

ENCORE™/ST G4 DUET™

Dual Processor Upgrade Card for Power Mac® G4 AGP Graphics

Quick Start Guide for Encore/ST G4 Duet

Power Mac and Operating System Compatibility

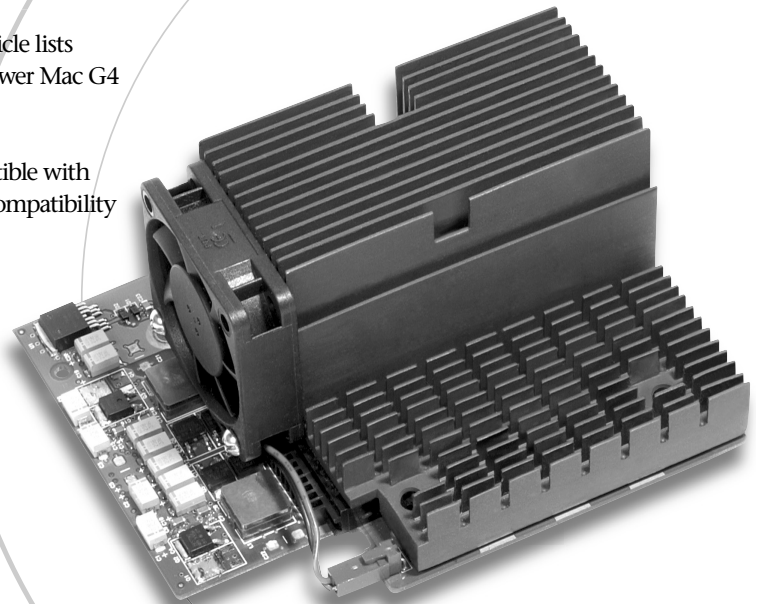
This Encore/ST G4 Duet processor upgrade card is compatible only with Power Mac® G4 AGP Graphics, Gigabit Ethernet, Digital Audio, QuickSilver 2001, and QuickSilver 2002 models. *Installation of this product into a Power Mac G4 Cube is not currently supported. If you are unsure which Power Mac model you have, refer to Apple's online support article that describes the differences at <http://docs.info.apple.com/article.html?artnum=58418>. This article lists model numbers, and describes the physical aspects of the various Power Mac G4 models.*

At this printing, the Encore/ST G4 Duet processor upgrade is compatible with Mac OS® 9.2 through OS X Version 10.3.x. For up-to-date Mac OS compatibility information, check our web site.



WARNING: Some Power Mac G4 (AGP Graphics) models are incompatible with dual processor cards. If you purchased this upgrade for a Power Mac G4 (AGP Graphics) computer, be sure to read the included warning sheet for information on how to determine whether your system is compatible before you install this product.

In order for the Encore/ST G4 Duet to operate in your system, Mac OS 9.2 (or later), and the latest Power Mac G4 firmware must be installed. If your system does not meet these criteria, you must upgrade to OS 9.2 (or later) and update your system's firmware before installing this upgrade. Otherwise, your system will not operate with the Encore/ST G4 Duet installed. Instructions follow.



The Encore/ST G4 Duet supports hard disk and display sleep in all compatible Power Mac G4 computers; in some configurations, deep sleep may not be supported.

You Should Have

The following items should be included in your product package:

- Encore/ST G4 Duet processor upgrade card*
- Power card*
- Sonnet Installer CD

The following items are required for installation:

- Medium Phillips screwdriver
- Flat blade screwdriver (only for QuickSilver installation)
- Needle-nose pliers

* Your card may differ from what is pictured.



Support Notes: Please familiarize yourself with the following instructions before beginning the installation. If you feel you are unable to install the computer hardware, please contact a qualified computer technician. Sonnet strongly recommends that a qualified technician perform this installation.

Before proceeding with the installation, we recommend that you make a backup of important information on your hard drive prior to installing new hardware or software.

Multiple Upgrade Recommendation

If you intend to perform multiple hardware upgrades to your Power Mac, we recommend that you complete the installation of the Encore/ST G4 Duet first, and then install the remaining upgrades; *complete each upgrade and test it before proceeding to the next.*



Remember to register your product online at <http://registration.sonnettech.com> to be informed of future upgrades and product releases.

Software updates and links are available from the Sonnet web site at www.sonnettech.com. • Online support form available at <http://supportform.sonnettech.com>.

Sonnet Technologies Customer Service hours are Mon.-Fri., 7 a.m.-5 p.m. Pacific Time • Customer Service Phone: 1-949-472-2772 • E-mail: support@sonnettech.com
Sonnet Technologies, Inc., Irvine, California USA • Tel: 1-949-587-3500 Fax: 1-949-457-6350

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Software and Firmware Installation/Update Info



WARNING: Before starting the installation, be sure to read the **Important Notice page** (on colored paper) included in the package with this document. The notice contains information regarding compatibility issues of the Duet with some Power Mac computers.

Install or Upgrade to Mac OS 9.2 or Later, If Necessary

The Encore/ST G4 Duet requires Mac OS 9.2 or later in order to operate in your system, and must be installed before you install the processor upgrade card.

1. Verify the Mac OS version running on your system is at least Mac OS 9.2, and then install or upgrade the OS software if necessary (Figure 1).

Install Sonnet Software—All Models with Mac OS 9.2 Installed



Mac OS 9.2 User Alert: *Mac OS 9.2 users MUST run the Crescendo/Encore installer from the included Sonnet Installer CD.* Due to issues arising from the use of current 745x G4 processors on the Encore/ST G4 Duet in some older systems, sleep is not supported under Mac OS 9.2 unless you run the Crescendo/Encore installer (version 2.2 or higher). **If you fail to run the installer and your system goes into sleep mode while running OS 9.2, your system will not wake up; you will have to hard restart your system.**

Please note that if you only run classic applications in the Classic environment within Mac OS X, this issue will not appear.

This section describes the installation of software required to support the Encore/ST G4 Duet in compatible Power Mac computers under Mac OS 9.2. *If you only use Mac OS X, you may skip this section;* go to “Update Power Mac Firmware” below.

1. Insert the Sonnet Installer CD into the CD-ROM drive.
2. Double-click the Crescendo/Encore Install icon. By default, with “Easy Install” selected from the pop-up menu, the required software will be installed into the active System Folder on the boot drive. If this is okay, click the Install button; otherwise, select “Custom Install” from the pop-up menu for more options or to select another drive to install the software. The installer will install the appropriate software into the System Folder of your computer.
3. If the installation is successful, a dialog box will appear. Click Quit to leave the installer and shut down your computer.

- CONTINUED ON NEXT PAGE -

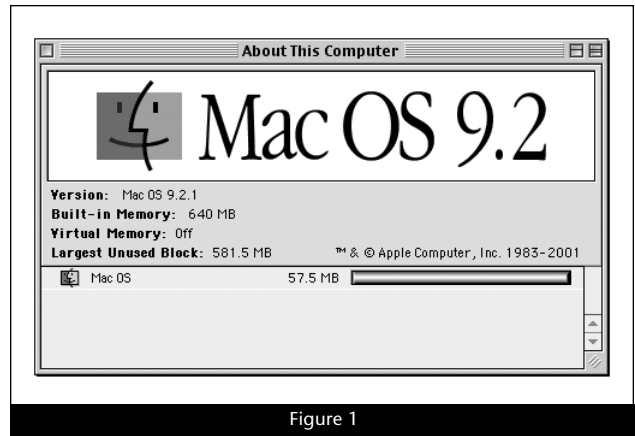


Figure 1

Software and Firmware Installation/Update Info



WARNING: When you install (or upgrade to) Mac OS 9.2 or later in an AGP Graphics, Gigabit Ethernet, or Digital Audio model, you may have to upgrade your computer's firmware as part of the software installation. Please note, the firmware installed with the Mac OS may not be the version required by the Encore/ST. **Before installing the Encore/ST G4 Duet, you may be required to upgrade your firmware again; you MUST ensure your system is using version 4.2.8 firmware.** If your system is using an earlier version of the firmware, your system will not operate with the Encore/ST G4 Duet installed.

Update Power Mac Firmware—AGP Graphics, Gigabit Ethernet, and Digital Audio Models

Before installing the Encore/ST G4 Duet, you must ensure your AGP Graphics, Gigabit Ethernet, or Digital Audio system's firmware has been updated to the latest version (currently 4.2.8). Please note, *your system may need to connect to the Internet to perform some of the steps.*

1. **OS 9 users:** Select and open Apple System Profiler from the Apple Menu. Click the triangle next to Production Information, and find the Boot ROM version information (**Figure 2**). If it reads "\$0004.28f1", skip the rest of the steps in this section and proceed to page 3. Otherwise, go to step 2.

