



Power Macintosh/Performa 5260, 5280 Series

Power Macintosh 5260/100, 5260/120
International Performas 5260/120, 5280





Basics

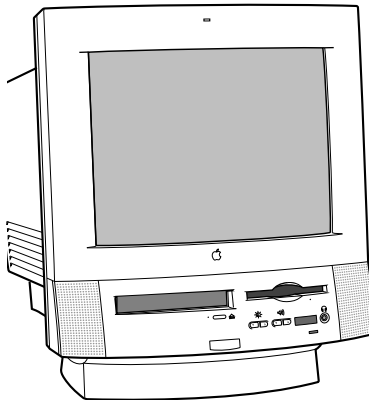
Power Macintosh/Performa 5260, 5280 Series





System Overview

The Power Macintosh 5260 and 5280 design includes expansion slots for 68040 LC communications and PDS cards, as well as other video-in, video tuner, and video-out options. Disk storage includes an IDE hard drive in a variety of capacities and a trayloading CD-ROM drive.





5260/120 and 5280

The Performa 5260/120 is sold in Canada and Australia. The Performa 5280 is sold in Japan. The Power Macintosh 5260/120 is sold in the United States and Canada.

The 5260/120 and 5280 models are similar to the 5260/100, but differ with these features:

- PowerPC 603e processor at 120 MHz clock frequency
- 16 MB of DRAM minimum (32-bit wide, 72-pin fast-paged mode, 80-nanosecond SIMMs)
- AppleCD 1200i CD-ROM





Service Strategy

Service the Power Macintosh/Performa 5000 series through module exchange and parts replacements. Customers can request on-site service from an Apple Authorized Service Provider Plus (AASP+) or Apple Assurance. They can also choose carry-in service from an Apple Authorized Service Provider (AASP).

Ordering

AASPs planning to support the Power Macintosh/Performa 5000 series may purchase service modules and parts to develop servicing capability. To order parts, use the AppleOrder system, or refer to the "Service Price Pages." Large businesses, universities, and K-12 accounts must provide a purchase order (PO) on all transactions, including





orders placed through the AppleOrder system. Service Providers not enrolled in AppleOrder may fax their orders to Service Provider Support (512-908-8125) or mail them to

Apple Computer, Inc.
Service Provider Support
MS 212-SPS
Austin, TX 78714-9125

Warranty and AppleCare

These new computers are covered under the Apple One-Year Limited Warranty. The AppleCare Service Plan is also available. Service Providers are reimbursed for warranty and AppleCare repairs made to these computers. For pricing information, refer to the AppleCare section in the “Service Price Pages.”





Diagnostics

Use MacTest Pro for Power Macintosh to perform diagnostics on the Power Macintosh/Performa 5000 series.

Design for Serviceability

To access the floppy drive, CD-ROM drive, or front panel control board, remove the drive and controls bezel. To service the logic board, hard drive, or video options, remove the I/O door. The logic board slides from a connector similar to the connector on Macintosh LC 630 and LC 500.

The CRT and degauss frame are matched at the factory and are removed and replaced as a unit. The chassis harness is one service module, including the metal chassis and logic board connector with cables.





User Controls

User controls include

- Soft power-on control from keyboard
- Front-panel sound-control pushbuttons
- Front-panel brightness-control pushbuttons
- Optional infrared remote control





Internal Expansion Connections

Expansion connections on the logic board include

- 2 DRAM SIMM expansion slots
- LC Processor Direct Slot (PDS)
- Communications slot for modems and Ethernet
- Video-in slot for real-time video display, capture, and overlay
- External video port

An expansion ribbon connector for an optional TV Tuner card provides NTSC and PAL input from an external TV antenna or cable.





Intelligent Device Electronics (IDE) Hard Drive

The internal hard drive uses Intelligent Device Electronics (IDE) technology, commonly used in DOS-compatible systems. The IDE hard drive functions the same as a typical SCSI hard drive. You must replace IDE drives like-for-like.

The IDE drive does not affect SCSI ID selections or SCSI termination schemes. Seven external SCSI devices may be daisy-chained through the external SCSI port.





Processor Direct Slot (PDS)

The LC-PDS is compatible with the PDS in the Macintosh LC family of computers, but it is not a true PDS. Like the expansion slot in the other models in the Power Macintosh and Performa 5000 series, this expansion slot supports many PDS cards designed to operate with the MC68030 bus.

While the I/O expansion slot accepts PDS cards designed for the Macintosh LC family of computers, some of those cards do not work. PDS cards designed to interact with the main processor—to provide, for example, a RAM cache or an FPU—will not work in the I/O expansion slot.





Video-In Card

The Video-In Card is an optional card included with the Apple Video System. It allows users to digitize video from the TV Tuner, MPEG Card, and external composite or S-video inputs. It accepts NTSC, PAL, or SECAM format video and also provides stereo audio inputs.

Install the Video-In Card into the dedicated 60-pin, 1.75-inch video slot.





MPEG Card

The MPEG Card is an optional card included with the Apple MPEG Media System. The MPEG Card requires that the Video-In Card be installed. It provides hardware decompression for MPEG movie files, enabling full-screen (through pixel doubling), 30-frames-per-second, 24-bit video playback with 16-bit audio. After the MPEG movies are compressed, they are sent to the Video-In Card, which converts the data into digital format for output to the screen.

Install the MPEG Card in the processor direct slot.





TV Tuner Module

The TV Tuner, an optional module included with the Apple TV/Video System, turns the computer into a television receiver. The TV Tuner requires the Video-In Card, which is also included with the Apple TV/Video System. The TV Tuner receives incoming television signals from cable or antenna television inputs, and then sends the information to the Video-In Card, which converts the data for display on the screen. In the United States, only NTSC is supported, but PAL and SECAM are available internationally.

Install the TV Tuner in a separate bay at the rear of the computer, below the logic board.





TV/FM Radio Tuner Card

The TV/FM radio tuner card turns the computer into a television and FM radio receiver, complete with remote control. An expansion ribbon connector for the optional TV/FM radio tuner card provides NTSC and PAL input from an external TV antenna or cable. Change channels by typing the channel number on the keyboard or with the remote control. Switch between the current and previous channel by pressing the Tab key. The computer displays the user-assigned channel name on the picture in the video window.

Apple Video Player software supports the TV/FM tuner card. The user can disable channels and require a password to access the disabled channels. Users can also capture or freeze a single frame of video or record a segment of video as a QuickTime movie. It isn't possible to resize the window while recording a movie.





The TV picture is in its own window on the desktop, and the default size of the window is 320x240 pixels. The picture can be resized from 160x120 pixels up to 640x480 pixels. The resolution of the picture does not increase at larger window sizes, but the image is expanded by doubling the pixel size or by two-dimensional linear interpolation.

The TV signal is carried in YUV format for improved picture clarity. The YUV format is 16-bit, with 8 bits for the Y (luminance) channel and 8 bits for the U and V (chrominance) channels to share by multiplexing. The picture is clearer because the YUV format carries more levels of luminance information.





The card is available in versions for NTSC, PAL, and SECAM television systems. The features of the TV tuner include the following:

- Remote tuner for 181 broadcast and cable channels (U.S. version)
- Coaxial connector for TV antenna or cable input (F-type connector in U.S. and Japanese version, IEC-type connector in Europe)
- TV picture in a resizable and movable window
- YUV format for improved clarity
- Closed captioning and teletext support
- Software password protection
- Automatic and manual channel programming
- Single remote control for TV and for playback of audio CDs





The features of the FM radio tuner include the following:

- FM radio frequencies received and displayed
- Stations scanned and searched up and down the frequency spectrum
- Step frequency
- DX mode to tune out harmonic spillover from other stations
- Stereo/mono station indicator
- Preset station programming





External Video Connector

The External Video Connector is an optional module that provides the computer with video output (mirroring). Install the External Video Connector in a dedicated 3/4-inch, 22-pin slot on the logic board.





Apple Presentation System

The Apple Presentation System (APS) is an external module that uses the 15-pin video output connector on the computer, and then provides a video signal for a separate television display or for recording on a VCR. The APS supports video mirror mode, where the image on the television display is the same as the computer's primary video monitor. The APS is required for video mirroring.





The Cuda Chip

The Cuda is a microcontroller chip. Its function is to

- Turn system power on and off
- Manage system resets from various commands
- Maintain parameter RAM (PRAM)
- Manage the Apple Desktop Bus (ADB)
- Manage the real-time clock

Many system problems can be resolved by resetting the Cuda chip. Press the Cuda reset button on the logic board to reset the Cuda chip. See the 5400 or 5260/5280 logic board diagrams later in this chapter to locate the Cuda reset button.





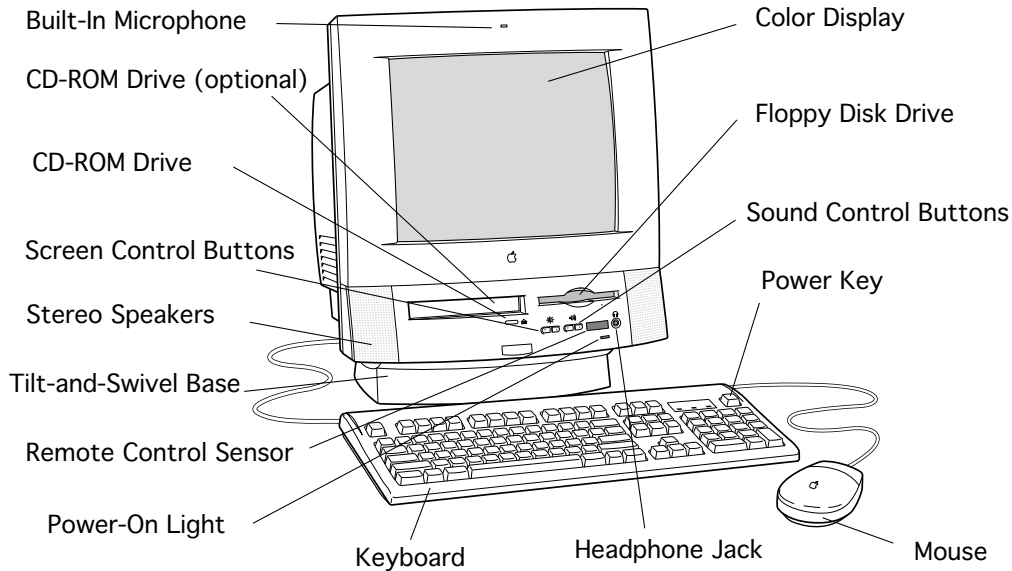
CRT and Degauss Frame

The CRT and degauss frames are precisely matched at the factory and must be removed and replaced as a unit.



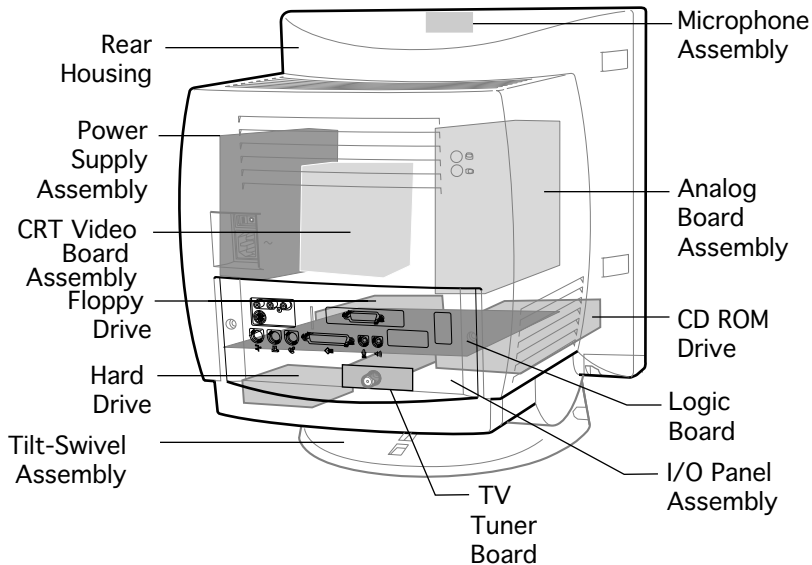


Front View



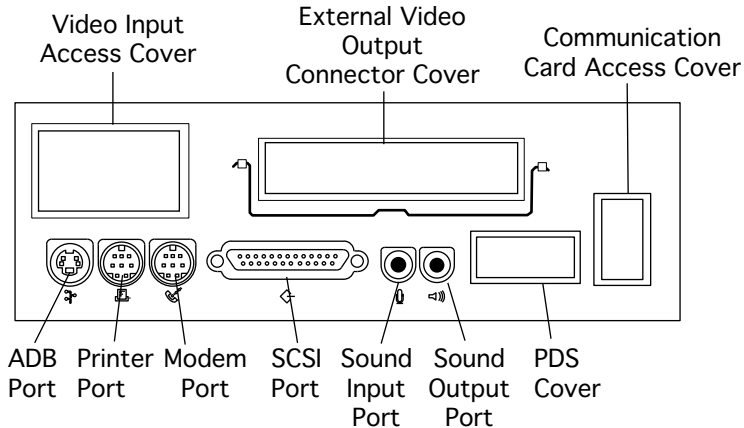


Rear View



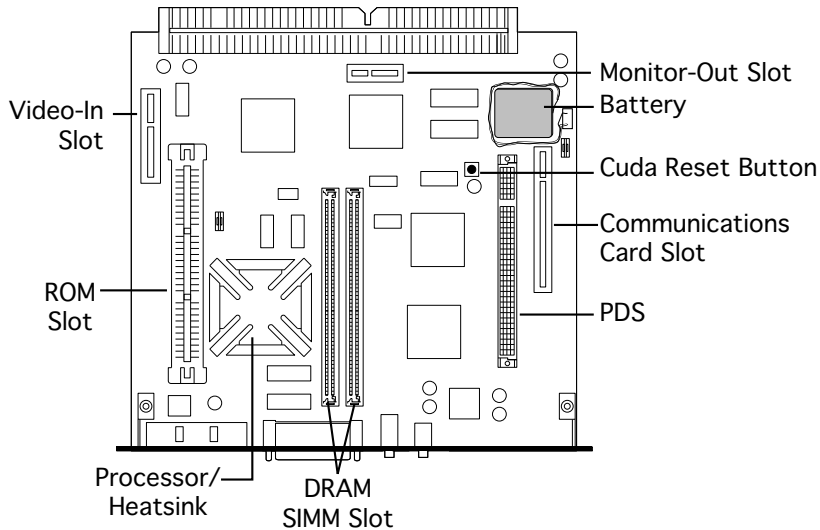


I/O Panel





5260/5280 Logic Board





Specifications

Power Macintosh/Performa
5260, 5280 Series





Processor

CPU

5260/100

PowerPC 603e processor
100 MHz

5260/120, 5280

PowerPC 603e processor
120 MHz

Addressing

64-bit PowerPC bus





Memory

DRAM	16 MB DRAM, minimum Expandable to 64 MB (72-pin, 80 ns or faster SIMMs)
Frame Buffer	1 MB DRAM on board, for video support
ROM	4 MB
Cache Memory	256K Level 2





Disk Storage

Floppy Drive

1.4 MB Apple SuperDrive Manual Insert

Hard Drive

800 MB, 1.2 GB, or 1.6 GB IDE hard drive

CD-ROM Drive

5260/100

Standard AppleCD 600i drive

5260/120, 5280

AppleCD 1200i drive





I/O Interfaces

Serial	Two RS-232/422 serial ports for modem and printer (mini DIN-8 connectors) LocalTalk supported
SCSI	One external SCSI port (DB-25 connector) Supports up to seven SCSI devices
Apple Desktop Bus	One Apple Desktop Bus (ADB) port (mini DIN-4 connector)
Sound Input	Built-in microphone for monaural sound input. Sound-input port for microphone or line input. The port accepts stereophonic input, but sound is combined into monophonic sound for play-through or recording.



**Sound Output**

Two stereophonic sound output ports, level nominally 0.5 V RMS into 39 ohms

One front headphone jack, one rear stereo mini phonejack

Internal stereo speakers

External Video Connector

One DB-15 mirror video out connector using optional video connector kit. This feature provides “mirroring” (or display of the system’s monitor’s screen on a presentation screen).

(Note: the external video display is presentation only. It cannot be manipulated directly by mouse or other input signals.)





Video-in Slot	One 60-pin video-in slot for optional expansion card providing real-time video display, capture, and overlay.
TV Tuner	One 10-pin port for TV Tuner card
Communications	One 112-pin internal expansion slot for modem or Ethernet card (68040-bus configuration)
Processor-Direct Slot	One 96/114-pin internal expansion slot for LC-compatible processor-direct card
Controls	Soft-power control from keyboard Front panel pushbutton control for sound volume Front panel pushbutton control for display brightness Infrared remote control option





I/O Devices

Keyboard

Apple Extended Keyboard II, AppleDesign (other ADB keyboards supported)

Mouse

Apple Desktop Bus Mouse
Mechanical tracking, optical shaft, or contact encoding

Microphone

Integrated microphone for monophonic sound input

Speaker

Integrated stereo speakers capable of delivering 16-bit stereo sound





Sound and Video

Sound Generator

Records at 11-kHz or 22-kHz sample rate

Plays back at 22-kHz sample rate

Two speakers with enhanced stereo sound

Allows playback and recording of ordinary audio compact discs (CDs)

16-bit monophonic sound input

16-bit stereophonic sound output (16-bit CD stereophonic playback), level nominally 0.5 V RMS into 39 ohms

Sound-input port for microphone or line input; accepts stereophonic input, but sound is combined into monophonic sound for play-through or recording

Two stereophonic sound output ports, level nominally 0.5 V RMS into 39 ohms

Internal speaker muted when a plug is inserted into an output jack





Built-in Video Display

Dot Pitch: 0.28 mm

Vertical Frequency: 66.7 Hz

Active Raster Size (nominal): 9.5 in. by 7.3 in. (240 mm by 185 mm)

White Point: 9,300° K

Shipping Brightness (nominal): 25-foot lamberts

14-in. Shadow Mask display (12.8-in. viewable image)

Phosphor (aluminized): P22 (red, green, blue)

Phosphor CIE Coordinates:

Red $x = 0.643 \pm 0.020$, $y = 0.324 \pm 0.020$

Green $x = 0.301 \pm 0.020$, $y = 0.606 \pm 0.020$

Blue $x = 0.142 \pm 0.015$, $y = 0.056 \pm 0.015$

Video Modes

Supports 640x480 resolution with 16-bit color.





Monitor Timings

640x480 Resolution at 60 Hz

Horizontal Timing

Back porch: 96 dots
HSYNC: 64 dots
Front Porch: 64 dots
1 dot: 33.06878 ns
1 H: 28.5714 ms
1/dot: 30.24 MHz

Vertical Timing

Back porch: 39 H
VSYNCH: 3 H
Front Porch: 3 H
1 H: 28.5714 ms
1/H: 35.000 k Hz
1 V: 15.000 ms





Monitor Timings

640x480 Resolution at 66.67 Hz

Horizontal Timing

Back Porch: 96 dots
H SYNC: 64 dots
Front Porch: 64 dots
1 dot: 33.06878 n
1 H: 28.5714 ms
1/dot: 30.24 MHz

Vertical Timing

Back Porch: 39 H
V SYNC: 3 H
Front Porch: 3 H
1 H: 28.5714 ms
1/H: 35.000 kHz
1V: 15.000 ms
1/V: 66.666 Hz





Monitor Timings

800x600 Resolution at 60 Hz

Horizontal Timing

Back Porch: 88 dots
H SYNC: 128 dots
Front Porch: 40 dots
1 dot: 25.000 ns
1 H: 26.4 ms
1/dot: 40.000 MHz

Vertical Timing

Back Porch: 23 H
V SYNC: 4 H
Front Porch: 1 H
1 H: 37.879 ms
1/H: 16.58 kHz
1 V: 60.3165 ms
1/V: 60.3165 Hz





Monitor Timings

800x600 Resolution at 72 Hz

Horizontal Timing

Back Porch: 64 dots
H SYNC: 120 dots
Front Porch: 56 dots
1 dot: 20.000 ns
1 H: 20.800 ms
1/dot: 50.000 MHz

Vertical Timing

Back Porch: 23 H
V SYNC: 6 H
Front Porch: 37 H
1 H: 20.800 ms
1/H: 48.077 kHz
1 V: 13.853 ms
1/V: 72.186 Hz





External Video

Connector (Optional)

Supports video mirroring on the following external monitors (at product introduction):

Supports video mirroring on the following external monitors (at product introduction) with 640x480 resolution: Macintosh 13" Color Display, Apple Color Plus 14" Display, Macintosh Color Display, Apple Performa Plus Display, Apple Multiple Scan 14 Display, Apple Multiple Scan 15 Display, Apple Multiple Scan 17 Display, Apple Multiple Scan 20 Display, AppleVision 1710AV Display, Apple Multiple Scan 1705 Display, VGA monitors (a plug adapter may be required)





Electrical

Line Voltage

100-240 VAC

Frequency

47-63 Hz

Power

240 W maximum

Surge Voltage: 300 V RMS for 100 ms

Peak Inrush Current: 40 A pk

Current: 4.0 A maximum for all line and load conditions

Power: 220 W maximum for all line and load conditions





Physical

Dimensions

Height: 17.5" (445 mm)

Width: 16" (406 mm)

Depth: 15.1" (383 mm)

Weight

Without CD-ROM: 17 lb.

With CD-ROM: 19 lb. (21.15 kg)

Weight varies with options





Environmental

Temperature

Operating: 50°–104° F (10°–40° C)

Transit (72 hours): -40° F to +149° F (-40° C to +65° C)

Storage (6 months): -40° F to +116° F (-40° C to +47° C)

Humidity

Noncondensing, 20–95%

Altitude

0–10,000 ft. (0–3,000 m)





Troubleshooting

Power Macintosh/Performa 5260, 5280 Series





General

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to your product. Because cures are listed on the charts in the order of most likely solution, try the first cure first. Verify whether the product continues to exhibit the symptom. If the symptom persists, try the next cure. (**Note:** If you have replaced a module, reinstall the original module before you proceed to the next cure.)

If you are not sure what the problem is, or if the Symptom Charts do not resolve the problem, refer to the Flowchart for the product family.

For additional assistance, contact Apple Technical Support.





First Checklist

Jitter, faint lines, or screen movement can be caused by external interference such as electronic devices and fluorescent lights. Move the unit to another room or building to help determine if external interference is the source of the problem.

A misadjusted screen can mimic the same symptoms as analog board or CRT failures. By performing the adjustment procedures, you might determine if one or more of the adjustments is the cause of the problem.





Symptom Charts

System

System
intermittently
crashes or hangs

- 1 Verify that system software is version 7.5 or later.
- 2 Verify that software is compatible with system.
- 3 If Ethernet card is installed, verify that it is fully seated.
- 4 Check that system has enough memory installed for application.

System does not start
up

- 1 Reset logic board. Refer to Additional Procedures.
- 2 Replace power supply.
- 3 Check power cord connection.
- 4 Replace logic board. Retain customer's SIMMs.





System will not start up from keyboard, but will start up from rear power switch	1	Verify keyboard as known-good.
	2	Replace analog board.
System continually restarts after Shutdown from Special menu	1	Verify keyboard as known-good.
	2	Replace analog board.
Flashing “?” appears at startup in system with vacant PDS and communications slots	1	Diagnose hard drive with Disk First Aid included on Power Macintosh CD-ROM.
	2	Perform repairs, and then go to step 4.
	3	If repairs are impossible, back up drive, reformat with Drive Setup 1.0.3, and then go to step 4.
	4	Update driver using Drive Setup 1.0.3.
	5	Perform clean install of system software.





Menu bar constantly flashes or system constantly beeps

- 1 Verify that front-panel control buttons are not jammed.
- 2 Verify “mute” is not selected in the Sound control panel.
- 3 Reseat drive bezel and front-panel control board.





Audio

Distorted or garbled sound from both speakers	Replace analog/video board assembly.
Distorted or garbled sound from one speaker	<ol style="list-style-type: none">1 Replace defective speaker.2 Replace analog/video board assembly.
Sound distortion with MPEG board installed	Replace MPEG board with modified MPEG board. A modified board should have a jumper present from U5 Pin 2 to D1 Pin 1.
No sound output from speakers	<ol style="list-style-type: none">1 Check sound source.2 Check that speaker cable at connector P601 on analog board is plugged in and not defective.3 Reseat drive bezel and front-panel control board.





Crackling noise is present when playing sounds other than system beeps and not in “play through” mode

- 1 If static noise varies while adjusting volume with Sound control panel, use Audio Volume Extension 1.1 or later.
Note: Audio Volume Extension is available from standard Apple software update sites.
- 2 Replace logic board.





Video

Screen is black, too dark, or too bright; audio and drive operate

- 1 Adjust contrast button on front bezel.
- 2 Adjust brightness. Use Screen control panel.
- 3 Check yoke cable connection.
- 4 Perform video adjustments. Refer to “Video” in Adjustments chapter.
- 5 Replace analog/video board assembly.
- 6 Replace power supply board.
- 7 Replace CRT.

Screen is bright and audio is present, but no video information is visible

- 1 Perform video adjustments. Refer to “Video” in Adjustments chapter.
- 2 Replace analog/video board assembly.





Video will not play or system hangs when attempting to run video in units with MPEG card

- 1 If chip at location U12 on MPEG card displays number 341S0205, check all connections.
- 2 If chip at location U12 on MPEG card does not display number 341S0205, replace MPEG card.

Single vertical or horizontal line is displayed

- 1 Replace analog/video board assembly.
- 2 Replace CRT.

Predominant color tint or color cannot be adjusted

- 1 Verify that video board is securely connected to CRT socket.
- 2 Check cable connections to analog/video board.
- 3 Replace the RGB cable.
- 4 Replace analog/video board assembly. Perform video adjustments (refer to “Video” in Adjustments chapter).
- 5 Replace CRT.





Out of convergence
(color bleeds from
text or lines)

- 1 This problem rarely indicates a defective module. Some misconvergence is normal, especially around edges of screen. Contact Apple Technical Support if you're uncertain whether misconvergence is within specification.
- 2 Replace analog/video board assembly.

Black screen spots
(burnt phosphors)

Replace CRT.

Picture breaks into
diagonal lines, or
picture rolls
vertically or
horizontally

- 1 Perform geometry adjustments. Refer to "Geometry" in Adjustments chapter.
- 2 Replace analog/video board assembly.





Screen jitters or
flashes

- 1 Refer to “First Checklist” in Troubleshooting chapter. Move electrical devices (other monitors, scanners, and so on) away from monitor. Temporarily shut off all fluorescent lights in area.
- 2 Move unit to another room or building and check if symptom persists.
- 3 Replace analog/video board assembly.

Out of focus

- 1 Perform focus adjustment. Refer to “Focus” in Adjustments chapter.
- 2 Check for proper screen luminance. If luminance is off, perform Cutoff and White Balance procedures. Refer to “Video” in Adjustments chapter.
- 3 Replace analog/video board assembly.





Linearity bad (size of text/graphics differs at top, bottom, or sides of screen)

Replace analog/video board assembly.

Raster tilted or shifted

- 1 Refer to “First Checklist” in Troubleshooting chapter. Move metal objects away from monitor.
- 2 Perform appropriate geometric adjustments. Refer to “Geometry” in Adjustments chapter.
- 3 Replace analog/video board assembly.





