



Powerbook G4 Titanium 400/500 Repair Guide

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This manual is presented as a guide in order to help you repair problems on your powerbook. Working on a powerbook can be dangerous if not done properly. We at Powerbookmedic.com take no responsibility for any damage or harm done to yourself or your powerbook as a result of reading this guide.

Suggestions for making this manual better? Email: sales@powerbookmedic.com

Tools Needed for Take Apart:

Torx T8 Screwdriver – Available from our online store
Torx T6 Screwdriver – Available from our online store
Philips head screwdriver (small and medium size screwdrivers)
Pliers

Always remove the battery and power supply from the computer before beginning any take apart or repair!

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Identifying the Powerbook G4 400/500

The powerbook G4 Titanium is easily identified by its titanium frame and sleek appearance. Even though all of the models look nearly identical, each of them is different in a unique way, and the parts are NOT interchangeable between models. The easiest way to identify which model you have and need parts for is by processor speed. The pairs listed below are compatible only with each other. For example, the 400mhz can use 500mhz parts, but cannot use the parts from a 550mhz.

400mhz & 500mhz

550mhz & 667mhz (non-DVI)

667mhz & 867mhz DVI

To determine if your machine is a DVI model, then you will need to look at the rear ports on your unit. Look at the pictures below. The first picture is a NON-DVI model. (Notice the VGA port next to the fan slots.



The picture below is from a DVI model. Notice the rectangular DVI port.



Identification of Parts



Display



Bottom Pan Casing



Optical Drive



Inverter Board



Clutch Covers



Logic Board



Trackpad / Heat Exchange / Rib Frame



Modem

Before proceeding with any repair, make sure your powerbook is shut down and unplugged. It is a good idea to let your powerbook sit unplugged for at least 15 minutes before proceeding with any repair.

It is strongly recommended that you remove the battery before proceeding with any repairs.

Battery Removal



Turn the computer over with the bottom up as shown. Push the battery latch to the right as shown. The battery will then “pop” up and you will be able to remove it from the laptop as shown in the second picture.



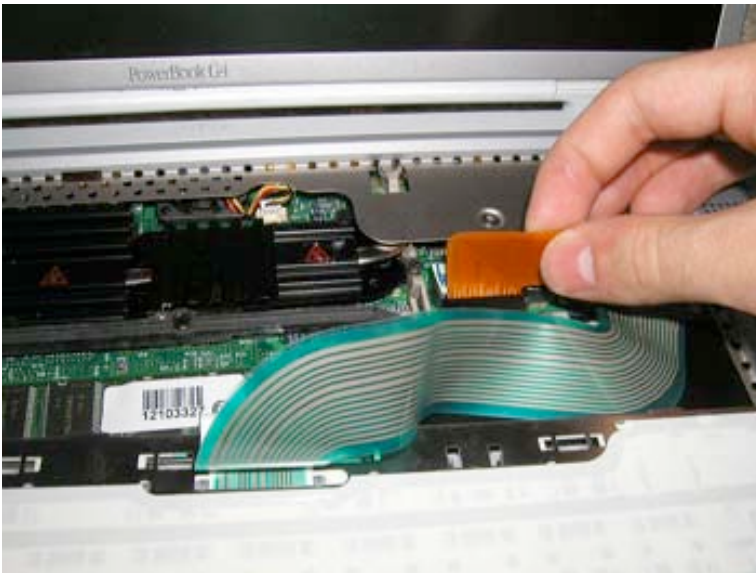
Keyboard Removal

Before proceeding, you must first remove:

Battery



After you have removed the battery, turn the computer over and open up the display. Then, depress the two keyboard tabs as shown in the picture. Holding the tabs in, flip the keyboard up and towards you. (If the keyboard does not easily come out, check to make sure you have not locked the keyboard.)



To remove the keyboard connector, grasp the cable as shown and gently pull up. You can gently wiggle the cable from side to side if it doesn't come off easily. Do not use much force. It should come off relatively easily.

Memory (Ram) Removal

Before proceeding, you must first remove:

Battery
Keyboard



To remove currently installed ram, pry back the metal or plastic fasteners holding in the ram as shown. Do this on each side. It's easier if you do them at the same time.



The ram chip will pop up. Just slide out to remove it. To install a new chip, just align the new chip in the grooves, press in, and then press down until the fasteners clip on both sides.

