

ADDENDUM TO SPECIFICATION 5948S TO  
ADD INFORMATION FOR USING THE 163359  
MODIFICATION KIT WITH A 50 CYCLE  
3000 R. P. M. MOTOR

1. Make the following changes in the Specification.
  - a. On Page 1, after Paragraph 1. a. add this note:

NOTE

The 163359 modification kit is for use with a 60 cycle 3600 R. P. M. motor. If it is to be used with a 50 cycle 3000 R. P. M. motor, Gear No. 318903 is available to provide operation of the 163359 modification kit with a 50 cycle 3000 R. P. M. motor. This gear is not supplied with the 163359 modification kit but must be obtained separately.

- b. On Page 2, add to Paragraph 2. a. (2): With kit 163359, when operating with a 50 cycle motor, replace the motor pinion with the 318903 gear instead of the 162669 gear.

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INSTRUCTIONS FOR INSTALLING THE 162641 OR 163359  
 MODIFICATION KIT ON A MODEL 28 KEYBOARD OR BASE TO  
 PROVIDE A VARIABLE SPEED DRIVE

\*The chart below pertains to Bell System only

Unit	Teletype Code	Bell System Code
Keyboard	LK5	28C
	LK16	28D
Base	LB4	28B, 28B1
	LB9	28F

1. GENERAL

a. The 162641 Modification Kit when installed on Model 28 Keyboard (LK3, LK4, and LK5) or Receiving-Only Base (LB3 and LB4) and the 163359 Modification Kit when installed on the Model 28 Keyboard (LK8 and up) or Receiving-Only Base (LB6 and up) provide a variable speed drive mechanism. These Modification Kits permit the selection and locking of the printer units at speeds corresponding to a rate of 60, 75, and 100 wpm. The motor unit must be turned off in order to select a different operating speed. The 162641 or 163359 Modification Kit cannot be used when the Model 28 Multiple Wire Distributor (LD) is used. The 162641 Modification Kit is compatible with the 152338 Time Delay Mechanism. The 163359 Modification Kit is compatible with the 154142 Time Delay Mechanism.

*b. The 162641 or 163359 Modification Kit consists of:	162641	163359
2 173908 Post	X	
1 1257 Screw	X	X
2 2191 Washer, Lock	X	X
2 2449 Washer, Lock	X	X
2 3598 Nut	X	
2 7002 Washer, Flat		X
2 8449 Collar	X	
1 34432 Washer, Flat	X	X
2 76279 Screw	X	X
1 97296 Screw	X	X
2 125231 Nut	X	X
2 151618 Screw	X	
2 151630 Screw	X	X
1 151659 Screw	X	X
1 157288 Plate	X	
1 162642 Gear Shift Assembly	X	X
1 162669 Gear, Helical 15T	X	X
1 162686 Guard	X	X
1 162668 Bracket	X	
1 163360 Bracket		X
1 173906 Spacer	X	
2 193563 Post		X
1 173912 Plate Assembly	X	X

*90*  
*102.00*  
*3.55*  
*7.35*

\*Indicates change

Printed in U.S.A.

c. For part numbers referred to and for parts ordering information see Teletype Model 28 Page Printer Parts Bulletin 1149B.

**\*2. INSTALLATION (Figure 1)**

**NOTE**

Make the Shoulder Screw and Selector Lever adjustments in paragraph 3.

**a. 162641 Modification Kit**

(1) Remove and discard the 151678 Screw and 152045 Gear Guard.

(2) Replace the motor pinion with the 162669 Gear using its mounting screw and lock washer.

(3) Mount the 157228 Adapter Plate on top of two 8449 Collars above the keyboard filter position as follows:

(a) If the keyboard or base has a 153631 Spark Suppressor or 151369 Electrical Noise Suppressor replace the two 151692 Screws with the 151618 Screws.

(b) If the keyboard or base does not have these parts use the two 151618 Screws, 2191 Lock Washers, 7002 Flat Washer and 3598 Nuts to mount the 157288 Plate.

