5 .3 Disassembly Procedures

This subsection provides procedural instructions for removal of the projector's main system modules and components. Replacement and reassembly is performed by following these instructions in reverse order (except where noted).

WARNINGS:

1) **Perform servicing only after becoming thoroughly familiar with the service warnings and guidelines covered in section 3.1 of this manual. Noncompliance increases the risk of hazards and injury to the user.**
2) **Servicing must be performed by qualified service personnel.**
3) **Always unplug the projector prior to disassembly. Uninsulated dangerous voltages may be exposed.**
4) **Electrostatic discharge precautions must be observed. A grounded wrist strap should be used during disassembly of electronic circuit modules.**
5) **Always perform an AC leakage test on exposed metallic parts after each servicing. Refer to section 3.2 for leakage test instructions.**

Hardware Layout ➤

The projector system consists of several modules and components, each located in one of three main serviceable areas:

1) Rear Panel Rack
2) Front Slide-out Rack
3) Projection Head

Modules within each of the serviceable areas are inter-connected via cabling and/or the centrally located Mother Board.

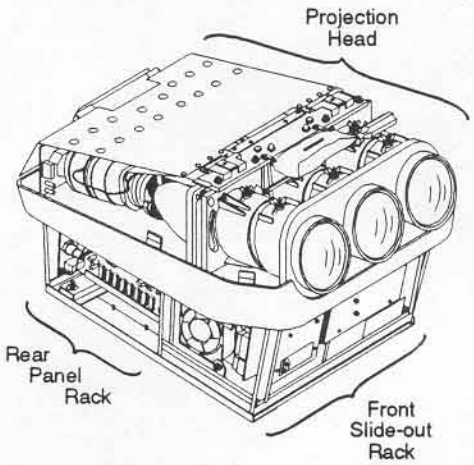

Figure 5-1. Service Areas

Rear Panel Card Rack

The Rear Panel Card Rack contains the projector's plug-in card type modules. They are accessible by removing the rear panel. These modules include:

- Vertical Deflection & Horizontal Regulation Module
- Horizontal Deflection Module
- Remote Control Module
- Waveform Module
- Convergence Module
- Video Control Module
- Auto-Convergence Module (optional)
- Input Module
- RS-232 Communications Module

Front Slide-out Rack

The Front Slide-out Rack is a wire frame module rack which can be temporarily slid out from the front projector base for module servicing. The rack is accessible by removing the lower front panel. Modules contained within this rack include:

- High Voltage Power Supply (HVPS)
- Low Voltage Switch Mode Power Supply (LVPS)

- Power Entry Module (PEM)
- Standby Power Transformer and
- Keystone Module

Projection Head

The Projection Head includes the system's optical and electro-mechanical components. Accessibility is provided by removing the front and rear top covers. Modules and assemblies within the Projection Head area include:

- Lens/CRT Assemblies (3)
- Power Deflection Modules (3)
- Output Modules (3)
- Bias/Focus Module
- High Voltage Splitter
- Built-in Keypad
- IR Sensor Assembly

Top Cover & Shield Removal ➤

The top cover is hinged to the lower case of the projector by two hinges. It is secured by two slot head fasteners at the top of the projector. A large plastic safety shield is located below the cover. It is secured by four screws at the bulkhead top plate.

Tools & Equipment Required:

- large slot screw driver
- Phillips screw driver

a) Turn off the projector then unplug it.

b) Locate the two slot head fasteners on the projector's top cover. Using a large slot screw driver, turn the head of each fastener approximately 3 turns counter-clockwise. See Figure 5-2. At the front of the projector, grasp adjacent sides of the top cover and gently lift it away from the projector body. The cover hinges at the rear.

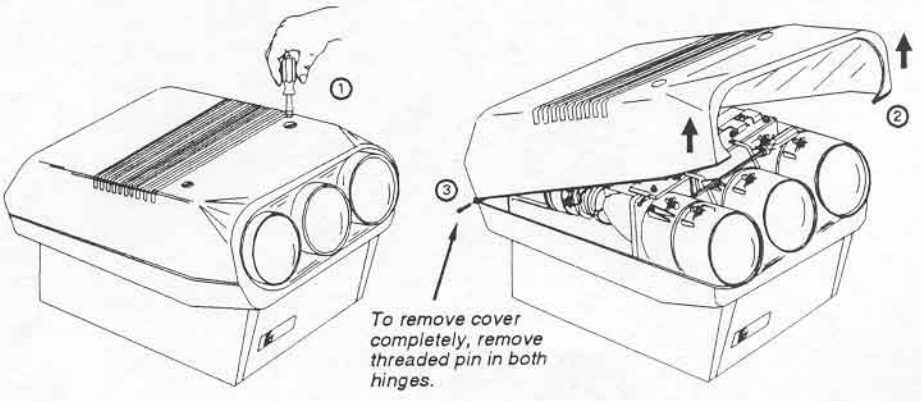

Figure 5-2. *Cover Removal*

Most servicing can easily be performed with the cover lifted while hinged. To remove the cover completely, remove the two threaded hinge screws as shown.

c) Below the cover is a large plastic safety shield. For most servicing the shield does not require removal. It can simply be lifted to access the components below it. Some servicing however, such as CRT replacement, requires that the shield be removed. To remove the shield, remove the two Phillips screws from each of the two case mounting brackets as shown in Figure 5-3. Remove the brackets and lift the shield away from the projector.

