PRIVATE LINE INTERCONNECTION ARRANGEMENT FOR LINE SIDE OF 10-TYPE DATA LINE CONCENTRATOR MAINTENANCE

1. GENERAL

1.01 This section covers the maintenance procedures, along with the data set and circuit pack removal and installation procedures, for the private line (PL) interconnection arrangements used on the line side of the 10-type Data Line Concentrator.

1.02 This section is reissued to include information pertaining to the AR463, Series 2 circuit pack which replaces the AR463, Series 1 circuit pack. The AR463, Series 1 circuit pack has been rated manufacture discontinued (MD). Information pertaining to the use of Data Set 109D or 109E as the line-side data set is also added.

1.03 One such arrangement (Fig. 1) consists of a line-side data set (Data Set 108A, 109A, ▶109D, or 109E),◀ an ▶AR463, Series 2 circuit pack,◀ a concentrator-side data set (Data Set 109D or 109E), and a 208A adapter, all of which are housed in a 28A1 Data Mounting. The 28A1 Data Mounting is capable of accommodating three ▶(when using Data Set 108A or 109A as the line-side data set) or four (when using Data Set 109D or 109E as the line-side data set)◀ of these arrangements. ▶Early installations may be equipped with the AR463, Series 1 circuit pack. Since the series 1 and 2 circuit packs perform the same function, either or both may be used in any installation.◀

1.04 The data sets, circuit packs, 208A adapter(s), and 28A1 Data Mounting require no routine maintenance. When a trouble condition is found to exist in an arrangement, repair is achieved by replacement of the defective unit.

1.05 Testing procedures for arrangements suspected of being in trouble, or arrangements where a defective unit has been replaced, should be performed in accordance with the section entitled Private Line Interconnection Arrangement for Line Side of 10-Type Data Line Concentrator —Test Procedures (591-811-502).

1.06 Preinstallation and output level adjustments of replacement units should be made in accordance with the section entitled Private Line Interconnection Arrangement for Line Side of 10-Type Data Line Concentrator— Installation and Connections (591-811-202).

1.07 Exercise care in handling and transporting data sets, ▶data mountings,◀ and circuit packs. If possible, use original cartons to store, transport, or ship them.

1.08 A KS-16979-L1 volt-ohm-milliammeter (VOM) is required for the performance of these maintenance procedures.

2. DATA SET AND CIRCUIT PACK REMOVAL AND INSTALLATION

2.01 To remove a data set or circuit pack from the 28A1 Data Mounting, ▶place the pivots of the 748A tool assembly (card extracting tool) against the faceplate of the data set or circuit pack and gently push in until the pivots engage the faceplate, then◀ grasp the extracting handle and pull forward.

2.02 To install a data set or circuit pack in the 28A1 Data Mounting, ▶connect the 748A tool to the faceplate of the data set or circuit pack as described in 2.01,◀ position the unit in the proper slot, and firmly push it back into the locking position. ▶Verify that the unit is properly seated in the connector and then remove the 748A tool by springing down the bottom pivot of the tool and disengage it from the faceplate. Disengage the top pivot by lifting up on the 748A tool.◀

3. TROUBLESHOOTING PROCEDURES

3.01 This part describes the procedures to be followed when trying to isolate a trouble condition in a PL interconnection arrangement for ▶the 10-type Data Line Concentrator.◀ The troubleshooting flowchart (Fig. 2) and Table A are

