

113-TYPE DATA STATION INSTALLATION

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1. GENERAL

- 1.01** This section covers the procedures to be followed for the installation of a 113-type data station on customer premises.
- 1.02** This section is reissued to add information that will clarify when option U is to be installed, to delete the warning in 4.04, to add information designating how the key strip should

be labeled on key telephones, and to include information in Part 5 and Table D so that the transmission output level adjustment can be made with an ac voltmeter.

1.03 The customer must furnish a standard 3-wire, grounding type, 105- to 130-volt, 57- to 63-Hz ac power receptacle. The ac power receptacle is equipped to accept a plug with two parallel blades and a round shaped grounding pin.



The ac outlet must not be under the control of a switch.

1.04 To minimize the possibility of data errors due to potential differences between the data sets and data terminal grounds, the data mounting(s) power receptacle should be served from the same power distribution panel as the receptacle for the data terminal. If this is not possible, a test should be made, using the 6A impulse counter, to determine if excessive noise is present. This test procedure is described in the section entitled 113-Type Data Station—Test Procedures (591-814-500). If the test requirements are not met, the data station and data terminal grounds must be bonded together in accordance with local regulations.

1.05 Verify with the Plant Service Center (PSC) that the overall facilities meet transmission requirements specified in the section entitled Data Systems—DATA-PHONE® Service on Direct Distance Dialing Network, Overall Transmission Test Requirements (314-205-501).

1.06 Reference directions (left, right, front, or rear) are in respect to facing the fuse blocks on the 32A1 data mounting mounted in the cabinet.

1.07 Verify that the location selected by the customer for the KS-20018-L4 or KS-20093-L1 cabinet(s) is adequate for maintenance. The following cabinet dimensions should be exceeded to allow room for disassembly and maintenance of the 113-type data station.

SECTION 591-814-200

- (a) KS-20018-L4 Cabinet—24 inches wide, 30 inches high, and 12 inches deep
- (b) KS-20093-L1 Cabinet (front and rear doors open)—55 inches wide, 75 inches high, and 55 inches deep.

1.08 The KS-20018-L4 cabinet will accommodate one 32A1 data mounting; the KS-20093-L1 cabinet will accommodate up to six 32A1 data mountings.

1.09 The tip (T) and ring (R) leads of the access lines are connected to J23 of the 32A1 data mounting(s). The sleeve (S) leads (a third wire from the central office which is used for supervisory signaling) of the access lines, when used, are connected to J24 of the 32A1 data mounting(s). This is accomplished by use of single-ended A25D connector cables. The single-ended A25D connector

cable may be ordered in standard lengths of 13, 20, 22, 24, or 26 feet. If a single-ended A25D connector cable is required in a nonstandard length, it can be specially ordered in any length up to 200 feet.

2. OPTIONS

2.01 The 113-type data station is provided with six options that may or may not be provided in accordance with the service order or circuit layout record card. Two of the options are associated with the 32A1 data mounting and four are associated with data set 113B-L1. Each option is installed by closing the screw switch(es) associated with that option. Refer to Table A and Figure 1. When an option is not specified, ensure that the screw switch(es) associated with that option is in the open position (screw turned fully counterclockwise).

TABLE A
113-TYPE DATA STATION OPTIONS

OPTIONS (SEE NOTE)	OPTION DESIG	LOCATION	SCREW SETTING CLOSE	FUNCTION
32A1 data mountings equipped with less than 10 data sets	U*	32A1 D/M	SS3, 4, 5	Provides a dummy load in D/Ms equipped with 9 or less data sets 113B-L1.
Common Grounds	V*	32A1 D/M	SS1	Connects all data set signal grounds (AB) to frame ground (AA).
Common CB-CF Indication	W	Data Set 113B-L1	W‡	Causes the CB signal to track with the CF signal.
Ignore CN Control	X <i>20 TIME SHARE NOT OT CHS</i>	Data Set 113B-L1	X‡	Provides a ground path for the EIA terminator for the customer-provided CN lead. This causes customer signaling via the CN lead to be ignored.
Tip-Ring Make Busy	Y*†	Data Set 113B-L1	Y‡	In installations where the sleeve leads are not used, this provides a dummy load between tip and ring of the data set telephone line, therefore implementing the make-busy feature.
Data Terminal Control of Disconnect	Z	Data Set 113B-L1	Z‡	Provides an input that overrides the carrier fail disconnect timer, thereby leaving control to the CD interface lead.

* Factory furnished

† In installations where Y option is not provided, the make-busy feature must be implemented by connecting the sleeve leads as described in Part 4 of this BSP.

‡ See Fig. 1 for location of screw switches on data set 113B-L1.

Note: Options V, W, X, and Z should be installed or removed in accordance with customer requirements, while options U and Y should be installed or removed in accordance with telephone requirements.

