

This Practice Released on: .....

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B.S.P.M. # ..... O. & E. List # .....

FINAL SELECTOR TEST FRAME ES-20149-011  
TESTS  
GROUND CUTOFF PANEL OFFICES

1. GENERAL

1.01 This section describes a method of testing the final selector test frame per ES-20149-011, which is used in connection with final selectors in ground cut-off relay type panel offices, for proper operation. A check of equipment for condition and the measurement of certain resistance paths involving current flow features are also described.

1.02 The tests are divided as follows:

- (A) Check of Equipment For Condition
- (B) Check of Certain Resistance Paths
- (C) Test of Frame for Proper Operation

1.03 The purpose of this test is to insure that the final selector test frame satisfactorily performs the functions for which it was designed, that wrong requirements are not applied to the equipment, and that the mechanical features and appurtenances are in a satisfactory condition. It is extremely important that the tests imposed are made as intended, for if they are more severe than required, maintenance may become unnecessarily difficult, and if not severe enough, the equipment and service may suffer.

2. APPARATUS

- 2.01 No. 184 Plugs, as required.
- 2.02 No. 32B Test Set.
- 2.03 No. 136B Tools, as required.
- 2.04 No. 253B Tools, as required.

- 2.05 No. 357 Tools, as required.
- 2.06 Portable Wheatstone Bridge.
- 2.07 Toothpicks, as required.

3. METHOD

(A) Check of Equipment for Condition

3.01 The check of equipment should include the following:

- (a) Inspection for worn, broken, mutilated or missing parts.
- (b) Check of designation strips and the particular circuit locating chart to determine that they are in good condition and correct.
- (c) Check to determine that no unauthorized circuit changes, equipment modifications or adjustments exist in the frame.

(B) Check of Certain Resistance Paths

3.02 Before making any resistance measurements, open the battery supply to the test frame by removing the No. 35 type fuses at the frame fuse panel.

3.03 The following resistance paths should be measured, using the portable Wheatstone Bridge. Any defects noted should be corrected as soon as possible.

SECTION 215-259-905PT

| Resistances And Relays Measured                                                                                  | Connect Bridge         |                            | Opr. Key<br>Or Relay | Seq.Sw.Pos. |             |             | Resistance Values  |                   |                    |
|------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------|----------------------|-------------|-------------|-------------|--------------------|-------------------|--------------------|
|                                                                                                                  | X1                     | X2                         |                      | R2          | R3          | R4          | Rated              | Min.              | Max.               |
| Sleeve Conditions<br>SLV Rel. Pri. & Sec. Wdg. (E6353)<br>SLV Rel. Pri. Wdg.<br>Z & Z1 Res. (For E6353 SLV Rel.) | Grd.<br>Grd.<br>L1(BS) | SS2-K3<br>SS3-K3<br>SS2-K3 | -<br>-<br>-          | 7<br>7<br>1 | 1<br>5<br>3 | 1<br>1<br>1 | 1100<br>100<br>265 | 1045<br>95<br>262 | 1155<br>105<br>268 |
| Opr. Test P.B.X. Relay<br>AC, AD & AE Res. in Parallel<br>With A1 Res. & YT Rel.<br>For E6353 SLV Rel.           | L4(TR)                 | *                          | -                    | 1           | 13          | 8           | 171                | 168               | 175                |
| L Relay Hold Test<br>LK Rel. - AG & AH Res.<br>SUB Rel. - AL, K & Y Res.<br>(Parallel Circuit)                   | SS4-J3                 | SS4-13                     | (SL3)                | 1           | 1           | 9           | 806                | 796               | 816                |
| L Relay Release Test<br>AH, AG Res., LK Rel.                                                                     | SS4-J3                 | SS4-13                     | (SL3)                | 1           | 1           | 13          | 5000               | 4870              | 5130               |
| Fundamental Selection Path<br>STP Rel., O, G & F Res.                                                            | Grd.                   | U2(TR)                     | (YT)Rel.             | 1           | 2           | 2           | 2035               | 2009              | 2060               |
| Brush Continuity<br>AC, AC1 Res., AC Relay                                                                       | AC1<br>Res.            | SS2-14                     | (BC)Key              | 1           | 1           | 1           | 49600              | 47168             | 52032              |

\*G battery fuse post using Figures A or B on T-20149-13.

3.04 Replace the No. 35 type fuses

(C) Test of Frame for Proper Operation

3.05 This part of the test is to determine that the final selector test frame properly performs its major functions.

3.06 Reference should be made to Section 215-331-501 for instructions as to the operation of the test frame, and to the circuit description sheet CD-20149-01 for the detailed description of the circuit operation.

3.07 The test is made by checking the test frame against a final selector which is made to simulate a number of trouble conditions. Before proceeding with the test a "multi" test should be run on the final selector circuit selected for the test in order to insure that it is in working order. From the particular circuit chart, determine the

three final selectors which precede in testing order the final selector that has been selected for the test. Make busy these selectors and the selector selected for the test. Note the particular incoming selector used to gain access to these selectors and make it busy.

