Macintosh IIsi

Basics

Macintosh IIsi

Overview

This manual contains complete repair procedures for the Macintosh IIsi shown at left.
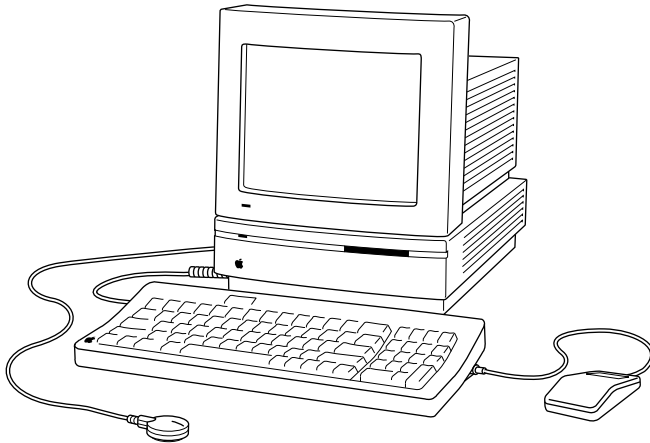
Figure: Macintosh IIsi

Specifications

IIsi

Processor

CPU
Motorola 68030 microprocessor
20 MHz
32-bit internal data bus
256-byte instruction and data caches
Burst-mode RAM access
Built-in memory management unit (MMU)

Coprocessor
Motorola 68882 floating-point unit (FPU) included on the
optional adapter card
20 MHz

Memory

RAM   2 MB, expandable to 17 MB

ROM   512K standard

PRAM   256 bytes of parameter memory

Disk Storage

Floppy Drive   Internal 1.4 MB floppy drive

Hard Drive   Internal 40 MB hard drive
Optional internal 80 MB hard drive

I/O Interfaces

Expansion   One slot for either a NuBus or 030 direct slot card
                    Power available (15 W maximum)
                    + 5 V   2.0 A
                    +12 V   175 A
                    -12 V   150 A

SCSI   One external SCSI port; DB-25 connector

Serial   Two RS-422/RS-232/AppleTalk serial ports; mini DIN-8
                      connectors

I/O Devices

Keyboard   Apple Keyboard, Apple Keyboard II, or Apple Extended Keyboard
                      connected through Apple Desktop Bus (ADB) ports (mini
                      DIN-4)

Mouse   ADB mouse (mini DIN-4)

Sound and Video

Sound Generator   Output impedance of 8–600 ohms
Short-circuit protected
Disables internal speaker when in use
Four-voice, wavetable synthesis and stereo sampling generator

Electrical

Line Voltage   100–240 VAC, automatically configured

Frequency   50–60 Hz, single phase

Maximum Power   100 W (not including monitor)

Physical

Dimensions   Height: 4.0 in. (10 cm)
                     Width: 12.4 in. (31 cm)
                     Depth: 14.9 in. (37.2 cm)

Weight   10 lb. (4.5 kg)
                     Configuration of RAM, floppy drives, hard drives, and NuBus
                        expansion cards will vary weight.

Troubleshooting

IIsi

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 Verify monitor works with different Macintosh.
3 Replace monitor. Refer to appropriate monitor manual to
   troubleshoot defective monitor.
4 Replace video cable.
5 Replace video card.
6 Replace SIMMs. See Hardware/Memory.
7 Replace logic board. Retain customer's SIMMs.
8 Replace power supply.

Video (Continued)

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

1 Verify monitor works with different Macintosh.
2 Replace video cable.
3 Replace monitor. Refer to appropriate monitor manual to troubleshoot defective monitor.
4 Remove NuBus cards.
5 Remove peripherals.
6 Replace SIMMs. See Hardware/Memory.
7 Replace logic board. Retain customer's SIMMs.
8 Replace power supply.

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

1 Verify monitor works with different Macintosh.
2 Replace monitor. Refer to appropriate monitor manual to troubleshoot defective monitor.
3 Replace video cable.
4 Replace logic board. Retain customer's SIMMs.

Video (Continued)

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 Remove NuBus card and switch on power again. (NuBus card
   draws more than 45 watts.)
3 Remove peripherals.
4 Replace power supply.
5 Replace logic board. Retain customer's SIMMs.

Floppy Drive

Audio and video 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.

Disk ejects; display shows Mac icon with blinking "X"

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

Disk will not eject

1 Switch off computer. Hold mouse button down while switching computer on.
2 Eject disk manually.
3 Replace floppy drive.

Floppy Drive (Continued)

Drive attempts to
eject disk but doesn't

1   Push disk completely in.
2   Remove top cover and attempt to eject the disk.
3   Eject disk manually.
4   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
will 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.

Peripheral

Works with internal
hard drive or
external SCSI device
but not with both

1 Verify that SCSI select switch on external device shows a
   different priority from internal hard drive.
2 Replace terminator on the external device.
3 Verify that internal hard drive has a terminator.
4 Replace SCSI select cable.

Cursor does not move

1 Reboot computer.
2 Verify mouse connection.
3 If mouse was connected to keyboard, connect the mouse to a
   computer ADB port and disconnect the keyboard. If mouse
   works, replace keyboard.
4 If mouse does not work in any ADB port on computer, replace
   mouse.
5 Remove additional NuBus cards.
6 Replace logic board. Retain customer's SIMMs.

Peripheral (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 an application,
disk, or server

1   Remove duplicate system files.
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
    <Command> <Option> <Shift> keys and select Control Panel
    from Apple menu.
3   If mouse was connected to keyboard, connect the mouse to a
    computer ADB port instead and disconnect the keyboard. 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.

Peripheral (Continued)

No response to any
key on the keyboard

1 Verify 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 won't
print

1 Verify that the System is version 6.0.7 (or later).
2 Verify that the Chooser and Control Panel settings are
   correct.
3 Check printer DIP switches.
4 Reset PRAM.
5 Replace printer interface cable.
6 Replace logic board. Retain customer's SIMMs.

Peripheral (Continued)

Known-good
LaserWriter® won't
print

1 Verify that the System is version 6.0.7 (or later).
2 Verify that the Chooser and Control Panel settings are correct.
3 Reset PRAM.
4 Refer to the Networking and Communications manual.

Miscellaneous

Clicking, chirping,   1   Replace power supply.
or thumping   2   Disconnect hard drive. If noise disappears, replace drive.
                          3   Replace logic board. Retain customer's SIMMs.

System shuts down   1   Check that air vents on the back and top of the case are
intermittently   unobstructed. (Thermal protection circuitry may shut down
                              the system. After 30 to 40 minutes, the system should run.)
                          2   Replace power cord.
                          3   Replace power supply.
                          4   Replace logic board. Retain customer's SIMMs.

