



PowerBook 100





Specifications

PowerBook 100





Processor

CPU	Motorola 68HC000, 16-bit CMOS microprocessor 15.6672 MHz
Addressing	32-bit internal registers 24-bit address bus 16-bit data bus





Memory

RAM	2 MB of 100 ns pseudostatic RAM (PSRAM) standard, expandable to 8 MB
ROM	256K (two 128K by 8-bit devices); 150 ns access time; addressing supports up to 4 MB
PRAM	128 bytes of parameter memory
VRAM	32K of pseudostatic video display memory
Clock/Calendar	CMOS custom chip with long-life lithium battery





Disk Storage

Floppy Drive (Optional)

External Macintosh HDI-20 1.4 MB drive
4.5 W startup power; 1.25 W random operation; 50 mW idle

20 MB Hard Drive

20 MB formatted capacity
Apple SCSI interface; 2.5 in. mechanism
23 msec average access time (maximum)
5.0 W startup power; 2.7 W random operation

40 MB Hard Drive

40 MB formatted capacity
Apple SCSI interface; 2.5 in. mechanism
<19 msec average access time (maximum)
5.0 W startup power; 2.25–2.5 W random operation; 1.3–1.5 W
idle





I/O Interfaces

Floppy Drive

One HDI-20 floppy drive port for external 1.4 MB drive

SCSI

One HDI-30 SCSI port; 1.5 MB/sec. transfer rate
Supports five devices maximum

Apple Desktop Bus

One Apple Desktop Bus (ADB) port; low-speed serial interface

Serial

Two RS-422 ports, one external and one internal 230.4 Kbaud
minimum
Asynchronous, synchronous, and AppleTalk protocols supported
Internal connector supports Macintosh PowerBook Fax/Data
modem





Sound

One sound output port for external audio amplifier





I/O Devices

Keyboard

Built-in keyboard; ADB interface

Dimensions: 10.6 in. length, 3.5 in. width, .5 in. depth

Pitch: .73 in. horizontal; .71 in. vertical

Trackball

Dual-button trackball; 25 mm diameter; ADB interface

Mouse (Optional)

Low-power mouse; ADB interface

Floppy Drive (Optional)

External Macintosh HDI-20 1.4 MB floppy drive





Sound and Video

Sound

Apple Sound Chip; one- or four-voice mono (one or two voices in stereo) with 4-bit digital-to-analog conversion using 22-kHz sampling rate

Video Display

9 in. (229 mm) diagonal screen
Film-compensated Super Twist Nematic (FSTN), backlit flat-panel display
640 by 400 pixels; 75 dpi





Electrical

Main Battery

Sealed lead-acid battery (7 V)
2.5 hrs. maximum capacity

Backup Batteries

Three 3.5 V lithium cells
Industry-standard CR-2430 batteries
110-220 V

Frequency

50-60 Hz

ADB Power Requirements

Maximum current draw for all ADB devices is 50 mA (maximum
of three ADB devices recommended)





Power Adapter

Input voltage: 85–270 VAC (100/240 nominal); 48–62 Hz (50/60 nominal)

Output voltage: 7.0–7.6 V (7.5 nominal); 5 mA–2 A (1.5 nominal)

Sound

One sound output port for external audio amplifier





Troubleshooting

PowerBook 100





General

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to your product. Because cures are listed on the charts in the order of most likely solution, try the first cure first. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try the next cure. (Note: If you have replaced a module, reinstall the original module before you proceed to the next cure.)

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

For additional assistance, contact Apple Technical Support.





Power Manager Reset

Reset the power manager if the battery and power adapter are proven good, but the computer will not power on. The computer will not reset after a system crash.

To reset the power manager in the PowerBook 100,

- Remove the AC adapter and the battery.
- Let the unit sit without power hooked up for 3-5 minutes.
- Simultaneously hold down the Control, Command, Option, and Power On keys for 5-10 seconds.
- Reinstall the battery and, if necessary, reconnect the AC adapter.
- Turn on the computer.





Symptom Charts

Startup

Error chord sounds during startup sequence

- 1 Connect AC adapter and restart computer in three or four minutes.
- 2 Replace memory expansion board (if installed). Refer to “Memory Expansion Card” in Upgrades.
- 3 Replace motherboard.
- 4 Replace daughterboard.

Screen displays checkerboard pattern; no startup chime

- 1 Reseat RAM expansion card.
- 2 Replace RAM expansion card.
- 3 Replace daughterboard.
- 4 Reseat display cable.





Power

Screen is blank;
computer does not
respond

- 1 Verify storage switch is in “on” position.
- 2 Reset computer.
- 3 Connect AC adapter and restart computer in three or four minutes.
- 4 Install known-good, charged main battery. If computer works, replace main battery.
- 5 Verify that keyboard cable is securely connected.
- 6 Reset the power manager.
- 7 Replace keyboard.
- 8 Replace daughterboard.
- 9 Replace motherboard.





Power (Continued)

After main battery is changed, some Control Panel settings are different

Replace backup batteries.

After all power sources are removed, some Control Panel settings are different

Condition is normal. Removing all power affects some Control Panel settings (such as time) that are stored in parameter RAM.





Power (Continued)

AC adapter is plugged in and connected, but battery DA does not indicate charger is connected

- 1 Verify that AC adapter is connected properly.
- 2 Try different main battery. If battery charges, replace main battery.
- 3 Verify that adapter is good.
- 4 Replace AC adapter.
- 5 Replace motherboard.

Low-power warning appears soon after computer starts

- 1 Attach AC adapter. Battery needs recharging.
- 2 Verify that peripherals display low-power icon.
- 3 Reduce use of floppy or hard drives, modem, sound, backlight, or other power-consuming devices or connect AC adapter.





Video

Screen suddenly goes blank

Condition is normal; computer has gone into sleep to conserve battery power.

Screen goes blank and computer shuts down every few minutes

Adjust sleep delays in Control Panel or connect AC adapter.

Pixel never comes on

Replace display.

Row of pixels never comes on

- 1 Replace interconnect cable.
- 2 Replace display.
- 3 Replace interconnect board.
- 4 Replace daughterboard.
- 5 Replace motherboard.
- 6 Return computer to Apple.





Video (Continued)

Pixel is always on

Replace display.

Partial or complete row of pixels is always on

- 1 Replace interconnect cable.
- 2 Replace display.
- 3 Replace interconnect board.
- 4 Replace daughterboard.
- 5 Replace motherboard.
- 6 Return computer to Apple.





Video (Continued)

Display is very light
or totally white

- 1 Adjust screen contrast and brightness settings.
- 2 Verify interconnect-cable-to-motherboard connection.
- 3 Replace inverter board.
- 4 Replace interconnect cable.
- 5 Replace interconnect board.
- 6 Replace display.
- 7 Replace daughterboard.
- 8 Replace motherboard.
- 9 Return computer to Apple.





Video (Continued)

No display but computer appears to operate correctly

- 1 Adjust screen contrast and brightness settings.
- 2 Verify interconnect-cable-to-motherboard connection.
- 3 Replace inverter board.
- 4 Replace interconnect cable.
- 5 Replace interconnect board.
- 6 Replace display.
- 7 Replace daughterboard.
- 8 Replace motherboard.
- 9 Return computer to Apple.

Display shows rainbow colors when viewed from extreme side angles

Condition is normal for PowerBook 100 screen.





Video (Continued)

Image on display is not uniform

Condition is normal for PowerBook 100 screen.

Display stopped working (or dimmed) but shows no problems now

If temperature (under 5° C or over 45° C) or light was extreme when problem occurred, condition is normal for PowerBook 100 screen.





Video (Continued)

Backlight doesn't operate

- 1 Adjust screen brightness setting.
- 2 Verify interconnect-cable-to-motherboard connection.
- 3 Replace inverter board.
- 4 Replace interconnect cable.
- 5 Replace interconnect board.
- 6 Replace display.
- 7 Replace daughterboard.
- 8 Replace motherboard.

Slight white line is always in middle of screen.

Condition is normal for PowerBook 100 screen.





Hard Drive

Internal hard drive does not operate

- 1 Verify that all external SCSI devices connected to computer are switched on.
- 2 Verify that hard drive flex cable is securely connected at both ends.
- 3 Use “HD SC Setup” to see if drive is visible to program. If it is visible, update SCSI driver.
- 4 Reinstall system software.
- 5 Replace hard drive flex cable.
- 6 Replace hard drive.
- 7 Replace motherboard.
- 8 Replace daughterboard.





Hard Drive (Continued)

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

Adjust sleep delays in Control Panel or connect AC adapter.





Peripheral

After you connect external SCSI device, computer no longer boots

- 1 Switch on external SCSI device before starting up computer.
- 2 Verify that Apple HDI-30 SCSI system cable is connected to computer and external SCSI device(s).
- 3 Verify that cable termination is correct.
- 4 Verify that no SCSI devices have same device address.
- 5 Replace motherboard.
- 6 Replace daughterboard.

Cursor does not move when you move trackball

- 1 Reset computer.
- 2 Verify trackball-assembly-to-motherboard connection.
- 3 Replace trackball assembly.
- 4 Replace daughterboard.
- 5 Replace motherboard.





Peripheral (Continued)

Cursor intermittently does not move or moves erratically

- 1 Clean trackball ball and internal rollers.
- 2 Replace trackball assembly.

Cursor does not move when you move mouse

- 1 Verify that mouse is connected to ADB port.
- 2 Reset computer.
- 3 Clean mouse ball and inside of mouse.
- 4 Replace mouse.
- 5 Replace motherboard.
- 6 Replace daughterboard.





Peripheral (Continued)

Cursor moves, but clicking button has no effect

- 1 Verify trackball-assembly-to-motherboard connection.
- 2 Replace trackball assembly.
- 3 Replace daughterboard.
- 4 Replace motherboard.

No response to any key on keyboard

- 1 Reset computer.
- 2 Connect AC adapter and restart computer in three or four minutes.
- 3 Install known-good, charged main battery. If computer works, replace main battery.
- 4 Verify that keyboard cable is securely connected to motherboard.
- 5 Replace keyboard.
- 6 Replace daughterboard.
- 7 Replace motherboard.





Peripheral (Continued)

Known-good
ImageWriter,
ImageWriter II, or LQ
does not print

- 1 Verify that system software is 7.0.1 or later.
- 2 Verify that Chooser setting is correct.
- 3 Verify that printer cable is securely attached.
- 4 Replace printer cable.
- 5 Replace motherboard.
- 6 Replace daughterboard.

Known-good
LaserWriter does not
print

- 1 Verify that system software is 7.0.1 or later.
- 2 Verify that Chooser setting is correct.
- 3 Verify that all printer cables are securely attached.
- 4 Connect computer to another printer. If printer works, refer to Networks and Communications manual.
- 5 Replace motherboard.
- 6 Replace daughterboard.





Peripheral (Continued)

PowerBook doesn't recognize serial devices, or garbage is transmitted and/or received

- 1 Verify that system software is 7.0.1 or later.
- 2 Verify that all cables are correct and securely attached.
- 3 Attach device(s) in chain to known-good computer.
- 4 Replace motherboard.
- 5 Replace daughterboard.





Internal Modem

Internal modem options do not appear in Control Panel window when modem is installed

- 1 Reseat modem card.
- 2 Replace modem card. Refer to “Fax/Data Modem” in Upgrades.
- 3 Replace motherboard.
- 4 Replace daughterboard.

Modem does not respond properly to AT command set instructions

- 1 Verify that baud rate and data format settings of communications application are compatible with internal modem and remote modem.
- 2 Verify that telephone cord is securely attached and working properly.
- 3 Verify that phone line produces dial tone. (Attach phone to line and listen.)
- 4 Replace modem card. Refer to “Fax/Data Modem” in Upgrades.





Internal Modem (Continued)

Strange mix of characters appears on screen

- 1 Verify that baud rate and data format settings of communications application are compatible with internal modem and remote modem.
- 2 Verify that telephone cord is securely attached and working properly.
- 3 Replace modem card. Refer to “Fax/Data Modem” in Upgrades.

Modem interferes with system sound

- 1 Replace modem card. Refer to “Fax/Data Modem” in Upgrades.
- 2 Replace motherboard.
- 3 Replace daughterboard.





Internal Modem (Continued)

Modem does not respond to incoming call

- 1 If system doesn't respond during sleep mode, verify that "Wake on Ring" option in CDEV is selected.
- 2 Verify that telephone cord is securely attached and working properly.
- 3 Replace modem card. Refer to "Fax/Data Modem" in Upgrades.
- 4 Replace motherboard.
- 5 Replace daughterboard.

Modem has no sound output

Replace modem card. Refer to "Fax/Data Modem" in Upgrades.





Internal Modem (Continued)

Modem connects but does not communicate with remote modem

- 1 Verify that remote modem needs error correction.
- 2 If remote modem does not need error correction, disable error correction by typing “&Q0” (see “Macintosh PowerBook Fax/Data Modem User’s Guide”).





Miscellaneous

Some applications seem to run slower after few seconds of operation

Computer is switching to system rest. If system rest is interfering with operation of application, connect computer to AC adapter.

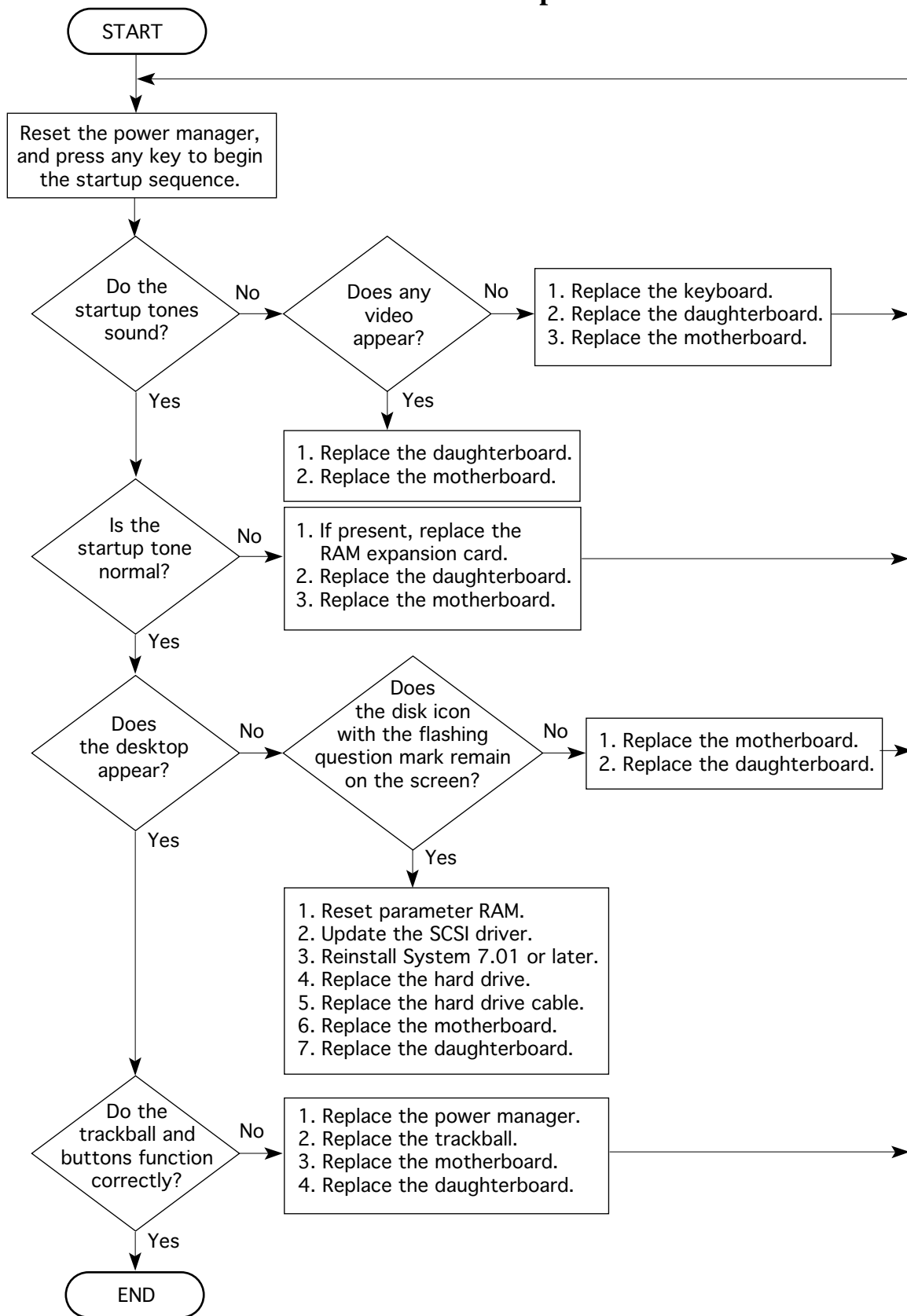
No sound from speaker

- 1 Verify that volume setting in Control Panel is 1 or above.
- 2 Verify that speaker is connected to motherboard.
- 3 Replace motherboard.





