

10-TYPE DATA LINE CONCENTRATOR SYSTEM (DLCS) TEST PROCEDURES

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1. GENERAL

1.01 This practice outlines the test procedures to be followed when troubleshooting the 10-type Data Line Concentrator System (DLCS).

1.02 The tests covered are:

A. Local Station Loop Continuity Test:
Checks the metallic loop between a local station and the concentrator for opens and shorts.

B. Concentrator Line Circuit Test

C. Full-Duplex Station Loop-Back Test:
Checks the distortion level between a full-duplex (FDX) station and the concentrator on a loop-back basis.

D. Station-to-Concentrator Test: Checks the distortion level between a half-duplex (HDX) or FDX station on an end-to-end basis.

E. Interconcentrator Trunk Loop-Back Test:
Checks the distortion level between a tandem concentrator and the primary concentrator on a loop-back basis.

F. Interconcentrator Trunk Distortion Test:
Checks the distortion level between a tandem concentrator and the primary concentrator on an end-to-end basis.

G. Computer Port Trunk Loop-Back Test:
Checks the distortion level between the primary concentrator and the computer port on a loop-back basis.

H. Computer Port Trunk Distortion Test:
Checks the distortion level between the primary concentrator and the computer port on an end-to-end basis.

I. DDD-Out Trunk Loop-Back Test: Checks the distortion level of a DDD-out trunk loop on a loop-back basis. It is made with a 904-type Data Test Center (DTC).

J. DDD-Out Trunk Distortion Test: Checks the distortion level of a DDD-out trunk loop on an end-to-end basis. It is made with a 904-type DTC.

K. Concentrator Trunk Circuit Test**L. Computer Port to Station Loop-Back**

Test: Checks the distortion level of an FDX loop between the station data set and trunk terminating data set on a loop-back basis.

M. Computer Port to Station End-to-End

Test: Checks the distortion level of FDX and HDX loops between the station data set and trunk terminating data set on an end-to-end basis.

1.03 This practice is intended for use in conjunction with the section entitled 10-Type Data Line Concentrator System (DLCS)—Maintenance Procedures (591-810-300).

1.04 Tests C, E, G, I, and L are included in this section for use when all of the data sets in a loop are arranged for **FDX** operation.

1.05 Tests D, F, H, J, and M are included in this BSP for use when all of the data sets in a loop are arranged for **HDX** operation or when the requirements for Tests C, E, G, I, L, respectively, are not met.

1.06 Tests A, B, C, G, and K require the dispatch of only **one** TELCo employee to the concentrator. However, Tests C and G require the assistance of the station or computer attendant, respectively.

1.07 Tests D, E, F, H, and M require the dispatch of **two** TELCo employees as follows.

- Test D—One to station and one to concentrator
- Tests E and F—One to primary concentrator and one to tandem concentrator
- Test M—One to station and one to trunk terminating data set (computer port).

1.08 Test H normally should require the dispatch of only **one** TELCo employee to the concentrator. However, if the multiple data set arrangement is not located in close proximity to the concentrator or trunking is provided via the 1A Data Station, the dispatch of **two** TELCo employees (one to the concentrator and one to the multiple data set arrangement or computer end 1A Data Station) is required.

1.09 Tests I and J normally should require the dispatch of only **one** TELCo employee to the concentrator. However, if the DDD-out interconnection arrangement is not located in close proximity to the concentrator, the dispatch of **two** TELCo employees (one to the concentrator and one to the DDD-out interconnection arrangement) is required.

1.10 Test L requires the dispatch of only **one** TELCo employee to the trunk terminating data set (computer port). However, assistance of the station attendant is required.

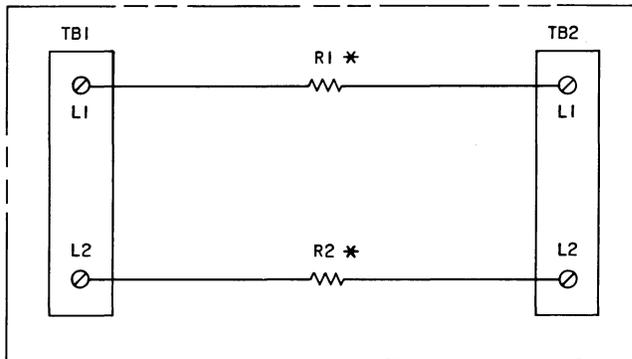
1.11 Tests C through J require the use of a Data Set 109H-L1 as follows:

- Tests C and D—One at concentrator serving the station under test.
- Tests E and F—One at primary concentrator and one at tandem concentrator.
- Tests G through J—One at primary concentrator.

In addition, these tests require a means for connecting the test Data Set 109H-L1 to the Data Auxiliary Set 803E1 and padding out the loop to the required 2000-ohm resistance limit of the Data Set 109-type. A suggested resistance box which can be manufactured locally is shown in Fig. 1.

1.12 To determine the value of the resistors to be used in the resistance box, consult the circuit/layout/record card for amount of padding that has been installed in the trunk data set (Data Set 109-type of multiple data set arrangement, Data Set 109-type of DATA-PHONE® interconnection arrangement, or DP63 circuit pack of 1A Data Station). For the **line test resistance box**, the value of each resistor should be one-half of the sum of the trunk loop resistance and the padding installed in the trunk data sets. For the **trunk test resistance box**, the value of each resistor should be one-half of the difference between the amount of padding installed in the trunk data sets and 1600 ohms. For example, if the trunk data sets have 500 ohms of padding in them, the resistors used in the resistance boxes should be as follows.

- (a) Line test resistance box—250 ohms (500/2).



- * THE VALUE OF THESE RESISTORS IS DETERMINED AS FOLLOWS (SEE 1.10):
- (A) LINE TEST INTERFACE BOX--
1/2 OF THE PADDING INSTALLED IN THE TRUNK DATA SETS.
 - (B) TRUNK TEST INTERFACE BOX--
1/2 OF THE DIFFERENCE BETWEEN THE PADDING INSTALLED IN THE TRUNK DATA SETS AND 1600 OHMS.

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Fig. 1—Suggested Data Set 109H-Type to Concentrator Line Test or Trunk Test Resistance Box

- (b) Trunk test resistance box—550 ohms (1600-500/2).

Both a line test resistance box and a trunk test resistance box should be provided at each concentrator employed in the system.

1.13 Prior to performing Tests C through I, ensure that the 911A Data Test Set(s) (DTS) is operating properly in accordance with the section entitled 911A, B, or C Data Test Sets—Description, Operation, and Maintenance (103-813-100) and set the controls of the test sentence generator (TSG) and distortion measuring set (DMS) portions as follows.

TSG

- AUTO. MAN. STEP to MAN.
- BAUDS to 110
- BIAS to 0
- CODE to 8/11
- DIST 1% to 0
- DIST 5% to 0

- REPEAT to OFF
- RY or U* to OFF
- OUTPUT to EIA.

DMS

- BAUDS to 110
- CODE to 8/11
- DISCR % to 5
- FILTER to OUT
- PARITY to OFF
- AUTO. PK-PIP to PIP
- INPUT to EIA.

1.14 When performing any of these tests, take proper steps to ensure that the customer is not billed for test calls. Refer to the section entitled Crediting Charges on Test Calls (010-250-001).

1.15 Tests C through J:

(a) The status of the DAS 803E1 CF lamp when the switch on the faceplate of the DAS is in the **TRK HOLD** position indicates the following.

(1) Tests C and D

- CF lamp lighted—normal.
- CF lamp extinguished—Trunk not made busy.

(2) Tests E and F

- CF lamp extinguished—Tandem concentrator/normal. Primary concentrator; trunk not made busy.
- CF lamp lighted—Tandem concentrator/trunk circuit not seeing proper voltage across L1 and L2 of trunk. This indicates that a trouble condition exists in the trunk loop. Primary concentrator/normal.

