



Power Macintosh User's Manual

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*Includes setup, troubleshooting, and important health-related
information for Power Macintosh 5400 series computers*

🍏 Apple Computer, Inc.

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Communications regulation information

FCC statement

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple’s instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

Note: When 10BASE-T Ethernet is connected, the system complies only with the FCC Part 15, Class A limits and the CISPR 22, Class A limits, and may not be used in a residential area.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

DOC statement

DOC Class B Compliance This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Department of Communications.

Observation des normes—Classe B Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur : “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

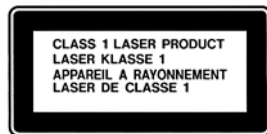
取扱説明書に従って正しい取り扱いをしてください。

CD-ROM drive

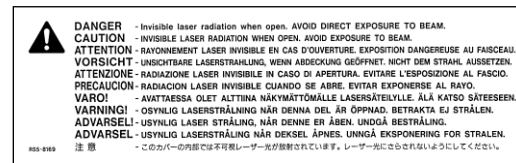
WARNING Making adjustments or performing procedures other than those specified in your equipment’s manual may result in hazardous exposure.

WARNING Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.



Class 1 label



Service warning label



Welcome to Power Macintosh

• • • • •

Congratulations on the purchase of your new Macintosh. Your computer is designed to give you the highest performance combined with real ease of use—it's easy to set up, easy to use, and easy to expand. This book will guide you through the setup procedure, tell you how to expand your Macintosh, and provide many tips on using your new system.

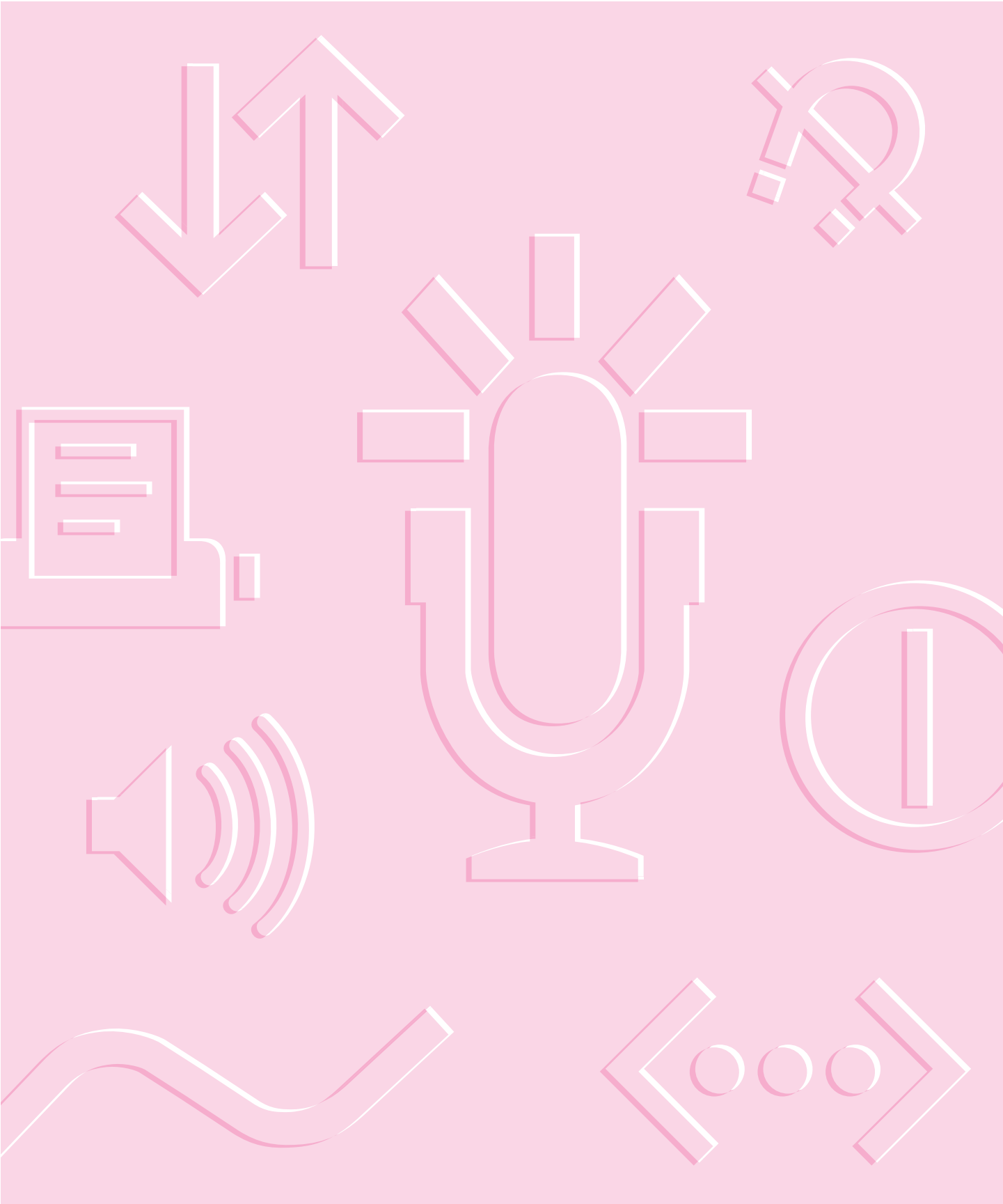
Your Macintosh computer is powered by the new **PowerPC** microprocessor (or “chip”). This microprocessor was designed by Apple Computer, Inc., Motorola, Inc., and IBM Corporation. The **PowerPC** microprocessor uses Reduced Instruction Set Computing (RISC) technology to deliver very high performance at the lowest possible cost. The **PowerPC** RISC microprocessor represents the state of the art in microprocessor design.

Your new Macintosh will run almost all of your existing Macintosh software, but for best performance and greatest speed, look for the new software programs designed especially for computers that contain the **PowerPC** microprocessor. You'll find **PowerPC** microprocessor-compatible programs at any software store that carries products for the Macintosh computer.

- Chapter 1 Getting Started
- Chapter 2 Getting Help
- Chapter 3 Expanding Your Computer and Using Its Special Features
- Chapter 4 Installing and Using Application Programs



part



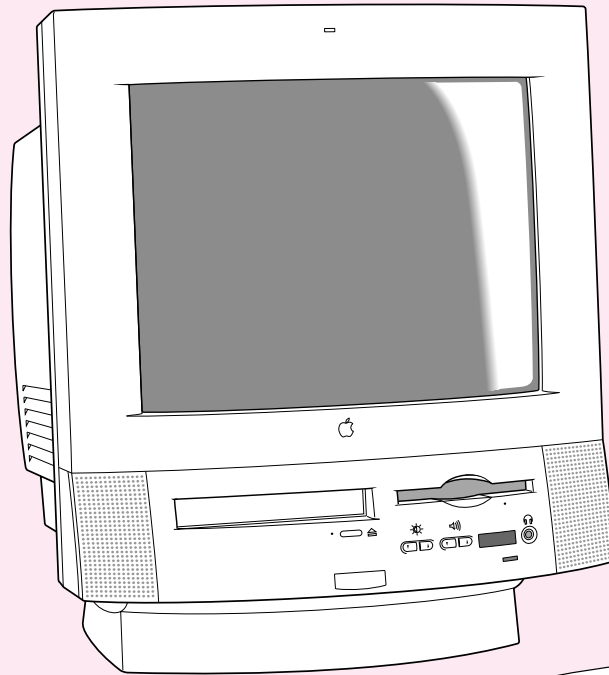
Follow the instructions in this chapter to set up your computer and learn the basics.

1

Getting Started

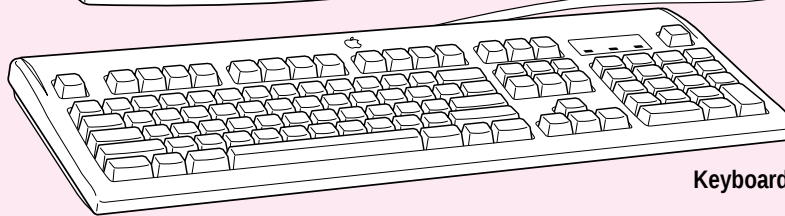


The illustration on the next page shows all the equipment you will need to set up your computer and begin using it. Place your equipment on a sturdy, flat surface near a grounded wall outlet. Before following the setup instructions in this chapter, you may want to read “Arranging Your Office” in Appendix A (in the section on health-related information) for tips on adjusting your work furniture so that you’re comfortable when using the computer.

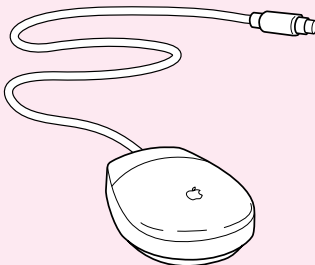


Macintosh computer

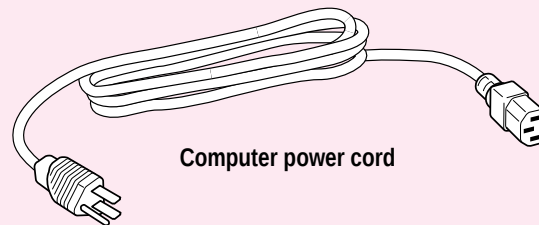
Keyboard cable
(sometimes built into the
keyboard as shown here)



Keyboard



Mouse



Computer power cord

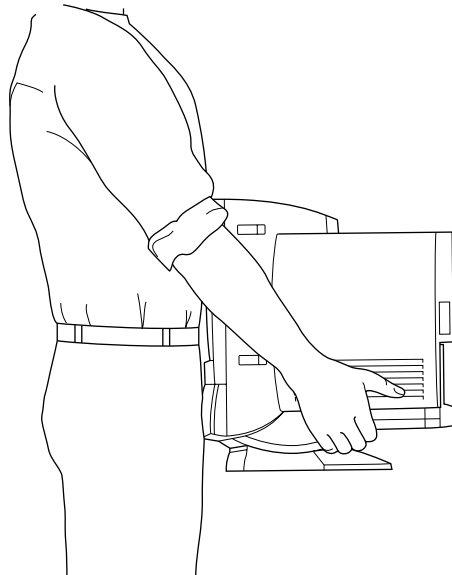
Plugging in the computer

Before you plug your Macintosh into a wall socket, carefully read all the setup instructions in this chapter. Then, before you connect anything to your Macintosh, follow the instructions in this section to plug it in. The plug grounds the computer and protects it from electrical damage while you are setting up.

When you are ready to begin, follow these steps:

1 Place the computer where you want it.

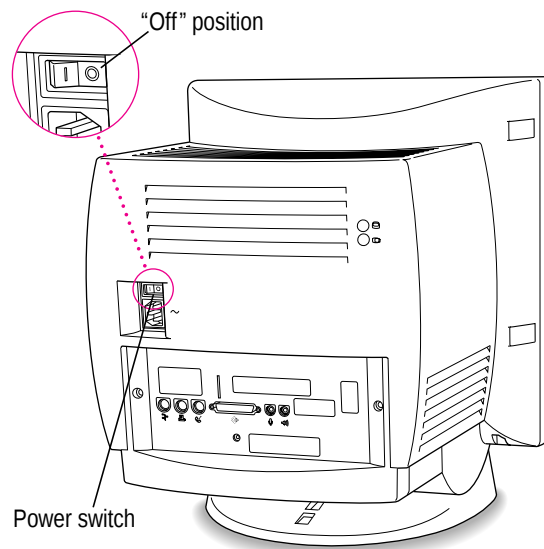
Carry the computer with its screen facing you. Most of its weight is near the screen. Lift with your knees, not your back.



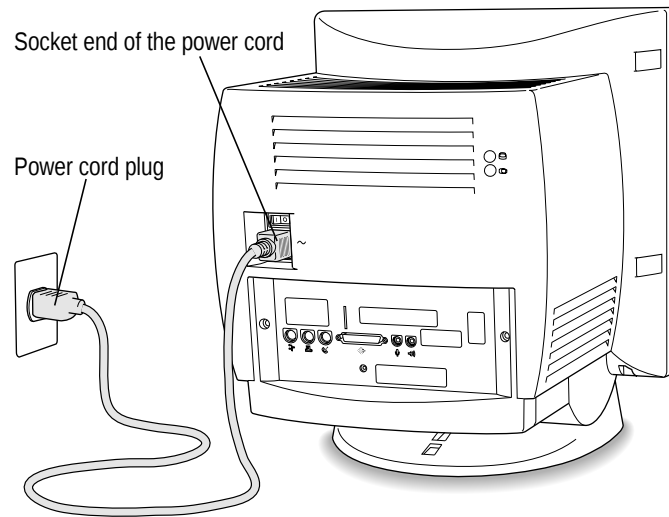
- 2 Plug the socket end of the power cord into the recessed power plug (marked with the symbol ~) on the back of the computer.

Make sure at least one end of the power cord is within easy reach so that you can unplug the computer when you need to.

IMPORTANT To protect both yourself and the computer from electrical hazards, the computer should remain turned off until you are finished connecting its parts. Check the power switch at the back of the computer. Make sure that the side of the switch marked with the ○ symbol is pressed in.



- 3 Plug the other end of the power cord into a three-hole grounded outlet or power strip.



WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Installing an expansion card

If you purchased an expansion card for your Macintosh, install it now. (See Appendix B, “Installing Expansion Cards and Additional Memory,” for instructions.) If you don’t have an expansion card, continue with the next section, “Connecting the Mouse and the Keyboard.”

Connecting the mouse and the keyboard

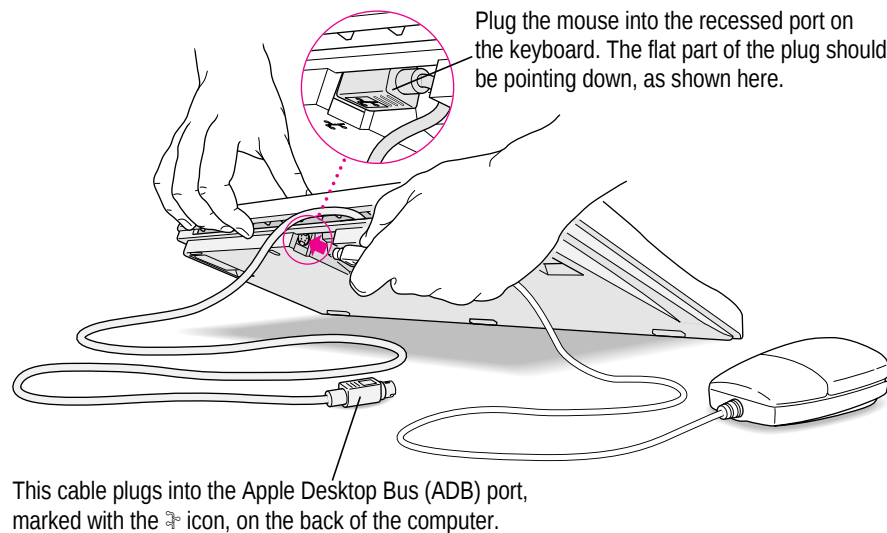
The way you connect the mouse and the keyboard depends on whether the keyboard has a built-in cable or a separate cable. If your computer came with a PC Compatibility Card installed, you may have a two-button mouse. See the instructions that came with the card for information about connecting a two-button mouse.

Connecting a keyboard with a built-in cable

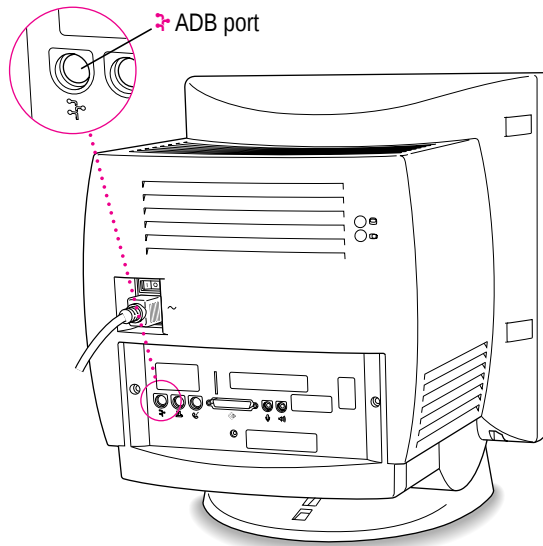
- 1 Plug the mouse cable into the recessed port on the back of the keyboard.

The plug and the port are marked with the ⌘ icon (symbol). The positions of the port and icon on your keyboard may be different from those pictured.

By the way: A port marked with the ⌘ icon is called an Apple Desktop Bus (ADB) port.



- 2 Plug the keyboard cable into the port marked with the  icon on the back of the computer.



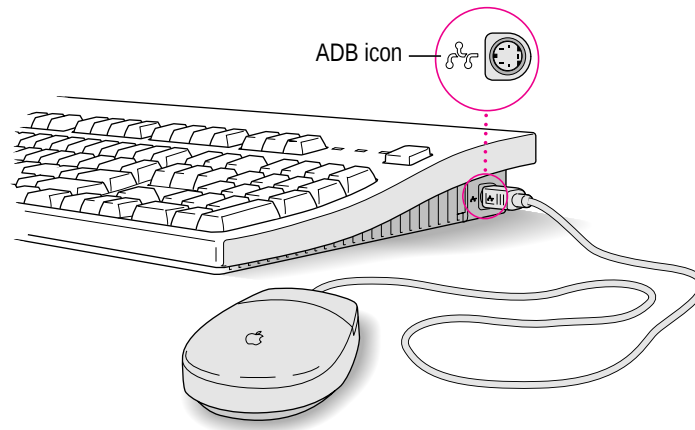
Connecting a keyboard with a separate cable

- 1 Plug the mouse cable into the port on either side of the keyboard.

Most right-handed people prefer to use the mouse with their right hand; most left-handed people prefer to use their left hand. Plug the mouse into the port on the side you prefer.

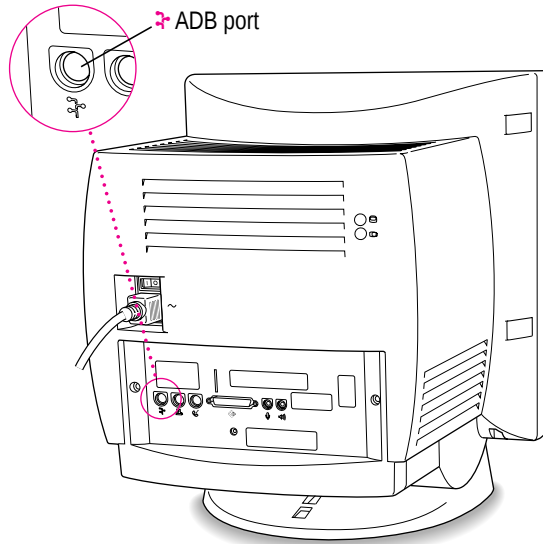
The plug and the port are marked with the ⌘ icon (symbol). Align the icons before you insert the plug. (The positions of the port and icon on your keyboard may be different from those pictured here.)

By the way: A port marked with the ⌘ icon is called an Apple Desktop Bus (ADB) port.



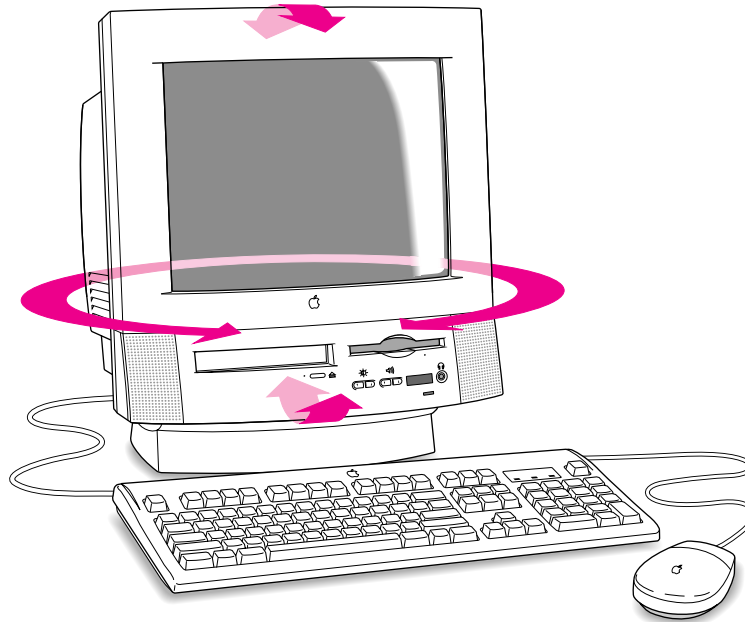
- 2 Plug the keyboard cable (both ends are the same) into the other port on the keyboard.

- 3** Plug the keyboard cable into the port marked with the  icon on the back of the computer.



Adjusting the angle of the screen

You can adjust the angle of the screen to avoid glare and reflections by using the computer's tilt-and-swivel base. Turn the computer to either side or tilt it slightly back or forward.



IMPORTANT You should not turn or tilt the computer while a CD-ROM is in the drive. For more information, see “Inserting a CD-ROM disc or Other CD” later in this chapter.

For more information on setting up your office for comfort and safety, see Appendix A, “Health, Safety, and Maintenance Tips.”

Connecting other equipment

If you are new to the Macintosh, it's a good idea to get some experience using your computer before you connect other equipment, such as a printer or scanner. To learn basic Macintosh skills, continue with the instructions in this chapter.

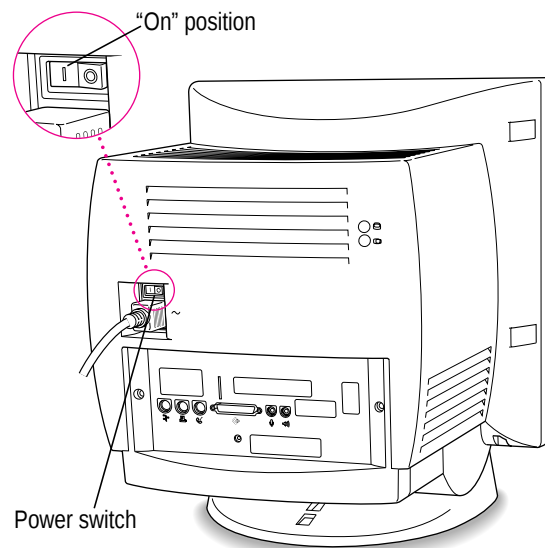
When you're ready to connect other equipment to your Macintosh, see the instructions in Chapter 3.

Turning the computer on for the first time

To turn the computer on for the first time, follow these steps:

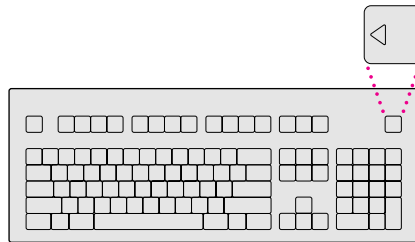
- 1** On the back of the computer, press the side of the power switch marked with the symbol I.

Once you turn on the main power with the power switch, you can leave it on. From now on, you'll be starting up and shutting down your computer using the Power key on the keyboard. You only need to use the power switch on the back of the computer when you connect equipment to your computer or when you can't use the Power key for some reason.



2 Press the Power key (marked with a triangle) on your keyboard.

If you have a different keyboard than the one pictured here, your Power key may be in a slightly different location, but a triangle is always marked on or near the key.

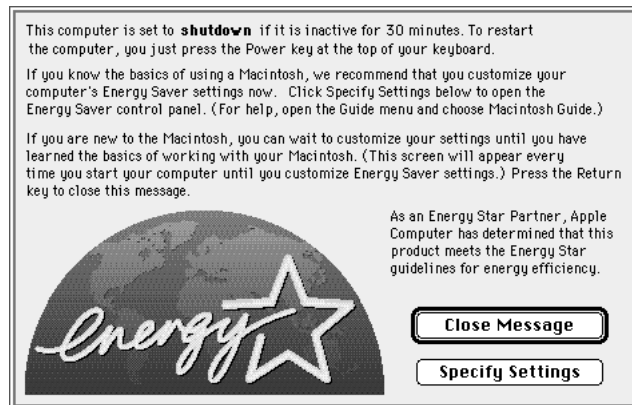


You hear a tone from your computer as it starts up.

3 Check to see what's on your screen.

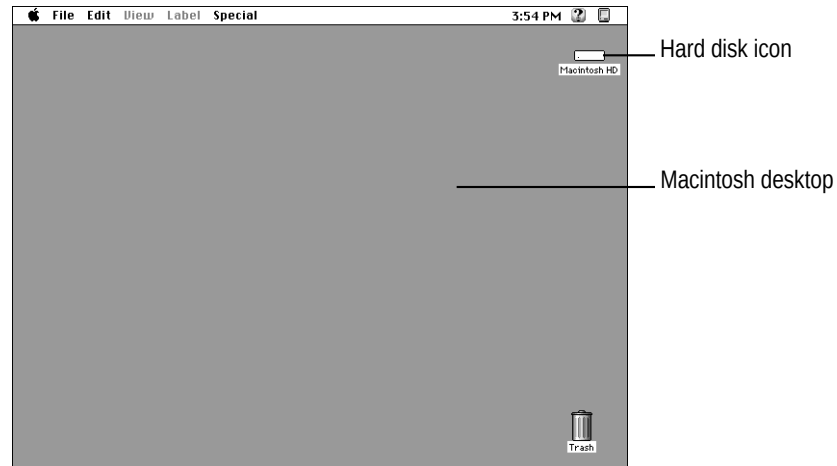
You see a sequence of messages describing what is happening, followed by the Energy Saver dialog box.

- If you see a blinking question mark, see “Solutions to Common Problems” in Chapter 5.
- If you see anything else on your screen, or if you see nothing at all, see the section “Problems Starting Up?” next in this chapter.
- If you are a beginning Macintosh user, press the Return key when the Energy Saver dialog box appears.
- If you're an experienced Macintosh user, you may want to set your energy-saving options now (refer to the “Saving Energy” topic area of Macintosh Guide, available in the Guide (📖) menu, and “Saving Energy With the Energy Saver Control Panel,” later in this chapter).



- If, when you press Return, you see the Macintosh desktop (shown here), your system software is already set up correctly.

Skip now to the section, “What’s Next?”



Note: To save energy, your computer is automatically set to put itself to sleep if you haven’t used it for 30 minutes or more (the computer goes into power-saving mode and the screen turns black). If this happens while you’re setting it up, simply press the Power key or any key but Caps Lock on the keyboard to “wake up” the computer (it may take a few seconds). See “Saving Energy With the Energy Saver Control Panel,” later in this chapter for more information on setting power-saving options.

Problems starting up?

If the screen is dark, check these items to see if you can identify the problem:

- Is the computer turned on? The power-on light on the front of the computer should be on. Make sure the side of the power switch marked with the symbol I (on the back of the computer) is pressed in.
- Is the power cord connected to the computer, and is the cord plugged into a power source?
- If the computer is plugged into a power strip, is the power strip turned on?
- Are the keyboard and mouse cables connected correctly? (Don't disconnect the keyboard or mouse cable while the computer is on. You could damage your equipment.)
- Are the screen control buttons on the front of the computer (marked with the ☼ and ☼ icons) adjusted correctly?
- If you have an external hard disk attached to your computer, is that hard disk turned on? Was it turned on before you turned on the computer? If you're not sure, turn everything off. Then turn on the external hard disk before you turn on your computer.

If you see a blinking question mark on the screen, you probably need to read "Solutions to Common Problems" in Chapter 5.

What's next?

You've finished setting up your computer. Continue with one of the following steps:

- If you are new to the Macintosh, turn to the next section, “Learning the Basics.” When you’ve learned the basic Macintosh skills, turn to the section, “Saving Energy With the Energy Saver Control Panel” to learn how to set energy-saving options for your computer.
- If you are an experienced Macintosh user, turn to the section “Saving Energy With the Energy Saver Control Panel,” later in this chapter, to learn how to set energy-saving options for your computer. Then turn to Chapter 2, “Getting Help,” to learn about Macintosh Guide, your main source of information when you’re working with the Macintosh.
- If you want to connect additional equipment, such as a microphone, to your computer, see Chapter 3, “Expanding Your Computer and Using its Special Features,” for instructions.
- If you want to install application software on your computer, see Chapter 4, “Installing and Using Application Programs.” You’ll need this information to properly set up any applications specifically designed for Power Macintosh computers.

