

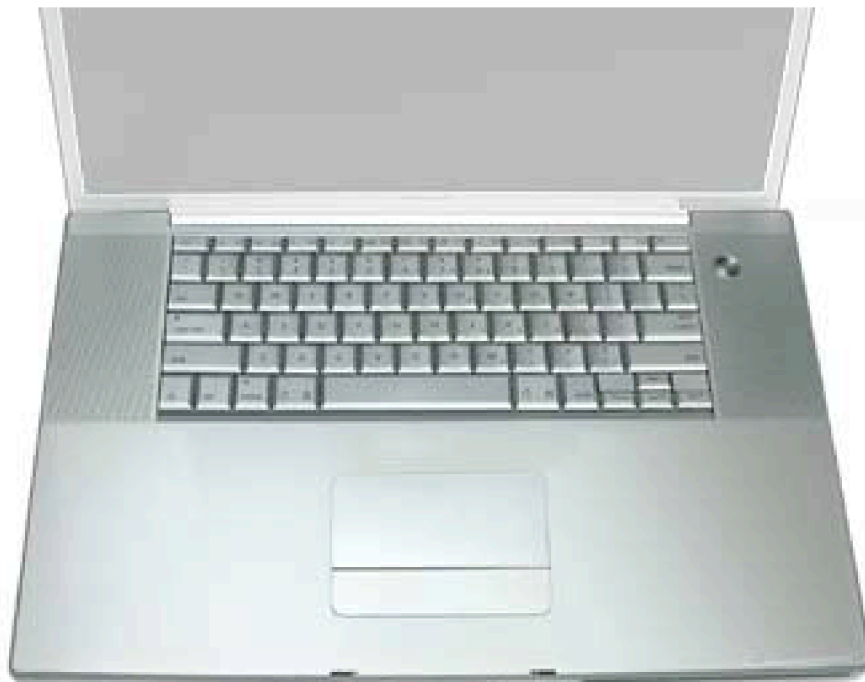
Top Case

Tools

This procedure requires the following tools:

- #0 Phillips screwdriver (magnetized)
- #1 Phillips screwdriver (magnetized)
- Torx T8 screwdriver (magnetized)
- Black stick (or other nonconductive nylon or plastic flat-blade tool)
- Soft cloth
- Multi-compartment screw tray (21 screws to remove the top case)

Part Location



Preliminary Steps

Before you begin, remove the following:

- Battery
- Memory door
- Lower memory card (nearest to battery bay), if present

Procedure

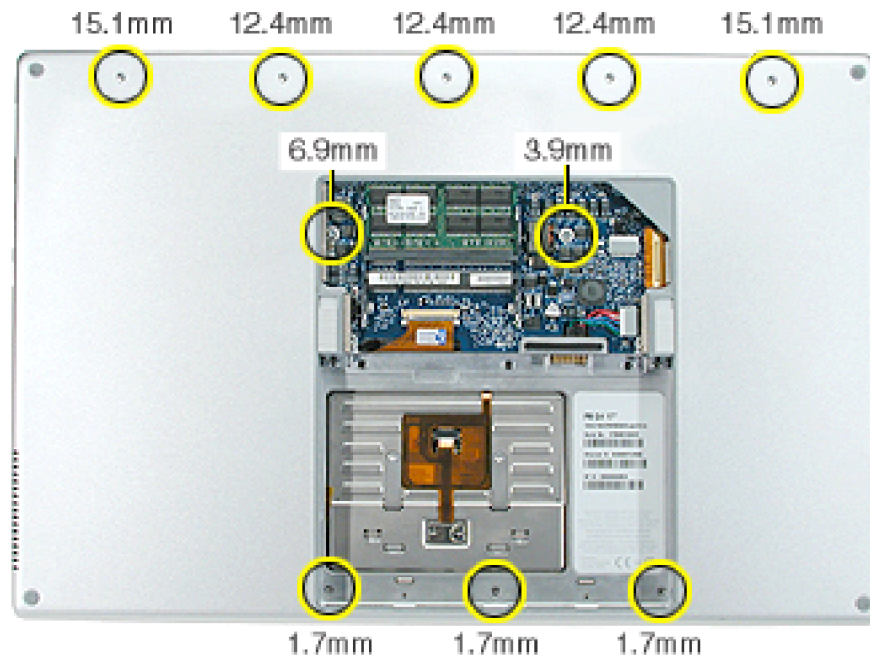
Note: This procedure removes the top case and keyboard assembly. The keyboard is attached to the top case and is not removed.

1. Place the computer face down on a soft cloth.
2. Remove the three screws inside the battery bay.

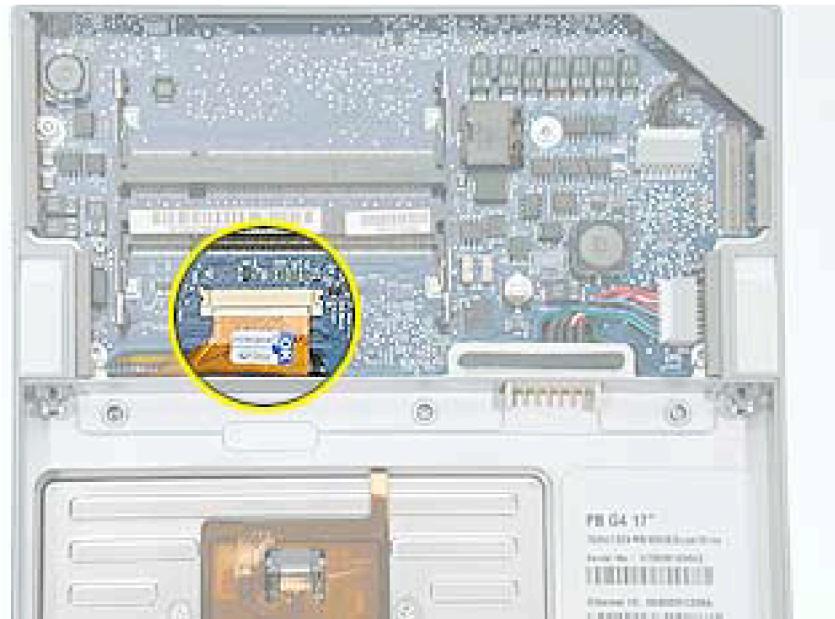
Note: These screws are shorter than on the memory door. Use care not to lose the screws into holes along the battery bay.

