

DATA AUXILIARY SET 811F-L1 TEST PROCEDURES

1. GENERAL

1.01 This section contains information concerning the testing of Data Auxiliary Set 811F-L1. The following tests are to be made at the time of installation and may be used for clearing routine trouble conditions.

1.02 Tests in this section which refer to specific card slots (B07, B03, A11, etc.) are referring to slots in the A or B card nest. The cards which are to the right of the control panel (viewed from the front) are part of card nest A. Cards to the left of the control panel are part of card nest B.

2. TESTING

2.01 The following tests are described in this section:

- (a) Interface Control Unit (ICU) Relay Test
- (b) Sync Test
- (c) Crypto Ancillary Unit (CAU) Alarm Test
- (d) Scrambler—Descrambler Test

2.02 The following test equipment is required in order to perform these tests:

- 1—901B Data Test Set cover
- 1—902B Data Test Set
- 3—903-type Data Test Sets
- 1—KS-14510 volt-ohm-milliammeter (VOM)
- 1—180A interface adapter
- 1—1011-type handset (or equivalent)
- 8—Clip leads with insulated alligator clips

2.03 Before performing any test, connect the power leads from Data Sets 207-type as shown in Fig. 2 of the section entitled Data Auxiliary Set 811F-L1 Installation and Connection (598-070-200). Connect the Frame Ground (FG) and power supply ground (PGA and PGB) leads between the data auxiliary set and the data sets. All other leads must be disconnected. This can be done by removing the 180A interface adapter cards from the associated Data Sets 207-type.

2.04 If power from the Data Sets 207-type is not available, another power supply can be substituted. Data Auxiliary Set 811F-L1 has the following current drains:

+18v—1 amp

-18v—0.3 amp

When the power supplies of the associated Data Sets 207-type are not used, power connections to Data Auxiliary Set 811F-L1 should be made as shown in Fig. 1. These connections are made to the 180A interface adapter. Temporarily connect the FG terminal to the SG terminal at the front of the set.

A. Interface Control Unit (ICU) Relay Test

2.05 The following procedure will test the operation of the ICU relay:

Note: Terminals preceded by a letter (A1, A2, etc.) are on the 180A interface adapter. Numbered terminals (16, 17, etc.) are on the 901B Data Test Set cover.

- (a) Place the MODE switch in the REGEN position; the ICU relay should be non-operated.
- (b) With the VOM set on Ohms X1 measure less than 1-ohm resistance between pin A1 and pin B2.

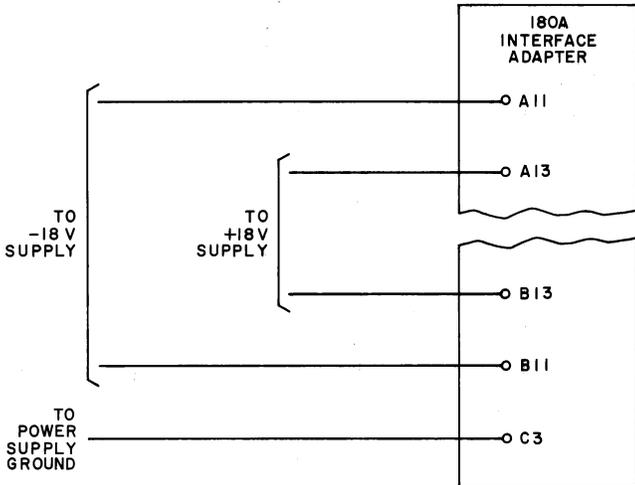


Fig. 1—Power Supply Connections

- (c) Measure less than 1-ohm resistance between pin B1 and pin A2.
- (d) Place the MODE switch in the AUTO position.
- (e) Repeat (b) and (c) for same results.
- (f) Apply ground to pin A15. The ICU relay should operate.

Note: If the set fails the preceding test, the following may be defective:

- (1) Card AR424—slot B03
- (2) The ICU relay
- (3) The MODE switch

B. Sync Test

2.06 The following procedure will test the operation of the data sync initiate circuits:

- (a) Place the SYNCH switch in the ENABLE position.
- (b) Connect the cord from the 901B Data Test Set cover to J1 on the front of Data Auxiliary Set 811F-L1. All straps on the 901B cover should be in the connected position.

