H233		Same as H104	Locks A117 to O255	6-5
H234		Same as H105	Locks A117 to O255	6-5
H235		WASHER, FLAT: 151246	Spaces O260 and O254	6-5

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H240		Same as H104	Locks O265, O267 or O268 to E501 or E601	6-6
H241		Same as H105	Locks O265, O267 or O268 to E501 or E601	6-6
H242		SCREW, MACHINE: 6-40 hex 151631	Holds O266, O269 or O270 to O255	6-6
H243		Same as H105	Holds O266, O269 or O270 to O255	6-6
H244	3	Same as H119	Holds A119 to A105	6-7
H245	3	Same as H105	Holds A119 to A105	6-7
H246	3	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652)	Retains O271 to A119 or O276 to A120	6-7
H251	3	Same as H246	Retains O278 or O277 to A121 and O279 on O277	6-8
H252	3	Same as H246	Retains O283 on O278 or O277	6-8
H253	1	SCREW, MACHINE: 4-40 fil 152122	Pivot for and holds O280 to O279	6-8
H254	1	WASHER, FLAT: 85957	Holds O280 to O279	6-8
H255	1	Same as H127	Holds O280 to O279	6-8
H256	1	Same as H130	Holds O280 to O279	6-8
H257	3	Same as H158	Retains O284 on stud of O283	6-8
H258	2	WASHER, FLAT: 3438	Spacer for O278	6-8
H260	3	Same as H117	Holds A122 to A105	6-8
H261	3	Same as H105	Holds A122 to A105	6-8
H262	3	Same as H119	Holds A121 to A105	6-8
H263	3	Same as H105	Holds A121 to A105	6-8
H264	1	Same as H117	Holds A123 to A105	6-9
H265	1	SCREW, MACHINE: 6-40 hex 151630	Holds A124 to A125	6-9
H266	1	Same as H105	Holds A124 to A125	6-9
H267	1	Same as H141	Holds A124 to A125	6-9
H268	1	Same as H119	Holds A125 to A123	6-9
H269	1	WASHER, FLAT: 91904	Spacer for A123	6-9
H270	1	SCREW, MACHINE: 6-40 fil 151659	Holds A125 and A123 to A105	6-9
H271	1	Same as H105	Holds A125 and A123 to A105	6-9
H274	1	Same as H192	Holds O287 to A124	6-9
H275	1	Same as H127	Holds O287 to A124	6-9
H276	1	SCREW, PILOT: 6-40 fil 151843	Provides adjustment for spacing and retains O288 in channel formed by assembly of A124 and O287	6-9
H277	1	NUT, HEX: 3606	Locks H276 in position	6-9
H278	1	Same as H192	Holds O290, H280 and H281 to A124	6-9
H279	1	Same as H127	Holds O290, H280 and H281 to A124	6-9
H280	1	PLATE, LOCK: 151848	Prevents operation of O205	6-9
H281	1	WASHER, FLAT: 151080	Spaces H280 from A124	6-9
H282	1	Same as H119	Holds A126 to A125	6-9
H283	1	Same as H105	Holds A126 to A125	6-9
H284	1	SCREW, PILOT: 6-40 hex 151224	Pivot O291	6-9
H285	1	Same as H112	Locks H284 in position	6-9
H286	1	Same as H186	Pivot for and holds O-292 to O291	6-9
H287	1	Same as H130	Holds O292 to O291	6-9
H288	1	Same as H186	Pivot for and holds O293 to O292	6-9
H289	1	Same as H130	Holds O293 to O292	6-9
H290	1	SCREW, SHOULDER: 4-40 fil 151223	Pivots and holds O291 to O294	6-9
H291	1	Same as H104	Holds A127 to A125	6-9
H292	1	Same as H104	Holds O295 to A125	6-9
H293	1	WINDOW, PLASTIC: 151353	Protects data sheets	6-9
H294	1	SCREW, MACHINE: 151354	Holds H293 to O295	6-9
H295	1	CLAMP: 111343	Clamps O290 to A124	6-9
H296	1	Same as H192	Holds O287 and H295 to A124	6-9
H297	1	Same as H127	Holds O287 and H295 to A124	6-9
H298	1	BUTTON, PLUG: 153116	Plug for unused keytop guide holds of O295	6-9



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H299	1	NUT, SHEET SPRING: Steel, mfg. code No. 78553, part No. C159-012-1 (code 59433 part No. 117608) (Continued. See H300.)	Lock nut for H298	6-9
O200	1	Same as O175	Sets up code for 9 and 0	6-4
O201	1	Same as O175	Sets up code for ) and L	6-4
O202	1	Same as O175	Sets up code for LINE FEED	6-4
O203	1	Same as O175	Sets up code for $\beta$ and P	6-4
O204	1	Same as O175	Operates O272	6-4
O205	1	Same as O175	Sets up code for blank	6-4
O206	1	LEVER: 151853	Operates O174	6-4
O207	1	Same as O206	Operates O382	6-4
O208	1	LEVER: 151855	Unlocks keyboard by unlatching O145 from O174	6-4
O209	1	Same as O208	Sets up code for Repeat	6-4
O210	1	LEVER: 151852	Sets up code for Space	6-4
O211	1	LEVER: 151854	Operates O283	6-4
O212	1	Same as O211	Operates O272	6-4
O213	1	Same as O146	Applies tension to symbols O175 through O212	6-4
O214	1	WASHER, FELT: 101796	Lubricates O156 and O175 through O212	6-4
O215	1	KEYLEVER, "LOC LF": 151286	Operates O211	6-4
O216	1	Same as O215 except characters "LOC, CR": 151287	Operates O212	6-4
O217	1	Same as O215 except characters "KBD, UNLK": 151288	Operates O208	6-4
O218	1	Same as O215 except characters "KBD, LOCK": 151289	Operates O206	6-4
O219	1	Same as O215 except characters "BREAK": 151290	Operates O207	6-4
O220	1	Same as O215 except characters "REPT": 151291	Operates O209	6-4
O221	1	KEYLEVER, "1, Q": 151292	Operates O176	6-4
O222	1	Same as O221 except characters "2, W": 151293	Operates O179	6-4
O223	1	Same as O221 except characters "3, E": 151294	Operates O182	6-4
O224	1	Same as O221 except characters "4, R": 151295	Operates O185	6-4
O225	1	Same as O221 except characters "5, T": 151296	Operates O118	6-4
O226	1	Same as O221 except characters "6, Y": 151297	Operates O191	6-4
O227	1	Same as O221 except characters "7, U": 151298	Operates O194	6-4
O228	1	Same as O221 except characters "8, I": 151299	Operates O197	6-4
O229	1	Same as O221 except characters "9, O": 151300	Operates O200	6-4
O230	1	Same as O221 except characters " $\emptyset$ , P": 151301	Operates O203	6-4
O231	1	KEYLEVER, " -, A": 151302	Operates O177	6-4
O232	1	Same as O231 except characters "BELL, S": 151303	Operates O180	6-4
O233	1	Same as O231 except characters "\$, D": 151304	Operates O183	6-4
O234	1	Same as O231 except characters "! , F": 151305	Operates O186	6-4

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O235	1	Same as O231 except characters "&, G": 151306	Operates O189	6-4
O236	1	Same as O231 except characters "blank, H": 151307	Operates O192	6-4
O237	1	Same as O231 except characters "I, J": 151308	Operates O195	6-4
O238	1	Same as O231 except characters "(, K": 151309	Operates O198	6-4
O239	1	Same as O231 except characters ")", L": 151310	Operates O201	6-4
O240	1	Same as O231 except characters "CAR RET": 151311	Operates O204	6-4
O241	1	KEYLEVER, "FIGS": 151312	Operates O175	6-4
O242	1	Same as O241 except characters " ", Z": 151313	Operates O178	6-4
O243	1	Same as O241 except characters " /, X": 151314	Operates O181	6-4
O244	1	Same as O241 except characters " : , C": 151315	Operates O184	6-4
O245	1	Same as O241 except characters " ; , V": 151316	Operates O187	6-4
O246	1	Same as O241 except characters " ? , B": 151317	Operates O190	6-4
O247	1	Same as O241 except characters " , , N": 151318	Operates O193	6-4
O248	1	Same as O241 except characters " . , M": 151319	Operates O196	6-4
O249	1	Same as O241 except characters "LTRS": 151320	Operates O199	6-4
O250	1	Same as O241 except characters "LINE FEED": 151321	Operates O202	6-4
O251	1	Same as O241 except no characters: 151322	Operates O205	6-4
O252		PLATE: 154085	Nut plate for O253	6-5
O253		BEARING, BALL: 151228	Bearing and support for O255	6-5
O254		BEARING, BALL, ANNULAR: mfg. code No. 43991, part No. S-3R (code 59433 part No. 104827)	Bearing for O255	6-5
O255		SHAFT: 154663	Drives O257 and O258 through A117	6-5
O257		GEAR: 151129	Drives O1843	6-5
O258		BUSHING: 151244	Drives O260	6-5
O259		WASHER, FELT: 151245	Lubricates O258 and O260	6-5
O260		PAWL: 154136	Steps O121 and O122	6-5
O261		SPRING: 110436	Applies tension to O260	6-5
O265		GEAR: 151132	Drives O266 at 75 wpm	6-6
O266		GEAR: 151133	Drives O255	6-6
O267		GEAR: 151130	Drives O269 at 60 wpm	6-6
O268		GEAR: 151134	Drives O270 at 100 wpm	6-6
O269		GEAR: 151131	Drives O255	6-6
O270		GEAR: 151135	Drives O255	6-6
O271	3	SHAFT: 153264	Pivot for O272	6-7
O272	3	BAIL: 151857	Operates O2118	6-7
O273	3	SPRING: 76299	Applies tension to O272	6-7
O277	1	SHAFT: 153244	Pivot for O279 and O283	6-8
O278	2	SHAFT: 151863	Pivot for O279 and O283	6-8
O279	1	BAIL: 151861	Operates O206	6-8
O280	1	PLUNGER: 151115	Operates O279	6-8
O281	1	SPRING: 4703	Applies pressure to O280	6-8
O282	1	SPRING: 151352	Applies pressure to O279	6-8

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O283	3	BAIL: 151858	Operates O284	6-8
O284	3	LINK: 151859	Operates O1761	6-8
O285	3	SPRING: 112630	Applies tension to O284	6-8
O286	1	SPACER: 151338	Spaces A123 and A125	6-9
O287	1	RETAINER, BALL: 151842	Retains O288 in channel of A124	6-9
O288	1	BALL, BEARING: 104710	Prevents two keylevers from operating at the same time	6-9
O289	1	WEDGE, LOCK: 151076	Locks O288 balls until operation completed	6-9
O290	1	RETAINER, WEDGE: 154086	Retains O289 on O175 through O205 and O210 through O211	6-9
O291	1	BAIL: 151013	Operates O292	6-9
O292	1	LINK: 151014	Operates O293	6-9
O293	1	LEVER: 151105	Operates O210	6-9
O294	1	BAR, SPACE: 151045	Operates O291	6-9
O295	1	PLATE, GUIDE: 151834	Guide for O215 through O251	6-9
O296	1	STRIP: 151226 (Continued. See O300.)	Nut plate for A123 and A125	6-9
H308	1	WASHER, FLAT: 73008	Spacer and retainer for O333	6-11
H309	1	Same as H202	Holds O316 to O315	6-11
H310	1	Same as H127	Holds O316 to O315	6-11
H311	1	WASHER, FLAT: 2034	Holds O316 to O315	6-11
H312	1	Same as H246	Retains O315 and H313	6-11
H313	1	SCREW, PILOT: 151057	Pivot for O310 and O315	6-11
H315	1	WASHER, FLAT: 111767	Friction washer for O310	6-11
H316	1	NUT, HEX: 3595	Holds H313 to A132	6-11
H319	1	SCREW, PILOT: 151041	Pivot for O318	6-11
H320	1	Same as H130	Locks H319 to A132	6-11
H321	1	SCREW, MACHINE: 2-56 fil 128002	Holds O319 to O318	6-11
H322	1	WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1202 (code 59433 part No. 90791)	Holds O319 to O318	6-11
H323	1	Same as H149	Stop for O315	6-11
H324	1	STUD: 151054	Locks H324 to A132	6-11
H325	1	Same as H127	Pivot for O320	6-11
H326	1	STUD: 151213	Holds H326 to A132	6-11
H327	1	Same as H105	Holds H326 to A132	6-11
H328	1	Same as H112	Retains O320 and H326	6-11
H329	1	Same H206	Anchor for O325	6-11
H331	1	POST, SPRING: 92668	Anchor for O329	6-11
H332	1	POST, SPRING: 86720	Pivot for O324	6-11
H333	1	STUD: 151837	Holds O323 and H333 to A132	6-11
H334	1	Same as H105	Holds O323 and H333 to A132	6-11
H335	1	Same as H112	Retains O324 and O326 on H333	6-11
H336	1	Same as H246	Retains O327 on H333	6-11
H337	1	RING, RETAINING: Steel mfg. code No. 79136, part No. 5133-12 (code 59433 part No. 119649)	Pivot for O328	6-11
H338	1	STUD: 151207	Holds H338 to A132	6-11
H339	1	Same as H222	Holds H338 to A132	6-11
H340	1	Same as H232	Retains O328 and H338	6-11
H341	1	Same as H246	Mounts O332	6-11
H342	1	STUD: 151039	Holds H342 to O328	6-11
H343	1	NUT, HEX: 5475	Retains O332 on H342	6-11
H344	1	Same as H206	Shaft for O333	6-11
H345	1	STUD: 151018	Holds H345 to O328	6-11
H346	1	Same as H105	Holds H345 to O328	6-11
H347	1	Same as H112	Retains O333 and H308 on H345	6-11
H348	1	Same as H158		6-11

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H349	1	Same as H119	Holds O335 to A105	6-11
H350	1	Same as H105	Holds O335 to A105	6-11
H351	1	SCREW, MACHINE: 6-40 fil 151642	Holds A132 to A105	6-11
H352	1	Same as H105	Holds A132 to A105	6-11
H353	1	SCREW, MACHINE: 4-40 hex 151737	Holds O337 to O338	6-12
H354	1	Same as H127	Holds O337 to O338	6-12
H355	1	Same as H204	Holds O337 to O338	6-12
H356	1	Same as H353	Holds O349 to O337	6-12
H357	1	Same as H127	Holds O349 to O337	6-12
H358	1	WASHER, EXTRUDED: 151063	Spaces and retains O352 on O349	6-12
H359	1	Same as H222	Holds cam clutch on O347	6-12
H360	1	Same as H232	Holds cam clutch on O347	6-12
H361	1	Same as H117	Holds O346 to A132	6-12
H362	1	Same as H105	Holds O346 to A132	6-12
H377	1	STUD: 151059	Bearing for O367	6-13
H378	1	NUT, HEX: 86742	Holds H377 to A136	6-13
H379	1	Same as H337	Retains O367 on H377	6-13
H380	1	SCREW, SHOULDER: 2-56 fil 151145	Pivot for and holds O369 to O367	6-13
H381	1	NUT, SHOULDER: 151899	Holds H380 to O367 and stop for O367	6-13
H384	1	Same as H202	Holds A135 to A136	6-13
H385	1	Same as H127	Holds A135 to A136	6-13
H386	1	Same as H311	Holds A135 to A136	6-13
H387	1	STUD: 151098	Bearing for O371	6-13
H388	1	Same as H311	Holds H387 to A136	6-13
H389	1	Same as H127	Holds H387 to A136	6-13
H390	1	Same as H130	Holds H387 to A136	6-13
H391	1	Same as H337	Retains O371 on H387	6-13
H392	1	Same as H377	Bearing for O373	6-13
H393	1	Same as H378	Holds H392 to A136	6-13
H394	1	Same as H337	Retains O373 and O374 on H392	6-13
H395	1	Same as H202	Holds O375 to A136	6-13
H396	1	Same as H127	Holds O375 to A136	6-13
H397	1	Same as H311	Holds O375 to A136	6-13
H398	1	STUD: 151056	Bearing for H400	6-13
H399	1	Same as H127	Locks H398 to A136	6-13
		(Continued. See H400.)		
O310	1	BAIL: 152493	Completely disengages keyboard clutch	6-11
O311	1	SPRING: 90260	Applies tension to O310	6-11
O313	1	Same as O214	Lubricates H313, O310 and O315	6-11
O314	1	WASHER, FELT: 151225	Lubricates H313 and O310	6-11
O315	1	BAIL: 151189	Operates O316	6-11
O316	1	LEVER: 151211	Engages and disengages O339	6-11
O317	1	Same as O131	Applies tension to O315	6-11
O318	1	BAIL: 151066	Operates O319	6-11
O319	1	EXTENSION: 151099	Disengages O376 and O378 from O371	6-11
O320	1	DETENT: 153887	Stop for O318	6-11
O323	1	SPACER: 91765	Spacer for shaft of H333	6-11
O324	1	LEVER: 151835	Detent and latch for O328	6-11
O325	1	SPRING: 111342	Applies tension to O324	6-11
O326	1	WASHER, FELT: 90679	Lubricates O324	6-11
O327	1	LINK: 162485	Support link for O388	6-11
O328	1	BAIL: 151067	Resets O139 through O145 and operates O149	6-11
O329	1	SPRING: 49420	Applies tension to O328	6-11
O330	1	Same as O131	Applies tension to O328 and O352	6-11
O331	1	Same as O214	Lubricates O156 and O175 through O212	6-11
O332	1	PLATE, GUIDE: 151038	Guides O352	6-11

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O333	1	BEARING, ROLLER, NEEDLE: mfg. code No. 60380, part No. B-2 1/2 4X, (code 59433 part No. 151016)	Detent bearing for O324	6-11
O335	1	PLATE: 151106	Locks back end of A132 to keyboard base	6-11
O336	1	SLEEVE, GEAR: 151154	Operates keyboard clutch when O342 and O343 are in engaged position	6-12
O337	1	DISK: 154694	Drives O349	6-12
O338	1	ARM: 150013	Drives O337	6-12
O339	1	LEVER: 150026	Engages and disengages O342 and O343	6-12
O340	1	SPRING: 151728	Applies tension to O339	6-12
O341	1	WICK: 150029	Lubricates keyboard clutch	6-12
O342	1	SHOE, CLUTCH: 150044	Permits O343 to drive O338 when in engaged position	6-12
O343	1	SHOE, CLUTCH: 150043	Drives O338 when in engaged position	6-12
O344	1	SPRING: 150241	Applies tension to O342 and O343	6-12
O345	1	WASHER, FELT: 120824	Lubricates O336 and O347	6-12
O346	1	PLATE: 151064	Mounts back end of O347 and retains O336 on O347	6-12
O347	1	SHAFT: 151157	Mounting shaft for O336 and O349	6-12
O348	1	WASHER, FELT: 72563	Lubricates H358 and O347	6-12
O349	1	CAM ASSEMBLY: 151151	Drives O352 and operates O310, O371 and O404 through O410	6-12
O350	1	WICK: 151333	Lubricates O349	6-12
O351	1	SPRING: 161348	Retains O350 and O349	6-12
O352	1	FOLLOWER, ECCENTRIC: 151068	Resets O328 through O332 and operates O160	6-12
O353	1	WICK: 151201	Lubricates O336 and O347	6-12
O367	1	LEVER: 151025	Mounts and applies pressure to O369	6-13
O368	1	SPRING: 101386	Applies tension to O367	6-13
O369	1	TOGGLE, DETENT: 151026	Operates O387	6-13
O370	1	WASHER, FELT: 93758	Lubricates O369, O373 and O387	6-13
O371	1	LEVER: 151037	Operates O376 and O378	6-13
O372	1	SPRING: 125268	Applies tension to O371	6-13
O373	1	LEVER: 151190	Operates O369 and guide for O376 and O378	6-13
O374	1	WASHER, FELT: 151222	Lubricates O373 and H392	6-13
O375	1	PLATE: 151205	Pivot for O376 and O378 and anchor for O377 and O379	6-13
O376	1	LEVER: 151051	Operates O373	6-13
O377	1	SPRING: 151395	Applies tension to O376	6-13
O378	1	Same as O376	Operates O373	6-13
O379	1	SPRING: 90573	Applies tension to O378	6-13
O380	1	LEVER: 152815	Operates O373 on "BREAK"	6-13
O381	1	SPRING: 80581	Applies tension to O380	6-13
O382	1	ROD, BREAK: 151218	Operates O380	6-13
O383	1	TOGGLE: 151171	Sends spacing and marking impulses by making and breaking with E111 contact screws	6-14
O384	1	LINK, TOGGLE: 151180	Holds O383 in position to make and break with E111	6-14
O385	1	SPRING: 151820	Applies tension to O384	6-14
O386	1	GUIDE: 151185	Guide for O387	6-14
O387	1	EXTENSION, TOGGLE: 151184	Operates O383	6-14
O388	1	GUIDE, LEVER: 151188	Guide for O390 through O396 and O404 through O410 and spring anchor for O397	6-14
O389	1	SHAFT: 151161	Pivot and stop for O390 through O396	6-14
O390	1	LEVER: 151053	Positions O404	6-14
O391	1	Same as O390	Positions O405	6-14
O392	1	Same as O390	Holds O406 in position	6-14
O393	1	Same as O390	Positions O407	6-14
O394	1	Same as O390	Positions O408	6-14

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O395	1	Same as O390	Positions O409	6-14
O396	1	Same as O390	Holds O410 in position	6-14
O397	1	SPRING: 151398	Applies tension to O390 through O396	6-14
O398	1	WASHER, FELT: 86079	Lubricates O389 and O390 through O396	6-14
O399	1	BAIL: 151065 (Continued. See O400.)	Lock O390 through O396 in position until operation completed	6-14
A451	2	BRACKET: 153112	Guides and supports O452 and O455	6-10
A452	2	BRACKET: 151867	Supports A453 by H461	6-10
A453	2	COVER: 153117	Cover and guide for O451 and O454	6-10
A455	2	Same as A123	Noise seal and support for A453	6-10
H400	1	WASHER, FLAT: 73844	Roller for O376	6-13
H401	1	Same as H206	Retains H400 on H398	6-13
H402	1	Same as H398	Bearing for H404	6-13
H403	1	Same as H127	Locks H402 to A136	6-13
H404	1	Same as H400	Roller for O378	6-13
H405	1	Same as H206	Retains H404 on H402	6-13
H406	1	STUD: 152814	Pivot for O380 and holds O375 to A136	6-13
H407	1	Same as H127	Holds O375 to A136	6-13
H408	1	Same as H311	Holds O375 to A136	6-13
H409	1	Same as H158	Retains O380 on H406	6-13
H410	1	Same as H158	Retains O382 on O380	6-13
H411	1	SCREW, MACHINE: 2-56 fil 1164	Holds O386 to A138	6-14
H412	1	WASHER, LOCK: 93118	Holds O386 to A138	6-14
H413	1	SCREW, MACHINE: 2-56 fil 125126	Holds O383 to A140	6-14
H414	1	Same as H322	Holds O383 to A140	6-14
H415	1	SCREW, MACHINE: 4-40 fil 151685	Holds A138 and A140 to A141	6-14
H416	1	Same as H127	Holds A138 and A140 to A141	6-14
H417	1	SCREW, MACHINE: 4-40 fil 151731	Holds A138 and A140 to A139	6-14
H418	1	Same as H127	Holds A138 and A140 to A139	6-14
H419	1	Same as H130	Holds A139 to H417	6-14
H420	1	Same as H202	Holds K101 to A136	6-14
H421	1	Same as H127	Holds K101 to A136	6-14
H422	1	Same as H311	Holds K101 to A136	6-14
H426	1	STUD: 151055	Stop for selector levers O404 through O410	6-14
H427	1	Same as H337	Retains O389 to O388	6-14
H428	1	Same as H202	Holds O388 to A136	6-14
H429	1	Same as H127	Holds O388 to A136	6-14
H430	1	Same as H183	Holds O388 to A136	6-14
H431	1	STUD: 151062	Pivot for O399	6-14
H432	1	Same as H246	Retains O399 on H431	6-14
H433	1	Same as H206	Retains O403 to O402	6-14
H434	1	Same as H202	Holds O402 to A136	6-14
H435	1	Same as H127	Holds O402 to A136	6-14
H436	1	WASHER, FLAT: 2597	Holds O402 to A136	6-14
H437	1	SCREW, MACHINE: 6-40 fil 151832	Holds A136 to A132	6-14
H438	1	WASHER, LOCK: 3646	Holds A136 to A132	6-14
H439	1	WASHER, FLAT: 2247	Holds A136 to A132	6-14
H440	1	SCREW, ADJUSTMENT: 151169	Adjusts position of K101	6-14
H441	1	Same as H130	Locks H440 to A136	6-14
H442	1	Same as H127	Locks H426 to A136	6-14
H443	1	Same as H212	Locks A114 and H211 in adjusted position	6-14
H451	2	Same as H119	Holds A451 to A105	6-10
H452	2	Same as H105	Holds A451 to A105	6-10
H453	2	STUD: 100149	Support and pivot for O452 and O455	6-10
H454	2	Same as H105	Holds H453 to A451	6-10
H455	2	Same as H112	Holds H453 to A451	6-10
H456	2	SCREW, MACHINE: 6-40 fil 1047	Pivot for and holds O451 to O452 and O454 to O455	6-10

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H457	2	Same as H105	Holds O451 to O452 and O454 to O455	6-10
H458	2	Same as H112	Holds O451 to O452 and O454 to O455	6-10
H459	2	Same as H270	Holds A452 to A105	6-10
H460	2	Same as H105	Holds A452 to A105	6-10
H461	2	Same as H453	Guide for and helps retain A453 to A105	6-10
H462	2	WINDOW: 153118	Covers for data sheets	6-10
H463	2	Same as H192	Holds H462 to A453	6-10
H464	2	Same as H298	Plug for center keylever guide hole of A453	6-10
H465	2	Same as H299	Locks H464 to A453	6-10
H466	2	Same as H105	Holds A455 to A453	6-10
H467	2	SCREW: 151628	Holds A455 to A453	6-10
I451	2	LABEL SET: 153119	Data sheets	6-10
O400	1	SPRING: 90573	Applies tension to O399	6-14
O401	1	WASHER, FELT: 109762	Lubricates H431 and O399	6-14
O402	1	GUIDE, SELECTOR: 151158	Guide for O404 through O410 and anchor for O411	6-14
O403	1	SHAFT: 151097	Stop for O404 through O410	6-14
O404	1	LEVER: 151052	Operates O318	6-14
O405	1	Same as O404	Operates O318	6-14
O406	1	Same as O404	Operates O318	6-14
O407	1	Same as O404	Operates O318	6-14
O408	1	Same as O404	Operates O318	6-14
O409	1	Same as O404	Operates O318	6-14
O410	1	Same as O404	Operates O318	6-14
O411	1	SPRING: 151397	Applies tension to O404 through O410	6-14
O420	12	Same as O231 except character " ↑ , A": 152001	Operates O177	
O421	12	Same as O231 except character " ↗ , D": 152004	Operates O183	
O422	12	Same as O231 except character " → , F": 152005	Operates O186	
O423	12	Same as O231 except character " ↘ , G": 152006	Operates O189	
O424	12	Same as O231 except character " ↓ , H": 152008	Operates O192	
O425	12	Same as O231 except character " ↙ , J": 152010	Operates O195	
O426	12	Same as O231 except character " ← , K": 152011	Operates O198	
O427	12	Same as O231 except character " ↖ , L": 152012	Operates O201	
O430	12	Same as O241 except character " + , Z": 152015	Operates O178	
O431	12	Same as O241 except character " O , C": 152003	Operates O184	
O432	12	Same as O241 except character " ⊖ , V": 152014	Operates O187	
O433	12	Same as O241 except character " ⊕ , B": 152002	Operates O190	
O434	12	Same as O241 except character " ⊙ , N": 152013	Operates O193	
O435	12	Same as O241 except character " _ , ": 152016	Operates O205	
O451	2	KEYLEVER: 153444	Operates O452	6-10
O452	2	LEVER: 153109	Operates O283	6-10
O453	2	SPRING: 139555	Applies pressure to O451 and O452	6-10

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114B/UG, MX-1114C/UG, OR MX-1677A/UG, OR BASE NT-1443/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O454	2	KEYLEVER: 153445	Operates O455	6-10
O455	2	Same as O452	Operates O272	6-10
O456	2	Same as O453	Applies pressure to O454 and O455	6-10
O457	2	Same as O296	Nut plate for A453 and A455	6-10
O458	2	Same as O286	Spaces A453 and A455	6-10

MOTOR PD-17A/U

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
500 to 599 A501		MOTOR PD-17A/U	Power supply for Keyboard, Base, Automatic Typewriter and Clutches and Gears	6-15
A502 B501		BRACKET ASSEMBLY: 150976	Support for synchronous motor and accessories	6-15
B502 C501		PLATE, MOUNTING: 151920 MOTOR, AC: 151795	Support for C501, K501 and S501 Operates components of TT-47C/UG, TT-69B/UG, TT-128B/UG, TT-130B/UG, TT-171A/UG or TT-234/SGA-3	6-15 6-15
E501 E502 E503 E504 H501 H502		FAN: 123769 CAPACITOR, FIXED, ELECTROLYTIC: 125 v ac working, max working temperature 50 C, insulated aluminum can, approx 3-3/16 in. lg x 1-1/16 in. diam, mfg. code No. 74861, part No. AX7 (code 59433 part No. 122245)	Cools synchronous motor Starting capacitor for synchronous motor	6-15 6-15
H503 H505 H506 H507 H508 H509 H510 H511 H512 H513 H514 H515 H516 H517 H518 H519 H520 H521		ROTOR, MOTOR: 128874 INSULATOR, PLATE: 151924 WASHER, FLAT: 87334 WASHER, FLAT: 153049 WASHER, EXTRUDED: 122211 WASHER, FLAT: Steel, mfg. code No. 24446, part No. 621A134AA-P5 (code 59433 part No. 152297) SCREW, MACHINE: 8-32 fil 122229 NUT, HEX: 2263 SCREW, MACHINE: 6-40 fil 1179 WASHER, LOCK: 2191. Same as H105 STRAP, MOUNTING: 151620 SCREW, MACHINE: 6-32 Rd hd 151621 NUT, SQUARE: 151622 CLAMP: 151925 SCREW, MACHINE: 4-40 fil 151637 WASHER, LOCK: 3640 CLAMP: 151922 Same as H512 Same as H513 NUT, HEX: 151926 SCREW, MACHINE: 4-40 fil 151686 Same as H513 WASHER, FLAT: 125011. Same as H183 Same as H512	Operates O265, O267 or O268 and B501 Insulates K501 from A502 Insulates S501 from mounting hardware Insulates washers for H503 Pull washer for O504 Support for O503 Holds O502 to O501 Holds O502 to O501 Holds B502 to E501 Holds B502 to E501 Clamps synchronous motor to A501 Clamps H508 straps Locks H508 straps in clamping position Clamps K501 to A502 Holds H511 to A502 Holds H511 to A502 Clamps C501 to A502 Holds H514 to A502 Holds H514 to A502 Spaces S501 from A502 Holds S501 to H517 Holds S501 to H517 Holds S501 to H517 Holds H517 to A502	6-15 6-15



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

## MOTOR PD-17A/U (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H522		Same as H513	Holds H517 to A502	6-15
H523		SCREW, MACHINE: 6-40 fil 151692. Same as H119	Holds A502 to A501	6-15
H524		Same as H507	Holds A502 to A501	6-15
H525		WASHER, FLAT: 7002. Same as H141	Holds A502 to A501	6-15
H526		SCREW, MACHINE: 6-40 fil 151346. Same as H104	Holds gear sets to E501	6-15
H527		Same as H507	Holds gear sets to E501	6-15
K501		RELAY, MOTOR STARTING: 151923	Starting relay for the synchronous Motor	6-15
O501		STATOR, MOTOR: 122251	Operates E501	6-15
O502		END-BELL: 122252	End bells for O501	6-15
O503		SPRING: 71999	Applies pressure to E501	6-15
O504		BEARING, BALL: 122201	Rotor bearings for O502	6-15
O505		OILER, BALL: 122220	Lubricates O504	6-15
O506		MOUNT, VIBRATION: 153030	Mounts E501	6-15
S501		SWITCH, THERMOSTATIC, SPST: 122249	Current overload switch, prevents overheating	6-15
W501		CABLE ASSEMBLY: 151927	Connects Motor with TB101	6-15

## MOTOR, AC, GOVERNED, PD-18/U

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
600 to 699		MOTOR, PD-18/U	Power source for Keyboard, Base, Automatic Typer and Clutches and Gears	6-16 and 6-17
A601		MOUNTING, BRUSH HOLDER: 150884	Guide for E604	6-16
A602		PLATE, CLAMP: 150886	Locks mounting hardware of A603 to A601	6-16
A603		PLATE, BRUSH: 150885	Holds E604 on A601	6-16
A604		Same as A602	Locks mounting hardware of A605 to A605	6-16
A605		Same as A601	Guide for E605	6-16
A606		Same as A603	Holds E605 on A605	6-16
A607		COVER: 152044	Cover and electrostatic shield for governor mechanism	6-16
A608		COVER: 152037	Cover for and electrostatic shield for mounted parts of A610	6-16
A609		BRACKET: 152046	Support for B601	6-16
A610		BASE, MOTOR: 152039	Container for C603, R601 and Z601	6-16
A611		BRACKET: 152034	Mounts R601 to A610	6-16
A612		COVER: 152040	Cover for A610	6-16
A617		BRACKET: 150877	Anchor support for O613	6-17
A618		BRACKET: 150858	Support for E612	6-17
A619		BRACKET: 150859	Support for E611	6-17
A620		COVER: 150879	Cover for all mounted parts of B603	6-17
A621		Same as A611	Supports R602	6-16
A622		BRACKET: 152459	Supports R602	6-16
B601		MOTOR, AC: 150701	Operates components of TT-48B/UG, TT-70C/UG, TT-129A/UG or TT-131A/UG	6-16
B603		FAN: 150997	Cools series motor and support for governor mechanism	6-17
C601		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 v dc working, 20,000 mmf, ceramic insulation, 3/4 in. diam. by 1/4 in. thick, mfg. code No. 59433, part No. 122233	Electrical noise suppressor for E607 and E608	6-16