Note: Check for lost screws caught by magnets inside the front edge of the battery well.

3. Remove the five screws along the back edge (the two outside screws are longer and have “shoulders”).
4. Remove the two screws on the logic board.

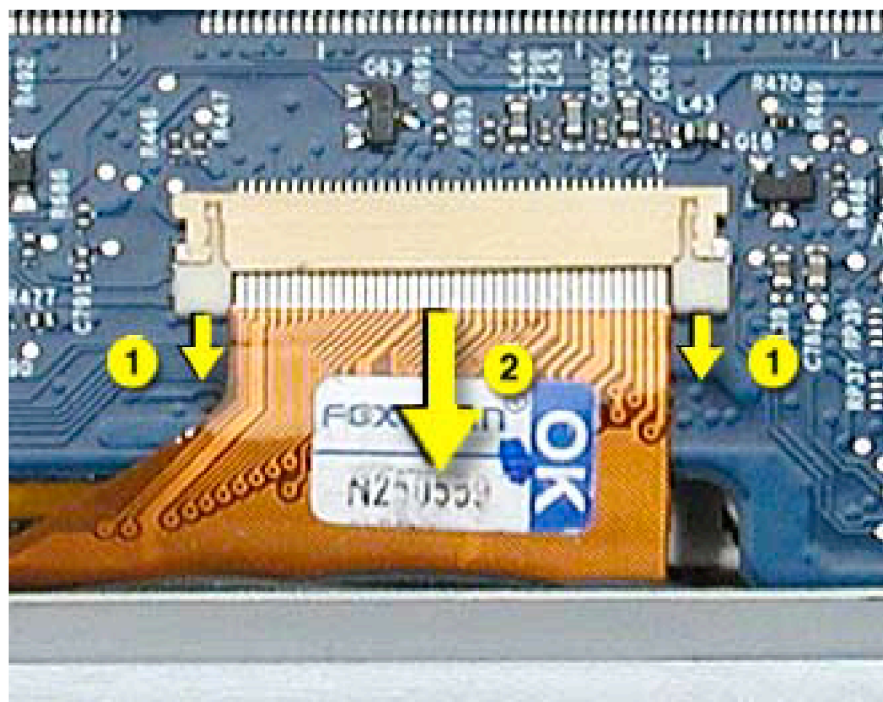


5. Locate the top case flex cable and ZIF connector.

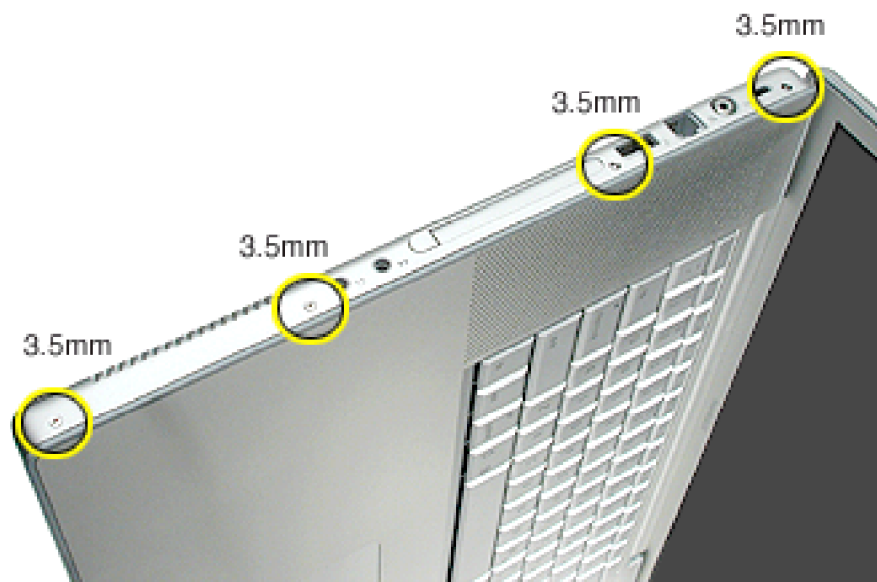
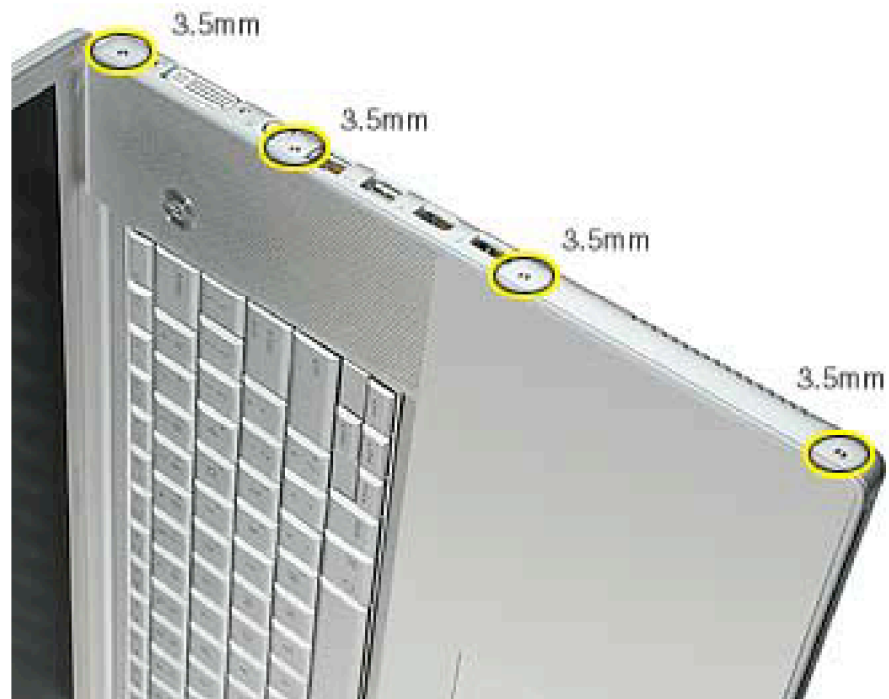


6. Very carefully disconnect and remove the cable from the connector.

Important: The ZIF connector and locking bar are fragile and can easily break if too much force is used. (See “Zero Insertion Force Connectors” heading.)



