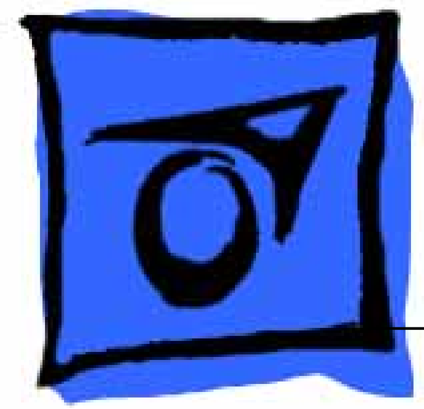


Macintosh IIcx/IIci/ Quadra 700

Macintosh IIcx
Macintosh IIci
Macintosh Quadra 700

Basics

Macintosh IIcx/IIci/Quadra 700

Overview

This manual includes complete repair procedures for the Macintosh IIcx, Macintosh IIci, and Quadra 700, shown at left.

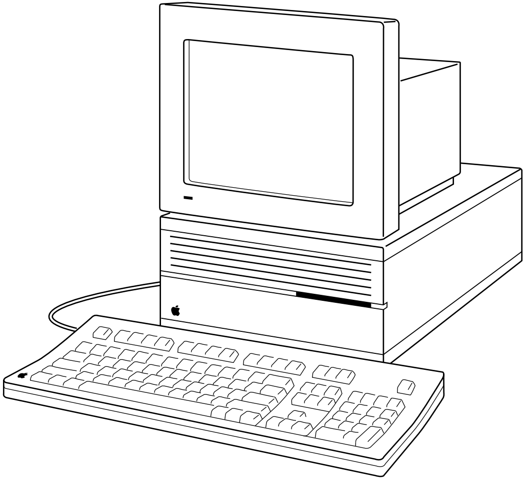
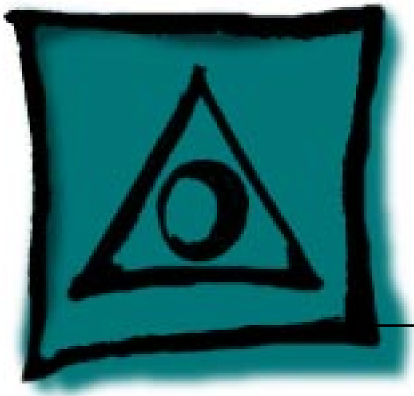


Figure: Macintosh IIcx, IIci, and Quadra 700



Specifications

Macintosh IIcx/IIci/Quadra 700

Processor

CPU

Macintosh IIcx	Motorola 68030 microprocessor 15.6672 MHz
Macintosh IIci	Motorola 68030 microprocessor 25 MHz
Quadra 700	Motorola 68040 microprocessor 25 MHz

Addressing	32-bit registers 32-bit address/data bus

Coprocessor	Built-in floating-point unit (FPU)

Memory

RAM

Macintosh IIcx	1 MB, expandable to 128 MB (120 ns or faster SIMMs)
Macintosh IIci	1 MB, expandable to 128 MB (80 ns or faster SIMMs)
Quadra 700	4 MB, expandable to 8 MB (80 ns, I MB SIMMs) or 20 MB (third-party 4 MB SIMMs)

ROM

Macintosh IIcx	256K
Macintosh IIci	512K

Quadra 700	1 MB soldered on logic board; ROM SIMM socket available

Disk Storage

Floppy Drive	Internal 1.4 MB floppy drive

Hard Drive

Macintosh IIcx/IIci	Optional internal 40, 80, or 160 MB hard drive
Quadra 700	Internal 80, 160, or 400 MB hard drive

I/O Interfaces

Floppy Drive	One DB-19 serial port for connecting external floppy drives
SCSI	One DB-25 external connector
Apple Desktop Bus	Two Apple Desktop Bus (ADB) ports
Serial	Two RS-232/RS-422 serial ports; mini DIN-8 connectors
Expansion	
Macintosh IIcx/IIci	Three NuBus slots
Quadra 700	Two NuBus slots and one processor-direct slot

Sound	Stereo sound jack
Video	
Macintosh IIci/ Quadra 700	One DB-15 video port for built-in video
Ethernet	
Quadra 700	Built-in Ethernet port; AUI-15 connector

I/O Devices

Keyboard	Apple Keyboard
Mouse	ADB mouse; DIN-4 connector

Sound and Video

Sound Generator	Apple sound chip provides 8-bit stereo sampling at 44.1 kHz Four-voice, wavetable synthesis; capable of driving stereo headphones or other stereo equipment through the sound jack

Video Display

Macintosh IIci/ Quadra 700	Supports 640 by 480 pixel screens at up to 256 colors or shades of gray (up to 8 bits per pixel) Supports 640 by 870 pixel screens at up to 16 shades of gray

Electrical

Line Voltage	100–240 VAC, automatically configured
Frequency	50–60 Hz, single phase
Maximum Power	
Macintosh IIcx/IIci	90 W (not including monitor power)
Quadra 700	130 W (not including monitor power) 90 W continuous

Physical

Dimensions	Height: 5.5 in. (14.0 cm) Width: 11.9 in. (30.2 cm) Depth: 14.4 in. (36.5 cm)
Weight	14 lb. (6.4 kg) with internal hard drive

Troubleshooting

Macintosh IIcx/IIci/Quadra 700

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

System

Does not power on—screen is black, fan is not running, and LED is not lit	1 Check cables. 2 Plug monitor directly into wall socket, and verify that monitor has power. 3 Replace power cord. 4 Replace power supply. 5 Replace logic board. Retain customer’s SIMMs.
Clicking, chirping, or thumping	1 Replace power supply. 2 Replace logic board. Retain customer’s SIMMs.

System (Continued)

System shuts down intermittently	1 Make sure air vents on sides and top of case are unobstructed. Thermal protection circuitry may shut down system. After 30–40 minutes, system should be OK. 2 Replace power cord. 3 Check batteries. Refer to “Battery Verification” in Additional Procedures. 4 Replace power supply. 5 Replace logic board. Retain customer’s SIMMs.
System intermittently crashes or locks	1 Make sure system software is correct version. 2 Make sure application software is known-good. 3 Replace SIMMs. 4 Replace logic board. Retain customer’s SIMMs. 5 Replace power supply.

Video

Screen is dark, audio and 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. Move video card to different slot.
5. Replace video card.
6. Quadra 700: Replace VRAM SIMMs.
7. Macintosh IIcx/IIci: Make sure ROM jumper is on.
8. Replace SIMMs.
9. Replace logic board. Retain customer’s SIMMs.
10. Replace power supply.

Video (Continued)

Screen is dark, audio and drive do not operate, but fan is running and LED is lit	1 Replace video cable. 2 Replace monitor. Refer to appropriate monitor manual to troubleshoot defective monitor. 3 Quadra 700: Replace VRAM SIMMs. 4 Macintosh IIcx/IIci: Make sure ROM jumper is on. 5 Remove NuBus cards. 6 Remove peripherals. 7 Replace SIMMs. 8 Replace logic board. Retain customer’s SIMMs. 9 Replace power supply.

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 Move video card to different slot. 4 Replace video card. 5 Replace logic board. Retain customer’s SIMMs.
Screen is completely dark, fan is not running, and LED is not lit	1 Plug the monitor directly into a wall socket and verify that the monitor has power. 2 Check battery. Refer to “Battery Verification” in Additional Procedures. 3 Replace power supply. 4 Replace logic board. Retain customer’s SIMMs.

Floppy Drive

Audio and video present, but internal drive does not operate	1 Replace disk with known-good system disk. 2 Verify that all external SCSI devices are disconnected. 3 Replace internal floppy drive cable. 4 Replace internal floppy drive. 5 Replace logic board. Retain customer’s SIMMs. 6 Replace power supply.
Disk ejects; display shows icon with blinking “X”	1 Replace disk with known-good system disk. 2 Replace internal floppy drive cable. 3 Replace internal floppy drive. 4 Replace logic board. Retain customer’s SIMMs.

Floppy Drive (Continued)

Will not eject disk	1 Switch off computer. Hold mouse button down while you switch computer on. 2 Eject disk manually. 3 Replace floppy drive.
Attempts to eject disk, but doesn’t	1 Push disk completely in. 2 Eject disk manually. 3 Replace floppy drive.

Hard Drive

Internal hard drive runs continuously	1 Replace hard drive data cable. 2 Replace internal hard drive. 3 Replace logic board. Retain customer’s SIMMs.
Internal hard drive does not operate	1 Replace hard drive data cable. 2 Replace hard drive power cable. 3 Replace hard drive. 4 Replace logic board. Retain customer’s SIMMs.
Works with internal hard drive or external SCSI device but not with both	1 Verify that SCSI select switch setting on external device is not 7 or same number as internal hard drive. 2 Replace terminator on external device. 3 Verify that internal hard drive has a terminator.

Peripherals

Cursor does not move	1 Reboot system. 2 Check mouse connection. 3 If mouse was connected to keyboard, connect mouse to a computer ADB port instead and disconnect the keyboard. If mouse works, replace the keyboard. 4 If mouse does not work in any ADB port on computer, replace mouse. 5 Replace logic board. Retain customer’s SIMMs.
Cursor moves, but clicking the mouse button has no effect	1 Replace mouse. 2 Replace logic board. Retain customer’s SIMMs.

