

DATA SETS 201A- AND 201B-LIST TYPE TRANSMITTER-RECEIVER INSTALLATION AND CONNECTIONS

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1. GENERAL

1.01 This section contains installation information concerning data sets 201A- and 201B-list type. The data sets should be installed in conformance with existing installation practices. Refer to the section entitled Data Sets—General Installation and Connection Information (590-010-200).

1.02 This section is reissued to add information on data auxiliary set (DAS) 804A (2.02) and to show circuit board GU73 (3.01).

1.03 Data sets 201A- and 201B-list type must be located within range of the customer-supplied interface cord which must not exceed 50 feet. The data sets are designed to operate in an ambient temperature range of 40° to 110°F and a relative humidity range of 20 to 90 percent.

2. INSTALLATION

2.01 The D25D-61 cord supplied with the data set is terminated on one end with a 25-pin connector which mates with the TEL SET connector J1 on the data set. The other end plugs into either a 66E3 connecting block or a KS-19252-L1 bridging adapter. If a DAS is not used with the data set, the D25D cord plugs directly into the 66E3 connecting block which provides terminals for the telephone line connections.

2.02 If a DAS is used with the data set, the D25D cord plugs into a KS-19252-L1 bridging

adapter. If a telephone set is used, it is plugged into one end of an M26H cord, and the other end of the M26H cord is plugged into the bridging adapter. If a DAS 828A is used, refer to Sections 598-080-100, 598-080-180, 598-080-200, and 598-080-500 for complete information. If a DAS 804A is used, it is plugged into one end of an M50J cord. The other end of the M50J cord plugs into the bridging adapter.

Caution: If the DAS 804A 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 may result. It is also important to remember that the DAS 804 inserts a 2-dB loss in the signal path. However, options Z and Y (see Table A) compensate for transmission loss by increasing the transmit power level. The receive level loss must be compensated for by selecting the proper option (see Table A).

2.03 The bridging adapter is a 3-way multiple which also connects to a 66E3 connecting block with a B25A cable (not supplied with the data set). The plug and connector pin numbers of this cable correspond. The B25A cable can be ordered in lengths of 5, 15, 30, 60, and 100 feet, allowing flexibility in locating the 66E3 connecting block. Connections to key telephone units (KTUs) or to the telephone line are made at the 66E3 block. If DAS 801 is also used, connections for it are also made at the 66E3 block. By inserting 161A adapters over the quick-connect terminals of the 66E3 block, the spade lugs on the DAS 801 cord can easily be connected to the 66E3 block.

2.04 The power source must be 117 volts ± 10 percent and 60 ± 0.5 Hz. A 3-wire power cord (KS-14532-L15) is supplied with the data set for connecting to the 117-volt ac receptacle. The customer must furnish a 3-wire ac outlet to accept a plug with two parallel blades and a

U-shaped grounding pin. This outlet must not be under the control of a switch. To avoid the possibility of data errors due to potential difference between data set ground and business machine ground, the outlet for the data set power cord should be served from the same ac distribution panel as the business machine. If they are not served from the same panel, a test using the 6A impulse counter should be made to detect the presence of noise potentials. This test procedure is described in Section 592-011-502. If test requirements are not met, data set ground and business machine ground must be bonded together.



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

2.05 To minimize inductive interference to data signals on the telephone (data) line, the line should not be carried in the same run as lines between the data set and the customer business machine or lines connected to dc teletypewriter services. If this condition cannot be met, it will be necessary to use SK-type (shielded) station wire for the telephone (data) line between the data set and cable distribution terminal or building entrance.



To reduce possible interruptions during data transmission, it is preferable to avoid connecting extension stations or multiple appearances on the data line.

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

2.07 Data sets 201A- and 201B-list type must be tested after being installed and connected. For information on installation tests, refer to Section 592-011-502.

3. CONNECTIONS

3.01 The options which are available on data set 201-type are shown in Table A and must be specified on the service order. Figures 1 and 2 show the location of circuit boards on which

strapping options are made. Terminals on circuit board GU73 are shown (Fig. 3) and numbered to facilitate option strapping.

3.02 Refer to the sections listed in 4.01 for information on the options available with the various types of DASs used with the data set.

3.03 Interconnections for the various types of service are shown in Fig. 4 through 13. Listed below are the figure numbers and titles of each connection drawing.

Fig. 4—2-Wire DDD Service With DAS 804A

Fig. 5—2-Wire DDD Service With DAS 804A and 801 ACU

Fig. 6—2-Wire Private Line With DAS 804A

Fig. 7—2-Wire Private Line Without a Telephone

Fig. 8—4-Wire Private Line With DAS 828A (Data Only)

Fig. 9—4-Wire Private Line With DAS 828A (Data/Voice)

Fig. 10—4-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data Only)

Fig. 11—4-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data/Voice)

Fig. 12—Data Set 201 Using DAS 804A

Fig. 13—Line and Test Key Circuit

3.04 Figure 12 shows connections which are common to Fig. 4 through 6. To use these figures, extend Fig. 12 first and lay the appropriate figure over Fig. 12. Figure 13 shows an external line and test key circuit which may be specified for 4-wire circuits. In the normal (LINE) position, this key does not affect the operation of the data set. When 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 business machine to send data to itself through the local data set.

→ TABLE A ←
OPTIONS FOR DATA SET 201

FEATURE	OPTION	TYPE OF OPERATION	CIRCUIT BOARD STRAPPING				
			→ L2(CP AN73 or GU73) ←	L1	T10		
NEW SYNC	ZM	New sync used	None	None	None		
	ZL*	New sync not used	None	(7, 15)	None		
ECHO DELAY	ZN‡	Echo delay used		(1, 5) (11, 12)			
	ZP†	Echo delay not used. Short clear-to-send interval		(11, 16)			
	YB	Echo delay not used. Long clear-to-send interval		(1, 5) (11, 16)			
TERMINAL IMPEDANCE	ZJ*	IMPEDANCE (OHMS)		None	(6, 10) (3, 8)		
		600					
TERMINAL IMPEDANCE	ZK	900		None	(2, 10) (3, 4)		
2- OR 4- WIRE	E†	TYPE OF OPERATION		(22, 24, 25) (20, 21, 23) (13, 16) (11, 12)			
		4-Wire private line (full-duplex)	Continuous carrier				
	B		Carrier controlled by request -to-send or multiparty	(18, 22) (19, 20) (24, 25) (14, 17) (21, 23) (13, 16) (11, 12)			
	A‡	2-Wire private line or DDD (half-duplex)		(22, 24) (20, 23) (15, 25) (10, 21) (9, 14, 17)			
RECEIVER SIGNAL LEVEL (See notes)	ZA	RECEIVER SIGNAL (dBm)	MAXIMUM LINE NOISE (dBm)	None	None		
		COMPROMISE EQUALIZER OUT					
		-50 to -20	28				
		ZB	-44 to -14			34	(1, 7) (3, 5)
		ZC	-38 to -8			40	(6, 7) (4, 5)
		ZD†	-32 to -2			46	(1, 7) (3, 6) (4, 5)
		COMPROMISE EQUALIZER IN					
		ZE	-42 to -12			36	(2, 7) (5, 8)
		ZF	-36 to -6			42	(1, 7) (2, 3) (5, 8)
		ZG	-30 to 0			48	(2, 4) (5, 8) (6, 7)
ZH‡	-24 to +6	54	(1, 7) (3, 6) (2, 4) (5, 8)				
TRANSMITTER LINE SIGNAL	LINE SIGNAL (dBm)			None	None		
	Z	+2	(26, 30)				
	Y	+1	(26, 30)				
	X	0	(26, 30)				
	W	-1	(27, 30)				
	V	-2	(27, 30)				
	T	-3	(27, 30)				
	S	-4	(28, 30)				
	R	-5	(28, 30)				
	Q	-6	(28, 30)				
	N	-7	(29, 30)				
	M	-8	(29, 30)				
	K	-9	(29, 30)				
	J*	-10	(31, 30)				
G	-11	(31, 30)					
F	-12	(31, 30)					

