



Macintosh IIvx, IIvi, Performa 600

Macintosh IIvx, Macintosh IIvi, Performa 600





Basics

Macintosh IIvx, Macintosh IIvi,
Performa 600





Overview

This manual includes complete repair procedures for the Macintosh IIvx, Macintosh IIvi, and Performa 600.

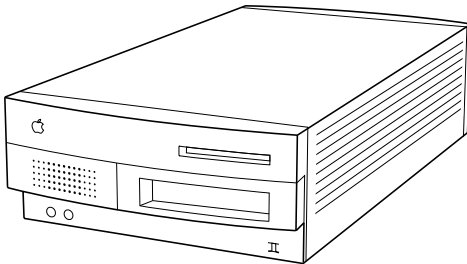


Figure: Macintosh IIvx, IIvi, and Performa 600





Specifications

Macintosh IIvx, Macintosh IIvi,
Performa 600





Processors

CPU	Motorola 68030 microprocessor Built-in memory management unit (MMU) Macintosh Ilvi: 16 MHz Macintosh Ilvx, Performa 600: 32 MHz
Coprocessor	Macintosh Ilvx: Motorola 68882 floating-point unit (FPU)
Cache	Macintosh Ilvx: 32K
Addressing	32-bit internal registers 32-bit address bus 32-bit data bus





Memory

RAM 4, 5, or 8 MB, expandable to 68 MB

ROM 1 MB

PRAM 256 bytes of parameter memory

VRAM 512K or 1 MB, upgradable to 1 MB

**With 512K VRAM,
these video modes
are supported:**

- 512 by 384 pixel screens with 2, 4, 8, and 16 bits per pixel
- 640 by 480 pixel screens with 2, 4, and 8 bits per pixel

**With 1 MB VRAM,
these video modes
are supported:**

- 512 by 384 pixel screens with 2, 4, 8, and 16 bits per pixel
- 640 by 480 pixel screens with 2, 4, 8, and 16 bits per pixel





Disk Storage

Floppy Drive

1.4 MB floppy drive

Hard Drive

80–400 MB hard drive

CD-ROM Drive

Optional CD-ROM drive





1/O Interfaces

Expansion

Three NuBus slots
One accelerator slot

SCSI

One SCSI port; DB-25 connector
Supports a maximum of six external devices

Apple Desktop Bus

Two Apple Desktop Bus (ADB) ports
Low-speed synchronous serial interface

Serial

Two RS-232/RS-422 serial ports; mini DIN-8 connectors
230.4 Kbaud maximum
0.92 Mbit/sec., if external clock source is provided





Sound One sound output port for stereo playback from CDs
 Monaural input port

Video One video port DB-15 connector
 Supports Apple monitors (8-bit)





I/O Devices

Keyboard

Standard or Extended Keyboard connected through Apple Desktop Bus (ADB) ports (mini DIN-4)
Maximum power draw for all ADB devices: 500 mA
Keyboard draws 25–80 mA

Mouse

ADB mouse
Draws up to 80 mA

Microphone

Electret, omnidirectional microphone
Microphone output voltage is 4 mV peak to peak at normal speaking volume





Sound and Video

Apple Monitor

Macintosh IIvi/vx and Performa 600 video support includes these

Apple monitors:

- Apple Color Display
- Macintosh 12-in. Monochrome Display
- Macintosh 12-in. RGB Display
- AppleColor High-Resolution RGB Monitor
- Apple Performa Display/Plus

Third-Party Monitors

Nubus video cards allow the computer to support other non-Apple VGA, NCST, and PAL monitors

Sound

Custom Sound Chip drives stereo miniature headphone jack





Electrical

A/C Line Input

Line voltage: 100–120 VAC

Power: 200 W

A/C Line Output

Output receptacle: 100–240 VAC

3 A maximum

DC Power

112 W maximum





Physical

Temperature

Operating: 10–40° C (50–104 ° F)

Storage -40 to 47° C (-40 F to 116.6° F)

Relative Humidity

5–95% noncondensing

Altitude

Zero to 10,000 ft. (3,048 m)





Troubleshooting

Macintosh IIvx, Macintosh IIvi,
Performa 600





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.





Symptom Charts

Video

Screen is dark, audio and at least one drive operate, fan is running, and LED is lit

- 1 Adjust brightness on monitor.
- 2 Replace monitor. Refer to appropriate monitor manual to troubleshoot defective monitor.
- 3 Replace video cable.
- 4 Replace VRAM SIMMs.
- 5 Replace logic board. Retain customer's SIMMs.

Screen is dark, audio and drive do not operate, fan is running, and LED is lit

- 1 Remove peripherals.
- 2 Remove NuBus cards.
- 3 Replace DRAM SIMMs.
- 4 Replace VRAM SIMMs.
- 5 Replace power supply.
- 6 Replace logic board.





Video (Continued)

Partial or whole screen is bright and audio is present, but no video information is visible

- 1 Replace monitor. Refer to appropriate monitor manual to troubleshoot defective monitor.
- 2 Replace video cable.
- 3 Replace VRAM SIMMs.
- 4 Replace logic board. Retain customer's SIMMs.

Screen is completely dark, fan is not running, and LED is not lit

- 1 Verify that external power cables are properly connected.
- 2 Remove peripherals.
- 3 Remove NuBus cards and switch on power again. (Combined NuBus cards should not draw more than 45 watts.)
- 4 Remove accelerator card.
- 5 Replace power supply.
- 6 Replace logic board. Retain customer's SIMMs.





Floppy Drive

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

- 1 Replace internal floppy drive cable.
- 2 Replace internal floppy drive.
- 3 Replace logic board. Retain customer's SIMMs.

Floppy disk ejects, and display shows Mac icon with blinking "X"

- 1 Replace floppy disk.
- 2 Replace floppy drive cable.
- 3 Replace internal floppy drive.
- 4 Replace logic board. Retain customer's SIMMs.

Floppy disk does not eject

- 1 Switch off system and hold mouse button down while switching system on.
- 2 Eject disk manually.
- 3 Replace floppy drive cable.
- 4 Replace floppy drive.





Floppy Drive (Continued)

Floppy drive attempts to eject disk but doesn't

- 1 Push floppy disk completely in.
- 2 Eject floppy disk manually by pushing opened paper clip into hole beside drive slot.
- 3 Replace floppy drive.





Hard Drive

Internal hard drive runs continuously

- 1 Turn off virtual memory if it's on and check to see if hard drive stops running. Hard drive runs more with virtual memory on.
- 2 Replace SCSI data cable.
- 3 Replace internal hard drive.
- 4 Replace logic board. Retain customer's SIMMs.

Internal hard drive does not operate

- 1 Replace SCSI data cable.
- 2 Replace SCSI power cable.
- 3 Replace hard drive.
- 4 Replace logic board. Retain customer's SIMMs.





CD-ROM Drive

CD-ROM drive does not accept a compact disc

- 1 Exchange disc (if disc is dirty or damaged).
- 2 Replace CD-ROM drive mechanism.

Macintosh does not display CD-ROM drive icon

- 1 Reinstall CD software, and verify that CD-ROM extensions are in System Folder.
- 2 Reinstall system software.
- 3 Replace CD-ROM drive mechanism.
- 4 Replace power supply.
- 5 Replace SCSI data cable.





Peripherals

Works with internal or external SCSI device, but does not work with both

- 1 Verify that SCSI select switch on any external device is set differently from any internal SCSI device.
- 2 Verify that hard drive is terminated but optional CD-ROM is not terminated.
- 3 Replace terminator on external SCSI device.
- 4 Replace SCSI select cable on external SCSI device.

Cursor does not move

- 1 Reboot computer.
- 2 Verify that mouse is connected properly.
- 3 If mouse was connected to keyboard, connect mouse to computer ADB port instead. If mouse works, replace keyboard.
- 4 If mouse does not work in any ADB port on computer, replace mouse.
- 5 Replace logic board. Retain customer's SIMMs.





Peripherals (Continued)

Cursor moves, but clicking the mouse button has no effect

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

Double-click does not open application, disk, or server

- 1 Remove duplicate system files from hard drive.
- 2 Clear parameter RAM. Hold down <Command> <Option> <P> <R> during startup but before "Welcome to Macintosh" appears.
- 3 If mouse was connected to keyboard, connect mouse to computer ADB port instead. If mouse works, replace keyboard.
- 4 If mouse does not work in any ADB port on computer, replace mouse.
- 5 Replace logic board. Retain customer's SIMMs.





Peripherals (Continued)

No response to any key on the keyboard

- 1 Verify that keyboard is connected to ADB port.
- 2 Replace keyboard cable.
- 3 Replace keyboard.
- 4 Replace logic board. Retain customer's SIMMs.

Beeping sound when any key is pressed.

Turn off Slow Keys from the Easy Access control panel.

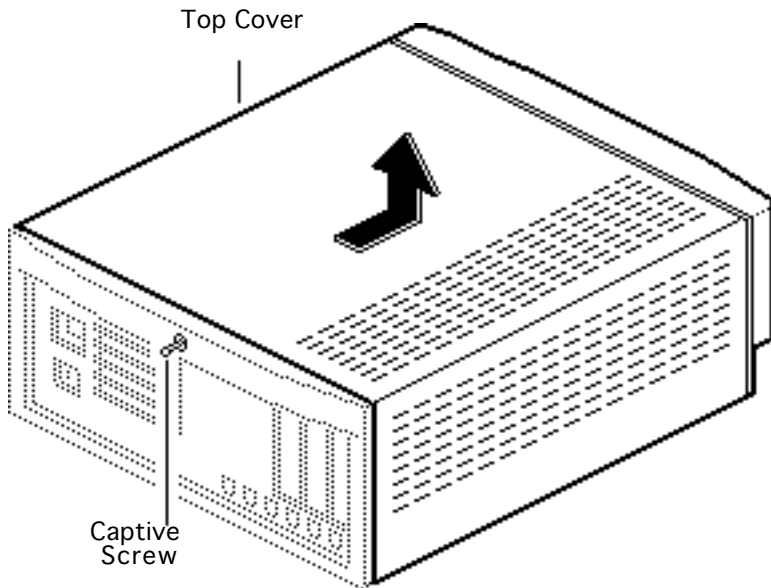




Take Apart

Macintosh IIvx, Macintosh IIvi,
Performa 600





Top Cover

No preliminary steps are required before you begin this procedure.

- 1 Loosen the captive screw.
- 2 Slide the top cover toward the front of the computer about 1 inch and lift off the cover.

Replacement Note: Do not jar the reset/interrupt switch and light pipe out of alignment when you replace the top cover.

