

TECHNICAL MANUAL

TELETYPEWRITER SETS AN/FGC-25, AN/FGC-25X, AN/FGC-26, AN/FGC-26X,
AN/FGC-52, AN/FGC-52X, AN/FGC-57, AND AN/FGC-68

TM 11-5815-244-35 }
CHANGES No. 2 }

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 14 August 1963

Note. The parenthetical reference to previous changes (example: "page 1 of C 1") indicates that pertinent material was published in that changes.

TM 11-5815-244-35, 5 October 1960, is changed as indicated, so that the manual also applies to equipments on Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51.

The title of the manual is changed as shown above.

Nomenclature	Components		
	Teletypewriter	Reperforator-Transmitter	Table
Teletypewriter Set AN/FGC-26X-----	TT-120/FG-----	TT-180/FG	FN-65/FG
Teletypewriter Set AN/FGC-52-----	TT-269A/FG-----	TT-270/FG	FN-65/FG
Teletypewriter Set AN/FGC-52X-----	TT-271A/FG-----	TT-272/FG	FN-65/FG
Teletypewriter Set AN/FGC-68-----	TT-396/FG-----	TT-397/FG	FN-65/FG

Add "AN/FGC-52" after "AN/FGC-26" and "AN/FGC-68" after "AN/FGC-57" in the following places:

- Page 3, paragraph 3, line 3 from end of paragraph.
- Page 34, paragraph 28, line 5.
- Page 86, paragraph 68a, line 2.
- Page 123, paragraph 96, line 4 from end of paragraph.
- Page 133, paragraph 101a, line 6.
- Page 137, paragraph 103, lines 4 and 5.

Add "AN/FGC-26X," and "AN/FGC-52X" after "AN/FGC-25X" in the following places:

- Page 3, paragraph 3, line 2 from end of paragraph.
- Page 34, paragraph 28, last line.
- Page 87, paragraph 68a, line 1.
- Page 123, paragraph 96, line 2 from end of paragraph.
- Page 134, paragraph 101a, line 1.
- Page 137, paragraph 103, line 4.
- Page 463, paragraph 519 (page 102 of C1), heading.
- Page 464, paragraph 520 (page 102 of C1), heading.

Add "TT-177B/FG, TT-119B/FG, TT-120/FG, TT-269/FG, TT-269A/FG, TT-271/FG, TT-271A/FG, and TT-396/FG" in the following places:

- Page 9, figure 6, after the caption.
- Page 47, figure 54, after the caption.
- Page 81, figure 92, after the caption.
- Page 83, figure 95, after the caption.
- Page 112, paragraph 90b, right-hand column, line 2, after "TT-119A/FG".
- Paragraph 91, line 5, after "TT-119A/FG".
- Page 119, paragraph 95b (2), line 2 from bottom of page, after "TT-119A/FG".
- Page 155, figure 163, after the caption.
- Page 160, figure 171, after the caption.
- Page 186, paragraph 132, after the heading.
- Page 187, figure 187, after the caption.
- Page 191, paragraph 134, after the heading.
- Paragraph 135a (2), last line, after "TT-118/FG".
- Page 192, figure 188, legend, after the footnote.
- Page 205, figure 195 (page 17 of C1), legend, after the footnote.
- Page 209, figure 198, after the caption.

Page 211, figure 199 (page 18 of C1), legend, after the footnote.

Paragraph 146, after the heading.

Page 232, paragraph 163, after the heading.

Page 233, figure 212, after the caption.

Page 249, figure 221 (page 31 of C1), legend, after the footnote.

Page 253, figure 224, legend, after the footnote.

Page 266, figure 234 (page 36 of C1), legend, items 18, 19, and 33.

Page 273, figure 238, legend, item 15.

Page 275, figure 239, legend, item 74 and after the footnote.

Page 406, paragraph 370, after the heading.
Figure 386, after the caption.

Page 408, paragraph 374, after the heading.

Page 409, figure 390, after the caption.

Page 416, paragraph 391, after the heading.

Page 472, figure 547, after the caption.

Add "TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG" in the following places:

Page 97, figure 112, after the caption.

Page 112, paragraph 91, right-hand column, line 1, after "TT-181/FG".

Page 171, figure 184, after the caption.

Page 279, paragraph 199, after the heading.

Page 280, figure 242, after the caption.

Page 295, figure 251, legend, item 52.

Page 301, paragraph 215, after the heading.

Page 302, figure 257, after the caption.

Page 306, paragraph 220, after the heading.

Page 307, figure 260, after the caption.

Page 310, paragraph 222, after the heading.

Page 311, figure 262, after the caption.

Page 312, figure 263, legend, item 37.

Page 328, figure 272, legend, after the footnote.

Page 353, figure 286, legend, after the footnote.

Page 432, paragraph 435, after the heading.

Page 433, figure 442, after the caption.

Paragraph 436b, note, line 2, after "TT-181/FG".

Page 458, paragraph 505, after the heading.

Figure 506, after the caption.

Paragraph 506, after the heading.

Figure 507, after the caption.

Page 459, paragraph 508, after the heading.

Figure 509, after the caption.

Paragraph 510, after the heading.

Figure 511, after the caption.

Page 460, paragraph 513, after the heading.

Page 461, figure 514, after the caption.

Paragraph 514, after the heading.

Figure 515, after the caption.

Add "Not applicable to the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-396/FG, TT-269A/FG, and TT-271A/FG" in the following places:

Page 64, figure 74, after the caption.

Page 67, paragraph 51, after the heading.

Figure 77, after the caption.

Page 69, paragraph 52, after the heading.

Figure 79, after the caption.

Page 77, figure 87, after the caption.

Page 146, chart (page 4 of C1), "Fig. No. 157", related to item 22.

Page 147, chart (page 4 of C1), "Fig. No. 159", related to items 9, 10, 11, 15, and 16.

Page 149, figure 157 (page 7 of C1), legend, after item 22.

Page 151, figure 159 (page 9 of C1), legend, after items 9, 10, 11, 15, and 16.

Page 176, chart, opposite "Condition 10" in the "Probable trouble" column, after "Figures sensing lever spring broken".

"Condition" column, after condition 12.

Page 177, chart, opposite "Condition 17" in the "Probable trouble" column, after "Line feed sensing lever spring broken".

"Condition" column, after condition 18.

Page 216, figure 202 (page 18 of C1), after the caption.

Page 218, paragraph 153, after the heading.

Page 243, paragraph 170, after the heading.

Page 244, figure 219 (page 28 of C1), after the caption.

Page 246, paragraph 172, after the heading.

Page 255, paragraph 178, after the heading.

Page 256, figure 225 (page 32 of C1), after the caption.

Page 359, figure 288, after the caption.

Paragraph 264, after the heading (page 58 of C1).

Page 361, paragraph 271, after the heading.

Page 362, figure 294, after the caption.

Page 363, paragraph 274, after the heading.

Figure 297, after the caption.

Figure 298, after the caption.

Paragraphs 275 and 276, after the headings.

Page 364, figure 299, after the caption.

Page 372, paragraph 292, after the heading.

Figure 315, after the caption.

Page 384, figure 340, after the caption.

Page 387, paragraph 325, after the heading.

Page 388, figure 345, after the caption.

Page 392, paragraph 336 (page 71 of C1), after the heading.

Figure 355 (page 71 of C1), after the caption.

Page 2. Delete chapter 1 and substitute:

CHAPTER 1 INTRODUCTION

1. Scope

a. This manual covers the installation, theory, and field and depot maintenance of Teletypewriter Sets AN/FGC-25, AN/FGC-25X, AN/FGC-26, AN/FGC-26X, AN/FGC-52, AN/FGC-52X, AN/FGC-57, and the AN/FGC-68. The operation and organizational maintenance instructions for the equipments are contained in TM 11-5815-244-12. Minor features which are unique to the AN/FGC-57 are covered in TM 11-5815-203-15.

b. Forward all comments on this publication direct to: Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, N. J. DA Form 1598 (Record of Comments on Publications), DA Form 2496 (Disposition Form), or letter may be used.

1.1. Index of Publications

Refer to the latest issue of DA PAM 310-4 to determine whether there are new editions, changes, or additional publications pertaining to your equipment. DA PAM 310-4 is an index of current technical manuals, technical bulletins, supply bulletins, lubrication orders, and modification work orders which are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc.) and the latest to changes and revisions of each equipment publication.

2. Internal Differences in Models

Internal differences in the various models of the equipment affect field and depot maintenance. The most significant differences are shown in *a* and *b* below.

a. Page Printers.

Variable features	TT-117/FG of AN/FGC-26	TT-117A/FG of AN/FGC-26	AN/FGC-57	TT-117B/FG of AN/FGC-25	TT-118/FG of AN/FGC-26	TT-119/FG of AN/FGC-25X	TT-119A/FG of AN/FGC-25X	TT-119B/FG of AN/FGC-25X	TT-120/FG of AN/FGC-26X	TT-269/FG of AN/FGC-52	TT-269A/FG of AN/FGC-52	TT-271/FG of AN/FGC-52X	TT-271A/FG of AN/FGC-52X	TT-296/FG of AN/FGC-68
Synchronous motor	X		X		X					X				X
Series-governed motor														
Communication symbols	X		X		X					X				X
Weather symbols			X		X					X				X
Mechanical keyboard lockout mechanism.			X		X					X				X
Electrical keyboard lockout mechanism.	X					X				X				
Two-relay motor stop mechanism activated by FIGS-H sequence.	X		X			X				X				
Three-relay motor stop mechanism activated by FIGS-BLANK-H sequence.					X									X
Antibackup mechanism for ribbon feed and reversing mechanism.			X											X
Y-level stabilizer			X							X				X
Fiber carriage rack and drive gear	X													X
Steel carriage rack and drive gear			X											X
Solid piece type bars			X											X
Motor mounting adjustment sleeves			X											X
Once-percycle reciprocating drawbar			X											X
Two roller carriage return sensing lever.			X											X
Paper holddown fingers pinned assembly.			X											X
Round threaded steel shift link and spring assembly.			X											X
Carriage holddown bracket			X											X

b. Perforators.

Variable features	TT-178/FG of AN/FGC-25X	TT-178A/FG of AN/FGC-25X	TT-178B/FG of AN/FGC-25X	TT-179/FG of AN/FGC-25	TT-179A/FG of AN/FGC-25	TT-179B/FG of AN/FGC-25	TT-180/FG of AN/FGC-26X	TT-181/FG of AN/FGC-26	TT-250/FG of AN/FGC-57	TT-270/FG of AN/FGC-52	TT-272/FG of AN/FGC-52X	TT-397/FG of AN/FGC-68
Synchronous motor												
Series-governed motor												
Communication symbols	X	X	X	X	X	X	X	X	X	X	X	X
Weather symbols												
Equipped with 1-piece double gear	X											
Equipped with ball-bearing mounted double gear.												
Equipped with special switch (S31) and connector for AN/FGC-30 application.												
Electrical parts identified by 2-digit reference symbols.	X			X								
Electrical parts identified by 3-digit reference symbols.		X										
Reduced drive gear for function shaft of punching mechanism.			X									
Y-lever stabilizer												
Control box												

Page 3, paragraph 4. Make the following changes:

Subparagraph *a*, line 2. Delete: "in three wooden boxes".

Subparagraph *a*(2), line 8. After "manuals", add: and control box for AN/FGC-52, AN/FGC-52X, and AN/FGC-68.

Subparagraph *b*. Add "Not applicable on Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51" at the end of subparagraphs (1) and (2).

Page 6, figure 3. Make the following changes: Add the following note above "Technical Manuals".

NOTE

A CONTROL BOX FOR AN/FGC-52, AN/FGC-52X, AND AN/FGC-68 IS ADDED AND SHOULD BE PACKED IN THE FIBERBOARD ACCESSORY CARTON.

After callout "NAILED WOODEN BOX" add: NOT APPLICABLE ON ORDER NO. 23330-PC-C5-51 AND ORDER NO. 35997-PC-62-C5-51.

Page 7, paragraph 6. Add subparagraph *e* after subparagraph *d*.

e. Control Box (AN/FGC-52, AN/FGC-52X, and AN/FGC-68.)

- (1) Remove the five machine screws and lockwashers that hold the cover to the base.
- (2) Install the base on the table with the mounting holes towards the front and secure with the two machine screws,

lockwashers, and flat washers provided.

- (3) Replace the cover and secure it with the five machine screws and lockwashers.

Page 27, paragraph 17 (page 2 of C1). Make the following changes:

Add paragraph 17.1 after paragraph 17.

17.1. Character Pulse Alignment AN/FGC-52, AN/FGC-52X, and AN/FGC-68

a. When power for the character pulse is to be supplied by an external source, use a dc voltmeter to verify the polarity and voltage (60 volts dc) of the supply. Connect the positive wire to terminal E301 and the negative wire to terminal E302 on the control box. Place the CHARACTER PULSE switch at EXT BAT.

b. When power for the character pulse is to be supplied by the power supply of the AN/FGC-52 or AN/FGC-52X, place the CHARACTER PULSE switch at INT BAT and connect the wires from the external source to terminals E301 and E302 on the control box. No further adjustments are required. The external source closes a contact in this instance.

Paragraph 19*a*. Add the following after the last sentence. The following charts show the relationship between words per minute (wpm), operations per minute (opm), and baud modulation rate.

Equipment		Speeds			
		Wpm	Opm	Actual baud	
AN/FGC-25 AN/FGC-25X AN/FGC-26 AN/FGC-57 AN/FGC-26X	Page printer and tape receiver	61.76	370.59	45.83	
	Keyboard XMTR and transmitter-distributor	61.54	369.23	45.66	
Components of AN/FGC-52 AN/FGC-52X AN/FGC-68	TT-269A/FG TT-271A/FG TT-269/FG TT-271/FG TT-396/FG	Keyboard XMTR	56.93	341.56	45.54
	TT-270/FG TT-272/FG TT-397/FG	Transmitter-distributor	65.01	390.09	45.51
		Tape receiver	70.58	423.52	

Note. Spare gearsets are also provided for the speeds shown below.

Equipment		Speeds		
		Wpm	Opm	Actual baud
AN/FGC-25 AN/FGC-25X AN/FGC-26 AN/FGC-57 AN/FGC-26X	Page printer and tape receiver	75	458.18	56.66
		100	600.00	74.20
AN/FGC-57 AN/FGC-26X	Keyboard XMTR and transmitter-distributor	75	459.77	56.86
		100	600.00	72.20
TT-269/FG TT-271/FG TT-269A/FG TT-271A/FG TT-396/FG	Keyboard XMTR	62.43	374.61	49.95
		93.65	561.91	74.92
TT-270/FG TT-272/FG TT-397/FG	Transmitter-distributor	71.31	427.84	49.91
		106.96	641.76	74.87
TT-270/FG TT-272/FG TT-397/FG	Tape receiver	77.42	464.52	49.91
		116.13	696.78	74.87

Page 29, paragraph 19e. After the gear chart add:

Page printer gear chart (AN/FGC-52, AN/FGC-52X, and AN/FGC-68 only)

Operating speed (baud)	Worm gear marking	Main shaft driven gear marking
45.5	R-368.2 or 45.5B	386.2 or 45.5 baud
50.0	R-404 or 50.0 baud	R-404 or 50.0 baud
75.0	75B	75B

Perforator gear chart (AN/FGC-52, AN/FGC-52X, and AN/FGC-68 only)

Operating speed (baud)	Worm gear marking	Main shaft driven gear marking	Idler gear marking	Double gear marking
45.5	R-368.2 or 45.5 baud	R-368.2 or 45.5 baud	Small portion	368.1—460 opm
50.0	R-404 or 50.0 baud	R-404 or 50.0 baud	Small portion	368.1—460 opm
75.0	75B	75B	Large portion	460 —600 opm

Page 32. Make the following changes:

Paragraph 24. Change the heading to:
Baudot Start-Stop, Five-Unit Code.

Add the following introductory paragraph below the heading.

The term "baud" (signal modulation rate) indicates the maximum number of impulses that are transmitted or received within 1 second, where all impulses in a code group are of equal length; for example, "7.00 code". Where impulses within a code group vary in length; for

example, in the 7.42 code, baud is based on the shortest impulse within the code group. The baud is obtained by dividing 1,000 milliseconds by the length in milliseconds of the shortest impulse. Thus, a signal whose shortest impulse is 20 milliseconds has a modulation rate of 50 baud: $\frac{1000}{20} = 50$ baud. The following three items of information are required for a description of the signal handling capabilities of the teletypewriter sets described in this manual: baudot start-stop five-unit code; signal modula-

Figure 34.1. Code impulse chart.
(Located in back of manual)

tion rate —45.5, 50, 75, or 100 baud; and code length — 7.00, 7.42, or 8.00 units. The code impulse chart (fig. 34.1) shows the interrelationship between the code lengths and baud modulation rates.

Figure 34. Make the following changes:

Top of the illustration. Change the two callouts "AN/FGC-25" to: AN/FGC-25 ().

In the caption: Change "AN/FGC-25" to: AN/FGC-25 ().

Add figure 34.1 after figure 34.

Page 63, paragraph 49. After the paragraph heading add:

Note. The carriage-return operation described in this paragraph is applicable to all equipments described in this manual. Figure 74.1 illustrates the carriage-return sensing mechanism of the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG only; figure 74 is applicable to all other models.

Page 64. Make the following changes:

Add figure 74.1 after figure 74.

Paragraph 49. Make the following changes:

Subparagraph *d*, line 4. After "74", add: or 74.1.

Subparagraph *e*, line 4. After "cam", add: (or roller on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 65, paragraph 49. Make the following changes:

Subparagraph *e*, lines 3 and 6. After "cam", add: (or roller on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Subparagraph *g*, line 5. Change "(fig. 338)" to: (fig. 336).

Line 11. Change "(fig. 337)" to: (fig. 336).

Page 66, paragraph 49*h*, chart. Make the following changes:

Item 4 (right of vertical line) after "cam", add: (or roller on TT-117B/FG, TT-

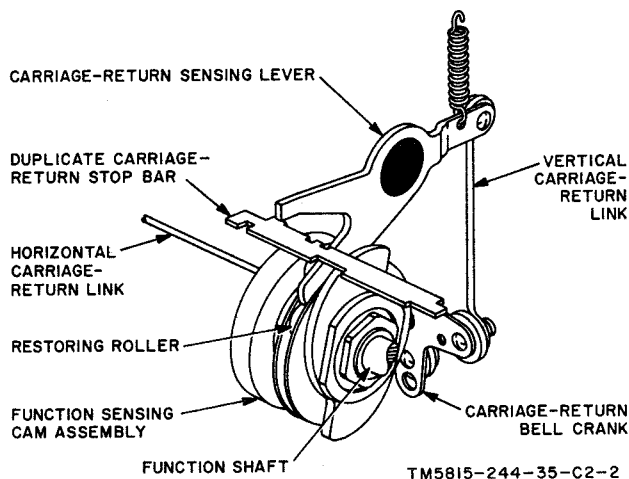


Figure 74.1. Carriage-return sensing mechanism (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 10 (extreme right) after "cam", add: (or roller on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 67. Add figure 77.1 after figure 77.

Page 68. Make the following changes:

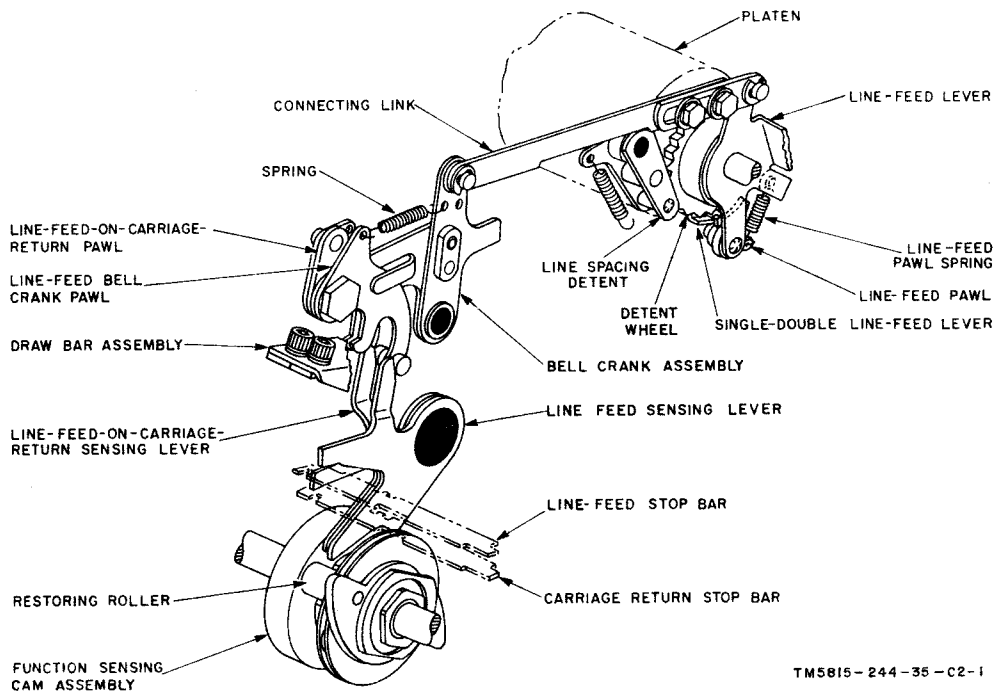
Add figure 78.1 after figure 78.