TABLE A (Cont)

FEATURE	OPTION	TYPE OF OPERATION	FUNCTION OF LEAD	CIRCUIT BOARD STRAPPING
				L4 (CP API OR GU74)
CONTROL LEAD INTERFACE	ZR*	EIA RS-232-A voltage interface	Interlock (IT) (Corresponds to data set ready function of RS-232-A)	(1, 3) (5, 6) (11, 13) (21, 24)
	ZT*		Ring Indicator 1 (RG1) (Corresponds to ring indicator function of RS-232-A)	(9, 10) (17, 18) (19, 20) (21, 22) (8, 14, 15)
			Remote Control (RC) (Corresponds to data terminal ready function of RS-232-A)	
	ZS		Interlock (IT)	(1, 2) (4, 5, 7) (11, 12, 24)
ZU	Contact closure interface	Ring Indicator 1 (RG1) Ring Indicator 2 (RG2) Remote Control (RC) Remote Release (RR) Ready (RDY)	(8, 9) (15, 16) (18, 20) (22, 23)	

Note 1: Usually, the equalizer is not used on private lines.

Note 2: Option ZG should be used when loop loss is less than 4 dB. Option ZF 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 ZF, then option ZG should be used.

* Indicates factory-wired option for 201A and 201B.

† Indicates factory-wired option for 201B only.

‡ Indicates factory-wired option for 201A only.

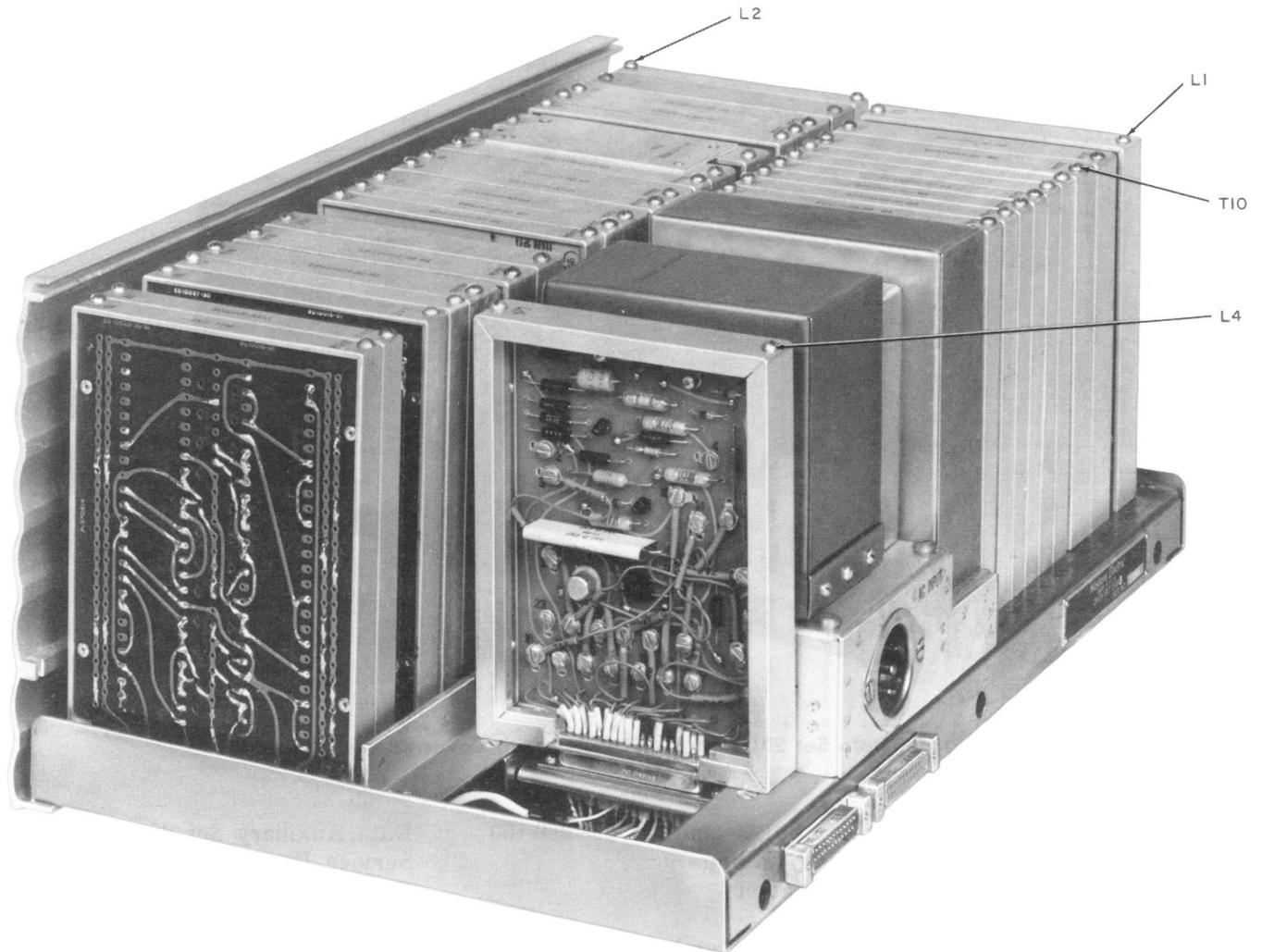


Fig. 1—Data Set 201 (List 1 Chassis) With Cover Removed

4. REFERENCES

4.01 Detailed information concerning data sets 201A- and 201B-list type is contained in CD- and SD-1D186-01. Information concerning the key telephone units is in SD-69288-01. The following sections are listed for reference:

502-525-410	Telephone Set 564HL—Connections	592-011-302	Data Sets 201A- and 201B-List Type Transmitter-Receiver—Maintenance
590-010-200	Data Sets—General Installation and Connection Information	592-011-502	Data Sets 201A- and 201B-List Type Transmitter-Receiver—Test Procedures
592-011-102	Data Sets 201A- and 201B-List Type Transmitter-Receiver—Description and Operation	598-010-100	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Description and Operation
		598-010-200	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Installation and Connections

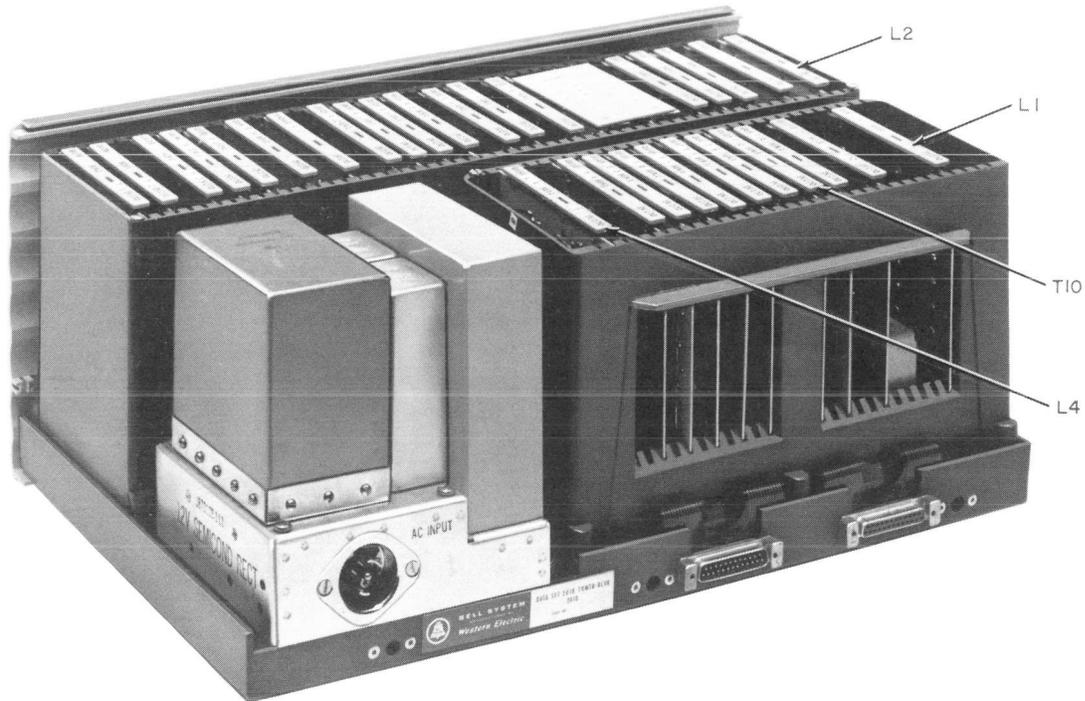


Fig. 2—Data Set 201 (List 1A Chassis) With Cover Removed

598-010-101	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Identification and Operation	598-080-100	Data Auxiliary Set 828A—Data Service Unit—Description and Operation
598-010-201	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Installation and Connections	598-080-101	Data Auxiliary Set 828C—Description and Operation
598-012-100	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Identification and Operation	598-080-200	Data Auxiliary Set 828A—Data Service Unit—Installations and Connections
598-012-200	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Installation	598-080-201	Data Auxiliary Set 828C—Installation and Connections
598-012-101	Data Auxiliary Sets 801C3 and 801C4—Description and Operation	598-080-500	Data Auxiliary Set 828A—Data Service Units—Maintenance and Test Procedures
598-012-201	Data Auxiliary Sets 801C3 and 801C4—Installation		
598-030-100	Data Auxiliary Set 804A—Type—Identification and Connections	598-080-501	Data Auxiliary Set 828C—Maintenance and Test Procedures

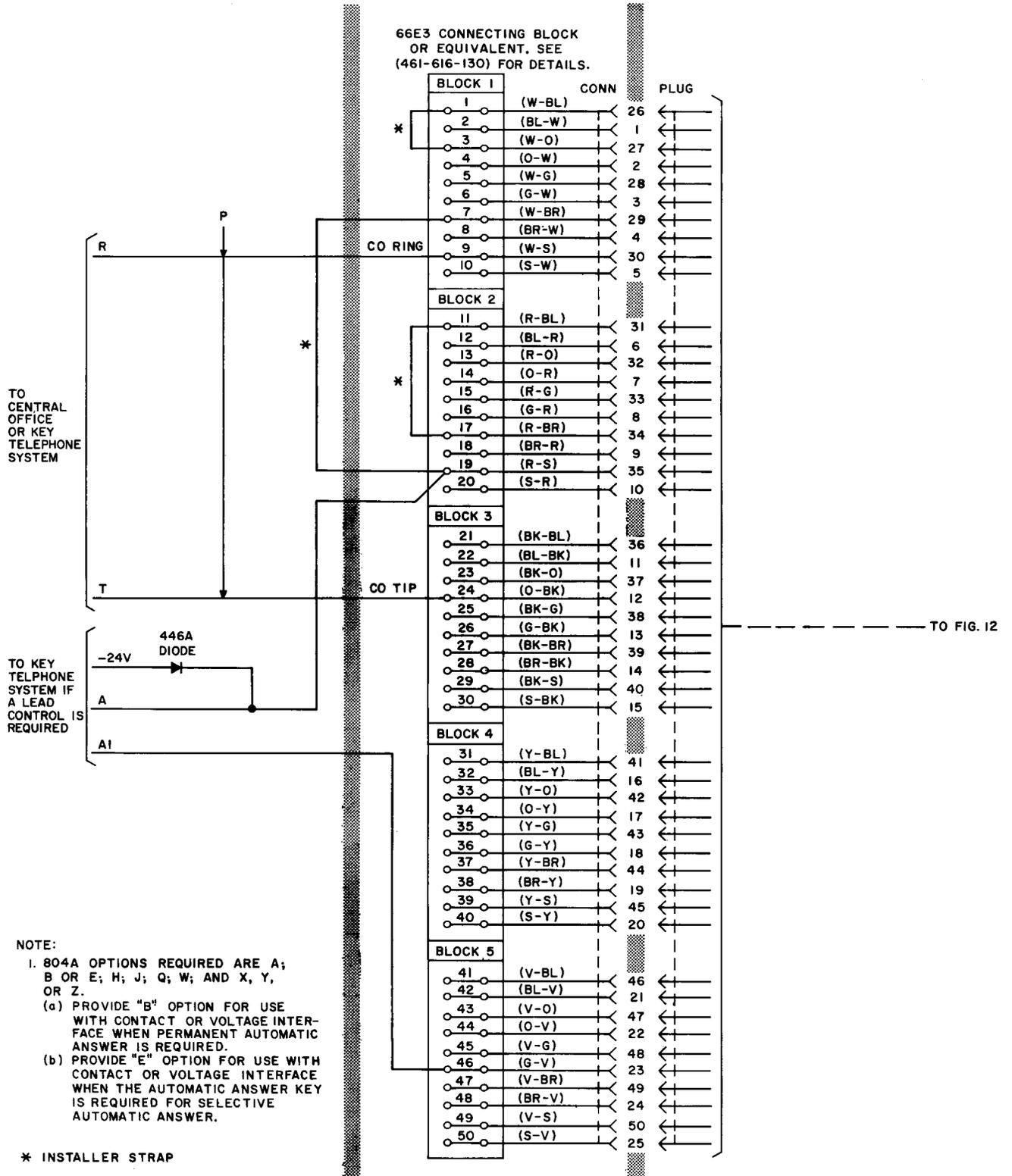


Fig. 4—2-Wire DDD With DAS 804A

NOTES:

1. 804A OPTIONS REQUIRED ARE A; B; H; J; Q; T; W; AND X, Y OR Z.
2. 801A1 OPTIONS REQUIRED ARE W, S, F, Q, Y OR REMOVE Y, Z OR REMOVE Z, V.
3. 801A2 OPTIONS REQUIRED ARE W, S, F, Q, Y OR REMOVE Y, Z OR REMOVE Z, U.
4. 801A6 OPTIONS REQUIRED ARE W, S, M, Q, R OR H, B, G OR Z, ZE OR ZF.
5. 801C2 OPTIONS REQUIRED ARE V OR Y, W, S, M, Q, R OR REMOVE R, Z OR REMOVE Z.
6. 801C4 OPTIONS REQUIRED ARE V OR Y, W, S, M, Q, R OR H, B, G OR Z, ZH, ZM.
7. 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.

8. 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 THE WIRES FROM THE WIRE WRAPPED TERMINALS 2 AND 33 ON THE PRINTED WIRING BOARD AND REMOVE OPTION V OR W (WHICHEVER IS USED) FROM THE OPTION BOARD.
 - (2) ADD A STRAP BETWEEN WIRE WRAPPED TERMINALS 2 AND 49 ON THE PRINTED WIRING BOARD. STRAP TERMINAL 37 (OPTION W) OR TERMINAL 39 (OPTION V) TO PRINTED WIRING BOARD TERMINAL 33

* INSTALLER STRAP

DATA AUXILIARY SET 801A1 SD-ID042-01 (NOTE 2)
 DATA AUXILIARY SET 801A2 SD-ID042-01 (NOTE 3)
 DATA AUXILIARY SET 801A6 SD-ID082-01 (NOTE 4)
 DATA AUXILIARY SET 801C2 SD-ID035-01 (NOTE 5)
 DATA AUXILIARY SET 801C4 SD-ID103-01 (NOTE 6)

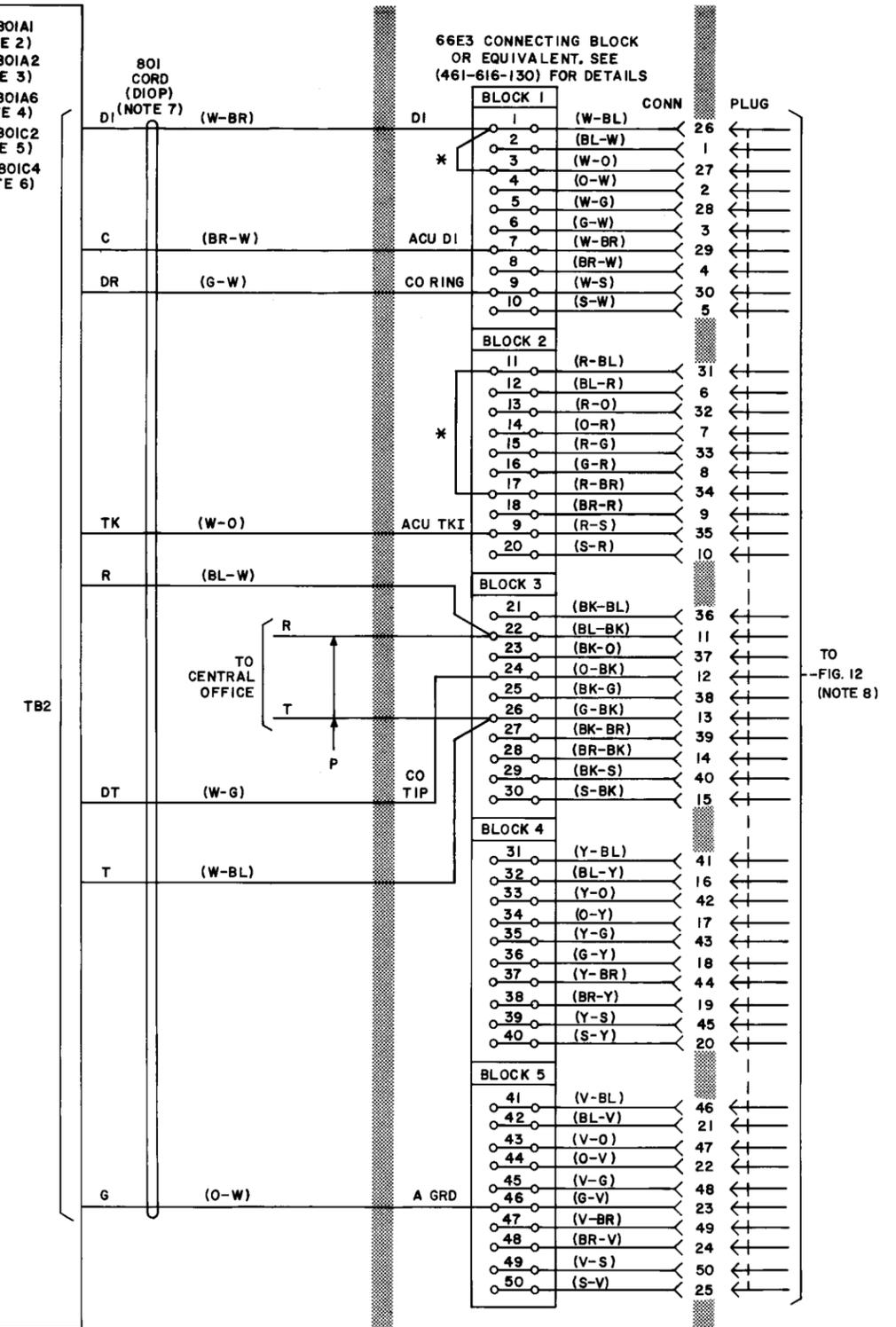


Fig. 5—2-Wire DDD With DAS 804A and DAS 801

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			
		9	3	5		
		12	4	6		
			1	11		
		8		1		
			22	15		
			40		2	
5					5	
				17		36
	6			9	7	8
(1)	(2)	(3)	(4)	(5)	(6)	(7)

KEY TELEPHONE UNITS

- NOTES:**
- 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.
 - 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.

