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## 1. MAIN CHASSIS

The RF-590 chassis is a rigid one piece sand casting. The main frame includes siderails, assembly mounting holes, and compartments used to mount and house most printed wiring board assemblies.

### 1.1 Top Side of Main Chassis

The top side of the chassis is shown in figure 1 and contains compartments that house the following assemblies.

- First Converter Assembly A2
- Second Converter Assembly A3
- IF Filter Assembly A4
- IF/Audio Assembly A5A1 with AGC Assembly A5A2
- Power Supply Assembly A15
- ISB IF/Audio Assembly A18
- Frequency Standard Assembly A21
- Speaker Amplifier Assembly A23

Also, Remote Control Assembly A17 sets over IF/Audio Assembly A5 in a hinged pan that pivots out for troubleshooting.

### 1.2 Underside of Main Chassis

The underside of the chassis is shown in figure 2 and contains compartments that house the following assemblies.

- Input Filter Assembly A1
- PLL I Assembly A6
- PLL II Assembly A7
- PLL III Assembly A8
- PLL IV Assembly A9

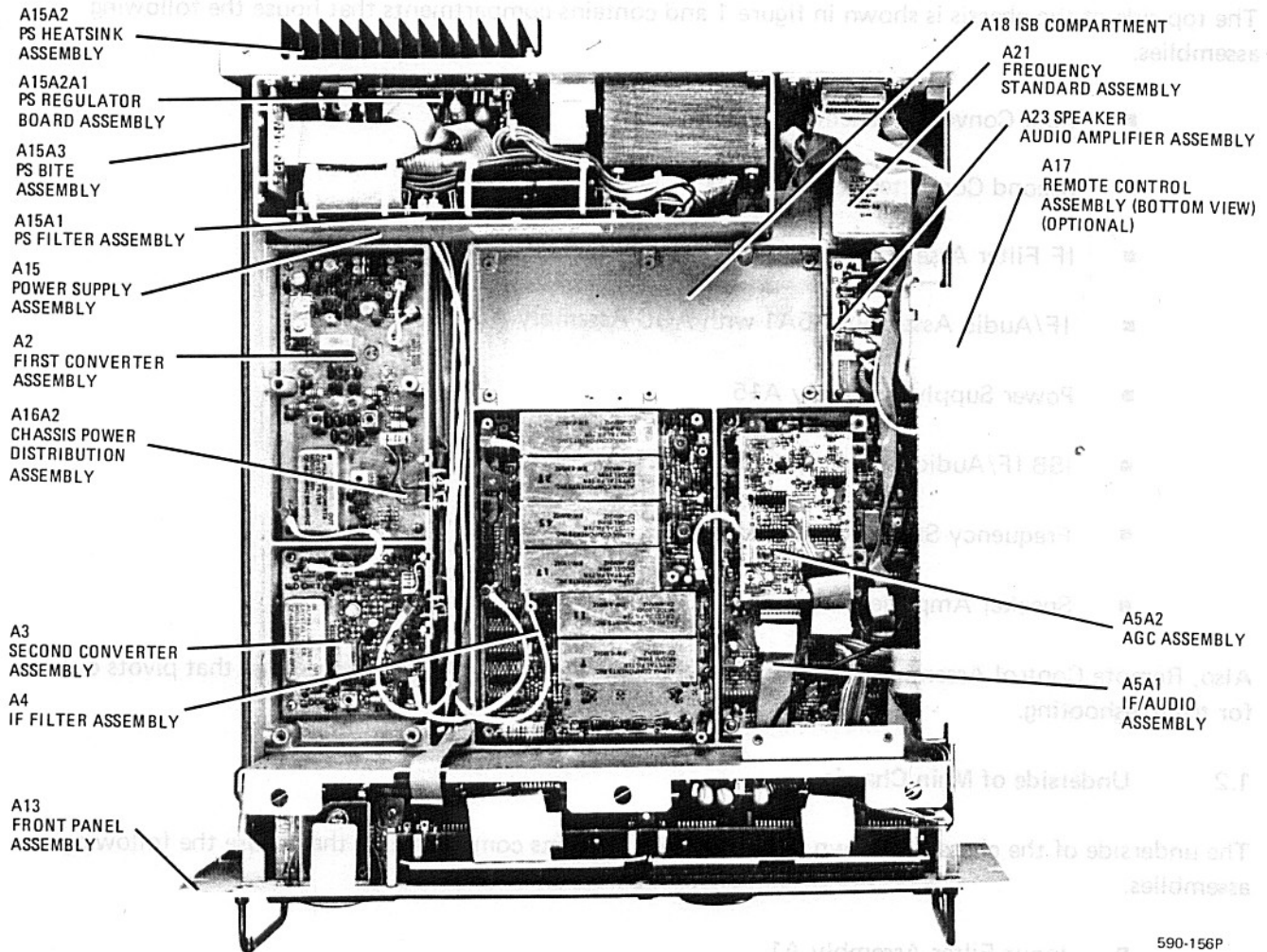


Figure 1. RF-590 Top View Without Covers

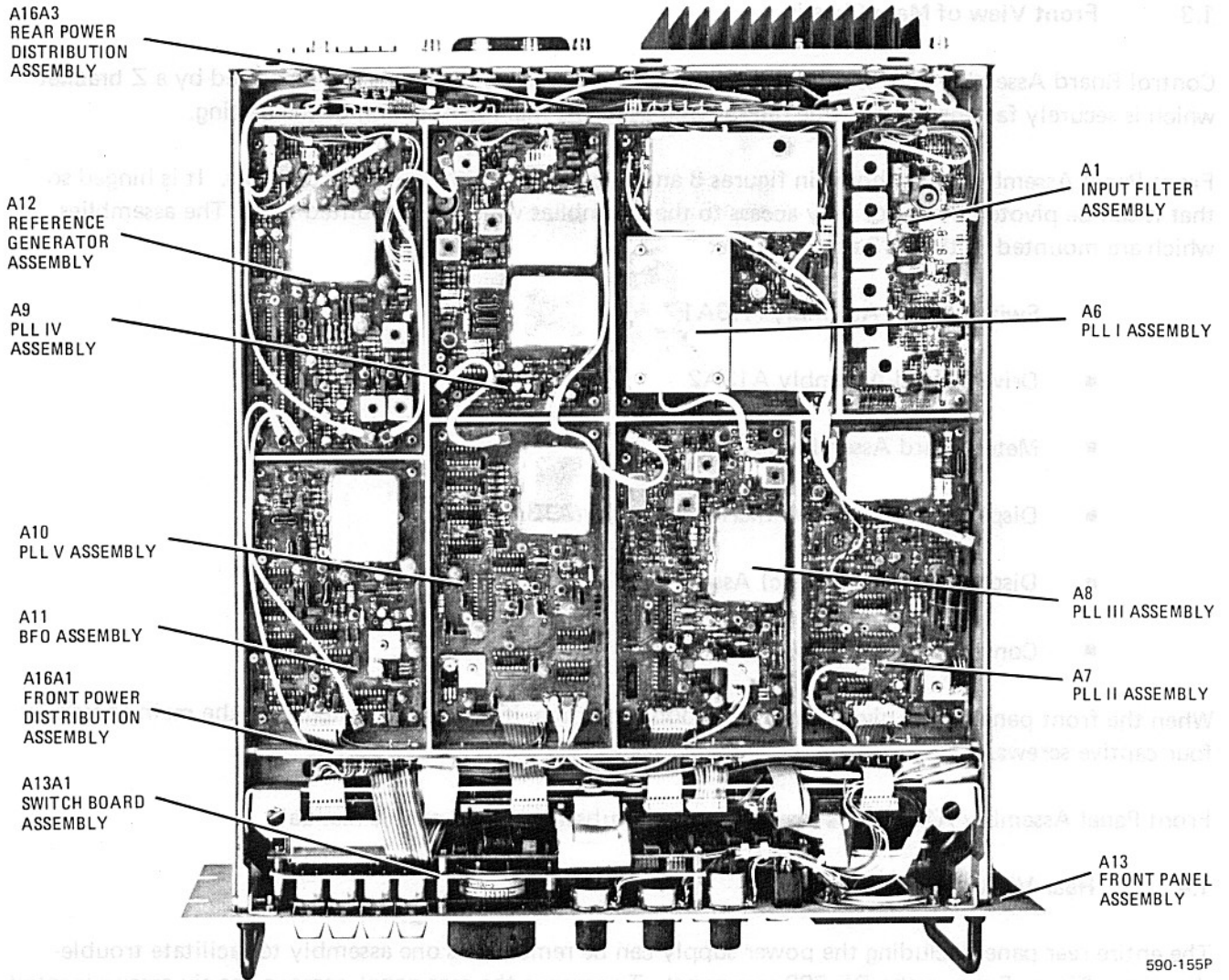


Figure 2. RF-590 Bottom View Without Covers

- PLL V Assembly A10
- BFO Assembly A11
- Reference Generator Assembly A12

### **1.3 Front View of Main Chassis**

Control Board Assembly A14 is mounted on the forward section of the chassis separated by a Z bracket which is securely fastened to the side rails as well as to the main pan section of the casting.

Front Panel Assembly A13, shown in figures 3 and 4, contains all the operator controls. It is hinged so that it can be pivoted down for easy access to the assemblies which are mounted to it. The assemblies which are mounted to the A13 assembly are:

- Switch Board Assembly A13A1
- Driver Board Assembly A13A2
- Meter Board Assembly A13A3
- Display Board (alphanumeric) Assembly A13A4
- Display Board (numeric) Assembly A13A5
- Converter Assembly A13A6

When the front panel is not pivoted out for troubleshooting, it is securely fastened to the main chassis by four captive screws.

Front Panel Assembly A13 details may be found in subsection A13 of this manual.

### **1.4 Rear View of Main Chassis**

The entire rear panel including the power supply can be removed as one assembly to facilitate troubleshooting. Figure 5 shows the RF-590 rear panel. To remove the rear panel, remove the six screws located on the panel and the two screws inside Power Supply Assembly A15. Disconnect the two connectors on the underside of the chassis.

Power Supply Assembly A15 contains the following assemblies housed in a wrap around chassis design.