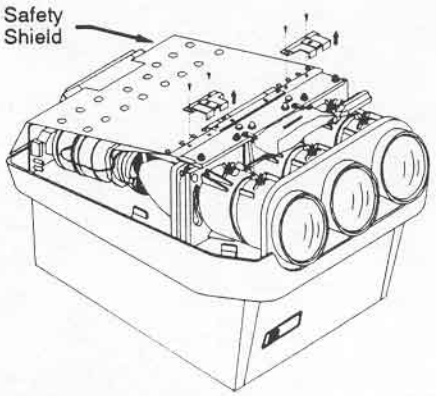

Figure 5-3. *Safety Shield Removal*

Side Panel/Fans Removal ➤

Tools & Equipment Required:

- 1/4" hex head socket driver
- Phillips screw driver

a) Turn off the projector then unplug it.

b) For each side panel, remove the 2 hex head screws which secure the side panel to the projector frame as shown in Figure 5-4.

c) Pull each side panel down and away from the projector.

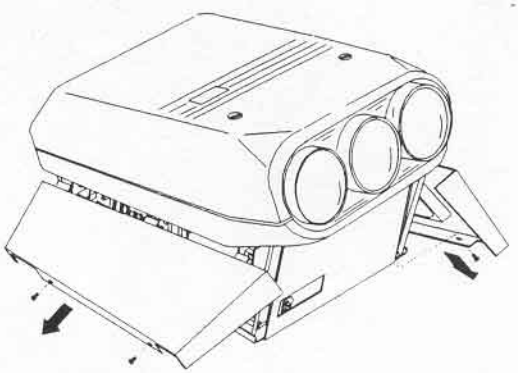

Figure 5-4. *Side Panel Removal*

d) Each side panel contains two cooling fans as shown in Figure 5-5. To remove a fan, unplug the harness at the fan then unscrew the two securing screws.

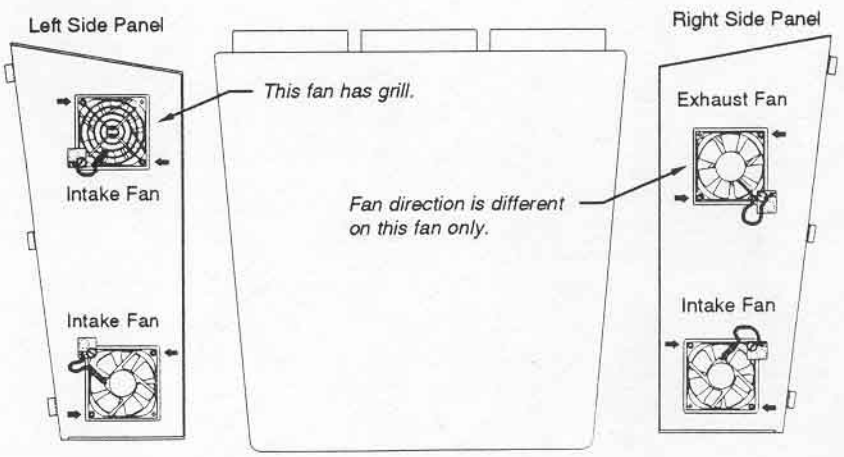

Figure 5-5. *Ventilation Fans*

Note: Check fan orientation before disassembly and during reassembly.

Front Panel Removal & Front Rack Modules Access

The following projector modules are mounted in a slide-out rack located in the lower front portion of the projector:

- High Voltage Power Supply (HVPS)
- Low Voltage Switch Mode Power
- Supply (LVPS)
- Power Entry Module
- Standby Power Transformer
- Line Filter
- Keystone Module

To access any of the above modules, the projector lower front panel must be removed and the front slide-out rack slid away from the projector body. Access the front slide-out rack as follows:

Tools & Equipment Required:

- Phillips screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove side panels per removal instructions.

