

INSTRUCTIONS FOR INSTALLING: THE 154755, 159395, 163292  
OR 154792 MODIFICATION KIT ON A MODEL 28 TYPING UNIT  
TO PROVIDE 5, 6, 8, OR 12 SPACES RESPECTIVELY, THE 154334  
MODIFICATION KIT TO PROVIDE INCREASED RIBBON HEIGHT  
ON UNITS WITH LARGE GOTHIC TYPE PALLETS

1. GENERAL

a. The 154755, 159395, 163292 or 154792 modification kit when installed on a Model 28 Typing Unit permits printing of 5, 6, 8, or 12 characters per inch respectively instead of 10 characters. Printing of 5, 6, or 8 characters per inch permits the use of large Gothic pallets, printing of 12 characters per inch requires narrow Gothic pallets.

(1) If the 154755 modification kit is to be installed on a Model 28 typing unit already equipped with 5 spaces per inch, make certain that the unit is equipped with the 150091 (27T) and 150202 (18T) spacing shaft driving gears instead of the 153883 (33T) and 153884 (11T) gears, which may be present. On units with 6 or 12 spaces per inch horizontal tab mechanism it will be necessary to replace the 163181 wheel with a 158357 wheel and the 163182 bracket with a 158340 bracket.

(2) The 159395 modification kit is not intended to be used with the 152917 local back space or with the 152903 horizontal tabulator modification kit. On units equipped with 5 or 10 spaces per inch horizontal tabulator mechanisms it will be necessary to replace the 158357 wheel with a 163181 wheel and the 158340 bracket with a 163182 bracket.

(3) The 163292 modification kit is not intended to be used on units equipped with horizontal tabulator mechanism.

(4) If the 154792 modification kit is to be installed in a Model 28 typing unit equipped with 5 or 10 spaces per inch horizontal tab mechanisms, it will be necessary to replace the 158357 wheel with a 163181 wheel and the 158340 bracket with a 163182 bracket.

b. The 154334 modification kit, when installed on a Model 28 page printer using large Gothic type pallets, positions the ribbon spools higher on the ribbon spool shaft. This provides increased ribbon height during printing.

c. The 154755 modification kit consists of:

2	75229	Spring	2	154324	Cam, Eccentric
1	81731	Spring	1	155855	Pawl, Spacing
1	155852	Link	1	155856	Pawl, Spacing
1	155853	Ratchet	1	155857	Retainer

d. The 159395 modification kit consists of:

2	125268	Spring	1	161138	Retainer
1	154516	Ratchet	1	161491	Pawl, Feed
1	172598	Cam, Eccentric	1	161492	Pawl, Feed

e. The 154792 modification kit consists of:

1	154516	Ratchet	1	154323	Cam, Eccentric
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f. The 163292 modification kit consists of:

1	172620	Cam, Eccentric	1	163294	Ratchet
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g. The 154334 modification kit consists of:

2	154332	Shaft, Ribbon Spool Assembly	2	154333	Roller
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h. For part numbers referred to and for parts ordering information, see Teletype Model 28 printer parts bulletin 1149B.

## 2. INSTALLATION

a. 154792 modification kit (Figure 1)

(1) Remove the typing unit from the base.

(2) Remove the printing carriage and the front plate in accordance with standard practice.

(3) Loosen the 112626 nut on the front end of the 150197 spring and spacing drum stud. Operate the 150237 ratchet escapement lever to unwind the 74272 or 154310 carriage return spring.

### NOTE

Make certain that the carriage return spring is unwound to its fullest extent.

(4) Unhook the two 75229 spacing feed pawl springs from the spacing pawls.

(5) Remove the two 150089 screws, the 110743 lockwashers, 150203 retainer, 150678 and 150677 spacing feed pawls and the two 150204 eccentric cams (or the one-piece 154389 eccentric cam) from the 150668 spacing collar. Discard the two 150204 (or one-piece 154389) eccentric cams and retain the other parts.

