

INSTRUCTIONS FOR INSTALLING THE 311728 MODIFICATION KIT TO
PROVIDE THREE SPEED GEAR SHIFT FOR MODEL 28 KSR OR RO SET

1. GENERAL

1.01 The 311728 modification kit provides a three speed gear shift (45.5, 50, and 75 baud, 7.00 unit code) for a Model 28 KSR or RO Set. The kit mounts in the same area as the intermediate gear assembly on the keyboard or base. Compatibility with the time delay motor stop is provided.

Note: The associated page printer must be similar to LP72 which has the necessary 163459 driven gear and the 163503 (26T) keyboard drive gear for use with 7.00 unit code. In addition, the keyboard must have the 163519 gear sleeve assembly (28T) and the 163368 cam assembly for 7.00 code transmission.

1.02 This modification kit is not compatible with an LD mounted on the keyboard or base, the 164848 modification kit to provide parallel output contacts, or with the 163146 modification kit to provide universal contact on a printer, or the 310261 modification kit to add electrical controlled carriage return and line feed. It is also incompatible with the wall mounted printer and any early design keyboard.

1.03 The 311728 modification kit may also be used to provide speed change for printers mounted in LBAC233, 235, or 247 cabinets; however, the cabinet must be equipped with two 195921 and one 195922 modification kits if paper winders are used.

1.04 If this modification kit is to be installed on a keyboard which is equipped with the 154145 local reverse line feed modification kit, two of the local reverse line feed parts must be replaced. These replacement parts are not supplied with the 311728 modification kit but are available as the 149896 modification kit.

1.05 The 311728 modification kit provides an eccentric follower pawl compatible with the 154142 modification kit to provide the keyboard with a time delay mechanism. When the 311728 modification kit is used, the pawl and the eccentric supplied with the time delay mechanism are to be discarded. The replacement eccentric follower pawl is slotted to allow insertion into the gear shift assembly if the time delay mechanism is to be used.

SPECIFICATION 50451S

1.06 The 311728 kit consists of:

7	2191	Lockwasher	1	159287	Pinion retainer
5	2669	Lockwasher	2	161301	Post
1	3598	Nut	2	192025	Flat washer
2	6970	Nut	1		Lever
2	7002	Flat washer	1	195168	Bracket
2	44035	Screw	1	195169	Bracket
1	97393	Shoulder screw	1	195420	Pawl
1	98502	Flat washer	1	198679	Bolt retaining bracket
1	119652	Retaining ring			
2	121414	Post	3	198680	Clamping screw
2	145393	Bushing	1	304274	Lever
1	149881	Gear cover	1	307788	Bracket
2	151630	Screw	1	311889	Helical gear
5	151631	Screw	1	311890	Gear with insert
1	151658	Screw	1	311892	Speed shift gear bracket assembly
1	152441	Flat washer			

1.07 For parts ordering information, other than the parts in the kit, see Teletype Parts Bulletin 1149B. (U.S. Navy see Navships 93241.)

2. INSTALLATION

2.01 Remove the keyboard or base from the cabinet following standard procedure.

2.02 Remove from the keyboard or base and discard the following items:

- (a) Intermediate gear assembly and associated mounting facilities. Save one of the two 151712 pivot buttons.
- (b) Connector and motor terminal block mounting bracket. Retain all connector and terminal block hardware.
- (c) Motor pinion.
- (d) If this modification kit is to be installed on a Model 28 keyboard or base, discard the two 121414 posts (posts used on LBAC installations only).
- (e) It may be desirable to remove the motor to make subsequent assembly easier.

SPECIFICATION 50451S

2.03 Remove either the 154085 or 145307 intermediate gear assembly support plate (whichever exists on unit). Remove the oil drip pan on the upper or middle shelves if installation is being made on an LBAC apparatus cabinet. Insert the two 198680 clamping screws through the 198679 bracket. Secure bracket to base (raised extension toward rear) using the furnished 44035 screws, 2669 lockwashers, and 304229 plate using the slots at the rear of the keyboard vacated by the intermediate gear assembly. (See Figure 4.) Position bracket at forward edge of slots (toward printer) and tighten the 44035 screws.

