

INSTRUCTIONS FOR INSTALLING MODIFICATION KIT 319820
TO CONVERT A MODEL 37 FRICTION FEED TYPING UNIT TO
A SPROCKET FEED TYPING UNIT

1. GENERAL

1.01 Modification kit 319820 contains all parts, other than those that vary with paper width, required to convert a friction feed typing unit to a sprocket feed typing unit. The kit, when installed in conjunction with a modification kit containing variable parts, provides positive positioning and feeding of continuous superfold form paper through the use of retractable sprocket pins at either end of the platen roller.

1.02 Modification kit 319820, when used in conjunction with a variable parts modification kit (176181 through 176197, or 310733) enables the typing unit to feed any width of paper between 3-5/8 and 9 inches, depending on kit selection. To accommodate 9-1/2 inch wide sprocket feed paper, use modification kit 310733.

1.03 A paper tray installed in the typing unit, in conjunction with modification kit 319820 serves as a support for continuous form between the tray in the rear of the console and the under side of the platen.

1.04 Modification kit 319820 contains:

9	2191	Lockwasher	1	151657	Screw
2	8330	Washer, flat	1	153676	Bail, detent
1	55063	Spring	1	153678	Bracket (with shaft)
1	76800	Spring	1	153682	Bracket (right)
1	80848	Spring	1	153683	Bracket (left)
4	110434	Screw	2	153685	Arm, stripper
11	110743	Lockwasher	1	153697	Bracket
11	125011	Washer, flat	1	153698	Cam, feed (left)
1	128357	Ring, retainer	1	153699	Cam, feed (right)
1	150040	Screw	1	153791	Shaft
1	150436	Bushing	2	153794	Plate, adjusting
			6	153799	Screw
1	<u>163959</u>	Spring	1	153810	Ribbon guide
2	151346	Screw	2	153839	Screw
2	151629	Nut	2	154290	Ring "O"
3	151630	Screw	2	154358	Hub, platen
1	151632	Screw	1	154519	Latch
1	151637	Screw	1	155565	Arm (right)

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1	155566	Arm (left)	1	157979	Detent, toggle link
1	155896	Finger, paper (left)	22	195855	Pin
1	155897	Finger, paper (right)	1	196471	Bearing, sleeve
1	157286	Clamp			

Note: Various paper width modification kits are listed in Table 1 (Page 15).

1.05 For parts referred to and for parts ordering information see Teletype Model 37 Printer Parts Bulletin 1209B.

2. INSTALLATION

Note: References made to left or right, up or down, front or rear, etc, apply to the unit in its normal operating position as viewed from the operator's position in front of the unit unless otherwise specified.

2.01 Install the sprocket feed parts in modification kit 319820 in the same area in Model 37 normally occupied by friction feed paper handling components (Figure 1).

2.02 Select a modification kit (176181 through 176197, or 310733) and a suitable paper tray to handle the desired paper width.

2.03 Remove the typing unit from the printer set if one has been previously mounted.

2.04 Remove the typebox and ribbon spools. Remove paper spindle 150907.

Note: Retain all parts marked with a plus sign for use in subsequent assembly of sprocket feed.

2.05 Remove and discard paper spindle parts from between side frames (Figure 2):

4	2191	Lockwasher	1	150904	Block
3	3598	Nut	1	151721	Screw
3	7002	Washer, flat	3	153841	Screw
1	150903	Block			

2.06 Remove paper straightening parts from between side frames (Figure 3):

4	3640	Lockwasher	2	153634	Disc
2	4708	Spring	2	153817	Screw
2	124681	Screw	2	306364	Lever
2	125011	Washer, flat	1	319673	Plate
2	150815	Bushing	1	319674	Plate
1	152832	Shaft	2	319673	Stud

2.07 Remove paper finger parts from between the side frames (Figure 3):

1	3640	Lockwasher	2	150803	Spring, leaf
2	4708	Spring	1	150804	Finger
1	125802	Washer, flat	1	150826	Finger
1	150436	Bushing	1	151685	Screw
1	150685	Shaft			

2.08 Remove platen detent parts from left side frame (Figure 3):

1	1268	Screw	1	153676	Detent arm
1	83497	Washer	1	306331	Spring
+1	150961	Bushing			

2.09 Remove platen assembly from between the side frames (Figure 4):

+1	2191	Lockwasher	+3	151737	Screw
+3	3640	Lockwasher	+1	153689	Gear
+3	110743	Lockwasher	+1	153692	Gear
+3	125011	Washer, flat	+3	153799	Screw
+1	150719	Retainer	2	306362	Bushing
+1	150720	Retainer	1	306363	Disc
+1	151346	Screw	1	306367	Platen

2.10 Remove paper guide assembly from between side frames (Figure 3):

4	2191	Lockwasher	2	306361	Stud
2	7002	Washer, flat	1	306369	Paper guide
2	156875	Screw			

2.11 Remove pressure roller lever parts from right side frame (Figure 3):

1	2191	Lockwasher	1	150276	Lever
2	7002	Washer	1	150436	Bushing
2	119651	Retaining ring	1	151630	Screw
1	150270	Link			

2.12 Remove pressure roller assembly from between side frames (Figure 3):

4	2191	Lockwasher	4	151630	Screw
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Entire assembly may now be removed. Further disassembly of roller parts is unnecessary.

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2.13 Mount bracket 153697 in the four mounting holes vacated by the pressure roller with four screws 151658 and four lockwashers 2191 (Figure 5).

2.14 Install the following parts on the rear typing unit frames: (Figure 5)

4	2191	Lockwasher	1	153682	Right bracket
3	151630	Screw	1	153683	Left bracket
1	151632	Screw	2	153794	Plate

2.15 Assemble the platen as follows:

(a) Slip spur gear 153692 on platen shaft 153791. Secure with screw 151346 and lockwasher 2191. Slip bearing sleeve 306362 on the left side.

(b) Assemble "O" ring 154290 to the groove in platen hub 154358. Insert the 11 pins 195855 and position the pins (with the slot facing the pin side of the hub) to accept cam 153698 or 153699, place a coating of grease on the surface of the cam which contacts the pins, recheck position of the pins before proceeding to insert cam. Pack sprocket pin cavity with grease KS7471 (2 places).

(c) Press the left cam 153698 into the greased hub. When the cam is fully seated, it should be flush with the projecting hub. Do not force the cam in. If it does not go in freely, repeat instructions from Paragraph 2.15(a) and (b). Add spur gear 153689 flat side toward the hub. Fasten with three screws 153799, lockwashers 110743, and washers 125011. Wipe off excessive grease.

(d) Slip the sprocket assembly over platen shaft 153791 and fasten with a screw 151346 and lockwasher 2191. Slip platen cylinder 176221 through 176237 (one required) over the shaft and force it over the "O" ring against the stop on the platen hub.

