

DATA SETS 201A1, A2 AND 201B1, B2

TRANSMITTER-RECEIVER

INSTALLATION AND CONNECTIONS

1. GENERAL

1.01 This section contains information concerning the installation and connection of Data Sets 201A1, A2 and 201B1, B2. 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 update the contents and to include information pertaining to Data Sets 201B1, B2. Prior to this issue, information concerning Data Sets 201B1, B2 was contained in Section 592-012-202. Because revision is extensive, change arrows have been omitted.

1.03 Unless a particular model of data set is to be discussed, hereafter in this section Data Sets 201A1, A2 and 201B1, B2 will be referred to as Data Sets 201A and 201B, respectively.

1.04 Data Sets 201A and 201B are designed to operate in an ambient temperature range of +40 to +110°F. The relative humidity of the environment should be in the range of 20 to 90 percent.

2. INSTALLATION

2.01 The data set must be installed within range of the customer-supplied interface cord which must not exceed 50 feet in length. To connect with the data set, the customer-supplied interface cord should be equipped with a DB-19604-432 Cinch (or Cannon) plug and a DB-51226-1 or similar hood.

2.02 Some data sets will be equipped with a D25C-61 cord for connecting to the line and associated equipment. The following information applies for installations using a D25C-61 cord:

- The D25C-61 cord is terminated on one end with a 25-pin connector P1 which mates with

the TEL SET connector J1 on the data set. The other end should be terminated on three 44A connecting blocks. The telephone lines are connected directly to the 44A blocks.

- If a telephone set is used, the telephone set cord (D50J-61) is plugged into an A25B connector cable which is terminated on five 44A connecting blocks. Appropriate connections are then made between the three connecting blocks which terminate the data set and the five connecting blocks which terminate the telephone set. Connections between the two sets of blocks should be made with 6-pair inside wiring (IW) cable or equivalent. If a 1A1 or 1A Key Telephone System is used, connections for it are made at the set of five 44A connecting blocks.

2.03 The following information applies for installations using a D25D cord:

- The D25D cord 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 no telephone set is used, the D25D cord is plugged into the 66E3 connecting block and telephone line connections are made to it.
- If a telephone set is used without a key telephone system, the D25D cord is plugged into a KS-19252-L1 bridging adapter. One end of a 3-foot M26H cord plugs into the bridging adapter and the other end mates with the telephone set cord (D50J-61) connector. This latter connection is housed in a 57P telephone service fitting (optional). The bridging adapter is a 3-way multiple which also connects to a 66E3 connecting

block with a B25A connector cable. The plug and connector pin numbers of this cable correspond. The B25A connector cable can be ordered in lengths of 5, 15, 30, 60, and 100 feet, allowing flexibility in locating the 66E3 block. Connections to key telephone units (KTU) and/or telephone lines (depending on type of service) are made to the 66E3 connecting block. If a 1A1 or 1A Key Telephone System is used, separate 66E3 connecting blocks are used for the telephone set and for the data set. Cross connections are made between the connecting blocks.

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

2.05 When quad JKT wire is used on 4-wire systems, use the red and green conductors as one pair and the yellow and black conductors as the second pair.

2.06 A 3-wire power cord (KS-14532-L15) is supplied with the data set for connecting to a 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 the section entitled Data Sets 201A1, A2 and 201B1, B2, Transmitter-Receiver, Test Procedures (592-011-500). 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.

2.07 The power source must be 117 volts (± 10 percent) 60 (± 0.5) Hz.

2.08 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's business machine or lines connected to dc teletypewriter services. If this condition cannot be met, it will be necessary to use type SK (shielded) station wire for the telephone (data) line between the data set and cable distribution terminal or building entrance.

2.09 For information on installation tests, refer to Section 592-011-500.

2.10 The wiring options of the data set will be specified on the service order and arranged accordingly.

3. CONNECTIONS

3.01 For cover removal and replacement, proceed as follows:

- Disconnect cords from the rear of the data set, loosen the three captive retaining screws, and disengage them from the chassis. Slide the cover off by pulling it towards the rear of the data set.
- To replace the cover on the data set, reverse the procedure.

3.02 The type of operation and strapping options shown in Table A must be specified on the service order. Factory-wired options are indicated by asterisks (*). Figure 1 shows the locations of terminal strips L1 and L2 on which options are strapped.



Sets used on service orders specifying options other than those mentioned must be changed in accordance with Table A. Straps are removed, added, or changed as applicable.

3.03 Interconnections for the various types of service are shown in Fig. 2 through 5 when the data set is supplied with a D25C cord. When the data set is supplied with a D25D cord and an M26H cord, the interconnections are shown in Fig. 2A through 5A. Select the appropriate figure and wire as shown:

Fig. 2 and 2A—Four-Wire Data Service Without a Telephone Set

TABLE A

FEATURE	OPTION	TYPE OF OPERATION		CONNECTIONS			
				TERMINAL STRIP	STRAP TERMINALS		
AUTOMATIC ANSWER (WITH TWO-WIRE KEY TELEPHONE SET)	W	Selective Automatic Answering			See Connection Diagram.		
	X	Permanent Automatic Answering			See Connection Diagram.		
TERMINAL IMPEDANCE	G*	IMPEDANCE (OHMS)		L1	(6, 10) (3, 8)		
		600					
	F	900		L1	(2, 10) (3, 4)		
NEW SYNC	A*	New Sync Not Used		L1	(7, 15)		
		New Sync Used		L1	None		
ECHO DELAY (See Note 1.)	E	2-Wire		L1	(1, 5) (11, 12)		
	B*	4-Wire		L1	(11, 16)		
TRANSMITTER OUTPUT LEVEL	ZI	LINE SIGNAL (DBM)		L2	(26, 30)		
		0					
		-2				L2	(27, 30)
		-4				L2	(28, 30)
		-6				L2	(29, 30)
	ZM*	-8		L2	None		
TYPE OF OPERATION	4-WIRE PRIVATE LINE	ZN*	TYPE OF OPERATION		L2	(22, 24, 25) (20, 21, 23) (13, 16) (11, 12)	
			Continuous Carrier				
		ZO	Carrier Controlled By Request to Send		L2	(18, 22) (19, 20) (24, 25) (14, 17) (21, 23) (13, 16) (11, 12)	
	2-WIRE PRIVATE LINE OR DDD	ZP	Carrier Controlled By Request to Send		L2	(22, 24) (20, 23) (15, 25) (10, 21) (9, 14, 17)	
RECEIVE SIGNAL LEVEL (See Note 2 and Note 3.)			RECEIVER SIGNAL (DBM)	MAXIMUM LINE NOISE (DBRNC)			
			COMPROMISE EQUALIZER OUT				
		ZA	-50 to -20	-36	L2	(5, 7)	
		ZB	-44 to -14	-42	L2	(1, 7) (3, 5)	
		ZC	-38 to -8	-48	L2	(6, 7) (4, 5)	
		ZD*	-32 to -2	-54	L2	(1, 7) (3, 6) (4, 5)	
		COMPROMISE EQUALIZER IN					
		ZE	-42 to -12	-40	L2	(2, 7) (5, 8)	
		ZF	-36 to -6	-46	L2	(1, 7) (2, 3) (5, 8)	
		ZG	-30 to 0	-52	L2	(6, 7) (2, 4) (5, 8)	
ZH	-24 to +6	-58	L2	(1, 7) (3, 6) (2, 4) (5, 8)			

* Indicates factory-wired option.