Modem Removal

Before proceeding, you must first remove:

Battery
Keyboard



To remove the modem you will need either a pair of pliers or a 5mm hex nut screwdriver or wrench. Undo the hex nut as shown. Then pull the modem up to disconnect it from the motherboard. Lastly remove the cable connected to the modem.

Bottom Case Removal

Before proceeding, you must first remove:

Battery



Remove the 8 Philips Head screws from the bottom case with a Philips Head screwdriver. Be careful not to strip the screws. (Apply just enough downward force to break the initial torque.)



Gently lift up on the case as shown. Do not use much force at all or you will break the trackpad casing. Gently work your way around the casing.



Take special care near the DVD drive area. This area is very delicate, and you especially risk breaking the trackpad at this point.

When the casing is loose, lift up and place it on a clean surface.

Airport Card Removal / Installation

Before proceeding, you must first remove:

Battery
Bottom Case



To remove the airport card locate the metal clip that holds the cable connector in place. Gently pry this back with your finger and pull up on the cable to release it from the connector.



Lift up on the card as shown. Then pull the card out of its connector. (You may gently rock the card side to side to ease it out of the connector.)



Using your fingers, pull the cable connector from the card. (If it is hard to pull the connector out, you can use a pair of needle nose pliers to gently pull the connector out while holding the card. If you do this, don't use much force at all or you risk breaking the card and connector.)

Hard Drive Removal

Before proceeding, you must first remove:

Battery
Bottom Case

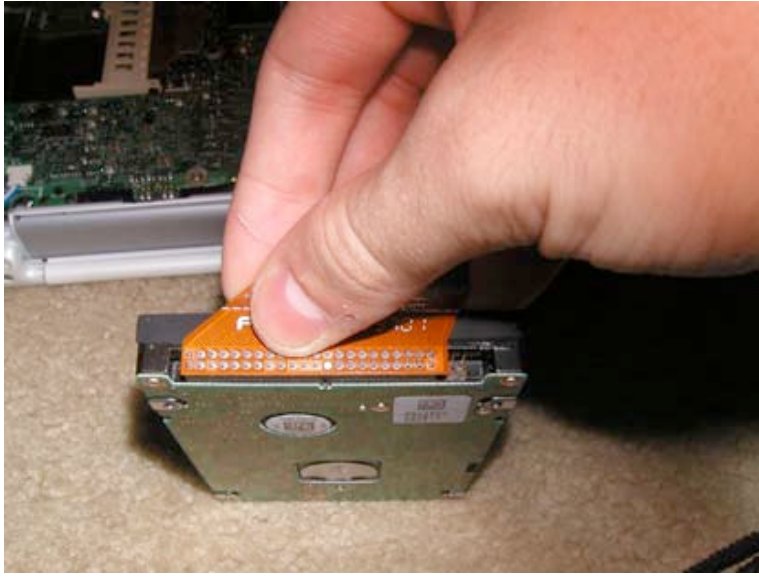


Disconnect the orange hard drive cable from the motherboard as shown.



Remove the two Torx T8 screws shown in red. These are located in the battery bay. Note – There are two rubber washers, if they fall out remember to put them back in when installing a new drive.

Lift the drive up and out.



Remove the orange cable from the hard drive by pulling the cable straight up as shown. Do not use excessive force or you will bend the connector pins.

Replacement note – If it is difficult to put the hard drive back in, you can remove the torx screw from the rib frame and move that portion of the rib frame slightly to allow for more wiggle room.