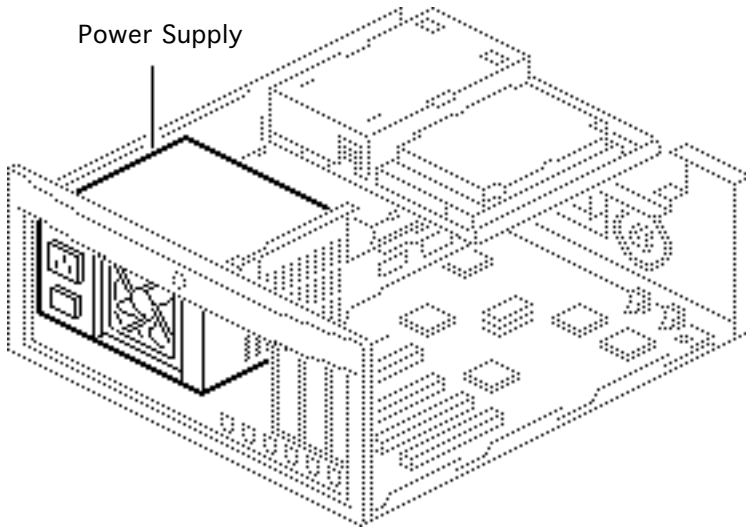


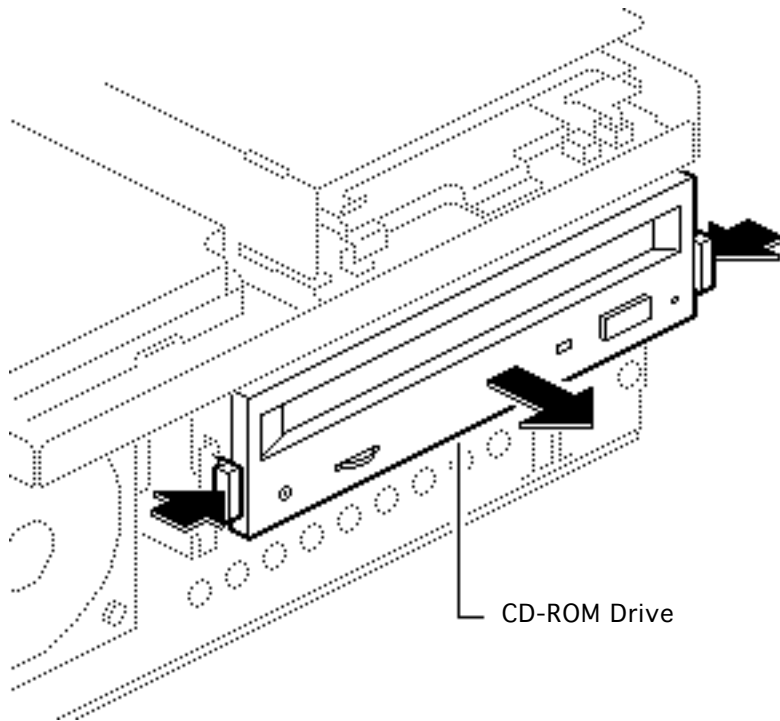


Power Supply

Before you begin, remove the cover.

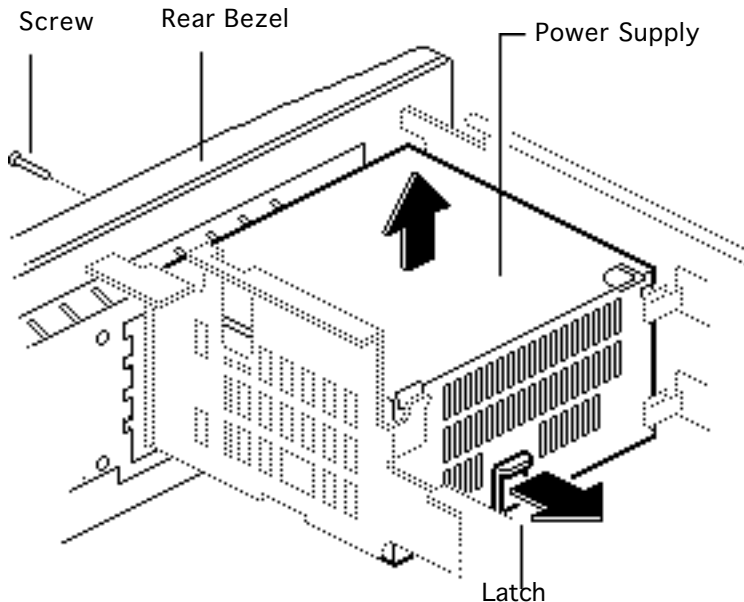
Caution: Review the ESD precautions in Bulletins/Safety.





- 1 If a CD-ROM drive is installed, squeeze its side tabs and pull the drive out an inch or two to more easily reach the power supply.





- 2 Remove the screw from the rear bezel.
- 3 Pry the latch away from the base of the power supply.
- 4 **Note:** A firm lifting motion is necessary to disconnect the power supply's connector from the logic board.

Grasp the power supply and firmly lift it out of the internal chassis.



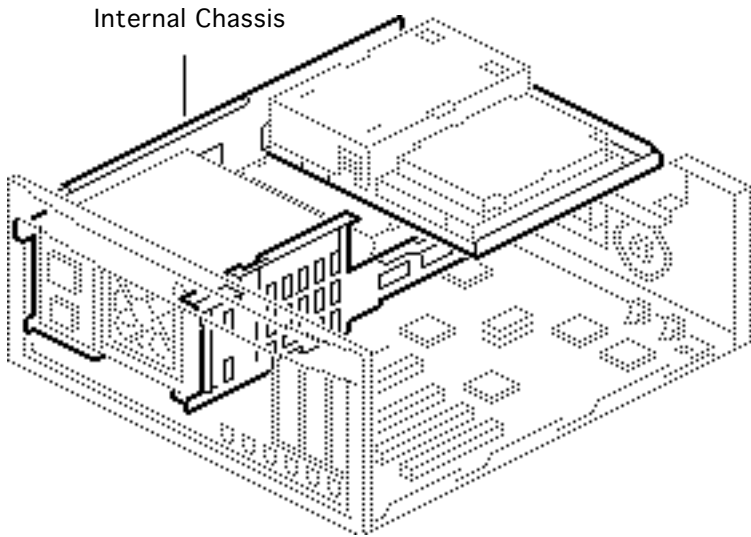


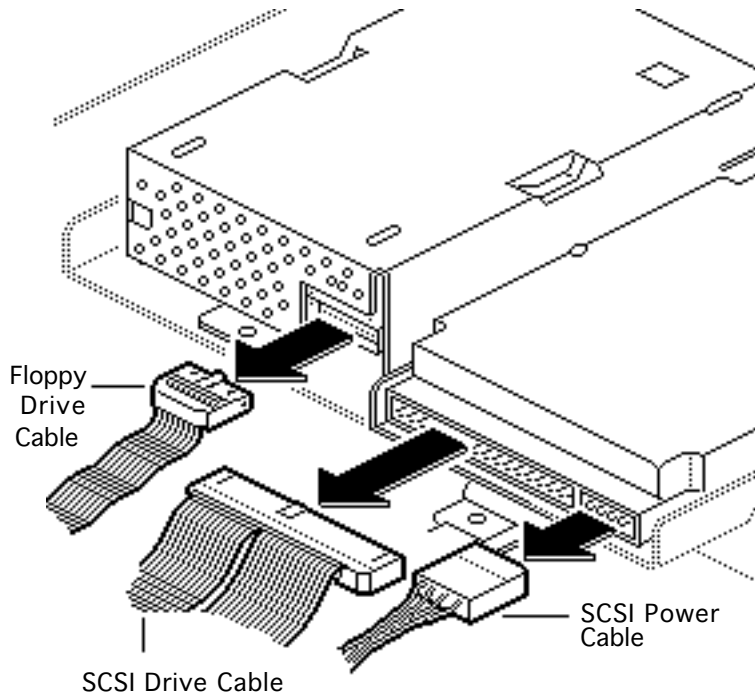
Internal Chassis

Before you begin, remove the following:

- Cover
- Power supply

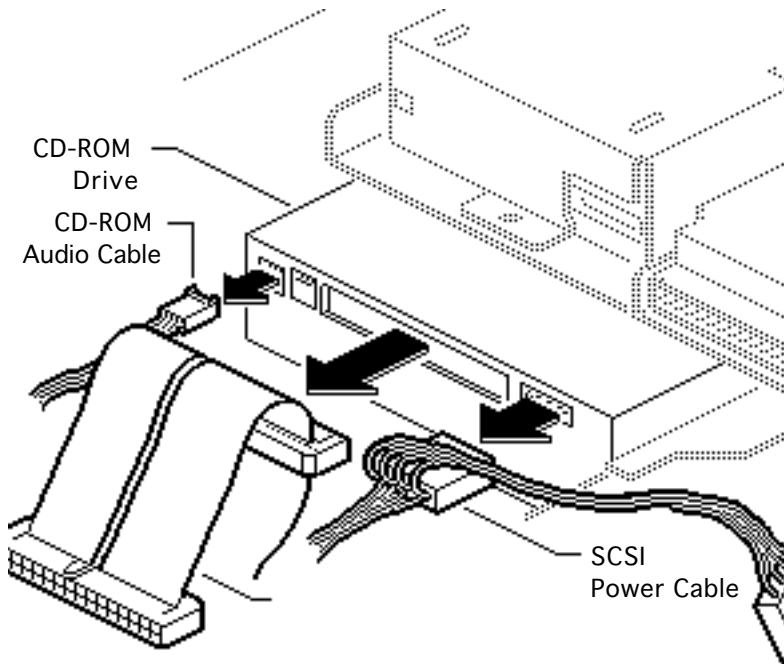
Caution: Review the ESD precautions in Bulletins/Safety.





