

**DATA SET 401J-TYPE
RECEIVER
INSTALLATION AND CONNECTIONS**

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1. GENERAL

1.01 This section is reissued for the following reasons:

- To provide information concerning Data Sets 401J6, 401J7, 401J8 and 401J9
- To add information necessary to meet data signal requirements

1.02 Illustrations in this section show a shop model Data Set 401J-type. Production models may vary slightly.

1.03 The procedures for the removal and replacement of the data set covers are outlined in the section entitled Data Set 401J-Type—Receiver—Maintenance (594-018-300).

1.04 Prior to installing the data set, verify that the overall facilities have been tested and meet the transmission requirements specified in the section entitled Data Systems—On Direct Distance Dialing (DDD) Network DATA-PHONE® Services—Subscriber Lines (314-205-500).

1.05 No special tools are required for the installation of the data set.

1.06 To avoid interference during data transmission, the following restrictions apply to the data line where practicable:

- (a) Use only on individual line.
- (b) Do not connect extension telephones.

1.07 To minimize inductive interference to the data signal on the telephone (data) line, the line should not be placed in the same run or raceway as the interface cable between the data set and the business machine or the lines carrying teletypewriter services. If this requirement cannot be met, it will be necessary to run the telephone (data) line in SK (shielded) station wire between the data set and the cable distribution terminal or the building entrance. The shield should be grounded at the distribution terminal end only.

1.08 The customer must furnish a 3-wire, 60-Hz ac power outlet to supply the power to the data set. This outlet must not be under the control of a switch. If 60-Hz power is not available, arrangements must be made through lines of organization with Marketing to provide it.

2. OPTION CONNECTIONS



To eliminate possible damage to electronic components in the data set, do not make power connection until all other connections have been completed.

2.01 The data set options are used to provide the type of service requested by a customer. The option connections are normally made prior to the initial installation of the data set. The options used are specified on the service order or DATAPHONE circuit layout record (CLR) card for the data set installation. The option connections can be changed at any time if necessary to meet changes in the customer service or operations.

2.02 The options for Data Sets J1D401J and 401J1 are shown in Table A. The options for Data Sets 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8 and 401J9 are shown in Table B.

TABLE A
DATA SETS J1D401J AND 401J1
OPTIONS AND CONNECTIONS

FEATURE	OPTION	DESIG	CONNECTIONS						LEAD DESIG	QUANTITY
			ON 58A CONTROL UNIT		ON TB2		ON TB1			
			FROM TERM	TO TERM	FROM TERM	TO TERM	FROM TERM	TO TERM		
Answering	Unattended (See Note 1)	G*	28	14					BR-3R	One per circuit
	Attended (See Note 2)	H†								
Ringing indication	To customer	W*	32	25					S-3W	One per circuit
Out-of- service control	By customer (See Note 3)	X†	32	29					S	
Termination	900-ohm	Q*	18	36					BR	One per circuit
	600-ohm (See Note 4)	N†	18	37					BR	
6-dB pad	Not in	S*	19			2			S	One per circuit
	In (See Note 5)	R†	19		2	1 3			S	
Answer-back tone output level	-6dBm -9dBm‡	L*	5			7			G-3R	One per circuit
		M†	5			8			G-3R	
	-3dBm -6dBm‡	K†	5			6			G-3R	
		J†	5			5				
Equip spare button 1	Momentary ground start (See Note 6)	F†					5H	5T		One per circuit

* Identifies factory-installed options.

† Identifies options that may be installed by removing the noncompatible factory-installed option and wiring as shown.

‡ Identifies options installed in J1D01J series C and above, and 401J1 series 2 and above.

Note 1: Do not connect additional ringing bridges on the data line when option G is used.

Note 2: Remove lead BR-3R (option G) at terminal 28 and dead dress with KS-19147-L9 cord insulator when option H is specified.

Note 3: Central office data line must be incoming only, equipped with standard auxiliary line circuit.

Note 4: DC battery must be furnished on private line installations.

Note 5: This option is used only on short telephone lines with unusual noise conditions.

Note 6: This option is used only when the data set is connected to Data Auxiliary Set 801-type.

TABLE B

DATA SETS 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8,
AND 401J9, OPTIONS AND CONNECTIONS

FEATURE	OPTION	DESIG	AVAILABLE ON				CONNECTIONS				QUANTITY
			401J2 401J6	401J3 401J7	401J4 401J8	401J5 401J9	ON TB1		ON TB2		
							FROM TERM	TO TERM	FROM TERM	TO TERM	
Answering	Unattended (See Note 1)	G	*	*	*	*			22	23	One per circuit
	Attended	H	†	†	†	†			24	23	
Ringing indication	To customer	W	*	*	*	*			7	8	One per circuit
Out-of- service control	By customer (See Note 2)	X	†	†	†	†			7	6	
Termina- tion	900-ohm	Q	*	*	*	*			20	21	One per circuit
	600-ohm (See Note 3)	N	†	†	†	†			20	19	
6-dB Pad	Not in	S	*	*	*	*			2	3	One per circuit
	In (See Note 4)	R	†	†	†	†			2 3	1 4	
Answer- back tone output level	-6dBm -9dBm‡	T	*	*	*	*			16 13	17 14	One per circuit
	-9dBm -12dBm‡	M	†	†	†	†			27 13	26 14	
	-3dBm -6dBm‡	K	†	†	†	†			27 13	28 14	
	0dBm -3dBm‡	J	†	†	†	†			15	16	
Equip spare button 1	Momentary ground start to line for dial tone (See Note 5)	F	†	†	†	†	16	17			One per circuit

TABLE B (Cont)

FEATURE	OPTION	DESIG	AVAILABLE ON				CONNECTIONS		QUANTITY
			401J2 401J6	401J3 401J7	401J4 401J8	401J5 401J9	FROM CPS4	TO TB2 TERM	
Answer-back	Voice	E		*		*	O-3R R-3W R BR-3BK Y Y-G	31 32 33 34 35 36	One per circuit
	8F-type (rotary)	V	*	*			CONNECTION ON 4010B NETWORK		One per circuit
							COLOR CODE	TERM	
							W G BL W	R BR F GN	
	35-type (TOUCH-TONE)	Y			*	*	O-BK BL R R-G W BK G	C B L2 R G RR F	

* Identifies options installed by the factory.

† Identifies options that may be installed by removing the noncompatible factory-supplied option and wiring as shown.

‡ Identifies options installed in 401J2 through 401J5 series 4 and above and all 401J6 through 401J9.

Note 1: Do not connect additional ringing bridges on the data line when option G is used.

Note 2: Central office data line must be incoming only, equipped with standard auxiliary line circuit.

Note 3: DC battery must be furnished on private line installations.

Note 4: This option is used only on short telephone lines with unusual noise conditions.

Note 5: This option is used only when the data set is connected to Data Auxiliary Set 801-type.

Note: Data Set J1D401J, 401J1, 401J2, 401J3, 401J4 and 401J5 are now rated manufacture discontinued (MD), but they are covered in this section to provide information for those units already in the field.

2.03 All in-service data sets must meet signal level requirements which allow the data signal to be no greater than -12 dBm at the serving central office.

2.04 The answer-back tone in Data Sets J1D401J, series B and below; 401J1, series 1; and 401J2, 401J3, 401J4 and 401J5, series 3 and below may require padding to meet the requirements mentioned in 2.03 (refer to Fig. 1 for pad construction and connection information).

2.05 The pad will attenuate the data set output to meet the 12dBm requirement. Table C shows the pad value required for different values

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of loop loss and data set output. The pad can be constructed locally or ordered from Western Electric Company as shown in Fig. 1.

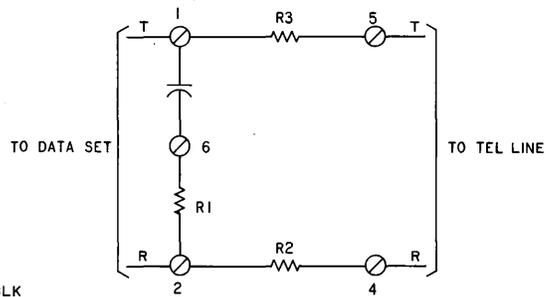
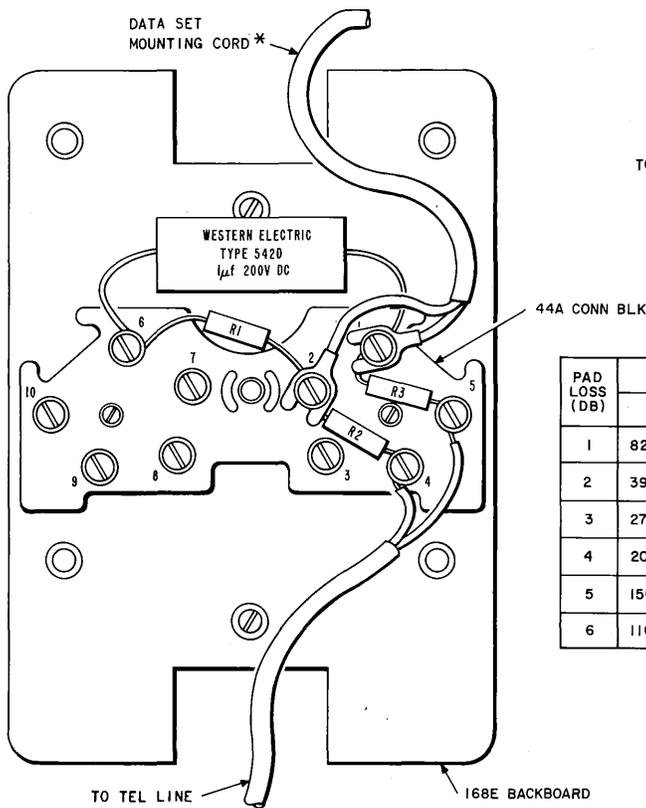
2.06 The procedure for connecting the options of the data set is as follows.