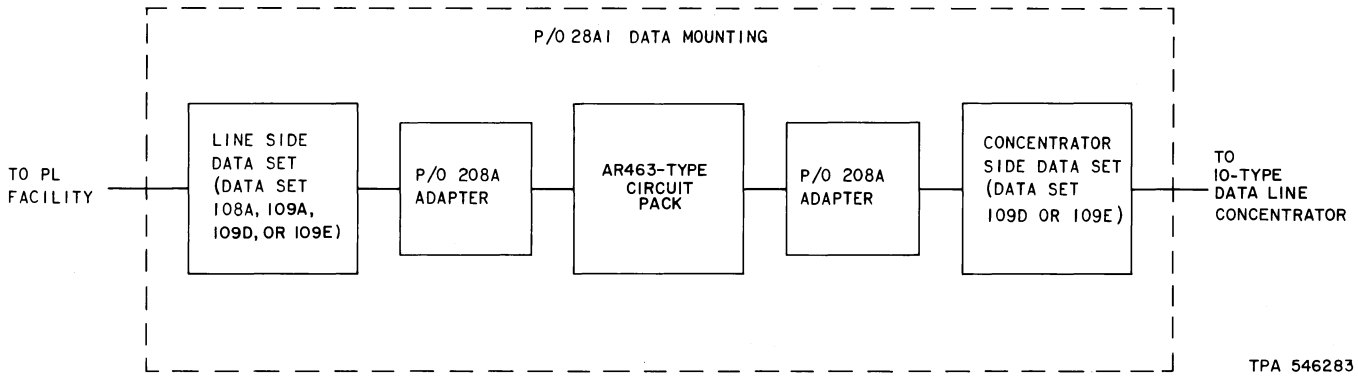


Fig. 1—Block Diagram of Private Line Interconnection Arrangement for Line Side of 10-Type Data Line Concentrator

recommended for an organized trouble investigation with a minimum amount of time spent in locating the cause of trouble. The tests referenced in this part and in the flowchart should be performed in accordance with the section entitled Private Line Interconnection Arrangements for Line Side of 10-Type Data Line Concentrator—Test Procedures (591-811-502).

Multiple Data Set and Circuit Pack Troubles

3.02 When all of the data sets and circuit packs either in slots 1 through 8, 9 through 16, or both are inoperative, it indicates a dc power source failure. In this case, check that the power source is properly powered, the power source fuses are not blown, and then perform the Power Source (Loaded) Test (Test A) of the section referenced in 3.01. If the power source does not meet the requirements of this test, perform the Power Source (Unloaded) Test (Test B).

> ***Note:*** When a limited output power supply such as the KS-20575 rectifier is used for the dc power source, an overload (eg, short circuit) on the source output will cause the output voltage to drop to zero and the current will be limited to a safe value.

3.03 If the power source does not meet the requirements of Test B, replace it with one that is known to be operating properly.

3.04 If the power source ***does*** meet the requirements of Test B but not those of Test A, proceed as follows.

(1) Use a KS-16979-L1 VOM, or equivalent, to monitor the power source output voltage.

(2) Remove all inoperative data sets and circuit packs from the 28A1 Data Mounting.

(3) If the power source output returns to normal, return the data sets and circuit packs to the slots one at a time until the trouble returns and then replace that unit with one that is known to be operating properly.

(4) If the power source output is still incorrect with all of the data sets and circuit packs removed, replace the 28A1 Data Mounting with one that is known to be operating properly.

Single Data Set or Circuit Pack Troubles

3.05 When only one data set or circuit pack in the arrangement is in trouble, troubleshooting and testing should be in accordance with the flowchart (Fig. 2). If a data set or circuit pack fails a test, it should be replaced by one that is known to be operating properly, and the test(s) should be repeated.

3.06 Table A and Fig. 3 are to be used in conjunction with the AR463 circuit pack test outlined in the section referenced in 3.01 ▶when testing an AR463, Series 1 circuit pack. Table A and Fig. 4 should be used when testing an AR463, Series 2 circuit pack.◀