Particular Circuit and Busy Incoming Test Selector

3.08 Operate the PC key at the test frame. Determine from the particular circuit chart the setting of the U, T, TW and GN keys that should direct the incoming test selector to the group of final selectors in which the selector selected for the test is located. Operate the "Direct Line Idle" Class Key No. 1, TRA and ST keys. The B1 lamp should light. Have the make-busy plug removed from the make-busy jack of the

incoming test selector. The B1 lamp should be extinguished and the incoming test selector should make selections in accordance with the particular keys operated. Operate the LP key, and then operate and release the MPB key a sufficient number of times to direct the test selector to the first of the made busy selectors.

### Time Alarm, Manual and Automatic Pass Busy

3.09 Release the PC key. The BF lamp should remain lighted and, after a time interval, the BY, aisle pilot and floor alarm lamps should light and the alarm bell should ring.

3.10 Operate and release the TA key. The BY, aisle pilot and floor alarm lamps should be extinguished and the alarm bell should stop ringing.

3.11 Operate the MPB key and note that the incoming test selector advances one terminal, as indicated by the locating lamps. Remove the make-busy plug from the final selector selected for the test and operate the APB key. The incoming test selector should advance over the remaining two busy final selectors and should start to test the fourth final selector used in connection with the test. Operate the CA key.

### Trouble Alarm

3.12 Block the final L relay normal and release the CA key. After an interval, the TBL aisle pilot and floor alarm lamps should light and the alarm bell should ring. Operate the TA and REP keys, and release the APB key. Remove the block from the L relay.

3.13 At the final selector frame, insert the No. 110 plug of the 32B test set into the REP jack associated with the test frame under test. Operate and release the red key of the 32B test set. When the final selector sequence switch reaches normal, insulate, with a toothpick held in the hand, SS1-O cam of the final selector sequence switch. The test frame should stop with the R4 switch in position 9. Remove the toothpick from SS1-O cam.

3.14 At the final selector frame, operate and release the red key of the 32B test set. When the final selector sequence switch reaches normal, insulate, with a toothpick held in the hand, SS1-F cam of final selector sequence switch. The final selector sequence switch should stop in talking position. The test frame R4 switch should stop in position 9 with the TL lamp lighted. Remove the toothpick from SS1-F cam. The test frame should advance and start to retest the final selector.

### Release Test of L Relay

3.15 As soon as the final selector sequence switch has moved out of the talking position and the L relay has operated, block the L relay in its operated position. This should cause the test frame to stop with the R4 switch in position 14 and with the TL lamp lighted. Remove the block from the L relay and operate and release the red key of the 32B test set. The test frame should advance and start to retest the final selector.

3.16 The following tests are operation checks of the final selector and repeat the operations of class tests Nos. 1 and 2, except for line conditions. Observe that the class switch takes settings as follows and that each of the tests are completed when the following class keys are operated:

Class Key No.3 P.B.X. Line Idle R3 Pos. 5  
(First of Group)

Class Key No.4 Hunt Idle P.B.X. Line R3 Pos. 7  
(Last of Group)

Class Key No.5 Hunt Busy P.B.X. Line R3 Pos. 9  
(Last of Group)

Class Key No.6 Hunt Idle P.B.X. Line R3 Pos.11  
(Intermediate Line)

3.17 Release the Nos. 1,2,3,4,5 and 6 class test keys and operate the NO-TEST key. Operate and release the red key of the 32B test set and when the final selector sequence switch reaches normal, insulate SS1-G cam with a toothpick held in the hand. The final selector sequence switch should go to busy-back position and the R4 switch of the final test frame should stop in position 9. Remove the toothpick from SS1-G cam.

### Time Measure Release

3.18 Release the NO-TEST key and operate the TMR key. Operate and release the red key of the 32B test set. As soon as the final selector sequence switch has reached position 15 manually release the final selector L relay. The R4 switch of the test frame should stop in position 10. Operate the CA key on the test frame.

### Tell-Tale

3.19 Release the TMR key and operate the TELL-TALE key. Release the CA key. Observe that the final selector goes to tell-tale and returns. Operate the CA key.

### Brush Continuity

3.20 Release the TELL-TALE key and operate class test key No. 1 and BC key. Operate the final brush, final ten, and final unit keys to direct the final selector to an idle working line. Release the CA key. The test frame should complete the test of the final selector under test.

3.21 At the final selector frame operate and release the red key of the 32B test set. When the final selector sequence switch reaches normal insulate SS1-F cam with a toothpick held in the hand. The R4

switch of the test frame should stop in position 10. Remove the toothpick from SS1-F cam.

3.22 Block the test frame TP relay operated. Operate and release the CA key. The test frame should stop in position 15.

### Busy Line

3.23 Operate the FB, FT and FU keys to direct the final selector to a busy line. Operate and release the CA key. The final selector should challenge the line repeatedly in accordance with the wiring of the T3 switch. After the final selector challenges the line the first time the REP key should be released. When the T3 selector reaches terminal 22, the LB lamp should light.

### Return to Normal

3.24 Operate the RN and CA keys. The frame should restore to normal. As soon as the frame has restored, release all keys and then release the RN key. Ascertain that the equipment used in connection with the test has been restored to service.

## 4. REPORTS

4.01 The required record of this routine should be entered on the proper form.