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC, GOVERNED, PD-18/U (Continued)				
REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
C603		CAPACITOR, FIXED, PAPER DIELECTRIC: 1,000 v dc working, 0.5 mfd $\pm$ 20%, metal casing hermetically sealed, 2-1/4 in. h, 1-5/16 in. deep, 5/8 in. w, mfg. code No. 72618, part No. OMX-1050 (code 59433 part No. 150979)	Spark suppressor for E611 and E612	6-16
E601		ARMATURE, MOTOR: 122210	Operates O265, O267 or O268 and B603	6-16
E602		WASHER, FLAT: 91837	Insulates C601 from O603	6-16
E603		INSULATOR, PLATE: 152058	Insulates R601 from C603	6-16
E604		BRUSH, ELECTRICAL CONTACT: 150882	Electrical contact brush for E607	6-16
E605		Same as E604	Electrical contact brush for E608	6-16
E606		Same as E603	Insulates terminals of Z601 from H640	6-16
E607		BRUSH, ELECTRICAL CONTACT: 122205	Completes series circuit, electrical contact brush for E604	6-16
E608		Same as E607	Completes series circuit, electrical contact brush for E605	6-16
E609		SPRING: 151455	Terminals for C601	6-16
E611		CONTACT, GOVERNOR: 150856	Opens and closes resistance circuit for Motor	6-17
E612		SCREW, CONTACT: 6320	Contact for resistance circuit of Motor	6-17
E613		WASHER, FLAT: 150849	Insulates A617 from H665	6-17
E614		INSULATOR, BUSHING: 150868	Insulates A617 from H663	6-17
E615		INSULATOR, PLATE: 150850	Insulates A617 from B603	6-17
E616		Same as E613	Insulates A618 from H673	6-17
E617		Same as E614	Insulates A618 from H670 and H671	6-17
E618		Same as E615	Insulates A618 from B603	6-17
E619		Same as E613	Insulates A619 from H677	6-17
E620		Same as E614	Insulates A619 from H674	6-17
E621		Same as E615	Insulates A619 from B603	6-17
E622		BUSHING, INSULATOR: 152495	Insulates E611 from O613, H655 and H684	6-17
E623		TERMINAL, LUG: mfg. code No. 64959, part No. p-216277 (code 59433 part No. 91230)	Strap W604 terminal	6-16
E624		TERMINAL, LUG: mfg. code No. 77147, part No. 2046 (code 59433 part No. 91231)	Strap W604 terminal	6-16
E625		TERMINAL: 151626	Cable W601 terminal	6-16
E626		TERMINAL: 151626	Motor winding terminal	6-16
E627		INSULATOR: 172398	Insulates R601 from Z601	6-16
E628		TERMINAL: 164479	Terminal for C601 lead	6-16
H600		WASHER, EXTRUDED: 122211. Same as H501	Pull washer for O615	6-16
H601		ROD: 122202	Holds O602 and O603 to O601	6-16
H602		NUT, PLAIN, HEX: Steel, mfg. code No. 24446, part No. N210P16C (code 59443 part No. 151453)	Locks O602 to O601	6-16
H603		SCREW, MACHINE: 8-32 fil 122229. Same as H503	Support for O609	6-16
H604		SCREW, MACHINE: 6-32 fil 125143	Holds C601 to O603	6-16
H605		WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1206 (code 59433 part No. 92260)	Holds C601 to O603	6-16
H606		NUT, HEX: 6345	Holds C601 to O603	6-16
H607		HOLDER, CONTACT BRUSH: 122206	Holder for E607 or E608	6-16
H608		SCREW, SET: 8-32 headless 153102	Set Screws for H607	6-16
H609		SCREW, MACHINE: 6-40 hex 151630	Ground screw	6-16
H610		WASHER, LOCK: 2191. Same as H105	Locks H609 to O603	6-16
H611		SCREW, MACHINE: 6-40 fil 151642. Same as H351	Holds A601 to O603	6-16
H612		Same as H610	Holds A601 to O603	6-16
H613		SCREW, MACHINE: 6-40 fil 151346. Same as H104	Holds A602 to A601	6-16
H614		Same as H610	Holds A602 to A601	6-16
H615		WASHER, FLAT: 7002. Same as H141	Holds A602 to A601	6-16

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC, GOVERNED, PD-18/U (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H616		SCREW, MACHINE: 6-40 fil 151658. Same as H117	Holds A603 and terminal of E604 to A601	6-16
H617		Same as H610	Holds A603 and terminal of E604 to A601	6-16
H618		SCREW, MACHINE: 6-40 fil 151657. Same as H113	Holds A603 to A601	6-16
H619		Same as H610	Holds A603 to A601	6-16
H620		Same as H613	Holds O605 and A602 to A601	6-16
H621		Same as H610	Holds O605 and A602 to A601	6-16
H622		Same as H615	Holds O605 and A602 to A601	6-16
H623		SCREW, MACHINE: 6-40 fil 151661	Holds A601 and A605 to O603	6-16
H624		Same as H610	Holds A601 and A605 to O603	6-16
H625		Same as H623	Holds A605 to O603	6-16
H626		Same as H610	Holds A605 to O603	6-16
H627		Same as H616	Holds A606 and terminal from E605 to A605	6-16
H628		Same as H610	Holds A606 and terminal from E605 to A605	6-16
H629		Same as H618	Holds A606 to A605	6-16
H630		Same as H610	Holds A606 and A605	6-16
H631		Same as H613	Holds A604 to A605	6-16
H632		Same as H610	Holds A604 to A605	6-16
H633		Same as H615	Holds A604 to A605	6-16
H634		Same as H613	Holds O607 and A604 to A605	6-16
H635		Same as H610	Holds O607 and A604 to A605	6-16
H636		Same as H615	Holds O607 and A604 to A605	6-16
H637		Same as H609	Holds A607 to O603	6-16
H638		Same as H610	Holds A607 to O603	6-16
H639		SCREW, MACHINE: 4-40 hex 151152. Same as H202	Holds A608 to A609	6-16
H640		SHIELD, CABLE: 152067	Shields conductors of Motor	6-16
H641		Same as H639	Holds A611 to A610	6-16
H642		WASHER, LOCK: 110743. Same as H127	Holds A611 to A610	6-16
H643		Same as H639	Locks A612 to A610	6-16
H644		Same as H642	Locks A612 to A610	6-16
H646		Same as H613	Holds gear sets to E601	6-16
H647		Same as H610	Holds gear sets to E601	6-16
H648		WASHER, LOCK: Steel, mfg. code No. 78189 part No. 1210 (code 59433 part No. 98642)	Locks O602 to O601	6-16
H649		STRAP, MOUNTING: 151620. Same as H508	Clamps Motor to A609	6-16
H650		SCREW, MACHINE: 6-32 Rd hd 151621. Same as H509	Clamps H649 straps	6-16
H651		NUT, SQUARE: 151622. Same as H510	Locks H649 straps	6-16
H652		SCREW: 153103	Motor nameplate screws	6-16
H653		GROMMET: 153101	Protect Motor leads	6-16
H655		SCREW, MACHINE: 4-40 hex 151637. Same as H192	Holds E611 to O613	6-17
H656		Same as H642	Holds E611 to O613	6-17
H657		Same as H639	Holds E611 to A619	6-17
H658		Same as H642	Holds E611 to A619	6-17
H659		CLAMP: 150857	Clamps E611 to A619	6-17
H660		Same as H615	Holds E612 to A618	6-17
H661		Same as H610	Holds E612 to A618	6-17
H662		Same as H606	Holds E612 to A618	6-17
H663		SCREW, MACHINE: 6-40 fil 151659. Same as H270	Holds A617 and E615 to B603	6-17
H664		Same as H610	Holds A617 and E615 to B603	6-17
H665		Same as H615	Holds A617 and E615 to B603	6-17
H666		SCREW, MACHINE: 4-40 fil 150865	Adjusts tension of and holds O613 to A617	6-17
H667		Same as H639	Holds H669 to A617	6-17
H668		Same as H642	Holds H669 to A617	6-17
H669		CLAMP: 150866	Friction clamp for H666	6-17
H670		Same as H663	Holds A618 and E618 to B603	6-17

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC, GOVERNED, PD-18/U (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H671		POST, SPACING: 150872	Mounting post for A620 and holds A618 and E618 to B603	6-17
H672		Same as H610	Holds A618 and E618 to B603	6-17
H673		Same as H615	Holds A618 and E618 to B603	6-17
H674		Same as H671	Mounting post for A620 and holds A619 and E621 to B603	6-17
H675		Same as H663	Holds A619 and E621 to B603	6-17
H676		Same as H610	Holds A619 and E621 to B603	6-17
H677		Same as H615	Holds A619 and E621 to B603	6-17
H678		Same as H623	Holds O614 to B603	6-17
H679		Same as H610	Holds O614 to B603	6-17
H680		Same as H615	Holds O614 to B603	6-17
H681		Same as H663	Holds B603 to E601	6-17
H682		Same as H610	Holds B603 to E601	6-17
H683		SCREW, MACHINE: 4-40 fil 98712	Holds A620 to H671 and H674	6-17
H684		WASHER, FLAT: 125011. Same as H183	Holds E611 to O613	6-17
H685		SCREW: 5740	Holds R601 and W601 and W602 to A610	6-16
H686		WASHER: 3624	Holds R601 and W601 and W602 to A610	6-16
H687		WASHER, LOCK: 61085	Holds R601 and W601 and W602 to A610	6-16
H688		NUT: 112627	Holds R601 and W601 and W602 to A610	6-16
H689		SCREW: 1181	Holds A622 to A610	6-16
H690		WASHER: 76099	Holds A622 to A610	6-16
H691		Same as H105	Holds A622 to A610	6-16
H692		Same as H112	Holds A622 to A610	6-16
O600		BUSHING: 153031	Bushing for B601 leads	6-16
O601		STATOR, MOTOR: 122221	Operates E601	6-16
O602		END-BELL: 122253	End bell for O601	6-16
O603		END-BELL: 122200	End bell for O601 and mounts A601, A605, H607 and part of series circuit	6-16
O604		CAP: 122204	Retains E607 and E608 in H607	6-16
O605		SPRING: 150880	Applies pressure to E604	6-16
O606		SPACER: 150873	Spaces one end of A605 from O603	6-16
O607		SPRING: 150881	Applies pressure to E605	6-16
O608		SPRING: 152078	Applies pressure to and spaces C603 and Z601	6-16
O609		SPRING: 71999. Same as O503	Applies pressure to E601	6-16
O610		BEARING: 122201. Same as O504	Armature bearing for O602 and O603	6-16
O611		RING, CUSHION: 153030	B601 vibration mount	6-16
O612		CUP, OIL: 122220	B601 oiler	6-16
O613		SPRING: 150869	Applies tension to E611	6-17
O614		BUSHING: 150853	Adjustable stop for E611	6-17
P601		PLUG, MACHINE THREAD: 152035	Plug for A607	6-16
R601		RESISTOR, FIXED, WIRE WOUND: non-inductive winding, 250 ohms, 40w at 300°C max continuous operating temp. mfg. code No. 59433. part No. 152054	Offers resistance to series motor	6-16
R602		Same as R601	Offers resistance to series Motor	6-16
W601		CABLE ASSEMBLY, SPECIAL PURPOSE: 152059	Connects series motor with Z601	6-17
W602		LEAD, ELECTRICAL: 153114	Connects H607 to governor contact	6-16
W603		STRAP, RESISTOR: 87385	Connect R601 and C603	6-16
W604		STRAP: 91228	Ground strap	6-16
W606		WIRE: 162684	Connects R601 to Motor circuit	6-16
W607		WIRE: 162685	Connects R602 to Motor circuit	6-16
Z601		SUPPRESSOR, ELECTRICAL NOISE:	Radio interference suppressor for Motor	6-16

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
700 to 1699		CABINET, CY-2538/UG, CY-2539/UG or CY-2320/SGA-3	Shelf mounted (CY-2539/UG only) or console container for Keyboard or Base, Motor, Power Distribution Panel and Automatic Typer; main power switch control; associated equipment power switch control (CY-2320/SGA-3 only); power and signal line input, terminals and electrical noise filters; copy and margin indicator light; and signal bell.	6-18 through 6-21
A701	13	LATCH: 151506	Secure O812 to O811	6-18
A702	13	GUIDE, CABLE: 151956	Rear guide for W1101	6-18
A703	13	CLAMP: 74546 (Continued. See A800.)	Guide for W1101	6-18
E701	13	INSULATOR: 153468	Insulates TB701 from Cabinet shell	6-18
E702	13	INSULATOR: 153470	Insulates TB702 from Cabinet shell	6-18
E703	13	KNOB: (old style) 151556 (Continued. See E800.)	Main power switch control; operates O720	6-18
H701	13	SCREW, MACHINE: 6-40 fil 1179. Same as H506	Holds A701 to O811	6-18
H702	13	WASHER: 76099. Same as H138	Holds A701 to O811	6-18
H703	13	WASHER, LOCK: 2191. Same as H105	Holds A701 to O811	6-18
H704	13	NUT, HEX: 3598. Same as H112	Holds A701 to O811	6-18
H705	13	SCREW: 153442	Holds O706 to O811	6-18
H706	13	WASHER, LOCK: 3639	Holds O706 to O811	6-18
H707	13	WASHER: 3438. Same as H223	Holds O706 to O811	6-18
H708	13	WASHER: 84579	Holds O706 to O811	6-18
H709	13	STUD: 151542	Pivot for O710	6-18
H710	13	Same as H703	Holds H709 to O707 and O710	6-18
H711	13	NUT, HEX: 6345. Same as H606	Holds H709 to O707 and O710	6-18
H712	13	NUT, LOCK: 151558	Holds I701 to Cabinet dome	6-18
H713	13	SCREW, CAP, HEX: Steel, mfg. code No. 77250, part No. 12-24 (code 59433 part No. 152884)	Dome counterbalance adjusting screw	6-18
H714	13	SCREW: 8333	Holds A702 and A703 to O713	6-18
H715	13	Same as H706	Holds A702 and A703 to O713	6-18
H716	13	SCREW: 151534	Pivot for and holds O715 to Cabinet	6-18
H717	13	SCREW: 151526	Holds cross bar O717 to Cabinet	6-18
H718	13	SCREW: 153484	Terminal screws for TB701	6-18
H719	13	SCREW: 10-32 hex 6810	Holds O713 and O714 to O722	6-18
H720	13	SCREW: 151723	Holds O713 and O714 to O722	6-18
H721	13	WASHER: 35826	Holds O713 and O714 to O722	6-18
H722	13	WASHER, LOCK: 98642. Same as H102	Holds O713 and O714 to O722	6-18
H723	13	NUT, HEX: 125231	Holds O713 and O714 to O722	6-18
H724	13	Same as H708	Holds O723 to O725	6-18
H725	13	Same as H722	Holds O723 to O725	6-18
H726	13	Same as H723	Holds O723 to O725	6-18
H727	13	Same as H708	Holds O725 to O812	6-18
H728	13	Same as H722	Holds O725 to O812	6-18
H729	13	Same as H723	Holds O725 to O812	6-18
H730	13	Same as H708	Holds O726 to O725	6-18
H731	13	Same as H722	Holds O726 to O725	6-18
H732	13	Same as H723	Holds O726 to O725	6-18
H733	13	SCREW: 6-40 fil 1176	Holds O729 to O812	6-18
H734	13	Same as H703	Holds O729 to O812	6-18
H735	13	WASHER; FLAT: 7002. Same as H141	Holds O729 to O812	6-18
H736	13	STUD: 153388	Spaces O730 from TB701 and TB702 and holds TB701 and TB702 to Cabinet	6-18

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3 (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H737	13	Same as H735	Spaces O730 from TB701 and TB702 and holds TB701 and TB702 to Cabinet	6-18
H739	13	SCREW: 6-40 fil 8543	Holds O730 to H737	6-18
H740	13	Same as H703	Holds O730 to H737	6-18
H741	13	Same as H722	Ground fastener	6-18
H742	13	Same as H706	Ground fastener	6-18
H743	13	Same as H723 (Continued. See H800.)	Ground fastener	6-18
I701	13	LENS: 155083 (Continued. See I800.)	Lens for indicator lamp	6-18
O701	13	GASKET: 151505	Noise seal for dome	6-18
O702	13	BUTTON: 151507	Lid latch release button	6-18
O703	13	WASHER: 151509	Seal for O702	6-18
O704	13	BUSHING: 151523	Pivot for A701	6-18
O705	13	SPRING: 151508	Return spring for O702	6-18
O706	13	RETAINER: 151513	Retains H811	6-18
O707	13	BAR: 151514	Dome latch	6-18
O708	13	BUTTON: 151515	Dome latch release button	6-18
O709	13	Same as O703	Seal for O708	6-18
O710	13	LEVER: 151599	Dome latch roller detents	6-18
O711	13	SPRING: 74712	Applies tension to O707	6-18
O712	13	GUIDE: 151536	Cable guide	6-18
O713	13	COUNTERBALANCE, LEFT: 152882	Restricts movement of O811	6-18
O714	13	COUNTERBALANCE, RIGHT: 152883	Restricts movement of O811	6-18
O715	13	ARM: 151519	Supports back end of Keyboard or Base when raised	6-18
O716	13	BUTTON, PLUG: Steel, mfg. code No. 61864, part No. 48155 (code 59433 part No. 119639)	Plug for cable inlet	6-18
O717	13	BAR: 151527	Cross bar	6-18
O718	13	SEAL: 151512	Seal for O718	6-18
O719	7	PAD: 154308	Resilient base for Keyboard or Base	6-18
O720	13	SHAFT: (old style) 151541	Operates S1101	6-18
O721	13	SPRING: 151559	Applies tension to O720	6-18
O722	13	HINGE: 151530	Pivots O811	6-18
O723	13	HINGE: 151578	Pivots O812	6-18
O724	13	SPRING: 151538	Applies tension to O723	6-18
O725	13	HINGE: 151727	Holds O723 to O812	6-18
O726	13	ARM: 153033	Engages O727	6-18
O727	13	BRACKET: 153032	Restricts movement of O812	6-18
O728	13	GASKET: 151504	Noise seal for dome lid	6-18
O729	13	GUIDE: 151545	Paper guide	6-18
O730	13	COVER: 153466	Covers TB701 and TB702	6-18
O731	13	SHAFT: (new style) 162628 (Continued. See O800.)	Operates S1101	6-18
TB701	13	BOARD: 153459	Signal terminal board	6-18
TB702	13	BOARD: 153485 (Continued. See TB1000.)	Power terminal board	6-18
A801	13	BRACKET: 151516	Holds O815 to Cabinet	6-19
A802	8	MOUNT, REAR: 151587	Vibration mount for CY-2539/UG	6-19
A803	8	MOUNT, FRONT: 151588	Vibration mount for CY-2539/UG	6-19
A804	13	RAIL: 151522	Support for A805 and A806	6-19
A805	13	HINGE: 151524	Tilts Automatic Typewriter or Base	6-19
A806	13	RAIL: 151525	Rear member of cradle	6-19
A807	13	BRACKET: 151564	Mount for signal bell assembly	6-19
A808	13	PLATE: 151579 (Continued. See A900.)	Retaining plate	6-19
E801	13	STRAP: 151569	Ground	6-19

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3 (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E803	13	ARMATURE: 151567	Rings I801 when attracted by E802	6-19
E804	13	TERMINAL: 82474. Same as E105 (Continued. See E900.)	Connectors for W801	6-19
H801	8	NUT, HEX: 2539	Holds O802 to Cabinet	6-19
H802	13	SCREW, MACHINE: 6-40 fil 151658. Same as H117	Holds O804 to dome	6-19
H803	13	Same as H703	Holds O804 to dome	6-19
H804	13	Same as H704	Holds O804 to dome	6-19
H805	13	SCREW, MACHINE: 4-40 fil 151685. Same as H415	Holds O806 to O805	6-19
H806	13	WASHER, LOCK: 3640. Same as H513	Holds O806 to O805	6-19
H807	13	SCREW: 6-40 hex 151442	Holds O804 and O809 to dome	6-19
H808	13	SCREW, MACHINE: 6-40 hex 151772.	Holds O809 to dome	6-19
H810	13	WASHER, FLAT: 107116	Holds O809 to dome	6-19
H811	13	WINDOW: 153042	Copy window for Cabinet dome	6-19
H812	13	SCREW: 85529	Pivot for and holds O813 and O814 to Cabinet	6-19
H813	13	Same as H706	Holds O813 to Cabinet	6-19
H814	13	Same as H723	Holds O813 to Cabinet	6-19
H815	13	SCREW: 100184	Pivot for and holds O813 to Cabinet	6-19
H816	13	Same as H706	Holds O813 to Cabinet	6-19
H817	13	Same as H723	Holds O813 to Cabinet	6-19
H818	13	Same as H815	Pivot for and holds O815 and O816 to A801	6-19
H819	13	Same as H706	Holds O815 to A801	6-19
H820	13	NUT: 102751	Holds O815 to A801	6-19
H821	13	SCREW: 1263	Holds A801 to Cabinet	6-19
H822	13	Same as H703	Holds A801 to Cabinet	6-19
H823	13	Same as H735	Holds A801 to Cabinet	6-19
H824	13	Same as H815	Pivot for and holds O815 to dome	6-19
H825	13	Same as H706	Holds O815 to dome	6-19
H826	13	Same as H723	Holds O815 to dome	6-19
H827	13	BOX CONNECTOR, ELECTRICAL: Steel, mfg. code No. 03743, part No. 7380V (code 59433 part No. 94660)	Clamps signal and power cables to Z801 and Z802 or Z1001	6-19
H828	13	SCREW: 8-32 fil 125170	Holds Z801, Z802 or Z1001 to Cabinet	6-19
H829	13	WASHER, LOCK: Steel, mfg. code No. 48425, part No. 3250822 (code 59433 part No. 92527)	Holds Z801, Z802 or Z1001 to Cabinet	6-19
H830	13	NUT: 49514	Holds Z801, Z802 or Z1001 to Cabinet	6-19
H831	13	STUD: 151521	Holds A802, A904 or A905 to A804	6-19
H832	13	WASHER, LOCK: 2449. Same as H125	Holds A802, A904 or A905 to A804	6-19
H833	13	NUT: 125218	Holds A802, A904 or A905 to A804	6-19
H834	13	WASHER: 71858	Holds A802, A904 or A905 to A804	6-19
H835	13	Same as H714	Holds A802, A904 or A905 to Cabinet	6-19
H836	13	Same as H706	Holds A802, A904 or A905 to Cabinet	6-19
H837	13	Same as H723	Holds A802, A904 or A905 to Cabinet	6-19
H838	13	GUIDE: 151955	Cable guide for W1101	6-19
H839	13	Same as H832	Holds H838 on H831	6-19
H840	13	Same as H833	Holds H838 on H831	6-19
H841	13	Same as H701	Stop adjustment for A805	6-19
H842	13	Same as H704	Locks H841	6-19
H843	13	SCREW: 74567	Holds A805 to A804	6-19
H844	13	Same as H832	Holds A805 to A804	6-19
H845	13	WASHER: 2846	Holds A805 to A804	6-19
H846	13	SCREW: 1113	Holds A806 to A804	6-19
H847	13	Same as H832	Holds A806 to A804	6-19
H848	13	Same as H845	Holds A806 to A804	6-19

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3 (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H849	13	SCREW: 55219	Holds E802 to A807	6-19
H850	13	WASHER: 3646. Same as H438	Holds E802 to A807	6-19
H851	13	SCREW, SET: 110434. Same as H126	Holds A808 to A807	6-19
H852	13	Same as H806	Holds A808 to A807	6-19
H853	13	SCREW: 1026	Holds I801 to Cabinet	6-19
H854	13	Same as H703	Holds I801 to Cabinet	6-19
H855	13	WASHER: 125015	Holds I801 to Cabinet	6-19
H856	13	SCREW: 1028	Stop for E802	6-19
H857	13	Same as H703	Holds H856 to A807	6-19
H858	13	NUT, HEX: 110435. Same as H212	Holds H856 to A807	6-19
H859	13	SCREW: 151577	Holds A807 to Cabinet	6-19
H860	13	Same as H707	Holds A807 to Cabinet	6-19
		(Continued. See H900.)		
I801	13	GONG: 43954	Signal bell	6-19
		(Continued. See I1000.)		
L802	13	COIL, ELECTROMAGNETIC ACTUATOR: 4,000 turns No. 34 AWG wire, 500 v ac, 190 ohms ± 10%, mfg. code No. 59433, part No. 247M	Attracts E803	6-19
O801	8	CABINET: 151500	Shelf mounted enclosure and support for Teletypewriter components	6-19
O802	8	FOOT: 151533	Vibration mount	6-19
O803	8	BUSHING: 151598	Holds O802 to O801	6-19
O804	13	TRAY: 154404	Paper holder	6-19
O805	13	GUIDE: 153020	Paper guide	6-19
O806	13	HANDLE: 153023	Copy guide handle	6-19
O807	13	SPRING: 153021	Applies tension to O805	6-19
O808	13	BUSHING: 153022	Retains O809 to O805	6-19
O809	13	SHAFT: 162590	Track for movement of O805	6-19
O810	13	BUSHING: 74479	Spaces O809 from O804	6-19
O811	13	DOME: 152767	Cover for Cabinet	6-19
O812	13	LID: 151503	Access door for dome	6-19
O813	13	ARM: 151575	Brace for dome when open	6-19
O814	13	SPRING: 151528	Applies tension to O813	6-19
O815	13	ARM: 151576	Brace for lid when open	6-19
O816	13	SPRING: 151547	Applies tension to O815	6-19
O817	13	SPRING: 4703. Same as O281	Applies tension to E803	6-19
O818	13	BUSHING: 151565	Holds H853 to O818	6-19
O819	13	GROMMET, RUBBER: Neoprene, mfg. code No. 70485, part No. 1453 (code 59433 part No. 151574)	Isolates A807 from Cabinet vibrations	6-19
		(Continued. See O900.)		
W801	13	CABLE ASSEMBLY: 151571	Signal bell cable	6-19
		(Continued. See W1000.)		
Z801	13	SUPPRESSOR: 154655	Signal line radio interference suppressor	6-19
Z802	7	Same as Z801	Power line radio interference suppressor	6-19
		(Continued. See Z1000.)		
A902	9	MOUNT: 151594	Vibration mount	6-20
A903	9	BRACKET: 151584	Mounts A804 in console type Cabinet	6-20
E901	9	BOX CONNECTOR, ELECTRICAL: mfg. code No. 03743, part No. 7286 (code 59433 part No. 103092)	Signal line connections	6-20
		(Continued. See E1000.)		
H912	9	SCREW: 86433	Holds A902 to Cabinet	6-20
H913	9	WASHER: 2920	Holds A902 to Cabinet	6-20
H914	9	NUT: 103612	Holds A902 to Cabinet	6-20
H915	9	BUSHING: 155846	Holds A902 to Cabinet	6-20



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3 (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H916	9	RING, RETAINING, Steel, mfg. code No. 79136, part No. X5133-21 (code 59433 part No. 128357)	Retains O907 in O905	6-20
H917	9	SCREW, MACHINE: 6-40 fil 151657 Same as H113	Holds O909 to O905	6-20
H918	9	Same as H703	Holds O909 to O905	6-20
H919	9	RING: 74594	Retains O910 on O905	6-20
H920	9	SCREW: 8333	Holds O904 to O901	6-20
H921	9	WASHER, LOCK: 3634 (Continued. See H1000.)	Holds O904 to O901	6-20
O901	10	CABINET: 153488	Console type enclosure and support for Teletypewriter components	6-20
O902	8	PLUG: 119641	Filler plug for unused cable entry holes	6-20
O903	8	BUMPER: 151726	Stop for O811	6-20
O905	8	PANEL: 153035	Cover for base of Cabinet and tray for maintenance parts	6-20
O906	8	SHAFT: 153034	Hinge for O905	6-20
O907	8	SHAFT: 153036	Pivot for O906	6-20
O908	8	SPRING: 153037	Applies tension to O906	6-20
O909	8	HANDLE: 153039	Panel O905 handle	6-20
O910	8	STUD: 129395 (Continued. See O1000.)	Fastener for O905	6-20
E1001	11	INSULATOR: 142227	Insulated mount for S1001 in Cabinet	6-21
E1002	11	Same as E703	System power switch control	6-21
E1003	11	INSULATOR: 142226	Insulates TB1001 from O1011	6-21
E1004	11	SLEEVE: 131248	Insulator for W1001	6-21
E1005	11	SLEEVE: 131247	Insulator for W1001	6-21
E1007	13	TERMINAL: 151626. Same as E625	Terminals for W1002	6-21
E1008	13	INSULATOR, PLATE: 150966. Same as E101	Insulates TB1003 from O1011	6-21
E1009	13	TERMINAL, LUG: mfg. code No. 00779, part No. C-41470 (code 59433 part No. 72596)	Terminals for W1003	6-21
E1010		TERMINAL: 82474. Same as E804	Terminals for W1004	6-21
H1001	11	Same as H718	Terminals for TB1001	6-21
H1002	11	Same as H735	Holds TB1001 and E1003 to O1011	6-21
H1003	11	Same as H736	Spaces O1005 from TB1001; holds E1003 to E1011	6-21
H1005	11	Same as H739	Holds O1005 to H1003	6-21
H1006	11	SCREW: 125004	Holds O1011 to Cabinet	6-21
H1007	11	NUT, SHEET SPRING: Steel, mfg. code No. 78553, part No. C814-832-1 (code 59433 part No. 115594)	Holds O1011 to Cabinet	6-21
H1008	11	SCREW: 6390	Locks O1007 to O1006	6-21
H1010	11	NUT, PLAIN, WING: Steel, mfg. code No. 72962, part No. WC040 (code 59433 part No. 142247)	Holds O1008 to O1006	6-21
H1011	11	SCREW, TAPPING, THREAD CUTTING: Steel, mfg. code No. 45722, Type F (code 59433 part No. 115593)	Holds O1009 to Cabinet	6-21
H1012	11	SCREW: 1043	Holds O1009 to Cabinet	6-21
H1013	11	WASHER, LOCK: 2669. Same as H222	Holds O1009 to Cabinet	6-21
H1014	11	NUT, HEX: 112626. Same as H232	Holds O1009 to Cabinet	6-21
H1015	13	Same as H735	Holds XI1001 and XI1002 to Cabinet	6-21
H1016	13	Same as H703	Holds XI1001 and XI1002 to Cabinet	6-21
H1017	13	Same as H704	Holds XI1001 and XI1002 to Cabinet	6-21
H1018	13	SCREW, MACHINE: 6-40 hex 151630. Same as H265	Holds XI1001 and XI1002 to Cabinet	6-21

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3 (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1019	13	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-5B (code 59433 part No. 121245)	Retains cable W1004	6-21
H1020	13	WASHER: 41663	Holds H1019 to O1013	6-21
H1021	13	Same as H706	Holds H1019 to O1013	6-21
H1022	13	SCREW, MACHINE: 10-32 hex 151724. Same as H224	Holds H1019 to O1013	6-21
H1023	13	Same as H706	Holds O1013 to dome	6-21
H1024	13	SCREW: 153442	Holds O1013 to dome	6-21
H1025	13	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-2B (code 59433 part No. 121242)	Retains cable W1003	6-21
H1026	13	Same as H735	Holds H1025 to O1013	6-21
H1027	13	Same as H703	Holds H1025 to O1013	6-21
H1028	13	Same as H1018	Holds H1025 to O1013	6-21
H1029	13	SCREW, MACHINE: 6-40 fil 111017. Same as H108	Terminals for TB1003	6-21
H1030	13	NUT, HEX: 151416. Same as H109	Holds H1029 to TB1003	6-21
H1031	13	Same as H736	Holds TB1003 and E1008 to O1013	6-21
H1032	13	SCREW: 151691	Holds T1001 to O1013	6-21
H1033	13	Same as H706	Holds T1001 to O1013	6-21
H1034	13	Same as H723	Holds T1001 to O1013	6-21
H1035	13	WASHER: 119715	Holds S1002 to O1013	6-21
H1036	13	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-3 (code 59433 part No. 121243). Same as H136	Retains cable W1002	6-21
H1037	13	Same as H735	Holds H1036 to O1013	6-21
H1038	13	Same as H703	Holds H1036 to O1013	6-21
H1039	13	Same as H1018	Holds H1036 to O1013	6-21
H1040	13	SCREW, MACHINE: 6-40 hex 151630	Holds XI1003 to Cabinet	6-21
H1041	13	Same as H703	Holds XI1003 to Cabinet	6-21
H1042	13	Same as H704	Holds XI1003 to Cabinet	6-21
I1001	13	LAMP, INCANDESCENT: 6-8v, 1.14 amp, 6 cp, G-6 clear bulb, C-2R filament, double contact bayonet base, mfg. code No. 24446, part No. 82 (code 59433 part No. 151982)	Copy light lamp	6-21
I1002		Same as I1001	Copy light lamp	
I1003		LAMP, INCANDESCENT: 60v, 0.1 amp, 6w S-6 clear bulb, double contact bayonet base, mfg. code No. 24446, part no. 6S6/5SC (code 59433 part No. 153400)	Margin indicator lamp	6-21
O1001	11	CABINET: 142233	Console type enclosure and support for Teletypewriter components and rectifier	6-21
O1002	11	PAD: 142232	Resilient base for Keyboard or Base	6-21
O1003	11	SHAFT: 142228	Operates S1001	6-21
O1004	11	SPRING: 35855	Applies tension to O1004	6-21
O1005	11	Same as O730	Covers TB1001	6-21
O1006	11	ROD: 142245	Attaches O1008 to O1009	6-21
O1007	11	COLLAR: 74547	Spaces O1008 on O1006	6-21
O1008	11	FRAME: 142246	Retains rectifier	6-21
O1009	11	SHELF: 142240	Rectifier shelf	6-21
O1010	11	BRACKET: 142229	Mounts S1001 to Cabinet	6-21
O1011	11	BRACKET: 142237	Mounts TB1001 to Cabinet	6-21
O1012	13	SHIELD: 151983	Copylight reflector	6-21
O1013	13	BRACKET: 157999	Mounts S1002 and T1001 to Cabinet	6-21
O1014	11	SHAFT: (new style) 163171	Operates S1001	6-21
O1015	13	INSULATOR: 150966	Insulates TB1003 terminal	6-21

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CY-2538/UG, CY-2539/UG OR CY-2320/SGA-3 (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
S1001	11	SWITCH, TOGGLE: DPST 2 position, 125v ac 20 amp non-inductive load, mfg. code No. 15605, part No. 8822K8 for S1001 (code 59433 part No. 118688)	Main power switch for Teletypewriter and associated equipment 118688	6-21
S1002	13	SWITCH, TOGGLE: DPTD 3 position (center position "OFF"), 125v ac 15 amp non-inductive load, mfg. code No. 15605, part No. 7503K13 (code 59433 part No. 155045)	Copyright switch	6-21
T1001	13	TRANSFORMER: 159275	Reduces AC voltage supplied to copy lights	6-21
TB1001	11	Same as TB701	Terminal for associated equipment wiring	6-21
TB1002	11	Same as TB702	Terminal block for TB1001	6-21
TB1003	13	BOARD, TERMINAL: 141415. Same as TB101	Terminal for T1001	6-21
W1001	11	CORD, POWER: 142184	Cable connections from TB1001 to Cabinet	6-21
W1002	13	CABLE ASSEMBLY: 157278	Copy light system power cable	6-21
W1004	13	CABLE ASSEMBLY: 153487	Margin indicator lamp power cable	6-21
W1005	11	STRAP: 144252	Jumper for TB1001	6-21
W1006	11	STRAP: 144253	Jumper for TB1001	6-21
W1007	11	STRAP: 144254	Jumper for TB1001	6-21
W1008	11	STRAP: 151819	Jumper for TB1001	6-21
XI1001	13	SOCKET: 151540	Holder for I1001	6-21
XI1002	13	Same as XI1001	Holder for I1002	6-21
XI1003	13	Same as XI1001	Holder for I1003	6-21
Z1001	11	SUPPRESSOR: 142230	Power line radio interference suppressor	6-21

POWER DISTRIBUTION PANEL SB-964/UG

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
1100 to 1199		POWER DISTRIBUTION PANEL, SB-964/UG and SB-408/UG	Container for main power switch, fuse, convenience outlet, line shunt relay, motor control assembly and power and signal terminal boards	6-22 and 6-23
A1101	15	CONTAINER: 158278 (Continued. See A5800)	Container for and supports Power Distribution Panel	6-22
A1102	15	PLATE, CLAMP: 151427	Clamps O1103 to A1101	6-22
A1104	15	BRACKET: 151814	Support for K1101	6-22
A1105	15	COVER: 151813	Cover for K1101	6-22
A1106	15	BRACKET: 153456	Support for TB1102 and TB1106 and A1101	6-22
A1108	15	BASE: 151401	Support for A1109 and motor control unit	6-23
A1109		FRAME: 151403	Support for motor control unit	6-23
A1110		Same as A1102	Clamps A1108 to A1101	6-23
E1101		INSULATOR, PLATE: 151412	Insulator plate for TB1101 and TB1105	6-23
E1102	15	STRAP: 151827	Jumper strap for TB1101	6-23
E1103	15	Same as E1101	Insulator plate for TB1102 and TB1106	6-22
E1104	15	WASHER: 89969	Insulates R1100 from O1101 and H1153	6-22
E1105	15	Same as E1102	Jumper strap for TB1106	6-22
E1106	15	STRAP: 153457	Jumper strap for TB1101	6-22
E1107	15	TERMINAL, LUG: mfg. code No. 77147, part No. 2027 (code 59433 part No. 107398)	Terminals for W1101	6-22
E1108	15	TERMINAL: 82474. Same as E105	Terminals for W1101	6-22
E1109	15	WASHER, FLAT: 5816	Insulates R1101 from A1108, H1162 and H1163	6-23
E1111		INSULATOR, PLATE: 151406	Insulates S1104 from A1109	6-23
E1112		ARMATURE: 151432	Operates S1104 and S1105	6-23
E1113	15	ARMATURE: 151409	Operates O1114	6-23

