



PowerBook G3 Series

M4753





Basics

PowerBook G3 Series





Product Overview



The PowerBook G3 Series is the first PowerBook to offer build-to-order options that include a choice of microprocessor speed, internal hard disk, on-board RAM, and display size and type.

Note: The PowerBook G3 Series can be distinguished from other PowerBooks by its physical design and the family marketing number M4753 on the bottom product label.





Features

The PowerBook G3 Series includes

- PowerPC G3 microprocessor running at clock speeds of 233, 250, or 292 MHz
- Backside L2 cache consisting of 1 MB of fast static RAM in some configurations (L2 cache not supported in 233 MHz units)
- Two standard SO-DIMM expansion slots for SDRAM modules and 32 MB minimum of SDRAM installed, expandable to 192 MB total
- Built-in hard disk drives of 2 to 8 GB
- Choice of 13.3 or 14.1-inch TFT display with XGA resolution (1024 x 768 pixels), or 12.1-inch STN or TFT display with SVGA resolution (800 x 600 pixels)
- Standard VGA video connector for external video monitor with XGA resolution, or S-video connector that supports PAL and NTSC video monitors





- Either 2 MB or 4 MB of video SGRAM
- Built-in 2D and 3D graphics acceleration via video circuits
- Two expansion bays for batteries, floppy disk drive, CD-ROM drive, DVD-ROM drive, and other IDE or PCI devices
- Two CardBus slots that accept one Type III or two Type II CardBus cards or PC Cards
- Built-in Ethernet port with a 10BaseT connector
- Infrared link for up to 4 Mbit-per-second IrDA data transfer
- Built-in modem with 56 kbps data rate in some configurations (optional)
- Built-in microphone and speakers as well as a line-level stereo input jack and a stereo headphone jack
- New keyboard design with an embedded numeric keypad and inverted-T arrow keys
- New compact 45 watt AC adapter





System Configurations

At introduction in May, 1998, six basic configurations of the PowerBook G3 Series computer are available. With build to order options, customers may customize their PowerBook G3 Series computers in a variety of ways. For more details on these configurations and on the build to order options, see the Data Sheet at the end of the Specifications chapter of this manual.





Repair Strategy

Note: In the US only, refer to the latest program notice for special service considerations for the first 90 days of product availability.

Service the Power Macintosh G3 Series computers through module exchange and parts replacement. Customers can request on-site service from an Apple Authorized Service Provider Plus (AASP+), Apple Assurance (US only), or Apple Canada Technical Answerline (Canada only). They can also choose carry-in service from an AASP.

Ordering

Apple Service Providers planning to support the computer systems covered in this manual may purchase Service modules and parts to develop servicing capability. To order





parts, use the AppleOrder (US only) or ARIS (Canada only) system and refer to the PowerBook G3 Series “Service Price Pages.”

Large businesses, universities, and K-12 accounts must provide a purchase order on all transactions, including orders placed through the AppleOrder (US only) or ARIS (Canada only) system.

US Ordering

US 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





For US inquiries, please call Service Provider Support at 800-919-2775 and select option #1.

Canadian Ordering

Canadian Service providers not enrolled in ARIS may fax their orders to Service Provider Support in Canada (1-800-903-5284). For Canadian inquiries, please call Service Provider Support at 905-513-5782 and select option #3.





Warranty/AppleCare/ARIS

US Only

The PowerBook G3 Series computers are covered under the Apple One-Year Limited Warranty. The AppleCare Service Plan is also available for these products. Service Providers are reimbursed for warranty and AppleCare repairs made to these computers. For pricing information, refer to “Service Price Pages.”

Canada Only

The PowerBook G3 Series computers are covered under AppleCare. The Extended AppleCare Service Plan is also available for these products. Service Providers are reimbursed for warranty and AppleCare repairs made to these computers. For pricing information, refer to “Service Price Pages.”





Repair Issues

Prevent Cosmetic Damage

The outside plastics of the PowerBook G3 Series computers are vulnerable to scratches and finger marks from skin oil. To prevent cosmetic damage to a customer's PowerBook, do not wear jewelry when handling the computer, and wear gloves if you have them available. Wipe fingerprints from the outside plastics with a damp cloth.

Install Microprocessor Board Securely

The microprocessor board can be partially inserted and the computer will still function. However, over time, heat will cause the microprocessor board to lose contact and can cause the system to have intermittent problems such as no booting.





Therefore, verify proper installation by pressing on the microprocessor board connector a second time to make sure the board is fully seated.

Verify Parts Before Placing Orders

The PowerBook G3 Series computers offer build to order features. For this reason, it is mandatory that you either see the part you are replacing, or use diagnostics to identify the part, before you place a parts order. Misidentification of parts may occur if this step is not performed first.





Hard Disks and HFS Plus

PowerBook G3 Series hard disks use a new, improved file format called Mac OS Extended format (HFS Plus). HFS Plus has two benefits: it increases the number of files that can be stored on the hard disk, and it lets the computer work with data more efficiently than previous formats.

Disk Utilities

Some disk utility and disk locking programs manufactured by companies other than Apple are incompatible with HFS Plus.

Using an incompatible disk utility or disk locking program could result in hard disk corruption and loss of all data on the hard disk. Check the documentation that came with the program or contact the manufacturer or the vendor of the





program before attempting to use it. Apple recommends using the utility Disk First Aid, which is included on the system software CD that ships with the PowerBook G3 Series.

Norton Utilities

Warning: Using Norton Utilities version 3.5.1 or earlier on your hard disk can result in hard disk corruption and loss of all your data.

Norton Utilities version 3.5.1 and earlier is not compatible with Mac OS Extended format. See the Symantec Web site at <http://www.symantec.com/nu/num-hfs.html> for more information on Norton Utilities and Mac OS Extended format.





SCSI Disk Mode

To use a PowerBook in SCSI disk mode, the computer you are connecting to must be running Mac OS 8.1 or later. If the computer is running an earlier version of system software, no user files will be visible on the PowerBook hard disk.





Expansion Bay Modules

The expansion bays in the PowerBook G3 Series are not the same as those in the PowerBook G3 and PowerBook 3400 computers. Expansion bay modules designed for earlier PowerBook computers will not fit in the expansion bays of the PowerBook G3 Series.

The left and right expansion bays accept both expansion modules and PowerBook G3 Series batteries. The right expansion bay accepts the wider 5.25-inch CD-ROM drive and DVD-ROM drive. When a smaller device is inserted, the expansion bay flip door covers the empty part of the bay.

Expansion bay modules may be removed while the PowerBook is turned on, in sleep, or shut down. Modules should not be swapped while the computer is starting up.





Battery Information

The PowerBook G3 Series uses Lithium Ion (Lilon) batteries that charge whenever the external AC adapter is connected.

Lilon batteries have battery level indicator lights that tell whether the battery is fully charged, three-fourths charged, one-half charged, one-fourth charged, or empty. If the battery lights blink, there is a problem with the battery. To check the battery charge, press the status button located next to the status lights.





Battery Handling Guidelines

Warning: Lilon batteries contain hazardous chemicals and should not be thrown out with household or office trash. Take dead batteries to an Apple authorized service provider for recycling or proper disposal. Review battery handling and disposal instructions in Safety Information in Bulletins/ Safety.

The following are guidelines for properly handling the PowerBook G3 Series batteries:

- Handle the battery carefully. Do not drop, puncture, disassemble, mutilate, or incinerate it.
- Do not leave a battery in the computer for longer than a week without plugging in the power adapter.
- Do not short the battery contacts.
- Do not leave the battery in hot locations (such as the trunk of a car).





- Do not leave a battery in storage for longer than six months without recharging it.
- Never get batteries wet.
- Recharge batteries only as described in the user's manual and only in ventilated areas.





PC Card Handling

The PowerBook G3 Series has two PC Card slots that can hold two PC cards simultaneously. Both slots hold Type I (3.3 mm) and Type II (5 mm) cards, but only the lower slot holds a Type III (10.5 mm) card. When a Type III PC Card is inserted in the lower slot, the upper slot cannot be used.

The lower PC Card slot has circuitry for handling video signals (zoom video). Although a zoom video card is a Type II card, it can only be used in the lower slot.

The following are guidelines for properly handling PC Cards:

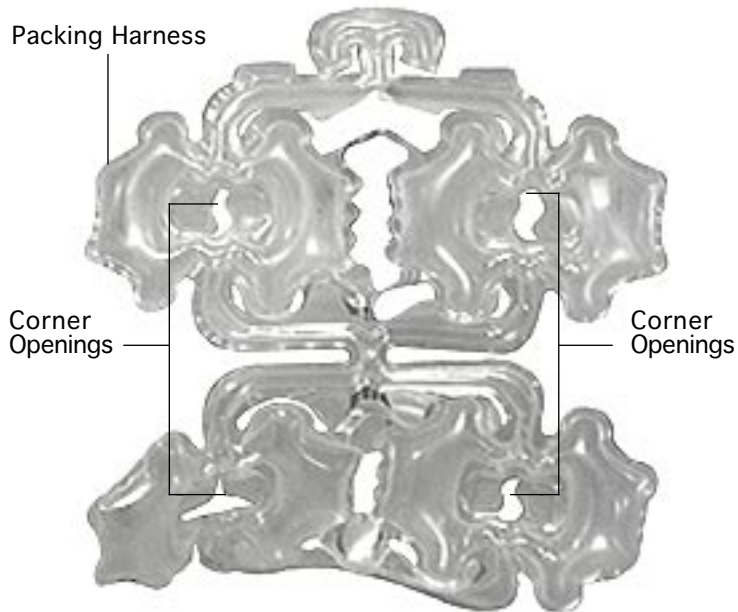
- Use only cards that are compatible with the PC Card unit. Refer to the compatibility information that came with the PC Card. If you cannot find the compatibility information, contact the card vendor.





- Do not insert anything other than a PC Card into the card slots.
- The computer must be on or off in order to eject a PC Card. When the computer is in sleep mode, a PC Card cannot be ejected.
- Before you eject a card, make sure nothing is blocking the card's slot.
- If you want to use the card again immediately, pull it out about an inch more, wait eight seconds, and then push it back in. If you don't follow this procedure and try to push the card back in to use it again, the card will not engage properly.
- Do not pull on a PC Card before it has been ejected out of the slot. Forcing a PC Card out of the slot may damage the computer or the card.





Packaging the Unit for Shipment

Caution: To avoid damaging the unit, use the same box that the unit originally shipped in.

To package the PowerBook for shipment,

- 1 Position the PowerBook so that the four corners are captured in the corner openings of the air-sealed packing harness.





- 2 Clasp together the two ends of the packing harness over the top of the PowerBook.
- 3 Place the protected unit in the shipping box.





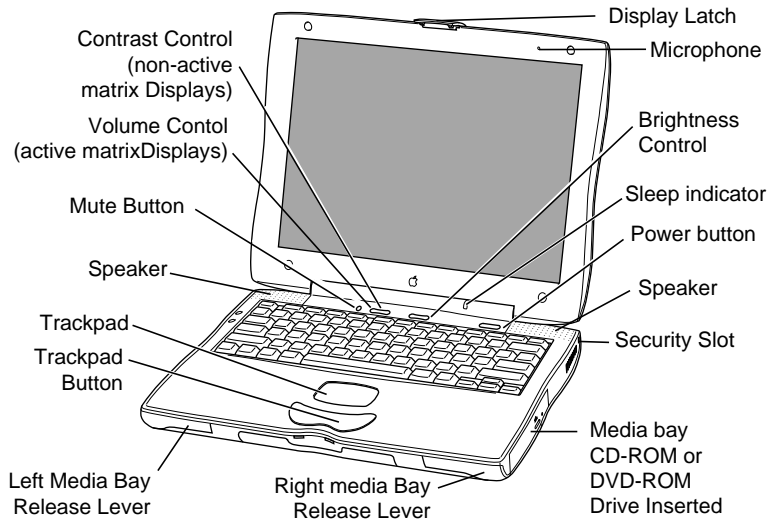
View of Front and Right Side

The front of the computer includes the: microphone, sleep indicator, brightness control, power button, contrast control (FSTN displays only), volume control (non FSTN displays), PC Card eject buttons, mute button, trackpad, trackpad button, and right expansion bay release lever.

The right side includes the security slot and the right expansion bay.

The front of the computer is shown on the following page.





PowerBook G3 Series Front View





View of Rear and Left Side

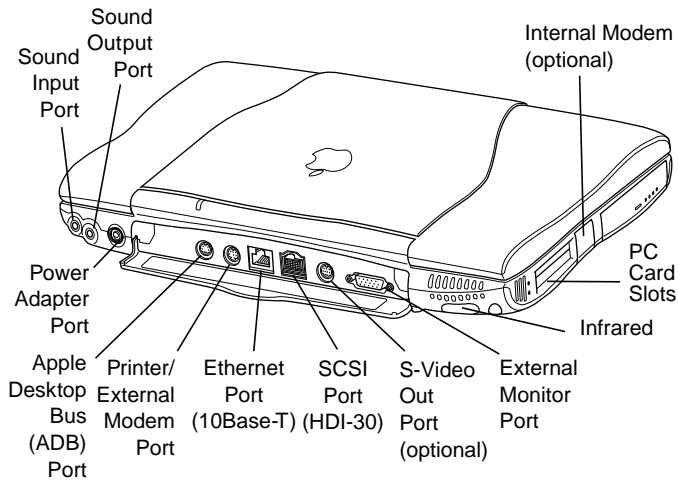
The rear of the computer includes the: microphone, printer/external modem port, ADB port, Sound input port, sound output port, power adapter port, ethernet port, SCSI port, external TV out port (optional), external monitor port, and infrared.

The left side includes the PC Card slots, internal modem port (optional), and the left expansion bay.

Note: The PowerBook G3 Series does not have a hardware reset switch. To reset, press Shift-Fn-Ctrl-Power.

The rear of the computer is pictured on the following page:





PowerBook G3 Series Rear View





Boards and Cards

The PowerBook G3 Series features a modular architecture with four boards and three cards (or four if an internal modem is installed) that support all the necessary functions.

The three main boards—I/O Logic Board, Microprocessor Board, and PMU Board—are discussed on the following pages.

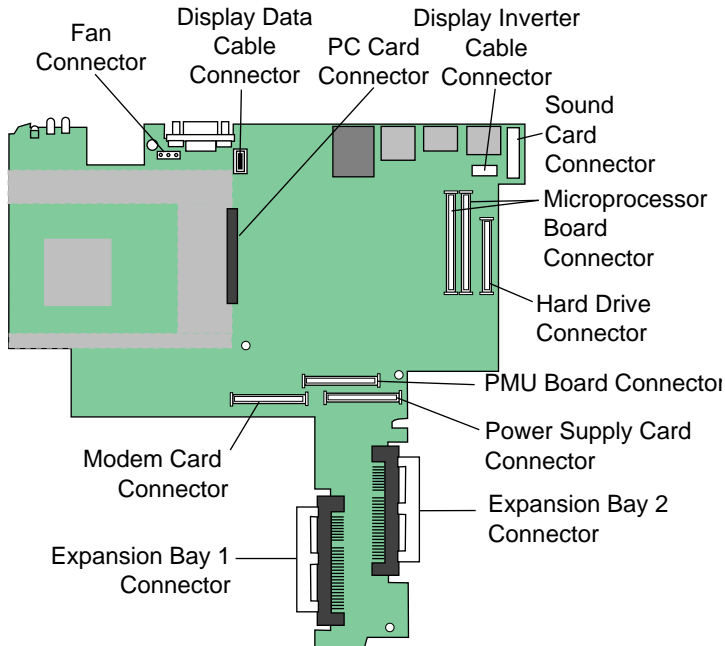




I/O Logic Board

The I/O logic board includes the PC Card cardcage mechanism (CardBus slots), all the I/O interfaces, video and display support, and expansion bays.

The I/O logic board also includes two I/O controller ICs that integrate most of the standard Macintosh I/O controllers such as SCSI, SCC, IDE, floppy disk, sound, Ethernet, and VIA.

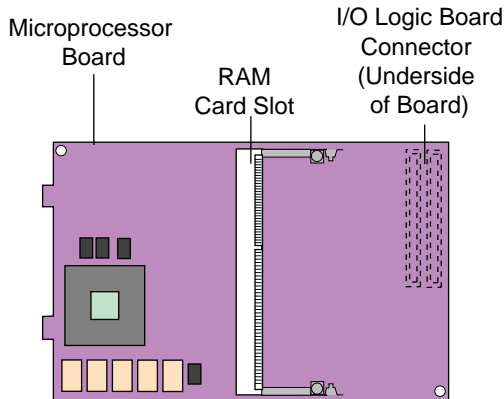


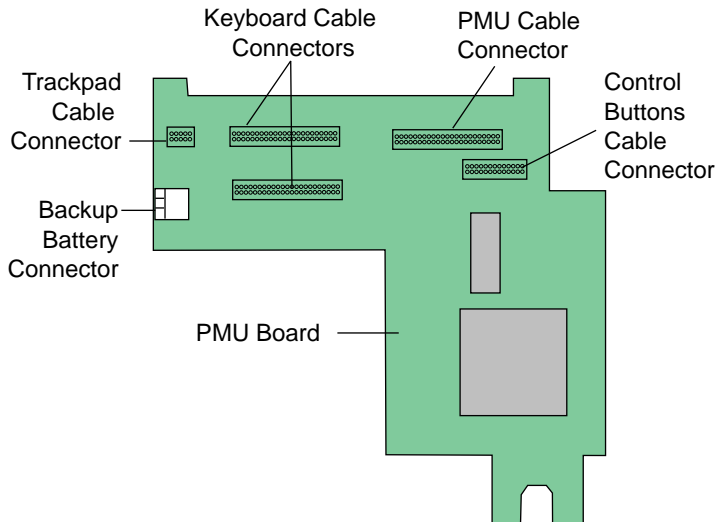


Microprocessor Board

The microprocessor board contains the high-speed components: the microprocessor, backside cache, main memory, system ROM, and the IC that contains the memory controller and the PCI bus bridge.

The Microprocessor board has two memory card slots. The top slot is the user-replaceable slot. The slot on the underside of the board is used by the factory.





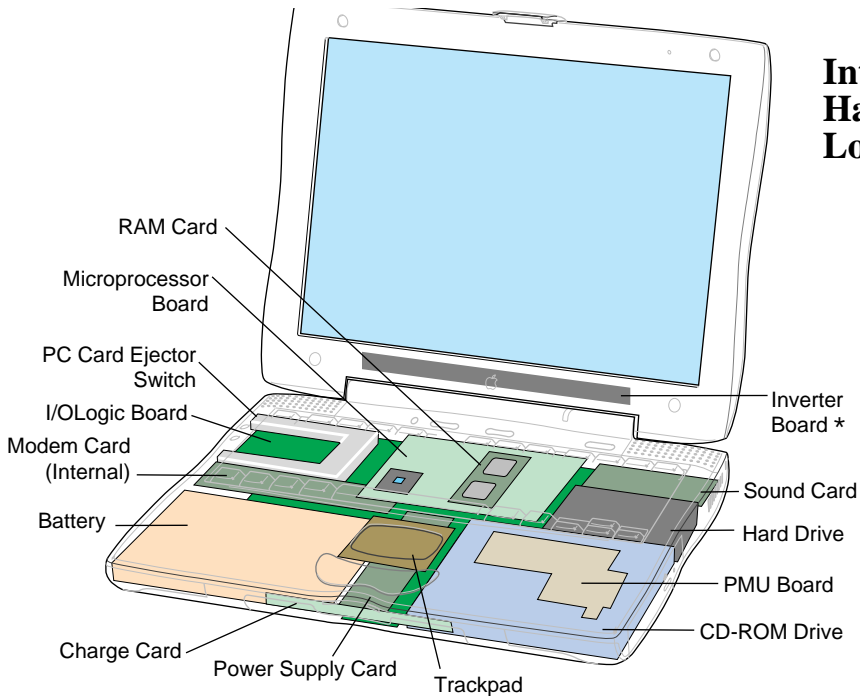
PMU Board

The PMU board controls the sleep and power on and off sequences, power to the other ICs, and brightness of the display.





Internal Hardware Locator



* Location varies with each display size.





Specifications

PowerBook G3 Series





Introduction

Specifications information for this product can be found in this chapter and also in the Spec Database, which you can access in one of three ways:

- Launch it directly by double-clicking the Apple Spec Database runtime alias at the top level of the Main Service Source CD.
- Select “Apple Spec Database” from the Service Source drop-down main menu.
- Click the Acrobat toolbar icon for the database, which is near the right end of the toolbar with the letters “SP.”





Processor

CPU

PowerPC G3 microprocessor running at 233 MHz

PowerPC G3 microprocessor running at 250 MHz

PowerPC G3 microprocessor running at 292 MHz

Cache

1 MB L2 Backside Cache at 100 MHz for the 250 MHz and 292 MHz systems

Backside Cache not supported in the 233 MHz system





Memory

RAM 32 MB minimum, expandable to 192 MB, SO-DIMM
Note: EDO RAM is not compatible.

ROM 4 MB ROM

VRAM

12.1" Display 2 MB Video SGRAM
13.3" Display 4 MB Video SGRAM
14.1" Display 4 MB Video SGRAM
Video RAM cannot be upgraded





Disk Storage

Floppy Drive

Removable 1.44 MB floppy drive (in the expansion bay). Reads and writes Macintosh 1.4 MB and 800K floppy disks, as well as Windows, DOS, and OS/2 720K and 1.44 MB floppy disks.

Hard Drives

Minimum 2.0 GB 2.5" hard drive

Expansion Bay Modules

CD-ROM Drive

Removable 20x-speed (maximum) CD-ROM drive in the right expansion bay (if included)

DVD-ROM Drive

Removable drive in the right expansion bay (if included)
1.5x-speed when reading DVD-ROM discs
12x-speed (maximum) when reading CD-ROM discs





I/O Interfaces

SCSI

SCSI port (HDI-30 connector) for hard drives, scanners, printers, and other devices; also supports PowerBook SCSI disk mode

PC Cards

Two PC Card (PCMCIA card) slots support either two Type I or Type II cards or one Type III card
Lower slot also supports “Zoomed Video,” a method of displaying video signals sent from a PC card
Supports CardBus standard

ADB

Apple Desktop Bus (ADB) port for keyboard, mouse, or other input devices using a low-speed, synchronous serial bus
Maximum current draw for all ADB devices is 20 mA





Maximum number of ADB devices recommended in a daisy chain connected to the ADB port is three

Serial

Serial port for printer, modem (including GeoPort support), LocalTalk network, or other serial devices (RS-422)

Sound**Output**

16-bit stereo sound in and out supporting 44.1 kilohertz (kHz)
Sound output port for external audio amplifier/powered speakers, stereo mini-jack, 3-connector, standard 3.5-mm stereo miniplug
Two built-in stereo speakers at the top of the keyboard

Input

Sound input port for stereo sound input (line level), stereo mini-jack, 3-connector, standard 3.5-mm stereo miniplug;
PlainTalk microphone can also be connected to the sound input port





Infrared	Built-in infrared that supports two types of transmission—230 kB/second IRTalk and up to 4 MB/second IrDA
Power Adapter	Power adapter port
Video	<p>Video port for up to 24-bit/millions-of-color video output to most Apple monitors (with the supplied adapter), VGA monitors (640 x 480), SVGA monitors (800 x 600), and XGA monitors (1024 x 768, 1280 x 960)</p> <p>Optional TV out support (S-video or composite) for video display and recording on NTSC and PAL compatible devices</p>
Security	Security slot for security cable





Expansion Interfaces

Expansion Bays

Two dual function expansion bays accept removable expansion bay modules (1.44 MB floppy disk drive, CD-ROM drive, DVD-ROM drive or other modules) or a PowerBook battery

Note: Larger 5.25-inch expansion bay modules such as the CD-ROM or DVD-ROM drives can only be placed in the right expansion bay. Smaller 3.5-inch expansion bay modules and PowerBook batteries can be placed in either expansion bay.





I/O Devices

Keyboard

New keyboard design with embedded numeric keypad and inverted-T arrow keys

Trackpad

Integrated, solid-state trackpad

Microphone

Internal, omnidirectional electret microphone





Video

Display

12.1" Diagonal	800 x 600 (dual scan or active matrix) for maximum color depth of 16 bpp (thousands of colors)
13.3" Diagonal	1024 x 768 active matrix for maximum color depth of 24 bpp (millions of colors)
14.1" Diagonal	1024 x 768 active matrix for maximum color depth of 24 bpp (millions of colors)





Electrical

Main Battery

Rechargeable lithium ion (Lilon) battery
2.5 to 4 hours of use before recharging

Power Adapter

Input: AC 100–240 volts (V), 50/60 hertz (Hz)
Output: DC 24 V, 1.875 A nominally

Backup Battery

180 milliampere (mAh) rechargeable lithium coin cell for calendar/clock maintenance. Also backs up contents of RAM for a few minutes while battery is changed (when PowerBook is in sleep mode).





Physical

Dimensions

Height: 2.01 in. (51 mm)

Width: 12.72 in. (323 mm)

Depth: 10.43 in. (265 mm)

Weight

7.56 lb. (3.43 kg) with battery and floppy disk drive installed

7.73 lb. (3.51 kg) with battery and CD-ROM or DVD-ROM
installed

Operating Altitude

10,000 ft. (3,048 m) maximum

Shipping/Non- Operating Altitude

15,000 ft. (4,572 m) maximum





Macintosh PowerBook G3 Series

The Apple Macintosh PowerBook G3 Series sets new standards for portable design and performance. At first glance, you'll be struck by the extreme elegance of these computers. On closer examination, you'll find their advanced features and outstanding flexibility even more striking. Most impressive of all, though, is their performance. These innovative notebook systems outperform comparable Pentium and Pentium II processor-based notebook and desktop systems.*

The Macintosh PowerBook G3 Series truly offers "something for everyone"—from creative professionals to educators and students to business professionals. Built around the high-performance PowerPC G3 processor—the same innovative chip that sparked the success of Apple's current line of desktop systems—these notebook systems provide the power to handle even the most demanding tasks.

To complement their power, the PowerBook G3 computers incorporate the impressive multimedia capabilities that are a must for today's educators and professionals. And since Apple understands that individual needs are just that—individual—these systems offer flexible configuration options. Each system includes a high-speed CD-ROM drive and supports the latest storage technology—DVD-ROM. They also include built-in video output, and several configurations include S-video output for connecting to a TV.

The innovative design of these computers is as functional as it is attractive, with features such as two hot-swappable expansion bays for multiple storage options and lithium-ion batteries, and a flip-up keyboard for fast, easy access to the RAM expansion slot and removable hard disk drive.

The PowerBook G3 computers' communications offerings include built-in Ethernet—a requirement in most educational environments as well as in business. An optional K56flex modem lets you tap into your organizational network or the Internet.**

The Macintosh PowerBook G3 Series: Truly customizable portable systems that give you unmatched performance and capabilities to meet your needs at a price you can afford.



Features

Astounding performance at affordable prices

- Features the PowerPC G3 processor, for the fastest performance ever in a notebook computer
- Incorporates performance-boosting backside level 2 cache**
- Uses SDRAM and SGRAM for the fastest memory architecture available
- Supports two lithium-ion batteries for up to 7 hours of normal use
- Offers flexible configuration options to meet your needs and your budget

Advanced multimedia

- Features a high-quality display—12.1, 13.3, or 14.1 inches (diagonal)
- Includes up to 4MB of video memory, for displaying millions of colors on an external monitor
- Provides outstanding 2D/3D graphics acceleration through an integrated controller
- Includes a high-speed CD-ROM drive and supports the latest performance breakthrough in storage—DVD-ROM
- Allows you to connect an external monitor, video projector, or TV**

Striking style and stellar efficiency

- Combines aesthetics and innovative design to create an elegantly efficient system
- Includes two expansion bays for a variety of storage and battery options
- Provides easy access to the memory expansion slot and removable hard disk drive through its flip-up keyboard
- Accommodates CardBus cards and PC Cards for additional networking, storage, and modem capabilities

Integrated communications

- Includes built-in 10BASE-T Ethernet
- Accommodates K56flex technology for the ultimate in modem connectivity**
- Comes with built-in 4-Mbps IrDA technology for easy, wireless LAN access and file sharing

Macintosh PowerBook Performance Comparisons

Based on MacBench Processor Scores***

G3 Series at 292	1031
G3 Series at 250	881
G3 Series at 233	445
G3 at 250 (12.1-inch TFT display and 512K level 2 cache)	739
3400c/240	333
1400c/166	155

*Based on BYTEmark integer index.

**Available in some configurations; see Configurations chart for product details.

***Based on Apple internal testing using MacBench 4.0 processor performance scores. Actual performance on applications will vary. MacBench is a subsystem-level benchmark that measures the relative performance of Mac OS-based systems.