- 1 Disconnect these cables:
 - Floppy drive cable
 - SCSI power cable
 - SCSI data cable



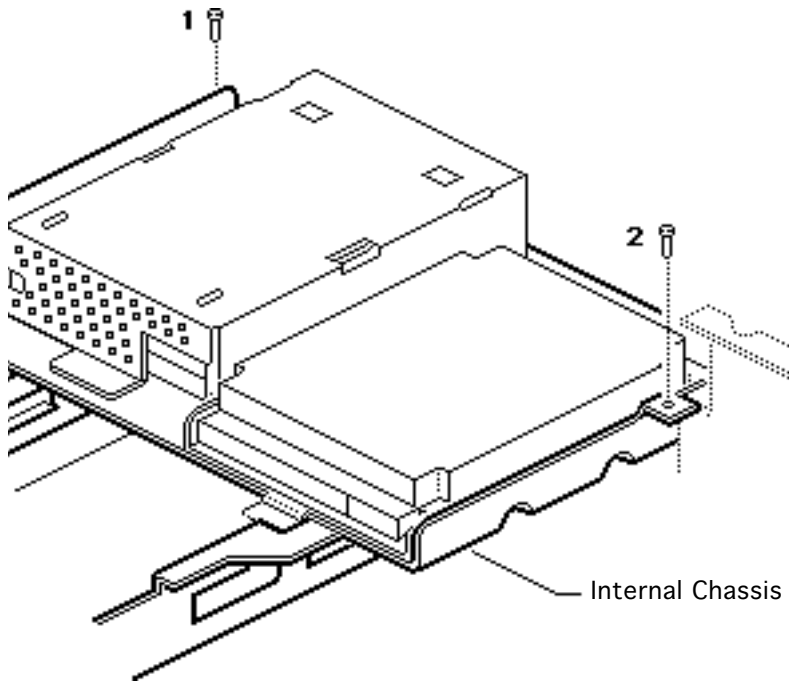


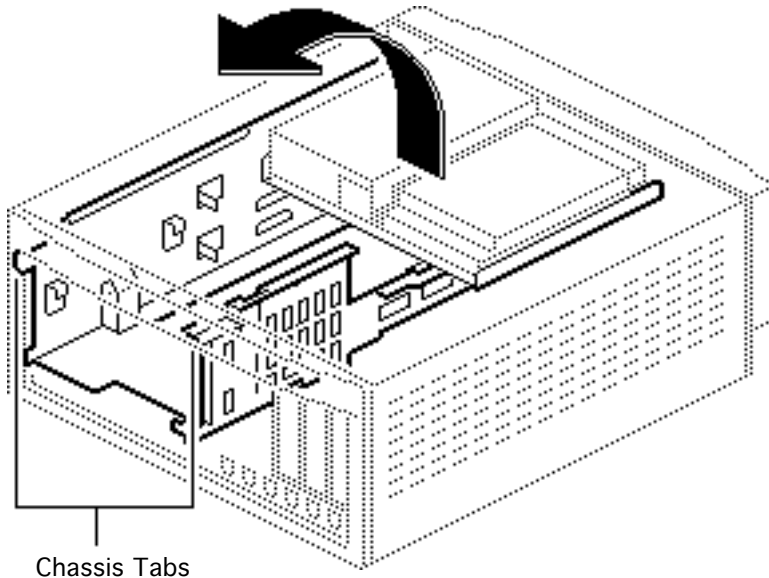
- 2 If a CD-ROM drive is installed, disconnect these cables:
- SCSI power cable
 - SCSI data cable
 - CD-ROM audio cable





- 3 Remove the two screws that secure the internal chassis.

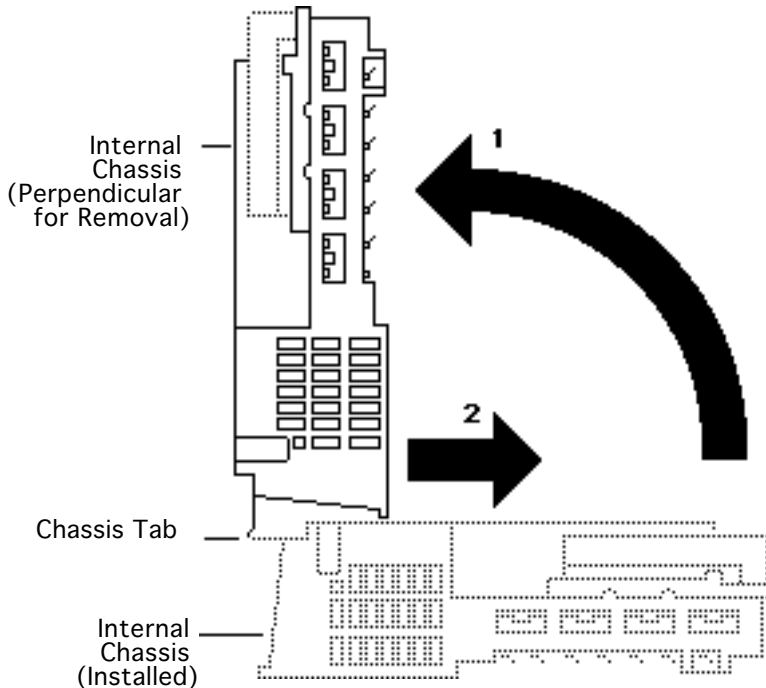




- 4 Lift the front of the internal chassis until it is perpendicular to the bottom case.

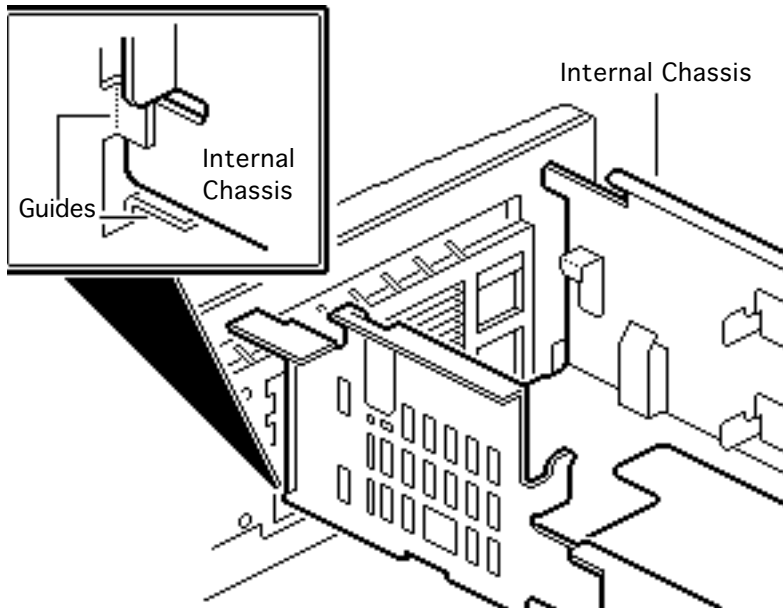
Note: The chassis swivels where the chassis tabs meet the bottom cover.





- 5 Guide the chassis tabs out of the slots in the bottom case and remove the internal chassis.

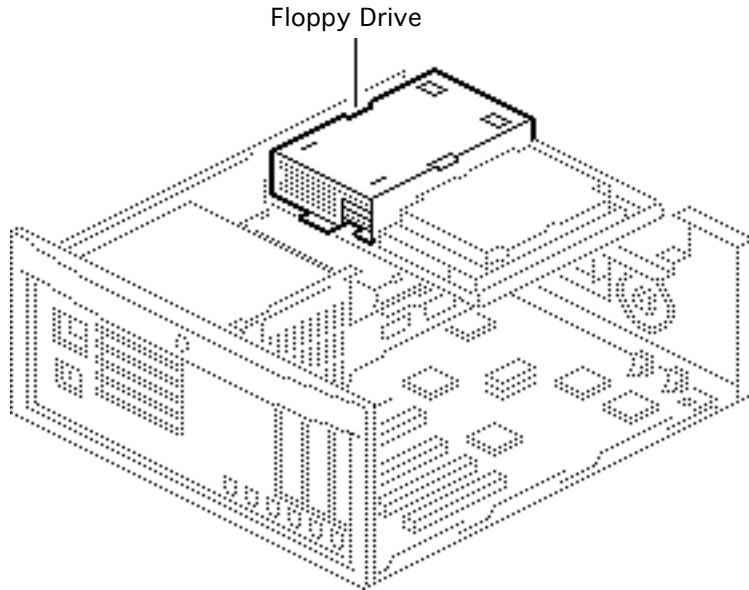




Replacement Note:

Carefully seat the bottom corners of the internal chassis into the guides in the case bottom.



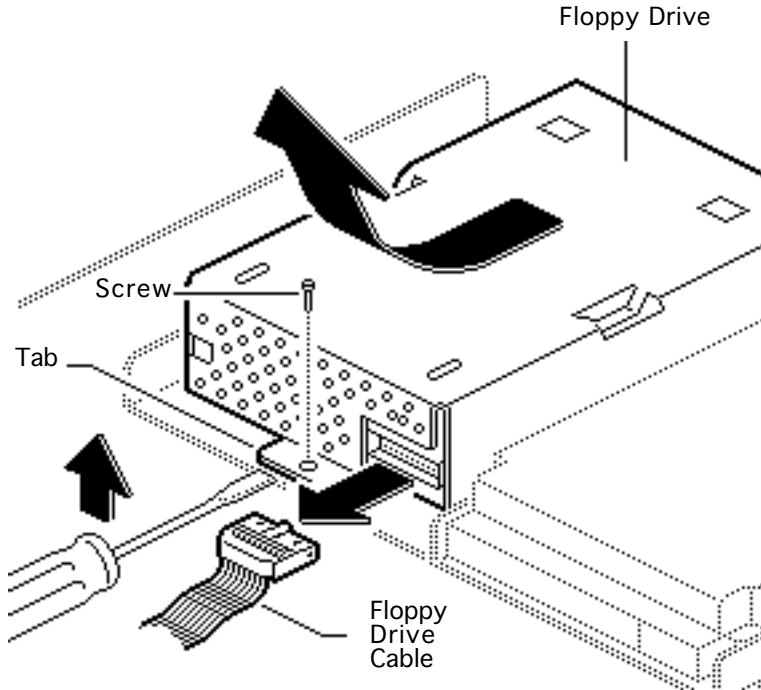


Floppy Drive

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.





- 1 Disconnect the floppy drive cable from the floppy drive.
- 2 Remove the floppy drive mounting screw.
- 3 Pry up the mounting tab and slide out the floppy drive.

Replacement Note: You may encounter either an auto-inject or manual-inject 1.4 MB floppy drive. Replace floppy drives like for like.

