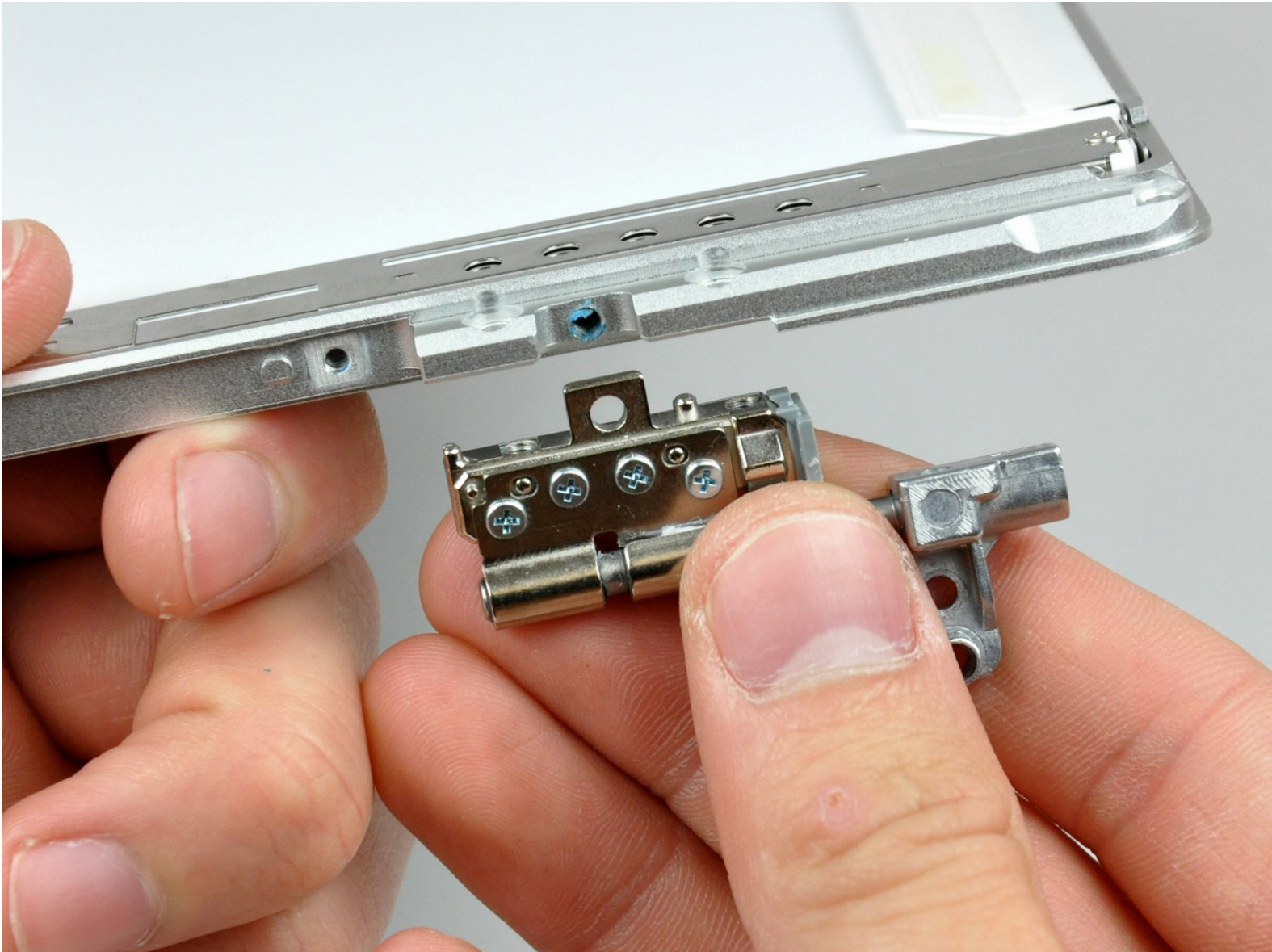




PowerBook G4 Aluminum 15" 1.5-1.67 GHz Left Clutch Hinge Replacement

Replace the left clutch hinge on your 1.5-1.67 GHz 15" Aluminum PowerBook G4.

Written By: Walter Galan



INTRODUCTION

Replace a worn clutch hinge to keep your display opening smoothly.



TOOLS:

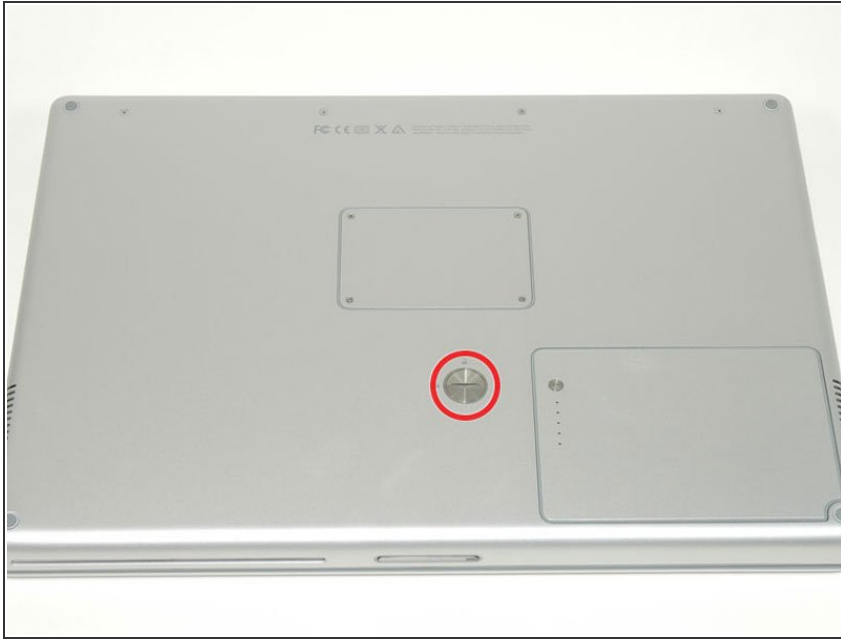
- [4mm Nut Driver](#) (1)
- [Anti-Static Wrist Strap](#) (1)
- [Arctic Silver ArctiClean](#) (1)
- [Arctic Silver Thermal Paste](#) (1)
- [Coin](#) (1)
- [Phillips #00 Screwdriver](#) (1)
- [Push Pin](#) (1)
- [Spudger](#) (1)
- [T6 Torx Screwdriver](#) (1)
- [T8 Torx Screwdriver](#) (1)
- [iFixit Opening Tools](#) (1)



PARTS:

- [G4 Aluminum 15" Left Clutch Hinge](#) (1)

Step 1 — Battery



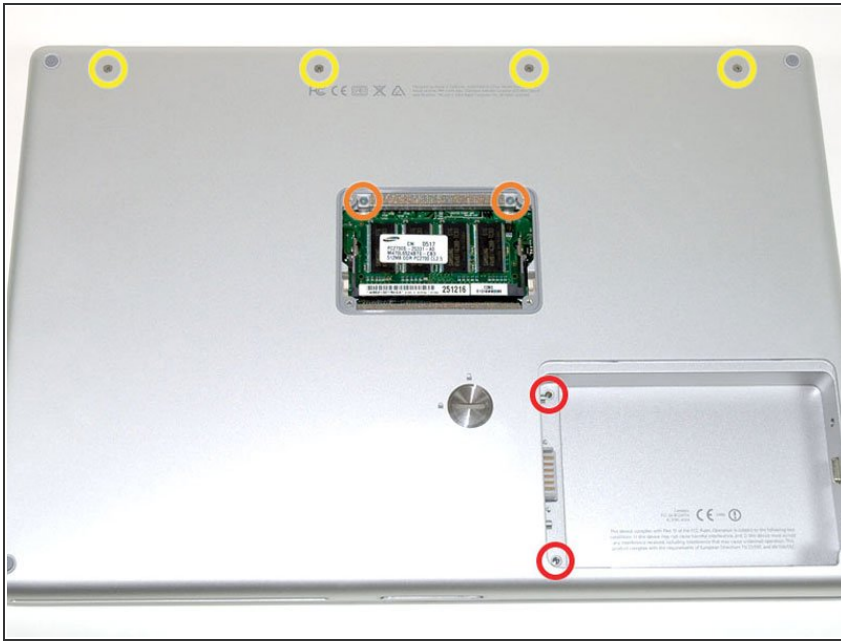
- Use a coin to turn the battery locking screw 90 degrees clockwise.
- Lift the battery out of the computer.

Step 2 — Upper Case



- Remove the four Phillips screws from the memory door.
- Slide the memory door away from the memory compartment.

Step 3



- Remove the following 8 screws:
 - Two 3 mm Phillips in the battery compartment, on either side of the battery contacts.
 - Two 12 mm Phillips on either side of the memory compartment.
 - Four 16 mm Phillips along the hinge.

Step 4



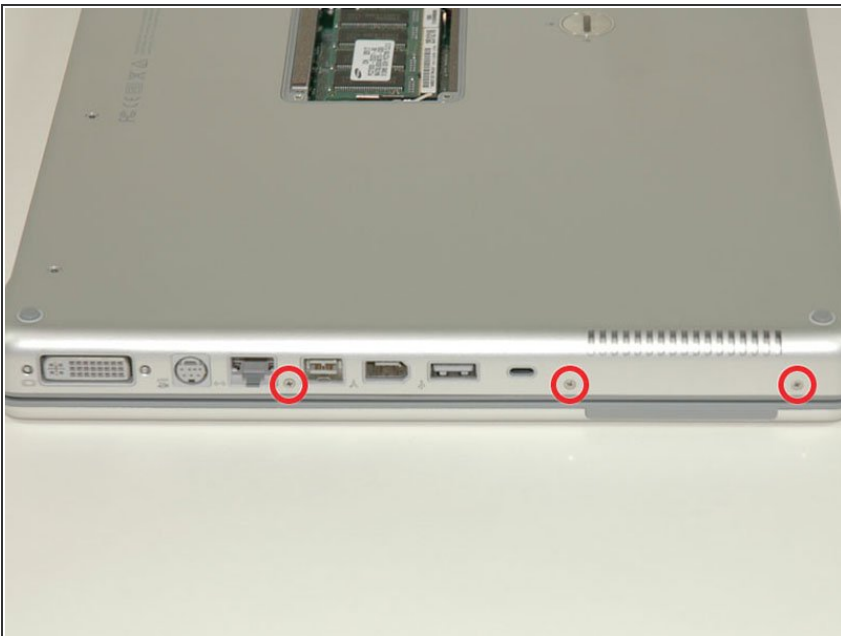
- Rotate the computer 90 degrees clockwise, so that the power receptacle faces you.
- Remove the three 3 mm Phillips screws.
- ★ When replacing these screws, you must place each screw in the correct order. Begin by installing the screw closest to the display hinge, and go out from there.