Add paragraphs 51.1 and 51.2 after paragraph 51.

51.1. Function Sensing Cam and Drawbar Mechanism (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 78.1)

On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG the figures shift, line-feed, and line-feed-on-carriage-return sensing levers and connecting links are operated by the function sensing cam assembly (which is mounted on the function shaft) and the drawbar assembly. The drawbar roller is held in contact with the function sensing cam by the spring. Thus, each time



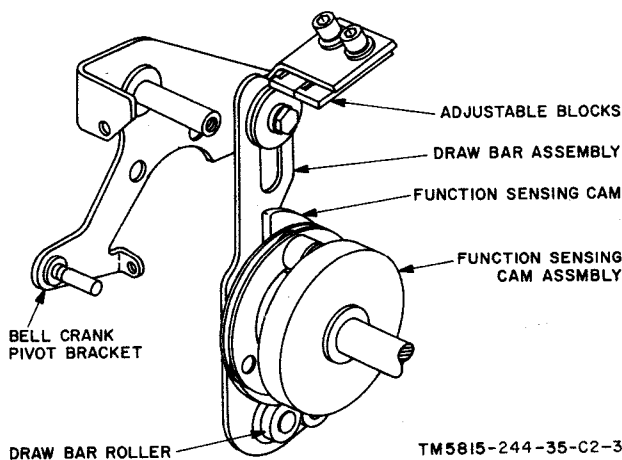
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Figure 77.1. Line-feed mechanism and line-feed on carriage-return (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

51.2. Line-Feed and Line-Feed-On-Carriage-Return Operation (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG) (fig. 77.1)

The platen is turned to feed the paper one or two spaces by the operation of the line-feed mechanism. The degree of turn depends on the position of the single-double line-feed lever. The line-feed mechanism functions each time a carriage-return code group, or a line-feed code group is received.

a. When a line-feed code group is received, the line-feed and duplicate line-feed stop bars are actuated. The duplicate line-feed stop bar moves toward the rear of the teletypewriter out of the path of the line-feed sensing lever. As the restoring roller moves out of engagement with it, the spring-operated line-feed sensing lever turns counterclockwise. This allows the spring-operated line-feed bellcrank pawl to turn clockwise into the path of the drawbar assembly. As the drawbar assembly moves downward,



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Figure 78.1. Function sensing cam and drawbar mechanism (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

while the function shaft is turning through half a revolution, the drawbar moves once up and down under the influence of the function sensing cam and the drawbar spring.

it pulls the line-feed pawl with it. The bellcrank assembly, in turn, pulls the connecting link toward the rear of the teletypewriter. The connecting link rocks the line-feed lever counterclockwise. The line-feed pawl is mounted on the line-feed lever and spring operated in the direction of the detent wheel. In the rest position, the line-feed pawl is held away from the detent wheel by the single-double line-feed lever. When the line-feed lever is rocked counterclockwise, the line-feed pawl moves toward and engages the detent wheel. Further counterclockwise movement of the line-feed lever causes the line-feed pawl to turn the detent wheel and attached platen in unison. The platen is detained in its new position by the action of the spring-loaded line spacing detent pressing against the detent wheel. The single-double line-feed lever (fig. 78) is positioned by the operator, and detained in position by the platen spacing detent. The single-double line-feed lever determines the amount of line-feed lever movement which is wasted before the line-feed pawl engages the detent wheel and begins to turn the platen. The line-feed mechanism is restored to the starting position as the drawbar assembly returns to its up position.

b. When a carriage-return code group is received, the duplicate carriage-return stop bar moves out of the path of the line-feed-on-carriage-return sensing lever. As the restoring roller moves out of engagement with it, the spring-operated line-feed-on-carriage-return sensing lever turns counterclockwise. This allows the spring-loaded line-feed-on-carriage-return pawl to turn clockwise into the path of the drawbar assembly. The line-feed-on-carriage-return pawl is mounted on the bellcrank assembly; therefore, the remainder of the operation of the mechanism for line-feed-on-carriage-return is identical with the operation of the mechanism described in *a* above.

c. The operations described in this paragraph are summarized in the following chart:

Line-feed and line-feed-on-carriage-return sequence chart

1	Line-feed or line-feed-on-carriage-return code group received.
2	Transfer lever released.
3	Code rings aligned. Function shaft starts.
4	Stop bar operated.
5	Sensing lever drops.

Line-feed and line-feed-on-carriage-return sequence chart—Continued

6	Bellcrank pawl moves into path of the drawbar assembly.
7	Drawbar assembly moves downward and pulls the bellcrank with it.
8	Bellcrank assembly rotated counterclockwise.
9	Connecting link pulled toward the rear of the machine.
10	Line-feed lever rotated counterclockwise.
11	Line-feed pawl slides off single-double line-feed lever and engages detent wheel.
12	Detent wheel and platen turn one or two line spaces, depending on the setting of the single-double line-feed lever.
13	Restoring roller raises the sensing lever and attached bellcrank pawl.
14	Line-feed mechanism restored.
15	Function shaft stops.
16	Stop bar restored by a different code selection.

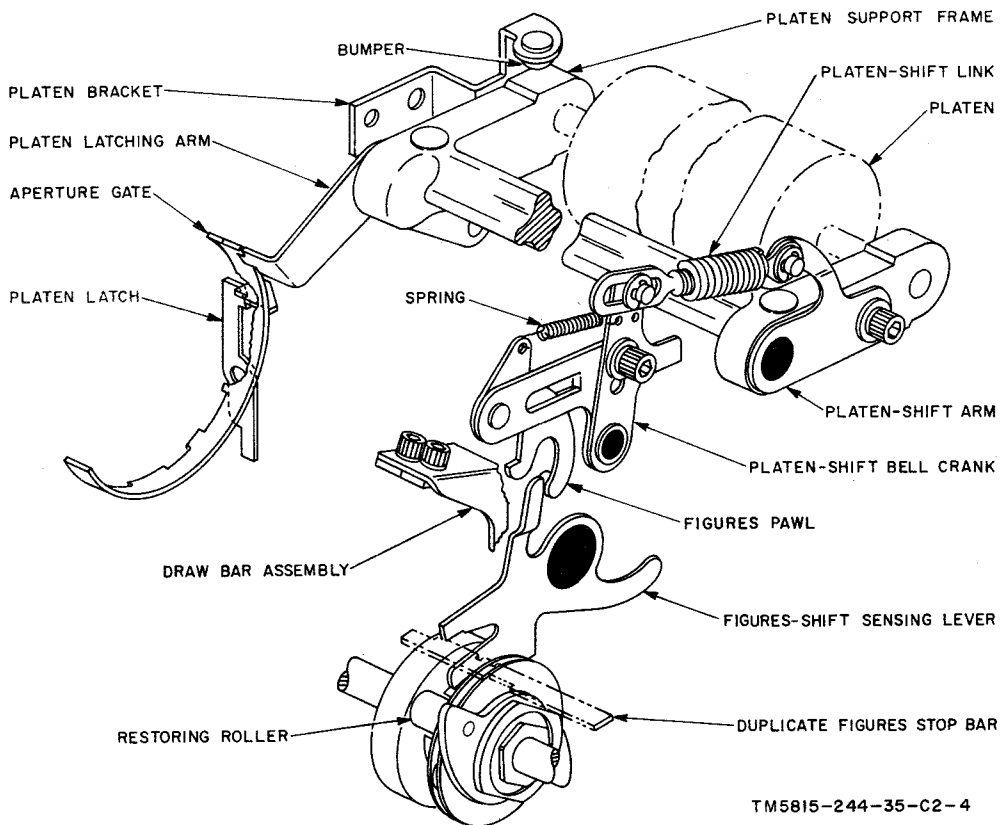
Page 69. Add figure 79.1 after figure 79.

Page 71. Add paragraph 52.1 after paragraph 52.

52.1. Figure-Shift Operation (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)
(fig. 79.1)

a. When the figures code group is received, the duplicate figures stop bar moves out of the path of the figures-shift sensing lever; and the spring-actuated figures-shift sensing lever turns counterclockwise as the restoring roller moves out of engagement with it. This allows the spring-operated figures pawl to pivot clockwise into the path of the drawbar assembly. As the drawbar assembly moves downward, it pulls the figures pawl with it. The figures pawl rocks the platen shift bellcrank counterclockwise, which, in turn, pulls the platen shift link toward the rear of the machine. The platen shift link rocks the platen shift arm about its pivot point, thereby raising the platen support frame and the platen. The upward movement of the platen is limited by the bumper on the platen bracket. As the platen rises, the attached platen latching arm moves downward and repositions the aperture gate to retain the platen in the figures position.

b. The figures-shift sensing lever is restored to the starting position by one of the four restoring rollers, and the figures-shift sensing



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Figure 79.1. Figures shift mechanism (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-296/FG).

lever restores the figures bellcrank. When a different code group is received, the duplicate figures stop bar is restored, and will hold the figures-shift sensing lever, figures-shift pawl, and platen shift bellcrank in the restored position.

c. The operations described in this paragraph are summarized in the following chart:

Figures-shift sequence	
1	Figures code group received.
2	Transfer lever released.
3	Code rings aligned for figures shift. Function shaft starts.
4	Figures-shift sensing lever lifted off figures stop bar by restoring roller.
5	Figures stop bar operated.
6	Figures-shift sensing lever drops.
7	Figures pawl moves into the path of the drawbar.
8	Drawbar moves downward and pulls figures pawl with it.
9	Platen shift bellcrank rocks counterclockwise.

Figures-shift sequence—Continued

10	Platen shift link pulled toward the rear of the teletypewriter. Platen shift arm rocked counterclockwise.
11	Platen support frame and platen raised.
12	Platen latching arm rocked downwards.
13	Aperture gate repositioned and latched.
14	Restoring roller raises figures-shift sensing lever and attached figures pawl.
15	Function shaft stops.
16	Stop bar restored by a different code selection.
17	Platen remains latched in figures position until letters code group is received.

Page 75, paragraph 56a. Make the following changes:

Line 2. After "TT-118/FG" add: TT-120/FG and TT-396/FG.

Line 4. After "TT-119A/FG" add: TT-117B/FG, TT-119B/FG, TT-269/FG, TT-269A/FG, TT-271/FG, and TT-271A/FG.

Page 76, paragraph 59a, line 5. After "figure 87", add: and 87.1.

Page 77. Make the following changes:

Paragraph 59. Add subparagraph *c* after subparagraph *b*.

c. On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, the ribbon feed mechanism is identical with that described in *a* and *b* above with the following exceptions (fig. 87.1). The detent and detent block are on the right side of the beam, but the operation is unaffected. There is a ratchet wheel on the drive shaft and an associated detent spring. The purpose of the ratchet wheel and detent spring is to insure that the jaw clutch teeth slip during the carriage-return operation described in *b* above.

Add figure 87.1 after figure 87.

Page 86, paragraph 68a, line 2. After "AN/FGC-26" add "AN/FGC-52", and after "AN/FGC-57", add "AN/FGC-68".

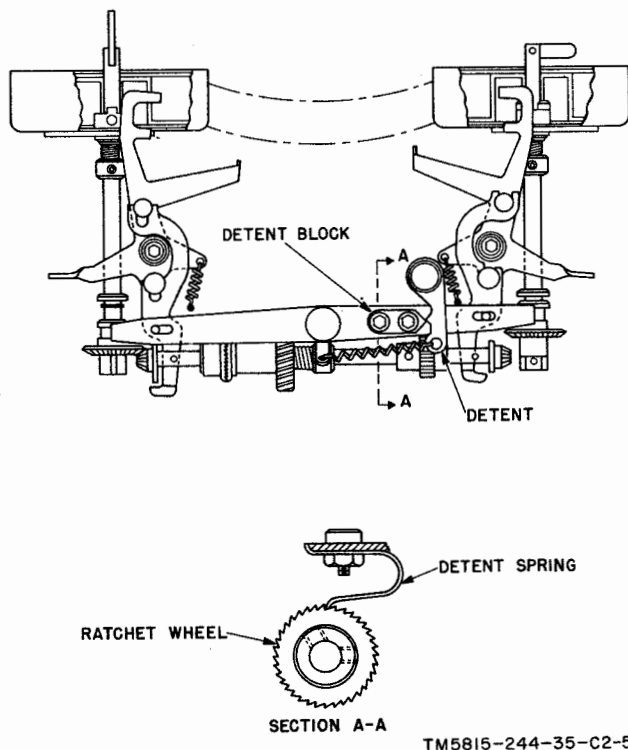


Figure 87.1. Ribbon feed mechanism (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 87, paragraph 68a, line 1. After "AN/FGC-25X", add: AN/FGC-26X and AN/FGC-52X.

Page 88, paragraph 70b. Add subparagraph *b.1*.

b.1. On the TT-270/FG, TT-272/FG, and TT-397/FG, a transmitter-distributor pulsing control box, located in the electrical circuit between the perforator and the transmitter-distributor, permits an external pulsing source to control the operation of the transmitter-distributor. A toggle switch mounted on the transmitter-distributor pulsing control box permits the transmitter-distributor to be used in *free running* (as a standard transmitter-distributor), or in *stepping* operation (controlled by an external pulsing source).

Page 113, paragraph 91, chart. Make the following changes:

Subparagraph *a*, headings. In the 2d, 4th, 6th, and 8th columns, after "TT-119A/FG", add: TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269/FG, TT-269A/FG, TT-271/FG, TT-271A/FG, TT-396/FG.

Footnote *b*. Add: TT-119B/FG, TT-120/FG, TT-271/FG, TT-271A/FG.

Footnote *d*. Add: TT-117B/FG, TT-269/FG, TT-269A/FG, TT-396/FG.

Pages 114 and 115, paragraph 91b, chart, headings. In the 2d, 4th, 6th, and 8th columns, after "TT-181/FG", add: TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, TT-397/FG.

Page 115, paragraph 91b, chart. Footnote *c*. Add: TT-272/FG, TT-178B/FG, TT-180/FG.

Footnote *d*. Add: TT-179B/FG, TT-270/FG, TT-397/FG.

Page 133. Make the following changes:

Add figure 151.1 after figure 151.

Paragraph 100. Add subparagraph *g* after subparagraph *f*.

g. Transmitter-Distributor Clutch Magnet Circuit TT-270/FG, TT-272/FG, and TT-397/FG (fig. 151.1). Clutch magnet L201 controls the rotation of the transmitter camshaft of the transmitter-distributor. Direct current to actuate the clutch magnet is supplied by rectifier

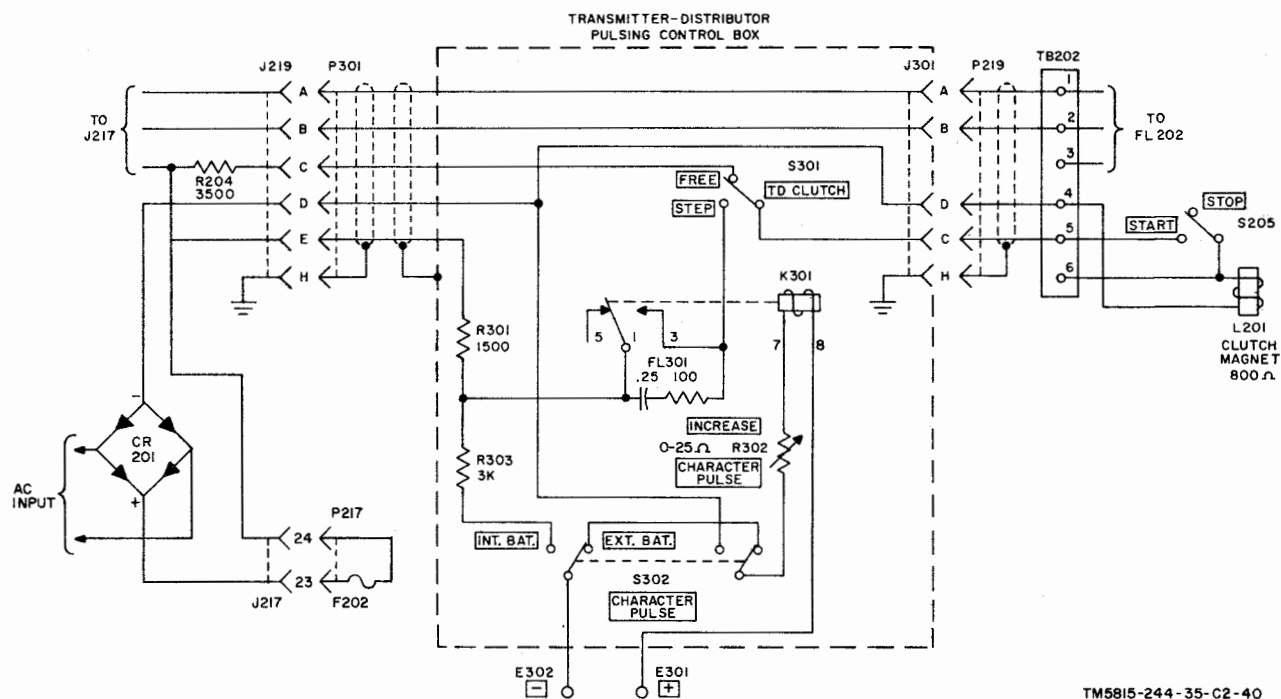


Figure 151.1. Transmitter-distributor clutch magnet circuit (TT-270/FG, TT-272/FG, and TT-397/FG only).

CR201. When START-STOP switch S205 is at STOP, no current flows in the winding of CLUTCH MAGNET L201. Each of the following circuit descriptions assumes that START-STOP switch S205 is at START.

- (1) With TD CLUTCH switch S301 at FREE, the circuit is traced from the positive side of rectified CR201 through terminal 23 of jack J217 and plug P217, fuse F202, terminal 24 of plug P217 and jack J217, resistor R204, terminal C of jack J219 and plug P301, the FREE contact of TD CLUTCH switch S301, terminal C of jack J301 and plug P219, terminal 5 of terminal board TB202, the START contact of START-STOP switch S205, clutch magnet L201, terminal 4 of TB202, terminal D of P219 and J301, and terminal D of P301 and J219 to the negative side of the rectifier.
- (2) With TD CLUTCH switch S301 at STEP, the circuit is traced from the positive side of the rectifier through terminal E of J219 and P301, 1,500-

ohm resistor R301 and one of the following paths:

- (a) With the CHARACTER PULSE switch at EXT BAT, a dc pulse from a remote control source is applied to terminals E301 and E302. The pulse energizes relay K301 which, in turn, causes the relay float to operate, thus providing a path from the positive side of rectifier CR201, resistor R301, relay contacts 1 and 3, STEP contact of TD CLUTCH switch S301, and clutch magnet L201 to the negative side of the rectifier.
- (b) With the CHARACTER PULSE switch at INT BAT, the circuit is traced from the positive side of rectifier CR201, resistors R301 and R303, the INT BAT contact of CHARACTER PULSE switch S302, transmitter-distributor control box terminal E302, through a closed circuit at the remote control source,

transmitter-distributor control box terminal E301, relay K301, potentiometer R302, and the INT BAT contact of CHARACTER PULSE

switch S302 to the negative side of the rectifier.

Page 145, paragraph 118b, chart (page 3 of C1). Add the following after item No. 26.

Fig. No.	Item No.	Name of part	Method and quantity
159.1	1	Carriage rack retainer-----	Apply sparingly all along the upper surfaces of the carriage rack.
159.1	7	Drawbar actuating cam-----	Apply sparingly to working surfaces.
159.1	8	Restoring rollers -----	Apply sparingly to the working surfaces of the rollers.

Page 147, paragraph 118f, chart (page 5 of C1). Add the following after item No. 28.

Fig. No.	Item No.	Name of part	Method and quantity
159.1	2	Sensing levers -----	Several drops at pivot point and rubbing surfaces.
159.1	3	Platen-shift and line-feed bellcrank and pawl assemblies.	Several drops at all pivot points.
159.1	4	Line-feed and figures pawl springs----	Apply 1 drop to each end of the springs.
159.1	5	Adjustable blocks -----	Apply sparingly to working surfaces.
159.1	6	Drawbar slot and roller-----	Apply sparingly to the working surfaces.
159.1	8	Restoring rollers -----	Apply sparingly to each end of rollers (inside pin surfaces).