(3) Tests G through J

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- CF lamp extinguished—Normal.
- CF lamp lighted—Trunk circuit not seeing proper voltage across L1 and L2 of trunk. This indicates that a trouble condition exists in the trunk loop.

(b) A lighted LB or TB lamp indicates that the line loop or trunk loop, respectively, is in service. If either or both of these lamps are lighted while the DAS 803E1 switch is in the TRK HOLD position, wait until *both* are extinguished before switching to the LINE CONN position.

(c) For a connection to be established after switching the DAS 803E1 switch to the LINE CONN position, the line must be served in the normal queue. Therefore, if the test is made during a busy hour, it may take a period of time for the connection to be established (LB, TB, and CONN lamps lighted).

(d) At the completion of a test, it is imperative that the DAS 803E1 and AR464 circuit pack test cords are disconnected: as long as they are connected, the trunk will appear busy to the concentrator.

2. APPARATUS

2.01 The test apparatus required for each test is given in Table A. The details of each item are covered in the paragraph indicated by the number in parenthesis.

2.02 Data Set 109H-L1 which, as recommended in the section entitled 10-Type Data Line Concentrator System (DLCS)—Maintenance Procedures (591-810-300), should be installed at each concentrator.

2.03 The 911A DTS is the J79911A Data Test Set.

2.04 The DAS 803E1 is part of the manual test equipment supplied with the concentrator.

2.05 The AR464 circuit pack is part of the manual test equipment supplied with the concentrator.

2.06 The interface test adapter is a 901B-L3 DTS (cover of the 901B DTS).

2.07 The resistance box, previously described in 1.11, 1.12 and Fig. 1, is to be manufactured locally.

2.08 The VOM is a KS-14510-L1 volt-ohm-milliammeter, or equivalent.

2.09 W1AD cord (or equivalent)—4 feet 7 inches long, equipped with one 35 cord tip and one Mueller test clip with a black Mueller insulator (for connection of the interface test adapter to the 911A DTS).

2.10 W1AH cord (or equivalent)—6 feet long, equipped with one Amp No. 6 terminal and one 45 Mueller pee-wee clip with one black 47 insulator (for connection of the interface test adapter to the 911A DTS).

2.11 W2BH cord (or equivalent)—6 feet long, equipped with two 27 Mueller test clips and two 128 cord tips (for connection of the Data Set 109H-L1 to the resistance box and from the resistance box to the DAS 803E1).

3. PROCEDURES

STEP	PROCEDURE
	A. Local Station Loop Continuity Test
1	At the line-side connector block or intermediate distribution frame (IDF), disconnect the L1 (tip) or L2 (ring) lead associated with the station loop to be tested.
2	Condition the VOM to measure 3 milliamps.
3	Connect the VOM test leads to L1 and L2 of the station loop being tested.

STEP	PROCEDURE
4	<p>Using a nearby telephone, call the attendant at the station being tested and ask that a service request be initiated.</p> <p>Requirement: Meter indicates current flowing in loop.</p>
5	Have station attendant remove service request.
6	Disconnect VOM test leads and restore service connections (L1 or L2).
	<p>B. Concentrator Line Circuit Test AR365 Circuit Pack (Single Access Concentrator)</p>
1	<p>Condition VOM to measure 24 volts dc.</p> <p>Note: The test point (TP) number shown in parentheses in this part of the test corresponds to the TP number of the portion of the AR365 circuit pack that is associated with the even-numbered lines.</p>
2	Connect negative VOM lead to TB3 GND of the line and switch module.
3	Connect positive VOM lead to TP2 (10) of the AR365 circuit pack.
	<p>Requirement: Line idle—Meter indicates zero volts. Line busy—Due to possible ground potential, meter may or may not indicate voltage present.</p>
4	Disconnect positive VOM lead and connect it to TP3 (11).
5	Disconnect positive VOM lead and connect it to TP4 (12).
	<p>Requirement: Line idle or requesting service and not scanned—Meter indicates zero or near zero volts. Line busy—Meter indicates voltage present.</p>
6	Disconnect positive VOM lead and connect it to TP5 (13).
	<p>Requirement: Line scanner on line—Meter indicates zero or near zero volts. Line scanner scanning—Meter indicates voltage present.</p>
7	Disconnect positive VOM lead and connect it to TP6 (14).
	<p>Requirement: Line idle—Meter indicates zero volts. Line busy—Due to possible ground potentials, meter may or may not indicate voltage present.</p>
8	Disconnect both meter leads.
	<p>AR366 Circuit Pack (Dual Access Concentrator)</p>
9	Connect the negative VOM lead to GRD of TB3 on the line and switch module.
10	Connect positive VOM lead to TP1 (9) of the AR366 circuit pack.

STEP	PROCEDURE
11	<p>Requirement: Line idle—Meter indicates voltage present. Line busy, locked out, or requesting service—Meter indicates near zero volts.</p> <p>Disconnect positive VOM lead and connect it to TP2 (10).</p>
12	<p>Requirement: Line idle—Meter indicates zero volts. Line busy—Due to possible ground potential, meter may or may not indicate voltage present.</p> <p>Disconnect positive VOM lead and connect it to TP3 (11).</p> <p>Requirement: Line idle, locked out from trunk group B, or camped-on to trunk group B—Meter indicates voltage. Line busy, locked out from trunk group A, or camped-on to trunk group A—Meter indicates approximately zero volts.</p>
13	<p>Disconnect positive VOM lead and connect it to TP4 (12).</p> <p>Requirement: Line idle, locked out, or requesting service and not scanned—Meter indicates zero or near zero volts. Line busy or requesting service and has been scanned—Meter indicates voltage present.</p>
14	<p>Disconnect positive VOM lead and connect it to TP5 (13).</p> <p>Requirement: Line scanner on line—Meter indicates approximately 3 volts. Line scanner scanning—Meter indicates approximately 5 volts.</p>
15	<p>Disconnect positive VOM lead and connect it to TP6 (14).</p> <p>Requirement: Line idle—Meter indicates zero volts. Line busy—Due to possible ground potentials, meter may or may not indicate voltage present.</p>
16	<p>Disconnect both VOM leads.</p>
	<p>C. Full-Duplex Station Loop-Back Test</p>
1	<p>Ensure that the switch on the faceplate of DAS 803E1 is in the OFF position.</p>
2	<p>At the line and switch module, locate the line circuit associated with the station to be tested.</p>
3	<p>Place the trunk associated with the trunk circuit to be used for testing in the made-busy mode.</p>
	<p>Note: When the trunk serving the trunk circuit being used for testing is associated with a multiple data set arrangement or DATA-PHONE interconnection arrangement that is not located at the concentrator site or with a 1A Data Station link, it is necessary to place a call to the remote location or computer site, respectively, and request that the trunk be made busy.</p>

STEP	PROCEDURE
4	Using the <i>line test resistance box</i> , connect the test apparatus as shown in Fig. 2.
5	Using a nearby telephone, call the station to be tested, inform the attendant that a test is in progress, and request that no service request be initiated until further notice.
6	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position. Requirement: LB and TB lamps extinguished. CF lamp lighted.
7	Operate switch on DAS 803E1 to LINE CONN position. Requirement: CONN, LB, and TB lamps lighted.
8	Operate switch on DAS 803E1 to TRK HOLD position.
9	Place another call to the station and have the attendant place the station in the test mode.
10	Ensure that the controls of the 911A DTS are set according to 1.13.
11	Plug 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.
12	At the Data Set 109H-L1 operate the LINE 1 button. Requirement: CF lamp extinguished.
13	After about one minute, operate AUTO. PK-PIP switch of DMS to PK.
14	Operate AUTO. MAN. STEP switch of TSG to AUTO.
15	Operate RESET switch on DMS and, after one minute, record reading displayed on DMS pixie tubes.
16	Repeat Step 15 until three readings have been made. Requirement: Distortion displayed on DMS pixie tubes are as follows. (a) Local station, remote PL (voice), or multiplexed station—10 percent or less. (b) Remote PL (telegraph) station—18 percent or less.
17	End of test; operate switch on faceplate of DAS 803E1 to the OFF position, disconnect all test connections, return the trunk to service, and call the station attendant and have the station turned off.

