DATA AUXILIARY SET 804M-TYPE
IDENTIFICATION AND CONNECTIONS

1. GENERAL

1.01 This section contains identification and connection information for Data Auxiliary Set 804M-type. It does not contain information concerning the associated data set or data auxiliary set.

1.02 Data Auxiliary Set 804M1 (Fig. 1) is a six-button set which contains a telephone, control circuitry, a rotary dial (11C Apparatus Unit), and CP AR195 which consists of CP AR171 and CP AR172. Data Auxiliary Set 804M2 (Fig. 2) is identical to the 804M1 with the exception that it contains a TOUCH-TONE® dial (11G Apparatus Unit).

1.03 Telephone line current is required to power the telephone transmitter. Additional power (±18 volts, 100 ma max.) for lamp and relay operation is provided by the associated data set.

1.04 The Data Auxiliary Set 804M-type is intended for use with DATA-PHONE* data sets on a four-wire switched network or four-wire private line. They are used to establish and control calls and provide alternate voice or data communications for a single data set.

*Service Mark of the American Telephone and Telegraph Company

1.05 The Data Auxiliary Set 804M-type provides the following features:

- Allows compatibility with four-wire automatic calling unit (ACU) (e.g., 801C4).
- Provides bridging of the telephone line to the ACU with the transmit pair on terminals T1 and R1 and the receive pair on terminals T and R.

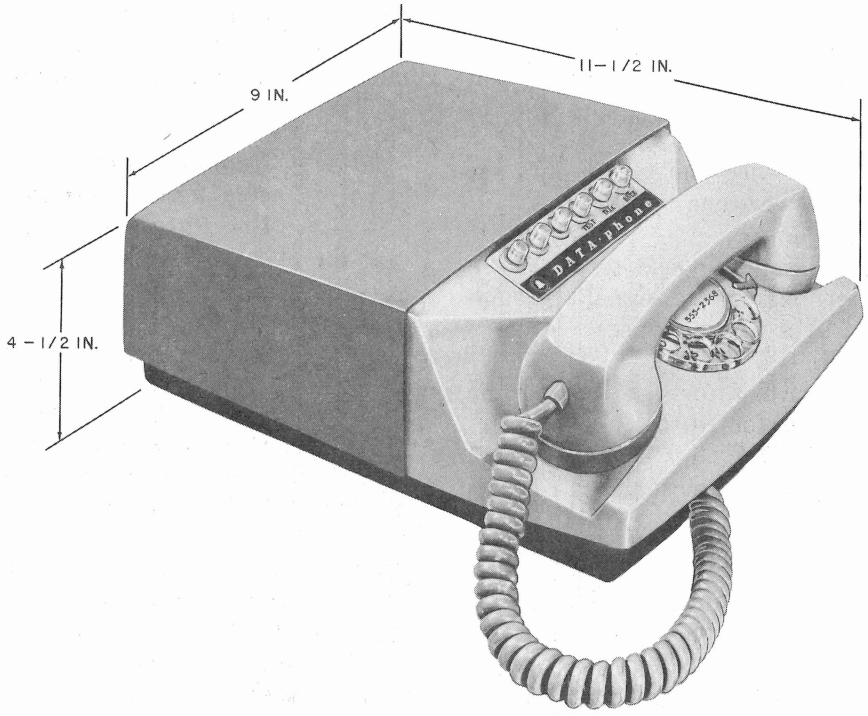

Fig. 1—Data Auxiliary Set 804M1, Front View

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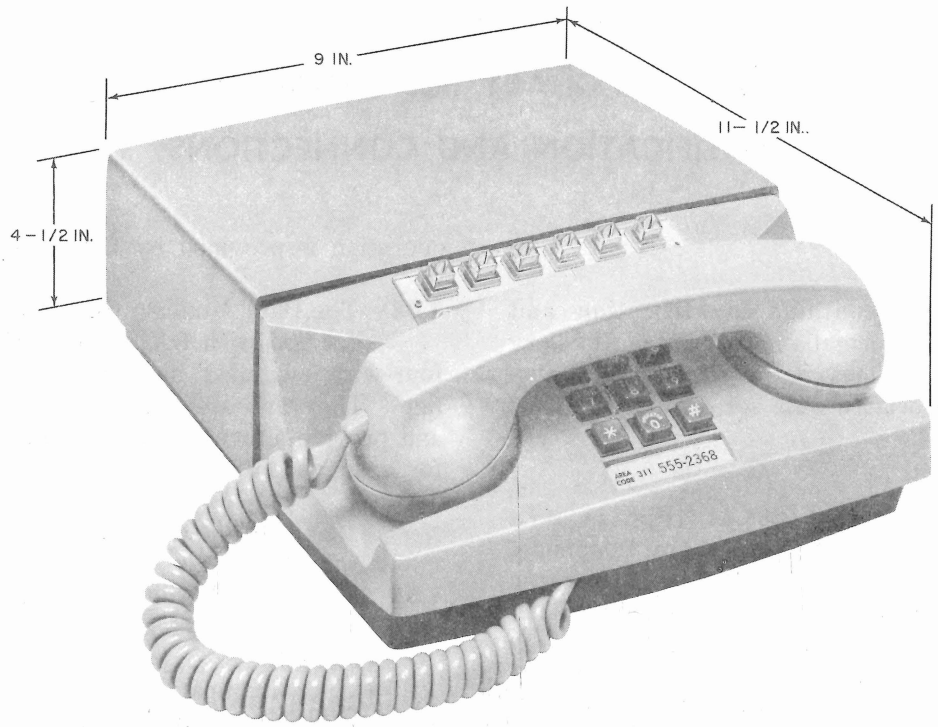


