

WIDEBAND STATION USING DATA SET 303-TYPE ECHO-FOX UHF RADIO SYSTEM INSTALLATION AND CONNECTIONS

1. GENERAL

1.01 This section contains installation and connection information on the Echo-Fox wideband data station, which consists of the following major components:

- Data Auxiliary Set (DAS) 824B1 or B3 data recognizer
- DAS 824B2 or B4 data recognizer
- Data Set (DS) 303H7 data transmitter-receiver
- DAS 809B1 vestigial sideband (VSB) modem
- DAS 806B7 monitor and test unit.

1.02 For general information concerning installation and connection of data sets and data auxiliary sets, refer to the section entitled Data Sets—General Installation and Connection Information (590-010-200), and SD-1D099-01.

1.03 No special tools are required for installing and connecting the wideband data station.

1.04 Information pertaining to the radio station and other portions of the Echo-Fox System is not covered in this section.

2. INSTALLATION

2.01 The Echo-Fox wideband data station may be either rack-mounted or cabinet-mounted. For cabinet mounting, a KS-20018-L4 cabinet is used. For rack mounting, either a 19-inch or 23-inch relay rack may be used. Hardware required for mounting the data station components is listed in Table A.

Note: Visually check all units for physical damage before proceeding with installation.

TABLE A — MOUNTING HARDWARE FOR ECHO-FOX WIDEBAND DATA STATION

TYPE OF MOUNTING	MOUNTING BRACKETS REQUIRED									
	DAS 824B-TYPE		DS 303H7		DAS 809B1		DAS 806B7		TWO 824B-TYPE SETS OR ONE 824B-TYPE AND ONE 806B7*	
	CODE	NO. REQD	CODE	NO. REQD	CODE	NO. REQD	CODE	NO. REQD	CODE	NO. REQD
No. 5 Cross-bar-type frame (23-inch mounting plates)	87B	1	87A	1	87A	1	87B	1	87D	1
KS-20018-L3 cabinet (23-inch mounting plates)	87B	1	87A	1	87A	1	87B	1	87D	1
Bulb angle-type frame (19-inch mounting plates)	87K	1	87J	1	87J	1	87K	1	—	—
Bulb angle-type frame (23-inch mounting plates)	87F	1	87E	1	87E	1	87F	1	87H	1

* Units mounted adjacent to each other in same horizontal mounting space.

2.02 Mount a 590A (23-inch) or 591A (19-inch) power distribution panel in the bottom of the cabinet or on the relay rack. *Do not connect the KS-14532-L16 power cable, which is furnished with the panel, to 117 Vac at this time.*

Note: The 303-type Data Station may be ordered completely factory-wired as a KS-20018-L4 cabinet plus the required data set and data auxiliary sets.

2.03 Before the data set and data auxiliary sets are installed, the required options should be incorporated. These options are summarized in

Table B, and are applied as outlined in 2.04 through 2.08.

Data Auxiliary Set 824B1

2.04 Remove back cover of DAS 824B1 (Fig. 1) and lay cover and screws aside. Apply option T by strapping between terminals as shown in Table C.

Data Auxiliary Set 824B3

2.05 Remove back cover of DAS 824B3 (Fig. 1). Apply option T by strapping terminals as shown in Table C.

TABLE B
SUMMARY OF OPTIONS REQUIRED
FOR COMPONENTS OF ECHO-FOX WIDEBAND DATA STATION

DS/DAS	OPTIONS REQUIRED
824B1 or B3	T — Provides contact closure to switch radio transmitter to wideband mode
824B2 or B4	Q — Provides termination of wideband data line in absence of 18.75 kb/sec data
303H7	J — Provides squelch feature Q — Free-running scrambler R — Supplies permanent send request to VSB ZA — CP AR134
806B7	G — Connects VB circuit through DAS 806B7 V — 4-wire voiceband circuit Y — 10-dB wideband transmit line pad Z — Supplies power for remote test when DAS 804A-type is not provided
809B1	None