Peripherals (Continued)

Double-click doesn’t open an application, disk, or server	1 Remove duplicate system files on the hard drive. 2 Clear parameter RAM. System 7: Hold down <Command> <Option> <P> <R> during startup but before “Welcome to Macintosh” appears. System 6 and earlier: Hold down <Shift> <Option> <Command> keys and select Control Panel from Apple menu. 3 If mouse was connected to keyboard, connect the mouse to a computer ADB port, and disconnect the keyboard. If mouse works, replace the 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)

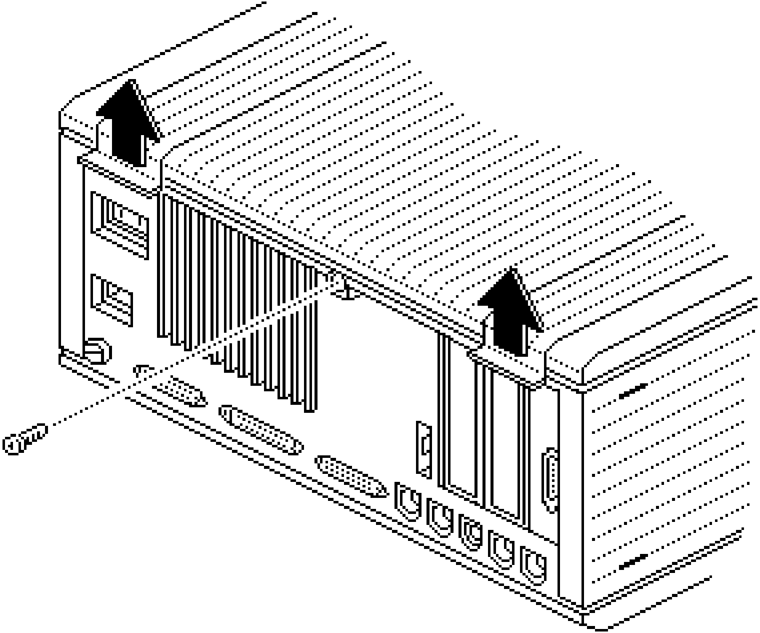
No response to any key on the keyboard	1 Check keyboard connection to ADB port. 2 Replace keyboard cable. 3 Replace keyboard. 4 Replace logic board. Retain customer’s SIMMs.
Known-good ImageWriter or Imagewriter II does not print	1 Make sure System is 6.0.4 and Finder is 6.1 (or later). 2 Make sure the Chooser and Control Panel settings are correct. 3 Replace printer interface cable. 4 Replace logic board. Retain customer’s SIMMs.
Known-good LaserWriter does not print	1 Make sure System is 6.0.4 and Finder is 6.1 (or later). 2 Make sure the Chooser and Control Panel settings are correct.

Miscellaneous

No sound from speaker	1 Verify that volume setting in the Control Panel is 1 or above. 2 Replace speaker. 3 Replace logic board. Retain customer’s SIMMs.
Clock not running	1 Replace battery. See “Battery Verification” in Additional Procedures. 2 Replace logic board. Retain customer’s SIMMs.

Take Apart

Macintosh IIcx/IIci/Quadra 700

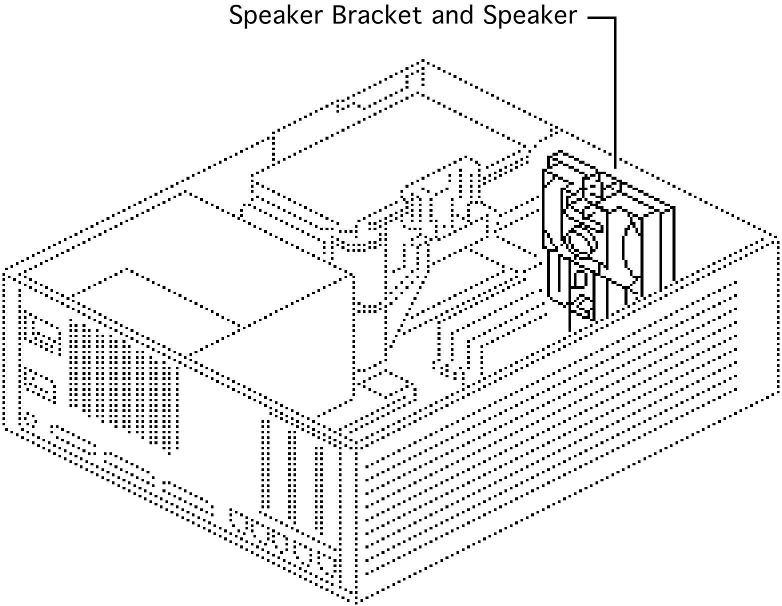


Cover

No preliminary steps are required before you begin this procedure.

1 Remove the Phillips screw.

2 Pull up on the tabs and lift the cover until it comes off the front end.

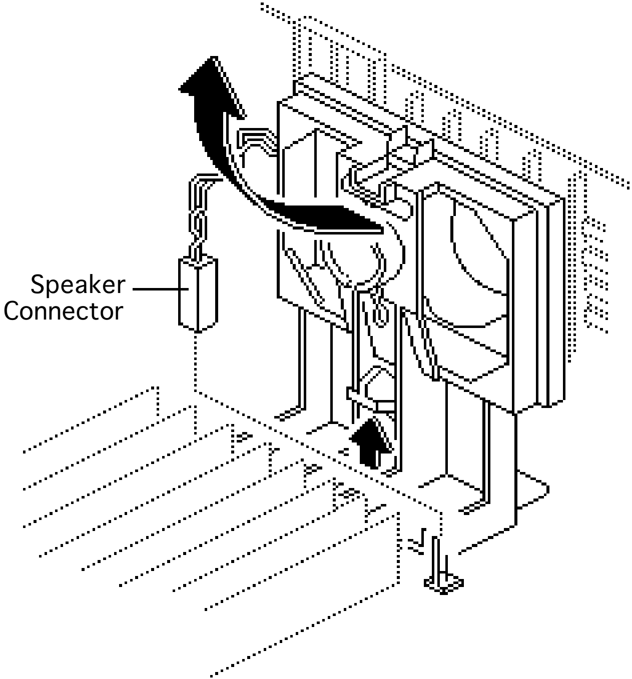


Speaker Bracket and Speaker

Before you begin, remove the cover.

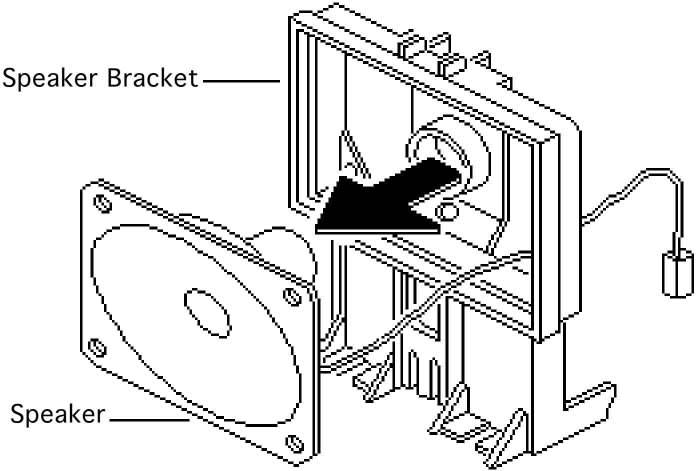
Caution: Review the ESD precautions in Bulletins/ Safety.

Note: The speaker and speaker bracket are two separate, replaceable units. To remove the speaker, you must first remove the speaker bracket.



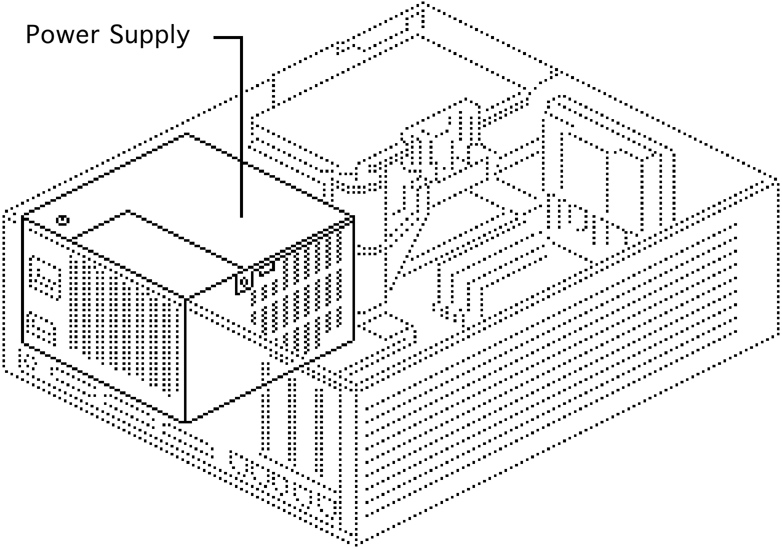
1 Disconnect the speaker connector from the logic board.

2 Gently lift the release latch and pull back on the bracket until it comes free from the case.


Speaker Bracket
Speaker

3 **Caution:** Do not push on the heavy paper part of the speaker.

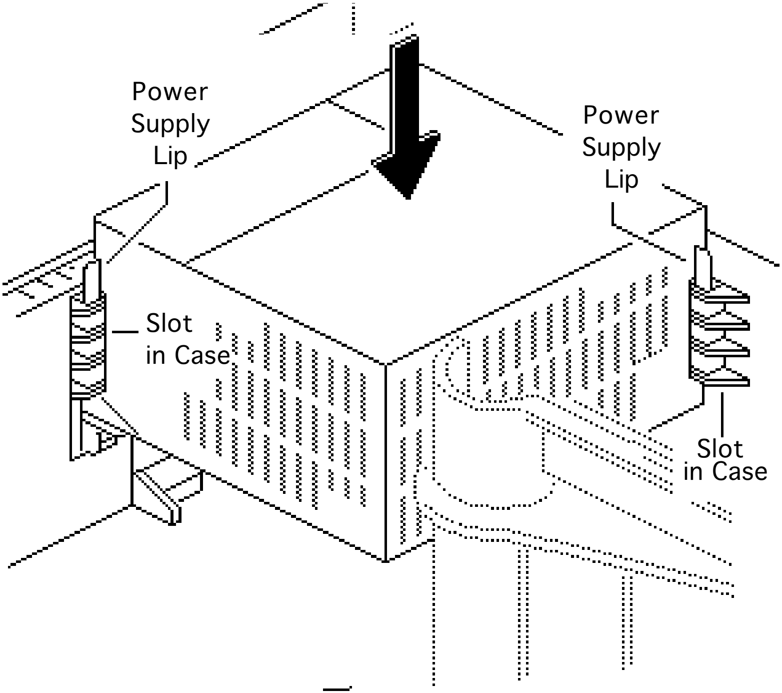
Gently push the speaker from the bracket.



Power Supply

Before you begin, remove the cover.