- A15A1 Power Supply Filter Board
- A15A2 Power Supply Regulator Heatsink Assembly, with Regulator Board A15A2A1

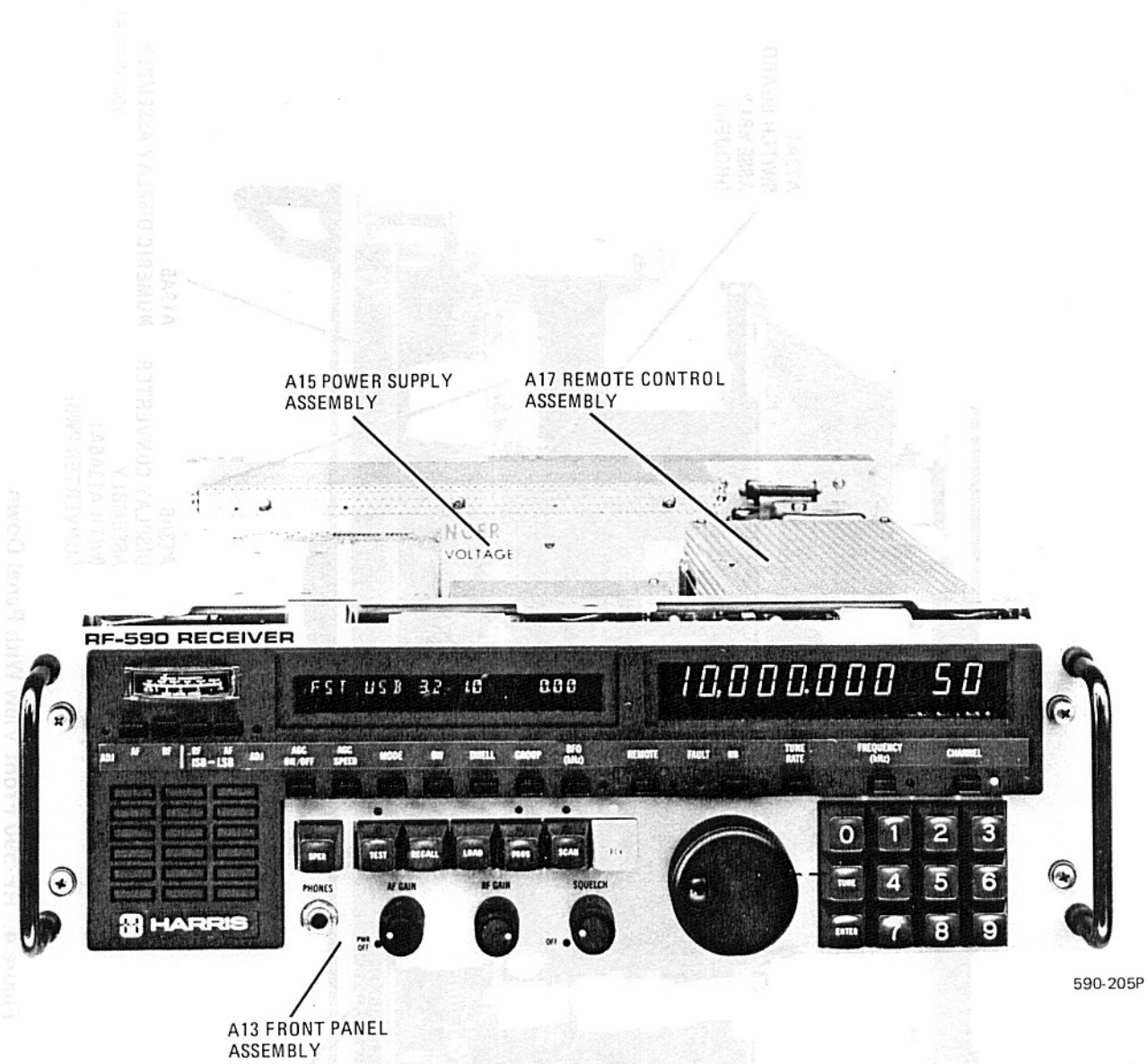


Figure 3. RF-590 Front View

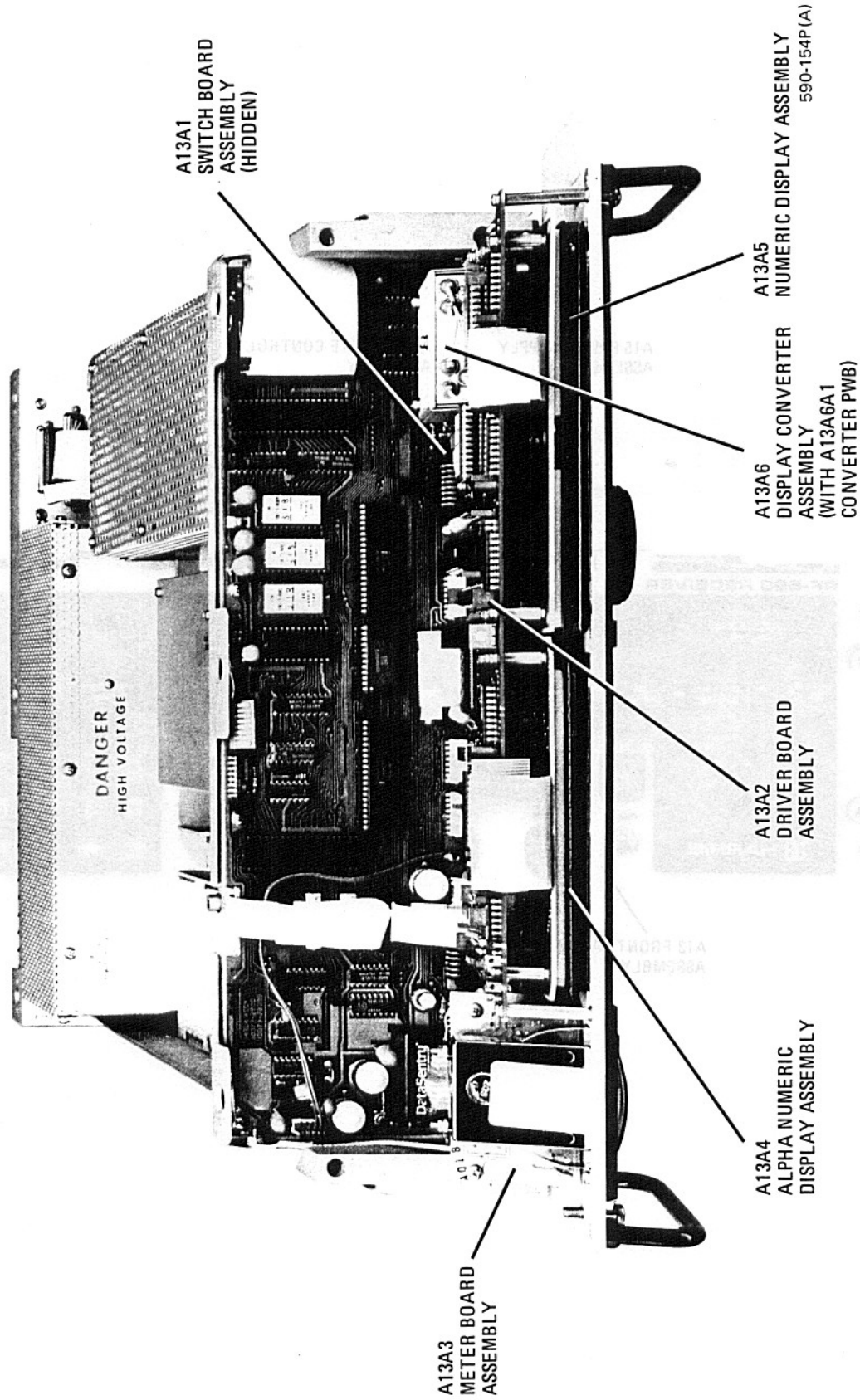


Figure 4. RF-590 Front View With Panel Down



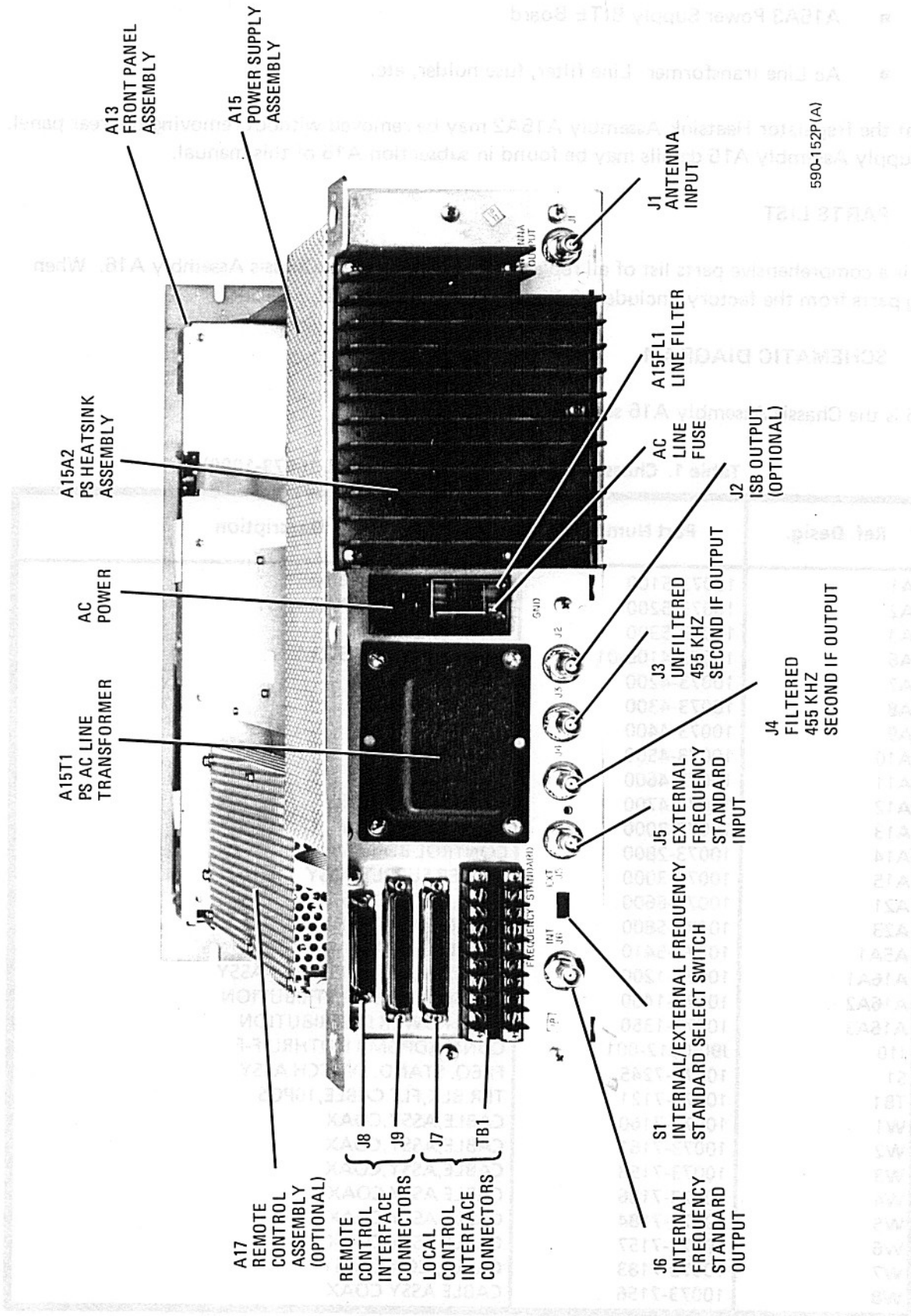


Figure 5. RF-590 Rear Panel



- A15A3 Power Supply BITE Board
- Ac Line transformer, Line filter, fuse holder, etc.

