

**SECTION 9**  
**POWER SUPPLIES**

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## 9.1 TECHNICAL DESCRIPTION

### 9.1.1 General Description

The projection system contains two power supplies; the Low Voltage Switch Mode Power Supply, and the High Voltage Power Supply.

#### 9.1.1.1. Low Voltage (Switch Mode) Power Supply

The Low Voltage Switch Mode Power Supply provides +5, +6.3,  $\pm 12$ ,  $\pm 24$ , +150 and +200 VDC. It has short circuit protection. A short circuit, on any output line, will cause the power supply to switch OFF.

#### 9.1.1.2. High Voltage Power Supply

The High Voltage Power Supply provides 34 KV to each CRT anode, 11 KV to the focus circuitry and 800 VDC for G2 cut-off. The High Voltage Power Supply has short circuit protection. A short circuit on the anode output, will prevent the High Voltage Power Supply from turning ON.

## 9.2 SERVICING AND ALIGNMENT

### 9.2.1 Disassembly and Access

#### Module Location:

- front slide-out rack

#### Tools & Equipment Required:

- 1/4" hex head socket driver

#### Low Voltage Switch Mode Power Supply Removal

- Remove the projector lower front and side panels as described in Section 5.2.
- Remove the two screws securing the front slide-out rack to the projector chassis. Slide the rack out about 4".
- Disconnect the M14-P1, M14-P2, M14-P3 and M14-P4 connections from the module. See Figure 9-1.
- Pull back and lower the Low Voltage Switch Mode Power Supply until removed from the front slide-out rack.

