



Apple Scanners





## Specifications

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Apple Scanners





## Characteristics

<b>Scanner Type</b>	Flatbed
<b>Maximum Document Size</b>	8.5 by 14 in.
<b>Speed</b>	20.4 sec. for a 300-dpi scan measuring 8.5 by 11 in.
<b>Grayscale</b>	16 levels (4 bits per pixel)
<b>Dropout Color</b>	Green
<b>Interface</b>	SCSI





## Settings

<b>Contrast</b>	Up to 8 (specified by user)
<b>Brightness</b>	Up to 16 (specified by user)
<b>Threshold Values</b>	Up to 16 (specified by user)
<b>Gray-Map</b>	More light detail, normal detail, more dark detail
<b>Scan Selections</b>	Line art, halftone, grayscale
<b>Halftone Techniques</b>	Spiral, bayer, 2 by 2, line, user-definable patterns, and adaptive dithering to grayscale data that has been scanned.





## Electrical

**Line Voltage**

120 VAC  $\pm$ 10%

**Frequency**

58-62 Hz





## Physical

### Size

Height: 4.4 in. (11.2 cm)

Width: 13.6 in. (34.5 cm)

Depth: 21.8 in. (55.4 cm)

### Weight

20 lb. (9.1 kg)





## Environmental

**Operating  
Temperature**

32-104°F (0-40°C)

**Storage  
Temperature**

-40 to 149°F (-40 to 65°C)

**Relative Humidity**

5-95% noncondensing





# Troubleshooting

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## Apple Scanners







## 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

## Miscellaneous

Power lamp not on;  
machine dead

- 1 Plug in power cord.
- 2 Close lamp cover and turn button clockwise.
- 3 Check for correct setting of voltage selector (on universal models).
- 4 Check interlock switch with multimeter; replace if switch is not opening and closing.
- 5 Check fuses FU1, FU2, and FU3 on power supply board.
- 6 Check fuse 1 on logic board (4-bit only).
- 7 Replace logic board.
- 8 Replace power supply.
- 9 Replace transformer.





Optical assembly does not move

- 1 Check and clean or replace belt.
- 2 Check belt tension. Belt should be tight with no slack.
- 3 Check for damage to gears or buildup of foreign material; clean or replace gears.

Optical assembly moves once, then does not move

Check limit switch for continuity.

System does not boot or locks up during transfer of data over SCSI bus

Perform “Logic Board Modification” (see Additional Procedures).





AppleScan program  
crashes during  
middle of scanning  
operation, or  
computer hangs

- 1 Verify version of AppleScan.
- 2 Replace power supply board.
- 3 Replace logic board.

Fluorescent lamp  
won't light or is dim

- 1 Check lamp holder connector.
- 2 Check that label of fluorescent lamp faces down (into lamp holder).
- 3 Replace lamp.
- 4 Check flexible cable.
- 5 Replace inverter (or optical assembly).





Scan command not executed	<ol style="list-style-type: none"><li>1 Check external cable connections.</li><li>2 Reset SCSI select switch on scanner to an unused device number (factory preset at 2). Do not use 7 or 8.</li><li>3 Check that SCSI cable terminates correctly.</li><li>4 Check fuse on logic board.</li><li>5 Replace logic board.</li></ol>
Image not clean; dark or light spots	<ol style="list-style-type: none"><li>1 Clean glass with water and soft, lint-free cloth.</li><li>2 Adjust contrast or threshold settings on application.</li><li>3 Replace lamp.</li><li>4 Replace logic board.</li><li>5 Replace optical assembly.</li></ol>
Scanning performed, but image doesn't reach host computer	<ol style="list-style-type: none"><li>1 Check interface connector.</li><li>2 Replace optical assembly.</li><li>3 Check fuse on logic board.</li><li>4 Replace logic board.</li></ol>





Incorrect image on  
host screen

- 1 Clean glass with water and soft, lint-free cloth.
- 2 Replace optical assembly.





## Apple OneScanner for Windows

Scanner does not operate in Windows environment

- 1 Check connections of SCSI cable.
- 2 Check that SCSI terminator is installed.
- 3 Replace AT-to-SCSI Host Adapter card.
- 4 If you determine that there is a software problem, contact the Apple Assistance Center.





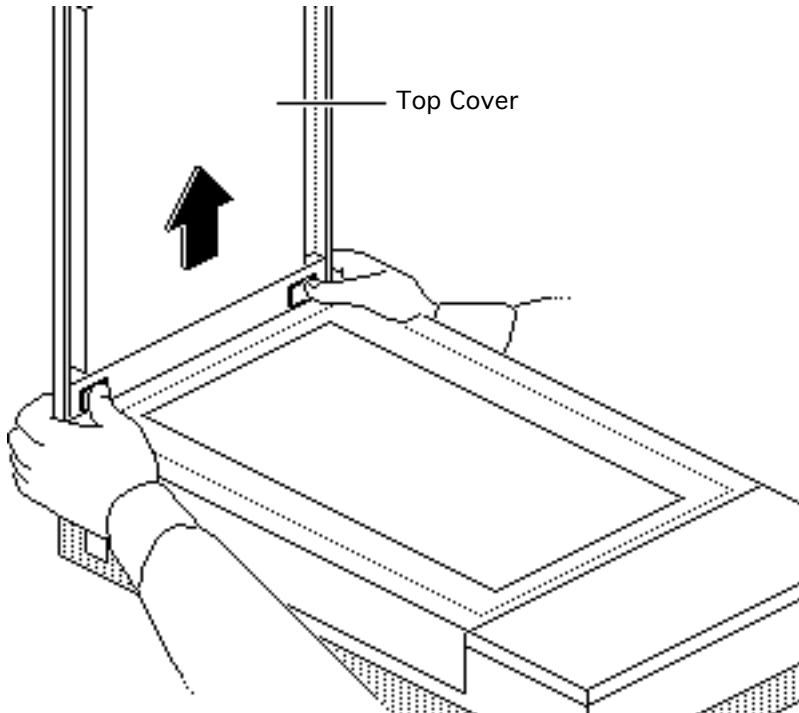
# Take Apart

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## Apple Scanners







## Top Cover

No preliminary steps are required before you begin this procedure.

- 1 Press the clips and lift the top cover.



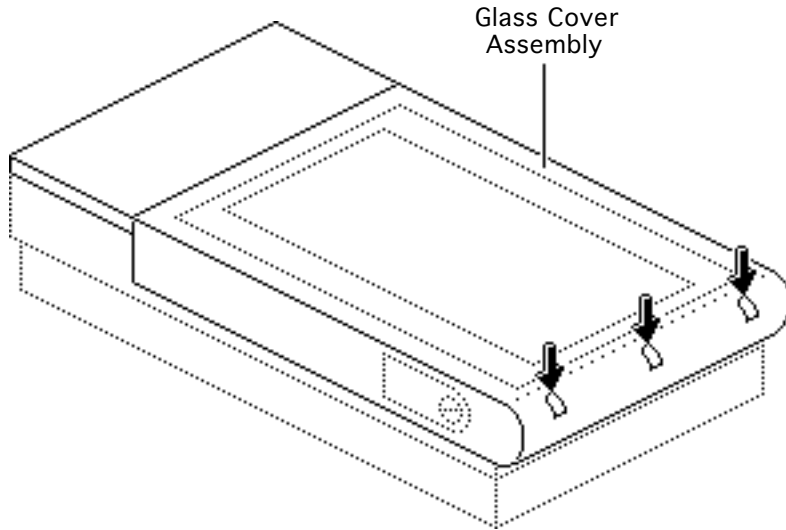


## Glass Cover Assembly

Before you begin, remove the top cover.

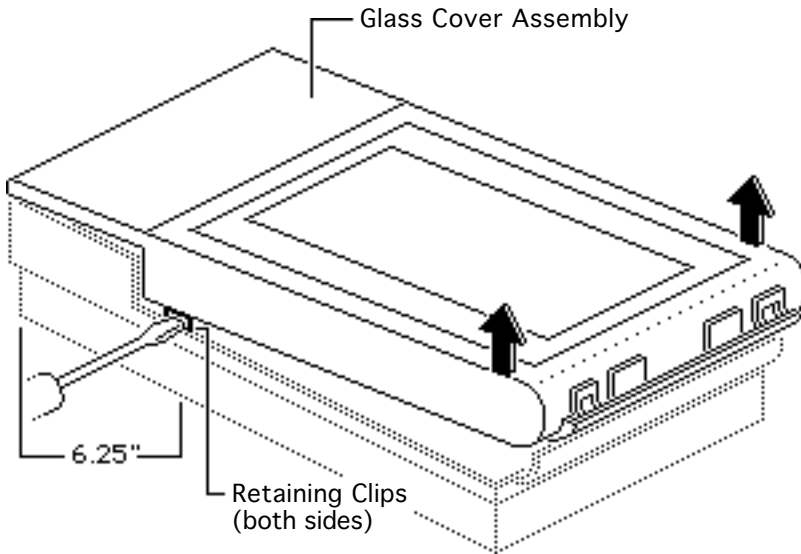
**Caution:** Review the ESD precautions in Bulletins/ Safety.

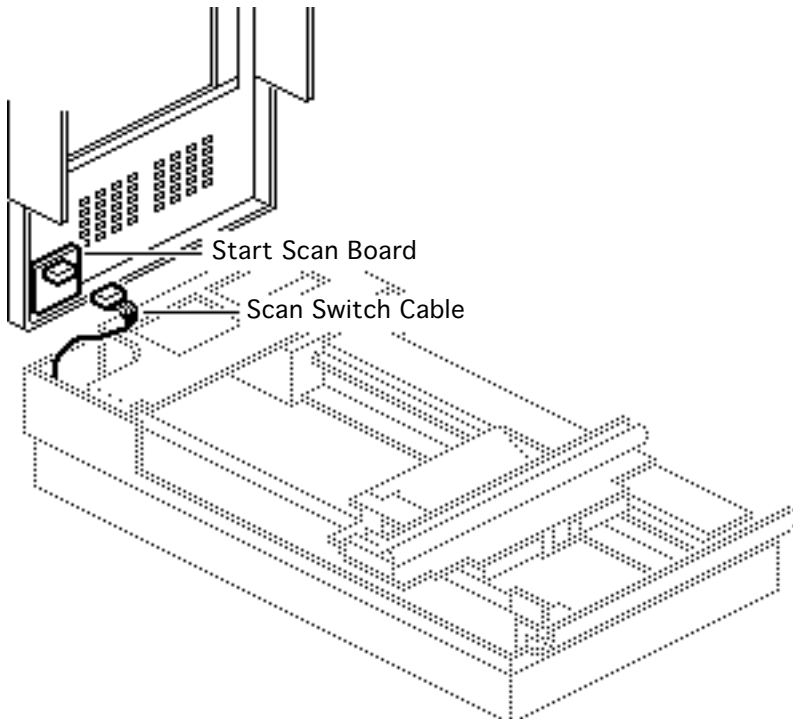
- 1 Loosen the three captive screws.





- 2 While lifting the glass cover assembly from the rear, use a flat-blade screwdriver to press in and release the two retaining clips.

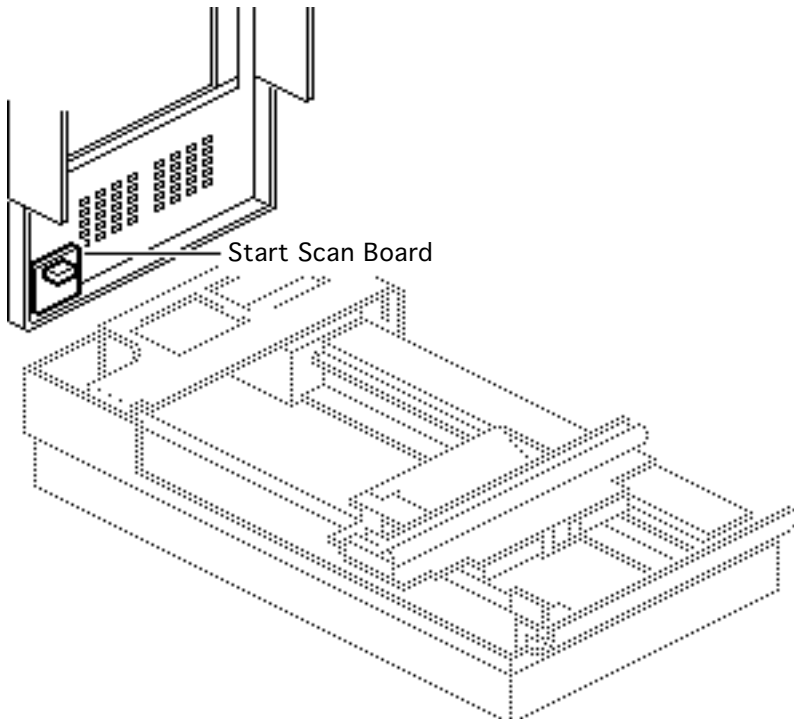




**Caution:** Make sure that you don't damage the protruding components on the start scan board while performing this procedure.