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

POWER DISTRIBUTION PANEL SB-964/UG AND SB-408/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E1114	15	TERMINAL: 151626. Same as E625 (Continued. See E5800)	Terminals for W1103	6-23
F1102		FUSE, CARTRIDGE: 4 amp, 125v ac max, mfg. code No. 75915, part No. 313004, (code 59433 part No. 129919) (Continued. See F5800)	Protects power circuit	6-22
H1101		SCREW: 6-40 fil 151618	Holds O1101 to A1101	6-22
H1102		WASHER, LOCK: 2191. Same as H105	Holds O1101 to A1101	6-22
H1103		WASHER, FLAT: 7002. Same as H141	Holds O1101 to A1101	6-22
H1104		SCREW, MACHINE: 6-40 fil 151346. Same as H104	Holds J1101 to O1101	6-22
H1105		Same as H1102	Holds J1101 to O1101	6-22
H1106		NUT, HEX: 3606. Same as H277	Holds J1101 to O1101	6-22
H1107		STUD: 152760	Spaces O1106, TB1101 and TB1105 from O1101	6-22
H1108		Same as H1102	Holds H1107 to O1101	6-22
H1109		NUT, HEX: 3598. Same as H112	Holds H1107 to O1101	6-22
H1110		SCREW, MACHINE: 6-40 fil 111017. Same as H108	Terminal screw for TB1101, TB1102, TB1105 and TB1106	6-22
H1111		NUT, HEX: 151416	Holds H1110 to TB1101, TB1102, TB1105 or TB1106	6-22
H1112		SCREW: 6-40 fil 150040. Same as H109	Holds TB1101 to H1107, TB1102 to H1149, TB1105 to O1106 or TB1106 to A1106	6-22
H1113		Same as H1102	Holds TB1101 to H1107, TB1102 to H1149, TB1105 to O1106 or TB1106 to A1106	6-22
H1118		NUT: 91683	Locks S1101 to A1101	6-22
H1120		CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-8 (code 59433 part No. 121248)	Retains W1101	6-22
H1121		SCREW, MACHINE: 8-32 fil 1157	Power Distribution Panel ground screw; holds H1120 to A1101	6-22
H1122		WASHER, FLAT: 44048	Holds H1120 to A1101	6-22
H1123		WASHER: 92527. Same as H829	Locks ground lead from W1101 to A1101 and holds H1120 to A1101	6-22
H1124		WASHER, LOCK: 3646. Same as H438	Holds H1120 to A1101	6-22
H1125		Same as H807	Holds H1120 to A1101	6-22
H1126		SCREW, MACHINE: 6-40 fil 1179. Same as H506	Holds O1103 to A1101	6-22
H1127		Same as H1102	Holds O1103 to A1101	6-22
H1128		Same as H1103	Holds O1103 to A1101	6-22
H1129		WASHER, FLAT: 90789	Holds O1103 to A1101	6-22
H1134		Same as H1101	Holds O1105 to A1101	6-22
H1135		Same as H1102	Holds O1105 to A1101	6-22
H1136		Same as H1103	Holds O1105 to A1101	6-22
H1137		SCREW, MACHINE: 6-40 fil 151657. Same as H113	Holds K1101 to A1104	6-22
H1138		Same as H1102	Holds K1101 to A1104	6-22
H1139		Same as H1106	Holds K1101 to A1104	6-22
H1140		Same as H1137	Holds A1104 to O1105	6-22
H1141		Same as H1102	Holds A1104 to O1105	6-22
H1142		Same as H1106	Holds A1104 to O1105	6-22
H1143		Same as H1137	Holds A1105 to A1104	6-22
H1144		Same as H1102	Holds A1105 to A1104	6-22
H1145		Same as H1103	Holds A1105 to A1104	6-22
H1146		CLAMP, CABLE: Cad pl steel, mfg. code No. 74545, part No. 112 (code 59433 Part No. 151801	Clamps W1101, keyboard power supply break- out to O1101 and Automatic Typewriter power supply breakout to O1105	6-22

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

POWER DISTRIBUTION PANEL SB-964/UG AND SB-408/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1147	15	WASHER, SHOULDER AND RECESSED: Steel, mfg. code No. 03743, part No. 2-7336 (code 59433 part No. 154696)	Separates H1146 from O1101 and O1105	6-22
H1148	15	STUD: 151437	Holds power distribution panel to cabinet	6-22
H1149	15	POST: 152761	Spaces A1106 and O1105	6-22
H1150	15	Same as H1102	Holds H1149 to O1105	6-22
H1151	15	Same as H1109	Holds H1149 to O1105	6-22
H1153	15	SCREW, MACHINE: 6-40 fil 80854	Holds R1100 to O1101	6-22
H1154	15	WASHER: 76099. Same as H138	Holds R1100 to O1101	6-22
H1155	15	Same as H1102	Holds R1100 to O1101	6-22
H1156	15	Same as H1109	Holds R1100 to O1101	6-22
H1162		Same as H1153	Holds R1101 to A1108	6-23
H1163		Same as H1103	Holds R1101 to A1108	6-23
H1164		Same as H1102	Holds R1101 to A1108	6-23
H1165		Same as H1109	Holds R1101 to A1108	6-23
H1166		WASHER, SPRING TENSION: Steel, mfg. code No. 78189, part No. 3502-20 (code 59433 part No. 121125)	Applies pressure to L1101 and L1102	6-23
H1167		NUT, HEX: 2201	Holds O1112 to A1108	6-23
H1168		SCREW, MACHINE: 8-32 fil 1093	Holds E1110 to A1109	6-23
H1169		Same as H1124	Holds E1110 to A1109	6-23
H1170		Same as H1122	Holds E1110 to A1109	6-23
H1171		WASHER, FLAT: 125390	Spaces E1110 and A1109	6-23
H1172		STUD: 151440	Mounting shaft for S1104 and S1105	6-25
H1173		WASHER, FLAT: 2034. Same as H311	Holds H1172 and E1111 to A1109	6-23
H1174		WASHER, LOCK: 90951	Holds H1172 and E1111 to A1109	6-23
H1175		NUT, HEX: 110435. Same as H212	Holds H1172 and E1111 to A1109	6-23
H1176		Same as H1173	Holds S1104, S1105 and O1118 on H1172	6-23
H1177		Same as H1174	Holds S1104, S1105 and O1118 on H1172	6-23
H1178		Same as H1175	Holds S1104, S1105 and O1118 on H1172	6-23
H1179		SCREW, MACHINE: 6-40 hex 151630 Same as H265	Holds A1109 to A1108	6-23
H1180		Same as H1102	Holds A1109 to A1108	6-23
H1181		Same as H1103	Holds A1109 to A1108	6-23
H1182		Same as H1126	Holds A1108 to A1101	6-23
H1183		Same as H1102	Holds A1108 to A1101	6-23
H1184		Same as H1103	Holds A1108 to A1101	6-23
H1185		Same as H1129	Holds A1108 to A1101	6-23
H1191	15	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-5B (code 59433 part No. 121245). Same as H1019	Retains cable W1104	6-23
H1192	15	SCREW, MACHINE: 6-40 hex 151632 (Continued. See H5800)	Holds H1191 and A1108 to A1101	6-23
J1101	15	CONNECTOR, RECEPTACLE, ELECTRICAL: mfg. code No. 71785, part No. 12844 (code 59433 part No. 151422) (Continued. See J5800)	Convenience receptacle	6-22
K1101	15	RELAY, ARMATURE: DPDT, cont. rating 8 amp, 115v ac, mfg. code No. 77342, part No. MR1301 (code 59433 part No. 151808)	Shunts signal line when S1101 is in "OFF"	6-22
L1101	15	COIL, SOLENOID: 252M	Attracts E1113	6-23
L1102	15	Same as L1101 (Continued. See L5800)	Attracts E1113	6-23
L1110	15	COIL, ELECTROMAGNET ACTUATOR: 4,000 turns No. 34 AWG wire, 500v ac, 190 ohms $\pm$ 10%, mfg. code No. 59433, part No. 247M. Same as L802	Attracts E1112	6-23

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

POWER DISTRIBUTION PANEL SB-964/UG AND SB-408/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1101	15	PLATE: 153461	Support for J1101, S1102, XF1102, TB1101 and TB1105	6-22
O1103	15	PLATE, COVER: 151441	Blank cover for A1101	6-22
O1105	15	PLATE: 153460	Support for A1106	6-22
O1106	15	PLATE: 153462	Support for TB1101 and TB1105	6-22
O1112		CORE: 151402	Core for and holds L1101 and L1102 to A1108	6-23
O1113		SPRING: 74882	Applies tension to E1113	6-23
O1114		LEVER: 151408	Guide for E1112	6-23
O1115		SPRING: 7603. Same as O146	Applies tension to O1114	6-23
O1116		CLIP, RETAINER: 151410	Retains E1112 to A1109	6-23
O1117		Same as O1116	Retains E1113 and O1114 to A1109	6-23
O1118		SPACER: 151407	Spaces S1104 and S1105	6-23
O1119		SPRING: 3870 (Continued. See O5800)	Applies tension to E1112	6-23
P1101	15	CONNECTOR, PLUG: 152465	Termination for and connects W1101 to J101	6-22
P1102	15	CONNECTOR, PLUG: 152466 (Continued. See P5800)	Termination for and connects W1101 to J1301	6-22
R1100	15	RESISTOR, FIXED, COMPOSITION: 700 ohms $\pm$ 5%, 12w power dissipation, mfg. code No. 63743, part No. 1-A-700 (code 59433 part No. 155858)	Protects 60v margin indicator lamp circuit	6-22
R1101		RESISTOR, FIXED, WIRE WOUND: 400 ohms $\pm$ 10%, 5w power dissipation, mfg. code No. 63743, part No. 5-F-400 with No. 211 terminals (code 59433 part No. 153157)	Line balancing resistance in 0.20 amp operation	6-23
S1101	15	SWITCH, TOGGLE: DPDT, 15 amp, 125v ac, mfg. code No. 15605, part No. 7503-K-13 (code 59433 part No. 155023)	Main power switch	6-22
S1104		SWITCH, SENSITIVE: SPDT, snap action, 125v ac 60 cycle, 10 amp non-inductive load actuated, 1/32 in. min. overtravel, 3 to 8 oz max operating, mfg. code No. 84523, part No. SK-3DT (code 59433 part No. 151414)	Stops and supplies shunt to E1114 and E1115	6-23
S1105		Same as S1104 (Continued. See S5800)	Stops and operates Motor	6-23
TB1101	15	BOARD, TERMINAL: 151411	Terminal board for W1101	6-22
TB1102	15	Same as TB1101	Terminal board for W1101	6-22
TB1105	15	Same as TB1101	Motor Control terminal board, cable W1101	6-22
TB1106	15	Same as TB1101 (Continued. See S5800)	Terminal board for W1101	6-22
W1100	15	WIRE: 151818	Strap	6-22
W1101	15	CABLE ASSEMBLY: 153473	Main power supply cable	6-22
W1102	15	WIRE: 151819	Strap	6-22
W1103	15	CABLE ASSEMBLY: 153478 (Continued. See W5800)	Connects W1101 with motor control	6-23
XF1102	15	FUSEHOLDER: Extractor post type, mfg. code No. 71400, part No. HKP (code 59433 part No. 116783) (Continued. See XF5800)	Holder for F1102	6-22

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
1300 to 2299		AUTOMATIC TYPER, MX-1115B/UG, OR MX-1422A/UG	Perform page printing and related functions on signal received from line or local Keyboard or Base operation	6-24 through 6-47
A1301		FRAME: 153820	Support for printing carriage mechanism	6-24
A1302		BRACKET: 150065	Stop for O1302	6-24
A1303		BRACKET: 164313	Advances A1301 through W1307	6-24
A1304		BRACKET: 150053	Anchor for and adjusts tension of O1308	6-24
A1305		BRACKET: 150304	Guide for code bars	6-25
A1306		BRACKET: 150288	Shifts O1349	6-25
A1307		BRACKET: 152576	Right end guide for code bars and guide for code bar shift bars	6-25
A1308		BRACKET: 152575	Left end guide for code bars	6-25
A1309		BRACKET: 152572	Mounts O1361 and O1362	6-25
A1310		BRACKET: 152827	Supports part of left ribbon feed	6-26
A1311		BRACKET: 152524	Turns O1364 when left ribbon feed is engaged, slack tape-up when disengaged	6-26
A1312		BRACKET: 152644	Pivot for A1310 and mounts left ribbon feed to A1391	6-26
A1313		BRACKET: 152823	Pivot and support for O1380	6-26
A1316		BRACKET: 153315	Shifts O1343	6-25
A1317		CLIP: 154650	Holds O1343 in A1309	6-25
A1318		BRACKET: 152828	Supports part of right ribbon feed	6-27
A1319		Same as A1311	Turns O1402 when right ribbon feed is engaged, slack tape-up when disengaged	6-27
A1320		BRACKET: 152824	Pivot and support for O1415	6-27
A1321		BAR, GUIDE: 152652	Guide for O1425 through O1435 and O1445 through O1466	6-28
A1324		BRACKET: 153298	Right side mounting bracket for function box	6-28
A1325		BRACKET: 153299	Left side mounting bracket for function box	6-28
A1326		BLADE: 160577	Strips O1456 through O1466 from O1425 through O1435	6-28
A1327		SLIDE: 155060	Disengages spacing function on LF operation	6-28
A1330		BRACKET: 153545	Support for selector magnet assembly	6-29
A1331		BRACKET: 152421	Support for E1311 and E1313	6-29
A1332		BRACKET: 152423	Support for and spaces H1469 and O1488 from O1487	6-29
A1333		BRACKET: 152461	Support for J1301	6-29
A1334		PLATE: 155096	Mounting date for range scale	6-30
A1335		BRACKET: 152403	Anchor for O1506 and guide for O1501 through O1505 and O1508 through O1515	6-30
A1336		BRACKET: 152404	Anchor for O1516, O1517 and O1519	6-30
A1337		BRACKET: 152406	Guides O1510 and anchor for O1518	6-30
A1338		PLATE, MOUNTING: 152400	Support for range scale and selector	6-30
A1344		BRACKET: 155586	Guide for O1351 through O1356, O1539 through O1540	6-31
A1345		BRACKET: 150475	Back stop for O1556 through O1560	6-31
A1346		BRACKET: 152546	Guide for O1556 through O1560	6-31
A1348		TRACK: 150598	Operates O1323 through O1326	6-32
A1349		BRACKET: 150245	Drives O1565 through O1578	6-32
A1355		PLATE, FRONT: 152538	Support for front plate	6-33
A1356		BRACKET: 153256	Back stop for O1628 and O1631 and pivot for O1621 and O1624	6-33
A1357		BRACKET: 152586	Anchor for O1629 and O1632 and locks O1667 to A1355	6-33
A1358		PLATE, MOUNTING: 150554	Support for A1359, H1742, H1757 and O1675 and guide for A1348	6-34
A1359		TRACK: 152579	Track for A1301	6-34
A1360		BRACKET: 152508	Stop for O1572	6-34
A1361		BRACKET: 152509	Stop for O1566	6-34
A1362		PLATE: 150531	Clamps W1307 to O1705	6-34
A1363		PLATE, CLAMP: 153173	Locks O1708 to O1697	6-34
A1364		Same as A1363	Locks O1710 to O1697	6-34
A1370		PLATE: 153530	Support for O1902 and O1943	6-39

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A1371		TRACK: 150824	Track for A1370 and vertically positions O1943	6-39
A1372		BRACKET: 150367	Drives O1933 through H1939	6-39
A1373		HOUSING: 152593	Shield for O1817	6-39
A1374		PLATE: 154616	Front guide plate for type pallets	6-39
A1375		PLATE: 152560	Rear guide plate for type pallets	6-39
A1376		BRACKET: 150366	Operates O2006 and O2017 through H1984	6-40
A1378		BRACKET: 155042	Support for A1379	6-43
A1379		PLATE: 155041	Holds O2250	6-43
A1380		BRACKET: 157990	Anchor for O1732, O1743, O1748, O1751 and O1755, support for O1740, and retains O2095 in slot of O2093	6-43
A1381		BRACKET: 152563	Pivot for O2102 and O2108, support for H2113, O2094 and O2115, stop for O2089 and anchor for O2109	6-43
A1382		BRACKET: 153314	Retains O2096 and O2097 in slots of O2093 and pivot for O2104 and O2106	6-43
A1383		BRACKET: 150557	Guide for O2104	6-43
A1384		BRACKET: 150840	Guides and feeds paper to O2028	6-44
A1385		BRACKET: 150274	Clamps O2143 to O2142 and guides paper to O2136	6-44
A1388		BRACKET: 154872	Retains W1301 to A1389	6-45
A1389		FRAME: 152580	Right side frame for Automatic Typewriter	6-45
A1390		BRACKET: 150545	Support for A1324	6-45
A1391		FRAME: 152581	Left side frame for Automatic Typewriter	6-46
A1392		BRACKET: 150546	Support for A1325	6-46
E1301	20	BLOCK: (Old Style) 157884	Body for S1401	6-28
E1302		ARM: 157887	Contact for S1401	6-28
E1303	20	PLATE: (Old Style) 157890	Retains E1302 and E1304 in S1401	6-28
E1304	20	SPRING, CONTACT: (Old Style) 157889	Contact for S1401	6-28
E1308		SLEEVE, INSULATING: 151626	Insulates leads of W1302	6-29
E1309		SLEEVE, INSULATING: 155753	Insulates leads of W1302	6-29
E1310		ARMATURE: 153543	Attracted to E1308 and E1309 on line impulses	6-29
E1311		SHIELD, TERMINAL: 152458	Insulator guard for terminals of E1308, E1309 and W1302	6-29
E1312		INSULATOR, PLATE: 152464. Same as E103	Insulator guards for J1301	6-29
E1313		SHIELD: 157237	Insulator guard for terminals of E1308 and E1309 and W1302	6-29
E1314		SLEEVE, INSULATING: 155751 (Continued. See E1400)	Insulates leads of W1302	6-29
H1301		STUD: 150064	Pivot for O1302 and O1306, and holds A1302 to A1301	6-24
H1302		NUT, HEX: 3598. Same as H112	Locks H1301 to A1301	6-24
H1303		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-15 (code 59433 part No. 119651). Same as H158	Retains O1302 and O1306 on H1301	6-24
H1304		SCREW, MACHINE: 6-40 fil 151692. Same as H119	Holds A1302 to A1301	6-24
H1305		WASHER, LOCK: 2191. Same as H105	Holds A1302 to A1301	6-24
H1306		WASHER, FLAT: 7002. Same as H141	Holds A1302 to A1301	6-24
H1307		Same as H1303	Retains O1314 and O1312 on A1301	6-24
H1308		SCREW, MACHINE: 4-40 hex 151152. Same as H202	Holds O1315 to A1303	6-24
H1309		WASHER, LOCK: 110743. Same as H127	Holds O1315 to A1303	6-24
H1310		WASHER, FLAT: 125011. Same as H183	Holds O1315 to A1303	6-24
H1311		SCREW: 151695	Holds A1303, H1312 and O1316 through O1319 to A1301	6-24
H1312		WASHER, FLAT: 151610	Spacer for and guides O1317 on A1359	6-24
H1313		Same as H1305	Holds H1311 to A1301	6-24
H1314		Same as H1302	Holds H1311 to A1301	6-24
H1315		Same as H1311	Holds A1303, H1325, O1320 through O1322 and O1328 to A1301	6-24
H1316		Same as H1305	Holds lower roller parts to A1301	6-24



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1317		Same as H1302	Holds lower roller parts to A1301	6-24
H1318		Same as H1303	Retains A1304 on A1301	6-24
H1319		SCREW, MACHINE: 6-40 151630. Same as H265	Holds O1324 to O1323	6-24
H1320		Same as H1305	Holds O1324 to O1323	6-24
H1321		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652). Same as H246	Retains O1323 on A1301	6-24
H1322		Same as H1321	Retains O1326 on O1323	6-24
H1323		ECCENTRIC: 151443	Adjusting nut for O1324	6-24
H1324		Same as H1305	Locks H1301 to A1301	6-24
H1325		Same as H1312	Spacer and guides O1320 on A1359	6-24
H1326		Same as H1306	Holds H1301 to A1302	6-24
H1327		WASHER: 8330	Spaces H1320 from O1323	6-24
H1331		Same as H1308	Holds O1330 and O1340 to O1341	6-25
H1332		Same as H1309	Holds O1330 and O1340 to O1341	6-25
H1333		Same as H1309	Holds A1316 to O1348	6-25
H1334		Same as H1308	Holds A1316 to O1348	6-25
H1335		SCREW, SET: 4-40 fil 110434. Same as H126	Holds A1305 to O1340	6-25
H1336		Same as H1309	Holds A1305 to O1340	6-25
H1337		Same as H1319	Holds O1340 to A1307 and A1308	6-25
H1338		Same as H1305	Holds O1340 to A1307 and A1308	6-25
H1339		Same as H1308	Holds A1306 to O1349	6-25
H1340		Same as H1309	Holds A1306 to O1349	6-25
H1341		SCREW, MACHINE: 3-48 fil 42827	Holds O1350 to A1307	6-25
H1342		Same as H1335	Holds O1357 to A1307	6-25
H1343		Same as H1309	Holds O1357 to A1307	6-25
H1344		SCREW, MACHINE: 6-40 fil 151657. Same as H113	Holds A1307 to A1389	6-25
H1345		Same as H1305	Holds O1360 to A1309	6-25
H1346		Same as H1308	Holds O1360 to A1309	6-25
H1347		Same as H1309	Holds A1309 to A1308	6-25
H1348		SCREW: 6-40 fil 151618. Same as H1101	Holds A1309 to A1308	6-25
H1349		Same as H1305	Holds O1358 to A1308	6-25
H1350		Same as H1341	Holds O1358 to A1308	6-25
H1351		Same as H1335	Holds O1359 to A1308	6-25
H1352		Same as H1309	Holds O1359 to A1308	6-25
H1353		Same as H1344	Holds A1308 to A1391	6-25
H1354		Same as H1305	Holds A1308 to A1391	6-25
H1355		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-25 (code 59433 part No. 119653)	Retains O1370 through O1373 on O1365 and O1365 on A1310	6-26
H1356		Same as H1303	Retains A1311 on O1364 and O1364 on O1365	6-26
H1357		Same as H1303	Retains O1369 on A1310	6-26
H1358		Same as H1321	Retains A1310 on A1312	6-26
H1359		SCREW, MACHINE: 4-40 hex 151637. Same as H192	Holds O1366 and O1367 to A1310	6-26
H1360		Same as H1309	Holds O1366 and O1367 to A1310	6-26
H1361		Same as H1303	Retains O1380 on A1313	6-26
H1362		Same as H1344	Holds O1381, O1382 and O1383 to A1312	6-26
H1363		Same as H1305	Holds O1381, O1382 and O1383 to A1312	6-26
H1364		Same as H1309	Holds O1391 on O1384	6-26
H1365		NUT, HEX: 3599. Same as H130	Holds O1391 on O1384	6-26
H1366		WASHER: 153819	Holds O1350 to A1307	6-25
H1367		Same as H1366	Holds O1357 to A1308	6-25

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1368		Same as H1344	Holds A1313 to A1312	6-26
H1369		Same as H1305	Holds A1313 to A1312	6-26
H1370		SCREW, MACHINE: 6-40 fil 151693	Holds A1313 and A1312 to A1391	6-26
H1371		Same as H1305	Holds A1313 and A1312 to A1391	6-26
H1372		Same as H1306	Holds A1313 and A1312 to A1391	6-26
H1373		Same as H1303	Retains O1384 to A1312	6-26
H1374		SCREW, MACHINE: 4-40 fil 1293	Locks O1385 on O1384	6-26
H1375		SCREW, MACHINE: 4-40 fil 151658. Same as H117	Holds O1386, O1387 and O1388 to A1389	6-26
H1376		Same as H1305	Holds O1386, O1387 and O1388 to A1389	6-26
H1377		Same as H1309	Holds O1390 on O1384	6-26
H1378		Same as H1365	Holds O1390 on O1384	6-26
H1379		SCREW, MACHINE: 6-40 fil 151659. Same as H270	Holds A1312 to A1391	6-26
H1380		Same as H1305	Holds A1312 to A1391	6-26
H1381		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-12 (code 59433 part No. 119649	Retains O1378 to A1310	6-26
H1387		Same as H1344	Holds A1320 to A1389	6-27
H1388		Same as H1381	Retains O1400 to A1318	6-27
H1389		STUD: 152648	Pivot for and mounts A1318 and O1411	6-27
H1390		Same as H1355	Retains O1403 through O1406 on O1401 and O1401 and A1318	6-27
H1391		Same as H1303	Retains A1319 on O1402 and O1402 on O1401	6-27
H1392		Same as H1303	Retains A1408 on A1318	6-27
H1393		Same as H1321	Retains O1318 on H1389	6-27
H1394		Same as H1359	Holds O1409 and O1410 to A1318	6-27
H1395		Same as H1309	Holds O1409 and O1410 to A1318	6-27
H1396		Same as H1319	Holds H1389 to A1389	6-27
H1397		Same as H1305	Holds H1389 to A1389	6-27
H1398		SCREW, MACHINE: 6-40fil 151346. Same as H104	Holds O1411 through O1414 to A1389	6-27
H1399		Same as H1305 (Continued. See H1400.)	Holds O1411 through O1414 to A1389	6-27
H1301		DIAL: 152436	Dial for selecting range scale	6-30
J1301		CONNECTOR, RECEPTACLE: 152467. Same as J101	Termination for W1302	6-29
L1308		COIL, ELECTROMAGNET ACTUATING: 4,000 turns No. 34AWG wire, 500vac, 190 ohms ± 10%. mfg. code No. 59433 part No. 247M. Same as L802	Attracts E1310	6-29
L1309		COIL, ELECTROMAGNET ACTUATING: 4,000 turns No. 34AWG wire, 500v ac, 190 ohms ± 10%. mfg. code No. 59433 part No. 247M. Same as L802	Attracts E1310	6-29
O1302		BAIL: 150059	Supports O1303	6-24
O1303		HEAD, HAMMER: 150061	Strikes O1946 through O1995	6-24
O1304		SPRING: 112633	Applies tension to O1303	6-24
O1305		WICK: 93729	Lubricates O1304	6-24
O1306		BAIL: 150054	Operates O1303 by O1302	6-24
O1307		WASHER, FELT: 93758. Same as O370	Lubricates H1301, O1302 and O1306	6-24
O1308		SPRING: 154638	Applies tension to O1306	6-24
O1309		WICK: 108199	Lubricates O1308	6-24
O1310		SPRING: 152129	Applies tension to O1302	6-24
O1311		SHIM: 90599	Adjusts striking level of O1303 by spacing H1301 and A1302	6-24
O1312		LATCH: 150038	Latches O1306 in striking position	6-24
O1313		SPRING: 49420. Same as O329	Applies tension to O1312	6-24
O1314		WASHER, FELT: 150923	Lubricates O1312	6-24
O1315		PLATE: 150230	Clamps W1307 to A1303	6-24
O1316		BUSHING: 151611	Bearing roller for O1317	6-24
O1317		ROLLER, BEARING: 150030	Upper roller for printing carriage on A1359	6-24

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG, OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1318		SPACER: 151612	Spacer for and guides O1317 on A1359	6-24
O1319		WASHER, FELT: 93356	Lubricates O1316 and O1317	6-24
O1320		Same as O1317	Lower roller for printing carriage on A1359	6-24
O1321		Same as O1318	Spacer for and guides O1320 on A1359	6-24
O1322		Same as O1319	Lubricates lower roller parts	6-24
O1323		ARM: 150068	Trips O1306 by disengaging O1312 and O1306 and latches O1306 with O1312 through O1324	6-24
O1324		ARM: 151709	Latches O1306 with O1312	6-24
O1325		Same as O1319	Lubricates O1323	6-24
O1326		SLIDE: 150039	Pivot for and operates O1323 by A1348	6-24
O1327		WASHER, FELT: 101796. Same as O214	Lubricates O1323 and O1326	6-24
O1328		Same as O1316	Bearing roller for O1320	6-24
O1329		WASHER: 94674	Spaces O1302 and O1329 under tension	6-24
O1330		BRACKET: 153605	Function shift control adjustment	6-25
O1331		BRACKET: 154380	Anchor for O1332	6-25
O1332		SPRING: 31636. Same as O131	Applies tension to O1330	6-25
O1333		CODE BAR: 152256	Vertically positions type box by O1918 and blocks and permits function bars to be selected; #1 code bar	6-25
O1334		Same as O1333	Vertically positions type box by O1918 and blocks and permits function bars to be selected; #2 code bar	6-25
O1335		Same as O1333	Vertically positions type box by O1918 and blocks and permits function bars to be selected; common code bar	6-25
O1336		BAR: 152255	Shifts O1333 by O1539 and O1540 when positioned	6-25
O1337		Same as O1336	Shifts O1334 by O1539 and O1540 when positioned	6-25
O1338		Same as O1336	Shifts O1335 by O1539 and O1540 when positioned	6-25
O1339		SPRING: 152257	Applies tension to O1336, O1337 and O1338	6-25
O1340		BAR: 153321	Tie bar for A1307 and A1308 and supports A1305	6-25
O1341		CODE BAR: 153320	Vertically positions type box by O1918 and blocks and permits function bars to be selected; suppression code bar	6-25
O1342		CODE BAR: 152551	Operates O1617 which determines the selection of one row from four vertical rows in type box and blocks and permits function bars to be selected; #4 code bar	6-25
O1343		CODE BAR: 153319	Vertically positions type box by O1918 and blocks and permits function bars to be selected	6-25
O1344		Same as O1342	Operates O1619 which determines the selection of one row from 4 vertical rows in type box and blocks and permits function bars to be selected; #5 code bar	6-25
O1346		CODE BAR: 152552	Operates O1664 which determines whether selection is made from left 4 vertical rows or right 4 vertical rows in letters or figures end of type box and blocks and permits function bars to be selected; #3 code bar	6-25
O1349		CODE BAR: 152553	Operates O1650, letters and figures shift and blocks and permits function bars to be selected	6-25
O1350		POST, CODE BAR: 150289	Retains code bars to A1307	6-25
O1351		BAR: 152548	Shifts O1342 by O1539 and O1540 when positioned	6-25
O1352		Same as O1351	Shifts O1344 by O1539 and O1540 when positioned	6-25
O1353		Same as O1351	Shifts O1346 by O1539 and O1540 when positioned	6-25

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1357		PLATE, RETAINER: 150301	Retains code bar shift bars in guide slots of A1307	6-25
O1358		Same as O1350	Retains code bars to A1308	6-25
O1359		PLATE, GUIDE: 152574	Retains code bars in guide slots of A1308	6-25
O1360		PLATE, RETAINER: 150293	Retains O1361 and O1362 in A1309	6-25
O1361		SPRING: 150535	Applies pressure to O1362	6-25
O1362		BALL, BEARING: 150537	Detents for code bars	6-25
O1363		SHIM: 150302	Spaces A1308 and A1309	6-25
O1364		SHAFT: 154332	Turns O1393 when left ribbon feed is engaged	6-26
O1365		HUB: 152525	Sleeve bearing for O1364 and turns O1373 when left ribbon feed is engaged	6-26
O1366		LEVER: 150310	Left end ribbon guide and reverses ribbon feed by O1381	6-26
O1367		BUSHING: 150336	Pivot for O1366	6-26
O1368		SPRING: 112634	Applies tension to O1366	6-26
O1369		ROLLER: 154333	Left end roller guide for ribbon	6-26
O1370		WASHER, FELT: 152629	Lubricates O1364, O1365 and O1371	6-26
O1371		RATCHET, RIBBON: 152528	Turns O1365 when left ribbon feed is engaged	6-26
O1372		SPRING: 152523	Applies pressure to O1371	6-26
O1373		PLATE: 152527	Turns A1311 when left ribbon feed is engaged	6-26
O1374		SPRING: 42661. Same as O147	Slack take-up yield spring, applies tension to A1311	6-26
O1375		SPRING: 152834	Applies pressure to O1379	6-26
O1376		SPRING: 82463	Applies tension to O1380	6-26
O1378		SHAFT: 152826	Pivot for O1379 and mounts O1375	6-26
O1379		LEVER: 152818	Turns O1371 when left ribbon feed is engaged	6-26
O1380		LEVER: 152820	Prevents O1371 from reversing when left ribbon feed is engaged and prevents O1379 from turning O1371 when disengaged	6-26
O1381		LEVER: 152646	Reverses ribbon feed by O1391 and O1382	6-26
O1382		LEVER: 150343	Disengages O1380 from O1371 when ribbon feed is reversed	6-26
O1383		BUSHING: 150932	Pivot for O1381 and O1382	6-26
O1384		SHAFT: 152582	Reverses ribbon feed by O1390 or O1391	6-26
O1385		LINK: 157979	Detent for O1387	6-26
O1386		BUSHING: 150436	Pivot for O1387	6-26
O1387		LEVER: 150937	Positions O1384 for left or right ribbon feed through O1375	6-26
O1388		SPACER: 8449	Spaces O1387 from A1389	6-26
O1389		SPRING: 22015	Applies tension to O1387	6-26
O1390		GEAR: 150335	Reverses ribbon feed by O1384 or O1411	6-26
O1391		Same as O1390	Reverses ribbon feed by O1384 or O1381	6-26
O1392		SPACER: 152571	Spaces A1312 from A1391	6-26
O1393		RIBBON, TELETYPEWRITER: 11 yds lg by 0.005 thk, black record, extra heavy inked, Underwood spool, 17 threads per 1/8 in. base, mfg. code No. 83272, part No. 301 (code 59433 part No. 7835)	Ink supply and operates ribbon feed by O1366 and O1409	6-26
O1394		WASHER, FELT: 161346	Lubricates A1310 and shaft of A1312	6-26
O1395		WASHER, FELT: 90361	Lubricates A1310 and shaft of A1312	6-26
O1398		Same as O1394	Lubricates A1318 and H1389	6-27
O1399		Same as O1395 (Continued. See O1400.)	Lubricates A1318 and A1389	6-27
W1301	17, 18	CABLE ASSEMBLY: 155066	Connects E1301 and E1302 with J1301	6-28
W1302		CABLE ASSEMBLY: 152468	Connects E1308 and E1309 with J1301	6-28
W1304	19	CABLE ASSEMBLY: 157975	Operates sequential switching	6-28
W1306		WIRE ROPE: 150225	Advances printing carriage by A1303 and advances type box by O1705	6-35
W1307		WIRE ROPE: 150712	Tension cable between O1715 and O1722	6-35