Step 5



- Turn the computer 90 degrees clockwise so that the hinge faces you.
- Remove the bottom 5 mm Phillips screw on either side of the hinge (two total).

Step 6



- Rotate the computer 90 degrees clockwise, so that the ports face you.
 - Remove the three 3 mm Phillips screws.
- ★ When replacing these screws, you must place each screw in the correct order. Begin by installing the screw closest to the display hinge, and go out from there.

Step 7



- Turn the computer over and open the display.
- Remove the two 1.5 mm hex screws in either corner, next to the display (a T6 Torx driver will work, but repeated use will strip the screws).

Step 8



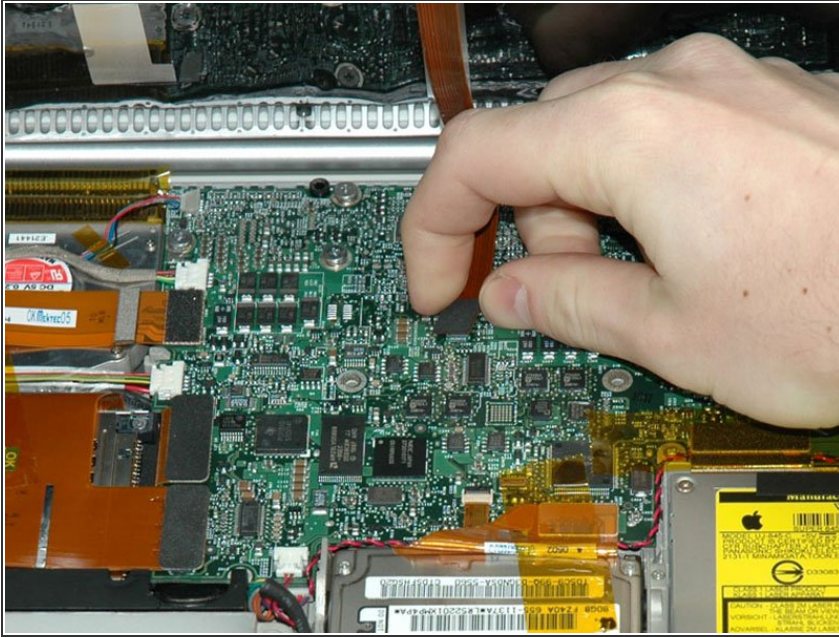
- Grasp the back corners of the upper case and pull up. Do not pull the upper case off yet; you still need to disconnect the keyboard and trackpad cable.
- Lift the back of the case up and work your fingers along the sides, freeing the case as you go. Once you have freed the sides, you may need to rock the case up and down to free the front of the upper case.

Step 9



- Rotate the upper case up and toward the screen, so that the upper case rests against it.

Step 10



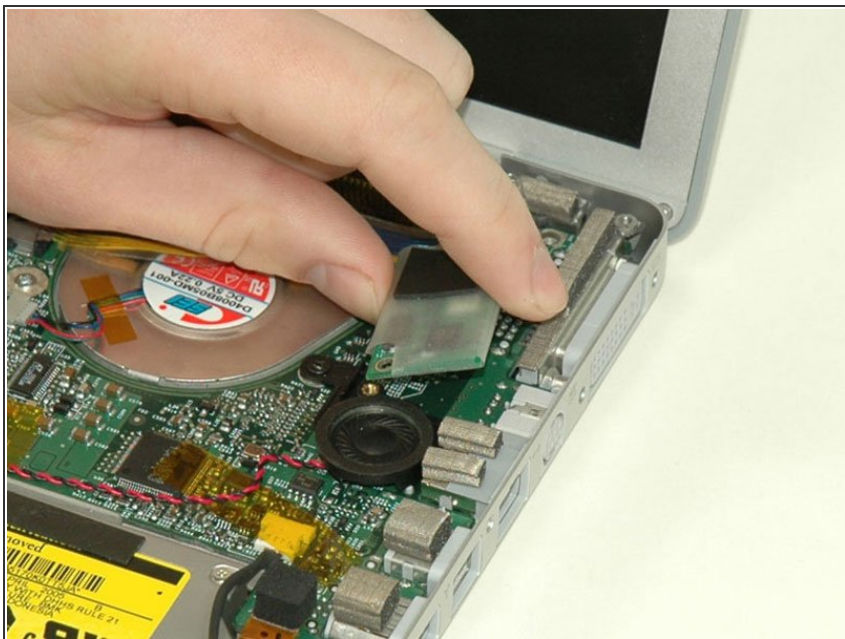
- Remove the orange tape securing the trackpad ribbon to the logic board.
- Disconnect the trackpad ribbon from the logic board.
- Remove the upper case from the computer.

Step 11 — Right Ambient Light Sensor



- Remove the 9.5 mm silver Phillips screw from the top of the right ambient light sensor board.
- Remove the small 3 mm black Phillips screw from the bottom of the board.

Step 12



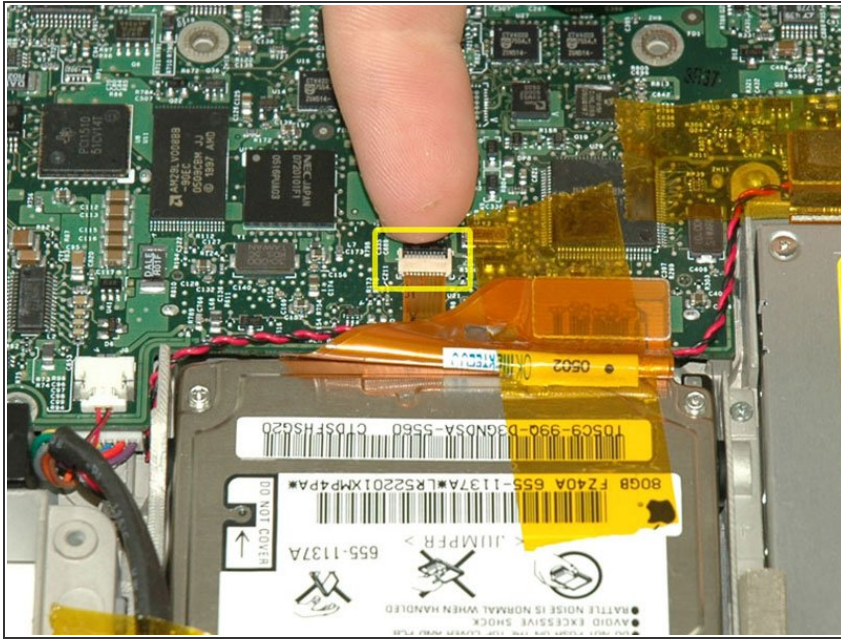
- Lift the right ambient light sensor board from the computer.

Step 13 — Logic Board



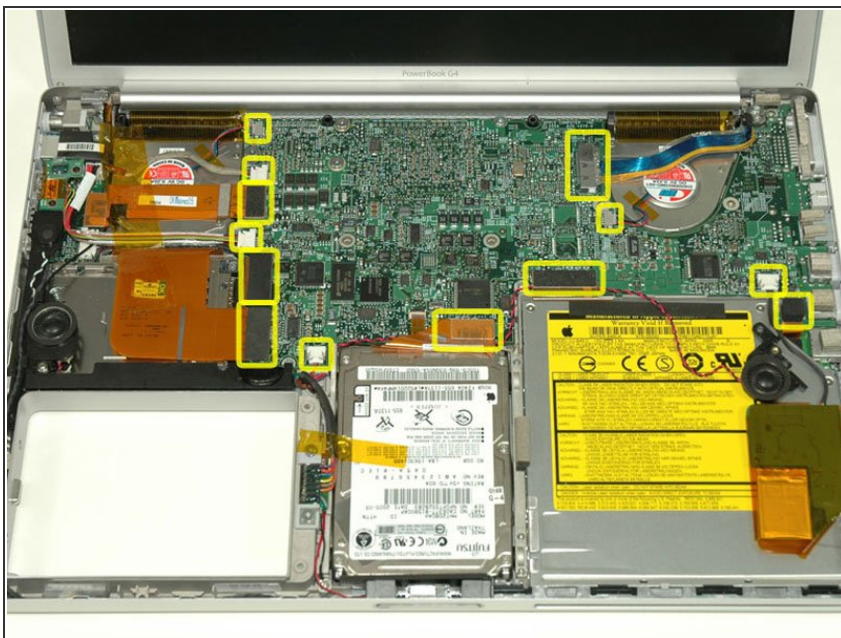
- Remove the two black Phillips screws from the right speaker.
- Lift the speaker away from the logic board and place it aside

Step 14



- Use your fingernail to flip up the black plastic flap locking the modem cable in place.
- Slide the modem cable from its connector.

Step 15



- Disconnect the 13 indicated cables, removing tape as necessary.
- ⓘ When re-installing the board, make sure the two small connectors at the right hand side are above the board before inserting the screws.

Step 16



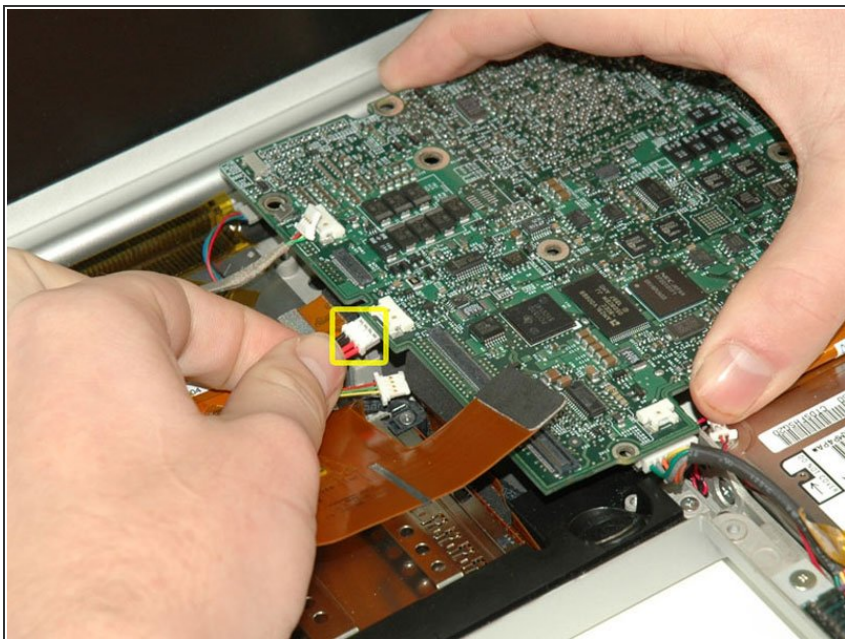
- Remove the following 8 Phillips screws from the logic board:
 - Three 6.5 mm in the upper left corner.
 - Five 4.5 mm around the edges.

