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PowerBook G3 Series (Wall Street)

Keep your 'Book up to date

Soup up your PowerBook

An inescapable truth in a technological world is that in order to keep up, one must trade up. Who, for example, would have imagined that the massively expansive 2GB hard drive in 1998's PowerBook G3 would be considered inadequate for today's modest library of MP3 files? Or that the original Titanium PowerBook G4's 64MB of RAM would be incapable of booting the version of Mac OS current in the waning weeks of 2002?



Hot links

www.apple-history.com

What type of PowerBook do you have?

docs.info.apple.com/article.html?artnum=14870

What type of RAM do you need? (Be sure to check the footnotes).

1 Prepare to upgrade the RAM.

If you looked at specifications alone, you'd think this PowerBook's maximum RAM capacity was 192MB. Small high-capacity RAM modules weren't available when the Wall Street was released, but they are now. You can actually install as much as 512MB of RAM if you put 256MB 144-pin SDRAM modules in both the user-accessible upper RAM slot and the supposedly for-Apple-techs-only slot beneath the processor card.

● First, shut down the PowerBook and remove all attached cables. Pull the front expansion-bay release handles toward you to eject any inserted peripheral modules (the battery and the CD-ROM drive, for example). Place your index fingers inside the expansion bays and locate the ridged, plastic tab on the roof of each expansion bay. Pull the tabs toward you to release the bottom of the keyboard.

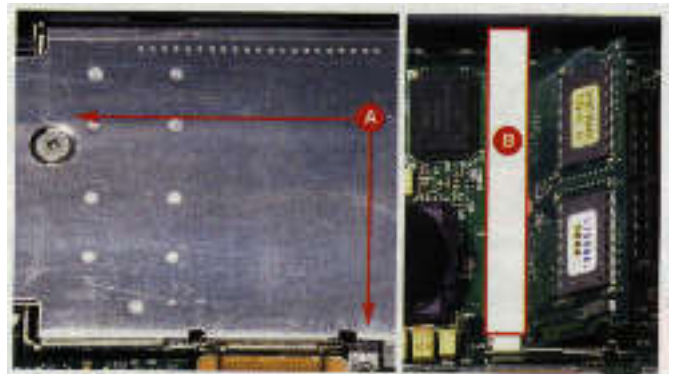
Lift the bottom of the keyboard, and pull it toward you to release the metal tabs that hold the top of the keyboard in place. Fold the keyboard back toward you, making sure not to tug on the keyboard's fragile connector ribbons.

2 Access the first RAM slot.

Now that you're inside the Mac, you can access the first RAM slot — but wait to put in the card if you're going to upgrade the hidden RAM slot, too. Be sure to use a grounding strap if one came with the RAM you purchased. If you don't have one, touch the metal hard-drive bracket to the side of the heat shield to discharge any static electricity.

● Using a small Phillips-head screwdriver, unscrew the two screws that hold the heat shield in place. A. Use needle-nose pliers to remove the screw closest to you if your fingers can't grasp it. Pull the shield's wire handle toward you to remove the shield.

The white slot on top of the processor card is the PowerBook's user-serviceable RAM slot. If you want to upgrade the PowerBook via this slot only, insert a 144-pin SDRAM module (up to 256MB) at a 45-degree angle and press it into place so that the indentations on the side line up with the snaps on the retaining brackets. B. (If your RAM upgrade is complete, skip to step 4.)



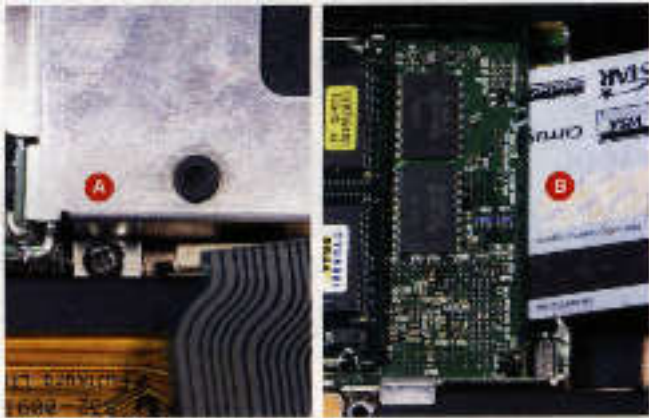
3

Access the hidden RAM slot.