- (a) Remove the covers of the data set.
- (b) Connect the necessary options as shown in either Table A or Table B on terminal boards TB1 (see Fig. 2) and TB2 (see Fig. 3 and 4), and on the 58A control unit or the 3A3 data unit, depending on the data set code.
- (c) Replace the covers of the data set.

3. INSTALLATION PROCEDURES

3.01 Data Set 401J-type shall be installed in conformance with the existing practices covering installation of station sets. Refer to the section entitled Data Sets—General Installation Information (590-010-200).

Note: To minimize noise and interference, the business machine and the data set should be served from the same ac distribution panel. A test using the 6A impulse counter should be made to detect any noise as outlined in the section entitled Data Set 401J-Type—Test Procedures (594-018-500). If the test requirements are not met, a bond must be provided to improve the grounding condition between the business machine and the data set. The



PAD LOSS (DB)	RESISTOR VALUE (OHMS)				ORDERING INFORMATION
	R1		R2 AND R3		
1	8200	GRAY RED RED	47	YELLOW VIOLET BLACK	F-58101
2	3900	ORANGE WHITE RED	110	BROWN BROWN BROWN	F-58102
3	2700	RED VIOLET RED	160	BROWN BLUE BROWN	F-58103
4	2000	RED BLACK RED	220	RED RED BROWN	F-58104
5	1500	BROWN GREEN RED	240	RED YELLOW BROWN	F-58105
6	1100	BROWN BROWN RED	270	RED VIOLET BROWN	F-58106

- NOTES:**
- 1. RESISTORS ARE ALLEN BRADLEY, 1 WATT, 5% TOLERANCE (KS-19151 L1). CAPACITOR IS WESTERN ELECTRIC CO. 542D TYPE, 1µF, 200VDC.
 - 2. A 101C TYPE COVER SHOULD BE USED TO PROTECT THE PAD.
 - 3. THE PAD VALUE SHOULD BE STENCILED ON COVER FOR FUTURE REFERENCE.

* STORE UNUSED CONDUCTORS ON VACANT TERMINALS

Fig. 1—Pad Construction and Connections

TABLE C

OUTPUT LEVEL AND PAD LOSS REQUIRED FOR LOOP LOSS ON EARLIER MODEL DATA SETS

LOOP LOSS AT 1 KHZ (DB)	DATA SET OUTPUT LEVEL	PAD LOSS REQUIRED
0-1	-9	3
1-2	-9	2
2-3	-9	1
3-6	-9	None
6-9	-6	None
9-12	-3	None

method of providing this bond should be in accordance with the local instructions.

3.02 The data set must be located within the range of the business machine interface connector cord, which is supplied by the customer. The interface connector cord should not exceed 50 feet in length and should connect to data set interface connector J2 as shown in Fig. 5.

3.03 Connect the data set mounting cord (see Fig. 5) to the telephone line connector block. For specific connection information on the data set mounting cord, refer to Part 4.

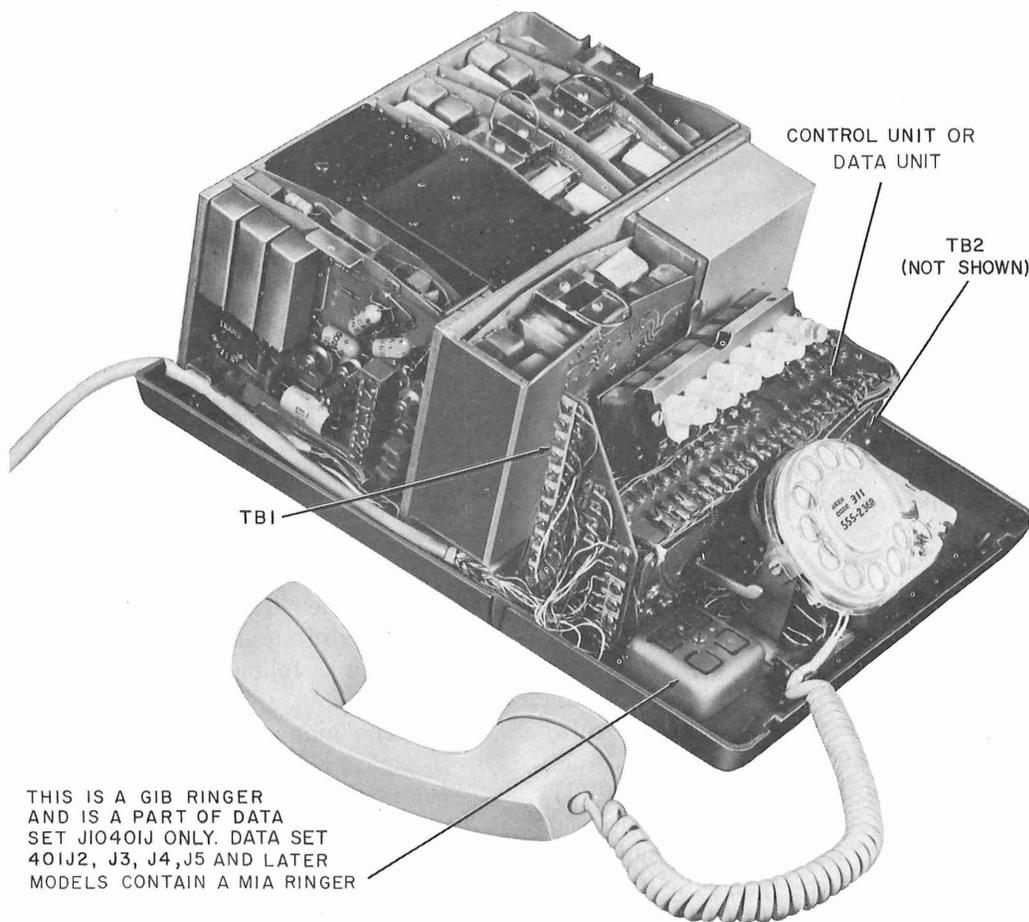


Fig. 2—Data Set 401J, Inside View

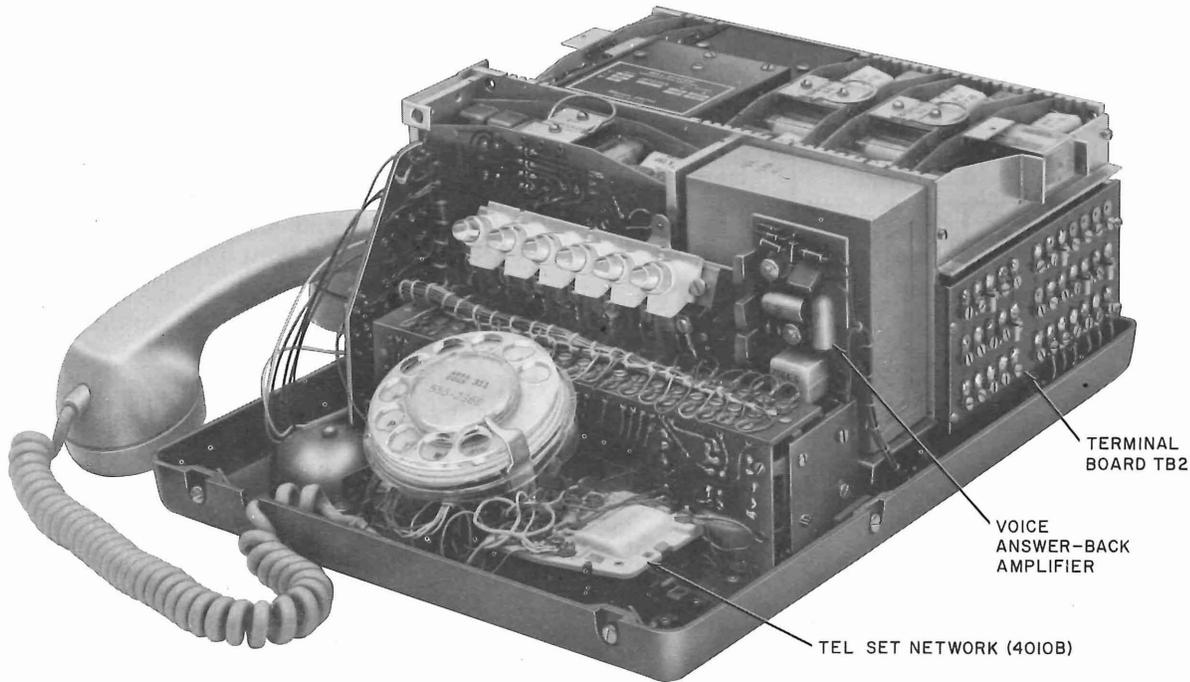


Fig. 3—Data Set 401J3 and 401J7, Inside View

3.04 To complete the installation of the data set, apply power to the set. This is done by connecting the ac power cord (shipped with the data set) to the ac power connector on the data set (see Fig. 5) and to the customer-supplied ac outlet.