OS X users: Open System Profiler or Apple System Profiler (located within the Utilities folder found in the Applications folder). Find the Boot ROM information listed in the Hardware Overview pane (**Figure 3**). If it reads "4.28f1", skip the rest of the steps in this section and proceed to page 3. Otherwise, go to step 2.

2. Boot your system in Mac OS 9.2.x (the firmware updater will not work in OS X Classic mode). As of this writing, Apple has not made this firmware updater available as an OS X application.
3. Log on to the Internet and type the following in your browser window's address bar:
<http://docs.info.apple.com/article.html?artnum=120068>
4. Click on the appropriate link to download the firmware (**Figure 4**).
5. Double-click the G4 FW Update 4.2.8.smi file icon to mount the G4 Firmware Update disk image. Double-click the G4 Firmware Update icon to open the disk image, then double-click the About G4 Firmware Update file icon. Once the read me file has opened, print it. Following the directions on the pages you printed, update the firmware on your system.

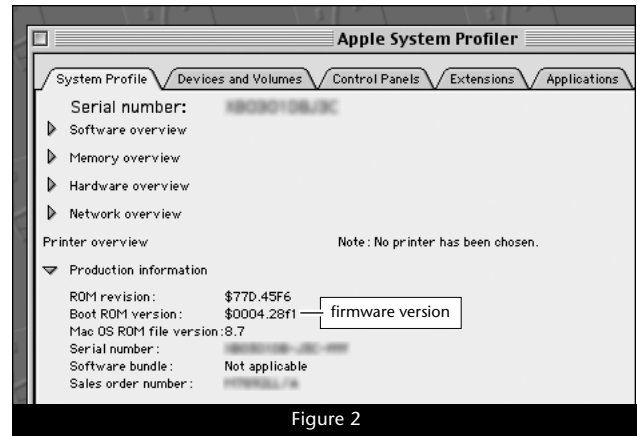


Figure 2

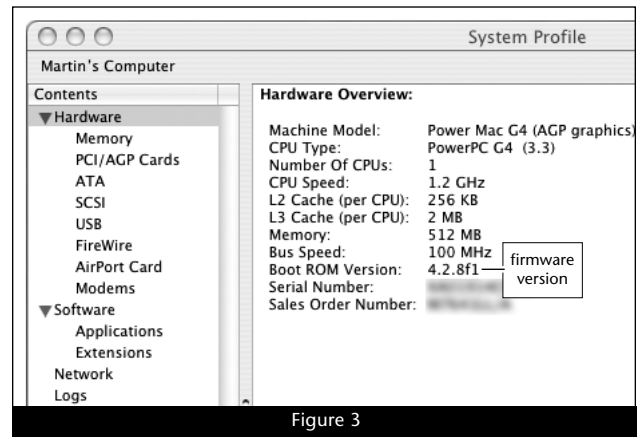


Figure 3

Language/OS Required	Release Date	Version	Read Me	Software
Any English Any English Mac OS 9.1 or later (but not X) is required	2001-10-18	4.2.8		 1.2 MB
Français French Mac OS 9.1 or later (but not X) is required	2001-10-25	4.2.8		 1.2 MB
Deutsch German Mac OS 9.1 or later (but not X) is required	2001-10-25	4.2.8		 1.2 MB
Español Spanish Mac OS 9.1 or later (but not X) is required	2001-10-25	4.2.8		 1.2 MB
Italiano Italian Mac OS 9.1 or later (but not X) is required	2001-10-25	4.2.8		 1.2 MB
Japanese Japanese Mac OS 9.1 or later (but not X) is required	2001-10-25	4.2.8		 1.2 MB

Figure 4

Installation—AGP Graphics and Gigabit Ethernet Models

This section covers the installation of the Encore/ST G4 Duet into Power Mac G4 AGP Graphics and Gigabit Ethernet models. If you are installing this product into a Digital Audio model, skip to page 6. If you are installing this product into a QuickSilver 2001 or QuickSilver 2002 model, skip to page 10.



WARNING: When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle processor upgrade cards only by their edges and avoid touching connector traces and component pins.

Shut Down and Open Computer

1. Shut down your Power Mac. If the computer has been on for a while, allow 20 minutes for it to completely cool before beginning the installation.
2. If you need to move the computer to a different area where you can work freely, disconnect any connected cables, move the computer, then reconnect the power cord to the computer and an electrical outlet.
3. Touch a port access cover on the back of the computer (**Figure 5**) to discharge any potentially damaging static electricity.
4. Disconnect the power cord from the computer.



Support Note: To avoid generating a static charge in your body, do not walk around the room until after you finish installing the Encore card and close the computer.

5. Locate the security lock at the back of the computer (**Figure 6**). If it is not already pressed in, press it in now.
6. With the right side of the case facing you, open your Power Mac by lifting the release latch and lowering the side panel away from the computer's case (**Figure 7**).

Remove Heat Sink

Locate the processor heat sink on the logic board (**Figure 8**); your heat sink may appear different from what is pictured. Using caution to avoid touching the processor card, grasp one of the clips securing the heat sink with needle-nose pliers, between the heat sink and processor card. Pull down and away to unhook one side of the clip from the processor card (**Figure 8**). Push the clip away from you to unhook it from the other side. Repeat these steps with the other clip. Once the clips have been unhooked, gently lift the heat sink and clips away from the processor and set them aside, but not on the logic board.

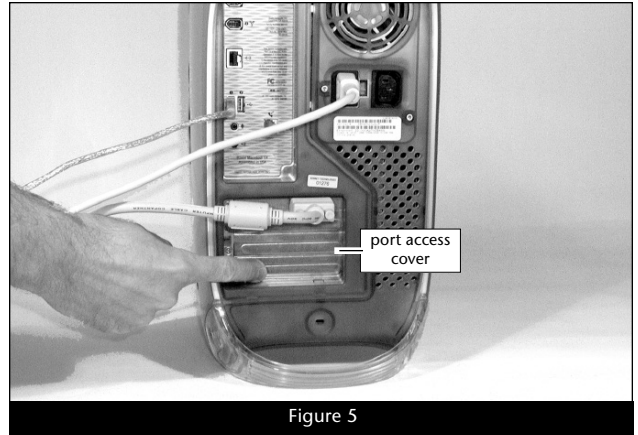


Figure 5



Figure 6

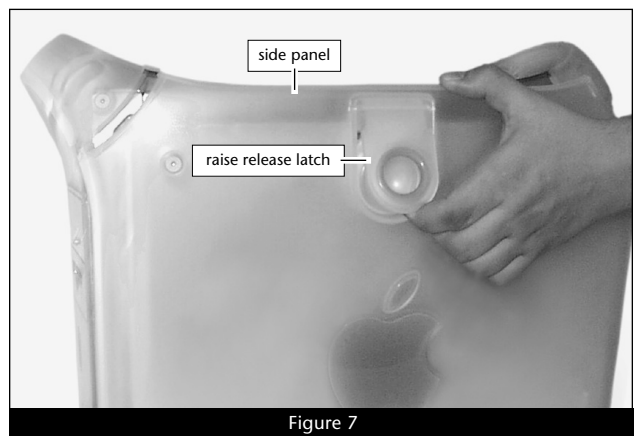


Figure 7

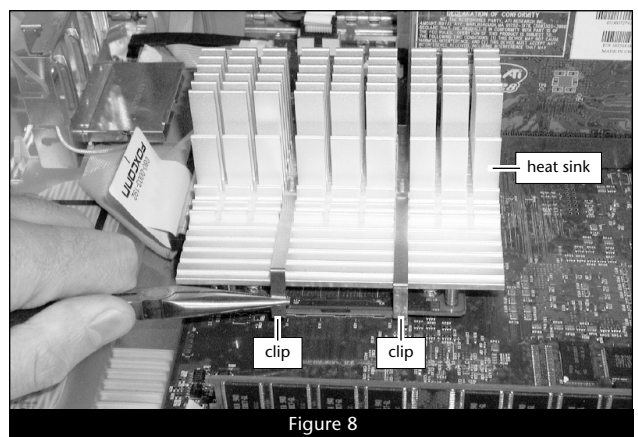
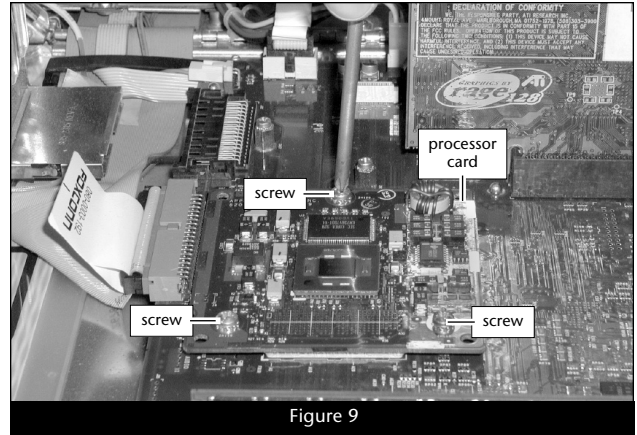