Fig. 2—Data Auxiliary Set 804M2 Front View

- Provides (by option) automatic answering with ring detection on the receive pair or on a separate pair.
- Provides answer-tone generation on the transmit pair.
- Transfers the four-wire line to the data set at the end of answer-tone.
- Releases the line in response to a release of the data terminal ready signal (through the associated data set interface).
- Provides a test circuit for conditioning the associated data set for testing.

1.06 Routine maintenance is not required for this data auxiliary set.

1.07 Table A lists the service options and necessary connections required to install these options.

Note: The options are arranged on TB1, CP AR171, and CP AR172 in a manner to make it necessary to remove the installed option when the required option is installed.

1.08 Fig. 3 and 4 identify the straps for providing the W, X, Y, and Z options on CP AR171 and CP AR172. Refer to the installation section of the associated data set to determine what options must be supplied by Data Auxiliary Set 804M-type.

Remove power from associated data sets when changing option straps in the Data Auxiliary Set 804M-type.

1.09 A D6AA-61 cord is supplied with Data Auxiliary Set 804M-type. When Data Auxiliary Set 804M-type is to be used with key telephone arrangements for multiple or private line service, a D20K-61 cord must be ordered separately to replace the D6AA-61 cord.

1.10 Data Auxiliary Set 801C4 (ACU) and Data Auxiliary Set 804M-type may be connected together by two plug-ended cords (M14C cord and M14E cord). Neither of these cords is provided with the data auxiliary sets and must be ordered separately. When these cords are used, a D6AA-61 cord is necessary for connection of the data auxiliary set to the four-wire telephone line.

TABLE A

SERVICE OPTIONS

OPTION OR FEATURE	DESIGNATION	AVAILABILITY		REMARKS AND CONNECTIONS	PROVIDE
		804M1	804M2		
With AUTO ANS key	M	†	†	Remove strap between terminals 51 and 52 of TB1. Unblock and identify the AUTO ANS key. The data auxiliary set will answer in response to the key when the DTRY lead is conditioned. It will manually transfer when the DTRY is conditioned (without the key).	One per Station
Without AUTO ANS key	K	*	*	Place a strap between terminals 51 and 52 of TB1. This permits the DAS to answer automatically only in response to DTRY.	
600 OHM Termination of receive pair to Data Set	N	*	*	Place a strap from terminal 33 to 34 of TB1. (Terminates a sensitive receiver.)	One per Station
Receive pair To the Data Set open	Q	†	†	Remove N option. (Strap from 33 to 34 of TB1 and place strap between terminals 34 and 35 of TB1.)	
Ring signal on receive pair	G	*	*	Place a strap between terminals 3 and 4 of TB1 and a strap between terminals 6 and 7 of TB1.	One per Station
Ring signal on separate lines	F	†	†	Remove G option and place a strap between terminals 4 and 5 of TB1 and a strap between terminals 7 and 8 of TB1.	
Does not provide test control	X	†	†	Position strap located on CP AR171 per marking for the X option.	One per Station
Provides test control	W	*	*	Position strap located on CP AR171 per marking for the W option.	

TABLE A

SERVICE OPTIONS (Cont)

OPTION OR FEATURE	DESIGNATION	AVAILABILITY		REMARKS AND CONNECTIONS	PROVIDE
		804M1	804M2		
Provide + battery for test and talk modes of operation	Z	†	†	Position three straps — two on CP AR171 and one on CP AR172 per marking for Z option (Fig. 3 and 4).	††
Provides grounded test and talk modes of operation	Y	*	*	Position two straps located on CP AR171 per marking for Y option. Position one strap located on CP AR172 per marking for Y option.	
Receive pair with test signal path	S	†	†	To provide this option, three straps are installed — one between terminals 27 and 28 of TB1, one between terminals 18 and 19 of TB1, and one between terminals 31 and 32 of TB1.	One per Station
Receive pair without test signal path	R	*	*	To provide this option, remove the S option and install three straps in the following manner. Install one between terminals 28 and 29 of TB1, one between 30 and 31 of TB1, and one between 19 and 20 of TB1.	
A lead control	T	*	*	Place a strap between terminals 9 and 10 of TB1.	One per Station
ACU control	V	†	†	Remove T option and place a strap between terminals 10 and 11 of TB1.	

* Factory provided

† Installer provided

†† The data set which is used with the Data Auxiliary Set 804M will dictate which option (Y or Z) will be installed.

Note: When Data Auxiliary Set 804M type is used with Data Set 202D the 5-6 make contact of the 804M test key must be removed from terminals 63 and 20 of TB1 and connected to terminals 42 and 43 of TB1.

