



Macintosh Performa User's Guide

*Includes setup, troubleshooting, and health-related information
for Macintosh Performa 5200cd and 5300cd 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.

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. You may find the following booklet helpful: *Interference Handbook* (stock number 004-000-00493-1). This booklet, prepared by the Federal Communications Commission, is available from the U.S. Government Printing Office, Washington, DC 20402.

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

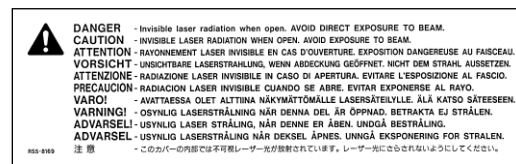
WARNING Making adjustments or performing procedures other than those specified in your equipment’s manual may result in hazardous exposure.

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



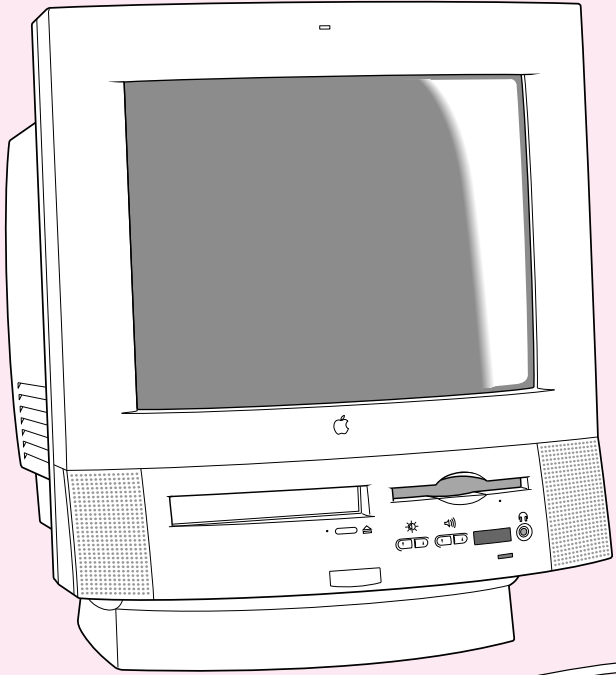
Welcome to Macintosh



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.

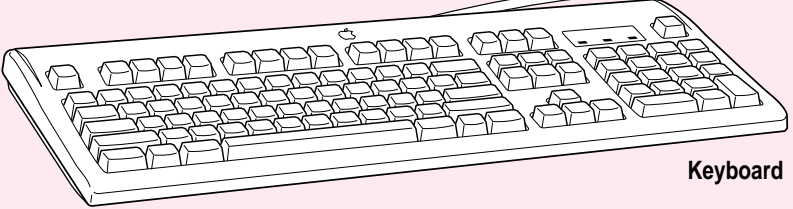
Your Macintosh computer is powered by the new **PowerPC** microprocessor (or “chip”). This microprocessor was designed by Apple Computer, Inc., Motorola, Inc., and IBM Corporation. The **PowerPC** microprocessor uses Reduced Instruction Set Computing (RISC) technology to deliver very high performance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

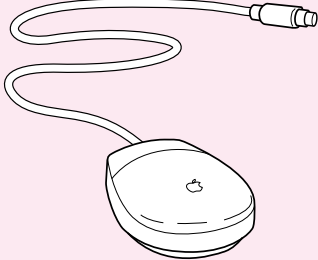


Macintosh Performa computer

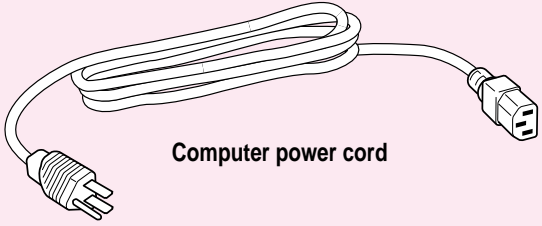
Keyboard cable
(permanently attached to the keyboard)



Keyboard



Mouse



Computer power cord

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

1

Getting Started



The illustration on the facing 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.

If you used the setup poster: The poster included with your Macintosh Performa computer was designed to help you start using your computer as quickly as possible. This chapter contains more detailed information than the poster. If you have already set up your computer using the poster, you may want to turn to the section “What’s Next?” later in this chapter.

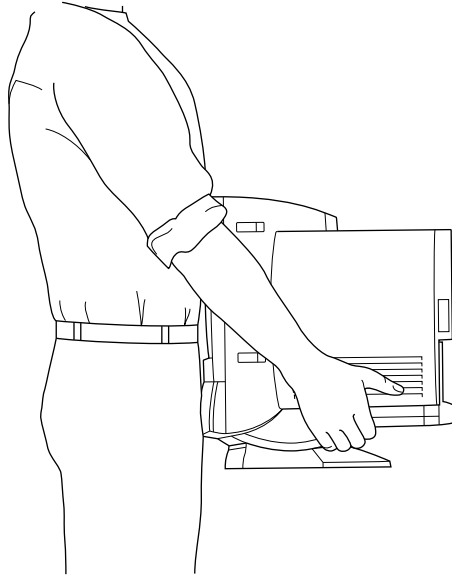
Plugging in the computer

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.

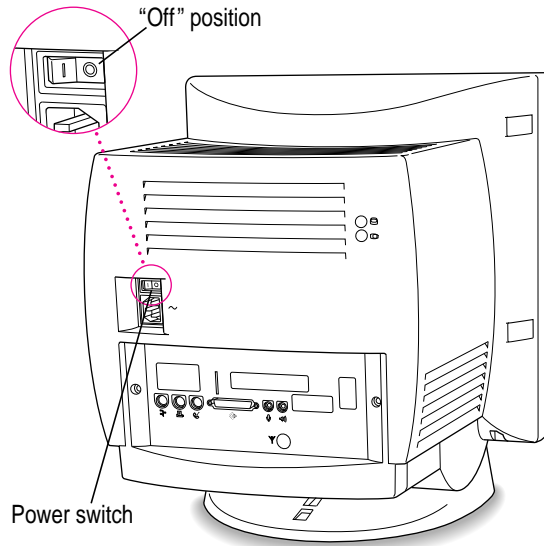
Carry the computer with its screen facing you. Most of its weight is near the screen. Lift with your knees, not your back.



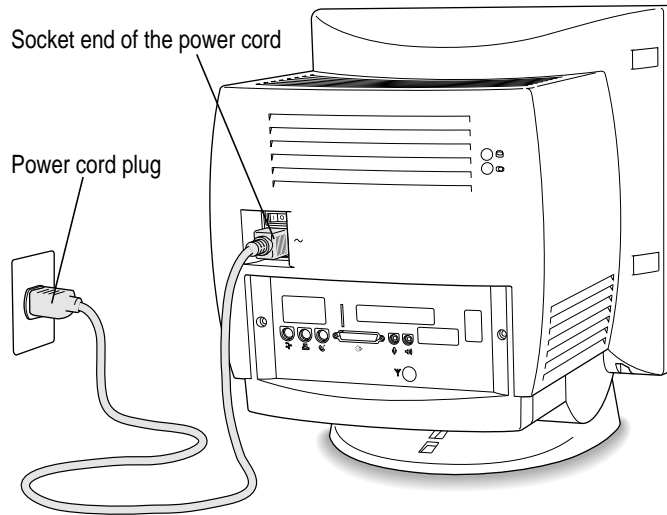
- 2 Plug the socket end of the power cord into the recessed power plug (marked with the symbol ~) on the back of the computer.**

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 \bigcirc 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

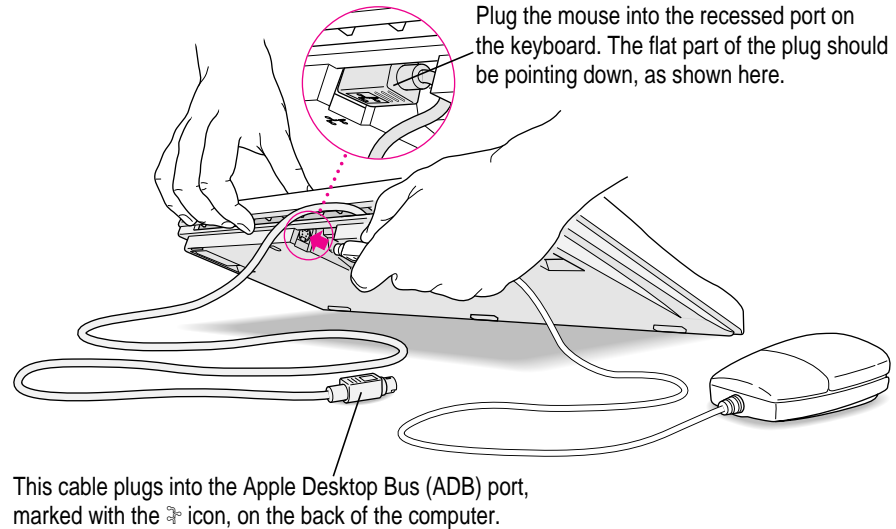
If you purchased an expansion card for your Macintosh, install it now. (See Appendix B, “Installing an Expansion Card,” for instructions.) If you don’t have an expansion card, continue with the next section, “Connecting the Mouse and Keyboard.”

Connecting the mouse and keyboard

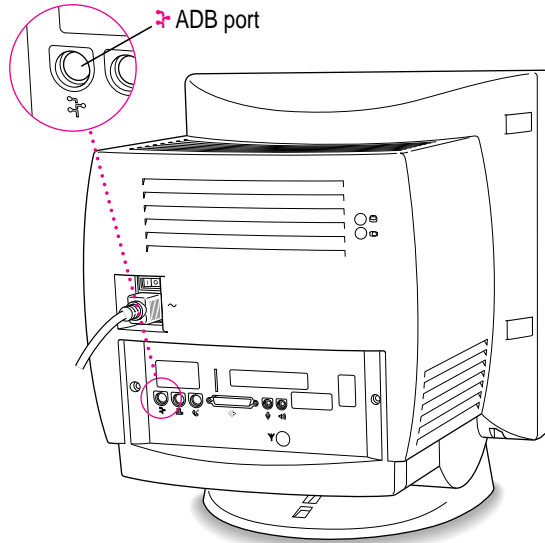
- 1 Plug the mouse cable into the recessed port on the back of the keyboard.**

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.

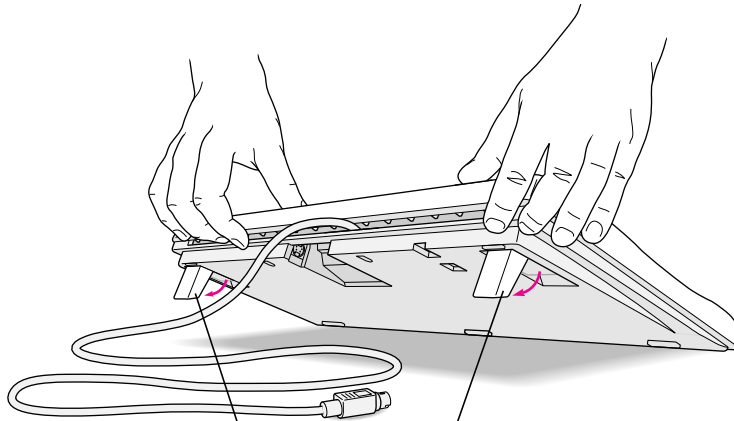


- 2 Plug the keyboard cable into the port marked with the  icon on the back of the computer.**



If you use a second monitor in addition to the one built into your computer, it may also have a port to which you can connect the keyboard or mouse. See the information that came with the monitor.

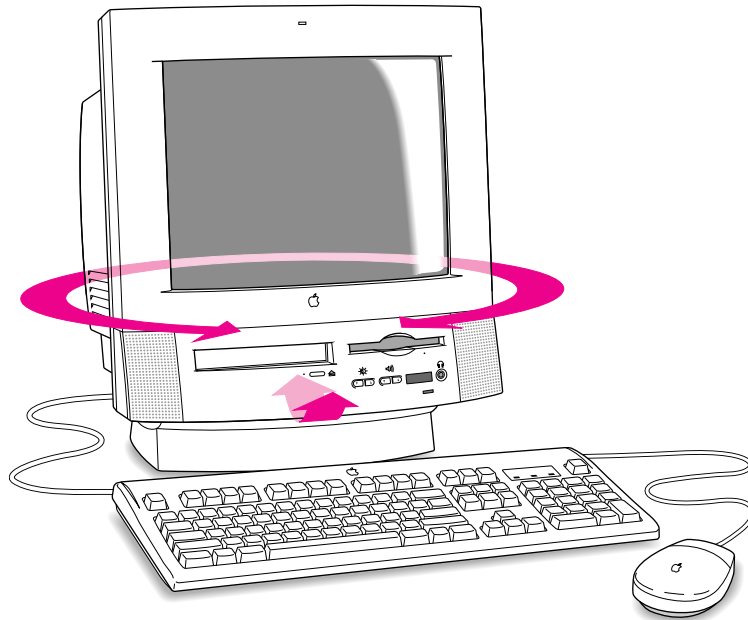
- 3 If you want to adjust the keyboard angle, lower the feet on the keyboard.**



To adjust the keyboard angle, lower the feet until they snap into position.

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.



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

Connecting other equipment

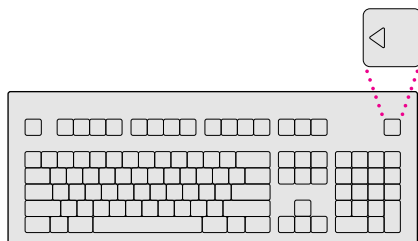
If you are new to the Macintosh, it's a good idea to get some experience using your computer before you connect other equipment, such as a printer or scanner. To learn basic Macintosh skills, continue with the instructions in this chapter.