Note that the Regulator Heatsink Assembly A15A2 may be removed without removing the rear panel. Power Supply Assembly A15 details may be found in subsection A15 of this manual.

## 2. PARTS LIST

Table 1 is a comprehensive parts list of all replaceable components in Chassis Assembly A16. When ordering parts from the factory, include a full description of the part.

## 3. SCHEMATIC DIAGRAM

Figure 6 is the Chassis Assembly A16 schematic diagram.

**Table 1. Chassis Assembly A16 Parts List (PL 10073-1000)**

Ref. Desig.	Part Number	Description
A1	10073-5100	INPUT FILTER PWB ASSY
A2	10073-5200	1ST CONVERTER PWB ASSY
A3	10073-5300	2ND CONVERTER
A6	10073-4100-01	PWB ASSY, PLL 1 SLOW
A7	10073-4200	PWB ASSY, PLL 2
A8	10073-4300	PWB ASSY, PLL 3
A9	10073-4400	PWB ASSY, PLL 4
A10	10073-4500	PWB ASSY, PLL 5
A11	10073-4600	BFO PWB ASSY
A12	10073-4700	REF-GEN PWB ASSY
A13	10073-2000	PANEL ASSEMBLY
A14	10073-2800	CONTROL BD ASSY
A15	10073-3000	POWER SUPPLY ASSY
A21	10073-6600	FREQ. STD 1X10 6
A23	10073-5800	AUDIO AMPLIFIER
A5A1	10073-5410	IF AUDIO BOARD ASSY
A16A1	10073-1200	FRONT POWER DIST PWB ASSY
A16A2	10073-1400	CHASIS POWER DISTRIBUTION
A16A3	10073-1350	REAR POWER DISTRIBUTION
J10	J90-0012-001	CONN ADP SMB F'DTHRU F-F
S1	10073-7245	FREQ. STAND. SWITCH ASSY
TB1	10073-7121	TER.BLK,FLT CABLE,10POS
W1	10073-7160	CABLE,ASSY,COAX
W2	10073-7161	CABLE,ASSY,COAX
W3	10073-7158	CABLE,ASSY,COAX
W4	10073-7186	CABLE ASSY COAX
W5	10073-7184	CABLE ASSY COAX
W6	10073-7157	CABLE ASSY COAX
W7	10073-7183	CABLE, COAX ASSY
W8	10073-7156	CABLE ASSY COAX

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Table 1. Chassis Assembly A16 Parts List (PL 10073-1000) (Cont.)

Ref. Desig.	Part Number	Description
W9	10073-7054	CABLE,RIBBON
W10	10073-7182	CABLE, COAX ASSY
W11	10073-7246	CABLE, AC POWER
W12	10073-7155	CABLE, COAX ASSY
W13	10073-7154	CABLE, COAX ASSY
W14	10073-7159	CABLE, COAX ASSY
W15	10073-7153	CABLE, COAX ASSY
W16	10073-7150	CABLE, COAX ASSY
W17	10073-7069	RIBBON CABLE (CH PS)
W19	10073-7152	CABLE ASSY
W20	10073-7070	RIB CABLE CONT-PAN
W21	10073-7058	RIBBON (PAN IF/CONT)
W22	10073-7151	CABLE ASSY
W23	10073-7247	SPEAKER CABLE
W24	10073-7055	RIBBON CABLE (MTR CONT)
W26	10073-7056	CABLE,RIBBON
W28	10073-7078	IF AUDIO
W37	10073-7187	CABLE COAX
W38	10073-7248	CABLE ASSY