PowerBook 100 Startup Problems Flowchart





Take Apart

PowerBook 100





Guidelines

Caution: Use the Macintosh Shut Down command to shut down the PowerBook 100 before you begin Take Apart procedures. Otherwise, all RAM contents will be lost.

Caution: Review the ESD precautions in Bulletins/ Safety.

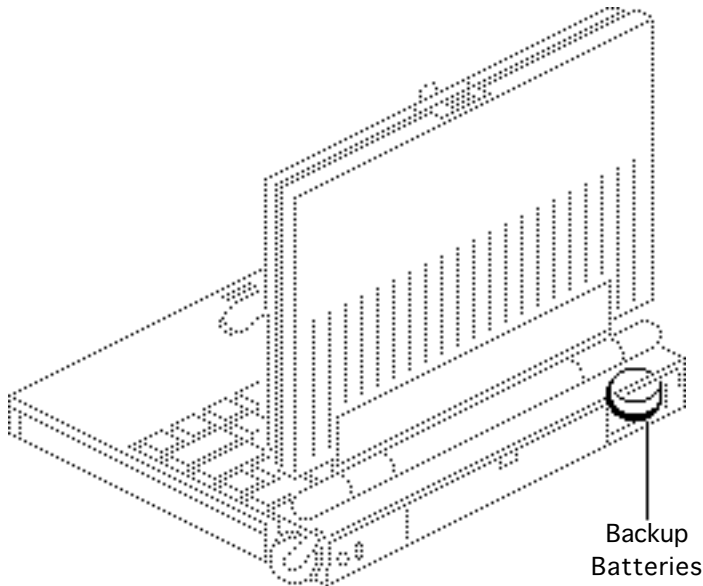


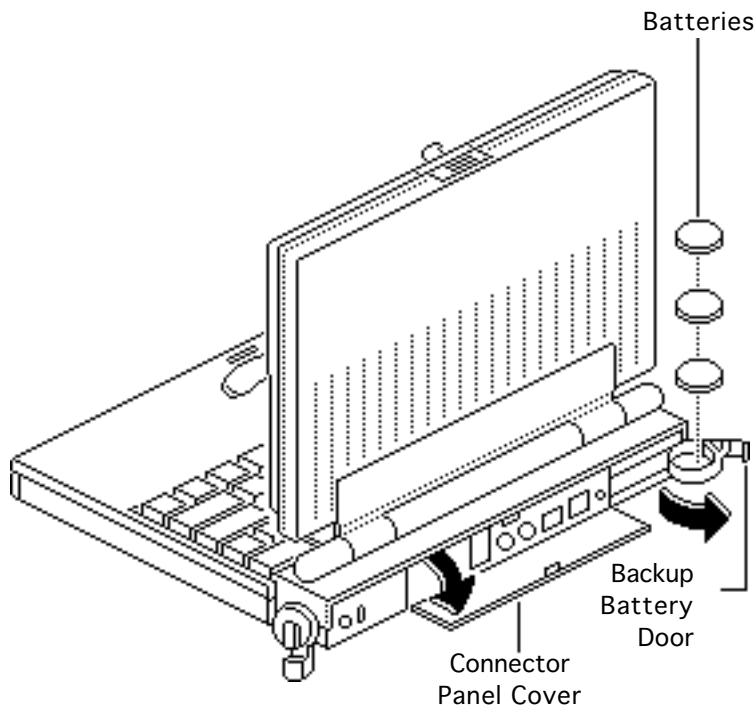


Backup Batteries

No preliminary steps are required before you begin this procedure.

Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.





If you are changing the backup batteries without performing other Take Apart procedures, make sure the main battery or the AC adapter is providing power to the computer. You can then remove the batteries without losing the contents of parameter RAM.

- 1 Place the elevation feet in the “down” position.
- 2 Press down on the latch and open the connector panel cover.





- 3 Pry open the backup battery door and ease out the batteries.

Replacement Note: Make sure the positive side of each replacement battery faces up.

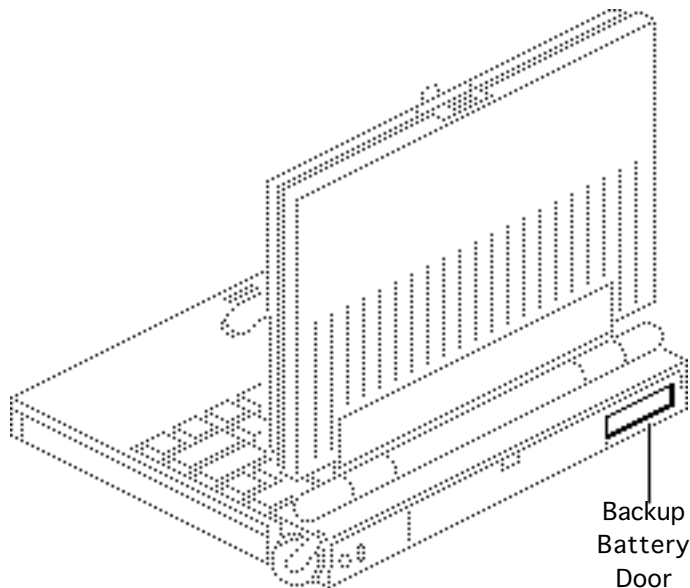


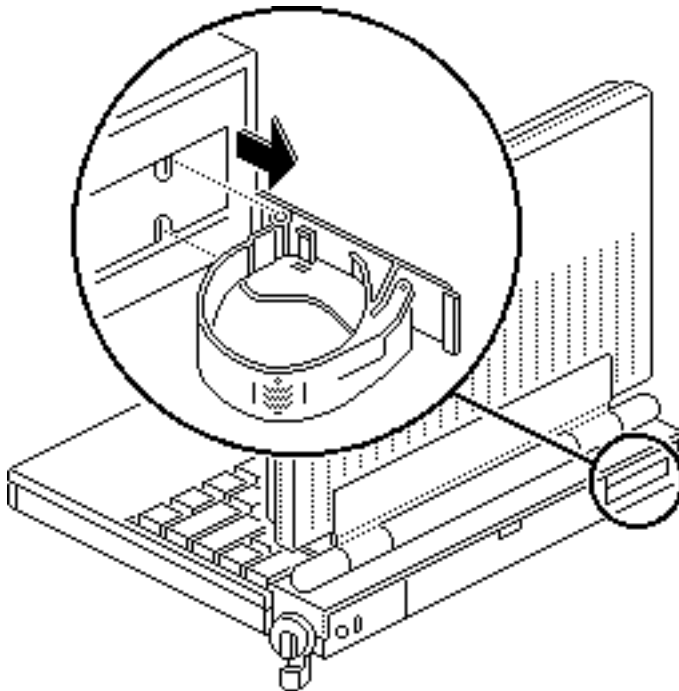


Backup Battery Door

Before you begin, remove the backup batteries.

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.

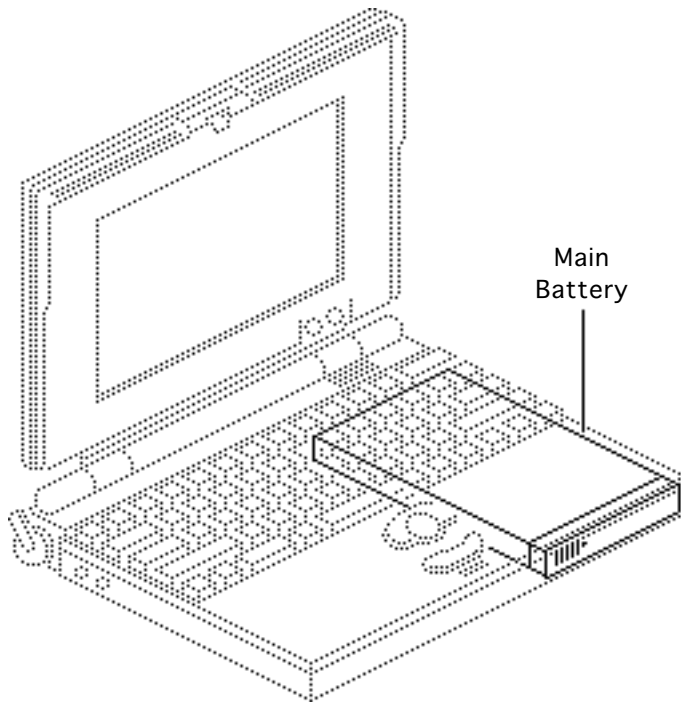




Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.

- 1 Open the backup battery door so that it is parallel to the right side of the bottom case.
- 2 Firmly pull the door until it unsnaps from the hinge posts in the bottom cover.



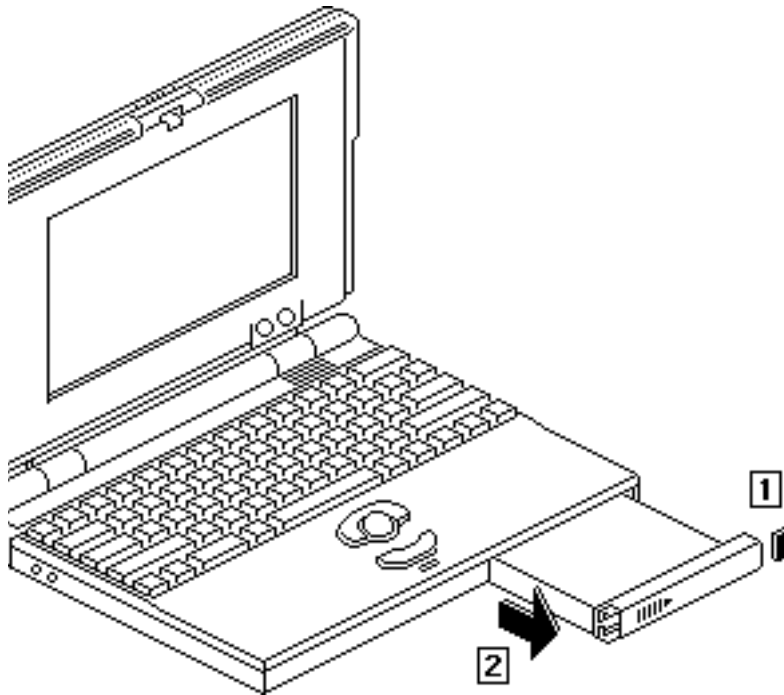


Main Battery

Before you begin,
disconnect power adapter.

⚠ Warning: Do not expose the main battery to an open flame, attempt to open the plastic case, or dispose of the battery with other trash. If you touch a damaged battery, immediately wash your hands and affected skin with water for at least five minutes. If you are replacing the battery, send the old one to Apple for proper disposal. Review



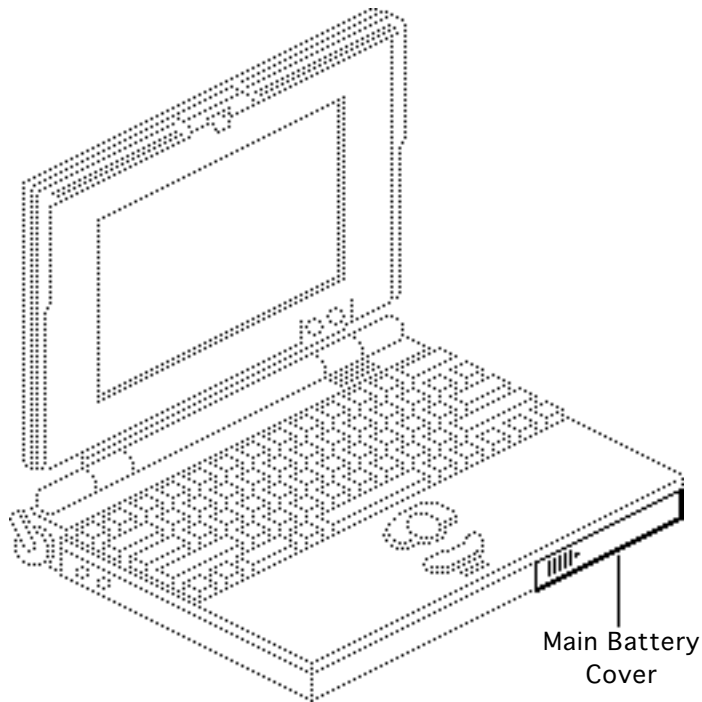


battery-handling and disposal instructions in Bulletins/Safety.

Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.

- 1 Place the elevation feet in the “up” position.
- 2 Slide the main battery cover to the right.
- 3 Pull on the right side of the cover and remove the battery.



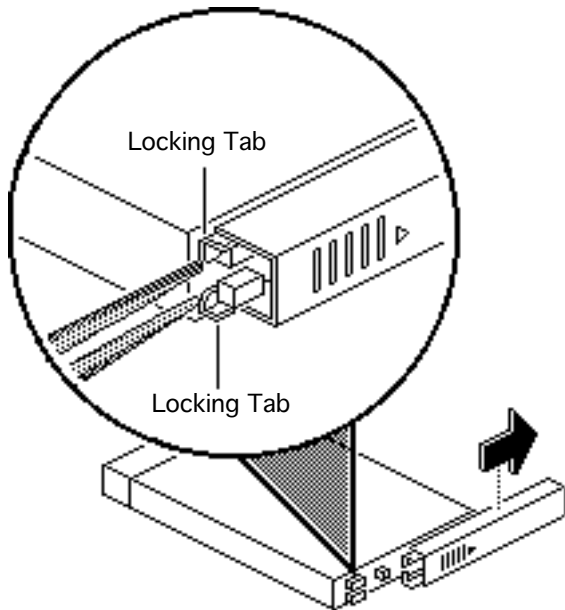


Main Battery Cover

Before you begin, remove the main battery.

⚠ Warning: Do not expose the main battery to an open flame, attempt to open the plastic case, or dispose of the battery with other trash. If you touch a damaged battery, immediately wash your hands and affected skin with water for at least five minutes. If you are replacing the battery, send the old one to Apple for





proper disposal. Review battery-handling and disposal instructions in Bulletins/Safety.

Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.

Using needlenose pliers, pry the battery cover locking tabs apart and slide the cover off the main battery.