Note 1: Four-wire installations use option B. Most 2-wire installations use option E; however, short-haul circuits may use option B if requested by customer.

Note 2: Usually, the equalizer is not used on private lines.

Note 3: The least sensitive option (ZD or ZH) should be used where possible to minimize the effects of noise.

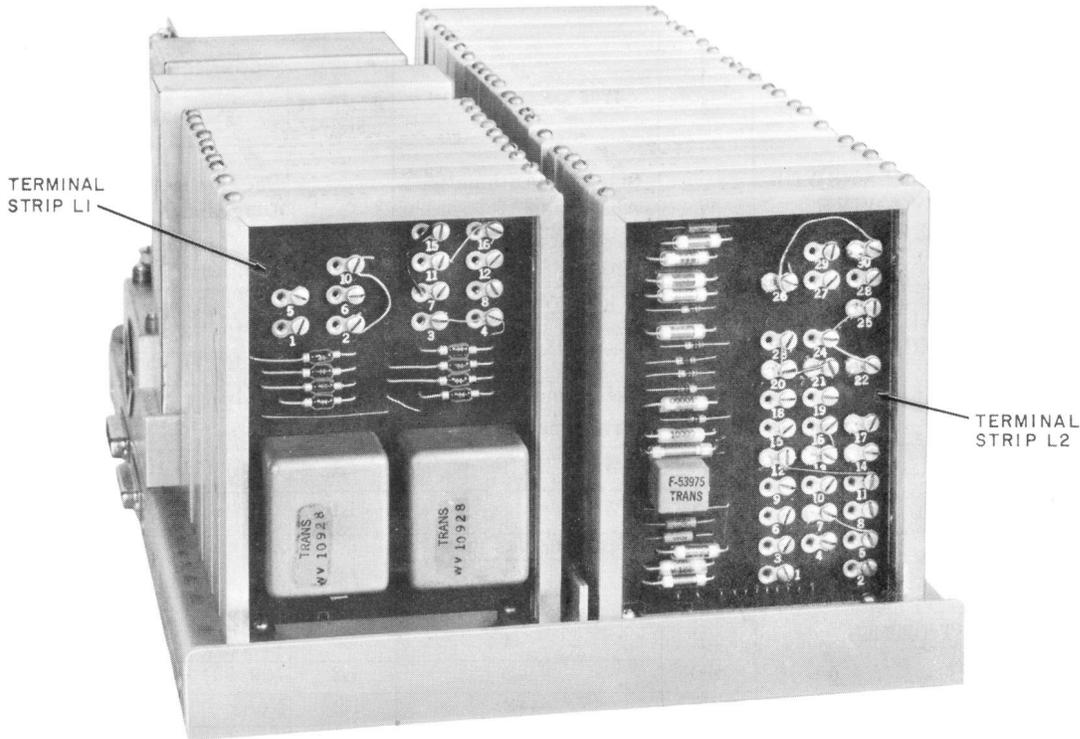


Fig. 1—Data Set 201-Type, Cover Removed

Fig. 3 and 3A—Two-Wire Data Service Without a Telephone Set

Fig. 4 and 4A—Two-Wire Data Service With a Telephone Set but Without a Key Telephone System

Fig. 5 and 5A—Two-Wire Data Service With a Telephone Set and a 1A1 or 1A Key Telephone System

Fig. 6—569NB Telephone Set, Internal Connections

Fig. 7—Data Sets 201A and 201B, Automatic Answering Circuit

Fig. 8—Line and Test Key Circuit.

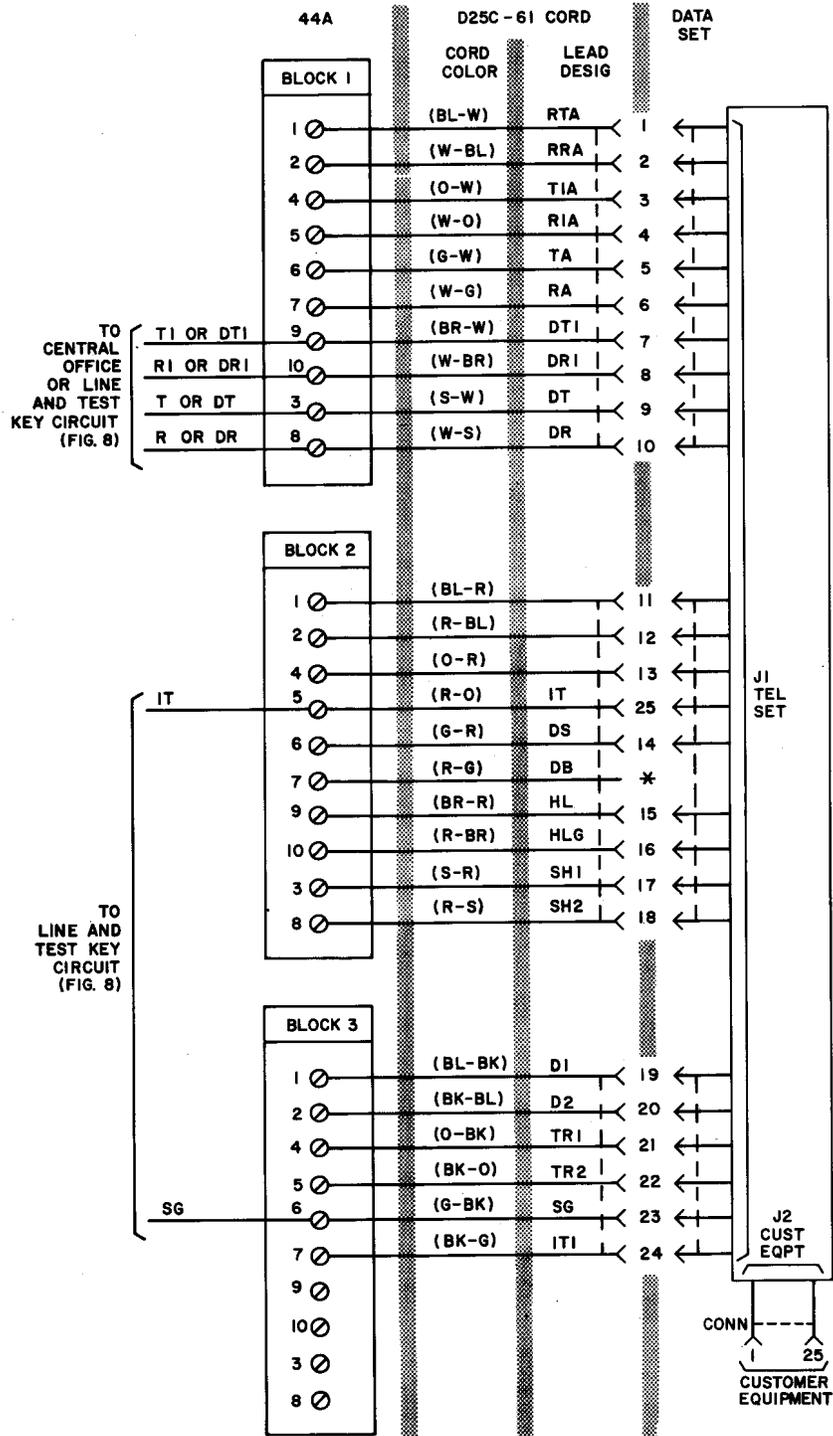
3.04 Figure 8 shows an external line and test key circuit which may be specified for 4-wire circuits. In the normal position, this key does not affect the operation of the data set. When in the test position, this key connects the output of the

