Power 100/120 User Guide

Sections on Hard Disk ToolKit
and
CD-ROM ToolKit are Missing. :-(

Information on these products can be found in the Storage Device Training Module.

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Power Computing Corporation

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Other legal notices are found in “Regulatory Information” on page 65

Manual Revision 951006

Support Numbers

Please use the following numbers to contact Power Computing for assistance: (All times are Central Standard Time.)

Sales	To place or check on an order you haven’t received yet	M – F 8AM to10 PM Sat 9 AM to 6 PM Sun 10 AM to 6 PM	1-800-999-7279
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Technical Support	For help with a technical problem	M – F 8 AM to 8 PM Sat 10 AM to 4 PM	1-800-708-6227

Contents

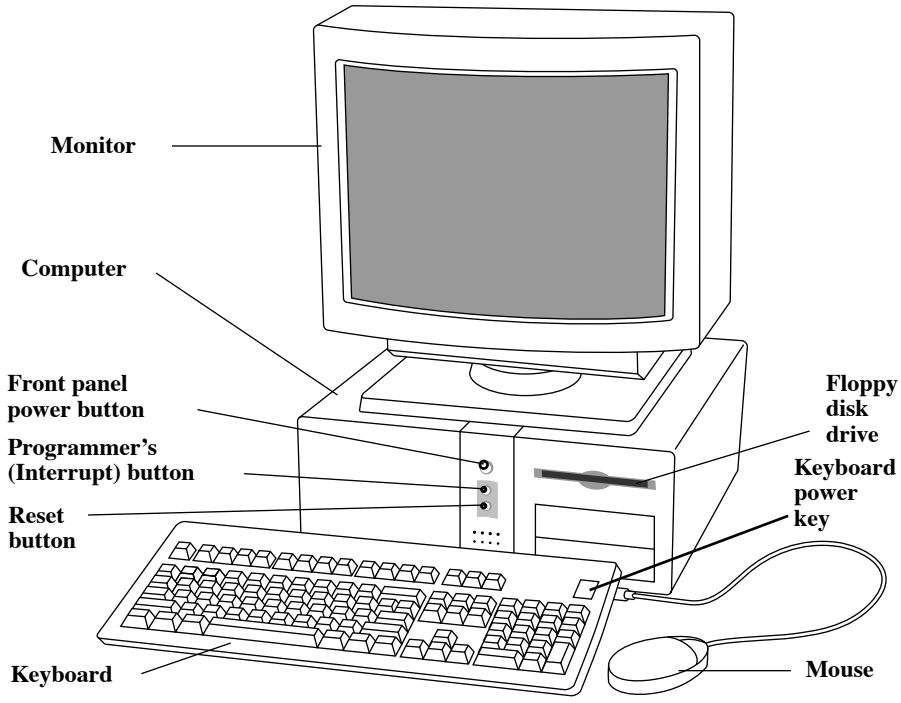
Power 100/120 User Guide

Hard Disk ToolKit·Personal Edition User Guide

Power 100/120 Overview

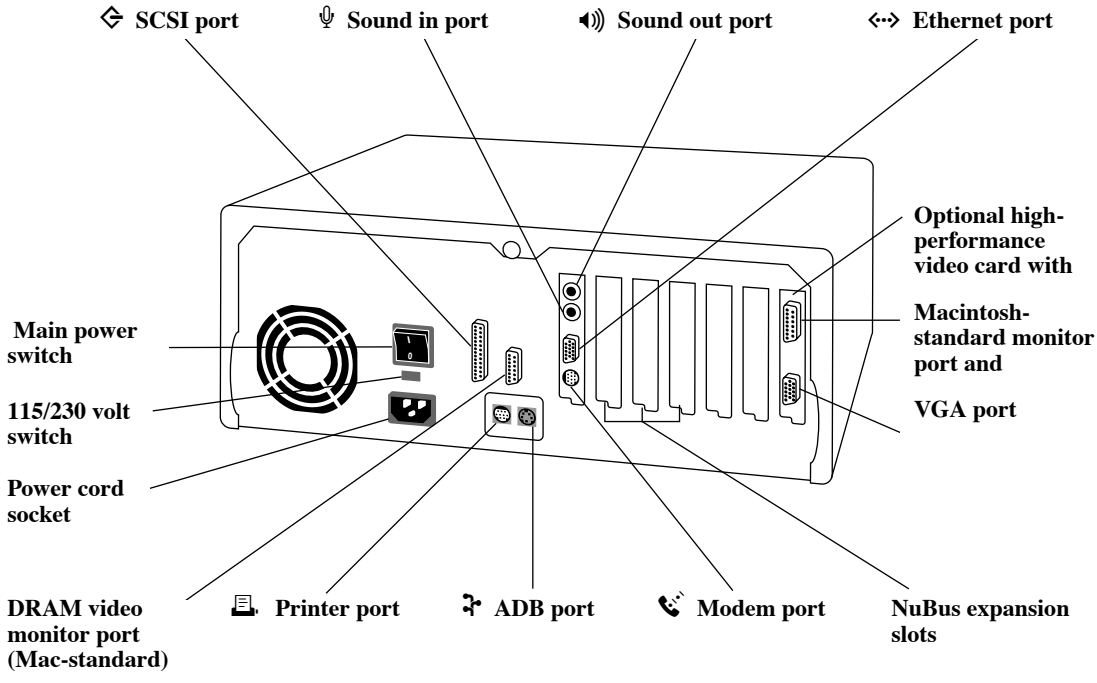
Desktop System Front View

Here are the key features of the desktop system front panel.



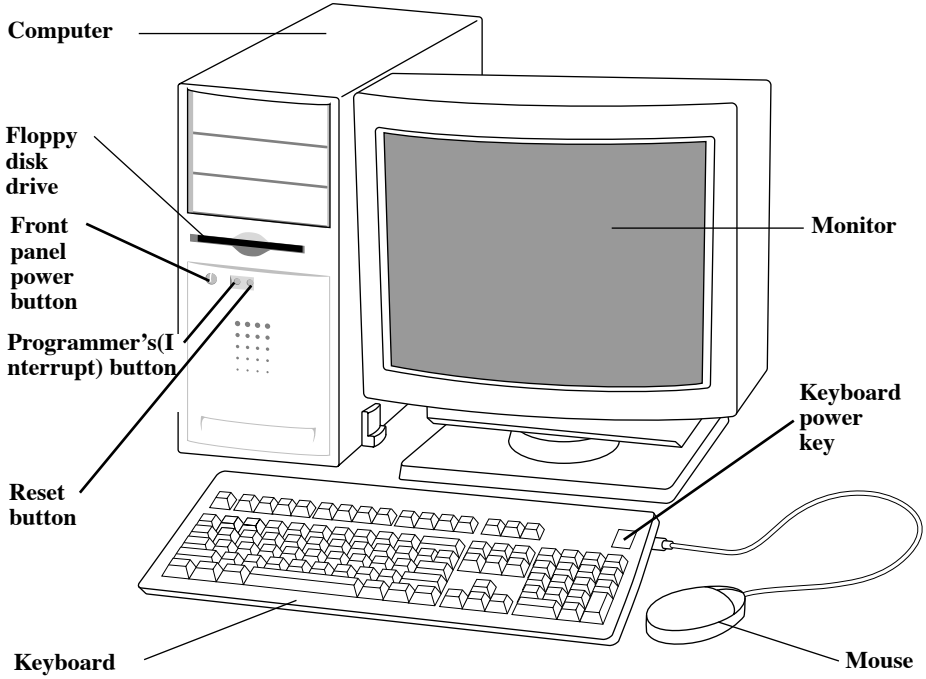
Desktop System Rear View

Here are the key components of the desktop system rear panel.



