DATA SET 603A-TYPE
FOR TRANSMISSION OF MEDICAL ANALOG DATA
TEST PROCEDURES

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1. GENERAL

1.01 This section describes test procedures for Data Set 603A-type. The test procedures should be performed at the time of installation or when investigating trouble reports.

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

1.03 Identification of the data set model can be made by the type dial on the data set. Data Set 603A1 uses a rotary dial as shown in Fig. 1. Data Set 603A2 uses a TOUCH-TONE® dial as shown in Fig. 2.

1.04 Before starting a test on the data set, visually inspect the set for damage or incorrect connections. Also verify that the options called for on the service order have been installed. If it is necessary to install an option for test purposes, the option should be installed at this time. Refer to the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Installation (596-012-200) for the connections required to install the required options.

1.05 Cover removal and installation procedures are covered in the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Maintenance (596-012-300).

1.06 The following equipment is required to test Data Set 603A-type:

(a) 901B DTS with interface test adapter

(b) KS-14510 volt-ohm-milliammeter

(c) 6A impulse counter

or:

(a) 914B DTS

(b) 6A impulse counter.

1.07 Tests should be made to the nearest data test center capable of performing the type of test required. These tests should be made, if practical, during the busy hours with use of the same local telephone facilities that the customer will be or has been using.

1.08 Before proceeding with any test, verify the following.

(a) The data set strapping options agree with the service order.

(b) The data loop has been tested and meets requirements as specified in the section entitled Data Systems—DATA-PHONE® Service, Direct Distance Dialing Network—Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines (314-205-501). A check should be made with the local test center to verify that the loop has been tested and meets the specified requirements.

