DATA SET 603B-TYPE

TEST PROCEDURES

CONTENTS PAGE

1. GENERAL

1.01 This section describes test procedures for Data Sets 603B1, 603B2, 603B3, and 603B4. The tests are to be made at the time of installation and can be used for clearing routine trouble conditions.

1.02 This section is reissued to add new test procedures using the 914B Data Test Set (DTS). Due to extensive revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The tests described are presented in the following order:

(a) Ground noise test

(b) Loop-back test

(c) Interface test.

1.04 During a trouble visit, if the data set meets requirements and the customer business machine is operating properly, check the loop requirements as specified in the section entitled Data Systems—DATA-PHONE® Service on Direct Distance Dialing Network—Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines (314-205-501). If trouble persists, refer to supervision for further action.

1.05 When more than one method of performing a test procedure is given, the method selected should depend upon the type of test equipment available.

2. INSTALLATION TEST PROCEDURES

2.01 The following tests are performed to ensure proper installation of Data Set 603B-type. The tests should be made as soon as possible after installation to ensure proper operation of the data set. The tests may also be used during a maintenance visit.

A. Power Ground Noise Test

2.02 The power ground noise test should be performed when the data set and business machine are not served from the same ac distribution panel and there is a possibility of data errors due to a difference of potential between grounds.

2.03 There are two methods of performing the power ground noise test. The two methods are as follows:

(a) 6A impulse counter and 901B Data Test Set (DTS) cover (interface test adapter) method

(b) 6A impulse counter and 914B DTS method.

2.04 The 6A impulse counter is connected and the test is performed as shown either in Fig. 1 if the 901B DTS is used or in Fig. 2 if the 914B DTS is used.

Note: General description, calibration, and operating procedures for the 6A impulse counter are contained in the section entitled 6A Impulse Counter—Description, Operation, and Maintenance (103-620-100).

2.05 If any counts are noted in a 15-minute period, grounding arrangements must be improved as specified in the section entitled Data Set 603B-Type—Installation and Connections (596-013-200).