Macintosh PowerBook G3 Series

Technical Specifications

Processor and memory

- 233-, 250-, or 292-MHz PowerPC G3 processor
- 1MB backside level 2 cache on the 250- and 292-MHz processor modules; 125- or 146-MHz dedicated 64-bit backside bus*
- 66- or 83-MHz system bus
- Integrated floating-point unit and 64K on-chip level 1 cache (32K data and 32K instruction)
- 32MB or 64MB of RAM; two SO-DIMM slots support up to 192MB
- 4MB of ROM

Storage

- Internal 2GB, 4GB, or 8GB IDE hard disk drive
- Two expansion bays for floppy disk drive, CD-ROM or DVD-ROM drive, and third-party storage solutions
- Removable 1.44MB floppy disk drive for use in expansion bay*
- 20x-speed (maximum) CD-ROM drive for use in expansion bay

Interfaces

- Connectivity
 - Apple Desktop Bus (ADB) port
 - SCSI port for connecting as many as seven external devices
 - Serial (RS-422) port
 - Power adapter port
- Communications
 - Built-in 10BASE-T Ethernet connector (10 Mbps)
 - RJ-11 modem port supports K56flex modem*
 - Infrared technology port (4-Mbps IrDA)
- Expansion
 - PC Card slots for two Type II PC Cards or one Type III PC Card or CardBus cards
- Video
 - S-video output connector*
 - 24-bit video output port (VGA-style connector)
- Sound
 - 16-bit CD-quality stereo input/output

Media capabilities

- Video
 - 2MB or 4MB of SGRAM video memory supports millions of colors on up to 20-inch external displays
 - 2D/3D graphics through an integrated video controller
 - Support for Zoomed Video technology in the lower PC Card slot

- Display
 - 12.1-inch (diagonal) built-in SVGA STN passive-matrix display supports thousands of colors at 800- by 600-pixel resolution
 - 13.3-inch (diagonal) and 14.1-inch (diagonal) built-in TFT XGA active-matrix displays support millions of colors at 1,024- by 768-pixel resolution
- Sound
 - Two built-in stereo speakers

Battery

- 49-watt-hour lithium ion
- Average life: up to 3.5 hours with one battery; up to 7 hours with two batteries, based on normal use

Security

- Kensington cable lock slot

Keyboard

- Built-in full-size keyboard with 76 (U.S.) or 77 (ISO) keys, including 12 function keys

Apple trackpad

- Solid-state Apple trackpad provides precise cursor control; sensing of movement and acceleration is easily adjustable through a control panel; supports tap, double-tap, and drag capabilities

Electrical requirements

- Line voltage: 100 to 240 volts AC
- Frequency: 50 to 60 Hz

Environmental requirements

- Operating temperature: 50° to 95° F (10° to 35° C)
- Storage temperature: -13° to 140° F (-25° to 60° C)
- Relative humidity: 20% to 80% noncondensing
- Operating altitude: 0 to 10,000 feet (0 to 3,048 m)
- Maximum storage altitude: 15,000 feet (4,572 m)

Size and weight

- Width: 12.7 inches (32.3 cm)
- Height: 2.0 inches (5.1 cm; 5.3 cm for the 14.1-inch model)
- Depth: 10.4 inches (26.4 cm)
- Weight (varies by configuration; examples listed below include modem, battery, and CD-ROM module)
 - 12.1-inch model: 7.2 lb. (3.3 kg)
 - 13.3-inch model: 7.6 lb. (3.4 kg)
 - 14.1-inch model: 7.8 lb. (3.5 kg)

*Available in some configurations; see Configurations chart for product details.



Macintosh PowerBook G3 Series

Ordering Information

For detailed information about currently available configurations, see the chart below. All models also include a built-in keyboard and trackpad; all necessary cables, such as an Ethernet cable, modem cable, composite to S-video adapter and VGA-to-Macintosh connector cable; Mac OS 8.1 (which includes Internet access software); third-party software (FAXstf, Now Contact & Up•to•Date, and WebWhacker); complete setup, learning, and reference documentation; and limited warranty.

Build-to-order (BTO) options

These systems can also be ordered through the online Apple Store, which allows you to custom-configure your computer in such areas as processor speed, display size, RAM, hard disk size, modem, and expansion bay modules such as a DVD-ROM drive and lithium-ion battery.

For more information

For more information about these products, or to find out where to buy Apple products—through a reseller or from the Apple Store—visit www.apple.com or call 1-800-538-9696.

Configurations

Macintosh PowerBook G3 computers

12.1-Inch Display



Order no.	M6359LL/A	M6477LL/A
Processor speed	233 MHz	233 MHz
Memory (SDRAM)	32MB	32MB
Video memory (SGRAM)	2MB	2MB
Backside level 2 cache	—	—
Backside bus speed	—	—
System bus speed	66 MHz	66 MHz
Hard disk drive	2GB IDE drive	2GB IDE drive
CD-ROM drive module	20x speed (maximum)	20x speed (maximum)
Floppy disk drive module	—	Yes
Ethernet	Built-in 10BASE-T	Built-in 10BASE-T
Modem	—	K56flex
S-video output	—	—

13.3-Inch Display



Order no.	M6481LL/A	M6357LL/A
Processor speed	233 MHz	250 MHz
Memory (SDRAM)	32MB	32MB
Video memory (SGRAM)	4MB	4MB
Backside level 2 cache	—	1MB
Backside bus speed	—	125 MHz
System bus speed	66 MHz	83 MHz
Hard disk drive	2GB IDE drive	4GB IDE drive
CD-ROM drive module	20x speed (maximum)	20x speed (maximum)
Floppy disk drive module	Yes	Yes
Ethernet	Built-in 10BASE-T	Built-in 10BASE-T
Modem	—	K56flex
S-video output	Yes	Yes

14.1-Inch Display



Order no.	M6484LL/A	M6541LL/A
Processor speed	233 MHz	292 MHz
Memory (SDRAM)	32MB	64MB
Video memory (SGRAM)	4MB	4MB
Backside level 2 cache	—	1MB
Backside bus speed	—	146 MHz
System bus speed	66 MHz	83 MHz
Hard disk drive	2GB IDE drive	8GB IDE drive
CD-ROM drive module	20x speed (maximum)	20x speed (maximum)
Floppy disk drive module	Yes	Yes
Ethernet	Built-in 10BASE-T	Built-in 10BASE-T
Modem	—	K56flex
S-video output	Yes	Yes

Accessories

PowerBook G3 Series Power Adapter
 PowerBook G3 Series Power Adapter (for Europe and U.K.)
 PowerBook G3 Series Lithium-ion Rechargeable Battery
 PowerBook G3 Series DVD-ROM Expansion Bay Module
 PowerBook G3 Series Floppy Disk Drive Expansion Bay Module
 Apple HDI-30 SCSI Disk Adapter for SCSI disk mode
 Apple SCSI Peripheral Interface Cable for SCSI-to-SCSI connection
 Apple HDI-30 SCSI System Cable for PowerBook-to-SCSI connection

Order no.

M6384LL/A
 M6548G/A
 M6385G/A
 M6387G/A
 M6396G/A
 M2539LL/A
 M0207
 M2538LL/A



Troubleshooting

PowerBook G3 Series





General

In each product manual on Service Source, you will find Flowcharts and/or Symptom Charts designed to help you diagnose and repair Apple computers.

If you have narrowed the problem down to a particular symptom, start with the Symptom Charts. Because cures are listed in the order of most likely solution, try the first cure first. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try 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 Flowcharts.

If you require additional assistance, contact Apple Technical Support.





Symptom Charts

Startup

RAM failure occurs
(eight-tone error
chord sequence
sounds after startup
chord)

- 1 Remove top RAM SO DIMM (if present) and restart computer. If startup sequence is normal, replace RAM SO DIMM and retest.
- 2 Replace bottom RAM SO DIMM and retest.
- 3 Replace microprocessor board.
- 4 Replace I/O logic board.





Hardware failure occurs (four-tone error chord sequence sounds after startup chord)

- 1 Reset PRAM (during startup, hold Command-Option-P-R keys until the second startup tone is heard).
- 2 Remove expansion module from left expansion bay and restart computer. If startup sequence is normal, insert expansion module and retest.
- 3 Remove expansion module from right expansion bay and restart computer. If startup sequence is normal, insert expansion module and retest.
- 4 Disconnect hard drive connector and restart computer. If startup sequence is normal, reconnect cable and retest.
- 5 Replace hard drive.
- 6 Replace I/O logic board.
- 7 Replace microprocessor board.





Power

Note: You will hear only the click of the power button when you attempt to start up a computer that lacks sufficient power to start.

Computer won't power up

- 1 If sleep LED is continually on, backup battery power has been interrupted. Restart computer by holding down Shift-FN-Control and power on key. Wait 5 seconds and press power on key. If computer doesn't restart, repeat 3–4 times.
- 2 Try known-good power adapter.
- 3 Try known-good, firmly seated, charged battery. Repeat once.
- 4 Connect power adapter and restart computer in 3–4 minutes.
- 5 Replace sound card.
- 6 Replace power supply card.
- 7 Replace PMU card.
- 8 Replace charge card.
- 9 Replace I/O logic board.
- 10 Replace microprocessor board.





Screen is blank;
backlight isn't on;
computer doesn't
respond

- 1 If sleep LED is continually on, backup battery power has been interrupted. Restart computer by holding down Shift-FN-Control and power on key. Wait 5 seconds and press power on key. If computer doesn't restart, repeat 3-4 times.
- 2 Restart computer.
- 3 Disconnect power adapter, remove battery, and restart computer in 3-4 minutes.
- 4 Check power adapter cable.
- 5 Try known-good, charged battery.
- 6 Try known-good power adapter.
- 7 Disconnect backup battery for 2 minutes.
- 8 Check all I/O logic board cables and connections.
- 9 Replace sound card.
- 10 Replace power supply card.
- 11 Replace PMU card.
- 12 Replace I/O logic board.





After you remove battery, some Control Panel settings are different

- 1 Check backup battery cable and connections.
- 2 Replace backup battery.
- 3 Replace PMU card.
- 4 Replace cable from PMU to I/O logic board.
- 5 Replace I/O logic board.

Computer runs when plugged into wall outlet but not on battery power

- 1 Reset power manager (shift-Fn-Ctrl-Pwr button).
- 2 Reseat battery to make sure battery is mating with contacts on I/O logic board.
- 3 Try battery in opposite expansion bay.
- 4 Try known-good, firmly seated, charged battery. Repeat once.
- 5 Try known-good power adapter.
- 6 Replace charge card.
- 7 Replace PMU board.
- 8 Replace power supply card.
- 9 Replace I/O logic board.





Power adapter is plugged in, but Control Strip doesn't indicate adapter is connected

- 1 Verify that power adapter is connected correctly and the power cord is plugged solidly in the adapter.
- 2 Verify that there is power at the outlet.
- 3 Try known-good power adapter.
- 4 Replace sound card.
- 5 Replace PMU card.
- 6 Replace PMU cable.
- 7 Replace I/O logic board.

When Shutdown is selected with power adapter plugged in, computer shuts down but immediately powers back up

- 1 Reset PRAM.
- 2 Disconnect power adapter, remove battery, disconnect backup battery, and wait 15 minutes before retesting.
- 3 Replace backup battery.
- 4 Replace PMU board.
- 5 Replace PMU cable.





Low-power warning
appears

- 1 Attach power adapter and recharge battery.
- 2 Disconnect peripherals. If warning disappears when peripherals are disconnected, verify that peripherals are low-power.
- 3 Reduce use of CD-ROM, floppy, or hard drive; sound; backlight; or other power-consuming devices. Or reconnect power adapter.
- 4 Try known-good, charged battery.
- 5 Try known-good power adapter.
- 6 Replace sound card.
- 7 Replace PMU board
- 8 Replace PMU cable.
- 9 Replace power supply card.
- 10 Replace I/O logic board.





Battery won't charge

- 1 Reset power manager (shift-Fn-Ctrl-Pwr button).
- 2 Try battery in opposite expansion bay.
- 3 Try known-good, firmly seated, charged battery. Repeat once.
- 4 Replace charge card.
- 5 Replace PMU board.
- 6 Replace power supply card.
- 7 Replace I/O logic board.





Video

Note: A certain number of defects are inherent in display technology and vary by many factors, including type of technology. If you suspect that your display contains an abnormal number of defects, call Apple Technical Support.

Caution: Do not use a metal screwdriver to reseal the display cables, or shorting could result. Use a plastic or nylon tool.

Partial or full row of pixels is always on or never comes on in an active matrix display

- 1 Check display cables and connections.
- 2 Replace data display cable (STN units only in the US).
- 3 Replace display.
- 4 Replace I/O logic board.





Display is very light
or totally white

- 1 Adjust screen contrast (FSTN units only) and brightness settings.
- 2 Verify display cable, inverter board, and I/O logic board connections.
- 3 Replace inverter board.
- 4 Replace display.
- 5 Replace I/O logic board.

Backlight doesn't
operate

- 1 Adjust screen brightness setting.
- 2 Verify that backlight cable connection is secure.
- 3 Check display cable, inverter board, and I/O logic board connections.
- 4 Verify that inverter cable is properly connected and that cable is good.
- 5 Verify that cables are not pinched or severed.
- 6 Replace inverter board.
- 7 Replace display.
- 8 Replace I/O logic board.





No display, but computer appears to operate correctly

Note: If sleep light is blinking and computer is not in sleep mode, reset power manager.

- 1 Insert disk into floppy drive and press Command-E (eject disk) to verify that computer is working.
- 2 Adjust screen brightness setting.
- 3 Verify display cable, inverter board, PMU connections, and I/O logic board connections.
- 4 Verify inverter cable.
- 5 Connect power adapter.
- 6 Replace inverter board.
- 7 Replace display.
- 8 Replace I/O logic board.

An external monitor connected to the PowerBook shows no video

- 1 Verify external monitor has power.
- 2 Try another monitor.
- 3 Restart unit and reset PRAM.
- 4 Replace I/O logic board.





An external monitor connected to the PowerBook shows either horizontal or vertical rolling, or horizontal or vertical distortion

- 1 Verify monitor using another computer.
- 2 Replace I/O logic board.





Sound

No sound from
speaker(s)

- 1 Verify that mute button is not depressed.
- 2 Verify that volume setting in Control Panel is above 0.
- 3 Verify that no external speakers or headphones are plugged in.
- 4 Replace sound card.
- 5 Replace speaker(s).
- 6 Replace I/O logic board.





Floppy Drive

Audio and video present, but floppy drive in expansion bay does not operate

- 1 Verify the floppy disk is inserted squarely in the drive. Push the disk in from the center edge.
- 2 Try floppy drive in opposite expansion bay.
- 3 Start the system with extensions off.
- 4 Try known-good floppy disk.
- 5 Make sure floppy drive is properly seated in expansion bay. Try reseating it one more time to verify connection.
- 6 Try floppy drive in opposite expansion bay.
- 7 Replace floppy drive.
- 8 Replace I/O logic board.





Disk does not eject

- 1 Verify the floppy disk is inserted squarely in the drive. Push the disk in from the center edge.
- 2 Try floppy drive in opposite expansion bay.
- 3 If floppy drive is in the right expansion bay, switch off system and hold down command shift 1 while you restart.
- 4 If floppy drive is in the left expansion bay, switch off system and hold down command shift 2 while you restart.
- 5 Eject disk manually by carefully inserting opened paper clip into hole near floppy drive slot.
- 6 Replace floppy drive.
- 7 Replace I/O logic board.





Disk initialization
fails

- 1 Verify the floppy disk is inserted squarely in the drive. Push the disk in from the center edge.
- 2 Try floppy drive in opposite expansion bay.
- 3 Try known-good floppy disk.
- 4 Restart with extensions off.
- 5 Replace floppy drive.
- 6 Replace I/O logic board.

Read/write/copy
error

- 1 Try known-good floppy disk.
- 2 Restart with extensions off.
- 3 Try to format a floppy disk.
- 4 Replace floppy drive.
- 5 Replace I/O logic board.





Hard Drive

Internal hard drive
does not spin

- 1 Make sure power adapter is connected.
- 2 Disconnect external SCSI devices.
- 3 Check hard drive connection.
- 4 Replace hard drive connector board.
- 5 Replace hard drive.
- 6 Replace I/O logic board.





CD-ROM Drive / DVD-ROM Drive

Drive does not accept disk

- 1 Verify that Apple CD extensions are on.
- 2 Replace disc (if dirty or damaged).
- 3 Reinsert drive.
- 4 Replace drive.
- 5 Replace I/O logic board.

Volume control does not operate correctly

- 1 Check Control Panel Sound setting.
- 2 Verify that mute button is turned off.
- 3 Verify the setting of volume control button.
- 4 Reinsert drive.

Macintosh cannot mount drive

- 1 Reinsert drive.
- 2 Check software drivers for the drive and replace if needed.
- 3 Replace drive.
- 4 Replace I/O logic board.





Audio and video present, but drive in expansion bay does not operate

- 1 Verify that Apple CD extensions are installed.
- 2 Try known-good disc.
- 3 Replace drive.





PC Card Module (PCMCIA)

PC Card won't eject

- 1 Make sure computer is not in sleep mode.
- 2 Make sure PC Card slot is not blocked.
- 3 Drag PC Card to trash can.
- 4 Turn the computer off and then try PC Card eject buttons.
- 5 Insert straightened paper clip into hole next to slot.
- 6 Remove top case and gently push down on PC Card while ejecting.
- 7 Verify that PC Card is not warped or damaged in any way; if so, replace with new card.
- 8 Replace PC Card cardcage





PC Card is inserted
but doesn't appear on
desktop

Note: Modem and communication cards may not appear on desktop.

- 1 Try PC Card in the other slot.
- 2 Verify that correct software for that PC Card is installed.
- 3 Replace PC Card.
- 4 Replace PC Card cardcage.
- 5 Replace I/O logic board.

Note: If “defective card” or “unrecognizable card” appears in place of card name in PCMCIA Eject control panel, card is damaged or computer does not have software required to support it. Eject card.





PC Card can't be inserted

- 1 Wait 8 seconds after a soft eject for PC Card cardcage to reset.
- 2 Push PC Card in from center of the exposed edge, not off center.
- 3 Try a different PC Card.
- 4 Try the other slot.
- 5 Replace PC Card cardcage.

PC Card flies out of PC Card cardcage when ejected

- 1 Try different PC Card.
- 2 Use alignment procedure to ensure PC Card cardcage is installed so that PC Card tracks are parallel.





Infrared Communication

Infrared communication is not working

- 1 Clean infrared window with soft lint-free cloth.
- 2 Make sure units are spaced greater than 3 feet but less than 6 feet and at less than a 20 degree angle.
- 3 Verify infrared signal is being received by host computer.
- 4 Replace I/O logic board.





Peripherals

After you connect external SCSI device, computer does not boot

- 1 Verify that device and SCSI chain are terminated correctly.
- 2 Switch on external SCSI device before starting computer.
- 3 Check cable connections.
- 4 Try known-good SCSI cable.
- 5 Verify that SCSI ID select switch setting on external device is unique.
- 6 Try known-good external SCSI device.
- 7 Try known-good external SCSI device without terminator.
- 8 Replace I/O logic board.





Cursor does not move when you are using trackpad

- 1 Shut down computer, unplug adapter, and remove battery. Let computer sit for 1 minute before restarting.
- 2 Reset power manager.
- 3 Connect low power mouse and try to move cursor. If trackpad does not move cursor but external ADB mouse does, replace trackpad. If external ADB mouse also doesn't move, replace PMU board.
- 4 Check trackpad connections.
- 5 Check keyboard connections.
- 6 Replace I/O logic board.





Cursor intermittently does not move or moves erratically

Note: User must touch trackpad with the surface of only one finger at a time and point directly down on the trackpad surface.

- 1 Clean trackpad surface (with computer off, using a non-static inducing material).
- 2 Reset power manager.
- 3 Check trackpad connections.
- 4 Replace trackpad.
- 5 Replace trackpad cable.
- 6 Replace PMU card.
- 7 Replace I/O logic board.

Cursor moves, but clicking trackpad button has no effect

- 1 Reset power manager.
- 2 Check trackpad connections.
- 3 Replace trackpad cable.
- 4 Replace PMU card.
- 5 Replace I/O logic board.
- 6 Replace trackpad.





Cursor does not move when you are using mouse

Note: S-Video and ADB ports look the same; make sure you plug the mouse into the ADB port.

- 1 Check mouse connection to ADB port.
- 2 Try a known-good low-power mouse. If the known-good mouse works, clean mouse ball and inside of original mouse and retest. If original mouse still doesn't work, replace it.
- 3 Replace I/O logic board.

No response to any key on keyboard

- 1 Verify that computer is on.
- 2 Reset the power manager (restart computer by holding down shift-FN-Control-power on).
- 3 Check keyboard connection by disconnecting and reconnecting keyboard cables.
- 4 Replace keyboard.
- 5 Replace keyboard cable.
- 6 Replace PMU card.
- 7 Replace I/O logic board.





Known-good direct-connect printer does not print

- 1 Reset PRAM.
- 2 Verify that Chooser and Control Panel settings are correct. (AppleTalk inactive; modem port selected if printer and modem port appear separately.)
- 3 Check cables.
- 4 Replace printer cable.
- 5 Try known-good printer.
- 6 Replace I/O logic board.

Known-good network printer does not print

- 1 Reset PRAM.
- 2 Verify that Chooser and Control Panel settings are correct.
- 3 Reinstall printer drivers.
- 4 Check cables.
- 5 Attach computer directly to printer, and retest.
- 6 Replace I/O logic board.





I/O devices are unrecognized, or garbage is transmitted or received

- 1 Reset PRAM.
- 2 Check cables (use Apple cables).
- 3 Verify that SCSI device is correctly terminated.
- 4 Verify that SCSI ID select switch setting on external device is unique.
- 5 Check with vendor for current drivers.
- 6 Test device with known-good computer.
- 7 Replace I/O logic board.

In disk mode, computer does not display SCSI icon until host is booted, or computer crashes when host is shut down

- 1 Verify that computer has a unique SCSI ID.
- 2 Check that SCSI disk mode cable is good and that connection is tight.
- 3 Make sure password security is off.
- 4 Replace I/O logic board.





Miscellaneous

Sleep light won't come on

- 1 Verify that computer is in sleep mode and not powered off.
- 2 Reset power manager.
- 3 Replace control buttons cable.

Screen goes blank and computer shuts down every few minutes

Computer is going into system sleep to conserve battery power. Adjust sleep delays in Energy Saver Control Panel or connect power adapter.

Application seems to run slower after a few seconds

Computer is switching to system rest. If system rest is interfering with operation of application, connect power adapter or turn off processor cycling in Energy Saver Control Panel under Advanced Settings.

Hard drive is slow to respond, or screen goes blank too often

Adjust sleep delays in Energy Saver Control Panel or connect power adapter.





Intermittent operating problems such as no booting or initialization errors

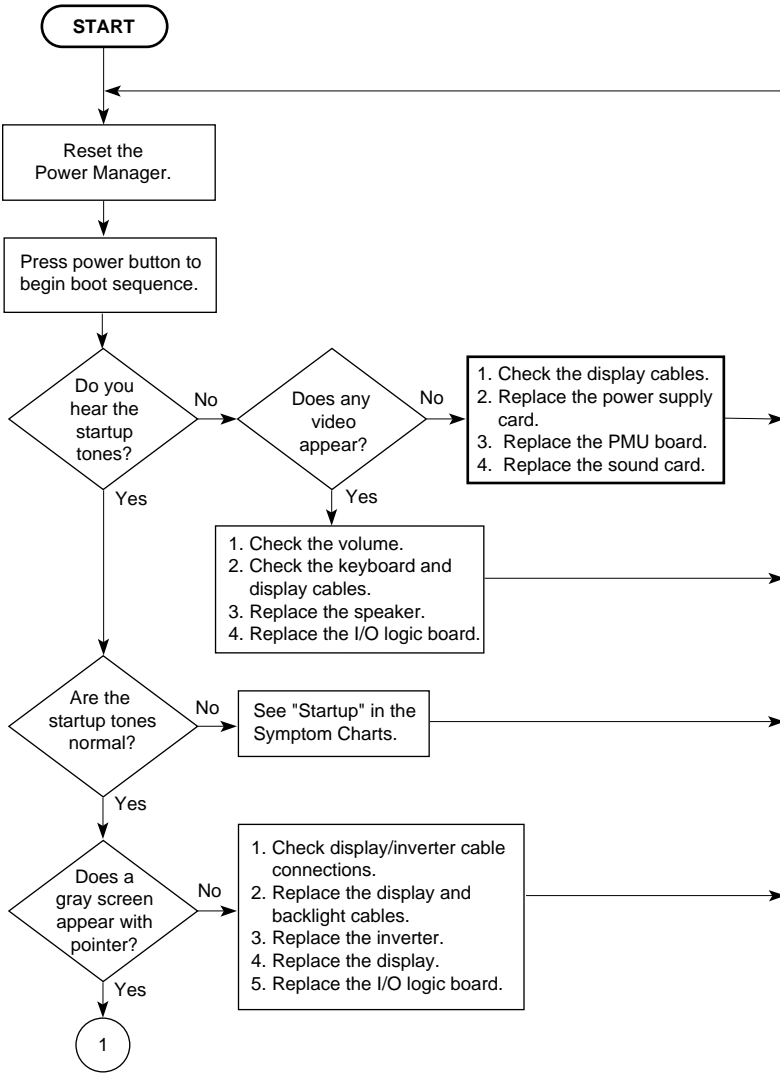
- 1 Verify that microprocessor board is properly installed.
- 2 Press on microprocessor board a second time to make sure the board is fully seated.

Caution: The microprocessor board can be partially inserted and the computer will still function. However, over time, heat will cause an partially seated microprocessor board to lose contact and cause intermittent system problems. The connection of these boards is checked and double-checked at the factory.



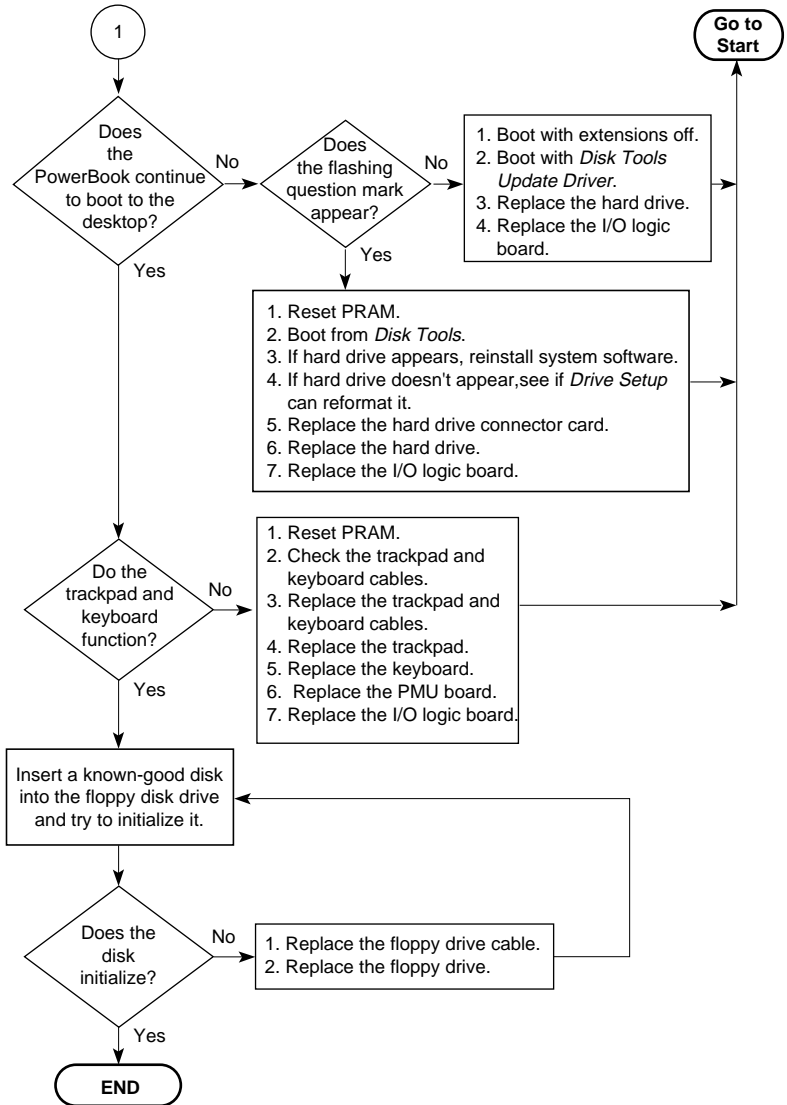


Troubleshooting Flowchart—Startup Problems





Troubleshooting Flowchart—Startup Problems





Take Apart

PowerBook G3 Series





Tools

Use the following tools for procedures in this chapter:

- #8 Torx driver (for most screws)
- #6 Torx driver (for the PC Card cardcage)
- Phillips screwdriver (for the heat sink and modem)
- Flat-blade nylon or plastic tool
- Dental pick or hook tool (to open flex connectors)
- Phillips-head jeweler's screwdriver for some displays
- Torque screwdriver (highly recommended for some replacement procedures)

Note: Magnetic Torx drivers are invaluable for replacing some screws. However, if you use a magnetic driver, do not use it around the hard drive or the sleep reed switch.

Caution: To avoid damaging or losing parts, ensure your work surface is clean.















Screw Matrix

There are 49 screws installed in these PowerBooks, including the hard drive bracket. The number of screws in the displays will vary with the size and manufacturer of the display.

