REPLACING PAGE ADDENDUM
Filing Instructions:

1. REMOVE FROM THE SECTION THE PAGES NUMBERED THE SAME AS THOSE ATTACHED TO THIS PINK SHEET.
2. INSERT THE ATTACHED PAGES INTO THE SECTION IN THEIR PLACE.
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113-TYPE DATA STATION

TEST PROCEDURES

1.001 This addendum supplements Section 591-814-500, Issue 1. The attached pages must be inserted in the section in accordance with the filing instructions above.

1.002 This addendum is reissued to revise the test procedures.

3. TEST PROCEDURES

The following changes apply to Part 3 of the section:

D. Data Set 113B-L1 Interface Test Using 914B DTS

Step 44—position of METER POLARITY switch added

F. Data Set 113B-L1 Interface Test Using 901B DTS

Step 27—note added in verification column

Steps 34, 35, and 37—meter indications in verification column revised.

Attached:

Page 11 dated September 1971—revised
Page 12 dated September 1971—reissued
Page 19 dated September 1971—revised

113-TYPE DATA STATION

TEST PROCEDURES

1. GENERAL

1.01 This section covers the test procedure to be followed when installing and performing maintenance activities on the Data Sets 113B-L1, 32A1 Data Mounting(s) and the optional Data Auxiliary Set (DAS) 804T-type which comprise the 113-type data station.

1.02 The tests covered are:

A. Power Source Output Test: This test checks the +18, −18, and +4.5 volt dc outputs of the 32A1 Data Mounting power source.

B. Loop-Back Test From the 904-Type Data Test Center: This test checks the sensitivity of the data set, frequency and level of mark and space signals, and the slicing point.

C. Power Receptacle Ground Test Using 914B Data Test Set (DTS): This test checks the power outlet ground source of all Data Sets 113B-L1 within a single 32A1 Data Mounting.

D. Data Set 113B-L1 Interface Test Using 914B DTS: This test checks the BB, CB, CC, CD, CE, CF, and CN interface leads. A check of the abort timer is also made.

E. Power Receptacle Ground Test Using 901B DTS Interface Test Adapter: This test checks the power outlet ground source of all Data Sets 113B-L1 within a single 32A1 Data Mounting.

F. Data Set 113B-L1 Interface Test Using 901B DTS: This test checks the BB, CB, CC, CD, CE, CF, and CN interface leads. A check of the abort timer is also made.

1.03 Prior to performing any tests, verify the following:

(a) The overall facilities have been tested and meet transmission requirements specified in the section entitled Data System—DATA-PHONE® Service on Direct Distance Dialing Network—Test Requirements for Subscribers, Foreign Exchange and Remote Lines (314-205-501).

(b) Telephone portion of installation meets standard dc talk, signaling, and supervision requirements.

1.04 Both installation and maintenance test procedures are identical and, therefore, each test is presented only once.

1.05 The installation tests are designed to verify that the equipment has been assembled properly and that the installation is operative. Tests A, B, C, and D should be made following the completion of installation.

1.06 Tests E and F are included in this section to be used in place of Tests C and D,

respectively, at locations where a 914B DTS is not available.

Take necessary steps to ensure customer is not billed for test calls. Refer to the section entitled Crediting Charges on Test Calls (010-250-001).

1.07 The maintenance tests (Test A and Test B) should be performed in accordance with the maintenance philosophy and maintenance activities given in the section entitled 113-Type Data Station—Maintenance (591-814-300). Test D is presented herein as a maintenance test and may be performed at any time.

1.08 Test C or E is to be performed when required. See section entitled 113-Type Data Station—Installation (591-814-200).

1.09 Tests B, D, and F require the assistance of a 904-type Data Test Center (DTC).

Note: If a dynamic test of Data Set 113B-L1 is desired, Test B must be performed with a 904G or 904H DTC.

1.10 When Tests A, B, C, and D have been completed and the test requirements have been met, suggest that the customer verify that service is satisfactory.

Note: Since the 113-type data station operates only in the answer mode, the customer must have a distant DATA-PHONE station call the 113-type data station directly (following installation tests) or via the service line (following maintenance tests) to verify service.

1.11 If any of the test requirements for Test A are not met, replace the 41D power unit.

1.12 If any of the test requirements for Tests B, D, or F are not met, replace the data set.

1.13 Before performing any tests, verify that the test equipment is in good operating condition. Refer to the appropriate sections covering operational and calibration tests of test equipment as follows:

(1) J94006A (6A) Impulse Counter—Section 103-620-100

(2) 914B DTS—Section 107-101-100

(3) 901B DTS (and adapter)—Section 107-100-100.

