Service Source

iBook

iBook (14.1 LCD 16 VRAM)
iBook (14.1 LCD 32 VRAM)
iBook (14.1 LCD 900 MHz 32 VRAM)

Updated February 25, 2005

Service Source

Take Apart

iBook (14.1 LCD 16 VRAM)
iBook (14.1 LCD 32 VRAM)
iBook (14.1 LCD 900 MHz 32 VRAM)

General Information

Overview

The key identifying characteristics among the iBook computers covered by this manual are shown in the following table:

Configuration	16 VRAM	32 VRAM	900 MHz 32 VRAM
Video RAM	16 VRAM	32 VRAM	32 VRAM
Processor	700 MHz	800 MHz	900 MHz

Tools

The following tools are recommended for the Take Apart procedures:
- Coin
- ESD wriststrap and mat
- Magnetized #0 Phillips screwdriver
- Jeweler's flat-blade screwdriver
- Small soft cloth
- Torx T8 screwdriver
- Black stick (or other nonconductive nylon or plastic tool)
- Metal paper clip
- Needlenose pliers

Note: To organize the screws you remove from the assembly, use a tray with divided compartments (such as a plastic ice cube tray).

Serial Number Location

In this computer, the product serial number is located in the battery bay and on the top case underneath the keyboard.

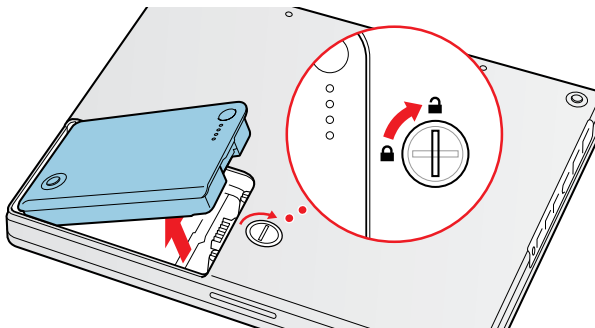# Battery

Tools

- Coin

Procedure

Warning: Always shut down the computer before opening it to avoid damaging its internal components or causing injury. After you shut down the computer, the internal components can be very hot. Let the computer cool down before continuing.

1. Place the computer on a clean, flat surface.

2. Shut down the computer and wait thirty minutes before continuing.

3. Disconnect the power cord and any other cables connected to the computer.

4. Close the computer, turn it over, and locate the battery latch.

   Use a coin to turn the battery latch 1/4 turn clockwise to unlock the battery. Gently remove the battery.

   Removing the battery will prevent you from accidentally turning on the computer.

   Warning: Removing the battery before shutting down the computer may result in data loss.

5. Install the replacement battery.

6. Reconnect the power cord and any other cables that were connected and restart the computer.

    Note: You may need to reset the date and time (using the Date & Time control panel).

Warning: Never turn on the computer unless all of its internal and external parts are in place and it is fully reassembled. Operating the computer when it is missing parts can damage the computer or cause injury.

Keyboard and RAM Shield

Tools

- #0 Phillips screwdriver
- Jeweler's flat-blade screwdriver (if keyboard is locked)
- Small soft cloth (if an optional AirPort Card is installed)

Preliminary Steps

Before you begin, remove the battery.

Procedure

1. Raise the display so you can access the keyboard.

2. Make sure the keyboard locking screw, located in the small plastic tab to the left of the Num Lock key, is not in the locked position. The iBook comes with the keyboard unlocked, so unless you or someone else locked the keyboard, you can skip this step.
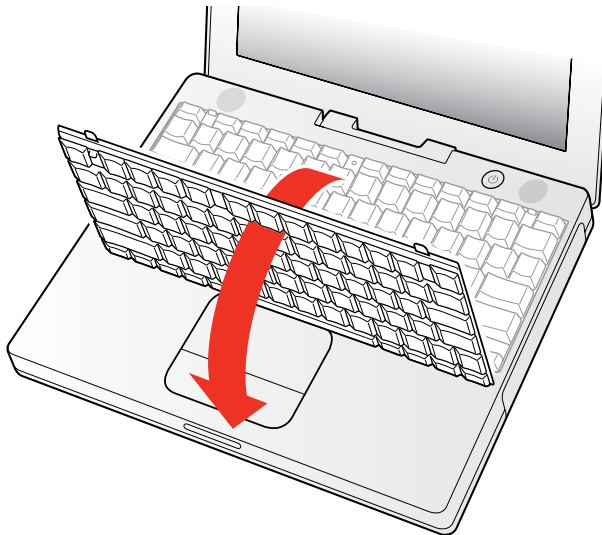
   To unlock the keyboard, turn the screw 1/2 turn.
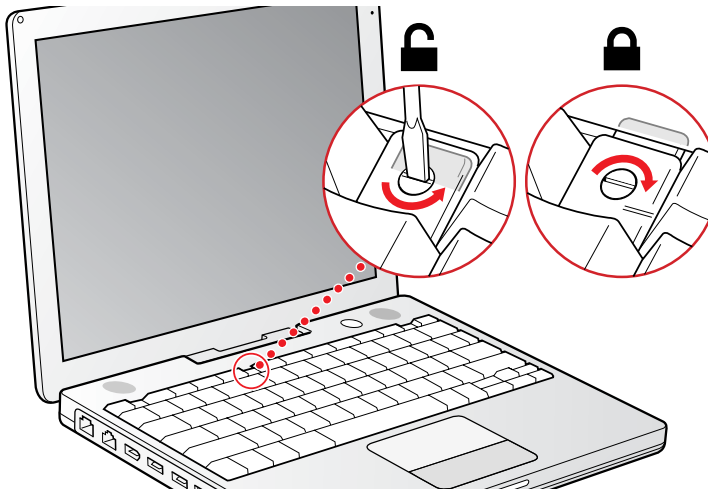
3. Release the keyboard by pulling down on the keyboard release tabs (located to the left of the F1 and F12 keys), then lift the top portion of the keyboard up slightly, and toward the display.
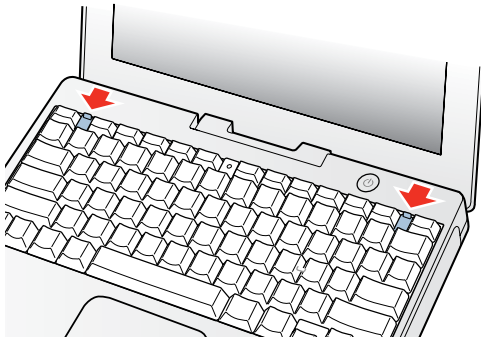

4. Flip the keyboard over and lay it on the palm rests and trackpad.

5. Touch a metal surface on the inside of the computer to discharge any static electricity, as shown.

   Important: To avoid electrostatic discharge damage, always ground yourself by touching the computer's framework before you touch any parts or install any components inside the computer. To avoid static electricity building back up in your body, do not walk around the room until you have completed the installation and closed the computer.
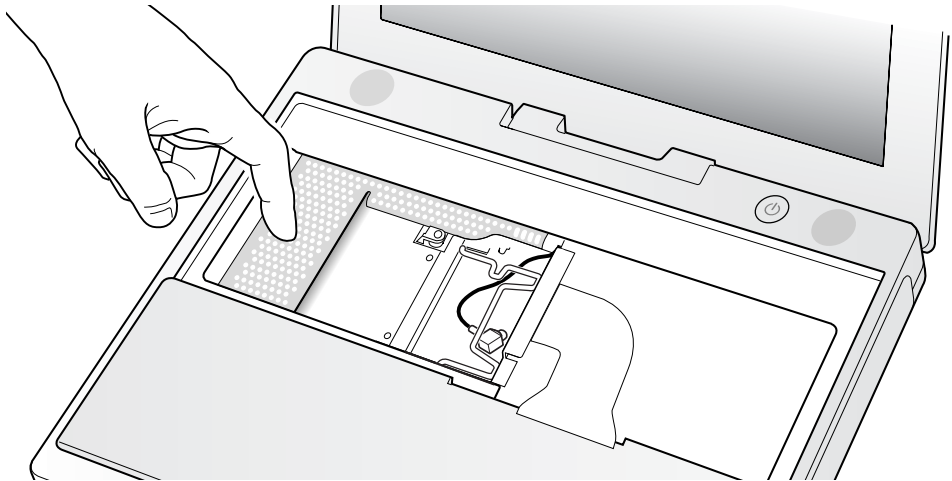

6. If the computer has the optional AirPort Card installed, unlatch the flexible wire holder that secures the card.

7. Use the pull-tab on the card to remove it from the slot. (You do not need to disconnect the antenna.)

   Note: To avoid scratching the computer's case, place a soft cloth between the AirPort Card and the surface of the iBook.
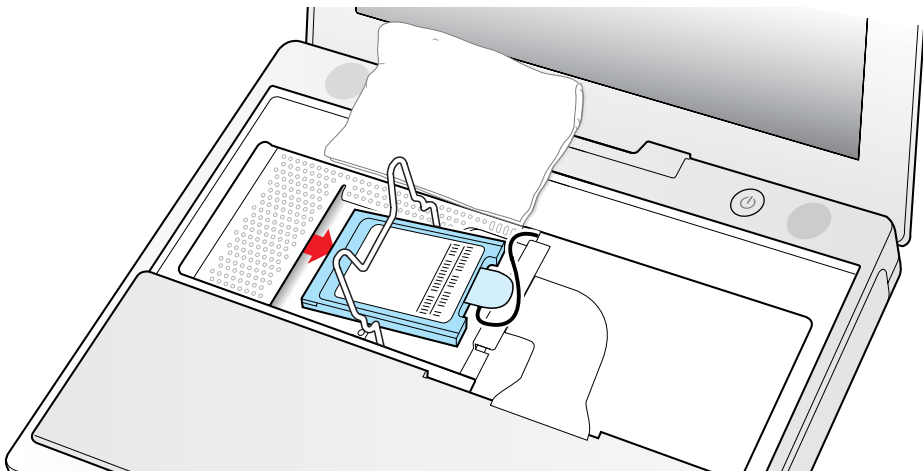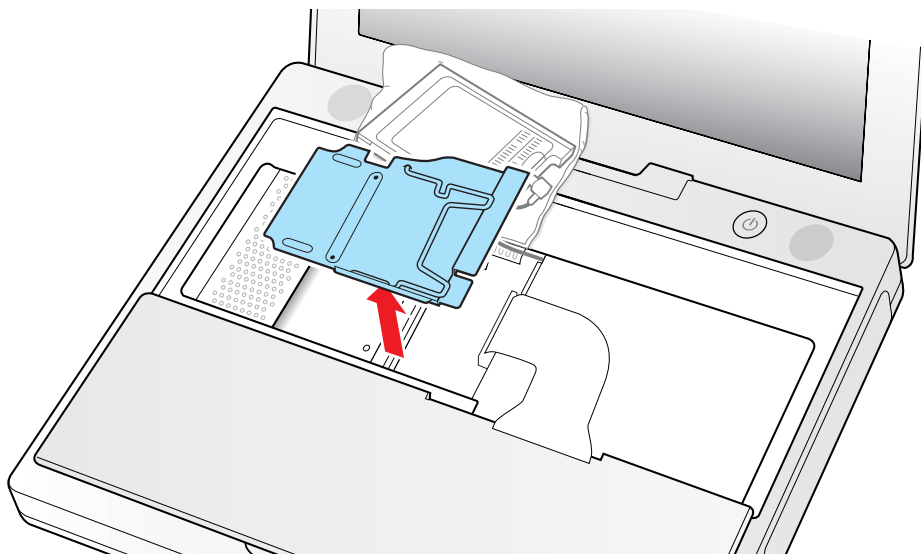
8. If an AirPort Card is not installed, unlatch the flexible wire holder to release the AirPort Card antenna cable.

9. Remove the two screws that secure the RAM shield.
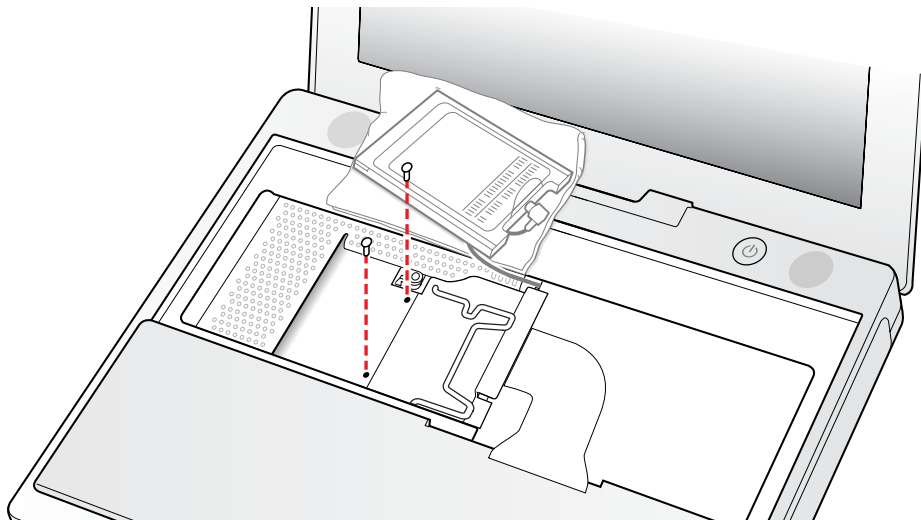
10. Lift the RAM shield out of the computer. Carefully pulling up on the wire holder may help to remove the shield.

11. Locate the keyboard cable connector.

12. Firmly grasp the cable as shown in the illustration.

13. Carefully pull straight up on the cable until the connector releases.

   Important: Pull straight up; do not twist or pull the cable sideways.
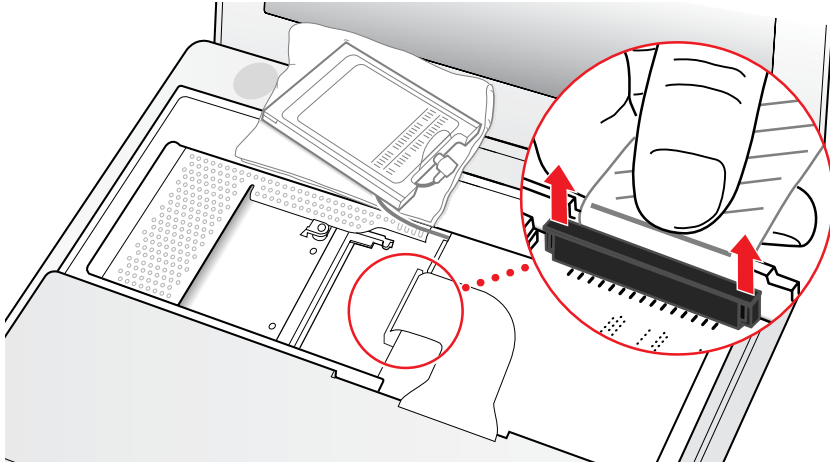
14. Install the replacement keyboard, RAM shield, and AirPort Card (if used).

Make sure the replacement keyboard is firmly seated:

• Flip the keyboard back toward the keyboard opening in the case.
• Hold the keyboard at a 45-degree angle above the keyboard opening, and insert the tabs on the bottom edge of the keyboard into the slot under the edge of the opening.
• **Important:** Make sure that all the tabs are seated and that the keyboard rests flush against the edge of the opening.
• Lay the keyboard flat into the keyboard opening.
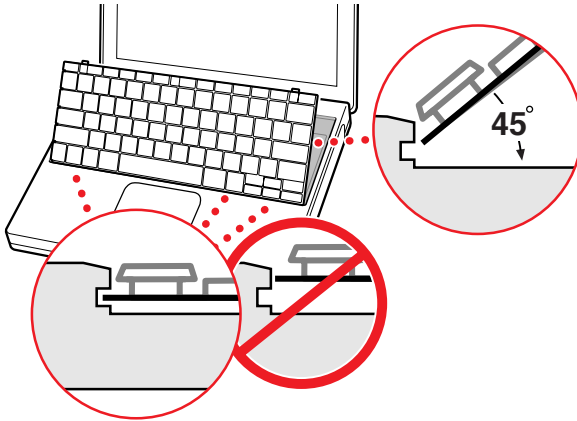
• Pull down on the keyboard release tabs and then press down on the top portion of the keyboard to secure it in place.
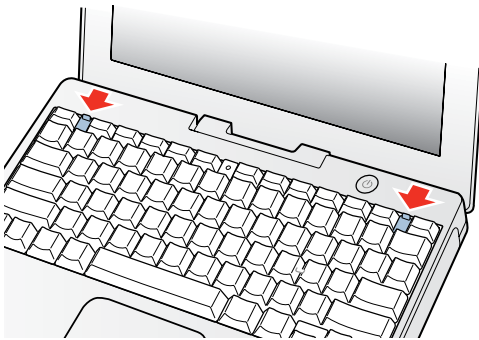
AirPort Card

Tools

- Small soft cloth (if an optional AirPort Card is installed)

Preliminary Steps

Before you begin, remove the following:
- Battery
- Keyboard (but leave keyboard cable connected)

Procedure

1. Touch a metal surface on the inside of the computer to discharge any static electricity, as shown.

   Important: To avoid electrostatic discharge damage, always ground yourself by touching the computer's framework before you touch any parts or install any components inside the computer. To avoid static electricity building back up in your body, do not walk around the room until you have completed the installation and closed the computer.
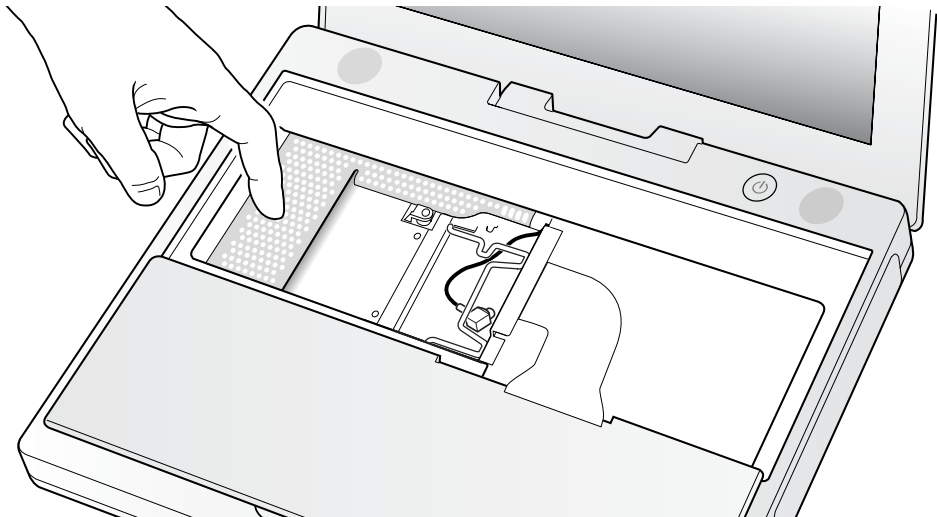
2. Unlatch the flexible wire holder that secures the card.

3. Use the pull-tab on the card to remove it from the slot.

4. Disconnect the antenna cable from the AirPort Card by pulling straight back on its connector.
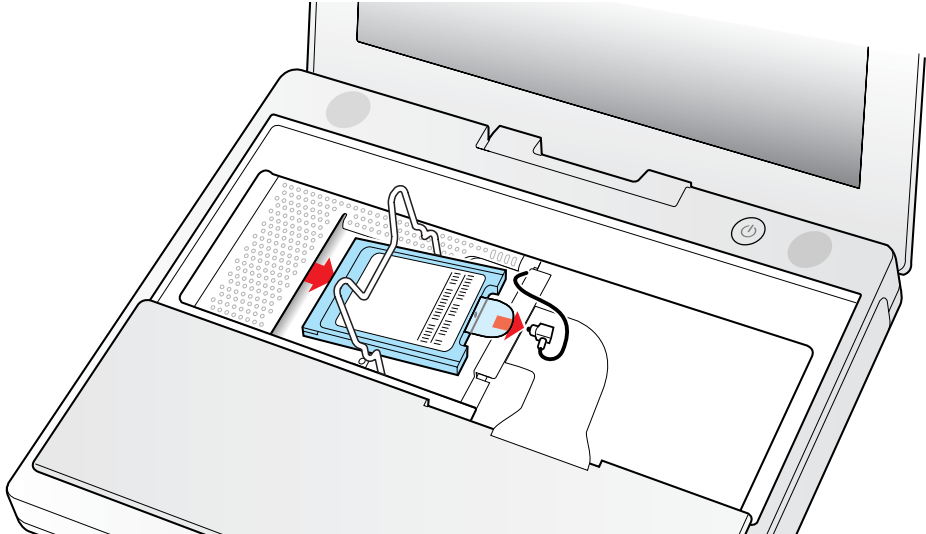
5. Install the replacement AirPort Card:

If the replacement AirPort Card came with an AirPort adapter, remove the metal clip (A) and pull the AirPort Card (B) from the adapter (C).
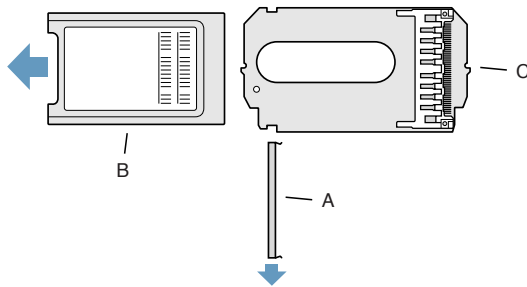
Plug the AirPort antenna cable connector into the port (located just below the pull-tab) on the end of the AirPort Card. Make sure the connector is straight before inserting it into the card.

Gently slide the AirPort Card (with the AirPort ID number and bar code facing up) under the wire bracket and securely into the AirPort Card slot.
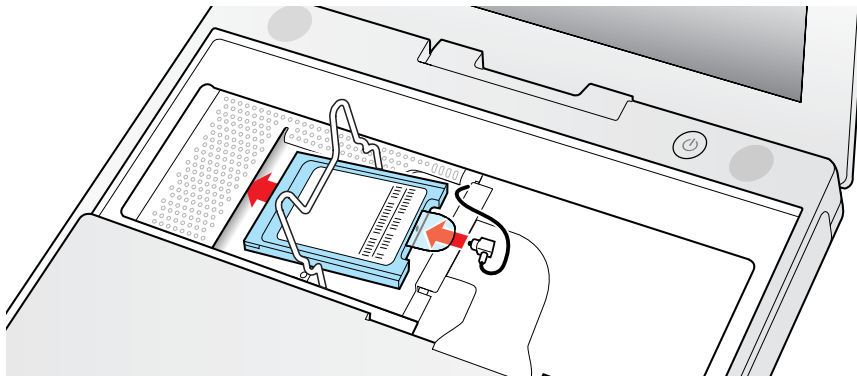
Use the wire holder to secure the AirPort Card in place by inserting its prongs into the slots in the RAM shield.
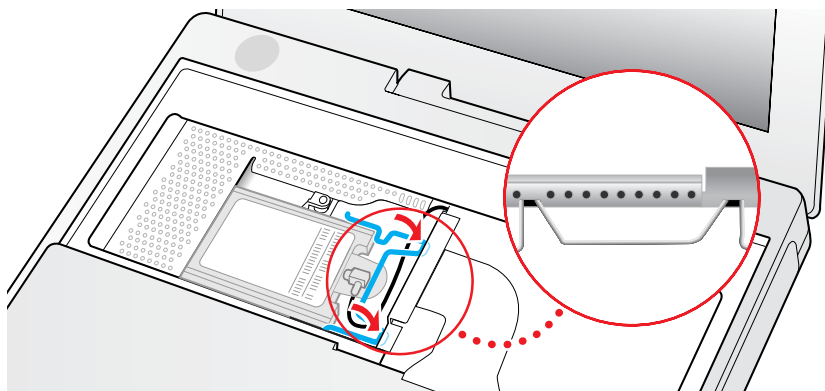
Memory Card

Warning: Memory cards come in various specifications. Only install memory cards that are approved for this computer.

Tools

• Small soft cloth (if an optional AirPort Card is installed)

Preliminary Steps

Before you begin, remove the following:
• Battery
• Keyboard and RAM shield
• AirPort Card (if installed)

Procedure

1. Locate the installed memory card and brackets that secure the card on both sides.

2. Carefully spread the brackets apart until the card releases on each side. Pull the card up and out of the memory slot.
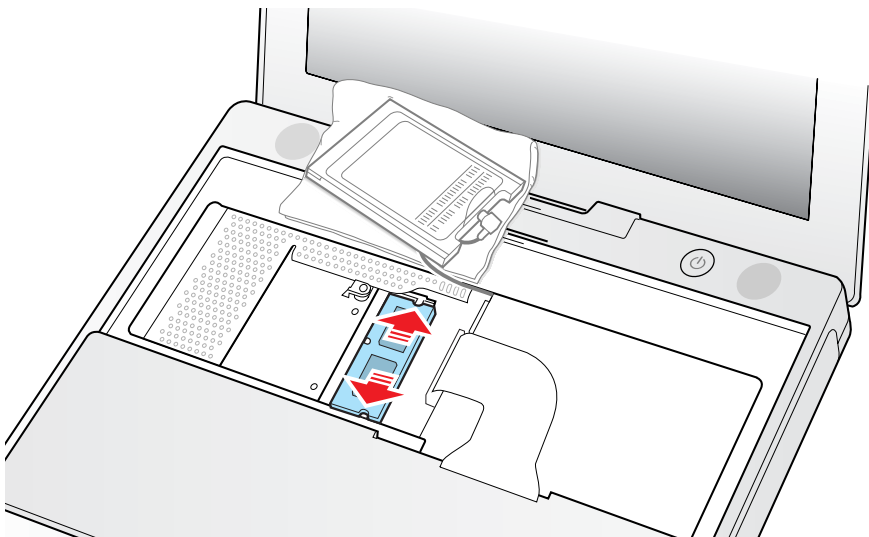
3. Install the replacement memory card by lining up the notch in the memory card with the small tab in the memory slot. Hold the card at a 30-degree angle, then push the card into the slot until it is firmly seated.

