

DATA SETS 201A3, A4 AND 201B3, B4 TRANSMITTER-RECEIVER INSTALLATION AND CONNECTIONS

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1. GENERAL

1.01 This section contains the installation and connection information for data sets (DS) 201A3, A4 (hereafter referred to as DS 201A-type) and 201B3, B4 (hereafter referred to as DS 201B-type). The data sets should be installed in conformance with existing installation practices as specified in Section 590-010-200.

1.02 This section is reissued to add information concerning data auxiliary sets (DASs) that are used with DS 201A- and 201B-type. Since this is a general revision, change arrows have been omitted.

1.03 It is preferred that the data set be installed apart from the customer provided equipment (CPE) on a nearby desk, table, or stand. The data set will operate in an ambient temperature range of 40 to 120°F and a relative humidity range of 20 to 95 percent.

1.04 The data set must be located near the CPE since the interface cord supplied by the customer should not exceed 50 feet in length [to reduce stray capacitance and to conform to Electronic Industries Association (EIA) standards]. To minimize inductive interference to data signals on the telephone (data) line, the line should not be carried in the same run as cable between the data set and CPE or lines connected to teletypewriter services. If this condition cannot be met, the telephone (data) line must be run in type SK (shielded) station wire between the data set and the cable distribution terminal or building entrance. The shield should be grounded at one end only, preferably at the distribution terminal end.

1.05 When quad JKT wire is used on 4-wire systems, use the red (R₁) and green (T₁) conductors as the station transmitting pair and the yellow (R) and black (T) conductors as the station receiving pair. For 2-wire systems, use the red (R) and green (T) conductors.

1.06 The data set requires a power source that provides 105 to 129 volts, 22 watts, at 59.5 to 60.5 Hz. The customer must supply an outlet that will accept the 3-prong plug on the KS-14532-L15 power cord provided with the data set. To prevent the data set from being turned off accidentally, this outlet should not be under the control of a switch. To avoid the possibility of data errors due to a potential difference between data set ground and CPE ground, the outlet for the data set power cord should be served from the same ac distribution panel as the CPE. If this condition cannot be met, a test using the 6H impulse counter should be made to detect the presence of noise potentials. This test is described in Section 592-011-501. If test requirements are not met, data set ground and CPE ground must be bonded together.

NOTICE

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Bell System except under written agreement



The method of providing this bond must be in accordance with local instructions.

1.07 Connections to the CPE are made through the 25-pin CUST EQUIP connector at the rear of the data set. This connector mates with a customer-supplied Cinch or Cannon DB-19604-432 plug wired in accordance with Table A.

1.08 Connections to the telephone (data) line are made through the 25-pin TEL SET connector at the rear of the data set. This connector mates with the plug on one end of a D25D-61 cord provided with the data set. The other end of this cord mates with a 66E3 connecting block or a KS-19252-L1 bridging adapter. An M50J-61 cord is provided with the data set for connecting the bridging adapter to a DAS 804A-type.

Caution: *If the DAS 804A-type cord connector is plugged directly into the bridging adapter without using the M50J cord, the equipment will not function and electrical damage to the DAS 804A-type may result.*

1.09 To gain access to the circuit packs and assemblies in the data set, the cover must be removed. To remove the cover, disconnect the cords from the rear of the data set (Fig. 1), disengage the three cover retaining screws from the chassis, and slide the cover off by pulling it toward the rear of the data set. To replace the cover, reverse this procedure.

2. OPTIONS

2.01 DS 201A- and 201B-type have features or options that must be installed prior to placing the data set in service. The options to be installed should be specified on the service order. The options are installed by strapping terminals on data set circuit packs L1, L2, L4, and T10 (Fig. 2). Table B contains a summary of the options, including the terminals to be strapped.

A. Customer Options

2.02 Control Lead Interface: The control leads affected by this option are the interlock (IT) lead, the remote control (RC) lead, the remote

release (RR) lead, the ready (RDY) lead, and the ring indicator (RG1 and RG2) leads.

(a) With EIA voltage interface, the interlock lead, the remote control lead, and the ring indicator 1 lead conform to EIA specification RS-232-B. The remote release lead, the ready lead, and the ring indicator 2 lead are not used.

(b) With contact closure interface, the interlock lead provides a ground for OFF and +6 volts for ON. The remote control lead, the remote release lead, and the ready lead enable the CPE to control automatic answering by the data set. The ring indicator 1 and 2 leads indicate to the CPE that a ringing signal is present on the line.

2.03 Alternate Voice: If automatic answer is not required, alternate voice capability can be provided by use of the 568HAA-3 telephone set with the data set. If automatic answer is required, DAS 804A-type must be used with the data set. DAS 804A-type can be equipped with selective or permanent automatic answer. With selective automatic answer, the AUTO button on DAS 804A-type must be depressed to enable the data set to answer automatically an incoming call. With permanent automatic answer, the AUTO button is bypassed.

2.04 New Sync: In multipoint arrangements (with the new sync option installed), the CPE can use the new sync interface lead to quench the data set receiver for a new message. If new sync is not required, the new sync interface lead can be inhibited.

2.05 2-Wire or 4-Wire:

(a) With the 2-wire option, half-duplex (alternate transmit and receive) operation is required. When the data set is transmitting, the transmitted data appears on the receive data lead to provide a local copy.

(b) With the 4-wire option, full-duplex operation is possible. The data set can transmit and receive simultaneously, but local copy is not provided. Carrier controlled by request-to-send or continuous carrier options are available.

- With the carrier controlled by request-to-send option, the data set can transmit (carrier is

TABLE A
CUSTOMER INTERFACE

PIN NO.	FUNCTION	DATA SET MNEMONIC	EIA DESIGNATION (RS-232-B)
1	Frame Ground	-FG	AA
2	Send Data	SD	BA
3	Receive Data	RD	BB
4	Request to Send	RS	CA
5	Clear to Send	CS	CB
6	Interlock	IT	CC
7	Signal Ground	SG	AB
8	Carrier On	CO	CF
9	Positive Battery	+12V	Reserved for Data Set Testing
10	Negative Battery	-12V	Reserved for Data Set Testing
14	New Sync	NS (Non-EIA)	Unassigned
15	Serial Clock Transmitter	SCT	DB
16	Dibit Clock Transmitter	DCT (Non-EIA)	Unassigned
17	Serial Clock Receiver	SCR	DD
18	Dibit Clock Receiver	DCR (Non-EIA)	Unassigned
19	Remote Release	RR* (Non-EIA)	Unassigned
20	Remote Control	RC*	CD
21	Ready	RDY* (Non-EIA)	Unassigned
22	Ring Indicator 1	RG1†	CE

TABLE A (Cont)

CUSTOMER INTERFACE

PIN NO.	FUNCTION	DATA SET MNEMONIC	EIA DESIGNATION (RS-232-B)
23	Ring Indicator 2	RG2† (Non-EIA)	Unassigned
24	Serial Clock Transmitter External	SCTE	DA

* When contact interface is used, these leads are for automatic answering and are used for terminating dialed calls. When voltage interface is used, the Remote Control (RC) lead performs this functions and leads 19 and 21 are not used.

† When contact interface is used, these leads indicate to the customer provided equipment that a ringing signal is present on the line. When voltage interface is used, the Ring Indicator 1 (RG1) lead performs this function and lead 23 is not used.