Note: The following three items are normally assembled at the factory. These instructions are for field reference.

- 2.04 Position the 151245 felt washer on the 145386 sleeve assembly. (See Figure 1.)
- 2.05 Insert the 145383 key into keyway of the 195417 shaft with 145385 spring and 145384 pin in place. Hold spring depressed. (See Figure 1.)
- 2.06 With the left end of the 145383 key extending beyond the left end of the 195417 shaft, position the extension of the left end of the key in the hole on the inner bearing surface of the sleeve assembly and slide the sleeve assembly onto the 195417 shaft. Care must be taken that the spring and pin at the right end of the key remain in alignment as the key slides into the bearing in the 311893 gear bracket. The 145386 sleeve assembly should be assembled on the 195417 shaft with the 151245 felt washer nearest the 311893 gear bracket casting.
- 2.07 Assemble the 195167 lever to the 307788 bracket with the 97393 shoulder screw, 2191 lockwasher, and 3598 nut. Assemble the 307788 bracket to the 311893 gear shift casting with three each 151631 screw and 2191 lockwasher. At the same time, the slot in the lower end of the 304272 lever should be placed over the stud on the 145386 sleeve. Fasten lever in place with the 152441 flat washer and 119652 retaining ring. (See Figures 1 and 4.)
- 2.08 Place the gear bracket assembly over the clamping screws. Assemble remaining 198680 clamping screw and associated hardware through the remaining slot vacated by the intermediate gear assembly. (See Figure 4.)
- 2.09 If a time delay mechanism is to be used, insert the 195420 pawl into the gear bracket assembly. The open end of the pawl fits on the eccentric hub of the 304212 gear. Fasten the 311890 gear to the 145367 drive shaft with a 151658 screw and 2191 washer. (See Figure 3.)

SPECIFICATION 50451S

- 2.10 Fasten the 311889 motor pinion to the motor with a 159287 retainer and two 161301 posts. Adjust and lubricate as given in Section 3.

Note: The next three paragraphs do not apply to installations made in LBAC cabinets.

- 2.11 Mount the connector to the 195168 bracket using retained hardware. The 152462 and 152463 latches are now mounted on opposite sides as previously mounted and also the 86835 spring is now mounted forward of the connector rather than in back of the connector.

Note: Any leads not long enough to reach the new terminal block position must have additional wire spliced to the lead.

- 2.12 Fasten the 195168 bracket and the 195169 terminal block bracket to the bracket mounted to the gear shift casting. Place the 195169 bracket between the 195168 bracket and the gear shift bracket. Use two each 151630 screw and 2191 lockwasher. (See Figures 3 and 5.)
- 2.13 Fasten the motor terminal block to the 195169 bracket using retained hardware. On the top or middle shelf of an LBAC apparatus cabinet, the two 121414 posts are mounted in place of the 151415 terminal block, the two 151335 posts, and the two 150966 insulators. (See Figure 2.)
- 2.14 Check wiring diagram for all correct connections to motor terminal block. Check cable routing clearances to moving parts.
- 2.15 Mount the 149881 gear cover on top of the terminal block cover. Replace the original screws holding the cover with the two 151631 screws. Also use two 7002 flat washers.
- 2.16 Replace the oil drip pan removed in Paragraph 2.03.
- 2.17 If the 311728 modification kit is to be mounted in an LBAC233, 235, or 247 apparatus cabinet, refer to Specification 50209S for the 195921 and 195922 modification kits to equip Model 28 apparatus cabinets with paper winders if paper winders are used.
- 2.18 Upon completion of installation and adjustment of this modification kit, it should be shifted through its three speed selections while the motor is running to assure interference free operation of the shaft linkage. If the proper speed transmission lines are available, it is suggested that the printer associated with this gear shift be connected to these signal lines to check proper speed of operation. If a time delay mechanism is used with this kit, it should be checked to assure proper operation.
- 2.19 To service this mechanism it is not necessary to remove the keyboard from the cabinet. Remove printer, motor unit, and 149881 cover.