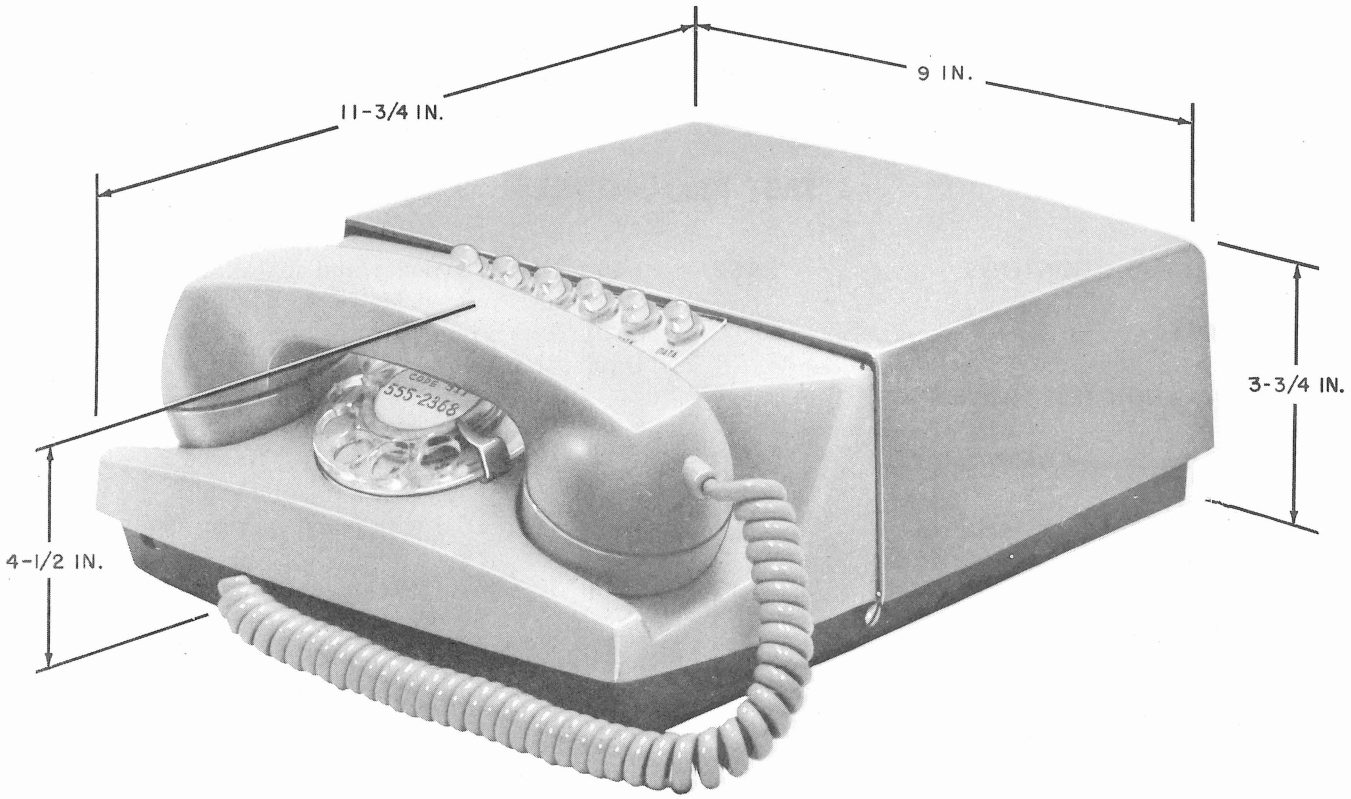


Fig. 1—Data Set 603A1, Front View

1.09 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 to be performed to ensure proper installation of Data Set 603A-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 possiblity 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. 3 if the 901B DTS is used or in Fig. 4 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).

