

**DATA SET 108A- OR C-TYPE SINGLE PRIVATE LINE STATION  
USING DATA AUXILIARY SET 820D-L1 OR 820D-L1A  
IN 10-TYPE DATA LINE CONCENTRATOR SYSTEM (DLCS)  
INSTALLATION AND CONNECTIONS**

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**1. GENERAL**

**1.01** This section covers the options used in and installation and connection procedures for a Data Set 108A- or C-type single private line (PL) station using Data Auxiliary Set (DAS) 820D-L1 or 820D-L1A in a 10-type Data Line Concentrator System (DLCS). Also included are the preoperative tests and adjustments.

**1.02** This section is reissued to:

- (a) Include information pertaining to the DAS 820D-L1 which is used with a customer-provided terminal (CPT).

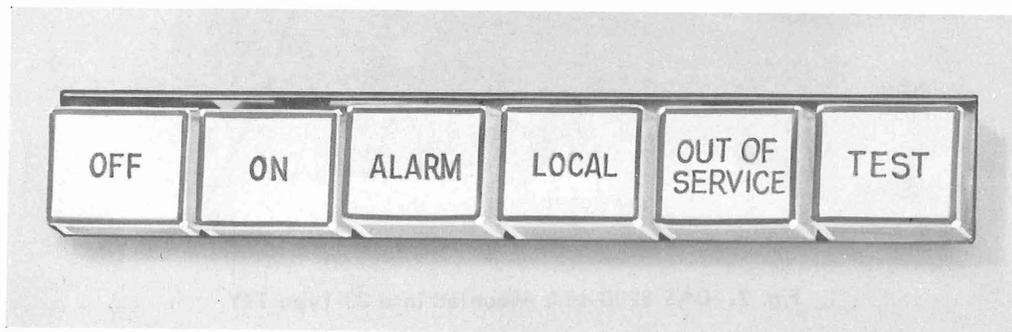
- (b) Remove all reference to the acronym DATREX.

- (c) Include information pertaining to the use of a 6041H key to provide key control of transmit supervision, a remote TEST key/lamp, and/or a visual camp-on indication.

**1.03** The station consists of a model 33- or 35-type teletypewriter (TTY) or CPT (with optional 6041H key), a DAS 820D-L1 or DAS 820D-L1A, a Data Set 108A- or C-type, an AR430 circuit pack (hereafter referred to in this section as AR430 CP), a 96A or 102A mounting bracket (TTY station only), and a 180A backboard (TTY station only). The TTY station is a self-contained station which is intended to be completely assembled at the distributing house prior to delivery.

**1.04** The TTY used at a TTY station is equipped with a logic package having interface signals which conform to the Electronic Industries Association (EIA) Standard RS-232-B. It is also provided with a key (Fig. 1) consisting of six buttons equipped with lamps.

**1.05** The DAS 820D-L1 or 820D-L1A is used to house and supply power to the Data Set 108A- or C-type and AR430 CP. When used at a TTY station, the DAS 820D-L1A mounts on the 180A backboard and 96A or 102A bracket inside



**Fig. 1—TTY Key**

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the pedestal of the TTY (Fig. 2 and 3). When used at a CPT station, the DAS 820D-L1 (Fig. 4) may be installed in any location that is convenient for the customer and within reach of the customer interface cable. This cable should not exceed 50 feet in length.



*The Data Set 108A- or C-type and AR430 CP are not supplied with the DAS 820D-L1 or 820D-L1A and must therefore be ordered separately.*

**1.06** Removal and replacement procedures for the DAS 820D-L1 cover, data set, and AR430 CP can be found in the section entitled Data Set 108A- or C-Type Single Private Line Station Using Data Auxiliary Set 820D-L1 or 820D-L1A in 10-Type Data Line Concentrator System (DLCS)—Maintenance (591-023-310).