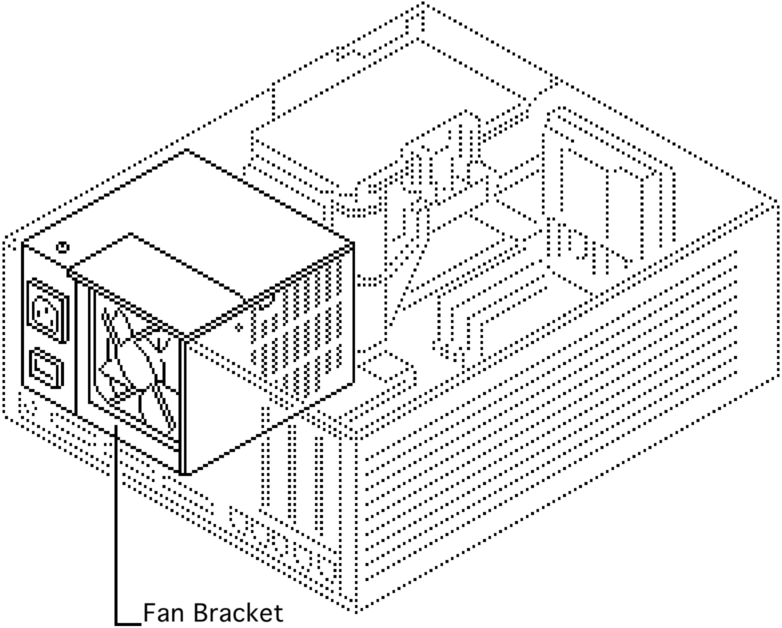
Caution: Review the ESD precautions in Bulletins/ Safety.


Power Supply Lip
Power Supply Lip
Slot in Case
Slot in Case

Note: Use some force in lifting the power supply. If the power supply does not move, verify that the latch is released.

Release the latch and lift the power supply from the computer.

Replacement Note: Make sure the lips of the power supply align with the slots in the case. Slide the power supply down until you hear a click.



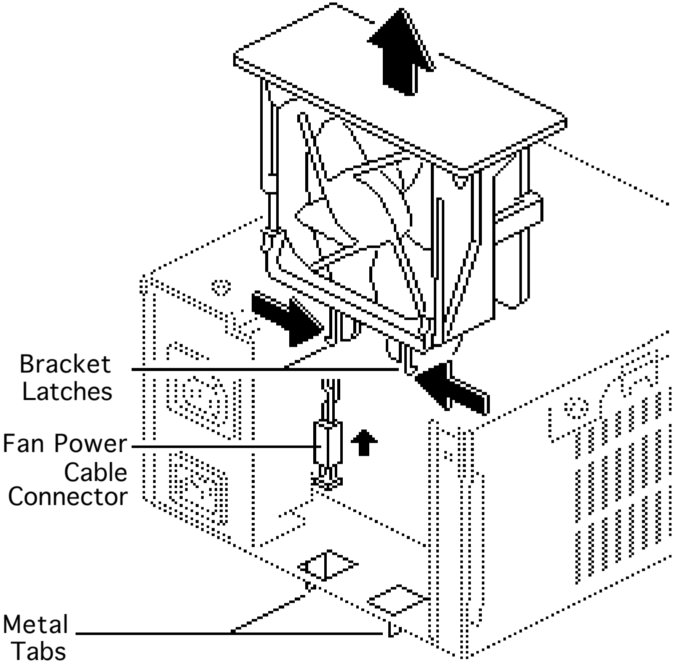
Fan Bracket and Fan

Before you begin, remove the following:

- Cover
- Power supply

Caution: Review the ESD precautions in Bulletins/ Safety.

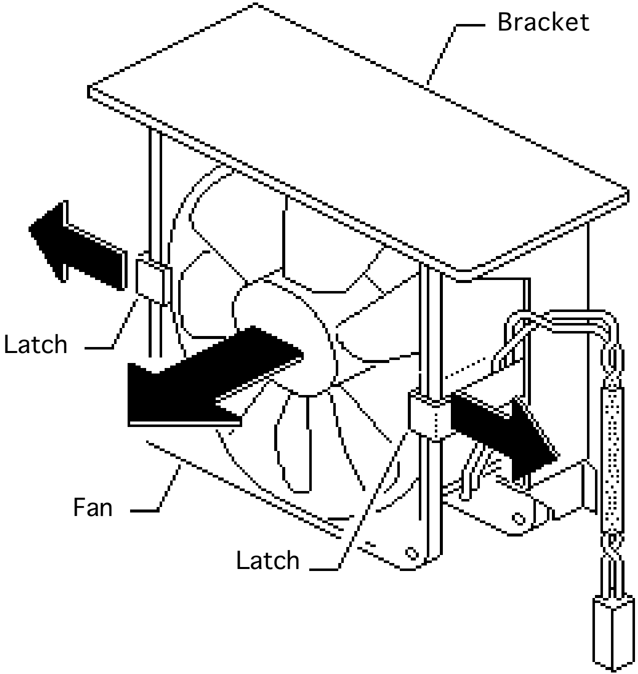
Note: The fan and fan bracket are two separate, replaceable units. To remove the fan, you must first remove the fan bracket.


Bracket Latches
Fan Power Cable Connector
Metal Tabs

1 Gently squeeze together the two bracket latches and release them from the metal tabs.

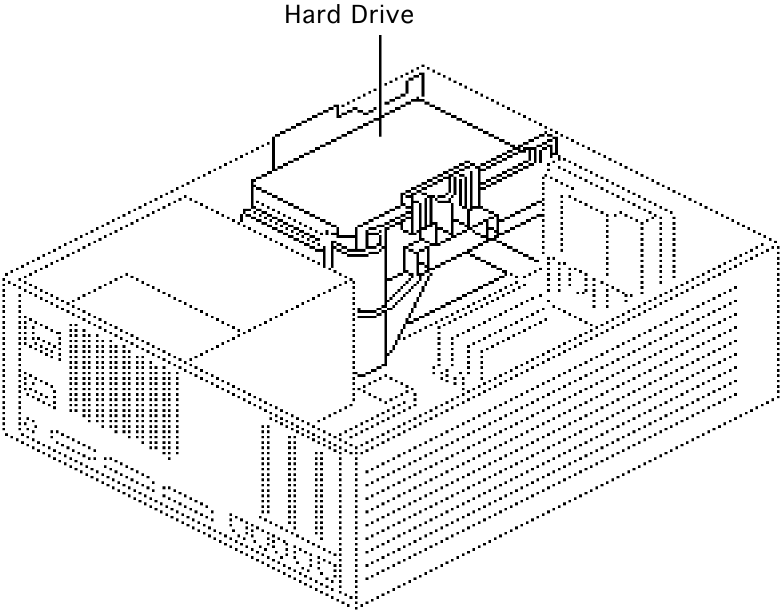
2 Push up on the latches until you can access the fan power cable connector.

3 Disconnect the cable from the power supply and pull the fan bracket from the case.


Bracket
Latch
Fan
Latch

4 Release the two latches and push the fan from the bracket.

Replacement Note: Push the fan wire into the power supply case far enough to prevent the fan blades from striking the wire.



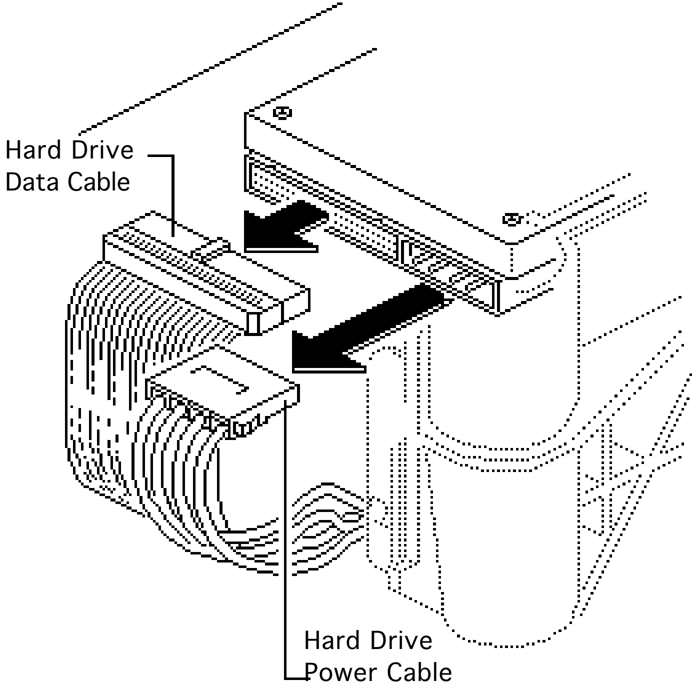
Hard Drive

Before you begin, remove the following:

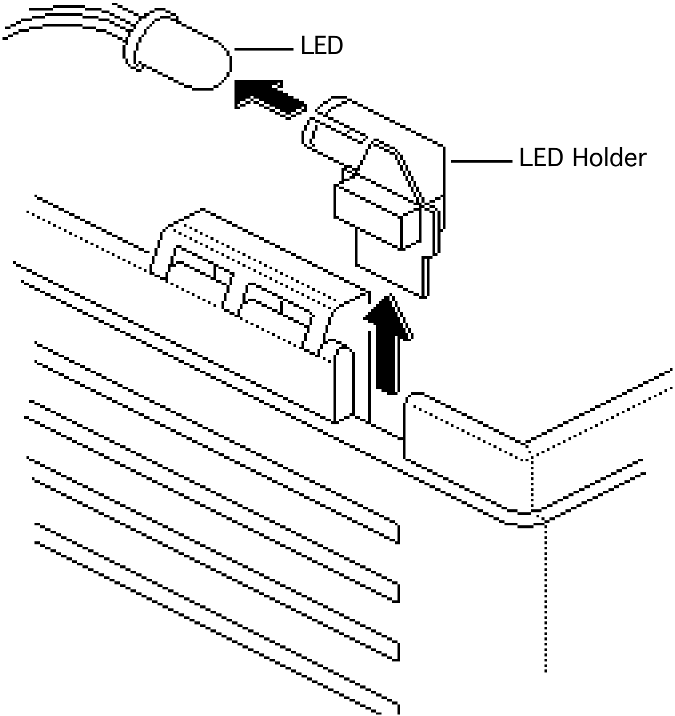
- Cover
- Power supply

Caution: Review the ESD precautions in Bulletins/ Safety.