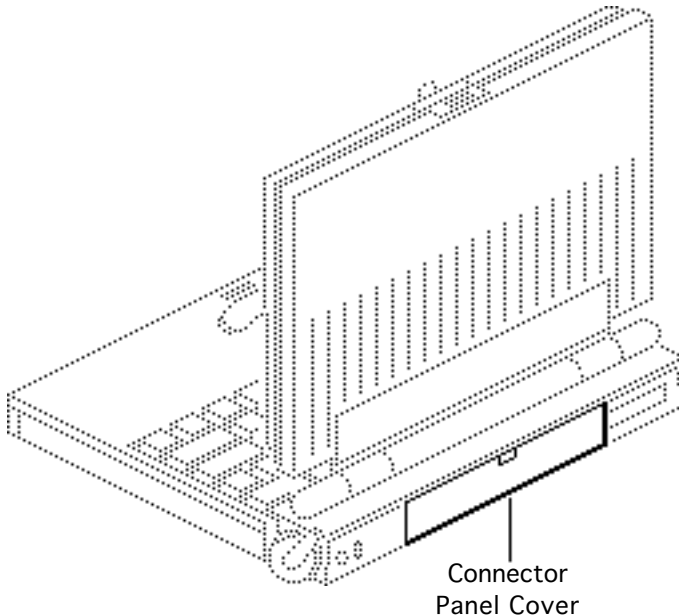


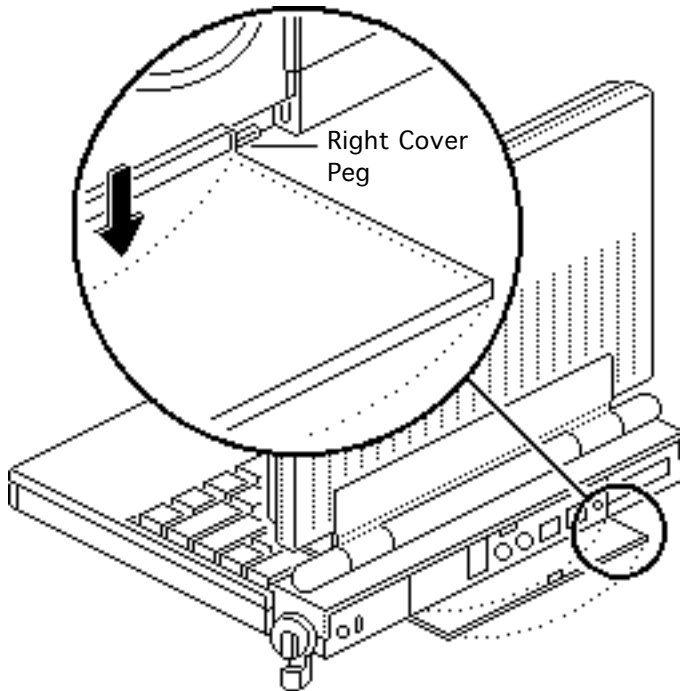


Connector Panel Cover

No preliminary steps are required before you begin this procedure.

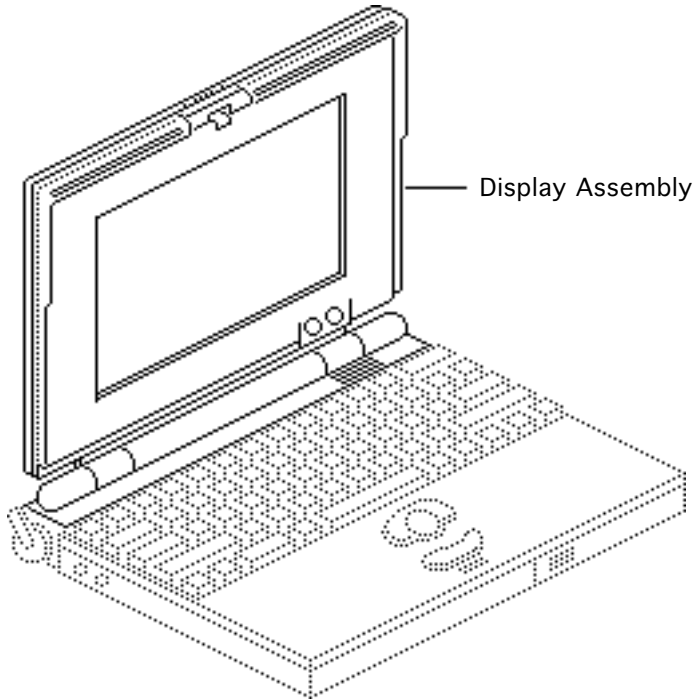
Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.





- 1 Place the elevation feet in the “down” position.
- 2 Open the connector panel cover.
- 3 Hold the cover against the left cover peg, gently bend the center of the cover away from the computer, and free the right cover peg.
- 4 Remove the panel cover from the computer.





Display Assembly

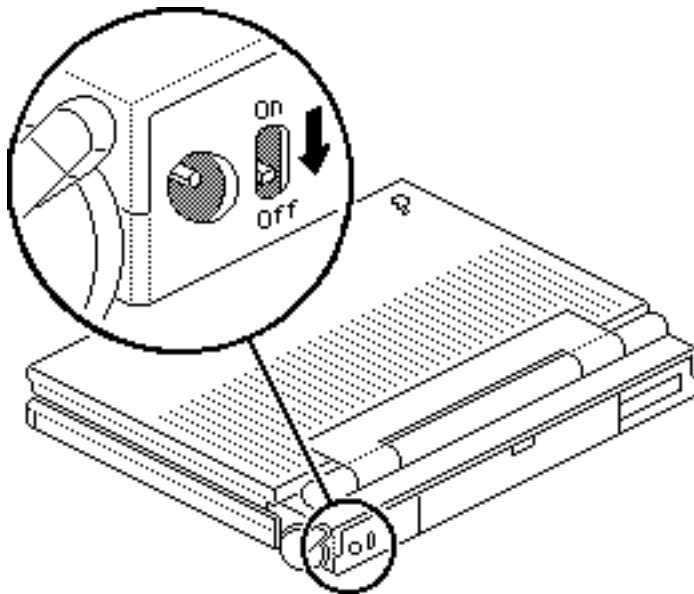
Before you begin, remove the following:

- Backup batteries
- Main battery

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/ Safety.

Caution: Review the ESD

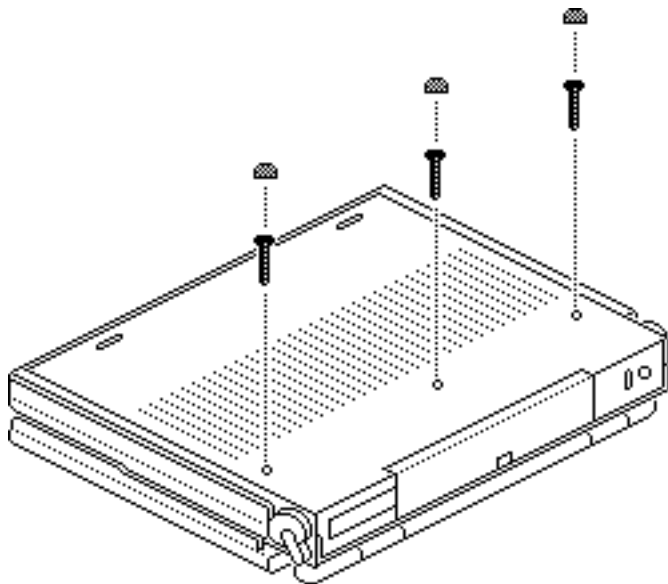




precautions in Bulletins/
Safety.

- 1 Close the computer so that it locks.
- 2 Using a Phillips screwdriver or pen, move the power switch to the “off” position.

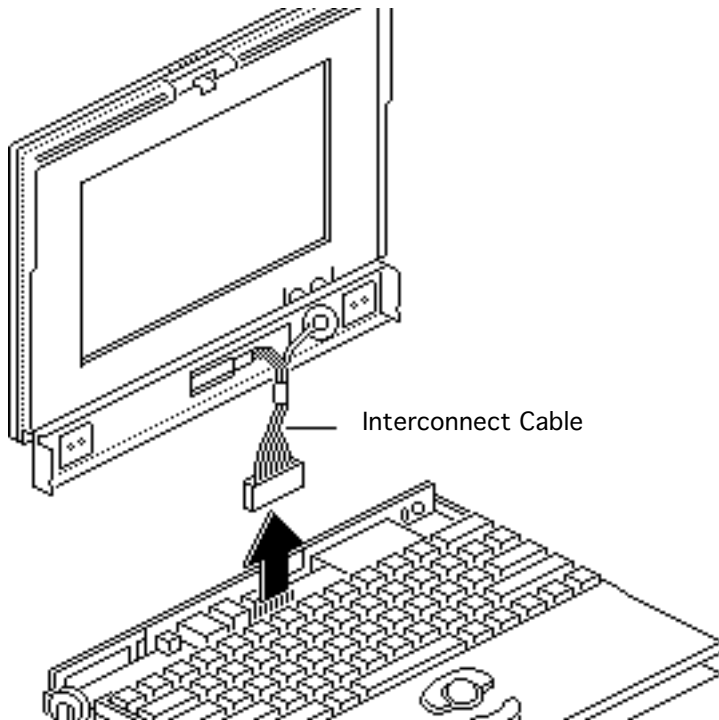




Caution: Do not proceed if the backup batteries, main battery, or AC adapter are still connected to the computer.

- 3 With the computer upside down, pry off the three rubber covers and remove the three case screws.



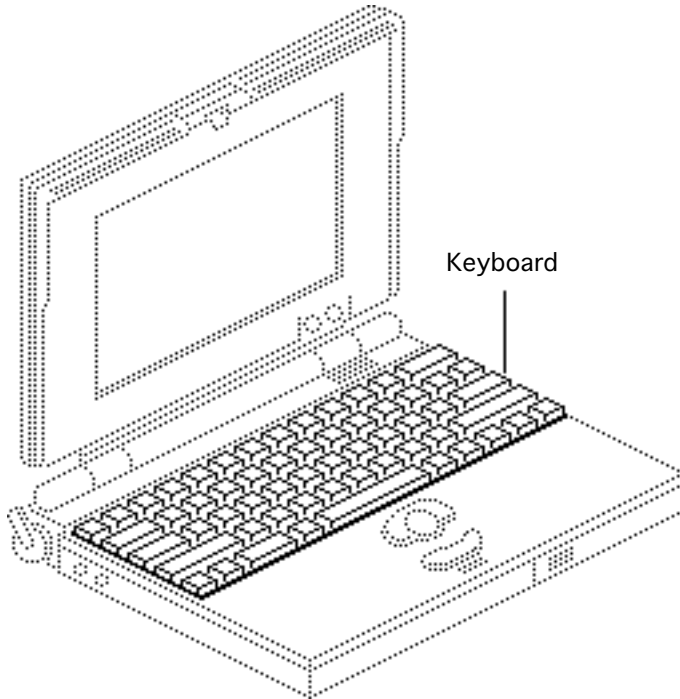


- 4 With the computer right-side up, place the elevation feet in the “down” position.

Note: Keep a firm grip on the display assembly while you complete the following steps.

- 5 Unlatch the display assembly and open the computer.
- 6 Disconnect the interconnect cable from the motherboard and remove the display assembly.





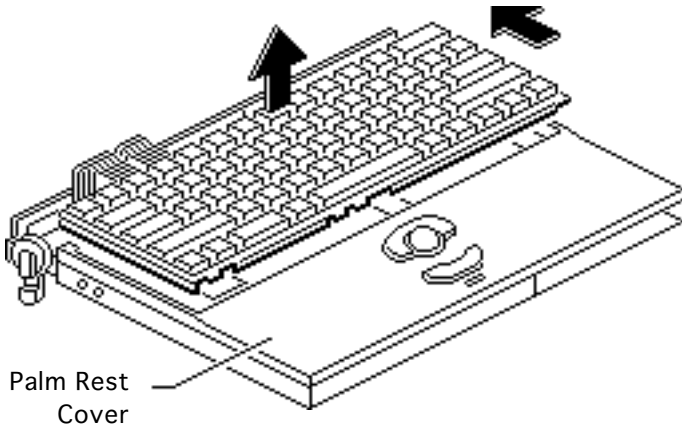
Keyboard

Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.

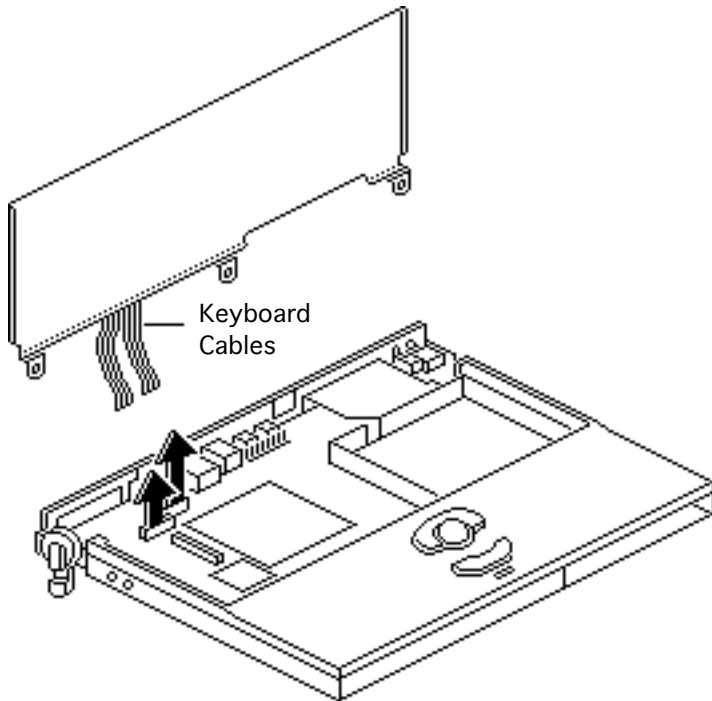




Caution: Review the ESD precautions in Bulletins/ Safety.

- 1 **Caution:** Be careful not to stress the keyboard cables or the connectors on the motherboard.
- 2 Lift the back side of the keyboard as high as the keyboard cables will allow.
- 3 Slide the keyboard toward the rear of the computer until the front edge of the keyboard clears the palm rest cover.





- 4 **Note:** You may have to pry up one side of the connector at a time.

Holding the keyboard vertically, gently unlock the connectors and remove the two keyboard cables.

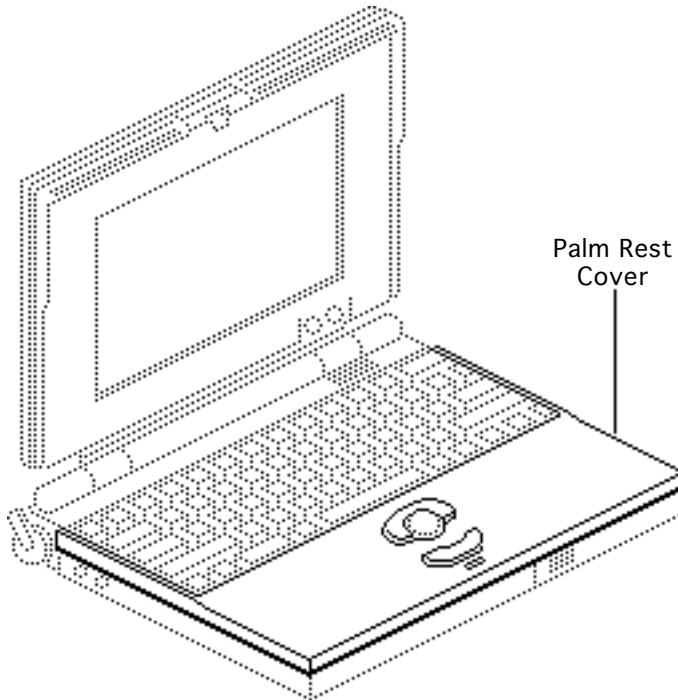




Palm Rest Cover

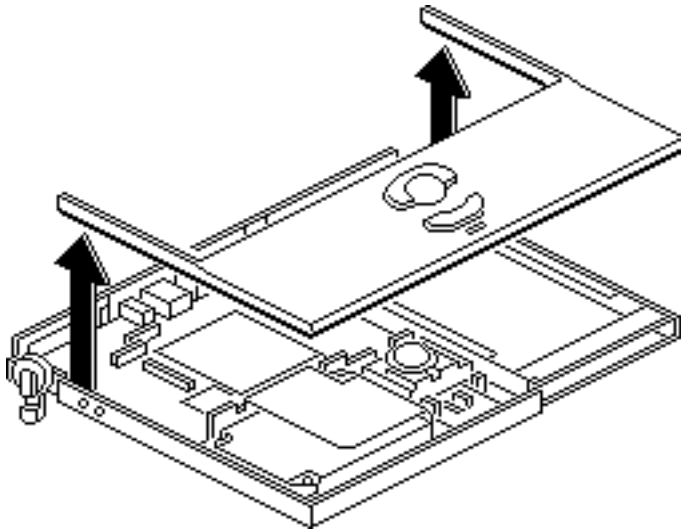
Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly
- Keyboard



⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/ Safety.