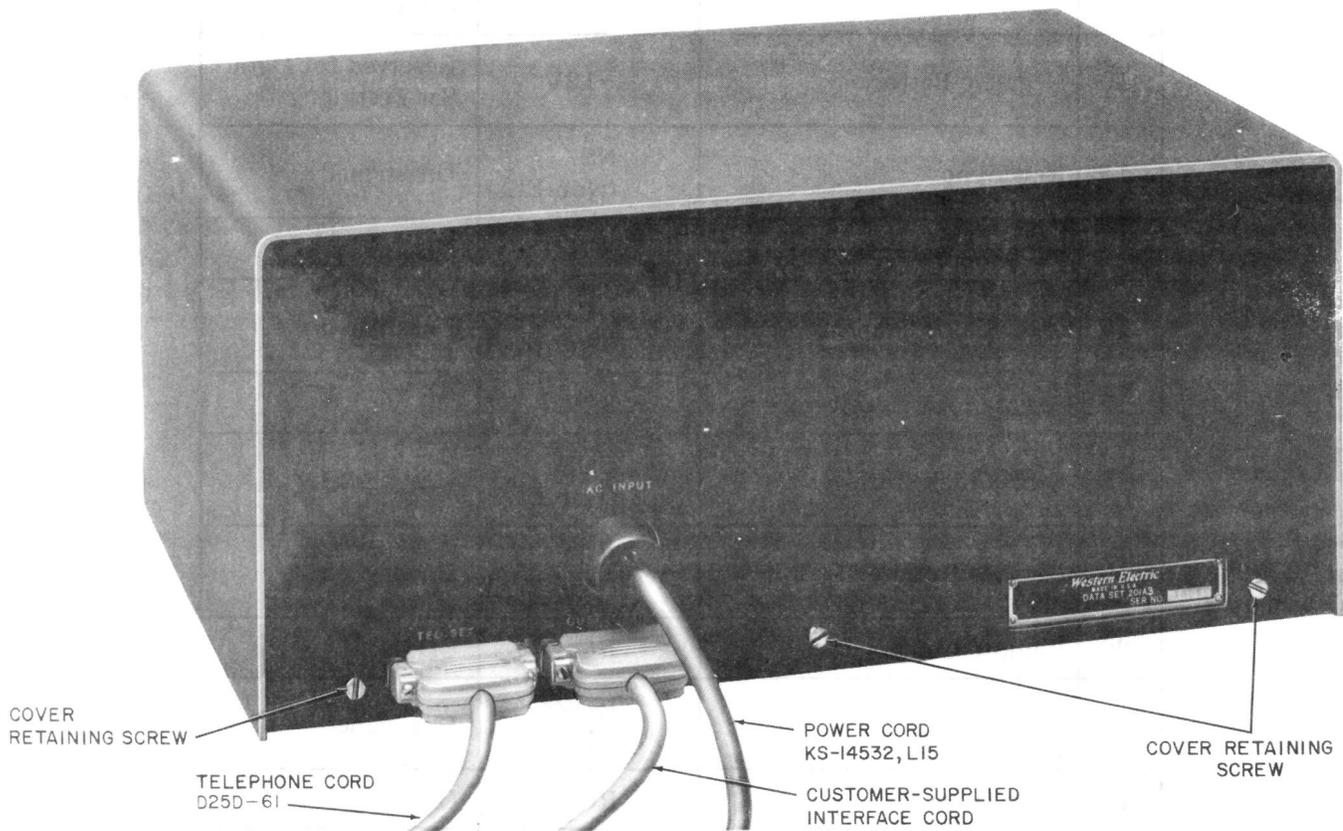


Fig. 1—Data Set 201A- or 201B-Type, Rear View

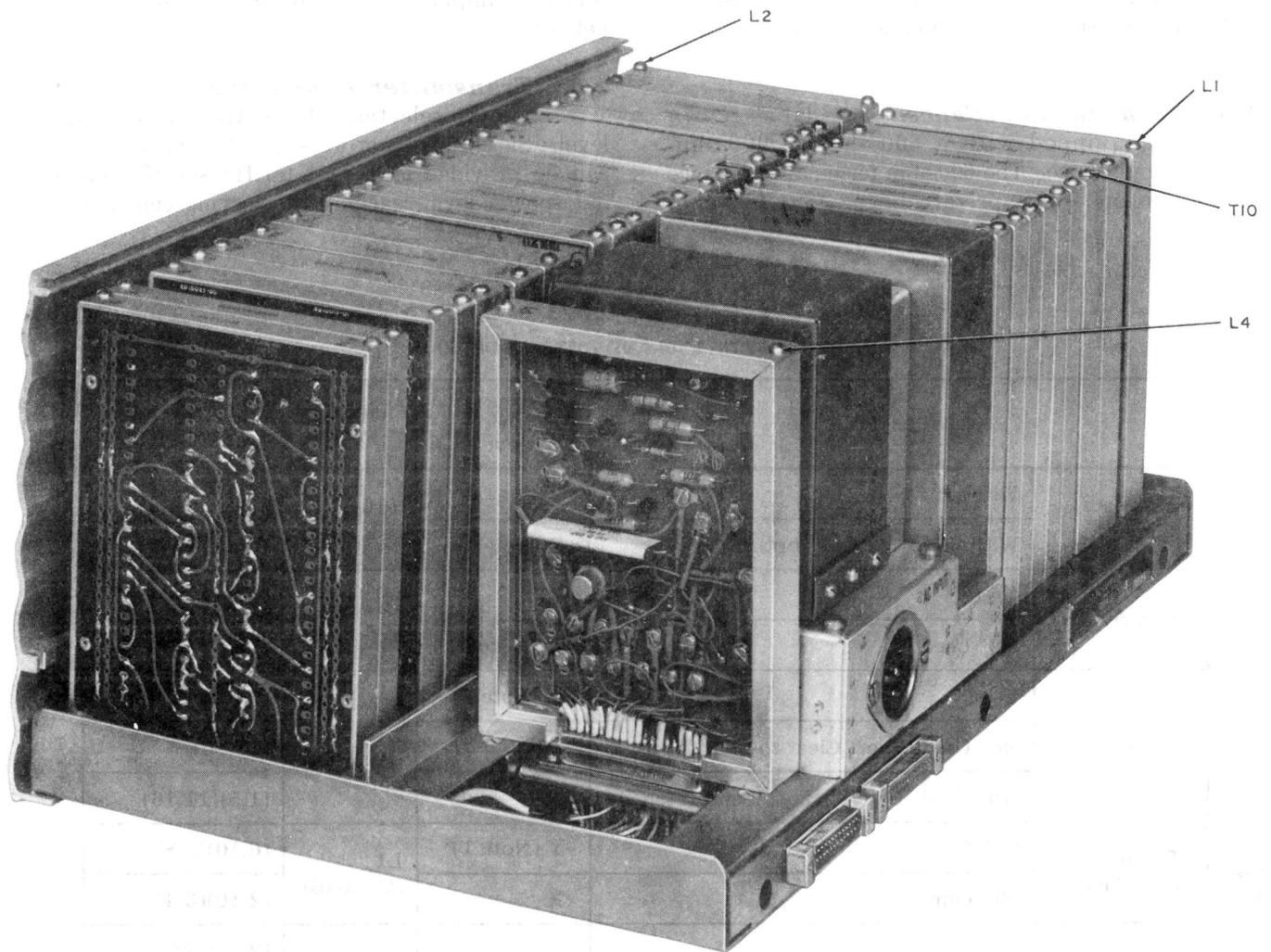


Fig. 2—Data Set 201A- or 201B-Type, Rear View With Cover Removed

on) when the request-to-send lead is ON. The data set transmitter is off when request-to-send is OFF.

- With the continuous carrier option, the data set can transmit when the request-to-send lead is ON; however, when request-to-send is OFF, the data set transmitter sends an idle code of steady marks.

B. Telco Options

2.06 Echo Delay:

- (a) With the echo delay used option, there is 150 ms of delay between request-to-send

and clear-to-send. This delay allows time for echo suppressors in the telephone (data) line to turn around and for the distant receiver to establish synchronization. In addition, the receiver is clamped for 100 ms after the transmitter is turned off to permit line echoes to decay before the transmitter is turned on again.

(b) With the echo delay not used (short clear-to-send interval) option, the delay between request-to-send and clear-to-send is reduced to 7-1/2 ms and the receiver clamp is removed to allow fast turnaround time.

(c) With the echo delay not used (long clear-to-send interval) option, the delay between

request-to-send and clear-to-send is 150 ms, but the 100-ms receiver clamp is not provided.

2.07 Terminal Impedance: The data set can be equipped with a 600-ohm or 900-ohm terminal impedance. The 600-ohm terminal impedance is for use on 4-wire private lines. The 900-ohm

terminal impedance is for use on the switched network.

2.08 Transmitter Line Signal: This option allows selection of the transmitted signal level. Signal levels of 0, -2, -4, -6, or -8 dBm can be provided. Present tariffs specify that the data power level reaching the serving central office

TABLE
DATA SETS 201A3, A4 AND 201B3, B4 OPTIONS

FEATURE OR OPTION		WIRING OPTION (NOTE 6)	CIRCUIT PACK	OTHER TERMINALS
Alternate Voice	Without 804A	ZJ	T10	(1,2)
	With 804A (requires option V)	Z (Note 1)	(CP AN3)	Remove (1,2)
New Sync	Used	ZK	L1	None
	Not Used	W (Note 1)	(CP AN6)	(7,18)
Echo Delay	Used	V (Note 2)		(5)(11,12)
	Not Used (Short Clear-to-Send Interval)	T (Note 3)	L1 (CP AN3)	(10,16)
	Not Used (Long Clear-to-Send Interval)	ZL		(1,5)(11,16)
Terminal Impedance	600 Ohms	Y (Note 1)	L1	(6,10)(3,8)
	900 Ohms	X	(CP AN6)	(2,10)(3,4)
2-Wire or 4-Wire	4-Wire Private Line (Full-Duplex)	Continuous Carrier	L2 (CP AN7)	(22,24,25) (20,21,23) (13,16)(11,12)
		Carrier Controlled by Request-to-Send or Multiparty		(18,22)(19,20) (24,25)(14,17) (21,23)(13,16) (11,12)
	2-Wire PL or DDD (Half-Duplex)	ZC (Note 2)		(22,24)(20,23) (15,25)(10,21) (9,14,17)
Transmitter Line Signal (dBm)	0	G	L2 (CP AN7)	(26,30)
	-2	F		(27,30)
	-4	E		(28,30)
	-6	B		(29,30)
	-8	A (Note 1)		(30,31)

TABLE B (Cont.)

DATA SETS 201A3, A4 AND 201B3, B4 OPTIONS

FEATURE OR OPTION		WIRING OPTION (NOTE 6)	CIRCUIT PACK	STRAP TERMINALS
Receiver Line Signal (Notes 4 and 5)	Rec Sig (dBm) Max Line Noise (dBrc)		L2 (CP AN7)	
	Compromise Equalizer Out			
	-50 to -20 28	S		(5,7)
	-44 to -14 34	R		(1,7)(3,5)
	-38 to -8 40	Q		(6,7)(4,5)
	-32 to -2 46	N (Note 3)		(1,7)(3,6)(4,5)
	Compromise Equalizer In			
	-42 to -12 36	M		(2,7)(5,8)
	-36 to -6 42	K		(1,7)(2,3)(5,8)
	-30 to 0 48	J		(2,4)(5,8)(6,7)
	-24 to +6 54	H (Note 2)		(1,7)(3,6)(2,4) (5,8)
EIA RS-232-B Voltage Interface	Interlock (IT) Corresponds to Data Set Ready Function of RS-232-B	ZD (Note 1)	L4 (CP AP1)	(1,3)(5,6) (11,13)(21,24)
	Ring Indicator 1 (RG1) Corresponds to Ring Indicator Function of RS-232-B	ZF (Note 1)		(9,10)(17,18) (19,20)(21,22) (8,14,15)
	Remote Control (RC) Corresponds to Data Terminal Ready Function of RS-232-B			
Contact Closure Interface	Interlock (IT)	ZE		(1,2)(4,5,7) (11,12,24)
	Ring Indicator 1 (RG1); Ring Indicator 2 (RG2); Remote Control (RC); Remote Release (RR); Ready (RDY)	ZG		(8,9)(15,16) (18,20)(22,23)

Note 1: Factory-wired option for 201A3, A4 and 201B3, B4.

Note 2: Factory-wired option for 201A3, A4 only.

Note 3: Factory-wired option for 201B3, B4 only.

Note 4: Usually, the equalizer is not used on private lines.

Note 5: Option J should be used when loop loss is less than 4 dB. Option K should be used when loop loss is between 4 and 10 dB. If line noise causes faulty operation of the data terminal when using option K, then option J should be used.

Note 6: The designation "factory-wired" indicates that the option will be installed by WECO at the factory on new data sets and at the distributing house on class C sets. A set that has been previously in service and not returned to WECO may have any option installed. Installation of the correct options should be verified before again placing the set in service.

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shall not be greater than -12 dBm. Therefore, in systems where the loss is less than 4 dB, an external pad is required.

Note: DAS 804A-type inserts a 2-dB loss into the system. This loss should be allowed for when the transmitted signal level is selected.

2.09 Receiver Line Signal: This option allows selection of the range of the received signal level. By adding attenuation in 6-dB steps, the receiver can be changed from its most sensitive range to its least sensitive range. This sensitivity range is also affected by the compromise equalizer. With the compromise equalizer out, the received signal level is variable from -50 to -2 dB, depending on the option used. With the compromise equalizer in, the received signal level is variable from -42 to $+6$ dB, depending on the option used. The compromise equalizer corrects for the average attenuation distortion and envelope delay distortion encountered on the switched network.

3. CONNECTIONS

3.01 Connections for the various types of service using DS 201A- and 201B-type are shown in Fig. 3 through 18. The figure numbers and titles of these connection drawings are listed below.