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:

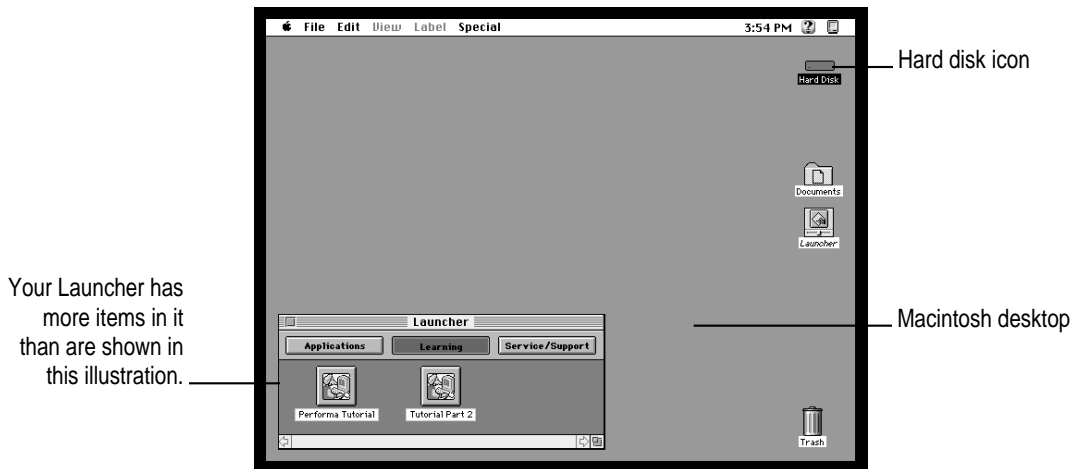
- 1** On the back of the computer, press the side of the power switch marked with the symbol I.
- 2** Press the Power key (marked with a triangle) on your keyboard.



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

3 Check to see what's on your screen.



- You will see a welcome screen that gives you a choice about what you want to do next.
 - If you're new to the Macintosh or would like some review of the basics, you'll want to go through the Performa Tutorial, a program that teaches how to use your computer. Press the Return key on your keyboard to go to the tutorial.
 - If you already know how to use your Macintosh and you don't want to use the tutorial, you can leave the welcome screen (by clicking Go To Desktop) and go to the Macintosh desktop.
- When you see the Macintosh desktop, as in the illustration below, your computer is ready to use. Skip now to the section "What's Next?" later in this chapter.



- If you see a blinking question mark, or nothing at all, see the next section, "Problems Starting Up?"

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  (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 and plugged in?
- 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  icon) 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, turn to “Solutions to Common Problems” in Chapter 6.

What's next?

Congratulations! You've finished setting up your computer. Now continue with one of the following steps:

- If you are new to the Macintosh, see the next section, “Learning the Basics.”
- If you are an experienced Macintosh user, 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 other equipment, such as a printer, to your computer, see Chapter 3, “Expanding Your Computer and Using Special Features.”
- If you want to install application software on your computer, see Chapter 4 of this book for information on setting up your programs and managing memory. You’ll need this information to properly set up any software programs specifically designed for computers with PowerPC microprocessors.

Before you begin working with your computer, be sure to read the important health and safety information in Appendix A.

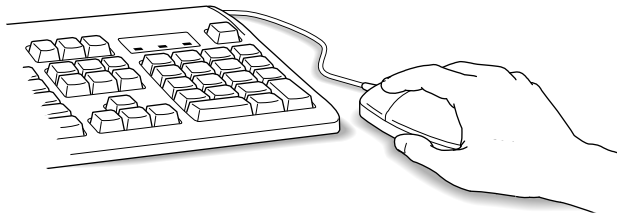
IMPORTANT If you need to turn off your computer at any point, please see “Turning the Computer Off” later in this chapter. It is very important to use the correct procedure for shutting down your Macintosh before turning it off.

Learning the basics

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

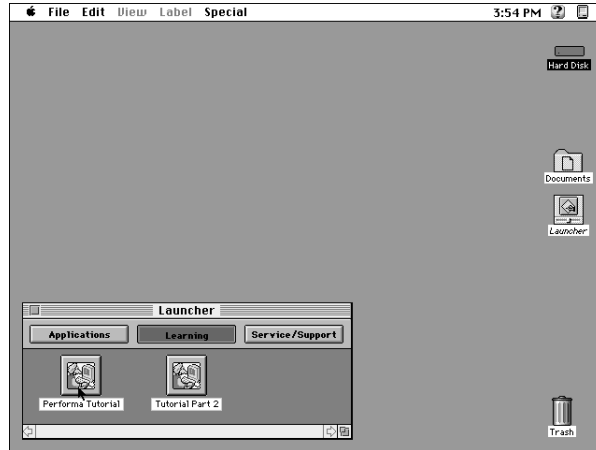
- 1 Slide your mouse along your mouse pad or desk.**

Hold the mouse as shown, with the cable pointing away from you. 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.

2 Move the mouse so that the arrow (↔) is over the picture labeled “Performa Tutorial.”



If you don't see the Performa Tutorial picture on your screen, put the arrow on the word “Learning” and click (press and release) the mouse button.

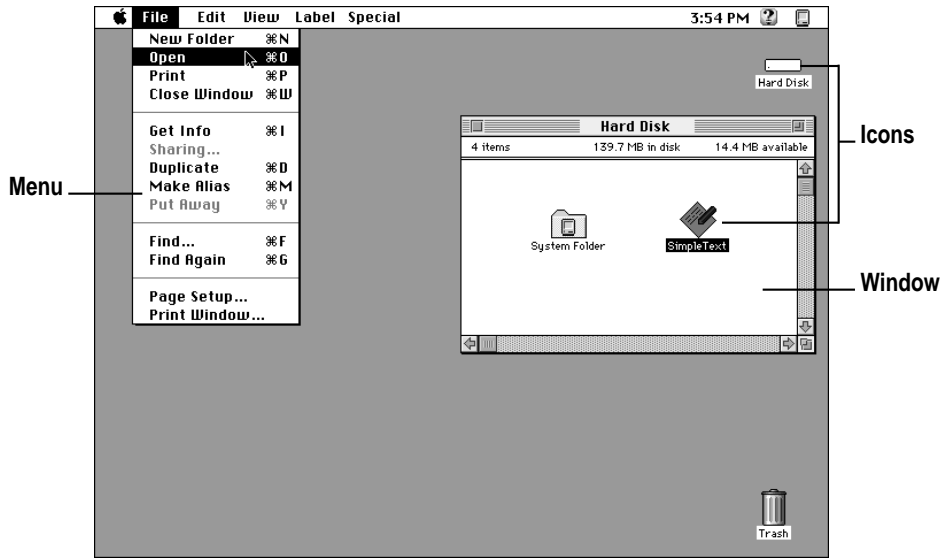
If you run out of room on your mouse pad or desk while moving the mouse, pick up the mouse and place it where there's more room. (The arrow on the screen moves only when the mouse is in contact with the mouse pad or desk.)

3 Without moving the mouse, click 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 both parts of the tutorial, return to this book.

Reviewing the basics

You can use the following illustrations to review the elements you use on your screen to do 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.

Guide menu

To find an answer to a question, look in the Guide (🔍) menu.



Application menu

You can have several application programs open at once. To see which program is active or to switch from one program to another, use this menu (called the Application menu).

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.



Hard Disk

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.

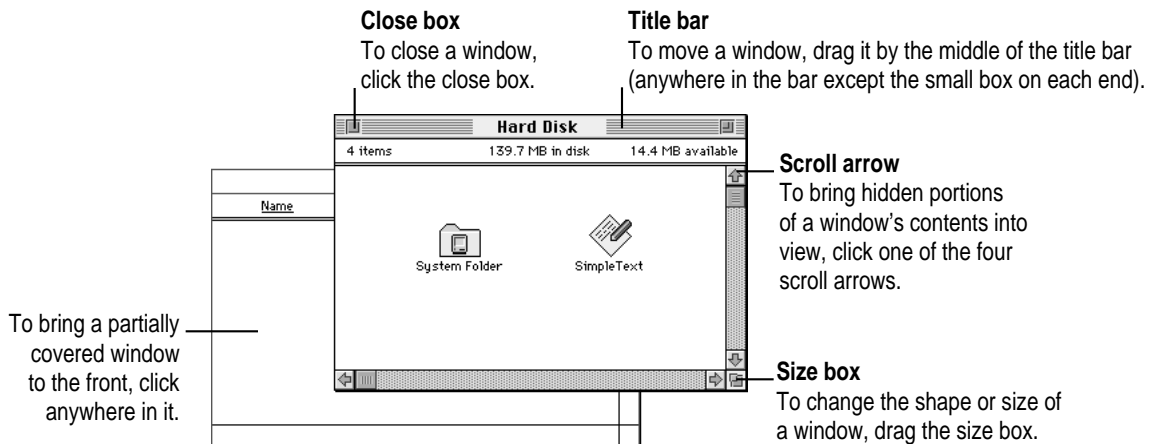


Trash

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.



Turning the computer off

To turn the computer off:

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

You will see a message asking whether you want to shut down or continue working.

- 2 **Click Shut Down.**

You can also turn off your computer by choosing Shut Down from the Apple () menu. Detailed instructions follow. (*Note:* The Shut Down command is also available in the Special menu.)

- 1 **Move the tip of the arrow to the Apple () menu at the top left of the screen.**
- 2 **With the tip of the arrow on the apple, press and hold down the mouse button.**
- 3 **While holding down the mouse button, move the arrow down the list of choices until the words “Shut Down” are highlighted, then release the mouse button.**



Turning the computer on

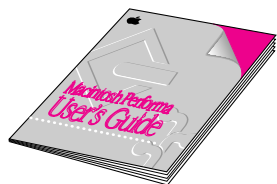
To turn on the computer after you've shut it down (using either the Power key on the keyboard or the Shut Down command):

- **Press the Power key (marked with a 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 | 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.




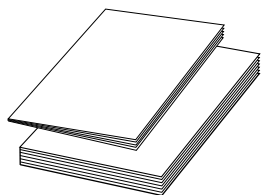
In this book

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



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

From the Read Me files in the Apple Extras folder

The Apple Extras folder (in your System Folder) on your hard disk contains SimpleText documents with important information about some of the application programs included with your computer.



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. (Note: If you have problems with an application program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to get a software publisher's phone number.)

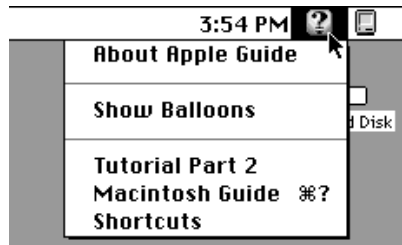
Use the instructions in this chapter to learn about the help available to you in the Guide menu.

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.

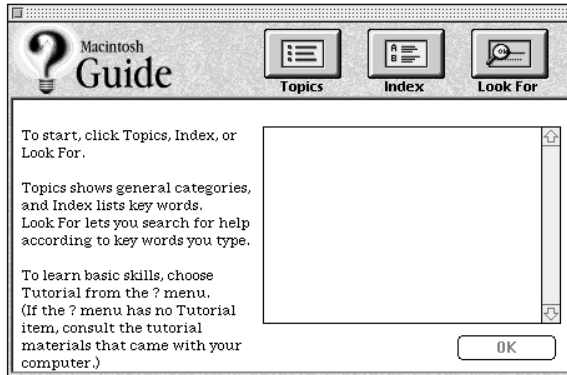


A checkmark in the menu indicates that the Finder is the active program.

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

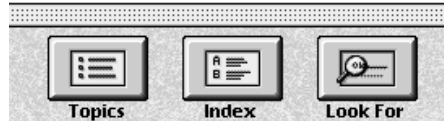


The Macintosh Guide window appears.



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.

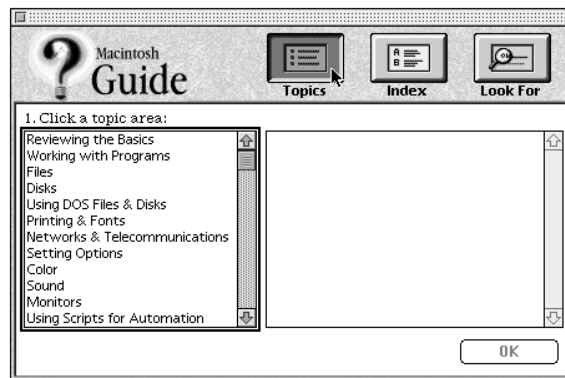
In the following sections you will practice using each method.

If you have problems while using Macintosh Guide, see “Tips for Using Macintosh Guide” later in this chapter.

Getting answers with the Topics button

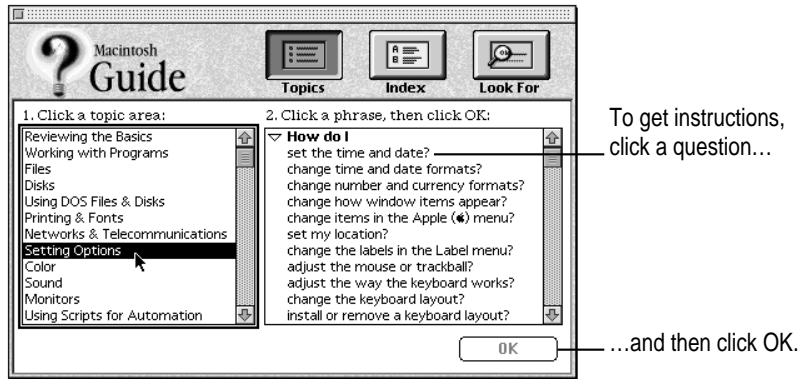
1 In the Macintosh Guide window, click the **Topics** button.

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.)



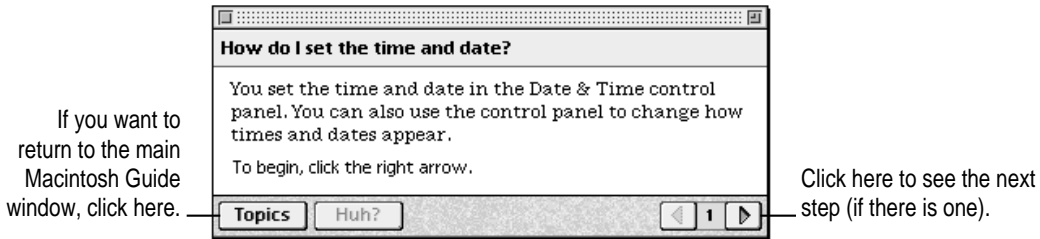
2 Click “Setting Options” in the list of topics.

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.

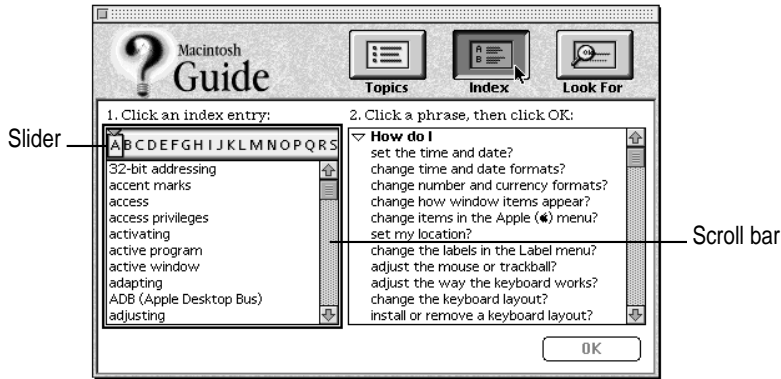
5 When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

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.