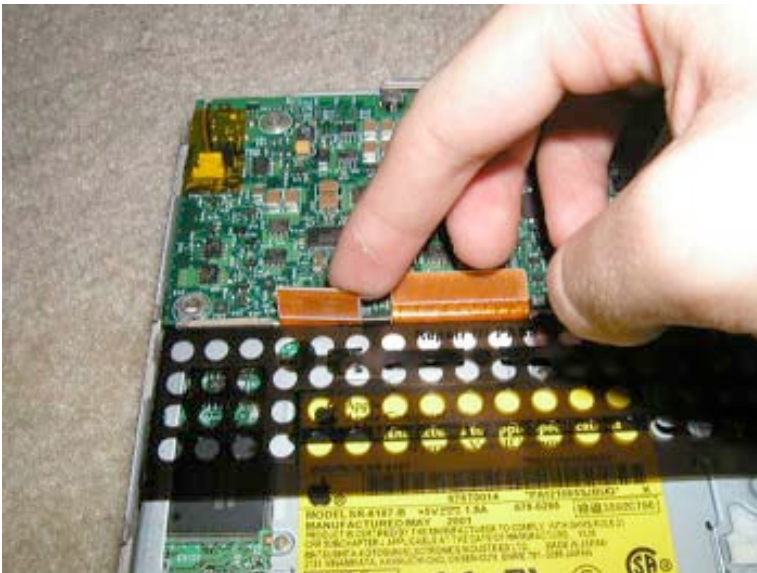
CD / DVD Drive Removal

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case



Remove the black dust cover as shown by gently prying up one corner and pulling up lightly. Work your way around the dust cover until it is free. (Do not pull too hard or you will tear part of the plastic on the DVD drive. It is recommended that you replace the dust cover when reinstalling a new drive.)



Turn the computer over and locate the DVD drive and two orange cables connected to the motherboard.

You must first remove the orange strip of tape covering the cables. Then, undo the orange cable on the left from the motherboard as shown. Your fingernail or a flat head screwdriver will work.



Grabbing the drive from the sides only, lift the drive up and out.
Note –Grasp the drive by the sides only or you run the risk of damaging your drive.

PMU Board Removal

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
CD/DVD Drive

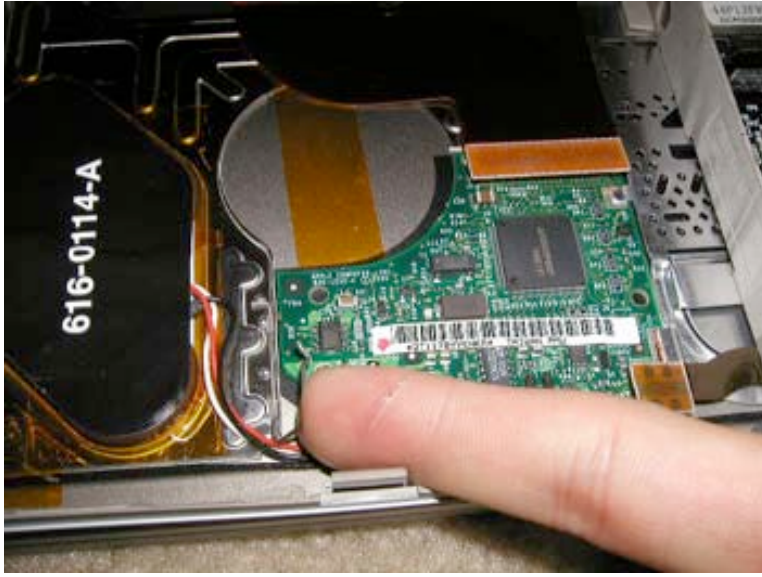


First, Remove all of the orange tape surrounding the PMU board.

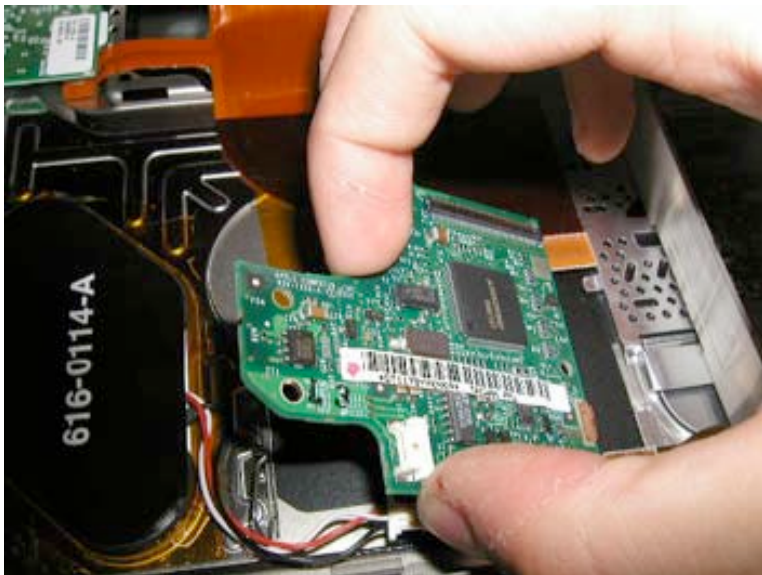
Then undo the two cables as shown. Your fingernail or a flathead screwdriver will work.



