

**BELL SYSTEM PRACTICES**  
Teletypewriter and Manual  
Telegraph Station and P.B.X.  
Installation and Maintenance

**SECTION P35.541**  
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Provisional Standard

## **NO. 14 TELETYPEWRITER**

### **MAINTENANCE INSPECTIONS AND TESTS**

#### **1. GENERAL**

1.01 This section specifies the procedures for carrying out the field maintenance of the No. 14 teletypewriter. It replaces the information contained in Specifications 4966 under the heading "Maintenance Routines for No. 14 Type Tape Printer and Associated Apparatus."

1.02 The apparatus requirements and adjusting procedures for any particular item which may require adjusting either on a routine inspection or a trouble visit will be found in the section on "Requirements and Procedures" for the unit affected.

1.03 The methods of carrying out the cleaning work will be found in the section on "Teletypewriter Apparatus—Cleaning—General Requirements" and the lubrication requirements will be found in the section on "Teletypewriter—Lubrication of No. 14 Type—Requirements and Procedures."

1.04 Troubles following maintenance visits have in some cases been noted to be due to the methods of carrying out the maintenance work on teletypewriter apparatus. The instructions in this section have been arranged with the view of avoiding such troubles and it is therefore important that the practices be very carefully followed.

#### **2. ROUTINE MAINTENANCE PROCEDURES**

2.01 The periodic cleaning, lubrication and inspection work should be carried out in the order shown. This work should be confined to the items specified except for the correction of any condition noted, not mentioned herein, which in the judgment of the repairman is likely to cause trouble before the next regular inspection.

- (1) Obtain the necessary authority for the release of the apparatus. In case the service is to be interrupted during the inspection period, proper authority should also be obtained for the release of the circuit.
- (2) Disconnect the source of power.
- (3) Remove cover.
- (4) Clean, lubricate and inspect in accordance with the detail procedure given under Part 3.
- (5) Reconnect the source of power.
- (6) If a motor-generator set is employed start and stop it, watching its performance carefully. If it fails to start normally or does not run quietly, investigate and clear the trouble.
- (7) If the motor is of the governed type, examine the motor brushes and, if necessary, recondition or replace them.
- (8) If excessive sparking at the motor brushes is now observed, clean the commutator.
- (9) For governed type motors, observe the condition of the governor sliprings. If there is pitting or wear, clean the governor rings and brushes. Replace if necessary.
- (10) If motor is of governed type, check speed after it has run for at least 3 minutes. If the speed is as much as 15 spots in 10 seconds, either fast or slow, or if the speed is variable, examine the governor contacts and replace them if necessary.
- (11) Make final check of speed, if governed type motor, with machine running open and adjust if required.
- (12) Replace cover and wipe off cover and glass.
- (13) Check items 2 to 5, inclusive, under paragraph 4.01, to determine that the machine is functioning properly.
- (14) Measure orientation range on local test to check the condition of the teletypewriter. If receiving only, measure on line, or arrange for test with testboard.
- (15) Make such additional tests as may be required by auxiliary features provided, for example, station sets employed for TWX use.
- (16) After the local tests have been completed lock the range finder in the correct position for the type of service involved. For services requiring maximum margin the correct position should be determined by tests over the loop.
- (17) Check to see that line test key is in line position.
- (18) Notify attendant that machine is again ready for ser-

vice, or, if out of hours, place machine in normal condition for the usual start of service.

### **3. DETAILS OF CLEANING, LUBRICATING AND INSPECTING**

3.01 The detailed items to be covered in the cleaning, lubricating and inspecting are given in the paragraphs below.

#### **(a) Cleaning**

3.02 The cleaning should, ordinarily, be confined to the items shown.

- (1) With a dry cloth, clean out the base around the tape guide tube, beneath the platen and back under the type comb.
- (2) With a dry cloth, wipe off the frame around the keyboard.
- (3) If gummed tape is used, clean out the tape guide tube with a pipe cleaner slightly moistened with water and wipe off the platen with a cloth slightly moistened with water. Wipe out the tape guide tube with a dry pipe cleaner and wipe off the platen with a dry cloth.
- (4) Clean the type if found to be gummed or dirty.
- (5) Clean the key caps if these are found to be excessively dirty.

#### **(b) Lubrication**

3.03 After all cleaning has been completed, lubricate the machine in the order shown below. Apply an amount of lubricant just sufficient for the purpose so that it will not be necessary to wipe off any excess oil or grease, as this tends to work dirt and grit into the bearing surfaces.

- (1) Lubricate all points requiring the application of oil. Complete this before applying any grease.
- (2) Apply grease to all points specified.
- (3) After the lubrication has been completed, the space between the selector armature and the magnet cores should be cleaned by drawing through the space a piece of plain printer tape (not gummed) or some similar strip of plain, hard surface paper. In the same manner clean the space between the armature and the front and back stops.

#### **(c) Inspection**

3.04 During the processes of cleaning and lubricating, observe the condition of the machine with respect to the following points in so far as can be observed without any dismantling or disturbing of adjustments. Such items as are likely to cause

trouble before the next scheduled inspection should be corrected.

- (1) Worn parts, loose parts, parts out of place, parts obviously out of adjustment, or likely to cause trouble.
  - (2) Red or rust colored deposit indicates wear which should be investigated and, if necessary, the parts replaced. If the parts are not worn sufficiently to require replacing, special care should be taken in lubricating to see that the oil or grease gets into the bearing parts.
  - (3) Bent parts or elongated springs should be investigated and replaced if found abnormal. Do not elongate or cut a spring to adjust the tension, use a new spring.
- 3.05 Check the following specific items to make certain that they are in satisfactory condition:
- (1) Platen, for wear.
  - (2) Platen shift mechanism, for smoothness of operation when shifted by hand.
  - (3) Tape out bell, for satisfactory operation.
  - (4) Ribbon, for satisfactory condition.
  - (5) Magnet armature, for end play.
  - (6) Armature trip-off eccentric screw, for proper adjustment.
  - (7) If the orientation range is unsatisfactory inspect the line relay, for adjustment and condition of parts. If required, clean the contacts and adjust the relay.

#### **4. TROUBLE VISIT INSPECTIONS**

4.01 When a machine is visited on account of a trouble report, the following items should be checked after the trouble has been cleared or during the process of clearing it:

- (1) Speed, if motor is of governed type, after at least 3 minutes of operation unless motor is already warm. Should be steady under load. Adjust if required.
- (2) The printing of all type, for alignment.
- (3) Appearance of copy, for strength of printing blow. There should be no embossing of letters on the back of copy for single copy work nor on the last copy of multiple copy work. (Embossing of punctuation marks is permissible.)
- (4) All functions, for correct operation.
- (5) Ribbon feeding and reversing mechanism, for correct operation.
- (6) If it has been necessary to measure the orientation range be sure to lock range finder in correct position after test is completed. (See item 16 in paragraph 2.01.)