Caution: Review the ESD precautions in Bulletins/ Safety.

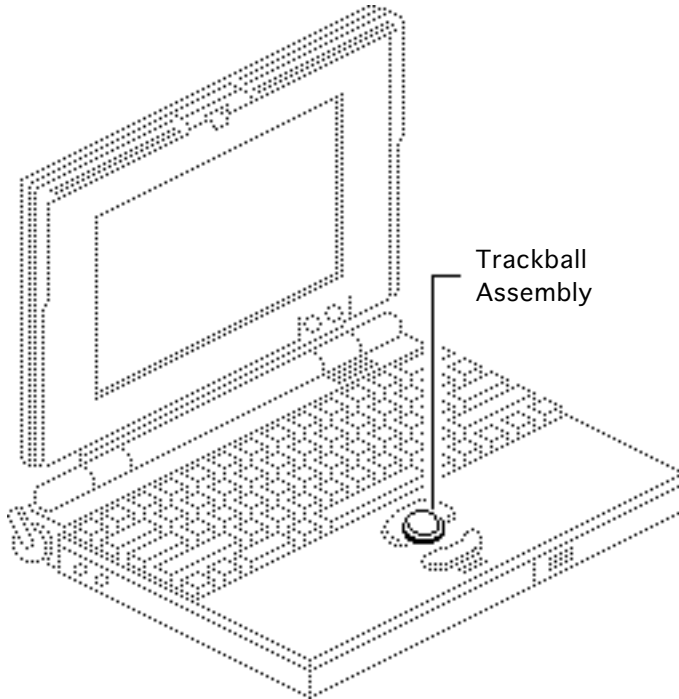
- 1 Using both hands, grasp the two back corners of the palm rest cover and lift.
- 2 Remove the palm rest cover from the computer.





Replacement Note: To replace the cover, hold it vertically with the front edge slightly in front of the front edge of the computer. Rotate the back of the palm rest cover down and back until the cover locks into position.





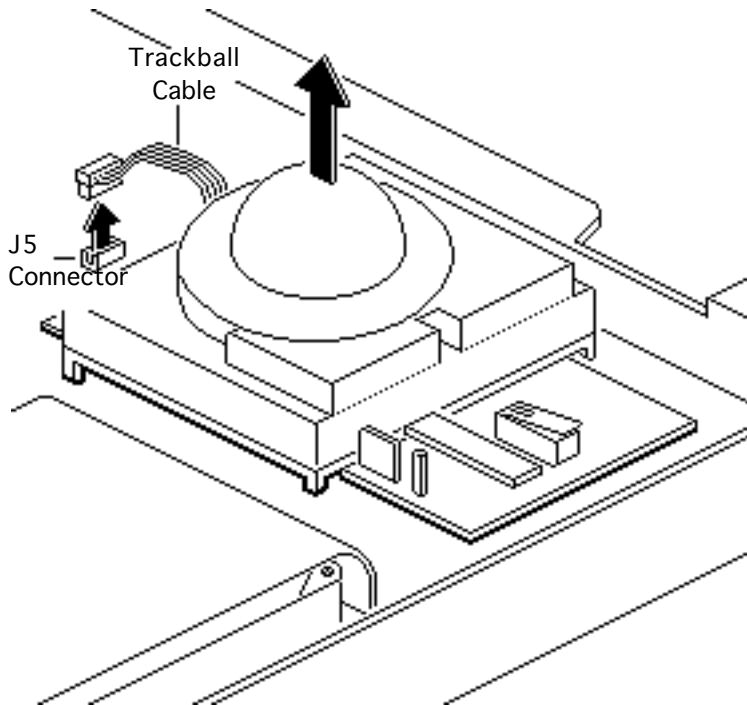
Trackball Assembly

Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly
- Keyboard
- Palm rest cover

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal



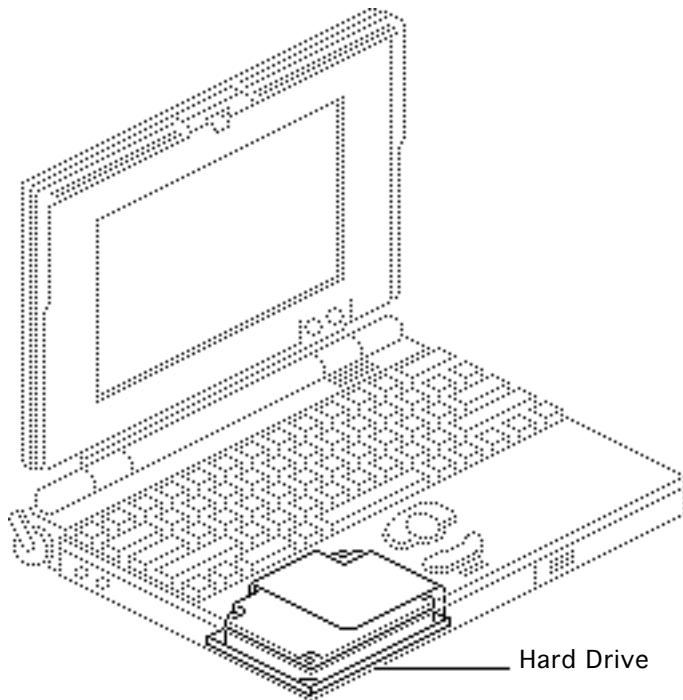


instructions in Bulletins/
Safety.

Caution: Review the ESD
precautions in Bulletins/
Safety.

- 1 Gently pull the trackball cable up and out of connector J5 on the motherboard.
- 2 Remove the trackball assembly from the computer.





Hard Drive

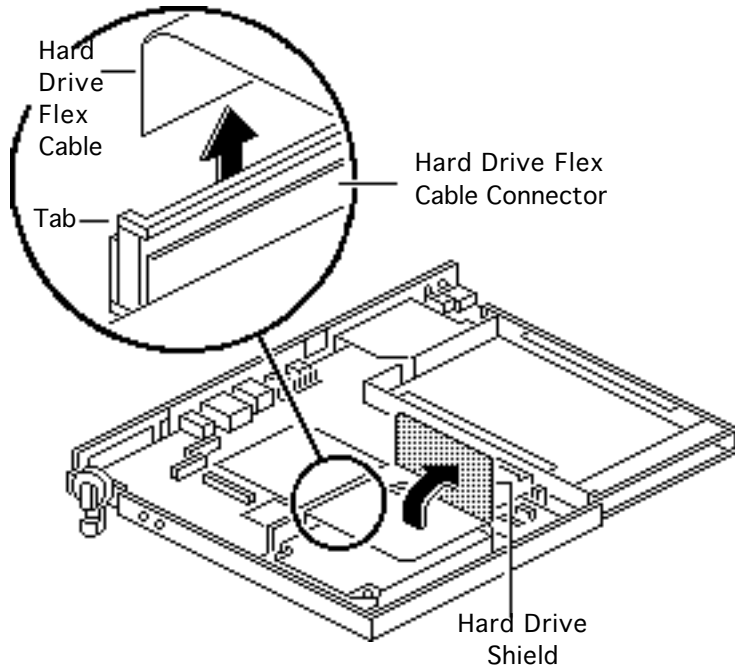
Hard Drive

Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly
- Keyboard
- Palm rest cover

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.

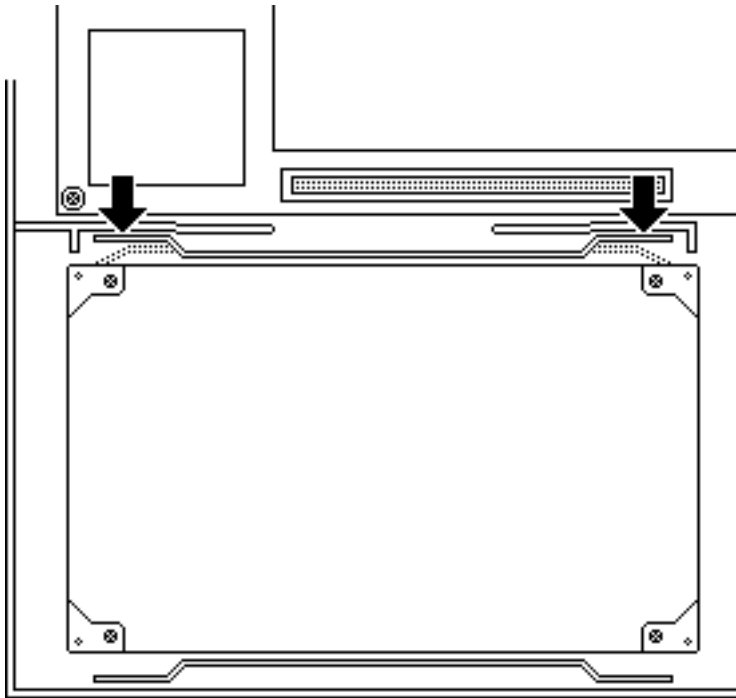




Caution: Review the ESD precautions in Bulletins/ Safety.

- 1 Fold back the hard drive shield and pull up the tabs to unlock the hard drive flex cable connector.
- 2 Disconnect the hard drive flex cable from the motherboard.





- 3 Using a flat-blade screwdriver, unlock one of the two latches on the side of the hard drive nearest the motherboard.
- 4 While applying upward pressure on the first latch, unlock the second latch on the same side.
- 5 Lift up the motherboard side of the hard drive and remove the drive from the computer.





Replacement Note: If the replacement drive is too high to fit in the PowerBook 100, remove the four spacers on the bottom of the drive. For information on returning drives, cables, and carriers to Apple, refer to the Hard Drives manual.



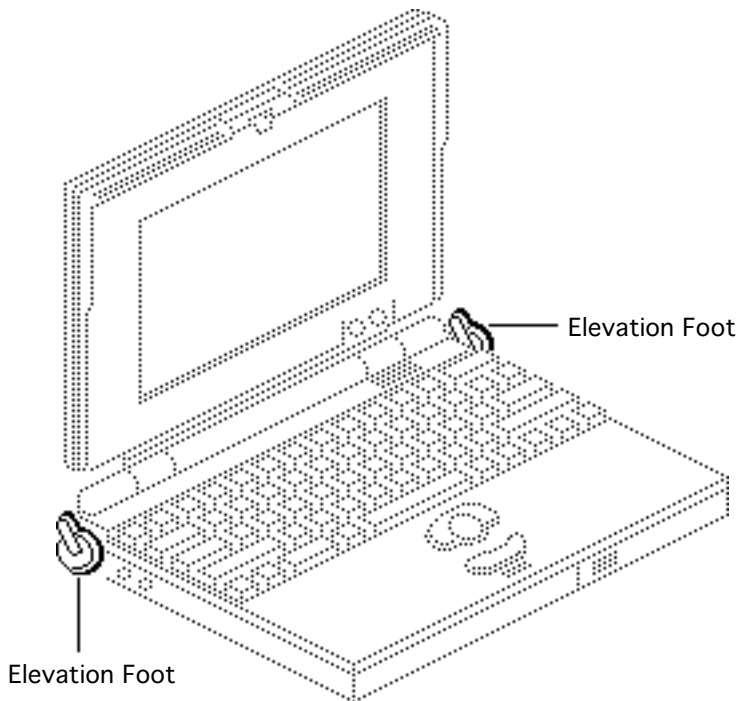


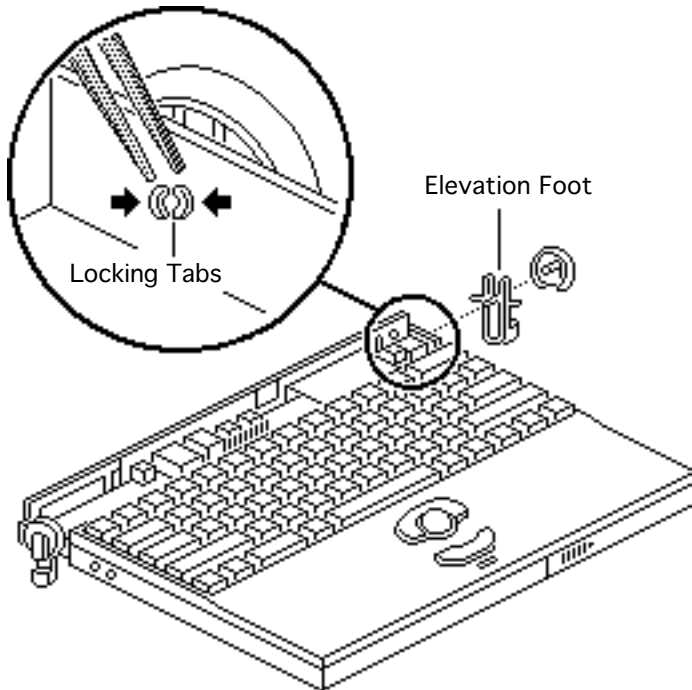
Elevation Foot

Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.

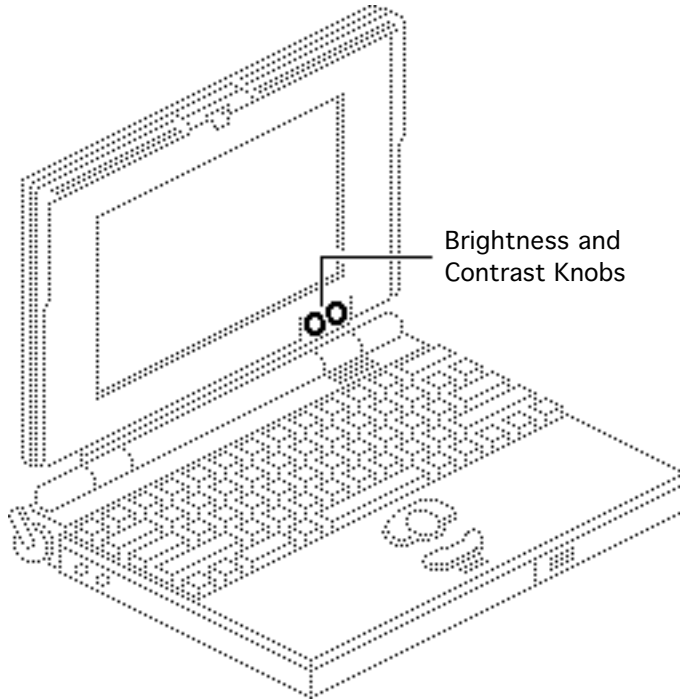




Caution: Review the ESD precautions in Bulletins/ Safety.

- 1 Using needlenose pliers, squeeze the locking tabs on the right elevation foot and pull the foot assembly from the case.
- 2 Repeat the procedure for the left elevation foot.