STEP	PROCEDURE
	<p>D. Station-to-Concentrator Test Concentrator (Transmit) End</p> <p>1 Ensure that the switch on the faceplate of the DAS 803E1 is in the OFF position.</p> <p>2 At the line and switch module, locate the line circuit associated with the station to be tested.</p> <p>3 Place the trunk associated with the trunk circuit to be used for testing in the made-busy mode.</p> <p><i>Note:</i> When the trunk serving the trunk circuit being used for testing is associated with a multiple data set arrangement or DATA-PHONE interconnection arrangement that is not located at the concentrator site or with a 1A Data Station link, it is necessary to place a call to the remote location or computer site, respectively, and request that the trunk be made busy.</p> <p>4 Using the <i>line test resistance box</i>, connect the concentrator end test apparatus as shown in Fig. 2.</p> <p>5 Using a nearby telephone, call the station to be tested, inform the attendant that a test is in progress, and request that no service request be initiated until further notice.</p> <p>6 Operate switch on faceplate of DAS 803E1 to the TRK HOLD position.</p> <p><i>Requirement:</i> LB and TB lamps extinguished. CF lamp lighted.</p> <p>7 Operate switch on DAS 803E1 to LINE CONN position.</p> <p><i>Requirement:</i> CONN, LB, and TB lamps lighted.</p> <p>8 Operate switch on DAS 803E1 to TRK HOLD position.</p> <p>9 Ensure that the control of the 911A DTS are set according to 1.13.</p> <p>10 Plug 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.</p> <p>11 At the Data Set 109H-L1, operate the LINE 1 button.</p>
	<p>Remote Station (Receive) End</p> <p> <i>At station equipped with Data Set 109C- or 109F- type, Steps 12 through 14 are omitted and the station TTY is used to transmit and receive the test message.</i></p> <p>12 At the data set interface connector, disconnect the terminal equipment.</p> <p>13 Connect the test apparatus as shown in Fig. 3.</p>

STEP	PROCEDURE
14	Ensure that the controls of the 911A DTS are set according to 1.13.
15	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.
16	<p>Initiate a service request as follows.</p> <ul style="list-style-type: none"> (a) Local station being tested to trunk group A—Operate LINE 1 button. (b) Local station being tested to trunk group B—Operate LINE 2 button. (c) All other stations—Operate ON button. <p>Requirement: At concentrator, CF lamp on DAS 803E1 extinguished.</p>
17	If the 911A DTS is used at the station end, operate the AUTO. PK-PIP switch to PK.
18	Operate the RESET switch on DMS.
19	At concentrator end, operate AUTO. MAN. STEP switch on TSG to AUTO. and after one minute, record reading displayed on station end DMS pixie tubes.
20	<p>Repeat Step 19 until three readings have been made.</p> <p>Requirement: If 911A DTS <i>is</i> used at the station end, distortion is displayed on pixie tubes of DMS as follows:</p> <ul style="list-style-type: none"> (a) Local station—5 percent or less (b) Remote PL (voice) station—8 percent or less (c) Remote PL (telegraph) station—18 percent or less (d) Multiplexed station—10 percent or less. <p>If the 911A DTS <i>is not</i> used at the station end, TTY repeatedly prints out "THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 TESTING" error free. (Each test message will be followed by two carriage returns, a rubout character, and a line feed.)</p>
21	At the concentrator end, operate AUTO. MAN. STEP switch of TSG to MAN.
22	If the 911A DTS is used at the station end, operate AUTO. MAN. STEP switch of TSG to AUTO.
23	If the 911A DTS <i>is not</i> at the station end, repeatedly transmit the test message "THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 TESTING". (Follow each test message with two carriage returns, a rubout character, and a line feed).

STEP	PROCEDURE
24	At the concentrator end, operate the RESET switch on the DMS and record reading displayed on DMS pixie tubes.
25	<p>Repeat Step 23 until three readings have been made.</p> <p>Requirement: If the 911A DTS <i>is</i> used at the station end, the distortion is displayed on the DMS pixie tubes as follows.</p> <ul style="list-style-type: none"> (a) Local station—5 percent (HDX)/10 percent (FDX) or less (b) Remote PL (voice) station—8 percent (HDX)/10 percent (FDX) or less. (c) Remote PL (telegraph) station—18 percent (HDX or FDX) or less (d) Multiplexed station—10 percent (HDX or FDX) or less. <p>If the 911A DTS <i>is not</i> used at the station, the distortion is displayed on the DMS pixie tubes as follows.</p> <ul style="list-style-type: none"> (a) Local station—10 percent (HDX)/15 percent (FDX) or less (b) Remote PL (voice) station—13 percent (HDX)/15 percent (FDX) or less. (c) Remote PL (telegraph) station—23 percent (HDX or FDX) or less (d) Multiplexed station—15 percent (HDX or FDX) or less.
26	<p>End of test; operate switch on faceplate of DAS 803E1 to the OFF position, disconnect all test connections, return the trunk to service, and call the station attendant and have the station turned off.</p> <p>E. Interconcentrator Trunk Loop-Back Test Tandem Concentrator End</p>
1	Ensure switch on faceplate of DAS 803E1 is in the OFF position.
2	At line and switch module, locate the line circuit to be used for testing.
3	Using a nearby telephone, call the station associated with the line circuit to be used for testing, inform the attendant that a test is in progress, and request that no service request be initiated until further notice.
4	At trunk module, locate the trunk circuit associated with the interconcentrator trunk to be tested.
5	<p>Using the trunk test resistance box, connect the Data Set 109H-L1 as shown in Fig. 2.</p> <p>Note: The 911A DTS and interface test adapter are not required at the tandem concentrator end for this test.</p>

STEP	PROCEDURE
6	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position. Requirement: LB and TB lamps extinguished.
7	Operate switch on DAS 803E1 to LINE CONN position. Requirement: CONN, LB, and TB lamps lighted.
8	Operate switch on DAS 803E1 to the RING/LINE position. Primary Concentrator End
9	Ensure that switch on faceplate of DAS 803E1 is in the OFF position.
10	At the line and switch module, locate the line circuit associated with the interconcentrator trunk to be tested.
11	Place the trunk associated with the trunk circuit to be used for testing in the made-busy mode. Note: When the trunk serving the trunk circuit being used for testing is associated with a multiple data set arrangement or DATA-PHONE interconnection arrangement that is not located at the concentrator site or with a 1A Data Station link, it is necessary to place a call to the remote location or computer site, respectively, and request that the trunk be made busy.
12	Using the <i>line test resistance box</i> , connect the test apparatus as shown in Fig. 2.
13	Ensure that the controls of the 911A DTS are set in accordance with 1.13.
14	Operate switch on faceplate of DAS 803E1 to TRK HOLD position. Requirement: LB and TB lamps extinguished. CF lamp lighted.
15	Operate switch on DAS 803E1 to LINE CONN position. Requirement: CONN, LB, and TB lamps lighted.
16	Operate switch on DAS 803E1 to TRK HOLD position.
17	Operate the Data Set 109H-L1 LINE 1 button.
18	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.
19	At the tandem concentrator, place the Data Set 109H-L1 in the test mode. Requirement: At both concentrators, CF lamp on DAS 803E1 extinguished.
20	At primary concentrator, operate the AUTO. MAN. STEP switch of the TSG to AUTO.

