TYPE-3 LOW-VOLTAGE HUB
INSTALLATION AND CONNECTIONS

CONTENTS PAGE

1. GENERAL

1.01 This practice provides installation and connection information on the type-3 low-voltage hub arrangement. Information is included on the 27-type data mountings, circuit packs, and associated equipment that make up a type-3 low-voltage hub arrangement, hereafter referred to in this practice as an LV hub or hub.

1.02 Since this reissue entails a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The low-voltage hub consists of up to 20 legs made up of any combination of data sets (data set 109G-L1/2 or data set 108D-L1) and 43B1 channels and is interconnected to a hub circuit card by bus circuit cards. The cards and data sets are located in a 27-type data mounting which provides for power connection, test and monitoring circuit connections, and 43B1 channel connections.

1.04 The 27-type data mounting provides for rack-mounting of hub components and facilitates the interconnections required for half-duplex, full-duplex, and back-to-back operation.

1.05 The 27-type data mounting used for a particular installation depends on the number of legs to be connected, the location of the hub, and the type of service being provided. Refer to the section entitled 27-Type Data Mounting—Identification (590-102-123) for information on the various features of each 27-type data mounting.

1.06 The installation of the equipment required to make up a low-voltage hub and the interconnection of this equipment should be made in accordance with the applicable documents covering central office installations.

1.07 The installation and connection information given in Part 4 of this practice is supplied to supplement the central office installation procedures and to provide additional information on installing the low-voltage hub at locations other than the central office.

2. PHYSICAL CONSIDERATIONS AND EQUIPMENT REQUIREMENTS

2.01 When a hub is to be installed in a location other than a central office, ie, at a location that does not have a readily available dc power source, a KS-20575 rectifier is required for each data mounting. The 27C1 data mounting provides space for mounting two of these rectifiers, each of which can provide power for one complete 27B1 or 27C1 data mounting or up to 25 positions in a 27A1 data mounting.

2.02 The 27-type data mounting can be mounted in 23- or 25-inch mounting relay racks. After the data mounting is installed, the required data sets, bus cards, hub card, test circuit card, etc, are then inserted into the data mounting in accordance with the desired circuit configuration. Figure 1 shows a typical rack mounting arrangement.

2.03 When installing a low-voltage hub, the J70173AB terminal strip is mounted above the 27-type data mountings and provides a common tie point for central office and bay wiring. The front of the terminal strip is used for wire-wrapping

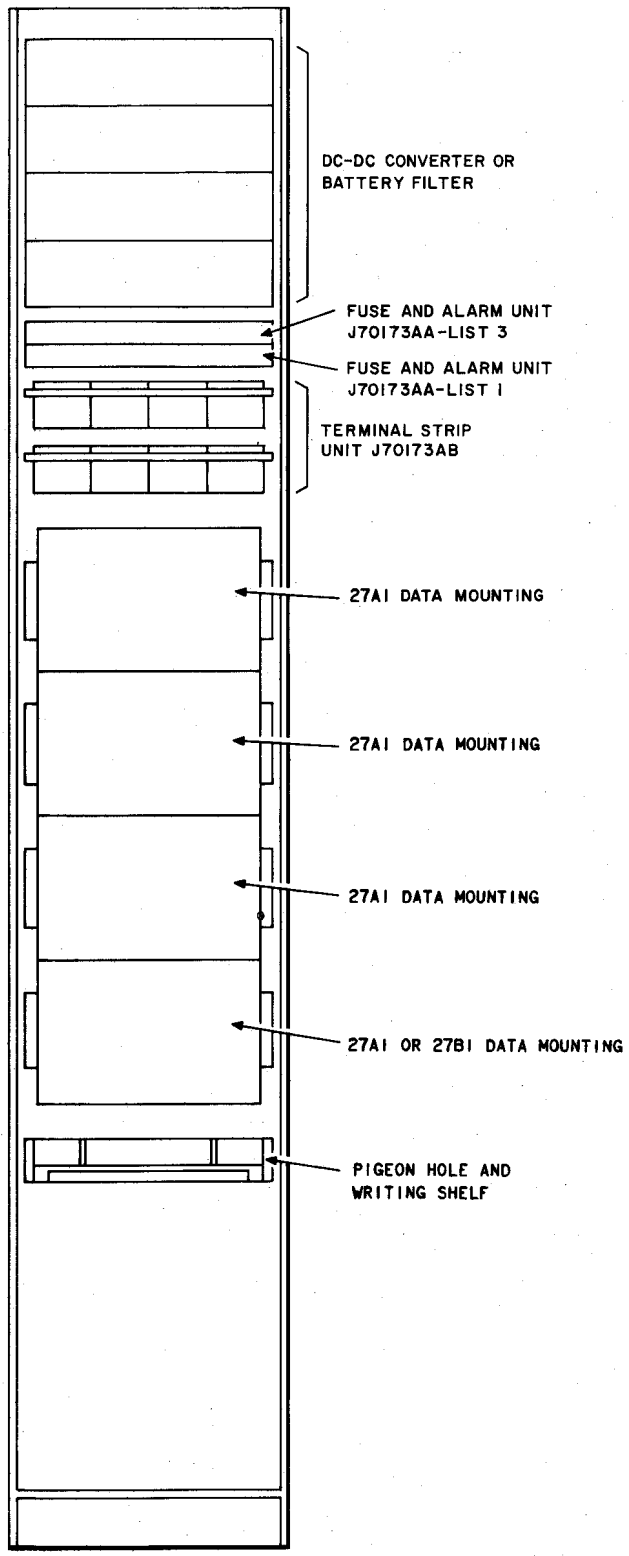


Fig. 1—Typical Rack Mounting Arrangement of Low-Voltage Hub Equipment

incoming central office circuits and multiple wiring to other bays, if any. The rear of the terminal strip assembly is used for the cross connection of the incoming circuits to the 27-type data mountings.

2.04 The physical connections of the VF lines or DC lines to the data mounting are made via the J70173AB terminal strip unit using TB3 and TB4 of the terminal strip. Connections from the terminal strip unit to the appropriate connecting block on the back of the data mounting are made by cross-connect wiring. Refer to Part 4 of this practice for the tables and figures showing the connecting blocks and the lead assignments.

2.05 The 43B1 channels are connected to the hub by connecting the baseband leads (SL, RL, TL, and CF1 leads) via the J70173AB terminal strip unit using TB1 and TB2 of the terminal strip. These leads are connected from the J70173AB terminal strip unit to the appropriate connecting block on the back of the data mounting. The connections are also made by cross-connect wiring and are covered by Part 4 of this practice.

2.06 The AR432 bus circuit card (Fig. 2) connects the data set and channel leads to the appropriate hub bus or adjacent AR432 bus circuit card when operating back-to-back. The connection is made by inserting the AR432 circuit pack in the lower nest position, corresponding to the position of the data set or channel being connected, after setting the R and S switches. Setting of the R and S switches provides the connections required for the type of service being provided. The procedure for setting R and S switches is given in Part 3 of this practice. Arrangement of the data sets, 43B1 channels, and AR432 bus circuit cards to provide HDX, FDX, and back-to-back service is covered in Part 4 of this practice.

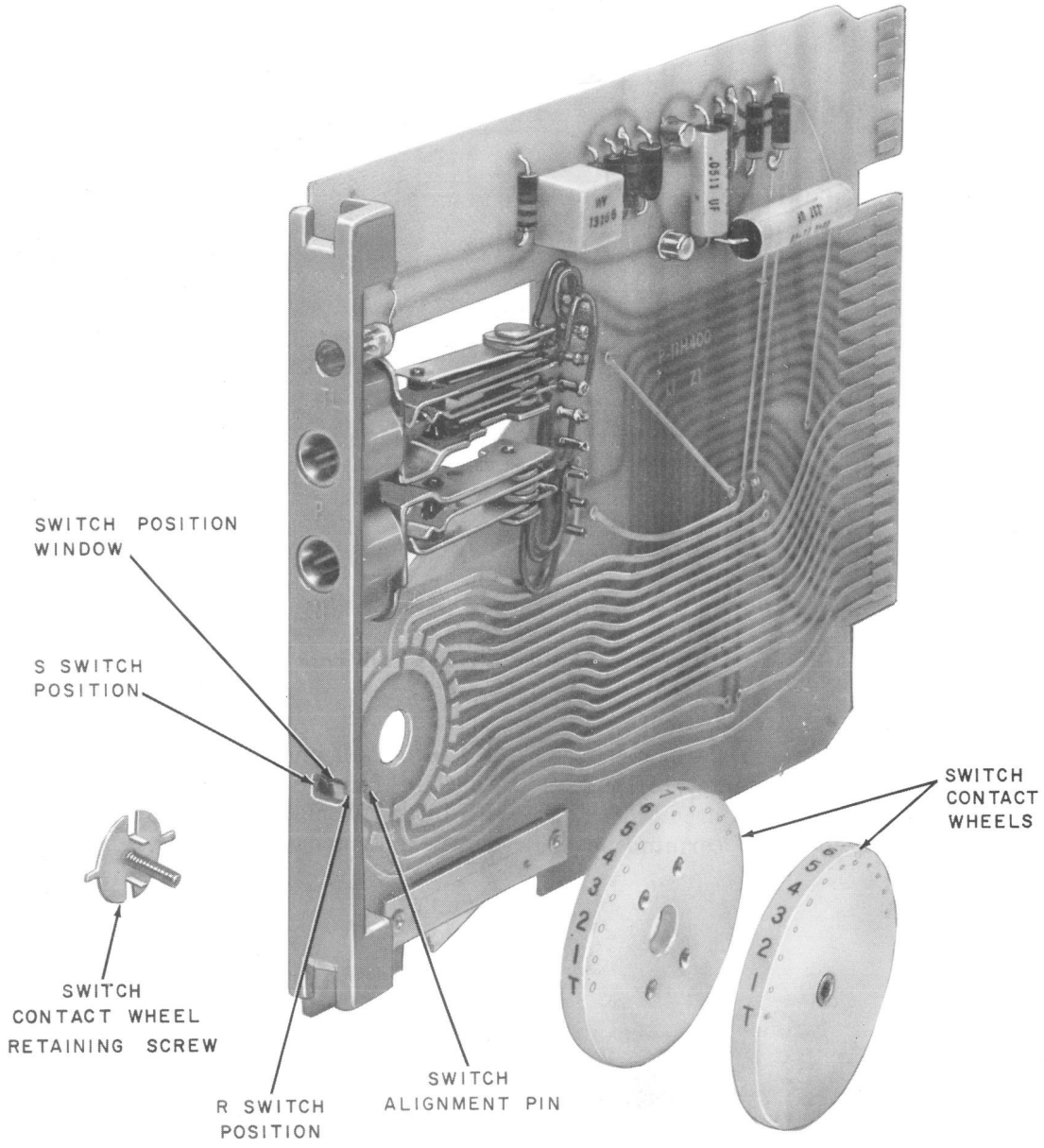


Fig. 2—Bus Circuit Card—AR432 Showing the Contact Switches Disassembled

2.07 The AR433 strap card (Fig. 3) is used to maintain continuity in the lower nest of the data mounting. This card is required only when a double-width circuit pack (ie, data set 108D) is used as the left side card, thereby causing a vacant space in the lower nest when providing back-to-back service.