Raster distorted
(barrel-shaped,
corners not square,
stretched or
compressed at top of
display, or sides not
perpendicular)

- 1 Refer to “First Checklist” in Troubleshooting chapter.
- 2 Perform appropriate geometric adjustments. Refer to “Geometry” in Adjustments chapter.
- 3 Install monitor-adjustment cable and use on-screen video adjustment controls to eliminate distortion. Based on video tolerances, some distortion is allowed and setting need not be perfect. Contact Apple Technical Support if you’re unsure about tolerance level.
- 4 Replace analog/video board assembly.

Raster not centered

- 1 Adjust horizontal or vertical shift control. Refer to Adjustments chapter.
- 2 Refer to “First Checklist” in Troubleshooting chapter.





Screen has white areas with blotches of color

- 1 Refer to “First Checklist” in Troubleshooting chapter.
- 2 Because this purity problem can be caused by magnetic fields, move unit to another location.
- 3 Degauss display with manual degaussing coil. (Degaussing coils can be purchased at most major electronic parts stores.)





Floppy Drive

Audio and video are present, but internal floppy drive does not operate

- 1 Replace bad disk with known-good disk.
- 2 Replace floppy drive.
- 3 Replace logic board. Retain customer's SIMMs.

Disk ejects; display shows icon with blinking "X"

- 1 Replace bad system disk with known-good system disk.
- 2 Replace floppy drive.
- 3 Replace logic board. Retain customer's SIMMs.

Unable to insert disk all the way

- 1 To eject previously inserted disk, insert opened paper clip into hole beside floppy drive.
- 2 Switch off system and hold mouse button down while switching system on (to complete eject cycle).
- 3 Replace floppy drive.





- | | |
|---|---|
| Disk does not eject | <ol style="list-style-type: none">1 Insert opened paper clip into hole beside floppy drive.2 Switch off system and hold mouse button down while switching system on (to complete eject cycle).3 Replace floppy drive. |
| Internal floppy drive runs continuously | <ol style="list-style-type: none">1 Replace bad disk with known-good disk.2 Replace floppy drive.3 Replace logic board. Retain customer's SIMMs. |





Hard Drive

Internal or external hard drive does not operate

- 1 Verify that all hard drive connections are secure.
- 2 Verify that external drive is properly terminated.
- 3 Reseat logic board.
- 4 Replace internal IDE hard drive.
- 5 Replace chassis/wiring harness.
- 6 Replace logic board. Retain customer's SIMMs.

Internal hard drive runs continuously

- 1 Verify that system software is version 7.5 (or later).
- 2 Replace hard drive cable.
- 3 Replace internal hard drive.
- 4 Replace logic board. Retain customer's SIMMs.

Hard drive not found when booted from CD-ROM drive

Use Drive Setup 1.03 to attempt mounting the hard drive.





Flashing ? appears at startup in 5260/100 with 1.6 GB ATA hard drive (p/n 661-1107), and may be corrected with restart.

- 1 Be sure system software is not corrupted. See the Software Troubleshooting document in the HW-SW Procedures topic under the Troubleshooting tab on the Service Source CD startup screen.
- 2 Remove the 1.6 GB ATA hard drive and look at the serial number on the bar code label.
- 3 If serial number is within range **XXX6099XXXXX** to **XXX6131XXXXX**, replace hard drive.





CD-ROM Drive

CD-ROM drive does not accept disc

- 1 Exchange compact disc (if disc is dirty or damaged).
- 2 Replace CD-ROM drive mechanism.
- 3 Replace SCSI data cable.

Volume control does not operate correctly

- 1 Check Sound control panel setting.
- 2 Check front-panel controls.
- 3 Reseat the drive and control bezel.
- 4 Verify that the front-panel control board is completely installed.
- 5 Reseat CD adapter connector.
- 6 Replace CD adapter connector.
- 7 Replace CD-ROM drive.
- 8 Replace chassis/wiring harness.





Computer cannot
mount known-good
CD-ROM drive

- 1 Reseat CD-ROM drive adapters.
- 2 Check SCSI ID setting. (Internal CD-ROM drive was originally set to 3 at factory.)
- 3 Replace CD-ROM drive.
- 4 Replace chassis/wiring harness

When an internal and
external SCSI device
are present, only one
starts up

- 1 Verify that ID switch setting on external SCSI device is higher than 0. Verify that ID switch setting on external SCSI device does not duplicate ID switch settings on other external SCSI devices.
- 2 Replace terminator on external SCSI device.
- 3 Replace SCSI select cable.

CD Plus (CD+)
format CD-ROM disc
causes stuttering
sound, and may not
mount.

Replace CD-ROM drive.





Eject button sticks.

Replace the front bezel.





Peripheral

Cursor does not move

- 1 Restart system.
- 2 Check mouse connection.
- 3 If mouse was connected to keyboard, connect mouse to rear ADB port and disconnect keyboard. If mouse works, replace keyboard. If mouse does not work in ADB port, replace mouse.
- 4 Reseat logic board.
- 5 Replace logic board. Retain customer's SIMMs.

Cursor moves, but clicking mouse button has no effect

- 1 Replace mouse.
- 2 Reseat logic board.
- 3 Replace logic board. Retain customer's SIMMs.





Cannot double-click to open application, disk, or server

- 1 Remove extra system files on hard drive.
- 2 Check mouse speed on Control Panel.
- 3 Unplug 4.5 battery, wait 20 seconds, plug in battery, and restart computer.
- 4 If mouse was connected to keyboard, connect mouse to rear ADB port and disconnect keyboard. If mouse works, replace keyboard. If mouse does not work in ADB port, replace mouse.
- 5 Replace logic board. Retain customer's SIMMs.

No response to any key on keyboard

- 1 Verify that system software is version 7.5 or later.
- 2 Check keyboard connection to ADB port.
- 3 Replace keyboard.
- 4 Reseat logic board.
- 5 Replace logic board. Retain customer's SIMMs.





- | | | |
|---|---|---|
| Known-good
StyleWriter,
ImageWriter, or
ImageWriter II does
not print | 1 | Verify that Chooser and Control Panel are set correctly. |
| | 2 | Verify that printer driver and system software are not corrupt. |
| | 3 | Verify system software is version 7.5 or later. |
| | 4 | Check printer DIP switches. |
| | 5 | Replace printer interface cable. |
| | 6 | Replace logic board. Retain customer's SIMMs. |
| Known-good
LaserWriter does not
print | 1 | Verify that Chooser and Control Panel are set correctly. |
| | 2 | Verify that printer driver and system software are not corrupt. |
| | 3 | Replace printer interface cable(s). |
| Doesn't recognize
SCSI device | 1 | Check for proper SCSI termination. |
| | 2 | Check that the SCSI cable is good and firmly connected. |
| | 3 | Check the SCSI device manual for required software. |





Miscellaneous

- | | | |
|---|---|---|
| Clicking, chirping,
or thumping sound | 1 | Replace analog board. |
| | 2 | Replace logic board. Retain customer's SIMMs. |
| Smoke or Odor
Present | 1 | Replace Analog board. |
| | 2 | Replace Power Supply. |
| | 3 | Replace Logic Board. |
| No video, no audio, and
no drive operation | 1 | Connect power cord. |
| | 2 | Switch power on. |
| | 3 | Replace power cord. |
| | 4 | Replace analog board. |
| | 5 | Replace logic board. Retain customer's SIMMs. |





Screen shows “Sad Macintosh” icon and black vertical lines; screeching sound

- 1 Replace RAM SIMMs on logic board.
- 2 Replace logic board. Retain customer’s SIMMs.

Rattling sound at startup in system with Apple External Video Connector

Press or fold Apple External Video cable to prevent it from contacting fan blades.

Headphone jack does not operate correctly

- 1 Verify that headphone jack is seated properly.
- 2 Replace front panel control board.
- 3 Replace chassis/wiring harness.





- “Sad Macintosh” icon
- 1 Verify that no disc is in CD-ROM drive.
 - 2 Disconnect all external SCSI devices and attempt to restart computer.
 - 3 Disconnect internal SCSI device and attempt to start computer with known-good floppy disk.
 - 4 Replace bad SCSI drive with known-good SCSI drive.
 - 5 Replace RAM SIMMs on logic board.
 - 6 Replace logic board. Retain customer’s SIMMs.
- No sound from known-good external speakers
- 1 Check that volume is turned on (manually or through Control Panel).
 - 2 Verify that headphones are unplugged.
 - 3 Verify that speaker connectors are properly connected.
 - 4 Replace logic board. Retain customer’s SIMMs.





System with internal modem unable to recognize graphics or Ethernet card in communications slot

- 1 Replace internal modem.
- 2 Replace graphics or Ethernet card.





Take Apart

Power Macintosh/Performa 5260, 5280 Series





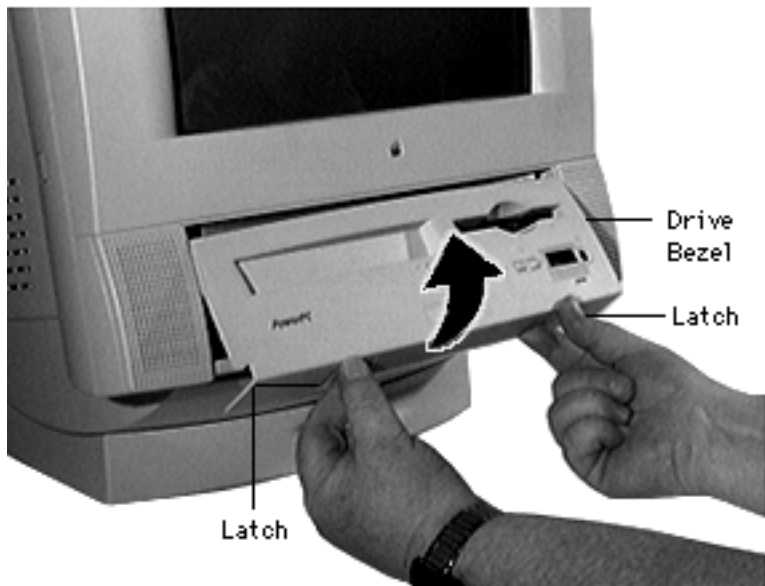
Drive and Control Bezel

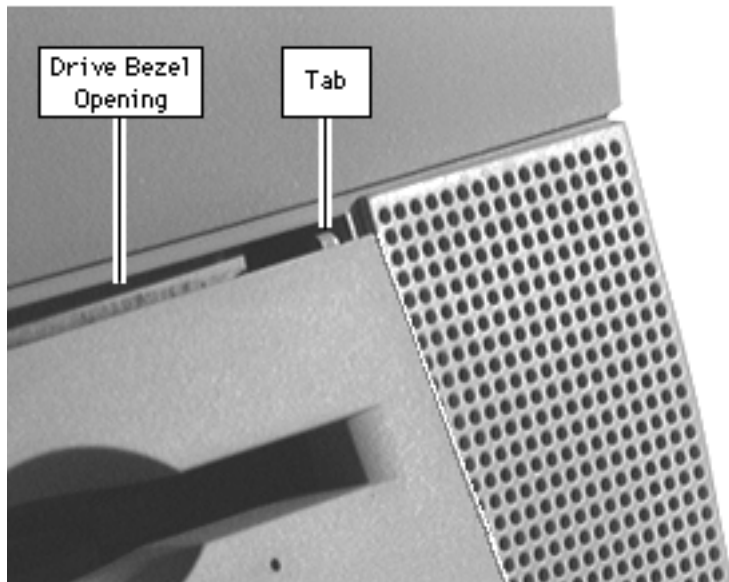
No preliminary steps are required before you begin this procedure.





- 1 Placing your fingertips in the holes of the finger latches, pull the two finger latches down.
- 2 Swing the drive and control bezel up and off.





Replacement Note: Insert the drive bezel hinge tabs behind the upper corners of the front bezel opening. Swing the drive bezel down until it snaps closed.

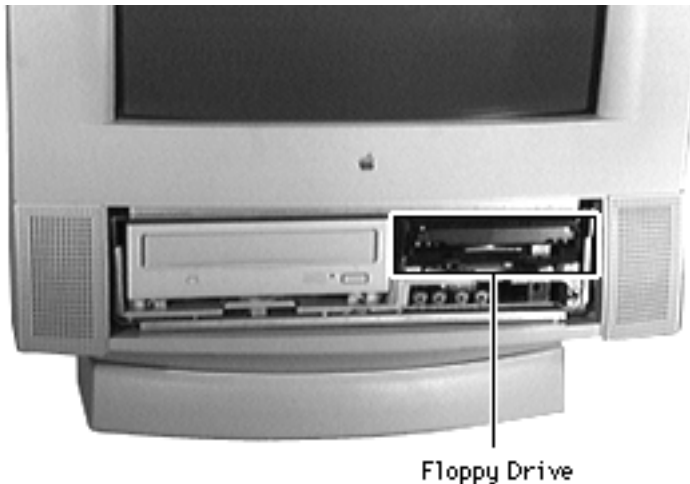




Floppy Drive

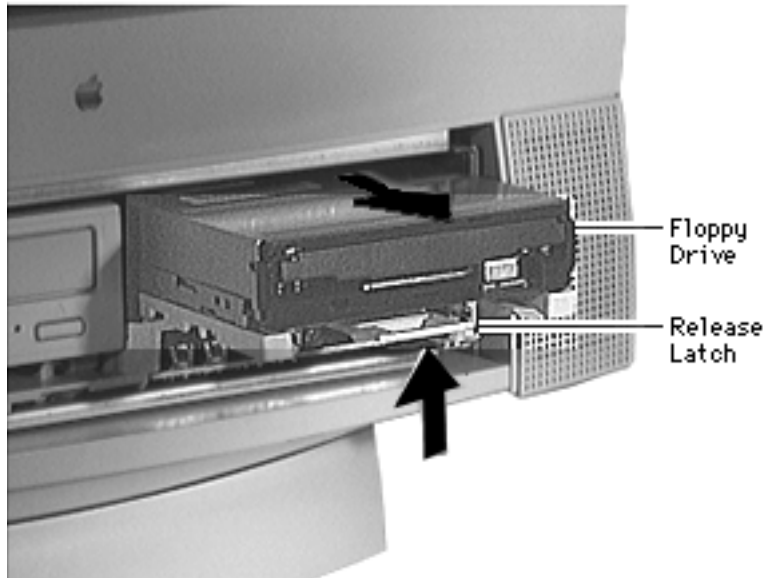
Before you begin, remove the drive and control bezel.

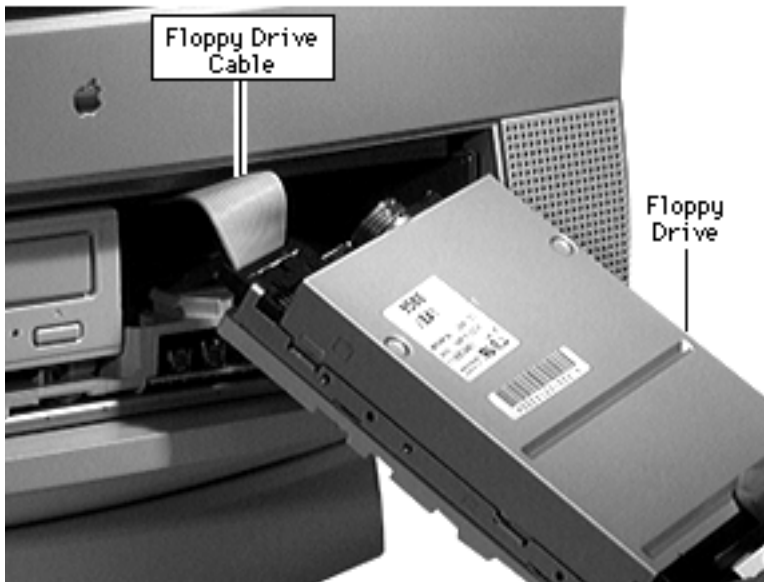
Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Pull up the release latch, and pull out the floppy drive far enough to reach the ribbon cable connector.



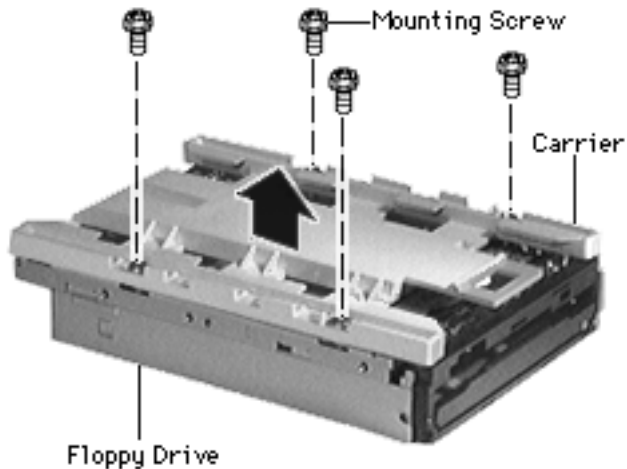


- 2 Disconnect the floppy drive from the floppy drive cable.

Note: Remove the drive carrier if you are replacing the floppy drive.

Note: Because screw placement varies according to the type of drive used with the carrier, note the placement of the screws before removing them. Retain the carrier and screws, and install them on the new floppy drive.





- 3 Remove the four mounting screws.
- 4 Remove the carrier from the floppy drive.





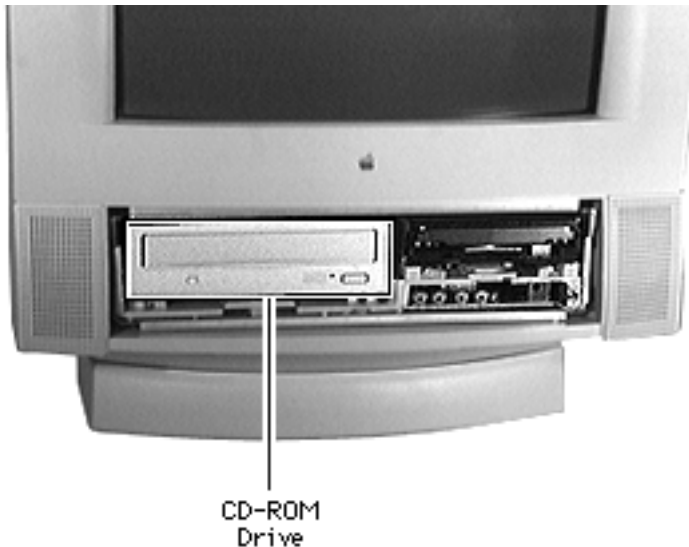
CD-ROM Drive

Before you begin, remove the following:

- Drive and control bezel
- Floppy drive

Note: The CD-ROM drive is optional.

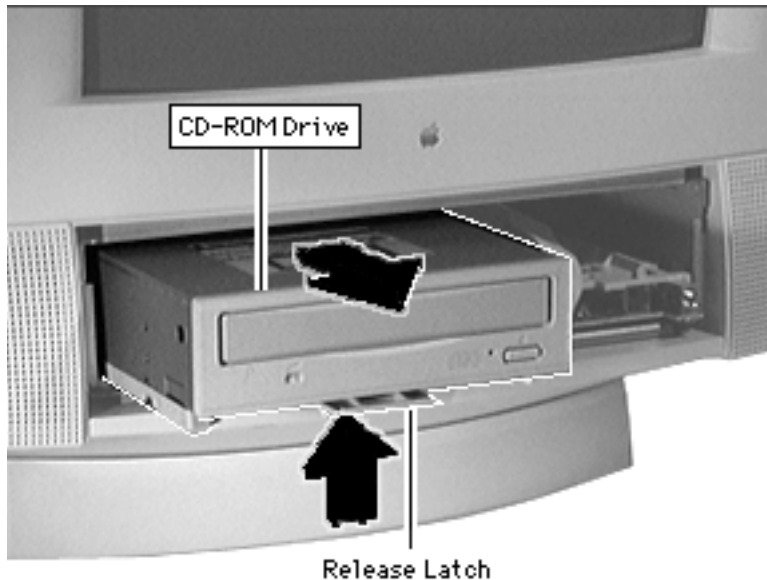
Caution: Review the ESD precautions in Bulletins/Safety.





Push up the release latch and pull the CD-ROM drive from the chassis.

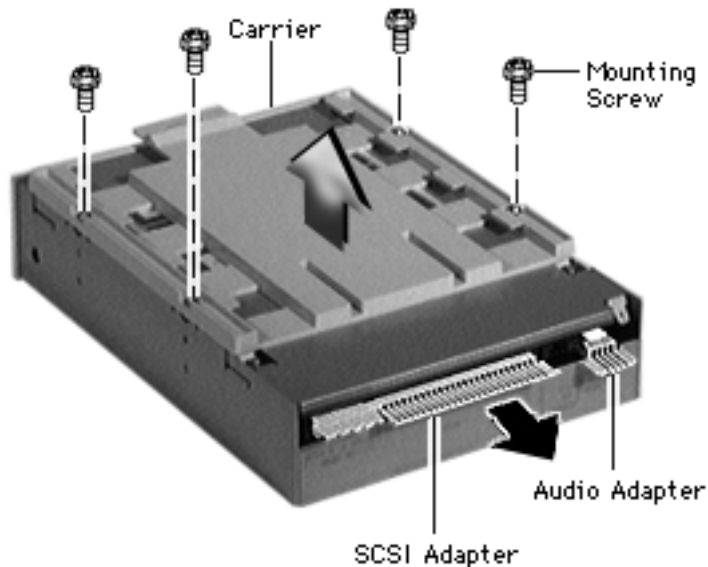
Note: You may need to use some initial force to disconnect the CD-ROM drive from the internal chassis/wiring harness.





Note: Perform the following steps only if you are replacing the CD-ROM drive.

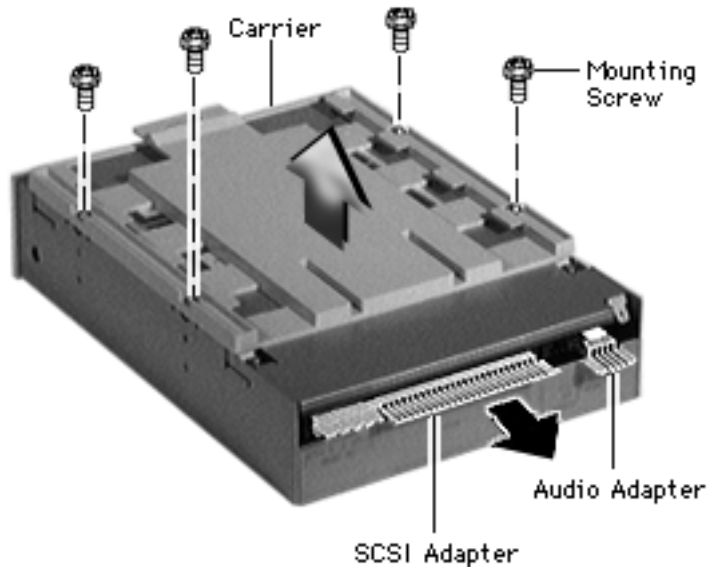
- 1 Disconnect the CD-ROM audio adapter from the drive.
- 2 Disconnect the SCSI adapter
- 3 Remove the four mounting screws and carrier from the CD-ROM drive.





Replacement Note: Retain the carrier, screws, and adapters for installation on the new drive.

Replacement Caution: Before replacing the SCSI adapter, verify that the SCSI drive connector pins are not bent.





Front Panel Control Board

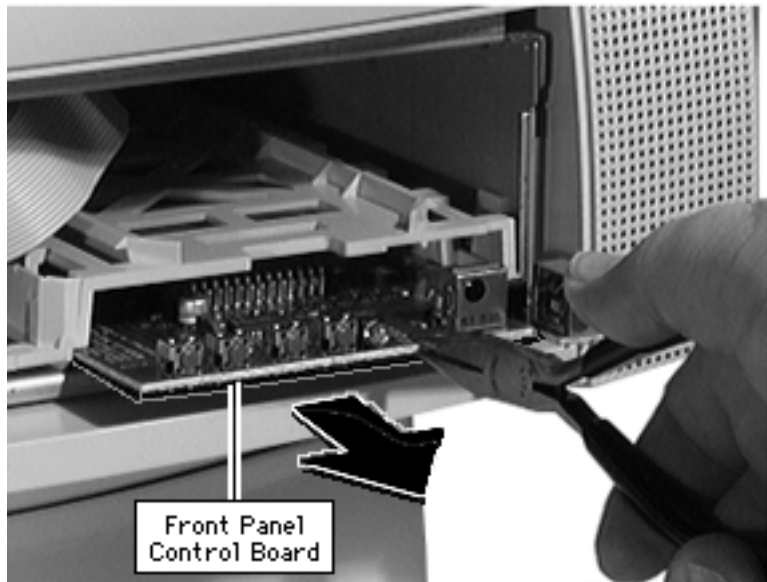
Before you begin, remove the drive and control bezel.

Caution: Review the ESD precautions in Bulletins/ Safety.



Front Panel Control Board





Caution: Be sure to grip the front panel in the area shown to avoid harming circuit tracings.

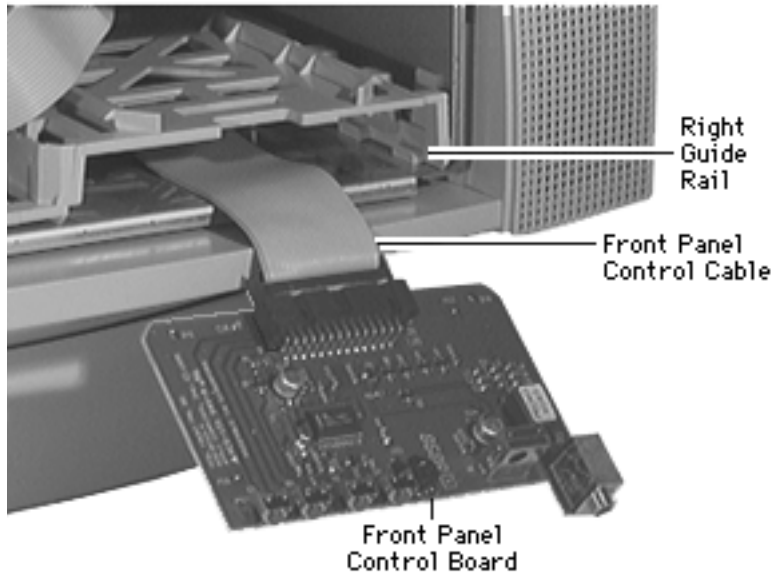
- 1 Using needle-nose pliers, grip the front edge of the front-panel control board.
- 2 Pull firmly and slide the front panel control board out far enough to reach the ribbon cable connector.





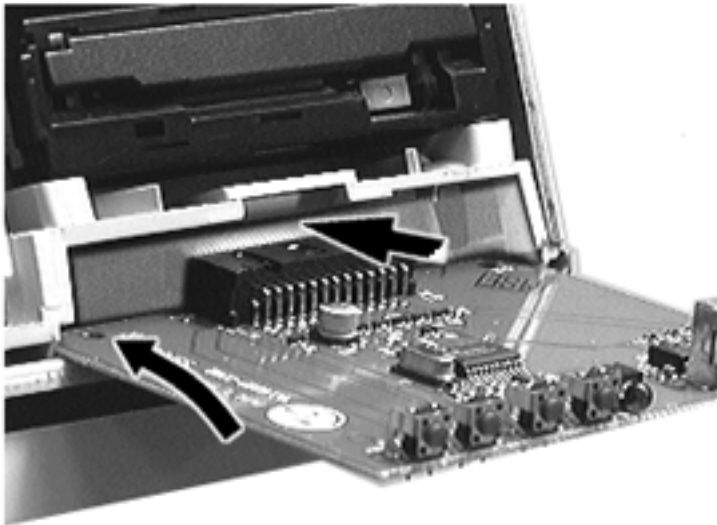
- 3 Disconnect the cable from the front-panel control board.