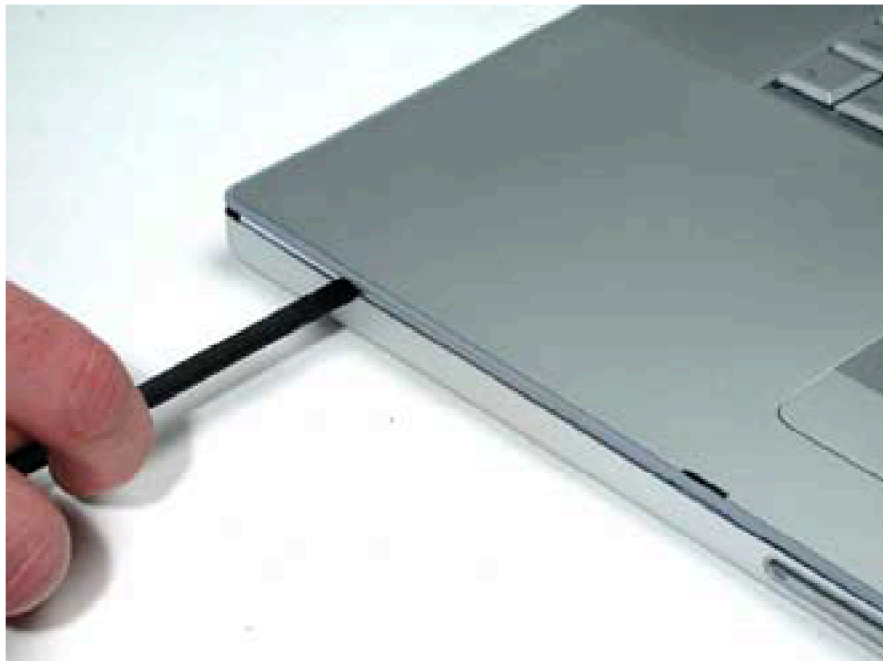
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7. Open the display and place the computer on its side.
 8. Remove four side screws from both sides.



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9. Turn the computer over.
 10. Pull up on the top case along the sides and front until it releases.



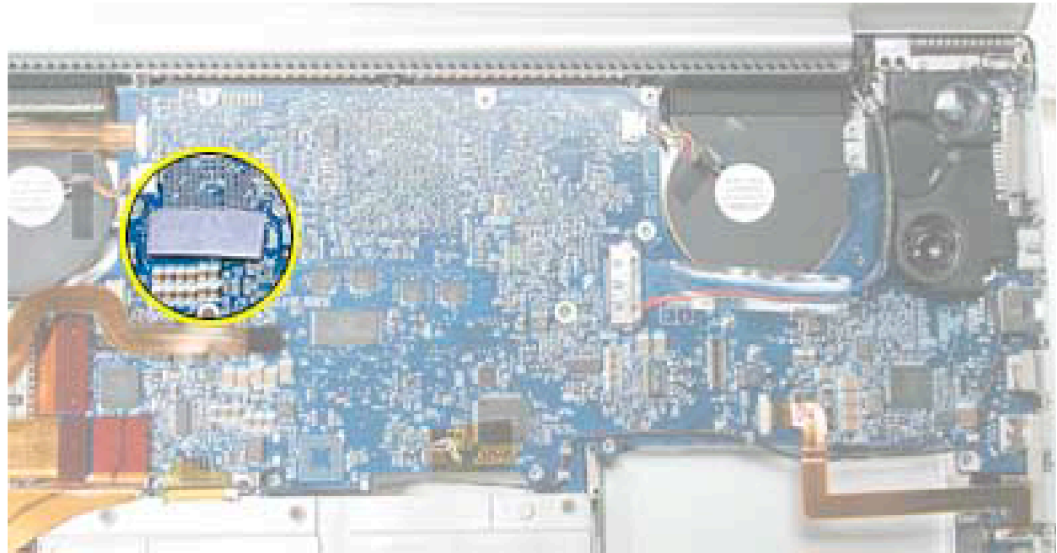
Note: A black stick inserted and twisted under the top case seam may be helpful.



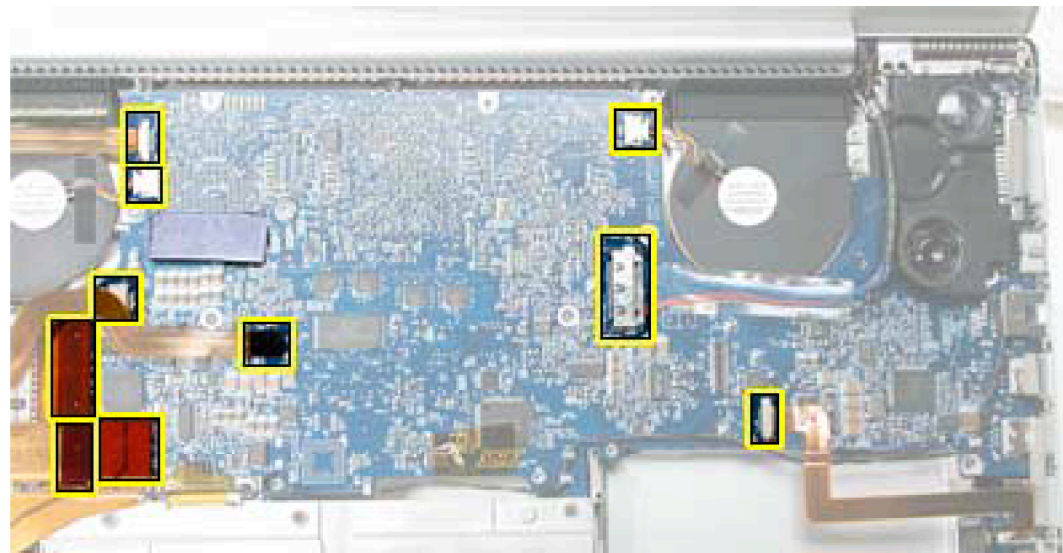
Replacement Procedure

Note: If replacing the top case, remove the keyboard and transfer it to the replacement top case.