SPECIFICATION 50451S

3. ADJUSTMENTS AND LUBRICATION

3.01 GEAR SHIFT ASSEMBLY GEAR PLAY Adjustment

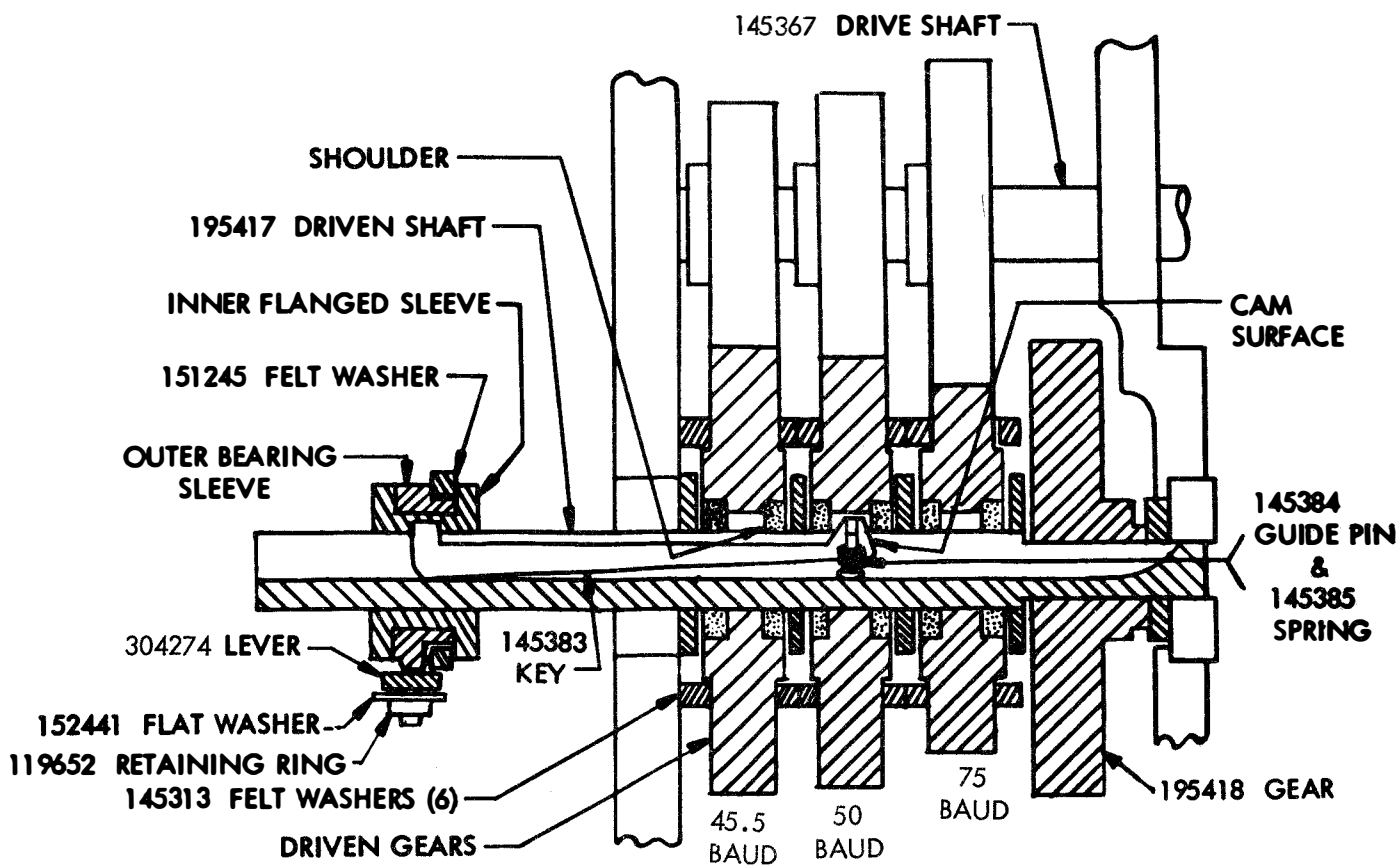
- (a) Requirement: There should be 0.004 to 0.008 inch backlash between the printer main shaft gear and the driving gear of the gear shift assembly at point of least gear mesh clearance.
- (b) To Adjust: Loosen three gear shift mounting screws and position gear shift assembly.
- (c) Requirement: There should be 0.004 to 0.008 inch backlash between the motor pinion and its mating gear on the gear shift assembly at point of least gear mesh clearance.
- (d) To Adjust: Loosen three gear shift mounting screws. Raise or lower rear end of the gear shift assembly by loosening clamp nuts and turning adjusting bushings. Recheck 1.11.