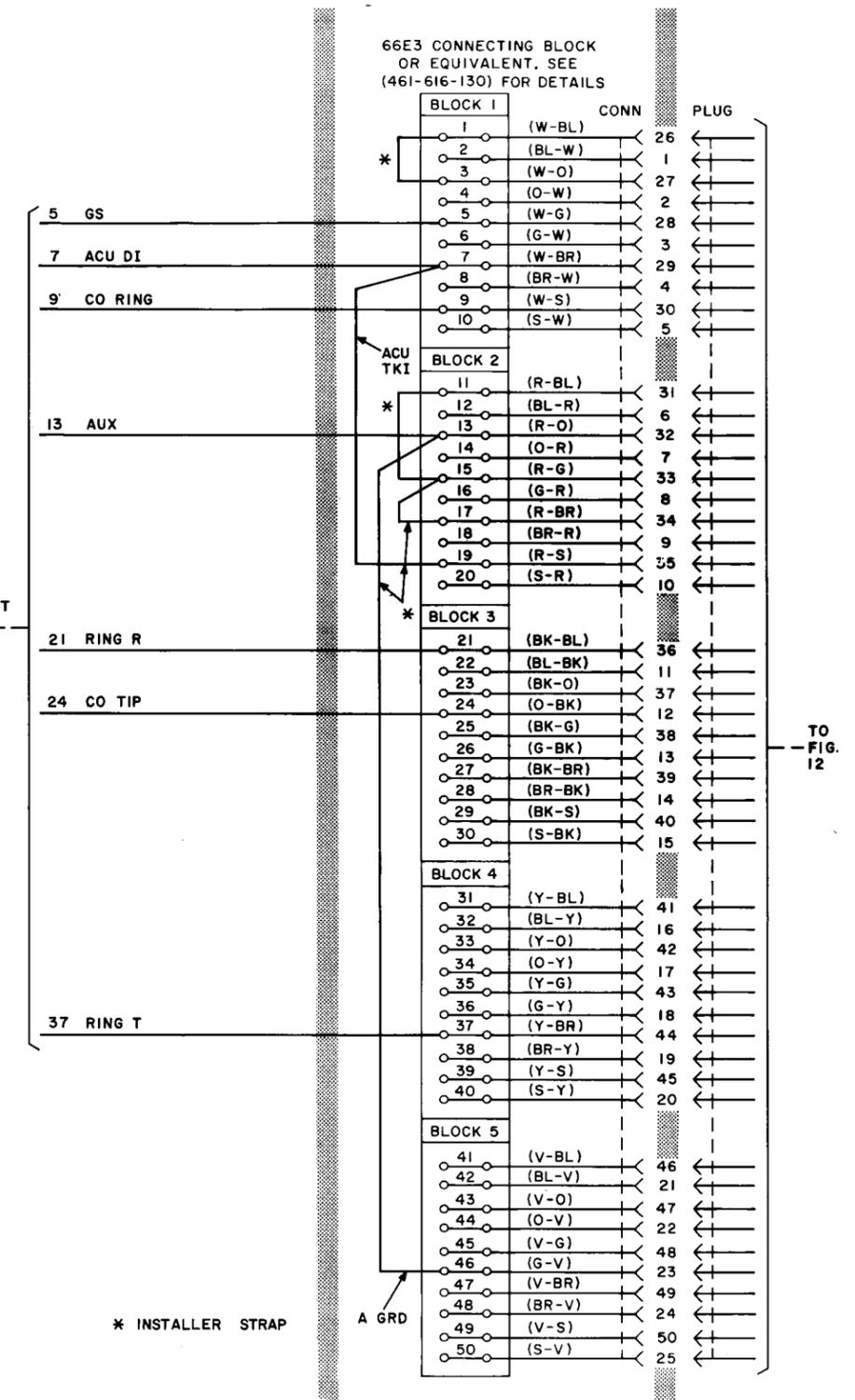
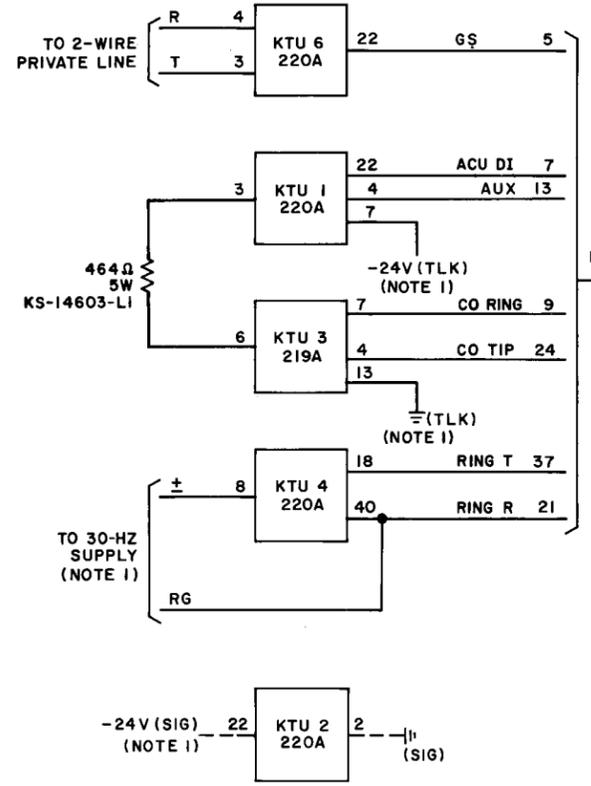