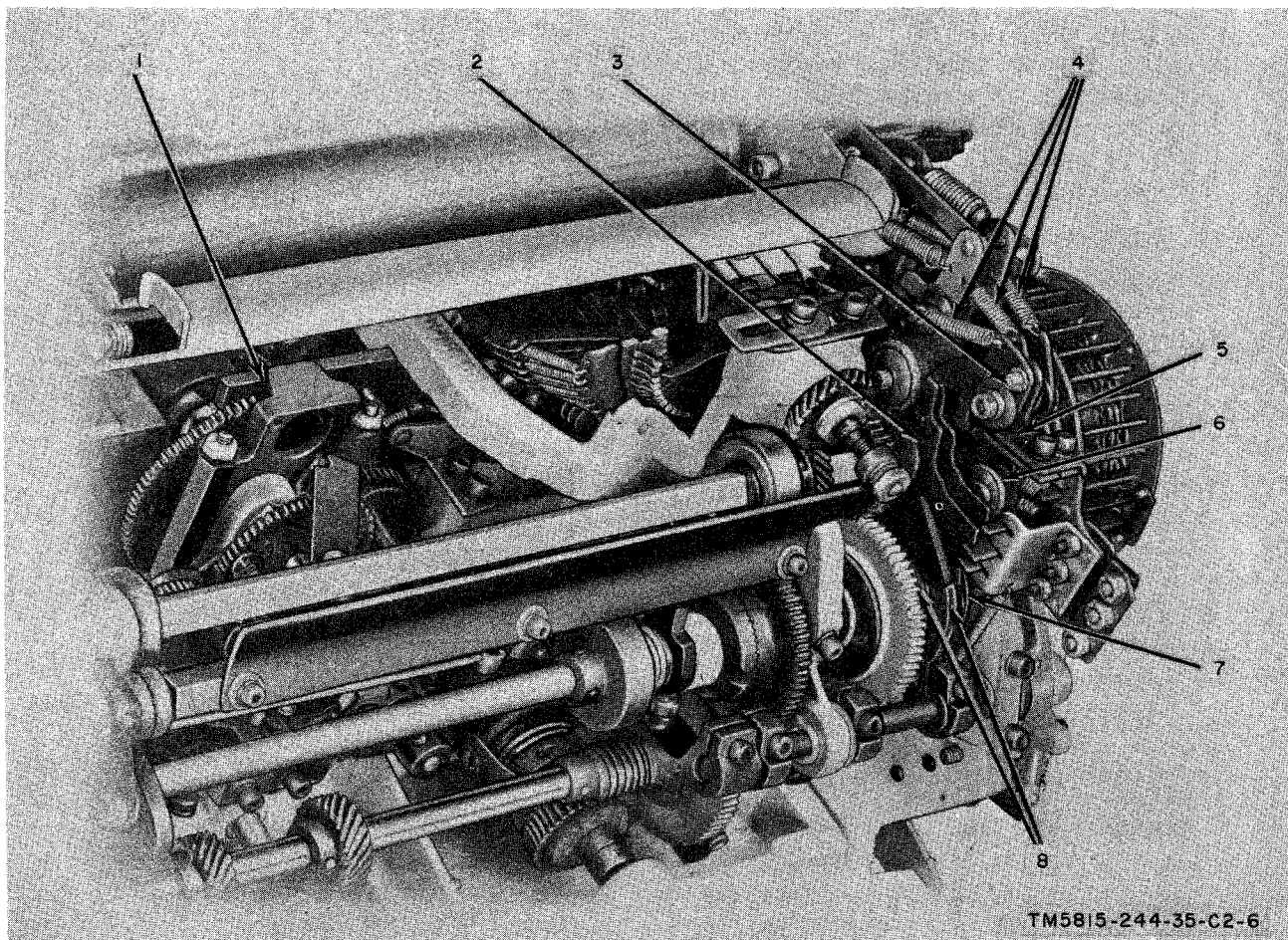
Page 151. Add figure 159.1 after figure 159.

Page 176, paragraph 124b, chart, "Condition 10". Add the following after the second item.

Condition	Probable trouble	Correction
10. Platen will not shift-----	Figures stop bar broken-----	Replace figures stop bar.
10.1. Platen will not shift (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG.	Figures pawl spring broken----- Figures pawl broken----- Figures adjustable block incorrectly adjusted.	Replace spring. Replace pawl. Adjust block (par. 334.1).

Page 177, paragraph 124b, chart, "Condition 17". Add the following after the third item.

Condition	Probable trouble	Correction
17. Line-feed function does not operate--	Line-feed stop bar broken-----	Replace line-feed stop bar.
17.1. Line-feed function does not operate TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG.	Line-feed bellcrank pawl spring broken. Line-feed bellcrank pawl broken--- Line-feed adjustable block incorrectly adjusted.	Replace spring. Replace pawl. Adjust block (par. 334.1).



- 1 Carriage rack retainer
- 2 Sensing levers
- 3 Platen shift and line-feed bellcrank and pawl assemblies
- 4 Line feed and figures pawl springs

- 5 Adjustable blocks
- 6 Drawbar slot and roller
- 7 Drawbar cam
- 8 Restoring rollers

Figure 159.1. Line feed and drawbar mechanism, rear view (automatic carriage-return mechanism removed) showing lubrication points (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 178, paragraph 124c, chart. Make the following changes:

In "Correction" column, line 3, add the following: On TT-270/FG, TT-272/FG, and TT-397/FG, check the position of the switches on the transmitter-distributor pulsing control box.

Note. If the clutch magnet fails to function when the TD CLUTCH switch is at STEP and the CHARACTER PULSE switch is at EXT BAT, but functions correctly with all other combinations of those switches, check relay K301.

In "Probable trouble" column, add after line 8: On TT-270/FG, TT-272/FG,

and TT-397/FG, plug P301 may be disconnected from jack J301, or plug P219 may be disconnected from jack J301.

In "Correction" column, add after line 11: Insure plug P219 is connected to jack J301, and plug P301 is connected to jack J301.

Page 192. Make the following changes:

Figure 188, add the following:

Note. SPACER, 61303, USED BETWEEN 8 AND 9 ON TT-117B/FG, TT-119B/FG, TT-120/FG, TT-296A/FG, TT-271A/FG, AND TT-396/FG ONLY.

Paragraph 135a(5), line 3. After "arm (9)", insert: (a spacer is used between the tab crank arm (9) and the flat washer (8) on the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-296A/FG, TT-271A/FG, and the TT-396/FG only).

Page 212. Make the following changes:

Paragraph 147. Make the following changes:

Add the following after subparagraph a (3).

(3.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the three machine screws and lockwashers (1 and 2, fig. 201.1) that hold the motor to the frame; remove the motor.

Subparagraph a(4), line 2. Change "(6 and 7)" to: (6 and 7, fig. 200).

Add the following after subparagraph b (2).

On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, secure with three machine screws and lockwashers (1 and 2, fig. 201.1).

Paragraph 148a. Add the following after subparagraph (1).

(1.1) On the TT-117B/FG, TT-269A/FG, and TT-396/FG, remove the three sleeves (3, fig. 201.1) and lockwashers (4) from the teletypewriter frame.

Page 213. Make the following changes:

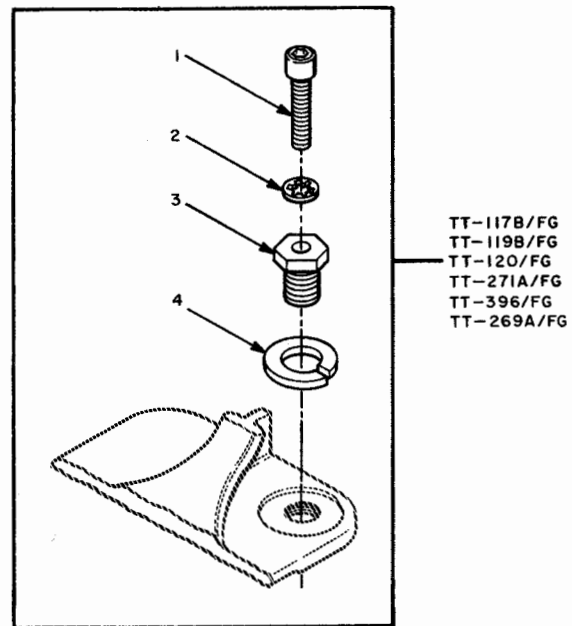
Paragraph 148b. Add the following after subparagraph (7).

(7.1) On the TT-117B/FG, TT-269A/FG, and TT-396/FG, reinstall the three sleeves (3, fig. 201.1) and lockwashers (4) in the teletypewriter frame.

Paragraph 149a. Add the following after subparagraph (1).

(1.1) On the TT-119B/FG, TT-120/FG, and TT-271A/FG, remove the three sleeves (3) and lockwashers (4) from the teletypewriter frame.

Page 214. Add figure 201.1 after figure 201.



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1 Machine screw, 10018-01 3 Sleeve, 57493
2 Lockwasher, 10405 4 Lockwasher, 10422
Figure 201.1. Series-governed or synchronous motor mounting hardware for page printer, exploded view.

Page 215, paragraph 149b. Add the following after subparagraph (2).

(2.1) On the TT-119B/FG, TT-120/FG, and TT-271A/FG, reinstall the three sleeves (3, fig. 201.1) and lockwashers (4) in the teletypewriter frame.

Page 216. Add figure 202.1 after figure 202 (page 18 of C1).

Page 217, paragraph 151a. Make the following changes:

Add subparagraphs (3.1), (3.2), (3.3), and (3.4) after subparagraph (3).

(3.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the retainer ring (15, fig. 219.1) that holds the line-feed connecting link (16) to the stud on the line-feed bellcrank. Disengage the link.

(3.2) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG,

TT-271A/FG, and TT-396/FG, remove the retainer ring (13) that holds the platen shift link (14) to the stud on the platen shift bellcrank. Disengage the link.

(3.3) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the platen shift bellcrank spring (42) from the hole in the bracket link (12, fig. 202.1).

(3.4) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the line-feed bellcrank spring (23, fig. 219.1) from the hole in the bracket link (12, fig. 202.1).

Subparagraph (4), line 2. Add "or 202.1" after "202".

Page 218. Make the following changes:

Paragraph 151*b*(1), line 8. Add "or 202.1" after "202".

Paragraph 152*a*(7), line 2. Change "lockwasher" to: flat washer.

Page 219, figure 203, legend. Make the following changes (page 21 of C1):

Item 17. Delete "10005" and substitute: 10015.

Item 18. Delete "Lockwasher" and substitute: Flat washer.

Item 19. Add: (57981A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 220. Add paragraph 153.1 after paragraph 153.

153.1. Disassembly and Reassembly of Platen Trough Assembly (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 202.1)

a. Disassembly.

- (1) Remove the platen from the platen frame as described in paragraph 152*a*.
- (2) Follow the procedure described in paragraphs 153*a*(2) through (14).
- (3) Remove the two roll pins (33 and 34)

that hold the paper guides (38 and 42) to the paper guide shaft (37).

- (4) Remove the three stripper springs (36) from the six paper strippers (40 and 41).
- (5) Remove the setscrew (47) that holds the paper guide (38) to the stud (49).
- (6) Remove the socket head nut (52), machine screw (53), lockwasher (54), and plain washer (55) that mount the paper guide stop lever assembly (56) to the platen trough (46).
- (7) Follow the procedures described in paragraph 153*a* (17 and 18).
- (8) Remove the retainer ring (48) from the stud (49). Remove the stud from the platen trough.

b. Reassembly.

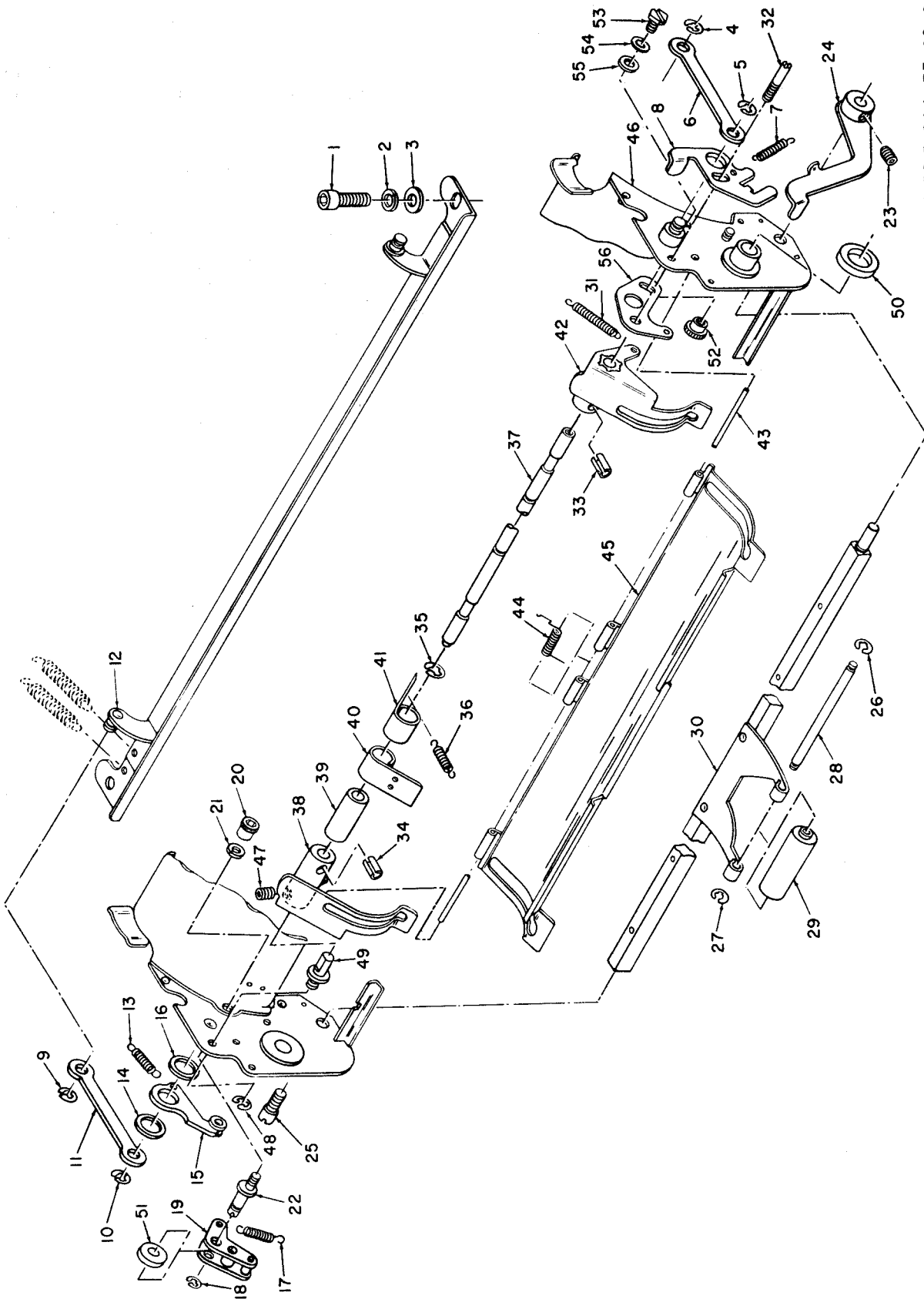
- (1) Reassemble the platen trough as indicated in figure 202.1. The sequence for assembling the parts is the reverse of the disassembly sequence. When installing setscrew (47) in the paper guide (38), make sure that the setscrew is against the flat on the stud (49).
- (2) Adjust the platen trough as instructed in paragraphs 324, 325.1, 327, 331, 332, 334, and 335.
- (3) Install the platen on the platen frame as described in paragraph 152*b*.

Page 222, paragraph 156*a*. Make the following changes:

Subparagraph (2), line 1. Delete "fiber".

Add subparagraph (2.1) after subparagraph (2).

- (2.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the two self-locking hexagonal nuts (30, fig. 232) that hold the carriage rack retainer (31) to the retainer posts (34). Remove the carriage rack retainer, two plain washers (32), and shims (33) from the retainer posts. Remove the two retainer posts (34) and lockwashers (35) from the bearing cap.



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Figure 202.1. Platen trough assembly, exploded view (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

- | | |
|---|---|
| 1 Machine screw, 10024 | 29 Platen pressure roller, 50161A |
| 2 Flat washer, 10464 | 30 Platen pressure roller operating shaft, 55530A |
| 3 Lockwasher, 10431 | 31 Paper guide spring, 52169 |
| 4 Retainer ring, 10949 | 32 Pivot screw, 55139 |
| 5 Retainer ring, 10949 | 33 Roll pin, 11058 |
| 6 Connecting link, 50215 | 34 Roll pin, 11058 |
| 7 Platen lever latch spring, 53149 | 35 Retainer ring, 10949 |
| 8 Platen lever latch, 54951 | 36 Stripper spring, 55143 |
| 9 Retainer ring, 10949 | 37 Paper guide shaft, 61072 |
| 10 Retainer ring, 10949 | 38 Paper guide LH, 61073A |
| 11 Connecting link, 50215 | 39 Sleeve, 55041 |
| 12 Bracket link, 57971A | 40 Paper stripper, 55151 |
| 13 Platen spacing detent spring, 51851 | 41 Paper stripper, 55151 |
| 14 Flat washer, 51768 | 42 Paper guide RH, 61070A |
| 15 Platen spacing detent, 53202A | 43 Hinge pin, 55146 |
| 16 Flat washer, 51768 | 44 Platen trough spring, 54967 |
| 17 Platen detent spring, 51851 | 45 Paper trough guide, 54962 |
| 18 Retainer ring, 10960 | 46 Platen trough, 59432A |
| 19 Line spacing detent, 50108A | 47 Setscrew, 10203 |
| 20 Plain round nut, 10537 | 48 Retainer ring, 11103 |
| 21 Lockwasher, 10429 | 49 Stud, 61071 |
| 22 Platen detent eccentric stud, 52931 | 50 Felt washer, 61472 |
| 23 Setscrew, 10203 | 51 Felt washer, 61474 |
| 24 Pressure roller lever, 54954A | 52 Socket head nut, 10537 |
| 25 Pressure roller operating shaft screw, 50238 | 53 Machine screw, 10398 |
| 26 Retainer ring, 51099 | 54 Lockwasher, 10429 |
| 27 Retainer ring, 51099 | 55 Plain washer, 10458 |
| 28 Platen pressure roller shaft, 54968 | 56 Paper guide stop lever assembly, 61069A |

Figure 202.1—Continued.

Subparagraph (3), line 1. After "screw" change "(1)" to: (1, fig. 206).

Page 223, paragraph 156b (1), line 5. Delete "fiber".

Page 224, paragraph 156b. Add subparagraph (6.1) after subparagraph (6).

(6.1) Reassemble the carriage rack retainer as indicated in figure 232; the sequence for assembling the parts is the reverse of the disassembly sequence. Adjust the carriage rack retainer as described in paragraph 304.1.

Page 227. Make the following changes:

Figure 209, legend. Add item 8.1 after item 8.

8.1 Detent, 61288 (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 14. Add: (63503A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Paragraph 160a. Add subparagraph (5.1) after paragraph (5).

(5.1) On TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG (fig. 209.1), catch the detent spring (8.1) as it falls from the screw (9).

Add figure 209.1 after figure 209.

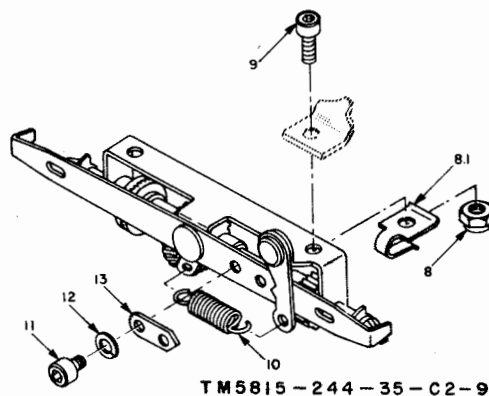


Figure 209.1. Ribbon drive subassembly (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 228, figure 210, legend, item 3. Change "161b(6)" to: 161b(1).

Page 229. Make the following changes:

Paragraph 160b(1), line 2. After "209" add: (and 209.1 on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Paragraph 161b(1), line 10. Change "chart" to: charts.

Add subparagraph (1.1) after subparagraph (1) (page 21 of C1).

Type bar and connecting bar sequence chart

No. stamped in bar	Connecting bar ref. No.	Type bar ref. No. (standard keyboards) TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG	Type bar ref. No. (weather keyboard)	Type bar symbol all models LTRS position
1	50022	62211	62237	Z
2	50023	62212	62238	J
3	50024	62213	62213	X
4	50025	62214	62239	V
5	50026	62215	62240	B
6	50027	62216	62241	C
7	50028	62217	62217	P
8	50029	62218	62218	M
9	50030	62219	62242	F
10	50031	62220	62220	R
11	50032	62221	62221	O
12	50033	62222	62222	I
13	50034	62223	62223	T
14	50035	62224	62224	E
15	50036	62225	62243	A
16	50037	62261	62261	S
17	50038	62260	62244	H
18	50039	62228	62245	N
19	50040	62229	62246	L
20	50041	62230	62247	D
21	50042	62231	62231	U
22	50043	62232	62248	G
23	50044	62233	62233	Y
24	50045	62234	62234	W
25	50046	62235	62249	K
26	50047	62236	62236	Q
27	50048	None	62250	None

Page 236. Delete figure 214 (page 22 of C1) and substitute new figure 214:

Page 237. Make the following changes:

Figure 214 (page 23 of C1), legend, item 4. Change: "55009" to: 61000.

