PRIVATE LINE DATA SETS 2024, 2048, AND 2096
INSTALLATION AND CONNECTIONS
STAND ALONE - MULTIPLE
"DATAPHONE®" II SERVICE

CONTENTS PAGE

1. GENERAL

1.01 This section contains the information needed to install and connect private line version data sets (DSs) 2024, 2048, and 2096. Refer to Fig. 1. The data set should be installed in conformance with the general instructions given in Section 590-010-200. The information in this section covers the installation of data sets in both individual mountings stand-alone (Fig. 2) and multiple mountings (Fig. 3). The stand-alone installation is described first. The similarities between stand alone and multiple will be referenced instead of repeated.

1.02 Whenever this section is reissued, the reason for reissue will be contained in this paragraph.

1.03 For optimum appearance and utility, install the data set apart from the customer-provided equipment (CPE) on a nearby desk, table, stand, or in a Bell System-provided or customer provided equipment cabinet. It is recommended that the KS-20018,L11 or KS-20018,L12 cabinet be installed on a table top 28 to 32 inches above the floor.

1.04 The data set operates in an ambient temperature range of 40 to 120°F and a relative humidity range of 5 to 95 percent, noncondensing.

1.05 All new and repaired DATAPHONE II service data sets will be received in a package that is specially designed for reuse and to protect the data sets throughout the inventory pipeline. The package has provisions to include the Bell System Practices, cords, and adapter used with the data sets, so that these could be returned with the

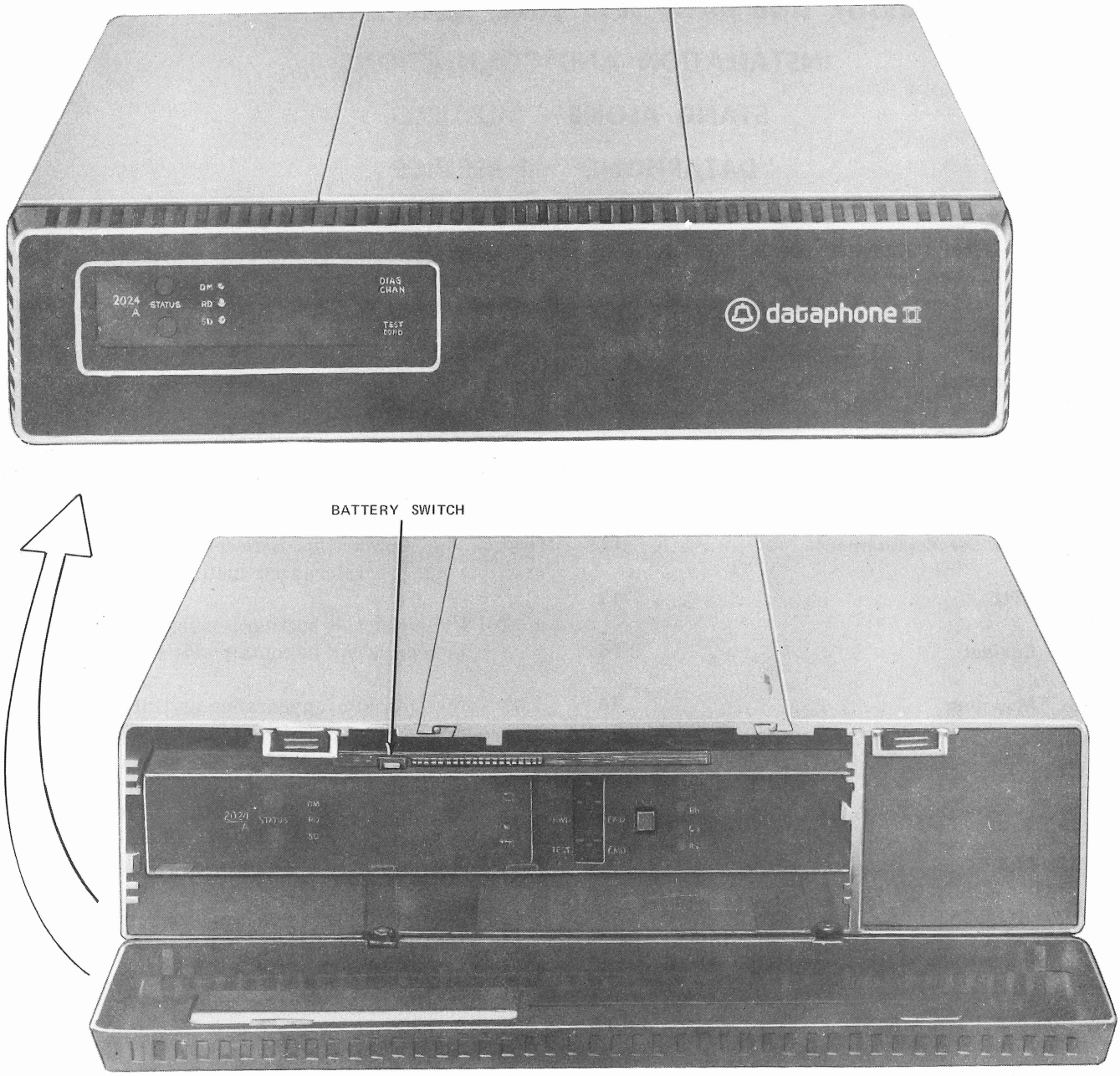


Fig. 1—Example of 63A1 Data Mounting With DATAPHONE II Service Data Set Installed (Stand Alone)

disconnected data set. Work locations should maintain sufficient empty protective packages for all their use. In case of surplus empty protective package build up, local materials management (suppliers) forces should be contacted to arrange for handling of the surplus units.

Warning: Exercise caution when handling DATAPHONE II service data sets to avoid damaging the LEDs.

1.06 The faceplates of the data sets are designed to allow easy reading of the display, switch,

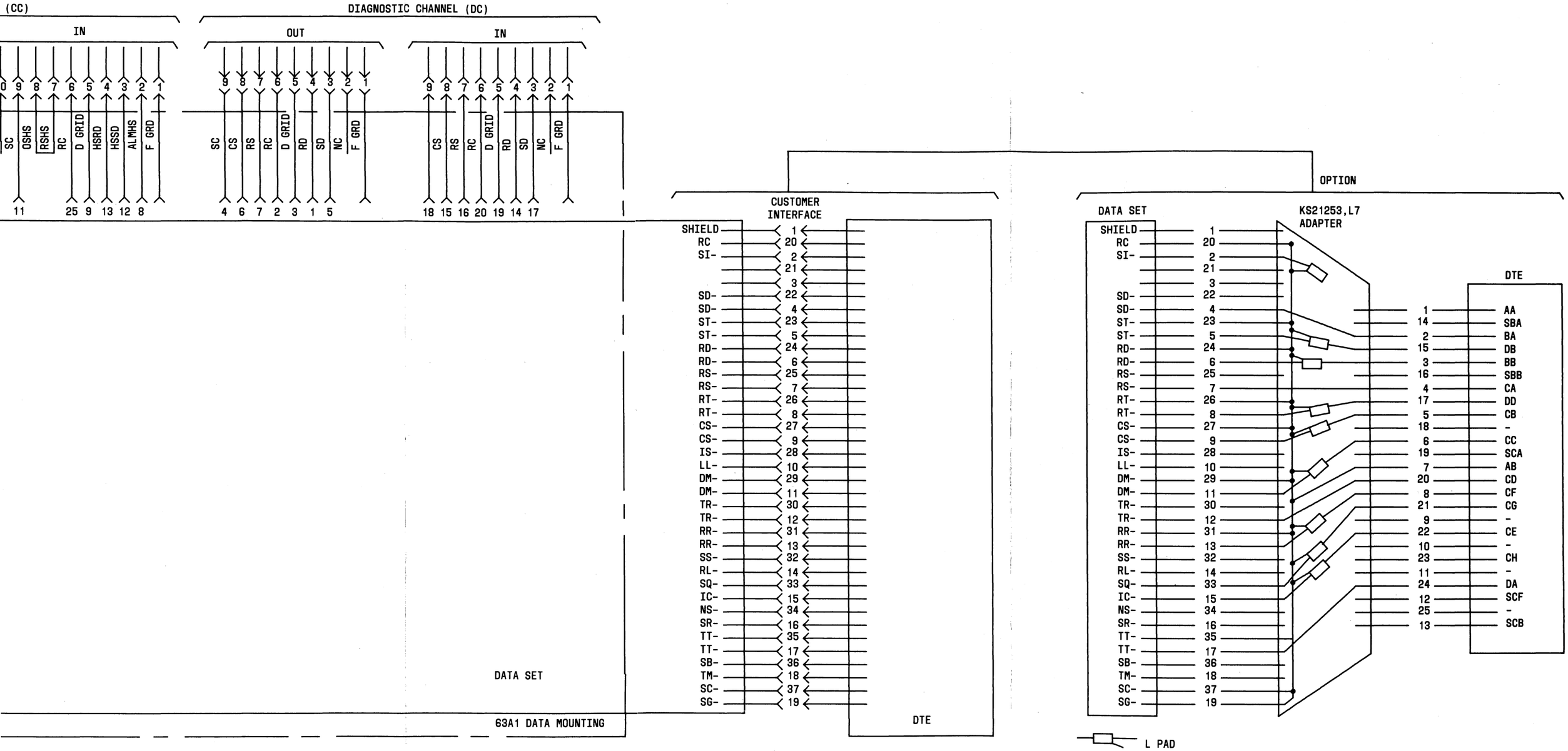


Fig. 2—DS 2024 Stand-Alone Connection Diagram

CONTROL CHANNEL (CC)

OUT

10	9	8	7	6	5	4	3	2	1
NC	SC	NC	NC	RC	D GRID	HSRD	HSSD	ALMHS	F GRD
24				23	10	22	26	21	

IN

10	9	8	7	6	5	4	3	2	1
NC	SC	OSHS	RSHS	RC	D GRID	HSRD	HSSD	ALMHS	F GRD
11				25	9	13	12	8	

DIAGNOSTIC CHANNEL (DC)

OUT

9	8	7	6	5	4	3	2	1
SC	CS	RS	RC	D GRID	RD	SD	NC	F GRD
4	6	7	2	3	1	5		

IN

9	8	7	6	5	4	3	2	1
CS	RS	RC	D GRID	RD	SD	NC	F GRD	
18	15	16	20	19	14	17		

4-WIRE PRIVATE LINE

DAS 829

B25A CABLE

CIU (J6)

30	DT	P6 020
5	DR	021
29	DT1	123
4	DR1	015
3	TEK6	122
28	TEK5	121
1	DBU1	119
26	DBU2	023
6	DBU3	024
31	DBU4	022

SW S1

8	ADR8	110
7	ADR7	112
6	ADR6	114
5	ADR5	010
4	ADR4	011
3	ADR3	012
2	ADR2	013
1	ADR1	014

K2

CP1

DATA SET

63A1 DATA MOUNTING

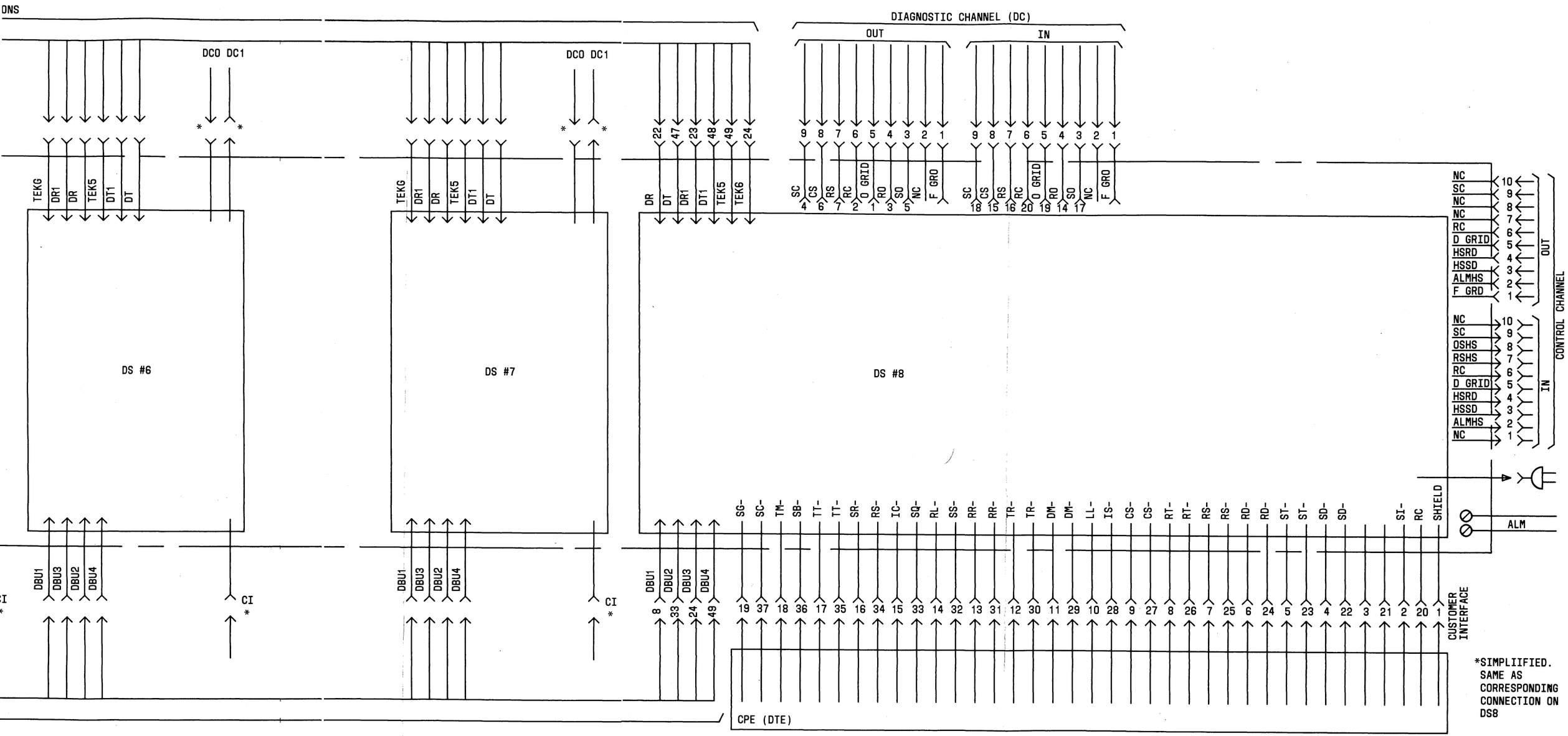


Fig. 3—Private Line-Single Multiple Mounting

CHANNEL INTERFACE UNIT (CIU) CONNECTIONS

DIAGNOSTIC CHANNEL

DS #4

DS #5

DS #6

DS #7

DS #8

DIAL BACK-UP (DBU) CONNECTIONS

CPE (DTE)

CHANNEL INTERFACE UNIT (CIU) CONNECTIONS

DCO DC1

TEKG DR1 DR TEK5 DT1 DT

DS #2

DS #3

DS #4

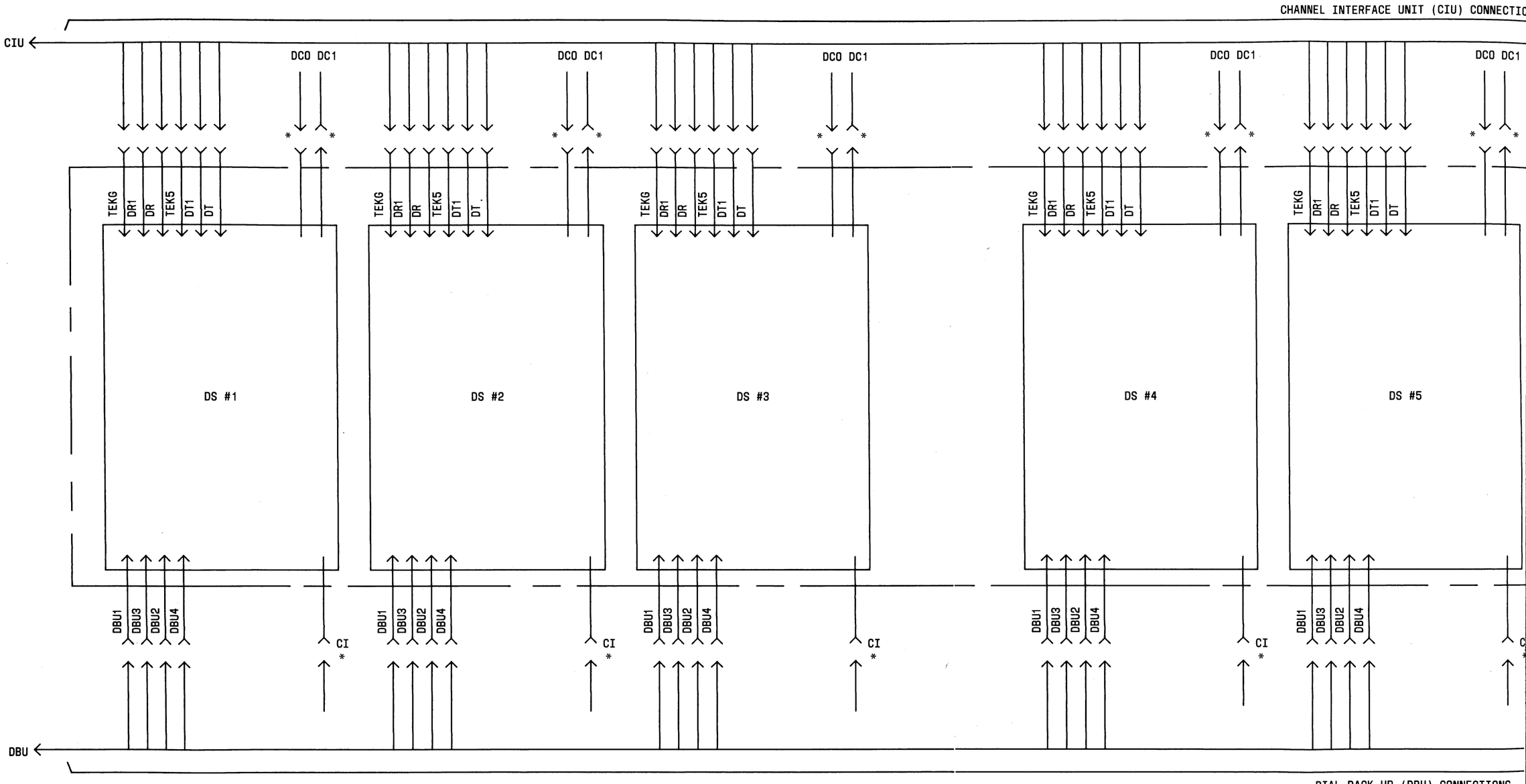
DS #5

DS #6

CI

DBU1 DBU3 DBU2 DBU4

DIAL BACK-UP (DBU) CONNECTIONS


CHANNEL INTERFACE UNIT (CIU) CONNECTIO
CIU
DCO DC1
TEKG
DR1
DR
TEK5
DT1
DT
DS #1
DS #2
DS #3
DS #4
DS #5
DBU1
DBU3
DBU2
DBU4
CI
*
DBU
DIAL BACK-UP (DBU) CONNECTIONS

and indicator designations regardless of data set orientation; horizontally for stand-alone arrangements and vertically for multiple arrangements. The designations strips on the faceplates are removable and are made of flexible plastic that contains switch and indicator designations on both sides. One side of each strip has the designations oriented for a horizontally mounted data set and the other side has the designations oriented for a vertically mounted data set. The display can be rotated 90 degrees with the top designation strip removed to allow proper orientation. This strip slides out. A small screw driver may be used in the slot next to the small hole at one end to assist in getting it started. The larger of the two thin labels at the other end of the faceplate also slides into position. While holding the EXEC switch depressed, help it over the button. To remove this label, insert the end of a small screwdriver under it starting at the depression at one end in the center. Slide the small screwdriver beneath the label longitudinally toward, but just to one side of the EXEC button. To remove the smallest label next to the paddle switches, lift in the center. Insert this label by flexing and inserting one end at a time.

