1000A DATA COUPLER

DESCRIPTION, INSTALLATION, MAINTENANCE, AND TESTS

1. GENERAL

1.001 This addendum supplements Section 590-103-103, Issue 4. The attached pages must be inserted in accordance with the following filing instructions:

(1) Remove from the section the pages numbered the same as those attached to this pink sheet.

(2) Insert the attached pages with the same page number in their place. Insert point-numbered pages (eg, 8.1/8.2) following the page with the same basic number.

(3) Place this pink sheet ahead of Page 1 of the section.

Attached:

Pages 5 and 18 dated July 1978, reissued
Pages 6 and 17 dated July 1978, revised
Pages 6.1, 8.1/8.2, and 8.3/8.4 dated July 1978, added

1.002 This addendum is issued to add coverage on the 502BM, 2502BM, 503CM, and 2503CM modular telephone sets.

3. INSTALLATION AND CONNECTIONS

The following changes apply to Part 3 of this section:

(a) 3.08—revised

(b) 3.08.1—added

(c) Fig. 5.1 and 5.2—added

4. MAINTENANCE AND TESTS

The following change applies to Part 4 of this section:

(a) 4.14 paragraph heading—revised

3. INSTALLATION AND CONNECTIONS

3.01 The data coupler may be used with various types of central office lines, key telephone systems, or PBX lines that provide access to the DDD network facilities.

3.02 Verify that the assigned loop facilities meet the transmission requirements for the specific data service before proceeding with the installation. The general requirements for DAA are covered in Section 314-205-501. The requirements for the 1000A data coupler are as follows:

(a) ***Loop Loss:*** Maximum 1000-Hz insertion loss is 10 dB excluding the coupler.

(b) ***Set Classification:*** The installation measurements to be made should have been determined by the design engineer from the type of data modem information provided by the customer and specified on the service order. When the modem type cannot be determined, high-speed requirements should be specified. When the type of modem can be obtained from the customer, the following guidelines should be used:

(1) For all analog modems, high-speed requirements should be specified.

(2) For all other modems, requirements based on speed of modem (same as for DATAPHONE service) should be specified.

(3) If the type of modem is known to be similar to a Bell System DATAPHONE data set, use the requirements for that particular data set.

3.03 When test or demonstration calls are made at the time of installation, refer to Section 010-250-001 for proper procedure for crediting charges.

3.04 The installation of the coupler should comply with general practices to ensure an orderly station arrangement.

3.05 The location of the coupler shall be determined by the following conditions:

- The coupler should normally be mounted vertically on a wall or other smooth vertical surface.
- The coupler must be within range of the interface cord supplied by the customer.
- The location of the coupler should provide easy access for operation of the test key by the customer attendant.

Note: In general, there is no restriction on the length of the customer interface cord providing the transmission path between the data apparatus and the coupler. Bell System responsibility terminates at the interface terminals of the coupler. The inside wiring connection between the coupler and the telephone line connecting block is restricted only to the presentation of a neat station appearance.

3.06 The data key or associated telephone set should be positioned so the operator can easily operate the key and the controls on the customer apparatus.

3.07 Install the coupler on the wall or vertical surface as follows:

(1) Remove tape securing cover to base pan. Retain screw envelope that is secured under tape.

(2) Remove snap-off cover assembly from the coupler ▶by lifting cover up from bottom to relieve tension on mounting lips, then pull cover out at top.◀ Lift up circuit board from base pan.

(3) Position base pan vertically against wall with keyhole slot end up and at least 3 inches above top of baseboard or other obstruction which will be below the unit. Secure base with two screws.

(4) Route inside wiring through slots on base as shown in Fig. 3. Attach circuit board to base using four screws provided. Connect the two leads to terminals T and R on printed wiring board.