- (c) Measure voltage between terminal 16 and terminal 15 (ground). Measure the voltage between terminal 23 and terminal 15 (ground).

Requirement: +6 (± 0.5) volts

- (d) Short pin C1 to pin A14.

- (e) On the 901B Data Test Set cover, measure voltage between terminal 16 and terminal 15 (ground), and between terminal 23 and terminal 15 (ground).

Requirement: 0 volts

- (f) If the preceding voltage check indicated 0 volts, place the VOM in the Ohms X1 range. The VOM should indicate less than 2 ohms between terminal 23 and terminal 15 (ground), and between terminal 16 and terminal 15 (ground).

- (g) Place the VOM back in the +12 volt range. Remove the short between pin C1 and pin A14.

- (h) Place SYNCH switch in the INHIBIT position and repeat (e).

- (i) Place SYNCH switch in the AUTO position.

- (j) Connect the SIGNAL OUT terminal of a 903-type Data Test Set to pin A4 and pin B4. Connect ground from the 903-type Data Test Set to pin C8.

- (k) The 903-type Data Test Set controls should be set as follows:

RANDOM—DOT to DOT

BIT RATE to 600

TRIGGER to + (plus)

ON—OFF to ON

- (l) Connect the voltmeter between terminal 16 and terminal 15 (ground). Measure the voltage.

Requirement: 0 volts

Note: If the set fails the preceding test, the following may be defective:

- (1) Card AR424----slot B03
 - (2) Card AR158----slot A07
 - (3) Card AR9-----slot A09
 - (4) The ICU relay
 - (5) The SYNCH switch
- (m) Connect pin A13 to pin A5; connect pin B13 to pin B5. When both connections have been made, voltage on VOM should go immediately to +6 volts.
- (n) Disconnect pin A13 from pin A5.
- (o) Verify that voltage drops to 0 after 8 (± 1) seconds have elapsed.
- (p) Connect pin A15 to pin A5; disconnect pin B13 from pin B5. Repeat (o).

Note: If the set passes the preceding test but fails at step (o) or (p) the following may be defective:

- (1) Card AR9-----slot A09
 - (2) Card AR10-----slot A11
 - (3) Card AR10-----slot A13
- (q) Connect the voltmeter between terminal 23 and terminal 15 (ground). Measure 0 volts. Repeat steps (m) through (p) and proceed to step (r).
- (r) Leave pin B5 disconnected from pin B13. Move the BIT RATE switch to the 1200 position and measure voltage at terminal 3 and terminal 9 with respect to terminal 15 (ground).

Requirement: -6.0 (± 0.5) volts

- (s) Connect the 1011-type handset between terminal 15 and terminal 18 of the 901B Data Test Set cover. A 300-Hz tone should be heard.

Caution: The 300-Hz tone is at 12 volts peak-to-peak and the sound from the handset is intense. At no time during the test should the handset be placed near the ear!

- (t) Repeat (r) for terminal 15 and terminal 21. Remove the handset.
- (u) Place SYNCH switch in the AUTO position. Connect pin B13 to pin B5. Place MODE switch in the REGEN position. Measure voltage at terminal 16 and terminal 23 with respect to terminal 15 (ground).

Requirement: 0 volts

- (v) Connect ground to test point TP 12 of card AR149 in slot B15. Place the MODE switch in the KEY CHANGE position. Place the BIT RATE switch in the 1200 RESTR (restricted) position. Connect the 1011-type handset between pin A2 and ground. A 300-Hz tone should be heard.
- (w) Remove the ground connection from TP 12 and place it on TP 13 of the same card. Connect the handset between pin B2 and ground. A 300-Hz tone should be heard.
- (x) Remove the ground connection from TP 13 and remove the handset. Remove the clip lead from between A15 and A5 and from between B15 and B5.