(4) Remount if previously assembled, the four name plates from the rear left-hand corner of the base to the 157288 Plate in the following order from front to rear:

- (a) Code Plate
- (b) Serial Number Plate
- (c) Patent Plate
- (d) Teletype Plate
- (e) Use the eight 92265 Screws to mount these plates.

(5) Remount the 152460 Bracket and its associated keyboard connector assembly to the 162668 Bracket with two 151692 Screws and two 2191 Lock Washers.

(6) Mount the 162668 Bracket to the base in the former position of the 152460 Bracket with two 151630 Screws and two 2191 Lock Washers.

(7) Remount the motor terminal board to the 162668 Bracket with its mounting posts and screws. Discard the two 3598 Nuts and 2191 Lock Washers.

(8) Remove and discard the intermediate gear assembly by removing the two 151724 Screws and the one 151725 Screw. Retain the three 2669 Lock Washers and discard the remaining screws, 151712 Pivot Buttons and washers.

(9) Remove and discard the 154085 or 151219 Plate by removing and discarding the 151723 Screw and the 3438 Flat Washer, and retaining the 2669 Lock Washer.

(10) Remove and retain the motor unit by disconnecting the motor cable from the 151415 Terminal Board and removing and retaining two of the 151678 Screws and discarding the other two.

(11) Work over the base by enlarging the three slotted holes as shown in Figure 1.

(12) Remove and retain the 151113 Left Motor Mounting Strip by removing and discarding the 151658 Screw and retaining the 2191 Lock Washer.

(13) After placing the 173906 Spacer on the bottom of the top side of the base over the two left motor mounting holes, mount the 173912 Plate Assembly to the bottom of the top side of the base at the intermediate gear assembly with the 97296 Screw, 2669 Lock Washer (retained in paragraph (9), and 34432 Flat Washer. Refer to Figure 1 for location.

(14) Mount the 151113 Left Motor Mounting Strip with a 151659 Screw and 2191 Lock Washer retained in paragraph (12).

(15) Mount the two 173908 Posts to the 173912 Plate Assembly thru the two enlarged rear mounting holes.

#### NOTE

If the base or keyboard contains the 152338 or 154142 Motor Stop time delay mechanism, proceed as follows; if not, omit paragraphs (16) thru (23) and proceed with paragraph (24).

(16) Remove and discard the 151346 Screw and 2191 Lock Washer that secure the intermediate typing unit driving gear to the 151127 Shaft of the intermediate gear assembly, discarded in paragraph (8). Remove and discard the 112626 Nut, 2669 Lock Washer and 3438 Washer from the end of the shaft. Remove and discard the shaft from the assembly. Retain the 151245 Felt Washer and the 154136 Eccentric Follower Pawl and discard the remainder of the assembly.

(17) Remove and retain the following from the 162642 Gear Shift Assembly: 158788 Bearing Clamp by removing and retaining the 151631 and 151722 Screws and 2191 Lock Washers; the 151631 Screw, 72509 Lock Washer and 76099 Flat Washer that fasten the 76492 Bearing to the 199450 Shaft.

(18) Remove and retain the 199243 Shaft and assembled parts from the 162642 Gear Shift Assembly by removing and retaining the following: the 162659 Bearing Clamp by removing and retaining the 151657 Screw and 2191 Lock Washer; the 162649 Bearing Clamp by removing the 151722 Screw, 2191 Lock Washer, the 3606 Nut and 2191 Lock Washer; the two 130499 Bearings by removing and retaining the 151630 Screws, 72509 Lock Washers, and 7002 Flat Washers; and the left 114125 Screw and 124177 Lock Washer that fasten the 198695 Key to the 199243 Shaft. Remove the 1257 Screw from the 162643 Bracket and shift the assembly to the 75 WPM position. To facilitate removing the 162656 Shaft, slide the 199243 Shaft and assembled parts as far to the left as possible.

