

**INTERCEPTING TRUNKS FROM TRUNK FINDERS
TO A NO. 14C, 14D OR 15C SWITCHBOARD
ARRANGED TO TRIP MACHINE RINGING BEFORE EXTENDING CALL TO OPERATOR
OPERATION TESTS
USING TRUNK TEST SET SD-90469-01 OR SD-90469-02 (J94710A)
STEP-BY-STEP SYSTEMS**

1. GENERAL

1.01 This section describes methods of testing the operating features of 2- and 3-wire intercepting trunks from trunk finders to DSA switchboards. These trunks are of the type which require machine ringing to signal the operator and are arranged to trip machine ringing before extending the call to the operator.

1.02 The tests covered are:

(A) Regular Intercepting - Test Trunk Circuit Provided

(B) Regular Intercepting - Test Trunk Circuit Not Provided

(C) Trouble Intercepting

1.03 Test (A) is based on the use of the test trunk circuit SD-32090-01. This circuit is provided with jack appearances at the trunk relay rack.

1.04 These tests cover all of the various arrangements of the trunk circuits and it will be necessary, in order to perform the proper tests, to review the particular arrangements provided in an office before proceeding with the test. It is suggested that paragraphs or subparagraphs be cross-hatched where they do not apply.

1.05 In connection with Test (B), machine ringing is simulated by reversing the battery and ground supply on the tip and ring of the trunk in order to operate the ring-up relay and cause the trunk circuit to function and signal the operator.

1.06 These tests, when made on a routine basis, should preferably be performed during periods of light traffic.

1.07 If an "out of service" failure is encountered on the trunk, the associated trunk finder should be made busy in the approved manner until the trouble is cleared.

2. APPARATUS

All Tests

2.01 Trunk Test Set J94710A (SD-90469-01 or SD-90469-02).

2.02 Operator's Telephone Set.

2.03 Four P3E Cords equipped with No. 310 Plugs (3P7A) - only three required for Tests (B) and (C).

Test (A) Only

2.04 Test Trunk Circuit SD-32090-01.

Tests (B) and (C) Only

2.05 One W3A Cord equipped with three No. 59 and three No. 108 Cord Tips at one end and a No. 310 Plug at the other (3W3A) - for use where test jacks are not provided on the trunk circuit.

Test (C) Only

2.06 One No. 310 Plug with the tip and ring short-circuited - for use where test jacks are provided on the trunk circuit.

2.07 One No. 893 Cord (or equivalent) equipped with two No. 360A Tools and two KS-6278 Clips - for use where test jacks are not provided on the trunk circuit.

3. PREPARATION

All Tests

3.01 Connect the BAT-G jack of the test set to a 48-volt battery supply jack, using a P3E cord.

Note: To avoid possible grounding of the battery supply lead, connect the cord to the test set first and, when disconnecting, remove the cord from the test set last.

3.02 Connect the plug of the operator's telephone set to the TEL jacks of the test set. Operate the TRS key.

Test (A) Only

3.03 Connect the T and TL jacks of the test set to the T and TL jacks of the test trunk circuit, respectively, using P3E cords.

Tests (B) and (C) Only

3.04 Connect together the C and TL jacks of the test set, using a P3E cord.

4. METHOD

(A) Regular Intercepting - Test Trunk Circuit Provided

4.01 Connect the TK jack of the test trunk circuit to the T jack of the trunk to be tested, using a P3E cord. If the trunk is busy, the BSY lamp will light in which case remove the plug from the T jack.

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4.02 If the trunk is idle, operate the DL ST, REV and CT keys. Operate the T key. Audible ringing should be heard unless the operator answers in less than four seconds.

4.03 When the operator answers, observe that audible ringing stops and that the C lamp does not light. Advise the operator that a test is being made. Verify that no tone (toll identification) was heard. If separate answering jacks are provided for "regular" intercepting and "trouble" intercepting from plugging-up lines, verify that the call was received through the "regular" intercepting answering jack.

4.04 Request the operator to operate and restore the flashing key.

(a) Trunks Arranged for Flashing on Local Calls - No. 15C Switchboard: Observe that the C lamp lights for a short interval (approximately one-half second) after the flashing key is restored.