Note: If the set fails the preceding test, the following may be defective:

- (1) Card AR148----slot A21
- (2) Card AR9-----slot B13
- (3) Card AR9-----slot B17

C. Crypto Ancillary Unit (CAU) Alarm Test

2.07 The following procedure will test the alarm circuits between the security equipment and the data auxiliary set:

- (a) Place the MODE switch in the REGEN position and press the LAMP TEST button. Verify that the lamp lights. Restore the MODE switch to the KEY CHANGE position.

SECTION 598-070-500

- (b) On the 901B Data Test Set cover, connect +6 volts from terminal 19 to terminal 14 and to terminal 25.
- (c) Verify that the MODE switch is in the KEY CHANGE position.
- (d) Momentarily disconnect the +6 voltage from terminal 14.
- (e) The message register should increment and the test lamp should light. The test lamp should remain lighted as long as the lead is disconnected from terminal 14.
- (f) Reconnect the lead to terminal 14; disconnect the lead from terminal 25. The message register should increment and the test lamp should light.
- (g) While the lead is disconnected from terminal 25, place the MODE switch in the REGEN position. The lamp should extinguish. Remove all clip leads.

Note: If the set fails the preceding test, the following may be defective:

- (1) Card AR158----slot B01
- (2) Card AR9-----slot B09
- (3) Card AR423----slot B03
- (4) The message register
- (5) The ICU relay

D. Scrambler—Descrambler Test

2.08 The following procedure will test the scrambler and descrambler circuits in the data auxiliary set:

- (a) Connect the test circuit as shown in Fig. 2. The controls on the data test sets should be as follows:

- 903 No. 1 and 903 No. 2
TRIGGER to + (plus)
RANDOM-DOT to RANDOM

BIT RATE to EXT CLOCK

- 903 No. 3

TRIGGER to + (plus)

RANDOM-DOT to DOT

BIT RATE to 2400

- 902

TRIGGER to - (minus)

SELECTOR to DIST MEAS

BIT RATE to EXT SYNC

- (b) The BIT RATE switch of Data Auxiliary Set 811F-L1 should be in the 2400 position, the MODE switch should be in the KEY CHANGE position, and the SYNCH switch should be in the ENABLE position.

- (c) Remove card AR424 from slot B03. Observe and record the positions of the option straps. Using the straps provided, strap pins A2 to A3, B2 to B3, C2 to C3 and D2 to D3. Replace the card.

Note: The straps may already be in these positions. In either case, record their position and restore them to this position at the end of the test.

- (d) Apply power to the 903 Data Test Sets.
- (e) Momentarily press the START switch on all three 903 Data Test Sets.
- (f) Momentarily press the WORD SYNC & RESET button on the 902 Data Test Set.
- (g) The TOTAL ERRORS lamps on the 902 Data Test Set will indicate errors as they occur. To obtain the total number of errors, add the values indicated by the illuminated lamps.
- (h) To be sure that the 902 is counting errors, momentarily press the START switch on 903 No. 2 Data Test Set. The bottom TOTAL ERRORS lamp should illuminate which indicates maximum errors.

- (i) Momentarily press the WORD SYNC & RESET button on the 902 Data Test Set.
- (j) A 30-second error run should be conducted. No errors should be counted in this time. If any errors are detected, verify that correct testing procedure has been used and conduct another test. If errors are detected again, the set is faulty and should be replaced.
- (k) Connect the circuit as shown in Fig. 3 and repeat (d) through (i).

Note: If the set fails the preceding test before step (k), the following may be defective:

- (1) Card AR148---slot A21
- (2) Card AR149---slot B11
- (3) Card AR9-----slot B13
- (4) Card AR149---slot B15
- (5) Card AR423---slot A17
- (6) Card AR149---slot B07
- (7) Card AR9-----slot B09
- (8) Card AR148---slot A19

If the set passes the preceding test but fails during step (k) the following may be defective:

- (1) Card AR148---slot A19
- (2) Card AR148---slot B19
- (3) Card AR9-----slot B17
- (4) Card AR423---slot A15
- (5) Card AR149---slot B07
- (6) Card AR149---slot B11
- (7) Card AR9-----slot B09
- (8) Card AR9-----slot B13
- (9) Card AR148---slot A21
- (10) Card AR148---slot A19

Card having the same code can be interchanged in their slots.