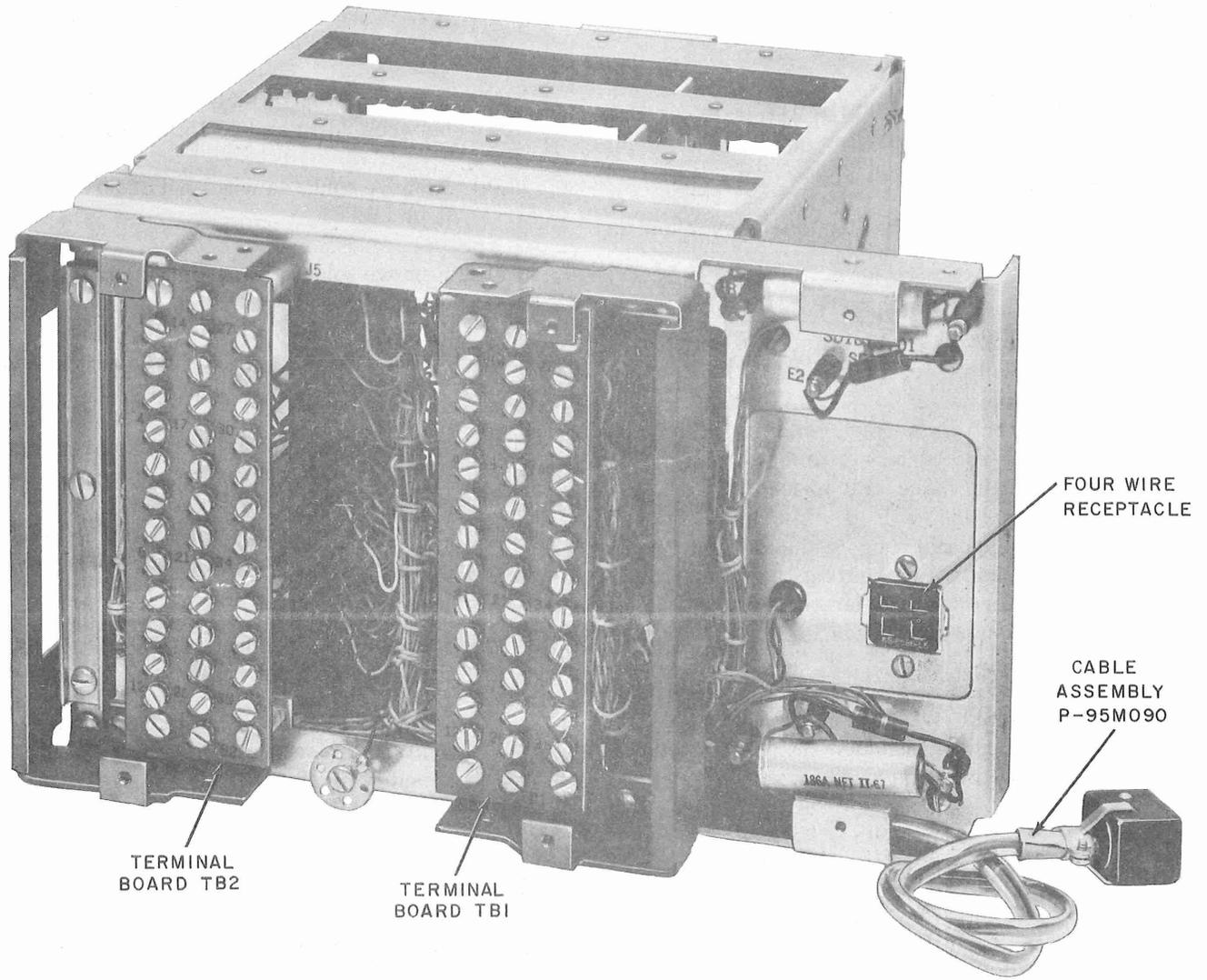


Fig. 1—Data Auxiliary Set 824B1—Rear View (Covers Removed)

TABLE C
DAS 824B1 AND B3 OPTION STRAPPING
(OPTION T)

CONNECT STRAP	
FROM	TO
TB1-30	TB1-31
TB1-32	TB1-33
TB1-35	TB1-36
TB1-37	TB1-38

Data Auxiliary Sets 824B2 and 824B4

2.06 DAS 824B2 (Fig. 2) must be internally modified to provide for option Q strapping, as follows:

- (a) Remove screws holding back cover and lay cover and screws aside.
- (b) Remove four screws holding TB1, being careful not to lose stand-offs supporting TB1. Carefully move TB1 aside.
- (c) Remove four screws holding TB2, being careful not to lose stand-offs supporting TB2. Carefully move TB2 aside.
- (d) Add a 26-gauge solid conductor wire between TB2-24 and J3-13, routing the wire alongside the cable harness. Solder the wire in place at TB2-24 and wire-wrap at J3-13.
- (e) Add a 26-gauge solid conductor wire between TB2-25 and J3-15, routing the wire alongside the cable harness. Solder the wire in place at TB2-25 and wire-wrap at J3-15.

- (f) Add a 135-ohm KS-16312-L3A resistor between J3-8 and J3-14; solder in place.
- (g) Add a 135-ohm KS-16312-L3A resistor between J3-10 and J3-15; solder in place.
- (h) Remove soldered wire on TB2-30 and resolder it to TB2-33.
- (i) Remove soldered wire on TB2-31 and resolder it to TB2-34.
- (j) Add a 26-gauge solid conductor wire from TB1-33 to TB2-26; solder in place.
- (k) Add a 26-gauge solid conductor wire from TB1-37 to TB2-23; solder in place.
- (l) Carefully replace terminal strips TB1 and TB2, using the screws and stand-offs previously removed.
- (m) Stamp above nameplate, "MODIFIED FOR OPTION Q."

Note: The 824B4, which has the above modification incorporated, may be used instead of modifying the 824B2.