**1.07** General data set installation practices such as outlined in the section entitled Data

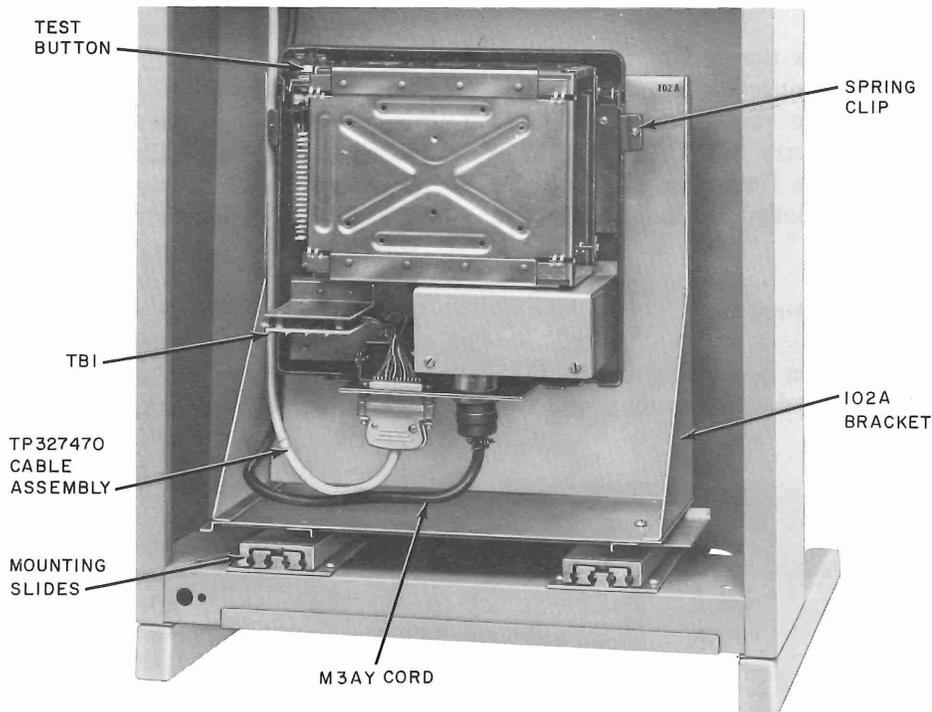
Sets—General Installation and Connection Information (590-010-200) should be followed in addition to the steps outlined in this section.

## 2. OPTIONS

**2.01** This part describes the options to be installed in the DAS 820D-L1 or 820D-L1A and AR430 CP at Data Set 108A- or C-type single PL Data Line Concentrator stations. The method of installing these options is also given.

### DAS 820D-L1 or 820D-L1A

**2.02** There are two optional arrangements provided in the DAS 820D-L1 and 820D-L1A. They are for data terminal ready (CD) lead control (option ZC) or key control (option ZD) of transmit supervision. Option ZC is always used in this arrangement at a TTY station and is installed by connecting the strapping link between terminals 9 and 10 of TB1 on the DAS 820D-L1A.