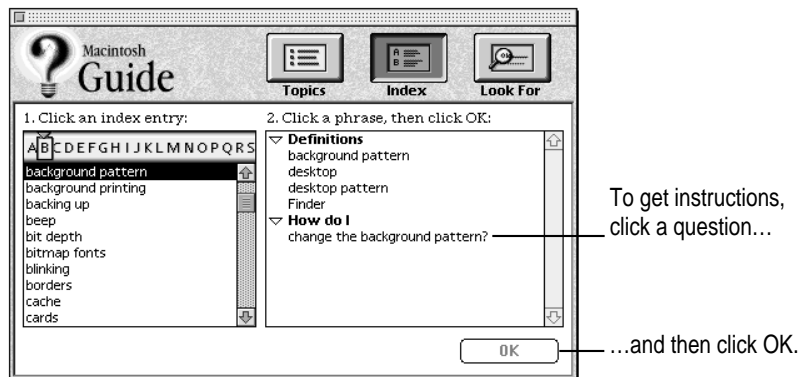


- 2 Scroll through the alphabetical list until the phrase “background pattern” is visible.

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.

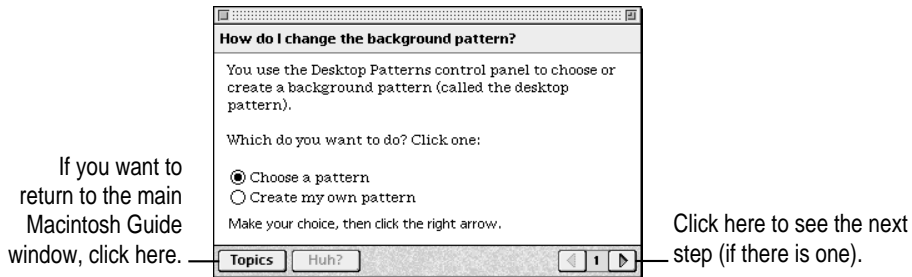
- 3 Click the phrase “background pattern” in the alphabetical list.

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.



- 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.

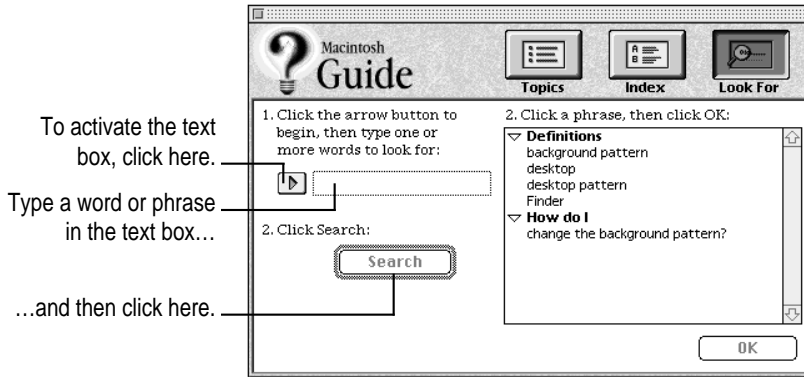
- 6 When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

Now continue with the next section.

Getting answers with the Look For button

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

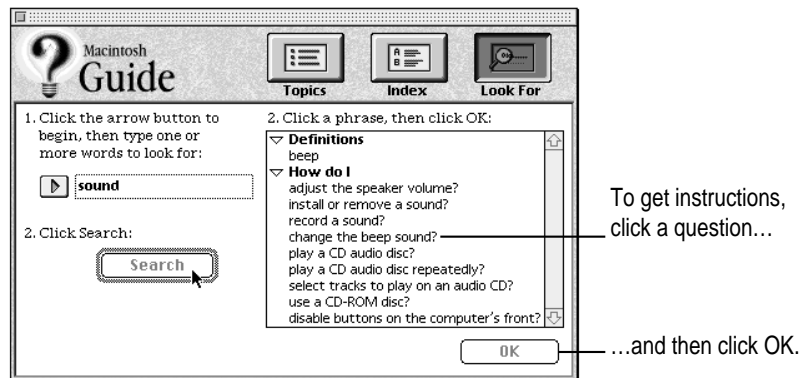
A small box appears on the left side of the window, where you can type text.



- 2 Click the arrow button to activate the text box.

- 3 Type "sound" in the text box and then click Search.

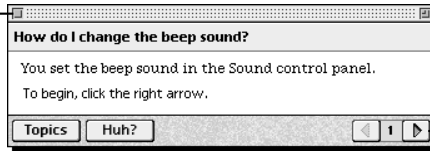
When you click Search, a list of questions related to the word or phrase you typed appears on the right side of the Macintosh Guide window.



- 4 Click the question “How do I change the beep sound?” 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.

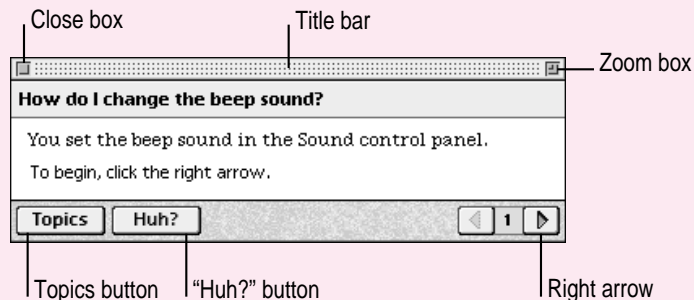
Tips for using Macintosh Guide

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 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  icon) 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.**

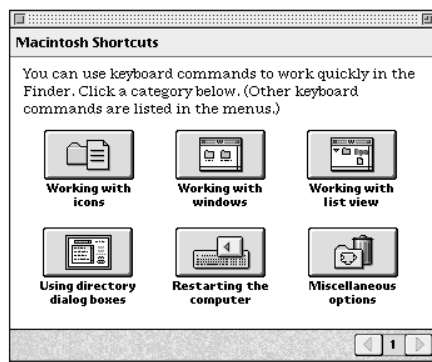
Learning useful shortcuts

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.

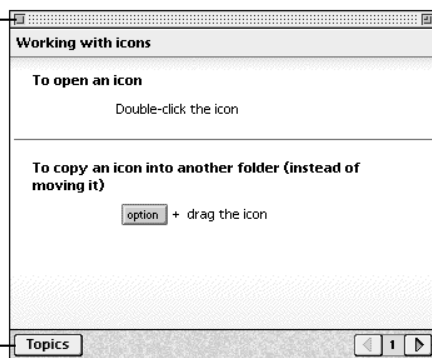


- 2 Click one of the category buttons.

Another window appears, describing shortcuts for that category.

If you want to close the window, click here.

Click here to return to the main Macintosh Shortcuts window for more categories.



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

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 and using special features of your computer.

3

Expanding Your Computer and Using Special Features

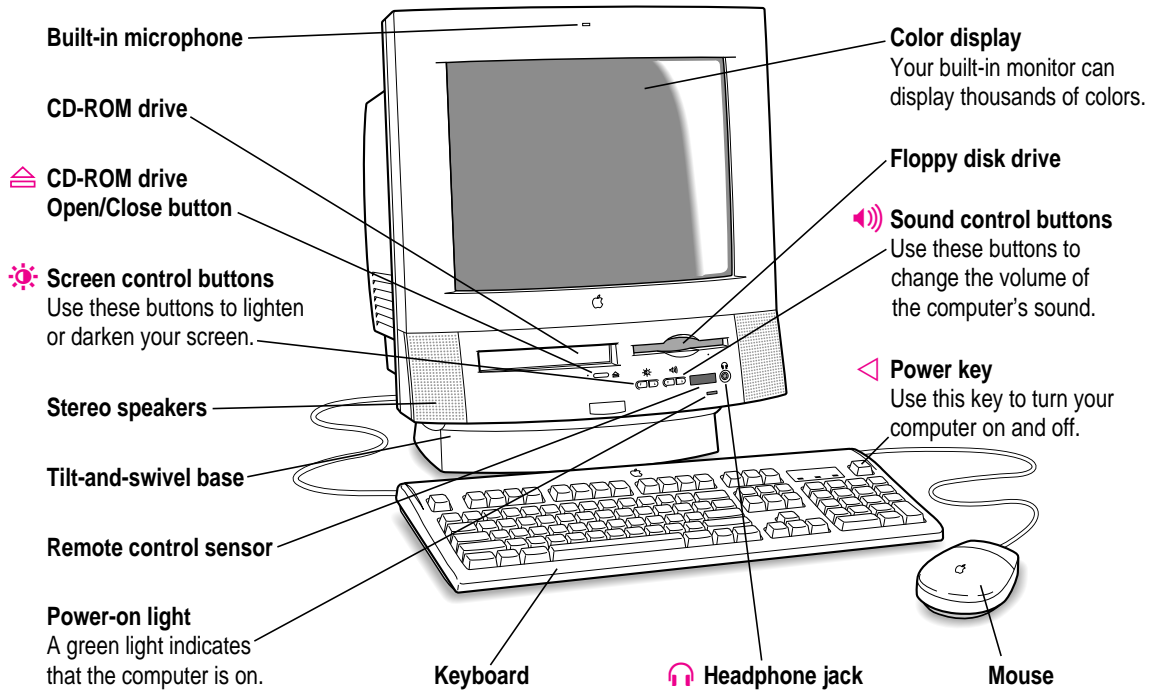


Read this chapter to learn how to connect additional equipment to your Macintosh. Also read this chapter to learn about some of the special features of your Macintosh:

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

Your computer at a glance

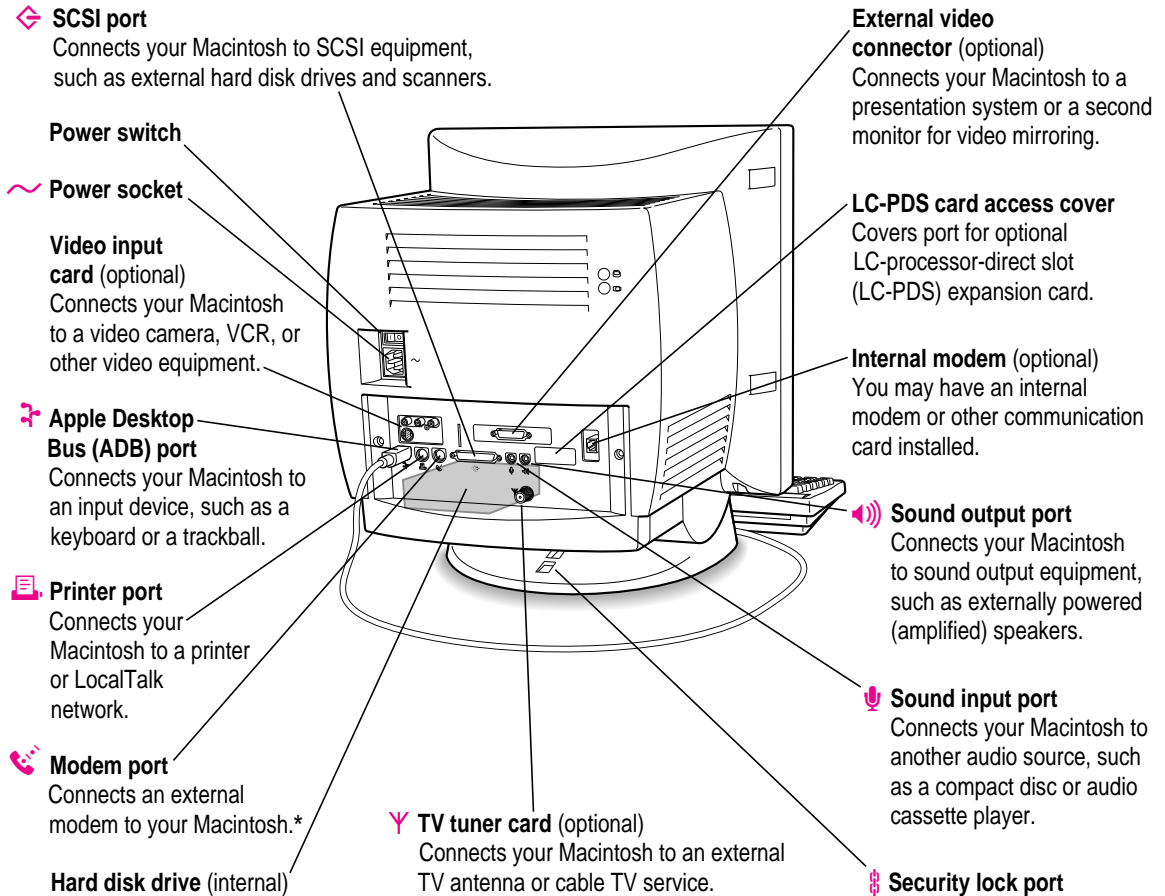
This illustration shows your Macintosh Performa system. You can expand your computer system by connecting additional hardware (such as a printer, modem, or scanner).



Connecting additional equipment


The illustration on this page shows where equipment should be connected to your computer.

For instructions on connecting equipment such as a printer or scanner, see the manual that came with the equipment.

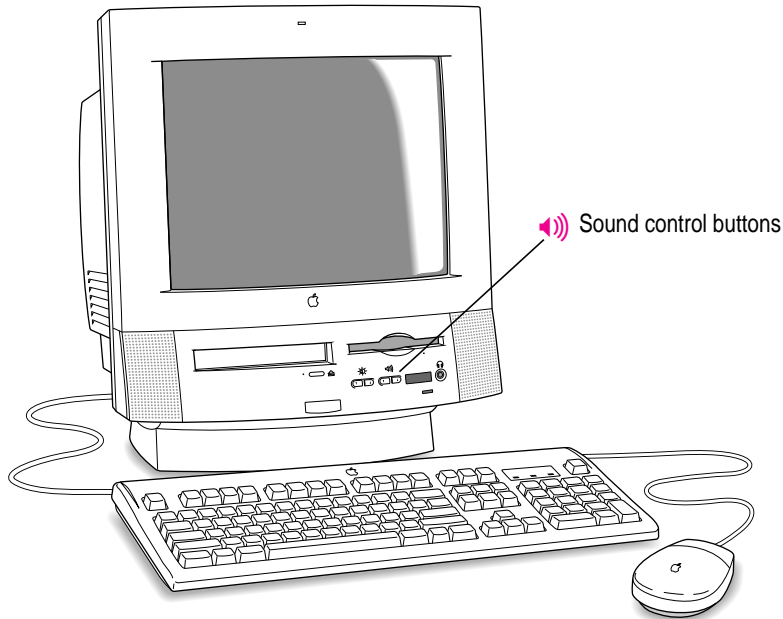



*If your computer has an internal modem, this port is covered. Don't remove the cover or connect anything to this port if you have an internal modem.

