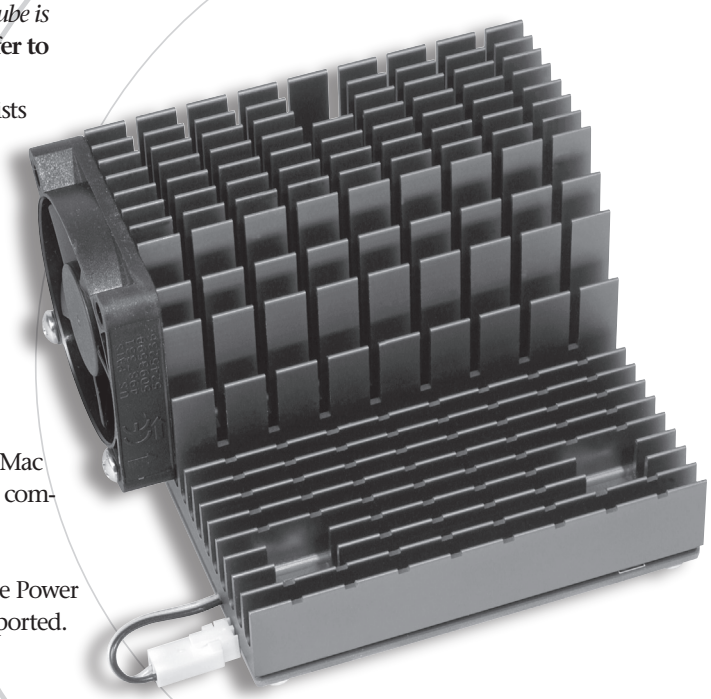
ENCORE™/ST G4

Processor Upgrade Card for Power Mac® G4 AGP Graphics

Installation Instructions

Power Mac and Operating System Compatibility

This Encore/ST G4 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 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 differences of the various Power Mac G4 models.



WARNING: In order for this Encore/ST G4 to operate in your system, it must have the latest Apple Power Mac G4 firmware and Mac OS 9.2 installed. If your system does not meet these criteria, you must install Mac OS 9.2 and update your system's firmware before installing this upgrade. Otherwise, your system may not operate properly with the Encore/ST G4 installed. Instructions follow.

At this printing, this Encore/ST G4 processor upgrade is compatible with Mac OS® 9.2 through Mac OS X Version 10.4 and later. For up-to-date Mac OS compatibility information, check our web site.

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

The following items are required for installation:

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

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 first, and then install the remaining upgrades; *complete each upgrade and test it before proceeding to the next.*

* 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.

SONNET™ SIMPLY FAST
www.sonnettech.com

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.
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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 original Power Mac 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, 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 installed.

A. AGP Graphics, Gigabit Ethernet, and Digital Audio Users Only—Update Apple Power Mac Firmware

If your computer is a Power Mac G4 (QuickSilver) model, skip to section B on page 2. Otherwise, before installing the Encore/ST G4, you must ensure your AGP Graphics, Gigabit Ethernet, or Digital Audio system's original Power Mac 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 1)**. If it reads "**$0004.28f1**", skip the rest of the steps in this section and proceed to section B on page 2. 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 2)**. If it reads "**4.28f1**", skip the rest of the steps in this section and proceed to section B on page 2. Otherwise, go to step 2.

2. Boot your system in Mac OS 9.2 (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.

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.

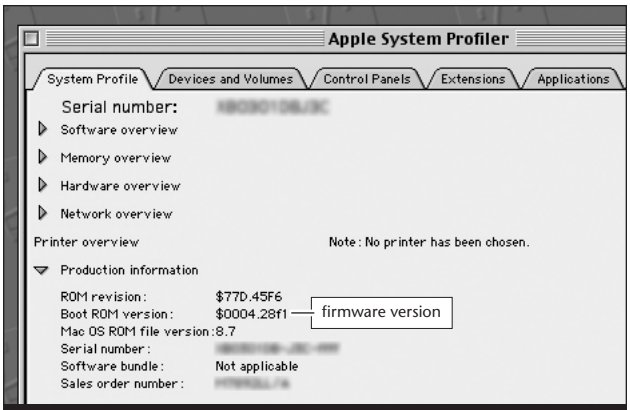

Figure 1

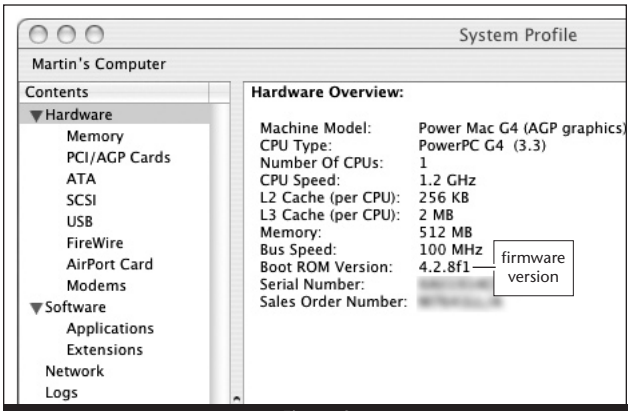

Figure 2

Software and Firmware Installation/Update Info

B. ALL USERS—Install or Upgrade to Mac OS 9.2, If Necessary

This Encore/ST G4 processor upgrade requires that Mac OS 9.2 be installed on your system on a writeable local hard disk (internal hard drive or external FireWire or USB drive, but not a CD, DVD or network disk). You must boot your system from a Mac OS 9.2 system folder so that you can run the Crescendo/Encore installer application that will patch the original Power Mac firmware so your system can support this Encore/ST G4 card. **Verify that Mac OS 9.2 is installed on your system, and if it isn't, install or upgrade the OS software if necessary**.