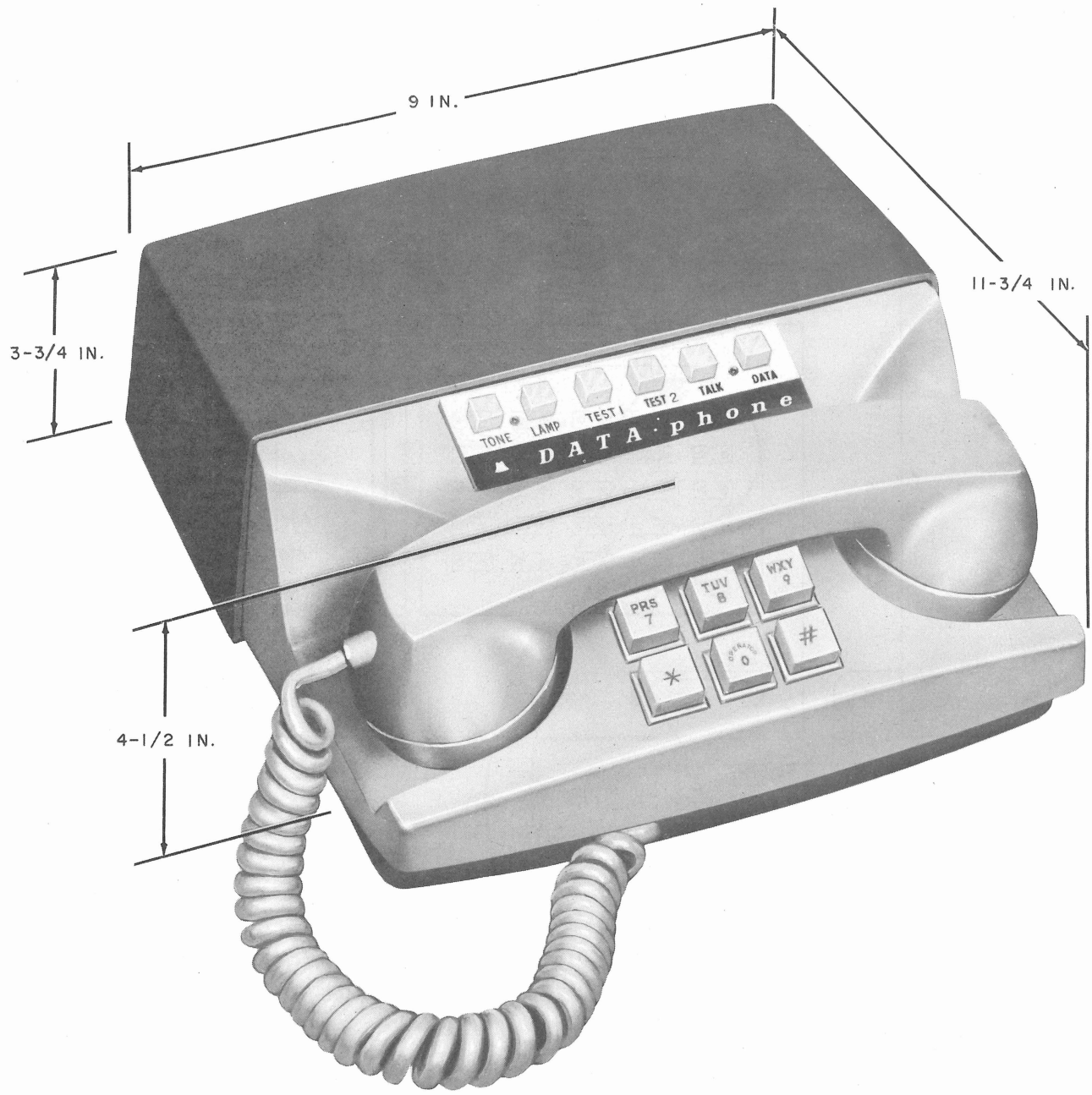