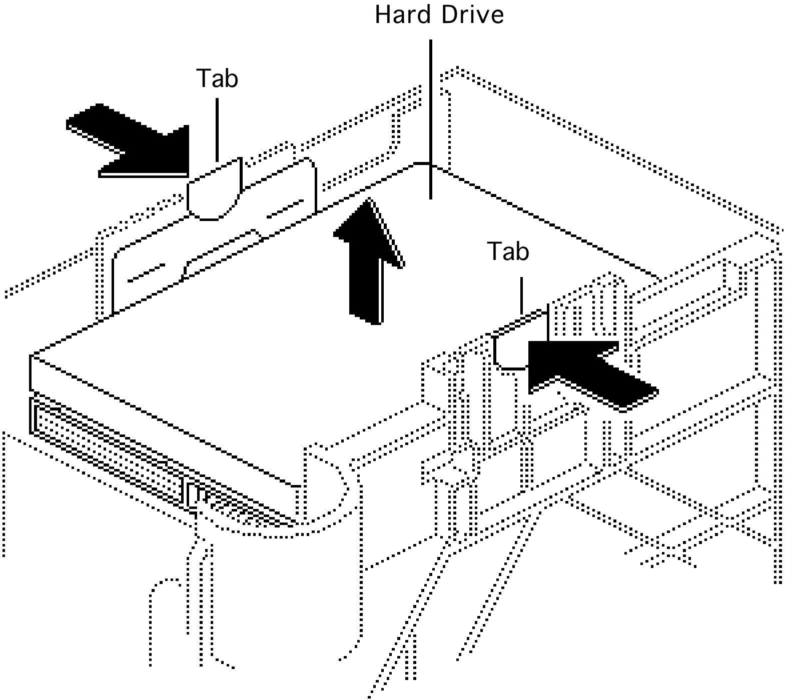
Note: The hard drive is located on the top of the drive mount. You can remove the hard drive with or without removing the mount. The following procedure describes how to remove the hard drive without removing the mount. (The procedure for removing the mount is in “Floppy Drive and Mount.”)


Hard Drive Data Cable
Hard Drive Power Cable

1 Disconnect the hard drive data cable and hard drive power cable from the hard drive.


LED
LED Holder

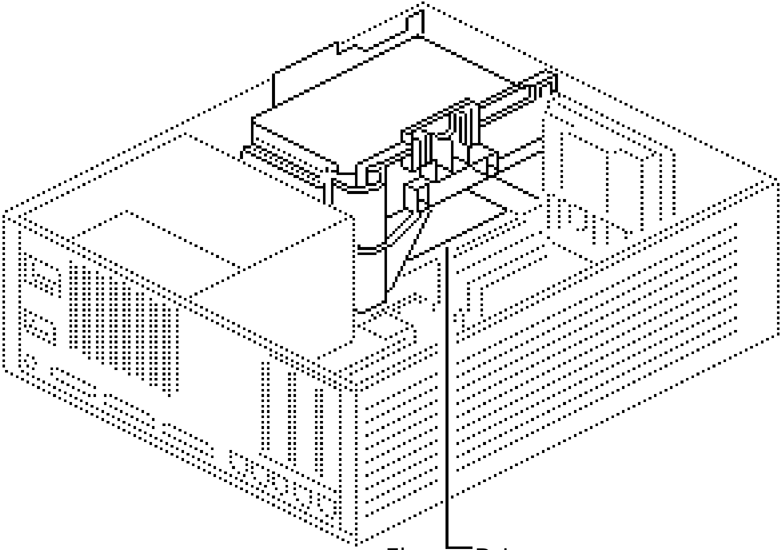
2 Lift the LED holder on the front of the case and pull out the LED.



3 Squeeze the two tabs and gently pull up.

4 Remove the hard drive along with its carrier.

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.



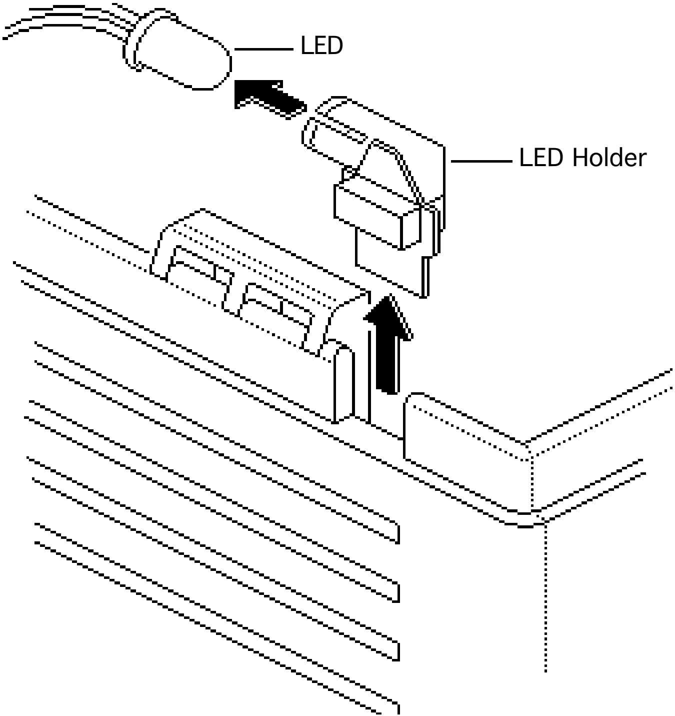
Floppy Drive and Mount

Before you begin, remove the following:

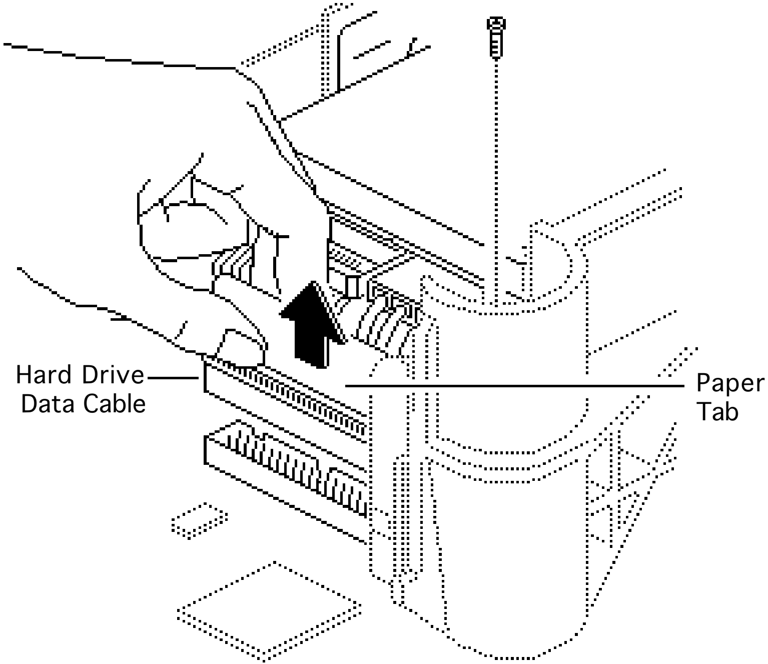
- Cover
- Power supply

Caution: Review the ESD precautions in Bulletins/ Safety.

Note: To remove the floppy drive, you must remove the drive mount.