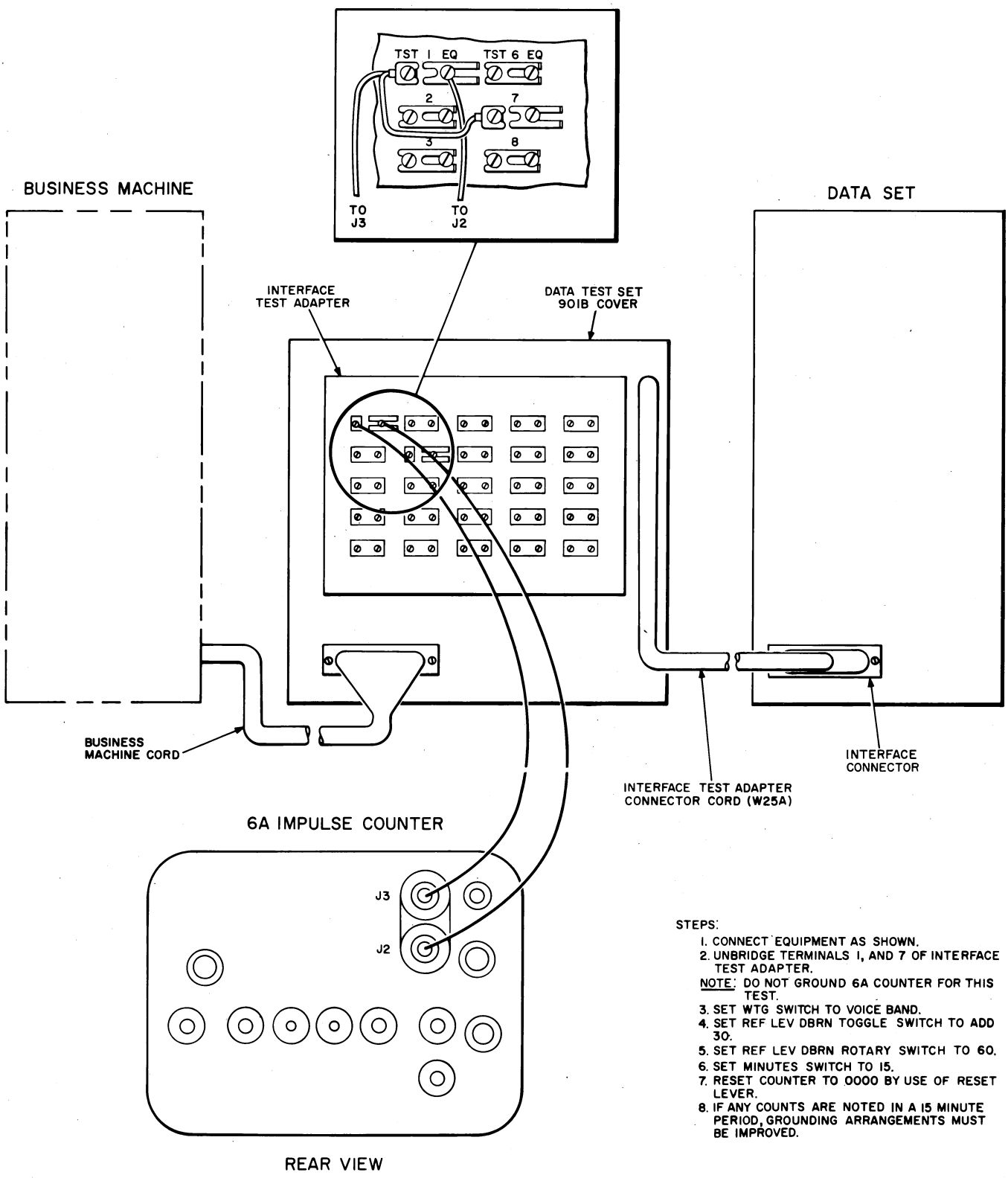

Fig. 1—Interface Test Adapter Connections For Measuring Noise Count

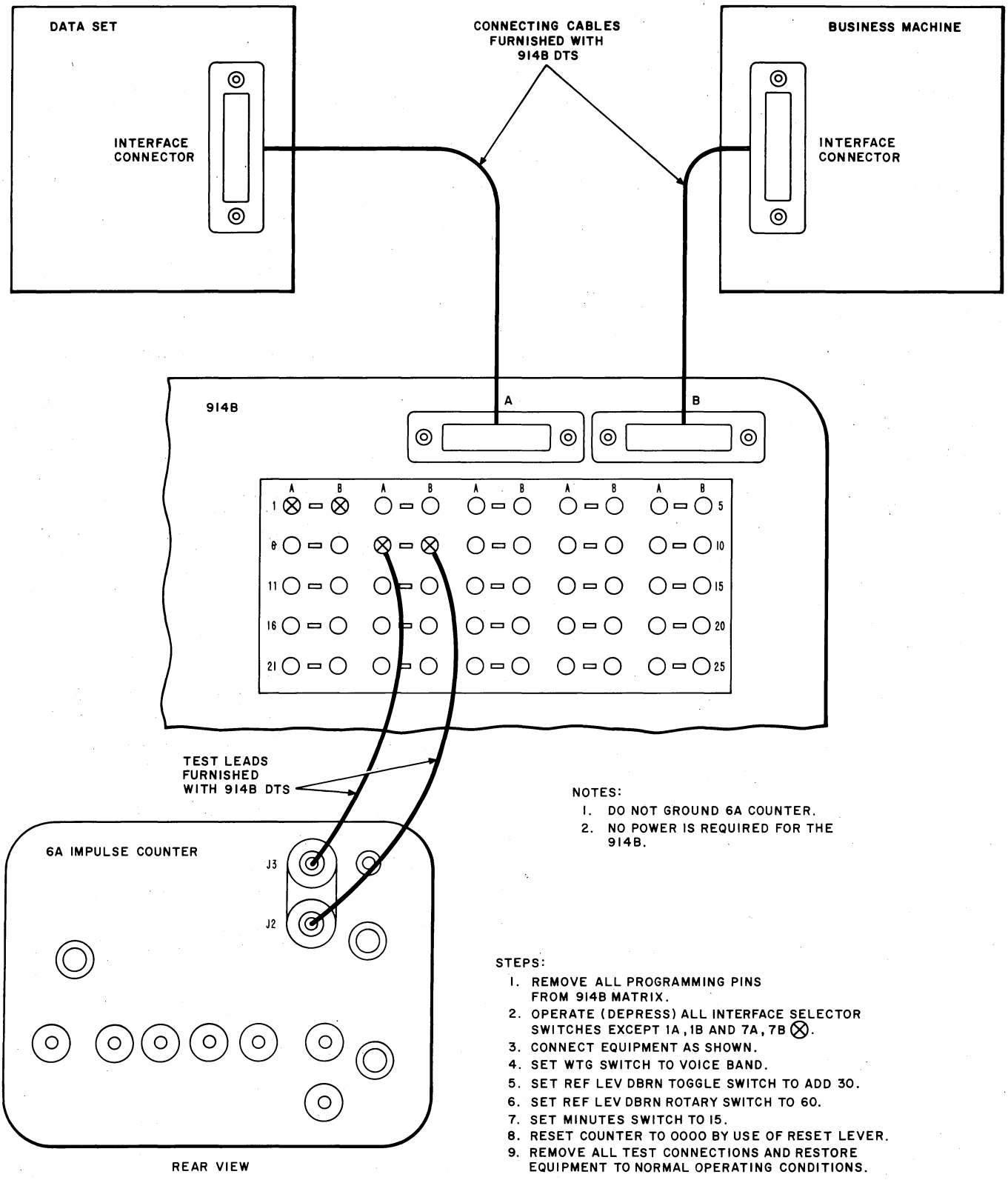

Fig. 2—Power Ground Noise Test Using 6A Impulse Counter and 914B Data Test Set

B. Loop-Back Test

2.06 The purpose of the loop-back test is to allow the data test center to measure the lower and upper frequency range of the data set and the release feature.

2.07 There is no test equipment required for this test.

2.08 Perform the following procedure.

STEP	PROCEDURE
1	Lift handset and depress TALK button.
2	Call nearest data test center and request a loop-back test.
3	When tone is heard, depress TEST button and place handset on-hook. TEST lamp will light.
4	When the test is complete, TEST lamp will extinguish.

3. MAINTENANCE TEST PROCEDURES

3.01 The following test procedure should be performed if the data set does not meet the requirements of the loop-back test and after a telephone company employee has been dispatched to the station.

A. Interface Test

3.02 The purposes of this test are to verify that proper voltages are present on the interface leads of Data Set 603B-type to check the reverse-channel frequency, and to verify that the set answers automatically.

Interface Test Adapter Method

3.03 The following test equipment is required for this test:

(a) 901B Data Test Set cover (interface test adapter)

(b) KS-14510 volt-ohm-milliammeter, or equivalent.

3.04 Arrange the interface test adapter as shown in Fig. 3. The business machine should be disconnected and the interface test adapter connected in its place.

3.05 Perform the following procedure.

STEP	PROCEDURE
1	Place KS-14510 meter function switch to the 3 DC VOLTS position.
2	Connect meter leads to TST 1 (negative) and TST 3 (positive) on the interface test adapter. Meter should indicate 0 volts.
3	Remove meter leads from TST 1 and TST 3.
4	Place meter function switch to X100 OHMS position.
5	Connect meter leads to TST 1 and TST 3. Meter should indicate 1000 ohms.

