

INSTRUCTIONS FOR INSTALLING 174491 MODIFICATION KIT TO
PROVIDE RADIO-FREQUENCY FILTER FOR SIGNAL GENERATOR
CONTACTS OF MODEL 28 KEYBOARDS LK6 AND UP, LAK,
LTPK, LTRK, AND TRANSMITTER DISTRIBUTOR LXD

The following chart applies to Bell System only:

TELETYPE NOMENCLATURE	BELL SYSTEM NOMENCLATURE
LK6 and up - Send-Receive Keyboards	28D and up - Teletypewriter Bases
LAK Automatic Send-Receive Keyboard Base	28 Perforator Transmitter Base
LTPK Tape Printer Keyboard	28 Tape Teletypewriter Base
LTRK Typing Reperforator Keyboard	28 Typing Reperforator Base
LXD Transmitter Distributor	28 Transmitter Distributor Unit

1. GENERAL

1.01 The 174491 modification kit, when installed, prevents arcing of the signal generator contacts and reduces propagation of radio-frequency interference from the Model 28 LK6 and up, LAK, LTPK, LTRK, and LXD signal generators. The 195923 radio-frequency filter should be used in conjunction with the 154651 electrical noise suppressor assembly (not approved for Bell System use) used to suppress radio-frequency interference from the dc signal line of the Model 28 LAC or LAAC cabinets.

1.02 The 174491 modification kit is applicable only to signal line circuits in which the signal generator contacts are wired to provide neutral operation.

1.03 The 195923 radio-frequency filter of the 174491 modification kit mounts inside the signal generator contact box in place of the 154166 arc suppressor.

1.04 The 174491 modification kit consists of:

1	195923	Filter, R. F.	1	154226	Strap and Contact Box Assembly
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1.05 For schematic diagram of the 195923 filter see Figure 1.

2. THEORY OF OPERATION

2.01 The opening and closing of signal generator contacts causes rapid interruptions in electrical currents which may cause undersirable electrical disturbance to be generated.

2.02 The radio-frequency filter assembly minimizes buildup of voltages and currents generated when signal line current is suddenly interrupted by the signal generator contacts. The resistance-capacitance and capacitance networks reduce arcing at the signal generator contacts and limit buildup of radio-frequency voltages between the signal line leads and ground, while the choke coils impede radio-frequency currents traveling along the signal line. Thus, propagation of radio-frequency voltages and currents outside of the signal generator contact box is reduced.

3. INSTALLATION

3.01 DISASSEMBLY

(a) For the LXD, remove the 156608 cover plate.

(b) Remove the 154131 contact box cover by removing the retaining nut and the lockwasher. Disconnect the 154166 arc suppressor and signal line leads. Retain the 1293 screws and the 110743 lockwashers. Remove the screw and mounting hardware from the 121242 signal line cable clamp, located on the base. Remove the signal line cable with strain relief plate and grommet from contact box.

(c) Unhook the 86304 drive link spring from the drive link. For the LK, LAK, LTPK, and LTRK, remove the two 151632 screws, 2191 lockwashers, and 7002 flat washers that mount the 154056 contact box mounting bracket to the unit front plate. For the LXD, remove the two 156747 shoulder screws, 2191 lockwashers, and 76099 flat washers that mount the 156643 contact box mounting bracket to the unit front plate.

(d) Disengage the 156644 drive link from the transfer bail. Lift up and remove the contact box assembly from the unit.

- (e) Remove the 151880 locknut from the top of the 154194 base. Turn the contact box assembly over and remove the 151731 screw, the 151686 screw, and the 3640 lockwashers that retain the contact assembly to the contact box. Remove the 154166 arc suppressor and the entire contact assembly from the contact box by sliding the drive link through the slot in the contact box.
- (f) Remove the 151152 screw and 3640 lockwasher that secure the 154130 contact box to the contact box mounting bracket. Remove the 154189 insulator strip from the contact box and discard the box.