Miscellaneous (Continued)

System
intermittently
crashes or locks up

1 Verify that the System is version 6.0.7 (or later).
2 Verify that software is known-good.
3 Remove additional RAM and NuBus cards.
4 Replace logic board. Retain customer's SIMMs.
5 Replace SIMMs. See Hardware/Memory.
6 Replace power supply.

No sound from
speaker

1 Verify that volume setting in the Control Panel is 1 or above.
2 Reset PRAM.
3 Replace speaker.
4 Replace logic board. Retain customer's SIMMs.

Miscellaneous (Continued)

Clock not running
1. Replace battery. See "Battery Verification" in Additional Procedures.
2. Reset PRAM.
3. Replace logic board. Retain customer's SIMMs.

System seems to boot; then message "Finder is old version" appears
1. 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 <Command> <Option> <Shift> keys and select Control Panel from Apple menu.
2. Replace logic board. Retain customer's SIMMs.

System restarts itself
Set the locking power switch on the rear of the computer to the unlocked (horizontal) position.

Error Chords

Error chord sounds
during startup
sequence

1 Perform SIMM verification on customer's logic board.
2 Replace logic board. Retain customer's SIMMs.

Take Apart

IIsi

Cover

No preliminary steps are required before you begin this procedure.

Push down on the small tabs with your thumbs and at the same time lift up on the large tabs with your forefingers. (The cover may make a loud snap.)
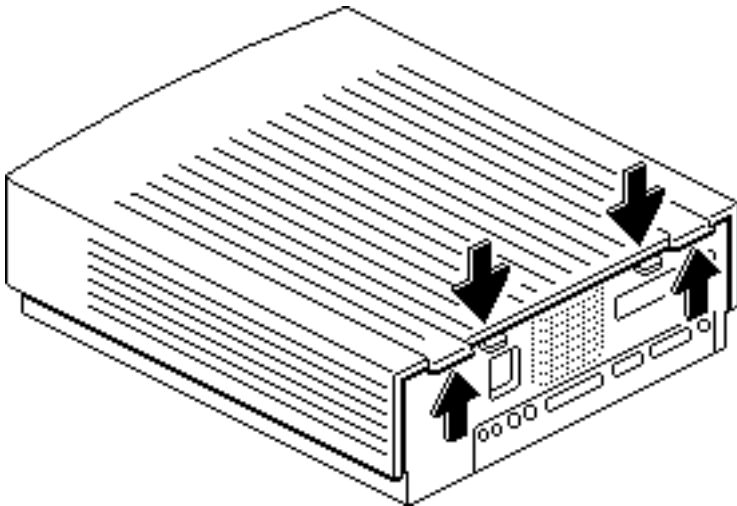
Fan

Before you begin, remove the following:

- Cover
- Expansion card

Caution: Review the ESD precautions in Bulletins/Safety.

Fan
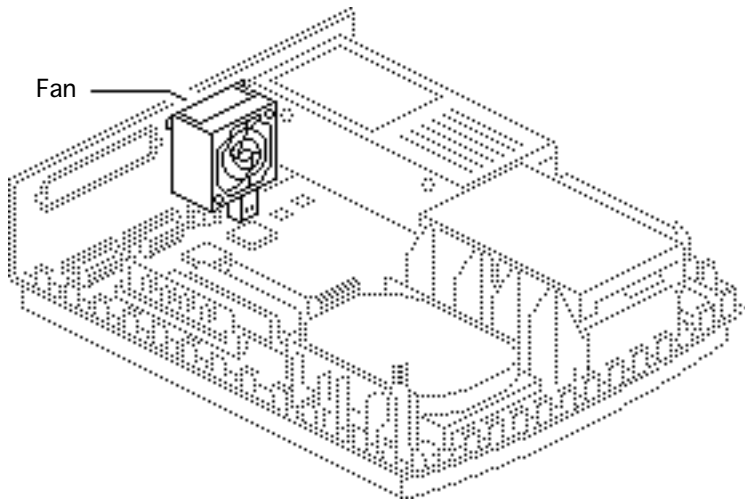
Place your thumbs under the fan and using some force pull up until the fan snaps free.
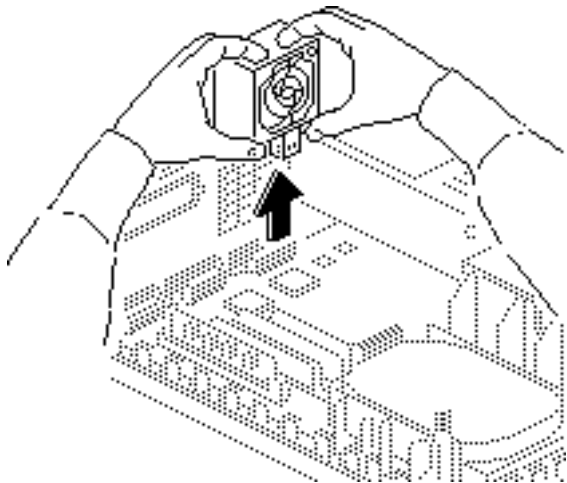
Power Supply

Before you begin, remove the following:

- Cover
- Expansion card
- Fan

Caution: Review the ESD precautions in Bulletins/Safety.