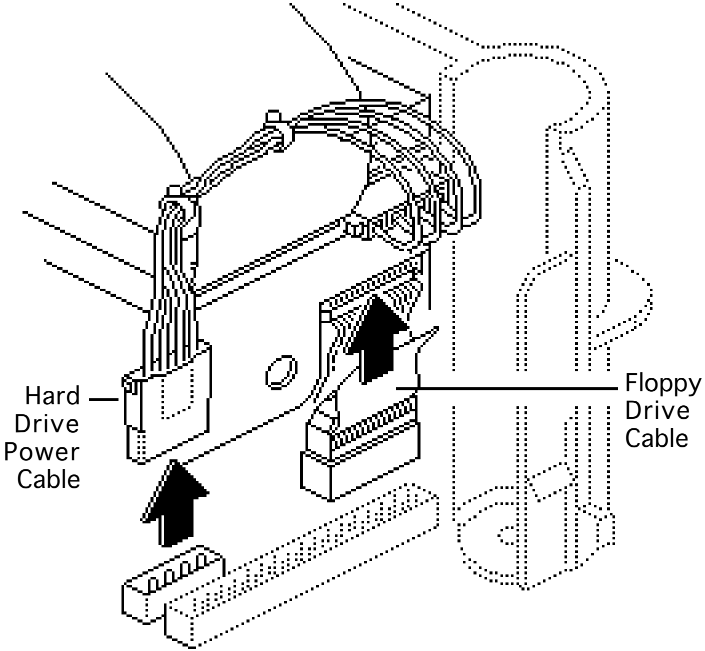

LED
LED Holder

1 Lift the LED holder on the front of the case and pull out the LED.

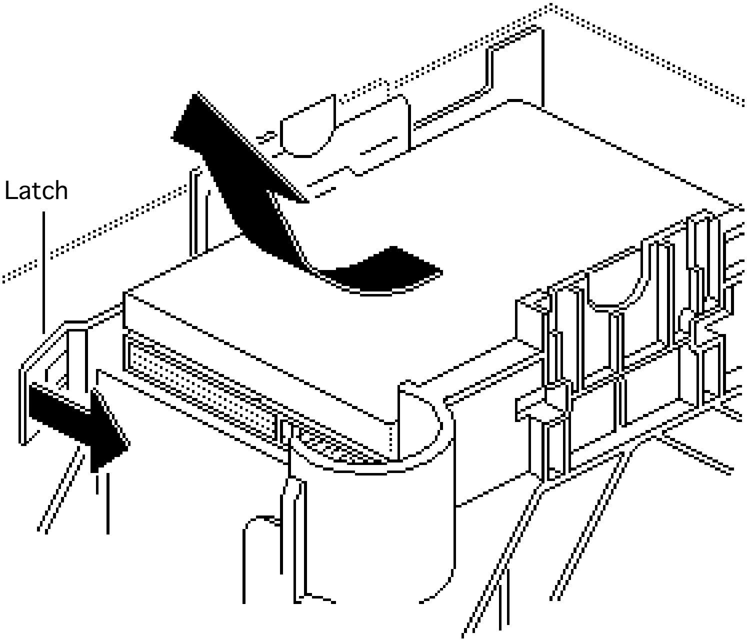

Hard Drive Data Cable
Paper Tab

2 Remove the screw from the drive mount.

3 Pull up on the paper tab and disconnect the hard drive data cable from the logic board.

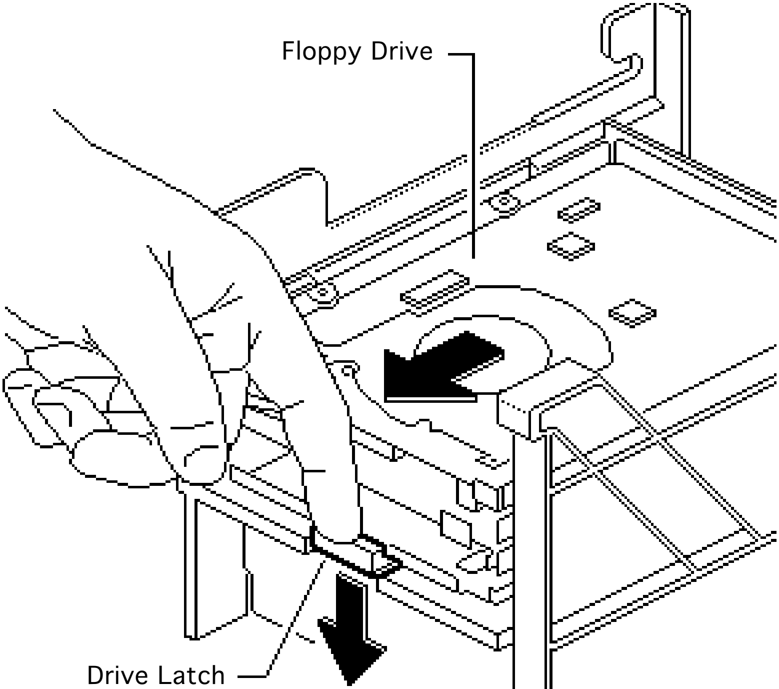

Hard Drive Power Cable
Floppy Drive Cable

4 Disconnect the floppy drive cable and hard drive power cable from the logic board.



5 Release the latch and pull the mount toward the rear of the case about 1/2 inch.

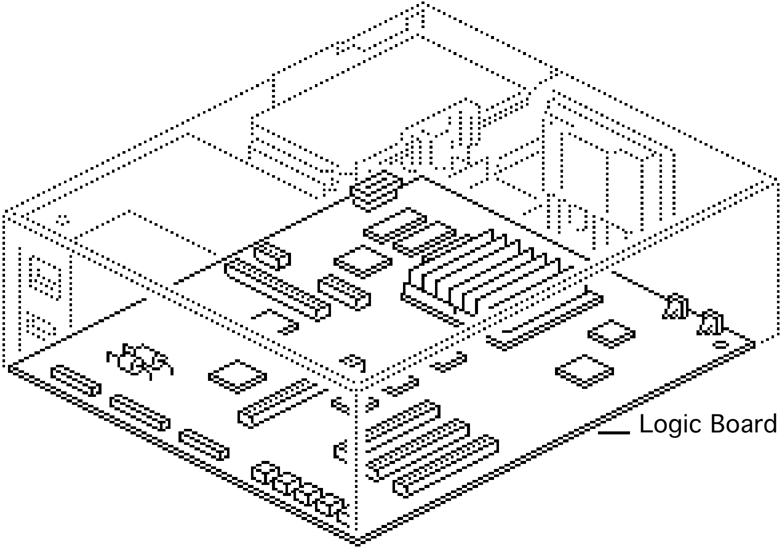
6 Lift the mount from the case.


Floppy Drive
Drive Latch

7 Turn over the mount and gently push down the drive latch.

8 Slide the floppy drive toward the front of the mount about 1 inch and pull the drive out of the mount.

Replacement Note: Apple recommends using dust shields on 1.4 MB SuperDrives. All 1.4 MB replacement drives ship with the dust shield already installed. If you plan to install a dust shield on the current drive, you must first clean the drive.

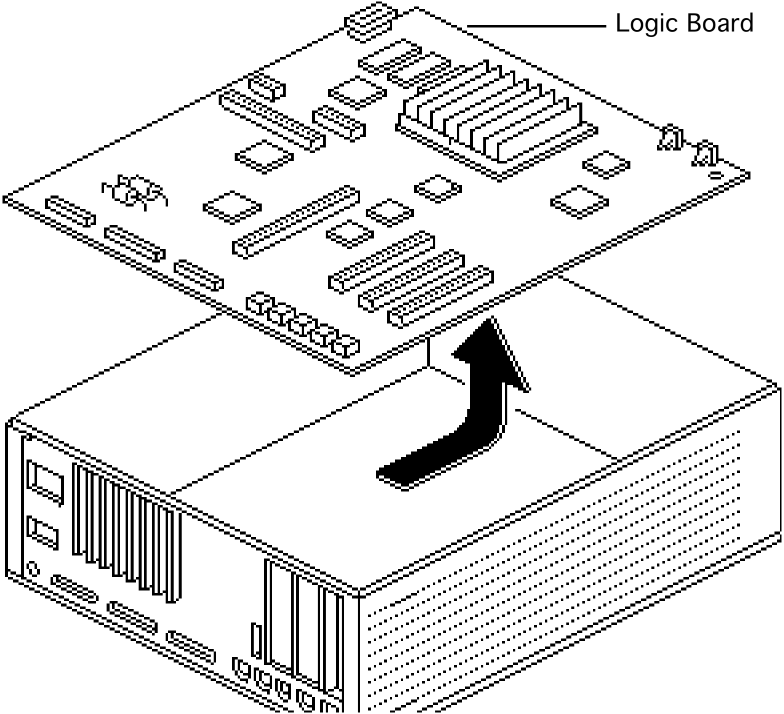


Logic Board

Before you begin, remove the following:

- Cover
- Expansion cards
- Power supply
- Drive mount
- Reset/interrupt switch
- Speaker bracket

Caution: Review the ESD precautions in Bulletins/ Safety.



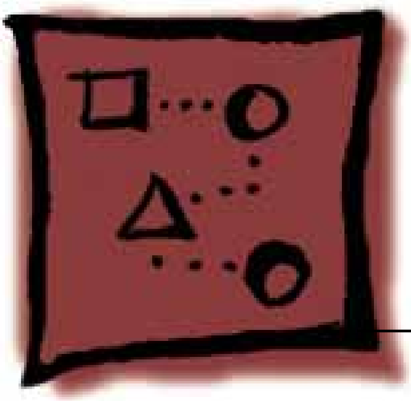
1 Slide the logic board toward the front of the case until the board stops.

2 Gently lift the front end of the logic board and remove the board from the case.

Replacement Note: Before you replace the logic board, make sure the metal grounding tabs that surround the port holes on the rear of the case are not folded in front of the holes.

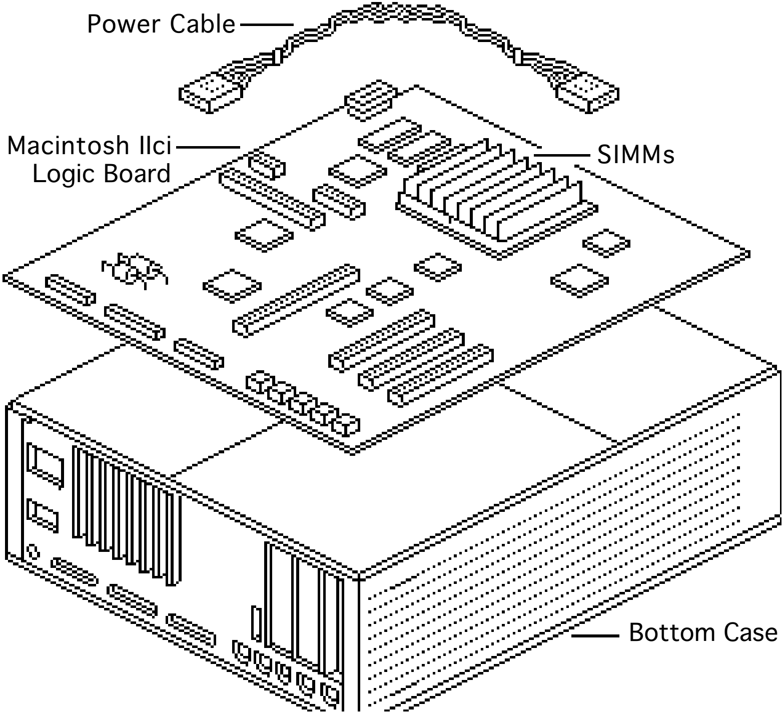
Replacement Note: Remove the SIMMs from the defective logic board and install them on the replacement logic board.

Service Source



Upgrades

Macintosh IIcx/IIci/Quadra 700


Power Cable
Macintosh IIci Logic Board
SIMMs
Bottom Case

Macintosh IIci Upgrade

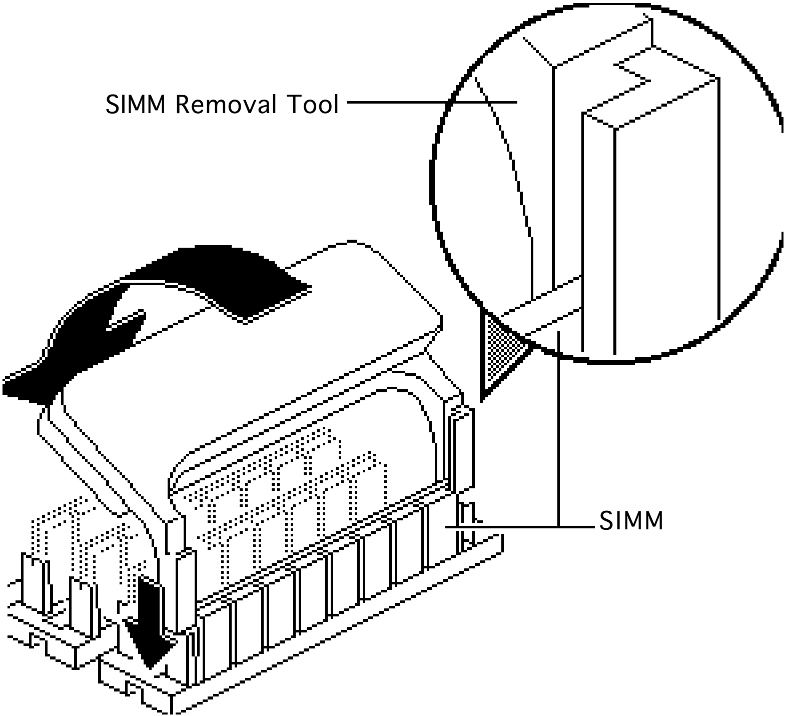
Before you begin,remove the following:

- Cover
- Expansion cards
- Power supply
- Drive mount
- Reset/interrupt switch
- Speaker bracket
- Logic board

Note: The Macintosh IIci Upgrade Kit for the Macintosh IIcx includes a IIci logic board, 1 MB of