**Fig. 2—DAS 820D-L1A Mounted in a 33-Type TTY**

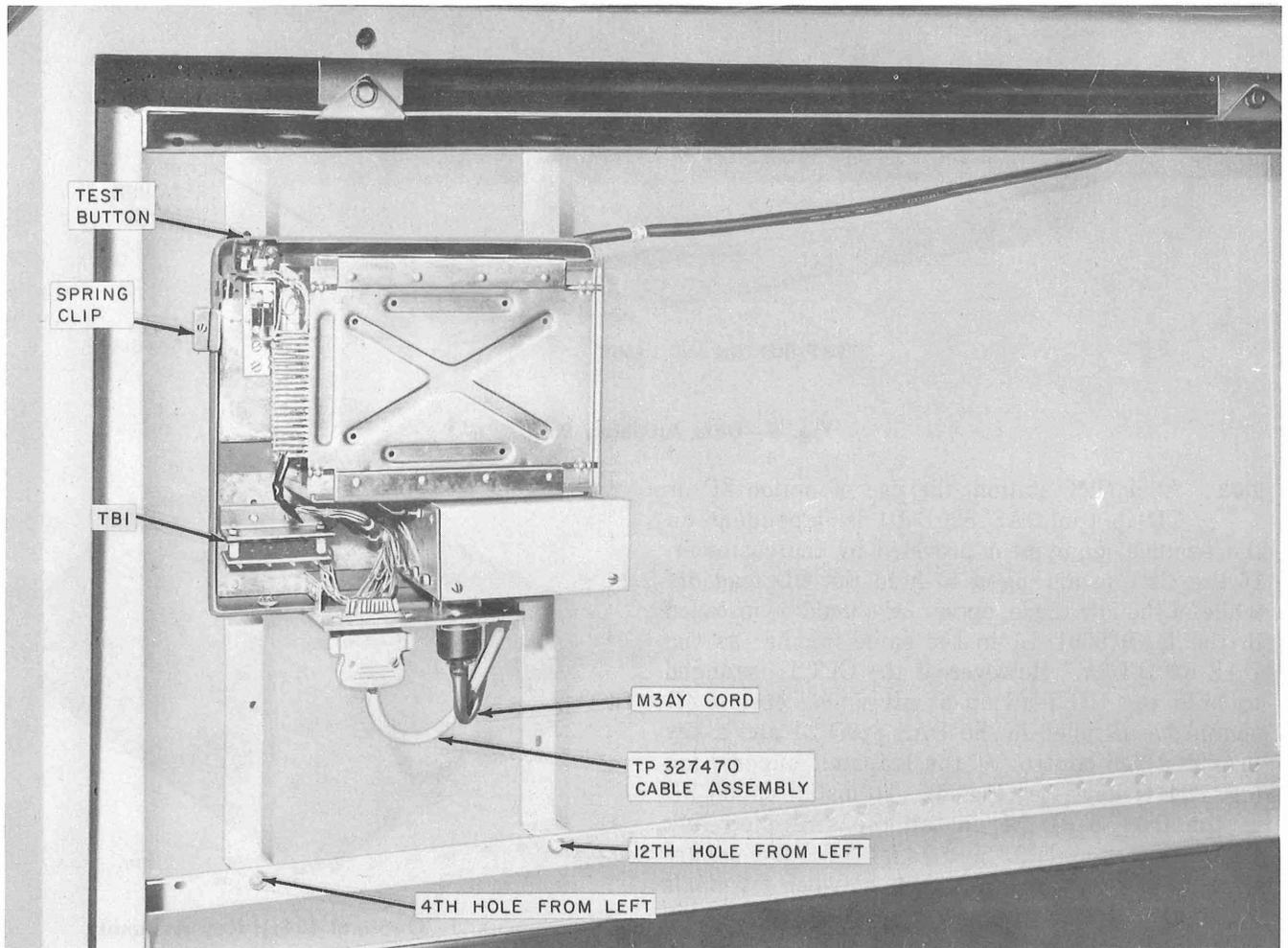


Fig. 3—DAS 820-L1A Mounted in a 35-Type TTY

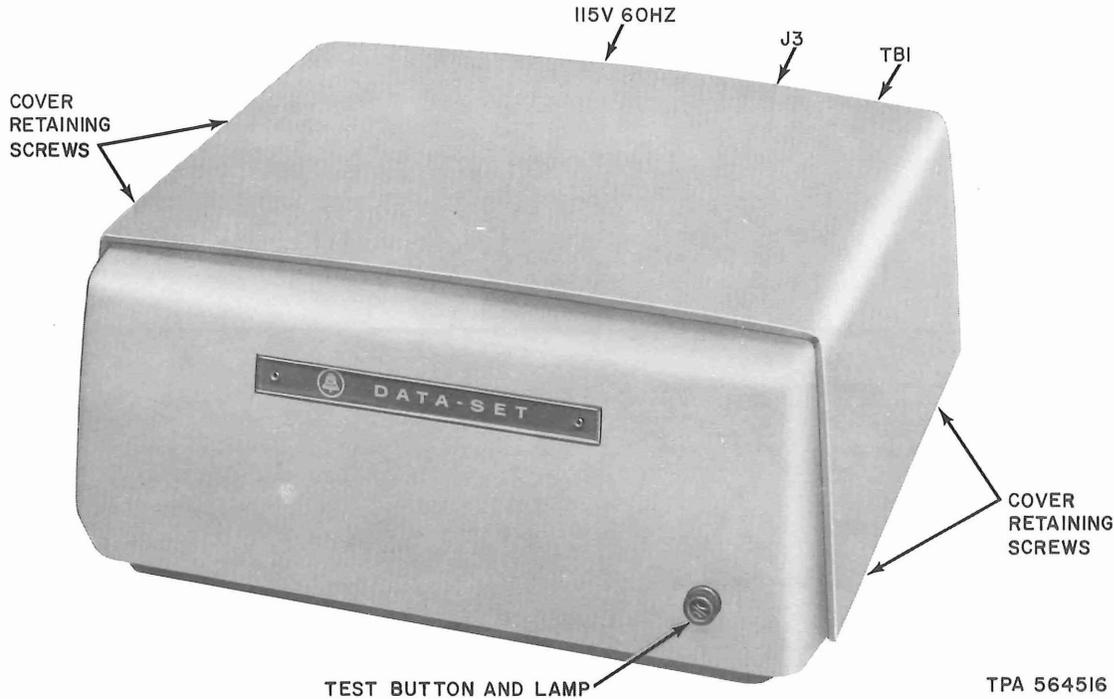


Fig. 4—Data Auxiliary Set 820D-L1

2.03 At a CPT station, the use of option ZC or ZD in the DAS 820D-L1 is dependent on the terminal equipment provided by the customer. If the CPT is arranged to hold the CD lead off while in the idle mode, option ZC should be installed in the DAS 820D-L1 in the same manner as the DAS 820D-L1A. However, if the CPT is arranged to hold the CD lead on at all times, option ZD should be installed in the DAS 820D-L1 and a key provided for control of the transmit supervision (eg, 6041H key—See Fig. 5). To install option ZD in the DAS 820D-L1, install the strapping link between terminals 13 and 14 of TB1 and ensure that there is no strapping link between terminals 9 and 10. If an external key is to be used, it will be connected across terminals 9 and 10.



**Terminals 13 and 14 are nonfunctional and used only for storage of the strapping link.**

The DAS 820D-L1 is now ready for the connection of a key as described in Part 4 of this section.

**AR430 Circuit Pack**

2.04 There are six optional arrangements provided in AR430 CP. Table A lists the options,



Fig. 5—Optional 6041H Key Assembly

the feature provided, and the screw switch or link straps that have to be opened and closed to provide the option. It also indicates which options are factory-provided and which options are required at a TTY station installation.

2.05 At CPT installations, the use of options A, E, F, G, and H are dependent on the terminal equipment provided by the customer.

**Note:** Options ZA and F are *never* used in DLCS installations.

TABLE A  