    Note: If you feel resistance when inserting the card, try pushing one side at a time.
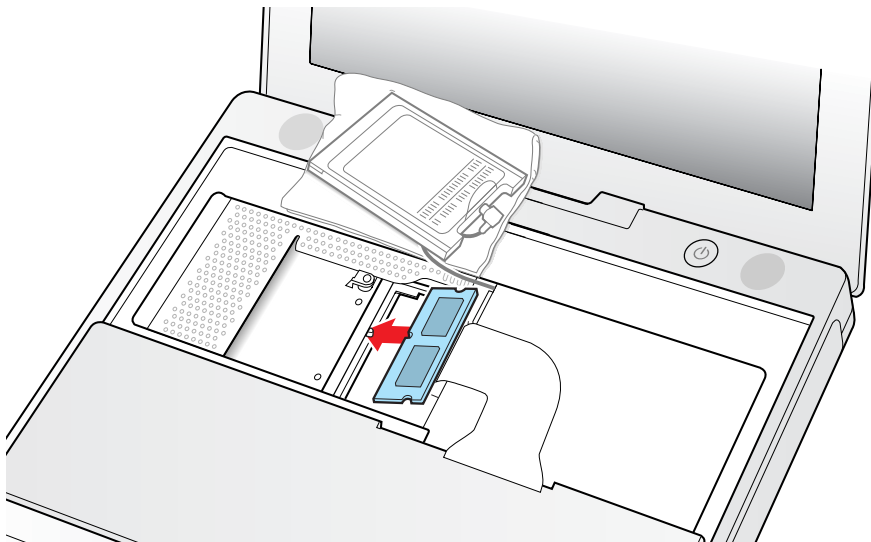
4. Gently push the top of the card down until the brackets snap onto both sides of the memory card to lock it into place.

    Warning: Apply gentle pressure to the memory card only. Pressing on nearby connectors or components can cause electrical damage.

Bottom Case

Tools

- Soft cloth
- Torx T8 screwdriver
- Black stick (or other nonconductive nylon or plastic tool)
- #0 Phillips screwdriver

Preliminary Steps

Before you begin, remove the battery.

Procedure

1. Place the computer upside down on a soft cloth.

2. **Important:** To avoid damaging the case, be careful that the screwdriver tip does not slip out of the screw head during removal.

   Remove the three screws (two identical screws in the back, one shorter screw in the center of the bottom case).

3. Using a black stick, peel up the three rubber feet from the metal sockets.

   Note: When reassembling the computer, do not reuse the feet. Install three new rubber feet.

4. Remove the three identical Phillips screws from the metal sockets.

5. Use a black stick to lift out the metal sockets.

   Note: When reassembling the computer, note that the metal sockets are keyed. Rotate them until they sit flat against the bottom case.

6. Remove the two identical Phillips screws next to the battery connector.

7. Note the locations of the slots on the bottom case. The computer frame has tabs that fit into slots within the bottom case (six tabs in front; two on each side; three in back). When using a black stick to pry off the bottom case, it helps to know where the slots are as you free the tabs from the slots.
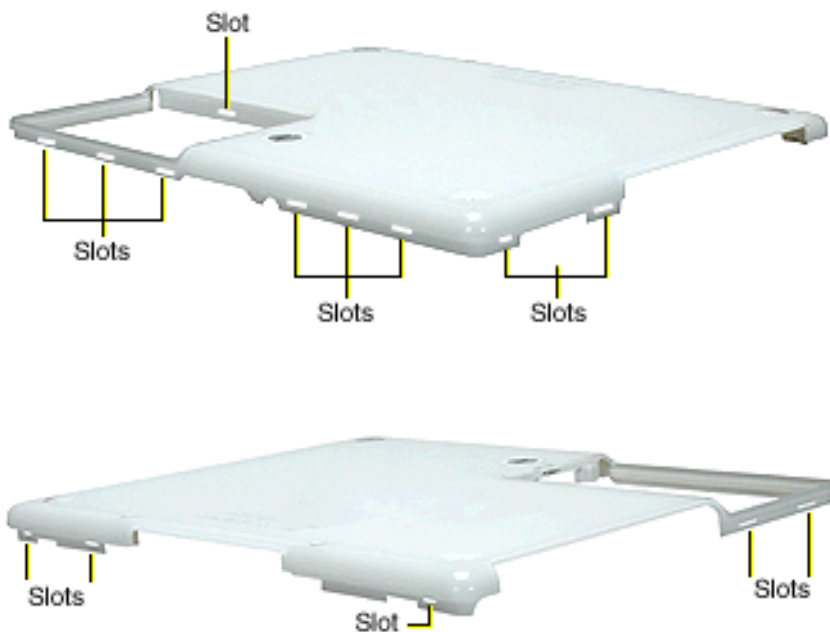
8. In the battery compartment, lift up the corner of the bottom case, and use a black stick or jeweler's flat-blade screwdriver to gently pry up the slot from the inner tabs on the frame.

9. Starting at the battery compartment, use a black stick to carefully pry up the bottom case from the computer.

10. **Warning: To avoid damaging the sleep light and other delicate components, do not insert the black stick too far into the computer as you free the bottom case from the computer. Use just the tip of the black stick to pry up the bottom case.**

11. Carefully work the black stick around the corners of the bottom case.

12. The bottom case fits snugly. Use moderate force to remove the remaining tabs from the slots.

13. When all tabs have been freed from the slots, lift up the bottom case.

    Note: When reassembling the computer, be careful not to pinch any cables as you press the bottom case back onto the computer. Check that the bottom case shows no raised surfaces and is fully snapped into place before installing the remaining screws, sockets, and feet.

14. If you are replacing any additional parts at this time, remove the two springs from the battery compartment so they do not fall out and get lost.
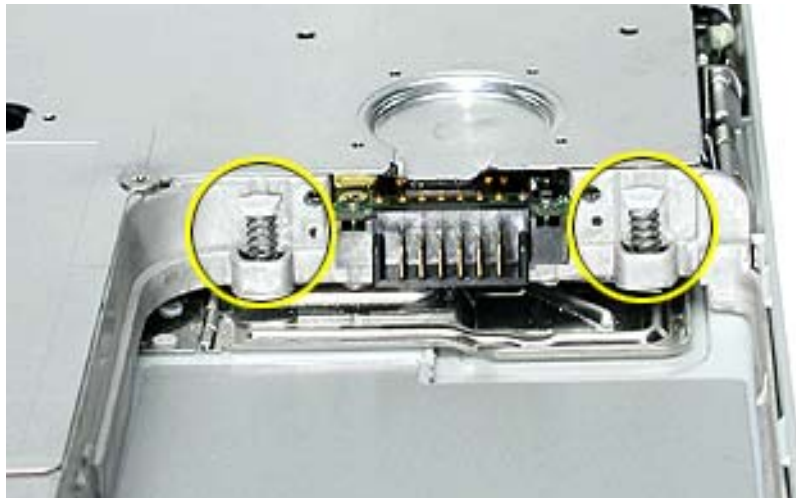
    Note: When reassembling the computer, make sure that the two springs in the battery connector are in place before installing the bottom case. Each spring has a plastic cap on one end. The cap should fit securely on the spring, and the curved side of the cap should be positioned against the inner frame.

15. Install the replacement bottom case, and reassemble and test the computer.

Bottom Shield

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case

Procedure

1. With the computer on a soft cloth, remove the following screws from the bottom shield:
    *   nine identical 6-mm long Phillips screws (two of the screws may be concealed under foil tape at the display hinge)
    *   two identical 14.5-mm long Phillips screws
    *   one 5-mm long Phillips screw
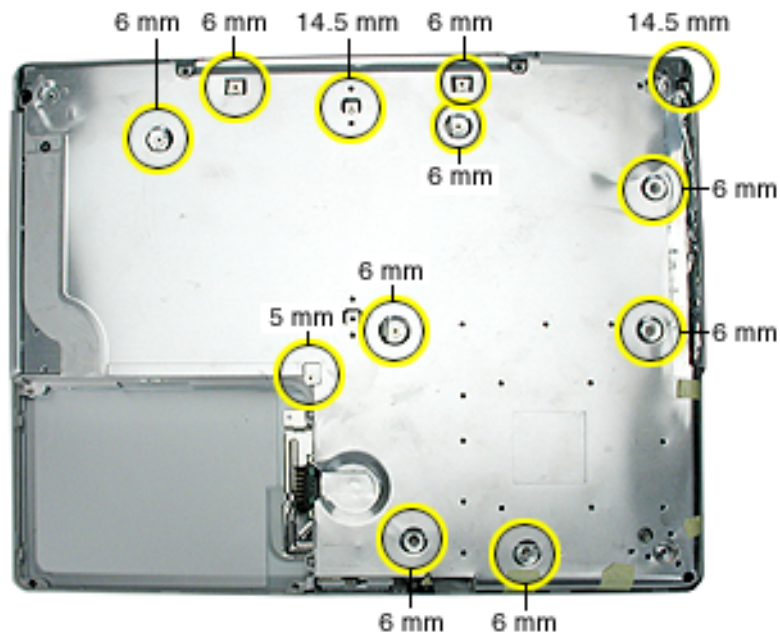
2. Using a black stick, peel up—but do not remove—the strips of tape.

    Note: Check for foil tape by the computer latch as well as the areas shown below.
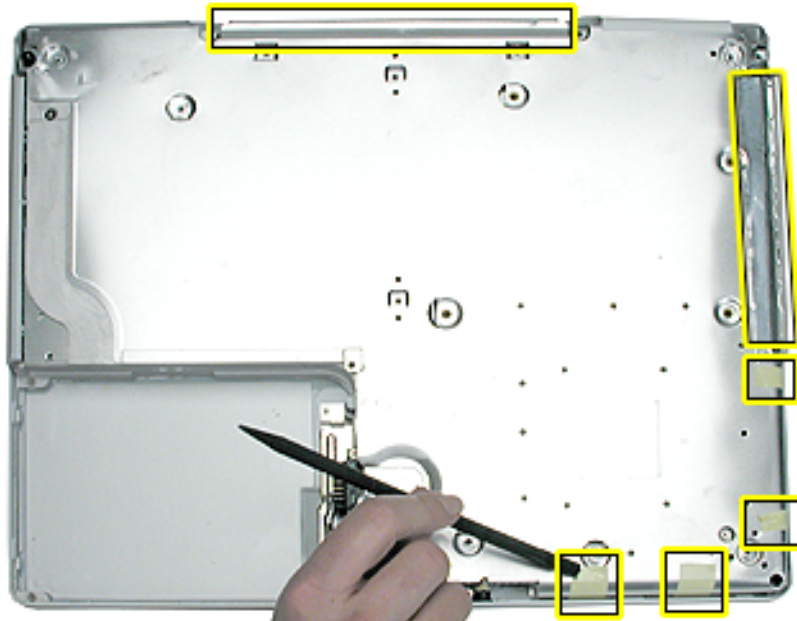
3. Carefully peel up the foil tape at the computer latch. Use the tape when reassembling the computer.

4. **Warning: Do not bend the bottom shield.**

   Lift the bottom shield off the computer, being careful where it might catch on the tape.

5. If necessary, use a black stick to separate the foil tape on the bottom shield from the I/O bezel shield.

6. **Note:** The two springs in the battery connector can become loose. When reassembling the computer, make sure that the two springs in the battery connector are in place before installing the bottom case. Each spring might have grease on the coils, and each has a plastic cap on one end. Make sure the cap fits securely on the spring, and the curved side of the cap is positioned against the inner frame.
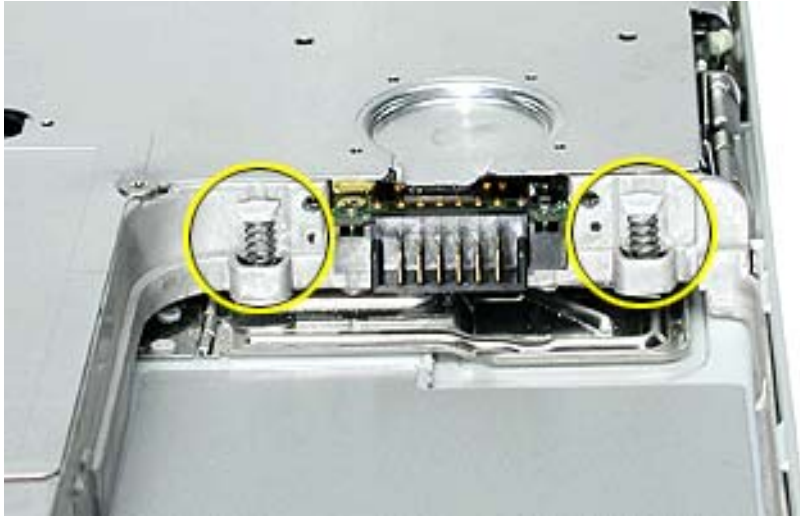
7. Install the replacement bottom shield, and reassemble and test the computer.

![Fan icon] Fan

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Bottom shield

Procedure

1. With the computer on a soft cloth, remove the single screw from the fan bracket.
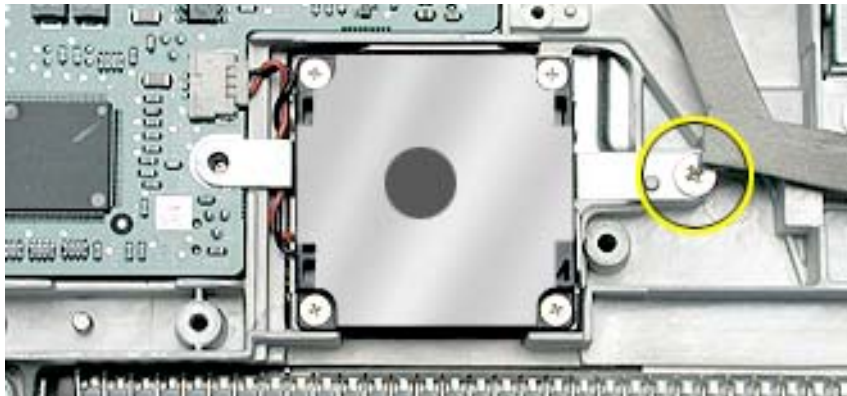
2. Lift the fan and bracket from the computer, and disconnect the connector from the logic board. (Use a black stick, if necessary.)

   Note: When installing the replacement fan, make sure that the fan cable routes underneath the fan bracket.
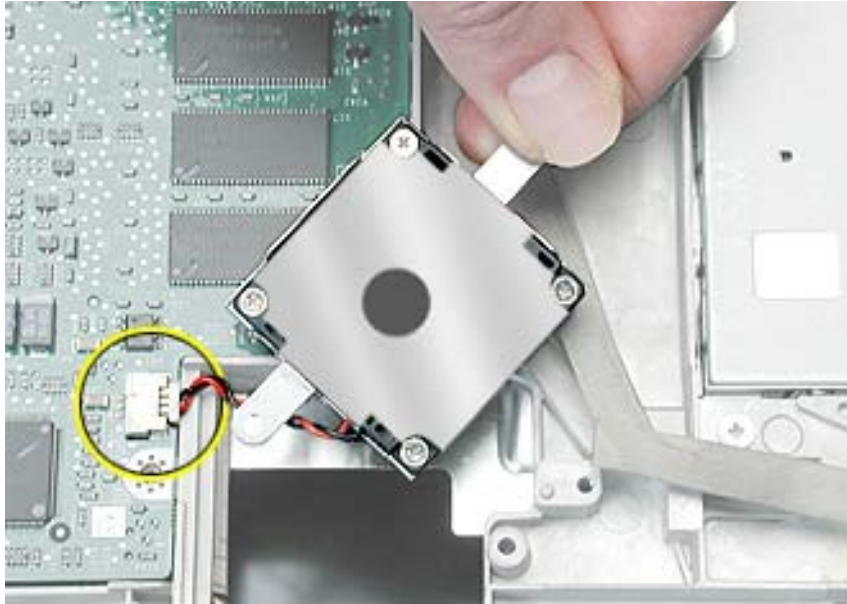
3. Install the replacement fan, and reassemble and test the computer.

Top Case

Tools

This procedure requires the following tools:
- Soft cloth
- Black stick (or other nonconductive nylon or plastic tool)
- Magnetized #0 Phillips screwdriver
- Metal paper clip
- Needlenose pliers

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Keyboard
- AirPort Card
- Bottom case

Procedure

1. With the computer on a soft cloth and the bottom shield facing up, remove the nine screws shown:
   - three 14.5-mm long screws
   - three 5-mm long screws
   - three 3-mm long screw
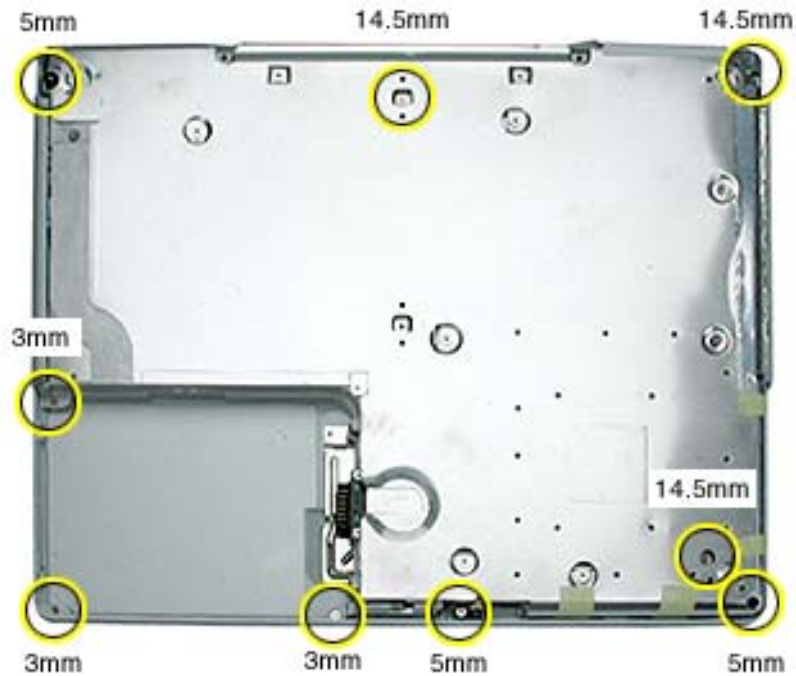
2. Turn over the computer. Using a black stick, pry up the sides of the trackpad cable connector to release the trackpad cable.

3. Remove the three screws from the keyboard well:
   • two 6-mm long Phillips screws
   • one 8-mm long Phillips screw
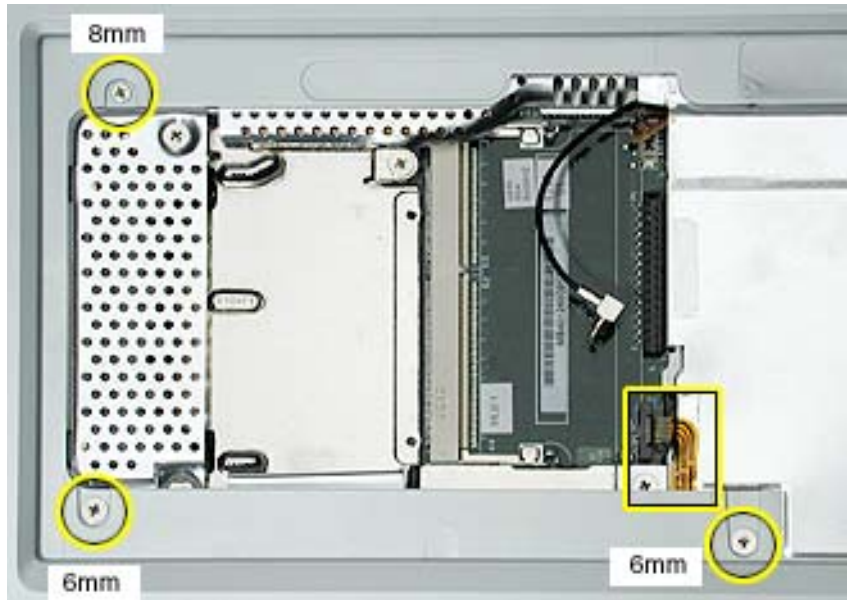
4. Using a straightened paper clip, open the optical drive.

5. **Warning: When performing this step, make sure the speaker cable and power switch cable are not strained.**

    Starting near the left speaker end of the top case, lift up the top case near the front. Tilt the top case so that it clears the DC connector.

    Tilt the top case up away from the computer latch.

    Use a black stick to loosen the top case from the optical drive.
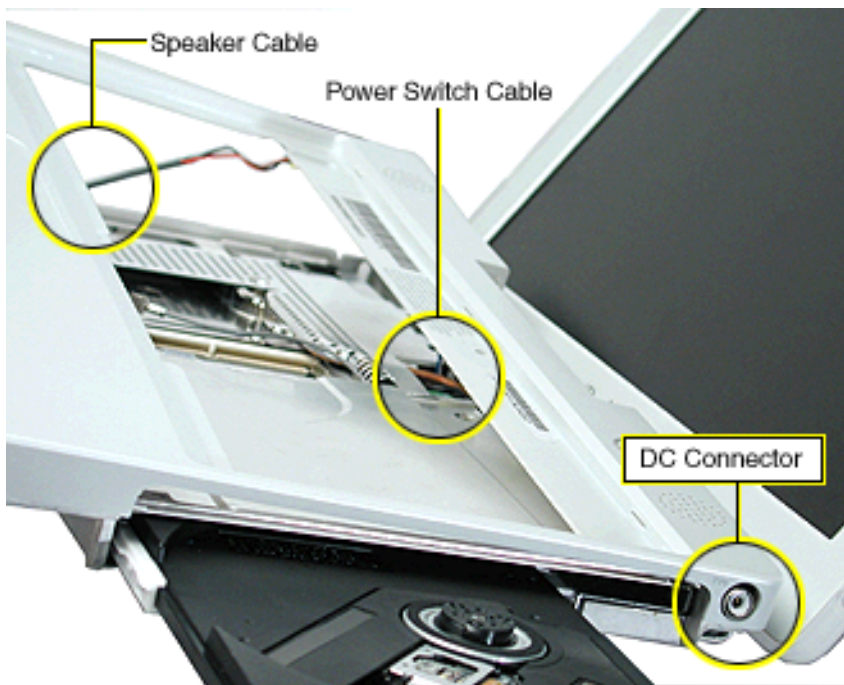
6. With the top case loosened, use a needlenose pliers to disconnect
   • Speaker cable
   • Power switch cable
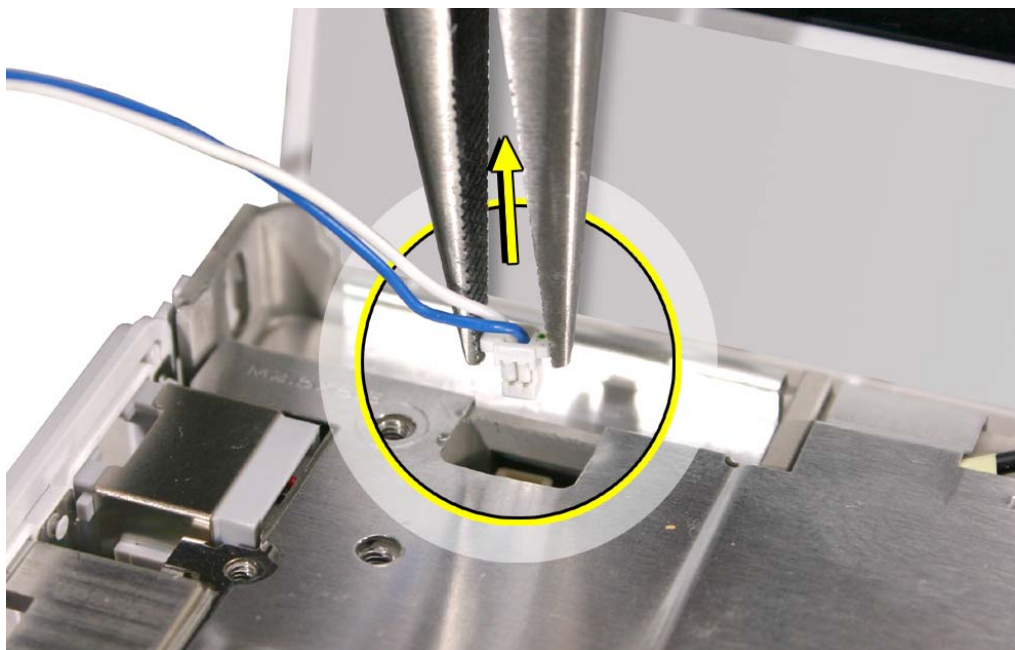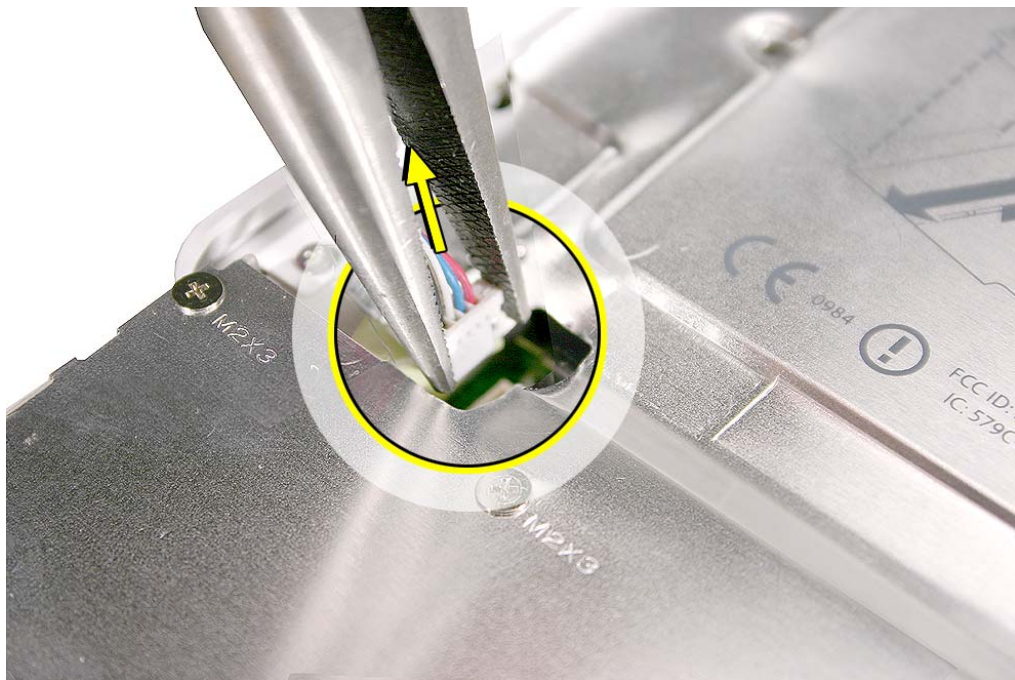
7. Remove the top case from the computer.