Note: Apply a light film of oil on the "O" ring to facilitate assembly.

(e) Assemble the right hand sprocket as described in Paragraph 2.15(a), (b), and (c), using the following parts and lining up the cam with the letter R. Assemble to the shaft:

3	110743	Lockwasher	1	154358	Hub and 154290
3	125011	Washer			"O" ring
1	150040	Screw	1	157286	Clamp
1	153699	Right cam	11	195855	Pin
3	153799	Screw			

Place the right bearing sleeve 196471 on the shaft with the chamfer or "O" (stamped on the side of the bearing, on older units) facing the end of the shaft.

2.16 Install the platen assembly in the typing unit. Cam yokes must point up, and bushings must be aligned so that the rounded portion of the slot goes into the slot in the typing unit frames.

2.17 Assembly the following platen retainer parts: (Figure 2)

4	110743	Lockwasher	1	150720	Right retainer
1	125011	Washer	3	151073	Screw
1	150719	Left retainer	1	151637	Screw

2.18 Install the following paper finger parts: (Figure 5)

3	2191	Lockwasher	1	151657	Screw
2	8330	Washer	1	153678	Plate with shaft
1	55063	Spring	2	153685	Arm with hub
1	76800	Spring	2	153839	Screw
4	110434	Screw	1	154519	Latch
4	110743	Lockwasher	1	155565	Right arm
4	125011	Washer	1	155566	Left arm
1	128357	Retainer	1	155897	Right paper finger
1	150436	Bushing	1	155896	Left paper finger
2	151629	Nut			

2.19 Install the following platen detent parts: (Figure 2)

1	2191	Lockwasher	1	150969	Torsion spring
1	150646	Shoulder screw	1	151630	Screw
1	150961	Bushing	1	153676	Detent bail

2.20 Clip in paper tray 304772 through 304775, or 305028 — one required (Table 1).

2.21 Replace the ribbon spools and typebox.

3. ADJUSTMENTS AND LUBRICATION

Note: For standard adjustments and lubrication procedures, refer to standardized information. (For customers other than Bell System, refer to Teletype Bulletin 1209B.)

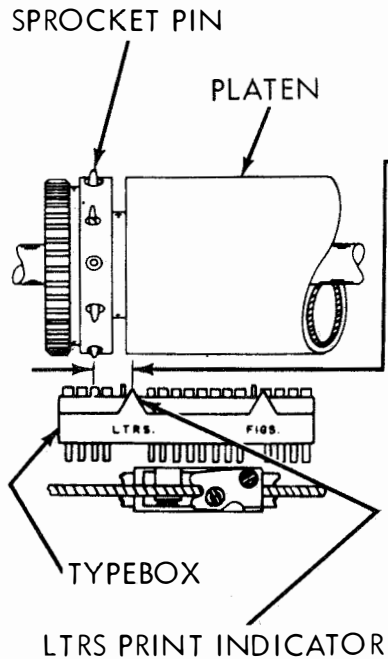
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A. Adjustments

3.01 Check the following adjustments after installation of the modification kit.

- A. LEFT MARGIN
- B. PRINTING CARRIAGE POSITION
- C. PRINT HAMMER GUIDE
- D. TYPEBOX ALIGNMENT
- E. PLATEN ENDPLAY
- F. SPROCKET PIN SEPARATION
- G. PRINTED LINE
- H. PAPER FINGER OR GUIDE BRACKET
- I. PAPER GUIDE TRAY

A. LEFT MARGIN

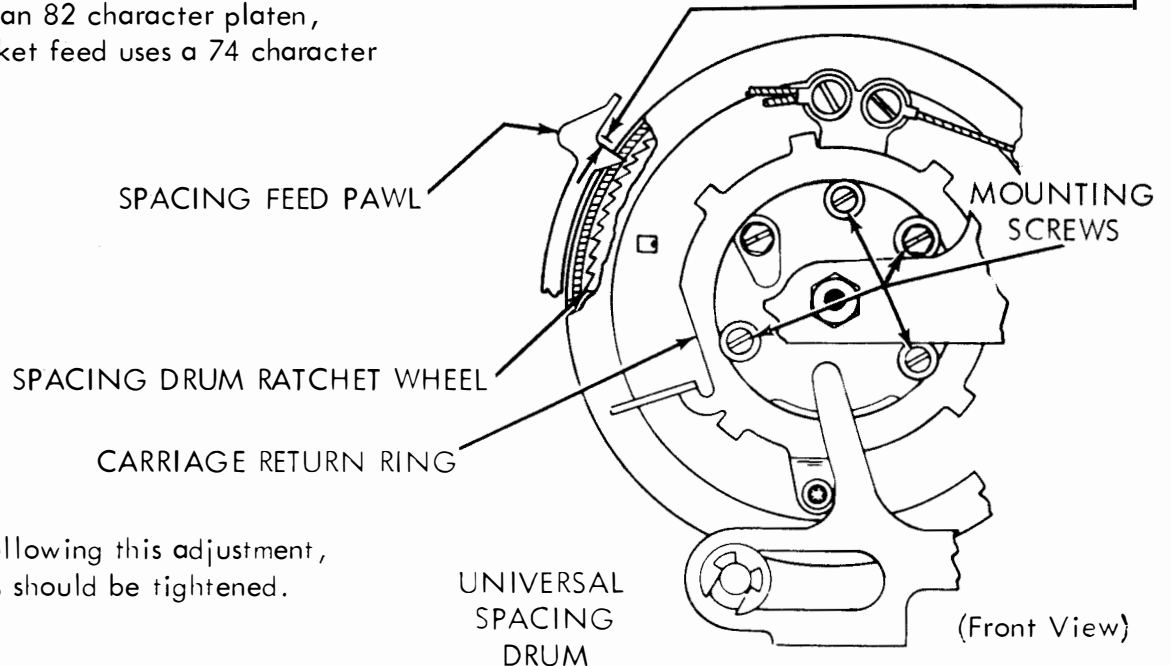


- (1) Requirement
(72 character line) All codebars should be spaced, all clutches disengaged, and carriage fully returned. Distance from left edge of typebox to left edge of platen should be:
8 level - in line - 1/16 inch left or right permissible.
- (2) Requirement
Spacing clutch should be disengaged, and front spacing feed pawl farthest advanced. Spacing drum must be fully returned. Play in spacing shaft gear should be taken up clockwise. Clearance between pawl and shoulder of ratchet wheel tooth immediately ahead should be:
Min 0.002 inch - Max 0.015 inch
- (3) Requirement
Rear pawl, when farthest advanced, should rest at bottom of indentation between ratchet wheel teeth.