AR430 CIRCUIT PACK OPTIONS

REG IN TTY INSTALL	OPTION	FEATURE	FACTORY PROVIDED	OPEN SCREWS OR LINKS	CLOSE SCREWS OR LINKS
X	H	CA looped to CB	X	G	H
	G	CB looped to CC		H	G
	F	Receive space timer		E	F
X	E	Camp-on detector	X	F	E
X	A	CC turned off by CD	X	—	A
	ZA	CC independent of CD		A	—

They should be installed in accordance with the service order or circuit layout record card in the same manner as for a TTY station (see Table A). The features provided by each option are as follows.

- (a) Option A (CD control of CC)—This option arranges the circuit pack so that the CC lead is turned off whenever the CD lead is turned off. It is always required in stations associated with the DLCS.
- (b) Option ZA (CC independent of CD)—This option arranges the circuit pack so that the CC lead is not affected by the CD lead. It is never used in stations associated with the DLCS.
- (c) Option E (camp-on detector)—This option arranges the circuit pack so that the receive space timer will enable the camp-on lamp driver when the camp-on signal is received from the concentrator (no receive supervision). It is normally used with option A and always required in stations associated with the DLCS.
- (d) Option F (receive supervision)—This option arranges the circuit pack so that the CC lead will be turned off whenever 1.5 seconds (approximately) of space frequency is detected by the receive space timer (receive supervision). It is normally used in conjunction with option ZA and is never required in stations associated with the DLCS.
- (e) Option G (CC control of CB)—This option arranges the circuit pack so that the CB lead is turned on whenever the CC lead is turned on. It is not usually required in stations associated with the DLCS.