If Mac OS 9.2 is not installed on your system, you may install it on top of Mac OS X; simply boot from the Mac OS 9.2 Install CD, choose clean install in the Options menu, and click install. For more detailed information on how to do this installation, visit www.sonnettech.com/support/techtips/default.html

WARNING: Before running the Crescendo/Encore Install application, you must ensure your system is booted in Mac OS 9.2; do not attempt to run this installer in Mac OS X (Classic mode).

C. ALL USERS—Sonnet Software Installation

This section describes the installation of software to support this Encore/ST G4 in your computer. **Please note you MUST run the Crescendo/Encore Installer before you install this Encore/ST G4 card**. If you do not run the installer, your computer will not operate properly with the processor upgrade installed.

1. If your system is booted in Mac OS X, switch back to OS 9.2; otherwise, skip to the next step. From the Apple menu, select System Preferences…, and then click on the Startup Disk icon. When the System Folders appear, select the Mac OS 9.2 System Folder in which you will install the Sonnet software.

2. Insert the Sonnet Installer CD into the CD-ROM drive. Double-click the *Mac OS 7-9 ONLY, not Classic* folder, and then 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 your computer's System Folder.

3. If the installation was successful, a dialog box will appear; the program will then install a firmware patch that enables the use of this Encore/ST G4 in your computer. (The Sonnet firmware patch may be uninstalled. However, doing so may prevent your system from working properly with this Encore/ST G4.) Read the instructions in the dialog box, and click OK to shut down your computer.

4. Press *and hold* down the Programmer's button (the button on the right, beneath the Power button) on the front of your computer.

5. While holding down the Programmer's button, press and release the Power button on your computer or keyboard; continue to hold down the Programmer's button (for approximately eight seconds) until you hear a tone play through the speaker.

6. When the tone is heard, release the Programmer's button; the regular boot chime will play and a progress bar will appear at the bottom of your display screen. **Do not do anything with your computer until after it restarts**.

7. If an error occurred, a message will appear; you must rerun the installer. Otherwise, once the firmware update is complete and your system restarts a dialog box will appear, stating it is okay to install the Encore/ST G4; click OK.

8. After your system shuts down, proceed to the hardware installation steps: If you have an AGP Graphics or Gigabit Ethernet system, go to page 3. If you have a Digital Audio system, go to page 6. If you have a QuickSilver 2001 or QuickSilver 2002 system, go to page 10.

Support Note: After updating your system's firmware with the Crescendo/Encore installer, you do not need to install the software located in the Mac OS X ONLY folder on the Sonnet Installer CD; that software is used for other processor upgrade cards by Sonnet.

Installation—AGP Graphics and Gigabit Ethernet Models

This section covers the installation of the Encore/ST G4 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. Also, avoid touching the logic board and any of its components.

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 3)** 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 4)**. 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 5)**.

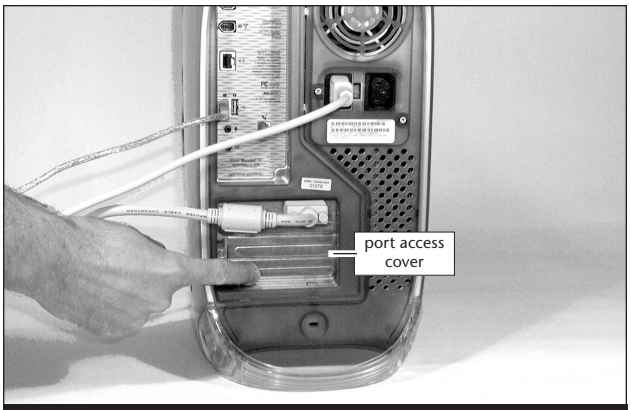

Figure 3

Figure 4

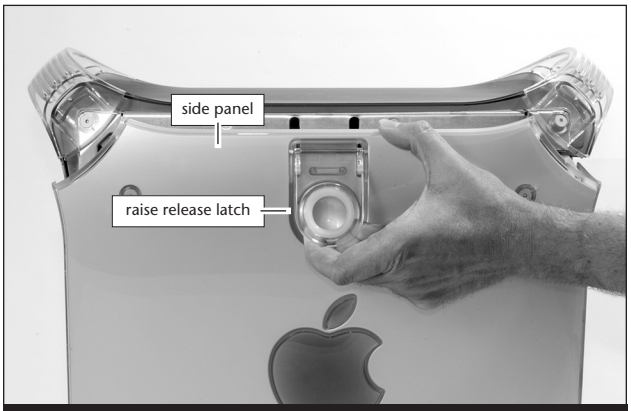

Figure 5

Remove Heat Sink

Locate the processor heat sink on the logic board **(Figure 6)**; your heat sink may appear different from what is pictured. Using caution to avoid touching the processor card and the logic board, 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 6)**. 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.