2.08 The 27B1 and 27C1 data mountings provide for a test card circuit (AR460 circuit pack), a test panel, and a jack and key panel. This arrangement permits testing of the hub and the associated circuits.

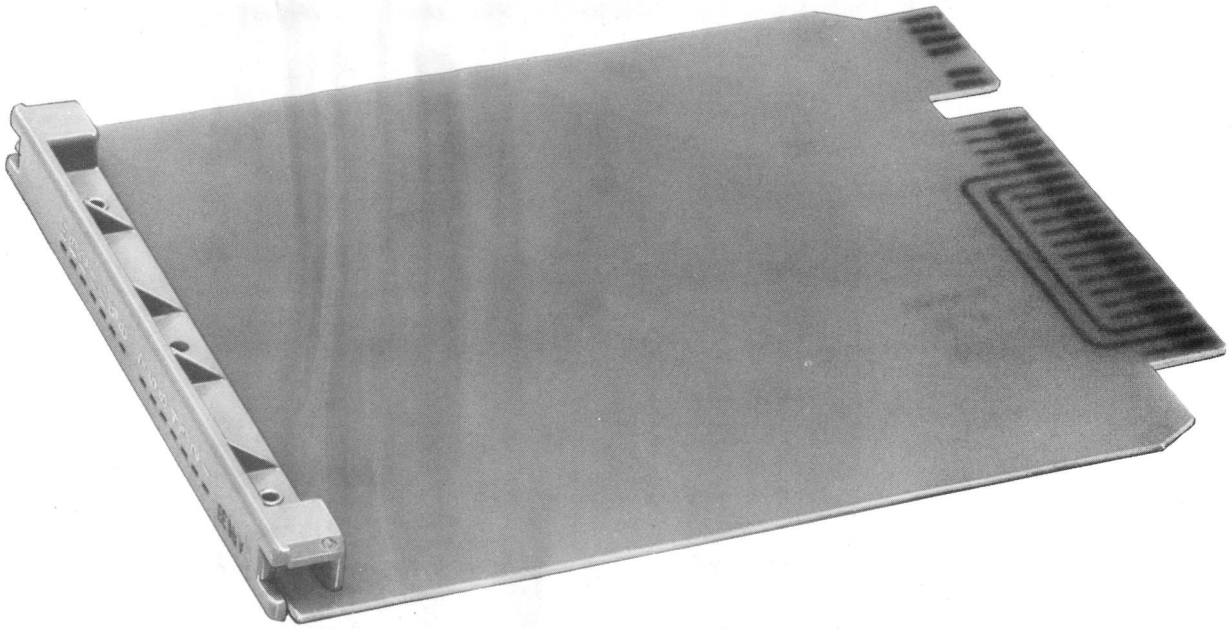
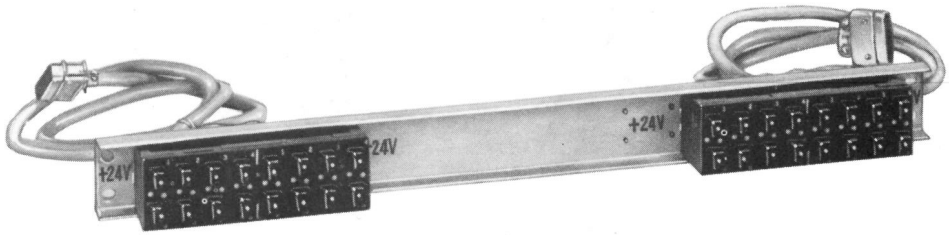
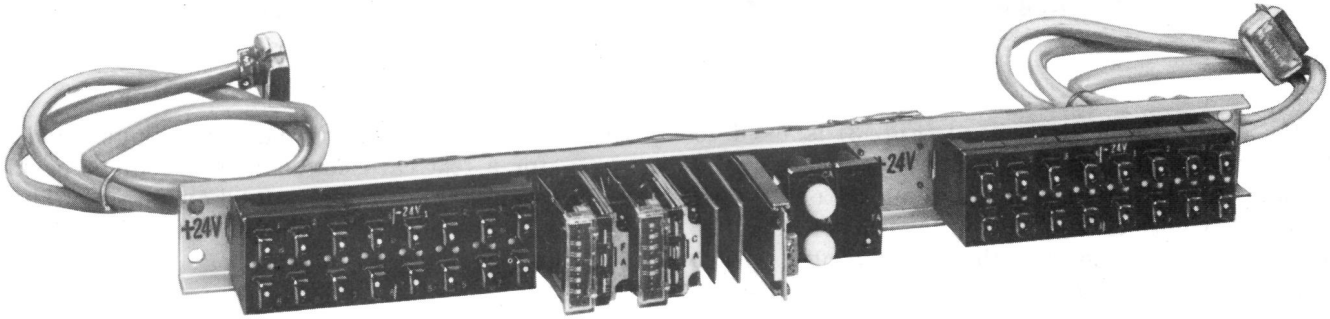


Fig. 3—Strap Card—AR433 Circuit Pack

2.09 The J70173AA-L1 fuse and alarm unit (see Fig. 4) is a prewired assembly of fuses, relays, lamps, resistors, an EN1 circuit pack, a 912A connector, and two cords terminated in KS-16758-L10 plugs. The purpose of this unit is to feed fused ± 24 Vdc power through the KS-16785-L10 plug to the mating KS-16786-L2 jack on the 27-type data mounting.



J70173AA-L3 FUSE AND ALARM UNIT



J70173AA-L1 FUSE AND ALARM UNIT

Fig. 4—Low-Voltage Hub Fuse and Alarm Units

2.10 The 70173AA-L3 fuse and alarm unit (Fig. 4) is a prewired assembly of fuses connected to two cords terminated in KS-16758-L10 plugs.

2.11 The J70173AA-L1 fuse and alarm unit also provides a carrier fail circuit. This connection is made to the data mounting by the KS-16758-L10 plug connection. Central office connections to the carrier fail and fuse alarm circuits are made through the J70173AB terminal strip unit to TB1 and TB2 which are located on the rear of the unit. The J70173AA fuse and alarm units are not required when the 27-type data mountings are powered from KS-20575 rectifiers.

Note: When central office alarm circuits are used in conjunction with the carrier fail alarms (CA), an alarm cut-off key is provided on the 27B1 and 27C1 data mounting to silence the central office alarm when required.

2.12 The following tools are required to install the low-voltage hub equipment.

- Western Electric 748A tool—Required for operation of card lock release strip and removal of the circuit packs
- Western Electric 756B2 tool—Required to insert wires into the quick connect terminals used on this equipment.

2.13 When installing the low-voltage hub, W22M distributing frame wire or its equivalent must be used to wire the cross-connect fields. ***Under no circumstances should the cross-connect wires be soldered in place.***

2.14 The cross-connect wires should not be stretched taut when connecting between the data mounting and the terminal strip unit. The wires for these connections should be cut approximately 1 to 2 inches longer than required to make the connection to ensure that there will be no tension after connections are made.

2.15 The connecting blocks on the rear of the 27-type data mounting are designed to be opened when servicing the 927-type connectors of the data mounting. The connecting blocks are hinged so they open from the center out when the quick release fastener is opened. If it is necessary to open one of the connecting blocks after the wiring has been completed, care must be taken to avoid pulling or stretching the connecting wiring. This can be accomplished by opening all of the connecting blocks that are wired together at the same time.

3. EQUIPMENT PREPARATION AND CONDITIONING

BUS CARD SWITCH SETTING (AR432 CIRCUIT PACK)

Caution: Do not attempt to turn switches S and R without disassembling the switch as indicated in the following text. Disassembly of the switches should be performed on a clean table or bench. Care should be taken to avoid bending or distorting any of the switch parts.

3.01 Before starting installation and connection of the hub, the bus card switches S and R must be set to make the connection to the required bus.

3.02 In order to set the bus card switches, the switch must be disassembled (refer to Fig. 2). After removing the switch contact wheel retaining screw, the switch contact wheels can be removed from the alignment pin. The right contact wheel (outer wheel) selects the receive buses and the adjacent AR432 bus circuit card SL lead in a back-to-back configuration. The left contact wheel (inner wheel) selects the send buses and the adjacent AR432 bus circuit card TL lead in a back-to-back configuration.

3.03 The switch contact wheels must be carefully set so the required connecting number shows in the switch position window when the contact wheel is placed over the switch alignment pin (see Fig. 2). This makes contact with the appropriate contact strip. When the circuit pack is inserted in a data mounting, the switch connects to the desired bus.

CARD LOCKS

3.04 The bus circuit cards (AR432 circuit pack) are provided with a card locking mechanism (Fig. 5), which prevents these cards from being removed by normal use of the M and P jacks.