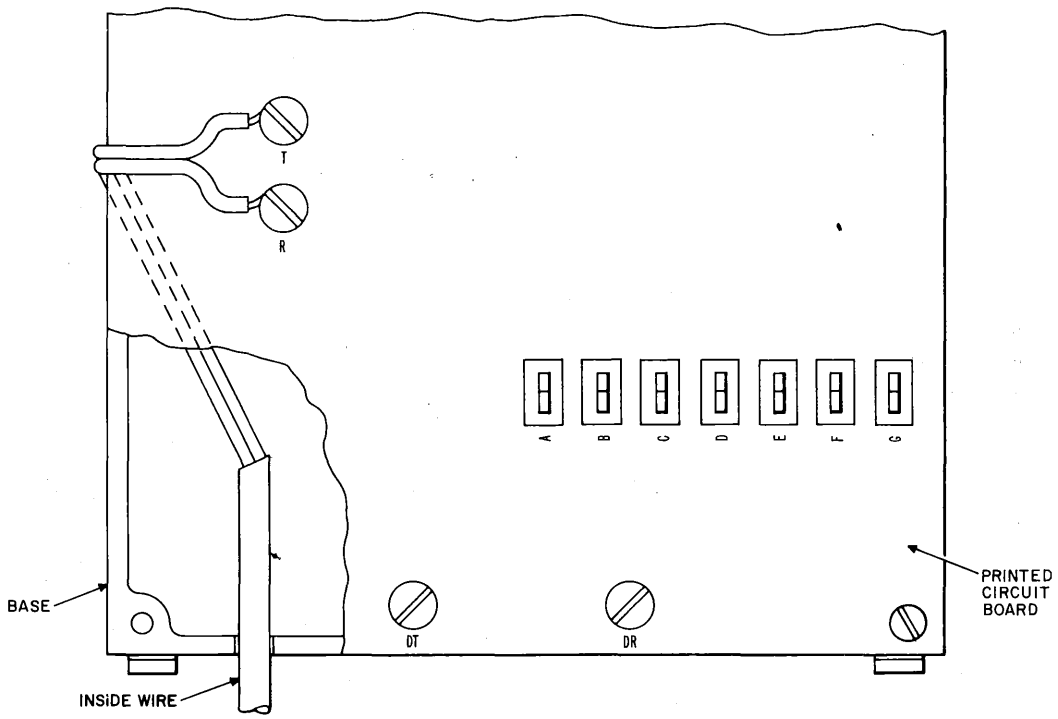


Fig. 3—▶Route of Station Wiring and Location of Terminals◀

Care should be taken not to overtighten screw terminals or stripping will result.

Note: Do not replace cover at this time.

3.08 When a telephone set is associated with the coupler, the exclusion key leads in the set must be rewired to provide the necessary control functions of the data key. Typical wiring diagrams in Fig. 4, 5, ▶5.1, 5.2◀ and 6, show rewiring and connections required when using the 502A/B, 503C, ▶503CM, 2503CM, 558FM, or 2558DM◀ telephone set. The rewiring permits the telephone set to control the line. Location of the terminals on the coupler is shown in Fig. 3.

