

**PATCHING CORDS AND TEST LINES**  
**TOLL OFFICES**  
**TESTS**

**1. GENERAL:**

- 1.1 This section describes routine tests and inspections of patching cords and cord terminated test lines used in connection with toll testboards, ringing equipment, and for miscellaneous purposes in toll offices.
- 1.2 Since dirty plugs will give the same indications on tests as noisy cords, the plugs should be cleaned before making the tests covered in this section.

**2. APPARATUS:**

- 2.1 Testing Circuit per SD-61423-01 for the No. 5 Toll Testboard or per SD-62008-01 for the No. 4 Toll Testboard.
- 2.2 Portable Potentiometer and Receiver—X-63173-D.
- 2.3 No. 637 Cord equipped with No. 47 Plugs, No. 853 Cord equipped with Nos. 110 and 241-A Plugs, No. 855 Cord equipped with No. 241-A Plugs and No. 733 Cord equipped with Nos. 206 and 152 Plugs.
- 2.4 No. 241-C Plug.
- 2.5 Wheatstone Bridge Circuit of Toll Testboard.

**3. METHOD:**

- 3.1 Inspect patching cords, and the cords associated with test lines to see that they are not frayed or badly worn; that the insulation of the associated plugs does not pro-

ject above the sleeve and is not cracked or broken; that the plug shells are not broken and that there are no loose or missing assembly screws.

- 3.2 Tests of Patching Cords: To test the various types of patching cords, insert the plugs into the proper jacks of the test circuit, in accordance with the information in Table 1. Connect the portable test set to the TEST SET jacks, and set the potentiometer arm on "0". If tone is heard, the potentiometer should be reset to a point where tone is not heard, or heard only slightly. If a considerable volume of tone is heard, and resetting the potentiometer has no effect in balancing out the tone, it is an indication that the patching cord under test is defective.

- 3.3 Manipulate each cord in turn in the following manner to detect possible cut-outs or faulty connections: Pull on the cord downward and downward at an angle to the right and to the left and shake the cord. Hold the plug in the jack with one hand and grasp the cord with the other hand approximately four inches from the plug. Move the cord about the plug with a cranking motion. Any cut-outs or changes in the resistance of the cord will be indicated by clicks or breaks in the tone heard in the receiver.

Note: Single conductor cords with No. 47 plugs must be tested in pairs, using cords of approximately the same length.

**TABLE 1**

No. of Conductors in Patching Cord	Plug	Insert in Jacks of Testing Circuit	Remarks
1	47-47	(T) CORD TEST A and (T) CORD TEST B (R) CORD TEST A and (R) CORD TEST B	Test in pairs.
2	47-47	(T) CORD TEST A and (T) CORD TEST B	
2	241-241	(T) CORD TEST A and (T) CORD TEST B (R) CORD TEST A and (R) CORD TEST B	
2 and 3	110-110	(T) and (R) CORD TEST C	
2	47-241	(T) CORD TEST A and (T) CORD TEST B (R) CORD TEST A and (R) CORD TEST B	
3	110-241	(T) CORD TEST C and (T) CORD TEST B (R) CORD TEST C and (R) CORD TEST B	

**3.4 Test of Test Lines for Continuity and Noise:** Test lines terminated in cords and plugs at the end distant from the testboard should be tested by means of the testing circuit per SD-61423-01. The jacks of the test line should be patched to jacks T and R of CORD TEST A, using a No. 855 cord previously tested and found to be in good condition. The cord at the other end of the test line should be connected back to the testboard over any available line or trunk which is known to be in good condition and provides a direct metallic circuit. For instance, test lines to the distributing frame, terminated in a No. 206 plug at that point, may be tested by inserting the No. 206 plug into a spare pair of protectors, strapped tip to tip and ring to ring. In this case, the drop side of the line may be tested at the same time as the line side. The return circuit should be patched to the T and R jacks of CORD TEST B of the testing circuit, also using a No. 855 cord previously tested and found to be in good condition. The portable test set should be connected to the test set jacks and the potentiometer arm set as described in 3.2. The test should then be made by having an assistant shake the cord at the end of the test line distant from the testboard while the tester listens for variations in the tone.

**3.5 Resistance Test of Test Lines:** Test lines to the frame should also be tested for resistance and resistance unbalance, since

important tests of outside plant circuits are often made over these test lines. Remove the No. 152 plug of the test cord from the jack box at the frame, and insert a No. 241-C plug to short-circuit the line and drop sides of the test line at this point. By means of a No. 855 cord known to be in good condition, connect the Wheatstone bridge jacks at the testboard to the line jacks of the test line. With the MULTIPLY BY dial of the Wheatstone bridge set at  $\frac{1}{1}$ , and the 6V key operated, measure the loop resistance. Move the patch cord to the drop jacks, and repeat the measurement. Note both readings. Remove the No. 241-C plug from the jacks at the frame and re-insert the No. 152 plug of the test cord. Insert the No. 206 plug on the other end of the cord into the short-circuited protectors and again measure the loop resistance from the line jacks and from the drop jacks of the test line at the testboard. The difference between the first and the second sets of readings will be the resistance of the test cord, and should not exceed .21 ohms per conductor-foot.