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E1405	20	PLATE: (New Style) 172593	Retains E1302 and E1304 in S1401	6-28
E1406	20	BLOCK: (New Style) 172597	Body for S1401 or S1402	6-28
E1407	20	SPRING, CONTACT (New Style) 172591	Contact for S1401 or S1402	6-28
E1408		SLEEVE, INSULATING: 155751	Insulates W1301 and W1304	6-28
H1400		Same as H1304	Holds A1320 to A1389	6-27
H1401		Same as H1305	Holds A1320 to A1389	6-27
H1402		Same as H1306	Prevents H1401 from slipping through large mounting hole in A1320	6-27
H1405		Same as H1303	Retains O1415 on A1320	6-27
H1406		SCREW, MACHINE: 2-56 fil 5740	Holds O1422 to A1321	6-28
H1407		SCREW, MACHINE: 3-48 fil 150543	Holds O1423 to A1321	6-28
H1408		SCREW, MACHINE: 4-40 hex 93507	Renders O1425 inoperative	6-28
H1409		NUT, HEX: 151702	Locks H1408 in position	6-28
H1410		Same as H1359	Holds O1424 to O1423	6-28
H1411		Same as H1309	Holds O1424 to O1423	6-28
H1413		SCREW: 4-40 fil 151689	Holds S1401 or S1402 to O1423	6-28
H1414		Same as H1309	Holds S1401 or S1402 to O1423	6-28
H1415		NUT: 151880	Holds S1401 to O1423	6-28
H1416		Same as H1355	Retains O1478 in A1324 and A1325	6-28
H1420		STUD: 153644	Holds Letters-Figures Shift to O1423	6-28
H1421		Same as H1310	Holds Letters-Figures Shift to H1420	6-28
H1422		Same as H1309	Holds Letters-Figures Shift to H1420	6-28
H1423		Same as H1365	Holds Letters-Figures Shift to H1420	6-28
H1429		Same as H1344	Holds A1324 to A1321	6-28
H1430		Same as H1305	Holds A1324 to A1321	6-28
H1431		Same as H1344	Holds A1325 to A1321	6-28
H1432		Same as H1305	Holds A1325 to A1321	6-28
H1433		HANDLE: 150544	Handle for function box	6-28
H1434		SCREW, MACHINE: 6-40 fil 151692. Same as H119	Holds H1433 to A1324 and A1325	6-28
H1435		Same as H3105	Holds H1433 to A1324 and A1325	6-28
H1436		HANDLE: 153581	Handle for function box	6-28
H1437		Same as H1304	Holds H1436 to A1324 and A1325	6-28
H1438		SCREW, IDENTIFICATION: 6-40, 151739	Holds H1436 to A1324 and A1325 and identifies function box arrangement	6-28
H1439		Same as H1305	Holds H1436 to A1324 and A1325	6-28
H1440		SCREW, SHOULDER: 6-40, 155099	Holds O1477 to A1324 or A1325	6-28
H1441		NUT, HEX: 3606. Same as H277	Holds O1477 to A1324 or A1325	6-28
H1442		Same as H1304	Holds A1324 or A1325 to A1390	6-28
H1443		Same as H1305	Holds A1324 or A1325 to A1390	6-28
H1444		Same as H1309	Holds O1479 or O1481 to O1478	6-28
H1445		Same as H1359	Holds O1479 or O1481 to O1478	6-28
H1447	19	Same as H1381	Retains O1435 and O1443 to O1463	6-28
H1448	21	Same as H1303	Retains A1327 to A1326	6-28
H1451		CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-3 (code 59433 part No. 121243)	Clamp for W1301	6-29
H1452		SCREW: 6-40 hex 80342	Holds H1451 to A1333	6-29
H1453		WASHER: 125015. Same as H855	Holds H1451 to A1333	6-29
H1454		Same as H1305	Holds H1451 to A1333	6-29
H1455		Same as H1302	Holds H1451 to A1333	6-29
H1456		POST: 153184	Holds O1485 to A1330	6-29
H1458		SCREW: 4-40 fil 81778	Holds terminals from W1302 to E1308 and E1309	6-29
H1459		WASHER, FLAT: 2438	Holds terminals from W1302 to E1308 and E1309	6-29
H1460		SCREW, MACHINE: 4-40 fil 151688. Same as H176	Holds O1485 to A1330	6-29
H1461		Same as H1309	Holds O1485 to A1330	6-29
H1462		SCREW, MACHINE: 4-40 fil 151686. Same as H518	Holds A1331 and O1485 together	6-29
H1463		Same as H1309	Holds A1331 and O1485 together	6-29
H1464		Same as H1365	Holds A1331 and O1485 together	6-29
H1465		SCREW, MACHINE: 4-40 fil 150089. Same as H174	Holds O1485 to A1330	6-29

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1466		Same as H1309	Holds O1485 to A1330	6-29
H1467		STUD: 152415	Anchors O1520 to A1330	6-29
H1468		POST, SPRING: 152425	Anchro for O1487	6-29
H1469		NUT, LOCK: 153426	Adjusts tension of O1467 by H1468	6-29
H1470		Same as H1462	Holds O1489, A1332 and E1310 to A1330	6-29
H1471		Same as H1309	Holds O1489, A1332 and E1310 to A1330	6-29
H1472		Same as H1451	Clamp for W1302	6-29
H1473		Same as H1375	Holds H1472 to A1389	6-29
H1474		Same as H1305	Holds H1472 to A1389	6-29
H1475		Same as H1453	Holds H1472 to A1389	6-29
H1476		Same as H1375	Holds J1301 to A1333	6-29
H1477		Same as H1305	Holds J1301 to A1333	6-29
H1478		Same as H1379	Holds A1333 to A1389	6-29
H1479		Same as H1305	Holds A1333 to A1389	6-29
H1480		SCREW: 6-40 hex 153839	Holds A1333, O2068 and O2070 to A1389	6-29
H1481		Same as H1305	Holds A1333, O2068 and O2070 to A1389	6-29
H1482		LATCH, LEVER: 152463. Same as H115	Latches P1102 to J1301	6-29
H1483		LATCH, LEVER: 152462. Same as H116	Latches P1102 to J1301	6-29
H1484		SCREW, MACHINE: 6-40 hex 151631. Same as H24?	Holds A1330 to A1338	6-29
H1485		Same as H1305	Holds A1330 to A1338	6-29
H1486		Same as H1453	Holds A1330 to A1338	6-29
H1490		Same as H1305	Holds A1334 to O1500	6-30
H1491		Same as H1302	Holds A1334 to O1500	6-30
H1492		Same as H1344	Holds A1334 to H1514 and O1507	6-30
H1493		Same as H1305	Holds A1334 to H1514 and O1507	6-30
H1495		Same as H1321	Holds O1492, H1496 and H1497 to A1334	6-30
H1496		WASHER, SPRING: 74283	Applies pressure to H1497	6-30
H1497		WASHER, FLAT: 152441	Retains O1491 on A1334	6-30
H1498		LATCH, LEVER: 152427	Prevents selector clutch from reversing by latching O1793	6-30
H1499		Same as H1335 (Continued. See H1500.)	Holds O1497 to O1496	6-30
O1400		Same as O1378	Pivot for O1416 and mounts O1420	6-27
O1401		Same as O1365	Sleeve bearing for O1402 and turns O1405 when right ribbon feed is engaged	6-27
O1402		Same as O1364	Turns O1421 when right ribbon feed is engaged	6-27
O1403		Same as O1370	Lubricates O1401, O1402, and O1404	6-27
O1404		RATCHET, RIBBON: 152529	Turns O1401 when right ribbon feed is engaged	6-27
O1405		Same as O1372	Applies pressure to O1404	6-27
O1406		PLATE: 152526	Turns A1319 when right ribbon feed is engaged	6-27
O1407		Same as O1374	Slack take-up yield spring, applies tension to A1319	6-27
O1408		Same as O1369	Right end roller guide for ribbon	6-27
O1409		LEVER: 150311	Right end ribbon guide and reverses ribbon feed by O1411	6-27
O1410		Same as O1367	Pivot for O1409	6-27
O1411		LEVER: 152647	Reverses ribbon feed by O1390 and O1413	6-27
O1412		Same as O1383	Pivot for O1411 and O1413	6-27
O1413		LEVER: 150344	Disengages O1415 from O1404 when ribbon feed is reversed	6-27
O1414		SPACER: 150821	Spaces O1411 from A1389	6-27
O1415		LEVER: 152821	Prevents O1404 from reversing when right ribbon feed is engaged and prevents O1416 from turning O1404 when disengaged	6-27
O1416		LEVER: 152819	Turns O1404 when right ribbon feed is engaged	6-27
O1418		Same as O1368	Applies tension to O1409	6-27
O1419		Same as O1376	Applies tension to O1415	6-27
O1420		Same as O1375	Applies pressure to O1416	6-27

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1421		SPOOL, PRINTING RIBBON: 71681	Takes up ribbon from O1393 when right ribbon feed is engaged	6-27
O1422		BLOCK, GUIDE: 150689	Support for O1473	6-28
O1423		GUIDE: 153322	Guide for O1452	6-28
O1424		PLATE: 152651	Guide for O1425 through O1451 and anchor for O1453	6-28
O1425		BAR: 155129	Operates O1452	6-28
O1425-1		LEVER: 152642	Operates O1459 or O1477 on shift-on-space	6-28
O1425-2		PLATE, SPRING: 152660	Anchors O1470 and stops O1425-1	6-28
O1427		BAR, FUNCTION: 152665	Operates O1452	6-28
O1427-1		LEVER: 152641	Operates O1460 on figures shift	6-28
O1427-2		Same as O1425-2	Anchors O1470 and stops O1427-1	6-28
O1428		BAR, FUNCTION: 152666	Operates O1452	6-28
O1428-1		Same as O1427-1	Operates O1459 on letters shift	6-28
O1428-2		Same as O1425-2	Anchors O1470 and stops O1428-1	6-28
O1429		BAR, FUNCTION: 152671	Operates O1452	6-28
O1429-1		Same as O1427-1	Operates O2095 on automatic carriage return	6-28
O1429-2		Same as O1425-2	Anchors O1470 and stops O1429-1	6-28
O1430		Same as O1429	Operates O1452	6-28
O1430-1		Same as O1427-1	Operates O2097 on automatic line feed	6-28
O1430-2		Same as O1425-2	Anchors O1470 and stops O1430-1	6-28
O1431		BAR, FUNCTION: 152667	Operates O1452	6-28
O1431-1		LEVER: 162059	Operates O2095 on carriage return	6-28
O1431-2		LATCH: 154613	Anchors O1470 and latches O1431-1	6-28
O1432	19	BAR, FUNCTION: 152683	Operates O1452	6-28
O1432-1	19	LEVER: 152121	Operates S1402 on sequential signal	6-28
O1432-2	19	Same as O1431-2	Anchors O1470 and latches O1432-1	6-28
O1433	19	Same as O1432	Operates O1452	6-28
O1433-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1433-2	19	Same as O1431-2	Anchors O1470 and latches O1433-1	6-28
O1434	19	Same as O1432	Operates O1452	6-28
O1434-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1434-2	19	Same as O1431-2	Anchors O1470 and latches O1434-1	6-28
O1435	19	Same as O1432	Operates O1452	6-28
O1435-1	19	LEVER: 153670	Operates S1402 on sequential signal	6-28
O1435-2	19	Same as O1425-2	Anchors O1470 and stops O1435-1	6-28
O1436	19	BAR, FUNCTION: 152678	Operates O1452	6-28
O1436-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1436-2	19	Same as O1431-2	Anchors O1470 and latches O1436-1	6-28
O1437	19	Same as O1436	Operates O1452	6-28
O1437-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1437-2	19	Same as O1431-2	Anchors O1470 and latches O1437-1	6-28
O1438	19	Same as O1436	Operates O1452	6-28
O1438-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1438-2	19	Same as O1431-2	Anchors O1470 and latches O1438-1	6-28
O1439	19	Same as O1436	Operates O1452	6-28
O1439-1	19	LEVER: 152298	Operates S1402 on sequential signal	6-28
O1439-2	19	LATCH: 152089	Anchors O1470 and latches O1439-1	6-28
O1440	19	Same as O1432	Operates O1452	6-28
O1440-1	17	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1440-2	19	Same as O1431-2	Anchors O1470 and latches O1440-1	6-28
O1441	19	Same as O1432	Operates O1452	6-28
O1441-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1441-2	19	Same as O1431-2	Anchors O1470 and latches O1441-1	6-28
O1442	19	Same as O1432	Operates O1452	6-28
O1442-1	19	Same as O1432-1	Operates S1402 on sequential signal	6-28
O1442-2	19	Same as O1425-2	Anchors O1470 and latches O1442-1	6-28

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG, OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1443	19	Same as O1432	Operates O1452	6-28
O1443-1	19	Same as O1435-1	Operates S1402 on sequential signal	6-28
O1443-2	19	Same as O1425-2	Anchors O1470 and stops O1433-1	6-28
O1444	16	BAR: 153437	Operates O1452	6-28
O1444-1	16	Same as O1427-1	Operates S1401	6-28
O1444-2	16	Same as O1425-2	Anchors O1470 and stops O1441-1	6-28
O1445	17	BAR, FUNCTION: 152672	Operates O1452	6-28
O1445-1	17	Same as O1427-1	Allows E1302 to make contact with E1304 or E1407 on signal bell	6-28
O1445-2	17	Same as O1425-2	Anchors O1470 and stops O1445-1	6-28
O1446	21	BAR, FUNCTION: 152675	Operates O1452	6-28
O1447		BAR, FUNCTION: 152669	Operates O1452	6-28
O1447-1		LEVER: 152659	Latches O1448 in position	6-28
O1447-2		Same as O1431-2	Anchors O1470 and latches O1447-1	6-28
O1448		Same as O1447	Operates O1452	6-28
O1448-1		Same as O1425-1	Operates O2096 on keyboard lock	6-28
O1448-2		Same as O1425-2	Anchors O1470 and stops O1448-1	6-28
O1449		BAR, FUNCTION: 152668	Operates O1452	6-28
O1449-1		Same as O1427-1	Operates O2089 on line feed suppression	6-28
O1449-2		Same as O1425-2	Anchors O1470 and stops O1449-1	6-28
O1450	17	Same as O1449	Operates O1452	6-28
O1450-1	17	Same as O1427-1	Operates O2097 on line feed	6-28
O1450-2	17	Same as O1425-2	Anchors O1470 and stops O1450-1	6-28
O1451	16	BAR: 153435	Operates O1452	6-28
O1451-1	16	Same as O1425-1	Operates O2097 on line feed	6-28
O1451-2	16	Same as O1425-2	Anchors and stops O1451-1	6-28
O1452		PAWL: 152653	Operates O1425-1 through O1451-1	6-28
O1453		SPRING: 4703	Applies tension O1425 through O1451	6-28
O1454	20	BUSHING: (Old Style) 153646	Pivot for O1455 and spaces O1464 from O1468	6-28
O1455	20	FORK: (Old Style) 153608	Shifts O1349 by A1306	6-28
O1456	20	BUSHING: (New Style) 103863	Pivot for O1457 and spaces O1458 and O1462	6-28
O1457	20	FORK: (New Style) 155935	Shifts O1349 by A1306	6-28
O1458	20	PLATE: (New Style) 155934	Spaces O1457 from O1459 and O1460	6-28
O1459	20	SLIDE: (New Style) 155939	Shifts O1457 for letters function	6-28
O1460	20	SLIDE: (New Style) 155938	Shifts O1457 for figures function	6-28
O1461	20	Same as O1456	Spaces O1458 and O1462 and guides O1459 and O1460	6-28
O1462	20	PLATE: (New Style) 155933	Holds O1456 through O1461 in place	6-28
O1463	19	SHAFT: 155076	Pivot for O1435 and O1443	6-28
O1464	20	PLATE: (Old Style) 153647	Spaces O1455 from O1456 and O1466	6-28
O1465	20	SLIDE: (Old Style) 153643	Shifts O1455 for letters function	6-28
O1466	20	SLIDE: (Old Style) 153795	Shifts O1455 for figures function	6-28
O1467	20	Same as O1454	Spaces O1464 and O1468 and guides O1465 and O1466	6-28
O1468	20	PLATE: (Old Style) 153645	Holds O1456 through O1467 in place	6-28
O1469		SPRING: 157240	Applies tension to O1452	6-28
O1470		SPRING: 90517	Applies tension to O1425-1 through O1451-1	6-28
O1471		SHAFT: 152547	Stop and guide for O1452	6-28
O1472		SHAFT: 150547	Stops O1425-1 through O1451-1	6-28
O1473		Same as O1472	Support for O1425-1 through O1451-1	6-28
O1474	21	PLATE, RETAINER: 152889	Retaining plate for O1471, O1472 and O1473	6-28
O1477		ARM: 153301	Operates A1326 through O1478 and O1481	6-28
O1478		SHAFT: 153295	Supports O1477, O1479 and O1480	6-28
O1479		CAM: 153294	Operates O1478	6-28
O1480		WASHER, FELT: 4586	Lubricates O1479 and O1478	6-28
O1481		ARM: 153291	Operates O1478	6-28
O1482		WASHER, FELT: 151222	Lubricates O1481	6-28



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1483		WICK: 72522	Lubricates O1469	6-28
O1484	20	ROLLER: 153609	Pivot for O1457	6-28
O1485		LAMINATION: 152420	Core for E1308 and E1309	6-29
O1486		SPRING: 157194	Applies pressure to E1308 and E1309	6-29
O1487		SPRING: 151715	Applies tension to E1310	6-29
O1488		SPACER: 151603	Spaces H1469 and A1332	6-29
O1489		PLATE, STOP: 152424	Stop plate for E1310	6-29
O1490		SPRING: 86835. Same as O102	Applies tension to H1482 and H1483	6-29
O1491		SECTOR: 152429	Positions H1498 and O1497	6-30
O1493		SPRING: 152445	Applies pressure to I1301	6-30
O1495		SPRING: 41382	Applies tension to H1498	6-30
O1496		BAIL: 152438	Operates O1497 by O1508	6-30
O1497		ARM: 152432	Latch for O1796	6-30
O1498		BAIL: 152410	Resets symbols O1501 through O1505	6-30
O1499		SPRING: 151701 (Continued. See O1500.)	Applies pressure to O1498	6-30
S1401		SWITCH ASSEMBLY: (New Style)	Signal bell contact	6-28
S1402	20	Same as S1401 or S1403	Operate optional auxiliary contacts	6-28
S1403	20	SWITCH ASSEMBLY: (Old Style 157072)	Signal bell contact	6-28
H1500		Same as H1309	Holds O1497 to O1496	6-30
H1501		Same as H1310	Holds O1497 to O1496	6-30
H1502		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-9 (code 59433 part No. 119648). Same as H206	Holds O1521 to O1496	6-30
H1504		SCREW: 156536	Holds A1335 to A1338	6-30
H1505		Same as H1309	Holds A1335 to A1338	6-30
H1506		SCREW: 152892	Holds A1336 and O1523 to A1338	6-30
H1507		Same as H127	Holds A1336 and O1523 to A1338	6-30
H1508		Same as H1335	Holds A1337 to A1338	6-30
H1509		Same as H127	Holds A1337 to A1338	6-30
H1510		Same as H1319	Holds O1520 to A1338	6-30
H1511		Same as H1305	Holds O1520 to A1338	6-30
H1512		Same as H1306	Holds O1520 to A1338	6-30
H1513		SCREW, SHOULDER: 4-40 fil 96717	Pivot for O1520	6-30
H1514		POST: 150687	Spaces A1334 and A1338	6-30
H1515		Same as H1319	Holds A1338 to H1517 and H1520	6-30
H1516		Same as H1305	Holds A1338 to H1517 and H1520	6-30
H1517		STUD: 150479	Spaces A1338 from A1389	6-30
H1518		Same as H1305	Holds H1517 to A1389	6-30
H1519		Same as H1302	Holds H1517 to A1389	6-30
H1520		Same as H1517	Spaces A1338 from A1389 and holds A1338 and A1380 to A1389	6-30
H1521		Same as H1319	Holds O1500 to A1338	6-30
H1522		Same as H1305	Holds O1500 to A1338	6-30
H1523		Same as H1319	Holds H1514 to A1338	6-30
H1524		Same as H1305	Holds H1514 to A1338	6-30
H1525		Same as H1517	Holds O1507 to A1338 and spaces A1338 from A1389	6-30
H1526		Same as H1309	Locks H1513 to A1338	6-30
H1527		Same as H1356	Locks H1513 to A1338	6-30



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1529		Same as H1327	Holds A1334 to O1507	6-30
H1530		Same as H1306	Holds O1500 to A1388	6-30
H1531		WASHER, FLAT: 2034. Same as H311	Holds O1523 and A1336 to A1338	6-30
H1532		NUT, HEX: 112626. Same as H232	Holds O1528, I1301 and O1493 to A1334	6-30
H1533		WASHER, LOCK: 2669. Same as H122	Holds O1528, I1301 and O1493 to A1334	6-30
H1540		STUD: 155589	Mounting shaft for O1535, O1539 and O1540	6-31
H1541		NUT: 92682	Holds H1540 to O1535	6-31
H1542		STUD: 150471	Mounting shaft for O1542	6-31
H1543		Same as H1305	Holds A1346 and H1542 to A1344	6-31
H1544		Same as H1302	Holds A1346 and H1542 to A1344	6-31
H1545		WASHER, FLAT: 3649	Holds O1539 on shank of O1542	6-31
H1546		Same as H1305	Holds O1539, O1540 and O1542 on H1542	6-31
H1547		Same as H1302	Holds O1539, O1540 and O1542 on H1542	6-31
H1548		Same as H1308	Holds O1540 to O1535	6-31
H1549		Same as H1309	Holds O1540 to O1535	6-31
H1551		Same as H1321	Retains O1543 and O1544 on O1535	6-31
H1552		SCREW, MACHINE: 6-40 hex 151721	Locks O1544 to O1563	6-31
H1553		Same as H1305	Locks O1544 to O1563	6-31
H1554		Same as H1327	Locks O1544 to O1563	6-31
H1555		NUT, LOCK: 151629	Locks O1544 to O1563	6-31
H1556		SCREW, MACHINE: 6-40 fil 150978	Holds A1346 and O1546 to A1344	6-31
H1557		Same as H1305	Holds A1346 and O1546 to A1344	6-31
H1558		Same as H1344	Holds A1345 and O1555 to A1344	6-31
H1559		Same as H1305	Holds A1345 and O1555 to A1344	6-31
H1560		Same as H1344	Holds A1345 to A1344	6-31
H1561		Same as H1305	Holds A1345 to A1344	6-31
H1562		Same as H1306	Holds A1345 to A1344	6-31
H1563		Same as H1344	Holds A1344 to O1562	6-31
H1564		Same as H1305	Holds A1344 to O1562	6-31
H1565		Same as H1344	Holds A1346 to O1555	6-31
H1566		Same as H1305	Holds A1346 on O1555	6-31
H1567		Same as H1319	Holds A1346 to A1389	6-31
H1568		Same as H1305	Holds A1346 to A1389	6-31
H1569		PLATE, LOCK: 150482	Nut plate for H1556 and O1545	6-31
H1570		NUT, HEX: 110435. Same as H212	Locks O1545 to H1569	6-31
H1571		Same as H1375	Holds H1573 to A1338	6-31
H1572		Same as H1305	Holds H1573 to A1338	6-31
H1573		HOLDER, WICK: 152456	Holder for O1561	6-31
H1574		Same as H1484	Holds O1562 to A1389	6-31
H1575		Same as H1305	Holds O1562 to A1389	6-31
H1576		STUD: 150055	Pivot for and connects O1805 to O1563	6-31
H1577		Same as H1305	Holds H1576 to O1563	6-31
H1578		Same as H1302	Holds H1576 to O1563	6-31
H1579		Same as H1319	Holds A1348 to O1565	6-32
H1580		Same as H1305	Holds A1348 to O1565	6-32
H1581		WASHER, FLAT: 36273	Holds A1348 to O1565	6-32
H1582		STUD: 150748	Pivot for O1578	6-32
H1584		Same as H1305	Holds H1582 to A1349	6-32
H1585		Same as H1302	Holds H1582 to A1349	6-32
H1586		Same as H1321	Retains O1578 on H1582	6-32
H1592		Same as H1321	Retains O1578 on H1588	6-32
H1594		Same as H1355	Retains O1580 and O1581 on O1565	6-32

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1599		Same as H1321 (Continued. See H1600.)	Retains O1566 or O1604 on H1595	6-32
O1500		GUIDE, LEVER: 152401	Guide for O1501 through O1505 and spaces A 1334 or A 1339 from A 1338	6-30
O1501		LEVER: 152411	Operates O1556	6-30
O1502		Same as O1501	Operates O1557	6-30
O1503		Same as O1501	Operates O1558	6-30
O1504		Same as O1501	Operates O1559	6-30
O1505		Same as O1501	Operates O1560	6-30
O1506		SPRING: 150048	Applies tension to O501 through O1505	6-30
O1507		GUIDE, LEVER: 152402	Guide for O1508 through O1515 and spaces A 1334 or A 1339 from A 1338	6-30
O1508		LEVER: 152408	Operates O1497 through O1496, feels for E1307 or E1310 on stop impluses	6-30
O1509		LEVER: 152407	Locks E1307 or E1310 in unattracted position	6-30
O1510		LEVER: 152405	Locks E1307 or E1310 in attracted position and stop for O1511 through O1515	6-30
O1511		LEVER: 152409	Operates O1501	6-30
O1512		Same as O1511	Operates O1502	6-30
O1513		Same as O1511	Operates O1503	6-30
O1514		Same as O1511	Operates O1504	6-30
O1515		Same as O1511	Operates O1505	6-30
O1516		SPRING: 152891	Applies tension to O150E	6-30
O1517		SPRING: 151714	Applies tension to O1509	6-30
O1518		SPRING: 78533	Applies tension to O1510	6-30
O1519		SPRING: 151103	Applies tension to O1511 through O1515	6-30
O1520		LINK: 152412	Provides adjustment for A 1330 by H1467	6-30
O1521		SHAFT: 157261	Shaft and pivot for O1496	6-30
O1523		LUBRICATOR: 155090	Lubricates O1507	6-30
O1524		WICK: 154620	Retains lubricant in O1523	6-30
O1525		RETAINER: 154621	Holds O1524 in O1523	6-30
O1526		LUBRICATOR: 154622	Housing for lubricator parts	6-30
O1527		OILER: 151336	Oiling hole for O1523	6-30
O1528		DETENT: 153489	Index for I1301	6-30
O1535		LINK: 155587	Operates O1539 and O1540	6-31
O1539		LEVER: 152584	Shifts selected code bar shift bars	6-31
O1540		LEVER: 152585	Resets shifted code bar shift bars	6-31
O1541		ROLLER: 151618	Roller for H1540 and H1535	6-31
O1542		BEARING, SLEEVE: 152583	Bearing for O1539 and O1540	6-31
O1543		WASHER, FELT: 150990	Lubricates O1535 and H1553	6-31
O1544		ARM: 150447	Operates O1535	6-31
O1545		SHAFT: 150481	Stop for O1547 through O1552	6-31
O1546		GUIDE, LEVER: 152663	Guide for O1547 through O1552	6-31
O1547		LEVER: 152635	Positions O1351 and operates O1552	6-31
O1548		LEVER: 152636	Positions O1352 and operates O1552	6-31
O1549		LEVER: 152637	Positions O1353	6-31
O1550		LEVER: 152638	Positions O1354	6-31
O1551		LEVER: 152639	Positions O1355	6-31
O1552		LEVER: 152640	Positions O1356	6-31
O1553		SPRING: 150563	Applies tension to O1552	6-31
O1554		SPRING: 150507	Applies tension to O1547 through O1551	6-31
O1555		SHAFT: 152662	Guide and pivot for O1556 through O1560	6-31
O1556		ARM: 150450	Operates O1547	6-31
O1557		Same as O1556	Operates O1548	6-31
O1558		Same as O1556	Operates O1549	6-31
O1559		Same as O1556	Operates O1550	6-31
O1560		Same as O1556	Operates O1551	6-31
O1561		WICK: 152457	Lubricates selector	6-31

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1562		BEARING, SLEEVE: 150452	Bearing sleeve for O1563	6-31
O1563		SHAFT: 155796	Operates O1535 by O1544	6-31
O1564		Same as O1482	Lubricates H1576 and O1805	6-31
O1565		BAIL: 150263	Operates A1348, O1644 and O1607; mounts O1584 and O1586 and guide for O1581	6-32
O1569		BUSHING: 150218	Bearing roller for O1604	6-32
O1571		WASHER, FELT: 161347. Same as O124	Lubricates H1595 and O1604	6-32
O1575		Same as O1569	Bearing roller for O1607	6-32
O1577		Same as O1571	Lubricates H1596 and O1607	6-32
O1578		LINK: 150247	Links A1349 and O1566 and O1572	6-32
O1580		Same as O1314	Lubricates O1565 and O1581	6-32
O1581		LEVER: 150776	Locks O1589 in position through H1610 until operation completed	6-32
O1582		Same as O1490	Applies tension to O1581	6-32
O1583		WICK: 105028	Lubricates O1582	6-32
O1584		BAIL: 150208	Operates O1656	6-32
O1585		SPRING: 150558	Applies pressure to O1584	6-32
O1586		BAIL: 150777	Operates O1653	6-32
O1587		SPRING: 150559	Applies pressure to O1586	6-32
O1588		BAIL: 152536	Support for O1592	6-32
O1589		ARM: 150757	Support for H1610	6-32
O1590		BLOCK, GUIDE: 150215	Guide for O1565	6-32
O1591		RETAINER, OIL: 150232	Lubricates O1565 and O1591	6-32
O1592		PULLEY: 150758	Slack take-up guide for W1306	6-32
O1593		SPRING: 33828	Applies tension to O1588	6-32
O1594		Same as O1309	Lubricates O1593	6-32
O1595		ROLLER: 150754	Roller for O1581	6-32
O1596		ROLLER: 150753	Roller guide for O1589	6-32
O1598		Same as O1571	Lubricates H1614, O1589 and O1596	6-32
O1599		POST, BEARING: 152598 (Continued. See O1600.)	Pivot for and mounts O1566 or O1604	6-32
H1600		Same as H1321	Retains O1607 on H1596	6-32
H1601		Same as H1321	Retains O1607 and O1603 on O1600	6-32
H1602		Same as H1321	Retains O1604 and O1602 on O1599	6-32
H1603		Same as H1303	Retains O1584 on O1565	6-32
H1604		Same as H1303	Retains O1586 on O1565	6-32
H1605		STUD: 150175	Pivot for O1588, O1589 and shaft for O1590	6-32
H1606		Same as H1321	Retains O1588, O1589 and O1590 on H1605	6-32
H1607		SCREW, SHOULDER: 6-40 hex 151700	Shaft for O1592	6-32
H1608		Same as H1305	Holds H1607 to O1588	6-32
H1609		Same as H1302	Holds H1607 to O1588	6-32
H1610		STUD: 150755	Shaft for O1595	6-32
H1611		Same as H1305	Holds H1610 to O1589	6-32
H1612		Same as H1302	Holds H1610 to O1589	6-32
H1613		Same as H1502	Retains O1595 on H1610	6-32
H1614		STUD: 150752	Positions O1589 and shaft for O1596	6-32
H1615		Same as H1309	Holds H1614 to O1610	6-32
H1616		Same as H1365	Holds H1614 to O1610	6-32
H1617		Same as H1309	Holds O1610 and H1718 to O1686	6-32
H1618		Same as H1365	Holds O1610 and H1718 to O1686	6-32
H1619		Same as H1309	Holds O1610 and H1719 to O1686	6-32
H1620		Same as H1365	Holds O1610 and H1719 to O1686	6-32
H1621		Same as H1375	Holds O1599 and O1600 to A1355	6-32
H1622		Same as H1305	Holds O1599 and O1600 to A1355	6-32
H1623		Same as H1306	Holds O1599 and O1600 to A1355	6-32
H1624		Same as H1375	Holds O1601 to O1599 and O1600	6-32
H1625		Same as H1305	Holds O1601 to O1599 and O1600	6-32
H1626		Same as H1306	Holds O1601 to O1599 and O1600	6-32

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG, OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1627	17	Same as H1344	Holds O1618A to A1355	6-33
H1628	17	Same as H1305	Holds O1618A to A1355	6-33
H1629	17	Same as H1321	Retains O1658 on A1356	6-33
H1630	17	Same as H1306	Holds H1652 on O1630	6-33
H1631	17	SCREW, MACHINE: 4-40 by 7/32	Holds O1611A on O1611	6-33
H1632	17	Same as H1310	Holds O1611A on O1611	6-33
H1633		Same as H1335	Holds O1612 on O1617	6-33
H1634		Same as H1309	Holds O1612 on O1617	6-33
H1634	16	Same as H1309	Holds O1611A on O1611	6-33
H1635		WASHER: 152634	Locks O1613 to A1355 on H1644	6-33
H1636		Same as H1635	Locks O1617 to A1355 on H1632	6-33
H1637		Same as H1335	Holds O1670 and O1671 spare shims to A1355	6-33
H1638		Same as H1309	Holds O1670 and O1671 spare shims to A1355	6-33
H1639		Same as H1310	Holds O1670 and O1671 spare shims to A1355	6-33
H1640		SCREW, MACHINE: 10-32 151723	Holds A1355 to A1389 and A1391	6-33
H1641		Same as H1533	Holds A1355 to A1389 and A1391	6-33
H1642		POST: 155081	Anchor for O1593	6-33
H1643		Same as H1344	Holds O1613, O1611 and O1615 to A1355	6-33
H1644		Same as H1305	Holds O1613, O1611 and O1615 to A1355	6-33
H1645		Same as H1304	Holds A1356 to A1355	6-33
H1646		Same as H1305	Holds A1356 to A1355	6-33
H1647		Same as H1304	Holds O1625 to O1621	6-33
H1648		Same as H1305	Holds O1625 to O1621	6-33
H1649		Same as H1306	Holds O1625 to O1621	6-33
H1650		Same as H1321	Retains O1621, O1624 and O1625 on A1356	6-33
H1651		Same as H1398	Holds A1357 and O1667 to A1355	6-33
H1652		Same as H1305	Holds A1357 and O1667 to A1355	6-33
H1653		Same as H1462	Locks O1626 to O1668	6-33
H1654		Same as H1309	Locks O1626 to O1668	6-33
H1655		Same as H1465	Holds O1627, O1630 and O1633 to O1626	6-33
H1656		Same as H1309	Holds O1627, O1630 and O1633 to O1626	6-33
H1657		STUD: 158335	Shaft for O1636 and O1637	6-33
H1658		Same as H1533	Holds H1657 to A1355	6-33
H1659		Same as H1532	Holds H1657 to A1355	6-33
H1660		Same as H1355	Retains O1636 and O1637 on H1657 and O1634 on O1636 and O1637	6-33
H1661		SCREW: 4-40 hex 153817	Holds O1638 through O1641 to O1634	6-33
H1662		Same as H1365	Holds symbols O1638 through O1641 to O1634	6-33
H1663		SCREW, SET: 10-32 headless 1214	Adjusts air release from O1642 by applying pressure to O1643	6-33
H1664		NUT, HEX: 89897	Locks H1663 in position	6-33
H1665		SCREW, MACHINE: 4-40 fil 151685. Same as H415	Holds O1650, O1651, O1652 and H1667 to A1355	6-33
H1666		Same as H1309	Holds O1650, O1651, O1652 and H1667 to A1355	6-33
H1667		WASHER, FLAT: 125802	Spaces O1651 and O1652	6-33
H1668		STUD: 154253	Guides and mounts O1653, and O1656	6-33
H1669		WASHER, FLAT: 125802	Front friction washers for O1653 and O1656	6-33
H1670		Same as H1309	Retains O1653 or O1656 on H1668	6-33
H1671		Same as H1305	Locks H1642 to A1355	6-33
H1672		Same as H1669	Rear friction washers for O1653 and O1656	6-33
H1673		Same as H1415	Holds O1653 or O1656 on H1668	6-33
H1674		Same as H1359	Holds O1645 to A1355	6-33
H1675		Same as H1309	Holds O1645 to A1355	6-33
H1676		Same as H1310	Holds O1645 to A1355 at elongated slot only	6-33
H1677		Same as H1305	Holds H1668 and H1671 to A1355	6-33
H1678		Same as H1302	Holds H1668 to A1355	6-33
H1679		Same as H1381	Retains O1659, O1661 and O1663 on A1355	6-33