Scale 0 $\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1	Screw Matrix —Bottom Case Assembly
	Eject Arms (2) Heat Sink (1) Modem (1)
	PC Eject Switch (2) Fan Cover (4)
	Trackpad (2) Hold Down (2) Bottom Cable (2) PMU Board (1)
	Stiffener (1)
	Bottom Case Short (2)
	Under Bottom Case (3) Stiffener Top (1) Power Supply (1)
	I/O Door (4)
	PC Cardcage (4)
	Bottom Case (4 total) Long (2)





Scale		12.1/13.3/14.1 inch Displays Screw Matrix	
0	1 1 3 1 5 3 1		
	8 4 8 2 8 4 1		
		Top Brackets (2) Bezel Top (2) Inverter Board (1)	
		Bezel Bottom (2)	
		LCD Display (4)	
		Top of Bezel (2) Side of Bezel (2) Left Clutch/Brace (2) Right Clutch/Brace (2)	
		Left Bracket (2) Right Bracket (2)	
		Top Case (2)	
		I/O Door (4)	
		Bumpers (4)	
		Covers (2)	
		Bumpers (4)	





Cables

Follow these guidelines when working with cables:

- Ensure that all cables are routed exactly when reassembling. Use all grooves and/or protrusions to align cabling. If the cable is improperly routed, you may not be able to reassemble the computer, or once reassembled, the computer may fail to function.
- Check that all cables are properly aligned in the connectors and that the connections are tight.
- Handle flex cables carefully. Using excessive force to disconnect a cable can tear the cable or damage it so it will not work properly.
- Use a nylon tool or dental pick to help loosen cable connections.





Expansion Bay Modules

Before you begin, unplug the AC adapter.

Caution: You must remove all modules (batteries and drives) in the expansion bays before performing any take apart procedure.

- 1 Open the display all the way and support it underneath with something flat.





Note: If you do not wish to open the display all the way, open the display to a 90° angle. This will prevent the computer from tipping over when the expansion bay modules are removed.

- 2 Pull the expansion bay eject arm toward you to eject the module.
- 3 Slide the module out of the expansion bay.





Keyboard

Before you begin, remove the following:

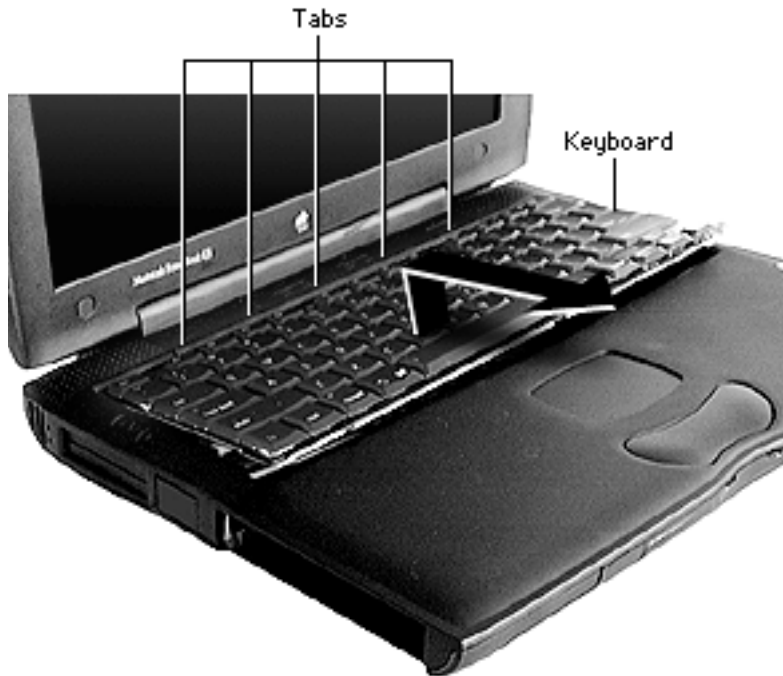
- AC adapter
- Expansion bay modules





- 1 Place your index fingers inside both expansion bays to locate the keyboard latches. The ribbed keyboard latches are located on the underside of the top case, just below the bottom edge of the keyboard.
- 2 Slide both keyboard latches toward you. The front edge of the keyboard will disengage and pop up.



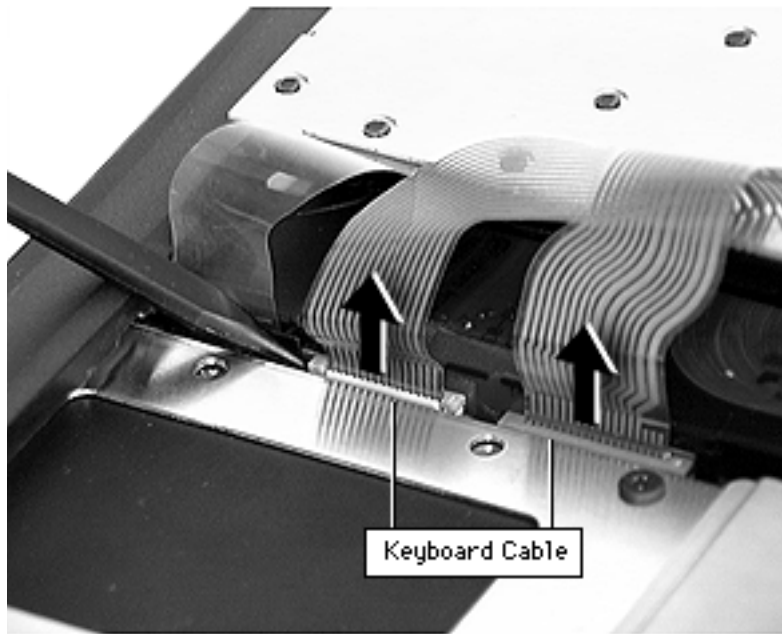


- 3 Lift the bottom portion of the keyboard up slightly and pull it back to disengage the five metal tabs holding the keyboard in place.

Caution: Do not lift the keyboard by the keycaps. Lift from the bottom of the keyboard. (See Additional Procedures in this manual if you need to replace a keycap.)

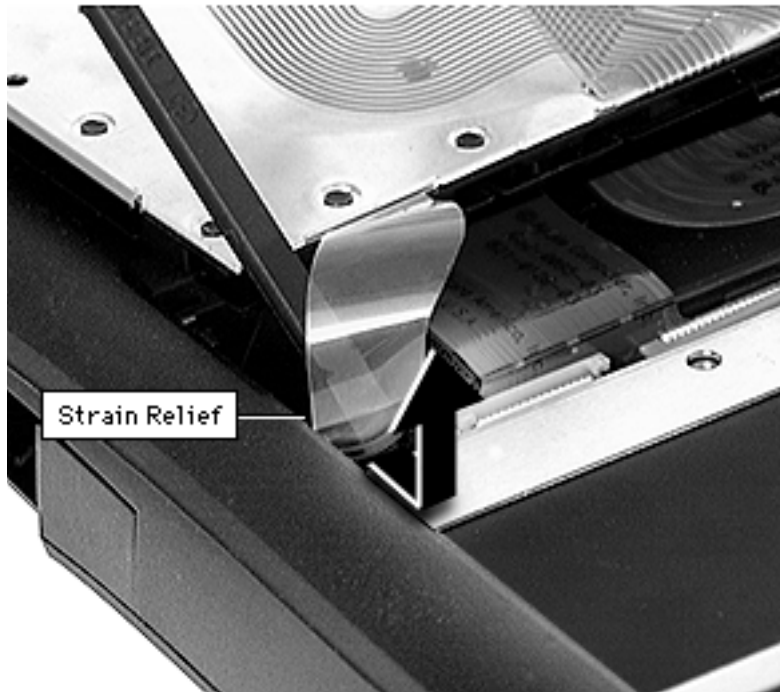
Replacement Note: Press lightly on the clutch cover to fully insert the five tabs.





- 4 Flip the keyboard over and lay it on top of the palm rests and trackpad.
- 5 Disconnect the two keyboard cables. Lift up on the connectors with a pick or nylon tool and gently pull the cables up.





- 6 Use a nylon tool to bow the two strain relief cables outward, then pull the cables up to release them.
- 7 Lift the keyboard out.



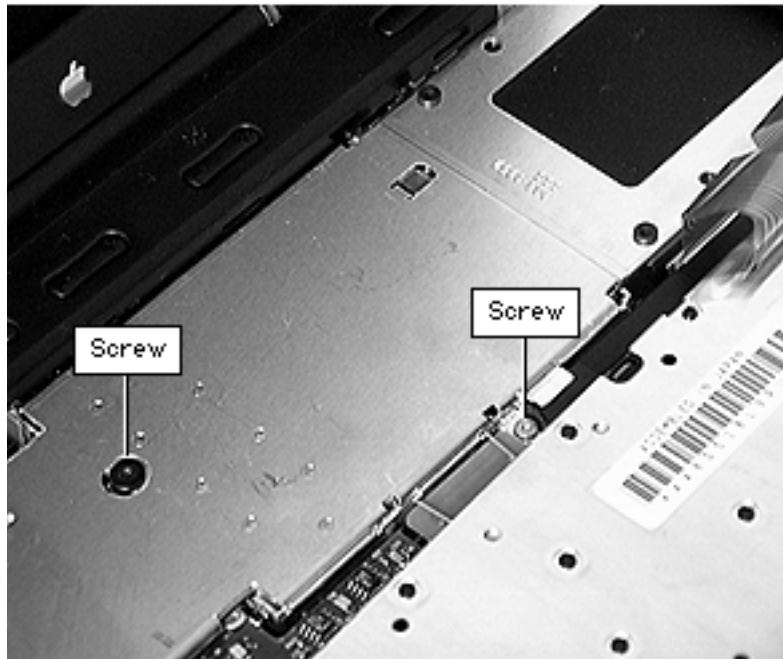


Heat Sink

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard





- 1 Use a Phillips screwdriver to remove the screw from the top of the heat sink.
- 2 Use a Phillips screwdriver to remove the screw from the front of the heat sink.



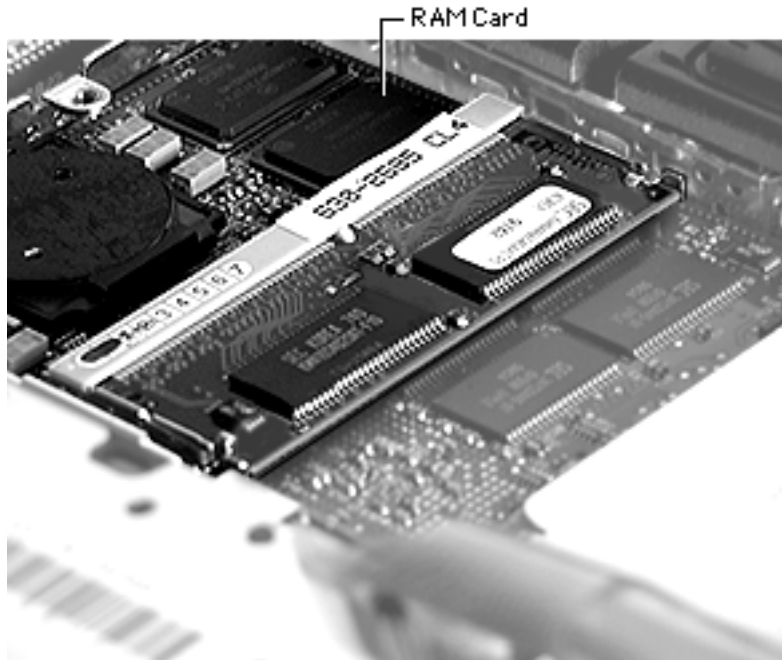


- 3 Lift up on the front handle and pull forward to clear the two tabs from the slots at the back of the heat sink.



Replacement Note: Align the tabs to the slots before reseating the heat sink. If you have trouble fitting the tabs into the slots, press down on the clutch cover while pushing in on the heat sink. Ensure the heat sink is tightly secured.





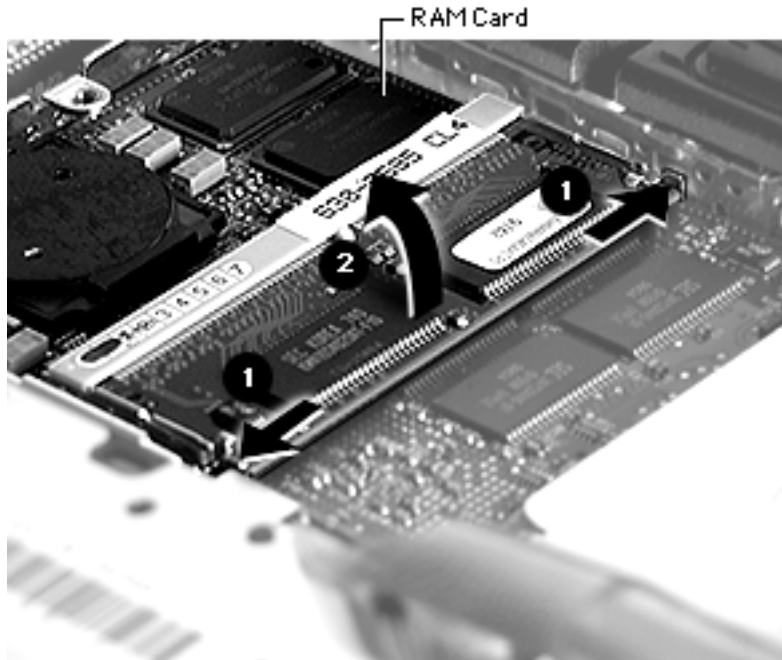
RAM

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink

Note: There are two expansion slots for RAM modules on the microprocessor board. To reach the one on the bottom of the board, follow the procedures for removing the microprocessor board later in this chapter.





- 1 Pull the metal snaps on either side of the RAM card to the sides. The connector will tilt up.
- 2 Pull the RAM card out.

Replacement Note: Line up the notch in the RAM expansion card with the small plastic tab in the RAM expansion slot. Push in on the card and then down until the two metal snaps click into place.

Note: The 128 MB RAM card fits in the top slot only.



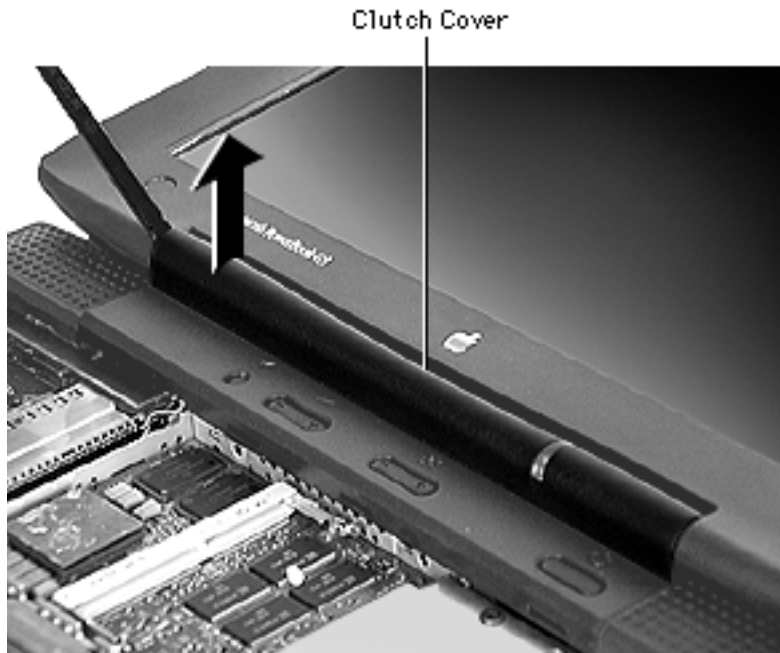


Clutch Cover

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink





- 1 Insert the flat end of a nylon tool into one end of the clutch cover.
- 2 Lift up gently to pop up the clutch cover.

Replacement Caution: Do not catch the data and inverter cables in the ends of the clutch cover when you replace it. This can damage the cables.





Volume Icon



TFT Clutch Cover

Contrast Icon



FSTN Clutch Cover

Replacement Note: Two types of replacement clutch covers are available:

- The TFT clutch cover has a volume icon
- The FSTN clutch cover has a contrast icon

Note the differences shown at left, then ensure you install the correct clutch cover.



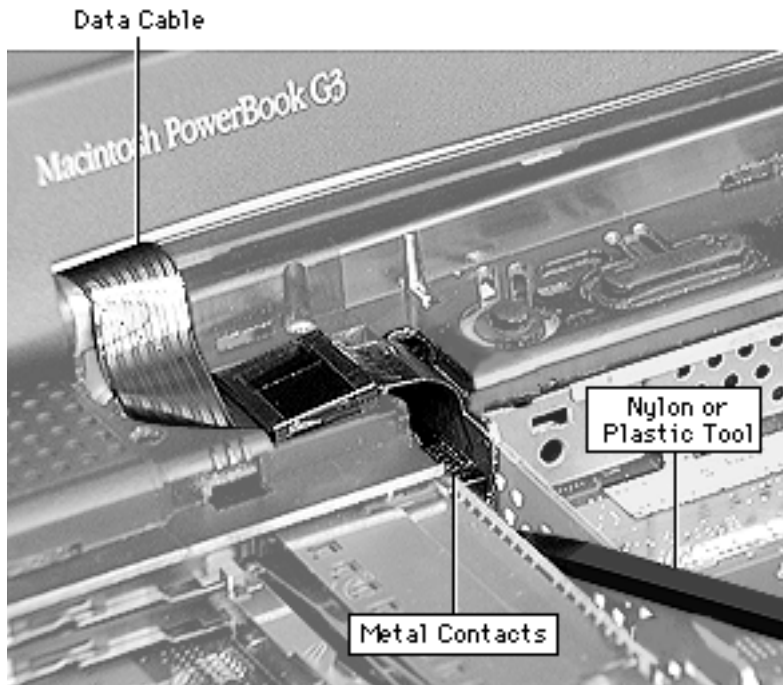


Display

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink
- Clutch cover





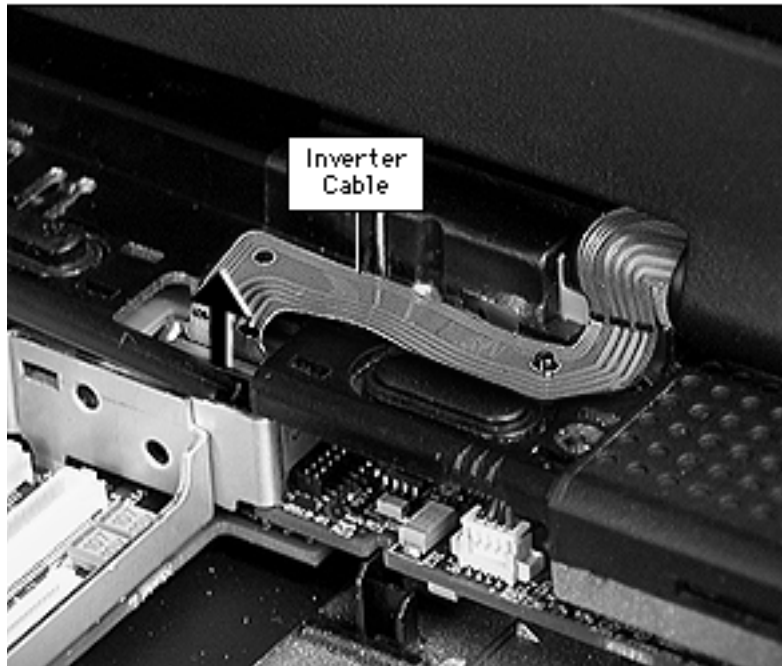
Warning: The cable connectors on the inverter cable and data cable have exposed metal contacts. Use only a non-metal tool to connect and disconnect these cables or you could short out the system.





- 1 Remove the four T-8 screws behind the I/O door.



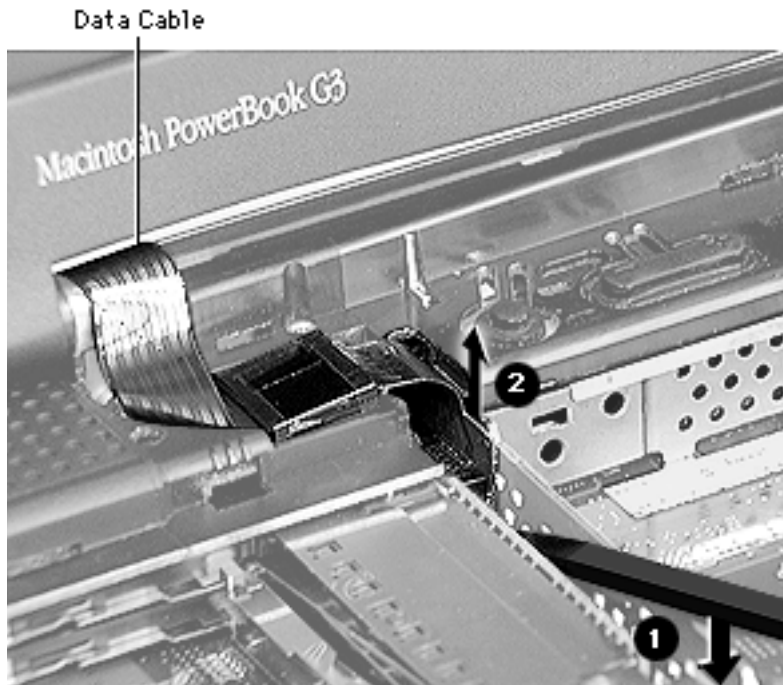


- 2 Use a nylon tool or other non-metal tool to unlock the inverter cable from the connector.

Replacement Note: Align the holes in the inverter cable to the two pegs and press down. This will keep the cable in place when you replace the clutch cover.

- 3 Remove the cable connector from the logic board.





- 4 Use a nylon tool or other non-metal tool to unlock the data cable from the connector.

Replacement Note: Remove the backing on the foam tape under the data cable. Press down on the cable. This will secure the cable when you replace the clutch cover.

- 5 Remove the cable connector from the logic board.
- 6 Pull straight up on the display to separate it from the bottom case.



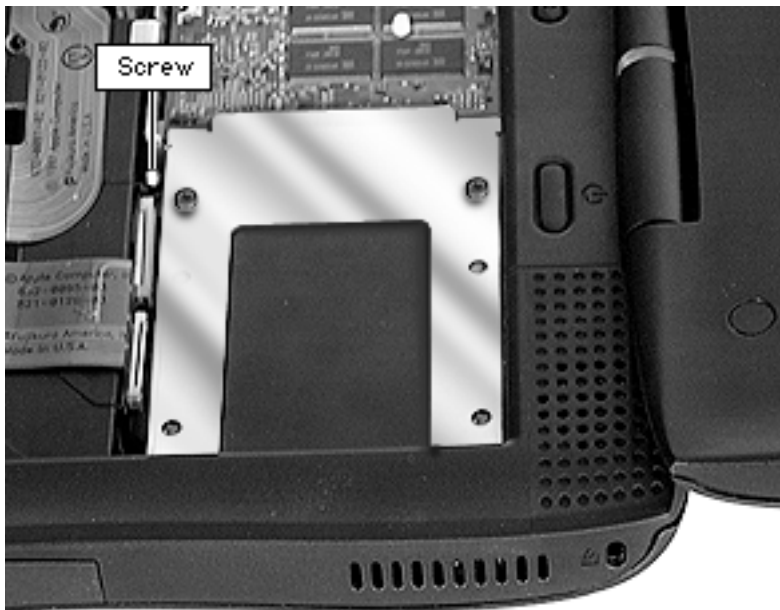


Hard Drive

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink





- 1 Loosen the screw holding the hard drive bracket.

Note: The screw is captured, so you will not be able to remove it completely from the hard drive bracket.

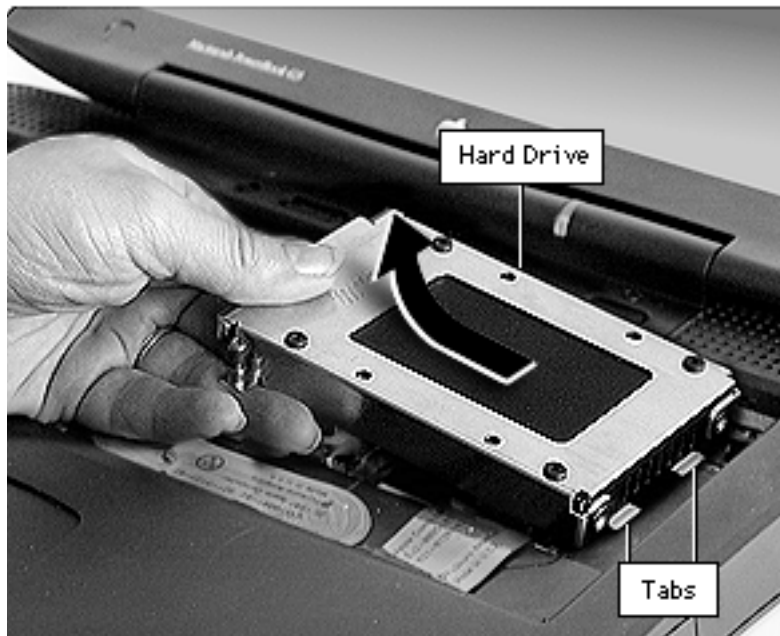
Replacement Note: Ensure the screw is tightened to the hard drive bracket.

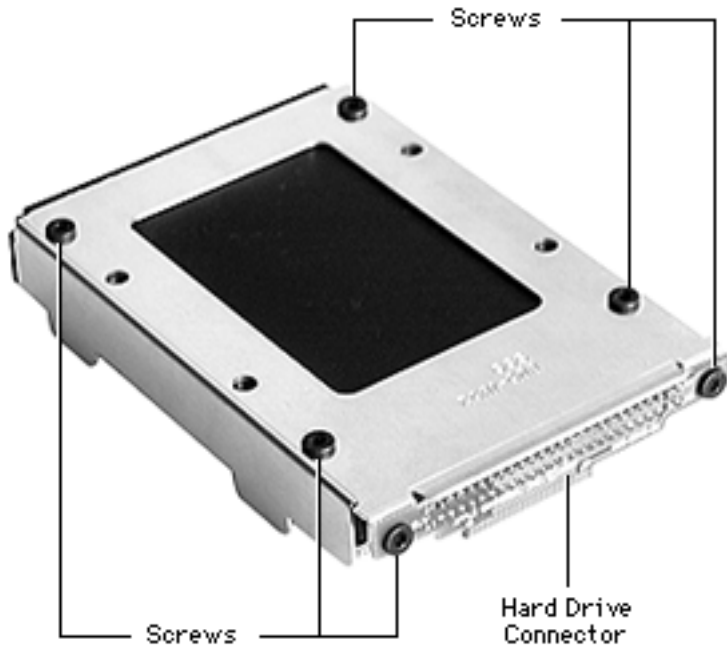




- 2 Pull up on the left side of the hard drive to release it from its connector.
- 3 Pull the hard drive to the left.

Replacement Note: Align the two tabs to the slots before pushing down on the hard drive connector.



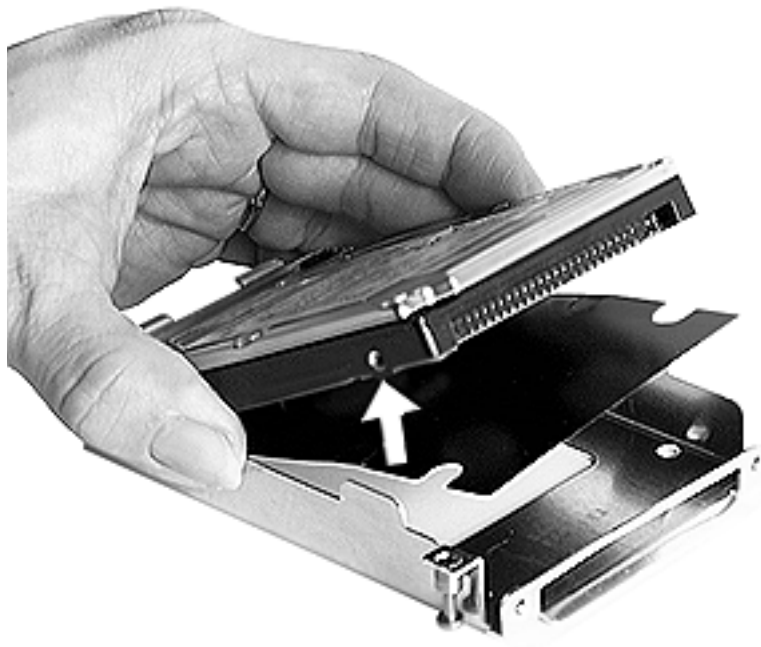


- 4 Remove the four black screws on top of the hard drive bracket.
- 5 Remove the two black screws on the hard drive connector and pull it off the hard drive.





- 6 Remove the hard drive and hard drive insulator from the bracket.



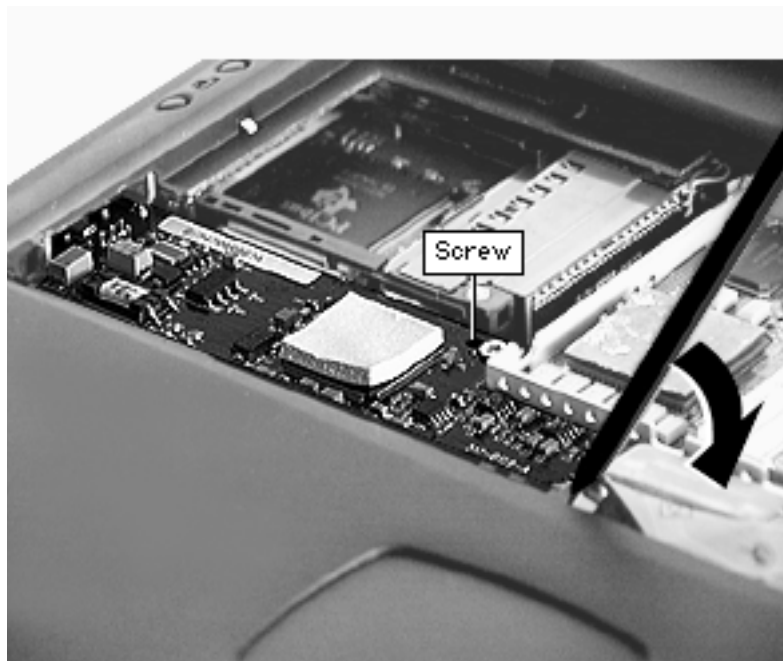


Modem

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink





- 1 Remove the modem screw.
- 2 Use a nylon tool to pry the modem up from its connector.
- 3 Lift up slightly and pull the modem to the right.