Undo the red white and black cable as shown.



Locate the metal hinge as shown and pull it in the direction of the Pram battery to lift it up and away from the PMU card.



Lift the PMU card up and out to remove. Pull in the direction of the PRAM battery.

Pram Battery Removal

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
CD/DVD Drive



Remove the orange tape covering the PRAM battery cable. Then, undo the white black and red cable from the PMU board as shown



The PRAM battery is held on by an adhesive tape. It is easiest to stick a flathead screwdriver under the battery and work your way around the battery gently pulling up to loosen the adhesive tape. The battery will then pull up and out.

Logic Board Removal

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
Airport Card (If installed)



Undo the cable connector shown in red.

Go to the next picture and remove the torx T8 screw near the PCMCIA card cage shown in red.

Undo the orange PCMCIA connector from the motherboard by gently prying it up.

Remove the battery connector cable from the motherboard by gently prying it up. This connector can be hard to remove sometimes. Use a flathead screwdriver while pulling up to make the job a little easier.





Locate the EMI clip as shown. Using a flathead screwdriver pry up the EMI clip. It will be behind the DVD drive.



Turn the laptop over.

Undo the three cables on the left hand side of the logic board. These cables are very delicate, so use extreme caution



If you have not already done so, disconnect the hard drive cable from the motherboard. The airport connector, which is also shown in red, does not need to be removed.

Remove the two Torx T8 screws as shown in red.



Locate the DVD drive and two orange cables connected to the motherboard.

You must first remove the orange strip of tape covering the cables.

Then, undo the two orange cables from the motherboard.

(In the picture the DVD drive has been previously removed)



Remove the orange piece of tape covering the black and grey cable on the right hand side of the logic board.

Carefully undo the cable.



Grasp the logic board as shown and gently pull up. Then gently pull the board out and place it on an anti-static surface.

Display Removal

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
Airport Card (If installed)
Logic Board



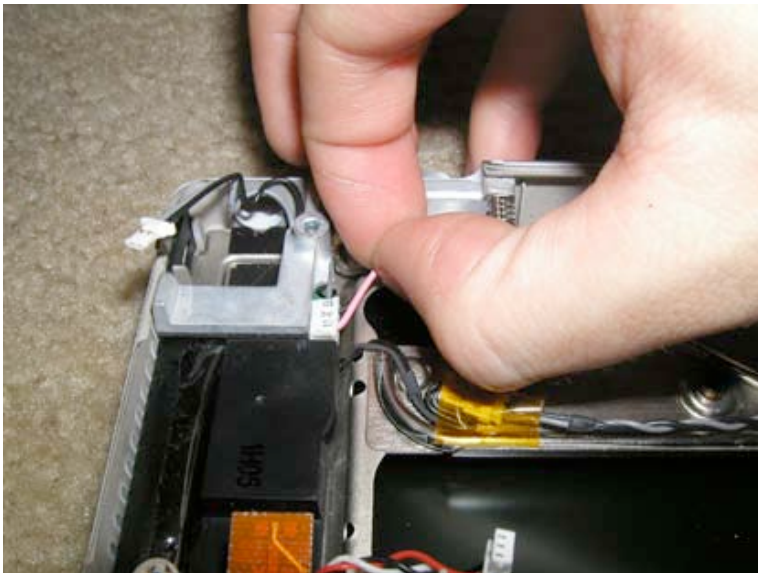
Remove the 4 Torx T8 screws on the clutch covers as shown.



Gently pry the clutch covers off of the frame. If you use a flathead screwdriver, be sure not to chip your paint. They should come off easily.



Now, remove the 4 Philips head screws at the locations shown. Do not remove the black screws on the black hinge. Be very careful around the cables.



On the right hand side, gently remove the pink and black cable from the inverter board as shown.



On both sides of the casing is the piece shown in red. This piece pivots up and “folds” over.

On the side with the display cable and white and blue wire, lift this piece up, and then, carefully guide the display cable and blue and white cable through the hole. You will have to turn the display data cable to get it properly go through the hole. Be very careful with the cables!

Display Take Apart / Hinge Replacement

READ BEFORE PROCEEDING

Working on the display of the G4 Titanium is a very risky procedure. If you are not careful, there is a high risk of damaging your display. Also, the casing will not look 100% cosmetically perfect many times after performing this repair if you have never done this type of work before.