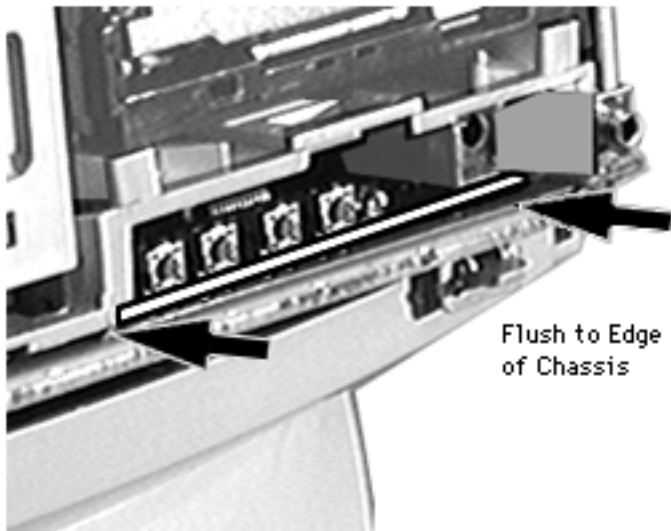
Replacement Note: Using a flat-blade screwdriver, press the front-panel control cable back and down.





Replacement Note: Tilt the board up slightly to insert it into the guide rails.





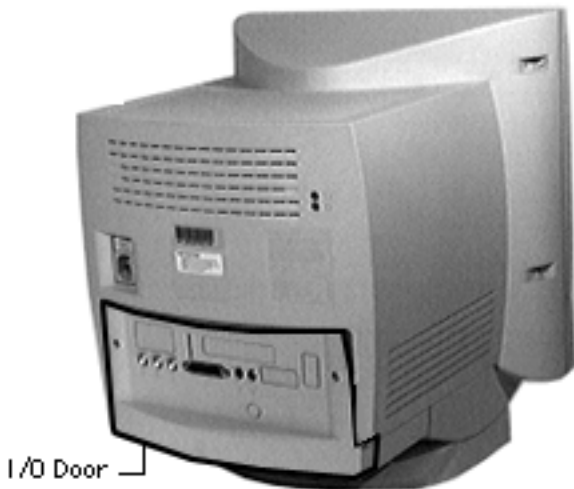
Replacement Note: The front edge of the reinstalled front-panel control board must be flush with the front edge of the plastic chassis.





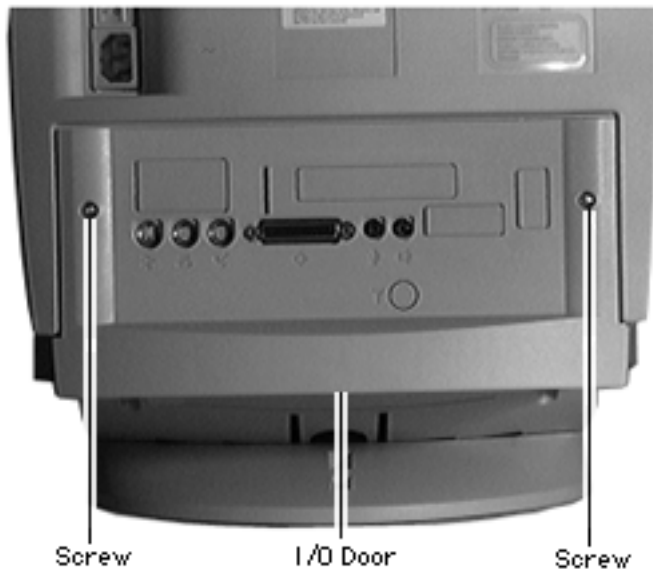
I/O Door

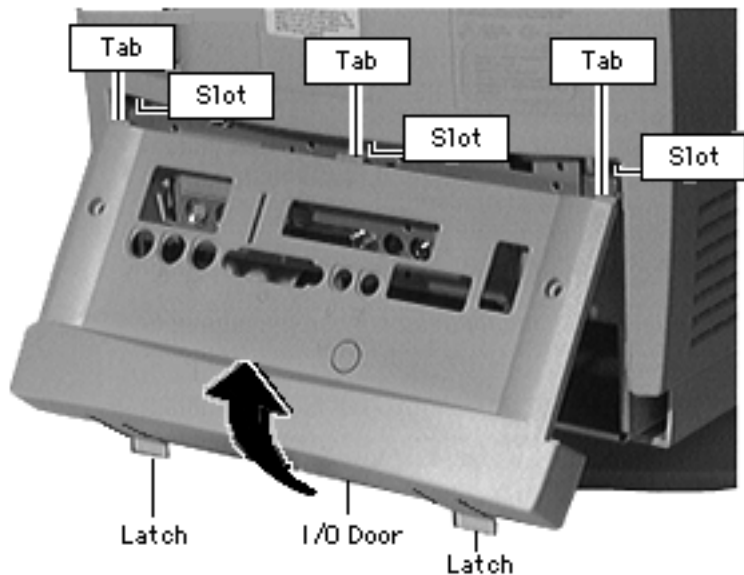
No preliminary steps are required before you begin this procedure.





- 1 Remove the two security screws.





- 2 Using your fingertips, pull the two finger latches down.
- 3 Swing the door up and off.

Replacement Note: Align the I/O door hinge tabs and slide the door up into position. Swing the door down until it snaps closed.

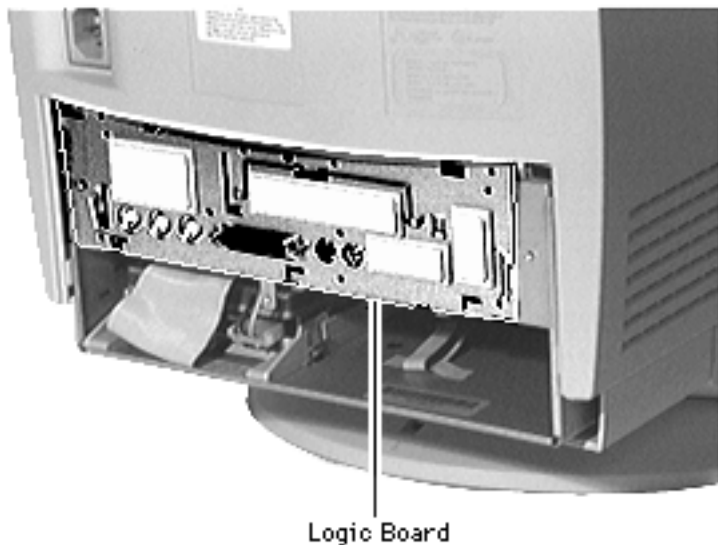


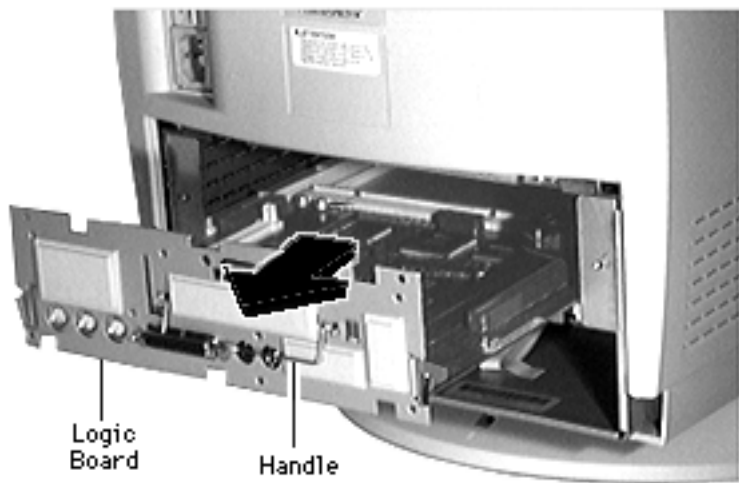


Logic Board

Before you begin, remove the I/O door.

Caution: Review the ESD precautions in Bulletins/ Safety.

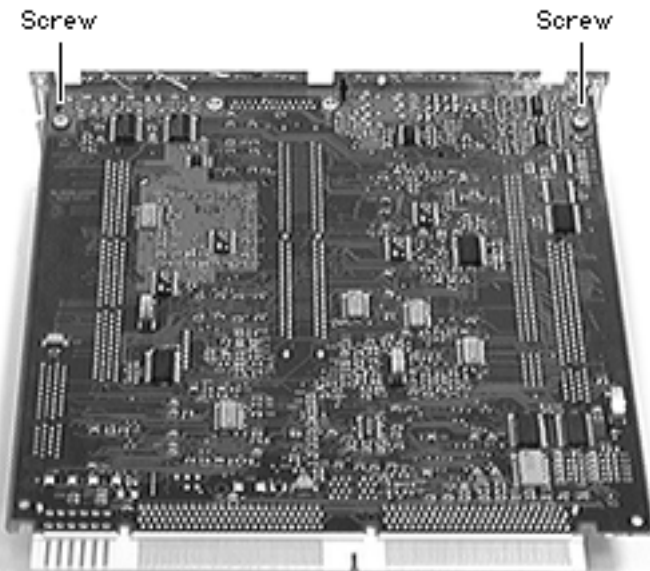




- 1 Swing out the handle from its storage position.
- 2 Pull out the logic board.

Note: When installing cards, cover the two screws (for fan support and ground thermistor mounting) with tape. These screws are below the upper chassis, in the area of the logic board. Stretching a length of strong tape (fiber-reinforced, if possible) from front to back over the screws protects cables from damage.

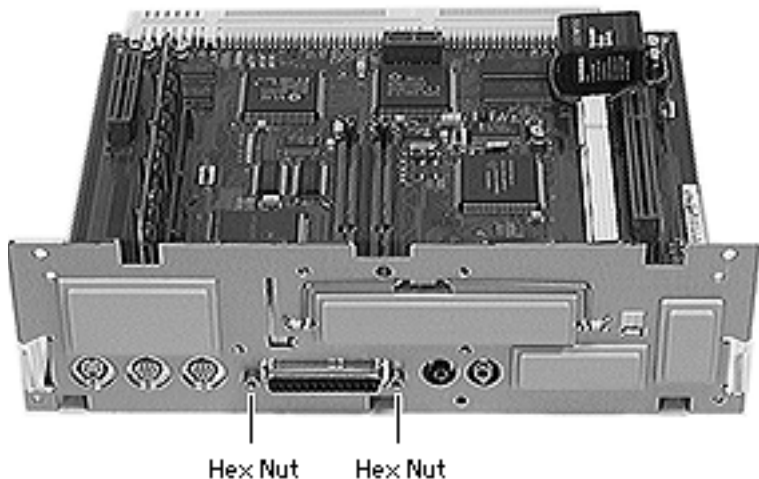




Note: Perform the following steps only if you are replacing a defective logic board.

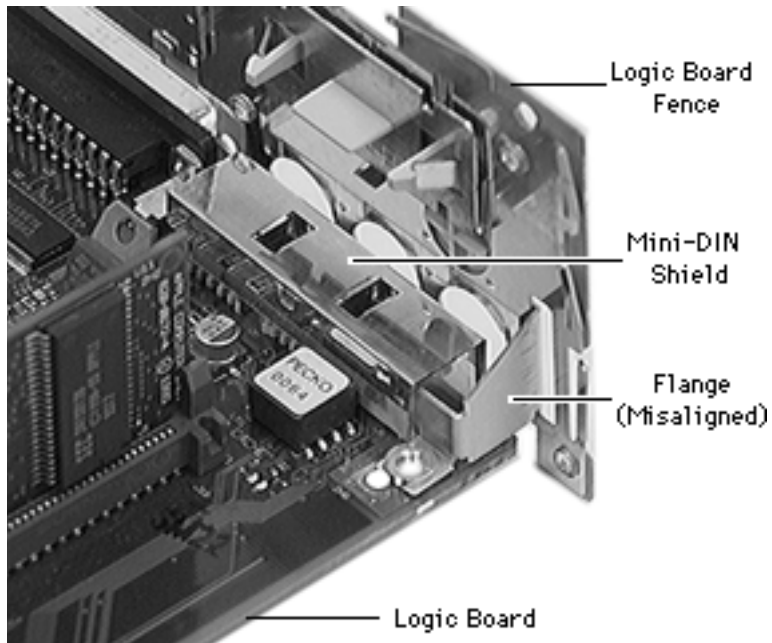
- 3 Remove the two Phillips screws that secure the fence to the solder side of the logic board.





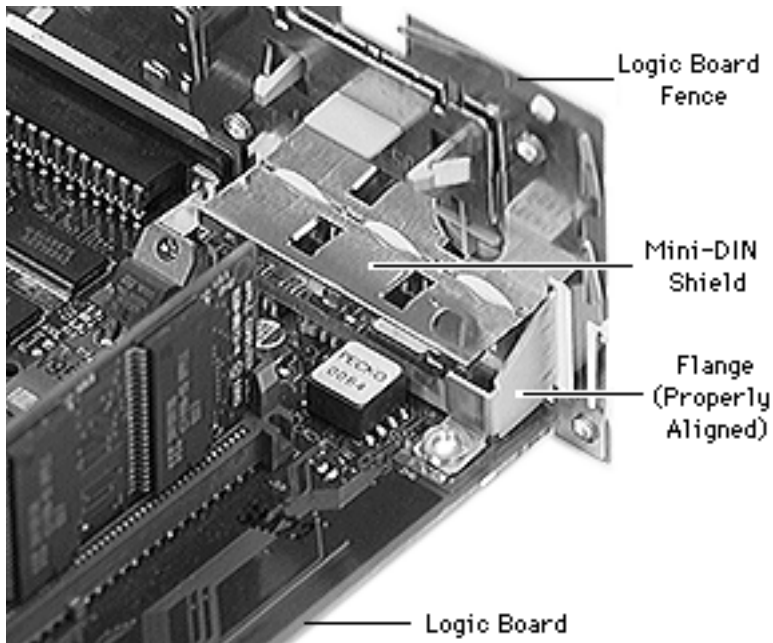
- 4 Using a hex nut driver, remove the two hex nuts that secure the logic board fence to the SCSI connector.
- 5 Separate the logic board fence from the logic board.





Replacement Note: Verify that the flange on the logic board fence is properly aligned with the mini-DIN shield.





Replacement Note: Align the flange around the mini-DIN shield first, then swing the rest of the logic board fence into place.

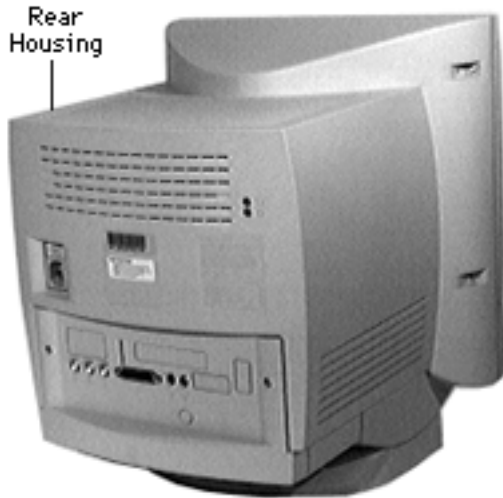


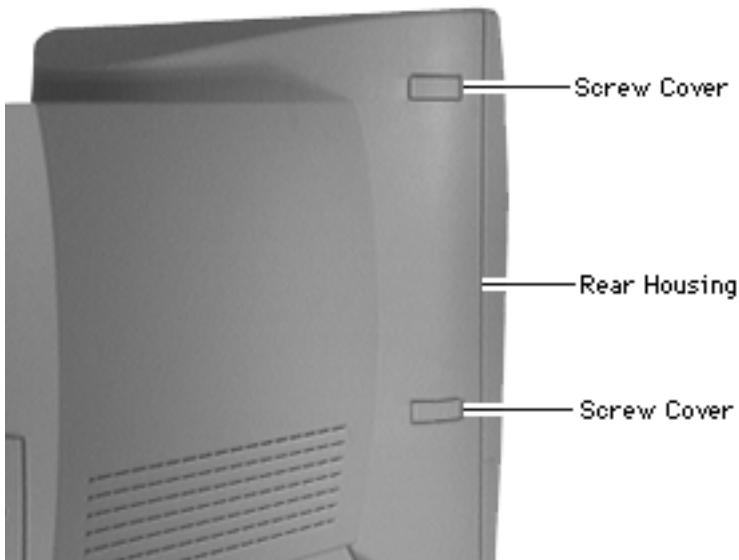


Rear Housing

Before you begin, remove the I/O door.

⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.





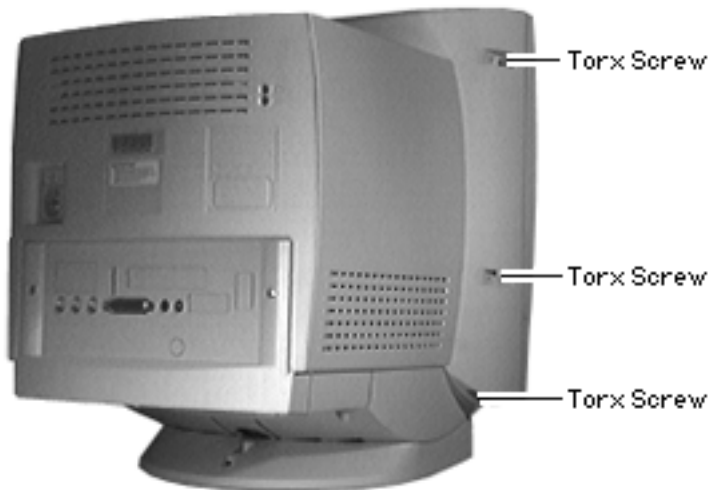
- 1 Pry off the two screw covers on each side of the rear housing.

Tip: Pry up from the rear edge of the screw cover.





- 2 Remove the three torx screws on each side of the rear housing.





- 3 **⚠ Warning:** This step exposes high voltage components. Follow CRT safety precautions.

Slide the rear housing back and off.





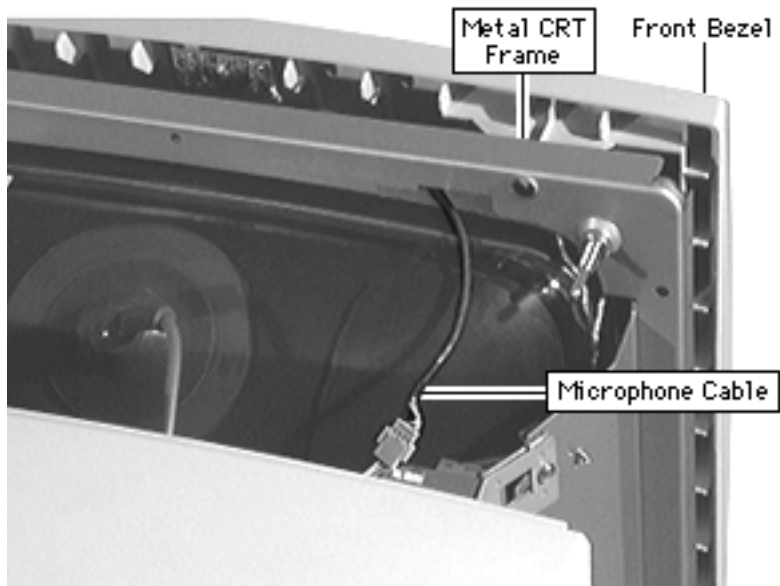
Front Bezel

Before you begin, remove the following:

- I/O door
- Rear housing

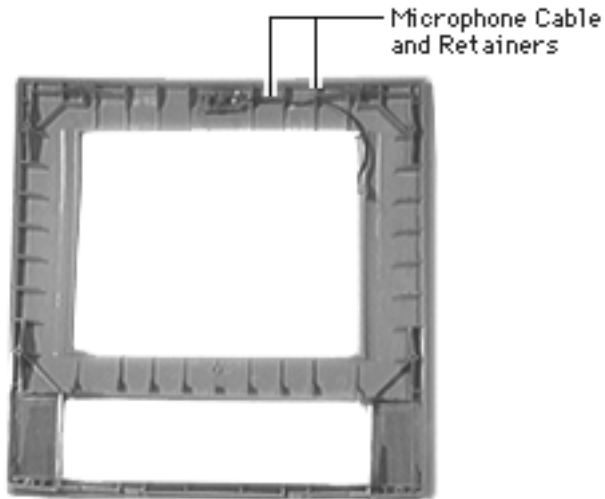
⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.





- 1 .Disconnect the microphone cable and guide the cable to the microphone side of the metal CRT frame.
- 2 Pull off the front bezel.





Replacement Note: Guide the microphone cables through the plastic retainers before replacing the front bezel.





Internal Microphone

Before you begin, remove:

- I/O door
- Rear housing
- Front bezel

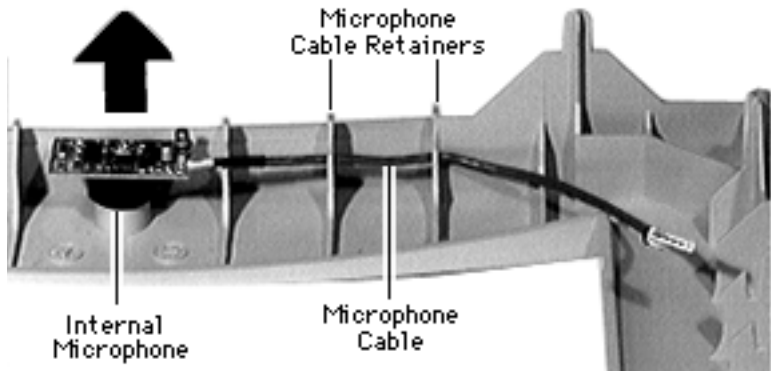
⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.





Lift off the microphone.

Replacement Note: Guide the microphone cable through the plastic cable retainers.





Rear EMI Shield

Before you begin, remove the following:

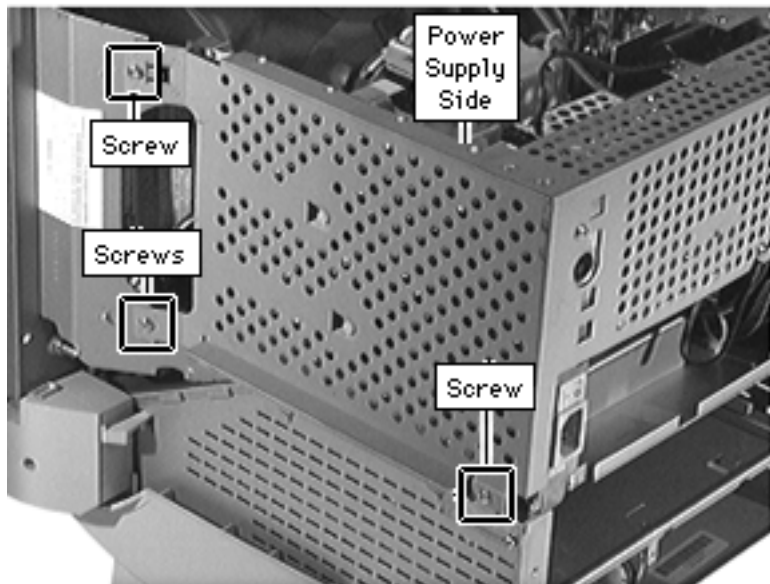
- I/O door
- Front bezel
- Rear housing

EMI
Shield



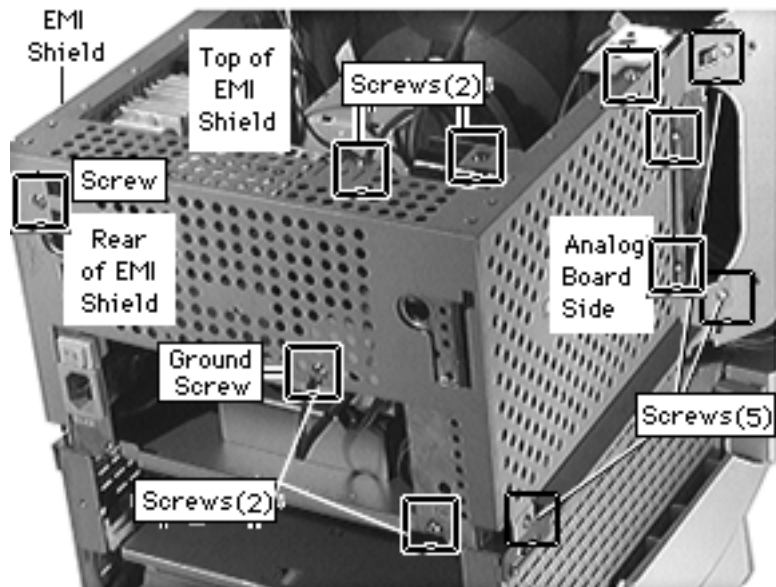
⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.





- 1 Remove the three screws from the power supply side of the EMI shield.



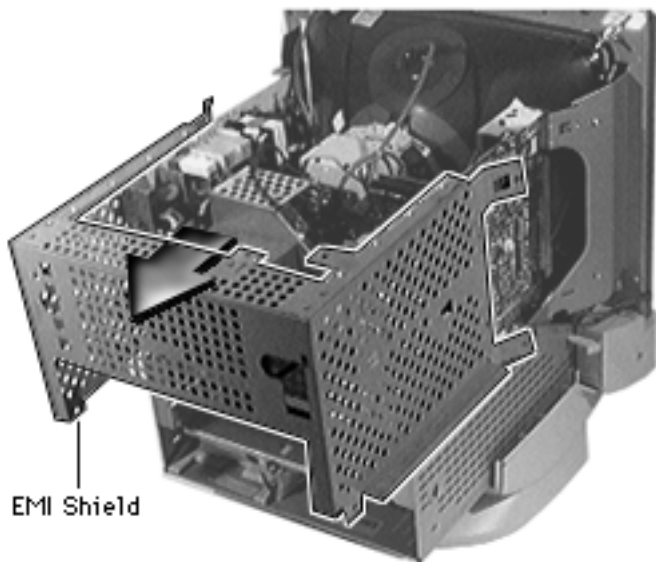


- 2 Remove the three screws from the analog board side of the EMI shield.
- 3 Remove the two screws from the top of the EMI shield.
- 4 Remove the two screws from the rear of the EMI shield.





- 5 Pull back the EMI shield and remove it.