3.02 ASSEMBLY

- (a) For the LK, LAK, LTPK, and LTRK, assemble the 154226 contact box with strap to the 154056 bracket with the 151152 screw and 3640 lockwasher. For the LXD, assemble the 154226 contact box with strap to the 156643 bracket with the 151152 screw and 3640 lockwasher.
- (b) Insert the 154189 insulator strip in the 154226 contact box and install the contact assembly; insert the drive link through the slot in the insulator and contact box. Secure the contact assembly to the contact box with the 151731 and 151686 screws, and 3640 lockwashers.
- (c) Insert the 195923 R. F. filter in the 154226 contact box and secure to the 154194 base by assembling the 151880 locknut to the 151731 screw over the filter ground plate.

Note: When tightening the 151880 locknut, hold the R. F. filter against the side of the contact box so that the filter does not exert pressure against the 154194 base.

- (d) For the LK, LAK, LTPK, and LTRK, reassemble the contact box assembly and 154095 eccentric to the keyboard using the two 151632 screws, 2191 lockwashers, and 7002 flat washers. For the LXD, reassemble the contact box assembly and 154095 eccentric to the front plate of the LXD using the two 156747 shoulder screws, 2191 lockwashers, and 76099 flat washers.

Note: The high portion of the adjustment eccentric should be in the upward position.

- (e) Engage the 156644 drive link with the transfer bail and re-engage the 86304 drive link spring.

- (f) Secure the R. F. filter leads to the signal generator contact terminals with the 1293 screws and the 110743 lockwashers as illustrated in Figure 2.

Note: Make certain that the filter leads do not interfere with the moving parts in the contact box.

- (g) Remove the two 131099 terminals, 41733 or 154173 strain relief plate, and 154156 rubber grommet from the signal line cable. Trim the two signal line cable leads to approximate equal length. Skin both leads approximately 1/2 inch, twist and tin. Solder both leads to the R. F. filter as illustrated in Figure 2. The polarity of the signal leads need not be maintained.

Note: When soldering, make certain that the cable leads do not short to the case of the contact box.

- (h) Reinstall the 154131 contact box cover using the retaining nut and lockwasher previously removed.

- (i) For the LK, LAK, LTPK, and LTRK, take up excess signal line cable slack to the rear of the keyboard. Replace the screw and mounting hardware for the 121242 cable clamp on the keyboard base and tighten. For the LXD, wrap the excess signal line cable back underneath the contact box.

- (j) Fasten the copper-braided contact box ground wire as follows:

Note: Make certain that this ground wire does not interfere with any moving parts.

- (1) For the LXD with self-contained LXDB base, route the ground wire straight down and through the opening between the LXDB 156753 left base rail bar and the LXD 156598 support bar and fasten to the top of the 156602 plate by means of the LXD left rear 151723 mounting screw, 2669 lockwasher and 111516 flat washer as illustrated in Figure 3.

(2) For LXD mounted on LCXB base in ASR set, remove the 79890 mounting screw with 2449 lockwasher and 71858 flat washer from the left mounting slot of the LAAC cabinet 158679 front base rail. Insert the ground wire terminal on the screw and replace screw, lockwasher, and flat washer as illustrated in Figure 4.

(3) For LAK, remove the left front 151549 keyboard mounting screw. Route the ground wire down through the opening between the 158113 codebar extension frame and the 154055 front bracket, underneath the keyboard base and to the left side. Route the ground wire through the circular hole at the extreme left corner of the base and secure the ground wire terminal to the top of the lower keyboard base plate by means of the 151549 keyboard mounting screw as illustrated in Figure 5.

(4) For LK6 and up, remove the left front 151549 keyboard mounting screw. Route the ground wire down through the opening in the keyboard base and fasten to the top of the lower keyboard base plate by means of the 151549 keyboard mounting screw as illustrated in Figure 6.

(5) For the LTPK or LTRK, remove the left front 151549 keyboard mounting screw. Route the ground wire down through the opening in the keyboard base and fasten to the top of the lower keyboard base plate by means of the 151549 keyboard mounting screw as illustrated in Figure 7.