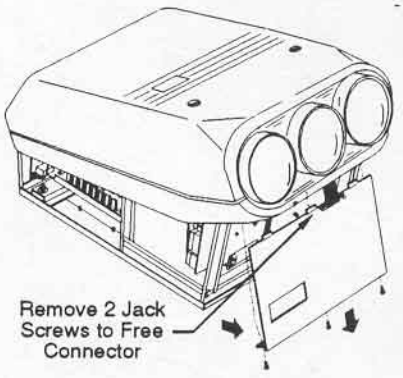

Figure 5-6. ***Front Panel Removal***

c) Remove the 3 hex head screws which secure the front panel to the projector frame as shown in Figure 5-6. Pull the front panel down a few inches then disconnect the ACON connector at the top of the panel by removing the two securing jack screws.

Note: Upon reassembly of the front panel, install the ACON connector with the wider edge of the "D" connector against the panel.

d) Access the front rack modules as follows:

The front rack is positioned behind the front panel and secured to the projector frame by two hex head screws. Remove the two hex head screws as shown in Figure 5-7.

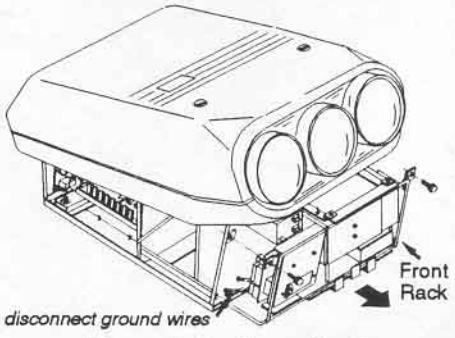

Figure 5-7. ***Front Rack***

Notice how the front rack frame rests within guides located on each side of the projector frame. Grip the front rack and gently slide it out about 2 inches. Locate the three ground wires which are secured to the frame. Remove the two screws which secure the wires. You can then pull the rack out another 2 or 3 inches from the frame. Closely watch all cables connected to the front rack modules to assure no restrictions or unnecessary strain occurs.

Lower Case Removal ➤

The lower case rarely requires removal. It is usually only required for Mother Board removal.

Tools & Equipment Required:

- Phillips screw driver
- 1/4" hex head screw driver

a) Turn off the projector then unplug it.

b) Remove the top cover and side and front panels per their removal procedures.

c) Remove the 12 screws which secure the lower case to the chassis as shown in Figure 5-8. Lower the case away from the projector.

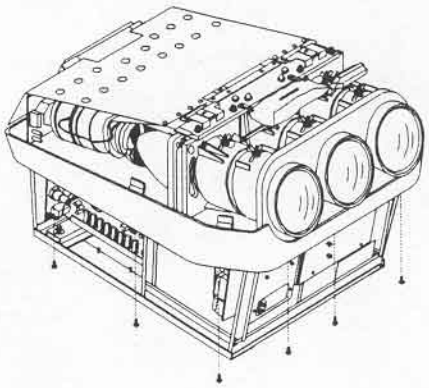

Figure 5-8. *Lower Case Removal*

Rear Panel & Card Rack Modules Removal ➤

The following modules are card-rack mounted in the rear panel card rack:

- Vertical Deflection & Horizontal Regulation Module
- Horizontal Deflection
- Remote Control Module
- Waveform Module
- Convergence Module
- Video Control Module
- Auto-convergence Module (optional - in "spare" slot)
- Video Input Module (in slot 0 or 1 - e.g., RGB Sync 2 Input Module).

See Figure 5-9 below.

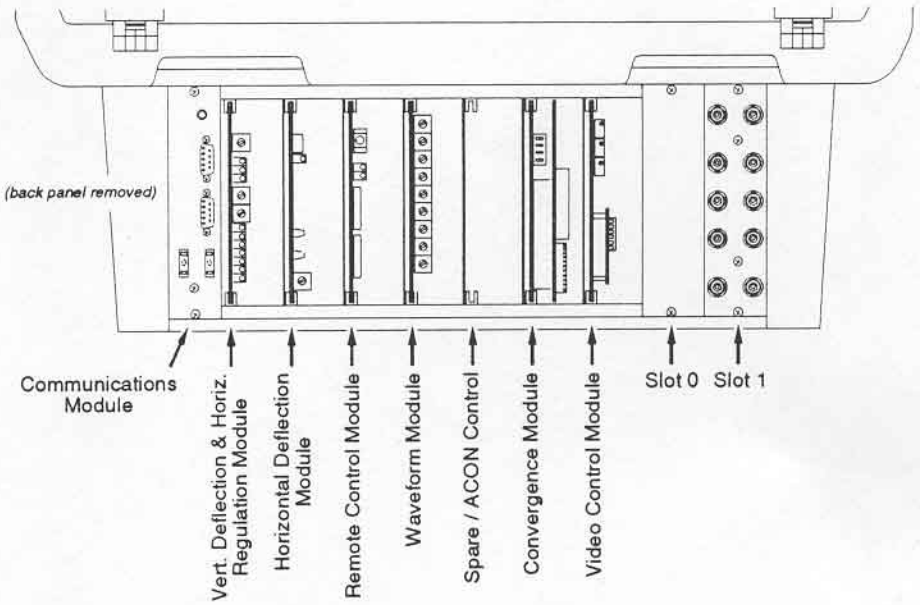

Figure 5-9. *Rear Panel / Card Rack Modules*

Tools & Equipment Required:

- Phillips screw driver

a) Turn off the projector then unplug it.

b) Remove the 6 rear panel securing screws as shown in Figure 5-10 then set the rear panel aside.