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1680		Same as H1640	Holds H1605 to A1355	6-33
H1681		Same as H1533	Holds H1605 to A1355	6-33
H1682		SCREW, MACHINE: 6-40 fil 151661. Same as H623	Holds O1666 to A1355	6-33
H1683		Same as H1305	Holds O1666 to A1355	6-33
H1684		Same as H1306	Holds O1666 to A1355 and O1664 and O1665 on O1666	6-33
H1685		Same as H1375	Locks O1669 to O1668	6-33
H1686		Same as H1305	Locks O1669 to O1668	6-33
H1687		Same as H1355	Retains O1668 in position in O1667	6-33
H1688		Same as H1319	Holds O1642 to A1355	6-33
H1689		Same as H1305	Holds O1642 to A1355	6-33
H1690		Same as H1344	Holds O1673 and O1672 to A1358	6-34
H1691		Same as H1305	Holds O1673 and O1672 to A1358	6-34
H1692		Same as H1302	Holds O1673 and O1672 to A1358	6-34
H1693		SCREW, MACHINE: 6-40 hex 150909	Pivot for and holds O1675 and H1694 to A1358	6-34
H1694		WASHER, FLAT: 76461	Spaces O1675 and A1358	6-34
H1695		Same as H1305	Holds H1693 to A1358	6-34
H1696		Same as H1302	Holds H1693 to A1358	6-34
H1697		SCREW, MACHINE: 6-40 hex 151632 Same as H1192	Holds H1706 and A1359 to A1358	6-34
H1698		Same as H1305	Tie strip for O1599 and O1660	6-34
H1699		Same as H1306 (Continued. See H-1700)	Holds H1706 and A1359 to A1358	6-34
O1600		POST, BEARING: 152599	Pivot for and mounts O1607.	6-32
O1601		STRIP: 151625	Tie strip for O1599 and O1600	6-32
O1602		Same as O1319	Lubricates O1566 and O1599	6-32
O1603		Same as O1319	Lubricates O1572 and O1600	6-32
O1604		LINE, DRIVE: 153331	Operates O1686	6-32
O1605		SPRING, 153340	Applies tension to O1604	6-32
O1606		BUSHING: 153337	Bearing for O1605	6-32
O1607		LINK, DRIVE: 153332	Operates O1686	6-32
O1608		Same as O1605	Applies tension to O1607	6-32
O1609		Same as O1606	Bearing for O1608	6-32
O1610		PLATE, RETAINER: 153335	Retains O1604 and O1607 on H1719	6-32
O1611	17	ARM: 153259	Operates O1658 through O1611A	6-33
O1611A	17	PLATE, ADJUSTING: 153260	Provides adjustment for O1611 and operates O1658	6-33
O1613		LNK: 150184	Disengages O1628 and O1631 from O1726	6-33
O1615		Same as O1386	Pivot for O1613	6-33
O1616		SPRING: 81731	Applies tension to O1613	6-33
O1617		BELL CRANK: 157972	Shifts O1348	6-33
O1618	17	BUSHING: 153258	Bearing for O1611 and O1611A	6-33
O1618A	17	BUSHING: 153261	Holds O1611A and O1611 to A1355	6-33
O1619		BUSHING: 95827	Pivot for O1617	6-33
O1620		SPRING: 110436. Same as O261	Applies tension to O1617	6-33
O1621		BAIL: 150196	Latches O2118 until carriage return is completed	6-33
O1622		SPRING: 125238	Applies tension to O1621	6-33
O1623		WICK: 73520	Lubricates O1622	6-33
O1624		HUB: 150193	Pivot for O1621 and O1625	6-33
O1625		PLATE: 150194	Unlatches O1621 from O2118 on completion of carriage return	6-33
O1626		COLLAR: 150668	Ties O1627 and O1630 to O1668 and allows O1668 to drive O1627 and O1630	6-33
O1627		ECCENTRIC: 154389	Drives O1628 and O1631	6-33
O1628		PAWL: 150677	Steps O1726 and latches O1726 while O1631 is stepping	6-33
O1629		SPRING: 75229	Applies tension to O1628	6-33

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG. MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1630	17	ARM STOP: 153263	Stop for O1658	6-33
O1631		PAWL: 150678	Steps O1726 and latches O1726 while O1628 is stepping	6-33
O1632		Same as O1629	Applies tension to O1631	6-33
O1633		RETAINER: 150203	Retains O1628 on O1627 and O1631 on O1630	6-33
O1634		SLIDE, TRANSFER: 150235	Operates O1639	6-33
O1635		SPRING: 150536	Applies tension to O1634	6-33
O1636		ROLLER, BEARING: 150233	Bearing roller for O1634	6-33
O1637		ROLLER, BEARING: 150234	Bearing roller for O1634	6-33
O1638		RETAINER: 150229	Back retainer for O1639	6-33
O1639		CUP, DASHPOT: 150975	Valve for O1642	6-33
O1640		SPACER: 150987	Spaces O1638 and O1641 from O1639	6-33
O1641		RETAINER: 150228	Front retainer for O1639	6-33
O1642		CYLINDER, DASHPOT: 150538	Slows carriage return to stop	6-33
O1643		SPRING: 110872	Applies pressure to O1644	6-33
O1644		Same as O1362	Valve for air release from O1642	6-33
O1645		GUIDE: 150738	Guide for O1646, O1648 and O1649	6-33
O1646		SLIDE: 150733	Positioning stop for O1686 or O1713	6-33
O1647		SPRING: 45027	Applies tension to O1648	6-33
O1648		SLIDE: 150731	Positioning stop for O1686 or O1713 and resets O1646 and O1649	6-33
O1649		SLIDE: 150732	Positioning stop for O1686 or O1713	6-33
O1650		SLIDE, SHIFT: 152596	Positions O1653 and O1656	6-33
O1651		BAIL: 152597	Stop for O1566 and O1572 to prevent jamming of Automatic Typer due to improperly adjusted or badly worn parts	6-33
O1652		Same as O1367	Guide for O1650	6-33
O1653		SLIDE: 150694	Operates O1692	6-33
O1654		Same as O1327	Lubricates O1650 and O1653	6-33
O1655		SPRING: 139555. Same as O453	Applies pressure to O1653 or O1656	6-33
O1656		Same as O1653	Operates O1695	6-33
O1657		Same as O1327	Lubricates O1650 and O1656	6-33
O1658	17	BAIL: 153257	Disengages O1628 and O1631 on back space	6-33
O1658A	17	SPRING: 153288	Applies tension to O1658	6-33
O1659		BELL CRANK: 150770	Shifts O1649	6-33
O1660		Same as O1647	Applies tension to O1659	6-33
O1661		BELL CRANK: 150771	Shifts O1646	6-33
O1662		Same as O1647	Applies tension to O1661	6-33
O1663		Same as O1571	Lubricates O1659 and O1661	6-33
O1664		LEVER: 152522	Shifts O1681 by H1711	6-33
O1665		Same as O1327	Lubricates O1664 and O1666	6-33
O1666		BUSHING: 150746	Pivot for O1664	6-33
O1667		BEARING: 150672	Bearing sleeve for O1668	6-33
O1668		SHAFT: 150673	Drives O1627 and O1630 through O1626	6-33
O1669		GEAR: 150202	Drives O1668	6-33
O1670		SHIM: 150669	Adjustment shim for spacing O1667 and A1355	6-33
O1671		SHIM: 150670	Adjustment shim for spacing O1667 and A1355	6-33
O1672		SHIM: 150805	Adjustment shim for spacing O1673 and A1358	6-34
O1673		PLAT, RETAINER: 150806	Retains A1348 to A1358	6-34
O1674		RETAINER, OIL: 150807	Lubricates A1348 and O1673	6-34
O1675		LEVER: 150237	Latch for O1721	6-34
O1676		SLEEVE: 150709	Spaces A1359 from A1355 and guide for O1702 and O1703	6-34
O1677		PULLEY: 150224	Roller guide for W1306	6-34
O1678		WASHER, FELT: 90504	Lubricates H1706 and O1677	6-34
O1679		BLOCK, GUIDE: 150751	Guide for O1581	6-34



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG. MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1680		PLATE: 150750	Retains O1581 against O1679	6-34
O1681		SLIDE: 152595	Mounts and positions A1360 and A1361	6-34
O1682		OILER, FELT: 150927	Lubricates O1681 and O1688	6-34
O1683		LEVER: 152510	Positioning detents for O1681	6-34
O1684		SPRING: 7603. Same as O146	Applies tension to O1683	6-34
O1685		ROLLER, DETENT: 152507	Roller guide for positioning O1681 with Q1683	6-34
O1688		GUIDE: 152592	Left end guide for O1681 and O1686 or O1713	6-34
O1689		GUIDE: 152511	Right end guide for O1081 and O1686 or O1713	6-34
O1690		OILER, FELT: 150929	Lubricates O1686 or O1713	6-34
O1697		RAIL: 150728	Rail for O1705 and horizontally positions O1943 by O1705	6-34
O1698		Same as O1677	Roller guide for W1307	6-34
O1699		WASHER, FELT: 150926 (Continued. See O1700.)	Lubricates O1698 and O1700	6-34
H1700		SCREW, MACHINE: 6-40 fil 150710	Holds A1359, O1676 and O1707 to A1355	6-34
H1701		Same as H1305	Holds A1359, O1676 and O1707 to A1355	6-34
H1702		Same as H1319	Holds A1359 to O1688 and O1689	6-34
H1703		Same as H1305	Holds A1359 to O1688 and O1689	6-34
H1704		Same as H1661	Holds O1679 and O1680 to A1359	6-34
H1705		Same as H1309	Holds O1679 and O1680 to A1359	6-34
H1706		STUD: 150800	Shaft for O1677	6-34
H1707		Same as H1321	Retains O1677 and O1678 on H1706	6-34
H1708		Same as H1308	Holds A1360 and A1361 to O1681	6-34
H1709		Same as H1309	Holds A1360 and A1361 to O1681	6-34
H1710		Same as H1310	Holds A1360 and A1361 to O1681	6-34
H1711		STUD: 152505	Connects O1681 with O1664	6-34
H1712		Same as H1310	Holds H1711 to O1681	6-34
H1713		Same as H1309	Holds H1711 to O1681	6-34
H1714		Same as H1365	Holds H1711 to O1681	6-34
H1715		Same as H1381	Retains O1685 on O1681	6-34
H1716		Same as H1304	Holds O1688 and O1689 to A1355	6-34
H1717		Same as H1305	Holds O1688 and O1689 to A1355	6-34
H1718		SCREW, MACHINE: 4-40 sq hd 150219	Shaft for O1569	6-34
H1719		Same as H1718	Shaft for O1575	6-34
H1720		Same as H1321	Retains O1691 and O1694 on O1686 or O1707 and O1710 on O1713	6-34
H1721		Same as H1303	Retains O1692 and O1691 and O1695 on O1694 or O1708 on O1707 and O1711 on O1710	6-34
H1722		Same as H1329	Holds O1692 and O1695 or O1708 and O1711 to O1697	6-34
H1723		Same as H1305	Holds O1692 and O1695 or O1708 and O1711 to O1697	6-34
H1725		Same as H1303	Retains O1697 and O1700 on O1702 and O1703	6-34
H1726		Same as H1319	Holds O1701 to A1355	6-34
H1727		Same as H1305	Holds O1701 to A1355	6-34
H1728		Same as H1335	Holds A1362 to O1705	6-34
H1729		Same as H1309	Holds A1362 to O1705	6-34
H1740		SCREW: 6-40 hex 156632	Holds O1723 to O1722	6-35
H1741		Same as H1305	Holds O1723 to O1722	6-35
H1742		STUD: 150197	Shaft for O1715 and O1721	6-35
H1743		Same as H1533	Holds H1742 to A1355	6-35
H1744		Same as H1532	Holds H1742 to A1355	6-35
H1745		Same as H1665	Holds O1716 to O1715	6-35
H1746		Same as H1309	Holds O1716 to O1715	6-35
H1747		Same as H1348	Holds O1718 to O1715	6-35
H1748		Same as H1305	Holds O1718 to O1715	6-35
H1749		Same as H1348	Holds W1306 to O1715	6-35
H1750		Same as H1305	Holds W1306 to O1715	6-35

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1752		Same as H1359	Holds O1720 to O1715	6-35
H1753		Same as H1309	Holds O1720 to O1715	6-35
H1754		Same as H1310	Holds O1720 to O1715	6-35
H1755		Same as H1533	Holds O1715 and O1721 on H1742	6-35
H1756		Same as H1532	Holds O1715 and O1721 on H1742	6-35
H1757		Same as H1742	Shaft for O1722	6-35
H1758		Same as H1533	Holds H1757 to A1355	6-35
H1759		Same as H1532	Holds H1757 to A1355	6-35
H1763		Same as H1533	Holds O1722 and O1725 on H1757	6-35
H1764		Same as H1532	Holds O1722 and O1725 on H1757	6-35
H1765		Same as H1375	Holds W1306 on O1722	6-35
H1766		Same as H1305	Holds W1306 to O1722	6-35
H1768		Same as H1375	Holds O1727 to O1722	6-35
H1769		Same as H1305	Holds O1727 to O1722	6-35
H1770		Same as H1348	Holds W1307 to O1722	6-35
H1771		Same as H1305	Holds W1307 to O1722	6-35
H1776		Same as H1484	Holds O1729 to O1722 through O1723	6-35
H1777		Same as H1305	Holds O1729 to O1722 through O1723	6-35
H1778		Same as H1306	Holds O1729 to O1722 through O1723	6-35
H1779		Same as H1398	Holds O1728 and O1729 to O1722	6-35
H1780		Same as H1305	Holds O1728 and O1729 to O1722	6-35
H1781		Same as H1306	Holds O1728 and O1729 to O1722	6-35
H1782		Same as H1321	Retains O1731 and O1734 on O1730	6-36
H1783		SCREW: 150040. Same as H1112	Locks O1734 to O1730	6-36
H1784		Same as H1305	Locks O1734 to O1730	6-36
H1785		Same as H1327	Locks O1734 to O1730	6-36
H1786		Same as H1555	Locks O1734 to O1730	6-36
H1787		WASHER, LOCK: 73175	Holds O1736 to A1389	6-36
H1788		NUT, HEX: 2539. Same as H801	Holds O1736 to A1389	6-36
H1789		Same as H1306	Holds O1737 to O1730	6-36
H1790		Same as H1305	Holds O1737 to O1730	6-36
H1791		Same as H1302	Holds O1737 to O1730	6-36
H1792		Same as H1304	Locks O1741 to O1740	6-36
H1795		Same as H1783	Locks O1753 to O1740	6-36
H1796		Same as H1305	Locks O1753 to O1740	6-36
H1797		Same as H1327	Locks O1753 to O1740	6-36
H1798		Same as H1555	Locks O1753 to O1740	6-36
H1799		SCREW, SHOULDER: 6-40 fil 6800 (Continued. See H1800.)	Shaft for O1759 and holds O1757, O1758 and O1759 to O1754	6-36
O1700		BUSHING: 150705	Bearing roller for O1698 or O1699	6-34
O1701		BUSHING: 150255	Pivot for O1702 and O1703	6-34
O1702		ARM: 150721	Guides and allows O1697 to be positioned	6-34
O1703		ARM: 150722	Guides and allows O1697 to be positioned	6-34
O1704		WASHER, FELT: 89096	Lubricates O1701, O1702 and O1703	6-34
O1705		SLIDE: 154354	Type spaces O1943 and horizontally positions O1943 by O1905	6-34
O1707		LINK: 153180	Operates O1708	6-34
O1708		LINK: 153175	Positions O1697	6-34
O1709		SPRING: 153172	Applies tension to O1707 to O1708	6-34
O1710		LINK: 153181	Operates O1711	6-34
O1711		LINK: 153174	Positions O1697	6-34
O1712		Same as O1709	Applies tension to O1710 and O1711	6-34
O1713		SLIDE: 153183	Letters and Figures positioning slide; Operates O1707 and O1710	6-34
O1714		Same as O1374	Decelerating springs for O1713	6-34
O1715		DRUM, SPRING: 150827	Mounts O1719 and O1721 and operates W1306 on carriage return	6-35
O1716		PLATE: 150843	Anchors O1685 to O1715	6-35

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1717		WASHER, FELT: 74755	Lubricates H1742 and O1715	6-35
O1718		BUSHING: 151619	Guide for W1307	6-35
O1719		SPRING: 74272	Applies tension to O1715	6-35
O1720		DISK: 150796	Retains O1719 in cutout side of O1715	6-35
O1721		RATCHET: 150251	Anchor for and adjusts tension of O1719	6-35
O1722		DRUM: 154627	Anchor for W1306 and W1307 and mounts O1727	6-35
O1723		RING: 154623	Mounting plate for O1728 and O1729	6-35
O1724		Same as O1717	Lubricates H1757 and O1722	6-35
O1725		SPACER: 150206	Spaces O1722 and A1358	6-35
O1726		RATCHET: 150798	Advances O1722 on type space	6-35
O1727		RING, RETAINER: 150838	Guide for W1306 and W1307 and clamps O1726 to O1722	6-35
O1728		RING: 154624	Operates O1634 and disengages O1621 from O1613 through O1625	6-35
O1729		RING: 154626	Operates O1617 on automatic carriage return	6-35
O1730		SHAFT: 150348	Shaft for selector and code bar clutch trip mechanism	6-36
O1731		LEVER: 150355	Prevents code bar clutch from reversing by latching O1808	6-36
O1732		SPRING: 74701	Applies tension to O1731	6-36
O1733		Same as O1319	Lubricates O1731	6-36
O1734		LEVER: 150356	Engages and disengages O1810	6-36
O1735		WASHER, FELT: 90819	Lubricates O1730 and O1736	6-36
O1736		BUSHING: 150352	Bearing sleeve for O1730	6-36
O1737		LEVER: 150444	Unlatches O1734 from O1810 by O1730	6-36
O1738		SPRING: 70388. Same as O154	Applies tension to O1737	6-36
O1739		WASHER, FELT: 93758	Lubricates O1792	6-36
O1740		SHAFT: 150350	Shaft for function, spacing, line feed and type box clutch trip mechanism	6-36
O1741		COLLAR: 74547. Same as O1007	Retains function and spacing clutch trip mechanism in position	6-36
O1742		Same as O1731	Prevents spacing clutch from reversing by latching O1848	6-36
O1743		Same as O1732	Applies tension to O1742	6-36
O1744		Same as O1319	Lubricates O1742	6-36
O1745		BAIL: 158353	Engages and disengages O1851	6-36
O1746		BAIL: 158352	Disengages O1745 from O1851	6-36
O1747		Same as O1319	Lubricates O1745 and O1746	6-36
O1748		Same as O1313	Applies tension to O1745	6-36
O1749		SPACER: 150361	Spaces O1745 and O1750	6-36
O1750		LEVER: 153584	Prevents function clutch from reversing by latching O1827	6-36
O1751		Same as O1732	Applies tension to O1750	6-36
O1752		Same as O1319	Lubricates O1750	6-36
O1753		LEVER: 153583	Engages and disengages O1830	6-36
O1754		ARM, FOLLOWER: 150349	Disengages O1753 from O1830 by O1740 and O1771 from O1886 by O1740 and O1773	6-36
O1755		SPRING: 153806	Applies tension to O1754	6-36
O1756		Same as O1309	Lubricates O1755	6-36
O1757		Same as O1314	Lubricates O1758 and O1759	6-36
O1758		Same as O1388	Bearing roller for O1759	6-36
O1759		DETENT, CAM ROLLER: 74785	Cam roller guide for O1754	6-36
O1760		Same as O1741	Retains line feed clutch trip mechanism in position	6-36
O1761		LEVER: 150431	Engages and disengages O1869	6-36
O1762		ARM: 150895	Disengages O1761 from O1869	6-36
O1763		SPRING: 135716	Applies tension to O1761	6-36
O1764		Same as O1319	Lubricates O1761 and O1762	6-36

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1765		Same as O1732	Prevents line feed clutch from reversing by latching O1866	6-36
O1766		SPRING: 135716	Applies tension to O1765	6-36
O1767		Same as O1319	Lubricates O1765	6-36
O1768		Same as O1741	Retains line feed clutch trip mechanism in position	6-36
O1769		Same as O1319	Lubricates O1740 and O1770	6-36
O1770		BUSHING: 152726	Sleeve bearing for O1740	6-36
O1771		LEVER: 150358	Engages and disengages O1886	6-36
O1772		Same as O1732	Applies tension to O1771	6-36
O1773		ARM: 153569	Disengages O1771 from O1886	6-36
O1774		Same as O1731	Prevents type box clutch from reversing by latching O1883	6-36
O1775		Same as O1732	Applies tension to O1774	6-36
O1776		Same as O1319	Lubricates O1774	6-36
O1777		BAIL: 153368	Disengages function clutch cam	6-36
O1778		ARM: 153367	Operates O1777	6-36
O1779		SPRING: 110437	Applies tension to O1777	6-36
O1780		Same as O1319	Lubricates O1777 and O1778	6-36
O1781		ARM: 158354	Operates O1746	6-36
O1782		Same as O1684	Applies tension to O1746	6-36
O1785		SPACER: 155044	Spaces O1789 from O1835	6-37
O1787		PLATE: 153292	Operates O1821 through O1835	6-37
O1788		ECCENTRIC: 153296	Operates O1787	6-37
O1789		CAM: 153576	Operates function clutch latch lever	6-37
O1790		SHAFT: O1785	Separates O1789 and O1823	6-37
O1791		SHAFT: 152447	Mounts main shaft mechanism	6-37
O1792		CAM, SELECTOR: 152450	Drives O1508 through O1515 and O1737	6-37
O1793		DISK: 154694. Same as O337	Drives O1792	6-37
O1794		SPRING: 151728. Same as O340	Applies tension to O1796	6-37
O1795		ARM: 150013. Same as O338	Drives O1793	6-37
O1796		LEVER: 151640	Engages and disengages O1798 and O1799	6-37
O1797		WICK: 150029. Same as O341	Lubricates selector clutch mechanism	6-37
O1798		SHOE, CLUTCH: 150043. Same as O343	Drives O1795 when in engaged position	6-37
O1799		SHOE, CLUTCH: 150044. Same as O342 (Continued. See O1800.)	Permits O1798 to drive O1795 when in engaged position	6-37
H1800		Same as H1302	Locks H1799 to O1754	6-36
H1801		Same as H1306	Holds O1754 to O1740 and O1740 to A1380	6-36
H1802		Same as H1305	Holds O1754 to O1740 and O1740 to A1380	6-36
H1803		Same as H1302	Holds O1754 to O1740 and O1740 to A1380	6-36
H1804		Same as H1304	Locks O1760 to O1740	6-36
H1805		Same as H1665	Positions O1761 in relation to O1878	6-36
H1806		Same as H1365	Locks H1805 in position	6-36
H1807		Same as H1304	Locks O1768 to O1740	6-36
H1808		Same as H1787	Holds O1770 to A1391	6-36
H1809		Same as H1788	Holds O1770 to A1391	6-36
H1810		Same as H1783	Locks O1773 to O1740	6-36
H1811		Same as H1305	Locks O1773 to O1740	6-36
H1812		Same as H1327	Locks O1773 to O1740	6-36
H1813		Same as H1555	Locks O1773 to O1740	6-36
H1814		Same as H1321	Retains O1774 and O1776 on O1740	6-36
H1815		Same as H1306	Holds O1777 to O1778	6-36
H1816		Same as H1305	Holds O1777 to O1778	6-36
H1817		Same as H1329	Holds O1777 to O1778	6-36
H1818		Same as H1306	Holds O1781 to O1746	6-36
H1819		Same as H1305	Holds O1781 to O1746	6-36
H1820		Same as H1329	Holds O1781 to O1746	6-36
H1821		Same as H1305	Holds O1821 to O1787	6-37

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1822		Same as H1306	Holds O1821 to O1787	6-37
H1823		Same as H1319	Holds O1821 to O1787	6-37
H1824		RING: 153323	Spaces function clutch from spacing clutch	6-37
H1825		SCREW, MACHINE: 4-40 hex 151737. Same as H353	Holds O1793 to O1792	6-37
H1826		Same as H1309	Holds O1793 to O1792	6-37
H1827		WASHER, FLAT: 42823. Same as H204	Holds O1793 to O1792	6-37
H1828		Same as H1825	Holds O1795 to O1793	6-37
H1829		Same as H1309	Holds O1795 to O1793	6-37
H1830		Same as H1827	Holds O1795 to O1793	6-37
H1831		SCREW, MACHINE: 6-40 fil 151642. Same as H351	Locks O1801 to O1791	6-37
H1832		Same as H1305	Locks O1801 to O1791	6-37
H1833		Same as H1305	Locks O1801 to O1791	6-37
H1834		Same as H1302	Locks O1801 to O1791	6-37
H1835		SCREW, MACHINE: 4-40 hex 155046	Holds O1802, O1803, O1804, O1803, and O1808 to O1807	6-37
H1836		Same as H1309	Holds O1802, O1803, O1804, O1806, and O1808 to O1807	6-37
H1837		Same as H1827	Holds O1802, O1803, O1804, O1806, and O1808 to O1807	6-37
H1838		Same as H1825	Holds O1809 to O1808	6-37
H1839		Same as H1309	Holds O1809 to O1808	6-37
H1840		Same as H1827	Holds O1809 to O1808	6-37
H1841		Same as H1783	Locks O1816 to O1791	6-37
H1842		Same as H1305	Locks O1816 to O1791	6-37
H1843		Same as H1319	Holds O1818 and H1525 to A1389	6-37
H1844		Same as H1305	Holds O1818 and H1525 to A1389	6-37
H1845		CLAMP: 153824	Clamps O1819 to O1791	6-37
H1846		Same as H1413	Locks H1845 and O1819 to O1791	6-37
H1847		Same as H1309	Locks H1845 and O1819 or H1823 and O1790 to O1791	6-37
H1848		Same as H1835	Holds O1823 to O1789	6-37
H1849		Same as H1309	Holds O1823 to O1789	6-37
H1850		Same as H1827	Holds O1823 to O1789	6-37
H1851		Same as H1825	Holds O1828 to O1827	6-37
H1852		Same as H1309	Holds O1828 to O1827	6-37
H1853		Same as H1827	Holds O1828 to O1827	6-37
H1854		Same as H1783	Locks O1839 to O1791	6-37
H1855		Same as H1305	Locks O1839 to O1791	6-37
H1856		Same as H1321	Connects O1821 to main rocker bail	6-37
H1857		SCREW: 10-32 fil 151690	Holds O1842 to O1701	6-38
H1858		Same as H1370	Holds O1840 to O1841	6-38
H1859		Same as H1305	Holds O1840 to O1841	6-38
H1862		Same as H1398	Locks O1843 to O1791	6-38
H1863		Same as H1305	Locks O1843 to O1791	6-38
H1864		Same as H1848	Holds O1844 through O1847 to O1848	6-38
H1866		WASHER, CURVED: 151794	Holds O1844 through O1847 to O1848	6-38
H1867		Same as H1825	Holds O1849 to O1848	6-38
H1868		Same as H1309	Holds O1849 to O1848	6-38
H1869		Same as H1827	Holds O1849 to O1848	6-38
H1870		Same as H1783	Locks O1860 to O1791	6-38
H1871		Same as H1305	Locks O1860 to O1791	6-38
H1872		CLAMP: 152537	Clamps O1861 to A1391	6-38
H1873		Same as H1319	Holds H1872 to A1391	6-38
H1874		Same as H1305	Holds H1872 to A1391	6-38
H1875		Same as H1460	Locks O1861 to O1791	6-38
H1876		Same as H1309	Locks O1861 to O1791	6-38

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1877		Same as H1697	Holds O1862 through O1865 to O1866	6-38
H1880		Same as H1825	Holds O1867 to O1866	6-38
H1881		Same as H1309	Holds O1867 to O1866	6-38
H1882		Same as H1827	Holds O1867 to O1866	6-38
H1883		Same as H1783	Locks O1878 to O1791	6-38
H1884		Same as H1305	Locks O1878 to O1791	6-38
H1885		STUD, ECCENTRIC: 150364	Pivot for O1879	6-38
H1886		Same as H1305	Holds H1885 to A1376	6-38
H1887		Same as H1302	Holds H1885 to A1376	6-38
H1888		Same as H1335	Holds O1882 to O1881	6-38
H1889		Same as H1309	Holds O1882 to O1881	6-38
H1890		Same as H1665	Holds O1883 to O1881	6-38
H1891		Same as H1309	Holds O1883 to O1881	6-38
H1892		Same as H1827	Holds O1883 to O1881	6-38
H1893		Same as H1825	Holds O1884 to O1883	6-38
H1894		Same as H1309	Holds O1884 to O1883	6-38
H1895		Same as H1827	Holds O1884 to O1883	6-38
H1896		Same as H1783	Locks O1891 to O1791	6-38
H1897		Same as H1305	Locks O1891 to O1791	6-38
H1898		Same as H1305	Locks O1862 to O1866	6-38
H1899		Same as H1309	Locks O1862 to O1866	6-38
		(Continued. See H1900.)		
O1800		SPRING: 150241. Same as O344	Applies tension to O1798 and O1799	6-37
O1801		DRUM, CLUTCH: 150001	Drives O1798 and O1799 when they are engaged	6-37
O1802		CAM: 150004	Drives O1754 through O1759	6-37
O1803		WASHER, FLAT: 150016	Spaces O1802 and O1806	6-37
O1804		CAM: 150051	Drives O1805	6-37
O1805		ARM: 150056	Drives O1563 by H1576	6-37
O1806		SPACER, CLUTCH: 150050	Retains O1805 on O1804	6-37
O1807		BEARING, SLEEVE: 150047	Sleeve bearing for code bar clutch	6-37
O1808		DISK: 155047	Drives O1802, O1804 and O1807	6-37
O1809		Same as O1795	Drives O1808	6-37
O1810		LEVER: 150026	Engages and disengages O1813 and O1814	6-37
O1811		Same as O1794	Applies tension to O1810	6-37
O1812		Same as O1797	Lubricates code bar clutch	6-37
O1813		Same as O1798	Drives O1809 when in engaged position	6-37
O1814		Same as O1799	Permits O1813 to drive O1809 when in engaged position	6-37
O1815		Same as O1800	Applies tension to O1813 and O1814	6-37
O1816		DRUM, CLUTCH: 150000	Drives O1813 and O1814 when they are engaged	6-37
O1817		BEARING, BALL, ANNULAR: mfg code No. 24617, part No. 77-R-6 (code 59433 part No. 151633)	Right side frame bearing for O1791	6-37
O1818		RETAINER, BEARING: 152573	Retains O1817 to A1389	6-37
O1819		COLLAR: 153823	Retains O1817 to A1389	6-37
O1820		Same as O1704	Lubricates O1817	6-37
O1821		ARM: 153300	Operates function box stripper mechanism	6-37
O1823		SPACER: 153293	Retains O1788 on O1787	6-37
O1827		Same as O1808	Drives O1872 and O1835	6-37
O1830		Same as O1795	Operates O1834	6-37
O1831		Same as O1794	Applies tension to O1830	6-37
O1832		Same as O1797	Lubricates function clutch	6-37
O1834		Same as O1810	Engages and disengages O1836 and O1837	6-37
O1835		Same as O1807	Sleeve bearing for function clutch	6-37
O1836		Same as O1798	Drives O1827 when in engaged position	6-37
O1837		Same as O1799	Permits O1836 to drive O1827 when in engaged position	6-37
O1838		Same as O1800	Applies tension to O1836 and O1837	6-37

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1839		Same as O1816	Drives O1836 and O1837 when they are engaged	6-37
O1840		GEAR: 163590	Drives O336	6-38
O1842		GEAR: 150439	Drives O1791	6-38
O1843		COLLAR: 150549	Retains spacing clutch in position	6-38
O1844		GEAR: 150091	Drives O1669	6-38
O1845		CAM: 154614	Drives O2113	6-38
O1846		RING, RETAINER: 150831	Retains O1847 in slot of O1856	6-38
O1847		KEY: 150832	Retains O1848 on O1856	6-38
O1848		DISK: 150033	Drives O1844, O1845 and O1856	6-38
O1849		DISK: 150014	Drives O1848	6-38
O1850		BEARING, SLEEVE: 150841	Sleeve bearing for O1849 and O1851	6-38
O1851		DISK: 150035	Operates O1854	6-38
O1852		SPRING, CLUTCH SHOE LEVER DISK: 151736	Applies tension to O1851	6-38
O1853		BUSHING: 150830	Bearing for and retains O1854 in position on O1856	6-38
O1854		LEVER: 150027	Engages and disengages O1857 and O1858	6-38
O1855		Same as O1797	Lubricates spacing clutch	6-38
O1856		BEARING, CLUTCH SLEEVE: 150045	Sleeve bearing for spacing clutch	6-38
O1857		Same as O1798	Drives O1849 when in engaged position	6-38
O1858		Same as O1799	Permits O1857 to drive O1849 when in engaged position	6-38
O1859		Same as O1800	Applies tension to O1857 and O1858	6-38
O1860		Same as O1816	Drives O1857 and O1858 when they are engaged	6-38
O1861		BEARING, SLEEVE: 1500970	Left side frame bearing for O1791	6-38
O1862		GEAR: 153236	Drives O2049	6-38
O1863		PLATE: 153235	Spaces O1862 and O1864	6-38
O1864		Same as O1846	Retains O1865 in slot of O1874	6-38
O1865		Same as O1847	Retains O1866 on O1874	6-38
O1866		Same as O1848	Drives O1862 and O1874	6-38
O1867		Same as O1849	Drives O1866	6-38
O1868		Same as O1850	Sleeve bearing for O1867 and O1869	6-38
O1869		Same as O1851	Operates O1872	6-38
O1870		Same as O1852	Applies tension to O1869	6-38
O1871		Same as O1853	Bearing for and retains O1872 in position on O1874	6-38
O1872		Same as O1854	Engages and disengages O1875 and O1876	6-38
O1873		Same as O1797	Lubricates line feed clutch	6-38
O1874		Same as O1856	Sleeve bearing for line feed clutch	6-38
O1875		Same as O1798	Drives O1867 when in engaged position	6-38
O1876		Same as O1799	Permits O1875 to drive O1867 when in engaged position	6-38
O1877		Same as O1800	Applies tension to O1875 and O1876	6-38
O1878		Same as O1816	Drives O1875 and O1876 when they are engaged	6-38
O1879		LINK: 150244	Drives A1376 by H1885	6-38
O1880		Same as O1319	Lubricates H1885 and O1879	6-38
O1881		BEARING, SLEEVE: 150046	Sleeve bearing for type box clutch and drives O1879	6-38
O1882		PLATE, RETAINER: 150010	Retains one end of O1879 in O1881	6-38
O1883		Same as O1793	Drives O1881	6-38
O1884		Same as O1795	Drives O1883	6-38
O1885		Same as O1794	Applies tension to O1886	6-38
O1886		Same as O1810	Engages and disengages O1888 and O1889	6-38
O1887		Same as O1797	Lubricates type box clutch	6-38
O1888		Same as O1798	Drives O1884 when in engaged position	6-38
O1889		Same as O1799	Permits O1888 to drive O1884 when in engaged position	6-38
O1890		Same as O1800	Applies tension to O1888 and O1889	6-38