4. ADJUSTMENTS AND LUBRICATION

4.01 Refer to the following bulletins and remake the Signal Contact Clearance adjustment (Bell System refer to appropriate BSP sections):

- (a) Model 28 Page Printer Set (LK Keyboard) - Adjustment and Lubrication Bulletin 217B.
- (b) Model 28 Perforator Transmitter (LAK Keyboard) - Adjustment and Lubrication Bulletin 250B.
- (c) Model 28 Tape Printer and Typing Reperforator Sets (LTPK and LTRK Keyboards, respectively) - Adjustment and Lubrication Bulletin 247B.
- (d) Model 28 Transmitter Distributor (LXD) - Adjustment and Lubrication Bulletin 235B.

- 4.02 Apply one drop of KS7470 oil on hook at each end of the contact toggle drive link spring.
- 4.03 Apply a light coat of KS7471 grease to the portion of the contact toggle drive link that engages the transfer bail.

Note: For LXD only - After adjusting and lubricating the LXD (as applicable above), replace the 156608 cover plate.

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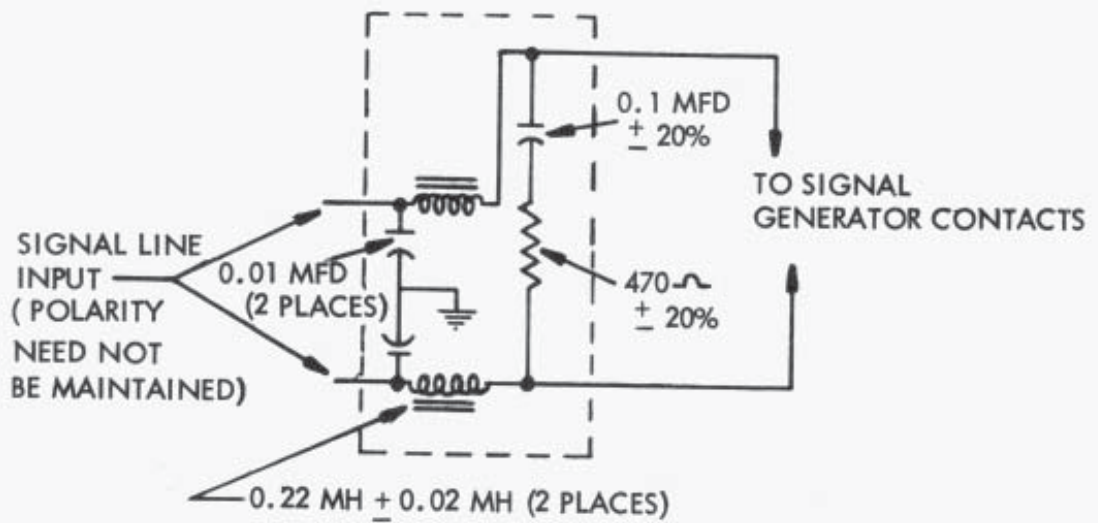
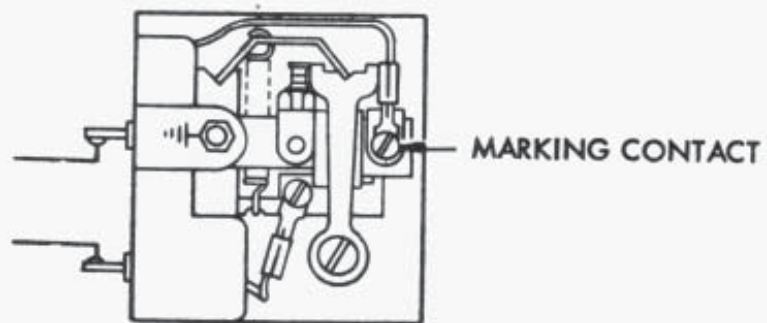