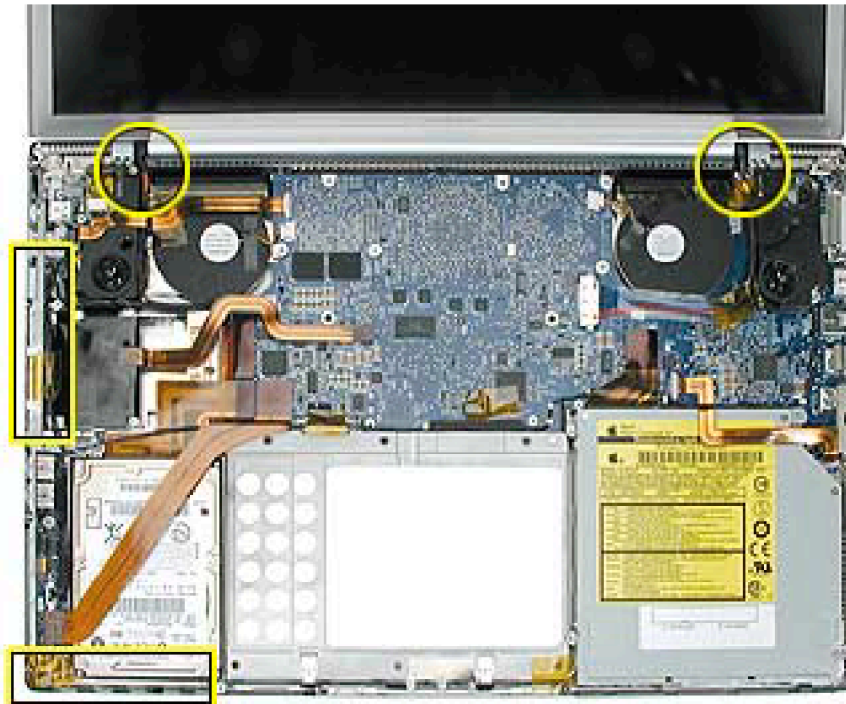
1. Verify the thermal pad shown here is in place. If not, check whether it is stuck under the removed top case and replace. If not, install a new pad.



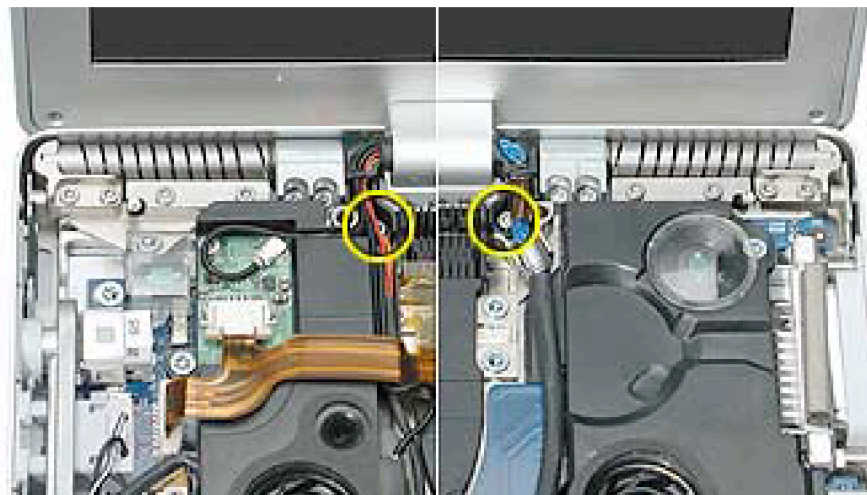
2. Visually check to verify that all cables (highlighted below) are connected and routed correctly with nothing raised up or incorrectly over a component.



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3. Check perimeter wiring, where shown, to verify that it will not be caught or pinched by the top case during replacement.



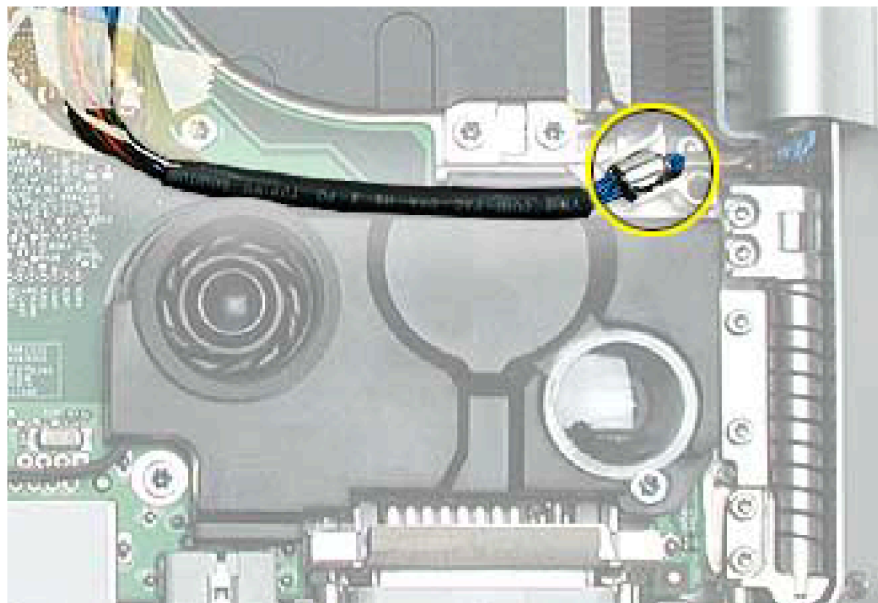
4. Check that display cable brackets are properly seated and secured with screws.