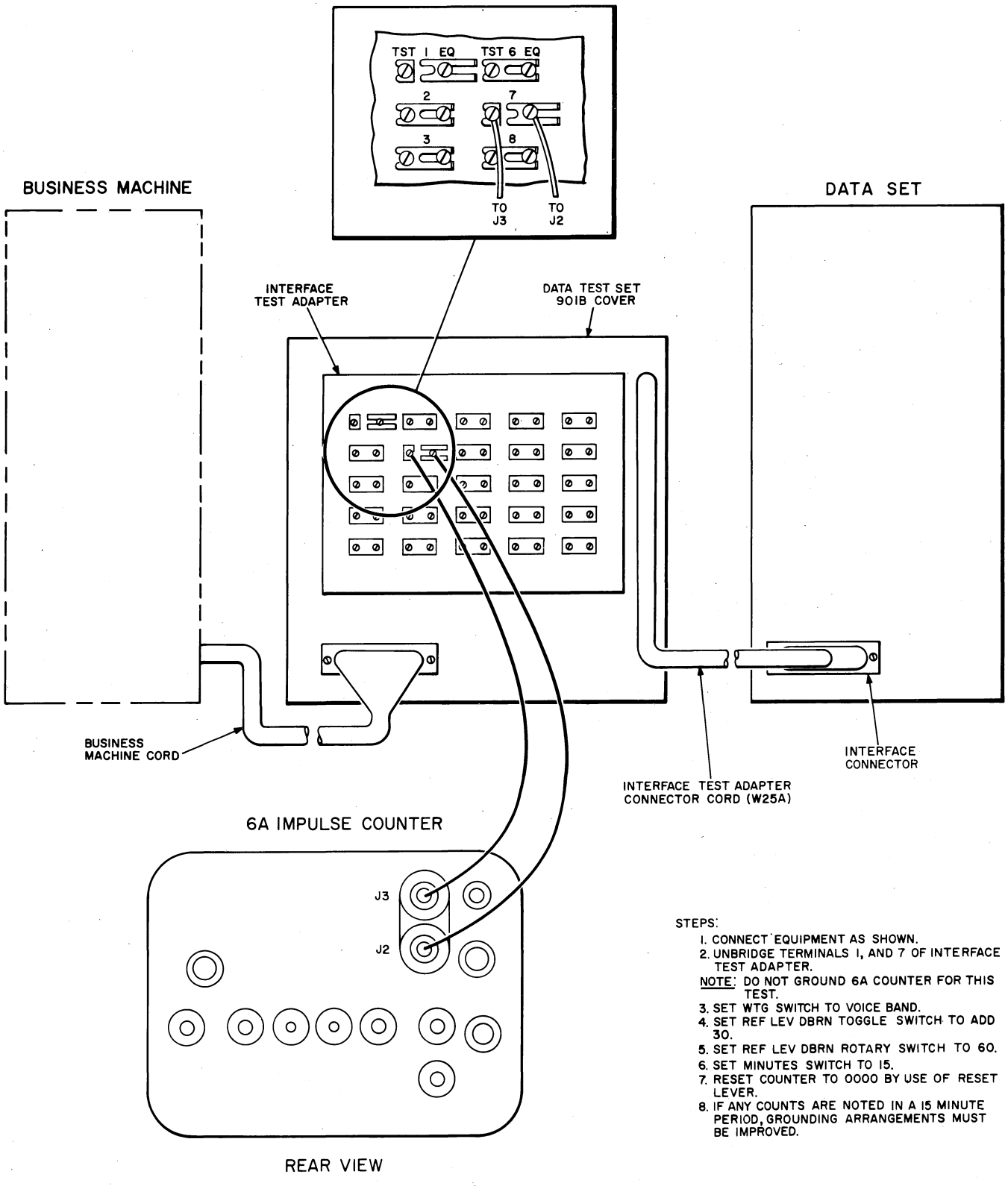