STEP	PROCEDURE
21	After about one minute, operate the AUTO. PK-PIP switch of the DMS to PK.
22	Operate RESET key of DMS and, after one minute, record reading displayed on DMS pixie tubes.
23	Repeat Step 22 until three readings have been made.
	Requirement: Distortion displayed on pixie tubes of DMS is 10 percent or less.
24	End of test; operate switch on faceplate of DAS 803E1 to the OFF position, disconnect all test connections, return the trunk to service, and inform the station attendant that testing is complete.
	F. Interconcentrator Trunk Distortion Test
	<i>Tandem Concentrator End</i>
1	Ensure that switch on faceplate of DAS 803E1 is in the OFF position.
2	At the line and switch module, locate the line circuit to be used for testing.
3	Using a nearby telephone, call the station associated with the line circuit to be used for testing, inform the attendant that a test is in progress, and send request that no service request be initiated until further notice.
4	At the trunk module, locate the trunk circuit associated with the interconcentrator trunk to be tested.
5	Using the <i>trunk test resistance box</i> , connect the test apparatus as shown in Fig. 2.
6	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position.
	Requirement: LB and TB lamps extinguished.
7	Operate switch on faceplate of DAS 803E1 to the LINE CONN position.
	Requirement: CONN, LB, and TB lamps lighted.
8	Operate switch on DAS 803E1 to RING/LINE position.
9	Ensure that controls of 911A DTS are set in accordance with 1.13.
10	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the power switch to ON.
	<i>Primary Concentrator End</i>
11	Ensure that switch on faceplate of DAS 803E1 is in the OFF position.

STEP	PROCEDURE
12	At the line and switch module, locate the line circuit associated with the interconcentrator trunk to be tested.
13	Place the trunk associated with the trunk circuit to be used for testing in the made-busy mode.
	Note: When the trunk serving the trunk circuit being used for testing is associated with a multiple data set arrangement or DATA-PHONE interconnection arrangement that is not located at the concentrator site or a 1A Data Station link, it is necessary to place a call to the remote location or computer site, respectively, and request that the trunk be made busy.
14	Using the <i>line test resistance box</i> , connect the test apparatus as shown in Fig. 2.
15	Ensure that the controls of the 911A DTS are set according to 1.13.
16	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position.
	Requirement: LB and TB lamps extinguished; CF lamp lighted.
17	Operate switch on faceplate of DAS 803E1 to the LINE CONN position.
18	Operate switch on DAS 803E1 to TRK HOLD position.
19	Operate the Data Set 109H-L1 LINE 1 button.
20	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.
21	At the tandem concentrator Data Set 109H-L1, operate the LINE 1 button (tests to trunk group A) or LINE 2 button (tests to trunk group B).
	Requirement: At both concentrators, CF lamp on DAS 803E1 extinguished.
22	After about one minute, operate AUTO. PK-PIP switch of DMS to PK.
23	At primary concentrator, operate AUTO. MAN. STEP switch of TSG to AUTO.
24	At the tandem concentrator, operate RESET switch of DMS and, after one minute, record reading displayed on pixie tubes.
25	Repeat Step 24 until three readings have been made.
	Requirement: At tandem concentrator, distortion displayed on pixie tubes of DMS is 10 percent or less.
26	At the primary concentrator, operate the AUTO. MAN. STEP switch to MAN.
27	At tandem concentrator, operate AUTO. MAN. STEP switch of TSG to AUTO.

STEP	PROCEDURE
28	At primary concentrator, operate AUTO. PK-PIP switch of DMS to PK.
29	Operate RESET switch of DMS and, after one minute, record reading displayed on pixie tubes.
30	Repeat Step 28 until three readings are made.
	Requirement: Distortion displayed on pixie tubes of DMS is 10 percent or less.
31	End of test; operate switch on faceplate of DAS 803E1 to the OFF position, disconnect all test connections, return the trunk to service, and inform the station attendant that testing is complete.
	G. Computer Port Trunk Loop-Back Test
1	Place the trunk to be tested in the loop-back mode.
	Note: When the trunk to be tested terminates in a 1A Data Station or a multiple data station that is not located at the concentrator site, it is necessary to call the computer site or remote location, respectively, and request that the trunk be looped back.
2	At the trunk module, locate the trunk circuit associated with the trunk to be tested.
3	At the line and switch module, locate the line circuit to be used for testing.
4	Using a nearby telephone, call the station associated with the line circuit to be used for testing, inform the attendant that a test is in progress, and request that no service requests be initiated until further notice.
5	Ensure that switch on faceplate of DAS 803E1 is in the OFF position.
6	Using the trunk test resistance box , connect the test apparatus as shown in Fig. 2.
7	Ensure that the controls of the 911A DTS are set according to 1.13.
8	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position.
	Requirement: LB and TB lamps extinguished.
9	Operate switch on faceplate of DAS 803E1 to the LINE CONN position.
	Requirement: LB, TB, CF, and CONN lamps lighted.
10	Operate switch of DAS 803E1 to the RING/LINE position.
11	Operate the Data Set 109H-L1 LINE 1 (tests to trunk group A) or LINE 2 (tests to trunk group B) button.
	Requirement: CF lamp extinguished.

STEP	PROCEDURE
12	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.
13	After approximately one minute, momentarily operate AUTO. PK-PIP switch of DMS to PK.
14	Operate the AUTO. MAN. STEP switch of the TSG to AUTO.
15	Operate the RESET switch on the DMS and, after one minute, record the reading displayed on the pixie tubes.
16	Repeat Step 15 until three readings are made. Requirement: Distortion displayed on pixie tubes of DMS is 10 percent or less.
17	End of test; operate switch on faceplate of DAS 803E1 to OFF, disconnect all test connections, return the trunk to service, and inform the station attendant that testing is complete.
	H. Computer Port Trunk Distortion Test Computer Port (Receive) End
1	Disconnect computer port interface cable associated with the trunk to be tested from the 27A1 Data Unit (multiple data set arrangement) or 1A Data Station (multiplexed trunk).
2	Connect the test apparatus as shown in Fig. 3.
3	Ensure that controls of 911A DTS are set according to 1.13. Primary Concentrator End
4	At the trunk module, locate the trunk circuit associated with the trunk to be tested.
5	At the line and switch module, locate the line circuit to be used for testing.
6	Using a nearby telephone, call the station associated with the line circuit to be used for testing, inform the attendant that a test is in progress, and request that no service requests be initiated until further notice.
7	Ensure that switch on faceplate of DAS 803E1 is in the OFF position.
8	Using the <i>trunk test resistance box</i> , connect the test apparatus as shown in Fig. 2.
9	Ensure that the controls of the 911A DTS are set according to 1.13.
10	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position. Requirement: LB and TB lamps extinguished.
11	Operate switch on faceplate of DAS 803E1 to the LINE CONN position.

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STEP	PROCEDURE
	<p>Requirement: LB, TB, CF, and CONN lamps lighted.</p>
12	Operate switch on DAS 803E1 to the RING/LINE position.
13	Operate the Data Set 109H-L1 LINE 1 (tests to trunk group A) or LINE 2 (tests to trunk group B) button.
	<p>Requirement: CF lamp extinguished.</p>
14	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.
15	Operate the AUTO. MAN. STEP switch of the TSG to AUTO.
16	At computer port end, operate AUTO. PK-PIP switch of DMS to PK.
17	Operate RESET switch on DMS and, after one minute, record reading displayed on pixie tubes.
18	Repeat Step 17 until three readings have been made.
	<p>Requirement: Distortion displayed on pixie tubes of DMS as follows.</p> <p>(a) Multiple data set arrangement trunk—5 percent or less.</p> <p>(b) 1A Data Station trunk—10 percent or less.</p>
19	At primary concentrator end, operate AUTO. MAN. STEP switch of TSG to the MAN. position.
20	At computer port end, operate AUTO. MAN. STEP switch to AUTO.
21	At primary concentrator end, operate the AUTO. PK-PIP switch of the DMS to PK.
22	Operate RESET switch of DMS and, after one minute, record reading displayed on pixie tubes.
23	Repeat Step 23 until three readings have been made.
	<p>Requirement: Distortion displayed on DMS pixie tubes are as follows.</p> <p>(a) Multiple data set arrangement trunk—5 percent or less</p> <p>(b) 1A Data Station trunk—10 percent or less.</p>
24	End of test; operate switch on faceplate of DAS 803E1, disconnect all test connections, connect the computer port interface cord, and inform station attendant that testing is complete.