Figure 8

Installation—AGP Graphics and Gigabit Ethernet Models

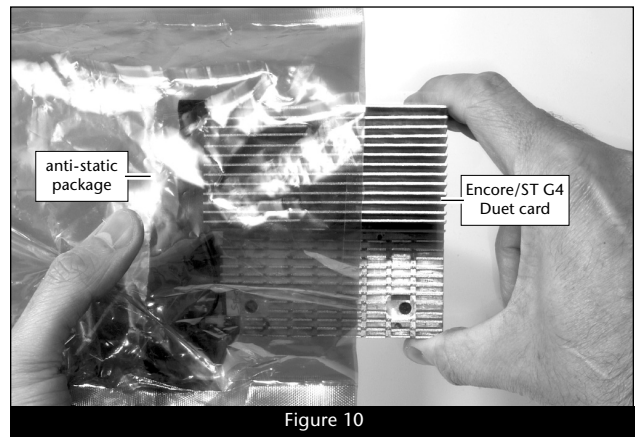
Remove Processor Card

Remove the three screws securing the processor card to the logic board (Figure 9). Grasping its edges, gently lift one edge of the processor card to separate it from the logic board, and then carefully lift it straight up and away.

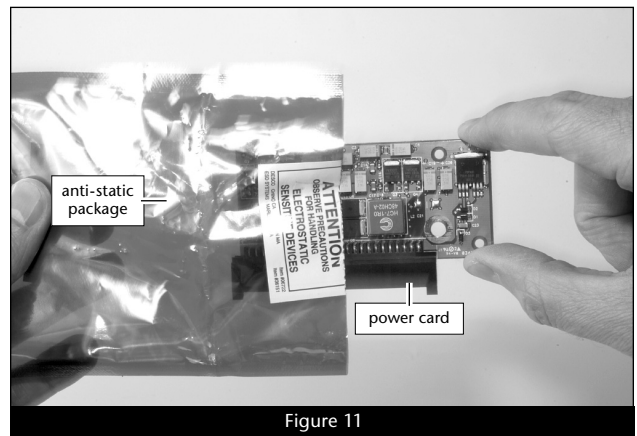


Install Encore/ST G4 Duet Processor Upgrade Card

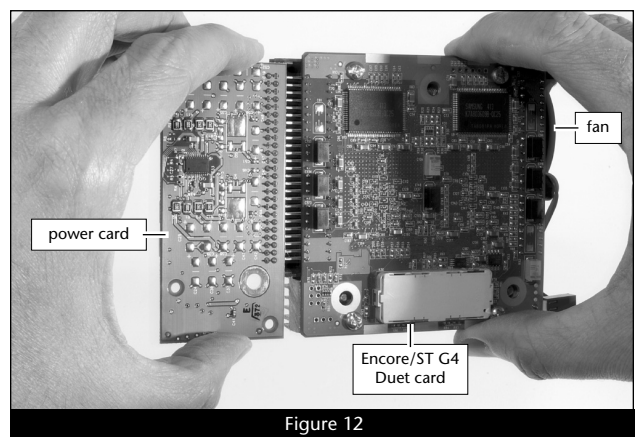
1. Remove the Encore/ST G4 Duet processor upgrade card from its anti-static package; make sure to handle the card by its edges (Figure 10); *your card may differ from what is pictured*. Set the card, heat sink side down, on a flat, level surface.



2. Remove the power card from its anti-static package; make sure to handle the card by its edges (Figure 11); *your card may differ from what is pictured*.



3. Grasp the Duet processor card with its heat sink face down and the fan on the right (Figure 12). Holding the power card as shown, align its connector with the connector on the left edge of the Duet processor card.
4. Making sure the pins are lined up with the holes, carefully and completely plug the power card into the Duet processor card (Figure 12). If you encounter any unusual resistance, separate the cards and check for bent pins; if none are bent, realign the pins with the holes and plug in the power card again.




Installation—AGP Graphics and Gigabit Ethernet Models

- Carefully remove the cap covering the connector on the bottom of the Duet processor card (**Figure 13**), and then place the cap on the original processor card's connector.
- Place the processor card you removed from the computer into the anti-static package, and then store it, the original heat sink, heat sink clips, and the screws you removed in a safe place.
- Align the connector on the bottom of the Duet card with the connector on the logic board (**Figure 14**), and then set the card down on top of the three threaded posts (not shown). Make sure the connectors are lined up, then, grasping the Duet card by its heat sink, gently press it straight down until the connectors snap together. Verify the connectors are completely coupled by gently pulling up on the edges of the Encore/ST board; the board should remain firmly in place.
- Making sure the Duet card's captive screws are engaged properly in the threaded posts, tighten each of the three screws and secure the card snugly to the logic board; **do not overtighten the screws** (**Figure 15**).

Close Computer

- Raise the side panel back into place (**Figure 16**).
- Return the computer to your computing area if necessary, and reconnect the power cord and peripheral cables to the computer.

 **WARNING:** When your computer is operating, the Duet's heat sinks will become VERY hot to the touch; take care to not touch the heat sinks, or you may get burned.

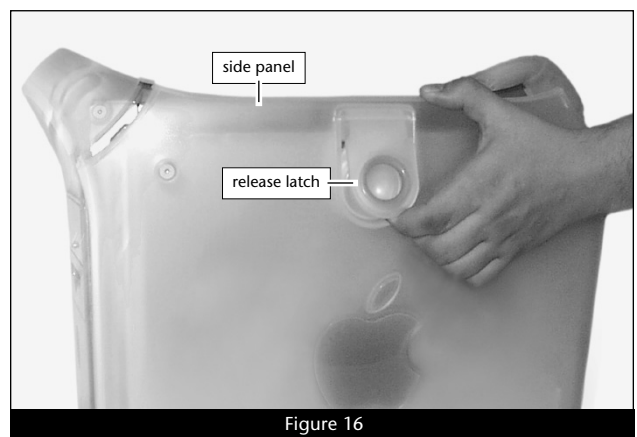
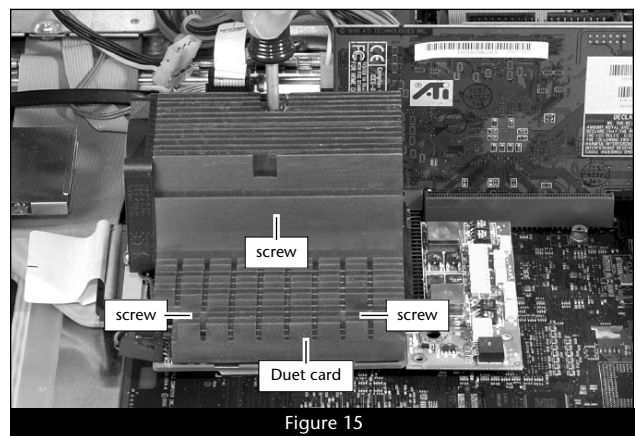
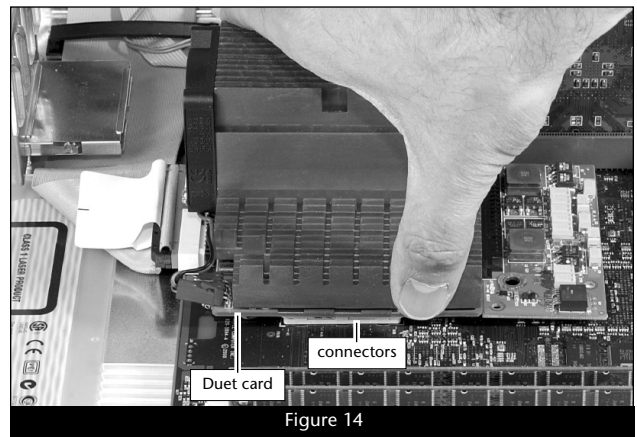
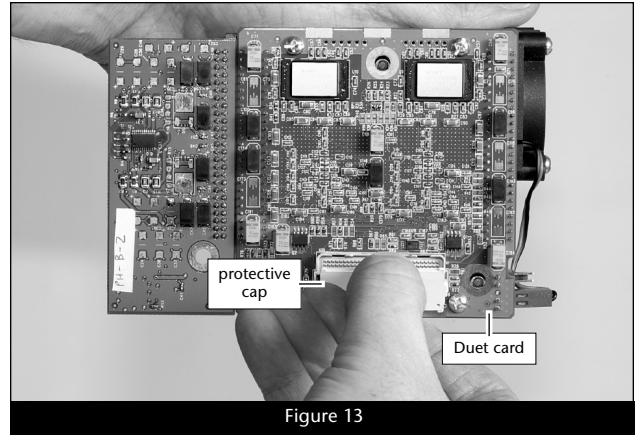
Turn On Computer

Turn on your Power Mac; your accelerated machine should boot normally.