- 3 Raise the glass cover assembly to 90°, disconnect the scan switch cable from the start scan board, and remove the glass cover assembly.





- 4 Replacement Note:**  
When you replace a damaged glass cover assembly, remove the start scan board and install the board on the new glass cover assembly.



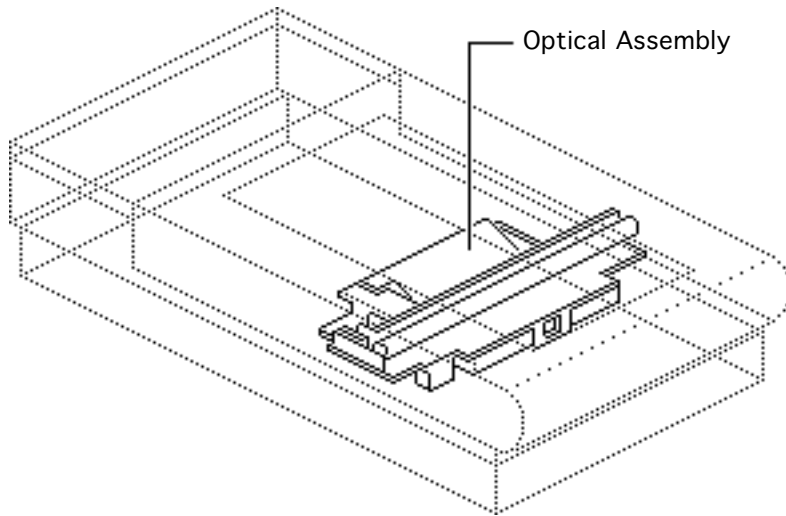


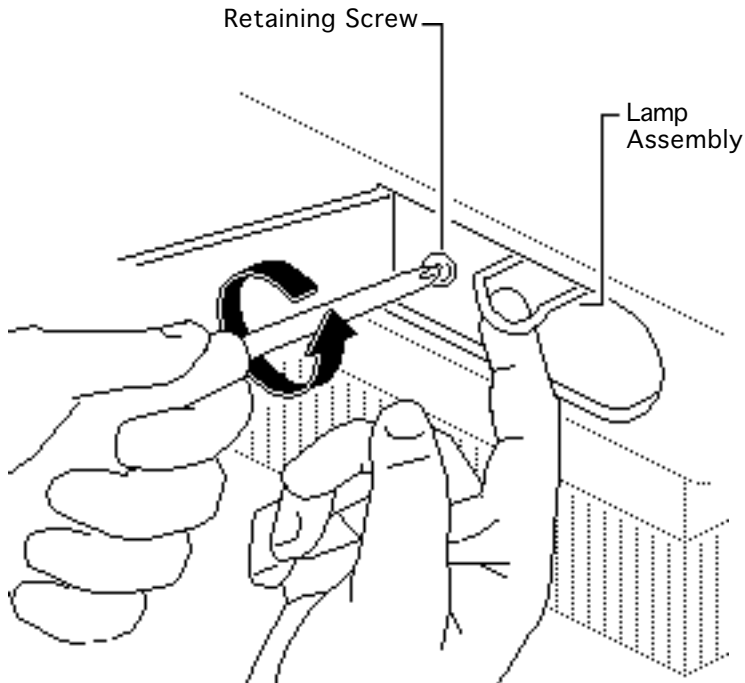
# Optical Assembly

Before you begin, remove the following:

- Top cover
- Glass cover assembly

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

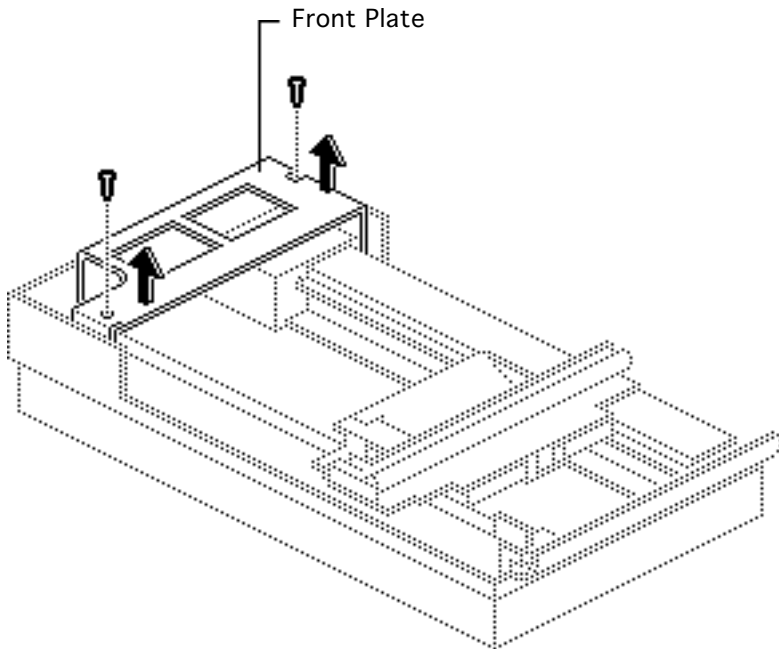




- 1 While pulling the wire handle, loosen the retaining screw and remove the lamp assembly.

**Replacement Note:** Make sure the left side of the lamp assembly engages the left retaining flanges properly.

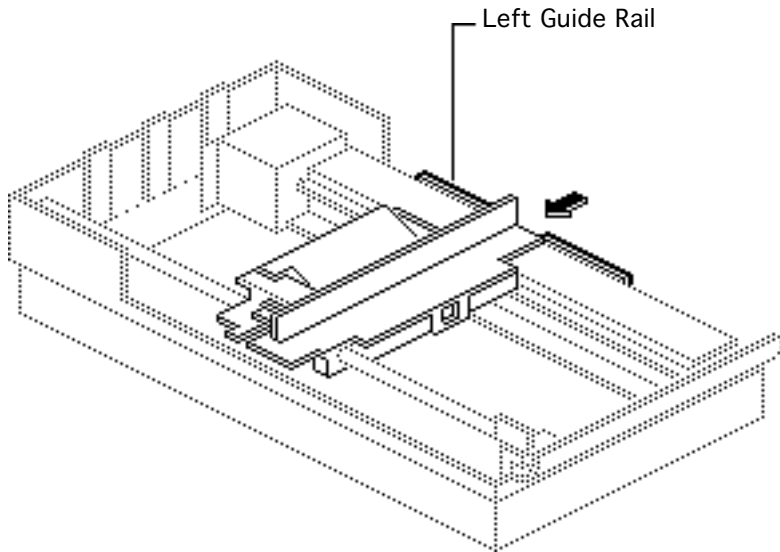




- 2 Remove the two retaining screws and lift out the front plate.





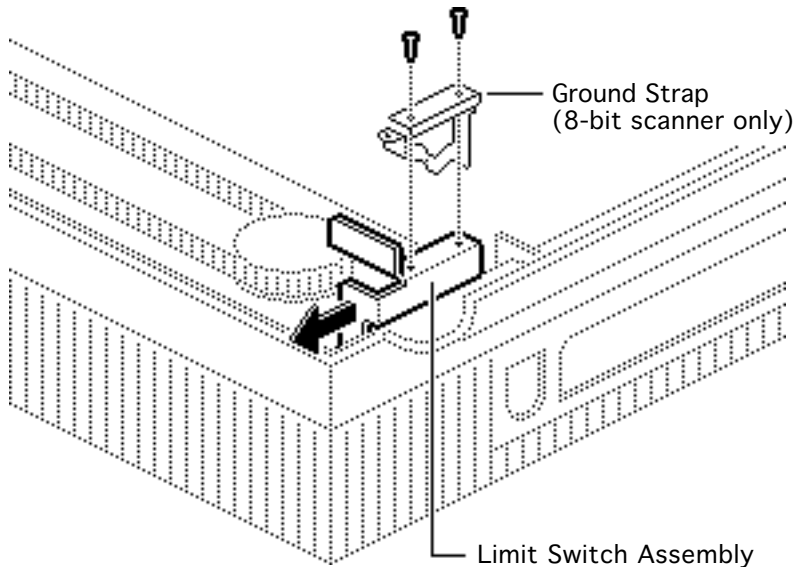


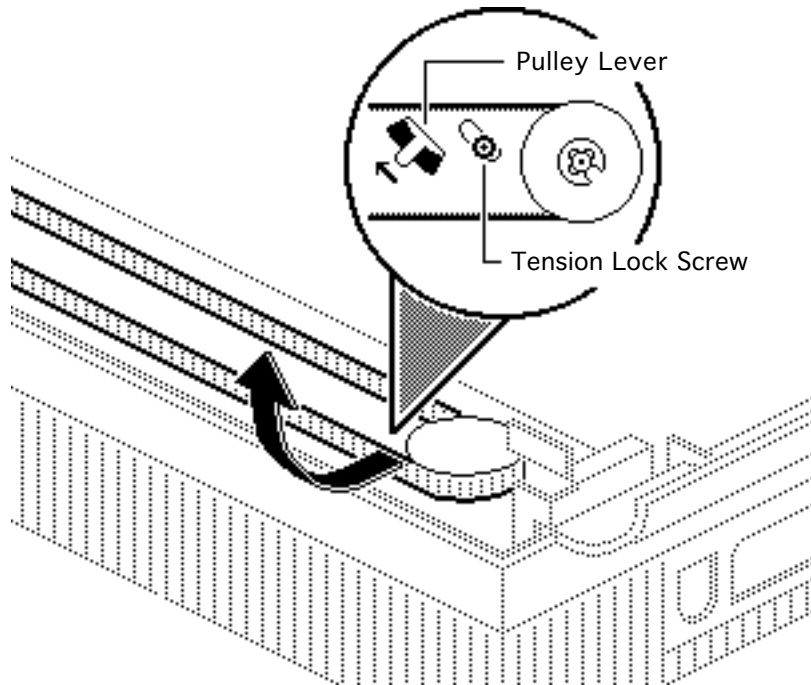
- 3 Push the optical assembly to the center of travel and over the cutout in the left guide rail.





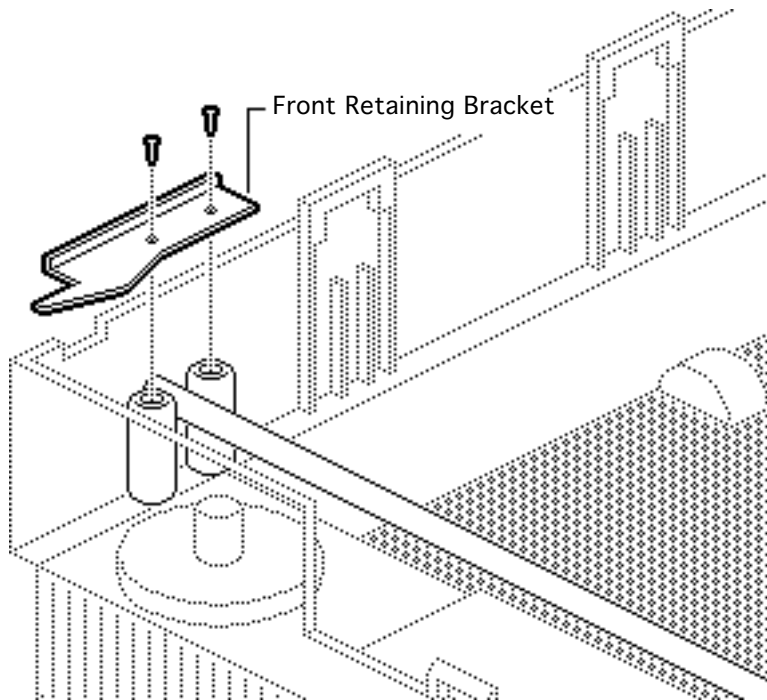
- 4 Remove the two retaining screws (and ground strap, for 8-bit scanner only) and slide the limit switch assembly to the side.