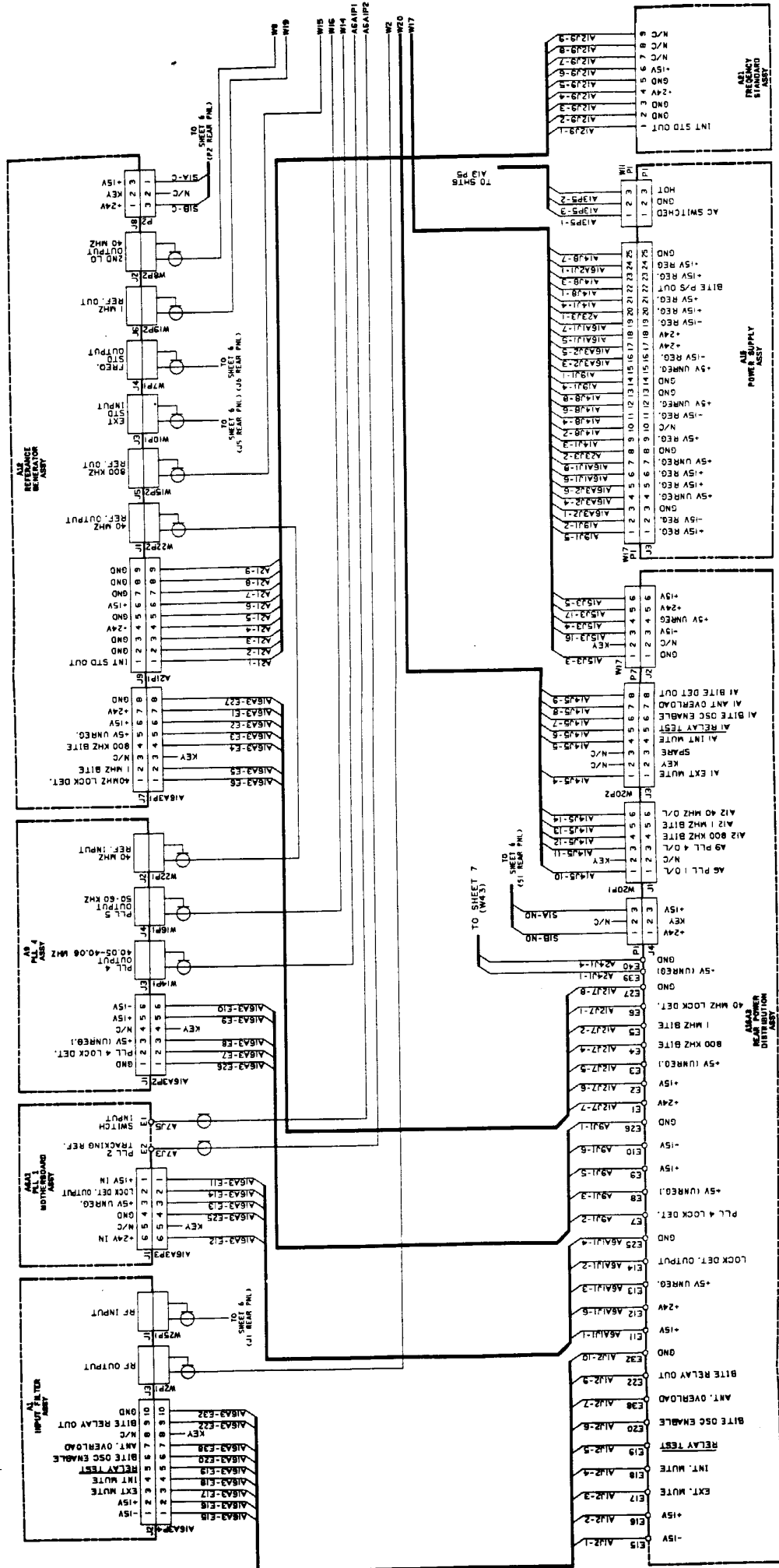
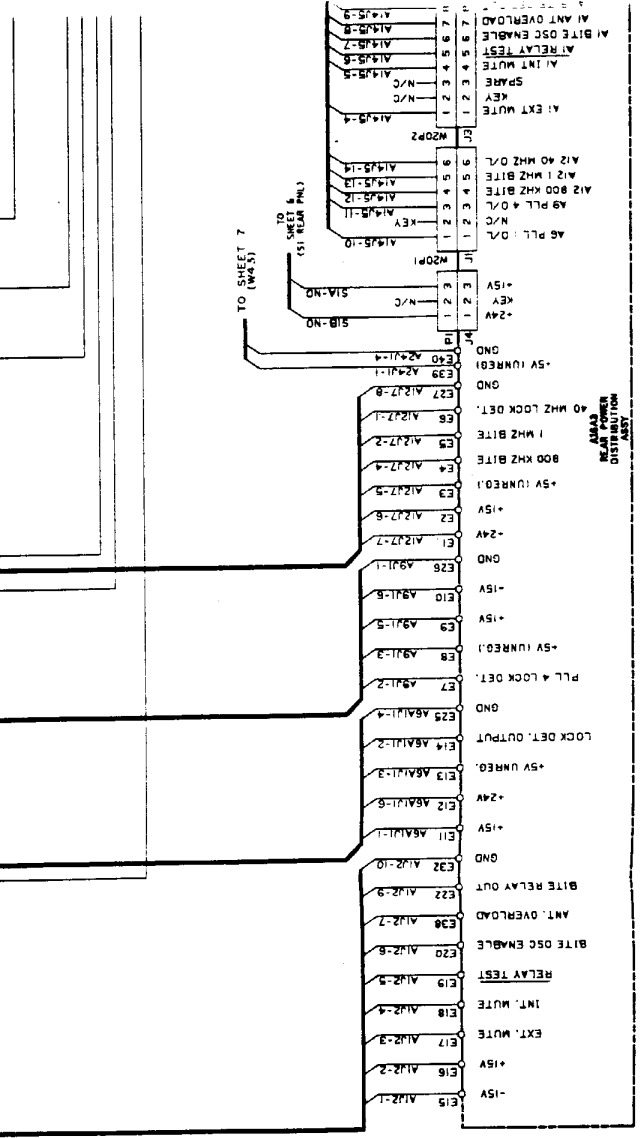
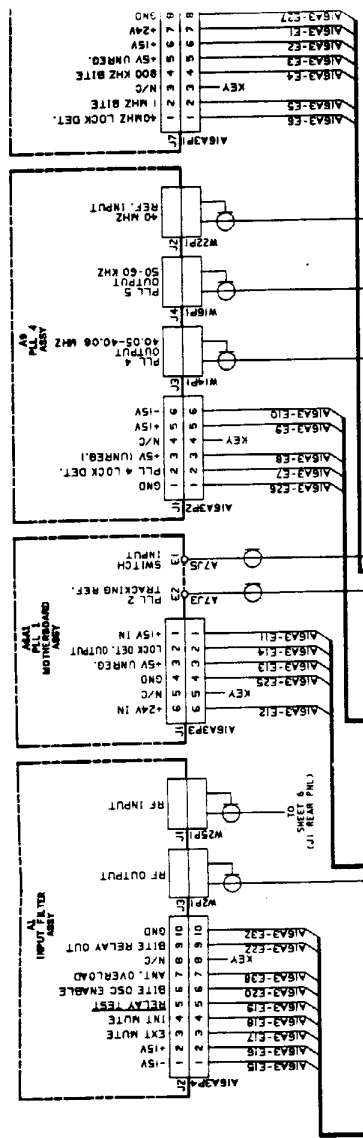
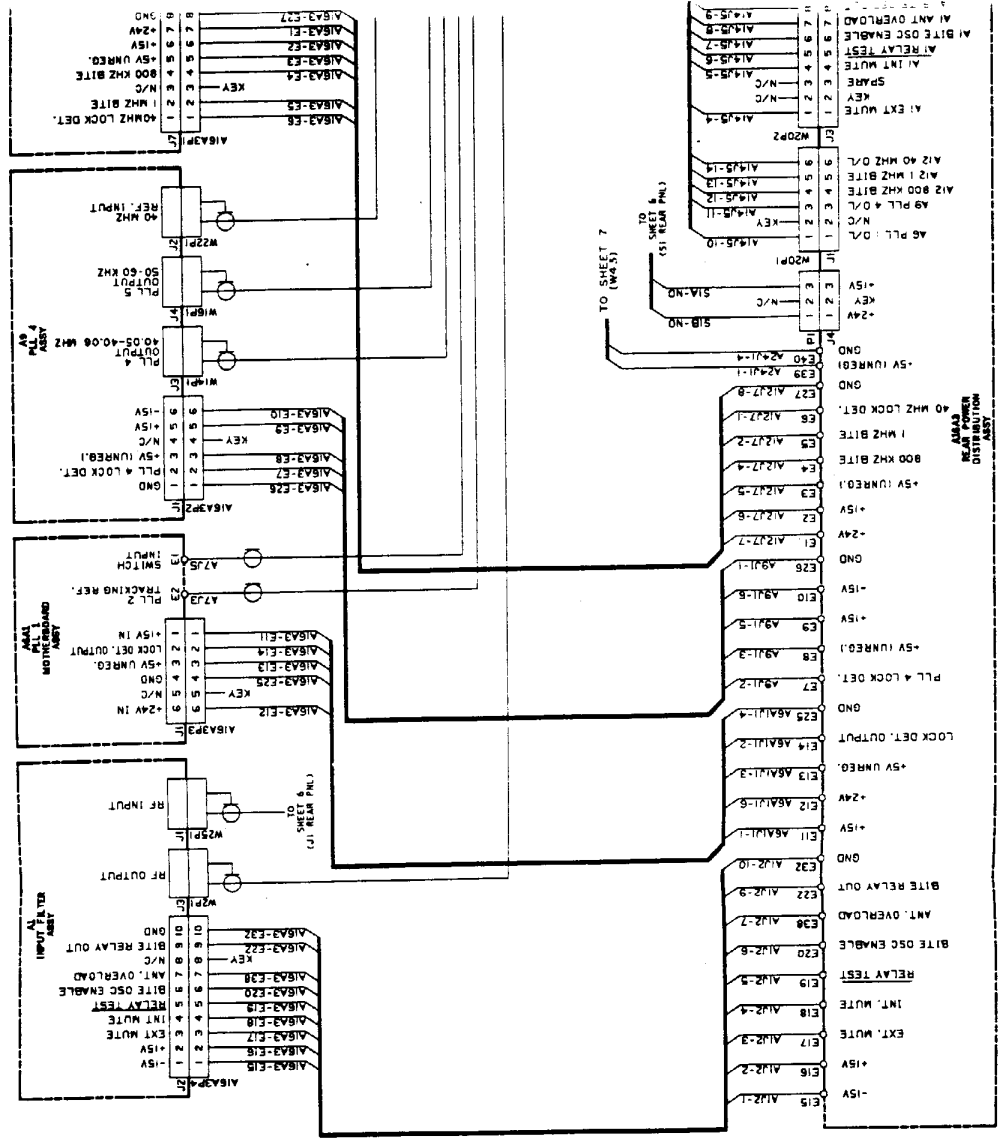
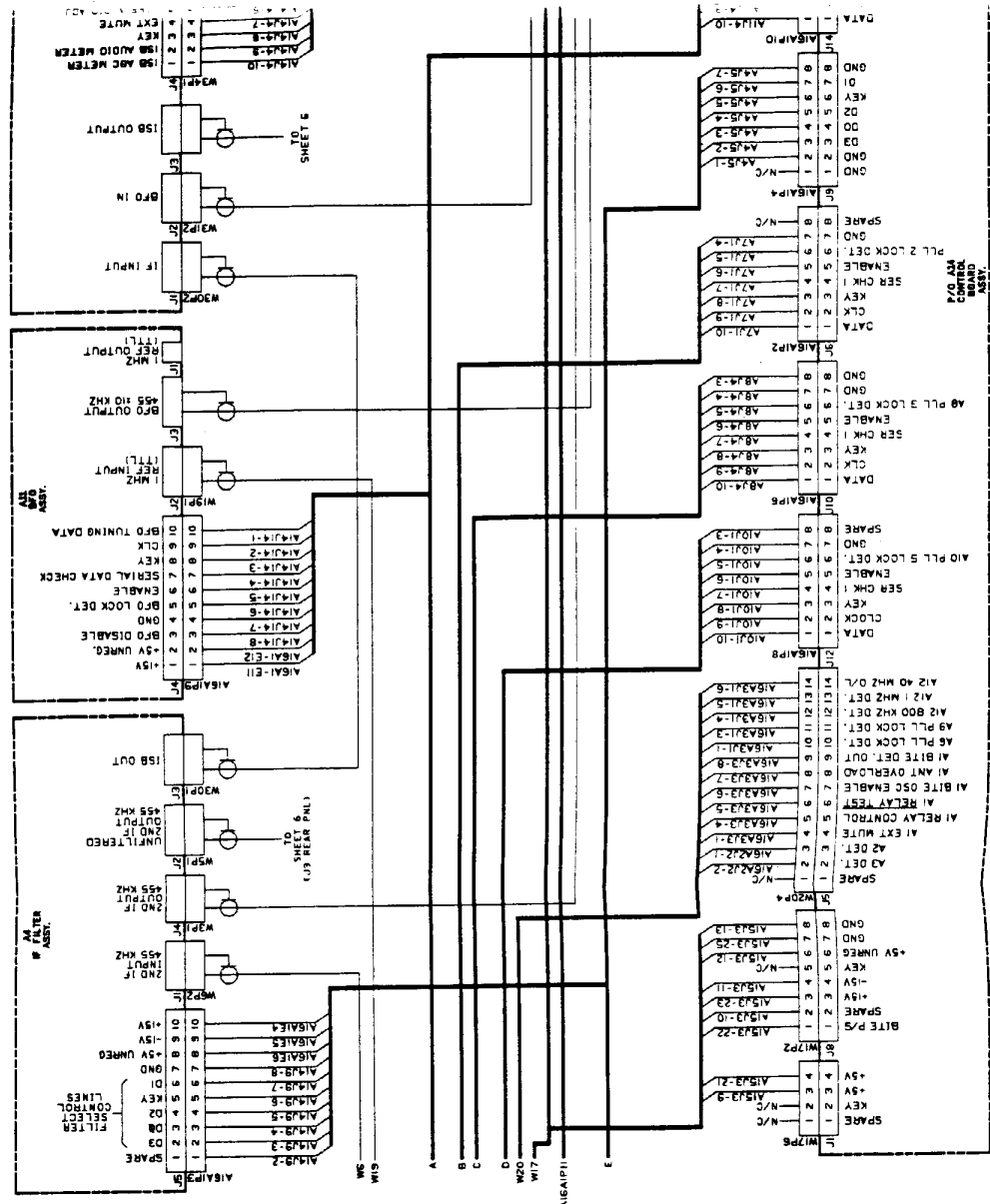


Figure 6. RF-590 Chassis Interconnect Schematic  
Diagram (10073-1001, Rev. J)  
(Sheet 1 of 7)











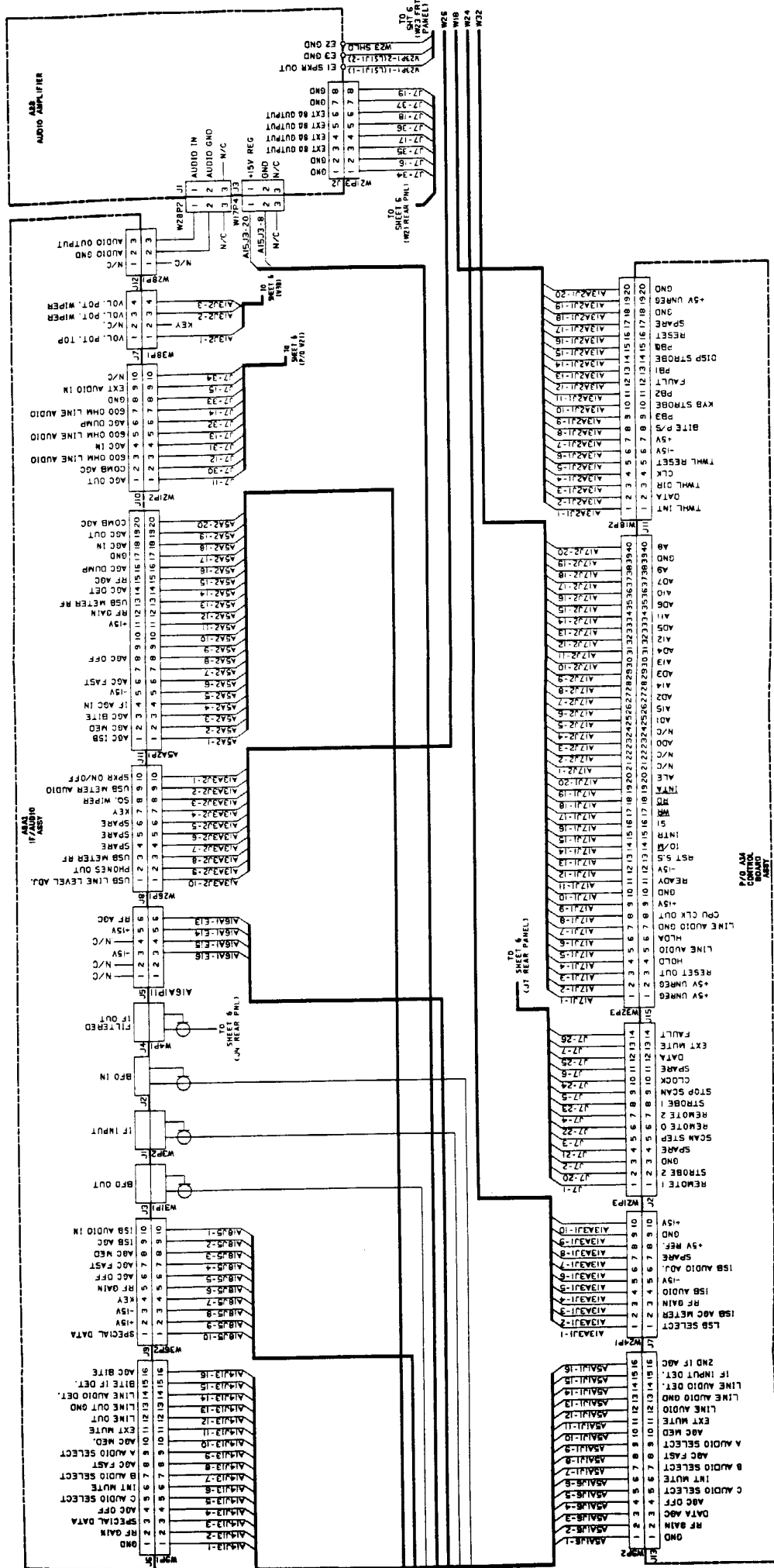


Figure 6. RF-590 Chassis Interconnect Schematic  
Diagram (10073-1001, Rev. J)  
(Sheet 4 of 7)