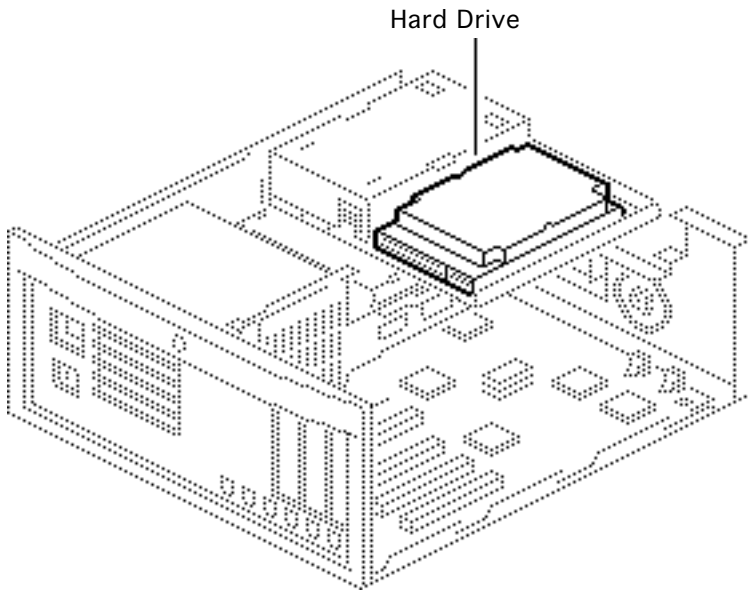


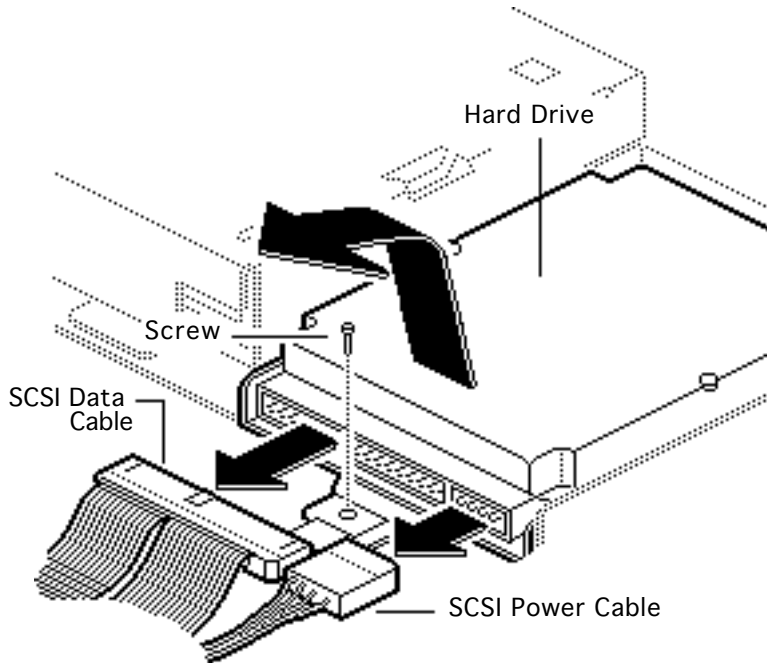


Hard Drive

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Disconnect the SCSI data cable and the SCSI power cable from the hard drive.
- 2 Remove the hard drive mounting screw from the carrier.
- 3 Lift the back of the hard drive and slide the hard drive carrier out of the internal chassis.





Replacement Note: For information on removing the hard drive from the carrier and returning drives, cables, and carriers to Apple, refer to Additional Procedures in the Hard Drives manual.



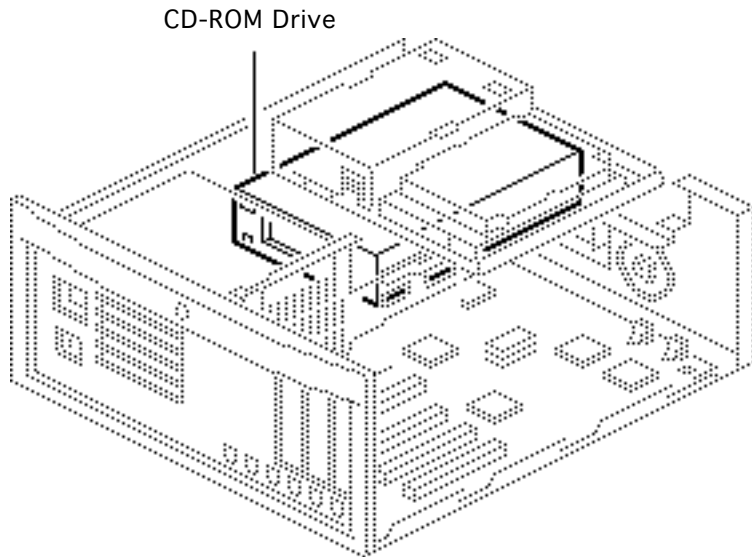


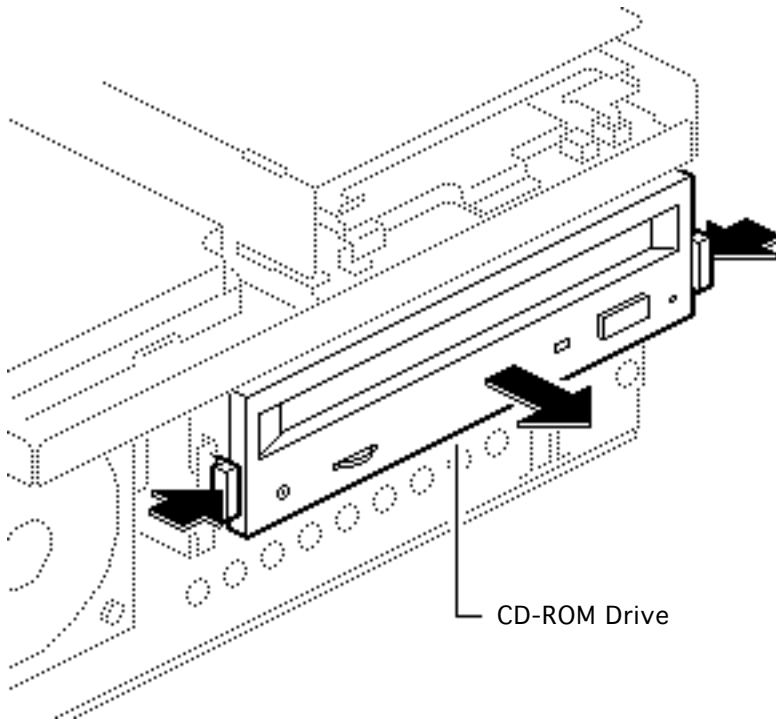
CD-ROM Drive

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.

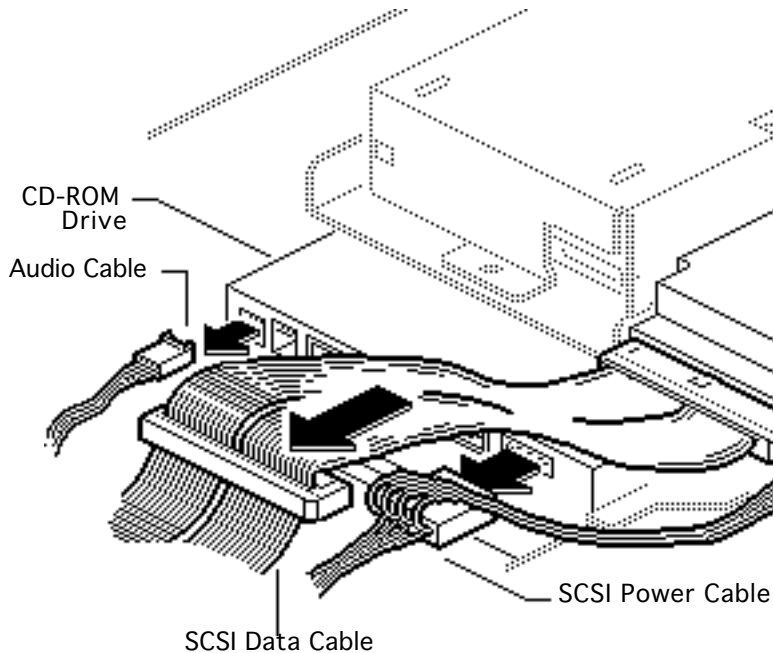
Note: A CD-ROM Drive is optional.





- 1 Squeeze the side tabs and pull the drive out a few inches to more easily perform the next step.



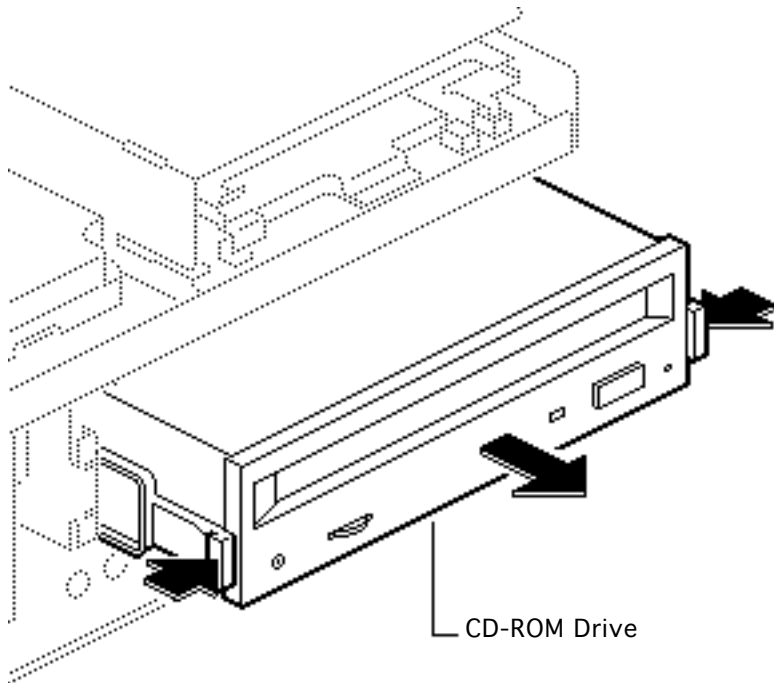


- 2 Disconnect these cables from the CD-ROM drive:
- Audio cable
 - SCSI power cable
 - SCSI data cable



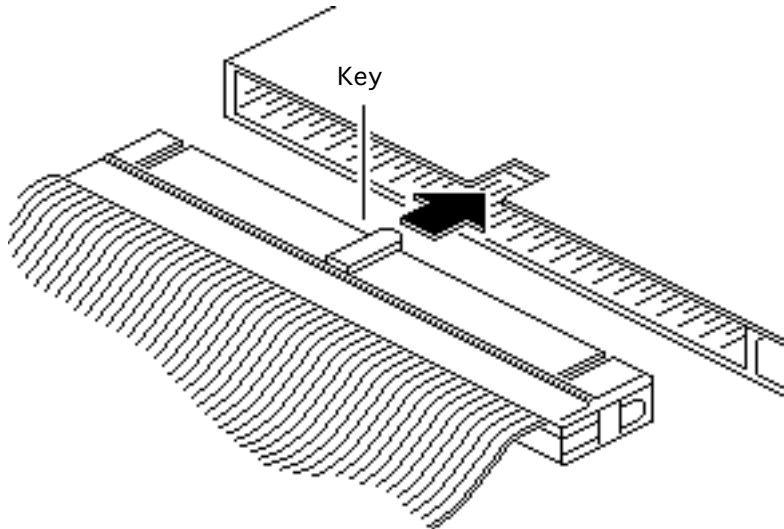


- 3 Slide out the CD-ROM drive.



CD-ROM Drive





Replacement Note: The connectors on the SCSI data cable are keyed. You may need to twist the cable to insert the connector properly.