3.02 KEY SPRING TENSION Adjustment

- (a) Requirement: It should require 25 to 40 ounces applied above the spring to depress the key to its lowermost position in the slot.
- (b) To Measure: It is necessary to disconnect the operating linkage by removing the retaining ring and moving the operating end of the key out from under the gears. Use care to avoid loss of pin and spring.

3.03 Lubrication:

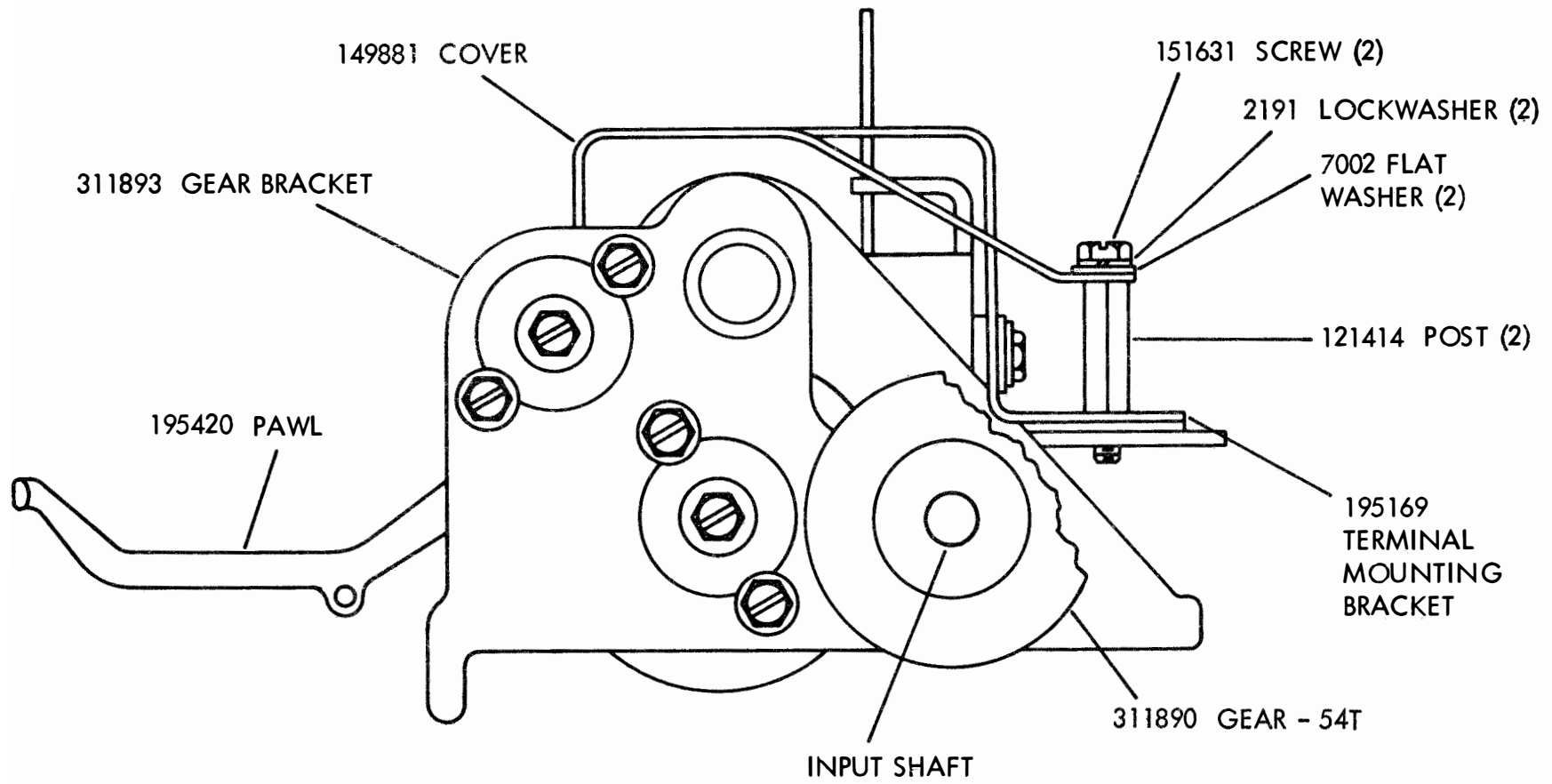
- (a) Put light coat of grease around periphery of all gears.
- (b) Saturate felts in gear shift assembly with oil.
- (c) Put two drops of oil on bronze bearings in gear shift assembly.
- (d) Both pivot points of shift lever - 1 or 2 drops.
- (e) Flanged sleeve and bearing - light coat of oil.
- (f) Key and spring - light coat of oil.
- (g) Eccentric follower pawl - 1 or 2 drops at eccentric bearing surface.