Speakers

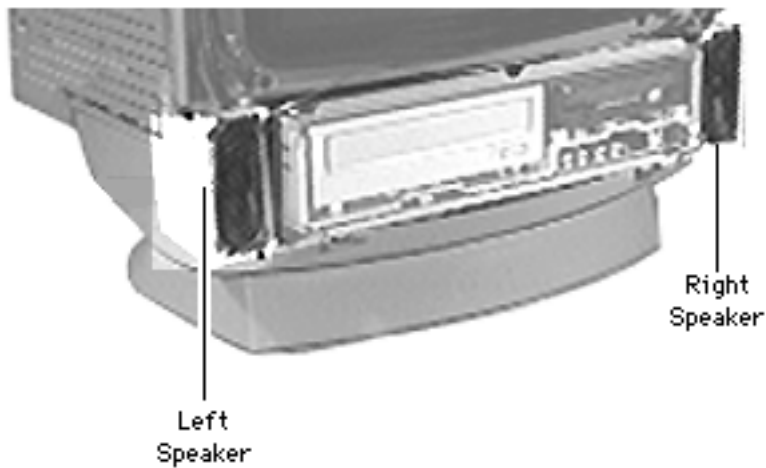
Before you begin, remove the following:

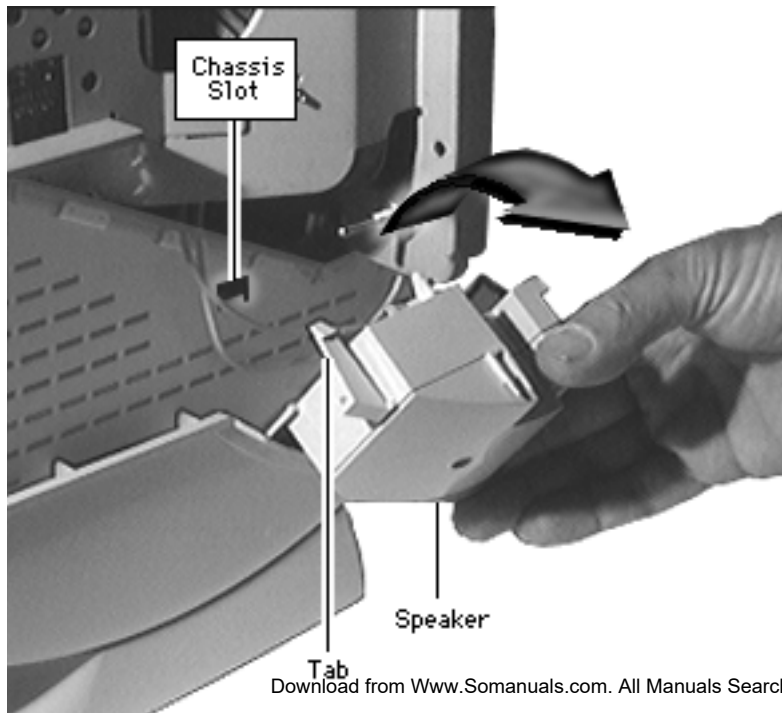
- I/O door
- Rear housing
- Front bezel





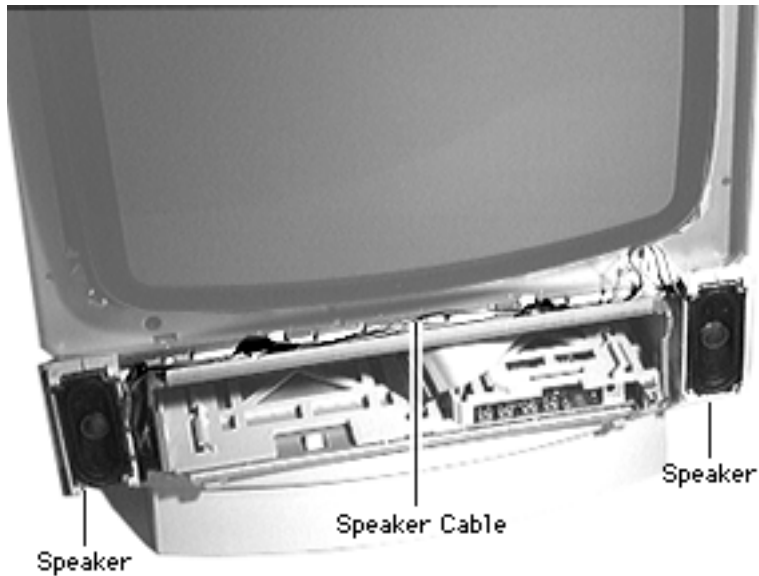
- 1 Press the tab and release the speaker from the chassis slot.





- 2 Tilt the speaker and remove it.





Replacement Note:

- The plastic speakers are printed “right” and “left.” Place the speakers accordingly as you face the monitor.
- Guide the wire connecting the speakers in the channel between the monitor and chassis.
- Be careful not to crimp the speaker wire as you guide it from the speaker to its analog board connection.

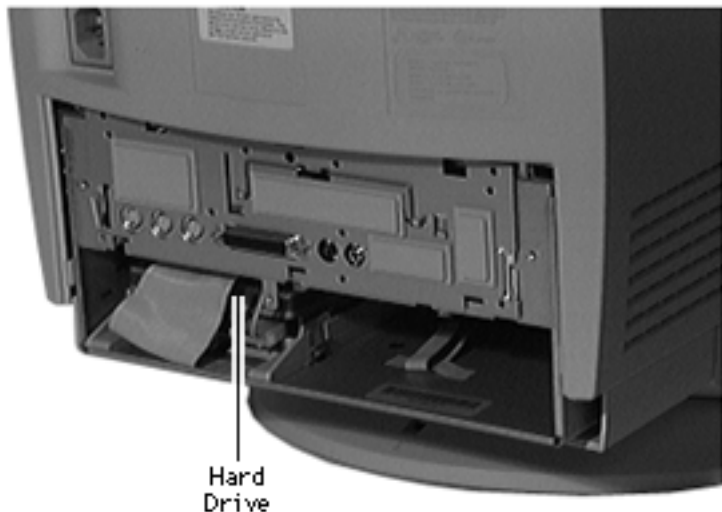


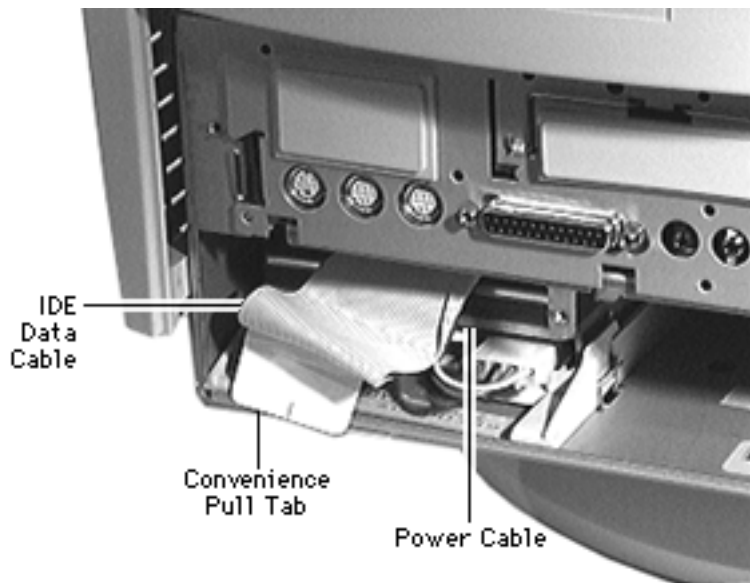


Hard Drive

Before you begin, remove the I/O door.

Caution: Review the ESD precautions in Bulletins/ Safety.





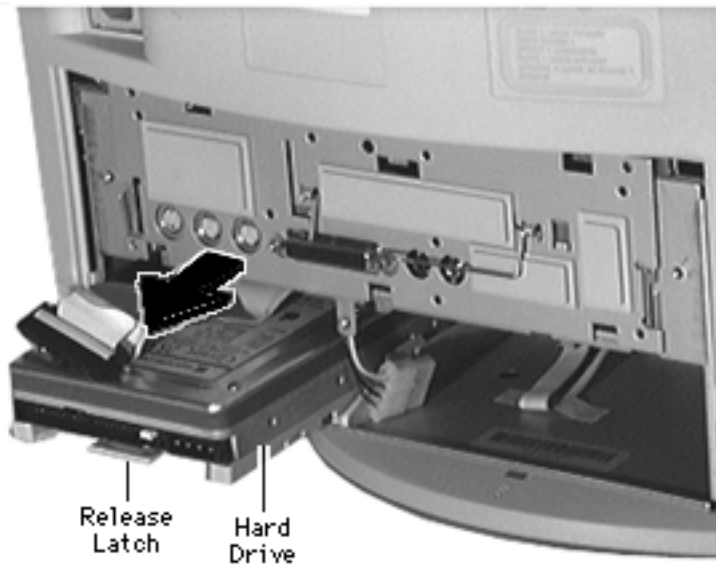
- 1 Using the convenience pull tab, disconnect the IDE data cable from the hard drive connector.
- 2 Disconnect the power cable.

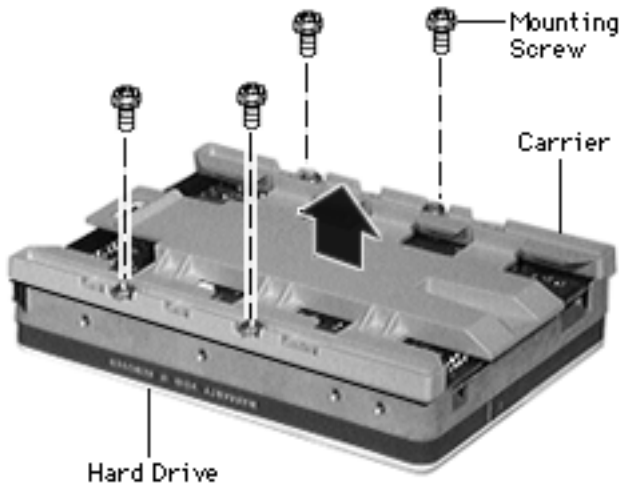




- Using needle-nose pliers, pull up the release latch and slide the IDE hard drive from the chassis.

Replacement Caution: Some hard drives have sharp edges near the cable connector that can rub and, therefore, damage the cable. Avoid rubbing the cable against the edge of the drive.





Note: Perform the following steps only if you are replacing the hard drive.

Note: Notice the placement of the carrier and screws before removing them. Retain the carrier and screws, and install them on the new hard drive.

- 4 Remove the four screws.
- 5 Remove the carrier from the hard drive.





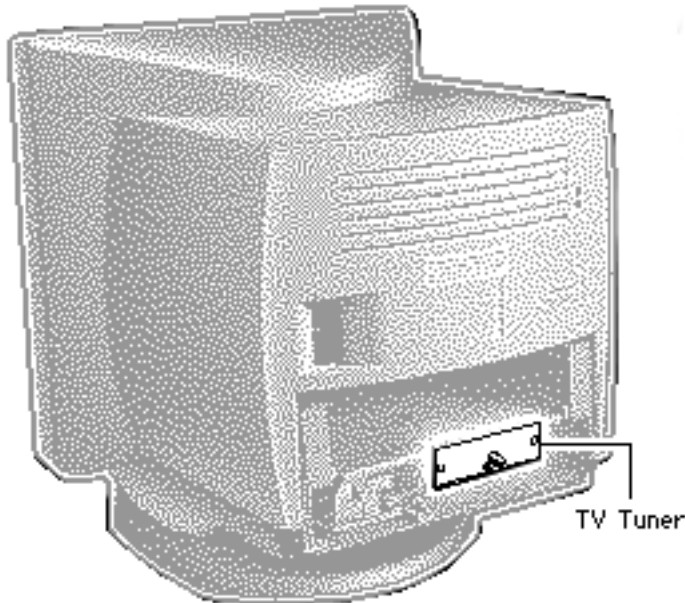
TV Tuner

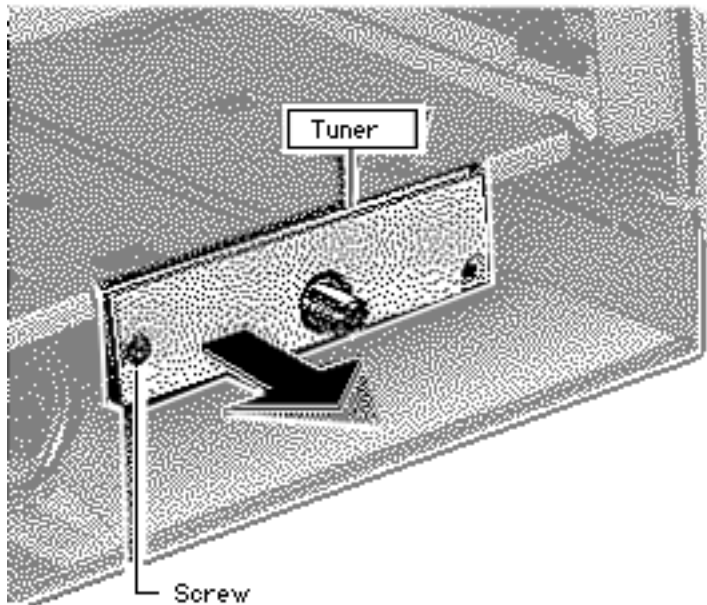
Before you begin, remove the following:

- I/O door
- Logic board

Note: The TV Tuner is an option.

Caution: Review the ESD precautions in Bulletins/ Safety.



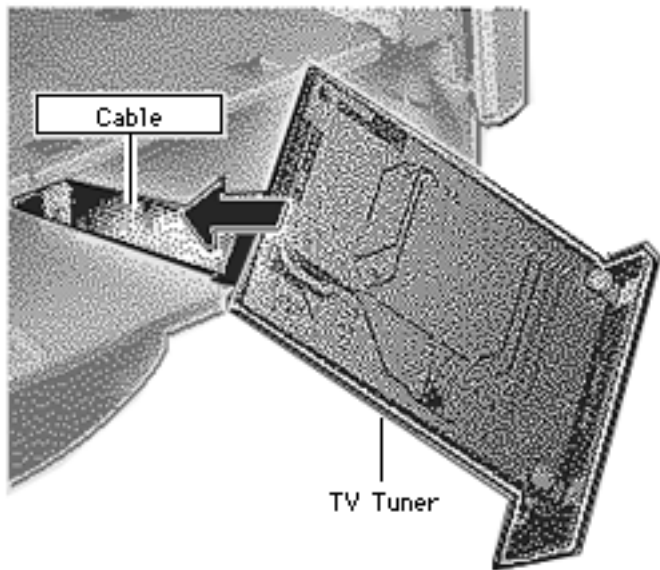


- 1 Remove the Phillips screw.
- 2 Slide out the TV Tuner far enough to reach the TV Tuner cable.



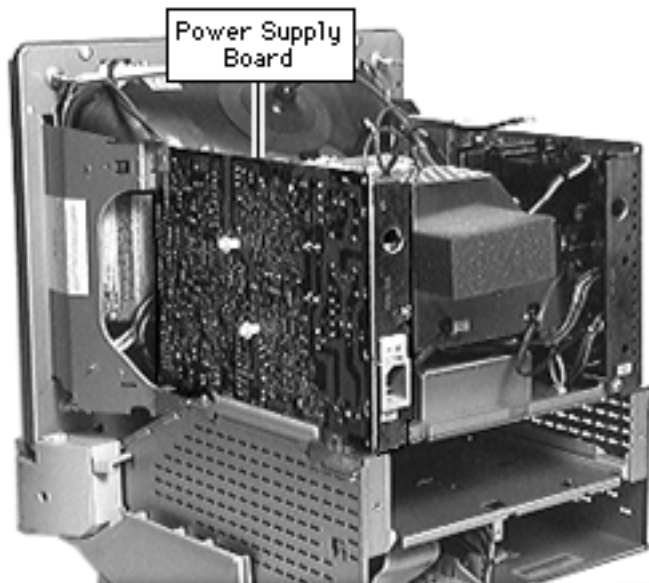


- 3 Disconnect the TV Tuner cable and remove the TV Tuner.





Power Supply

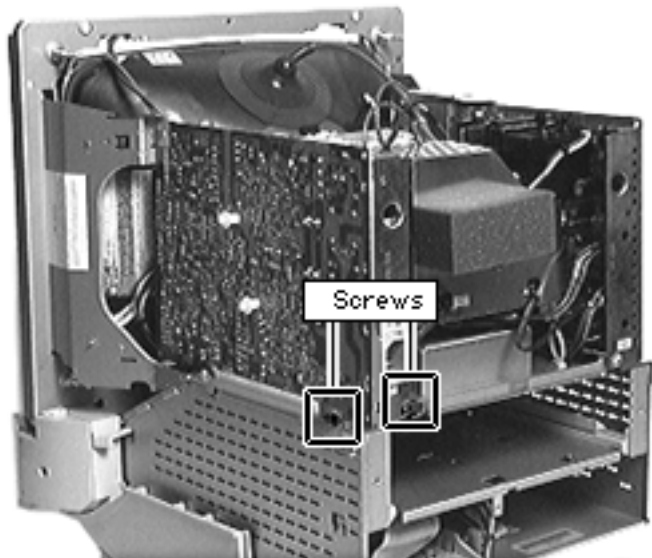


Before you begin, remove the following:

- Front bezel
- I/O door
- Rear housing
- Logic board
- EMI shield

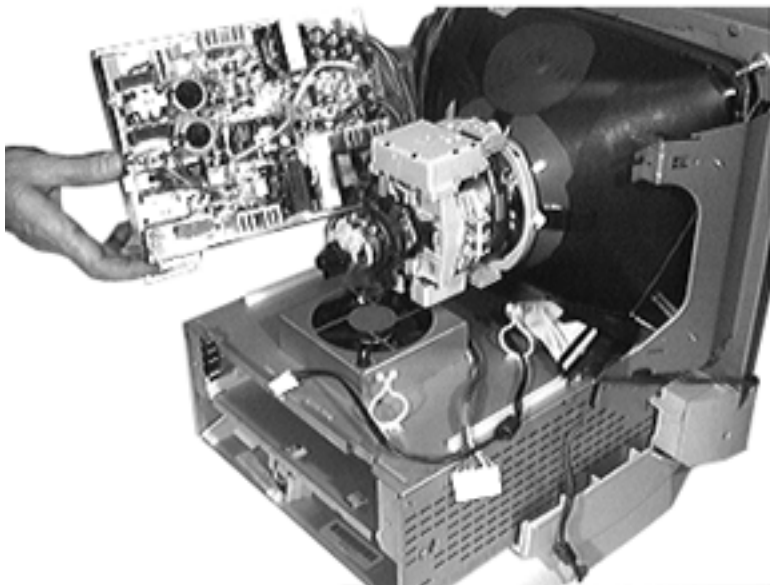
⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.





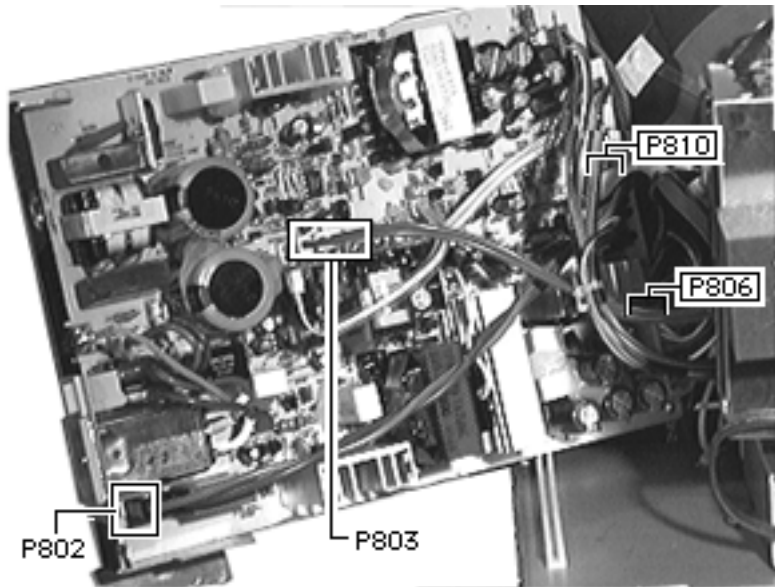
- 1 Remove the Phillips screws from the bottom right corner of the power supply and from the rear of the power supply.





- 2 Slide the power supply back to clear the interlocking tab and lift it from the guide rail.
- 3 Support the power supply next to the guide rail, on top of the chassis.

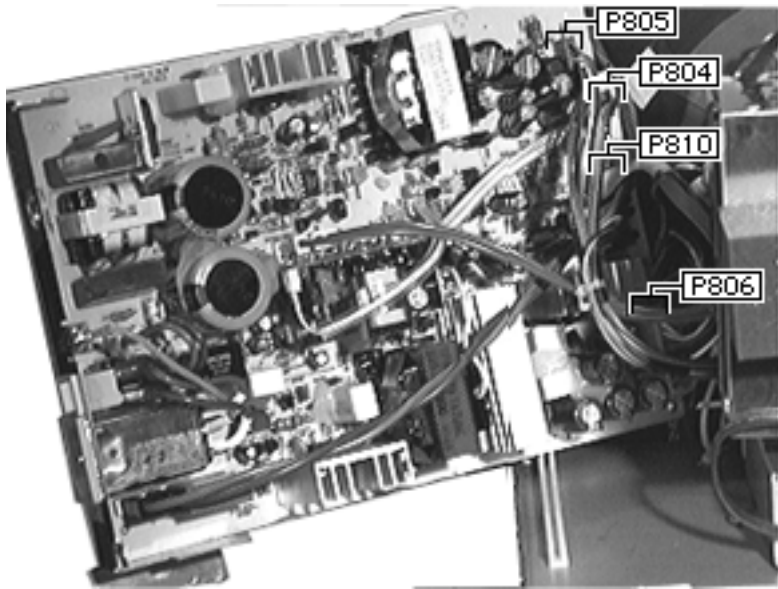




4 Disconnect the following cables:

- 2-pin degauss cable from location P802
- 2-pin power supply-to-flyback connector from location P803
- 2-pin fan cable from location P808
- Power cable from location P806
- 10-pin small, ribbon connector from location P810





Note: The power supply-to-analog board connectors are keyed and fit snugly. You may need to use a jeweler's screwdriver to loosen the sockets of the following connectors:

- 10-pin power supply-to analog board cable from location P805
- 4-pin power supply-to-analog board cable from location P804
- 2-pin power supply-to-analog board cable from location P807

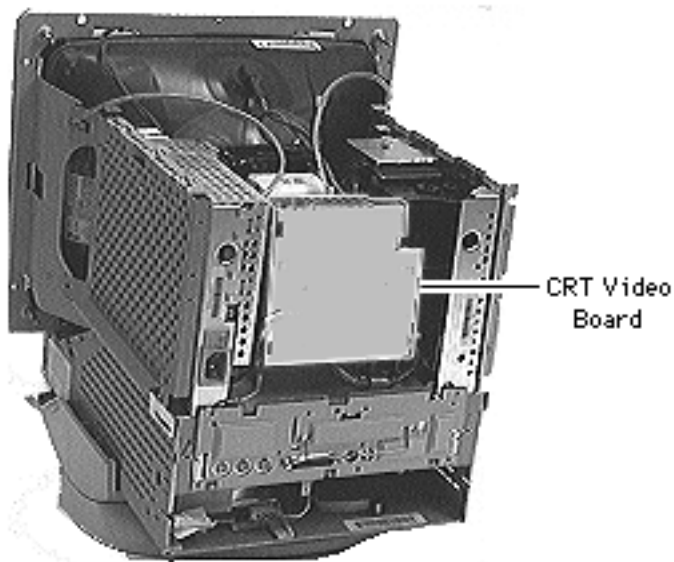


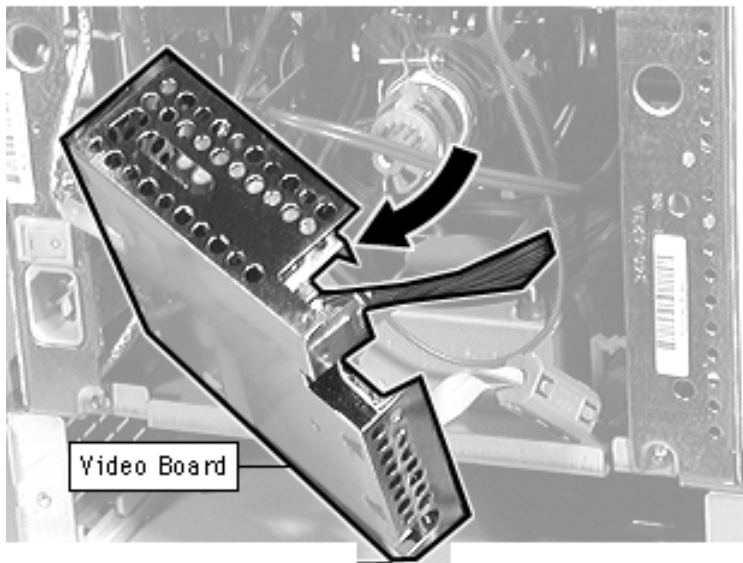


Video Board

Before you begin,

- Remove the rear housing
- Remove the front bezel
- Remove the logic board
- Remove the rear EMI shield
- Discharge the CRT
- Remove the anode cap

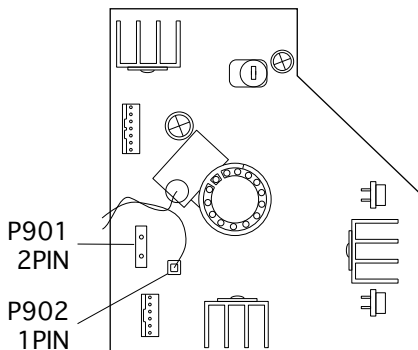




⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

- 1 If an adhesive glue secures the video board to the CRT, cut and peel it off before removing the board.
- 2 **Caution:** Do not attempt to disconnect the video board from the analog board. The video board and the analog board are permanently connected





by several cables and form one service unit.

Pull off the video board.

- 3 Disconnect the ground cable on the chassis, which is connecting the video board to the fan.
- 4 Disconnect 2-pin degauss wire from location P901.



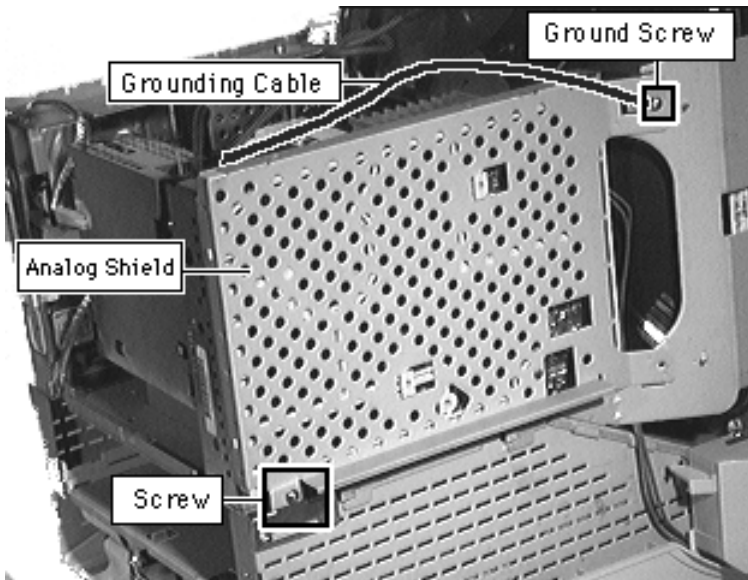


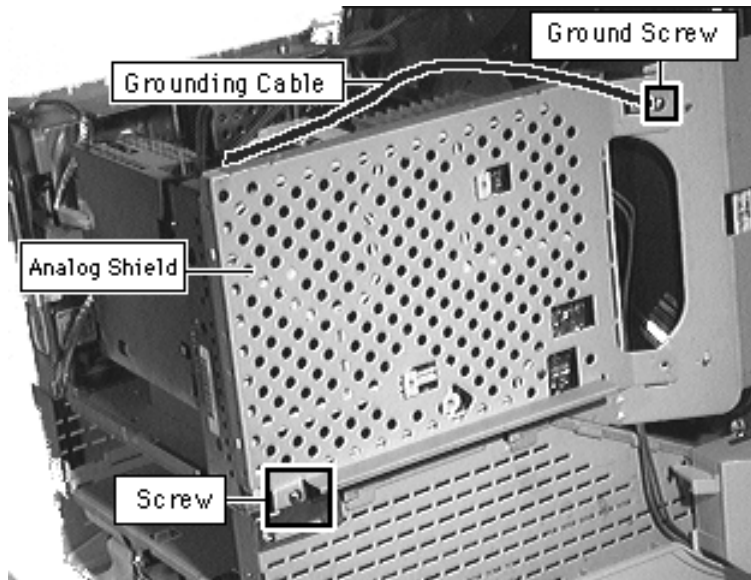
Analog Shield

Before you begin,

- Remove the rear housing
- Remove the front bezel
- Remove the logic board
- Remove the rear EMI shield
- Discharge the CRT
- Remove the anode cap
- Remove the video board

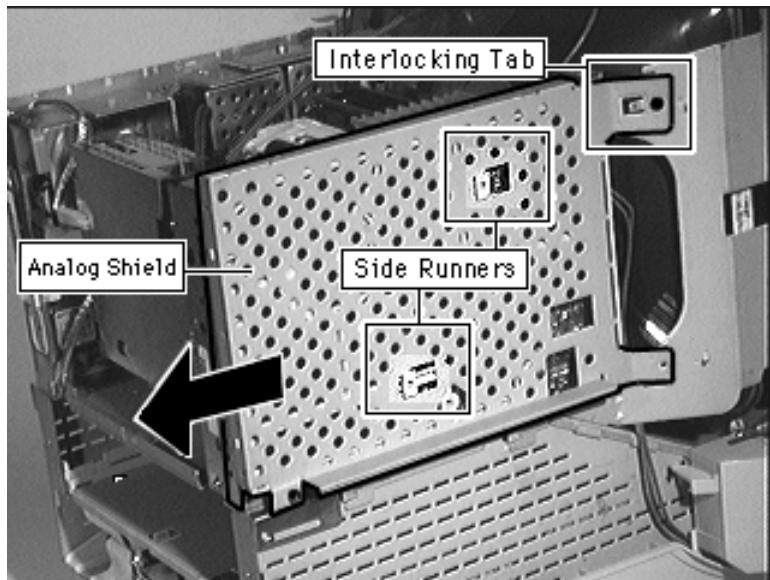
⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.