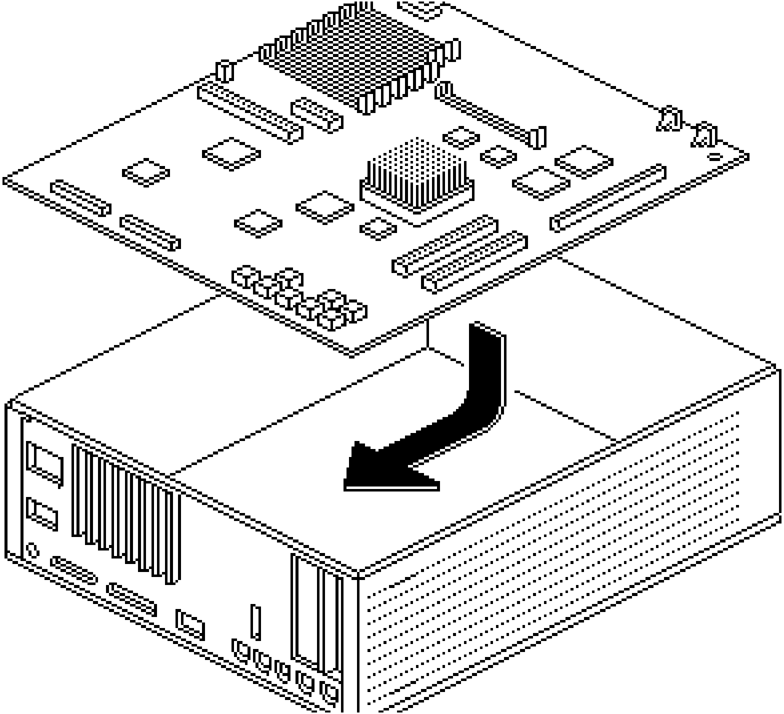
80 ns fast page mode DRAM SIMMs, a new bottom case, and a new hard drive power cable.

Caution: Review the ESD precautions in Bulletins/ Safety.



1 Using the SIMM removal tool, remove the DRAM SIMMs from the old logic board and, if they are 120 ns SIMMS, give them to the customer.

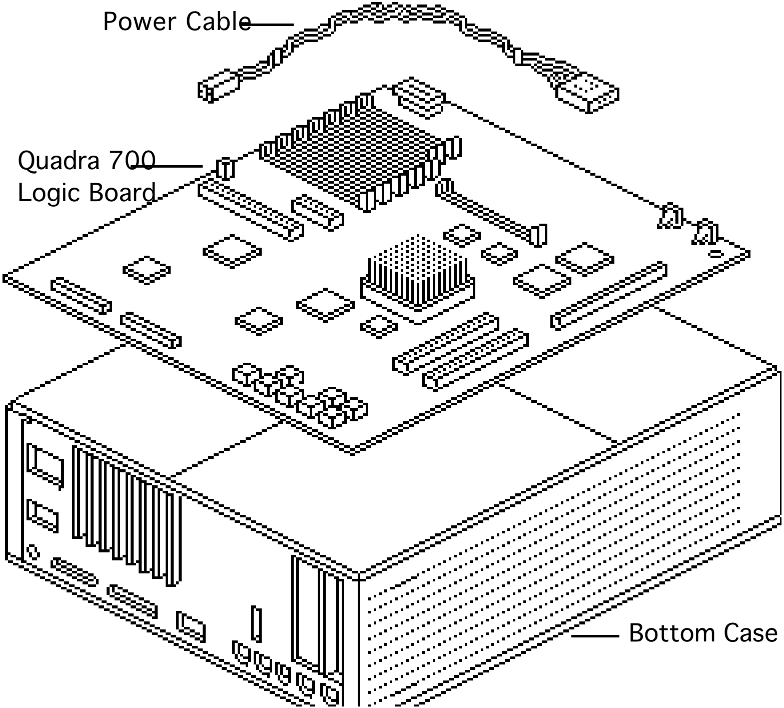
2 Discard the bottom case. (You need not return it to Apple.)



3 Insert the new Macintosh IIci logic board into the new bottom case.

Replacement Caution: Be sure to insert the replacement DRAM SIMMs (or other 80 ns SIMMs) into the Macintosh IIci logic board. If you use the 120 ns SIMMs from the Macintosh IIcx, the new Macintosh IIci will not function correctly.

Replacement Note: To finish the Macintosh IIci upgrade, install the speaker, drives, drive mount (using the new hard drive power cable), power supply, and reset/interrupt switch. (Refer to Take Apart for detailed procedures.) If the unit contains a hard drive, install the hard drive light pipe from the old case in the new Macintosh IIci bottom case.


Power Cable
Quadra 700 Logic Board
Bottom Case

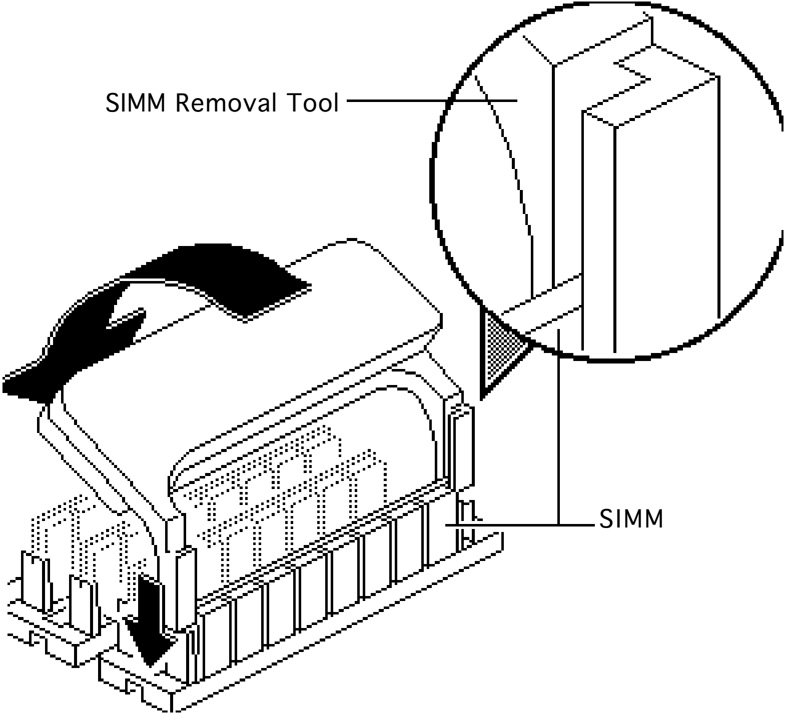
Quadra 700 Upgrade

Before you begin, remove the following:

- Cover
- Expansion cards
- Power supply
- Drive mount
- Reset/interrupt switch
- Speaker bracket
- Logic board

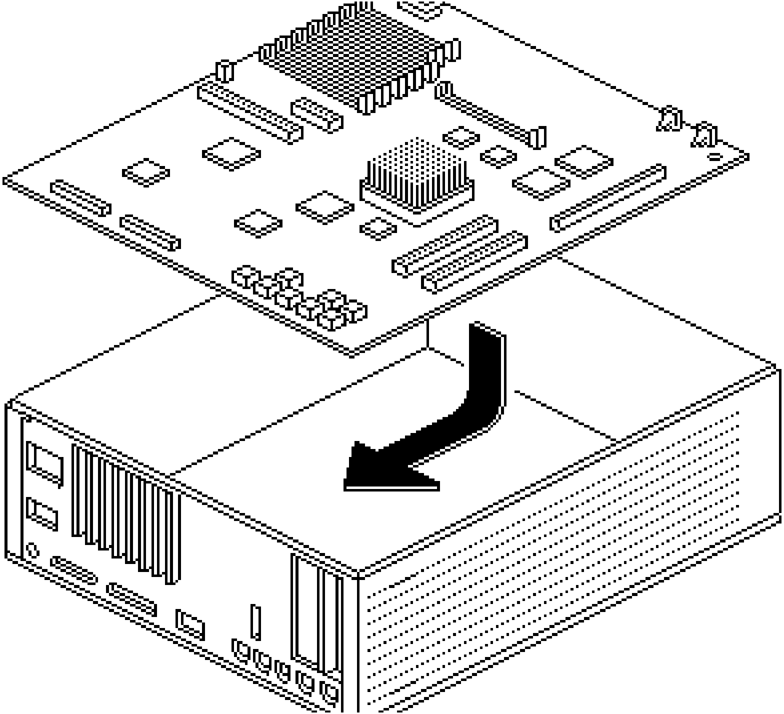
Note: The Macintosh Quadra 700 Upgrade Kit includes a Quadra 700 logic board, a new bottom case, and a new hard drive power cable.

Caution: Review the ESD precautions in Bulletins/ Safety.



1 Using the SIMM removal tool, remove the DRAM SIMMs from the old logic board and, if they are 120 ns SIMMS, give them to the customer.

2 Discard the bottom case. (You need not return it to Apple.)

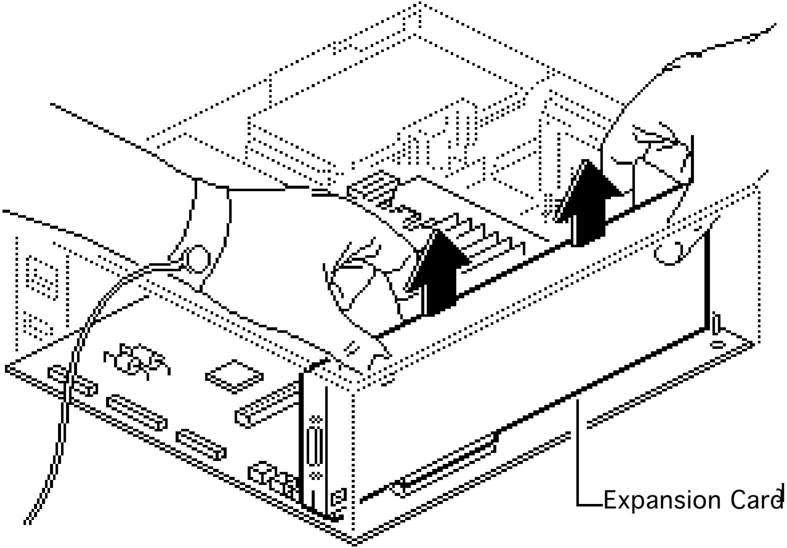


3 Insert the new Quadra 700 logic board into the new bottom case.

Replacement Caution: Be sure to insert the replacement DRAM SIMMs (or other 80 ns SIMMs) into the Quadra 700 logic board. If you use 120 ns SIMMs, the new Quadra 700 will not function correctly.