FIGURE 1. 195923 R. F. FILTER SCHEMATIC



NOTE: POLARITY OF INCOMING LEADS NEED NOT BE MAINTAINED

FIGURE 2. 195923 R. F. FILTER CONNECTIONS

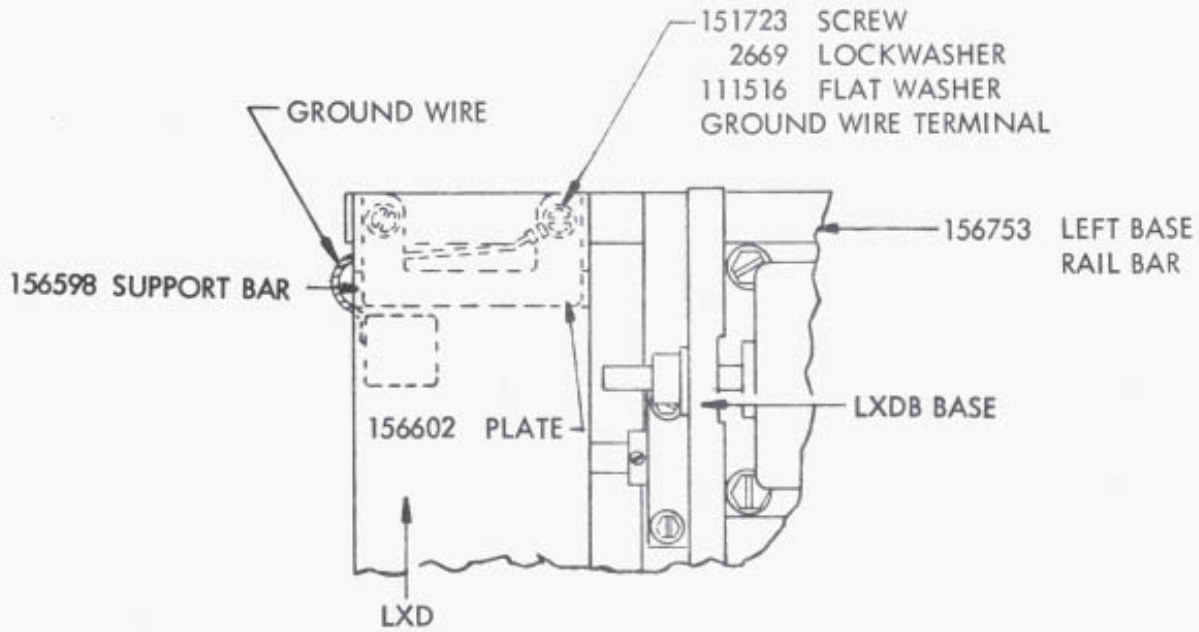