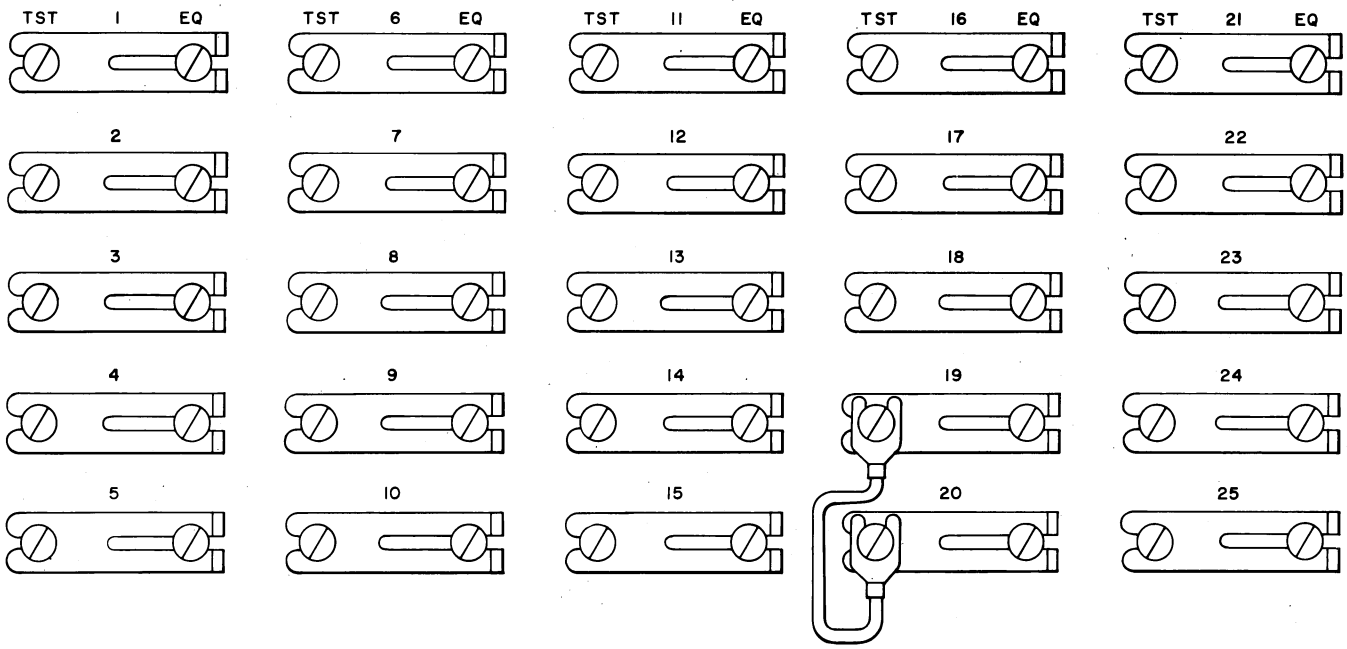

Fig. 3—Interface Test Adapter Connection

STEP	PROCEDURE
6	Remove meter leads from TST 1 and TST 3.
7	Place meter function switch to the 60 DC VOLTS position.
8	Connect meter leads to TST 1 (negative) and TST 6 (positive). Meter should indicate 18 $\pm$2 volts dc.
9	Remove meter leads from TST 1 and TST 6.
10	Call the serving test center or an adjacent telephone.
11	When call is answered, depress DATA button. The attendant at the called telephone should hear approximately 3.5 seconds of high frequency signal followed by a low frequency reverse-channel signal.
12	Depress and release REV CHAN button several times. The low frequency signal should stop each time the REV CHAN button is depressed and reappear when the button is released.
13	Temporarily short terminals TST 1 and TST 11. The low frequency signal should stop.
14	Remove short from terminals TST 1 and TST 11. Low frequency signal should return.
15	Replace data set if reverse channel is not heard or is not interrupted.