Microprocessor Board

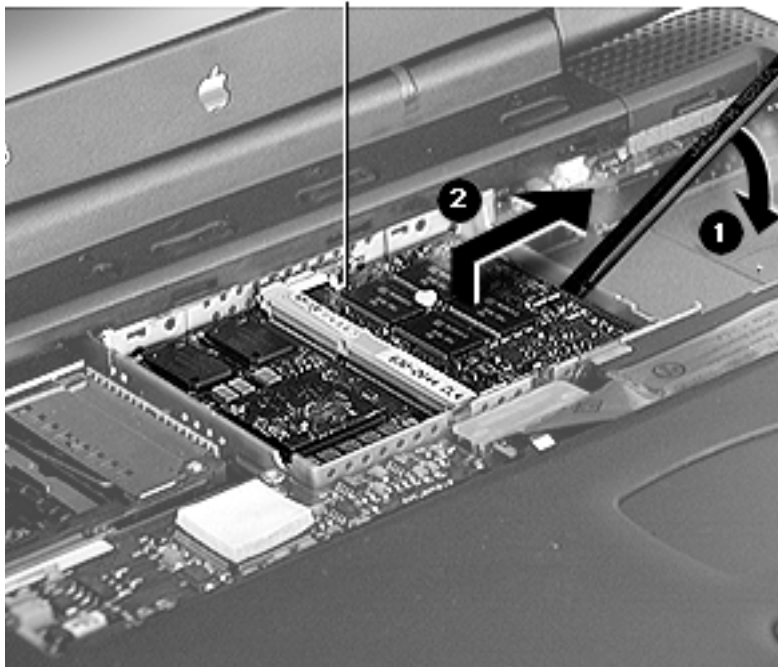
Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink
- Hard drive





Microprocessor Board



- 1 Position a nylon tool under the center of the right side of the board and lift up to release it.
- 2 Pull the microprocessor board to the right.

Replacement Note: Align the tabs on the left side of the board with the slots on the top case stiffener, then press down firmly on the right side of the board to seat the connector.

Replacement Caution: The microprocessor board can be partially inserted and the





computer will still function. However, over time, heat will cause the microprocessor board to lose contact and can cause the system to have intermittent problems such as no booting.

Therefore, check proper installation by pressing on the microprocessor board connector a second time to make sure the board is fully seated.





Top Case Assembly

Procedures for removing parts from the top case assembly are detailed on the following pages.

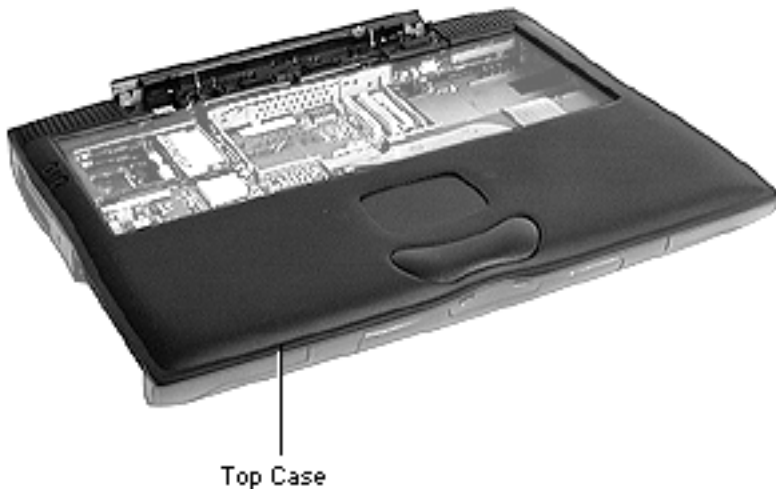


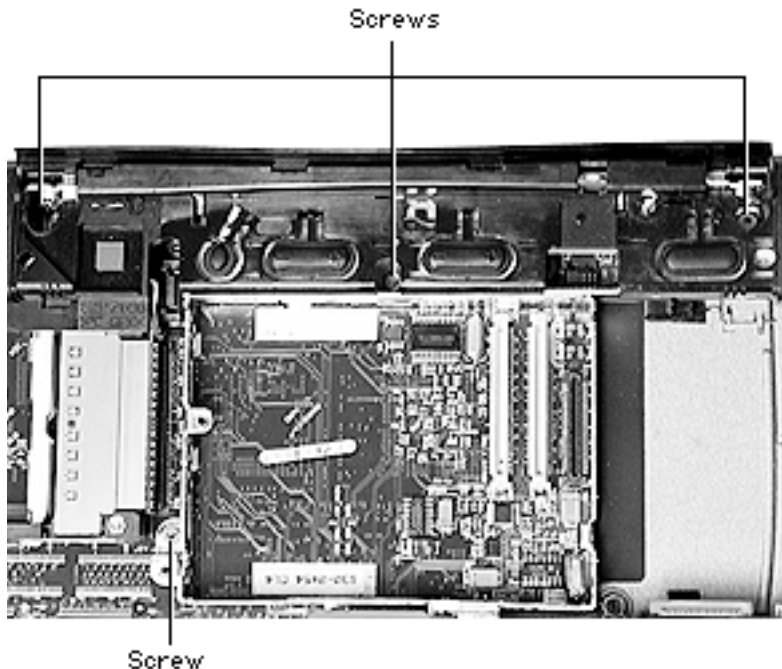


Top Case

Before you begin, remove the following:

- AC adapter
- Expansion bay modules
- Keyboard
- Heat sink
- Clutch cover
- Display
- Hard drive
- Modem or modem plug
- Microprocessor board





- 1 Remove the three screws under the clutch cover.

Replacement Note: Because the screws can get lost in the case when attempting to reset them, use a magnetic screwdriver or place the screws in their holders before putting the two halves of the case together.

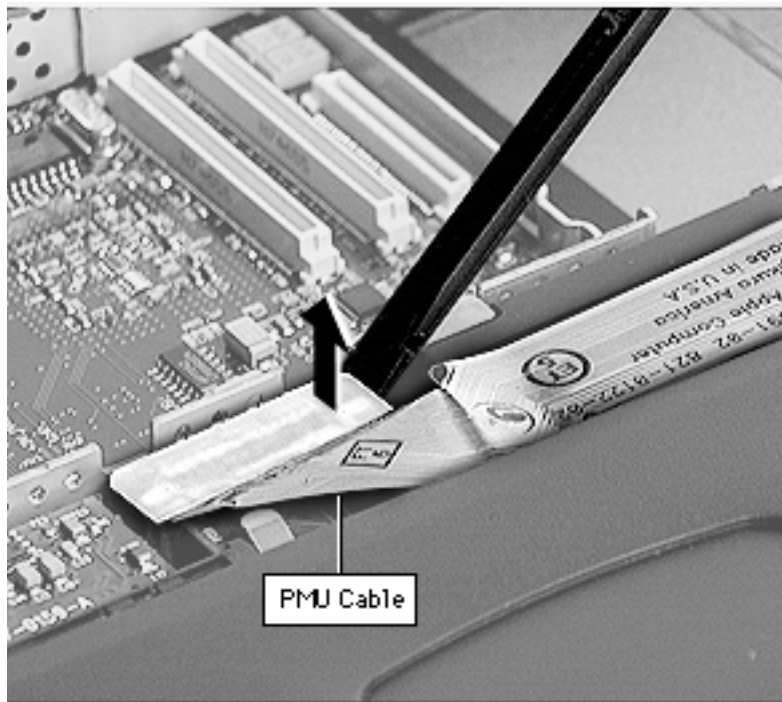
- 2 Remove the screw that holds the top case to the bottom case.

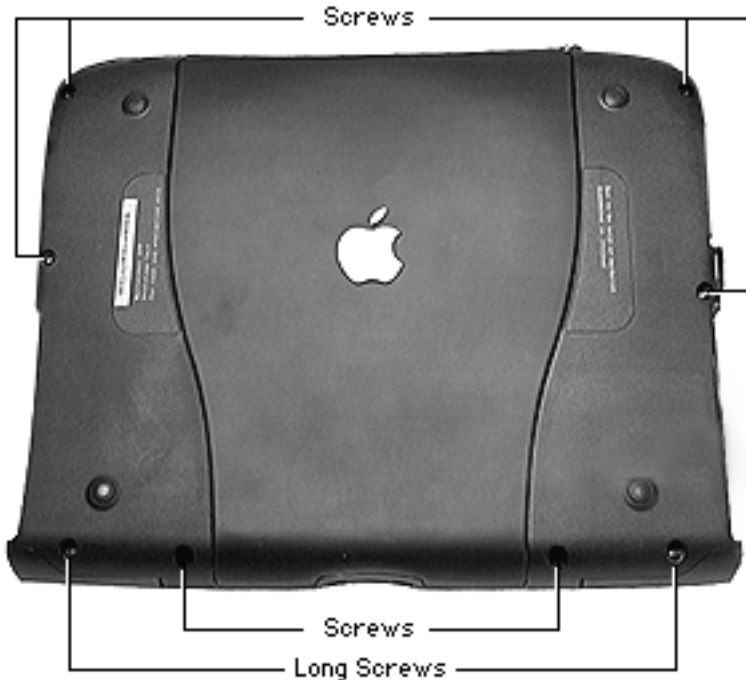
Replacement Note: Tighten the screw to 2.5 inch pounds.





- 3 Disconnect the PMU cable.

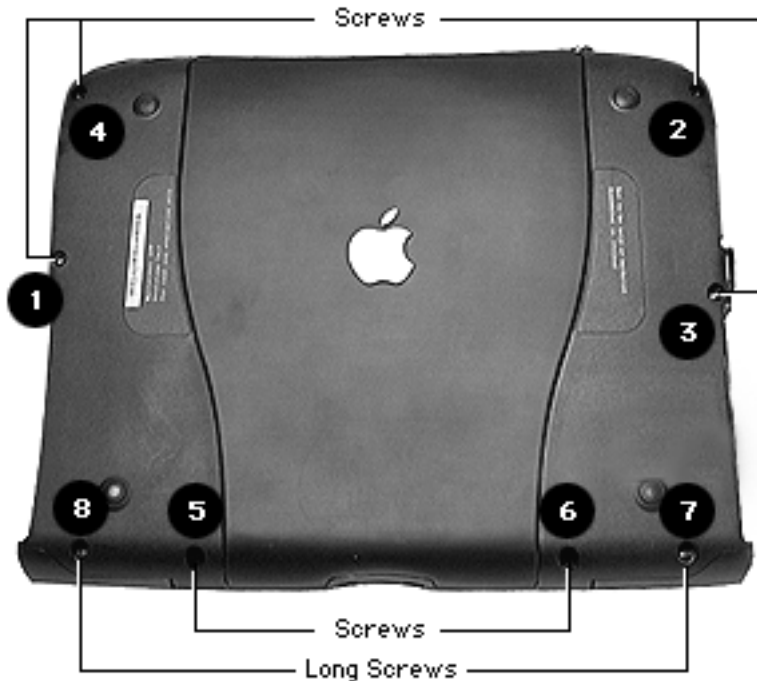




- 4 Turn the case over and remove the eight screws around the perimeter of the bottom case.

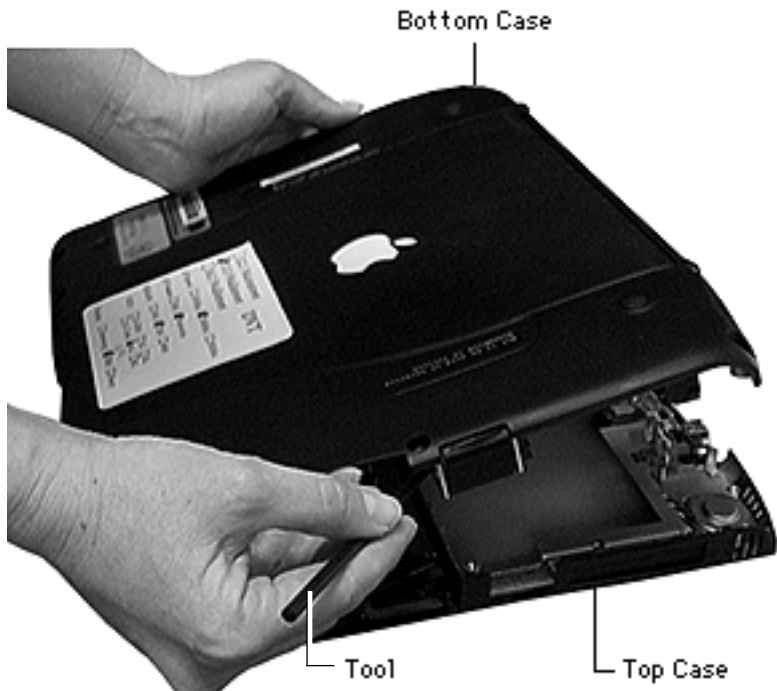
Replacement Caution: When reassembling the PowerBook, the two long screws go in the outside holes on the front edge. Installing them in any of the other screw holes could cause the screws to push through the plastics or cause the plastic to dimple.



**Replacement Caution:**

Replace the screws in the order shown at left. Do not overtighten the screws. Using a torque screwdriver, tighten the screws to a torque of 2.5 inch pounds. Test the screw tightness by installing a battery in both expansion bays. If the batteries do not fit properly or the expansion bays will not lock, loosen the closest screw(s) a 1/4 turn and try the test again.

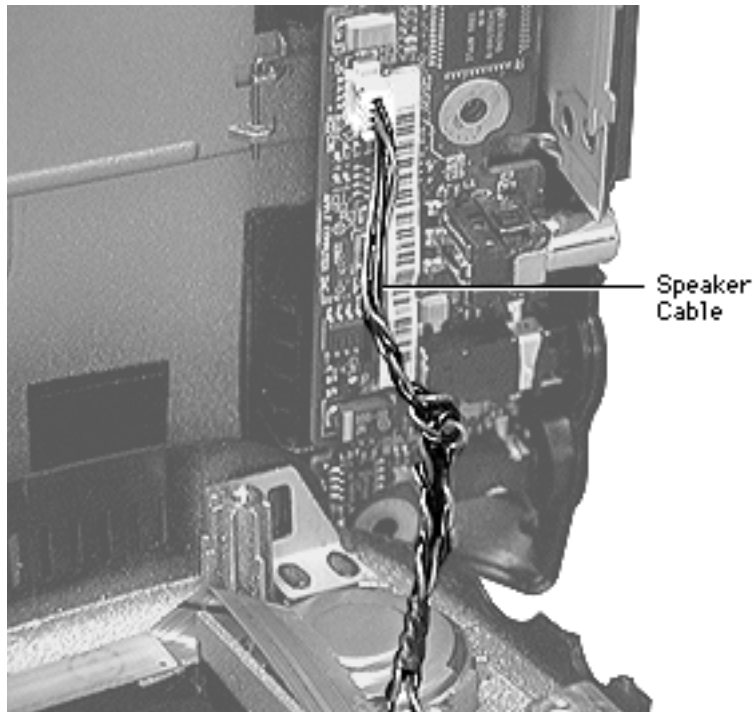




Replacement Note: To make sure the expansion bay flip door is aligned properly, push in on it when you replace the screw near the expansion bay flip door.

- 5 Use a nylon tool to separate the two halves of the case. Start at one corner and slide the tool along the seam.
- 6 Lift the rear of the bottom case first and then lift straight up.





- 7 Disconnect the speaker cable.

Replacement Note: To keep the speaker cable from getting caught in the case plastics, pull it forward. After the top case and bottom case are snapped together, tuck the cable into the space above the sound card.

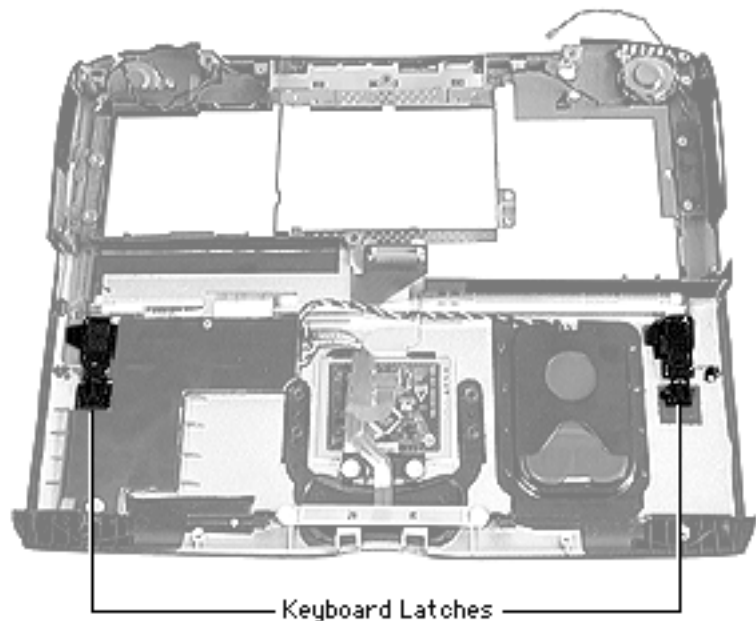
Replacement Caution: Check that the speaker cable is routed away from the power button and that the power button functions properly.

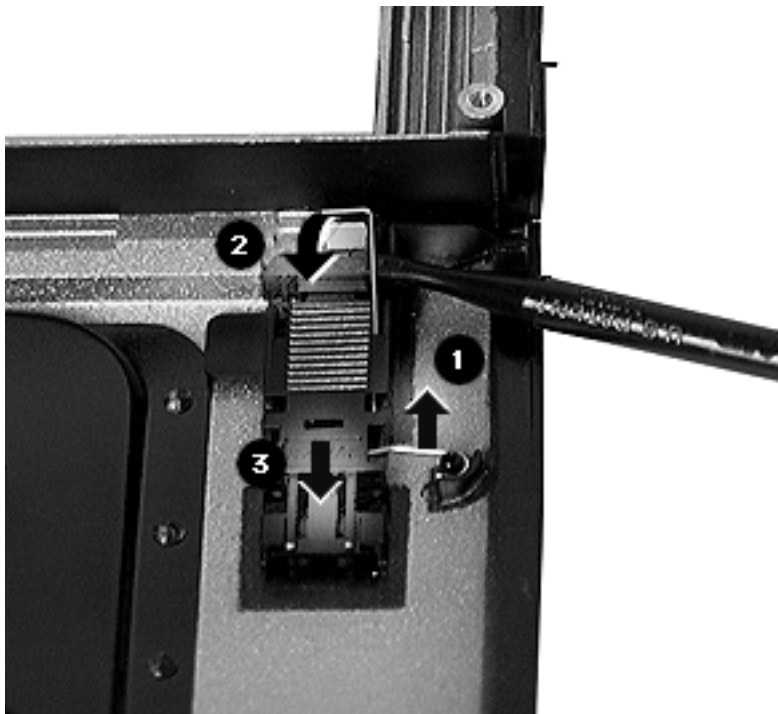




Keyboard Latch

Before you begin, remove the top case.





- 1 Lift up on the wire hook with a screwdriver and move it off the anchoring post.

Replacement Note: If the wire does not stay down over the anchoring post, bend the wire down slightly to give it a firmer seating.

- 2 Lift up on the L-shaped wire with a screwdriver and slide the latch back and out of its retaining brackets.

Replacement Note: Slide the tabs at the rear end of the





latch under the retaining brackets first. Then slide the latch forward, lift up on the L-shaped wire with a screwdriver, and reseal it.



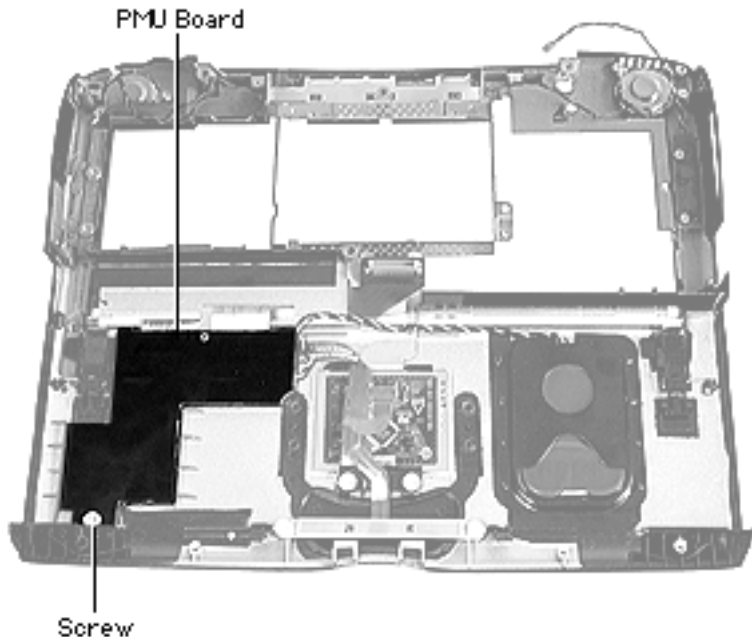


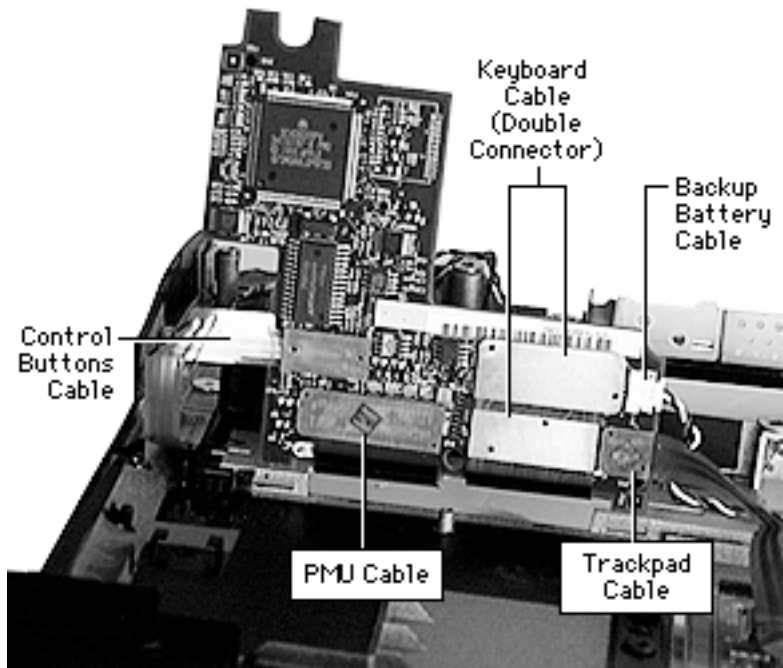
PMU Board

Before you begin, remove the following:

- Top case
- Keyboard latch

- 1 Remove the screw at the front of the PMU board.





2 Lift the PMU board up and use a nylon tool or other flat-blade tool to disconnect the following cables:

- Backup battery cable
- Control buttons cable
- Trackpad cable
- Keyboard cable
- PMU Cable

Caution: Excessive force can bend pins in the connectors or tear the cables.

Replacement Note: Align the two tabs at the rear of the





PMU board to the slots in the case. Then connect the cables in reverse order.

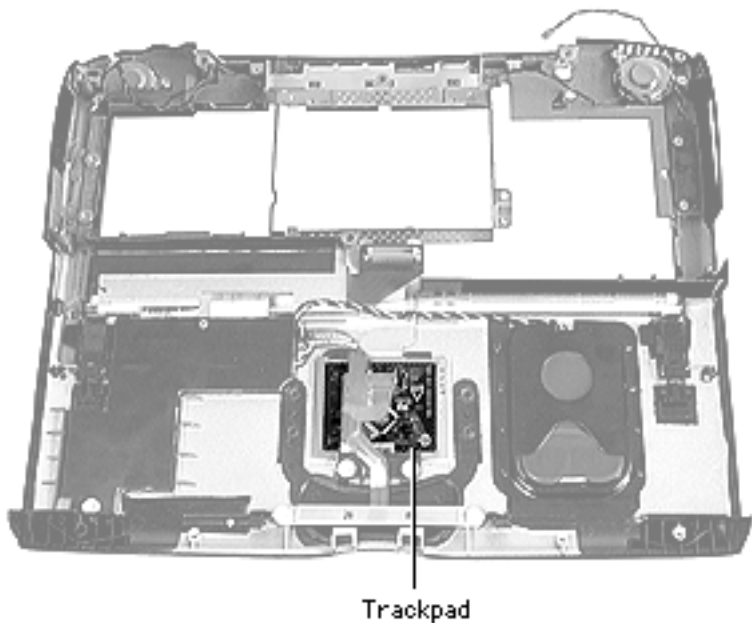


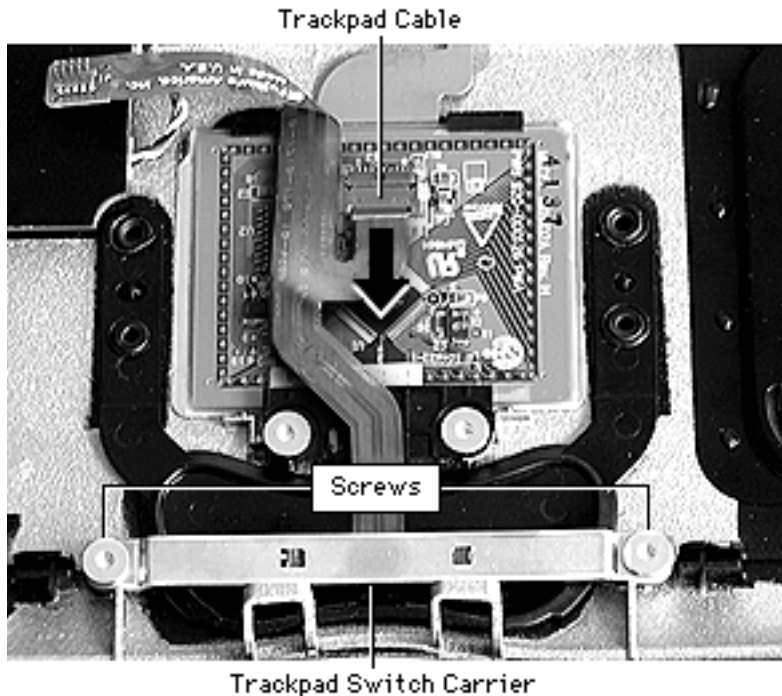


Trackpad

Before you begin, remove the following:

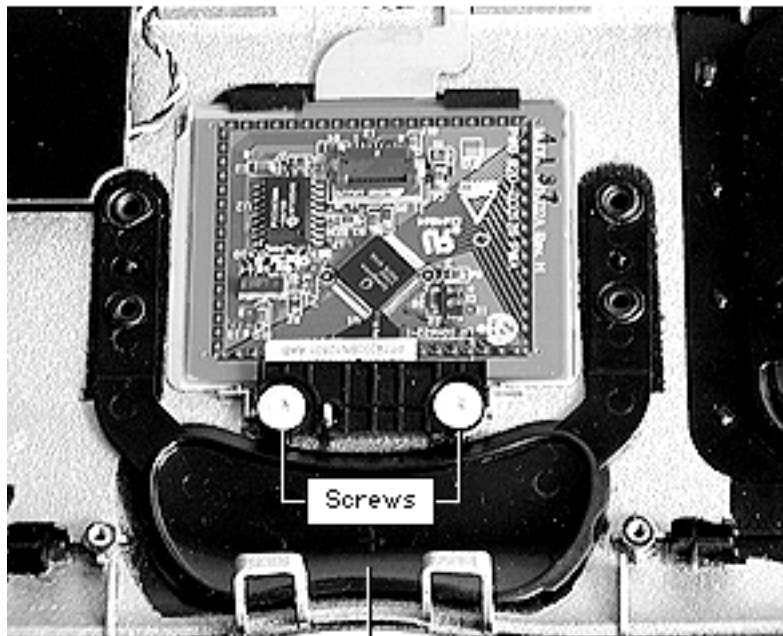
- Top case
- Keyboard latch
- PMU board: trackpad cable only





- 1 Remove the two screws holding the trackpad switch carrier.
- 2 Push down on the trackpad switch carrier connector with a pick or nylon tool, then carefully pull the cable toward you.





Screws

Trackpad Hold Down

- 3 Remove the two screws on the trackpad hold down.
- 4 Lift up on the front of the trackpad and pull it forward.

Replacement Note: To properly place the trackpad, check that the trackpad carrier switch connector is on the side farthest from the trackpad hold down.