FIGURE 3. MODEL 28 LXD TRANSMITTER DISTRIBUTOR WITH LXDB SELF-CONTAINED BASE

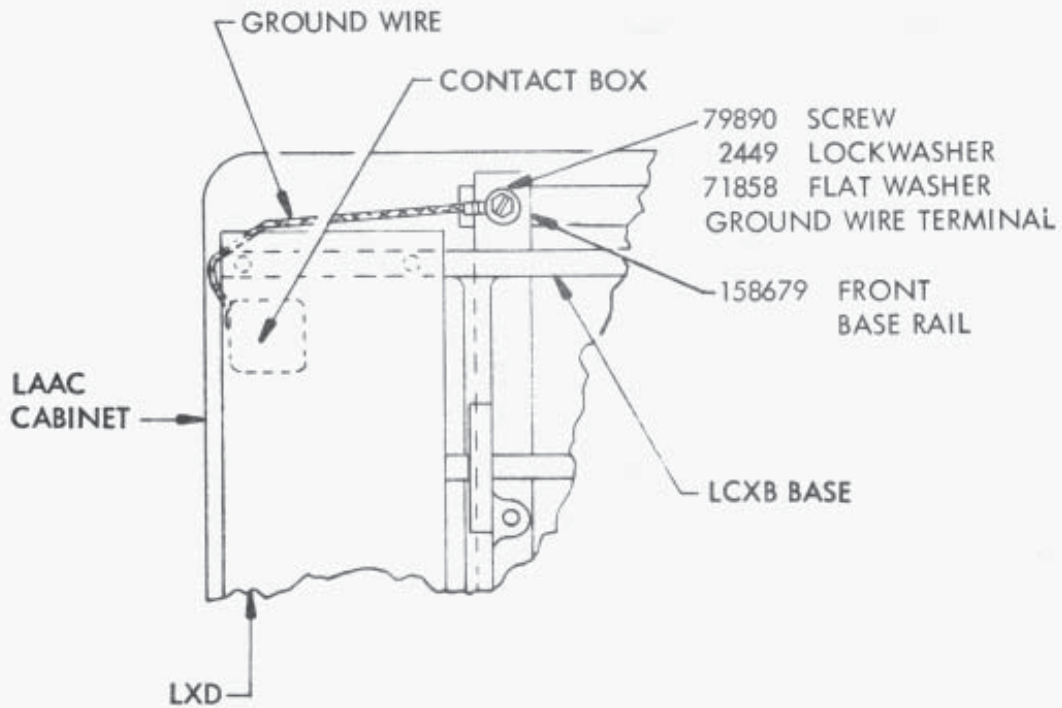


FIGURE 4. MODEL 28 LXD TRANSMITTER