STEP	PROCEDURE
	Note: If the serving test center has been notified in advance of the test procedures, a measurement of the reverse-channel frequency can be obtained. A -12 dBm level is desirable. If the reverse-channel transmission level requires adjustment, refer to Table A in the section entitled Data Set 603B-Type—Installation Instructions (596-013-200) for terminal strapping.
16	Measure the power supply voltages listed in Table A.
17	Depress TALK button and request ringback.
18	Place meter function switch to the X1 OHMS position.
19	Connect meter leads to terminals TST 22 and TST 23. Meter should indicate infinite or maximum resistance.
20	When ringing is heard, the meter should indicate 0 or minimum resistance.
21	Remove meter leads.
22	Lift handset and answer the call. If data set is not wired for Y or Z option (refer to service order or subscriber line card and to the section entitled Data Set 603B-Type—Installation Instructions [596-013-200], Table A), this is the end of the test. If the data set is wired for Y or Z option, continue with the procedure.
23	Request ringback and hang up.
24	Place a strap between EQ 20 and TST 21.
25	IF Y option is provided, depress TALK button. If Z option is provided, depress AUTO ANS button.
26	After ringing is heard, the data set should automatically go into the data mode. If this requirement is met, this is the end of the test. If the requirement is not met, replace the data set.

TABLE A

OPERATING VOLTAGES

MEASURE BETWEEN ADAPTER TERMINALS		REQUIRED INDICATION
TST 9	TST 1	+18 (±2) Vdc
TST 10	TST 1	−18 (±2) Vdc
TST 6	TST 1	+9 (±2) Vdc

914B DTS Method

3.06 Figure 4 is a test connection diagram showing the equipment set up to perform an interface test of Data Set 603B-type.

3.07 Test switches not shown on the test connection diagram or not mentioned in text are not required for the test.

3.08 Before making test connections, ensure that all programming pins are removed from the 914B matrix. Insert only those pins shown in the test connection diagram.

3.09 Perform the following procedure.

STEP	PROCEDURE
1	Connect the equipment as shown in the test connection diagram.
2	Plug the data set and 914B DTS into a customer-supplied source of 115-volt 60 Hz power, and depress POWER switch.
3	Call a nearby telephone or the quiet termination number. When the call is answered, place S1 ON and depress DATA button.
4	Place METER FUNCTION switch on VOLT INT. Meter on 914B DTS should indicate 9 $\pm$2.
5	Place METER FUNCTION switch to OFF.
6	Rotate VERTICAL MONITOR switch to positon 9.
7	Place METER FUNCTION to VOLT INT, meter should indicate 18 $\pm$2.
8	Place METER FUNCTION switch to OFF.
9	Place METER POLARITY switch to REV.
10	Rotate VERTICAL MONITOR switch to position 10.
11	Place METER FUNCTION switch to VOLT INT. Meter should indicate 18 $\pm$2.
12	Place METER FUNCTION switch to OFF.
13	Place S1 OFF and depress TALK button.
14	Place a call to the nearest DTC and request the DTC to transmit the following frequencies one at a time: 1726, 1988 and 2250 Hz. Ask the DTC to change frequency when the reverse-channel tone ceases, and to return on line after transmitting 2250 Hz.
15	Place S1 ON.
16	Depress DATA button and hang up. DATA lamp should light in approximately 3 to 4 seconds; a 2025-Hz tone approximately 3 seconds in duration, followed by a 387-Hz tone, should be transmitted to the DTC. The DTC should measure the frequency and level of both tones.

STEP	PROCEDURE
17	Place METER RANGE switch to 3 DVC.
18	Rotate VERTICAL MONITOR to position 3.
19	Place METER FUNCTION switch to VOLT INT. When 1726 Hz is transmitted by the DTC, meter should indicate 2 $\pm$0.5.
20	Place S3 ON for 30 seconds.
21	When 1988 Hz is transmitted by the DTC, meter should indicate 0 $\pm$0.5.
22	Place S3 ON for 30 seconds.
23	Place METER POLARITY switch to NOR position.
24	When 2250 Hz is transmitted by the DTC, meter should indicate 2 $\pm$0.5.
25	Place S3 ON for 30 seconds.
26	Return the talk mode and discuss the results of the test with the DTC.
27	If Y or Z option is installed in the data set, request a ringback from the DTC, depress TALK button and hang up.
28	Place S2 ON.
29	If Z option is installed, depress AUTO ANS button.
30	When ringing is received, data set should answer automatically. Lamp DS1 should flash.
31	Remove DTS and return to pretest conditions.