To Adjust

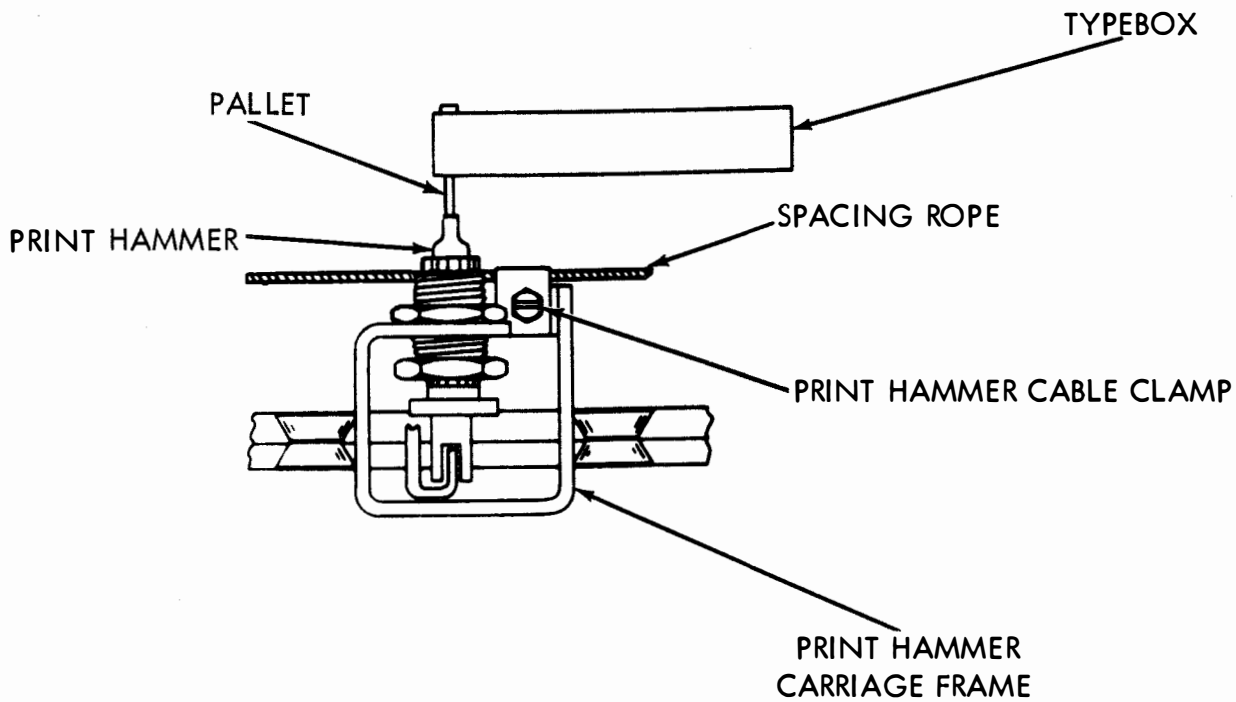
Note: The left margin may be varied as required. Maximum range of adjustments are for mechanisms with standard 10 characters per inch. Friction feed uses an 82 character platen, and sprocket feed uses a 74 character platen.

Return print carriage to its left position. Loosen four indicated carriage return ring mounting screws. Hold carriage return ring in its counterclockwise position. Locate typebox as per (1) requirement. Tighten the four mounting screws.



Note: Following this adjustment, all screws should be tightened.

(Front View)



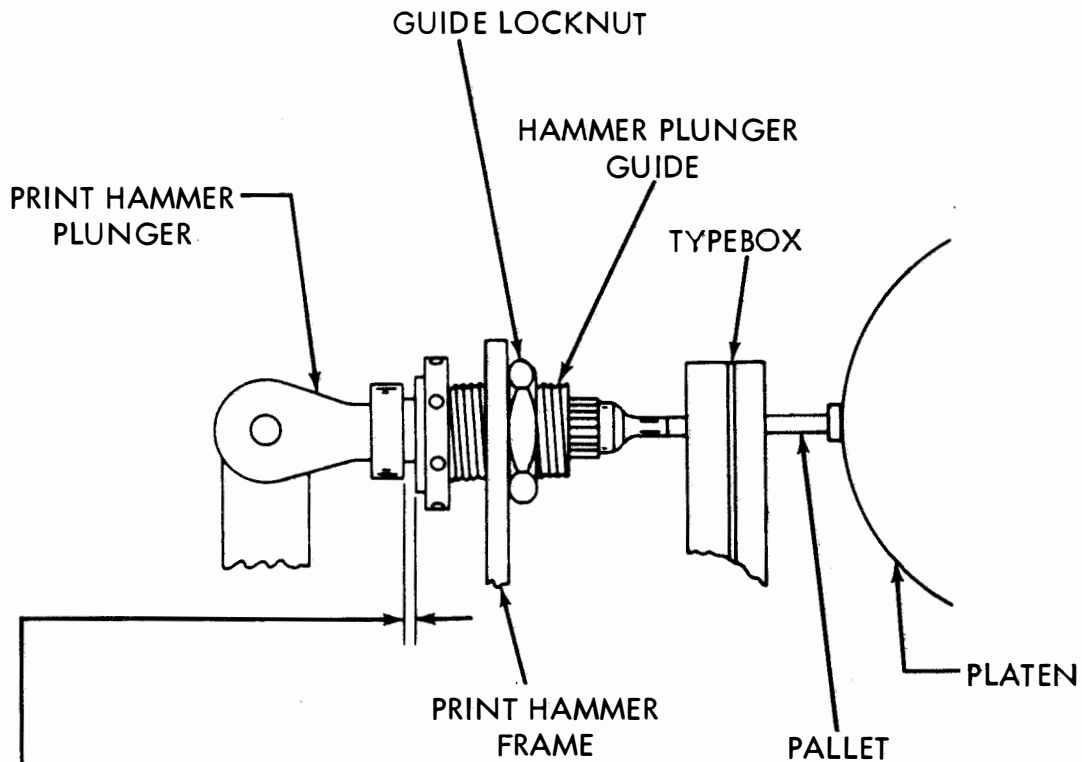
B. PRINTING CARRIAGE POSITION

Requirement

Codebars 3, 4, and 7 or shift should be marking, and all others spacing. With positioning clutches disengaged, trip the print hammer clutch and rotate until stop lug is toward bottom of machine. The print hammer should line up with the pallet in the top row, 4th from the right.

To Adjust

Position hammer carriage on wire rop with clampscrew loosened. Tighten clampscrew.



C. PRINT HAMMER GUIDE

Requirement

With any pallet selected, print hammer should be pressed towards the rear of the machine so that the pallet engages platen with clearance between hammer plunger and hammer plunger guide. This adjustment should be made with carriage at center of platen and without taking up any play in the print hammer frame.