Fig. 6—2-Wire Private Line With DAS 804A

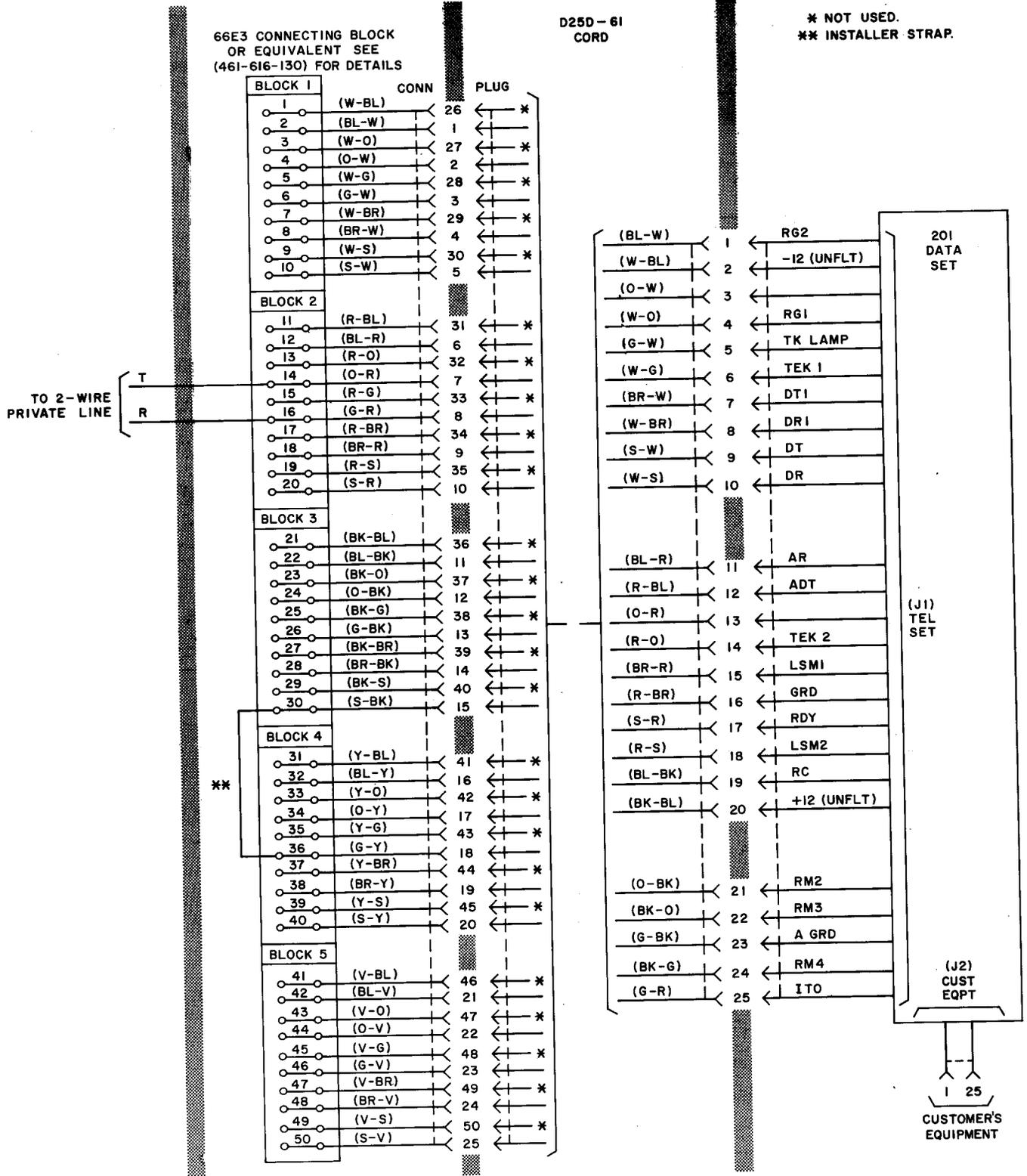


Fig. 7—2-Wire Private Line Without a Telephone

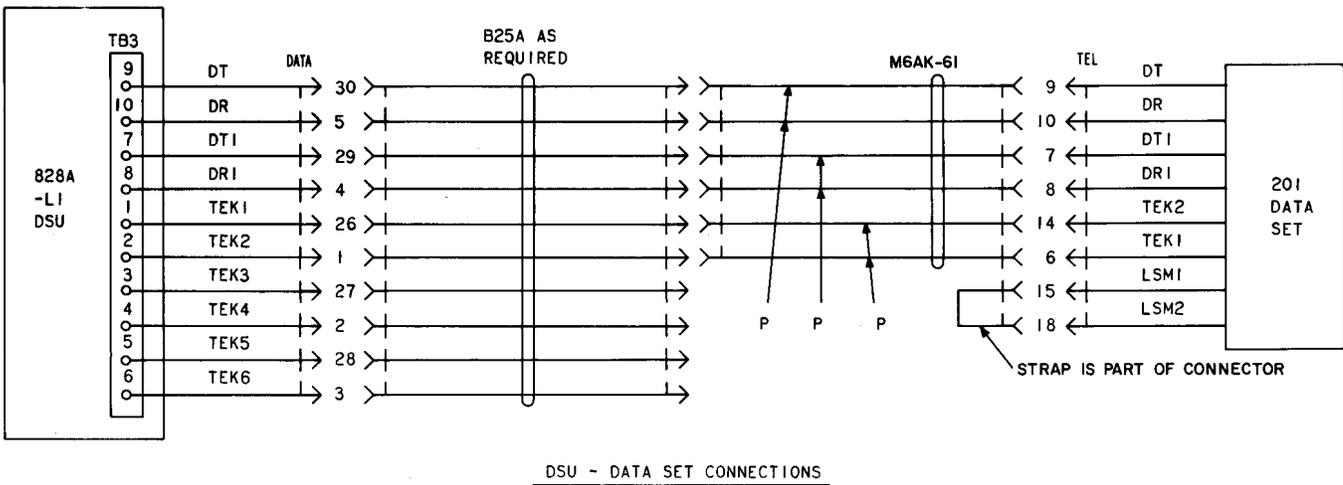
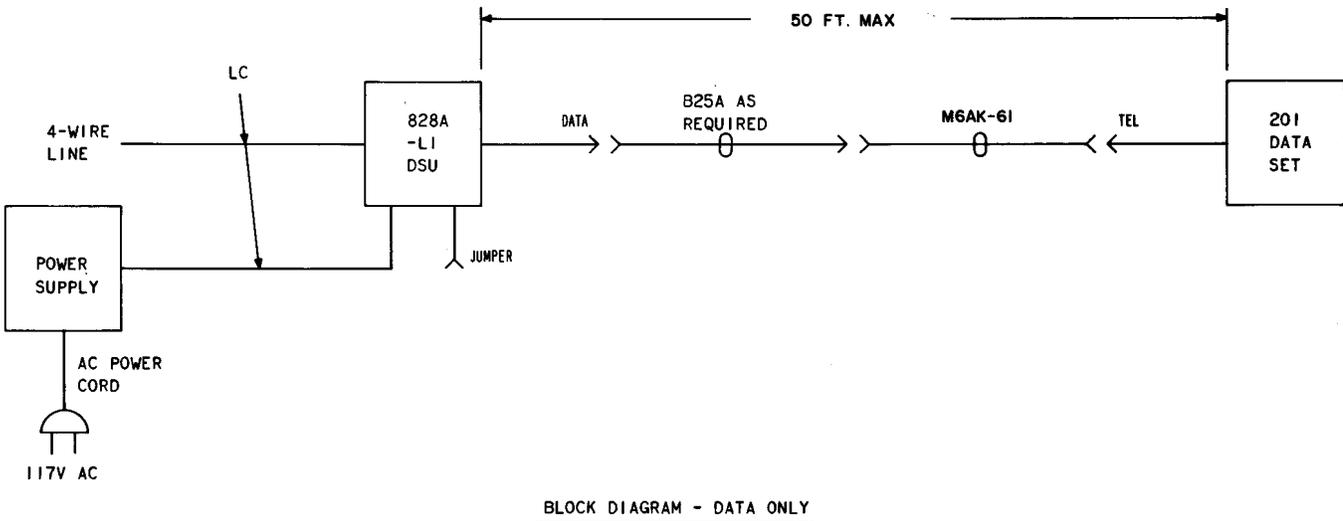