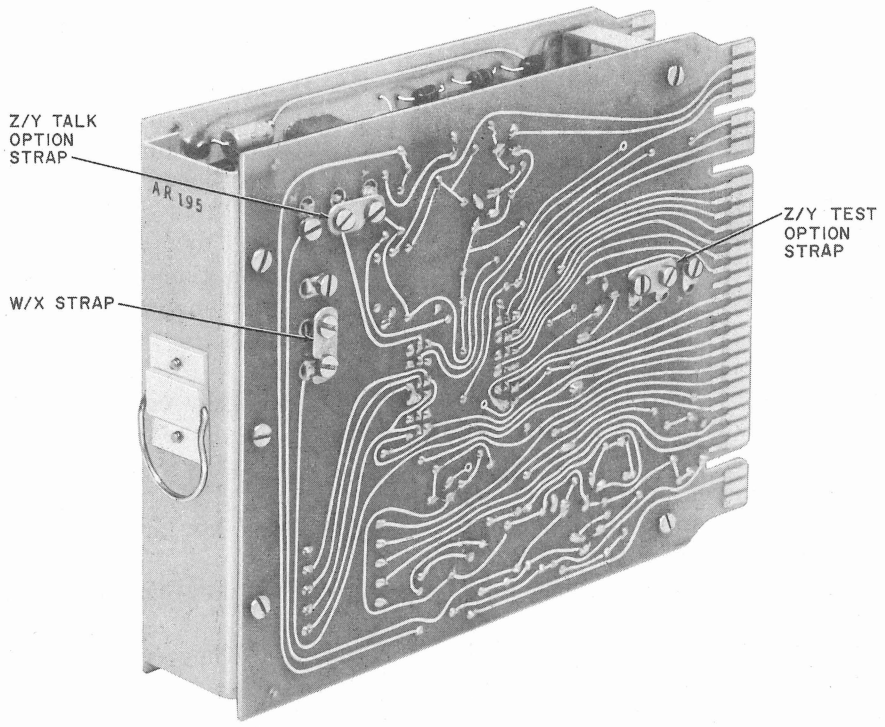


Fig. 3—Location of Straps On CPAR 171 (Part of CPAR195) For Providing XY and Z Options

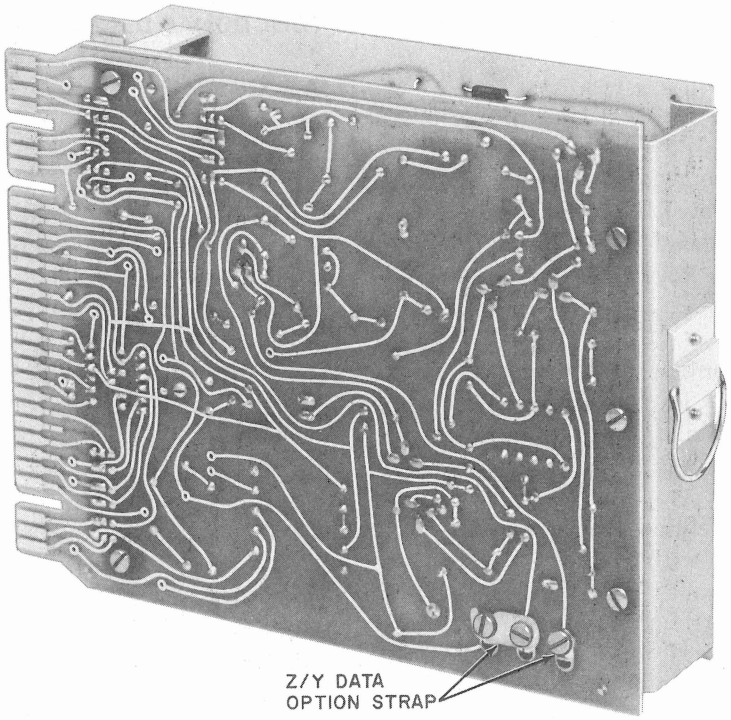


Fig. 4—Location of Straps On CP AR172 (Part of CPAR195) For Providing Z or Y Options

1.11 Table B lists the options required by Data Auxiliary Set 801C4C (ACU) when it is used in conjunction with Data Auxiliary Set 804M-type. All of the options listed in Table B, with the exception of those identified by an asterisk, are necessary for the proper operation of the auxiliary set. The options identified by the asterisk should be provided according to the service order.

2. IDENTIFICATION

PHYSICAL DESCRIPTION

2.01 The two basic types of Data Auxiliary Set 804M-type are 804M1 and 804M2. Both data auxiliary sets provide the same features and perform the same functions but differ in appearance because the 804M1 is a rotary dial version. The 804M2 is a TOUCH-TONE version. The data auxiliary sets are housed in a two-tone gray enclosure. Their dimensions are shown in Fig. 1. The sets weigh approximately five pounds each. Fig. 5 illustrates the internal components of either type set (804M1 or 804M2).

2.02 Both data auxiliary sets contain a six-button key unit. Three of the buttons have designated functions and are illustrated by Fig. 6. Table C lists their functions. The three remaining buttons are spare buttons and may be utilized as various station arrangements require them.

2.03 Suggestions for use of the spare keys are:

- As a RING key from point-to-point signaling on private line—The RING lead is connected to TB1 45, a grounded make contact on the No. 4 key. The key must be nonlocking for this operation.