3.05 A card lock release assembly (Fig. 6) is provided in the lower portion of the nest

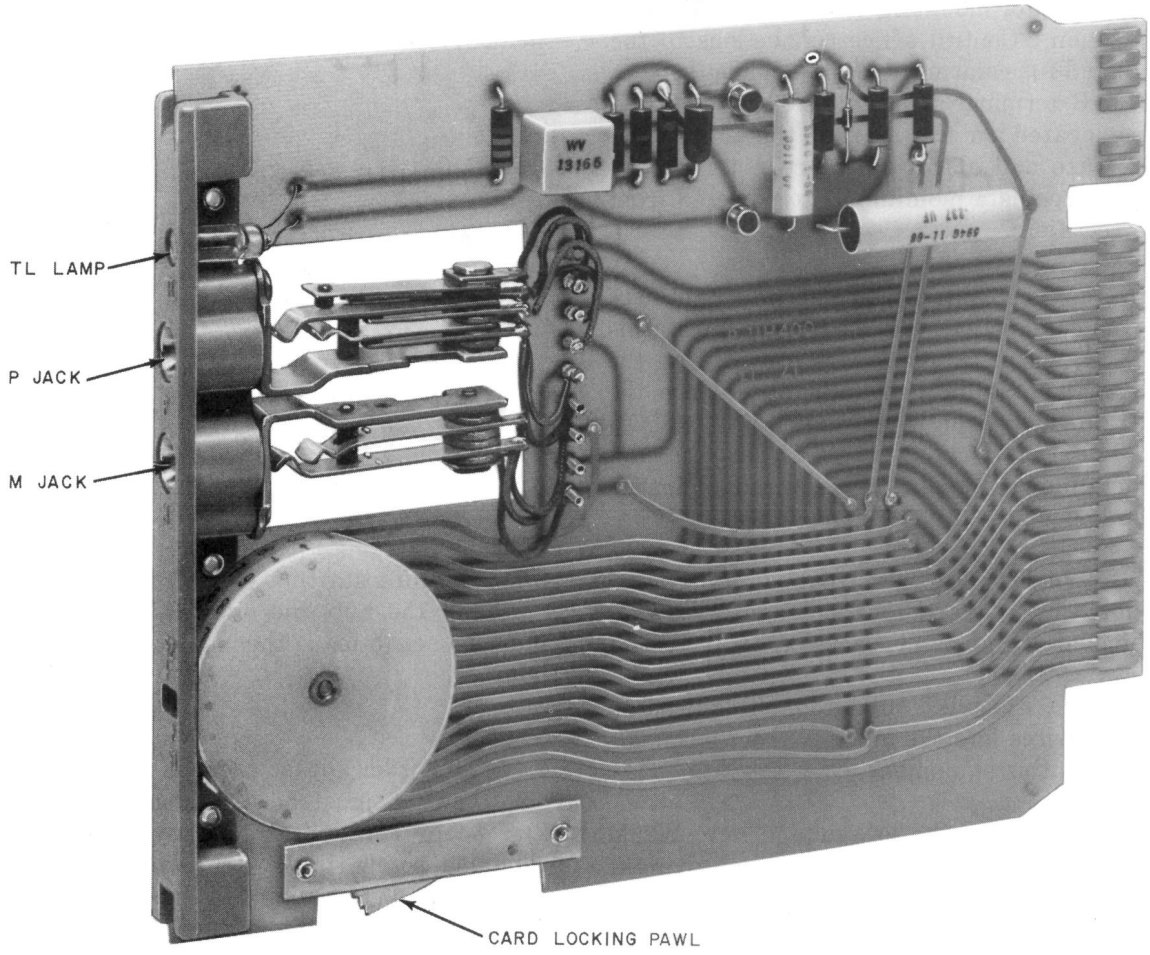


Fig. 5—Bus Circuit Card—AR432—Locking Pawl and Jack Designation

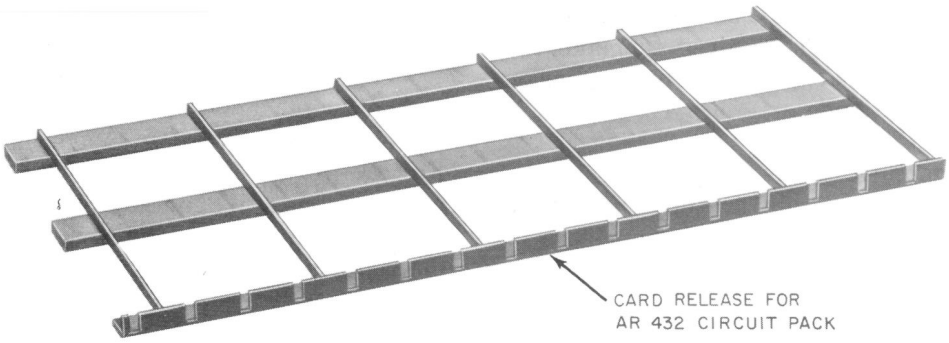


Fig. 6—Card Lock Release for 27-Type Data Mounting

for positions L1 through L32 of the 27-type data mountings. This card lock must be operated before the AR432 circuit packs can be removed from the mounting.

3.06 The bus circuit cards (AR432 circuit pack) are removed by inserting a WE 748A tool in approximately the center of the card lock release assembly and pulling the entire lock release assembly forward about one-half inch. This releases all the cards in the lower nest. The P and M jacks should not be used when the card lock is released.

Caution: Failure to pull the card lock release forward before attempting the removal of the AR432 circuit pack will result in damaging the circuit pack.

3.07 In order for the card lock to operate satisfactorily, the card lock release must be pushed all the way in to allow the card locks to engage the data mounting.

3.08 When an AR432 circuit pack is accidentally inserted into a nest that does not contain a card lock release bar, the following steps should be taken to release the card.

(1) Gain access to the locking pawls on the AR432 circuit pack and push them upward with a screwdriver until the teeth clear the plastic track of the nest (Fig. 5).

(2) While keeping the locking teeth clear, remove the circuit card by using a 748A tool.

4. INSTALLATION

4.01 Install the 27-type data mountings that are to be used for this installation. The data mountings are installed in 7-foot and 11-1/2 foot mounting racks. Fig. 1 illustrates a typical 11-1/2 foot mounting. The 27A1, 27B1, and 27C1 data mountings are shown by Fig. 7, 8, and 9, respectively. Tables A, B, and C give the lead assignments for the 27A1, 27B1, and 27C1 data mounting connecting blocks which are shown by the referenced figures.

4.02 Mount the J70173AB terminal strip unit and the J70173AA fuse and alarm unit. If power is being supplied by a KS-20575 rectifier unit, this unit will be mounted on a 27C1 data mounting before the mounting is installed.

Ensure that the data set mode of operation (HDX or FDX) is compatible with that of the associated far-end data set prior to installing the hub data set in the data mounting.

4.03 The connections required to provide half-duplex, full-duplex, and back-to-back service is shown by Fig. 10, 11, and 12. Refer to Fig. 10, 11, 12 and 13 for information on the installation and connections required to provide the type of service being installed. Table A provides information on the suggested assignment of the terminals on the back of the 27-type data mounting.

4.04 Install the data sets in the upper nest of the data mounting. Positioning of the data sets in the data mounting will be determined by the type of service being installed and any other local requirements. Figure 13 shows a typical arrangement of data sets for various types of service. Check to assure that the bus switches have been set to make required bus connections and install the bus circuit pack (AR432) under each data set.

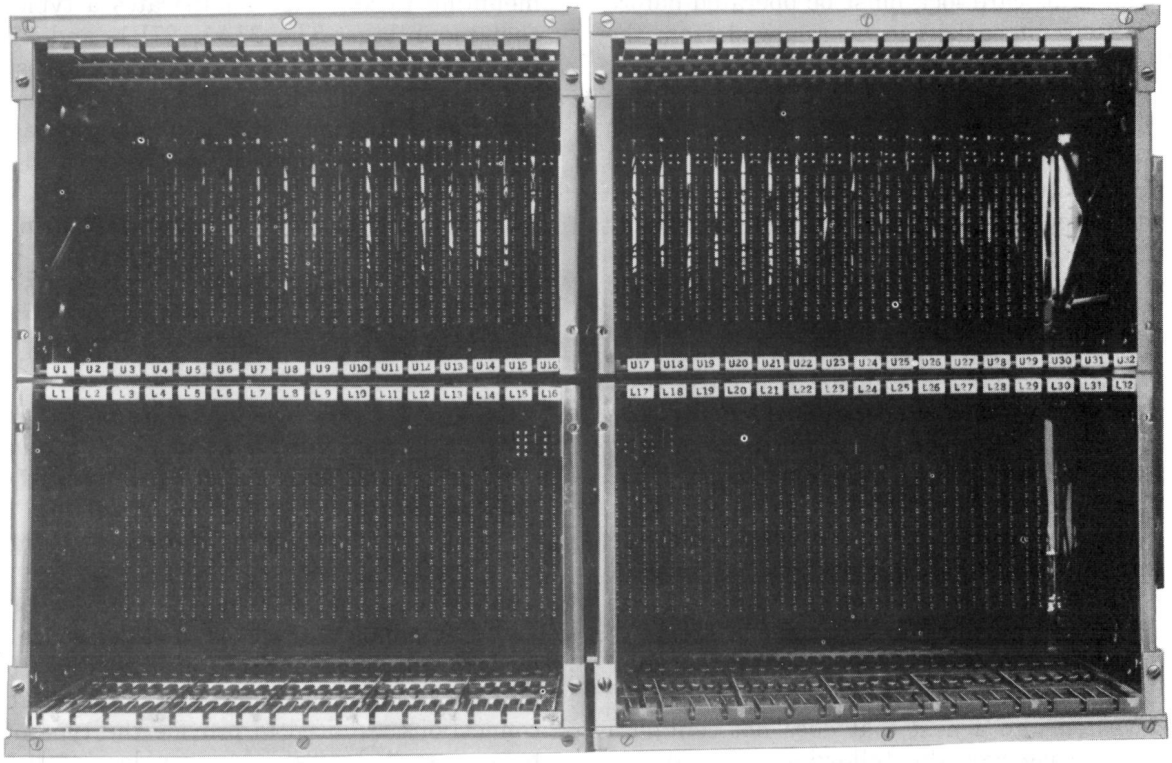
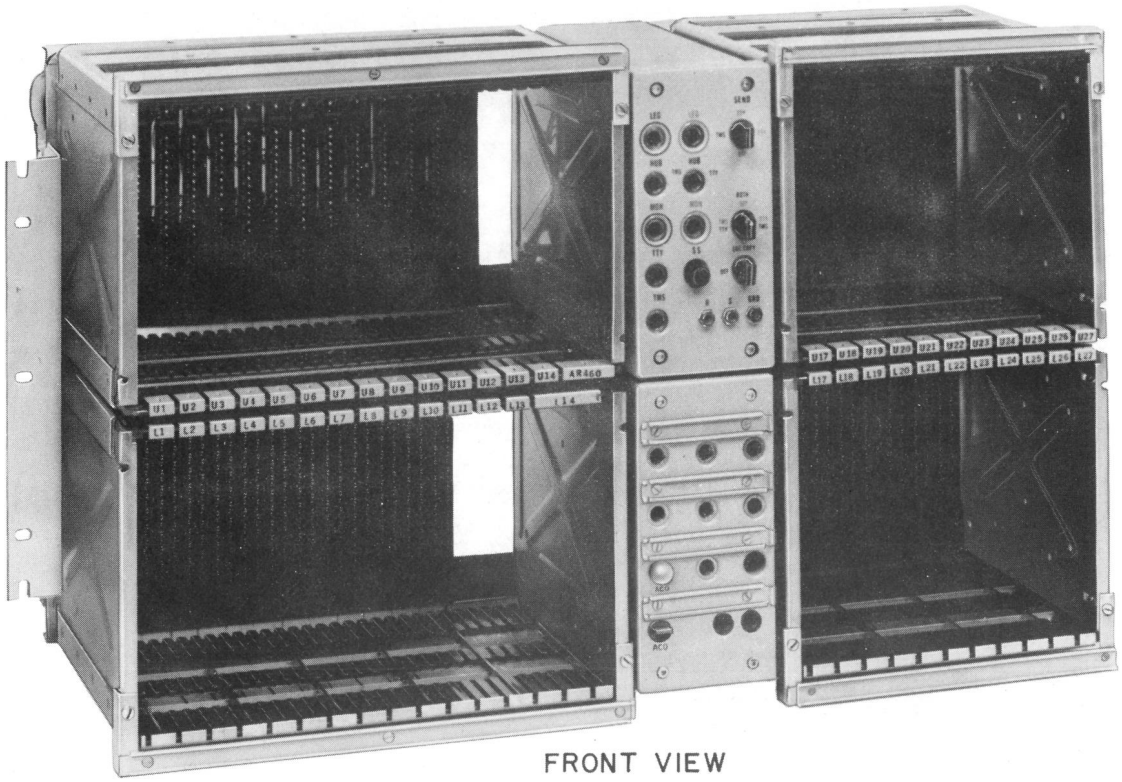
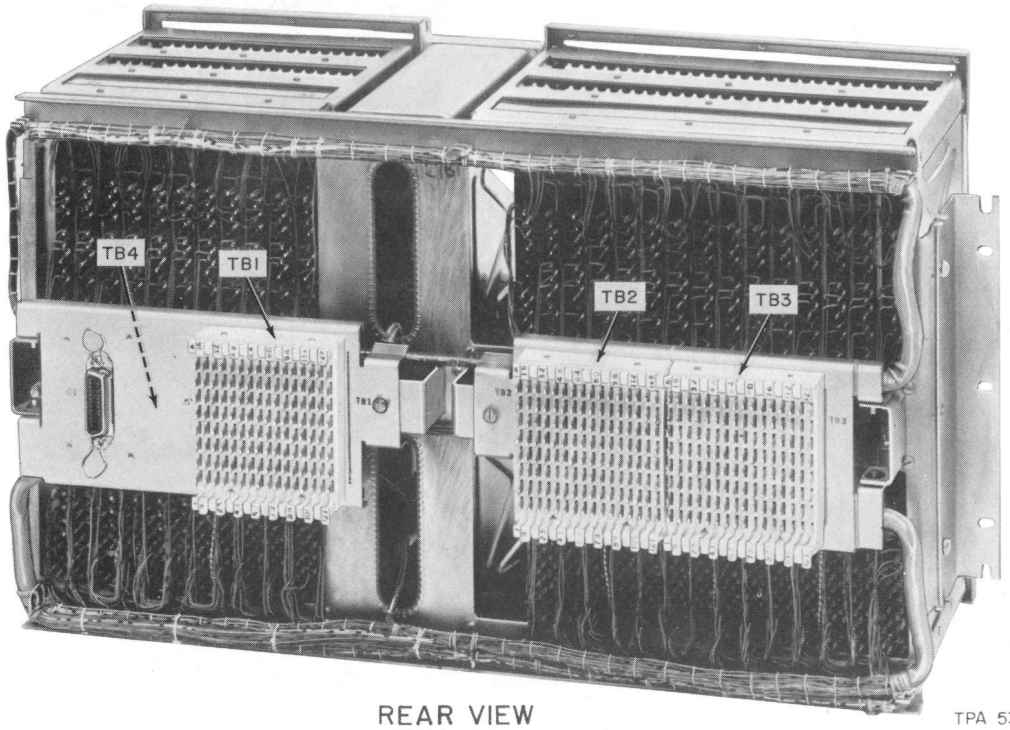