STEP	PROCEDURE
	<p>I. DDD-Out Trunk Loop-Back Test</p> <p>1 At the trunk module, locate the trunk circuit associated with the trunk to be tested.</p> <p>2 At the line and switch module, locate the line circuit to be used for testing.</p> <p>3 Using a nearby telephone, call the station associated with the line circuit to be used for testing, inform the attendant that a test is in progress, and request that no service requests be initiated until further notice.</p> <p>4 Ensure that switch on faceplate of DAS 803E1 is in the OFF position.</p> <p>5 Using the <i>trunk test resistance box</i>, connect the test apparatus as shown in Fig. 2.</p> <p>6 Operate switch on faceplate of DAS 803E1 to the TRK HOLD position.</p> <p>Requirement: LB, TB, and CF lamps extinguished.</p> <p>7 Operate switch on faceplate of DAS 803E1 to the LINE CONN position.</p> <p>Requirement: LB, TB, and CONN lamps lighted.</p> <p>8 Operate switch on DAS 803E1 to the RING/LINE position.</p> <p>9 Using a nearby telephone, call the 904-type DTC and request a loop-back test of the trunk.</p> <p>10 When instructed to do so by the DTC, operate the Data Set 109H-L1 LINE 1 (tests to trunk group A) or LINE 2 (tests to trunk group B) button.</p> <p>11 When dial tone is heard, dial the number of the 904-type DTC and, when instructed to do so, place the Data Set 109H-L1 in the loop-back (test) mode. Testing is now under control of the DTC.</p> <p>12 Testing is complete when the DTC gives test results. Operate the OFF button on the Data Set 109H-L1, operate switch on faceplate of DAS 803E1 to OFF, disconnect all test connections, and inform station attendant that testing is complete.</p> <p>Requirement: DTC reports distortion of 10 percent or less.</p>
	<p>J. DDD-Out Trunk Distortion Test</p> <p>1 At the trunk module, locate the trunk circuit associated with the trunk to be tested.</p> <p>2 At the line and switch module, locate the line circuit to be used for testing.</p> <p>3 Using a nearby telephone, call the station associated with the line circuit to be used for testing, inform the attendant that a test is in progress, and request that no service requests be initiated until further notice.</p>

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STEP	PROCEDURE
4	Ensure switch on faceplate of DAS 803E1 is in the OFF position.
5	Using the <i>trunk test resistance box</i> , connect the test apparatus as shown in Fig. 2.
6	Ensure that controls of 911A DTS are set according to 1.13.
7	Plug the 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the power switch to ON.
8	Operate switch on faceplate of DAS 803E1 to the TRK HOLD position. Requirement: LB, TB, and CF lamps extinguished.
9	Operate switch on faceplate of DAS 803E1 to the LINE CONN position. Requirement: LB, TB, and CONN lamps lighted; CF lamp remains extinguished.
10	Operate switch on faceplate of DAS 803E1 to the RING/LINE position.
11	Using a nearby telephone, call the 904-type DTC and request a distortion test of the trunk.
12	When instructed to do so by the DTC, operate the Data Set 109H-L1 LINE 1 (tests to trunk group A) or Line 2 (tests to trunk group B) button.
13	When the dial tone is heard, dial the number of the 904-type DTC, and when instructed to do so, operate AUTO. MAN. STEP switch of TSG to AUTO. Requirement: DTC reports distortion of 10 percent or less.
14	When informed of test results, operate the AUTO. MAN. STEP switch of the TSG to MAN.
15	Operate AUTO. PK-PIP switch of DMS to PK.
16	Operate RESET switch of DMS and, after one minute, record reading displayed on pixie tubes.
17	Repeat Step 16 until three readings have been made. Requirement: Distortion displayed on DMS pixie tubes is 10 percent or less.
18	End of test; operate Data Set 109H-L1 OFF button, operate switch on faceplate of DAS 803E1 to OFF, disconnect all test connections, and inform station attendant that testing is complete.

STEP	PROCEDURE
	<p>K. Concentrator Trunk Circuit Test AR368 Circuit Pack (Single Access Concentrator Trunk Circuit)</p> <p>1 Condition VOM to measure 24 volts dc.</p> <p>2 Connect negative VOM lead to TB2-3 of 21A1 or 22A1 Data Mounting.</p> <p>3 Connect positive VOM lead to TP1 of AR368 circuit pack.</p> <p>Requirement: Meter indicates zero volts.</p> <p>4 Condition VOM to measure resistance.</p> <p>Requirement: Meter indicates zero ohms.</p> <p>5 Condition VOM to measure 24 volts dc.</p> <p>6 Disconnect positive VOM lead and connect it to TP2.</p> <p>Requirement: Trunk idle—Meter indicates zero volts. Line busy—Due to possible ground potentials, meter may or may not indicate voltage present.</p> <p>7 Disconnect positive VOM lead and connect it to TP9.</p> <p>Requirement: Relay K1 operated—Meter indicates zero volts. Relay K1 <i>not</i> operated—Meter indicates 22 to 26 volts.</p> <p>8 Disconnect positive VOM lead and connect it to TP10.</p> <p>Requirement: Trunk connected to a line—Meter indicates zero volts. Trunk <i>not</i> connected to a line—Meter indicates 22 to 26 volts.</p> <p>9 Disconnect positive VOM lead and connect it to TP12.</p> <p>Note: TP11 is not used.</p> <p>Requirement: Trunk idle—Meter indicates zero volts. Trunk busy—Due to possible ground potentials, meter may or may not indicate voltage present.</p> <p>Note: Polarity of voltage appearing on TP13 (Step 18) will depend on whether or not marking battery is being received from the trunk (see requirement for Step 18).</p> <p>10 Disconnect positive (or negative) VOM lead and connect it to TP13.</p> <p>Requirement: Trunk circuit receiving marking battery from line—Meter indicates +22 to +26 volts. Trunk circuit <i>not</i> receiving marking battery from trunk—Meter indicates -22 to -26 volts.</p> <p>11 Disconnect VOM positive lead and connect it to TP14.</p>