1.14 ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Part 3 of this section indicates an action which may or may not be required, depending on local conditions. The condition under which a lettered step or series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. APPARATUS

2.01 The apparatus required for each test is shown in Table A.

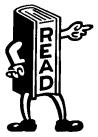
TABLE A

APPARATUS

APPARATUS	TESTS					
	A	B	C	D	E	F
6A Impulse Counter			1		1	
914B Data Test Set	1*		1	1		
901B Data Test Set						1
Interface Test Adapter (J79901B-L3 — Cover of J79901B)					1	1
KS-14510-L1 or KS-16979-L1 Volt-Ohm-Milliammeter, or equivalent	1					
Test Mode Connector		1				
904-Type Data Test Center		1		1		1

*If a 914B DTS is available, its meter may be used in place of the VOM.

3. TEST PROCEDURES

STEP	ACTION	VERIFICATION
A. Power Source Output Test		
	 ***Prior to performing this test, ensure proper power is being delivered to the 32A1 Data Mounting.***	
1	Condition VOM to measure 18 volts dc.	
2a	If option U is not installed in 32A1 Data Mounting under test— Connect VOM – lead to pin 5 of screw switch (SS) 3 and + lead to pin 6 of SS3. ***Note:*** Screw switch pin numbers are read from left to right.	VOM indicates not less than 17.5 and not more than 20.5V dc.
3a	Disconnect VOM.	
4a	Connect VOM – lead to pin 8 of SS4 and + lead to pin 7 of SS4.	VOM indicates not less than 17.5 and not more than 20.5V dc.
5a	Disconnect VOM.	
6a	Condition VOM to measure 4.5 volts dc.	
7a	Connect VOM – lead to pin 10 of SS5 and + lead to pin 9 of SS5.	VOM indicates not less than 4.4 and not more than 4.6V dc.

STEP	ACTION	VERIFICATION

8b If option U is installed in 32A1 Data Mounting under test—
Remove fuse caps and fuses associated with unused slots on the 32A1 Data Mounting as shown in Table B.

TABLE B

SLOT NO.	FUSE DESIG	VOLTAGE FUSED
1-5	F1	+18
	F5	−18
	F9	+4.5
6-10	F2	+18
	F6	−18
	F10	+4.5
11-15	F3	+18
	F7	−18
	F11	+4.5
16-20	F4	+18
	F8	−18
	F12	+4.5

Example: If slots 10 through 20 are not being used—

Remove either F3, F7, and F11, or remove F4, F8, and F12.

9b Connect VOM − lead to pin 2 of SS1 and + lead to the side contact of the removed fuse (F1, F2, F3, or F4).

VOM Indicates not less then 17.5 and not more than 20.5V dc.

There are two side contacts on the fuse holders. If, while performing Steps 9b, 11b, and 14b, a meter indication is not obtained when using one contact, connect the VOM + lead to the other contact. If a meter indication is not obtained from the second contact a power trouble is indicated.

STEP	ACTION	VERIFICATION
	Caution: Do not short the output to ground as this will damage the 41D power unit.	
10b	Disconnect VOM.	
11b	Connect VOM – lead to the side contact of the removed fuse (F5, F6, F7, or F8) and the + lead to pin 2 of SS1.	VOM indicates not less than 17.5 and not more than 20.5V dc.
12b	Disconnect VOM.	
13b	Condition the VOM to measure 4.5 volts dc.	
14b	Connect VOM – lead to pin 2 of SS1 and + lead to the side contact of the removed fuse (F9, F10, F11, or F12).	VOM indicates not less than 4.4 and not more than 4.6V dc.
15	Disconnect all test equipment and restore normal operating conditions.	

B. Loop-Back Test From the 904-Type DTC

1	Ensure that the data set to be tested is in the idle mode as described in 2.06 of the section referenced in 1.07.	
2	Using the service line, call the DTC and request a test of Data Set 113B-L1.	
3	When instructed by the DTC, perform the following in sequence— Operate the TALK-CLEAR/DATA key on the 32A1 Data Mounting and (if provided) DAS 804T-type or key telephone set to DATA. Connect the service line twin plug (grooves up) from the 32A1 Data Mounting to the service line twin jack on the faceplace of the data set to be tested. Remove the customer-provided interface connector from the data set to be tested. Connect the test mode (TM) connector to the interface connector on the data set to be tested.	The DTC will wait approximately 5 minutes after giving these instructions and then will call and perform the test.

The ringer associated with the telephone handset will ring once when the DTC calls to perform the test. Do NOT answer the telephone at this time.