- 1 Remove the grounding cable and screw from the upper front corner of the analog board shield.
- 2 Remove the screw from the lower rear side of the analog board shield.





- 3 Slide the analog board shield back to clear the interlocking tabs and side runners.
- 4 Remove the analog board shield.

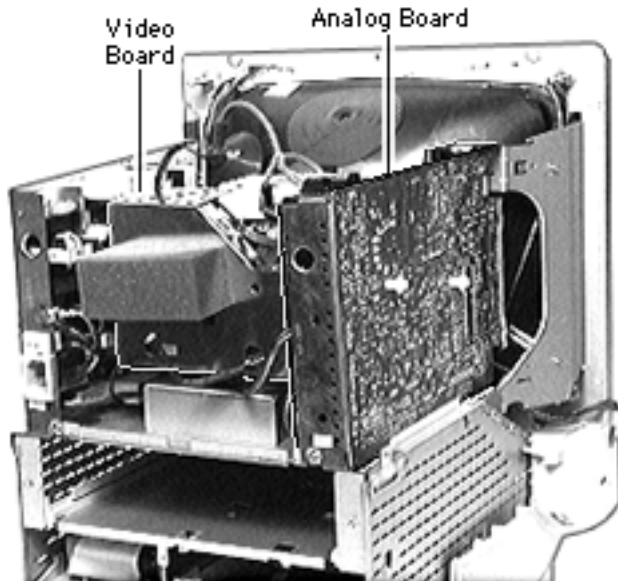


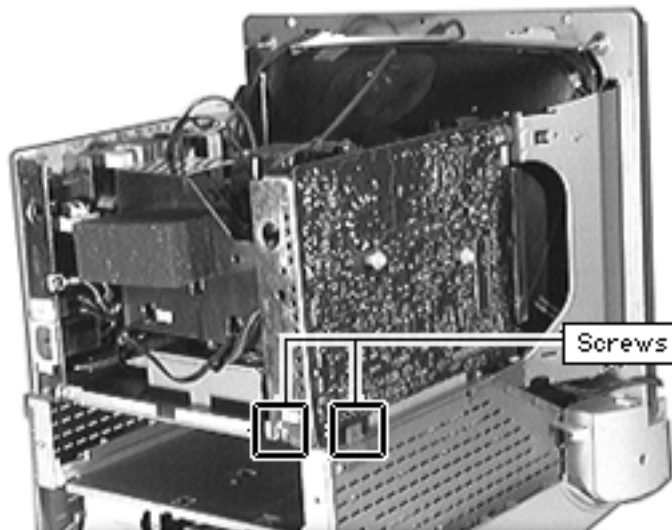


Analog Board

Before you begin,

- Remove the front bezel
- Remove the I/O door
- Remove the rear housing
- Remove the logic board
- Remove the rear EMI shield
- Discharge the CRT
- Remove the anode cap
- Remove the video board
- Remove the analog shield



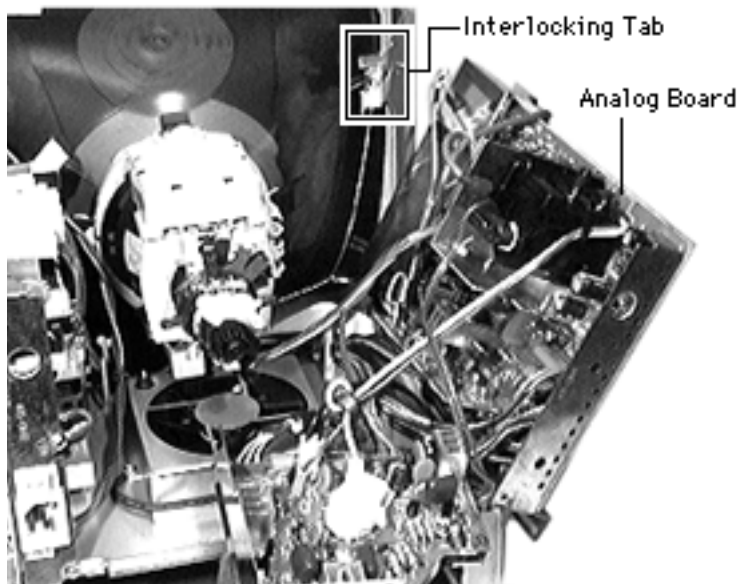


⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

Note: Do not disconnect the cables connecting the video board and the analog board.

- 1 Remove the screws at the lower rear of the analog board.

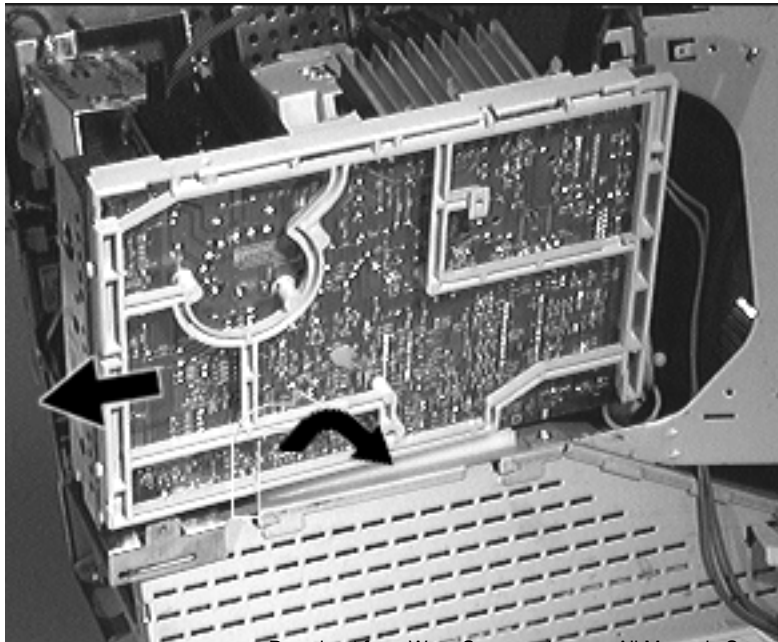




- 2 Lift up the lower back corner of the analog board to disengage the rear bracket from the chassis slot.
- 3 Slide the analog board back to clear the interlocking tab and lift it from the guide rail.

Important: At this point, you may need to disconnect the microphone cable to be able to slide the analog board completely out.





- 4 Lift up the analog board just enough to clear the security rail and rest the analog board on the top of the chassis.

Note: For a diagram of analog board cable connections, refer to the diagram at the end of this topic.

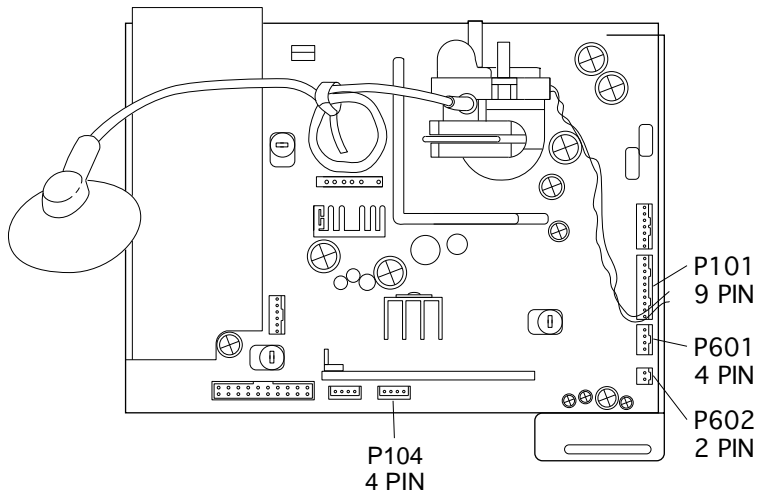
- 5 Disconnect the yoke cable at the power supply.
- 6 Disconnect the 2-pin power supply-to-flyback connector.

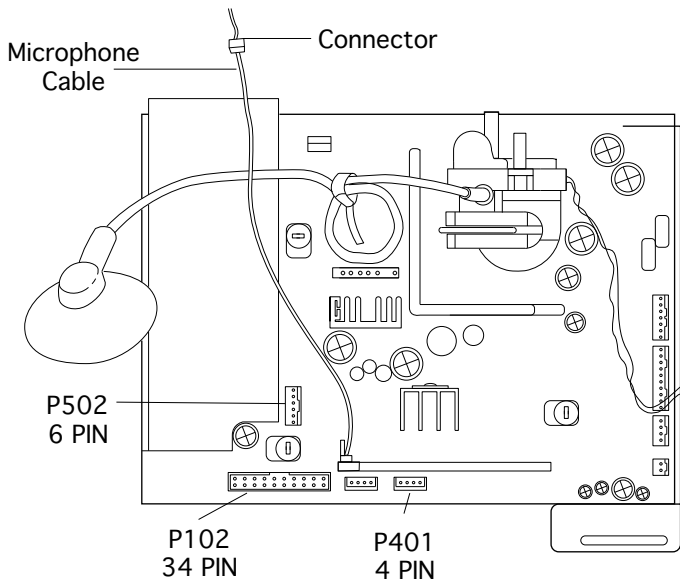




Note: Do not disconnect the cables connecting the video board and the analog board.

- 7 **Note:** The power supply-to-analog board connectors are keyed and fit snugly. You may need to use a jeweler's screwdriver to loosen the sockets of the following connectors:
- 9-pin cable at P101
 - 4-pin cable at P601
 - 2-pin cable at P602
 - 4-pin at P104





8 Disconnect the following cables from the analog board:

- Microphone cable at the connector closest to the top of the CRT.
- Ribbon cable at P102
- 6-pin cable at P502
- 4-pin yoke cable at P401

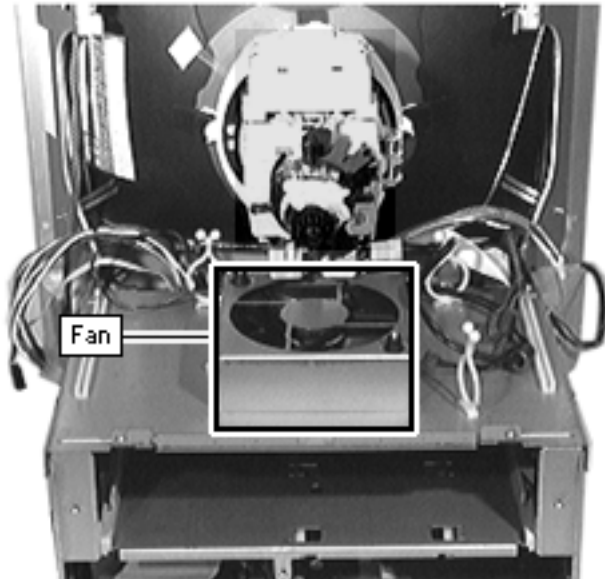


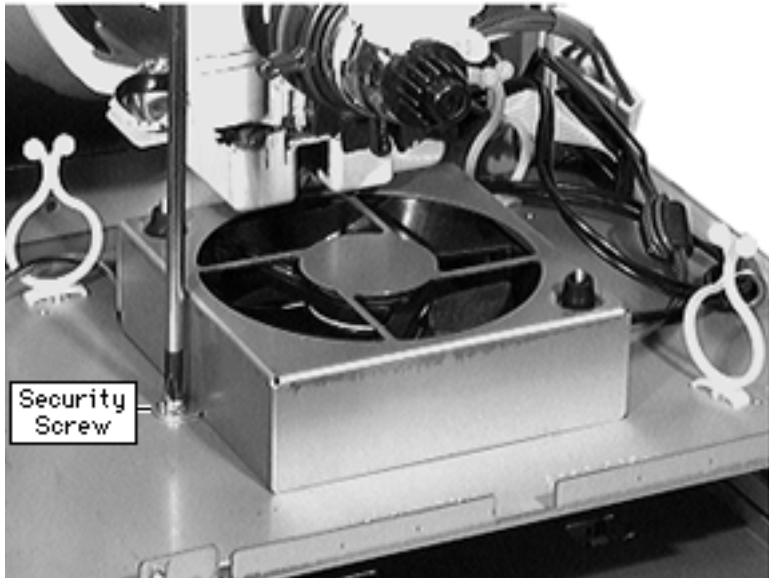


Fan

Before you begin,

- Remove the I/O door
- Remove the rear housing
- Remove the front bezel
- Remove the rear EMI shield
- Discharge the CRT
- Remove the anode cap
- Remove the video board
- Remove the power supply

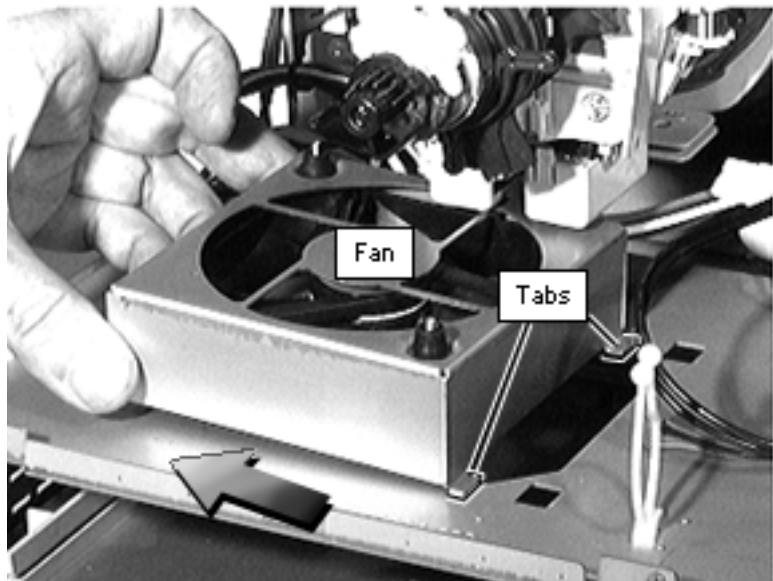




⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

- 1 Remove the fan security screw.





- 2 Slide the fan toward the power supply to release the two tabs.
- 3 Remove the fan.





Tilt/Swivel Base

Before you begin, remove the following:

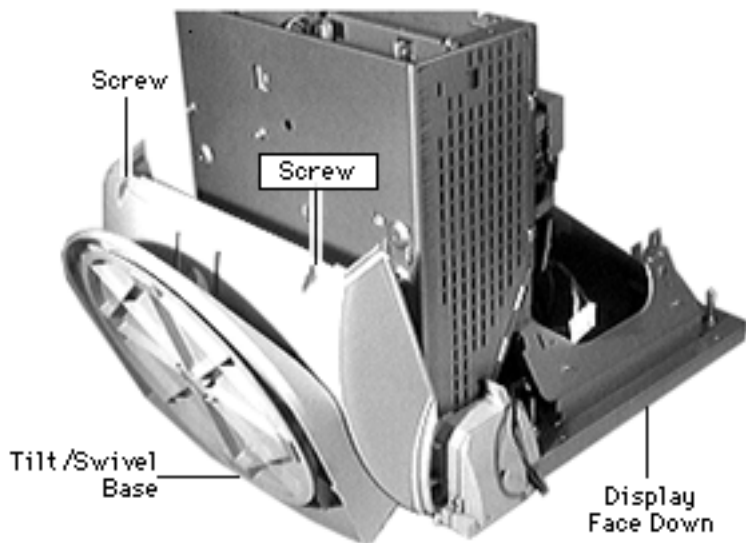
- Front bezel
- Rear housing

⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.



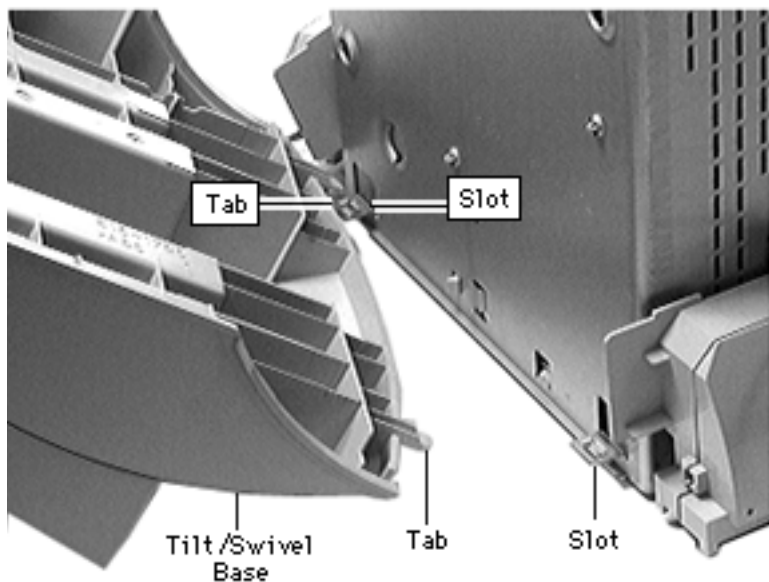
Tilt /Swivel Base





- 1 Place the display face down on a padded surface.
- 2 Remove the two screws at the back of the tilt/swivel base.
- 3 Separate the back of the base from the metal chassis by a few inches.
- 4 Slide the tilt/swivel base up and remove it from the chassis.





Replacement Note: Align the tabs at the front of the tilt/swivel base with the slots in the chassis. Angle the tilt/swivel base and slide in the tabs.





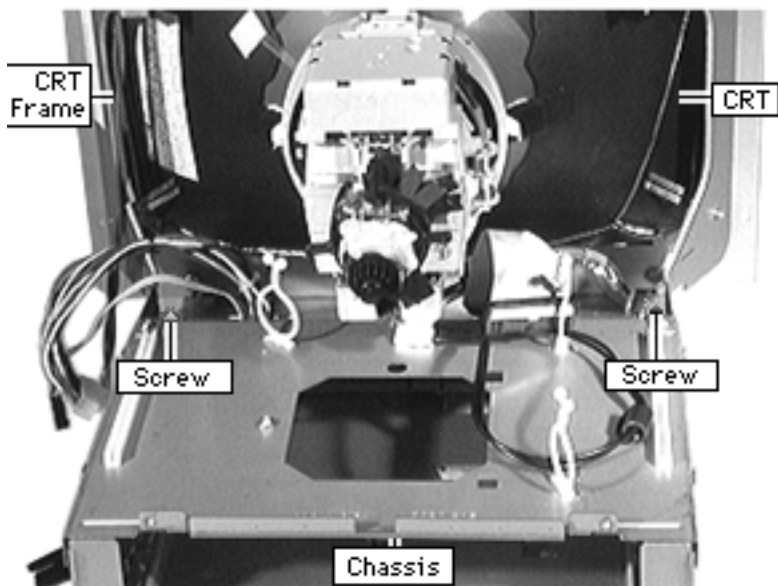
CRT



Before you begin,

- Remove the I/O door
- Remove the rear housing
- Remove the front bezel
- Remove the logic board
- Discharge the CRT
- Remove the rear EMI shield
- Remove the analog shield
- Remove the analog/video board assembly
- Remove the power supply
- Remove the tilt/swivel base





⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

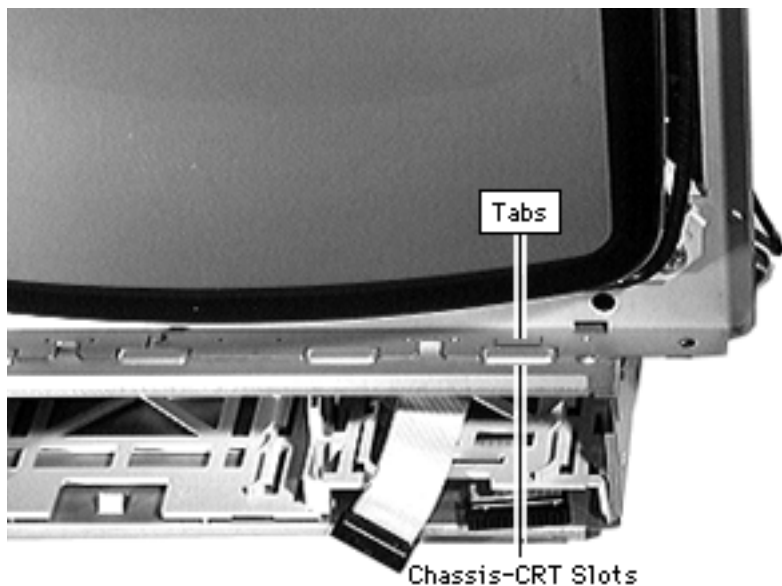
⚠ Warning: Support the top of the CRT. The CRT is very heavy and may fall forward as you complete this procedure.

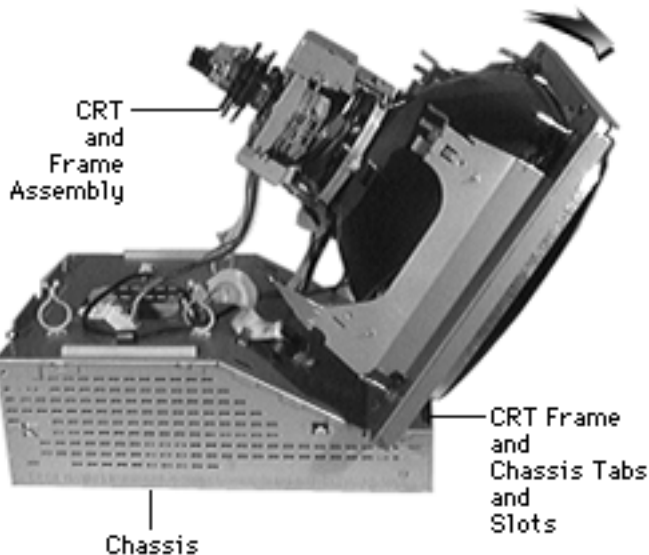
- 1 Remove the two screws securing the metal CRT frame to the chassis.





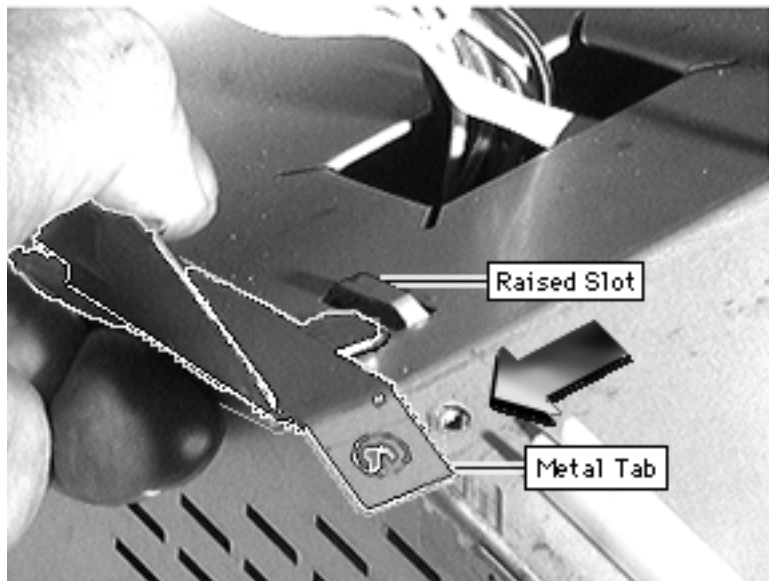
- 2 Pry back the metal tab from the raised slot on each side of the chassis.





- 3 Tilt the top of the CRT and frame assembly forward.
- 4 Push back the bottom of the CRT frame to disengage the line of CRT frame and chassis tabs and slots.
- 5 Lift off the CRT assembly.





Replacement Note: Align the line of tabs on the CRT frame with the line of slots on the front of the chassis.

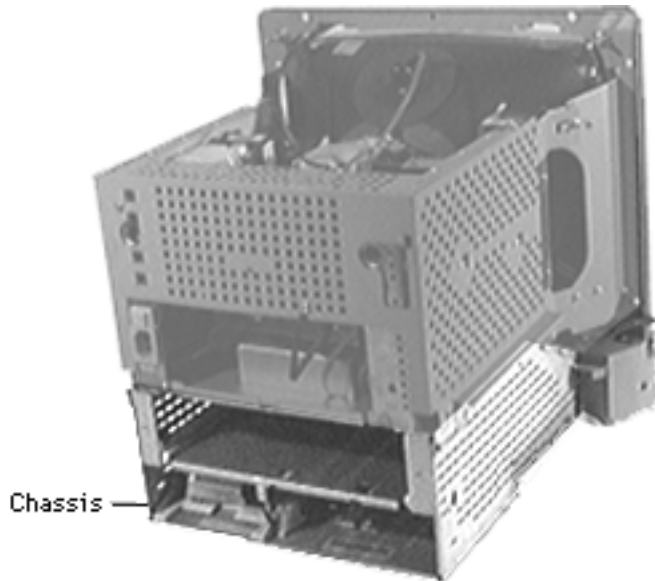




Chassis/Wiring Harness

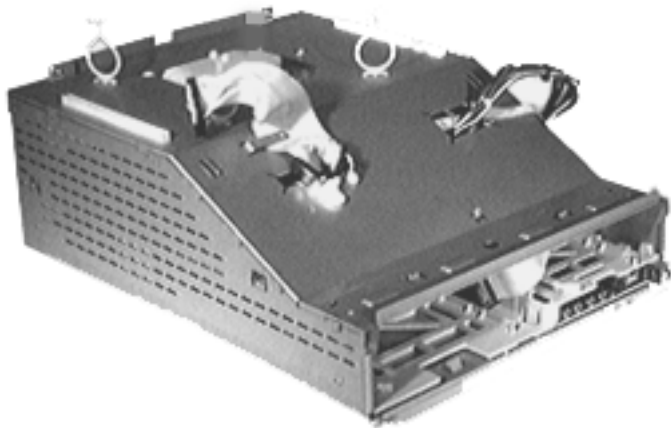
Before you begin,

- Remove the I/O door
- Remove the rear housing
- Remove the front bezel
- Remove the CD-ROM drive, if any
- Remove the TV Tuner, if any
- Remove the floppy drive
- Remove the front-panel control board
- Remove the logic board
- Remove the rear EMI shield





Chassis
Harness



- Discharge the CRT
- Remove the analog shield
- Remove the analog/video board assembly
- Remove the power supply
- Remove the tilt/swivel base
- Remove the CRT
- Remove the fan

Remove the chassis/wiring harness.