OPERATION OF SPEED SHIFT GEAR BRACKET ASSEMBLY AND ASSOCIATED PARTS

NOT TO SCALE

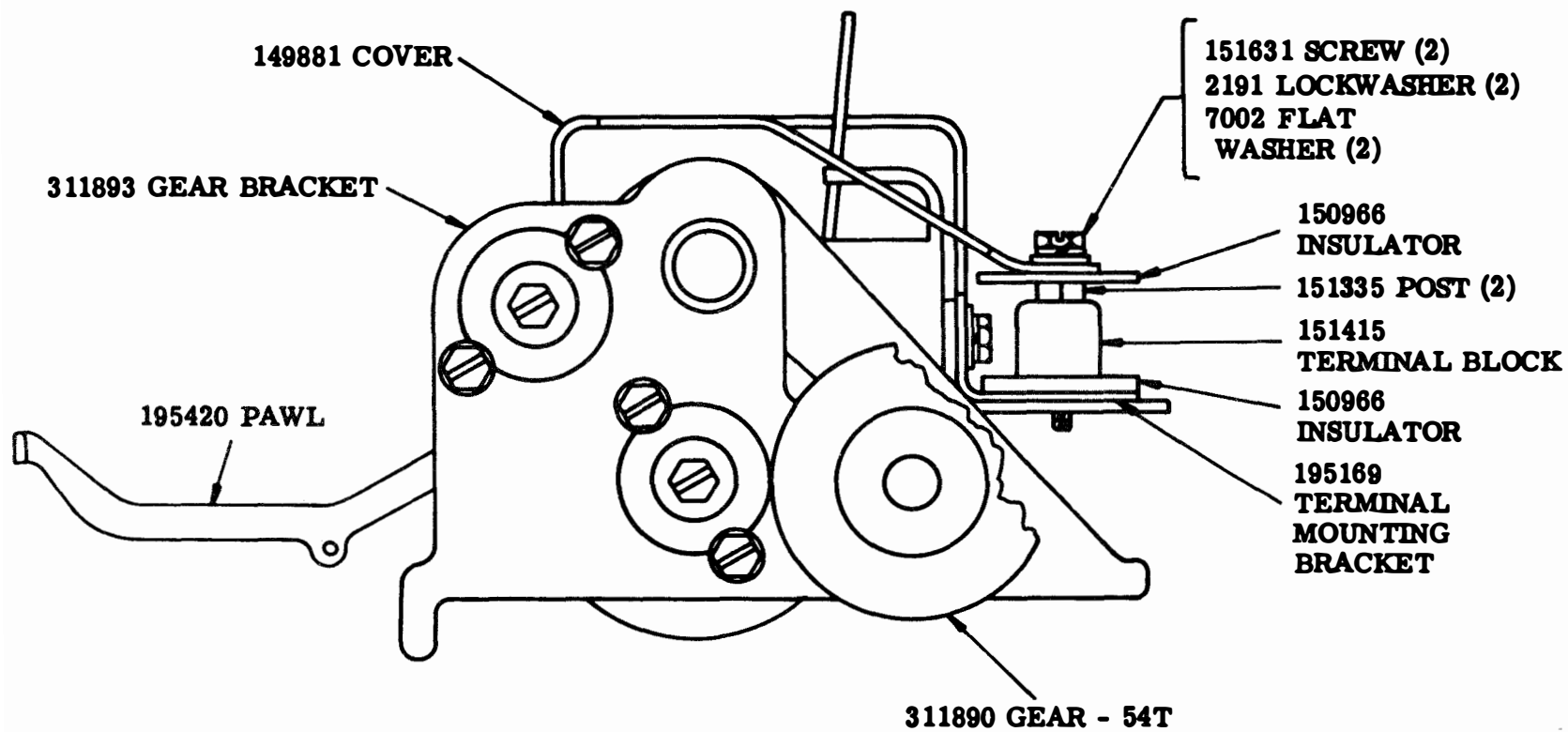