STEP	ACTION	VERIFICATION
4a	If the Z option is not installed in the data set under test— Approximately 10 minutes after the phone rings the first time, it will ring a second time. Answer this time by first lifting the handset and then operating the TALK-CLEAR button.	The DTC will supply the test results.
5b	If the Z option is installed in the data set under test— Approximately 10 minutes after the phone rings the first time, lift the handset and operate the TALK-CLEAR/DATA key to TALK-CLEAR.	The DTC will supply the test results.
6	After DTC supplies the test results— Disconnect the TM connector, connect the CPT interface cable to the data set, and then disconnect the 32A1 Data Mounting service line twin plug from the data set.	

C. Power Receptacle Ground Test Using 914B DTS

1	Remove all programming pins from 914B DTS matrix.	
2	Operate (depress) all interface selector switches except 1A, 1B, and 7A, 7B. ***Note:*** Do not ground 6A impulse counter for this test.	
3	Connect equipment as shown in Fig. 1.	
4	At the 32A1 Data Mounting— Install option V (Common Grounds).	
5	At 6A impulse counter— Set WTG switch to VOICEBAND.	
6	Set REF LEV DBRN toggle switch to ADD 30.	
7	Set REF LEV DBRN rotary switch to 60.	
8	Set MINUTES switch to 15.	
9	Reset counter to 0000 by use of the RESET lever.	Counter remains at 0000 for 15 minutes. ***Note:*** If any counts are noted in a 15-minute period, grounding arrangements must be improved.

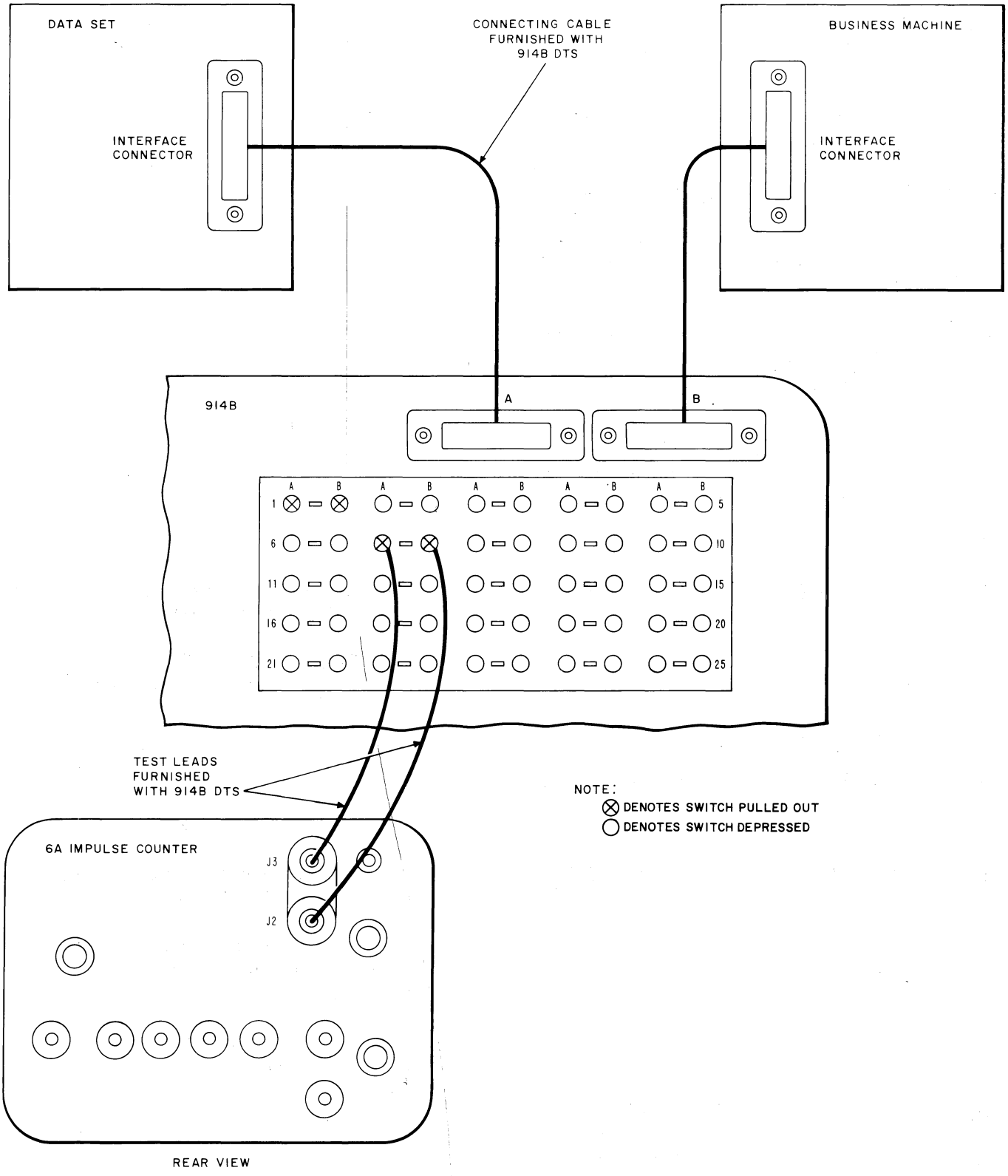


Fig. 1—Power Receptacle Ground Test Using 6A Impulse Counter and 914B Data Test Set

STEP	ACTION	VERIFICATION
10a	After completion of test— If option V was installed in Step 4— Remove option V.	
11	Remove all test connections and restore normal operating conditions.	