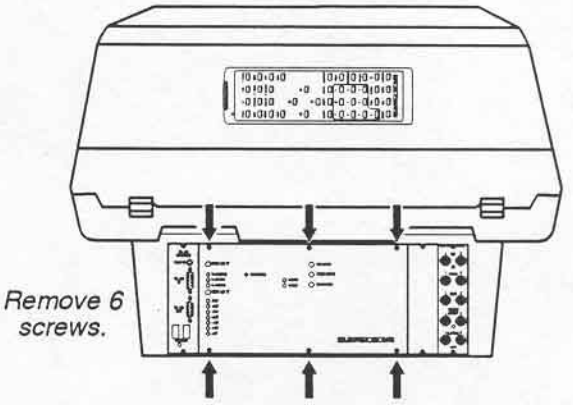

Figure 5-10. *Rear Panel Removal*

c) To remove a module from the card rack use the printed circuit board extraction tool supplied in the tool kit. Insert the hook of the extraction tool into the hole located at the top and/or bottom of the module. Pull the module from the projector. See Figure 5-11.

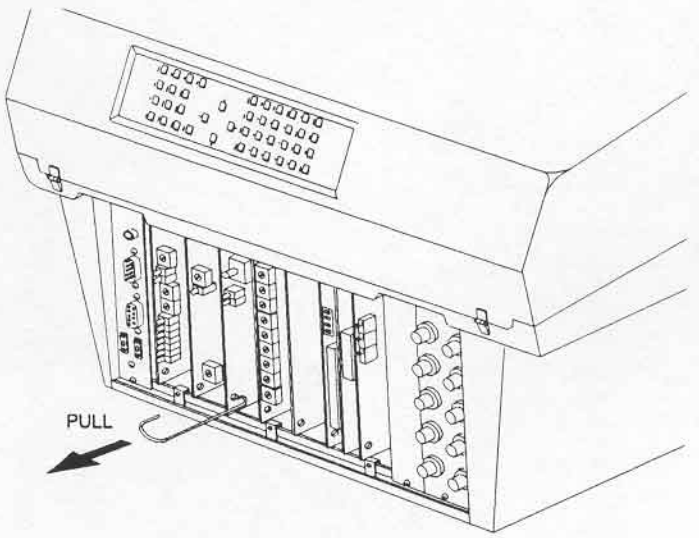

Figure 5-11. *Card Rack Module Removal*

Video (RGB) Input Module Removal ➤

Tools & Equipment Required:
- Phillips screw driver

a) Turn off the projector then unplug it.

b) Remove the 2 securing screws which secure the input module to the frame as shown in Figure 5-12.

c) Pull the module away from the projector.

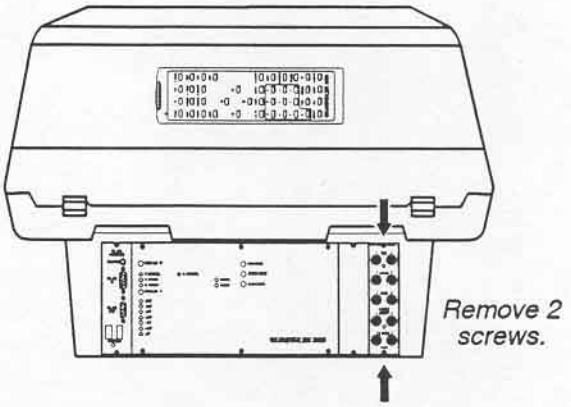

Figure 5-12. *Side Panel Removal*

RS-232 Communications Module Removal ➤

Tools & Equipment Required:
- Phillips screw driver

a) Turn off the projector then unplug it.

b) Remove the 2 securing screws which secure the RS-232 Communications Module to the frame as shown in Figure 5-13.

c) Pull the assembly/module out about 4 inches (10 cm) then unplug the connector at the back of it.