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1891		Same as O1816 (Continued. See O1900.)	Drives O1888 and O1889 when they are engaged	6-38
H1900		SCREW: 4-40 fil 151732	Locks H1862 to H1866	6-38
H1901		WASHER: 151610.	Holds O1862 to O1867	6-38
H1910		Same as H1321	Retains O1905 to A1370	6-39
H1911		Same as H1502	Retains O1905 to O1705	6-39
H1912		Same as H1453	Retains O1918 on O1922	6-39
H1913		SCREW, ADJUSTING: 4-40 fil 153532	Positions O1902 on A1370	6-39
H1914		Same as H1415	Locks H1913 on O1902	6-39
H1918		SCREW, MACHINE: 2-56 fil 27425	Holds O1902 to A1370	6-39
H1919		WASHER, LOCK: Steel, mfg code No. 78189, part No. 1202 (code 59433 part No. 90791). Same as H322	Holds O1902 and O1907 to A1370	6-39
H1921		SCREW, MACHINE: 4-40 by 3/8 hex 151734	Holds O1908 through O1912 to A1370	6-39
H1922		Same as H1309	Holds O1908 through O1912 to A1370	6-39
H1923		Same as H1415	Holds O1908 through O1912 to A1370	6-39
H1924		Same as H1921	Holds O1913 through O1917 to A1370	6-39
H1925		Same as H1309	Holds O1913 through O1917 to A1370	6-39
H1926		Same as H1415	Holds O1913 through O1917 to A1370	6-39
H1927		Same as H1344	Holds A1371 to O1918	6-39
H1928		Same as H1302	Holds A1371 to O1918	6-39
H1929		Same as H1344	Holds A1371 to O1998	6-39
H1930		SCREW, MACHINE: 6-40 hex 150395	Holds O1919 through O1921 to A1389 and retains O1918 on O1919	6-39
H1931		Same as H1305	Holds O1919 through O1921 to A1389	6-39
H1932		Same as H1302	Holds O1919 through O1921 to A1389	6-39
H1933		Same as H1480	Holds O1922 through O1925 to A1389	6-39
H1934		Same as H1305	Holds O1922 through O1925 to A1389	6-39
H1935		Same as H1302	Holds O1922 through O1925 to A1389	6-39
H1936		Same as H1303	Retains O1918 on O1928	6-39
H1937		Same as H1697	Holds A1372 to O2017	6-39
H1938		Same as H1305	Holds A1372 to O2017	6-39
H1939		STUD: 150429	Pivot for O1933	6-39
H1940		Same as H1305	Holds H1939 to A1372	6-39
H1941		Same as H1302	Holds H1939 to A1372	6-39
H1942		Same as H1321	Retains O1929 and O1930 on O1928	6-39
H1943		Same as H1321	Retains O1929 on A1318	6-39
H1944		Same as H1321	Retains O1928 on O1933	6-39
H1951		Same as H1321	Retains O1933 on H1939	6-39
H1952		STUD: 150380	Pivot for O1928	6-39
H1953		Same as H1533	Holds H1952 to A1389	6-39
H1954		Same as H1532	Holds H1952 to A1389	6-39
H1955		Same as H1665	Holds O1935 and O1936 to O1937	6-39
H1956		Same as H1309	Holds O1935 and O1936 to O1937	6-39
H1957		Same as H1310	Holds O1935 and O1936 to O1937	6-39
H1958		Same as H1319	Holds O1938 to A1389	6-39
H1959		Same as H1305	Holds O1938 to A1389	6-39
H1960		Same as H1344	Holds O1941 to A1389	6-39
H1961		Same as H1305	Holds O1941 to A1389	6-39
H1962		Same as H1344	Holds A1373 to A1389	6-39
H1963		Same as H1305	Holds A1373 to A1389	6-39
H1964		SCREW, MACHINE: 4-40 hex 151738	Holds A1374 to A1375 and identifies type arrangement	6-39
H1965		Same as H1335	Holds A1374 to A1375	6-39
H1966		Same as H1309	Holds A1374 to A1375	6-39
H1967		Same as H1310	Holds A1374 to A1375	6-39
H1968		NUT, SHOULDER: 150078	Locks A1374 to A1375	6-39



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1969		STUD: 150079	Locks A1374 to A1375 and handle for removing and guide for positioning type box	6-39
H1970		Same as H1302	Holds A1371 to O1998	6-40
H1971		CLAMP: 152589	Clamps O1997 to A1391	6-40
H1972		CLAMP: 152550	Clamps H1971 and O1997 to A1391	6-40
H1973		Same as H1375	Holds H1971, H1972 and H1975 to A1391	6-40
H1974		Same as H1305	Holds H1971, H1972 and H1975 to A1391	6-40
H1975		CLAMP: 150401	Clamps O1997 to A1391	6-40
H1976		Same as H1930	Holds O1999, O2002, and O2003 to A1391 and retains O1998 on O1999	6-40
H1977		Same as H1305	Holds O1999, O2002, and O2003 to A1391	6-40
H1978		Same as H1302	Holds O1999, O2002, and O2003 to A1391	6-40
H1979		SCREW: 151442	Holds O2000 through O2003 to A1391	6-40
H1980		Same as H1305	Holds O2000 through O2003 to A1391	6-40
H1981		Same as H1302	Holds O2000 through O2003 to A1391	6-40
H1982		Same as H1303	Retains O2007 and O2008 on O1998	6-40
H1983		Same as H1321	Retains O2007 on O2006	6-40
H1984		Same as H1939	Pivot for O2006	6-40
H1985		Same as H1305	Holds H1984 to A1376	6-40
H1986		Same as H1302	Holds H1984 to A1376	6-40
H1987		Same as H1321	Retains O2006 on H1984	6-40
H1988		STUD: 150410	Pivot for O2007	6-40
H1989		Same as H1533	Holds H1988 to A1391	6-40
H1990		Same as H1532	Holds H1988 to A1391	6-40
H1991		Same as H1303	Retains O2007 on H1988	6-40
H1992		Same as H1321	Retains O2009 on O2007	6-40
H1993		Same as H1321	Retains O2009 on A1310	6-40
H1999		Same as H1697	Holds A1376 to O2017	6-40
		(Continued. See H2000.)		
O1902		PLATE: 153531	Type box adjustment plate	6-39
O1903		SPRING: 74882. Same as O1113	Applies tension to A1370	6-39
O1904		OILER: 74553	Lubricates O1904	6-39
O1905		BAIL: 154356	Horizontally positions O1943 by O1370	6-39
O1907		GUIDE: 153810	Guide for ribbon from O1393	6-39
O1909		ROLLER: 152147	Upper roller guides for A1370 and retains A1370 on A1371	6-39
O1910		BALL, BEARING: 3637	Bearing balls for O1909	6-39
O1911		SHIM: 150381	Spaces O1908 and O1912	6-39
O1912		CONE, BEARING: 150072	Retains O1910 on O1909	6-39
O1913		Same as O1908	Retains O1915 in O1914	6-39
O1914		Same as O1909	Lower roller guide for A1369 or A1370 and retains A1369 or A1370 on A1371	6-39
O1918		LEVER: 150397	Positions A1371	6-39
O1919		BLOCK, GUIDE: 150382	Bearing guide for O1918	6-39
O1920		SPACER: 150384	Spaces O1918 and A1389	6-39
O1921		Same as O1395	Lubricates O1918 and O1919	6-39
O1922		BLOCK, GUIDE: 151604	Bearing guide for O1918	6-39
O1923		PLATE, RETAINER: 151602	Retains O1918 on O1922	6-39
O1924		Same as O1488	Spaces O1918 and A1389	6-39
O1925		Same as O1395	Lubricates O1918 and O1922	6-39
O1926		SPRING: 151644	Applies tension to O1918	6-39
O1927		WICK: 152254	Lubricates O1926	6-39
O1928		LEVER: 150420	Operates O1918, O1929 and O1931 and allows O1937 to position O1935	6-39
O1929		LINK: 150387	Drives A1318	6-39
O1930		Same as O1327	Lubricates O1928 and O1929	6-39
O1933		LINK: 150370	Operates O1928	6-39
O1934		WASHER: 115122	Lubricates H1952 and O1928	6-39

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/JG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1935		LEVER: 150425	Stops O1918 in one of four vertical positions	6-39
O1936		WASHER, FLAT: 150411	Spaces O1935 and O1937	6-39
O1937		ARM: 150413	Mounts and pivots O1935	6-39
O1938		STUD: 150811	Pivot for O1937	6-39
O1939		SPRING: 76379	Applies tension to O1937	6-39
O1940		Same as O1395	Lubricates O1937 and O1938	6-39
O1941		BLOCK, BEARING: 150891	Right side frame bearing for O2017	6-39
O1942		Same as O1319	Lubricates O1941 and O2017	6-39
O1943		PALLET SET, TYPE: 151938	Prints copy	6-39
O1944		SPRING: 157238	Retracts type pallets	6-39
O1946		PALLET: 157600	Prints impression of character "A"	6-39
O1947		PALLET: 157601	Prints impression of character "B"	6-39
O1948		PALLET: 157602	Prints impression of character "C"	6-39
O1949		PALLET: 157603	Prints impression of character "D"	6-39
O1950		PALLET: 157604	Prints impression of character "E"	6-39
O1951		PALLET: 157605	Prints impression of character "F"	6-39
O1952		PALLET: 157606	Prints impression of character "G"	6-39
O1953		PALLET: 157607	Prints impression of character "H"	6-39
O1954		PALLET: 157608	Prints impression of character "I"	6-39
O1955		PALLET: 157609	Prints impression of character "J"	6-39
O1956		PALLET: 157610	Prints impression of character "K"	6-39
O1957		PALLET: 157611	Prints impression of character "L"	6-39
O1958		PALLET: 157612	Prints impression of character "M"	6-39
O1959		PALLET: 157613	Prints impression of character "N"	6-39
O1960		PALLET: 157614	Prints impression of character "O"	6-39
O1961		PALLET: 157615	Prints impression of character "P"	6-39
O1962		PALLET: 157616	Prints impression of character "Q"	6-39
O1963		PALLET: 157617	Prints impression of character "R"	6-39
O1964		PALLET: 157618	Prints impression of character "S"	6-39
O1965		PALLET: 157619	Prints impression of character "T"	6-39
O1966		PALLET: 157620	Prints impression of character "U"	6-39
O1967		PALLET: 157621	Prints impression of character "V"	6-39
O1968		PALLET: 157622	Prints impression of character "W"	6-39
O1969		PALLET: 157623	Prints impression of character "X"	6-39
O1970		PALLET: 157624	Prints impression of character "Y"	6-39
O1971		PALLET: 157625	Prints impression of character "Z"	6-39
O1972		PALLET: 157626	Prints impression of character "1"	6-39
O1973		PALLET: 157627	Prints impression of character "2"	6-39
O1974		PALLET: 157628	Prints impression of character "3"	6-39
O1975		PALLET: 157629	Prints impression of character "4"	6-39
O1976		PALLET: 157630	Prints impression of character "5"	6-39
O1977		PALLET: 157631	Prints impression of character "6"	6-39
O1978		PALLET: 157632	Prints impression of character "7"	6-39
O1979		PALLET: 157633	Prints impression of character "8"	6-39
O1980		PALLET: 157634	Prints impression of character "9"	6-39
O1981		PALLET: 157635	Prints impression of character "0"	6-39
O1982		PALLET: 157636	Prints impression of character ". "	6-39
O1983		PALLET: 157637	Prints impression of character ", "	6-39
O1984		PALLET: 157638	Prints impression of character "' "	6-39
O1985		PALLET: 157639	Prints impression of character " ' "	6-39
O1986		PALLET: 157640	Prints impression of character " ; "	6-39
O1987		PALLET: 157641	Prints impression of character " : "	6-39
O1988		PALLET: 157642	Prints impression of character " - "	6-39
O1989		PALLET: 157643	Prints impression of character " / "	6-39
O1990		PALLET: 157644	Prints impression of character " ? "	6-39
O1991		PALLET: 157645	Prints impression of character " ( "	6-39
O1992		PALLET: 157646	Prints impression of character " ) "	6-39
O1993		PALLET: 157647	Prints impression of character " ! "	6-39

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1994		PALLET: 157648	Prints impression of character "\$"	6-39
O1995		PALLET: 157649	Prints impression of character "&"	6-39
O1997		Same as O1817	Left side frame bearing for O2017	6-40
O1998		LEVER: 150396	Positions A1371	6-40
O1999		Same as O1919	Bearing guide for O1998	6-40
		(Continued. See O2000.)		
H2000		Same as H1305	Holds A1376 to O2017	6-40
H2001		Same as H1306	Holds A1376 to O2017	6-40
H2002		Same as H1321	Retains O2012 and O2013 on A1391	6-40
H2003		Same as H1359	Holds O2015 to O2012	6-40
H2004		Same as H1309	Holds O2015 to O2012	6-40
H2005		Same as H1310	Holds O2015 to O2012	6-40
H2006		SCREW: 152893	Holds O2018 to O2017	6-40
H2007		Same as H1309	Holds O2018 to O2017	6-40
H2008		Same as H1310	Holds O2018 to O2017	6-40
H2009		Same as H1379	Holds A1349 to O2017	6-40
H2010		Same as H1305	Holds A1349 to O2017	6-40
H2020		Same as H1398	Holds O2030 and O2031 to O2028	6-41
H2021		Same as H1305	Holds O2030 and O2031 to O2028	6-41
H2022		Same as H1398	Locks O2033 on O2028	6-41
H2023		Same as H1305	Locks O2033 on O2028	6-41
H2024		SCREW, MACHINE: 6-40 fil 150912	Shaft for O2034 and holds O2035, O2036 and O2037 to A1391	6-41
H2025		Same as H1305	Holds O2035, O2036 and O2037 to A1391	6-41
H2026		Same as H1302	Holds O2035, O2036 and O2037 to A1391	6-41
H2027		SCREW, MACHINE: 4-40 fil 151731. Same as H417	Holds O2034 to O2035	6-41
H2028		Same as H1309	Holds O2034 to O2035	6-41
H2029		SCREW, MACHINE: 6-40 hex 150342	Shaft for and holds O2039 and H2030 to A1391	6-41
H2030		WASHER, FLAT: 74722	Retains O2039 on shoulder of H2029	6-41
H2031		Same as H1305	Holds O2039 and H2030 to A1391	6-41
H2032		Same as H1302	Holds O2039 and H2030 to A1391	6-41
H2033		SCREW, MACHINE: 6-40 fil 150646	Pivot for and holds O2040 to A1391	6-41
H2034		STUD: 150318	Shaft for O2048	6-41
H2035		Same as H1344	Holds H2034 to A1391	6-41
H2036		Same as H1305	Holds H2034 to A1391	6-41
H2037		SCREW, MACHINE: 4-40 fil 150652	Locks O2042, O2044, O2045, O2047 and O2048 to O2049	6-41
H2038		Same as H1309	Locks O2042, O2044, O2045, O2047 and O2048 to O2049	6-41
H2039		Same as H1355	Retains O2048 on H2034	6-41
H2040		SCREW: 4-40 151073	Holds O2050 to A1391	6-41
H2041		Same as H1309	Holds O2050 to A1391	6-41
H2042		Same as H2040	Holds O2051 to A1389	6-41
H2043		Same as H1309	Holds O2051 to A1389	6-41
H2044		Same as H1359	Holds H2046, H2047 and O2051 to A1389	6-41
H2045		Same as H1309	Holds H2046, H2047 and O2051 to A1389	6-41
H2046		Same as H1667	Guide and stop for O2129	6-41
H2047		Same as H1310	Spaces H2046 from O2051	6-41
H2048		Same as H1787	Holds O2053 to A1389	6-42
H2049		Same as H1788	Holds O2053 to A1389	6-42
H2050		Same as H1787	Holds O2055 to A1391	6-42
H2051		Same as H1788	Holds O2055 to A1391	6-42
H2052		Same as H1321	Retains O2027 on O2026	6-42
H2053		Same as H1321	Retains O2080 on O2079	6-42
H2054		Same as H1321	Retains O2026 and O2027 on O2080	6-42
H2058		Same as H1308	Holds O2062 to O2061	6-42
H2059		Same as H1309	Holds O2062 to O2061	6-42

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2060		Same as H1310	Holds O2062 to O2061	6-42
H2061		Same as H1304	Holds O2063 to A1389	6-42
H2062		Same as H1305	Holds O2063 to A1389	6-42
H2063		Same as H1304	Holds O2064 to A1391	6-42
H2064		Same as H1305	Holds O2064 to A1391	6-42
H2065		Same as H1665	Locks O2065 and O2072 in O2063 and O2064	6-42
H2066		Same as H1309	Locks O2065 and O2072 in O2063 and O2064	6-42
H2067		SCREW: 6745. Same as H705	Holds O2067 to A1389	6-42
H2068		Same as H1533	Holds O2067 to A1389	6-42
H2069		Same as H2067	Holds O2067 to A1389	6-42
H2070		Same as H1533	Holds O2067 to A1391	6-42
H2071		SCREW: 6-40 hex 153841. Same as H807	Holds H2075, O2068 and O2070 to A1389	6-42
H2072		Same as H1305	Holds H2075, O2068 and O2070 to A1389	6-42
H2073		Same as H1398	Holds O2068 to A1389	6-42
H2074		Same as H1305	Holds O2068 to A1389	6-42
H2075		Same as H1453	Retains O2070 or O2075 on O2071 or O2076 and H2072	6-42
H2076		Same as H1552	Holds H2080, O2073 and O2075 to A1391	6-42
H2077		Same as H1305	Holds H2080, O2073 and O2075 to A1391	6-42
H2078		SCREW: 74798	Holds O2073 to A1311	6-42
H2080		STUD: 155865	Pivot for O2080	6-42
H2081		Same as H1305	Holds O2080 to O2052	6-42
H2082		Same as H1344	Holds O2080 to O2052	6-42
H2083		Same as H1344	Holds A1391 to O2052	6-42
H2084		Same as H1305	Holds A1391 to A2052	6-42
H2089		Same as H1305	Holds O2087 to O2061	6-42
H2090		Same as H1302	Holds O2087 to O2061	6-42
H2091		Same as H1375	Holds O2087 to O2061	6-42
H2093		STUD: 150781	Pivot for O2089	6-43
H2094		Same as H1305	Holds H2093 to A1389	6-43
H2095		Same as H1302	Holds H2093 to A1389	6-43
H2096		SCREW, SHOULDER: 6-40 hex 153582	Holds and pivots O2089 and O2254	6-43
H2097		Same as H1305	Holds H2093 to A1391	6-43
H2098		Same as H1302	Holds H2093 to A1391	6-43
H2099		Same as H1344	Holds O2093 to A1389	6-43
		(Continued. See H2100.)		
O2000		BLOCK, GUIDE: 151604. Same as O1922	Bearing guide for O1998	6-40
O2001		PLATE, RETAINER: 151602. Same as O1923	Retains O1998 on O2000	6-40
O2002		SPACER: 150383	Spaces O1998 and A1391	6-40
O2003		Same as O1395	Lubricates O1998, O1999 and O2000	6-40
O2004		Same as O1926	Applies tension to O1998	6-40
O2005		Same as O1927	Lubricates O2004	6-40
O2006		LINK: 150369	Operates O2007	6-40
O2007		LEVER: 150428	Operates O1998, O2009 and O2011 and allows O2012 to position O2015	6-40
O2008		Same as O1934	Lubricates H1988 and O2007	6-40
O2009		LINK: 150386	Drives A1310	6-40
O2012		ARM: 150412	Mounts and pivots O2015	6-40
O2013		Same as O1395	Lubricates O2012	6-40
O2014		Same as O1939	Applies tension to O2012	6-40
O2015		Same as O1935	Stops O1998 in one of four vertical positions	6-40
O2017		SHAFT: 150365	Drives A1349, A1372 and O2018	6-40
O2018		PLATE, CAM: 150363	Operates O2108	6-40
O2021		WICK: 156093	Lubricates H2034	6-41
O2023		WICK: 97481	Lubricates O2085	6-42
O2024		Same as O1571	Lubricates O2079 and O2080	6-42
O2025		Same as O1543	Lubricates O2026 and O2027	6-42
O2026		LINK: 153550	Drives O2027	6-42

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2027		ROLLER: 153553	Reset bail cam	6-42
O2028		PLATEN, TELETYPEWRITER: 150718	Supports and advances copy	6-41
O2029		BUSHING: 150714	Right side frame sleeve bearing for O2028	6-41
O2030		DISK, SPACING: 150998	Spaces O2028 and O2031	6-41
O2031		GEAR: 150809	Drives O2028 automatically	6-41
O2032		Same as O2029	Left side frame sleeve bearing for O2028	6-41
O2033		GEAR: 150715	Drives O2028 manually	6-41
O2034		HANDWHEEL: 150656	Operates O2028 manually through O2035, O2039 and O2033	6-41
O2035		GEAR: 150658	Drives O2039	6-41
O2036		BUSHING: 150911	Spaces O2037 and O2035 and side frame bearing for O2034	6-41
O2037	16	LEVER: 150586	Disengages O2034 and O2046 from O2031 by O2040 on manual operation	6-41
O2038		SPRING: 80581. Same as O381	Applies tension to O2037	6-41
O2039		GEAR: 150666	Drives O2033	6-41
O2040		CRANK: 150642	Positions O2043 and O2046 on automatic operation and disengages them on manual operation	6-41
O2041	16	SPRING: 152871	Applies tension to O2040	6-41
O2042		ECCENTRIC: 150647	Retains O2043 on O2044	6-41
O2043	16	BAR, LINE FEED: 150585	Operates O2028 on line feed by O2031 and operates O2040	6-41
O2044		ECCENTRIC: 150648	Drives O2043	6-41
O2045		SPACER: 150649	Retains O2043 on O2044 and O2046 on O2047	6-41
O2046		Same as O2043	Operates O2028 on line feed by O2031 and operates O2040	6-41
O2047		Same as O2044	Drives O2046	6-41
O2048		BUSHING: 150650	Sleeve bearing for O2044 and O2047	6-41
O2049		GEAR: 150651	Drives O2044 and O2047 through O2048	6-41
O2050		RETAINER: 150719	Retains O2032 in A1391	6-41
O2051		RETAINER: 150720	Retains O2029 in A1389	6-41
O2052		SHAFT: 155864	Drives O2079	6-42
O2053		BUSHING: 150414	Left side frame sleeve bearing for O2052	6-42
O2054		Same as O1735	Lubricates O2052 and O2053	6-42
O2055		Same as O2053	Right side frame sleeve bearing for O2052	6-42
O2056		Same as O1735	Lubricates O2052 and O2055	6-42
O2061		BAIL: 153573	Releases and resets symbols O1425 through O1435 by O2062	6-42
O2062		BLADE, BAIL: 158365	Adjustable resetting blade for O2061	6-42
O2063		POST, PIVOT: 150423	Mounts O2065	6-42
O2064		POST, PIVOT: 150398	Mounts O2072	6-42
O2065		SHAFT: 150419	Right end pivot for O2061	6-42
O2066		Same as O1319	Lubricates O2061, O2065 and O2072	6-42
O2067		ROD: 151627	Tie bar for A1389 and A1391	6-42
O2068		BLOCK, GUIDE: 150904	Mounts O2077 to A1389	6-42
O2069		SPRING: 85407	Applies pressure to O2070	6-42
O2070		PLATE: 150910	Retains O2077 in cutout of O2068	6-42
O2071		BUSHING: 95030	Guide for O2070 and holds O2068 and O2070 to A1389	6-42
O2072		Same as O2065	Left end pivot for O2061	6-42
O2073		BLOCK, GUIDE: 150903	Mounts O2077 to A1391	6-42
O2074		Same as O2069	Applies pressure to O2075	6-42
O2075		PLATE: 150935	Retains O2077 in cutout of O2073	6-42
O2076		Same as O2071	Guide for O2075 and holds O2073 and O2075 to A1391	6-42
O2077		SPINDLE, PAPER: 150907	Spindle for roll paper	6-42

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2078		Same as O2071	Guide for O2070 and holds A1333, O2068 and O2070 to A1389	6-42
O2079		BRACKET: 153554	Operates O2080 through O2052	6-42
O2080		LINK: 153558	Operates O2027 through O2079	6-42
O2082		WASHER: 153577	Lubricates O2027 and O2080	6-42
O2085		SPRING: 154688	Applies tension to O2061	6-42
O2086		BRACKET, ROLLER: 157241	Bearing for O2027	6-42
O2088		WICK: 93879	Lubricates A1355	6-43
O2089		BAIL: 152140	Operates O2094	6-43
O2090		WASHER, FELT: 90679. Same as O326	Lubricates H2093, H2096 and O2089	6-43
O2091		SPRING: 84575	Applies tension to O2089	6-43
O2093		BAR, GUIDE: 150894	Guide for O2095, O2096 and O2097	6-43
O2094		SLIDE: 162729	Suppresses spacing by preventing O2113 from latching O1746	6-43
O2095		ARM: 150377	Operates O2116	6-43
O2096		ARM: 154649	Operates O2104	6-43
O2097		ARM: 162728	Operates O1762	6-43
O2098		SPRING: 153305	Applies pressure to O2106	6-43
O2099		BAIL: 153382 (Continued. See O2100.)	Operates O2102	6-43
H2100		Same as H1305	Holds O2093 to A1389 and A1391	6-43
H2101		Same as H1532	Holds O2093 to A1391	6-43
H2102		Same as H1533	Holds O2093 to A1391	6-43
H2103		Same as H1344	Holds A1380 and A1381 to O2093	6-43
H2104		Same as H1305	Holds A1380 and A1381 to O2093	6-43
H2105		SCREW: 6-40 by 5/32 fil 74536	Holds O2107 to H2113	6-43
H2106		STUD: 157991	Spring post	6-43
H2107		Same as H1304	Holds A1382 to O2093	6-43
H2108		Same as H1305	Holds A1382 to O2093	6-43
H2109		Same as H1453	Retainer and guide for O2094	6-43
H2110		Same as H1381	Retains O2094 and H2109 on A1381	6-43
H2111		Same as H1375	Holds A1380 to A1389	6-43
H2112		Same as H1305	Holds A1380 to A1389	6-43
H2113		STUD: 150214	Pivot for O2099	6-43
H2114		Same as H1305	Holds H2113 to A1381	6-43
H2115		Same as H1302	Holds H2113 to A1381	6-43
H2116		Same as H1321	Retains O2099 and O2100 on H2113	6-43
H2117		Same as H1321	Retains O2102 and O2103 on A1381	6-43
H2118		Same as H1321	Retains O2104 on A1382	6-43
H2119		Same as H1303	Retains O2106 in position on A1382	6-43
H2120		Same as H1321	Retains O2108 and O2111 on A1381	6-43
H2122		Same as H1381	Retains O2112 and O2113 to O2108	6-43
H2123	16	Same as H1304	Holds A1383 to A1391	6-43
H2124		Same as H1305	Holds A1383 to A1391	6-43
H2125		Same as H1344	Holds O2115 to A1381	6-43
H2126		Same as H1305	Holds O2115 to A1381	6-43
H2127		Same as H1344	Holds O2115 to A1389	6-43
H2128		Same as H1305	Holds O2115 to A1389	6-43
H2129		Same as H1355	Retains symbols O2116 through O2120 and O2251 on one side of O2115	6-43
H2130		Same as H1319	Holds O2118 to O2116	6-43
H2131		Same as H1305	Holds O2118 to O2116	6-43
H2132		Same as H1306	Holds O2118 to O2116	6-43
H2133		SCREW, SET: 6-40 hex socket set 124681	Locks O2123 on O2122	6-44
H2134		Same as H1462	Holds O2124 and O2125 to A1389 and A1391	6-44
H2135		Same as H1309	Holds O2124 and O2125 to A1389 and A1391	6-44
H2136		Same as H1310	Retains O2124 on O2125	6-44
H2137		Same as H1344	Holds O2127 and O2128 to A1389	6-44

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2138		Same as H1305	Holds O2127 and O2128 to A1389	6-44
H2139		PIN: 151703	Bearing surface for O2129 at A1391	6-44
H2140		STUD: 150992	Stop for O2124	6-44
H2141		Same as H1309	Locks H2140 to A1389 and A1391	6-44
H2142		Same as H1453	Bearing surface for and spaces O2127 from A1389	6-44
H2144		Same as H1303	Retains O2134 on O2127	6-44
H2145		Same as H1303	Retains O2134 on O2141	6-44
H2146		Same as H1344	Holds O2142 to A1389 and A1391	6-44
H2147		Same as H1305	Holds O2142 to A1389 and A1391	6-44
H2148		Same as H1344	Holds A1384 to O2135	6-44
H2149		Same as H1305	Holds A1384 to O2135	6-44
H2150		Same as H1302	Holds A1384 to O2135	6-44
H2151		Same as H1304	Holds O2135 to A1389 and A1391	6-44
H2152		Same as H1305	Holds O2135 to A1389 and A1391	6-44
H2153		CLAMP: 150267	Clamps O2140 to O2142	6-44
H2154		Same as H1413	Holds H2153 and O2144 to O2142	6-44
H2155		Same as H1309	Holds H2153 and O2144 to O2142	6-44
H2156		Same as H1365	Holds H2153 and O2144 to O2142	6-44
H2157		Same as H1413	Holds A1385 to O2142	6-44
H2158		Same as H1309	Holds A1385 to O2142	6-44
H2159		Same as H1365	Holds A1385 to O2142	6-44
H2168		Same as H1359	Holds A1388 and O2155 to A1389	6-45
H2169		WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1106 (code 59433 part No. 107116)	Locks A1388 and O2155 to A1389	6-45
H2170		Same as H1335	Holds O2155 to A1389	6-45
H2171		Same as H1309	Holds O2155 to A1389	6-45
H2172		Same as H1344	Holds A1390 to A1389	6-45
H2173		Same as H1305	Holds A1390 to A1389	6-45
H2174		Same as H1319	Holds O2157 to A1391	6-46
H2175		Same as H1305	Holds O2157 to A1391	6-46
H2176		Same as H1398	Holds O2160 and O2161 to A1391	6-46
H2177		Same as H1305	Holds O2160 and O2161 to A1391	6-46
H2178		Same as H1306	Retains O2160 on O2161	6-46
H2179		Same as H1344	Holds O2159 to A1391	6-46
H2180		Same as H1305	Holds O2159 to A1391	6-46
H2181		Same as H1302	Holds O2159 to A1391	6-46
H2184		Same as H1335	Holds O2162 to A1391	6-46
H2185		Same as H1309	Holds O2162 to A1391	6-46
H2186		Same as H1344	Holds A1392 to A1391	6-46
H2187		Same as H1305	Holds A1392 to A1391	6-46
H2188		POST, SPRING: 150341	Anchor for O1772, O1775, O1763 and O1766	6-46
H2189		Same as H1533	Holds H2188 to A1391	6-46
H2190		Same as H1532	Holds H2188 to A1391	6-46
H2191		STUD: 150353	Mounts H2194 and H2196	6-46
H2192		Same as H1533	Holds H2191 to A1391	6-46
H2193		Same as H1532	Holds H2191 to A1391	6-46
H2194		POST, ECCENTRIC: 150351	Adjustable stop for O1761	6-46
H2195		Same as H1532	Locks H2194 in position	6-46
H2196		Same as H2194	Adjustable stop for O1771	6-46
H2197		Same as H1532 (Continued. See H2200.)	Locks H2196 in position	6-46
O2100		Same as O1480	Lubricates H2113 and O2099	6-43
O2101		Same as O1376	Applies tension to O2099	6-43
O2102		BAIL: 152518	Suppresses spacing when carriage is at extreme right by positioning O2094	6-43
O2103		Same as O1327	Lubricates O2102	6-43
O2104		LEVER: 152708	Operates O280	6-43

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2105		SPRING: 7965.	Applies tension to O2104	6-43
O2106		BAIL: 153310	Operates A1327	6-43
O2108		BAIL: 152514	Operates O2113	6-43
O2109		SPRING: 82442	Applies tension to O2108	6-43
O2110		Same as O1307	Lubricates O2018 and O2108	6-43
O2111		Same as O1327	Lubricates O2108 and riveted stud on A1381	6-43
O2112		WASHER, FELT: 150930	Lubricates O2108 and O2113	6-43
O2113		LEVER: 152515	Operates spacing clutch by engaging O1746	6-43
O2114		Same as O2038	Applies tension to O2113	6-43
O2115		SHAFT: 150399	Pivot for O2116 and O2118	6-43
O2116		BAIL: 150392	Operates O2118	6-43
O2117		Same as O1395	Lubricates O2115, O2116, O2118 and O2251	6-43
O2118		LEVER: 152545	Operates O1613	6-43
O2119		SHIM: 90490	Pressure plate for O2120	6-43
O2120		SPRING: 111355	Applies pressure to O2118	6-43
O2122		SHAFT: 152832	Pressure roller guide for copy paper	6-44
O2123		COLLAR: 153634	Retains O2124 and O2125 on O2122	6-44
O2124		LEVER: 150816	Pressure arm and bearing for O2122	6-44
O2125		BUSHING: 150815	Spaces O2124 from A1389 and A1391	6-44
O2126		Same as O1732	Applies tension to O2124	6-44
O2127		LEVER: 150276	Manually operates O2134	6-44
O2128		Same as O1386	Pivot for O2127	6-44
O2129		PLATE: 150685	Positions O2131 and O2132	6-44
O2130		SPRING: 72468	Applies tension to O2129	6-44
O2131		FINGER, PAPER: 150804	Clamps right side of paper to O2028	6-44
O2132		FINGER, PAPER: 150826	Clamps left side of paper to O2028	6-44
O2133		SPRING: 150803	Friction spring for O2131 and O2132	6-44
O2134		LINK: 150270	Operates O2141	6-44
O2135		GUIDE, PAPER: 152539	Guides paper to O2122	6-44
O2136		BAIL: 157290	Guides and clamps paper to O2028 and disengages O2137 when released	6-44
O2137		ROLLER, PRESSURE: 150269	Roller for and advances paper around O2028	6-44
O2138		GUIDE: 150266	Pivot for and applies pressure to O2137	6-44
O2139		SPRING: 152725	Applies pressure to O2136	6-44
O2140		SHAFT: 150265	Pivot guide for O2136 and O2138	6-44
O2141		ARM: 150271	Releases paper through O2136, O2138 and O2145	6-44
O2142		BAR: 157289	Guide for and mounts pressure roller mechanism	6-44
O2143		Same as O2140	Pivot guide for O2145	6-44
O2144		GUIDE: 157291	Feeds paper to O2028	6-44
O2145		Same as O2138	Pivot for and applies pressure to O2147	6-44
O2146		SPRING: 152723	Applies pressure to O2145	6-44
O2147		Same as O2137	Roller for and advances paper around O2128	6-44
O2154		CLIP: 152831	Protects A1389 from wear by O2122	6-45
O2155		GUIDE: 153587	Guide for A1324	6-45
O2156		BAIL: 150900	Positioning detent for O2031	6-46
O2157		BUSHING: 150961	Pivot for O2156	6-46
O2158		SPRING: 150969	Applies pressure to O2156	6-46
O2159		GUIDE: 150654	Guide for O2043 and O2046	6-46
O2160		LEVER: 153312	Positions O2107 in stripping or disengaged position by shifting O2016	6-46
O2161		BUSHING: 153304	Bearing roller for O2160	6-46
O2162		GUIDE: 153586	Guide for A1325	6-46
O2163		Same as O2154	Protects A1391 from wear by O2122	6-46
		(Continued. See O2200.)		
H2251		Same as H1319	Holds A1379 to A1378	6-43
H2252		Same as H1305	Holds A1379 to A1378	6-43
H2253		Same as H1306	Holds A1379 to A1378	6-43
H2254		Same as H1398	Holds A1378 to O2093	6-43