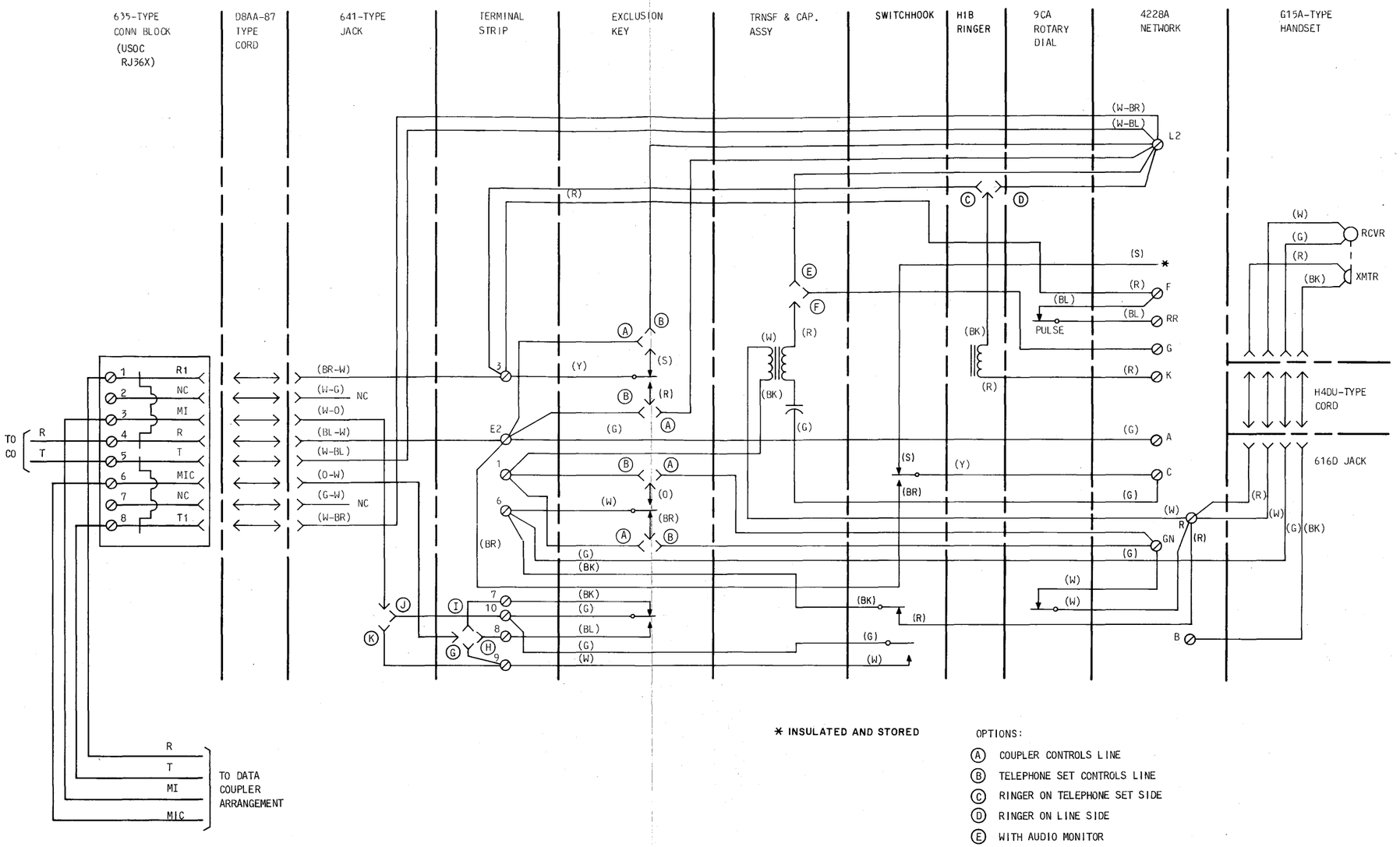
3.08.1 ▶The 502B and 2502B telephone sets shown in this section have been superseded by the 502BM and 2502BM, which are modular versions of these sets. The modular sets are available with an eight conductor cord which allows the sets to be plugged into the same series jack as shown in this addendum for 503CM and 2503CM telephone sets. When using the 502BM and 2502BM sets with data access arrangements in this way, it is necessary to order separately a D-180810 kit of parts and a D8AA-87 cord. Connection details are shown in supplements for Sections 502-501-102, Issue 3 (502BM) and 502-503-102, Issue 3 (2502BM).◀

3.09 A separate connecting block must be installed with the coupler when the 503C-type telephone set is used to furnish a telephone mode indication. A connection is made between a set of the exclusion key contacts in the telephone set and two terminals on the connecting block. The exclusion key contacts are closed when the line is connected to the telephone set. The customer may monitor the terminals on the connecting block and obtain an indication of the mode in which the telephone set is operating (closed—voice, open—data).

3.10 For key telephone system application, an auxiliary relay is required to switch the line to the coupler. A line key on a key telephone set is used as the data key to operate and hold the auxiliary relay. The telephone handset must be

off-hook during a data call. A partial schematic of a typical key telephone arrangement is shown in Fig. 7. Use Table A with Fig. 7 for the required connections to the key telephone units that may be used as line circuits and auxiliary relays for a key telephone system.

Note: The 1A telephone set wiring will differ from that shown in Fig. 7. The SG lead replaces the A1 lead and is used to operate the line circuit and auxiliary relays. The set must also be wired for station busy lamp. Refer to the appropriate section for the telephone set being used. A 15D key telephone unit (KTU) may be used with a 1A system for incoming call detection.