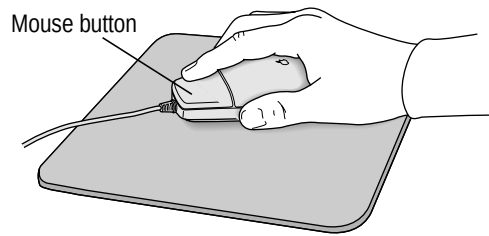
IMPORTANT If you need to turn off your computer at any point, please see “Turning the Computer Off” later in this chapter. It is very important to use the correct procedure for shutting down your Macintosh before turning it off.

Learning the basics

If you are new to the Macintosh, you should begin by looking at the easy-to-use program called the Macintosh Tutorial. The tutorial teaches you the basic skills you need to use your computer. To start the tutorial, follow these steps:

1 Slide your mouse along your mouse pad or desk.

Hold the mouse as shown, with the cable pointing away from you. Rest the heel of your palm on the desk and grasp the sides of the mouse between your thumb and fingers. Use your wrist and fingers to slide the mouse around with the index finger resting on the mouse button. Don't press the mouse button (under your index finger). Notice that the arrow (␣) on the screen moves in the same direction that you move the mouse.



If the arrow doesn't move, make sure that the cables connecting the mouse and keyboard are secure and that your mouse is positioned as shown in the illustration.

Note: If your computer came with a PC Compatibility Card installed, you may have a two-button mouse instead of the one shown in the illustration.

2 Move the tip of the arrow (␣) to the question mark (?) in the upper-right portion of the screen.

If you run out of room on your mouse pad or desk while moving the mouse, pick up the mouse and place it where there's more room. (The arrow on the screen moves only when the mouse is in contact with the mouse pad or desk.)

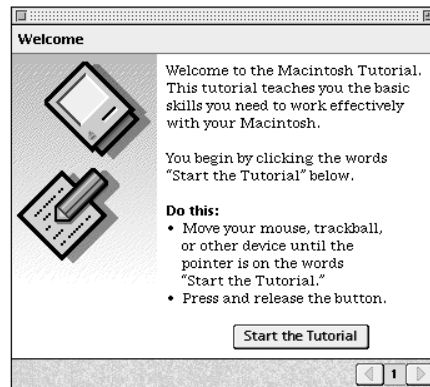
- 3 With the tip of the arrow on the question mark, press and hold down the mouse button.

A list of choices (called a *menu*) appears. This is the Guide (🔍) menu, which is the place to go when you have a question about how to use your computer.



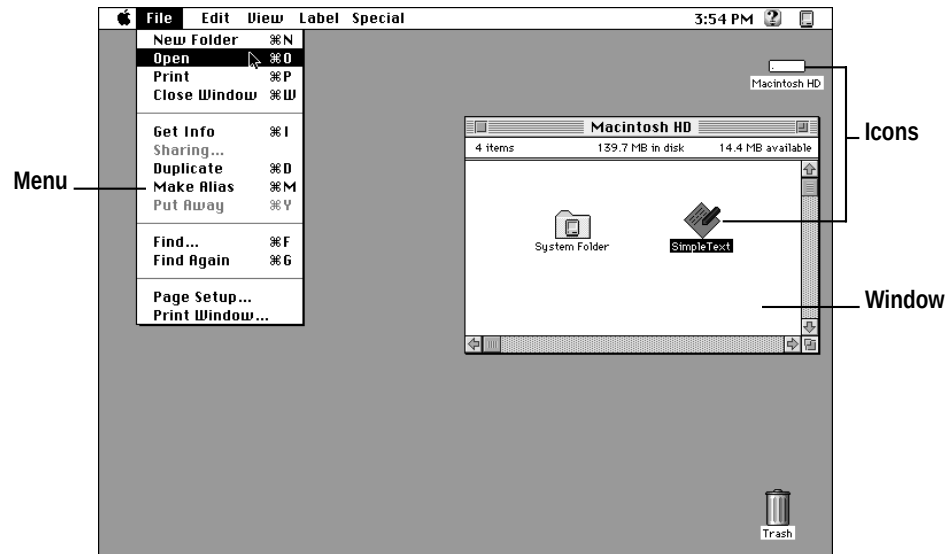
- 4 While holding down the mouse button, move the arrow until the words “Macintosh Tutorial” are highlighted, then release the mouse button.

A window appears welcoming you to the tutorial. You can set this book aside for now and follow the instructions on the screen. When you have completed the tutorial, return to this book.



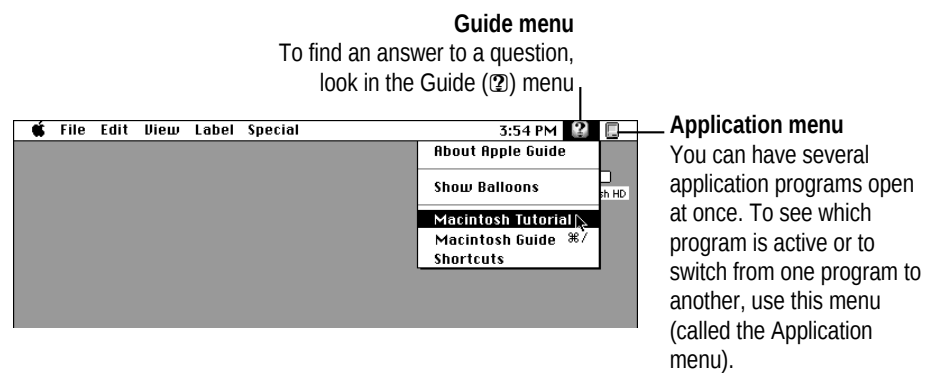
Reviewing the basics

Look at the following illustrations to review the elements you use on your screen to work with your computer.



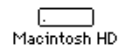
Menus

The strip across the top of the screen is called the menu bar. The symbols and words in it represent menus of commands. To open a menu, place the pointer on the symbol or word for the menu and press the mouse button.



Icons

Icons are small pictures that represent disks, programs, documents and folders. You can double-click any icon to open it and see what it contains.



Macintosh HD

This icon represents your computer's internal hard disk.



Application

Icons like this one represent application programs, which you use to create documents and do other work.



Document

Icons like this one represent documents, which you can create and edit.



Folder

Icons like this represent folders. A folder contains other icons.

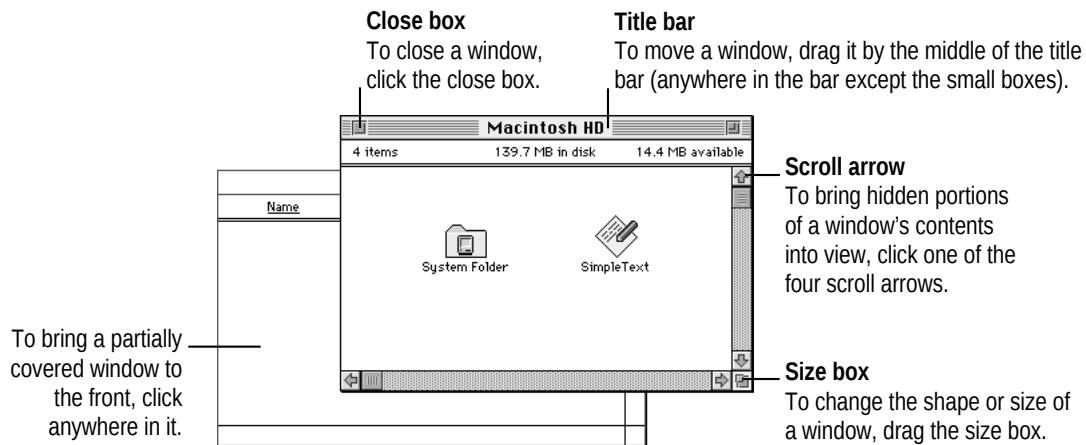


Trash

To throw away an item you no longer want, drag it to the Trash icon and choose Empty Trash from the Special menu.

Windows

Windows are boxes that display text, graphics, or icons. To change the shape or position of a window, or to close the window, use the elements shown here.



Saving energy with the Energy Saver control panel

When you save energy, you save natural resources and reduce pollution. Your Power Macintosh contains features that automatically save energy. You can increase the energy savings by using the Energy Saver control panel to turn your computer off if you won't be using it for a while—for example, overnight or over the weekend.

The Energy Saver dialog box (shown in step 3 of “Turning the Computer On for the First Time” earlier in this chapter) appears every time you start your computer until you open the Energy Saver control panel. Once you open the control panel, you can keep the preset options shown there, or set your own energy-saving options. If you do not want to set your energy-saving options when the Energy Saver dialog box is displayed, you can click Close Message or press Return (the Energy Saver dialog box continues to appear when you start your computer).

Setting energy-saving options

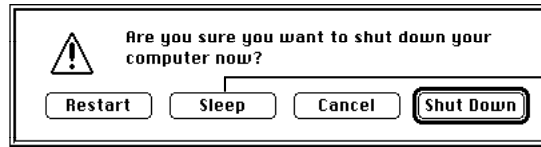
You can get to the Energy Saver control panel by clicking Specify Settings in the Energy Saver dialog box that appears when you start your computer or by choosing Control Panels in the Apple () menu.

The Energy Saver control panel displays the options you can accept or change. For more information on using the Energy Saver control panel, see the “Saving Energy” topic area of Macintosh Guide, available in the Guide (⌘) menu.

Putting your computer to sleep

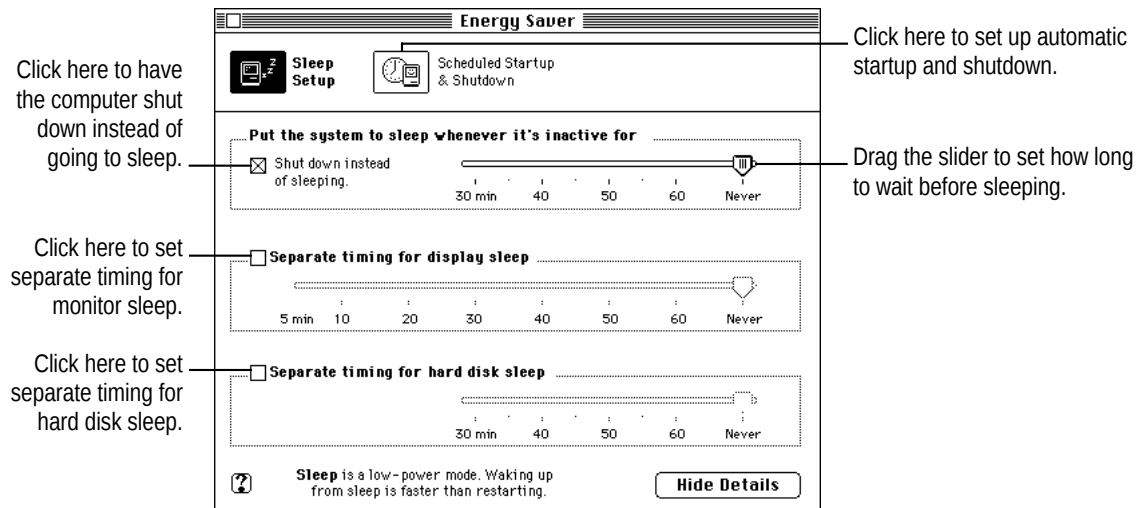
Your Power Macintosh is preset to put itself to sleep after 30 minutes of inactivity. When your computer goes to sleep, the screen enters a low-power mode in which it dims and the hard disk stops spinning but remains ready to start back up quickly. You do not lose any of the information you were working on even if you did not save it before the computer went to sleep.

To put your computer to sleep right away, choose the Sleep command from the Special menu, or press the Power key on the keyboard to bring up the Shutdown dialog box pictured below.



Click here to put your computer to sleep now.

You can set sleep options using the Energy Saver control panel, available under Control Panels in the Apple () menu.



Waking your computer from sleep

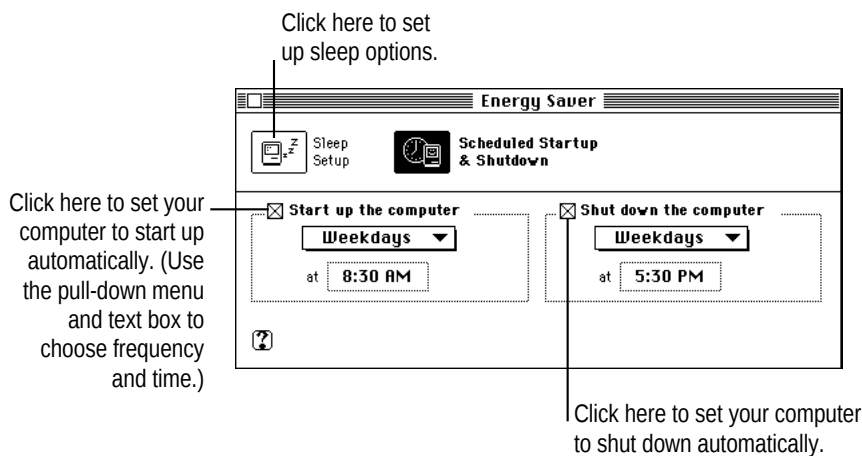
To wake the computer from sleep, press any key on the keyboard except Caps Lock. (It may take a moment or two for the computer to awaken.) The documents and application programs you had open when the computer went into sleep are still open and unsaved changes are preserved.

Accessing a sleeping computer over a network

If your computer is being used as a server, other users can still access it over a network while it is asleep if you set server options that prevent the hard disk from going to sleep. (You can set server options using the Preferences menu when the Energy Saver control panel is displayed.) The network connection does not have to be established before the computer goes to sleep. However, if you've chosen to have your computer shut itself down rather than go to sleep, other users will not be able to access it over a network after the computer shuts itself down.

Scheduling automatic startup and shutdown

You can set your computer to start up and shut down at specified times using the Energy Saver control panel. For information on using the Energy Saver control panel, see the “Saving Energy” topic area of Macintosh Guide, available in the Guide (?) menu. If there's an unsaved document open on your desktop when the scheduled shutdown time occurs, it is saved automatically for you in a folder on your startup disk. The folder is named with the date and time of the shutdown.

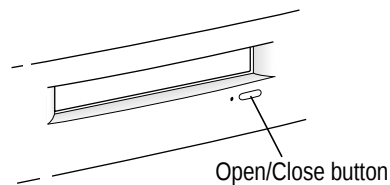


Inserting a CD-ROM disc or other CD

Your internal CD-ROM drive, if your computer came with one installed, works with CD-ROM discs, standard audio compact discs (CDs), and single-session or multisession Photo CDs. Follow these instructions to insert a CD-ROM disc (or other CD) into your CD-ROM drive. Then follow the instructions provided with your disc, as well as the instructions in this manual.

WARNING Because your computer is designed to tilt and swivel on its base (allowing you to position the monitor to minimize glare and reflections), small (8 cm) discs may not stay in the proper position in the CD-ROM drive. If you do use a small disc, make sure your computer is as level as possible before you insert the disc, and don't tilt and swivel the base while a small disc is in the drive. If a small disc is not properly seated, the disc or the CD-ROM drive (or both) may be damaged.

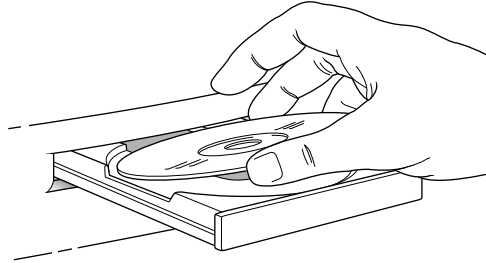
- 1 Start up your computer, if it's not already on.
- 2 Press the Open/Close button to open the tray of the CD-ROM drive.



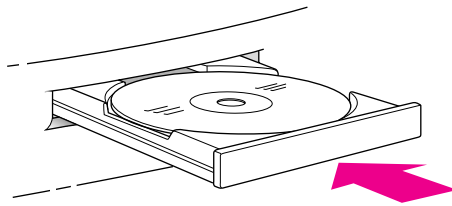
The tray opens.

3 Place a disc in the tray with the disc label facing up.

Make sure the disc is lying flat and centered in the tray. If you are using a small (8 cm) disc, make sure it is centered within the inside ring on the tray.



4 Gently push the tray in, or press the Open/Close button, to close the tray.



In a few moments, an icon for the disc appears on your screen.

For instructions on ejecting a CD-ROM disc or other CD, see the “CD-ROM Discs” topic area of Macintosh Guide, available in the Guide (🔍) menu. For instructions on using Macintosh Guide, see Chapter 2 of this manual.

Turning the computer off

Using the Power key

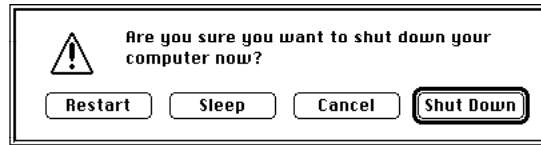
To turn the computer off using the Power key (marked with a triangle) on the keyboard, follow these instructions:

- 1 If the computer is in sleep, press any key on the keyboard except Caps Lock to wake it.

For information on the sleep feature of your Macintosh, see “Saving Energy With the Energy Saver Control Panel” earlier in this chapter.

- 2 Press and hold the Power key on the keyboard for about 2 seconds.

The following dialog box appears on the screen:

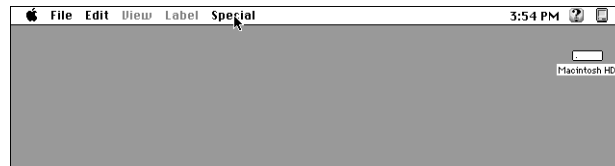


- 3 Press the Return key on the keyboard (or click the Shut Down button in the dialog box).

Using the Shut Down command

You can also turn your computer off by using the Shut Down command in the Special menu. Follow these steps:

- 1 If the computer is in sleep, press the Power key (or any key on the keyboard except Caps Lock) to wake it.
- 2 Move the tip of the arrow to the word “Special” at the top center of the screen.



If the word “Special” does not appear in the menu bar at the top of the screen, you’re not working in the Finder, the application you need to be in when you shut down your computer. Choose Finder from the Application menu (at the far right of the menu bar). Then try step 2 again.

- 3 With the tip of the arrow on the word Special, press and hold down the mouse button.
- 4 While holding down the mouse button, move the arrow until the words “Shut Down” are highlighted, then release the button.



To turn the computer on again, just press the Power key on the keyboard.

If you can't shut down your computer

If a problem with the computer prevents you from using the Power key on the keyboard or choosing Shut Down—for example, if the computer “freezes” so that the pointer does not respond to the mouse—you can turn off the computer by pressing the power switch on the back of the computer. (The power switch is near the location where the power cord plugs into the back of your computer.) Use this method only if you cannot choose Shut Down or Restart following the instructions in “Using the Power Key” or “Using the Shut Down Command.”

IMPORTANT You could lose unsaved work if you use the power switch on the back of the computer to turn off your computer. Only use the power switch when there is a problem that prevents the computer from being turned off with the Power key on the keyboard or the Shut Down command. To make sure your work is saved, use the Power key on the keyboard or the Shut Down command.

Turning the computer on

To turn the computer on after you've shut it down with either the menu command or the keyboard:

- **Press the Power key (marked with the triangle) on the keyboard.**

Leave the power switch on the back of your computer in the “on” position. (The side of the switch marked with the I symbol should be pressed in.)

Where to find answers

When you have questions about using your Macintosh, there are several places you can look for answers.



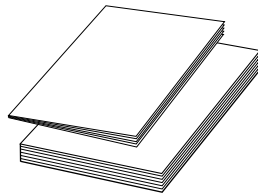
In this book

Use this book to help you set up your computer and learn about it, or to find solutions to problems.



In the Guide menu

The Guide menu (marked with the  icon) is your main source of information about the Macintosh. To learn how to get different kinds of help from the Guide menu, see Chapter 2 in this book.



In other manuals

For answers to questions about other equipment or about application programs you have purchased, see the manuals that came with the equipment or programs.



About Apple Extras

In the About Apple Extras file

The Apple Extras folder on your hard disk contains a SimpleText document called About Apple Extras (often called a "Read Me" file) with important information about some of the application programs included with your computer. Read Me files can also be found inside application folders.



From Apple's customer support hotline

If you can't find an answer in any of the materials provided, call the customer support hotline. (The phone number for the hotline is in the service and support information that came with your computer.)

If you have problems with a particular application program, contact the manufacturer of the program. See "Obtaining Online Support and Updated Apple Software," in Chapter 5 for information about getting updated Apple software.

Use the instructions in this chapter to learn about the help available to you in the Guide menu.

2

Getting Help

.....

The Guide menu is your main source of information when you're working with your computer. The menu is identified by a question mark (🔍) in the upper-right corner of the screen.



Getting answers to your questions

When you have a question while working with your computer, you can get the answer by choosing Macintosh Guide from the Guide (?) menu.

- 1 Pull down the Application menu (in the upper-right corner of the screen) and choose Finder to make it the active application program.

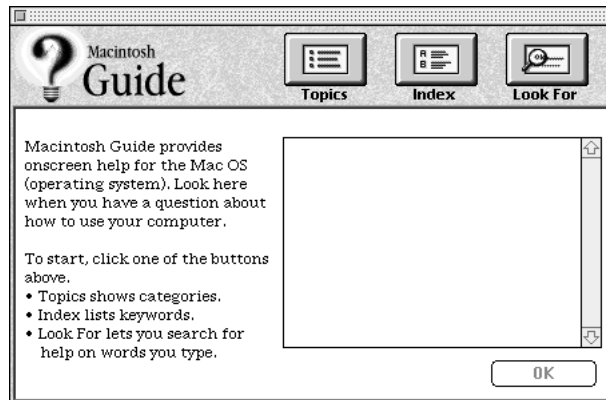


A checkmark in the menu indicates that the Finder is the active program.

- 2 Pull down the Guide menu (marked with the (?) icon) and choose Macintosh Guide.



The Macintosh Guide window appears.



Whenever you use Macintosh Guide, its window remains in front of other windows. If the window gets in your way, you can move it by dragging its title bar (the gray bar across the top of the window).

- 3 Notice the three buttons at the top of the window: Topics, Index, and Look For.



Macintosh Guide gives you three ways of finding information:

- **Topics** lets you choose from a list of general subjects; it is like the table of contents in a book.
- **Index** lets you choose from an alphabetical list of more specific subjects; it is like the index in a book.
- **Look For** lets you search for information related to a specific word or phrase that you type.

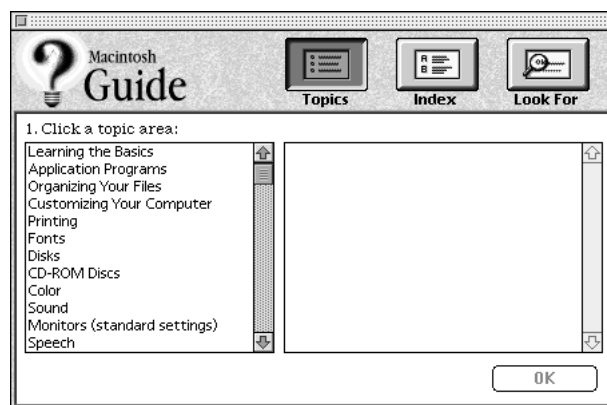
In the following sections you will practice using each method.

If you have problems while using Macintosh Guide, see “Tips for Using Macintosh Guide” at the end of this section.

Getting answers with the Topics button

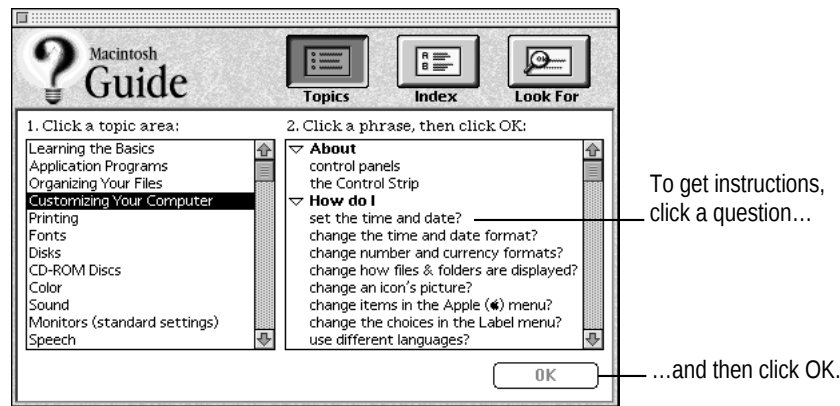
- 1 In the Macintosh Guide window, click the Topics button.

A list of general topics appears on the left side of the Macintosh Guide window. (Depending on the hardware and software you have, the list of topics may look different.)



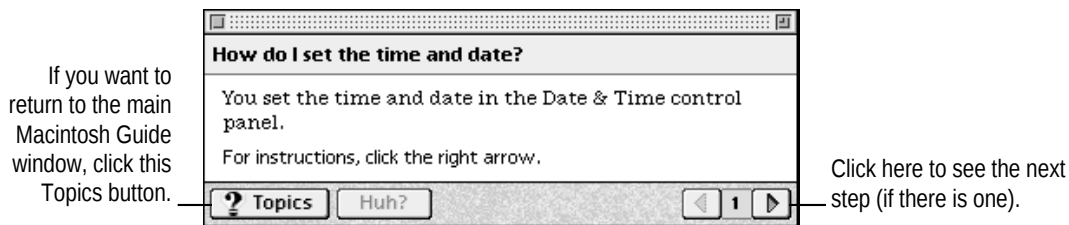
- 2 Click either “Customizing Your Computer,” or “Setting Options,” whichever is available, in the list of topics.

When you click any topic area, a list of related questions appears on the right side of the Macintosh Guide window.



- 3 Click the question “How do I set the time and date?” and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.



- 4 Read and follow the instructions in this window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

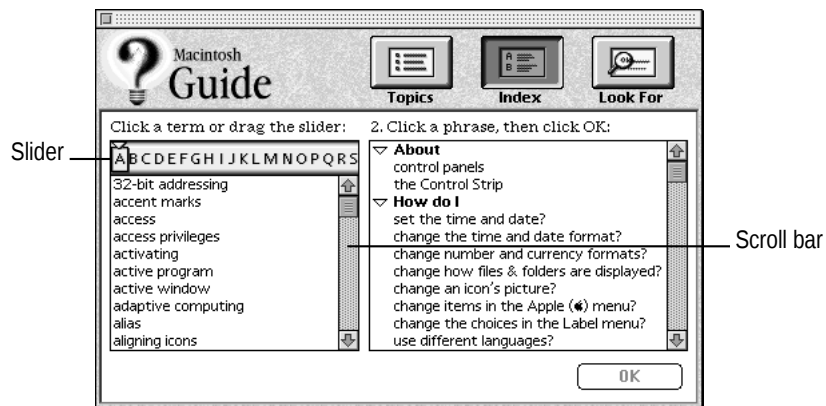
- 5 When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

Now continue with the next section.

Getting answers with the Index button

- 1 In the Macintosh Guide window, click the Index button.

An alphabetical list of subjects appears on the left side of the window.

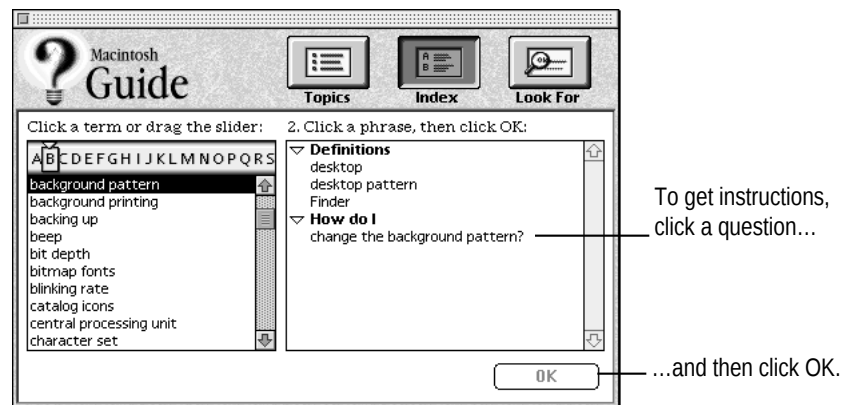


- 2 Scroll through the alphabetical list until the phrase “background pattern” is visible.