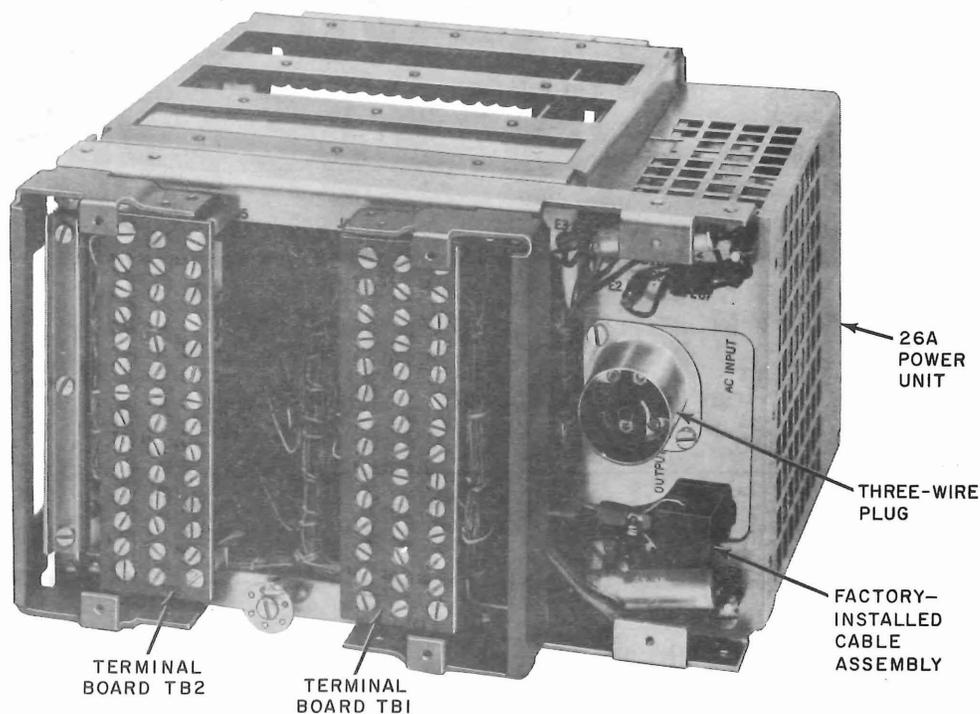


Fig. 2—Data Auxiliary Set 824B2—Rear View (Covers Removed)

2.07 Incorporate option Q in DAS 824B2 or 824B4 by strapping as shown in Table D and Fig. 3.

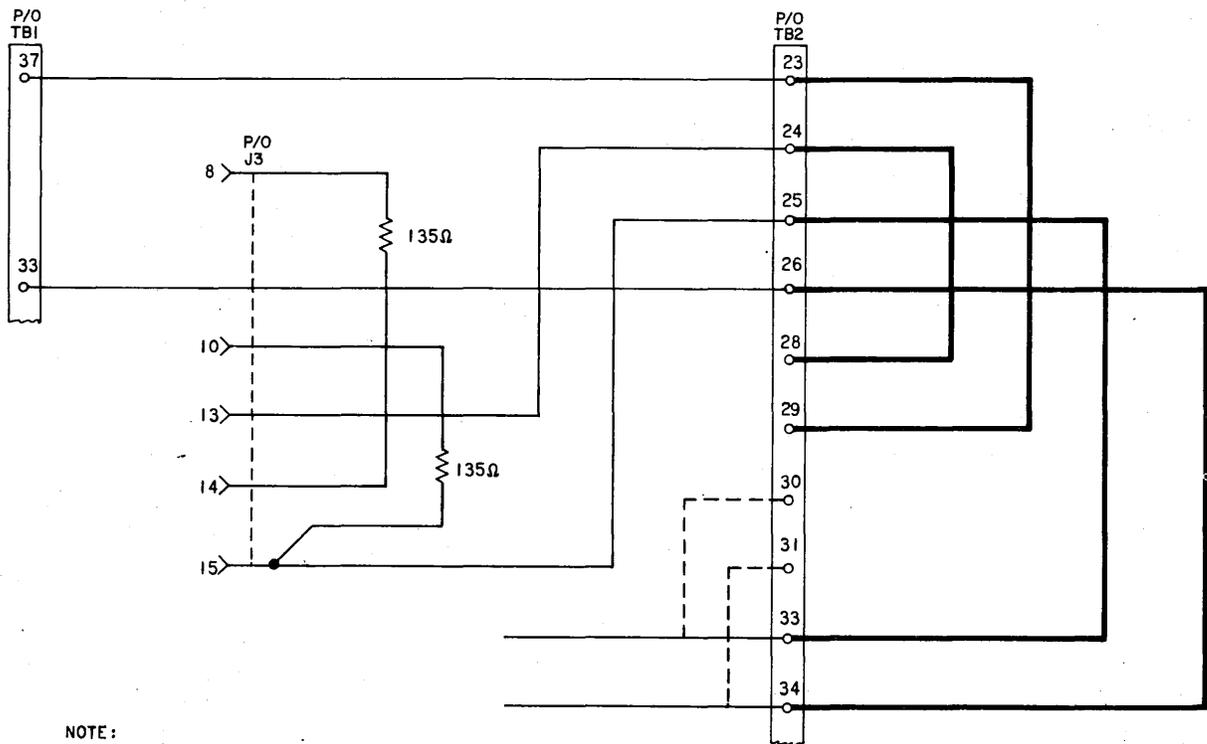
Data Set 303H7

2.08 Remove coverplates on back of Data Set 303H7 (Fig. 4) and lay covers and screws aside. Incorporate options by strapping as shown in Tables E and F.

Note: Be sure that data set is a 303H7 (factory option ZA—AR134 circuit pack) and not a 303H7A.

TABLE D
DAS 824B2 AND B4 OPTION STRAPPING
(OPTION Q)

CONNECT STRAP	
FROM	TO
TB2-23	TB2-29
TB2-24	TB2-28
TB2-25	TB2-33
TB2-26	TB2-34



NOTE:
ADDITIONS SHOWN BY LIGHT LINES;
OPTION STRAPS SHOWN BY HEAVY LINES.
DASHED LINES SHOW CONNECTIONS PRIOR
TO MODIFICATION.