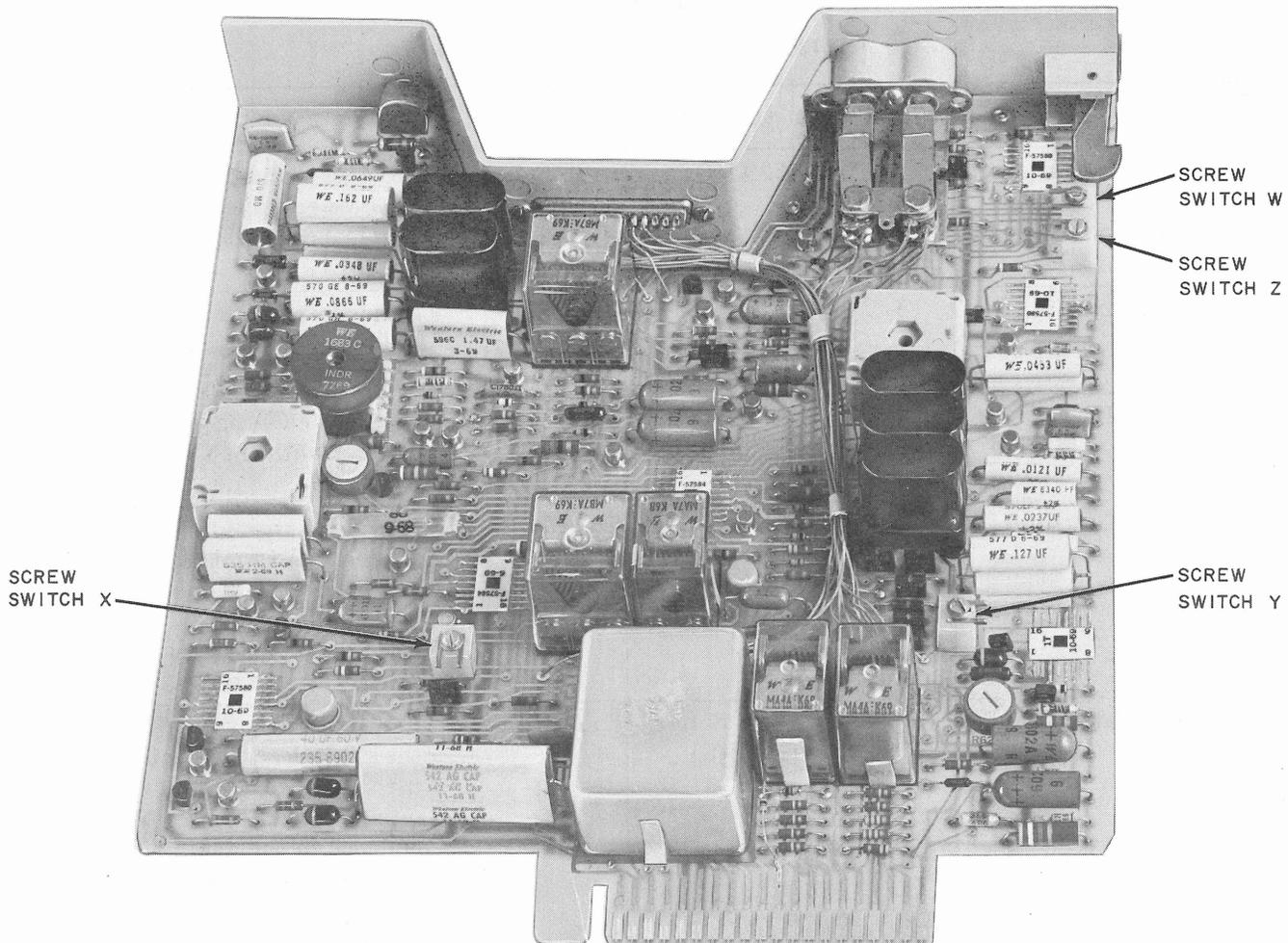


Fig. 1—Data Set 113B-L1—Location of Screw Switch Options

3. INSTALLATION PROCEDURES

A. Cabinets

3.01 Assemble and install the KS-20018-L4 or KS-20093-L1 cabinet in accordance with the section entitled Data Set—Multiple Installation Information (590-010-201).

B. 32A1 Data Mounting in a KS-20018-L4 Cabinet

Warning: *The 32A1 data mounting weighs 50 pounds when not equipped with data sets 113B-L1. Therefore, it is advised that the following procedures be performed by two people.*

3.02 Arrange the 32A1 data mounting to mount on 23-inch racks by placing the long side of the mounting bracket against the data mounting, the short side of the mounting bracket facing the front of the data mounting (as shown in Fig. 2), and proceed as follows:

- (1) Place the KS-20018-L4 cabinet on its back.
- (2) Carefully lower the 32A1 data mounting into the cabinet and align the top mounting hole of the 32A1 data mounting with the third hole from the top of the cabinet mounting bracket as shown in Fig. 3.
- (3) Using at least eight of the sixteen P-182142 (12-24 by 1/4 inch) BHM mounting screws

(supplied with the 32A1 data mounting), mount the 32A1 data mounting to the cabinet.

- (4) Tighten all mounting screws and place the cabinet in the upright position.

C. 32A1 Data Mounting in a KS-20093-L1 Cabinet

Warning: *The 32A1 data mounting weighs 50 pounds when not equipped with data sets 113B-L1. Therefore, it is advised that the following procedures be performed by two people.*

3.03 When the KS-20093-L1 cabinet is to be partially filled, the 32A1 data mountings should be installed in the front of the cabinet starting from the top and working downward until three 32A1 data mountings have been installed. Up to three additional 32A1 data mountings may be installed in the rear of the cabinet starting from the top and working downward.

Warning: *Since the mounting brackets alone hold the two data set mounting nests together, do NOT remove both mounting brackets at the same time. Instead, remove one of the mounting brackets, reinstall it*

as shown in Fig. 4, then remove the other mounting bracket and reinstall it as shown in Fig. 4.

3.04 Arrange the 32A1 data mounting to mount on 25-inch racks by placing the short side of the mounting bracket against the data mounting, the long side of the mounting bracket facing the rear of the data mounting (as shown in Fig. 4), and proceed as follows:

- (1) Align the first 32A1 data mounting to be installed in the cabinet so that the top mounting hole of the 32A1 data mounting is directly over the third hole from the top of the cabinet mounting bracket as shown in Fig. 5.
- (2) Using at least eight of the sixteen P-182142 (12-24 by 1/4 inch) BHM mounting screws (supplied with the 32A1 data mounting), mount the 32A1 data mounting to the cabinet.
- (3) Tighten all mounting screws.
- (4) Align the second 32A1 data mounting to be installed so that the top of it is two inches below the bottom of the first and repeat Steps (2) and (3).

