BELL SYSTEM PRACTICES
Teletypewriter Stations

SECTION P36.475
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AT&T Co Standard

INSTALLATION
WORD-COUNTER MECHANISMS
15 TELETYPEWRITER

1. GENERAL

1.01 This section furnishes installation information for the following equipment, to be used with 15 teletypewriters:

(a) Mechanical word-counter—TP94663.

(b) Electrical word-counter contact assembly—TP95216 or TP95217.

Installation and adjustment information for the on-line word-counter (WM200) is covered in Section P33.020.

1.02 This section is reissued to remove the adjusting information (now given in Section P36.615) and to bring the section up to date.

1.03 **Mechanical Word Counter:** TP94663 is a mechanism consisting of a linkage and a counter, installed under the teletypewriter cover. The printing-bail blade operates a lever which, through the medium of a link, actuates a 5-digit counter. The counter operating lever can be adjusted so that the counter will register in one of two ways:

(a) Once in response to every sixth operation, printing or spacing.

(b) Once in response to every sixth operation, printing, spacing or non-spacing.

1.04 **Electrical Word-Counter Contact Assembly:** The TP95216 (for a-c) or the TP95217 (for d-c) sets of parts, arranged for mounting on a 15 typing unit and base, are for the purpose of closing a pair of contacts, by means of which an external Veeder-Root electromagnetic counter may be operated from a-c or d-c power suppliers, respectively. The contacts are closed by the operation of a linkage assembly which is actuated by the printing bail. Both sets of parts are identical mechanically and differ only in the contact spark-

protection feature, which is special with regard to its application to either a-c or d-c current. The contact assembly may be adjusted to provide for closing the contacts to meet one of three requirements:

(a) A recording by the counter on every sixth operation, printing or spacing.

(b) A recording on every sixth operation, printing, spacing or non-spacing.

(c) A recording on every single operation, printing, spacing or non-spacing.

Note: Instructions for setting the counters for the type of operation desired are given in the adjustment section.

1.05 Where d-c electrical counters are to be used, the space on the base between the motor unit and the line-relay mounting bracket (normally occupied by a flat-type line circuit resistor mounting on 15A and 15B bases or a tubular line-circuit resistor on some 15C bases) is required for mounting spark-killer condensers. In such cases, the flat-type resistor mounting or the tubular resistor, if present, will have to be removed. If a line resistance is necessary, a TP96455 resistor and mounting assembly will be required. See Paragraph 5.04. This assembly is not included in the counter parts but must be ordered where required. The spark-killer condensers of the d-c counters also encroach on the space required for removing governor brushes unless the center-contact governor is employed. Where a-c electrical counters are used the spark-killer condensers do not interfere with the space required for the resistors or for the maintenance of governors.

1.06 The TP94663 set of parts consists of the following:

1—TP111716 Counter and Bracket Assembly
1—TP111779 Linkage Assembly
1—TP73276 Shoulder Screw
1—TP3606 Nut
1—TP125236 Spring
1—TP90421 Washer
1—TP85993 Spring Post
2—TP7002 Washers

1.07 The TP95216 set of parts consists of the following:

1—TP95212 Operating Mechanism with Contact Assembly
1—TP95213 Set of Spark Protection Parts for 110 Volts AC

1.08 The TP95217 set of parts consists of the following:

1—TP95212 Operating Mechanism with Contact Assembly

1—TP95214 Set of Spark Protection Parts for 110 Volts DC ↵

2. INSTALLATION OF TP94663 MECHANICAL COUNTER AND CONTACT PARTS OF TP95212 CONTACT ASSEMBLIES FOR ELECTRICAL COUNTERS

2.01 Remove the TP6810 screws and TP2669 lock-washers that mount the TP74126 right support of the TP74062 lower carriage track to the right side frame. Remove the TP6746 screw and TP2191 lock-washer which secures the lower carriage track to its support. Discard the track support and install the new support which is connected to the linkage arrangement using the TP6810 and TP6746 screws and the lock-washers previously removed.

2.02 Remove and discard the TP6746 screw and TP2191 lock-washer which secures the TP35858 margin bell to the right side frame. Reassemble the bell and the bell crank of the linkage furnished as follows: Insert the new TP73276 shoulder-screw into the hole in the bell crank of the linkage and add in order the new TP90421 washer and the TP35858 bell. ← With the parts in this order insert the shoulder-screw into the bell mounting-screw hole and tighten the screw.

2.03 Remove the TP6746 screws and TP2191 lock-washers which secure the TP74178 margin-bell shaft bracket to the right side frame. Discard the bracket and in its place install in its uppermost position the new bracket on which the counter (for the mechanical assembly) or the contact (for the electrical assembly) is mounted using the old screws and lock-washers and two TP7002 washers furnished. Make sure that the right end of the margin-bell shaft is in the lowest hole in the new mounting bracket.

2.04 Check to see that lateral movement of the slide-bar is free and so that the slot in the slide-bar can be moved approximately an equal distance to the right and left of the spring-post mounting-hole in the vertical portion of the counter mounting bracket just installed. Bend the lower end of the slide-bar, if necessary, to obtain this alignment. Also check to see that the slide-bar is parallel to the vertical portion of the counter mounting bracket. Bend the slide-bar if necessary to meet this requirement.