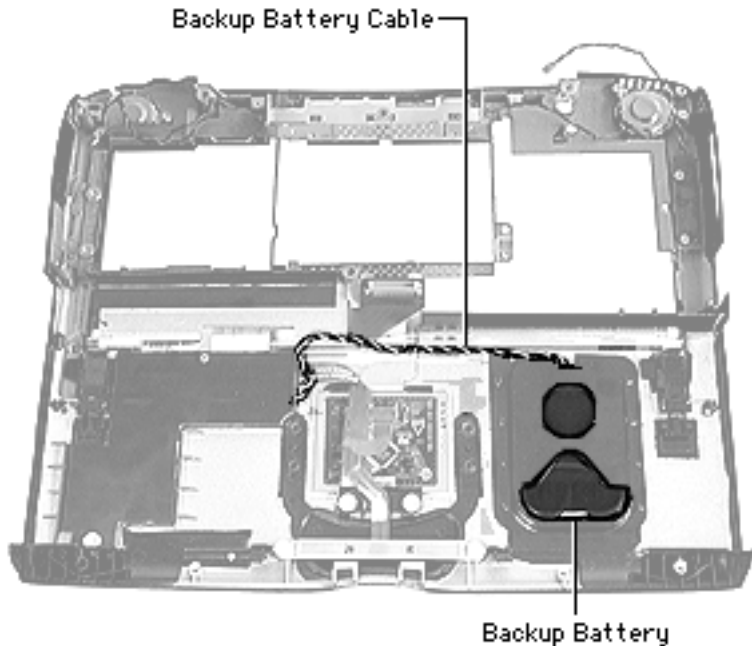


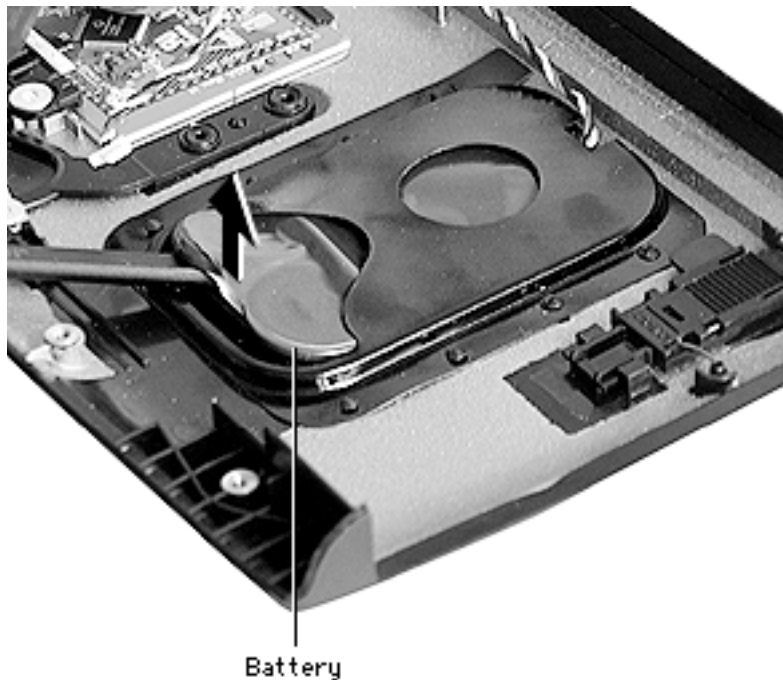
Backup Battery

Before you begin, remove the top case.

- 1 Disconnect the backup battery cable from the PMU board.

Replacement Note: You may need to loosen the PMU board to reconnect the cable. See the PMU board instructions in this chapter.





- 2 Lift the backup battery cable from its channeling.

Replacement Note: Use the flat end of a nylon tool or other flat-blade tool to push the cable securely into its channeling.

- 3 Use a flat-blade tool to lift up the front edge of the backup battery. Press down on the back end of the battery and slide it forward, out of its housing.





Note: To fully charge the backup battery, the unit must be connected to AC power for 48 hours.

Replacement Note: Ensure that the keyed connector at the end of the backup battery cable is securely connected to the PMU board.



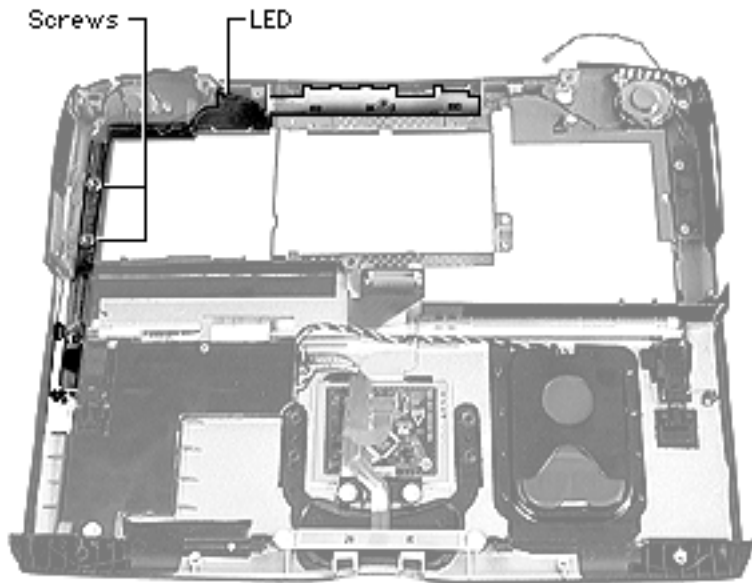


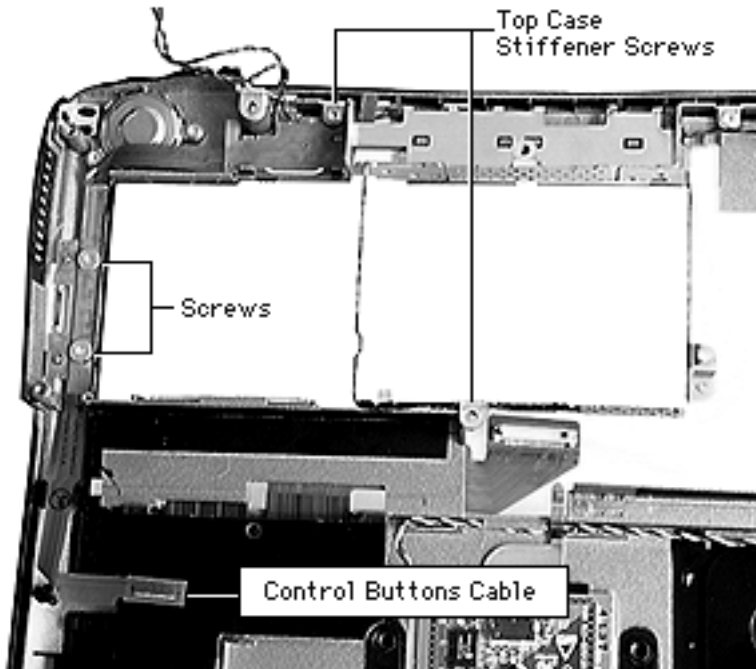
Control Buttons Cable

Before you begin, remove the following:

- Top case
- Keyboard latch

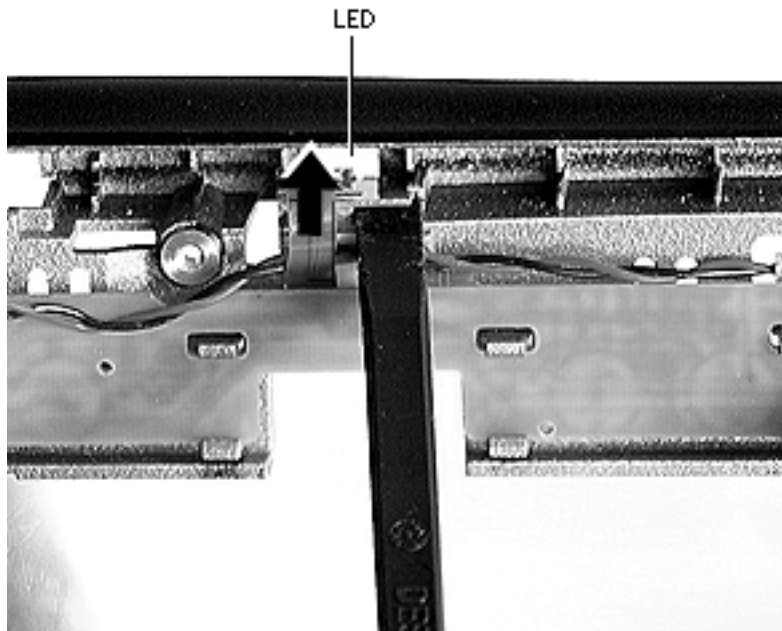
- 1 Disconnect the control buttons cable from the PMU board.





- 2 Remove the two screws holding down the sleep reed switch along the left side.
- 3 Remove the two screws holding the top case stiffener and lift the stiffener straight up.

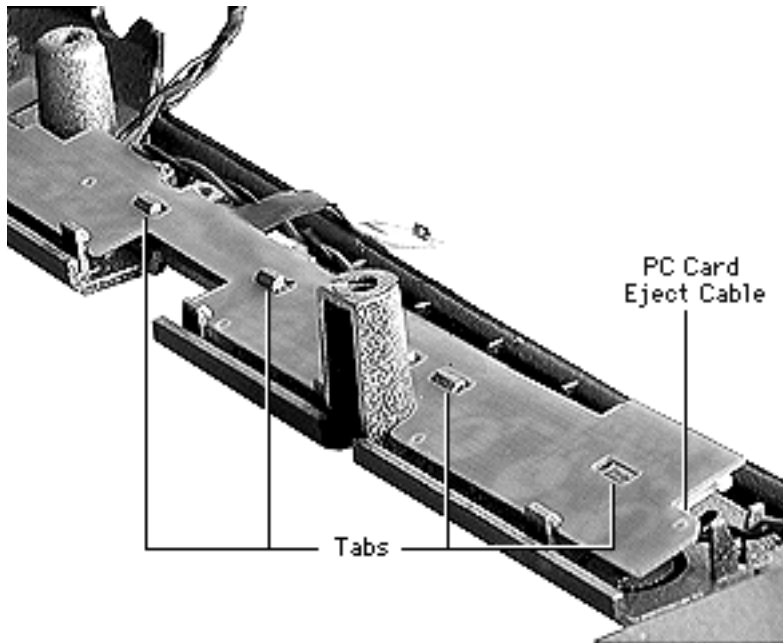




- Carefully bow the LED out with the flat end of a nylon tool to release it from its holding tab and pull up on the cable.

Replacement Note: Slide the LED carrier down inside the guides, and push it back to seat it over the tab.

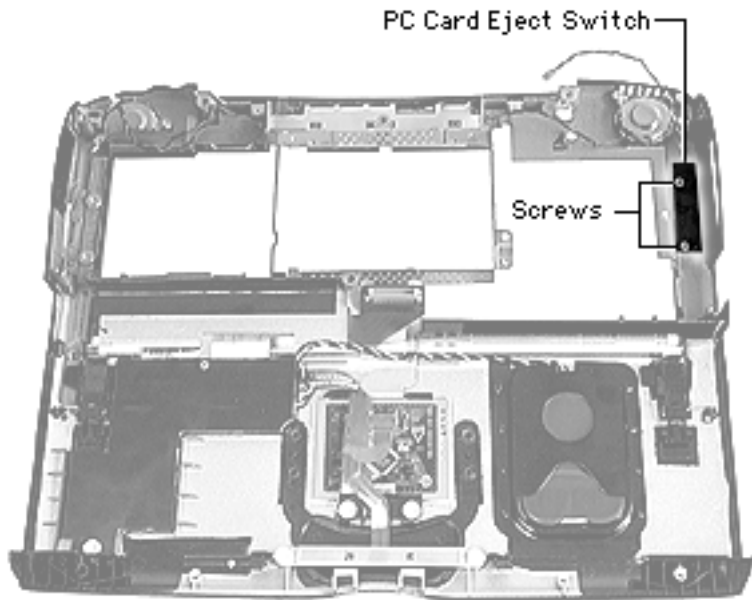




- 5 Disconnect the PC card eject cable.
- 6 Gently pull up on the remaining length of the control buttons cable, working it out of its holding tabs.

Replacement Note: Start from the end of the cable and line up the slots over the tabs. Tilt the cable to catch it under the tabs, then press down to snap it into place.



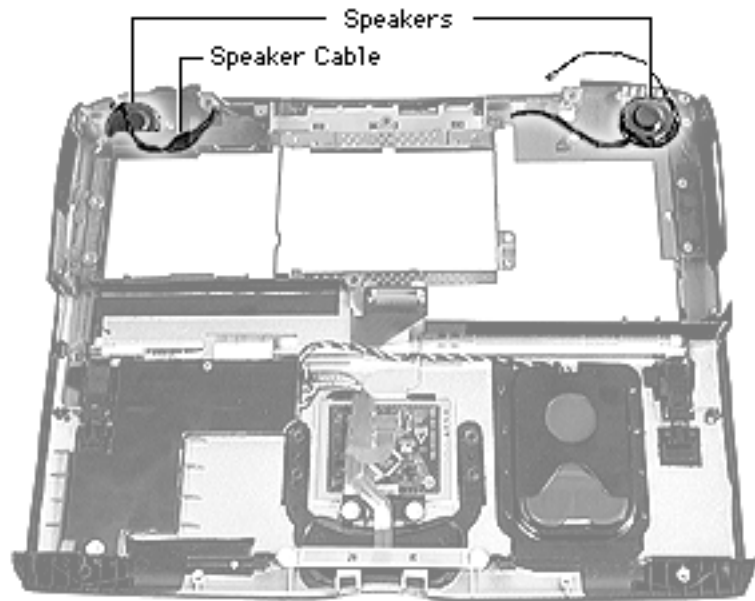


PC Card Eject Switch

Before you begin, remove the top case.

- 1 Disconnect the PC Card eject cable from the PC Card eject switch.
- 2 Remove the two holding screws.





Speaker Assembly

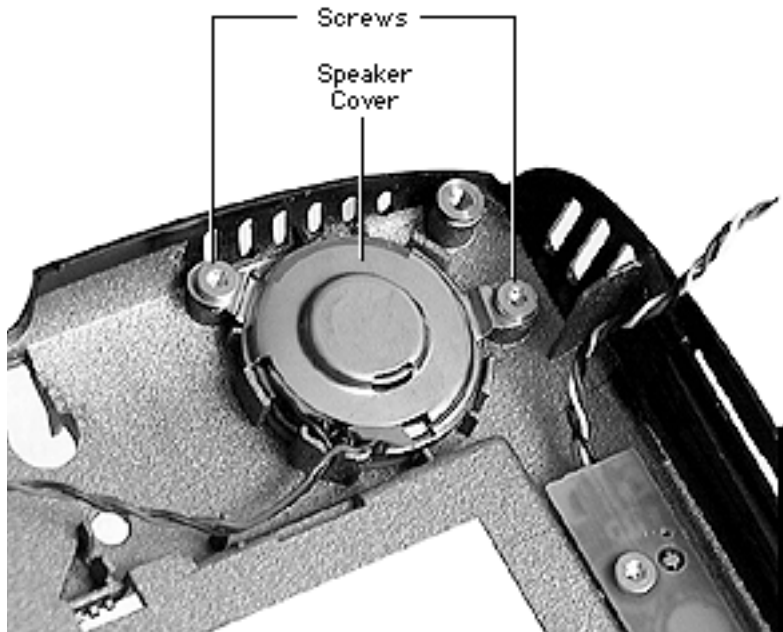
Before you begin, remove the following:

- Top case
- Control buttons cable





- 1 Unscrew the two screws on both the left and right speaker housings.



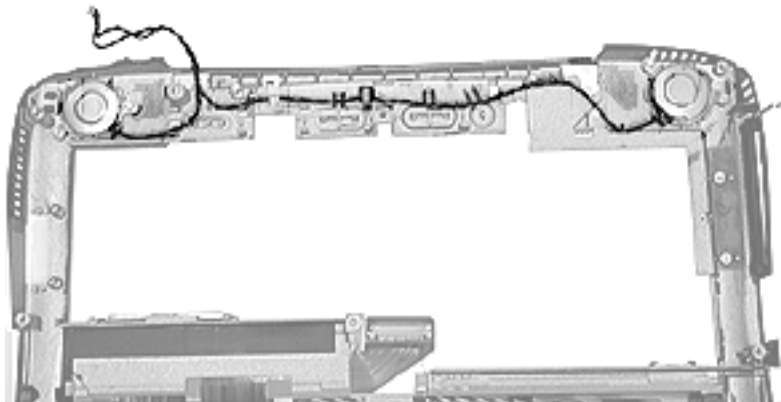


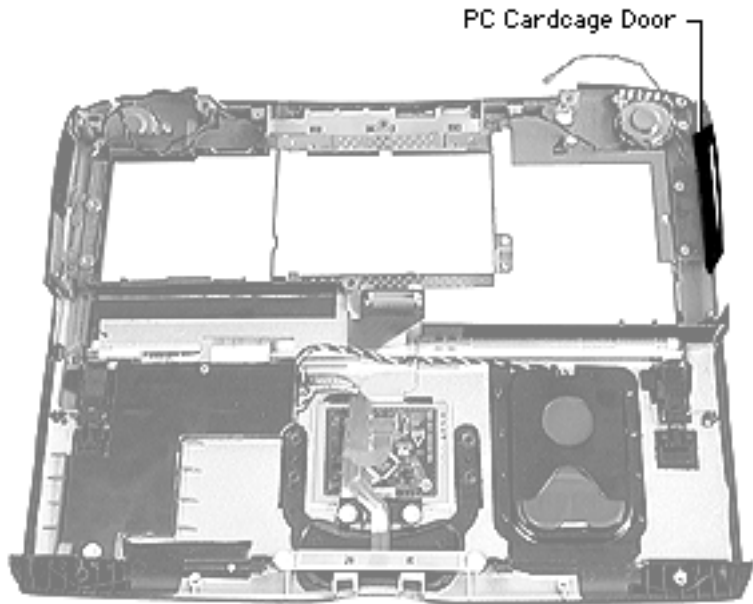
- 2 Release the speaker cable from its holding bracket.

Replacement Note: Reroute the speaker cable in its original channel or the control buttons cable will not seat properly over it.

- 3 Gently lift the speakers up.

Caution: The front of the speakers are delicate and should not be handled. They are easily dented.





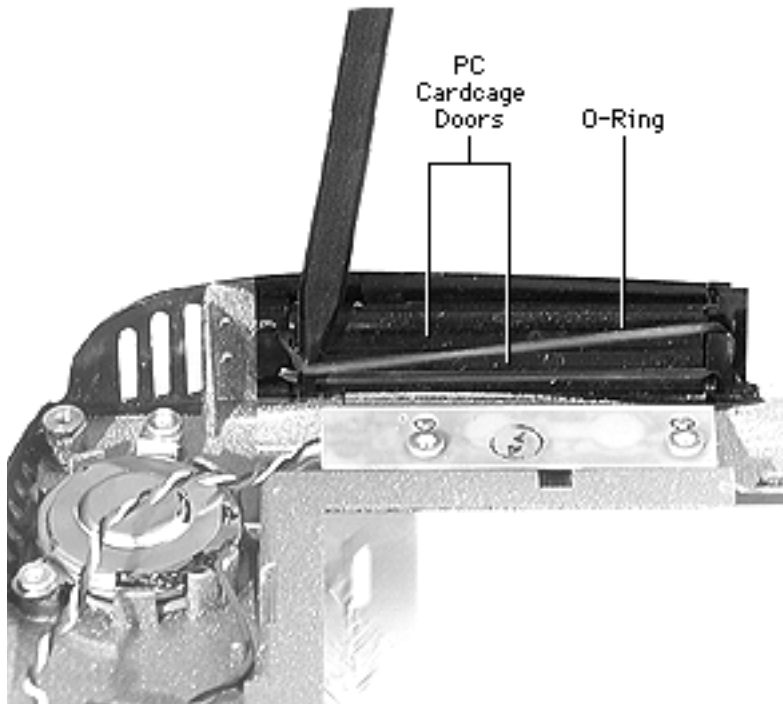
PC Cardcage Door

Before you begin, remove the top case.





- 1 Remove the O-ring from its retaining hooks.





- 2 Gently flex one half of the PC cardcage door and pull the retaining pins from their slots.
- 3 Repeat this procedure for the second half of the door.





Bottom Case Assembly

Procedures for removing parts from the bottom case assembly are detailed on the following pages.





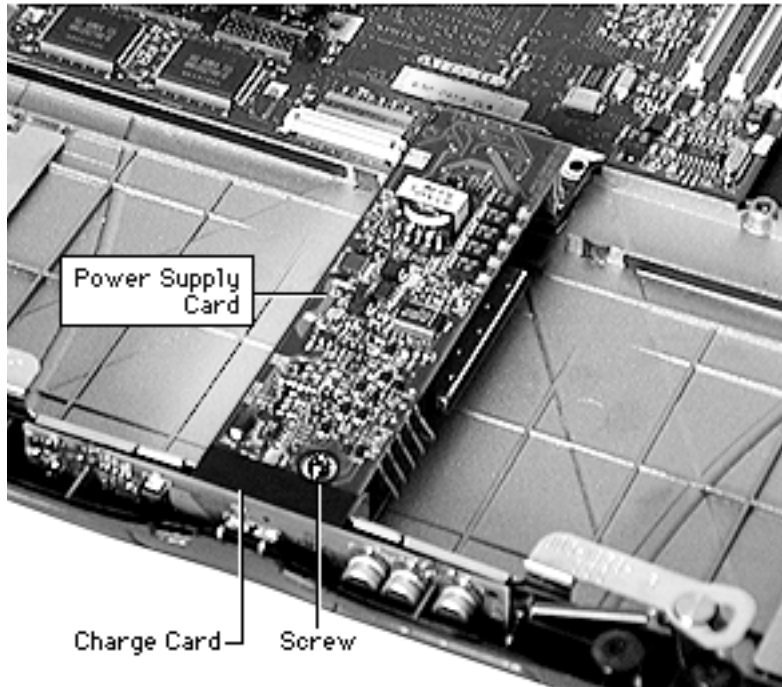
Power Supply and Charge Card

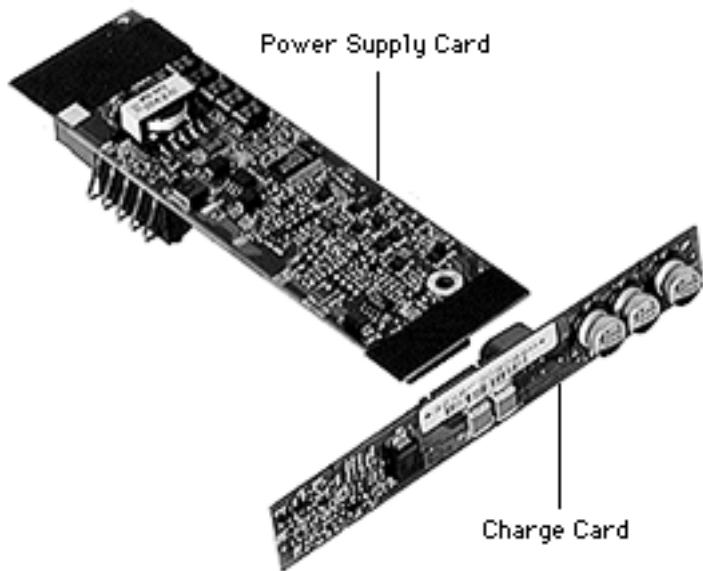
Before you begin, remove the top case.

- 1 Remove the screw at the front of the power supply card.

Replacement Note: Ensure that the screw is aligned directly over the hole and the power supply board is centered properly.

- 2 Lift up on the card to release it from its connector.





- 3 Lift the expansion bay eject arms off their tracks and swing them away from the front of the charge card.

Replacement Note: Make sure the expansion bay eject arms are back on their tracks before continuing to reassemble the computer

- 4 Disconnect the charge card from the power supply.



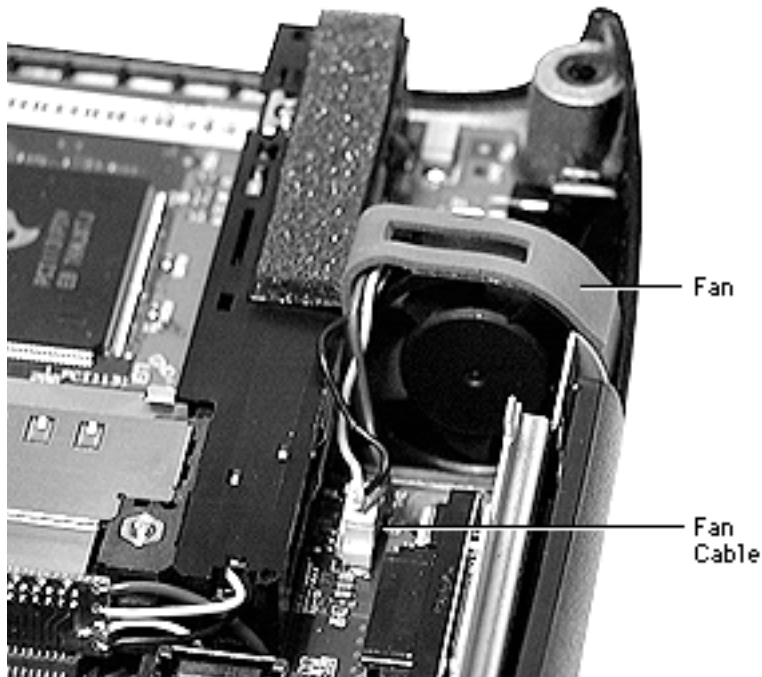


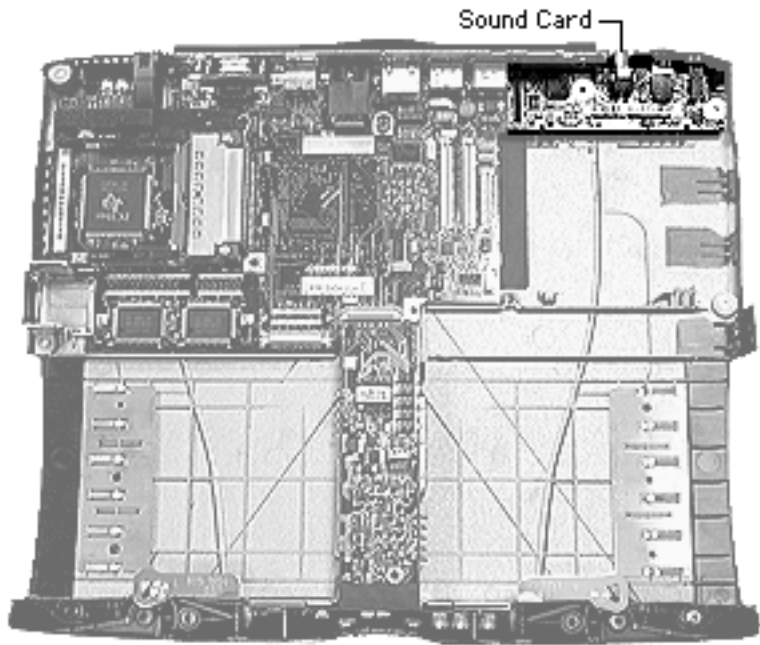
Fan

Before you begin, remove the top case.

- 1 Pull up on the fan cable with a pick and gently disconnect the fan cable.
- 2 Lift the fan up.

Replacement Note: Place the fan with the flat edge against the I/O logic board.

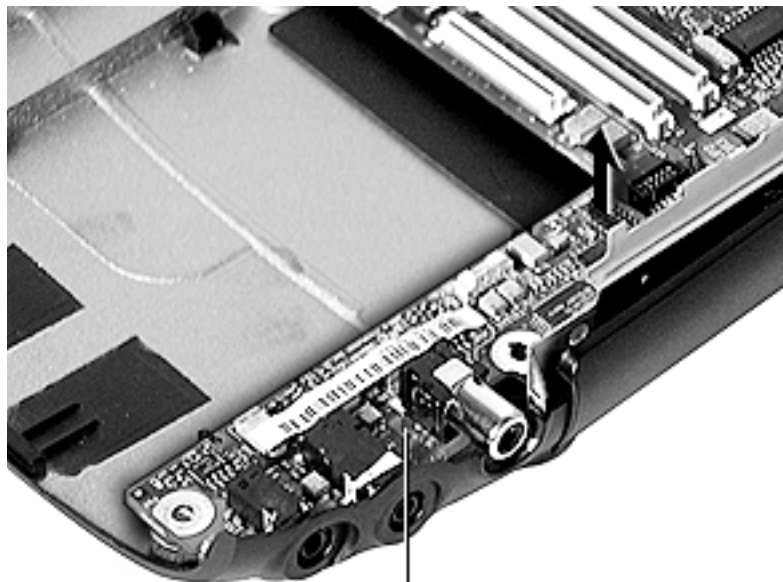




Sound Card

Before you begin, remove the top case.





Sound Card

Gently press away on the case, then lift the sound card straight up.