Note: The chassis/wiring harness includes the metal chassis, plastic drive bays, and the logic board connector with cables.





Upgrades

Power Macintosh/Performa
5260, 5280 Series





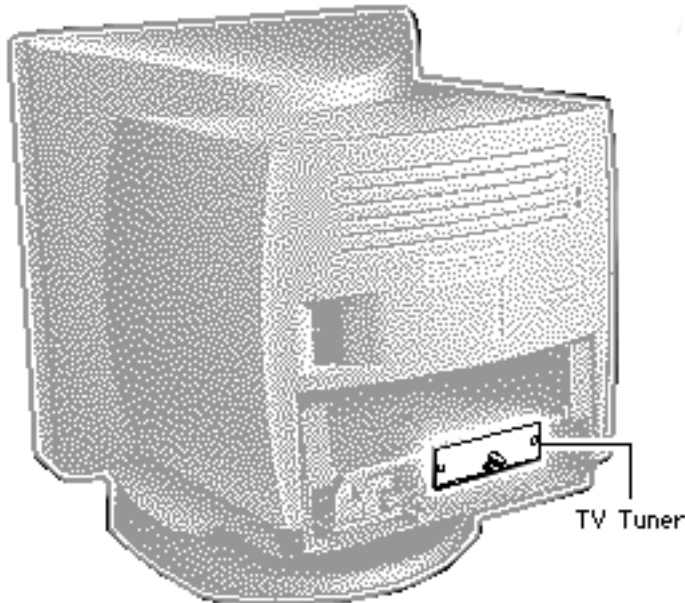
TV or TV/FM Tuner

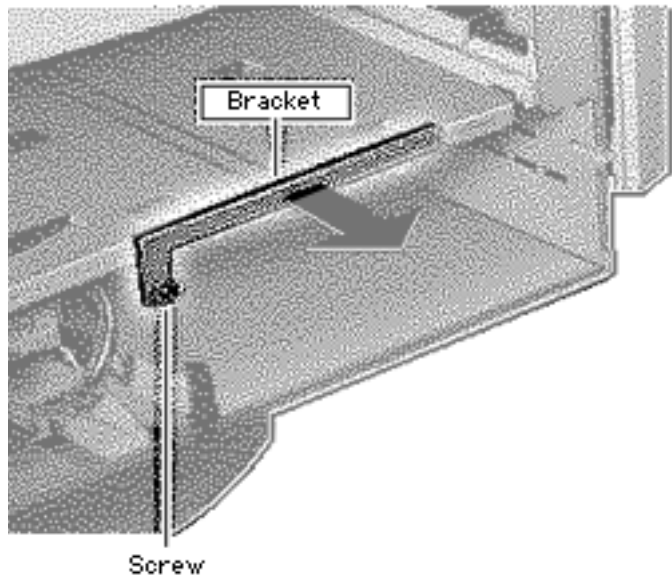
Before you begin, remove the following:

- I/O door
- Logic board

Note: The TV Tuner is an option.

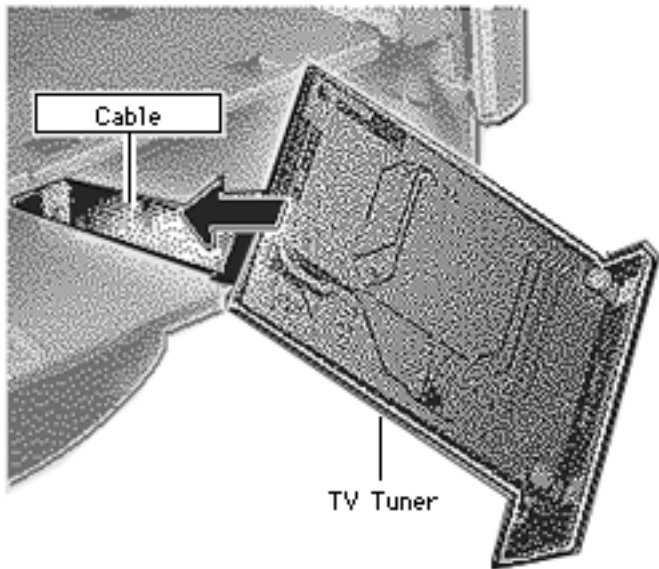
Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Remove the Philips screw.
- 2 Lift off the metal bracket from the chassis.





- 3 Connect the TV Tuner cable.
- 4 Slide the TV Tuner into place.





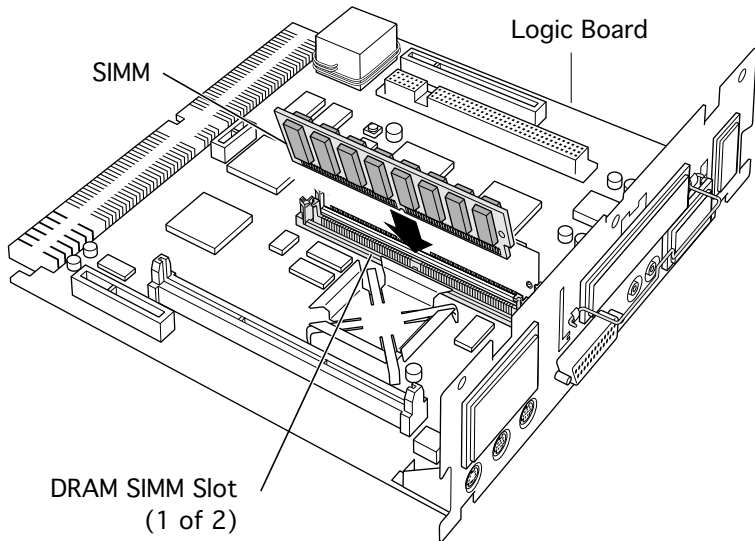
SIMM Upgrade

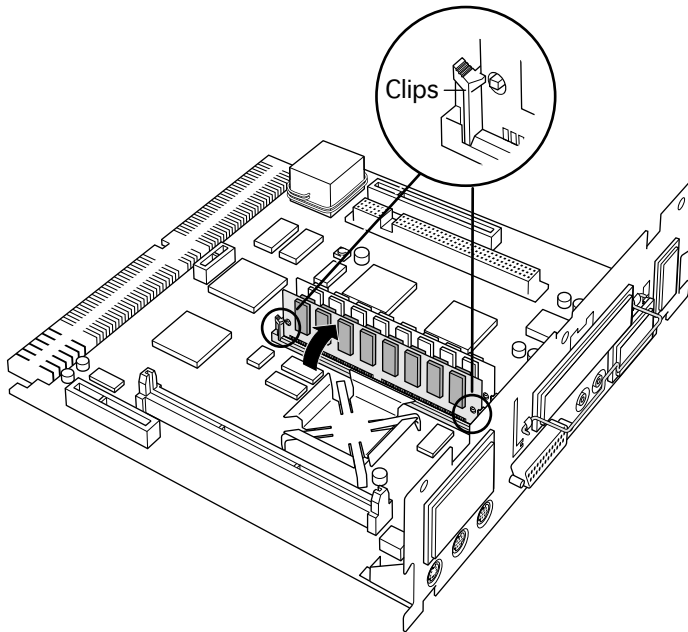
Before you begin, remove the following:

- I/O door
- Logic board

Caution: Review the ESD precautions in Bulletins/Safety.

- 1 Align the SIMM in the SIMM slot and snap it into place.





Note: The plastic pin on the SIMM slot should engage the hole in the SIMM.

Note: Verify that the clips on both sides of the SIMM slot snap into place.





Communications Card Installation

Before you begin, remove the following:

- I/O door
- Logic board

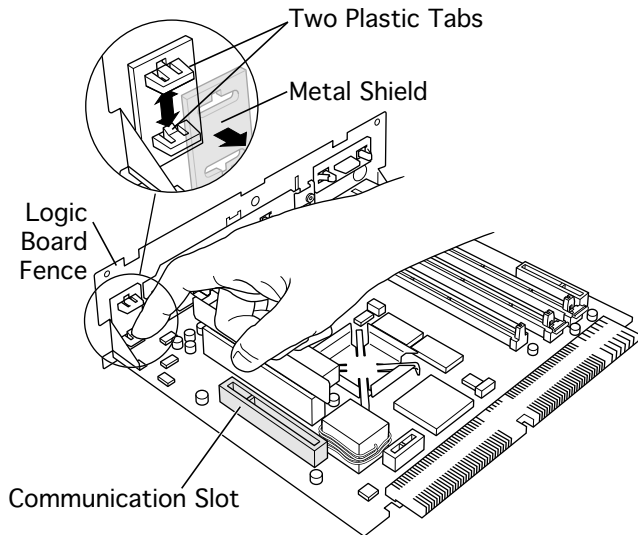
Caution: Review the ESD precautions in Bulletins/ Safety.

Note: This procedure shows installing a modem card, but the steps are similar for other communications cards you might be installing.



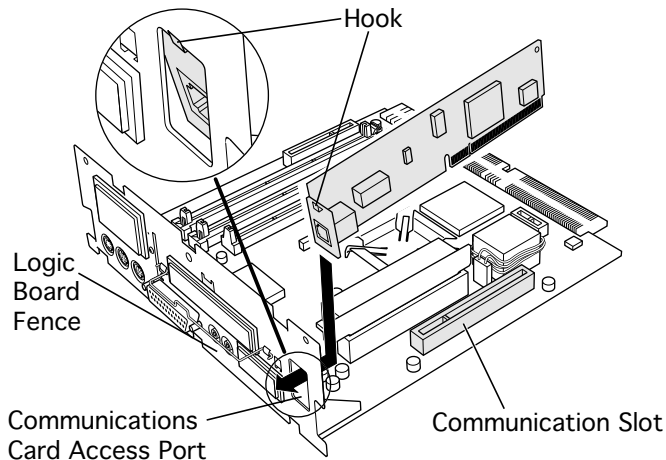


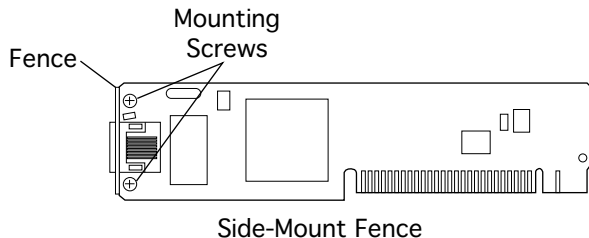
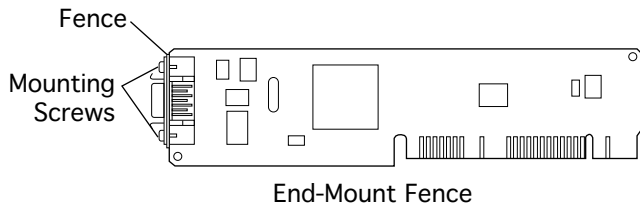
- 1 Remove the communications card access cover by pushing the two plastic tabs apart and removing the metal shield.





- 2 Angle the hook-end of the card down and bring the hook under and up through the communications card access port. The hook should rest against the outside of the logic board fence.



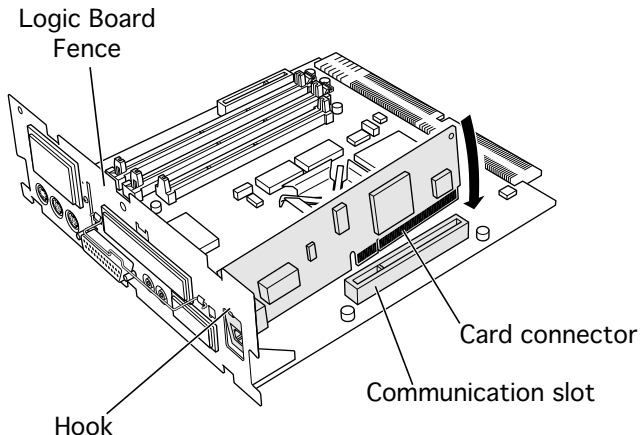


Replacement Note: If you are installing an Ethernet card and its fence does not include a hook, replace the fence.

- 3 Remove the card.
- 4 Remove the two card fence screws.
- 5 Remove the old fence.
- 6 Install the replacement fence on the card.

Note: If the Ethernet card fence does not include a hook and is riveted onto the card, replace the card.





- 7 Insert the card connector into the communications slot.

Note: Be sure the hook remains against the outside of the logic board fence.

- 8 Reset the logic board following the procedure in “Logic Board Reset” in the Additional Procedures chapter.





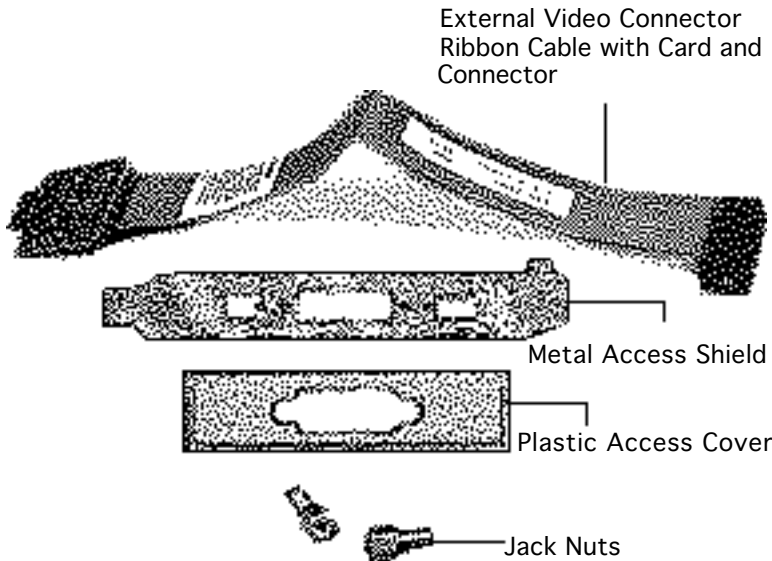
External Video Connector

Before you begin, remove the following:

- I/O door
- Logic board

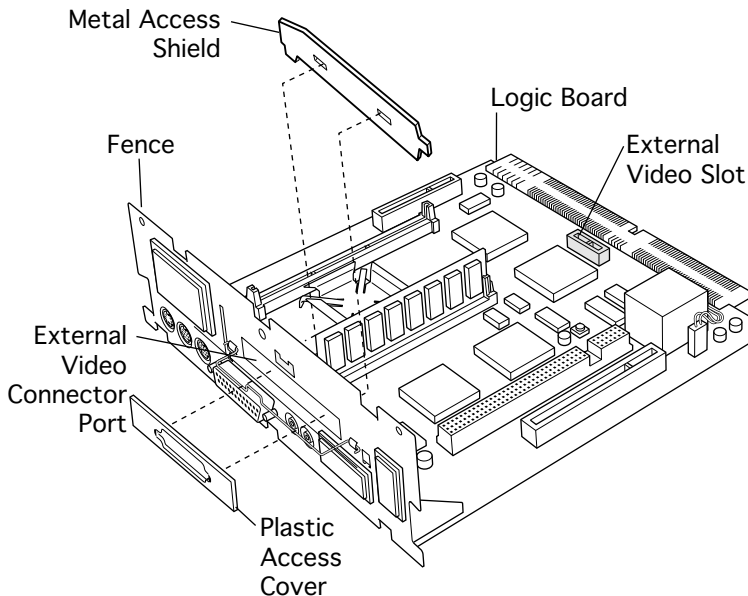
Caution: Review the ESD precautions in Bulletins/ Safety.





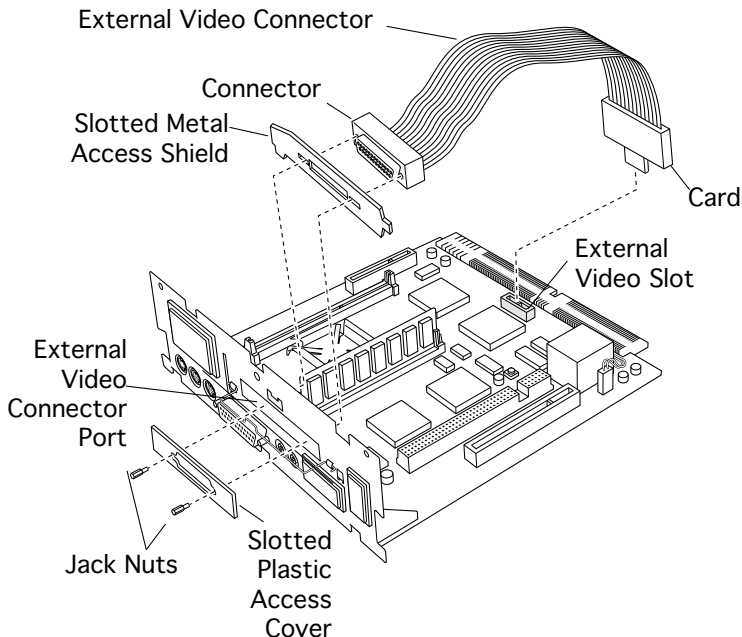
Note: The Apple External Video Connector provides “mirroring” or display of the system’s monitor screen on a presentation screen. In addition to the ribbon cable with card and the connector, the Apple External Video Connector kit includes a metal access shield, a plastic access cover, and two jack nuts.





- 1 Remove the plastic access cover from the logic board fence.
- 2 Lift the metal access shield up and out.





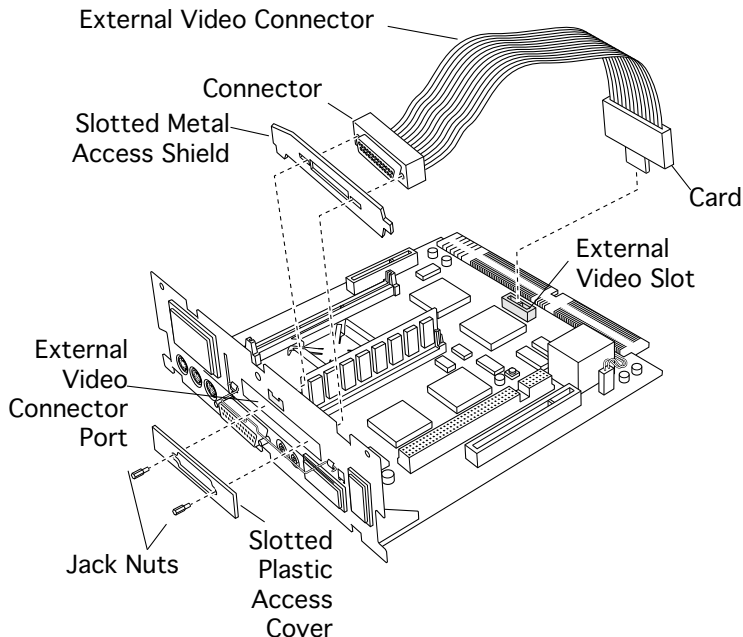
- 3 Insert the slotted metal access shield that came with the External Video Connector kit.

Note: Make sure the bottom of the metal shield engages the two small hooks on the logic board fence.

- 4 Insert the card at the end of the ribbon cable into the external video slot on the logic board.

Note: The pins will fit only one way; do not force them.





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- 5 Insert the connector end of the ribbon cable through the slotted opening of the shield and fence.
 - 6 Secure it with the jack nuts.
- Note:** Fold the ribbon cable to avoid crimping.
- 7 Insert the slotted plastic access cover that came with the kit.

Caution: The external video connector cable can sometimes rise up and contact the exposed blades of





the fan, which causes a rattling sound. To avoid this, be sure to fold or press the cable down flat.





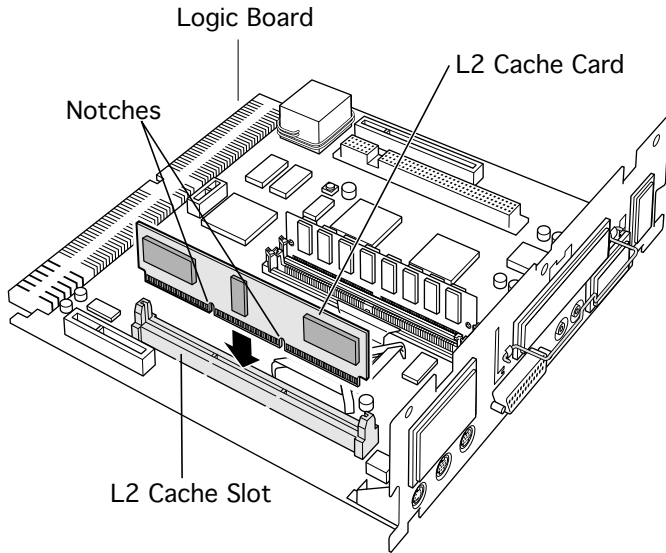
L2 Cache Installation

Before you begin, remove the following:

- I/O door
- Logic board

Caution: Review the ESD precautions in Bulletins/ Safety.

Align the notches in the L2 cache card with the small ribs inside the L2 cache slot. Snap the card into place on the logic board.





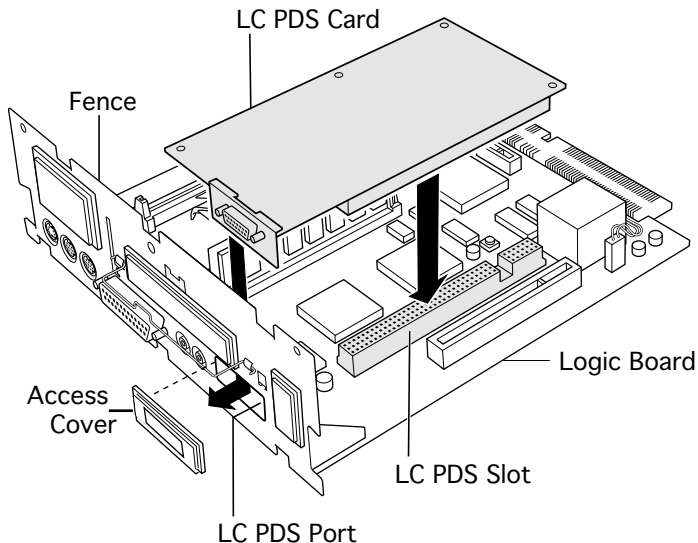
LC PDS Card Installation

Before you begin, remove the following:

- I/O door
- Logic board

Caution: Review the ESD precautions in Bulletins/ Safety.

- 1 Remove the access cover from the LC PDS port.
- 2 Angle the connector end of the LC PDS card into the LC PDS port, and snap the card into place.





Additional Procedures

Power Macintosh/Performa
5260, 5280 Series



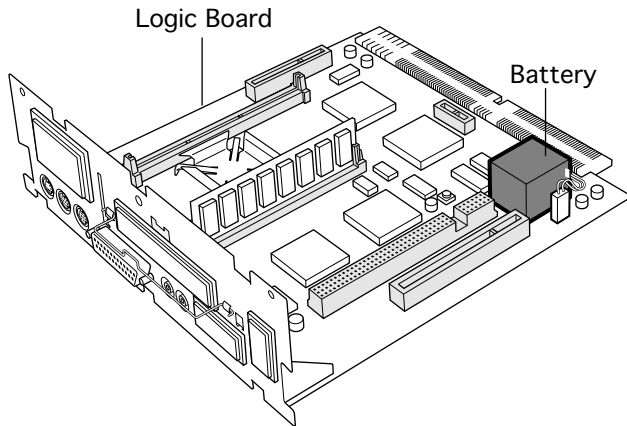


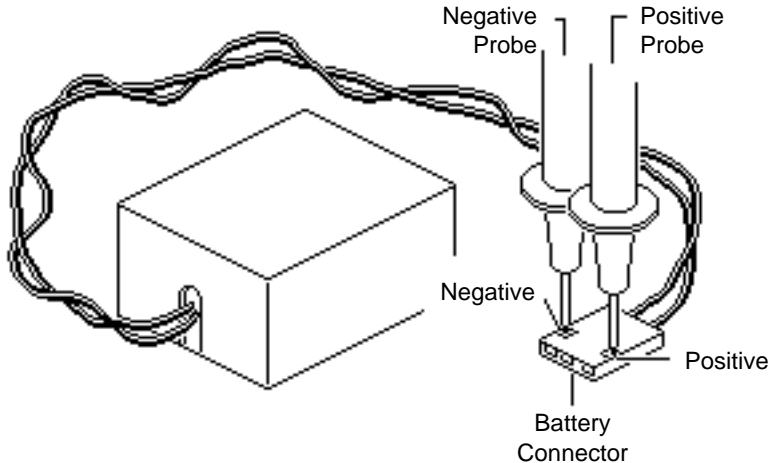
Battery Verification

Before you begin, remove the following:

- I/O door
- Logic board
- Battery

Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Set the voltmeter to the 10 V DC scale.
- 2 Hold the positive probe of the voltmeter to the positive end of the battery and the negative probe to the negative end of the battery.
- 3 If the battery voltage is below 3.0 V, replace the battery. Refer to “Battery Replacement” in this chapter.



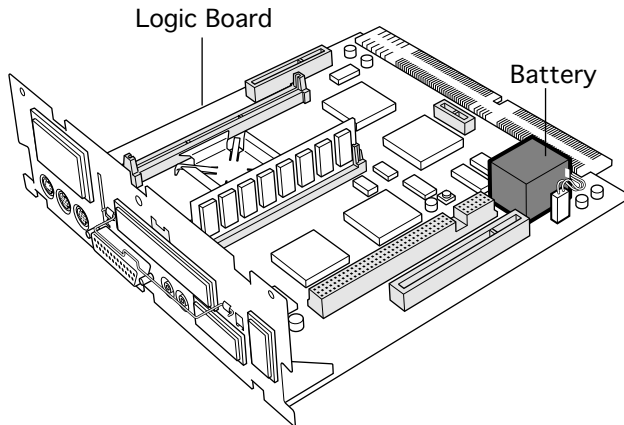


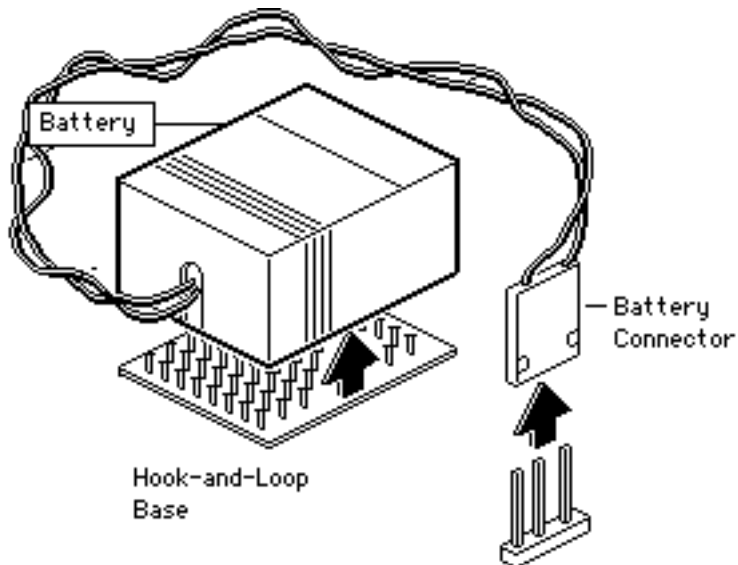
Battery Replacement

Before you begin, remove the following:

- I/O door
- Logic board

Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Pull up and disconnect the connector.
- 2 Pull up and remove the battery from its hook-and-loop base.