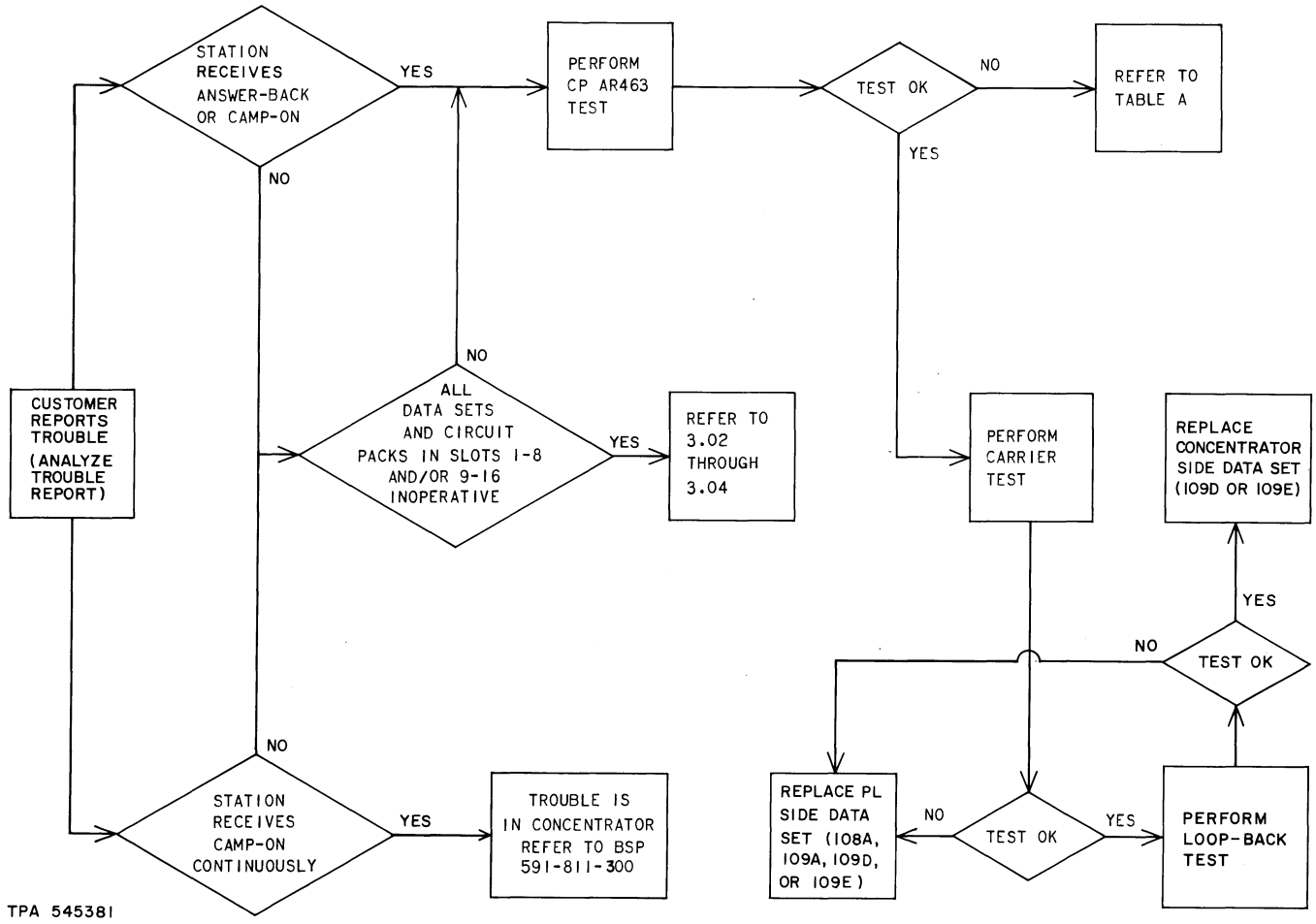