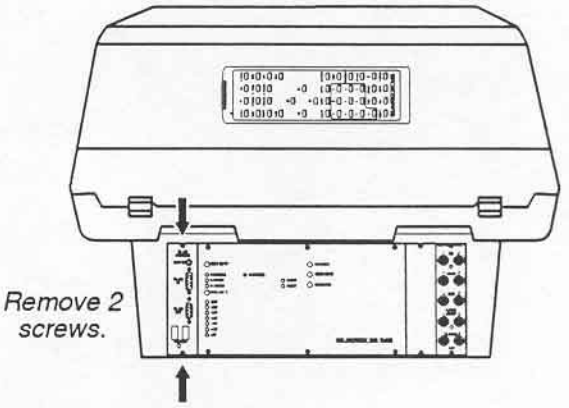

Figure 5-13. *Comm. Module Removal*

Standby Power Transformer Removal ➤

Tools & Equipment Required:
- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the front panel per removal procedure. Remove the screws which secure the front slide-out rack (2 screws) and front grounding wires (2 screws). Pull the rack out about 4 inches.

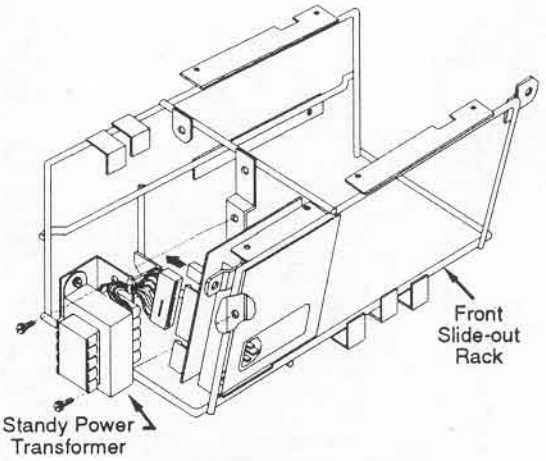

Figure 5-14. *Transformer Removal*

c) Unplug the transformer harness connector from the Power Entry Module as shown in Figure 5-14.

d) Unscrew the two hex head screws which secure the Standby Power Transformer bracket to the front slide-out rack. Feed the transformer assembly out through the bottom of the rack.

e) Remove the two screws which secure the transformer to the bracket.

Line Filter Removal ➤

Tools & Equipment Required:

- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the front panel per removal procedure. Remove the screws which secure the front slide-out rack (2 screws) and front grounding wires (2 screws). Pull the rack out about 4 inches.

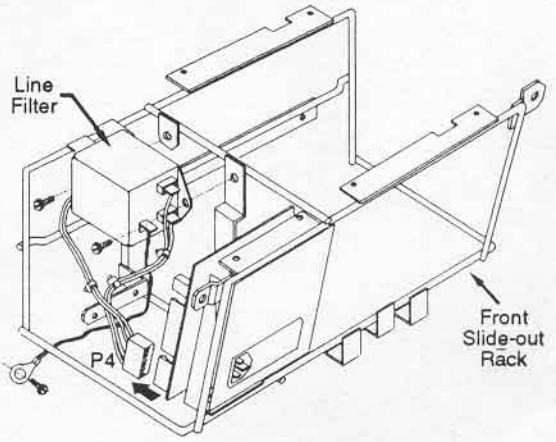

Figure 5-15. ***Line Filter Removal***

c) Unplug filter harness connector from the Power Entry Module as shown in Figure 5-15.

d) Follow the yellow/green earth grounding wire from the line filter to the grounding point located on the projector frame. Disconnect the ground lead at the grounding point.

e) Remove the two screws which secure the line filter to the front slide-out rack. Feed the filter out through the top of the rack.

Power Entry Module Removal ➤

Tools & Equipment Required:

- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the front panel per removal procedure. Remove the screws which secure the front slide-out rack (2 screws) and front ground wires(2 screws). Pull the rack out about 4 inches.

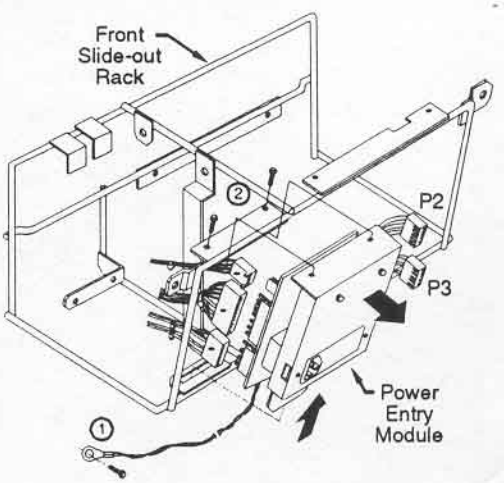

Figure 5-16. ***PEM Removal***

c) Follow the yellow/green grounding wire from the Power Entry Module to the grounding point on the projector chassis. See Figure 5-16. Disconnect the grounding wire.

d) Disconnect the P1, P2, P3, P4 and P5 connections from the rear of the module.

e) Remove the two hex head screws at the top of the module as shown.

f) Remove the Power Entry Module from the front slide-out rack as shown.