Fig. 3—Two-Wire DDD Service Using DAS 804A

Fig. 4—Two-Wire DDD Service Using DAS 804A and DAS 801 ACU

Fig. 5—Two-Wire Private Line Using DAS 804A

Fig. 6—Data Set 201 Using DAS 804A

Fig. 7—Two-Wire Private Line Without a Telephone

Fig. 8—Four-Wire Private Line Using 66E3 Connecting Block

Fig. 9—Four-Wire Private Line Using DAS 828A (Data Only)

Fig. 10—Four-Wire Private Line Using DAS 828A (Data/Voice)

Fig. 11—Four-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data Only)

Fig. 12—Four-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data/Voice)

Fig. 13—Four-Wire DDD Service With Two Two-Wire DDD Lines Using DAS 828C

Fig. 14—Four-Wire Private Line Using DAS 829-Type (Data Only)

Fig. 15—Four-Wire Private Line Using DAS 829-Type (Data/Voice)

Fig. 16—Four-Wire Private Line With DDD Backup Using DAS 829-Type (Data Only)

Fig. 17—Four-Wire Private Line With DDD Backup Using DAS 829-Type (Data/Voice)

Fig. 18—Line and Test Key Circuit.

3.02 Figure 6 shows connections that are common to Fig. 3 through 5. To use these figures, extend Fig. 6 first and lay the appropriate figure over Fig. 6.

3.03 Figure 18 shows an external line and test key circuit that may be specified for 4-wire circuits. In the normal (LINE) position, this key does not affect the operation of the data set. In the TEST position, this key connects the output of the transmitter to the input of the receiver and grounds the test key 1 (TEK 1) lead. This permits the CPE to send data to itself through the local data set.

4. INSTALLATION

4.01 Switched network data circuits used with DS 201A- and 201B-type must meet the requirements specified in Section 314-205-501. Private line data circuits used with these data sets must meet the requirements specified in Section 314-410-500.

4.02 If the data set transmitted signal level must be reduced more than 8 dB, an external pad is required. This pad may be ordered assembled or made up in the field. For ordering, field fabrication, and installation information, refer to Fig. 19. To determine which pad is required, the line loss must be known. This can be determined by dialing the milliwatt supply and measuring the line loss using a TTS-4 transmission measuring set or equivalent.

4.03 After the data set is installed, it must be tested to determine if it is operating properly. The required installation tests are specified in Section 592-011-501.

5. REFERENCES

5.01 Additional information concerning DS 201A- and 201B-type and auxiliary apparatus is contained in the following publications:

SECTION	TITLE	SECTION	TITLE
		592-011-151	Data Sets 201A3, A4 and 201B3, B4 — Transmitter-Receiver — Supplementary Information
		592-011-152	Data Set 201-Type—Transmitter-Receiver—Theory of Operation and Supplementary Information
		592-011-301	Data Sets 201A3, A4 and 201B3, B4—Transmitter-Receiver—Maintenance
314-205-501	Data Systems—DATA-PHONE® Service and Data Access Arrangements on Direct Distance Dialing Network—Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines	592-011-501	Data Sets 201A3, A4, and 201B3, B4 — Transmitter-Receiver — Test Procedures
314-410-500	Voice Bandwidth Private Line Data Circuits—Tests and Requirements	598-010-100	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Description and Operation
416-604-103	Connecting Blocks—66E3-25 and 66E4-25—Identification and Installation	598-010-101	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Description and Operation
502-541-415	Service—565HK Telephone Set	598-010-151	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Theory or Operation and Supplementary Information
502-541-425	Service—568HAA Telephone Set	598-010-200	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Installation and Connections
590-002-100	Data Services—2000 and 2400 BPS Provided by Data Set 201-Type—Reference Guide	598-010-201	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Installation and Connections
590-008-100	Data Auxiliary Set 801A-Type—Reference Guide	598-010-300	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Maintenance
590-008-101	Data Auxiliary Set 801C-Type—Reference Guide	598-010-301	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Maintenance
590-008-102	Data Auxiliary Set 804A-Type—Reference Guide	598-010-500	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Test Procedures
590-010-200	Data Sets and Data Access Arrangements—General Installation and Connection Information	598-010-501	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Test Procedures
592-011-101	Data Sets 201A3, A4 and 201B3, B4 — Transmitter-Receiver — Description and Operation		

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SECTION	TITLE	SECTION	TITLE
598-012-100	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Identification and Operation	598-080-101	Data Auxiliary Set 828C—Description and Operation
598-012-101	Data Auxiliary Sets 801C3 and 801C4—Description and Operation	598-080-200	Data Auxiliary Set 828A—Installation and Connections
598-012-102	Data Auxiliary Set 801C-L1/2—Description and Operation	598-080-201	Data Auxiliary Set 828C—Installation and Connections
598-012-150	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Theory of Operation and Supplementary Information	598-080-500	Data Auxiliary Set 828A—Maintenance and Test Procedures
598-012-151	Data Auxiliary Sets 801C3 and 801C4 for Automatic Calling—Theory of Operation and Supplementary Information	598-080-501	Data Auxiliary Set 828C—Maintenance and Test Procedures
598-012-200	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Installation	598-082-100	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Description
598-012-201	Data Auxiliary Sets 801C3 and 801C4—Installation and Connctions	598-082-101	Data Auxiliary Set 829-Type—Supplementary Functions for Voiceband Private Line Channels—(Alternate Voice and Dial Backup)—Description
598-012-202	Data Auxiliary Set 801C-L1/2—Installation and Connection	598-082-102	Data Auxiliary Set 829-Type—Multiple Channel Arrangements—(Switched Dial Backup)—Description
598-012-300	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Maintenance	598-082-200	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Installation and Connections
598-012-301	Data Auxiliary Sets 801C3 and 801C4—Maintenance	598-082-201	Data Auxiliary Set 829-Type—Supplementary Functions for Voiceband Private Line Channels—(Alternate Voice and Dial Backup)—Installation and Connections
598-012-500	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Test Procedures	598-082-202	Data Auxiliary Set 829-Type—Multiple Channel Arrangements—(Switched Dial Backup)—Installation and Connections
598-012-501	Data Auxiliary Sets 801C3 and 801C4—Test Procedures	598-082-500	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Maintenance and Test Procedures
598-012-502	Data Auxiliary Set 801C-L1/2—Test Procedures		
598-030-100	Data Auxiliary Set 804A-Type—Description and Operation		
598-080-100	Data Auxiliary Set 828A—Description and Operation		

SECTION	TITLE	SECTION	TITLE
598-082-501	Data Auxiliary Set 829-Type— Supplementary Functions for Voiceband Private Line Chan- nels—(Alternate Voice and Dial Backup)—Test Procedures	668-102-500	Data Test Center—904B- and 904D-Types—Test Procedures—Data Set 201-Type—Dynamic Test
598-082-502	Data Auxiliary Set 829-Type— Multiple Channel Arrange- ments—(Switched Dial Backup)— Test Procedures	5.02	Detailed information concerning DS 201A- and 201B-type is contained in CD- and SD-1D186-01. Information concerning the key telephone units is contained in SD-69288-01.

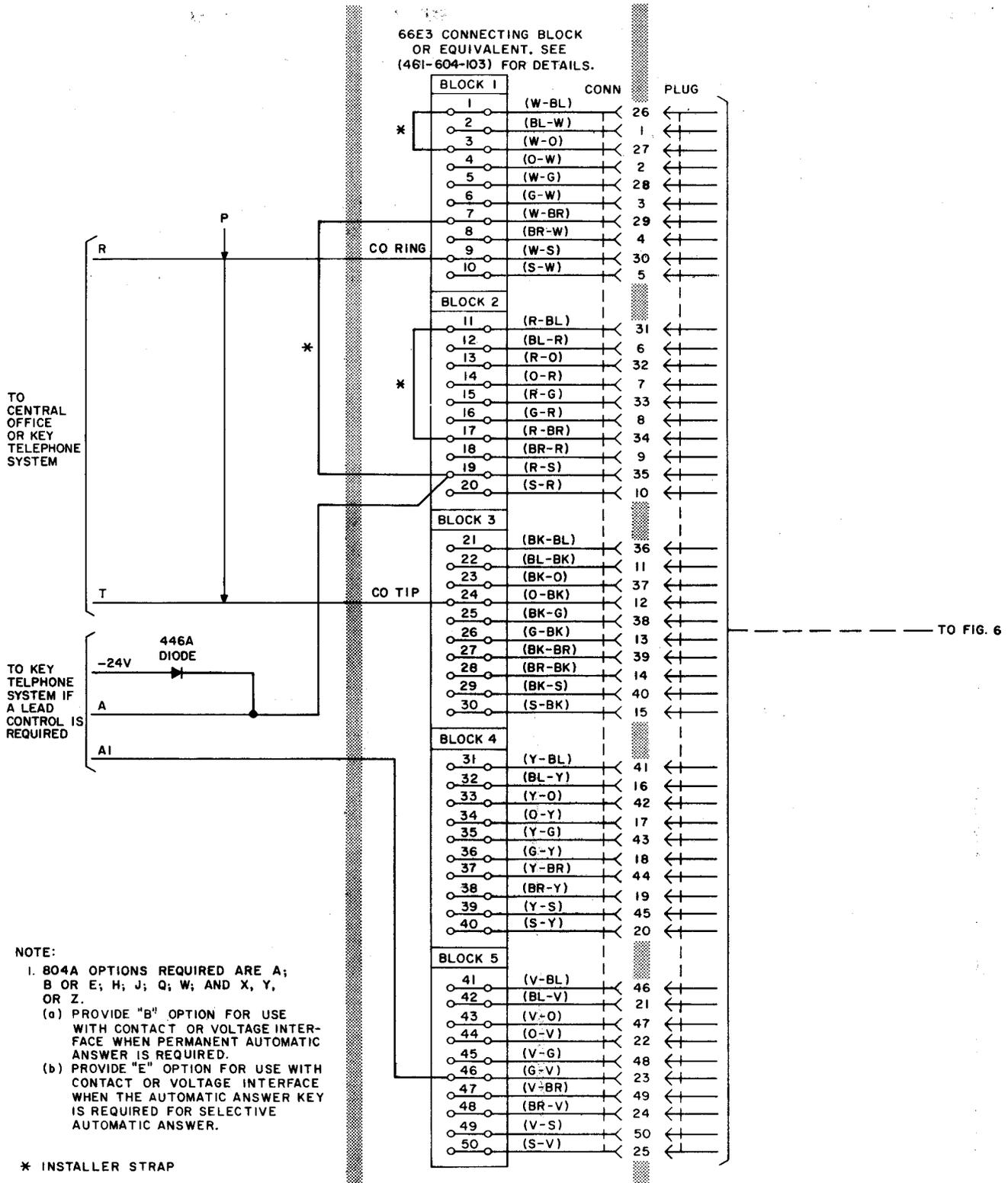


Fig. 3—Two-Wire DDD Service Using DAS 804A

NOTES:

1. 804A OPTIONS REQUIRED ARE A; B OR E; H; J; Q; T; W; AND X, Y OR Z.
2. 801-TYPE OPTIONS REQUIRED ARE SHOWN IN THE FOLLOWING TABLE:

801A1	801A2	801A6	801C2	801C4
			V OR Y	V OR Y
W	W	W	W	W
S	S	S	S	S
F	F	M	M	M
Q	Q	Q	Q	Q
Y OR REMOVE Y	Y OR REMOVE Y	R OR H	R OR REMOVE R	R OR H
		B		B
Z OR REMOVE Z	Z OR REMOVE Z	G OR Z	REMOVE Z OR Z	G OR Z
				ZH
				ZM
V	U	ZE OR ZF		

3. THE FOLLOWING TABLE SHOWS COLOR CODES FOR THE "K" AND "P" OPTION CORDS FOR 801A1, A2, AND 801C2, RESPECTIVELY, WHICH ARE RATED "MANUFACTURE DISCONTINUED":

801 TYPE TB2 TERMINAL	"K" AND "P" OPTION
D1	W
D2	-
DT	BR-G
T	G
DR	BR-R
R	R
TK	BR-BK
C	BK
SH 1	BL
SH 2	BR-Y
1	-
2	-
G	Y
3	-

ANY UNUSED CORD LEADS SHALL BE TAPED AND STORED.