DISTRIBUTOR WITH LCXB BASE IN ASR SET

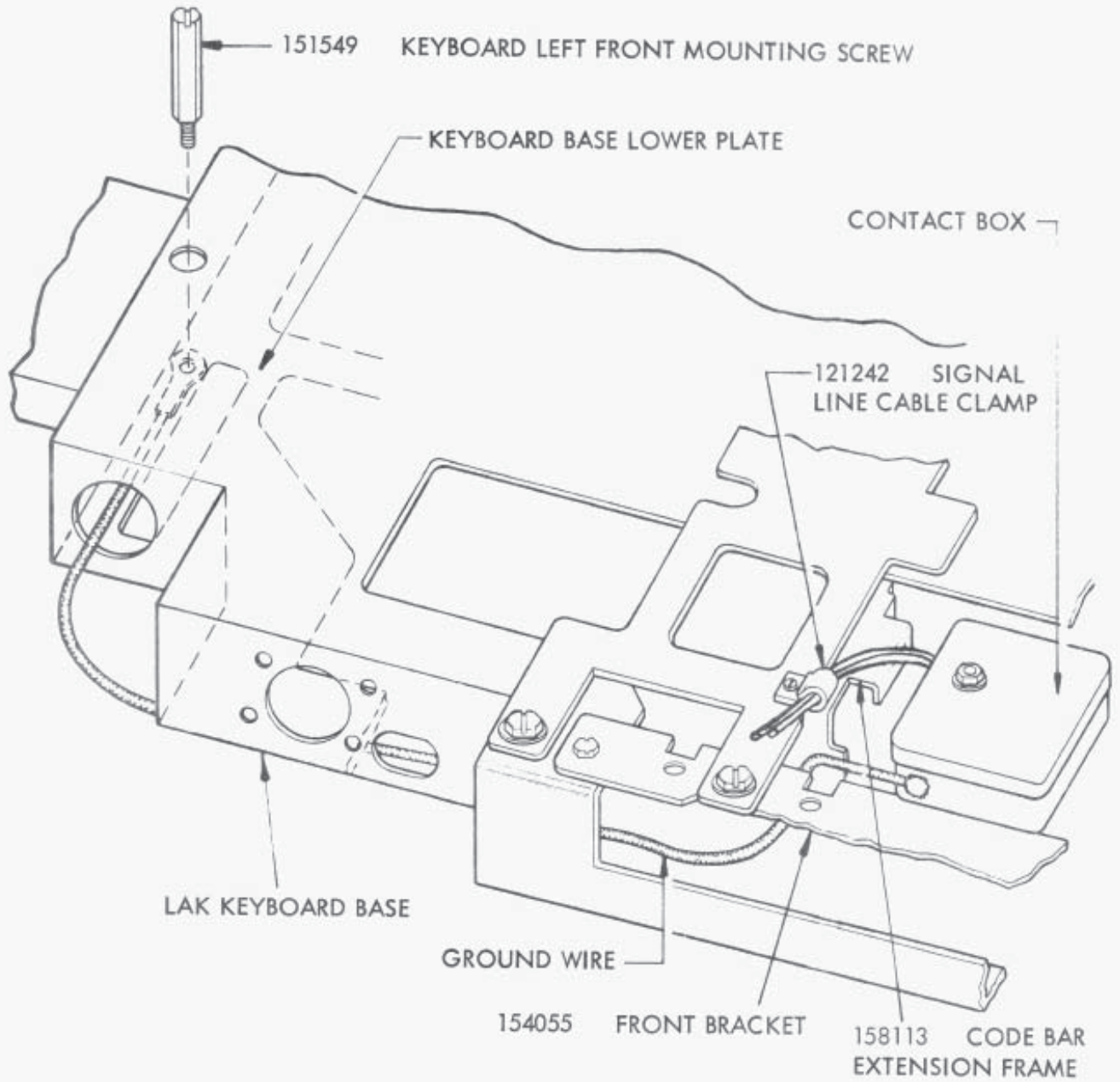


FIGURE 5. MODEL 28 LAK KEYBOARD IN ASR SET

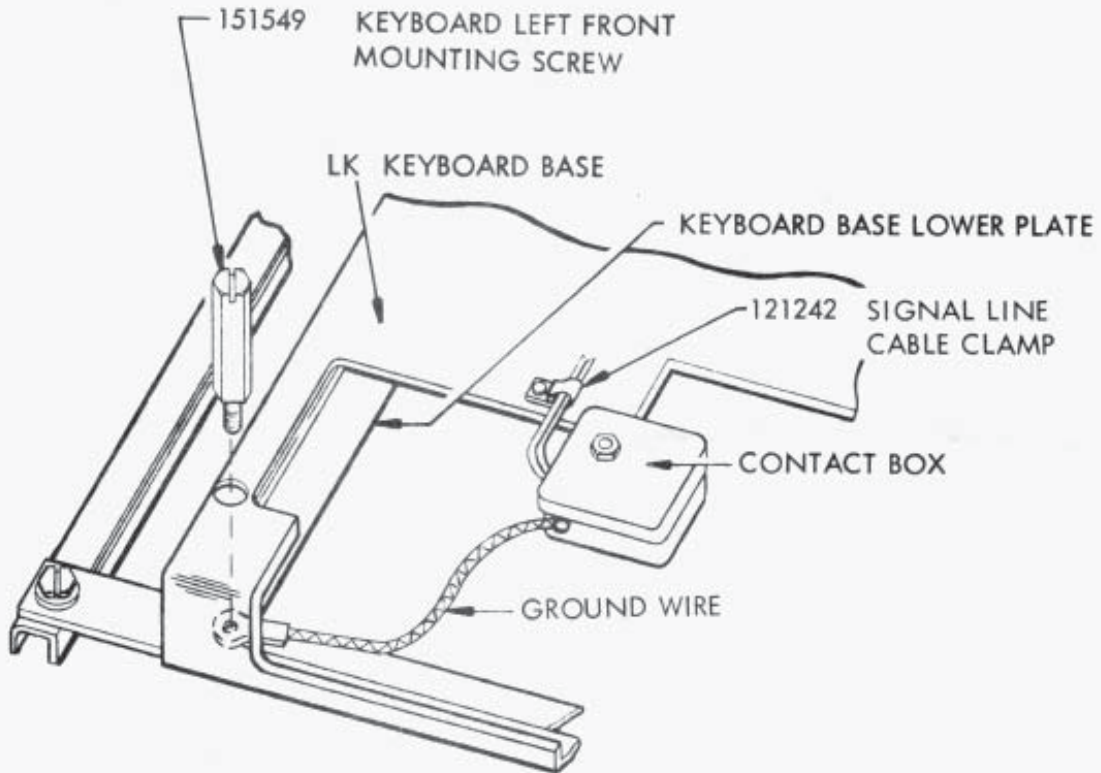