transmitter to the input of the receiver and grounds the interface (IT) lead. This permits the business machine to send data to itself through the local data set.

4. REFERENCES

4.01 The following Bell System Practices contain information which may be helpful in installing and connecting Data Sets 201A1, A2 and 201B1, B2:

SECTION	TITLE
502-533-100	Telephone Sets—569NB
590-010-200	Data Sets, General Installation and Connection Information
592-011-100	Data Sets 201A1, A2 and 201B1, B2, Transmitter-Receiver, Description and Operation



* CUT OFF AND STORED

Fig. 2—Four-Wire Data Service Without a Telephone Set

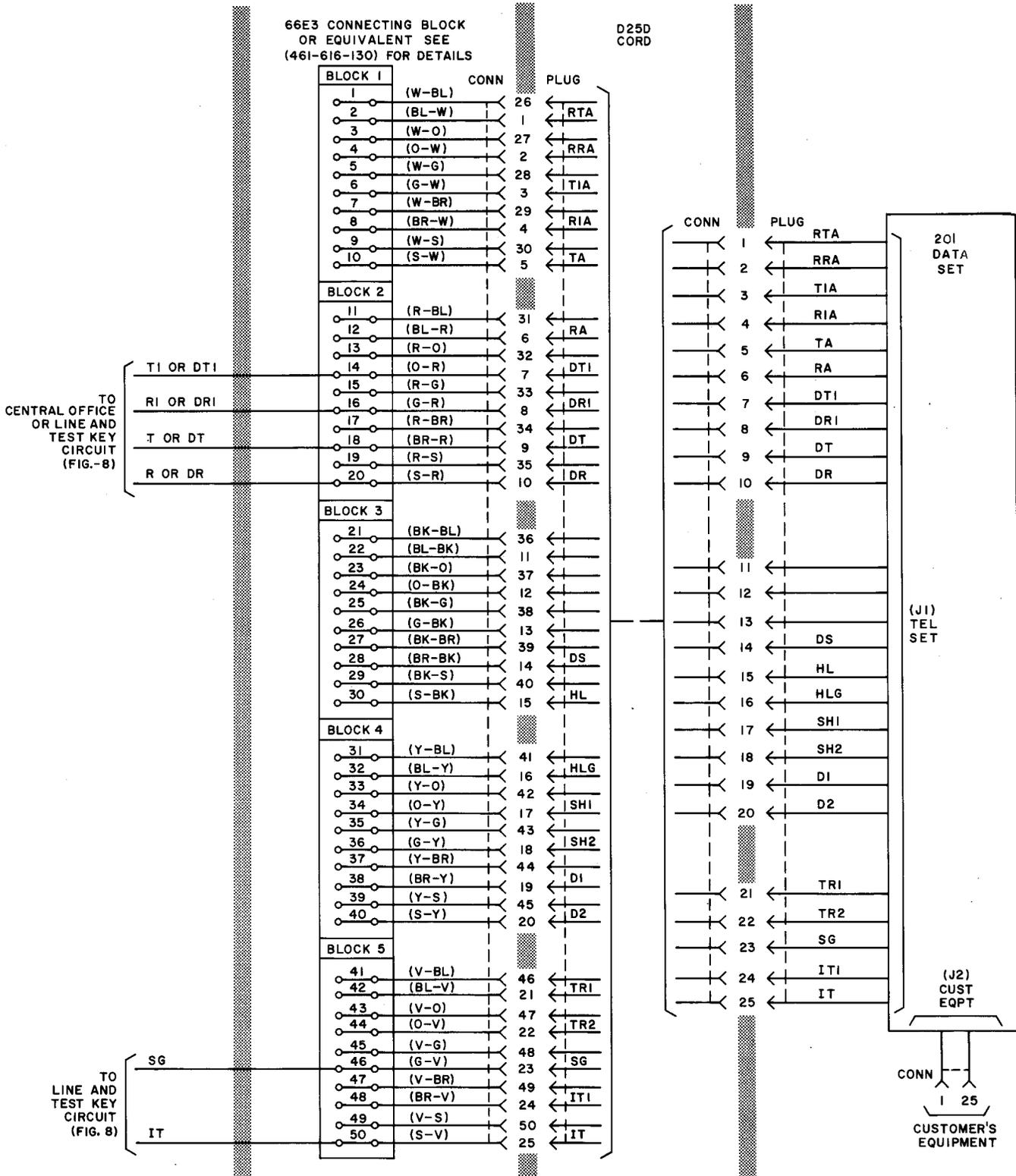


Fig. 2A—Four-Wire Data Service Without a Telephone Set

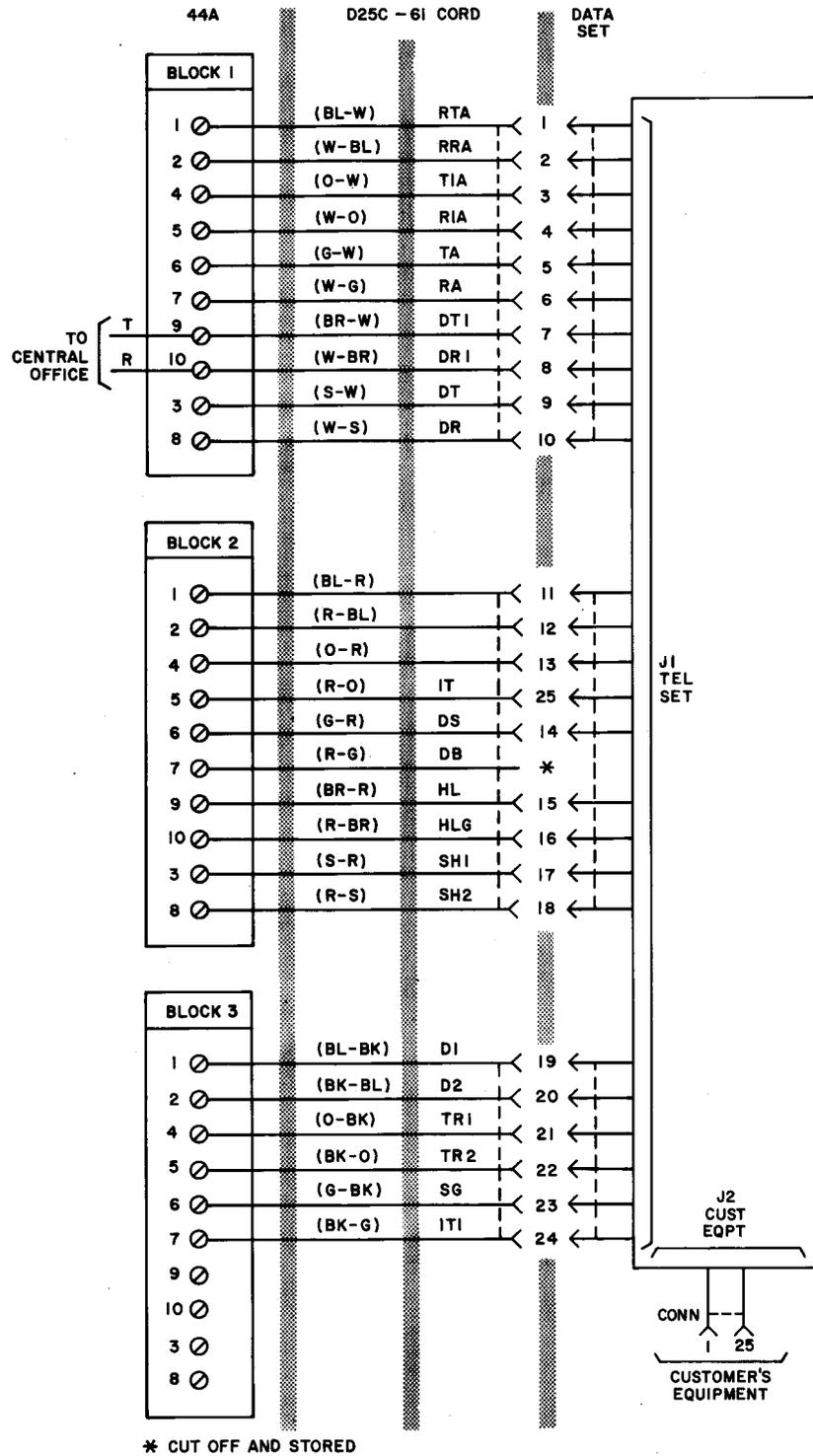


Fig. 3—Two-Wire Data Service Without a Telephone Set

D25D
CORD

66E3 CONNECTING BLOCK
OR EQUIVALENT SEE
(461-616-130) FOR DETAILS

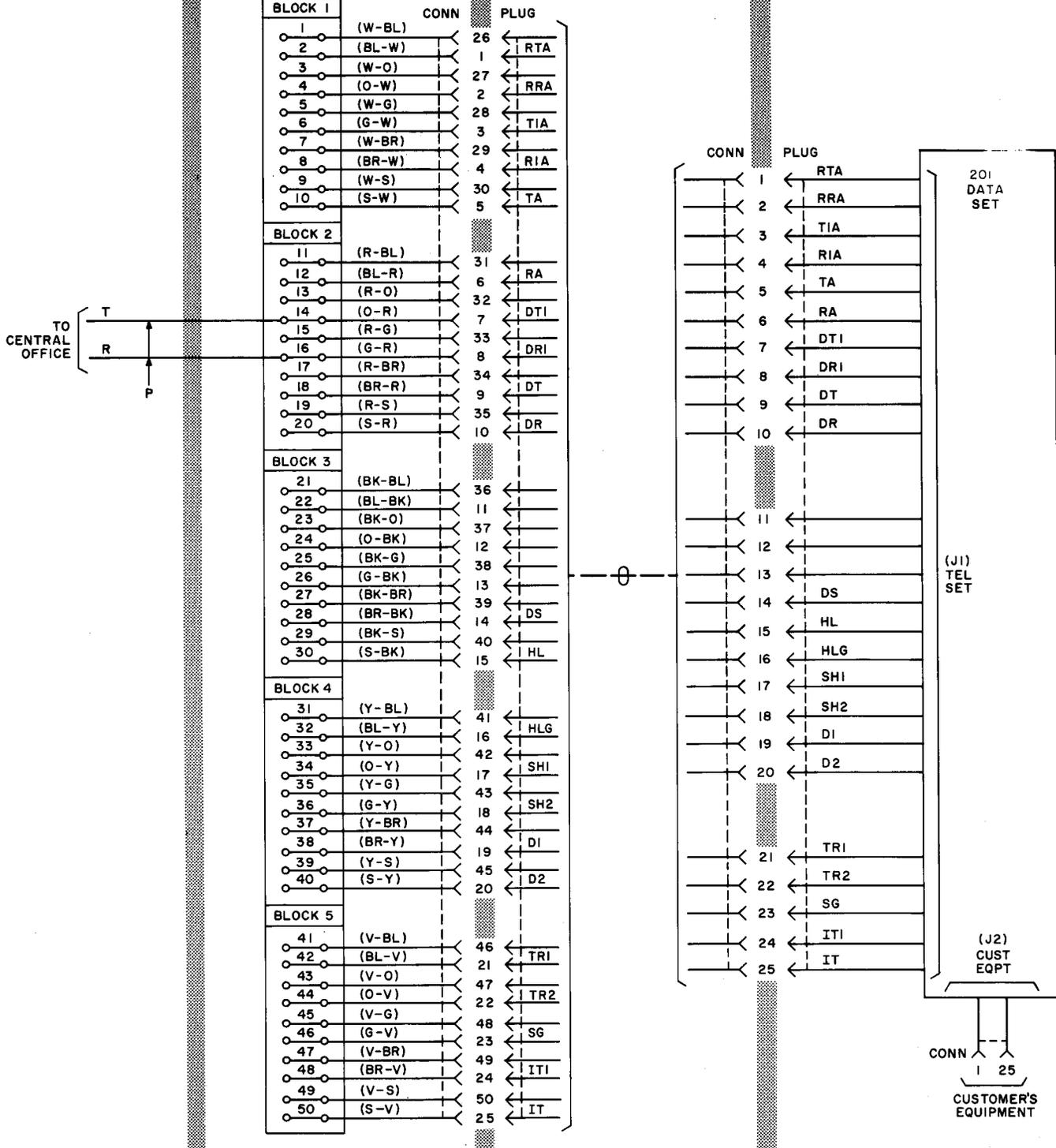


Fig. 3A—Two-Wire Data Service Without a Telephone Set