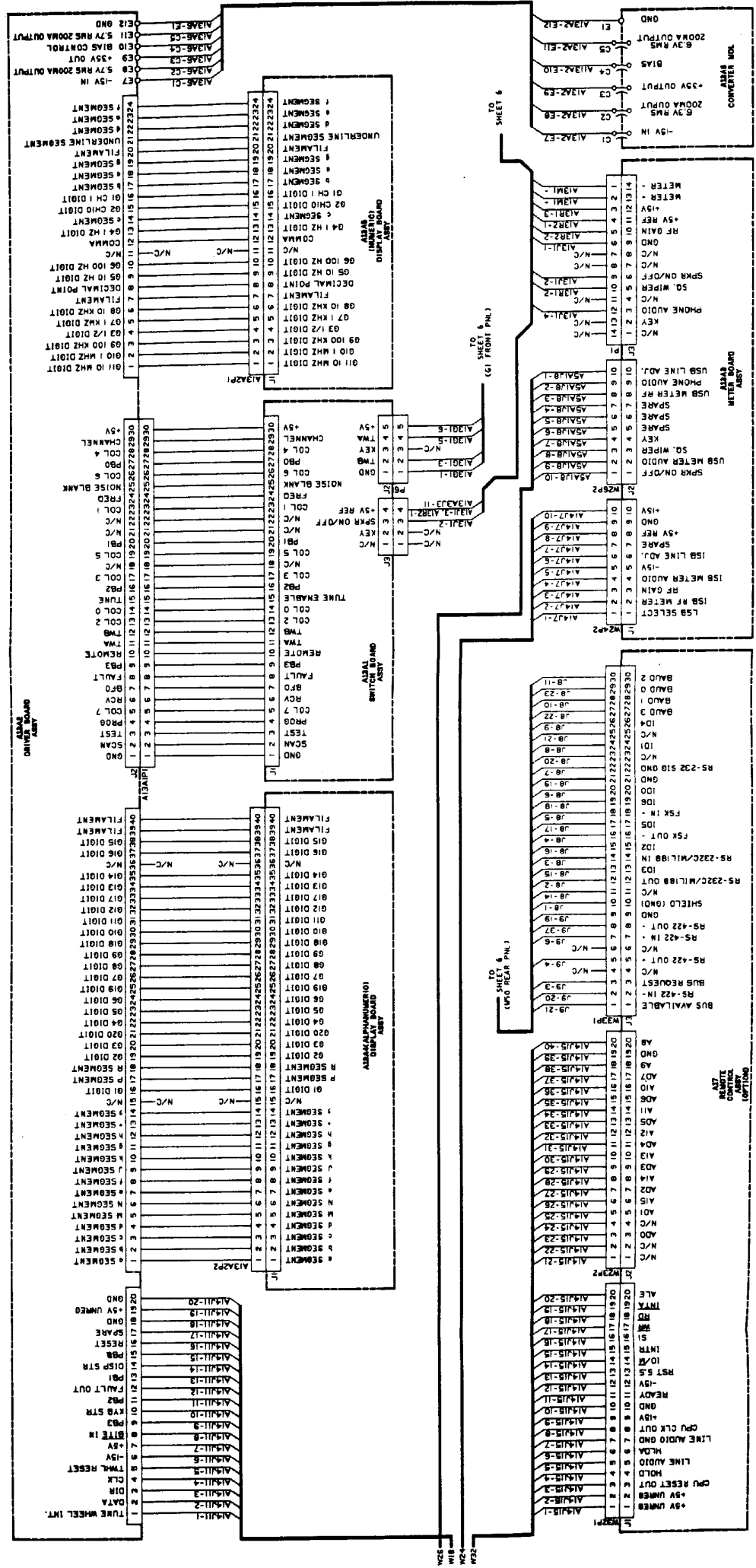
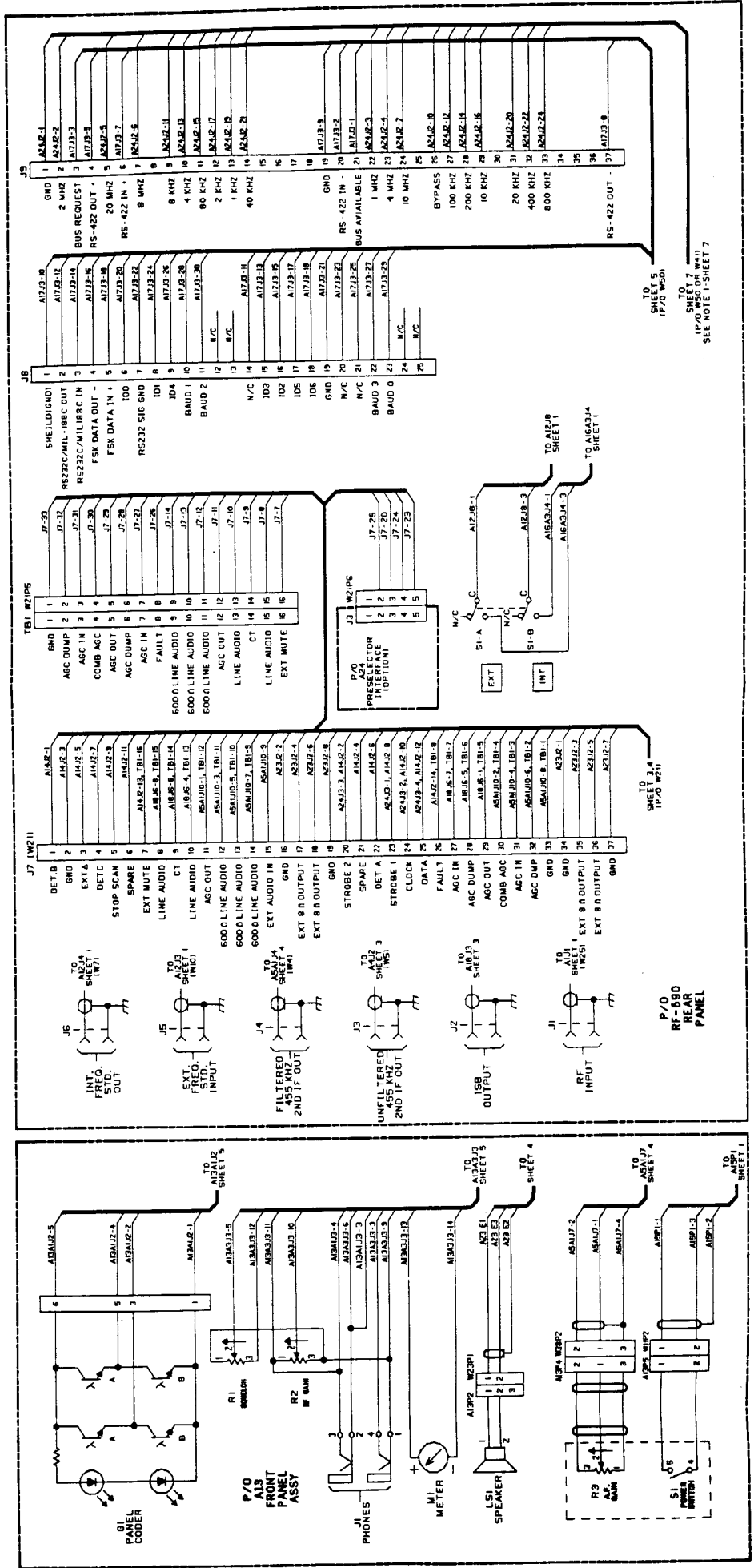


Figure 6. RF-590 Chassis Interconnect Schematic Diagram (10073-1001, Rev. J) (Sheet 5 of 7)



NOTES: THE A17 AND A24 OPTIONS ARE INSTALLED, THEN PART  
1. IF OPTION 1 IS NOT USED, CONNECTS TO THE A24 ASSEMBLY AND CABLE  
OR, IF NO OPTION 1 IS USED.

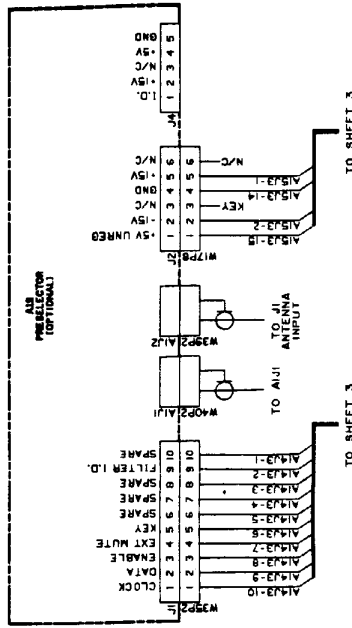
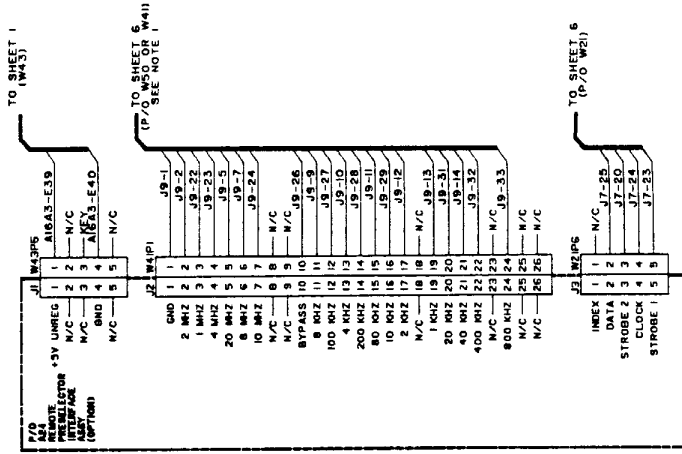


Figure 6. RF-590 Chassis Interconnect Schematic  
Diagram (10073-1001, Rev. J)  
(Sheet 7 of 7)

#### 4. MAIN CHASSIS POWER DISTRIBUTION PWBS

Interconnections to PWBs are made by mass terminated ribbon cables and the following three power distribution PWBs.