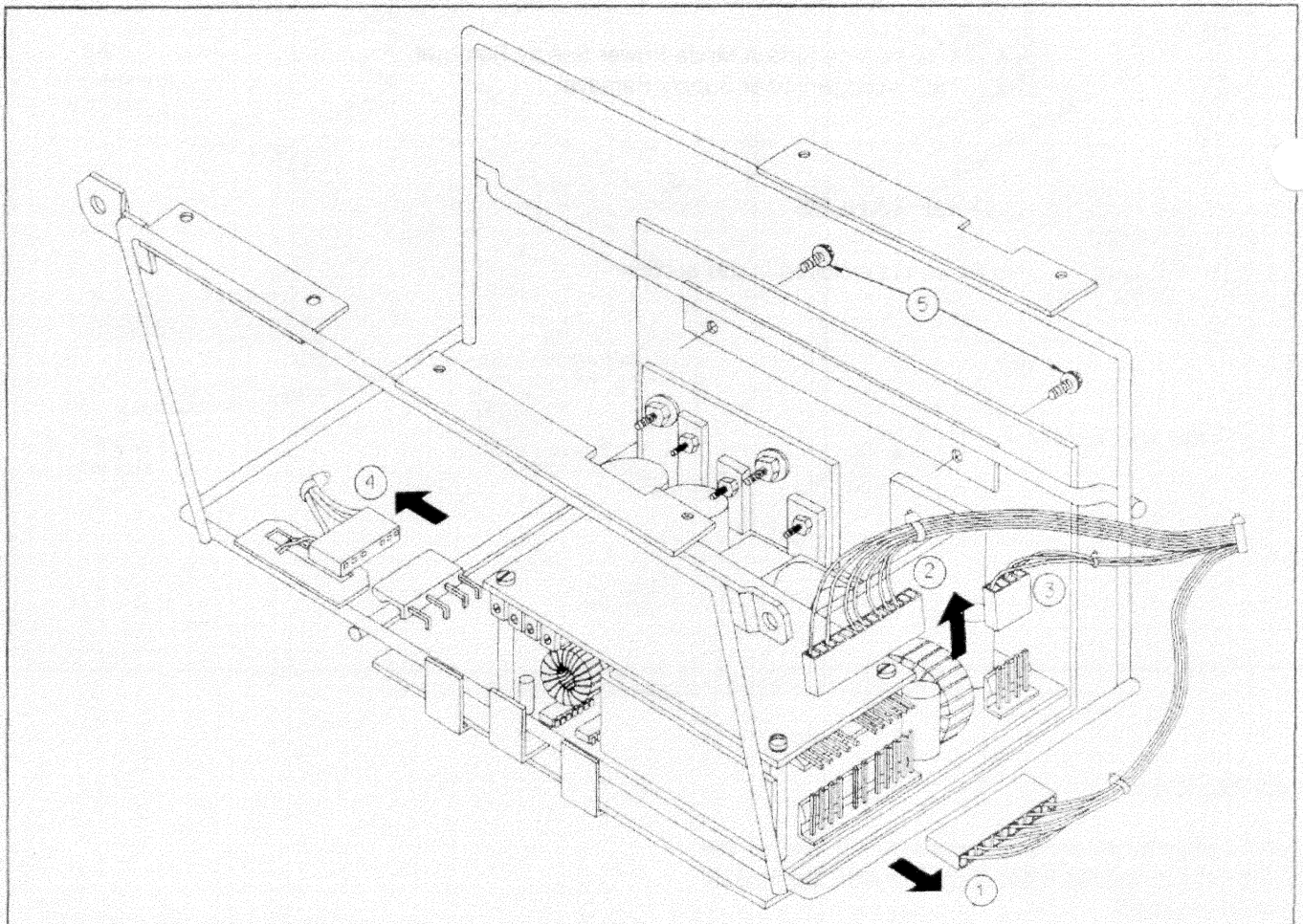


FIGURE 9-1. Low Voltage Switch Mode Power Supply Removal

### High Voltage Power Supply Removal

- a) Remove the projector lower front and side panels as described in Section 5.2.
- b) Remove the two screws securing the slide-out rack to the projector chassis. Slide the rack out about 4".
- c) Trace the anode lead from the High Voltage Power Supply to the splitter located in the projection head portion of the projector. Disconnect the anode lead from the splitter and route it back to the power supply.  
Note: Some cable ties may require removal. If so, record the cable tie positions for future re-assembly.

- d) Trace the focus lead from the High Voltage Power Supply to the Bias module located in the projection head portion of the projector. Disconnect the focus lead from the Bias board and route it back to the power supply. Record the positions of any cable ties requiring removal.
- e) Disconnect the M24-P1 and M24-P2 connectors from the module as shown.
- f) Remove the 4 hex head screws as shown in Figure 9-2. Guide the High Voltage Power Supply out the right side of the front slide-out rack.