You can scroll through the list either by dragging the slider to the letter *B* or by using the scroll bar at the right of the list.

- 3 Click the phrase “background pattern” in the alphabetical list.

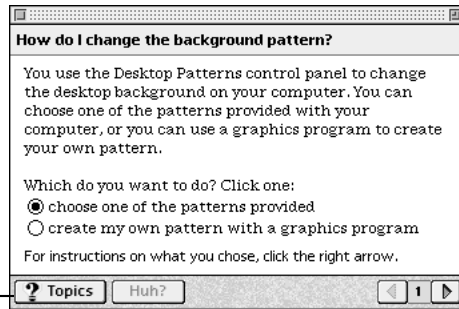
When you click any index entry, a list of related questions appears on the right side of the Macintosh Guide window.



- 4** Click the question “How do I change the background pattern?” and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, click this Topics button.



Click here to see the next step (if there is one).

- 5** Read and follow the instructions in the window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

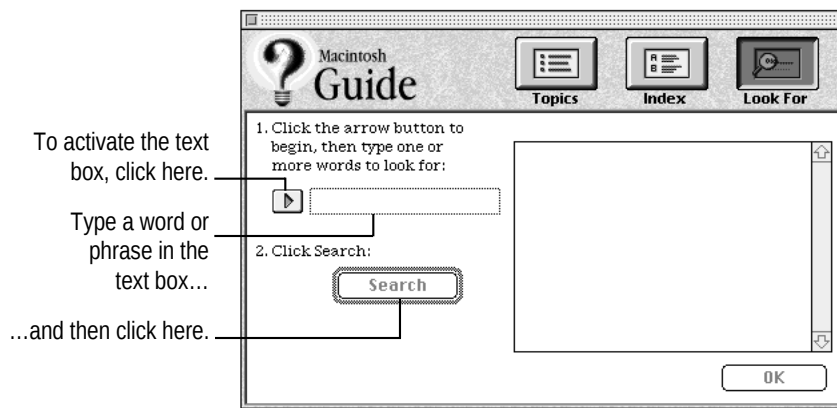
- 6** When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

Now continue with the next section.

Getting answers with the Look For button

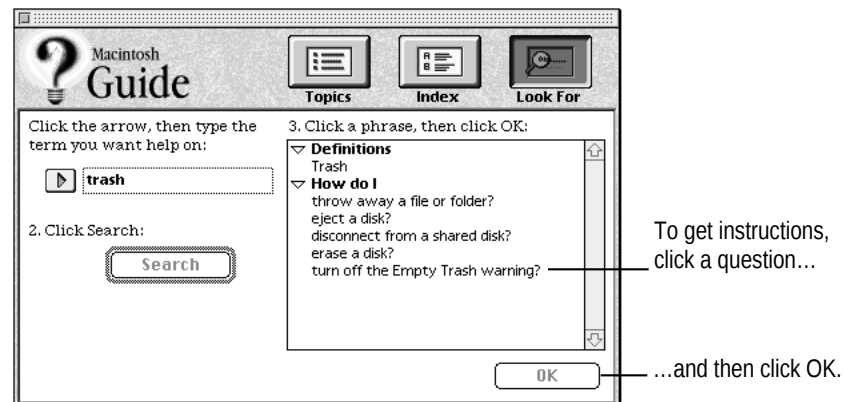
- 1 In the Macintosh Guide window, click the Look For button.

A small box appears on the left side of the window, where you can type text.



- 2 Click the arrow button to activate the text box.
- 3 Type "trash" in the text box and then click Search.

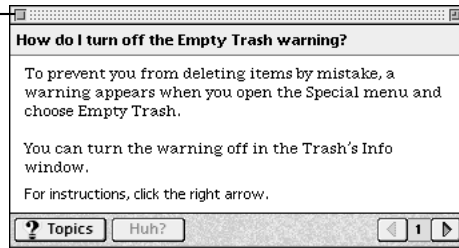
When you click Search, a list of questions related to the word or phrase you typed appears on the right side of the Macintosh Guide window.



- 4 Click the question “How do I turn off the Empty Trash warning?” and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to close
Macintosh Guide,
click here.



Click here to see the next
step (if there is one).

- 5 Read and follow the instructions in the window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to display the next step.

- 6 When you have completed all the steps, click the close box in the upper-left corner to close Macintosh Guide.

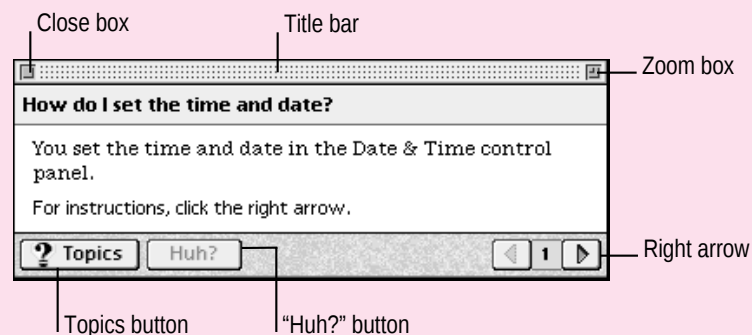
Tips for using Macintosh Guide

Here are a few tips for using Macintosh Guide effectively:

- Macintosh Guide is available only when you are in the Finder—the desktop area where you can see the icons of disks, folders, and files. (Other programs may also have help available in the Guide menu, however.) If you don't see Macintosh Guide in the Guide menu, pull down the Application menu (to the right of the Guide menu) and choose Finder.
- Follow the steps when you're instructed to; don't skip ahead or read ahead. That way the computer can check to make sure you've done a step correctly.
- Unlike most windows, the Macintosh Guide window stays in front of other windows on the screen so that your instructions are never covered. If you need to move the Guide window out of the way, drag it by the title bar at the top of the window.

You can also move the window out of the way by clicking the zoom box. Click the box once to shrink the window; click it a second time to expand the window to its original size.

- If you need more information about an instruction or a term, click the button labeled “Huh?” to get further explanation. (The “Huh?” button is dimmed when no additional information is available.)
- If you want to return to the main Macintosh Guide window, click the Topics (or ?) button in the lower-left corner of the Guide window.
- When you're finished using Macintosh Guide, click the close box in the upper-left corner of the window.



Identifying objects on the screen

Sometimes you'll see an unfamiliar item on the screen and ask yourself, "What's that?" You can get an answer by using a Macintosh feature known as Balloon Help.

Balloon Help explains the function of icons, menus, commands, and other items on the Macintosh screen in balloons like those you see in comic strips.

Follow these steps to use Balloon Help:

- 1 Pull down the Guide menu (marked with the ) and choose Show Balloons.



- 2 Point to any object on the screen that you want to identify.

A balloon appears next to the object. In the following illustration, for example, pointing to the Trash displays a balloon that explains how to use the Trash to throw items away.



Although balloons appear next to items when you point to them, the way you work does not change; you can still select icons, choose commands, and so on.

- 3 When you're finished using Balloon Help, choose Hide Balloons from the Guide menu.

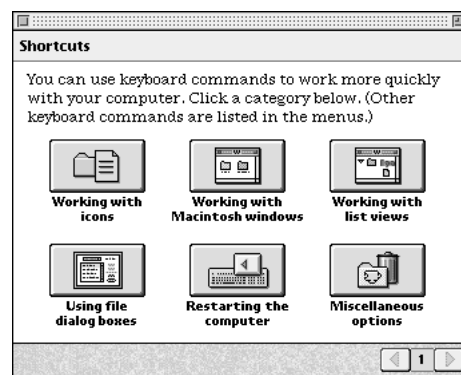
Learning useful shortcuts

You can perform many tasks in the Finder more quickly if you use keyboard or mouse shortcuts. For example, instead of clicking an icon and choosing Open from the File menu, you can simply double-click the icon to open it.

Follow these steps to learn keyboard and mouse shortcuts:

- 1 Pull down the Guide menu (marked with the ) and choose Shortcuts.

The main Macintosh Shortcuts window appears.



- 2 Click one of the category buttons.

Another window appears, describing shortcuts for that category.



- 3 Read about the shortcuts available for the category you selected.**

Click the right arrow in the lower-right corner of the window to display the next window (if there is one).

- 4 When you finish reading about the shortcuts for your category, click the Topics button in the lower-left corner to return to the main Macintosh Shortcuts window. Or click the close box in the upper-left corner to close the window.**

Read this chapter for information on expanding your computer system with additional hardware or by connecting to a network.

3

Expanding Your Computer and Using Its Special Features

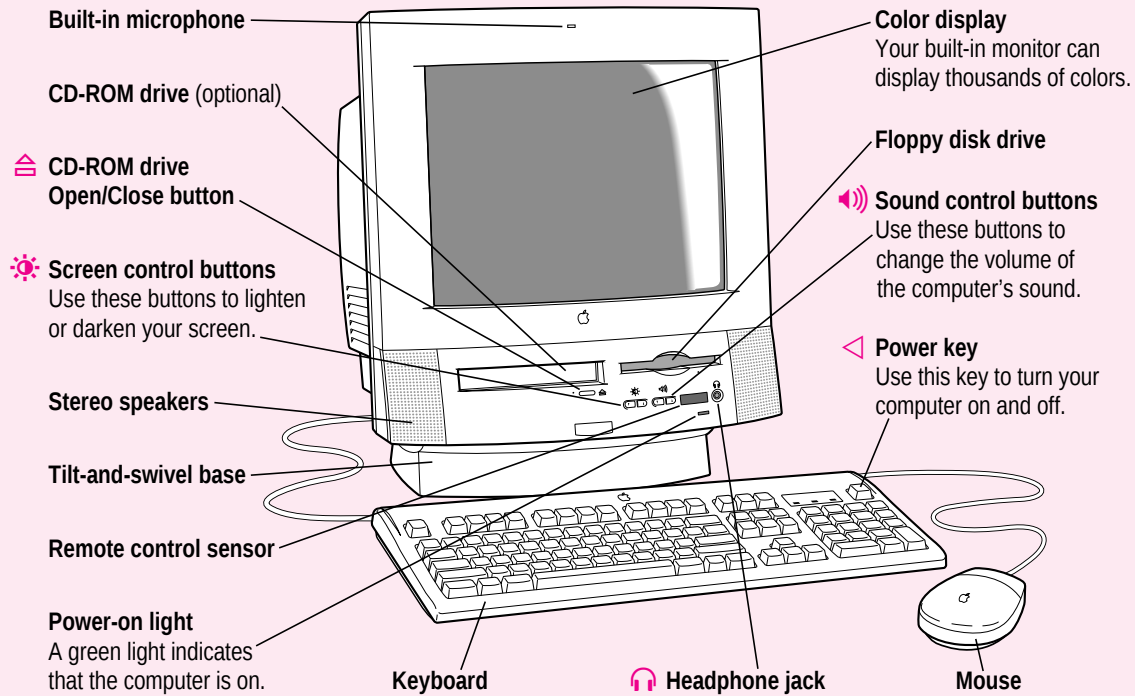


The illustration on the next page shows the basic computer system you now have. You can expand your computer system by connecting additional hardware (such as headphones, a printer, modem, or second monitor for video mirroring) to its external ports or by connecting it to a network.

You can also expand your computer by installing items inside the computer cover. Items you can install include additional random access memory (RAM), a High Performance Module (256K Level 2 cache), and expansion cards. Instructions for installing these internal accessories are provided in Appendix B, “Installing Expansion Cards and Additional Memory,” later in this manual.

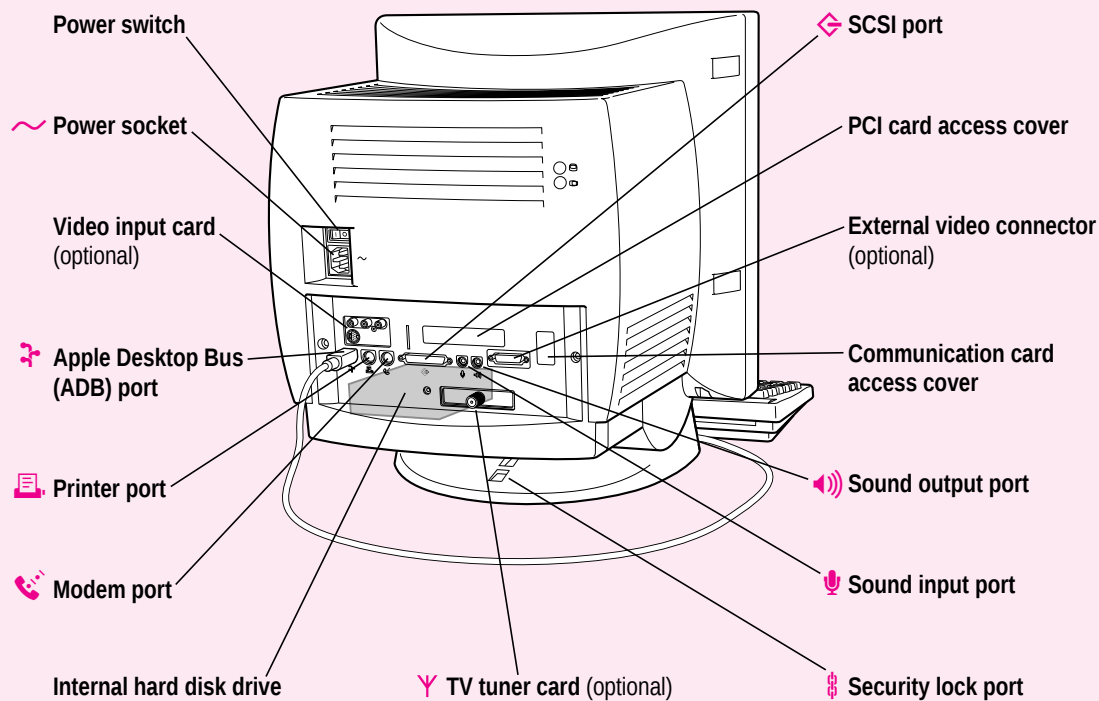
This chapter also tells you how to use some of the special features of your Macintosh:

- using the sound control buttons
- using the screen control buttons
- using the built-in microphone



Your computer's ports and connectors

Headphone jack	 Connects your Macintosh to standard headphones.
Video input card (optional)	Connects your Macintosh to a video camera, VCR, or other video equipment.
Apple Desktop Bus (ADB) port	 Connects your Macintosh to an input device, such as a keyboard or a trackball.
Printer port	 Connects your Macintosh to a printer, LocalTalk network, or GeoPort devices, such as the GeoPort Adapter and the QuickTake 150 digital camera.
Modem port	 Connects an external modem or GeoPort devices, such as the GeoPort Adapter and the QuickTake 150 digital camera to your Macintosh.
TV tuner card (optional)	 Connects your Macintosh to an external TV antenna or cable TV service.



SCSI port



Connects your Macintosh to SCSI equipment, such as external hard disk drives and scanners.

PCI card access cover

Covers port for optional Peripheral Component Interconnect (PCI) slot expansion card.

External video connector (optional)

Connects your Macintosh to a presentation system or a second monitor for video mirroring.

Communication card access cover

Covers port for optional communication card or modem.

Sound output port



Connects your Macintosh to sound output equipment, such as externally powered (amplified) speakers.

Sound input port



Connects your Macintosh to another audio source, such as a compact disc or audio cassette player.

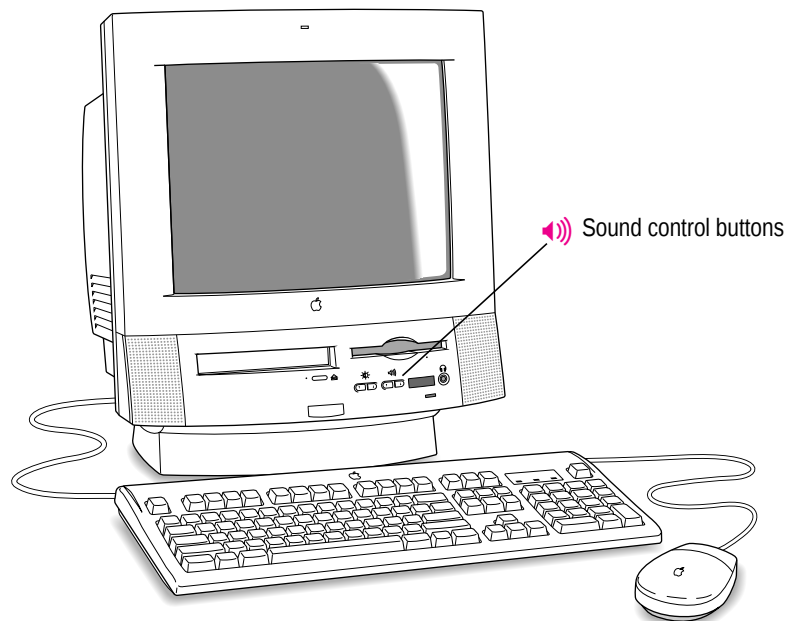
Security lock port

You can attach a security lock to your Macintosh. See your computer products retailer for security lock devices that work with your computer.

Using the sound control buttons on your computer

There are two sets of buttons on the front of your Macintosh. The set on the right (marked with the  icon) is for sound control. You can use these buttons to increase or decrease the volume of the sound your Macintosh plays:

- Press the button on the right to make the sound louder.
- Press the button on the left to make the sound softer.

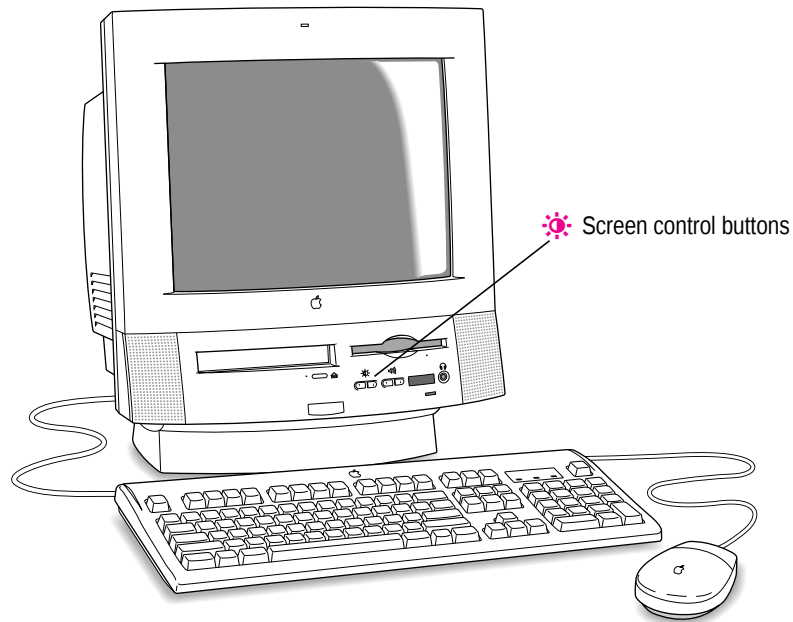


You can also use the Monitors & Sound control panel to adjust the sound or to turn **SRS**  3D Surround Sound technology on or off. For more information, see the “Sound” topic area of Macintosh Guide, available in the Guide () menu.

Using the screen control buttons on your computer

You can adjust the level of light and dark on the screen of your built-in monitor by using the screen control buttons on your computer (marked with the  icon).

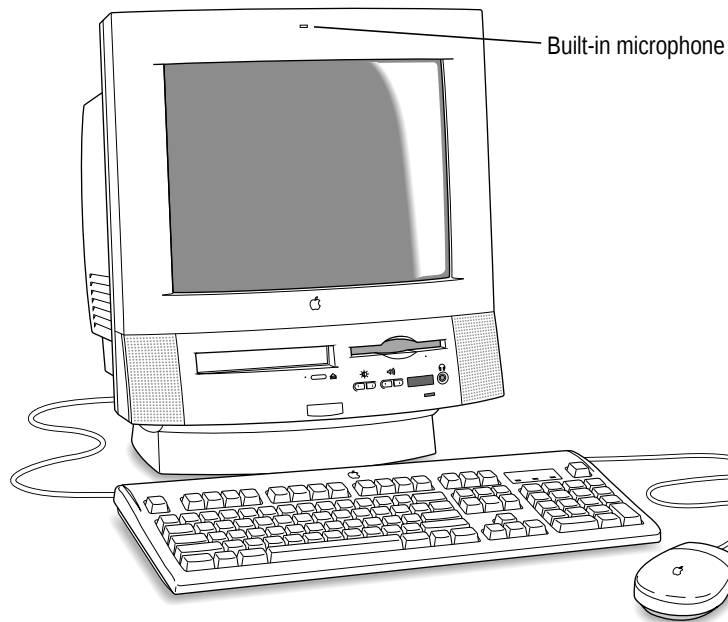
- Press the button on the right to brighten your screen.
- Press the button on the left to darken your screen.



You can also use the Monitors & Sound control panel to control the level of light and dark on the screen or to change the screen resolution to show larger or smaller images. For more information, see the “Monitors” topic area of Macintosh Guide, available in the Guide () menu.

Using the built-in microphone

Your Macintosh comes with a built-in microphone for recording live sounds. The microphone is highly sensitive. Once you've turned it on (which you do with a sound-recording application program), it can pick up sounds within a range of several feet. For information on recording sound, see the “Sound” topic area of Macintosh Guide, available in the Guide (📖) menu.

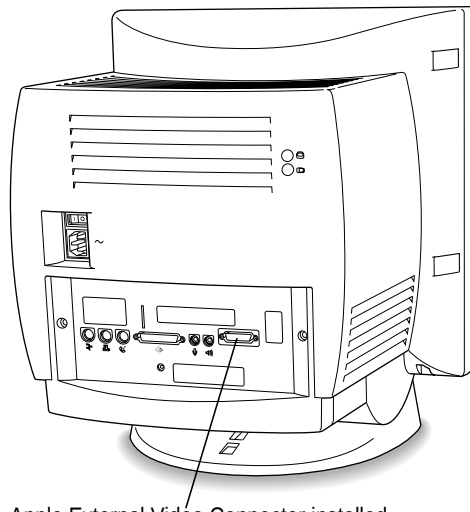


WARNING Do not stick any small objects into the built-in microphone. Doing so may damage your equipment.

Connecting a second monitor for video mirroring

If you have the optional Apple external video connector, you can connect a second, external monitor to your computer to display the same images that are on the computer's built-in monitor. Displaying your computer's images on a second monitor, called *video mirroring*, is useful for presentations.

If your computer doesn't have the optional Apple external video connector, you can install one.



Apple External Video Connector installed

The external monitor must use the same resolution and timing as the built-in monitor. Depending on what type of monitor you have added, you may need to change the built-in monitor's setting to one that the external monitor is capable of displaying.

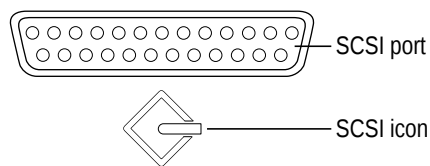
If you want to display your built-in monitor's images on a standard TV or record them using a VCR, you'll need the Apple Presentation System, which adds these capabilities when used with the Apple external video connector kit. The Apple external video connector kit and the Apple Presentation System are available for purchase from computer stores.

For more information about the monitors that you can connect to your computer for video mirroring, see the *Technical Information* booklet that came with your computer.

Connecting external SCSI devices

Your computer has a port for connecting devices that use the Small Computer System Interface (SCSI, pronounced “skuh-zee”). SCSI devices commonly used with the Macintosh include hard disk drives, CD-ROM drives, scanners, some printers, and tape or cartridge backup drives.

The SCSI port permits high-speed communication between the computer and the device. The SCSI icon appears below the port on the computer’s back panel.



You can connect SCSI devices to the SCSI port in a chain. The first device in the chain plugs into the SCSI port; the second device plugs into the first device, and so on.

You can attach up to six external SCSI devices to the SCSI port. All SCSI devices connected to this chain must have their own unique ID number (no two devices can use the same ID number). If your computer came with the optional CD-ROM drive installed, this drive is also part of the SCSI chain and uses SCSI ID number 3.

IMPORTANT “Before You Connect a Device” and “Connecting a SCSI Device,” both later in this section, contain general instructions for attaching SCSI devices to your computer. Be sure also to follow the specific instructions that came with your external hard disk drive or other SCSI device when connecting the device to your Macintosh.

Before you connect a device

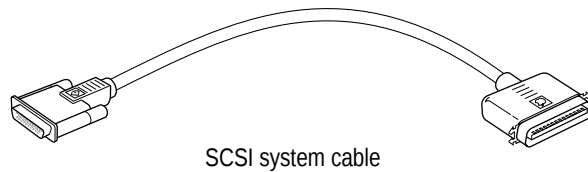
Before you connect a SCSI device to your Macintosh, be sure to complete these tasks:

- Make sure each SCSI device connected to your Macintosh has its own, unique ID number from 0 to 6. If your computer came with the optional CD-ROM drive installed, make sure other SCSI devices you add to the chain do not use ID number 3. See the instructions that came with each SCSI device for information on checking and setting its SCSI ID number.

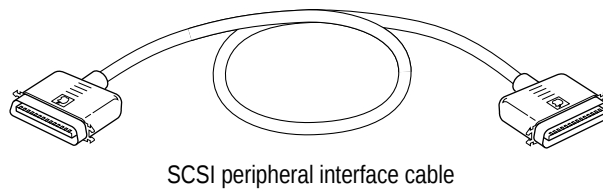
IMPORTANT If you use two or more devices attached to the same SCSI interface with the same ID number, your equipment could malfunction and you could lose data as a result.

- Make sure you have the appropriate cable for attaching the SCSI device to your Macintosh.

If the device is the first or only one you're connecting, use a SCSI system cable to connect it to the computer's SCSI port:



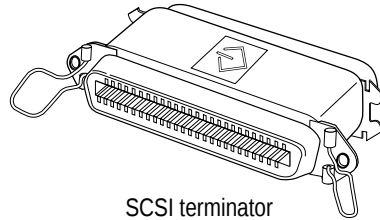
If the device is not the first one, use a SCSI peripheral interface cable to connect it to the last device in the chain:



IMPORTANT The total length of the cables in a SCSI chain should not exceed 6 meters (20 feet). SCSI cables must have a 110-ohm impedance. For best results, use SCSI cables manufactured by Apple Computer.

- Make sure that the last (or only) device in the SCSI chain has a terminator. Make sure that no other external SCSI device has a terminator.

Some external SCSI devices from manufacturers other than Apple have built-in terminators. (Check the information that came with the device.) If the device at the end of the SCSI chain does not have a built-in terminator, you need to attach an external terminator.



SCSI terminator

If your SCSI device has a built-in terminator, it should be the last device in the chain, or you may have your Apple-authorized service provider remove any extra built-in terminators. You can attach or remove external terminators yourself.

Connecting a SCSI device

Use these general instructions in conjunction with the instructions that came with your SCSI device:

- 1 Turn off your Macintosh.
- 2 Make sure the SCSI device is switched off.

WARNING Do not connect or disconnect any device while the device or your Macintosh is turned on. Doing so could damage the device, your computer, or both.

- 3 Use a SCSI cable to connect the device either to the computer's SCSI port or to the last SCSI device already in the chain.

IMPORTANT Make sure the device you're connecting is terminated or your computer may not be able to start.

- 4 Turn on all devices in your SCSI chain.

IMPORTANT Always turn on any external SCSI devices connected to your Macintosh before turning on the computer itself. Otherwise, your computer won't be able to recognize that the SCSI devices are connected to it and your computer may not be able to start.

- 5 Install any necessary device drivers (software that makes a device work with your computer).

Drivers needed for a SCSI device usually come on a floppy disk with the device. (If no drivers come with the device, contact the device manufacturer.)

Note: If you experience problems after connecting a SCSI device, see the troubleshooting information in Chapter 5 for possible solutions.