Fig. 2—Data Set 603A2, Front View



STEPS:

1. CONNECT EQUIPMENT AS SHOWN.
2. UNBRIDGE TERMINALS 1, AND 7 OF INTERFACE TEST ADAPTER.
   NOTE: DO NOT GROUND 6A COUNTER FOR THIS TEST.
3. SET WTG SWITCH TO VOICE BAND.
4. SET REF LEV DBRN TOGGLE SWITCH TO ADD 30.
5. SET REF LEV DBRN ROTARY SWITCH TO 60.
6. SET MINUTES SWITCH TO 15.
7. RESET COUNTER TO 0000 BY USE OF RESET LEVER.
8. IF ANY COUNTS ARE NOTED IN A 15 MINUTE PERIOD, GROUNDING ARRANGEMENTS MUST BE IMPROVED.

Fig. 3—6A Impulse Counter Test

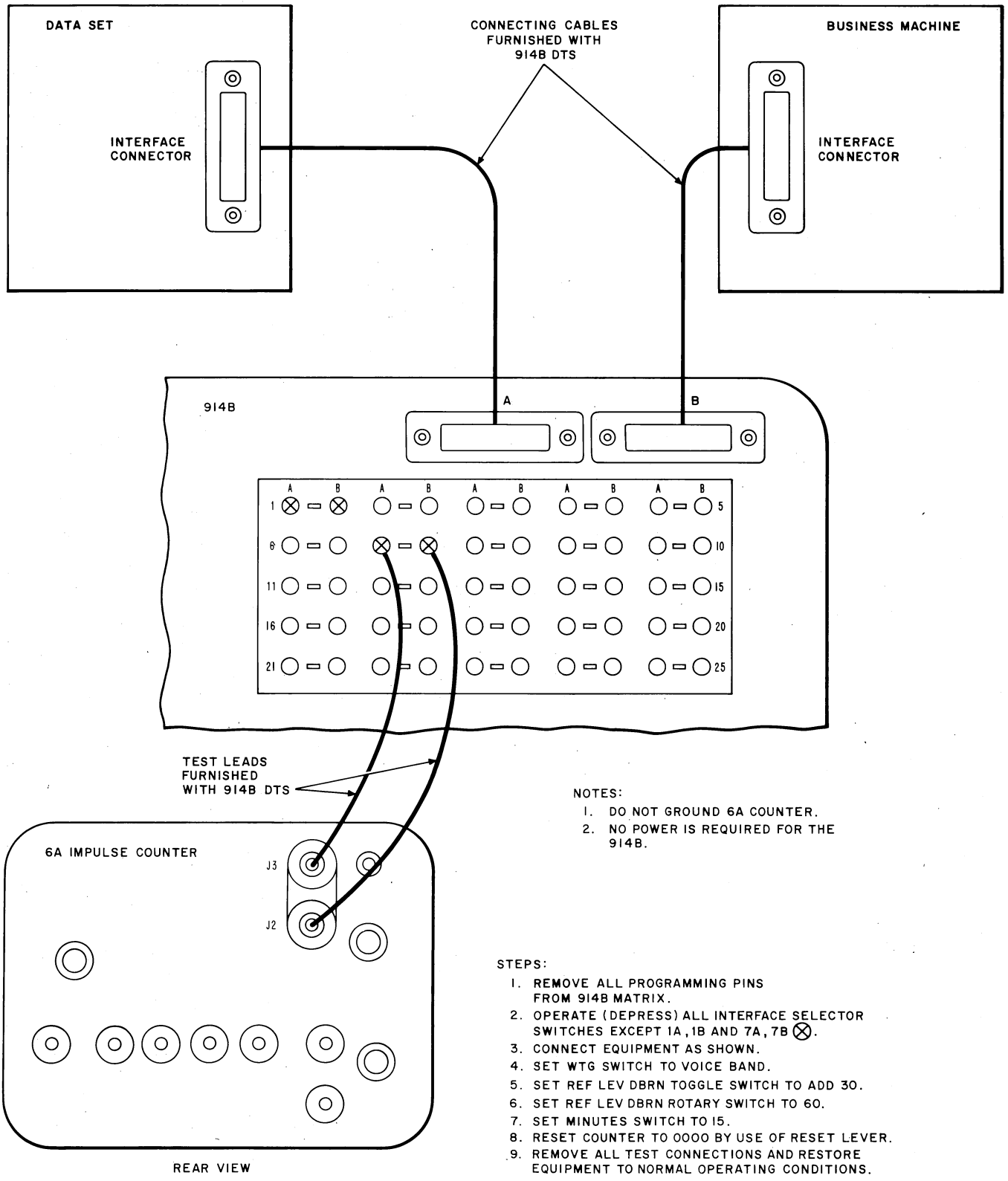


Fig. 4—Power Ground Noise Test Using 6A Impulse Counter and 914B Data Test Set

2.05 If any counts are noted in a 15-minute period, grounding arrangements must be improved as covered in the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Installation and Connections (596-012-200).

B. Data Test Center Test

2.06 The purpose of the data test center test is to allow the data test center to verify proper operation of the data set by measuring the frequency and level of tones generated by the test buttons. The test should be performed after installation and during a maintenance visit.

2.07 There is no test equipment required to perform this test. The T option (LAMP-TONE) must be installed for this test. Verify that this option has been installed before starting the test. If it has not been installed, make the necessary connections as shown in the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Installation (596-012-200). This option must be removed at the end of the test if it is not called for on the service order.

2.08 ***Test Procedure:***

STEP	PROCEDURE
1	Call the data test center and request a test of the data set.
2	Depress DATA button and return handset to cradle.
3	Depress and hold TEST 1 button.
4	Release TEST 1 button when a reverse-channel TONE or LAMP indication is received.
	Note: If at any time during this test procedure the reverse-channel indication is not received within approximately 1 minute after actuation of a TEST button or buttons, go to talk mode and communicate with the data test center.
5	Depress and hold TEST 2 button.
6	Release TEST 2 button when a reverse-channel indication is received.
7	Simultaneously depress and hold both TEST 1 and TEST 2 buttons.
8	Release TEST 1 and TEST 2 buttons when a reverse-channel indication is received.
9	Depress TALK button. If any additional testing is required, the necessary instructions will be given by the data test center.
10	Replace handset on cradle to terminate call.