D. Data Set 113B-L1 Interface Test Using 914B DTS

1	Ensure that the data set to be tested is in the idle mode as described in 2.06 of the section referenced in 1.07.	
2	Plug the 32A1 Data Mounting service line twin plug (grooves up) into the service line twin jack on the faceplate of the data set to be tested.	
3	At 914B DTS— Program matrix, set switches, and connect data set as shown in Fig. 2.	
4	Operate POWER switch.	
5	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CD—ON). ***Note:*** This test checks the CD signal that originates within customer equipment.
6	Set FUNCTION switch to OFF.	
7	Set VERTICAL MONITOR switch to 25.	
8	Set METER POLARITY switch to REV.	
9	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CN—OFF). ***Note 1:*** This test checks the CN signal to ensure that the computer has not made the data set busy. ***Note 2:*** If no voltage is indicated, verify that option X is installed.
10	Set FUNCTION switch to OFF.	
11	Set VERTICAL MONITOR switch to 2.	

STEP	ACTION	VERIFICATION
12	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (BA—MARK). ***Note:*** This test checks the BA signal that originates within the customer equipment.
13	Set FUNCTION switch to OFF.	
14	Pull up switches B2, B20, and B25.	
15	Insert red shorting pins in 914B DTS programming matrix at row S1, column 2; row DS6, column 20; row S6, column 20; and row S8, column 25.	
16	Operate (depress) switches A2, A20, and A25.	
17	Operate S6 to ON.	DS6 lamp lighted (CD—ON). ***Note:*** For the remainder of test the CD signal is generated within the 914B DTS.
18	Set VERTICAL MONITOR switch to 3.	
19	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (BB—MARK).
20	Set FUNCTION switch to OFF.	
21	Set VERTICAL MONITOR switch to 22.	
22	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CE—OFF).
23	Set FUNCTION switch to OFF.	
24	Set VERTICAL MONITOR switch to 6.	
25	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CC—OFF).
26	Set FUNCTION switch to OFF.	
27	Set METER POLARITY switch to NOR.	
28	At the 32A1 Data Mounting— Operate the TALK-CLEAR/DATA key to the DATA position.	

STEP	ACTION	VERIFICATION
29	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc. DS4 lamp lighted (CC—ON). If a DAS 804T-type is provided— DATA lamp lighted.
30	At 914B DTS— Set FUNCTION switch to OFF.	
31	At 32A1 Data Mounting— Operate TALK-CLEAR/DATA key to the TALK-CLEAR position.	DS4 lamp extinguished (CC-OFF).
32	At 914B DTS— Set METER POLARITY switch to REV.	
33	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CC—OFF).
34	Set FUNCTION switch to OFF.	
35	Set VERTICAL MONITOR switch to 8.	
36	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CF—OFF).
37	Set FUNCTION switch to OFF.	
38	Set VERTICAL MONITOR switch to 5.	
39	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc (CB-OFF).
40	Set FUNCTION switch to OFF.	
	***After performing Step 41, ensure the TALK-CLEAR/DATA key is in the mid-position and (if provided) neither the TALK-CLEAR nor DATA button is operated at the DAS 804T-type or key telephone set before the local operator calls the service line number.***	
41	Using the service line— Call and inform a local operator that a test is being performed. Have local operator dial service line number, listen for tone, and when tone is heard, hang up.	When the local operator calls the service line number— Service line phone rings once. DS7 lamp lighted during first ring (CE—ON). When DS7 lamp extinguishes— DS4 lamp lighted (CC—ON).