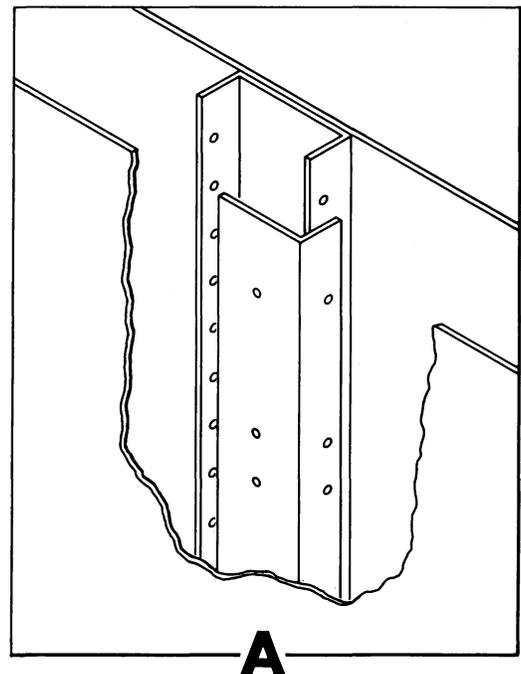
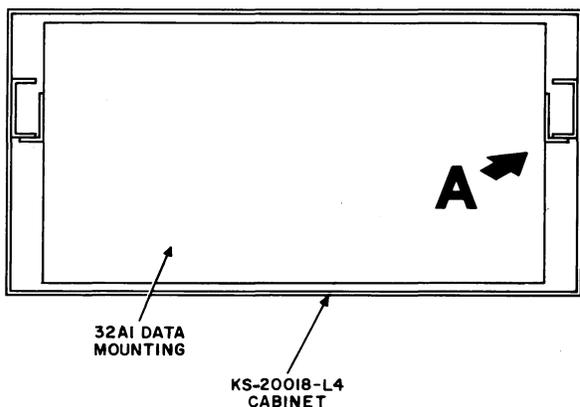


Fig. 2—Overhead View of 32A1 Data Mounting in a KS-20014-L4 Cabinet

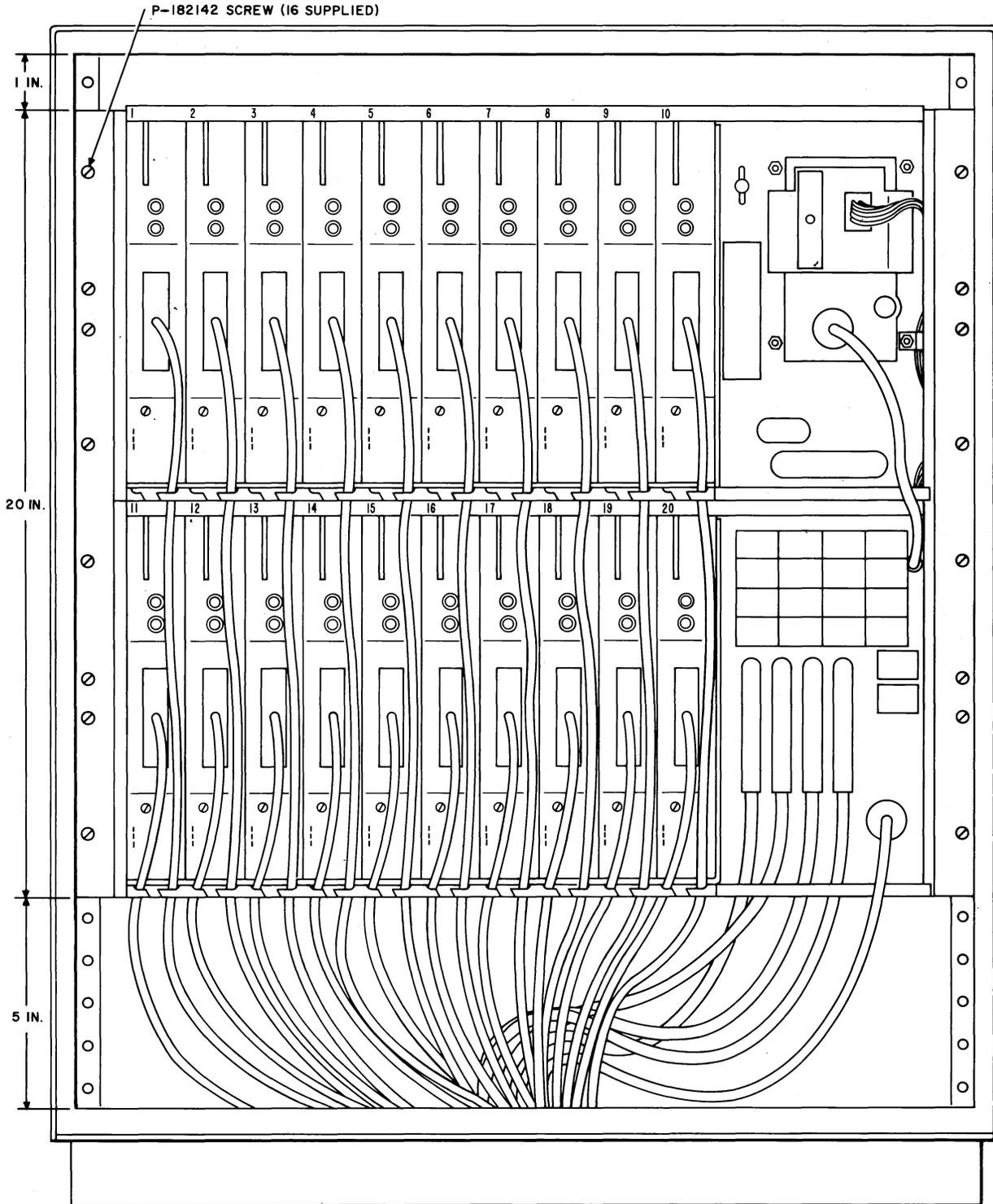


Fig. 3—113-Type Data Station Mounted in a KS-20018-L4 Cabinet

(5) Align the third 32A1 data mounting to be installed so that the top of it is two inches below the bottom of the second and repeat Steps (2) and (3).

(6) If more than three 32A1 data mountings are to be installed in the cabinet, install them in the rear of the cabinet in the same manner as those installed in the front [see Steps (1) through (5)].

D. Data Set 113B-L1



Ensure that all the proper options are installed in the data sets 113B-L1 before installing them in the 32A1 data mounting. If the data mounting is to be equipped with less than 10 data sets 113B-L1, verify that the U option is installed. When 10 or more

data sets are plugged into the data mounting, remove the U option.