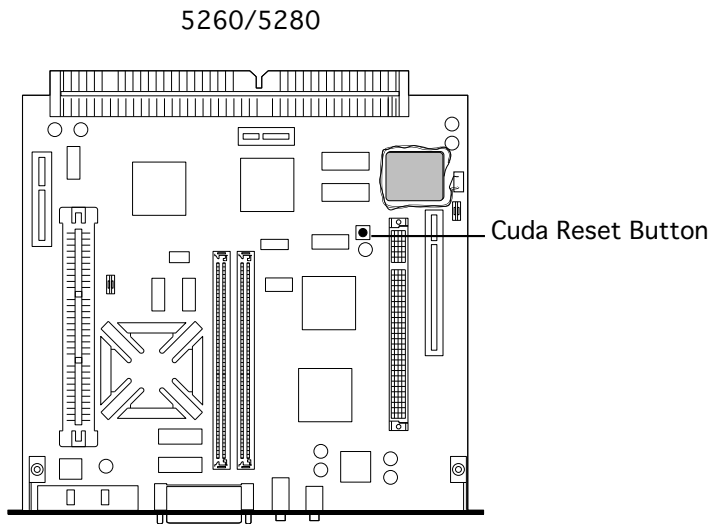
Cuda Chip Reset

Before you begin, remove the following:

- Power cord
- I/O door
- Logic board

Caution: Review the ESD precautions in Bulletins/ Safety.

Press the Cuda reset switch on the logic board using a flat plastic tool.



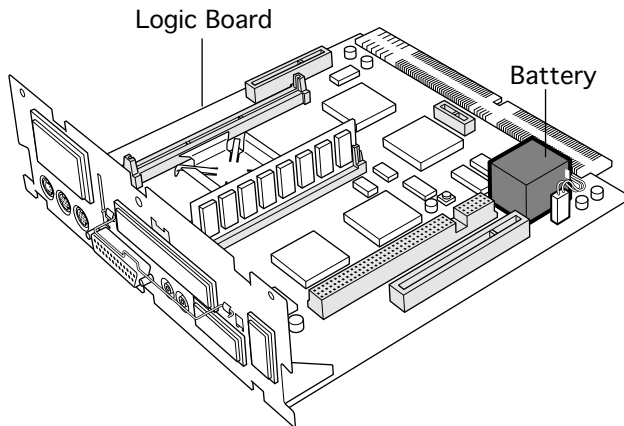


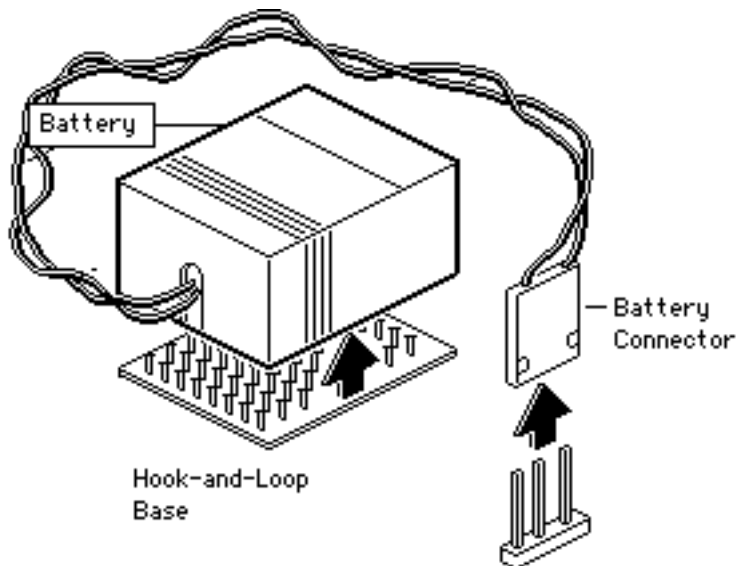
Logic Board Reset

Before you begin, remove the following:

- Power cord
- I/O door
- Logic board

Caution: Review the ESD precautions in Bulletins/ Safety.



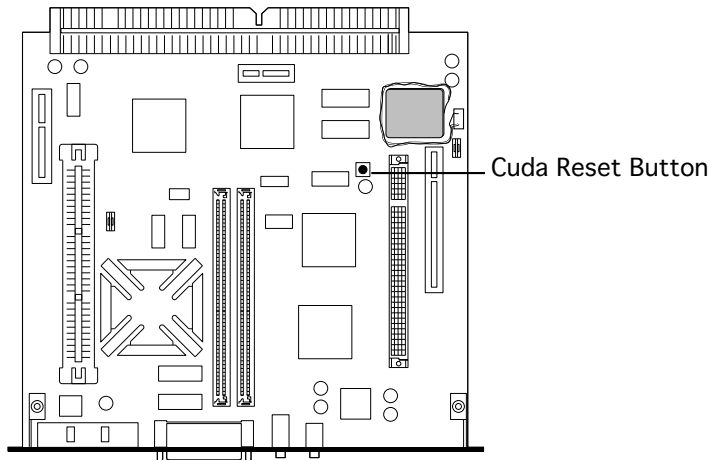


- 1 Pull up and disconnect the connector.
- 2 Pull up and remove the battery from its hook-and-loop base.
- 3 Wait 5 to 10 minutes, and then replace battery.





5260/5280



- 4 Press the Cuda reset switch on the logic board using a flat plastic tool.
- 5 Align the logic board at an upward angle to clear EMI clips.
- 6 Fully seat the logic board in the enclosure.
- 7 Replace the I/O door and power cable.

Note: This procedure resets PRAM. Be sure to check the computer's time/date and other system parameter settings.





Note: If this procedure resolves the problem, claim an adjustment on an SRO. If not, replace defective component and **do not** claim the adjustment.

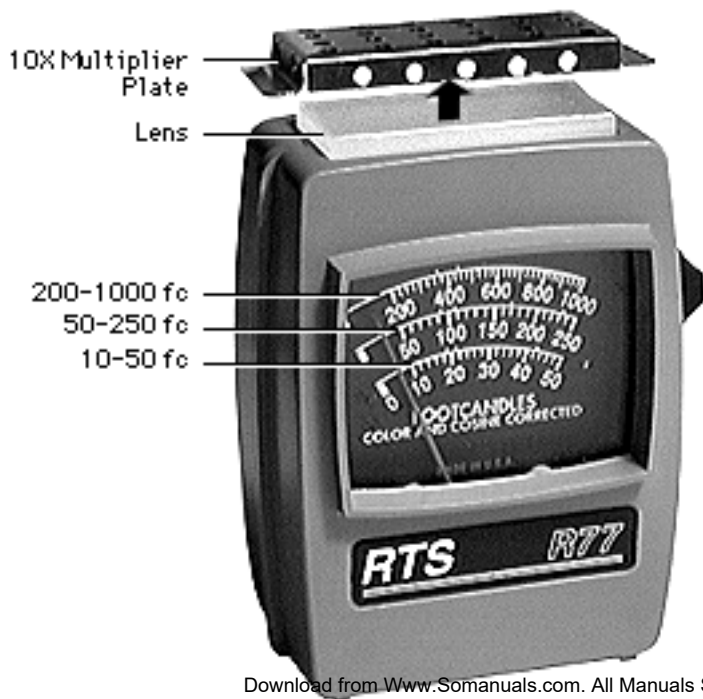




Adjustments

Power Macintosh/Performa
5260, 5280 Series





Light Meter Setup

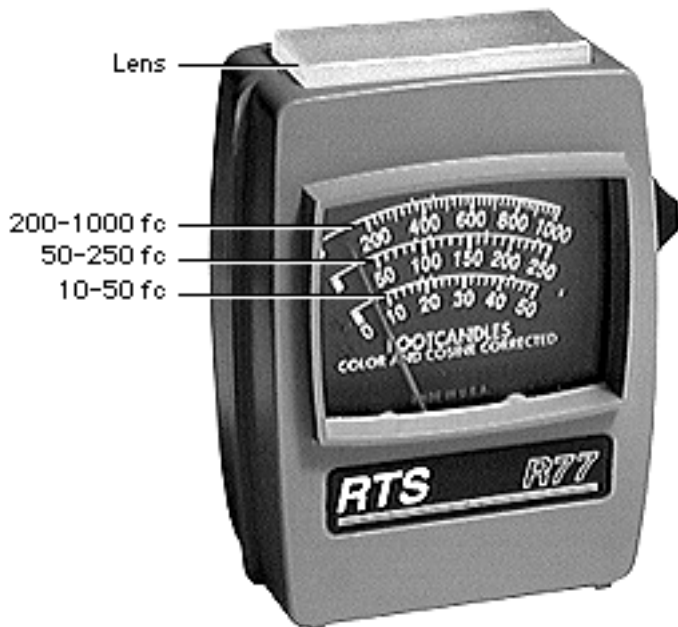
This topic covers setup for three light meter models: R77, L-248, and 246. Model R77 (Apple part number 076-0310) is the newest model available.

Model R77

The R77 light meter is capable of reading luminance from 10 to 1,000 footcandles (fc).

Before you begin, remove the 10X multiplier plate





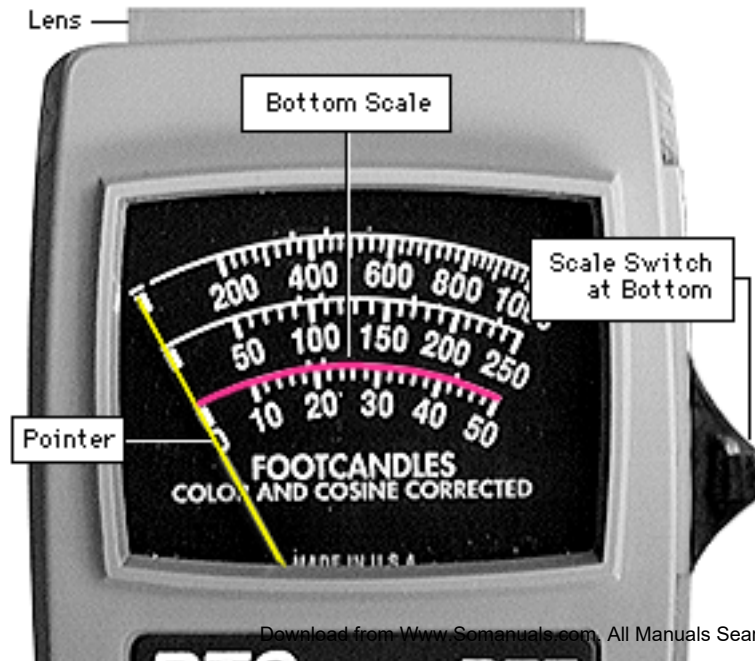
from the lens.

Three scales are shown on the light meter:

- 200-1000 fc
- 50-250 fc
- 10-50 fc

Because display screen luminance typically ranges from 10 to 50 fc, take readings from the bottom scale only.





To measure a display screen's luminance,

- 1 Set the scale switch to the bottom position (to set up the 10-50 fc scale).
- 2 Place the lens against the middle of the screen and read the bottom scale.

Note: When the light meter is not in use, slide the scale switch to its top position, and store the meter in its protective case.

Important: If you suspect the light meter is giving false





readings, verify the readings with a known-good light meter or photometer. Also check the age of the R77 light meter by its four-digit manufacturing date stamp (such as 0398 for March 1998).

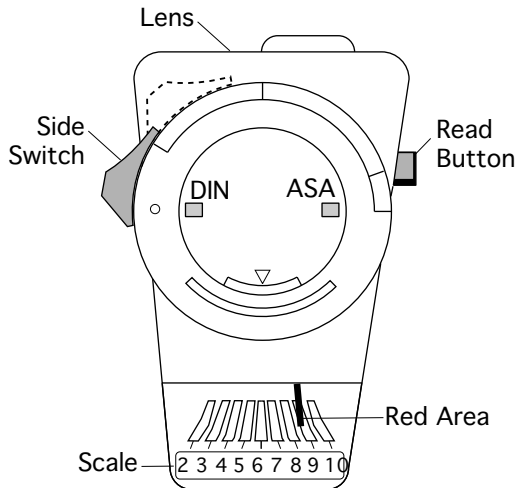
Caution: Dropping the meter can permanently damage its accuracy. A shock-damaged meter might read incorrectly or its pointer may not drop to zero.

Manufacturing
Date Stamp



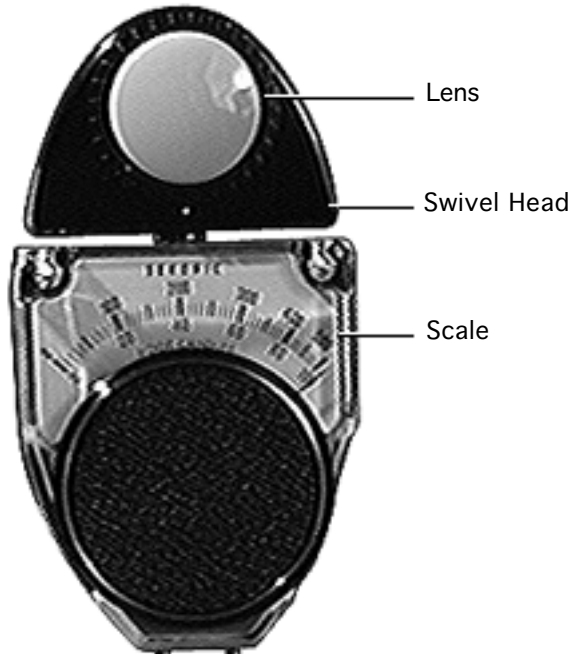


Model L-248



- 1 Press the red button on the back of the light meter. If the reading is out of the red area, replace the battery.
- 2 Move the side switch to its lower position so that the scale reads 2 through 10.
- 3 Uncover the lens of the meter.
- 4 Place the lens against the middle of the screen and press the read button to read the scale.

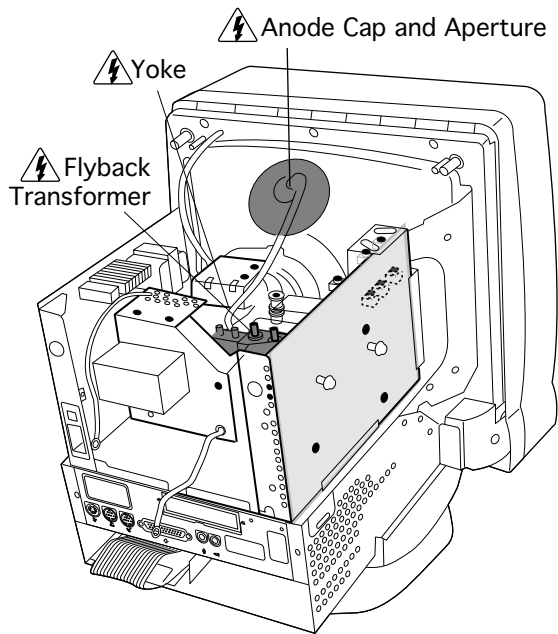




Model 246

- 1 Remove the metal slide, if installed, from the top of the light meter.
- 2 Install the white lens with the red dot.
- 3 Rotate the swivel head so the lens of the meter faces the monitor.
- 4 Place the lens against the middle of the screen and read the scale.





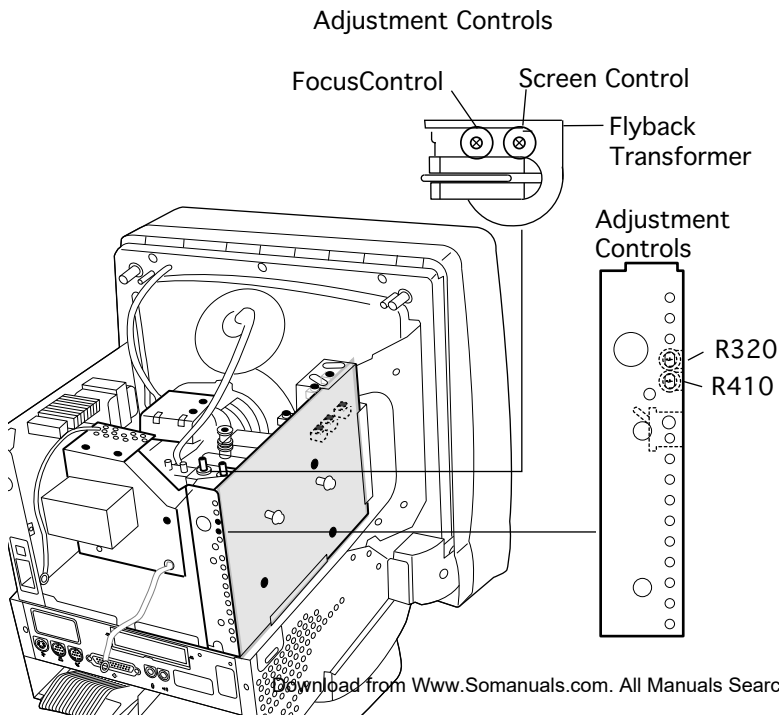
Geometry

Before you begin, remove the rear housing.

⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

⚠ Warning: Do not use metal alignment tools—they are a shock hazard.





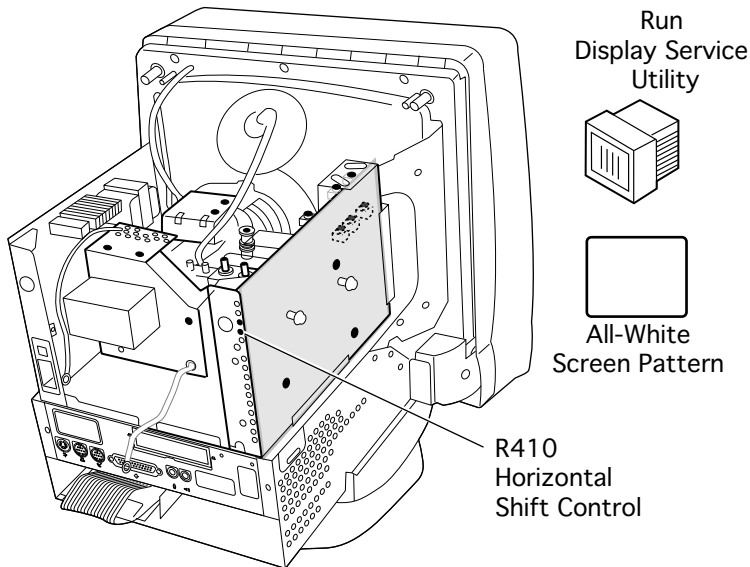
Note: The controls on this monitor require a small plastic Phillips-head tool or a small plastic flat-head tool to make adjustments.

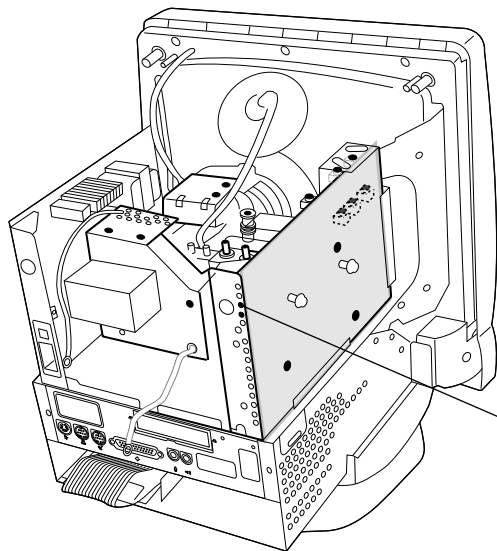




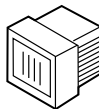
Horizontal Shift

- 1 Run Display Service Utility from the Utilities folder of the MacTest Pro CD to display the All-White Screen.
- 2 Using a flat-blade plastic tool, adjust the horizontal shift control (R410) until the raster is centered (left to right) in the display area.





Run
Display Service
Utility



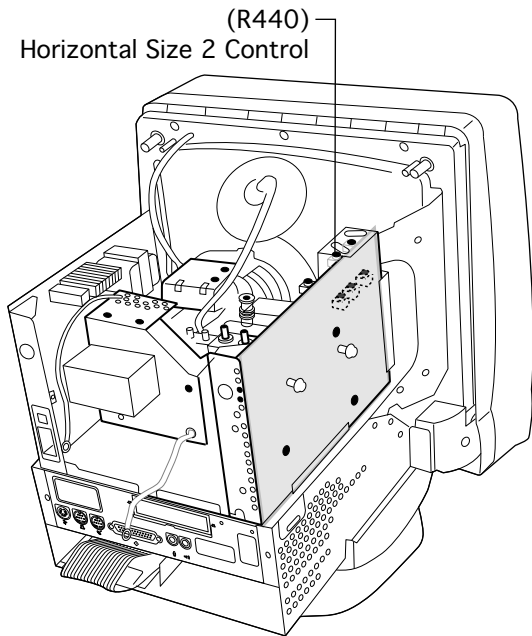
All-White
Screen Pattern

R320
Vertical
Shift
Control

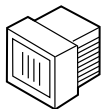
Vertical Shift

- 1 Run Display Service Utility from the Utilities folder of the MacTest Pro CD to display the All-White Screen.
- 2 Using a flat-head plastic adjustment tool, adjust the vertical shift (R320) control until the raster is centered (top to bottom) in the display area.





Run
Display Service
Utility

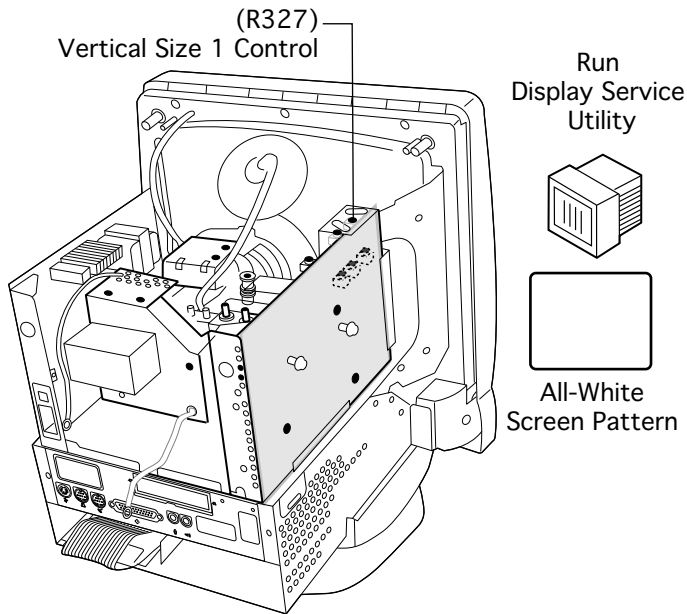


All-White
Screen Pattern

Horizontal Size

- 1 Run Display Service Utility to display the All-White Screen Test Pattern.
- 2 Using a flat-blade plastic tool, adjust the Horizontal Size 2 control (R440) until the raster width is 9.5 inches ($\pm 1/8$ inch) or 240 mm (± 2 mm)

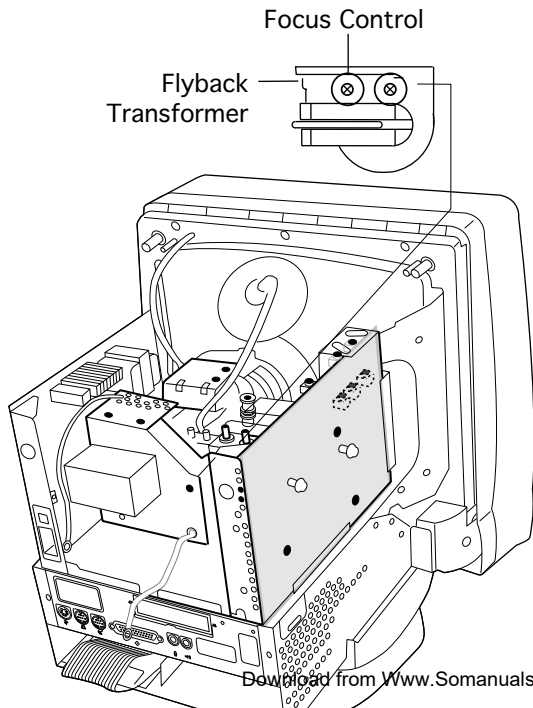




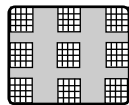
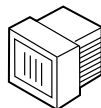
Vertical Size

- 1 Run Display Service Utility to display the All-White Screen Test Pattern.
- 2 Using a flat-blade plastic tool, adjust the vertical size 1 control (R327) until the raster height is 7.3 inches ($\pm 1/8$ inch) or 185 mm (± 2 mm).





Run
Display Service
Utility

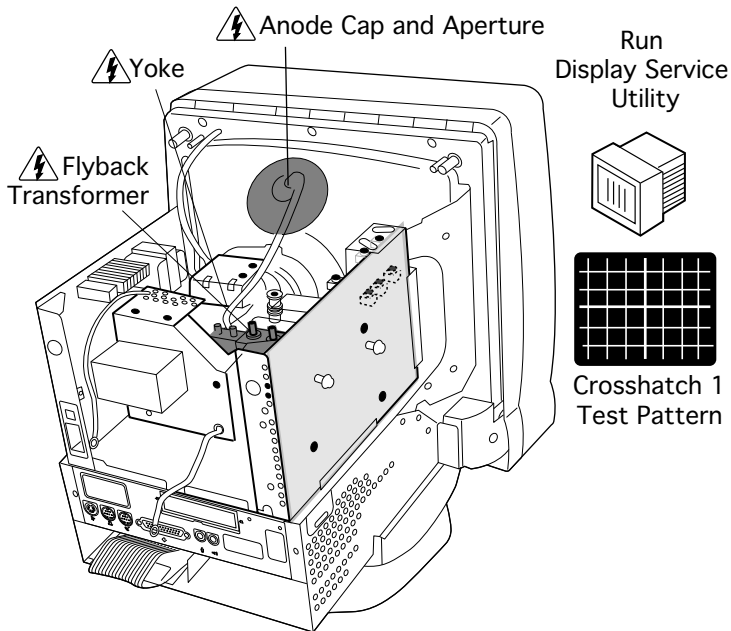


Focus
Test Pattern

Focus

- 1 Run Display Service Utility to display the Focus test pattern.
- 2 Using a flat-head plastic adjustment tool, adjust the focus control on the flyback transformer until the Focus test pattern reaches the best center-of-screen performance.





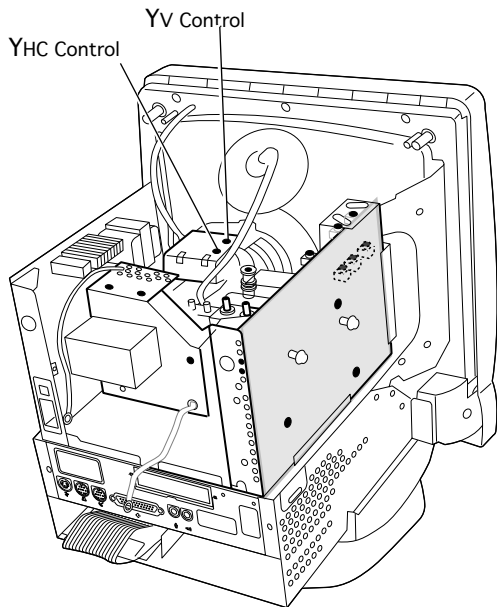
Convergence

Before you begin, remove the rear housing.