FIGURE 6. MODEL 28 LK KEYBOARD IN MODEL 28 CABINET

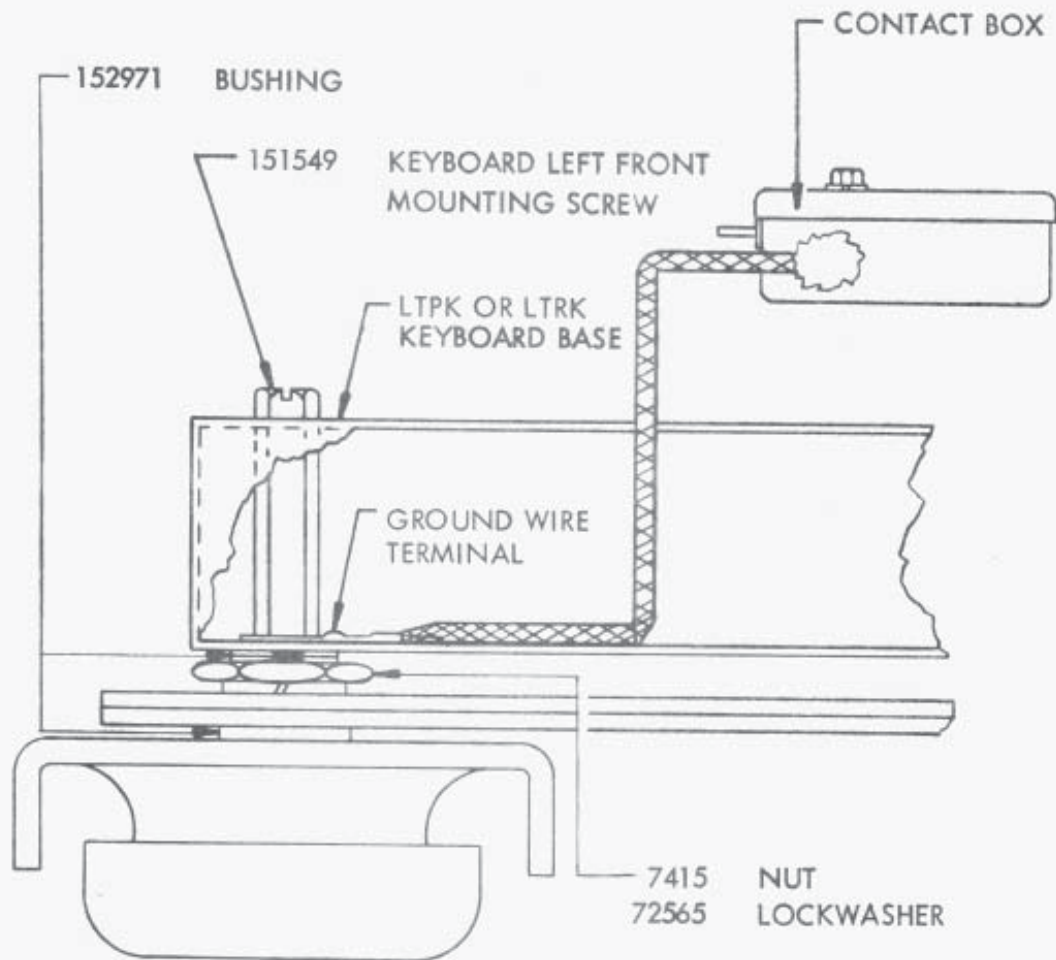


FIGURE 7. MODEL 28 LTPK TAPE PRINTER OR LTRK TYPING REPERFORATOR KEYBOARD