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-1115B/UG, MX-2984/UG OR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2255		Same as H1305	Holds A1378 to O2093	6-43
H2256		Same as H1305	Holds A1378 to O2093	6-43
H2257		Same as H1302	Holds A1378 to O2093	6-43
H2258		Same as H2006	Adjustment for O2251 in O2116	6-43
H2259		Same as H1310	Spaces H2260 from O2116	6-43
H2260		WASHER, LOCK: Same as H513	Locks adjustment screw H2258	6-43
H2261	19	Same as H1344	Holds A1383 and O2256 to A1391	6-43
H2262	19	Same as H1344	Holds O2259 to O2093	6-43
H2263	19	Same as H1305	Holds O2259 to O2093	6-43
O2200	21	PALLET SET, TYPE: 151683	Prints copy	6-39
O2250		Same as O1739	Lubricates A1379	6-43
O2251		BAIL: 153255	Local backspace bail	6-43
O2252		ARM: 153383	Extension arm for O2099	6-43
O2253		SPRING: 33038	Applies tension to O2252	6-43
O2254		ARM: 153311	Applies tension to O2252	6-43
O2255		SPRING: 86304	Applies tension to O2252	6-43
O2256	19	STOP ARM, STOP: 153242	Stop for O5930	6-43
O2257	19	SPRING: 81731	Applies tension to O5930	6-43
O2258	19	ARM: 153262	Positions O2251	6-43
O2259	19	PLATE, NUT: 153254	Holds O2258 to O2093	6-43

KEYBOARD MX-1114C/UG OR MX-1677A/UG

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5000 to 5499		Keyboard MX-1114C/UG OR MX-1677A/UG	Mounting support for Motor and Automatic Typer. Generates typing signal and on-line and off-line functions	6-1A through 6-14C
A5001	4	BRACKET, MARGIN INDICATOR SWITCH: 154208	Mounts O5001 and S5001 on A5013	6-1A
A5002	4	STRAP, MOUNTING: 151146. Same as H106	Holds H5018, A5001 and Automatic typer to A5013	6-1A
A5003	4	BRACKET: 154176	Support for J5001	6-1A
A5004	4	PLATE, NUT: 154088	Holds A5005, O5008, O5004 and O5005 to A5013	6-1A
A5005	5	BRACKET, LOCAL LINE FEED TRIP LINK: 154106	Guides O5006	6-1A
A5006	4	GUARD: 152045. Same as A104	Guards Keyboard gears	6-1A
A5008	4	PLATE, NUT: 154087	Mounts Keyboard to A5013	6-1A
A5009	4	PLATE, NUT: 151113	Mounts Motor to A5013	6-1A
A5010	4	Same as A5002	Holds H5032 to A5013	6-1A
A5011	4	PLATE, AUTOMATIC TYPER SPACING: 15118	Spacer for Automatic Typer	6-1A
A5012	4	PLATE, NUT: 154076	Holds A5100 to A5013	6-1A
A5013	4	BASE: 154000	Mounting and support for Keyboard assemblies, Motor and Automatic Typer	6-1A
A5060	4	BRACKET: 154134 (Continued. See A5100)	Support for time delay mechanism	6-2
E5001	4	INSULATOR, PLATE: 152464. Same as E103	Insulator for J5001	6-1A
E5002	4	INSULATOR, PLATE: 150966. Same as E101	Insulates TB5001 from A5013	6-1A
E5003	4	Same as E5002 (Continued. See E5100)	Insulates terminals of TB5001	6-1A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-111+C/UG OR MX-1677A/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5001	4	SCREW, MACHINE: 6-40 by 5/16 fil 151658. Same as H117	Holds J5001 to A5003	6-1A
H5002	4	WASHER, LOCK: 2191. Same as H105	Holds J5001 to A5003	6-1A
H5003	4	SCREW: 2-56 by 5/8 fil 1210	Holds S5001 to A5001	6-1A
H5004	4	WASHER, LOCK: 93118. Same as H412	Holds S5001 to A5001	6-1A
H5005	4	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-25 (code 59433 part No. 121242). Same as H1025	Holds W5001 to A5013	6-1A
H5006	4	SCREW, MACHINE: 4-40 by 3/8 hex 153817	Holds H5005 and A5001 to A5013	6-1A
H5007	4	WASHER, LOCK: 3640. Same as H513	Holds H5005 and A5001 to A5013	6-1A
H5008	4	WASHER, FLAT: 7002. Same as H141	Holds H5005 and A5001 to A5013	6-1A
H5009	4	SCREW, MACHINE: 4-40 fil 102057. Same as H129	Holds O5001 to A5001	6-1A
H5010	4	NUT: 4-40 hex 3599. Same as H130	Holds O5001 to A5001	6-1A
H5011	4	LATCH: 152462. Same as H116	Latches J5001 to A5003	6-1A
H5012	4	LATCH: 152463. Same as H115	Latches J5001 to A5003	6-1A
H5013	4	SCREW, MACHINE: 6-40 by 5/16 fil 111017. Same as H108	Terminal screw for TB5001	6-1A
H5014	4	NUT: 6-40 hex 151416. Same as H109	Holds H5013 to TB5001	6-1A
H5015	4	STUD: 151335. Same as H110	Holds TB5001 and A5003 to A5013 and spaces E5003	6-1A
H5016	4	SCREW, MACHINE: 6-40 by 1/4 hex 151630. Same as H265	Holds E5003 to H5015	6-1A
H5017	4	Same as H5002	Holds E5003 to H5015	6-1A
H5018	4	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-4 (code 59433 part No. 121244.)	Holds W5001 to A5013	6-1A
H5019	4	SCREW, MACHINE: 6-40 by 3/8 hex 151632	Holds H5018 to A5013	6-1A
H5020	4	Same as H5008	Holds H5018 to A5013	6-1A
H5021	4	Same as H5002	Holds H5018 to A5013	6-1A
H5022	4	NUT: 6-40 hex 3598. Same as H112	Holds H5018 to A5013	6-1A
H5023	4	Same as H5019	Holds A5004 to A5013	6-1A
H5024	4	SCREW, MACHINE: 6-40 by 5/16 hex 151631. Same as H242	Holds A5004 to A5013	6-1A
H5025	4	Same as H5002	Holds A5004 to A5013	6-1A
H5026	4	Same as H5008	Holds O5004 and O5005 to A5013	6-1A
H5027	4	Same as H5019	Holds A5005 to A5004	6-1A
H5028	4	Same as H5002	Holds A5005 to A5004	6-1A
H5029	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-15 (code 59433 part No. 119651). Same as H158	Holds O5006 to O5226	6-1A
H5030	4	SCREW, MACHINE: 6-40 by 3/16 hex 151722. Same as H1329	Holds O5008 to A5004	6-1A
H5031	4	Same as H5002	Holds O5008 to A5004	6-1A
H5032	4	SCREW, PILOT: 1/4-32 hex 151678. Same as H107	Holds A5003 and Automatic Typewriter and Motor to A5013	6-1A
H5033	4	SCREW, MACHINE: 10-32 by 3/8 hex 151723	Holds A5012 to A5013	6-1A
H5036	4	Same as H5019	Holds A5008 to A5013	6-1A
H5037	4	Same as H5002	Holds A5008 to A5013	6-1A
H5038	4	Same as H5008	Holds A5008 to A5013	6-1A
H5039	4	Same as H5019	Holds A5101 and A5103 to A5013	6-1A
H5040	4	Same as H5002	Holds A5101 and A5103 to A5013	6-1A
H5041	4	Same as H5008	Holds A5101 and A5103 to A5013	6-1A
H5042	4	Same as H5019	Holds A5009 to A5013	6-1A
H5043	4	Same as H5002	Holds A5009 to A5013	6-1A
H5044	4	Same as H5019	Holds A5010 and A5011 to A5013	6-1A
H5045	4	Same as H5002	Holds A5010 and A5011 to A5013	6-1A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114C/UG OR MX-1677A/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5046	4	STUD: 162333	Holds A5010 to A5013 and guides position of Automatic Typewriter	6-1A
H5060	4	WASHER, FLAT: 125011. Same as H183	Separates H123 from O123	6-2
H5061	4	Same as H5019	Holds A5060 to A5013	6-2
H5062	4	Same as H5030	Holds O5060 to A5060	6-2
H5063	4	Same as H5063 (Continued. See H5100)	Holds O5060 to A5060	6-2
J5001	4	CONNECTOR, KEYBOARD: 152467. Same as J101	Termination for W5001	6-1A
O5001	4	LEVER, SWITCH: 158164	Operates S5001	6-1A
O5002	4	SPRING, MARGIN INDICATOR: 55669	Applies tension to O5001	6-1A
O5003	4	SPRING: 86835	Applies tension to H5011 and H5012	6-1A
O5004	4	SHIM: 0.005 in. 154199	Positions gear mechanism on A5013	6-1A
O5005	4	SHIM: 0.014 in. 154201	Positions gear mechanism on A5013	6-1A
O5006	4	LINK, LOCAL LINE FEED TRIP: 153252	Operates line feed mechanism on Automatic Typewriter	6-1A
O5007	4	SPRING, LOCAL LINE FEED TRIP LINK: 112630	Applies tension to O5006	6-1A
O5008	4	PLATE, LOCK PLUNGER GUIDE: 154115	Guides O5009	6-1A
O5009	4	PLUNGER, KEYBOARD LOCK: 154109	Links Automatic Typewriter to keyboard locking mechanism	6-1A
O5010	4	SPRING: 151352	Holds O5009 to O5227	6-1A
O5011	4	SPRING, PLUNGER: 3870	Applies tension to O5009	6-1A
O5060	4	PLATE, ADJUSTING: 154137	Limits travel of O260	6-2
O5080	5	Same as O215 except characters "LOC B SP" 153284	Operates O5235	6-4
O5081	5	Same as O215 except characters "LOC R LF" 154123 (Continued. See O5100)	Operates O5242	6-4
S5001	4	SWITCH, SENSITIVE: 2 circuit, double break plunger type, 0.015 in. movement differential, 4 oz. operating pressure, mfg. code No. 30323 part No. 11-330-012 (code 59433 part No. 158163). Same as S301	Operates margin indicator lamp	6-1A
TB5001	4	BLOCK, KEYBOARD TERMINAL: 151415. Same as TB101	Terminal block for W5001	6-1A
W5001	4	CABLE ASSEMBLY: 162437	External power supply and Keyboard wiring	6-1A
W5002	4	CABLE, KEYBOARD: 162436  (Continued. See W5200)	Connects Keyboard electrical components to J5001	6-1A
A5100	4	BRACKET, FRONT: 154055	Mounts Keyboard assemblies to A5013	6-4A
A5101	4	BRACKET, CODE LEVER GUIDE (RIGHT): 154068	Support for O5192 and O5104 and pivot for O5114	6-4A
A5102	4	BRACKET, STOP: 158063	Arrests movement of O5109 through O5113	6-4A
A5103	4	BRACKET, CODE LEVER GUIDE (LEFT): 154069 (Continued. See A5200)	Support for A5102 and O5186 and pivot for O5114	6-4A
H5100	4	Same as H5016	Holds A5100 to A5013	6-4A
H5101	4	Same as H5019	Holds A5100 to A5013	6-4A
H5102	4	Same as H5002	Holds A5100 to A5013	6-4A
H5103	4	Same as H5008	Holds A5100 to A5013	6-4A
H5104	4	Same as H5016	Holds O5104 to A5101	6-4A
H5105	4	Same as H5002	Holds O5104 to A5101	6-4A
H5106	4	SCREW, UNIVERSAL BAIL PILOT: 1/4-32, 154071	Pivot for O5279	6-4A
H5107	4	WASHER, FLAT: 76081	Holds H5106 to A5101	6-4A
H5108	4	Same as H5030	Holds O5107 to A5101	6-4A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114C/UG OR MX-1677A/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5109	4	Same as H5002	Holds O5107 to A5101	6-4A
H5110	4	Same as H5016	Holds A5102 to A5103	6-4A
H5111	4	Same as H5002	Holds A5102 to A5103	6-4A
H5112	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-14 (code 59433 part No. 119650)	Holds O5106 to O5192	6-4A
H5113	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-31 (code 59433 part No. 119654) (Continued. See H5200)	Holds O5114 to A5103	6-4A
O5100	4	SPRING: 83877	Applies tension to O5105	6-4A
O5101	4	SPRING, CODE BAR: 2415	Applies tension to O5109 through O5113	6-4A
O5102	4	SPRING, CLUTCH TRIP BAR: 55063	Applies tension to O5108	6-4A
O5103	4	SPRING: 154125	Applies tension to levers O5150 through O5189	6-4A
O5104	4	BRACKET: 158226	Anchors O5100 and O5101	6-4A
O5105	4	GUIDE, CODE BAR: 154008	Right end guide for O5108 through O5113	6-4A
O5106	4	LATCH, LOCK BAR: 154023	Latches O5107	6-4A
O5107	4	BAR, LOCKING: 158010	Operates O5279	6-4A
O5108	4	BAR, CLUTCH TRIP: 162309	Operates O5479	6-4A
O5109	4	BAR, CODE, No. 1: 158087	Operates O5439	6-4A
O5110	4	BAR, CODE, No. 2: 158088	Operates O5440	6-4A
O5111	4	BAR, CODE, No. 3: 158089	Operates O5441	6-4A
O5112	4	BAR, CODE, No. 4: 158090	Operates O5442	6-4A
O5113	4	BAR, CODE, No. 5: 158091	Operates O5443	6-4A
O5114	4	SHAFT, CODE BAR LEVER: 154016	Pivot for O5150 through O5189	6-4A
O5115	4	WASHER, FELT: 150991	Lubricates O5150 through O5189	6-4A
O5116	4	KEYLEVER, ROW 1: 151286. Same as O160	Operates O5183	6-4A
O5117	4	KEYLEVER, ROW 1: 155843. Same as O161	Operates O5182	6-4A
O5118	4	KEYLEVER, ROW 1: 155844. Same as O162	Operates O5188	6-4A
O5119	4	KEYLEVER, ROW 2: 151292. Same as O163	Operates O5151	6-4A
O5120	4	KEYLEVER, ROW 2: 151293. Same as O164	Operates O5154	6-4A
O5121	4	KEYLEVER, ROW 2: 151294. Same as O165	Operates O5157	6-4A
O5122	4	KEYLEVER, ROW 2: 151295. Same as O166	Operates O5160	6-4A
O5123	4	KEYLEVER, ROW 2: 151296. Same as O167	Operates O5163	6-4A
O5124	4	KEYLEVER, ROW 2: 151297. Same as O168	Operates O5166	6-4A
O5125	4	KEYLEVER, ROW 2: 151298. Same as O169	Operates O5169	6-4A
O5126	4	KEYLEVER, ROW 2: 151299. Same as O170	Operates O5172	6-4A
O5127	4	KEYLEVER, ROW 2: 151300. Same as O171	Operates O5175	6-4A
O5128	4	KEYLEVER, ROW 2: 151301. Same as O172	Operates O5178	6-4A
O5129	4	KEYLEVER, ROW 3: 151302. Same as O173	Operates O5152	6-4A
O5130	4	KEYLEVER, ROW 3: 151303. Same as O175	Operates O5155	6-4A
O5131	4	KEYLEVER, ROW 3: 151304. Same as O176	Operates O5158	6-4A
O5132	4	KEYLEVER, ROW 3: 151305. Same as O177	Operates O5161	6-4A
O5133	4	KEYLEVER, ROW 3: 151306. Same as O178	Operates O5164	6-4A
O5134	4	KEYLEVER, ROW 3: 152009. Same as O179	Operates O5167	6-4A
O5135	4	KEYLEVER, ROW 3: 151308. Same as O180	Operates O5170	6-4A
O5136	4	KEYLEVER, ROW 3: 151309. Same as O181	Operates O5173	6-4A
O5137	4	KEYLEVER, ROW 3: 151310. Same as O182	Operates O5176	6-4A
O5138	4	KEYLEVER, ROW 3: 151311. Same as O183	Operates O5179	6-4A
O5139	4	KEYLEVER, ROW 4: 151312. Same as O184	Operates O5150	6-4A
O5140	4	KEYLEVER, ROW 4: 151313. Same as O185	Operates O5153	6-4A
O5141	4	KEYLEVER, ROW 4: 151314. Same as O186	Operates O5156	6-4A
O5142	4	KEYLEVER, ROW 4: 151315. Same as O187	Operates O5159	6-4A
O5143	4	KEYLEVER, ROW 4: 151316. Same as O188	Operates O5162	6-4A
O5144	4	KEYLEVER, ROW 4: 151317. Same as O189	Operates O5165	6-4A
O5145	4	KEYLEVER, ROW 4: 151318. Same as O190	Operates O5168	6-4A
O5146	4	KEYLEVER, ROW 4: 151319. Same as O191	Operates O5171	6-4A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114C/UG OR MX-1677A/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O5147	4	KEYLEVER, ROW 4: 151320. Same as O192	Operates O5174	6-4A
O5148	4	KEYLEVER, ROW 4: 151321. Same as O193	Operates O5177	6-4A
O5149	4	KEYLEVER, ROW 4: 151322. Same as O194	Operates O5180	6-4A
O5150	4	LEVER, CODE BAR: 154120. Same as O195	Sets up code for FIGS shift	6-4A
O5151	4	Same as O5150	Sets up code for 1 and Q	6-4A
O5152	4	Same as O5150	Sets up code for - and A	6-4A
O5153	4	Same as O5150	Sets up code for " and Z	6-4A
O5154	4	Same as O5150	Sets up code for 2 and W	6-4A
O5155	4	Same as O5150	Sets up code for BELL and S	6-4A
O5156	4	Same as O5150	Sets up code for / and X	6-4A
O5157	4	Same as O5150	Sets up code for 3 and E	6-4A
O5158	4	Same as O5150	Sets up code for † and D	6-4A
O5159	4	Same as O5150	Sets up code for : and C	6-4A
O5160	4	Same as O5150	Sets up code for 4 and ‡	6-4A
O5161	4	Same as O5150	Sets up code for ! and F	6-4A
O5162	4	Same as O5150	Sets up code for ; and V	6-4A
O5163	4	Same as O5150	Sets up code for 5 and T	6-4A
O5164	4	Same as O5150	Sets up code for & and G	6-4A
O5165	4	Same as O5150	Sets up code for ? and B	6-4A
O5166	4	Same as O5150	Sets up code for 6 and Y	6-4A
O5167	4	Same as O5150	Sets up code for BLANK and H	6-4A
O5168	4	Same as O5150	Sets up code for , and N	6-4A
O5169	4	Same as O5150	Sets up code for 7 and U	6-4A
O5170	4	Same as O5150	Sets up code for ' and J	6-4A
O5171	4	Same as O5150	Sets up code for . and M	6-4A
O5172	4	Same as O5150	Sets up code for 8 and I	6-4A
O5173	4	Same as O5150	Sets up code for ( and K	6-4A
O5174	4	Same as O5150	Sets up code for LTRS shift	6-4A
O5175	4	Same as O5150	Sets up code for 9 and O	6-4A
O5176	4	Same as O5150	Sets up code for ) and L	6-4A
O5177	4	Same as O5150	Sets up code for LINE FEED	6-4A
O5178	4	Same as O5150	Sets up code for ø and P	6-4A
O5179	4	Same as O5150	Sets up code for CAR RET	6-4A
O5180	4	Same as O5150	Sets up code for BLANK	6-4A
O5181	4	LEVER, CODE BAR: 154121	Sets up code for SPACE	6-4A
O5182	4	LEVER, FUNCTION: 154122	Sets up code for REC	6-4A
O5183	4	LEVER, FUNCTION: 154123	Sets up code for LOC LF	6-4A
O5184	4	Same as O5183	Sets up code for BREAK	6-4A
O5185	6	Same as O5183	Sets up code for LOC B SP	6-4A
O5186	6	Same as O5183	Sets up code for LOC REV LF	6-4A
O5187	4	Same as O5183	Sets up code for LOC CR	6-4A
O5188	4	LEVER, FUNCTION: 154124	Sets up code for SEND	6-4A
O5189	4	Same as O5188	Sets up code for REPT	6-4A
O5190	4	KEYLEVER, ROW 1: 151291	Operates O5189	6-4A
O5191	4	KEYLEVER, ROW 1: 151287	Operates O5187	6-4A
O5192	4	KEYLEVER, ROW 1: 151290	Operates O5184	6-4A
O5193	6	KEYLEVER, ROW 1: 153283	Operates O5186	6-4A
O5194	6	KEYLEVER, ROW 1: 153284	Operates O5185	6-4A
O5195	4	GUIDE, CODE LEVER: 154070	Guide for O5150 through O5189	6-4A
O5196	4	WEDGELOCK: 154080	Locks O5281 balls until operation cycle is completed	6-4A
		(Continued. See O5200)		
A5225	4	BRACKET, FUNCTION BAIL: 154059	Supports O5225	6-8A
A5226	6	BRACKET: 154107	Supports A5227	6-8A
A5227	6	BRACKET: 154133	Supports O5230 and guides O5236	6-8A
A5228	6	BRACKET: 154064	Supports O5232	6-8A
A5229	6	BRACKET: 154227	Supports O5225	6-8A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114C/UG OR MX-1677A/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A5230	6	BRACKET, REVERSE LF: 154132	Supports and guides O52338 and O5240	6-8A
A5231	4	BRACKET: 154039	Supports S5225	6-8A
A5275	4	CHANNEL, LOCK BALL: 154175 (Continued. See A5300)	With O5282 forms channel for O5281	6-8B
E5225	4	SLEEVE, INSULATING: 155751 (Continued. See E5400)	Insulates W5225	6-8A
E5225	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-25 (code 59433 part No. 119653). Same as H1355	Holds O5225 to A5225	6-8A
H5226	6	Same as H5030	Holds A5227 to A5226	6-8A
H5227	6	Same as H5002	Holds A5227 to A5226	6-8A
H5228	6	Same as H5030	Holds A5230 and H5230 to A5227	6-8A
H5229	6	Same as H5002	Holds O5230 and H5230 to A5227	6-8A
H5230	6	BUSHING, SHOULDER: 153248	Pivots O5230 on A5227	6-8A
H5231	6	Same as H5030	Holds A5228 to A5013	6-8A
H5232	6	Same as H5002	Holds A5228 to A5013	6-8A
H5233	6	Same as H5016	Holds O5232 to A5228	6-8A
H5234	6	Same as H5002	Holds O5232 to A5228	6-8A
H5235	6	Same as H5008	Holds O5232 to A5228	6-8A
H5236	6	Same as H5225	Holds O5233 to O5232	6-8A
H5237	6	Same as H5030	Holds A5229 to A5225	6-8A
H5238	6	Same as H5002	Holds A5229 to A5225	6-8A
H5239	6	RING, RETAINING: Steel, mfg. code No. 79136 part No. 5133-15 (code 59433 part No. 119651). Same as H158	Holds O5236 to O5235	6-8A
H5240	6	STUD: 92626	Holds O5238 to A5230	6-8A
H5241	6	Same as H5002	Holds O5238 to A5230	6-8A
H5242	6	Same as H5022	Holds O5238 to A5230	6-8A
H5243	6	Same as H5024	Holds O5238 and O5239 to A5230	6-8A
H5244	6	Same as H5002	Holds O5238 and O5239 to A5230	6-8A
H5245	6	Same as H5022	Holds O5238 and O5239 to A5230	6-8A
H5246	6	SCREW, MACHINE: 6-40 fil 151692. Same as H119	Holds O5240 to A5230	6-8A
H5247	6	Same as H5002	Holds O5240 to A5230	6-8A
H5248	6	NUT: 153248	Holds O5240 to A5230	6-8A
H5249	6	Same as H5239	Holds O5243 to O5242	6-8A
H5250	4	Same as H5036	Holds O5231 on A5013	6-8A
H5251	4	Same as H5002	Holds A5231 on A5013	6-8A
H5252	4	SCREW: 2-56 by 3/8 fil 125181	Holds S5225 to A5231	6-8A
H5275	4	SCREW: 4-40 by 1-1/4 fil 139752	Holds O5275 and O5276 to O5279	6-8B
H5276	4	WASHER, LOCK: 110743. Same as H127	Holds O5275 and O5276 to O5279	6-8B
H5277	4	POST, SPRING: 156574	Anchors O5100	6-8B
H5278	4	SCREW: 4-40 by 1/4 hex 152893	Holds O5278 to O5279 and O5277 to O5278	6-8B
H5279	4	Same as H5276	Holds O5278 to O5279 and O5277 to O5278	6-8B
H5280	4	Same as H5060	Holds O5277 to O5278	6-8B
H5281	4	Same as H5278	Holds O5280 to O5282 to A5275	6-8B
H5282	4	Same as H5007	Holds O5280 to A5275	6-8B
H5283	4	SCREW, ADJUSTING: 6-40 hex 151843	Adjust spacing and retain O5281 in channel form- ed by A5275 and O5282	6-8B
H5284	4	Same as H5022	Locks H5283 in position	6-8B
H5285	4	WASHER, FLAT: 151080 (Continued. See H5300)	Spaces O5282 from A5275	6-8B
O5225	4	SHAFT, FUNCTION LEVER: 154092	Supports O5226, O5227, O5228, O5232, O5235, O5242 and O5245	6-8A
O5226	4	LEVER (LOC LF): 154066	Operates O5006	6-8A
O5227	4	LEVER (KYBD LOCK): 154067	Operates O5009	6-8A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD MX-1114C/UG OR MX-1677A/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O5228	4	BAIL (LOC CR): 154099	Operates carriage return mechanism on Automatic Typewriter	6-8A
O5229	4	SPRING: 49420	Applies tension to O5228	6-8A
O5230	6	LEVER, TRIP: 153266	Disengages O5236 from O1745	6-8A
O5231	6	WASHER, FELT: 93758	Lubricates O5230 and O5236	6-8A
O5232	6	BAIL: 154097	Supports O5233	6-8A
O5233	6	BAIL: 154065	Operates Automatic Typewriter space suppression on LOC B SP	6-8A
O5234	6	SPRING: 82860	Applies tension to O5233	6-8A
O5235	6	BAIL: 154098	Operates O5233	6-8A
O5236	6	LINK, TRIP: 153273	Engages O1745	6-8A
O5237	6	SPRING: 73035	Applies tension to O5236	6-8A
O5238	6	BAIL, TRANSFER: 153249	Operates O2043 and O2046	6-8A
O5239	6	BUSHING, SHOULDER: 150932	Pivots P5239 pm ax A5230	6-8A
O5240	6	LEVER, TRIP: 153247	Disengages O5243 from O1761	6-8A
O5241	6	WASHER, FELT: 93758	Lubricates O5238 and O5240	6-8A
O5242	6	BAIL: 154116	Supports O5243	6-8A
O5243	6	LINK, TRIP: 153250	Operates O1761	6-8A
O5244	6	SPRING: 81731	Applies tension to O5243	6-8A
O5245	4	LEVER, BREAK: 154037	Operates S5225	6-8A
O5246	4	Same as O5229	Applies tension to O5245	6-8A
O5275	4	BLADE, FRONT: 154183	Operates O5279	6-8B
O5276	4	BLADE, REAR: 154184	Stops rotation of O5279	6-8B
O5277	4	EXTENSION: 154238	Latches O5468	6-8B
O5278	4	EXTENSION, UNIVERSAL: 154239	Mounts O5277	6-8B
O5279	4	BAIL, UNIVERSAL: 154179	Supports O5278, O5275 and O5276	6-8B
O5280	4	RETAINER, WEDGELOCK: 154086	Retains O5196 on O5150 through O5192 and guides O5150 through O5192	6-8B
O5281	4	BALL, LOCK: 104710	Prevents two keys from operating at once	6-8B
O5282	4	RETAINER, LOCK BALL: 154081 (Continued. See O5300)	Retains O5281	6-8B
S5225	4	SWITCH, SENSITIVE: SPDT, 10 amp. 125 vac, plunger type, 0.007 in. movement differential, 0.040 in. max. pretravel, 0.025 in. max. overtravel, 6 oz. operating pressure, mfg. code No. 70087, part No. IMD12AXX (code 59433 part No. 151329). Same as S101	Interrupts signal line circuit on operation of O5245	6-8A
W5225	4	CABLE ASSEMBLY, BREAK: 154149	Supplies current for S5225	6-8A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CW-354/UG

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5700 to 5799 A5701	12	Cabinet CW-354/UG	Encloses Keyboard Automatic Typer, Motor and Power Distribution Panel of TT-176A/UG	6-21A
A5701	12	COVER: 153390	Cover for Keyboard and Automatic Typer on TT-176A/UG	6-21A
A5702	12	TRAY, COPY: 153403	Tray for holding copy	6-21A
A5705	12	PLATE, CLAMP: 153391	Clamps H5718 to A5701	6-21A
A5706	12	PLATE, BASE: 152973	Base plate for Keyboard	6-21A
A5707	12	COVER: 152923	Cover for Power Distribution Panel	6-21A
E5702	12	WASHER, FIBER: 5816	Insulating washers for R5701	6-21A
H5701	12	HANDLE, LINE GUIDE: 153023	Handle for O704	6-21A
H5702	12	SCREW, MACHINE: 4-40 by 3/8 fil 151685	Holds H5701 to O5704	6-21A
H5703	12	WASHER, LOCK: 3640	Holds H5701 to O5704	6-21A
H5704	12	SCREW, MACHINE: 6-40 by 3/8 fil 151658	Holds A5702 to A5701	6-21A
H5705	12	WASHER, LOCK: 2191. Same as H105	Holds A5702 to A5701	6-21A
H5706	12	NUT: 6-40 hex 3598. Same as H112	Holds A5702 to A5701	6-21A
H5707	12	Same as H5705	Holds O5701 and O5713 to A5702	6-21A
H5708	12	SCREW, MACHINE: 153841	Holds O5701 and O5713 to A5702 and A5702 to A5701	6-21A
H5710	12	SCREW, MACHINE: 6-40 hex 151630. Same as H265	Holds O5701 to A5701	6-21A
H5711	12	SCREW, MACHINE: 6-40 fil 97393	Pivot for and holds O5705 to A5701	6-21A
H5713	12	Same as H5705	Holds O5705 to A5701	6-21A
H5714	12	NUT: 6-40 hex 3606	Holds O5705 to A5701	6-21A
H5715	12	SCREW, MACHINE: 6-40 by 1/4 fil 151692	Holds O5706 to A5701	6-21A
H5716	12	Same as H5705	Holds O5706 to A5701	6-21A
H5717	12	Same as H5712	Holds O5706 to A5701	6-21A
H5718	12	WINDOW, PLASTIC: 153042	Copy window for A5701	6-21A
H5719	12	SCREW, MACHINE: 6-40 by 5/16 fil 151657. Same as H113	Holds H5718 to A5701	6-21A
H5720	12	Same as H5705	Holds H5718 to A5701	6-21A
H5721	12	Same as H5712	Holds H5718 to A5701	6-21A
H5722	12	PLATE, NUT: 153395	Locks H5718 to A5701	6-21A
H5723	12	SCREW: 6-40 by 5/16 hex 151631. Same as H242	Holds X15703 to A5701	6-21A
H5724	12	Same as H5712	Holds X15703 to A5701	6-21A
H5725	12	Same as H5705	Holds X15703 to A5701	6-21A
H5726	12	Same as H5706	Holds X15703 to A5701	6-21A
H5727	12	Same as H5723	Holds X15701 to A5701	6-21A
H5728	12	Same as H5712	Holds X15701 to A5701	6-21A
H5729	12	Same as H5705	Holds X15701 to A5701	6-21A
H5730	12	Same as H5706	Holds X15701 to A5701	6-21A
H5731	12	SCREW: 6-40 fil 80854	Holds R5701 to A5701	6-21A
H5732	12	Same as H5712	Holds R5701 to A5701	6-21A
H5733	12	Same as H5705	Holds R5701 to A5701	6-21A
H5734	12	Same as H5706	Holds R5701 to A5701	6-21A
H5735	12	Same as H5719	Holds J5701 to A5701	6-21A
H5736	12	Same as H5705	Holds J5701 to A5701	6-21A
H5737	12	Same as H5706	Holds J5701 to A5701	6-21A
H5738	12	SCREW, THUMB: 111347	Operating screw for H5739	6-21A
H5739	12	BOLT, LATCHING: 111345	Latches front door of A5701	6-21A
H5740	12	NUT, LOCK: 151558. Same as H712	Holds I5702 to A5701	6-21A
H5741	12	WASHER, LOCK: 72565	Holds O5709 to A5706	6-21A
H5742	12	NUT: 1/2-32 hex 7415	Holds O5709 to A5706	6-21A
H5743	12	HANDLE: 152972	Handle for operating H5746	6-21A
H5744	12	WASHER, SPRING: 121125	Applies pressure to H5743	6-21A
H5745	12	RING, RETAINING: Steel, mfg. code No. 79136 part No. 5133-37 (code 59433 part No. 119655)	Holds H5743 to A5706	6-21A



TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

CABINET CW-354/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5746	12	LEVER, LATCH: 152925	Locks A5701 to A5706	6-21A
H5747	12	Same as H5744	Applies pressure to H5746	6-21A
H5748	12	Same as H5745	Holds H5746 to H5743	6-21A
H5749	12	SCREW, MACHINE: 10-32 by 15/32 152993	Guide and bearing surface for and retains H5746 to A5706	6-21A
H5750	12	WASHER, LOCK: 2669. Same as H222	Holds H5746 to A5706	6-21A
H5751	12	NUT: 10-32 hex 112626. Same as H232	Holds H5746 to A5706	6-21A
H5752	12	STUD: 152924	Locating stud for A5701	6-21A
H5753	12	Same as H5751	Holds H5752 to A5706	6-21A
H5754	12	PLATE, NUT: 152968	Locks A5801 to A5706	6-21A
H5755	12	Same as H5719	Holds H5754 to A5706	6-21A
H5756	12	Same as H5705	Holds H5754 to A5706	6-21A
I5701	12	LAMP, INCANDESCENT: 60v, 0.1 amp, 6w, S-6 clear bulb, double contact bayonet base, mfg. code No. 24446, part No. 6S6/5SC (code 59433 part No. 153400). Same as H1011	Margin indicator light	6-21A
I5702	12	LENS: 155083	Lens for I5701	6-21A
I5703	12	Same as I5701	Copy lights	6-21A
I5701	12	CONNECTOR: 153492	Receptacle for P5803	6-21A
O5701	12	SHAFT LINE GUIDE: 162590. Same as O809	Track for movement of O5704	6-21A
O5702	12	BUSHING: 153022	Sleeve for O5704	6-21A
O5703	12	SPRING, TORSION: 153021	Applies pressure to O5704	6-21A
O5704	12	GUIDE, LINE: 153020	Line guide for and holds copy to A5701	6-21A
O5705	12	ARM: 153397	Support for upper door	6-21A
O5706	12	GUIDE, PAPER: 15155	Guide for copy emerging from A5701	6-21A
O5707	12	SHIELD, LAMP: 151983	Shield for I5703	6-21A
O5708	12	SPRING: 111346	Applies pressure to H5739.	6-21A
O5709	12	BUSHING: 152971	Mounts keyboard to A5706	6-21A
O5710	12	PAD, SILENCING: 153392	Side silencing pads for A5701	6-21A
O5711	12	PAD, SILENCING: 153393	Front silencing pad for A5701	6-21A
O5712	12	PAD, SILENCING: 153394	Rear silencing pad for A5701	6-21A
O5713	12	SPACER: 74479	Spaces O5701 from A5702	6-21A
R5701	12	RESISTOR, FIXED, WIRE WOUND: 600 ohms $\pm 5\%$ , 8w power dissipation, mfg. code No. 63743, part No. 1-0-600 (code 59433 part No. 153455)	Limiting resistor for I701	6-21A
S5701	12	SWITCH, TOGGLE: SPST 2 position, 250v ac 3 amp non-inductive load, mfg. code No. 15605, part No. 8391K6 (code 59433 part No. 95320)	Copy light switch	6-21A
W5701	12	CABLE ASSEMBLY: 152942	Power supply cable for lamps	6-21A
XI5701	12	LAMPHOLDER: 151540	Socket for I5701	6-21A
XI5703	12	Same as XI5701	Socket for I5703	6-21A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