2.09 If the T option was installed for this test and is not called for on the service order, it should be removed at this time.

2.10 If the data set has successfully passed the preceding test, it may be considered to be operating properly.

3. MAINTENANCE TEST PROCEDURES

3.01 The following test should be performed if the data set has not met the requirements of the data test center test and after a telephone company employee has been dispatched to the station.

A. Interface Test

3.02 The purpose of the interface test is to check the test voltages, send data 1 and send data 2 leads, and the frequencies generated by the test buttons.

Interface Test Adapter Method

3.03 The following equipment is required to perform the test:

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

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

3.04 To perform the following tests, the data set must be connected to the telephone line and ac power applied. The T option (LAMP-TONE) must be installed for the tests. Verify that this option has been installed before starting the testing. If it has not been installed, make the necessary connections as shown in the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Installation (596-012-200). This option must be removed at the end of the test if it is not called for on the service order.

3.05 The cover of the 901B DTS is used to provide access to the interface terminals in the tests. This is accomplished by connecting the 901B interface test adapter (cover of the 901B) to the data set, but not connecting the cover to the 901B DTS. The business machine is disconnected for this part of the test. The terminals of the 901B interface test adapter are shown in Fig. 5.

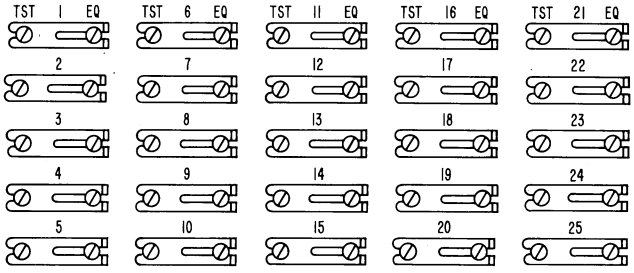


Fig. 5—901B Data Test Set Interface Test Adapter

3.06 ***Test Procedure:***

STEP	PROCEDURE
1	Place KS-14510 meter function switch to X10000 ohms positions.
2	Connect the meter leads to terminals 1 (frame ground) and 7 (signal ground) of the interface test adapter. Meter should indicate approximately 1 megohm.
3	Remove meter.
4	Verify that continuity exists between the following terminals: Interface terminal 12 and TB1, terminal 15 Interface terminal 11 and TB1, terminal 4. ***Note:*** For the location of TB1, refer to Fig. 6. TB1 is the same in both the 603A1 (shown) and the 603A2 (not shown).