Power Supply

Metal Tabs
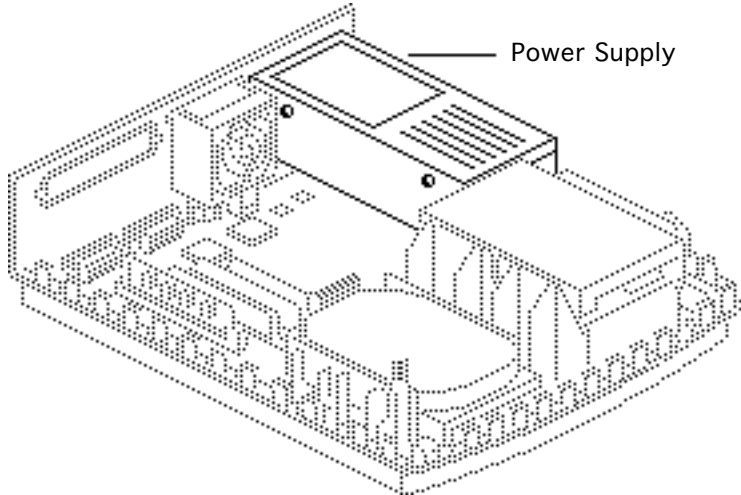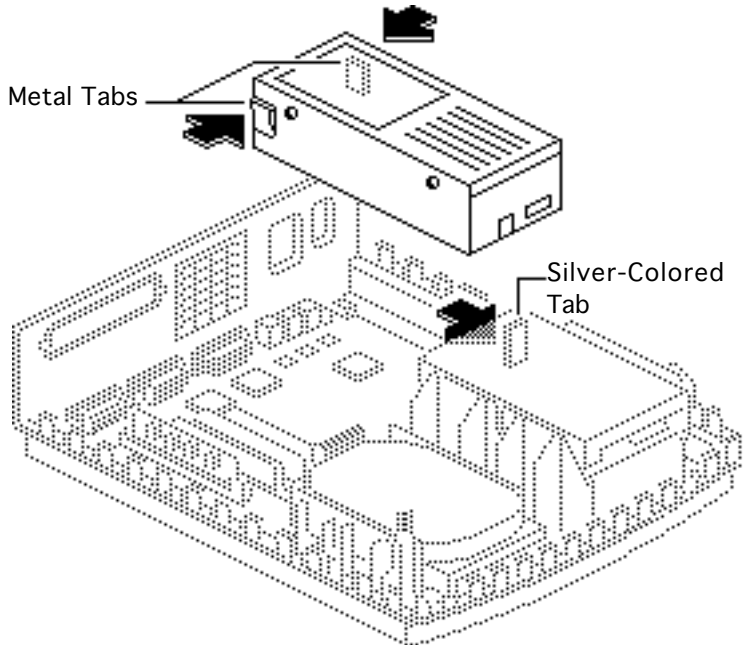
Silver-Colored Tab

1 Press the two metal tabs near the rear of the power supply and lift the power supply about 1/2 inch.

2 Pull the silver-colored tab toward the floppy drive and at the same time lift the power supply out of the case.

Hard Drive

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/ Safety.
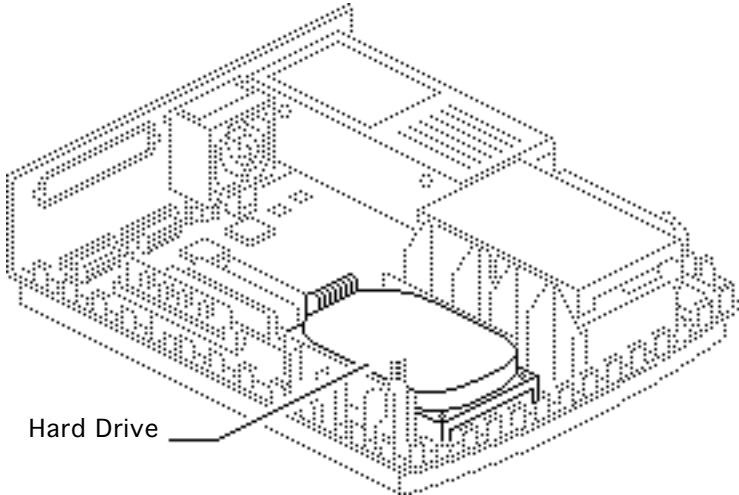
Hard Drive
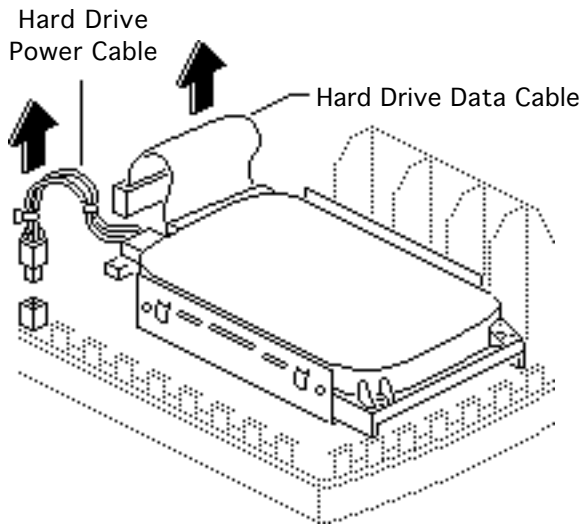
1 Disconnect the hard
   drive power cable and
   hard drive data cable
   from the logic board.

Hard Drive
Power Cable

Hard Drive Data Cable
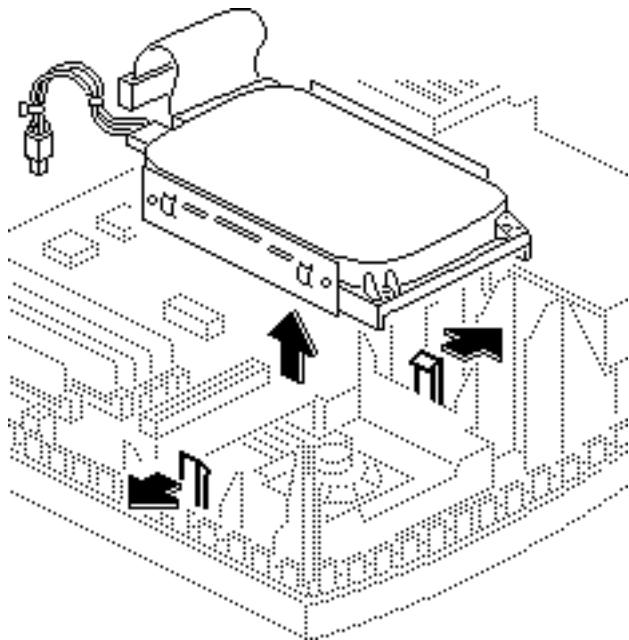
2 Release the two tabs and lift the drive (along with its carrier) out of the computer.

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

Floppy Drive

Before you begin, remove
the cover.