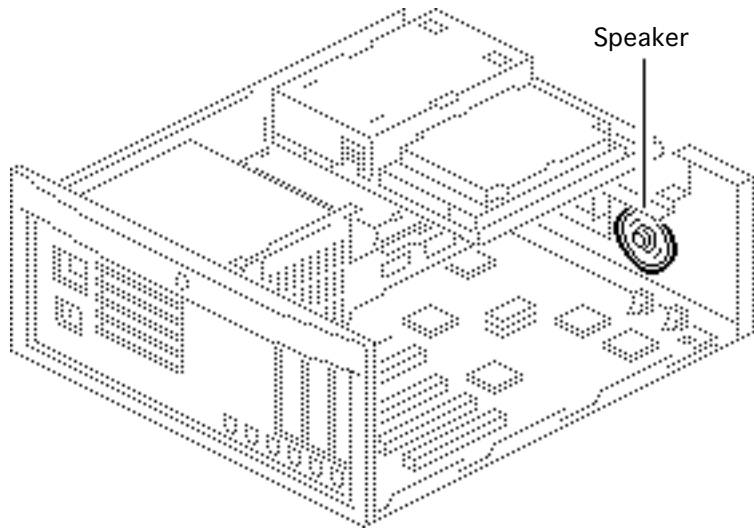


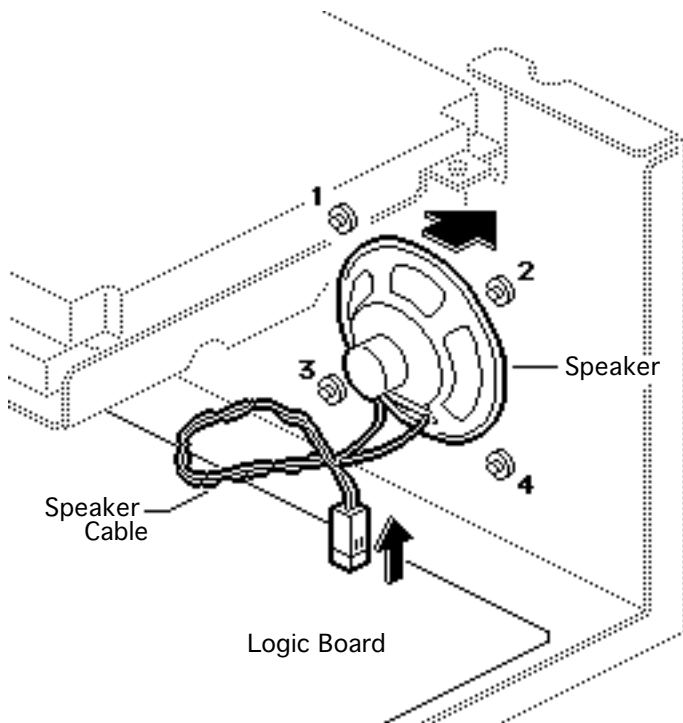


Speaker

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Disconnect the speaker cable from the logic board.
- 2 Remove the speaker mounting screws and pull out the speaker.

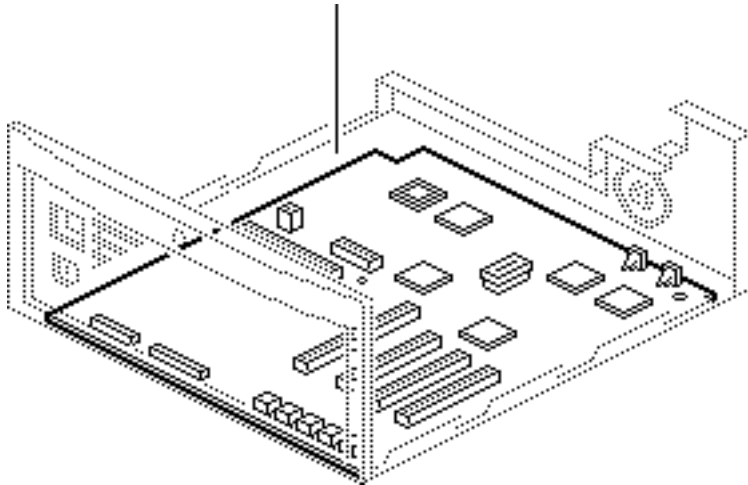
Note: Speakers are installed with four or two screws, depending on the version of speaker.





Logic Board

Logic Board

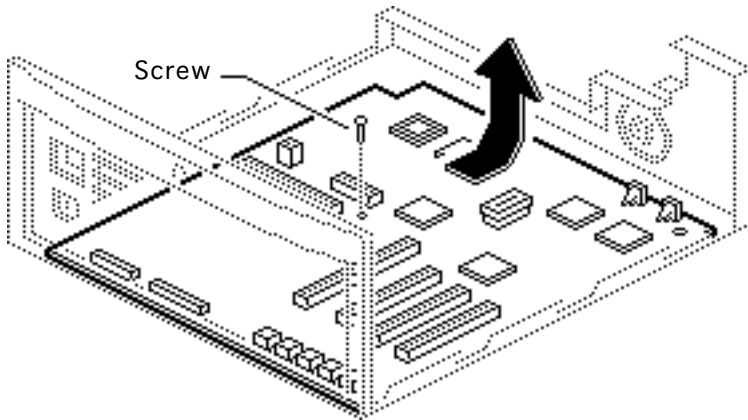


Before you begin, remove the following:

- Cover
- Power supply
- Internal chassis
- Reset/Interrupt switch
- Speaker

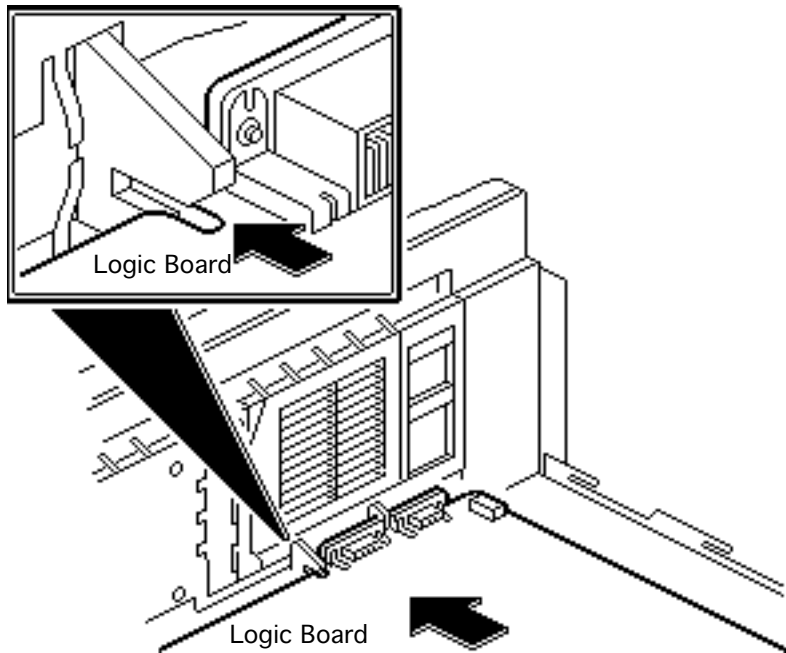
Caution: Review the ESD precautions in Bulletins/ Safety.





- 1 Remove the screw from the center of the logic board.
- 2 Slide the logic board toward the front of the computer about 1/2 inch and lift the board out of the case.





Replacement Note: Remove the customer's SIMMs from the defective logic board and install them on the replacement logic board.

Replacement Note: Be sure to install the correct logic board.

Replacement Note: Position the center rear edge of the logic board into the plastic bracket and slide the board straight back.





Upgrades

Macintosh IIvx, Macintosh IIvi,
Performa 600

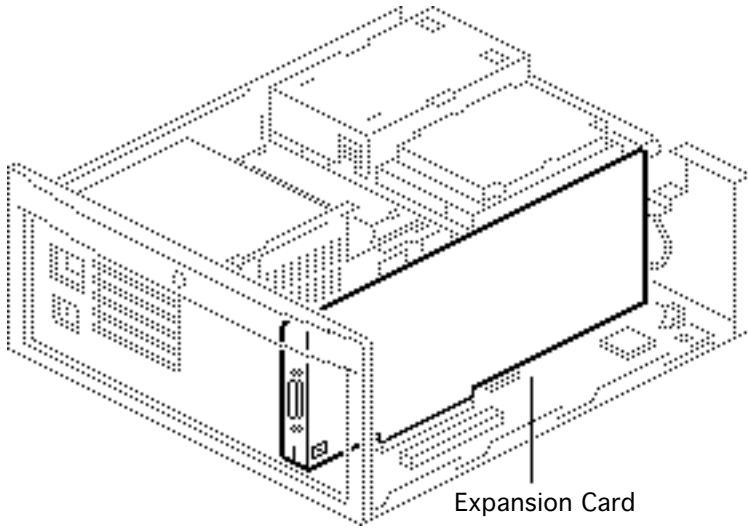


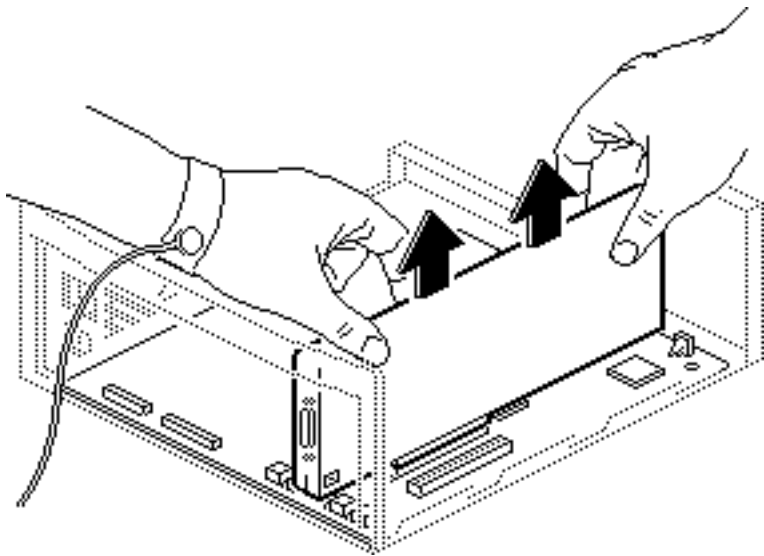


Expansion Cards

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.





- 1 **Caution:** Pull up evenly on both sides of the card to avoid bending the connector pins.

Carefully grasp each end of the card and pull straight up to remove it.

Replacement Caution: When replacing the card, do not force it into the expansion slot. If the card does not seat properly, remove it and try again.