Min 0.030 inch - Max 0.050 inch

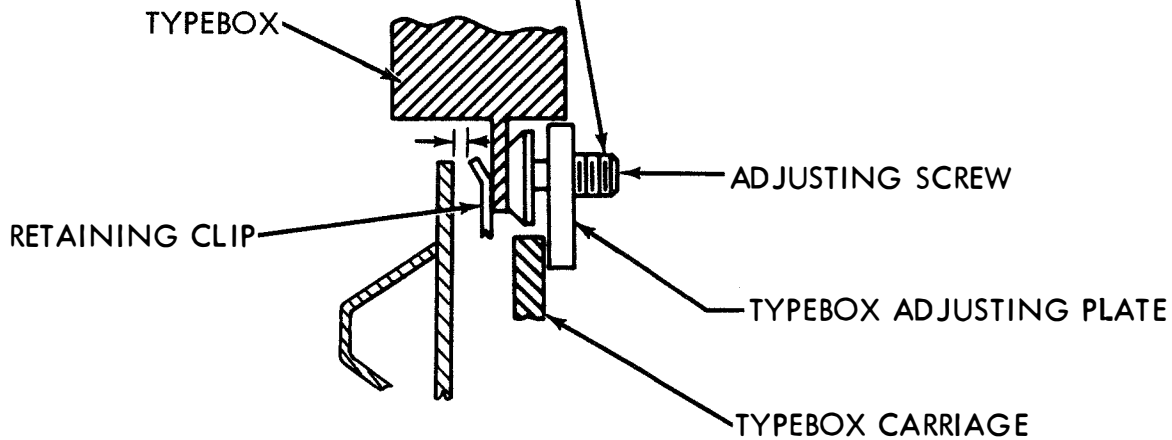
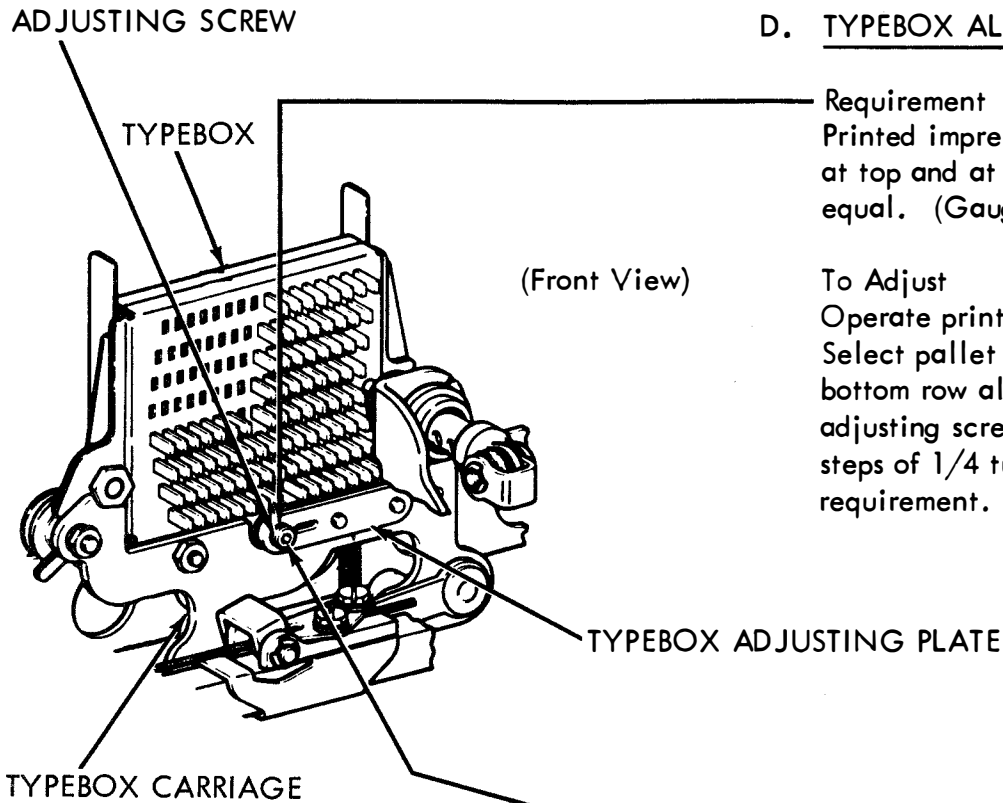
To Adjust

Locate guide locknut. Rotate hammer plunger guide until requirement is met. Tighten locknut.

D. TYPEBOX ALIGNMENT

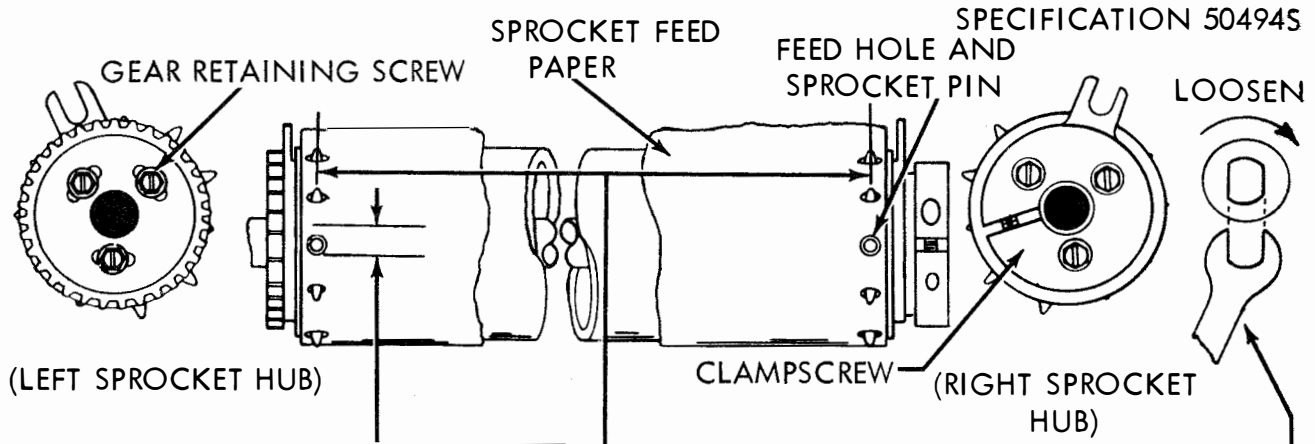
Requirement
Printed impression of characters
at top and at bottom should be
equal. (Gauge visually)

To Adjust
Operate printer under power.
Select pallet in the top and
bottom row alternately. Turn
adjusting screw in or out (in
steps of 1/4 turn) to meet
requirement. (See note below.)



Note: With typebox removed, clearance
must be at least 0.030 inch between the
typebox clamp and the vertical positioning
rail.

To Adjust
Refine TYPEBOX ALIGNMENT adjustment.