Run Sonnet X Tune-Up

Running the Sonnet X Tune-Up install application is necessary only when Mac OS X (any version) is installed on your system. This application installs a file that enables Mac OS X to properly identify processor speed, as well as L2 and L3 cache size and speed. Remember to install this software when you upgrade to Mac OS X. For complete information on Sonnet X Tune-Up, please refer to the Read Me notes provided with the software.

- Boot your system in Mac OS X from a hard drive or partition, not a CD-ROM.
- Insert the Sonnet Installer CD into your CD-ROM drive, double-click the ST/ZIF OS X Support folder, copy the Sonnet X Tune-Up file to your desktop, and then eject the Sonnet Installer CD.
- Run Sonnet X Tune-Up. After the installation is complete, restart your system; your installation is complete.



Installation—Digital Audio Models

This section covers the installation of the Encore/ST G4 Duet into Power Mac G4 Digital Audio models (back panel appears like Figure 18). If you are installing this product into an AGP Graphics or Gigabit Ethernet model, go back to page 3. If you are installing this product into a QuickSilver 2001 or QuickSilver 2002 model, skip to page 10.



WARNING: When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle processor upgrade cards only by their edges and avoid touching connector traces and component pins.

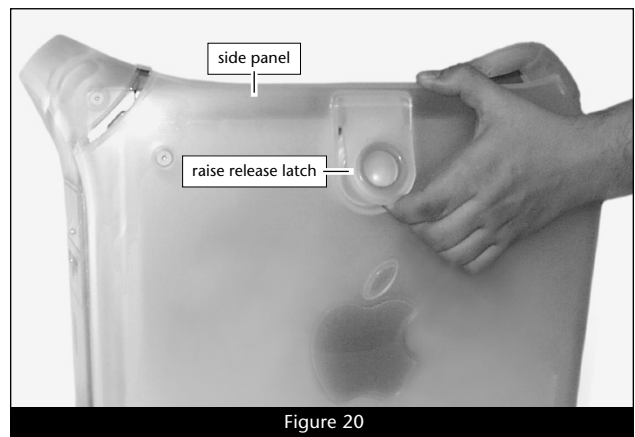
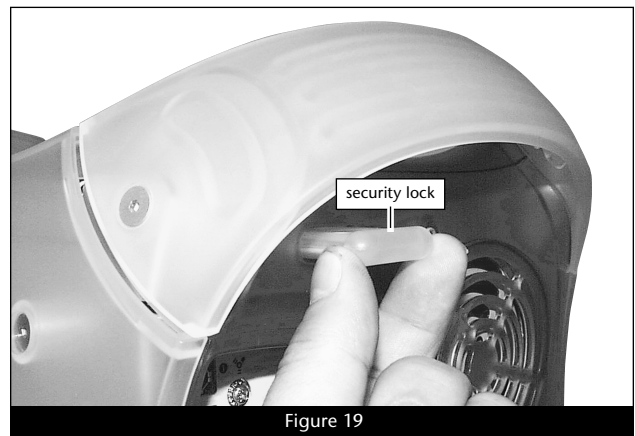
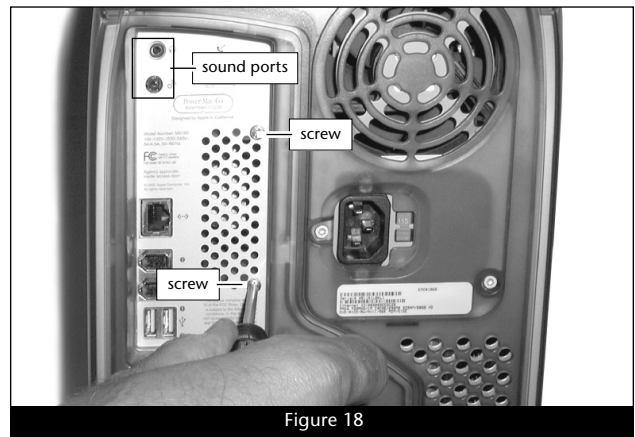
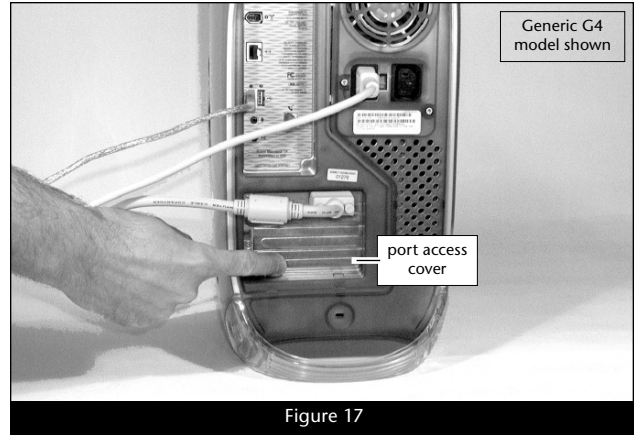
Shut Down and Open Computer

1. Shut down your Power Mac. If the computer has been on for a while, allow 20 minutes for it to completely cool before beginning the installation.
2. If you need to move the computer to a different area where you can work freely, disconnect any connected cables, move the computer, then reconnect the power cord to the computer and an electrical outlet.
3. Touch a port access cover on the back of the computer to discharge any potential damaging static electricity (Figure 17).
4. Disconnect the power cord from the computer.



Support Note: To avoid generating a static charge in your body, do not walk around the room until after you finish installing the Encore card and close the computer.

5. If present, remove the two indicated screws from the back plate of the computer (Figure 18). Otherwise, go to step 6.
6. Locate the security lock at the back of the computer (Figure 19). If it is not already pressed in, press it in now.
7. With the right side of the case facing you, open your Power Mac by lifting the release latch and lowering the side panel away from the computer's case (Figure 20).

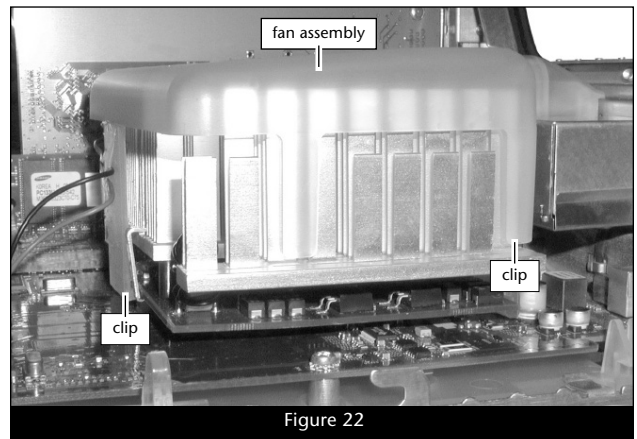
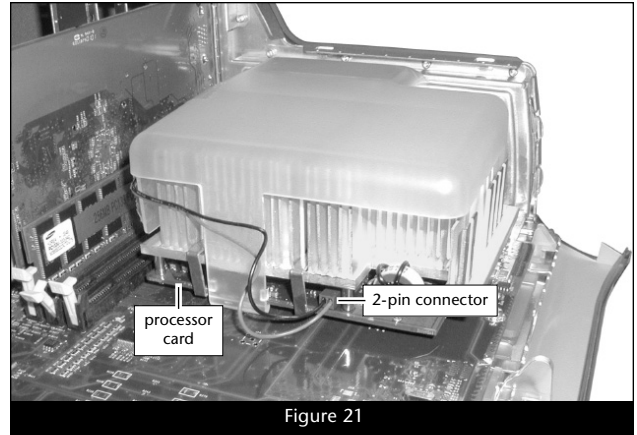


Installation—Digital Audio Models

Remove Fan Assembly

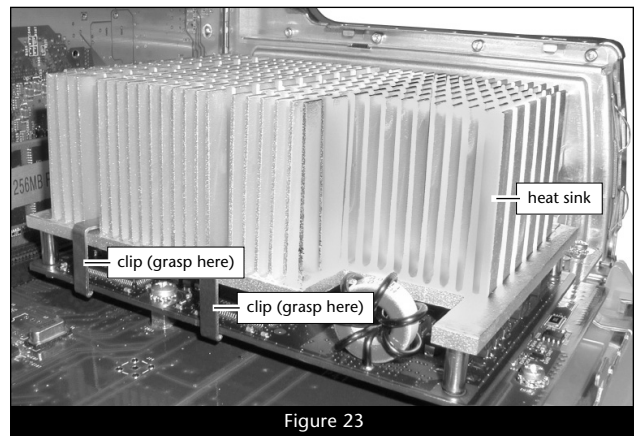
This section covers the removal of the fan assembly found on some Digital Audio models. If your machine does not have a fan assembly covering the processor heat sink, skip to “Remove Heat Sink” below.