Fig. 7—27A1 Data Mounting



FRONT VIEW



REAR VIEW

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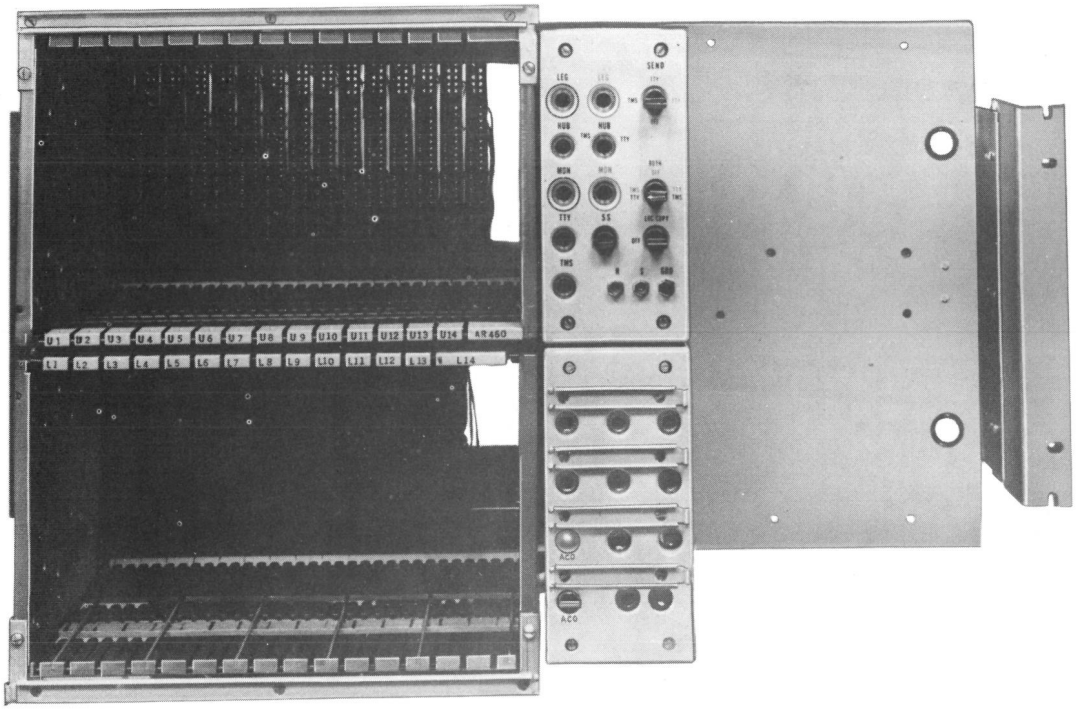
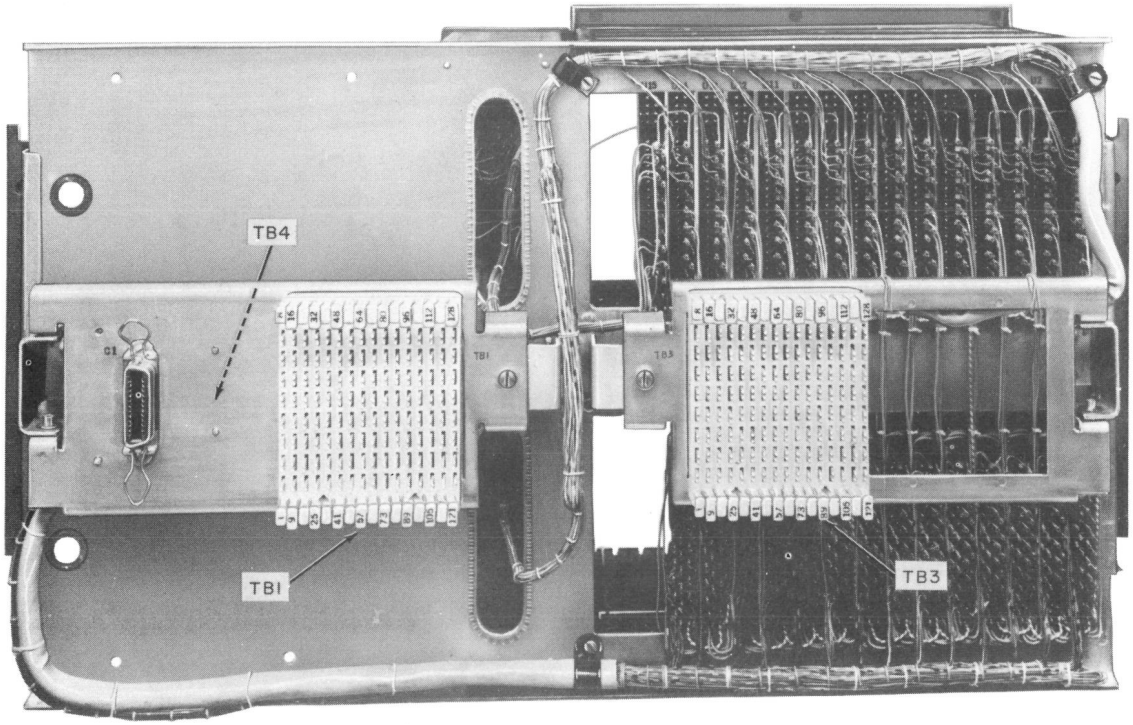
Fig. 8—27B1 Data Mounting



FRONT VIEW



REAR VIEW

Fig. 9—27C1 Data Mounting

TABLE A—27A1 DATA MOUNTING LEAD ASSIGNMENT

CONNECTING BLOCK TB1

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	SL	33	SL	65	SL	97	SL
2	RL — Position 1	34	RL — Position 9	66	RL — Position 17	98	RL — Position 25
3	TL (See Note 1)	35	TL	67	TL	99	TL
4	CF1	36	CF1	68	CF1	100	CF1
5	SL	37	SL	69	SL	101	SL
6	RL — Position 2	38	RL — Position 10	70	RL — Position 18	102	RL — Position 26
7	TL	39	TL	71	TL	103	TL
8	CF1	40	CF1	72	CF1	104	CF1
9	SL	41	SL	73	SL	105	SL
10	RL — Position 3	42	RL — Position 11	74	RL — Position 19	106	RL — Position 27
11	TL	43	TL	75	TL	107	TL
12	CF1	44	CF1	76	CF1	108	CF1
13	SL	45	SL	77	SL	109	SL
14	RL — Position 4	46	RL — Position 12	78	RL — Position 20	110	RL — Position 28
15	TL	47	TL	79	TL	111	TL
16	CF1	48	CF1	80	CF1	112	CF1
17	SL	49	SL	81	SL	113	SL
18	RL — Position 5	50	RL — Position 13	82	RL — Position 21	114	RL — Position 29
19	TL	51	TL	83	TL	115	TL
20	CF1	52	CF1	84	CF1	116	CF1
21	SL	53	SL	85	SL	117	SL
22	RL — Position 6	54	RL — Position 14	86	RL — Position 22	118	RL — Position 30
23	TL	55	TL	87	TL	119	TL
24	CF1	56	CF1	88	CF1	120	CF1
25	SL	57	SL	89	SL	121	SL
26	RL — Position 7	58	RL — Position 15	90	RL — Position 23	122	RL — Position 31
27	TL	59	TL	91	TL	123	TL
28	CF1	60	CF1	92	CF1	124	CF1
29	SL	61	SL	93	SL	125	SL
30	RL — Position 8	62	RL — Position 16	94	RL — Position 24	126	RL — Position 32
31	TL	63	TL	95	TL	127	TL
32	CF1	64	CF1	96	CF1	128	CF1