4. CONNECTION ARRANGEMENTS

4.01 Data Sets J1D401J, 401J1, and the early model Data Sets 401J2, 401J3, 401J4, and 401J5 were equipped at the factory with a D6AA-61 mounting cord. Later models of the 401J2, 401J3, 401J4, 401J5 and all models of the 401J6, 401J7, 401J8 and 401J9 come factory-equipped with the D10P-61 mounting cord. The connection arrangements for the mounting cord and the models of Data Set 401J-type are as follows.

- (a) The arrangement for Data Sets J1D401J and 401J1 is shown in Fig. 6.
- (b) The arrangement for Data Sets 401J2 or 401J4 is shown in Fig. 7.
- (c) The arrangement for Data Sets 401J3 or 401J5 is shown in Fig. 8.



Spare buttons must be unblocked before they are used.

4.02 If the spare pushbutton keys of the data set are to be used as signaling keys or for spare telephone line pickups, the D6AA-61 or D10P-61 mounting cord on each model of the data set must be replaced as follows.

- (a) The mounting cord of Data Sets J1D401J and 401J1 must be replaced with a D30B-61 mounting cord arranged as shown in Fig. 9.
- (b) The mounting cords of Data Sets 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8 and 401J9 must be replaced with D24D-61 mounting cords arranged as shown in Fig. 10.

4.03 The method for converting the spare pushbutton keys to signal keys is shown in Table D.

4.04 Data Set 401J-type can be arranged to operate with Data Auxiliary Set (DAS) 801-type (automatic calling unit). The connection arrangements

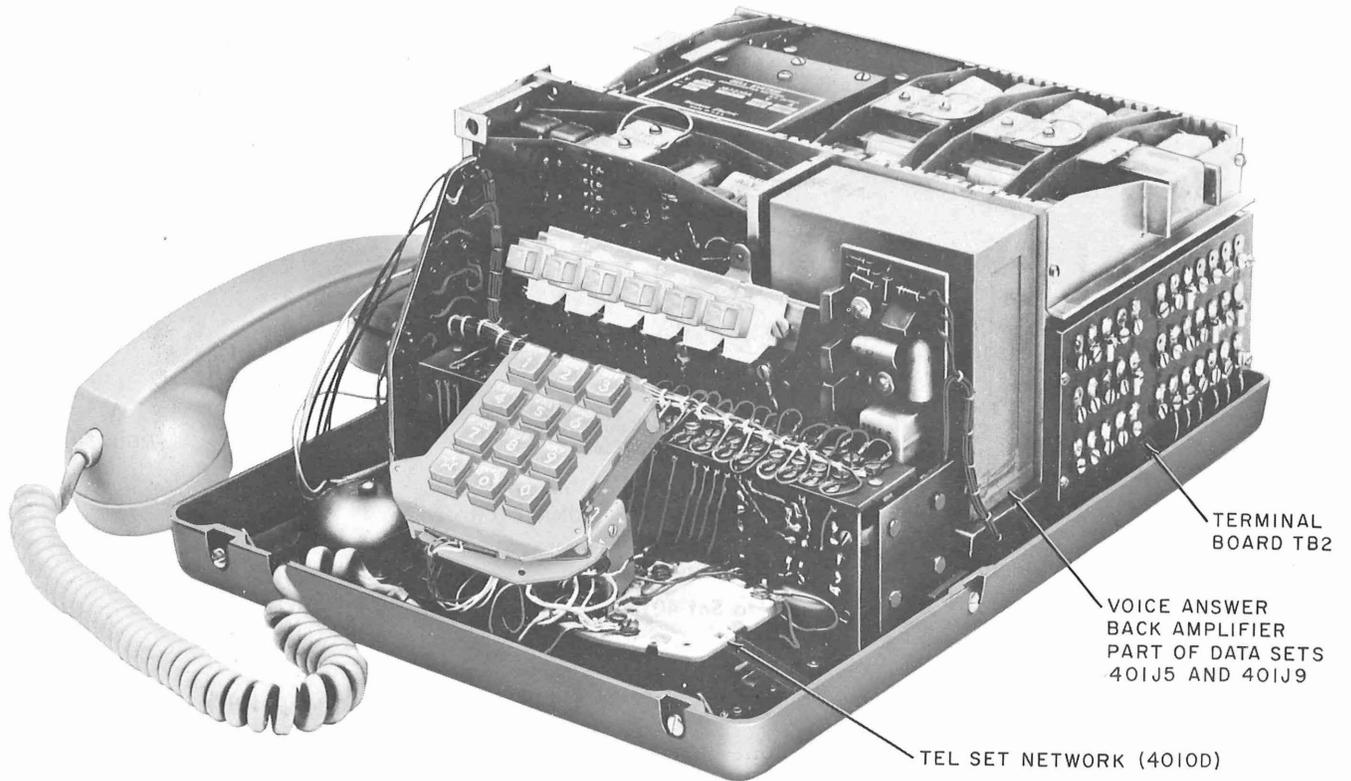


Fig. 4—Data Set 401J5 and 401J9, Inside View

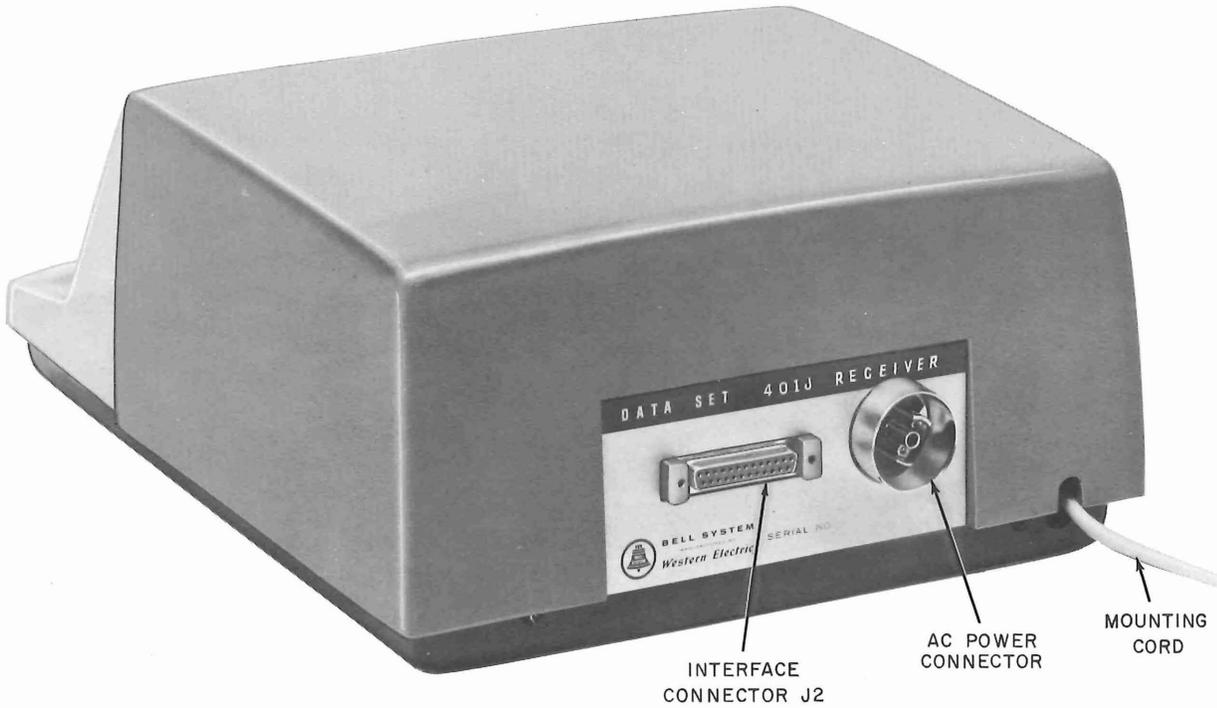


Fig. 5—Data Set 401J-Type, Rear View

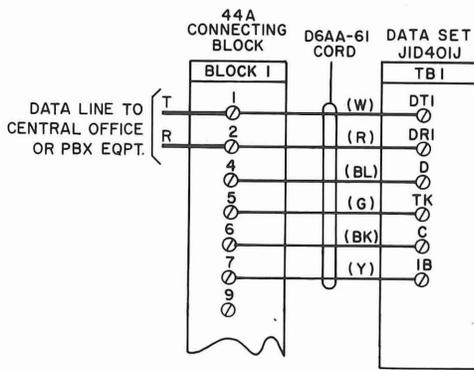


Fig. 6—Data Set J1D401J, 401J1, Connections (D6AA-61 Cord)

for the models of the data set with DAS 801-type are as follows.

- (a) The connection arrangement for Data Sets J1D401J and 401J1 is shown in Fig. 11.
- (b) The connection arrangement for Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7,

401J8 or 401J9 using a D10P-61 mounting cord is shown in Fig. 12.

(c) The connection arrangement for Data Set 401J2 or 401J4 using a D6AA-61 mounting cord is shown in Fig. 13.

(d) The connection arrangement for Data Set 401J2, 401J4, 401J6 or 401J8 using the D24D-61 mounting cord is shown in Fig. 14.

(e) The connection arrangement for Data Set 401J3, 401J5, 401J7 or 401J9 using the D24D-61 mounting cord is shown in Fig. 15.

4.05 Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8 or 401J9 can be arranged for a standard key telephone interface. The connection arrangements for the data sets are as follows.

(a) The connection arrangement for Data Set 401J2 or 401J4 using the D6AA-61 mounting cord is shown in Fig. 16.