Caution: Review the ESD
precautions in Bulletins/
Safety.
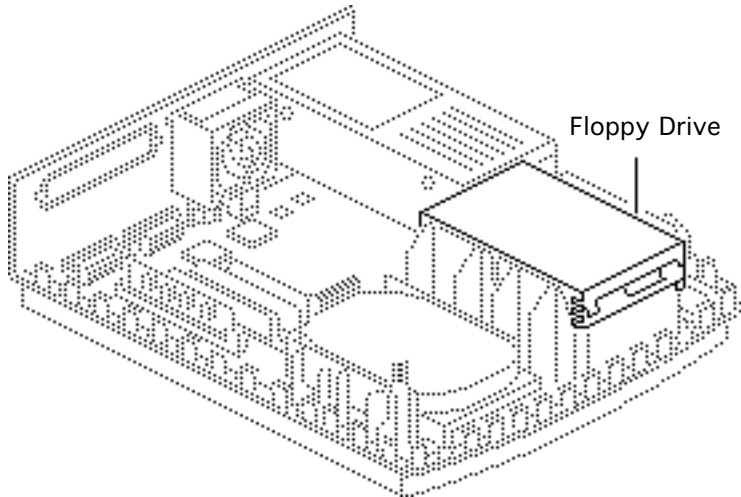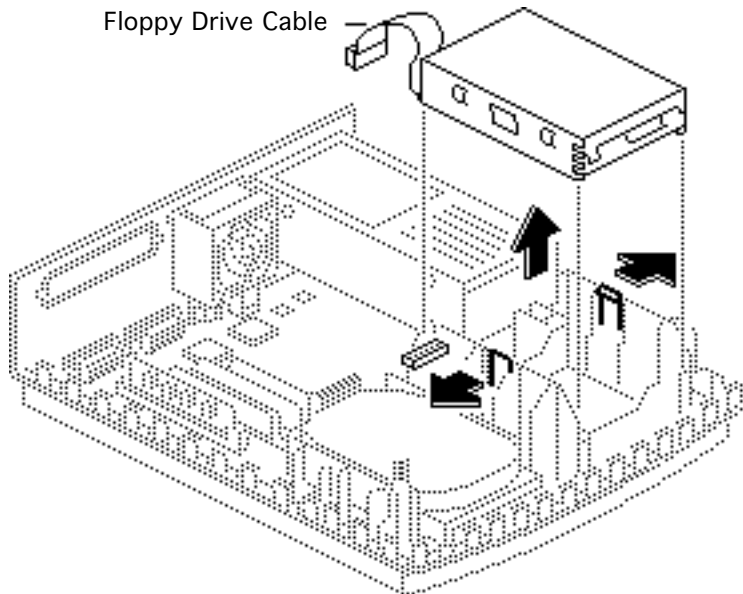
Floppy Drive Cable

1 Disconnect the floppy
   drive cable from the
   logic board.

2 Release the two tabs and
   lift the floppy drive out
   of the computer.

   Replacement Note:
   Apple recommends using
   dust shields on 1.4 MB
   SuperDrives in
   Macintosh IIsi
   computers. 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
- Adapter card
- Fan
- Power supply

Caution: Review the ESD precautions in Bulletins/ Safety.
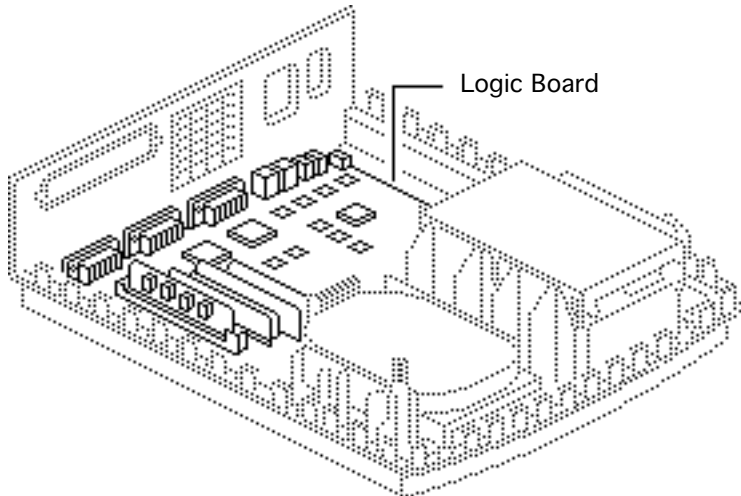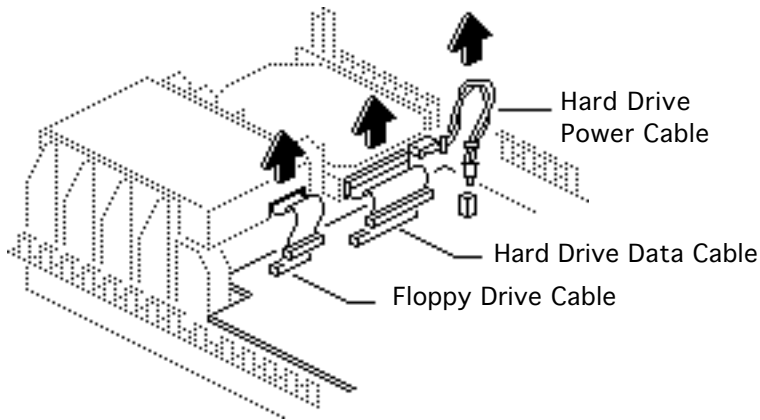
Logic Board

1 Disconnect these cable connectors from the logic board:
   • Hard drive power cable
   • Hard drive data cable
   • Floppy drive cable

Hard Drive Power Cable

Hard Drive Data Cable

Floppy Drive Cable
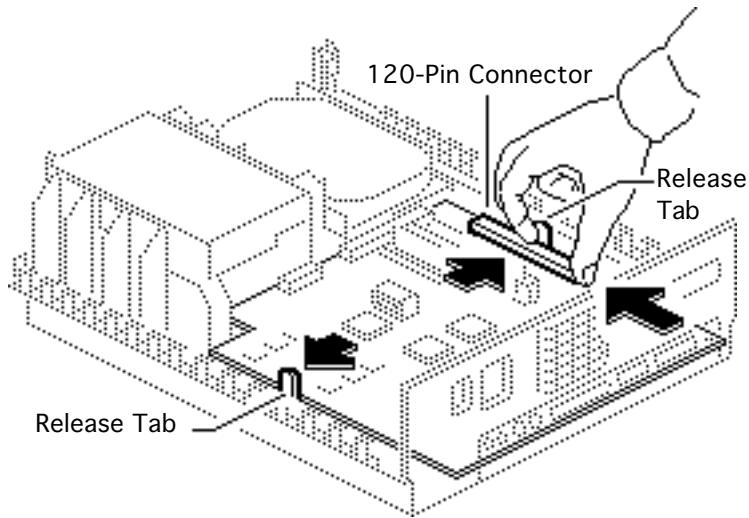
2 With the rear of the case facing you, release the two tabs with your forefingers and at the same time push on the 120-pin connector with your right thumb.