Fig. 3—Modification and Option Strapping for Data Auxiliary Set 824B2

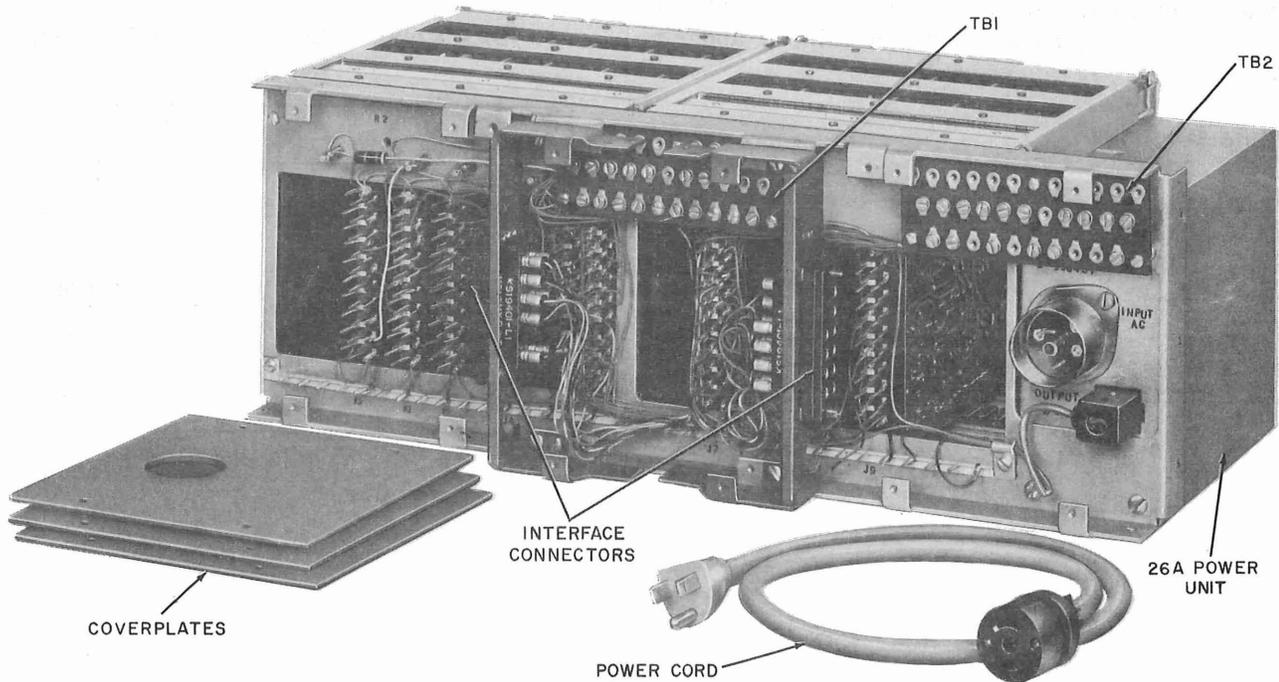


Fig. 4—Data Set 303H7—Rear View

TABLE E

DS 303H7 OPTION STRAPPING*

WIRING OPTION	CONNECT STRAP	
	FROM	TO
J	TB1-4	TB1-13
Q	TB1-17	TB1-19
R	TB1-15	TB1-16
Z	TB2-10	TB2-11
ZA	Use CP AR134 Scrambler-descrambler	

* These options, except ZA, are terminal board strapping arrangements. Option ZA requires CP AR134 (A&M) and *not* a 16A1 Data Unit.

TABLE F

DS 303H7 CIRCUIT PACK OPTION STRAPPING

CIRCUIT PACK	CONNECT STRAP	
	FROM	TO
AR307	Term. 1	Term. 2
AR130	Term. 7	Term. 8
	Term. 10	Term. 11
	Term. 1	Term. 2
AR131	Term. 4	Term. 5
	Term. 1	Term. 2

DAS 806B7

2.09 Remove coverplate on back of DAS 806B7 (Fig. 5) and lay cover and screws aside. Remove 10A2 Data Unit to gain access to TB1 on data unit. Incorporate options by strapping as shown in Table G. Replace 10A2 Data Unit.