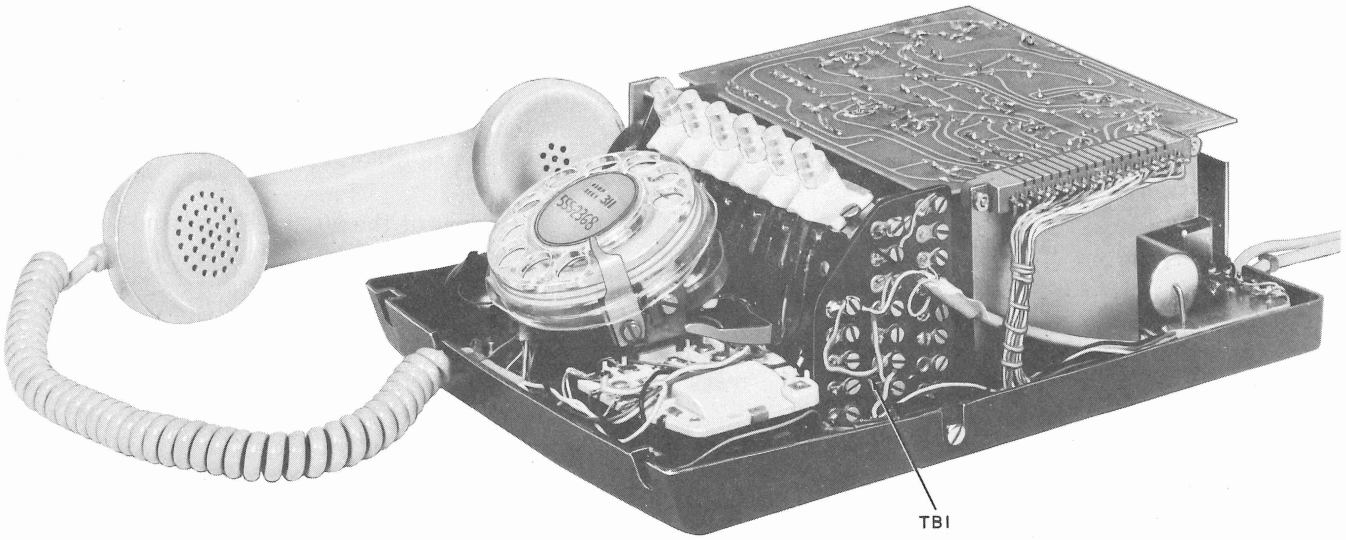


Fig. 6—Data Set 603A1—Cover Removed

STEP	PROCEDURE
5	Using the data set, place a call to any telephone or quiet termination.
	Note: This call must not be placed to a Data Set 603B receiver.
6	Depress DATA button when call is answered.
7	Depress LAMP button. The button will light indicating the absence of the reverse-channel signal.
8	Measure the voltages indicated in Table A on the interface test adapter.

TABLE A

FROM TERM.	TO TERM.	VOLTAGE
9*	7	17±3 volts dc
7*	10	17±3 volts dc

* Positive lead connected to this terminal.

9	Depress TONE button. A tone will be heard.
10	Connect terminal 2 to terminal 10 on the interface test adapter. The tone should change frequency.
11	Remove connection between terminal 2 and terminal 10.

STEP	PROCEDURE
12	Connect terminal 17 to terminal 10. Tone should change in frequency.
13	Remove connection between terminal 17 and terminal 10.
14	Return to talk mode and hang up.

914B DTS Method

3.07 Figure 7 is a test connection diagram showing the equipment set up to test Data Set 603A-type using the 914B DTS.

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

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

3.10 ***Test 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 operate POWER switch on the 914B DTS.
3	Place a call to a nearby telephone or to the quiet termination number. When the call is answered, depress DATA and LAMP buttons. DATA lamp should light. If LAMP button lights, T option is installed in the data set.
4	Place METER FUNCTION switch on the 914B DTS to VOLT INT. Meter should indicate 18 $\pm$3.
5	Place METER FUNCTION to OFF.
6	Rotate VERTICAL MONITOR switch to position 10.
7	Place METER POLARITY switch to REV.
8	Place METER FUNCTION switch to VOLT INT. Meter should indicate 22 $\pm$3.
9	Place METER FUNCTION switch to OFF.
10	If V option is installed (LAMP button not lit), place S1 ON. Lamp DS1 on the 914B DTS should light indicating the absence of a reverse channel signal.
11	If T option is installed (LAMP button lit), depress TONE button. A tone should be audible in the data set.

STEP	PROCEDURE
12	Insert a red programming pin into the following crosspoints of the 914B DTS matrix: SD and 10, SD and 2. Tone audible in Step 11 should change frequency. If V option is installed, tone can be monitored by connecting a 1011-type handset with the TALK-MON switch placed in the MON position across tip and ring.
13	Remove pin from crosspoint SD and 2 and insert it into crosspoint SD and 17. Tone should change frequency.
14	End of test. Return to talk mode and terminate the call.