G. PRINTED LINE

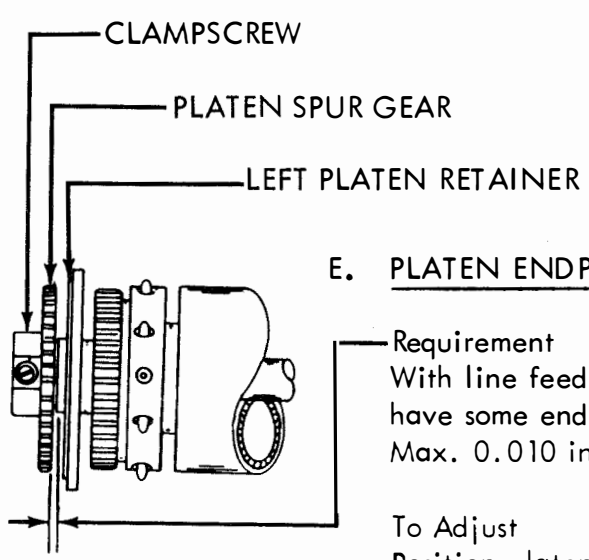
Requirement
 The bottom of the printed line should be $1/32$ inch \pm $1/64$ inch (plus a multiple of $1/6$ inch if required) above a horizontal line drawn even with the bottom edge of any sprocket hole.

To Adjust
 Loosen screws and position left sprocket. If other than standard paper is used, it may be necessary to make a variation in this adjustment.

F. SPROCKET PIN SEPARATION

- (1) Requirement
 With single sheet of sprocket feed paper placed on the platen, the sprocket pins should be centrally located in the feed holes of the paper.
- (2) Requirement
 Printed line should be parallel to a line drawn perpendicular to edge of paper within plus or minus $1/32$ inch.
- (1) To Adjust (Except 9-1/2 Inch Form Width) Position right sprocket with clampscrew loosened.
- (2) To Adjust (For 9-1/2 Inch Form Width) Loosen shaft lock by turning clockwise. Rotate right sprocket hub to required position. With hub held in required position, tighten shaft lock. (Turn counterclockwise)

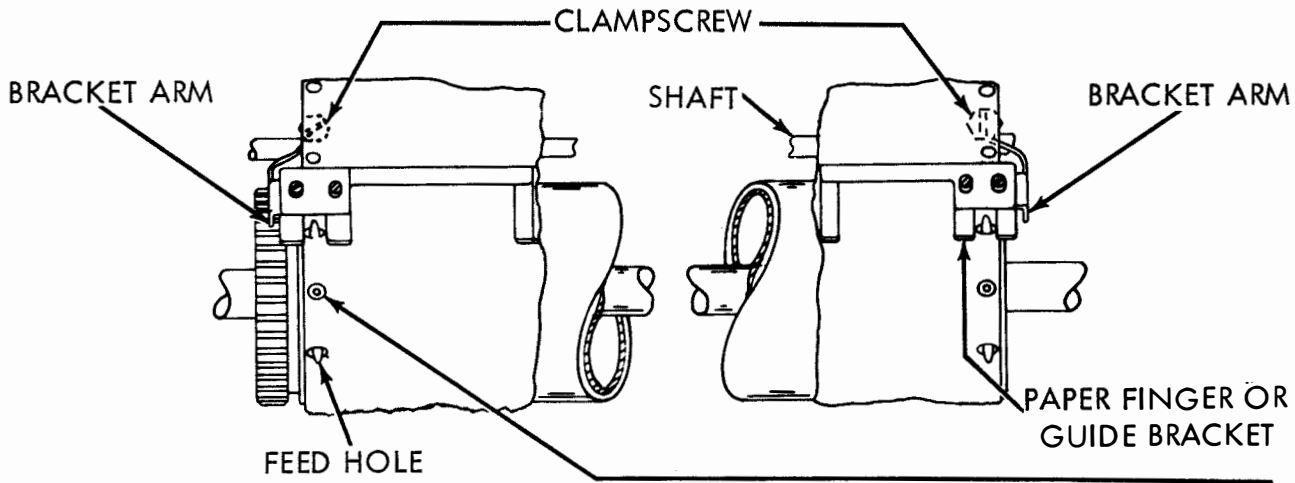
Note: The 9-1/2 inch form width does not make use of the clamp as seen on the RIGHT SPROCKET above.



E. PLATEN ENDPLAY

Requirement
 With line feed pawls disengaged, platen shaft should have some endplay.
 Max. 0.010 inch

To Adjust
 Position platen spur gear with clampscrew loosened.



H. PAPER FINGER OR GUIDE BRACKET

(1) Requirement
Sprocket pin should be centrally located in the finger or guide slot.

(2) Requirement
The gap between the platen and paper finger should be:

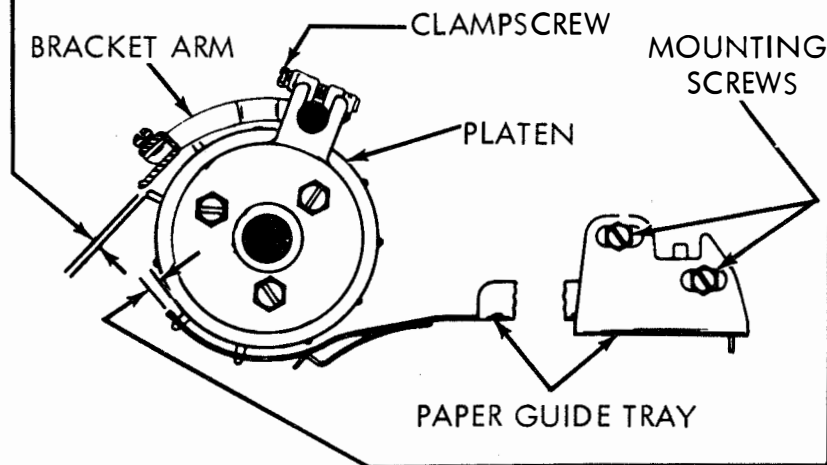
Stapled Multiple Copy
Min 0.050 inch - Max 0.105 inch

Single & Multiple Unstapled Copy
Min 0.020 inch - Max 0.060 inch

Note: A minimum clearance that will pass stationery freely is desired.

To Adjust

With paper finger or guide bracket assembly in the latched position, loosen both clampscrews, position assembly horizontally to meet (1) Requirement. Rotate assembly to meet (2) Requirement.



I. PAPER GUIDE TRAY

Requirement
The clearance between the platen and front edge of the paper guide should be same as (2) Requirement.

To Adjust
Position guide with rear mounting screws loosened.

3.02 Check the following spring tensions:

(a) LINE FEED PAWLS BELL CRANK

Rotate the line feed clutch so that the left hand line feed pawl is in its maximum rear position. Hook a 64 ounce scale on the upper end of the pawl and pull to the rear. It should require 28 to 34 ounces to start the pawl moving.

(b) GUIDE BRACKET SHAFT

Hook a 32 ounce scale under the guide bracket shaft spring extension and pull upward. It should require 6 to 10 ounces to move the bracket against the platen.