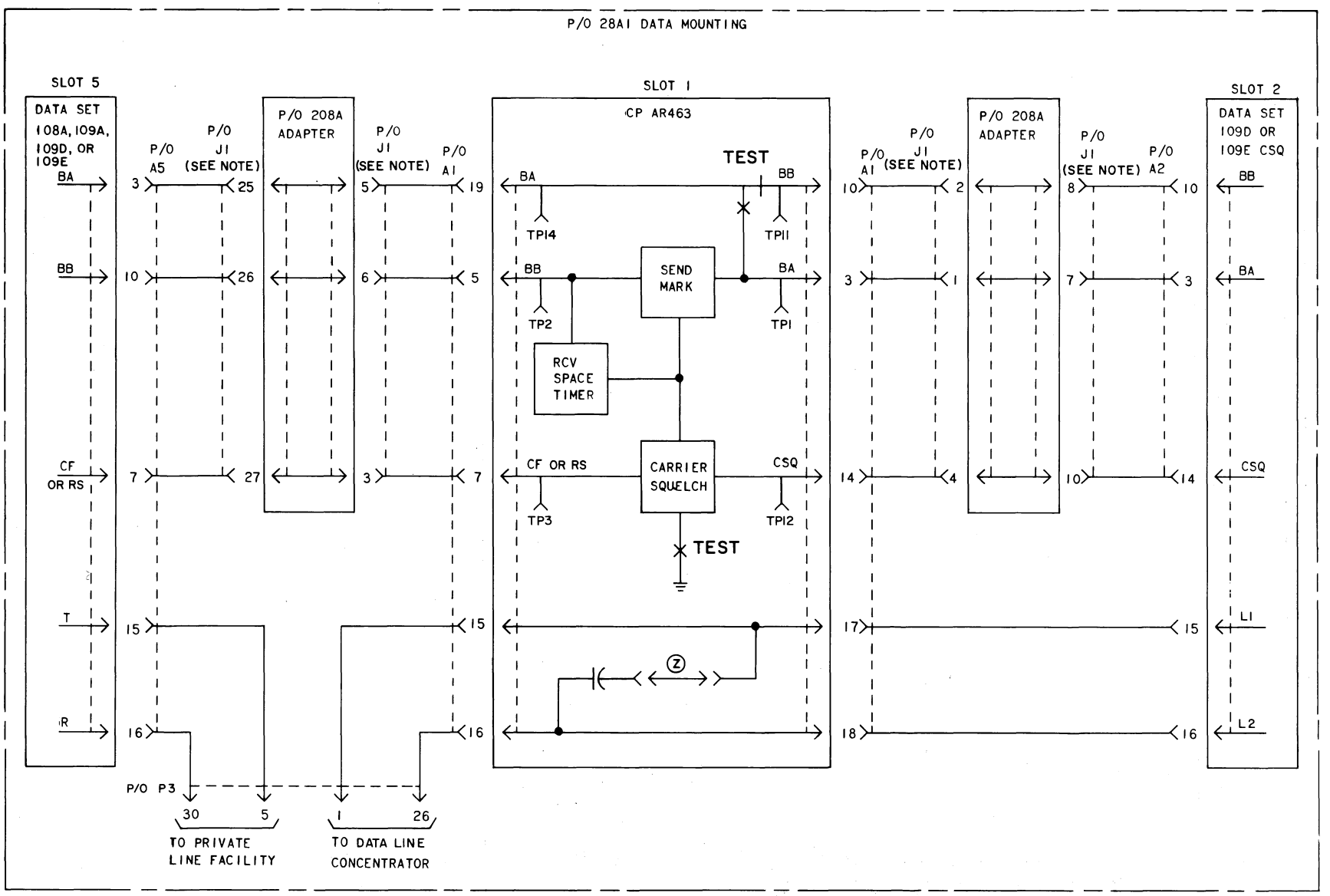