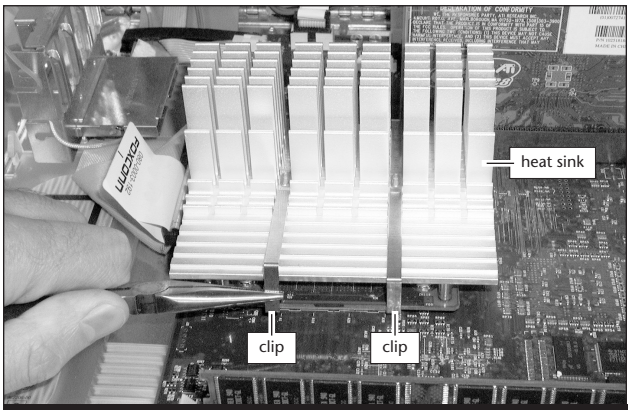

Figure 6

Installation—AGP Graphics and Gigabit Ethernet Models

Remove Processor Card

Remove the three screws securing the processor card to the logic board **(Figure 7)**. 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.

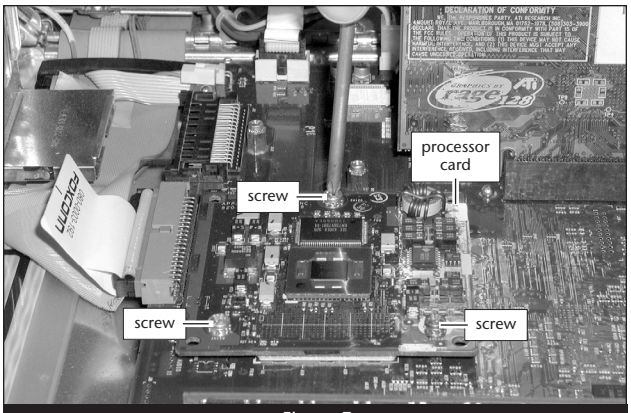

Figure 7

Install Encore/ST G4 Processor Upgrade Card

1. Remove the Encore/ST G4 processor upgrade card from its anti-static package; make sure to handle the card by its edges **(Figure 8)**; *your card may differ from what is pictured.*

Figure 8

2. Carefully remove the cap covering the connector on the bottom of the Encore/ST card **(Figure 9)**, and then place the cap on the original processor card's connector.

3. 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.

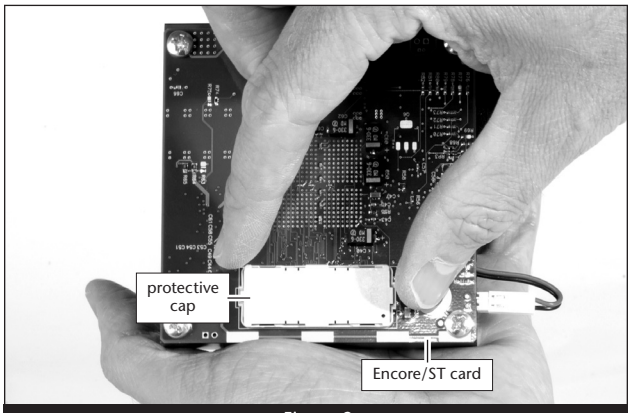

Figure 9

4. Align the connector on the bottom of the Encore/ST card with the connector on the logic board **(Figure 10)**, 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 Encore/ST 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.

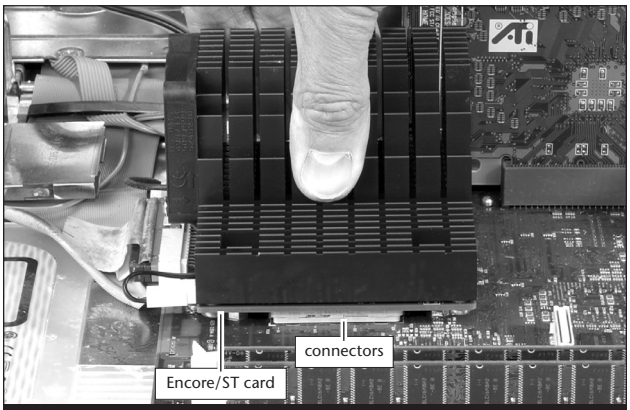

Figure 10

Installation—AGP Graphics and Gigabit Ethernet Models

5. Making sure the Encore/ST 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 11)**.

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

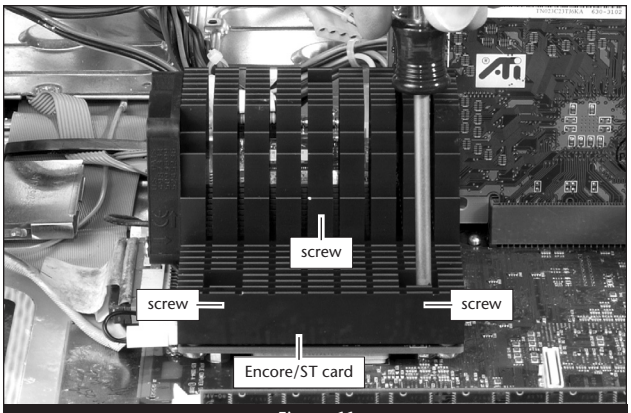

Figure 11

Close Computer

1. Raise the side panel back into place **(Figure 12)**.

2. Return the computer to your computing area if necessary, and reconnect the power cord and peripheral cables to the computer.

Turn On Computer

Turn on your Power Mac; your accelerated machine should boot normally. Your installation is now complete.