POWER DISTRIBUTION PANEL SB-408/UG (Continued from 1100)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5800 to 5899	14	POWER DISTRIBUTION PANEL, SB-408/UG	Container for main power switch, fuse, convenience outlet, line shunt relay, motor control assembly, signal bell, and power and signal terminal boards	6-21B to 6-23
A5801	14	CONTAINER: 158278. Same as A1101	Container for and supports Power Distribution Panel	6-21B
A5802	14	PLATE: 151427. Same as A1102	Clamps A5810 to A5801	6-21B
A5803	14	Same as A5802	Clamps A5807 to A5801	6-21B
A5804	14	PLATE, MOUNTING: 152922	Supports A5805, J5801, TB5801, XF5801 and XF5802	6-21B
A5805	14	BRACKET, SWITCH: 152998	Supports S5801	6-21B
A5806	14	PLATE, MOUNTING: 152921	Supports TB5802	6-21B
A5807	14	PLATE, COVER: 152988	Supports Z5801 and A5808	6-21B
A5808	14	BRACKET: 152995	Supports A5809	6-21B
A5809	14	BRACKET: 151564	Supports E5805, I5801 and L5801	6-21B
A5810	14	PLATE, COVER: 151441	Cover for A5801	6-21B
E5801	14	INSULATOR, PLATE: 151412. Same as E1101	Insulator plate for TB5801	6-21B
E5802	14	STRAP: 152755	Connects TB5801 terminals	6-21B
E5803	14	Same as E5801	Insulator plate for TB5801	6-21B
E5805	14	ARMATURE: 151567	Rings I5801	6-21B
E5808	14	Same as E5801	Insulator plate for TB5804	6-21B
E5813	14	ARMATURE: 152849	Operates O1114	6-23
E5814	14	TERMINAL: 82474	Terminal for W5809	6-21B
F5801	14	FUSE, CARTRIDGE: 10 amp, 125v max, mfg. code 75915 part No. ABC (code 59433 part No. 151418)	Protects one side of power circuit	6-21B
F5802	14	Same as F5801	Protects one side of power circuit	6-21B
H5801	14	SCREW, MACHINE: 6-40 fil 151618	Holds A5804 to A5801	6-21B
H5802	14	WASHER, LOCK: 2191. Same as H105	Holds A5804 to A5801	6-21B
H5803	14	WASHER, FLAT: 7002. Same as H141	Holds A5804 to A5801	6-21B
H5804	14	SCREW, MACHINE: 6-40 fil 151346. Same as H104	Holds J5801 to A5804	6-21B
H5805	14	Same as H5802	Holds J5801 to A5804	6-21B
H5806	14	NUT: 3598. Same as H112	Holds J5801 to A5804	6-21B
H5807	14	STUD: 152760	Supports and spaces TB5801 from A5804	6-21B
H5808	14	Same as H5802	Holds A5805 and H5807 to A5804	6-21B
H5809	14	Same as H5806	Holds A5805 and H5807 to A5804	6-21B
H5810	14	SCREW, MACHINE: 6-40 fil 111017. Same as H108	Terminal Screw for TB5801	6-21B
H5811	14	NUT: 151416. Same as H109	Holds H5801 to TB5801	6-21B
H5812	14	SCREW, MACHINE: 6-40 fil 150040	Holds E5801 and TB5801 to H5807	6-21B
H5813	14	Same as H5802	Holds E5801 and TB5801 to H5807	6-21B
H5814	14	Same as H5810	Terminal screw for TB5802	6-21B
H5815	14	Same as H5811	Holds H5814 to TB5802	6-21B
H5816	14	Same as H5812	Holds E5803 and TB5802 to H5849	6-21B
H5817	14	Same as H5802	Holds E5803 and TB5802 to H5849	6-21B
H5820	14	CLAMP, LOOP: Nylon, mfg. code No. 71616 part No. CPC-1953-8 (code 59433 part No. 121248)	Holds W5801 to Z5801	6-21B
H5821	14	Same as H5804	Holds H5820 to Z5801	6-21B
H5822	14	Same as H5802	Holds H5820 to Z5801	6-21B
H5823	14	Same as H5803	Holds H5820 to Z5801	6-21B
H5824	14	SCREW, MACHINE: 8-32 by 1/2 fil 55219	Holds L5801 to A5809	6-21B
H5825	14	WASHER, LOCK: 3646. Same as H438	Holds L5801 to A5809	6-21B
H5826	14	Same as H5812	Holds A5810 to A5801	6-21B
H5827	14	Same as H5802	Holds A5810 to A5801	6-21B
H5828	14	Same as H5803	Holds A5810 to A5801	6-21B

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

## POWER DISTRIBUTION PANEL SB-408/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5829	14	WASHER, FLAT: 90789. Same as H1129	Holds A5810 to A5801	6-21B
H5830	14	Same as H5812	Holds A5807 to A5801	6-21B
H5831	14	Same as H5802	Holds A5807 to A5801	6-21B
H5832	14	Same as H5803	Holds A5807 to A5801	6-21B
H5833	14	Same as H1129	Holds A5807 to A5801	6-21B
H5834	14	Same as H5801	Holds A5806 to A5801	6-21B
H5835	14	Same as H5802	Holds A5806 to A5801	6-21B
H5836	14	Same as H5803	Holds A5806 to A5801	6-21B
H5837	14	SCREW, MACHINE: 6-40 by 5/16 fil 151657. Same as H113	Holds A5809 to A5808	6-21B
H5838	14	Same as H5802	Holds A5809 to A5808	6-21B
H5839	14	Same as H5804	Holds A5808 to Z5801 to A5807	6-21B
H5840	14	Same as H5802	Holds A5808 to Z5801 to A5807	6-21B
H5841	14	Same as H5806	Holds A5808 to Z5801 to A5807	6-21B
H5842	14	SCREW, MACHINE: 4-40 by 5/16 fil 1028	Stop for E5805	6-21B
H5843	14	Same as H5802	Holds H5842 to A5809	6-21B
H5844	14	NUT: 4-40 hex 110435. Same as H212	Holds H5842 to A5809	6-21B
H5845	14	Same as H5804	Holds I5801 to A5809	6-21B
H5846	14	Same as H5802	Holds I5801 to A5809	6-21B
H5847	14	WASHER, FLAT: 125015	Holds I5801 to A5809	6-21B
H5848	14	STUD: 154137	Holds A5801 to A5706 through H5754	6-21B
H5849	14	Same as H5807	Supports and spaces TB5802 from A5806	6-21B
H5850	14	Same as H5802	Holds H5849 to A5806	6-21B
H5851	14	Same as H5803	Holds H5849 to A5806	6-21B
H5852	14	Same as H5806	Holds H5849 to A5806	6-21B
H5853	14	SCREW, MACHINE: 4-40 by 1/4 fil 110434. Same as H126	Holds O5803 to A5809	6-21B
H5854	14	WASHER, LOCK: 3640. Same as H513	Holds O5803 to A5809	6-21B
H5855	14	STUD: 152761	Supports and spaces TB5804 from A1108	6-23
H5856	14	Same as H5802	Holds H5855 to A1108	6-23
H5857	14	Same as H5806	Holds H5855 to A1108	6-23
H5858	14	Same as H5810	Terminal screw for TB5804	6-23
H5859	14	Same as H5811	Holds H5858 to TB5804	6-23
H5860	14	Same as H5812	Holds TB5804 and E5804 to H5855	6-23
H5861	14	Same as H5802	Holds TB5804 and E5804 to H5855	6-23
H5862	14	WASHER, LOCK: 107116	Holds W5809 to A5807	6-22B
I5801	14	GONG: 43954	Signal bell	6-22B
J5801	14	CONNECTOR: 151422	Convenience receptacle	6-22B
L5801	14	COIL, ELECTROMAGNET ACTUATOR: 4,000 turns No. 34 AWG wire, 500 vac, 190 ohms $\pm 10\%$ , mfg. code No. 95433 part No. 247M. Same as L802	Attracts E5805	6-22B
O5801	14	SPRING: 4703. Same as O281	Applies tension to E5805	6-22B
O5802	14	BUSHING: 151565	Bushing for I5801	6-22B
O5803	14	PLATE, RETAINER: 151579	Holds E5805 to A5809	6-22B
P5801	14	CONNECTOR: 152465	Termination for W5801 and connects J101	6-21B
P5802	14	CONNECTOR: 152466	Termination for W5801 and connects J1301	6-21B
P5803	14	CONNECTOR: 153493	Termination for W5801 and connects J5701	6-21B
S5801	14	SWITCH, TOGGLE: 3PDT, 15 amp 125 v mfg. code No. 15605, part No. 7615-K-2 (code 59433 part No. 152994)	Line shunt and power switch	6-21B
TB5801	14	BOARD, TERMINAL: 151415. Same as TB1101	Terminal board for W5801	6-21B
TB5802	14	Same as TB5801	Terminal board for W5801	6-21B
TB5804	14	Same as TB5801	Terminal board for W5801 and W5803	6-21B
W5801	14	CABLE ASSEMBLY: 152997	Main power supply cable	6-21B
W5802	14	LEAD: 152753	Connects terminals of TB5802	6-21B
W5803	14	LEAD: 151819	Connects terminals of TB5802	6-21B

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

POWER DISTRIBUTION PANEL SB-408/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
W5804	14	LEAD: 152754	Connects terminals of TB5802	6-21B
W5806	14	Same as W5803	Connects terminals of TB5804	6-23
W5807	14	LEAD: 96260	Strap across R1101 leads	6-23
W5808	14	CABLE ASSEMBLY: 151417	Connects W5801 with motor control mechanism through TB5804	6-23
W5809	14	STRAP, GROUND: 155064	Ground for Power Distribution Panel	6-21B
XF5801	14	HOLDER, FUSE: 116783	Holds F5801	6-21B
XF5802	14	Same as XF5801	Holds F5802	6-21B

AUTOMATIC TYPER MX-3080/UG (Continued from 2200)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5900 to 5999	17	AUTOMATIC TYPER MX-3080/UG	Perform page printing and related functions on signal received from line or local Keyboard operation, with local back space and local reverse line feed functions	6-41 through 6-46
H5900	17	BUSHING: 153229	Bearing for and holds O5900 to A1391	6-41
H5901	17	SCREW, MACHINE: 6-40 fil 151692. Same as H119	Holds H5900 and O5900 to A1391	6-41
H5902	17	WASHER, LOCK: 2191. Same as H105	Holds H5900 and O5900 to A1391	6-41
H5920	17	SCREW, MACHINE: 6-40 fil 151657	Holds A1383 and O5920 to A1391	6-43
H5921	17	Same as H5920	Holds O5921 and O5922 to O2089	6-43
H5922	17	Same as H5902	Holds O5921 and O5922 to O2089	6-43
H5930	17	Same as H5901	Holds H5933 and O5930 to A1391	6-46
H5931	17	Same as H5902	Holds H5933 and O5930 to A1391	6-46
H5932	17	RING, RETAINING: Steel, mfg. code 79136, part No. 5133-9 (code 59433 part No. 119648). Same as H206	Holds O5935 to O5934	6-46
H5933	19	Same as H5900	Bearing for and holds O5930 to A1391	6-46
O5900	17	CRANK, BELL: 176598	Positions O5902 and O5903 on automatic operation and disengages them on manual operation	6-41
O5901	17	WASHER, FELT	Lubricates O5900	6-41
O5902	17	BAR, LINE FEED: 153231	Operates O2028 on line feed by O2031 and operates O5900 and O5930 on reverse line feed	6-41
O5903	17	BAR, LINE FEED: 153230	Operates O2028 on line feed by O2031 and operates O5900 and O5930 on reverse line feed	6-41
O5904	17	SPRING: 73035	Applies tension to O5902 and O5903	6-41
O5905	17	LEVER, RELEASE: 153234	Disengages O5902 and O5903 on manual operation	6-41
O5906	17	SPRING: 153287	Applies tension to O5900	6-41
O5920	17	BRACKET, STOP: 153242	Stop for O5902 and O5903 and anchor for O5921	6-43
O5921	17	SPRING: 81731	Applies tension to O5930	6-43
O5922	17	ARM: 153262	Positions O2251	6-43
O5923	17	PLATE, NUT: 153254	Holds O5922 to O2093	6-43
O5930	17	LINK, SLIDE: 153241	Stop for and operates O5902 and O5903	6-46
O5932	17	GUIDE: 153233	Guide for O5902 and O5903	6-46
O5933	17	RETAINER: 153240	Holds O5934 to A1391	6-46
O5934	17	ARM: 153237	Supports O5935	6-46
O5935	17	ROLLER: 153239	Bearing for O5902, O5903 and O5930	6-46
A5300	5	HOOD: 154110	Cover for keyboard mechanism	6-10A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A5301	4	BRACKET, FRAME MOUNTING (LEFT): 154210	Supports A5307 and A5275	6-10A
A5302	4	BRACKET, FRAME MOUNTING (RIGHT): 154211	Supports A5307 and A5275	6-10A
A5303	5	PLATE, KEYBOARD LOWER SEAL: 154057	Supports A5305	6-10A
A5304	5	PLATE, KEYBOARD UPPER SEAL: 154058	Supports A5305	6-10A
A5305	5	SEAL, KEYBOARD FRONT: 154020	Cabinet noise reduction	6-10A
A5306	4	BRACKET, SPACE BAR: 154119	Supports O5302	6-10A
A5307	4	FRAME, KEYBOARD FRONT: 154212	Supports A5300, A5306 and A5308	6-10A
A5308	6	PLATE, KEYTOP GUIDE: 154211	Guides keytops	6-10A
A5309	5	PLATE, KEYTOP GUIDE: 151834	Guides keytops	6-10A
A5350	4	PLATE, CLUTCH SHAFT REAR MOUNTING: 154101	Mount support and retainer for O5388 and O5390 and O5391	6-11A
A5351	4	FRAME, SIGNAL GENERATOR: 154200 (Continued. See A5400)	Supports signal generator mechanism	6-11A
H5300	5	WINDOW, LABEL SET: 154198	Protects data sheets	6-10A
H5301	5	SCREW: 154202	Holds H5300 and I5300 to A5308	6-10A
H5302	5	SCREW: 6-40 by 1/2 fil 151659. Same as H270	Holds A5308 to A5300	6-10A
H5303	5	WASHER, FLAT: 81774	Holds A5308 to A5300	6-10A
H5304	5	Same as H5019	Holds A5300 to O5303	6-10A
H5305	5	Same as H5002	Holds A5300 to O5303	6-10A
H5306	5	Same as H5008	Holds A5300 to O5303	6-10A
H5307	4	Same as H5016	Holds A5306 to A5307	6-10A
H5308	4	Same as H5002	Holds A5306 to A5307	6-10A
H5309	4	SCREW, PILOT: 6-40 151244. Same as H284	Pivot for O5602	6-10A
H5310	4	Same as H5022	Locks H5309 on A5306	6-10A
H5311	4	SCREW, SHOULDER: 151223. Same as H290	Pivot for and holds O5300 to O5302	6-10A
H5312	4	Same as H5239	Holds O5301 to O5302	6-10A
H5313	5	GROMMET, WINDOW MOUNTING SCREW: 154204	Anchors H5301	6-10A
H5314	4	Same as H5024	Holds A5308 to A5307	6-10A
H5315	4	Same as H5002	Holds A5308 to A5307	6-10A
H5316	4	Same as H5008	Holds A5308 to A5307	6-10A
H5317	4	Same as H5302	Holds A5308 to A5307	6-10A
H5318	4	Same as H5002	Holds A5308 to A5307	6-10A
H5319	4	WASHER, FLAT: 8330	Holds A5308 to A5307	6-10A
H5320	4	PLUG, PLASTIC: 154197	Plugs unused keytop guide holes	6-10A
H5321	4	NUT, SHEET SPRING: Steel mfg. code No. 78553, part No. C159-012-1 (code 59433 part No. 117608)	Lock nut for H5320	6-10A
H5322	4	Same as H5016	Holds A5307 to A5301 and A5302	6-10A
H5323	4	Same as H5002	Holds A5307 to A5301 and A5302	6-10A
H5324	5	Same as H5030	Holds A5304 to A5307	6-10A
H5325	5	Same as H5002	Holds A5304 to A5307	6-10A
H5326	4	SCREW: 6-40 by 13/32 hex 156632	Adjusts A5275	6-10A
H5327	4	Same as H5022	Adjusts A5275	6-10A
H5328	4	Same as H5024	Holds A5275 to A5301 or A5302	6-10A
H5329	4	Same as H5002	Holds A5275 to A5301 or A5302	6-10A
H5330	4	WASHER, FLAT: 125015. Same as H183	Holds A5275 to A5301 or A5302	6-10A
H5331	4	Same as H5024	Holds A5301 or A5302 to A5013	6-10A
H5332	4	Same as H5002	Holds A5301 or A5302 to A5013	6-10A
H5333	4	Same as H5330	Holds A5301 or A5302 to A5013	6-10A
H5334	5	SCREW: 6-40 by 1/2 hex 151442	Holds O5303 to A5303 and A5304	6-10A
H5335	5	Same as H5019	Holds A5303 to A5013	6-10A
H5336	5	Same as H5002	Holds O5303 to A5303 and A5304 and A5303 to A5013	6-10A
H5350	4	NUT: 112626. Same as H232	Holds O5388 to A5351	6-11A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-3080/UG (Continued)				
REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5351	4	WASHER, LOCK: 2669. Same as H222	Holds O5388 to A5351	6-11A
H5352	4	Same as H5024	Holds A5350 to A5351	6-11A
H5353	4	Same as H5002	Holds A5350 to A5351	6-11A
H5354	4	Same as H5024	Holds A5426 to A5351	6-11A
H5355	4	Same as H5002	Holds A5426 to A5351	6-11A
H5356	4	Same as H5022	Holds O5356 to A5351	6-11A
H5357	4	Same as H5002	Holds O5356 to A5351	6-11A
H5358	4	Same as H5008	Holds O5356 to A5351	6-11A
H5359	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652). Same as H246	Holds O5351, O5353, and O5354 to A5351	6-11A
H5360	4	SCREW: 4-40 by 3/16 hex 151152	Holds O5351 to O5354	6-11A
H5361	4	Same as H5276	Holds O5351 to O5354	6-11A
H5362	4	Same as H5280	Holds O5351 to O5354	6-11A
H5363	4	Same as H5334	Holds O5357 and O5360 to A5351	6-11A
H5364	4	Same as H5002	Holds O5357 and O5360 to A5351	6-11A
H5365	4	WASHER, FLAT: 76099	Spaces O5360 from A5351	6-11A
H5366	4	STUD: 117416	Stop for O5353 and O5354	6-11A
H5367	4	Same as H5022	Holds O5473 to A5351	6-11A
H5368	4	Same as H5002	Holds O5473 to A5351	6-11A
H5369	4	SCREW, MACHINE: 6-40 by 9/16 hex 153841	Holds A5351 to A5013	6-11A
H5370	4	Same as H5002	Holds A5351 to A5013	6-11A
H5371	4	SCREW: 10-32 by 3/4 hex 74805	Holds A5351 to A5013	6-11A
H5372	4	Same as H5351	Holds A5351 to A5013	6-11A
H5385	4	SCREW: 4-40 by 11/64 hex 151737 Same as H353	Holds O5385 to O5387 and O5387 to O5379	6-12A
H5386	4	Same as H5276	Holds O5385 to O5387 and O5387 to O5379	6-12A
H5387	4	WASHER, FLAT: 42823 (Continued. See H5400)	Holds O5387 to O5379	6-12A
I5300	5	LABEL SET: 151391	Data Sheets	6-10A
I5301	5	LABEL, INSTRUCTION: 151376	Instruction label	6-10A
I5302	5	PAPER, CARBON, WHITE: 151389	White carbon paper	6-10A
I5303	5	TISSUE: 152051	Timer for I5300	6-10A
I5304	5	LABEL, BLANK: 1513900	Blank label	6-10A
O5300	4	BAR, SPACE: 151045. Same as O294	Operates O5302	6-10A
O5301	4	LINK, SPACE CODE: 154021.	Operates O5181	6-10A
O5302	4	BAIL, SPACE BAR: 154117	Operates O5301	6-10A
O5303	5	BRACKET, HOOD MOUNTING: 154203	Supports A5300	6-10A
O5350	4	Same as O5011	Applies tension to O5351 and O5353	6-11A
O5351	4	LEVER, CLUTCH STOP: 154034	Engages O5380	6-11A
O5352	4	WASHER, FELT: 74755	Lubricates O5353 and O5354	6-11A
O5353	4	LEVER, CLUTCH LATCH: 154033	Releases O5351	6-11A
O5354	4	BAIL, CLUTCH TRIP: 154053	Engages O5108 to release O5351	6-11A
O5355	4	WASHER, FELT: 115122	Lubricates O5353, O5354 and O5356	6-11A
O5356	4	STUD: 154046	Support and pivot for O5353 and O5354	6-11A
O5357	4	BUSHING, ECCENTRIC: 154096	Pivot for O5360	6-11A
O5358	4	Same as O5116	Lubricates O5357 and O5360	6-11A
O5359	4	SPRING, LATCH LEVER: 4702	Applies tension to O5360	6-11A
O5360	4	LEVER, BAIL LATCH: 154236	Operates O5464	6-11A
O5375	4	FOLLOWER, CODE BAR BAIL ECCENTRIC: 154019	Operates O5479	6-12A
O5376	4	SPACER, CAM: 154083	Spaces O5385 from A5351	6-12A
O5377	4	WASHER, FELT: 120824	Lubricates O5375, O5385 and O5388	6-12A
O5378	4	SPRING: 151728. Same as O340	Applies tension to O5379	6-12A
O5379	4	ARM: 150013. Same as O338	Drives O5387	6-12A
O5380	4	LEVER: 150026. Same as O339	Engages and disengages O5383 and O5384	6-12A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O5381	4	WICK, FELT: 150029. Same as O341	Lubricates keyboard clutch	6-12A
O5382	4	SPRING: 150241. Same as O344	Applies tension to O5383 and O5384	6-12A
O5383	4	SHOE, SECONDARY CLUTCH: 150043 Same as O343	Drives O5387 when in engaged position	6-12A
O5384	4	SHOE, PRIMARY CLUTCH: 150044. Same as O342	Permits O5383 to drive O5387 when engaged	6-12A
O5385	4	CAM, SIGNAL GENERATOR: 154154	Operates O5375 and O5439 through O5445	6-12A
O5386	4	WICK, FELT: 156503	Lubricates O5385	6-12A
O5387	4	DISK: 154694. Same as O337	Drives O5385	6-12A
O5388	4	SHAFT, SIGNAL GENERATOR: 154030	Mounting shaft for O5385 and O5389	6-12A
O5389	4	WICK, FELT: 154029	Lubricates O5388 and O5390	6-12A
O5390	4	SLEEVE, SIGNAL GENERATOR GEAR: 154032	Operates O5385 when O5383 and O5384 are engaged	6-12A
O5391	4	WASHER, FELT: 120824 (Continued. See O5400)	Lubricates O5390	6-12A
A5400	4	COVER: 154131	Cover for A5402	6-14A
A5401	4	BASE: 154194	Mounting base for O5403 and contacts	6-14A
A5402	4	BOX, CONTACT: 154209	Container for contact mechanism	6-14A
A5403	4	BASE: 154194	Mounting base for K5400	6-14A
A5425	4	PLATE, DETENT: 154036	Supports O5426	6-14B
A5426	4	PLATE, FRONT: 154009	Supports signal generator mechanisms	6-14B
A5460	4	PLATE, REAR: 154102	Supports signal generator mechanisms	6-14C
E5400	4	WASHER, INSULATING: 151182. Same as E109	Insulates O5403 from H5403	6-14C
E5401	4	INSULATOR: 156663	Insulates O5403 from H5402 and O5404	6-14A
E5402	4	TERMINAL STRIP: 154042	Terminal for W5001 and Z5400 lead	6-14A
E5403	4	SCREW, CONTACT: 154045	Determines marking or spacing impulse in signal line by making or breaking contact with O5403	6-14A
E5404	4	TERMINAL, LUG: 154043	Terminals for W5001 and Z5400 lead	6-14A
E5405	4	INSULATOR, STRIP: 154189	Insulates contact mechanism from A5402	6-14A
H5400	4	Same as H5010	Holds A5400 to A5402	6-14A
H5401	4	Same as H5282	Holds A5400 to A5402	6-14A
H5402	4	SCREW: 2-56 by 9/32 fil 125126. Same as H413	Holds O5403 to O5404	6-14A
H5403	4	WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1202 (code 59433 part No. 90791). Same as H322	Holds O5403 to O5404	6-14A
H5404	4	SCREW: 4-40 by 1/8 fil 1293	Holds Z5400 terminal to E5404 and holds E5404 to A5401	6-14A
H5405	4	Same as H5276	Holds Z5400 terminal to E5404 and holds E5404 to A5401	6-14A
H5406	4	Same as H5404	Holds W5001 and Z5400 lead to E5402	6-14A
H5407	4	Same as H5476	Holds W5001 and Z5400 lead to E5402	6-14A
H5408	4	NUT: 4-40 hex 151880	Holds A5401 to A5402 and A5402 to A5403	6-14A
H5409	4	SCREW: 4-40 by 7/8 fil 151731. Same as H417	Holds A5401 to A5402 and A5402 to A5403	6-14A
H5410	4	Same as H5282	Holds A5401 to A5402 and A5402 to A5403	6-14A
H5411	4	SCREW: 4-40 by 5/16 fil 151685.	Holds A5400 to A5401 and A5402 to A5403	6-14A
H5412	4	Same as H5282	Holds A5400 to A5401 and A5402 to A5403	6-14A
H5413	4	Same as H5360	Holds A5402 to A5403	6-14A
H5414	4	Same as H5282	Holds A5402 to A5403	6-14A
H5415	4	Same as H5019	Holds A5403 to A5425	6-14A
H5416	4	Same as H5002	Holds A5403 to A5425	6-14A
H5417	4	Same as H5008	Holds A5403 to A5425	6-14A

TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPER MX-3080/UG (Continued)

REF. DES	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5425	4	RING, RETAINING: Steel, mfg code No. 79136, part No. 5133-9 (code 59433 part No. 119648). Same as H206	Holds O5426 and O5427 to A5425	6-14B
H5426	4	Same as H5239	Holds O5428 and H5427 on O5430	6-14B
H5427	4	WASHER, FLAT: 156509	Spaces O5428 from O5430	6-14B
H5428	4	Same as H5022	Holds O5430 through O5433 to A5426	6-14B
H5429	4	Same as H5002	Holds O5430 through O5433 to A5426	6-14B
H5430	4	Same as H5030	Holds O5447 and O5448 to A5426	6-14B
H5431	4	POST, SPRING: 154047	Holds O5447 to A5426 and anchors O5436	6-14B
H5432	4	SCREW: 6-40 by 1/4 hex 1020	Holds A5425 to A5426	6-14B
H5433	4	Same as H5002	Holds O5447, O5448 and A5425 to A5426	6-14B
H5460	4	Same as H5022	Holds O5432, O5433 and O5473 to A5460, O5463 to O5462 and O5477 to O5479	6-14C
H5461	4	Same as H5002	Holds O5432, O5433 and O5473 to A5460, O5463 to O5462 and O5477 to O5479	6-14C
H5462	4	Same as H5008	Holds O5432 and O5433 to A5460	6-14C
H5463	4	Same as H5239	Holds O5464 on O5466 and O5475 on O5477	6-14C
H5464	4	NUT: 4-40 hex 86742	Holds O5468 to O5469	6-14C
H5465	4	SCREW, SHOULDER: 4-40 fil 151036	Pivot for O5468	6-14C
H5466	4	NUT: 6-40 hex 3606. Same as H277	Holds O5469 and O5480 to A5460	6-14C
H5467	4	SCREW, SHOULDER: 6-40 hex 154051	Pivot for O5469 and O5480	6-14C
H5468	4	Same as H5330	Spaces O5469 from A5460	6-14C
H5469	4	WASHER, FLAT: 111767	Spaces O5479 from A5460	6-14C
H5470	4	NUT, LOCK: 6-40 hex 154127	Holds O5478 to O5479	6-14C
H5471	4	Same as H5002	Holds O5478 to O5479	6-14C
K5400	4	BOX, CONTACT: 154225	Set up marking and spacing impulses in signal line	6-14A
O5400	4	SPRING, TOGGLE LINK DRIVE: 86304	Applies tension to O5404	6-14A
O5401	4	SPRING: 151820. Same as O385	Applies tension to O5402 and E5402	6-14A
O5402	4	LINK, TOGGLE: 151180. Same as O384	Holds O5403 in position	6-14A
O5403	4	TOGGLE: 151171. Same as O383	Sends spacing marking impulses by making and breaking with E5403	6-14A
O5404	4	LINK, DRIVE: 156644	Operates O5403	6-14A
O5405	4	ECCENTRIC, CONTACT BOX: 154095	Adjusts position of K5400	6-14A
O5425	4	SPRING: 80581	Applies tension to O5426	6-14B
O5426	4	LATCH: 156516	Holds O5428 in selected position	6-14B
O5427	4	WASHER, FELT: 108370	Lubricates A5425 and O5426	6-14B
O5428	4	BAIL, TRANSFER: 154010	Holds O5429 and operates O5404	6-14B
O5429	4	WICK, LEATHER: 154217	Lubricates O5439 through O5445	6-14B
O5430	4	POST, TRANSFER BAIL: 154105	Supports O5428	6-14B
O5431	4	POST, STOP: 154041	Limits O5439 through O5445 travel	6-14B
O5432	4	POST, GUIDE: 154014	Pivot and guide for O5439 through O5445	6-14B
O5433	4	POST, LOCKING BAIL: 154018	Guides O5437	6-14B
O5434	4	WASHER, FELT: 161346	Lubricates O5433	6-14B
O5435	4	WASHER, FELT: 150293	Lubricates O5433 and O5437	6-14B
O5436	4	SPRING: 70388	Applies tension to O5437	6-14B
O5437	4	BAIL, LOCKING: 154140	Locks O5439 through O5445 in selected position	6-14B
O5438	4	SPRING: 154178	Applies tension to O5439 through O5445	6-14B
O5439	4	LEVER, TRANSFER: 154040	Operates O5428	6-14B
O5440	4	Same as O5439	Operates O5428	6-14B
O5441	4	Same as O5439	Operates O5428	6-14B
O5442	4	Same as O5439	Operates O5428	6-14B
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O5444	4	Same as O5439	Operates O5428	6-14B
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TABLE 7-2. TELETYPEWRITER EQUIPMENT, LIST OF MAINTENANCE PARTS (Continued)

AUTOMATIC TYPWR MX-3080/UG (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O5446	4	WASHER, FELT: 156630	Lubricates O5439 through O5445	6-14B
O5447	4	GUIDE, TRANSFER LEVER: 154011	Guides O5439 through O5445	6-14B
O5448	4	GUIDE, TRANSFER LEVER: 154012	Guides O5439 through O5445 and anchors O5438	6-14B
O5449	4	WICK, FELT: 120870	Lubricates O5437	6-14B
O5460	4	SPRING: 154215	Applies tension to O5479	6-14C
O5461	4	SPRING: 154191	Applies tension to O5464	6-14C
O5462	4	POST, SPRING: 154089	Supports O5463 and anchors O5460	6-14C
O5463	4	GUIDE, NON-REPEAT LEVER: 154091	Guides O5468	6-14C
O5464	4	LATCH, CODE BAR BAIL: 158268	Retains O5479 in latched position	6-14C
O5465	4	Same as O5355	Lubricates O5464 and O5466	6-14C
O5466	4	STUD: 154079	Pivot for O5464	6-14C
O5467	4	SPRING: (old style) 78533	Applies tension to O5468	6-14C
P5468	4	LEVER, NON-REPEAT: 154237	Operates O5469	6-14C
O5469	4	CRANK: 154027	Operates O5360	6-14C
O5470	4	WASHER, FELT: 101796	Lubricates O5469	6-14C
O5471	4	WASHER, FELT: 90679	Lubricates O5473 and O5479	6-14C
O5472	4	WASHER, FELT: 150990	Lubricates O5473 and O5479	6-14C
O5473	4	POST, RESET BAIL: 154015	Pivot for O5479	6-14C
O5474	4	WASHER, PLASTIC: 159334	Spaces O5475 on O5477	6-14C
O5475	4	BEARING, ROLLER, NEEDLE: mfg. code No. 60380, part No. B-2 1/2 4x (code 95433 part No. 154084)	Bearing for O5479 operation	6-14C
O5476	4	WASHER, PLASTIC: 159327	Spaces O5475 on O5477	6-14C
O5477	4	STUD: 154241	Supports O5475	6-14C
O5478	4	STUD, FOLLOWER ECCENTRIC: 154017	Links O5375 to O5479	6-14C
O5479	4	BAIL, CODE BAR: 154240	Operates O5108 through O5113 and O5468	6-14C
O5480	4	PLATE, ADJUSTING: (Old style) 154025	Adjusts position of O5469	6-14C
O5481	4	PLATE, ADJUSTING: (New style) 154386	Adjusts position of O5469	6-14C
O5482	4	SPRING: (New style) 7603	Applies tension to O5468	6-14C
W5400	4	WIRE, GROUND: 162337	Ground lead for K300	6-14A

TABLE 7-3. LIST OF MANUFACTURERS

CODE NUMBER	NAME	ADDRESS
00779	Aircraft Marine Products, Inc.	Harrisburg, Pa.
03743	Appleton Electric Co.	Chicago, Ill.
15605	Cutler-Hammer, Inc.	Milwaukee, Wis.
24446	General Electric Co.	Schenectady, N. Y.
24617	General Motors Corp.	Detroit, Mich.
35434	Lectrohm, Inc.	Chicago, Ill.
43991	Norma-Hoffman Bearings Corp.	Stamford, Conn.
45722	Parker Kalon Corp.	New York, N. Y.
48425	Power Equipment Co.	Detroit, Mich.
59433	Teletype Corp.	Chicago, Ill.
60380	The Torrington Co.	Torrington, Conn.
61864	United Carr Fastener Corp.	Cambridge, Mass.
63743	Ward Leonard Electric Co.	Mount Vernon, N. Y.
64959	Western Electric Co., Inc.	New York, N. Y.
70087	Acro Electric Co.	Columbus, Ohio
70485	Atlantic India Rubber Works, Inc.	Chicago, Ill.
71400	Bussmann Manufacturing Co.	St. Louis, Mo.
71616	Commercial Plastics Co.	Chicago, Ill.
71785	Cinch Manufacturing Corp.	Chicago, Ill.
72618	Tobe Deutschman Corp.	Norwood, Mass.
72962	Elastic Stop Nut Corp. of America	Union, N. J.
74545	Harvey Hubbell and Co.	Bridgeport, Conn.
74861	Industrial Condenser Corp.	Chicago, Ill.
75915	Littelfuse, Inc.	Chicago, Ill.
77147	Patton MacGuyer Co.	Providence, R. I.
77250	Pheoll Manufacturing Co.	Chicago, Ill.
77342	Potter and Brumfield Mfg. Co., Inc.	Princeton, Ind.
78189	Shakeproof, Inc., Division of Illinois Tool Works	Chicago, Ill.
78553	Tinnerman Products, Inc.	Cleveland, Ohio
79136	Waldes Koh-I-Noor, Inc.	Long Island City, N. Y.
83272	Codo Manufacturing Co.	Coraopolis, Pa.
84523	First Industrial Corp.	Freeport, Ill.
96312	Dialight Corp.	Brooklyn, N. Y.

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