Item 54. Add: (61001 on TT-117B/FG,

TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Add the following at the end of the legend:

- 58 Machine screw, 10006
- 59 Flat washer, 10459
- 60 Clamp nut, 50174
- 61 Y-lever stud bracket, 60677
- 62 Machine screw, 10001
- 63 Lockwasher, 10429
- 64 Flat washer, 50319
- 65 Y-lever eccentric tie, 60678
- 66 Spacer, 60679

Paragraph 165. Make the following changes: Subparagraph a. Add subparagraphs (4.1) and (4.2) after subparagraph (4).

(4.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-279A/FG, and TT-396/FG, remove the machine screw (58), flat washer (59), and clamp nut (60) that hold the Y-lever stud bracket (61) to the Y-lever pivot stud (52); remove the Y-lever stud bracket from the Y-lever stud and the Y-lever eccentric stop (54). Remove the spacer (66) from the Y-lever stud.

(4.2) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the two machine screws (62), lockwashers (63), and flat washers (64) that hold the Y-lever eccentric tie (65) to the Y-lever stud bracket (61); remove the Y-lever eccentric tie.

Subparagraph b. Add subparagraph (2.1) after subparagraph (2).

(2.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, adjust the selector levers and Y-levers as described in paragraphs 265, 266, 282, 284, 291, 292.1, and 301.1.

Page 238. Make the following changes:

Delete figure 215 (page 24 of C1) and substitute new figure 215.

Add the following at the end of the legend:

- 47 Spacer, 57922.

Paragraph 166a(3). Delete subparagraph (3) and substitute:

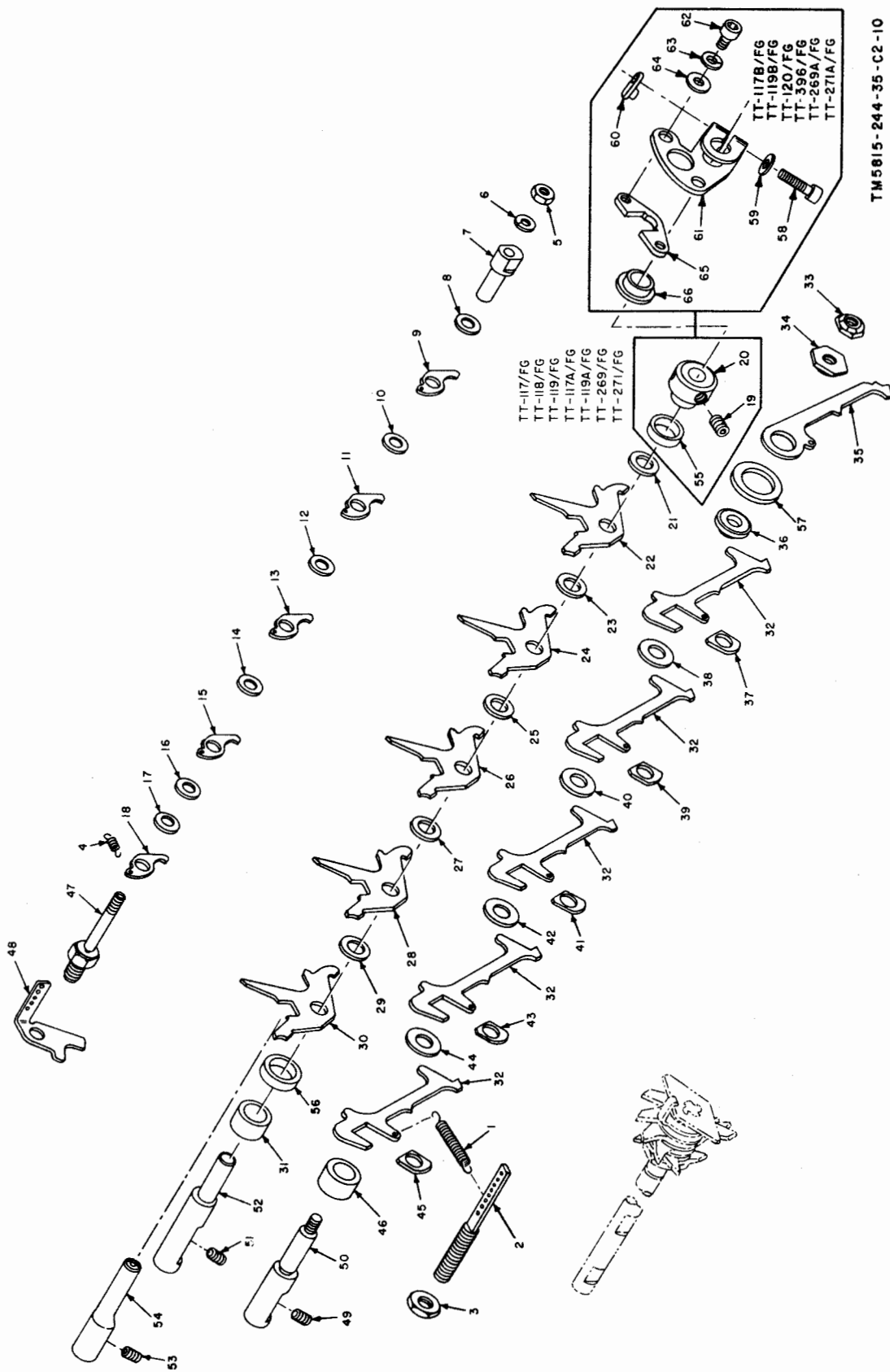
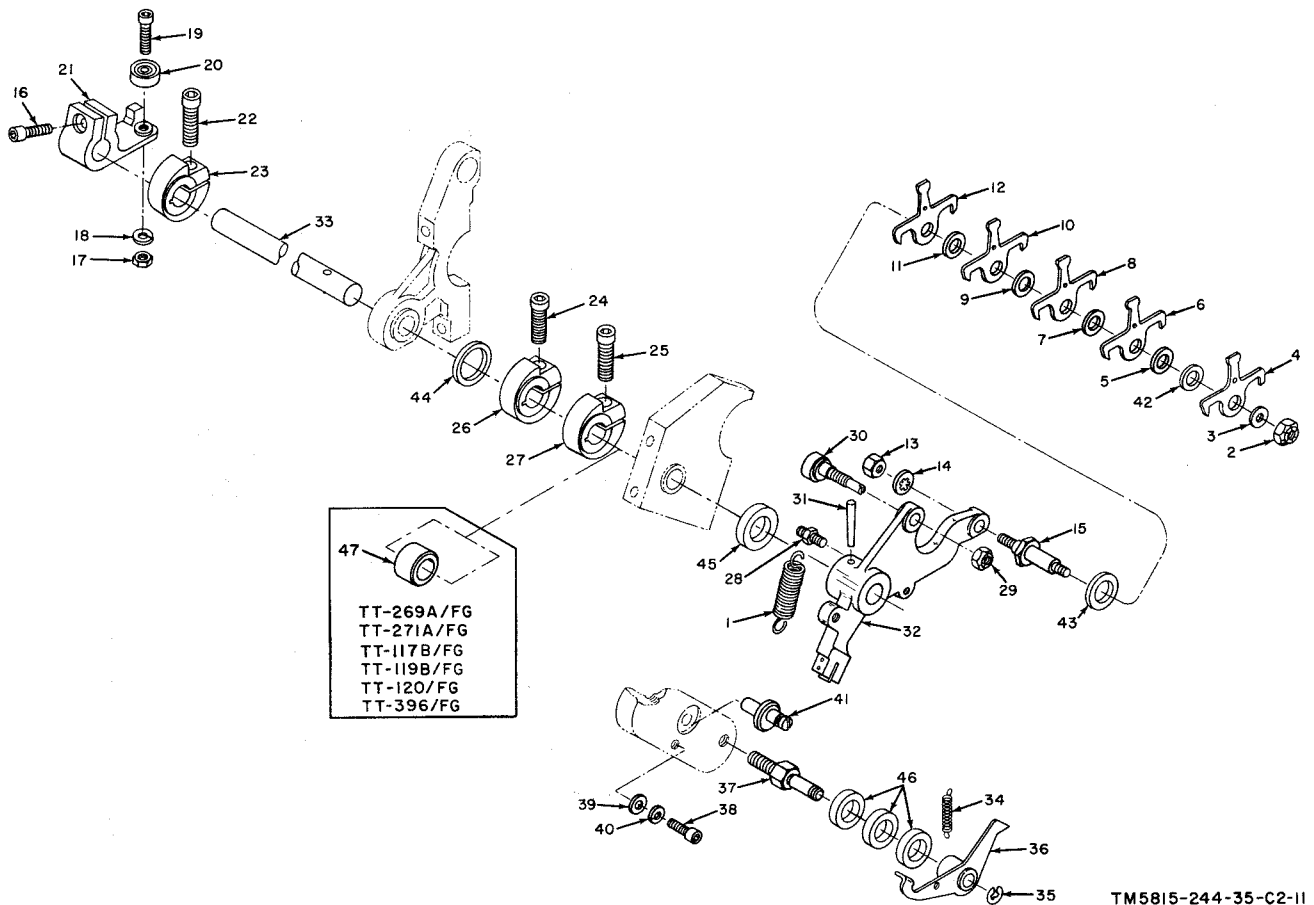


Figure 214. Selector levers and Y-levers, exploded view.

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TM5815-244-35-C2-11

Figure 215. Transfer lever shaft, exploded view.

- (3) Remove the self-locking hexagonal nut (2) and flat washer (3) that hold shims (42) and T-levers (4, 6, 8, 10, and 12) to the T-lever pivot stud (15); alternately remove the T-levers and the flat washers (5, 7, 9, and 11).

Page 239, paragraph 166a (9), line 4. After (26 and 27) insert:

(on the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG) and spacer (47).

Page 244. Add figure 219.1 after figure 219 page 28 of C1).

Page 245. Add paragraph 170.1 after paragraph 170.

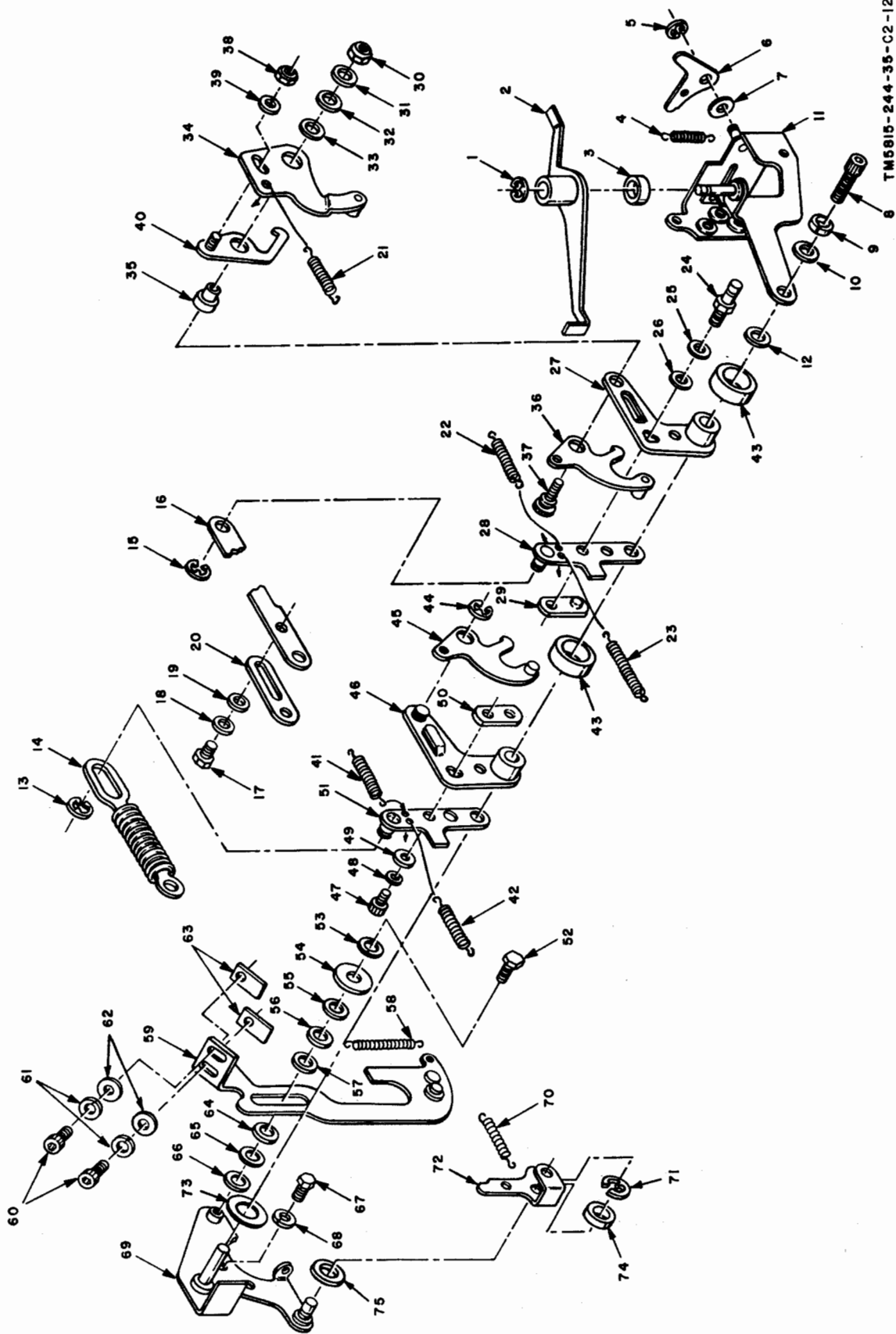
170.1. Disassembly and Reassembly of Line Feed and Platen Shift Mechanism (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG and TT-396/FG)

(fig. 219.1)

a. Disassembly.

- (1) Remove the paper roller stand and terminal box as described in paragraph 192a.
- (2) Remove the retainer ring (1, fig. 219.1) that holds the delaying lever (2) and felt washer (3) on the mounting stud on the stop bar shift link bracket (11); remove the delaying lever.

- (3) Remove the delaying latch spring (4) from the delaying latch (6) and from the stop bar shift link bracket (11).
- (4) Remove the retainer ring (5), delaying latch (6), and felt washer (7) from the pivot stud on the stop bar shift link bracket (11).
- (5) Remove the machine screw (8), lockwasher (9), and flat washer (10) from the bellcrank pivot bracket (69); catch the flat washer (12) and felt washers (43 and 73) as they drop out.
- (6) Remove the stop bar shift link as described in paragraph 181a(1) through (7). Remove the stop bar shift link bracket (11, fig. 219.1).
- (7) Remove the retainer ring (13) from the stud on the platen shift bellcrank assembly (51); disengage the platen shift link (14) from the stud.
- (8) Remove the retainer ring (15) from the stud on the line-feed bellcrank assembly (28).
- (9) Remove the two machine screws (17), lockwashers (18), and flat washers (19) that hold the connecting link (16) to the adjusting link (20); remove the connecting link from the adjusting link.
- (10) Remove the pawl spring (21) from the bellcrank post (24) and plate assembly (34).
- (11) Remove the bellcrank pawl spring (22) from the line-feed bellcrank assembly (28) and line-feed bellcrank pawl (36).
- (12) Remove the bellcrank spring (23) from the line-feed bellcrank assembly (28) and the hole in the platen bracket link (12, fig. 202.1).
- (13) Remove the bellcrank post (24, fig. 219.1), lockwasher (25), flat washer (26), line-feed bellcrank assembly (28), and nut plate (29) from the line-feed bellcrank assembly (27).
- (14) Remove the hexagonal nut (30), lockwasher (31), flat washers (32 and 33), plate assembly (34), bushing (35), line-feed bellcrank pawl (36), and shoulder screw (37) from the line-feed bellcrank assembly (27).
- (15) Remove the hexagonal nut (38) and flat washer (39) that hold the line-feed-on-carriage-return pawl (40) to the plate assembly. Remove the pawl.
- (16) Remove the bellcrank pawl spring (41) from the platen shift bellcrank (51) and figures shift bellcrank pawl (45).
- (17) Remove the bellcrank spring (42) from the platen shift bellcrank (51) and the hole in the platen bracket link (12, fig. 202.1).
- (18) Remove the retainer ring (44, fig. 219.1) and figures shift bellcrank pawl (45) from the platen shift bellcrank assembly (46). Remove the platen shift bellcrank assembly.
- (19) Remove the machine screw (47), lockwasher (48), flat washer (49), nut plate (50), and platen shift bellcrank (51) from the platen shift bellcrank assembly (46).
- (20) Remove the function shaft as described in paragraph 172.1a.
- (21) Remove the drawbar spring (58) from the drawbar assembly (59) and from the function stop bar support guide (15, fig. 224).
- (22) Remove the machine screw (52, fig. 219.1), lockwasher (53), flat washers (54, 55, 56, 65, and 66) and spacers (57 and 64). Remove the drawbar assembly (59).
- (23) Remove the two machine screws (60), lockwashers (61), flat washers (62), and adjustable blocks (63) from the drawbar assembly.
- (24) Remove the two machine screws (67) and lockwashers (68) that attach the bellcrank pivot bracket assembly (69) to the page printer frame; remove the bellcrank pivot bracket.
- (25) Remove the platen lower-case latch spring (70) from the platen lower-case latch (72) and from the bellcrank pivot bracket (69).
- (26) Remove the retainer ring (71) from the pivot post on the bellcrank pivot



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Figure 219.1. Line-feed and platen shift mechanism, exploded view (TT-117B/FG, 119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

- | | | | |
|----|--------------------------------------|----|---|
| 1 | Retainer ring, 10949 | 39 | Flat washer, 50320 |
| 2 | Delaying lever, 52960A | 40 | Line-feed-on-carriage-return pawl, 62113A |
| 3 | Felt washer, 61483 | 41 | Bellcrank pawl spring, 57875 |
| 4 | Delaying latch spring, 50916 | 42 | Bellcrank spring, 59310 |
| 5 | Retainer ring, 10960 | 43 | Felt washer, 61671 |
| 6 | Delaying latch, 52963 | 44 | Retainer ring, 10959 |
| 7 | Felt washer, 61483 | 45 | Figures shift bellcrank pawl, 57947A |
| 8 | Machine screw, 10003 | 46 | Platen shift bellcrank assembly, 57914A |
| 9 | Lockwasher, 10429 | 47 | Machine screw, 10032 |
| 10 | Flat washer, 10450 | 48 | Lockwasher, 10430 |
| 11 | Stop bar shift link bracket, 57997A | 49 | Flat washer, 10454 |
| 12 | Flat washer, 10450 | 50 | Nut plate, 52073 |
| 13 | Retainer ring, 10949 | 51 | Platen shift bellcrank assembly, 57920A |
| 14 | Platen shift link, 62611A | 52 | Machine screw, 10398 |
| 15 | Retainer ring, 10949 | 53 | Lockwasher, 10429 |
| 16 | Connecting link, 57979 | 54 | Flat washer, 57872 |
| 17 | Machine screw, 10303 | 55 | Flat washer, 57873 |
| 18 | Lockwasher, 10429 | 56 | Flat washer, 57873 |
| 19 | Flat washer, 10458 | 57 | Spacer, 57924 |
| 20 | Adjusting link, 62590 | 58 | Drawbar spring, 57871 |
| 21 | Pawl spring, 62154 | 59 | Drawbar assembly, 57939A |
| 22 | Bellcrank pawl spring, 57875 | 60 | Machine screw, 10003 |
| 23 | Bellcrank spring, 62169 | 61 | Lockwasher, 10429 |
| 24 | Bellcrank post, 62130 | 62 | Flat washer, 10459 |
| 25 | Lockwasher, 10430 | 63 | Adjustable block, 62151 |
| 26 | Flat washer, 10454 | 64 | Spacer, 57924 |
| 27 | Line-feed bellcrank assembly, 62114A | 65 | Flat washer, 57873 |
| 28 | Line-feed bellcrank assembly, 57920A | 66 | Flat washer, 57873 |
| 29 | Nut plate, 52073 | 67 | Machine screw, 10076 |
| 30 | Hexagonal nut, 10507 | 68 | Lockwasher, 10430 |
| 31 | Lockwasher, 10426 | 69 | Bellcrank pivot bracket assembly, 57910A |
| 32 | Flat washer, 10467 | 70 | Platen lower-case latch spring, 50920 |
| 33 | Flat washer, 63577 | 71 | Retainer ring, 10960 |
| 34 | Plate assembly, 62138A | 72 | Platen lower-case latch, 52748 |
| 35 | Bushing, 62146 | 73 | Felt washer, 61670 |
| 36 | Line-feed bellcrank pawl, 57945A | 74 | Felt washer, 61474 |
| 37 | Shoulder screw, 62145 | 75 | Felt washer, 61483 |
| 38 | Hexagonal nut, 10551 | | |

Figure 219.1—Continued.

bracket (69). Remove the platen lower-case latch (72) and felt washers (74 and 75).

b. Reassembly.

- (1) Reassemble the line feed and platen shift mechanism by reversing the procedure described in *a*(21) through (26) above.
- (2) Replace the function shaft as described in paragraph 172.1*b*.
- (3) Reassemble the line feed and platen shift mechanism by reversing the procedure described in *a*(1) through (19) above.
- (4) Adjust the line feed and platen shift mechanism as described in paragraphs

268.1, 271.2, 334.1, 335, and 351 through 354.