- A16A1 Front Power Distribution (section 7)
- A16A2 Chassis Power Distribution (section 8)
- A16A3 Rear Power Distribution (section 9)

All cabling is keyed and polarized to prevent misalignment of plugs.

All PWB assemblies can be removed by removing the standard mounting hardware and connectors supplied. No unsoldering is required.

Internal covers providing Radio Frequency Interference (RFI) protection fit snugly over most of the assembly compartments listed in 1.1 and 1.2. Their snap in design makes removal easy. Top and bottom outer covers are fastened to the unit with quarter turn fasteners.

The RF-590 may be rack mounted into a standard 19-inch rack by securing rack slides to the chassis side rails in the mounting holes provided for this purpose.

##### 4.1 Front Power Distribution Board A16A1

The A16A1 assembly is located on the underside of the main chassis and mounts through cutouts in the walls of the A7, A8, A10, and A11 compartments. The distribution board carries power to these assemblies via connector J1 from Power Supply Assembly A15. It also feeds power (through chassis cutouts) to the Chassis Distribution Board A16A2 mounted on the top side of the chassis, and power to the A4 and A5 assemblies.

Table 2 is the Front Power Distribution Board A16A1 parts list. Figures 7 and 8 are the Front Distribution Board A16A1 component location and schematic diagrams.

**Table 2. Front Power Distribution Board A16A1 Parts List (PL 10073-1200)**

Ref. Desig.	Part Number	Description
C1 - C9	10073-1200	PWB, FRONT PWR DIST
J1	CK05BX102M	CAP 1000PF 20% 200V CER
W1	J46-0033-008	HDR 8 PIN 0.100" RT ANG
W2	10073-7061	RIBBON CABLE, 7 COND
W3	10073-7057	RIBBON CABLE, 24 COND
W4	10073-7057	RIBBON CABLE, 24 COND
W5	10073-7057	RIBBON CABLE, 24 COND
W6	10073-7064	CABLE, RIBBON
	10073-7073	CABLE, RIBBON

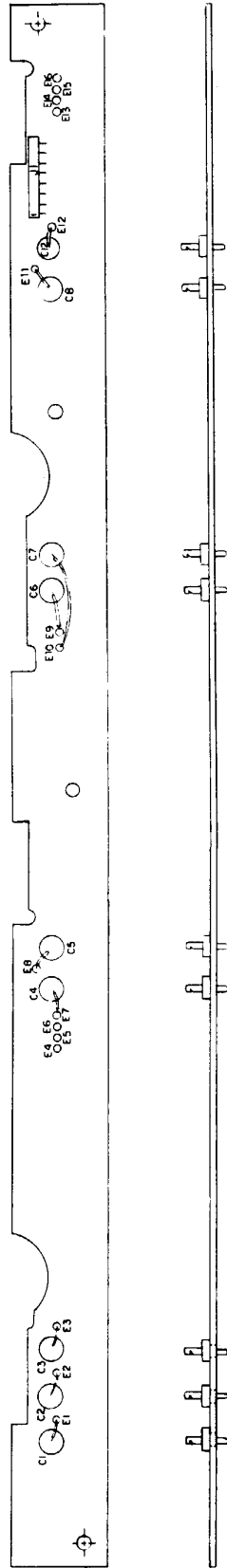


Figure 7. Front Power Distribution Board A16A1 Component Location Diagram (10073-1200, Rev. E)



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UNLESS OTHERWISE SPECIFIED:  
ALL REFERENCE DESIGNATIONS ARE SHOWN.  
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NO. AND/OR ASSEMBLY NO. DESIGNATION.

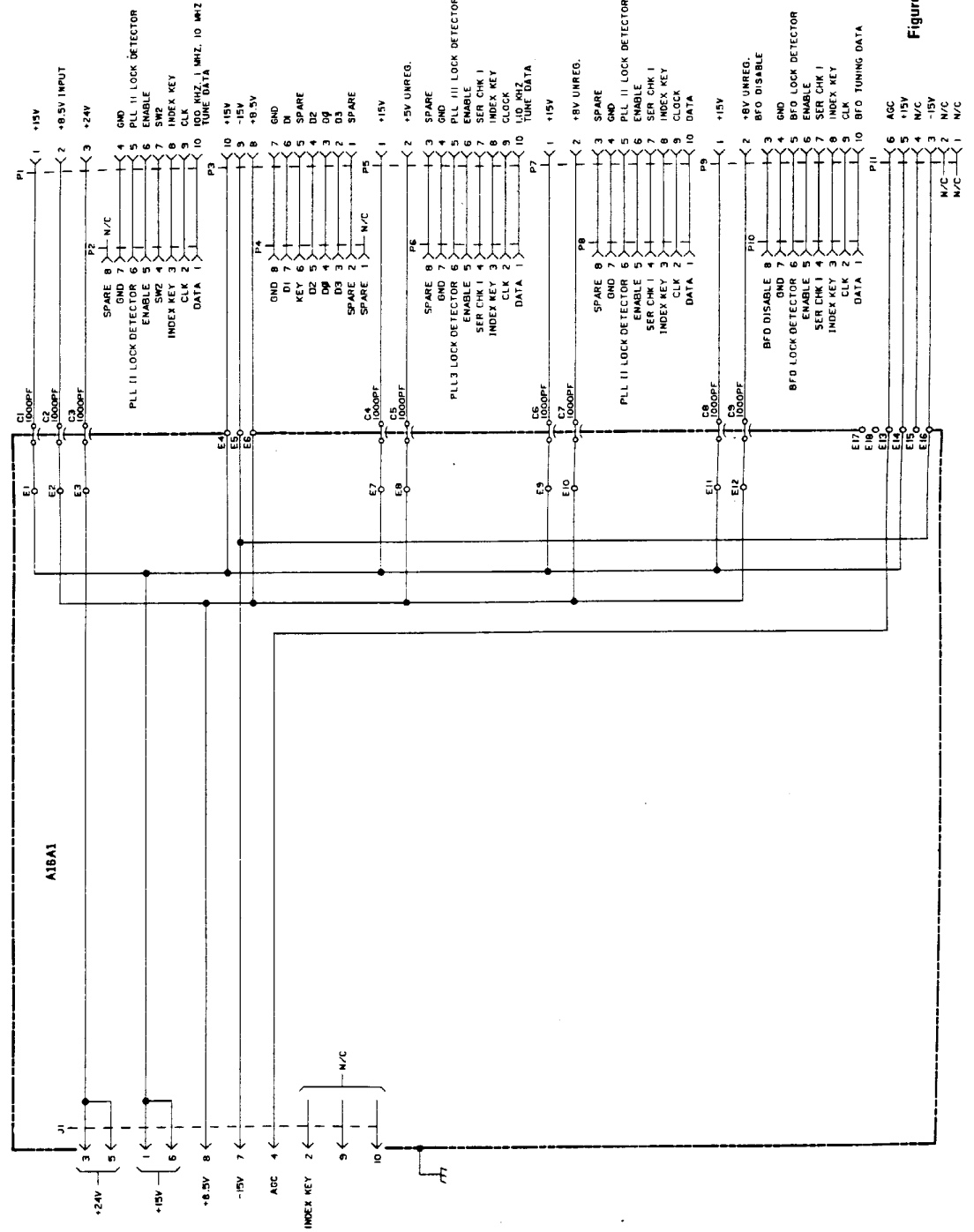
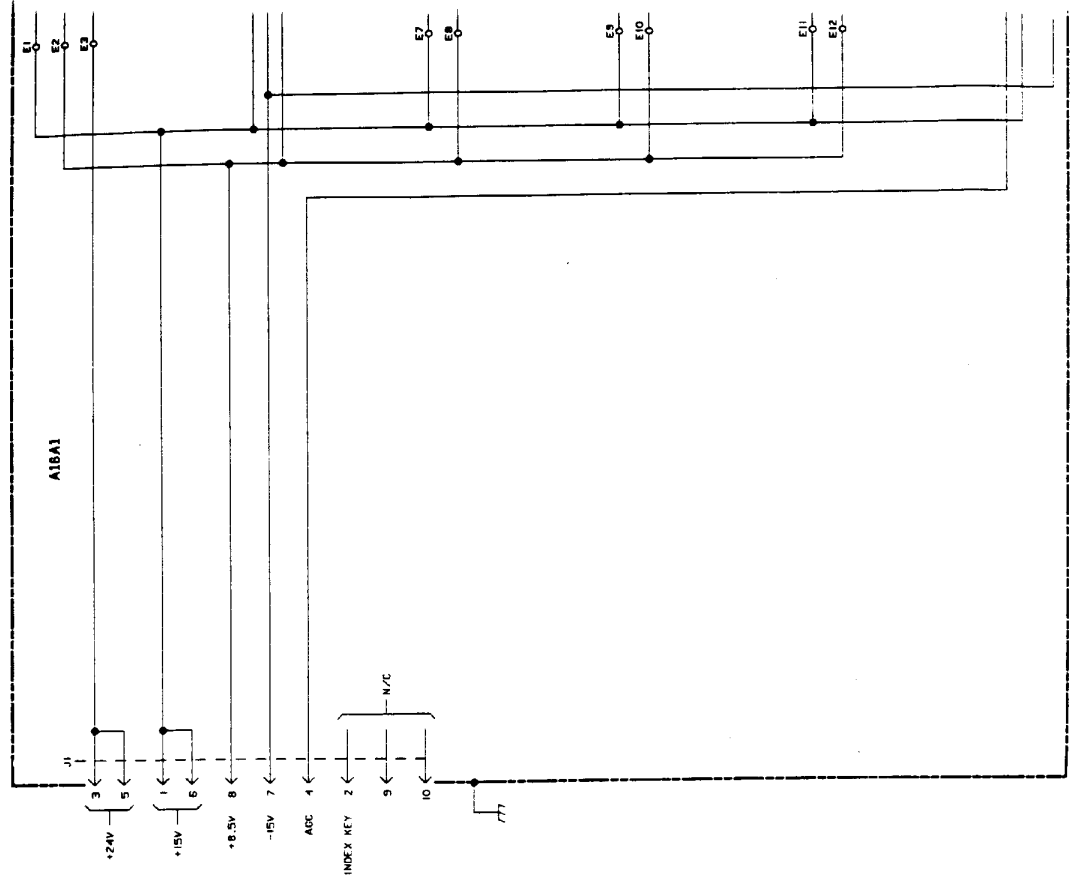


Figure 8. Front Power Distribution Board A16A1  
Schematic Diagram (10073-1201,  
Rev. C)

NOTE: UNLESS OTHERWISE SPECIFIED:  
 1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN.  
 FOR A COMPLETE DESIGNATION, PREFIX WITH  
 UNIT NO. AND/OR ASSEMBLY NO. DESIGNATION.