CONNECTING BLOCK TB2

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	TS — Position 1	33	TS — Position 17		
2	RS	34	RS		
3	TS — Position 2	35	TS — Position 18		
4	RS	36	RS		
5	TS — Position 3	37	TS — Position 19		
6	RS	38	RS		
7	TS — Position 4	39	TS — Position 20		
8	RS	40	RS		
9	TS — Position 5	41	TS — Position 21		Terminals 65 Through 110 Unassigned
10	RS	42	RS		
11	TS — Position 6	43	TS — Position 22		
12	RS	44	RS		
13	TS — Position 7	45	TS — Position 23		
14	RS	46	RS		
15	TS — Position 8	47	TS — Position 24		
16	RS	48	RS	111	S1
17	TS — Position 9	49	TS — Position 25	112	R1
18	RS	50	RS	113	S2
19	TS — Position 10	51	TS — Position 26	114	R2
20	RS	52	RS	115	S3
21	TS — Position 11	53	TS — Position 27	116	R3
22	RS	54	RS	117	S4
23	TS — Position 12	55	TS — Position 28	118	R4
24	RS	56	RS	119	S5 — Bus Circuits
25	TS — Position 13	57	TS — Position 29	120	R5
26	RS	58	RS	121	S6
27	TS — Position 14	59	TS — Position 30	122	R6
28	RS	60	RS	123	S7
29	TS — Position 15	61	TS — Position 31	124	R7
30	RS	62	RS	125	S8
31	TS — Position 16	63	TS — Position 32	126	R8
32	RS	64	RS	127	S9
				128	R9

CONNECTING BLOCK TB3

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	T	33	T	65	T	97	T
2	R — Position 1	34	R — Position 9	66	R — Position 17	98	R — Position 25
3	T1	35	T1	67	T1	99	T1
4	R1	36	R1	68	R1	100	R1
5	T	37	T	69	T	101	T
6	R — Position 2	38	R — Position 10	70	R — Position 18	102	R — Position 26
7	T1	39	T1	71	T1	103	T1
8	R1	40	R1	72	R1	104	R1
9	T	41	T	73	T	105	T
10	R — Position 3	42	R — Position 11	74	R — Position 19	106	R — Position 27
11	T1	43	T1	75	T1	107	T1
12	R1	44	R1	76	R1	108	R1
13	T	45	T	77	T	109	T
14	R — Position 4	46	R — Position 12	78	R — Position 20	110	R — Position 28
15	T1	47	T1	79	T1	111	T1
16	R1	48	R1	80	R1	112	R1
17	T	49	T	81	T	113	T
18	R — Position 5	50	R — Position 13	82	R — Position 21	114	R — Position 29
19	T1	51	T1	83	T1	115	T1
20	R1	52	R1	84	R1	116	R1
21	T	53	T	85	T	117	T
22	R — Position 6	54	R — Position 14	86	R — Position 22	118	R — Position 30
23	T1	55	T1	87	T1	119	T1
24	R1	56	R1	88	R1	120	R1
25	T	57	T	89	T	121	T
26	R — Position 7	58	R — Position 15	90	R — Position 23	122	R — Position 31
27	T1	59	T1	91	T1	123	T1
28	R1	60	R1	92	R1	124	R1
29	T	61	T	93	T	125	T
30	R — Position 8	62	R — Position 16	94	R — Position 24	126	R — Position 32
31	T1	63	T1	95	T1	127	T1
32	R1	64	R1	96	R1	128	R1

CONNECTING BLOCK TB4

TERM.	J CONNECTOR TERM.	LEAD ASSIGNMENT
1	See Note 2	+24V Power Supply
2	J1-4	+24V Position 1-4
3	J1-5	+24V Position 5-8
4	J1-6	+24V Position 9-12
5	J1-7	+24V Position 13-16
6	J1-16	+24V Position 17-20
7	J1-17	+24V Position 21-24
8	J1-18	+24V Position 25-28
9	J1-19	+24V Position 29-32
10	See Note 2	—24V Power Supply
11	J1-9	—24V Position 1-4
12	J1-10	—24V Position 5-8
13	J1-11	—24V Position 9-12
14	J1-12	—24V Position 13-16
15	J1-21	—24V Position 17-20
16	J1-22	—24V Position 21-24
17	J1-23	—24V Position 25-28
18	J1-24	—24V Position 29-32
19	See Note 2	GROUND
20	J1-2	GRD Position 9-16
21	J1-1	GRD Position 1-8
22	J1-13	GRD Position 17-24
23	Strap to 22	
24	J1-14	GRD Position 25-32
—	J1-3	CF1s of Data Mtg to Channel Alarm Ckts
—	J1-8	Not Assigned
—	J1-15	GRD thru ACO Key
—	J1-20	—24V to ACO Relay

Note 1: The CF1 leads on TB1 are strapped together and connected to J1-3.

Note 2: Power is supplied from either the J70173AB panel (via the J1 connector and distributed as shown by TB4) or by a KS-20575 rectifier. When the KS-20575 rectifier is used, power is connected to terminals 1, 10, and 19, and straps are provided on TB4 as follows: +24: 1, 2, 3, 4, 5, 6, 7, 8, 9
—24: 10, 11, 12, 13, 14, 15, 16, 17, 18
GRD: 19, 20, 21, 22, 23, 24

Note 3: When the KS-20575 rectifier is used, connect a strap between terminals GRD and COM on the rectifier terminal board.

TABLE B—27B1 DATA MOUNTING LEAD ASSIGNMENT

CONNECTING BLOCK TB1

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	SL	33	SL	65	SL	97	SL
2	RL — Position 1	34	RL — Position	66	RL — Position	98	RL — Position
3	TL — (See Note 1)	35	TL — 9	67	TL — 17	99	TL — 25
4	CF1	36	CF1	68	CF1	100	CF1
5	SL	37	SL	69	SL	101	SL
6	RL — Position	38	RL — Position	70	RL — Position	102	RL — Position
7	TL — 2	39	TL — 10	71	TL — 18	103	TL — 26
8	CF1	40	CF1	72	CF1	104	CF1
9	SL	41	SL	73	SL	105	SL
10	RL — Position	42	RL — Position	74	RL — Position	106	RL — Position
11	TLI — 3	43	TL — 11	75	TL — 19	107	TL — 27
12	CF1	44	CF1	76	CF1	108	CF1
13	SL	45	SL	77	SL	109	
14	RL — Position	46	RL — Position	78	RL — Position	110	
15	TL — 4	47	TL — 12	79	TL — 20	111	
16	CF1	48	CF1	80	CF1	112	
17	SL	49	SL	81	SL	113	
18	RL — Position	50	RL — Position	82	RL — Position	114	
19	TL — 5	51	TL — 13	83	TL — 21	115	
20	CF1	52	CF1	84	CF1	116	
21	SL	53	SL	85	SL	117	
22	RL — Position	54	RL — Position	86	RL — Position	118	No Conn.
23	TL — 6	55	TL — 14	87	TL — 22	119	
24	CF1	56	CF1	88	CF1	120	
25	SL	57		89	SL	121	
26	RL — Position	58		90	RL — Position	122	
27	TL — 7	59		91	TL — 23	123	
28	CF1	60	No	92	CF1	124	
29	SL	61	Conn.	93	SL	125	
30	RL — Position	62		94	RL — Position	126	
31	TL — 8	63		95	TL — 24	127	
32	CF1	64		96	CF1	128	

CONNECTING BLOCK TB2

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	TS — Position	33	TS — Position	97	
2	TR — 1	34	TR — 17	98	
3	TS — Position	35	TS — Position	99	
4	TR — 2	36	TR — 18	100	
5	TS — Position	37	TS — Position	101	
6	TR — 3	38	TR — 19	102	
7	TS — Position	39	TS — Position	103	No Conn.
8	TR — 4	40	TR — 20	104	
9	TS — Position	41	TS — Position	105	
10	TR — 5	42	TR — 21	106	
11	TS — Position	43	TS — Position	107	
12	TR — 6	44	TR — 22	108	
13	TS — Position	45	TS — Position	109	
14	TR — 7	46	TR — 23	110	
15	TS — Position	47	TS — Position	111	S1
16	TR — 8	48	TR — 24	112	R1
17	TS — Position	49	TS — Position	113	S2
18	TR — 9	50	TR — 25	114	R2
19	TS — Position	51	TS — Position	115	S3
20	TR — 10	52	TR — 26	116	R3
21	TS — Position	53	TS — Position	117	S4
22	TR — 11	54	TR — 27	118	R4
23	TS — Position	55		119	S5 — Bus Circuits
24	TR — 12			120	R5
25	TS — Position			121	S6
26	TR — 13			122	R6
27	TS — Position			123	S7
28	TR — 14		No Conn.	124	R7
29				125	S8
30	No			126	R8
31	Conn.			127	S9
32		96		128	R9

CONNECTING BLOCK TB3

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	T	33	T	65	T	97	T
2	R — Position	34	R — Position	66	R — Position	98	R — Position
3	T1 — 1	35	T1 — 9	67	T1 — 17	99	T1 — 25
4	R1	36	R1	68	R1	100	R1
5	T	37	T	69	T	101	T
6	R — Position	38	R — Position	70	R — Position	102	R — Position
7	T1 — 2	39	T1 — 10	71	T1 — 18	103	T1 — 26
8	R1	40	R1	72	R1	104	R1
9	T	41	T	73	T	105	T
10	R — Position	42	R — Position	74	R — Position	106	R — Position
11	T1 — 3	43	T1 — 11	75	T1 — 19	107	T1 — 27
12	R1	44	R1	76	R1	108	R1
13	T	45	T	77	T	109	T3 — TRK
14	R — Position	46	R — Position	78	R — Position	110	R3 — 3
15	T1 — 4	47	T1 — 12	79	T1 — 20	111	S3 — (J15)
16	R1	48	R1	80	R1	112	No Conn.
17	T	49	T	81	T	113	T4 — TRK
18	R — Position	50	R — Position	82	R — Position	114	R4 — 4
19	T1 — 5	51	T1 — 13	83	T1 — 21	115	S4 — (J16)
20	R1	52	R1	84	R1	116	Trans Meas Set Conn
21	T	53	T	85	T	117	
22	R — Position	54	R — Position	86	R — Position	118	No Conn.
23	T1 — 6	55	T1 — 14	87	T1 — 22	119	
24	R1	56	R1	88	R1	120	Trans Meas Set Conn
25	T	57	T1 — TRK	89	T	121	
26	R — Position	58	R1 — 1 (*J9	90	R — Position	122	No Conn.
27	T1 — 7	59	S1 — J10,J11)	91	T1 — 23	123	
28	R1	60	No Conn.	92	R1	124	Trans Meas Set Conn
29	T	61	T2 — TRK	93	T	125	TA — TEL — To Central Office
30	R — Position	62	R2 — 2 (J12,	94	R — Position	126	SA — 1
31	T1 — 8	63	S2 — J13, J14)	95	T1 — 24	127	TB — TEL — Telephone Conn. as Required
32	R1	64	No Conn.	96	R1	128	SB — 2

CONNECTING BLOCK TB4

TERM.	J CONNECTOR TERM.	LEAD ASSIGNMENT
1	See Note 2	+24V Power Supply
2	J1-4	+24V Position 1-4
3	J1-5	+24V Position 5-8
4	J1-6	+24V Position 9-12
5	J1-7	+24V Position 13, 14 & AR460
6	J1-16	+24V Position 17-20
7	J1-17	+24V Position 21-24
8	J1-18	+24V Position 25-27
9	J1-15	ACO Key
10	See Note 2	—24V Power Supply
11	J1-9	—24V Position 1-4
12	J1-10	—24V Position 5-8
13	J1-11	—24V Position 9-12
14	J1-12	—24V Position 13, 14, & AR460 & ACO Lamp-Key
15	J1-21	—24V Position 17-20
16	J1-22	—24V Position 21-24
17	J1-23	—24V Position 25-27
18	(Not Used)	
19	See Note 2	GROUND
20	J1-2	GRD Position 9-14 & AR460
21	J1-1	GRD Position 1-8
22	J1-13	GRD Position 17-24
23	Strap to 22	
24	J1-14	GRD Position 25-27
	J1-3	CF1s of Data Mtg to Channel Alarm Ckts.
	J1-8,15, 19 and 24	Not Assigned
	J1-20	—24V to ACO Relay

Note 1: The CF1 leads on TB1 are strapped together and connected to J1-3.

