

**BELL SYSTEM PRACTICES**  
**Teletypewriter Stations**

**ADDENDUM P36.479**  
**Issue 1, September, 1957**  
**AT&TCo Standard**

# **INSTALLATION OF TP96807 OR TP115889 SET OF PARTS TO PROVIDE SWITCHING CONTACTS WHICH CLOSE AND OPEN AN EXTERNAL CIRCUIT ON 15 TELETYPEWRITER**

## **1. GENERAL**

- 1.001 This addendum supplements Section P36.479, Issue 4.
- 1.002 This addendum is issued to include an additional keytop which is required for a keyboard machine.

## **2. LIST OF PARTS**

The following change applies to Part 2 of the section:

(a) 2.07—revised

- 2.07 In addition to the TP96807 or TP115889 set of parts, the following parts are required for keyboard machines.
  - 1—(\*) Keytop with (\*\*) in upper case and (\*\*) in lower case (This keytop is for use with contact-close operation.)
  - 1—(\*) Keytop with (\*\*) in upper case and (\*\*) in lower case (This keytop is for use with contact-open operation.)

\* Specify whether spring cushion, pneumatic, or celluloid.

\*\* Specify character. This information may be obtained from the private-line service order.

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## **1. GENERAL**

1.01 This section gives information for installing the TP96807 or TP115889 set of parts on a 15 teletype-  
writer to provide a contact which is closed when a selected character is received and opened when another character is received. The mechanism can be used:

(a) To control the reception of signals on another teletypewriter or a reperforator.

(b) To control other switching or signaling arrangements.

Usually upper-case characters are used for control.

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1.02 This section is reissued:

- (a) To add the TP115889 set of parts which provides switching contacts operated by characters, such as upper-case F and H, to close and open an external circuit, on a 15 teletypewriter equipped with the horizontal tabulation feature and to change the title of this section accordingly.
- (b) To revise Figs. 1, 2A, and 2B.
- (c) To add a list of Bell System Practices associated with this section.

Marginal arrows are used to indicate changes.

1.03 **The TP96807 set of parts** is intended for installation on a 15 teletypewriter not equipped with the horizontal tabulation feature.

1.04 **The TP115889 set of parts** is intended for installation on a 15 teletypewriter equipped with the horizontal tabulation feature.

1.05 The teletypewriter equipment in 1.01 can be remotely controlled by installing the required set of parts on a 15 teletypewriter and by wiring this contact mechanism to the armature and the marking contact of the line relay of the equipment to be controlled. The contact mechanism is the same in the TP96807 and TP115889 sets of parts.

(a) **Upon receipt of the contact-close signal**, the contacts of the controlling equipment will unlatch and be allowed to close. This causes a short circuit across the armature and the marking contact of the line relay of the controlled equipment, and stops the recording of signals.

(b) **Upon receipt of the contact-open signal**, the contacts of the controlling equipment will open and be locked. This removes the short circuit from the armature and the marking contact of the line relay of the controlled equipment and allows the recording of signals to be resumed.

1.06 In operation, immediately after the controlled equipment is turned on by the opening of the contacts, a LTRS signal should be sent to permit the controlled equipment to attain synchronism.

1.07 Arrangements may be made, if desired, for printing and spacing of the control selections.

## 2. LIST OF PARTS

2.01 The TP96807 and TP115889 sets of parts are made up of a number of items, such as washers and springs, that are common to both sets of parts (listed in 2.02) and also contain additional items that are furnished in only one of these

sets of parts (listed in 2.03 and 2.04). The parts are identified in Fig. 1.