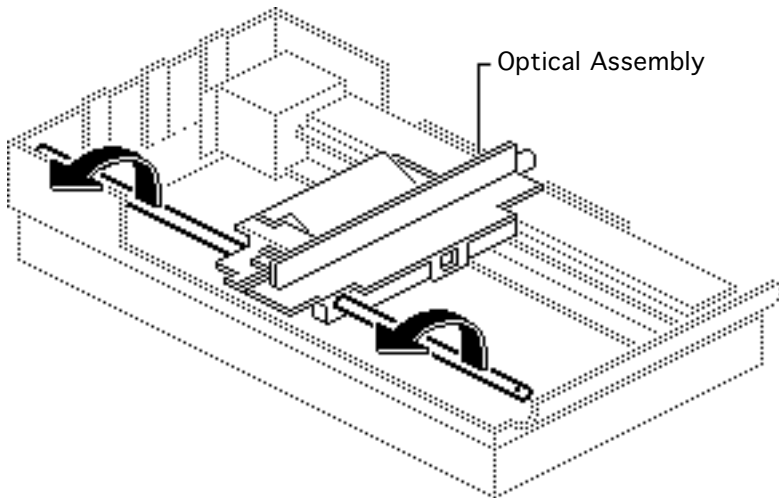
- 5 Loosen the tension lock screw.
- 6 Slide the pulley lever forward to relieve belt tension and remove the belt from the rear pulley gear.
- 7 Remove the belt from the front pulley gear.





- 8 Remove the two retaining screws and the carrier shaft front retaining bracket.

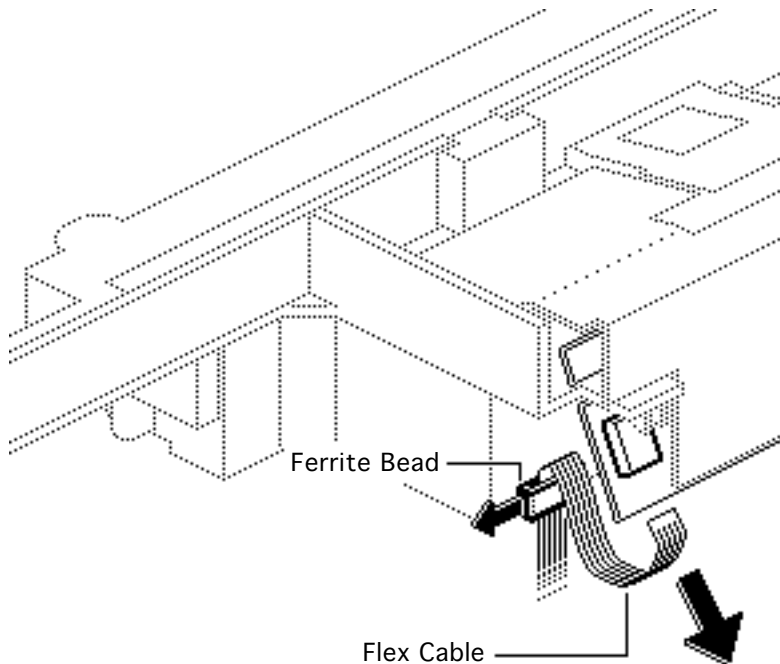




**Caution:** Do not lift the optical assembly too high, or you may damage the flex cable.

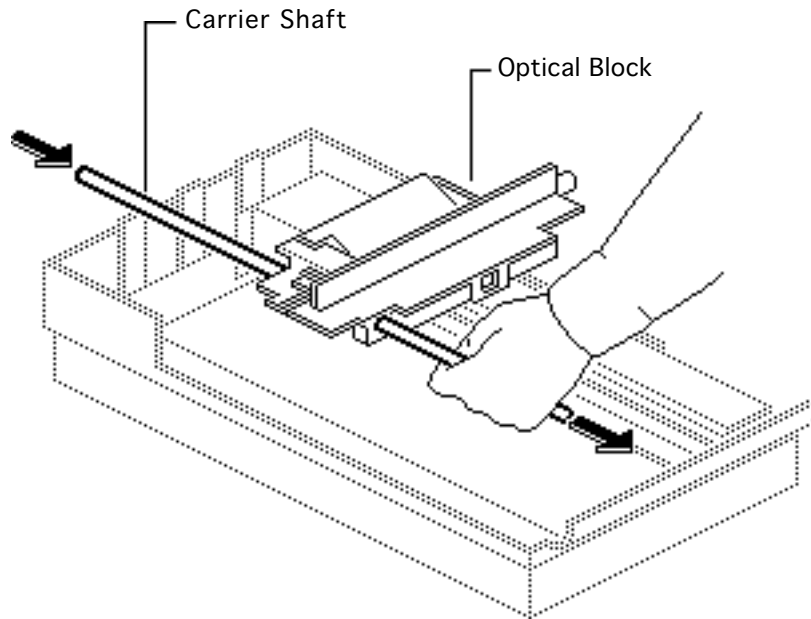
- 9 Lift the shaft until it clears both support brackets; then pull the shaft slightly to the right. Free the left side of the optical assembly from the left guide rail.





10 Disconnect the flex cable and remove the cable (and ferrite bead on the 8-bit scanner only) from the optical assembly.

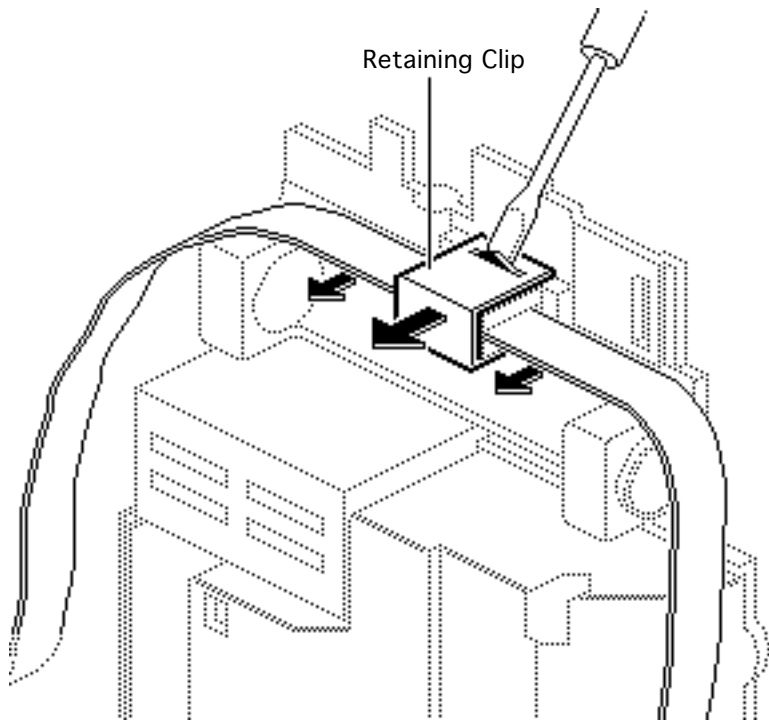




- 11 Lift the optical block from the scanner.
- 12 Slide the shaft out of the optical block.

Note: Keep the carrier stopper sleeve with the shaft.





- 13 Using a small screwdriver, pry off the retaining clip and remove the belt from the optical assembly.







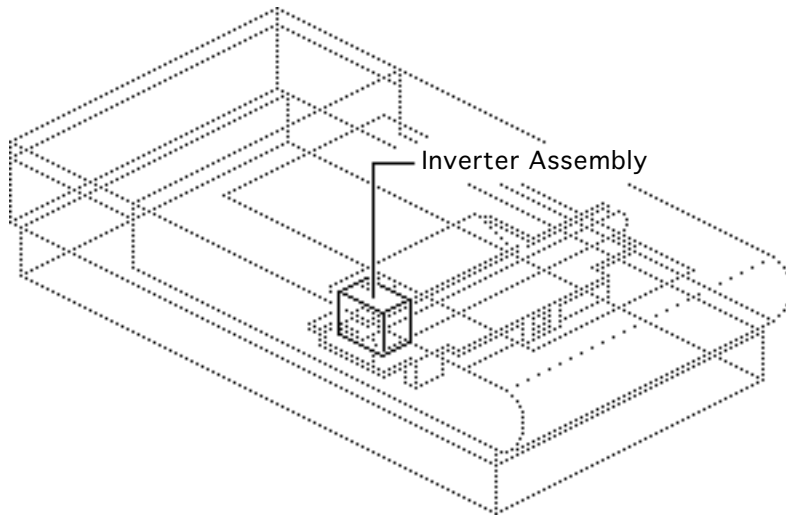
## Inverter Assembly

Before you begin, remove the following:

- Top cover
- Glass cover assembly
- Optical assembly

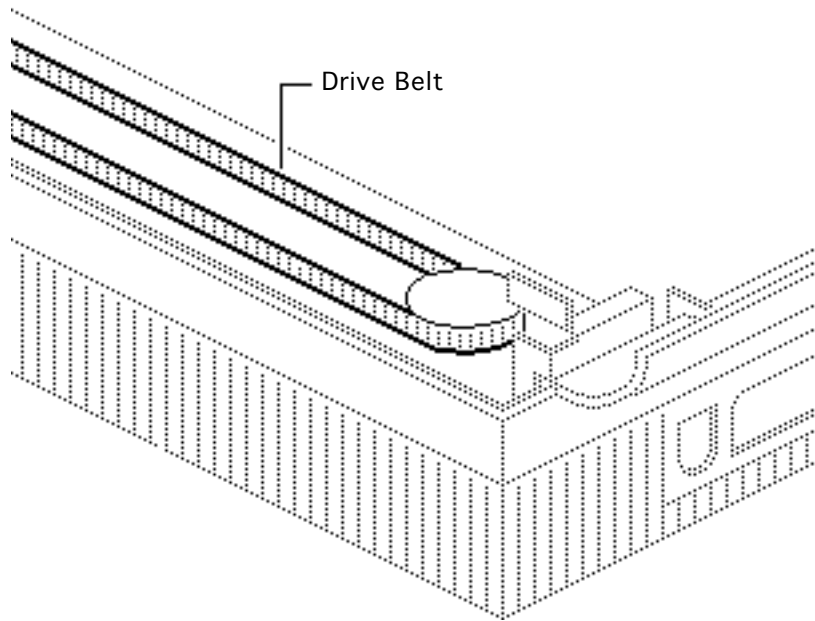
**Caution:** Review the ESD precautions in Bulletins/ Safety.

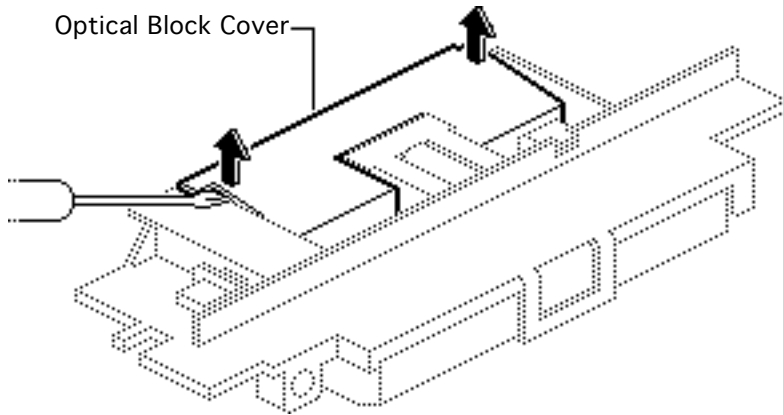
**Caution:** Do not loosen the set screw. Loosening the screw damages the factory optical settings, and you must replace the optical assembly.