Note 2: Power is supplied from either the J70173AB panel (via the J1 connector and distributed as shown by TB4) or by a KS-20575 rectifier. When the KS-20575 rectifier is used, power is connected to terminals 1, 10, and 19, and straps are provided on TB4 as follows: +24: 1, 2, 3, 4, 5, 6, 7, 8
−24: 10, 11, 12, 13, 14, 15, 16, 17
GRD: 19, 20, 21, 22, 23, 24

Note 3: When the KS-20575 rectifier is used, connect a strap between terminals GRD and COM on the rectifier terminal board.

TABLE C—27C1 DATA MOUNTING LEAD ASSIGNMENT

CONNECTING BLOCK TB1

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	SL — Position	33	SL — Position	65	TS — Position	97	
2	RL — 1	34	RL — 9	66	TR — 5	98	
3	TL — (See Note	35	TL	67	TS — Position	99	
4	CF1 — 1	36	CF1	68	TR — 6	100	
5	SL	37	SL	69	TS — Position	101	
6	RL — Position	38	RL — Position	70	TR — 7	102	
7	TL — 2	39	TL — 10	71	TS — Position	103	No Conn.
8	CF1	40	CF1	72	TR — 8	104	
9	SL	41	SL	73	TS — Position	105	
10	RL — Position	42	RL — Position	74	TR — 9	106	
11	TL — 3	43	TL — 11	75	TS — Position	107	
12	CF1	44	CF1	76	TR — 10	108	
13	SL	45	SL	77	TS — Position	109	
14	RL — Position	46	RL — Position	78	TR — 11	110	
15	TL — 4	47	TL — 12	79	TS — Position	111	S1
16	CF1	48	CF1	80	TR — 12	112	R1
17	SL	49	SL	81	TS — Position	113	S2
18	RL — Position	50	RL — Position	82	TR — 13	114	R2
19	TL — 5	51	TL — 13	83	TS — Position	115	S3
20	CF1	52	CF1	84	TR — 14	116	R3
21	SL	53	SL	85		117	S4
22	RL — Position	54	RL — Position	86		118	R4
23	TL — 6	55	TL — 14	87		119	S5 — Bus Circuits
24	CF1	56	CF1	88		120	R5
25	SL	57	TS — Position	89		121	S6
26	RL — Position	58	TR — 1	90	No Conn.	122	R6
27	TL — 7	59	TS — Position	91		123	S7
28	CF1	60	TR — 2	92		124	R7
29	SL	61	TS — Position	93		125	S8
30	RL — Position	62	TR — 3	94		126	R8
31	TL — 8	63	TS — Position	95		127	S9
32	CF1	64	TR — 4	96		128	R9

CONNECTING BLOCK TB3

TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT	TERM.	LEAD ASSIGNMENT
1	T	33	T	65	
2	R — Position	34	R — Position		
3	T1 — 1	35	T1 — 9		
4	R1	36	R1		
5	T	37	T		
6	R — Position	38	R — Position		No Assigned Connection
7	T1 — 2	39	T1 — 10		
8	R1	40	R1		
9	T	41	T		
10	R — Position	42	R — Position		
11	T1 — 3	43	T1 — 11	108	
12	R1	44	R1	109	T3 — TRK
13	T	45	T	110	R3 — 3
14	R — Position	46	R — Position	111	S3 — (J15)
15	T1 — 4	47	T1 — 12	112	No Conn.
16	R1	48	R1	113	T4 — TRK
17	T	49	T	114	R4 — 4
18	R — Position	50	R — Position	115	S4 — (J16)
19	T1 — 5	51	T1 — 13	116	Trans Meas Set Conn.
20	R1	52	R1	117	
21	T	53	T	118	No Conn.
22	R — Position	54	R — Position	119	
23	T1 — 6	55	T1 — 14	120	Trans Meas Set Conn.
24	R1	56	R1	121	
25	T	57	T1 — TRK	122	No Conn.
26	R — Position	58	R1 — 1 (J9,	123	
27	T1 — 7	59	S1 — J10, J11)	124	Trans Meas Set Conn.
28	R1	60	No Conn.	125	TA — TEL
29	T	61	T2 — TRK	126	SA — 1 — To C.O. Conn.
30	R — Position	62	R2 — 2 (J12,	127	TB — TEL
31	T1 — 8	63	S2 — J13, J14)	128	SB — 2
32	R1	64	No Conn.		

CONNECTING BLOCK TB4

TERM.	J CONNECTOR TERM.	LEAD ASSIGNMENT
1	See Note 2	+24V Power Supply
2	J1-4	+24V Position 1-4
3	J1-5	+24V Position 5-8
4	J1-6	+24V Position 9-12
5	J1-7	+24V Position 13, 14 and AR460
6	Not Used	
7		
8		
9	J1-15	ACO Key
10	See Note 2	—24V Power Supply
11	J1-9	—24V Position 1-4
12	J1-10	—24V Position 5-8
13	J1-11	—24V Position 9-12
14	J1-12	—24V Position 13, 14, AR460, and ACO Lamp-Key
15	Not Used	
16		
17		
18		
19	See Note 2	GROUND
20	J1-2	GRD Position 9-14 and AR460
21	J1-1	GRD Position 1-8
22	Not Used	
23		
24		
	J1-3	CF1s of Data Mtg to Channel Alarm Ckt
	J1-8, 13 thru 19 and 21 thru 24	Not Assigned
	J1-20	—24V to ACO Relay

Note 1: The CF1 leads on TB1 are strapped together and connected to J1-3.

Note 2: Power is supplied from either the J70173AB panel (via the J1 connector and distributed as shown by TB4) or by a KS-20575 rectifier. When the KS-20575 rectifier is used, power is connected to terminals 1, 10, and 19, and straps are provided on TB4 as follows: +24: 1, 2, 3, 4, 5
—24: 10, 11, 13,14
GRD: 19, 20, 21

Note 3: When the KS-20575 rectifier is used, connect a strap between terminals GRD and COM on the rectifier terminal board.

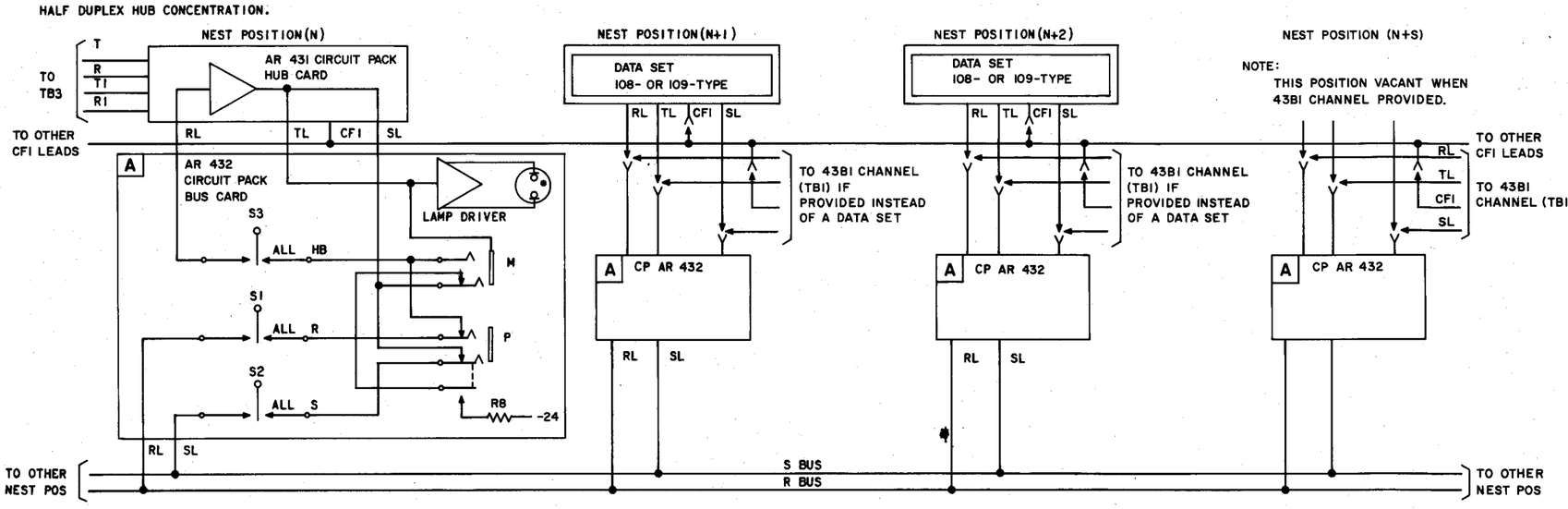


Fig. 10—Block Diagram of Type-3 Low-Voltage Hub Showing the Half-Duplex Arrangement