Replacement Note: To finish the Quadra 700 upgrade, install the DRAM SIMMs, speaker, drives, drive mount (using the new hard drive power cable), power supply, and reset/ interrupt switch. (Refer to Take Apart for detailed procedures.)

Expansion Cards



Before you begin,remove the cover.

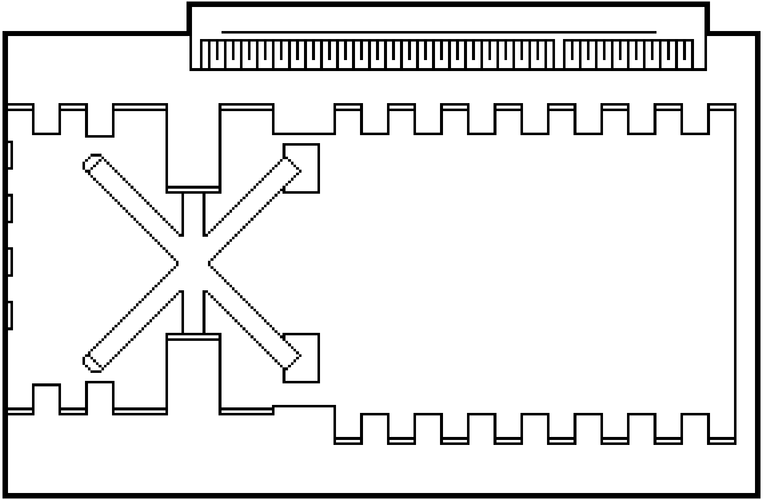
Caution: Review the ESD precautions in Bulletins/ Safety.

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.

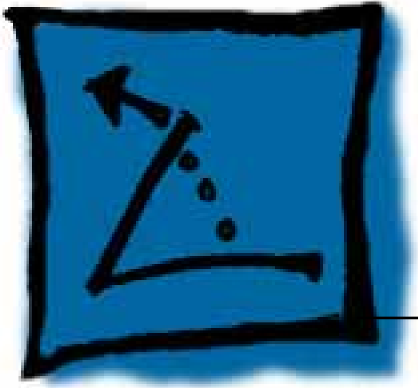
Power Macintosh Upgrade Card



By installing this card in the Macintosh Quadra 700 Processor-Direct Slot (PDS), you can upgrade the Quadra 700 to a PowerPC microprocessor.

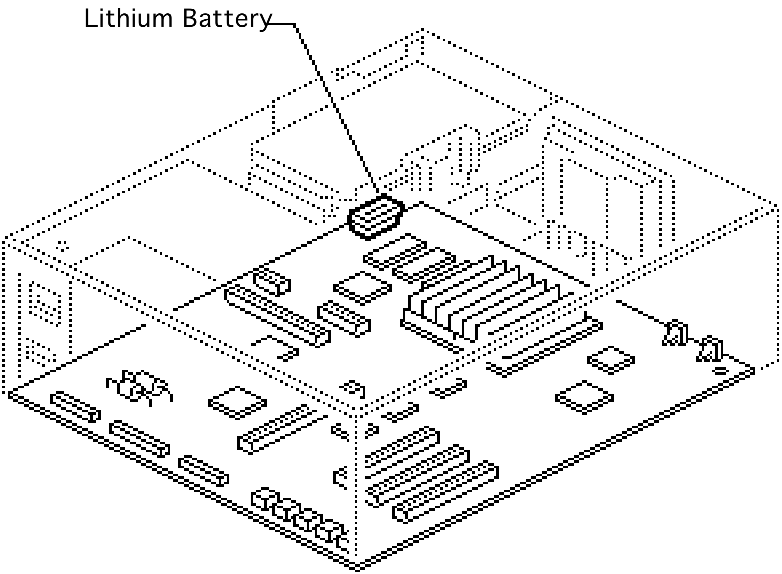
For more information, including installation instructions, refer to Basics in the Power Macintosh Upgrade Card manual.

Service Source



Additional Procedures

Macintosh IIcx/IIci/Quadra 700



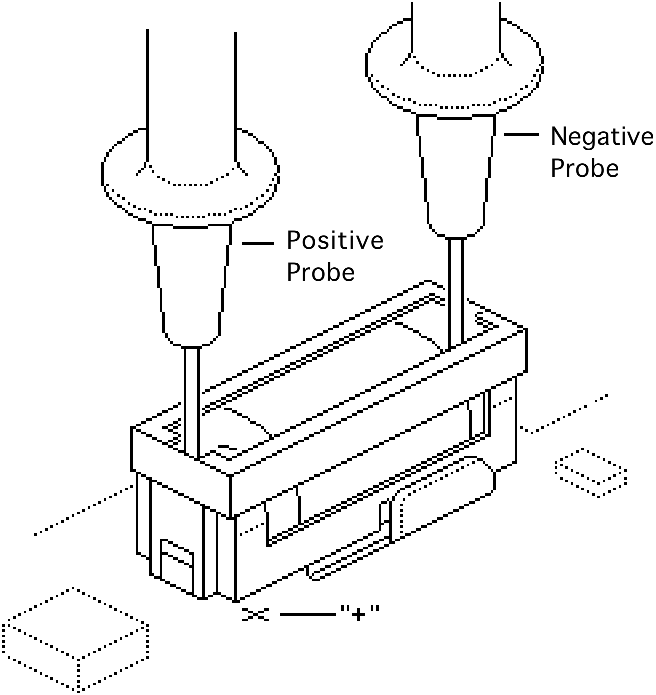
Battery Verification

Before you begin, remove the following:

- Cover
- Power supply
- Drive mount

⚠**Warning:** Review battery handling and disposal instructions in Bulletins/ Safety.

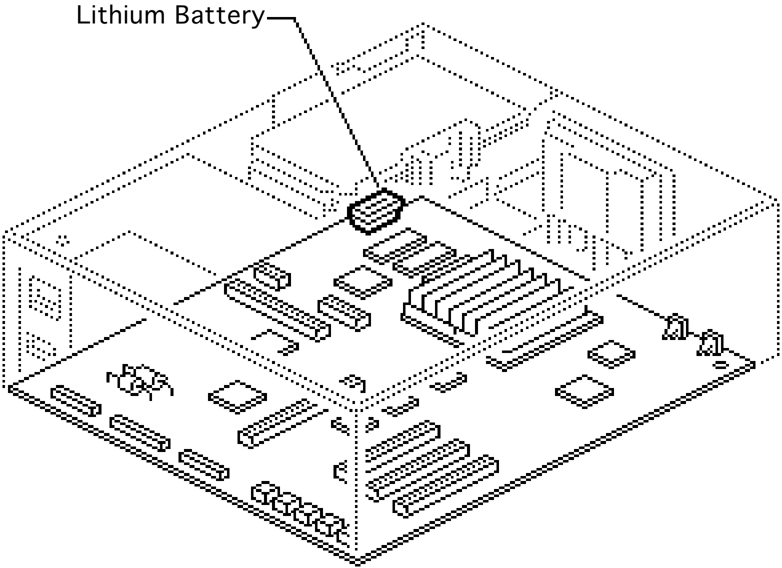
Caution: Review ESD precautions in Bulletins/ Safety.



1 Set the voltmeter to the 10 volts DC scale.

2 Hold the positive probe of the voltmeter to the positive 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.



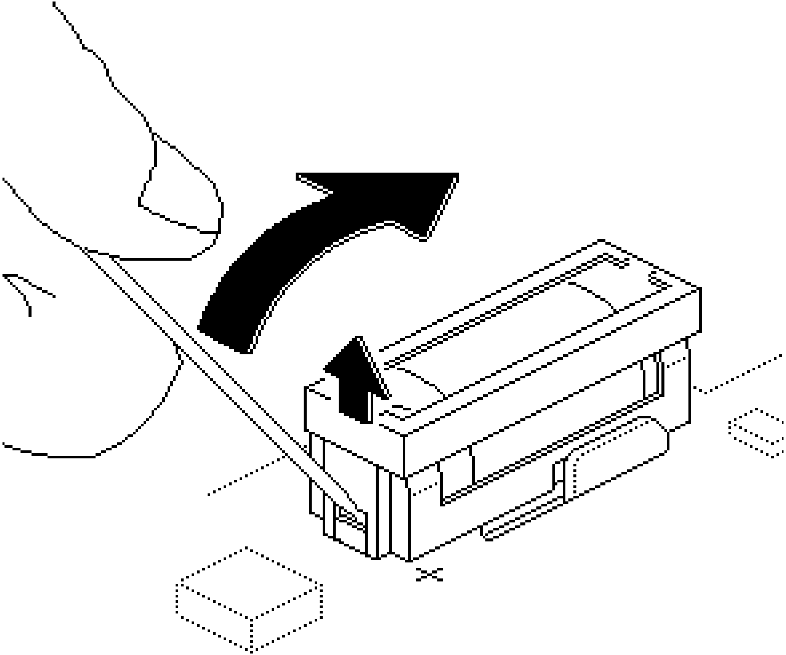
Battery Replacement

Before you begin, remove the following:

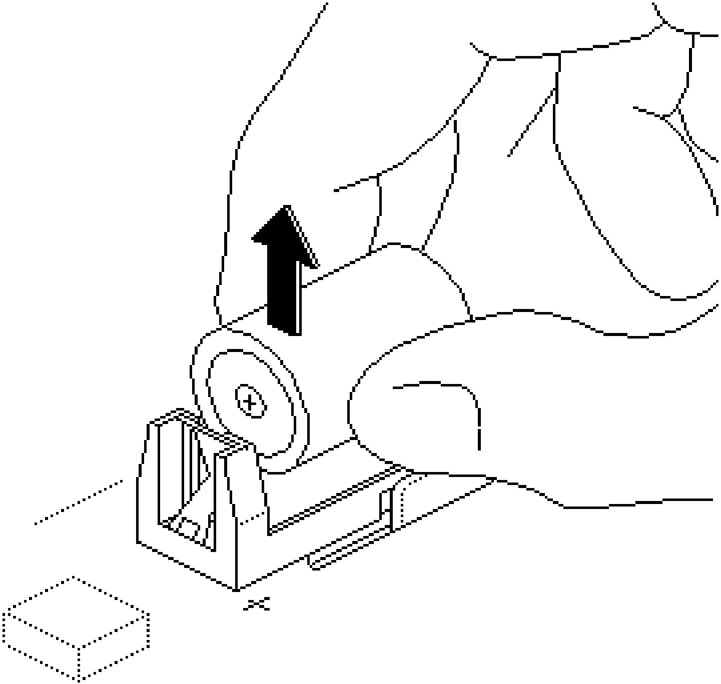
- Cover
- Power supply
- Drive mount

⚠ **Warning:** Review battery handling and disposal instructions in Bulletins/ Safety.