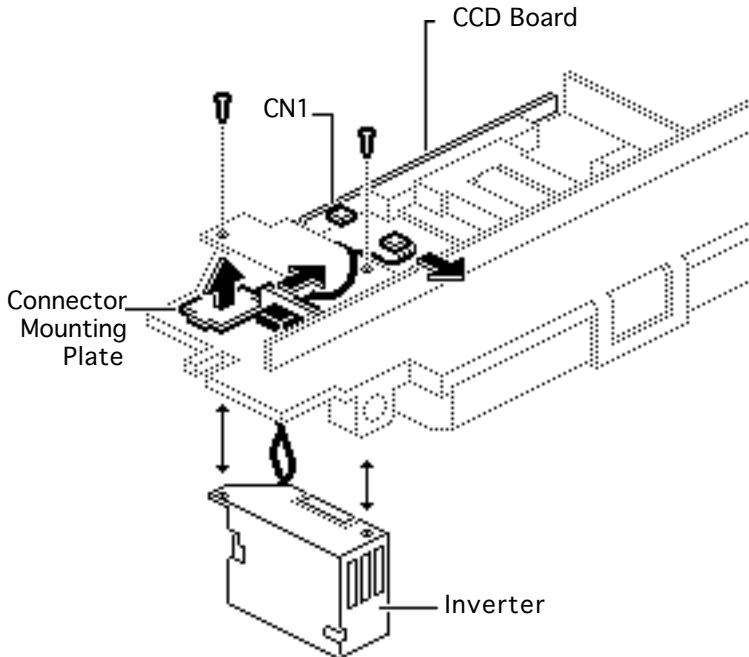
**Note:** You do not have to remove the drive belt from the optical block.





- 1 Insert a flat-blade screwdriver under one side of the optical block cover, and gently pry up until you hear a snap. Perform the same procedure on the other side, and remove the optical block cover.





**Caution:** Do not loosen the two CCD retaining screws. Loosening the screws damages the optical alignment, and you must replace the optical assembly.

- 2 Disconnect connector CN1 from the CCD board.
- 3 Remove the two mounting screws and let the inverter drop.
- 4 Slide the connector mounting plate to the left, toward the inverter, and lift the right side of the plate.





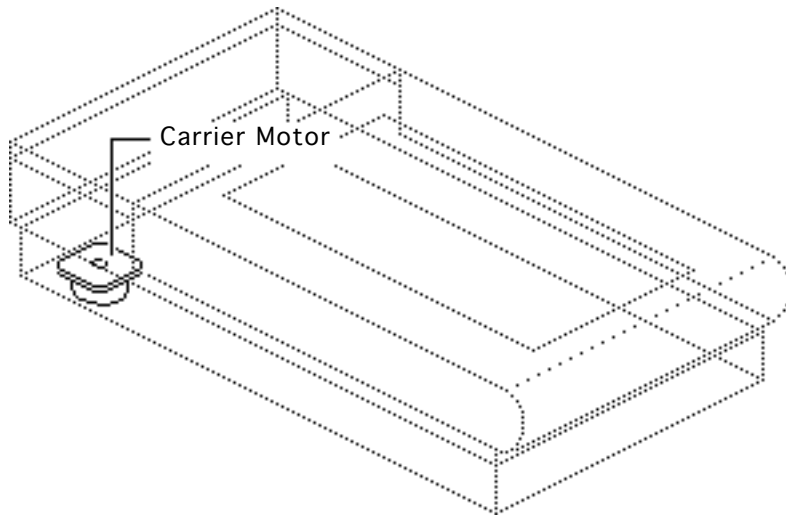
## Carrier Motor

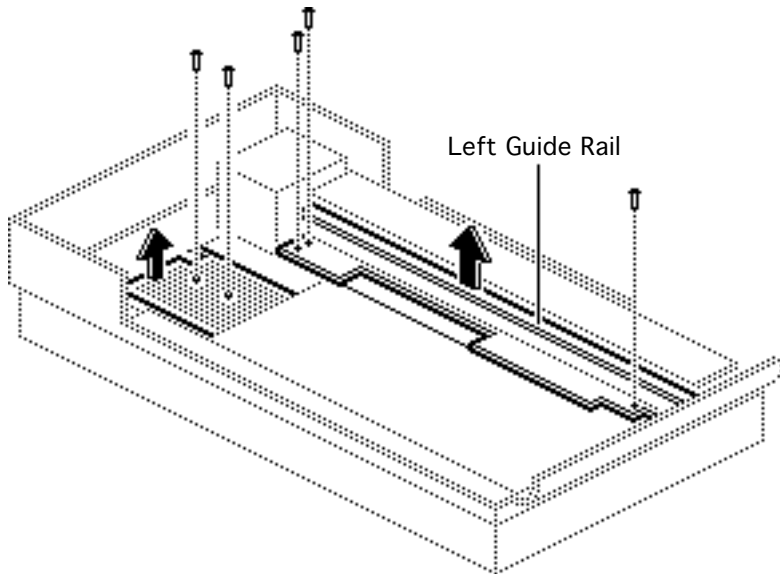
Before you begin, remove the following:

- Top cover
- Glass cover assembly
- Optical assembly

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

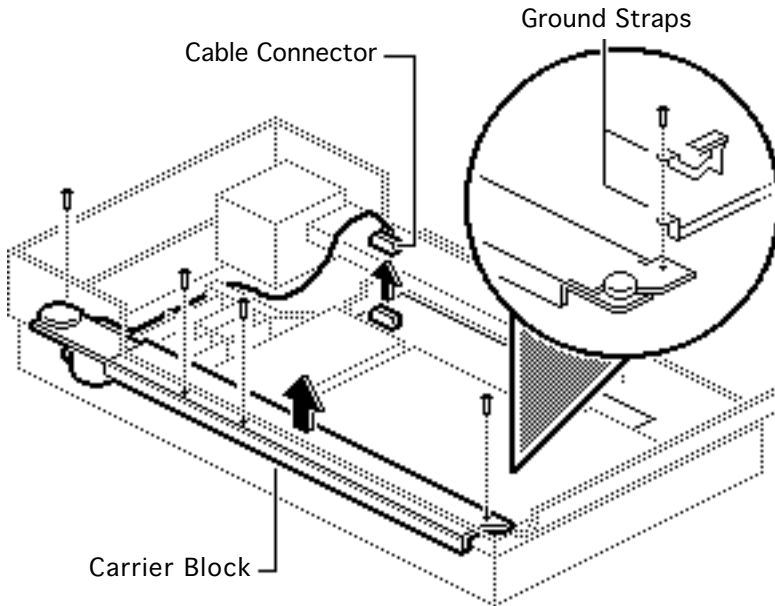
**Replacement Note:** Replace the drive belt tensioning spring and drive gear pulleys now.





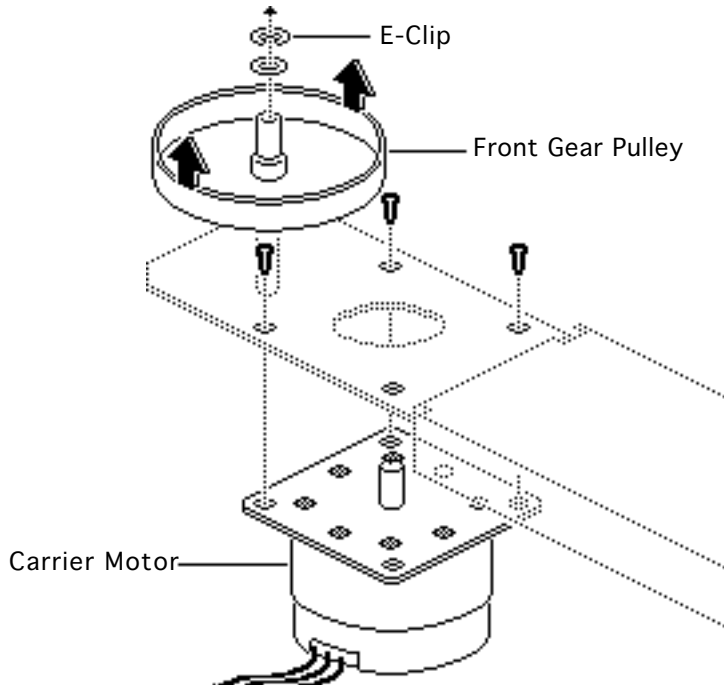
- 1 Remove the two retaining screws and the front inside cover.
- 2 Remove the three mounting screws and the left guide rail.





- 3 Disconnect the cable connector from the power supply Board.
- 4 Remove the retaining screw and move the ground straps out of the way.
- 5 Remove the four mounting screws and lift out the carrier block.





- 6 Remove the E-clip and washer, and slide the front gear pulley up and off the pulley spindle.
- 7 Remove the remaining three motor mounting screws and the motor.

**Replacement Note:**  
Install the motor onto the carrier assembly with the motor cable facing forward.





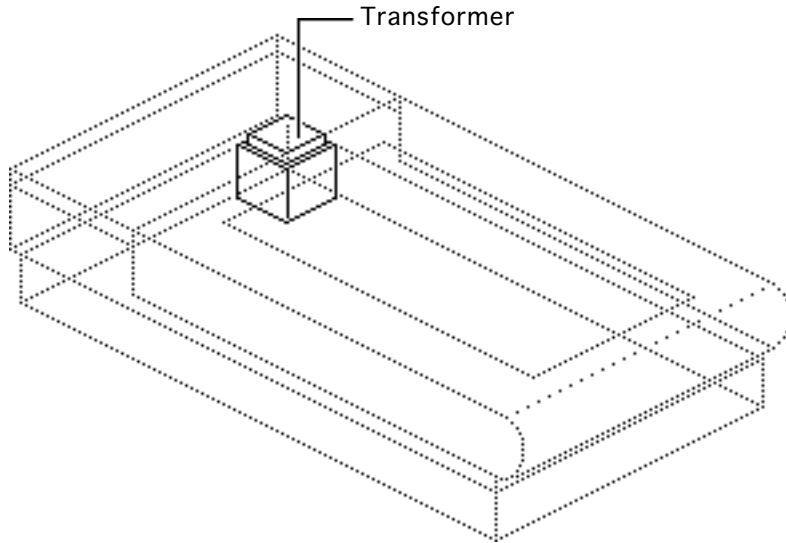


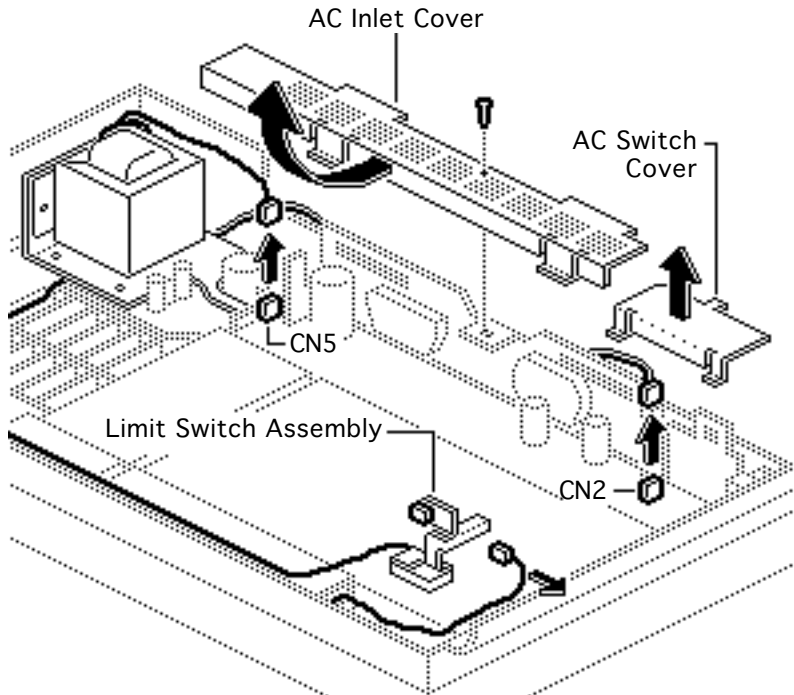
## Transformer

Before you begin, remove the following:

- Top cover
- Glass cover assembly
- Optical assembly
- Carrier block

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



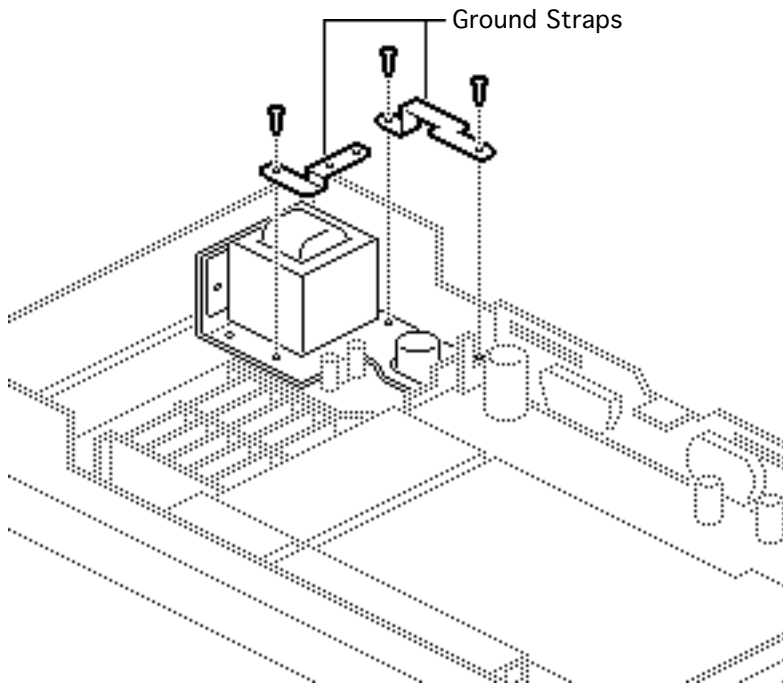


- 1 Remove the retaining screw and slide the AC inlet cover to the right and out of the scanner.
- 2 Remove the AC switch cover.
- 3 Using a small flat-blade screwdriver, push the retaining tab toward the connector and disconnect the two cable connectors, CN2 and CN5, from the power supply board.
- 4 Disconnect the cable connector from the limit switch assembly.