Step 17



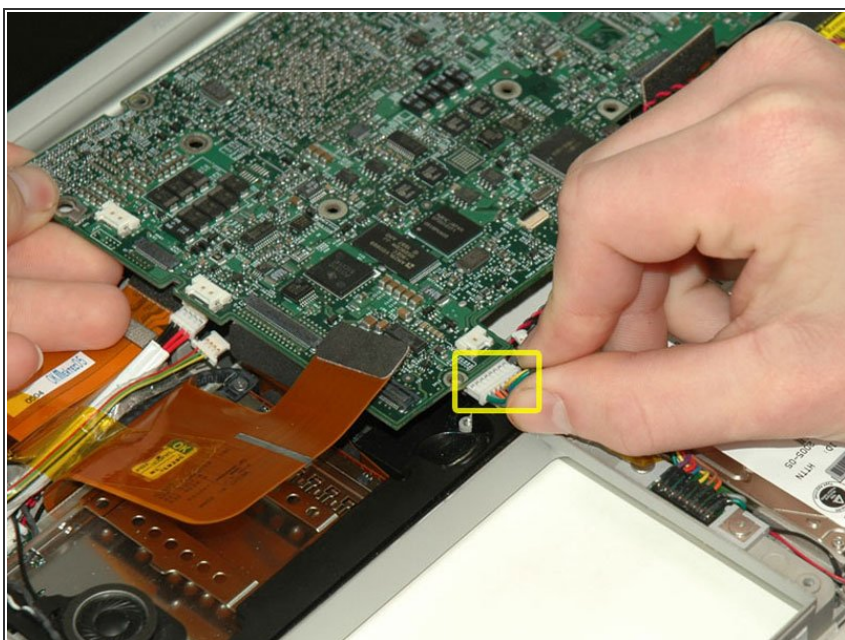
- ① Two cables still connect to the logic board and must be removed before pulling the board entirely out of the computer.
- Use a spudger to gently (very gently) pry up the left side of the logic board.
- ① If the logic board does not immediately come free, it may be necessary to soften the thermal paste between the logic board and heat sink. You can soften the thermal compound using a hairdryer. Move the hairdryer back and forth between the two fans about one inch above the logic board for one minute. At this point, the logic board should now come free easily.

Step 18



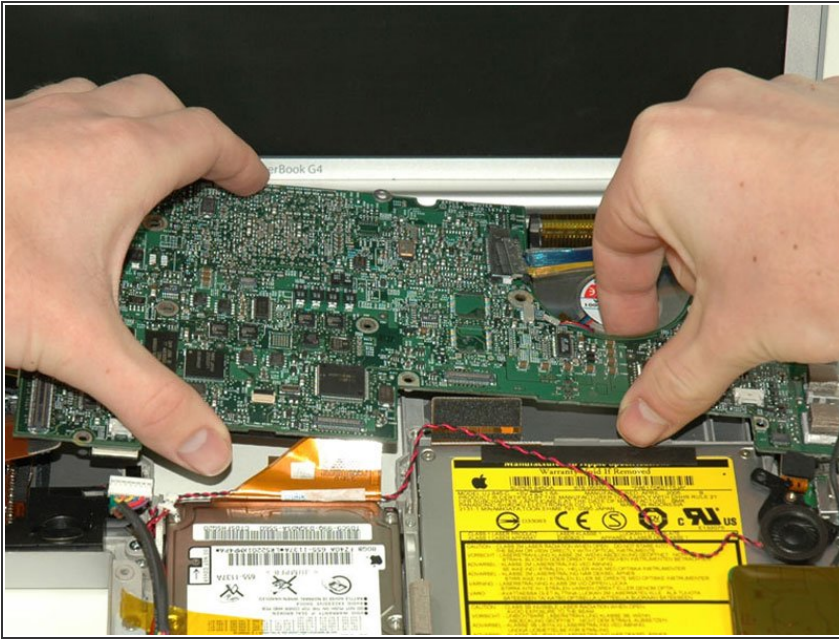
- Disconnect the DC-In connector from the left side of the logic board.

Step 19



- Disconnect the battery cable from the front, left corner of the logic board.

Step 20



- Grasp the logic board at the left edge with one hand and at the thinnest section with the other hand. Lift the left edge of the board up to approximately a 30 degree angle (if you don't have your protractor handy, just lift until the DVI port clears the right hinge).
- Once the logic board clears the ports, slide it out to the left.

Step 21

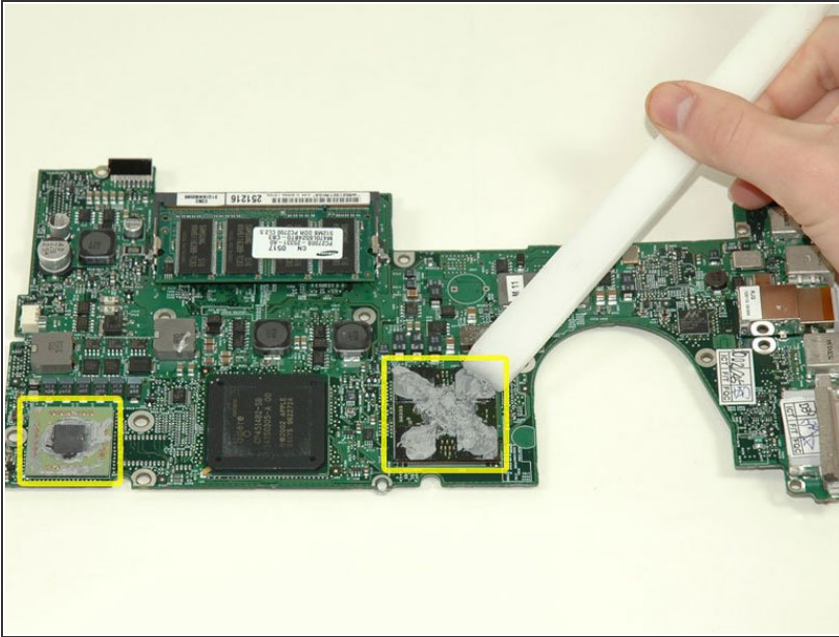


- ✦ Important: when you reinstall a logic board, you'll need to replace the thermal paste that goes between the processor on the logic board and the heat sink. Failure to remove the old paste and apply a new layer can cause the computer to overheat and sustain damage.

- To properly reassemble your PowerBook, you'll have to clean off and replace the old thermal

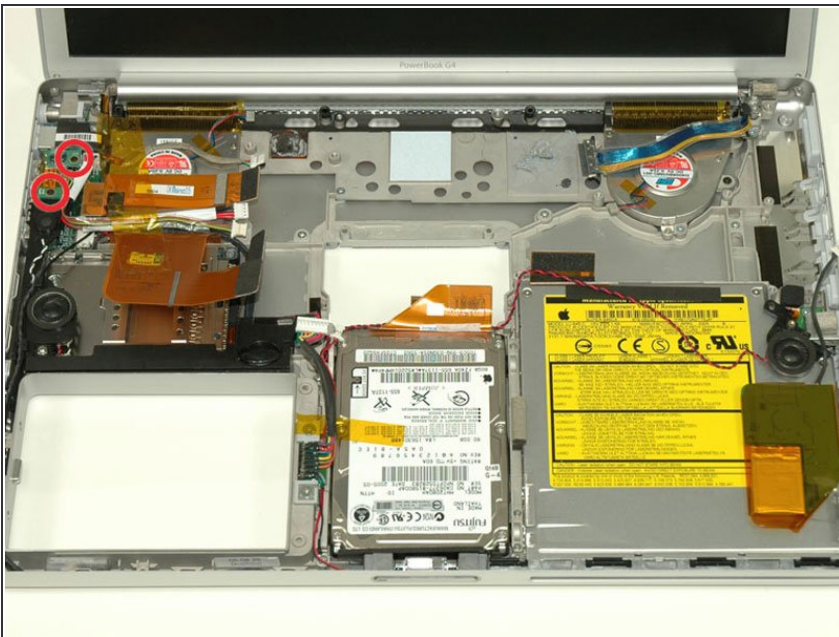
compound. Use our [Applying Thermal Paste Guide](#) to prepare the processor and heat sink surfaces.

Step 22



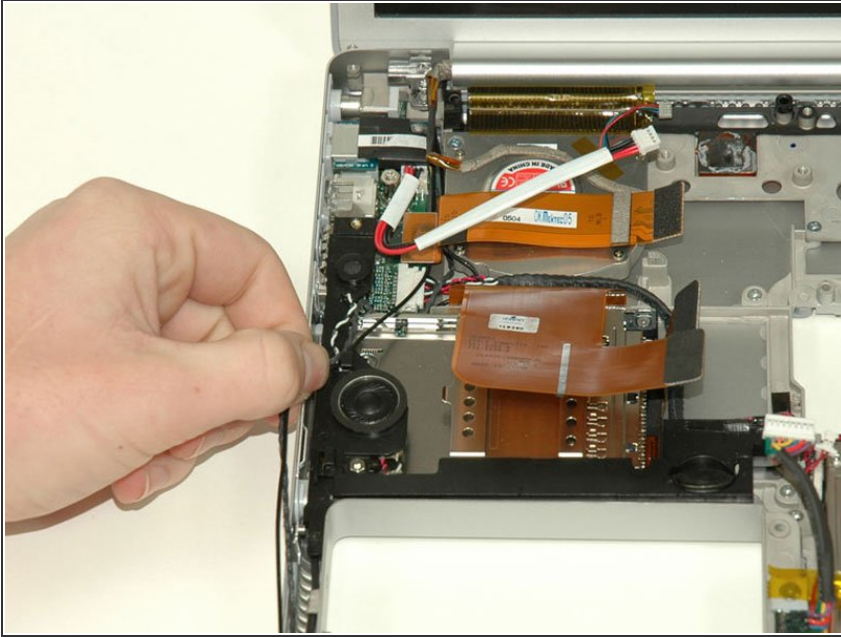
- Use a firm plastic edge to scrape the thermal material off the processor.
- ✦ When replacing the logic board, make sure all cables are routed around and above - not under - it, and to connect the two cables that do go beneath before pushing the board into place.
- ✦ Place the logic board back in the computer, trying not to move it around once the processor has come into contact with the newly-applied thermal paste.