2.05 Assemble the slide-bar (with pins) on the vertical portion of the bracket just installed by means of the new TP85993 spring post, so that the head of the spring post will be toward the front of the typing unit and so that the slide-bar will slide on the shoulder of the spring post. Secure the spring post with the TP3606 nut furnished. Hook one end of the TP125236 spring furnished to the spring post on the← slide-bar and the other end to the TP85993 spring post just installed.

3. INSTALLATION OF SLIP-CONNECTOR PARTS OF TP95212 CONTACT ASSEMBLIES

3.01 Run the cable down the inner surface of the right side frame and mount the contact-cable terminal block on the underside of the rear crossbar next to the other terminal block using two TP1226 screws, two TP2191 lock-washers, two← TP7002 washers and the TP74946 insulator furnished. Mounting-holes are provided in the crossbar. The soldered connections in the terminal block should be adjacent to the terminal block on the crossbar. Tie the cable to the right side frame just above the margin bell and also to the rear crossbar adjacent to the TP74413 bell hammer backstop and just below the TP81747 insulator block.

3.02 Remove the TP74551 slip connection spring cover from the base. Remove the TP74568 terminal block. Assemble the TP7094 connection springs furnished to the TP74568 terminal block, adjacent to the four connection springs already present using the TP7095 spring plates and TP6811 mounting-screws furnished. Replace the block.

4. INSTALLATION OF TP95213 SPARK KILLER PARTS FOR AC ELECTRICAL COUNTERS

4.01 Remove and discard the screws and bushings which secure the TP78011 condenser (under the line-relay connection block) to the base. Discard the insulators above and below the condenser. Remove the tie-wire from the condensers of the TP95213 parts furnished and using the TP1192 screws and the TP95247 bushings furnished, mount the new condensers above the TP78011 condenser and under the line-relay connection block, so that the terminals of the condensers point toward the front of the base unit.

4.02 Remove the rearmost of the two TP8539 screws and the TP2191 lock-washer used to mount the TP74422 line-relay mounting bracket if the base is equipped with a line-relay mounting. The spark-protection resistor should mount in this hole using the TP77920 mounting-screw. Two TP75750 bakelite

washers should be used at each end of the resistor and a TP7002 washer and a TP2191 lock-washer under the screw head. The resistor terminals should point toward the front of the base.

5. INSTALLATION OF TP95214 SPARK KILLER PARTS FOR DC ELECTRICAL COUNTERS

5.01 Remove and discard the flat-type resistance mountings from the 15A and 15B bases or the tubular resistor from the 15C base if the base is so equipped. (For mounting a line resistor see below.)

5.02 Remove and discard the screws and bushings which secure the TP78011 condenser (under the line-relay connection block) to the base. Discard the insulators above and below the condenser. Remove the tie-wire from the condensers of the TP95214 parts furnished and using the TP1192 screws and the TP95247 bushings furnished, mount the new condensers above the TP78011 condenser and under the line-relay connection block, so that the terminals of the condensers point toward the front of the base unit.

5.03 Detach the fuse block from the base unit, loosen the rear terminal and rotate it 90 degrees counter-clockwise so that it will not project beyond the rear edge of the block. Tighten the terminal. The mounting-bracket furnished with its two condensers and resistor should be mounted under the fuse block so that the condensers and the formed section of the TP95249 insulator are to the rear of the fuse block. The bracket should be against the base casting with the insulator between the bracket and fuse block.

5.04 If a line resistor is required, the TP96455 resistor and mounting assembly should be secured to the base by the front TP8539 screw of the TP74422 line-relay mounting bracket. If the base is not equipped with a line-relay bracket the resistor assembly should be mounted to the base by means of a TP8539 screw or the TP6746 screw which previously mounted the margin bell, using the front hole intended for the line-relay bracket. The resistor should be connected into the line circuit using the regular wires of the base. Any extra wires should be taped up.

6. WIRING FOR SPARK KILLERS AND ELECTRICAL COUNTER

6.01 Cut the control-relay loop provided in the base between terminals 31 and 36 and connect the ends to the two connection springs installed in the base. The wire from 31 should connect to the left spring, viewed from the front. (Remove the

black wire from terminal 35 in 15A and 15B bases or the orange wire in the 15C base, and tape.)

6.02 Connect the wire from the spark-killer resistor to terminal 31 and the wire from the spark-killer condensers to terminal 35, running the wires on the underside of the base and through the holes provided. Tie or clamp the cable in place.

6.03 The wires running to the electrical counter should connect to terminals 31 and 35. These wires may be approved lamp cord such as tirex if the run is comparatively short and the wire is run in accordance with local rules and regulations. If the run is long other approved wiring will have to be used.

6.04 The power supply for operating the counter should be connected to terminals 35 and 36 (may strap from terminals 21, 22 or 23 if desired) and should suit the counter used. The regular bakelite cover should always be used over the typing unit connection springs on the base unit.