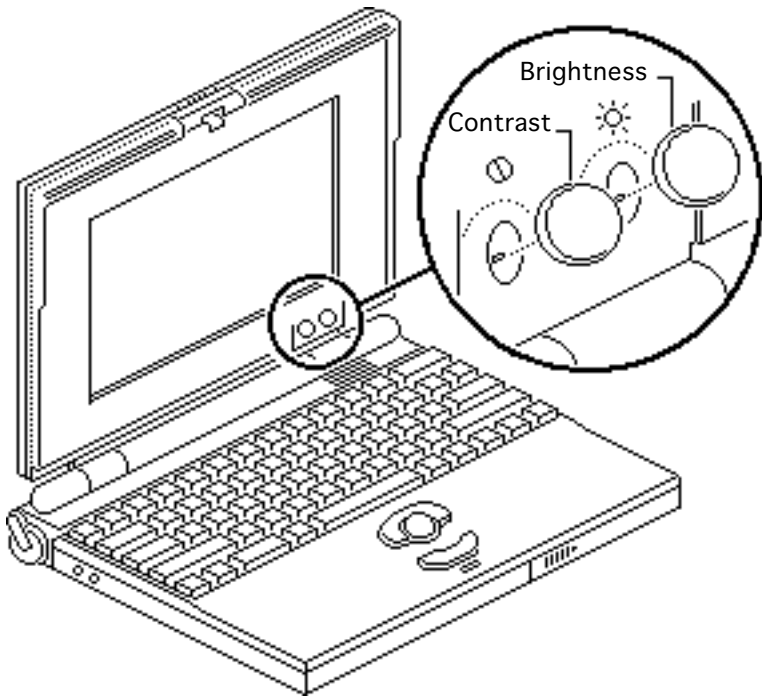


Brightness & Contrast Knobs

No preliminary steps are required before you begin this procedure.

Caution: Review the ESD precautions in Bulletins/Safety.





Using your fingers, pry the contrast and brightness knobs off the control shafts.



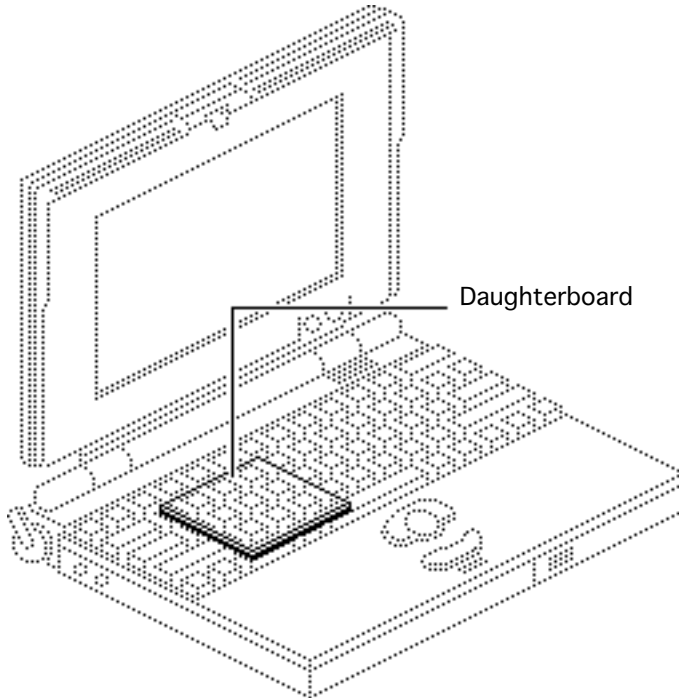


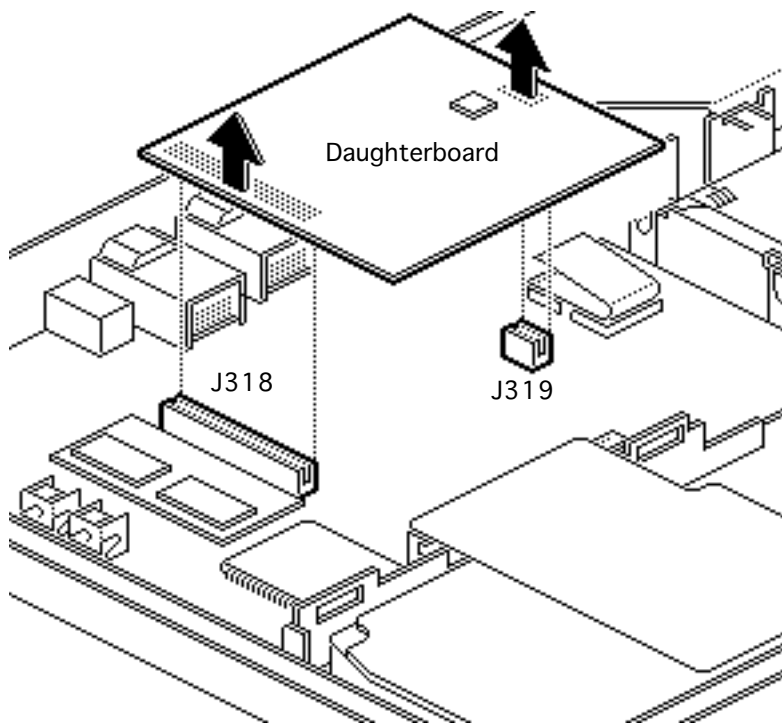
Daughterboard

Before you begin, do the following:

- Remove the backup batteries
- Remove the main battery
- Remove the display assembly
- Remove the keyboard

Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.





Note: To disconnect connector J318, rock it gently from end to end as you lift.

Grip the daughterboard near connectors J318 and J319 and lift the daughterboard off the motherboard.

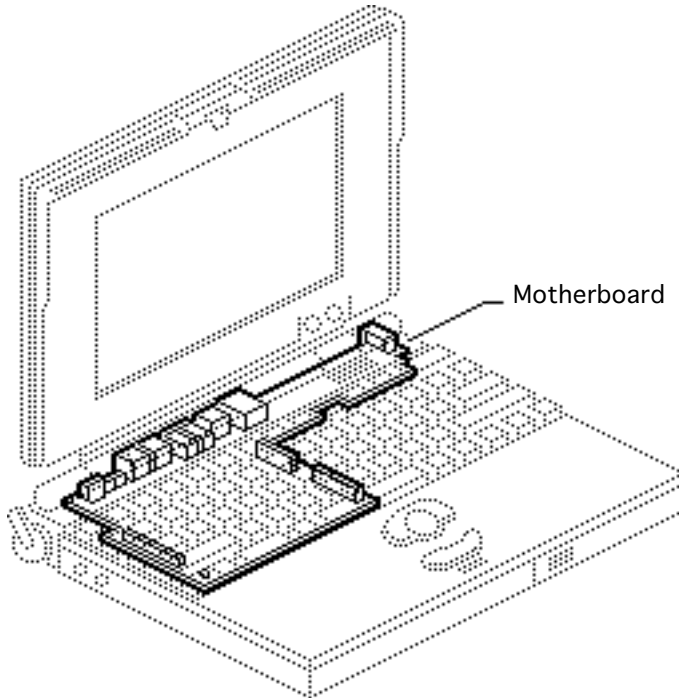


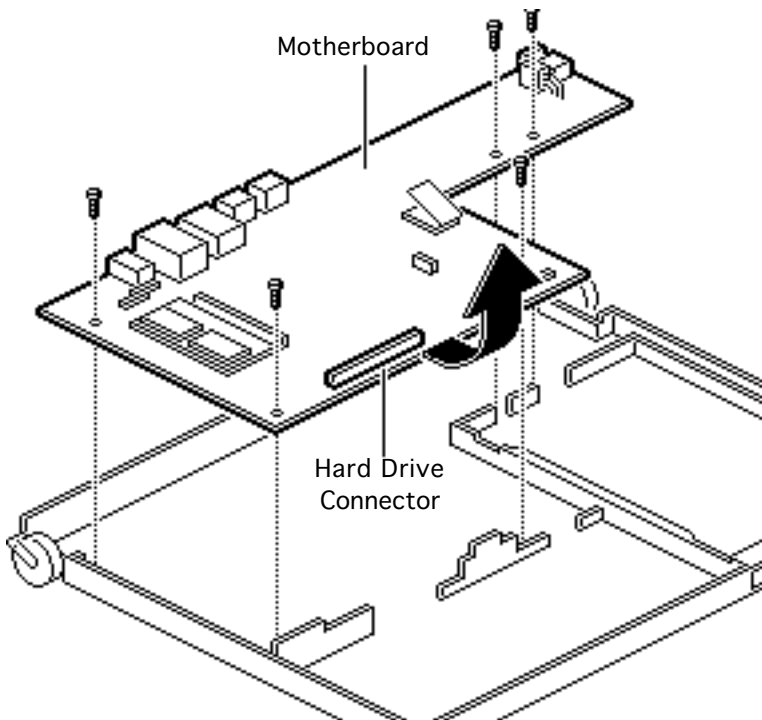


Motherboard

Before you begin, remove the following:

- Backup batteries
- Backup batteries door
- Main battery
- Display assembly
- Keyboard
- Palm rest cover
- Trackball assembly
- Hard drive
- Memory expansion card
- Modem shield and modem
- Daughterboard

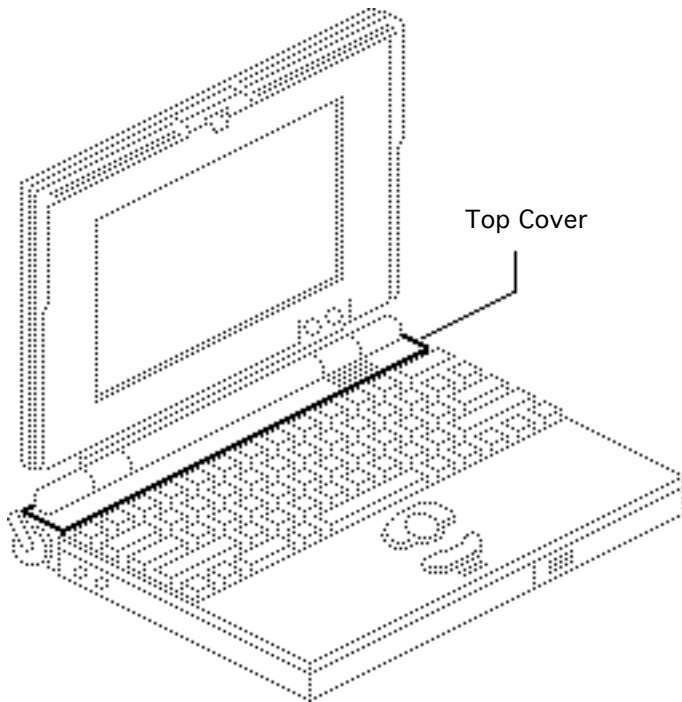




Caution: Review the ESD precautions in Bulletins/ Safety.

- 1 Remove the five motherboard mounting screws.
- 2 Lift the motherboard near the hard drive connector and remove the board from the bottom cover.



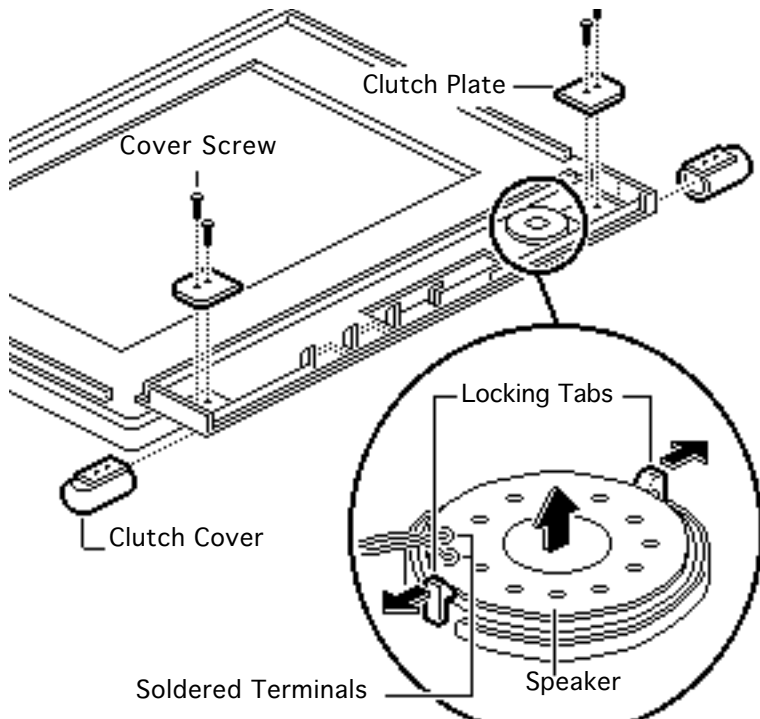


Top Cover

Before you begin, remove the display assembly.

Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.



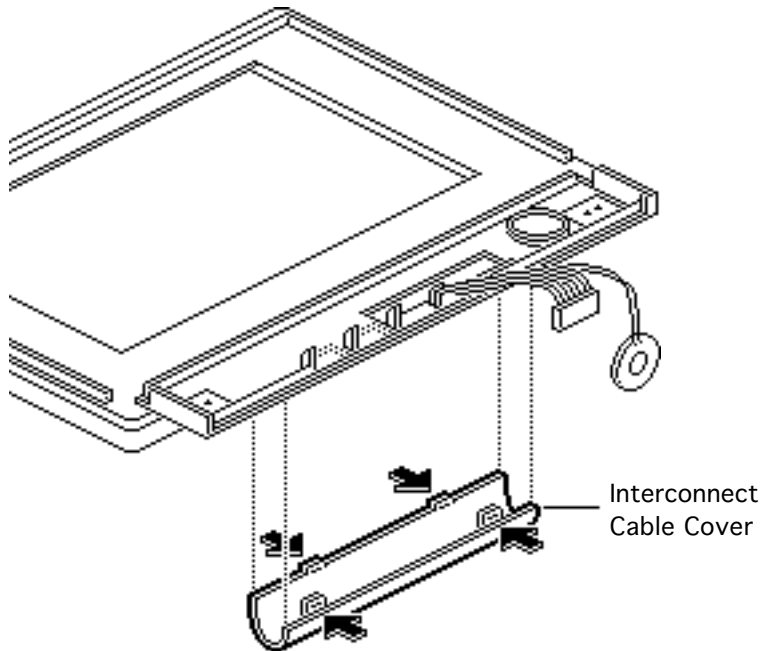


- 1 Remove the four top cover mounting screws.
- 2 Lift off the two clutch plates.
- 3 **Note:** You may need to lift the top cover before the clutch covers slide freely.

Slide off the two clutch covers.

- 4 Pry back the speaker locking tabs and lift out the speaker.

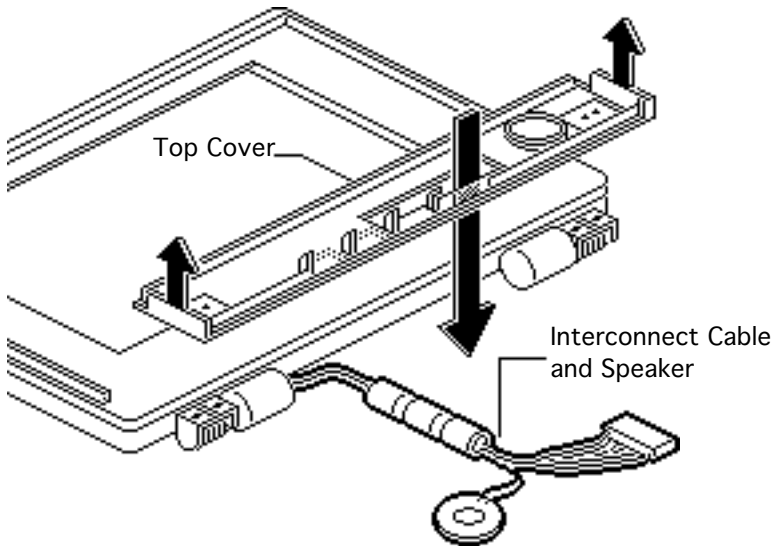




Replacement Note: Position the speaker so that the soldered wire terminals are closest to the cable cover.

- 5 Squeeze the outside of the interconnect cable cover near the tabs and release the tabs.
- 6 Remove the cable cover.