(c) PLATEN DETENT

With the detent seated between two teeth in the platen gear, hook a 32 ounce scale on the detent stud and pull at a right angle to the lever. It should require 20 to 28 ounces to move the detent.

(d) GUIDE BRACKET LATCH

With the guide bracket pushed against the platen, hook a 32 ounce scale under the guide bracket latch at the spring hook. It should require 8 to 12 ounces to start the latch moving.

B. Lubrication

3.03 Use oil KS7470 for the lubrication of all points where oil is specified.

3.04 Use grease KS7471 at all points where grease is specified.

3.05 Use one or two drops of oil in the following places:

- (a) Platen bearings - (two drops each end)
- (b) Platen detent bail bearing - (two drops)
- (c) Guide bracket shaft pivots - (two drops each)
- (d) Guide bracket spring hooks - (one drop each)
- (e) Idler gear bearing - (two drops)
- (f) Line feed bell crank spring hooks - (one drop each)
- (g) Guide bracket latch pivot - (two drops)
- (h) Guide bracket latch spring hooks - (one drop each)

3.06 Brush a light film of grease on the following locations:

- (a) Idler gear teeth
- (b) Hand wheel gear teeth
- (c) Platen gear

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3.07 Pack sprocket pin and spring cavity with grease KS7471 (2 sides).

4. MAINTENANCE

4.01 The following instructions are provided for lubrication of the sprocket hub assemblies which house the sprocket pins and cams or for replacement of pins or springs.

- (a) Remove the guide bracket assembly.
- (b) Remove the platen assembly.
- (c) Remove the sprocket hub assemblies from platen assembly.
- (d) Remove the clamp or gear and the cam from the hub assembly. Remove the desired pin from the assembly if replacing a pin and/or repack the cavity in which the pins are visible with grease KS7471. Recheck the pins for proper positioning (slots up and positioned in accordance with its cam) and reassemble in reverse order.

5. PAPER HANDLING INFORMATION

5.01 The Model 37 sprocket feed typing unit is capable of reliably handling up to 12 copies of stapled continuous form stationery or up to six copies of unstapled form stationery.

- (a) For stapled stationery, place the form supply box on the floor behind the cabinet or on the shelf provided in the 152349 paper supply box and form accumulating shelf.
- (b) For unstapled stationery, place the form supply box on a platform not more than 18 inches below the paper admission slot formed by the hinge opening in the rear of the Model 37 cover.

Note 1: When using paper less than 4-1/4 inches in width, cut off one of the paper finger extensions; preferably the left, flush with the inside edge of the U-form so that the remainder of the part straddles the sprocket pins.

Note 2: To simplify feeding loose multiple copy paper into the typing unit, staple the leading edge of the first form in order to maintain alignment of holes in all copies.

5.02 Modification kit 319820 must be used in association with a particular modification kit and paper tray. The paper trays are common to a number of form widths and therefore, must be ordered separately. Tabulated below are the various widths of stationery together with the corresponding modification kits and paper trays.

<u>Paper Widths</u>	<u>Modification Kit Standard</u>	<u>Paper Tray Standard</u>
9-1/2 Inches	310733	305028
9 Inches	176181	304773
8-1/2 Inches	176182	304772
8 Inches	176183	304773
7-1/2 Inches	176184	304772
7 Inches	176185	304773
6-1/2 Inches	176186	304772
6-3/8 Inches	176187	304774
6-1/4 Inches	176188	304775
6 Inches	176189	304773
5-3/4 Inches	176190	304774
5-1/2 Inches	176191	304772
5 Inches	176192	304773
4-1/2 Inches	176193	304772
4-5/16 Inches	176194	304775
4-1/4 Inches	176195	304774
4 Inches	176196	304773
3-5/8 Inches	176197	304772