- (5) Replace the paper roller stand and terminal box as described in paragraph 192*b*.

Page 247. Make the following changes:

Add paragraph 172.1 after paragraph 172.

172.1. Removal and Replacement of Page Printer Function Shaft (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

a. Removal.

- (1) Remove the function shaft as described in paragraph 172*a*(1), (2), and (3).

- (2) Disconnect the drawbar spring (58, fig. 219.1) from the function stop bar support guide (15, fig. 224).
- (3) Remove the machine screw (60, fig. 219.1), lockwasher (61), and flat washer (62) that hold the adjustable block (63) located closest to the code ring cage. Remove the adjustable block.
- (4) Follow the procedures described in paragraph 172a (8) through (11).
- (5) Disengage the drawbar cam on the line-feed and platen shift sensing (20, fig. 221) from the drawbar. Remove the assembled function shaft from the three bearing supports in the page printer frame.

b. Replacement.

- (1) Move the carriage assembly to the right-hand side of the page printer.
- (2) The sequence for replacement of the function shaft is the reverse of the removal procedure described in a(2) through (5) above.
- (3) Adjust the function shaft as described in paragraphs 297, 299, 319, 320, 321, and 334.1.
- (4) Replace the transfer lever shaft as described in paragraph 166b.
- (5) Replace the signal bell assembly. The sequence for replacement is the reverse of the removal procedure described in 172a (2).
- (6) Adjust the signal bell assembly as described in paragraphs 358 and 359.
- (7) Replace the paper roller stand and terminal box as described in paragraph 192b.

Paragraph 173a. Make the following changes:

Subparagraph (1). Add the following at the end of the subparagraph: (172.1a on the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Subparagraph (3), lines 3 and 5. After "cam" insert: (function sensing cam assembly on the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 249. Make the following changes:

Paragraph 173b (2). Add the following at the end of the subparagraph: (172.1b on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Figure 221 (page 31 of C1), legend, item 20. Add: (62115A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 37. Add: (57893A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 252, paragraph 177a (4). Delete line 1 and substitute:

Remove drawbar spring (58, fig. 219.1) (on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG) and the two dowels (14, fig. 224) from the.

Page 253, figure 224 (page 32 of C1), legend. Make the following changes:

Item 6. Add: (10052 on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 15. Add: (57927 on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 34. Add: (57928 on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 35. Add: (62142 on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 38. Add: (53972 on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 39. Add: (57926A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 255. Make the following changes:

Paragraph 177b (13). Delete lines 1 and 2 and substitute:

Position the two dowels (14) and reconnect drawbar spring (58, fig. 219.1) (on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-

396/FG) in the function stop bar support guide (15, fig. 224).

Add paragraph 178.1 after 178.

178.1. Disassembly and Reassembly of Function Sensing Lever Group (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 225.1)

a. Disassembly.

- (1) Remove the square shaft as described in paragraph 171a.
- (2) Remove the line feed and platen shift mechanism as described in paragraph 170.1a.
- (3) Remove the retainer ring (1) from the stud on the connector link (2). Remove the connector link from engagement with the double blocking lever (12, fig. 231). Disengage the end of the felt (3, fig. 225.1) from the end of the horizontal carriage-return link (5). Remove the connector link and felt.
- (4) Remove the retainer ring (4) from the pivot stud on the carriage-return bellcrank (13); remove the horizontal carriage-return link (5) from the stud.
- (5) Remove the retainer rings (6 and 7) from the pivot studs. Remove the vertical carriage-return link (8) from the pivot studs.
- (6) Remove the felt washer (9) from the pivot stud on the carriage-return sensing lever (24). Remove the felt washers (10 and 11) from the pivot studs on the carriage-return bellcrank (13).
- (7) Remove the retainer ring (12) and the carriage-return bellcrank (13) from the carriage-return bellcrank pivot (15).
- (8) Remove the felt washer (14) and the carriage-return bellcrank pivot (15).
- (9) Remove the flat washer (16) from the stop arm shaft.
- (10) Remove the line-feed-on-carriage-return sensing lever (17), flat washer

(18), line-feed sensing lever (19), flat washer (20), figures shift sensing lever (21), and flat washer (22) from the sleeve (25).

- (11) Remove the carriage-return-sensing-lever spring (23) from the carriage-return sensing lever (24) and from the bellcrank pivot bracket.
- (12) Remove the carriage-return sensing lever (24) from the sleeve (25). Remove the sleeve from the stop arm shaft.
- (13) Remove the two felt washers (26) from the spacing collar (27). Remove the spacing collar and the tolerance takeup flat washer (28) from the stop arm shaft.

b. Reassembly.

- (1) Reassemble the function sensing lever group as indicated in figure 225.1; the sequence for assembling the parts is the reverse of the disassembly sequence. Perform related adjustment described in paragraph 271.1.
- (2) Replace the line feed and platen shift mechanism (par. 170.1).
- (3) Replace the square shaft (par. 171).

Page 256. Add figure 225.1 after figure 225 (page 32 of C1).

Page 263. Make the following changes:

Delete figure 232 and substitute:

Item 19. Change: "55424" to: 55524.

Item 27. Add: (64926A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 29. Add: (63547A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Legend. Make the following changes:

Add the following at the end of the legend:

30 Self-locking hexagonal nut, 10501

31 Carriage rack retainer, 62268

32 Flat washer, 10454

33 Shim, 59561 and/or 59562

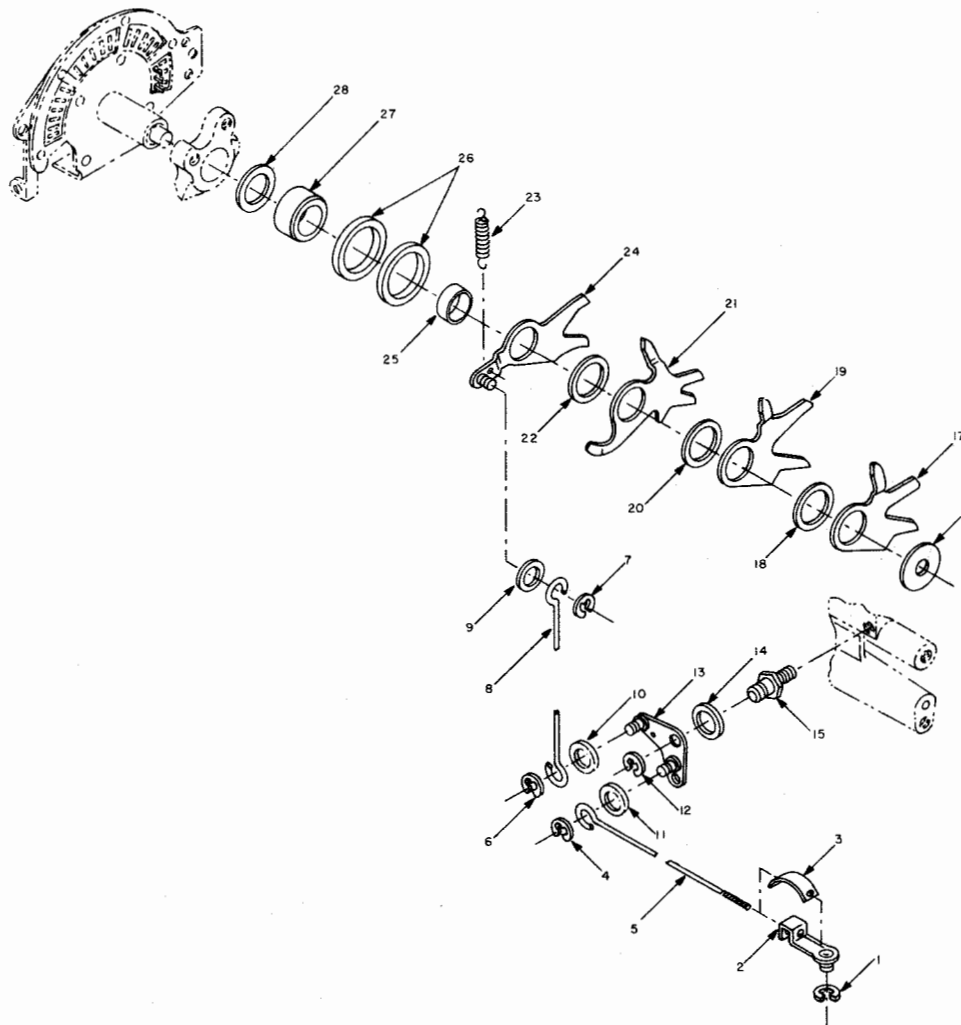
34 Retainer post, 62267

35 Lockwasher, 10404

36 Machine screw, 10303

37 Lockwasher, 10429

38 Plain washer, 10450



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- | | |
|--|--|
| 1 Retainer ring, 10960 | 15 Carriage-return bellcrank pivot, 52552 |
| 2 Connector link, 53161A | 16 Flat washer, 50374 |
| 3 Felt, 61677 | 17 Line-feed-on-carriage-return sensing lever, 62140 |
| 4 Retainer ring, 10960 | 18 Flat washer, 62134 |
| 5 Horizontal carriage-return link, 50864 | 19 Line-feed sensing lever, 62139 |
| 6 Retainer ring, 10960 | 20 Flat washer, 62134 |
| 7 Retainer ring, 10960 | 21 Figures-shift sensing lever, 62141 |
| 8 Vertical carriage-return link, 50483 | 22 Flat washer, 62135 |
| 9 Felt washer, 61672 | 23 Carriage-return sensing lever spring, 59442 |
| 10 Felt washer, 61483 | 24 Carriage-return sensing lever, 62128A |
| 11 Felt washer, 61483 | 25 Sleeve, 62594 |
| 12 Retainer ring, 10949 | 26 Felt washer, 61497 |
| 13 Carriage-return bellcrank, 59441A | 27 Spacing collar, 57923 |
| 14 Felt washer, 61673 | 28 Tolerance takeup flat washer, 51100 |

Figure 225.1. Function sensing lever group, exploded view (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

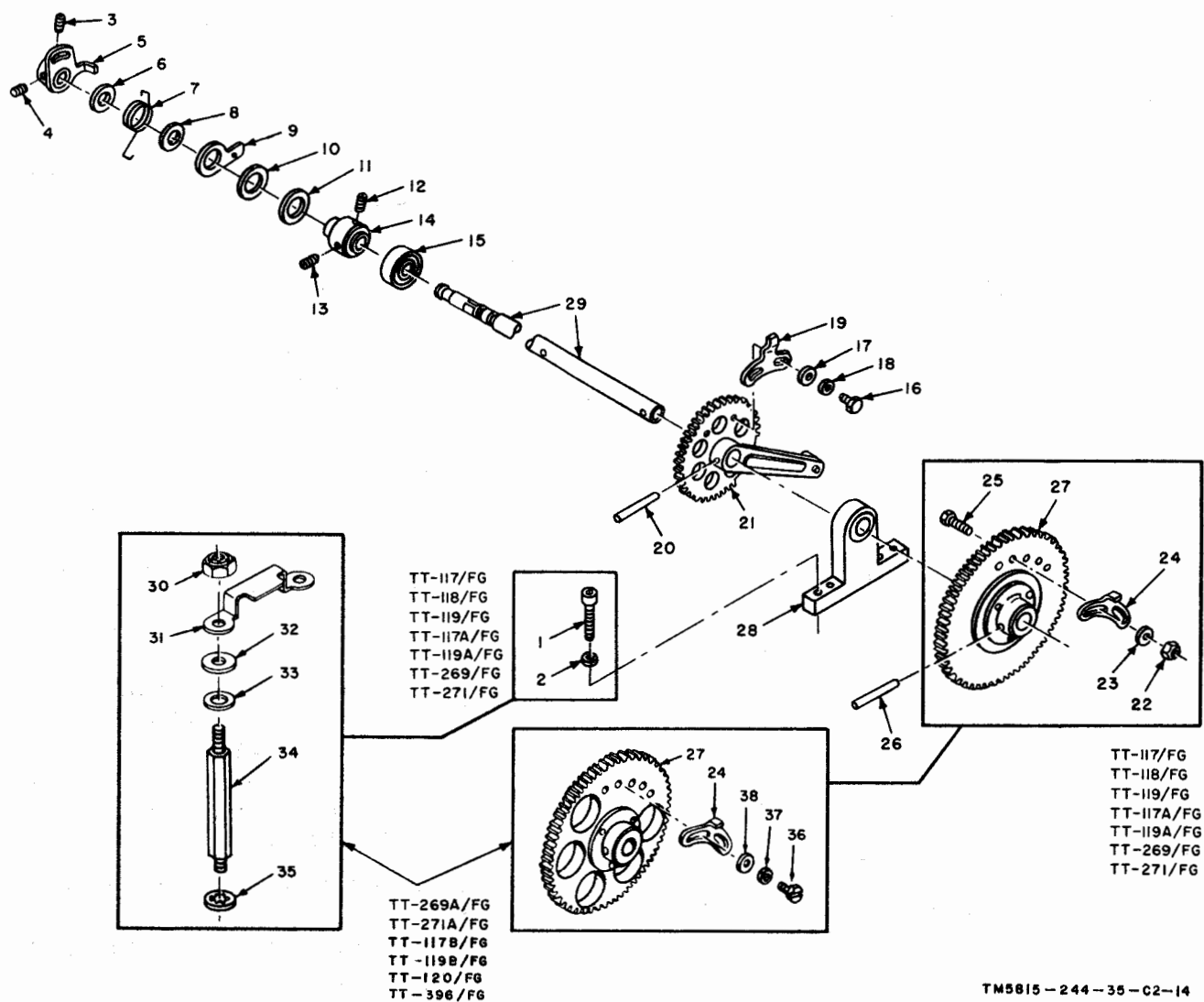


Figure 232. Carriage rack drive shaft, exploded view.

Paragraph 185a(3), line 1. After "carriage" add: (and carriage rack retainer on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 264, paragraph 185. Make the following changes:

Subparagraph a. Add subparagraph (10.1) after subparagraph (10).

(10.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, remove the two machine screws (36), lock-washers (37), and plain washers

(38) that hold the margin bell pawl trip arm (24) to the carriage rack driving gear; remove the margin bell pawl trip arm.

Subparagraph b(1), line 2. After "shaft" add: (and carriage rack retainer on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Add subparagraph b(1.1) after subparagraph b(1).

(1.1) On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG,

TT-271A/FG, and TT-396/FG adjust the carriage rack retainer as described in paragraph 304.1.

Page 268, figure 235, legend. Make the following changes:

Item 16. Add: (57929A on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 20. Add: (57933A on TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 24. Add: (59394 on TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 270, figure 236, legend. Make the following changes:

Item 3. Add: (57930A on TT-269A/FG, TT-271A/FG, and TT-396/FG).

Item 13. Add: 51641.

Page 330. Make the following changes:

Delete figure 273 (page 50 of C1) and substitute:

Legend. Make the following changes:

Items 1, 2, 3, 4, and 5. Change "55009" to: 61000.

Item 39. Add: (61001 on TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51).

Add the following at the end of the legend:

- 73 Machine screw, 10006
- 74 Flat washer, 10459
- 75 Clamp nut, 50174
- 76 Y-lever stud bracket, 60677
- 77 Machine screw, 10001
- 78 Lockwasher, 10429
- 79 Flat washer, 50319
- 80 Y-lever eccentric tie, 60678
- 81 Spacer, 60679

Page 331, paragraph 236. Make the following changes:

Subparagraph *a*. Add subparagraphs (4.1) and (4.2) after subparagraph (4).

(4.1) On the TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51, and Order No. 35997-PC-62-C5-51, remove

the machine screw (73), flat washer (74), and clamp nut (75) that hold the Y-lever stud bracket (76) to Y-lever pivot post stud (37); remove the Y-lever stud bracket from the Y-lever pivot post stud and the Y-lever stop (39). Remove the spacer (81) from the Y-lever pivot post stud (37).

(4.2) On the TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51, and Order No. 35997-PC-62-C5-51, remove the two machine screws (77), lockwashers (78), and flat washers (79) that hold the Y-lever eccentric tie (80) to the Y-lever stud bracket (76); remove the Y-lever eccentric tie.

Subparagraph *b*. Add subparagraph (3) after subparagraph (2).

(3) On the TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51, adjust the selector levers and selector Y-levers as described in paragraphs 409, 410.1, 410.2, 411, 412, and 438.

Page 336, figure 276, legend. Item 18, after "54734" add:

54730A (TT-270/FG, TT-272/FG, and TT-397/FG only).

Page 358. Add paragraph 263.1 and figure 287.1 after paragraph 263.

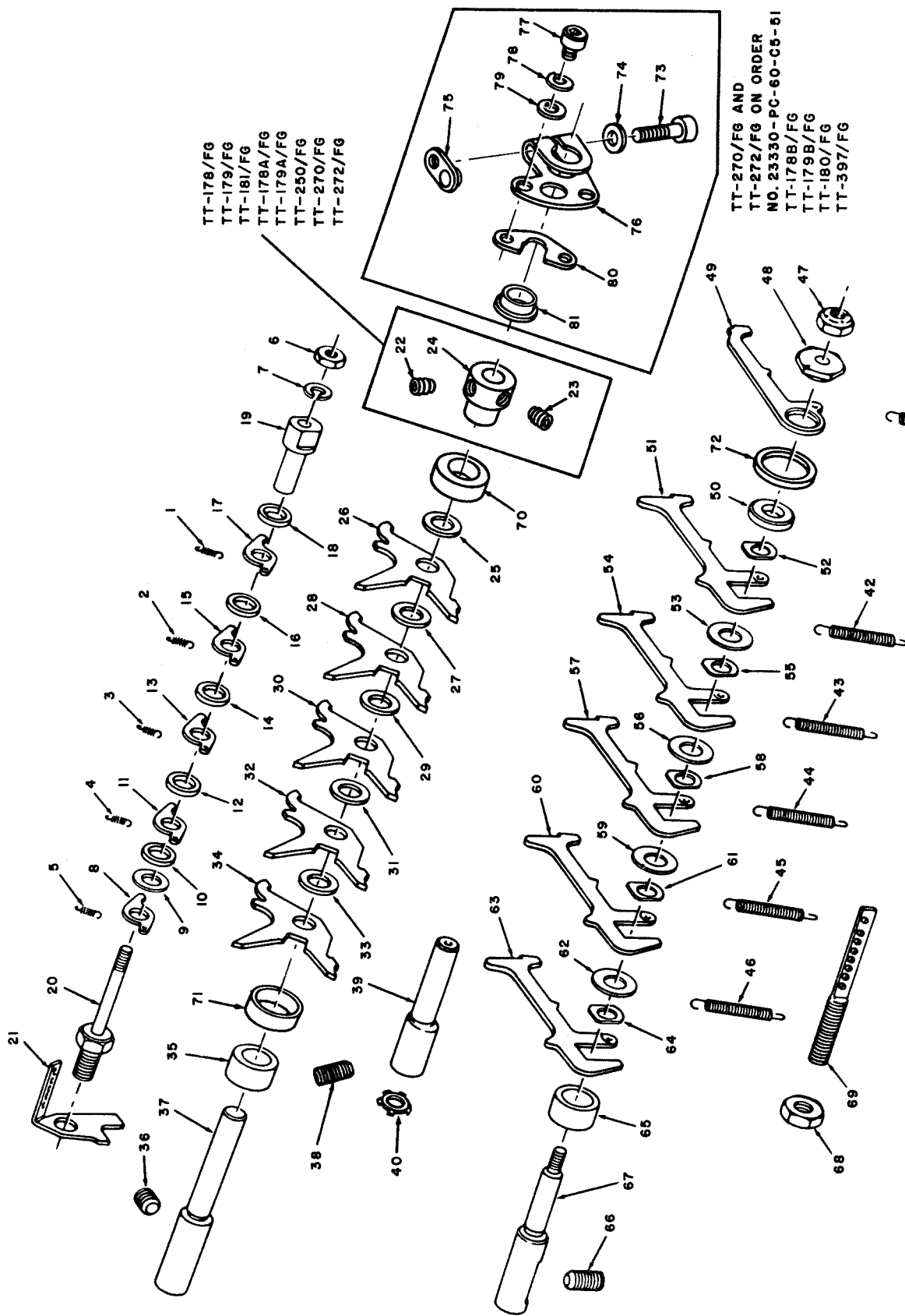
263.1. Motor Mounting and Motor Gears Backlash Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 287.1)

Note. This adjustment should be performed whenever the operating speed is changed. The adjustment procedure is the same for synchronous or series-governed motors.

a. Requirement.

(1) The worm gear should be centered with the main shaft driven gear.



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Figure 273. Y-levers and selector levers, exploded view.

- (2) There should be a minimum of backlash, with no binding, between the main shaft driven gear and worm gear.

b. Method of Checking.

- (1) Check the requirement given in *a*(1) above visually.
- (2) Grasp the main shaft, rock the driven gear back and forth to determine the gear backlash. Check the gear backlash in various positions of the shaft cycle.

c. Adjustment.