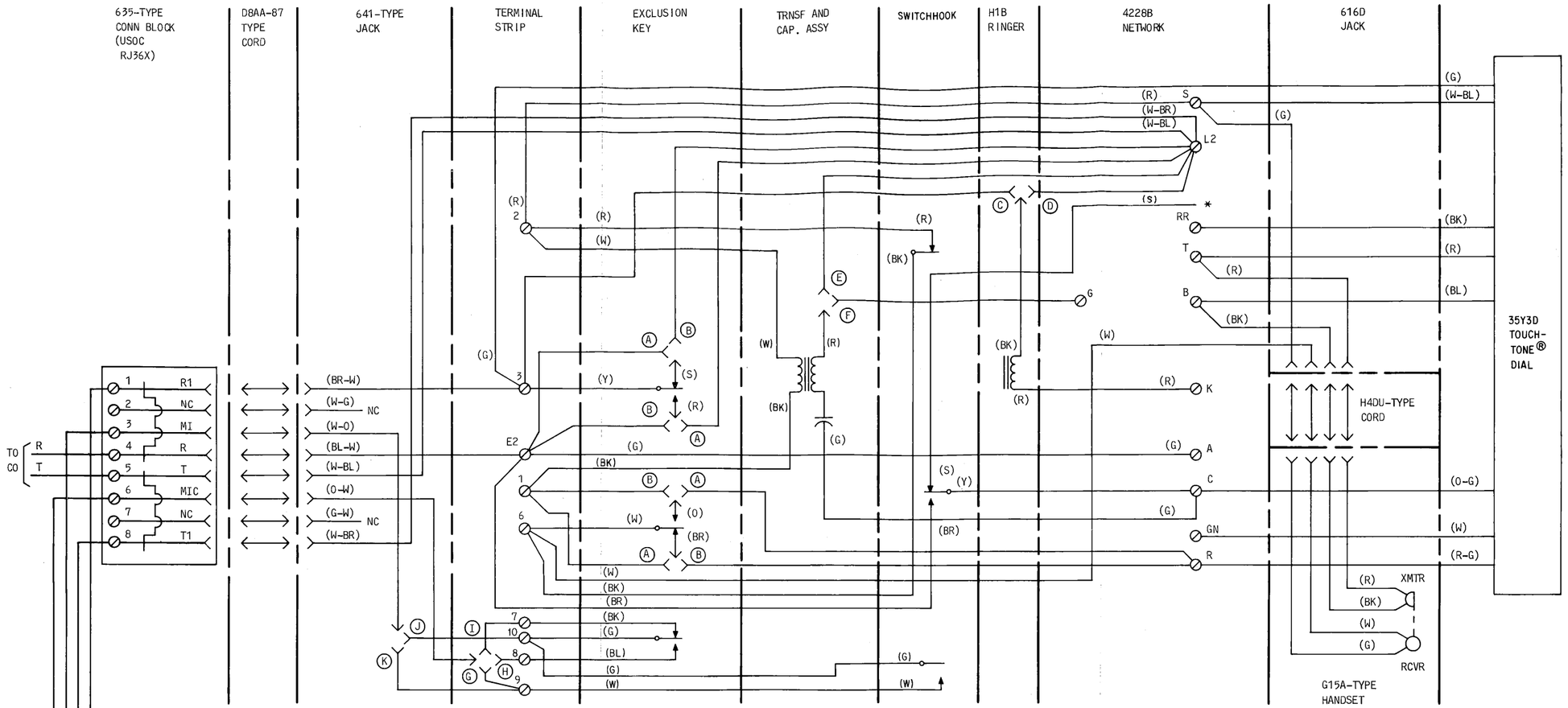
* INSULATED AND STORED

OPTIONS:

- (A) COUPLER CONTROLS LINE
- (B) TELEPHONE SET CONTROLS LINE
- (C) RINGER ON TELEPHONE SET SIDE
- (D) RINGER ON LINE SIDE
- (E) WITH AUDIO MONITOR
- (F) WITHOUT AUDIO MONITOR

INDICATOR	ADDITIONAL OPTIONS WITH	
	OPTION A	OPTION B
VOICE MODE	H, K	I, K
DATA MODE	I, J	H, K
SWITCH HOOK	G, J	G, J

Fig. 5.1—Typical Connections for 1000A Data Coupler With 503CM Telephone Set



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INDICATOR	ADDITIONAL OPTIONS WITH	
	OPTION A	OPTION B
VOICE MODE	H, K	I, K
DATA MODE	I, J	H, K
SWITCH HOOK	G, J	G, J