1.07 With RS-232C interface and fast rise time option, the maximum allowable distance between the data terminal equipment (DTE) and the DSs 2024, 2048, and 2096 should not exceed 50 feet. With RS-449 and slow rise time option, the maximum allowable distance between the DTE and the data sets should not exceed 4000 feet if it is a 2024 or 2048-type data set and 2700 feet if it is a 2096A-type data set. In order to minimize inductive interference with data signals, the telephone line should not be carried in the same cable run as cable between the data set and CPE or lines connected to teletypewriter services. If this condition cannot be met, the telephone 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.

> ***Note:*** If RS-232-C interface is used, "rise time" fast option must be installed in the data set. A label naming the option(s) is located near the switch on the data set.

1.08 Cables for connecting either the stand-alone data set or the multiple data station to transmission facilities must be terminated at the data mounting end and in a 50-pin male connector.

1.09 The stand-alone data set requires a power source that provides 100 to 129 volts, up to 80 watts, at 57 to 63 Hz. Each multiple mounting can require up to 600 watts of power. The customer must supply an outlet that will accept the 3-prong ac power plug within 10 feet of the data set location. To prevent the data set from being turned off accidentally, this outlet should not be under the control of a switch. A KS-20340,L3 (or equivalent) power cord is provided with each 63-type data mounting and a KS-14532,L25 power cord is provided with each 64-type data mounting.

1.10 For 2400 and 4800 bps operation ensure that the data loops have been tested and meet requirements for basic 3002-type channel. For 9600 bps operation, a D1 conditioned 3002 basic channel is required. Conditioning for private line is described in Section 314-410-500.

1.11 Connections to the CPE (Table A) are made through the 37-pin CUST INT connector at the rear of the data set (Fig. 2). The rear cover is equipped with four snap-in covers which have to be removed before customer interface connection can be made. This connector mates with a customer supplied Cinch which should meet the standard of mills/c/24308 and wired in accordance with Table A. In cases where the customer interface is a 25-pin plug, the 37-pin to 25-pin adapter KS-21253,L7 must be used. (Fig. 2).

1.12 Connections to the channel interface unit (CIU) for stand-alone (Table B) is made through a 50-pin connector at the rear of the data set mounting. Connections to the CIU for multiples are made through two 50-pin connectors (Table C and D) at the rear of the mounting. A B25A cable (ordered separately) must be used to interconnect the data set with the CIU. For private line service without a DAS 829 CIU an A25D double-ended cable (ordered separately) is required to connect the data set to a 66E-25 connecting block.

2. INSTALLATION

STAND ALONE

2.01 It is desirable to install the 63A1 stand-alone data mounting adjacent to or within view of the CPE. This will allow visual monitoring of

TABLE A

CUSTOMER INTERFACE CONNECTOR

PIN NO.	EIA CIRCUIT MNEMONIC (RS-449)	EIA CIRCUIT NAME (RS-449)	APPLIES TO DATA SET:			
			2024A	2048A	2048C	2096A
2	SI	Signaling Rate Indicator				√
4, 22	SD	Send Data	√	√	√	√
5, 23	ST	Send Timing	√	√	√	√
6, 24	RD	Receive Data	√	√	√	√
7, 25	RS	Request-to-Send	√	√	√	√
8, 26	RT	Receive Timing	√	√	√	√
9, 27	CS	Clear-to-Send	√	√	√	√
10	LL	Local Loopback	√	√	√	√
11, 29	DM	Data Mode	√	√	√	√
12, 30	TR	Terminal Ready				√
13, 31	RR	Receiver Ready	√	√	√	√
14	RL	Remote Loopback	√	√		√
15	IC	Incoming Call				√
16	SR	Signaling Rate Selector				√
17, 35	TT	Terminal Timing	√	√	√	√
18	TM	Test Mode	√	√	√	√
19	SG	Signal Ground	√	√	√	√
20	RC	Receive Common	√	√	√	√
28	IS	Terminal-in-Service				√
32	SS	Select Standby		√	√	√
33	SQ	Signal Quality		√	√	√
36	SB	Standby Indicator	√	√	√	√
37	SC	Send Common	√	√	√	√

TABLE B

TELEPHONE FACILITY INTERFACE

J6 PIN NO.	MNEMONIC	FUNCTION
1,26,6,31	DBU1, DBU2, DBU3, DBU4	Dial Backup Control Leads
4,29	DR1, DT1	Transmit Pair
5,30	DR, DT	Receive Pair
3,28	TEK6, TEK5	Not in Data Indicator

the status lamps on the data set while operating or testing the CPE.

2.02 Before proceeding with installation read service order and decode the Uniform Service Order Code (USOC) to determine options and address for location. The USOC information is provided in Part 5. The required installation steps are as follows:

- Set local address
- Remove data set from data mounting following data set removal procedure

TABLE C

MULTIPLE MOUNTING CHANNEL INTERFACE UNIT (CIU) CONNECTOR

PIN NO.	LEAD DESIGNATIONS	DATA SET POSITION NO.	FUNCTIONS
1,26	DR, DT	1	Receive Pair
2,27	DR1, DT1	1	Transmit Pair
3,28	TEK6, TEK5	1	Line Status Indicator
4,29	DR, DT	2	Receive Pair
5,30	DR1, DT1	2	Transmit Pair
6,31	TEK6,TEK5	2	Line Status Indicator
7,32	DR, DT	3	Receive Pair
8,33	DR1, DT1	3	Transmit Pair
9,34	TEK6, TEK5	3	Line Status Indicator
10,35	DR, DT	4	Receive Pair
11,36	DR1, DT1	4	Transmit Pair
12,37	TEK6, TEK5	4	Line Status Indicator
13,38	DR, DT	5	Receive Pair
14,39	DR1, DT1	5	Transmit Pair
15,40	TEK6, TEK5	5	Line Status Indicator
16,41	DR, DT	6	Receive Pair
17,42	DR1, DT1	6	Transmit Pair
18,43	TEK6, TEK5	6	Line Status Indicator
19,44	DR, DT	7	Receive Pair
20,45	DR1, DT1	7	Transmit Pair
21,46	TEK6, TEK5	7	Line Status Indicator
22,47	DR, DT	8	Receive Pair
23,48	DR1, DT1	8	Transmit Pair
24,49	TEK6, TEK5	8	Line Status Indicator

TABLE D

MULTIPLE MOUNTING DIAL BACKUP UNIT (DBU) CONNECTOR

PIN NO.	LEAD DESIGNATIONS	DATA SET POSITION NO.	FUNCTION
1,26		1	
2,27		2	
3,28		3	
4,29	DBU1,DBU2	4	Dial
5,30		5	Backup Control Leads
6,31		6	1 and 2
7,32		7	
8,33		8	
17,42		1	
18,43		2	
19,44		3	
20,45	DBU3,DBU4	4	Dial
21,46		5	Backup Control Leads
22,47		6	3 and 4
23,48		7	
24,49		8	

- Enable the battery
- Set rise time option
- Install data set in the mounting following data set replacement procedure
- Connect cables
- Turn on power
- Set data set options
- Set network address
- Perform installation test
- Add data set to poll list.

The procedures for the above are contained in the following paragraphs.

2.03 To set the local address of the data set, it is necessary to gain access to CP1 at the back of the 63A data mounting (Fig. 4). Set local address of data set to correspond with the local address as specified on the service order using the 8-position dual in-line package (DIP) switch located on the backplane of the data mounting. Details for setting the switch are shown in Fig. 5.

2.04 Remove data set from the mounting following data set removal procedures.

2.05 Enable the battery by depressing the rocker of the battery switch toward the white dot (ON). The switch is on top of the data set circuit boards behind the front panel (refer to Fig. 1).

2.06 Select data set rise time by setting 4-position rise time switch to either fast (open) or slow (closed) to correspond with service order according to the label next to the switch. Refer to Fig. 6 for rise time switch on 2024 or 2048-type data set. Refer to Fig. 7 for the four rise time switches on 2096-type data set, one for each port. The switch is closed when the rocker is down on the side adjacent to the numbers and open when down on the side opposite the numbers. For RS-449 interface the switch must be in closed position, and in open position for RS-232 interface.

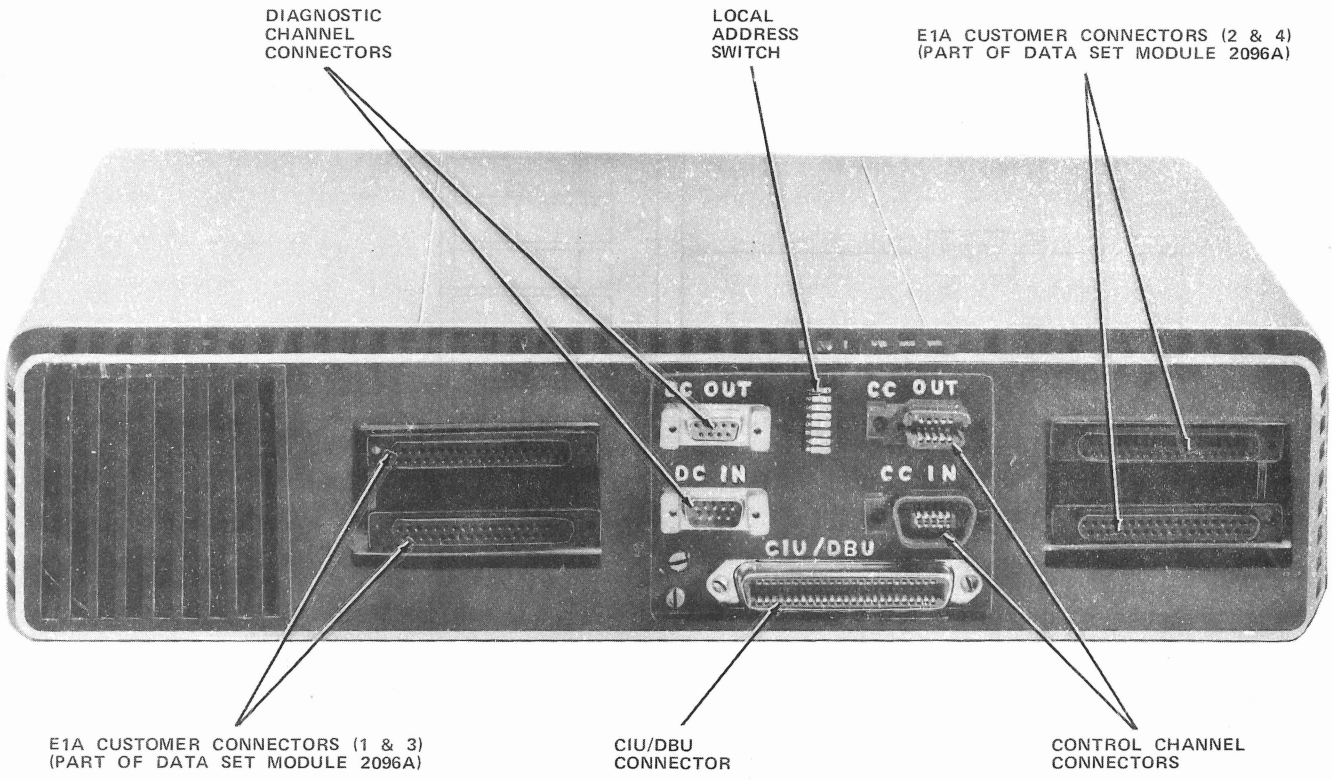


Fig. 4—63A1 Stand-Alone Data Mounting (Rear View)

2.07 Install data set in the mounting following data set replacement procedure.

2.08 Turn on power.

2.09 Set data set options following the procedure described in Part 4, Options.

2.10 Set network address of data set as specified on service order from front panel switches. Refer to Section 592-040-120 for operation of the front panel switches to install network address.

2.11 Set port address (applies to DS 2096-type only) of data set as specified on service order from front panel switches. Refer to Section 592-040-120 for operation of the front panel switches to install port address.

2.12 Follow the installation test sequence as outlined in Section 592-040-520. This test sequence provides a method of verifying that the installaton is satisfactory. Refer to Section 592-040-120 for a description of test and command menu and operation of data set.

2.13 Add data set to poll list unless directed otherwise. Refer to Section 592-040-120 for operation of the front panel switches to add to poll list.

A. Data Set Removal

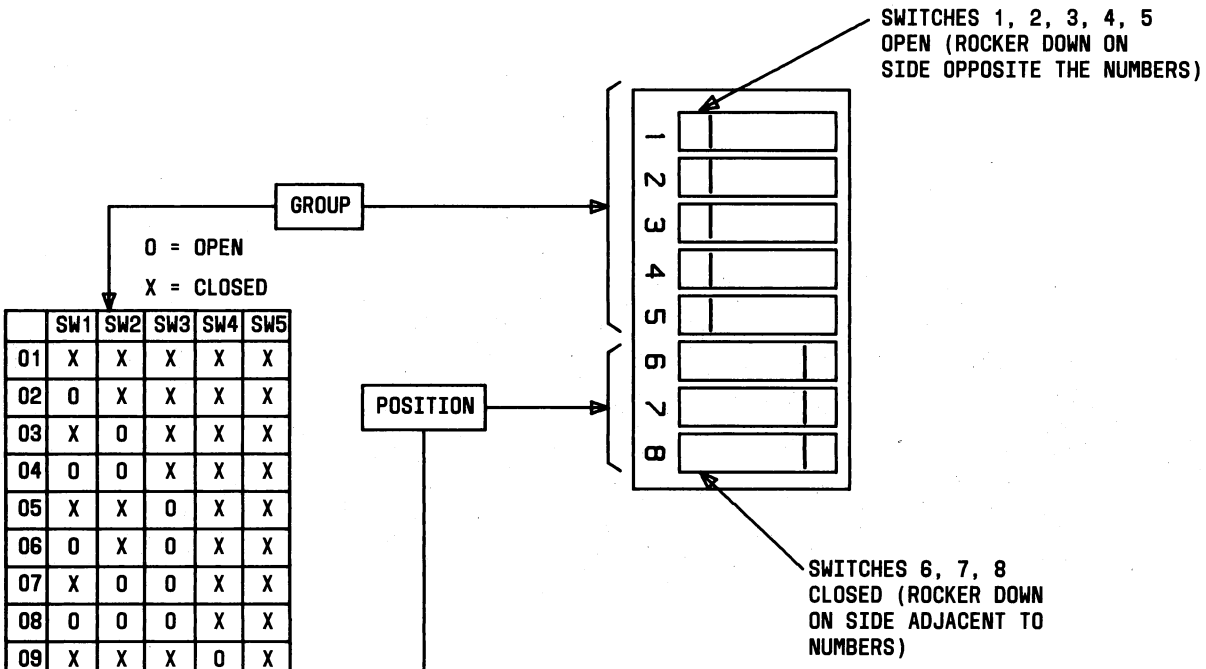
2.14 The data set should be removed from the mounting as follows:

(1) Disconnect the customer interface cord(s) from the rear of the data set.

(2) Open the magnetically latched hinged front cover by pulling outward on top edge and rotating downward.

Warning: When the data set is removed from its mounting handle only by faceplate, edges or brackets to prevent damages to integrated circuits (ICs). The data set should be placed on a clean, dry, nonconductive surface.