4. THE FOLLOWING WIRING MODIFICATIONS ARE REQUIRED WHEN AN 801 ACU IS USED WITH A DAS 804A AND A DATA SET 201.
 - (a) WHEN THE DAS CODING IS PRIOR TO 804A6 AND A8, SERIES 6:
 - (1) IN THE DAS 804A DISCONNECT, TAPE, AND STORE BR-R (ACU-DM) LEAD AT THE 3A-TYPE DATA UNIT TERMINAL 33, R-BL (D2) LEAD AT DATA UNIT TERMINAL 16 OR 35 (WHICHEVER IS USED), AND R-BR (L2) LEAD AT TB-15.
 - (2) STRAP FROM THE 3A-TYPE DATA UNIT TERMINAL 33 TO THE DATA UNIT TERMINAL 55, AND FROM DATA UNIT TERMINAL 16 OR 35 (WHICHEVER IS USED) TO TB2-15.
 - (b) WHEN THE DAS CODING IS 804A6 AND A8, SERIES 6, OR LATER:
 - (1) IN THE DAS 804A, DISCONNECT AND TAPE THE WIRES FROM WIRE WRAPPED TERMINAL 2 ON THE PRINTED WIRING BOARD AND TERMINAL TBI-35 ON THE OPTION BOARD. CUT AND TAPE THE WIRE CONNECTED TO PIN J1-34.
 - (2) ADD STRAPS BETWEEN WIRE WRAPPED TERMINALS 2 AND 50 ON THE PRINTED WIRING BOARD AND BETWEEN TERMINALS TBI-35 AND TBI-40 ON THE OPTION BOARD.
 - (c) MARK DAS 804A TO INDICATE THAT IT HAS BEEN MODIFIED PER SECTION 592-011-201, FIG. 4.

* INSTALLER STRAP

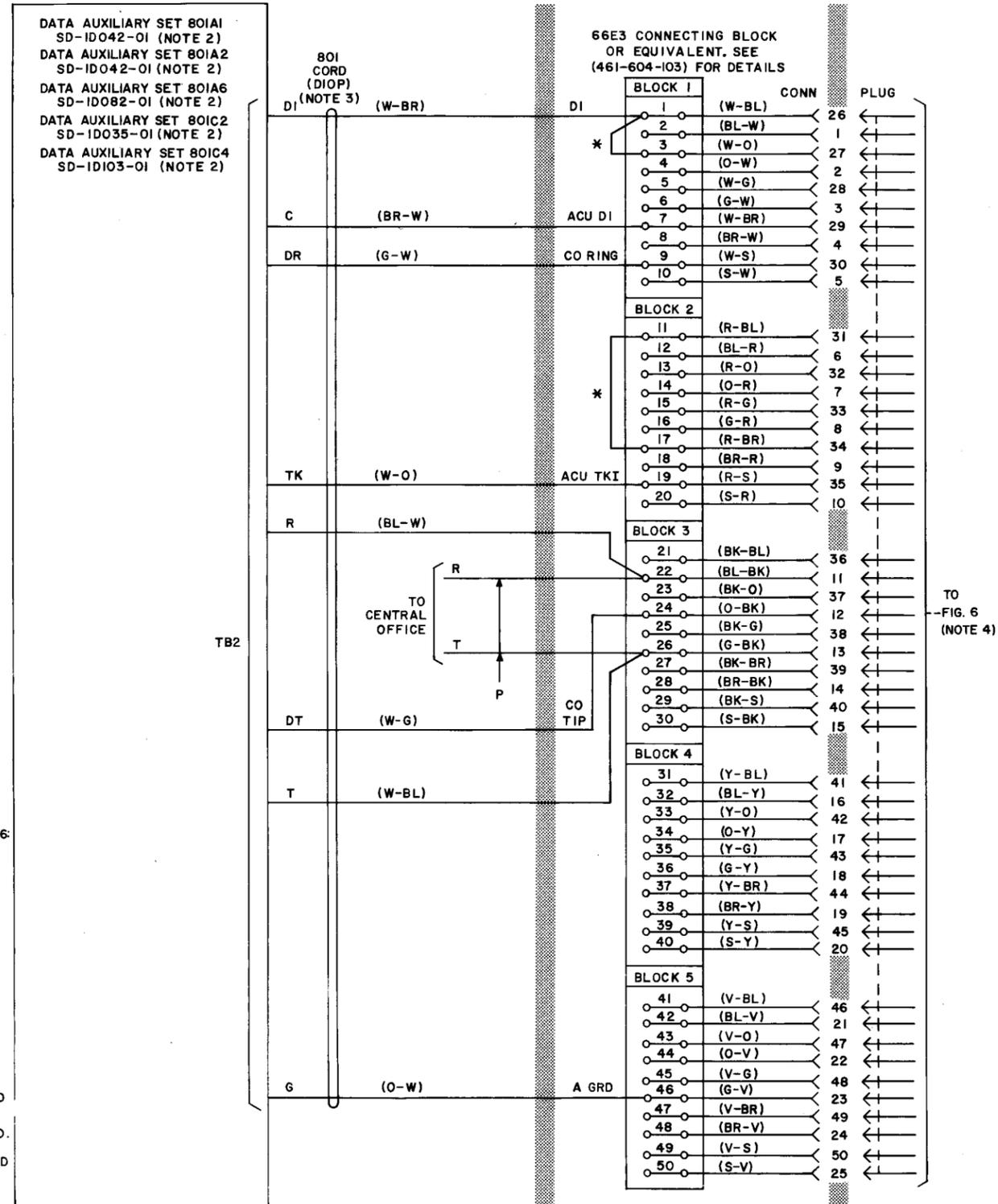
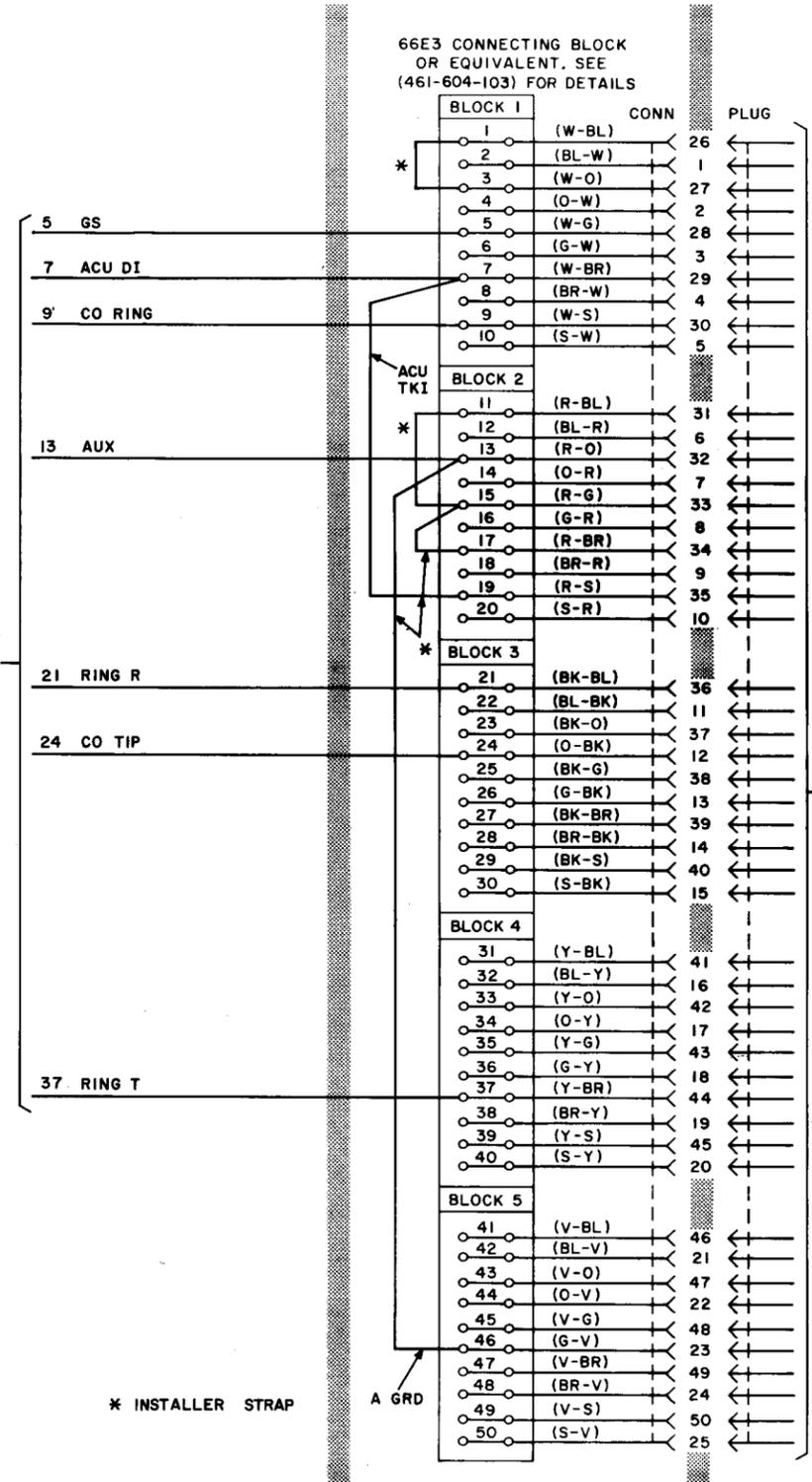
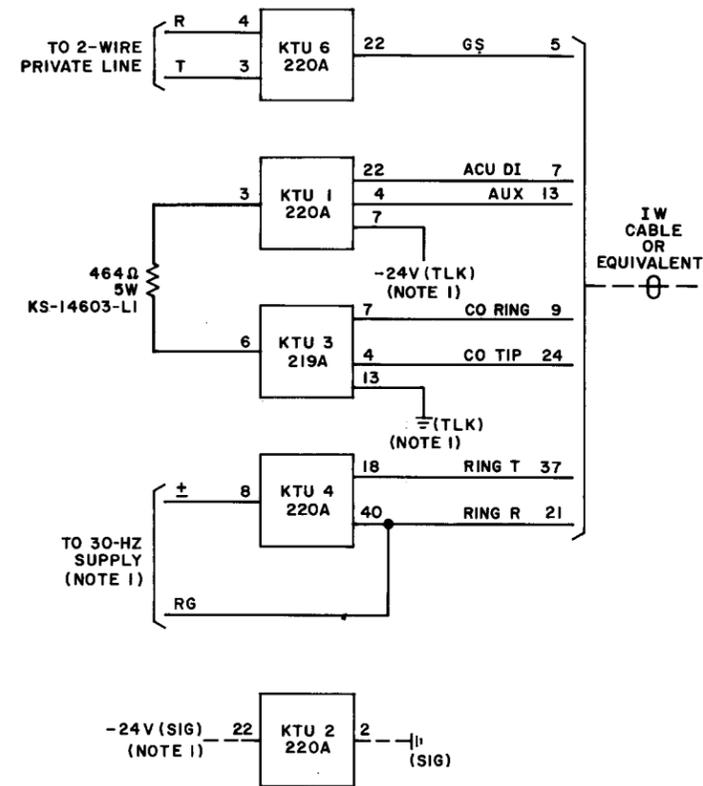