Step 23 — Speakers



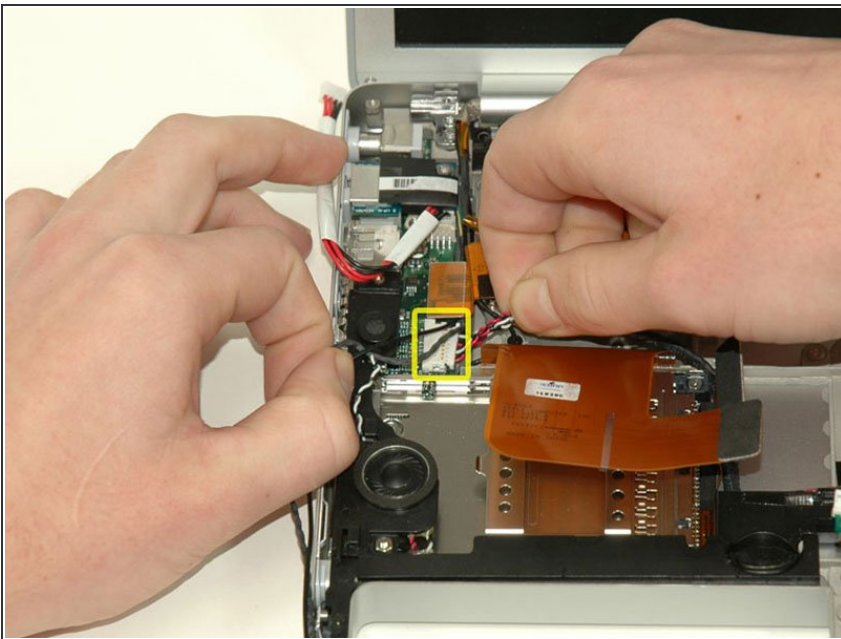
- Remove the two 3 mm black Phillips screws from the left ambient light sensor board.
- Lift the left ambient light sensor board out of the computer, removing tape as necessary.

Step 24



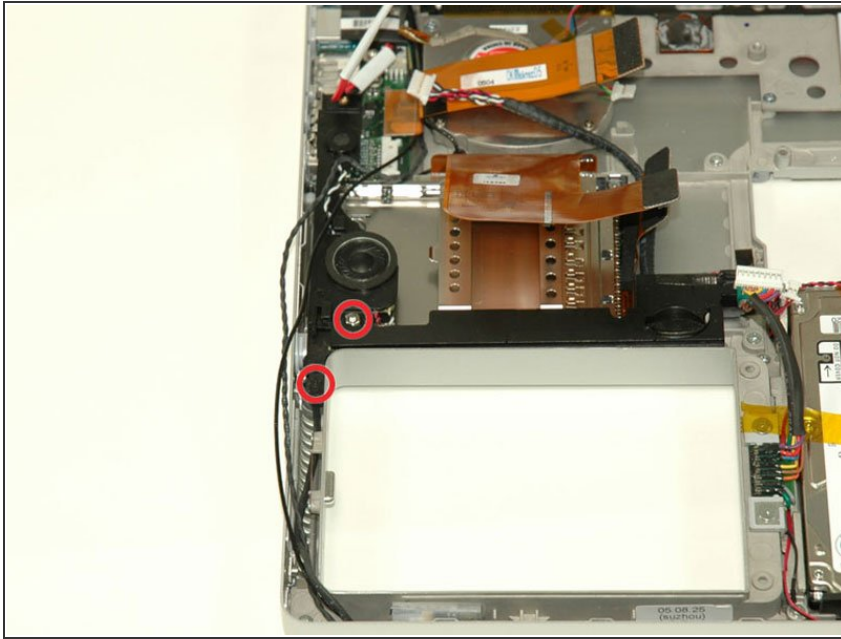
- Deroute the Bluetooth and RJ-11 cables from around the left side of the speaker.

Step 25



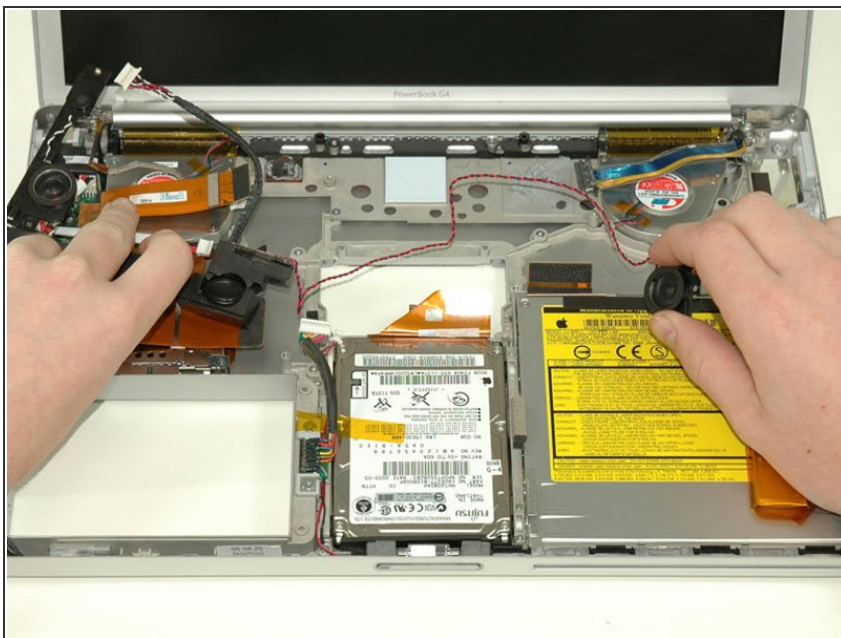
- Disconnect the speaker cable from the DC/Sound card.

Step 26



- Remove the 4 mm hex nut from below the left speaker.
- Remove the 3 mm black Phillips screw from bottom left corner of the speaker assembly, to the left of the battery compartment.

Step 27



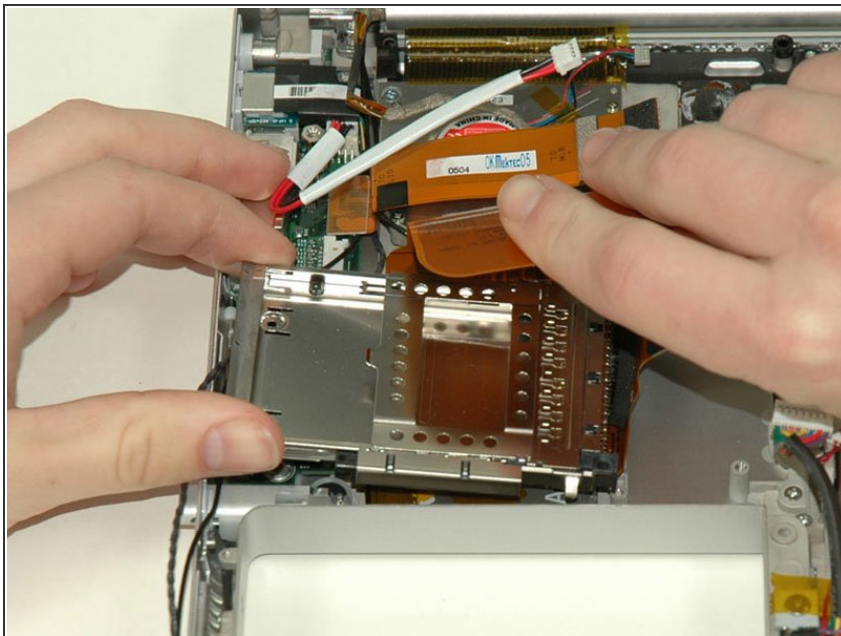
- Lift the speaker assembly (including the right speaker) out of the computer.

Step 28 — PC Card Cage



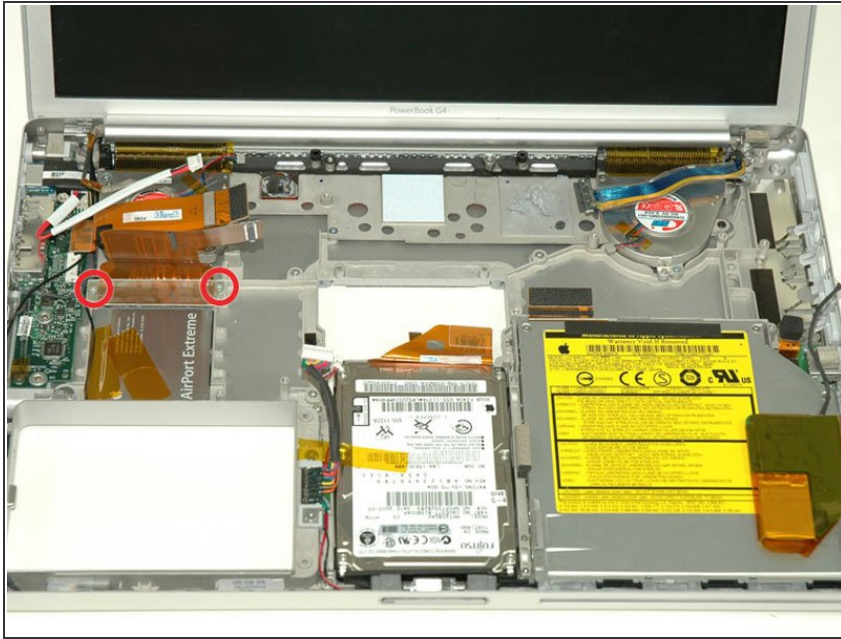
- Remove the two 4.2 mm silver Phillips screws from the left corners of the PC card cage.
- ☑ Next the two 6.8 mm shouldered screws go on the right side of the card cage.

