

# Macintosh Classic II

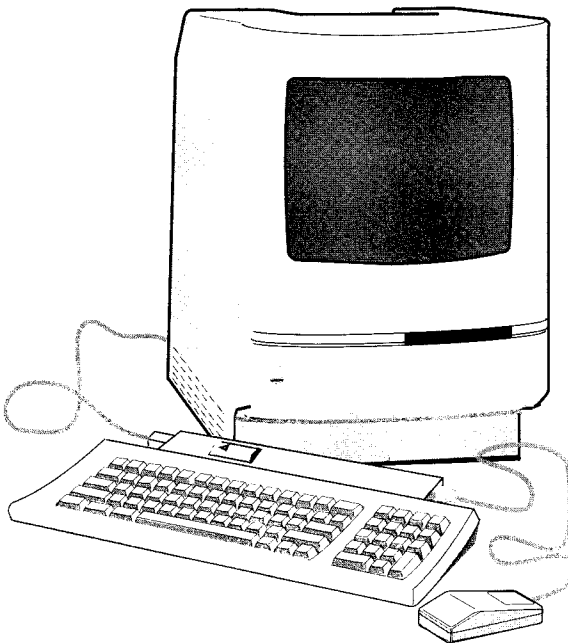
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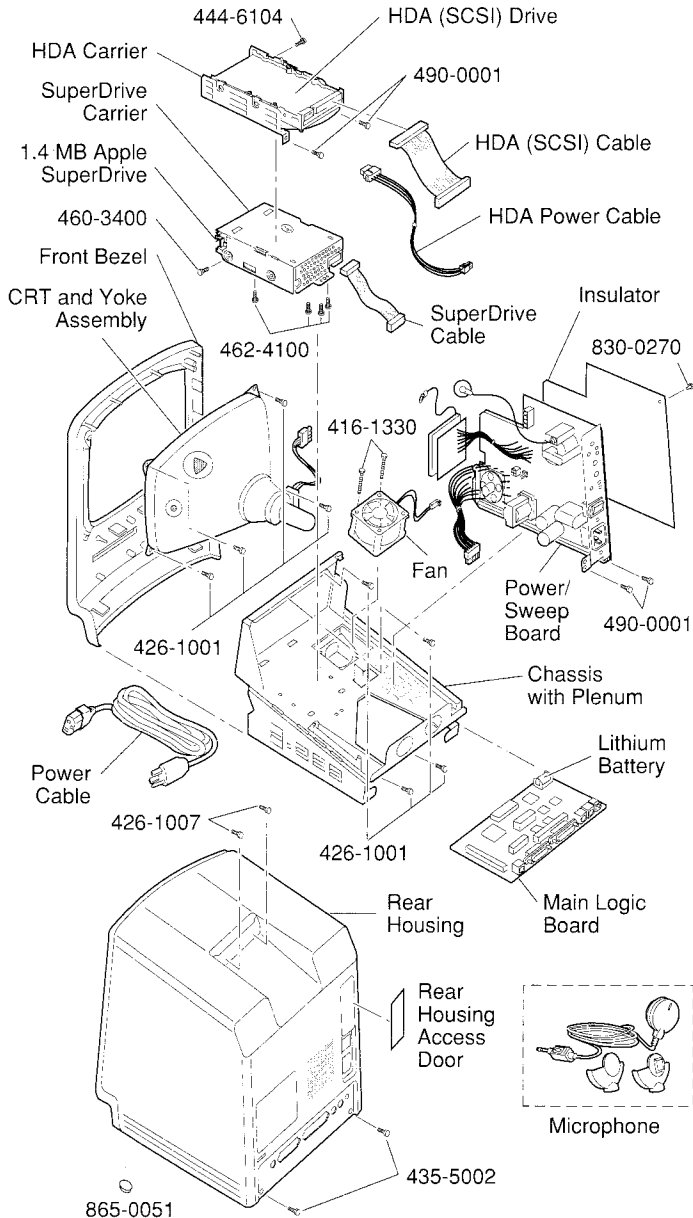
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## Exploded View