Connecting to an Ethernet network

If your computer came with the optional Ethernet card, you can connect your Macintosh to any standard high-speed Ethernet network. You can connect your Macintosh to an existing Ethernet network that uses thin coaxial cables, 10BASE-T twisted pair cables, thick coaxial cables, or other standard cables.

You may need to purchase an appropriate Apple Ethernet media adapter or other compatible media adapter to connect your Macintosh to a network. (Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for more information on Apple Ethernet media adapters.)

If you install an Ethernet card later on, you'll need to install the software that comes with the Ethernet card, then change the network connection in a control panel. (For instructions on how to select a network connection and other information about using your Macintosh on a network, see the "Networks" topic area of Macintosh Guide, available in the Guide [?] menu.)

IMPORTANT Your Macintosh works with EtherTalk Phase 2 (AppleTalk Phase 2 Protocols for Ethernet networks) and TCP/IP. Non-Apple products that you can use to communicate over Ethernet using protocols are also available. Your Macintosh does not work with EtherTalk Phase 1 (AppleTalk Phase 1 protocols for Ethernet networks).

Note: The use of an Ethernet card will make your Macintosh a Class A computing device, according to FCC regulations.

Read this chapter for information on installing and using application programs with your computer.

4

Installing and Using Application Programs



Your computer has several application programs already installed, as well as some applications that you must install before you can use them. The applications that come with your computer include

- AppleScript, which allows you to automate any actions you perform repeatedly on your Macintosh
- PowerTalk, which provides built-in mail and collaboration services (for use only with networks)
- QuickDraw GX, which gives your computer more powerful printing capabilities
- Apple Video Player, which you use to watch video or TV on your computer
- QuickDraw 3D, which gives your computer the ability to display graphics in three dimensions
- PlainTalk, which allows your computer to understand spoken commands in English and Mexican Spanish

You'll find these as well as other applications in the Apple Extras folder on your hard disk. To find out if an application needs to be installed, look inside the application's folder for an icon labeled Installer. If you find an Installer icon and want to use that application, double-click the Installer and follow the instructions on the screen.

Tip: To conserve memory, only install the applications you think you'll use. If you install an application that you find you don't use, you can remove it later to free memory. See "Increasing Memory Available to Run Applications" later in this chapter for instructions on "uninstalling" applications.



You may want to experiment with AppleScript, one of the applications on your hard disk. With AppleScript you can automate tasks in the Finder and other scriptable applications (applications that support AppleScript). Instructions for using AppleScript are also included in the AppleScript folder.

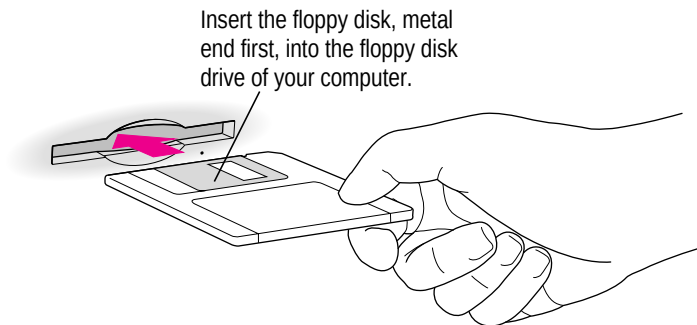
With Apple Video Player and a video input card, you can watch video on your computer. With Apple Video Player, a video input card, and a TV tuner card, you can watch video and TV. For instructions on using Apple Video Player, open Apple Video Player and then choose Apple Video Player Guide from the Guide (⌘) menu.

Installing application programs

You'll probably want to buy and install additional application programs. See the manuals you receive with your applications for instructions on installing and using them.

Note: Be sure you're acting within the terms of the software license agreement that comes with your application program before you install the program on your computer. The license agreement specifies how many copies of the program you can make for yourself and others.

In most cases, you'll install an application program on your internal hard disk from floppy disks that contain the application. The following illustration shows how to insert a floppy disk in your computer's disk drive.



To use your applications most effectively, follow these guidelines:

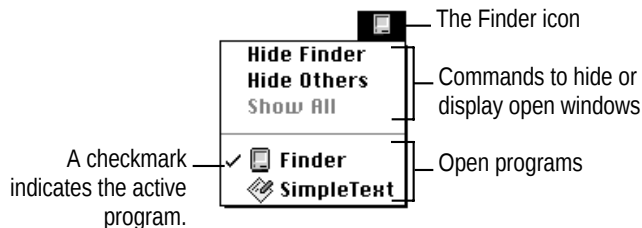
- Put only one copy of each application on your hard disk. Having more than one copy can cause errors.
- Whenever you copy an application disk to your hard disk, be careful not to copy a System Folder. Always check to see what you've copied, and drag any extra System Folders to the Trash.
- If an application malfunctions consistently, try installing a fresh copy. If that doesn't help, find out from the software manufacturer whether your version of the application is compatible with the system software you're using.

For instructions on how to eject floppy disks, see the “Disks” topic area of Macintosh Guide, available in the Guide (?) menu.

Working with several applications at a time

You can open as many application programs and desk accessories as your computer's memory allows.

All open applications are listed in the Application menu at the right end of the menu bar. The name of the active application (the one you're using right now) has a checkmark next to it, and its icon appears in the menu bar.



Finding out which applications are open

If you have several applications and windows open, you can find out which application is active and which other applications are open by pulling down the Application menu.

Switching applications

You can switch to another open application or desk accessory by choosing its name from the Application menu.

If an application's icon is dimmed in the menu, that means its windows are hidden. Choosing the application from the Application menu displays its windows.

You can also switch to another application by clicking in a window that belongs to an open application, or by double-clicking an application icon (or the icon of a document that was created with the application).

Increasing memory available to run applications

You can increase the memory available to run your application programs by changing memory settings and removing software that you may not need. Each of these options is discussed below.

Turning virtual memory on

Virtual memory uses space on your computer's hard disk to create extra random-access memory (RAM) to run your applications. Virtual memory allows your computer to run more applications at the same time, and to have more windows open at the same time, but it can result in slightly slower performance. Also, some application programs may not perform optimally when virtual memory is turned on.

To turn virtual memory on or off, use the Memory control panel. See the "Memory" topic area of Macintosh Guide, available in the Guide (📖) menu for more information.

Removing software that you may not need

If you have previously installed some or all of the software in the Apple Extras folder (such as QuickDraw 3D or QuickTime Conferencing), you can remove or "uninstall" the software if you are not using it. Removing software like this will make more memory available for running applications.

To remove software, follow these steps:

- 1 Start up your computer from the system software CD-ROM disc that came with your computer.**

For detailed steps, see “Starting Up From a CD-ROM Disc” under “Initializing a Hard Disk” in Chapter 5, “Troubleshooting.”

- 2 Open the Apple Extras folder on the CD-ROM disc.**
- 3 Open the folder for the software you want to remove.**
- 4 Double-click the Installer icon to open the Installer program.**

The Installer’s Welcome screen may appear.

- 5 Click OK.**

The Easy Install dialog box appears.

- 6 Choose Custom Remove from the pop-up menu.**



The Custom Remove dialog box appears, listing the software components that can be removed.

- 7 Scroll through the list of components, clicking the checkbox next to each component you want to remove.**

To get additional information about each component listed, click the box with the letter *i* in it to the right of the component.

- 8 Click Remove.**
- 9 Follow the instructions that appear on the screen.**
- 10 When you see a message reporting that the removal was successful, click Quit.**
- 11 Restart your Macintosh.**

The software is removed and your computer is ready to use. If you want to remove more software, you can repeat the steps in this section.

Hiding and showing windows on the desktop

You can hide all windows except those of the active application by choosing Hide Others from the Application menu.

The other applications remain open even though their windows are hidden. When you switch to another application, its windows become visible again.

If you want to see all the open windows, choose Show All from the Application menu.

Backing up your files

Making backup copies of important files is good protection against possible damage to the originals.

- You can back up files stored on your hard disk by copying them to floppy disks.
- You can back up an entire floppy disk by copying it to another floppy disk, or to a hard disk.
- You can use a commercial backup application to copy new and changed files from a hard disk to another hard disk, to a tape drive, or to a series of floppy disks.
- If your computer is on a network, you can back up files by copying them to a shared disk on the network.

Using Power Macintosh application programs

Your Power Macintosh is compatible with most application programs intended for use with Macintosh computers. But certain applications are designed especially for Power Macintosh computers. (These are sometimes called “native” applications.) You’ll find that these applications take best advantage of your computer’s speed.

Special memory requirements

Some Power Macintosh applications may be slightly larger than other applications and may take up more memory. If you find that you are running out of memory when you use your Power Macintosh applications, you can use space on your computer’s hard disk as additional memory. For instructions on how to use hard disk space as memory, see the “Memory” topic area of Macintosh Guide, available in the Guide (📖) menu.

You can also add more memory to your computer. See Appendix B, “Installing Expansion Cards and Additional Memory” for more information.

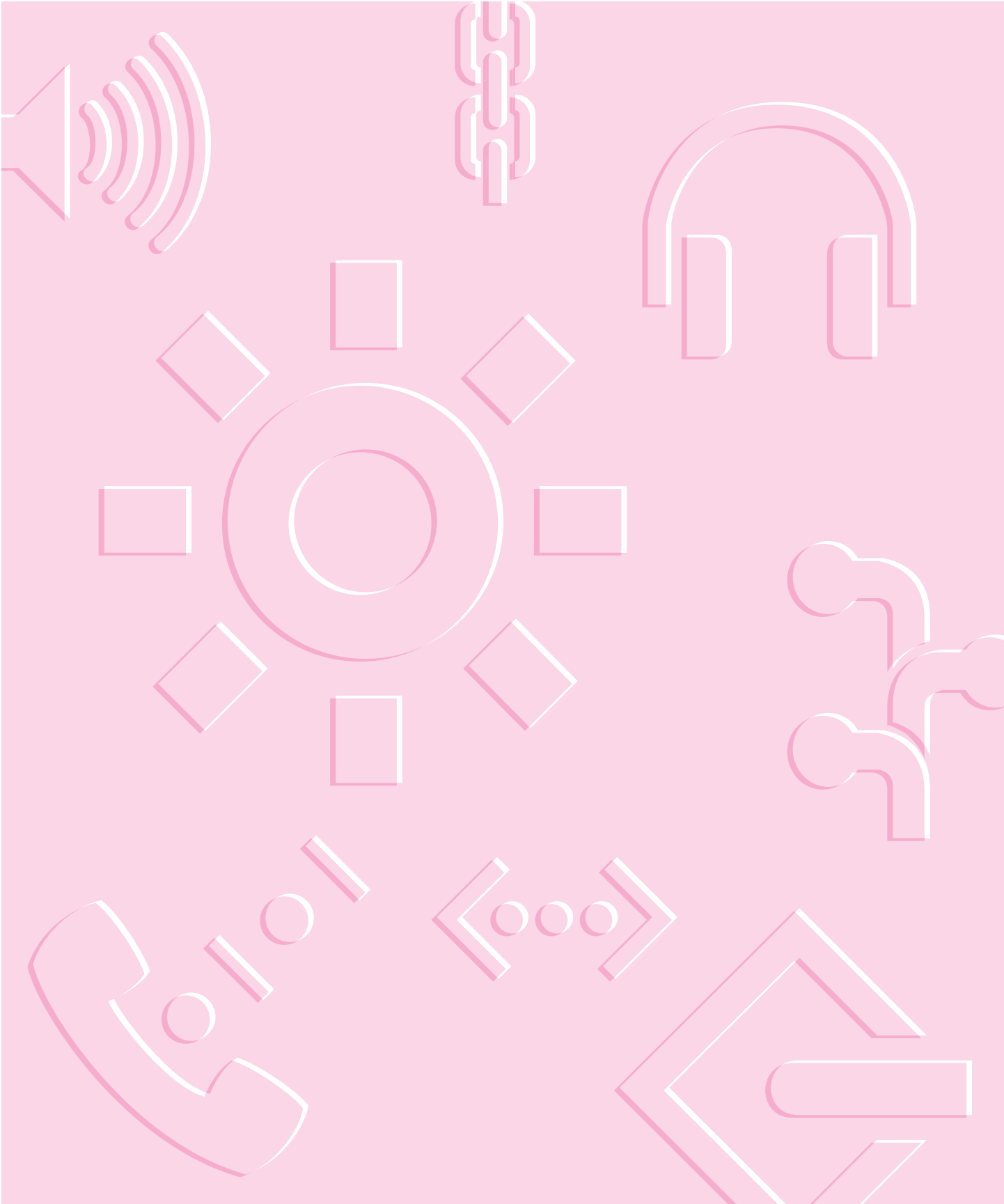
Using older Macintosh applications

If you experience problems using an older Macintosh application, it may be incompatible with your Power Macintosh. You may be able to use your older application if you turn off the Modern Memory Manager in the Memory control panel.

Chapter 5 Troubleshooting

II
part

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Consult this chapter if you experience problems using your computer.

5

Troubleshooting



When you have questions

If you want to know how to do a particular task with your computer, refer to Macintosh Guide in the Guide (🔗) menu. For instructions on using Macintosh Guide, see Chapter 2 of this manual.

When you run into trouble

While you're using your computer, you may occasionally see a bomb icon or an error message, or you may have a problem such as the pointer (⏏) “freezing” on the screen.



If you have trouble with your computer, take a few minutes to read the information in this chapter. If your problem is related to a particular procedure, you should also look for information on that procedure in Macintosh Guide, available in the Guide (🔗) menu. For additional troubleshooting information and a list of common questions relating to your system software, see the “Troubleshooting” topic area of Macintosh Guide.

If you are unable to access Macintosh Guide (for example, if your screen is “frozen”), refer to this chapter to see if you can resolve the problem.

Take your time

When you see an error message, you don't have to take action immediately. The message stays on the screen until you click the OK button or turn off the Macintosh.

To help diagnose and correct the problem, gather as much information on the situation as you can before starting over.

- Make a note of exactly what you were doing when the problem occurred. Write down the message on the screen and its ID number (if any). Also list the programs you were using and the names of any items you know have been added to the System Folder since the system software was installed. This information will help a service person diagnose the problem. (It is helpful to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the “Printing” topic area of Macintosh Guide, available in the Guide (🔍) menu.)
- Check the screen for any clues. Is a menu selected? What programs and document icons are open? Note anything else that seems relevant.
- If you were typing text and were not able to save it before the problem occurred, you can write down the parts of the text still visible on the screen so that some of your work will be easy to replace.
- Ask other Macintosh users about the problem you're having; they may have a solution for it.

If you need repair service, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Start over

Often you can eliminate a problem simply by clearing the computer's memory and starting over.

If you can, save any open documents before restarting the Macintosh. If your system is frozen and does not respond to anything you do, or if you have a “bomb” message on the screen, saving may not be possible. You can try pressing ⌘-Option-Esc to quit the program in use when the problem occurred; if this works, you can then save the documents open in other programs before restarting. (Be sure to restart the computer immediately after you save your documents—quitting a program using ⌘-Option-Esc may leave corrupted data in the computer's memory. This corrupted data is erased when you restart the computer.)

To restart your Macintosh, try the following steps:

- **If you can, choose Restart from the Special menu or from the dialog box that's on screen.**

Dialog boxes contain messages from the computer. If something goes wrong, a message may appear on the screen, asking you to restart the computer.

- **If you can't choose Restart, press the Power key on the keyboard.**

Select Restart from the dialog box that appears.

- **If the Power key on the keyboard doesn't work, hold down the ⌘ and Control keys while you press the Power key on the keyboard (marked with a triangle).**

This key combination restarts the computer. (Use this key combination only when you can't choose Restart from the Special menu.)

- **If your computer still does not respond, turn it off with the power switch on the back of the computer, wait at least 10 seconds, and then turn it on again.**
- **If you suspect that the problem is with other equipment, such as a printer or an external hard disk that's attached to your computer, turn that equipment off for 10 seconds or longer, then turn it on again and restart the Macintosh.**

Rebuild your desktop

A process known as “rebuilding the desktop” helps your Macintosh keep track of data on your startup disks. (Although you usually use the hard disk in your computer as a startup disk, you can also start up from any other disk that has system software installed.)

Rebuilding your desktop can solve a number of problems, such as when application documents are no longer represented by application-specific icons (and are instead represented by generic icons on the desktop), or when a document won’t open when you double-click it.

Some extensions may interfere with rebuilding your desktop. To prevent problems, you’ll need to turn off all extensions except Macintosh Easy Open before you rebuild your desktop. When you finish rebuilding the desktop, turn the extensions you normally use back on.

To rebuild the desktop of a startup disk, follow these steps:

- 1 Open the Extensions Manager control panel by choosing Extensions Manager from the Control Panels submenu of the Apple () menu.
- 2 From the Sets pop-up menu, choose Save Set.
- 3 In the Save Set dialog box, type a name for your set of selected extensions (for example, “My Extensions”) and click OK. The name of your set is added to the Sets pop-up menu.

This saves your current set of extensions.

- 4 Choose All Off from the Sets pop-up menu to turn off all extensions.
- 5 Turn on Macintosh Easy Open by clicking it in the list (under Control Panels) so that a checkmark appears beside it.
- 6 Restart your computer while holding down the Option and ⌘ keys.

Do not release the keys until you see a message asking whether you want to rebuild the desktop.

- 7 Click OK.

The desktop is rebuilt.

IMPORTANT Do not stop the desktop-rebuilding process. Doing so could cause problems with your system software.

- 8 Open the Extensions Manager control panel by choosing Control Panels from the Apple () menu. When the Control Panels window appears, double-click the Extensions Manager icon.
- 9 From the Sets pop-up menu, choose the name you gave your set of extensions in step 3 of these instructions.

This restores your original set of extensions.
- 10 Restart your computer to activate the extensions.

Solutions to common problems

This section contains descriptions of problems you could experience with your computer. Some problems may be caused by your CD-ROM drive, so if you don't find your problem here, be sure to check the section "Solutions to CD-ROM Problems" later in this chapter.

The computer is turned on but the screen is dark.

One of the following is probably the cause:

- The Macintosh is not getting power.

Check that the computer's power cord is firmly connected to the computer, that the other end is plugged into a grounded electrical outlet, and that the outlet has power.
- Your computer has gone to sleep due to inactivity. "Wake it up" by pressing any key on the keyboard except Caps Lock. See "Saving Energy with the Energy Saver Control Panel" in Chapter 1 for more information about computer sleep.
- You have a screen saver program that darkens the screen when the computer has not been used for a certain period of time.

Press a key or move the mouse to turn off the screen saver.
- The screen control buttons (☼ and ☾) are not adjusted properly.

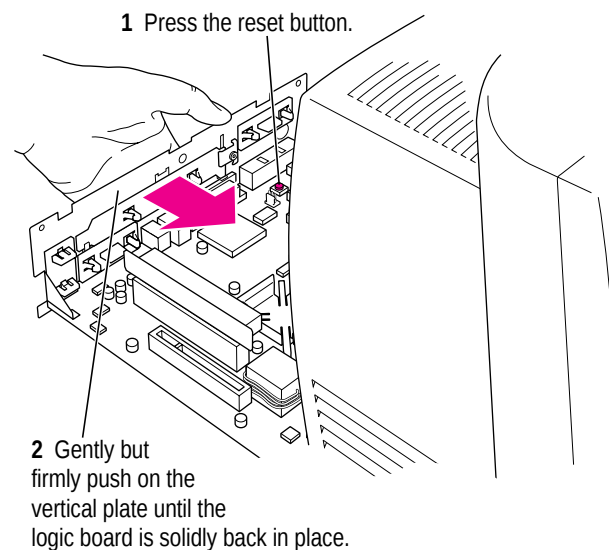
Adjust the brightness and contrast controls if necessary.

The computer does not start and you have just installed DIMMs, a High Performance Module (256K Level 2 cache), or expansion cards.

You may need to press the reset button on the main logic board.

- Open your computer following the instructions in “Opening the Computer,” in Appendix B of this manual.
- Press the reset button on the logic board, and then slide the logic board back into the computer.
- Reconnect all cables and then restart your computer.

When you press the reset button, some of your computer’s software settings will change. You should open the control panels for the date and time, keyboard, and mouse to make sure that they are set the way you want them. For more information about working with control panels, see the “Customizing Your Computer” topic area of Macintosh Guide, available in the Guide (📖) menu.



The computer does not start up from the hard disk.

Try the following:

- Use the Drive Setup program to make the disk available. Drive Setup is located in the Utility folder on the CD that contains your system software. For instructions, start Drive Setup, then choose Drive Setup Guide from the Guide (🔍) menu.
- If the hard disk is internal, shut down your computer, wait at least 10 seconds, and then turn it on again.
- If the startup hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- Check the ID numbers of all SCSI equipment connected to your computer. Each SCSI device must have its own unique ID number. If your computer came with the optional CD-ROM drive installed, it has SCSI ID number 3. See the manuals that came with your SCSI equipment for information on setting SCSI ID numbers.
- If the hard disk is your startup disk, start your computer using the *Disk Tools* floppy disk or (if you have a built-in CD-ROM drive) with the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see “Starting Up From a CD-ROM Disc” in the section “Initializing a Hard Disk” later in this chapter.) Then follow the instructions in “Testing and Repairing a Damaged Disk” later in this chapter to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions in “Installing or Reinstalling System Software” later in this chapter to reinstall system software on your startup hard disk.

The screen image is off center.

If the picture on your screen appears to be off center, use the centering controls on the back of the computer to adjust it. Use a small screwdriver to turn the controls.



Vertical centering control



Horizontal centering control

The computer's clock keeps time inaccurately.

If your clock begins to keep time inaccurately, have an Apple-authorized service provider replace the battery. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

When you start up, a disk icon with a blinking question mark appears in the middle of the screen.



This icon indicates that your Macintosh cannot find the system software it needs to start up. One of the following is probably the cause:

- Your computer may be having a problem recognizing equipment that uses the Small Computer System Interface (SCSI).

Turn off all SCSI equipment and disconnect the first SCSI device in the chain from your computer's SCSI port. Then restart the computer. If the computer starts up after you disconnect your SCSI equipment, refer to the manuals that came with the equipment for information on the proper way to connect SCSI equipment and assign SCSI ID numbers.

- System software is not installed on the startup hard disk, the system software is damaged, or the hard disk is not working properly.

Start up your computer using the *Disk Tools* floppy disk or (if you have a built-in CD-ROM drive) with the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.) Then follow the instructions in "Testing and Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions in "Installing or Reinstalling System Software" later in this chapter to reinstall system software on your startup hard disk.

When you try to start up from a floppy disk, a disk icon with an X appears in the middle of the screen and the floppy disk is ejected.



This icon indicates that the floppy disk you tried to start up from is not a startup disk.

Wait a few seconds. The computer should start up from its internal hard disk. Make sure you insert floppy disks only after the computer has begun starting up.

A “sad Macintosh” icon appears and the computer won’t start up.



This icon indicates that your Macintosh cannot start up because of a problem with the system software or the computer hardware.

Eject any floppy disks by turning off the computer and then holding down the mouse button while you turn the computer on again. Try starting up with the *Disk Tools* floppy disk or (if you have a built-in CD-ROM drive) with the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see “Starting Up From a CD-ROM Disc” in the section “Initializing a Hard Disk” later in this chapter.) If the “sad Macintosh” icon appears again, consult the service and support information that came with your computer for information on contacting an Apple-authorized service provider or Apple for assistance.

Icons do not appear correctly on your screen.

You need to rebuild the desktop—a process that helps your Macintosh keep track of files and folders on your hard disk. For instructions, see “Rebuild Your Desktop” in the section “When You Run Into Trouble” earlier in this chapter.

If icons do not appear correctly after you rebuild the desktop, try rebuilding a second time.

Your Macintosh can't read a floppy disk.

If you see a message that a floppy disk is unreadable, try one of the following:

- If the disk has never been used, you may simply need to initialize it. For instructions, see the “Disks” topic area of Macintosh Guide, available in the Guide (⌘) menu.
- The disk may be damaged. See “Testing and Repairing a Damaged Disk” later in this chapter for information on testing and repairing disks.

If you are trying unsuccessfully to use a floppy disk created in a PC (personal computer), DOS (Disk Operating System), or Windows environment, consider the following:

- When formatting floppy disks on a DOS computer for use in a Macintosh, you need to format standard double-sided disks as 720K disks and high-density disks as 1440K disks. Because DOS computers allow standard double-sided disks to be formatted in 1440K format and high-density disks to be formatted in 720K format, it's possible that your disk has been given a format that won't work in a Macintosh.

If you think your DOS floppy disk might have a format that doesn't work in a Macintosh, use a DOS computer to copy the contents of your DOS floppy disk onto another DOS floppy disk that has been properly formatted for use in a Macintosh.

A dialog box with a bomb appears.

Your system has a software problem.

- Write down what you were doing when the message appeared, and write down the message's text and its number, if there is one.
- Restart your Macintosh. (See "Start Over" in the section "When You Run Into Trouble" earlier in this chapter for instructions.) Most software problems are temporary, and restarting usually corrects the problem.
- Check the startup disk and application program you were using when the dialog box appeared. Make sure that all programs, desk accessories, and system extensions you're using are compatible with the system software. Reinstalling the system software may correct the problem.
- Sometimes incompatible system extensions or control panels can cause system software problems. Restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, remove all extensions from the Extensions folder (inside the System Folder) and put them back into the Extensions folder one at a time. Restart after you add each extension. This procedure should identify any incompatible extensions.

You can also use the Extensions Manager control panel to turn off individual extensions. For information on using this control panel to manage system extensions, see the "Customizing Your Computer" topic area of Macintosh Guide, available in the Guide (📖) menu.

- If the problem recurs, you may need to reinstall system software. See "Installing or Reinstalling System Software" later in this chapter for instructions.

Your screen displays a blank dialog box with a caret (>) in it.

Your computer has tried to launch a "debugging" application, but could not find one on your hard disk. Debugging applications are programs that software developers use to locate and fix problems in computer code. If you do not have a debugging application installed, your screen displays a caret prompt (>). To return to the desktop, type "G" and then press Return.

The pointer (⏏) doesn't move when you move the mouse.

One of the following situations is probably the cause:

- The mouse is not connected properly.

Check that the mouse and keyboard cables are connected properly, and then restart the computer.

- Signals from the mouse are not reaching the computer, either because the mouse needs cleaning or because there is something wrong with the mouse.

Clean the mouse according to the instructions in Appendix A of this book.

If you have another mouse or pointing device, try connecting and using it. (Turn off the computer before connecting it.) If the new device works, there is probably something wrong with the mouse you replaced.

- Your system has a software problem.

Press ⌘-Option-Esc to quit the application program in use when the problem occurred. If this works, you can save the documents open in other programs before restarting.

Restart your Macintosh. See “Start Over” in the section “When You Run Into Trouble” earlier in this chapter for instructions.

Check the startup disk and program you were using when the problem occurred. Make sure that all programs, desk accessories, and system extensions you're using are compatible with the system software. Try starting up the computer from the *Disk Tools* disk or the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see “Starting Up From a CD-ROM Disc” in the section “Initializing a Hard Disk” later in this chapter.) If your computer starts up normally, there may be an extension conflict.

If the problem recurs, you may need to reinstall system software. See “Installing or Reinstalling System Software” later in this chapter for instructions.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Typing on the keyboard produces nothing on the screen.

One of the following is probably the cause:

- You haven't selected any text or set the insertion point (I).

Make sure the program you want to type in is the active program. Then place the pointer (⬮) in the active window and click to set an insertion point (I) or drag to select text (if you want to replace the text with your typing).

- The keyboard is not connected properly.

Check that the keyboard cable is connected properly at both ends.

- Your system has a software problem.

Restart your Macintosh. For instructions, see "Start Over" in the section "When You Run Into Trouble" earlier in this chapter.

Check the startup disk and application program you were using when the problem occurred. Make sure that all programs, desk accessories, and system extensions you're using are compatible with the system software.

If the problem recurs, you may need to reinstall system software. See "Installing or Reinstalling System Software" later in this chapter for instructions.

- The keyboard is damaged.