(3) Disengage the latches on both sides of the data set and rotate outward until the set is



O = OPEN

X = CLOSED

	SW1	SW2	SW3	SW4	SW5
01	X	X	X	X	X
02	O	X	X	X	X
03	X	O	X	X	X
04	O	O	X	X	X
05	X	X	O	X	X
06	O	X	O	X	X
07	X	O	O	X	X
08	O	O	O	X	X
09	X	X	X	O	X
10	O	X	X	O	X
11	X	O	X	O	X
12	O	O	X	O	X
13	X	X	O	O	X
14	O	X	O	O	X
15	X	O	O	O	X
16	O	O	O	O	X
17	X	X	X	X	O
18	O	X	X	X	O
19	X	O	X	X	O
20	O	O	X	X	O
21	X	X	O	X	O
22	O	X	O	X	O
23	X	O	O	X	O
24	O	O	O	X	O
25	X	X	X	O	O
26	O	X	X	O	O
27	X	O	X	O	O
28	O	O	X	O	O
29	X	X	O	O	O
30	O	X	O	O	O
31	X	O	O	O	O
32	O	O	O	O	O

O = OPEN

X = CLOSED

	SW6	SW7	SW8
1	X	X	X
2	O	X	X
3	X	O	X
4	O	O	X
5	X	X	O
6	O	X	O
7	X	O	O
8	O	O	O

EXAMPLE:
THE STANDALONE LOCAL ADDRESS WILL BE GIVEN AS A THREE DIGIT NUMBER, THE FIRST TWO DIGITS REPRESENT THE GROUP AND THE THIRD DIGIT REPRESENTS THE POSITION. THE LOCAL ADDRESS SWITCH SHOWN ABOVE IS SET FOR LOCAL ADDRESS 321 ⟶ GROUP 32, POSITION 1

Fig. 5—Stand Alone Local Address Switch

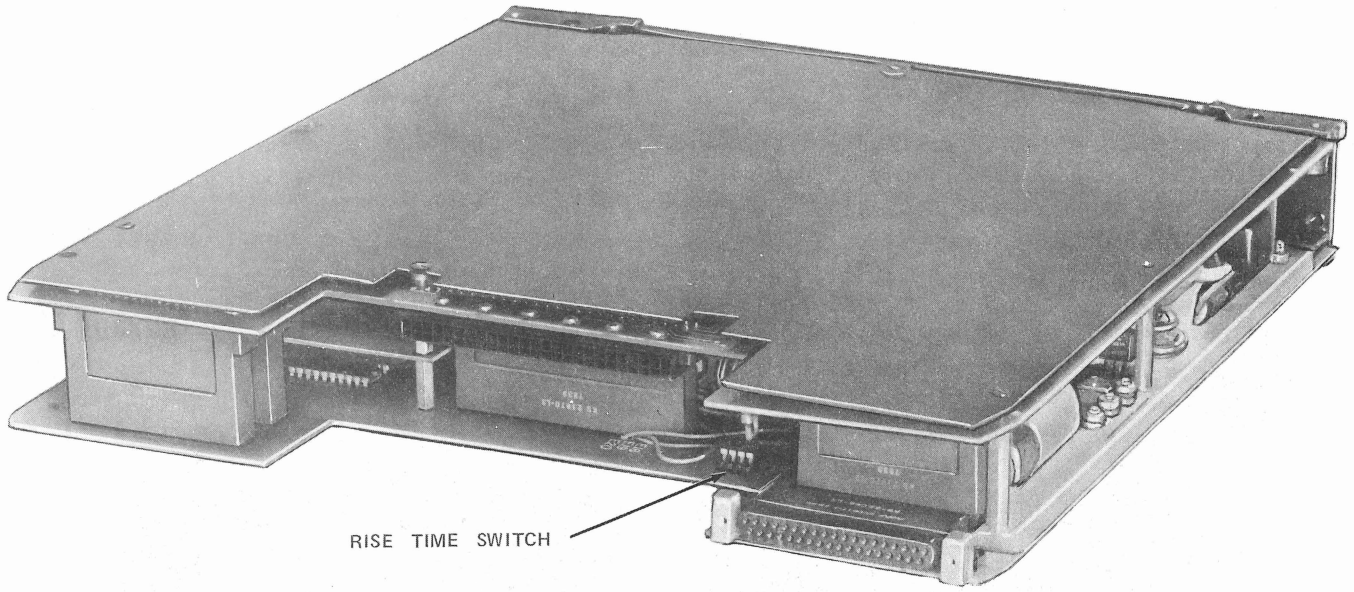


Fig. 6—Rise Time Switch on Data Set 2024-L1 or 2048-L1

free of its connector, then slide the data set out the front of the mounting.

Caution: When removing rear cover use finger pressure only. No special tools are required. Excessive force may crack the data set cover.

(4) Remove the rear cover by gently depressing on the top edge and rotating downward then lift off.

(5) Turn off the battery switch on top of the data set circuit board behind the front panel (Fig. 1), if data set is being removed from service. The switch is off when the rocker is down on the side opposite the white dot.

B. Data Set Replacement

2.15 To reassemble the data set, proceed as follows:

(1) Replace the rear cover by hooking the bottom tabs on the mounting, rotate forward and gently depress the top edge to engage the tabs on the top edge.

(2) Turn the battery switch, located on top of the data set circuit board, ON. The battery switch is ON when the rocker is down toward the white dot.

(3) Slide the data set into the mounting until the latches on both sides engage and the handles are flush with the front edge of the faceplate.

Caution: Do not push on the latches when inserting.

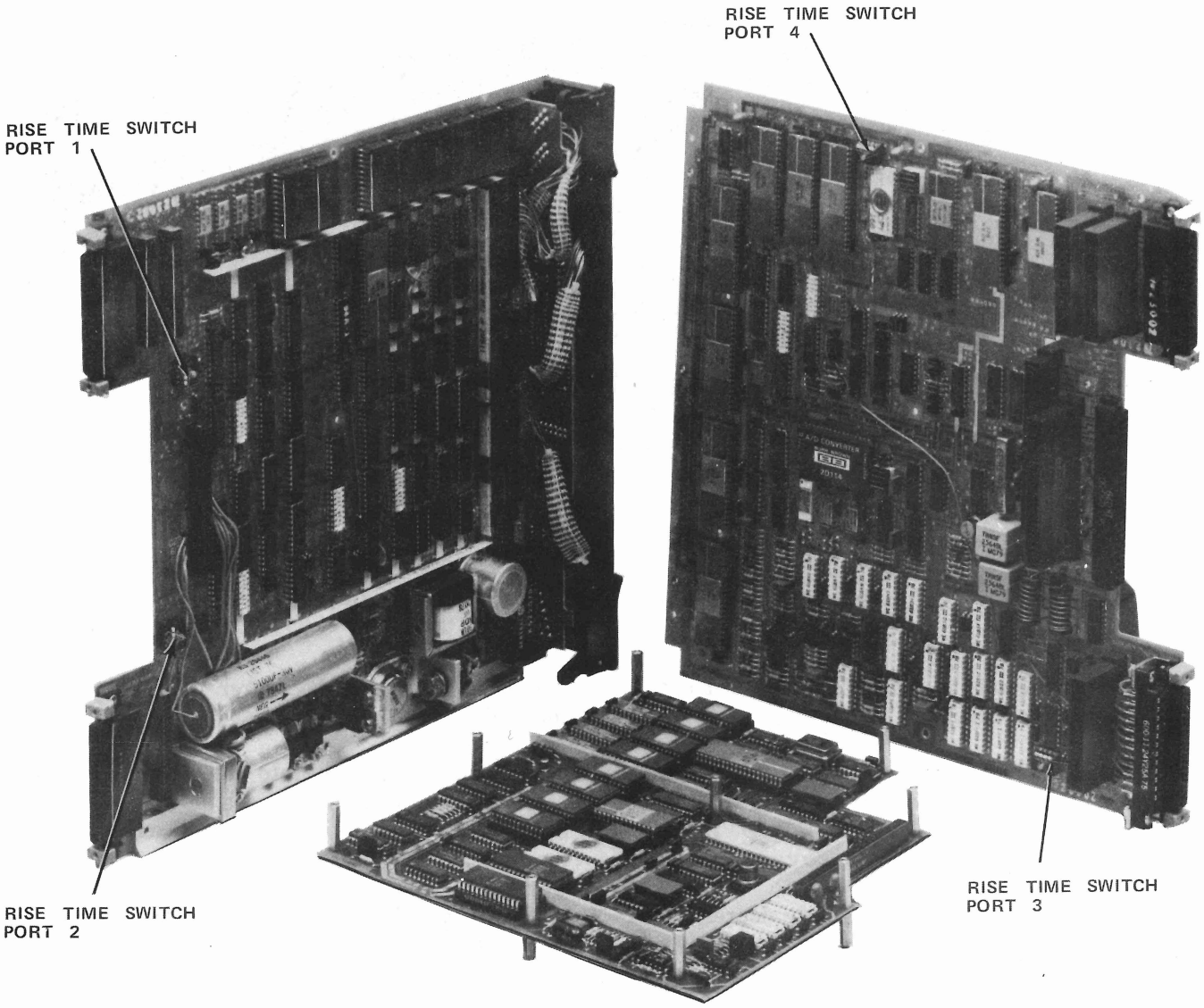
(3) Turn the battery switch ON.

(4) Close front cover - rotate upward until magnetic latches engage.

(5) Connect all cords.

MULTIPLE

2.16 This part provides installation procedures to be followed when installing private line data sets in a multiple arrangement. The multiple data station consists of private line data sets 64A-type data mountings (eight data sets per data mounting), one KS-14532,L25 power strip, and an appropriate cabinet or rack framework. An additional KS-22291, L1 power strip is required if powering more than two 64-type mountings in a KS-20018,L15 cabinet. The rear view of a 64-type data mounting is shown



RISE TIME SWITCHES ON DATA SET 2096A–L1 (OPEN AND DISASSEMBLED)

Fig. 7—Rise Time Switches on Data Set 2096A-L1 (Open and Disassembled)

in Fig. 8. The data sets in the data station should be installed in conformance with the general instructions in Section 590-010-200. For additional information on installation planning, refer to Section 590-010-201.

A. Cabinet

2.17 The recommended cabinet for the DATAPHONE II service multiple data station consists of KS-20018,L11A, L12A, and L15C cabinets (Fig. 9). Any mounting rack arrangement that will accept the 23-inch 64A-type data mounting can also be used. The 64A1 data mounting can be modified, by placing the power supplies between and changing mounting plates so that the data mounting will fit a 19-inch relay rack. Mounting the power unit in a 19-inch rack requires a mounting plate (comcode 842989451), a data set power extension cord (comcode 842989469), and a fan power extension cord (comcode 842989477) (ordered separately). The mounting plate will accommodate either one

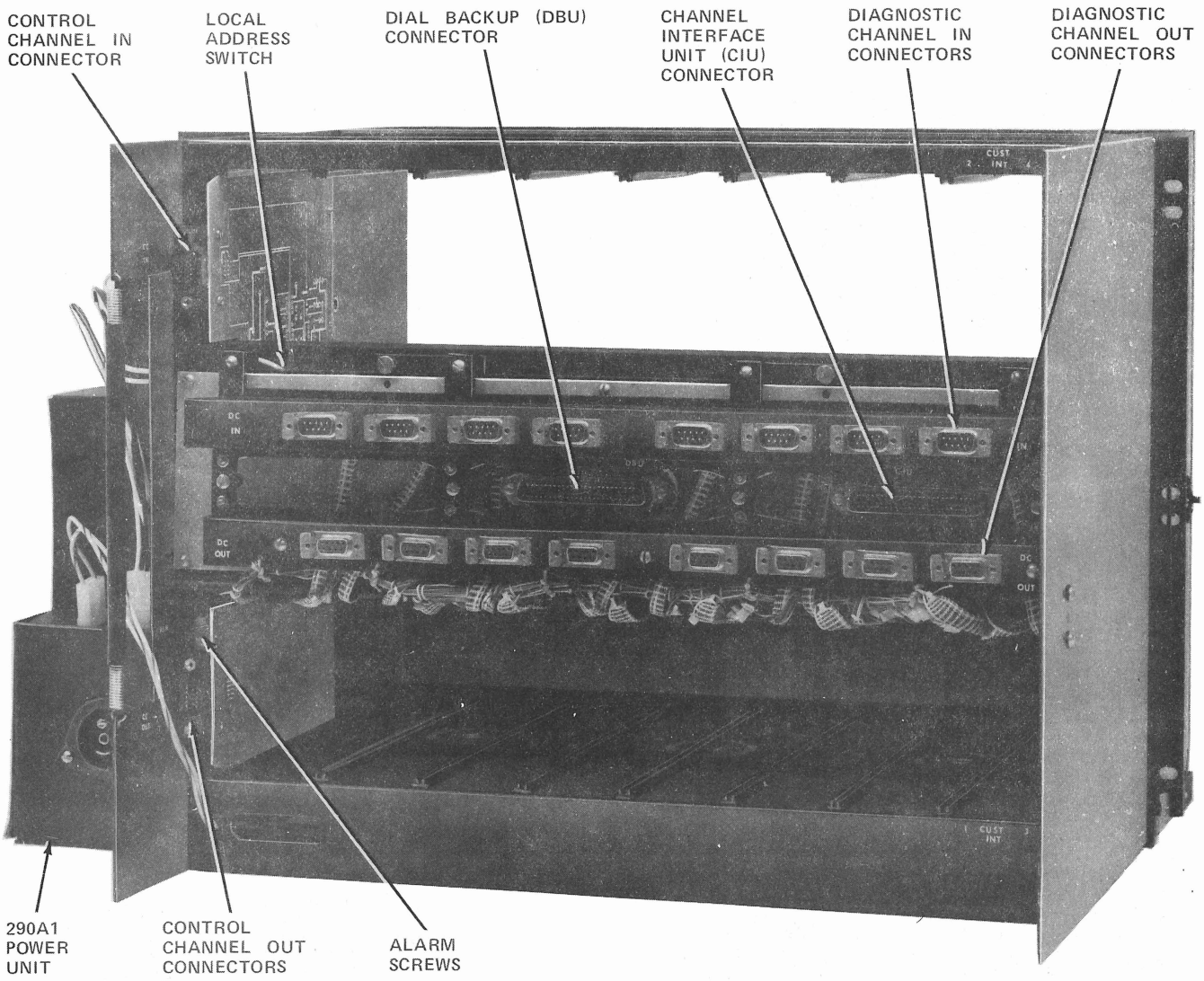


Fig. 8—64A1 Multiple Data Mounting (Rear View)

or two power units, and may be used to serve two data mountings if it is mounted between them with no intervening equipment. If the data mountings cannot be grouped in pairs, a mounting plate must be ordered for each data mounting installed in a 19-inch rack (refer to Fig. 10). In either arrangement, one of each type cord is required for each data mounting.

2.18 Each listed KS-20018-type cabinet above can house the following number of 64A-type data mountings and data sets.

- KS-20018,L11A cabinets can house one 64A-type data mounting with a maximum of eight data sets and a 46A2 data mounting containing eight DAS 829s.

- KS-20018,L12A cabinet can house one 64A-type data mounting with a maximum of eight data sets.

Note: When an external blower is used with the 64-type mounting do not use KS-20018,L12 cabinets.

- KS-20018,L15C cabinets can house four 64A-type data mountings with a maximum of 32 data sets. A second recommended arrangement is to group the data sets and

CABINET	HEIGHT	WIDTH	DEPTH
KS–20018–L11	30 IN.	24 IN.	19 IN.
KS–20018–L12	17 IN.	24 IN.	19 IN.
KS–20018–L15	72 IN.	29 IN.	26 IN.