TABLE 1

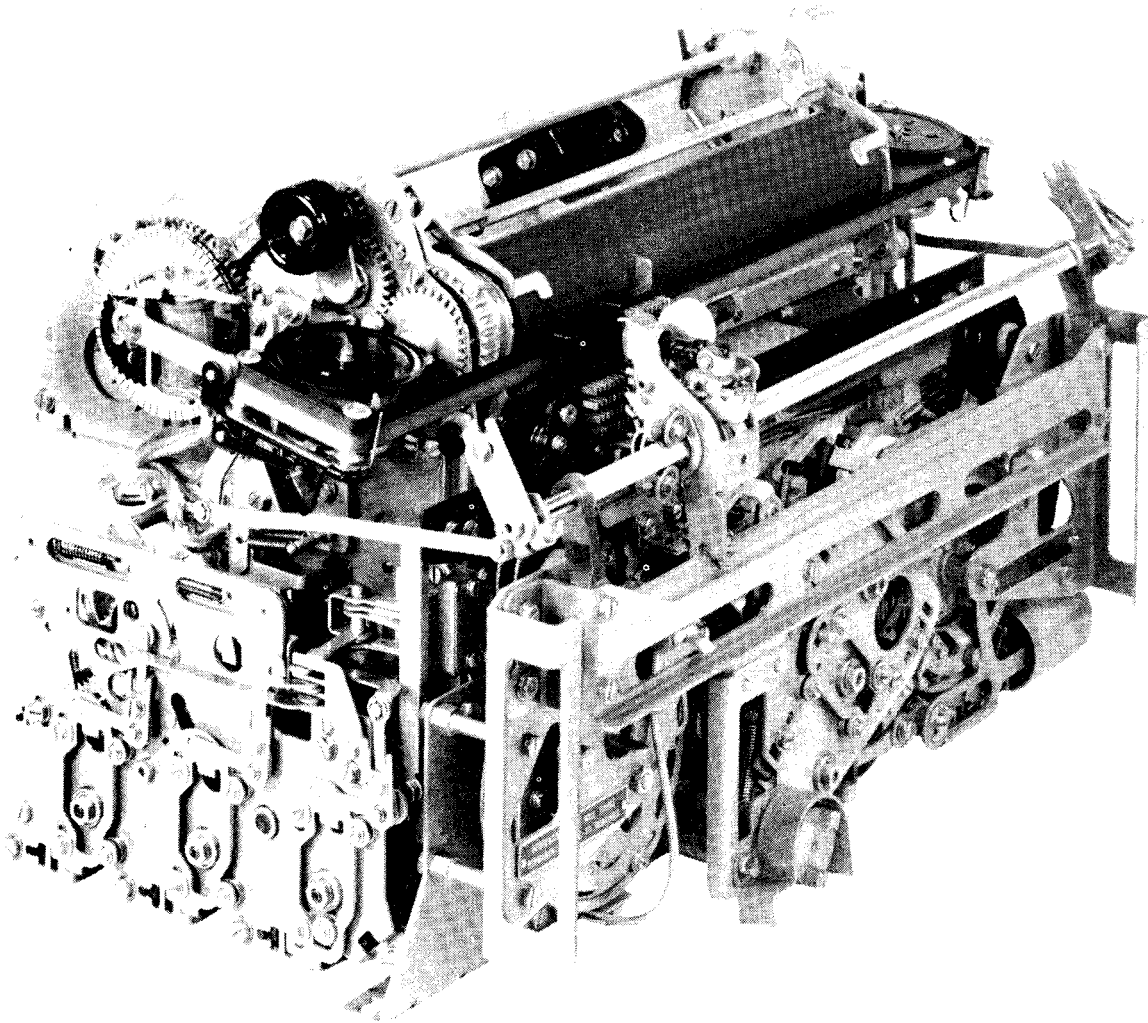


Figure 1 - Typical 37 Friction Feed Typing Unit

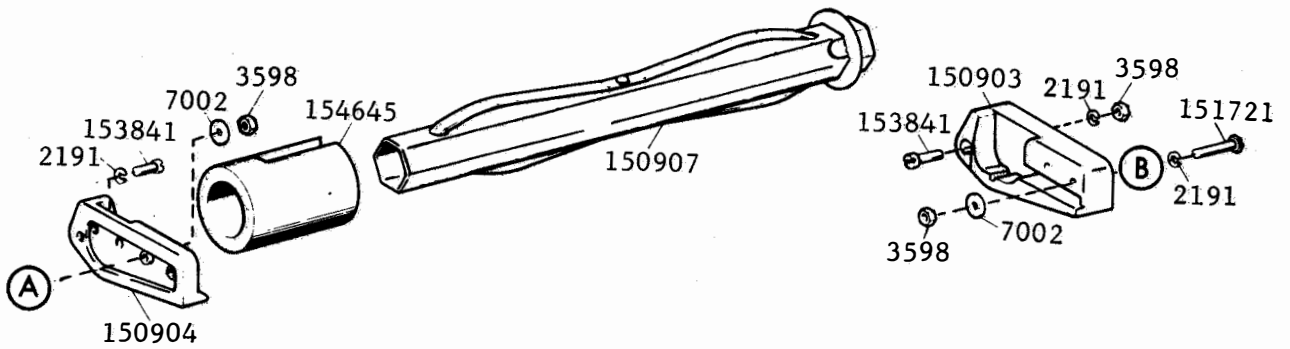
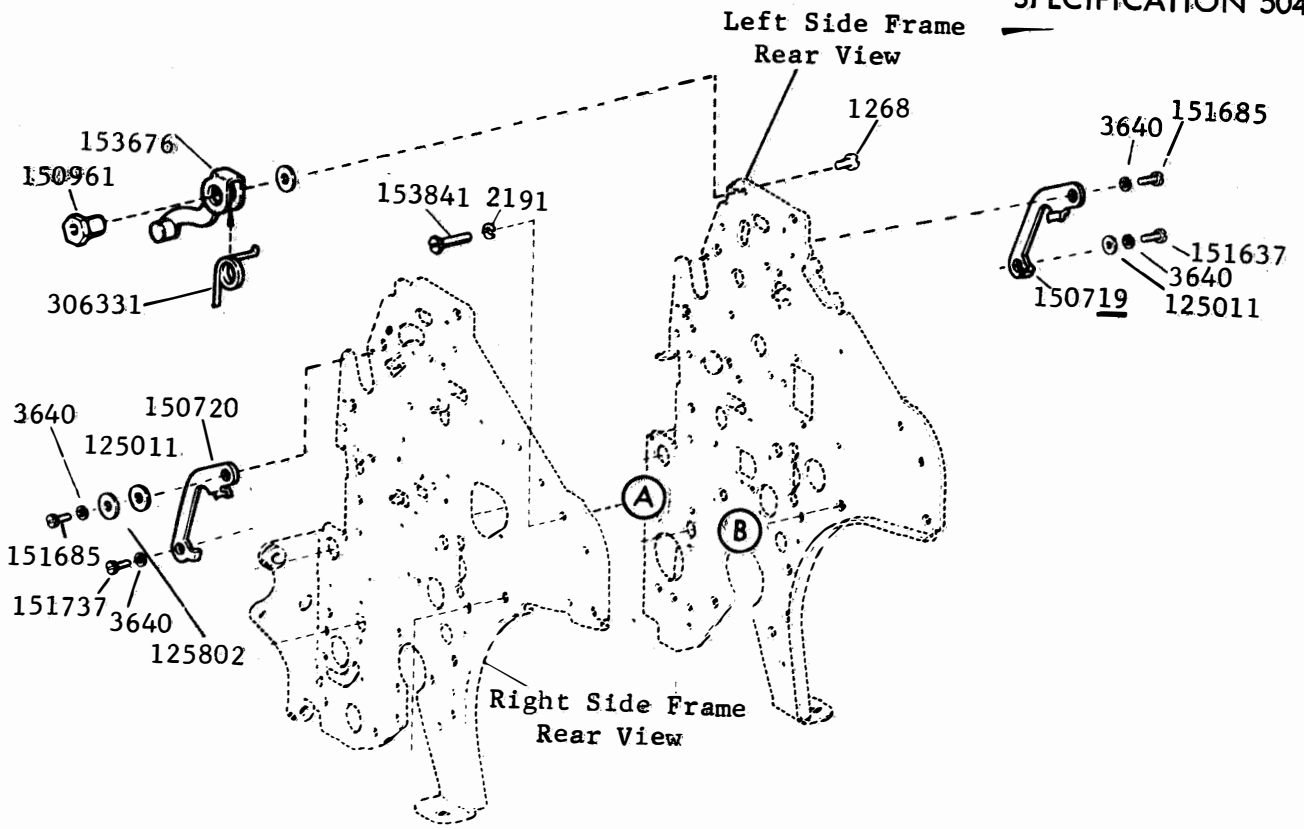