Step 29



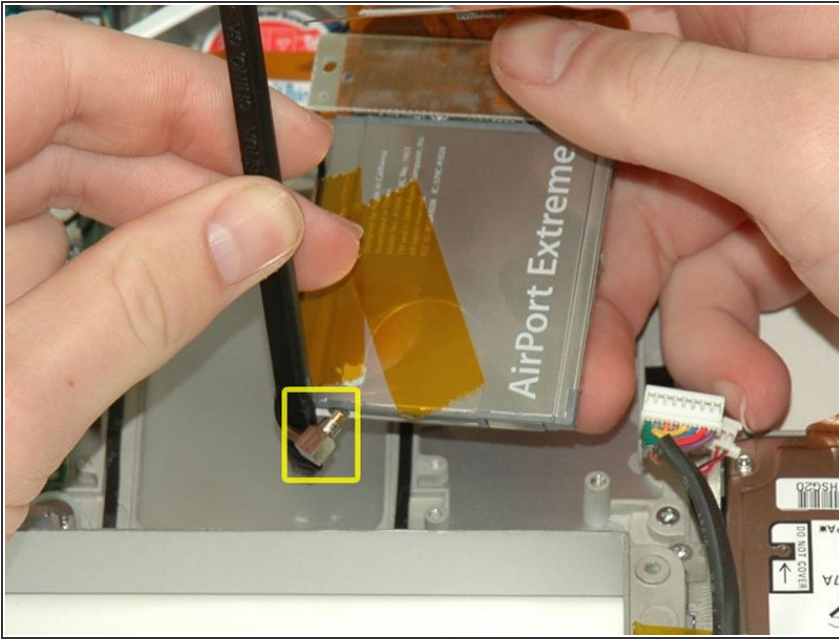
- Lift the PC card cage up and remove it from the computer.
- ☑ When replacing the PC card cage, make sure you attach it to the post on the metal eject button.

Step 30 — Display



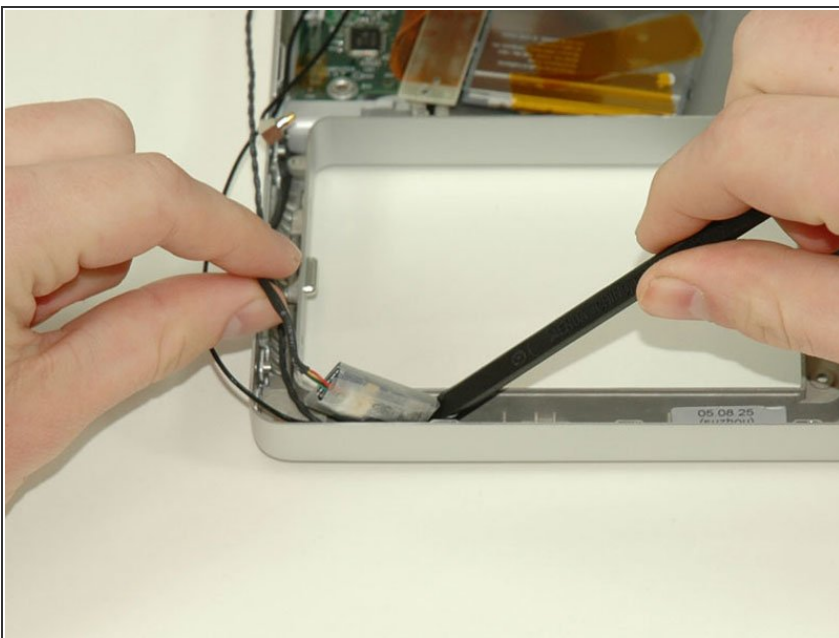
- Remove the two 4.2 mm silver Phillips screws from either side of the large orange Airport ribbon.

Step 31



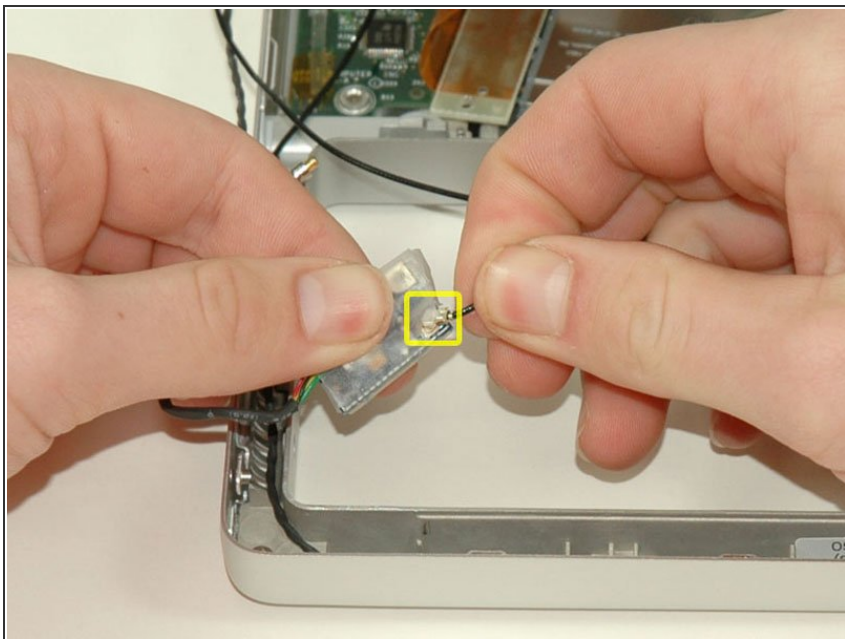
- Lift the Airport card out of the computer and slide a spudger between the card and the antenna connector to disconnect the cable from the card.
- Deroute the antenna cable from the side of the card, removing tape as necessary.
- You don't need to remove the Airport card entirely. We're just trying to free up the Airport antenna cable.

Step 32



- Using a spudger, pry up the Bluetooth board from the cavity in front of the battery compartment.

Step 33



- Disconnect the Bluetooth antenna cable from the Bluetooth board.

Step 34



- Close the display and turn the hinge side of the computer to face you.
- Remove the remaining Phillips screw on either side of the hinge (two screws total).

Step 35



- Open the display and turn the computer so the screen faces you.
- Remove the 10 mm T8 Torx screw closer to the display on either side of the hinge (two screws total).
- ☑ When replacing the display, make sure that the right screw pins down the ground loop from the display data cable.

Step 36



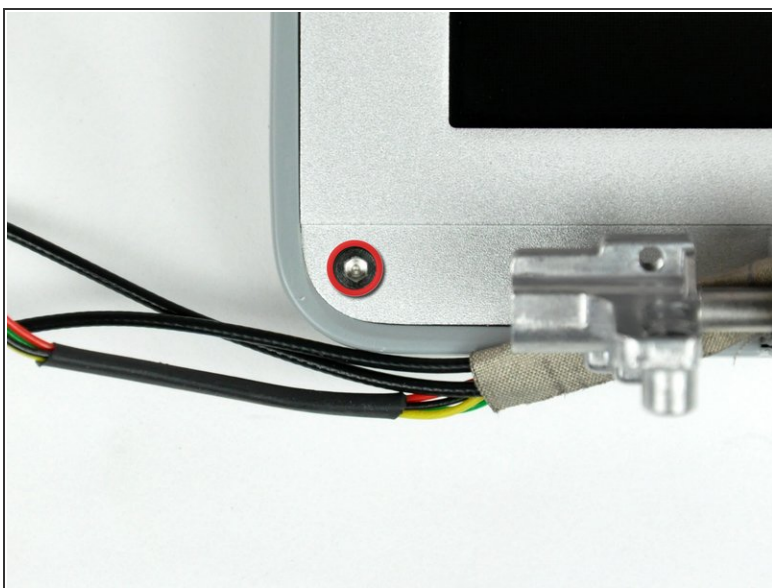
- ⓘ Be sure to support the display with one hand while removing the final two screws.
- Remove the longer 13 mm shouldered T8 Torx screw remaining on either hinge (two screws total).

Step 37



- Lift the display off.

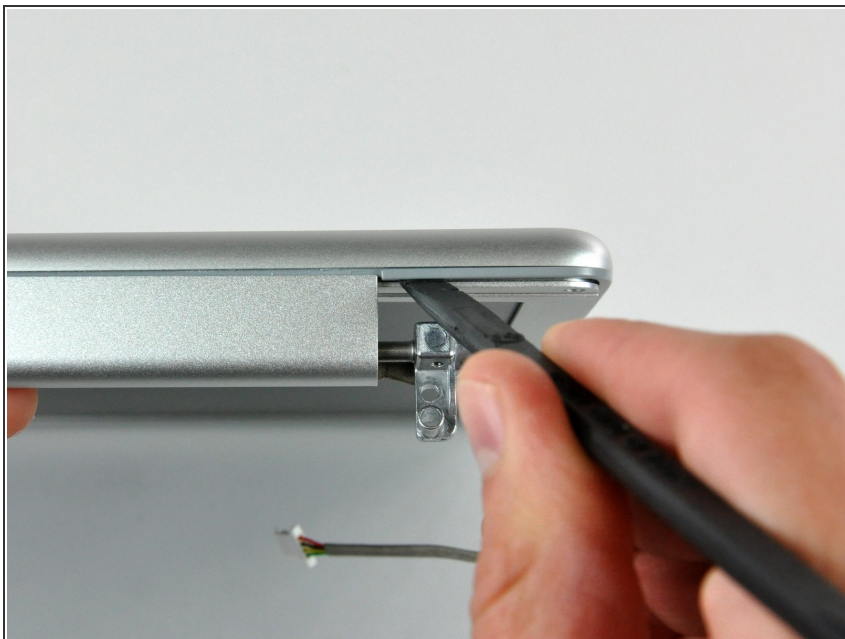
Step 38 — Rear Display Bezel



- Remove the two 11 mm X 1.5 mm hex screws near the lower left and right corners of the display.

 A T6 Torx screwdriver works just fine.