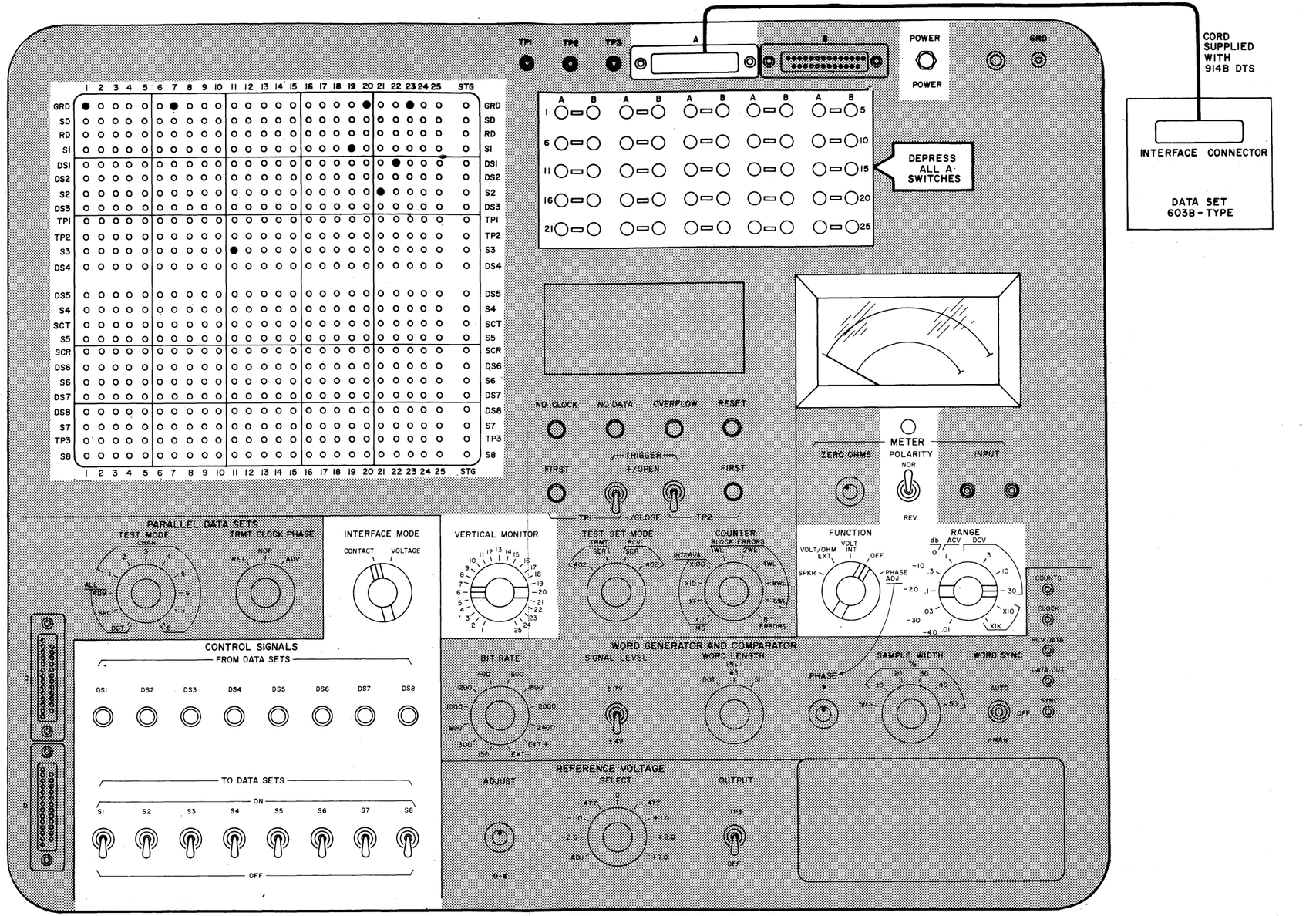

Fig. 4—Test Connection Diagram