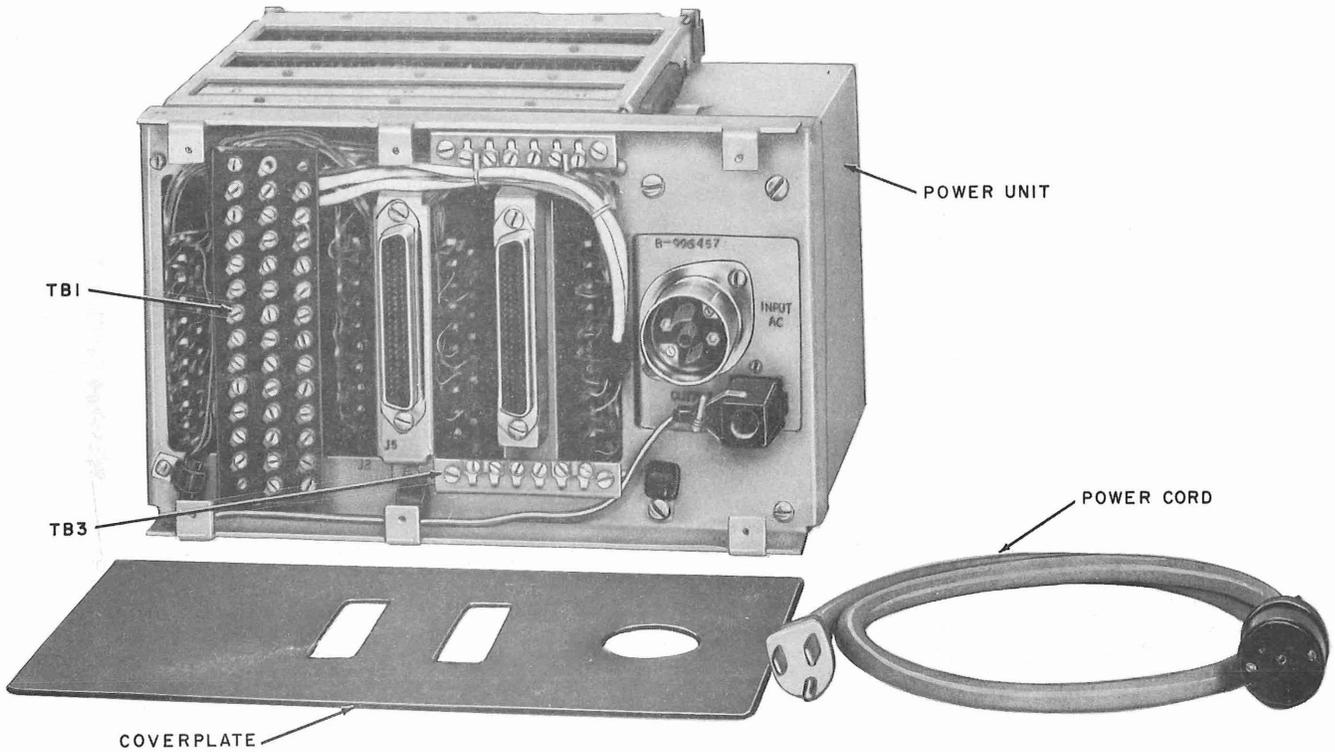


Fig. 5—Data Auxiliary Set 806B7—Rear View

TABLE G—DAS 806B7 OPTION STRAPPING

WIRING OPTION	CONNECT STRAP	
	FROM	TO
G	Term. 6	Term. 7
	Term. 8	Term. 9
V*	<i>On CP CS3</i>	
	TB1-1	TB1-2
	TB1-4	TB1-5
	TB1-9	TB1-10
Y†	TB1-12	TB1-13
	<i>On 806B7</i>	
Z*	TB1-31	TB1-32
	Remove pad, reverse and reinstall.	
Z*	<i>On 806B7</i>	
	TB1-19	TB1-20

* Factory-installed.

† Y option pad is located inside 10A2 Data Unit. The desired pad value, inscribed on board, should face color printed on socket.

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2.10 Remove coverplate on back of DAS 809B1 (Fig. 6) to gain access to connector blocks. This set requires no option connections for Echo-Fox application.

2.11 Fasten a DAS 824B1 or B3 to DAS 806B7, using the two mounting bars (P46M668) and eight screws supplied with the 87-type mounting brackets, as shown in Fig. 7. The two units may