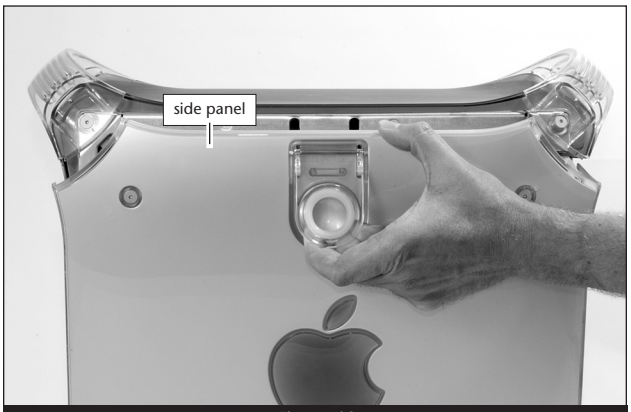

Figure 12

Installation—Digital Audio Models

This section covers the installation of the Encore/ST G4 into Power Mac G4 Digital Audio models (back panel appears like **Figure 14**). 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. Also, avoid touching the logic board and any of its components.

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 13)**.

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 14)**. Otherwise, go to step 6.

6. Locate the security lock at the back of the computer **(Figure 15)**. 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 16)**.

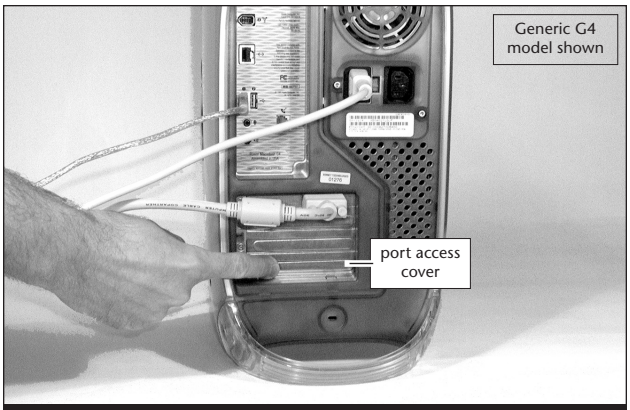

Figure 13

Figure 14

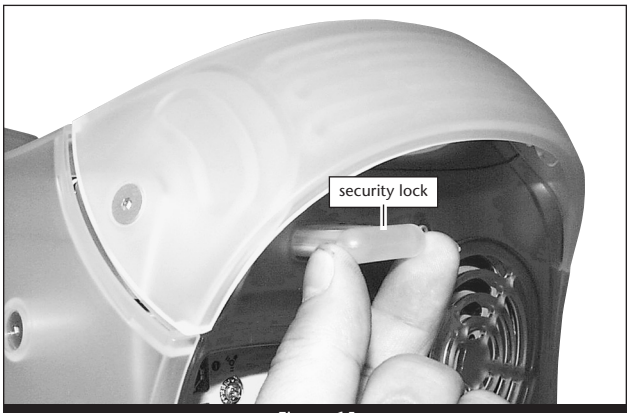

Figure 15

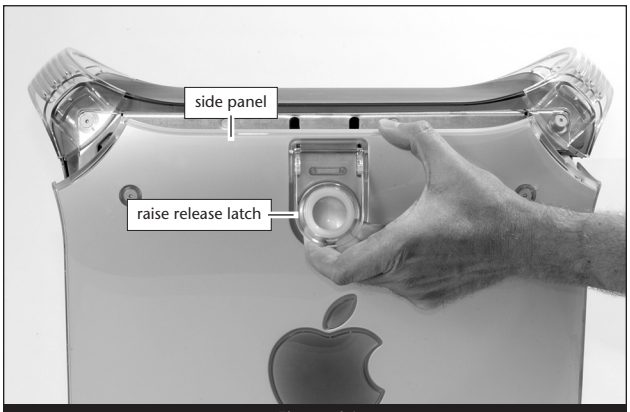

Figure 16

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 17)**.

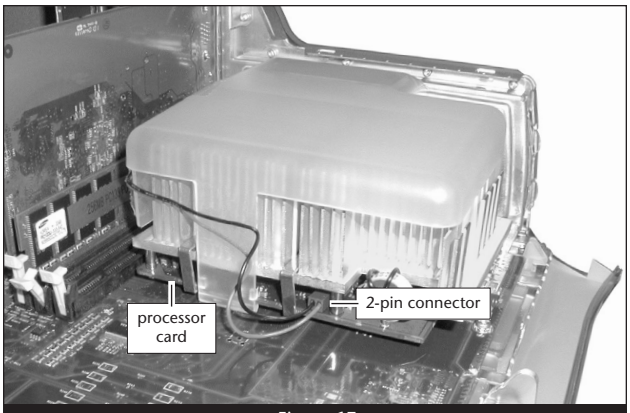

Figure 17

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 18)**.

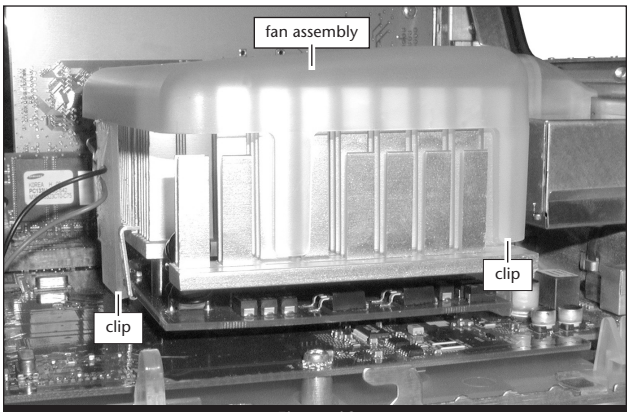

Figure 18

Remove Heat Sink

Locate the clips securing the processor heat sink to the processor card **(Figure 19)**; **your heat sink may appear different from what is pictured**. Using caution to avoid touching the processor card and the logic board, 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 19)**. 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.