STEP	ACTION	VERIFICATION
		Note 1: DS4 lamp should remain lighted not less than 15 seconds and not more than 30 seconds. ***Note 2:*** This test checks the automatic abort feature of the data set. DS6 lamp lighted (CD—ON).
42	Using the service line— Call and inform the DTC that f2 MARK will be sent and to respond with f1 MARK after one second; then sweep to f1 SPACE.	
43	Operate the TALK-CLEAR/DATA key to the DATA position and replace handset on switchhook.	DS4 lamp lighted (CC—ON). DS6 lamp lighted (CD—ON). If a DAS 804T-type is provided— DATA lamp lighted. When DTC sends f1 MARK— DS3 lamp lighted (CB—ON). DS5 lamp lighted (CF—ON). When DTC sweeps to f1 SPACE— DS2 lamp lighted (BB—SPACE). ***Note:*** This test checks the ability of the carrier detector to hold during a space signal.
44	At 914B DTS— Set VERTICAL MONITOR switch to 3. Set METER POLARITY switch to NOR.	
45	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc. DS2 lamp lighted (BB—SPACE).
46	Set FUNCTION switch to OFF.	
47	Set VERTICAL MONITOR switch to 5.	
48	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc. DS3 lamp lighted (CB—ON).
49	Set FUNCTION switch to OFF.	
50	Set VERTICAL MONITOR switch to 8.	
51	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc. DS5 lamp lighted (CF—ON).

STEP	ACTION	VERIFICATION
52	Set FUNCTION switch to OFF.	
53	Set VERTICAL MONITOR switch to 6.	
54	Set FUNCTION switch to VOLT INT.	Meter indicates not less than 5.0 and not more than 25.0V dc. DS4 lamp lighted (CC—ON).
55	Set FUNCTION switch to OFF.	
56	At the 32A1 Data Mounting— Lift handset, then operate the TALK-CLEAR/DATA key to the TALK-CLEAR position.	DS2 lamp extinguished (BB—MARK). DS3 lamp extinguished (CB—OFF). DS4 lamp extinguished (CC—OFF). DS5 lamp extinguished (CF—OFF). DS6 lamp lighted (CD—ON). If a DAS 804T-type is provided— DATA lamp extinguished.
57	End of test. Inform DTC and restore normal operating conditions.	

E. Power Receptacle Ground Test Using 901B DTS Interface Test Adapter

1	Connect 6A impulse counter and interface test adapter as shown in Fig. 3.	
2	Unbridge terminals 1 and 7 of interface test adapter. ***Note:*** Do not ground 6A impulse counter for this test.	
3	At the 32A1 Data Mounting— Install option V (Common Grounds).	
4	At 6A impulse counter— Set WTG switch to VOICEBAND.	
5	Set REF LEV DBRN toggle switch to ADD 30.	
6	Set REF LEV DBRN rotary switch to 60.	
7	Set MINUTES switch to 15.	
8	Operate RESET lever to reset counter to 0000.	Counter remains at 0000 for 15 minutes. ***Note:*** If any counts are noted in a 15-minute period, grounding arrangements must be improved.