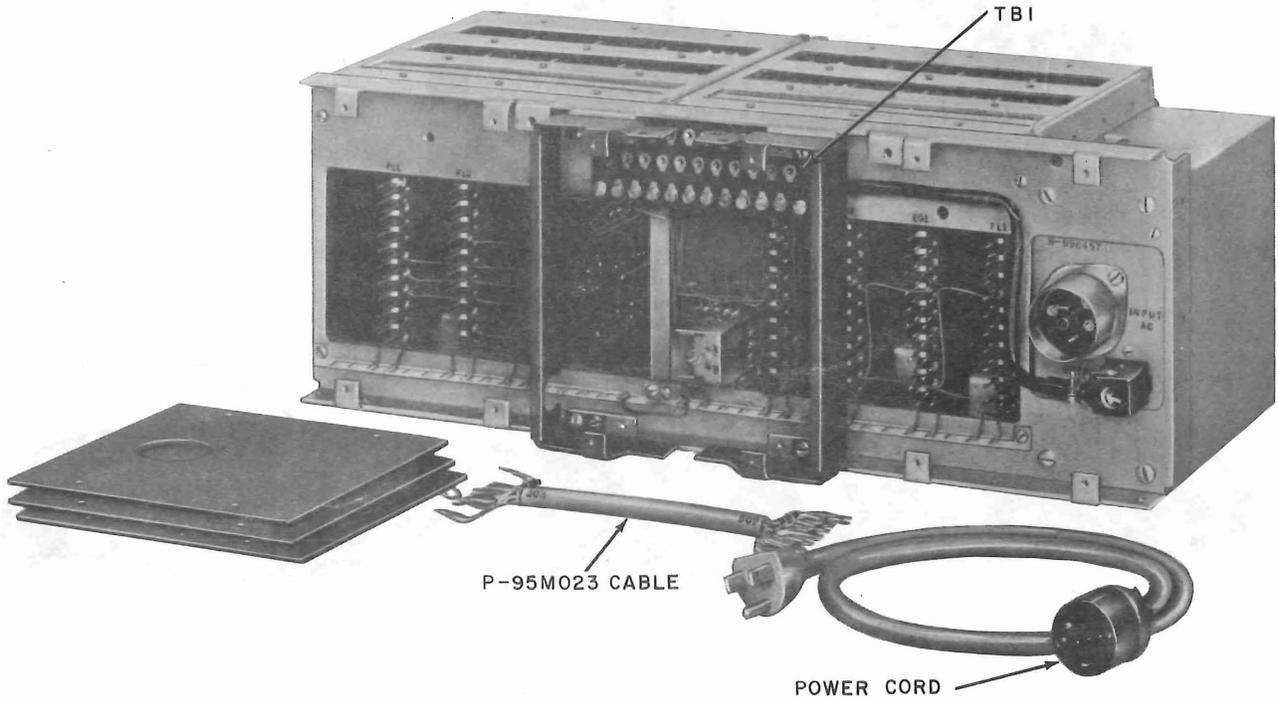


Fig. 6—Data Auxiliary Set 809B1—Rear View

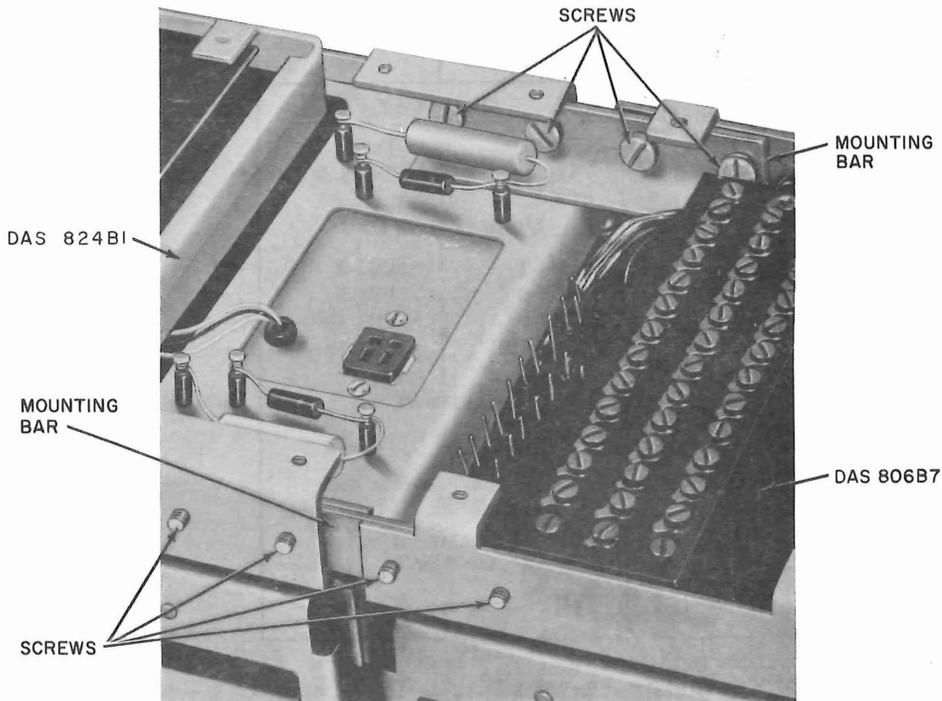


Fig. 7—Assembly of Data Auxiliary Set 824B1 and Data Auxiliary Set 806B7

now be mounted side by side in a cabinet or relay rack, using appropriate brackets as listed in Table A. Mount DS 303H7, DAS 809B1, and a modified DAS 824B2 or a DAS 824B4 in the cabinet or relay rack in a similar manner, using the brackets listed in Table A. A cabinet-mounted Echo-Fox wideband data station is shown in Fig. 8.

3. CONNECTIONS

3.01 Make interconnections between the data set, the data auxiliary sets, and the power units to the power distribution panel as shown in Fig. 9 (using DAS 824B1) or Fig. 10 (using DAS 824B3).

Caution: *Conductors in the 761A cable are easily broken. Be careful to avoid breaking conductors when making connections.*

3.02 If a 1044A connector block is used, a P-95M072 cable will also be required; these must be ordered separately. The P-95M071 cable used between DAS 824B1 or B3 and DS 303H7 must also be ordered separately.

3.03 After interconnections have been made within the data station, make connections to the radio station, the wideband loop repeater, and the voice lines as shown in Fig. 9 or 10.