3.05 Install the data sets 113B-L1 in the 32A1 data mounting as follows:

(1) Align the top and bottom edges of the data set in the slot for data set number 1 (top left hand corner of the data mounting) and push in until the catch on the handle snaps into place.

(2) Repeat Step (1) for all data sets to be installed in slots 2 through 20.

(3) Repeat Steps (1) and (2) for all other 32A1 data mountings provided.

4. CONNECTIONS

4.01 When the 113-type data station is provided with more than one 32A1 data mounting,

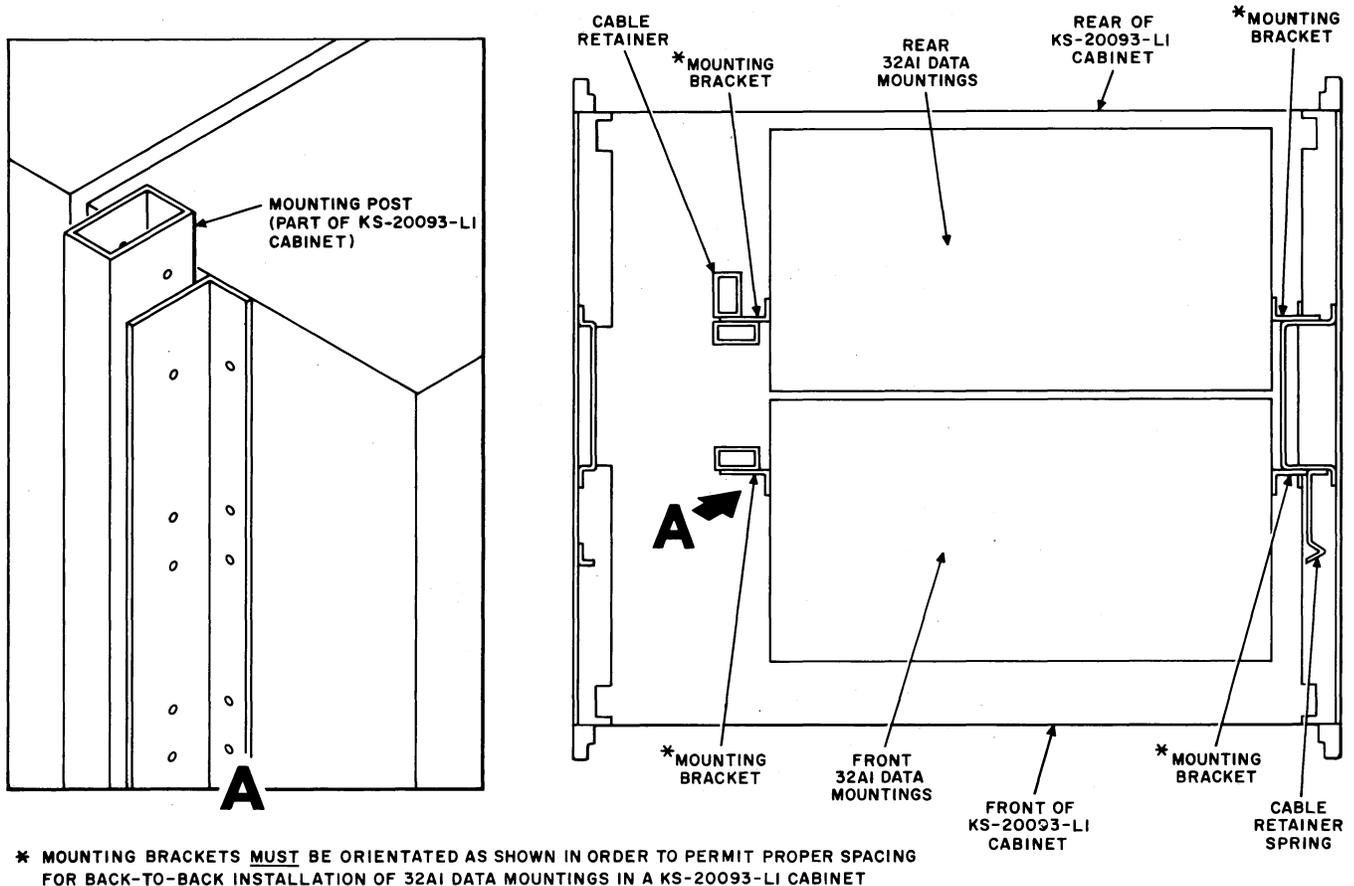


Fig. 4—Overhead View of 32A1 Data Mountings in a KS-20093-L1 Cabinet

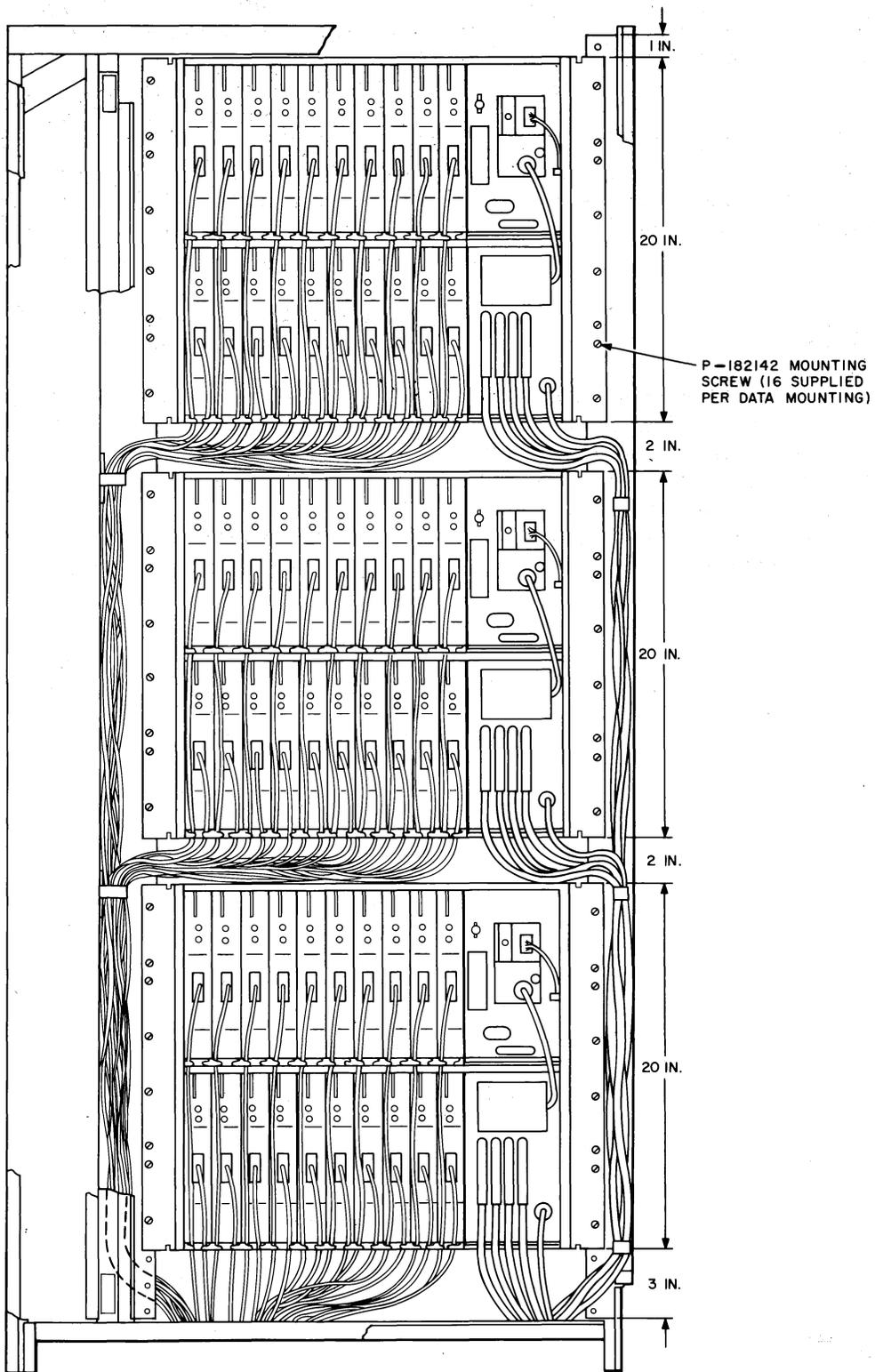


Fig. 5—113-Type Data Station Mounted in a KS-20093-L1 Cabinet

the installer must designate the 32A1 data mountings alphabetically in groups of three (ie, Unit A1, Unit B1, Unit C1, Unit A2, Unit B2, Unit C2, etc). In this case, the numerical designation will refer to the particular group of three 32A1 data mountings.

A. Power Connections

4.02 Connect the power cord assembly (J26) from the lower data mounting nest to P1 on the 41D power unit (on the upper data mounting nest) as shown in Fig. 6.

4.03 Connect the ac power cords to J25 of the 32A1 data mounting(s).

Note: All ac power cords should be connected to the same ac circuit.

4.04 Perform the data set 113B-L1 output level adjustment described in Part 5 of this section for all data sets in the data station.



The data set 113B-L1 output level adjustment MUST be completed before connecting tip and ring.

B. Tip and Ring Connections

4.05 Using one single-ended A25D connector cable, connect T and R of the transmission facilities to the 32A1 data mounting(s) as follows:

- (1) Plug the 50-pin connector end of the A25D connector cable into J23 of the 32A1 data mounting.