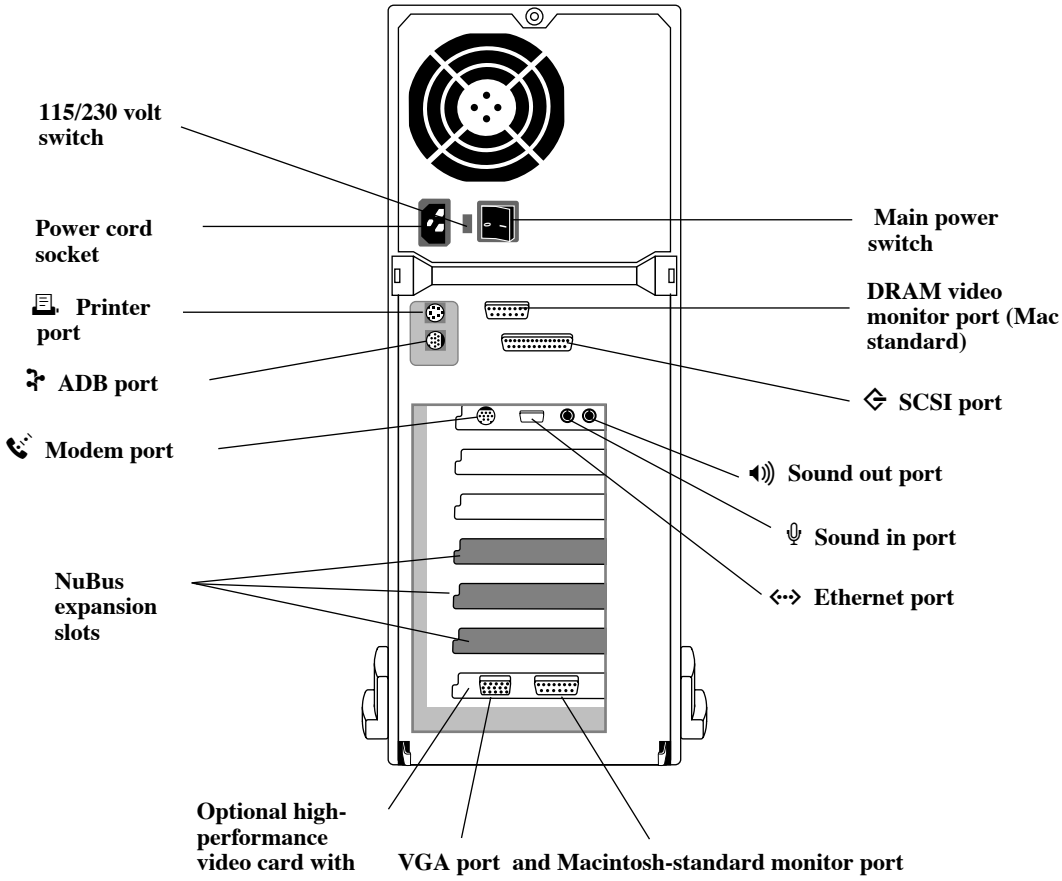
Tower System Front View

Here are the key features of the tower system front panel.



Tower System Rear View

Here are the key components of the tower system rear panel.



A word from the Power Computing team

Dear New Power Computer Owner,

Thank you for choosing this Mac OS compatible computer from Power Computing Corporation. We appreciate your support. As the new kids on the block, so to speak, we've got something to prove. We think that — dollar for dollar and pound for pound — Power Computing builds the best Mac OS compatible computers in the world. So thank you for giving us this opportunity to prove it to you.

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Even if you don't call us, a Power Computing Corporation representative will be contacting *you* in the next few days to make sure that everything is working to your satisfaction. In the meantime, don't hesitate to let us know if there is anything else we can do for you. And please, if there's something we could have done better, let us know that, too! Our company charter is to exceed your expectations in every way. Nothing less will do.

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Note: The Apple Software Registration Card is in the back of the manual.

Chapter 1 Getting Started

Your computer has been designed for easy plug-and-play setup in four simple steps - if you are in need of technical assistance, please feel free to call Power Computing Technical Support at 1-800-708-6227.

Note: This manual covers both desktop and tower systems, so look for the illustration that fits your system.