Fig. 4—Two-Wire DDD Service Using DAS 804A and DAS 801 ACU

KEY TELEPHONE UNIT STRAPPING INFORMATION

KEY TELEPHONE UNITS						
220A (1)	220A (2)	219A (3)	220A (4)	251A (5)	220A (6)	232B (7)
2	13					
		6	14			
4	2			7	16	
13	22		13		13	24
	3					38
	22			13		24
	4					37
		1	11			
		2	10			
		5	13			
				19	6	
		9		3	5	
		12		4	6	
			1	11		
			8		1	
			22	15		
			40		2	
				17		36
	6		9	7	8	
(1)	(2)	(3)	(4)	(5)	(6)	(7)

KEY TELEPHONE UNITS



NOTES:

1. POWER PLANT AND FUSING TO BE FURNISHED AS REQUIRED BY THE INSTALLATION
 - 20B2-POWER UNIT WITH 30-HZ GENERATOR FOR USE IN WALL-MOUNTED INSTALLATIONS.
 - 20C2-POWER UNIT WITH 30-HZ GENERATOR FOR USE IN RACK-MOUNTED INSTALLATIONS.
2. 804 OPTIONS REQUIRED: A; B OR E; H; J; N; V, X, Y, OR Z.
 - (a) PROVIDE "B" OPTION FOR USE WITH CONTACT OR VOLTAGE INTERFACE WHEN PERMANENT AUTOMATIC ANSWER IS REQUIRED.
 - (b) PROVIDE "E" OPTION FOR USE WITH CONTACT OR VOLTAGE INTERFACE WHEN THE AUTOMATIC ANSWER KEY IS REQUIRED FOR SELECTIVE AUTOMATIC ANSWER.