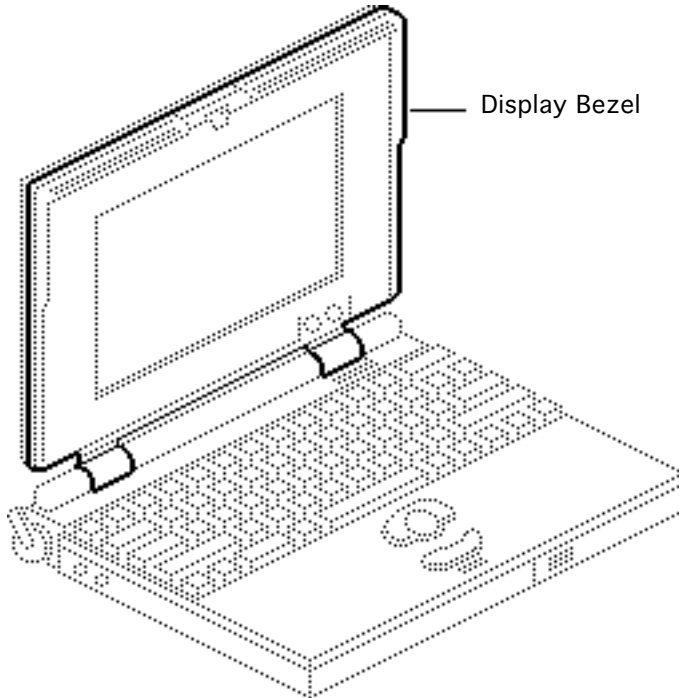




- 7 Slip the interconnect cable and speaker through the top cover and remove the top cover.

Replacement Note: The interconnect cable and the speaker are separate parts. If you replace the speaker or interconnect cable, you must solder the interconnect cable onto the speaker.





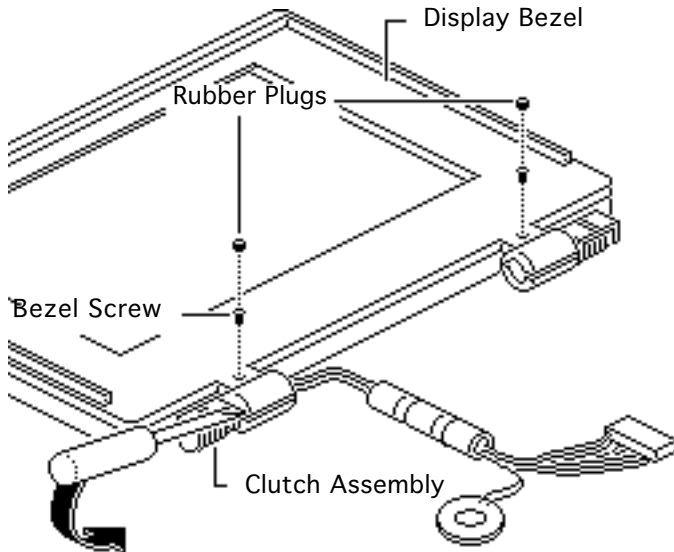
Display Bezel

Before you begin, remove the following:

- Display assembly
- Top cover
- Brightness and contrast knobs

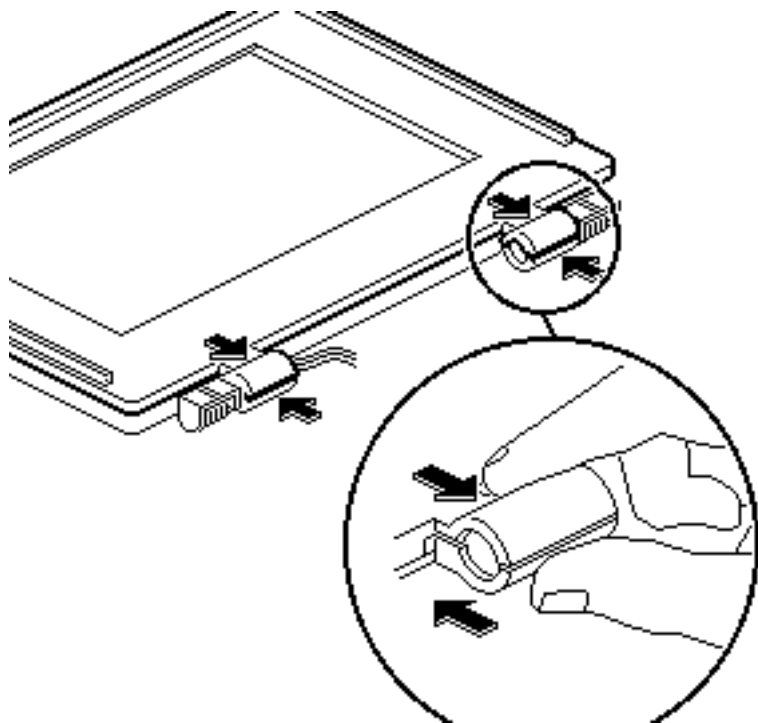
Caution: Review the ESD precautions in Bulletins/Safety.





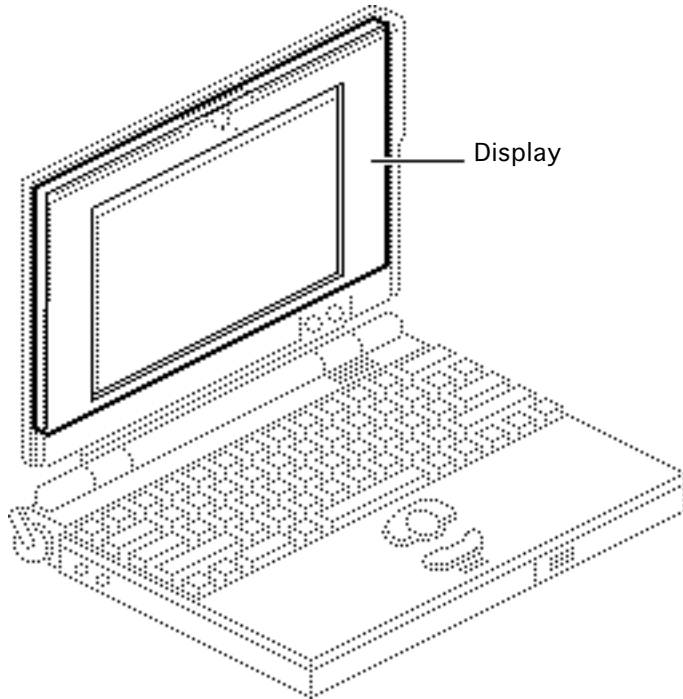
- 1 Using a small, flat-blade screwdriver, pry out the two rubber plugs.
- 2 Remove the two display bezel screws.
Note: Pry the display bezel until the locking tab closest to the clutch assembly releases.
- 3 Using the flat-blade screwdriver, pry the display bezel from the metal clutch assembly on each side of the display.





- 4 Using your thumb and index finger, pull the display bezel toward you and up until the top locking tabs release.
- 5 Lift off the bezel.





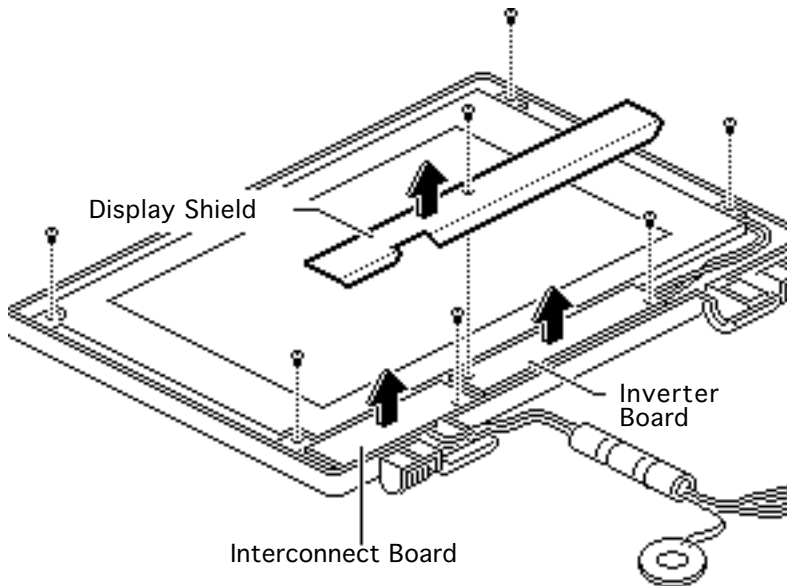
Display

Before you begin, remove the following:

- Display assembly
- Top cover
- Brightness and contrast knobs
- Display bezel

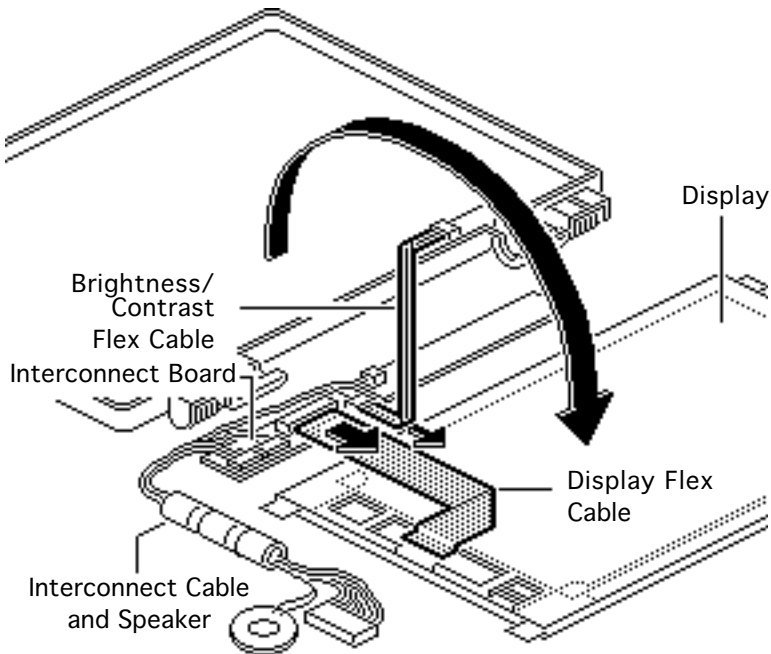
Caution: To prevent ESD damage to components, wear a grounding wriststrap. Review the ESD precautions in Bulletins/Safety.





- 1 Remove the display shield mounting screw and lift off the display shield.
- 2 Remove the remaining inverter board screw, interconnect board screw, and the four display mounting screws.

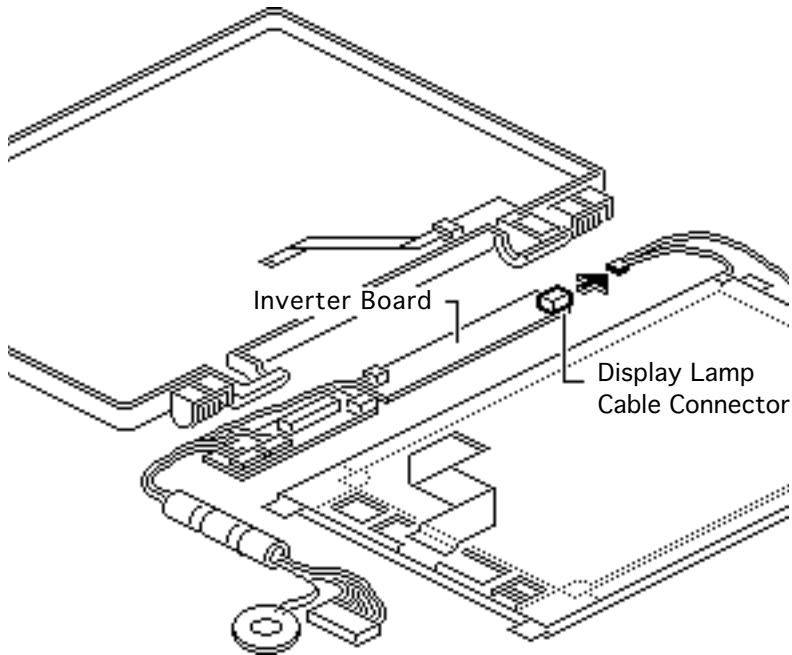




- 3 Move the interconnect cable and speaker away from the display.
- 4 **Note:** When you rotate the display, the interconnect board, inverter board, and related cables also rotate forward. Move the display carefully to avoid stressing these components.

Gently rotate the display forward so that it rests face-down.





- 5 Disconnect the brightness/ contrast flex cable and the display flex cable from the interconnect board.
- 6 Release the locking tab on the display lamp cable connector and disconnect the cable from the inverter board.

Replacement Note:

Carefully press the display lamp cable wires into the channels in the display housing.





Replacement Note: Make sure the blue insulator end of the brightness/contrast cable faces the interconnect board.

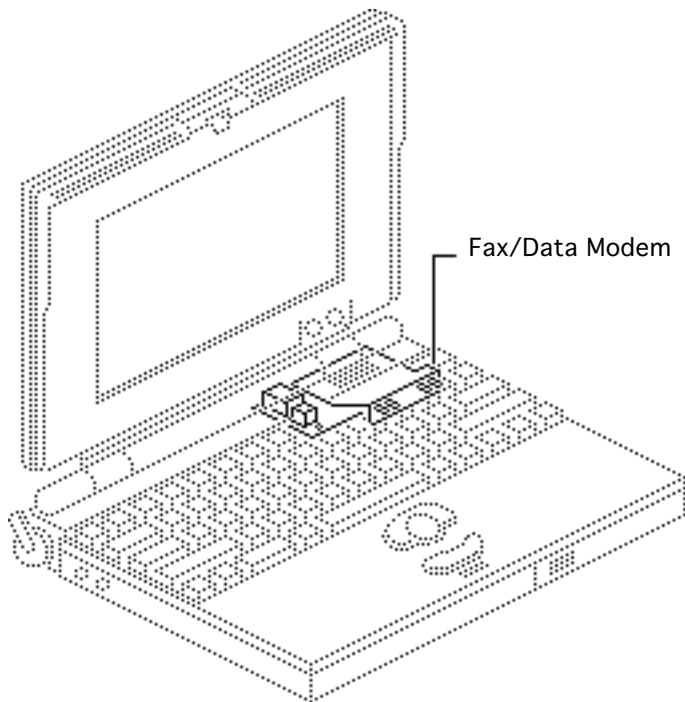




Upgrades

PowerBook 100





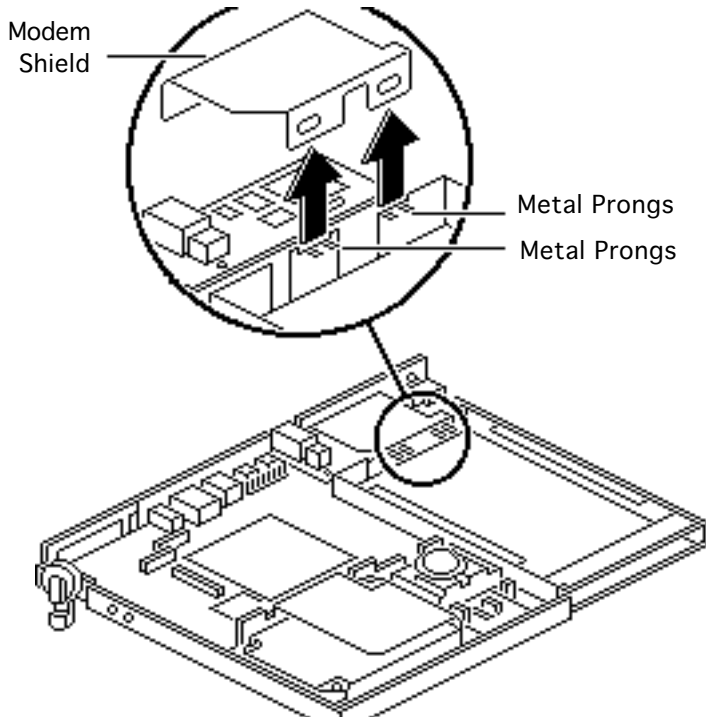
Fax/Data Modem

Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly
- Keyboard

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.