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

J20 Connector
(underneath)

J19 Connector
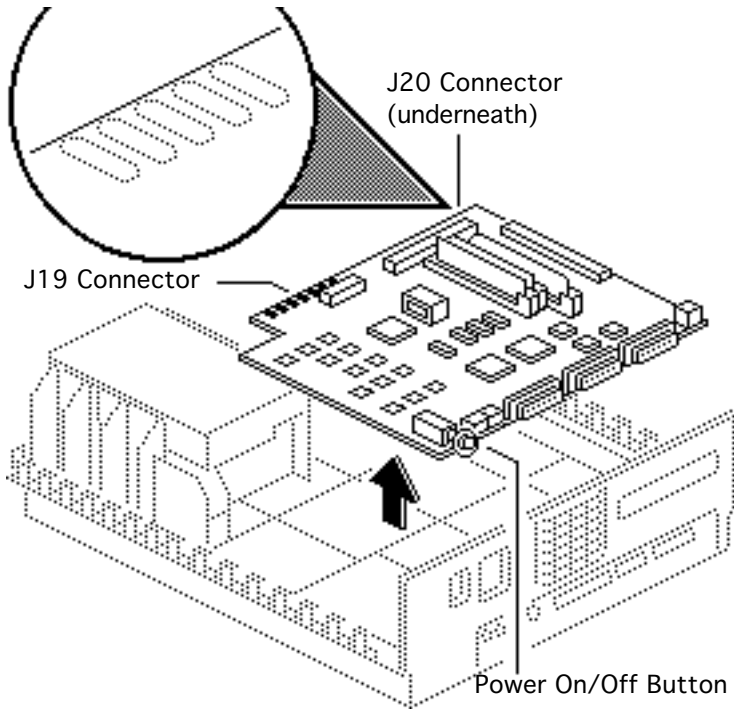
Power On/Off Button

4 **Caution:** Be sure the power on/off button clears the rear panel before you lift the logic board out of the case. While lifting the board, do not touch connector J19 or J20. (The oil from your skin harms the connectors.)

Gently lift the board out of the case.

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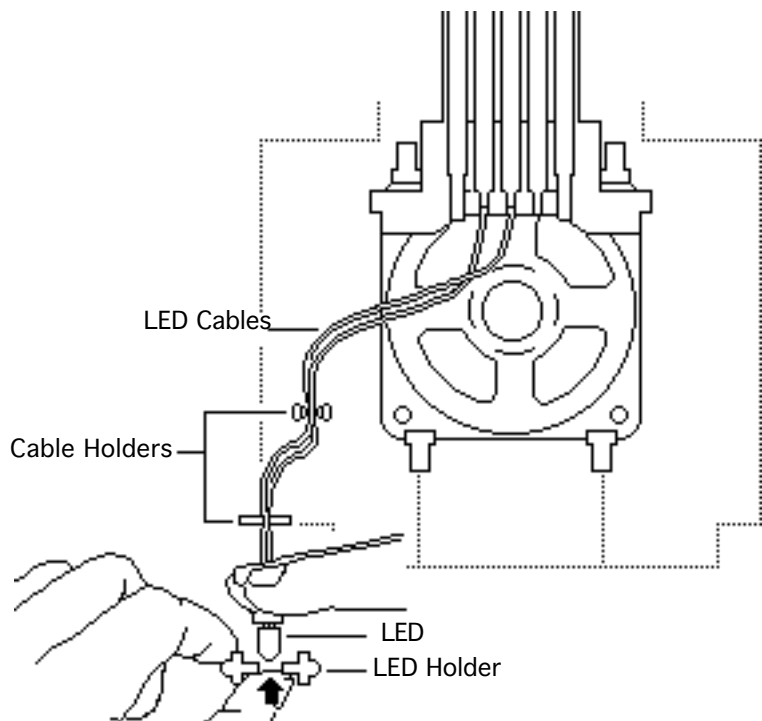install them on the
replacement logic board.

Speaker

Speaker

Before you begin, remove the following:

- Cover
- Adapter card
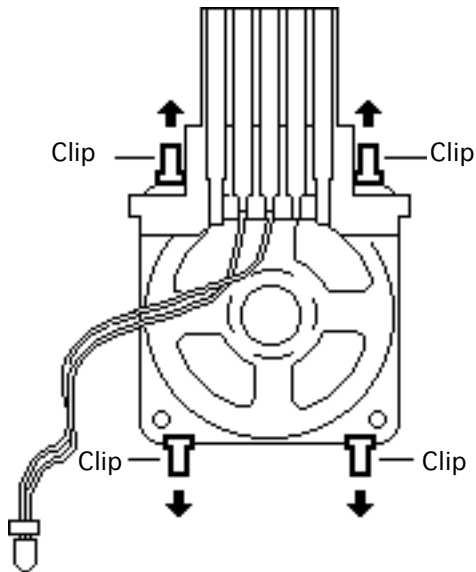- Fan
- Power supply
- Hard drive
- Logic board
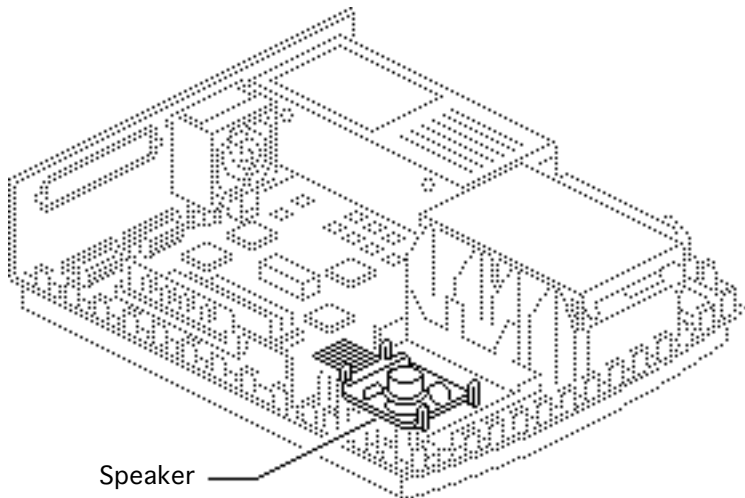
1 Push the LED out of the holder.