1. Locate and carefully disconnect the 2-pin connector from the processor card (Figure 21).
2. Unlatch the fan assembly's clips from the processor card and the heat sink, then lift the fan assembly out of the case and set it aside (Figure 22).



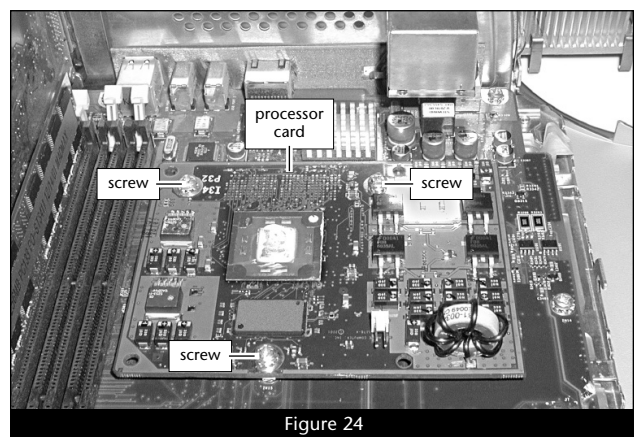
Remove Heat Sink

Locate the clips securing the processor heat sink to the processor card (Figure 23); your heat sink may appear different from what is pictured. Using caution to avoid touching the processor card, grasp one of the clips securing the heat sink with needle-nose pliers, between the heat sink and processor card. Pull down and away to unhook one side of the clip from the processor card (Figure 23). Push the clip away from you to unhook it from the other side. Repeat these steps with the other clip. Once the clips have been unhooked, gently lift the heat sink and clips away from the processor and set them aside, but not on the logic board.



Remove Processor Card

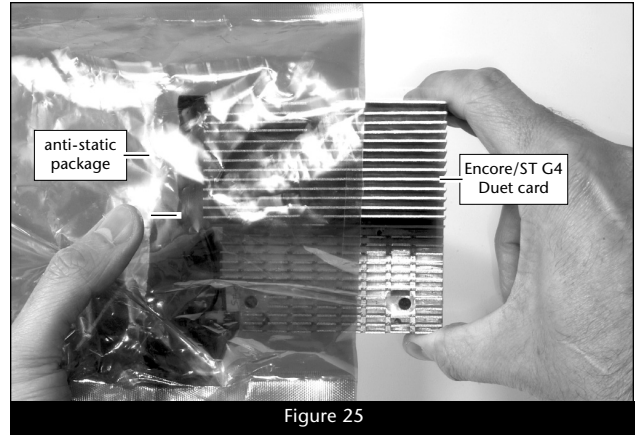
Remove the three screws securing the processor card to the logic board (Figure 24). Grasping its edges, gently lift one edge of the processor card to separate it from the logic board, and then carefully lift it straight up and away.



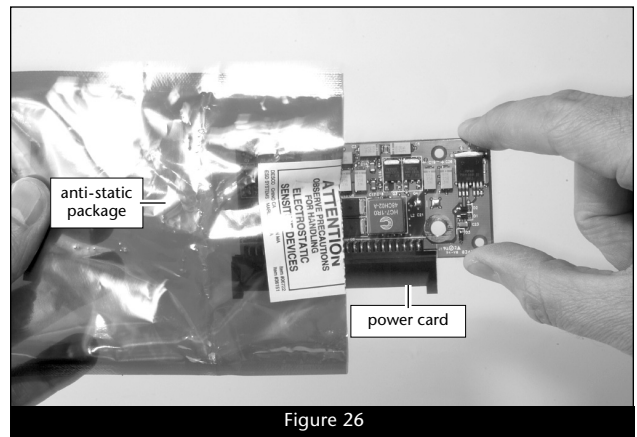
Installation—Digital Audio Models

Install Encore/ST G4 Duet Processor Upgrade Card

1. Remove the Encore/ST G4 Duet processor upgrade card from its anti-static package; make sure to handle the card by its edges (Figure 25); *your card may differ from what is pictured*. Set the card, heat sink side down, on a flat, level surface.

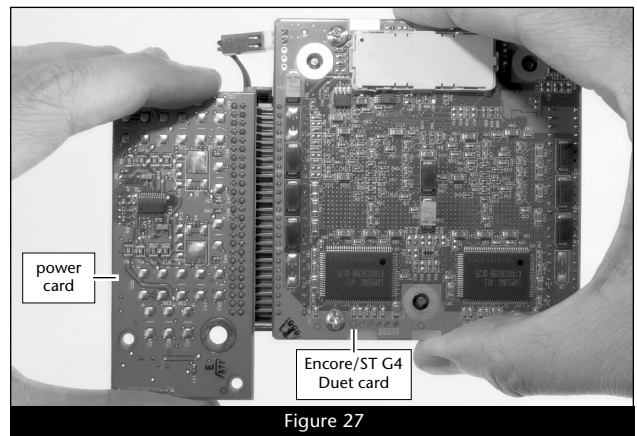


2. Remove the power card from its anti-static package; make sure to handle the card by its edges (Figure 26); *your card may differ from what is pictured*.



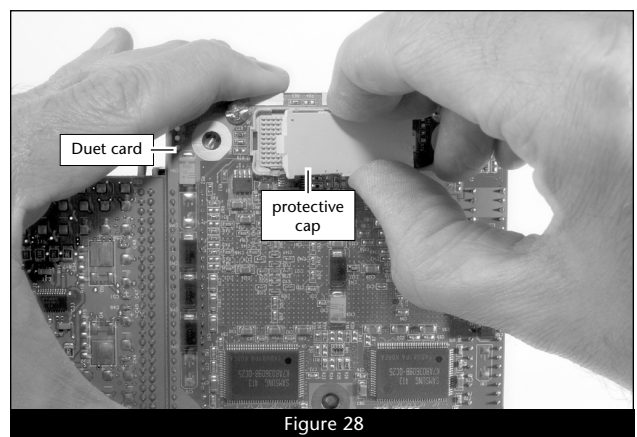
3. Grasp the Duet processor card with its heat sink face down and the fan on the left (Figure 27). Holding the power card as shown, align its connector with the connector above the fan on the edge of the Duet processor card.

4. Making sure the pins are lined up with the holes, carefully and completely plug the power card into the Duet processor card (Figure 27). If you encounter any unusual resistance, separate the cards and check for bent pins; if none are bent, realign the pins with the holes and plug in the power card again.



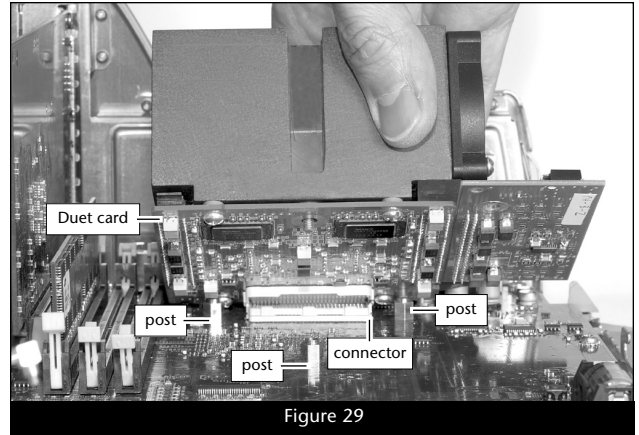
5. Carefully remove the cap covering the connector on the bottom of the Duet processor card (Figure 28), and then place the cap on the original processor card's connector.