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 ) 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.

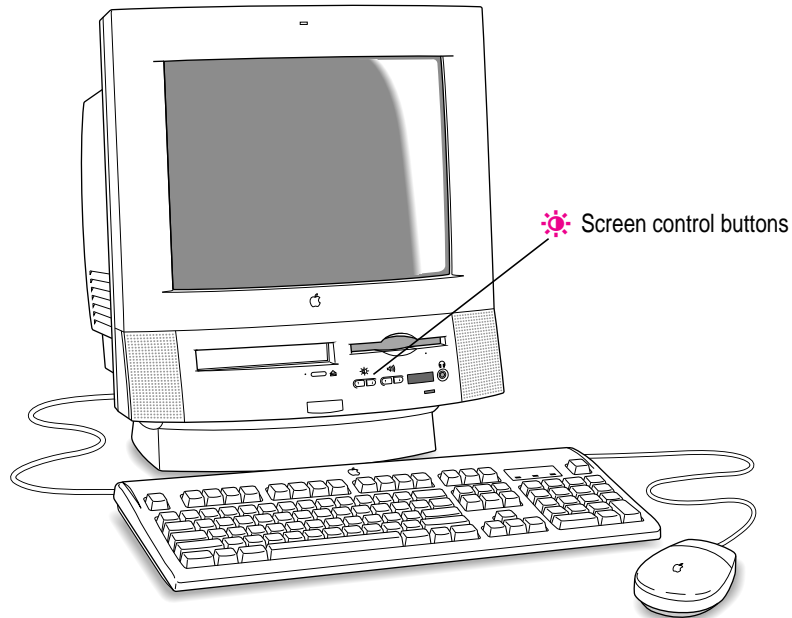


You can also adjust the sound by using the Sound control panel. For more information about adjusting sound, see the “Sound” topic of Macintosh Guide, available in the Guide () menu.

Using the screen control buttons on your computer

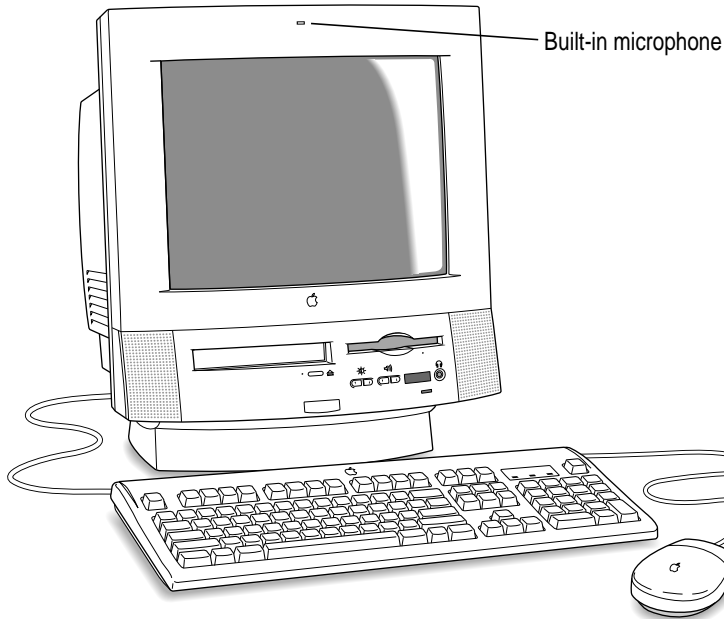
You can adjust the level of light and dark on the screen of your built-in monitor by using the screen control buttons on your computer (marked with the  icon).

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



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 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.

Expanding memory

You can install additional random-access memory (RAM) in your computer, which allows you to work with more programs and larger documents. Additional memory comes on memory chips (also called SIMMs). The *Technical Information* booklet that came with your computer describes how much additional memory can be installed in your Macintosh.

WARNING To avoid damage to your computer, Apple recommends that only an Apple-certified technician install additional RAM. 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 attempt to install additional RAM yourself, any damage you may cause to your equipment will not be 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.

Replacing internal storage devices

Your Macintosh comes with three internal storage devices—a floppy disk drive, a CD-ROM (compact disc read-only memory) drive, and a hard disk drive (several capacities are available). If you want to replace your internal drive, see your Apple-authorized dealer.

Adding an Ethernet card or a second monitor

If you purchase an Ethernet card or another monitor for your computer, see Appendix D, “If You Purchase Additional Equipment,” for more information.

Read this chapter to learn how to work with application programs and protect the information on your disks.

4

Using Programs and Backing Up Disks



Your computer came with several application programs already installed. You can open these programs by clicking their buttons in the Launcher.

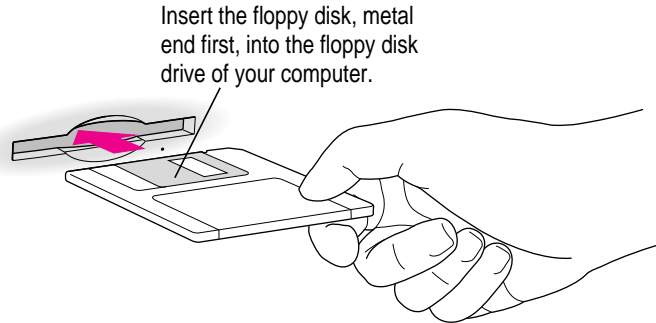
The Apple Extras folder on your hard disk (and on the *Macintosh Performa CD*) contains additional programs, including the following:

- *QuickDraw GX* gives your computer more powerful printing and font capabilities. You'll want to install QuickDraw GX only if you purchased another program that requires it. Your computer needs at least 8 megabytes of random-access memory (RAM) to use QuickDraw GX. You can install QuickDraw GX by opening the QuickDraw GX folder and double-clicking the Installer icon.
- *PowerTalk* provides an open collaboration environment with a universal mailbox and other electronic mail services. You'll want to install PowerTalk only if you use your computer on a local area network (connected to other computers) and if you purchased another program that requires it. Your computer needs at least 8 megabytes of RAM to use PowerTalk. You can install PowerTalk by opening the PowerTalk folder and double-clicking the Installer icon.
- *Apple Video Player* lets you watch video or TV on your computer. 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 may want to buy and install additional application programs. See the manuals you receive with your programs for instructions on installing and using them.

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



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

To use your programs most effectively, follow these guidelines:

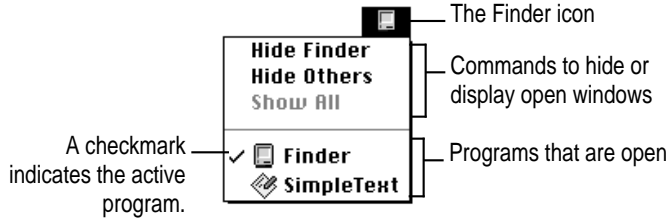
- Put only one copy of each program on your hard disk. Having more than one copy can cause errors.
- Whenever you copy a program disk to your hard disk, be careful not to copy a System Folder. Always check to see what you've copied, and drag any extra System Folders to the Trash.
- If you have problems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

To put a program into the Launcher, simply drag the program's icon (or its alias) into the Launcher window, or onto the Applications category button in the Launcher.

Working with several programs at a time

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

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



Finding out which programs are open

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

Switching programs

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

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

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

Hiding and showing windows on the desktop

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

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

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

Protecting the information on a disk

When you have a valuable document like a birth certificate, you probably make an extra copy of it for safekeeping. Similarly, you should make a copy of the documents you create on your computer. The extra copy is called a *backup*, and the process of making the copy is called *backing up*.

Once you have a backup, you're protected from accidentally losing the information on your hard disk. In the unlikely event that something happens to your hard disk, you can easily get the information back.

Your computer's hard disk comes with a lot of valuable information already stored on it, including system software and some application programs. The *Macintosh Performa CD* contains a backup copy of all the system software and application programs that came with your computer. See the *Macintosh Performa CD* booklet for instructions on using the CD to reinstall software.

Making backup copies of your documents

- You should *regularly* make copies of the documents you create.
- 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 of the same capacity or larger, or by copying it to a hard disk.
- You can use a commercial backup program 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 may be able to back up files by copying them to a shared disk on the network.

Restoring the information on your hard disk

If information on your hard disk becomes damaged or lost, you can restore it if you have a backup copy of the information. The *Macintosh Performa CD* contains copies of all the system software and application programs that came with your computer. See the *Macintosh Performa CD* booklet for instructions on using the *Macintosh Performa CD*.

Using application programs designed for the PowerPC microprocessor

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

Special memory requirements

Some native applications may be slightly larger than other programs and may take up more memory. If you find that you are running out of memory when you use one of these programs, 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 of Macintosh Guide, available in the Guide (🔍) menu.

You can also add more memory to your computer, as described in “Expanding Memory” in Chapter 3.

Using older Macintosh programs

If you experience problems using an older Macintosh program, it may be incompatible with your Macintosh. You may be able to use your older program if you change the Modern Memory Manager setting in your Memory control panel. For detailed instructions on using older programs with your Macintosh, see the “Working with Programs” topic of Macintosh Guide, available in the Guide (🔍) menu.

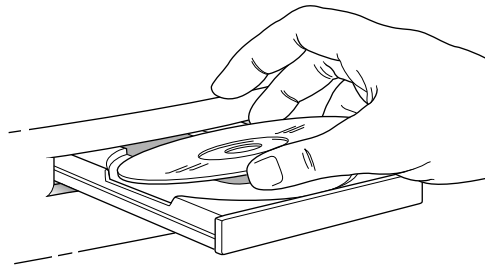
5

Using the CD-ROM Drive



This chapter provides information on the CD-ROM drive (also called a CD-ROM player). Refer to Appendix A, “Health, Safety, and Maintenance Tips,” for information on the proper handling of these discs.

Your internal CD-ROM (Compact Disc Read-Only Memory) drive for Macintosh computers works with CD-ROM discs, standard audio compact discs (CDs), and single-session or multisession Photo CDs. Your CD-ROM drive provides access to large amounts of information. However, you cannot save information on CD-ROM discs. ROM stands for *read-only memory*, meaning that the drive cannot “write” information onto CD-ROM discs.

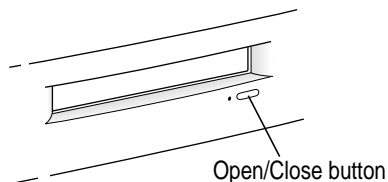


A wide selection of CD-ROM discs is available for entertainment, education, and business. A typical disc can hold over 650 megabytes (MB) of information—the equivalent of 270,000 pages of text, up to 8 hours of speech or music (depending on the sound quality), hundreds of high-resolution images, or any combination of text, sound, and graphics.

Inserting a CD-ROM disc

Follow these instructions to insert a CD-ROM disc into your CD-ROM drive. Then follow the instructions provided with your disc, as well as the instructions in this manual.

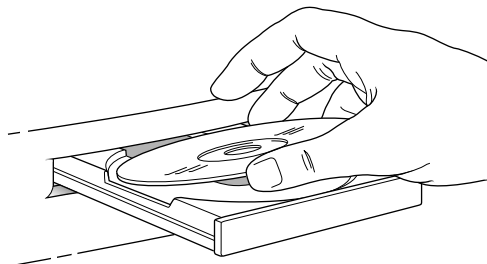
- 1 Start up your Macintosh computer, if it's not already on.**
- 2 Press the Open/Close button to open the tray of the CD-ROM drive.**



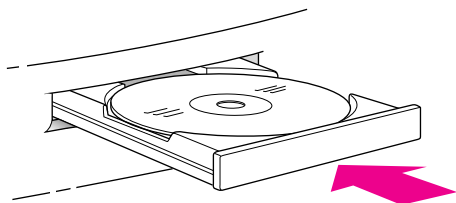
The tray opens.

- 3 Place a CD-ROM 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 (8cm) disc, make sure it is centered within the inside ring on the tray.



- 4 Push the tray in, or press the Open/Close button, to close the tray.**



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

Ejecting a CD-ROM disc

Follow these instructions to open the tray and eject a CD-ROM disc from your computer.

IMPORTANT You may not be able to eject a disc if it is being shared. To turn off file sharing, use the Sharing Setup control panel.

1 Open the tray.

There are several ways to open the tray of your CD-ROM drive.

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

- Select the disc icon on your screen and drag the icon to the Trash.
- Click the disc icon, then choose the Put Away command in the File menu.
- While the AppleCD Audio Player window is active, choose Eject CD from the File menu, or simultaneously press the ⌘ and E keys. (AppleCD Audio Player is a program that allows you to control your CD-ROM player and is available in the Apple [🍏] menu.)

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

- Press the Open/Close button for your CD-ROM drive.

2 Take the CD-ROM disc out of the tray.

Store your disc in a safe place, away from heat, dust, and moisture.

3 Push the tray in, or press the Open/Close button, to close the tray.

To avoid possible damage to the tray or the CD-ROM drive, keep the tray closed when you are not using it.

Types of compact discs you can use

Not all CD-ROM discs store information in the same way. A disc stores and displays information according to a given file format. Your computer's system software must understand the file format in order to use the contents of the disc.

Standard file formats

You can use CD-ROM discs with these standard file formats:

- HFS (Hierarchical File System)—the standard format used by the Macintosh.
- ISO 9660—the International Standards Organization's file format for CD-ROM discs. This format has been adopted by many CD manufacturers to make their discs compatible with a variety of computers. It is also the format that allows you to use Photo CDs in your CD-ROM drive.
- The High Sierra format, a predecessor of the ISO 9660 format.
- Photo CDs
- Audio CDs

The software that lets you use discs with these file formats is already installed on your computer.

Other CD-ROM formats

Your CD-ROM drive also works with file formats other than the ones listed above (for example, CD-ROM XA), provided that you install the appropriate software on your Macintosh. To find out about the availability of Macintosh software for additional file formats, contact the publisher of a particular disc.

Audio CDs

Your CD-ROM drive can play audio CDs and audio tracks on CD-ROM discs using your computer's built-in speaker. You can also attach headphones or speakers to your computer for stereo sound. For further information, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (🔍) menu.