Fig. 1

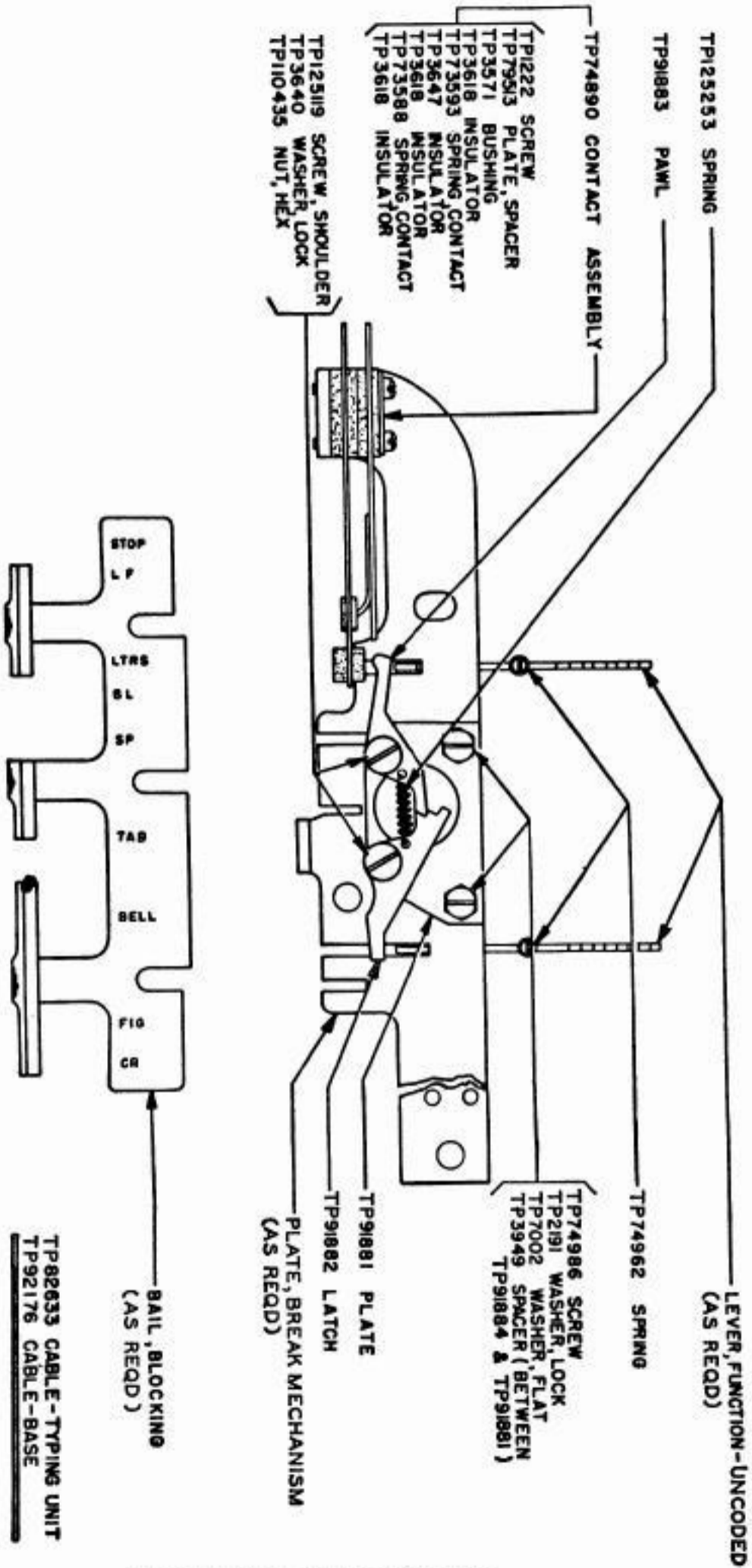


Fig. 1—TP96807 and TP115889 Sets of Parts

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## 2.02 Common Parts

<u>Part No.</u>	<u>Description</u>	<u>Quantity in Each Set of Parts</u>
TP2191	Lockwasher	2
TP3640	Lockwasher	2
TP3949	Spacer	2
TP7002	Flat washer	2
TP74890	Contact assembly	1
TP74962	Spring	2
TP74986	Screw (6-40 x 13/32 Hex.)	2
TP82633	Typing-unit cable	1
TP91881	Plate	1
TP91882	Latch	1
TP91883	Pawl	1
TP92176	Base cable	1
TP110435	Nut (4-40 x 1/16 Hex.)	2
TP125119	Shoulder screw (4-40)	2
TP125253	Spring	1

## 2.03 Additional Parts in TP96807 Set of Parts

<u>Part No.</u>	<u>Description</u>	<u>Quantity in Each Set of Parts</u>
TP91884	Break mechanism plate	1
TP91885	Blocking bail	1
TP116965	Function lever—uncoded	2

## 2.04 Additional Parts in TP115889 Set of Parts

<u>Part No.</u>	<u>Description</u>	<u>Quantity in Each Set of Parts</u>
TP86758	Break mechanism plate	1
TP116769	Blocking bail	1
TP116965	Function lever—uncoded	1
TP126979	Function lever—uncoded	1

2.05 A template, shown in Figs. 2A and 2B, for use in modifying the function levers to operate on the desired code combinations is furnished with each set of parts. As

described in Part 4, Installation, the levers are made with separate lugs for the marking and spacing positions of each selector vane, plus lugs for the upper-case and lower-case positions of the sixth vane. The lugs are scored on both sides so that they can be broken off with a pair of P-long-nose pliers.