High Voltage Power Supply (HVPS) Removal ➤

Tools & Equipment Required:

- slot screw driver
- 1/4" hex head socket driver

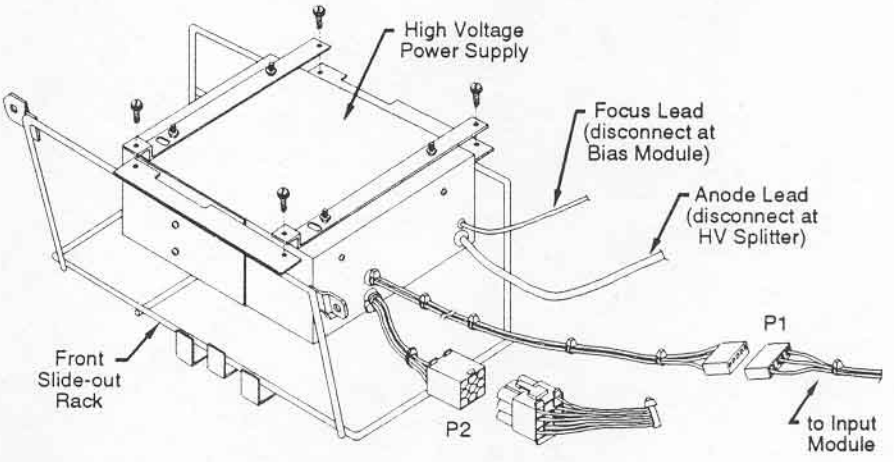

Figure 5-17. *HVPS Removal*

a) Turn off the projector then unplug it.

b) Remove the front panel per removal procedure. Remove the screws which secure the front slide-out rack (2 screws) and front grounding wires (2 screws). Pull the rack out about 4 inches.

c) Remove the side panels per removal procedure.

d) Follow the anode lead from the High Voltage Power Supply to the High Voltage Splitter located in the projection head portion of the projector. Disconnect the anode lead from the Splitter and route it back to the supply.

Note: Record the positions of any cable ties requiring removal.

e) Trace the Focus lead from the High Voltage Power Supply to the Bias/Focus Module located in the projection head portion of the projector. Disconnect the Focus lead from the Bias Board. Attach a piece of wire or string to the end of the lead then route the lead back to the power supply. Detatch the wire/string. Use the wire/string to re-route the new lead when installing the new supply.

Note: Record the positions of any cable ties requiring removal.

f) Disconnect the M24-P1 and M24-P2 connectors from the module as shown in Figure 5-17.

g) Remove the 4 hex head screws as shown. Guide the High Voltage Power Supply out the right side of the front slide-out rack.

Low Voltage Power Supply (LVPS) Removal ➤

Tools & Equipment Required:
- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the side panels per removal procedure.

c) Remove the front panel per removal procedure. Remove the screws which secure the front slide-out rack (2 screws) and front grounding wires (2 screws). Pull the rack out about 4 inches.

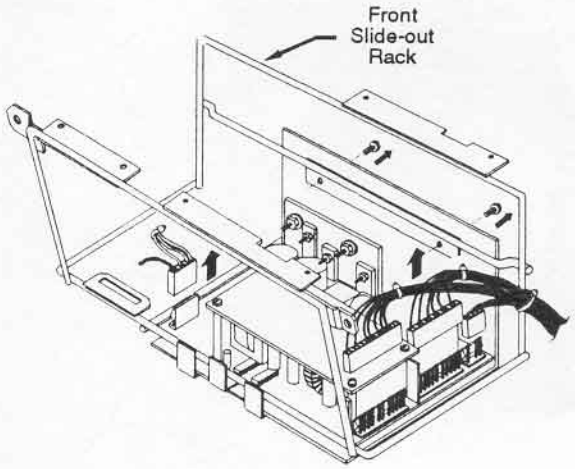

Figure 5-18. *LVPS Removal*

d) Remove the High Voltage Power supply per removal procedure.

e) Disconnect the P1, P2, P3, P4 connections from the module. See Figure 5-18.

f) Pull back and lower the Low Voltage Power Supply until it is removed from the front slide-out rack.

Keystone Module Removal ➤

Tools & Equipment Required:
- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the front panel per removal procedure. Remove the screws which secure the front slide-out rack (2 screws) and front ground wires (2 screws). Pull the rack out about 4 inches.

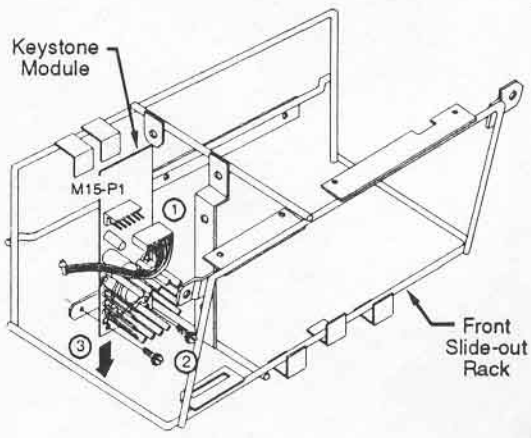

Figure 5-19. *Keystone Module Removal*

c) Disconnect connector P1 from the Keystone Module. See Figure 5-19.

d) Remove the two screws at the bottom of the Keystone Board.

e) Lower the Keystone Module from the slide-out rack.