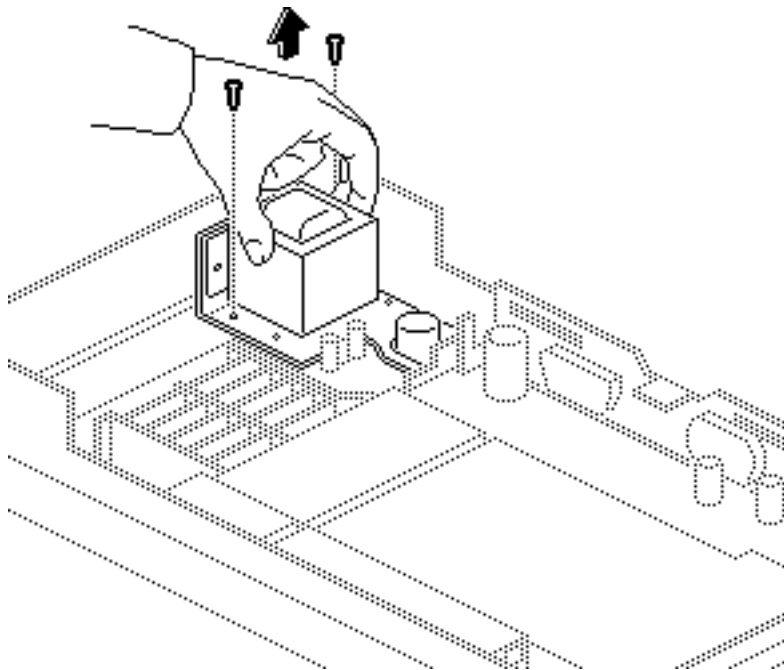


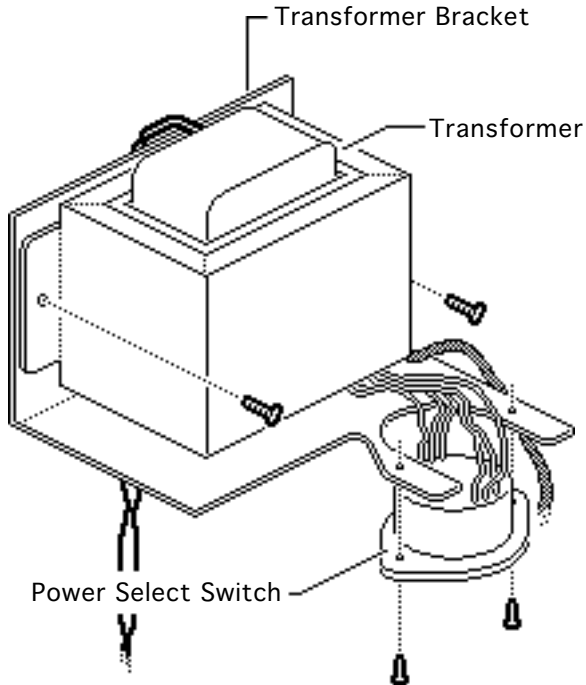
- 5 Remove the screws and ground straps.





- 6 Remove the two remaining screws and lift out the transformer.



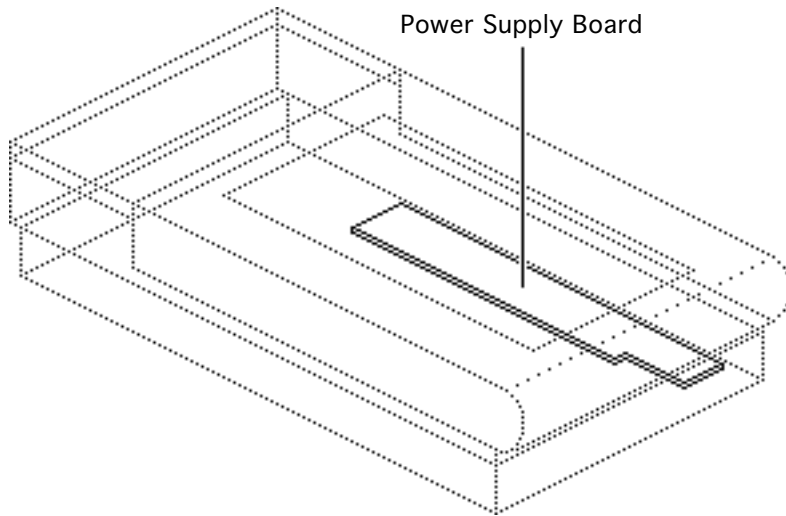


- 7 Remove the two mounting screws and separate the transformer from the transformer bracket.
- 8 Remove the two mounting screws and the power select switch from the transformer bracket (on universal transformers only).





## Power Supply Board

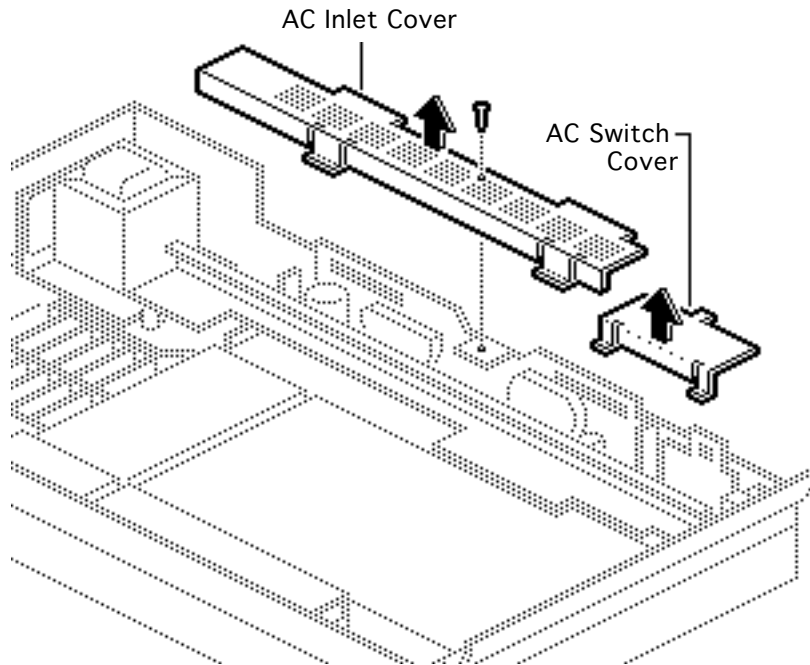


Before you begin, remove the following:

- Top cover
- Glass cover assembly
- Optical assembly

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



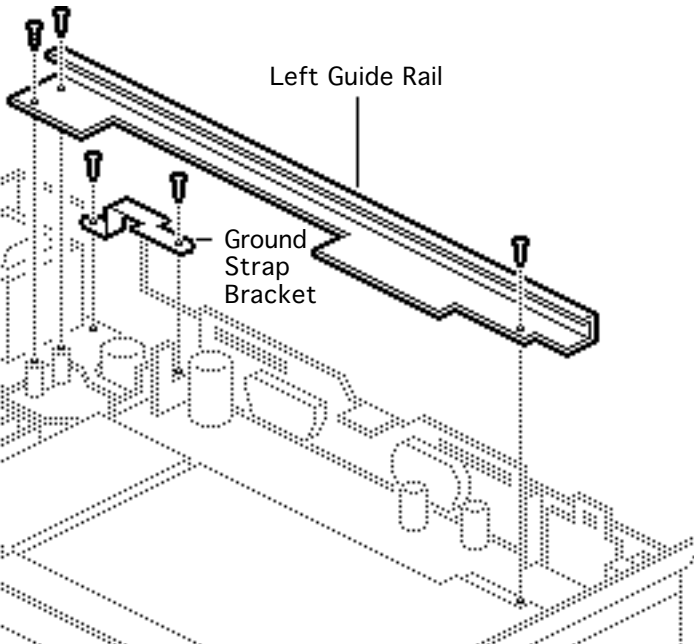


- 1 Remove the retaining screw and slide the AC inlet cover to the right and out of the scanner.
- 2 Remove the AC switch cover.

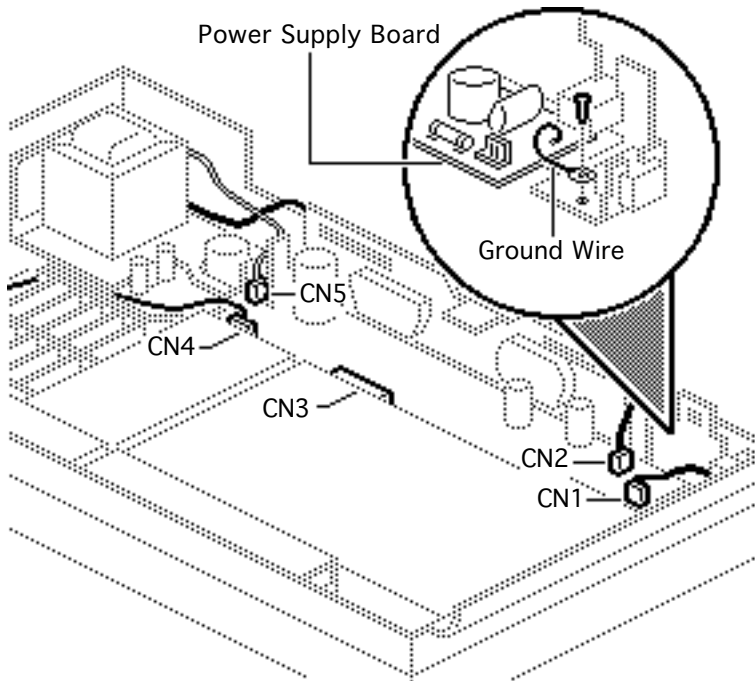




- 3 Remove the three mounting screws and the left guide rail.
- 4 Remove the two mounting screws and the ground strap bracket.







