

**BELL SYSTEM PRACTICES**  
**Teletypewriter and Data Stations**

**SECTION P34.437**  
**Issue 1, May, 1961**  
**AT&TCo Standard**

# **AUXILIARY TYPING REPERFORATOR FOR 28 AUTOMATIC SEND-RECEIVE SET INSTALLATION**

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## **1. GENERAL**

1.01 This section describes the method of installing a 28 typing reperforator for use as an auxiliary feature in a 28 automatic send-receive set, and includes the requirements and adjustments needed for the proper operation of this typing reperforator.

1.02 Before the auxiliary typing reperforator can be installed, it is necessary to adapt the 28 ASR to provide a mounting arrangement for it and to provide an exit path to guide the tape from the punch of the auxiliary reperforator to the outside of the cabinet. This adaptation is accomplished by installing a TP161815 modification kit and a new control panel. Also, it is necessary to provide a mounting arrangement in the base of the 28 ASR cabinet for the electrical service unit to be used with the typing reperforator. Both modification kits and the new control panel must be ordered separately.

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1.03 A TP176300 modification kit may be installed as an auxiliary feature to provide control of the typing reperforator motor from the outside of the 28 ASR cabinet.

1.04 The auxiliary typing reperforator is not a separately coded set, but must be assembled from the following components in accordance with the features desired.

28C Typing Reperforator Base

28C, 28D, 28E, or 28F Typing Reperforator Unit

28D Electrical Service Unit

28A, 28B, or 28D Motor Unit

28S, 28T, or 28U Set of Gears

TP161815 Modification Kit (mounting posts, tape guide)

TP161829 Modification Kit (for mounting electrical service unit)

1.05 The complete disassembly of the auxiliary typing reperforator is shown in Teletype Bulletin 1167B.

1.06 In this section all references to direction are given from the installer's position in front of the set.

## 2. INSTALLATION OF TP161815 MODIFICATION KIT

2.01 Screw the two longer mounting studs into the rear rail of the cabinet cradle assembly, and screw the shorter mounting stud into the transmitter-distributor base.

**Note:** Since all transmitter-distributors used as a part of a 28 ASR are now equipped with a base isolation set of parts, it will not be necessary to use the 0.095-inch thick spacer furnished as part of this modification kit.

2.02 Place the star washer between the tape guide and tape-guide bracket and fasten them together using the screw, lockwasher, flat washer, and nut plate. Turn in the screw until it is friction tight.

2.03 Mount the tape-guide bracket and its assembled parts on the right front portion of the typing reperforator base in line with the tape-exist cutout on the control panel using the two screws, two lockwashers, and two flat washers. Turn in the screws until they are friction tight.

## 3. INSTALLATION OF MOTOR UNIT, GEARS, AND TYPING REPERFORATOR BASE

**Note:** Before installing the auxiliary typing reperforator, check to see that the 151-180 and 181-220 terminal assemblies in the cabinet of the 28 ASR are mounted by studs 0.312 inch long and not by studs 0.750 inch long. If the

longer studs are used there will be interference between the upper row of terminal-block covers and the auxiliary typing reperforator.

3.01 In order to prevent any interference with the transmitter-distributor base, the mounting bracket used as a part of the auxiliary typing reperforator base shall be one which has three rectangular cutouts measuring 0.562 inch by 1.000 inch.

(a) If a 28D motor unit is being used as a part of the auxiliary typing reperforator, the bridging strip (3-7/8 inches by 3/4 inch) across the rear of the motor mounting area shall be removed.

3.02 Remove and discard the gear guard and its mounting screws from the transmitter-distributor base of the 28 ASR.

3.03 Install the gears for the 60, 75, or 100 wpm operation of the auxiliary typing reperforator. Install the driven gear on the intermediate (lower) shaft of the gear bracket assembly using the mounting screw and lockwasher furnished. Assemble the hub, sprocket, and retainer to the pinion gear using the three screws, six lockwashers, and three nuts furnished. Slide this sprocket and gear assembly on the driven (top) shaft of the gear bracket assembly, and secure it with its mounting screw and lockwasher.

3.04 Loosen the three screws which mount the gear bracket assembly and remove this assembly.

**Note:** Before installing the motor unit check to see if the leads on the motor unit are threaded through the hole in the motor mounting bracket. If they are, pull them out since they should not be routed through this hole when the unit is installed.

3.05 Install the motor unit on the lower horizontal surface of the mounting bracket using the four mounting screws, three lockwashers, four flat washers, four nuts, and two star washers furnished. The two star washers are for use with the mounting screw, for which no regular lockwasher is furnished, and are to be placed against the upper and lower surface of the mounting bracket in order to ground the bracket to the base.

3.06 Remove the tape container. Connect the motor leads to the lower terminal block in accordance with the appropriate drawing in the section entitled 28-type Typing Reperforator Units—Wiring Diagram. Replace the tape container leaving the screws friction tight for later adjustment.

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- 3.07 Replace the gear bracket assembly.
- 3.08 Remove and discard the screw which secures the cable clamp to the selector mounting plate of the typing reperforator unit. Mount the tape guide with roller in this location using the screw and flat washer furnished with the typing reperforator base.
- 3.09 Mount the hub and the sprocket (in that order) on the main shaft of the typing reperforator unit using the hardware furnished with the hub. The sprocket should be mounted with the shallower inset next to the hub and the screw heads and lockwashers on the side with the deeper inset.
- 3.10 Mount the motor pinion on the motor shaft using the rubber isolater and the two mounting posts furnished.
- 3.11 There should be a barely perceptible amount of backlash between the motor pinion and the driven gear at their closest point.
  - (a) To adjust, loosen the three mounting screws on the gear bracket assembly until they are friction tight. Position the assembly up or down as required. Tighten the mounting screws.