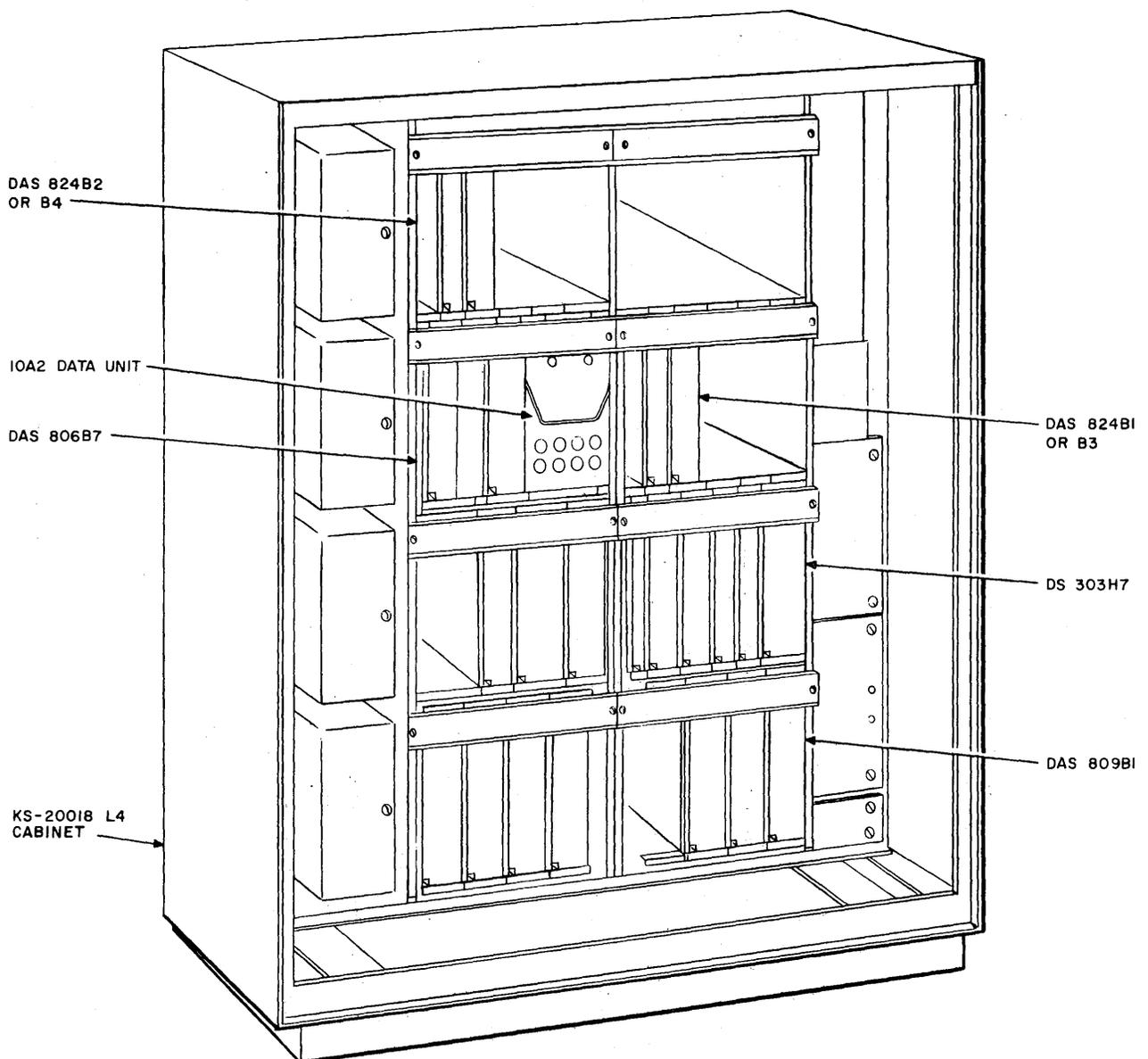


Fig. 8—Mounting Arrangement for Echo-Fox Data Station Using Two Data Auxiliary Sets 824-Type

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3.04 Replace all covers that were removed for making connections.

3.05 In cabinet- or rack-mounted stations, after making connections described in 3.02 and 3.03, connect the KS-14532-L16 power cable from the power distribution panel to a 3-wire grounded 117-volt 60-Hz 15-ampere power source that is not under control of a switch.

4. REFERENCES

4.01 The following Bell System Practices contain further information which may be helpful in installing the Echo-Fox Wideband Data Station:

SECTION	TITLE
593-800-102	Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Description
593-800-302	Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Maintenance
593-800-502	Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Test Procedures
590-010-200	Data Sets—General Installation and Connection Information
593-800-100	Wideband Data Station Using Data Set 303-Type—Description and Operation
593-800-200	Wideband Data Station Using Data Set 303-Type—Installation and Connections
590-010-201	Data Sets—Multiple Installation Information (Cabinets)

4.02 The following schematic drawings (SDs) and other listed documents contain additional information on 303-type Data Stations and components:

NUMBER	TITLE
SD-1D067-01	Data Systems Station—Data Auxiliary Set 809B-Type Vestigial Sideband Circuit
SD-1D097-01	Data Systems Station—Data Auxiliary Set 806B-Type—Line, Test, and Auxiliary Circuits
SD-1D098-01	Data Systems Station—10A-Type Data Unit
SD-1D099-01	Data Systems Station—Data Station for Wideband Service Using 303-Type Data Set—Application Schematic
SD-1D100-01	Data Systems Station—Data Set 303-Type Transmitter-Receiver Circuit
SD-1D134-01	Data Systems Station—Data Auxiliary Set 824-Type
FA 25177-SD (LL)	Addition of Q Option to Data Auxiliary Set 824B-Type
FA 25173-SD (LL)	Data Station For Wideband Service Using Data Set 303H7 For Echo Fox
FA 40843-SD (LL)	Radio Systems—400 MHz FM Base Station (Supplementary Radio Bay)