STEP	PROCEDURE
	<p>Requirement: Trunk idle—Meter indicates zero or near zero volts. Trunk busy or K1 relay operated—Meter indicates voltage present.</p>
12	<p>Disconnect both VOM leads.</p>
	<p>AR488 (Trunk Circuit A) or AR382 (Trunk Circuit B) Circuit Packs (Dual Access Concentrator Trunk Circuits)</p>
13	<p>Condition VOM to measure 24 volts dc.</p>
14	<p>Connect negative VOM lead to TB2-3 of 21B1 or 22B1 Data Mounting.</p>
15	<p>Connect positive VOM lead to TP1 of AR488 or AR382 circuit pack.</p>
	<p>Requirement: Meter indicates zero volts.</p>
16	<p>Condition VOM to measure resistance.</p>
	<p>Requirement: Meter indicates zero ohms.</p>
17	<p>Condition VOM to measure 24 volts dc.</p>
18	<p>Disconnect positive VOM lead and connect it to TP2.</p>
	<p>Requirement: Trunk idle—Meter indicates zero volts. Trunk busy—Due to possible ground potentials, meter may or may not indicate voltage present.</p>
19	<p>Disconnect positive VOM lead and connect it to TP9.</p>
	<p>Requirement: Relay K1 operated (indicates this trunk selected to be used for next connection to this trunk group)—Meter indicates zero volts. Relay K1 not operated—Meter indicates 22 to 26 volts.</p>
20	<p>Disconnect positive VOM lead and connect it to TP10.</p>
	<p>Requirement: Trunk connected to a line—Meter indicates zero volts. Trunk not connected to a line—Meter indicates 22 to 26 volts.</p>
21	<p>Disconnect positive VOM lead and connect it to TP12.</p>
	<p>Note: TP11 is not used.</p>
	<p>Requirement: Trunk idle—Meter indicates zero volts. Trunk busy—Due to possible ground potentials, meter may or may not indicate voltage present.</p>
	<p>Note: Polarity of voltage appearing on TP13 (Step 19) will depend on whether or not marking battery is being received from the trunk (see requirement for Step 19).</p>
22	<p>Disconnect positive (or negative) VOM lead and connect it to TP13.</p>

STEP	PROCEDURE
23	<p>Requirement: Trunk circuit receiving marking battery from trunk—Meter indicates -16 to -20 volts. Trunk circuit <i>not</i> receiving marking battery from trunk—Meter indicates +22 to +26 volts.</p> <p>Disconnect VOM positive lead and connect it to TP14.</p> <p>Requirement: Trunk idle—Meter indicates zero or near zero volts. Trunk busy or K1 relay operated—Meter indicates voltage present.</p>
24	<p>Disconnect both VOM leads.</p> <p>L. Computer Port to Station Loop-Back Test</p>
1	<p>At the computer port, ensure that the trunk to be tested is idle, make it busy, and then disconnect the computer port interface cable.</p> <p> Steps 1 through 7 should be performed at both the primary and tandem concentrators when testing a station served by a tandem concentrator.</p>
2	<p>At the trunk module, locate the trunk circuit associated with the interconcentrator trunk or primary concentrator trunk to be tested.</p>
3	<p>At the line and switch module, locate the line circuit associated with the interconcentrator trunk or station to be tested.</p> <p>Note: Test points 1 (or 2) through 6 are associated with the line circuit for the odd-numbered lines and test points 9 (or 10) through 14 are associated with the line circuits for the even-numbered lines.</p>
4	<p>Ensure that the switch on DAS 803E1 is in the OFF position.</p>
5	<p>Connect the DAS 803E1 and AR464 to the line and trunk circuits as shown in Fig. 4.</p>
6	<p>Operate the switch on DAS 803E1 to the TRK HOLD position.</p> <p>Requirement: LB and TB lamps extinguished.</p>
7	<p>Operate the switch on DAS 803E1 to the LINE CONN position.</p> <p>Requirement: CF, LB, and TB lamps lighted.</p>
8	<p>At the computer port, connect the test apparatus as shown in Fig. 3 and return the trunk to normal.</p>
9	<p>Ensure that the controls of the 911A DTS are set according to 1.13.</p>

STEP	PROCEDURE
10	Plug the 911A DTS power cord into a 117-volt, 60 Hz outlet and operate the POWER switch to ON.
11	<p>Using a nearby telephone, call the station and request the attendant to place the station in the test mode [operate the LINE 1 (tests to trunk group A) or LINE 2 (tests to trunk group B) key and TEST key simultaneously].</p> <p>Requirement: At primary and tandem (if station served by tandem concentrator) concentrators, CF lamp on DAS 803E1 extinguished.</p>
12	At computer port, operate the AUTO. MAN. STEP switch of the TSG to AUTO.
13	Operate AUTO. PK-PIP switch of DMS to PK.
14	Momentarily operate RESET switch on DMS and, after one minute, record reading displayed on pixie tubes.
15	<p>Repeat Step 15 until three readings have been made.</p> <p>Requirement: See Table B.</p>
16	<p>End of test; At station under test—Operate OFF key. At computer port—Disconnect all test equipment and reconnect the computer port interface cord. At primary (and tandem if station served by tandem concentrator) concentrator(s)—Operate switch on DAS 803E1 to OFF and disconnect all test connections.</p> <p>M. Computer Port to Station End-to-End Test</p>
1	<p>At computer port, ensure trunk to be tested is idle, make it busy, and then disconnect the computer port interface cable.</p> <p> Steps 1 through 7 should be performed at both the primary and tandem concentrators when testing a station served by a tandem concentrator.</p>
2	At the trunk module, locate the trunk circuit associated with the interconcentrator trunk or primary concentrator trunk to be tested.
3	<p>At the line and switch module, locate the line circuit associated with the interconcentrator trunk or station to be tested.</p> <p>Note: Test points 1 (or 2) through 6 are associated with the line circuits for odd-numbered lines and test points 9 (or 10) through 14 are associated with the line circuits for even-numbered lines.</p>
4	Ensure that the switch on DAS 803E1 is in the OFF position.
5	Connect the DAS 803E1 and AR464 to the line and trunk circuits as shown in Fig. 4.

STEP	PROCEDURE
6	<p>Operate switch on DAS 803E1 to the TRK HOLD position.</p> <p>Requirement: LB and TB lamps extinguished.</p>
7	<p>Operate switch on DAS 803E1 to the LINE CONN position.</p> <p>Requirement: CF, LB, and TB lamps lighted.</p>
8	<p>At computer port, connect the test apparatus as shown in Fig. 3 and return the trunk to normal.</p>
9	<p>Ensure controls of 911A DTS are set according to 1.13.</p>
10	<p>Plug 911A DTS power cord into a 117-volt, 60-Hz outlet and operate the POWER switch to ON.</p>
	<p> If testing a station equipped with a Data Set 109C- or 109F-type, Steps 11 through 13 are omitted and the station TTY is used to transmit and receive the test message.</p>
11	<p>At station, gain access to the data set or DAS, disconnect the terminal equipment interface cable, and connect the test apparatus as shown in Fig. 3.</p>
12	<p>Ensure controls on 911A DTS are set according to 1.13.</p>
13	<p>Plug the 911A DTS power cord into a 117-volt, 60 Hz outlet and operate the POWER switch to ON.</p>
14	<p>Initiate a service request as follows:</p> <ul style="list-style-type: none"> (a) Local station to trunk group A—Operate the LINE 1 button. (b) Local station to trunk group B—Operate the LINE 2 button. (c) All other stations—Operate ON button. <p>Requirement: At primary (and tandem if station served by tandem concentrator) concentrator(s), CF lamp on DAS 803E1 extinguished.</p>
15	<p>If 911A DTS is used at station, operate AUTO. PK-PIP switch of DMS to PK.</p>
16	<p>At computer port, operate AUTO. MAN. STEP switch of TSG to AUTO.</p>
17	<p>At the station, momentarily operate the RESET switch of the DMS and, after one minute, record the reading displayed on the pixie tubes.</p>
18	<p>Repeat Step 17 until three readings are made.</p>