   Note: When installing the replacement top case, first connect the power switch cable connector followed by the speaker cable connector. Do not strain the cables. Then make sure you attach the case over the DC connector.
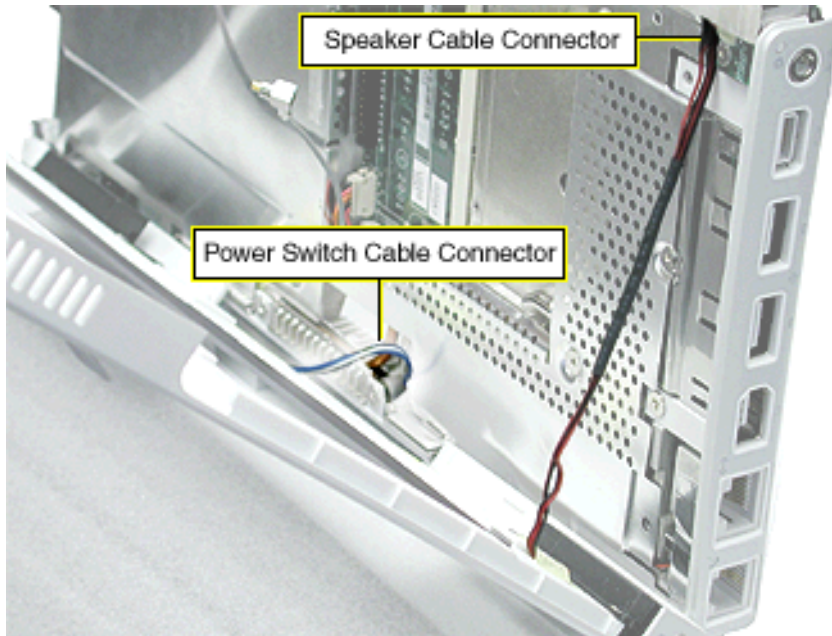
8. Before installing the replacement top case, make sure it includes the following:
   - Speaker set
   - Power button and board (under left speaker)
   - Speaker cable and power switch cable
   - Trackpad assembly with board and cable
   - Display latch
   - Battery magnet

9. **Important:** Make sure you transfer the original serial number label and Ethernet label from the old top case to the replacement top case. You can use a black stick to carefully peel up a corner of the label. Then peel off the label completely and apply it to the replacement top case. Make sure that the labels lie completely flat so they do not interfere with the battery compartment.
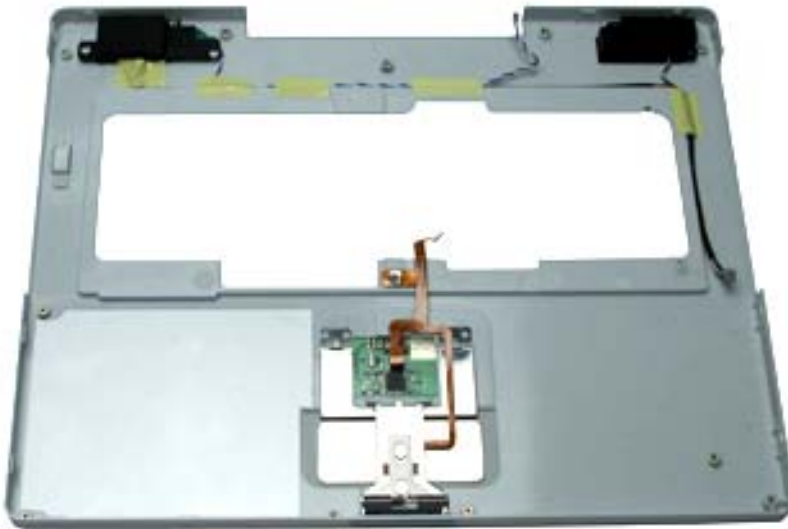
10. Install the replacement top case.

   Warning: When reassembling the computer, be careful not to pinch any cables as you press the top case back onto the computer. Check that the top case shows no raised surfaces and is fully snapped into place before installing the remaining screws.

11. Reassemble and test the computer.

   Note: When reinstalling the RAM shield, insert the edge next to the trackpad cable first. Then make sure the RAM shield lays flat and the two screw holes align with the two holes in the heat spreader before installing the screws.

Top Shield

Tools

- Soft cloth
- #0 Phillips screwdriver
- #1 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case

Procedure

1. With the computer on a soft cloth, remove the 16 Phillips screws:
   - nine 6-mm long screws
   - two 5-mm long screws
   - five 3-mm long screws
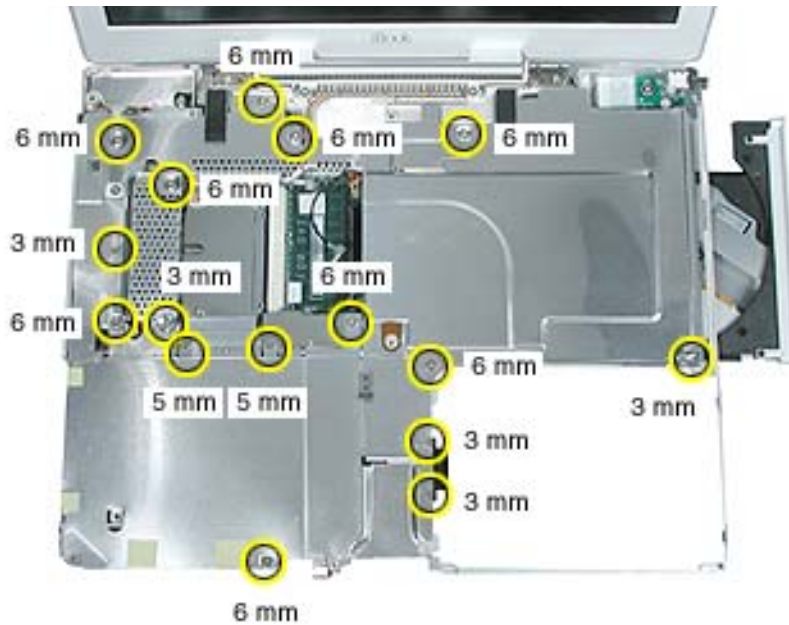
2. Using a black stick, carefully peel up, but do not remove, the foil strips and pieces of tape.

   Note: When reassembling the computer, reuse the foil and tape to secure the replacement top shield.
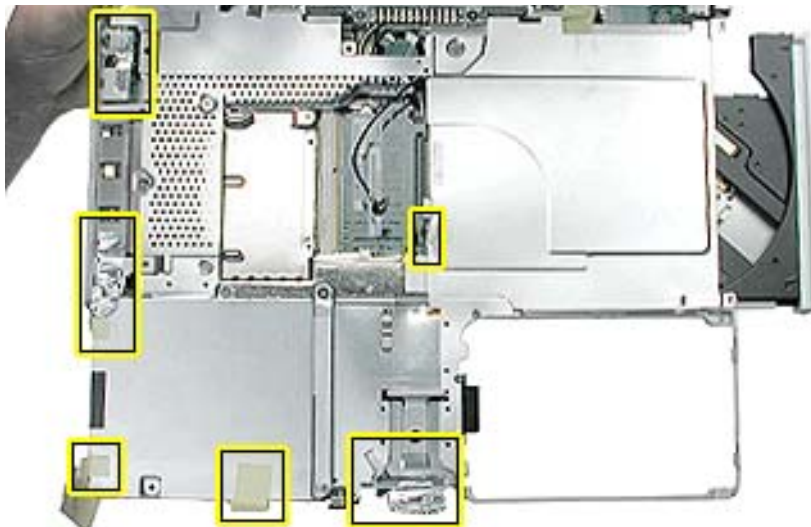
3. Lift up the foil tape near the trackpad cable.
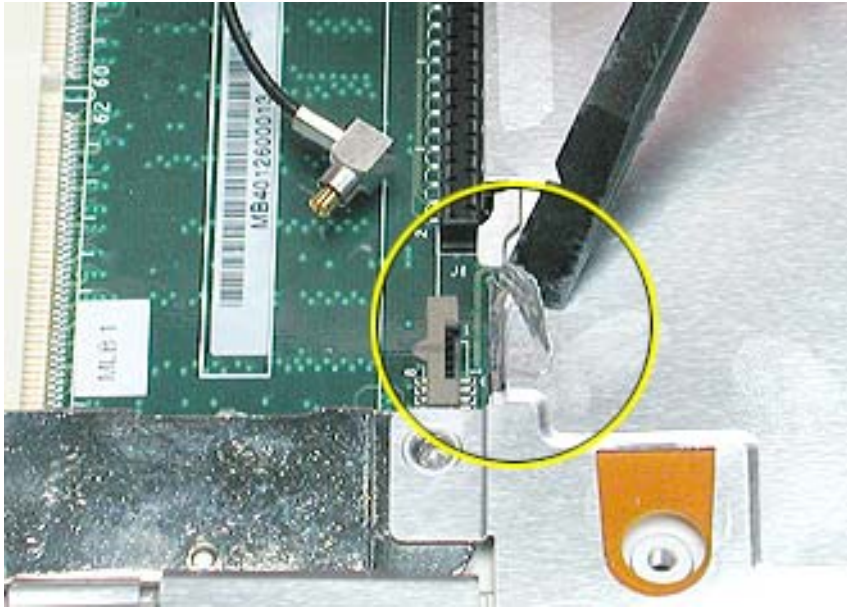
4. Before lifting up the top shield, note that the shield fits over posts on the computer frame.

   Note: When reinstalling the top shield, make sure the holes in the shield align with the screw holes and posts.
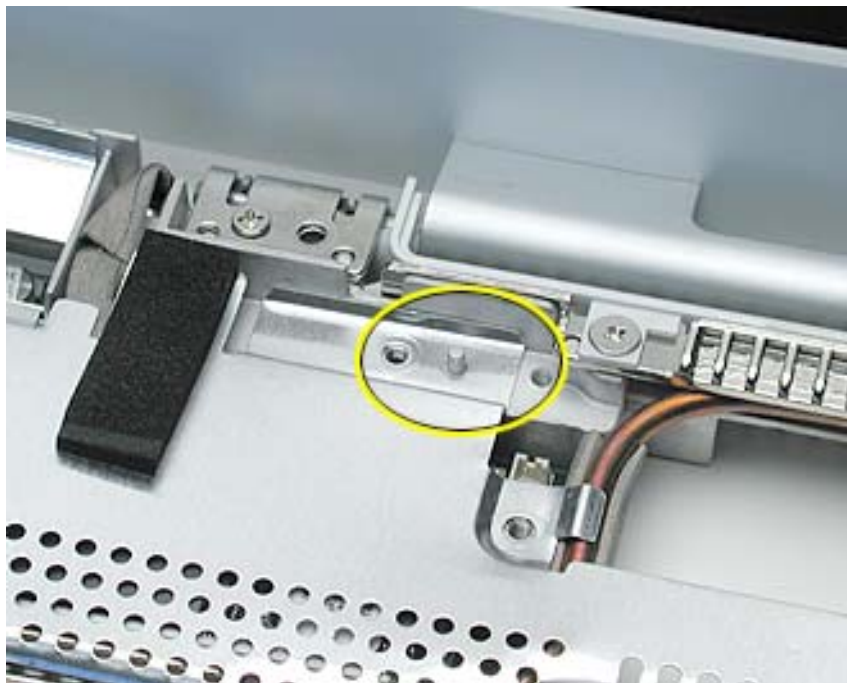
5. **Warning: Do not bend the top shield.**

   Lift the top shield off the computer, being careful where it might catch on the highlighted areas shown.
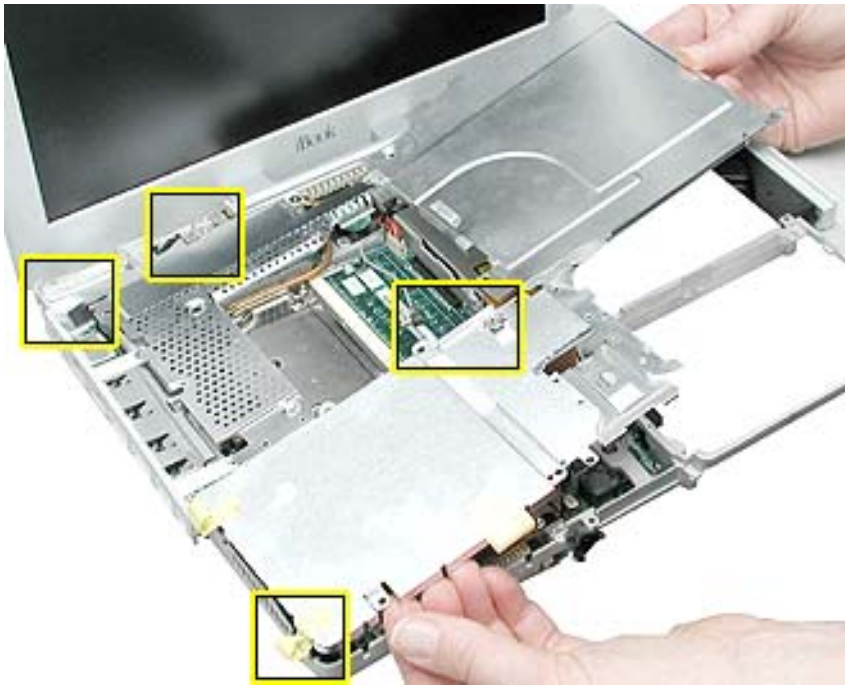
6. Install the replacement top shield, and reassemble and test the computer.

I/O Bezel

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Bottom shield
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield

Procedure

1. With the computer on a soft cloth, remove the screw from the I/O bezel.
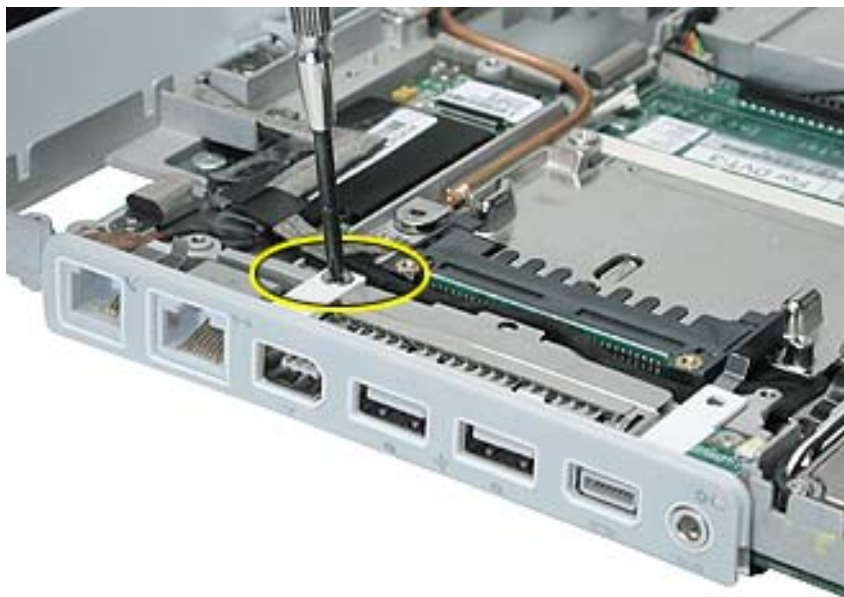
2. Tilt down the I/O bezel and remove it from the computer frame.

    Note: When reassembling the computer, make sure that the I/O bezel is level and fits over all ports.

3. Install the replacement I/O bezel, and reassemble and test the computer.

   Note: When installing the replacement I/O bezel, make sure the bezel shield and the mylar panel fits over the underside of the logic board, as shown below.

Hard Drive

Tools

- Soft cloth
- Black stick (or other nonconductive nylon or plastic tool)
- Torx T8 screwdriver

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield

Procedure

1. With the computer on a soft cloth, note the location of the hard drive and how the flex cable is routed.

2. Remove the 5-mm long Phillips screw at the corner of the hard drive.

3. **Warning: If the flex cable connector is pulled up unevenly, some connector pins could become bent and damaged.**

   Using even force, pull the looped handle straight up to disconnect the flex cable from the connector at the side of the hard drive.

   Note: When installing the flex cable at the side of the replacement drive, this connector is labeled "TO MAIN BOARD" on the flex cable.

4. Lift up the fabric tape to release the microphone cable.

    Note: When reassembling the computer, reuse the tape to secure the microphone cable to the replacement drive.

5. From the corner bracket, tilt up the hard drive, and slide it out from under the microphone cable.

6. **Warning: Handle the hard drive at the sides only. Do not touch or press anywhere else on the drive.**

   Warning: If the flex cable connector is pulled out unevenly, some connector pins could become bent and damaged.

   Using even force, pull the looped handle to disconnect the flex cable from the connector on the end of the hard drive.

   Note: When installing the flex cable to the end of the replacement drive, this connector is labeled "TO HDD" on the flex cable.

7. Holding the drive by the corners as shown, pull off the side rails (with grommets attached).

    Note: When reassembling the computer, transfer the side brackets (including the grommets) to the replacement hard drive so the grommets fit over the screw heads.

8. Install the replacement hard drive, and reassemble and test the computer.

    Note: Each connector on the flex cable is labeled for reinstallation.
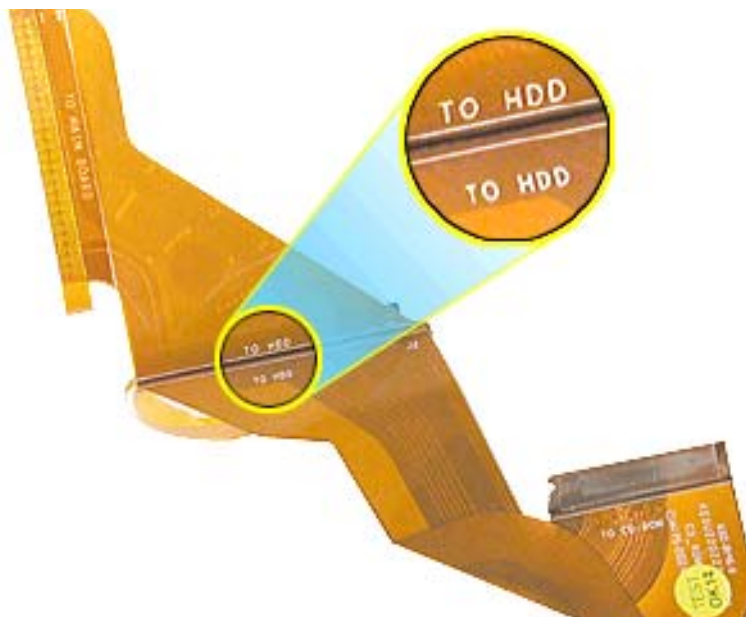
 Modem

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield

Procedure

1. With the computer on a soft cloth, remove the two Phillips screws from the modem board.

2. **Warning: When removing the modem, be careful not to strain the LVDS (low voltage data signal) cable.**

   Note the routing of the LVDS cable that is taped to the plastic modem sleeve.
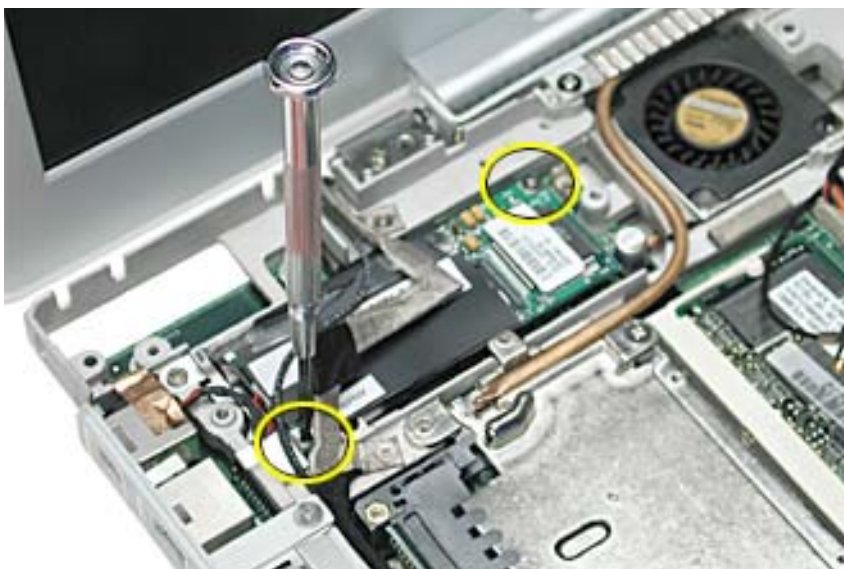
3. Without straining the LVDS cable, peel off the clear tape.
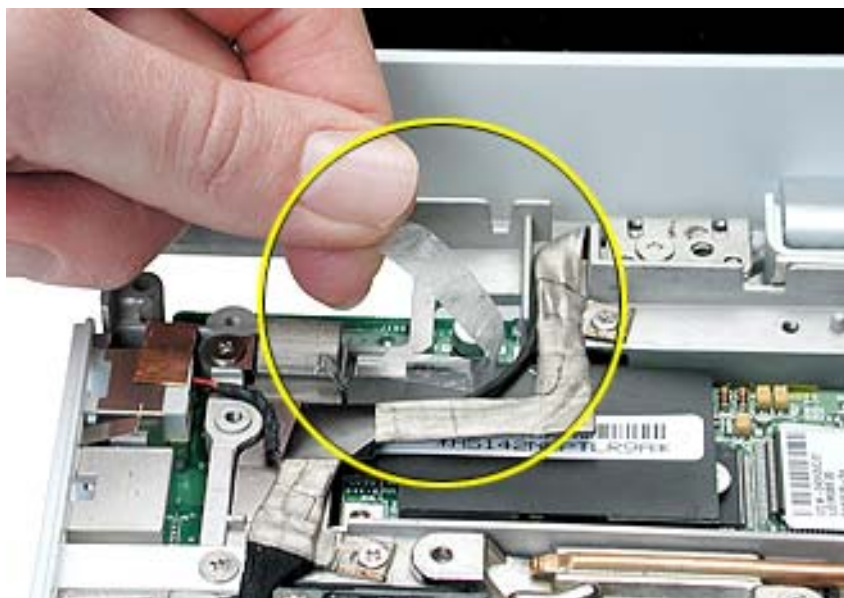
4. Tilt up the end of the modem board to disconnect it from the logic board.

5. **Important:** Do not strain or remove the LVDS cable.

   Gently move the LVDS cable aside, and pivot the modem board to reach the 2-pin cable connector located under the plastic sleeve.

6. Disconnect the connector from the modem. Slide the modem board out from under the LVDS cable.

   Note: When reassembling the computer, reuse the tape that secures the flat LVDS cable to the modem sleeve.

7. Install the replacement modem, and reassemble and test the computer.

Display Module

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield

Procedure

1. With the computer on a soft cloth, note the routing of the black microphone cable. Disconnect the microphone cable from the logic board and release the cable from the black fabric tape on the hard drive.

2. Pull up the flexible tab to disconnect the LVDS (low voltage data signal) cable from the logic board.

3. Remove the two screws securing the flat section of the LVDS cable.

   Warning: Be careful not to strain the LVDS cable.