(b) The connection arrangement for Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7,

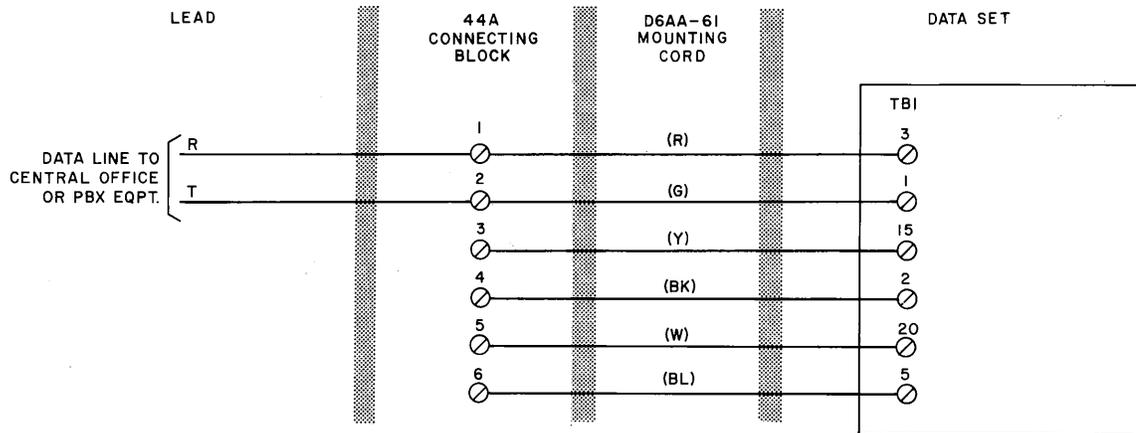


Fig. 7—Data Set 401J2 or 401J4, Connections (D6AA-61 Cord)

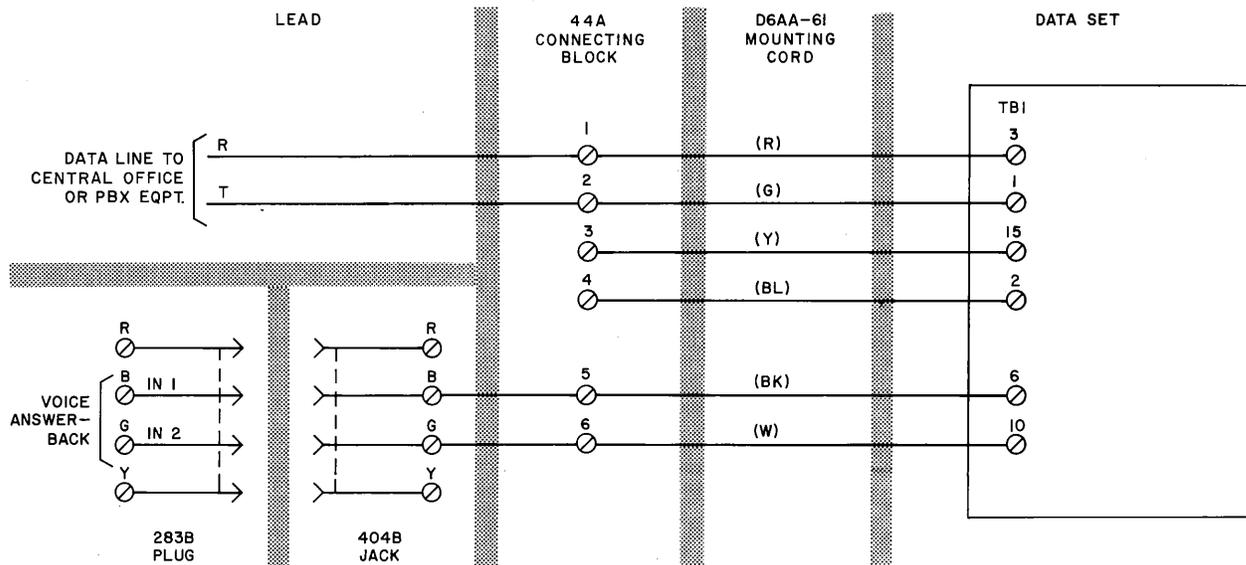


Fig. 8—Data Set 401J3 or 401J5, Connections (D6AA-61 Cord)

401J8, or 401J9 using the D10P-61 mounting cord is shown in Fig. 17.

(c) The connection arrangement for Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, or 401J9 using the D24D-61 mounting cord is shown in Fig. 18.



The switchhook wiring of series 1 sets of Data Set 401J2, 401J3, 401J4, or 401J5 must be modified to provide A lead control on the data line for use

in key telephone systems. Failure to make this change will result in the data line going into a false hold condition when the handset of the data set is placed on-hook to release the data line.

4.06 To provide A lead control on the data line for use in key telephone systems, the switchhook wiring of series 1 sets of Data Set 401J2, 401J3, 401J4, or 401J5 must be corrected for proper sequencing of the A lead.

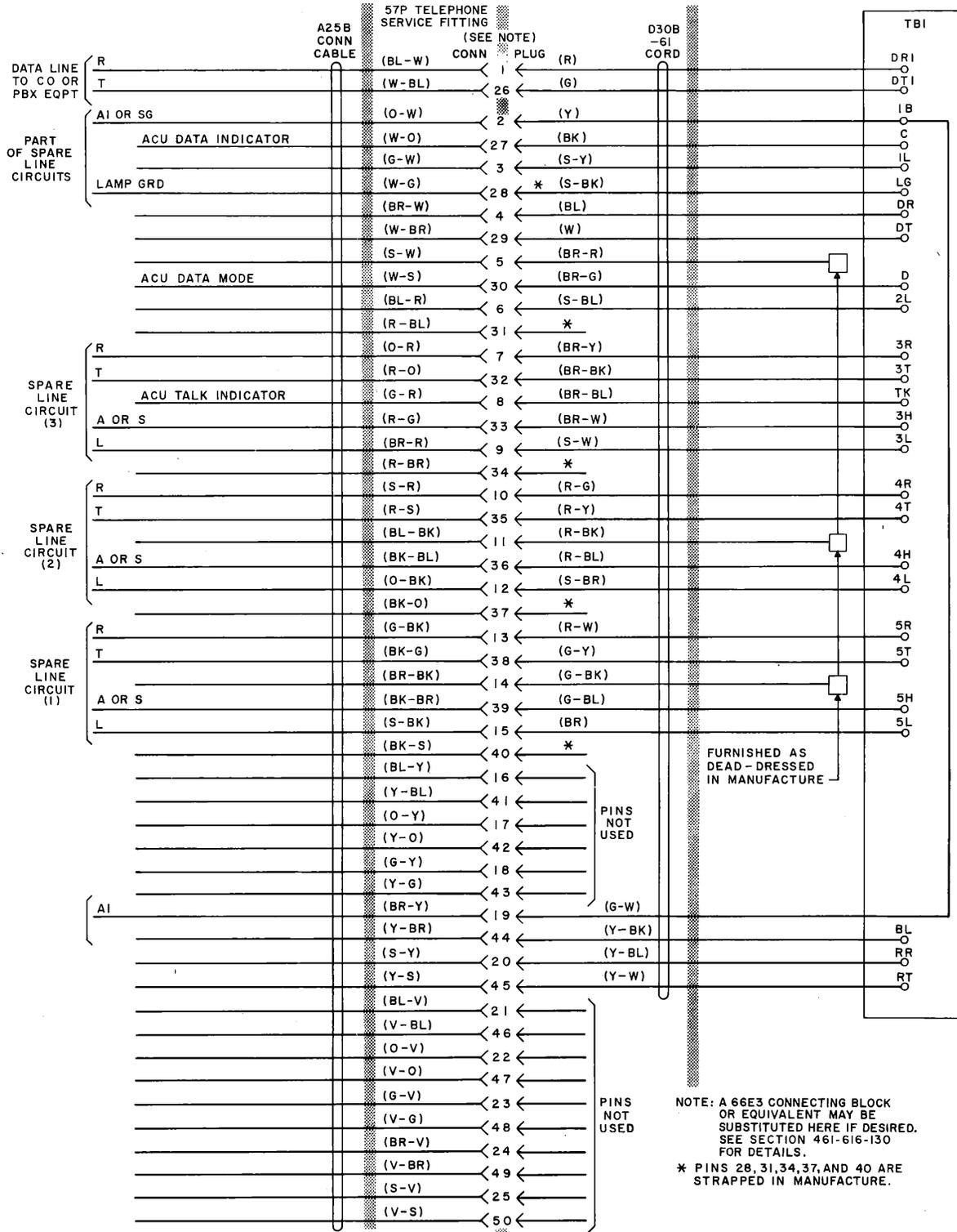
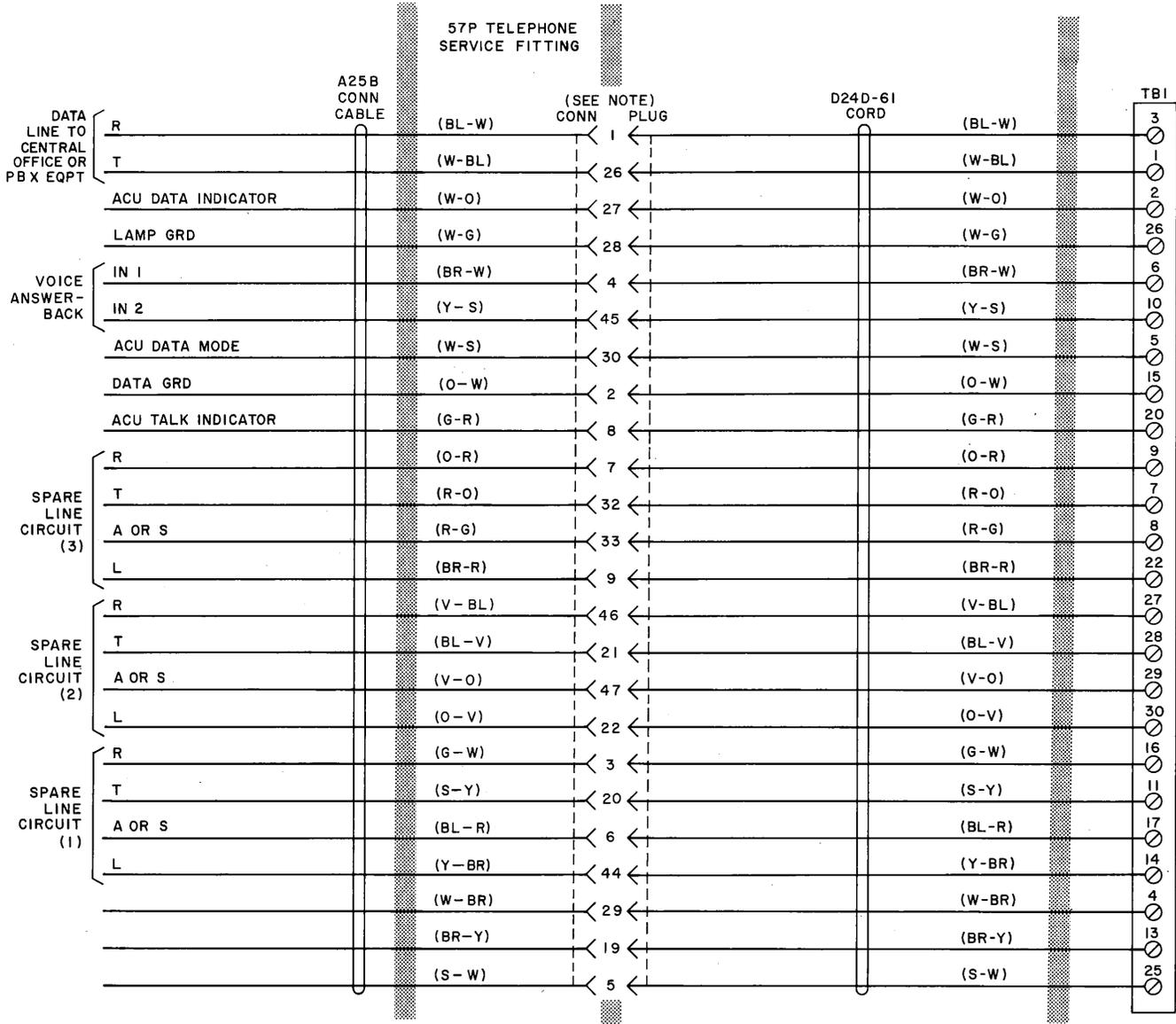