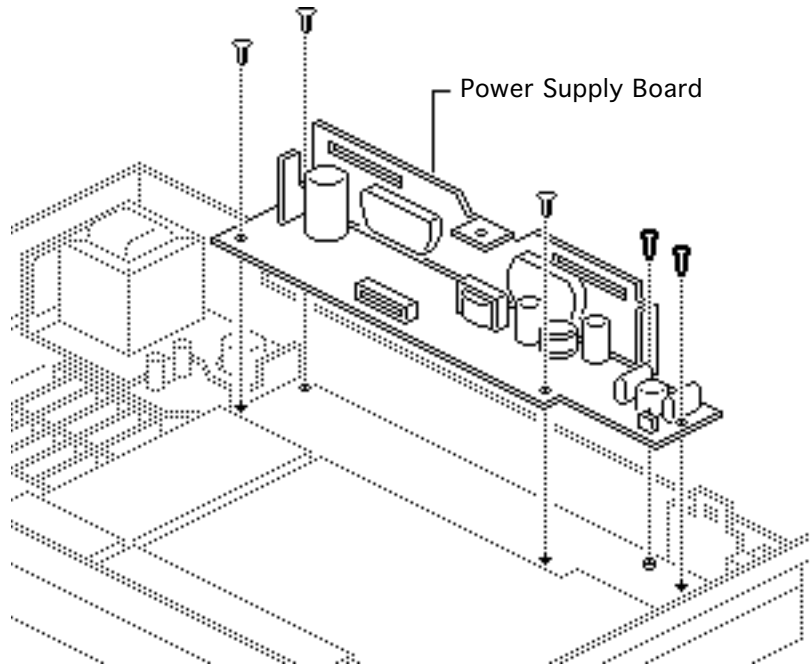
**Note:** On the 8-bit scanner, remove the logic board (with metal case) to allow removal of the power cable connector.

- 5 Disconnect the five cable connectors from the power supply board:
  - CN1
  - CN2
  - CN3
  - CN4
  - CN5
- 6 Remove the retaining screw and detach the ground wire.





- 7 Remove the three self-tapping screws, the two machine screws, and the power supply board.



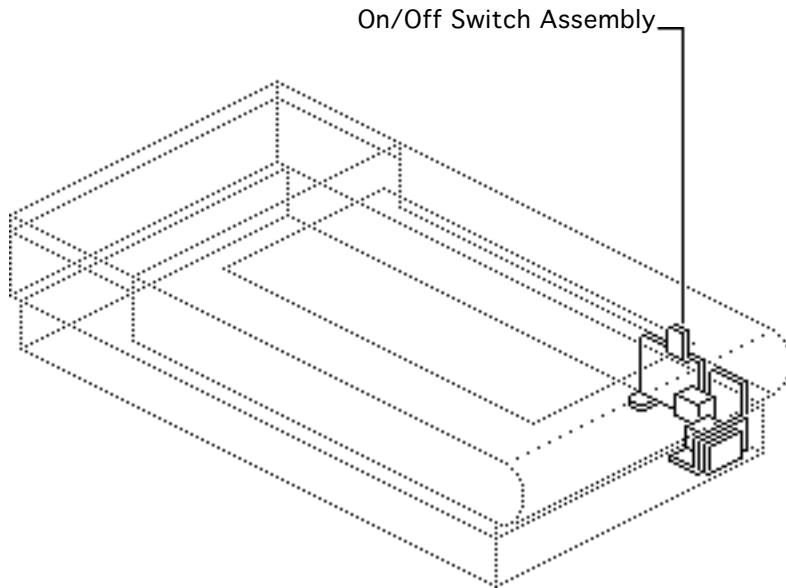


## On/Off Switch Assembly

Before you begin, remove the following:

- Top cover
- Glass cover assembly
- Optical assembly
- Power supply board

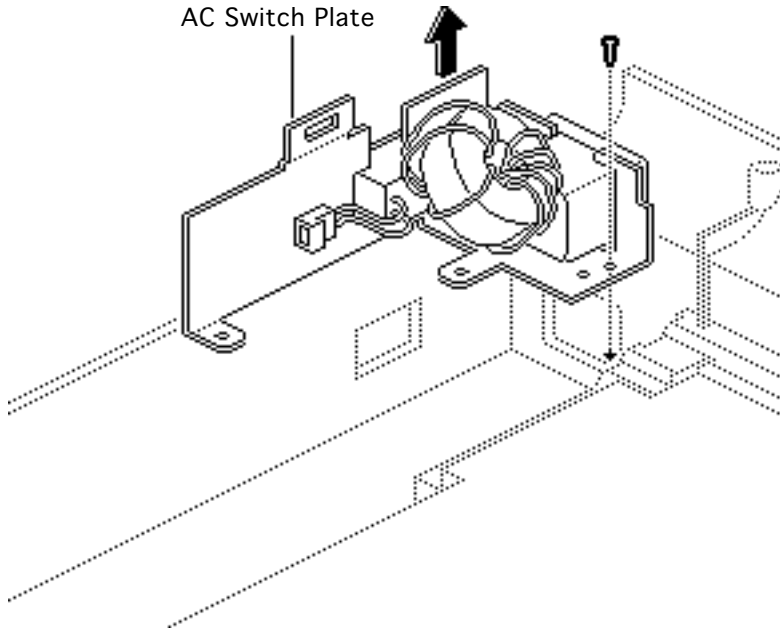
**Caution:** Review the ESD precautions in Bulletins/ Safety.





Remove the remaining screw  
and the AC switch plate.

AC Switch Plate

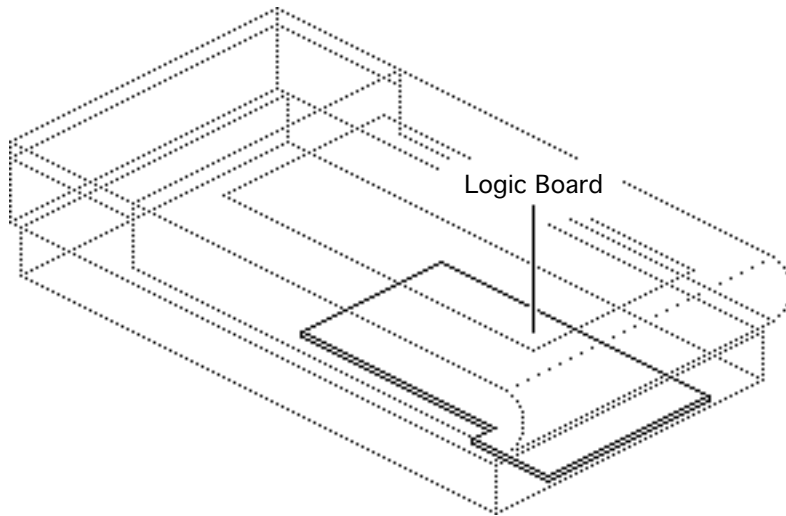




## Logic Board

No preliminary steps are required before you begin this procedure.

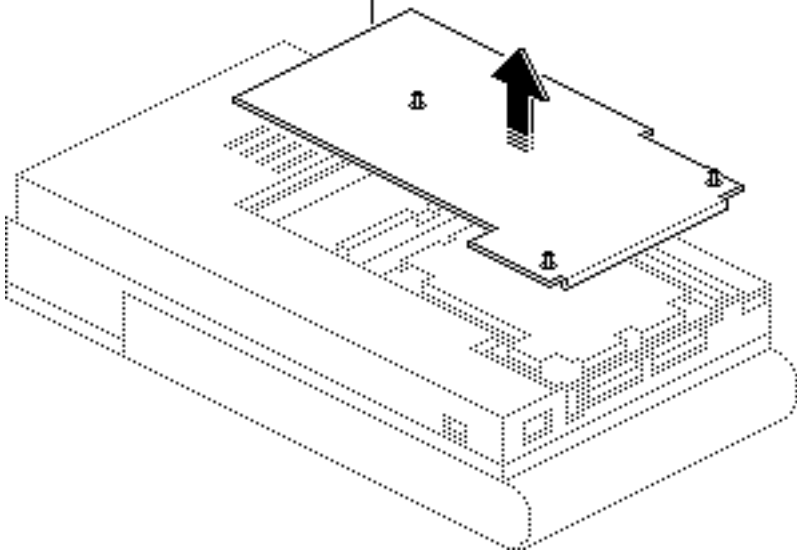
**Caution:** Review the ESD precautions in Bulletins/ Safety.





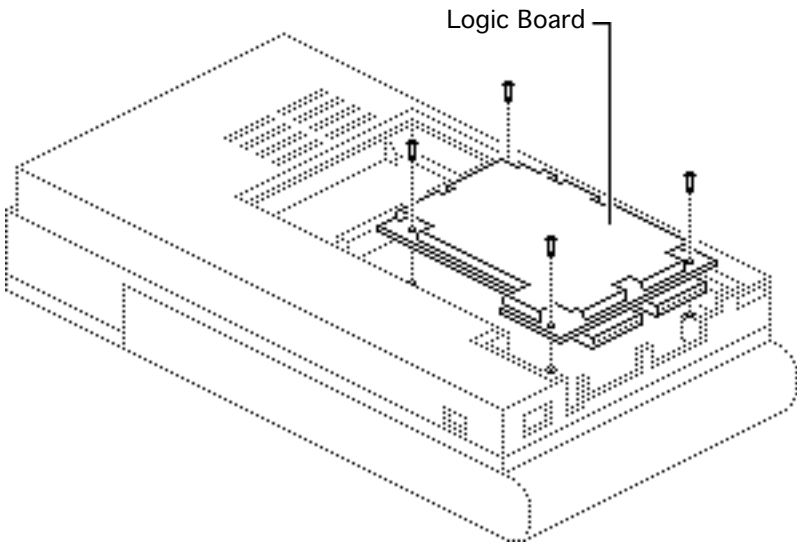
- 1 Loosen the three captive screws and remove the bottom cover.

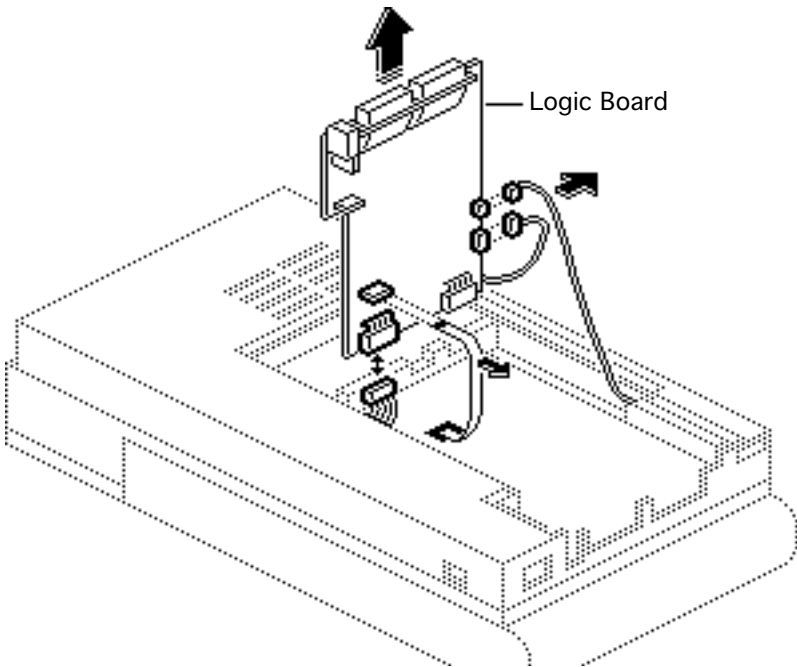
Bottom Cover





- 2 Remove the four mounting screws, and remove the logic board.





- 3 Lift the logic board to gain access and disconnect the four cables.
- 4 Remove the logic board.