Figure 2 - Paper Spindle

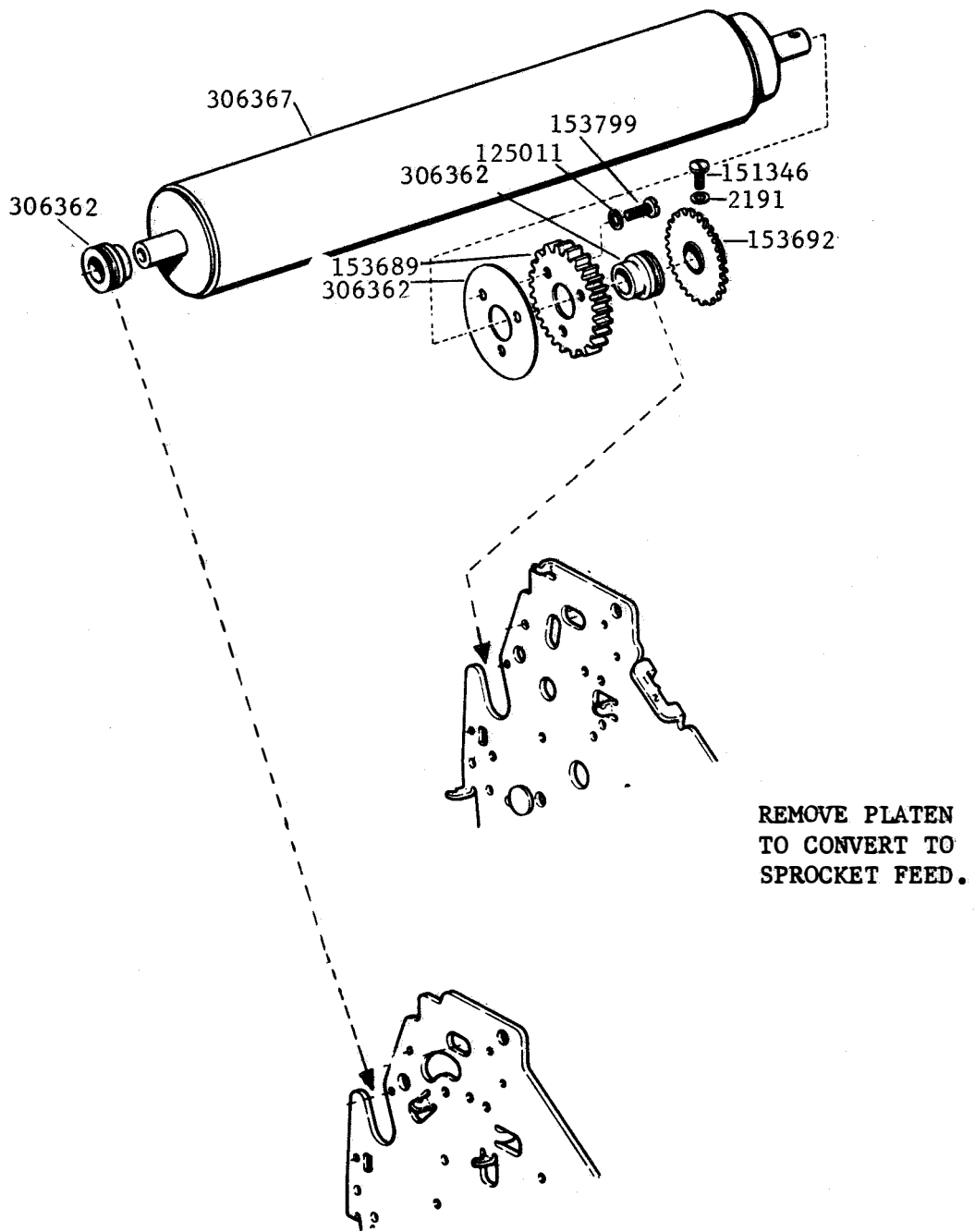


Figure 4 - M37 Printer Platen Mechanism

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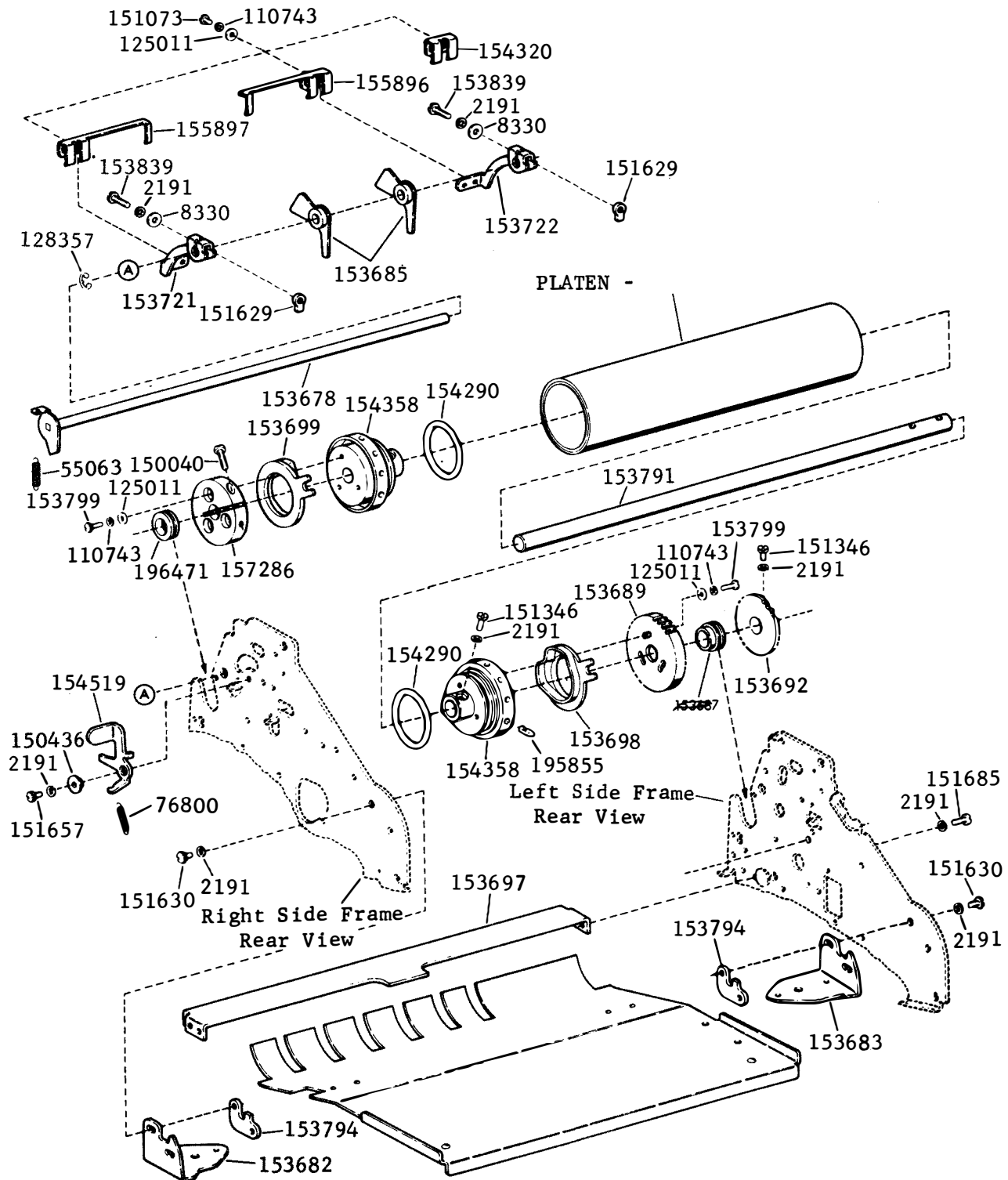


Figure 5 - Modification Kit 319820 to Convert Model 37 Friction Feed Typing Unit to Model 37 Sprocket Feed