Physical Harm – The casing of the Display is extremely sharp, and you risk cutting yourself on the casing if you are not careful. We strongly recommend using protective gloves when performing this procedure.

By performing any work on your Powerbook and by continuing with this repair, you agree that Powerbookmedic.com is in no way shape or form responsible for any damage done to your laptop or for physical injury done to yourself.

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
Airport Card (If installed)
Logic Board
Display



Hinge Mount Removal

Hold your display as shown, and locate the 2 hinge mounts shown in red in the picture. They will be held on by two black Philips head screws



Remove the two Philips head screws on each hinge mount as shown. Make sure to apply enough downward pressure so as not to strip the screws.



Guide the hinge mount out and towards you as shown.



Opening the Display

On both sides of the display you will notice 2 Torx T6 Screws as shown in red. If you want to remove the entire back panel (not recommended) or get to the display cable, you'll need to remove all 4. If you are performing just a hinge replacement, you only need to remove one from each side. (The ones on the bottom of the display where the hinges are located)

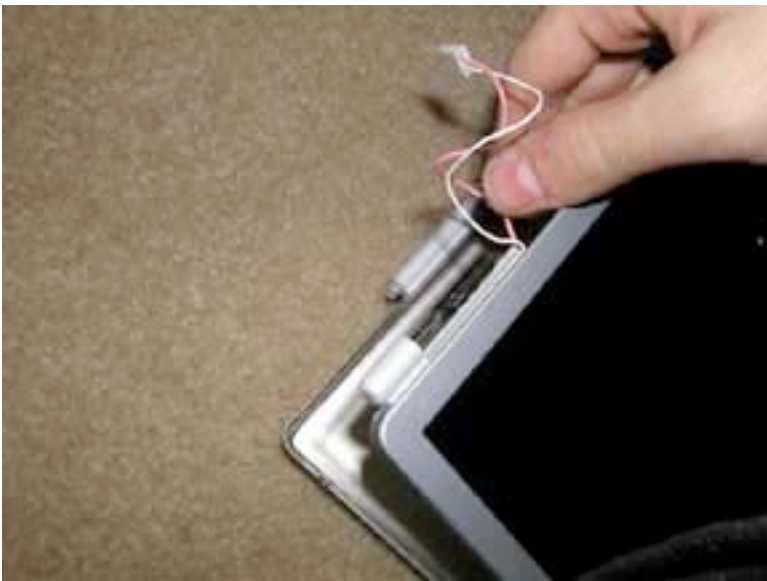


If your hinges are broken, the next step will be much easier. If your hinges aren't broken, then there is a high likelihood of breaking them when you try to open the display unless you take extra care.

Grab the display as shown, and pull with a fair amount of force up. You are needing to break the epoxy bond holding the display together. Try to only grasp the display as close to the edge as possible. You do not want to put pressure anywhere near the actual LCD or you may break it.



After the initial bond is broken, you need to work your way around the display to break the bond. Do this slowly. If you try to do too much at one time you'll dent your display casing. Again, only grasp from the sides. If you are performing the hinge repair only break the bond up to about 3-4" along the side...you want to break the bond as little as possible as it will be a cleaner repair when you are done.



Display Cable Replacement

If you are replacing the hinges, skip these next steps for the display cable removal.

Break the bond all the way around three edges of the display. Do not break the bond on the top of the display (side with screen latch mechanism) unless absolutely necessary. It is very difficult to put the casing back together if you break the top bond.



After you work your way around, it should look something like the picture.



From the base of the display, open the display as shown. You'll notice there is an orange piece of tape holding the display cable to the display connector. You will need to remove this piece of tape as well as the piece holding the cable on closer to the bottom of the display. You will then be able to remove the cable from its connector.



Note: this picture is turned around from the picture above.

The display cable is most easily replaced by replacing the enter cable and frieze (the white cylindrical plastic piece that is about 7" long)

The frieze is held on by a light epoxy, so you just have to pull it towards you and off as shown.

The cable will then be free. You can then replace the cable. You will need to epoxy the case (and frieze back together) Use a small amount of epoxy all the way along the casing edge, and then clamp and let sit. See instructions below for more information on epoxy.

Hinge Replacement

Note: Some of these pictures are taken with the display still attached. It is possible to do the repair without removing the display module, but in so doing you risk more damage to your unit. We strongly recommend against this!