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5. Verify that cables for Bluetooth, AirPort Extreme, inverter and power cable from the DC-in board are routed and seated correctly in channels around the left speaker.



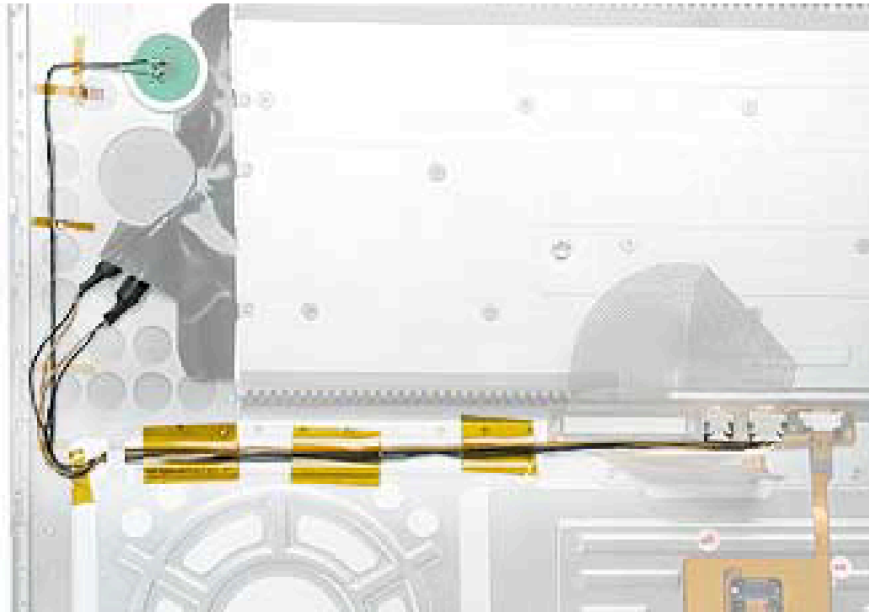
6. Verify that the LVDS cable's metal bead fits into the metal channel (rounded side up so that its teeth secure it) and that the cable is secured into the channel along the right speaker.



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7. Verify that the sleep LED wires route over the notch in the frame (secure with Kapton tape) and along the inside channel away from the front edge so that it will not be damaged when replacing the top case.

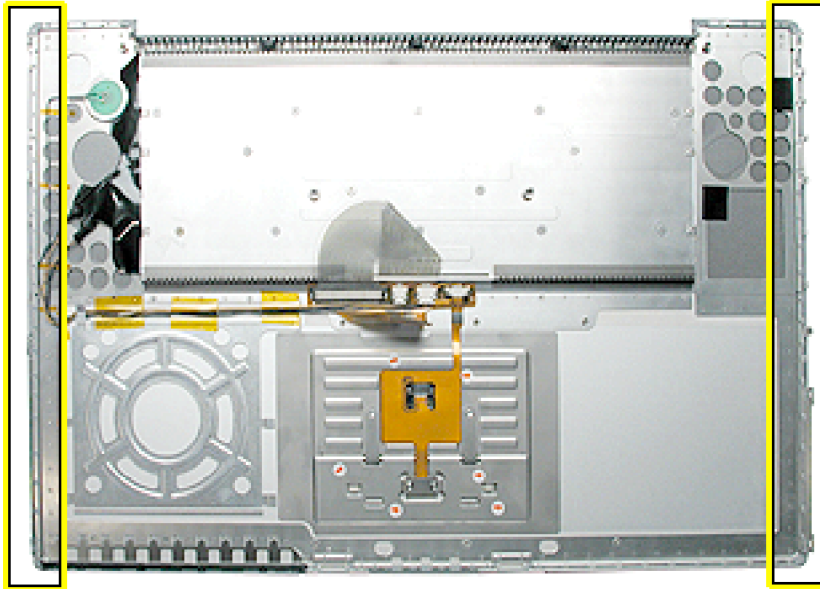


8. On the top case, check cable connections and routing.

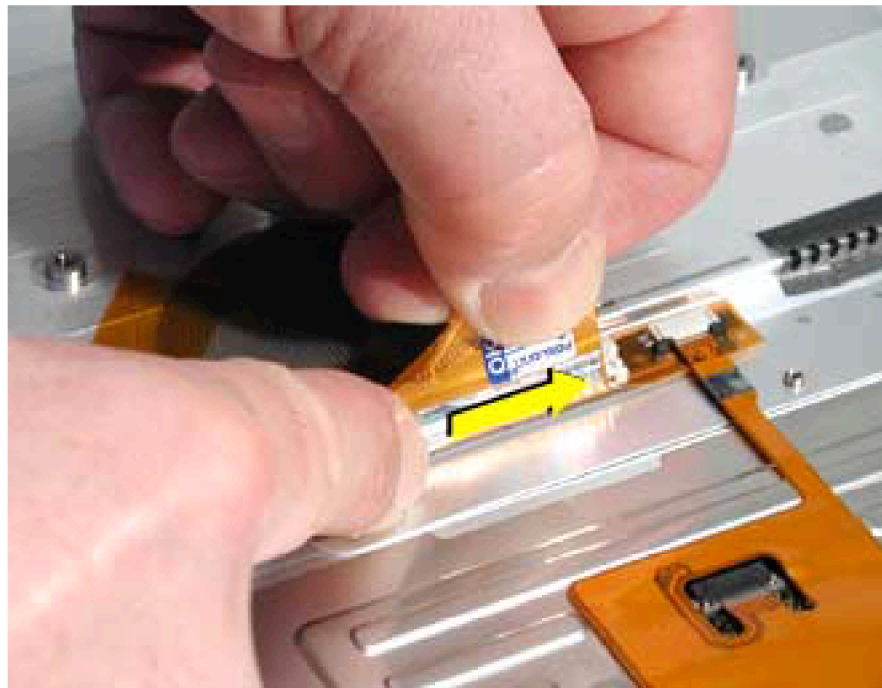


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9. Check that the perimeter metal tabs are not bent.