4. Peel up the clear tape that attaches the LVDS cable to the modem sleeve.

5. Gently guide the LVDS cable and the microphone cable up from the computer chassis.
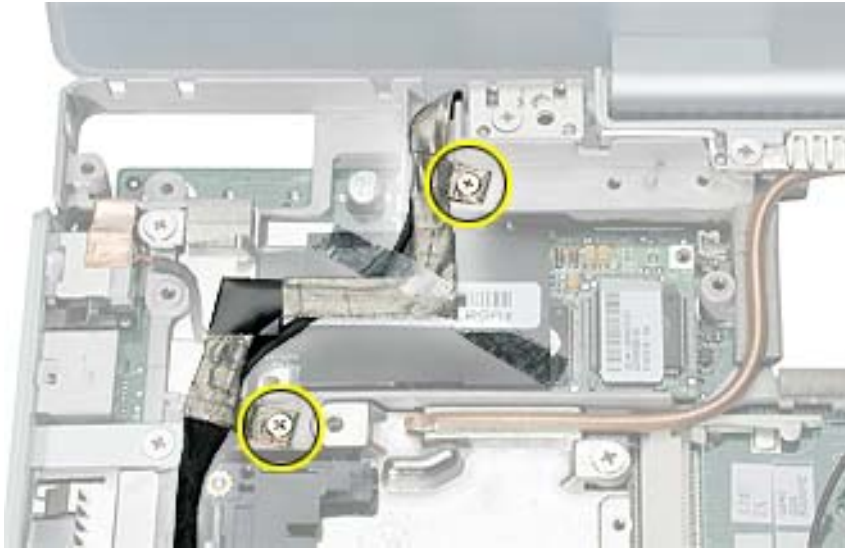
6. Peel the tape off of the computer frame, and disconnect the flat backlight cable from the logic board.

7. Route the cables up through the channel past the optical drive.

8. **Warning: To prevent damage, support the back of the display while performing this step.**

   Remove the screw at each display hinge.

9. **Warning: When lifting the display, be careful not to strain the cables.**

    Tilt the display up slightly from the computer.
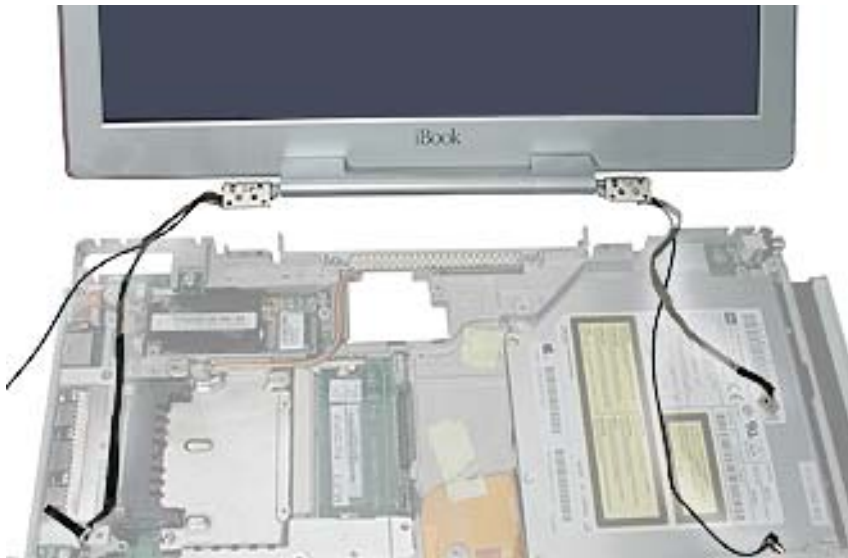
10. Install the replacement display, and reassemble and test the computer.

 Optical Drive

Note: The optical drive in this computer is a combination CD-RW/DVD-ROM drive.

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Bottom shield
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield

Procedure

1. Use a straightened paper clip to release the drive tray.

2. With the drive tray open, carefully turn over the computer.

3. On the underside of the drive, notice the tabs near each end of the drive bezel.

4. Using the pointed end of a black stick, press the recessed middle of the smaller tab, and loosen that end of the bezel.
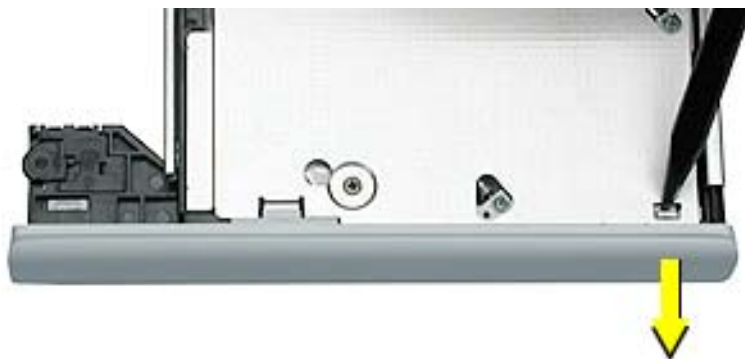
5. Press the wider tab, and pull the bezel off of the drive.

6. With the bezel removed, press the drive tray in until it is completely closed.

7. Tilt up the computer, and support the optical drive as you remove the two screws beneath the optical drive.
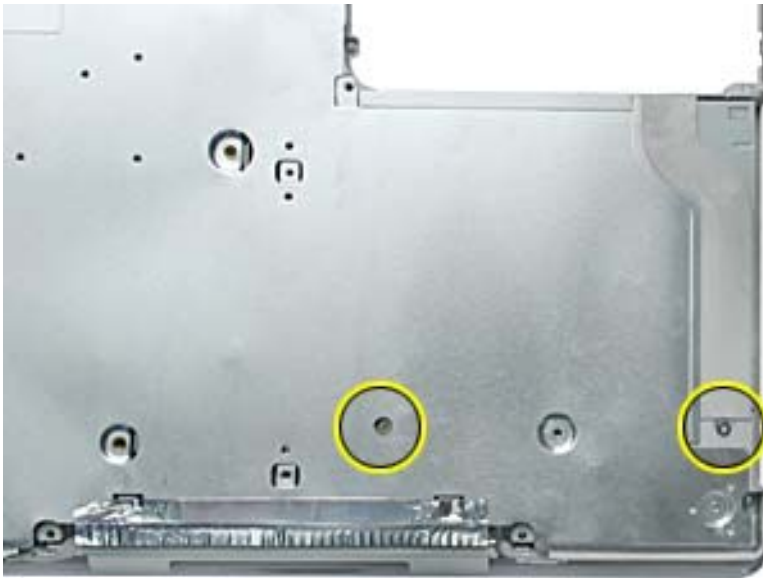
8. Turn the computer upright, and without straining the backlight cable, loosen the tape that secures the cable to the computer frame.

9. **Warning: Handle the optical drive at the sides only. Do not touch or press anywhere else on the drive.**

   Tilt up the optical drive so the corner tab clears the backlight cable.

   Without straining the optical drive flex cable, remove the tape and tilt the drive up from the computer frame.

10. Remove the two screws holding the cable bracket to the optical drive.

11. Remove the cable bracket.

   Note: When reassembling the computer, transfer the cable bracket to the replacement drive.

12. Disconnect the flex cable.

   Note: When reassembling the computer, transfer the flex cable to the replacement drive. The connector is labeled "TO CD-ROM" on the flex cable.

13. Remove the two screws that hold the mounting bracket to the optical drive.

    Important: When reassembling the computer, transfer the mounting bracket to the replacement drive.

    Note: The mounting bracket has a different shape on the 900 MHz model:

14. Install the replacement optical drive, and reassemble and test the computer.

    Note: When installing the replacement optical drive, press the bezel onto the drive after the optical drive is installed in the computer.

![DC Board logo]

DC Board

Tools

- Soft cloth
- #0 Phillips screwdriver

Preliminary Steps

Before you begin, remove the following:

- Battery
- Bottom case
- Bottom shield
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield

Procedure

1. With the computer on a soft cloth, remove the 6-mm long screw that secures the DC board to the computer frame.

2. Tilt up the DC board and route it through the opening in the computer frame.

3. Disconnect the flat power cable from the connector on the logic board.

   Note: When reassembling the computer, make sure the flat power cable is taped to the underside of the computer frame.

4. Peel up the tape holding the flat cable to the computer frame.
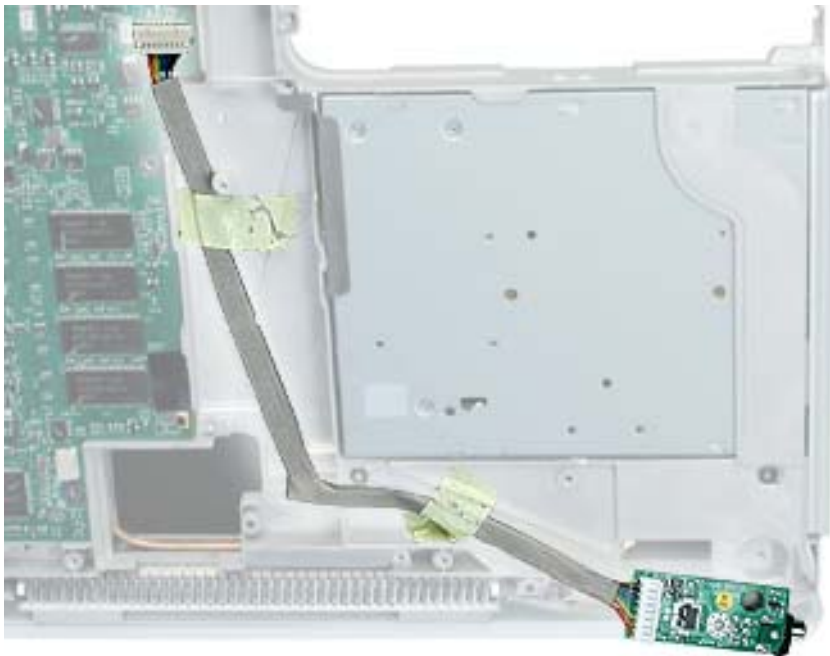
5. Install the replacement DC board, and reassemble and test the computer.

Logic Board

Tools

- Soft cloth
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the computer, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Bottom shield
- Keyboard and RAM shield
- Airport Card
- Fan
- Top case
- Top shield
- I/O bezel
- Display module
- Modem
- Hard drive
- Optical drive

Important: Before ordering and replacing the logic board, refer to the Additional Procedures chapter for complete details.

Procedure

Warning: Flexing the logic board can break solder joints to components. To prevent damage, do not flex the board.

1. With the computer on a soft cloth, note the location of the sleep light board connected to the logic board and outer frame.

   Note: When reassembling the computer, make sure the sleep light board is positioned as shown and does not get caught between the top and bottom case.

2. Using a black stick, disconnect the sleep light board connector from the logic board.
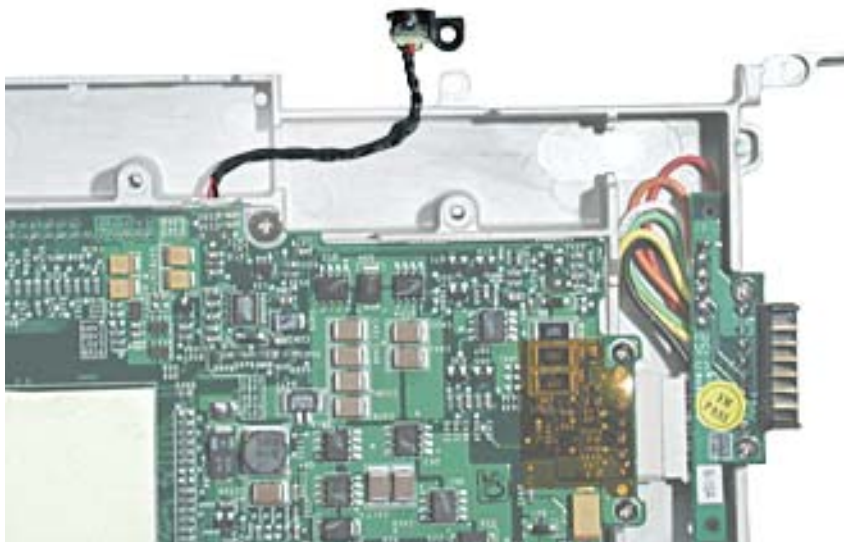
3. Turn over the computer frame and remove the two Phillips screws that secure the logic board to the heat spreader plate:
   • 5-mm long screw (near center of board)
   • 11-mm long screw (near edge of board)
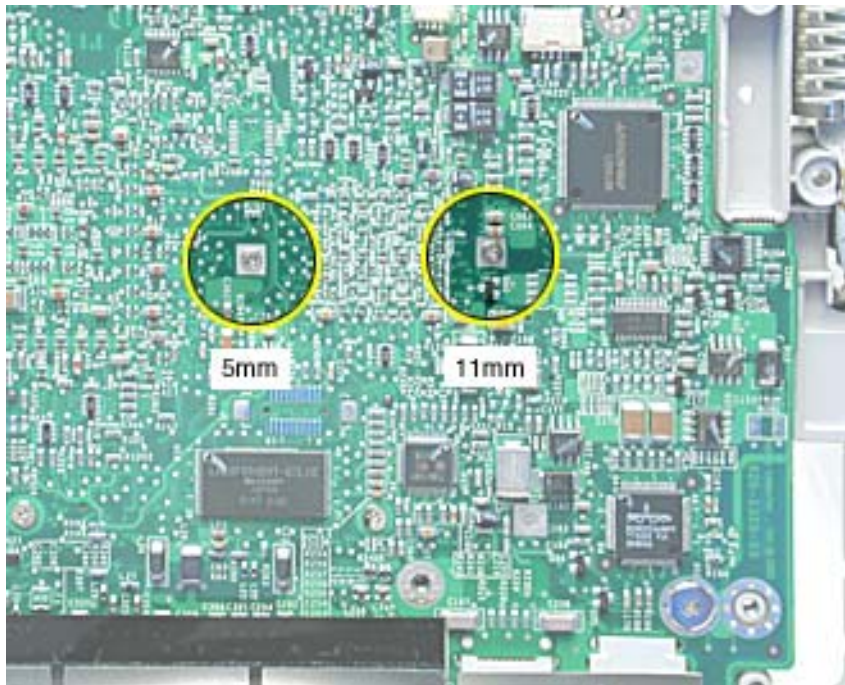
4. Remove the two screws holding the vent cover to the heat spreader.
5. Remove the remaining screw at the heat spreader plate.
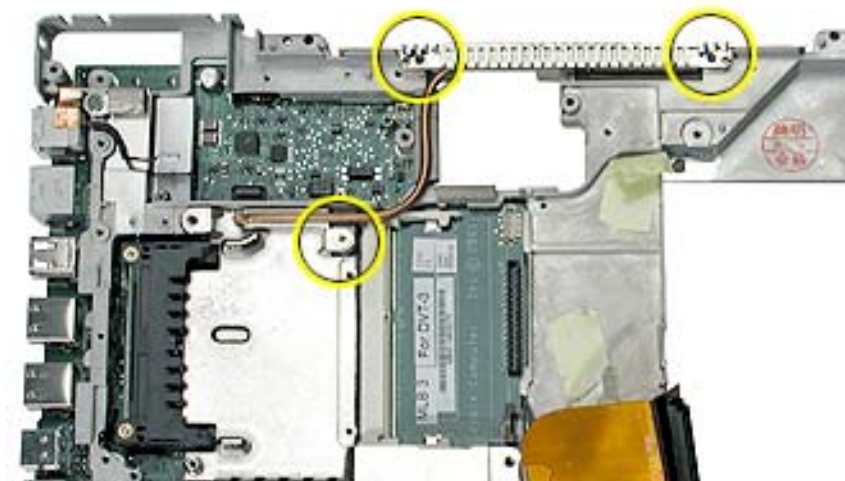
6. Tilt up the heat spreader and lift it off the logic board and out of the frame.
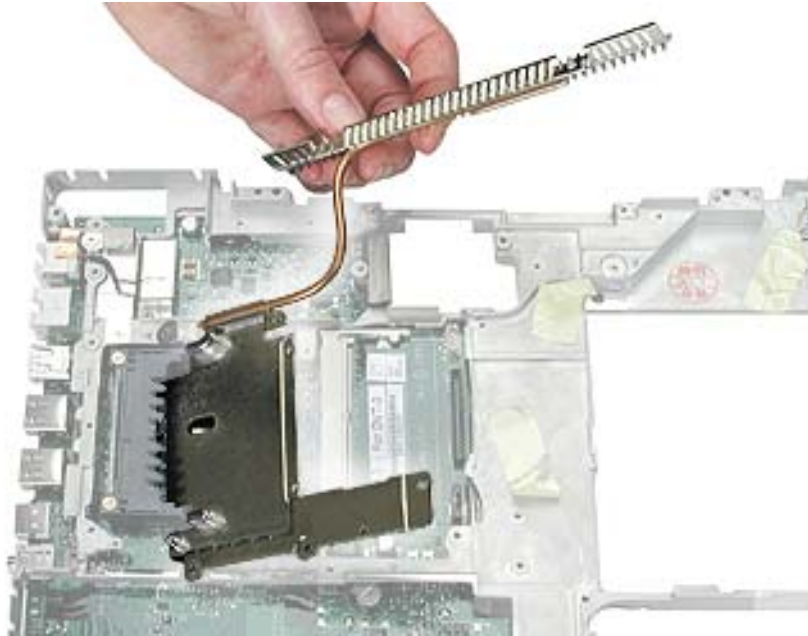
7. Turn over the heat spreader and notice the placement of the thermal pad on the other side. If replacing the heat spreader, make sure it has the thermal pad.
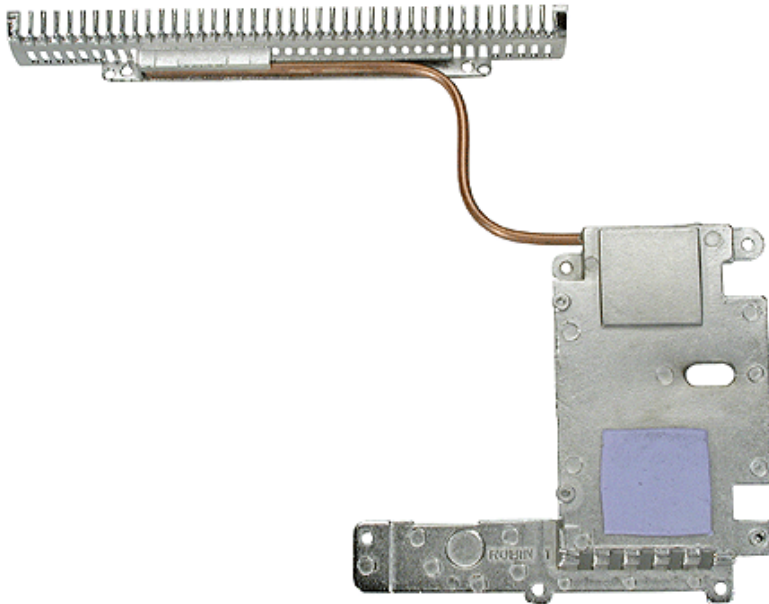
8. Turn over the frame, and remove the following:
    • Two 7.5 mm long screws at battery transfer board
    • Two 3.5 mm long logic board screws
    • One 6 mm long logic board screw
    • Two 4 mm long logic board screws

9. Disconnect the DC board connector.
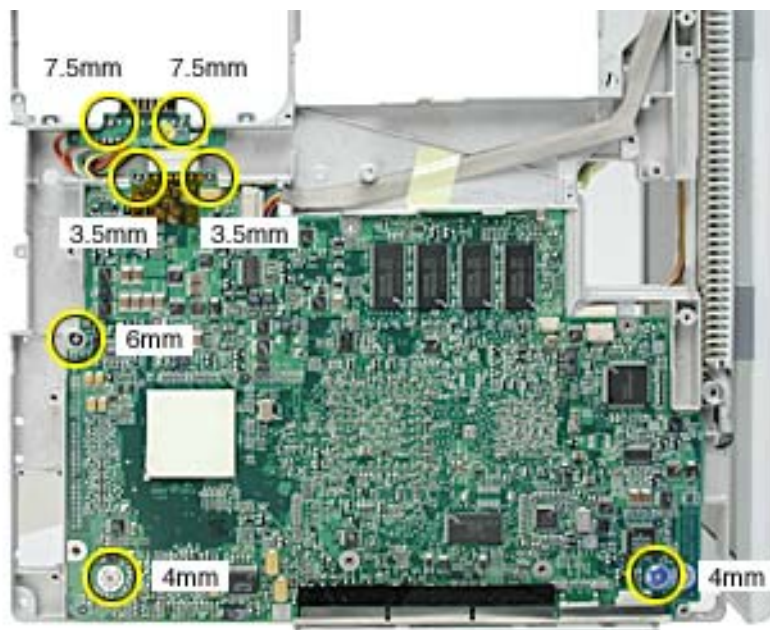
Note: When reassembling the computer, make sure that the underside of the replacement logic board includes the thermal transfer pad covering the large chip.

Note: When reassembling the computer, make sure that you transfer the following items from the original logic board to the top of the replacement logic board:
• Memory card(s)
• Strip of foil tape extending from the top of the Ethernet port, over the top of the modem port, and folding down the side of the modem port

10. **Warning:** Flexing the logic board can break solder joints to components. To prevent damage, do not flex the board.

Lifting the logic board at the back ports, tilt up the logic board to remove it from the frame.
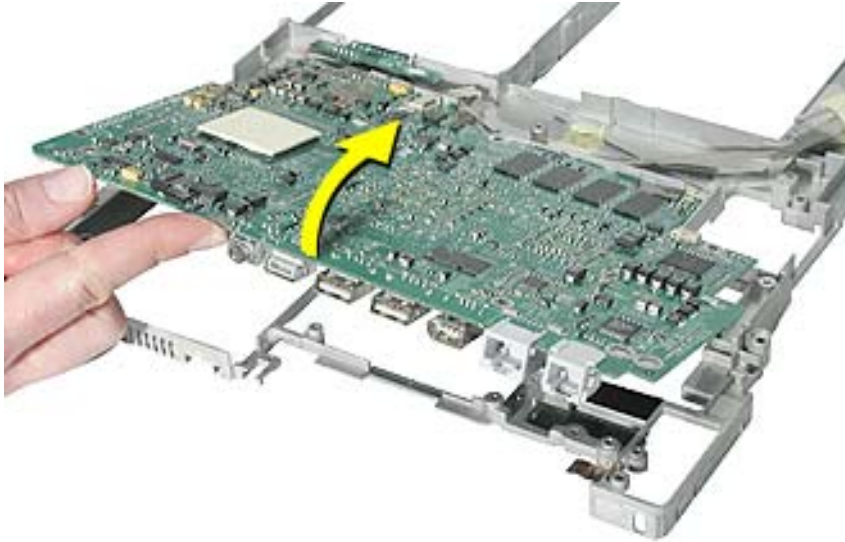
11. Disconnect the logic board from the battery transfer board connector.

12. Install the replacement logic board, and reassemble and test the computer.

Important: Before ordering and replacing the logic board, refer to the Additional Procedures chapter for complete details.

13. If replacing the battery transfer board, remove the two screws that connect the battery transfer board to the rib frame. Then disconnect the battery transfer board from the logic board.
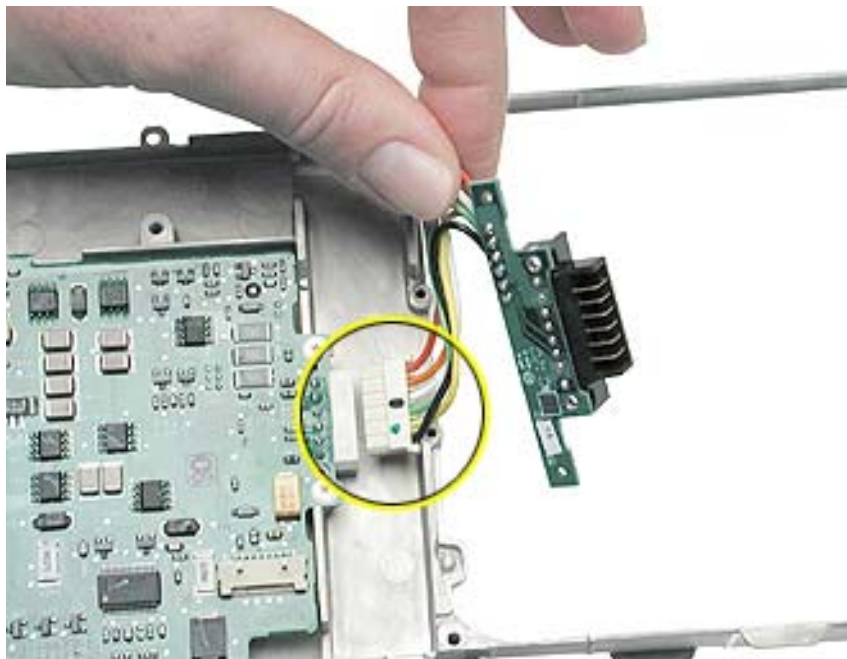
LCD Panel

Tools

- Soft cloth
- Torx T6 screwdriver or 5/32 hex driver
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the LCD panel assembly, use a tray with divided compartments (such as a plastic ice cube tray).