There are two main ways your hinges can break. We will cover the repair of both types of breaks below.



Break Type # 1

The picture to the left shows the first type of possible hinge break. If you're lucky, this is what you've got. The hinge is broken off only at the base. This makes extraction of the bad hinge much easier.

Follow the instructions above to break the bond on about 3-4" of the casing on the side of the casing of the hinge you need to replace.



Use a flat tool to nudge the bad hinge up. Do not use a lot of force or you will dent your casing.



Follow the hinge along, and continue gently nudging the hinge up until you believe it is sufficiently loose to be extracted. Again, do not use much force.



Use a pair of need nose pliers to pull the hinge towards you and out. Note: Do not use much force. You want the hinge to come out easily. If you use too much force the hinge will break and extraction will be much more difficult.

If you have extracted your hinge at this point, skip the next step on the second type of break.



Break Type # 2

With the second type of break, there is a stronger likelihood that the repair will leave your casing slightly damaged. In this type of break, the hinge breaks higher up into your casing. This makes extraction of the bad hinge much more difficult.



If you haven't done so already, follow the instructions above to break the bond on about 3-4" of the casing on the side of the casing of the hinge you need to replace.

Then, extract the first part of the broken hinge.



If the rest of the hinge does not come out easily, you will need to use a flat head tool to follow the piece of the hinge and break the bond with the hinge and the casing. The less force you use, the easier it will be to close your casing.



A lot of times, you will damage the thin piece of metal that connects the top casing to the bottom casing. When you close your display back, it will normally go back into position, but you may have to prod it in certain places with a flat head screwdriver to allow the casing to close correctly.



Use a pair of needle nose pliers to extract the hinge when it is loose enough to be pulled out.



Putting it Back Together

To put the display back together, you have to bond it with epoxy or contact cement. We use Loctite Quick Set Epoxy. It is very strong, and does the job well. The downside is that if you make a mistake in the repair, getting back in may be more difficult. Contact cement has a more glue consistency, and while it won't look as pretty or be as strong, it will be easier to undo if you make a mistake.

If you use the epoxy, premix the two components. (You can use broken hinges to mix.)



Apply the epoxy to the hinge. Apply enough to thoroughly coat the hinge, but not enough so that it drops off the hinge or that there are big gobs. If you use too much you could damage the display. Also, BE CAREFUL with the epoxy. Do not get the epoxy on your display or you will damage it. Make sure you only get it on the hinge and the area it needs to go in.



Line the epoxied hinge up with the hinge hole.

NOTE: If you are repairing the hinge around the inverter wire, be extremely careful that you guide the wire into the frieze before putting the hinge in. You want the inverter cable to come out of the frieze and no other place or you will have a whole other set of problems on your hand.



Guide the hinge into place. Make sure the hinge goes all the way back and then fits snugly into its corner.

Wipe off any excess epoxy!



Use a strong spring clamp (available at Wal-mart) to clamp the display shut. Only clamp the edge of the display! Do not put the clamp on the actual LCD or you will break it. Let the epoxy sit for 24 hours or as the instructions say. 24 hours is a good time to let the epoxy sit however.

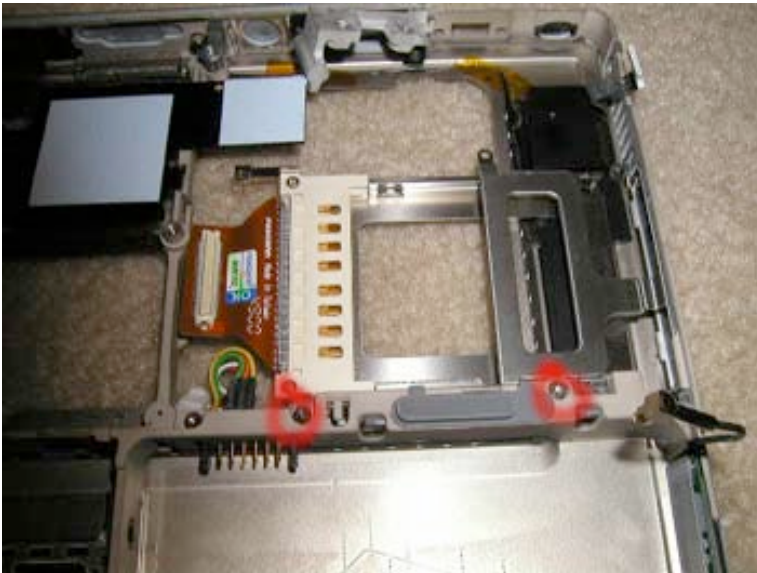
After it is dry, use a cleaner like GOO BE GONE on the case if you accidentally got some epoxy on it.