2 Carefully remove the LED cables from the two cable holders.

LED Cables

Cable Holders

LED

LED Holder

Clip

Clip

Clip

Clip

3   Release the four clips and lift the speaker out of the case.

Replacement Note:
When you replace the speaker and logic board, make sure the metal connector fingers of the speaker contact the metal fingers on the underside of the logic board.
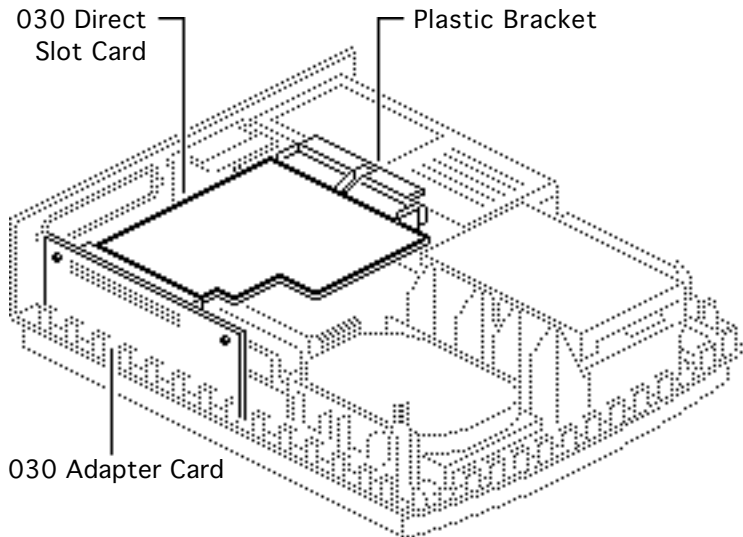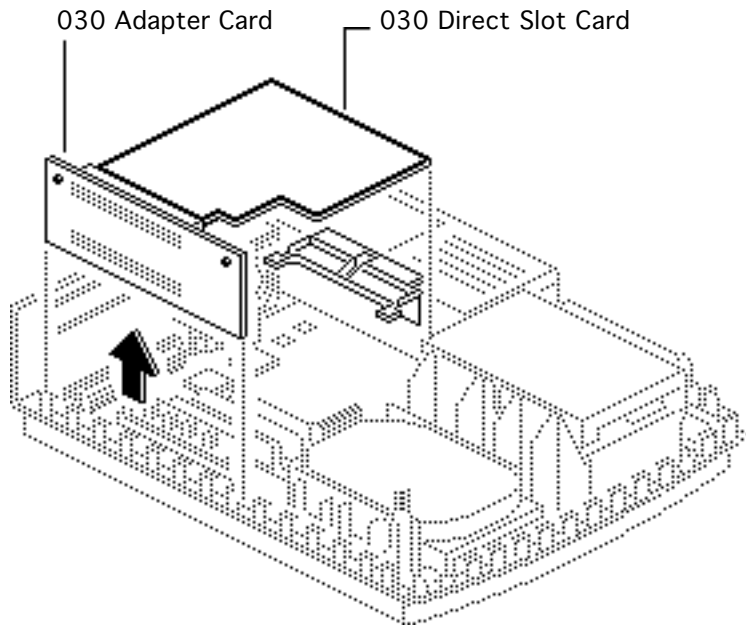
Upgrades

IIsi

030 Direct
Slot Card

Plastic Bracket

030 Adapter Card

Adapter/030 Direct Slot Card

Before you begin, remove the cover.

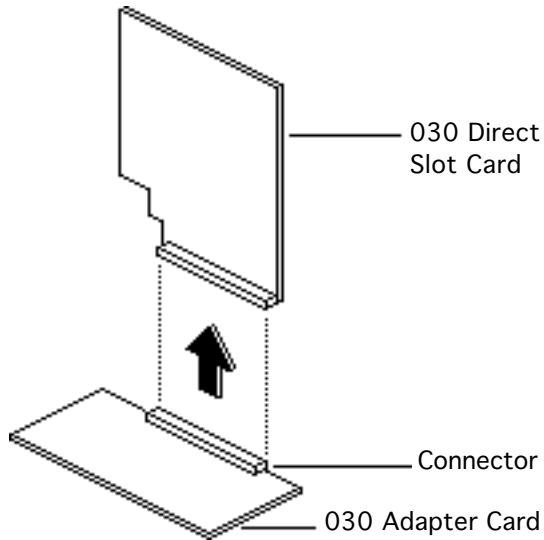**Caution:** Review the ESD precautions in Bulletins/ Safety.

Note: The following procedure explains how to remove the 030 adapter card, 030 direct slot card, and plastic bracket.

030 Adapter Card — 030 Direct Slot Card
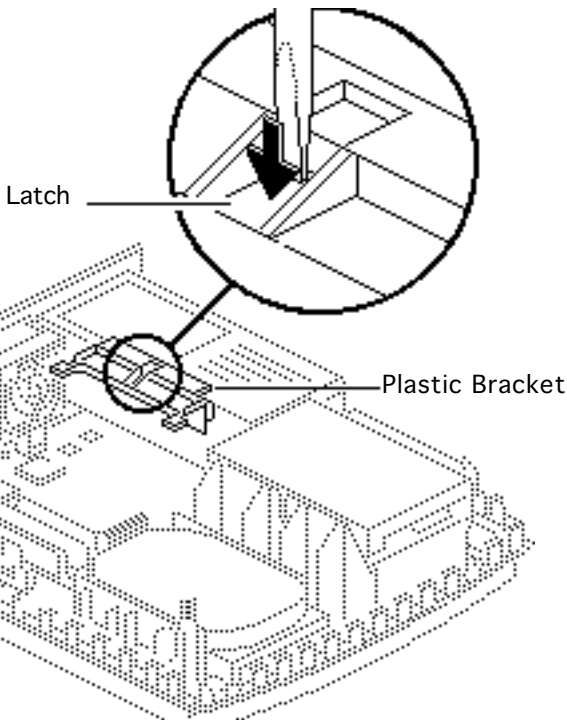
1 Pull straight up on the adapter card and carefully remove it and the direct slot card from the logic board.

2 If you are replacing the
   direct slot card, place
   the adapter card on a flat
   surface, and carefully
   pull the direct slot card
   from the adapter card
   connector.