- For local test control of data sets which have this feature. To provide this function, connect key 5 ("Make 4" or "Make 2") to TB1 terminals 21, 40, 41, 42, or 43 respectively.

- As a spare line pickup—Bridge the No. 1-2 TALK CONTACT with the No. 1-2, No. 4 KEY CONTACT and the No. 3-4 TALK CONTACT with the No. 5-6 No. 4 key contact. Use the T option as "A" lead control, and use TB1 23 to extend the A lead to the "TALK" line and TB1 45 to extend the A lead to the "No. 4" line. Key telephone units are used to control the connection of the transmission leads to the proper lines.

2.04 There are other key connections, or combinations of connections, which may provide other functions. The keys and their contacts are as follows:

- No. 4 key contacts 1 and 2
- No. 4 key contacts 5 and 6
- TALK key and No. 4 key combined
- TEST key contacts 5 and 6
- AUTO key contacts 5 and 6
- No. 5 key contact 1 and 3 together and contacts 2 and 6.

The SD-1D061-01, when it becomes available for field use, will provide information on the operation(s) which may be provided by the above key contacts.

FUNCTIONAL DESCRIPTION

A. General

2.05 Data Auxiliary Set 804M1 or M2 (Fig. 7) may be used with or without an ACU (801C4). If the ACU is used, connection to the data auxiliary set is made by connecting an M14E cord to TB1 of Data Auxiliary Set 804M, and an M14C cord to the 801C4 as in Fig. 8. The 801C4 is a four-wire ACU and performs the function of automatically originating calls. Calls may be originated without the use of an ACU through the Data Auxiliary Set 804M-type by operating the integrated TOUCH-TONE or rotary dial.

2.06 Functionally, Data Auxiliary Set 804M-type consists of ring detector circuitry, answer-tone generator and timer circuitry, test circuitry, lamps, keys, and line control signaling and a receive repeat coil.

TABLE B

OPTIONS REQUIRED IN

DATA AUXILIARY SET 801C4 (ACU)

WHEN USED WITH DATA ANXILIARY SET 804M TYPE

OPTION		FUNCTION PROVIDED BY THE INSTALLED OPTION
INSTALL THIS OPTION	REMOVE THIS OPTION	
Y	V, Z, & K	Loop Start
X or W*	—	Beginning or end of 2025 Hz detection.
S	T	Detection of 2025 Hz Answer-Tone.
M14E† cord	M or N	Line cord
F	Q or ZG	Data mode transfer
B	E	ACU detects tone
ZB	A or ZC	Grounded TK and CL contacts
ZJ	ZH	4-wire
ZL	ZM	Permits Data Set 804M type control of DLO.
R or H*	—	ACR Timer Control
A	G, Z, ZD	Terminate call via CRQ after DSS Turns on