**Caution:** Do not remove the metal case from the 8-bit logic board. You could cause ESD damage to the circuitry.







## Additional Procedures

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Apple Scanners

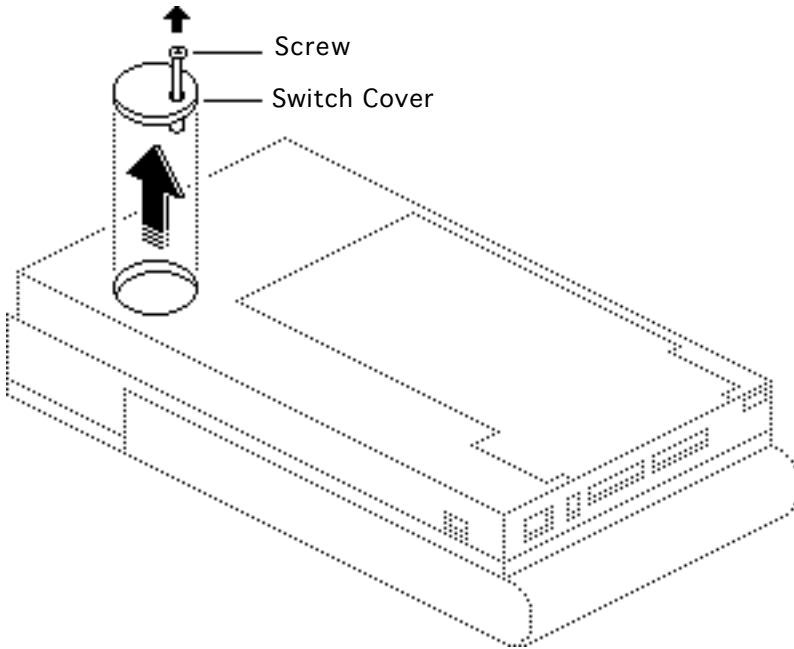


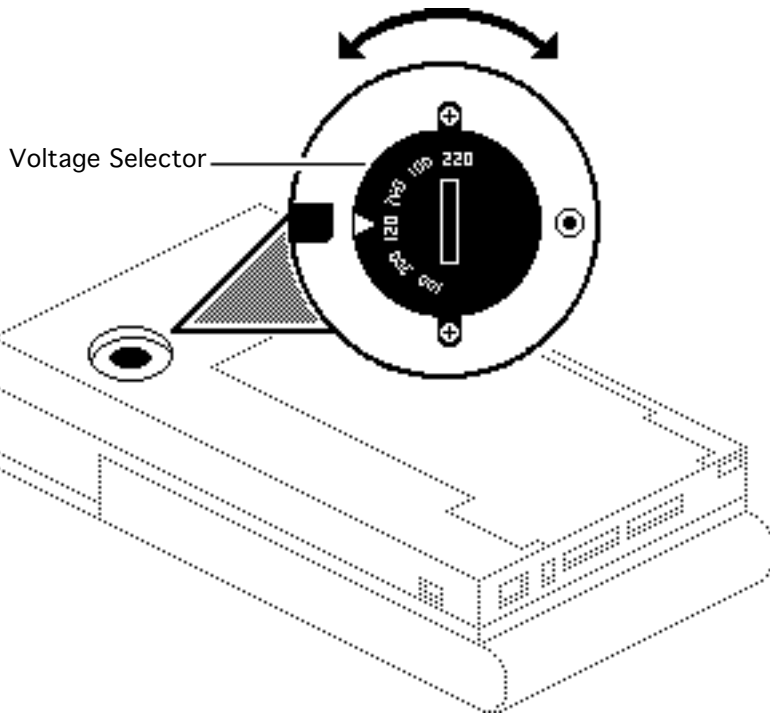


## Selecting Voltage

No preliminary steps are required before you begin this procedure.

- 1 Remove the screw and the switch cover.





- 2 Using a coin or a flat-blade screwdriver, rotate the voltage selector to match the incoming voltage.



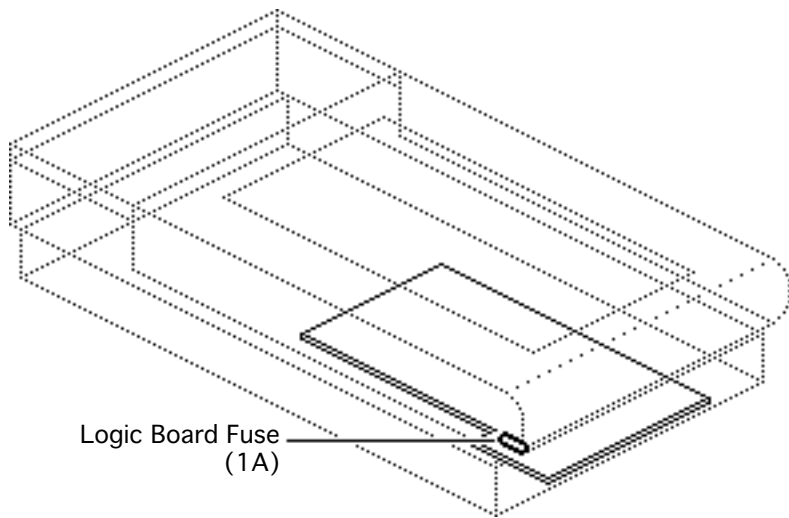


## Logic Board Fuse

Before you begin, remove the logic board.

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

**Note:** Perform this procedure on the 4-bit scanner only. Return the 8-bit logic board (in its shielded case) to Apple for repairs.



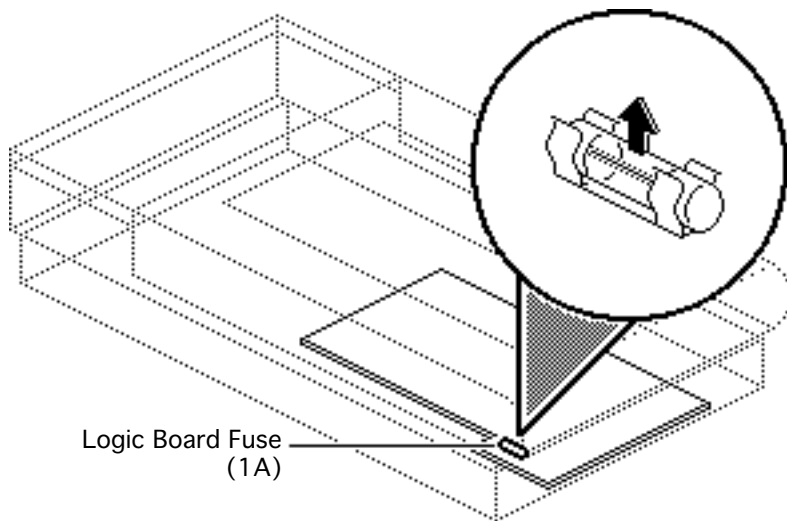
Logic Board Fuse  
(1A)





Pry up one end of the fuse at a time and remove the fuse.

**Replacement Caution:**  
Use a replacement fuse with the correct rating.

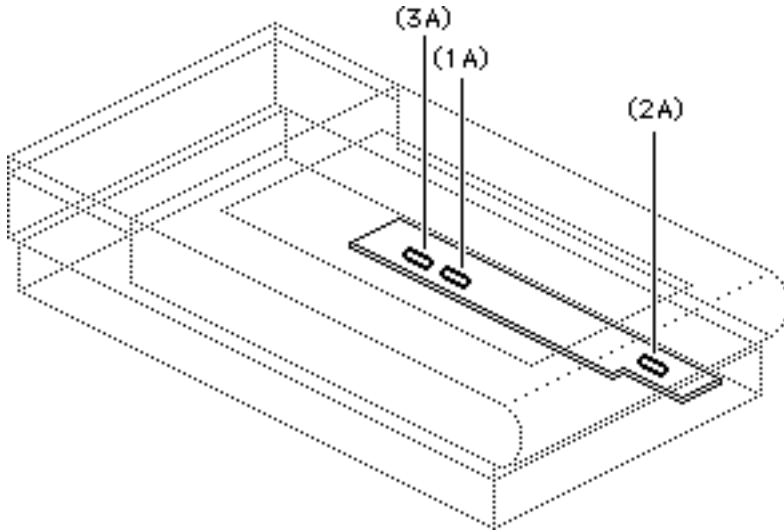


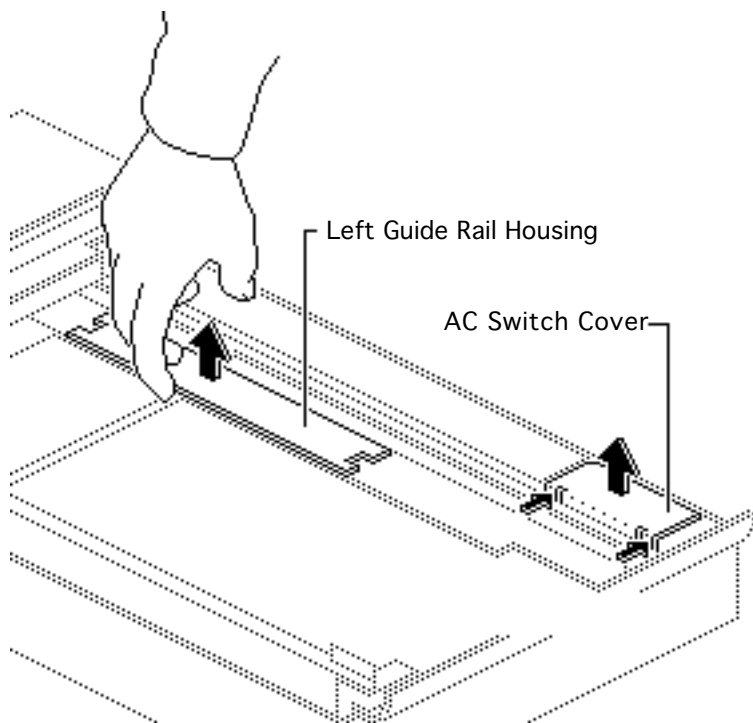


## Power Supply Fuses

No preliminary steps are required before you begin this procedure.

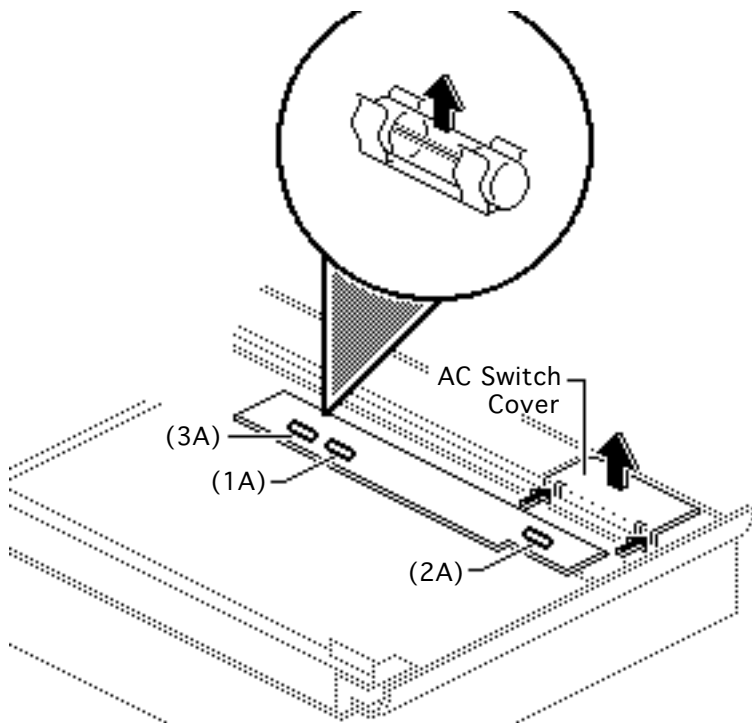
**Caution:** Review the ESD precautions in Bulletins/Safety.





- 1 Lift the center of the left guide rail housing and remove it from the left guide rail.





- 2 Remove fuses 1A and 3A.
- 3 Push in the tabs and remove the AC switch cover.
- 4 Remove fuse 2A.

**Replacement Caution:**  
Use a replacement fuse with the correct rating.







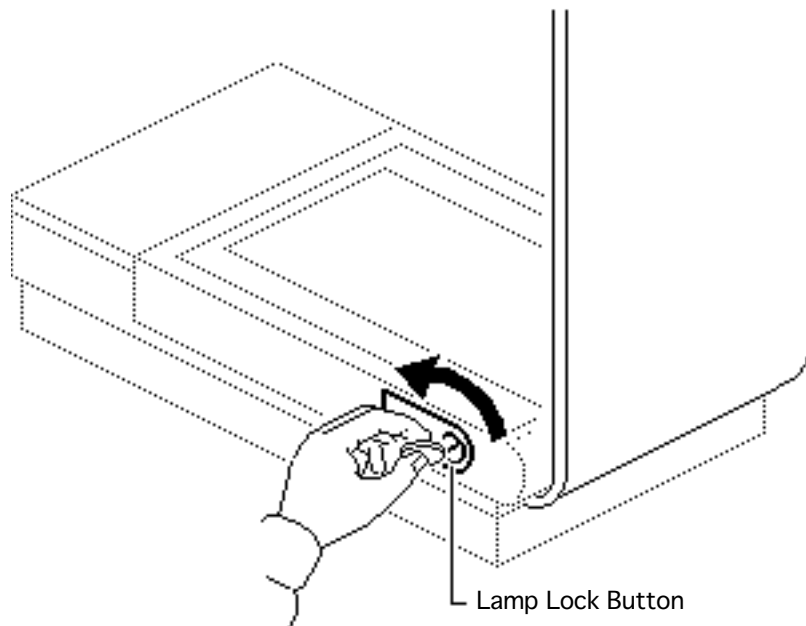
## Lamp Replacement

No preliminary steps are required before you begin this procedure.