(f) Option H (CA control of CB)—This option arranges the circuit pack so that the CB lead is turned on whenever the CA lead is turned on. It is not usually required in stations associated with the DLCS.

### 3. INSTALLATION

**3.01** This part describes the procedure for installing the Data Set 108A- or C-type and AR430 CP in the DAS 820D-L1A and how to install the DAS 820D-L1A in the pedestal of a 33-type (Fig. 2) or 35-type (Fig. 3) TTY. Since a TTY station is intended to be completely assembled at the distributing house prior to delivery, the installation procedure in this section is for use in instances where the DAS, AR430 CP, and data set are to be installed in a TTY already on the company premises, or in the event that TTY is not equipped with the DAS when received from the distributing house.

**3.02** The DAS 820D-L1 is designed to be set on top of a table, on a shelf, etc. Therefore, only the installation procedures described in 3.05 are required for the installation of a CPT station.

**3.03** The following apparatus is required for installing a single PL station associated with the data line concentrator in a 33-type TTY:

- (a) Data Set 108A- or C-type (as required)
- (b) DAS 820D-L1A consisting of an 18A power unit, TEST key and lamp, and terminal board TB1 mounted on a 61A apparatus mounting

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- (c) M3AY power cord (supplied with DAS 820D-L1A)
- (d) AR430 CP
- (e) Remote TEST key and/or lamp (eg, 6041H key)
- (f) 102A bracket
- (g) 180A backboard.

**3.04** The following apparatus is required for installing a single PL station associated with the data line concentrator in a 35-type TTY:

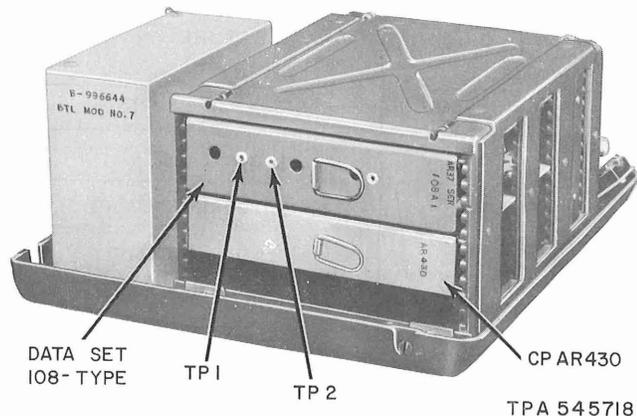
- (a) Data Set 108A- or C-type (as required)
- (b) DAS 820D-L1A consisting of an 18A power unit, TEST key and lamp, and terminal board TB1 mounted on a 61A apparatus mounting
- (c) M3AY power cord (supplied with the DAS 820D-L1A)
- (d) AR430 CP
- (e) Remote TEST key and/or lamp (eg, 6041H key)
- (f) 96A bracket
- (g) 180A backboard.

### Installation Procedures

**3.05** Prepare the DAS 820D-L1 or 820D-L1A, AR430 CP, and Data Set 108A- or C-type as follows.

- (1) If installing a CPT station, remove the DAS 820D-L1 cover.
- (2) Install the proper options in DAS 820D-L1 or 820D-L1A and AR430 CP in accordance with the service order and Part 2 of this section.
- (3) Strap the desensitizing pad of Data Set 108A- or C-type in accordance with 5.01 and 5.02 of this section.
- (4) Strap the hybrid network of Data Set 108A- or C-type in accordance with 5.03 of this section.

- (5) Plug Data Set 108A- or C-type and AR430 CP into the DAS 820D-L1 or 820D-L1A as shown in Fig. 6.



**Fig. 6—Data Set 108A- or 108C-Type Mounted in DAS 820D-L1A**

- (6) If installing a CPT station, replace DAS 820D-L1 cover and proceed to the connection procedures described in Part 4 of this section.

**3.06** Remove back of 33-type TTY as follows.

- (1) Remove the two mounting screws located at the top rear of the TTY pedestal.
- (2) Grasp the top of the rear panel and lift up to disengage it from the pedestal.