(19) Assemble the 151245 Felt Washer, retained in paragraph (16), to the round part of the 162658 Hub.

(20) Break off and discard the indicated part of the 154136 Eccentric Follower Pawl as shown in Figure 2, being careful not to bend or deform retained portion. "Smooth off" broken end of retained part.

(21) Assemble the 154136 Eccentric Follower Pawl to the eccentric part of the 162658 Hub with its spring hole down and with the long arm extending forward.

(22) Reassemble the 199243 Shaft and its assembled parts to the 162642 Gear Assembly by reversing the procedure in paragraphs (16), (17) and (18).

(23) Follow procedure outlined in paragraph (24) but be careful to fit the 154136 Pawl Arm into the slot of the 151884 or 154134 Bracket on the time delay mechanism and to hook the 110436 or 76295 Spring to the holes in the pawl and the bracket.

(24) Mount the 162642 Gear Shift Assembly to the two 173908 Posts with the two 125231 Nuts and two of the three 2669 Lock Washers retained in paragraph (8) and fasten the front of it to the 173912 Plate Assembly with the 1257 Screw and the 2669 Lock Washer retained in paragraph (8).

(25) Mount the motor unit to the base using the two 151678 Screws retained in paragraph (10) for the two right mounting holes and a 76279 Screw and 2449 Lock Washer for the left front mounting hole. Mount the 162686 Gear Guard with the 76279 Screw and 2449 Lock Washer. Route the motor unit cable to the rear of the 162686 Gear Guard and fasten the two terminal ends to terminals 1 and 2 of the 151415 Terminal Board. Reroute cables that interfere with gear shift assembly or linkage.

b. 163359 Modification Kit

(1) Follow the procedure outlined in paragraphs 2.a.(1) and (2).

(2) Remove the motor unit cable and the 154206 Cable from the 151415 Terminal Block.

(3) Remount the 154176 Bracket and its associated keyboard connector assembly and the 151415 Terminal Block to the 163360 Bracket with its mounting posts and screws.

(4) Reroute the 154206 Cable under the 163360 Bracket and refasten the cable to the terminal block.

(5) Mount the 163360 Bracket to the base with two 151630 Screws, 2191 Lock Washers and 7002 Flat Washers.

(6) Follow the procedure outlined in paragraphs 2.a.(8) thru (25), except omit the 173906 Spacer referred to in paragraph 1.b.(13).

### \*3. ADJUSTMENTS AND LUBRICATION

For standard adjustments and lubrication procedure refer to standardized information, for other than Bell System see Teletype Model 28 Printer Adjustment Bulletin 217B. Make the following adjustments.

a. The following four adjustments should be made before installation.

(1) Shoulder Screw (Figure 3)

(a) There should be a barely perceptible clearance between the 162643 Bracket and the 162661 Lever at the shoulder screw pivot.

(b) To adjust, tighten the shoulder screw until friction tight and then loosen approximately 1/8 turn. Lock the shoulder screw by tightening the 3606 Nut.

(2) Selector Lever

(a) With the mechanism assembled, place the speed selector lever in a detented position at 100 WPM. There should be a full mesh of the mating gears as shown in Figure 4. If this condition is not met, loosen the nut on the eccentric shoulder screw so that it is friction tight, and adjust by turning the shoulder screws. Tighten nut and re-check alignment.

(3) Spreader Post Adjustment (Figure 5)

(a) Tightening of the two 3606 Nuts or the 151632 Screw on the 162660 Post should not compress or spread the 162643 Bracket

(b) To check, loosen both 3606 Nuts until there is some clearance between them and the 162643 Bracket. Turn the inner 3606 Nut until it touches the inner side of the 162643 Bracket. Finally, lock the 162660 Post into position by tightening the outer 3606 Nut.

#### NOTE

If the sides of the 162643 Bracket are distorted by improper assembly of the 162660 Post, misalignment will occur in the bearings causing short bearing life.