Fig. 5—Two-Wire Private Line Using DAS 804A

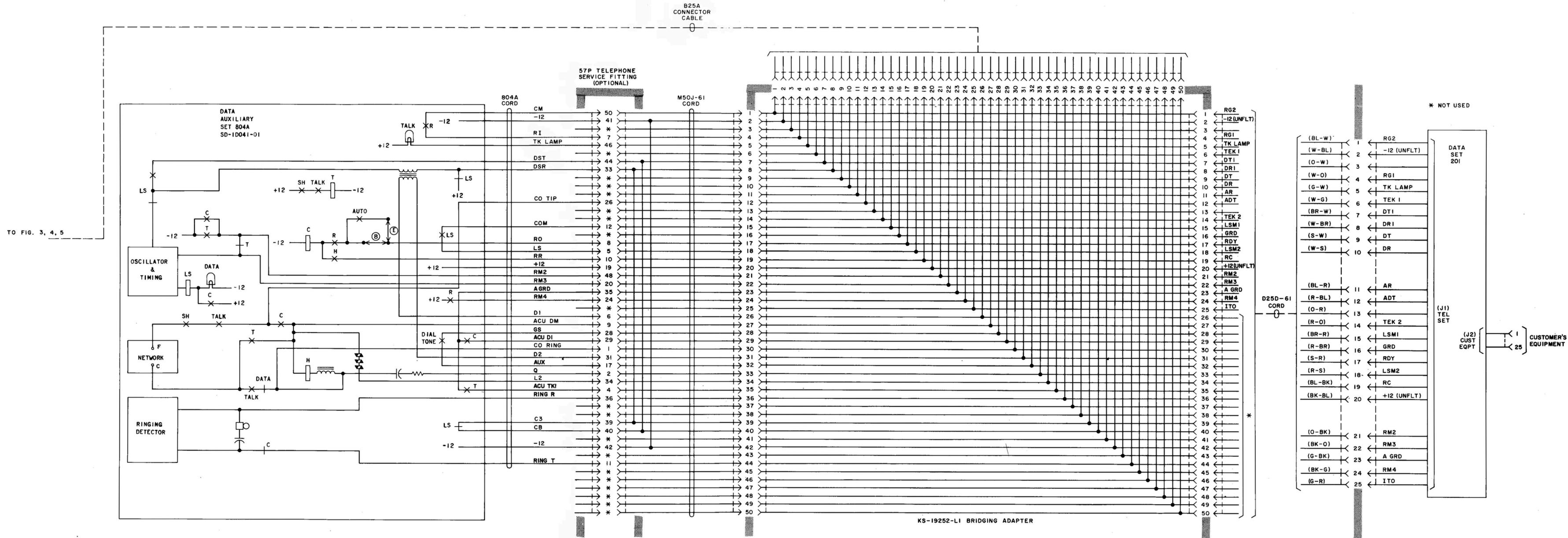


Fig. 6—Data Set 201 Using DAS 804A

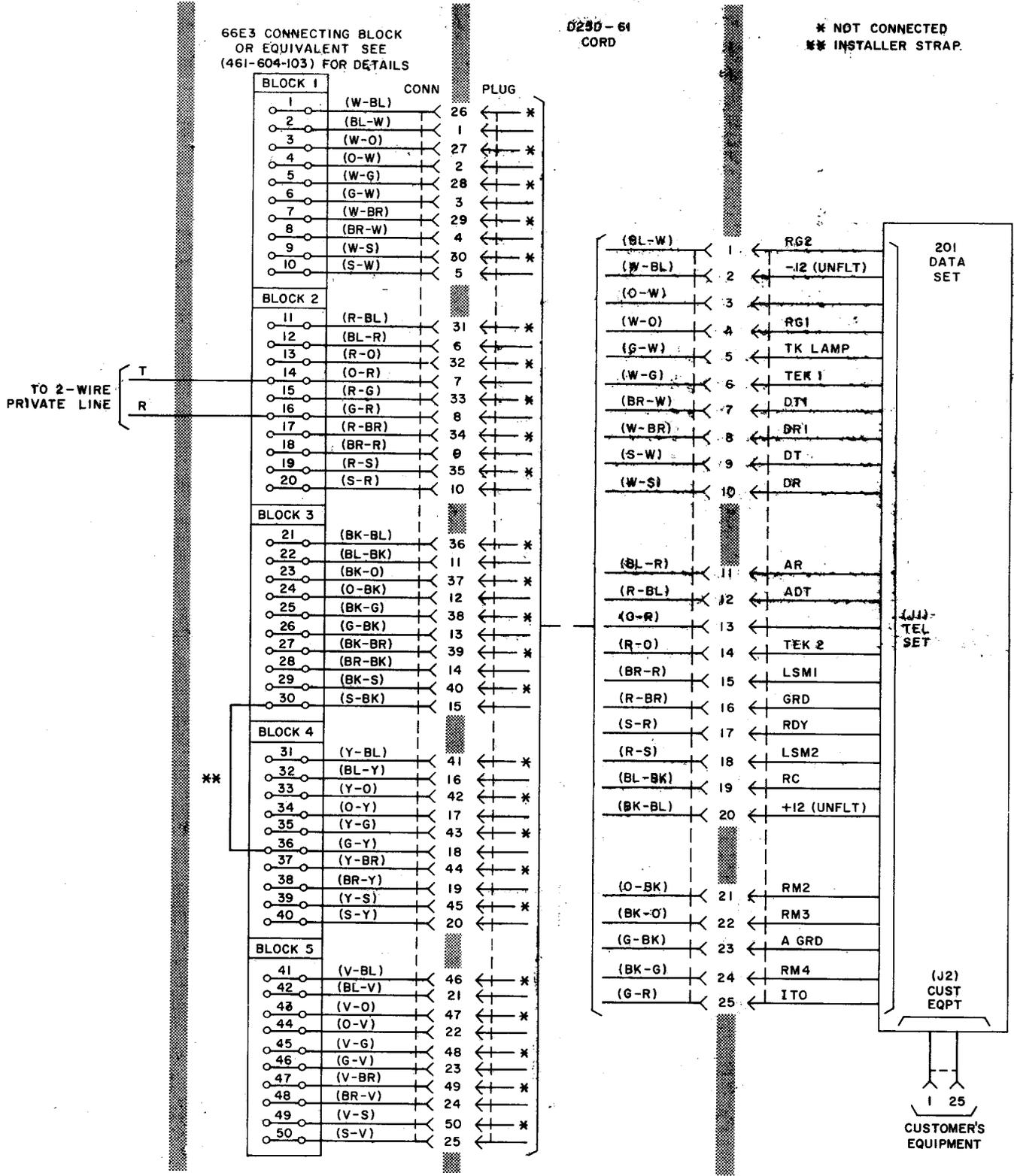


Fig. 7—Two-Wire Private Line Without a Telephone

D25D-61
CORD

* NOT CONNECTED
** INSTALLER STRAP

66E3 CONNECTING BLOCK
OR EQUIVALENT SEE
(461-604-103) FOR DETAILS

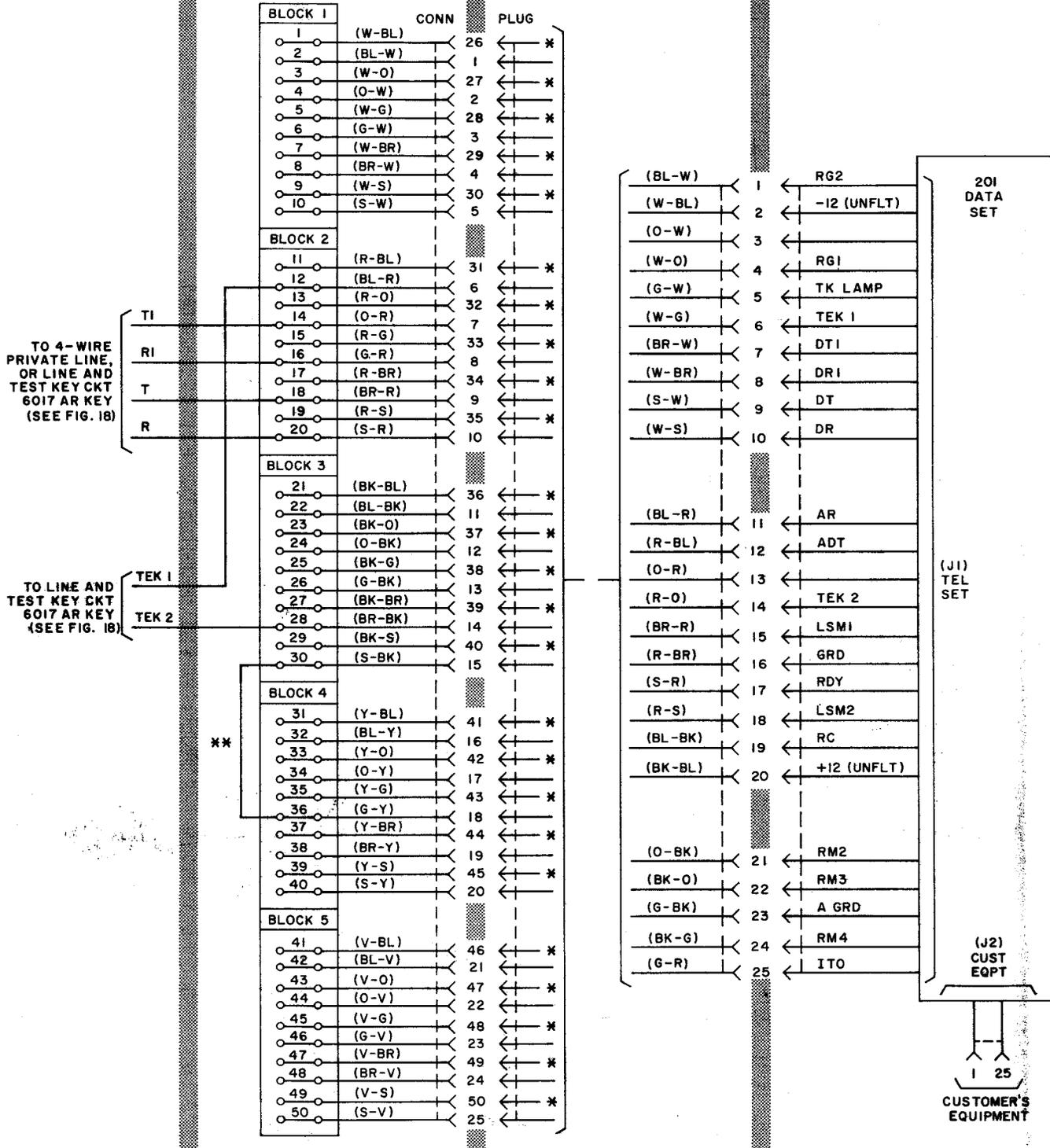


Fig. 8—Four-Wire Private Line Using 66E3 Connecting Block

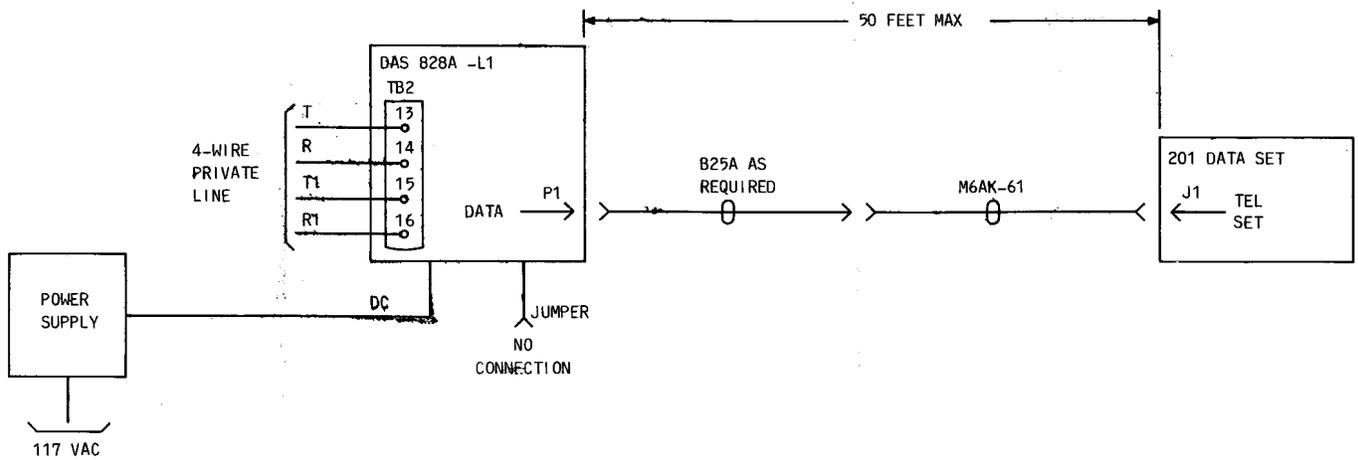


Fig. 9—Four-Wire Private Line Using DAS 828A (Data Only)

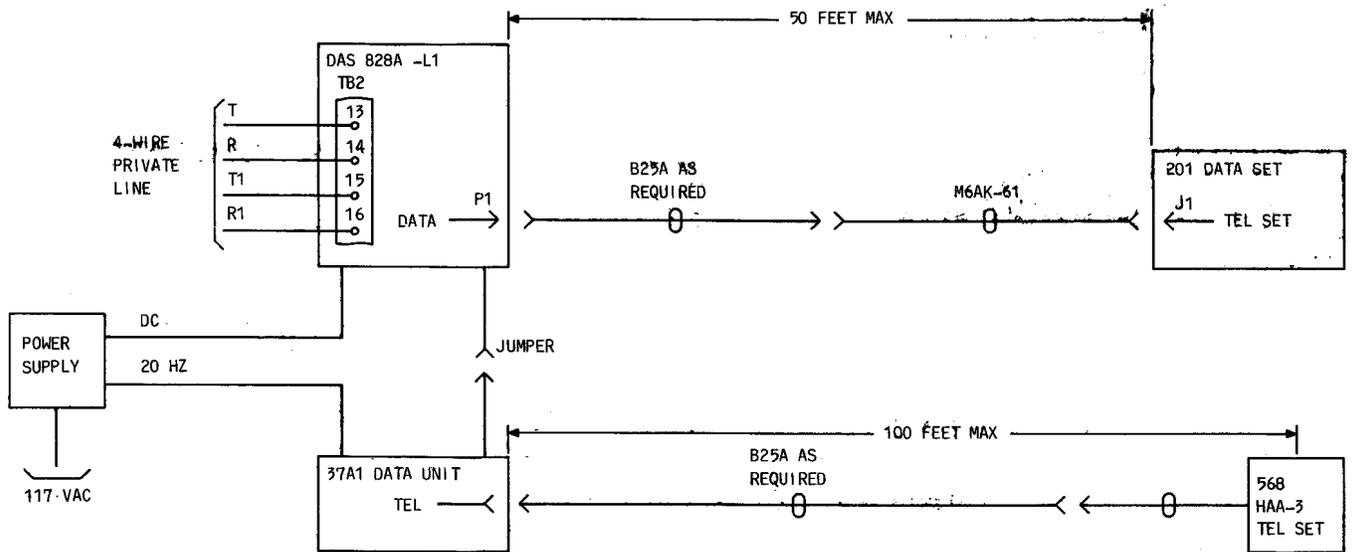


Fig. 10—Four-Wire Private Line Using DAS 828A (Data/Voice)

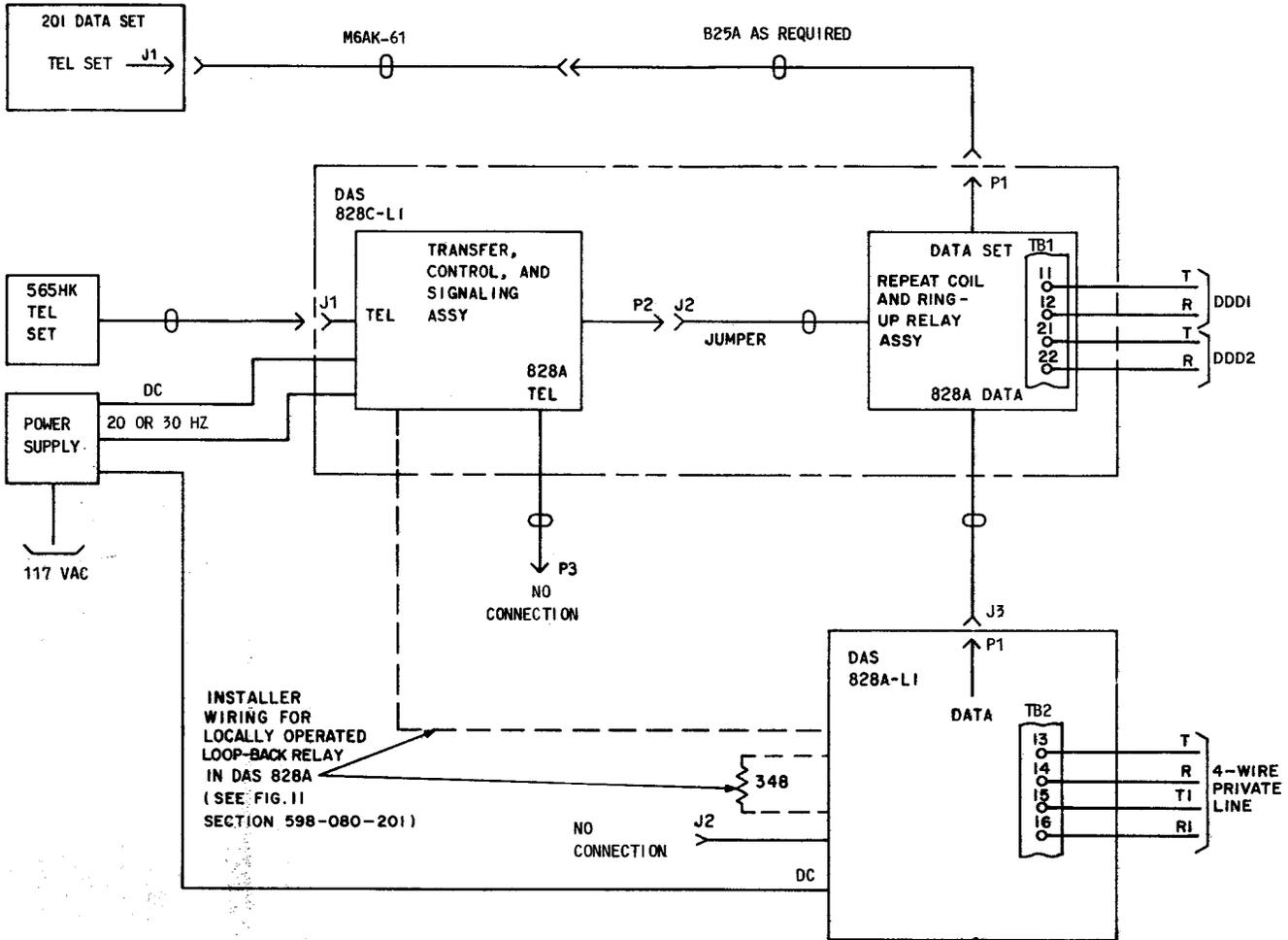


Fig. 11—Four-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data Only)