**3.07** Remove front cover of 35-type TTY pedestal as follows.

- (1) Remove chad container by sliding it to the left, raising the right side, and then sliding it to the right.
- (2) Operate the two pushbutton fasteners at the top of the cover.
- (3) Depress the spring clip underneath the keyboard and pivot the lower compartment to the floor.
- (4) Disengage the cover from the pivot screws and remove it from the pedestal.

**3.08** Install the 96A or 102A bracket, 180A backboard, and DAS 820D-L1A equipped with

the data set and AR430 CP inside the TTY pedestal as follows.

- (1) Position the 96A or 102A bracket inside the TTY pedestal and tighten the screws.
- (2) Mount the 180A backboard on the 96A or 102A bracket and tighten screws.
- (3) Verify that the data set and AR430 CP are securely seated in their slots.
- (4) Loosen the spring clips on the 180A backboard and position DAS 820D-L1A as shown in Fig. 2 or 3.
- (5) Verify that the DAS baseplate is under the spring clips and tighten the spring clip screws.

**Caution:** Before releasing grip on the DAS, ensure that it is securely in place.

#### 4. CONNECTIONS (Fig. 7)

##### TTY Station

**Warning:** Do not attempt to make any connections until the TTY power plug is disconnected from the customer-provided receptacle. Do not connect power to the station until told to do so in this section.

**4.01** Connection of power to the DAS 820D-L1A at a TTY station requires the removal of the TTY cover. This is accomplished as follows.

- (1) Remove paper and paper roll spindle.
- (2) Remove LOCAL ON-LINE mode switch knob by loosening setscrew and pulling knob off shaft.
- (3) Remove the two screws that secure the faceplate to the cover and remove faceplate by lifting vertically.
- (4) Remove platen knob by pulling it to the left.

**Note:** On sprocket feed typing units, the platen knob is held by a setscrew. Remove setscrew prior to removing knob.

- (5) Remove nameplate by pulling it down and out.

(6) Remove seven mounting screws (four in front and three in rear) that fasten the TTY cover to the subbase.

(7) On ASR TTY, remove screw from left rear corner of the tape reader cover.

(8) Remove TTY cover by lifting vertically.

**4.02** Connect the end of the M3AY power cord that is equipped with the 105 cord tips to the terminal strip at the right rear of the TTY as follows.

- (1) Connect GREEN lead to terminal 1.
- (2) Connect WHITE lead to terminal 2.
- (3) Connect BLACK lead to terminal 4.

**4.03** Replace TTY cover by reversing procedure given in 4.01 and connect the Hubbell connector end of the M3AY cord to the 115-volt ac power receptacle on DAS 820D-L1A.

##### CPT Station

**4.04** Connect the Hubbell connector end of the KS-14532-L16 cord to the 115-volt ac power receptacle on the DAS 820D-L1.