**4.2 Chassis Power Distribution Board A16A2**

The A16A2 assembly is located on the top side of the main chassis and mounts through cutouts in the walls of the A2 and A3 compartments. The assembly receives power and AGC signals via connector J1 from Front Power Distribution Board A16A1. It also carries A2 and A3 BITE information to Control Board Assembly A14 via connector J2.

Table 3 is the Chassis Power Distribution Board A16A2 parts list. Figures 9 and 10 are the Front Distribution Board A16A1 component location and schematic diagrams.

**Table 3. Chassis Power Distribution Board A16A2 Parts List (PL 10073-1400)**

Ref. Desig.	Part Number	Description
	10073-1400	PWB, CHASSIS PWR DIST
C1	C05-0003-102	CAP 1000PF GMV FEED-THRU
C2	C05-0003-102	CAP 1000PF GMV FEED-THRU
C3	C05-0003-102	CAP 1000PF GMV FEED-THRU
C4	C05-0003-102	CAP 1000PF GMV FEED-THRU
C5	C05-0003-102	CAP 1000PF GMV FEED-THRU
C6	C05-0003-102	CAP 1000PF GMV FEED-THRU
C7	C05-0003-102	CAP 1000PF GMV FEED-THRU
J1	J46-0033-004	HDR 4 PIN 0.100" RT ANG
J2	J46-0033-004	HDR 4 PIN 0.100" RT ANG
P1	J46-0016-005	CONN HOUSING 5 POS 24AWG
P2	J46-0016-005	CONN HOUSING 5 POS 24AWG

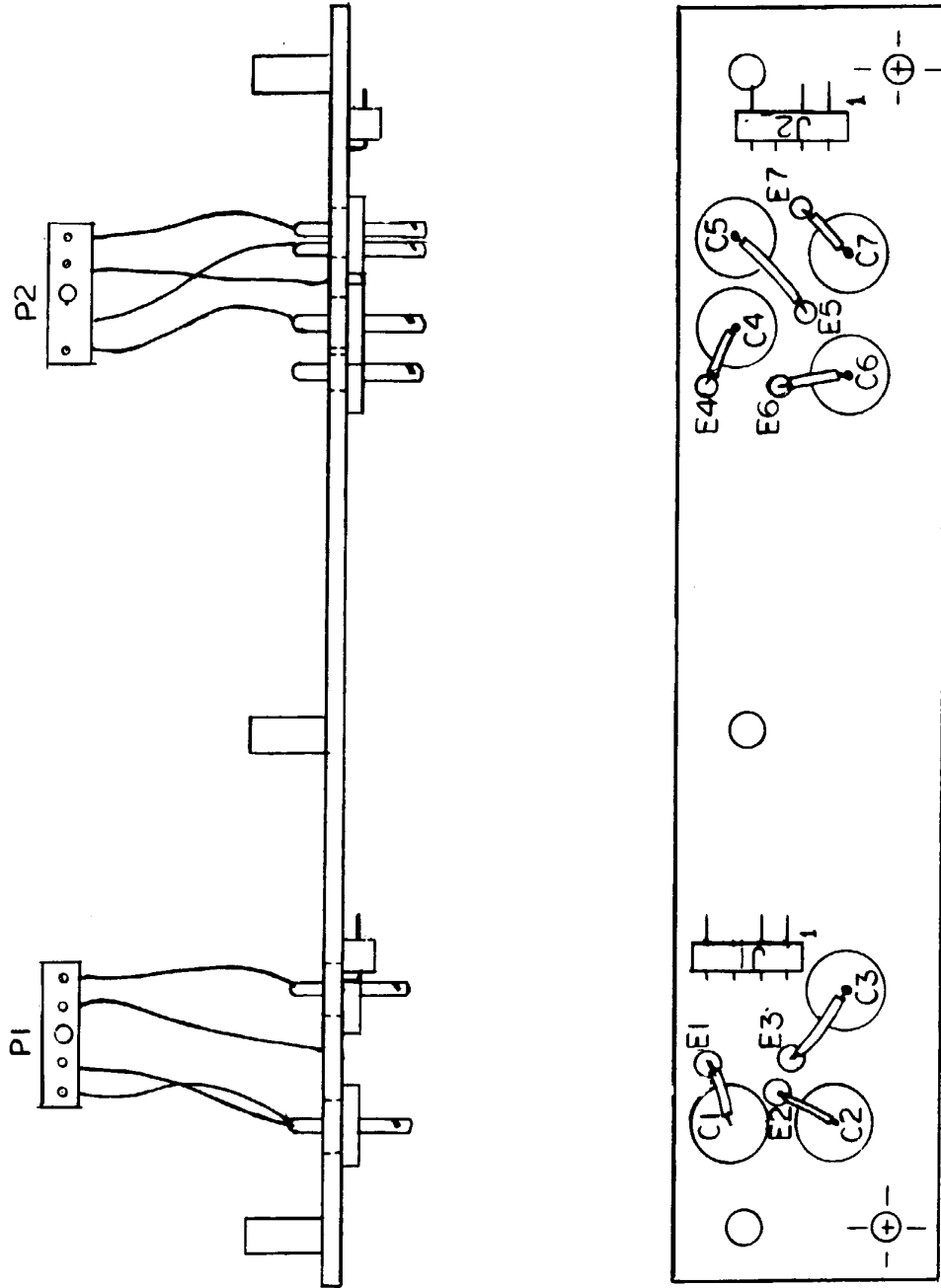


Figure 9. Chassis Power Distribution Board A16A2 Component Location Diagram (10073-1400, Rev. B)

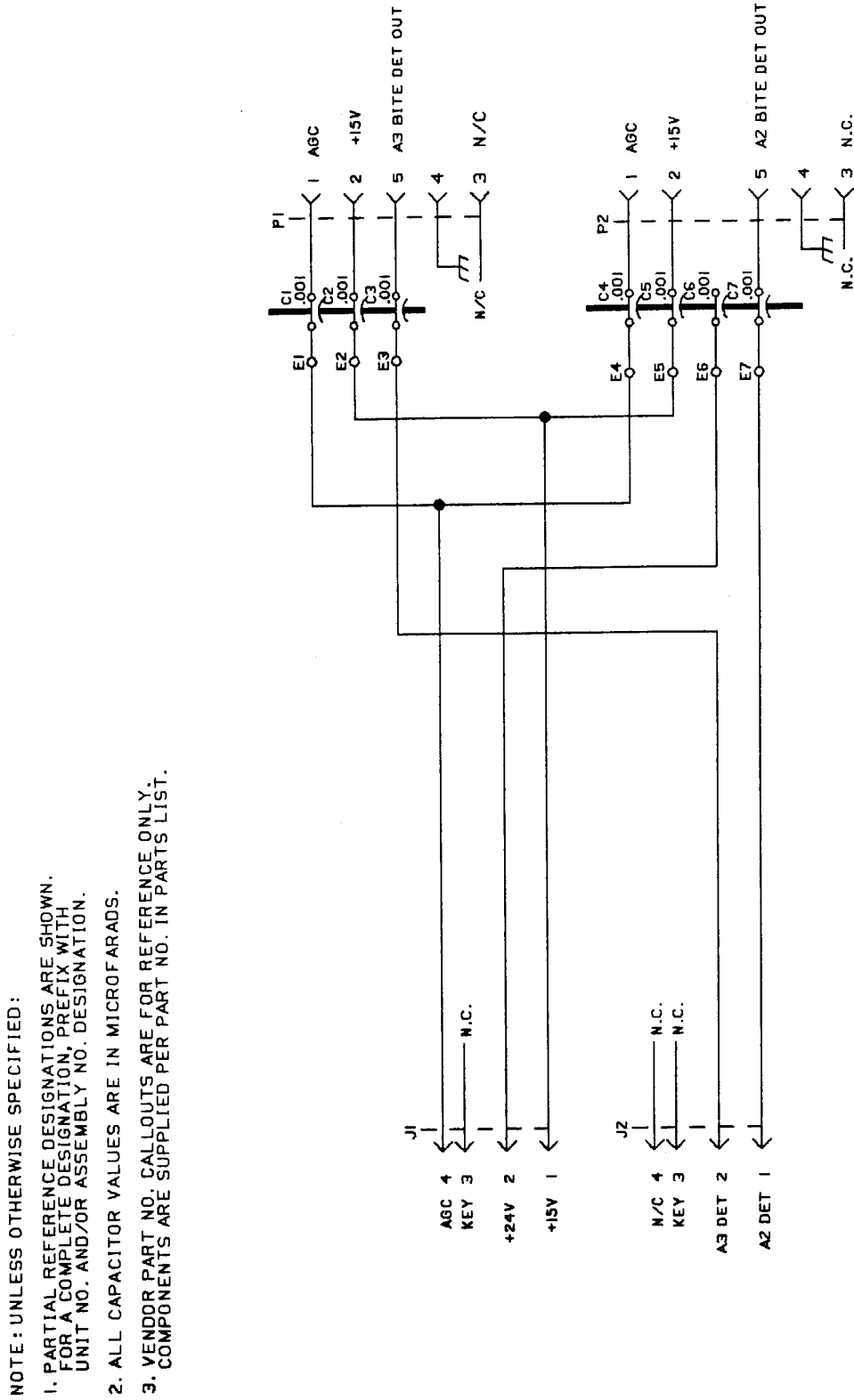


Figure 10. Chassis Power Distribution Board A16A2 Schematic Diagram (10073-1401, Rev. C)

### 4.3 Rear Power Distribution Board A16A3

The A16A3 assembly is located on the underside of the main chassis and mounts through cutouts in the walls of the A1, A6, A9, and A12 assemblies. It receives and distributes power from Power Supply Assembly A15 via connector J2. J4 connects to the RF-590 rear panel INT/EXT frequency standard switch. J1 carries BITE information to Control Board Assembly A14. J3 carries A1 control information to Control Board Assembly A14.

Table 4 is the Rear Power Distribution Board A16A3 parts list. Figures 11 and 12 are the Rear Power Distribution Board A16A3 component location and schematic diagrams.