Replacement Note: If the tape you remove from this assembly is worn and cannot be reused, use new Kapton tape (Apple part number 922-5025).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module

Procedure

Note: Although your display assembly might appear somewhat different than shown, the steps to follow are the same.

1. With the display module lying face up on a soft cloth, use either a 5/32 hex driver or a Torx T6 screwdriver to remove the four 8-mm long screws (two on each side) from the display housing.

2. Using a black stick, pry up the bezel from the display housing. Carefully work the black stick around the outer perimeter and corners of the bezel.

3. **Warning: When lifting the assembly, be careful not to strain the cables.**

   With the bezel assembly loosened, grasp the display clutch and raise the assembly off of the display housing.

4. Place the display assembly face down on a soft cloth.

5. Notice the U-shaped notches on the sides of the bezel.

6. Remove the four 3-mm long Phillips screws (two on each side) from the display shield. (Carefully move aside any cables or tape that partially block access to the screws.)
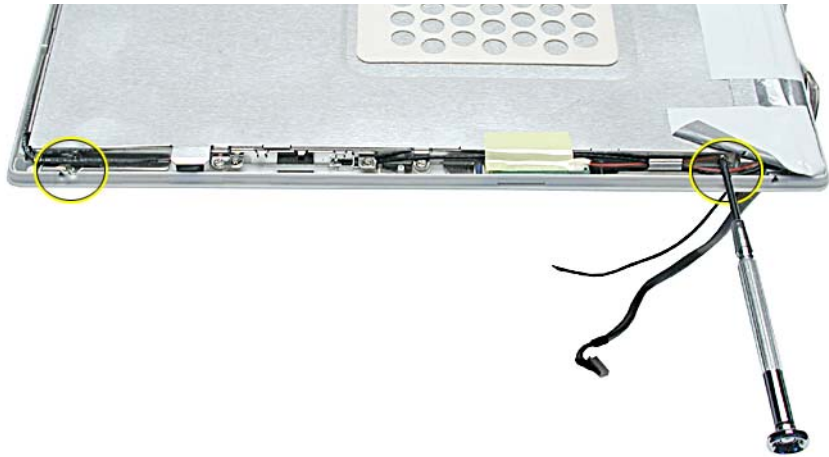
7. Peel up the foil tape that holds the LCD cable to the LCD shield.

8. Peel up the tape if it covers the two screws at the clutch. Remove the two 11-mm long Phillips screws.

9. Peel up the tape that anchors the folded mesh strip of the LCD cable to the shield.
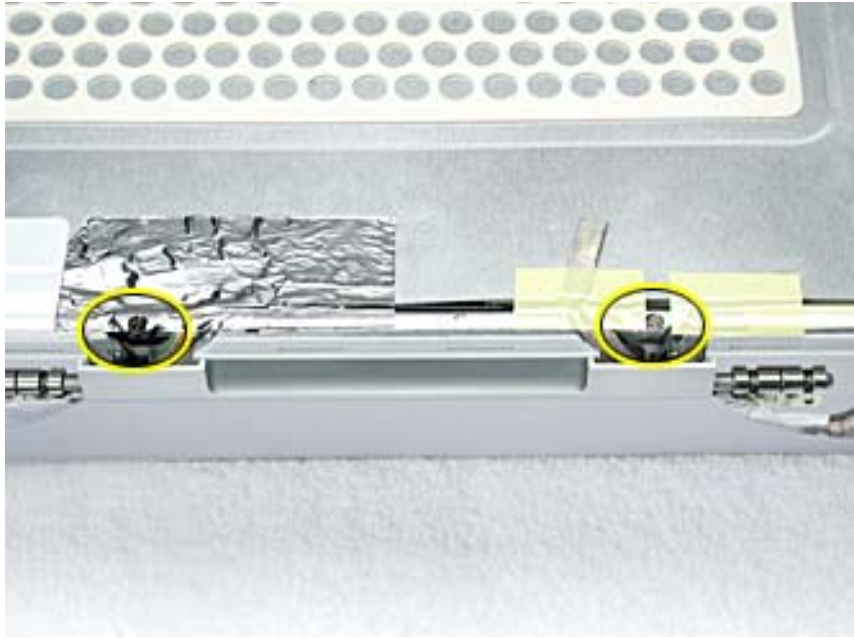
Note: The positioning of the tape on the shield might differ among computer models.

10. Loosen the remaining tape that secures the shield to the assembly. Remove the shield.

11. On the back of the LCD panel, grasp both sides of the LCD connector, and gently rock and pull the connector to disconnect the LCD cable from the LCD panel.
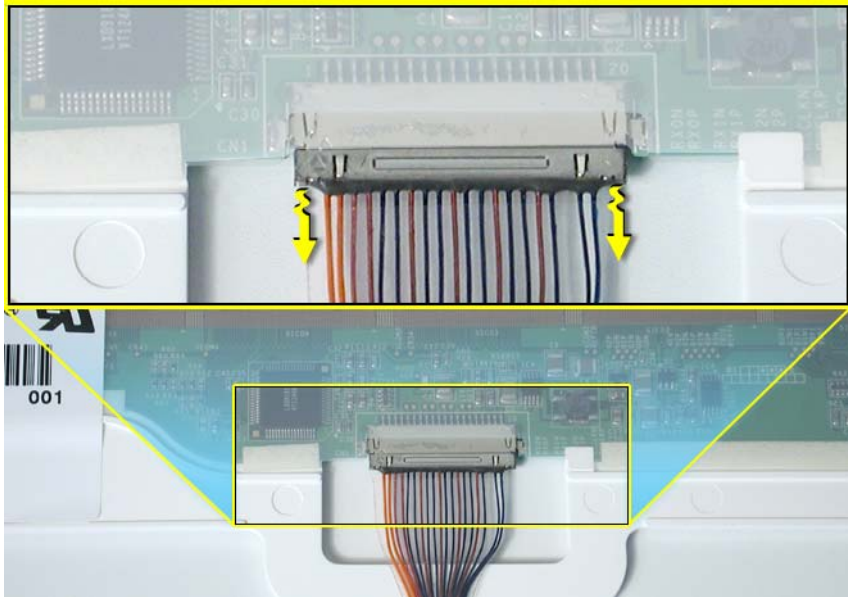
12. At the other end of the LCD cable, remove the tape from the bottom edge of the LCD panel.
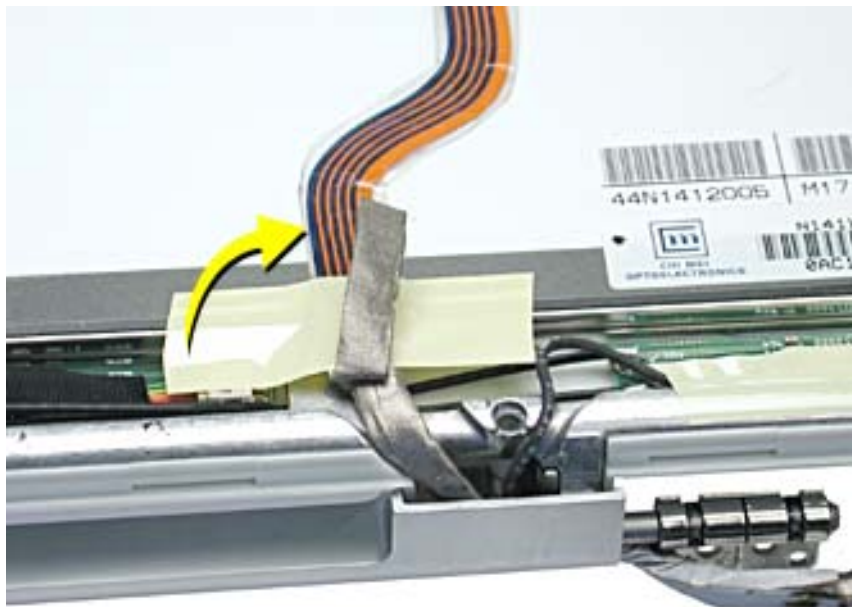
13. **Warning: When lifting the LCD panel, be careful not to strain the inverter cable.**

    Carefully lift up the LCD panel, pivoting it where it is still connected to the inverter by the 2-pin inverter connector.

14. Disconnect the inverter cable from the inverter board at CN2 and remove the LCD panel.

15. Install the replacement LCD panel, and reassemble and test the computer.

Display Clutch Cover

Tools

- Soft cloth
- Torx T6 screwdriver or 5/32 hex driver
- #0 Phillips screwdriver
- Black stick (or other nonconductive nylon or plastic tool)

Note: To organize the screws you remove from the display assembly, use a tray with divided compartments (such as a plastic ice cube tray).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module

Procedure

Note: Although your display assembly might appear somewhat different than shown, the steps to follow are the same.

1. With the display module lying face up on a soft cloth, use either a 5/32 hex driver or a Torx T6 screwdriver to remove the four 8-mm long screws (two on each side) from the display housing.

2. Using a black stick, pry up the bezel from the display housing. Carefully work the black stick around the outer perimeter and corners of the bezel.

3. **Warning: When lifting the assembly, be careful not to strain the cables.**

   With the bezel assembly loosened, grasp the display clutch cover and raise the assembly off of the display housing.

4. Place the display assembly face down on a soft cloth.

5. Peel up the tape if it covers the two screws at the clutch. Remove the two 11-mm long Phillips screws.

Note: The positioning of the tape on the shield might differ among computer models.
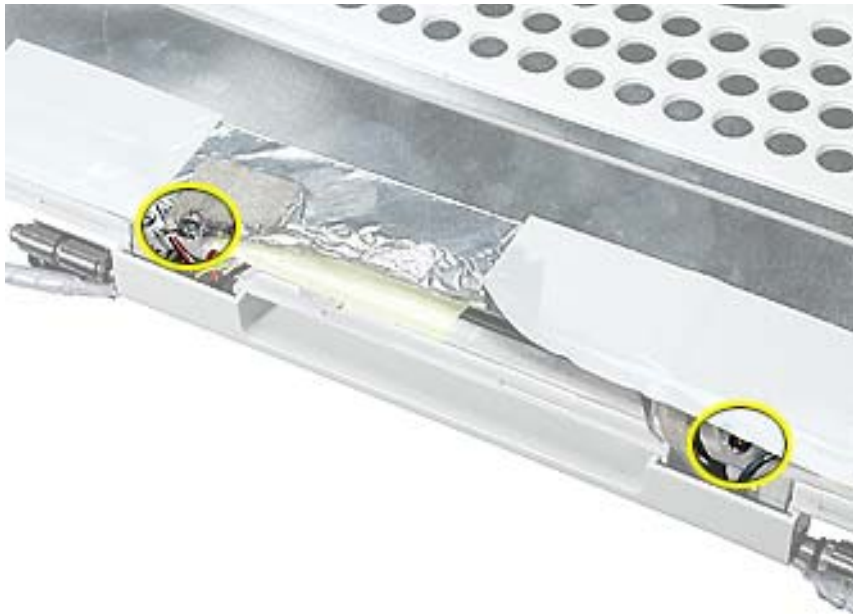
6. Tilt up the display assembly and pull straight down on the display clutch cover.

    Note: There are two small, thin, plastic clutch caps that slide into the ends of the clutch cover. The clutch caps might fall off as you remove the clutch cover. Be careful not to lose the clutch caps.

    Note: The clutch caps are mirror images of each other. There is a right clutch cap and a left clutch cap. Note the positioning of the clutch caps on the display clutch cover. The image below shows the left clutch cap installed.

7. Install the replacement display clutch cover, and reassemble and test the computer.

Warning: When installing the replacement clutch cover, be careful not to strain or pinch the cables. Make sure they fit easily into the recessed area on both ends of the clutch cover.

Note: The bundled cables on your display might look somewhat different than shown.

Replacement Note: When installing the replacement clutch cover, hold the cables and clutch cap in place as you slide the clutch cover over them.

Make sure the clutch cap on each side of the clutch cover is firmly seated before installing the two screws.

Inverter Board

Tools

- Soft cloth
- Black stick (or other nonconductive nylon or plastic tool)

Replacement Note: If the tape you remove from this assembly is worn and cannot be reused, use new Kapton tape (Apple part number 922-5025).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module
- LCD panel

Procedure

Note: Although your bezel assembly might appear somewhat different than shown, the steps to follow are the same.

1. With the bezel assembly lying on a soft cloth, use a black stick to disconnect the data cable from the right end of the inverter board at CN1.
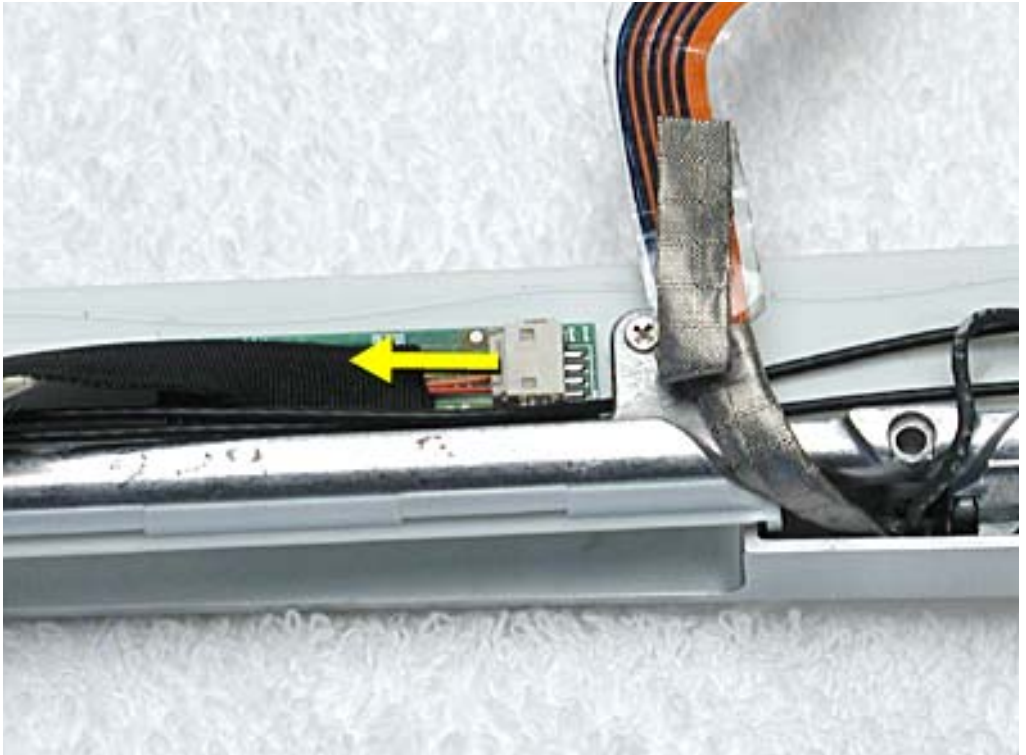
2. **Replacement Note:** Note the position of the inverter board and cables for the installation of the replacement inverter board.

    Warning: When lifting the inverter board, be careful not to pinch the cables that are routed above the board.

    Use a black stick to pry up the inverter board.

    Replacement Note: The inverter board is held to the bezel assembly with double-sided tape on each end of the board. Use new double-sided tape when installing the replacement inverter board.

3. Install the replacement inverter board, and reassemble and test the computer.

    Replacement Note: Make sure the left corner of the replacement inverter board aligns with the raised L-shaped guide in the bezel assembly. Make sure the replacement inverter board does not cover or pinch any cables.
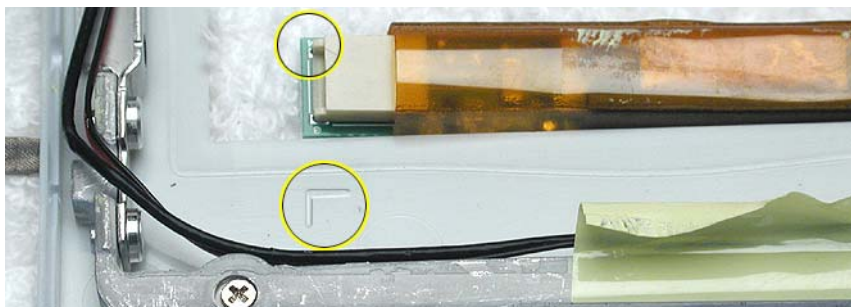
Antenna Board

Tools

- Soft cloth
- Black stick (or other nonconductive nylon or plastic tool)
- #0 Phillips screwdriver

Replacement Note: If the tape you remove from this assembly is worn and cannot be reused, use new Kapton tape (Apple part number 922-5025).

Preliminary Steps

Before you begin, remove the following:

- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module
- LCD panel

Procedure

Note: Although your bezel assembly might appear somewhat different than shown, the steps to follow are the same.

1. With the bezel assembly lying on a soft cloth, peel up the tape from the antenna board.

2. Note the placement of the antenna board and the routing of the cables that are soldered to and run along the bottom of the antenna board.
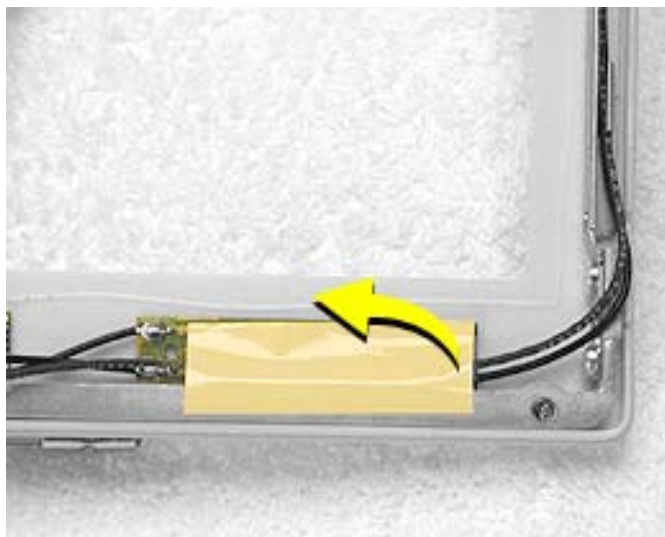
3. **Warning: When lifting the antenna board, be careful not to strain or pinch the cables.**

   Replacement Note: The antenna board is held to the bezel assembly with double-sided tape on each end of the board. Use new double-sided tape when installing the replacement antenna board.

   Use a black stick to pry up the antenna board, but do not remove it yet.

4. Remove the 4.5-mm long Phillips screw from the bezel brace.

5. Lift up the bezel brace and release the cables from under the brace.
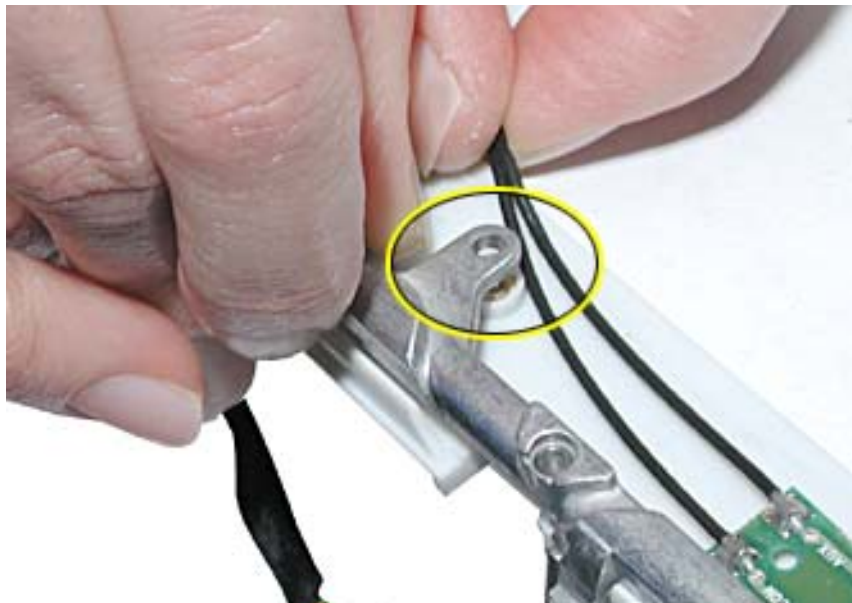
6. With the antenna board loosened, note the cable routing on each side of the bezel. On the right, the antenna receptor cable is routed underneath the microphone cable through two channels before terminating at the receptor bracket.
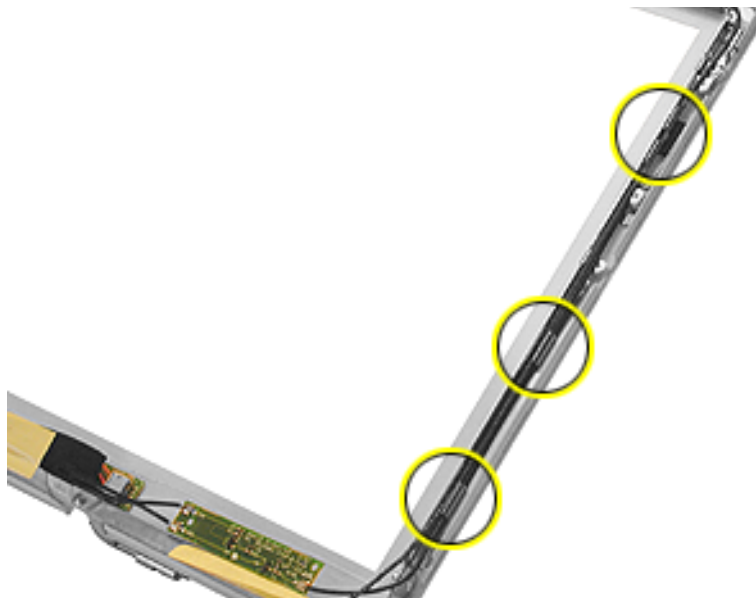
7. Remove the two 3-mm long Phillips screws from the antenna receptor on the right side of the bezel assembly.
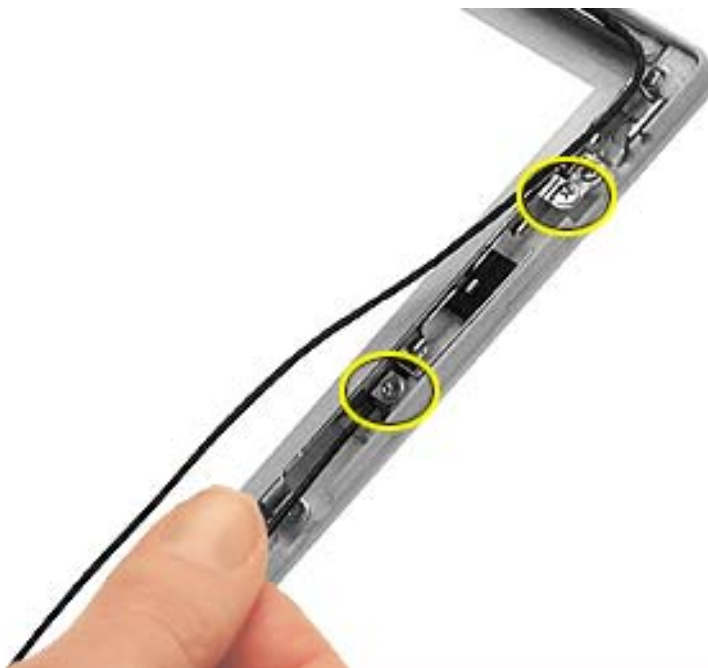
8. Tilt up the antenna receptor to remove it from the bezel assembly.

9. On the left side of the bezel, remove the two 3-mm long Phillips screws at the antenna receptor.

10. Tilt up the antenna receptor to remove it from the left side of the bezel assembly.
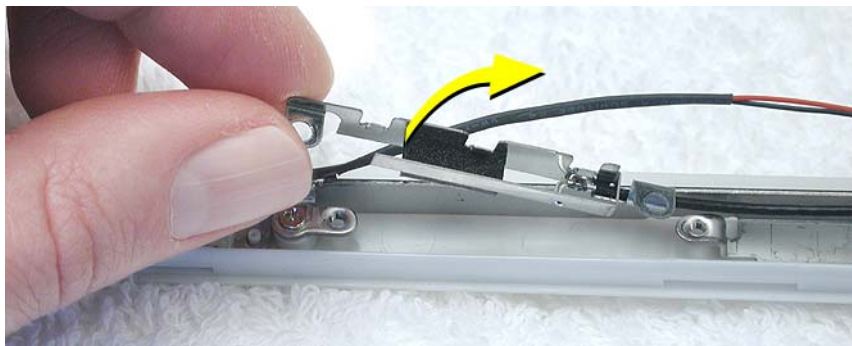
11. Unwrap the tape that secures the AirPort Card antenna to the cable bundle.
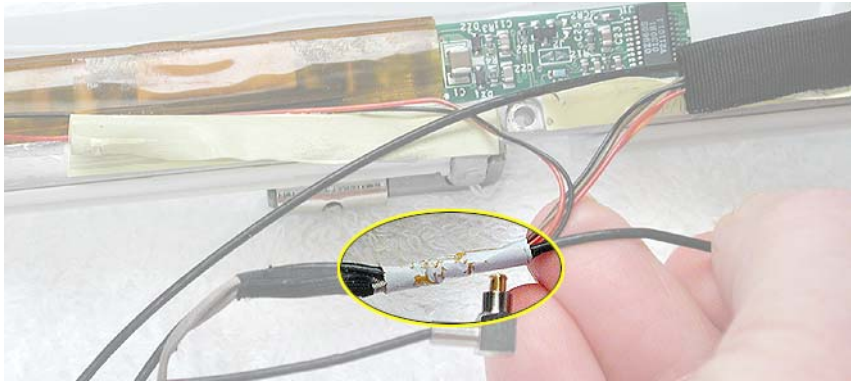
12. Use a black stick to lift out the cables from the channels.