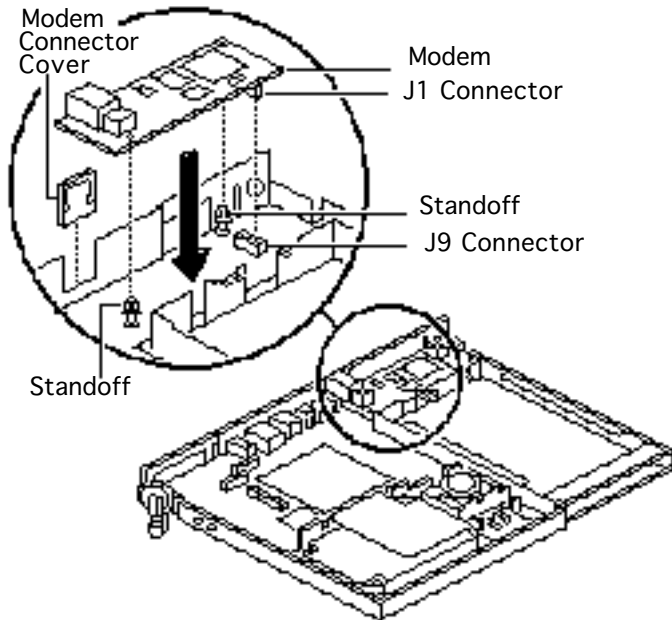


Caution: Review the ESD precautions in Bulletins/ Safety.

To install a fax/data modem,

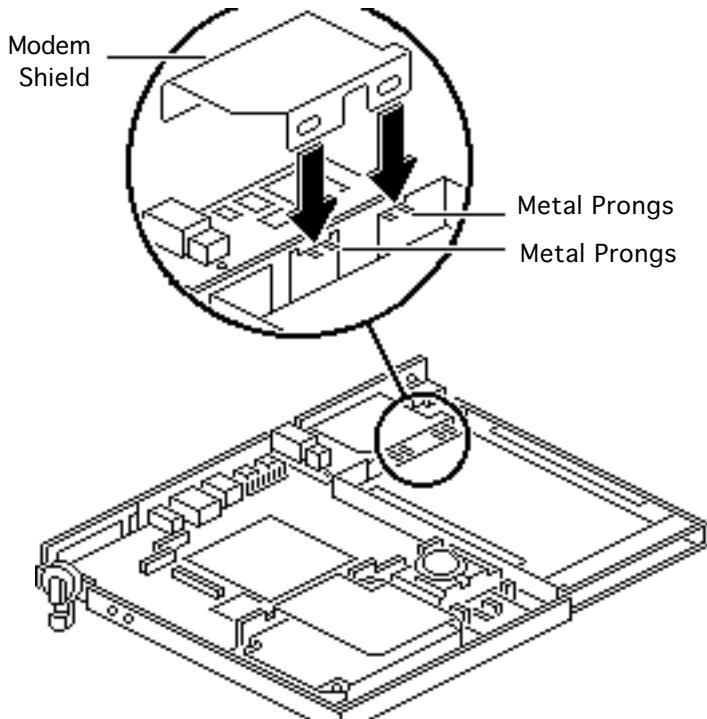
- 1 Push the metal prongs toward the back of the computer and lift the modem shield up and out of the bottom cover.





- 2 Lift the modem connector cover out of the bottom cover.
- 3 Position the modem so that connector J1 on the modem faces down and directly above connector J9 on the motherboard. Press down on the modem until the board locks in place on the two standoffs.





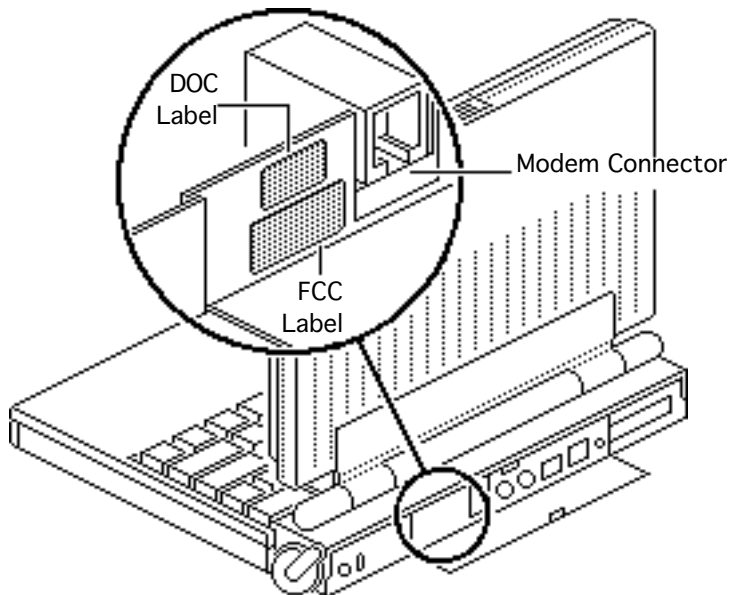
Caution: Make sure the modem shield does not extend into the battery cavity.

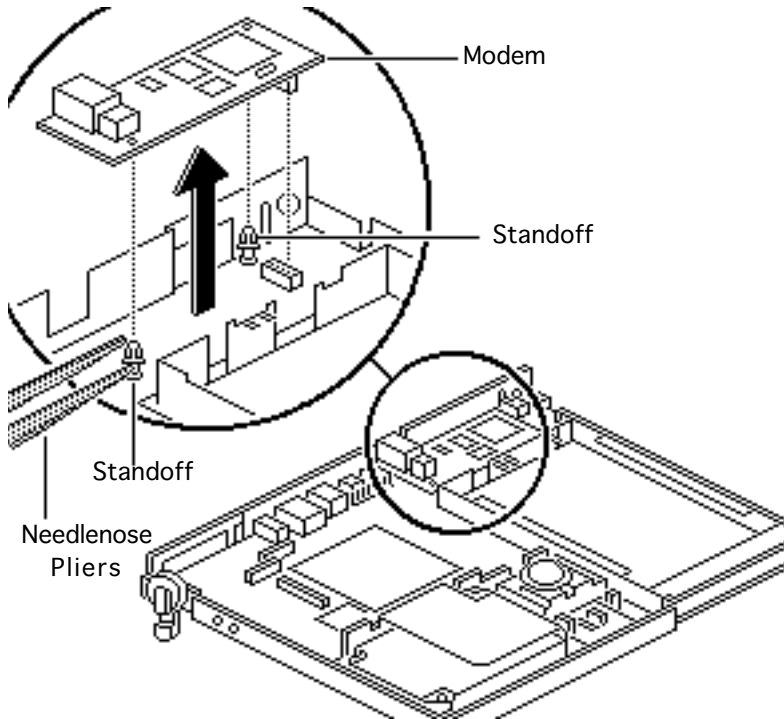
- 4 Replace the modem shield and modem connector cover.





- 5 Apply the DOC and FCC labels to the left of the modem connector.





Replacement Note: To remove the fax/data modem, use needlenose pliers to release the locking tabs of the two standoffs and lift the modem from the motherboard.

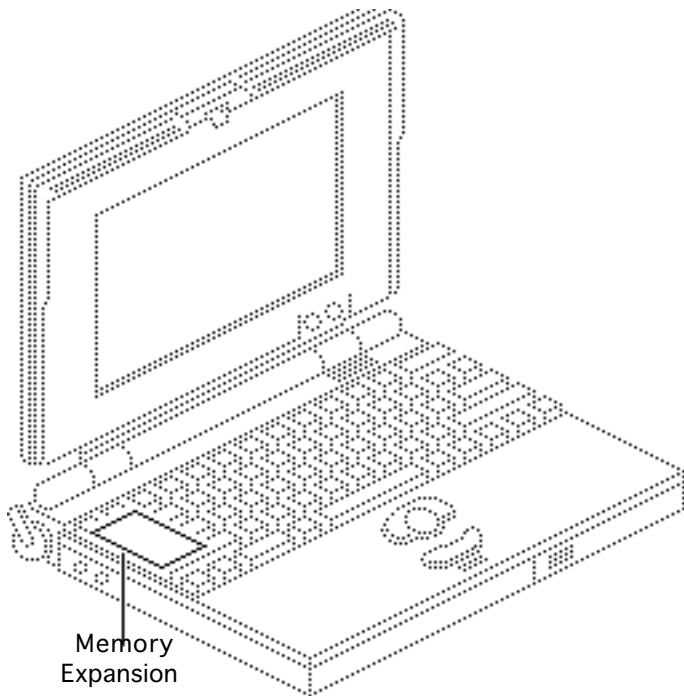




Memory Expansion Card

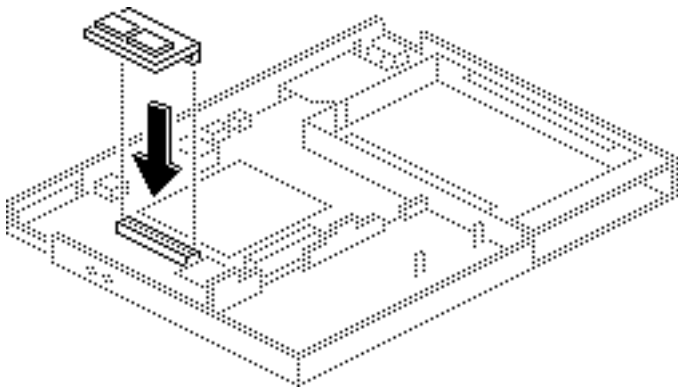
Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly
- Keyboard
- Palm rest cover



Memory
Expansion





⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/Safety.

Caution: Review the ESD precautions in Bulletins/Safety.

Install the memory expansion card on the motherboard.

Verification Note: To verify correct installation





of the memory expansion card, switch on the computer by pressing any key except <Caps Lock>. Pull down the Apple menu and select “About the Finder.” Verify that the amount of RAM (Total Memory) is 4096K (for a 2 MB RAM expansion card) or 6144K (for a 4 MB RAM expansion card). If the amount of RAM is not correct, replace the expansion card. If this procedure does not correct the problem, return the computer to Apple.

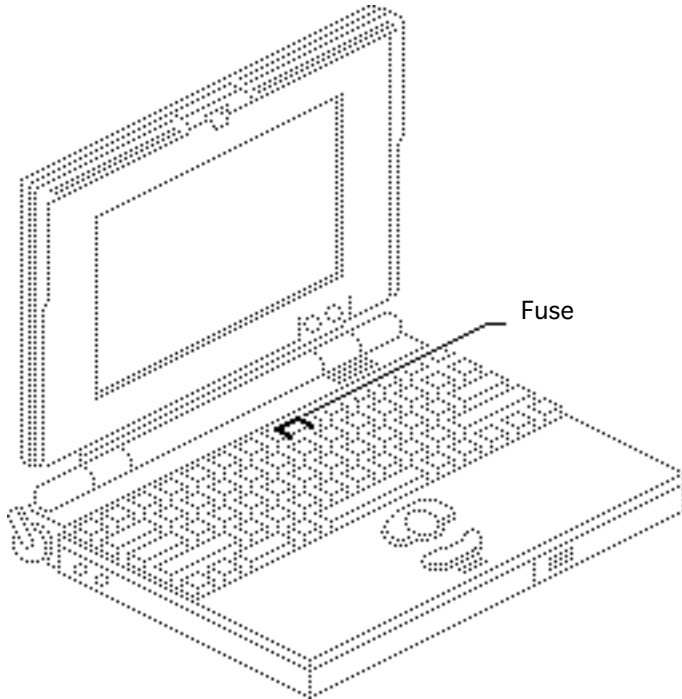




Additional Procedures

PowerBook 100





Fuse

Before you begin, remove the following:

- Backup batteries
- Main battery
- Display assembly
- Modem shield and modem

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery handling and disposal instructions in Bulletins/ Safety.

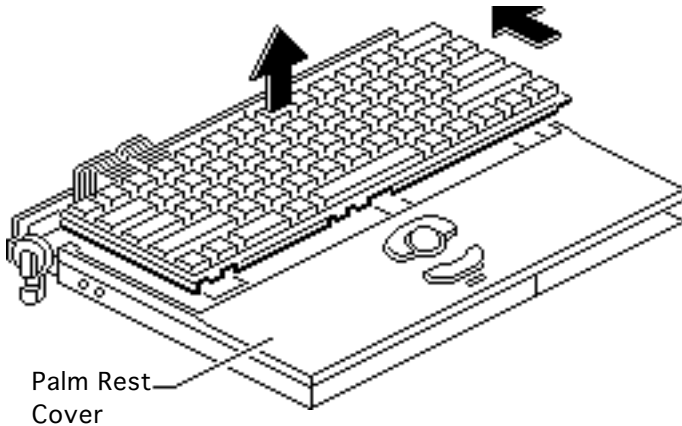




Caution: Review the ESD precautions in Bulletins/ Safety.

Note: Some PowerBook 100 motherboards contain fuses that are not removable. To replace a fuse that is soldered to the board, you must replace the motherboard. (All new motherboards ordered from Apple contain removable fuses.)

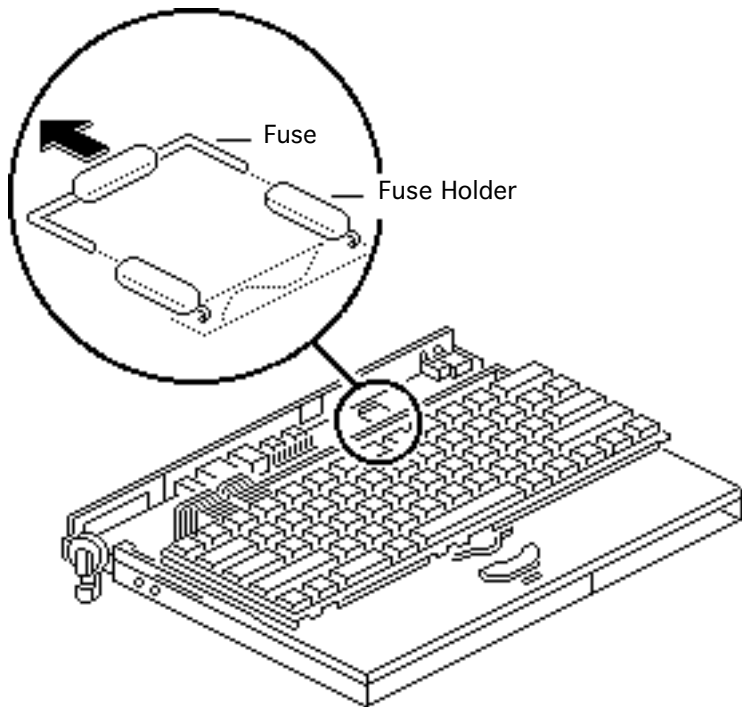




Caution: Be careful not to stress the keyboard cables or the connectors on the motherboard.

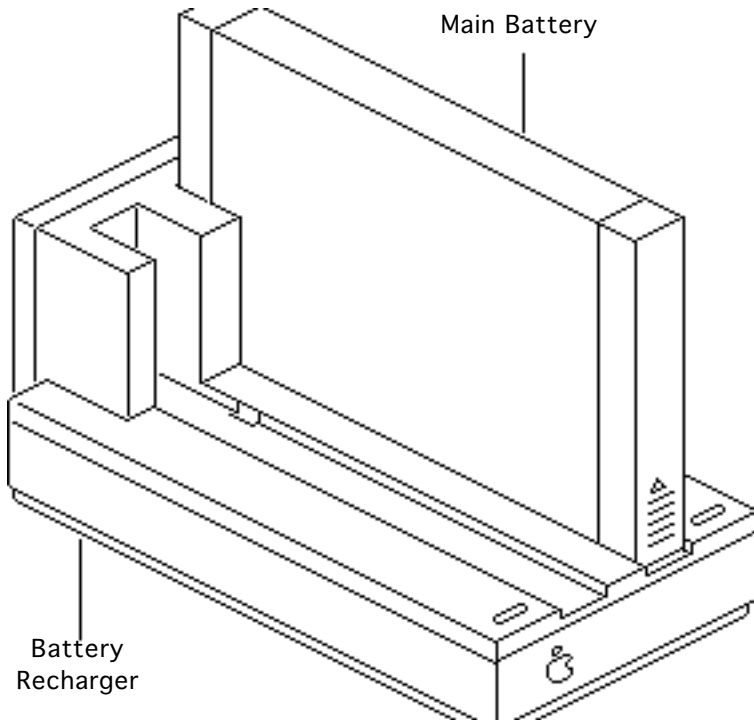
- 1 Lift the back side of the keyboard as high as the keyboard cables will allow.
- 2 Slide the keyboard toward the rear of the computer until the front edge of the keyboard clears the palm rest cover.