Caution: Review ESD precautions in Bulletins/ Safety.

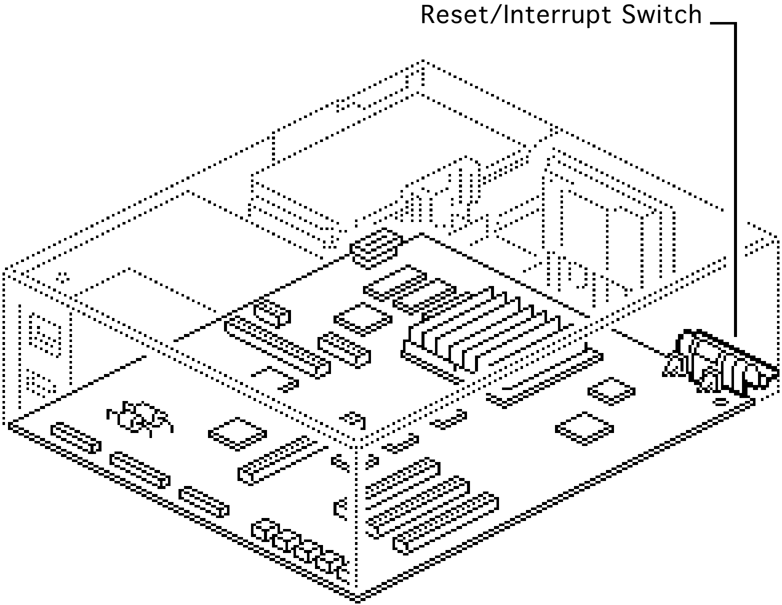


1 Using a small flat-blade screwdriver, pry open the latch at the end of the holder and lift off the cover.



2 Grasp the battery and remove it from the holder.

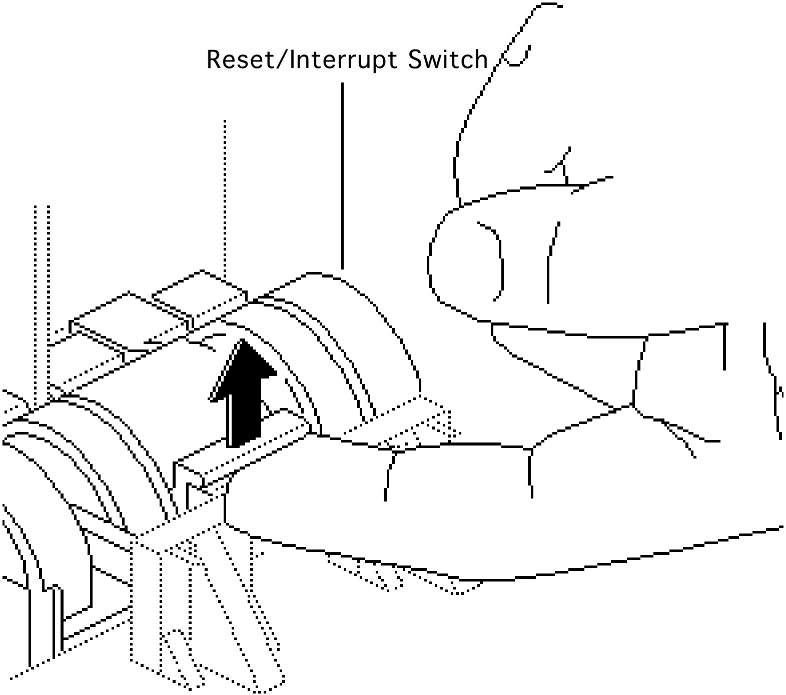
3 Return the battery to Apple for proper disposal. For battery packaging and labeling instructions, refer to the safety information in Bulletins/Safety.


Reset/Interrupt Switch

Reset/Interrupt Switch

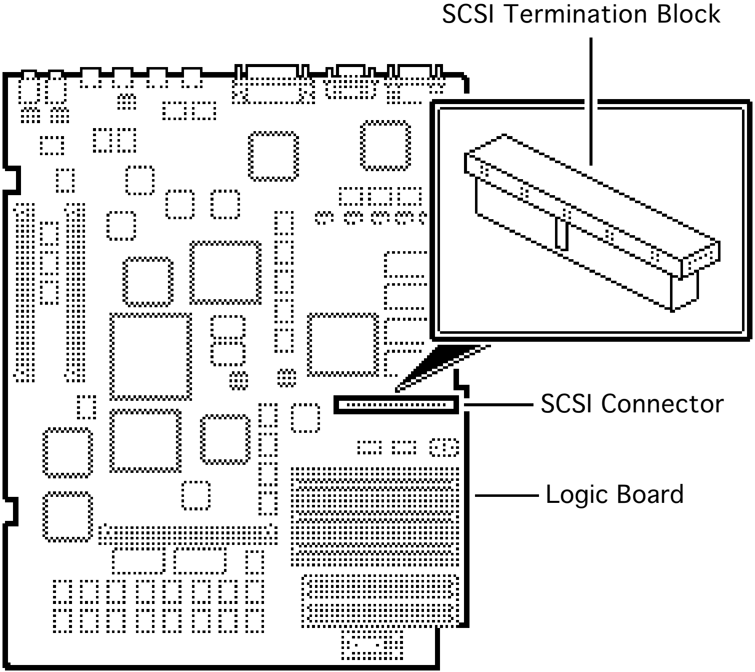
Before you begin, remove the cover.

Caution: Review ESD precautions in Bulletins/ Safety.


Reset/Interrupt Switch

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.


SCSI Termination Block
SCSI Connector
Logic Board

SCSI Termination

No preliminary steps are required before you begin this procedure.

The SCSI termination block provides proper termination for systems without an internal hard drive. All Macintosh Quadra 700 computers that shipped without internal hard drives have the termination block attached to the logic board SCSI connector. After you install an internal hard drive, remove the block.

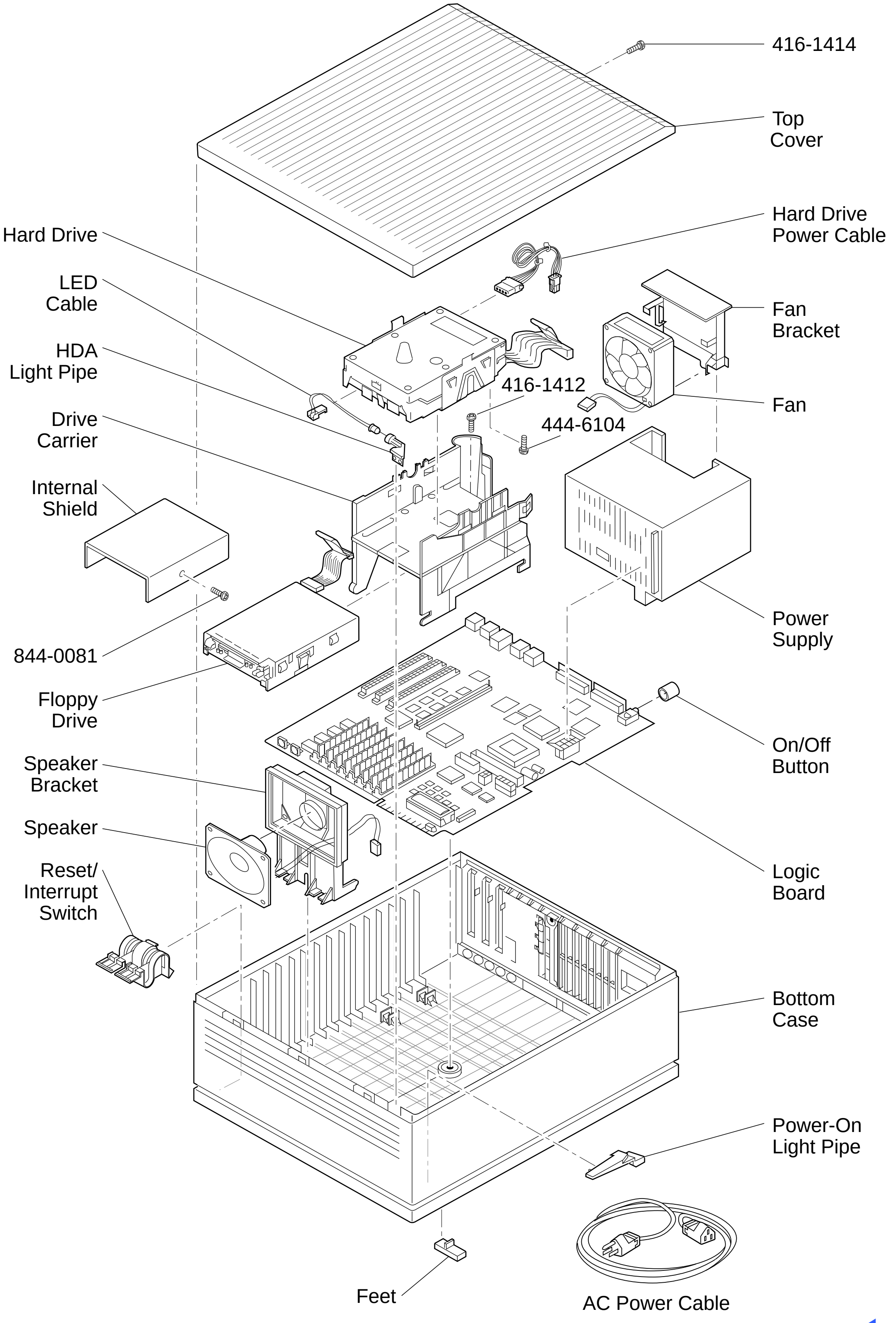
Service Source

Exploded View

Macintosh IIcx/IIci/Quadra 700

Exploded View

Macintosh IIcx/IIci and Quadra 700


416-1414
Top Cover
Hard Drive
Hard Drive Power Cable
LED Cable
Fan Bracket
HDA Light Pipe
416-1412
Fan
Drive Carrier
444-6104
Internal Shield
844-0081
Power Supply
Floppy Drive
On/Off Button
Speaker Bracket
Speaker
Logic Board
Reset/ Interrupt Switch
Bottom Case
Power-On Light Pipe
Feet
AC Power Cable