# Macintosh Classic II

## Parts List



|                                                                           |          |
|---------------------------------------------------------------------------|----------|
| Cable, Power AC, 110 V, Smoke. . . . .                                    | 590-0380 |
| Chassis with Plenum . . . . .                                             | 630-5818 |
| Screw, Tap, 4.22 x 1.41 x 13 mm, Torx, Zinc (chassis to bezel) . . . . .  | 426-1001 |
| CRT and Yoke Assembly . . . . .                                           | 630-5954 |
| Screw, Tap, 4.22 x 1.41 x 13 mm, Torx, Zinc (CRT to bezel) . . . . .      | 426-1001 |
| Fan. . . . .                                                              | 982-0055 |
| Screw, 3 x .5 x 30 mm (fan to plenum) . . . . .                           | 416-1330 |
| Floppy Disk Drive, Apple 1.4 MB SuperDrive, Internal . . . . .            | 661-0474 |
| Cable, 1.4 MB SuperDrive, Internal (red stripe) . . . . .                 | 590-0167 |
| Drive Carrier, 800K or SuperDrive . . . . .                               | 805-5050 |
| Screw, 3 x .5 x 6 mm (SuperDrive carrier to SuperDrive) . . . . .         | 460-3400 |
| Screw, Apple SuperDrive (SuperDrive carrier to chassis) . . . . .         | 462-4100 |
| Service Packaging, 800K and 1.4 MB Apple SuperDrive . . . . .             | 602-0210 |
| Front Bezel. . . . .                                                      | 630-6046 |
| HDA, 1" Internal, 40 MB, 3.5" SCSI . . . . .                              | 661-0614 |
| HDA, 1" Internal, 80 MB, 3.5" SCSI . . . . .                              | 661-0624 |
| Cable, HDA, Internal (SCSI connector cable) . . . . .                     | 590-0211 |
| Cable, HDA, Power . . . . .                                               | 590-0521 |
| HDA Carrier, Internal 3.5" SCSI . . . . .                                 | 805-0950 |
| Screw, 6 - 32 x .250 (HDA carrier to HDA) . . . . .                       | 444-6104 |
| Screw (HDA carrier to SuperDrive carrier) . . . . .                       | 490-0001 |
| Service Packaging, 3.5" HDA, 1-Inch-Height, Without Carrier . . . . .     | 602-0308 |
| Main Logic Board . . . . .                                                | 661-0672 |
| Lithium Battery (without leads) . . . . .                                 | 742-0011 |
| Microphone . . . . .                                                      | 699-5103 |
| Power/Sweep Board, 110 V (Rev. B) . . . . .                               | 661-0651 |
| Power/Sweep Board, 220 V (Rev. B) . . . . .                               | 661-0652 |
| Insulator, Power/Sweep Board . . . . .                                    | 815-1216 |
| Rivet, Nylon Snap-In, Black . . . . .                                     | 830-0270 |
| Screw (power/sweep to chassis) . . . . .                                  | 490-0001 |
| Rear Housing Assembly with Feet. . . . .                                  | 630-6045 |
| Platinum Foot . . . . .                                                   | 865-0051 |
| Rear Housing Access Door . . . . .                                        | 815-1195 |
| Screw, Tap, 8 - 32 x .625, Fill, Torx, Zinc Oxide (case bottom) . . . . . | 435-5002 |
| Screw, Tap, 4.22 x 1.41 x 16 mm, Torx, Zinc (case top) . . . . .          | 426-1007 |
| SIMMs . . . . .                                                           |          |
| SIMM, 1 MB, SOJ, 80 ns . . . . .                                          | 661-0520 |
| SIMM, 1 MB, SOJ, 80 ns . . . . .                                          | 661-0719 |
| SIMM, 2 MB, SOJ, 80 ns . . . . .                                          | 661-0643 |



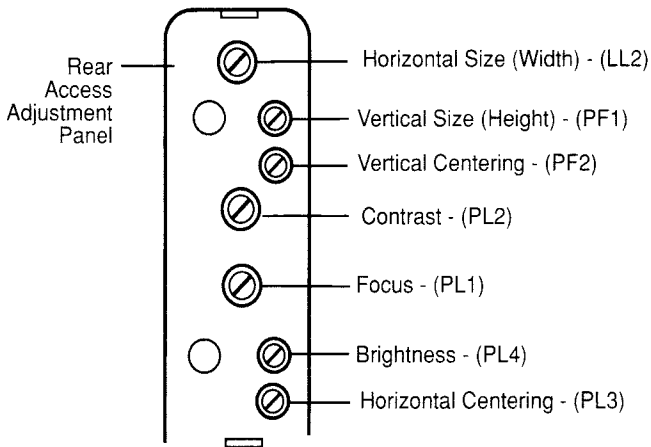
# Macintosh Classic II

## Video Adjustments

Video adjustments **may** be necessary whenever you replace the CRT or the power/sweep board. All video adjustments (except the tilt adjustment) are made from the service panel at the back of the Classic II under the service panel door (**see Figure**).