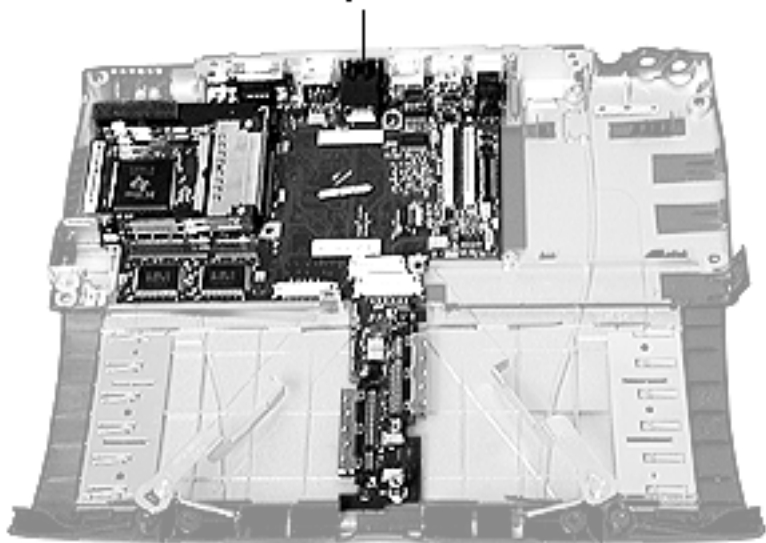
Replacement Note: Tilt the card to the left to align the connector pins and ensure that the two sound ports are properly aligned with the plastic guides, then press down.

Caution: Be careful not to bend the pins on the connector or you may damage the I/O logic board.





I/O Logic Board

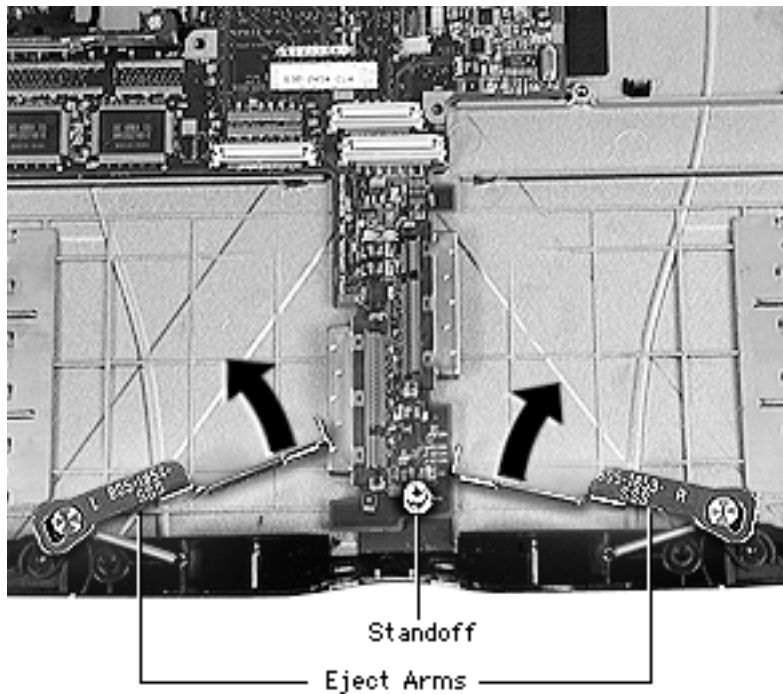


I/O Logic Board

Before you begin, remove the following:

- Top case
- Power supply and charge card
- Fan
- Sound card

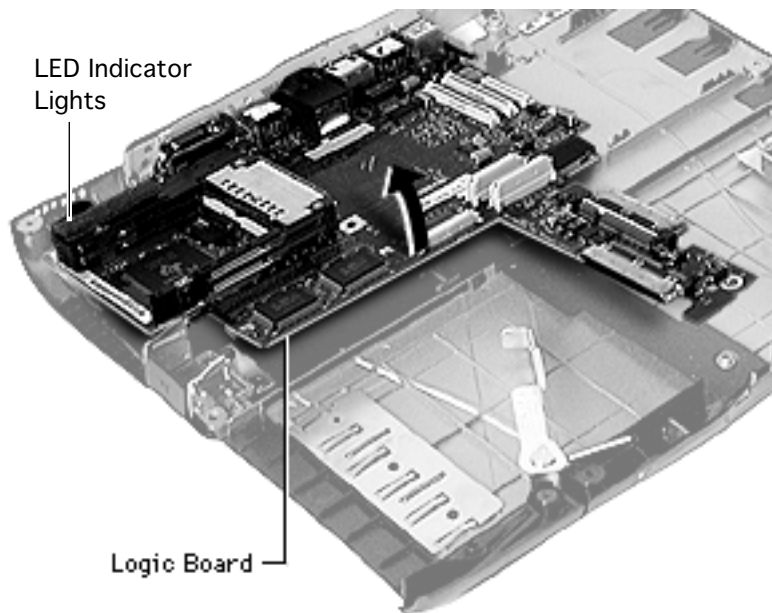




- 1 Unscrew the standoff located at the front of the I/O logic board.
- 2 Lift the expansion bay eject arms off their tracks and swing them away from the front of the I/O logic board.

Replacement Note: Make sure the expansion bay eject arms are back on their tracks before continuing to reassemble the computer





- 3 Hold the sides of the I/O logic board and lift up, then pull forward.

Caution: Do not use the long, narrow part of the I/O logic board as a handle. The board could break at this point. Hold the board by the outer edges.

Replacement Note: After repositioning the I/O logic board, check that the LED leads are not bent and the three LED indicator lights are aligned properly.



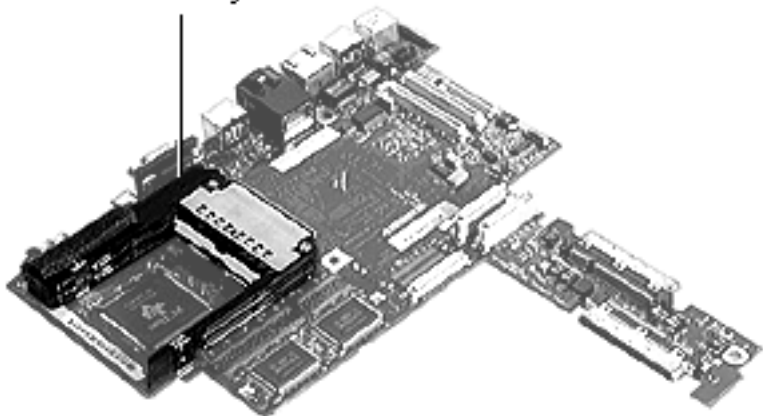


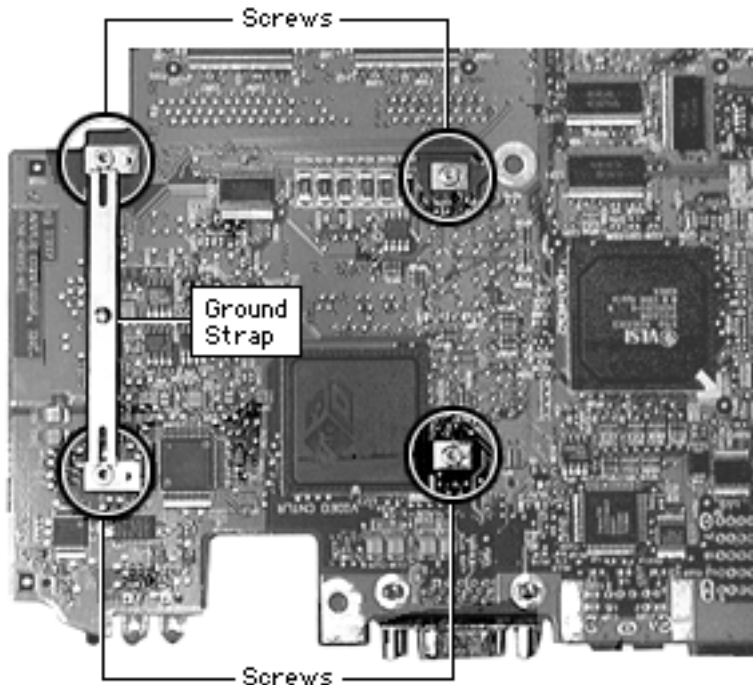
PC Card Cardcage

Before you begin, remove the following:

- Top case
- I/O logic board

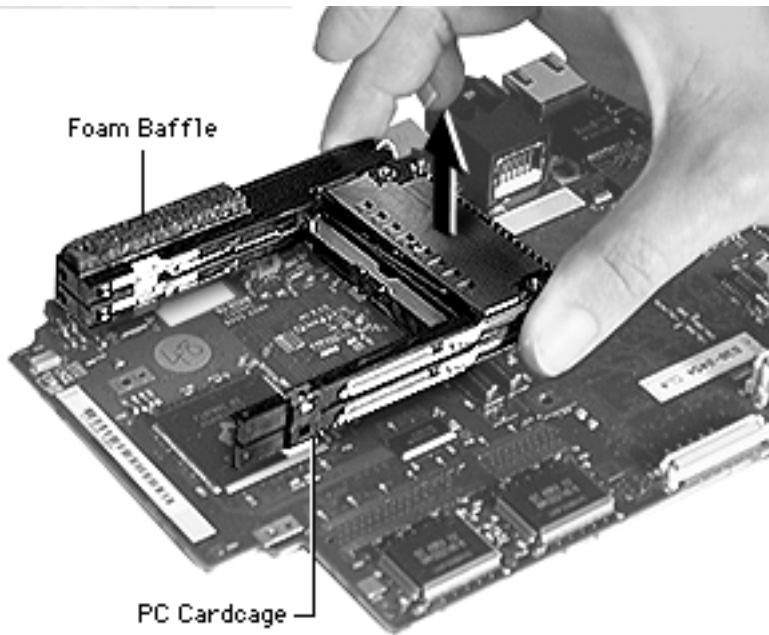
PC Cardcage





- 1 Turn the I/O logic board over and use a #6 Torx driver to remove the two long screws near the center of the board.
- 2 Remove the two long screws holding the PC Card cardcage EMI ground strap.





- 3 Turn the board back over and pull up on the PC Card cardcage to release it from its double connectors.

Replacement Note: If installing a new PC Card cardcage, check that the foam baffle is on the new cardcage.

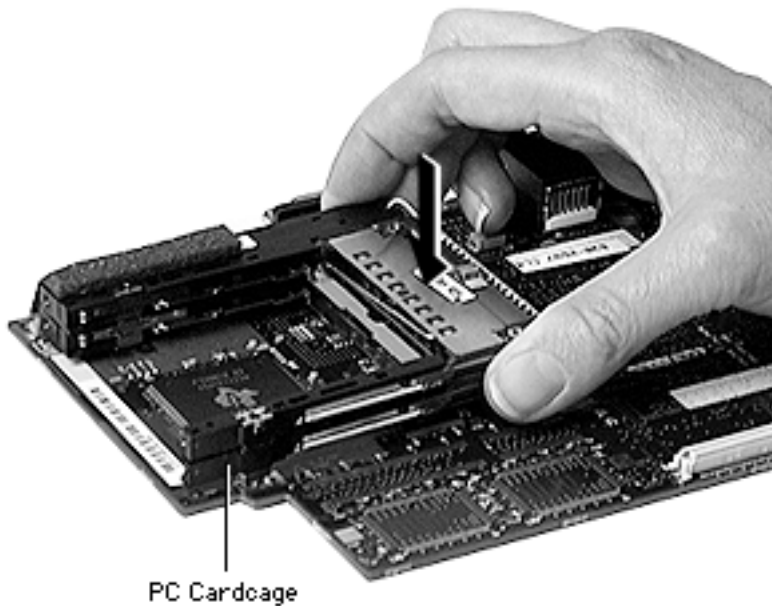


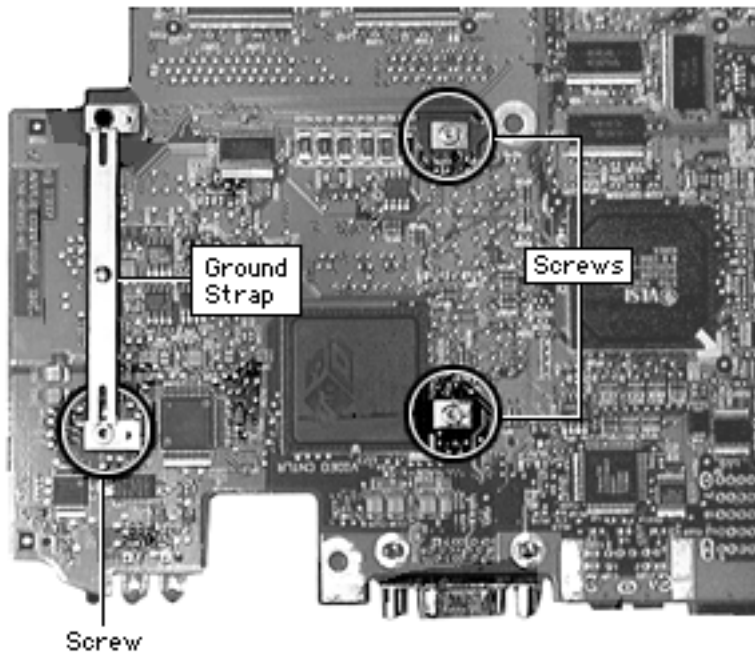


PC Card Cardcage Replacement

Replacement Caution: The PC Card cardcage must be carefully realigned for the PC Cards to work properly.

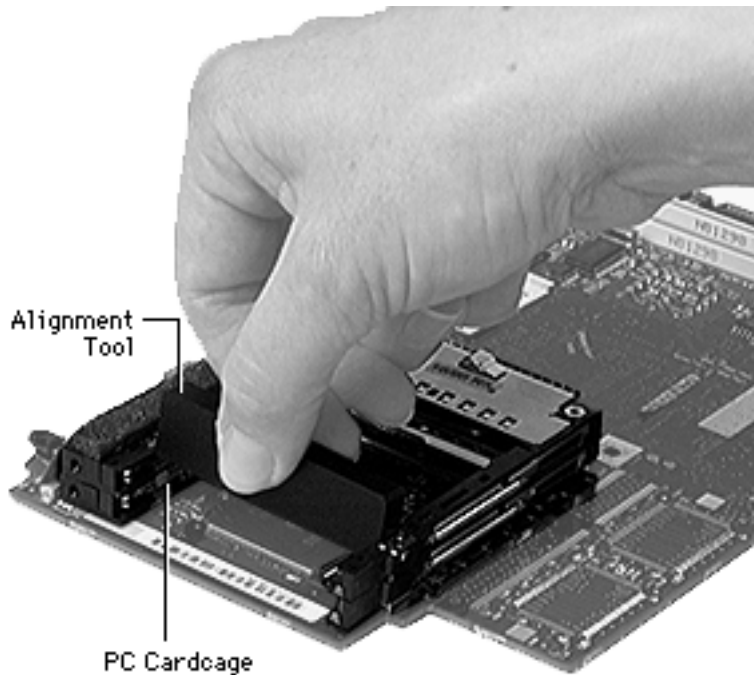
- 1 Align the PC Card cardcage to the top of the I/O logic board, matching up the screw holes and double connectors. Press down until the connectors engage.





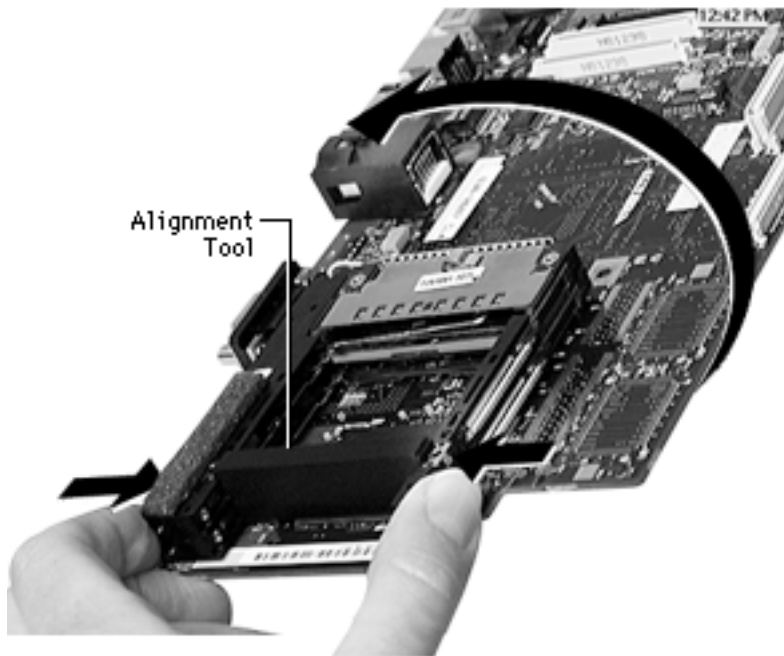
- 2 Turn the I/O logic board over.
- 3 Replace the two screws closest to the center of the I/O logic board. Tighten torque to 2.0 inch pounds.
- 4 Align the EMI ground strap so that the small hooks go into the corresponding holes in the I/O logic board. Replace only the lower screw, and tighten to 2.0 inch pounds.





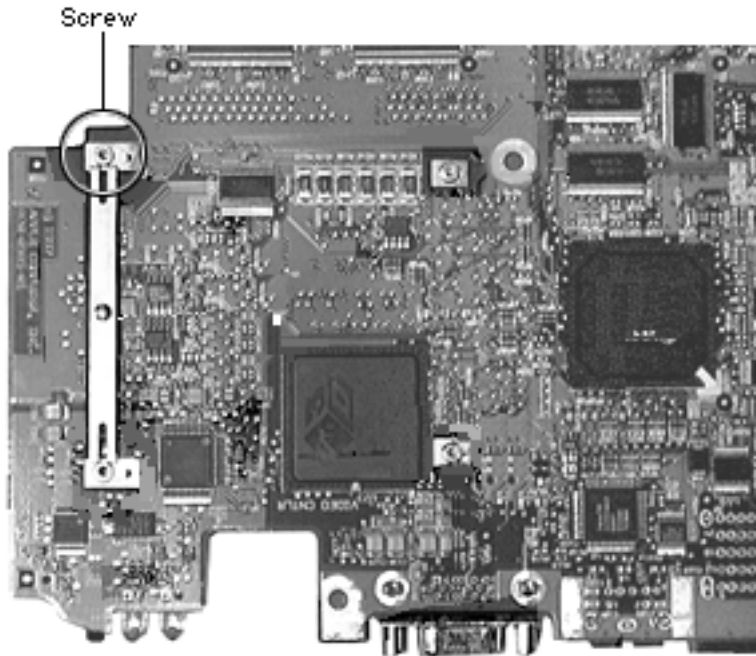
- 5 Turn the I/O logic board back over and insert the alignment tool between the inner sides of the PC Card cardcage.





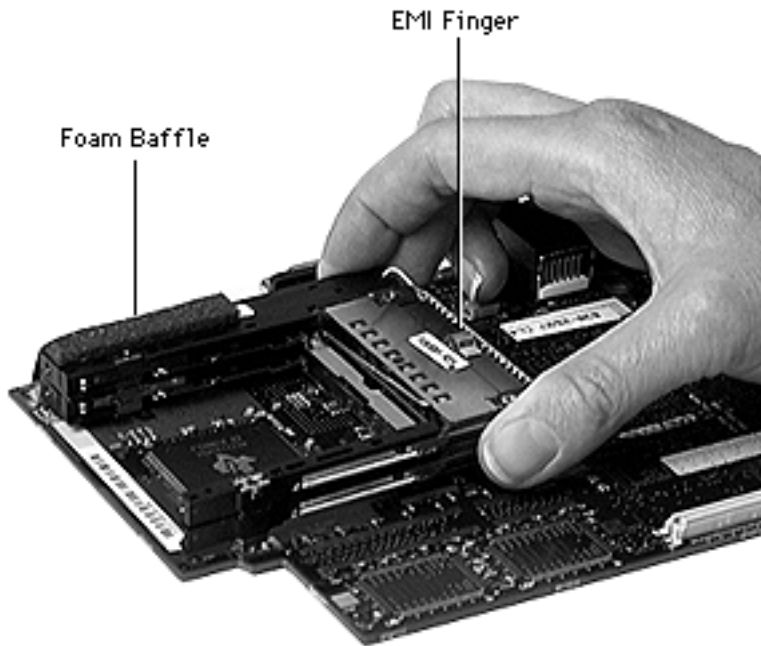
- 6 Pinching the ends of the cardcage together, turn the I/O logic board back over.





- 7 Insert the final (fourth) screw. Tighten torque to 2.0 inch pounds.
- 8 Remove the alignment tool by lifting it straight up.





- 9 Crease the foam baffle along the perforated line and attach it to the top back edge of the new PC Card cardcage.
- 10 Adhere the EMI finger to the center back of the new PC Card cardcage.





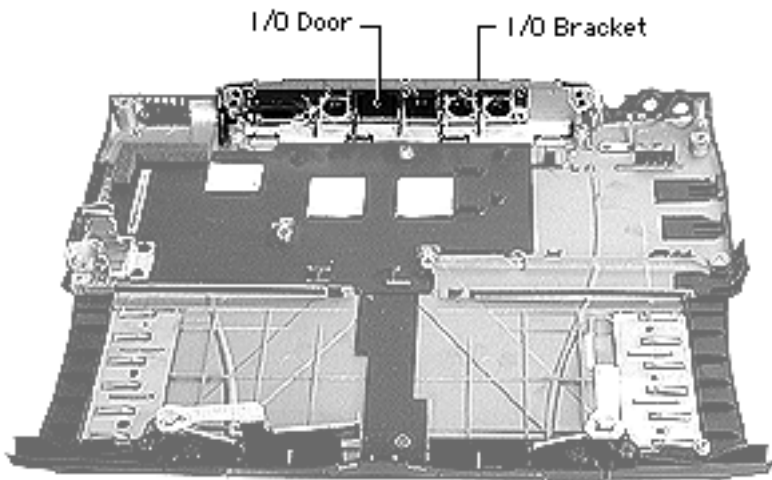
I/O Door

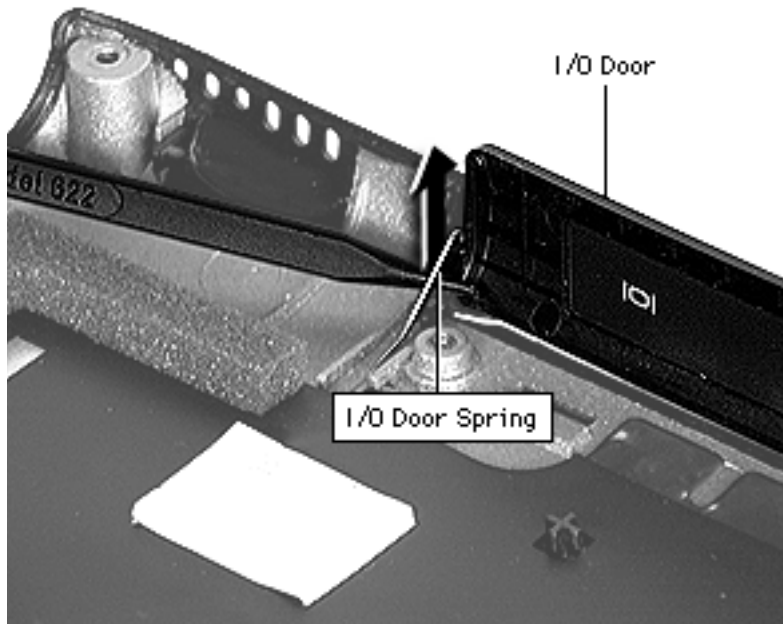
Before you begin, remove the following:

- Top case
- I/O logic board

Caution: To avoid tearing the I/O wall EMI shields (copper tape at each end of the I/O bracket) gently peel the tape away just until it clears the bracket. Refer to “I/O Wall EMI Shield Replacement” in Additional Procedures.

- 1 Tilt the I/O bracket forward and lift it up.





Replacement Note: Tilt the I/O bracket forward and align the four tabs to the slots at the bottom of the I/O bracket and then press the bracket back.

- 2 Lift up on the I/O door springs on both sides to release the I/O door.

Replacement Note: Check the back of the case to see if the door and the bottom of the case line up on the outside before continuing with reassembly.





With S Video Symbol



I/O Door Label for 13.3" or 14.1" Display

Without S Video Symbol



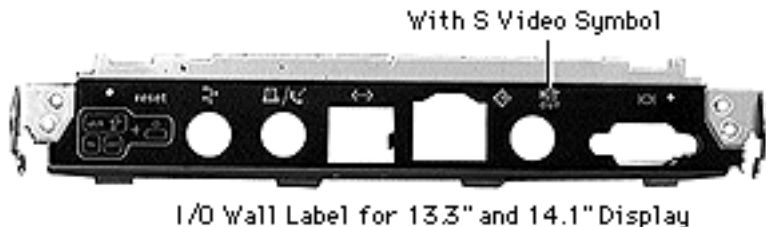
I/O Door Label for 12.1" Display

Replacement Note: Two types of replacement I/O doors are available:

- The I/O door for the 13.3" and 14.1" displays includes the S Video symbol.
- The I/O door for the 12.1" display does not include the S Video symbol.

Note the differences shown at left, then ensure you install the correct I/O door.





Replacement Note: Two types of replacement I/O brackets are available:

- The I/O bracket for the 13.3" and 14.1" displays includes the S Video symbol.
- The I/O bracket for the 12.1" display does not include the S Video symbol.

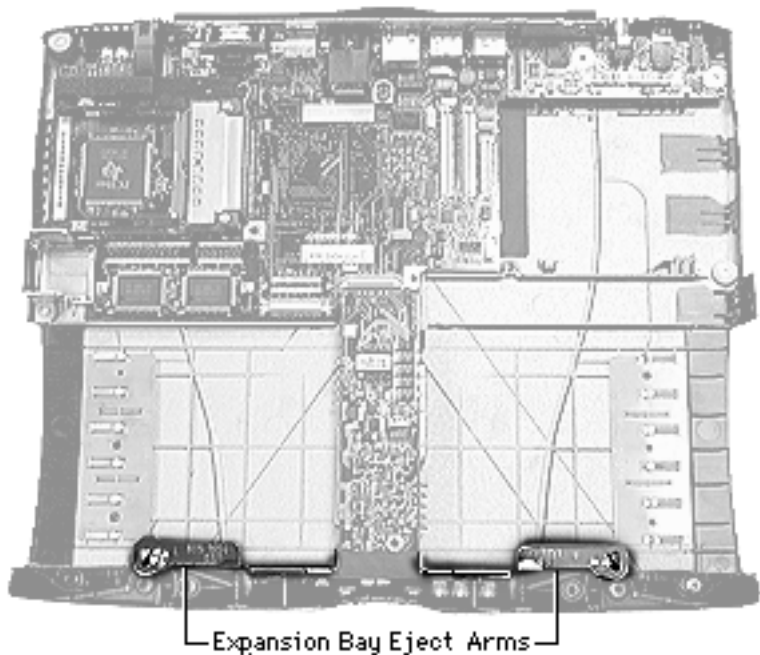
Note the differences shown at left, then ensure you install the correct I/O bracket.

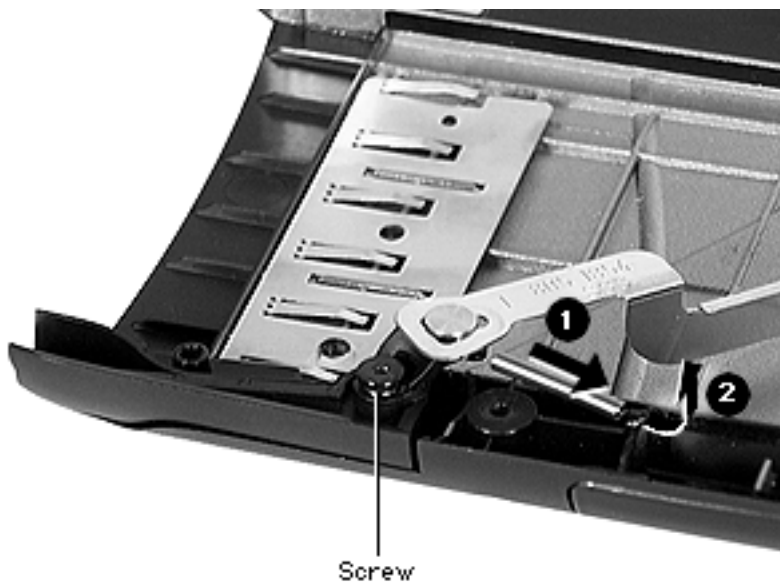




Expansion Bay Eject Arms

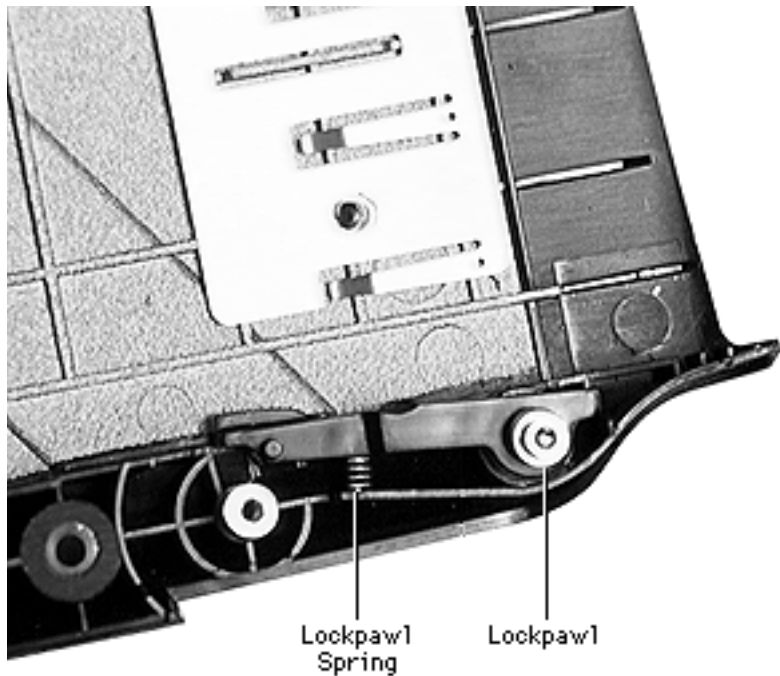
Before you begin, remove the top case.