**Figs. 2A and 2B**

2.06 Once a function lever has been modified, further modification for operation from other characters may not be possible, since the removed lugs cannot be replaced. Therefore, in those cases where a complete set of parts, including previously modified function levers, is available, and the function levers cannot be used for the characters specified by a private-line service order, it will be necessary to provide new function levers. These can be ordered separately.

2.07 In addition to the TP96807 or TP115889 set of parts, the following parts are required for keyboard machines:

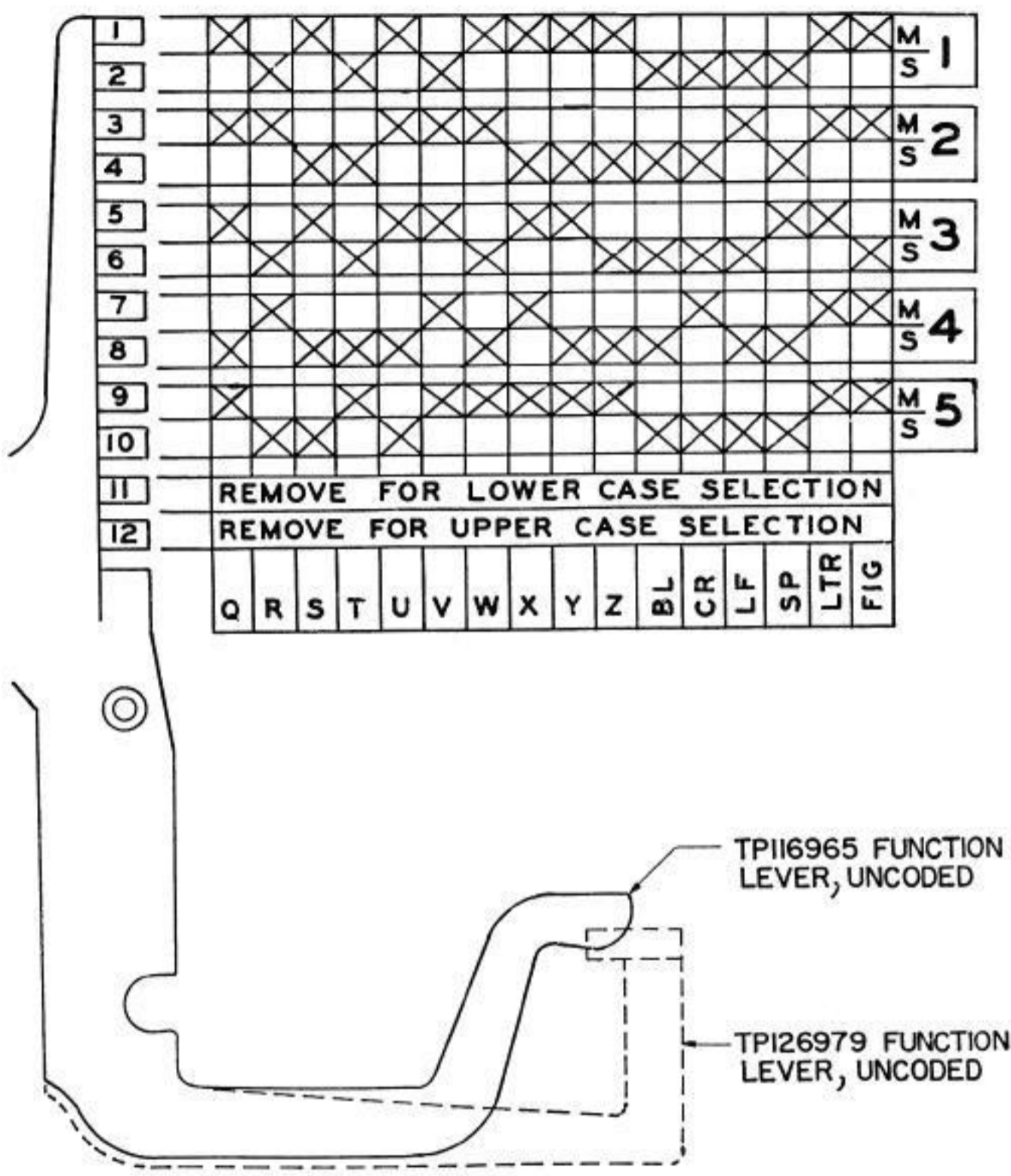
1—(\*) Keytop with (\*\*) in upper case and (\*\*) in lower case.