6. Place the processor card you removed from the computer into the anti-static package, and then store it, the original heat sink, heat sink clips, the screws you removed, and the fan assembly in a safe place.

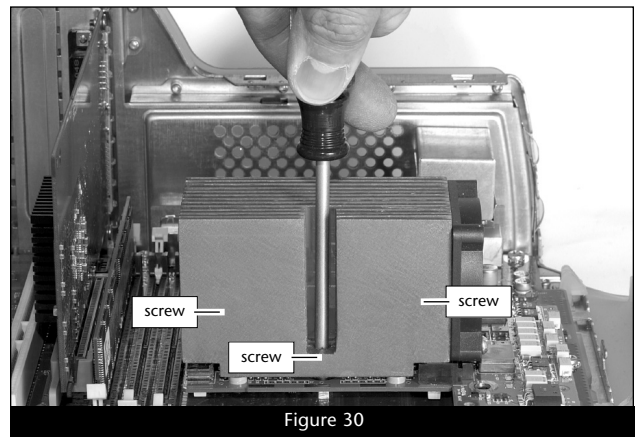


Installation—Digital Audio Models

7. Align the connector on the bottom of the Duet card with the connector on the logic board (**Figure 29**), and then set the card down on top of the three threaded posts. Make sure the connectors are lined up, then, grasping the Duet card by its heat sink, gently press it straight down until the connectors snap together. Verify the connectors are completely coupled by gently pulling up on the edges of the Encore/ST board; the board should remain firmly in place.




8. Making sure the Duet card's captive screws are engaged properly in the threaded posts, tighten each of the three screws and secure the card snugly to the logic board; **do not overtighten the screws** (**Figure 30**).



Close Computer

1. Raise the side panel back into place (**Figure 31**).
2. Return the computer to your computing area if necessary, and reconnect the power cord and peripheral cables to the computer.

 **WARNING:** When your computer is operating, the Duet's heat sinks will become VERY hot to the touch; take care to not touch the heat sinks, or you may get burned.

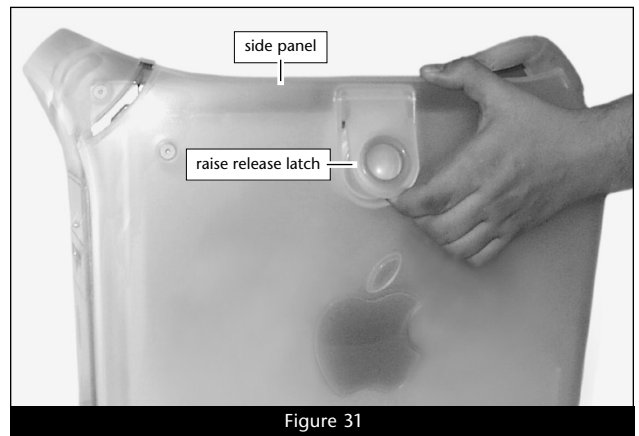
Turn On Computer

Turn on your Power Mac; your accelerated machine should boot normally.

Run Sonnet X Tune-Up

Running the Sonnet X Tune-Up install application is necessary only when Mac OS X (any version) is installed on your system. This application installs a file that enables Mac OS X to properly identify processor speed, as well as L2 and L3 cache size and speed. Remember to install this software when you upgrade to Mac OS X. For complete information on Sonnet X Tune-Up, please refer to the Read Me notes provided with the software.

1. Boot your system in Mac OS X from a hard drive or partition, not a CD-ROM.
2. Insert the Sonnet Installer CD into your CD-ROM drive, double-click the ST/ZIF OS X Support folder, copy the Sonnet X Tune-Up file to your desktop, and then eject the Sonnet Installer CD.
3. Run Sonnet X Tune-Up. After the installation is complete, restart your system; your installation is complete.



Installation—QuickSilver 2001 and 2002 Models

This section covers the installation of the Encore/ST G4 Duet into Power Mac G4 QuickSilver 2001 and QuickSilver 2002 models. If you are installing this product into an AGP Graphics or Gigabit Ethernet model, go back to page 3. If you are installing this product into a Digital Audio model, go back to page 6.



WARNING: When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle processor upgrade cards only by their edges and avoid touching connector traces and component pins.

Shut Down and Open Computer

1. Shut down your Power Mac. If the computer has been on for a while, allow 20 minutes for it to completely cool before beginning the installation.
2. If you need to move the computer to a different area where you can work freely, disconnect any connected cables, move the computer, then reconnect the power cord to the computer and an electrical outlet.
3. Touch a port access cover on the back of the computer to discharge any potential damaging static electricity (**Figure 32**).
4. Disconnect the power cord from the computer.

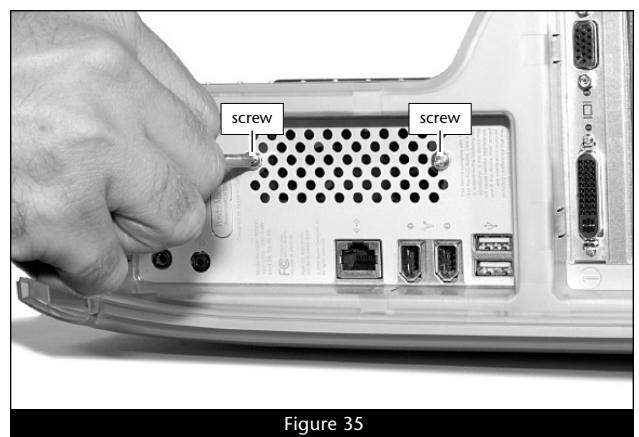
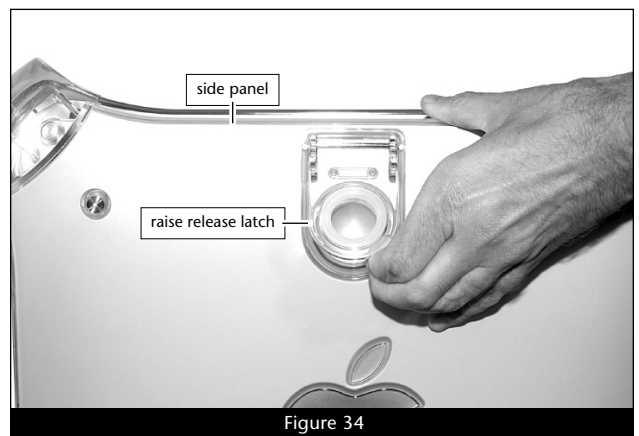
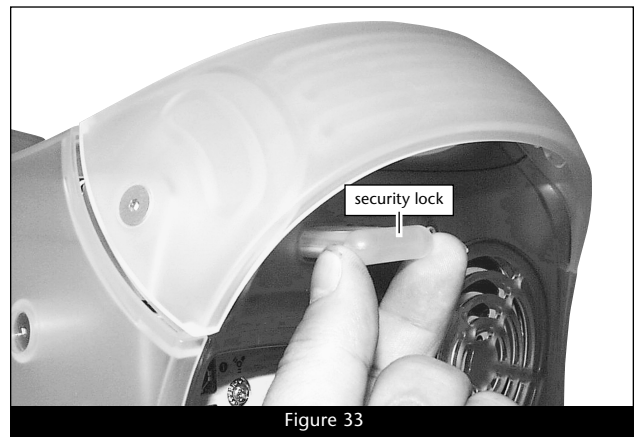
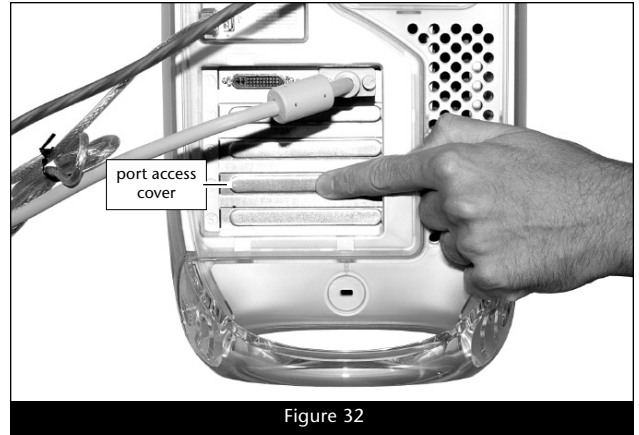


Support Note: To avoid generating a static charge in your body, do not walk around the room until after you finish installing the Encore card and close the computer.