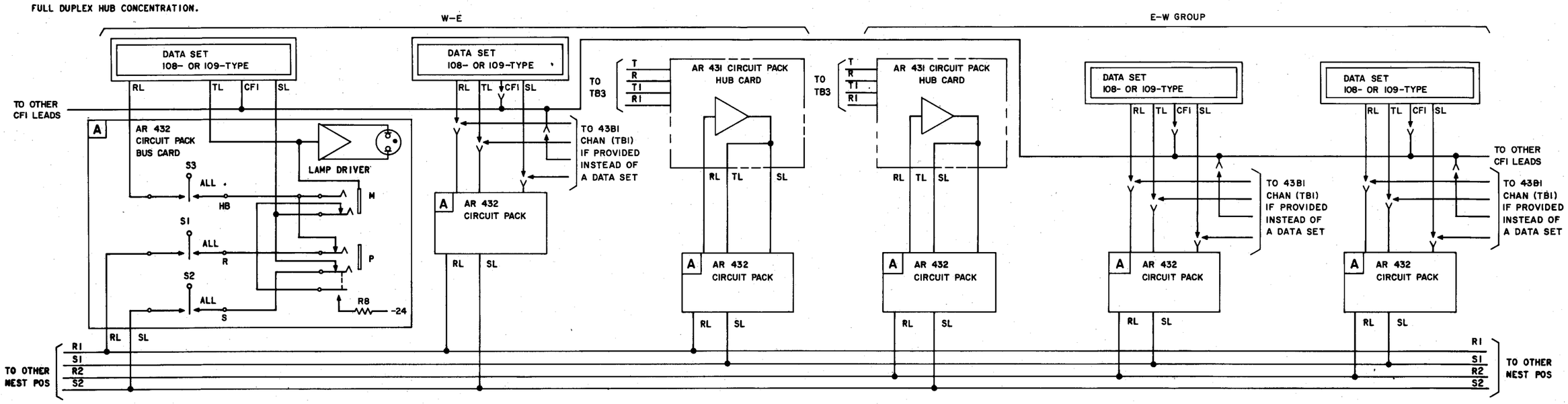


Fig. 11—Block Diagram of Type-3 Low-Voltage Hub Showing the Full-Duplex Arrangement

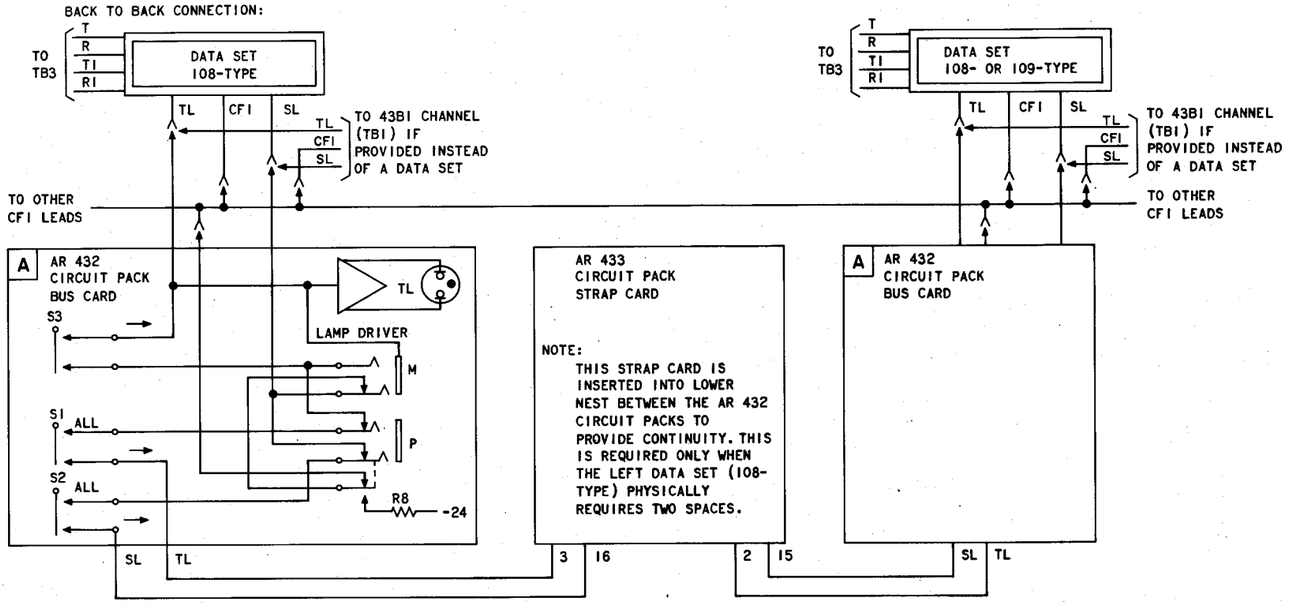
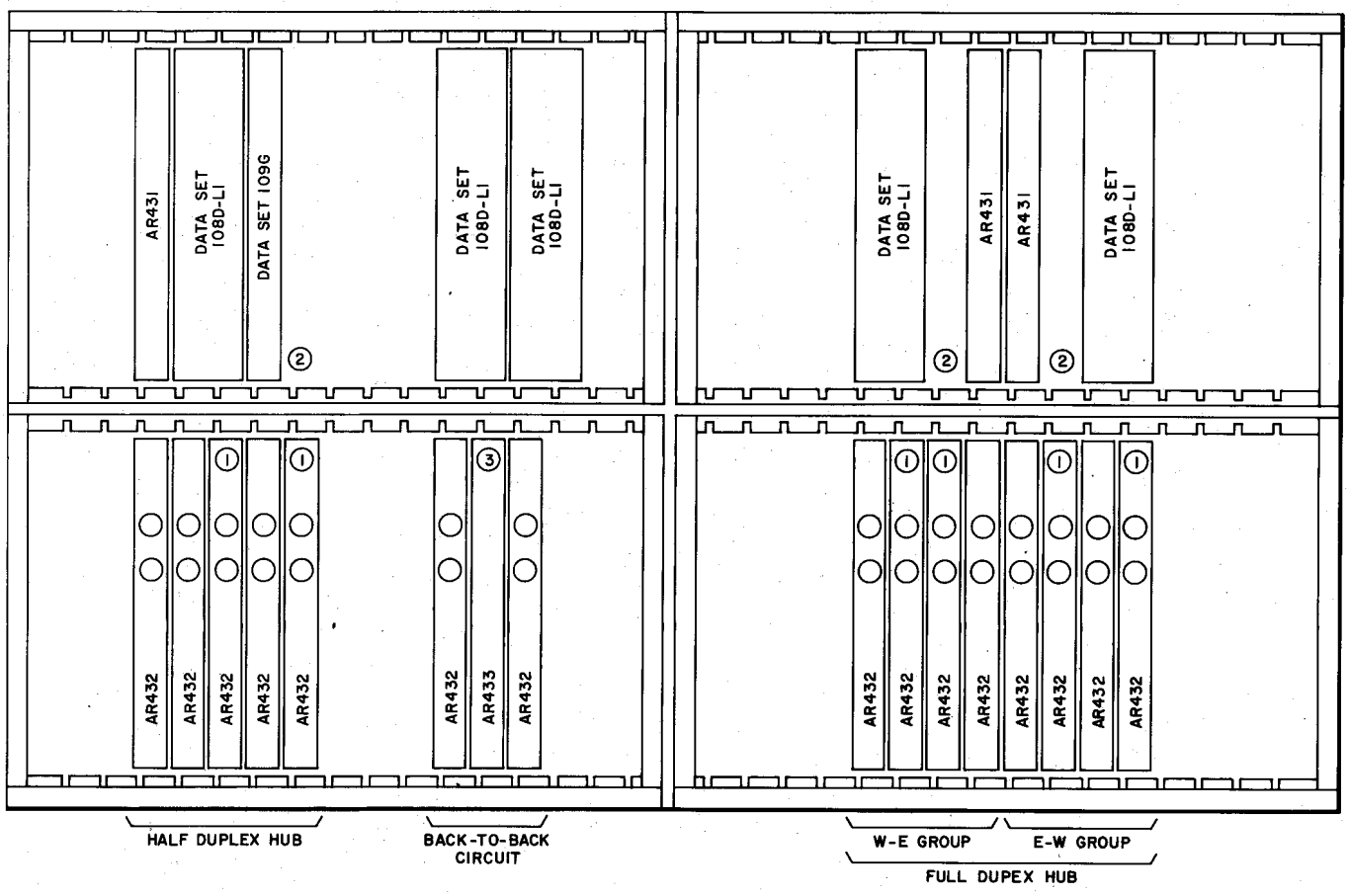


Fig. 12—Block Diagram of Type-3 Low-Voltage Hub Showing the Back-to-Back Arrangement



(1) 43BI CHANNEL TERMINAL (LOCATED EXTERNALLY) WIRED TO THESE POSITIONS.

(2) THIS POSITION CANNOT BE EQUIPPED WHEN 43BI CHANNEL IS WIRED TO POSITION DIRECTLY BELOW IT.

(3) THIS CIRCUIT PACK IS REQUIRED ONLY WHEN A DOUBLE WIDTH DATA SET, ON THE LEFT SIDE OF A PAIR USED IN BACK-TO-BACK SERVICE, CAUSES A VACANT SPACE IN THE LOWER NEST. THE AR 433 CARD PROVIDES LOWER NEST CONTINUITY.

Fig. 13—Typical Arrangement of Data Sets and Circuit Packs to Provide Half-Duplex, Full-Duplex, and Back-to-Back Service

Note: When back-to-back service is being provided and a data set that physically occupies two spaces (ie, data set 108D) is used as the left side card, an AR433 strap card is required in the lower nest. The AR433 strap card is inserted in the vacant space between the AR432 bus cards to maintain continuity in the lower nest.

4.05 A data set with an associated 432 bus circuit card can be located in an adjacent data mounting if there is no space in the mounting housing the associated hub circuit card. An example of this would be when all the hub circuits in a mounting are filled and there is still space for data sets. Two methods of extending hub circuits from one 27-type data mounting to another are as follows:

(1) A data set may be connected to a hub in another mounting by positioning the switch contact wheels on the associated AR432 bus circuit card to the "T" position and then cross connecting from the TS and TR terminals on the rear of the mounting. The TS and TR terminals should be connected to the S and R terminals (respectively) of the vacant hub bus. Refer to Tables A, B, or C to determine the correct terminals on the type data mounting being used.

(2) A similar method can be used to locate part or all of the data set(s) on a hub circuit in another data mounting. This method consists of cross connecting the vacant hub bus to a vacant bus circuit in the mounting housing the data sets. The switch contact wheels on the 432 bus circuit card(s) associated with the data set(s) should then be positioned to the number corresponding to the cross-connected bus.

4.06 When 43B1 channels are connected to the hub, they are wired to the terminal strip above the data mountings. The 43B1 channels are then cross connected to the connecting block on the back of the data mounting. The 43B1 channels are connected to the required bus by AR432 bus circuit cards inserted in the lower nest position associated with the slot or position the 43B1 is wired into.

Note: All of the telephone, baseband data, and alarm connections appear at the J70173AB terminal strip. All connections shall be brought off the bay through this terminal strip, and no connections shall be brought off the bay from the connecting blocks of the 27-type data mounting.