**WARNING:** Video adjustments are performed with the power on. Review the CRT safety rules before performing these procedures.



**Figure: Service Panel Adjustments**

You must use the *MacTest MP* Brightness and Video test patterns to adjust the Macintosh Classic II correctly.

Before performing the following adjustments, make sure the computer has been on for at least 30 minutes.

### Brightness and Contrast

1. Turn the computer so that the back is toward you, and place a mirror in front of the CRT screen. Remove the service panel door.
2. Boot *MacTest MP* and select **Brightness** from the Options menu to bring up the first brightness screen.
3. Set your light meter (Sekonic Multi-Lumi, model L-248) for the 10-to-18 range.
4. Using a plastic flat-blade tweaker, adjust contrast pot PL2 (**see Figure**) so that the luminance at the center of the screen reads at the high end of the black area between 10 and 11 on the light meter.

# Macintosh Classic II

## Video Adjustments



5. Click the mouse button to go to the next brightness level.
6. Set the light meter for the 2-to-10 range. Using a plastic hex alignment tool, adjust brightness pot PL4 (**see Figure**) so that the luminance at the center of the screen reads at the top end of 7 on the light meter.
7. Click the mouse button again to go to the next brightness level.
8. Reset the light meter for the 10-to-18 range and be sure the luminance at the center of the screen reads at the high end of the black area between 10 and 11 on the light meter. If it does not, repeat steps 2 through 8.

## Centering Adjustments

To generate the test patterns for the following adjustments, select **Screen Patterns** from the *MacTest MP* main menu. Click to advance to the pattern you need.

1. Select the all-white or crosshatch pattern (with white background). Using a plastic hex alignment tool, adjust horizontal centering pot PL3 to center the display horizontally within the bezel.
2. Using a plastic hex alignment tool, adjust vertical-centering pot PF2 to center the picture vertically within the bezel.

## Size Adjustments

To generate the test patterns for the following adjustments, select **Screen Patterns** from the logic board tests on the *MacTest MP* main menu. Click to advance to the pattern you need.

1. Select the all-white or crosshatch display (with white background). Using a plastic hex alignment tool, adjust horizontal size pot LL2 until the picture is approximately 7 inches wide.
2. Using a plastic hex alignment tool, adjust vertical size pot PF1 until the picture is approximately 4.7 inches high.

## Focus Adjustment

To generate the test patterns for the following adjustments, select **Screen Patterns** from the logic board tests on the *MacTest MP* main menu. Click to advance to the pattern you need.

- Select the focus display (with % signs). Using a plastic flat-blade tweaker, adjust focus pot PL1 for the best overall focus.

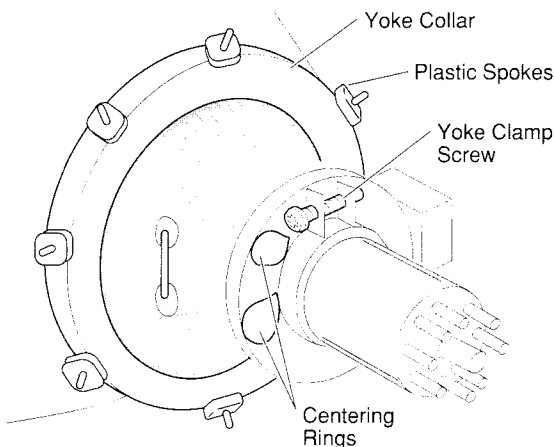


# Macintosh Classic II

## Video Adjustments

### Tilt Adjustment

1. Remove the cover and discharge the CRT. Turn the computer so that the back is facing you, and place a mirror in front of the CRT screen.
2. Loosen the **yoke clamp screw** two or three turns (**see Figure**).
3. Connect the power cord and switch the power on.
4. Place one hand behind your back, and with your other hand grasp only the plastic spokes of the **yoke collar** (**see Figure**). Rotate the **yoke collar** until the top and bottom edges of the picture appear parallel with the top and bottom edges of the bezel. (**Do not move the magnets, which are preset by the manufacturer and should not be adjusted.**)
5. Switch the power off, unplug the computer, and discharge the CRT.
6. Hold the **yoke collar** in position and tighten the yoke clamp screw so that the **yoke collar** will not slip (**see Figure**). Don't overtighten.
7. Connect the power cord and switch the power on to verify that the adjustment is still correct.
8. Replace the cover.