Fig. 9—Data Set J1D401J or 401J1, Connections (D30B-61 Cord)



NOTE:
 A 66E3 CONNECTING BLOCK
 OR EQUIVALENT MAY BE
 SUBSTITUTED HERE IF DESIRED.
 SEE SECTION 461-616-130
 FOR DETAILS.

Fig. 10—Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, or 401J9, Connections (D24D-61 Cord)

TABLE D
SPARE KEY TO SIGNAL KEY CONVERSION

SPARE KEY NO.	APPARATUS CONVERSION	CIRCUIT CONVERSION		
		MOVE		
		LEAD	FROM TB1	TO TB1
3	Remove P-12A892 screw and P-12A858 blocking ring	BR	24	15
2	Same as key 3	S-BR	24	15
1	Same as key 3	—	<i>Note:</i> Do not attempt circuit conversion of this key until keys 3 and 2 have been converted or when option F is used. (See Tables A and B.) Otherwise, make conversion by strapping from terminal 24 to 15.	

(a) To correct the switchhook wiring of Data Set 401J2 or 401J3, perform the following.

- (1) Remove the data set covers.
- (2) Remove the following leads from terminals on the telephone set network of the data set (see Fig. 3):

- Yellow and slate (Y)(S) leads from terminal F
- Brown (Br) lead from terminal L1
- White (W) lead from terminal G
- Green (G) lead from terminal L2

(3) Connect the following leads to the terminals on the telephone set network of the data set (see Fig. 3):

- Yellow and slate (Y)(S) leads to terminal G
- Brown (Br) lead to terminal L2
- White (W) lead to terminal F

- Green (G) lead to terminal L1

(4) Replace the data set covers.

(b) To correct the switchhook wiring of Data Set 401J4 or 401J5, perform the following.

- (1) Remove the data set covers.
- (2) Remove the following leads:

- Yellow and slate (Y)(S) leads from terminal F of the telephone set network (see Fig. 4)
- Brown (Br) lead from terminal L1 of the telephone set network (see Fig. 4)
- White (W) lead from TB3-3 (under the dial shown in Fig. 4)
- Green (G) lead from TB3-4 (under the dial shown in Fig. 4)

(3) Connect the following leads:

- Yellow and slate (Y)(S) leads to TB3-3 (see Fig. 4)

- Brown (Br) lead to TB3-4 (see Fig. 4)
- White (W) lead to terminal F of the telephone set network
- Green (G) lead to terminal L1 of the telephone set network

(4) Replace the data set covers.

4.06 A connection arrangement for Data Set 401J-type station arrangement with automatic exclusion circuitry is shown in Fig. 19.

4.07 A connection arrangement for Data Set 401J-type and the 6040/6050-type station control key is shown in Fig. 20.

4.08 A typical station arrangement using Data Set 401J-type, the 6040/6050-type station control keys, and automatic exclusion circuitry is shown in Fig. 21.

5. INSTALLATION TESTING

5.01 Upon completion of the installation, Data Set 401J-type must be tested as outlined in the section entitled Data Set 401J-Type Receiver—Test Procedures (594-018-500). These tests must be performed to ensure the proper operation of the data set following the installation.

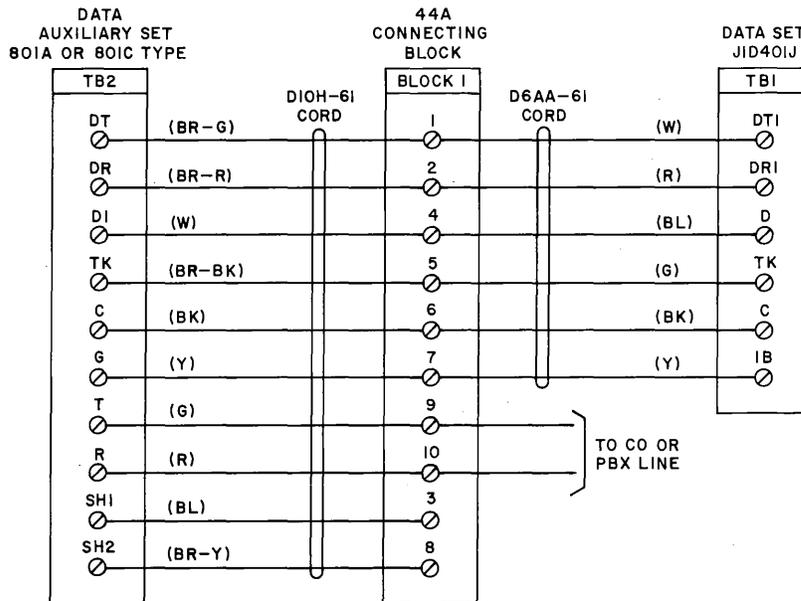


Fig. 11—Data Set 401J1 or J1D401J (D6AA-61 Cord), Connections to Data Auxiliary Set 801-Type

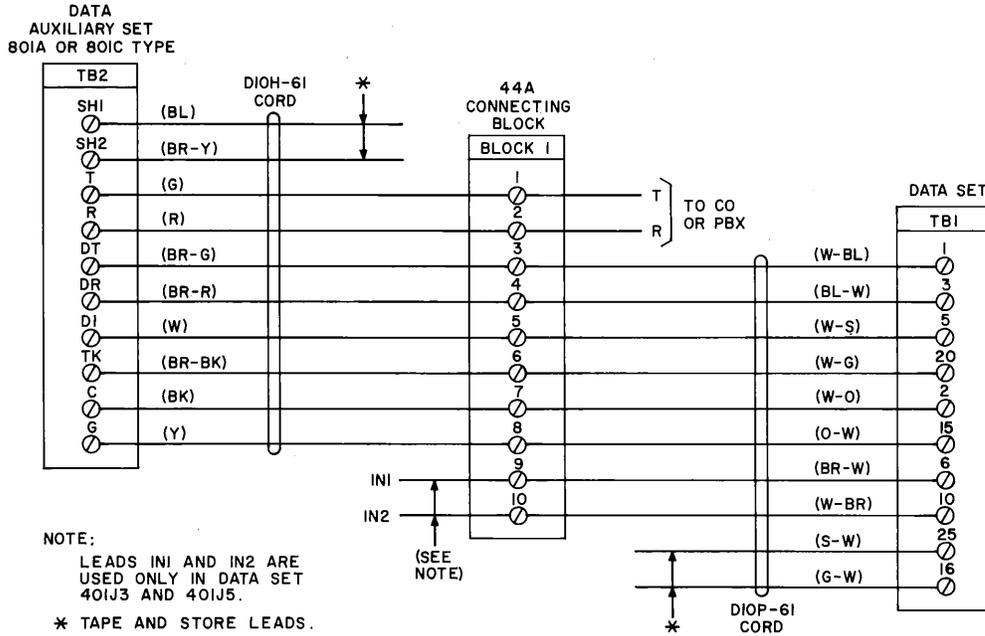


Fig. 12—Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, or 401J9 (D10P-61 Cord), Connections to Data Auxiliary Set 801-Type