Fig. 2—Troubleshooting Flowchart for Private Line Interconnection Arrangement

TABLE A

AR463-TYPE CIRCUIT PACK TROUBLE INDICATIONS

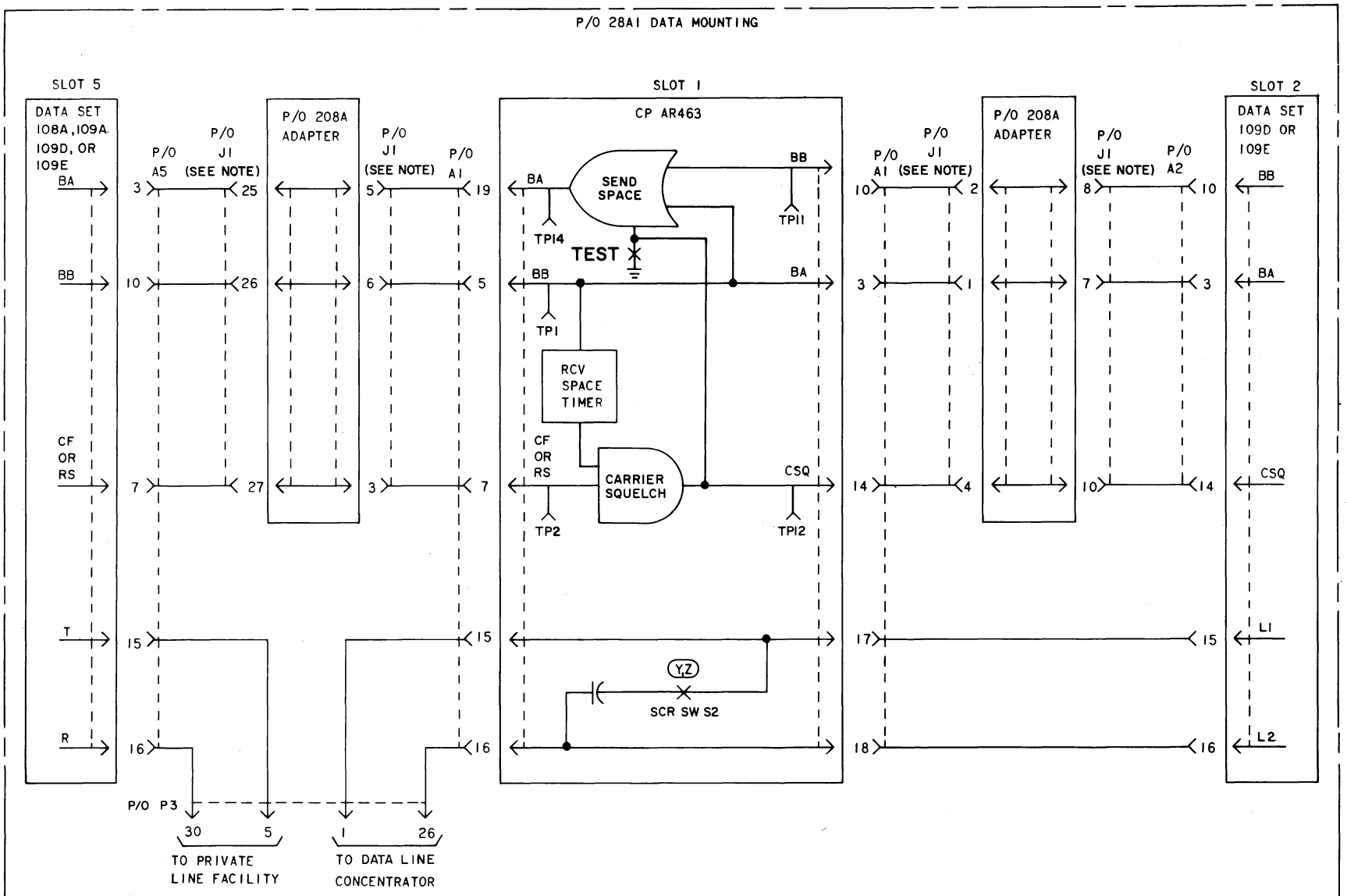
STATUS OF OUTLYING STATION	AR463 CP TROUBLE INDICATION	REMEDY (AR463, SERIES 1)	REMEDY (AR463, SERIES 2)
Idle	TP1 at 0 or pos voltage (Series 1 only)	Replace AR463 circuit pack	———
	TP1 at neg voltage (Series 2 only)	Replace Data Set 108A, 109A, →109D, or 109E (line-side data set)←	
	TP2 or TP3 (Series 1 only) at 0 volts		
	TP11 at 0 volts	Replace Data Set 109D or E →(concentrator-side data set)←	
	TP11 at pos voltage	If Data Set 109D or E →(concentrator-side data set)← is equipped with option U, replace it. If not, install option U in data set (see 591-811-202).	
	TP12 at pos voltage	Replace AR463 CP	
	TP14 at 0 volts		
On	TP2 at pos voltage (Series 1 only)	Private line voice facility: Trouble is at station end (see 591-811-510). Private line telegraph facility: Trouble is at a hubbing point.	
	TP1 at pos voltage (Series 2 only)		
	TP12 at or near 0 volts	Replace AR463 CP	
On with TEST switch of AR463 CP operated	TP12 at pos voltage	Replace CP AR463	
	TP14 at 0 volts		
On	Lamp on faceplate of concentrator-side data set lighted	If TP12 OK: Connect + and — VOM leads to TP10 and TP11, respectively, of concentrator-side data set. Meter should indicate 4 volts dc. If not, replace →concentrator-side← Data Set 109D or E. If meter does indicate 4 volts dc, trouble is in concentrator (see 591-811-300).	



NOTE:
IN ARRANGEMENTS USING SLOTS 11,12 AND 14, THIS WILL BE J2 OF THE 28A1 DATA MOUNTING.

TPA 553009

Fig. 3—Functional Block Diagram of 10-Type Data Line Concentrator Private Line Interconnection Arrangement Using AR463, Series 1 Circuit Pack and Slots 1, 2, and 5



NOTE:
IN ARRANGEMENTS USING SLOTS 11, 12 AND 14, THIS WILL BE J2 OF THE 28A1 DATA MOUNTING.

TPA 553693

Fig. 4—Functional Block Diagram of 10-Type Data Line Concentrator Private Line Interconnection Arrangement Using AR463, Series 2 Circuit Pack and Slots 1, 2, and 5