#### **4. INSTALLATION OF TYPING REPERFORATOR UNIT**

- 4.01 Position the typing reperforator unit over its mounting studs on the mounting bracket.
- 4.02 Loosen the screw fastening the perforator anchor bracket to the front plate of the punch mechanism, turn the bracket downward and fit it over the proper tapped hole in the mounting bracket. Place the flat washer and lockwasher over the screw slot in the anchor bracket and insert the mounting screw into the tapped hole. Do not tighten the screw at this time.
- 4.03 Start the three reperforator mounting screws with their lockwashers and flat washers through the holes in the main frame and into the tapped studs in the T-shaped plate after first having moved the reperforator pushbar to its foremost position to allow for maximum accessibility of the screwdriver to the rear mounting screw. Do not tighten the screws.
- 4.04 Place the timing belt over the two sprockets. There should be just enough slack in the belt so that an 8-oz. pressure applied midway between the sprockets will cause the belt to deflect approximately 1/8 inch.

(a) To adjust, move the reperforator backward or forward as required in order to increase or decrease the slack. Tighten the three reperforator mounting screws. Recheck the deflection of the belt.

4.05 Hold the anchor bracket firmly against the reperforator and the mounting bracket. Tighten the screw that secures the anchor bracket to the mounting bracket, and then tighten the screw that secures the anchor bracket to the reperforator.

4.06 Connect the three terminals of the AC cable assembly to terminals 39 and 40 of the ASR cabinet terminal block and to the common ground in accordance with the wiring diagram furnished with the base.

4.07 Place the entire reperforator and base assembly on its mounting studs in the 28 ASR cabinet and secure it with the three screws, two lockwashers, one star lockwasher, and three flat washers furnished. Place the star lockwasher under the left front mounting screw next to the painted surface of the base.

4.08 Connect the AC cable receptacle connector to its mating plug connector on the typing reperforator base.

4.09 Install the desired control panel in place of the blank panel in the cabinet dome using the existing mounting hardware.

4.10 When the cabinet dome is closed, the tape-exit guide should be in alignment with the tape-exit hole in the control panel.

(a) To adjust, position the tape guide and bracket as required. Tighten the screw used to mount the tape guide and the two screws used to mount the bracket.

4.11 Position the tape container so a full roll of tape may be inserted through the access door in the dome of the cabinet. Tighten the tape-container mounting screws.

## **5. INSTALLATION OF ELECTRICAL SERVICE UNIT**

5.01 Position the mounting brackets of the TP161829 modification kit so that the longer portion of each bracket extends toward the rear and the slanted portions extend upward and face each other.

5.02 Place the electrical service unit on the brackets with the nameplate of the electrical service unit facing the front. Fasten the electrical service unit to the brackets by means of

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the slotted-head studs furnished as part of the modification kit. Turn in the studs until they are friction tight.

5.03 Check the relay rack brackets of the ASR cabinet to be sure they are assembled with the right-angle brackets mounted on the front holes of each of the two side brackets.

5.04 Fasten the electrical service unit and bracket assembly to the relay rack brackets at the desired height using the four speed nuts and the four studs with the tapped head.

5.05 Tighten the studs which hold the electrical service unit in place.

5.06 Remove the plate from the left rear of the ASR cabinet shelf and route the cable from the electrical service unit through a knockout slot in the plate. Remount the plate on the shelf.

5.07 Plug the cable connector into the receptacle connector on the auxiliary typing reperforator base.

## **6. INSTALLATION OF TP176300 MODIFICATION KIT**

6.01 The TP176300 modification kit consisting of a control panel, a cable assembly with switch and plug connector, and a cable assembly with receptacle connector provides external manual control for the motor of the auxiliary typing reperforator base.

6.02 Remove the present control panel from the left front of the cabinet dome. Install the control panel, which is a part of this modification kit, using the existing hardware.

6.03 Mount the toggle switch and the ON-OFF instruction plate in the hole located in the center of the new control panel.

6.04 Extend the cable from the switch to the left of the cabinet dome and tie it to the cross members at the front and rear of the dome with No. 6 lacing twine.

6.05 Remove the power switch from its mounting bracket on the typing reperforator base. Remove the two leads from the switch and splice them to the cable assembly with receptacle connector of the modification kit. Replace the switch on its mounting bracket.

6.06 Connect the plug and receptacle.

## 7. REFERENCE BELL SYSTEM PRACTICES

7.01 The following Bell System Practices provide additional information that may be required in connection with this section.

<u>Subject</u>	<u>Section</u>
Teletypewriter Apparatus, General Requirements and Procedures .....	P30.012
Teletypewriter Apparatus, Lubrication, General Information and Routines .....	P30.011
Teletypewriter Apparatus, Disassembly and Reassembly, General Information and Routines....	P30.013
Teletypewriter Apparatus, Preparation of Apparatus for Installation .....	P33.014
Teletypewriter Tools and Maintenance Supplies...	P30.301
Alphabetical Index of 28-type Equipment, Bell System Practices, and Associated 28 ASR Station Drawings .....	P34.001

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