Photo CDs

With your CD-ROM drive, you can use QuickTime to open digitized images stored on Photo CDs.

For further information on Photo CDs, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (🔍) menu.

Playing audio CDs

With your CD-ROM drive and your computer’s built-in speaker, you can play audio compact discs (CDs) or audio tracks on CD-ROM discs. You can also attach headphones or speakers to the computer to listen to audio CDs and audio tracks. See Chapter 3 for information on connecting sound equipment to your computer.

To start, stop, and otherwise control audio discs, use the AppleCD Audio Player program, available in the Apple (🍏) menu. Your audio CD software will only play tracks that contain audio information. You can listen to an audio CD or audio tracks in the background while you do other work on your computer. For more information about playing audio CDs, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (🔍) menu.

You can listen to an audio CD or CD-ROM disc with audio tracks in the background while you use your computer for other work.

Working with Photo CDs

You can use your CD-ROM drive to open Photo CD images stored on Photo CDs. A Photo CD image is a digitized version of a standard photograph that you can open and view on your computer screen.



You can do many things with the images on your Photo CDs:

- Open and view the images individually on your computer screen.
- View the images on your computer screen in a series, as you would view a slide presentation.
- Copy and save the images, print them, paste them into word-processing documents or other documents that accept graphics, and edit them with a graphics application program.

Photo CD images are an excellent source of graphics for desktop publishing, multimedia presentations, business documents, and professional-quality graphic design. For more information on working with Photo CD images, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (🔍) menu.

Obtaining Photo CDs

Your own photographs can be recorded as Photo CD images on a Photo CD. To obtain a Photo CD of your own photographs, take your standard 35-mm film to a photofinisher who has a Photo CD system. The photofinisher develops your film, digitizes the photographs, and gives you back a Photo CD containing your Photo CD images. A single Photo CD can hold approximately a hundred images.

If your Photo CD isn't full, you can take it back to the photofinisher and have more photos added until the disc is full. Such discs are called *multisession discs* because they contain images added after the first session. Your CD-ROM drive can read both single-session and multisession Photo CDs. (Other CD-ROM drives can read only single-session discs and are unable to read the additional images placed on a multisession disc.)

Before viewing the contents of a Photo CD

Normally, you open Photo CD images with the SimpleText program that came with your computer. If you wish, you can use a graphics or image-editing program instead of SimpleText to open images. For instructions, see the “Working with Programs” topic of Macintosh Guide, available in the Guide (🔍) menu. If you use SimpleText to view high-resolution images, you should increase the amount of memory that SimpleText uses. For more information on memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.

A note about resolution

When a Photo CD image is created, it's recorded at five different levels of resolution. The higher the resolution, the more information is recorded about the image, and the sharper the image appears when displayed or printed at larger sizes. However, high-resolution images take up a lot of memory—up to 18 MB of data for one photograph—which affects file size, as well as the amount of time it takes to display or print an image.

It's best to work with a resolution appropriate for your monitor or printer. Some monitors and printers cannot display or print very high-resolution images.

For most work, a resolution of 768 x 512 pixels or smaller is suitable. For detailed work or very high-quality reproductions, you may want to use a higher resolution.

Make sure to open high-resolution images with application programs designed to handle large image files. SimpleText cannot open very large files.

Sharing a CD-ROM disc over a network

You can share a CD-ROM disc using the file-sharing feature of System 7.5. If the disc has audio portions, you will be able to hear the audio yourself, but other people on the network will not. Likewise, you cannot hear the audio portions of discs you access over a network.

For further information about file sharing in System 7.5, see the “Networks and Telecommunications” topic of Macintosh Guide, available in the Guide (🔍) menu.

Consult this chapter if you experience
problems using your computer.

6

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.

If you have trouble

While you're using your computer, you may occasionally see a bomb icon or an error message, or the pointer (⏏) may “freeze” 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 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 (or Restart) button or turn off the Macintosh.

To help diagnose and correct the problem, follow the suggestions in this section. Gather as much information on the situation as you can. Then follow the instructions in the next section, "Start Over."

- Make a note of exactly what you were doing when the problem occurred. Write down the message on the screen. 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 & Fonts" topic 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. (*Note:* Use this key combination to force a program to quit only when you can't choose Quit from the File menu.)

To restart your Macintosh, try the following steps:

- 1 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.

- 2 If you can't choose Restart, hold down the ⌘ and Control keys while you press the Power key (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.)

- 3 If nothing happens, turn off your computer with the power switch, wait at least 10 seconds, and then turn it on again.**
- 4 If the power switch doesn't turn off the computer, unplug your Macintosh.**

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 regularly

A process known as “rebuilding the desktop” helps your Macintosh keep track of data on your disks. It’s a good idea to rebuild the desktop of your disks once a month or so, especially 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.)

To rebuild the desktop of your internal hard disk, follow these steps:

- 1 Hold down the Option and ⌘ keys while you start up your computer.**

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

- 2 Click OK.**

You can also use this procedure to rebuild the desktop of an external hard disk or a floppy disk. Simply turn on the external hard disk or insert the floppy disk into a floppy disk drive before you turn on the computer.

If icons do not appear correctly after you rebuild the desktop, restart your computer while pressing the Shift key to temporarily turn off system extensions. When you see the “Welcome to Macintosh—extensions off” message, release the Shift key and press the Option and ⌘ keys until you see a message asking if you want to rebuild the desktop.

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:

- You have a screen saver program that darkens the screen when the computer has not been used for a certain period.

Press a key or move the mouse to turn off the screen saver.

- The screen control buttons (☼) are not adjusted properly.

Press the top screen control button to lighten the screen.

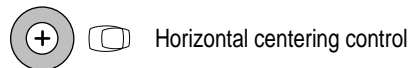
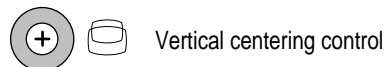
- The Macintosh is not getting power.

Check that the computer's power cord is firmly connected to the computer and plugged into a grounded electrical outlet, and that the outlet has power.

If you are displaying video from your computer on a television screen, it is normal for your computer monitor to be dark.

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.



The computer's clock keeps time inaccurately.

Your computer has a clock that runs continuously. When the computer is turned off, a battery keeps the clock running. If your clock begins to keep time inaccurately, have your Apple-authorized service provider replace the battery.

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 external SCSI equipment, such as hard disks, CD-ROM drives, and scanners. (SCSI stands for Small Computer System Interface.)

Turn off all external 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.

If you have a printer connected to your computer's SCSI port, make sure your printer is connected properly. Most printers connect to the printer port, not the SCSI port. Check the manuals that came with your printer for information on how to connect it properly.

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

Insert the *Macintosh Performa CD*. Then follow the instructions in "Repairing a Damaged Disk" to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions in the *Macintosh Performa CD* booklet to reinstall system software on your startup hard disk.

A disk icon with an X appears in the middle of the screen and a floppy disk is ejected from the disk drive.



This icon indicates that the floppy disk you tried to start up from is not a startup disk. When you turn on your computer, it looks first in the floppy disk drive for a disk containing system software. If the disk in the drive does not contain system software, the computer ejects the disk and looks on its internal hard disk for system software.

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 *Macintosh Performa CD*. (For instructions on how to start up your computer from the CD-ROM disc, see the *Macintosh Performa CD* booklet, which came with your computer.) 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.

The hard disk icon does not appear on the desktop.

If you don't see a hard disk icon on the desktop, try the following:

- Use the Drive Setup program to make the disk available. Drive Setup is located in the Apple Extras folder. 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 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. 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 with the *Macintosh Performa CD*. (For instructions on how to start up your computer from the CD-ROM disc, see the *Macintosh Performa CD* booklet.) Then follow the rest of the instructions on repairing a disk 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.

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 disks. For instructions, see “Rebuild Your Desktop Regularly” in the section “If You Have Trouble” earlier in this chapter.

If icons do not appear correctly after you rebuild the desktop, restart your computer while pressing the Shift key to temporarily turn off system extensions. When you see the “Welcome to Macintosh—extensions off” message, release the Shift key and press the Option and ⌘ keys until you see a message asking if you want to rebuild the desktop.

Your Macintosh can't read a floppy disk.

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

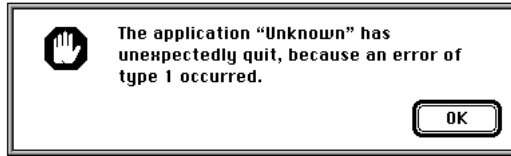
- If the disk has never been used, you may simply need to initialize it. For instructions, see the “Disks” topic of Macintosh Guide, available in the Guide (🔍) menu.
- The disk may be damaged. See “Repairing a Damaged Disk” later in this chapter for information on testing and repairing disks.
- If the disk is a high-density disk previously used on another computer, the disk may have been formatted incorrectly as an 800K disk rather than as a 1440K (high-density) disk. If so, use the other computer to copy the disk's contents onto a properly formatted disk.
- The disk may have been formatted for use on another kind of computer. You may be able to use a program that lets you work with such disks on your Macintosh.

If you are trying unsuccessfully to use a DOS floppy disk, 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. Double-sided disks formatted in 1440K format and high-density disks formatted in 720K format may not 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 the disk onto a properly formatted disk.

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.



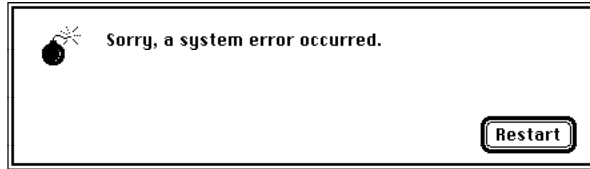
One of the following is probably the cause:

- 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.
Use the Memory control panel to turn on virtual memory. For more information on virtual memory, see the “Memory” topic 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 of Macintosh Guide, available in the Guide (🔗) menu.
- The program is incompatible with your Macintosh.
Contact the program's publisher to see if there is an upgrade available for the program.

You see a message that you need to have an FPU installed.

Your computer has a floating-point unit (FPU) installed. If you see this message, the program is probably incompatible with your Macintosh. Contact the program's publisher to see if there is an upgrade available for the program.

A dialog box with a bomb appears.



There is a software problem.

- Write down what you were doing when the message appeared, and write down the text of the message.
- Restart your Macintosh. (See “Start Over” in the section “If You Have Trouble” earlier in this chapter for instructions.) Most software problems are temporary, and restarting usually corrects the problem.
- If the problem recurs, 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, use the Extensions Manager control panel to turn on extensions and control panels one at a time. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels.

For information on using the Extensions Manager control panel to manage system extensions, see the “Setting Options” topic of Macintosh Guide, available in the Guide (🔍) menu.

- If the problem recurs, you may need to reinstall system software. See the *Macintosh Performa CD* booklet for instructions.

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

One of the following situations is probably the cause.

- There is a software problem. Try the following:
 - 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 “If You Have Trouble” earlier in this chapter for instructions.
- Follow the suggestions in the previous section, “A Dialog Box With a Bomb Appears.”
- The mouse is not connected properly.
 - Turn the computer off using the power switch, check that the mouse and keyboard cables are connected properly, and then restart the computer.

IMPORTANT Do not connect or disconnect the mouse while the computer is turned on. You may damage your 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 the computer off before connecting it.) If the new device works, there is probably something wrong with the mouse 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.

Typing on the keyboard produces nothing on the screen.

One of the following is probably the cause:

- Some system software features are turned on that affect the way the keyboard works.

Use the Easy Access control panel to turn off Sticky Keys, Slow Keys, and Mouse Keys.

- There is a software problem.

Restart your Macintosh. For instructions, see “Start Over” in the section “If You Have 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 the *Macintosh Performa CD* booklet for instructions.

- 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.

Turn off the computer using the power switch, then check that the keyboard cable is connected properly at both ends.

If you have a keyboard with an ADB port (marked with the ⌘ icon) on each end, turn off the Macintosh using the power switch and plug the keyboard cable into the other ADB port on the keyboard. (You may have to unplug the mouse to do this.) Then restart the computer.

- 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.

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 by holding down the Option and ⌘ keys while starting up your computer. Keep holding down the keys until you see a message asking whether you want to rebuild the desktop. Click OK.
- If the document is from a DOS computer, 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 "Using DOS Files & Disks" topic of Macintosh Guide, available in the Guide (🔍) menu.

You experience problems using a document from a DOS computer.

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 specify which Macintosh program will open the document.

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, or call the program's publisher.
- Try opening the document in another program.

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

For more information about working with DOS documents on your Macintosh, see the "Using DOS Files & Disks" topic 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.

Macintosh programs designed specifically for the PowerPC microprocessor (also called “native” applications) use special files called *shared libraries*. Any necessary shared libraries should be installed automatically when you install these special 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 Macintosh computers that have the PowerPC microprocessor.

- Contact the program's publisher to see if an upgrade is available.
- Open the Memory control panel and turn off Modern Memory Manager. For more detailed instructions, see the “Working with Programs” topic of Macintosh Guide, available in the Guide (🔍) menu.

Solutions to CD-ROM problems

Problems using the CD-ROM drive

The CD-ROM disc 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 (your CD-ROM drive has SCSI ID 3). Refer to the documentation that came with your SCSI devices if you need to reset SCSI ID numbers.

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. When your computer is off, press the Open/Close button of your CD-ROM drive to open the tray, then remove the CD-ROM disc. Close the tray. Then start up your computer again.

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 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 for 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. 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.

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.

- 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 CD-ROM 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 also 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 file names. 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. Continue to hold down the Option key until the disc is in the drive. The program you are using should now be able to locate file names on that CD-ROM disc.

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 connector to make sure they are firmly connected. Make sure the column control on your headphones or speakers is not turned down too low.
- If you do not have headphones or speakers connected to the computer, make sure that nothing else is plugged into the sound output port on your computer.
- Some programs change the sound options to suit their needs. You may need to reset the sound options in the Sound control panel. Refer to the “Sound” topic of Macintosh Guide available in the Guide (🔍) menu.
- 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.

- Check your computer's sound input port to see if a microphone or other device is connected.
- You may need to reset the sound options in the Sound control panel. Refer to the “Sound” topic of Macintosh Guide, available in the Guide (🔍) menu.

Problems using Photo CDs

You can't open Photo CDs that are in your CD-ROM drive.

- Reinstall the CD-ROM and QuickTime software (available through the “MultiMedia Software” option in Custom Install).

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 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. (See the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu for more information on managing memory.)