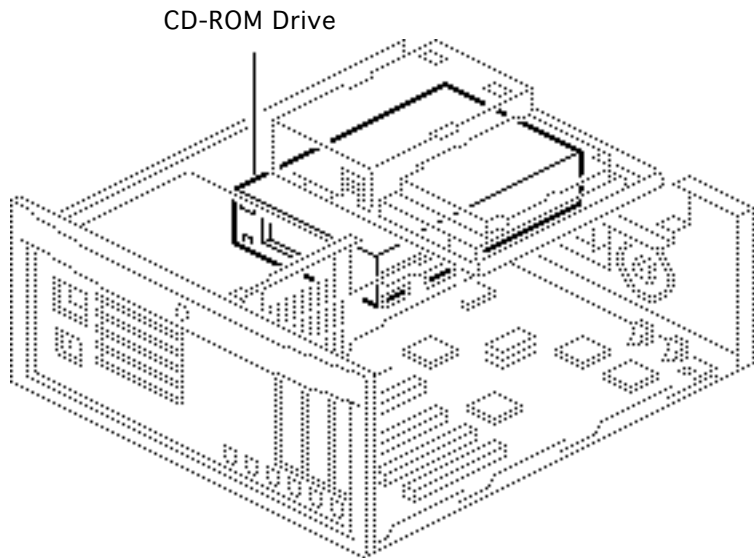


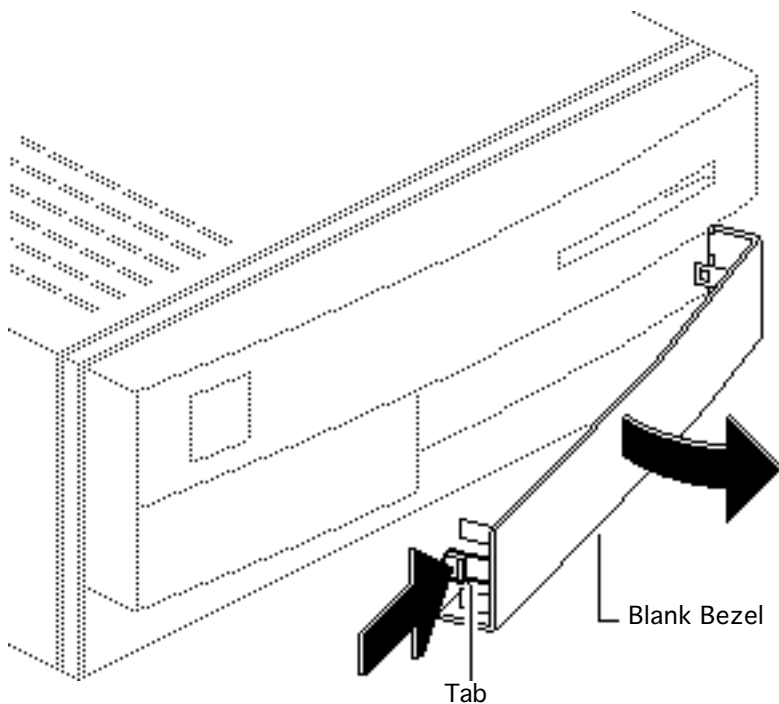


CD-ROM Drive Upgrade

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/ Safety.



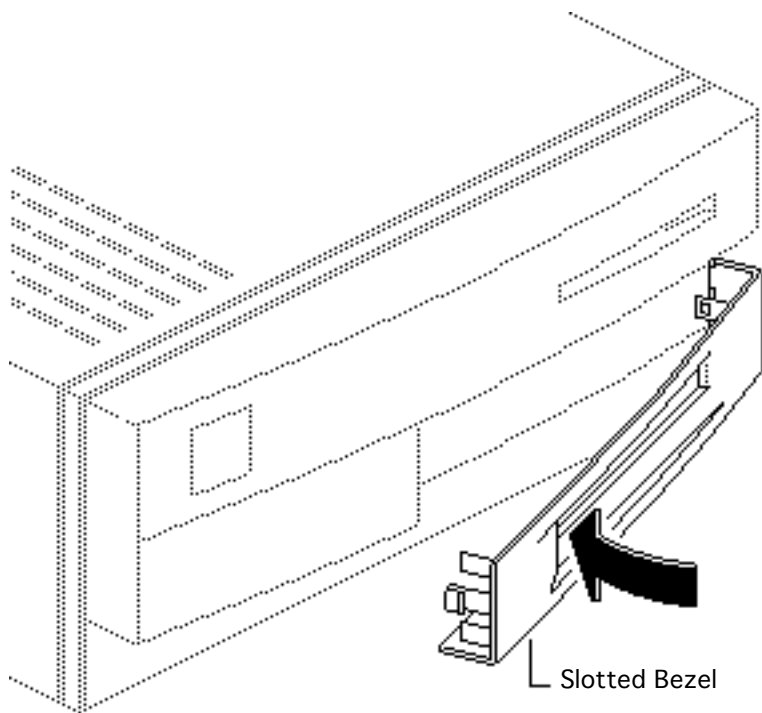


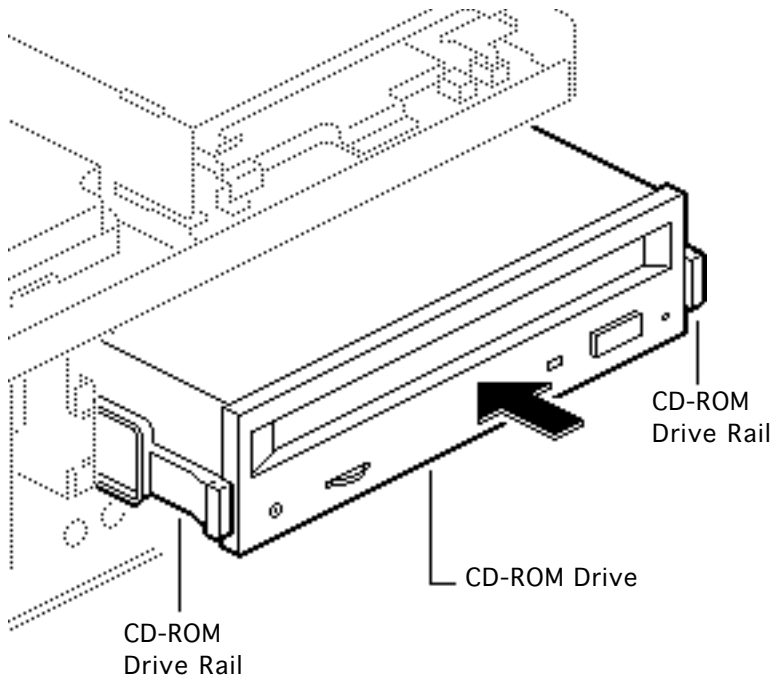
- 1 From the inside of the top cover, squeeze in the tabs of the blank bezel and push out the bezel.





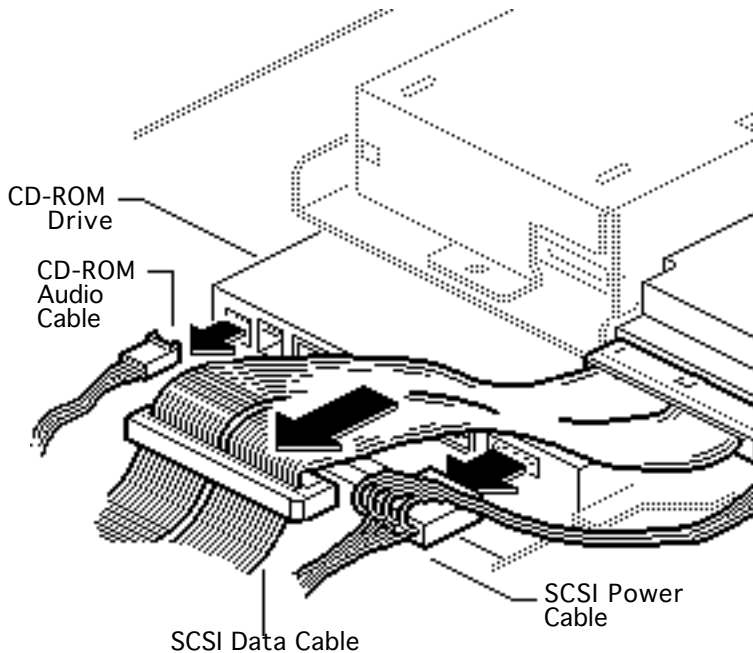
- 2 Push in the slotted bezel.





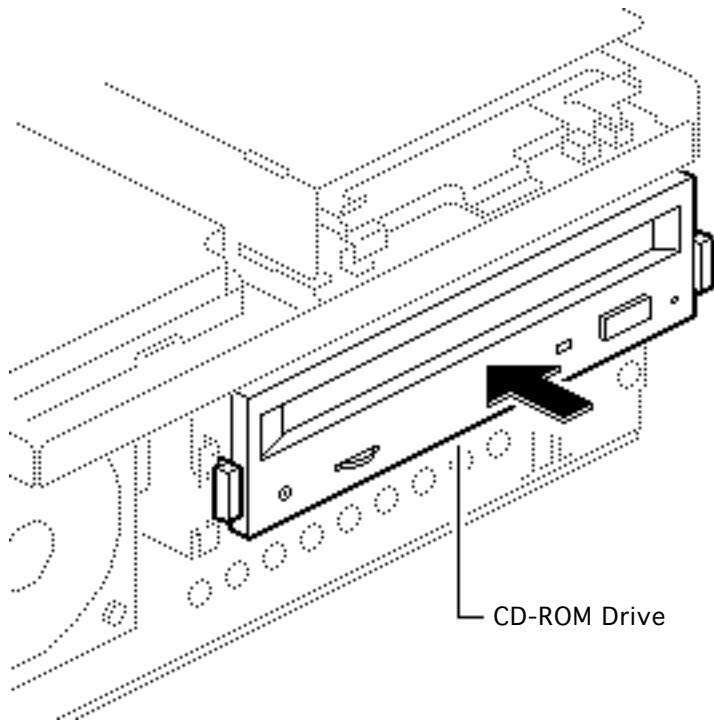
- 3 Attach the CD-ROM drive rails to the CD-ROM drive.
- 4 Slide the CD-ROM drive about three quarters of the way into the internal chassis.





- 5 Connect these cables to the CD-ROM drive:
- CD-ROM audio cable
 - SCSI data cable
 - SCSI power cable





- 6 Push the CD-ROM drive completely into the CD-ROM slot until you hear a click.