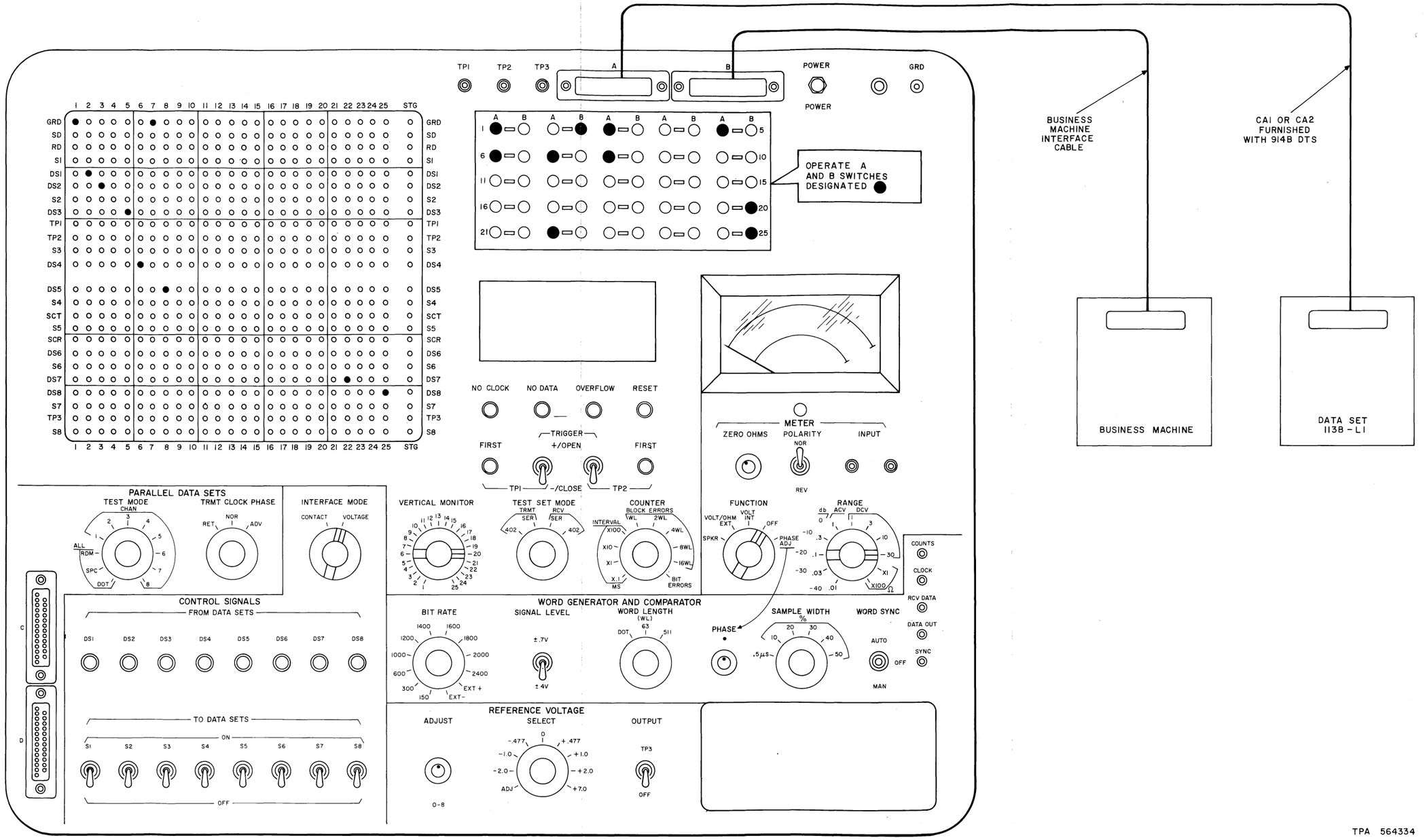


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Fig. 2—Interface Test Connection Arrangement Using the 914B Data Test Set