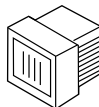
⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

- 1 Run Display Service Utility to display the Crosshatch 1 Test Pattern.





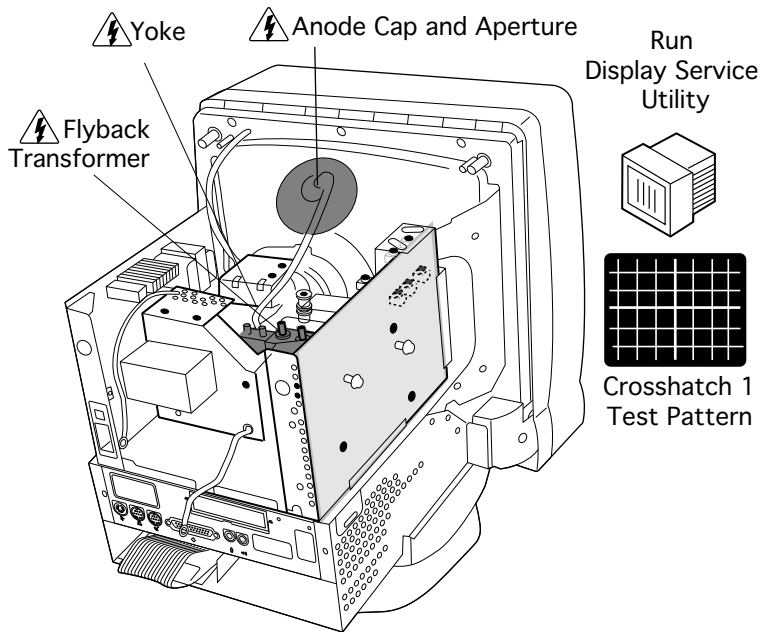
Run
Display Service
Utility



Important: Use a fine-tip plastic adjustment tool for the following adjustments.

- 2 Adjust the Yv control (yoke-mounted vertical dynamic convergence) for best convergence of vertical lines at the top and bottom of the screen.
- 3 Adjust the Yhc control (yoke-mounted horizontal dynamic convergence) for best convergence of horizontal lines at the top and bottom of the screen.





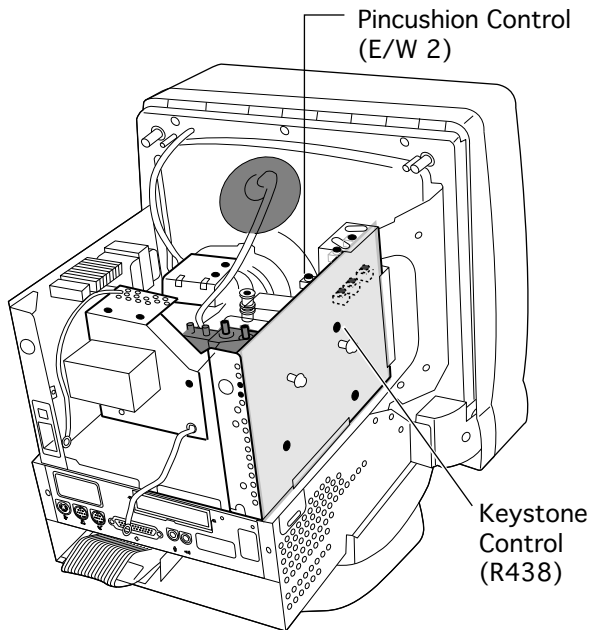
Geometric Distortion

Before you begin, remove the rear housing.

⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

- 1 Run Display Service Utility to display the Crosshatch 1 Test Pattern.

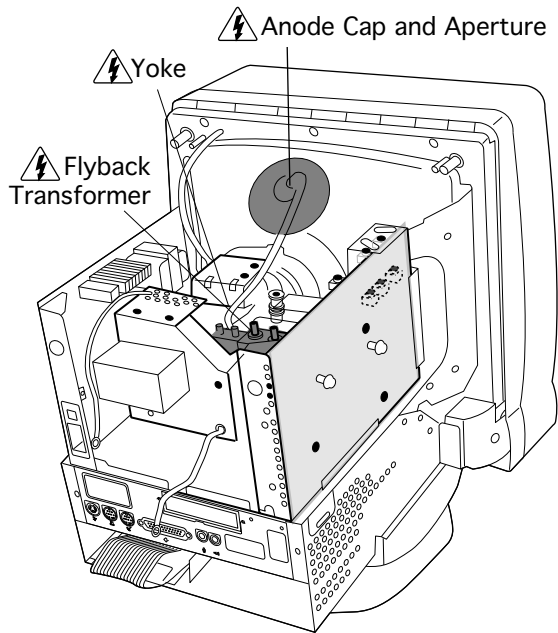




Important: Use a fine-tip plastic adjustment tool for the following adjustments.

- 2 If the raster is barrel-shaped, adjust the Pincushion (E/W 2) control.
- 3 If the raster is narrower or wider at top than bottom, adjust the Keystone (R438) control.





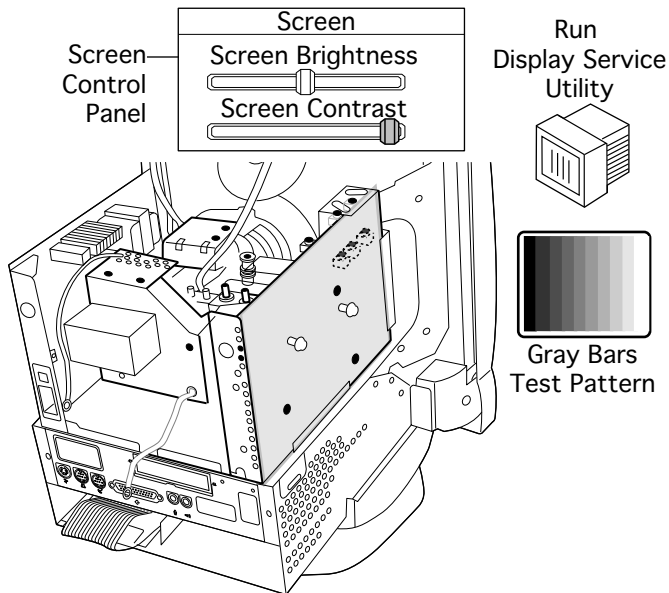
Video

Before you begin, remove the rear housing.

⚠ Warning: This product contains high voltage and a high-vacuum picture tube. To prevent serious injury, review CRT safety in Bulletins/Safety.

Replacement Note: Perform the Cutoff/White Balance Adjustment when you replace the CRT or analog board, or if the screen control has been changed.

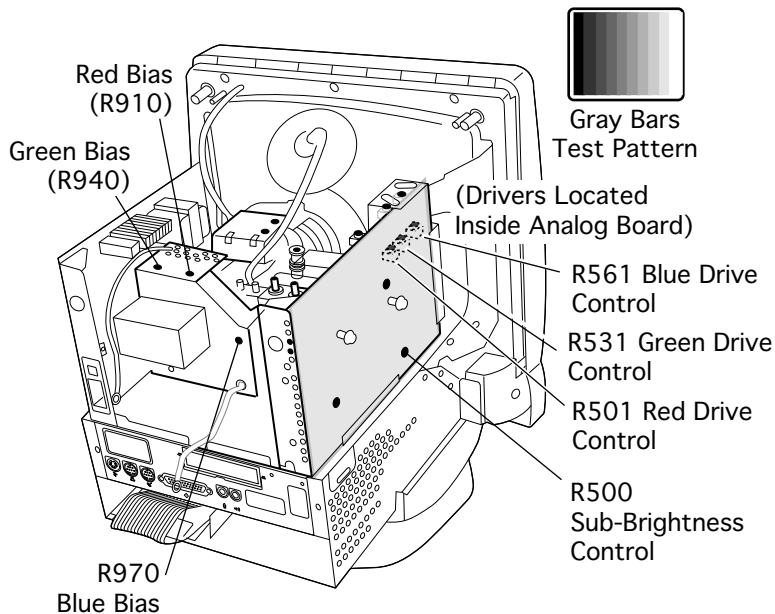




Note: Perform the Cutoff/White Balance adjustments after the display has been on for at least 10 minutes.

- 1 Open the Screen control panel.
- 2 Set the Screen Brightness slider control to its midpoint.
- 3 Set the Screen Contrast slider control to its maximum (far right) position.
- 4 Run Display Service Utility to display the Gray Bars Test Pattern.





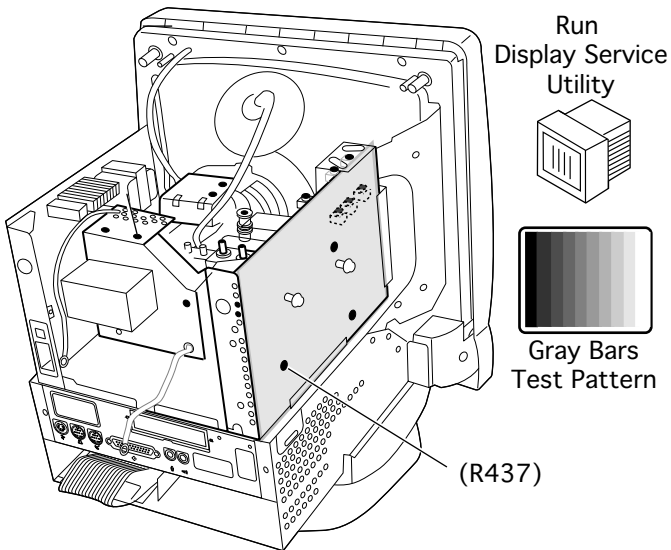
Important: Use a fine-tip plastic adjustment tool for the following adjustments.

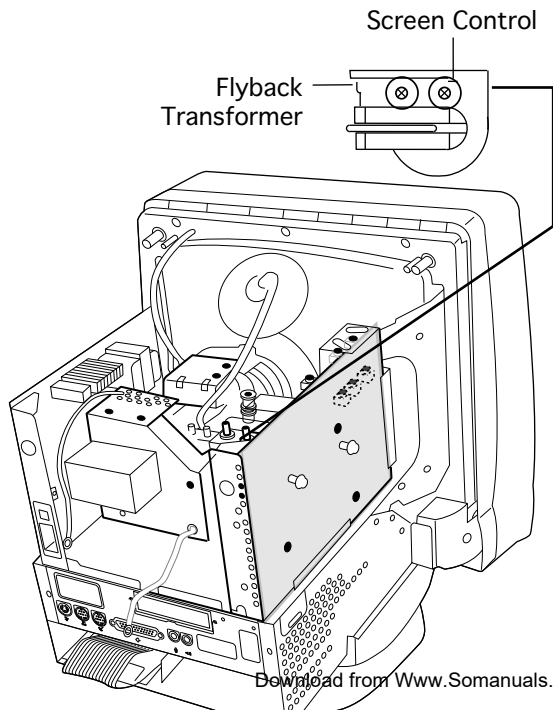
- 5 Set the following controls to their midpoints:
- Green Bias (R940)
 - Red Bias (R910)
 - Blue Bias (R970)
 - Blue Drive (R561)
 - Green Drive (R531)
 - Red Drive (R501)
 - Sub-Brightness (R500)



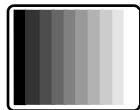


- 6 Set R437 to its midpoint.
- 7 Run Display Service Utility to display the Gray Bars test pattern.



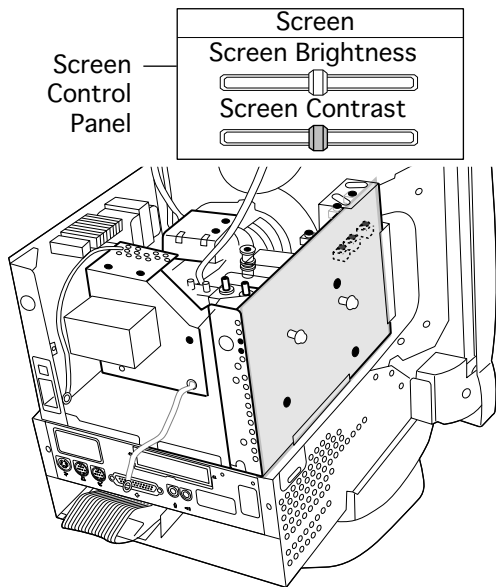


- 8 Adjust the Screen control on the flyback transformer very slowly until the first bar (furthest on left) is solid black and the bar to its immediate right is very dark.



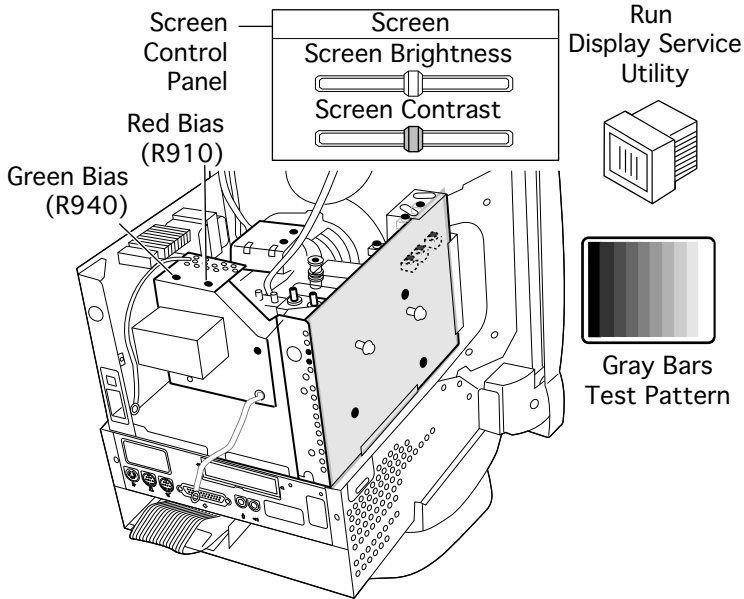
Gray Bars
Test Pattern





- 9 Open the Screen control panel.
- 10 Set the Screen Contrast slider control to its midpoint.



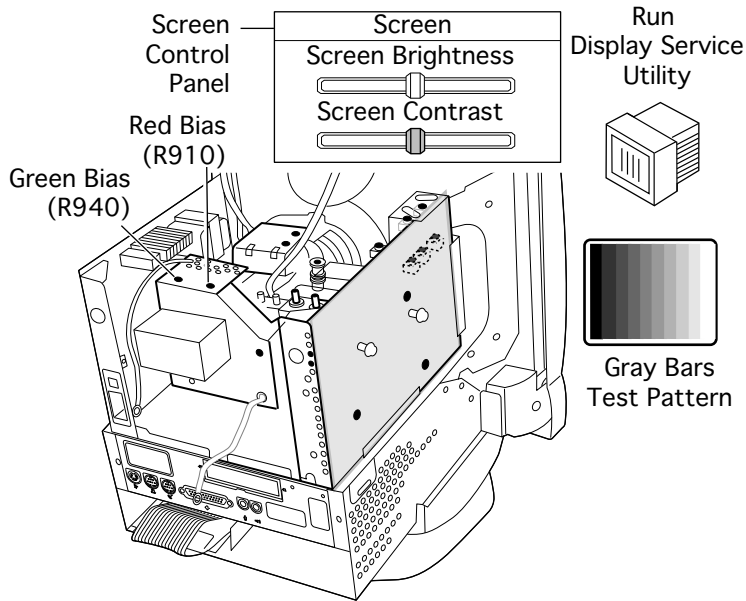


11 Run Display Service Utility to display the Gray Bars Test Pattern.

12 **Note:** Ensure that the left-most bar remains solid black while performing this step.

Adjust the red and green Bias controls to neutralize the darkest bars (left side) of the Gray Bars Test Pattern.

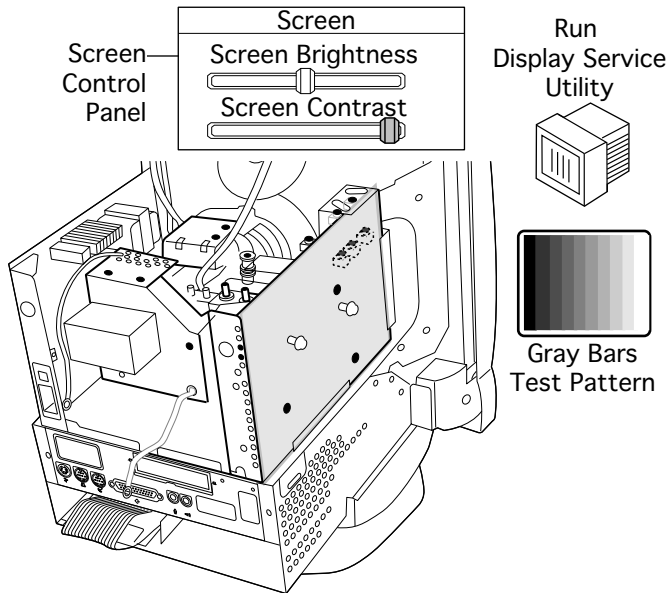




Note: If the screen shows a predominant blue color, adjust the green Bias control (R940) until the blue color is neutralized.

Note: Adjust the red Bias control (R910) until the bars appear to be shades of gray.





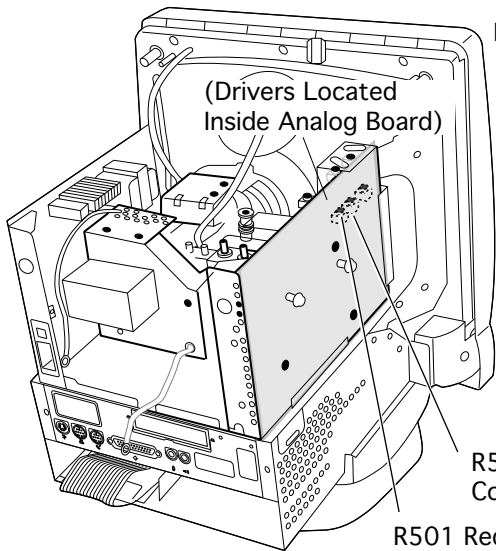
13 Open the Screen control panel.

14 Set the Screen Contrast slider control to its maximum (far right) position.

Note: At this point, the screen might appear too bright and out of focus.

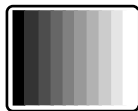
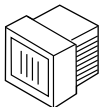
15 Run Display Service Utility to display the Gray Bars Test Pattern.





(Drivers Located Inside Analog Board)

Run Display Service Utility



Gray Bars Test Pattern

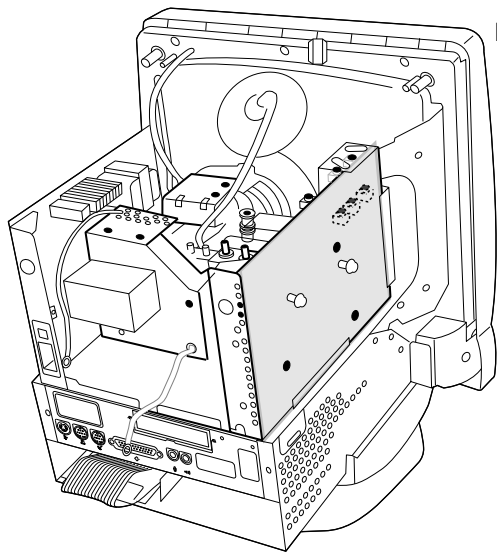
R531 Green Drive Control

R501 Red Drive Control

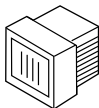
16 If the screen shows a predominant blue color, adjust the Green Drive Control (R531) until the blue color is neutralized.

17 Adjust the Red Drive Control (R501) until the bars appear to be shades of gray.





Run
Display Service
Utility

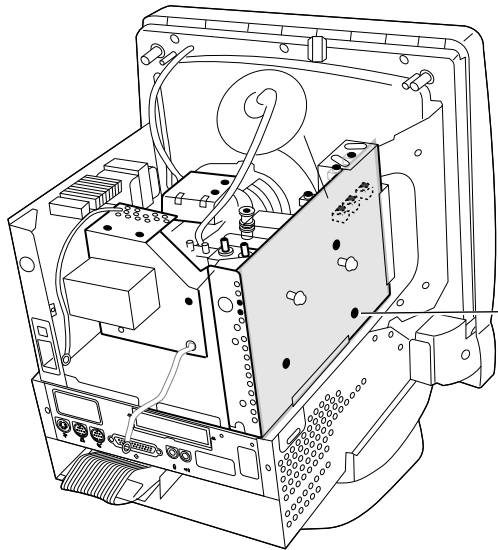


All-White
Screen
Test Pattern

18 Run Display Service Utility to display the All-White Screen Test Pattern.

19 Hold a light meter or photometer against the center of the screen.





R500
Sub-Brightness
Control

20 Adjust the Sub-Brightness control (R500) to decrease the brightness until the screen luminance measures one of the following:

- 20 ± 3 on the bottom scale of light meter Model R77
- 20 ± 3 foot candles on the red scale of light meter Model 246
- 25 fl (foot lamberts) on a photometer
- Between 9 and 10 on light meter Model L-248



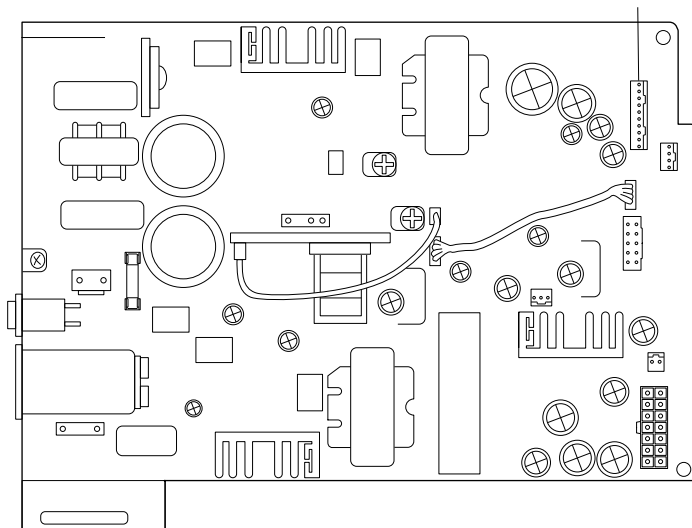


Power Supply

Note: This adjustment must be performed whenever the analog board or power supply are removed.

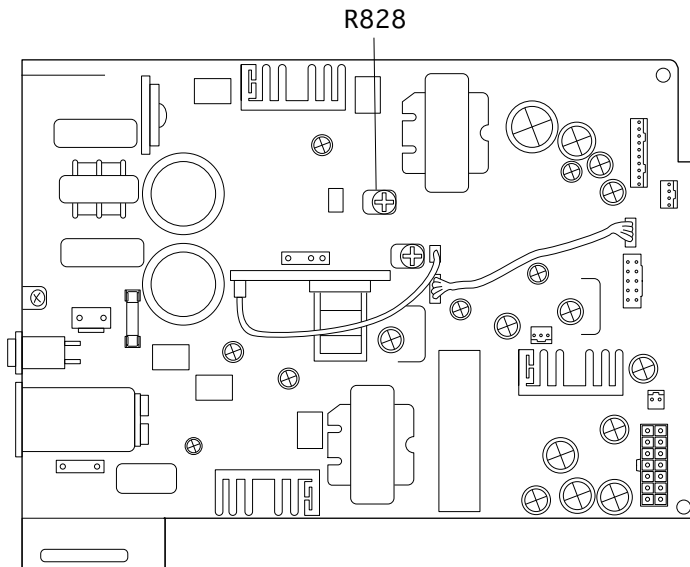
- 1 Connect the DC voltmeter ground lead to the metal chassis.
- 2 Connect the other lead of the DC voltmeter to pin 3 of connector P805 on the power supply.

P805
Pin 1





- 3 Adjust control R828 so that the voltmeter reads 110 VDC.

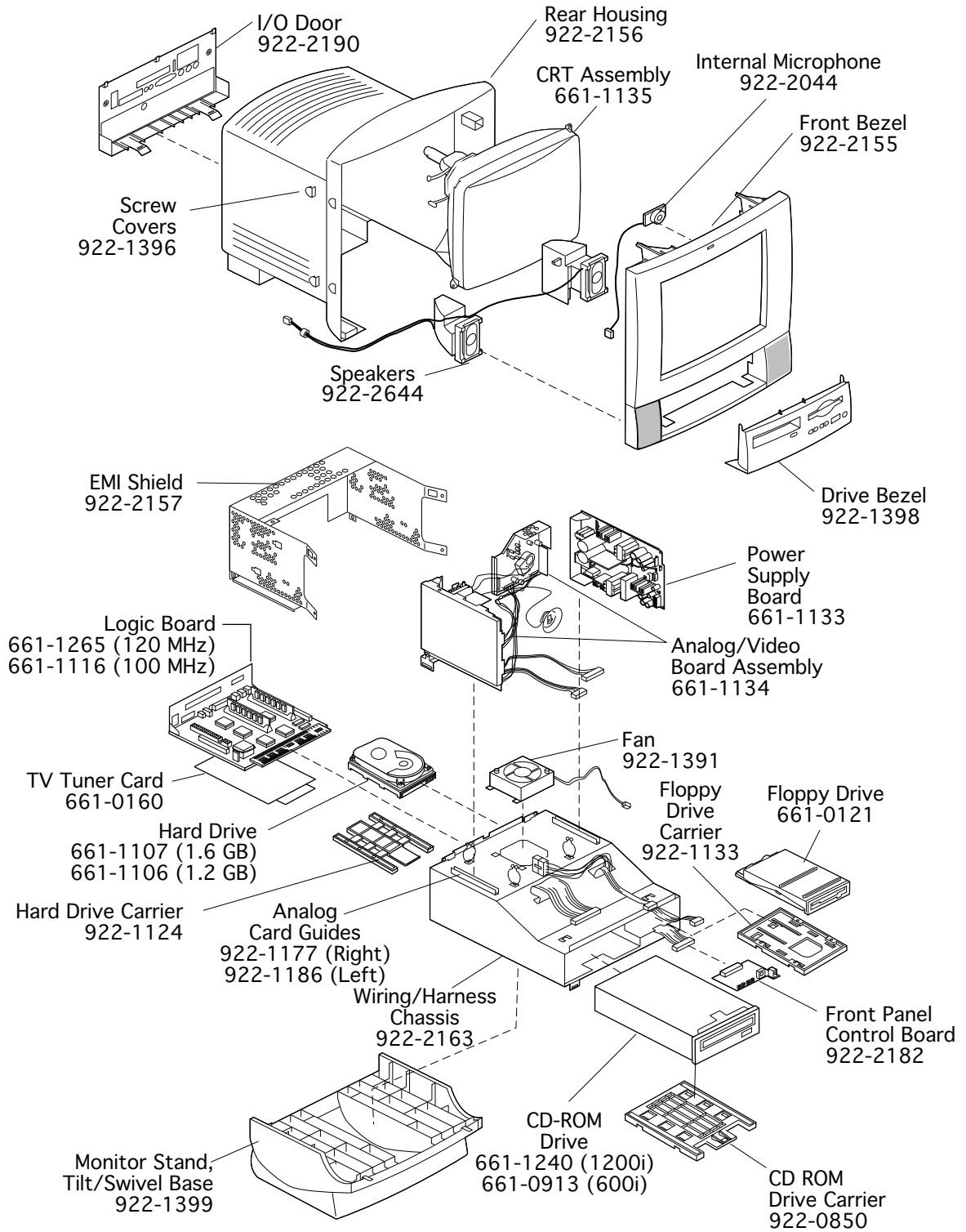




Exploded View

Power Macintosh/Performa
5260, 5280 Series





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