(4) Gear Bracket

(a) With the mechanism and typing unit mounted in place and the 162686 Gear Guard removed, there should be .002 to .006 backlash between the typing unit driven gear and the typing unit driving gear at the point where the backlash is the least.

(b) To adjust, loosen until friction tight the left front motor bracket mounting screw of the 173912 Plate Assembly, Position the complete gear bracket assembly by utilizing the adjusting slot located in the rear of the 173912 Plate Assembly. Align the gears at this time.

(c) There should be .002 to .006 backlash between the motor pinion and the driven idler gear at the point where the backlash is the least.

(d) To adjust, raise or lower the front end of the gear bracket by means of the adjusting and clamping screws located at the front end of the bracket.

(e) Recheck requirement (a) and refine (a) and (c) if necessary.

#### \*4. LUBRICATION

a. Place three drops of oil on the pivot screws of the speed selector lever and the speed selector link.

b. Place three drops of oil on the pivot posts of the speed selecting lever and the speed selector link.

c. Grease and oil lightly each of the gears on the variable speed mechanism as well as the motor pinion.

d. Saturate with oil the felt washer under the 158723 Speed Selector Roller. Apply grease to the outside of the roller and sides of the change gear cluster.

e. Grease the 162656 Shaft where the cluster of change gears slide when the speed is changed.

f. Place 3 drops of oil in each of the six ball bearings.

g. Saturate with oil the felt wick in the 198695 Bar.