Provided according to the service order
† Ordered separately

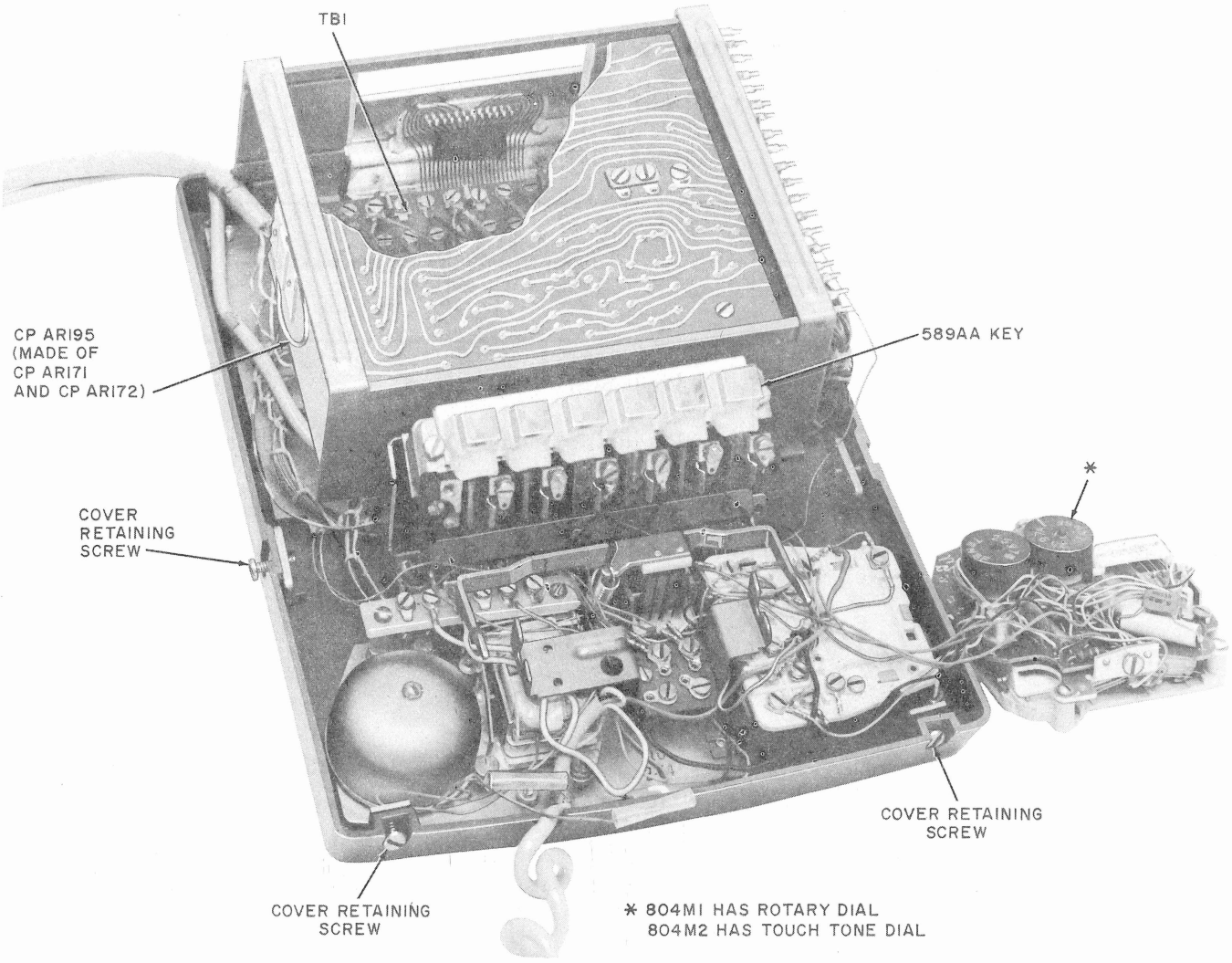


Fig. 5—Data Auxiliary Set 804M- Type, Internal Components

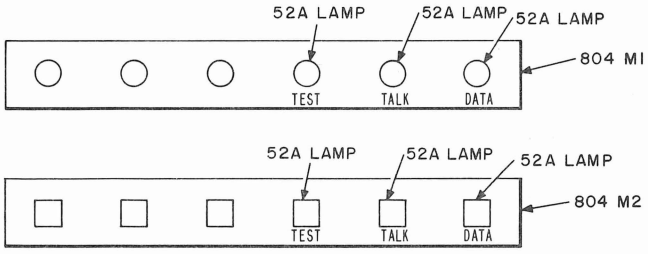


Fig. 6—Data Auxiliary Set Key Unit Designations

B. Operation

Incoming Call Function

2.07 The ringing current is applied to the ring detector circuitry which sets conditions to cause the following action:

(1) Audible ringing is heard at the Data Auxiliary Set 804M-type through the 11C or 11G apparatus circuitry ringer.

TABLE C

KEY FUNCTIONS

KEYS READING LEFT TO RIGHT	KEY DESIGNATION 804M1 or 804M2	DESCRIPTION AND FUNCTION
Spare	None	Nonlocking key which contains a 52A lamp and is to be used and labeled as required.
Spare	None	Nonlocking key which contains a 52A lamp and is to be used and labeled as required.
Spare	AUTO key when M option is used	Nonlocking blocked key which contains a 52A lamp and is to be used and labeled as required. The automatic answer feature is a suggested use.
TEST	TEST	Nonlocking key which contains a 52A lamp and is used to condition the associated data set for testing.
TALK	TALK	Locking key (no lamp) which is used to connect the telephone portion of the data auxiliary set to data line for talking.
DATA	DATA	Nonlocking key which contains a 52A lamp and is used to shift from talk to data mode.

(2) If the Data Terminal Ready (DTR) interface lead is on when the ringing current is applied, the Data Set Ready (DSR) lead is turned on by the control circuitry.

(3) The control circuitry terminates the transmit and receive pairs.

(4) The DATA lamp lights if Data Auxiliary Set 804M-type is supplied with the automatic answer feature.

(5) The answer-tone generator and timer is turned on which disables the echo suppressors and conditions Data Auxiliary Set 804M-type for data.

(6) The control circuitry transfers the data pairs through to the data set on a dry 600 ohm pair.

(7) Ground is applied to the C lead of the ACU indicating that the data set is in the data mode.

Outgoing Call Function

2.08 ***Automatic Operation of Both Ends:*** Establish the connection between stations by either dialing manually or by ACU. At the end of receiving the answer-tone (provided that end of answer-tone option is used), the ACU closes the answer leads ANS1 and ANS2 which causes Data Auxiliary Set 804M-type to transfer the dry 600 ohm line to the data set. This action lights the DATA lamp and informs the ACU that it has answered.

2.09 ***Manual Origination Automatic Answer:*** Establish the data call in the normal telephone manner. Ringing current is received and tripped by the remote station. Approximately 1.5 seconds after ringing is tripped, a 0.5 second answer-tone is heard in the originating station handset. The originator of the call depresses the DATA key. The DATA lamp at the remote station lights and the 600 ohm line is transferred to the data set.

2.10 ***Manual Origination and Manual Answer:*** Establish the call in the normal telephone manner. Both parties talk and agree to go into the data mode.

Conditioning A Data Set For Remote Testing

2.11 Data Auxiliary Set 804M-type conditions the Data Terminal Ready (DTRY) lead of the remote data set to permit the data set to operate without its associated business machine. If power being supplied from the data set to Data Auxiliary Set 804M1 is lost, the data auxiliary set will automatically go into the test mode.