If you have access to another keyboard, try using it instead. (Turn the computer off before connecting it.) If the new keyboard works, there is probably something wrong with the one you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

- Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray and remove the CD-ROM disc. Close the tray, then restart your computer.

You can't start an application program or it quits unexpectedly. Or, when you try to open a program, you see a message that not enough memory is available.

One of the following is probably the cause:

- The Macintosh ran out of memory.
Quit the programs that you have open and then open the program you want to use, or restart your Macintosh.

Make sure virtual memory is turned on in the Memory control panel.

For more information on virtual memory, see “Increasing Memory Available to Run Applications,” under “Working With Several Applications at a Time” in Chapter 4 of this manual, and the “Memory” topic area of Macintosh Guide, available in the Guide (🔍) menu.

- The program needs more memory.
Use the program's Info window to give it more memory. For more information on increasing a program's memory, see the “Memory” topic area of Macintosh Guide, available in the Guide (🔍) menu.

You see a message that your computer doesn't have enough memory to start an application or open a document.

You can make more memory available to run your application following the instructions in “Increasing Memory Available to Run Applications” under “Working With Several Applications at a Time” in Chapter 4 of this manual.

You can't open a document, or you see a message that an application program can't be found.

- Some documents can be opened by more than one application program.
Try starting a program that you think might be able to open the document, then choose Open from the program's File menu to try to open the document.

- Purchase and install the correct software to use the document, or find out if the creator of the document can convert it to a form that one of your programs can use.
- Don't try to open the files in your System Folder. Most of the files in your System Folder are used by your computer for internal purposes and are not intended to be opened.
- Rebuild your desktop. See "Rebuild Your Desktop" under "When You Run Into Trouble," earlier in this chapter, for more information.
- If the document was created on a PC (personal computer running DOS or Windows), use the PC Exchange control panel to specify which Macintosh program will open the document. For information about working with DOS documents on your Macintosh, see the information about DOS in Macintosh Guide, available in the Guide (🔍) menu.

You experience problems using a document created in a PC environment.

If you can't open a DOS document using a Macintosh program, try the following:

- Open the document from within the program by choosing Open in the program's File menu.
- Use the PC Exchange control panel to change the document's type to one that can be opened by the program.

If a DOS document is displayed incorrectly, or you see strange codes or characters in the document, try one of the following:

- Your application program may have special procedures for opening and saving documents with different file formats. See the information that came with your program.
- Try opening the document in another program.

Note: Some characters that can be displayed on the Macintosh are not accurately displayed on DOS computers, and vice versa.

For more information about working with DOS documents on your Macintosh, see the "DOS, Windows, and Apple II Files" topic area of Macintosh Guide, available in the Guide (🔍) menu.

You see a message that your application program can't be opened because a file can't be found.

Power Macintosh programs use special files called *shared libraries*. Any necessary shared libraries should be installed automatically when you install Power Macintosh programs.

Follow the directions that came with your program to reinstall the program. If the shared library is still missing, contact the software program's manufacturer for assistance.

You experience problems using an older Macintosh program.

Some older Macintosh programs are not completely compatible with Power Macintosh computers.

Open the Memory control panel and turn off Modern Memory Manager.

Solutions to CD-ROM problems

Problems using the CD-ROM drive

The CD-ROM drive icon does not appear on screen.

- If you have other SCSI devices attached to your computer, make sure that each device has a unique SCSI ID number. (If a CD-ROM drive was installed in your computer at the factory, it has SCSI ID 3)

Refer to the documentation that came with your SCSI devices if you need to reset SCSI ID numbers.

- If you reinstall the CD-ROM software, make sure to restart your computer after you reinstall the software.

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the installation instructions in this manual.

To return to the Macintosh desktop, choose Shut Down from the Special menu. Turn on your computer, and then immediately press the Open/Close button on your CD-ROM drive to open the tray. Remove the CD-ROM disc and gently close the tray. Your computer finishes starting up.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

The tray of your CD-ROM drive won't open.

If a CD-ROM disc icon appears on your screen:

- Drag the disc icon to the Trash, or select it and choose Put Away from the File menu. If the AppleCD Audio Player program is active, choose Eject CD from the File menu.

If you see a message that a disc can't be put away because it is being shared, turn off file sharing, then try again to put away the disc.

If no CD-ROM disc icon appears on your screen:

- Press the Open/Close button of your CD-ROM drive.
- The signal to open the tray may not be reaching the computer. Turn off your computer and locate the small pinhole to the lower right of the CD-ROM tray opening. Insert the end of a large, straightened paper clip firmly and horizontally into the pinhole. Push gently until the tray is released, then carefully pull the tray open. Do not force the tray open; wait until the paper clip has dislodged it, or you may break the front of the tray.

WARNING Turn off your computer before you attempt to eject the tray using a paper clip. If you don't, you may damage the CD-ROM drive.

If neither of these suggestions works, your CD-ROM drive may be damaged. Contact an Apple-authorized service provider or Apple for further assistance.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

- Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Gently close the tray; then restart your computer.

Problems using CD-ROM discs

You insert a CD-ROM disc, but its icon doesn't appear on the Macintosh desktop.

- Make sure that the disc label is facing up and the disc is centered in the tray. If you're using a small (8 cm) disc, make sure it is within the tray's inner ring.
- Make sure the tray is closed all the way.
- Try restarting your computer.
- While holding the C key down, try starting your computer from the CD-ROM disc that contains system software. If only the hard drive icon appears on the desktop, then there may be a hardware problem with your CD-ROM drive. If the CD-ROM icon appears above the hard drive icon, try reinstalling your CD-ROM software following the instructions in "Installing or Reinstalling CD-ROM Software" later in this chapter.

CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives. You can reinstall it by following the procedure in "Installing or Reinstalling CD-ROM Software" later in this chapter.

Your computer displays the message "This is not a Macintosh disk: Do you want to initialize it?" when you insert a CD-ROM disc in the CD-ROM drive.

- Make sure that the Foreign File Access and Audio CD Access CD-ROM extensions are installed in your Extensions Folder and are turned on. (If they are not turned on, use the Extensions Manager control panel to turn them on and then restart your computer.)
- Make sure the CD-ROM software is installed. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)
- The disc may use a format that the Macintosh cannot recognize.

Your computer ejects a CD-ROM disc without giving you any error message.

- Make sure the disc is flat in the tray and the disc label is facing up. If you're using a small (8 cm) disc, make sure it's centered within the tray's inner ring.
- The disc may need to be cleaned. (See "Handling Compact Discs" in Appendix A.) If there are visible scratches on the shiny side of the disc, you may be able to remove them with a CD polishing kit (available from your audio CD dealer). If the scratches can't be removed, you'll need to replace the disc.
- The disc may be damaged. Try another disc in the drive, and try the original disc in another drive. If the original drive reads other discs or if the original disc doesn't work in another drive, the disc is probably damaged. You'll need to replace the disc.

You can't open a document on a CD-ROM disc.

- Try opening the application program first; then open the document.
- Read the manual that came with your CD-ROM disc. Some discs come with software that you need to install on your computer before using the disc.

You can't save changes you make to information on a CD-ROM disc.

- CD-ROM is a read-only medium. This means that information can be read (retrieved) from it, but not written (stored) on it. You can save the changed information on a hard disk or floppy disk.

Problems using ISO 9660 or High Sierra discs

You cannot access files on a CD-ROM disc that uses the ISO 9660 or High Sierra format.

- Discs in the ISO 9660 and High Sierra disc formats have version numbers attached to filenames. Some application programs need these version numbers in order to work with files. To make the version numbers available to programs on your computer, follow these instructions:

Drag the CD icon to the Trash. When the tray opens, hold down the Option key and push the tray back in, continuing to hold down the Option key until the disc is fully in the drive. The program you are using should now be able to locate filenames on that CD-ROM disc.

- Make sure that Foreign File Access, ISO 9660 File Access and High Sierra File Access are present in the Extensions folder in your System Folder.

Problems playing audio CDs

You don't hear any sound when you play an audio CD or an audio track on a CD-ROM disc using the AppleCD Audio Player.

- If you have headphones or speakers connected to the computer, adjust the plug to make sure they are firmly connected. Make sure the volume control on your headphones or speakers is not turned down too low.
- If you are using a CD-ROM disc over a network, you won't be able to hear the audio portion.
- Make sure the volume is turned up in the AppleCD Audio Player. With the Audio Player open, drag the volume control slider up or press the Up Arrow key on your keyboard.
- The CD may have been paused. Click the Play/Pause button in the AppleCD Audio Player once or twice.

While playing an audio track on a CD-ROM disc that combines audio tracks and data, you double-click the disc icon and the audio track stops playing.

- You can't open data files on a CD-ROM disc and listen to audio tracks on that disc at the same time.

You are unable to record sound from an audio CD.

- You may need to reset the sound options in a sound control panel. Refer to the "Sound" topic area of Macintosh Guide, available in the Guide (🔍) menu.

Problems using Photo CDs

Your CD-ROM drive will not open Photo CDs.

- Reinstall the CD-ROM software (available through the "Multimedia Software" option in Custom Install when you reinstall system software).

Your computer does not display color icons for individual images on a Photo CD.

- Your computer may be low on memory. To view color icons, restart your computer and then reopen the Photos folder. See the "Memory" topic area of Macintosh Guide, available in the Guide (🔍) menu, for more information on managing memory.

After you open an image on a Photo CD, the image is scrambled, colors are displayed incorrectly, or no image appears in the window.

- The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. (For more information on managing memory, see the "Memory" topic area of Macintosh Guide, available in the Guide (🔍) menu.)

After you open an image on a Photo CD, your system is "frozen" and does not respond to any input, or you have a "bomb" message on your screen.

- Restart your Macintosh. The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program, or you can assign more memory to the program (see the "Memory" topic area of Macintosh Guide, available in the Guide (🔍) menu, for more information on managing memory).

If your computer's performance decreases

If you notice a decrease in your computer's speed and general performance and you often use networks, connect to bulletin boards, or share files with other computer users, your computer may have a computer "virus." Computer viruses are potentially data-destroying programs that can be copied to your computer without your knowledge when you or someone you share files with connects to public computer resources. Use a virus detection application, available at most software retailers, to see if your computer has a virus, and to remove it from your computer.

If you notice a significant decrease in performance and your computer has virtual memory turned on, you may want to turn it off. Refer to the section "Increasing Memory Available to Run Applications" under "Working With Several Applications at a Time" in Chapter 4 of this manual and to the "Memory" topic area of Macintosh Guide, available in the Guide (⌘) menu, for instructions.

If you notice a decrease in your computer's performance after you add special software (a control panel, system extension, or custom utility), it may be because your special software does not work well with Macintosh computers built with the PowerPC microprocessor.

- To find out if your special software is the problem, hold down the Shift key while you restart the computer. This temporarily turns off certain kinds of software. If the computer performs better without this software, the software is likely to be the problem.
- Use the Extensions Manager control panel to turn off a system extension or set of extensions. For detailed instructions, see the "Customizing Your Computer" topic area of Macintosh Guide, available in the Guide (⌘) menu. If the computer performs better when an extension is turned off, contact the extension's manufacturer for information or an upgrade.

- Drag special software items out of the System Folder or remove them permanently. (The special software may be in the Control Panels or Extensions folder inside the System Folder.) If the computer performs better when the software is removed, contact the software's manufacturer for information or an upgrade.

Hint: If you have more than one special software item, drag all the special items out of the Control Panels and Extensions folders. Then return them one at a time, restarting and checking your computer's performance each time until you identify the one that is causing problems.

If you still do not notice an improvement, follow the instructions in "Installing or Reinstalling System Software" later in this chapter to reinstall system software on your startup hard disk.

Solving printer problems

The following suggestions should work for all printers.

- Check your printer settings in the Chooser, making sure you have selected the correct printer.
- Next, turn off the computer and printer and check the printer cable connections.
- If neither of these suggestions solves the problem, reinstall your printer driver. If your printer is an older model, do not use the driver that came with the printer. Instead, use the updated printer drivers provided on the system software CD-ROM that came with your Power Macintosh. These drivers are created especially for use with the Power Macintosh.

Obtaining online support and updated Apple software

Apple technical support information and software updates are available from many online services. Using these services, you can get troubleshooting and other important information. You can also get all of the latest versions of Apple software, including most printer drivers, system enablers, and updates to utilities, networking, and communication software.

IMPORTANT Be sure to read the posted Apple Software License Agreement before installing any software.

Currently, Apple's Customer Service Division (CSD) posts Apple software updates to the following online services:

- America Online
- AppleLink
- CompuServe
- Internet: World Wide Web site
- Internet: FTP servers
- Internet: Gopher server

Specific paths and details for each service follow.

America Online

Apple software updates are posted to the USA Apple SW Updates area, which is located in the Apple Computer, Inc. folder. You can use the keyword `applecomputer` to go directly to the Apple Computer, Inc. folder, or follow this path to find the software updates:

Computing window
 Company Connection window
 Technical Support window
 Hardware folder
 Hardware window
 Apple Computer, Inc. folder
 USA Apple SW Updates folder

AppleLink

Support information is posted to the Support area, located in the following path:

- AppleLink Services (main window)
 - Support

Apple software updates are posted to the Apple SW Updates board, located in the following path:

- AppleLink Services (main window)
 - Software Sampler
 - Apple SW Updates

CompuServe

The MacPlanet (GO MACPLANET) area provides access to Macintosh-related information on CompuServe. From MacPlanet, go to the Apple Online (GO APLNEW) section for Apple product information, a database of technical support articles, a collection of popular software files, and software updates for U.S. and international customers.

The address for the Apple systems operator on CompuServe is 74431,1472 (via the Internet: 74431.1472@compuserve.com).

Internet: World Wide Web

You can also download Apple software updates via Apple's World Wide Web server, www.info.apple.com. The Apple web site allows you an easy way to download Apple software updates from [ftp.info.apple.com](ftp://ftp.info.apple.com).

- URL for the Apple web site is: <http://www.info.apple.com>
- IP number for the web site is: 204.96.16.2

Internet: FTP servers

Support information and software updates are posted to two File Transfer Protocol (FTP) servers: [ftp.info.apple.com](ftp://ftp.info.apple.com), and [ftp.support.apple.com](ftp://ftp.support.apple.com).

[ftp.info.apple.com](ftp://ftp.info.apple.com)

- Host name: [ftp.info.apple.com](ftp://ftp.info.apple.com)
- IP number: 204.96.16.4
- Path: [ftp/Applesupportarea](ftp://ftp.info.apple.com/Applesupportarea)

[ftp.support.apple.com](ftp://ftp.support.apple.com)

- Host name: [ftp.support.apple.com](ftp://ftp.support.apple.com)
- IP number: 130.43.6.3
- Path: [/pub](ftp://ftp.support.apple.com/pub)

You can log onto Apple's [ftp.info.apple.com](ftp://ftp.info.apple.com) server via the America Online file transfer protocol (ftp) gateway. To do this, you'll need an America Online account. Once you're online, follow these steps:

- 1 Use the keyword **ftp** to take you to the ftp area.
 - 2 Click the FTP button (disk with sunglasses icon)
 - 3 In the favorite sites list, double-click [ftp.info.apple.com](ftp://ftp.info.apple.com)
- A dialog box will appear with the [ftp.info.apple.com](ftp://ftp.info.apple.com) welcome screen.
- 4 Click the OK button.
 - 5 Double-click the [Applesupportarea](ftp://ftp.info.apple.com/Applesupportarea) folder to open it.
 - 6 Double-click the [Applesoftwareupdates](ftp://ftp.info.apple.com/Applesupportarea/Applesoftwareupdates) folder to open it.

Each time you open a folder, a new Macintosh window opens.

Internet: gopher server

Apple recommends using TurboGopher client software to access the Apple Computer Higher Education Gopher server. The “Apple Support Area” folder is located in the following path:

```
Home Gopher Server
  Computer Information
    Apple Computer Higher Education gopher server
      Apple Support Area
        Apple SW Updates
```

TurboGopher Client software is available via anonymous file transfer protocol (ftp) to boombox.micro.umn.edu in the /pub/gopher directory.

- Host name: info.hed.apple.com

Testing and repairing a damaged disk

Hard disks and floppy disks can become damaged by repeated use and handling.

When do you need to repair a disk?

If you see a message reporting that a disk is damaged or unreadable, you may need to repair the disk.

Dealing with a potentially damaged disk consists of several steps, which are explained in more detail later in this section:

- verifying the disk (checking for imperfections) with an application called Disk First Aid
- repairing any problems detected by Disk First Aid
- testing the disk with an application called Drive Setup
- repairing any problems detected by Drive Setup by using Disk First Aid (or another disk repair application) a second time, or, if the problem can't be repaired, by reinitializing the disk

Before you begin verifying and testing a disk you think is damaged, try the following possible solutions.

Try these suggestions first

If you can't start up from a hard disk or you don't see the hard disk icon on the desktop, try the following:

- If the hard disk is internal, shut down or turn off your Macintosh, wait at least 10 seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- If the hard disk is your startup disk, start up with a different startup disk. If the hard disk's icon appears on your desktop, reinstall system software on the hard disk (see "Installing or Reinstalling System Software" later in this chapter).
- Check the ID numbers of all SCSI equipment connected to your computer. Each device must have a unique ID number (If your computer came with the optional CD-ROM drive installed, it has ID number 3.) Also check that the chain of devices is terminated properly. For information on setting SCSI ID numbers and terminating a SCSI chain, see the manuals that came with your SCSI equipment.
- If none of these steps solves the problem verify and test the disk by following the instructions in the next section, "How to Verify and Test a Disk."

How to verify and test a disk

The Drive Setup and Disk First Aid applications are used to verify and test disks. They can be found on the CD-ROM disc that contains system software. If your computer did not come with a CD-ROM drive, these applications are on the *Disk Tools* floppy disk that came with your computer.

To verify and test the disk, follow these steps:

- 1** Start up your computer from the CD-ROM disc that contains system software or from the *Disk Tools* disk.

See "Starting Up From a CD-ROM Disc" or "Starting Up From a Floppy Disk" in the section "Initializing a Hard Disk" later in this chapter.

2 Verify the disk using Disk First Aid.

- Double-click the Disk First Aid icon (you may need to look in a folder called Utilities to find Disk First Aid).



Disk First Aid

- When the Disk First Aid window appears, click the icon of the disk you want to verify, then click Verify.
- If any problems are detected, repair them with Disk First Aid following the instructions in “How to Repair a Hard Disk or Floppy Disk” later in this chapter.

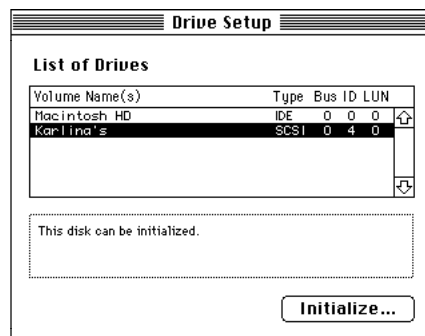
3 Open the Drive Setup program.

You may need to look in a folder called Utilities to find Drive Setup.



Drive Setup

4 In the list of drives, click the disk you want to test.



5 Open the Functions menu and choose Test Disk.

- 6 When a message tells you that testing is complete, click Quit.

If the Drive Setup test reveals a problem, you may be able to correct it by using Disk First Aid again or another disk repair program (see the instructions that follow), or you may need to reinitialize the disk (see “Initializing a Hard Disk” later in this chapter). Consult an Apple-authorized service provider for assistance if necessary.

How to repair a hard disk or floppy disk

You can repair some types of disk damage by using the Disk First Aid application, which is included either on the CD-ROM disc containing system software that came with your computer or on the *Disk Tools* floppy disk.

- 1 Start up your computer from the CD-ROM disc that contains system software or from the *Disk Tools* disk.

See either “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” in the section “Initializing a Hard Disk” later in this chapter.

- 2 Open the Disk First Aid icon.

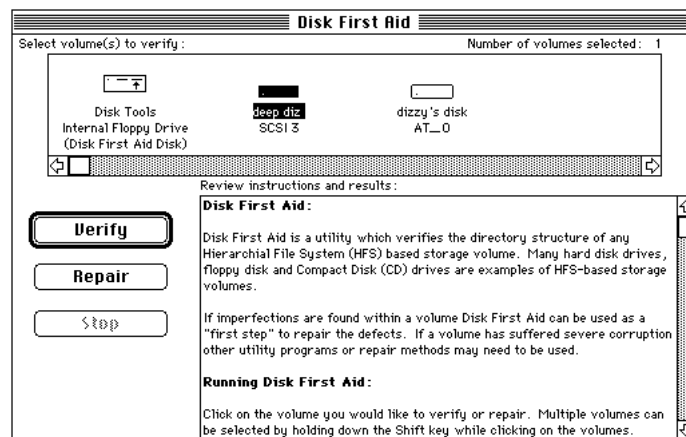
You may need to look in a folder called Utilities to find Disk First Aid.



Disk First Aid

- 3 Click the icon of the disk you want to repair.

Disk icons appear in a box at the top of the Disk First Aid window.



4 Click Repair to begin testing and repairing the disk.

You can't repair the startup disk or the disk that contains the Disk First Aid program, but you can test these disks by clicking Verify. If the program reveals a problem with either of these disks, start up the computer from another disk so that you can repair the damaged disk.

If you want to test and repair another disk, click its icon and then click Repair.

5 When testing and repair are finished, choose Quit from the File menu.

If Disk First Aid cannot correct the problem

- Try repairing the disk with Disk First Aid again. Sometimes repeating the process corrects the problem.
- Use another disk repair or recovery program. Some disk repair programs let you recover information from a damaged disk.
- Consult a computer repair specialist for help.
- Once you have recovered all the information you can, erase (reinitialize) the disk. If initialization doesn't work, discard the damaged disk (if it's a floppy disk), or take it to your Apple-authorized service provider for repair (if it's a hard disk).

Initializing a hard disk

You may never need to initialize a hard disk. This section helps you determine whether you need to initialize your hard disk and tells you how to do the initialization, if it's necessary.

When do you need to initialize a hard disk?

The hard disk inside your computer was initialized at the factory, so you shouldn't need to initialize it. You need to initialize a hard disk only if one of the following is true:

- You purchase a hard disk that has not been initialized at the factory.
- Your hard disk is damaged.

If a hard disk needs to be initialized, the disk's icon does not appear on the desktop when you start up the computer using another disk.

If the hard disk you want to initialize is not the startup disk, you can use the Drive Setup program to initialize it. Drive Setup is located on the floppy disk labeled *Disk Tools* that came with your computer. If your computer came with a CD-ROM drive and you didn't receive floppy disks, you can find Drive Setup on the CD-ROM disc that contains system software. For instructions, start Drive Setup and choose Drive Setup Guide from the Guide (🔗) menu.

If the hard disk you want to initialize is the startup disk, follow the instructions in this section. First, start up from either a CD-ROM disc or a floppy disk. Then follow the instructions in "How to Initialize a Hard Disk" later in this section.

WARNING Initializing a disk erases any information that may be on it. Before you initialize a damaged disk, try to repair it as described in "How to Repair a Hard Disk or Floppy Disk," earlier in this chapter.

Starting up from a CD-ROM disc

To initialize, test, or repair a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. If your computer has a CD-ROM drive, you can start up your computer using the CD-ROM disc containing system software that came with the computer.

To start up the computer using the CD-ROM disc, either use a control panel to set the CD-ROM drive as your startup drive, or follow these steps:

- 1 Turn your computer on.**
- 2 Immediately press the Open/Close button on your CD-ROM drive, and quickly insert the CD-ROM disc containing system software into the drive.**
- 3 Immediately press the C key on your keyboard.**

Continue to hold down the key until you see the “Welcome to Macintosh” message.

If a blinking question mark appears, or if the computer starts up from your hard disk: You did not insert the CD-ROM disc quickly enough for the computer to recognize it as a startup disk. Follow these steps:

- 1 Shut down your computer.**
The CD-ROM disc will remain in the CD-ROM drive.
- 2 Turn the computer on.**
- 3 Immediately press the C key on the keyboard.**

Continue to hold down the key until you see the “Welcome to Macintosh” message.

Starting up from a floppy disk

To initialize, test, or repair a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. If you don't have a built-in CD-ROM drive, you can start up the computer using either the *Disk Tools* or *Install Disk 1* floppy disk that came with your computer.

To start up your computer using a floppy disk, follow these steps:

- 1 **Shut down or turn off your computer.**
- 2 **Insert the appropriate floppy disk into the disk drive.**

If you want to initialize, test, or repair your hard disk, use the *Disk Tools* disk to start up your computer. If you want to install system software, use the *Install Disk 1* disk.

- 3 **Restart or turn on the computer.**

How to initialize a hard disk

You initialize a hard disk by using a program called Drive Setup, which is on the CD-ROM disc that contains system software. If your computer did not come with a CD-ROM drive, Drive Setup is on the *Disk Tools* floppy disk that came with your computer. (To initialize a hard disk from another manufacturer, use the utility software that came with the hard disk.)

WARNING Initializing a disk erases all information that may be on it. Before you initialize a damaged disk, try to repair it as described in “How to Repair a Hard Disk or Floppy Disk,” earlier in this chapter.

- 1 **Start up your computer from the CD-ROM disc that contains system software or from the *Disk Tools* disk.**

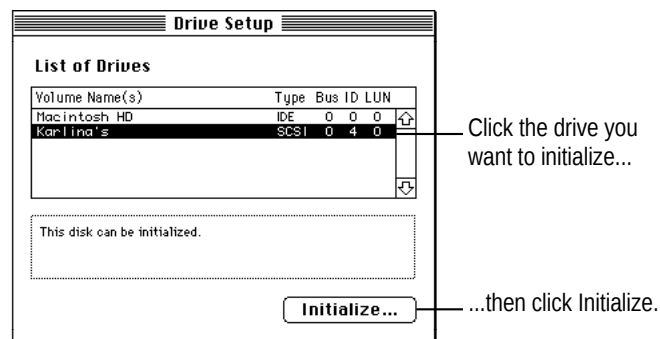
See “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” earlier in this section.

2 Open the Drive Setup program.

You may need to look in a folder called Utilities to find Drive Setup.



3 In the list of drives, click the disk you want to initialize.



4 Click Initialize to initialize the hard disk.

5 Click Quit when you see a message reporting that initialization was successful.

If a message reports that initialization failed, try again. If initialization fails a second time, take the disk to your Apple-authorized service provider for repair.

Installing or reinstalling system software

System software is the set of programs and other files that your computer uses to start itself up, keep track of your files, and run the application programs you use. System software is kept in the folder called the System Folder. When you turn on your computer, it looks for a startup disk, which is a disk that contains the system software. The startup disk is usually the hard disk that's inside your computer, though another hard disk or a floppy disk can also be a startup disk.

The accessory kit that came with your Macintosh provides system software on either a set of floppy disks or a CD-ROM disc. You can use the floppy disks or the CD-ROM disc to install the system software on your Macintosh if you need to do so.

When should you install system software?

Your Macintosh came with all the necessary system software installed on its internal hard disk, so you don't need to install system software on that disk unless you encounter software problems.

If you have a new hard disk or a newly initialized hard disk that doesn't contain system software, or if you want to upgrade to a more recent version of system software on a hard disk, follow the instructions in "Installing System Software" later in this section.

When should you reinstall system software?

If you have a problem with your system software, you may see this icon in the middle of the screen:



If this icon appears, follow the instructions in "How to Repair a Hard Disk or Floppy Disk" earlier in this chapter to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions "Installing System Software," to reinstall system software on your startup hard disk.

Installing system software

Follow the steps in this section to do what is commonly called a “normal” installation of system software.

If you’re installing system software on a hard disk for the first time, make sure that your hard disk has been initialized, a process that prepares the disk to store information. If you see the hard disk’s icon on the desktop when you start up the computer, the disk has been initialized. If no disk icon appears when you start up, see “Initializing a Hard Disk” earlier in this chapter for instructions.

To do a normal installation, follow these steps:

- 1 Start up your computer from the CD-ROM disc that contains system software (or from the *Disk Tools* disk, if your computer does not have a CD-ROM drive).**

See “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” in the section “Initializing a Hard Disk” earlier in this chapter.