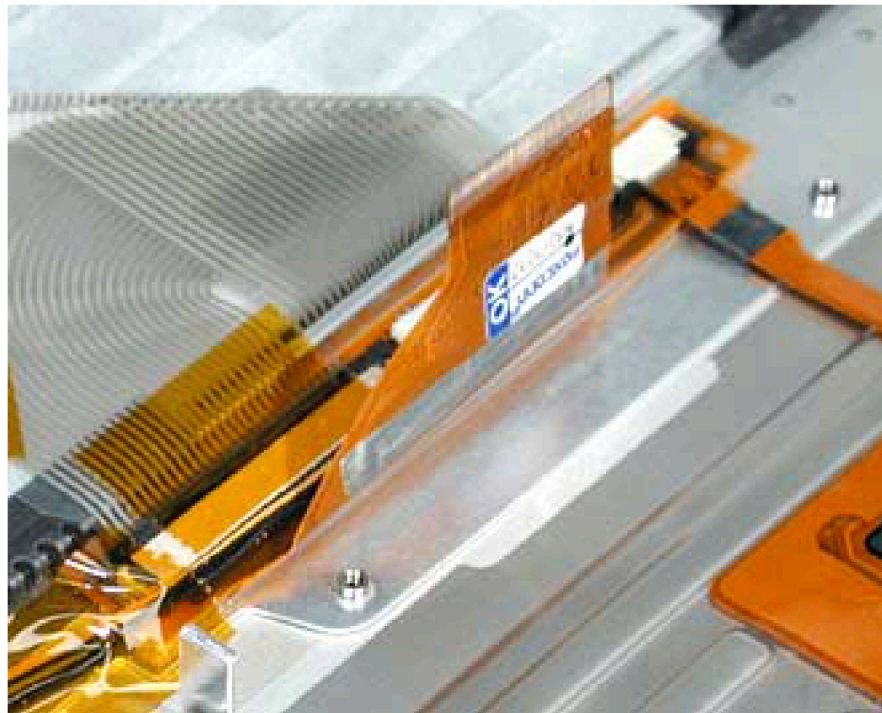
Note: Do not bend the tabs; the metal quickly fatigues and can break off easily.



10. Lay the top case upside down and locate the flex cable.
11. While pulling the cable up, run a finger along its base to crease it at a 90-degree angle.

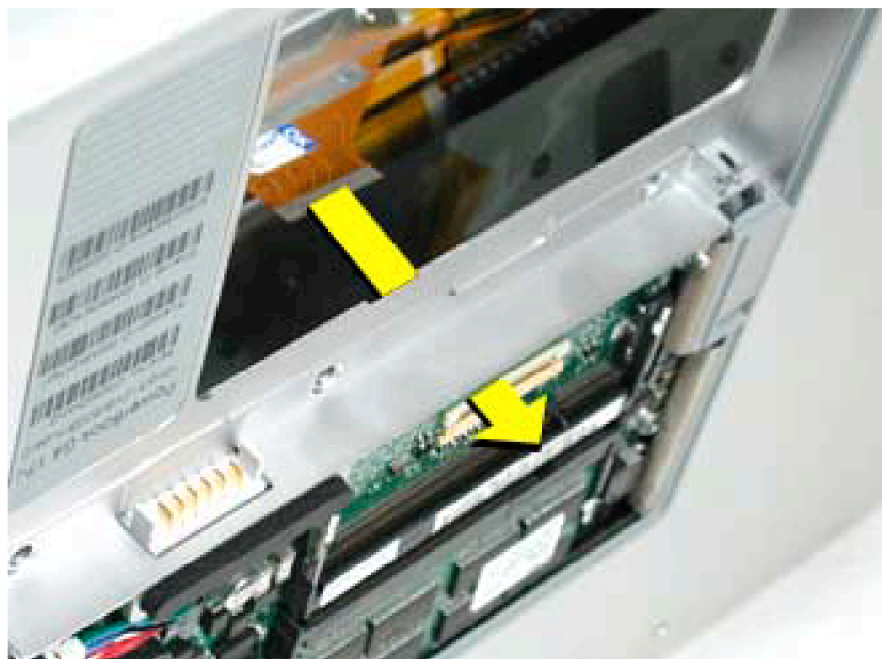


12. The cable should point straight up.



13. Open the display to 90-degrees and tilt the computer back so it rests on the back of the display.

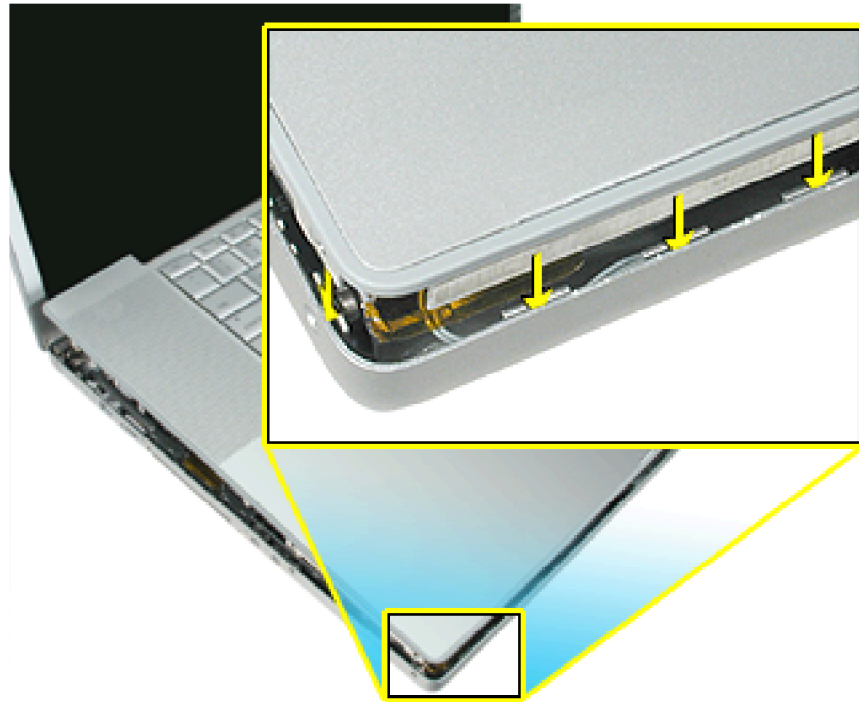
14. Guide the top case flex cable through the slot between the logic board and the bottom case frame.