FIGURE 1



504515

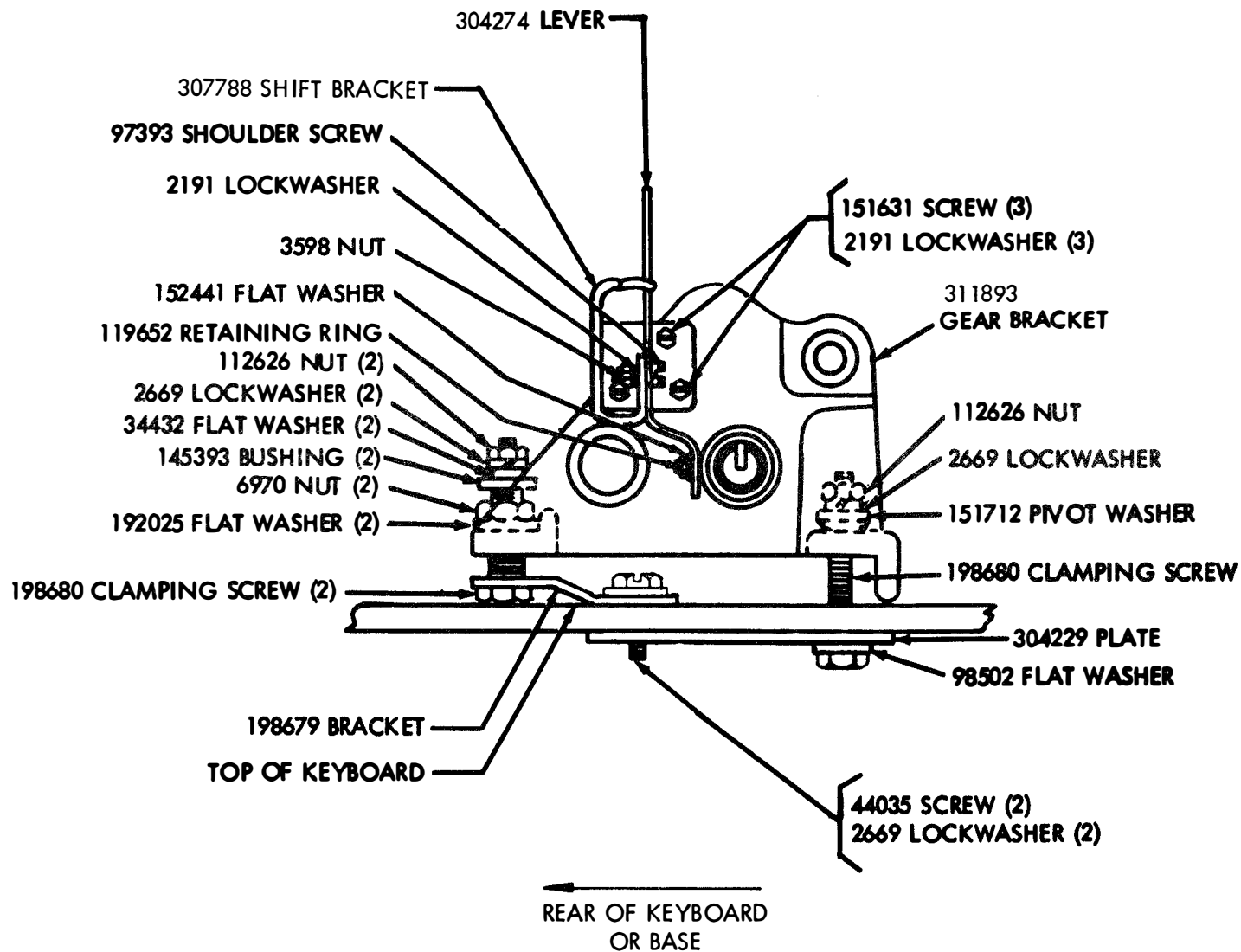
(THIS FIGURE APPLIES TO INSTALLATIONS MADE IN LBAC CABINETS ONLY)