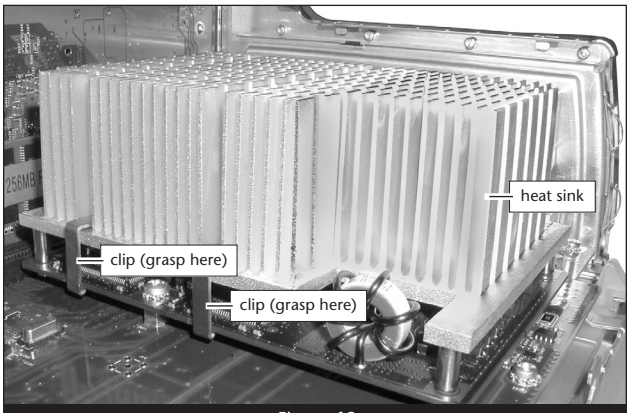

Figure 19

Remove Processor Card

Remove the three screws securing the processor card to the logic board **(Figure 20)**. 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.

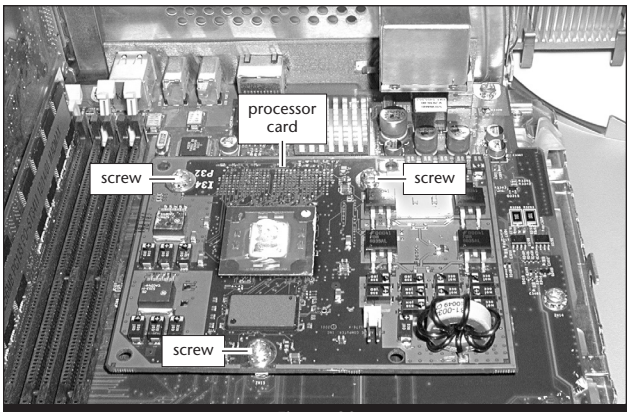

Figure 20

Installation—Digital Audio Models

Install Encore/ST G4 Processor Upgrade Card

1. Remove the Encore/ST G4 processor upgrade card from its anti-static package; make sure to handle the card by its edges **(Figure 21)**; *your card may differ from what is pictured.*

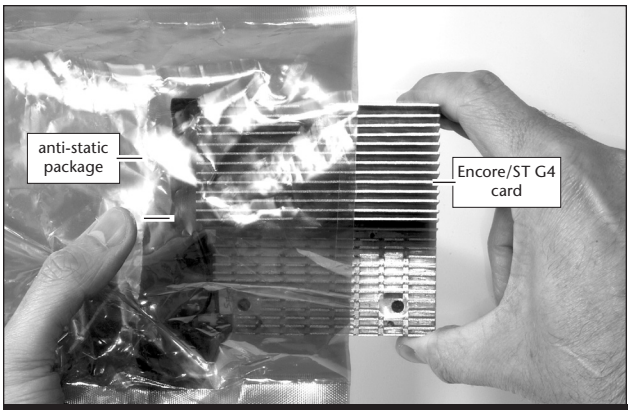

Figure 21

2. Carefully remove the cap covering the connector on the bottom of the Encore/ST processor card **(Figure 22)**, and then place the cap on the original processor card's connector.

3. 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.

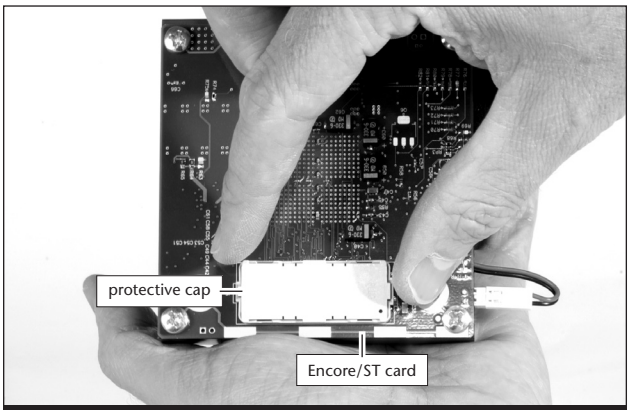

Figure 22

4. Align the connector on the bottom of the Encore/ST card with the connector on the logic board **(Figure 23)**, and then set the card down on top of the three threaded posts. Make sure the connectors are lined up, then, grasping the Encore/ST 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.