\*Specify whether spring cushion, pneumatic, or celluloid.

\*\*Specify character. This information may be obtained from the private-line service order.

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NOTE: INDICATES A LUG TO BE REMOVED.

**Fig. 2B—Template to be Used in Modifying Function Levers for Operation on Characters Q to Z and BL, CR, LF, SP, LTR, and FIG**

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### 3. PREPARATION

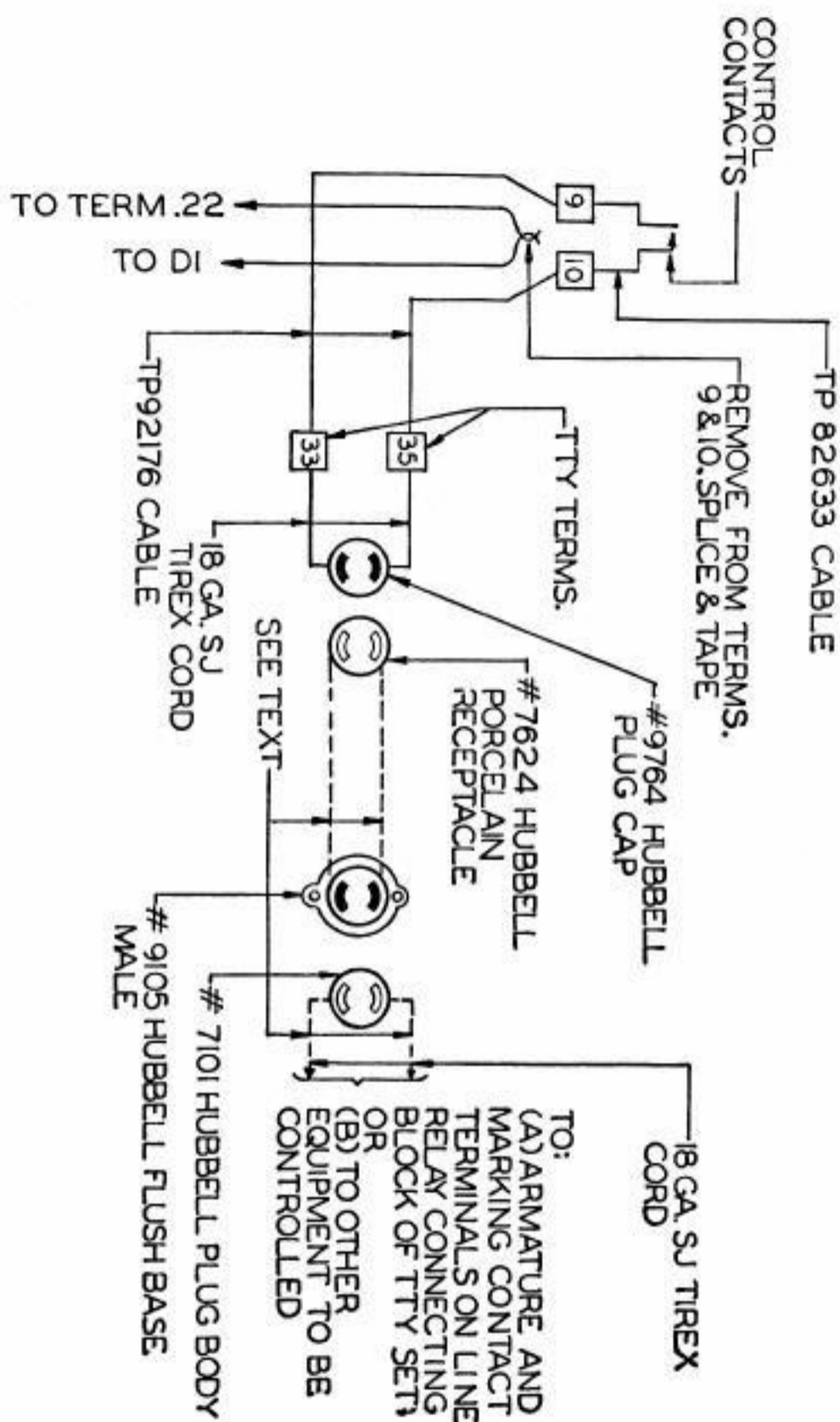
3.01 The following mechanisms are not compatible with the installation of the sets of parts indicated, and must be removed if the teletypewriter is equipped with them.