**Figure: CRT Adjustment Controls**

# Macintosh Classic II

## Symptom/Cure Chart



### Video Problems

### Solutions

Screen dark;  
audio and drive  
operate

1. Readjust brightness.
2. Readjust cutoff.
3. Check yoke cable connection.
4. Replace power/sweep board.
5. Replace logic board. Retain customer's SIMMs.
6. Replace CRT.

Screen bright and  
audio present,  
but no video  
information visible

1. Replace power/sweep board.
2. Replace logic board. Retain customer's SIMMs.

Screen completely  
dark and fan not  
running

- Replace power/sweep board.

Screen displays single  
vertical/horizontal line

1. Replace power/sweep board.
2. Replace logic board. Retain customer's SIMMs.
3. Replace CRT.

Screen displays  
vertical/horizontal  
bars or stripes

1. Replace power/sweep board.
2. Replace logic board. Retain customer's SIMMs.

Screen displays  
white dot in  
center of screen

1. Check yoke cable connection.
2. Replace power/sweep board.
3. Replace CRT.

Screen jitters

1. Move computer away from adjacent electrical equipment that may cause interference.
2. Replace power/sweep board.

### Peripheral Problems

### Solutions

Cursor does not  
move

1. Check mouse connection.
2. If mouse was connected to a keyboard, connect it to a rear ADB port. If mouse now works, replace keyboard. If mouse does not work in any ADB port, replace mouse.
3. 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.

continued...



# Macintosh Classic II

## Symptom/Cure Chart

### Peripheral Problems (continued)

### Solutions

No response to any key on the keyboard

1. Check keyboard connection to rear ADB port.
2. Replace keyboard cable.
3. Replace keyboard.
4. Replace logic board. Retain customer's SIMMs.

Cannot double-click to open a disk, application, or server

1. Remove extra system files on hard disk.
2. Clear parameter RAM by holding down <Option> <Command> <R> <P> keys during power on, and select **Control Panel** from Apple menu. Reset mouse controls.
3. If mouse was connected to a keyboard, connect it to a rear ADB port. If mouse works, replace keyboard. If mouse does not work in any ADB port, replace mouse.
4. Replace logic board. Retain customer's SIMMs.

Known-good ImageWriter or ImageWriter II will not print

1. Make sure Chooser and Control Panel are set correctly.
2. Replace printer driver and system software with known-good driver and system software.
3. Replace printer interface cable.
4. Replace logic board. Retain customer's SIMMs.
5. Replace power/sweep board.

Known-good LaserWriter will not print

1. Make sure Chooser and Control Panel are set correctly.
2. Replace printer driver and system software with known-good driver and system software.
3. Refer to *Networks* manual in *Service Source*.

### Floppy Drive Problems

### Solutions

Audio and video present, but internal drive does not operate

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

External drive does not operate

1. Replace bad disk.
2. As you face computer screen, be sure external drive is on the right side of the Macintosh.
3. Replace external drive.
4. Replace logic board. Retain customer's SIMMs.

# Macintosh Classic II

## Symptom/Cure Chart



Will not eject disk

1. Push opened paper clip into hole beside drive to manually eject disk.
2. Power off system and hold mouse button down while powering back on (to complete eject cycle).
3. Replace disk drive.

Disk ejects; display shows icon with blinking "X"

1. Replace disk with known-good system disk.
2. Replace disk drive.
3. Replace logic board. Retain customer's SIMMs.

Unable to insert disk all the way

1. To eject previously inserted disk, push opened paper clip into hole beside drive.
2. Switch off system power and hold mouse button down while switching power back on (to complete eject cycle).
3. Replace disk drive.

Internal disk drive runs continuously

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

### SCSI Problems

### Solutions

Internal or external hard disk will not operate

1. Verify that SCSI loopback card is not attached.
2. Verify that all three internal hard drive terminators are on HDA circuit board (internal hard drive systems only).
3. Replace hard disk drive cable.
4. Replace hard disk drive.
5. Replace logic board. Retain customer's SIMMs.

Works with internal or external SCSI device but not with both

1. Verify that SCSI device ID switch setting on external device is higher than 0. Also verify that ID switch setting on external SCSI device does not duplicate ID switch setting on any other attached SCSI device.
2. Replace terminator on external SCSI device.
3. Replace SCSI device select cable.