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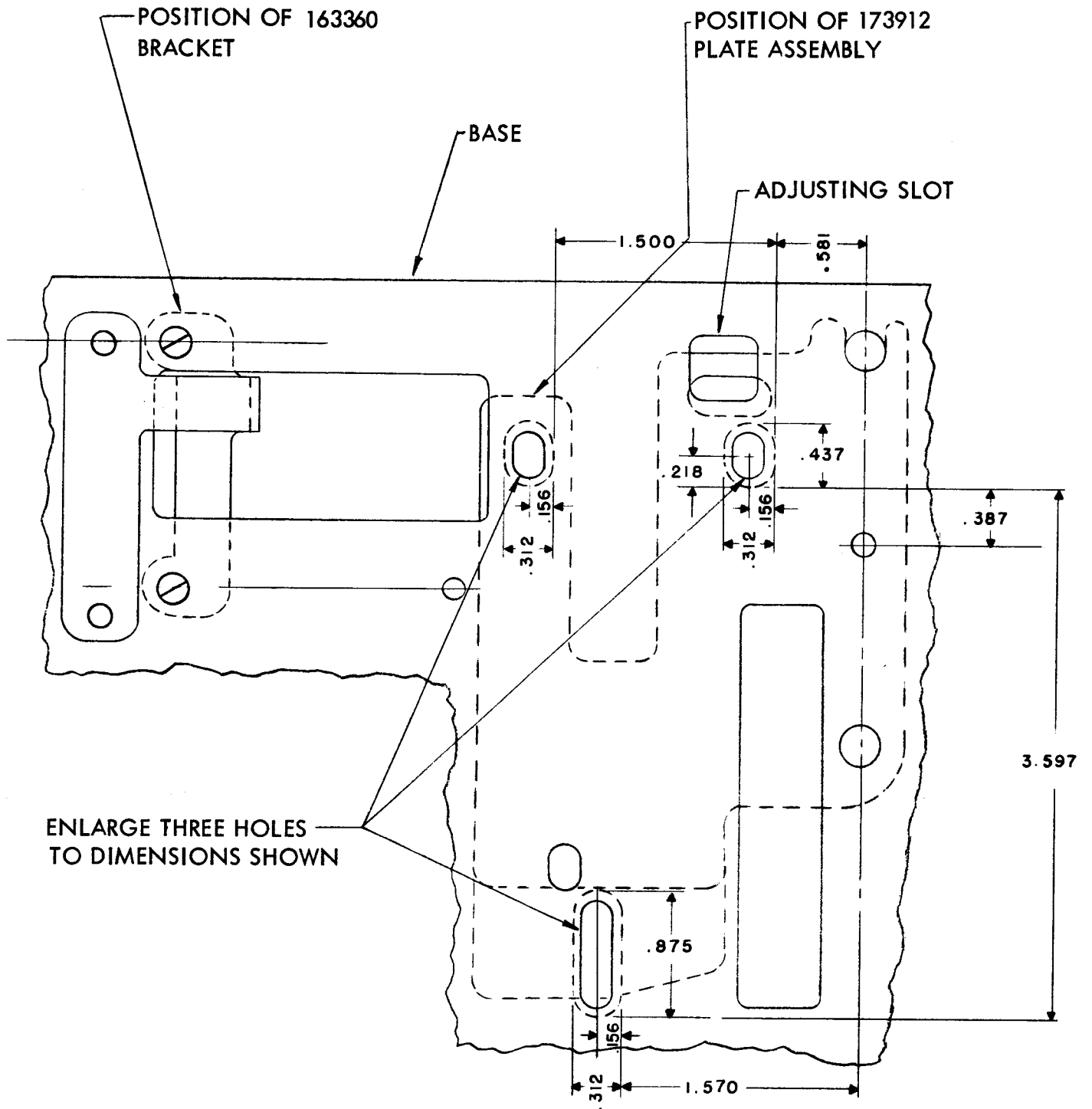
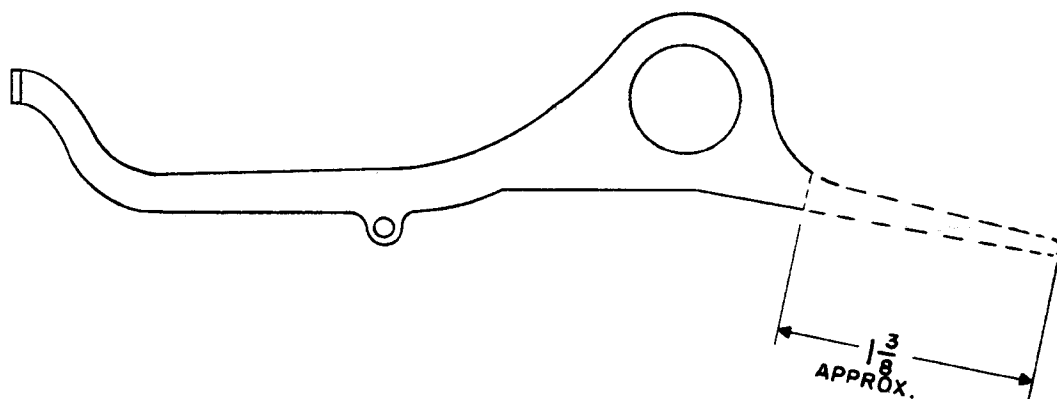


FIGURE 1.



59485

BREAK OFF DOTTED PORTION AS SHOWN.  
FILE SHARP EDGES OF BREAK.



PART NO. 154136

FIGURE 2.