4.07 In installations where it is not desirable to use a 43B1 channel to communicate between hubs, a data set 108E-type can be used at one hub and a data set 108D-type at the other. The data set 108E-type transmits in the F2 frequency band and receives in the F1 while the 108D-type transmits in the F1 frequency band and receives in F2.

4.08 Install the data sets as follows:

(1) Use W22M distributing frame wire to connect between the transmit and receive pair(s) of a vacant slot in the mounting and the line(s) from the far-end hub. The connection is made by connecting between the T and R ***or*** T, R, T1 and R1 terminals on TB3 and the far-end line appearance on the J70173AB terminal strip.

Note: An AR432 bus circuit card is required in the lower slot of the mounting to connect the data set to the appropriate S and R buses.

(2) Ensure that the S and R switches on the AR432 bus circuit card are correctly positioned, then install the card in the slot under the data set slot wired in (1).

(3) Install the data set in the slot wired in (1).

(4) The far-end data set should be installed in accordance with the procedure given above.

In order for this installation to function, the data set at one end must be a 108E-type and the other end must be a 108D-type.

4.09 Install the AR431 hub circuit card in the data mounting (Fig. 14). Connection to the appropriate bus is provided by the AR432 bus circuit card.

Note: Make sure that the regenerator switch is set to the regenerator-out position (closed). Refer to the service order for information on setting the HDX-FDX switch and break transmitter in-out switch.

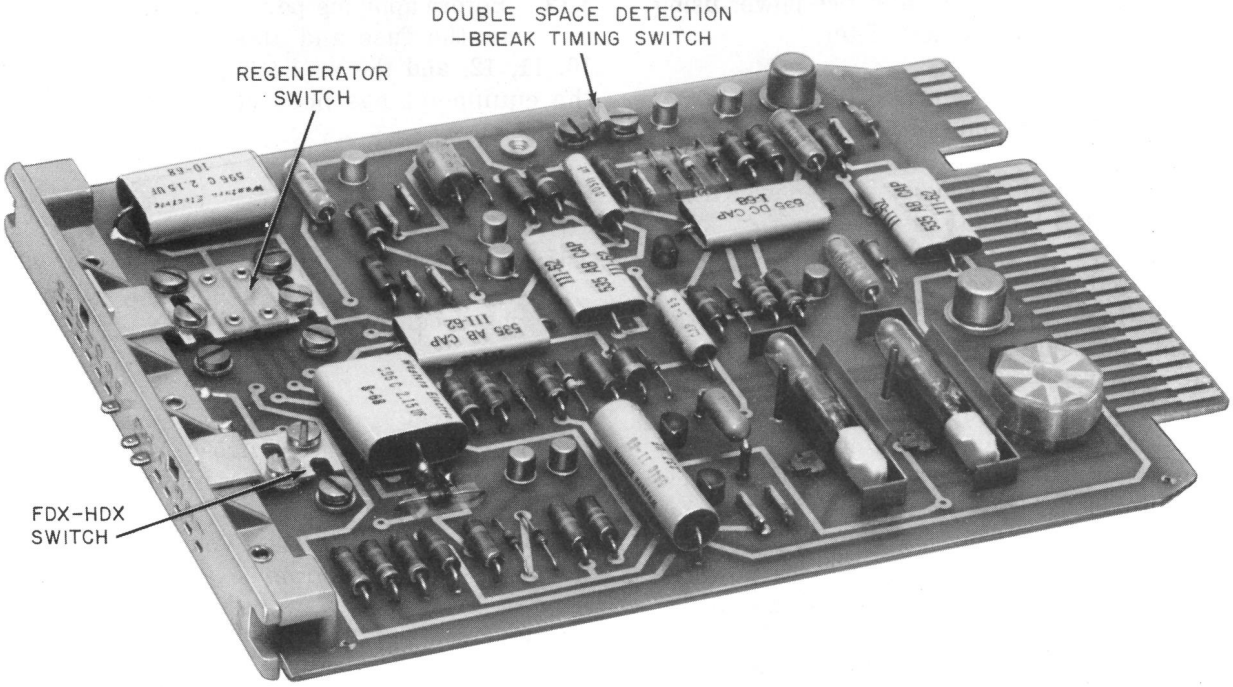


Fig. 14—AR431 Circuit Pack

4.10 Install the test circuit card (AR460 circuit pack, Fig. 15) in position 15-16 of the 27B1 and 27C1 data mountings.

4.11 The fuse and alarm panel may be wired to the central office power in one of the following ways (refer to Tables A, B, and C).

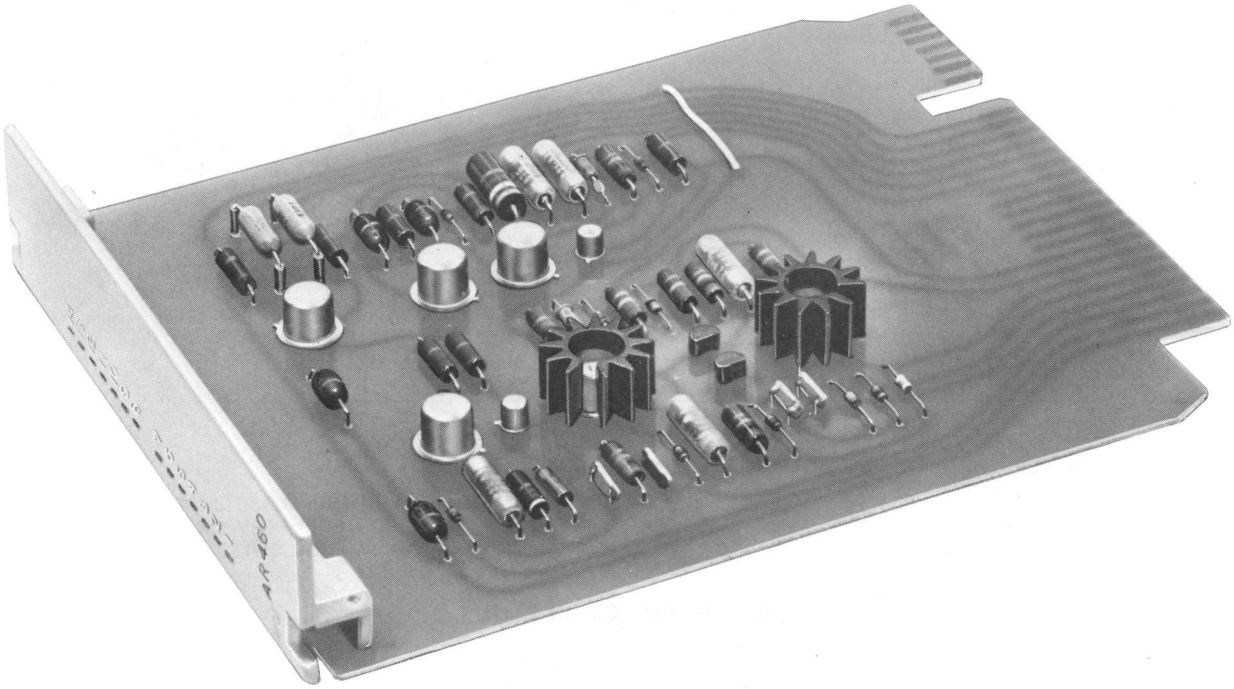


Fig. 15—AR460 Circuit Pack

- Connect to ±24V central office power using the J70169AD-L2 battery filter.

- Connect to −24V central office power using the J87308A-L5 and -L6 power unit.

- Connect to −48V central office power using the J87308A-L3 and -L4 power unit.

Make sure that the screw switches on the EN1 circuit pack (Fig. 16) are set for the central office battery voltage being used, ie, the screw switches must be open for −48V battery and closed for ±24V battery. The Z option is provided when −24V or ±24V central office battery is used. The Z option is not used when −48V central office battery is provided.

4.12 When the data mounting is to be powered by a KS-20575 rectifier, no fuse and alarm unit is required or provided. The 27C1 data mounting provides for mounting two of the KS-20575 rectifiers. These rectifiers are wired to TB4 of the data mounting to supply the required dc power. One power supply is required to power one complete 27B1 or 27C1 data mounting or up to 25 positions of a 27A1 data mounting. When a KS-20575 rectifier is used, provide the necessary straps as indicated by the applicable Table (A, B, or C).

4.13 Before applying power to either the rectifiers or the fuse and alarm unit, refer to Fig. 10, 11, 12, and the applicable Table to verify that the equipment has been correctly installed and connected.

5. REFERENCES

5.01 For additional information on the low-voltage hub and associated equipment, refer to the following documents:

NUMBER	TITLE
CD-73059-01	Type-3 Low-Voltage Hub Circuit—Description
SD-73059-01	Type-3 Low-Voltage Hub—Schematic Diagram
590-102-123	27-Type Data Mounting—Identification
807-401-153	(J70173)—Type 3 Low-Voltage Hub Equipment Design Requirements Data Systems

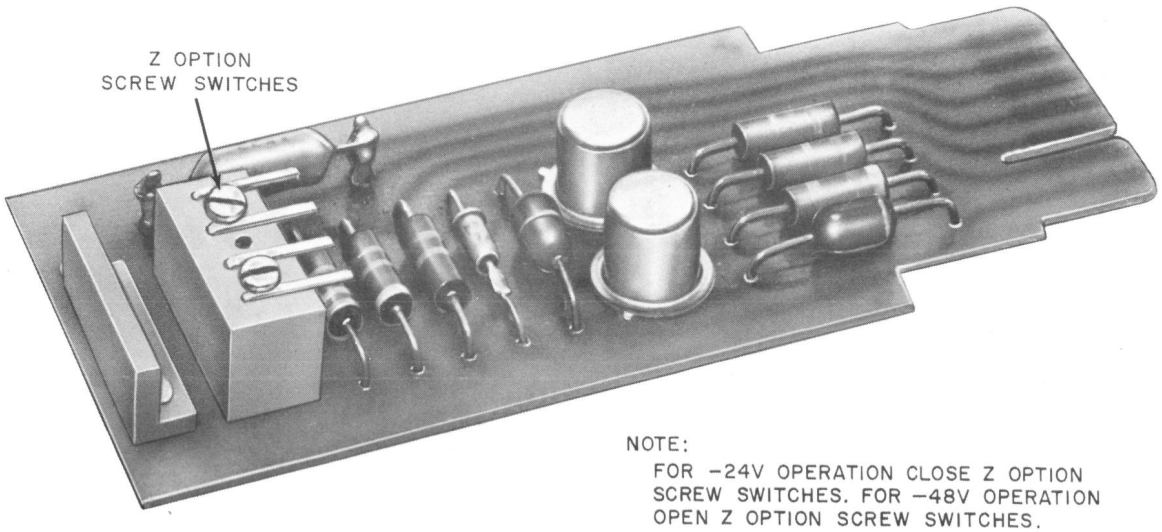


Fig. 16—EN1 Circuit Pack