Receive Repeat Coil Function

2.12 The receiver repeat coil terminates the receive pair towards the telephone line, and, when in the data mode, connects a 600 ohm dry line toward the data set. When the data set is conditioned for the talk mode, the receive repeat coil connects 150 ohms across the telephone receiver.

3. COVER REMOVAL AND REPLACEMENT

3.01 Fig. 5 shows the locations of the cover retaining screws in the base of the data set. To remove the cover, perform the following operations:

(1) Loosen but do not remove six captive cover retaining screws located in the base of the data auxiliary set.

(2) Lift off the covers, removing the rear cover first.

3.02 To replace the covers, perform the following operations:

(1) Position retaining wedges so that they will receive the cover lugs.

(2) Lower the front cover over the dial or TOUCH-TONE unit and the keys. Tilt cover forward as it is lowered.

(3) Lower the rear cover straight down and correctly position it to the base of the set.

(4) Tighten the six captive cover retaining screws.

4. INSTALLATION AND CONNECTIONS

4.01 No connections are required internal to the Data Auxiliary Set 804M-type with the exception of the service options specified on the service order.

4.02 The data auxiliary set is equipped with a D6AA-61 spade-tipped conductor cord. A D20K-61 cord must be ordered separately if the data auxiliary set is to be used with key telephone arrangements. A M14E cord, must be ordered separately when the connection is to an 801C4 ACU.

4.03 No special tools are required for installation of Data Auxiliary Set 804M-type.

4.04 The data auxiliary set must be installed in conformance with existing practices covering installation of data sets. Refer to the section entitled Data Sets, General Installation Information (590-010-200).

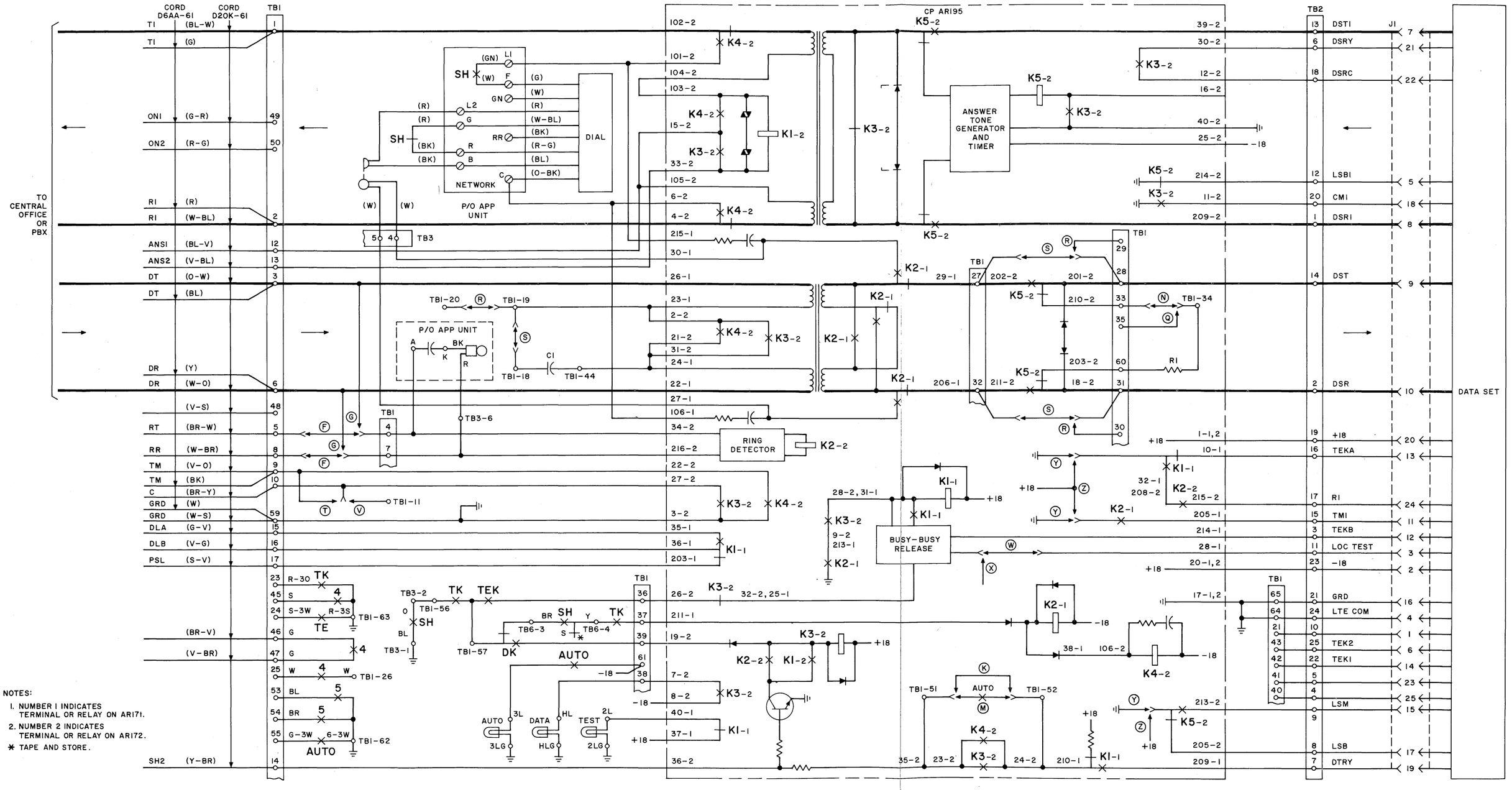
4.05 Data sets being used with Data Auxiliary Set 804M-type will have a plug-ended cord to connect to a plug at the rear of the auxiliary set.