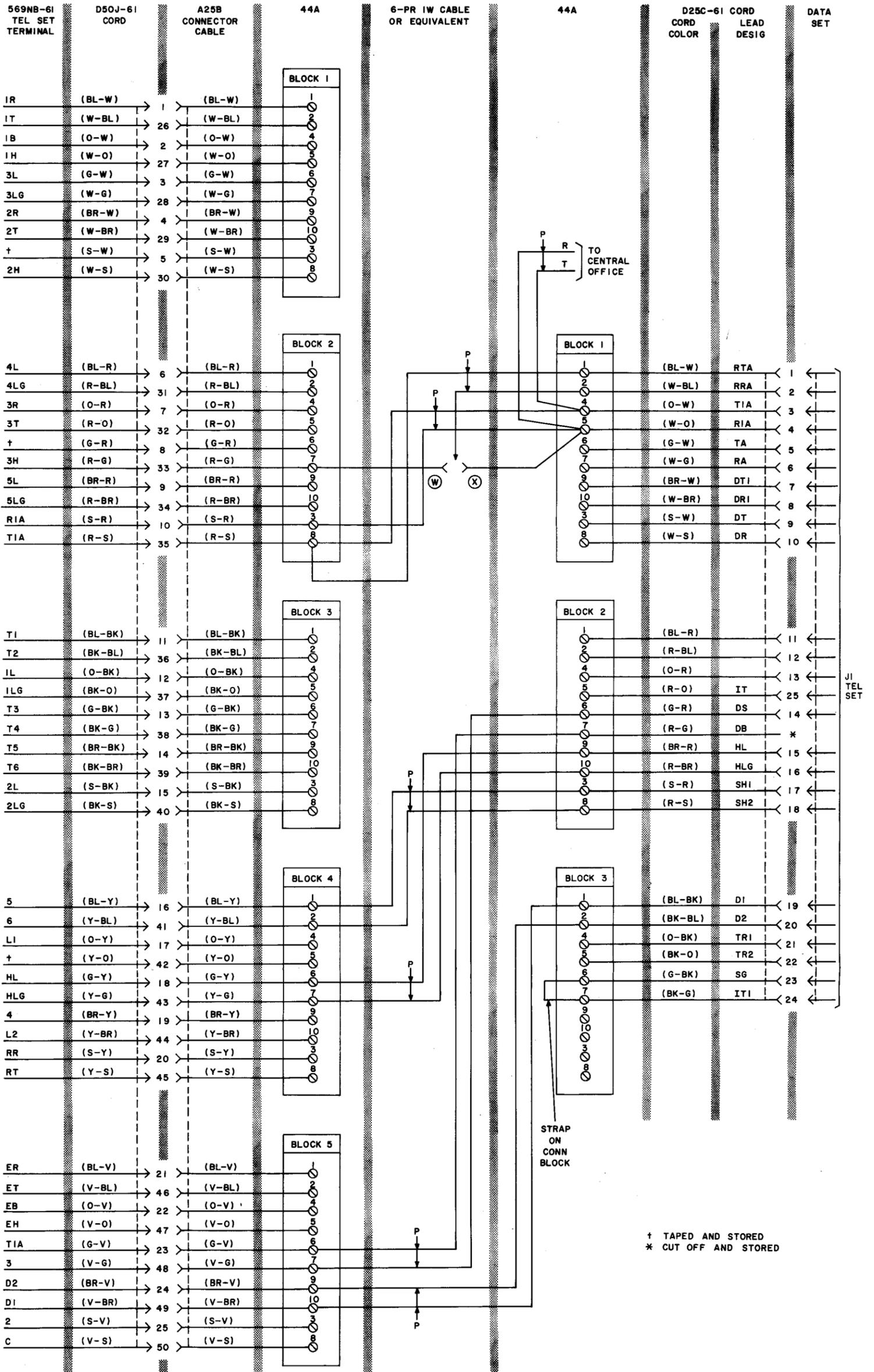


Fig. 4—Two-Wire Data Service With a Telephone Set but Without a Key Telephone System

NOTE:
 INSTALL STRAP FOR OPTION X WHEN PERMANENT AUTOMATIC ANSWERING IS REQUIRED. THE AUTOMATIC ANSWERING CIRCUIT IS SHOWN IN FIG. 7
 * SPARE LEADS ARE FOLDED BACK AND STORED WITHIN CONNECTOR HOOD.

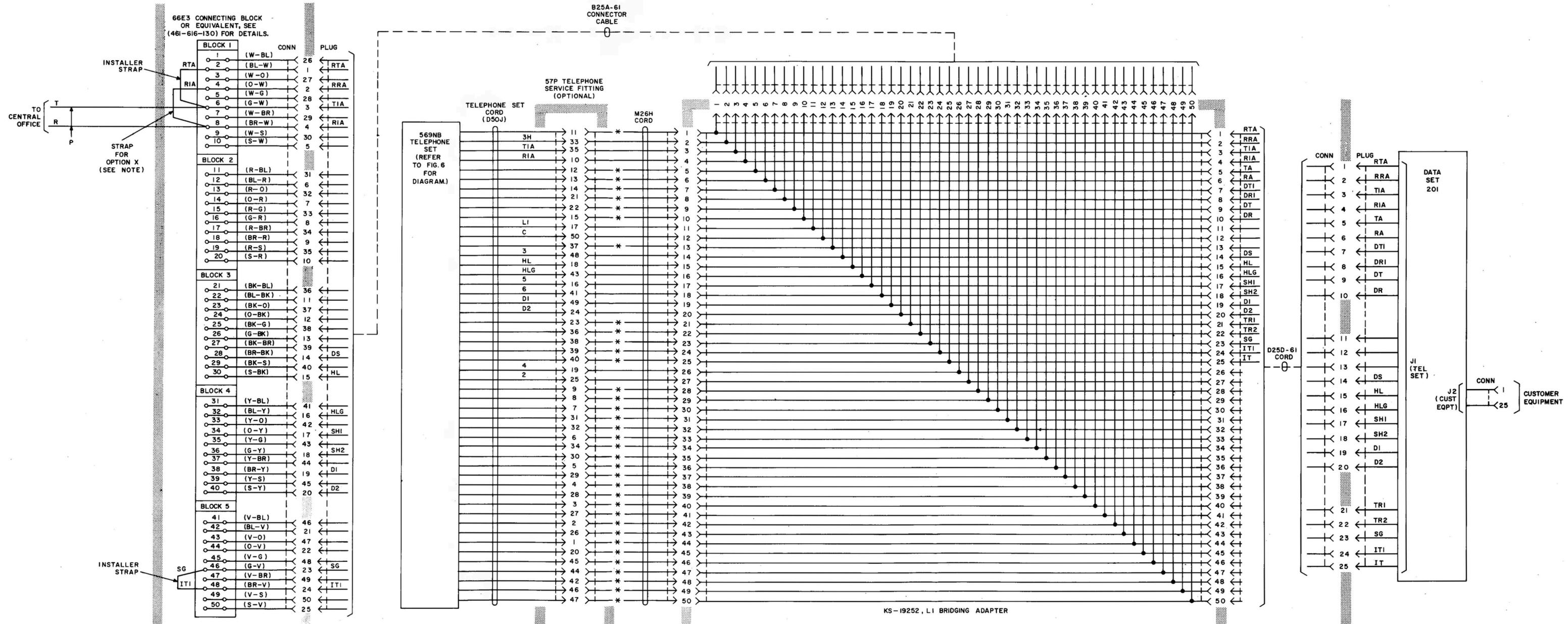


Fig. 4A—Two-Wire Data Service With a Telephone Set but Without a Key Telephone System