(b) Trunks Arranged for Flashing on Local Calls - Nos. 14C and 14D Switchboards: Observe that the C lamp lights while the flashing key is operated.

(c) Trunks Not Arranged for Flashing on Local Calls - Nos. 14C, 14D and 15C Switchboards: Observe that the C lamp does not light during the operation of the flashing key.

4.05 3-Wire Trunks - No. 15C Switchboard: Request the operator to remain on the connection and to observe her cord circuit

supervisory signal. Restore and reoperate the CT key several times and verify the flashing signal with the operator.

4.06 Proceed as follows:

(a) If testing 2-wire trunks arranged for completion of intercepted calls proceed as in 4.07 to 4.15.

(b) If testing 2-wire trunks not arranged for completion of intercepted calls, or if testing 3-wire trunks, request the operator to disconnect when she receives the disconnect signal. Restore the CT and T keys. The SL lamp may light but will be extinguished when the operator disconnects. Restore the REV key and proceed as in 4.10 to 4.15.

Completion of Intercepted Calls

4.07 Request the operator to remain on the connection and to complete a call to a made busy connector terminal (). Busy tone should be heard. Observe that the C lamp does not light.

4.08 Request the operator to disconnect the calling cord and to complete a call to the connector multiple test line terminal (). When ringing is tripped, observe that the C lamp follows the interruptions of the test line, i.e., the lamp should light during the test line closures. The test line tone should be heard during the intervals in which the C lamp is lighted.

4.09 Restore the CT and T keys. The C lamp will be extinguished. The SL lamp may light but will be extinguished when the circuit restores to normal. Restore the REV key.

Intercepting from Toll

4.10 If the trunk is idle (SL lamp extinguished), operate the CT key and then operate the T key. Audible ringing should be heard unless the operator answers in less than four seconds.

4.11 When the operator answers, observe that audible ringing stops. Advise the operator that a test is being made. If the trunk is arranged to supply toll identification tone, verify with the operator that "high" tone was heard and that the tone was removed when she momentarily operated the tone removal (or flashing) key. On trunks arranged for supervision on toll calls, observe that the C lamp lights.

4.12 Request the operator to operate and restore the flashing key.

(a) Trunks Arranged for Flashing on Toll Calls - No. 15C Switchboard: Observe that the C lamp lights for a short interval (approximately one-half second) if previously extinguished, or that it is extinguished for a short interval (approximately one-half second), if previously lighted, after the flashing key is restored.

(b) Trunks Arranged for Flashing on Toll Calls - Nos. 14C and 14D Switchboards: Observe that the C lamp lights, if previously extinguished, or that it is extinguished, if previously lighted, while the flashing key is operated.

(c) Trunks Not Arranged for Flashing on Toll Calls - Nos. 14C, 14D and 15C Switchboards: Observe that the C lamp does not light during the operation of the flashing key.

4.13 2-Wire Trunks - No. 15C Switchboard: Request the operator to remove the plug from the trunk jack and to observe that the trunk lamp does not light for two or three seconds. After waiting that length of time, restore the CT and T keys. All test set lamps should be extinguished. Reoperate the CT key and then operate the T key. When the operator answers verify the performance of the trunk lamp. Disregard the C lamp indication. Request the operator to disconnect when she receives the disconnect signal. Restore the CT, DL ST and T keys and disconnect the test cord from the T jack of the trunk.

4.14 3-Wire Trunks - No. 15C Switchboard: Request the operator to disconnect when she receives the disconnect signal. Restore the CT and T keys. The SL lamp may light but will be extinguished when the operator disconnects. Restore the DL ST key and disconnect the test cord from the T jack of the trunk.

4.15 2- and 3-Wire Trunks - No. 14C or 14D Switchboard: Request the operator to leave the plug in the trunk jack, to observe the operation of the cord supervisory lamp and the trunk lamp, and to remove and reinsert the plug when the trunk lamp lights. Restore the CT and T keys (the cord supervisory lamp should light). Operate the CT key and then operate the T key (the trunk lamp should light). When the operator answers, verify that the proper cord supervisory signal was received and that the trunk lamp remained extinguished for a short interval until the new call was originated. Request the operator to disconnect the cord from the trunk jack. Restore the CT,

DL ST and T keys and disconnect the test cord from the T jack of the trunk.