If you want to upgrade the Mac's other RAM slot, refrain from installing RAM in the top socket for the time being. The hidden slot is on the underside of the processor card (the user-upgradable RAM slot sits atop the processor card).

- To reach the hidden slot, first unscrew the single Phillips-head (shown here) or Torx T8 screw at the bottom left corner of the hard-drive bracket A. Pull up on the left side of the hard-drive bracket and lift it and the hard drive out.

Use a plastic (not metal) shim (a couple of old credit cards you're not attached to will do) to carefully pry up the right side of the processor card B. (Don't use a screwdriver! It can damage the processor card's delicate traces and destroy your PowerBook.) On the underside of the processor card, you'll see another white RAM slot filled with the PowerBook's original RAM. Remove this RAM by gently prying apart the retaining brackets until the module pops up. Replace it with a module no larger than 1.5 inches (the top slot can accommodate 1-, 1.5-, and 2-inch modules).



4

Put back the processor card.

Replacing the processor card isn't difficult, but you must put it firmly in place. Your PowerBook won't boot up if its not completely mated with the motherboard.

- Slip the two plastic tabs on the left side of the processor card into the slots on the left side of the processor bracket, and press the processor card firmly into place.

5

Access the hidden RAM slot.

All PowerBook G3 Series models use 2.5-inch IDE/ATA hard drives — either the Slim 12.5mm or SuperSlim 9.5mm varieties. In step 3 you learned how to remove the hard-drive bracket (and hard drive). To replace the drive, first remove the data connector.

- Using a Torx T-8 screwdriver, unscrew the two screws that hold the green data connector to the hard-drive bracket A. Turn the bracket over so you can see the drive, and carefully use a plastic shim (or a well-honed fingernail) to separate the connector from the hard drive at the base of the connector. To avoid damaging the connection between the motherboard and the hard drive, don't pull on the green circuit board! Turn the



bracket over, and remove the four black Torx T-8 screws that hold the drive to the bracket.

6

Reassemble with the new hard drive.

Unlike hard drives intended for desktop computers, drives intended for laptops are always sold configured with master jumper settings — so you needn't worry about them.

- Replace the drive, screw it into the bracket, attach the data connector, and press the new hard drive into place. Tighten the screw that holds the drive in position, and replace the heat shield. Put back the keyboard and expansion-bay modules. Plug in the power cord and any peripheral cables.

Finally, insert a system software CD. You'll need to format the new hard drive, so push the power button and hold down the C key to boot from the CD. If you've booted from a Mac OS 9 CD, launch Drive Setup, which you can find in the Utilities folder inside the Applications (Mac OS 9) folder. Select the drive in the Drive Setup window, and click on the Initialize button.

If you've booted from a Mac OS X Installer disc, select Disk Utility from the Installer menu, select the drive in the left side of the Disk Utility window, and click on the Erase tab. Choose Mac OS X Extended from the Volume Format pop-up menu, and click on the Erase button. Install Mac OS and enjoy.

PowerBook G4 (Titanium)

1

Prepare to upgrade the RAM.

It's a piece of cake to upgrade your Titanium PowerBook's memory -there's no need to remove a processor card to access the second RAM slot. Over its lifetime, the PowerBook G4 has shipped with two different types of RAM: PC100 and PC133. To simplify your life, we recommend you buy PC133144-pin SDRAM. This variety of RAM is easy to find and works in all PowerBook G4 varieties. (Only the older PowerBook G4 can accept PC100 RAM.)

- After shutting down the PowerBook and removing its cables, press the two release tabs at the top of the keyboard and fold the keyboard toward you. If you're not using a grounding strap, touch the inner metal case near the PowerBook's power button.

The RAM in this PowerBook is contained in two slots that piggyback one another just to the left of the bottom of the keyboard A. Carefully pry apart the RAM brackets that hold the installed RAM in place, and replace the RAM with two higher-capacity cards. (The maximum is 1GB total.) Replace the keyboard when you're done.