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 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 after you add special software (a control panel, system extension, or custom utility), it may be because the software does not work well with Macintosh computers built with the PowerPC microprocessor.

- To find out if the new software is the problem, hold down the Shift key while you restart the computer. This temporarily turns off control panels and extensions. If the computer performs better without this software, one of these items 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 “Setting Options” topic 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.
- Use the Memory control panel to turn off virtual memory. For more information on virtual memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.
- If you use several application programs at the same time, your computer's performance will increase if you install more RAM (random-access memory). See “Expanding Memory” in Chapter 3.

If you still do not notice an improvement, you may want to reinstall system software on your startup hard disk. See the *Macintosh Performa CD* booklet for instructions.

Repairing a damaged disk

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

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 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. (See the following section, “Starting Up From a CD-ROM Disc.”)

If, after you start up from a different disk, your 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. The computer itself has the ID number 7 and the internal CD-ROM drive has the ID number 3. The ID numbers 0, 1, 2, 4, 5, and 6 are available for additional SCSI devices.

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 suggestions solves the problem, test the disk by following the instructions given later in this section.

Starting up from a CD-ROM disc

To test, repair, or initialize a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. You can start up your computer using the *Macintosh Performa CD* that came with your computer.

The procedure for starting up from the CD varies depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your Macintosh.

The steps that follow tell how to start up from a CD-ROM disc, depending on what you see on your screen.

If you see a blinking question mark on your screen

The blinking question mark means that your Macintosh is unable to find usable system software on your hard disk.



- 1 Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
- 2 Place the *Macintosh Performa CD* disc in the tray with the disc label facing up.**
Make sure the disc is lying flat in the tray.
- 3 Push the tray in, or press the Open/Close button, to close the tray.**

Your Macintosh recognizes the CD as a startup disk, and in a few seconds the Macintosh desktop with a Launcher appears.

If you see the Macintosh desktop

- 1 Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
- 2 Place the *Macintosh Performa CD* disc in the tray with the disc label facing up.**
Make sure the disc is lying flat in the tray.
- 3 Push the tray in, or press the Open/Close button, to close the tray.**

If the Macintosh Performa CD icon does not appear on your screen, follow the steps in the next section, “Problems Starting Up From the CD?”

If the Macintosh Performa CD icon appears on the right side of your screen, continue with these steps.

- 4 Choose Control Panels from the Apple () menu.**
- 5 Double-click the Startup Disk icon.**
The Startup Disk control panel window appears.
- 6 Click the CD icon to select it as your startup disk.**
- 7 Choose Restart from the Special menu.**

Your computer recognizes the CD as its startup disk, and in a few seconds the Macintosh desktop with a Launcher appears.

Problems starting up from the CD?

If you've followed the steps in the previous sections and the Macintosh Performa CD icon does not appear on your screen, follow these steps:

- 1 Insert the CD into the tray.**
- 2 Choose Restart from the Special menu.**
- 3 Immediately press and hold down the Command (⌘), Shift, Option, and Delete keys.**

The computer bypasses the internal hard disk, and the Macintosh Performa CD icon appears on the desktop.

If the Macintosh Performa CD icon still does not appear on the desktop, continue with these steps:

- 4 Choose Control Panels from the Apple () menu.**
- 5 Double-click the Startup Disk icon.**

The Startup Disk control panel appears.

- 6 Click the CD icon to select it as your startup disk.**
- 7 Close the Startup Disk control panel.**
- 8 Choose Restart from the Special menu (or the Apple menu).**

The computer starts up using the CD, and in a few moments the Macintosh desktop with a Launcher appears.

Checking for damage on your hard disk

You can test a hard disk for damage with the Drive Setup program, which is on the *Macintosh Performa CD* that came with your computer.

- 1 **Start up your computer from the *Macintosh Performa CD*.**

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

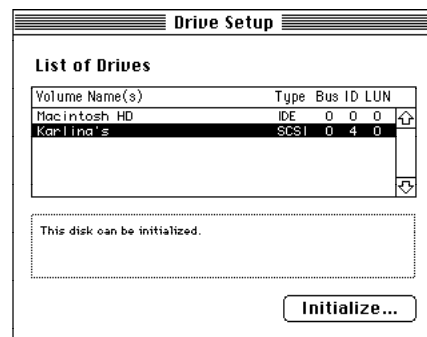
- 2 **Open the Drive Setup program.**

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



Drive Setup

- 3 **In the list of drives, click the disk you want to test.**



- 4 **Choose Test Disk from the Functions menu.**
- 5 **When a message tells you that the testing is complete, click Quit.**

If the test reveals a problem, you may be able to correct it by using Disk First Aid or another disk repair program (see the instructions in the next section), 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. If you had a hard disk from another manufacturer installed after you bought your computer, use the software that came with the disk or contact the disk vendor to get the latest version of software.

How to repair a hard disk or floppy disk

You can repair some types of disk damage by using the Disk First Aid program, which is on the *Macintosh Performa CD* that came with your computer.

- 1 Start up your computer from the *Macintosh Performa CD*.

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

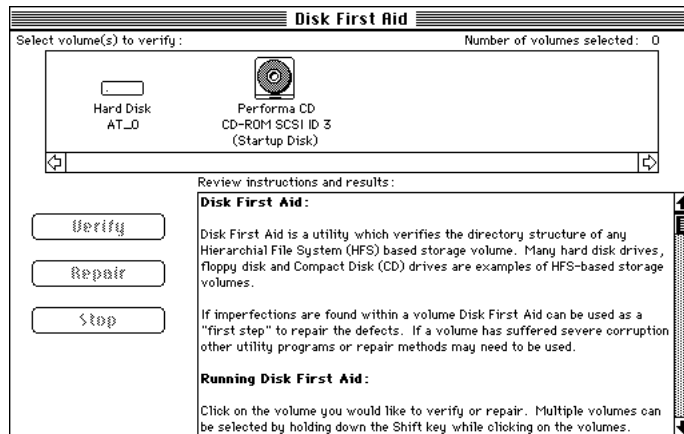
- 2 Open the Disk First Aid icon.



Disk First Aid

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

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.

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

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

If Disk First Aid cannot correct the problem

- Try repairing the disk 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 an Apple-authorized service provider for help.
- If you can't repair the disk, you'll need to reinitialize it, which erases all the information on it. Before you reinitialize, be sure you recover all the information you can and back it up. Then erase (reinitialize) the disk. For instructions on reinitializing a floppy disk, see the "Disks" topic of Macintosh Guide, available in the Guide (🔍) menu. For instructions on reinitializing a hard disk, see the next section, "Initializing a Hard 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). Bring the *Macintosh Performa CD* (which you received with your computer) with you to the service provider.

Initializing a hard disk

The hard disk inside your computer was initialized (formatted for use) at the factory, so you shouldn't need to initialize it. You need to initialize a hard disk only if

- you purchase an uninitialized hard disk from another manufacturer
- 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.

You initialize your internal hard disk using a program called Drive Setup, which is on the *Macintosh Performa CD* that came with your computer.

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 “Repairing a Damaged Disk” earlier in this chapter.

1 Start up your computer from the *Macintosh Performa CD*.

See “Starting Up From a CD-ROM Disc” in the section “Repairing a Damaged Disk,” earlier in this chapter.

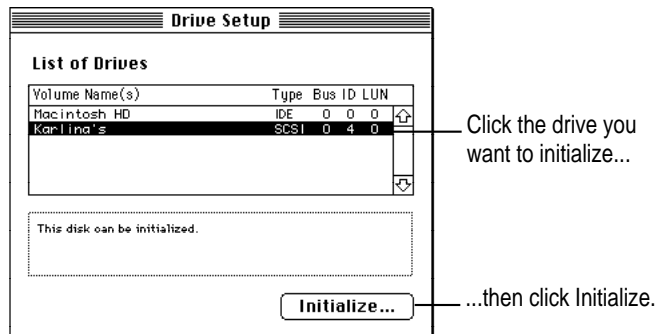
2 Open the Drive Setup program.

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



Drive Setup

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



4 Click Initialize to initialize the hard disk.

5 When you see a message reporting that initialization was successful, click Quit.

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 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.

When should you install or reinstall 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, you'll need to install system software. You can install or reinstall system software by following the instructions in the *Macintosh Performa CD* booklet that came with your computer.

If your hard disk already has system software installed on it but there is a problem with the disk or the software, you may see this icon in the middle of the screen:



If this icon appears, first try testing your startup hard disk and repairing any damage. To do this, follow the instructions in “Repairing a Damaged Disk” earlier in this chapter. If repairing the disk doesn't help, you may need to reinstall system software. You can install or reinstall system software by following the instructions in the *Macintosh Performa CD* booklet that came with your computer.

If you've used Apple Backup to back up the contents of your hard disk, you can use Apple Restore to reinstall system software. See “Restoring the Information on Your Hard Disk” in the section “Protecting the Information on a Disk” in Chapter 4.

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



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.

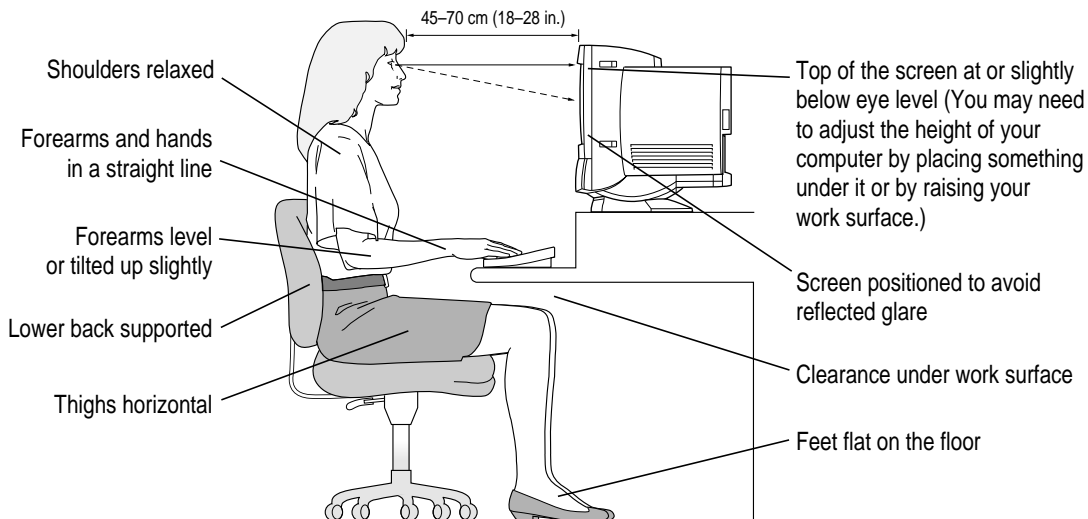
The back of the chair should support your lower back (lumbar region).

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:

- Turn down the screen brightness control if you leave the computer turned on for extended periods. If the brightness is not turned down, the image on the screen could “burn in” and damage the screen.

You can also use a “screen saver” program, which dims or varies the image on the screen when the computer has been idle for a specified period of time. These programs are available from independent suppliers and user groups.

- If there is interference on the monitor’s screen or on a television or radio near your computer, move the affected equipment farther away.

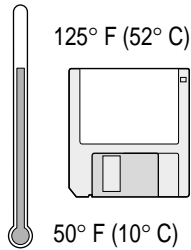
Handling the keyboard

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

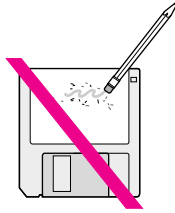
- If you spill liquid that is thin and clear, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If, after you take these steps, the keyboard doesn’t work, take it to your Apple-authorized service provider for repair.
- If you spill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

Handling floppy disks

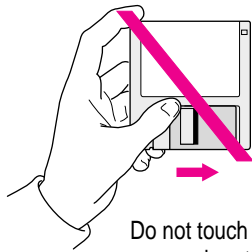
Store disks at temperatures between 50° F and 125° F.



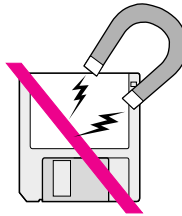
Do not use a pencil or an eraser on a disk or disk label.



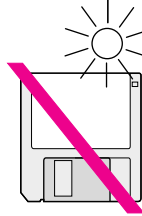
Keep disks dry.



Do not touch the exposed part of the disk behind the metal shutter.



Keep disks away from magnets.



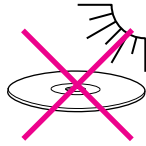
Avoid exposing disks to extremely hot temperatures.

Handling CD-ROM discs

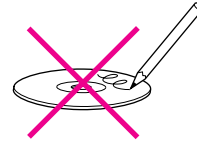
Keep these important safety instructions in mind as you use CD-ROM discs:

- 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.

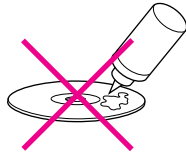
- To avoid damage to your discs, keep these points in mind:



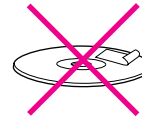
Do not expose discs to direct sunlight.



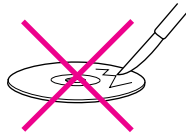
Do not write on discs.



Do not spill liquids on discs.



Do not put tape on discs.



Do not scratch discs.



Do not get dust on discs.

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 out your CD-ROM disc before shutting down.

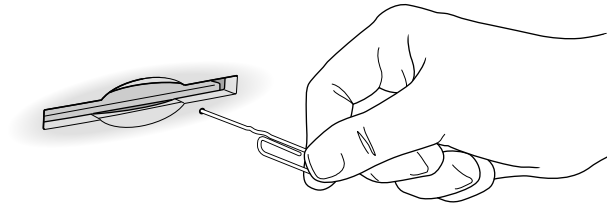
Ejecting a disk

For instructions on ejecting any disk (a floppy disk, a CD-ROM disc, or a removable media disk), see the “Disks” topic 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.
- Shut down 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.

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.

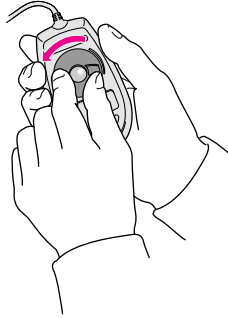
Cleaning the mouse

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.

- 1 **Turn off your computer.**

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

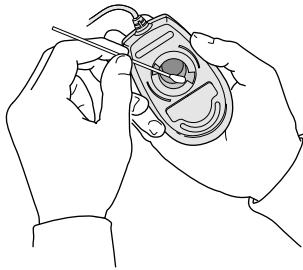


If you have an older mouse, you may need to press the plastic ring (rather than turn it) to disengage it.