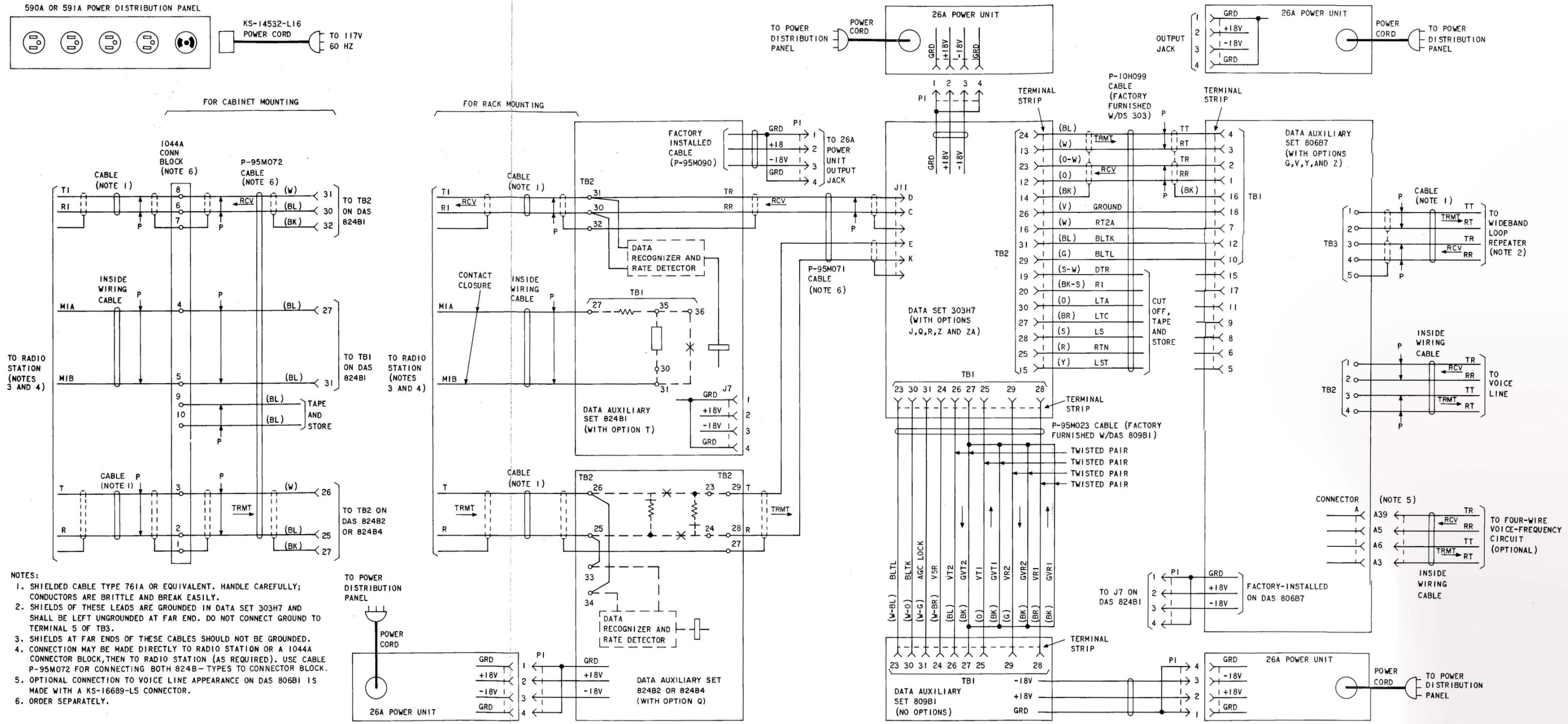


Fig. 9—Echo-Fox Wideband Data Station Using Data Auxiliary Set 824B1—Connection Diagram

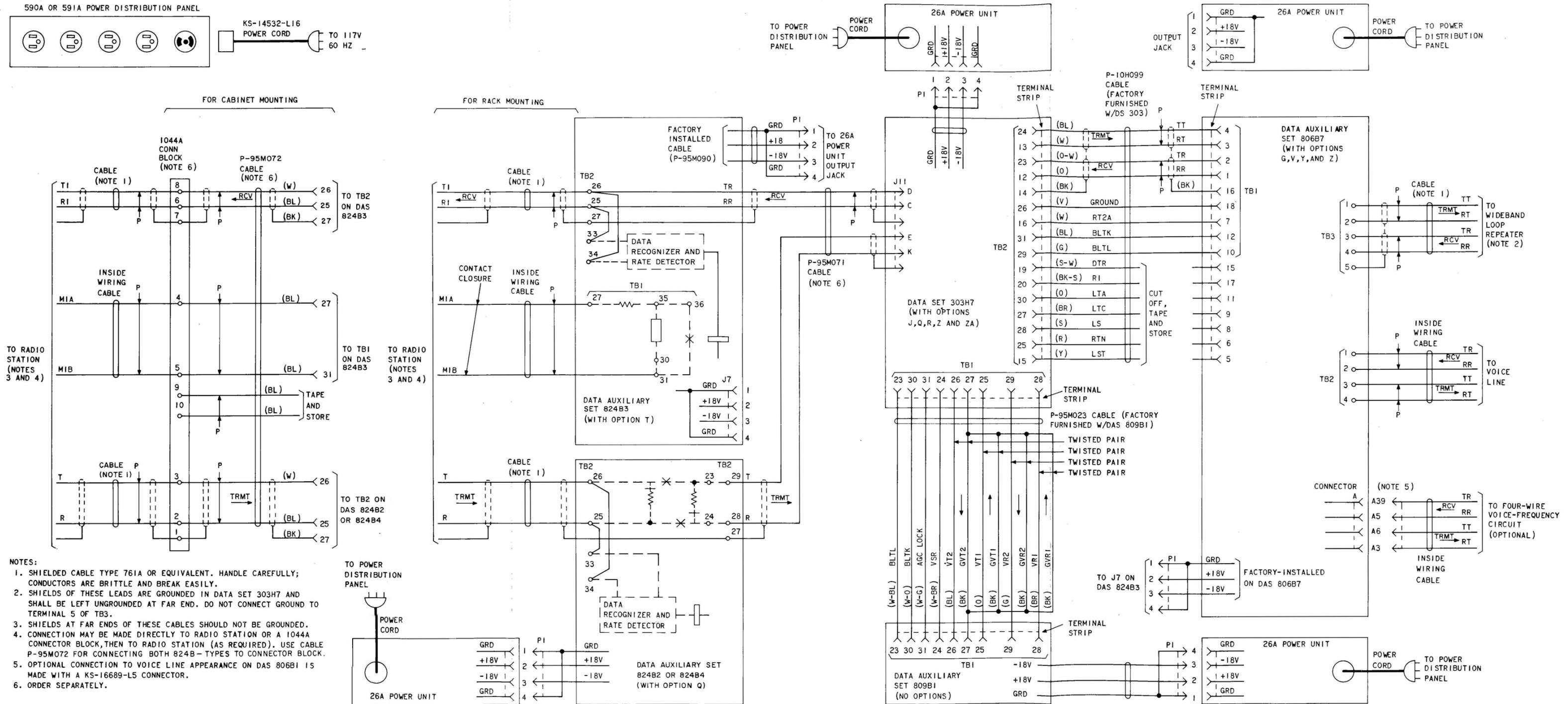


Fig. 10—Echo-Fox Wideband Data Station Using Data Auxiliary Set 824B3—Connection Diagram