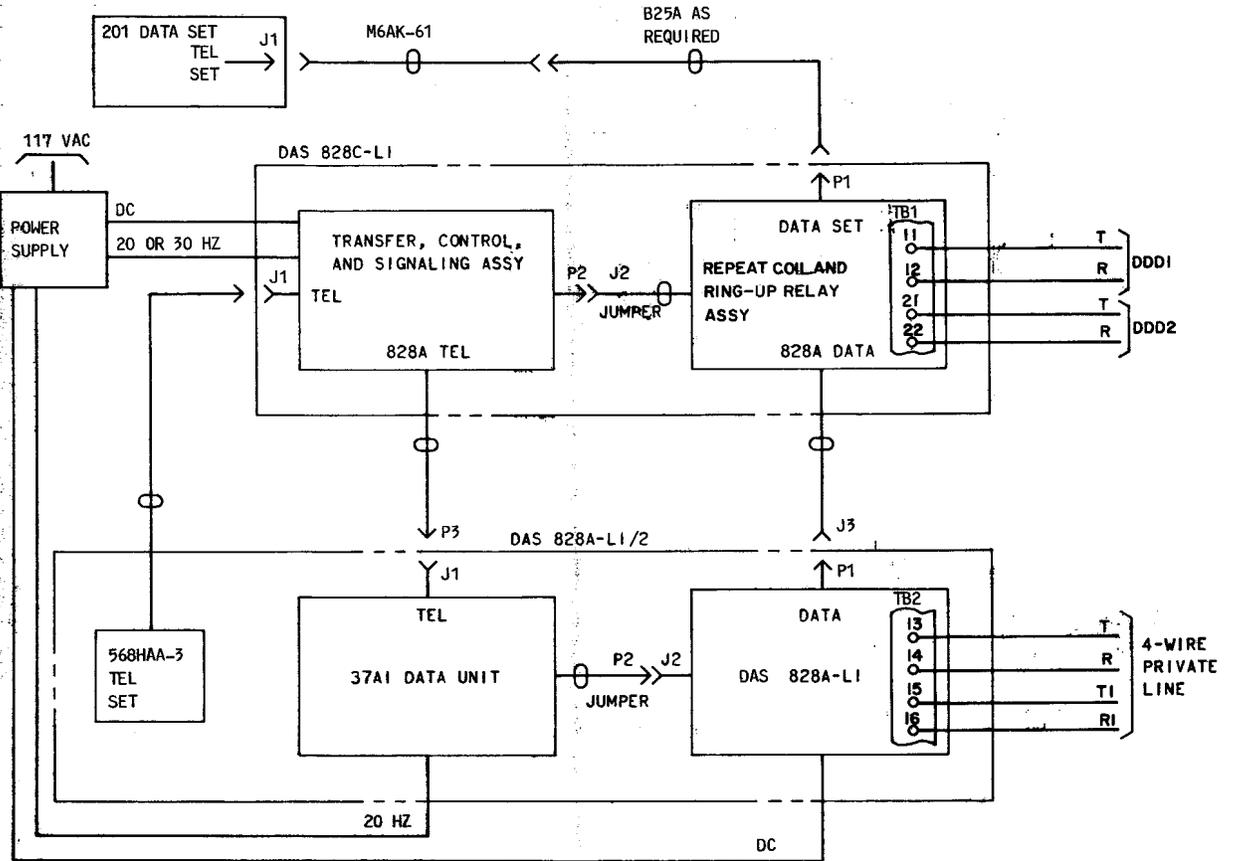
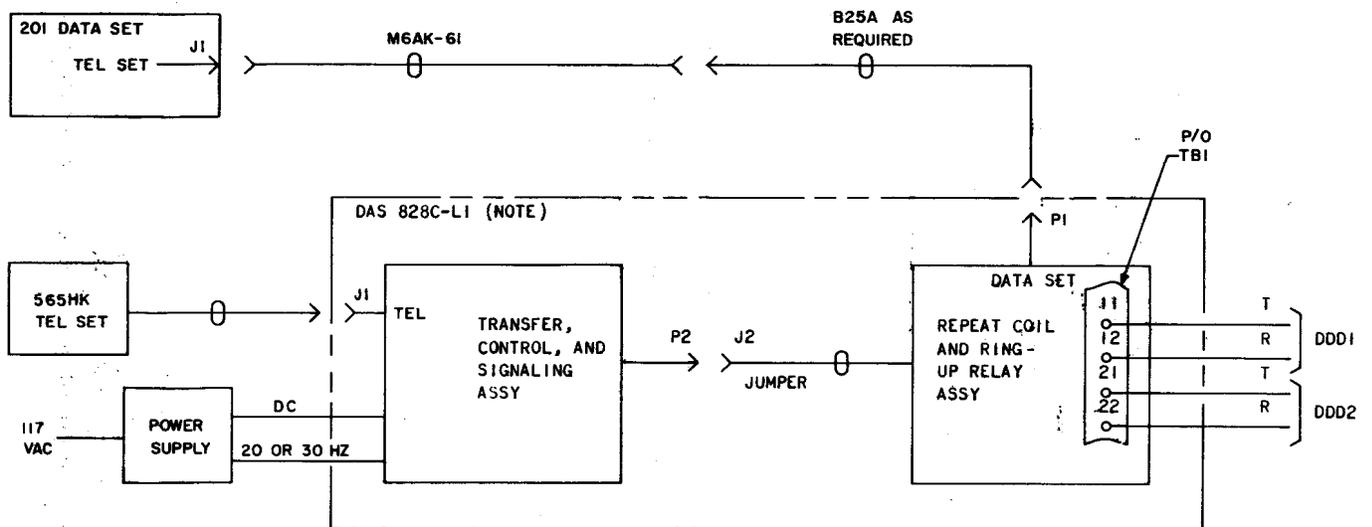


Fig. 12—Four-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data/Voice)



NOTE:
828C OPTIONS REQUIRED ARE X AND Z.

Fig. 13—Four-Wire DDD Service With Two Two-Wire DDD Lines Using DAS 828C

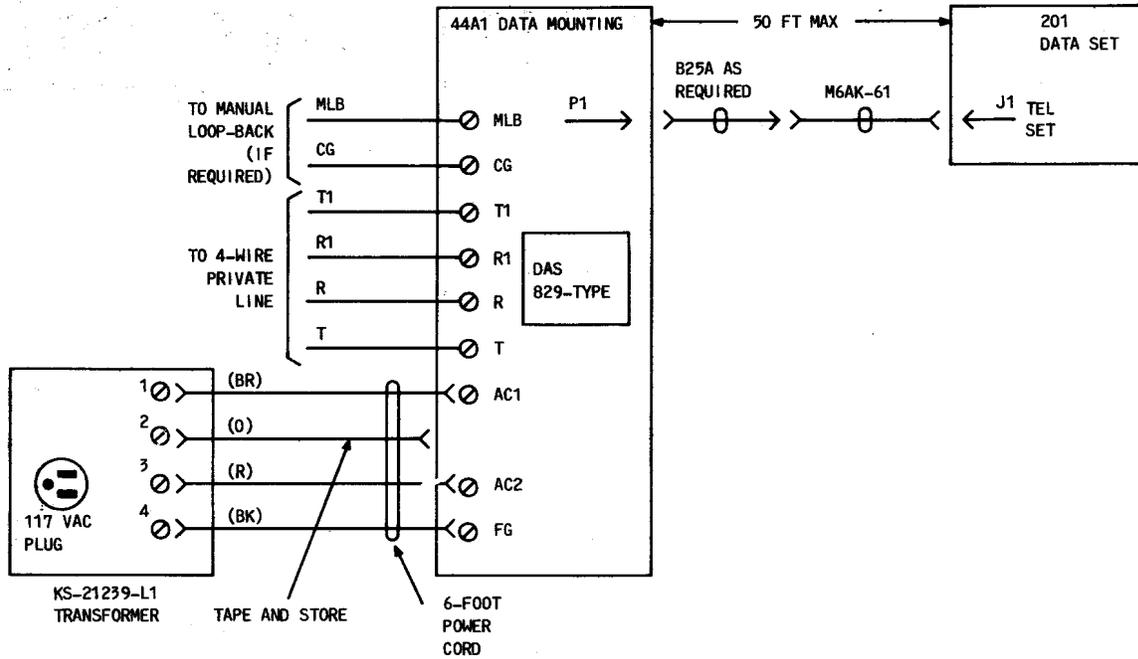


Fig. 14—Four-Wire Private Line Using DAS 829-Type (Data Only)

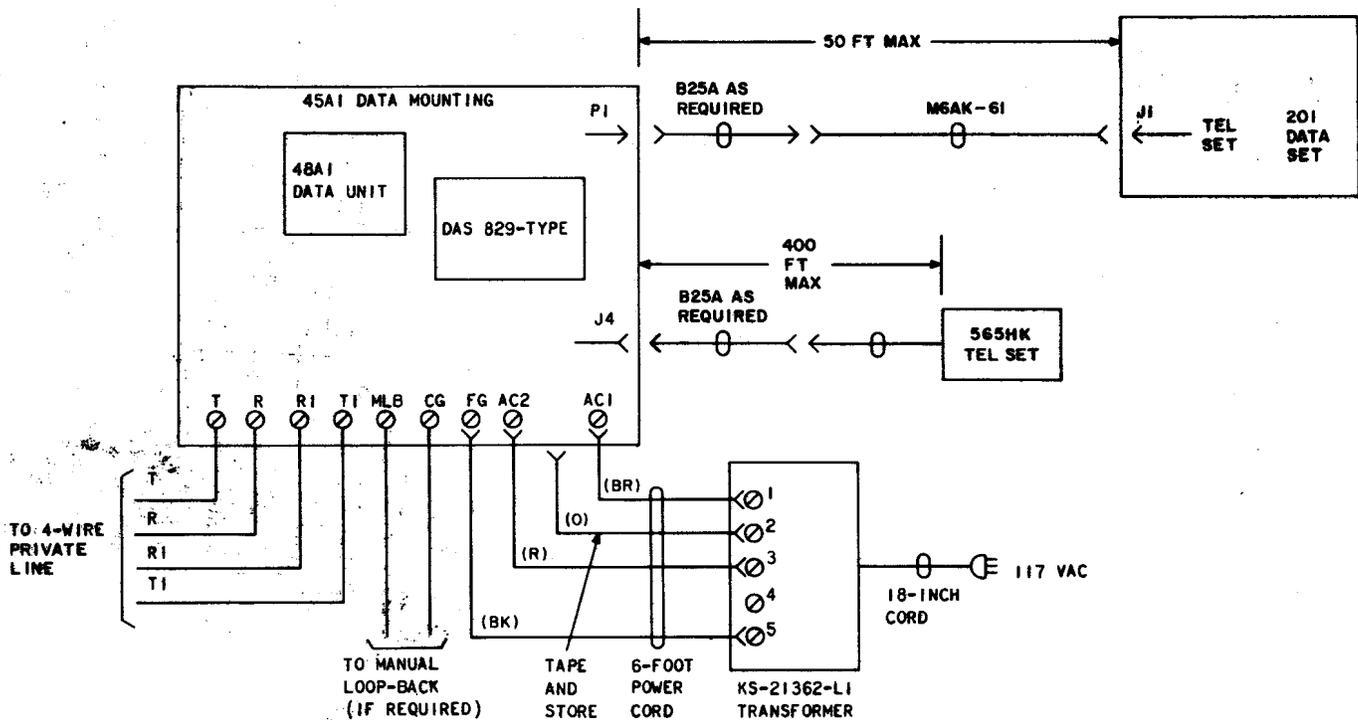


Fig. 15—Four-Wire Private Line Using DAS 829-Type (Data/Voice)