- 1 Remove the black screw close to the front of the bottom case.
- 2 Pull the spring slightly and unhook it from its post.
- 3 Pull slightly forward on the eject arm and lift the assembly up.





Lockpawl

Before you begin, remove the following:

- top case
- expansion bay eject arm

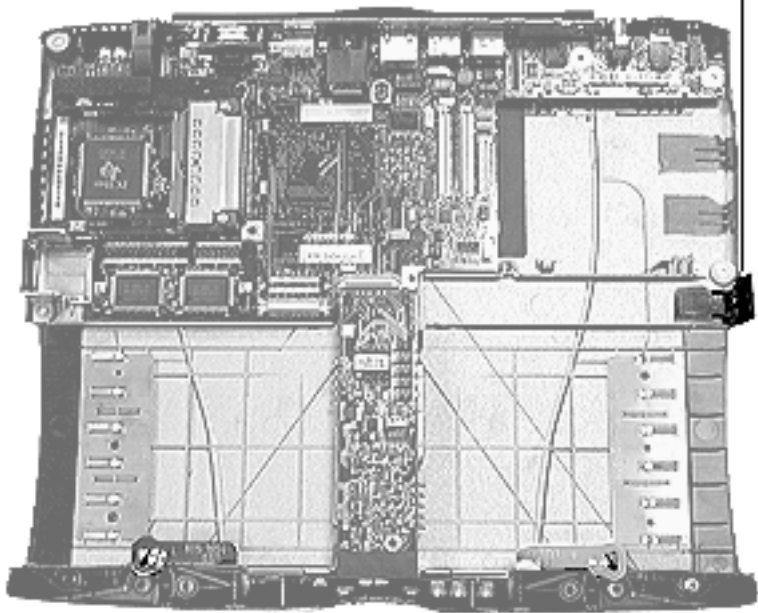
Pull straight up on the lockpawl, taking care that the spring does not fly up.

Replacement Note: Seat the spring in the hole in the lockpawl. Then push it in as you slide the lockpawl over its post.





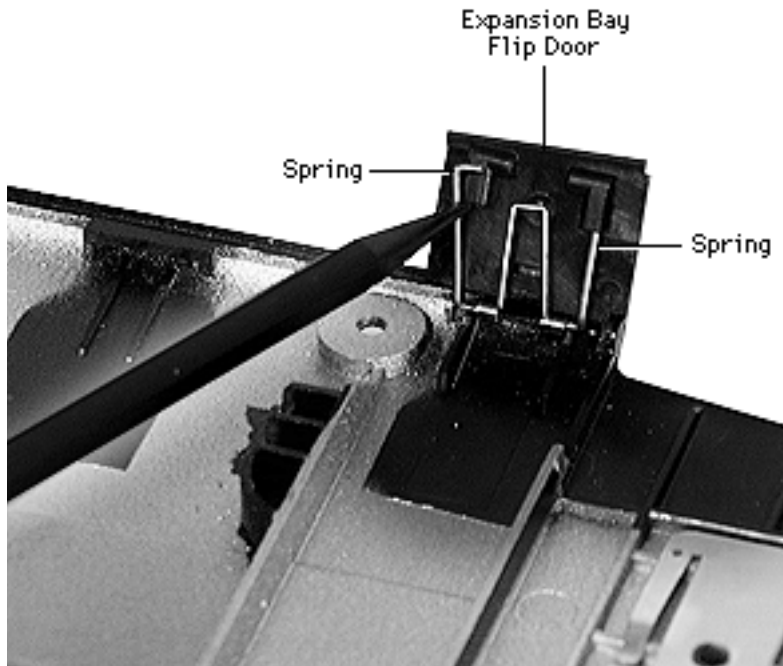
Expansion Bay Flip Door



Expansion Bay Flip Door

Before you begin, remove the top case.





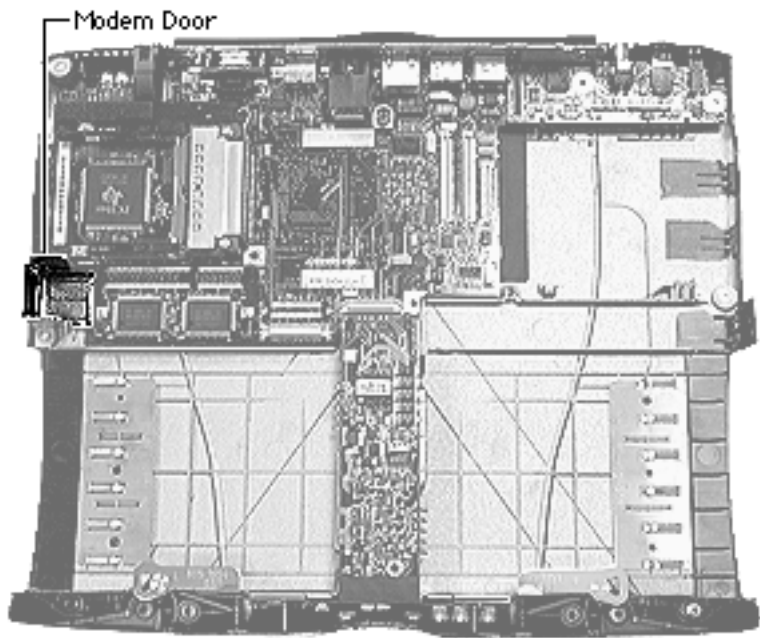
- 1 Use a pick to pull the springs on each side of the door to the side and out of their sockets.
- 2 Lift off the door.

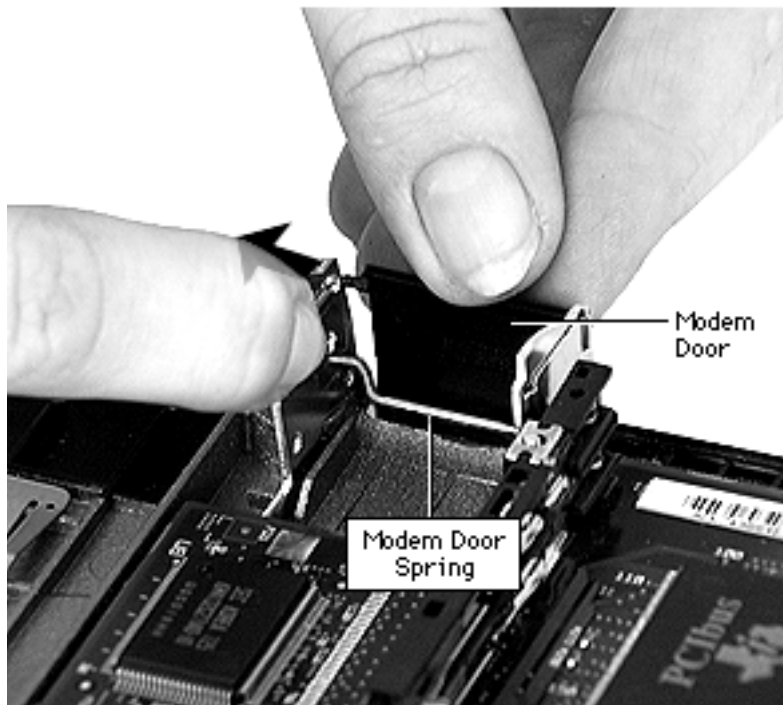




Modem Door

Before you begin, remove the top case.





- 1 Gently pull out on one side of the metal brackets and pull the door pins out of their holes.
- 2 Repeat the same procedure for the modem door spring.

Replacement Note: Seat the modem door spring first, then the modem door.





13.3" Display

Take apart procedures for the 13.3" display are detailed on the following pages. Other displays will vary, but all will have similar components. Use the procedures that follow as a guide when repairing other displays.





Display Housing

Before you begin, remove the display from the bottom case. (Refer to “Display” earlier in this chapter.)

- 1 Use a pick to pry the bumpers and screw covers off the display front.
- 2 Remove the screws behind the bumpers and screw covers.

Replacement Note: The two top screws are shorter than the two bottom screws.





- 3 Insert the flat end of a nylon tool in the seam between the front and back halves of the display, at the front curve near the latch.
- 4 Slide the tool along the seam and press down on the three tabs on each side of the display.

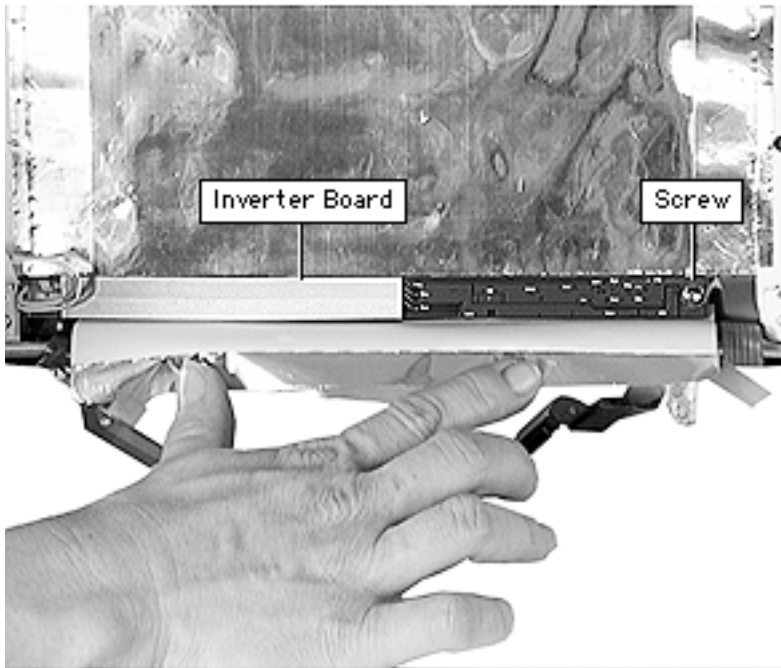




- 5 Lay the display screen-side up and lift the bezel from the bottom to separate the two halves of the display.

Caution: Separating the two halves from the top could cause the holding hooks along the top edge to break.



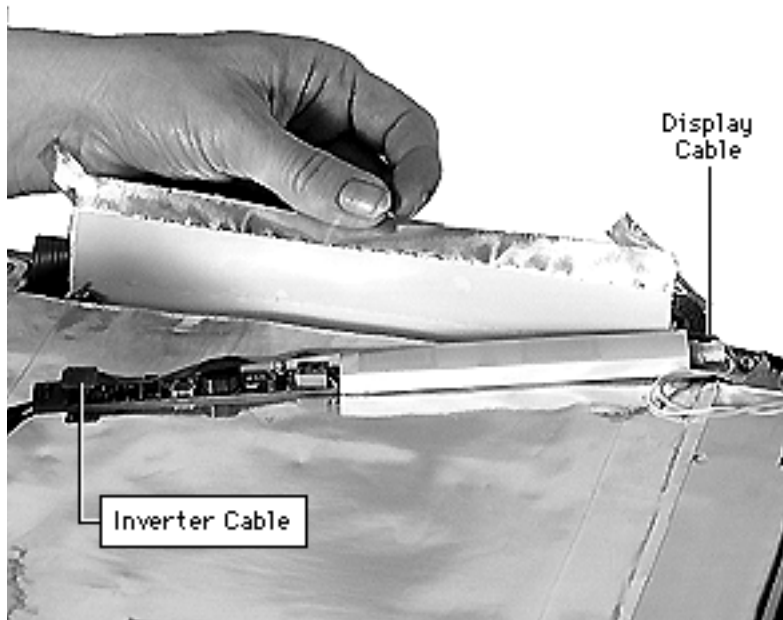


Inverter Board

Before you begin, remove the display housing.

- 1 Loosen the kapton tape holding the bottom flap of the EMI shield and fold the flap back.
- 2 Remove the screw on the right side of the board.





- 3 Lift up the right side of the board and disconnect the inverter cable underneath the inverter board.
- 4 Disconnect the display cable from the left side of the inverter board.

Replacement Note: Slide the left side of the inverter board under the black clip to secure it. The inverter cable lies under the inverter board.

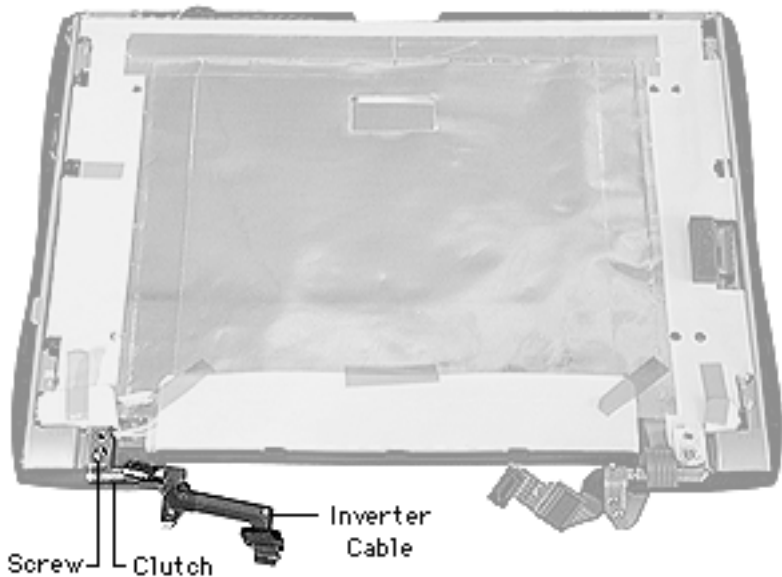


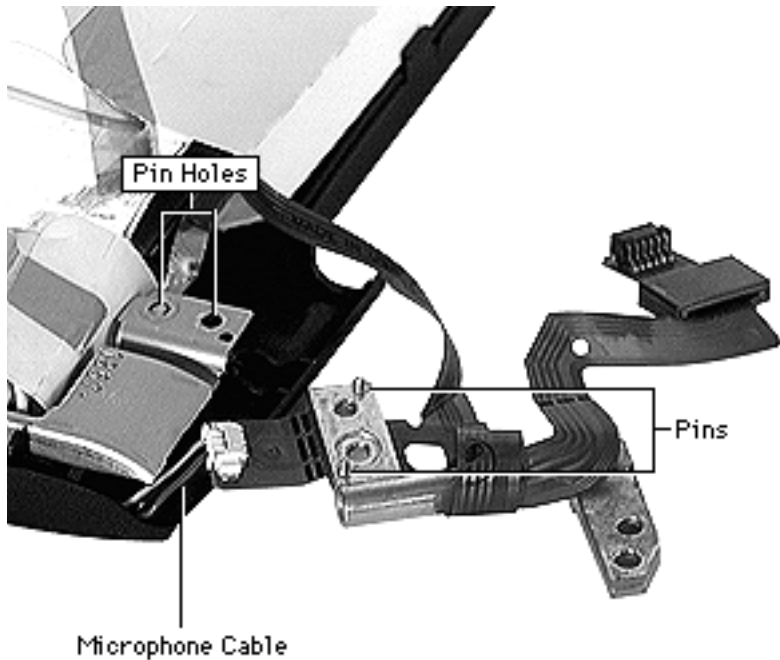


Inverter Cable and Clutch

Before you begin, remove the following:

- Display housing
- Inverter board



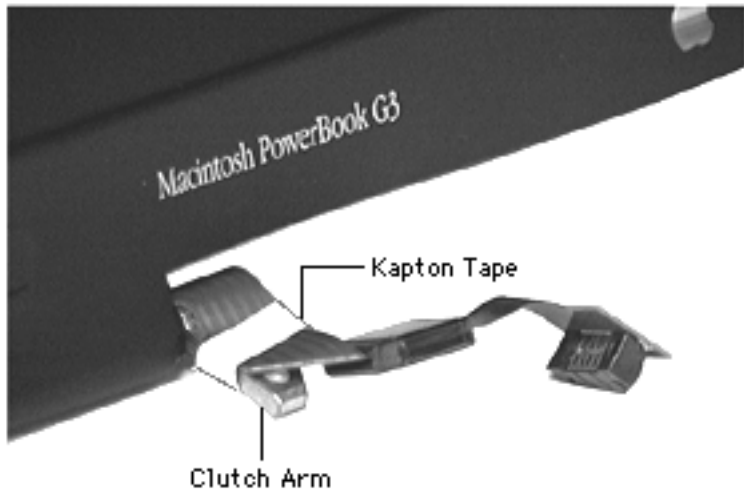


- 1 Remove the screw on the clutch and pull the clutch away from its bracket.
- 2 Disconnect the microphone cable.

Replacement Note: The data cable must be wrapped correctly around the clutch or it could get caught in the clutch cover. The cable runs under the clutch and wraps over the clutch from front to back twice.

Replacement Note: To properly install the clutch,

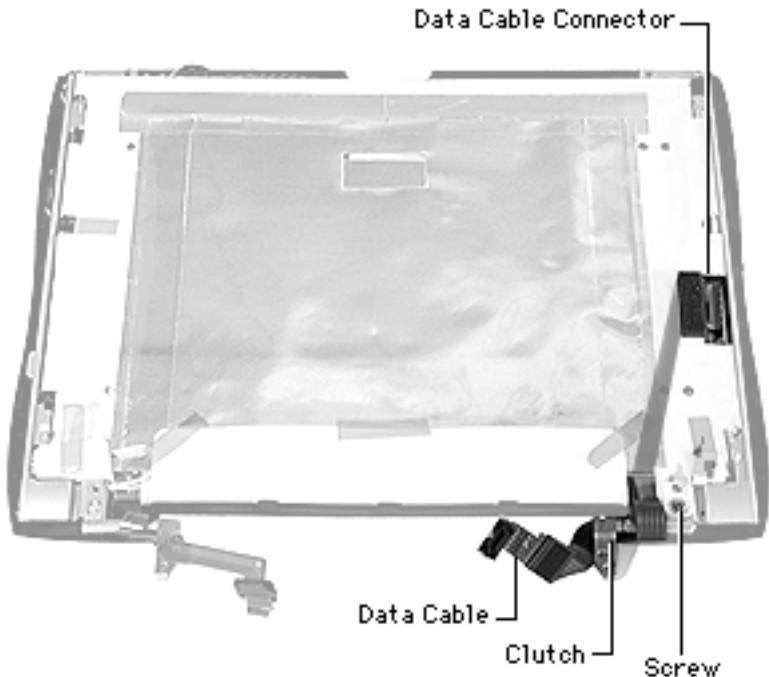




align the two pins to the bracket hole at the bottom and the notch at the top right of the bracket. There are two holes on the bracket. The screw belongs in the bottom hole.

Replacement Caution: To keep from pinching the cable during reassembly, wind the cable tightly and use a piece of Kapton tape to secure the cable to the clutch arm.





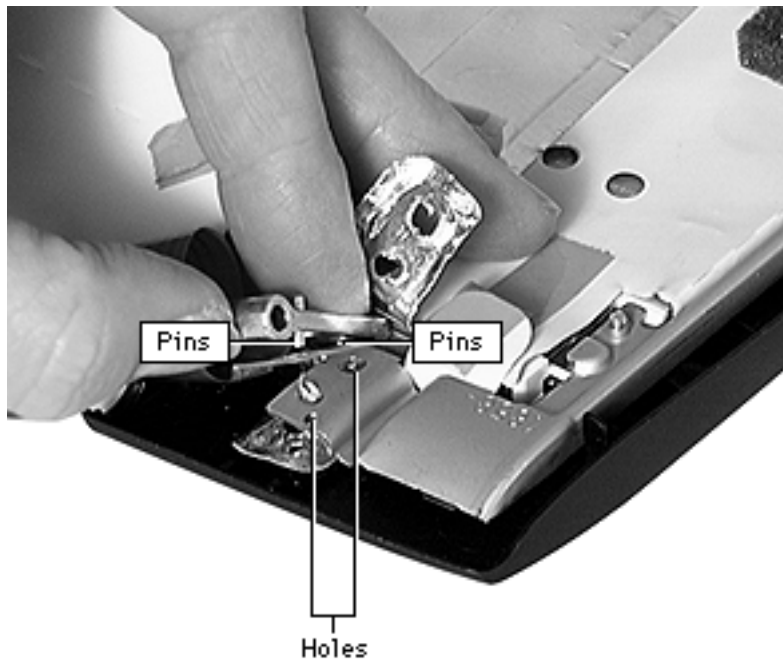
Data Cable and Clutch

Before you begin, remove the display housing.

- 1 Remove the screw on the clutch and pull the clutch away from its bracket.

Replacement Notes: The data cable must be wrapped correctly around the clutch or it could get caught in the clutch cover. The cable runs under the clutch and wraps once back over the clutch from front to back. If properly wound, the bottom



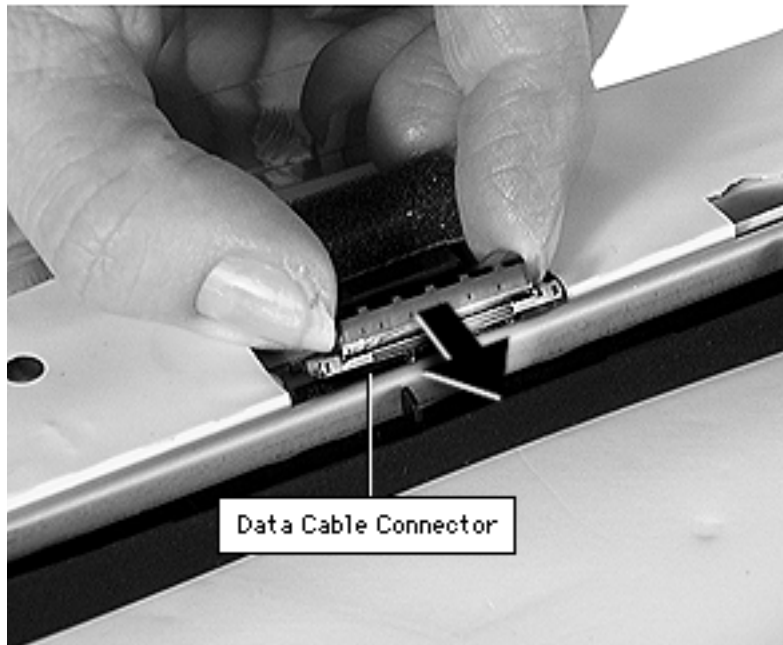


of the cable will point to the left.

To replace the clutch, align the two pins on the underside of the clutch to corresponding holes in the inverter cable. Then press the bracket and cable down, fitting the pins into the holes in the bracket.

There are two holes in the clutch. The screw belongs in the bottom hole.



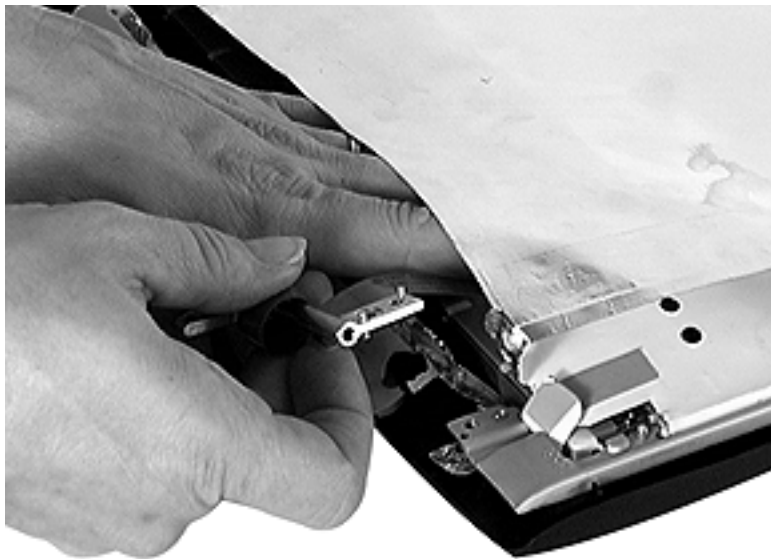


- 2 Use a nylon tool or pick to push the inverter cable connector on the side of the display to the right and gently pull the connector free.

Replacement Note: Use a pick or other tool to help you align the connector and push it into place.

- 3 Loosen the kapton tape holding the bottom flap of the EMI shield and lift the flap back.
- 4 Lift up the right corner of the EMI shield to see if





kapton tape holds the data cable in place. If it does, use the flat end of a nylon tool to loosen the tape.

- 5 Pull the data cable out through the bottom of the EMI shield, guiding it with a hand inside the EMI shield if necessary.



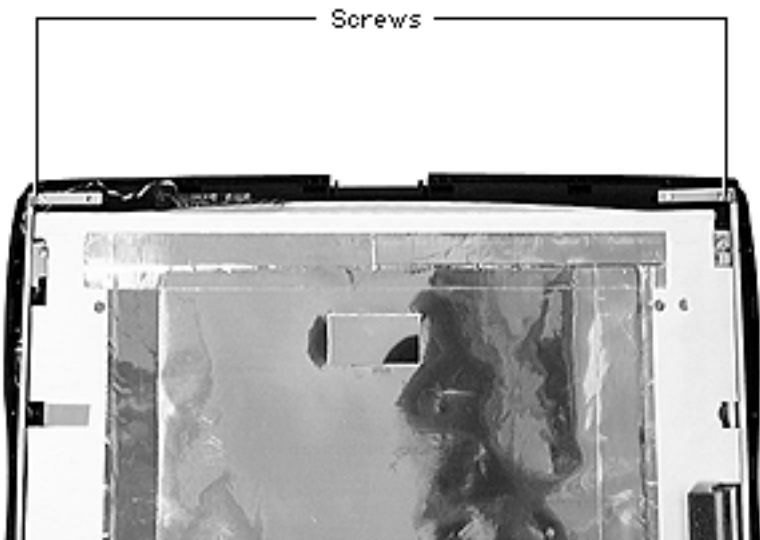


Bezel

Before you begin, remove the following:

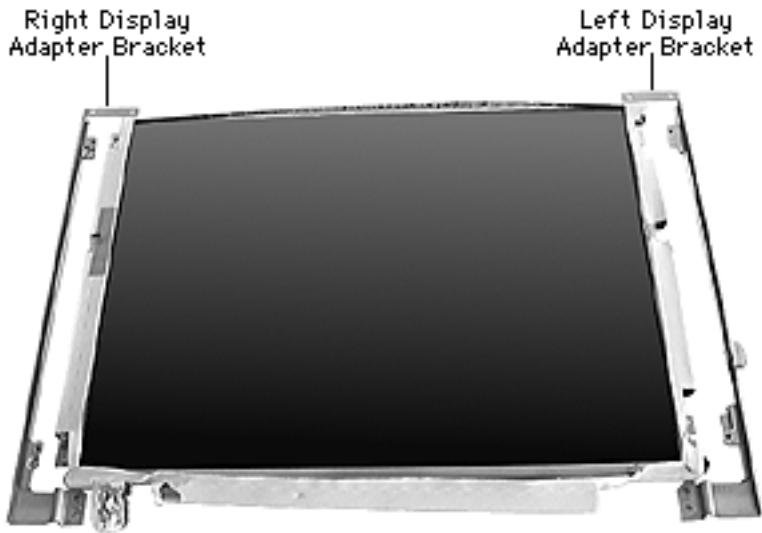
- Display housing
- Inverter board
- Inverter cable and clutch
- Data cable and clutch

- 1 Remove the screws at the top corners of the brackets.
- 2 Lift the display off the bezel.





Left and Right Display Adapter Brackets

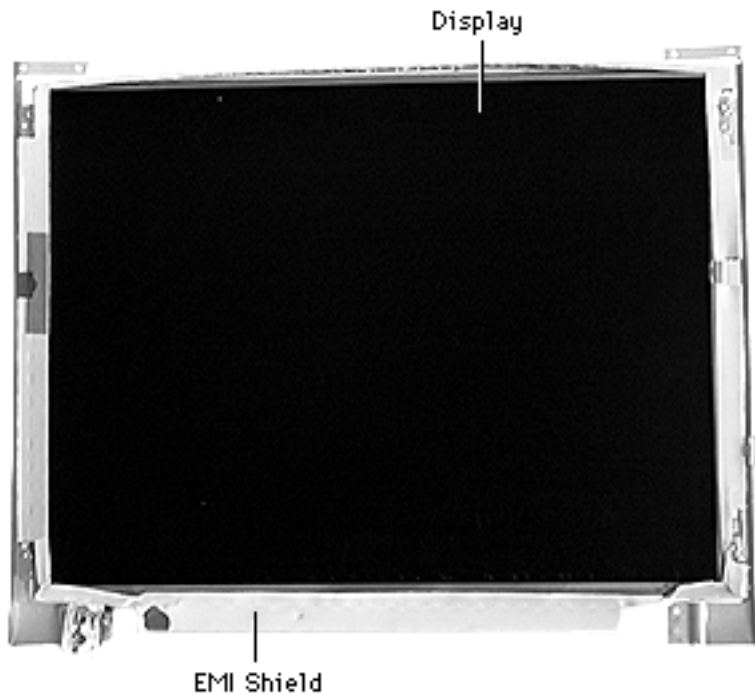


Before you begin, remove the following:

- Display housing
- Inverter board
- Inverter cable and clutch
- Data cable and clutch
- Bezel

- 1 Turn the display screen-side up.
- 2 Remove the two screws on each bracket.
- 3 Pull the brackets away from the display.