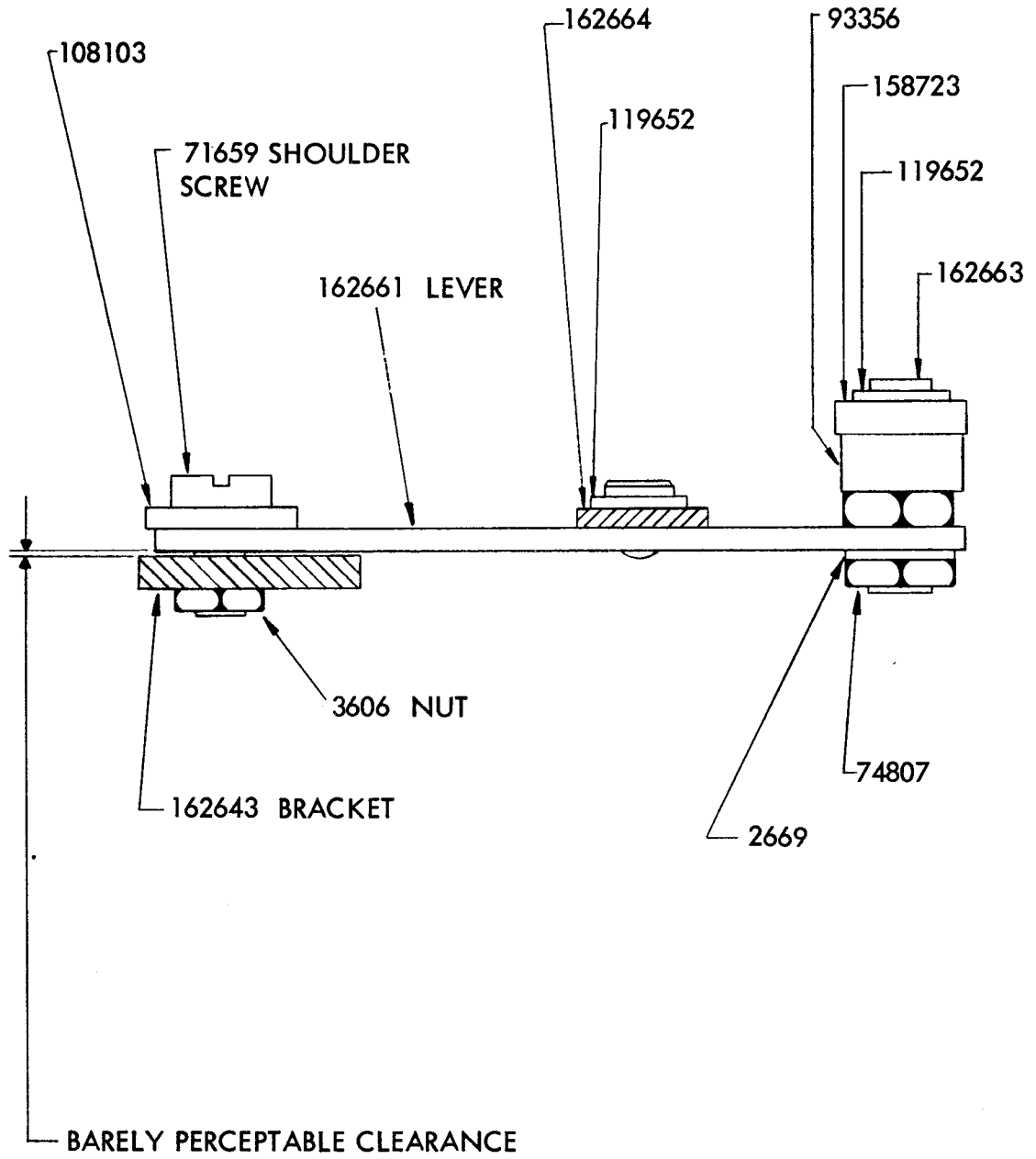


FIGURE 3.