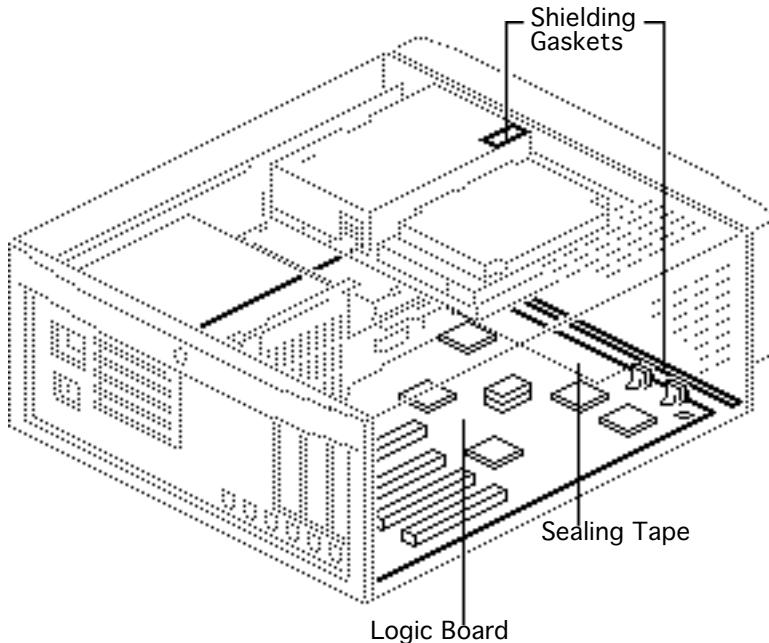


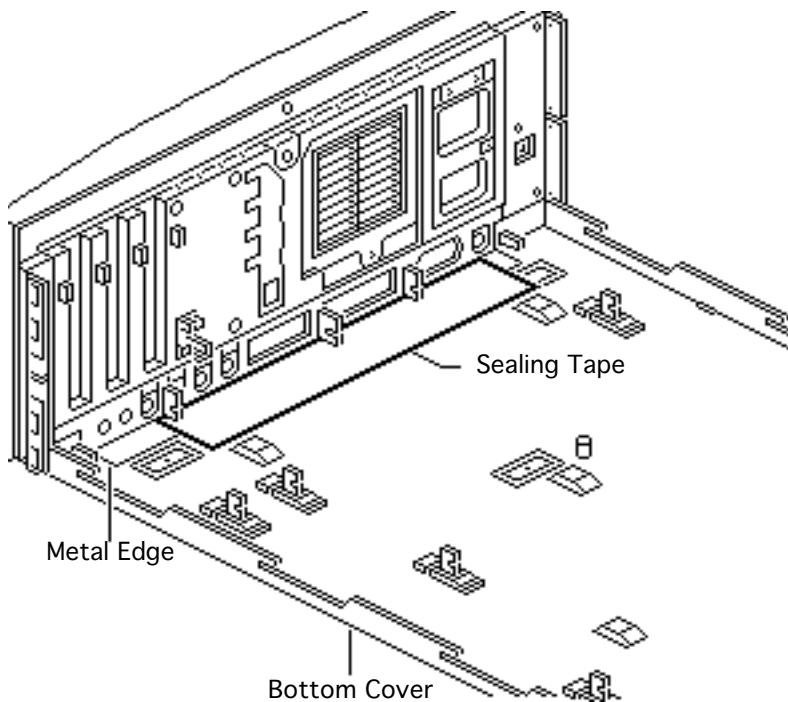
IIvx to Macintosh Centris 650 Upgrade

Before you begin, remove the following:

- Top cover
- Power supply
- Internal chassis
- Reset/Interrupt switch
- Speaker
- Logic board

Caution: Review the ESD precautions in Bulletins/ Safety.





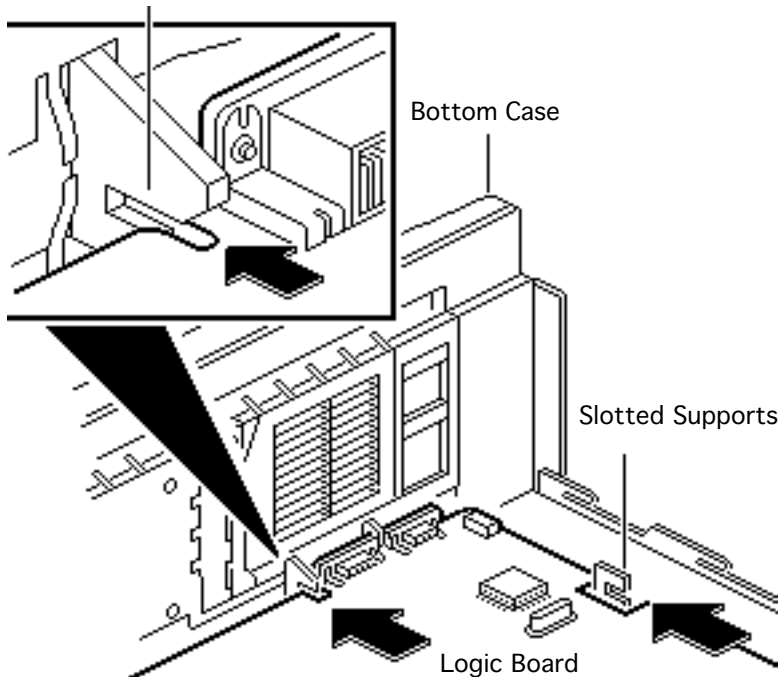
Note: The Macintosh Centris 650 Upgrade Kit upgrades a Macintosh Ilvx to a Macintosh Centris 650. The upgrade kit includes a Macintosh Centris 650 logic board, EMI shielding gaskets, sealing tape, and product name labels.

- 1 Remove the backing from the sealing tape.
- 2 Position the sealing tape over the metal edge of the bottom cover. Press firmly and secure the tape to the metal edge and





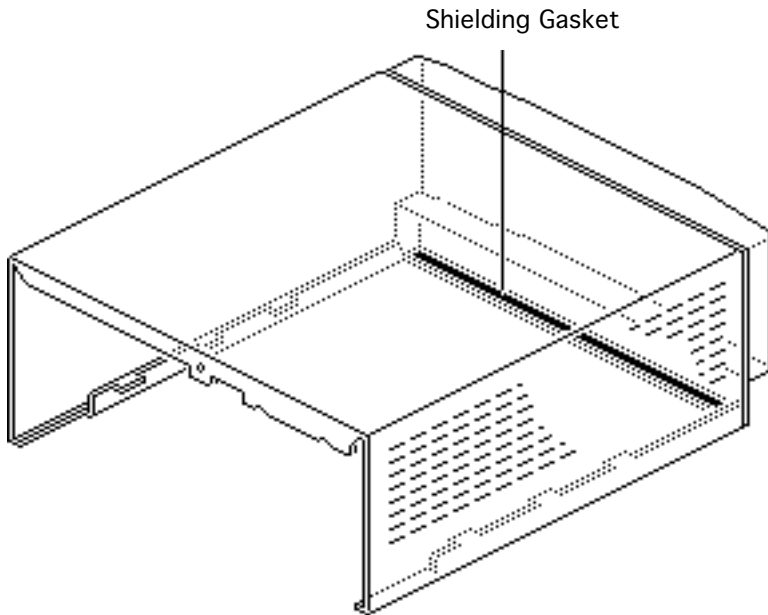
Plastic Bracket



the floor of the bottom cover.

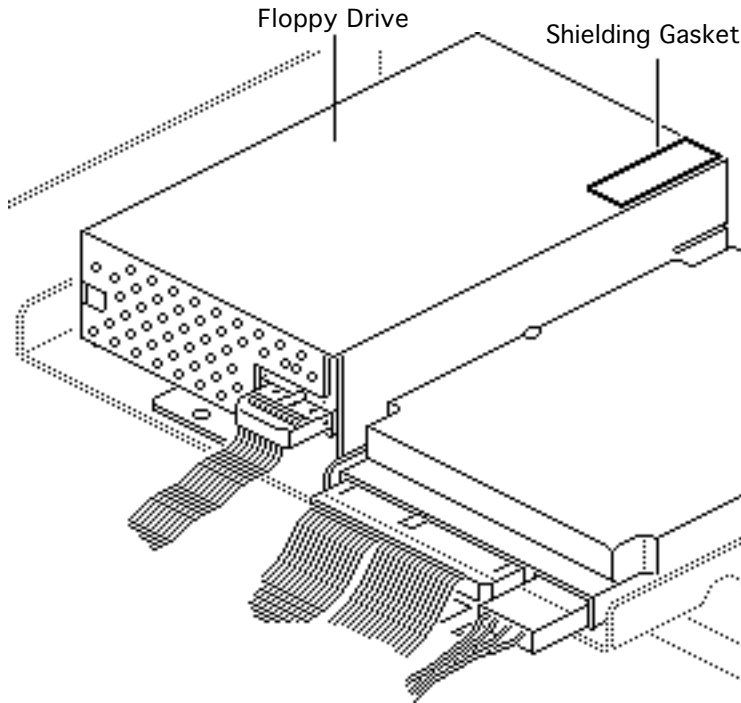
- 3 Position the center rear edge of the logic board in the plastic brackets on the bottom case.
- 4 Lay the logic board flat. Align the notches in the board with the slotted supports.
- 5 Slide the board straight back.





- 6 Secure the long strip of the shielding gasket along the bottom edge of the top cover.





- 7 Secure the smaller shielding gasket on the floppy drive as shown.

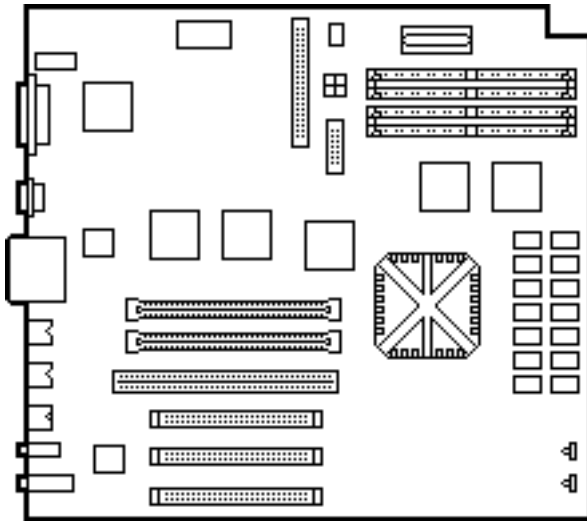




Power Macintosh Upgrade

No preliminary steps are required before you begin this procedure.

The Macintosh IIvx, IIvi, and Performa 600 computers can be upgraded to a Power Macintosh 7100/66 or 7100/66AV. For upgrade instructions, refer to Additional Procedures in the Power Macintosh 7100 manual.