## Macintosh Classic II

### Symptom/Cure Chart

#### Miscellaneous Problems

#### Solutions

Clicking, chirping, or thumping sound

1. Verify that main logic board power cable is connected at J12 on main logic board.
2. Replace power/sweep board.
3. Replace logic board. Retain customer's SIMMs.

No video, no audio, and no drive operation

1. Connect power cord and switch power on.
2. Replace power cord.
3. Replace power/sweep board.
4. Replace logic board. Retain customer's SIMMs.

"Sad Macintosh" icon displays

1. Replace bad floppy disk.
2. Replace optional SIMMs in the two SIMM slots on main logic board.
3. Replace logic board. Retain customer's SIMMs.

Screen displays "Sad Macintosh" icon and black lines; screeching sound

1. Replace optional SIMMs in the two SIMM slots on main logic board.
2. Replace logic board. Retain customer's SIMMs.

Smoke/odor

- Replace power/sweep board.

# Macintosh Classic II

## Specifications



|                         |                                                                                                                                                                                                                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Microprocessor</b>   | MC68030 32-bit internal architecture<br>16 MHz clock frequency<br>Runs System 7.0.1 or later                                                                                                                                                                                                                           |
| <b>Memory</b>           | 2 MB of RAM, expandable to 4, 6, or 10 MB<br>(100 ns or faster SIMMs)<br>512K of ROM                                                                                                                                                                                                                                   |
| <b>Video Display</b>    | Built-in 9-inch diagonal, high-resolution,<br>512-by-342-pixel, bit-mapped monochrome<br>display                                                                                                                                                                                                                       |
| <b>Interfaces</b>       | Apple Desktop Bus (ADB) port (mini DIN-4)<br>External drive port (DB-19)<br>SCSI port (DB-25)<br>Printer port (mini DIN-8)<br>Modem port (mini DIN-8)<br>Sound-out port (mini phone jack)<br>Sound input port (mini phone jack)                                                                                        |
| <b>Internal Storage</b> | One 1.4 MB Apple SuperDrive<br>One internal 40 MB (or 80 MB optional) SCSI<br>hard drive                                                                                                                                                                                                                               |
| <b>Sound</b>            | Sound output: four-voice sound with 8-bit<br>digital/analog conversion using 22-KHz<br>sampling rate<br>Sound input: records sound digitally and<br>permits user to mix an external audio source<br>with computer-generated sound; input<br>source should provide 20-mV amplitude<br>and 600- $\Omega$ input impedance |
| <b>Clock/Calendar</b>   | CMOS custom chip with seven-year battery                                                                                                                                                                                                                                                                               |
| <b>Electrical</b>       | Line voltage: 100 to 120 VAC<br>Frequency: 50 to 60 Hz, single phase<br>Maximum power: 100 watts                                                                                                                                                                                                                       |



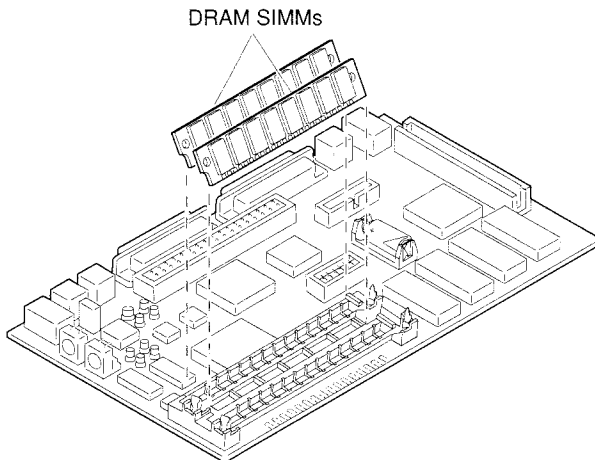
# Macintosh Classic II

## Memory Upgrade

The Macintosh Classic II main logic board has 2 MB of soldered random-access memory (RAM). You can increase the amount of memory to 4, 6, or 10 MB of RAM by installing additional SIMMs on the main logic board in the two SIMM slots. You must fill both slots with SIMMs of like memory capacity (two 1 MB, two 2 MB, or two 4 MB SIMMs), or leave both slots empty. The Classic II requires 100 ns (or faster) SIMMs. (Refer to “SIMM Identification” under the General Information tab.)