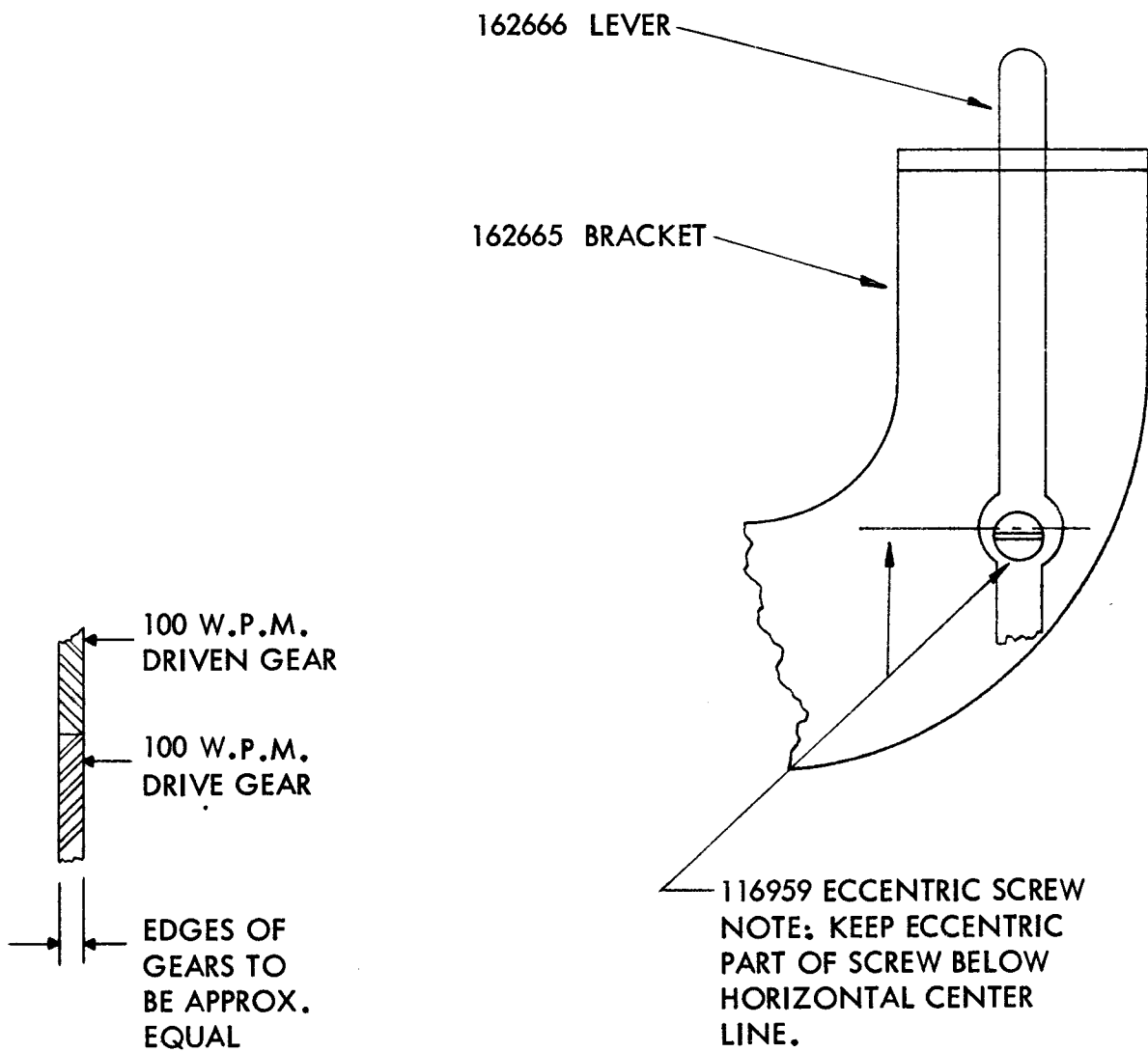
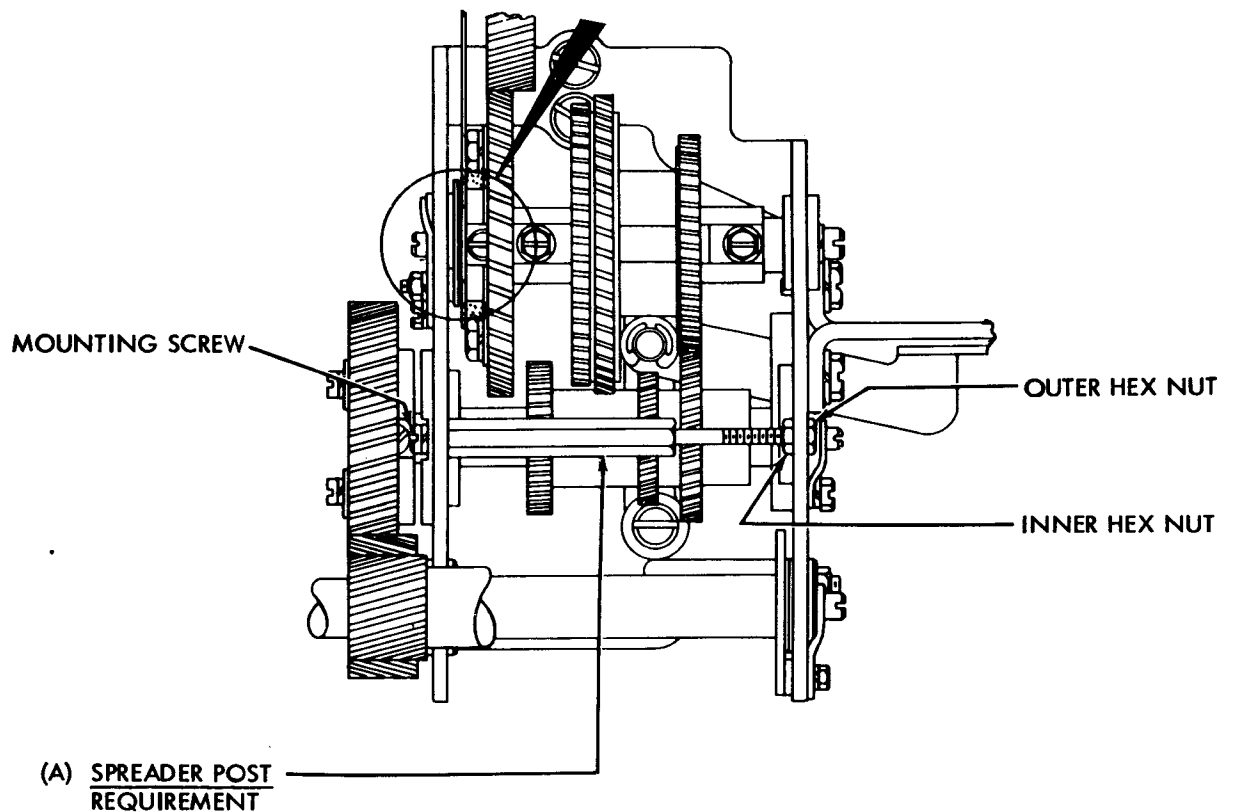