STEP	PROCEDURE
	<p>Requirement: If 911A DTS <i>is</i> used at the station, see Table C. If 911A DTS <i>is not</i> used at the station, the TTY repeatedly prints out "THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 TESTING" error free. Each test message will be followed by two carriage returns, a rubout character, and a line feed.</p>
19	At the computer port, operate the AUTO. MAN. STEP switch on the TSG to MAN.
20	If the 911A DTS <i>is</i> used at the station, operate the AUTO. MAN. STEP switch on the TSG to AUTO.
21	If the 911A DTS <i>is not</i> used at the station, repeatedly transmit the message "THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 TESTING". Follow each message with two carriage returns, a rubout character, and a line feed.
22	At the computer port, operate the AUTO. PK-PIP switch of the DMS to PK.
23	Momentarily operate the RESET switch of the DMS and, after one minute, record the reading on the pixie tubes.
24	Repeat Step 23 until three readings have been made.
	<p>Requirement: If 911A DTS <i>is</i> used at station, see Table C. If 911A DTS <i>is not</i> used at station, add 5 percent to readings given in Table C.</p>
25	<p>End of test; At the station—Operate the OFF button, disconnect the test apparatus, and reconnect the terminal equipment interface cable. At the computer port—Disconnect the test apparatus and reconnect the computer port interface cable. At the primary (and tandem if station is served by a tandem concentrator) concentrator(s)—Operate switch on DAS 803E1 to the OFF position and disconnect all test connections.</p>

TABLE A
TEST APPARATUS

TEST APPARATUS	TEST														L			M			
	A* and B*	C*	D		E		F		G ⁺	H		I ⁺	J ⁺	K*	PRIMARY CONC	TANDEM CONC	COMPUTER PORT	STATION END ⁺	PRIMARY CONC	TANDEM CONC	COMPUTER PORT
			STATION END [‡]	CONC END	PRIMARY CONC	TANDEM CONC	PRIMARY CONC	TANDEM CONC		PRIMARY CONC	COMPUTER PORT										
Data Set 109H - L1 (2.02)	—	1	—	1	1	1	1	1	1	1	—	1	1	—	—	—	—	—	—	—	—
911A DTS (2.03)	—	1	1	1	1	—	1	1	1	1	1	—	1	—	—	—	1	1	—	—	1
DAS 803E1 (2.04)	—	1	—	1	1	1	1	1	1	1	—	1	1	—	1	1	—	—	1	1	—
AR464 CP (2.05)	—	1	—	1	1	1	1	1	1	1	—	1	1	—	1	1	—	—	1	1	—
Interface Test Adapter (2.06)	—	1	1	1	1	—	1	1	1	1	1	—	1	—	—	—	1	1	—	—	1
Resistance Box (2.07)	—	1	—	1	1	1	1	1	1	1	—	1	1	—	—	—	—	—	—	—	—
VOM (2.08)	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Cord (2.09)	—	2	2	2	2	—	2	2	2	2	2	—	2	—	—	—	2	2	—	—	2
Cord (2.10)	—	2	2	2	2	—	2	2	2	2	2	—	2	—	—	—	2	2	—	—	2
Cord (2.11)	—	2	—	2	2	2	2	2	2	2	—	2	2	—	—	—	—	—	—	—	—

* This test apparatus is required at the concentrator serving the station under test.

+ This test apparatus is *not* required at stations using Data Set 109C - or F - type.
In this case, the station terminal equipment will be used to send and receive test messages.

‡ This test apparatus is required at the primary concentrator.

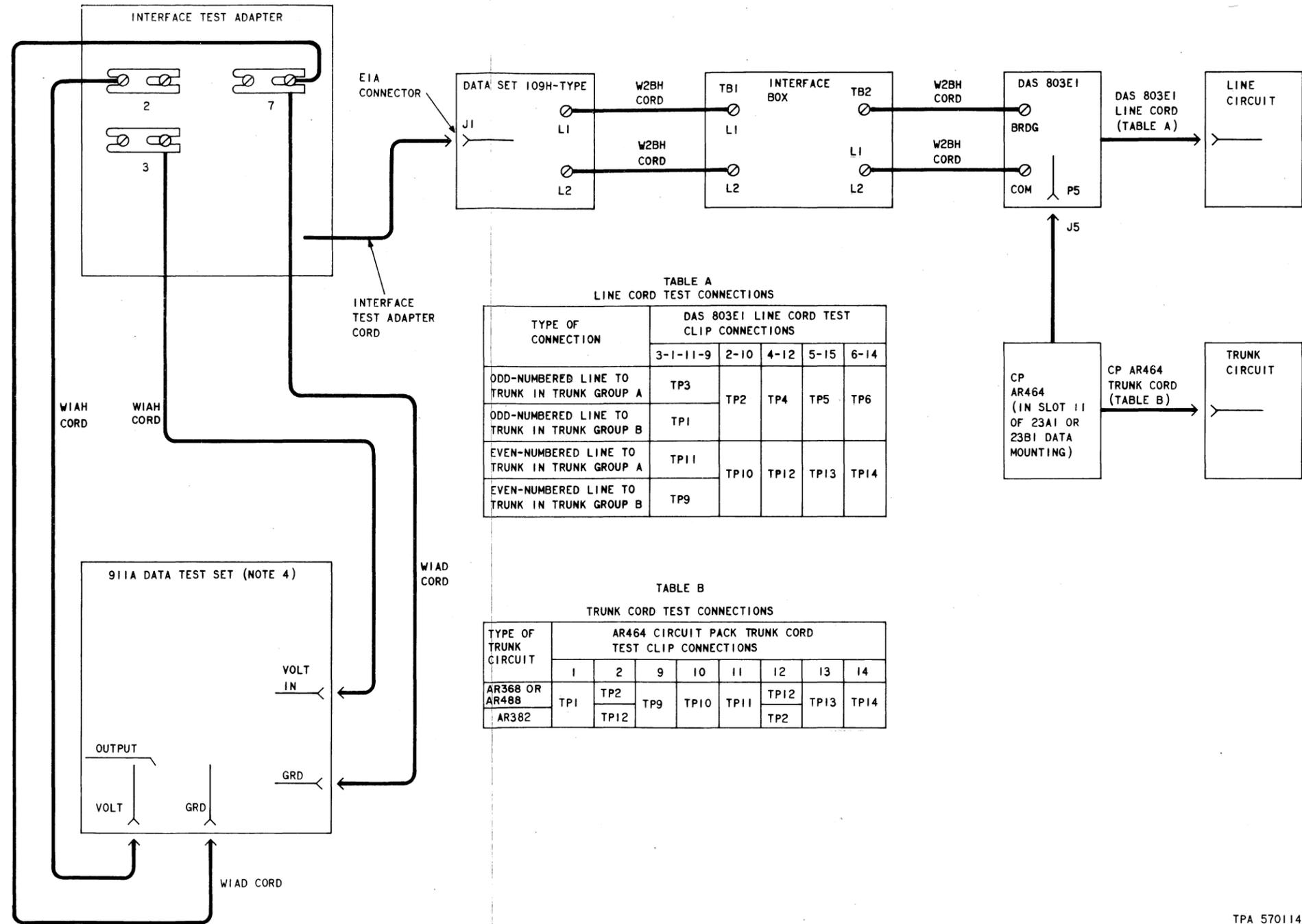
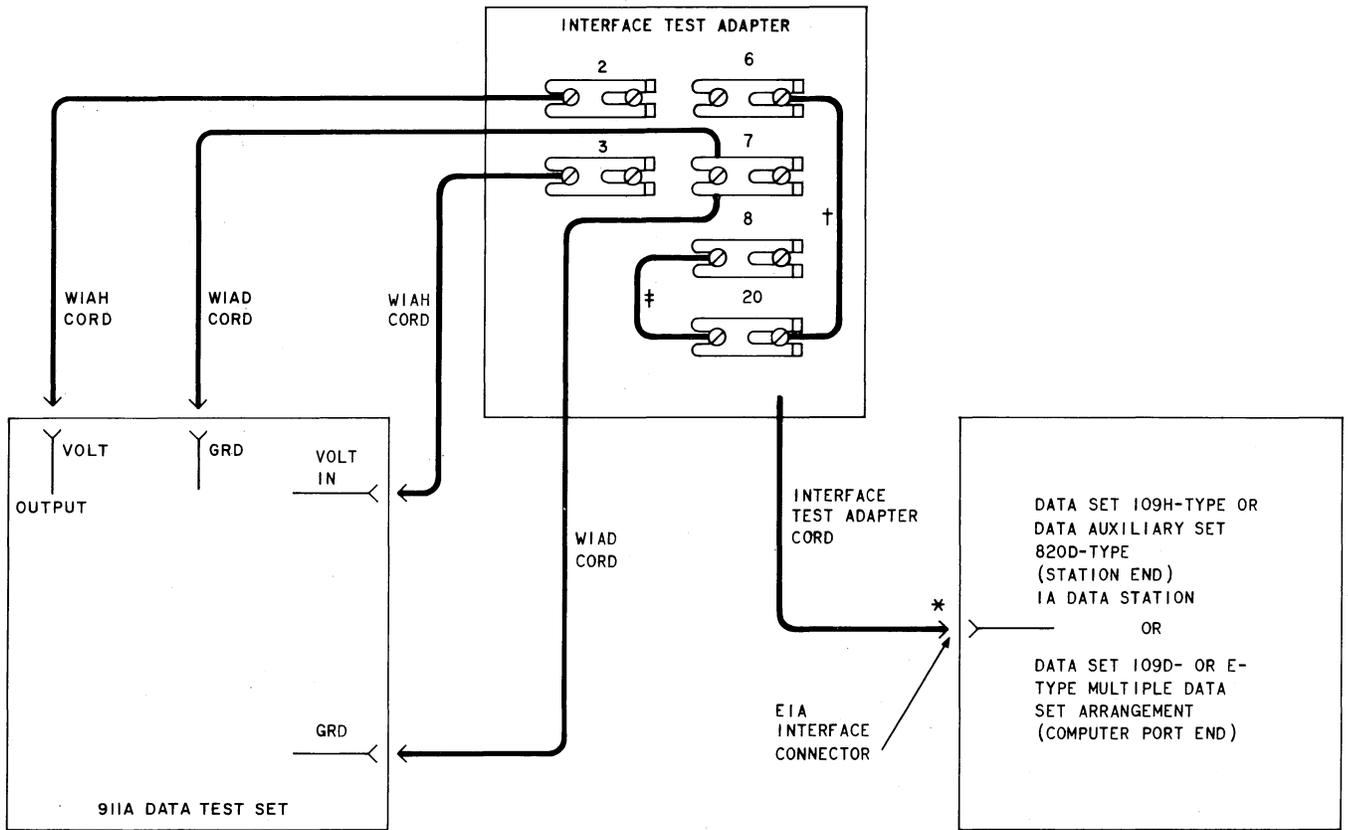