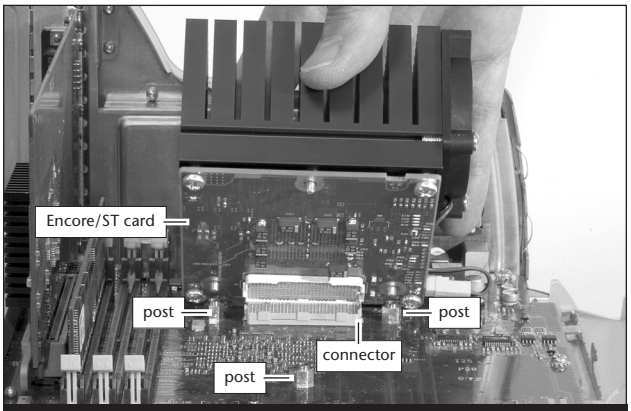

Figure 23

5. Making sure the Encore/ST 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 24)**.

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

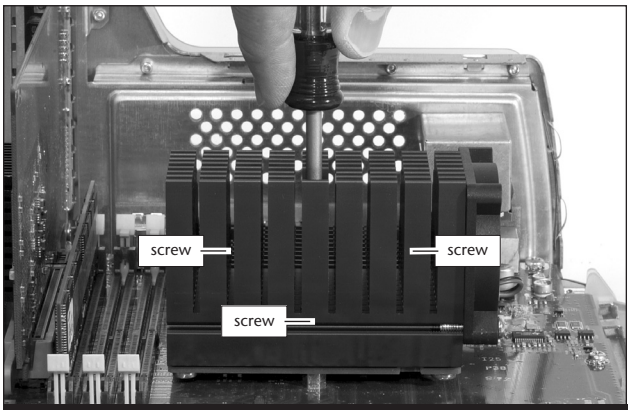

Figure 24

Installation—Digital Audio Models

Close Computer

1. Raise the side panel back into place (**Figure 25**).

2. Return the computer to your computing area if necessary, and reconnect the power cord and peripheral cables to the computer.

Turn On Computer

Turn on your Power Mac; your accelerated machine should boot normally. Your installation is now complete.

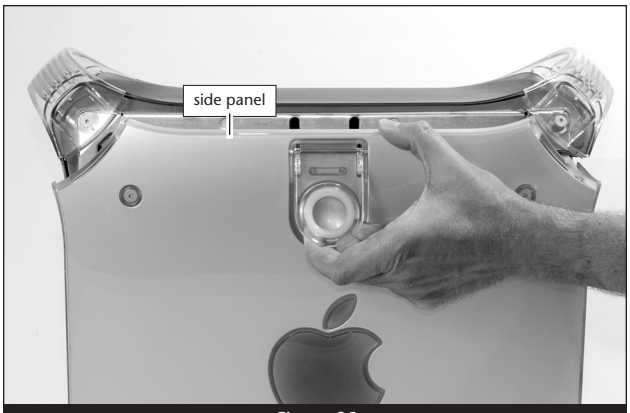

Figure 25

Installation—QuickSilver 2001 and 2002 Models

This section covers the installation of the Encore/ST G4 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. Also, avoid touching the logic board and any of its components.

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 26)**.

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 27)**. 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 28)**.

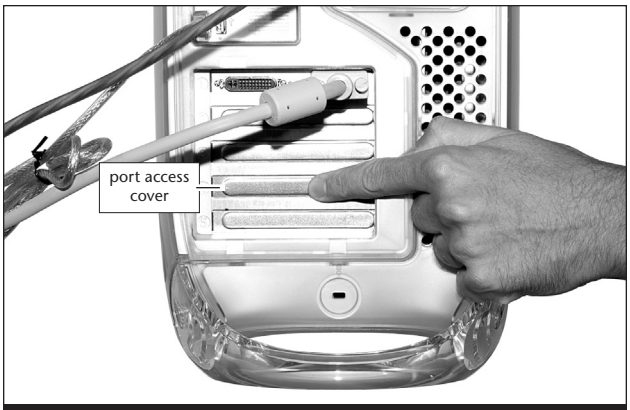

Figure 26

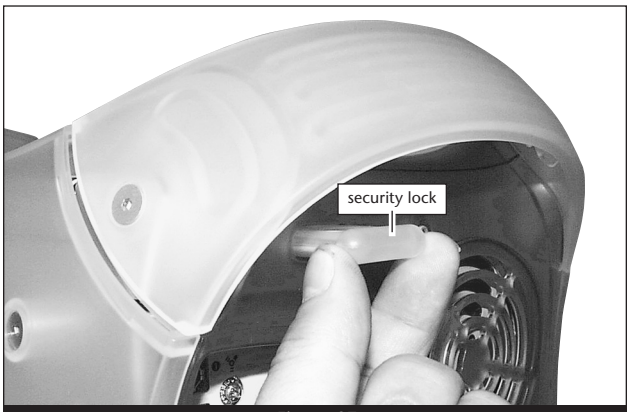

Figure 27

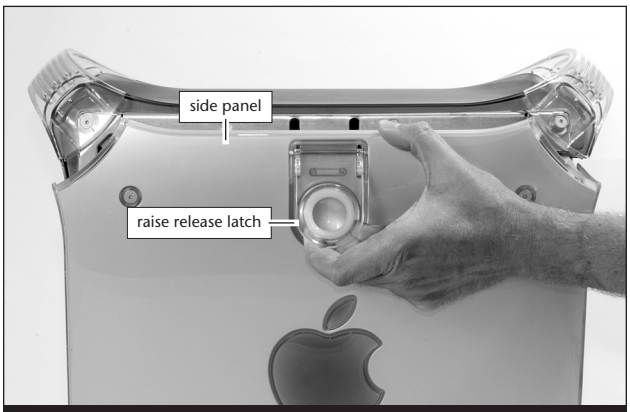

Figure 28

Remove Fan Assembly

1. With the back of the computer facing you, remove the two indicated screws **(Figure 29)**.

Figure 29

2. Locate and carefully disconnect the 2-pin fan power connector from the logic board, and then lift out the fan assembly **(Figure 30)**.