- (l) Remove all connections and test equipment.
- 2.09** Refer to Section 598-070-200 for restoring the set to normal.

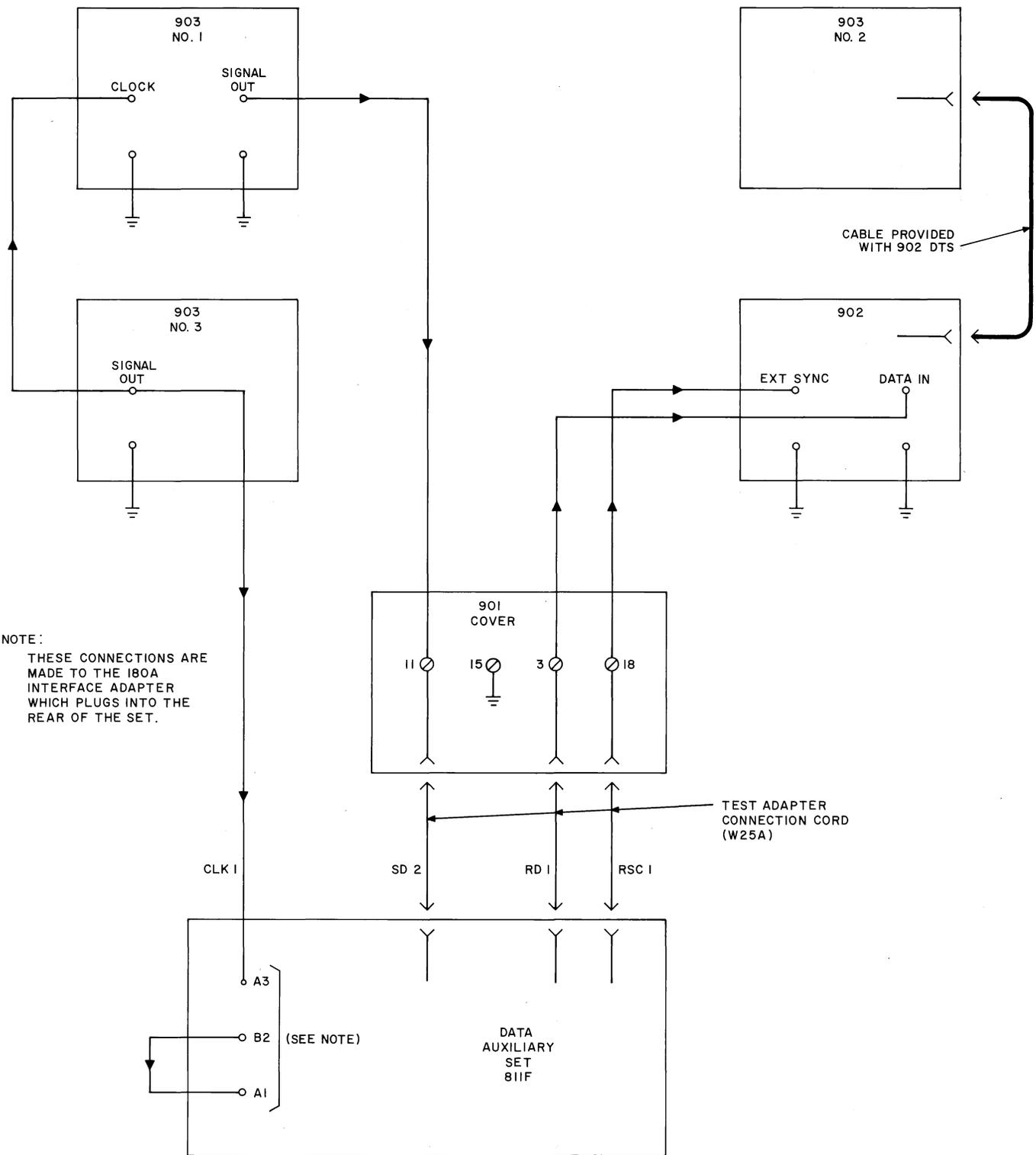