Reassemble your laptop.

PCMCIA Card Cage Replacement

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
Airport Card (If installed)
Logic Board



Remove the two torx T8 screws as shown. Then just lift the card cage out of the trackpad.

Rib Frame / Heat Exchange Removal

Before proceeding, you must first remove:

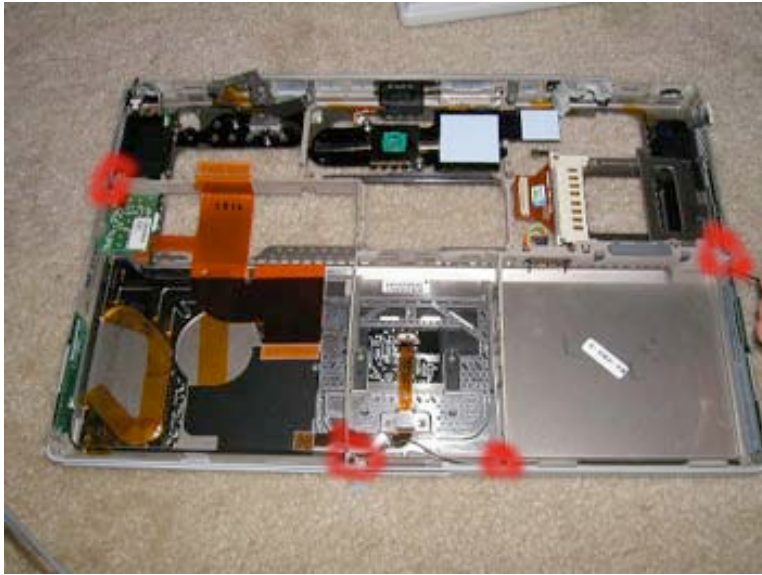
Battery
Keyboard
Bottom Case
Airport Card (If installed)
Logic Board
PCMCIA Card Cage



Remove the 4 Torx T6 Screws
near the ports as shown.



Remove the 4 Torx T8 screws
from the location shown.



Along the rib frame there are 4 small torx T8 screws as shown.

Remove all 4 screws.

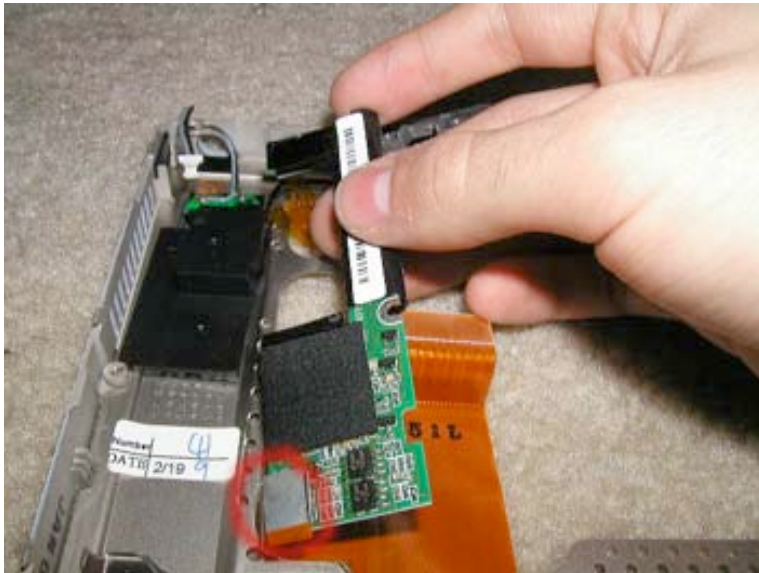


Gently lift the rib frame and heat sync up and out.

Inverter Board Removal

Before proceeding, you must first remove:

Battery
Keyboard
Bottom Case
Airport Card (If installed)
Logic Board
PCMCIA Card Cage
Rib Frame / Heat Exchanger



Fold the inverter board over and undo the orange connector as shown. The board will now be free to be removed.

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