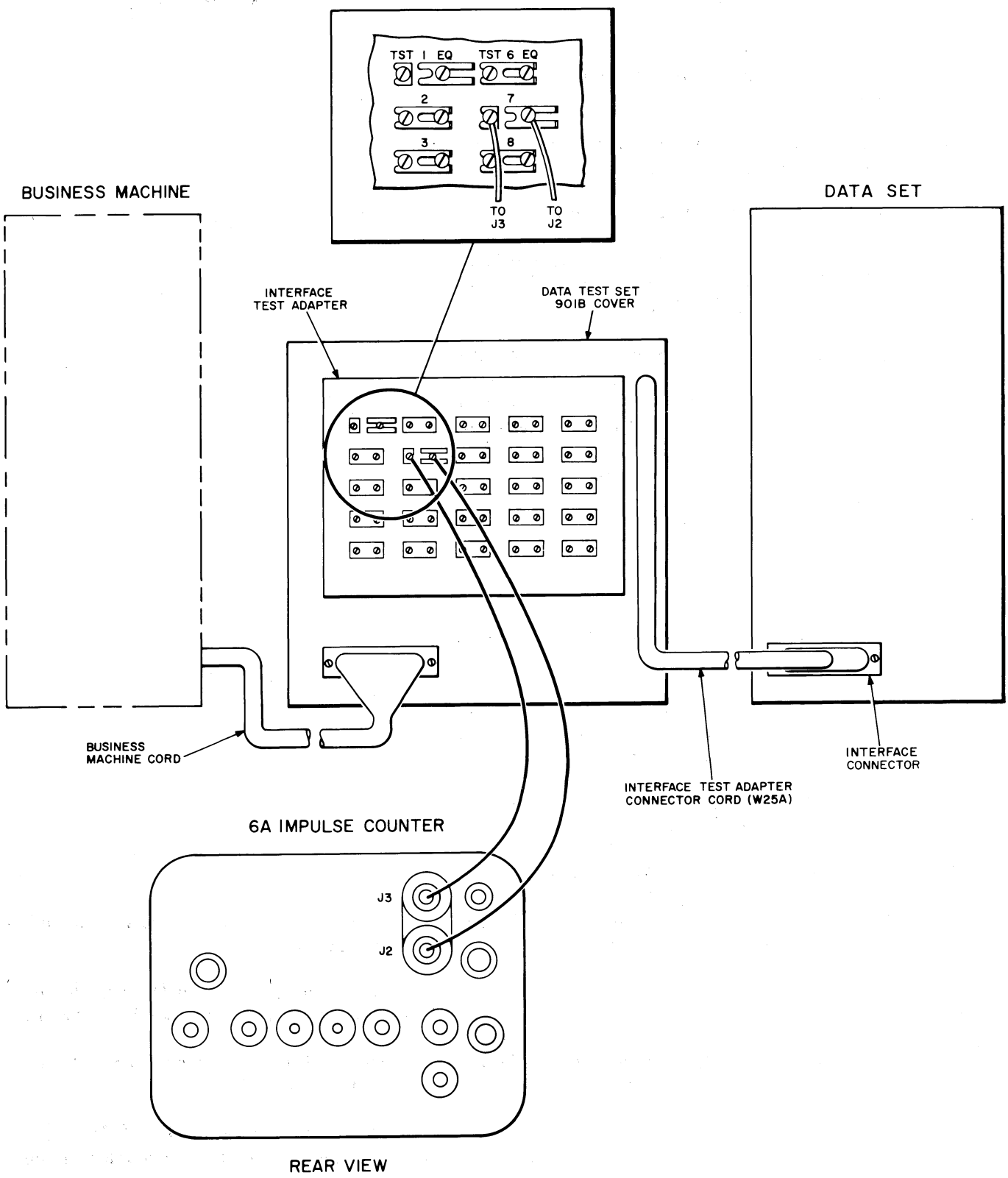

Fig. 3—Power Receptacle Ground Test Using 6A Impulse Counter and 901B Data Test Set Interface Test Adapter

STEP	ACTION	VERIFICATION
9a	At completion of test— If option V was installed in Step 3— Remove option V.	
10	Remove all test connections and restore normal operating conditions.	

F. Data Set 113B-L1 Interface Test Using 901B DTS

1	Ensure that the data set to be tested is in the idle mode as described in 2.06 of the section referenced in 1.07. ***Note:*** If the status field lamp on the DAS 804T-type is used, make the data set busy by operating the status field button associated with the data set of interest. This prevents a call from connecting to the data set while returning to the data mounting.	
2	Plug the 32A1 Data Mounting service line twin plug (grooves up) into the service line twin jack on the faceplate of the data set to be tested.	
3	Strap the interface test adapter as shown in Fig. 4.	
4	Disconnect the computer interface connector from the data set to be tested and connect it to the interface test adapter.	
5	Connect the interface test adapter to the data set to be tested.	
6	Condition the VOM to measure 25.0V dc.	
7	Connect VOM – lead to pin 7 and + lead to pin 20 of the interface test adapter.	Meter indicates not less than 5.0 and not more than 25.0V dc. ***Note:*** This test checks the CD signal that originates within the customer equipment.
8	Connect VOM – lead to pin 2 and + lead to pin 7 of the interface test adapter.	Meter indicates not less than 5.0 and not more than 25.0V dc. ***Note:*** This test checks the BA MARK signal that originates within the customer equipment.
9	Connect VOM – lead to pin 25 and + lead to pin 7 of the interface test adapter.	Meter indicates not less than 5.0 and not more than 25.0V dc.

STEP	ACTION	VERIFICATION
		Note 1: This test checks the CN signal to ensure that the computer has not made the data set busy.
		Note 2: If no voltage is indicated, verify that X option is installed.