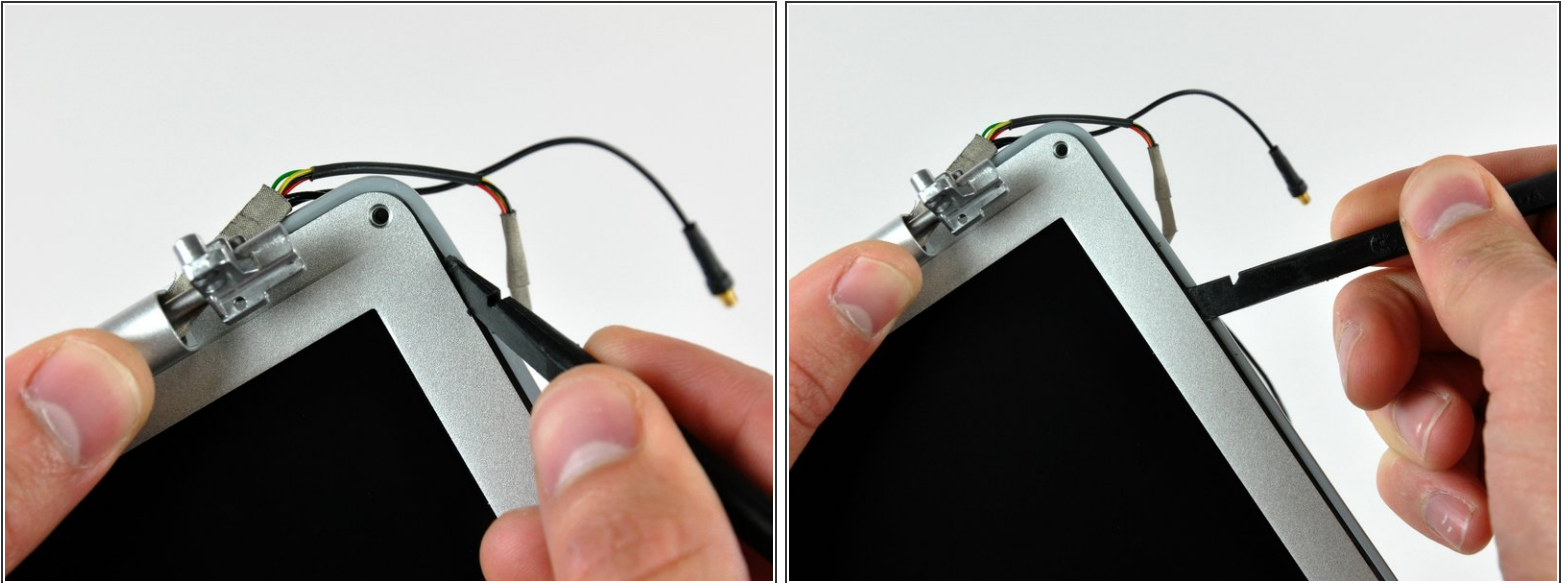
Step 39



- Insert the flat end of a spudger between the front display bezel and the plastic rim attached to the rear bezel near the lower left corner of the display.

⚠ Do not insert the spudger between the plastic rim of the rear display bezel and the aluminum rear display bezel plate.

Step 40



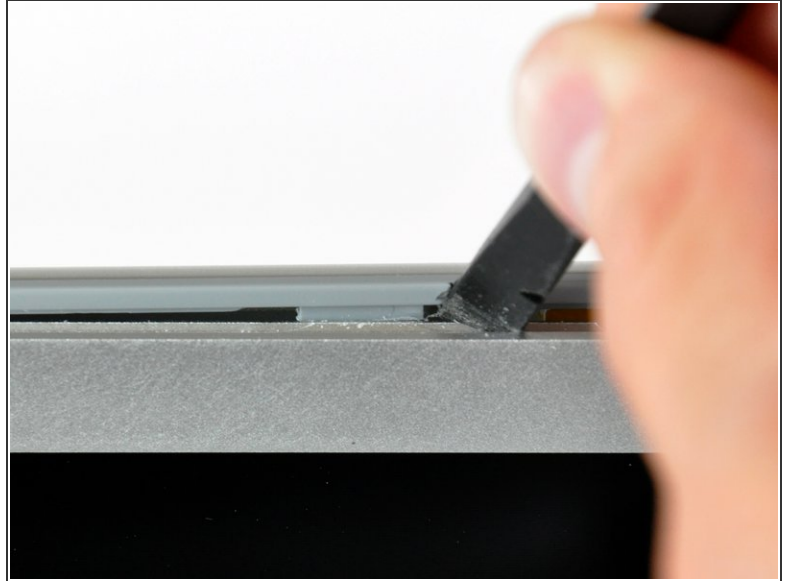
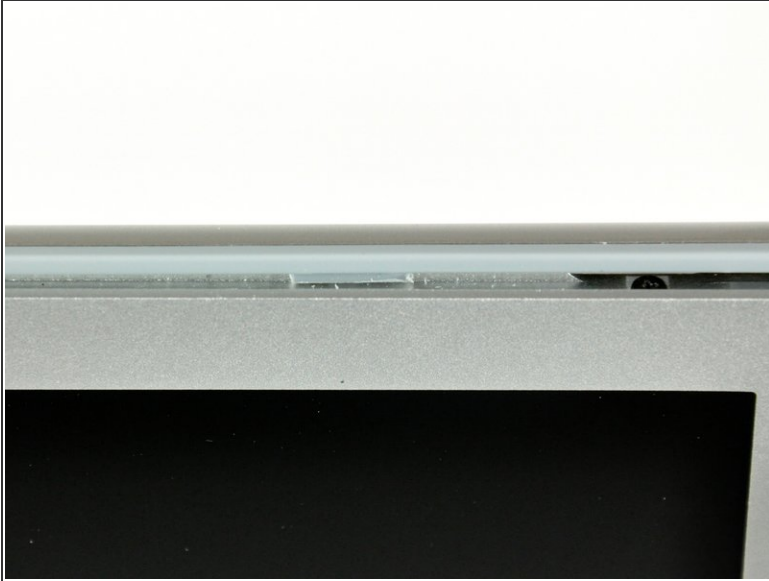
- With your spudger still inserted under the front display bezel, run it around the lower left corner of the display.
- Rotate the spudger away from yourself to pry the rear display bezel off the aluminum tabs on the front display bezel.
- Work your way down the side of the display until the rear display bezel has been separated from the front display bezel.

Step 41



- Insert the flat end of a spudger between the rear display bezel and the clutch cover.
- Twist the spudger to unclip the rear bezel from the clutch cover.

Step 42



- Repeat the previous steps to separate the right side of the rear display bezel from the display.
- Use your spudger to pry the plastic retaining clips on the rear display bezel over the raised aluminum tabs on the front display bezel.
- At this point, the clips on the left and right edges of the rear display bezel should be free from the raised aluminum tabs on the front display bezel. If they are not, use a spudger to pry them past the front display bezel.

Step 43



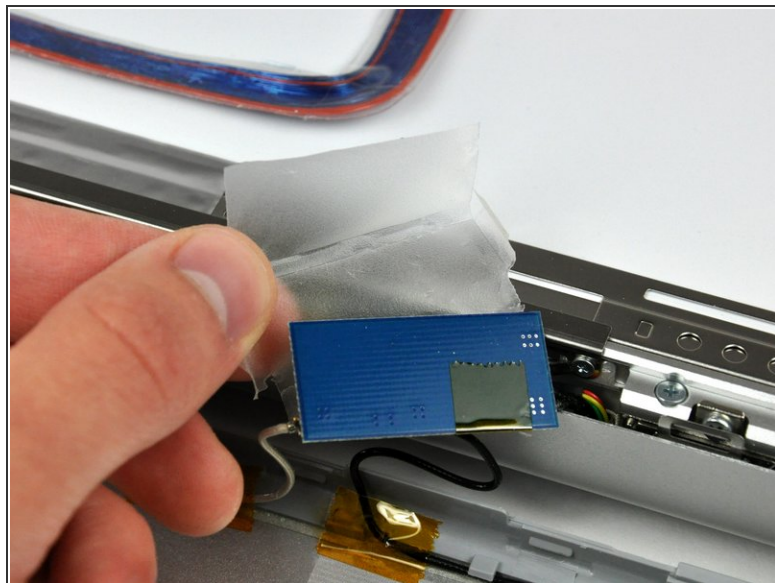
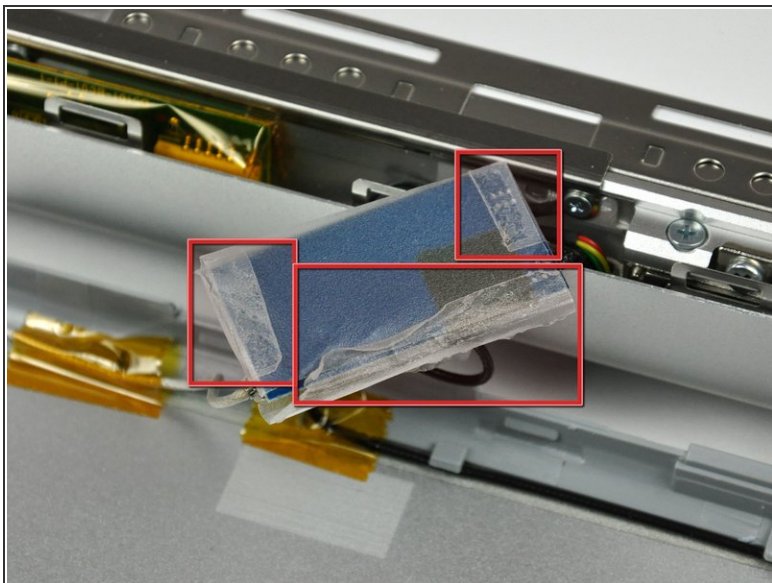
- Slightly lift the lower edge of the rear display bezel and push it toward the top edge of the display, releasing the clips along the top edge of the rear display bezel.
- Rotate the rear display bezel toward yourself and lay it flat on the table.