- 2 Find and open the Disk First Aid icon.**

You may need to look in a folder called Utilities to find Disk First Aid.



Disk First Aid

After Disk First Aid starts, follow the instructions on the screen. Disk First Aid checks your hard disk for any problems.

- 3 When Disk First Aid has finished checking your hard disk, choose Quit from the File menu.**
- 4 Open the Drive Setup program.**

You use the Drive Setup program to update your hard disk.
- 5 In the list of drives, click your startup disk.**
- 6 Choose Update Driver from the Functions menu.**
- 7 When the update process is finished, quit Drive Setup.**
- 8 Shut down your computer.**

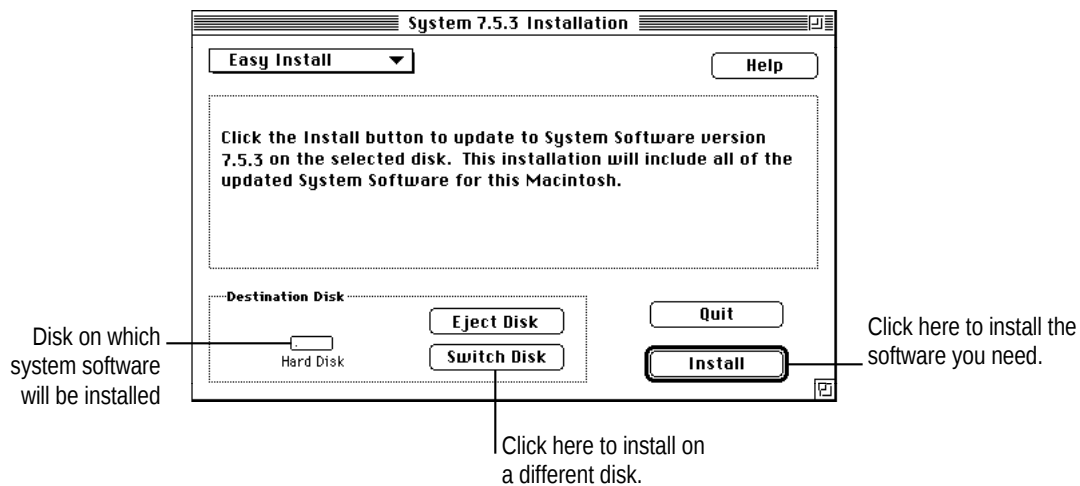
- 9** Start up your computer from the CD-ROM disc that contains system software or from the *Install Disk 1* disk.

See “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” in the section “Initializing a Hard Disk” earlier in this chapter.

The Installer’s Welcome screen appears. You may have to double-click the System Software Installer icon to open the Installer program.

- 10** Click **Continue**.

The Easy Install dialog box appears.



- 11** Make sure that the hard disk named in the box is the one on which you want to install system software.

If it isn’t, click Switch Disk until the correct disk name appears.

- 12** Click **Install**.

- 13** Follow the instructions that appear on the screen.

If you’re installing system software from floppy disks, you see messages asking you to insert different disks.

14 When you see a message reporting that the installation was successful, click Restart.

If a message reports that installation was not successful, try installing again. (Follow the instructions on the screen.)

If, after reinstalling system software by doing a normal installation, you still experience problems with your computer, follow the steps in the next section for doing a “clean” installation of system software.

IMPORTANT Certain system extensions or application programs that were originally on your hard disk may not be installed with the Installer program. If you notice that a certain extension or program was not installed, you may need to install it separately. You can find these additional extensions and programs on the CD-ROM disc that contains system software. (System extensions or application programs from other vendors can be reinstalled from their installation disks.) If you don’t have a CD-ROM drive, see the service and support information that came with your computer for information on how to contact Apple directly for assistance.

Doing a clean installation of system software

This section outlines what is commonly called a “clean” installation of system software. A clean installation allows you to discover which item in your System Folder is causing a problem. A clean installation creates a brand new System Folder and saves everything in your original System Folder in a different location. You can then follow the instructions in “Replacing Your Special Software” later in this section to reinstall system extensions, control panels, and other special software one at a time from the old System Folder to the new System Folder. This procedure allows you to determine which item in the old System Folder was the source of the problem.

Do a clean installation if you can’t determine what is damaged in your System Folder (especially if you think any special software, such as control panels, system extensions, or custom utilities, may be causing the problems you’re experiencing). You should also do a clean installation if you’re still having problems with your computer after you’ve reinstalled system software by doing a normal installation.

To do a clean installation, follow these steps:

- 1 Start up your computer from the CD-ROM disc that contains system software or from the *Install Disk 1* disk.**

See “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” in the section “Initializing a Hard Disk” earlier in this chapter.

- 2 Find and open the Disk First Aid icon.**

You may need to look in a folder called Utilities to find Disk First Aid.



Disk First Aid

After Disk First Aid starts, follow the instructions on the screen. Disk First Aid checks your hard disk for any problems.

- 3 When Disk First Aid has finished checking your hard disk, choose Quit from the File menu.**
- 4 Open the Drive Setup icon.**

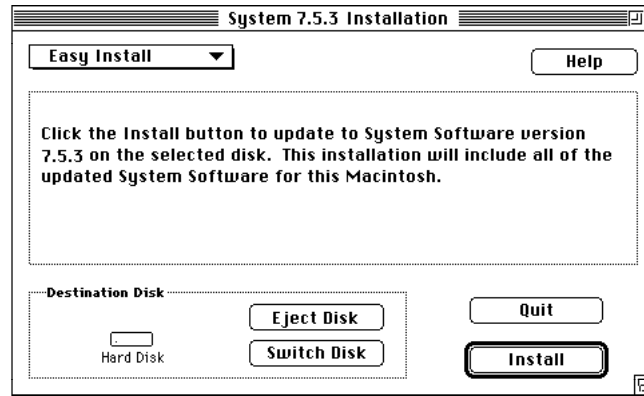
You use the Drive Setup program to update your hard disk.
- 5 In the list of drives, click your startup disk.**
- 6 Choose Update Driver from the Functions menu.**
- 7 When the update process is finished, quit Drive Setup.**
- 8 Shut down your computer.**
- 9 Start up your computer from the CD-ROM disc that contains system software or from the *Install Disk 1* disk.**

See “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” in the section “Initializing a Hard Disk” earlier in this chapter.

The Installer’s Welcome screen appears. You may have to double-click the System Software Installer icon to open the Installer program.

- 10 Click Continue.**

The Easy Install dialog box appears.



- 11 Make sure that the hard disk named in the Destination Disk box is the one on which you want to install system software.**

If it isn't, click Switch Disk until the correct disk name appears.

- 12 Hold down Shift-⌘-K to start the clean installation.**

The following dialog box appears.



- 13 Click the Install New System Folder button and click OK.**

The Easy Install dialog box appears. The Install button has changed to Clean Install, and the contents of your old System Folder have been moved to a new folder named Previous System Folder.

- 14 Click Clean Install.**

- 15 Follow the instructions that appear on the screen.**

It takes a few minutes to complete the installation.

- 16** When the installation is complete you see a message reporting that the installation was successful.

If a Restart button appears, click it to restart your computer.

If a message reports that installation was not successful, try repeating the clean installation procedure.

IMPORTANT Certain system extensions or application programs that were originally on your hard disk may not be installed with the Installer program. If you notice that a certain extension or program was not installed, you may need to install it separately. You can find these additional extensions and programs on the CD-ROM disc that contains system software. (System extensions or application programs from other vendors can be reinstalled from their installation disks.) If you don't have a CD-ROM drive, see the service and support information that came with your computer for information on how to contact Apple for assistance.

Replacing your special software

Special software consists of items such as control panels, system extensions, custom utilities, fonts, or Apple menu items that you may have added to your old System Folder. To make sure that special software does not create any conflicts with other programs on your computer, follow this procedure to safely add back these items in your new System Folder:

- 1** Copy any special software items from the Previous System Folder back to your System Folder one item at a time, restarting the computer after copying each item.

Special software consists of items such as control panels, system extensions, or custom utilities that you may have added to your System Folder.

IMPORTANT Be very careful not to *replace* (copy over) any of the files in the System Folder with files from the Previous System Folder.

- 2** Check after each restart to make sure your computer is not having any software problems.

If any of your special software items cause software problems, contact the software manufacturer for assistance or an upgrade.

Doing a custom installation

For most Macintosh users, the Easy Install procedure described in the previous sections is appropriate, because it automatically installs all the items you need. However, if you'd like to select a combination of system software files for your specific needs, you can customize your system software installation. You use custom installation to install or update one or more specific files, or to save space on your hard disk by installing only the files you want.

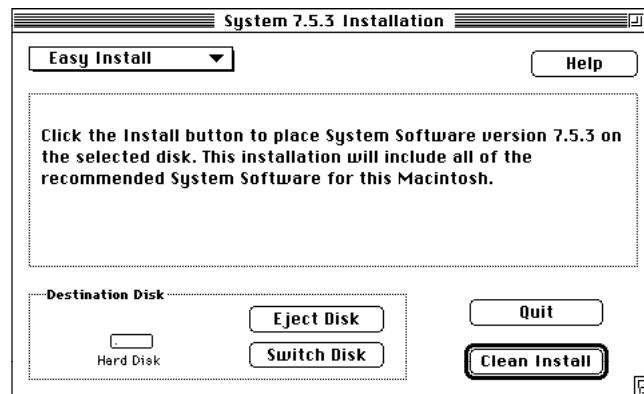
To install customized system software, follow these steps:

- 1 **Start up your computer from the CD-ROM disc that contains system software or from the *Install Disk 1* disk.**

See “Starting Up From a CD-ROM Disc” or “Starting Up From a Floppy Disk” in the section “Initializing a Hard Disk” earlier in this chapter.

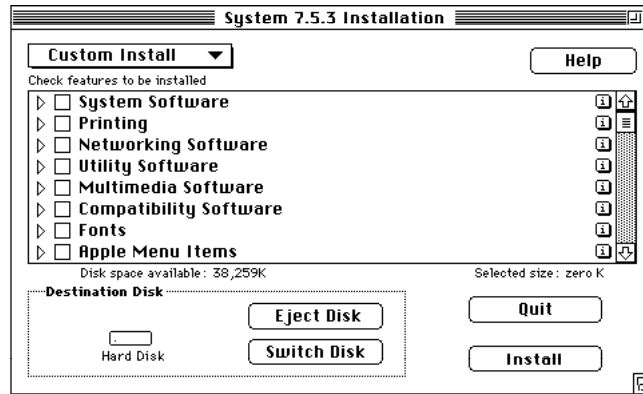
- 2 **Click OK.**

The Easy Install dialog box appears.



- 3 **Choose Custom Install from the pop-up menu.**

The Custom Install dialog box appears, listing all available system software components.



- 4 Scroll through the list of components, clicking the checkbox next to each component you want to install.

To get additional information about each component listed, click the box with the letter *i* in it to the right of the component.

- 5 Click Install.
- 6 Follow the instructions that appear on the screen.
- 7 When you see a message reporting that the installation was successful, click Quit.

If a message reports that installation was not successful, try installing again. (Follow the instructions on the screen.)

- 8 Restart your Macintosh.

The system software is installed and your computer is ready to use. Don't forget to eject the CD-ROM disc containing system software when you are finished.

Installing or reinstalling CD-ROM software

CD-ROM software is a set of programs and files that allow your CD-ROM drive to work correctly with your computer and allow it to play different kinds of CDs, like Photo CDs or audio CDs. If your computer came with a CD-ROM drive installed, the CD-ROM software is part of system software and was preinstalled for you on your computer's hard disk. (It is also available on floppy disks and a CD-ROM disc that came with your Macintosh.)

If you added a CD-ROM drive after you bought your computer, the CD-ROM software is probably on floppy disks that came with the drive.

When should you install or reinstall CD-ROM software?

If your Macintosh came with the CD-ROM drive already installed, you don't need to install the CD-ROM software unless you encounter problems. (See "Solutions to CD-ROM Problems" earlier in this chapter for descriptions of the kinds of problems you might encounter.)

If you added a CD-ROM drive after you bought your computer, you should install the CD-ROM software before you attempt to use the CD-ROM drive.

Installing or reinstalling CD-ROM software

- 1** Start up your computer from the CD-ROM disc that contains system software or from the *Install Disk 1* disk.

See "Starting Up From a Floppy Disk" or "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

The Installer's Welcome screen may appear. If not, you may have to double-click the System Software Installer icon to open the Installer program.

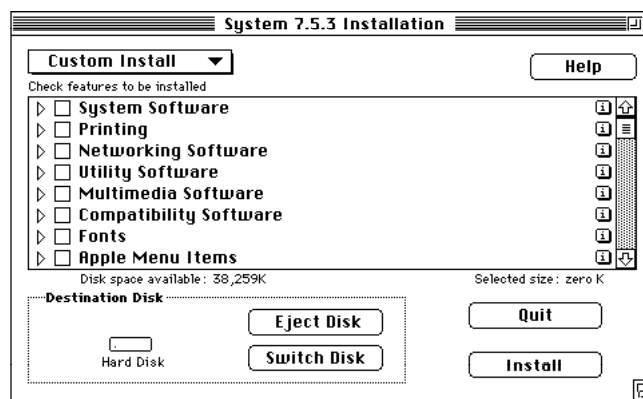
- 2** Click OK.

The Easy Install dialog box appears.

- 3 Choose Custom Install from the pop-up menu.



The Custom Install dialog box appears, listing all available system software components.



- 4 Select Multimedia Software by clicking the checkbox next to it.

To get additional information about each component listed, click the box with the letter *i* in it to the right of the component.

- 5 Click Install.

- 6 Follow the instructions that appear on the screen.

- 7 When you see a message reporting that the installation was successful, click Quit.

If a message reports that installation was not successful, try installing again. (Follow the instructions on the screen.)

- 8 Restart your Macintosh.

The CD-ROM software is reinstalled and your computer is ready to use. Don't forget to eject the CD-ROM disc containing system software when you are finished.

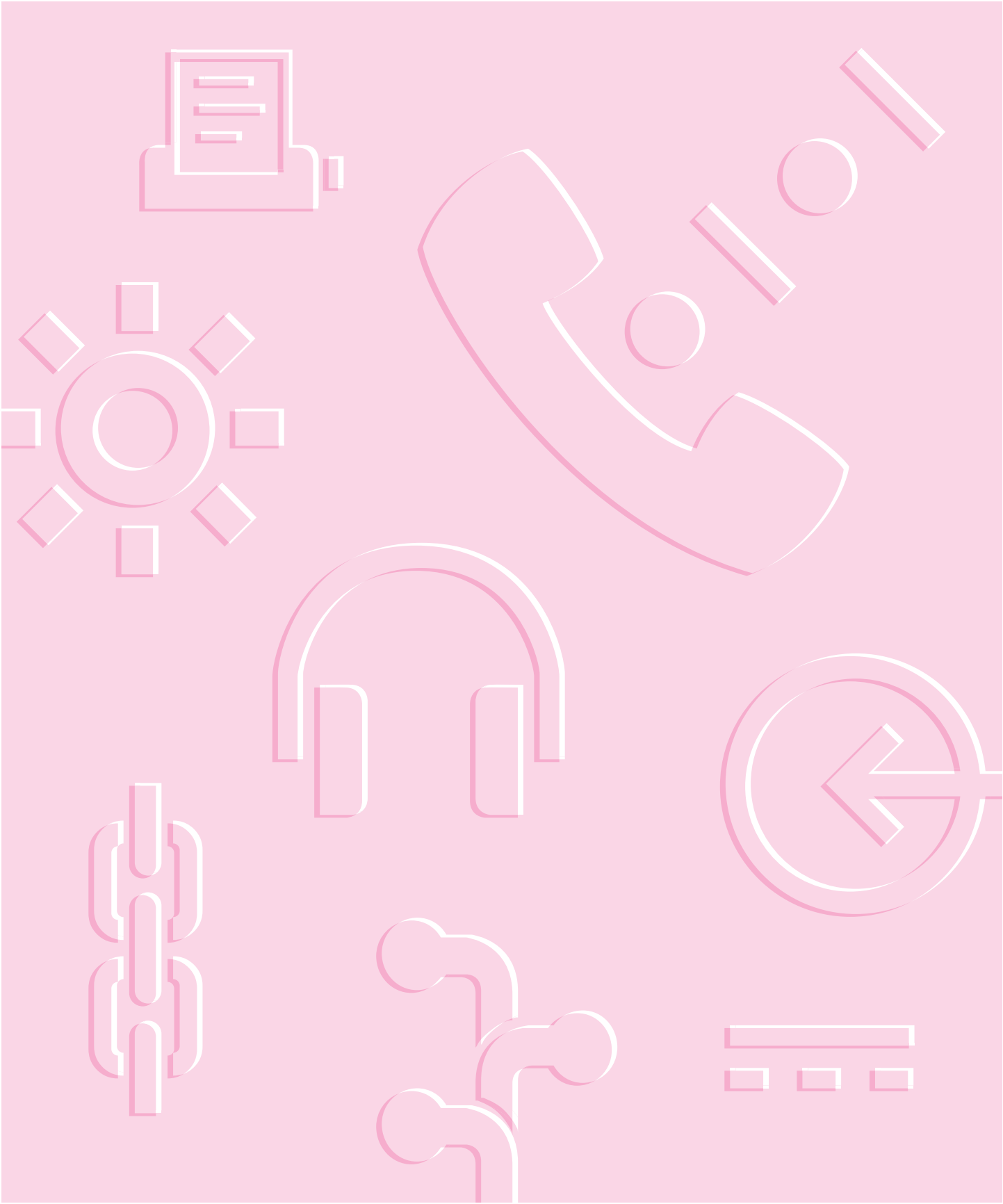
Appendix A **Health, Safety, and Maintenance Tips**

Appendix B **Installing Expansion Cards and Additional Memory**

Appendix C **Special Keys on Your Keyboard**



III *part*



Read this appendix for important health and safety instructions, as well as tips on keeping your computer in good working order.



Appendix A Health, Safety, and Maintenance Tips

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For your own safety and that of your equipment, follow all the instructions in this chapter. Keep these instructions available for reference by you and others.

Health-related information about computer use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in nonwork activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer’s keyboard improperly, you may increase your likelihood of developing wrist problems. Some individuals are at greater risk of developing these problems because of their health, physiology, lifestyle, and general exposure to stress. Work organization and conditions, such as workstation setup and lighting, also play a part in your overall health and comfort. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We’ll discuss each area of concern below.

Musculoskeletal discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully, using the guidelines that follow, and take frequent breaks to rest tired muscles. To make working with your computer more comfortable, allow enough space in your work area so that you can change position frequently and maintain a relaxed posture.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to awkward posture, such factors as the amount of repetition, the force used in the activity, the individual's physiology, workplace stress level, and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two RSIs that have been with us for a long time. Although less common than other RSIs, one serious RSI discussed more often today is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers advice on setting up your work area to enhance your comfort while you use your computer. Since the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

Eye fatigue

Eye fatigue can occur whenever the eyes are focused on a nearby object for a long time. This problem occurs because the eye muscles must work harder to view an object that's closer than about 20 feet (6 meters). Improper lighting can hasten the development of eye fatigue. Although eye fatigue is annoying, there's no evidence that it leads to permanent damage.

Whenever you're engaged in an activity that involves close-up work—such as reading a magazine, doing craft work, or using a computer—be sure to have sufficient glare-free lighting and give your eyes frequent rest breaks by looking up and focusing on distant objects. Remember to have your eyes examined regularly.

To prevent discomfort and eye fatigue:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward working posture.
- Take frequent short breaks to give your muscles and eyes a chance to rest.

Arranging your office

Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

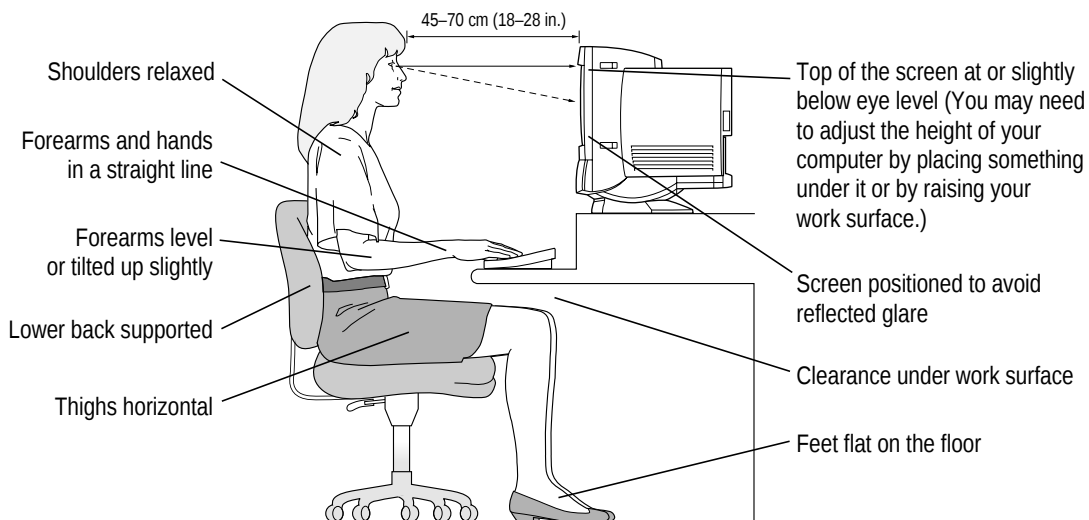
- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor.

The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.

- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.
- Arrange the monitor so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).
- Position the computer to minimize glare and reflections on the screen from overhead lights and windows.



Avoiding fatigue

- Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.
- Use a light touch when typing or using a mouse and keep your hands and fingers relaxed.
- Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.
- Allow adequate workspace so that you can use your keyboard and mouse comfortably. Place papers or other items so you can view them easily while using your computer. A document stand may make reading papers more comfortable.
- Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.
- Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

What about electromagnetic emissions?

There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of our products. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

Safety instructions

For your own safety and that of your equipment, always take the following precautions.

Turn off the computer completely and disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exists:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your Macintosh is exposed to rain or any other excess moisture
- your Macintosh has been dropped or the case has been otherwise damaged
- you suspect that your Macintosh needs service or repair
- you want to clean the case (use only the recommended procedure described later in this chapter)

Be sure that you always do the following:

- Keep your Macintosh away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Protect your Macintosh from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your Macintosh into a wall socket.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

WARNING Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

Handling your computer equipment

Follow these guidelines for handling your computer and its components:

- When setting up your computer, place components on a sturdy, flat surface, and carefully follow all setup instructions.
- When connecting or disconnecting a cable, always hold the cable by its connector (the plug, not the cord).
- Turn off your computer and all its components before connecting or disconnecting any cables to add or remove any component. Failure to do so could seriously damage your equipment.
- Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match. Make sure that the connector matches the port and that you have positioned the connector correctly in relation to the port.
- Take care not to spill any food or liquid on the computer, keyboard, mouse, or other components. If you do, turn your computer off immediately and unplug it before cleaning up the spill. Depending on what you spilled and how much of it got into your equipment, you may have to bring your equipment to an Apple-authorized service provider.
- Protect the computer and its components from direct sunlight and rain or other moisture.
- Keep all ventilation openings clear and unobstructed. Without proper air circulation, components can overheat, causing damage or unreliable operation.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Handling the built-in monitor

Follow these procedures for handling the built-in monitor:

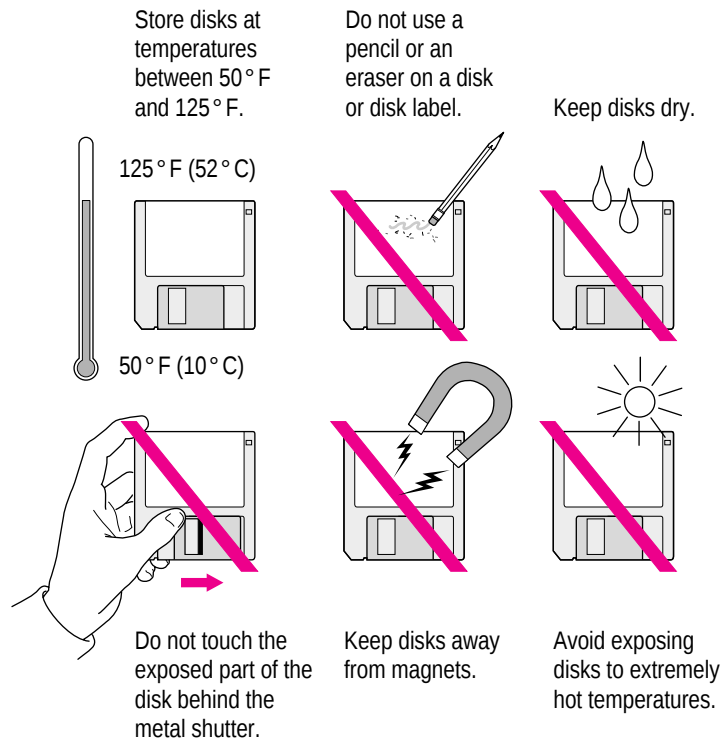
- Make sure the ventilation openings on the computer are clear and unobstructed.
- If there is interference on the monitor's screen or on a television or radio near your computer, move the affected equipment farther away.

Handling the keyboard

Take care not to spill any liquid on the keyboard. If you do, turn off your computer immediately.

- If you spill liquid that is thin and clear, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If, after you take these steps, the keyboard doesn't work, take it to your Apple-authorized service provider for repair.
- If you spill liquid that is greasy, sweet, or sticky, unplug the keyboard and take it to your Apple-authorized service provider for repair.

Handling floppy disks



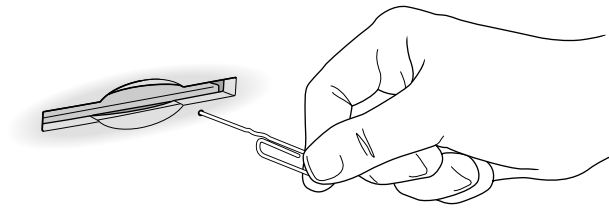
Ejecting a disk

For instructions on ejecting a floppy disk, a CD-ROM disc, or a removable media disk, see the “Disks” topic area of Macintosh Guide, available in the Guide (🔍) menu.

If you can't eject a floppy disk

If you can't eject a floppy disk in the usual way, try the following in order:

- Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.
- Turn off the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.
- Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.



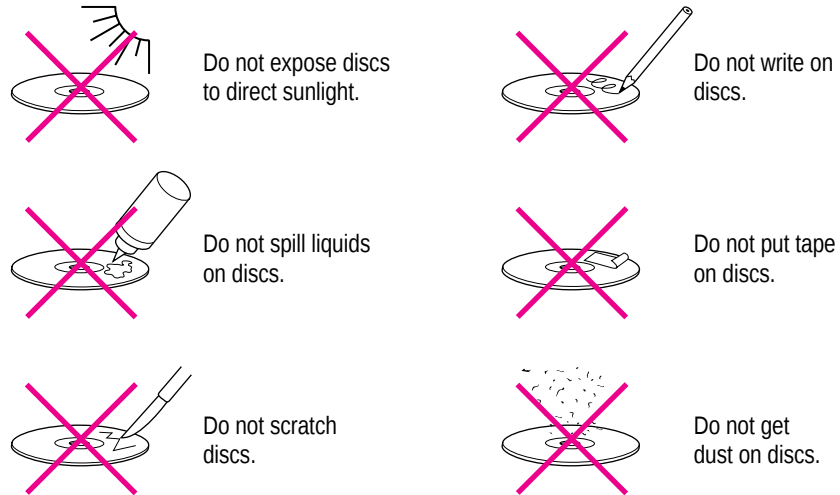
If nothing works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

Handling compact discs

Keep these important safety instructions in mind as you use compact discs (such as CD-ROM discs, audio CDs, and Photo CDs):

- Hold a disc by the edges or by one edge and the center hole. Do not touch the disc surface.
- To clean discs, wipe the shiny surface with a soft damp cloth, working in straight lines from center to edge. Do not use any form of cleaning agent.