- (1) Loosen the machine screws and position the threaded portion of the sleeves flush with the frame. Position the motor so that the worm gear is centered on the main shaft driven gear. Tighten the machine screws friction-tight and recheck the requirement.
- (2) Loosen the machine screws and turn the sleeves until there is a minimum amount of backlash, with no binding, between the worm gear and the main shaft driven gear. Tighten the machine screws and recheck the requirement.

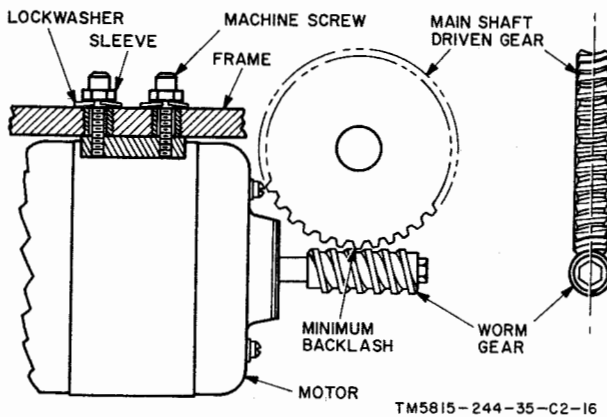


Figure 287.1. Motor mounting and motor gears backlash adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 360. Make the following changes:

Add figure 291.1 after figure 291:

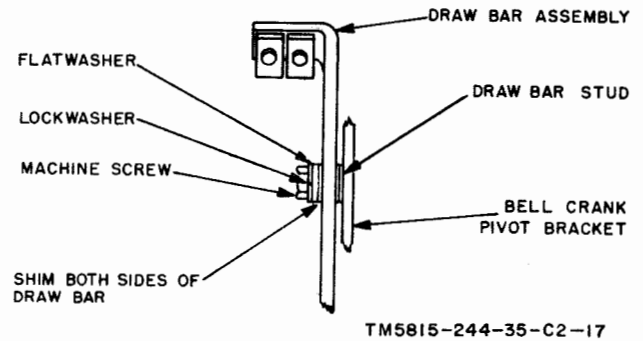


Figure 291.1. Drawbar shimming adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Add paragraph 268.1 after paragraph 268.

268.1. Drawbar Shimming Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 291.1)

Note. This is a preliminary adjustment; for final adjustment, see paragraph 271.2. The function shaft assembly must be removed from the machine before the following adjustment can be performed.

a. Requirement.

- (1) The drawbar assembly should be centered on the drawbar stud.
- (2) The drawbar assembly should be free to move up and down, and the end play must not exceed 0.010 inch.

b. Adjustment. Remove the machine screw, lockwasher, and flat washer. Install shims of equal total thickness on both sides of the drawbar to meet the requirements given in *a*(1) and (2). Reinstall the machine screw, lockwasher, and flat washer. Replace the function shaft assembly in the machine.

Page 362. Make the following changes:

Add figures 294.1, 294.2, and 294.3 after figure 294.

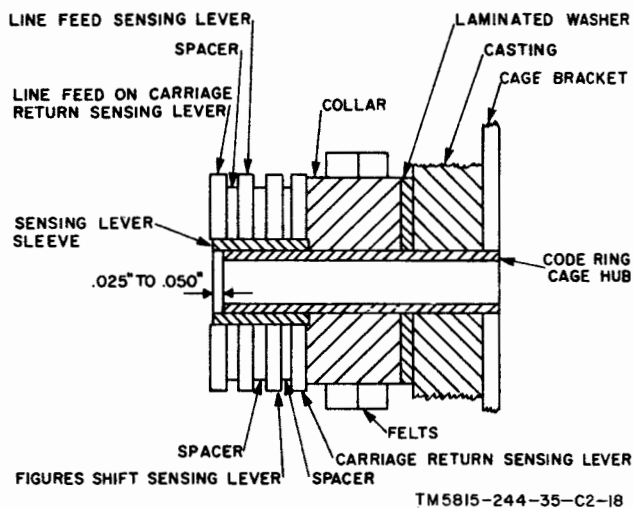


Figure 294.1. Function sensing levers end play adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Add paragraphs 271.1, 271.2, and 271.3 after paragraph 271.

271.1. Function Sensing Levers End Play Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)
(fig. 294.1)

Note. Perform this adjustment whenever the coding cage, sensing levers, or spacers are changed, replaced, or removed.

a. Requirement. The sensing lever sleeve should project 0.025 to 0.050 inch beyond the hub of the code-ring cage.

b. Method of Checking. Remove the necessary parts to gain access to the sensing levers. Remove the flat washer and the line-feed-on-carriage-return sensing lever. Remove the anti-bounce clutch shaft. Place a straightedge against the end of the sensing lever sleeve and check the requirement with wire feeler gages.

c. Adjustment. Remove the remaining sensing levers, flat washers, sensing lever sleeve, and spacing collar. Replace the tolerance take-up flat washer with one which is peeled to the correct thickness, and has all burrs removed. Reinstall the collar and sleeve, and recheck the requirement. Make sure the carriage-return sensing lever does not rub against the stop bar support bracket. Reinstall the sensing levers

and other parts removed. Check the related adjustments as described in paragraphs 273 and 322. If the code-ring cage was removed, also check related adjustments as described in paragraphs 276.1, 277, 281, 282, and 295.

271.2. Function Sensing Cam and Drawbar Adjustment (TT-117B, TT-119B, TT-120, TT-269A/FG, TT-271A/FG, and TT-396/FG)
(fig. 294.2)

a. Requirements.

- (1) When the function sensing cam assembly is against the laminated washer,

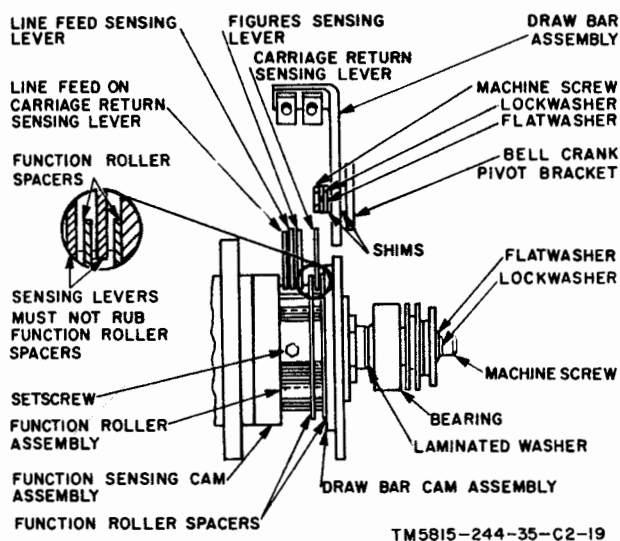


Figure 294.2. Function sensing cam and drawbar adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

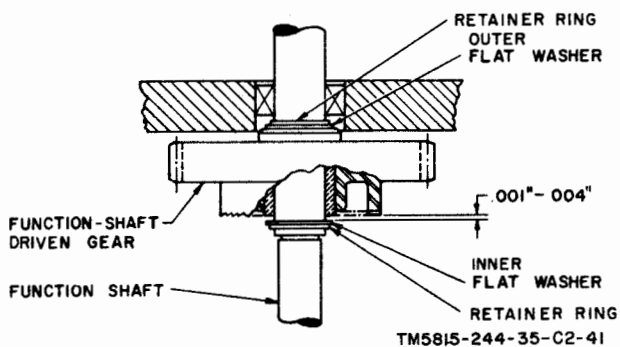


Figure 294.3. Function shaft driven gear end play adjustment.

the carriage - return sensing lever should ride on its function rollers without rubbing the function roller spacers; the figures sensing lever should not rub the function roller spacer.

- (2) The drawbar should operate freely in the drawbar cam assembly.

b. Method of Checking.

- (1) With the function shaft in the stop position, check the requirement given in a(1) above visually.
- (2) Manually operate the drawbar and check for free movement. Manually rotate the function shaft and check the requirement in various positions.

c. Adjustments.

- (1) Loosen the two setscrews in the function sensing cam assembly to allow the friction clutch spring to move the function cam assembly toward the selector side of the machine. Determine with feeler gages the required thickness for a laminated washer. Locate the two setscrews on their respective flats and tighten them. Remove the function shaft assembly from the machine. Remove the machine screw, lockwasher, and plain washer from the end of the function shaft assembly. Disassemble the necessary parts and install the laminated washer of the required thickness. Reassemble the function shaft; the sequence for assembling the parts is the reverse of the disassembly sequence. Temporarily install the function shaft assembly in the machine and check the requirements. Readjust if necessary.
- (2) Remove the temporarily installed function shaft assembly, and remove the machine screw, lockwasher, and flat washer that hold the drawbar and shim spacers. Install shim spacers to meet the requirement given in a(2) above. Reinstall the machine screw, lockwasher, and flat washer on the function shaft assembly. Replace the

function shaft assembly in the machine. Perform the related adjustment as described in paragraph 319.

271.3. Function Shaft Driven Gear End Play Adjustment

(fig. 294.3)

a. Requirement. There should be a 0.001- to 0.004-inch clearance between the function shaft driven gear and the inner flat washer when the driven gear is pressed against the outer flat washer.

b. Adjustment.

- (1) Remove the function shaft assembly (par. 173a).
- (2) Remove the function cam (44, fig. 221), sleeve bearing (45), print cam (42), flexible coupling disk (40), clutch spring (38), function shaft sliding clutch drum (37), retainer ring (36), and flat washer (35).
- (3) Add or remove flat washers (34) as required; replace the flat washers and retainer ring and recheck the clearance.
- (4) Reassemble and install the function shaft assembly (par. 173b).

Page 364. Make the following changes:

Add figure 299.1 after figure 299.

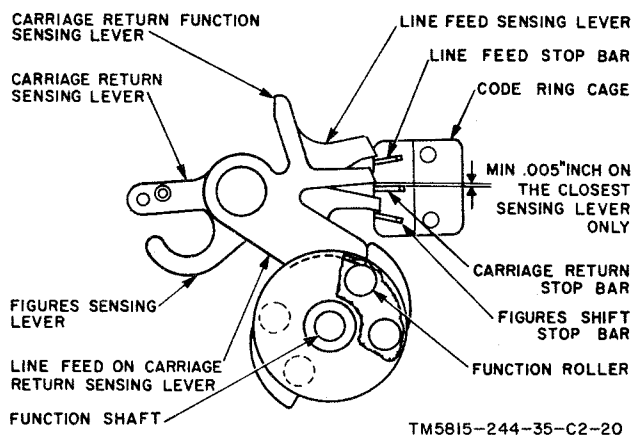


Figure 299.1. Code-ring cage adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Add paragraph 276.1 after paragraph 276.

276.1. Code-Ring Cage Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 299.1)

a. Requirement. There should be a 0.005-inch minimum clearance between the stop bars and their associated function sensing levers, when the sensing lever concerned is at maximum displacement by the function roller.

b. Method of Checking. Position the function shaft until the sensing levers are at maximum displacement by the function rollers; check the requirement with a 0.005-inch feeler gage.

c. Adjustment. Loosen the two machine screws that hold the code-ring cage, and partially rotate the code-ring cage to meet the requirement. Tighten the two machine screws and recheck the requirement. Perform related adjustments as described in paragraphs 277, 281, 282, and 321.

Page 366, paragraph 281b. Make the following changes:

Line 3. After "stop" add: (On the TT-117B/FG, TT-118B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, loosen the Y-lever eccentric tie machine screws also (fig. 323.1).)

Line 13. After "screw" add: (On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, tighten the Y-lever eccentric tie machine screws also, and check related adjustment described in paragraph 301.1.)

Page 372. Add paragraph 292.1 after paragraph 292.

292.1. Selector Magnet Armature Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 423.2)

a. Requirement. There should be 0.004- to 0.010-inch clearance between the No. 1 selector lever and the No. 1 Y-lever when the levers are positioned as follows:

- (1) No. 1 Y-lever is in the mark (clockwise) position, against the Y-lever eccentric stop.
- (2) No. 1 selector lever is in the mark position and is against a high part of its selector cam.

b. Method of Checking. Set the No. 1 Y-lever to the marking (clockwise) position. Hold the armature in the marking position and turn the selector camshaft until the No. 1 selector lever is on a high part of its selector cam. Check the clearance with a feeler gage.

c. Adjustment. Loosen each of the selector magnet bracket mounting screws slightly, and then tighten them friction-tight. Adjust the selector magnet bracket adjustment screws until the requirement (a above) is met. Tighten the two bracket mounting screws and recheck the requirement.

Page 377. Make the following changes:

Add figure 323.1 after figure 323.

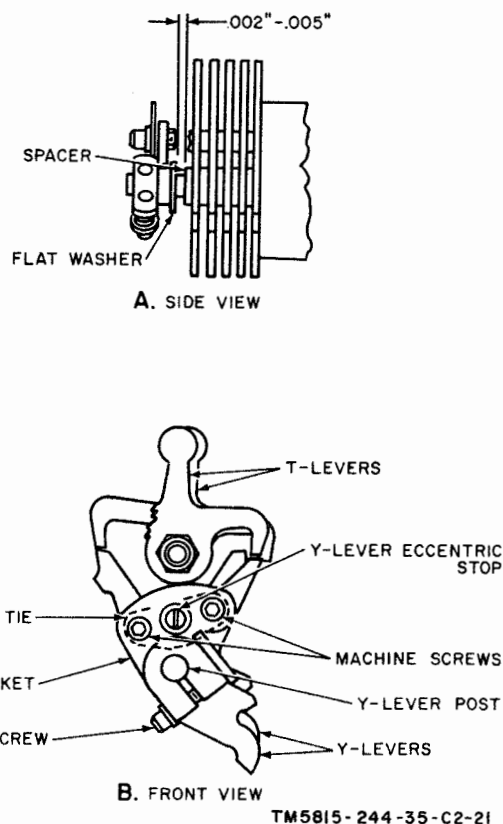


Figure 323.1. Y-lever stud bracket adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Add paragraph 301.2 after paragraph 301.1 (page 65 of C1).

301.2. Y-Lever Stud Bracket Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 323.1)

Note. The Y-lever eccentric stop preliminary adjustment (par. 281) should be completed before this adjustment is performed.

a. Requirements.

- (1) There should be 0.002- to 0.005-inch clearance between the spacer and flat washer (A, fig. 323.1).
- (2) The outer ends of the Y-lever eccentric stop and the Y-lever pivot stud should be secured to each other firmly by the Y-lever eccentric tie (B, fig. 323.1).

b. Method of Checking.

- (1) Set the machine to the stopped position. Take up the play of the Y-levers in the direction of the frame assembly. Check the requirement given in a(1) above with feeler gages.
- (2) Check the requirement given in a(2) above visually.

c. Adjustment.

- (1) Loosen the two machine screws of the Y-lever eccentric tie and the clamping screw of the Y-lever stud bracket. Position the bracket to meet the requirement. Tighten the clamping screw.
- (2) Position the Y-lever eccentric to obtain maximum engagement with the Y-lever eccentric stop and tighten the two machine screws.

Page 378. Make the following changes:

Add figure 325.1 after figure 325.

Add paragraph 304.2 after paragraph 304.1 (page 65 of C1).

304.2. Carriage Rack Retainer Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG and TT-396/FG)

(fig. 325.1)

Note. The adjustments described in paragraph 303 and 304 should have been completed before performing this adjustment.

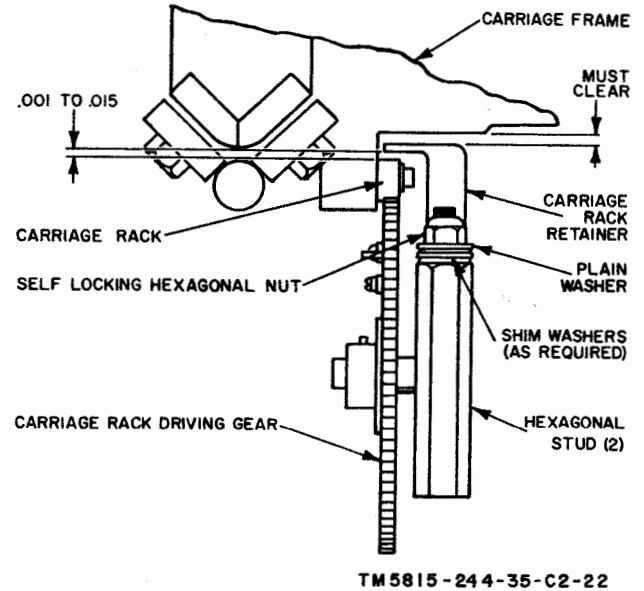


Figure 325.1. Carriage rack retainer adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

a. Requirement. There should be 0.001- to 0.015-inch clearance between the carriage rack and the carriage rack retainer.

b. Method of Checking. Check the requirement with feeler gages.

c. Adjustment.

- (1) Remove the two self-locking hexagonal nuts and plain washers that secure the carriage rack retainer to the hexagonal studs. Remove the carriage rack retainer.
- (2) Remove the shim washers or add the new ones to meet the requirement. (Use shims, part No. 59561, 0.005 inch or 59562, 0.010 inch as required.)
- (3) Replace the retainer, washers, and self-locking nuts.
- (4) Tighten the nuts and recheck the requirement.

Page 384. Make the following changes:

Add figure 340.1 after figure 340.

Paragraph 319. Make the following changes:

Subparagraph a(3), last line. Add: On the TT-117B/FG, TT-119B/FG, TT-

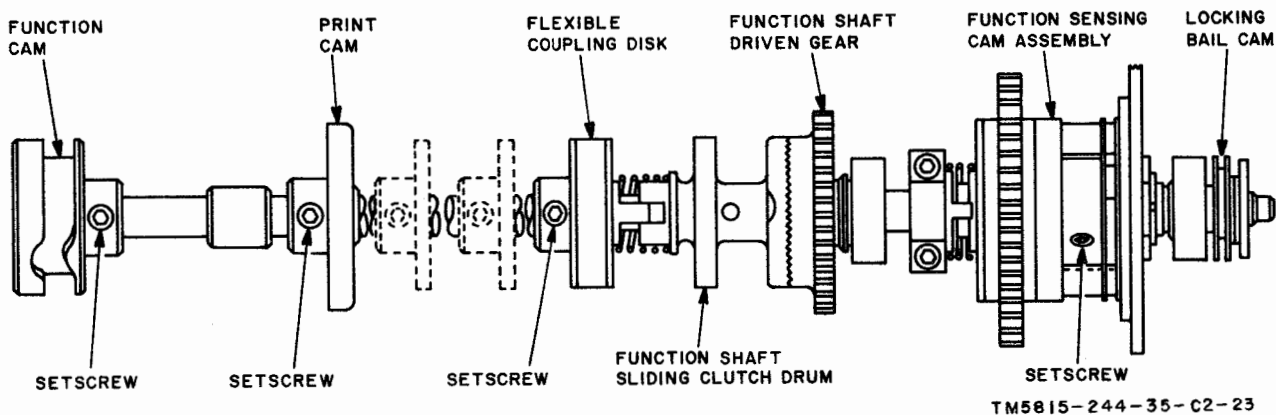


Figure 340.1. Angular relationship of function shaft parts (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, each function sensing lever should fall off of its restoring roller.

Subparagraph b (3), last line. Add: On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, make sure that the line-feed sensing lever has dropped off its restoring roller on the function sensing cam assembly.

Page 385. Make the following changes:

Paragraph 319c (3), last line. Add: On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, loosen the setscrews in the function sensing cam assembly.

Subparagraph (4). After the subparagraph add: Check the related adjustment (par. 321).

Add figure 341.1 after figure 341.

Add paragraph 320.1 after paragraph 320.

320.1. Function Punch Bar and Sideplate Adjustment (fig. 341.1)

Note. This adjustment should be performed when either the punch bar guide block or the sideplate have been disassembled.

a. Requirement. There should be 0.001- to 0.008-inch clearance between the punch bars and the aperture gate when the aperture gate is aligned with each punch bar.

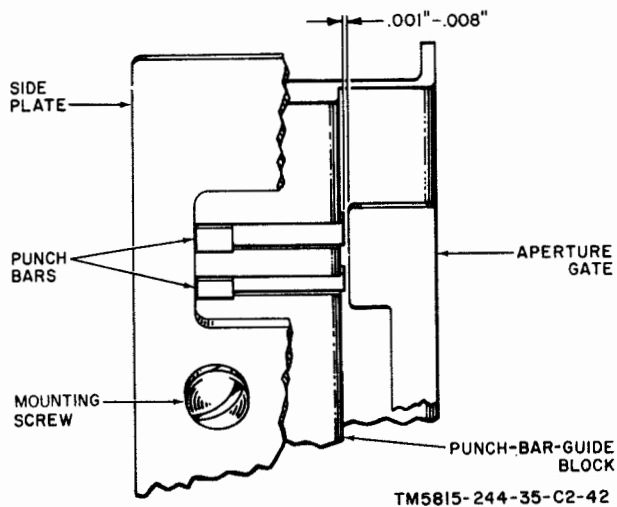


Figure 341.1. Function punch bar and sideplate adjustment.

b. Method of Checking. Align the aperture gate with the punch bars and check the requirement with feeler gages.

c. *Adjustment.* Loosen the sideplate mounting screws. Position the sideplate to meet the requirement (a above), and tighten the mounting screws. Recheck the requirement.