Fig. 2—Test Apparatus Arrangement for Loop-Back and Distortion Tests

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* J1 OF DATA SET 109H-TYPE, J3 OF DAS 8200-TYPE, INTERFACE CONNECTOR OF IA DATA STATION CHANNEL ASSOCIATED WITH LINE OR TRUNK UNDER TEST, OR INTERFACE CONNECTOR (ON 27A1 DATA UNIT OF DATA SET 109D- OR E-TYPE MULTIPLE DATA SET ARRANGEMENT) ASSOCIATED WITH TRUNK UNDER TEST.

† STRAP SUPPLIED WITH INTERFACE TEST ADAPTER--REQUIRED ONLY WHEN STATION IS EQUIPPED WITH DATA SET 109H - LI/2/4, LI/3/4, LI/2/4/5, OR LI/3/4/5.

‡ STRAP SUPPLIED WITH INTERFACE TEST ADAPTER--REQUIRED ONLY WHEN COMPUTER PORT PROVIDES CD LEAD CONTROL.

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Fig. 3—Test Apparatus Arrangement at Station End or Computer Port End for Test D or H

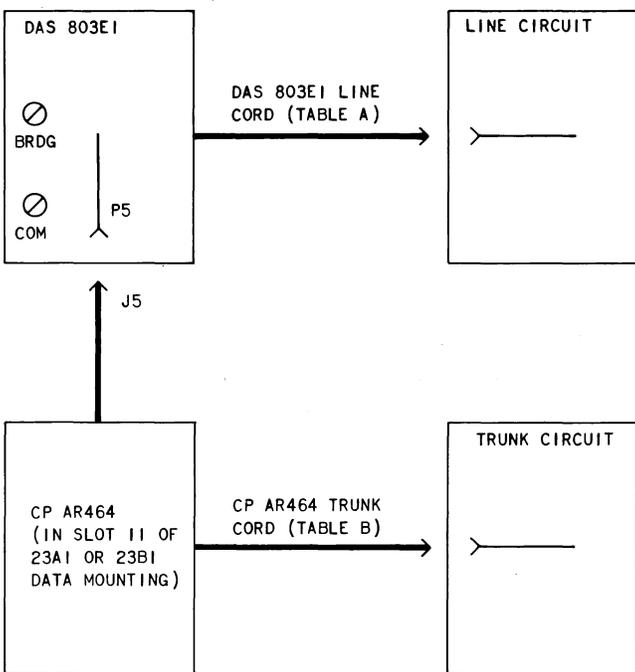


TABLE A
LINE CORD TEST CONNECTIONS

TYPE OF CONNECTIONS	DAS 803E1 LINE CORD TEST CLIP CONNECTIONS				
	3-1-11-9	2-10	4-12	5-15	6-14
ODD-NUMBERED LINE TO TRUNK IN TRUNK GROUP A	TP3	TP2	TP4	TP5	TP6
ODD-NUMBERED LINE TO TRUNK IN TRUNK GROUP B	TP1				
EVEN-NUMBERED LINE TO TRUNK IN TRUNK GROUP A	TP11	TP10	TP12	TP13	TP14
EVEN-NUMBERED LINE TO TRUNK IN TRUNK GROUP B	TP9				

TABLE B
TRUNK CORD TEST CONNECTIONS

TYPE OF TRUNK CIRCUIT	AR464 CIRCUIT PACK TRUNK CORD TEST CLIP CONNECTIONS							
	1	2	9	10	11	12	13	14
AR368 OR AR488	TP1	TP2	TP9	TP10	TP11	TP12	TP13	TP14
AR382		TP12				TP2		

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Fig 4—Test Apparatus Arrangement at Primary or Tandem Concentrator for Tests L and M

TABLE B

CONCENTRATOR SERVING STATION	TYPE STATION	PRIMARY CONCENTRATOR TRUNK ARRANGEMENT		PIXIE TUBES INDICATE
		MULTIPLE DATA SET	1A DATA STATION	
Primary	Local	✓		20 percent or less
			✓	25 percent or less
	Remote PL (voice)	✓	✓	18 percent or less
	Remote PL (telegraph)	✓	✓	25 percent or less
	Remote (multiplexed)	✓		18 percent or less
			✓	20 percent or less
Tandem	Local, Remote PL (telegraph), or Remote PL (voice)	✓	✓	25 percent or less
	Remote (multiplexed)	✓	✓	23 percent or less

TABLE C

CONCENTRATOR SERVING STATION	TYPE STATION	PRIMARY CONCENTRATOR TRUNK ARRANGEMENT		PIXIE TUBES INDICATE*
		MULTIPLE DATA SET	1A DATA STATION	
Primary	Local	✓		5 percent or less
			✓	13 percent or less
	Remote PL (voice)	✓		10 percent or less
			✓	13 percent or less
	Remote PL (telegraph)	✓		18 percent or less
			✓	20 percent or less
Remote (multiplexed)	✓		13 percent or less	
		✓	15 percent or less	
Tandem	Local	✓		13 percent or less
				15 percent or less
	Remote PL (voice)	✓		15 percent or less
				18 percent or less
	Remote PL (telegraph)	✓	✓	20 percent or less
				15 percent or less
Remote (multiplexed)	✓		15 percent or less	
		✓	18 percent or less	

* When the 911A DTS *is not* used at the station, add 5 percent to these figures.