**3.6 Resistance Unbalance of Test Lines:** With the No. 206 plug of the test cord plugged into the short-circuited protectors and the Wheatstone bridge jacks patched to the line jacks as described in 3.5, operate the VARLEY and 6V keys of the

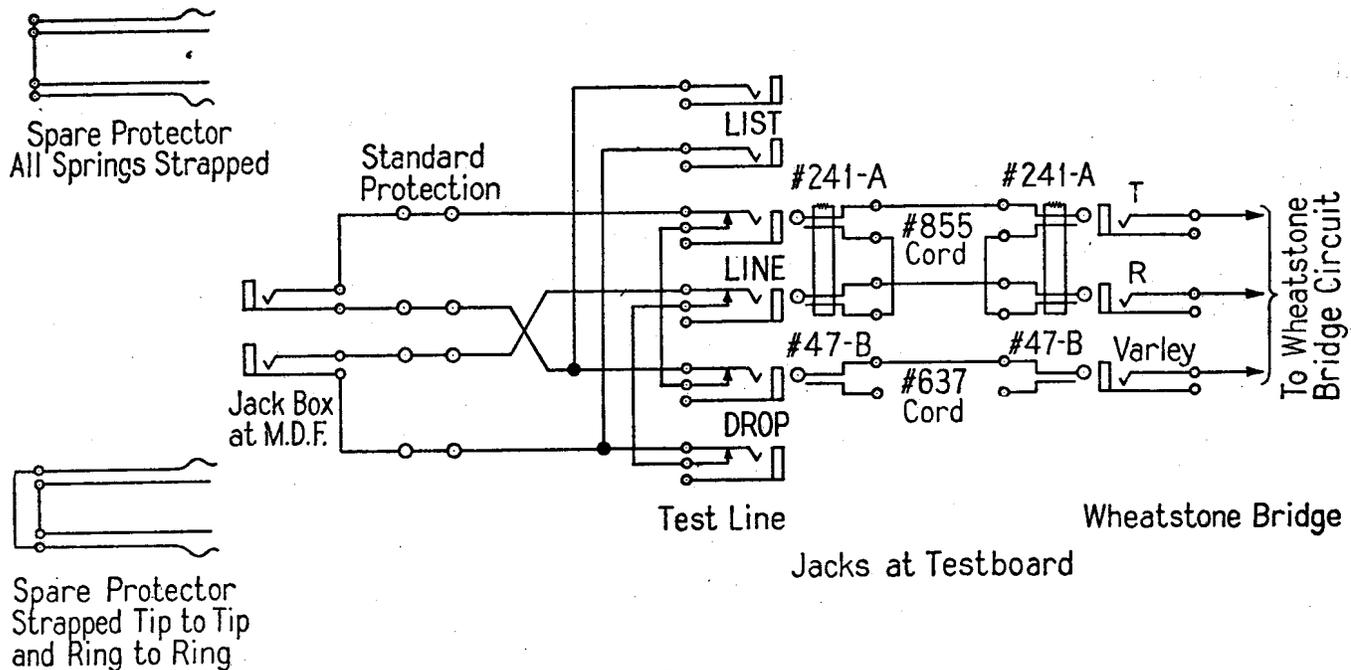


Fig. 1

Wheatstone bridge circuit and set the MULTIPLY BY dial on 1/1000. Patch the tip drop jack of the test line to the Varley jack of the Wheatstone bridge circuit, using a No. 637 cord known to be in good condition. Balance the bridge and note the reading. Operate the REV LINE key and re-balance the bridge, noting the new reading. Subtract the smaller from the larger reading (assuming that they are unequal) and divide by 1000. The result is the unbalance in ohms between the tip and ring line conductors of the test line and cord. Restore the REV LINE key of the bridge circuit, and interchange the patching cords in the line and drop

jacks of the test line at the testboard. Repeat the test to determine the unbalance between the tip and ring drop conductors of the test line and cord. In so far as possible, there should be no unbalance but in any case it should not exceed .25 ohms. In case an unbalance exceeding this limit exists, it will be necessary to determine by process of elimination whether the trouble is in the test trunk or test cord.

#### 4. REPORTS:

- 4.1 Any required record of these tests should be entered on the proper form.