2

Prepare to upgrade the hard drive.

The PowerBook G4's hard drive is beneath the bottom cover. Get ready to remove a lot of screws.

- Make sure that your PowerBook is off and that you've removed any cables. To avoid scratching the top of your PowerBook, place it, top down, on a non-abrasive surface. Remove the battery and the eight small screws that hold the cover in place A. With the screws removed, pull the cover toward you slightly and lift up.



3

Detach the data cable and remove the hard drive.

To avoid bending (and possibly breaking) the hard drive's data cable when you remove the drive, detach it now.

- With your fingers, gently pull up on the dark orange hard-drive data cable attached to the motherboard A. Use a Torx T-8 screwdriver to remove the two screws on the side of the battery compartment that hold the drive in place B. Using an old credit card or other stiff piece of plastic, pry up the back of the hard drive.

Thanks to four rubber grommets, the hard drive will offer resistance as you pull it out. The two grommets closest to the battery compartment are likely to remain in the hard-drive compartment.



4

Remove the grommets, insulator sheet, and data cable.

Before you can extract the hard drive from the internal bracket, you must remove the drive's accoutrements.

- Remove the grommets, pull off the plastic insulator sheet, and carefully pull the data connector away from the drive. (Grasp the black connector rather than the orange data cable A.) Remove the remaining two Torx T-8 screws from the side of the drive. (The bracket doesn't come out with the drive.)



5

Attach the accoutrements to the new drive

The hard drive, grommets, data connector, and plastic insulator sheet all go back into the PowerBook as one unit. Here's how to assemble them.

- With the name of the hard drive facing up and the data pins pointing away from you, screw two Torx T8 screws into the left side of the drive. Place the two rubber grommets over these screws with the thickest portion of the grommet closest to the drive.

Attach the data connector to the drive so that the four pins to the left of the drive remain uncovered (these are for jumpers that you don't need). Attach the plastic insulator sheet. Now you're ready to put the new drive into your PowerBook.

6

insert the drive.

It may be easy to access the Titanium PowerBook's RAM slots, but you'll have to work in very cramped quarters to put in a new hard drive. It's a tight fit, but you can do it.



- Make sure the rubber grommets on the right side of the drive bracket are firmly in place. Position the drive sideways at a 45-degree angle so that the grommets on the left side of the drive line

up with the holes on the left side of the drive bracket A. Push the drive into place and screw the two Torx T-8 screws into the right side of the hard drive from the battery compartment. Reattach the data connector to the motherboard.

7

Replace the cover and format the drive.

Perform this step carefully, as the bottom cover may not fit correctly the first time. The screws should go straight into the holes and not resist being tightened.

- Place the cover just below where it should go, and push it into place. Be sure the screw holes are aligned before replacing screws. Replace the screws and the battery. Plug in the power cord and any peripheral cables.

Finally, insert a system-software CD into the media drive. You'll need to format the new drive, so push the power button and do so (see step 6 in the Wall Street section). Install Mac OS, and enjoy your updated PowerBook.

Three PowerBook upgrade tips

■ **Which PowerBook do you have?** First released in 1998, the Wall Street PowerBooks can be identified by the multi-coloured Apple logo at the bottom of the display. (These were the last PowerBooks to bear that logo.) The original PowerBook G4, released in 2001, was the first to sport the Titanium case. See "Hot links" for sites with more detailed info.

■ **Don't know your DIMMs from your DRAMS?** You're not alone. SO-DIMM refers to the form factor of the RAM module in most PowerBooks; it means "Small Outline DIMM." SO-DIMM is a smaller module (with 144 pins) than the 168-pin DIMMs found in desktop Macs. SDRAM is the type of RAM found in that module.

■ **All RAM isn't created equal.** The Mac OS X 10.2 installer can fail to work properly if your PowerBook contains RAM that doesn't comply with Apple's specifications. Before you purchase additional RAM, it's a good idea to call the maker or check its web site to make sure the RAM meets those specifications.