- (2) Connect leads 1 through 21 of the A25D connector cable to the ring side of the access lines at the connecting block.
- (3) Connect leads 26 through 46 of the A25D connector cable to the tip side of the access lines at the connecting block.

Note: Leads 21 and 46 of the A25D connector cable are the leads for the service line pair.

- (4) Insulate and store the remainder of the A25D connector cable leads.
- (5) Cross-connect T and R of the access lines in accordance with Table B.

C. Sleeve Lead Connections

4.06 At installations where the S lead of the access lines is to be used to signal the central office (CO) when the data set is busy, use one single-ended A25D connector cable and connect the S leads of the access lines to the 32A1 data mounting(s) as follows:



If Y option (T/R Make Busy) is installed in the data sets 113B-L1, the S leads are not to be connected and the following steps may be omitted. In this case, do not remove the dust cover from J24 of the 32A1 data mounting.

- (1) Plug the 50-pin connector end of the A25D connector cable into J24 of the 32A1 data mounting.
- (2) Connect leads 1 through 20 of the A25D connector cable to the access lines at the connecting block.
- (3) Insulate and store the remainder of the A25D connector cable leads.
- (4) Cross-connect the S leads of the access lines in accordance with Table C.

D. Service Line Connections

4.07 Connect the service line as follows:

- (1) At the connecting block, strap lead J23-21 of the A units (ie, Unit A1, A2, etc) to lead J23-21 of their respective B and C Units (ie, Units B1 and C1, Units B2 and C2, etc).
- (2) At the connecting block, strap lead J23-46 of the A Units (ie, Unit A1, A2, etc) to lead J23-46 of their respective B and C Units (ie, Units B1 and C1, Units B2 and C2, etc).