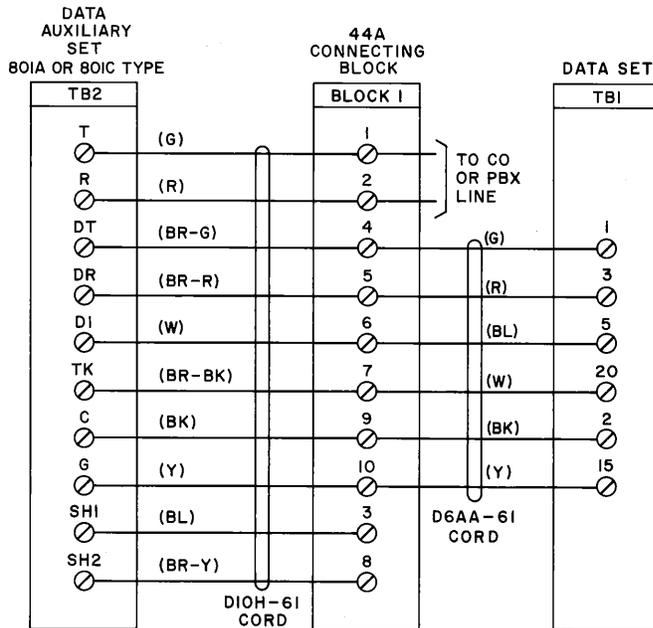


Fig. 13—Data Set 401J2 or 401J4 (D6AA-61 Cord), Connections to Data Auxiliary Set 801-Type

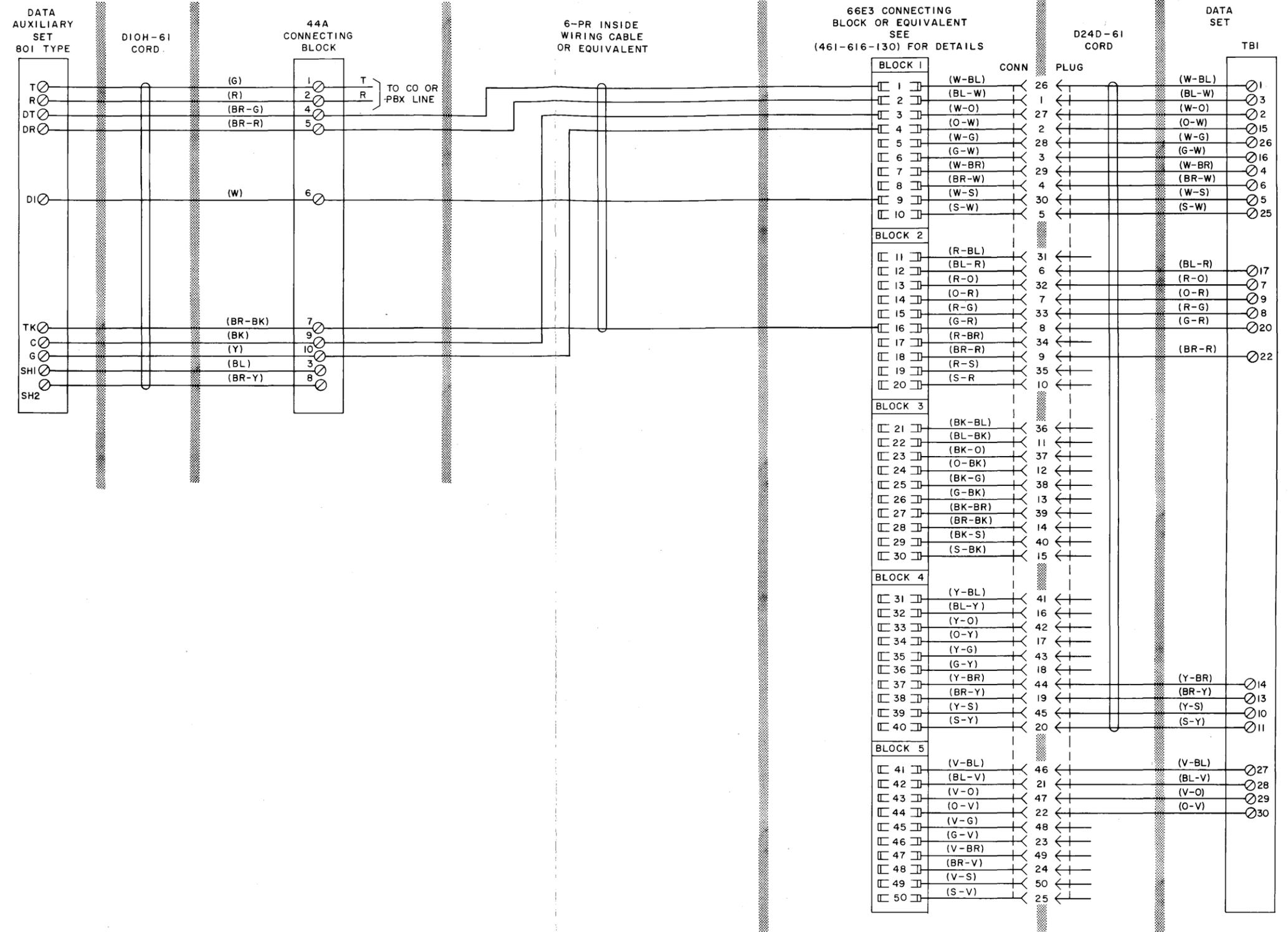


Fig. 14—Data Set 401J2, 401J4, 401J6, or 401J8 (D24D-61 Cord), Connections to Data Auxiliary Set 801-Type

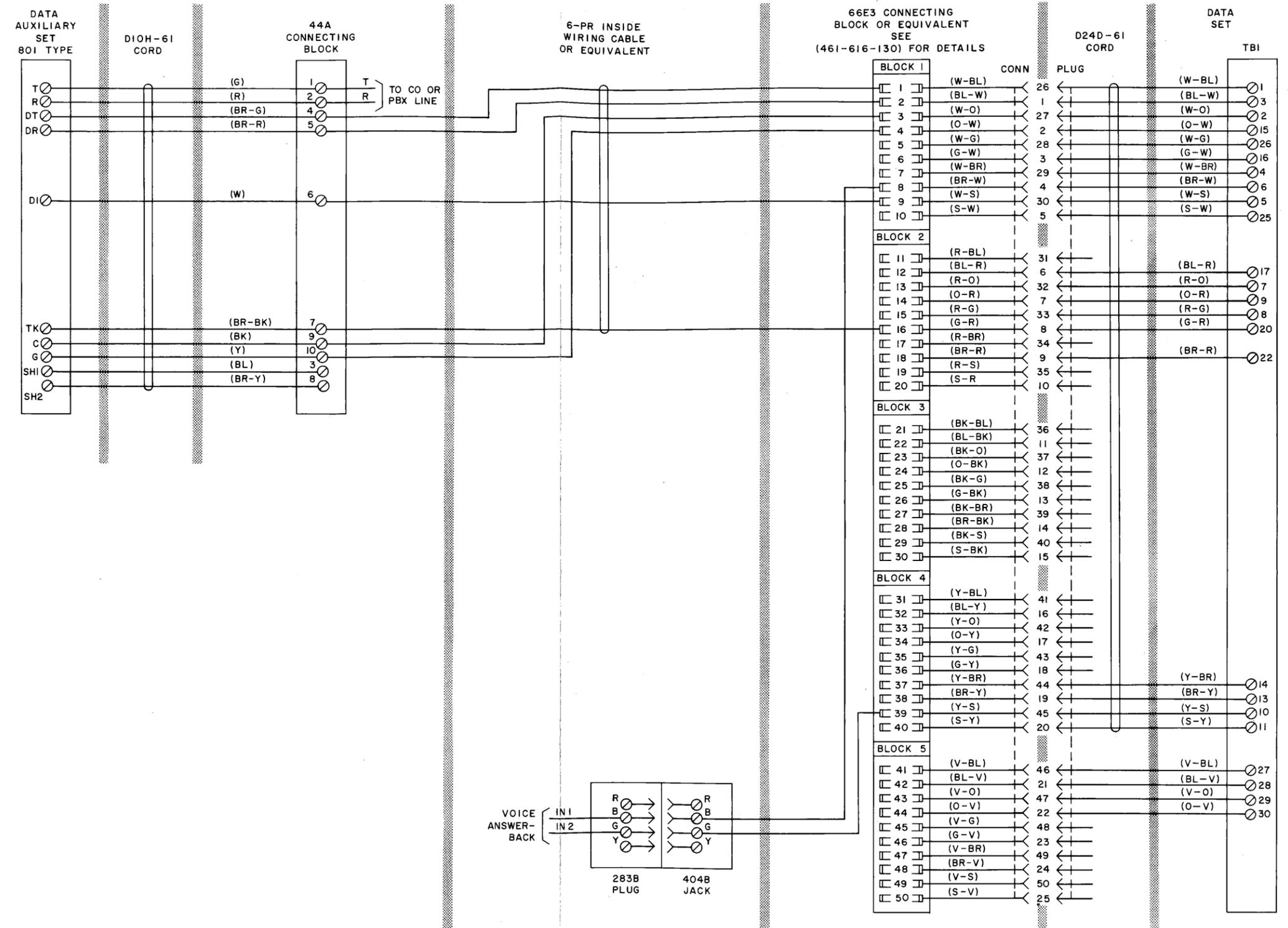


Fig. 15—Data Set 401J3, 401J5, 401J7 or 401J9 (D24D-61 Cord) Connections to Data Auxiliary Set 801-Type