Additional Procedures

Macintosh IIvx, Macintosh IIvi,
Performa 600



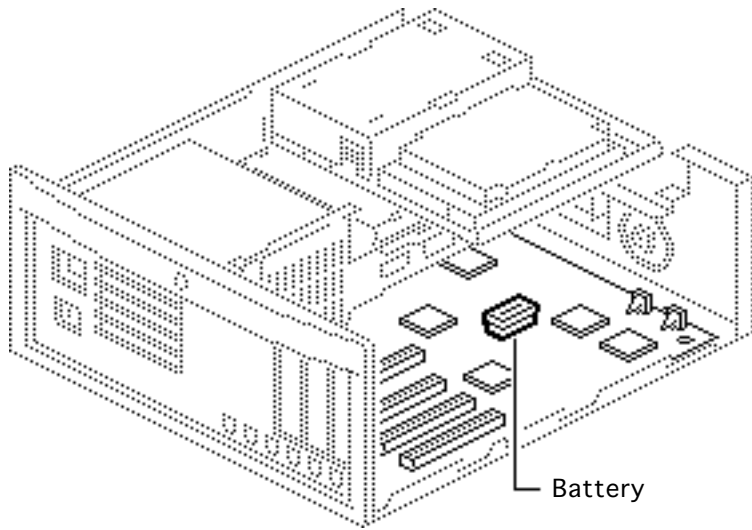


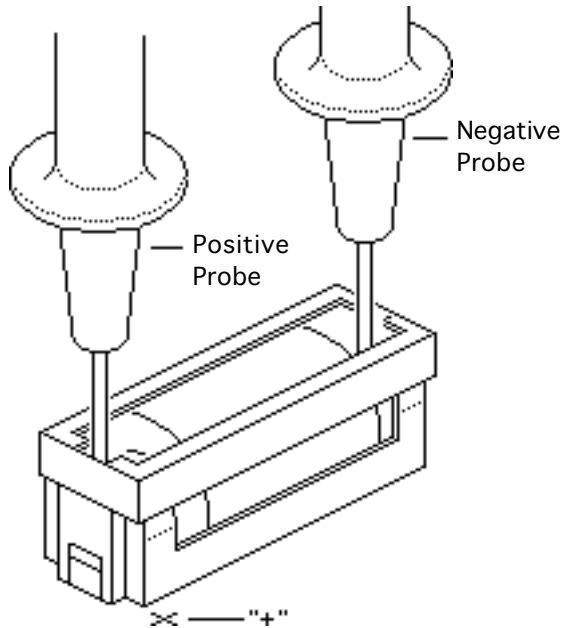
Battery Verification

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.

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





- 1 Set the voltmeter to the 10 volts DC scale.
- 2 Hold the positive probe of the voltmeter to the positive end of the battery (marked “+” on the logic board) and the negative probe to the negative end of the battery.
- 3 If the battery voltage is below 2.8 volts, replace the battery. Refer to “Battery Replacement” in this chapter.



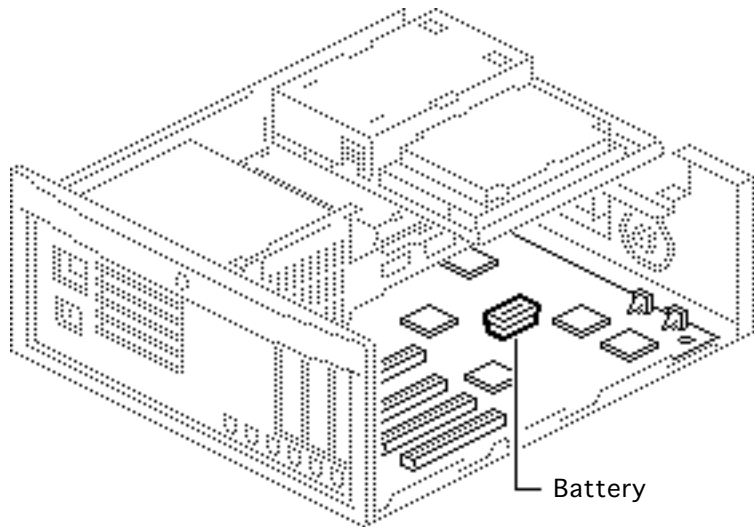


Battery Replacement

Before you begin, remove the cover.

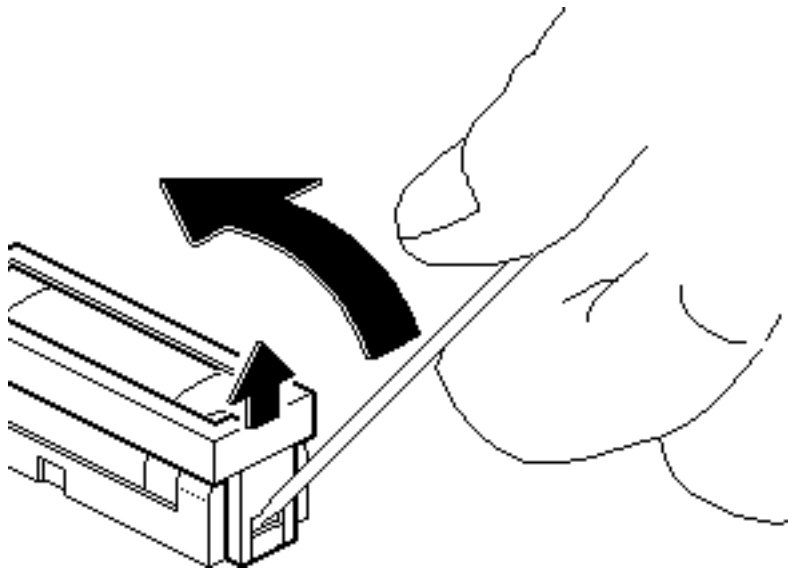
Caution: Review the ESD precautions in Bulletins/Safety.

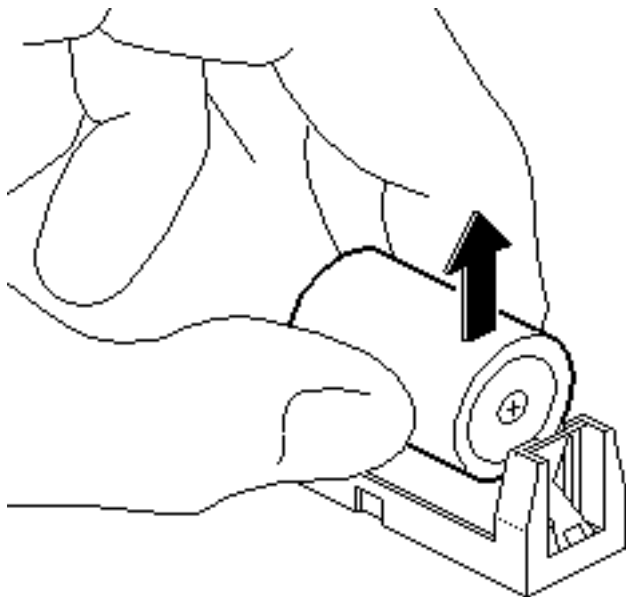
Warning: If handled or discarded improperly, the lithium battery in the computer could explode. Review battery handling and disposal instructions in Bulletins/Safety.





- 1 Using a small flat-blade screwdriver, pry open the latch at the end of the battery holder and lift off the cover.





- 2 Grasp the battery and remove it from the holder.
- 3 Return the battery to Apple for proper disposal. For battery packaging and labeling instructions, refer to the safety information in Bulletins/Safety.

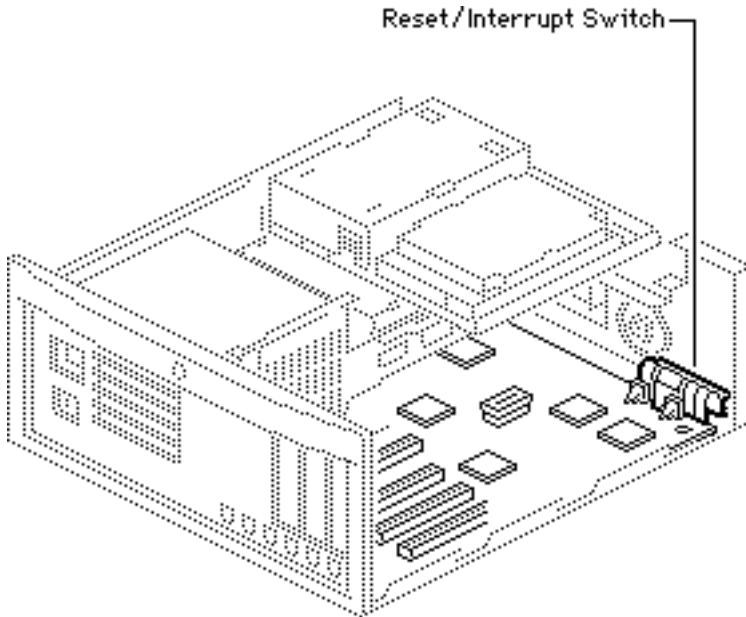


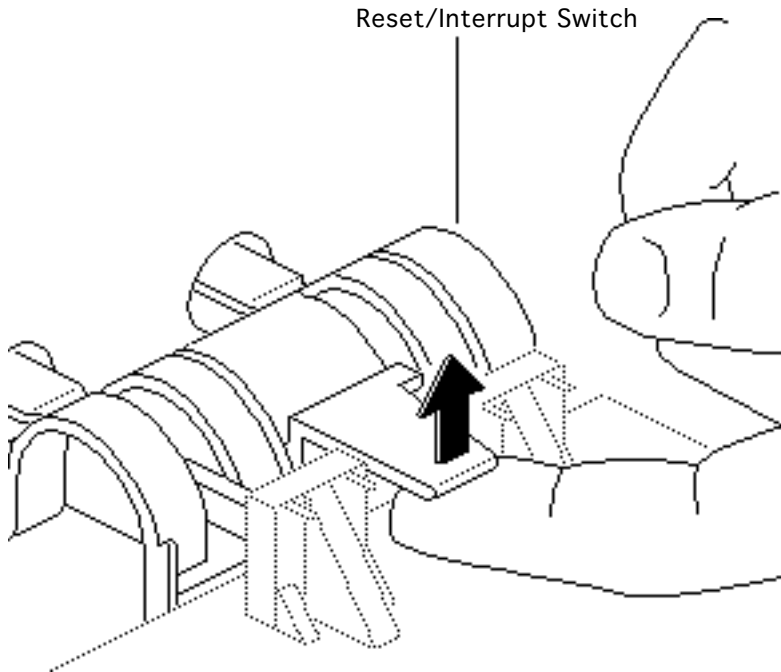


Reset/Interrupt Switch

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.





- 1 With one finger, lift the center tab of the switch.
- 2 Gently lift the rear of the switch up and away from the front of the case.





Exploded View

Macintosh IIvx, Macintosh IIvi,
Performa 600





Exploded View