030 Direct
Slot Card

Connector

030 Adapter Card

Latch

Plastic Bracket

3 To remove the plastic bracket, press on the latch with a screwdriver and lift the bracket from the power supply.

Replacement Note: If you are replacing the direct slot card, retain the plastic bracket and use it with the replacement card.
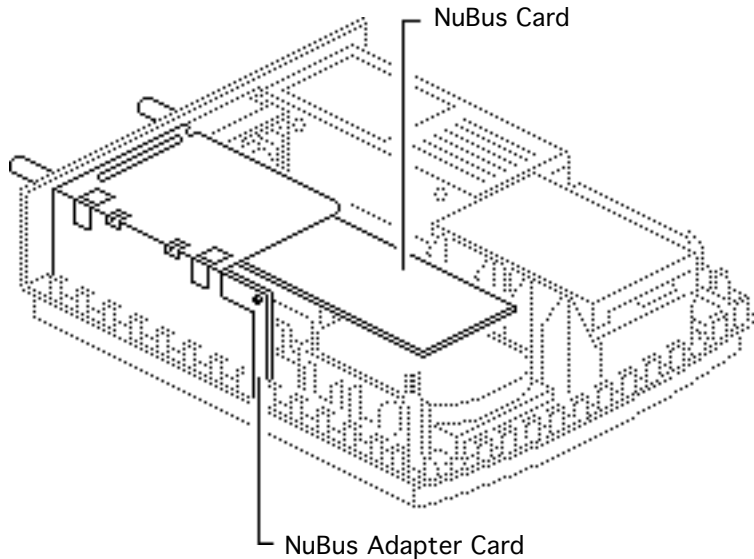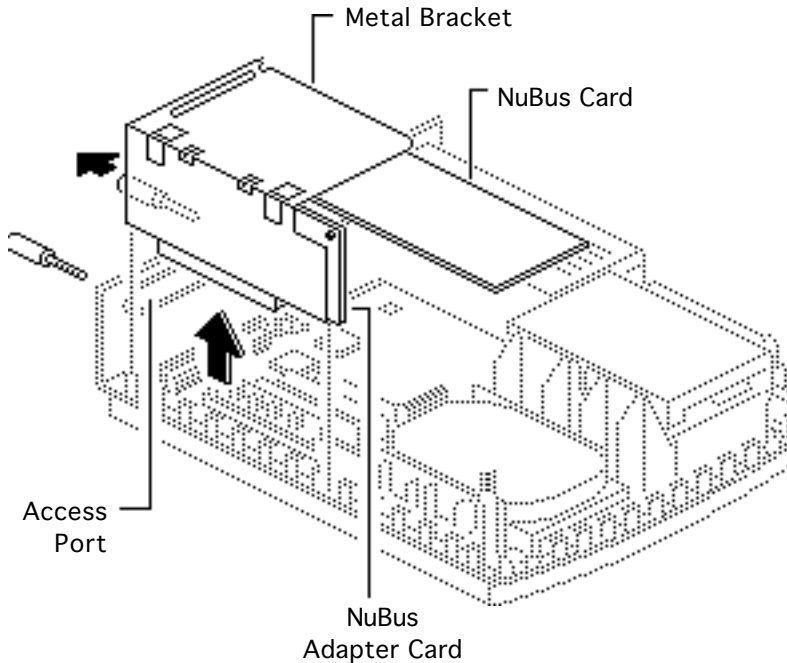
NuBus Card

NuBus Adapter Card

Adapter/NuBus Card

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/ Safety.

Metal Bracket

NuBus Card

Access Port

NuBus Adapter Card

1 Remove the screws that secure the NuBus adapter card to the access port.

2 Pull straight up on the metal bracket and remove the bracket, NuBus card, and adapter card from the computer.

NuBus Card

Metal Bracket
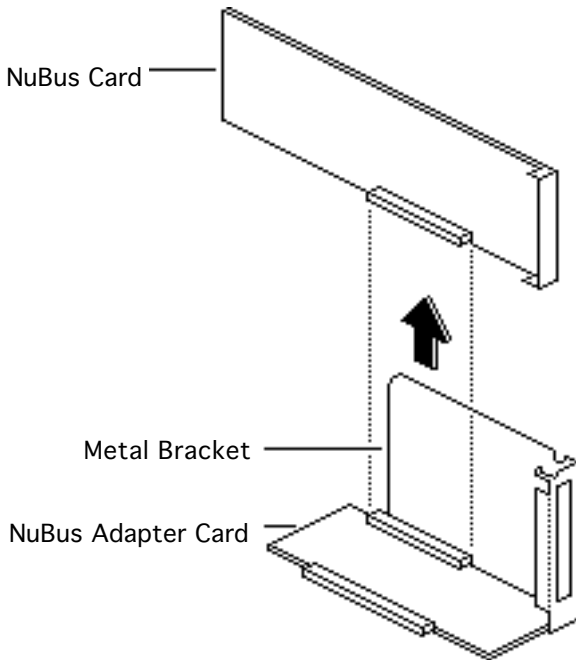
NuBus Adapter Card

3 If you are replacing the NuBus card, place the adapter card on a flat surface, and carefully pull the NuBus card from the adapter card connector.
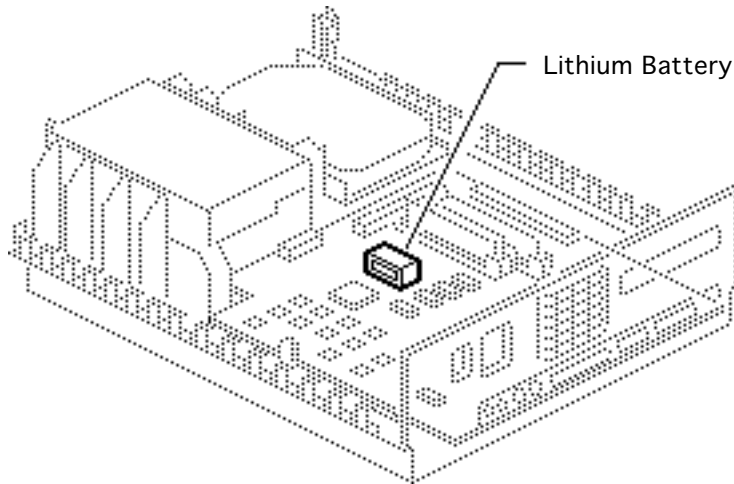
Additional Procedures

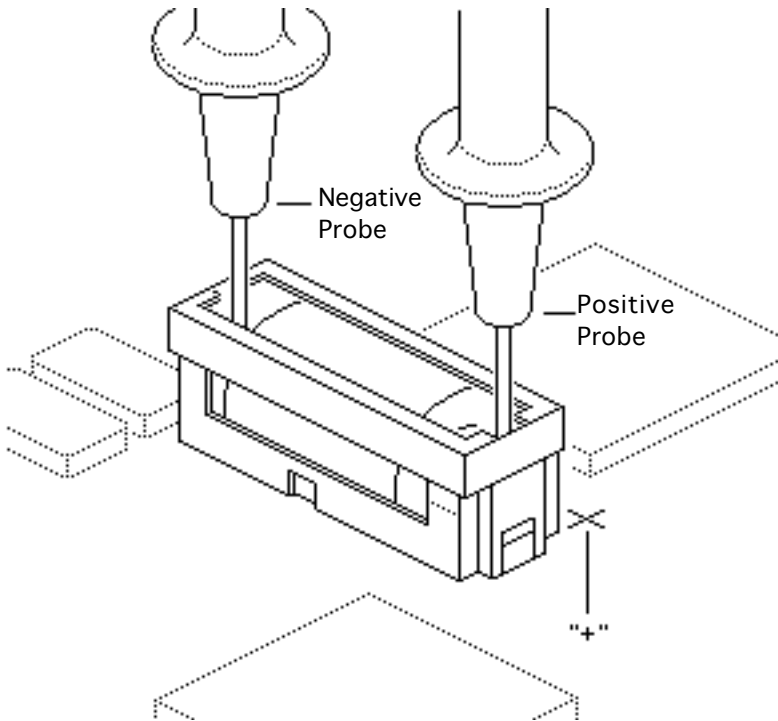## IIsi

Lithium Battery

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 Macintosh IIsi 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 and the negative probe to the negative end of the battery.