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.**

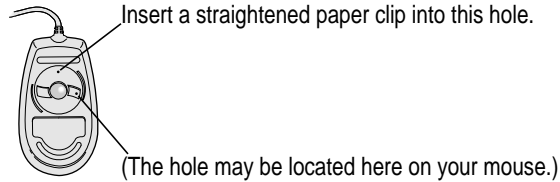
Your mouse should roll smoothly across your mouse pad or desk. If it doesn't, repeat these instructions carefully.

Locking and unlocking the mouse

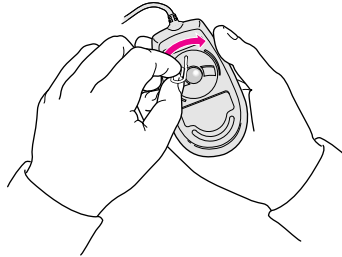
Some mouse devices can be locked so that the ball can't be removed. A locking mouse has a small hole on the plastic ring.

To lock the mouse, follow these steps:

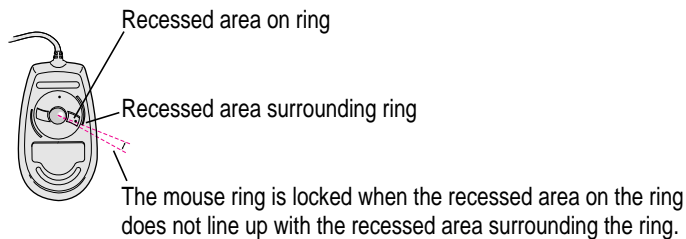
- 1 **Insert a straightened paper clip into the hole on the plastic ring.**



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

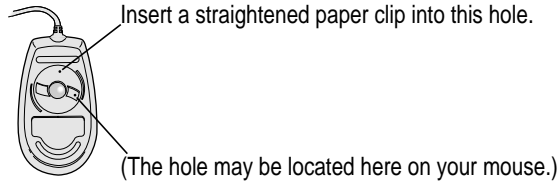


Turn the ring a very short distance, until it stops. When the recessed area on the ring is *not* lined up with the recessed area surrounding the ring, the mouse is locked.

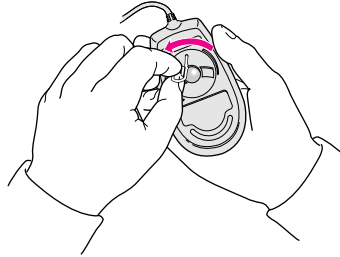


To unlock the mouse, follow these steps:

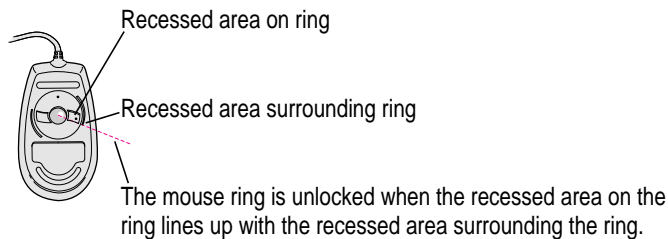
- 1** Insert a straightened paper clip into the hole on the plastic ring.



- 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 in your computer.

Appendix B Installing an Expansion Card

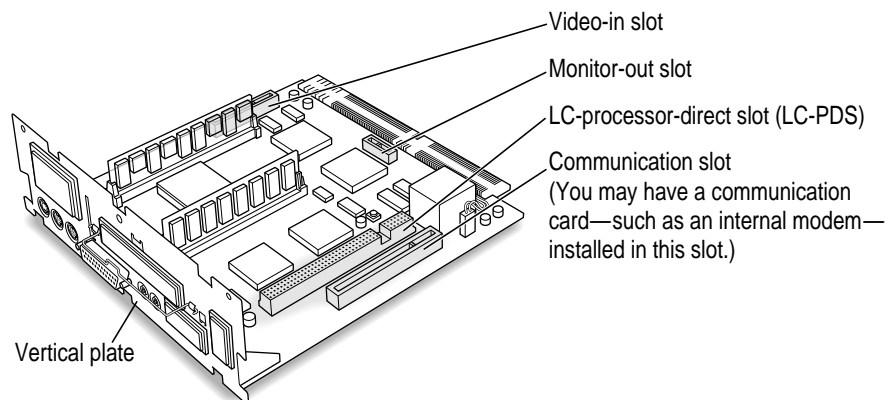


Expansion cards are printed circuit boards that can be installed in your computer to give it special features, such as enhanced video capabilities, networking and communications, and additional processing power. Your Macintosh has slots available for three different kinds of expansion cards:

- an LC-processor-direct slot (LC-PDS) for most expansion cards
- a communication slot for an internal modem or Ethernet card
- a video-in slot for a card that brings signals into the computer from a videocassette recorder (VCR), laserdisc player, video camera, or similar device

You can also install the following additional options in your Macintosh:

- an 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



This appendix contains instructions for installing an LC-PDS card or a communication card. To install a video input card, an external video connector kit, or a TV tuner card, follow the instructions that came with the kit or card.

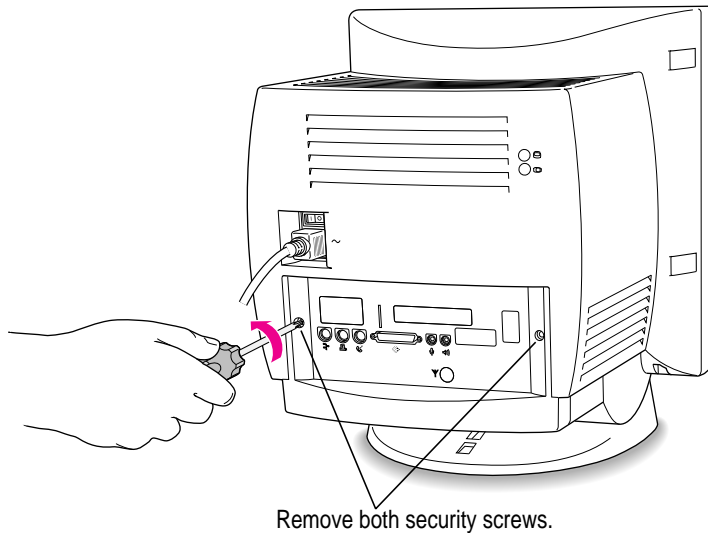
WARNING To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an Apple-certified technician must install the card (usually because the installation requires special training 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.

Installing any expansion card involves three steps:

- opening the computer
- inserting the card into a specific slot
- closing the computer

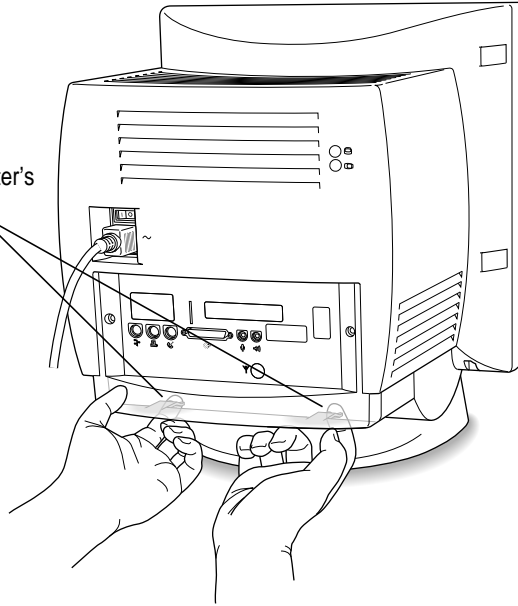
Opening the computer

- 1 Shut down your computer by pressing the Power key on the keyboard.**
You can also choose Shut Down from the Special menu or the Apple () menu.
- 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 \circ symbol.
- 3 Unplug the cable that connects your keyboard to the computer.**
- 4 Remove the security screws on either side of the computer's back panel with a screwdriver.**



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

Locate the two latches on the underside of the computer's case with your fingertips.

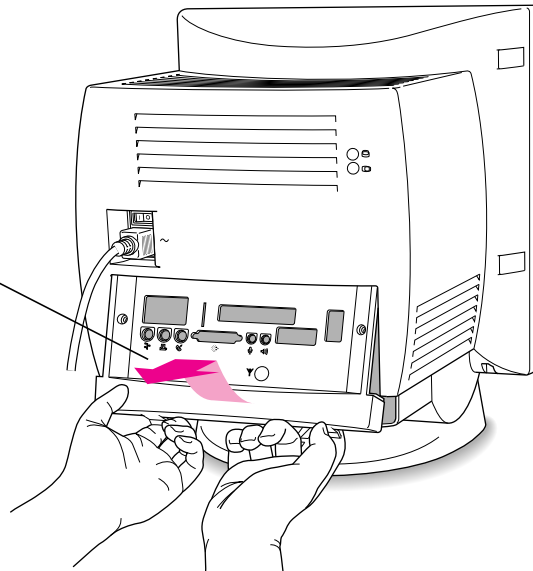


- 6** Pull gently on the latches.

- 7** Swing the panel up and slip it out.

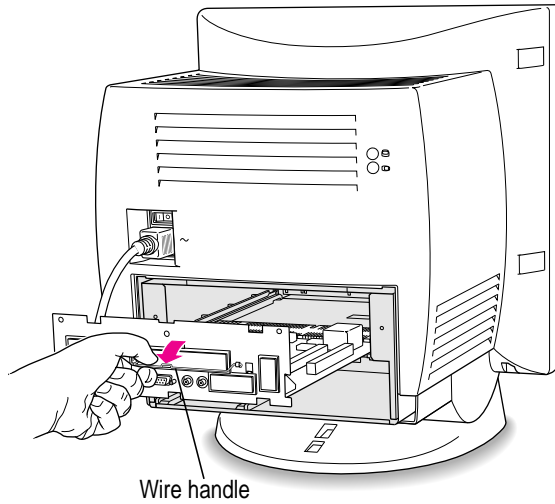
Set the panel aside.

Pulling gently, swing the panel up, and slip it out.



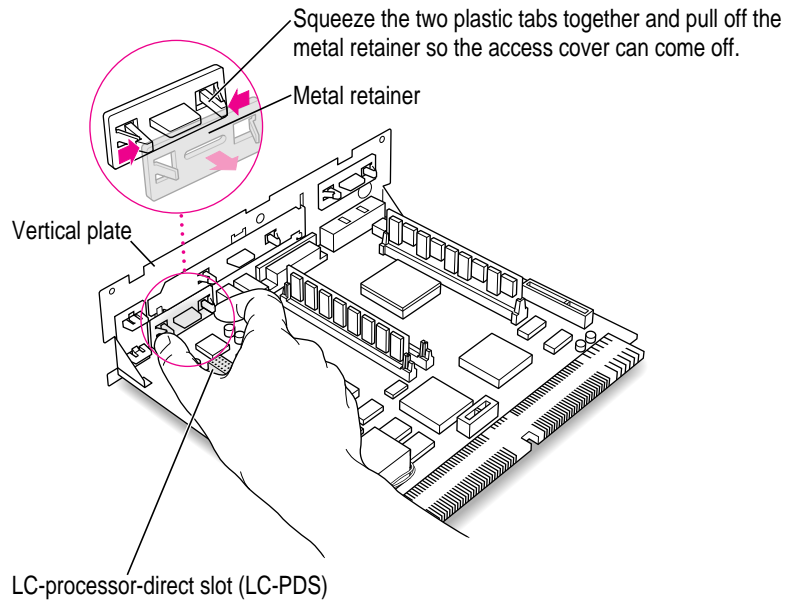
- 8 Gently pull down on the wire handle and swing it out to unlock it from its storage position. Then grasp the handle and pull the logic board out of the computer.**

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.



Installing an LC-PDS card

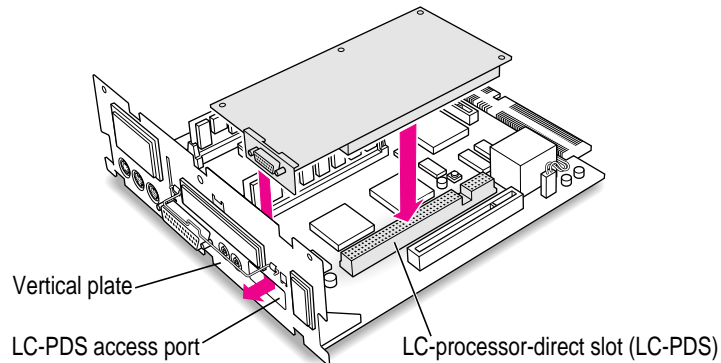
- 1 Remove the plastic access cover from the vertical plate.



- 2 Remove the LC-PDS expansion card from its static-proof bag.

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

- 3 Align the card over the LC-processor-direct slot.



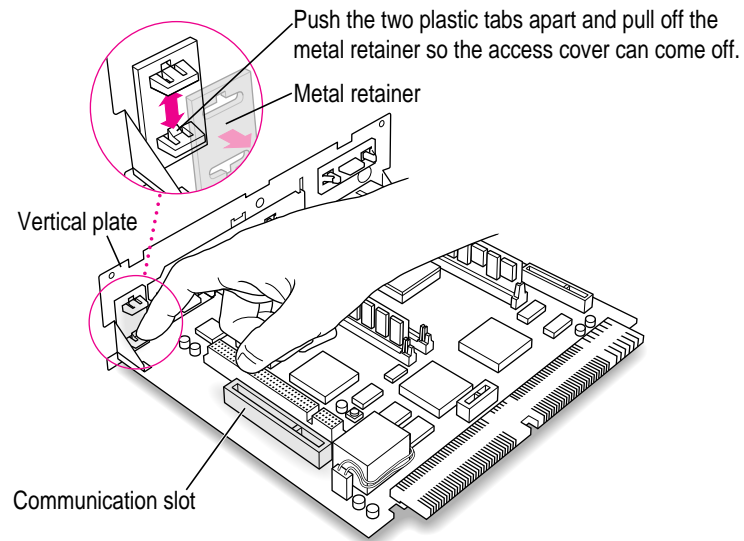
- 4 Press down on the card until the connector is solidly in place.**

Don't force the card. If you meet resistance, pull the card out and try again.