Fig. 8—4-Wire Private Line With DAS 828A (Data Only)

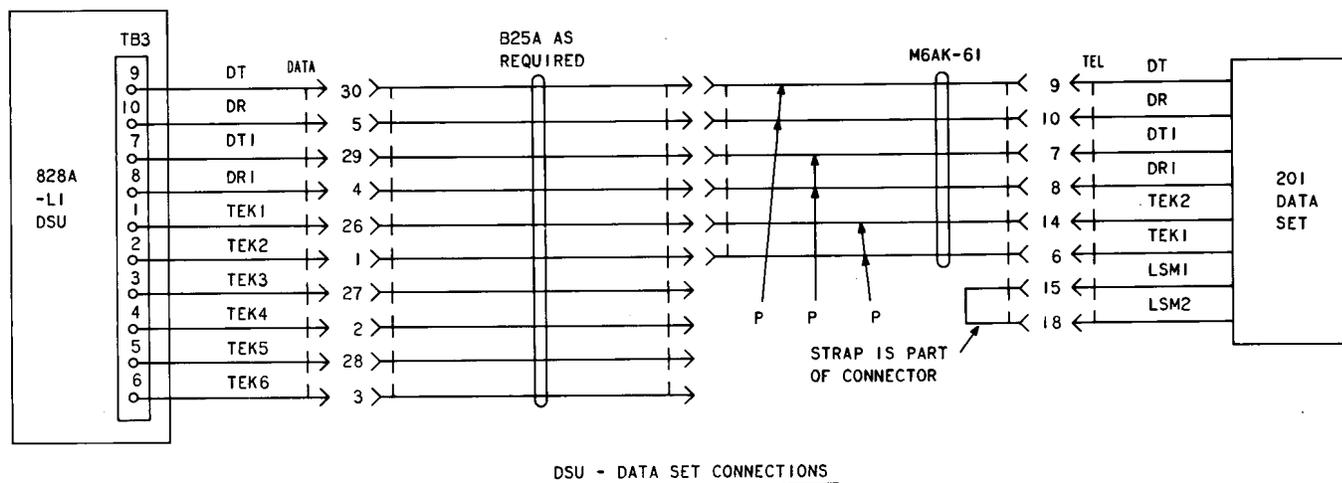
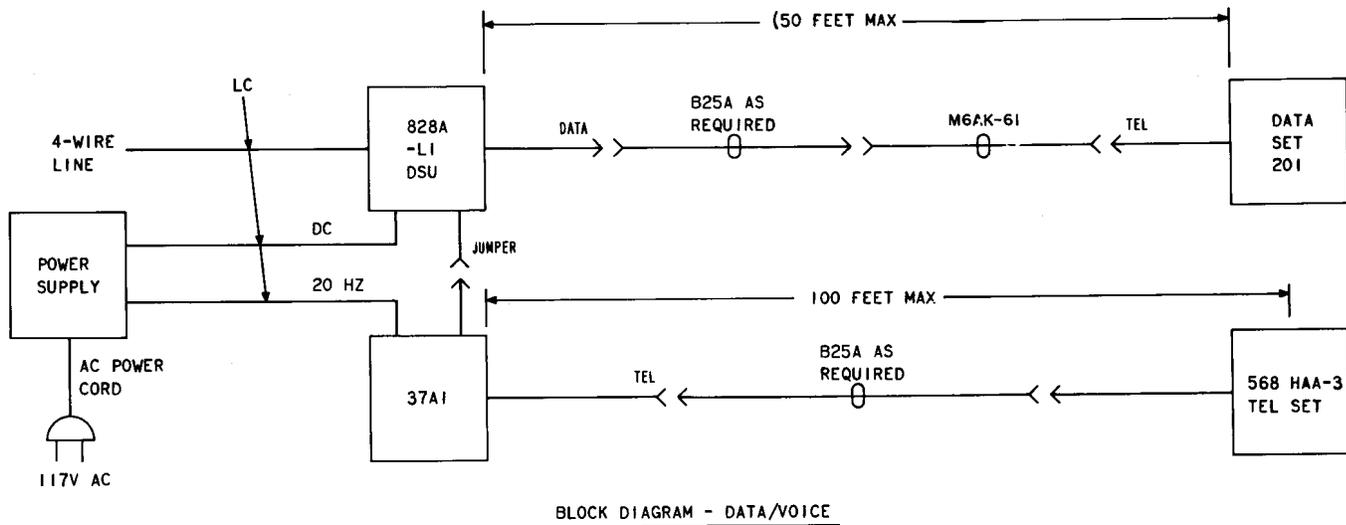


Fig. 9—4-Wire Private Line With DAS 828A (Data/Voice)