E. Optional Equipment Connections

4.08 At installations where a 500-type telephone set is used to provide voice communications, connect the telephone set to the 32A1 data mounting as follows:

Note: If more than one service line is used, the first telephone set will connect to whichever 32A1 data mounting (Units A1, B1, or C1) is

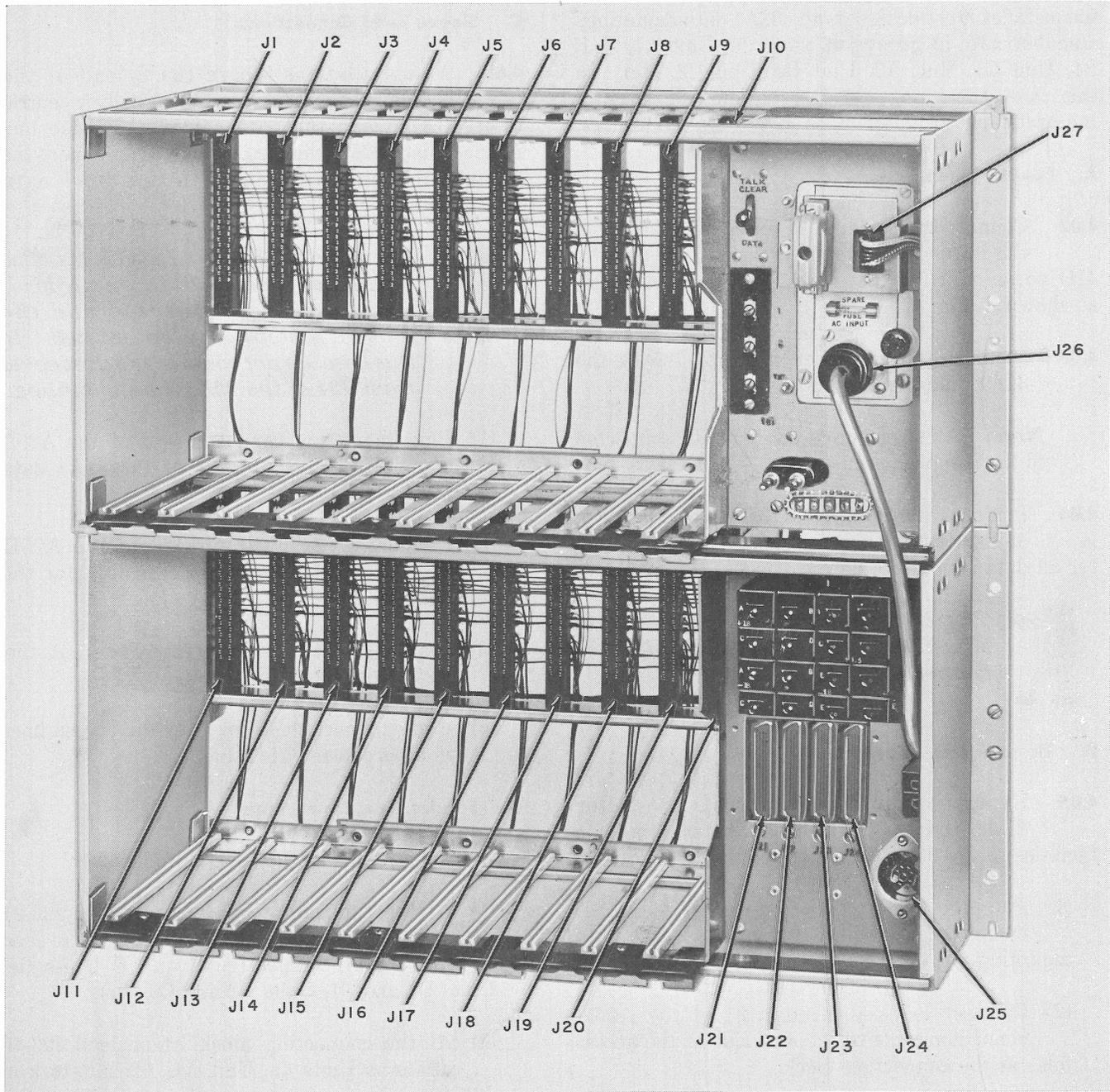


Fig. 6—32A1 Data Mounting—Identification of Connectors

TABLE B
CROSS-CONNECTIONS FOR TIP AND RING LEADS

ACCESS LINES FOR DATA SET IN SLOT	CONNECT TIP TO	CONNECT RING TO
1	J23-26	J23-1
2	27	2
3	28	3
4	29	4
5	30	5
6	31	6
7	32	7
8	33	8
9	34	9
10	35	10
11	36	11
12	37	12
13	38	13
14	39	14
15	40	15
16	41	16
17	42	17
18	43	18
19	44	19
20	45	20
* Service Line	46	21

* The service line pair from every 32A1 data mounting must be connected to the connecting block. However, only the service line from the 32A1 data mountings designated as Unit A1, A2, etc, should be cross-connected to the access lines.

TABLE C
CROSS-CONNECTIONS FOR SLEEVE LEADS

ACCESS LINE FOR DATA SET IN SLOT	CONNECT SLEEVE TO J24
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20

most convenient. The second telephone set will connect to whichever 32A1 data mounting (Units A2, B2, or C2) is most convenient, etc.

500DR (Rotary Dial) or 2500D (TOUCH-TONE Dial) Telephone Set

- (1) Connect the green (G), yellow (Y), and red (R) leads of the telephone set cord to TB1 on the 32A1 data mounting in accordance with Fig. 7.

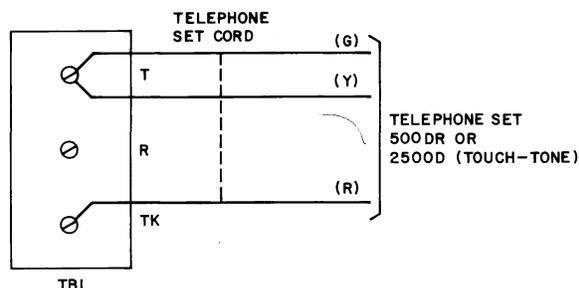


Fig. 7—Connection Arrangement for Telephone Set 500DR (Rotary Dial) or 2500D (TOUCH-TONE Dial)

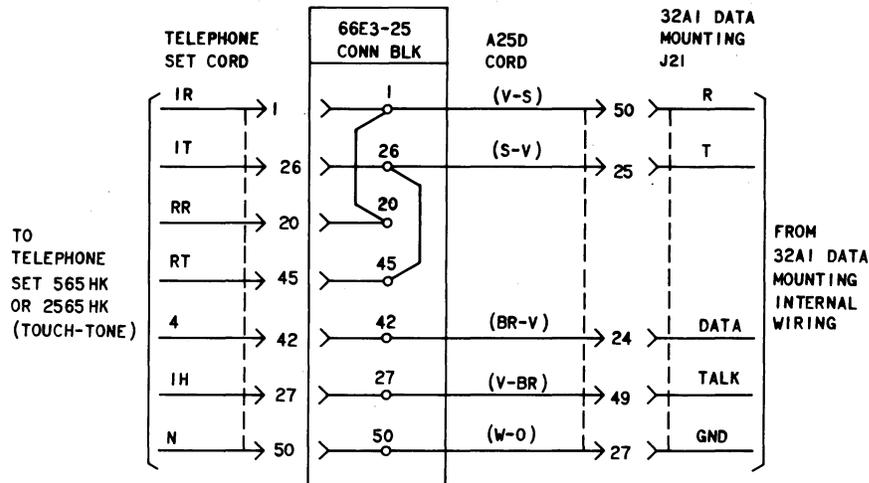
Note: The cord provided with either of these telephone sets must be at least nine feet in length.