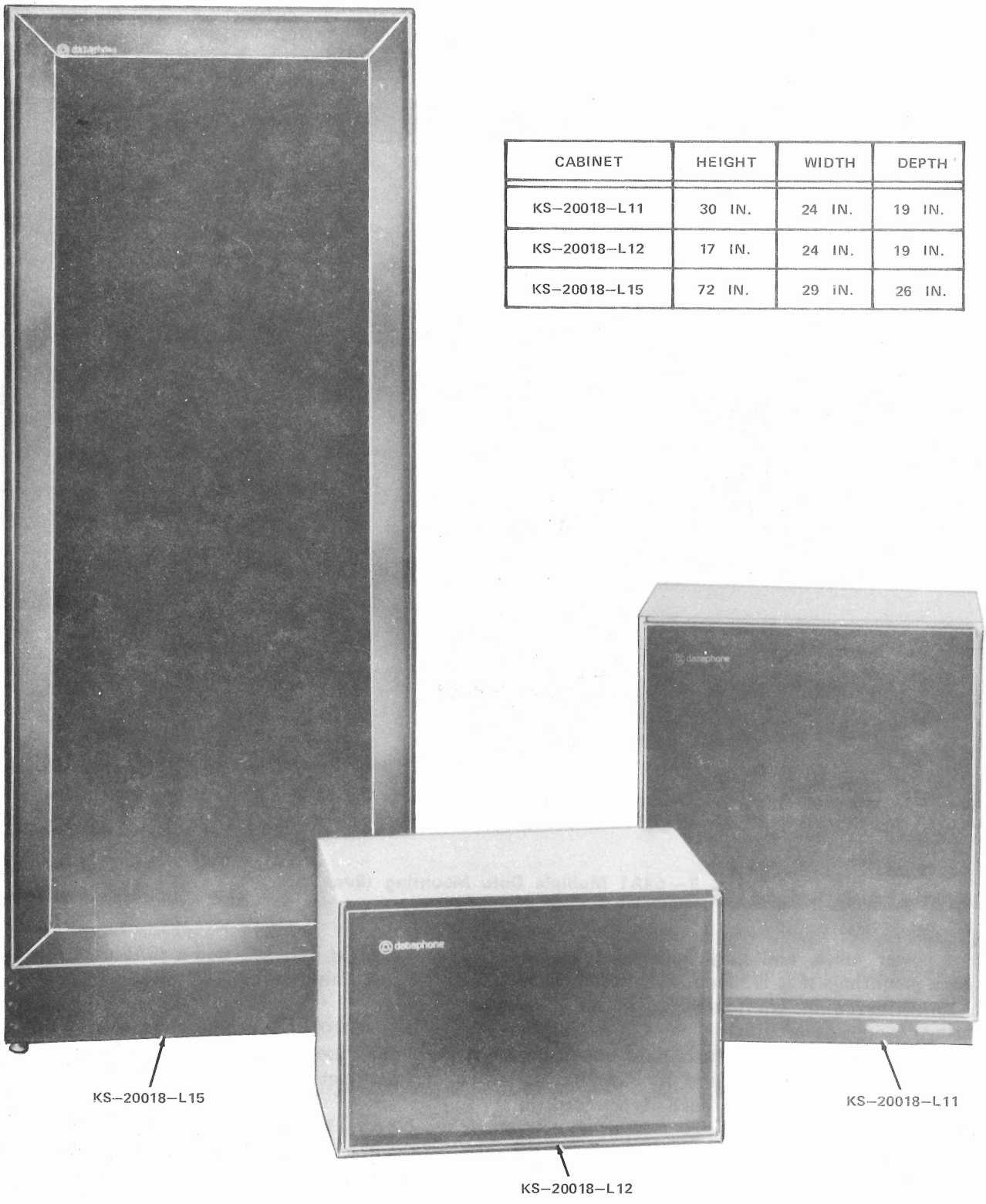


Fig. 9—KS-20018-Type Cabinet

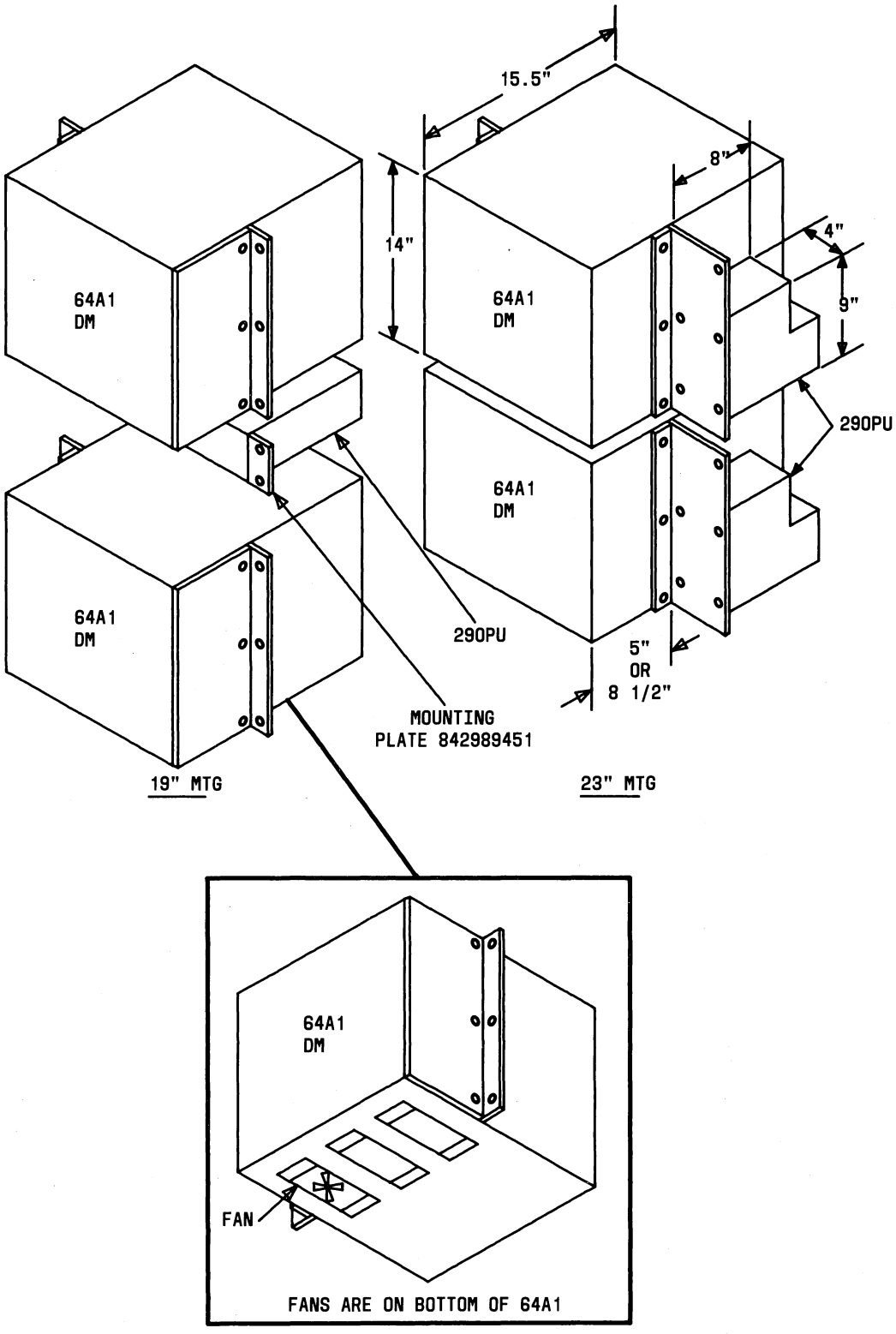


Fig. 10—Location of Transformer Brackets in 19- and 23-Inch Mounting

the DAS 829s (Fig. 9). This arrangement provides space for 24 data sets and 24 DAS 829s.

2.19 The multiple data station arrangement may be installed in any location within 50 feet of the CPE that is convenient for the customer. It is desirable to mount the station adjacent to or within view of the CPE. This will allow visual monitoring of the status lamps on the data sets while operating or testing the CPE. Verify that the location selected is adequate for ventilation, maintenance, and that the customer-provided standard 3-wire, grounded, 117 Vac power outlets are capable of supplying the required current. To prevent the data set from being turned off accidentally, this outlet should not be under control of a switch. Refer to Fig. 11 and 12 for the power requirements for the different cabinet configurations. The ac power outlet and cable must be arranged to adequately reach the equipment cabinet or mounting rack arrangement (10 feet). The KS-20018,L15C cabinet comes equipped with its own power strip (KS-22291,L1). However, an additional KS-22291,L1 power strip is required for installation involving more than two 64A1-type data mountings. Separate powering of each data mounting in a cabinet is accomplished by using the 10-foot power cord included with the 64A1-type data mounting.

2.20 The recommended eight data sets and eight data auxiliary sets (DASs) 829-type channel interface units (CIUs) station arrangement is shown in a KS-20018,L11A cabinet (Fig. 13).

2.21 Up to 32 data sets (four 64A1 data mountings) can be installed in a KS-20018,L15C cabinet (Fig. 14). If all 32 data sets are 2096As, the cabinet must be served by two separate outlets. The typical outlet is fused for 15 amps. A full cabinet of DS 2096As requires approximately 28 amps.

Note: May be more than one circuit breaker per cabinet.

2.22 Many data sets and KS-20018-type cabinet combinations are possible. The combinations illustrated in this section are typical examples of the many possibilities available for required needs. Do ***not*** apply power to the cabinet or any of the related components of the data station until the complete station has been installed. Prepare the KS-20018-type cabinet in accordance with Section 590-010-201.

B. Mounting

2.23 In addition to the standard installation tools, installation of the data mountings and data sets may require the following additional tools:

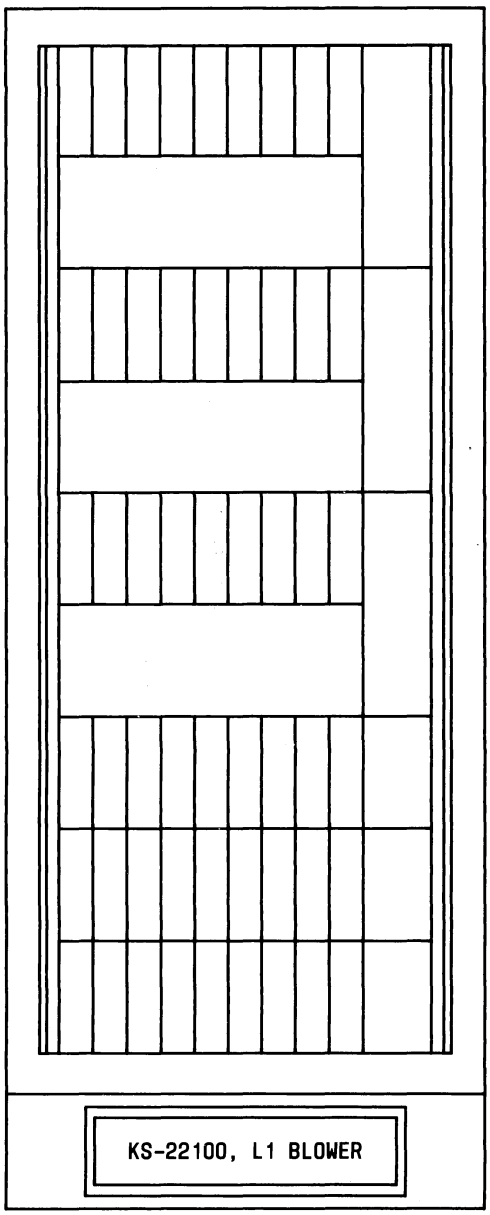
- 12-inch screwdriver
- A screw starter, Kedman Co. No. 1736, or equivalent.

2.24 For a one-person installation perform the following:

- For 23-inch mounting space, insert the furnished 12-24 by 1/2 inch long screws at the sixth screw hole from bottom of cabinet or one inch from the bottom of each mounting.
- For the 19-inch mounting space, insert the furnished 12-24 by 1/2 inch long screws 3 3/4 inches from the bottom of the mounting on each side in the threaded upright position of the cabinet or rack.
- Hook the 64-type mounting onto this started screw and then insert the remaining mounting screws in position using the screw starter and making minor position changes if necessary. Mount the 290A1 power unit to the 64-type data mounting if it is a 23-inch cabinet. Mount the 290A1 power unit to a 842989451 mounting plate if it is a 19-inch cabinet (refer to Fig. 10).

2.25 For ease of installation of the 64-type data mountings, the KS-20018,L11 and KS-20018,L12 cabinets may be placed ***face up*** or ***face down*** during installation. The screw starter and KS-19053,L1 screwdriver may be helpful in installing the data mounting.

2.26 The data set is provided with a local mounting address that must be installed in the data mounting. The mounting has a 5-position local address switch (Fig. 8). This switch sets the group part of the local address. The data set position is set automatically when the data set is inserted into the mounting. The local address to be installed in the data set will be specified on



KS 20018 L15C CABINET EQUIPPED
WITH BLOWER AND PANELS

POWER REQUIREMENTS (APPROX.)

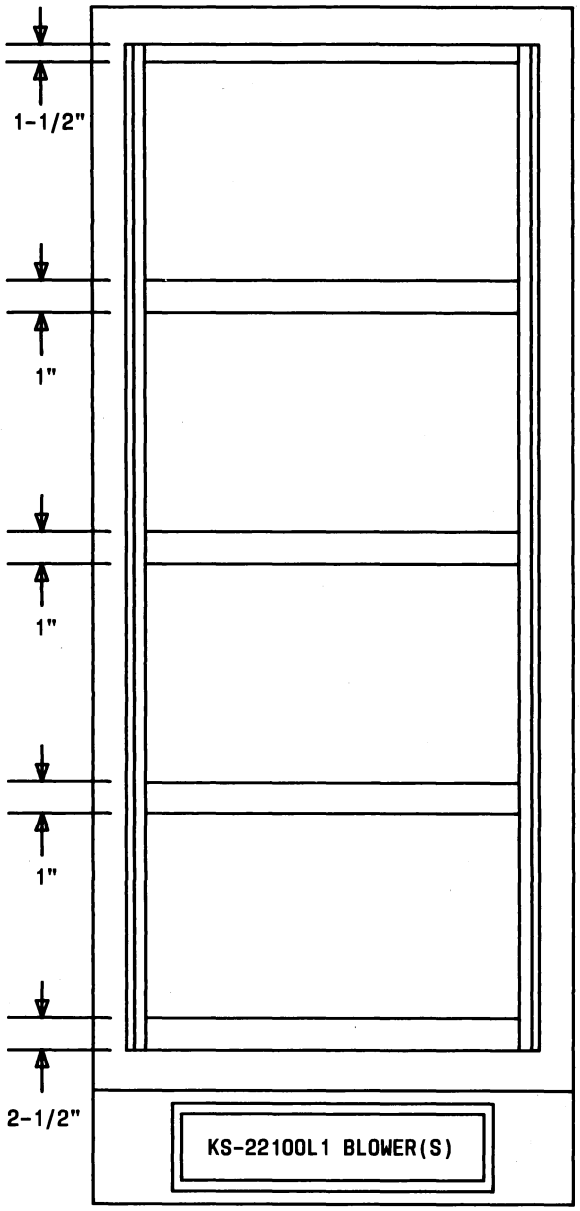
DS2096A		DS2048A		DS2024A	
WATTS	AMPS	WATTS	AMPS	WATTS	AMPS
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
14	.14	14	.14	14	.14
14	.14	14	.14	14	.14
14	.14	14	.14	14	.14
FAN					
120	1.3	120	1.3	120	1.3
1962	21.8	1752	19.4	1560	17.3

Fig. 11—Three 64A1 Multiple Data Mountings and Three 46A2 Data Mountings Installed in a KS-20018,L15C Cabinet

the service order. Details for setting the switch are shown in Fig. 15.

Note: This address, circuit number, and trouble report number may be written on the designation strip on the front cover of the 64-type mounting.

2.27 If the alarm circuit is to be used, connect station wire to the ALARM (ALM) terminals (Fig. 8). The alarm circuit lead to which this is connected should draw less than 100 ma through the contact and should be noninductive or otherwise a 458A network or equivalent diode is required in parallel with the contact. Tape along the channel interface unit cable (telephone line connection).



LIST 15C TYPE

POWER REQUIREMENTS (APPROX.)

DS2096A		DS2048A		DS2024A	
WATTS	AMPS	WATTS	AMPS	WATTS	AMPS
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
600 V.A. 700	6.7	530 V.A. 618	5.9	466 V.A. 544	5.2
FAN					
120	1.3	120	1.3	120	1.3
25.20	28.1	2240	24.9	1984	22.1

Fig. 12—Four DATAPHONE II Service Data Set Mountings

2.28 Turn on the battery switch on the data set (refer to Fig. 16) before installing the data set in the data mounting by depressing the rocker of the battery switch toward the white dot.

C. Data Sets

2.29 Be sure that the battery switch is on and the rise time option is selected. For RS-449 interface the switch must be in closed position and in open position for RS-232C interface. The type of interface will be specified on the service order. The rise time options switch is closed when rocker is down on the side adjacent to the numbers and open when down on the side opposite the numbers. For slow rise time, the switch must be in closed position, and in open position for fast rise time. Insert the data sets into the 64A-type

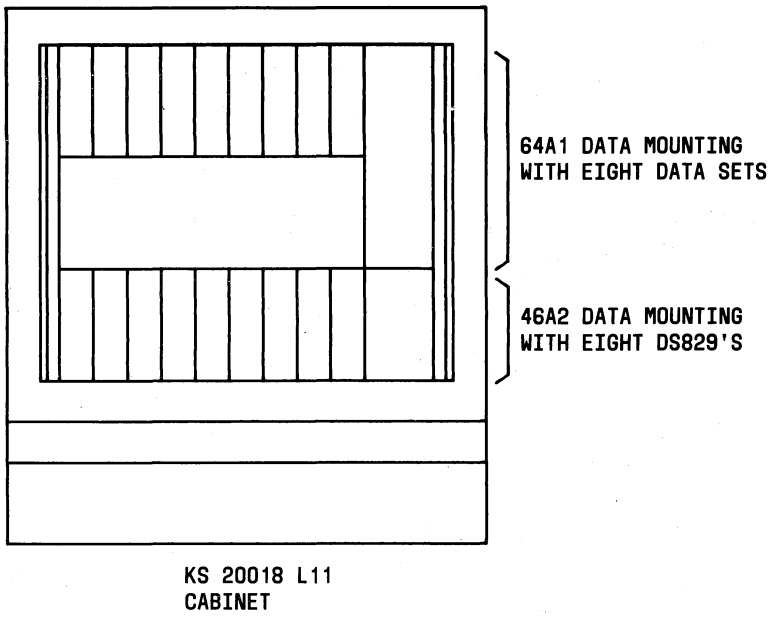


Fig. 13—One 64A1 Multiple Data Mounting and One 46A2 Data Mounting Installed in a Cabinet KS-20018,L11

data mountings. Ensure that all data sets are slid into place and are secured by the latch on the data set.

2.30 Connect cables and route customer equipment cables behind the cable retainer springs on each data mounting and route downward and out of the cabinet. Connect the power cord to the twist-lock connector on the 290A1 power unit. Connect the fan and data set cords to the 290A1 power unit if it is a 23-inch mounting. If it is a 19-inch mounting, connect using 842989469 and 842989477 extender cords.

EXTENDED LOCATIONS

2.31 Extended service is necessary when two 2096A data sets are used in a point-to-point multiplex mode, with at least one of the multiplexed channels extended beyond the interface capability (RS-449—4000 feet, RS-232-C—50 feet). The installation is the same as previously described, however there are cable changes which are described in the Part 3, Connections.

3. CONNECTIONS

STAND ALONE

3.01 The connection part of a typical installation requires minimum effort on part of the installer, since the connections consist of connecting the appropriate cables.