Fig. 5.2—Typical Connections for 1000A Data Coupler With 2503CM Telephone Set

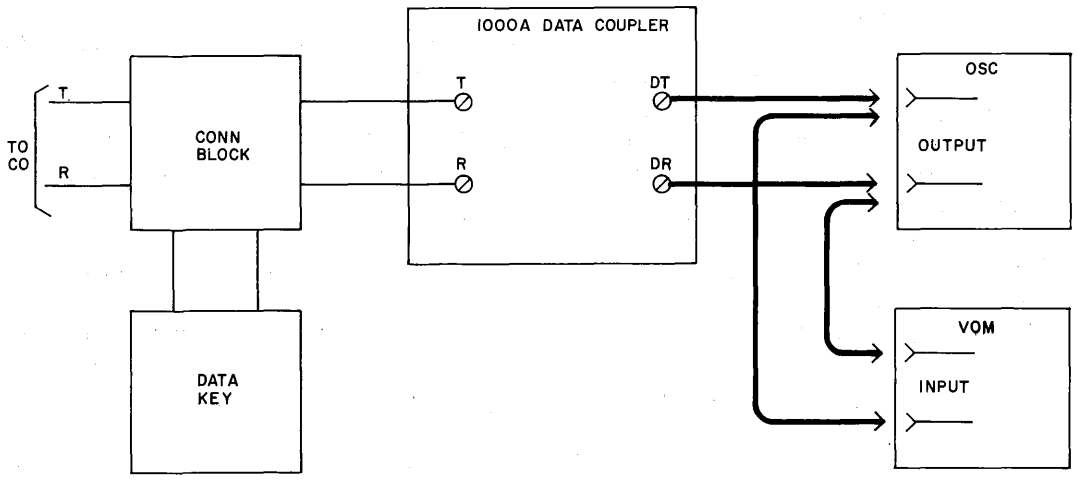

Fig. 10—Test Equipment Connections for Impedance-Matching Test

(7) Use VOM to again measure signal level (in dBm). This value is used in 3.12 to derive the level option strapping from Table B.

(8) Disconnect test equipment and restore connection to normal.

4.12 ***Remote Test:*** The remote test is required to measure the test signal of the coupler at the local serving office. The test signal provides a check of the local loop and the limiting function of the coupler. The initial reading can then be compared with subsequent readings for indications of service degradation.

4.13 The data coupler must be connected to the telephone line through the data key for this test. Proceed with the test as follows:

(1) Use associated network control signaling apparatus (telephone, key telephone equipment, etc) and contact a test employee at the local test desk (LTD). If the LTD is not equipped for ac testing, contact a remote test location that is so equipped, or a data test center (DTC) (see Step 5).

(2) Request LTD or DTC employee to call the coupler and to measure level of coupler test tone (2800 Hz) at the test desk.

(3) Agree upon length of time required to perform test, and when instructed by LTD or DTC employee, operate data and TST keys.

Note: When an exclusion key on an associated telephone set functions as the data key, the telephone handset must remain off-hook during the test.

(4) After the agreed interval, restore TST and data keys and request level reading from the LTD or DTC employee. This level indicates the loop plus coupler loss at 2800 Hz. When test is made at time of installation, record the actual value of loss on the line history card for comparison against measurements made in subsequent tests. If the level of the 2800-Hz signal on subsequent tests varies by more than ±2 dB from the original value, it is an indication of possible trouble in either the loop or coupler.

(5) If the test tone must be measured at a remote test desk or data test center over facilities of unknown or varying loss, a successful receipt of tone indicates there is ac continuity through the loop and coupler. This is estimated to provide an 80 percent confidence level that the coupler and loop facilities are operating satisfactorily.

(6) Restore telephone connection to normal.

4.14 ▶503C or 503CM and 2503C or 2503CM◀ Telephone Set Test: This test verifies that the telephone set mode indication and audible monitor features are operating properly. The requirements of this test are based on the logic sense which gives a contact closure when the

telephone set is connected to the line. In all other cases, the mode indication will be open.

This test can be performed without disconnecting the customer interface. Precautions should be taken to ensure that the customer does not receive inadvertent signals.

(1) Use VOM to measure resistance between the two terminals on connecting block (described in 3.09). VOM should indicate continuity.

(2) Lift telephone handset and measure resistance between the two terminals on connecting block. VOM should indicate continuity.

(3) Operate exclusion key to place the telephone set in data mode, then measure resistance between the two terminals. VOM should indicate an open circuit.

(4) Operate exclusion key to place telephone set in voice mode and dial local milliwatt supply.

(5) When the 1000-Hz tone is heard in handset, operate exclusion key to data. Tone should still be heard in handset.

(6) Return equipment to normal.

5. ▶REFERENCES

5.01 The following Bell System Practices provide additional information that may be helpful in installing the data coupler:

SECTION	TITLE
010-250-001	Crediting Charges on Test Calls
010-521-100	Data Technical (DATEC) Support
010-521-101	Data Technical (DATEC) Support — Designee Directory
314-205-500	Data Systems—DATAPHONE® Service and Data Access Arrangements on Direct Distance Dialing Network — Overall Data Transmission Test Requirements
314-205-501	Data Systems—DATAPHONE® Service and Data Access Arrangements on Direct Distance Dialing Network — Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines
590-010-200	Data Sets and Data Access Arrangements — General Installation and Connection Information
660-101-312	Maintenance Service Charge on Services With Customer-Provided Equipment (CPE)

5.02 Detailed information on the 1000A data coupler is contained in the following schematic drawing (SD) and circuit description (CD):

SD- & CD-1D205-01 1000A Data Coupler◀