Built-in Keypad Removal ➤

Tools & Equipment Required:

- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the top cover per removal procedure.

c) See Figure 5-20. Remove the 4 hex head screws which secure the keypad holder to the side brackets then remove the top 2 hex head screws which secure the keypad holder to the top bracket.

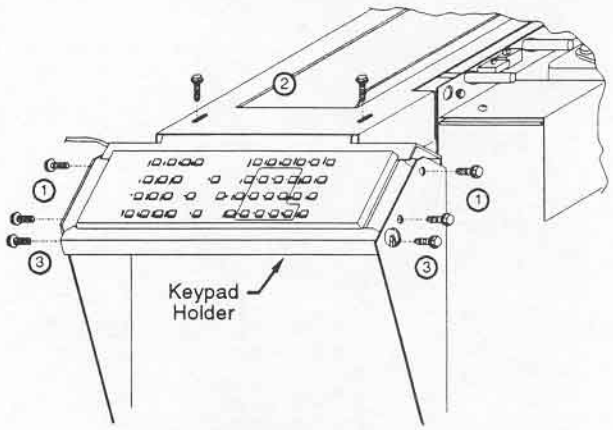

Figure 5-20. *Keypad Removal*

d) Remove the 2 corner screws on the bracket. Gently bend the tow top flanges of the holder to free the keypad.

e) Open the compartment at the back of the keypad. Unplug the keypad harness cable.

Keypad Brackets Removal ➤

The keypad brackets must be removed to allow removal of the CRT, its associated components, and the Power Deflection Modules.

Tools & Equipment Required:

- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the top cover per removal procedure.

c) See Figure 5-21. Remove the top 2 hex head screws which secure the keypad holder to the top bracket.

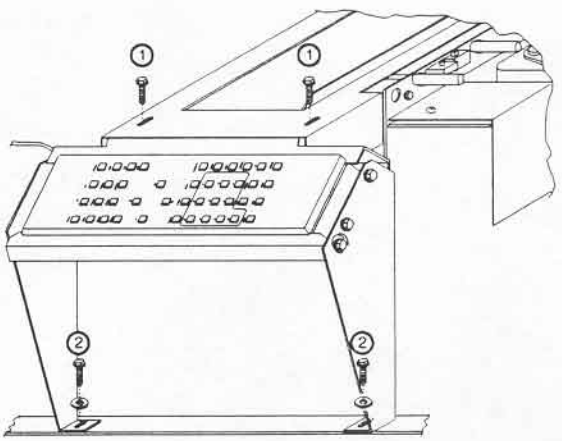

Figure 5-21. *Keypad Brackets Removal*

d) Look at the bottom of the keypad side brackets. Remove the two screws which secure each side bracket to the projector chassis. Move the brackets (with the keypad attached) off to one side. The Green CRT and its associated components are now accessible for removal.

Bias/Focus Module Removal ➤

Tools & Equipment Required:

- slot screw driver
- Phillips screw driver

a) Turn off the projector then unplug it.

b) Remove the top cover per removal procedure. Also remove the plastic safety shield as covered in the procedure.

c) Locate and disconnect the following wires on the Bias/Focus Module: P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11 and P12.

d) Remove the two Phillips screws which secure the module to the rectangular top bracket. See Figure 5-22.

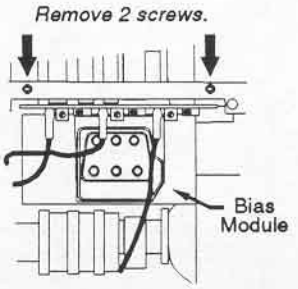

Figure 5-22.
Bias/Focus Module Removal

Power Deflection Module Removal ➤

Tools & Equipment Required:

- slot screw driver
- 3/16" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the top cover per removal procedure.

c) Remove the keypad brackets (with keypad) per removal procedure. (It is not necessary to disconnect the keypad).

d) Disconnect connectors P6, P7, and P8 from the Power Deflection Module.

e) Remove the two Phillips screws securing the Power Deflection Module to the upper rear extrusion.

f) Carefully remove the Power Deflection Module from the projector.

Video Output Module Removal ➤

Tools & Equipment Required:

- slot screw driver

a) Turn off the projector then unplug it.

b) Remove the top cover per removal procedure.

c) If the Video Output module for the green CRT is to be removed, remove the keypad bracket (with keypad) per removal procedure. (The keypad cable does not need to be disconnected).