3.02 The external wiring and relationship of the data set with the mounting is shown in Fig. 2. The adapter (KS-21253,L7) for converting from a 37-pin customer interface to a 25-pin interface is also shown in Fig. 2. This adapter is supplied with data set.

3.03 Connections for the various types of service using private line data sets are shown in Fig. 17 and 18. The emphasis in these diagrams is on equipment interconnections at one location and not system configuration. The figures, numbers, and titles of the connection diagrams are shown below:

Fig. 17—Single Stand-Alone Data Set Connection Diagram

Fig. 18—More Than one Stand-Alone Data Set Connection Diagram

MULTIPLE

3.04 The connection part of a typical installation requires minimum effort by the installer. The connections consist of connecting the appropriate cables.

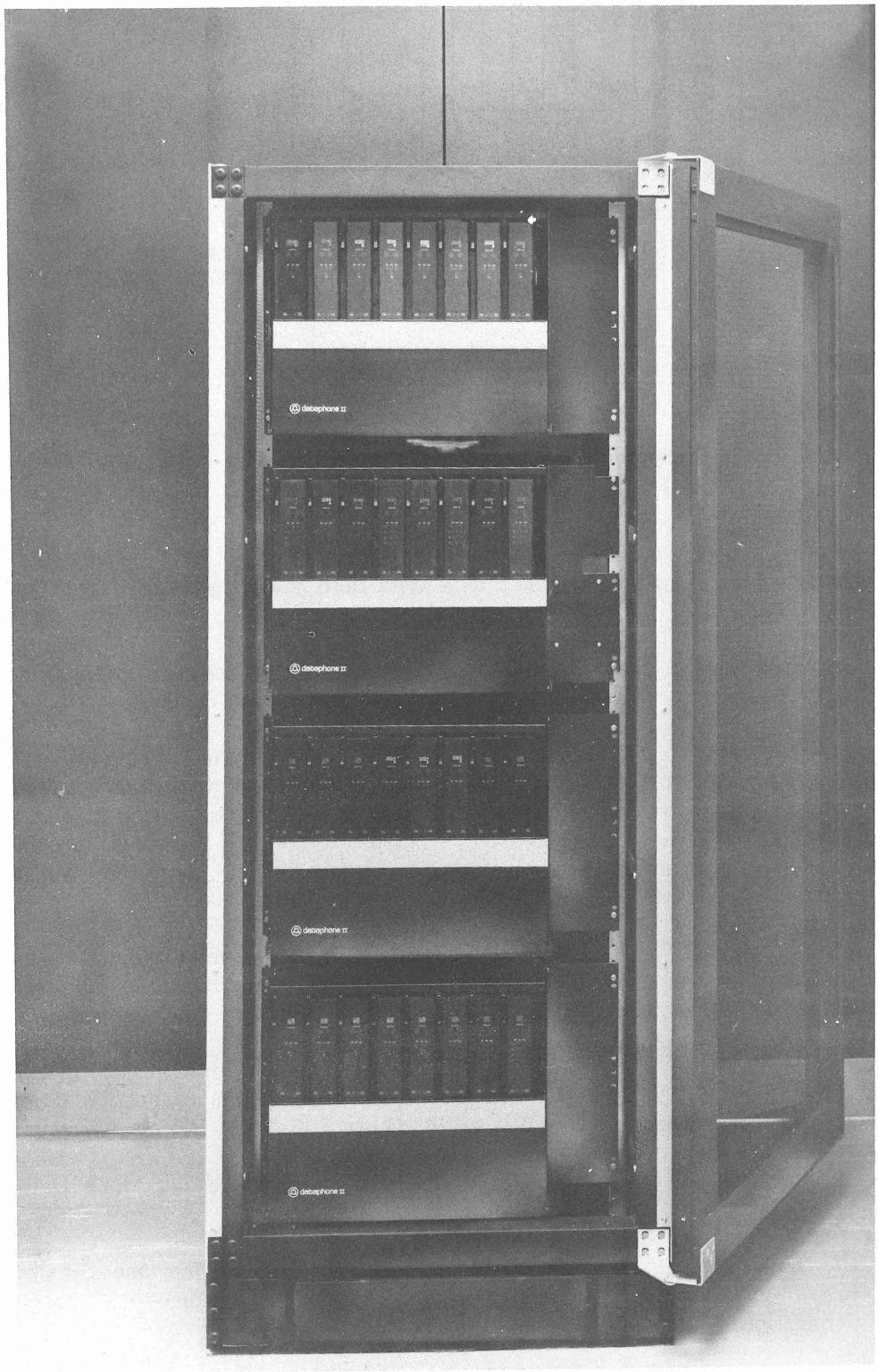
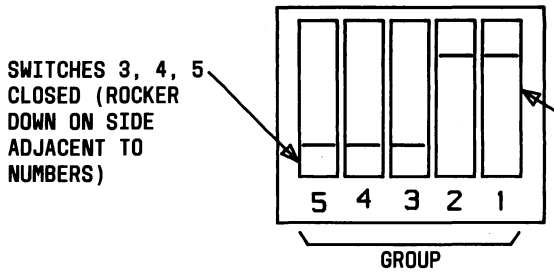


Fig. 14—Cabinet KS-20018,L15C Equipped With 32 Data Sets (Front Cover Open)



	SW5	SW4	SW3	SW2	SW1
01	X	X	X	X	X
02	X	X	X	X	0
03	X	X	X	0	X
04	X	X	X	0	0
05	X	X	0	X	X
06	X	X	0	X	0
07	X	X	0	0	X
08	X	X	0	0	0
09	X	0	X	X	X
10	X	0	X	X	0
11	X	0	X	0	X
12	X	0	X	0	0
13	X	0	0	X	X
14	X	0	0	X	0
15	X	0	0	0	X
16	X	0	0	0	0
17	0	X	X	X	X
18	0	X	X	X	0
19	0	X	X	0	X
20	0	X	X	0	0
21	0	X	0	X	X
22	0	X	0	X	0
23	0	X	0	0	X
24	0	X	0	0	0
25	0	0	X	X	X
26	0	0	X	X	0
27	0	0	X	0	X
28	0	0	X	0	0
29	0	0	0	X	X
30	0	0	0	X	0
31	0	0	0	0	X
32	0	0	0	0	0

0 = OPEN

X = CLOSED

NOTE:
POSITION NUMBER
PREWIRED ON BACKPLANE

Fig. 15—Multiple Mounting Local Address Switch

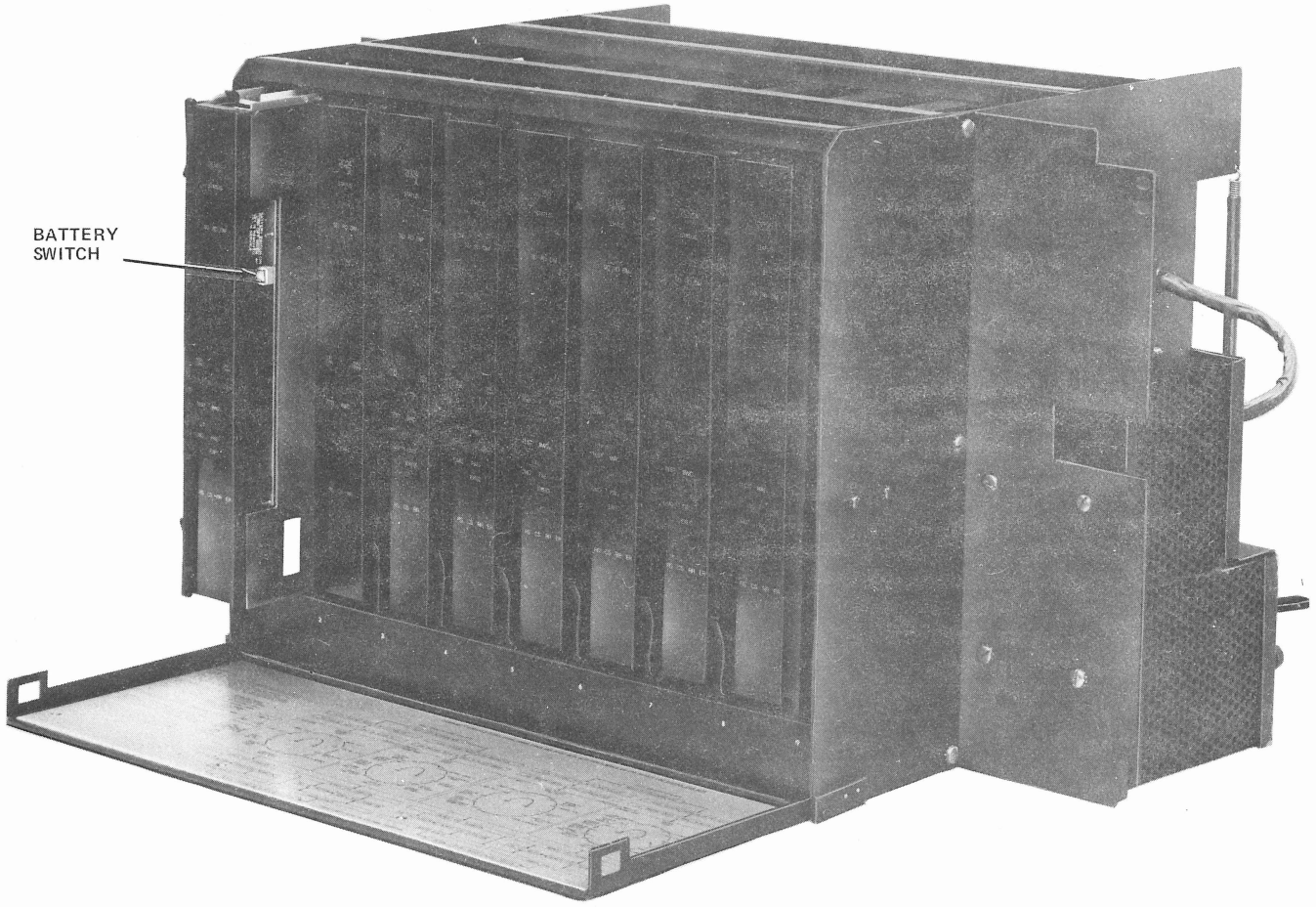


Fig. 16—64A1 Multiple Data Mounting With Data Sets Installed (One Data Set Pulled out to Show Battery Switch Location)

3.05 The recommended connections for the various types of multiple installations are shown in Fig. 19, 20, 21, and 22. The figure number and title of the typical multiple connection diagram is shown below:

Fig. 19—Private Line, Single Multiple Mounting

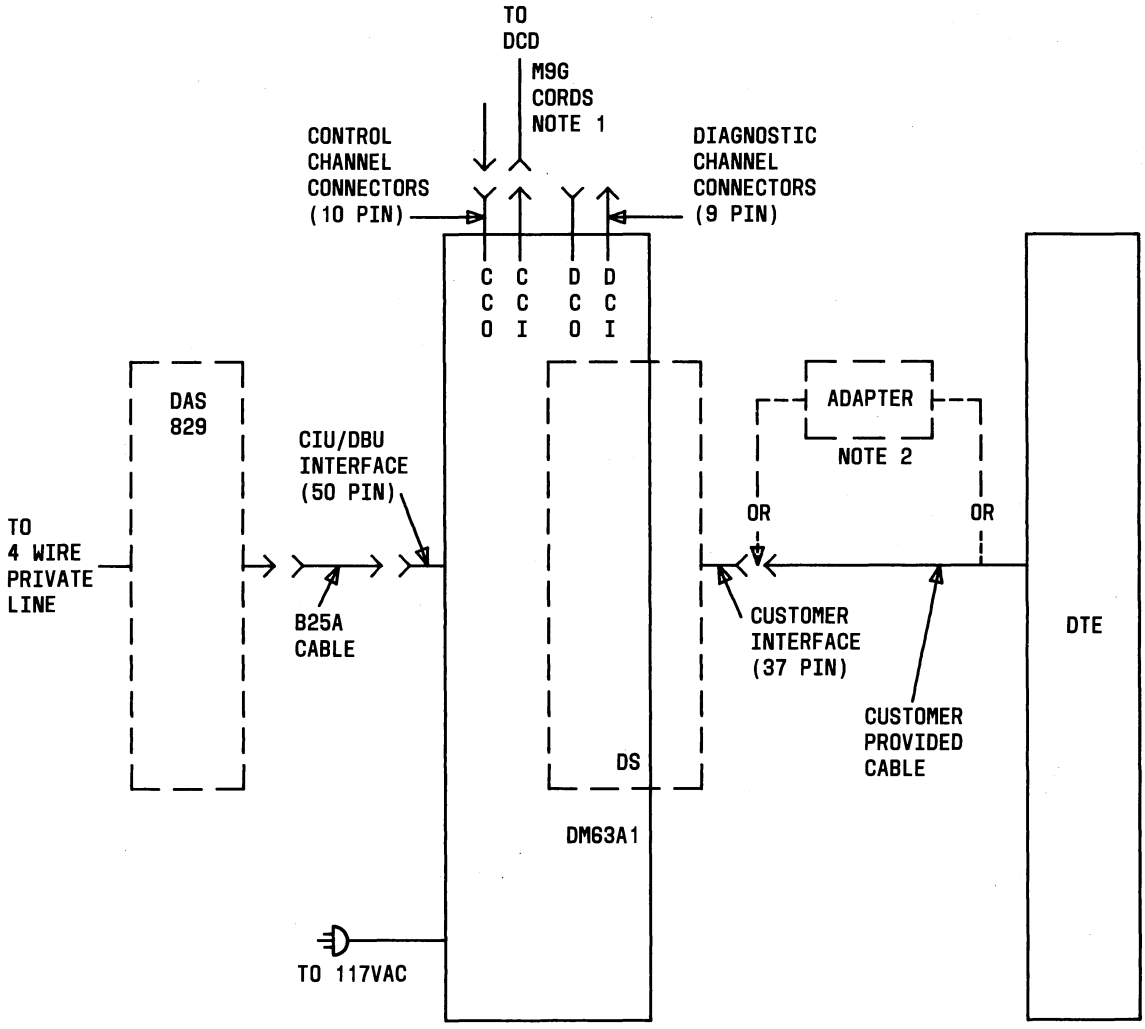
Fig. 20—Private Line, More Than one Multiple Mounting

Fig. 21—Private Line, Mixture of Stand-Alone and Multiple Mountings

Fig. 22—Private Line Mixture of Stand-Alone and Multiple Mountings to Illustrate Diagnostic Channel Connection (M9F and M9H Cords, Used in Extended Service Connections).

EXTENDED LOCATIONS

3.06 Figure 23 shows an example of three extended service circuits and a local terminal that are multiplexed over a 9600 bps data link (backbone channel) to a data terminal equipment (DTE). The diagnostic connections in this circuit consist of a diagnostic control device (DCD) connected to the control channel at the control location (denoted by a dotted line) and diagnostic channel interconnections between colocated data sets at the extended location (denoted by dashed lines) by M9F, M9G, and M9H cords. These connections allow the diagnostic capabilities to be extended throughout the network. The data channels are extended by interconnecting, with M28A cords, the 2096A customer interface connectors to the appropriate colocated data set interface connector.