- 1 Lift the cover to the vertical position.

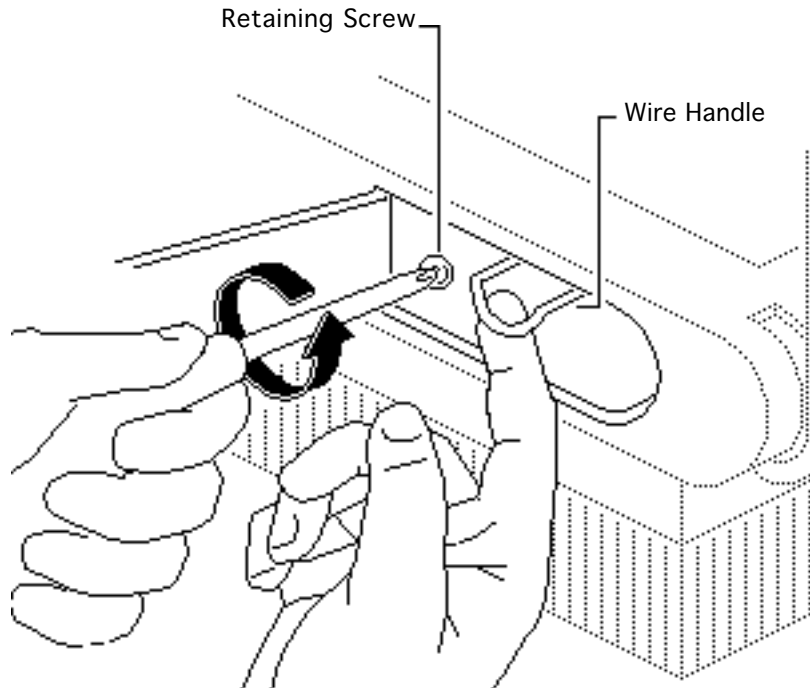
**Note:** To move the optical assembly to the home position, switch the scanner on and then off.

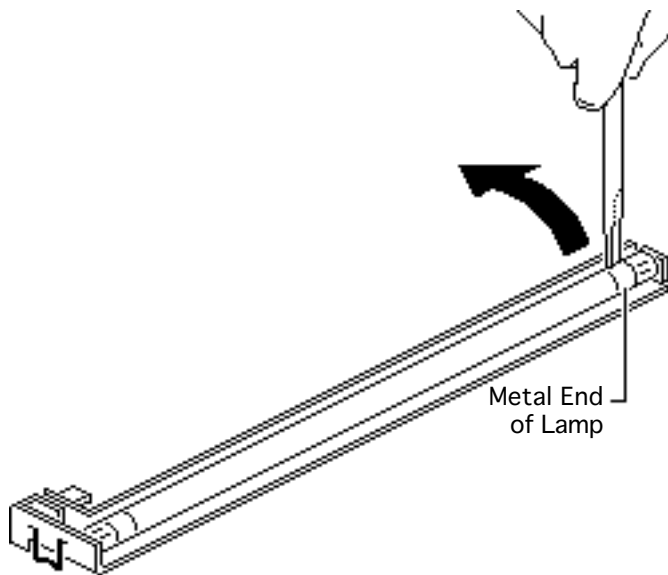
- 2 Using a coin or flat-blade screwdriver, unscrew the lamp lock button.





- 3 To remove the lamp assembly, pull on the wire handle and unscrew the retaining screw.

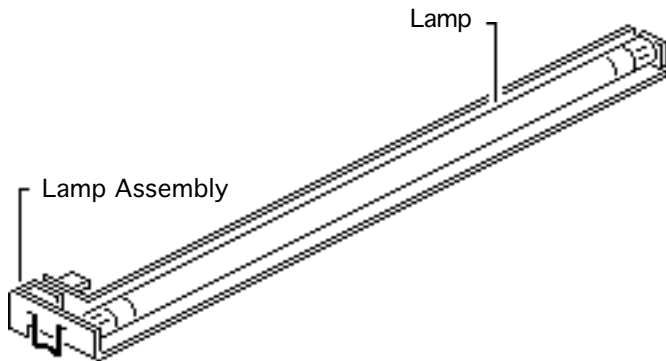




**Warning:** Do not pry the glass area of the lamp. The lamp could shatter.

- 4 Carefully pry one metal end of the lamp to disengage the lamp from the socket.
- 5 Pull the lamp from the other socket.



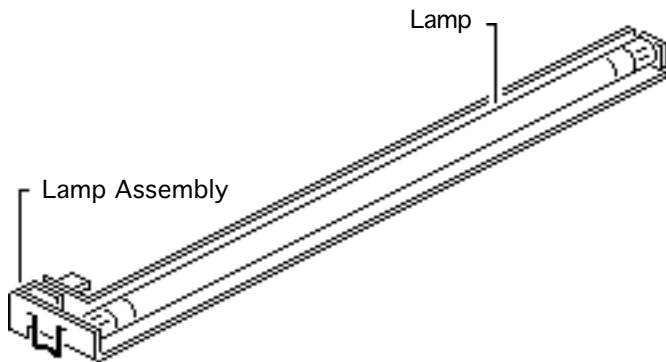


**Replacement Note:**

When replacing the lamp and lamp assembly, make sure that

- The lamp is free of fingerprints. Wipe it with a soft cloth prior to inserting it into the lamp assembly.
- The printing on the lamp faces the lamp assembly.
- The lamp assembly seats securely in the left retaining flanges.





- The wire handle is in the down position before you close the lamp cover.
- The lamp lock button is tight. The button activates interlock switches.

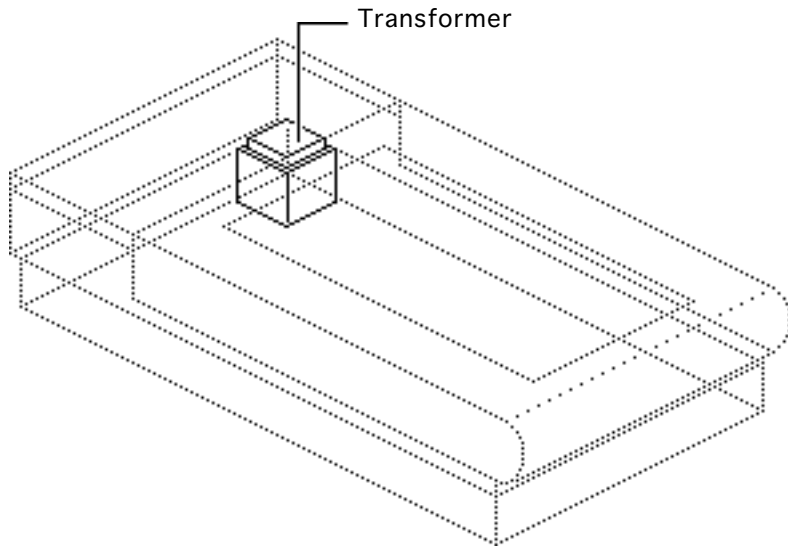


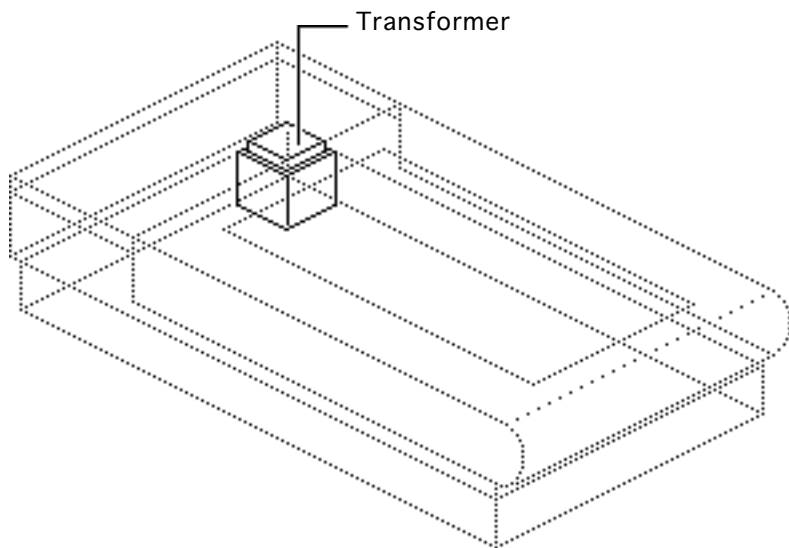


## Voltage Conversion

Before you begin, remove the transformer.

**Note:** Do not remove the transformer bracket from the transformer.





To convert a 110 V scanner (without the universal voltage selector) to a universal model, remove the transformer and bracket plate assembly and install the universal model transformer and bracket plate assembly.

**Replacement Note:**  
Before switching on scanner power, refer to “Selecting Voltage.”



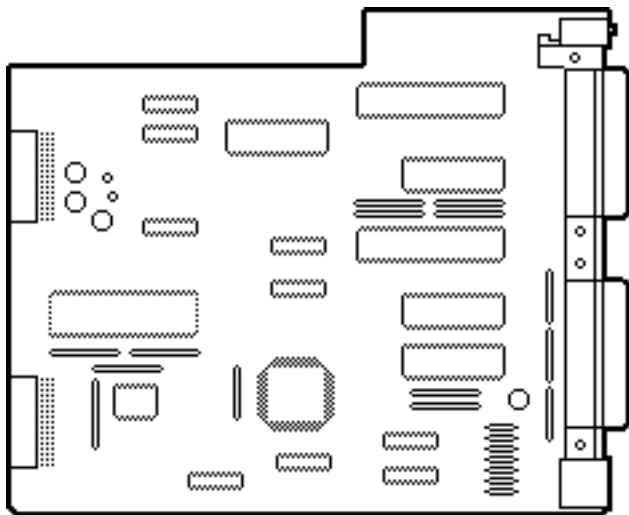


## Logic Board Modification

Before you begin, remove the logic board.

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

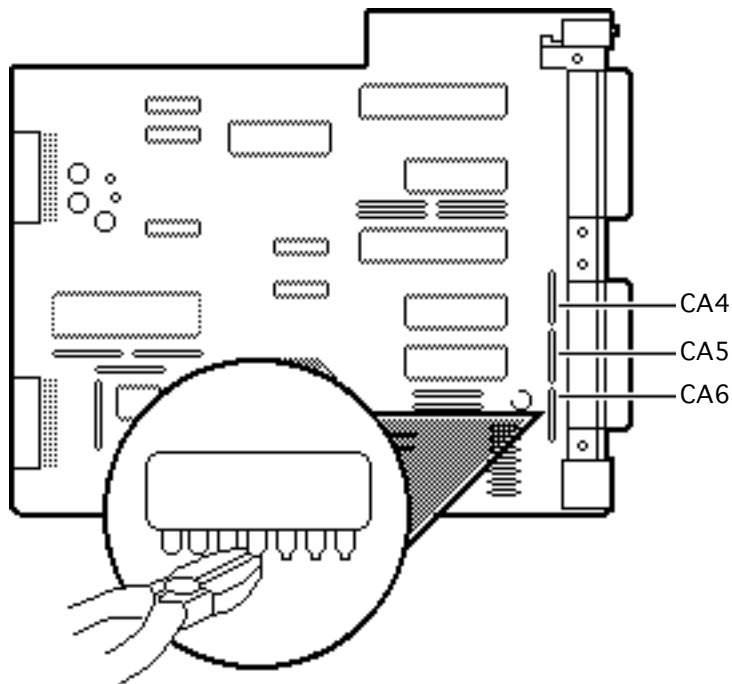
**Note:** Perform this procedure on the 4-bit scanner only. Return the 8-bit logic board (in its metal shield) to Apple for modifications.



4-Bit Logic Board







**Caution:** Do not touch other components on the logic board.

Using diagonal cutters, cut each lead of capacitors CA4, CA5, and CA6 just above the board surface and remove the capacitors.





Exploded View

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Apple Scanners