<u>Mechanism</u>	<u>Cannot Be Used With Set of Parts</u>
Motor-stop mechanism	TP96807 or TP115889
Tabulator mechanism	TP96807
Any mechanism using upper-case S	TP96807

### 4. INSTALLATION

#### A. Installation of TP96807 Set of Parts on Controlling Teletypewriter

- 4.01 Remove the two wires from terminals 9 and 10, and splice and tape them together.
- 4.02 Remove the existing leads from terminals 33 and 35 and install the TP92176 cable from terminals 9 and 10 on the base to terminals 33 and 35, respectively.
- Fig. 3**
- 4.03 Modify the two function levers as follows, using the full-scale template furnished with the set of parts.
- (1) Place the first lever to be modified on the template next to the character on which the contact-close operation of the function lever is desired, making sure that the



**Fig. 3—Connections Between Controlling Teletypewriter and Controlled Equipment**

lugs are on the corresponding lines. In the TP96807 set of parts, this lever is either of the two TP116965 function levers.

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- (2) Mark the lugs to be removed with an X, as indicated by the X markings for the desired character.

**Figs. 2A and 2B**

- (3) Break off the lugs by means of a pair of P-long-nose pliers.
- (4) Place the second lever to be modified on the template next to the character on which the contact-open operation of the function lever is desired, again making sure that the lugs are on the corresponding lines. In the TP96807 set of parts, this lever is the remaining TP116965 function lever.
- (5) Proceed as indicated in (2) and (3) above.

**Note:** While the lugs are being broken off, the lever should be held securely near the score mark to prevent distortion.

4.04 Remove the TP74539 send-receive-break mechanism plate from the typing unit and transfer all the parts on it to the TP91884 send-receive-break mechanism plate. Install the TP91884 plate on the typing unit.

4.05 Install the TP116965 contact-close function lever in slot 6 and the TP116965 contact-open function lever in slot 13. (The function levers can be readily inserted from the bottom of the unit without disturbing the pushbar guide combination.) Attach a TP74962 spring between each of these function levers and the function-lever spring plate.

4.06 Viewing the TP91881 contact-control plate so that the tapped holes are at the bottom, and the slanted edge is to the observer's right, mount the TP91882 latch in the right-hand tapped hole, using a TP125119 shoulder screw, a TP3640 lockwasher, and a TP110435 nut, so that the arm with the spring hole extends upward to the left and the other arm extends horizontally to the right. Mount the TP91883 contact pawl in the left-hand tapped hole, using a TP125119 shoulder screw, a TP3640 lockwasher, and a TP110435 nut, so that the arm with the spring hole extends upward to the right and the other arm extends horizontally to the left. Hook the TP125253 spring between the pawl and the latch.

**Fig. 1**

4.07 Mount the TP91881 plate with its pawl and latch on the TP91884 send-receive-break mechanism plate, using the TP74986 screws, with the TP3949 spacers between the TP91881 plate and the send-receive-break mechanism plate, and with 2P2191 lockwashers and TP7002 washers under the heads of the screws.

4.08 Mount the TP74890 contact assembly on the shelf at the left-hand end of the send-receive-break mechanism plate, so that the selection of the function lever in slot 13 will cause the TP91883 pawl to open the contact.

**Note:** This contact may be installed to function as a normally opened or normally closed contact. Adjustment of the leaf spring will be necessary to obtain proper functioning.

4.09 Wire the TP82633 cable into the typing unit, connecting the TP74890 contact assembly to terminals 9 and 10.

4.10 When printing and spacing is desired to occur on controlled apparatus control selections, the TP91885 blocking bail should be installed in place of the TP81956 blocking bail. When it is desired to suppress printing and spacing, the TP81956 blocking bail should be retained.

#### **B. Installation of TP115889 Set of Parts on Controlling Teletypewriter**

4.11 Proceed as outlined in 4.01 and 4.02.

4.12 Modify the TP126979 function lever for contact-close operation and the TP116965 function lever for contact-open operation in accordance with 4.03 **Figs. 2A and 2B**

4.13 If the typing unit is not already equipped with the new-style TP86758 send-receive-break mechanism plate having tapped holes for mounting the TP91881 contact control plate, remove the old-style TP86758 plate and transfer the parts mounted on the old-style plate to the new-style TP86758 plate. Install the new-style plate on the typing unit.