### Upgrade Procedure

To install a SIMM, hold it by its edges with the contacts on the SIMM pointing down. Insert the SIMM at an angle (bottom forward) into the SIMM slot. Push back on the top corners of the SIMM. You will hear a click when the SIMM snaps into place.



**Figure: Classic II Main Logic Board and SIMMs**

# Macintosh Classic II

## Battery Replacement



**WARNING:** The lithium battery used in the Macintosh Classic II has a potential for explosion or overheating if improperly handled and cannot be recharged. A violent chemical reaction may occur if you attempt to recharge a lithium battery.

Take the following precautions when you store, handle, or dispose of lithium batteries:

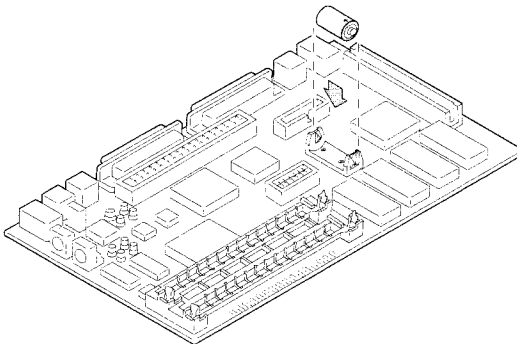
- Inspect the integrity of battery wrappers and store the batteries in the same packaging, or in a similar closed, heavy plastic bag.
- Store batteries in a designated, well-marked area with limited access.
- Do not allow the battery leads or terminals to short-circuit.
- Do not dispose of batteries in a fire or incinerator. They may explode.
- Lithium is water reactive. Dispose of lithium compounds as hazardous waste:

**Place the dead battery in the air-tight wrapper and packaging that came with the replacement battery. Mark the package DEAD and return it to Apple for proper disposal. Exception: if the battery is physically damaged (for example, leaking), do not return it to Apple; dispose of the battery locally according to your local hazardous waste ordinances.**

### Replacement Procedure

Remove the main logic board. With the board removed, grasp the old battery and pull it from the battery holder.

When installing a new battery, be sure to use only the correct Apple replacement battery. Orient the new battery so that the end marked "+" matches the "+" on the main logic board. Insert the battery into the battery holder. If the battery holder has a cover, replace the cover. Package the old battery as directed in the introduction to this procedure and return the battery to Apple for proper disposal.



**Figure: Battery Replacement**



## Macintosh Classic II

### Classic II Upgrade and Board Diagram

Use the Macintosh Classic II upgrade kit to upgrade a Macintosh Classic to a Classic II. The upgrade kit includes:

- Classic II logic board
- Classic II rear housing
- Microphone
- Accessory kit

### Upgrade Procedure

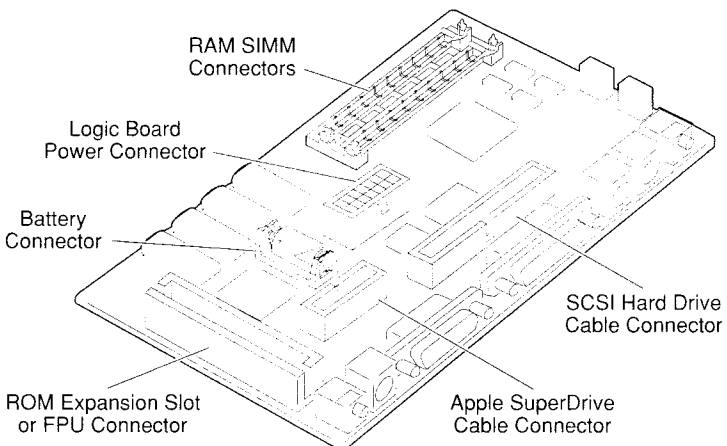
Remove the Macintosh Classic logic board and memory expansion board. Remove all SIMMs from the memory expansion board and return them to the customer.

Install the Classic II main logic board and rear housing provided in the upgrade kit. (The Classic II rear housing provides an opening for the sound input port.) Give the customer the microphone and accessory kit.

The Macintosh Classic II requires 100 ns or faster SIMMs. If you remove 100 ns or faster 1 MB SIMMs from the Classic memory expansion board, you may install these SIMMs on the Classic II main logic board in the two SIMM slots. Note that you must install two SIMMs of like capacity in the SIMM slots, or both slots must be empty. For more information, refer to the Memory Upgrade procedure earlier in this section.

### Board Diagram

The figure below illustrates the internal connectors on the Macintosh Classic II.



**Figure: Board Diagram**