- To avoid damage to your discs, keep these points in mind:



Other important safety instructions to keep in mind as you use your CD-ROM drive:

- Position your computer so that when the tray opens, it doesn't bump into anything.
- Do not leave the disc tray open. If dust gets on the lens of the CD-ROM drive, the drive may have problems reading your compact discs.
- Do not put anything (for instance, a cup) on top of the tray when it is open.
- Do not force the tray open by hand.
- Do not wipe the lens with a paper towel or other abrasive surface. If you need to clean the lens, see an Apple-authorized service provider for a lens cleaner.
- Never transport your computer with a disc inside the CD-ROM drive.
- Keep your computer equipment away from any source of liquid (such as wash basins, bathtubs, and shower stalls). If you drink coffee or other beverages while you're at your computer, take care not to spill.
- Avoid exposing your equipment to damp or wet weather. If your system is near a window, be sure the window is closed in rainy weather.

The tray on your CD-ROM drive automatically closes when you shut down your computer. You may want to open the tray and take your disc out before shutting down.

Power supply

The power supply in your computer is a high-voltage component and should not be opened for any reason, even when the computer is off. If the power supply needs service, contact your Apple-authorized dealer or service provider.

Cleaning your equipment

Follow these general rules when cleaning the outside of your computer and its components:

- Use a damp, soft, lint-free cloth to clean the computer's exterior. Avoid getting moisture in any openings.
- Don't use aerosol sprays, solvents, or abrasives.

Cleaning the computer case

To clean the case, do the following:

- 1 Turn off the computer completely and then disconnect the power plug. (Pull the plug, not the cord.)
- 2 Wipe the surfaces lightly with a clean, soft cloth dampened with water.

Cleaning the monitor

To clean the screen, put household glass cleaner on a soft cloth and wipe the screen. Don't spray the cleaner directly on the screen, because the liquid might drip into the monitor or computer.

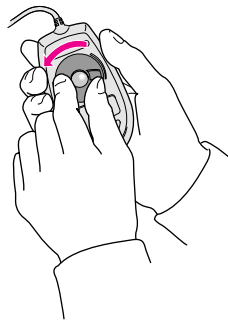
Cleaning the mouse

The mouse contains a small ball that must roll smoothly for the mouse to work properly. You can keep this ball free of dirt and grease by using the mouse on a clean, lint-free surface and cleaning it occasionally.

You need a few cotton swabs and a clean, soft, lint-free cloth.

Note: If your computer came with a special mouse (like the two-button mouse that comes with the DOS-compatibility card), see the instructions that came with it for cleaning and maintenance information.

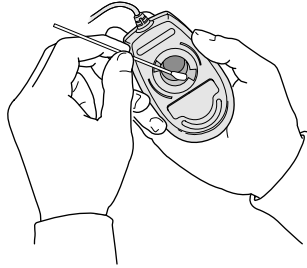
- 1 Turn off your computer.**
- 2 Turn the mouse upside-down and turn the plastic ring on the bottom counterclockwise to disengage it.**



If the mouse is locked, see the next section, “Locking and Unlocking the Mouse,” for instructions on how to unlock it.

- 3 Turn the mouse right-side up with one hand and catch the ring and the ball with your other hand.**

- 4** Clean the three small rollers inside the mouse with a cotton swab moistened with water.
Rotate the rollers to clean all around them.



- 5** Wipe the mouse ball with a clean, soft, dry, and lint-free cloth.
- 6** If necessary, wash the mouse ball with warm soapy water (use a mild soap such as a dishwashing liquid) and then dry the mouse ball thoroughly.
- 7** Gently blow into the mouse case to remove any dust that has collected there.
- 8** Put the ball and the ring back in place.

Your mouse should roll smoothly across your mouse pad or desk. If it doesn't, repeat these instructions carefully.

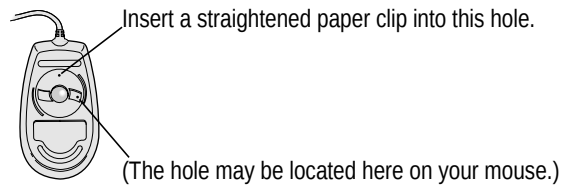
Locking and unlocking the mouse

Some mouse devices can be locked so that the ball can't be removed. A locking mouse has a small hole on the plastic ring.

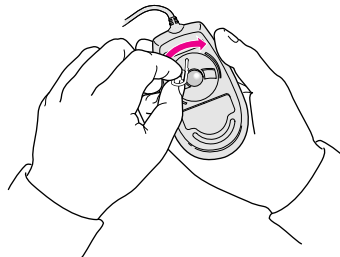
Note: If your computer came with a special mouse (like the two-button mouse that comes with the DOS-compatibility card), see the instructions that came with it.

To lock the mouse, follow these steps:

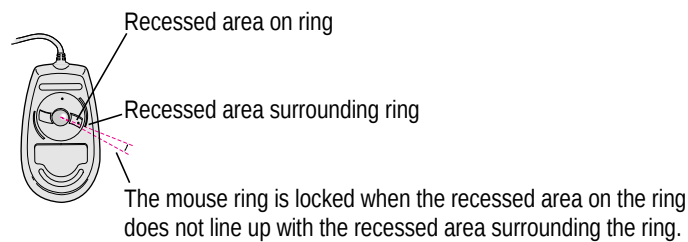
- 1 **Insert a straightened paper clip into the hole on the plastic ring.**



- 2 **Press down on the paper clip while you turn the ring clockwise.**

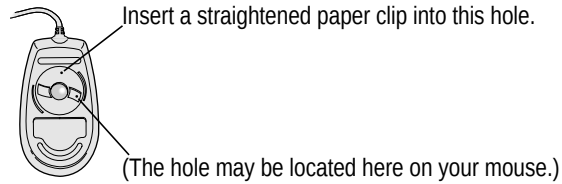


Turn the ring a very short distance, until it stops. When the recessed area on the ring is *not* lined up with the recessed area surrounding the ring, the mouse is locked.

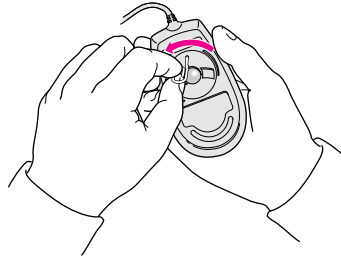


To unlock the mouse, follow these steps:

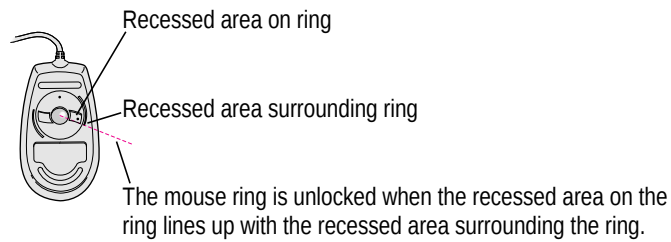
- 1 Insert a straightened paper clip into the hole on the plastic ring.**



- 2 Press down on the paper clip while you turn the ring counterclockwise.**



Turn the ring a very short distance. When the recessed area on the ring is lined up with the recessed area surrounding the ring, the mouse is unlocked.



Read this appendix for instructions
on installing an expansion card
or memory in your computer.



Appendix B Installing Expansion Cards and Additional Memory

• • • • •

This appendix provides information about expansion cards and memory modules (including an optional High Performance Module) and explains how to install both cards and memory.

Installing an expansion card or memory involves three procedures (detailed steps for each are provided later in this appendix):

- opening the computer
- inserting the card or memory module into a specific slot or socket
- closing the computer

About expansion cards

Expansion cards are printed circuit boards that can be installed in your computer to give it special features, such as enhanced video capabilities, networking and communications, and additional processing power. Slots that will fit three different kinds of expansion cards are available within your Macintosh:

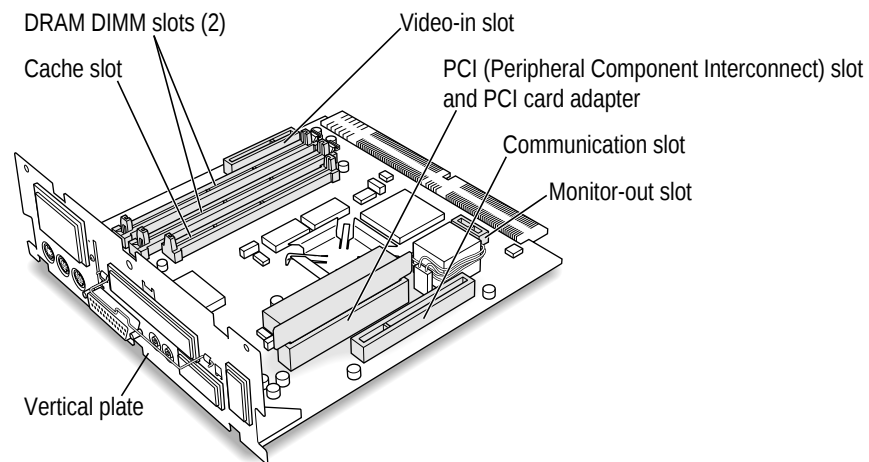
- a PCI (peripheral component interconnect) slot for most 6.88-inch cards
- a communication slot for an internal modem, fax, or Ethernet card
- a video-in slot for a video input card that brings signals into the computer from a videocassette recorder (VCR), laser disc player, video camera, or similar device

You can also install the following additional expansion cards in your Macintosh:

- the Apple External Video Connector kit that allows video mirroring on an external monitor
- a TV tuner card that allows you to watch TV on your Macintosh

Other video cards that let you perform editing and other functions may also be available for your computer.

This appendix contains instructions for installing a PCI card or a communication card. To install a video input card or a TV tuner card (if you don't already have these cards installed), or the Apple External Video Connector kit, follow the instructions that came with the card or kit.



WARNING To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an Apple-certified technician must install the card (usually because the installation requires special training or tools), consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to install the card yourself, any damage you may cause to your computer or card will not be covered by the limited warranty on your computer. If the card is not an Apple-labeled product, check with an Apple-authorized dealer or service provider to see if you can install it yourself.

About memory

You can have memory—dynamic random-access memory (DRAM)—added to your computer in packages called Dual Inline Memory Modules, or DIMMs. You can also add an optional 256K Level 2 cache by installing a High Performance Module.

DRAM configurations

Your computer can use any DRAM configuration with DIMMs of these sizes: 8, 16, 32, or 64 MB. DIMMs that are either 32 or 64 MB must support a 2K refresh count.

You can increase your computer's DRAM to up to a maximum of 136 MB (the 8 MB that comes on your computer's main logic board, plus an additional 128 MB for a total 136 MB). The main logic board has two slots where DIMMs can be installed. To increase DRAM to 136 MB, have an Apple-authorized dealer or service provider fill both slots with 64 MB DIMMs. You can also fill the slots with 8, 16, or 32 MB DIMMs. DIMMs of mixed sizes may be installed—for example, you can install one 8 MB DIMM and one 16 MB DIMM.

IMPORTANT The DIMMs should be 64-bit-wide, 168-pin fast-paged mode, with 70-nanosecond (ns) RAM access time or faster. DIMMs that are either 32 or 64 MB must support a 2K refresh count. The Single Inline Memory Modules (SIMMs) from older Macintosh computers are not compatible with your computer and should not be used.

If you decide to have additional DRAM installed in your computer, the DIMMs can be installed one at a time in any order in either of the memory slots.

High Performance Module (cache) configurations

A 256K Level 2 memory cache provides an overall increase in your computer's performance. You can add a cache by having an Apple-authorized dealer or service provider install the High Performance Module (256K Level 2 cache) in the cache slot on the main logic board of your computer.

Opening the computer

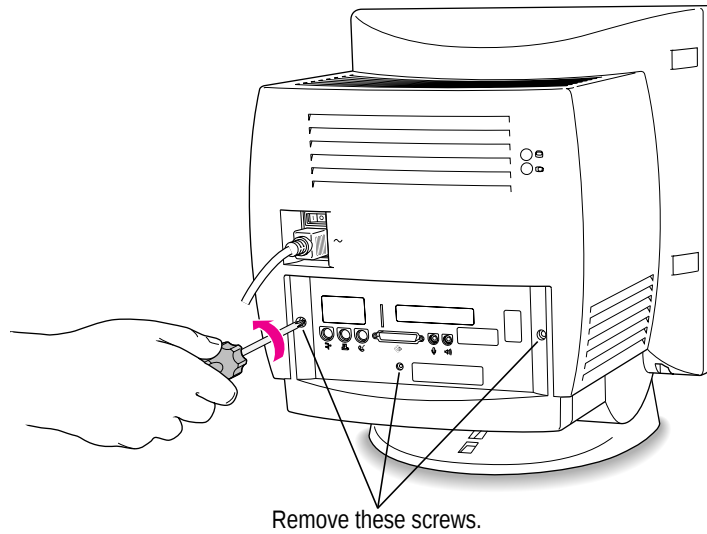
IMPORTANT To avoid generating static electricity that may damage components, do not walk around the room until you have completed the installation of the expansion card or memory and closed the computer. Additionally, move the logic board as little as possible while it is outside the computer case.

- 1 Turn off your computer following the instructions in "Turning the Computer Off" in Chapter 1 of this manual.
- 2 Turn the computer completely off by pressing the power switch at the back of the computer.

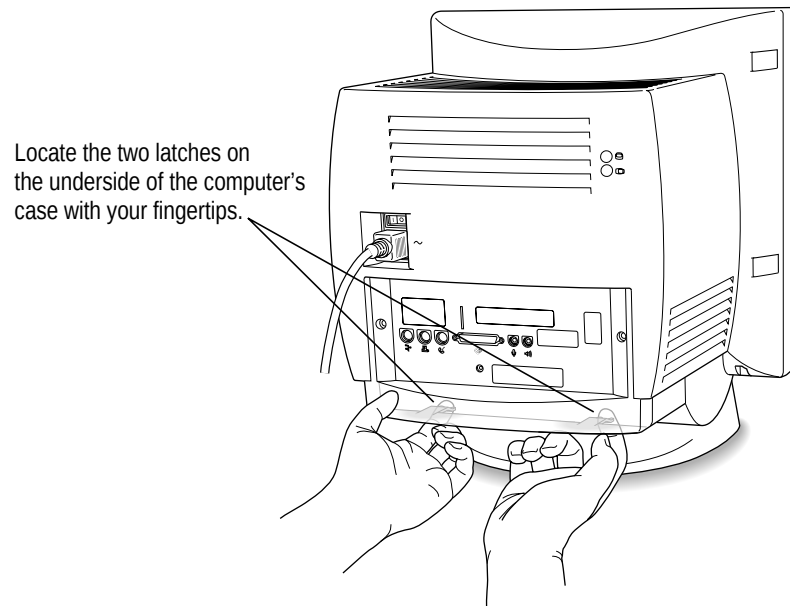
Press the side of the switch marked with the  symbol.
- 3 Unplug all the cables except the power cord from the computer (including the cable that connects your keyboard to the computer).

Leaving the power cord plugged in helps protect the computer from damage caused by electrostatic discharge.

- 4** Remove the security screws from the computer's back panel with a screwdriver.

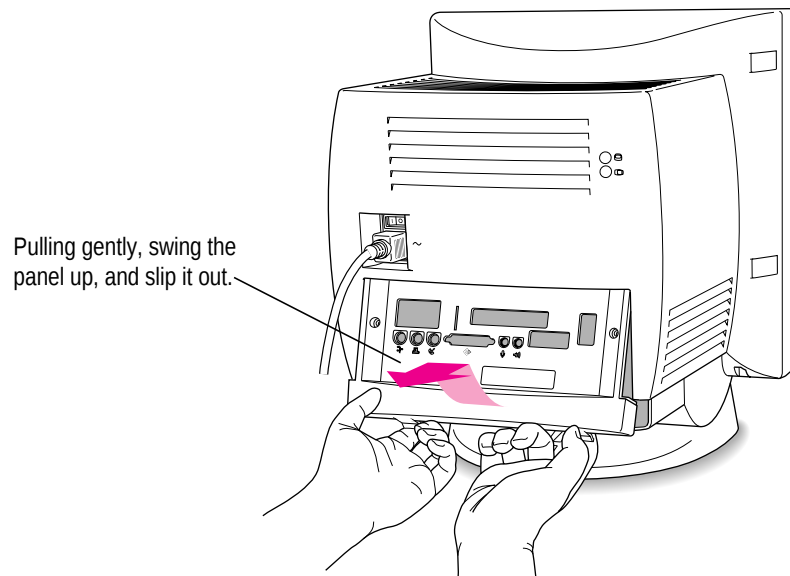


- 5** With your fingertips, find the two latches on the underside of the computer's case.



- 6** Pull gently on the latches.
- 7** Swing the panel up and slip it out.

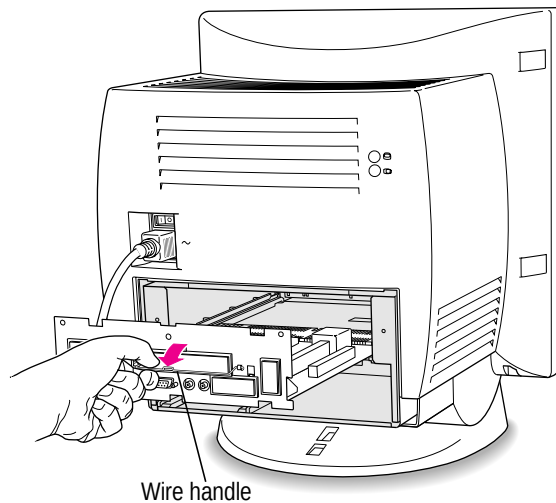
Set the panel aside.



- 8** To discharge static electricity from your body that could damage the components inside the computer, touch the metal panel on the back of the computer.

- 9 Gently pull down on the wire handle and swing it out to unlock it from its storage position. Then grasp the handle and pull the logic board out of the computer.

The vertical plate and the logic board to which it's attached slide all the way out of the computer. Carefully support the logic board as it comes out, and put it on a stable, clean, flat surface.



What you do next depends on whether you're installing an expansion card, memory, or a High Performance Module (cache). Skip to the section that pertains to the item you are installing.

Installing an expansion card

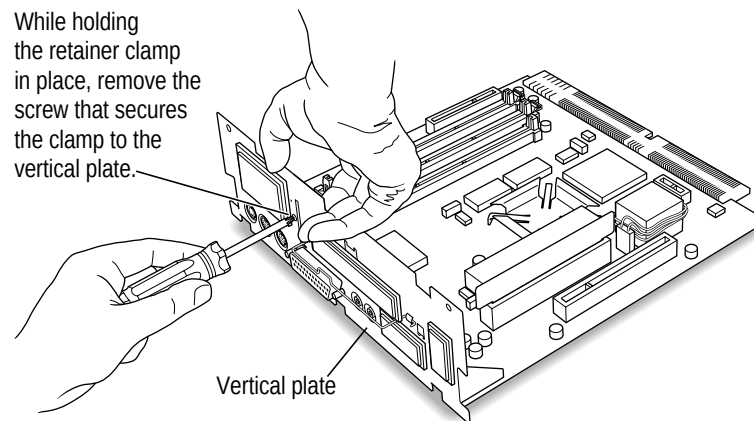
This section contains instructions for installing a peripheral component interconnect (PCI) card or a communication card. To install a video input card, the Apple external video connector kit, or a TV tuner card, follow the instructions that came with the kit or card.

Installing a PCI card

This section contains general instructions for installing a PCI card. You should also refer to any instructions that came with the card. PCI cards for your computer must be 6.88 inches long. Here's how to install one:

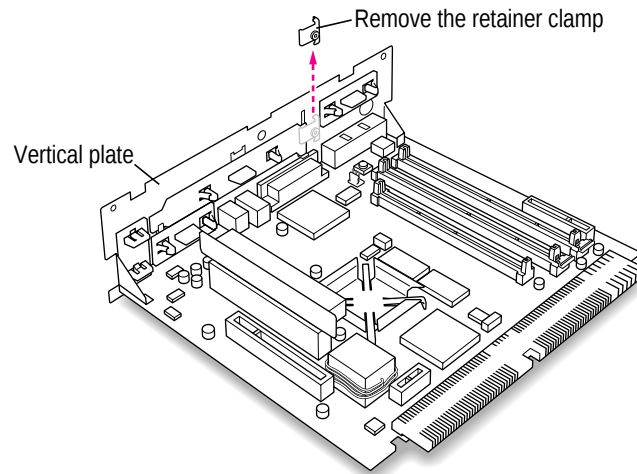
- 1** Unscrew the retainer clamp screw from the front of the vertical plate, while holding the clamp in place in back of the vertical plate.

Avoid letting the retainer clamp fall onto the logic board.



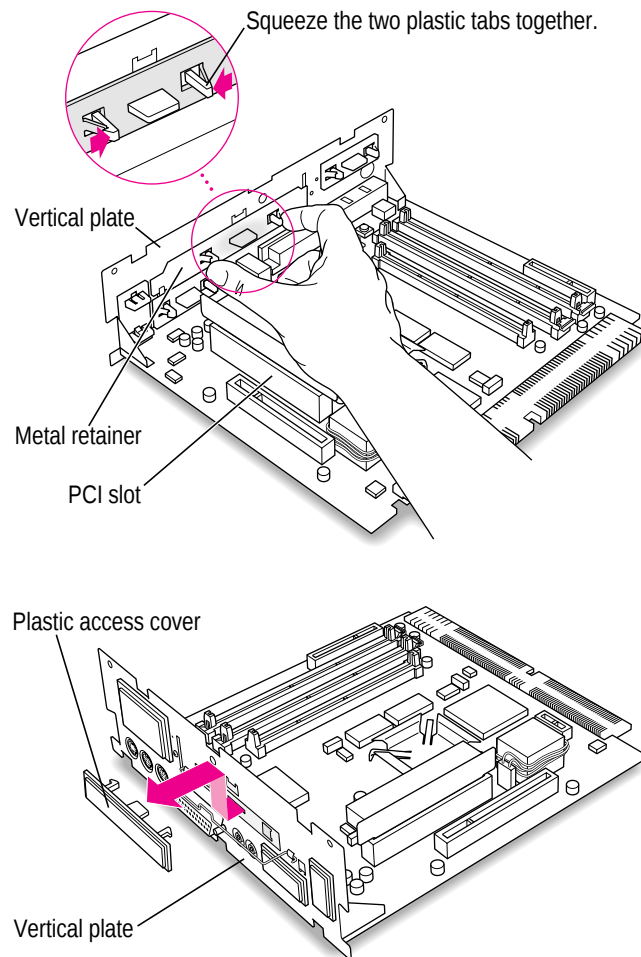
2 Lift out the retainer clamp and set it aside.

You'll need the retainer clamp later, after you install the card.

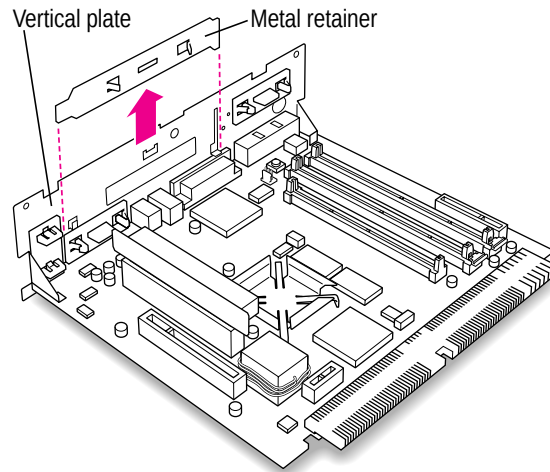


- 3** If your PCI card has ports for connecting equipment, remove the plastic access cover from the vertical plate.

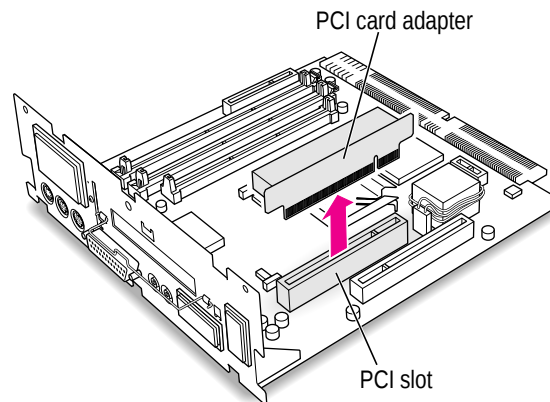
On the inside of the computer, squeeze together the two plastic tabs holding the access cover in place, then pull the access cover off from the outside.



- 4 Remove the metal retainer from the inside of the computer.**



- 5 Remove the PCI card adapter from the main logic board.**

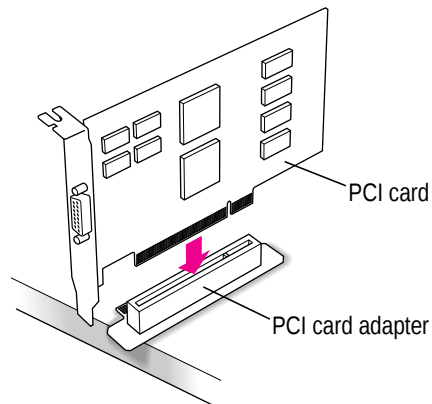


- 6 Remove the PCI card from its static-proof bag.**

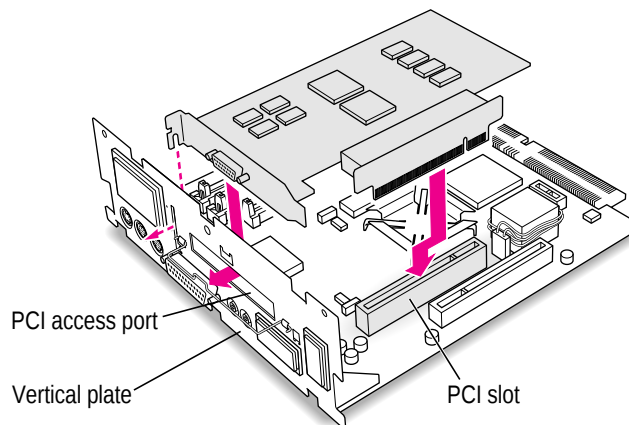
Hold the card by its edges to avoid touching any connectors on the card.

7 Connect the PCI card and the PCI card adapter.

Place the adapter on a firm surface, then press the card firmly into the adapter. You may find it helpful to place the card and adapter near the edge of a table with the metal edge of the card hanging over the end of the table so it doesn't block the card from being inserted completely into the adapter.

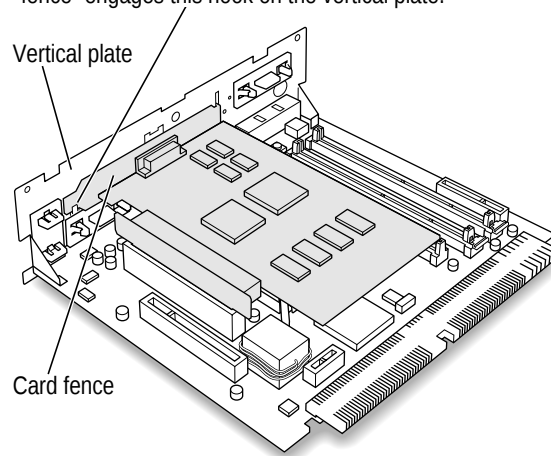


8 Align the PCI card and adapter over the PCI slot.



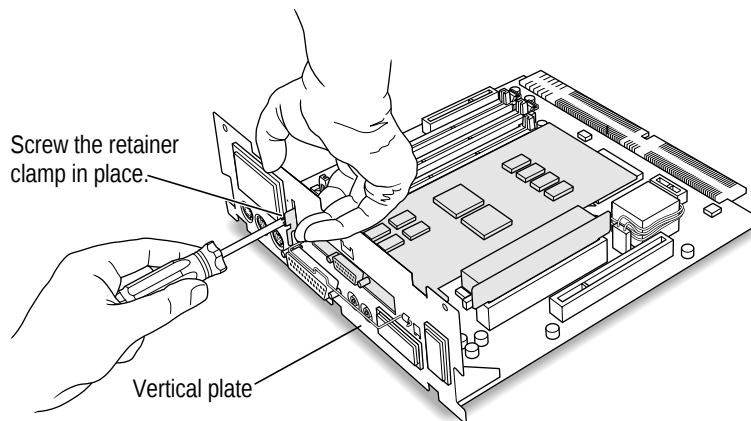
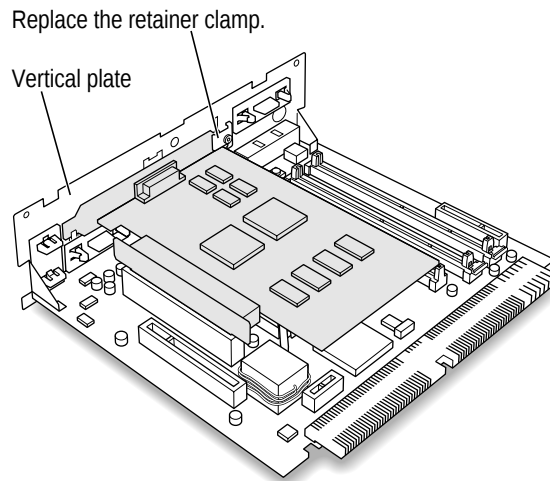
- 9 Insert the adapter into the PCI slot on the main logic board. Make sure the metal fence on the PCI card engages the hook on the vertical plate and that any connectors on the card protrude through the PCI access port opening.