FIGURE 2



504515

FIGURE 3



504515

FIGURE 4

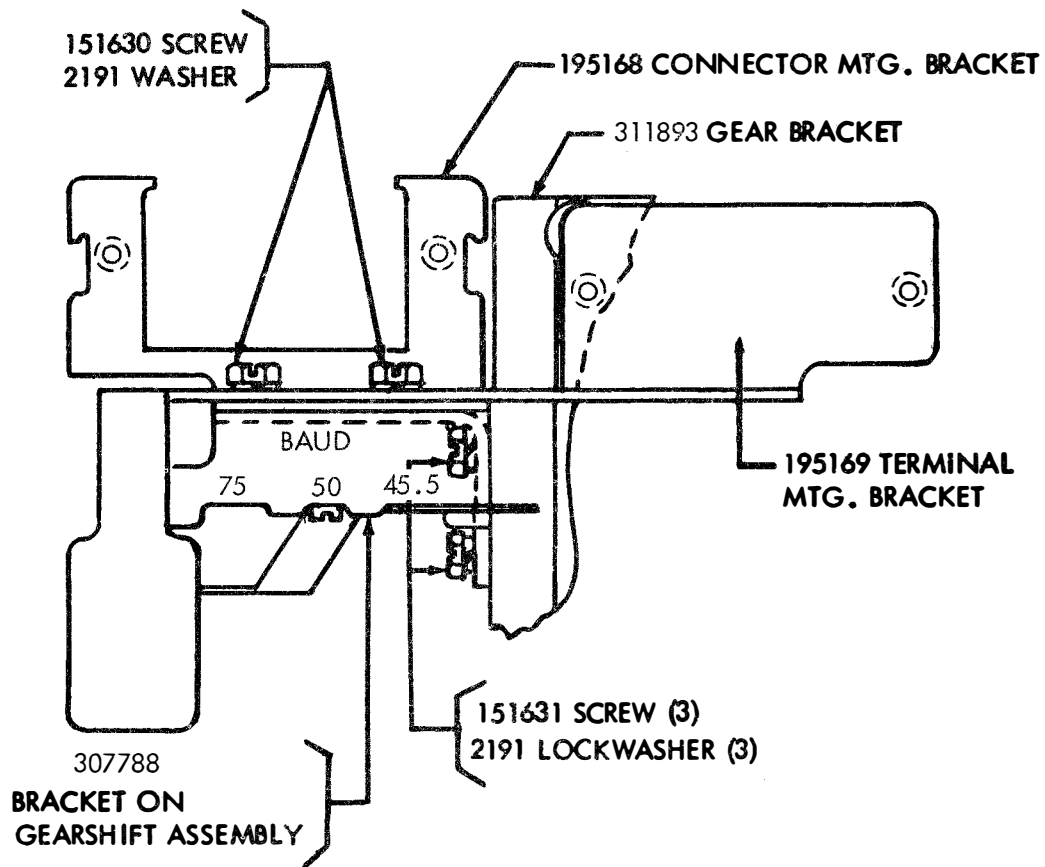


FIGURE 5