**Table 4. Rear Power Distribution Board A16A3 Parts List (PL 10073-1350)**

Ref. Desig.	Part Number	Description
A16A3	10073-1350	PWB, REAR PWR DIST
C1	10073-7035	CAP,FEED-THRU 100
C2	10073-7035	CAP,FEED-THRU 100
C3	10073-7035	CAP,FEED-THRU 100
C4	10073-7035	CAP,FEED-THRU 100
C5	10073-7035	CAP,FEED-THRU 100
C6	10073-7035	CAP,FEED-THRU 100
C7	10073-7035	CAP,FEED-THRU 100
C8	10073-7035	CAP,FEED-THRU 100
C9	10073-7035	CAP,FEED-THRU 100
C10	10073-7035	CAP,FEED-THRU 100
C11	10073-7035	CAP,FEED-THRU 100
C12	10073-7035	CAP,FEED-THRU 100
C13	10073-7035	CAP,FEED-THRU 100
C14	10073-7035	CAP,FEED-THRU 100
C15	10073-7035	CAP,FEED-THRU 100
C16	10073-7035	CAP,FEED-THRU 100
C17	10073-7035	CAP,FEED-THRU 100
C18	10073-7035	CAP,FEED-THRU 100
C19	10073-7035	CAP,FEED-THRU 100
C20	10073-7035	CAP,FEED-THRU 100
C21	10073-7035	CAP,FEED-THRU 100
C22	10073-7035	CAP,FEED-THRU 100
C24	10073-7035	CAP,FEED-THRU 100
JMP1, JMP2	MP-1142	CIRCUIT JUMPER
J1, J2	J46-0033-006	HDR 6 PIN 0.100" RT ANG
J3	J46-0033-008	HDR 8 PIN 0.100" RT ANG
J4	J46-0033-003	HDR 3 PIN 0.100" RT ANG
P1	J46-0016-008	CONN HOUSING 8 POS 24AWG
P2, P3	J46-0016-006	CONN HOUSING 6 POS 24AWG
P4	J46-0016-010	CONN HOUSING 10 POS 24AWG
W43	10073-6915	CABLE ASSY

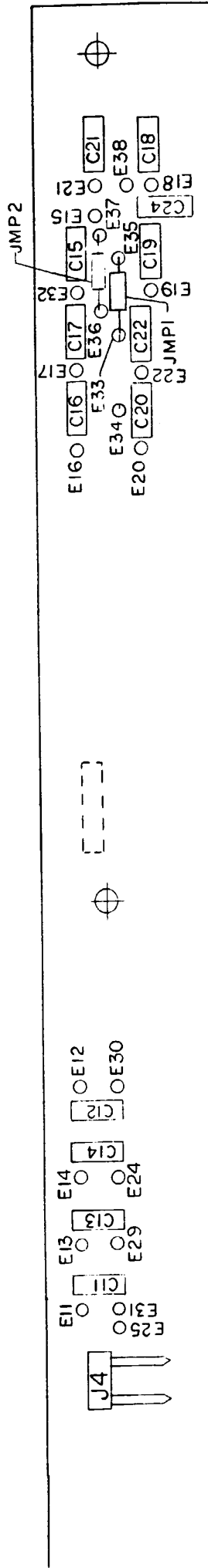
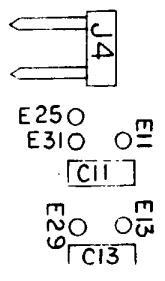
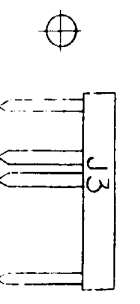
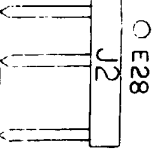
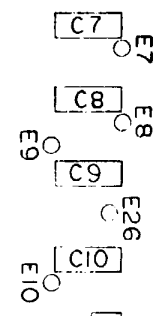
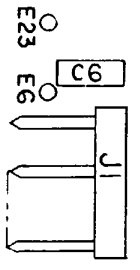
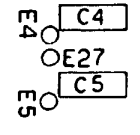
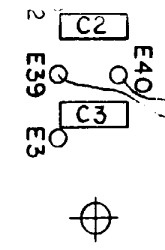
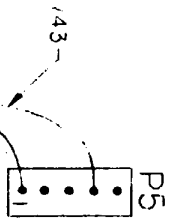
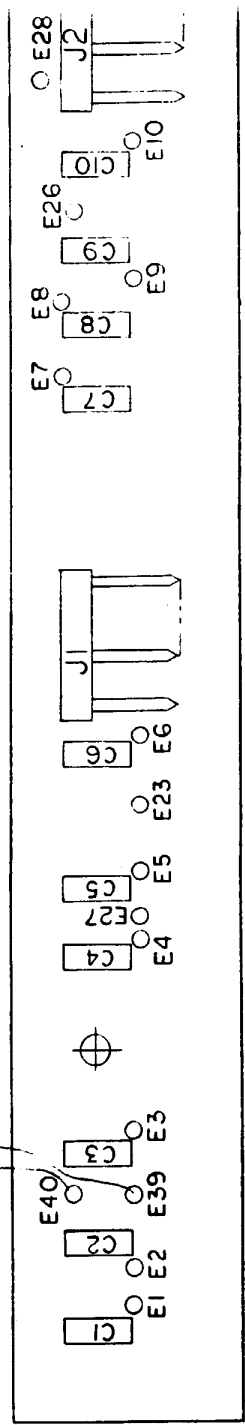
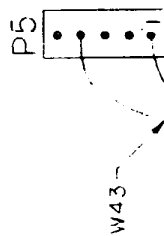


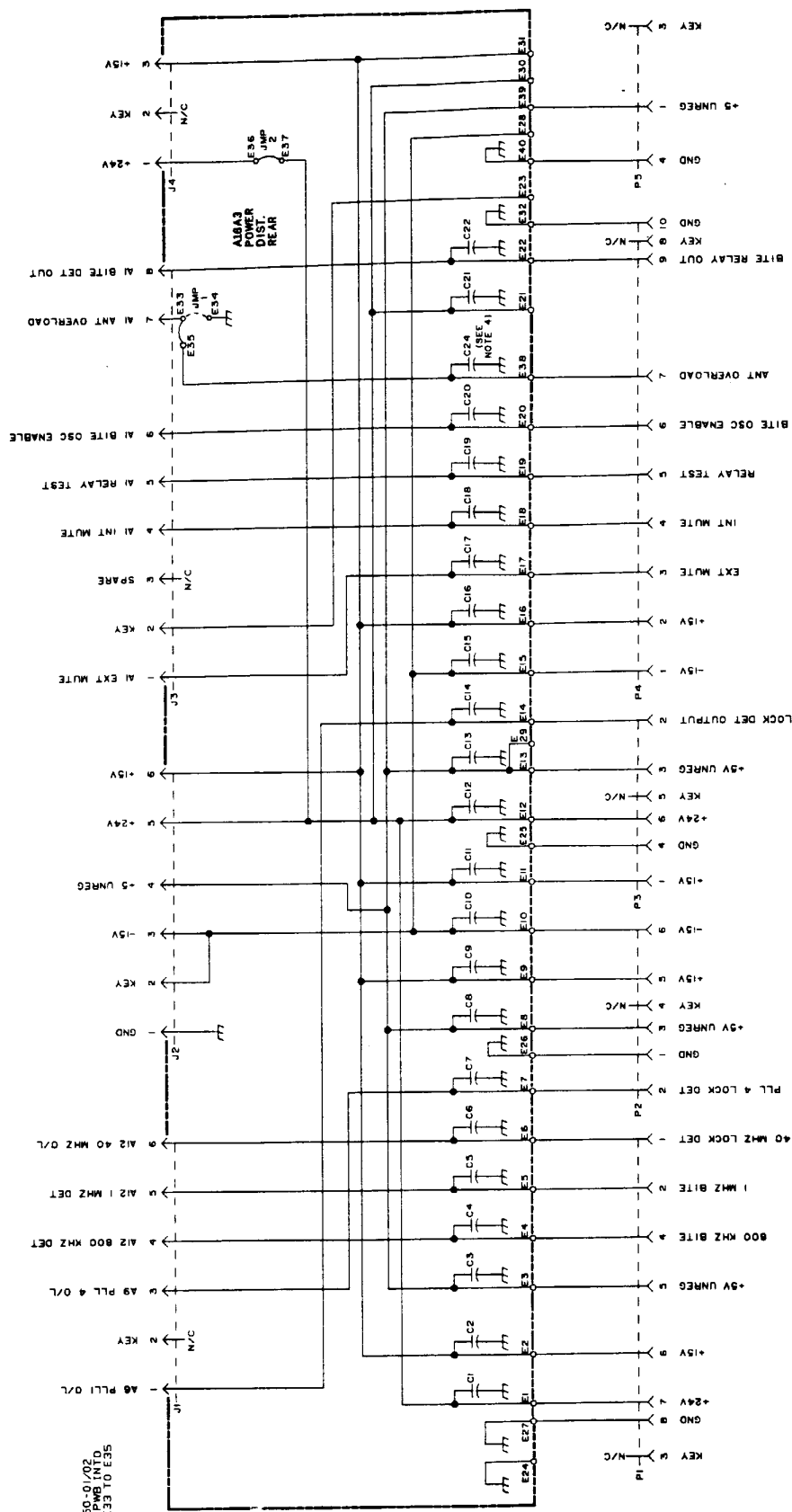
Figure 11. Rear Power Distribution Board  
A16A3 Component Location  
Diagram (10073-1350, Rev. B)







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NOTE: UNLESS OTHERWISE SPECIFIED:  
 1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR A COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND/OR ASSEMBLY NO. DESIGNATION.  
 2. ALL CAPACITOR VALUES ARE 1000 PICOFARADS.  
 3. THE 10121-1359 PWB IS COMMON TO THE 10121-1350-01/02 AND THE 10073-1350. FOR APPLICATION OF THIS PWB INTO THE RF-550 (10073-1350), JMP 1 IS INSTALLED E33 TO E35 AND C24 IS ADDED.

Figure 12. Rear Power Distribution Board A16A3 Schematic Diagram (10073-1351, Rev. A)

NOTE: UNLESS OTHERWISE SPECIFIED:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR CONVENIENCE. THE COMPLETE REFERENCE DESIGNATION SHALL BE THE UNIT NO. AND/OR ASSEMBLY NO. DESIGNATION.
2. ALL CAPACITOR VALUES ARE 1000 PICOFARADS.
3. THE 10121-1359 PWB IS COMMON TO THE 10121-1350-01/02 AND THE 6073-0350. FOR APPLICATION OF THIS PWB INTO THE 6073-0350, JMP-1 IS INSTALLED E33 TO E35 AND C24 IS ADDED.