Step 44



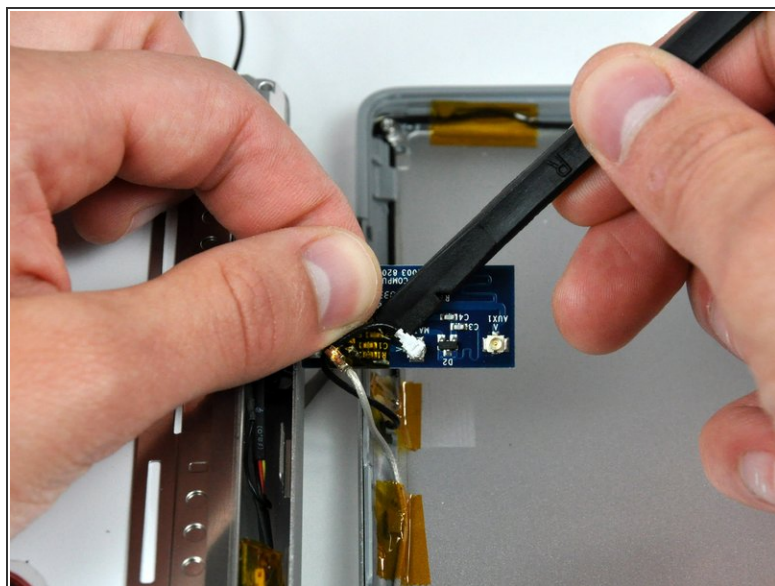
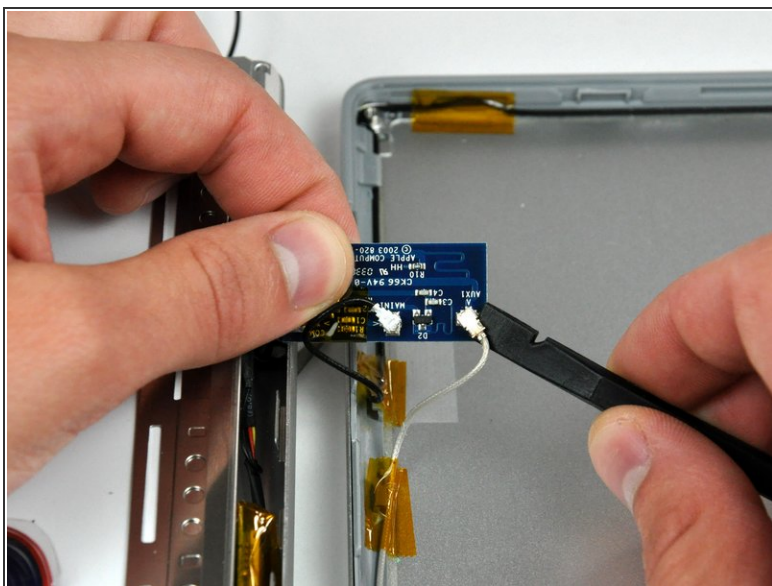
- Lift the antenna board out of the clutch cover.

Step 45



- Peel back the three edges of the antenna board cover and remove it from over the antenna board.

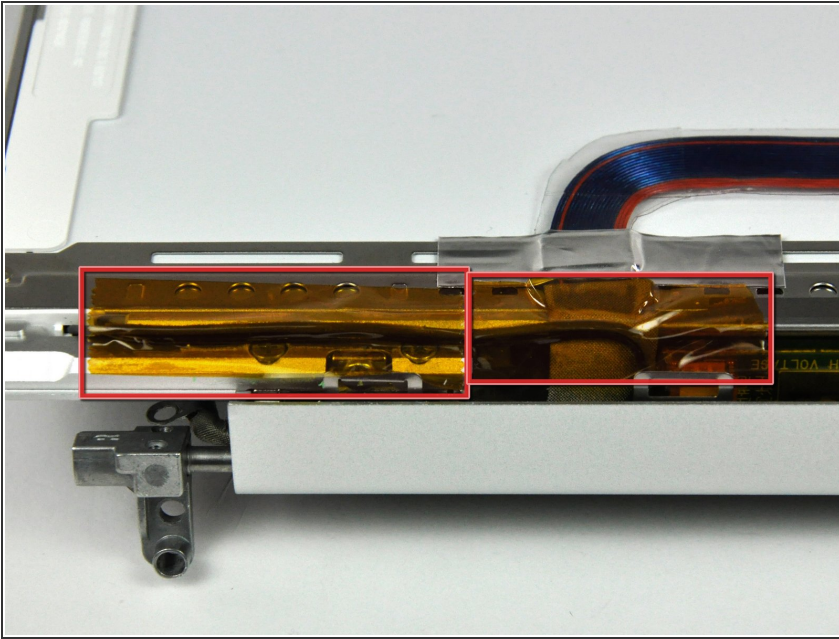
Step 46



- Use the flat end of a spudger to pry both antenna connectors up off the antenna board.

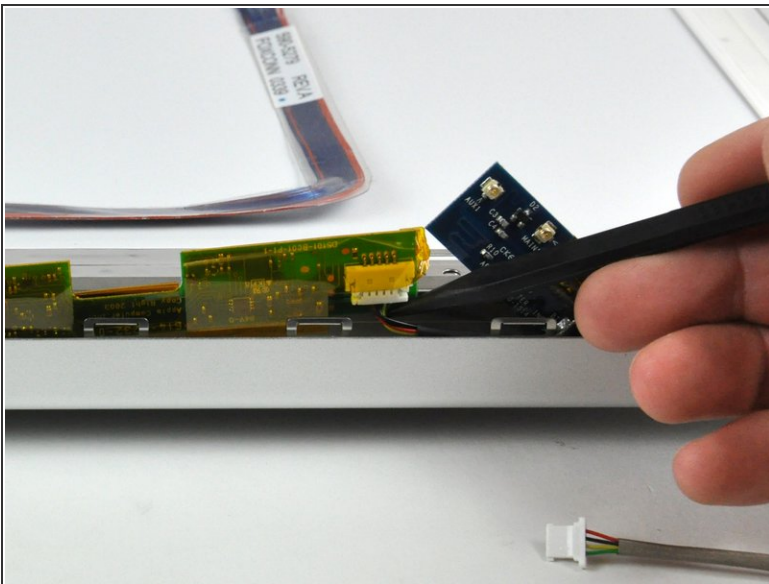
✦ The black antenna connects near the center of the antenna board.

Step 47 — Clutch Cover



i If necessary, remove the two pieces of tape covering the inverter leads.

Step 48

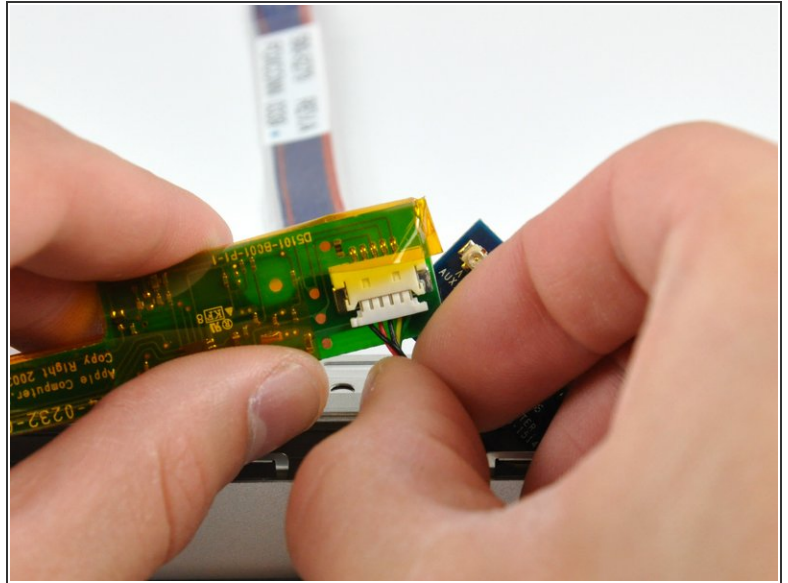
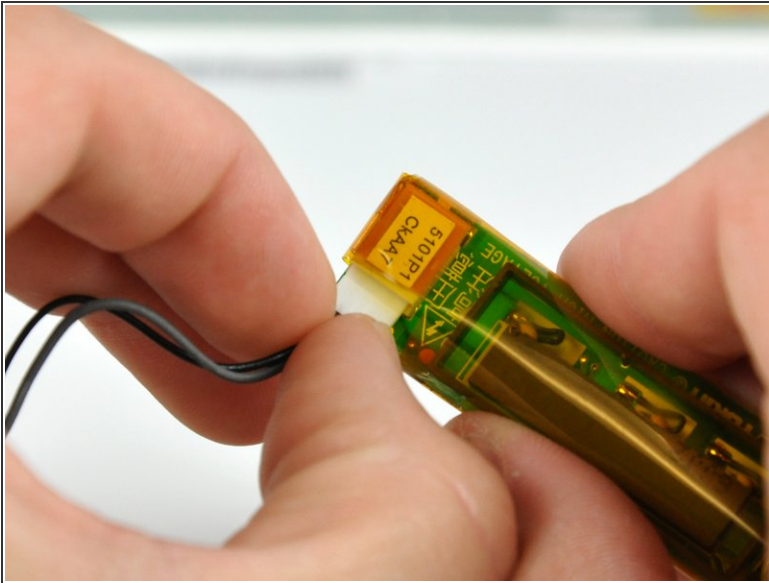


! The inverter is an extremely thin circuit board that is very delicate and easily cracked. Take care when handling.

- Use a spudger to raise the end of the inverter out from the clutch cover.
- Lift the inverter enough to access both cable connectors.

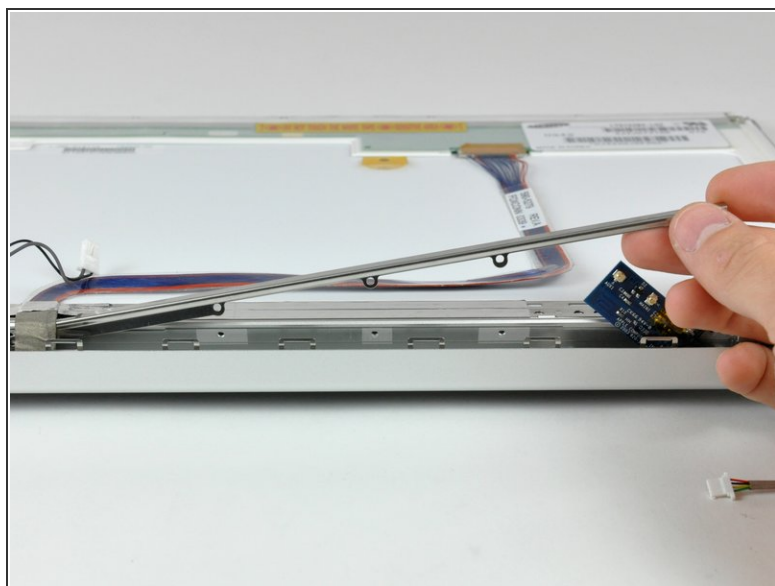
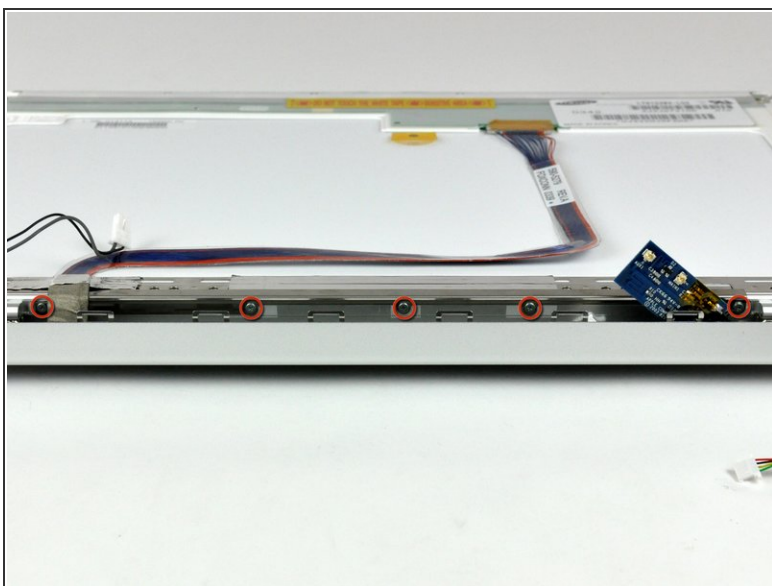
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Step 49