- (6) Remove the 125238 spring with the 73520 felt wick from the 150667 or 158335 transfer slide stud.
- (7) Unhook the 150536 spring from the 150667 or 158335 stud and 150235 transfer slide.
- (8) Remove the three 151630 screws and 2191 lockwashers from the 150538 dashpot cylinder.
- (9) Remove the 150538 dashpot cylinder from the front plate.
- (10) Remove the two 151692 screws and 2191 lockwashers from the 152540 or 153256 latch bail bracket.
- (11) Remove the 152540 or 153256 bracket assembly from the front plate.
- (12) Remove the two 151657 screws, two 2191 lockwashers, two 3598 nuts, two 150806 printing bracket guide plates, 150805 guide plate spacing shim and 150807 felt retainer from the right side of the 150554 pulley support plate.
- (13) Remove the two 151632 screws, two 2191 lockwashers, and the two 7002 flat washers from the two 150800 pulley bearing studs attached to the two 150224 draw wire rope pulleys.
- (14) Remove the 112626 nut and 2669 lockwasher from the right 150197 spacing drum stud.
- (15) Loosen the 112626 nut as far as possible without removing the nut from the left 150197 spring and spacing drum stud.
- (16) Pull the right side of the 150554 pulley support plate out to disengage the plate from the right 150197 spring and spacing drum stud. Rotate the right side of the plate up and to the left.
- (17) Remove the 150206 spacing sleeve from the right 150197 spring and spacing drum stud.
- (18) For typing units LP3 or LP5 only, loosen the two 151346 screws that mount the 152588 stop arm to the 152587 spacing drum. Rotate the 152588 stop arm counterclockwise so that the roller will not interfere with the removal of the screws that hold the cables to the 150838 retaining ring.
- (19) For typing units LP6 and up, loosen the screws that mount the 154624 carriage return ring to the 154627 spacing drum. Rotate the 154624 ring counterclockwise so that the roller will not interfere with the removal of the screws that hold the cables to the 150838 retaining ring.

(20) Remove the 151346 screw and 2191 lockwasher from the 150712 draw wire rope on the spacing drum.

(21) Remove the 151658 screw and 2191 lockwasher from the 150225 draw wire rope.

(22) Loosen the 112626 nut which mounts the 150667 or 158335 transfer slide stud to the front plate and rotate the 150235 transfer slide to the bottom of the typing unit.

(23) Remove the spacing drum assembly from the 150197 spring and spacing drum stud. (Printing track in uppermost position).

(24) For typing units LP3 or LP5 only, remove the two 151618 screws and the two 2191 lockwashers from the 152587 spacing drum.

(25) For typing units LP6 and up, remove the two 151658 screws and the 2191 lockwashers from the 150838 retaining ring.

(26) Remove the 150838 ratchet wheel retaining ring from the spacing drum.

(27) Remove and discard the 150798 spacing drum ratchet wheel from the spacing drum assembly.

(28) Mount the 154516 ratchet on the 152587 (LP3 or LP5) or 154627 (LP6 and up) spacing drum. The ratchet teeth should face in a counterclockwise direction when installed.

(29) Mount the remaining parts (except the spacing pawl assembly) on the front plate in the reverse order in which the parts were removed.

(30) Mount the one-piece 154323 eccentric cam, 150677 and 150678 spacing feed pawls, 150203 retainer, two 110743 lockwashers and the two 150089 screws and the 150668 spacing collar of the spacing shaft.

(31) Hook the two 75229 springs on each spacing feed pawl and the 152586 spacing feed pawl spring bracket.

(32) Mount the front plate on the printer with the four 151723 screws and the four 2669 lockwashers.

b. 163292 modification kit (Figure 1)

(1) Follow procedure in Paragraphs 2.a.(1) through (27) inclusive.



(2) Mount the 163294 ratchet on the 152587 (LP3 or 5) or 154627 (LP6 and up) spacing drum. The ratchet teeth should face in a counterclockwise direction when installed.

(3) Mount the remaining parts (except the spacing pawl assembly) on the front plate in the reverse order in which the parts were removed.