4.14 Remove the blank printing-spacing cutout function lever from slot 7 and place it in slot 5. Install the TP126979 contact-close function lever in slot 7 and the TP116965 contact-open function lever in slot 13. (The function levers can be readily inserted from the bottom of the unit without disturbing the pushbar guide combination.) Attach a TP74962 spring between each of these function levers and the function lever spring plate.

4.15 Proceed as outlined in 4.06.

4.16 Mount the TP91881 plate with its pawl and latch on the TP86758 send-receive-break mechanism plate, following the procedures outlined in 4.07.

4.17 Proceed as outlined in 4.08 and 4.09.

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4.18 When printing and spacing is desired to occur on control selections, the TP116769 blocking bail should be installed in place of the TP81956 blocking bail. When it is desired to suppress printing and spacing, however, the TP81956 blocking bail should be retained.

### C. List of Material for Interconnection

4.19 The following material may be required to connect the TP96807 or TP115889 set of parts to the equipment to be controlled. See Parts D and E to determine which of these items are needed in a particular case.

- 1—Hubbell 7624 porcelain receptacle or equivalent
- 1—Hubbell 9105 flush base (male) motor plug receptacle or equivalent
- 1—Hubbell 7101 plug body or equivalent
- 1—Hubbell 9764 plug cap or equivalent
- 18—gauge, type SJ, 2-conductor rubber-covered Tirez cord or equivalent as required
- 2—conductor inside wiring as required

### D. Cord Connections to Controlling and Controlled Equipment Fig. 3

#### 4.20 Controlling Teletypewriter

- (a) Make up a cord, using a suitable length of 18-gauge Tirez cord or equivalent and the 9764 plug cap (see Part E concerning length of cord).
- (b) Run the free end of this cord through the clamps holding the loop and power cords and connect to terminals 33 and 35 of the teletypewriter base.

#### 4.21 Controlled Equipment

- (a) If the set of parts is to control teletypewriter apparatus equipped with a line relay, make up a cord using a suitable length of 18-gauge Tirez cord or equivalent (see Part E concerning length of cord), and the 7101 plug body. Run the cord to the line relay connecting block of the apparatus to be controlled, making sure the cord does not touch any moving parts. Tie the cord in place and solder one lead to the armature terminal of the relay connecting block. Solder the other lead to the marking contact terminal when no line relay filter is provided, otherwise solder this lead directly to the filter terminal to which is connected the wire which was removed from relay connecting block terminal 4 during the installation of the filter. Pass the cord through the power cord hole in the table top.

(b) If the set of parts is to be used for controlling equipment other than as described in (a) above, make connections as specified in the drawing and other instructions covering the particular project.

**E. Interconnection of Controlling and Controlled Equipment**

**Case 1 Controlling and Controlled Equipment On Adjacent Tables with No Passage Between** **Fig. 3**

4.22 The plug cap on the cord from the controlling teletypewriter may be connected directly to the plug body on the cord from the controlled apparatus. In this case the 7624 receptacle and 9105 base will not be required.

**Case 2 Separable Plugs on Both Controlling and Controlled Equipment** **Fig. 3**

4.23 Mount the 7624 receptacle in a convenient location on the table on which the controlling teletypewriter is located.

4.24 Mount the 9105 base in a convenient location on the table on which the controlled apparatus is located using a mounting arrangement to meet local conditions. A suggested arrangement is to mount it on 2 blocks of wood attached to an inside surface of the table with wood screws.

4.25 Connect the 7624 receptacle to the 9105 base, using 2-conductor inside wiring.

**Case 3 Separable Plug on Controlling Equipment Only**

4.26 Wire the 7624 receptacle directly to the equipment. **Fig. 3**

**5. BSP REFERENCES**

5.01 The following Bell System Practices provide associated information which may be required in connection with this section.

<u>Subject</u>	<u>Section</u>
Cleaning .....	P30.010
General Requirements .....	P30.012
Lubrication .....	P36.601
Preparation of Apparatus for Installation .....	P33.014
Requirements and Procedures:	
Auxiliary Features .....	P36.615
Tabulating Mechanism .....	P36.618
Typing Unit .....	P36.610
Tools and Maintenance Supplies .....	P30.301

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