Note: For the following procedures, you will want to keep the top case close to the bottom case so the flex cable will not pull out of the slot.

15. Turn the computer to rest on the bottom case.

16. At the left front corner of the computer, insert the top case edges into the bottom case channels, shown.

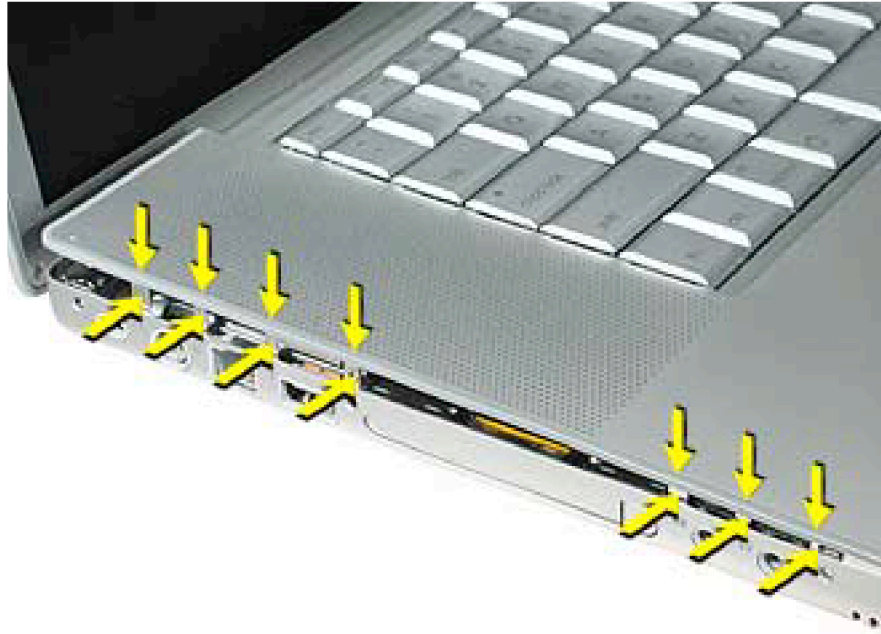


17. Hold the front of the top case along the front edge of the bottom case and lower into place.

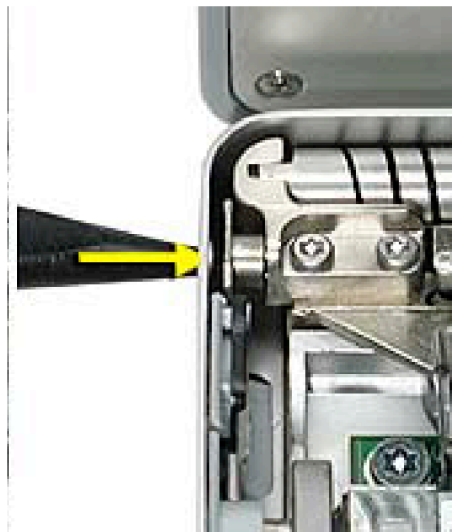


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18. **Note:** If the tabs along the sides of the top case catch on the bottom case, use a narrow tool and work from front to back to carefully push or pull the tabs very slightly to help slide them into place.

Important: The tabs are fragile. Do not apply too much pressure or bend them.

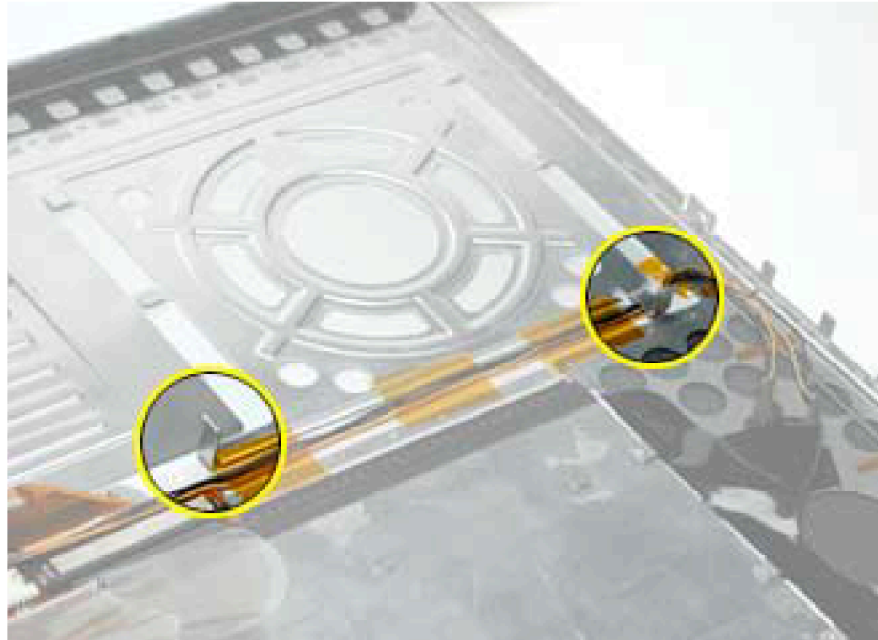


Note: Some side screws have a flexible screw boss. If they block a tab from seating, use a narrow tool to push the boss slightly.