565HK (Rotary Dial) or 2565HK (TOUCH-TONE Dial) Key Telephone Set

- (1) Plug the 50-pin connector end of the single-ended A25D connector cable into J21 on the 32A1 data mounting.
- (2) Using a 66E3-25 connecting block, connect the telephone set in accordance with Fig. 8.
- (3) Label the *hold* button DATA, and the adjacent button TALK/CLEAR.

Data Auxiliary Set 804T-Type

4.09 At installations where a DAS 804T-type is provided, using two, four, or six double-ended A25D connector cables, connect each DAS 804T-type to Units A1, B1, and C1, Units A2, B2, and C2, etc, in accordance with Figure 9.



NOTE:
THE O-BK SPADE-TIP LEAD ON TERMINAL
"N" (KEY TERMINAL STRIP IN TELEPHONE
SET) MUST BE RELOCATED TO TERMINAL 4.

Fig. 8—Connection Arrangement for Telephone Set 565HK (Rotary Dial) or 2565HK (TOUCH-TONE Dial)

◆**Note:** These interconnecting cables should not exceed 200 feet in length.◆

F. Customer Data Terminal Connections◆

4.10 Using the customer-provided interface connector cables, connect the terminal equipment as follows:



◆**If the customer interface cables are too large to allow the covers of the cabinet to close properly, extension cables (M25A-61) which are smaller and sufficiently flexible may be ordered separately.**◆

- (1) Connect computer port number 1 (or teletypewriter number 1, etc.) to the number 1 data set interface connector in Unit A1.
- (2) Route interface cable as shown in Fig. 2 (KS-20018-L4 cabinet) or Fig. 3 (KS-20093-L1 cabinet).
- (3) Repeat Steps (1) and (2) for all data sets in Unit A1.
- (4) Repeat Steps (1) through (3) for Unit B1, Unit C1, Unit A2, etc.



Ensure that all incoming telephone lines are properly terminated, all connectors are fully seated, and the catch on the handle of the data set 113B-L1 is snapped into place.

Perform the installation tests as described in the section entitled 113-Type Data Station—Test Procedures (591-814-500).

5. TRANSMISSION OUTPUT LEVEL ADJUSTMENT

Note 1: ◆This adjustment must be performed prior to connecting the tip and ring pairs of the incoming telephone lines.◆

Note 2: A TTS-28 Transmission Measuring Set (TMS), or equivalent, is needed for the following adjustment.

5.01 If the line loss of each line used by the 113-type data station is known and the data set that connects to line 1, line 2, etc, is known, adjust the data set transmitted output level as follows:

- (1) Connect the TM connector (Fig. 10) to the interface connector on the data set in place of the computer interface connector.

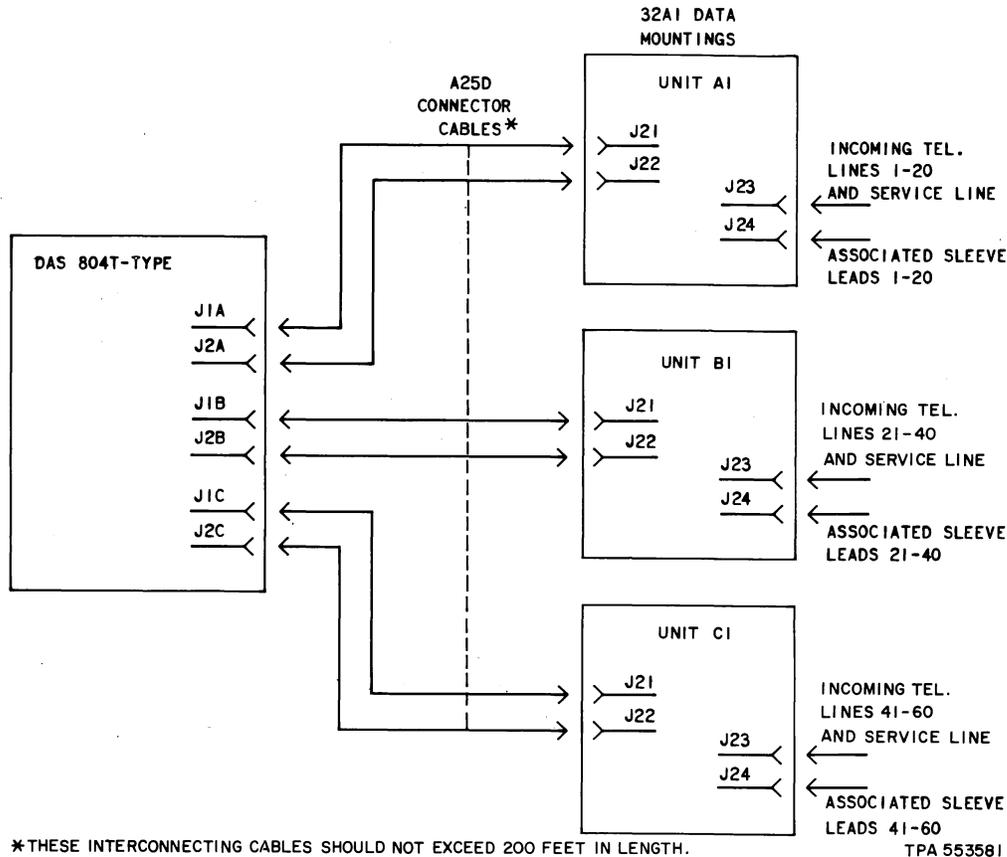


Fig. 9—DAS 804T-Type Connection Arrangement

- (2) Connect the service line twin plug (grooves up) to the data set.
- (3) Set FUNCTION switch of the TTS-28 TMS to the 900Ω TERM 0 position and connect the + and - leads of the TTS-28 TMS across T and R on TB1 of the 32A1 data mounting.
- (4) At the 32A1 data mounting—
Operate the TALK-CLEAR/DATA key to the DATA position.
- (5) Using Table D, under the LINE LOSS column, locate the line loss and adjust R29 (accessible at the faceplate of the data set) until the TTS-28 TMS meter indicates the corresponding dBm level listed in the dBm column.