5. Locate the security lock at the back of the computer (**Figure 33**). If it is not already pressed in, press it in now.
6. With the right side of the case facing you, open your Power Mac by lifting the release latch and lowering the side panel away from the computer's case (**Figure 34**).

Remove Fan Assembly

1. With the back of the computer facing you, remove the two indicated screws (**Figure 35**).



Installation—QuickSilver 2001 and 2002 Models

2. Locate and carefully disconnect the 2-pin fan power connector from the logic board, and then lift out the fan assembly (Figure 36).

Remove Heat Sink



Support Note: The following steps address the removal of your system's processor card heat sink. Please note, the dual processor heat sink is pictured, but the procedure to remove the single processor heat sink is identical.



WARNING: Verify that the power cord is disconnected from your Power Mac before you remove the heat sink and processor card. The original processor card is secured to the logic board with four screws, one of which carries +12V and could spark if it is grounded when the system is on.

With the front of the computer facing you, locate the clips securing the heat sink to the processor card (Figure 37). Carefully insert a flat blade screwdriver between the right clip and the edge of the heat sink; **do not touch the edge of the processor card**. Using extreme caution, press down on the edge of the clip with needle-nose pliers, and twist the screwdriver to unhook one side of the clip from the processor card (Figure 37). Push the clip away from you to unhook it from the other side. Repeat these steps with the left clip. Once the clips have been unhooked, gently lift the heat sink and clips away from the processor card and set them aside, but not on the logic board.

Remove Processor Card

1. Remove the four screws securing the processor card to the logic board (Figure 38); set aside the screw with a lock washer for later use.
2. Grasping its edges, gently lift one edge of the processor card to separate it from the logic board, and then carefully lift it straight up and away (Figure 39).

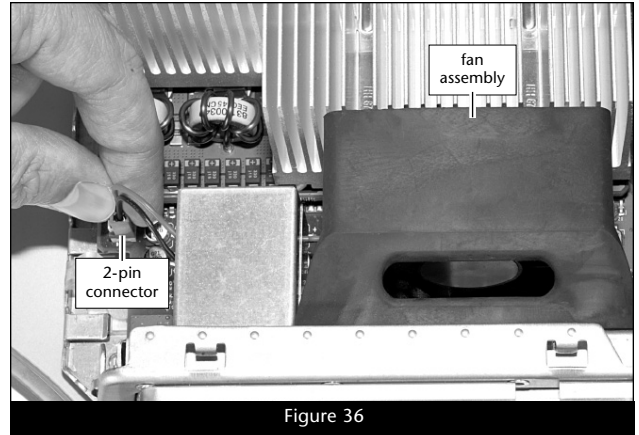


Figure 36

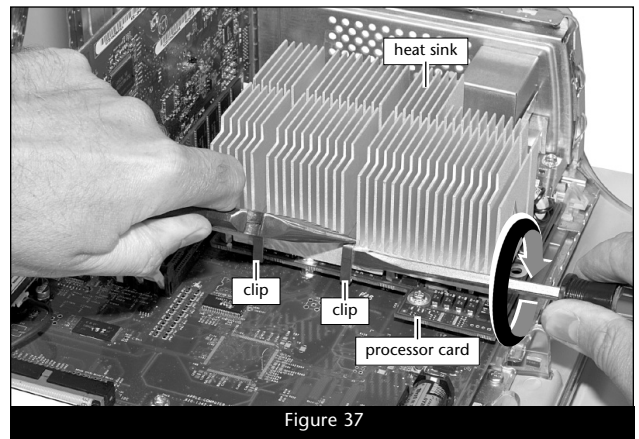


Figure 37

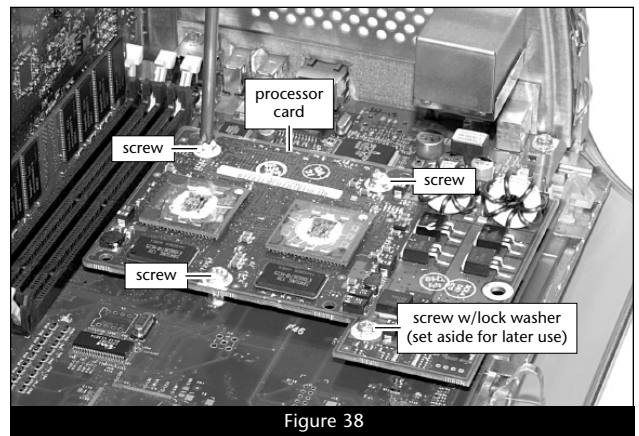


Figure 38

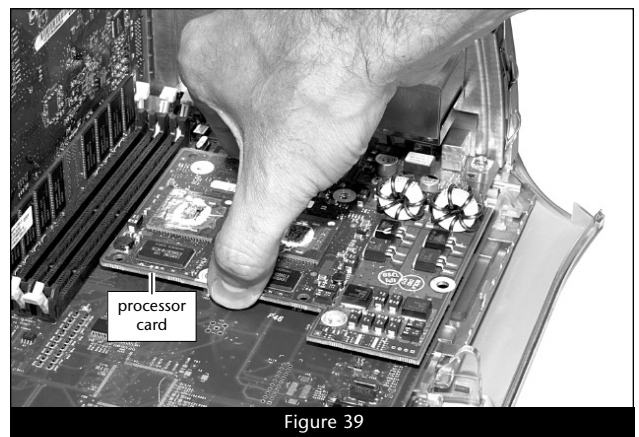
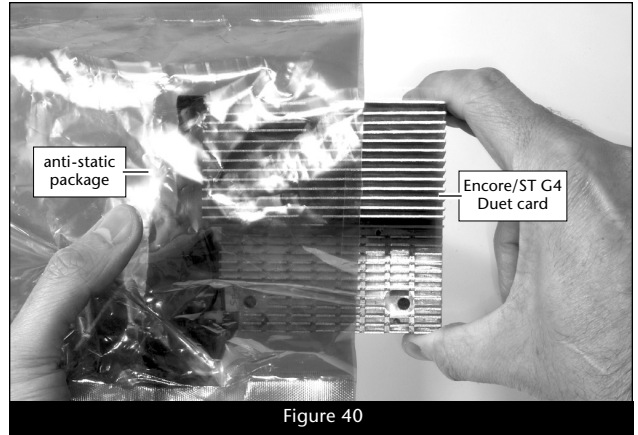


Figure 39

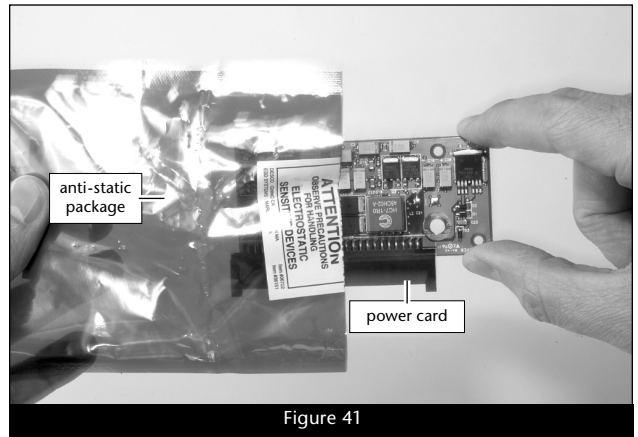
Installation—QuickSilver 2001 and 2002 Models

Install Encore/ST G4 Duet Processor Upgrade Card

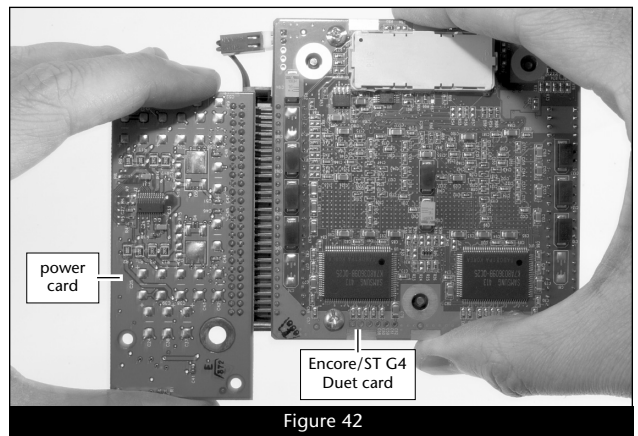
1. Remove the Encore/ST G4 Duet processor upgrade card from its anti-static package; make sure to handle the card by its edges (Figure 40); *your card may differ from what is pictured*. Set the card, heat sink side down, on a flat, level surface.