- 3 Place the keyboard on top of the palm rest cover.
- 4 Remove the fuse from the fuse holders.





Battery Recharger

No preliminary steps are required before you begin this procedure.

- 1 Using the PowerBook power adapter, plug the battery recharger into a power outlet and insert the main battery into the recharger.





- 2 Track the status of the battery. If the LED is
 - Yellow, the battery is charging
 - Green, the battery is ready to use
 - Off, the charger is unplugged, the battery is bad, the power adapter is defective, or the charger is defective

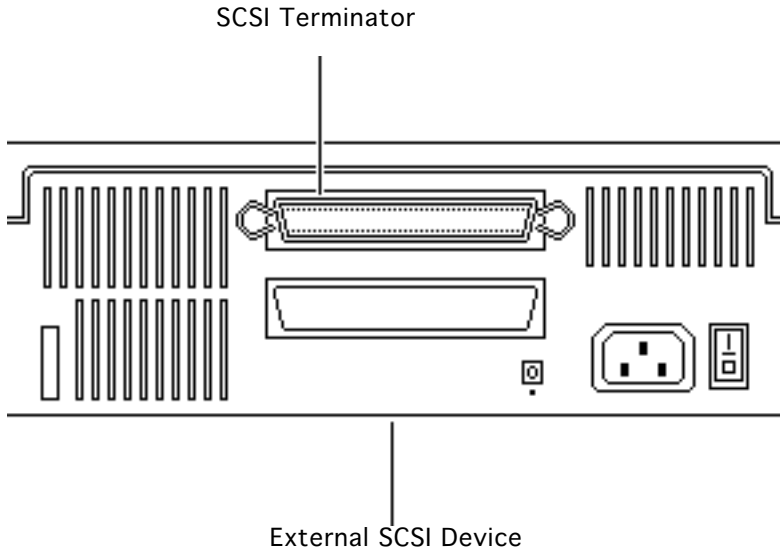




SCSI Termination

No preliminary steps are required before you begin this procedure.

Note: Because the PowerBook 100 does not provide SCSI termination at the logic board, remember to terminate at the beginning and end of the SCSI chain. Use the standard Apple terminator (not the Macintosh IIx terminator).





When terminating a SCSI chain, follow these guidelines:

- Add one terminator to a single external SCSI device, or
- Add one terminator to the first device and another to the last when there are multiple devices.



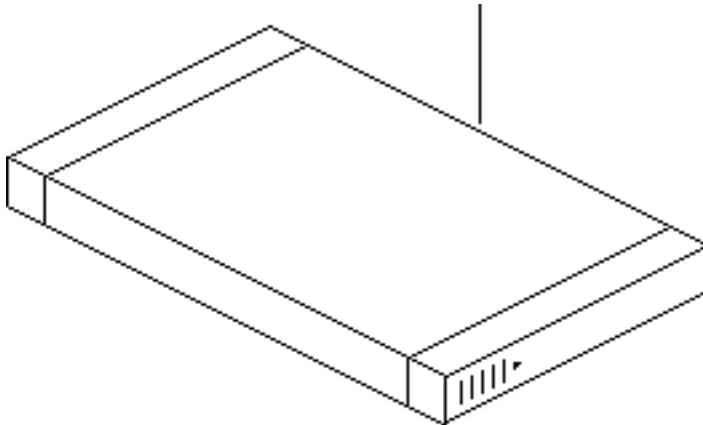


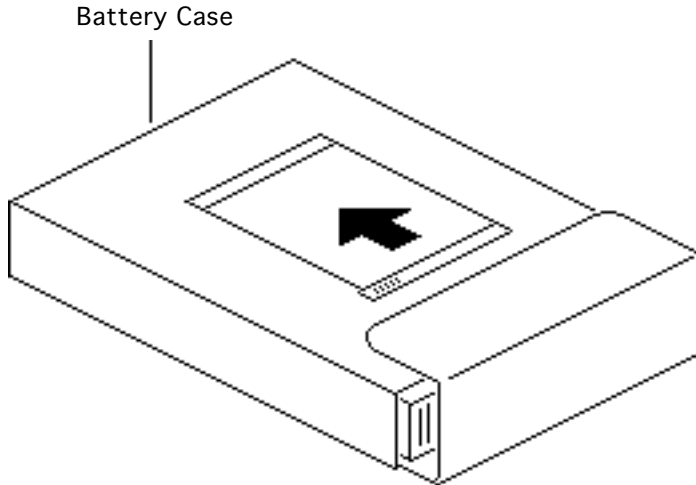
Battery Handling

No preliminary steps are required before you begin this procedure.

⚠ Warning: The main battery contains toxic materials. If you touch a damaged battery, immediately wash your hands and affected skin with water for at least five minutes. Send undamaged, dead batteries to Apple for recycling—do not discard dead batteries with other waste. If the battery is

Main Battery





damaged, do not return it to Apple. Review battery handling and disposal instructions in Bulletins/ Safety.

Follow these guidelines for properly handling the battery:

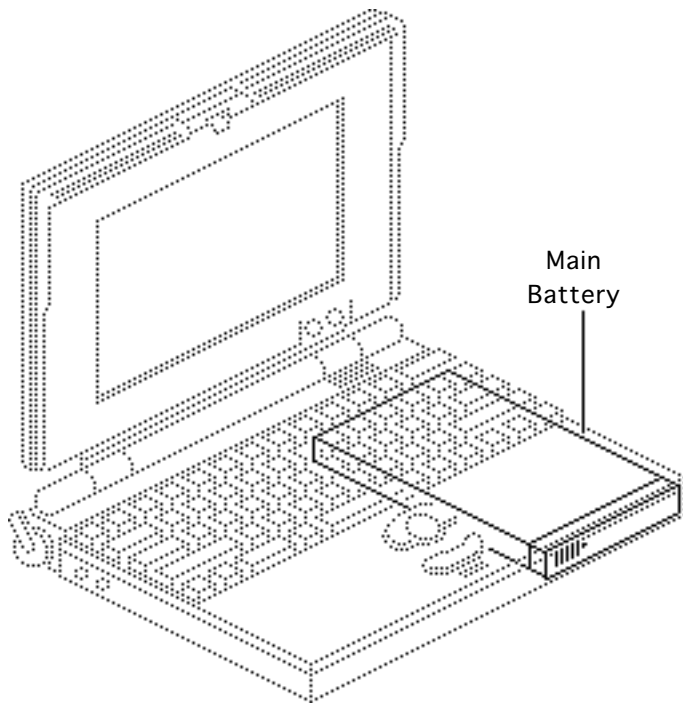
- Handle the battery carefully. Do not drop, puncture, disassemble, or incinerate the battery.
- Do not leave the battery in the computer for longer than one week without plugging in the power adaptor.





- Store the battery in its protective battery case. Do not store the battery longer than six months without recharging.
- Do not short-circuit the battery terminals.





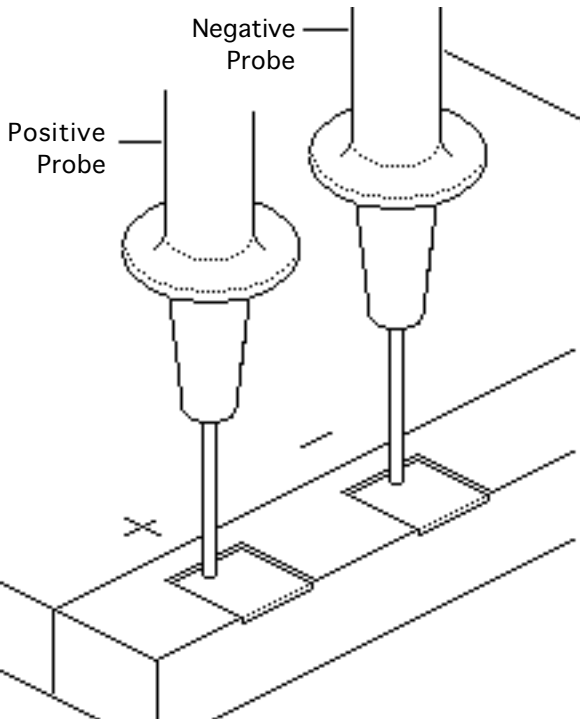
Battery Verification

Before you begin, remove the main battery.

⚠ Warning: If handled or discarded improperly, the lithium backup batteries in the PowerBook 100 could explode. Review battery-handling and disposal instructions in Bulletins/Safety.

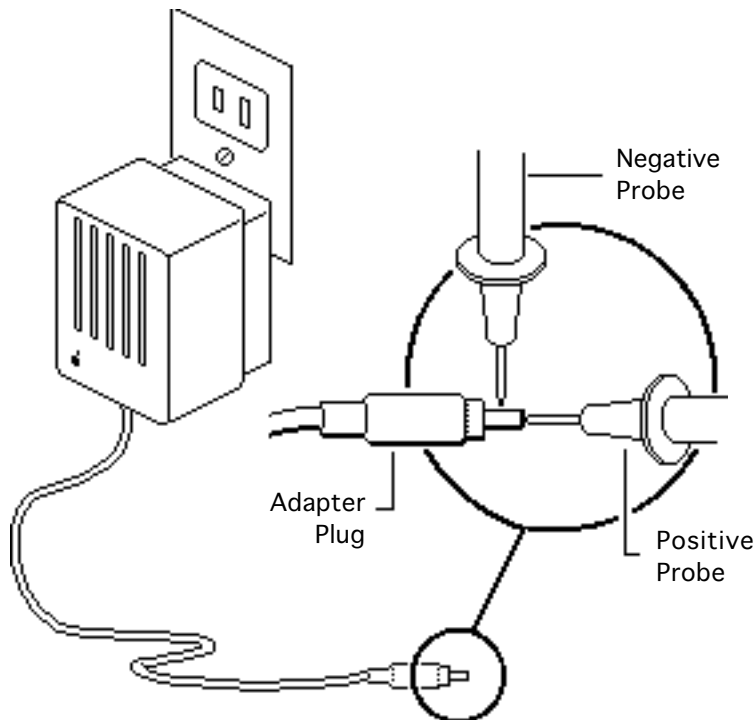
Review the ESD precautions in Bulletins/Safety.





- 1 Set the voltmeter to the 10 volts DC scale.
- 2 Hold the positive probe of the voltmeter to the positive position on the battery and the negative probe to the negative position on the battery.
- 3 If the battery voltage is below 5.7 volts, recharge or replace the battery.





AC Adapter Verification

No preliminary steps are required before you begin this procedure.

- 1 Set the voltmeter to the 10 volts DC scale.
- 2 Hold the positive probe of the voltmeter to the inside of the AC adapter plug and the negative probe to the outside of the plug.





- 3 If the voltage is not between 7.5 and 7.9 volts, replace the adapter.



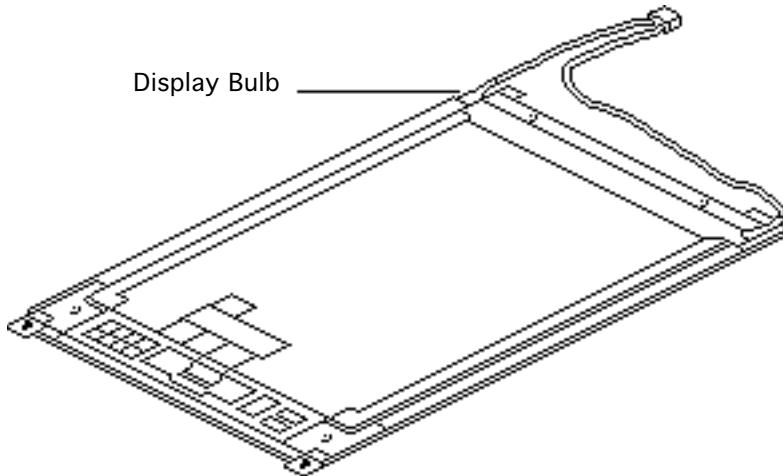


Display Bulb

Before you begin, remove the following:

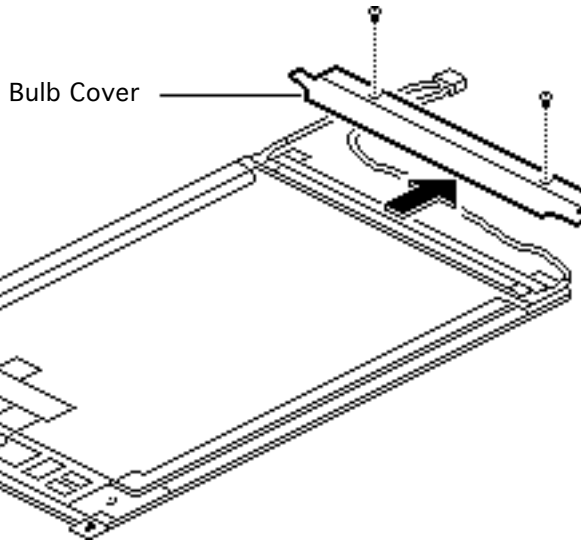
- Display assembly
- Top cover
- Brightness and contrast knobs
- Display bezel
- Display

Display Bulb



⚠ Warning: CCFL bulbs are thin and break easily. Handle them with care, especially at the delicate solder joints at the ends of the bulbs.



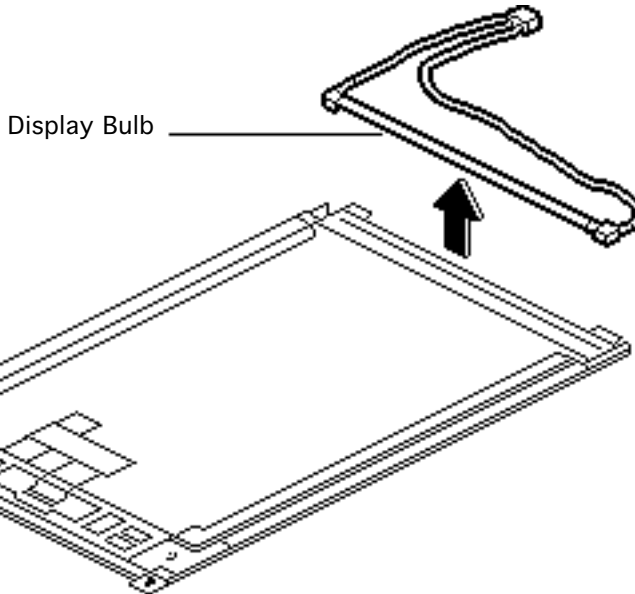


Caution: Review the ESD precautions in Bulletins/ Safety.

- 1 Place the display face-down on a soft workbench pad.
- 2 Using a #0 cross-tip screwdriver, remove the two self-threading screws.

Replacement Caution: Improperly installed self-threading screws could damage the display. Do not overtighten them.





- 3 Lift the metal display bulb cover and back it off the display.
- 4 Remove the display bulb.

Replacement Note: When replacing the display bulb, position the pink cable along the bottom of the display and make sure the display bulb cover is under the tabs at each end of the case.





Exploded View

PowerBook 100



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