13. Remove the antenna board with attached cables and antenna receptors.
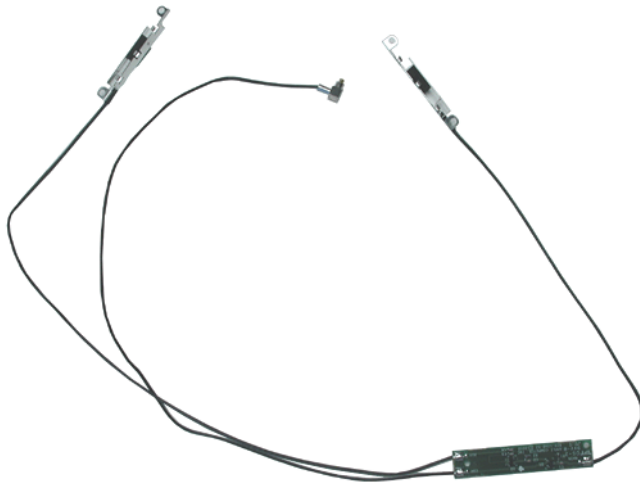
14. Install the replacement antenna board, and reassemble and test the computer.

Replacement Note: Make sure the right corner of the replacement antenna board aligns with the raised L-shaped guide in the bezel assembly, as shown.

Replacement Note: Make sure the replacement antenna board does not cover or pinch any cables.

Warning: Handle the replacement antenna board, receptors, and cables with care. Do not strain or pinch cables. Do not apply pressure to or bend the antenna receptors.
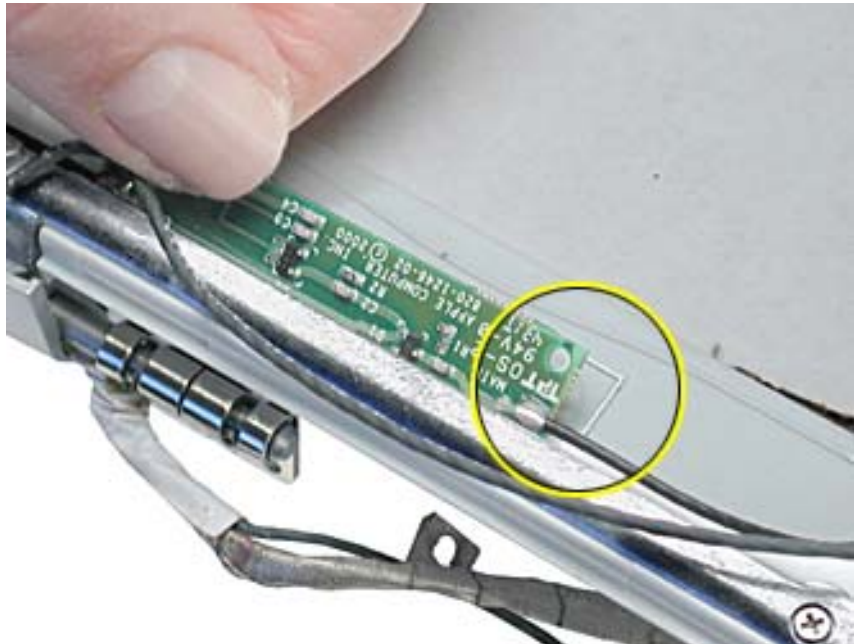
Reed Switch Board

Tools

- Soft cloth
- Black stick (or other nonconductive nylon or plastic tool)
- #0 Phillips screwdriver

Replacement Note: If the tape you remove from this assembly is worn and cannot be reused, use new Kapton tape (Apple part number 922-5025).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module
- LCD panel

Procedure

Note: Although your bezel assembly might appear somewhat different than shown, the steps to follow are the same.

1. With the bezel assembly lying on a soft cloth, remove the one 3- mm long Phillips screw at the reed switch board.

2. Pull up the reed switch cables from the channels on the left side of the bezel.
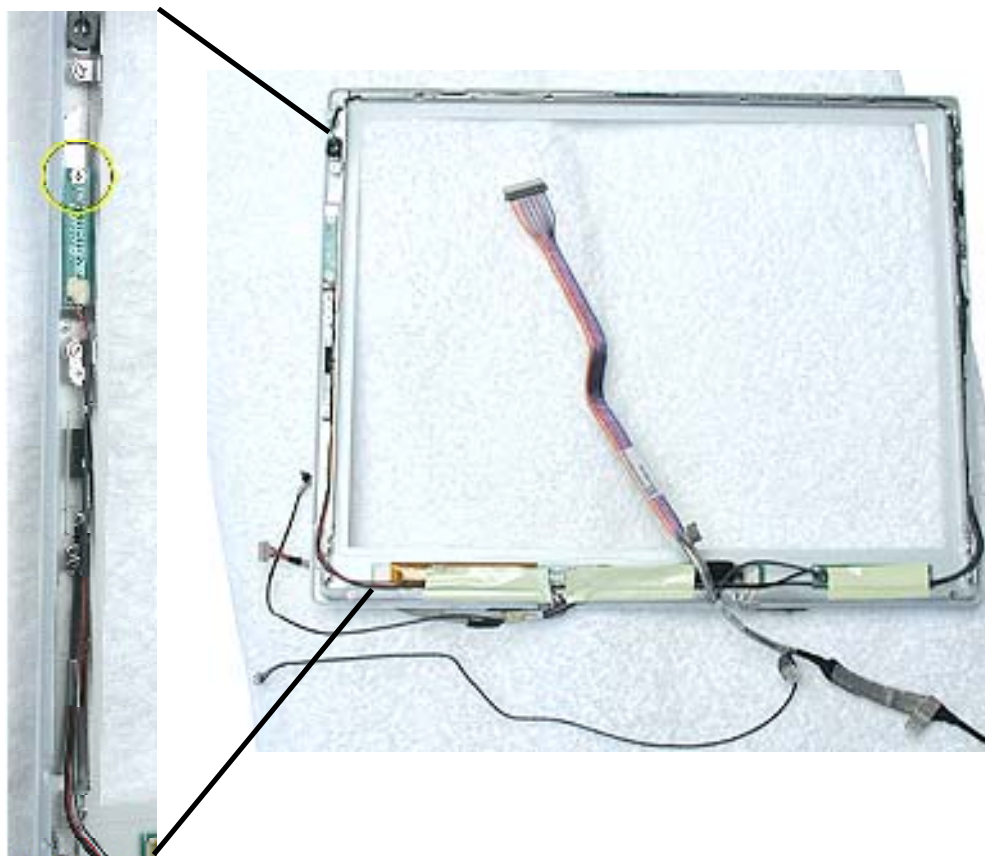
3. Lift up the cables and peel up the tape that covers the cables running along the bottom of the inverter board.

4. **Warning: When removing the tape that bundles the reed switch cable assembly to the AirPort Card antenna cable, be careful not to strain or pinch the cables.**

   Replacement Note: When installing the replacement reed switch board and cables, use new tape to bundle the cables together.

   Remove the tape to free the AirPort Card antenna cable from the reed switch cable assembly
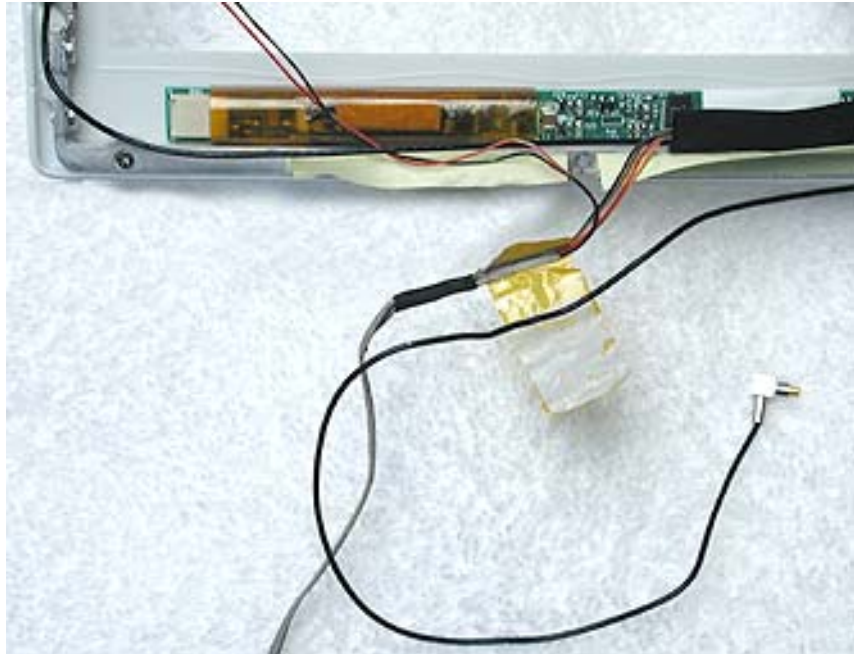
5. Disconnect the data cable from the inverter board at CN1.

6. Remove the reed switch cable assembly.
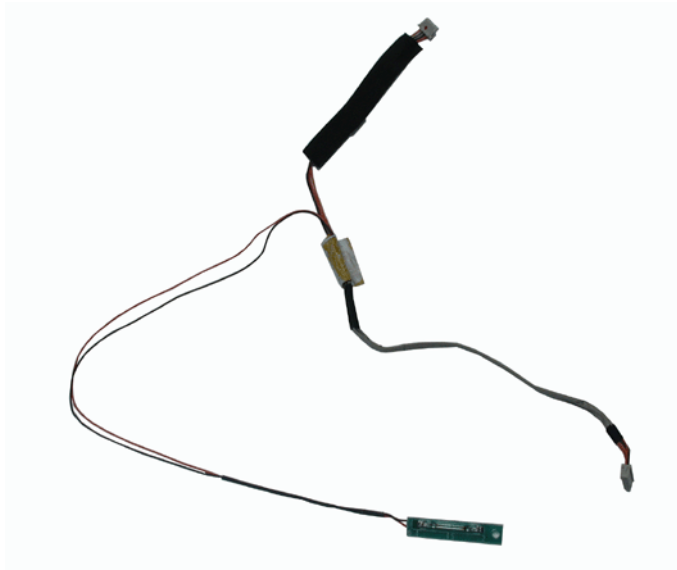
7. Install the replacement reed switch board and cable assembly, and reassemble and test the computer.

Microphone Cable

Tools

- Soft cloth
- Black stick (or other nonconductive nylon or plastic tool)

Replacement Note: If the tape you remove from this assembly is worn and cannot be reused, use new Kapton tape (Apple part number 922-5025).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module
- LCD panel

Procedure

Note: Although your bezel assembly might appear somewhat different than shown, the steps to follow are the same.

Warning: Be careful not to strain or pinch the delicate microphone cable or surrounding cables when performing this procedure.

1. With the bezel assembly lying on a soft cloth, use a black stick to loosen the slack on the cable near the microphone gasket.

2. Pry up the microphone gasket from the upper left corner of the bezel.

    Warning: Do not pull on the delicate wires attached to the microphone.

3. Working around the perimeter of the bezel, pull up the microphone cable from the cable channel, being careful not to strain any other cables.
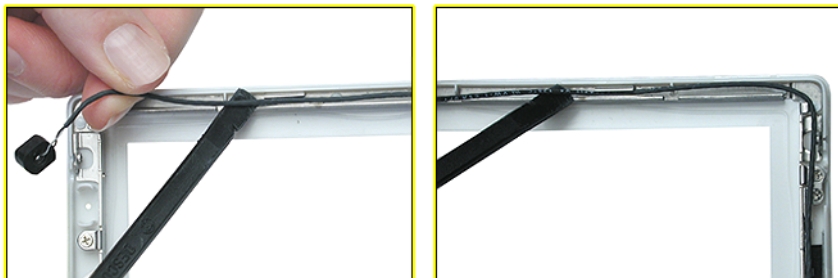
4. Free the microphone cable from the right corner of the bezel and from underneath the tape at the antenna board.
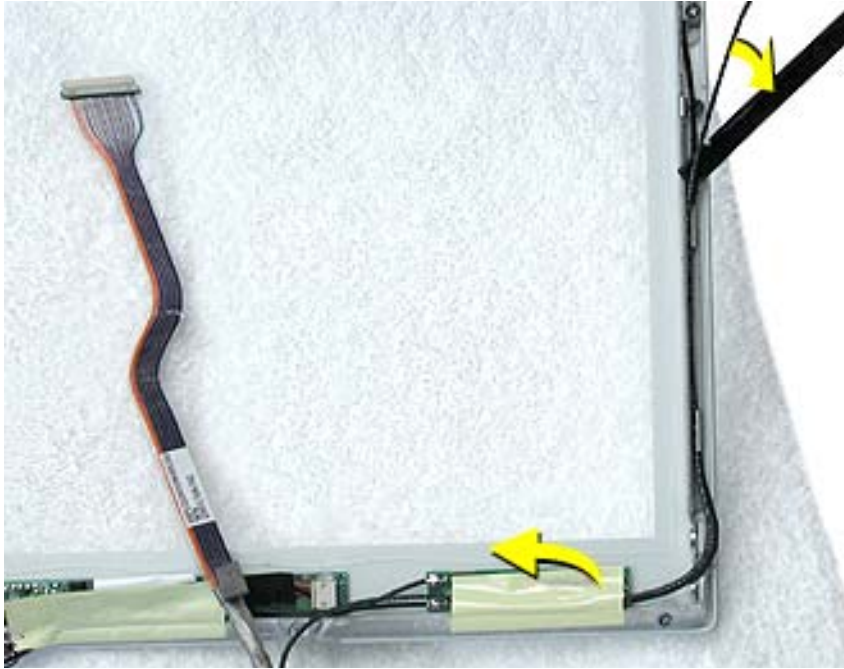
5. **Warning: When removing the tape and spiral tube that bundles the microphone cable to the LCD cable, be careful not to strain or pinch the cables.**

   Replacement Note: When installing the replacement microphone cable, reuse the spiral tube to bundle the microphone cable to the LCD cable. However, use new tape when bundling the cables together.

   Separate the microphone cable from the LCD cable by removing the tape, and uncurling the spiral tube.

6. Remove the microphone cable from the assembly.
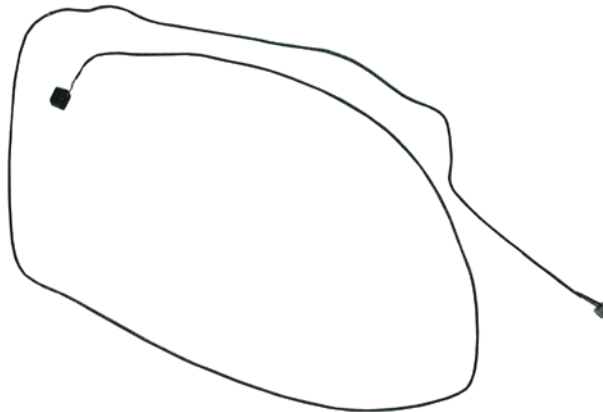
7. Install the replacement microphone cable, and reassemble and test the computer.

Bezel Brace with Clutch Assembly

Tools

- Soft cloth
- #0 Phillips screwdriver

Replacement Note: If the tape you remove from this assembly is worn and cannot be reused, use new Kapton tape (Apple part number 922-5025).

Preliminary Steps

Before you begin, remove the following:
- Battery
- Bottom case
- Keyboard and RAM shield
- Airport Card
- Top case
- Top shield
- Display module
- LCD panel
- Display clutch cover
- Inverter board
- Antenna board
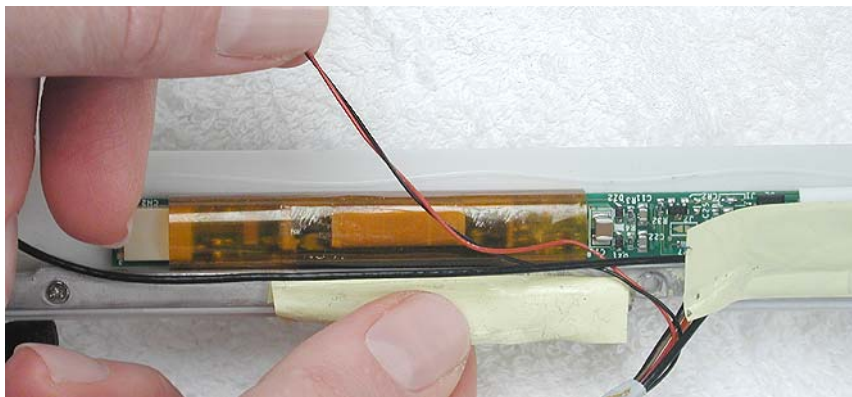- Reed switch board
- Microphone cable

Procedure

Note: Although your bezel assembly might appear somewhat different than shown, the steps to follow are the same.

1. With the bezel assembly lying on a soft cloth, remove the three pieces of tape.

2. Remove the two 5- mm long Phillips screws at the left bezel brace.

3. At the right bezel brace, remove the two Phillips screws:
   • one 5-mm long screw near the top of the right brace
   • one 3-mm long screw near the middle of the right brace

   Replacement Note: When installing the replacement bezel brace with clutch assembly, make sure the shorter 3-mm long screw is installed in the middle of the right bezel brace, as shown.

4. Remove the two 5- mm long Phillips screws at the bottom bezel brace.
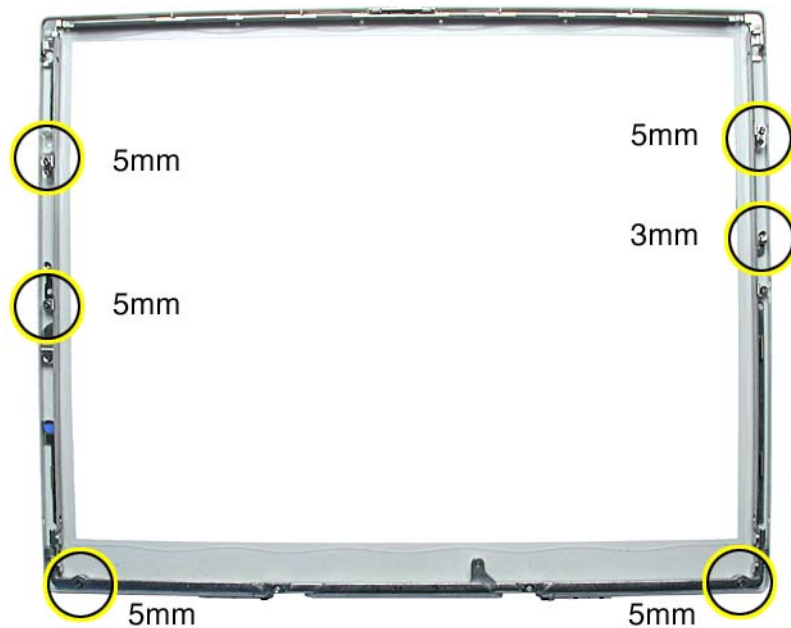
5. Lift the 3-sided bezel brace with clutch assembly off of the bezel.

6. Install the replacement bezel brace with clutch assembly, and reassemble and test the computer.

Service Source

Additional Procedures

iBook (14.1 LCD 16 VRAM)
iBook (14.1 LCD 32 VRAM)
iBook (14.1 LCD 900 MHz 32 VRAM)

Chip Standoff Installation Instructions

The following instructions explain how to install the chip standoff on the logic board in an iBook computer.

Products Covered

This procedure applies to the following products:
- iBook (16 VRAM)
- iBook (Opaque 16 VRAM)
- iBook (32 VRAM)
- iBook (800 MHz 32 VRAM)
- iBook (900 MHz 32 VRAM)
- iBook (14.1 LCD 16 VRAM)
- iBook (14.1 LCD 32 VRAM)
- iBook (14.1 LCD 900 MHz 32 VRAM)

Tools

- ESD mat and wrist strap
- Chip standoff kit

Electrostatic Discharge (ESD) Precautions

Follow these steps to avoid damage from ESD before working inside the computer.

1. Shut down the computer.

2. Unplug all external cables except the power cord.

3. Touch a metal part of the computer to discharge static electricity.

4. Unplug the power cord.

5. Place the computer on a flat surface, preferably covered by an ESD mat.

6. Put on an ESD wrist strap.

7. To avoid static electricity building back up in your body, do not walk around the room until after you have finished working and reassembled the computer.

Installing the Chip Standoff

Warning: Always shut down the computer before opening it to avoid damaging its internal components or causing injury. After you shut down the computer, the internal components can be very hot. Let the computer cool down before continuing.

1. Place the computer on a clean, flat surface.

2. Shut down the computer and wait thirty minutes before continuing.

3. Disconnect the power cord and any other cables connected to the computer.

4. Refer to the Take Apart chapter to remove the following parts to access the installed logic board:
    *   Battery
    *   Bottom Case
    *   Bottom Shield

5. Locate the large chip on the bottom of the logic board. It has a square thermal pad covering it.

    Note: The following images are representative of the iBook models.
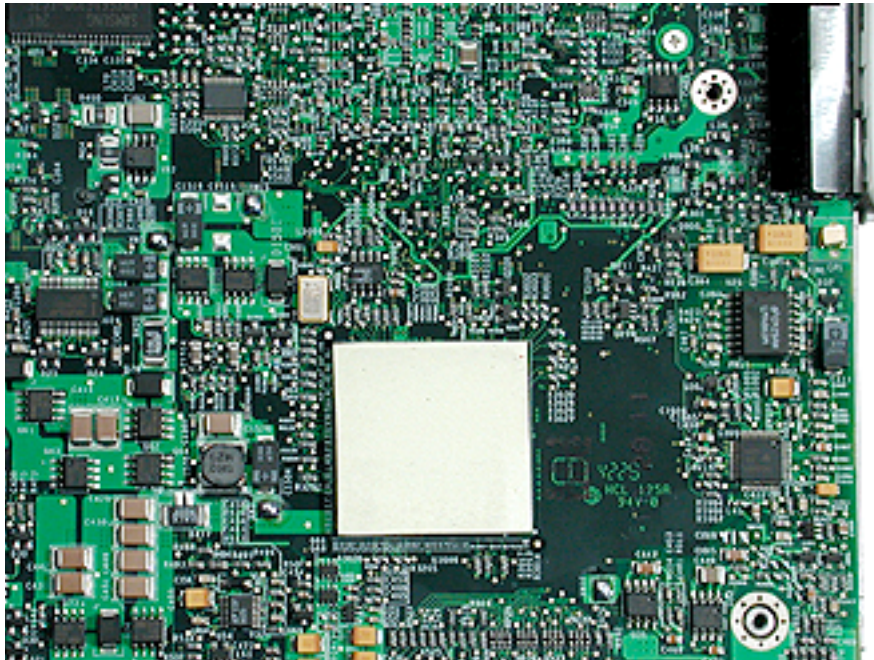
6. Holding the plastic frame of the standoff, peel away and discard all four strips of the tape.
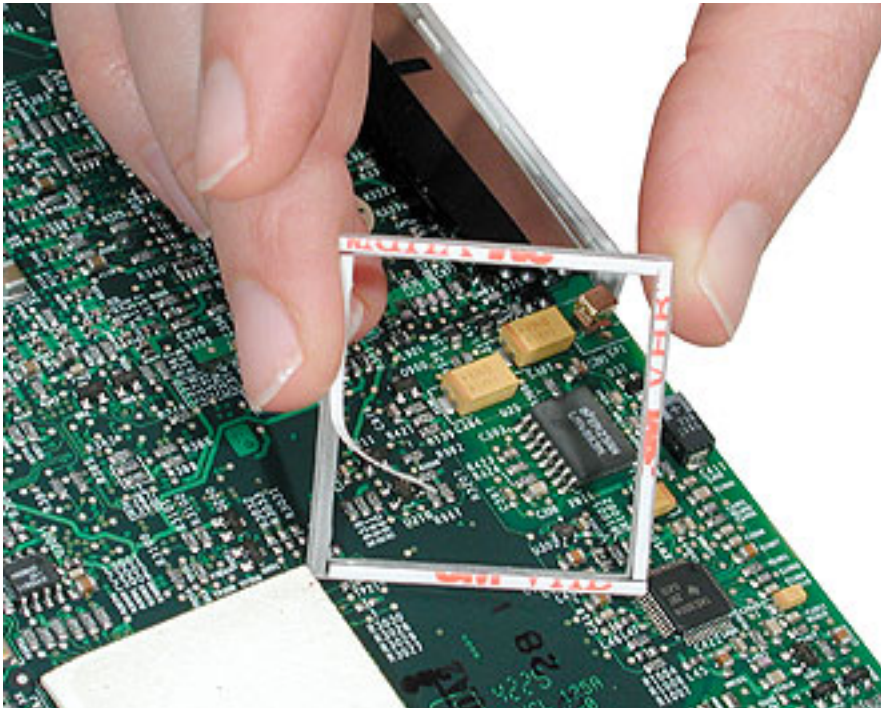
7. Place the sticky side of the standoff onto the logic board so that it frames the outer edge of the chip and is level.