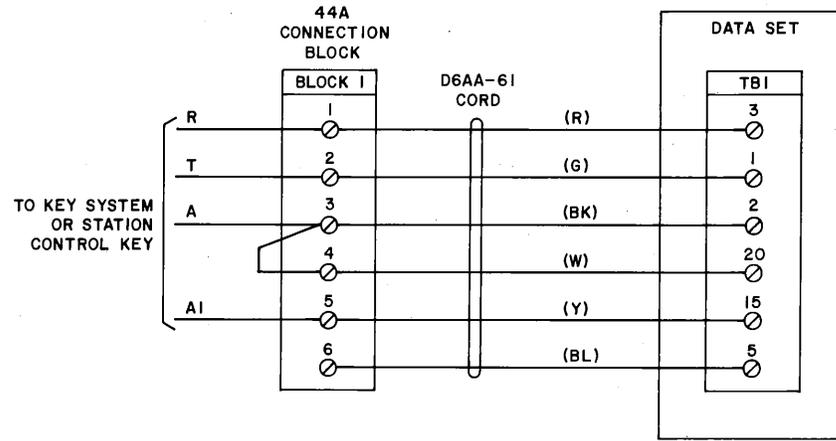


Fig. 16—Data Set 401J2 or 401J4 (D6AA-61 Cord), Connections for Standard Key Telephone Interface

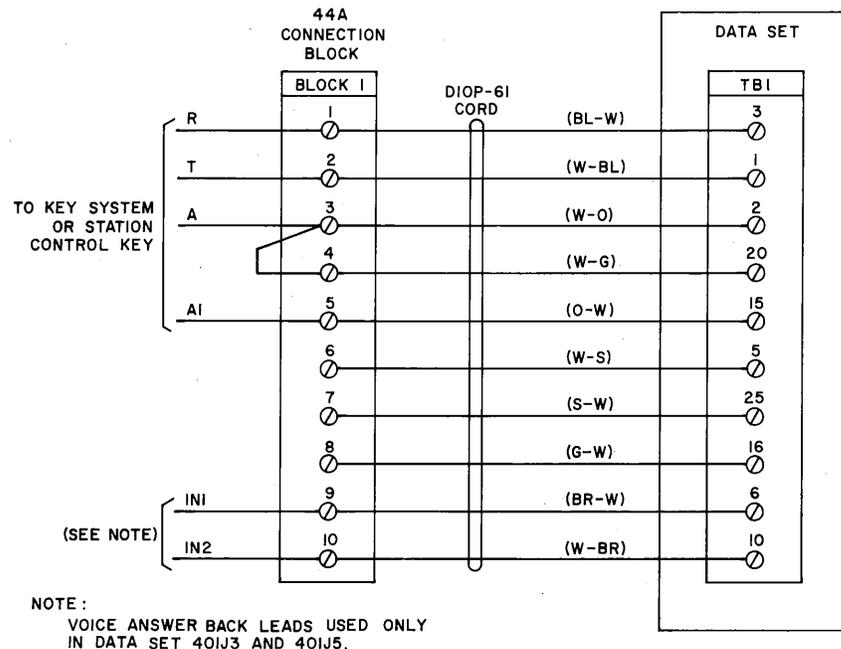


Fig. 17—Data Set 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, or 401J9 (D10P-61 Cord), Connections for Standard Key Telephone Interface

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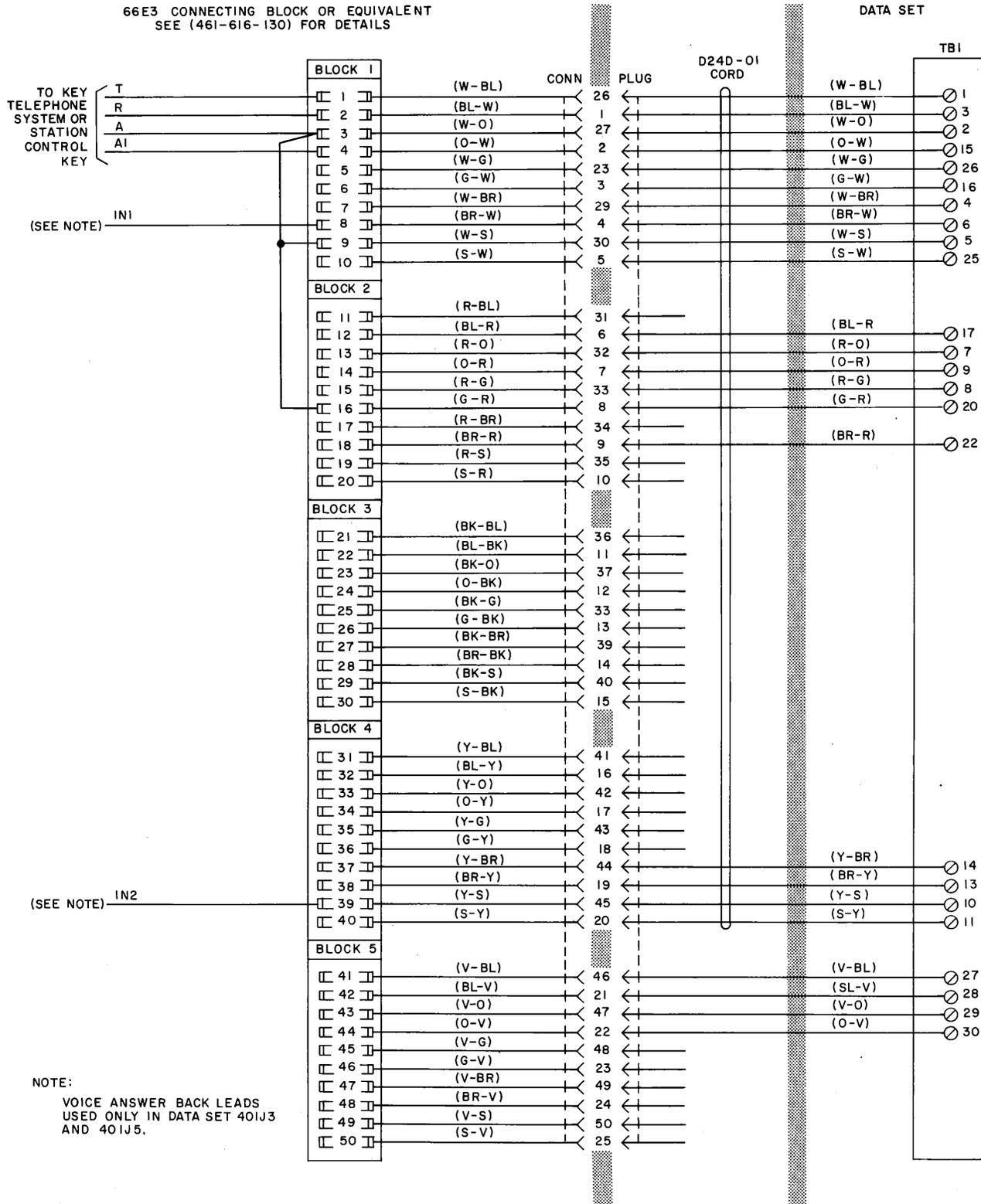
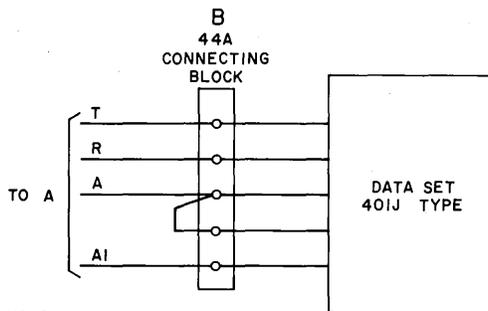
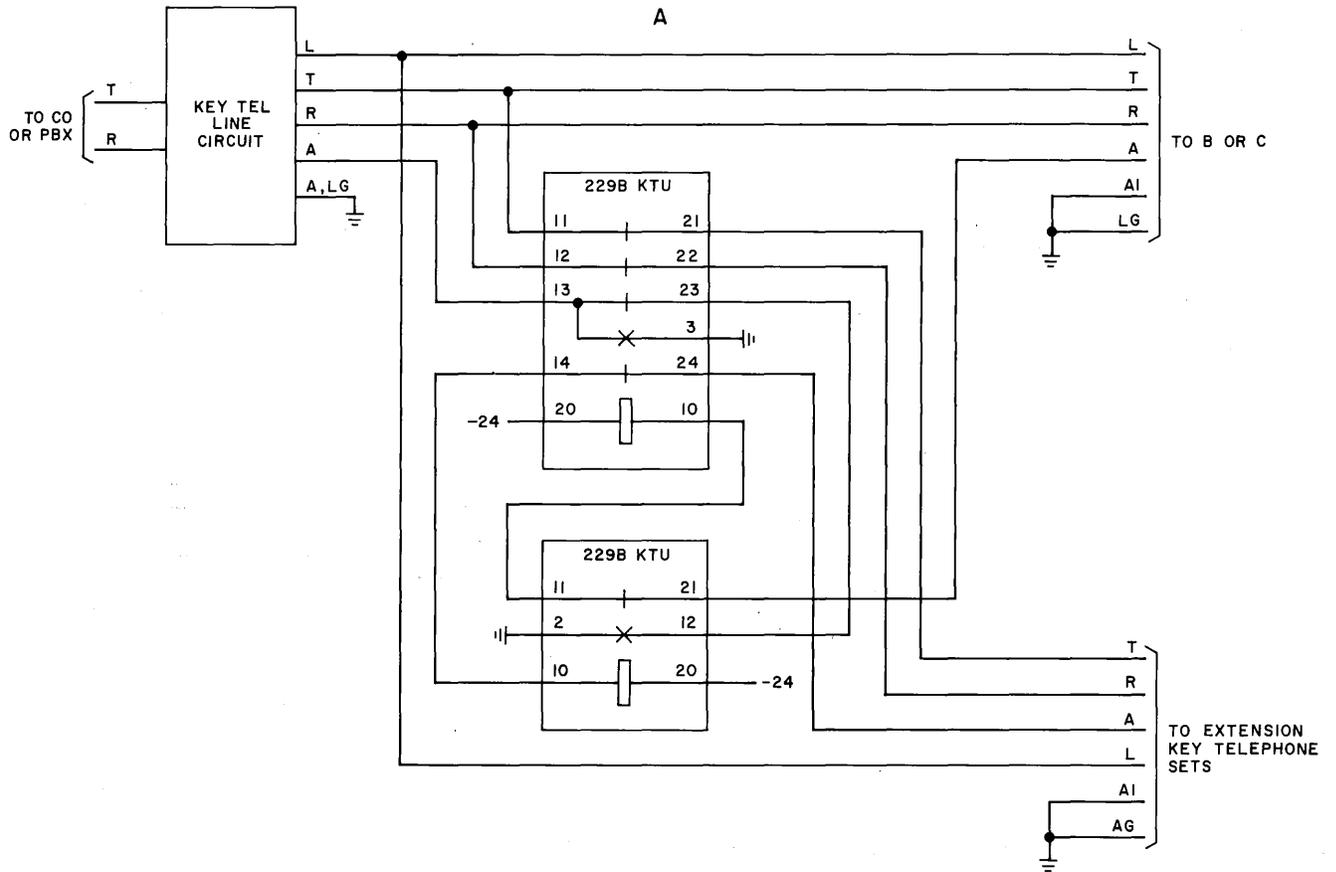