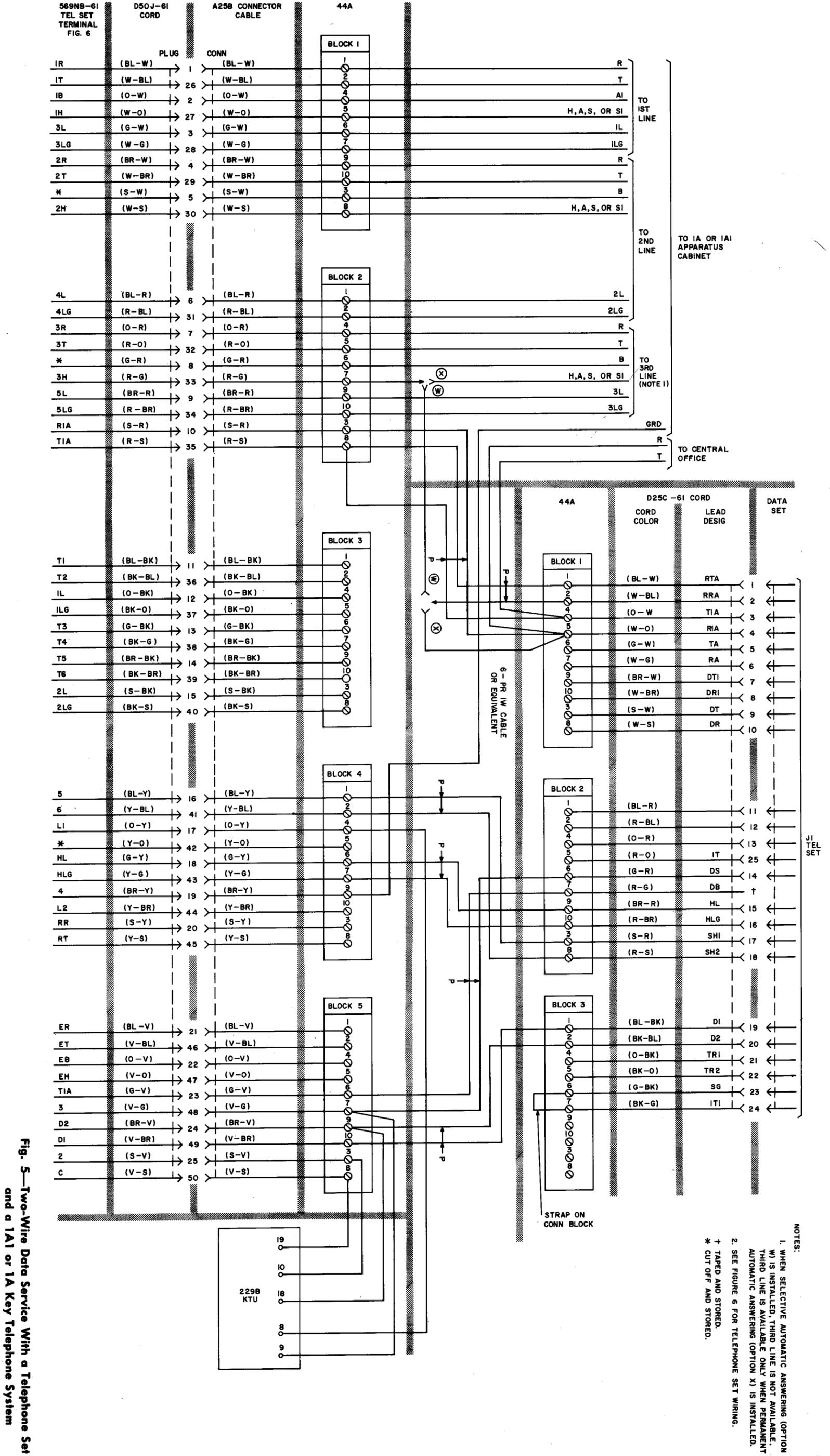
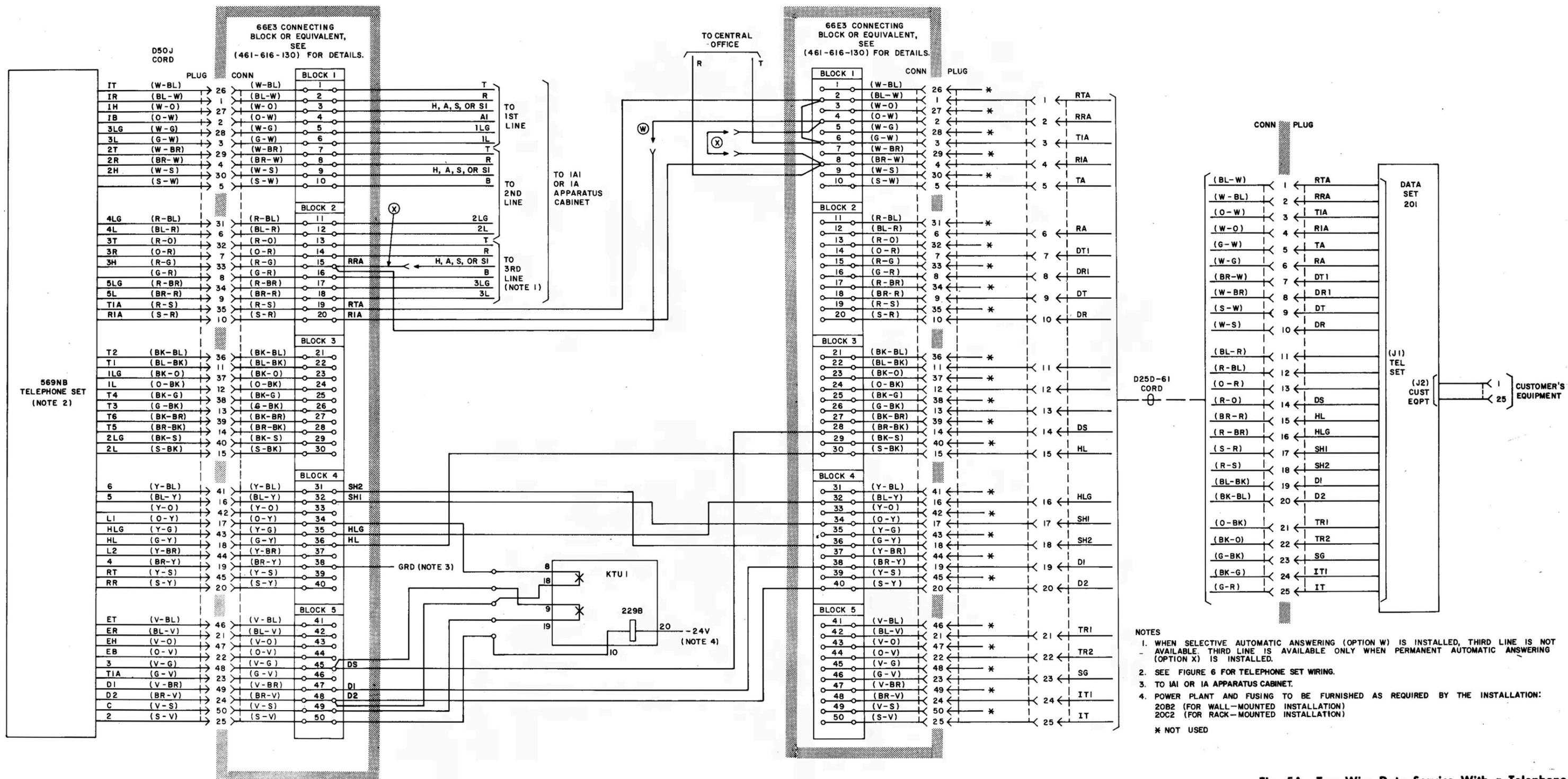