FIGURE 4.

## VARIABLE SPEED DRIVE



THE SPREADER POST SHOULD NOT SPREAD OR COMPRESS SIDES OF VARIABLE SPEED DRIVE ASSEMBLY.

**TO ADJUST**

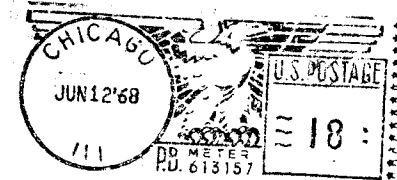
LOOSEN BOTH SPREADER POST HEX NUTS. TIGHTEN POST MOUNTING SCREW. TURN INNER HEX NUT UNTIL IT TOUCHES INNER SIDE OF BRACKET. TIGHTEN OUTER HEX NUT TO LOCK POST IN POSITION.

**CAUTION:** IMPROPER ASSEMBLY MAY CAUSE MISALIGNMENT RESULTING IN SHORTENED BEARING LIFE.

FIGURE 5

**TELETYPE®**

MESSAGE & DATA  
COMMUNICATIONS  
EQUIPMENT



**TELETYPE®**  
**CORPORATION**

5555 TOUHY AVENUE, SKOKIE, ILLINOIS  
1143

DEPENDABILITY IN MESSAGE AND DATA  
COMMUNICATIONS EQUIPMENT

RM-152340 (1-65)

*to*

MILWAUKEE RAILROAD DEPOT  
433 West St. Paul Avenue  
Milwaukee, Wisconsin 53203

Attention: Mr. E. Rowekamp