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

Installing a communication card

- 1 Remove the plastic access cover from the vertical plate.**

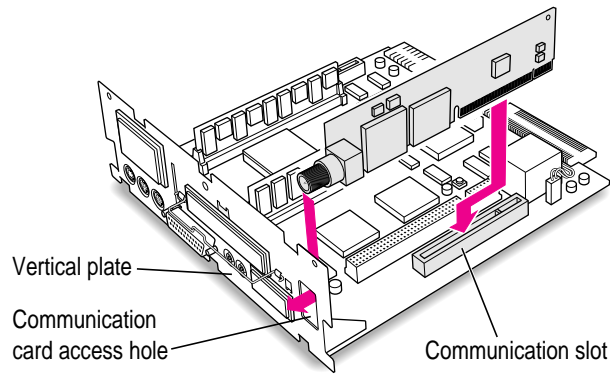


- 2 Remove the communication card from its static-proof bag.**

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

3 Align the card over the communication slot.

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



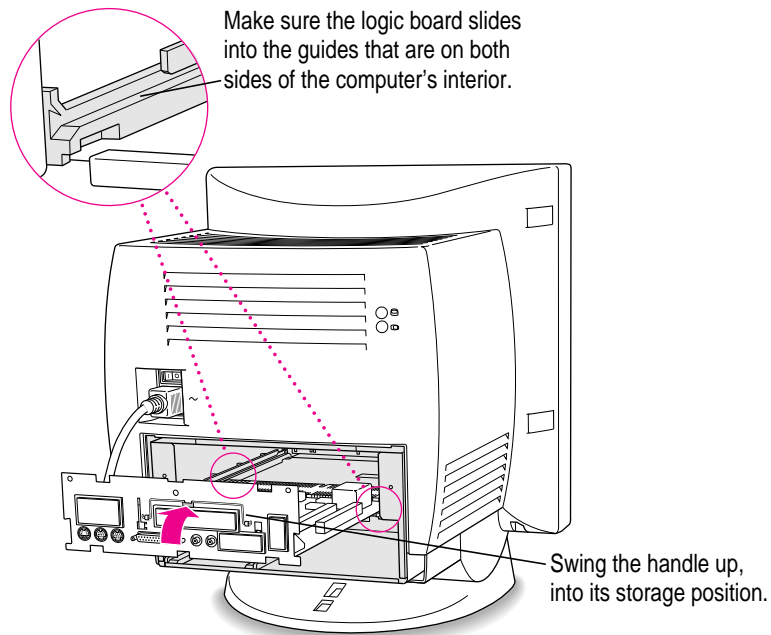
4 Press down on the card until the connector is solidly in place.

Don't force the card. If you meet resistance, pull the card out and try again.

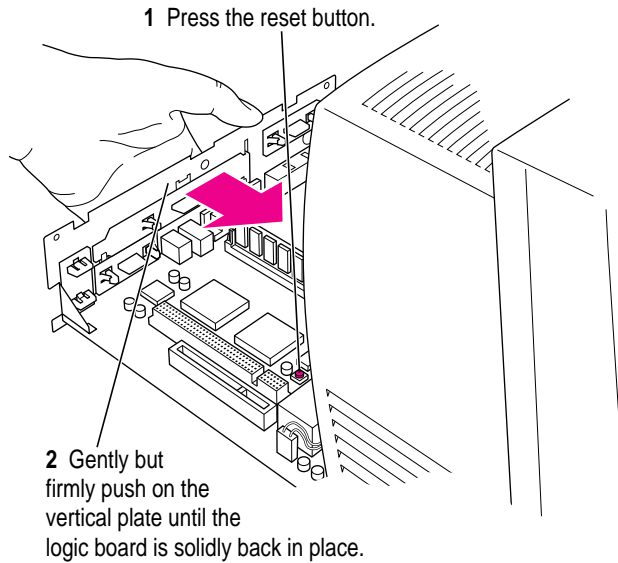
To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.

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.

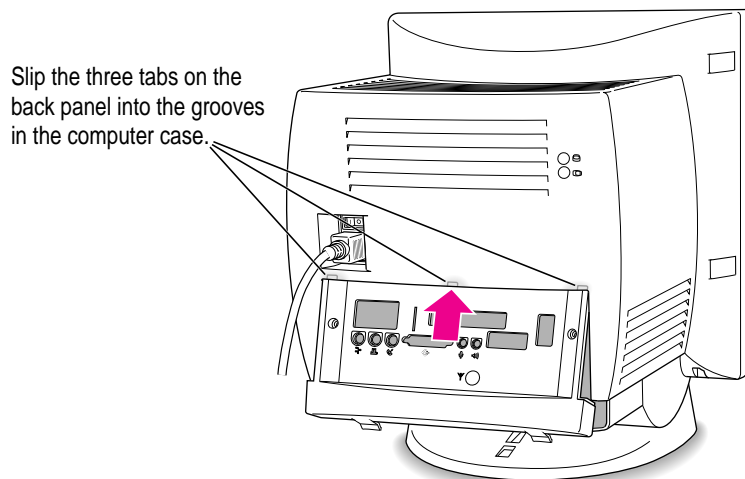


- 2 Press the reset button on the logic board and then slide the logic board back into the computer.

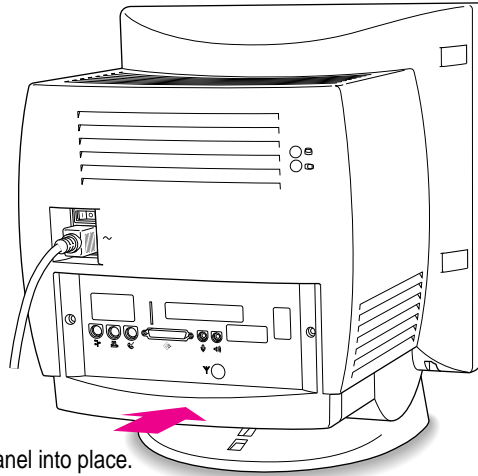


Note: When you press the reset button, some of your computer's software settings will change. You may want to open the control panels for the date and time, keyboard, and mouse to make sure that they are set the way you want them. For more information about working with control panels, see the "Setting Options" topic of Macintosh Guide, available in the Guide (🔍) menu.

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

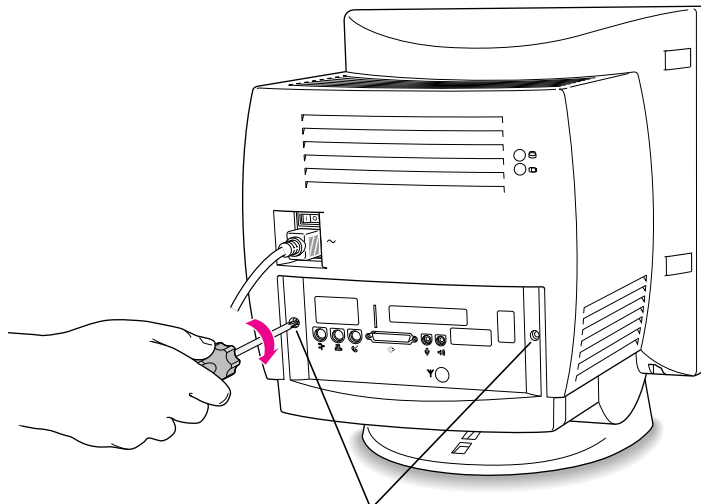


- 4 Snap the base of the back panel into place.



Snap the plastic back panel into place.

- 5 Reinsert the security screws.



Reinsert both security screws.

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.

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

Appendix C

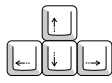



Special Keys on Your Keyboard



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, pressing the ⌘ (Command) key at the same time as the Q key lets you 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.

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 on certain models.

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

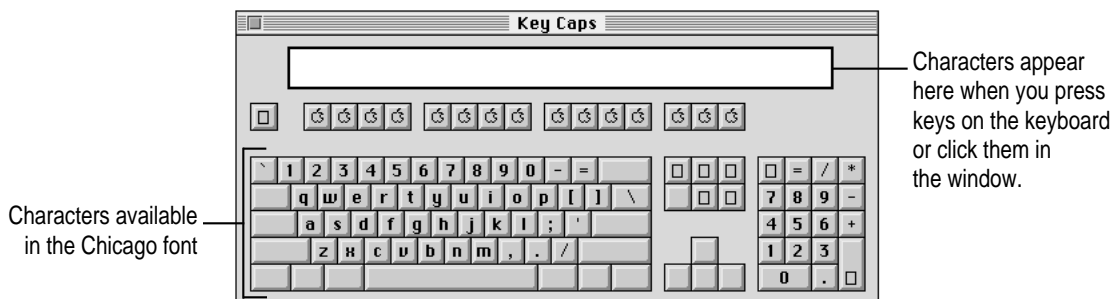


The function of these keys depends on the operating system and program you're using.

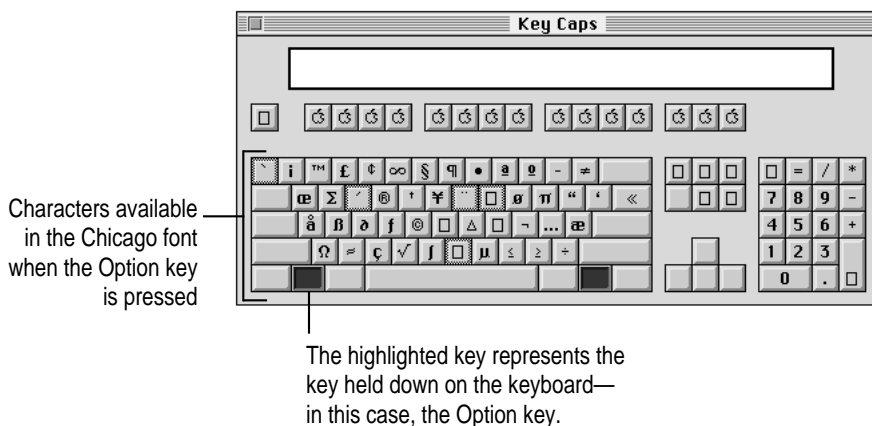
Typing special characters and symbols

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, 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



Appendix D If You Purchase Additional Equipment



This chapter contains information that is useful only if you purchase

- an Ethernet card
- a second monitor

Connecting to an Ethernet network

This section contains information for people whose computers are connected to other computers through a local area network. (Using a modem is not the same as being connected to a local area network. If you have an internal modem, you do not need an Ethernet card.)

If you buy and install an Ethernet card, you can connect your Macintosh to an existing high-speed Ethernet network that uses thin coaxial cables, 10BASE-T twisted pair cables, thick coaxial cables, or other standard cables.

Depending on the type of cables used in the Ethernet network you're connecting to, you may need to purchase an Apple Ethernet media adapter or other compatible media adapter to connect your Macintosh. (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.)

To use Ethernet, you need to change the network connection in the Network control panel. (For instructions on how to select a network connection and other information about using your Macintosh on a network, see the “Networks & Telecommunications” topic of Macintosh Guide, available in the Guide [?] menu.)

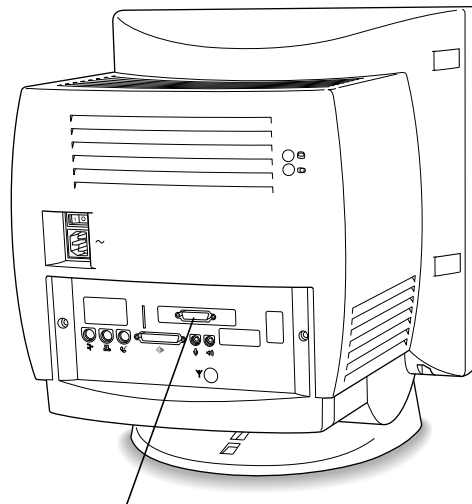
IMPORTANT Your Macintosh supports EtherTalk Phase 2 (AppleTalk Phase 2 Protocols for Ethernet networks) and TCP/IP (via MacTCP software). Your Macintosh does not support EtherTalk Phase 1 (AppleTalk Phase 1 protocols for Ethernet networks).

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

Connecting a second monitor for video mirroring

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 you want to use video mirroring, you need an external video connector with an external monitor attached. (If your computer doesn't have a connector, you can install one.)



Apple external video connector installed

The built-in monitor must use the same resolution and timing (refresh rate) as the external monitor. Depending on the 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 television or record them using a VCR, you'll need the Apple Presentation System, which adds these capabilities when used with the external video connector kit. The external video connector kit and the Apple Presentation System are available for purchase from Apple-authorized dealers.

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.



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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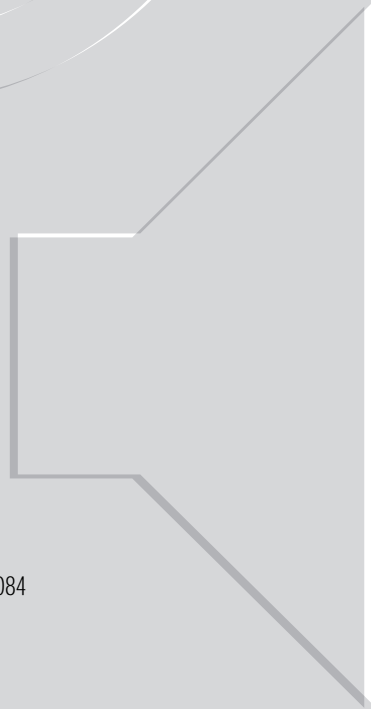
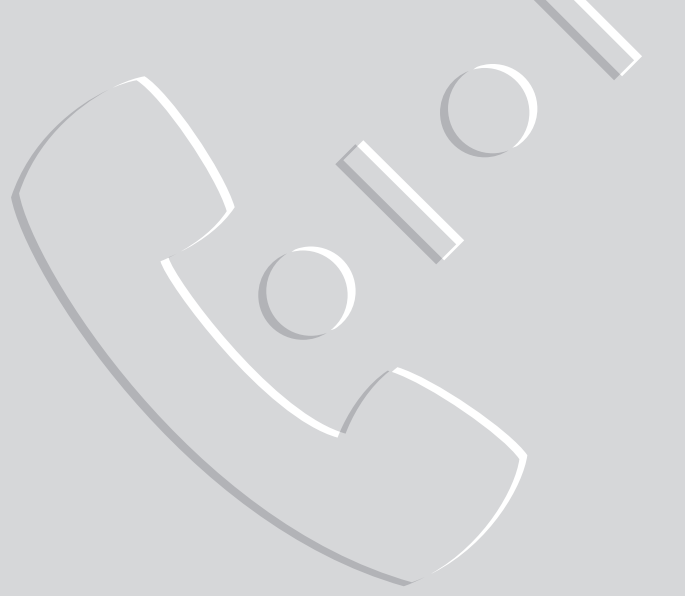
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