Important: The top case should lay flat along the sides and top, if not, make sure that cables and components are not interfering.

Also, make sure it is not held up by one of the metal tabs protruding down from the top case. Carefully bend them slightly to fit if needed.

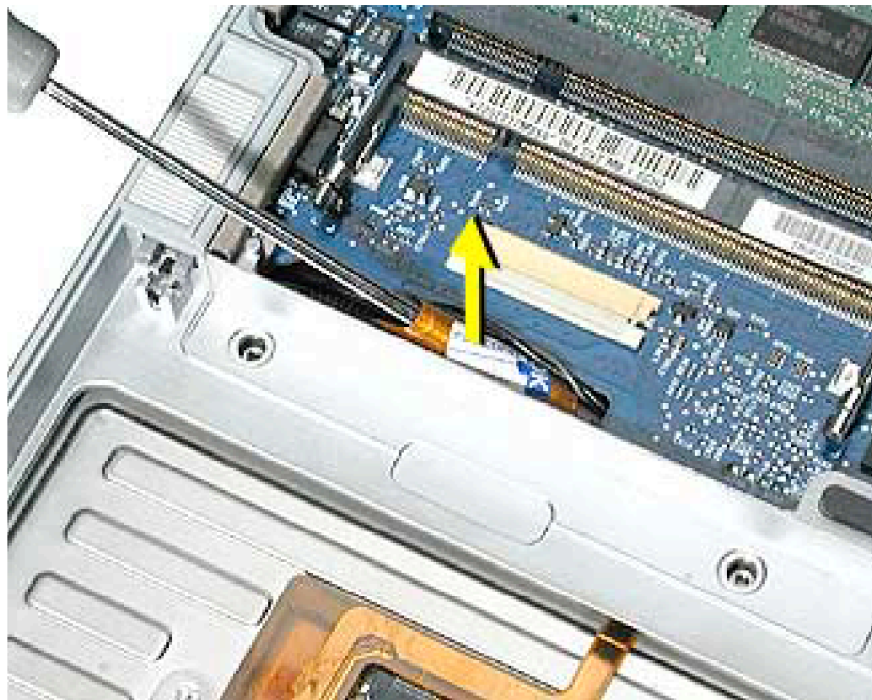


19. Install the front and rear side screws on both sides to hold the top case in place.

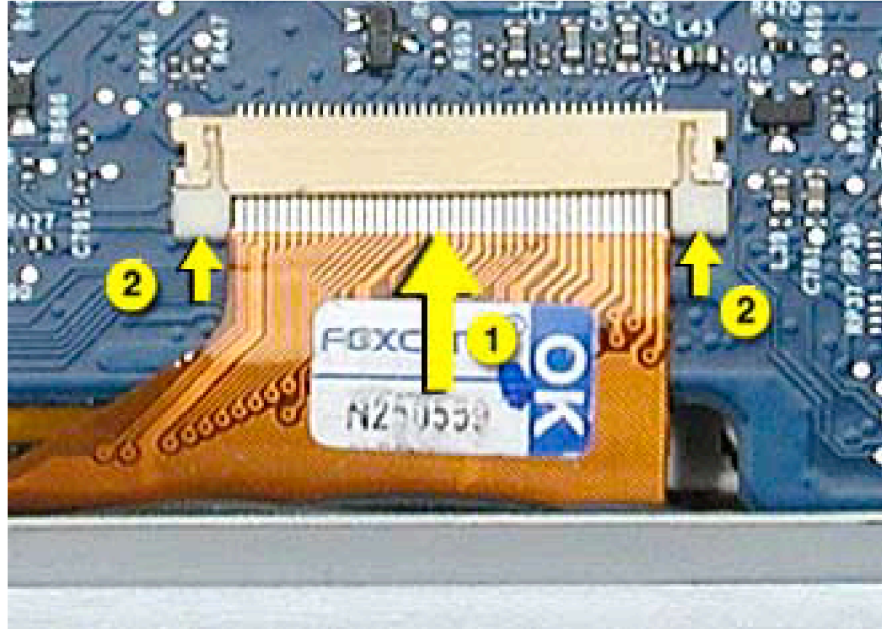


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20. Carefully close the display, without forcing. If it does not close easily, reinstall the top case, checking for cable routing and clearances.
 21. Turn the computer over.
 22. Check that the top case flex cable is still through the slot. If not, use the round shaft of a small Phillips screwdriver to carefully pull it through, as shown.

Important: If the cable does not fully reach the ZIF connector, the cable is trapped under the frame. Reinstall the top case.



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23. Carefully pull the locking bar of the ZIF connector out slightly. Slide the flex cable over the locking bar and into the connector until it stops (the metal edge of the cable should be parallel to the connector), then slide the locking bar in to secure it.



24. Check for a gap, as shown below, between the top and bottom case at the back right side next to the hinge. This may indicate that the LVDS cable is trapped.



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25. To check this, insert the flat-blade side of a black stick between the display and top case then push toward the bottom case to see if the gap can be closed. If so, proceed to next step. If not, remove the top case and check the routing of the LVDS cable, then reinstall the top case.



26. Carefully install one of the “shoulder” screws in the end screw hole on the bottom.

Important: If the screw does not go in easily do not force it or damage may result. Check the routing of the LVDS cable and reinstall the top case.



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27. Install the other “shoulder” screw in the end screw hole.
 28. Install the remaining side screws.
 29. Install the logic board screws.
 30. Install the remaining bottom screws along the back edge.
 31. Install the memory door, and screws.
 32. Install the battery bay screws.
 33. Visually check the flatness of the top case. If it is not flat, remove it, fix the problem, then reinstall.
 34. Replace the battery.
 35. Testing the computer should include powering on, checking the keyboard and trackpad function, and operate the computer in a dimly lit room to check that the keyboard backlight is working.