Page 387. Make the following changes :

Add figure 343.1 after figure 343.

Add paragraph 323.1 after paragraph 323.

323.1. Platen Shaft End Play Adjustment

a. *Requirement.* There should be 0.002- to 0.005-inch clearance between the shaft collar and the bearing when the platen shaft is held all the way to the left.

b. *Adjustment.* Loosen the setscrews in the shaft collar and position the collar to meet the requirement (a above). Tighten the setscrews and recheck the requirement.

Page 388. Add figure 345.1 after figure 345.

Page 389. Add paragraph 325.1 after paragraph 325.

325.1. Paper Guide Alignment and Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG)

(fig. 345.1)

a. *Requirement.*

- (1) The slots in the paper guides should be centered over the sprocket feed pins.

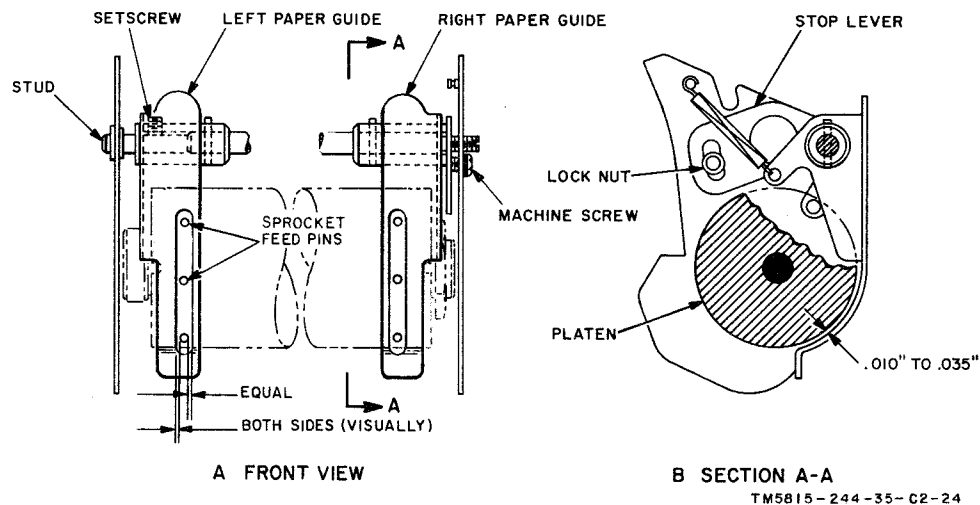
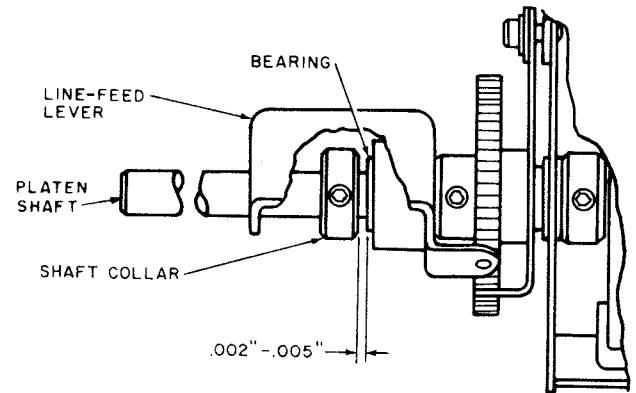


Figure 345.1. Paper guide alignment and adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).



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Figure 343.1. Platen shaft end play adjustment.

- (2) There should be 0.010- to 0.035-inch clearance between the paper guides and the platen.

b. *Method of Checking.*

- (1) Check the requirement given in a(1) above visually.
- (2) Check the requirement given in a(2) above with feeler gages.

c. *Adjustment.*

- (1) Loosen the setscrew in the left-hand paper guide and position the paper guides to meet the requirement. Tighten the setscrew and recheck the requirement.

- (2) Loosen the machine screw and locknut securing the stop lever. Position the lever to meet the requirement. Tighten the machine screw and nut and recheck the requirement. Readjust if necessary.

Page 391. Delete paragraph 333 and substitute:

333. Platen Shift Final Adjustment

(fig. 353)

Note. This adjustment must be performed when the operating speed of the teletypewriter is changed.

Perform the adjustments described in paragraphs 331 and 332 before proceeding with the following adjustment.

a. Requirements.

Note. Perform the preliminary requirements before adjusting the teletypewriter under power.

- (1) *Preliminary.* With the power off, position the Y-levers for the figures shift code group and manually trip the transfer lever latch. Manually turn the motor until the figures shift cam follower is on the highest part of the figures shift cam (on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, turn the motor until the drawbar is on the highest part of drawbar cam) and the play of the aperture gate is removed in an upward direction. (Prepare the teletypewriter in this manner for each of the following operating speeds.)

- (a) *60-wpm operation.* There should be a 0.010-inch maximum gap between the top surface of the lug on the aperture gate and the latching surface of the platen latch after latching. Use the side of the figures shift cam that provides the greater rise. (On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, use the side of the drawbar cam that provides the greater rise.)
- (b) *100-wpm operation.* The bottom surface of the lug on the aperture gate should be flush (visual check) with

the latching surface of the platen latch within ± 25 percent of the thickness of the lug on the aperture gate. Use the side of the figures shift cam that provides the greater rise. (On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, use the side of the drawbar cam that provides the greater rise.)

- (c) *66-, 75-, and 100-wpm operation.* The tolerance between the lug on the aperture gate and the latching surface of the platen latch should be determined relative to the information given in (a) or (b) above.

- (2) *Final.* When the teletypewriter is operated *under power* in the *letters* position and the *figures* code group is received, the platen latch should pass over the lug of the aperture gate without excessive overtravel to cause misalignment of the first character printed immediately after the platen shifts to the *figures* position.

b. Method of Checking. An operational check of the figures shift mechanism must be made while the teletypewriter is operated *under power* because the overtravel of the mechanism is a resultant of the operating speed (opm) of the teletypewriter.

c. Adjustment. Loosen the platen shift arm mounting screw (fig. 350). Reposition the platen shift arm to meet the requirements and tighten the screw. Recheck the requirement. Readjust if necessary.

Page 392. Make the following changes:

Delete figure 353 and substitute new figure 353.

Add paragraph 334.2 after paragraph 334.1 (page 70 of C1).

334.2. Pawl and Drawbar Block Adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG) (fig. 355.2)

Note. When checking or performing this adjustment, the bellcrank assemblies should be against the stop. The platen shift bellcrank assembly and platen shift pawl

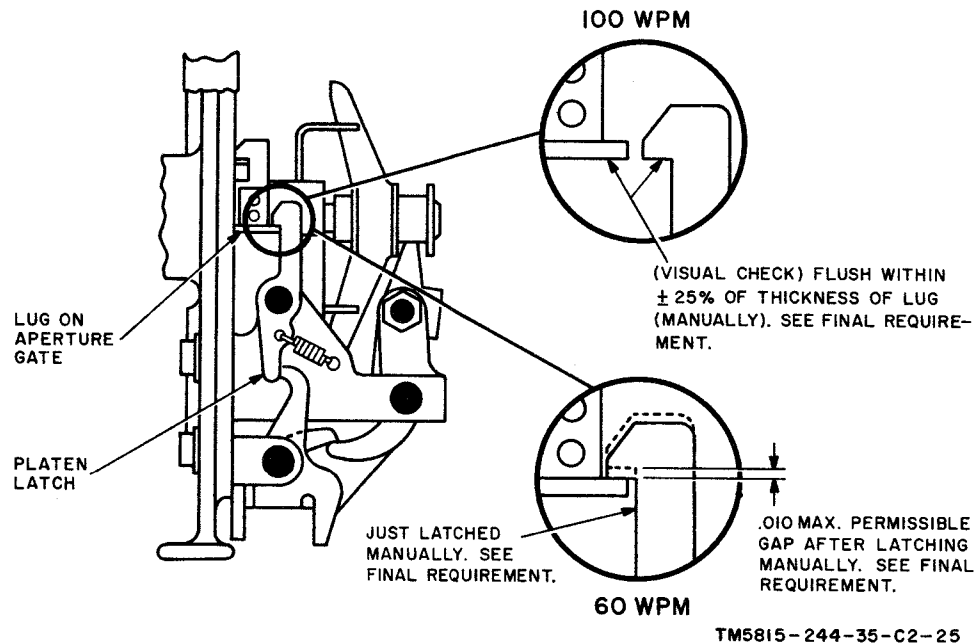


Figure 353. Platen shift final adjustment.

are not shown in the illustration; however, the procedure and illustration are similar to those for the line-feed bellcrank assembly and line-feed pawl.

a. Requirements.

- (1) With the platen in the *letters* position, there should be 0.030- to 0.060-inch clearance between the bottom of the drawbar block and the latching surface of the platen shift pawl when the figures sensing lever has just dropped off the function roller.
- (2) There should be 0.030- to 0.060-inch clearance between the bottom of the drawbar block and the latching surface of the line-feed pawl when the line-feed sensing lever has just dropped off the function roller.
- (3) There should be 0.030- to 0.060-inch clearance between the bottom of the drawbar block and the latching surface of the line-feed-on-carriage-return pawl when the line-feed-on-carriage-return sensing lever has just dropped off the function roller.
- (4) When any character is selected other than the line feed, carriage return, or figures; the function shaft rotated until the sensing levers have dropped off

the function roller; and the drawbar is pulled down until the drawbar blocks are adjacent to their respective pawls, there should be 0.015- to 0.025-inch clearance between the drawbar blocks and the line-feed-on-carriage-return pawl, line-feed pawl, and platen shift pawl.

b. Method of Checking.

- (1) With the platen in the *letters* position, select **FIGURES**, rotate the function shaft manually until the figures sensing lever has just dropped off the function roller. Check the requirement with feeler gages.
- (2) Select **LINE FEED**, rotate the function shaft manually until the line-feed sensing lever has just dropped off the function roller. Check the requirement with feeler gages.
- (3) Select **CARRIAGE RETURN**, rotate the function shaft manually until the line-feed-on-carriage-return sensing lever has just dropped off the function roller. Check the requirement with feeler gages.

c. Adjustment.

- (1) Position the machine as described in

method of checking. Loosen the machine screw securing the platen shift bellcrank assembly and position the platen shift bellcrank assembly to meet the requirement (a(1) above). Tighten the machine screw and recheck the requirement.

- (2) Loosen the spring-holding screw on the line-feed bellcrank assembly. Position the machine as described in the method of checking and position the line-feed bellcrank assembly to meet the requirement. Tighten the spring-holding screw and recheck the requirement.
- (3) Position the machine as described in the method of checking. Loosen the self-locking hexagonal nut that secures the line-feed adjustable pawl and position the line-feed adjustable pawl to meet the requirement in a(3) above. Tighten the self-locking hexagonal nut and recheck the requirement.
- (4) Position the machine as described in the method of checking. Loosen the two machine screws securing the two adjustable blocks and position the blocks to meet the requirement in a(4) above. Tighten the two machine screws and recheck the requirement.

Paragraph 335. Make the following changes:
 Heading: change "(fig. 355)" to: (fig. 355, 355.1, and 355.2). Add the following after the heading (page 70 of C1).

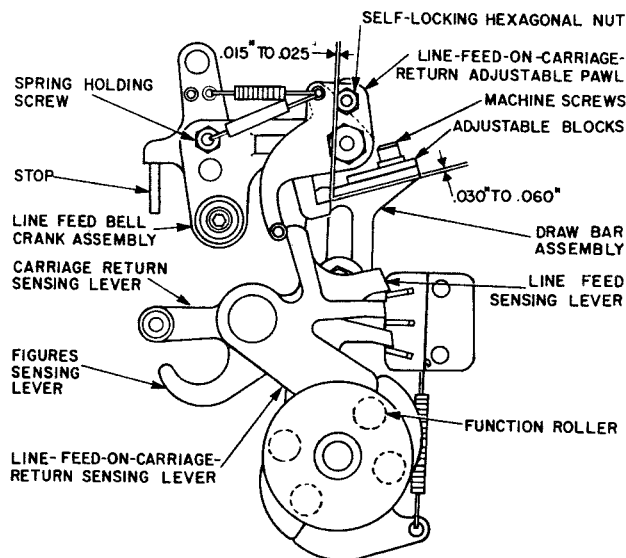
Note. This adjustment should be checked when the teletypewriter operating speed is changed.

Subparagraph b, line 6. After "cam" add: (On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, rotate the motor by hand until the drawbar roller is on a high part of its cam.)

Add the following at the end of the subparagraph: (On the TT-269A/FG and TT-271A/FG, check the adjustment described in paragraph 334.1.)

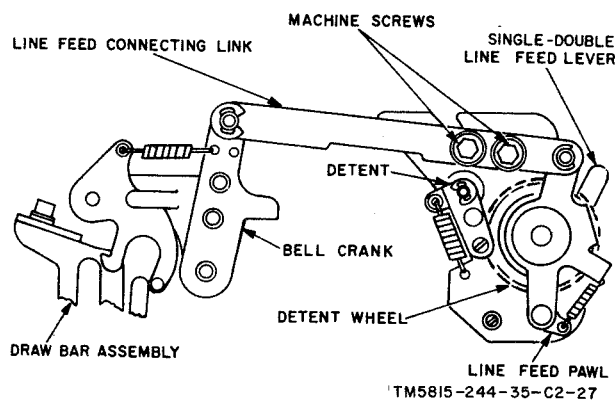
Add figures 355.2 and 355.3 after figure 355.1 (page 71 of C1).

Page 393, paragraph 337 (page 71 of C1).
 Heading. Change "(fig. 355.1)" to: (fig. 355.1 and 355.2).



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Figure 355.2. Pawl and drawbar block adjustment (TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).



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Figure 355.3. Line-feed connecting link adjustment (TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 396, paragraph 347a(2), lines 3, 13, and 16. After "collar" add: (ratchet on TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG).

Page 398, paragraph 348. Add the following after the heading:

Note. On the TT-117B/FG, TT-119B/FG, TT-120/FG, TT-269A/FG, TT-271A/FG, and TT-396/FG, the mechanism is the same as that shown in figure 366 except that the detent and the detent plate are facing in the opposite direction (see fig. 87.1) and positioned on the other end of the ribbon reversing beam.

Page 399. Make the following changes:

Add figure 367.1 after figure 367.

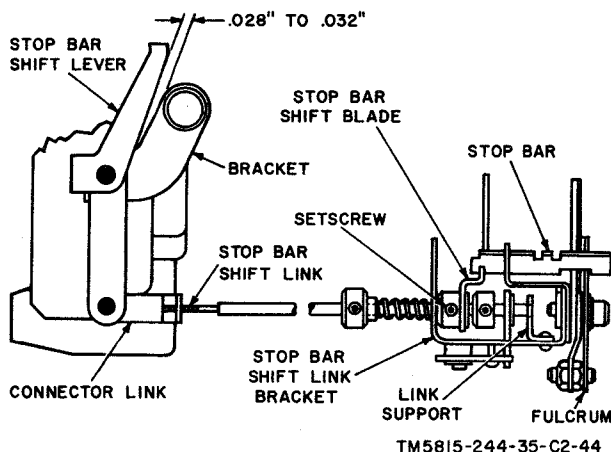


Figure 367.1. Stop bar shift link adjustment.

Add paragraph 350.1 after paragraph 350.

350.1. Stop Bar Shift Link Adjustment

a. Requirements.

- (1) The end of the stop bar shift link should be flush with the outer edge of the link support, and the stop bar shift blade should be against the shift link bracket when the teletypewriter is in the stopped position and the line-feed and carriage-return stop bars are held against their respective fulcrums.
- (2) There should be approximately .030-inch clearance between the stop bar shift lever and the shift lever bracket when the stop bar shift blade is held against the shift link bracket.

b. Method of Checking.

- (1) To check requirement a(1) above, remove the retainer ring that holds the adjusting link to the stop bar shift lever and disconnect the link from the lever. Hold the line-feed and carriage-return stop bars against their respective fulcrums and check the requirement. Reconnect the adjusting link.
- (2) To check requirement a(2) above, move the stop bar shift link until the stop bar shift blade is against the shift link bracket; check the clearance.

c. Adjustments.

- (1) Loosen the setscrew that holds the stop bar shift blade to the stop bar shift link. Remove the retainer ring that holds the adjusting link to the stop bar shift lever, and disconnect the link from the lever. Hold the line-feed and carriage-return stop bars against their respective fulcrums and position the stop bar shift link and stop bar shift blade to meet the requirement (a(1) above). Tighten the setscrew and recheck the requirement.
- (2) Hold the stop bar shift blade against the shift link bracket and turn the adjusting link to meet the requirement (a(2) above). Reconnect the adjusting link to the stop bar shift lever and secure it with the retainer ring.

Page 423. Make the following changes:

Paragraph 410. Add after the heading:
(Not applicable to the TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51).

Add paragraphs 410.1 and 410.2 after paragraph 410.

410.1. Y-Levers Stud Bracket Adjustment (TT-178/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51)

(fig. 423.1)

Note. The Y-lever eccentric stop preliminary adjustment (par. 281) should be completed before this adjustment is performed.

a. Requirements.

- (1) There should be 0.002- to 0.005-inch clearance between the spacer and flat washer (A, fig. 423.1).
- (2) The outer ends of the Y-lever eccentric stop and the Y-lever pivot stud should be secured to each other firmly by the Y-lever eccentric tie (B, fig. 423.1).

b. Method of Checking.

- (1) Set the machine to the stopped posi-

tion. Take up the play of the Y-levers in the direction of the frame assembly. Check the requirement in *a*(1) above with feeler gages.

- (2) Check the requirement in *a*(2) above visually.

c. Adjustment.

- (1) Loosen the two machine screws of the Y-lever eccentric tie and the clamping screw of the Y-lever stud bracket. Position the bracket to meet the requirement. Tighten the clamping screw.
- (2) Position the Y-lever eccentric to obtain maximum engagement with the Y-lever eccentric stop and tighten the two machine screws.

410.2. Selector Magnet Armature Adjustment (TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51)

a. Requirement. There should be 0.004- to 0.010-inch clearance between the No. 1 selector lever and the No. 1 Y-lever when the levers are positioned as follows:

- (1) No. 1 Y-lever is in the mark (clockwise) position against the Y-lever eccentric stop.
- (2) No. 1 selector lever is in the mark position and is against a high part of its selector cam.

b. Method of Checking. Set the No. 1 Y-lever to the marking (clockwise) position. Hold the armature in the marking position and turn the selector camshaft until the No. 1 selector lever is on a high part of its selector cam. Check the clearance with a feeler gage.

c. Adjustment. Loosen each of the selector magnet bracket mounting screws slightly, and then tighten them friction-tight. Adjust the selector magnet bracket adjustment screws until the requirement (*a* above) is met. Tighten the two bracket mounting screws and recheck the requirement.

Page 424. Make the following changes:

Figure 423. Add the following after the

caption: (not applicable to the TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51).

Add figures 423.1 and 423.2 after figure 423.

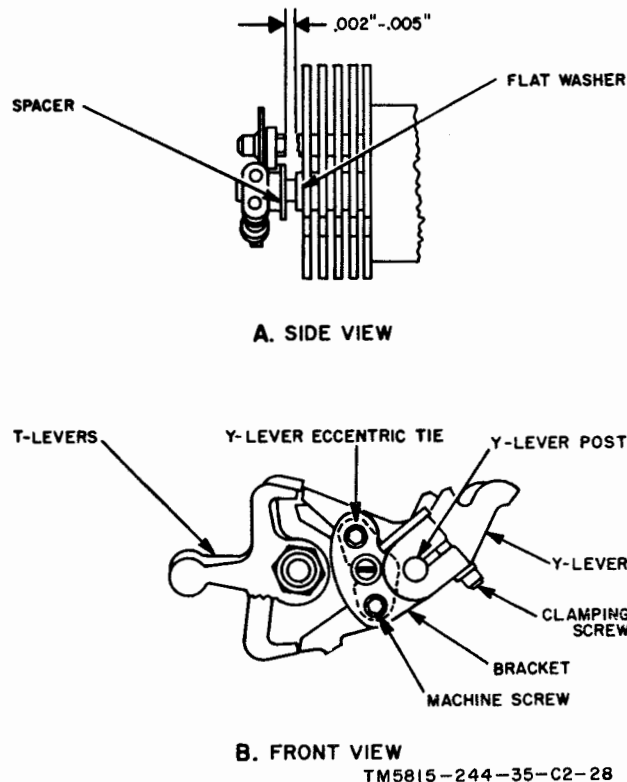


Figure 423.1. Y-levers stud bracket adjustment (TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51).

Page 457. Make the following changes:

Add paragraph 501.1 after paragraph 501.