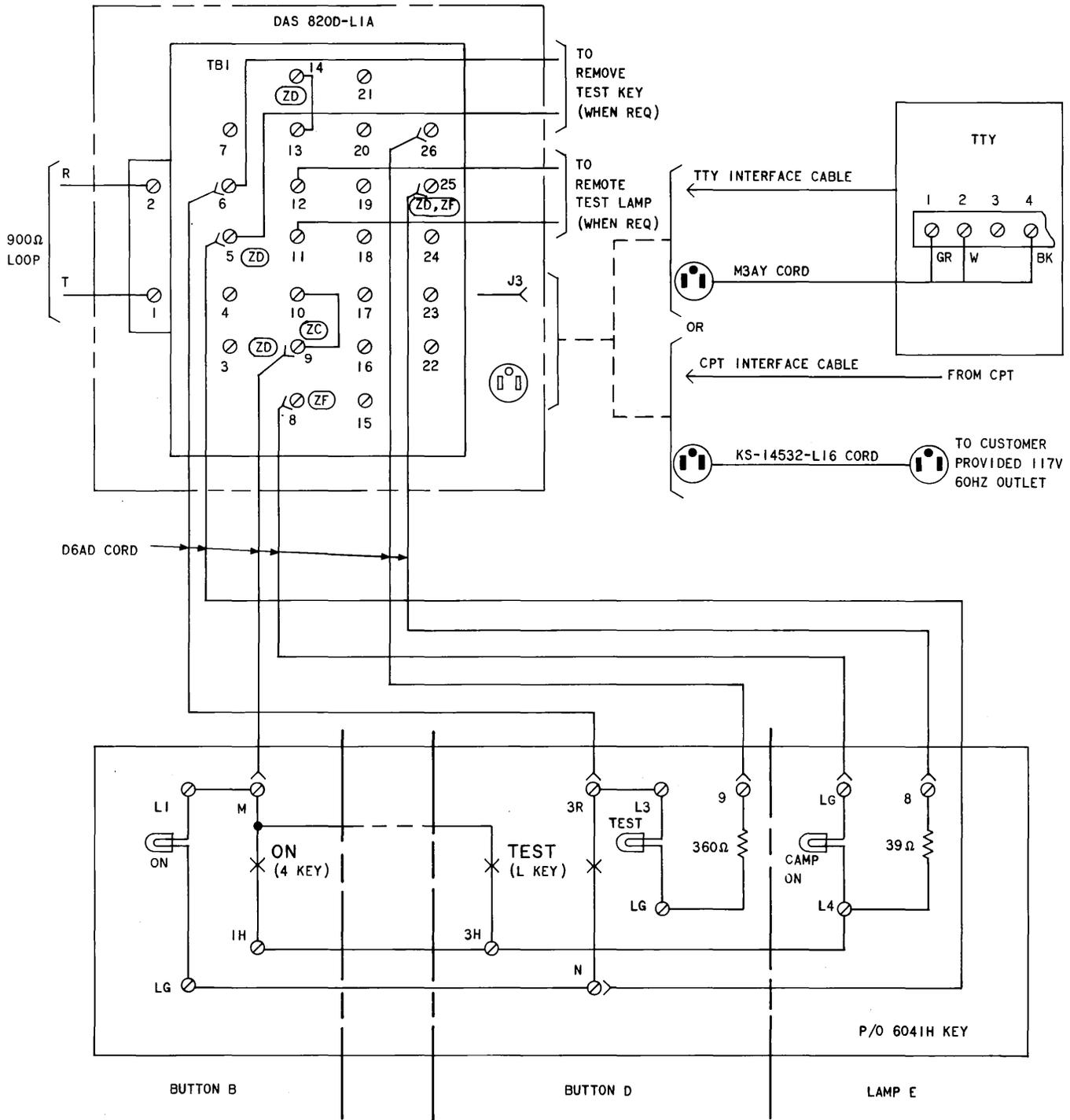
**4.05** Locate the DAS 820D-L1 in a place that is convenient for the customer and within 50 feet of the CPT.

##### TTY or CPT Stations

**4.06** Connect the TTY or CPT interface cable to connector J3 of the DAS 820D-L1A or 820D-L1, respectively.

**Note:** Tip and ring of the transmission facility should be run in preparation for connection, but the actual connection of these leads should not be made until the operations given in 5.04 and 5.05 of this section have been completed.

**4.07** If a 6041H key is to be used to provide key control of transmit supervision, a remote TEST key/lamp, and/or camp-on lamp, locate the 6041H key in a place convenient for the customer and within \_\_\_\_\_ feet of the DAS 820D-L1 or 820D-L1A. Connect the 6041H key as shown in Fig. 7.



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Fig. 7—Interconnection Diagram for Data Set 108A- or 108C-Type Single Private Line Station Using Data Auxiliary Set 820D-L1 or 820D-L1A in 10-Type Data Line Concentrator System

**5. PREOPERATIVE ADJUSTMENTS AND TESTS**

**Desensitizing Pad Strapping**

**5.01** Verify that the loop has been tested and meets requirements. Refer to the section entitled Private Line Data Circuits—Voice Bandwidth Circuits for Miscellaneous Data—Overall Tests and Requirements (314-410-500). Loop loss testing procedures and requirements for Data Set 108A- or C-type are given in the section entitled Data Set 108A- or C-Type Single Private Line Station—Using Data Auxiliary Set 820D-L1A—in Data Line Concentrator System—Test Procedures (591-023-510).