Note: When the tone removal key in the position circuit is used to remove the tone in 4.11, the cord supervisory lamp will not light.

(B) Regular Intercepting - Test Trunk Circuit Not Provided

4.16 Connect the T jack of the test set to the T jack of the trunk to be tested, using a P3E cord. Where the T jack is not provided on the trunk circuit, insert the plug of the W3A cord into the T jack of the test set and connect the No. 59 cord tips of the white (tip), blue (ring) and red (sleeve) conductors to the tip, ring and sleeve terminals (1, 2 and 3), respectively, on the trunk unit terminal strip. If the trunk is busy, the BSY lamp will light in which case remove the plug from the T jack of the trunk or disconnect the test clips from the terminals on the unit terminal strip.

Intercepting from Local

4.17 If the trunk is idle, operate the DL ST key and then operate the T key. The SL lamp should light.

4.18 Operate the REV and CT keys. After a short interval restore and reoperate the REV key. Audible ringing should be heard unless the operator answers in less than four seconds.

Note: If audible ringing is not heard, or if the operator does not answer within ten seconds, restore and reoperate the REV key again. This REV key operation is used to simulate machine ringing (see 1.05) and a failure of the trunk to signal the operator, under this condition, does not necessarily indicate a ring-up relay failure.

4.19 Proceed as in 4.03 to 4.05.

4.20 Proceed as follows:

(a) If testing 2-wire trunks arranged for completion of intercepted calls proceed as in 4.21 to 4.30.

(b) If testing 2-wire trunks not arranged for completion of intercepted calls, or if testing 3-wire trunks, request the operator to disconnect when she receives the disconnect signal. Restore the CT and T keys. The SL lamp will remain lighted until the operator disconnects. Restore the REV key and proceed as in 4.24 to 4.30.

Completion of Intercepted Calls

4.21 Request the operator to remain on the connection and to complete a call to a made busy connector terminal (). Busy tone should be heard. Observe that the C lamp does not light.

4.22 Request the operator to disconnect the calling cord to complete a call to the connector multiple test line terminal () and to hold the circuit until she receives the disconnect signal. When ringing is tripped, observe that the C lamp follows the interruptions of the test line, i.e., the lamp should light during the test line closures. The test line tone should be heard during the intervals in which the C lamp is lighted.

4.23 Restore the CT and T keys. The C lamp should be extinguished. The SL lamp should be extinguished when the circuit restores to normal. Restore the REV key.

Intercepting from Toll

4.24 If the trunk is idle (SL lamp extinguished), operate the T key. The SL lamp should light.

4.25 Operate the CT key. After a short interval, operate and restore the REV key. Audible ringing should be heard unless the operator answers in less than four seconds.

Note: If audible ringing is not heard, or if the operator does not answer within ten seconds, restore and reoperate the REV key again. This REV key operation is used to simulate machine ringing (see 1.05) and a failure of the trunk to signal the operator, under this condition, does not necessarily indicate a ring-up relay failure.

4.26 When the operator answers, observe that audible ringing stops. Advise the operator that a test is being made. If the circuit is arranged for toll identification tone, verify with the operator that "high" tone was heard and that the tone was removed when she momentarily operated her tone removal (or flashing) key. On circuits arranged for supervision on toll calls, observe that the C lamp lights.

4.27 Request the operator to operate and restore her flashing key.

(a) Trunks Arranged for Flashing on Toll Calls - No. 15C Switchboard: Observe that the C lamp lights for a short interval (approximately one-half second), if

previously extinguished, or that it is extinguished for a short interval (approximately one-half second), if previously lighted, after the flashing key is restored.

(b) Trunks Arranged for Flashing on Toll Calls - Nos. 14C and 14D Switchboards: Observe that the C lamp lights, if previously extinguished, or is extinguished, if previously lighted, while the flashing key is operated.

(c) Trunks Not Arranged for Flashing on Toll Calls - Nos. 14C, 14D and 15C Switchboards: Observe that the C lamp does not light during the operation of the flashing key.