Fig. 2—Test Connections, First Direction

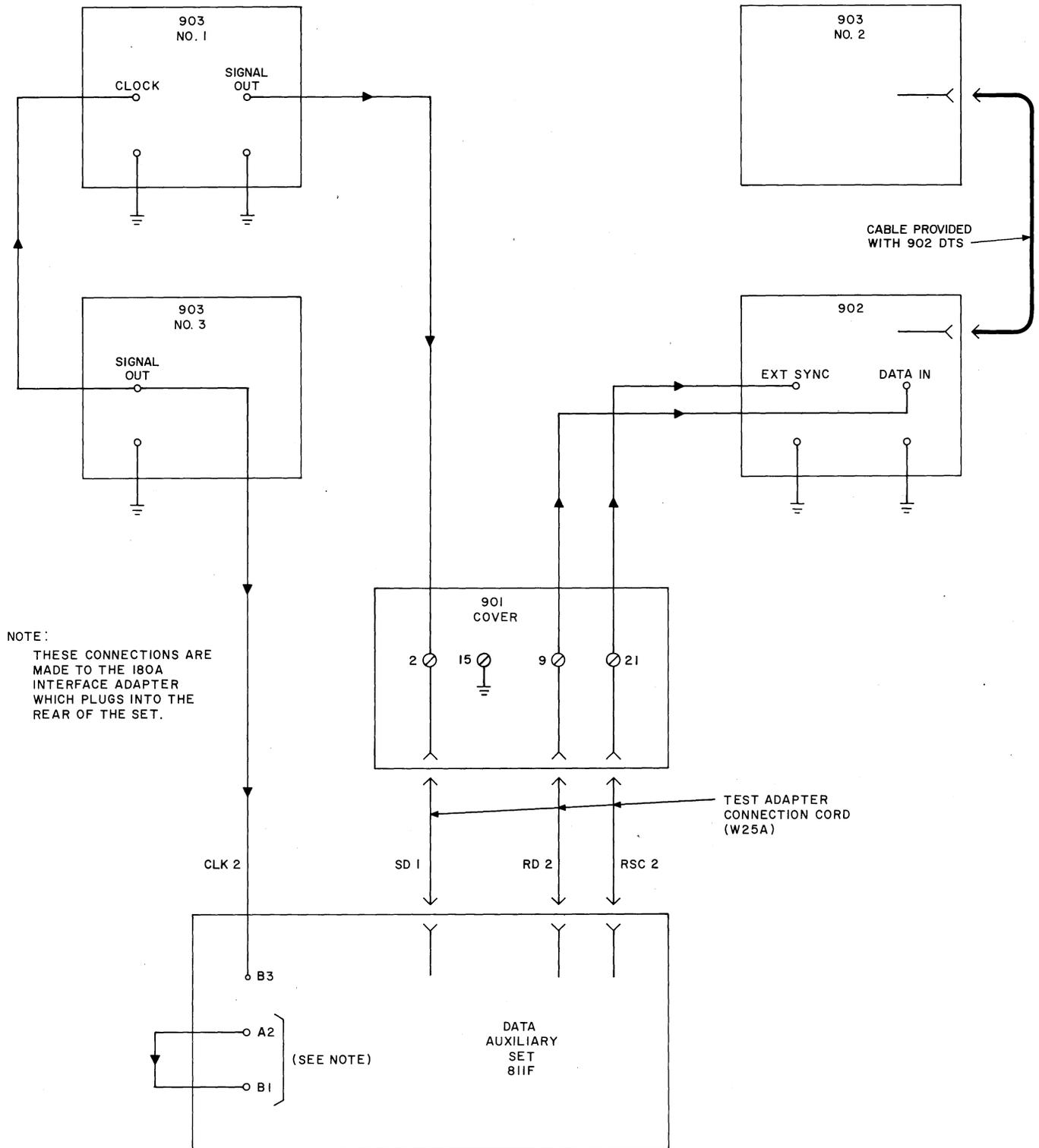


Fig. 3—Test Connections, Second Direction