2. Remove the power card from its anti-static package; make sure to handle the card by its edges (Figure 41); *your card may differ from what is pictured*.

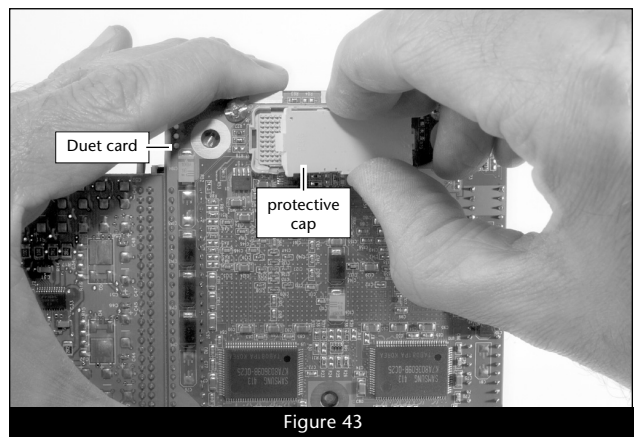


3. Grasp the Duet processor card with its heat sink face down and the fan on the left (Figure 42). Holding the power card as shown, align its connector with the connector above the fan on the edge of the Duet processor card.



4. Making sure the pins are lined up with the holes, carefully and completely plug the power card into the Duet processor card (Figure 42). If you encounter any unusual resistance, separate the cards and check for bent pins; if none are bent, realign the pins with the holes and plug in the power card again.

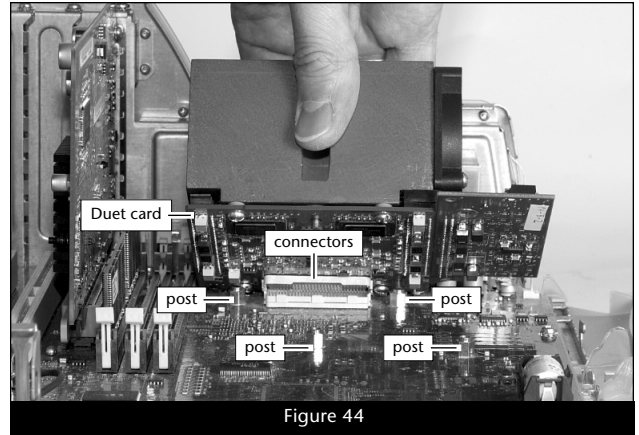
5. Carefully remove the cap covering the connector on the bottom of the Duet processor card, and then place the cap on the original processor card's connector (Figure 43).



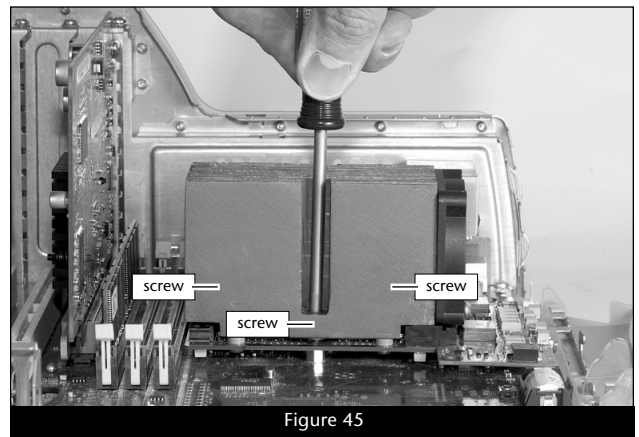
6. Place the processor card you removed from the computer into the anti-static package, and then store it, the original heat sink, heat sink clips, the screws you removed (except the one with the lock washer), and the fan assembly in a safe place.

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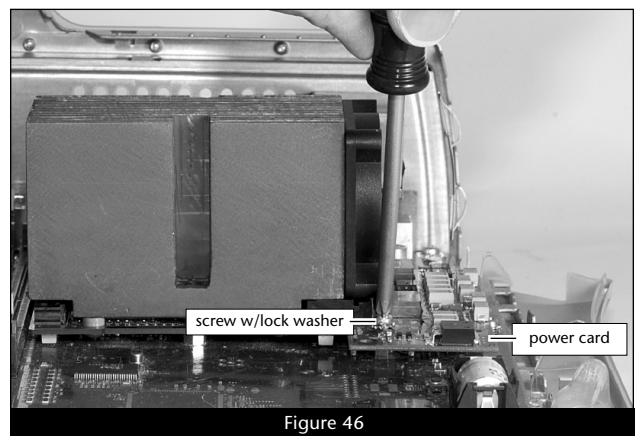
7. Align the connector on the bottom of the Duet card with the connector on the logic board (**Figure 44**), and then set the card down on top of the four threaded posts. Make sure the connectors are lined up, then, grasping the Duet card by its heat sink, gently press it straight down until the connectors snap together. Verify the connectors are completely coupled by gently pulling up on the edges of the Encore/ST board; the board should remain firmly in place.



8. Making sure the Duet card's captive screws are engaged properly in the threaded posts, tighten each of the three screws and secure the card snugly to the logic board; **do not overtighten the screws** (**Figure 45**).

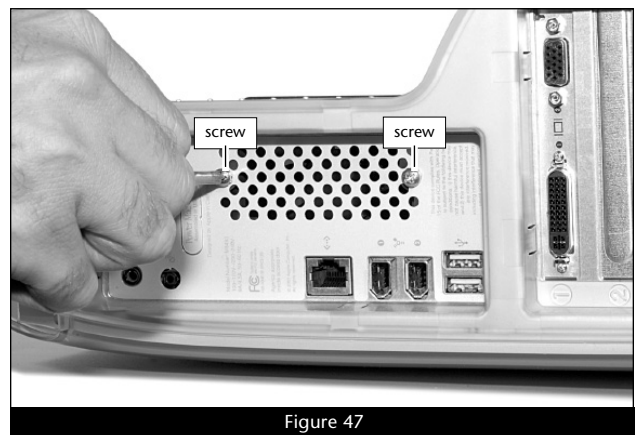


9. Using the screw with the lock washer you removed previously, secure the power card snugly to the logic board; **do not overtighten the screw** (**Figure 46**).



Reinstall Fan Assembly and Close Computer

1. While holding its 2-pin connector, place the fan assembly between the Duet processor card's heat sink and the back panel of the computer, against the modem filter (**not shown**). Carefully plug in the fan's 2-pin connector to the connector on the logic board.
2. With the back of the computer facing you, secure the fan assembly to the back plate of the computer with the two screws you removed previously (**Figure 47**).



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3. Raise the side panel back into place (Figure 48).
4. Return the computer to your computing area if necessary, and reconnect the power cord and peripheral cables to the computer.



WARNING: When your computer is operating, the Duet's heat sinks will become VERY hot to the touch; take care to not touch the heat sinks, or you may get burned.

Turn On Computer

Turn on your Power Mac; your accelerated machine should boot normally.

Run Sonnet X Tune-Up

Running the Sonnet X Tune-Up install application is necessary only when Mac OS X (any version) is installed on your system. This application installs a file that enables Mac OS X to properly identify processor speed, as well as L2 and L3 cache size and speed. Remember to install this software when you upgrade to Mac OS X. For complete information on Sonnet X Tune-Up, please refer to the Read Me notes provided with the software.

1. Boot your system in Mac OS X from a hard drive or partition, not a CD-ROM.
2. Insert the Sonnet Installer CD into your CD-ROM drive, double-click the *ST/ZIF OS X Support* folder, copy the Sonnet X Tune-Up file to your desktop, and then eject the Sonnet Installer CD.
3. Run Sonnet X Tune-Up. After the installation is complete, restart your system; your installation is complete.

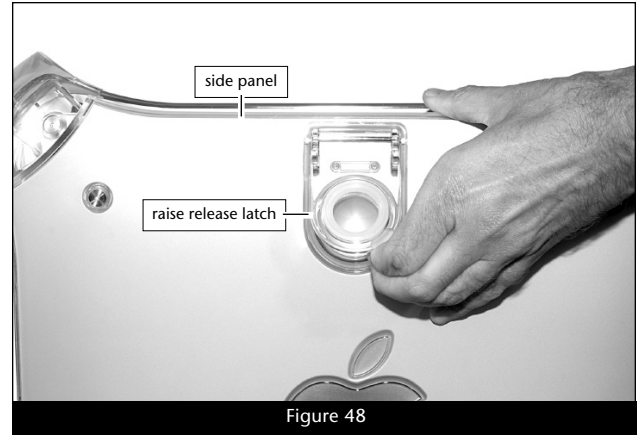


Figure 48