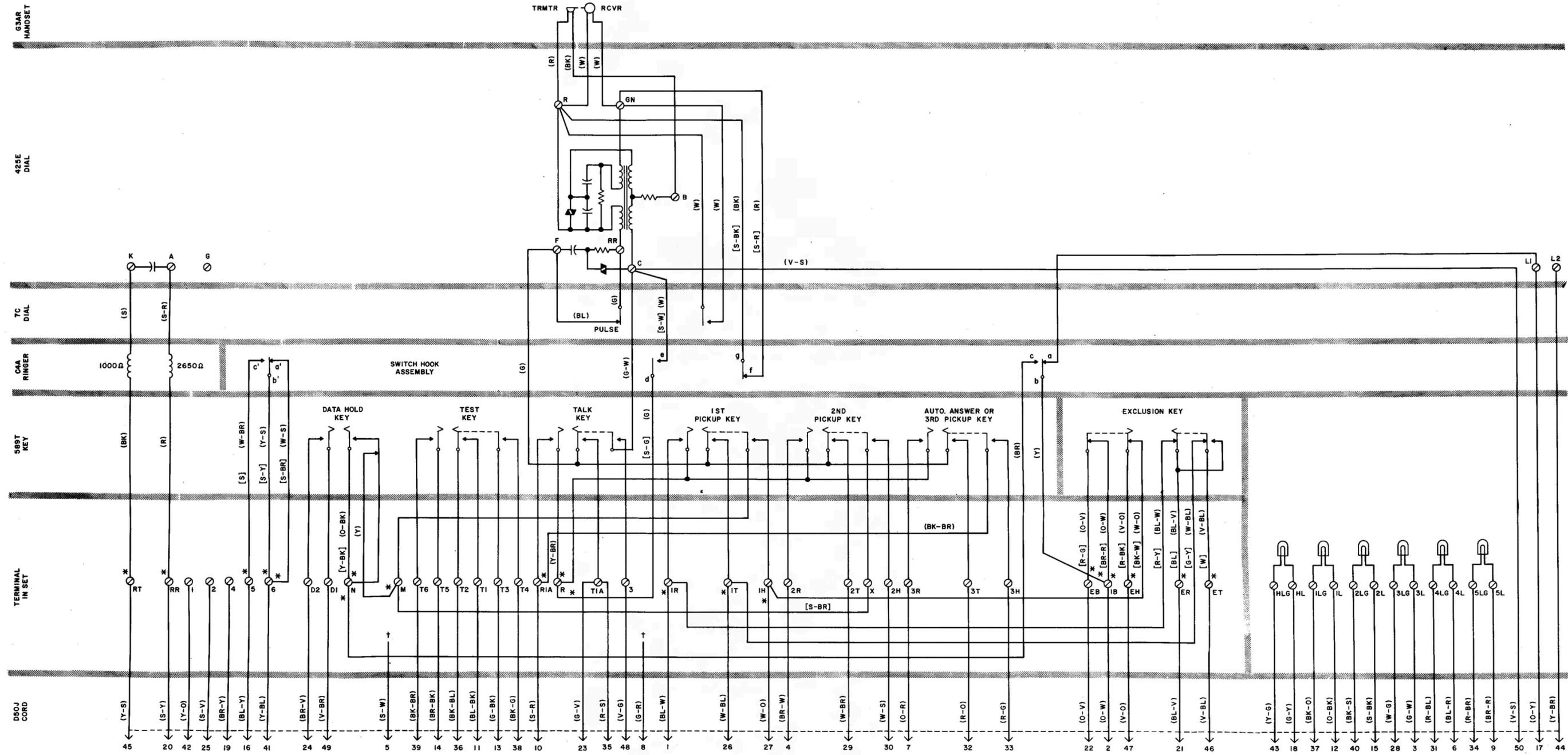
Fig. 5—Two-Wire Data Service With a Telephone Set and a 1A1 or 1A Key Telephone System

- NOTES:
1. WHEN SELECTIVE AUTOMATIC ANSWERING (OPTION W) IS INSTALLED, THIRD LINE IS NOT AVAILABLE. THIRD LINE IS AVAILABLE ONLY WHEN PERMANENT AUTOMATIC ANSWERING (OPTION X) IS INSTALLED.
 2. SEE FIGURE 6 FOR TELEPHONE SET WIRING.
- + TAPED AND STORED.
* CUT OFF AND STORED.



- NOTES
1. WHEN SELECTIVE AUTOMATIC ANSWERING (OPTION W) IS INSTALLED, THIRD LINE IS NOT AVAILABLE. THIRD LINE IS AVAILABLE ONLY WHEN PERMANENT AUTOMATIC ANSWERING (OPTION X) IS INSTALLED.
 2. SEE FIGURE 6 FOR TELEPHONE SET WIRING.
 3. TO IA1 OR IA APPARATUS CABINET.
 4. POWER PLANT AND FUSING TO BE FURNISHED AS REQUIRED BY THE INSTALLATION:
20B2 (FOR WALL-MOUNTED INSTALLATION)
20C2 (FOR RACK-MOUNTED INSTALLATION)
- * NOT USED

Fig. 5A—Two-Wire Data Service With a Telephone Set and a IA1 or IA Key Telephone System



IAI TO IA CONVERSION

SWITCH HOOK LEAD			KEY LEAD		
COLOR	OFF	ON	COLOR	OFF	ON
(Y-S)	[Y]	IB 4	Y	M	R
(W-BR)	[BR]	N L2	Y-BK	N	M
G	(S-G)	R N	Y-BR	R	N

PICKUP TO SIGNAL KEY CONVERSION

KEY NO.	CORD COLOR	FROM PICKUP	TO INDIVIDUAL SIGNAL
5	S-BR	M	4
6	BK-BR	RIA	4

FOR KEY TELEPHONE SYSTEMS
 MOVE: (O-Y) MOUNTING CORD OFF L1, ON D2.
 (G-W) KEY LEAD OFF C, ON 4.
 (BR) KEY LEAD OFF 3, ON 2.