Fig. 18—Data Sets 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, or 401J9 (D24D-61 Cord) Connections for Standard Key Telephone Interface



NOTE:
LEAD LG IS NOT REQUIRED BY
THE DATA SET 401J TYPE.

C
AUTOMATIC EXCLUSION CIRCUITRY
CAN BE CONNECTED DIRECTLY TO
6040/6050 TYPE STATION CONTROL
KEY AS SHOWN IN FIG 19.

Fig. 19—Data Set 401J-Type, Station Arrangement With Automatic Exclusion Circuitry

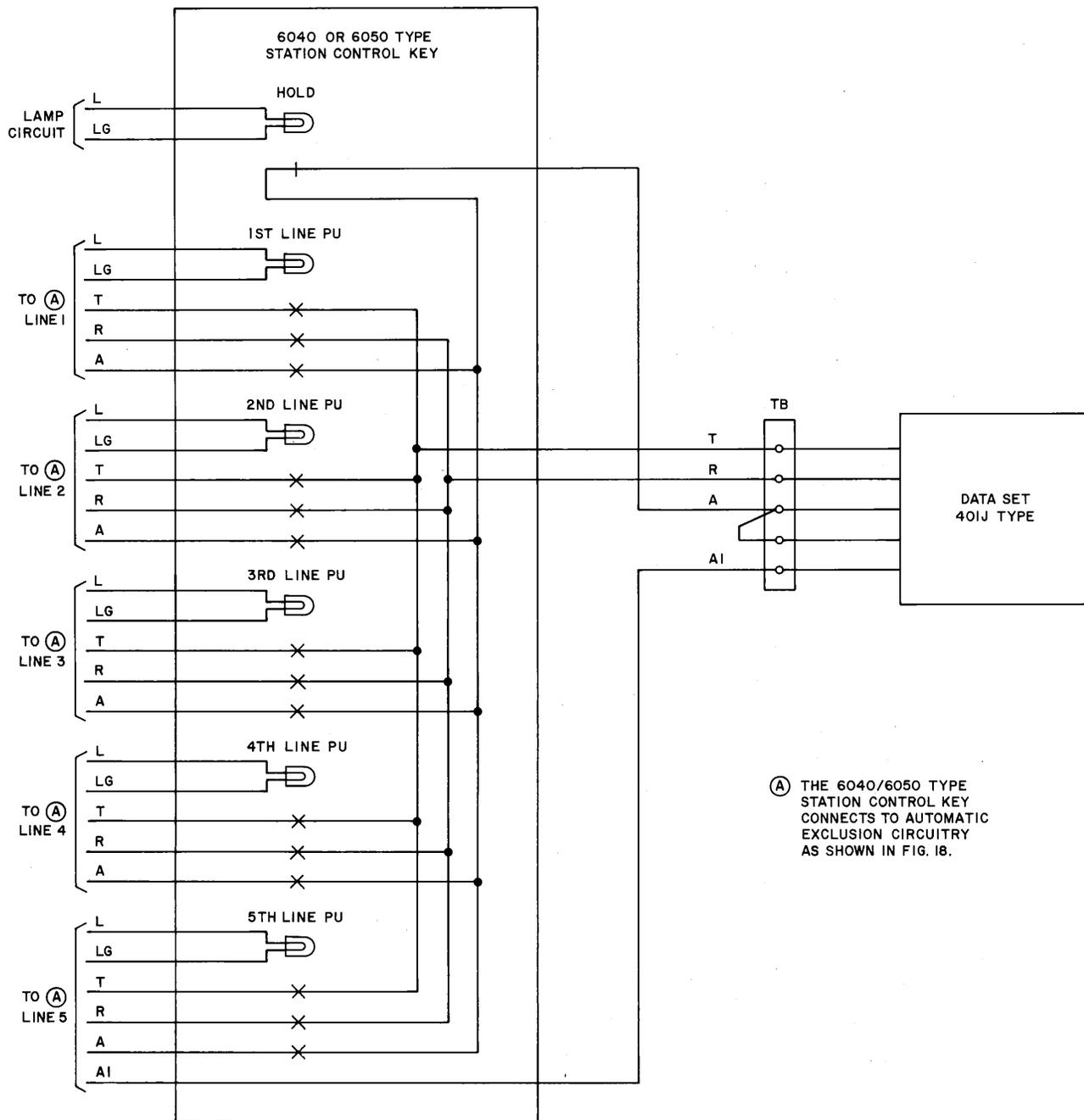


Fig. 20—Data Set 401J-Type, Typical Connections to 6040/6050-Type Station Control Key

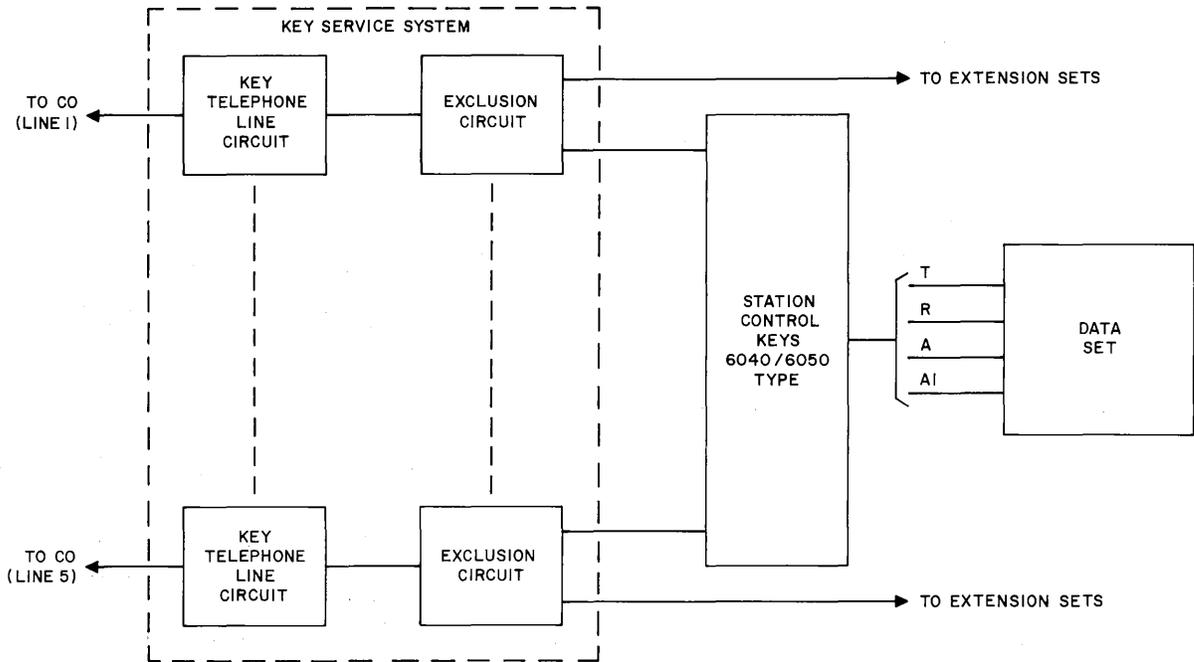


Fig. 21—Data Set 401J-Type, Typical Station Arrangement