3 If the battery voltage is below 3.0 volts, replace the battery. Refer to "Battery Replacement" in this chapter.

Lithium Battery

Battery Replacement
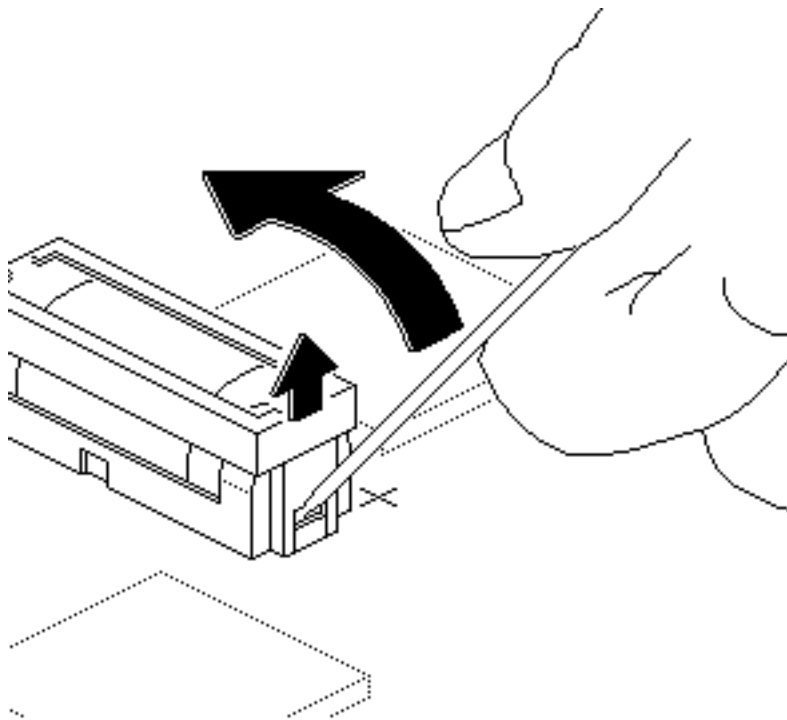
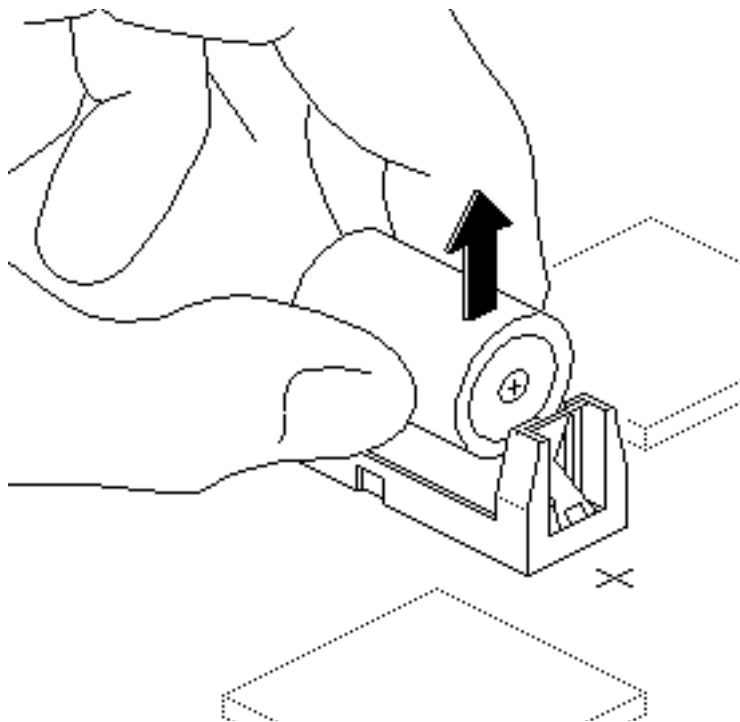Before you begin, remove the following:

- Cover
- Expansion cards

⚠️**Warning:** If handled or discarded improperly, the lithium battery in the Macintosh IIsi could explode. Review battery-handling and disposal instructions in Bulletins/Safety.
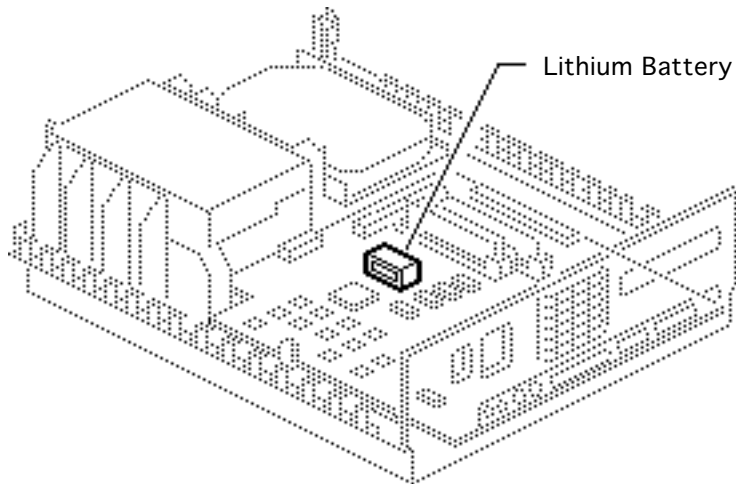
1 Using a small flat-blade screwdriver, pry open the latch at the end of the holder and lift off the cover.

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.

   Replacement Caution: Match the battery end marked "+" to the "+" on the battery holder.

Exploded View

Macintosh IIsi

Exploded View

Top Case
630-5804

Fan
Assembly
810-6030

Power
Supply
661-1616

Adaptor
Card and
Bracket
815-6246

Logic
Board
661-1615

Internal
Floppy
Drive
Cable
591-0025

Floppy
Drive
Carrier
805-0961

Floppy
Drive
661-0474

844-0018

Hard
Drive
Data
Cable
591-0026

Hard
Drive
Power
Cable
591-0027

Hard
Drive
Carrier
805-0980

444-6104

Hard
Drive
661-0216 (40 MB)

Bottom
Case
810-6032

865-0024

Speaker/
LED
Assembly
810-6031