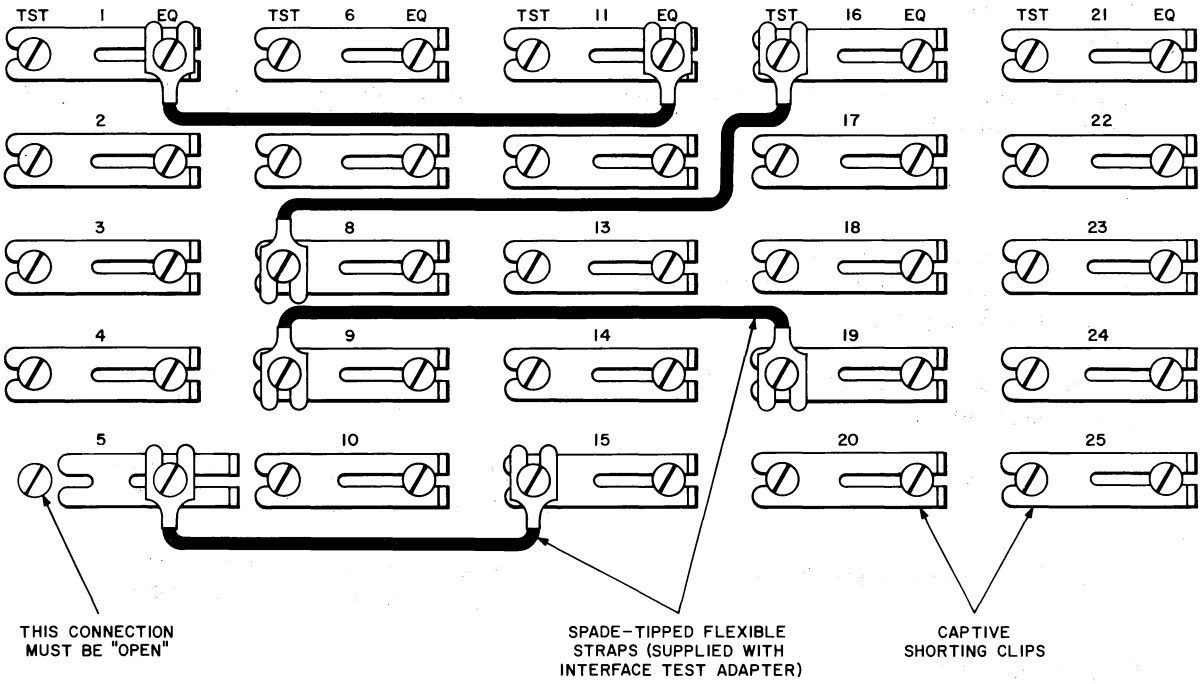

Fig. 4—Interface Test Adapter—Connection Arrangement for Data Set 113B-L1

10	At 901B DTS— (a) Set SELECTOR switch to 1. (b) Set A TEST switch to OFF. (c) Set B TEST switch to OFF. (d) Operate UNATT/ATT toggle switch to the UNATT position.	
11	Disconnect the computer interface connector from the interface test adapter and connect the 901B DTS in its place.	
12	Set A TEST switch to position 2.	
13	Connect VOM −lead to the RECEIVE DATA red terminal and the + lead to terminal D.	Meter indicates not less than 7.0 and not more than 11.0V dc (BB—MARK).

STEP	ACTION	VERIFICATION
14	Connect VOM – lead to terminal B and + lead to terminal D.	Meter indicates not less than 14.0 and not more 20.0V dc (CE—OFF).
15	Disconnect VOM.	
16	Set A TEST switch to position 3.	
17	At the 32A1 Data Mounting— Operate the TALK-CLEAR/DATA key to the DATA position.	
18	Connect VOM – lead to terminal D and + lead to terminal B.	Meter indicates not less than 14.0 and not more than 20.0V dc (CC—ON).
19	Disconnect VOM.	
20	At the 32A1 Data Mounting— Operate the TALK-CLEAR/DATA key to the TALK-CLEAR position.	
21	Connect VOM – lead to terminal B and + lead to terminal D.	Meter indicates not less than 14.0 and not more than 20.0V dc (CC—OFF).
22	Set A TEST switch to position 4.	Meter indicates not less than 7.0 and not more than 11.0V dc (CF—OFF).
23	Set A TEST switch to position 5.	Meter indicates not less than 7.0 and not more than 11.0V dc (CB—OFF).
24	Disconnect VOM.	
25	Set A TEST switch to position 3.	
	 ***After performing Step 25, ensure TALK-CLEAR/DATA key is in the mid-position and (if provided) neither the TALK-CLEAR nor DATA button is operated at the DAS 804T-type or key telephone set before the local operator calls the service line number.***	
26	Using the service line— Call and inform a local operator that a test is being performed. Have local operator dial service line number, listen for tone, and when tone is heard, hang up.	

STEP	ACTION	VERIFICATION
27	Wait approximately three seconds after service line phone rings— Then connect VOM – lead to D and + lead to B.	Meter indicates not less than 14.0 and not more than 20.0V dc (CC—ON). ***Note:*** ◗This test checks the automatic answer feature of the data set.◖
28	Disconnect VOM.	
29	Approximately 30 seconds after service line phone rings— Connect VOM – lead to terminal B and + lead to terminal D.	Meter indicates not less than 14.0 and not more than 20.0V dc (CC—0FF). ***Note:*** This test checks the automatic abort feature of the data set.
30	Disconnect VOM.	
31	Using the service line— Call and inform the DTC that f_2 MARK will be sent and to respond with f_1 MARK after one second; then sweep to f_1 SPACE.	
32	Operate the TALK-CLEAR/DATA key to the DATA position and replace handset on switchhook.	If a DAS 804T-type is provided— DATA lamp lighted.
33	Approximately 10 seconds after operating TALK-CLEAR/DATA key to the DATA position— Connect VOM – lead to terminal D and + lead to terminal B.	Meter indicates not less than 14.0 and not more than 20.0V dc (CC—ON).
34	Set A TEST switch to position 4.	Meter indicates not less than ◗14.0 and not more than 20.0V dc◖ (CF—ON).
35	Set A TEST switch to position 5.	Meter indicates not less than ◗14.0 and not more than 20.0V dc◖ (CB—ON).
36	Disconnect VOM.	
37	Connect VOM – lead to terminal D and + lead to RECEIVE DATA red terminal.	Meter indicates not less than ◗14.0 and not more than 20.0V dc◖ (BB—SPACE).
38	Disconnect VOM.	
39	Lift handset, then operate the TALK-CLEAR/DATA key to the TALK-CLEAR position.	If a DAS 804T-type is provided— DATA lamp extinguished.
40	End of Test. Inform DTC and restore normal operating conditions.	