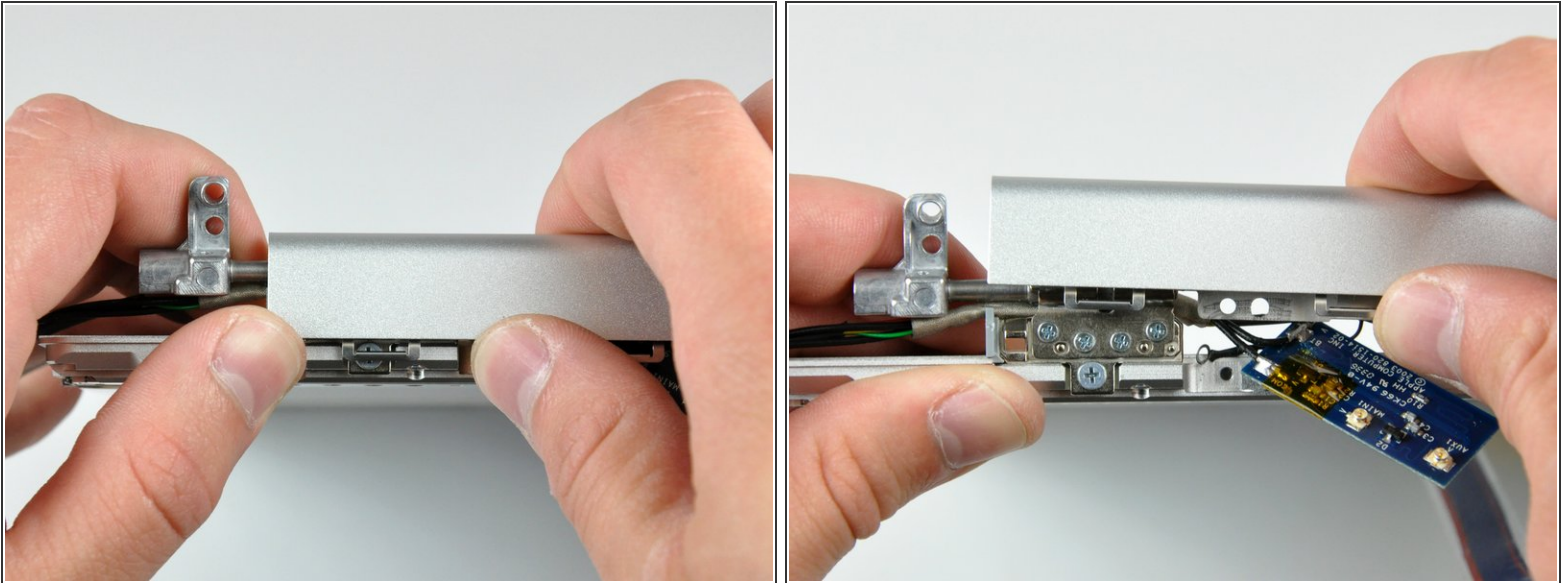
- Disconnect both inverter cables by pulling their connectors away from the sockets on the inverter.
- Remove the inverter from your display and set it aside.

Step 50



- Remove the five Phillips screws securing the LCD retaining bracket to the front display bezel.
- Lift the LCD retaining bracket off the front display bezel.
- ⓘ Some machines do not have this bracket. If your machine is missing the bracket, remove the five screws and proceed to the next step.

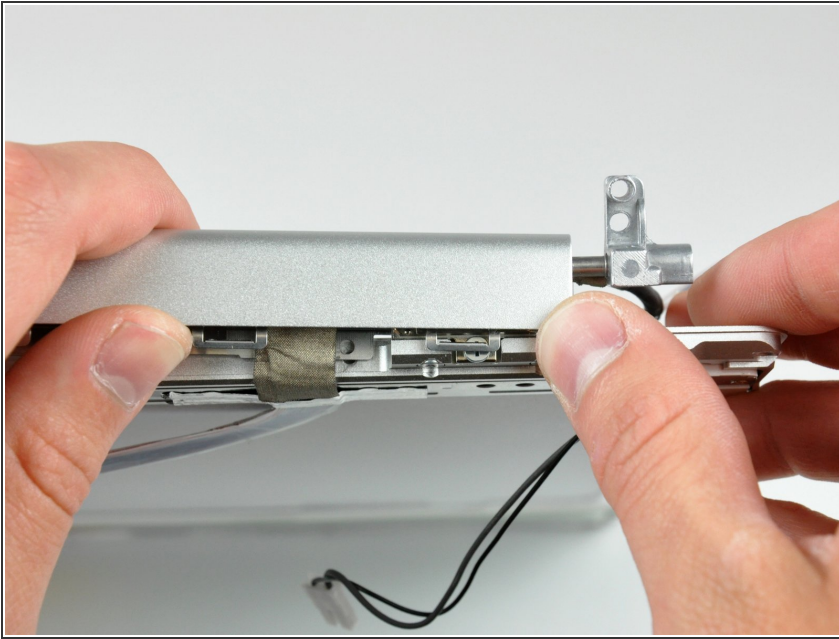
Step 51



 The clutch cover is constructed from aluminum and is held on to the clutch hinges with metal clips that require a good deal of force to remove. Proceed with caution.

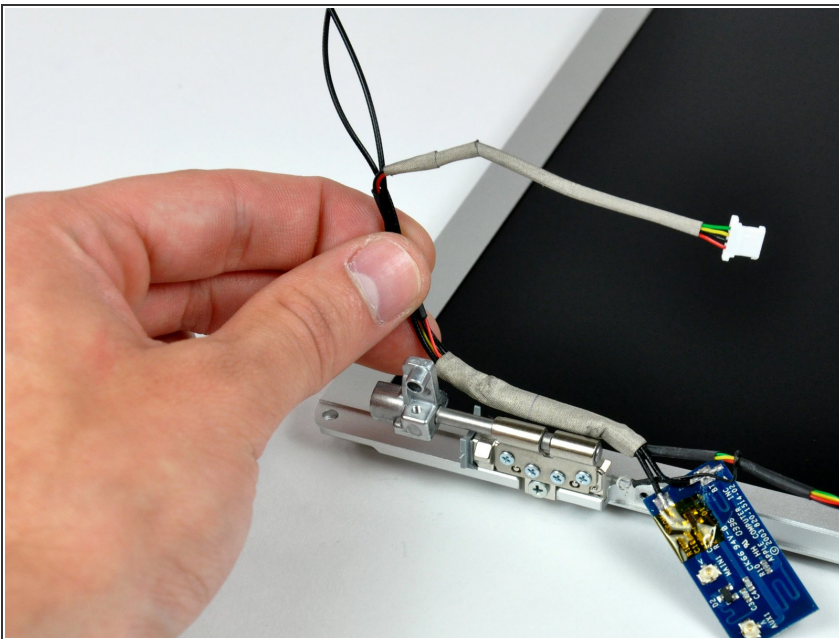
- Use your thumbs to push the clutch cover away from the clutch hinges.
- While pressing with your thumbs, rotate the clutch cover toward yourself about its long edge to pop it off the clutch hinge.
- It may be necessary to wiggle the clutch cover while pressing it away from the clutch hinges to release the retaining clips.

Step 52



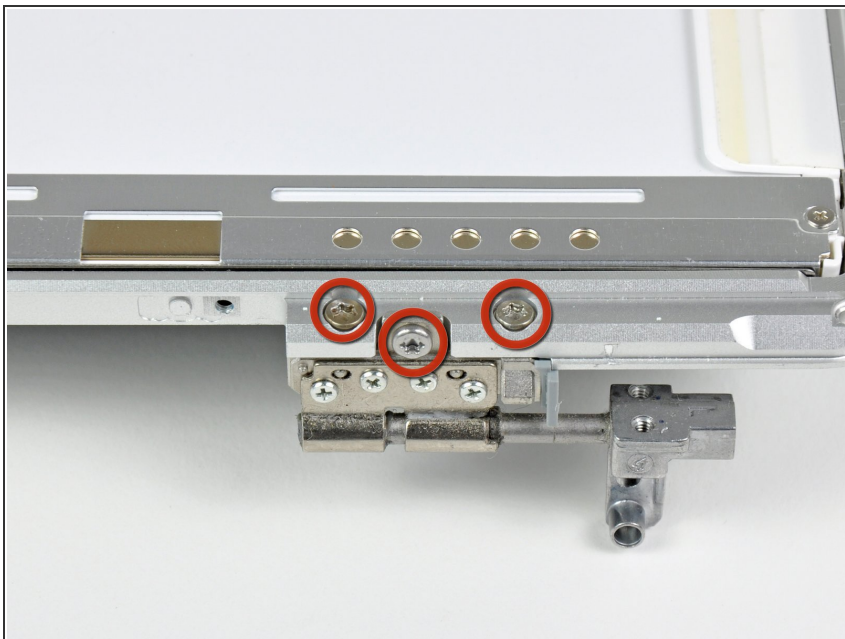
- Repeat this process for the other side of the clutch cover. Once the clutch cover is completely free from the clutch hinges, lift it off the front display bezel.
- ⓘ When replacing the clutch cover, be sure to route the display data cable so that it is inside the clutch cover and extending out the end between the hinge and the display frame.

Step 53 — Inverter/Antenna Cables



- De-route the inverter/antenna cables from the left clutch hinge and lift them out of your display.

Step 54 — Left Clutch Hinge



- Remove the three T8 Torx screws securing the left clutch hinge to the front bezel.

Step 55



- Remove the left clutch hinge from the front bezel.

To reassemble your device, follow these instructions in reverse order.