Note 1: Twenty-two seconds after the TALK-CLEAR/DATA key has been operated to the DATA position, the data set will

disconnect. If the desired output level has not been reached at this time, operate the TALK-CLEAR/DATA key to the DATA position and repeat Step (5).

Note 2: The dBm reference in Table D is in respect to 1 mW into a 900-ohm load. The equivalent RMS voltage is listed, should an ac voltmeter be used for this measurement. In this case a 900-ohm resistor must be connected across T and R on TB1 to properly terminate the data set.

- (6) Repeat Steps (1) through (5) for all data sets in the 113-type data station.



When more than one 32A1 data mounting is provided, ensure that the service line is connected to only one data set 113B-L1 at a time.

TABLE D
◆ TRANSMIT LEVEL ◆

LINE LOSS	REQUIRED LEVEL (DBM) AT TIP AND RING	EQUIVALENT RMS VOLTAGE AT TIP AND RING (IN VOLTS)
12 to 14 dB	0	0.95
10 to 12 dB	-2	0.76
8 to 10 dB	-4	0.60
6 to 8 dB	-6	0.48
4 to 6 dB	-8	0.38
2 to 4 dB	-10	0.30
0 to 2 dB	-12	0.24

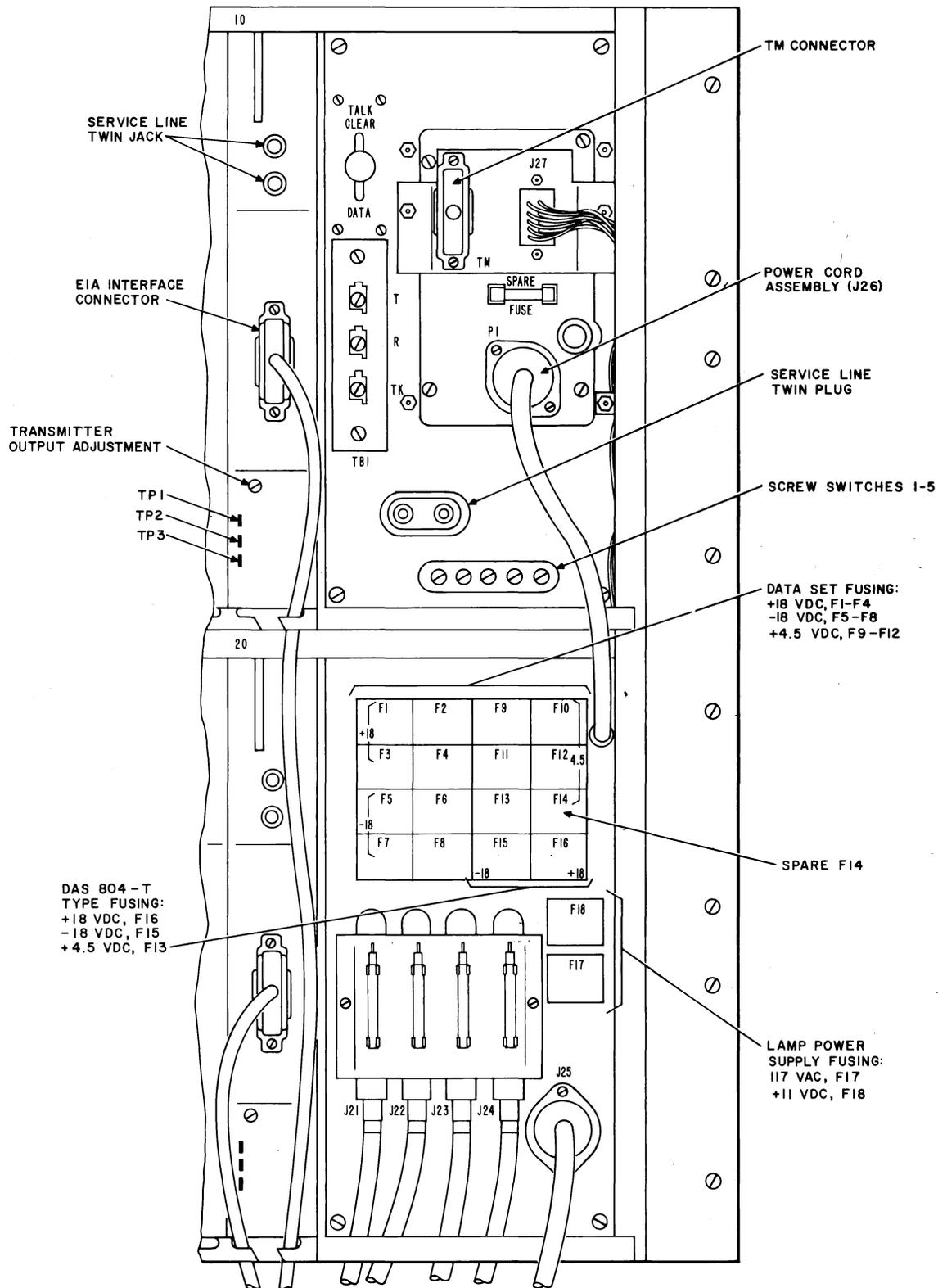


Fig. 10—32A1 Data Mounting—Enlarged View of Right Side