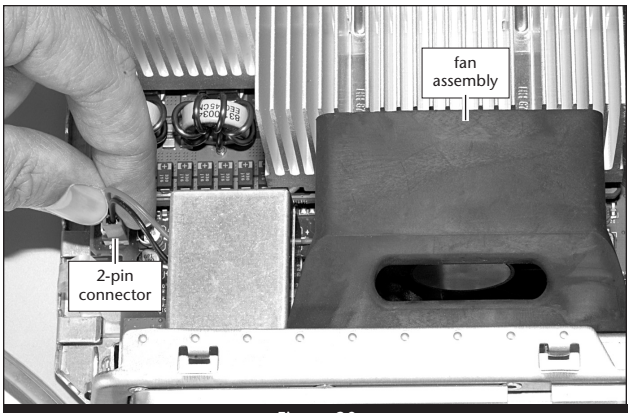

Figure 30

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 31)**. 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 31)**. Repeat the procedure on the other side of the clip. 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.

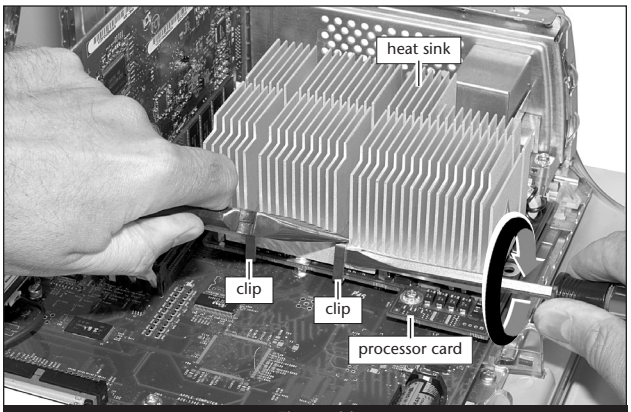

Figure 31

Remove Processor Card

1. Remove the four screws securing the processor card to the logic board **(Figure 32)**.

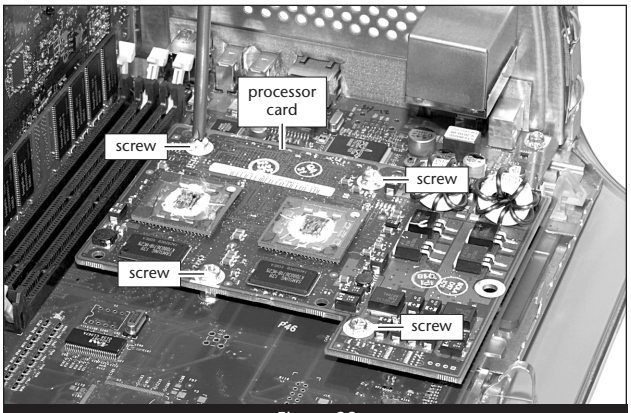

Figure 32

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 33)**.

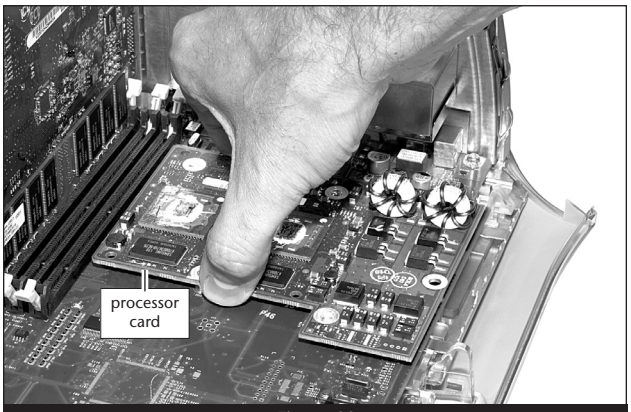

Figure 33

Installation—QuickSilver 2001 and 2002 Models

Install Encore/ST G4 Processor Upgrade Card

1. Remove the Encore/ST G4 processor upgrade card from its anti-static package; make sure to handle the card by its edges **(Figure 34)**; *your card may differ from what is pictured.*

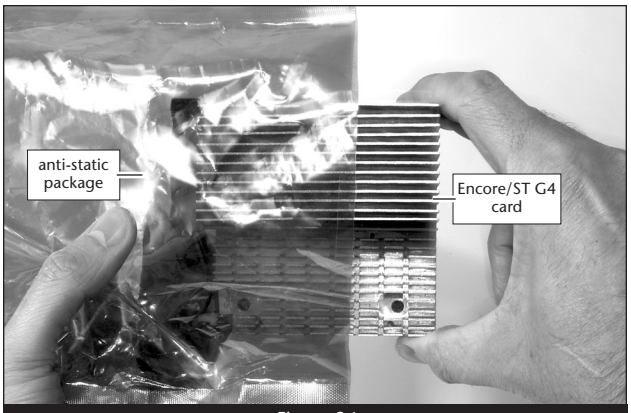

Figure 34

2. Carefully remove the cap covering the connector on the bottom of the Encore/ST processor card, and then place the cap on the original processor card's connector **(Figure 35)**.

3. 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.

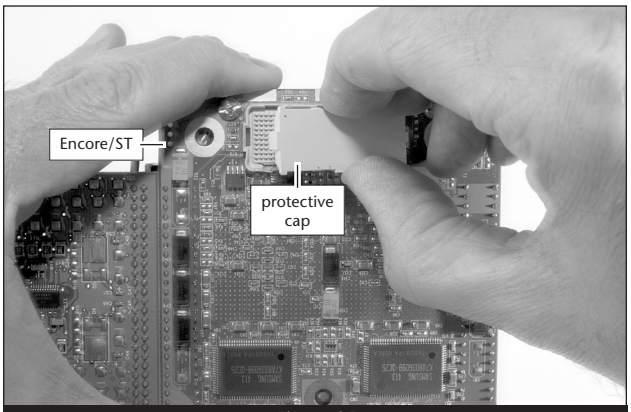

Figure 35

4. Align the connector on the bottom of the Encore/ST card with the connector on the logic board **(Figure 36)**, and then set the card down on top of the four threaded posts. Make sure the connectors are lined up, then, grasping the Encore/ST 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.