(4) Mount the one-piece 172620 eccentric cam, 150677 and 150678 spacing feed pawls, 150203 retainer, two 110743 lockwashers, and the two 150089 screws, on the 150668 collar of the spacing shaft.

(5) Follow procedure in Paragraphs 2.a.(31) and (32).

c. 159395 modification kit (Figure 1)

(1) Follow procedure in Paragraphs 2.a.(1) through (3) inclusive.

(2) Remove and discard the two 75229 spacing pawl springs from the spacing pawls.

(3) Remove the two 150089 screws, 110743 lockwashers, the 150203 retainer, 150678 and 150677 spacing feed pawls, and the two 150204 eccentric cams, (or the one-piece 154389 eccentric cam) from the 150668 spacing collar. Retain the two 150089 screws and 110743 lockwashers, and discard the rest of the assembly.

(4) Follow procedure in Paragraphs 2.a.(6) through (29) inclusive.

(5) Mount the one-piece 172598 eccentric cam, the 161491 and 161492 spacing feed pawls, the 161138 retainer, two 110743 lockwashers and the two 150089 screws on the 150668 collar of the spacing shaft.

(6) Hook the two 125268 springs on each spacing feed pawl and the feed pawl spring bracket.

(7) Follow procedure in Paragraphs 2.a.(32).

d. 154755 modification kit (Figure 1)

(1) Follow procedure in Paragraphs 2.a.(1) through (4) inclusive.

(2) Remove the two 150089 screws, 110743 lockwashers, the 150203 retainer, 150678 and 150677 spacing feed pawls, and the two 150204 eccentric cams, (or the one-piece 154389 eccentric cam), from the 150668 spacing collar. Retain the two 150089 screws, and 110743 lockwashers, and discard the rest of the assembly.

(3) Follow procedure in Paragraphs 2.a.(6) through (23) inclusive.

- (4) Remove the 81731 spring from the 150184 feed pawl release link assembly.
- (5) Remove the 151657 screw, 2191 lockwasher, 150436 bushing, and 152634 (or 3649) flat washer from the 150184 feed pawl release link assembly.
- (6) Discard the 150184 feed pawl release assembly, and retain the 81731 spring.
- (7) Mount the 155852 feed pawl release link assembly on the front plate with the 152634 (or 3649) flat washer, 150436 bushing, 2191 lockwasher and 151657 screw.
- (8) Hook the 81731 spring on the 155852 feed pawl release link assembly.
- (9) Follow procedure in Paragraph 2.a.(24) through (27) inclusive.
- (10) Mount the 155853 ratchet on the 152587 (LP3 or 5) or 154627 (LP6 and up) spacing drum. The ratchet teeth should face in a counterclockwise direction when installed.
- (11) Follow procedure in Paragraph 2.a.(29).
- (12) Mount the one-piece 154324 eccentric cam, the 155855 and 155856 spacing feed pawls, and the 155857 retainer on the 150668 collar, of the spacing shaft with the two retained 110743 lockwashers and 150089 screws.
- (13) Follow procedure in Paragraphs 2.a. (31) and (32).

e. 154334 modification kit (Figure 2)

- (1) Remove the ribbon and its spools from the unit.
- (2) Remove the 150386 left ribbon drive link from the 152827 ribbon spool bracket by removing the 119652 retainer.
- (3) Remove the left ribbon spool assembly from the unit by removing the 119652 retainer from the shaft on the 152644 bracket.
- (4) Remove the 152630 ribbon spool shaft assembly from the left ribbon spool assembly by removing the 119651 retainer.
- (5) Install the 154332 ribbon spool shaft assembly to the left ribbon spool assembly and reassemble the 119651 retainer. Make certain that the formed ear on the 152524 tension bracket is located between the two formed ears on the 152527 ribbon tension plate and the 42661 ribbon spool spring has not become unhooked.