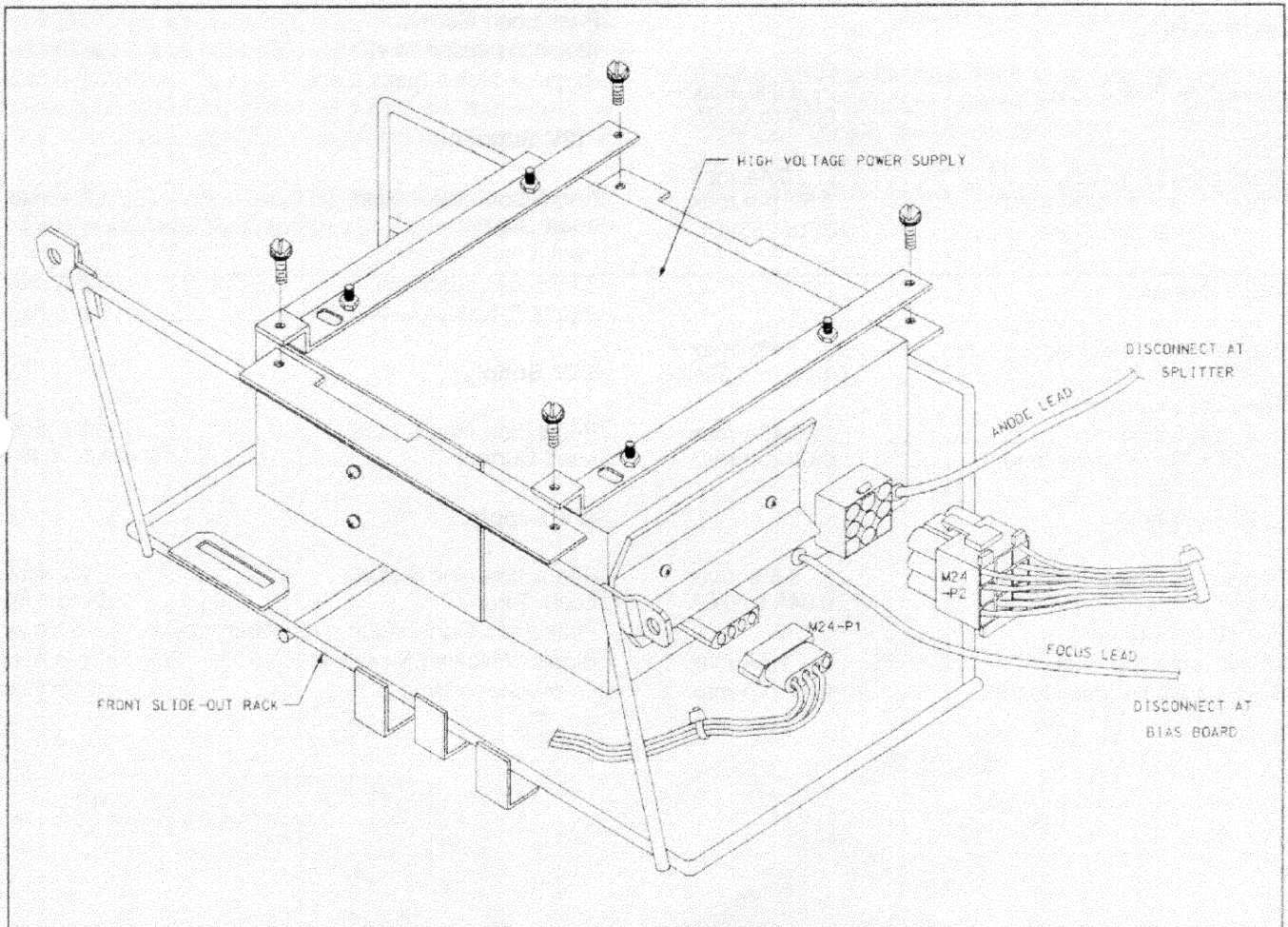


FIGURE 9-2. High Voltage Power Supply Removal

#### 9.2.2 Alignment

Service alignments are not necessary. If one of the power supply modules is out of specification, the module must be replaced.



## 9.3 SPECIFICATIONS

### 9.3.1 Switch Mode Power Supply

#### Power Requirements:

Voltage  
120V mode ..... 90 to 132 VAC  
240V mode ..... 180 to 264 VAC

Turn-on Current ..... 15A max  
Frequency ..... 45 to 65 Hz

Power (full load) ..... 350W max

#### +200V Supply:

Regulation (line & load) .....  $\pm 3\%$  max  
Load Current ..... 0.1A to 0.35A  
Peak Load Current  
(65 $\mu$ s repetition rate) ..... 0.4A max  
Ripple & Noise (peak load) ..... 1.5V p-p max  
Over-voltage Shutdown ..... 220 to 255VDC

#### +150V Supply:

Regulation (line & load) .....  $\pm 1\%$  max  
Load Current ..... 0.01A to 0.35A  
Peak Load Current  
(65 $\mu$ s repetition rate) ..... 0.45A max  
Ripple & Noise (peak load) ..... 0.5V p-p max

#### +24V Supply:

Regulation (line & load) .....  $\pm 5\%$  max  
Load Current ..... 0.04A to 0.6A  
Peak Load Current  
(20ms repetition rate) ..... 1.5A max  
Ripple & Noise (peak load) ..... 0.1V p-p max

#### -24V Supply:

Regulation (line & load) .....  $\pm 5\%$  max  
Load Current ..... 0.04A to 0.6A  
Peak Load Current  
(20ms repetition rate) ..... 1.5A max  
Ripple & Noise (peak load) ..... 0.1V p-p max

#### +12V Supply:

Regulation (line & load) .....  $\pm 2\%$  max  
Regulation (above 3A) ..... 5% max  
Load Current ..... 1.1A to 2.75A  
Peak Load Current  
(20ms repetition rate) ..... 3.5A max  
Ripple & Noise (peak load) ..... 0.1V p-p max

#### -12V Supply:

Regulation (line & load) .....  $\pm 2\%$  max  
Load Current ..... 0.75A  
Peak Load Current  
(20ms repetition rate) ..... 1.25A max  
Ripple & Noise (peak load) ..... 0.1V p-p max

#### 6.3V Supply:

Regulation (line & load) .....  $\pm 3\%$  max  
Load Current ..... 0.42A to 0.49A

#### +5V Supply:

Regulation (line & load) .....  $\pm 1\%$  max  
Load Current ..... 1.5A to 4.5A  
Peak Load Current(20ms repetition rate) ..... 5A max  
Ripple & Noise (@ peak load) ..... 50.0mV p-p max  
Over-voltage Limit ..... 6.5V max

### 9.3.2 High Voltage Power Supply

#### Power Requirements:

Voltage	
120V mode	90 to 132 VAC
240V mode	180 to 264 VAC
Turn-on Current	25A max
Frequency	50 to 60 Hz

Power (full load)	140W typ.
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#### Anode Supply:

Voltage adjustment range	34V nom
Current level	3mA max
Static load regulation (no load to full load)	0.2% max
thermal drift	200ppm/°C max
Dynamic load regulation (900pF load capacitance):	
0 to 3mA	150V p-p max

Line regulation	0.1% max
ripple & noise (3mA, 900pF load)	6.6V max

#### Focus Supply:

Terminal Voltage	10.5KV $\pm$ 10%
17KV Multiplier Tap Resistor	35.5M $\Omega$ , 1%
temperature coefficient	100ppm/°C max

#### G2 Supply:

Voltage	800VDC $\pm$ 5%
Current	1mA max
Dynamic load regulation (no load to full load)	16V p-p max
Line regulation	0.8V p-p max
Cross regulation (anode switched no load to full load)	16V p-p max
ripple (1mA load)	5V p-p max