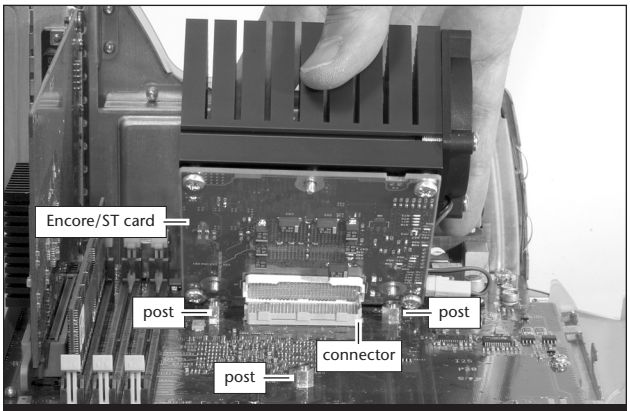

Figure 36

5. Making sure the Encore/ST 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 37)**.

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

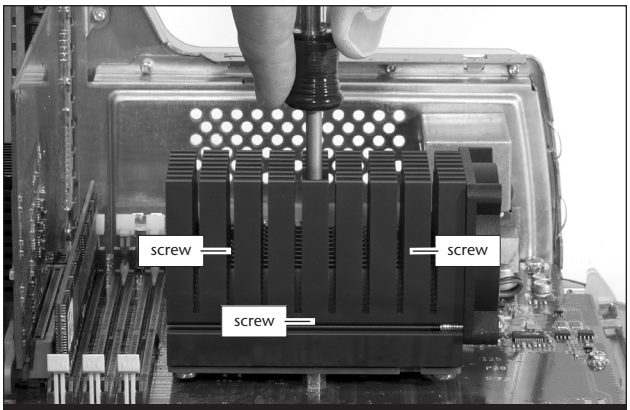

Figure 37

Installation—QuickSilver 2001 and 2002 Models

Reinstall Fan Assembly and Close Computer

1. Place the fan assembly between the Encore/ST card's heat sink and the back panel of the computer, against the modem filter **(Figure 38)**. Carefully plug in the fan's 2-pin connector to the connector on the logic board.

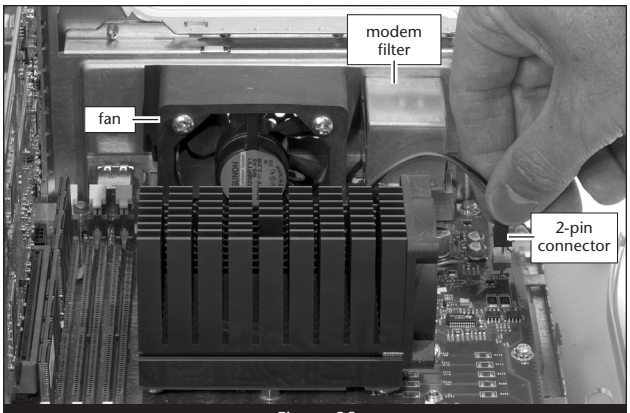

Figure 38

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 39)**.

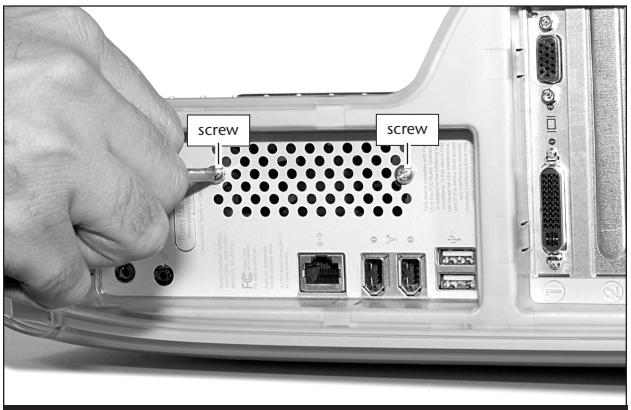

Figure 39

3. Raise the side panel back into place **(Figure 40)**.

4. Return the computer to your computing area if necessary, and reconnect the power cord and peripheral cables to the computer.

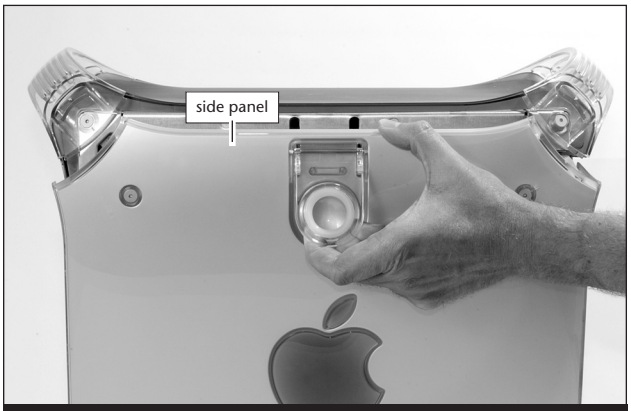

Figure 40

Turn On Computer

Turn on your Power Mac; your accelerated machine should boot normally. Your installation is now complete.