501.1. Clutch Magnet Armature Eccentric Stud Adjustment (TT-270/FG, TT-272/FG, and TT-397/FG Only)

(fig. 503.1)

a. Requirement. With the stop lever unoperated and the clutch magnet deenergized, the clearance between the top of the eccentric stud and the armature indicates the required clearance between the armature and the stop lever when the clutch magnet is energized. The following chart shows the required clearance be-

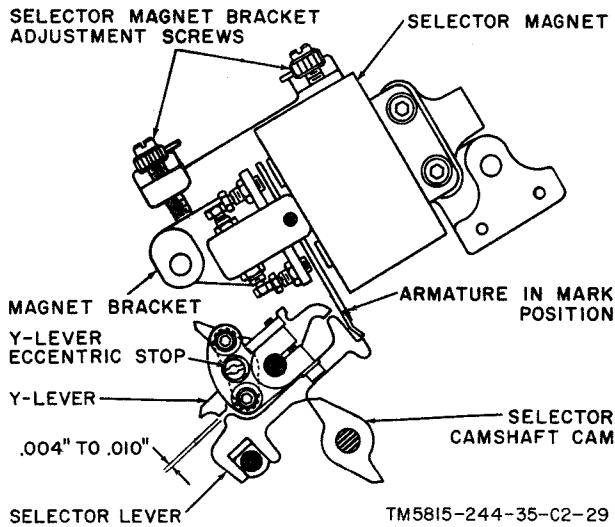


Figure 423.2. Selector magnet armature adjustment (TT-178B/FG, TT-179B/FG, TT-180/FG, TT-270/FG, TT-272/FG, and TT-397/FG, Order No. 23330-PC-60-C5-51 and Order No. 35997-PC-62-C5-51).

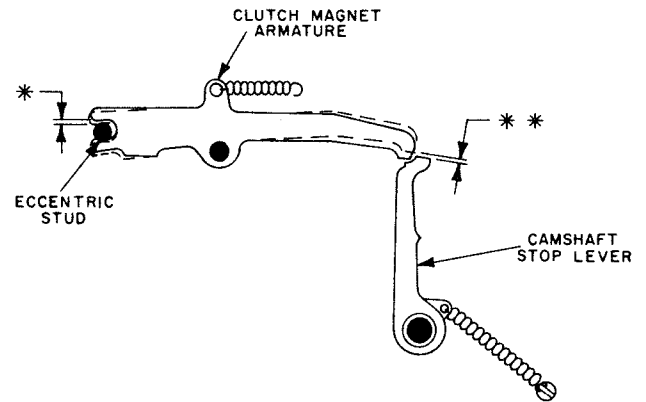
tween the armature and the stop lever for the corresponding clearance between the armature and the eccentric stud.

Clearance between armature and eccentric stud (in.)	Corresponding clearance between armature and stop lever (in.)
.008	.002 to .004
.009	.003 to .005
.010	.005 to .007
.011	.007 to .009
.012	.009 to .011

b. Method of Checking. With the stop lever unoperated and the clutch magnet deenergized, check the clearance between the top of the eccentric stud and the armature. From the above chart determine the required clearance between the armature and the stop lever. Position the armature against the top of the eccentric stud (energized position) and check the clearance between the armature and the stop lever.

c. Adjustment. Loosen the eccentric stud set-screw and position the eccentric stud as necessary. Tighten the setscrew and recheck the requirement. Check the related clutch magnet adjustment (par. 502).

Add figure 503.1 after figure 503.



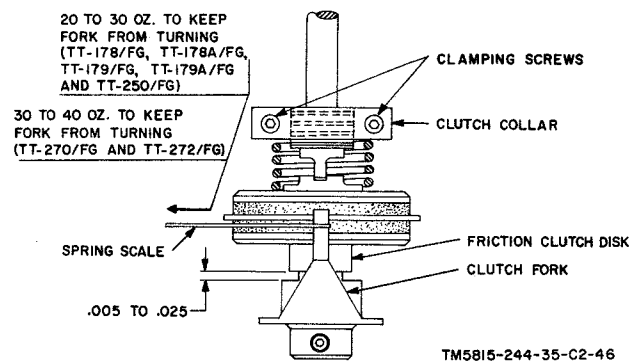
* CLEARANCE BETWEEN THE CLUTCH MAGNET ARMATURE AND THE ECCENTRIC STUD	** CLEARANCE BETWEEN THE CLUTCH MAGNET ARMATURE AND THE CAMSHAFT STOP LEVER
.008"	.002" TO .004"
.009"	.003" TO .005"
.010"	.005" TO .007"
.011"	.007" TO .009"
.012"	.009" TO .011"

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Figure 503.1. Clutch magnet armature eccentric stud adjustment (TT-270/FG, TT-272/FG, and TT-397/FG only).

Page 463. Make the following changes:

Delete figure 518 and substitute new figure 518.



TM5815-244-35-C2-46

Figure 518. Transmitter-distributor friction clutch adjustment.

Delete paragraph 517 and substitute:

517. Transmitter-Distributor Friction Clutch Adjustment

(fig. 518)

a. Requirements.

- (1) There should be .005- to .025-inch clearance between the friction clutch disk and the bearing of the clutch fork.
- (2) It should require a pull of 30 to 40 ounces to prevent the transmitter-distributor friction clutch from turning when the motor is on and the transmitter-distributor camshaft is not operating any levers.

b. Method of Checking.

- (1) Insert a flat feeler gage between the friction clutch disk and the bearing of the clutch fork to determine the clearance.
- (2) Install a piece of punched message tape in the transmitter-distributor. Hook a spring scale on the clutch fork. Move the transmitter-distributor control lever to the start position. While holding the scale rigidly, allow the transmitter-distributor camshaft to turn just slightly until it is not operating any levers. When the free spot has been established, hold the clutch fork from turning and read the scale.

c. Adjustment.

- (1) Loosen the two setscrews in the friction clutch disk and position the disk until the requirement is met. Tighten the setscrews.

- (2) Loosen the clamping screws in the clutch collar and turn the collar clockwise or counterclockwise to obtain the requirement. Tighten the clamping screws. Recheck the requirement and readjust if necessary.

Page 466, paragraph 524. Make the following changes:

Reference No. 50912, "Required tension, extended strength" column. Change " $\pm 1/2$ " to: $\pm 1 1/2$.

Reference No. 51754, "Required tension, extended strength" column. Change " ± 4 oz" to: ± 75 grams.

Reference No. 51755, column D. Change "28" to: $27 3/4$.

Reference No. 52173, column A. Change " $3/4$ " to: $3/4 \pm 1/32$.

In "Required tension, extended strength" column, change "24-28 oz" to: 26 oz ± 74 grams.

Reference No. 53313, column A. Change " $1 9/64$ " to: $1 9/64 \pm 0.018$.

Column C. Change ".010 ± 0.0003 " to: .009 ± 0.0003 .

Column D. Change "10" to: 8.

Reference No. 55941, column A. Change " $9/32$ " to: $.250 \pm 0.018$.

In "Required tension, extended length" column. Change " $4 3/4$ oz. $\pm 1/4$ oz" to: $4 3/4$ oz ± 13 grams.

Column D. Change " $5 3/4$ " to: $3 1/4$.

Reference No. 56258, column A. Change " $3 1/64$ " to: $3 1/64 \pm 1/32$.

Column D. Change " $7 3/4$ " to $7 3/4 \pm 1$.

Column E. Change ".168" to: $.168 \pm 0.005$.

After the last item in the chart add:

Reference No.	Name	A Free length (in.)	B Extended length (in.)	Required tension, extended strength	C Wire thickness (in.)	D Number of coils	E Outer diameter (in.)
59442	Carriage-return sensing lever.	0.734 ± 0.022	$1 5/8$	3 lb ± 5 oz	0.028 ± 0.0005	$14 3/4$	0.206 ± 0.006
61000	Y-lever detent	$7/32 \pm 3/32$	0.342	80 gr ± 5 gr	0.008 ± 0.0003	$9 3/4 \pm 1$	0.083 ± 0.005
62154	Pawl	$1 1/8 \pm 0.022$	$1 1/8$	18 oz ± 51 gr	0.020 ± 0.0003	$18 1/4$	0.196 ± 0.006
62169	Bellerank pawl	$5/4 \pm 3/2$	$1 1/2$	36 oz ± 102 gr	0.026 ± 0.0005	$17 3/4$	0.260 ± 0.008
60553	Ratchet wheel detent	$1 3/4 \pm 3/2$	$1/2$	$2 3/4 \pm 10\%$	$.009 \pm 0.0003$	$8 1/4 \pm 1$	0.125 ± 0.005

Page 467, paragraph 525, chart. After the last item in the chart add:

Reference No.	Name	A Free length (in.)	B Extended length (in.)	Required tension, extended strength	C Wire thickness (in.)	D Number of coils	E Outer diameter (in.)
57871	Drawbar -----	$1\frac{3}{4} \pm \frac{1}{32}$	$1\frac{11}{16}$	14 oz ± 1	0.016 ± 0.0003	$56\frac{1}{2}$	0.144 ± 0.004
57875	Bellcrank -----	$\frac{3}{4} \pm 0.022$	$\frac{1}{8}$	1 lb ± 2 oz	0.020 ± 0.0003	15	0.182 ± 0.004
59310	Pawl -----	1.016 ± 0.030	$1\frac{7}{32}$	21 oz	0.0190 ± 0.0003	38	0.206 ± 0.006

Page 468, paragraph 526. Make the following changes:

- Reference No. 52953, column B. Change "1/4" to: $1\frac{3}{64}$.
- Column D. Change " $1\frac{5}{64}$ " to: 0.135.
- Reference No. 54932, column A. Change " $1\frac{1}{2} \pm \frac{3}{64}$ " to: 0.399 ± 0.015 .
- Column C. Change " 0.067 ± 0.0005 " to: 0.066 ± 0.001 .
- Column D. Change " $3\frac{1}{2}$ " to: $3\frac{1}{4}$.
- Reference No. 54957, column C. Change ".025" to: 0.026.
- "Number of coils" column. Change "11" to: $9\frac{1}{2}$.

Page 469, paragraph 527. Make the following changes:

- Reference No. 55882, column A. Change "5/8" to: $1\frac{5}{32}$.
- "Number of coils" column. Add: $32\frac{1}{2}$.

Page 472, paragraph 527.1 (page 103 of C1), chart. Add after "Reference No. 61672":

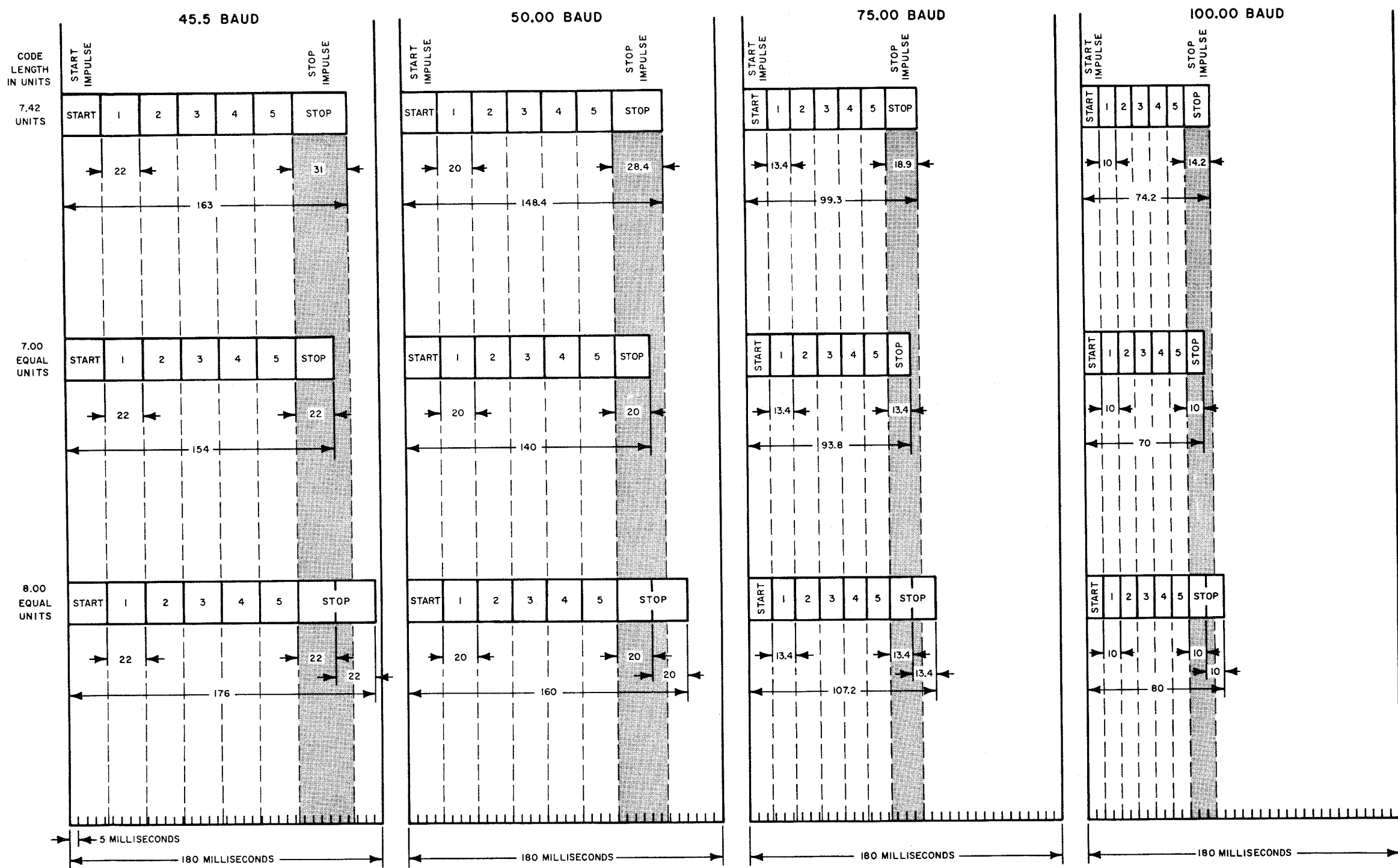
Reference No.	A Outside diameter (in.)	B Inside diameter (in.)	C Thickness (in.)
61671	$\frac{3}{4}$	$\frac{11}{16}$	$\frac{1}{4}$

Page 477, APPENDIX. Delete the appendix and substitute:

APPENDIX REFERENCES

The following publications are applicable to the field and depot maintenance of Teletypewriter Sets AN/FGC-25, AN/FGC-25X, AN/FGC-26, AN/FGC-26X, AN/FGC-52, AN/FGC-52X, AN/FGC-57, and AN/FGC-68.

- DA Pam 310-4 Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
- TM 11-2208 Test Sets TS-2/TG, TS-2A/TG, TS-2B/TG and TS-2C/TG (Teletypewriter Signal Distortion).
- TM 11-2217 Distortion Test Sets TS-383/GG, TS-383A/GG, and TS-383B/GG.
- TM 11-5500 Multimeter TS-297/U.
- TM 11-5527 Multimeters TS-352/U, TS-352A/U, and TS-352B/U.
- TM 11-5815-203-15 Teletypewriter Components of Teletypewriter Central Office Set AN/FGC-30.
- TM 11-5815-244-12 Operation and Organizational Maintenance:
Teletypewriter Sets AN/FGC-25, AN/FGC-25X, AN/FGC-26, AN/FGC-52, AN/FGC-52X, AN/FGC-57, and AN/FGC-68.



TM5815-244-35-C2-39

Figure 34.1. Code impulse chart.

Figure 34.1.

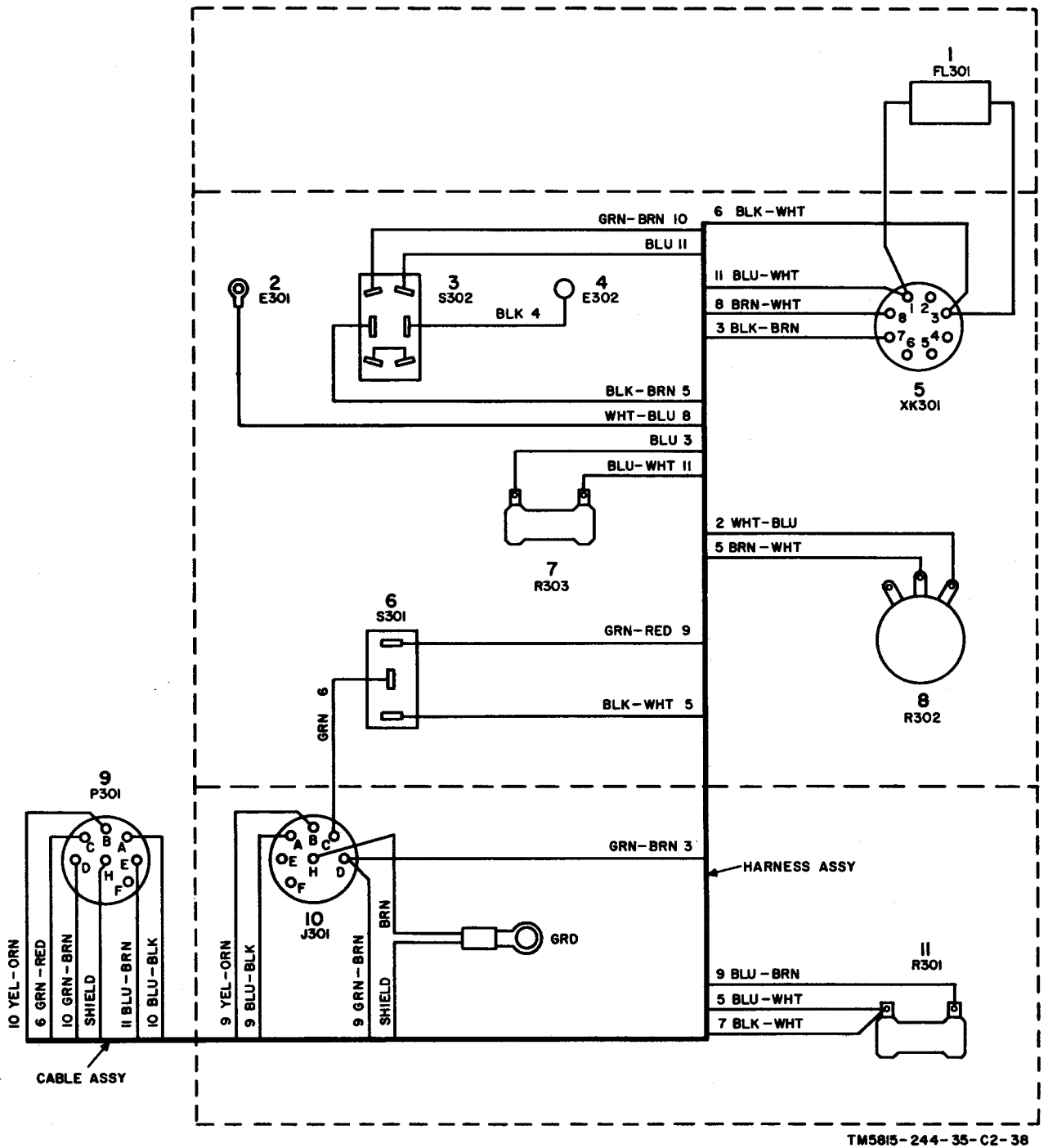


Figure 554.1. Transmitter-distributor pulsing control box, wiring diagram (TT-270/FG, TT-272/FG, and TT-397/FG).

Figure 554 (fold-out). Make the following changes:

Add reference designation "P236" to movable connector at TB203.

Add reference designation "P237" to movable connector at TB203 (M) from CR202 rectifier.

By Order of the Secretary of the Army:

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

DASA (6)
USASA (2)
CNGB (1)
CofEngrs (1)
TSG (1)
CSigO (7)
CofT (1)
CSptS (1)
USA CD Agcy (1)
USCONARC (5)
USAMC (5)
ARADCOM (2)
ARADCOM Rgn (2)
OS Maj Comd (3)
OS Base Comd (2)
LOGCOMD (2)
USAECOM (5)
USAMICOM (4)
USASCC (4)
MDW (1)
Armies (2)
Corps (2)
USA Corps (3)
USATC AD (2)
USATC Engr (2)
USATC Inf (2)
USATC Armor (2)
USASTC (5)
Instl (2) except
Ft Monmouth (63)
Svc Colleges (2)
Br Svc Sch (2) except

NG: None.

USAR: None.

For explanation of abbreviations used see AR 320-50.

Add reference designation "P238" to movable connector at TB203 (3) from CR202 rectifier.

Add figure 554.1 after figure 554.

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

GENDEP (OS) (2)
Sig Dep (OS) (12)
Sig Sec, GENDEP (5)
Army Dep (2) except
Ft Worth (8)
Lexington (12)
Sacramento (28)
Tobyhanna (12)
USA Elet RD Actv, White Sands (13)
USA Elet RD Actv, Ft Huachuca (2)
USA Trans Tml Comd (1)
Army Tml (1)
POE (1)
USAOSA (1)
AMS (1)
WRAMC (1)
AFIP (1)
Army Pic Cen (2)
USA Mbl Spt Cen (1)
USA Elet Mat Agcy (12)
Chicago Proc Dist (1)
USARCARIB Sig Agcy (1)
Sig Fld Maint Shop (3)
Units org under fol TOE (2 cy ea UNOINDC)
11-7 11-157
11-16 11-500 (AA-AC) (4)
11-57 11-557
11-97 11-587
11-98 11-592
11-117 11-597
11-155