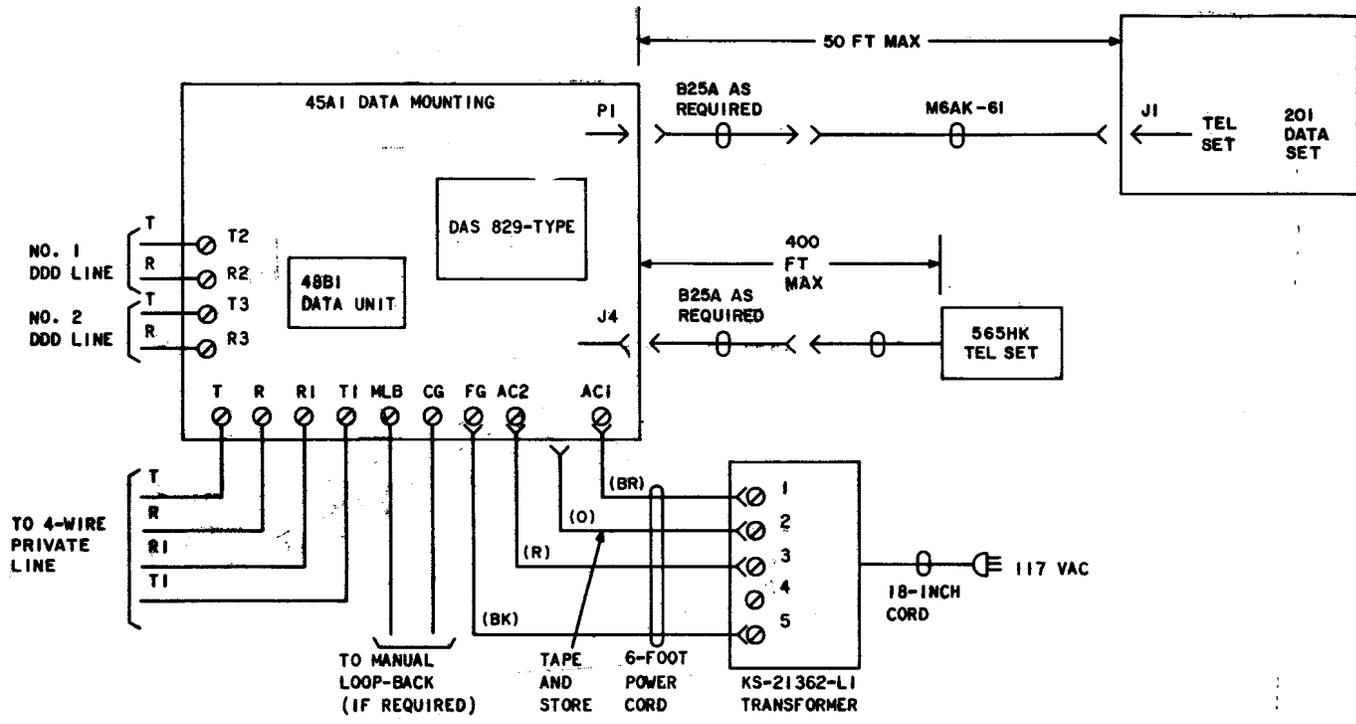


Fig. 16—Four-Wire Private Line With DDD Backup Using DAS 829-Type (Data Only)

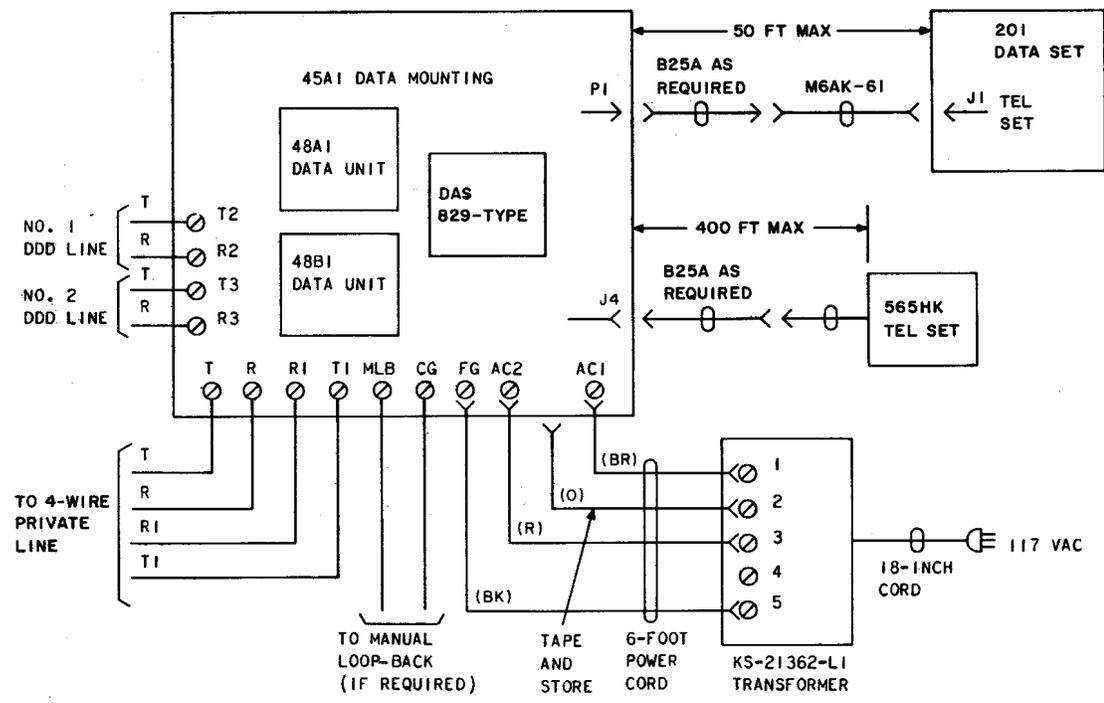
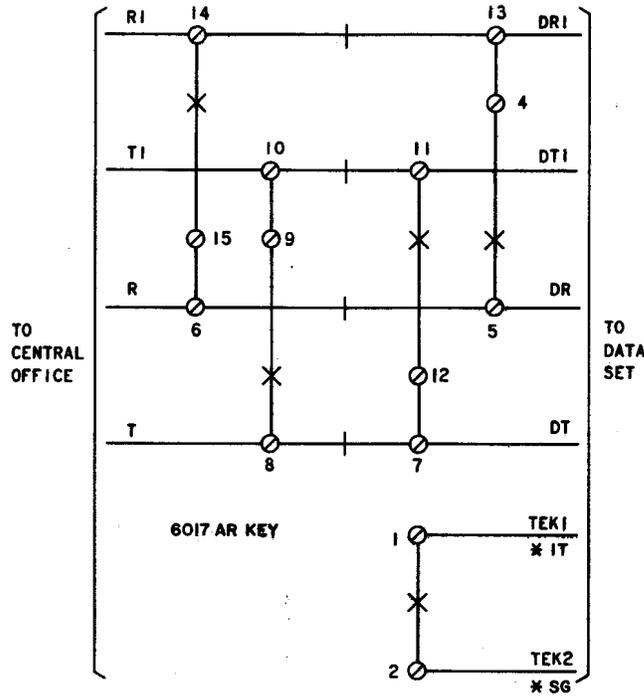
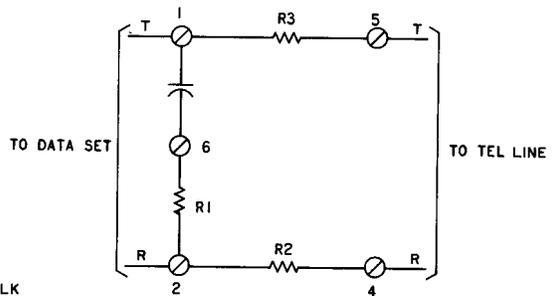
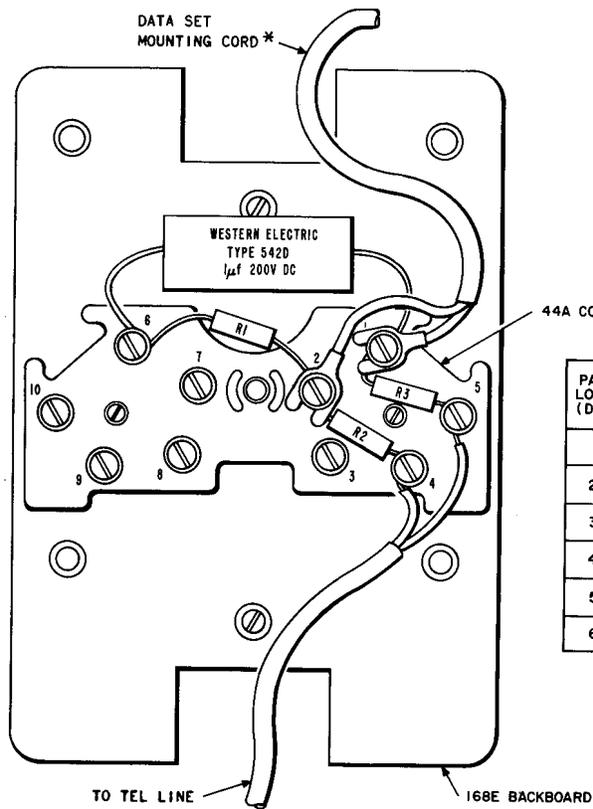


Fig. 17—Four-Wire Private Line With DDD Backup Using DAS 829-Type (Data/Voice)



* IT AND SG DESIGNATIONS REFER TO APPLICATIONS USING A LIST 5 EQUIPPED DATA SET.

Fig. 18—Line and Test Key Circuit



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. 19—Insertion Loss Pad Connections