4.28 2-Wire Trunks - No. 15C Switchboard:

Request the operator to remove the plug from the trunk jack and to observe that the trunk lamp does not light for two or three seconds. After waiting that length of time, restore the CT and T keys. All test set lamps should be extinguished. Reoperate the CT and T keys. The SL lamp should light. After a short interval, operate and restore the REV key (see 4.25). When the operator answers, verify the performance of the trunk lamp. Request the operator to disconnect when she receives the disconnect signal. Restore the CT, DL ST and T keys. All test set lamps should be extinguished. Disconnect the test cord from the T jack, or unit terminal strip terminals, of the trunk unless a test of the trouble intercepting feature is to be made, in which case proceed as in 4.32 to 4.37.

4.29 3-Wire Trunks - No. 15C Switchboard:

Request the operator to disconnect when she receives the disconnect signal. Restore the CT and T keys. The SL lamp will be extinguished when the operator disconnects. Restore the DL ST key. Disconnect the test cord from the T jack, or unit terminal strip terminals, of the trunk unless a test of the trouble intercepting feature is to be made, in which case proceed as in 4.32 to 4.37.

4.30 2- and 3-Wire Trunks - No. 14C or 14D Switchboard: Request the operator to

leave the plug in the trunk jack, to observe the operation of the supervisory lamp and the trunk lamp, and to remove and reinsert the plug when the trunk lamp lights. Restore the CT and T keys. The cord supervisory lamp should light. The SL lamp should be extinguished. Operate the CT and T keys. The SL lamp should light. After a short interval, operate and restore the REV key (see 4.25). The trunk lamp should light. When the operator answers, verify that the proper cord supervisory signal was received and that the trunk lamp remained

extinguished for a short interval until the new call was originated. Request the operator to disconnect the cord from the trunk jack. Restore the CT, DL ST and T keys. The SL lamp should be extinguished. Disconnect the test cord from the T jack, or unit terminal strip terminals, of the trunk unless a test of the trouble intercepting feature is to be made in which case proceed as in 4.32 to 4.37.

Note: When the tone removal key in the position circuit is used to remove the tone in 4.26, the cord supervisory lamp will not light.

(C) Trouble Intercepting

4.31 Connect the T jack of the test set to the T jack of the trunk to be tested, using a P3E cord. Where the T jack is not provided on the trunk circuit, insert the plug of the W3A cord into the T jack of the test set and connect the No. 59 cord tips of the white (tip), blue (ring) and red (sleeve) conductors to the tip, ring and sleeve terminals (1, 2 and 3), respectively, on the trunk unit terminal strip. If the trunk is busy, the BSY lamp will light in which case remove the plug from the T jack of the trunk or disconnect the test clips from the terminals on the unit terminal strip.

4.32 If the trunk is idle, insert the modified No. 310 (tip and ring short-circuited) plug into the T1 jack of the trunk under test or, where the T1 jack is not provided, connect together the sleeve and A terminals (3 and 4) on the trunk unit terminal strip, using a No. 893 cord.

4.33 Operate the DL ST, REV and CT keys and then operate the T key. The SL lamp

should light. Observe that audible ringing is not heard or that the operator does not answer for at least five seconds (this checks the thermistor timing).

Note: If audible ringing is not heard, or if no response is received from the operator after thirty or forty seconds, the indication is that the thermistor is not functioning properly.

4.34 When the operator answers, advise her that a test is being made. Observe that the C lamp does not light. If separate answering jacks are provided for "regular" intercepting and "trouble" intercepting from plugging-up lines, verify with the operator that the call was received through the "trouble" intercepting answering jack.

4.35 Request the operator to disconnect after she receives the disconnect signal. Restore the CT, REV and T keys. The SL lamp should be extinguished when the operator disconnects.

4.36 When the SL lamp is extinguished, momentarily operate the T key. The SL lamp should light and remain lighted until the operator answers and disconnects.

4.37 Remove the plug from the T jack of the trunk, or disconnect the test clips from the terminals on the unit terminal strip. Remove the plug from the T1 jack of the trunk, or disconnect the No. 893 cord. Restore the T key.

5. REPORTS

5.01 The required record of these tests should be entered on the proper form.