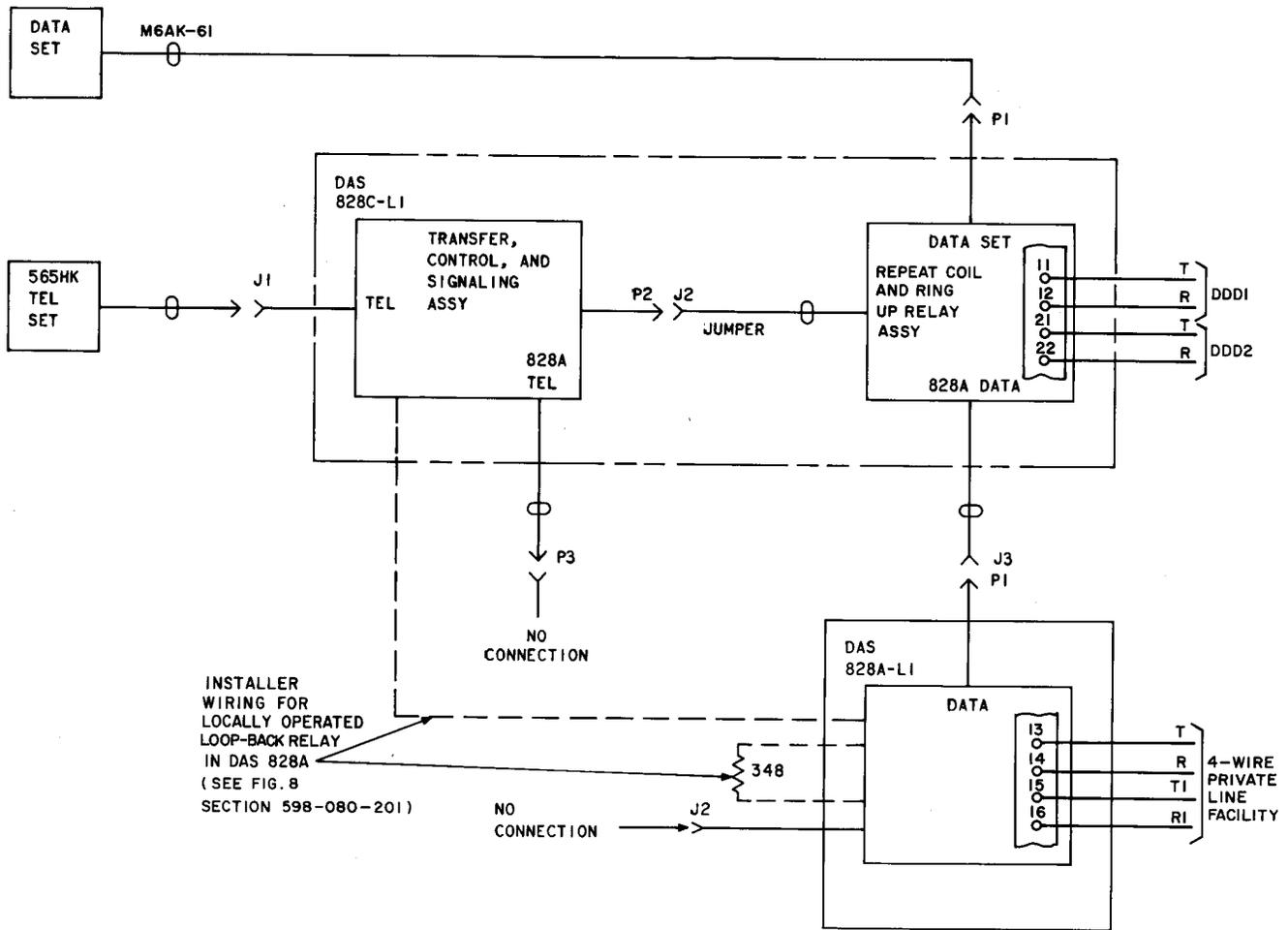


Fig. 10—4-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data Only)

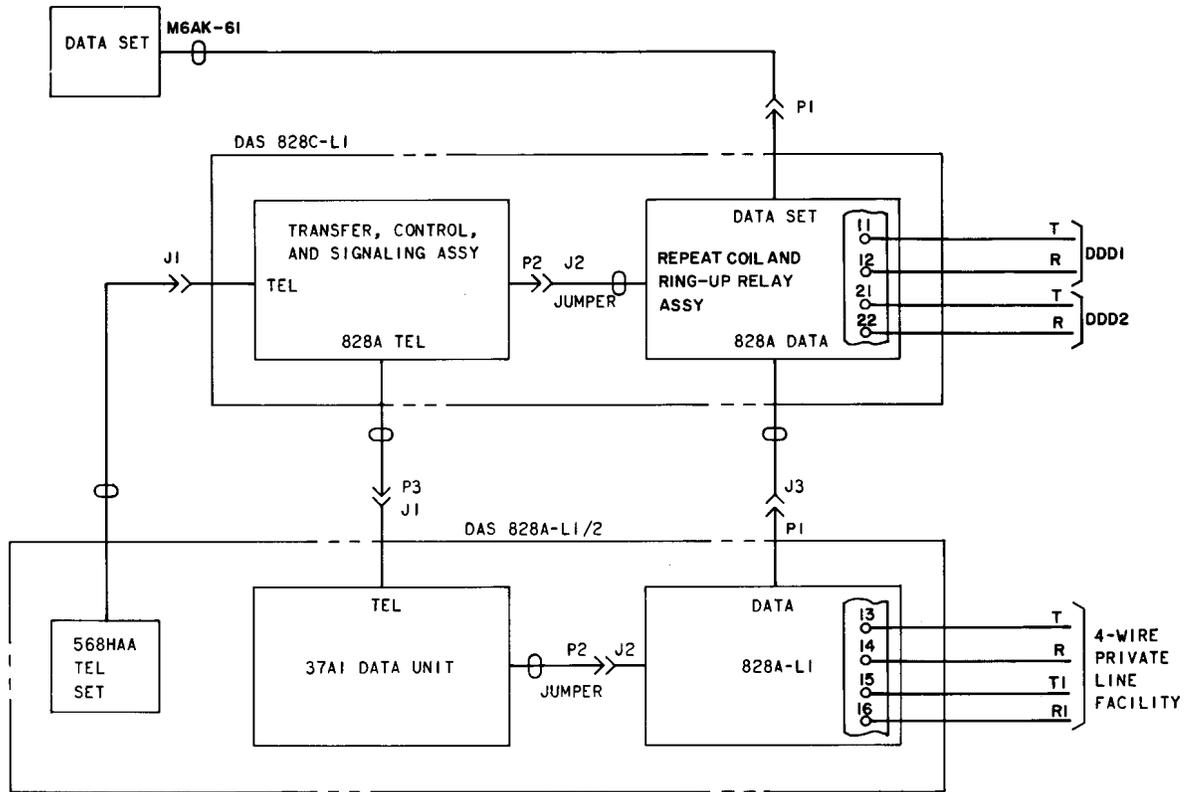
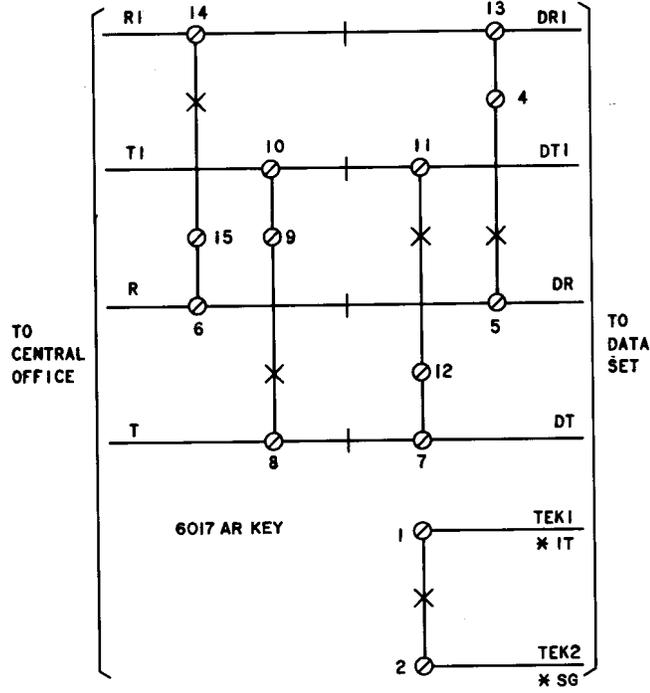


Fig. 11—4-Wire Private Line With DDD Backup Using DAS 828A and DAS 828C (Data/Voice)



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

Fig. 13—Line and Test Key Circuit