- (6) Assemble the ribbon spool assembly to the 152644 bracket and install the 119652 retainer. Make certain that the 152820 ribbon feed lever is correctly located in the 152818 detent lever.
- (7) Fasten the 150386 ribbon drive link to the 152827 bracket using the 119652 retainer.
- (8) Repeat the above instructions (1) thru (7) on the right ribbon spool assembly.
- (9) Remove the two 150327 rollers from the ribbon spool brackets by removing the two 119651 retainers.
- (10) Install the two 154333 rollers on the ribbon spool brackets and reassemble the two 119651 retainers.
- (11) Replace the ribbon and its spools onto the unit.

### 3. ADJUSTMENTS AND LUBRICATION

a. For adjustment and lubrication procedure refer to standardized information (for other than Bell System see Teletype Model 28 Adjustment Bulletin 217B).

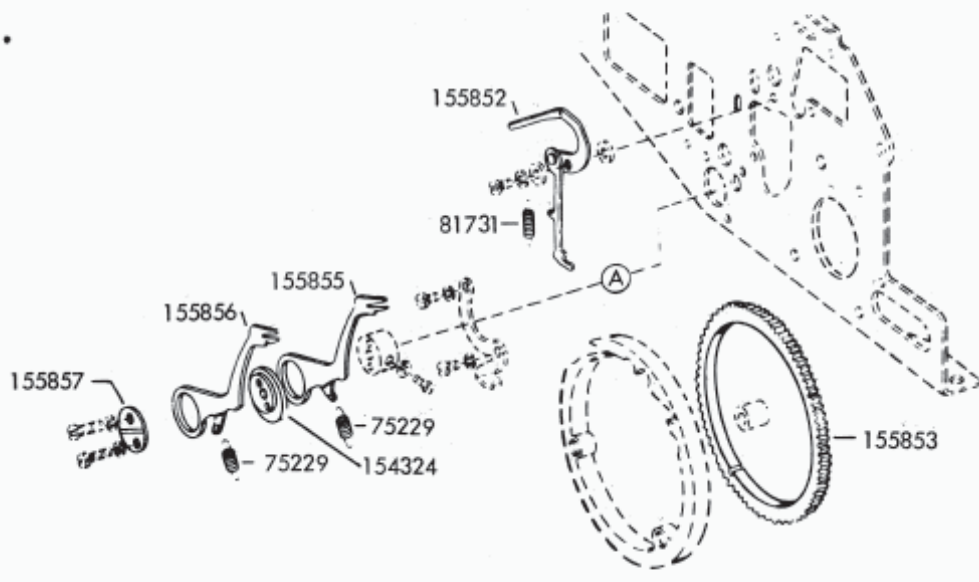
(1) Check the following adjustments when modification kits in Paragraphs 2.a., 2.c., or 2.d. are installed:

- |  |  |
|--|--|
| (a) Carriage Return Spring                               | (i) Spacing Gear Phasing                     |
| (b) Carriage Wire Rope                                   | (j) Dashpot Vent Screw                       |
| (c) Carriage Return Latch                                | (k) Carriage Return Latch Bail Spring        |
| (d) Carriage Return Lever (check<br>function reset bail) | (l) Lower Wire Rope Pulley Spring            |
| (e) Left Hand Margin                                     | (m) Spacing Feed Pawl Release Link<br>Spring |
| (f) Print Carriage Position                              | (n) Spacing Feed Pawl Springs                |
| (g) Right Hand Margin                                    | (o) Transfer Slide Spring                    |
| (h) Oscillator Shift Bracket                             |  |

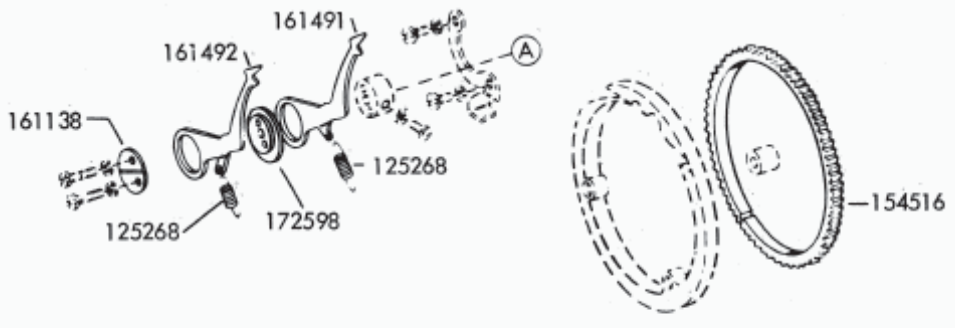
(2) Check the following adjustments with the 154334 modification kit is installed:

- (a) Ribbon Feed Lever Bracket
- (b) Ribbon Ratchet Wheel Friction Spring Tension

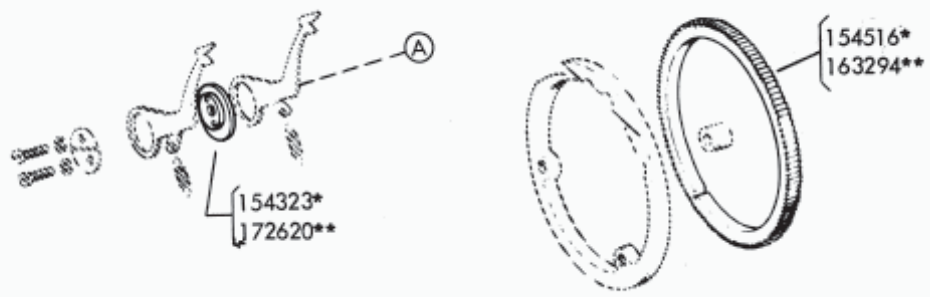
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154755 MODIFICATION KIT TO PROVIDE 5 SPACES PER INCH HORIZONTALLY



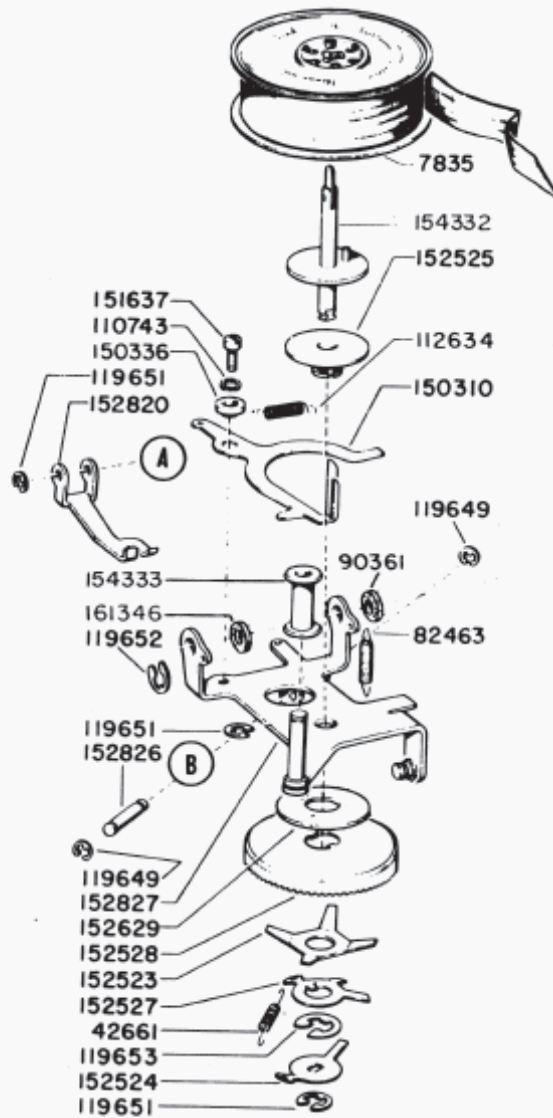
159395 MODIFICATION KIT TO PROVIDE 6 SPACES PER INCH HORIZONTALLY



\*154792 MODIFICATION KIT TO PROVIDE 12 SPACES PER INCH HORIZONTALLY  
\*\*163292 MODIFICATION KIT TO PROVIDE 8 SPACES PER INCH HORIZONTALLY

FIGURE 1





154334 MODIFICATION KIT TO PROVIDE INCREASED RIBBON HEIGHT

FIGURE 2