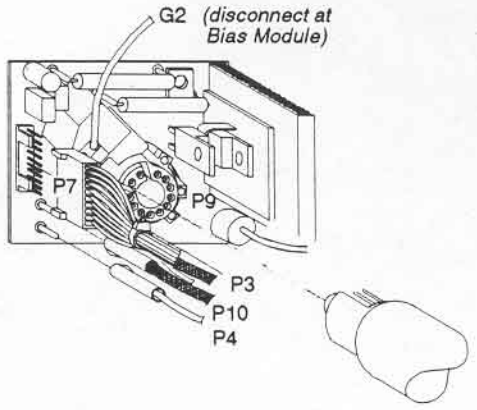

Figure 5-23.
Video Output Module Removal

d) Gently pull the Video Output Module away from the CRT.
The module is secured to the CRT by a small amount of hot-melt glue. The joint between the glue and the CRT should break without difficulty.

Note: The purpose of the glue is to secure the Video Output Module for shipping. At reassembly time, it may not be necessary to reapply the glue. If you decide to reapply the glue, pull or scrape off the hardened glue from the module's CRT connector. Reconnect the Video Output Module to the CRT and apply the same amount of hot melt glue between the CRT connector and the CRT connector terminals.

e) Follow the G2 lead to the Bias/Focus Module and disconnect it.

f) Disconnect the following connectors and leads from the Video Output Module:

Focus Lead (to Bias/Focus module)
P3 (ground)
P10 (ground)
P7
P9

CRT Removal ➤

Refer to section 4.16, *CRT Replacement and Realignment* for removal instructions.

Lens Assembly Removal ➤

Tools & Equipment Required:
- slot screw driver
- 1/4" hex head socket driver

a) Turn off the projector then unplug it.

b) Remove the top cover per removal procedure.

c) Remove the foam shield which surround the lenses.

d) Remove the 4 hex head screws (and washers) which secure the lens to the lens mounting plate. See Figure 5-24.

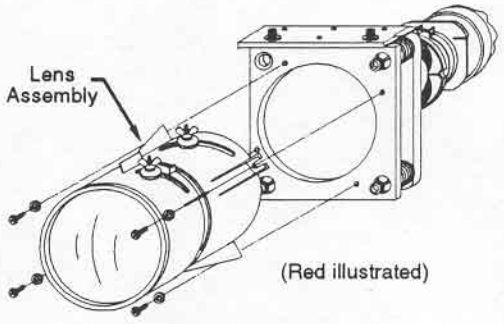

Figure 5-24. ***Lens Removal***

e) Carefully remove the lens from the projector.

Mother Board Removal ➤

Tools & Equipment Required:
- slot screw driver
- 1/4" hex head socket driver
- Phillips screw driver

a) Turn off the projector then unplug it.

b) Remove the following covers and panels per their removal procedures:
- top cover
- both side panels
- lower case
- rear panel

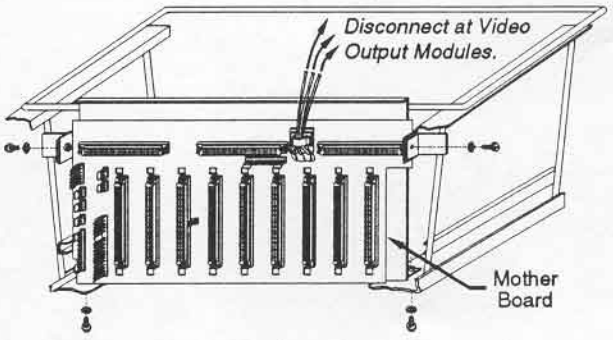

Figure 5-25. ***Mother Board Removal***

c) Remove all rear plug-in modules. These include:
- Video Input Module(s)
- Video Control Module
- Convergence Module
- Auto-Convergence Module (optional)
- Waveform Module
- Remote Control Module
- Horizontal Deflection
- Vertical Deflection & Horizontal
- Regulation Module
- RS-232 Communications Module

d) From the rear panel card rack, remove each of the upper and lower snap-in type card slides and module shields.

Note: Record the slot position for removed shields. For ease, it is recommended to remove slides and shields beginning from the right side to the left side of the card rack.

e) Remove each Power Deflection Module per removal procedure.

f) Unplug all connections from the Mother Board. These include: P13, P14, P15, P16, P17, P18, P21, P22 and P23.

g) Follow the three leads which lead to the Video Output Modules. Unplug the lead at each module.

h) Remove the hex head screws securing the projector bottom plate to the projector frame. See Figure 5-25.

i) With the bottom plate removed, remove the 2 side screws which secure the Mother Board backplane to the projector frame.

j) The Mother Board can then be removed through the bottom of the projector frame.