8. Press down on the four corners of the standoff.
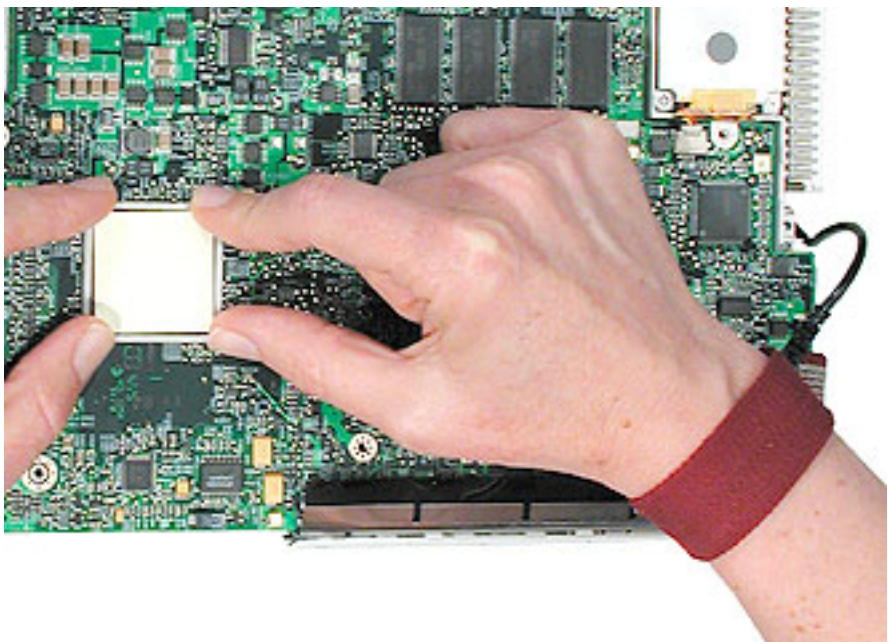
Reassembling the Computer

1. Replace the bottom shield, bottom case, and battery.

2. Reconnect the power cord and any other cables that were connected and restart the computer.

   Note: You may need to reset the date and time (using the Date & Time control panel).

   Warning: Never turn on the computer unless all of its internal and external parts are in place and it is fully reassembled. Operating the computer when it is missing parts can damage the computer or cause injury.

Steps to Follow Before Ordering a Logic Board Replacement

Before ordering a replacement logic board, first follow this procedure.

Products Covered

This procedure applies to the following products:
- iBook (16 VRAM)
- iBook (14.1 LCD 16 VRAM)

Procedure

1. Check the EEE code label located on the logic board at the memory slot area. The following image shows a sample of an EEE code label showing the code of "R0F."

2. If the EEE code begins with the letter "R," replace the board with the matching board shown in the following table:

iBook Model	MHz	Logic Board with EEE Identifier
iBook (16 VRAM)	600	661-3311 with R0F, R0H, or R0K
iBook (16 VRAM)	700	661-3312 with R0G, R0J, R0L, or R0W
iBook (14.1 LCD 16 VRAM)	700	661-3313 with R0M, R0N, R0U, R0X

3. If the EEE code begins with any other letter, and you are replacing the board for a symptom other than a video symptom, replace the board like-for-like based on the following EEE codes:

iBook Model	MHz	Logic Board with EEE Identifier
iBook (16 VRAM)	600	661-2673 with MSV, N0U, or N4G
iBook (16 VRAM)	700	661-2674 with MSS, N0V, or N4H
iBook (14.1 LCD 16 VRAM)	700	661-2678 with MST, N0W, N4J

4. If you are replacing the board for a video symptom covered under the Logic Board Repair Extension Program, replace the board based on the iBook computer model and speed:

iBook Model	MHz	Logic Board with EEE Identifier
iBook (16 VRAM)	600	661-3301 with R0F, R0H, or R0K
iBook (16 VRAM)	700	661-3302 with R0G, R0J, R0L, or R0W
iBook (14.1 LCD 16 VRAM)	700	661-3303 with R0M, R0N, R0U, R0X

Refer to the online FAQ "iBook Logic Board Repair Extension Program" for more details:
   • US, Canada, and Europe: http://www.apple.com/support/ibook/faq/
   • Asia-Pacific: http://www.apple.com.au/support/ibook/faq/

5. After ordering and installing the replacement logic board, refer to the next section to determine if a software installation is required.

Determining if a Software Installation is Required after Logic Board Replacement

The following instructions explain how to check the logic board to determine if a software installation is required.

Products Covered

This procedure applies to the following products:
- iBook (16 VRAM)
- iBook (14.1 LCD 16 VRAM)

Procedure

1. Check the EEE code label on the board at the memory slot. The following image shows a sample of an EEE code label showing the code of "R0F":
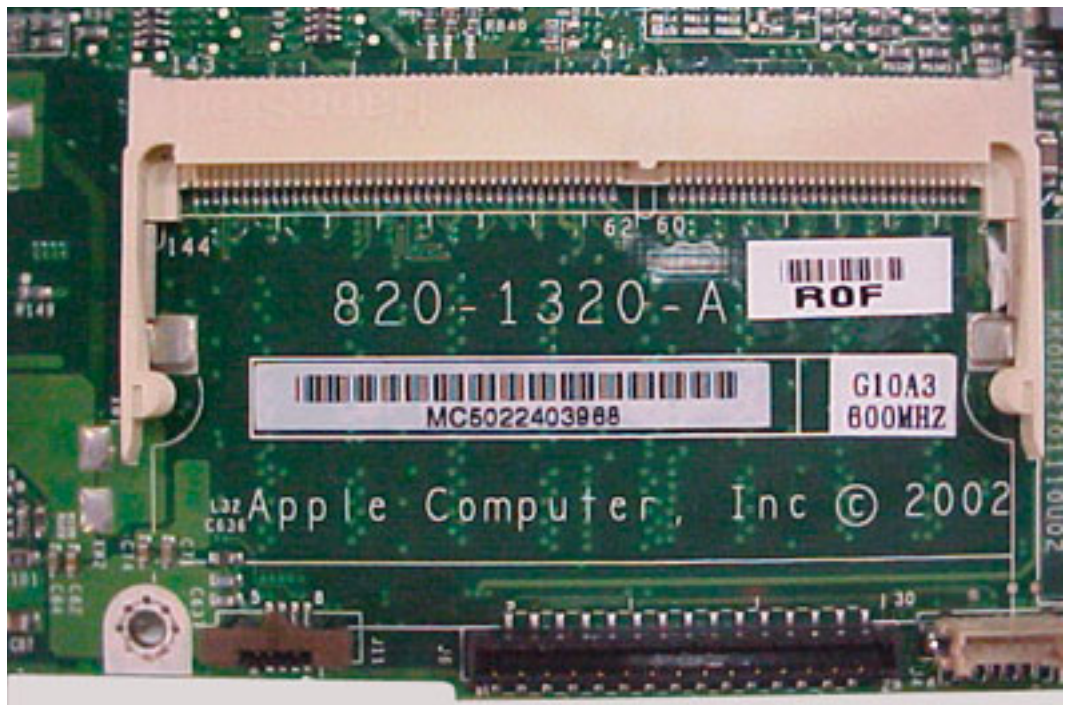
2. Compare the EEE code to those shown in the table for your iBook model:

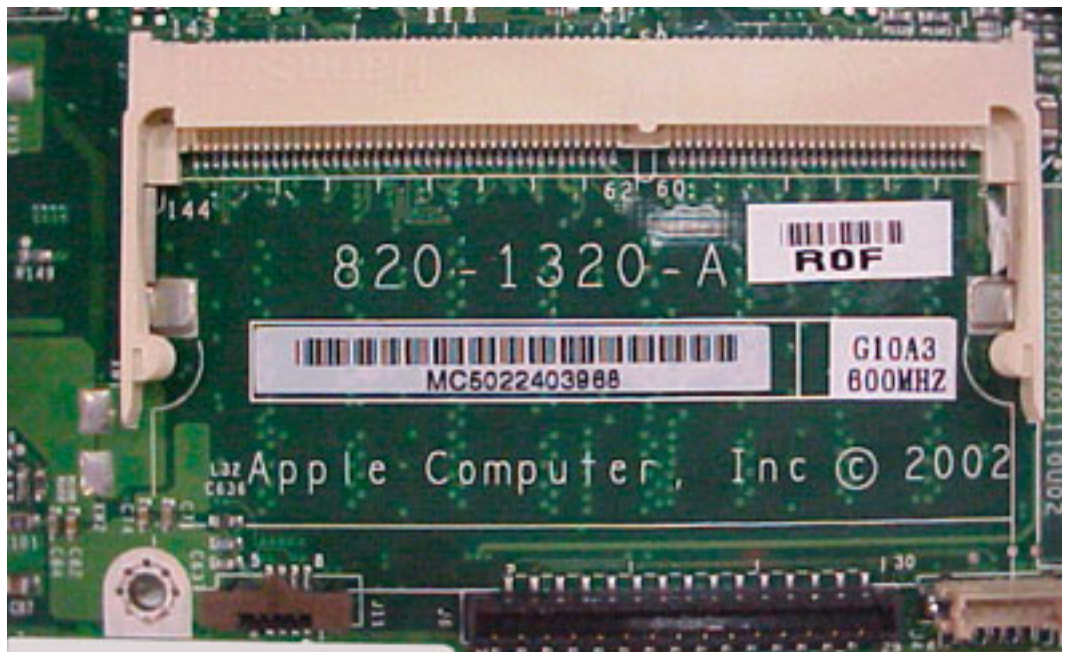| iBook Model	MHz	Old Logic Board with EEE Identifier	New Logic Board with EEE Identifier
iBook (16 VRAM)	600	MSV, N0U, or N4G	R0F, R0H, or R0K
iBook (16 VRAM)	700	MSS, N0V, or N4H	R0G, R0J, R0L, or R0W
iBook (14.1 LCD 16 VRAM)	700	MST, N0W, N4J	R0M, R0N, R0U, R0X

3. To determine whether or not a software installation is required,
    • If the EEE code on the board is one of those shown in the third column of the table, titled "Old Logic Board with EEE Identifier," then no software installation is required. Stop here.
    • If the EEE code on the board is one of those shown in the fourth column of the table, titled "New Logic Board with EEE Identifier," restart the computer and check for video distortion.
      – If there is no video distortion, then no software installation is required. Stop here.
      – If there is video distortion, go to the next step to install the software.

4. Confirm that a CD set was included with the replacement logic board.

5. **Important:** When installing the system software, use only the operating system software disc set that came with the replacement logic board. Start up the computer from the CD that matches the OS on the iBook.
    • If the computer was running an earlier version of Mac OS X, update the operating system to Mac OS X version 10.3.2 using a CD from the disc set.
    • If the computer was running Mac OS 9.2.2 or earlier, update the operating system to the version of Mac OS 9.2.2 that is compatible with the new logic board. Install the ATI update using the iBook Logic Board Update CD for Classic and Mac OS 9 from the disc set.

    Important: Using the CD, follow instructions on the startup screen to "Upgrade" the system. Do not perform a "Clean install" or "Erase install."

    Note: When you use the iBook Logic Board Update CD for Classic and Mac OS 9, once the installation is complete, the system restarts into Mac OS 9, not Mac OS X since OS 9 is where the installation occurred. In this case, select Mac OS X as the startup disk from the OS 9-booted system. Go to the control panel and select the startup disk. Select Mac OS X as the startup disk in the computer.

6. Find the Acrobat Reader icon in the OS X application folder, and open the application. If it doesn't open, delete the generic icon from the folder.

    Note: Acrobat Reader may get deleted when updating from 10.1.x to 10.3.2. If so, a generic icon for Acrobat Reader might remain in the Applications folder, but you might not be able to open Acrobat Reader. This condition is less likely when updating

from 10.2 to 10.3.2. Use the Acrobat Reader that resides in the "Applications (Mac OS 9)" folder. (This version works for Mac OS X also).

7. To verify correct board operation, make sure you run Mac Test Pro (Power Mac G3) 7.5.2 or later. If you do not have this version on disc, you can download it from the Service Source main page. Just click the Disc Images link from this site:

   http://service.info.apple.com/index.html

8. Verify that the replacement logic board operates correctly by starting up the computer and checking that there is no distorted video symptom. If distorted video remains, install Mac OS X, version 10.2.2 or later from the disc set that came with the replacement logic board.

9. If the replacement logic board came with a software disc set, be sure to return the disc set to the customer.

Service Source

Troubleshooting

iBook (14.1 LCD 16 VRAM)
iBook (14.1 LCD 32 VRAM)
iBook (14.1 LCD 900 MHz 32 VRAM)

Symptom Charts

How to Use the Symptom Charts

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to the product.

The steps to solve a symptom are listed sequentially. You might not need to perform every step before the symptom is solved. Start with the first step, and then test for the symptom. If the symptom persists, replace any modules you removed, go to the next step, and test again. Continue down the list until the symptom is solved.

AirPort Card

AirPort Card not recognized

1. Use Software Update in Mac OS X system preferences (or the Software Update control panel in Mac OS 9) or see the Apple Software Updates web page to make sure the latest version of AirPort software is installed.

2. If using Mac OS 9, select "Mac OS All" in the Extensions Manager control panel and restart.

3. Reseat AirPort Card and make sure AirPort antenna cable is fully connected.

4. Remove and reinstall the AirPort software.

5. Replace with known-good AirPort Card.

6. Replace logic board.

Battery

The battery won't charge

1. Remove any connected peripherals.

2. Try known-good power outlet.

3. Try known-good power adapter and power cord.

   Note: Verify that power adapter connector glows amber or green. If the power adapter light is green, turn over the computer and press the battery button. The

battery lights should glow green and stay on if the power adapter is operating correctly.

4. Try known-good battery.

5. Reset the power manager by pressing the key combination Control-Option-Shift-power.

   Warning: Make sure you do not hold down the "fn" key when resetting the power manager.

   Warning: Resetting the power manager will permanently remove a RAM disk, if present, and all of its contents. You will also need to reset the date and time (using the Date & Time control panel).

6. Replace battery transfer board.

7. Replace logic board.

Error Beeps

The computer automatically performs a power-on self test when it is turned on after being fully shut down (not a restart). This section describes what to do if beeps are heard during the startup.

Note: The iBook (14.1 LCD 16 VRAM) has a memory expansion slot that accepts a 1.25-inch (or shorter) PC-100 compliant, SO-DIMM memory card. Refer to the Memory Replacement instructions for removal and installation.

Computer beeps once at startup

1. One beep means that no RAM is detected.

2. If a RAM card is installed in the expansion slot, remove it and put in known-good and compatible RAM and restart.
   • If symptom does NOT repeat, replace RAM card.
   • If symptom repeats, replace logic board.

3. If no RAM card is installed, replace logic board.

Computer beeps twice at startup

1. Two beeps means that EDO memory is installed in the expansion slot. The iBook does not accept EDO memory.

2. Replace RAM card with known-good and compatible RAM and restart.
   • If symptom repeats, replace logic board.

Computer beeps three times at startup

1. Three beeps means that no RAM banks passed memory testing.

2. If a RAM card is installed in the expansion slot, remove it and put in known-good and compatible RAM and restart.
    - If symptom does NOT repeat, replace RAM card.
    - If symptom repeats, replace logic board.

3. If no RAM card is installed, replace logic board.

Computer beeps four times at startup

1. Four beeps indicates a bad checksum for the remainder of the boot ROM. The ROM (which is located on the logic board) is bad.

2. If a RAM card is installed in the expansion slot, remove it and put in known-good and compatible RAM and restart.
    - If symptom does NOT repeat, replace RAM card.
    - If symptom repeats, replace logic board.

3. If no RAM card is installed, replace logic board.

Related articles:

58442: Power On Self-Test Beep Definition - Part 2

95136: iBook (Dual USB): Installing or Replacing Memory

Hard Drive

Hard drive will not initialize

1. Boot from iBook Software Install CD and see if the hard drive mounts on the desktop.

2. If in Mac OS X, boot from the Mac OS X software install CD. Under the File menu, select Disk Utilities and initialize the disk or run Disk First Aid.

3. If in Mac OS 9, launch Drive Setup and update hard drive driver.

4. If no hard drive is found in Drive Setup, verify the hard drive cable connections.

5. Replace hard drive cable.(This is the same cable that attaches to the optical drive.)

6. Replace hard drive.

    Important: If the computer is under warranty and data recovery is required, refer to Article 31077: Hard Drive Data Recovery & Warranty Implications, for important information.

The internal hard drive does not spin

1. Disconnect any connected peripherals.

2. Try known-good power outlet.

3. Try known-good power adapter and power cord.

4. Boot from a Mac OS system CD.

5. Verify Drive Setup does not recognize the hard drive.

6. Verify cable connections.

7. Replace hard drive cable.

8. Replace hard drive.

Keyboard

No response from any key on keyboard

1. Remove any connected peripherals.

2. Boot from a Mac OS system CD to verify that it is not a software problem.

3. Turn off the computer. Disconnect the keyboard connector and inspect connectors.

4. Replace keyboard.

5. Replace logic board.

The keyboard lock is damaged or won't lock

1. Verify that keyboard is installed properly so the lock lines up with the notch in the top case.

2. Replace keyboard.

Modem

No modem dial tone

1. Check that the correct modem is selected. In Mac OS X, check Network Setup. In Mac OS 9, check the Modem control panel.

2. Verify known-good analog (not digital) telephone line.

3. Verify known-good RJ11 telephone cable.

4. Verify RJ11 cable is not plugged into Ethernet port.

5. Inspect RJ11 connector and modem port for pin damage.

6. Verify RJ11 telephone cable is firmly installed in the modem port.

7. If using Apple Remote Access, select Ignore Dial Tone in the Modem control panel. If the modem connects with this settings selected, try another phone line. If using a terminal or communications program, enter atx1 to disable tone detection. To reset the modem back to the factory settings, enter atz.

8. Verify modem 2-pin connector is plugged into modem correctly.

9. Replace the modem 2-pin connector cable.

10. Replace modem.

Optical Drive

The optical drive does not accept CD or DVD disc (mechanical failure)

1. Verify disc is not warped.

2. Verify disc is properly seated in the carrier.

3. Replace optical drive.

The disc icon does not show up on the desktop, or a dialog box appears to initialize disc

1. Verify the correct type of disc is being used.

2. Try cleaning the disc. It may not mount if dirty or scratched.

3. Try a different disc.

4. If using Mac OS 9, select "Mac OS All" in the Extensions Manager control panel and restart.

5. Reseat optical drive cable.

6. Replace optical drive cable. (This is the same cable that attaches to the hard drive.)

7. Replace optical drive.

Ports

The FireWire or USB port is not recognizing devices

1. Completely shut down, then press the power button to start the computer.

2. Use Software Update in Mac OS X system preferences (or the Software Update control panel in Mac OS 9) to verify that the latest software is installed.

3. Use Apple System Profiler to verify that the computer is recognizing the bus.

4. For USB, test ports with an Apple keyboard or mouse.

5. For FireWire, test by connecting another computer in FireWire Target Disk Mode. Refer to article 58583: How to Use FireWire Target Disk Mode.

6. Verify that drivers are installed properly for third party, if needed.

7. If in Mac OS 9, boot with Mac OS All extension set.

8. Try other port if available.

9. Try a different cable.

10. If self powered make sure that the power supply is connected and device's LED indicates that it is getting power.

11. Replace logic board.

A USB device not recognized by computer

Note: If you are trying to use a serial device with a USB/Serial adapter, check with the manufacturer of the adapter for compatibility.

1. Completely shut down, then press the power button to start the computer.

2. Try known-good Apple USB keyboard or mouse to verify the port is working properly.

3. Verify current driver for the device is installed.

4. If a camera, turn on camera after initiating download with camera application.

5. Try the other USB port.

6. Try different USB device on same port.

7. Eliminate chain by plugging in only one peripheral.

8. If in Mac OS 9, select "Mac OS All" in the Extensions Manager control panel and restart.

9. If in Mac OS 9, troubleshoot extensions and perform a clean installation of system software.

10. Replace logic board.

Sound

Distorted sound from speakers

1. Verify sound is correct with external speakers/headphones. If sound is correct, replace top case.

2. In Mac OS X check balance.

3. Compare same sound with two different units to make sure that sound is actually distorted.

4. Replace top case.

No sound from speaker(s)

1. Use the Software Update control panel to verify that the latest audio update has been installed.

2. Press the F3 key (with the fn key pressed and not pressed) to verify that mute mode is not enabled.

3. Press the F4 or F5 key (with the fn key pressed and not pressed) to check the volume setting.

4. Verify no external speakers or headphones are plugged in.

5. In Mac OS 9, check the speakers tab on the Sound control panel to confirm that the software is correctly seeing that there are no external speakers or headphones connected.

6. Shutdown computer and restart.

7. Reset PRAM (Press the power button, then hold down the Option-Command-P-R keys until you hear the startup chime at least one additional time after the initial startup chime).

8. Verify that the speaker cable is connected properly to logic board.

9. Replace top case.

10. Replace logic board

Related article:

58463: iBook: Sound Capabilities

Startup

The computer will not power on

1. Remove any connected peripherals.

2. Try known-good power outlet.

3. Try known-good power adapter and power cord.

4. Remove battery.

5. Press Caps Lock key to see if light on key comes on. If it does, hold power button down for six seconds to shut down the computer and restart.

6. Reset the power manager by pressing the key combination Control-Option-Shift-power.

   Warning: Make sure you do not hold down the "fn" key when resetting the power manager.

   Warning: Resetting the power manager will permanently remove a RAM disk, if present, and all of its contents. You will also need to reset the date and time (using the Date & Time control panel).

7. Disconnect keyboard completely. Inspect connectors. Restart with keyboard disconnected.

8. Remove any additional RAM

9. Remove AirPort Card.

10. Try known-good DC board.

11. Verify power button is connected properly to logic board, if power button is not functioning correctly or damaged, replace the top case.

12. Replace logic board.

At startup, a dialog box comes up stating: "kernel panic" in Mac OS X or "Built-in memory test has detected an error" in Mac OS 9

1. If a RAM card is installed in the expansion slot, remove it and restart.
   • If symptom repeats, replace logic board.
   • If symptom does not repeat, replace RAM card with known-good RAM card and restart.

2. If no RAM card is installed, replace logic board.

Related article:

   95136: iBook (Dual USB): Installing or Replacing Memory

Display

No display, or dim display, but computer appears to operate correctly

1. Remove any connected peripherals.

2. Try known-good power outlet, power adapter and power cord.

3. Press F2 (with the fn key pressed and not pressed) to increase the screen brightness setting.

4. Reboot the computer—hold down the Control and Command keys and press the Power button, or press and hold the Power button for 5 to 10 seconds to shut down the computer, then press the Power button to restart.

5. Connect an external display, and check for video on external display.

- If video is fine on external display, replace LCD panel.
- If video symptom is same on external display, replace logic board.

6. Verify backlight cable and LVDS cable connections are seated properly and that the cables are not damaged (refer to display assembly replacement instructions).

7. Replace display assembly.

8. Replace logic board.

When displaying a single color over the screen area, the LCD panel shows one or more pixels that are not properly lit

Active-matrix LCD technology uses rows and columns of addressable locations (pixels) that render text and images on screen. Each pixel location has three separate subpixels (red, green, and blue) that allow the image to be rendered in full color. Each subpixel has a corresponding transistor responsible for turning the subpixel on or off.

There are typically millions of these subpixels on an LCD display. For example, the LCD panel used in the Apple Cinema HD display is made up of 2.3 million pixels and 6.9 million red, green, and blue subpixels. Occasionally, a transistor does not work perfectly, which may result in the affected subpixel being turned on (bright) or turned off (dark). With the millions of subpixels on a display, it is quite possible to have a low number of faulty transistors on an LCD. Therefore, a certain number of subpixel anomalies is considered acceptable. Rejecting all but perfect LCD panels would significantly increase the retail price for products using LCD displays. These factors apply to all manufacturers using LCD technology—not just Apple products.

To determine whether or not the display has an acceptable number of pixel anomalies, follow the steps below:

1. Set the display image to one of the following colors: all-white display, all-red display, all-green display, or all-blue display.

2. Using a jeweler's loupe, pocket microscope, or other magnifying device, identify and count each subpixel anomaly:
   - Bright subpixel anomaly = subpixel that is always on
   - Dark subpixel anomaly = subpixel that is always off

3. **Important:** Check the number of subpixel anomalies with the following chart:

LCD Size (inches)	Acceptable Number of Subpixel Anomalies			Replace the LCD Panel		
	Bright	Dark	Combination	Bright	Dark	Combination
12.1 to 15.2	up to 3	up to 5	up to 7	4 or more	6 or more	8 or more

4. If the number of subpixel anomalies exceeds the acceptable number listed in the chart, replace the LCD panel.

5. If the number of subpixel anomalies is acceptable, explain to the customer that the pixel anomalies are within specifications, and no repair is necessary.

   Important: Do not release the specifications to customers. Instead, inform them that a certain number of subpixel anomalies is considered acceptable, and these factors apply to all manufacturers using LCD technology—not just Apple products.