**5.02** Screw switch D on Data Set 108A- or C-type was closed to provide maximum sensitivity (maximum gain of receive-amplifier stage) during manufacturing tests. The gain of the stage may be reduced in 4-dB steps and should be adjusted to meet the requirements of the individual installation. Table B shows the condition of the screw switches for each gain setting. The screw switches should be set according to the service order or circuit layout record card.

**TABLE B**  
**SCREW SWITCH D SETTINGS FOR**  
**DESENSITIZING PAD STRAPPING**

LOOP FACILITY WITH 2300 HZ LOSSES (DB)	DB REDUCTION IN GAIN	SCREW SWITCH D	
		CLOSED	OPEN
0 to 3	8		1-2, 3-4
3.1 to 7	4	1-2	3-4
7.1 and Greater	0	3-4	1-2

**Hybrid Network Strapping**

**5.03** Strapping of the hybrid is determined by the loop impedance of the facility. Table C shows typical loop impedance when the cable makeup is known. Find the typical loop impedance for the type of data set being installed. When the impedance is found, refer to Table D for the strapping required for the optimum trans-hybrid balance. An example of a good compromise strapping of the hybrid network for most applications is indicated in Table D under Loop Impedance 900 Ohms. If the received signal level at the station is below -3 dBm with the 900-ohm strapping installed, change the strapping and screw switch

setting to optimize the receive signal level in accordance with Table D.

*Note:* The hybrid network strapping arrangement should be provided on the service order or circuit layout record card.

**Data Set Level Adjustment**



*Tip and ring connections must be disconnected for data set level adjustment.*

**5.04** Connect the TTY power cord (TTY stations) or KS-14532-L16 cord (CPT stations) to a

**TABLE C**  
**TYPICAL LOOP IMPEDANCE**

TYPICAL LOOP FACILITY	TYPICAL LOOP IMPEDANCE	
	DATA SET 108A-TYPE (2125 Hz)	DATA SET 108C-TYPE (1170 Hz)
26 NL (HC)	650	900
24 NL (HC)	500	700
22 NL (HC)	400	550
19 NL (HC)	280	400
16 NL (HC)	200	280
26 H88 (HC)	1300	1180
24 H88 (HC)	1260	1080
22 H88 (HC)	1250	1060
19 H88 (HC)	1240	1030
16 H88 (HC)	1340	1130

NL — Nonloaded (HC) — High Capacity

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customer-provided 117-volt, 60-Hz ac power outlet and adjust the data set output level as follows.

- (1) Connect the + and - terminals of a TTS-28 portable station test set to TP1 and TP2, respectively, on the front of the data set.
- (2) Set TTS-28 FUNCTION switch to DBM 900Ω TERM 0.
- (3) Adjust R11 of data set for output level specified on service order or circuit layout record card.

**5.05** Connect the transmission facility tip and ring to TB1-1 and TB1-2, respectively, of DAS 820D-L1A. If the station being installed is a TTY station, replace the rear panel or front cover of the TTY by reversing the procedure given in 3.05 or 3.06, respectively.

**5.06** Perform the installation tests in accordance with the section entitled Data Set 108A- or C-Type Single Private Line Station—Using Data Auxiliary Set 820D-L1A—in Data Line Concentrator System—Test Procedures (591-023-510).

**TABLE D**

**HYBRID NETWORK STRAPPING**

LOOP IMPEDANCE	DATA SET 108A- AND 108C-TYPE SCREW SWITCH C CLOSED	DATA SET 108A-TYPE E-F CONNECTION	DATA SET 108C-TYPE A-B CONNECTION
1255	2-3	Cut	Cut
900	2-3	Strapped	Strapped
850	1-2	Cut	Cut
750	3-4	Cut	Cut
575	1-2, 3-4	Cut	Cut
500	1-2	Strapped	Strapped
410	3-4	Strapped	Strapped
220	1-2, 3-4	Strapped	Strapped