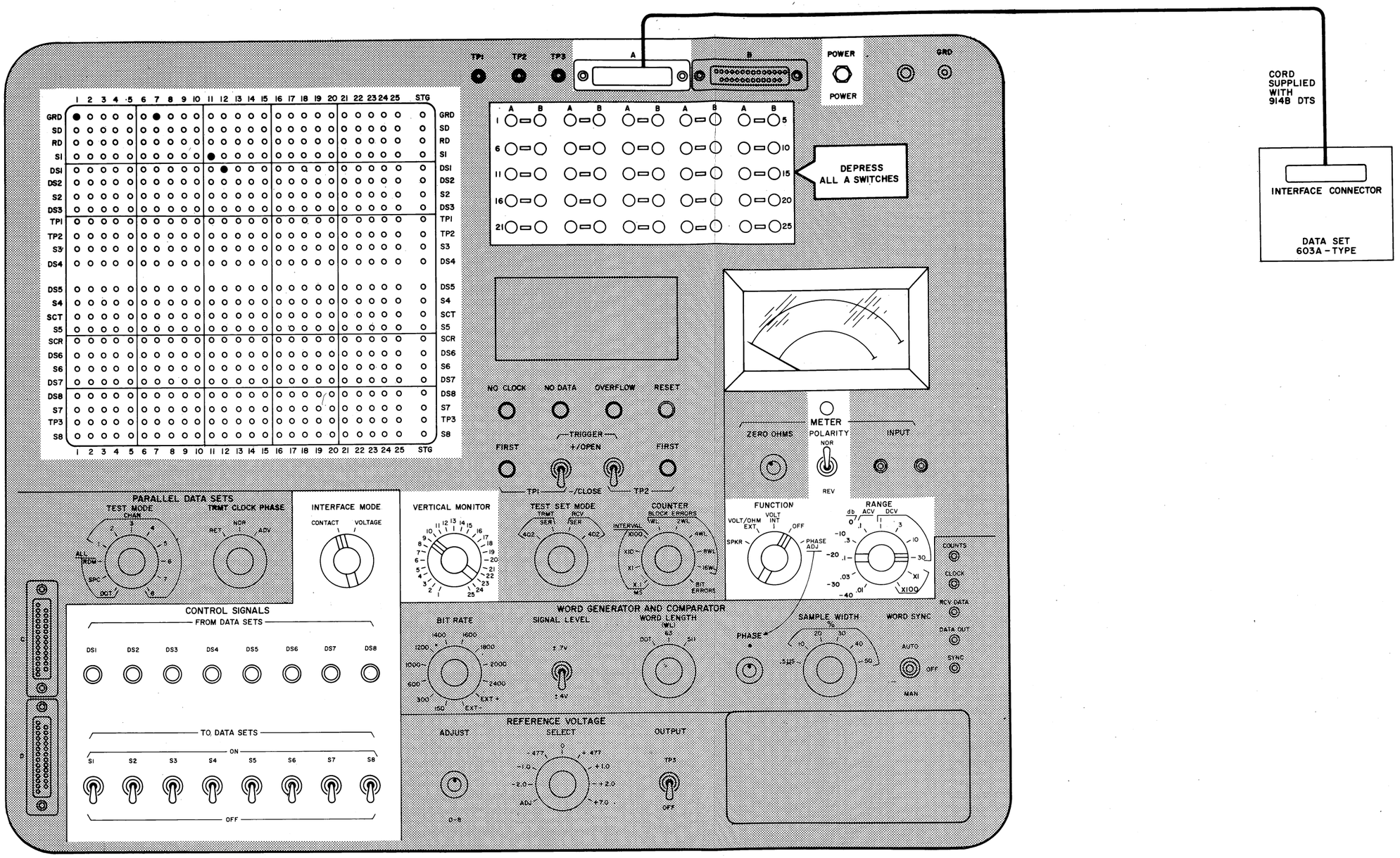


Fig. 7—Test Connection Diagram