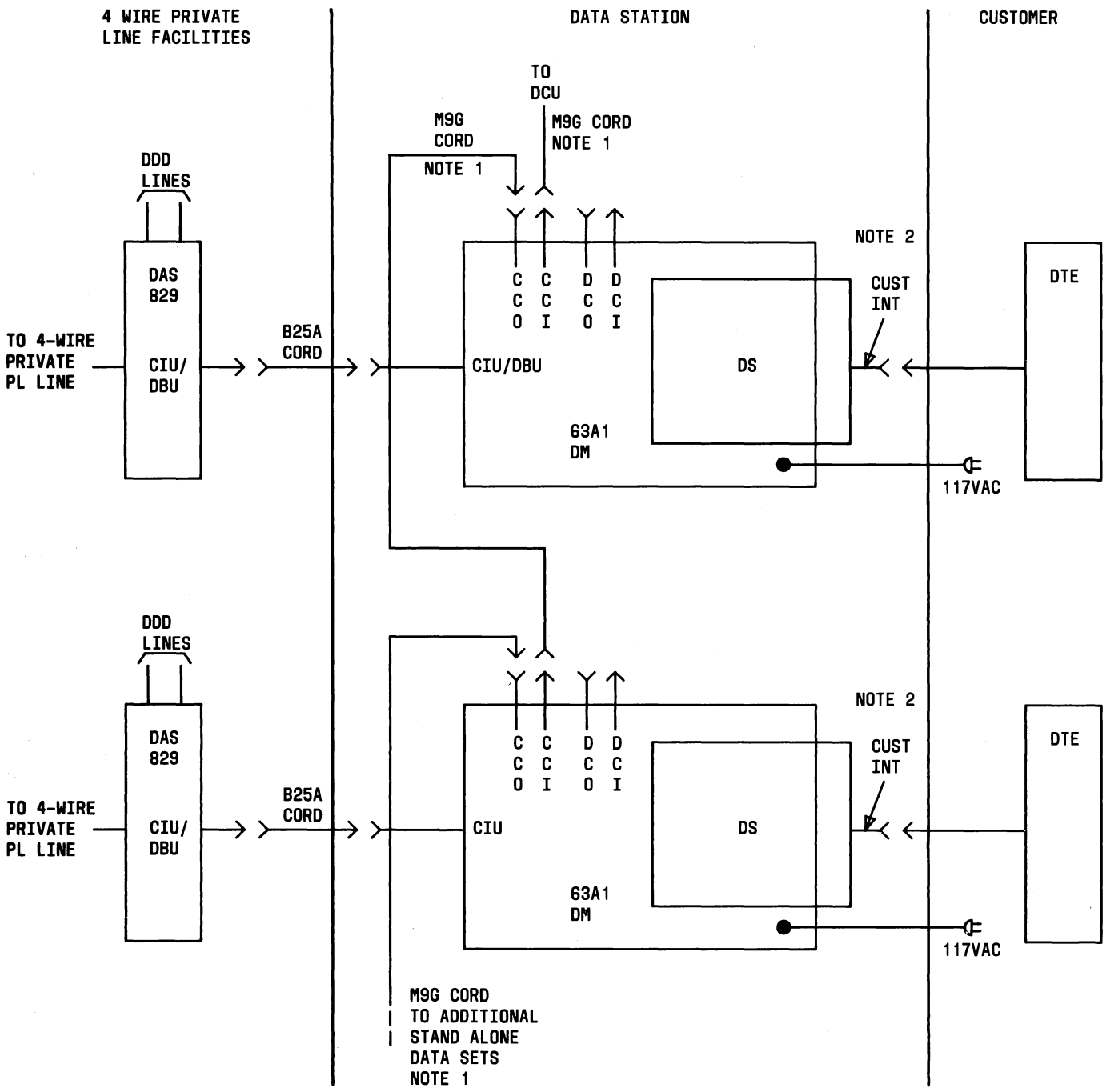


NOTES:
1. M9G CORDS CAN BE EXTENDED BY CONNECTING TOGETHER AND LOCKING, USING THE SMALL BLOCKS ATTACHED TO THE FEMALE CONNECTOR END OF EACH CORD. REMOVE THESE BLOCKS IF THEY ARE NOT REQUIRED.
2. THE 37 PIN TO 25 PIN KS21253_L7 ADAPTER IS REQUIRED ONLY WHEN THE CPE HAS A 25 PIN INTERFACE

Fig. 17—Single Stand-Alone Data Set Connection Diagram

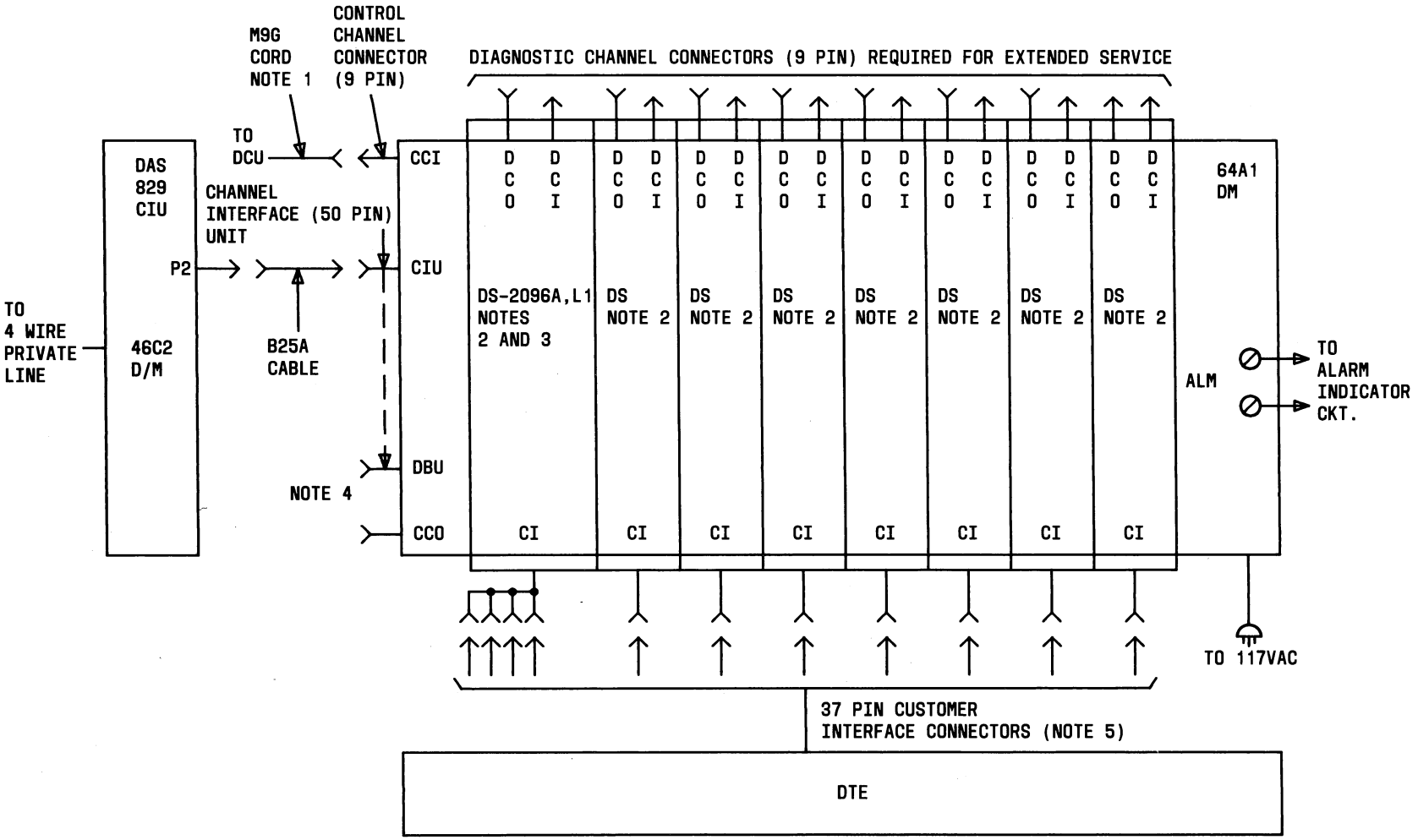
3.07 Figure 24 shows that a DS 2096A may be extended through another DS 2096A. A data terminal at location A communicates with a data terminal at location B. The remaining data terminals at locations A and B communicate with the data terminal equipment (DTE). Unlike the DS 209A, the DS 2096A has the capability of being externally timed on any one port, therefore the cross-connect in this example may be on any port. With a DCD at the DTE location, this circuit is treated as two point-to-point circuits by the diagnostic system and can be completely tested.

3.08 Figure 25 shows an extended servie where a line concentrator or multiplexer is employed. The line concentrator allows several data sets to bid for the channel of the DS 2096A. The network diagnostic system is able to extend around the concentrator from the backbone DS 2096A to the other data sets. This is done by interconnecting



NOTES:
1. M9G CORDS CAN BE EXTENDED BY CONNECTING TOGETHER AND LOCKING, USING THE SMALL BLOCKS ATTACHED TO THE FEMALE CONNECTOR END OF EACH CORD. REMOVE THESE BLOCKS IF THEY ARE NOT REQUIRED.
2. ADAPTER KS21253_L7 IS REQUIRED FOR 25-PIN INTERFACE

Fig. 18—More Than one Stand-Alone Data Set Connection Diagram



NOTES:

1. THESE CORDS MAY BE EXTENDED BY CONNECTING TOGETHER AND LOCKING, USING THE SMALL BLOCKS ATTACHED TO THE FEMALE CONNECTOR END OF EACH CORD. REMOVE THESE BLOCKS IF NOT REQUIRED.
2. DS CAN BE EITHER 2024A, LIST 1; 2048A OR C, LIST 1; 2096A OR C, LIST 1
3. DS 2096A L-1 CAN REQUIRE UP TO 4 CUSTOMER CONNECTORS.
4. MANUAL DIAL BACK-UP IS AVAILABLE FOR MULTIPLE ARRANGEMENT ONLY.
5. USE 37 PIN TO 25 PIN KS21253_L7 ADAPTER TO CONNECT TO 25 PIN CPE.

Fig. 19—Private Line, Single Multiple Mounting

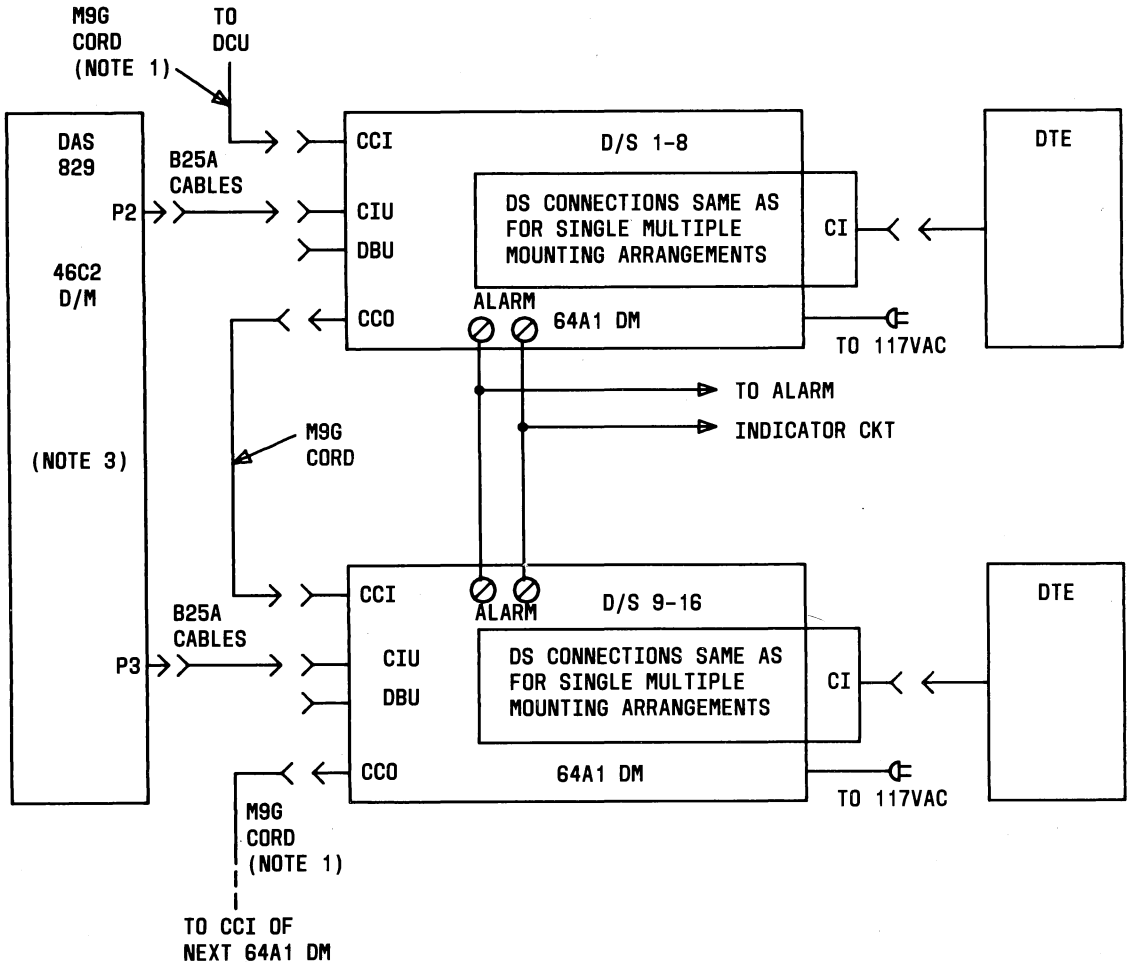


Fig. 20—Private Line, More Than one Multiple Mounting

the diagnostic channels of all the data sets at the concentrator location in a daisy-chain. The diagnostic system can monitor and test all DATAPHONE II service components in this circuit. Note that the data channels are connected directly to the multiplexer and not between data sets as in the other extended service examples. Extended service through a customer-provided or telephone company-provided multiplexer (instead of a line concentrator) would be done in a similar fashion.

Note: Daisy-chain refers to a series connection of devices, each having a special pair of ports designated "in" and "out," for this purpose. Intermediate device use both ports whereas a device at either end of the connection uses only one of the ports.

3.09 Figure 26 shows an example of double-ended extended service, which means extensions are provided from both the control location and the extended location. The backbone data sets are 2096A with the remaining data sets being 2024A, 2048A, or 2096A. With the DCD connected as shown at the control location, the circuit has complete system diagnostics.

3.10 Mixes of private line (PL), direct distance dialing (DDD), and DCD arrangements may be created by continuing the control channel daisy-chain from any DCD arrangement to any PL arrangement and then on to any DDD arrangement. In addition, the PL and DDD arrangements may be in any order. However, in any arrangement involving both multiple and stand-alone mountings, all stand-alone sets should be at the end of the

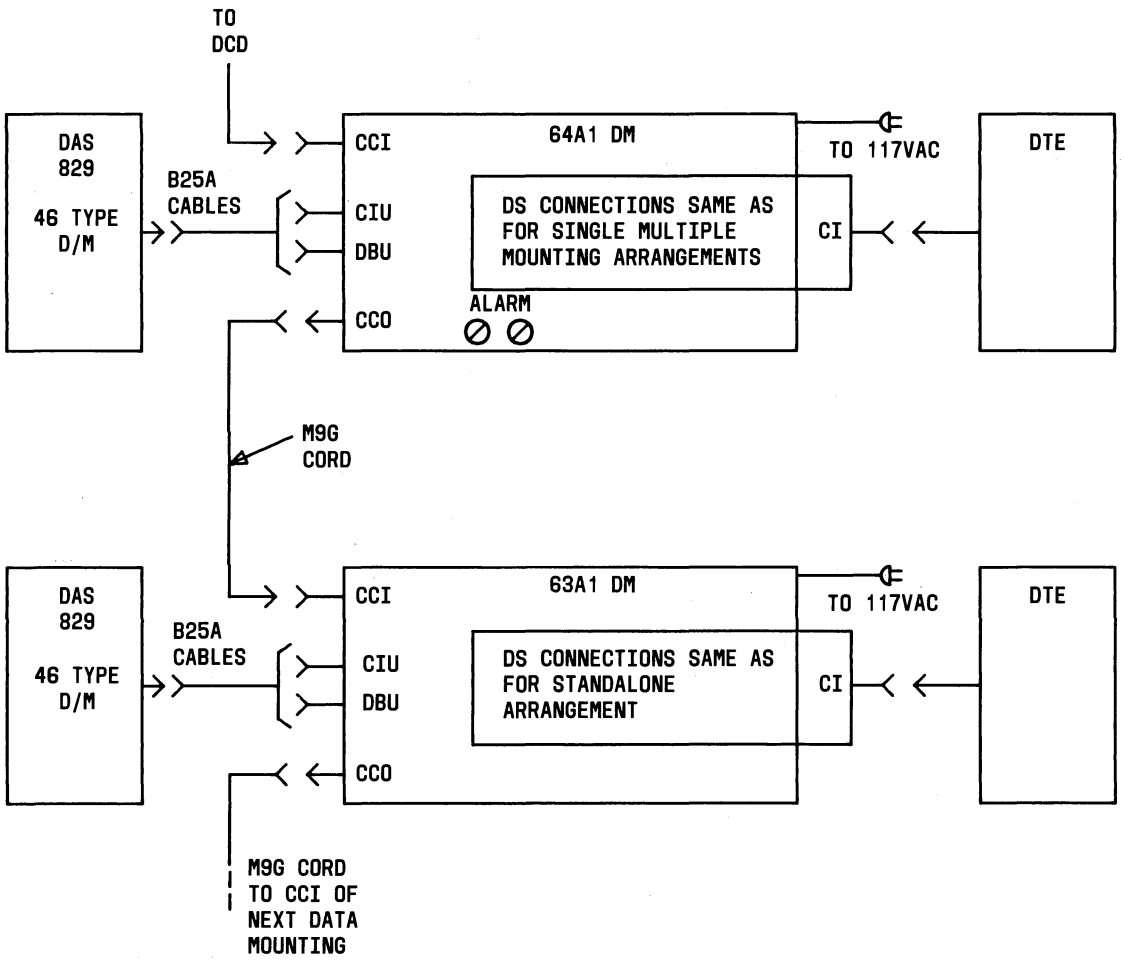


Fig. 21—Private Line Mixture of Stand-Alone and Multiple Mountings

daisy-chain to ensure proper operation of the common alarm and power failure bypass feature.

3.11 The M28A cord (Fig. 22) is used to connect the customer interface ports of a DS 2096A to another DATAPHONE II service data set (up to four may be required). To extend the customer's diagnostics through the extended site, the diagnostic channel interfaces associated with each data set must be connected in a daisy chain. An M9H cord is always used to connect the DS 2096A diagnostic channel out (DCO) port to the first extended sets, DCO port, and with subsequent connections from diagnostic channel in (DCI) to DCO ports by M9F cords forming a daisy-chain.

3.12 Connection of the control channel (CC) to the data set mountings is via the CC-OUT connector. Connection of the control channel to a network controller or a second diagnostic console is via the CC-IN connector.

3.13 The control channel may be extended from the CC-OUT port to the data mounting's CC-IN port via a 1200 bps voiceband data link for remote access (Fig. 27). The data link may consist of 212A data sets over dial-up facilities or 202T data sets over 4-wire private line facilities. Two especially coded cords, M4BA and M4BB, serve to connect the appropriate CC-OUT and CC-IN interfaces to the 1200 bps data sets.