The PCI card is properly seated when the card's metal "fence" engages this hook on the vertical plate.



Don't force the adapter. If you meet resistance, pull the adapter out and try again. To see if the adapter is properly connected, lift it gently. If it resists and stays in place, it's connected.

- 10** Insert the retainer clamp back into the hole and hold it there while you screw it into place.

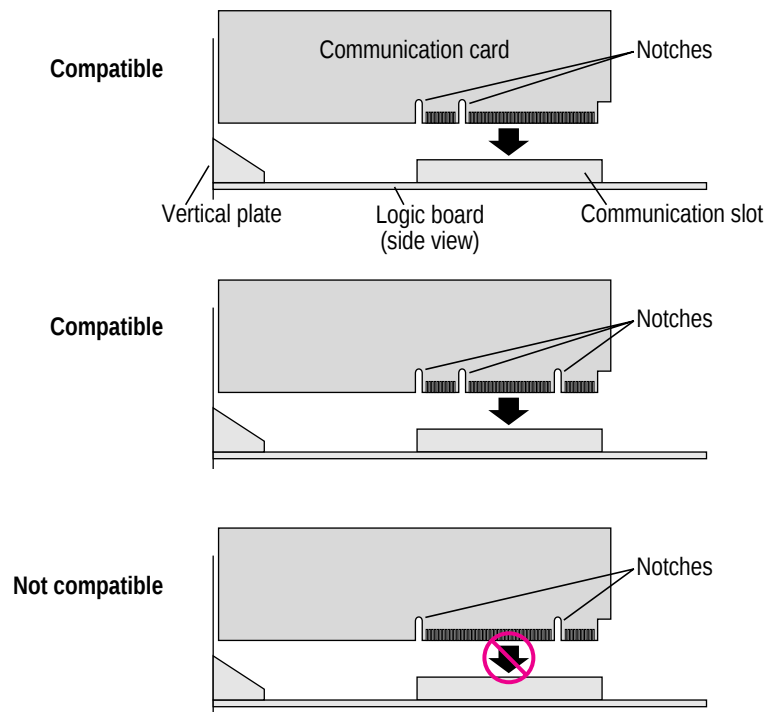


- 11** If you have a communication card, DIMMs, or a High Performance Module to install, skip ahead to those instructions in this chapter. If you are finished installing items in your computer, proceed to “Closing the Computer,” later in this chapter.

Installing a communication card

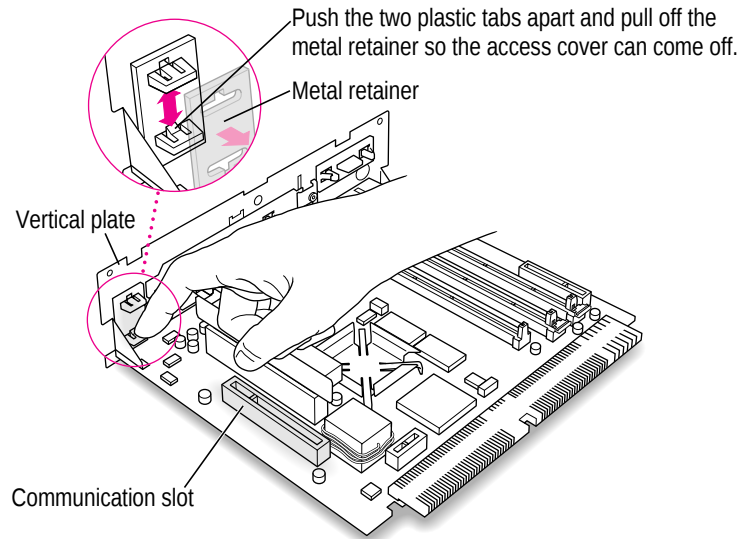
This section contains instructions for installing an Ethernet, fax, or internal modem card in the communication slot in your computer.

Some communication cards designed for other communication slots are not compatible with your computer and cannot be installed in its communication slot. Use the following illustration as a guide to determine if you have the correct type of card for the slot.



To install a communication card, follow these steps:

1 Remove the plastic access cover from the vertical plate.

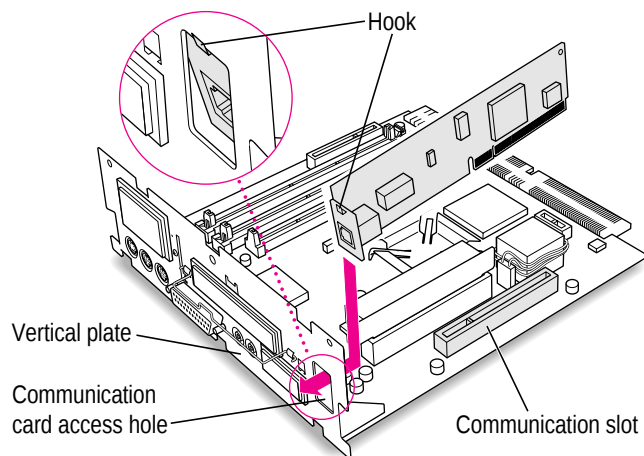


2 Remove the communication card from its static-proof bag.

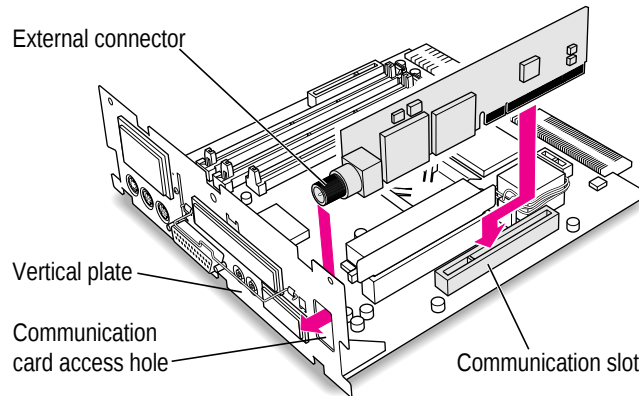
Hold the card by its edges to avoid touching the connectors on the card.

3 Align the card with the communication card access hole.

The communication slot is the rightmost slot on the logic board as you face the vertical plate.



Your card may have an external connector on it, as shown here.



- 4** Passing the external connector through the hole in the vertical plate, insert the card into the communication slot. Press down on the card until the connector is solidly in place.

Don't force the card. If you meet resistance, pull the card out and try again. If your card has a hook on it, make sure the hook engages the vertical plate.

- 5** To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.

- 6** If the communication card you installed is an Ethernet card, you may need to install software that comes with the Ethernet card. Then change the network connection in a control panel.

See the manual that came with the card for more information. For instructions on how to select a network connection and other information about using your Macintosh on a network, see the "Networks" topic area of Macintosh Guide, available in the Guide (?) menu.

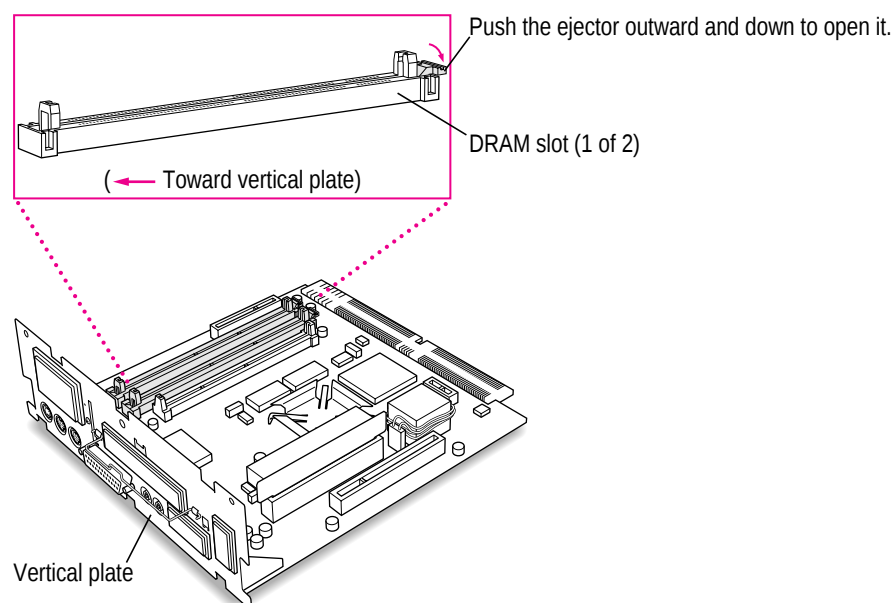
- 7** If you have DIMMs or a High Performance Module to install, skip ahead to those instructions in this chapter. If you are finished installing items in your computer, proceed to "Closing the Computer," later in this chapter.

Installing DIMMs or a High Performance Module

WARNING Although instructions for installing DIMMs and the High Performance Module are provided in this manual, Apple Computer strongly recommends that you have an Apple-certified technician install additional them. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service. If you install additional DIMMs yourself, you risk damaging your equipment, and this damage is not covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

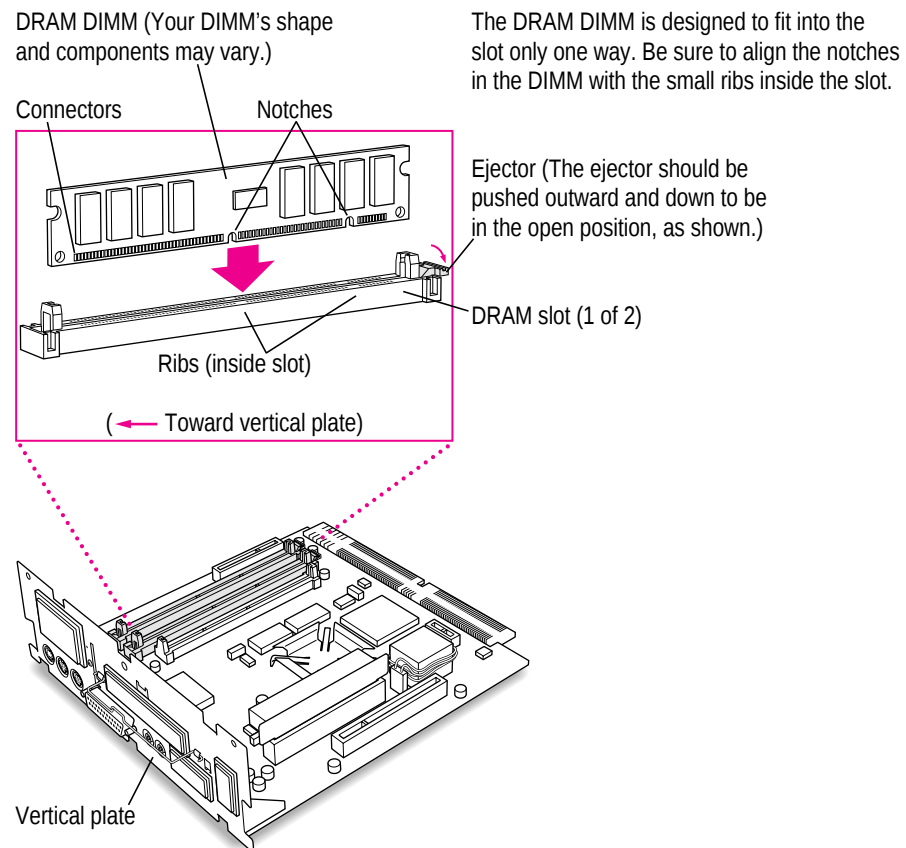
Installing a DRAM DIMM

- 1 Push the ejector on the DRAM slot outward and down to open it.



- 2 With the ejector in the “open” position, align the DRAM DIMM in the DRAM slots as pictured.

IMPORTANT Do not touch the DIMM’s connectors. Handle the DIMM only by the edges.



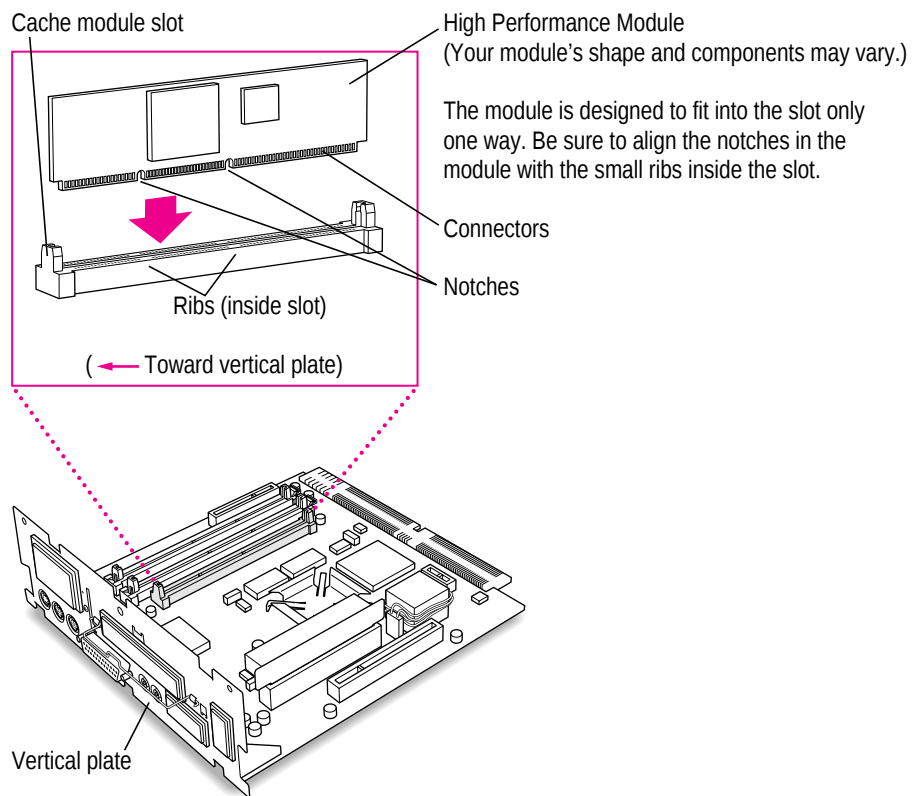
- 3 Push down on the DIMM until it snaps into place.
The ejector will automatically close.
- 4 Repeat steps 1–3 if you have another DRAM DIMM to install.
- 5 If you have a High Performance Module to install, proceed to the next section, “Installing the High Performance Module.” If you are finished installing items in your computer, proceed to the section “Closing the Computer” later in this chapter.

Installing the High Performance Module (256K Level 2 Cache)

- 1 Align the notches in the High Performance Module with the small ribs inside the module slot, and insert the module into the slot as pictured.

The module is designed to fit into the slot only one way. Be sure to align the notches in the module with the small ribs inside the slot.

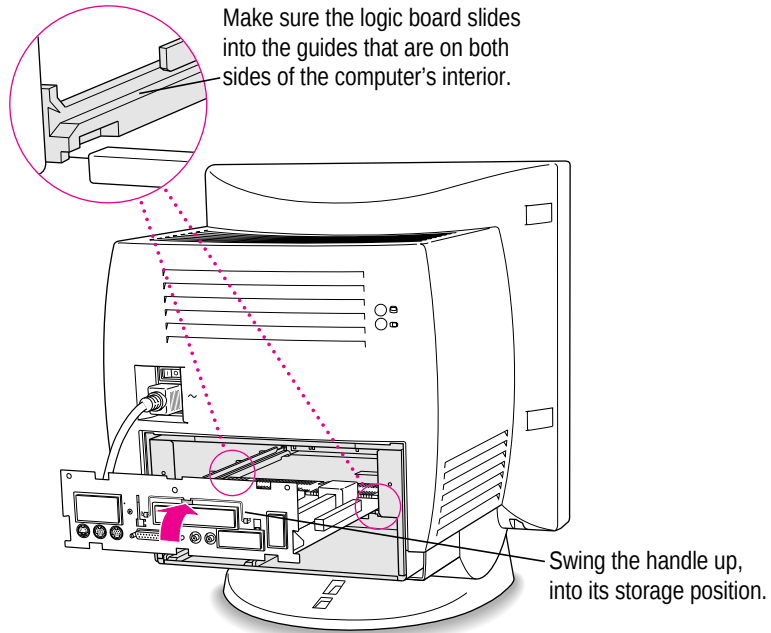
IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.



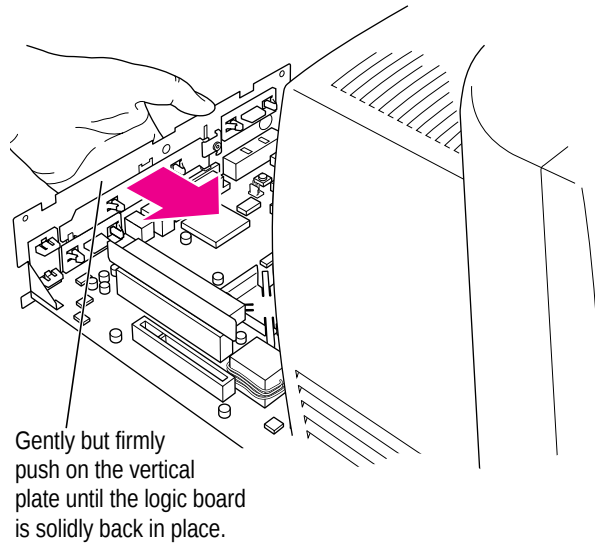
- 2 If you are finished installing items in your computer, proceed to "Closing the Computer," next.

Closing the computer

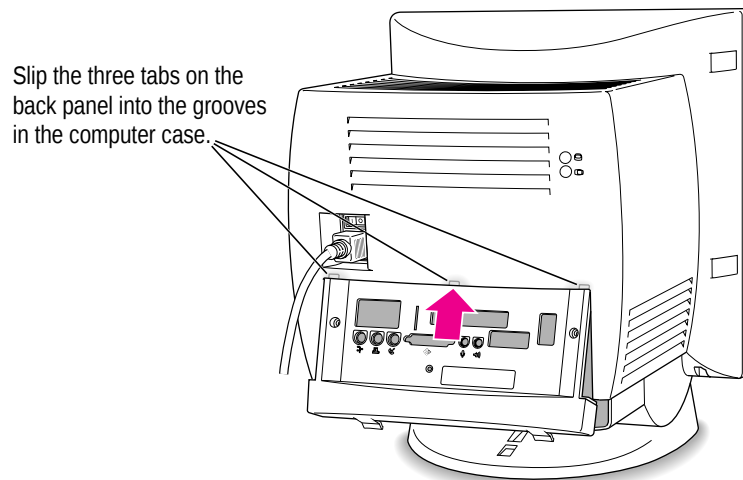
- 1 Slip the base of the logic board into the guide rails inside the computer's case and swing the wire handle back into its storage position.



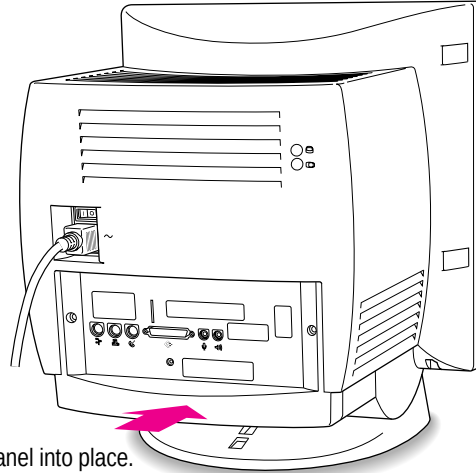
- 2 Slide the logic board back into the computer.**



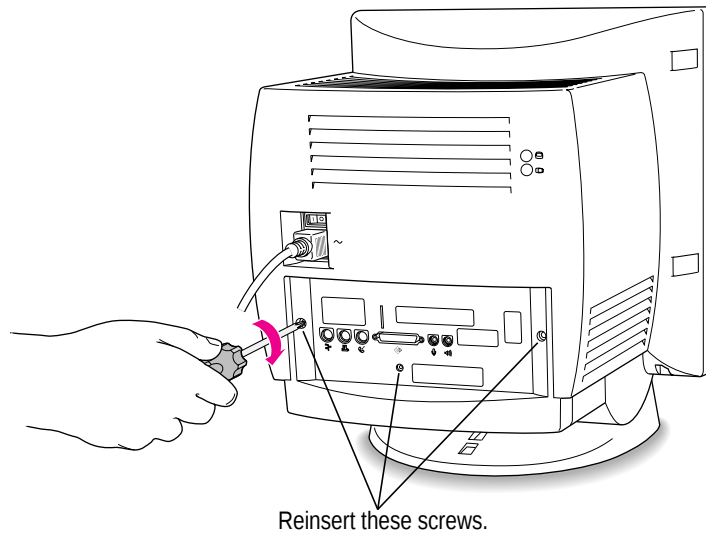
- 3 Slip the three tabs at the top of the back panel into the grooves in the computer's case.**



- 4** Snap the base of the back panel into place.



- 5** Reinsert the three security screws.



6 Plug the cables back into the computer.

Your computer is now ready to turn on and use.

WARNING Never turn on your computer unless all of its internal and external parts are in place. Operating the computer when it is open or missing parts can be dangerous, and can damage your computer.

Note: If your computer will not start after you've installed an expansion card, DRAM, or the High Performance Module, you may need to press the reset button on the main logic board. See the instructions listed under the symptom "The computer does not start and you have just installed DIMMs, a High Performance Module (256K level 2 cache), or expansion cards" in "Solutions to Common Problems" in Chapter 5 of this manual.

Read this appendix to learn
how to use the special keys
on your keyboard.



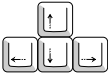
Appendix C

Special Keys on Your Keyboard

Your computer keyboard contains certain special keys that typewriter keyboards don't have. Many of these keys allow you to give commands to the computer without using the mouse. For example, in many application programs, you can press the ⌘ (Command) key at the same time as the Q key to quit a program.

The following table describes what you can do with the special keys on your keyboard. The special keys on your keyboard depend on the model of keyboard you have; some keyboards do not have all the keys listed here.

Special keys on Apple keyboards

Arrow keys		Use to move the insertion point, as an alternative to using the pointer. In some programs, the arrow keys have other functions.
Caps Lock key		Use to capitalize a series of letters (numbers and symbols aren't affected).
Clear key		Use to delete the current selection (or use the Delete key). In some programs, Clear has other functions.
⌘ (Command) key		Use in combination with other keys as an alternative to choosing a menu command.

continued ►

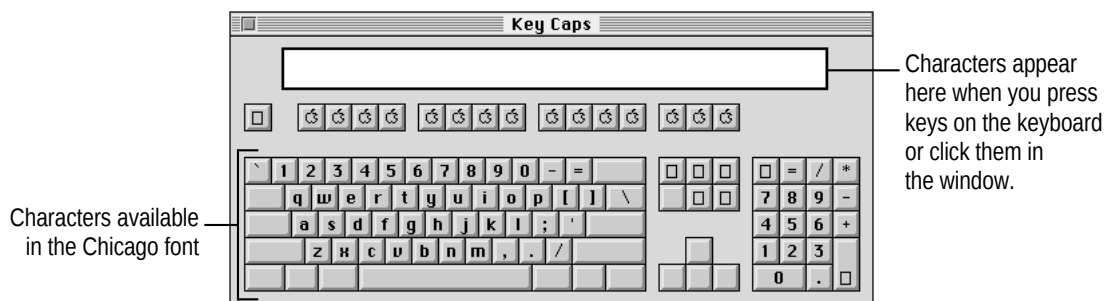
Special keys on Apple keyboards *(continued)*

Control key		In combination with other keys, this key provides shortcuts or modifies other actions.
Delete key		Use to delete selected material, or the character to the left of the insertion point.
Enter key		In a dialog box, pressing Enter is the same as clicking the outlined button. In some programs, pressing this key confirms information you have provided.
Escape key		The function of this key depends on the program you're using.
Function keys		Some programs allow you to use the 12 function keys to give commands. You can assign commands or action sequences to function keys with special utility programs.
Option key		Use in combination with other keys to produce special characters or modify actions.
Numeric keys		Use to produce numbers and mathematical symbols; some programs use these keys as function keys to initiate actions.
Power key		On some models, press to turn on the computer. Also press to shut down the computer, to put the computer to sleep, or to restart the computer.
Return key		Use to move the insertion point to the beginning of the next line. In a dialog box, pressing Return is the same as clicking the outlined button.
Shift key		Use to produce capital letters (or the upper character on the key).
Tab key		Use to move the insertion point to the next stopping place (such as a tab stop or field in a dialog box or program).
Other special keys		The function of these keys depends on the operating system and program you're using.

Typing special characters and symbols

You can type a variety of international and other special symbols and characters (including characters with diacritical marks, such as accents) by pressing combinations of keys.

The Key Caps program, which is installed with your system software, shows you the characters produced when you type certain keys and key combinations in the fonts available on your computer. Choose Key Caps from the Apple (🍏) menu, then choose the font from the Key Caps menu.



To have Key Caps show more options for special characters, press each of these keys or key combinations: Option, Shift, Shift-Option, Shift-⌘, and Option-⌘.



If you press the Option key, Key Caps outlines lightly the keys that you can use in combination with letter keys to type letters with accents or other diacritical marks.

If you see rectangles: If you see rectangles instead of diacritical marks on some of the pictures of keys in Key Caps, try pressing Option-⌘ to see the diacritical marks. However, you only need to use the Option key (not Option-⌘) in combination with the other keys to type letters with diacritical marks.

If you press the Option key at the same time as a key for a specific diacritical mark and then release both keys, Key Caps outlines in bold the keys for letters that can be typed with that mark. (You'll see that most key combinations for diacritical marks can be used with the Space bar as well as letter keys—producing the mark without a letter.)

The most common diacritical marks and how to create them are summarized next.

Diacritical mark	Key combination
Grave accent (`)	Option-`, then type the character
Acute accent (´)	Option-e, then type the character
Circumflex (^)	Option-i, then type the character
Tilde (~)	Option-n, then type the character
Umlaut (¨)	Option-u, then type the character
The letter "c" with a cedilla (ç)	Option-c

- **To type a letter or a space with a specific diacritical mark, press the Option key and the key for the mark simultaneously. Then type the letter that needs the mark.**

If you are having trouble getting a mark and letter to appear together, try again. Be sure to press the Option key before (or at the same time as) the key for the mark; then, after you release both keys, type the letter to be marked.

Special key combinations

If difficulties with your mouse or computer don't allow you to use standard methods of quitting a program or restarting your computer, you can try using these special key combinations.

To do this...	...press this key combination
Force a program to quit	⌘-Option-Esc
Force the computer to restart	⌘-Control-Power key

Here are other key combinations you may find useful to use while starting up your computer:

To do the following at startup...	...press this key combination
Start the computer from a CD-ROM disc	C key
Ignore SCSI ID 0 (zero)	⌘-Option-Shift-Delete
Turn off system extensions	Shift key
Start the Extensions Manager	Spacebar
Rebuild the desktop	Option-⌘

If you can't find what you're looking for
in this index, look in Macintosh Guide—
available in the Guide (⌘) menu
on your computer.

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