EMI Shield

Before you begin, remove the following:

- Display housing
- Inverter board
- Inverter cable and clutch
- Data cable and clutch
- Bezel
- Left and right brackets

- 1 Loosen any kapton tape holding the EMI shield in place.
- 2 Gently slide the display out of the EMI shield, taking care not to tear the shield.





Replacement Note: Before fastening the EMI shield with kapton tape, lay the bezel over it to make sure none of the EMI shield shows around the edges of the bezel.

Part Note: To avoid confusion while working on the display, these instructions were written for your left and right side as you work on the display. When ordering replacement brackets, note that the display brackets are named as though you were looking at the front of the display.





Additional Procedures

PowerBook G3 Series

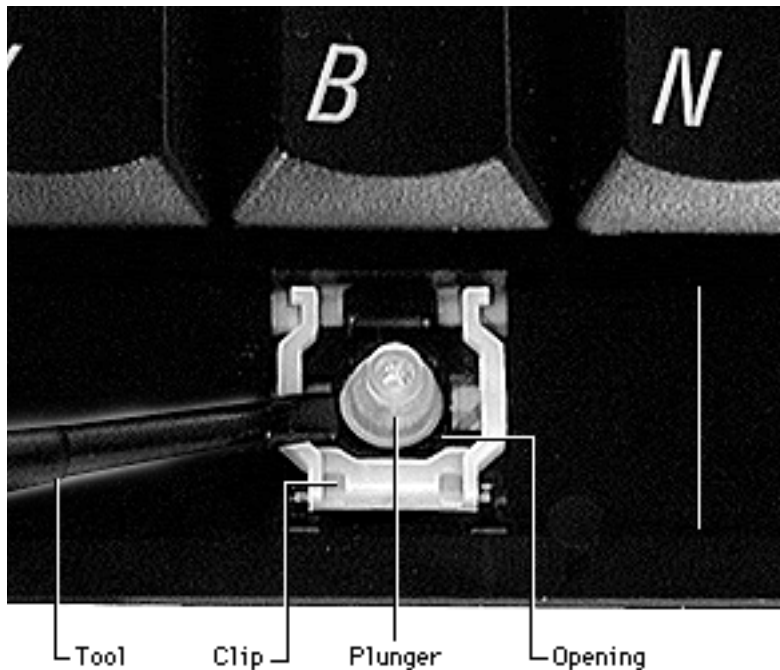


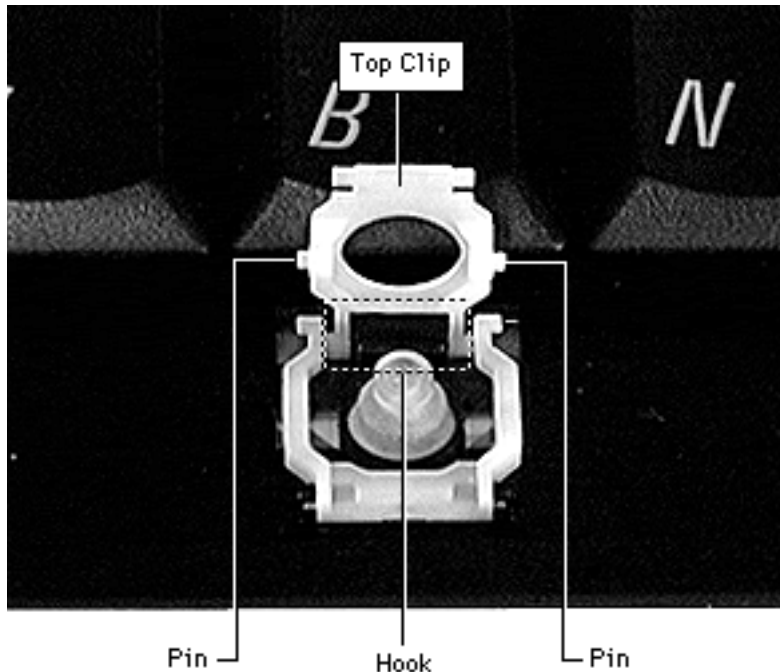


Keycap Replacement

Two types of keycaps are on the keyboard. The smaller number, letter, function, and arrow keys can be very easily snapped back in place if they come off. The remaining large keys (such as the spacebar) require more care to replace them.

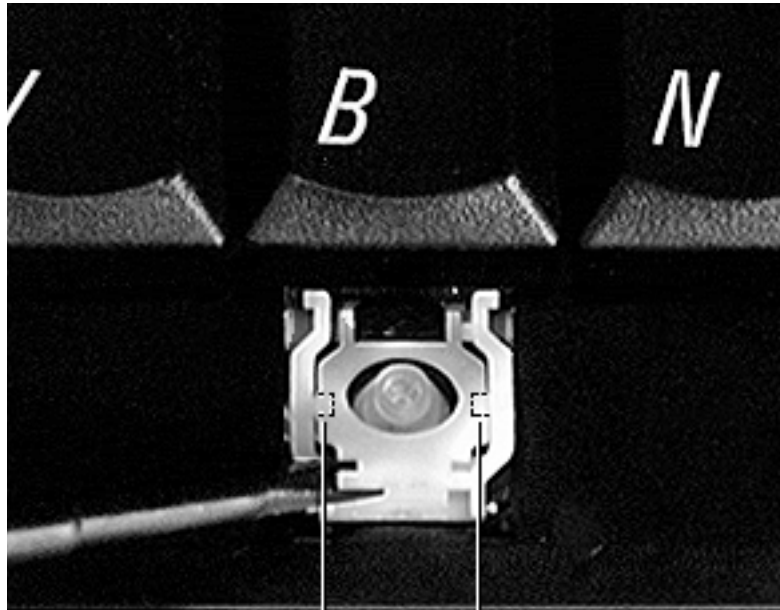
- 1 With the U-shaped clip in place, use a plastic tool to tuck the rubber plunger under the black circular opening.





- 2 Insert the top clip so that the side pins face downward.
- 3 Slide the top clip forward so that its slotted end is caught beneath the black hook on top of the keyswitch location.



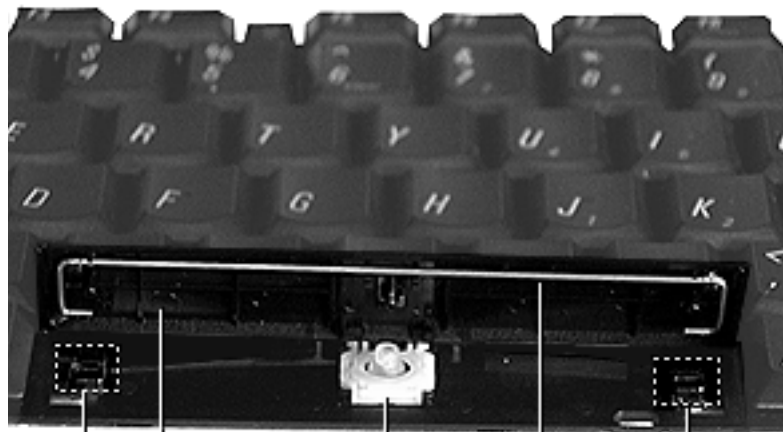


Locked Pin

Locked Pin

- 4 Press the top clip down carefully, taking care not to pop out the plunger.
- 5 Bow out the “arms” of the U-shaped clip to lock the pins inside the U-shaped clip. The locked clips should lie flat.





Hook

Keycap

Plunger
Mechanism

Metal Bar

Hook

- 6 Secure the ends of the keycap's metal bar to the hooks on the keyswitch location.
- 7 Align the keycap over the locked clips and press down.

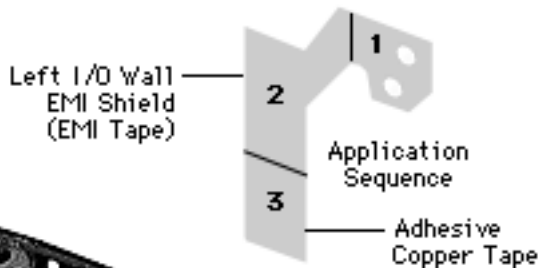




I/O Wall EMI Shield Replacement

If the copper EMI shield on either side of the I/O wall is torn, it must be replaced. Follow the procedures in this section to replace the I/O wall EMI shields.





Left I/O Wall EMI Shield

- 1 Align the holes in the top of the EMI shield to the holes in the bottom case.
- 2 Align the right edge of the EMI shield to the metal edge of the I/O wall.
- 3 Align the bottom edge of the EMI shield between the guides on the bottom case.
- 4 Rub the EMI shield with the flat edge of a nylon tool to ensure the

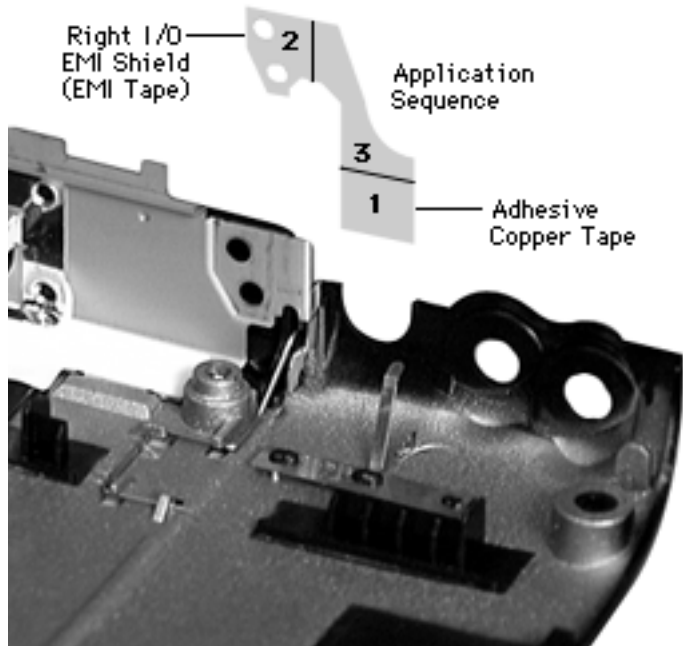




adhesive is secured to the bottom case.

Right I/O Wall EMI Shield

- 1 Align the bottom of the EMI shield above the metal heatstake on the bottom cover and between the guides.
- 2 Align the holes at the top of the EMI shield to the holes in the bottom case.
- 3 Align the left edge of the middle part of the EMI shield to the metal edge

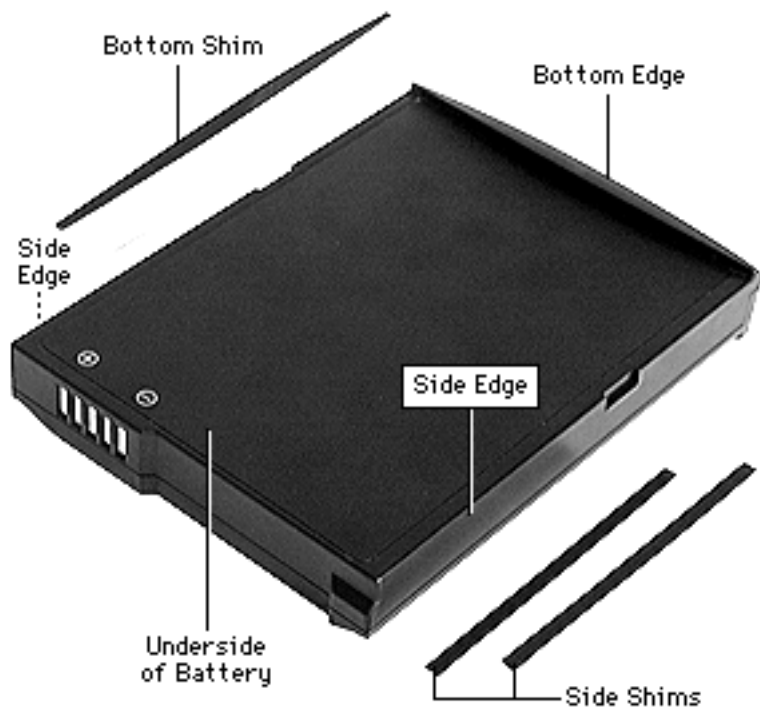




of the I/O wall.

- 4 Rub the EMI shield with the flat edge of a nylon tool to make sure the adhesive on the EMI shield is in firm contact with the bottom case.



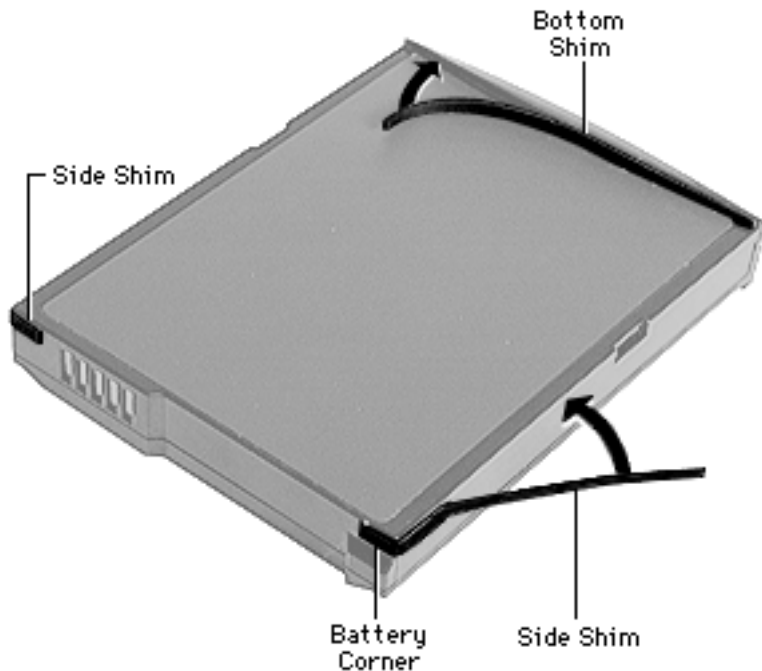


Battery Shim Replacement

To properly fit in the battery bay, the battery includes three shims (adhesive strips) located on the bottom edge and each side of the battery.

Caution: Never remove the shims unless they are damaged and you are replacing them with new shims.





- 1 Peel off the damaged shim and rub off any adhesive left on the battery.
- 2 Remove the new shim's paper backing.

Important: The side shims are scored at one end. Ensure that the scored end wraps securely around the corner of the battery.

- 3 Carefully align the shim so it is flush with the edge of the battery. Press the shim into place.



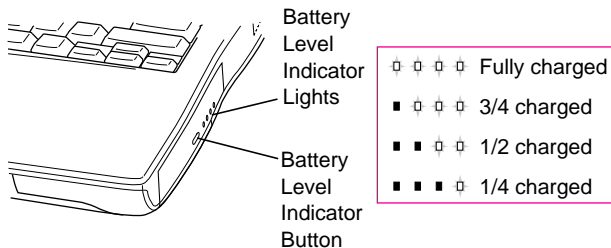


Battery Verification

The Control Strip on the desktop indicates the battery charge and the rate at which the battery is being used.

PowerBook G3 Series batteries have level indicator lights that show whether the battery is fully charged, three-fourths charged, one-half charged, or one-fourth charged.

Before the lights will report levels correctly, the battery





must be fully discharged and recharged to calibrate the battery. After this calibration, the lights will report charge levels properly.

To determine the actual battery charge, push in the level indicator button to activate the indicator lights.





Power Adapter Verification

No test is available for verifying the power adapter. Try using a new power adapter if the computer cannot run off the existing one.





Backup Battery Verification

The backup battery saves the PRAM and power management information on the logic board when the computer is shut down. To check that the backup battery is working, follow the procedures below.

- 1 Set the date, time, and timezone.
- 2 Perform a Shut Down from the Apple Menu or Special menu.
- 3 Remove the main battery and disconnect the power adapter for 10 minutes.
- 4 Connect the power adapter, insert the battery, and power on the computer.
- 5 If the date and time were lost, the backup battery may be dead or discharged.





- 6 To recharge the backup battery, leave the PowerBook plugged in for 48 hours. It is okay to use it while it is charging.
- 7 If the backup battery appears dead or will not charge, replace the backup battery.





PRAM and Power Manager Reset

Caution: Resetting parameter RAM (PRAM) erases the contents of the RAM disk, if there is one. Resetting PRAM also restores the default settings in most control panels. After you reset PRAM, be sure to check any custom settings for the desktop pattern, memory, network, AppleTalk, trackpad, power conservation, and so forth.

Resetting PRAM

Reset/zap PRAM from the shutdown state. Follow these steps to reset PRAM:

- 1 Power on the computer by pressing the Power key.
- 2 Immediately hold down the Option-Command-P-R keys.
- 3 Keep holding down these four keys until you have heard





the startup chime at least one additional time after the initial startup chime.

Resetting the Power Manager

Follow these steps to reset the power manager:

- 1 Make sure the unit is shut down, not in sleep mode.
- 2 Press Shift-Fn-Ctrl-Power keys at the same time.
- 3 Press the power key to turn the unit back on.





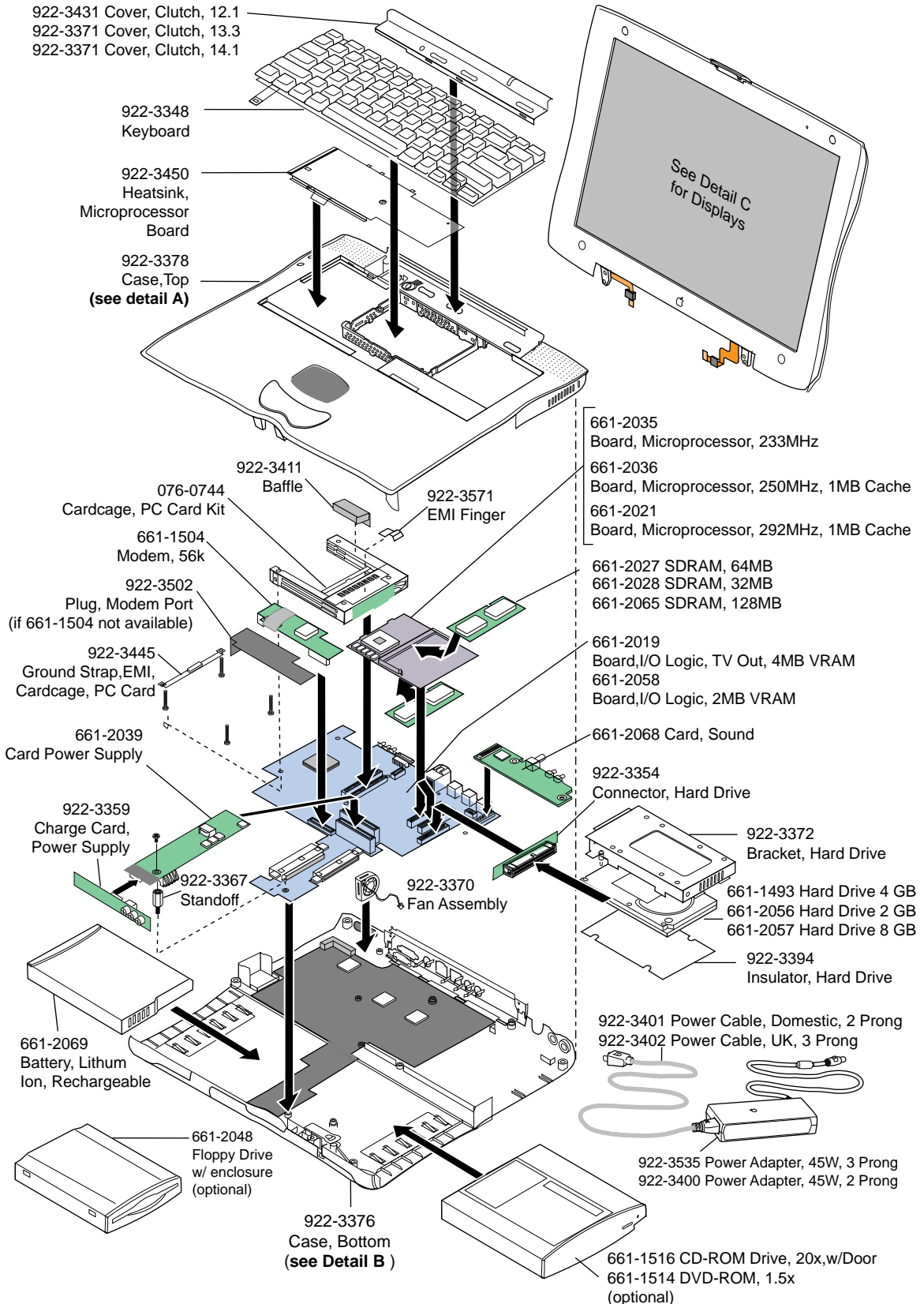
Exploded View

PowerBook G3 Series



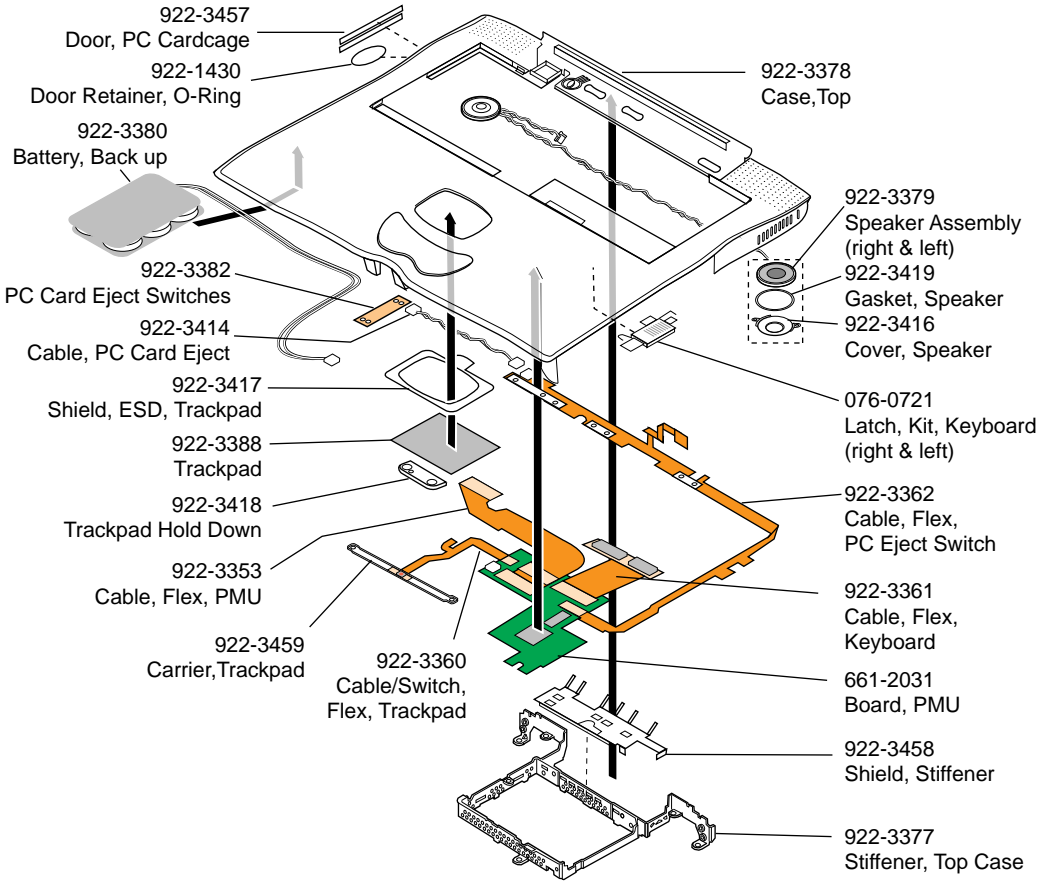


PowerBook G3 Series Main Exploded View

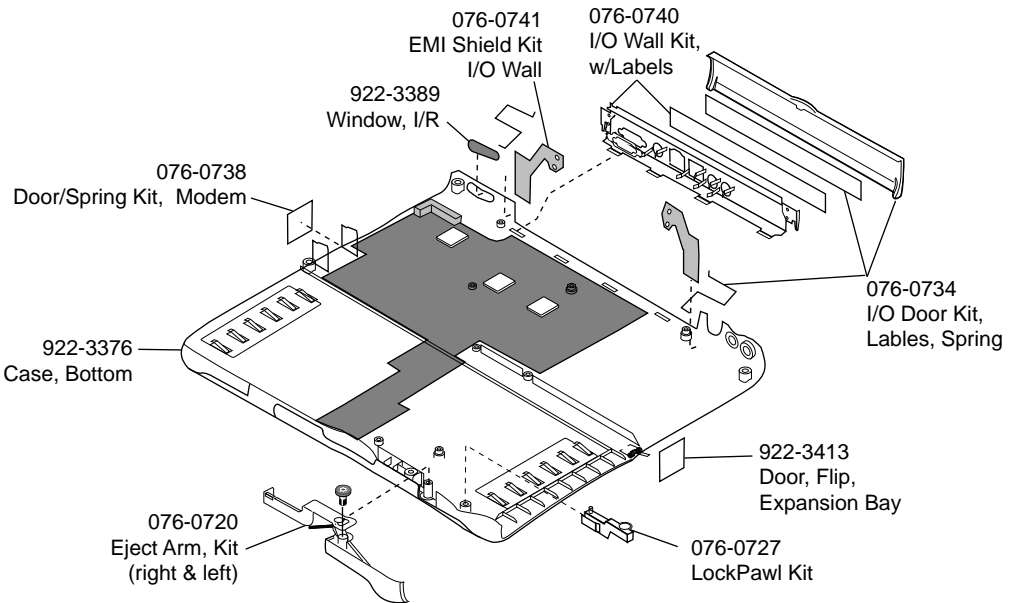




Top Case Assembly (Detail A) Exploded View



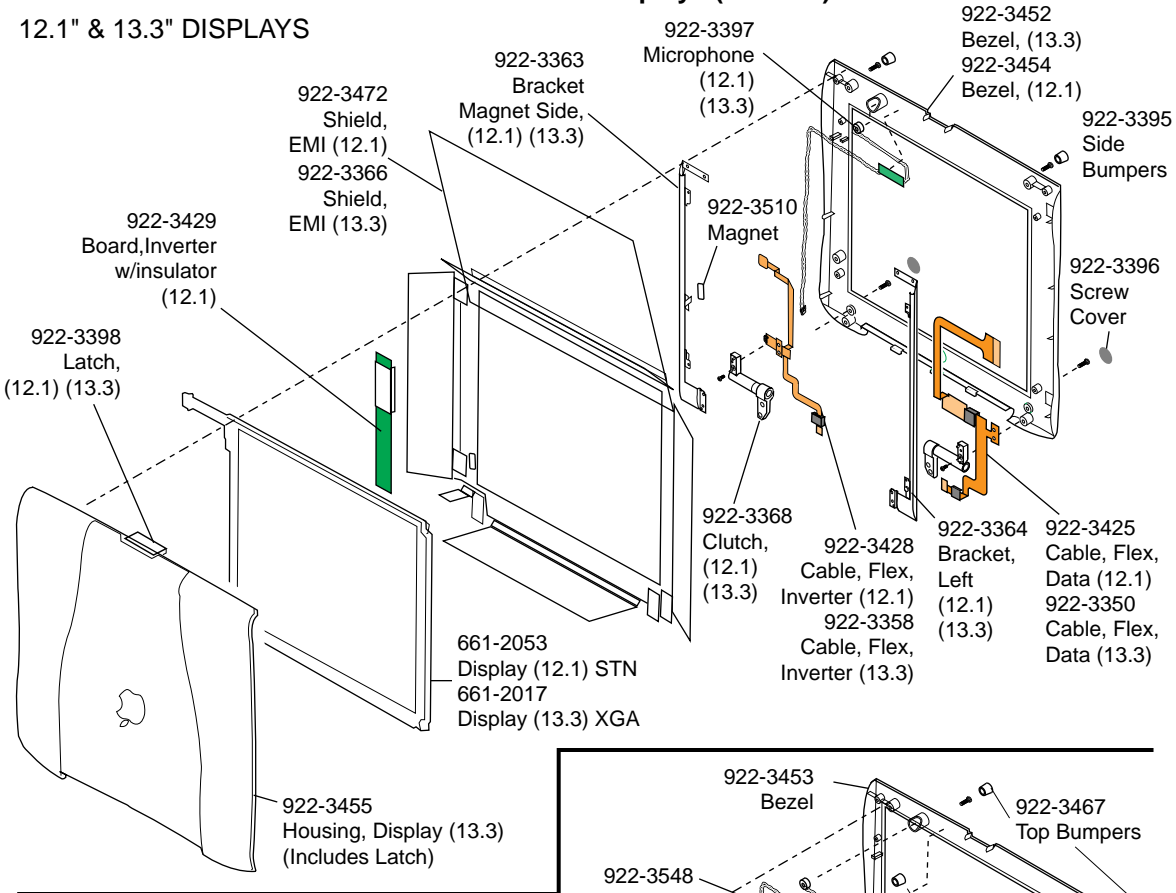
Bottom Case, Assembly (Detail B)





PowerBook G3 Series Displays (Detail C)

12.1" & 13.3" DISPLAYS



14.1" DISPLAY