4. OPTIONS

4.01 DATAPHONE II service data sets have thirteen categories of options with each category having up to eight options. The A to K categories of options are installed and removed

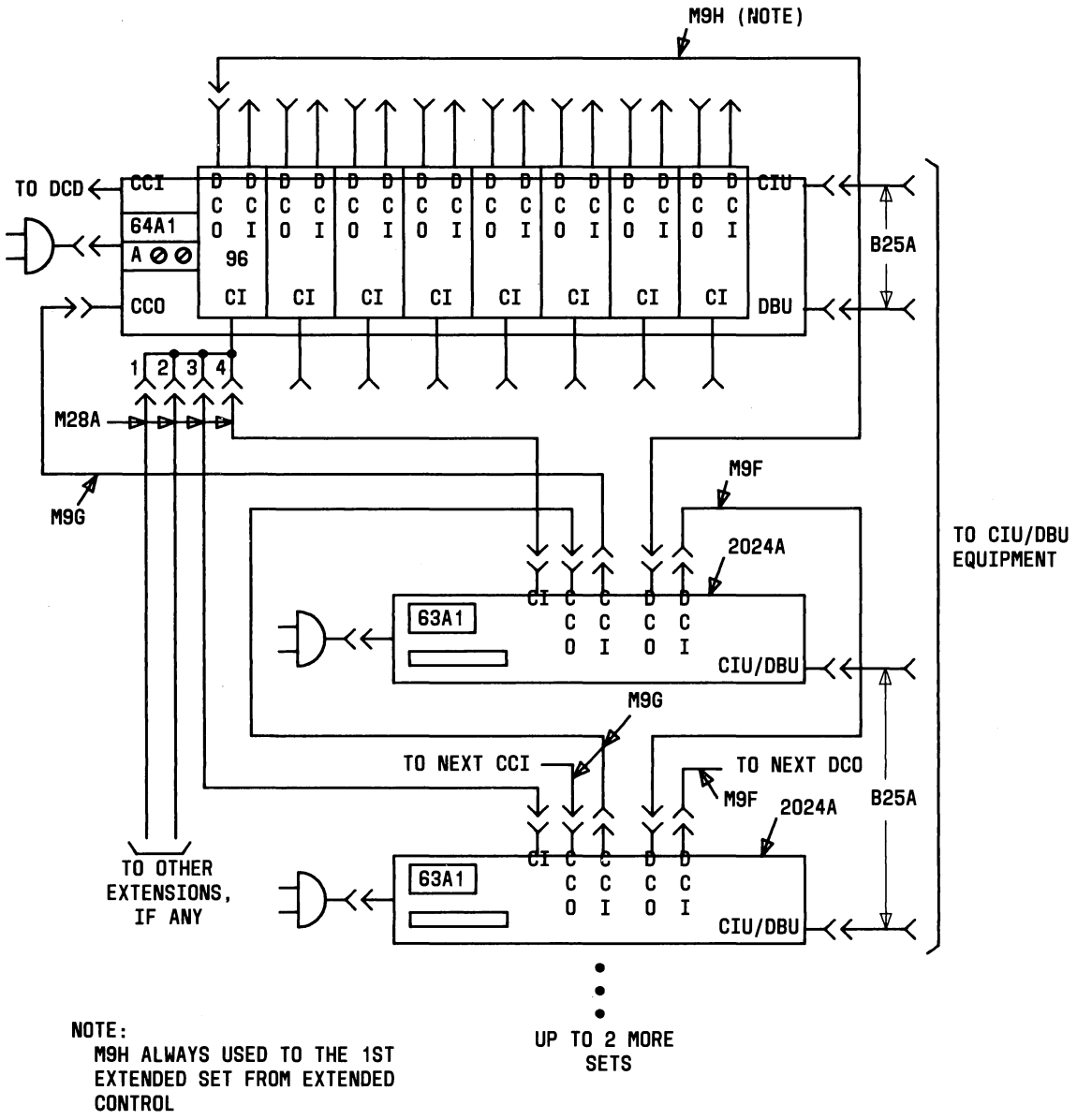


Fig. 22—Private Line Mixture of Stand-Alone and Multiple Mountings to Illustrate Diagnostic Channel Connection (M9F and M9H Cords)

from the data set by operating the switches on the front panel. The data set interface rise time options is installed or removed by means of the rise time switch on the data set. The categories are designated by letters A to K and the options by numbers from 1 to 8 within each category.

Note: A write-on block on the option label next to the option description permits the installer to mark the installed options in a given set.

4.02 The options are stored in a volatile memory which has a battery backup in case of power failure. Upon initial application of power or whenever the data set has power applied to it after having been totally without power, the default options will be automatically loaded into memory.

Note: Refer to Section 590-040-120 for a description of test and command menu and operation of data set.

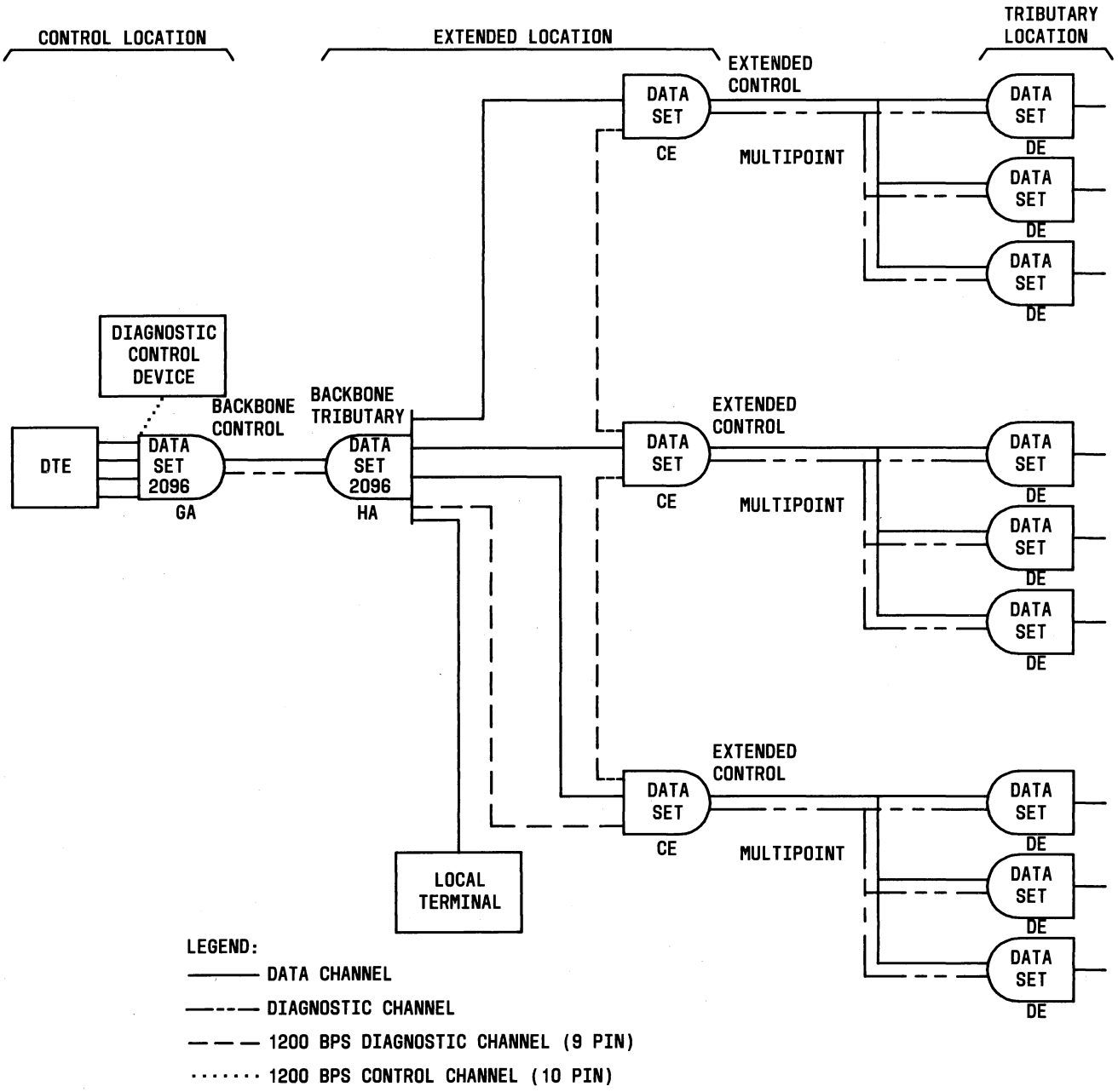


Fig. 23—Extended Service Example

4.03 The installer should verify that the rise time option called for on the service order is installed in the data sets prior to placing it in service. In DS 2024A- and 2048-type the rise time options are installed and removed by means of a 4-position DIP switch in the vicinity of the backplane connector adjacent to the rise time option label on the data set cover plate. In DS 2096-type the rise time options are installed and removed by four 4-position DIP switches, one for each port. Refer to Fig. 7 for the position of the switches. The switch is closed when the rocker is down on the side adjacent to the numbers and open when down on the side opposite the numbers. For

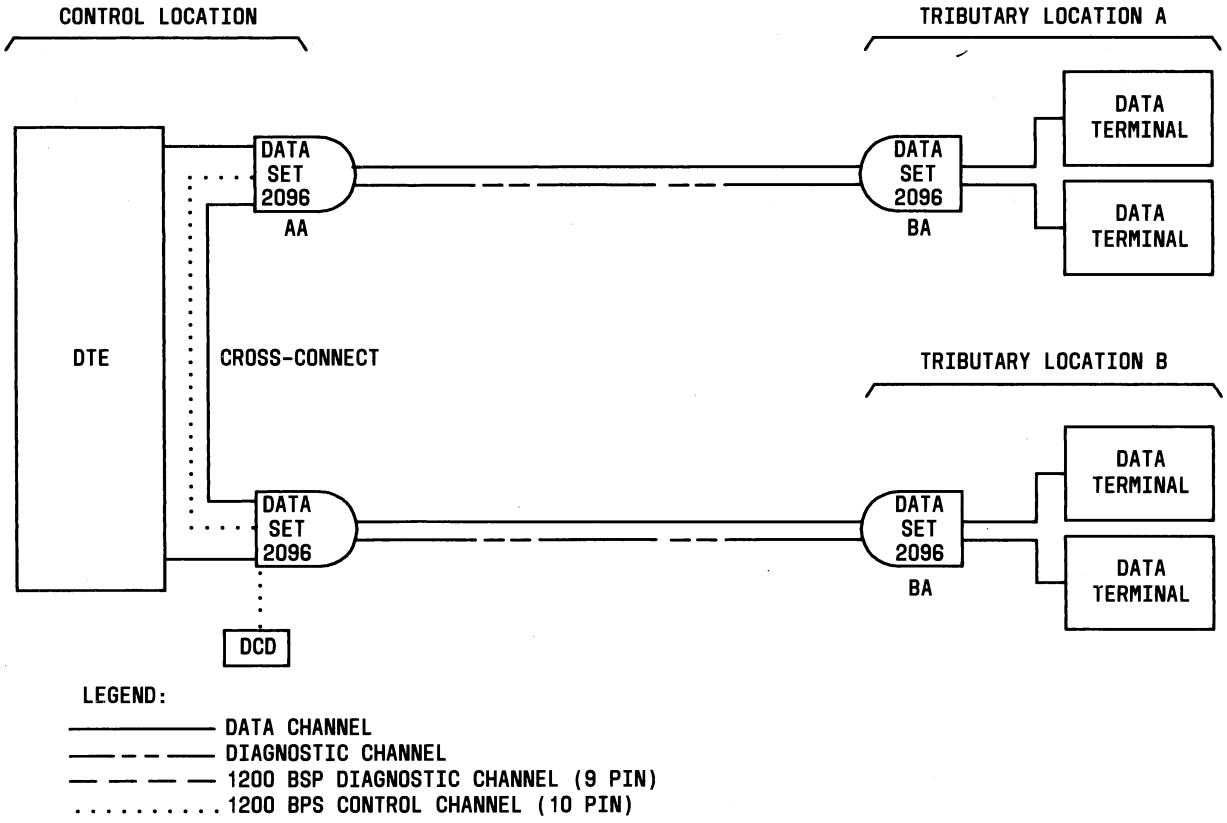


Fig. 24—Extension at Control Location

RS-449 interface four rockers must be in closed position, and all four rockers in open position for RS-232C interface.

4.05 The data set options are installed by changing what is stored in memory. An example of installing a typical option is as follows.

Place TEST/CMD switch in CMD position. Operate and hold the BWD/FWD switch to the BWD position until "CLOP" appears on the display, then release. Press EXEC button twice at 1 second intervals. This clears the options and moves to the CHOP command. The display blanks for a second and then CH** will appear with ** flashing on the display. Operate and hold the -/+ switch to either position. The display will show the designation of each data set option, one at a time. To install any available option (eg, A1), release the -/+ switch when the desired option (A1) is displayed. Depress EXEC button. The display changes to ✓A1 indicating the option is installed. (If EXEC button is depressed again, the display changes to A1 indicating that the option has been removed.) Repeat this for each option to be installed. After all desired options are installed place the TEST/CMD switch in normal position and the display returns to normal indication.

Note: If the "EXEC" command is exited having no option installed, the data set will automatically install a default option.

4.06 Refer to Table E for data set options.

5. UNIFORM SERVICE ORDER CODE (USOC) INFORMATION

5.01 The USOC code designates the required hardware and typical installer options needed to provide service. The USOC structure for DATAPHONE II service consists of a basic 3-character USOC followed by a 2-character suffix followed by the designated information fields. The first three characters of USOC identifies the hardware required for service followed by two characters which identify the customer application. The information field consists of the following elements: local address, network address, port number (applies to DS 2096-type only), and addition/deletion of data set option. Refer to Tables F, G, H, I, and J for decoding the USOC.

5.02 For example the USOC structure: 2EGCA/DCA 015; 65; N/DSO A NONE—D NONE. The 2EG indicates a 2400 bps multipoint service with stand-alone data set, CA indicates a control data

set, DCA indicates customer device address, 015 indicates local address, 65 indicates network address, indicates local address, 01 indicates network address, N stands for does not apply, DSO indicates data set options, A NONE indicates add none, D NONE indicates delete none. On the same example, if data set options needed change, the USOC would read the same up to DSO and then A B2—D B1 where A B2 indicates add option B2 and D B1 indicates delete option B1. The DSs 2024 and 2048 do not have port number, only DS 2096-type has. The port number will be either the numberic value of 1 through 4 or N indicating does not apply. Refer to Section 592-040-120 for more information on USOC.

6. REFERENCES

6.01 Addition information concerning private line data sets is contained in the following Bell System Practices:

SECTION	TITLE
592-040-120	Private Line Data Set 2024, 2048 and 2096—Stand Alone - Multiple—Description and Operation
592-040-520	Private Line Data Set 2024, 2048, and 2096—Stand Alone—Multiple—Test Procedures
592-101-100	2100A Data Control Unit (Diagnostic Console)—Description and Operation—DATAPHONE® II Service
592-101-200	2100A Data Control Unit (Diagnostic Console)—Installation and Connections—DATAPHONE® II Service
	Connections—DATAPHONE® II Service
592-102-500	2200A Data Control Unit (Network Controller)—Test Procedures—DATAPHONE® II Service
598-082-100	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channel—Description
592-101-500	2100A Data Control Unit (Diagnostic Console)—Test Procedures—DATAPHONE® II Service
592-102-100	2200A Data Control Unit (Network Controller)—Description and Operation—DATAPHONE® II Service
592-102-200	2200A Data Control Unit (Network Controller)—Installation and
598-082-200	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Installation and Connections
598-082-500	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Maintenance and Test Procedures