4.06 Connect the six-conductor cord D6AA-61 and M14E cord per Fig. 8, which shows the connection to an 801C4 ACU.

4.07 Fig. 9 illustrates a typical connection of a Data Auxiliary Set 804M type to Data Auxiliary Set 801C4 (ACU) using the 20-conductor cord D20K-61.

5. INSTALLATION TESTS

5.01 After all connections for the installation have been accomplished, remove the handset from Data Auxiliary Set 804M-type and observe that the TEST lamp is lighted. Perform the steps in Table D.



NOTES:

1. NUMBER 1 INDICATES TERMINAL OR RELAY ON AR171.
2. NUMBER 2 INDICATES TERMINAL OR RELAY ON AR172.

* TAPE AND STORE.

Fig. 7—Data Auxiliary Set 804M-Type, Block Diagram

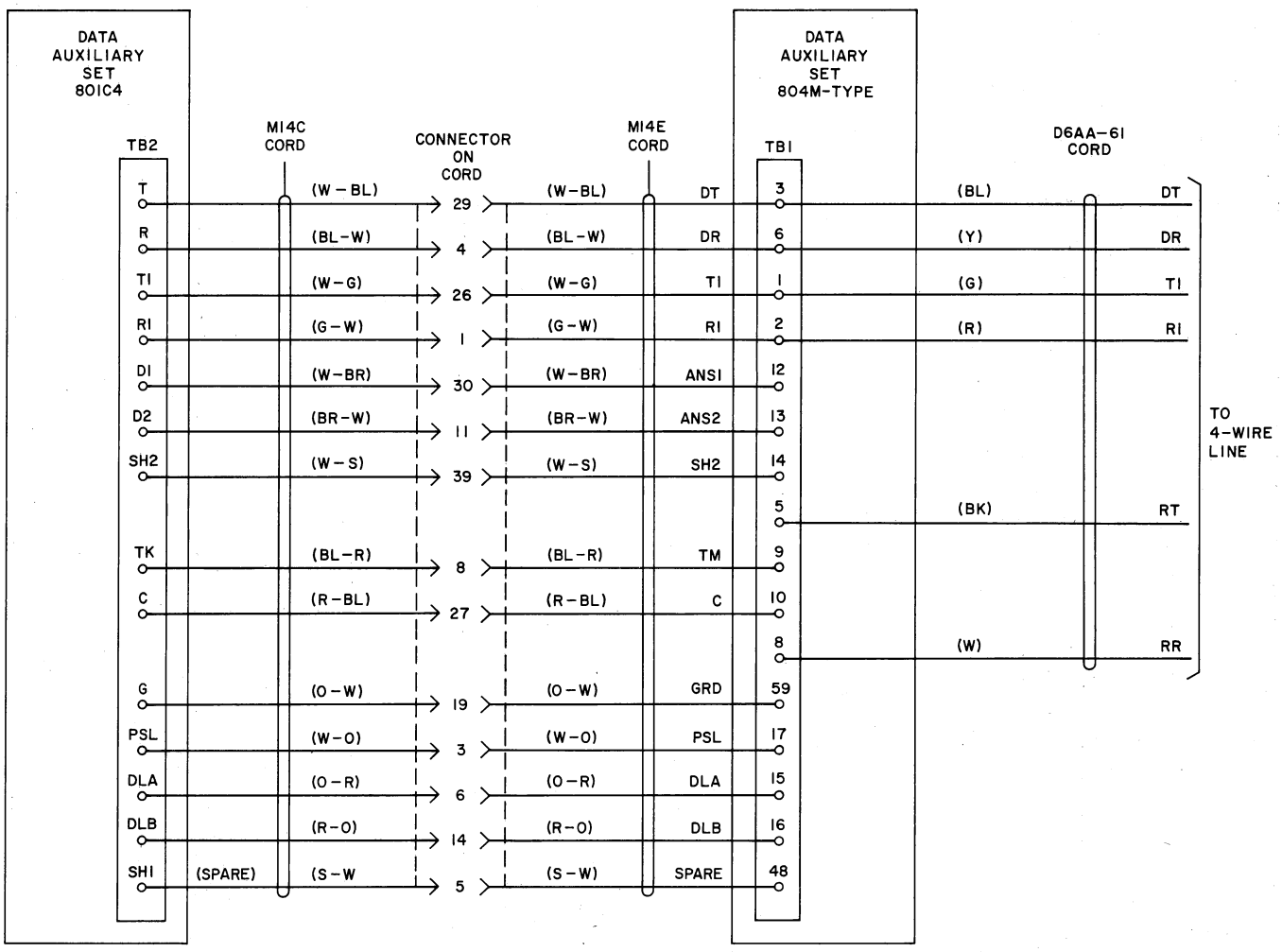


Fig. 8—Data Auxiliary Set 804M-Type, Connection Diagram Using M14E Cord

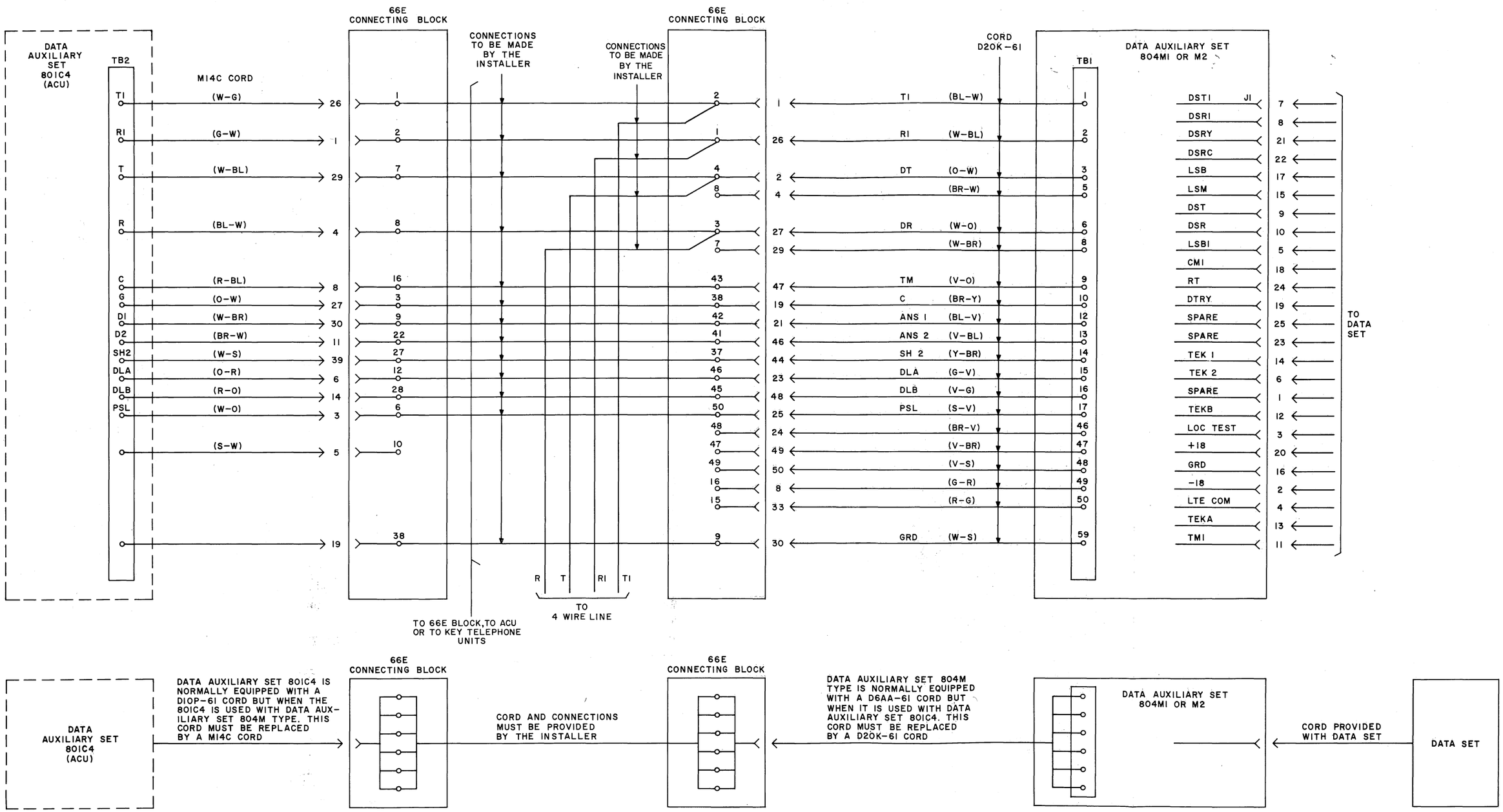


Fig. 9—Data Auxiliary Set 804M-Type, Connection Diagram Using a D6AA-61 or D20K-61 Cord

TABLE D

INSTALLATION TEST PROCEDURE

ACTION	OBSERVATION
(1) Depress TALK key.	(1) Dial tone is heard in handset. TALK lamp lights.
(2) Momentarily depress DATA key.	(2) DATA lamp lights, TEST lamp remains lighted, TALK lamp extinguishes.
(3) Depress TALK key.	(3) DATA lamp extinguishes, TEST lamp extinguishes. Dial tone is heard over the handset.
(4) Dial a Data Test Center and request test of data set.	***Note:*** If the associated data set does not have the test release feature, arrangements must be made orally with the Data Test Center for the end of test.
(5) At request of the Data Test Center, depress the TEST key and hang up.	(5) TEST lamp lights.
(6) If the AUTO ANS option is used, depress the AUTO key.	(6) AUTO lamp lights.
(7) The Data Test Center returns the call to test the data station.	(7) Ringing is heard momentarily on the handset receiver, then the DATA lamp lights.
(8) At the end of test, the Data Test Center either calls to release the line, or if the data set has test release, the set automatically releases the line.	(8) TEST lamp and DATA lamp extinguished.
(9) Either return call to the Data Test Center or have the Data Test Center call and give the test results.	