DISCONNECT: (BR-V) MOUNTING CORD, INSULATE AND STORE.

TO CONNECT C4A RINGER TO DATA LINE
 MOVE: (R) RINGER LEAD FROM RR TO RIA AND (BK) RINGER LEAD FROM RT TO TIA.

() INDICATES CURRENT COLOR CODE.
 * SPADE-TIPPED LEAD.
 [] INDICATES MD COLOR CODE.
 † INSULATE AND STORE.

Fig. 6—569NB Telephone Set, Internal Connections

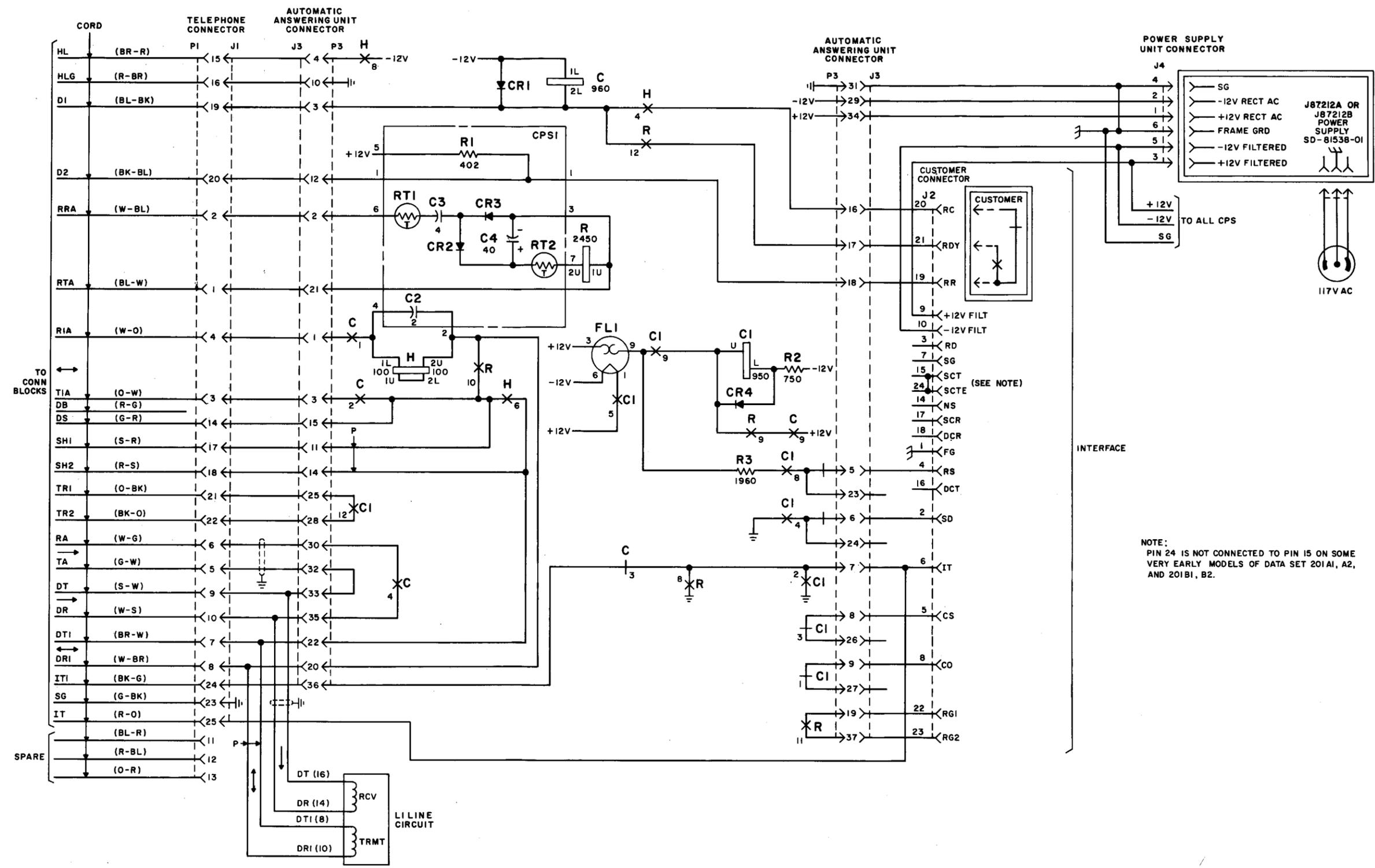


Fig. 7—Data Sets 201A and 201B, Automatic Answering Circuit

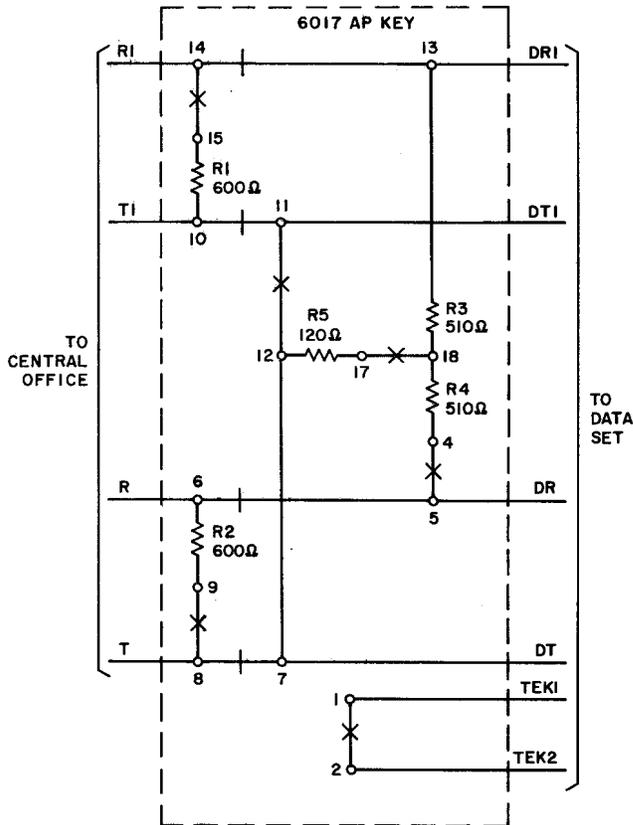


Fig. 8—Line and Test Key Circuit

SECTION	TITLE
592-011-300	Data Sets 201A1, A2 and 201B1, B2, Transmitter-Receiver, Maintenance
592-011-500	Data Sets 201A1, A2 and 201B1, B2, Transmitter-Receiver, Test Procedures
4.02	Information concerning the key telephone units is contained in SD-69288-01.