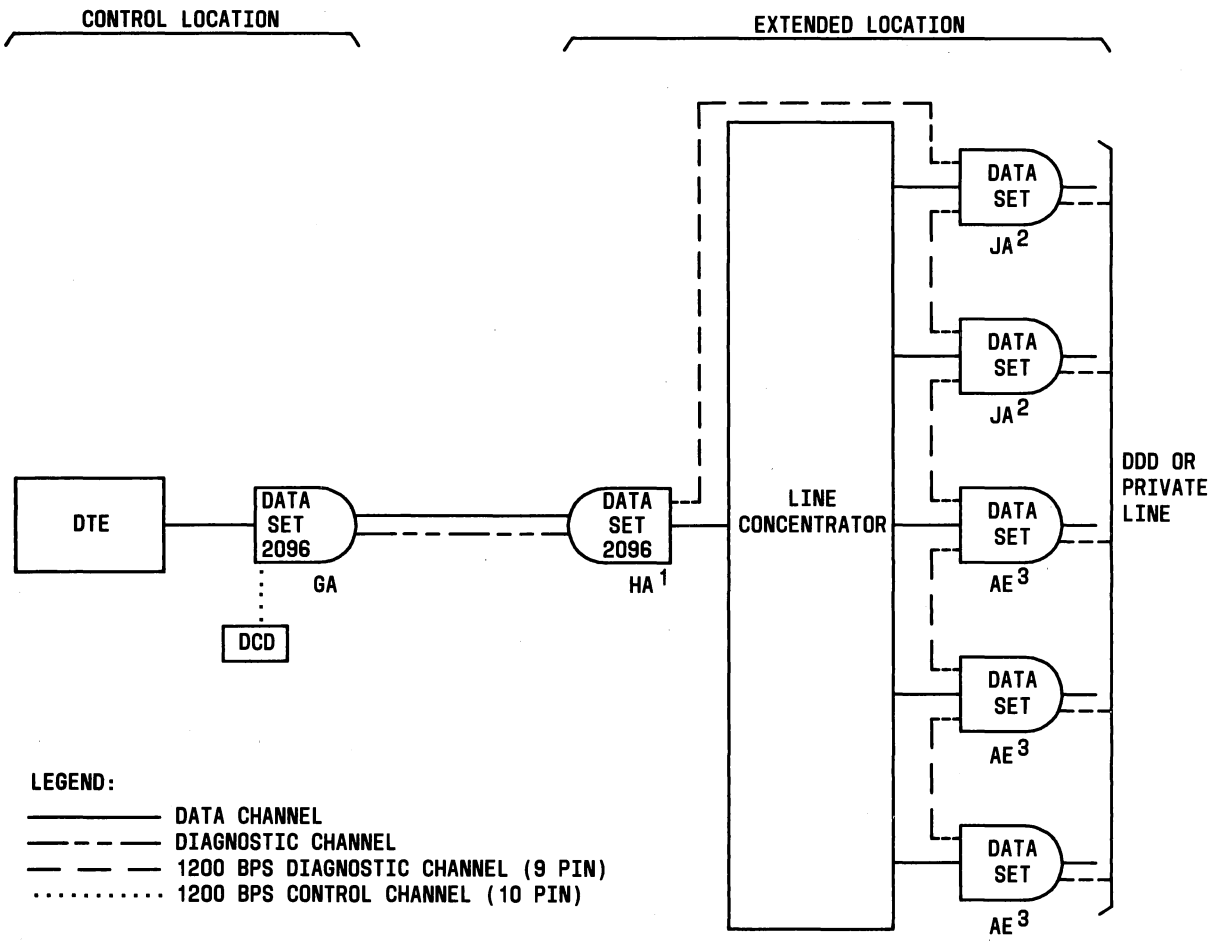


Fig. 25—Extended Service With Line Concentrator

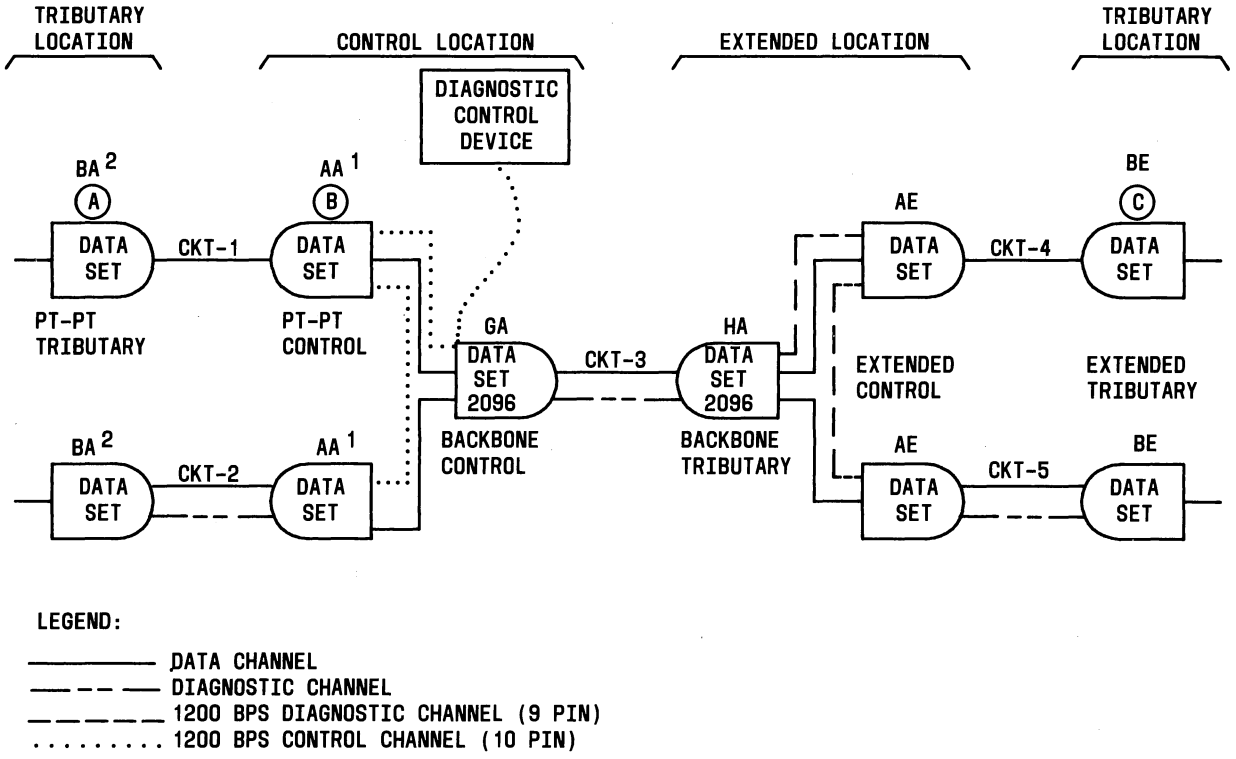


Fig. 26—Double Ended Extended Service Example (Without Outboard Extension Options)

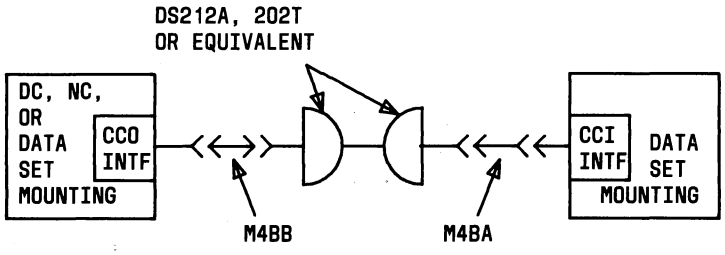


Fig. 27—DCD - Other Special Purpose Connection

TABLE E

DATA SET OPTIONS

OPTION DESIG.	OPTION NAME	APPLIES TO DATA SET				REMARKS
		2024A	2048A	2048C	2096A	
	Category A—Service Offerings					
A1	Point-to-Point Control	✓	✓		✓	
A2	Point-to-Point Tributary or Extended Point-to-Point Tributary	✓	✓		*	Mutually Exclusive with Cat. G options Below
A3	Multipoint Control	✓	✓	*		
A4	Multipoint Tributary or Extended Multipoint Tributary	*	*		‡	
	Category B—Timing Control					
B1	Internal Timing	*	*	*	*	
B2	Slaved Timing	✓	✓		✓	
B3	External Timing - Port 1	✓	✓	✓	✓	Mutually Exclusive
B4	External Timing - Port 2				✓	
B5	External Timing - Port 3				✓	
B6	External Timing - Port 4				✓	
	Category C—Carrier Control					
C1	Continuous Carrier, Switched RS - Port 1	✓	✓	✓	✓	
C2	Continuous Carrier, Switched RS - Port 2				✓	
C3	Continuous Carrier, Switched RS - Port 3				✓	Mutually Exclusive
C4	Continuous Carrier, Switched RS - Port 4				✓	
C5	Continuous Carrier, Continuous RS	✓	✓	*	*	
C6	Switched Carrier, Switched RS All Ports	*	*	✓	✓	
	Category D—Interface Control					
D1	DM off in Analog Loop	✓	✓	✓	✓	
D2	Received Data Not Clamped in Modem Test	✓	✓	✓	✓	
D3	Signaling Rate Selector (SR) Used				✓	
D4	Antistream Timer - 3 seconds	✓	✓		✓	
D5	Antistream Timer - 9 seconds	✓	✓		✓	
D6	Antistream Timer - 27 seconds	✓	✓		✓	
D7	Data Auxiliary Set or TEK Leads Not Used †	✓	✓	✓	✓	
D8	Disable Receive Signal Quality for Facility Health Monitor	✓	✓	✓	✓	

TABLE E (Contd)

DATA SET OPTIONS

OPTION DESIG.	OPTION NAME	APPLIES TO DATA SET				REMARKS
		2024A	2048A	2048C	2096A	
	Category E —Miscellaneous Options					
E1	Quick Start-Up		✓	✓		
E2	One-second Holdover Out	*	*		✓	
E3	Transmit Soft Turn-Off	✓	✓	✓		
E4	Receive Soft Turn-Off	✓	✓	✓		
E5	Maximum Address - 16	✓	✓	✓	✓	
E6	Maximum Address - 32	✓	✓	✓	✓	
E7	Disable Secondary Channel	✓	✓	✓	✓	
E8	Disable Receive Signal Level for Facility Health Monitor	✓	✓	✓	✓	
	Category F—DDD Options					
F5	DM-TR Interlock In				✓	
F6	Terminal-In-Service (IS) Used				✓	
	Category G—Additional Service Offerings					
G1	Double Extension Outboard Control	✓	✓		✓	
G2	Double Extension Outboard Tributary or M:1 Mux Tributary	✓	✓		✓	
G3	Double Extension Backbone Control or M:1 Mux Control	✓	✓		✓	
G4	Backbone Tributary or 1:M Mux Tributary	✓	✓		✓	
G5	Extended Point-to-Point Control or 1:M Mux Control	✓	✓		✓	
G6	Extended Multipoint Control or 1:M Mux Multipoint Control	✓	✓	✓		
	Category H—Elastic Stores					
H1	Elastic Store In- Port 1				✓	
H2	Elastic Store In - Port 2				✓	
H3	Elastic Store In - Port 3				✓	
H4	Elastic Store In - Port 4				✓	

TABLE E (Contd)

DATA SET OPTIONS

OPTION DESIG.	OPTION NAME	APPLIES TO DATA SET				REMARKS
		2024A	2048A	2048C	2096A	
	Category I—Independent Receiver Ready Operation					
I1	Independent Rcvr Ready Operation - Port 1				✓	
I2	Independent Rcvr Ready Operation - Port 2				✓	
I3	Independent Rcvr Ready Operation - Port 3				✓	
I4	Independent Rcvr Ready Operation - Port 4				✓	
	Category J—Interface Control for Port Identification					
J1	Extended Service Addressing - Port 1	✓	✓	✓	✓	
J2	Extended Service Addressing - Port 2				✓	
J3	Extended Service Addressing - Port 3				✓	
J4	Extended Service Addressing - Port 4				✓	
	Category K—DDD Interface Telemetry					
K1	Dial-In Extension Telemetry - Port 1				✓	
K2	Dial-In Extension Telemetry - Port 2				✓	
K3	Dial-In Extension Telemetry - Port 3				✓	
K4	Dial-In Extension Telemetry - Port 4				✓	
K5	DS 201, 208 Operation at Dial-In Ext - Port 1				✓	
K6	DS 201, 208 Operation at Dial-In Ext - Port 2				✓	
K7	DS 201, 208 Operation at Dial-In Ext - Port 3				✓	
K8	DS 201, 208 Operation at Dial-In Ext- Port 4				✓	
	Interface Rise Time Options ¶					
LA	RS-449 Rise Time - Port 1	✓	✓	✓	✓	
LB	RS-449 Rise Time - Port 2				✓	
LC	RS-449 Rise Time - Port 3				✓	
LD	RS-449 Rise Time - Port 4				✓	
SA	RS-232 Rise Time - Port 1	§	§	§	§	
SB	RS-232 Rise Time - Port 2				§	
SC	RS-232 Rise Time - Port 3				§	
SD	RS-232 Rise Time - Port 4				§	

✓ Available option.

* Default option, and available option.

† Provided only when TEK leads or 829-type ACUs are not present.

‡ Appears in option list but is not used.

§ Factory installed option.

¶ Installed and removed by rise time switch(s).

TABLE F

2096A MULTIPLEX MODES

PORTS	MULTIPLEX MODES OF DATA SET 2096A (SPLIT-STREAM PORT SPEEDS IN BPS)						
PORT 1	9600	7200	4800	4800	2400	4800	2400
PORT 2	—	2400	4800	2400	2400	—	2400
PORT 3	—	—	—	2400	2400	—	—
PORT 4	—	—	—	—	2400	—	—
DISPLAY INDICATES	1-96	7224	2-48	4824	4-24	1-48	2-24

TABLE G

USOC CODES FOR DATAPHONE II SERVICE PRIVATE LINE DATA SETS

USOC	DATA RATE (bps)			PHYSICAL ARRANGEMENT		QUICK START-UP*
	2400	4800	9600	STAND ALONE	MULTIPLE	
2EG++	✓			✓		
2EH++	✓				✓	
48J++		✓		✓		
48N++		✓			✓	
4QD++		✓		✓		✓
4QF++		✓			✓	✓
96V++			✓	✓		
96Y++			✓		✓	

* Pertains to quick start-up ***control*** data sets only.

TABLE H

USOC CUSTOMER APPLICATIONS AND SUFFIX TABLE

CONFIGURATION	APPLICATION SUFFIX
Private Line	
Point-to-Point	
Control	AA
Tributary	BA
Multipoint	
Control	CA
Tributary	DA
Control Quick Start-up	EA
Tributary Quick Start-up	FA
Extended Service	
Backbone	
Control	GA
Tributary	HA
Extended Data Sets	
Point-to-Point	
Control	AE
Tributary	BE
Multipoint	
Control	CE
Tributary	DE
Control Quick Start-up	EE
Tributary Quick Start-up	FE
Switched Network	
Colocated	JE
Remote	JA

TABLE I

PRIVATE LINE DATA SET APPLICATIONS

Date set codes = 2024A; 2048A; 2048C; 2096A
USOC codes = 2EG, 2EH; 48J, 48N; 4QD, 4QF; 96V, 96Y

	AA	BA	CA	DA	EA	FA	GA*	HA*	AE	BE	CE	DE	EE	FE
A1 Pt-Pt Control	✓	†	†	†	†	†	†	†	†	†	†	†	†	†
A2 Pt-Pt Tributary	†	✓	†	†	†	†	†	†	†	✓	†	†	†	†
A3 Multipt Control	†	†	✓	†	✓	†	†	†	†	†	†	†	†	†
A4 Multipt Tributary	†	†	†	✓	†	✓	†	†	†	†	†	✓	†	✓
B1 Internal Timing	✓	✓	✓	✓	✓	✓	✓							
B2 Slaved Timing			†		†			✓		✓		✓		✓
B3 External Timing									✓		✓		✓	
C1 Conts Carr Swd RS				†		†								
C5 Conts Carr Conts RS	✓	✓	✓	†		†	✓	✓	✓	✓	✓		✓	
C6 Switched Carrier				✓	✓	✓			†		†	✓	†	✓
D1 DM Off in AL														
D2 RD Not Clmpd in ST														
D3 SR Used													†	
D4 Antistream 3 Sec	†	†	†		†		†	†	†	†	†		†	
D5 Antistream 9 Sec	†	†	†		†		†	†	†	†	†		†	
D6 Antistream 27 Sec	†	†	†	✓	†	✓	†	†	†	†	†	✓	†	✓
D7 DAS Not Used ‡														
E1 Quick Start-up	†	†			✓	✓	†	†	†	†	†	†	✓	✓
E2 1 Sec Holdover Out			✓		✓						✓		✓	
E3 Trmt Soft Turn Off														
E4 Rcv Soft Turn Off														
E5 Max Address 16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E6 Max Address 32														
E7 Disable Sec Channel														
G1 Outboard Control	†	†	†	†	†	†	†	†	†	†	†	†	†	†
G2 Outboard Tributary	†	†	†	†	†	†	†	†	†	†	†	†	†	†
G3 Backbone Control	†	†	†	†	†	†	✓	†	†	†	†	†	†	†
G4 Backbone Tributary	†	†	†	†	†	†	†	✓	†	†	†	†	†	†
G5 Extnd Pt-Pt Control	†	†	†	†	†	†	†	†	✓	†	†	†	†	†
G6 Extnd Multipt Contr	†	†	†	†	†	†	†	†	†	†	✓	†	✓	†
J1 Extnd Svc Adrsg	†	†	†	†	†	†	*	*	✓	†	✓	†	✓	†
LA RS-449 Rise Time														
SA RS-232 Rise Time	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* See Table J for per port options.
† Not applicable.
‡ Install only when TEK leads or 829 not used.

TABLE J

PRIVATE LINE MULTIPLEXED AND BACKBONE EXTENSION SERVICE

Data set code = 2096A
USOC codes = 96V, 96Y

	MULTIPLEXED		MUX./EXT. SERVICE	
	AA	BA	GA	HA
B1 Internal Timing	✓	✓	✓	
B2 Slaved Timing				✓
B3 External Timing — Port 1				
B4 External Timing — Port 2				
B5 External Timing — Port 3				
B6 External Timing — Port 4				
C1 Continuous Carrier, Switched RS — Port 1				
C2 Continuous Carrier, Switched RS — Port 2				
C3 Continuous Carrier, Switched RS — Port 3				
C4 Continuous Carrier, Switched RS — Port 4				
C5 Continuous Carrier, Switched RS	✓	✓	✓	✓
C6 Switched Carrier	*	*	*	*
F5 DM-TR Interlock	*	*		*
F6 IS Used	*	*		*
H1 Elastic Store In — Port 1	*	*		
H2 Elastic Store In — Port 2	*	*		
H3 Elastic Store In — Port 3	*	*		
H4 Elastic Store In — Port 4	*	*		
I1 Independent Receiver Ready Operation — Port 1				
I2 Independent Receiver Ready Operation — Port 2				
I3 Independent Receiver Ready Operation — Port 3				
I4 Independent Receiver Ready Operation — Port 4				
J1 Extended Service Addressing — Port 1	*	*		
J2 Extended Service Addressing — Port 2	*	*		
J3 Extended Service Addressing — Port 3	*	*		
J4 Extended Service Addressing — Port 4	*	*		
K1 Dial-In Extension Telemetry — Port 1	*	*		
K2 Dial-In Extension Telemetry — Port 2	*	*		
K3 Dial-In Extension Telemetry — Port 3	*	*		
K4 Dial-In Extension Telemetry — Port 4	*	*		
K5 DS 201, 208 Operation at Dial-In Ext. — Port 1	*	*		*
K6 DS 201, 208 Operation at Dial-In Ext. — Port 2	*	*		*
K7 DS 201, 208 Operation at Dial-In Ext. — Port 3	*	*		*
K8 DS 201, 208 Operation at Dial-In Ext. — Port 4	*	*		*
LA RS-449 Rise Time — Port 1				
LB RS-449 Rise Time — Port 2				
LC RS-449 Rise Time — Port 3				
LD RS-449 Rise Time — Port 4				
SA RS-232 Rise Time — Port 1	✓	✓	✓	✓
SB RS-232 Rise Time — Port 2	✓	✓	✓	✓
SC RS-232 Rise Time — Port 3	✓	✓	✓	✓
SD RS-232 Rise Time — Port 4	✓	✓	✓	✓

* Not applicable.