Display shows scrambled or distorted video

Note: This symptom could also appear as
- unexpected lines on the screen
- intermittent video image
- video "freeze"
- blank screen on startup

1. Remove any connected peripheral devices.

2. Connect an external display and check if the video distortion still exists.
   - If the distortion still exists, replace the logic board.
   - If the distortion is not present, go to the next step.

   Important: Before ordering or replacing the logic board, read the Additional Procedures chapter for information on board identification.

3. Check the LVDS cable and LCD panel cable for a pinched or damaged cable or poor connection.
   - If the LVDS cable is damaged, replace it.
   - If the LCD panel cable is damaged, replace the LCD panel.
   - If the cables are undamaged, make sure the connectors are fully seated.

4. Remove memory card (if present).

5. Check other cable connections (inverter, backlight, etc.).

6. Replace logic board.

   Important: Before ordering or replacing the logic board, read the Additional Procedures chapter for information on board identification.

   Refer to the online FAQ "iBook Logic Board Repair Extension Program" for more details:
   - US, Canada, and Europe: http://www.apple.com/support/ibook/faq/
   - Asia-Pacific: http://www.apple.com.au/support/ibook/faq/

Video (S-Video and Composite adapter)

No video on an external device

1. Make sure you are using the S-Video and Composite adapter cable.

2. Verify TV or VCR is set up properly with correct source.

3. Try different TV or VCR. Check owner's manual for TV or VCR.

4. Replace adapter cable.

5. Replace logic board.

The display is rolling (PAL instead of NTSC)

1. Make sure you are not using Apple's A/V Video Cable.

2. Make sure you are using the S-Video and Composite adapter cable.

3. If in Mac OS 9, go to Monitors control panel and change the resolution from a PAL setting to an NTSC setting.

4. In Mac OS X, go to the Displays system preference to change the setting.

5. Try a different TV or VCR.

6. Try a different adapter cable

7. Replace logic board.

Display shows ghosting (signal reflection)

1. Verify that cables are correctly installed and firmly seated.

2. Replace video adapter.

Video (RGB adapter)

No video on an external device

1. If in Mac OS 9, in Resolution Control Strip, verify that monitor is being recognized. If so, select resolution.

2. If running Mac OS X, verify that this issue is also in Mac OS 9.

3. Verify monitor that is used in testing is known-good and is supported by this computer.

4. Try known-good RGB adapter.

5. Replace RGB adapter cable.

6. Replace logic board.

Display shows ghosting (signal reflection)

1. Verify that cables are correctly installed and firmly seated.

2. Replace video adapter.

Misc. Symptoms

The computer runs with battery, but not with the power adapter plugged into wall outlet

1. Try known-good power outlet.

2. Try known-good power adapter and power cord.

    Note: Verify that power adapter connector glows amber or green. If the power adapter light is green, turn over the computer and press the battery button. The battery lights should glow green and stay on if the power adapter is operating correctly.

3. Reset the power manager by pressing the key combination Control-Option-Shift-power.

    Warning: Make sure you do not hold down the "fn" key when resetting the power manager.

    Warning: Resetting the power manager will permanently remove a RAM disk, if present, and all of its contents. You will also need to reset the date and time (using the Date & Time control panel).

4. Replace DC board.

5. Replace logic board.

Related article: 88133: iBook (Dual USB): Using PowerBook G4 Adapter

The computer runs when plugged into a wall outlet but not on battery power

1. Reseat battery to verify battery is seated correctly with battery lock engaged.

2. Try known-good charged battery.

3. Reset the power manager by pressing the key combination Control-Option-Shift-power.

    Warning: Make sure you do not hold down the "fn" key when resetting the power manager.

    Warning: Resetting the power manager will permanently remove a RAM disk, if present, and all of its contents. You will also need to reset the date and time (using the Date & Time control panel).

4. Replace battery transfer board.

5. Replace logic board.

The cursor does not move when you are using trackpad

1. Verify that no USB device is connected.

2. Boot from a Mac OS system CD to verify that it is not a software problem.

3. Reset the power manager by pressing the key combination Control-Option-Shift-power.

   Warning: Make sure you do not hold down the "fn" key when resetting the power manager.

   Warning: Resetting the power manager will permanently remove a RAM disk, if present, and all of its contents. You will also need to reset the date and time (using the Date & Time control panel).

4. Check trackpad cable and connection to the logic board (see separate Top Case replacement instructions for location under RAM shield).

5. Replace top case.

6. Replace logic board.

The cursor intermittently does not move or moves erratically

Note: User must touch with the surface of only one finger at a time and point directly down on the trackpad surface.

1. Clean trackpad surface (with computer off, using a non-static-inducing material).

2. Completely shut down, then press the power button to start the computer.

3. Reset the power manager by pressing the key combination Control-Option-Shift-power.

   Warning: Make sure you do not hold down the "fn" key when resetting the power manager.

   Warning: Resetting the power manager will permanently remove a RAM disk, if present, and all of its contents. You will also need to reset the date and time (using the Date & Time control panel).

4. Try unit on battery power. If problem goes away, replace power adapter.

5. Place a Mac OS system CD in the optical disc drive, press the start button and hold down the "C" key. Check the cursor movement, to see if the problem is software.

6. Check trackpad cable and connection to the logic board (see separate Top Case replacement instructions for location under RAM shield).

7. Replace top case.

8. Replace logic board.

The microphone is not working

1. If in Mac OS 9, check the Sound control panel and verify that the selection for input is the built-in microphone.

2. Check the signal level and level meter and adjust the gain.

3. If in Mac OS 9, remove Sound Preferences from the Preferences folder and restart.

4. Reset PRAM (Press the power button, then hold down the Option-Command-P-R keys until you hear the startup chime at least one additional time after the initial startup chime).

5. Verify microphone cable connection to logic board.

6. Replace display assembly (which includes the microphone).

7. Replace logic board.

The latching mechanism that holds the display closed is not working

Note: As the display closes against the top case, a hook in the top of the display housing should be magnetically pulled down into a slot in the top case, and secured. When the latch button is pushed, the hook should release and retract into the display housing, allowing the display to open.

1. Verify hook operation by exercising the latch mechanism.

2. If the hook does not operate properly, replace the display assembly.

3. If the latch or latch button does not operate properly, replace the top case assembly.

AirPort Card installed and received a -3278 error

1. Check to make sure using the latest version of AirPort software.

2. Completely shut down, then press the power button to start the computer.

3. Reseat AirPort Card and make sure AirPort antenna cable is fully connected.

4. Remove and reinstall the AirPort software.

5. Replace with known-good AirPort Card.

6. Replace logic board.

Service Source

Views

iBook (14.1 LCD 16 VRAM)
iBook (14.1 LCD 32 VRAM)
iBook (14.1 LCD 900 MHz 32 VRAM)

Keyboard and Memory Replacement

⊕ �

Two identical #0 Phillips
 3 mm

Bottom Case Replacement
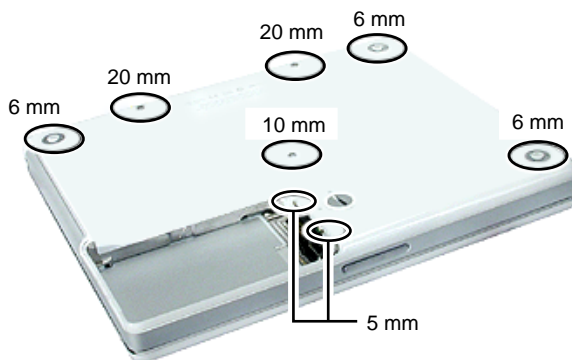
⊕ 〔ணி

Three identical #0 Phillips,
 6 mm long

✪ 〔ணணி

One Torx T8,
 10 mm long

✪ 〔ணணணணி
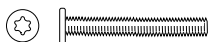
Two identical Torx T8,
 20 mm long

⊕ 〔ண

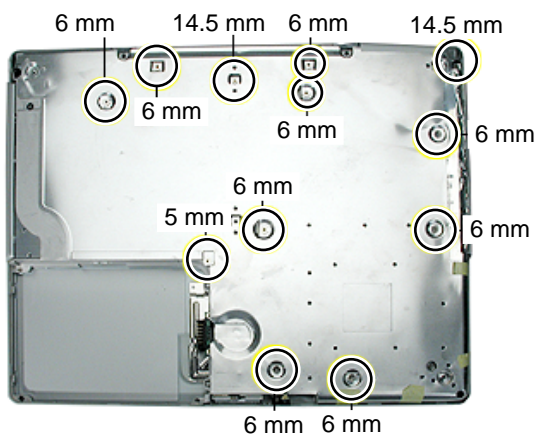Two identical #0 Phillips
 5 mm long

Bottom Shield Replacement
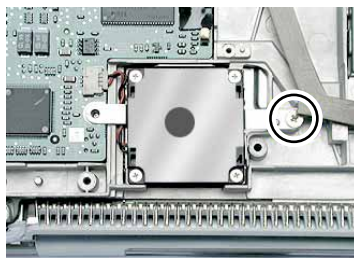
⊕ 〔ணி

Nine identical #0 Phillips
 6 mm long

⊕ 〔ண

One #0 Phillips
 5 mm long

⊕ 〔ணணணணி

Two identical #0 Phillips
 14.5 mm long

Fan Replacement

⊕ 〔ணி

One #0 Phillips
 6 mm long

Top Case Replacement

⊕ |ⴱⴱⴱⴱ|
Three identical #0 Phillips,
3 mm long

⊕ |ⴱⴱⴱⴱⴱⴱⴱⴱⴱⴱ|
Three identical #0 Phillips,
14.5 mm long

⊕ |ⴱⴱⴱ|
Three identical #0 Phillips,
5 mm long

⊕ |ⴱⴱⴱⴱⴱ|
Two identical #0 Phillips,
6 mm long

⊕ |ⴱⴱⴱⴱⴱⴱⴱ|
One #0 Phillips,
10 mm long

5 mm   14.5 mm   14.5 mm
3 mm
14.5 mm
3 mm   3 mm 5 mm   5 mm

10 mm
6 mm   6 mm
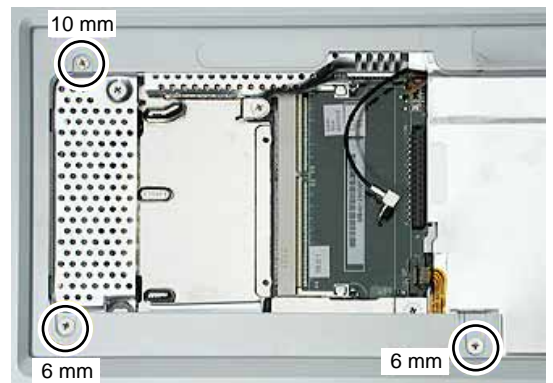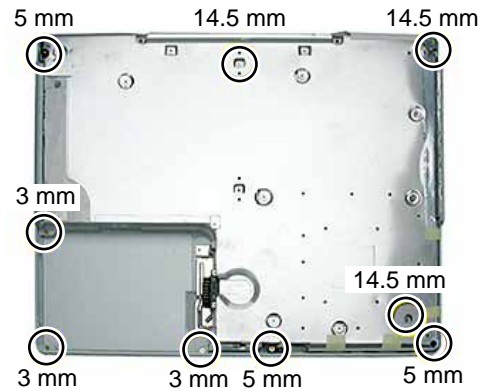
Top Shield Replacement

⊕ |ⴱⴱⴱⴱⴱⴱ|
Nine identical #0 Phillips,
6 mm long

⊕ |ⴱⴱⴱⴱ|
Two identical #0 Phillips,
5 mm long

⊕ |ⴱⴱⴱ|
Five identical #0 Phillips,
3 mm long

6 mm
6 mm   6 mm   6 mm
6 mm
3 mm
3 mm   6 mm
6 mm
6 mm   3 mm
5 mm 5 mm   3 mm
3 mm
6 mm

I/O Bezel Replacement

⊕ |ⴱⴱⴱⴱⴱ|
One #0 Phillips,
6 mm long

Hard Drive Replacement

⊕ |wwwww

One #0 Phillips,
 4.5 mm long

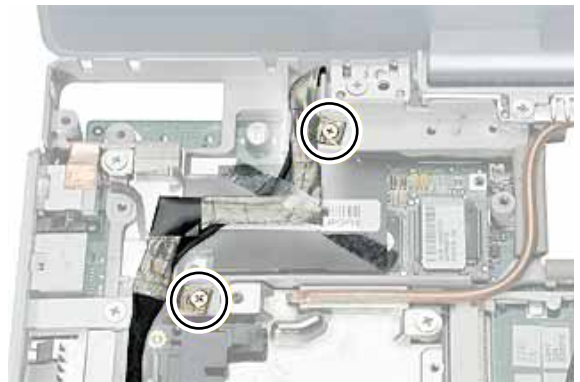Modem Replacement

⊕ |wwww

Two identical #0 Phillips,
 3.5 mm long

Display Module Replacement
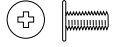
⊕ |wwww

Two identical #0 Phillips,
 3.5 mm long

⊕ |wwwww

Two identical #0 Phillips,
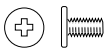 5 mm long

Optical Drive Replacement

⊕ |‖‖‖‖‖‖

Two identical #0 Phillips,
 6 mm long

⊕ |‖

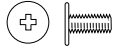Two identical #0 Phillips,
 3 mm long

DC Board Replacement
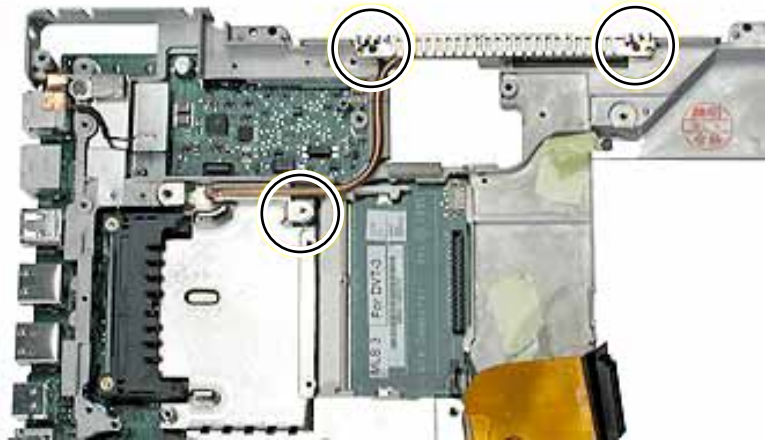
⊕ |‖‖‖‖‖

One #0 Phillips,
 6 mm long

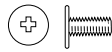# iBook (14.1 LCD 16 VRAM, 32 VRAM) Screw Locator - 5 of 5
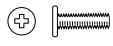
Logic Board Replacement

⊕ |ⵊ

Three identical #0 Phillips,
6 mm long

⊕ |ⵊ

Two identical #0 Phillips,
4 mm long

⊕ |ⵊ

One #0 Phillips,
6 mm long
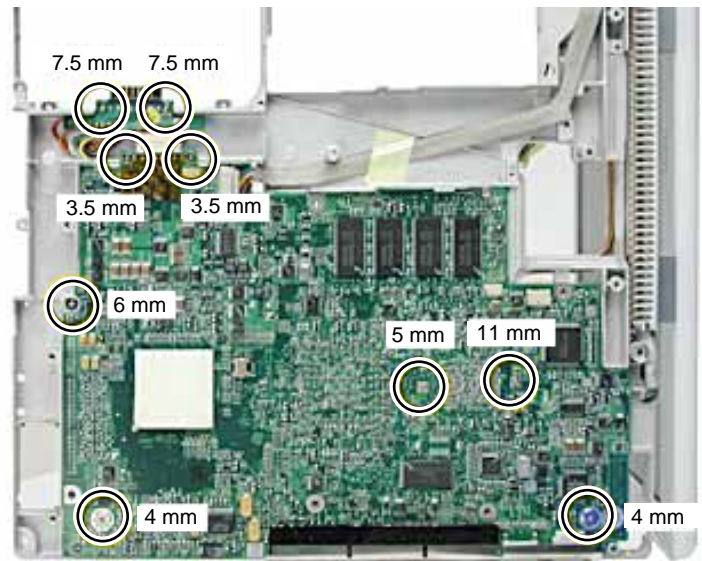
⊕ |ⵊ

Two identical #0 Phillips,
7.5 mm long

⊕ |ⵊ

Two #0 Phillips,
3.5 mm long

⊕ |ⵊ

One #0 Phillips,
5 mm long

⊕ |ⵊ

One #0 Phillips,
11 mm long

7.5 mm   7.5 mm

3.5 mm   3.5 mm

6 mm

5 mm   11 mm

4 mm

4 mm

iBook (14.1 LCD 16 VRAM, 32 VRAM) Screw Reference Sheet

This sheet shows the types of screws used in the iBook (14.1 LCD 16 VRAM), iBook (14.1 LCD 32 VRAM), and iBook (14.1 LCD 900 MHz 32 VRAM) computer. To see where the screws are located in the computer, refer to the Screw Locator in this chapter.

RAM Shield 2 @ 3 mm

Bottom Case 3 @ 6 mm

Bottom Case 2@ 20 mm

Bottom Case 1 @ 10 mm

Bottom Case: Battery 2 @ 5 mm

Bottom Shield 9 @ 6 mm

Bottom Shield 2 @ 14.5 mm

Bottom Shield 1 @ 5 mm

Fan 1@ 6 mm

Top Case: Battery 3 @ 3 mm

Top Case 3 @ 5 mm

Top Case 3 @ 14.5 mm

Top Case: Keyboard 2 @ 6 mm

Top Case: Keyboard 1 @ 8 mm

Top Shield 9 @ 6 mm

Top Shield 5 @ 3 mm

Top Shield 2@ 5 mm

I/O Bezel 1 @ 6 mm

Hard Drive 1 @ 4.5 mm

Modem 2 @ 3.5 mm

Display 2 @ 3.5 mm

Display: Hinge 2 @ 5 mm

Optical Drive 2 @ 6 mm

Optical Drive: Cable 2 @ 3 mm

DC Board 1 @ 6 mm

Logic Board: Heat Spreader 3 @ 6 mm

Logic Board 2 @ 4 mm

Logic Board 2 @ 7.5 mm

Logic Board 1@ 6 mm

Logic Board 2 @ 3.5 mm

Logic Board 1 @ 11 mm

Logic Board 1 @ 5 mm

iBook (14.1 LCD 16 VRAM and 32 VRAM) Main Exploded View

Keyboard
922-5186

RAM-Shield
076-0926

I/O Bezel
922-5561

Top Case
922-5188 (16 VRAM)
922-5437 (32 VRAM)

Display Assembly
661-2692 (16 VRAM)
661-1780 (32 VRAM)

Top Shield
922-5501

Modem 661-2676

Heat Spreader
922-5195

Power Switch Board
922-4751

Hard Drive
30GB 661-2670
40GB 661-2671

Fan 922-5189

Frame 922-5347

Hard Drive
Brackets
076-0936

Optical Drive
CD-ROM 661-2667
CD-RW/DVD-ROM 661-2683
CD-ROM 661-1775
COMBO 661-1776

Sleep Light Board
922-4749

Hard Drive/
Optical Drive Cable
922-5198

Bezel
CD-ROM 922-5565
CD-RW/DVD-ROM 922-4754

SDRAM
128 MB 661-2562
(16 VRAM)
256 MB 661-2563
(32 VRAM)
512 MB 661-2564
128 MB 661-2642
(32 VRAM)
256 MB 661-2643
(32 VRAM)

DC Board
922-5196

Logic Board
661-2678 (16 VRAM)
661-1779 (32 VRAM)

Battery Transfer Board
922-5218

Bottom Shield
922-5502

Bottom Case
922-5187 (16 VRAM)
922-5436 (32 VRAM)

Battery
661-2611

iBook (14.1 LCD 16 VRAM and 32 VRAM) Display Exploded View

Display Housing
922-5329

Display Shield
922-5453

Foil Tape
922-5026

LCD Panel
661-2767

Reed Switch Board
922-5451

Microphone Cable
922-5454

Bezel Brace with Clutch Assembly
922-5370

Antenna Board
922-5452

Inverter Board
922-5019

Display Bezel
922-5562

Clutch Cap, Right
922-5024

Clutch Cap, Left
922-5023

Display Clutch Cover
922-5450
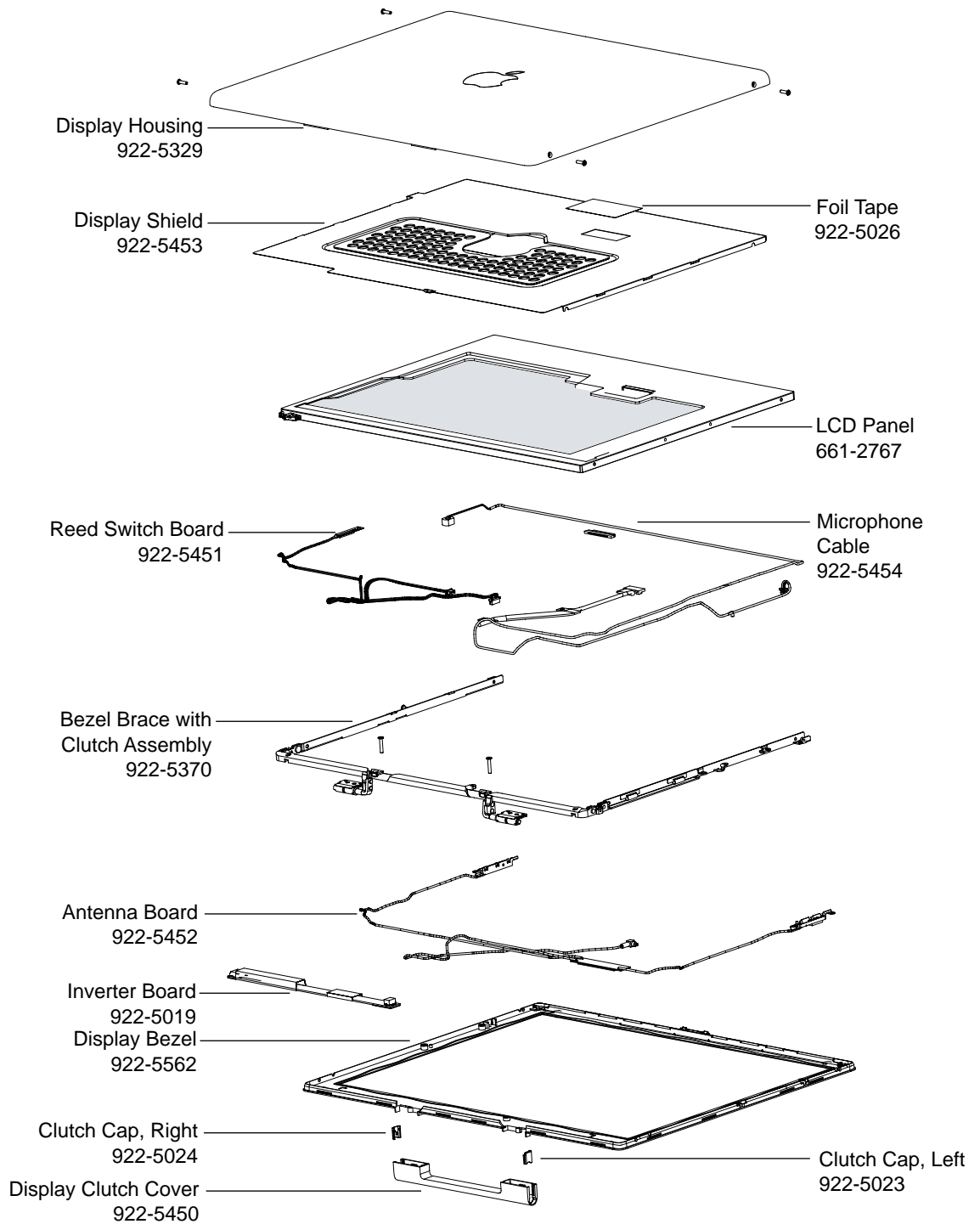
iBook (14.1 LCD 900 MHz 32 VRAM) Main Exploded View

Keyboard
922-5186

Display Assembly
661-2889

RAM-Shield
076-0926

I/O Bezel
922-5938

Top Case
922-5943

Top Shield
922-5501

Modem 661-2676

Heat Spreader
922-5195

Hard Drive
30GB 661-2860
40GB 661-2793
60GB 661-2794

Hard Drive
Brackets
076-0936

Sleep Light Board
922-4749

Hard Drive/
Optical Drive Cable
922-5198

SDRAM
512 MB 661-2564
128 MB 661-2642
256 MB 661-2643

Power Switch Board
922-4751

Fan 922-5189

Frame 922-5347

Optical Drive with Bezel
COMBO 661-2890

DC Board
922-5196

Logic Board
661-2888

Battery Transfer Board
922-5218

Bottom Shield
922-5502

Bottom Case
922-5942

Battery
661-2886

iBook (14.1 LCD 900 MHz 32 VRAM) Display Exploded View

Display Housing
922-5939

Display Shield
922-5453

Foil Tape
922-5026

LCD Panel
661-2767

Reed Switch Board
922-5451

Microphone
Cable
922-5454

Bezel Brace with
Clutch Assembly
922-5370

Antenna Board
922-5452

Inverter Board
922-5019

Display Bezel
922-5940

Clutch Cap, Right
922-5024

Clutch Cap, Left
922-5023

Display Clutch Cover
922-5941