- Find a place for the computer and monitor
- Plug in the computer
- Connect the monitor
- Connect the mouse and keyboard

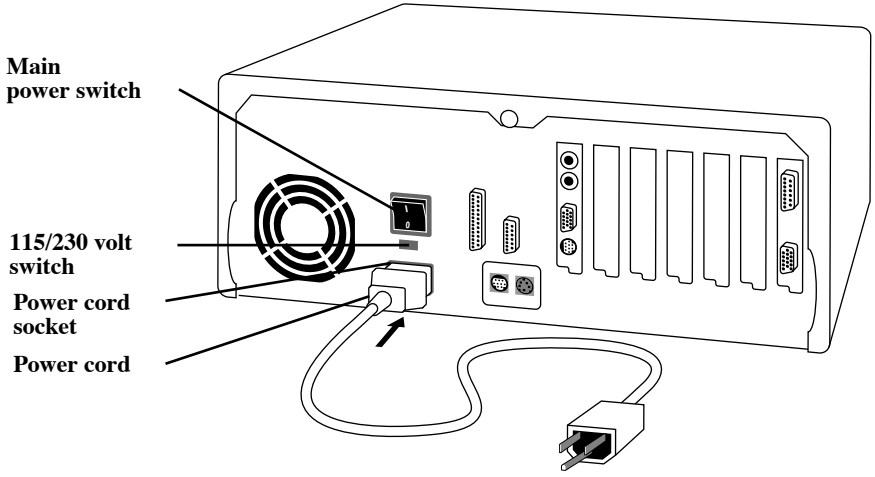
Finding a place for the computer and monitor

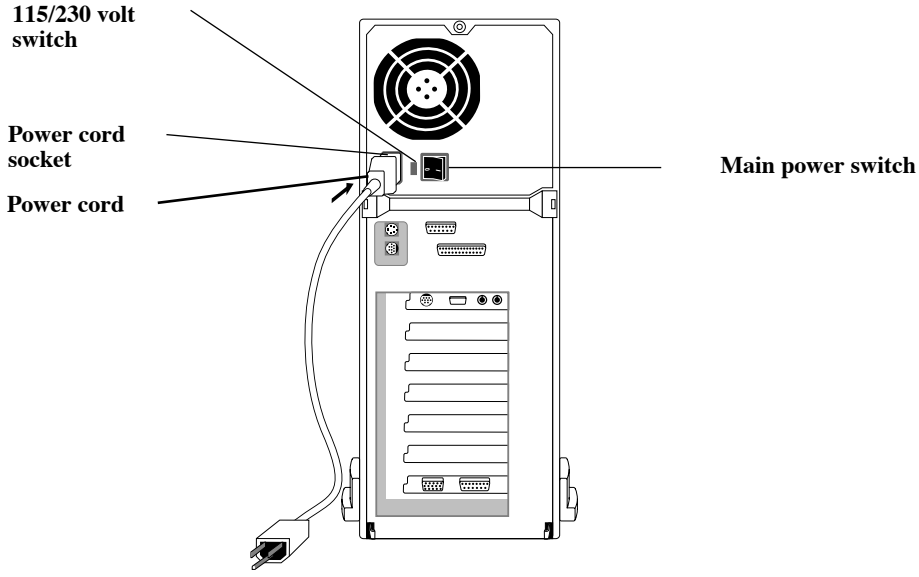
Think carefully about where you place your computer and monitor. Here are some suggestions to help you find a good place:

- Make sure there is a grounded, three-hole electrical outlet within a few feet.
- Use a sturdy, level table or desk as a work surface. Make sure that you can place your monitor, keyboard, and mouse so that you can work comfortably. See Appendix A, “Safety and Health Information,” on page 49 for detailed instructions.
- You can place monitors up to 132 lb. (60 kg) on top of the desktop computer. If you have a heavier monitor or a tower system, place the monitor directly on your work surface.
- Leave a few inches of space around the computer and monitor for air to circulate.

Plugging in the computer

Set up and plug in the computer before connecting the monitor, keyboard, and other devices. Plugging in the computer ensures that it is grounded and protected from electrical damage. The key components for plugging in the computer are shown below.





WARNING! For your safety, the computer is equipped with a three-prong plug designed to be used with a grounded electrical outlet. If you do not have access to an appropriate outlet, have an electrician install one. Do not use your computer with a three-prong adapter in an ungrounded outlet.

❑ To plug in the computer:

1. **Place the computer in the location you have chosen.**
2. **Make sure the computer's main power switch is turned off.**

   The main power switch is located on the back of the computer. The power is off when the side of the switch marked with ○ is depressed.

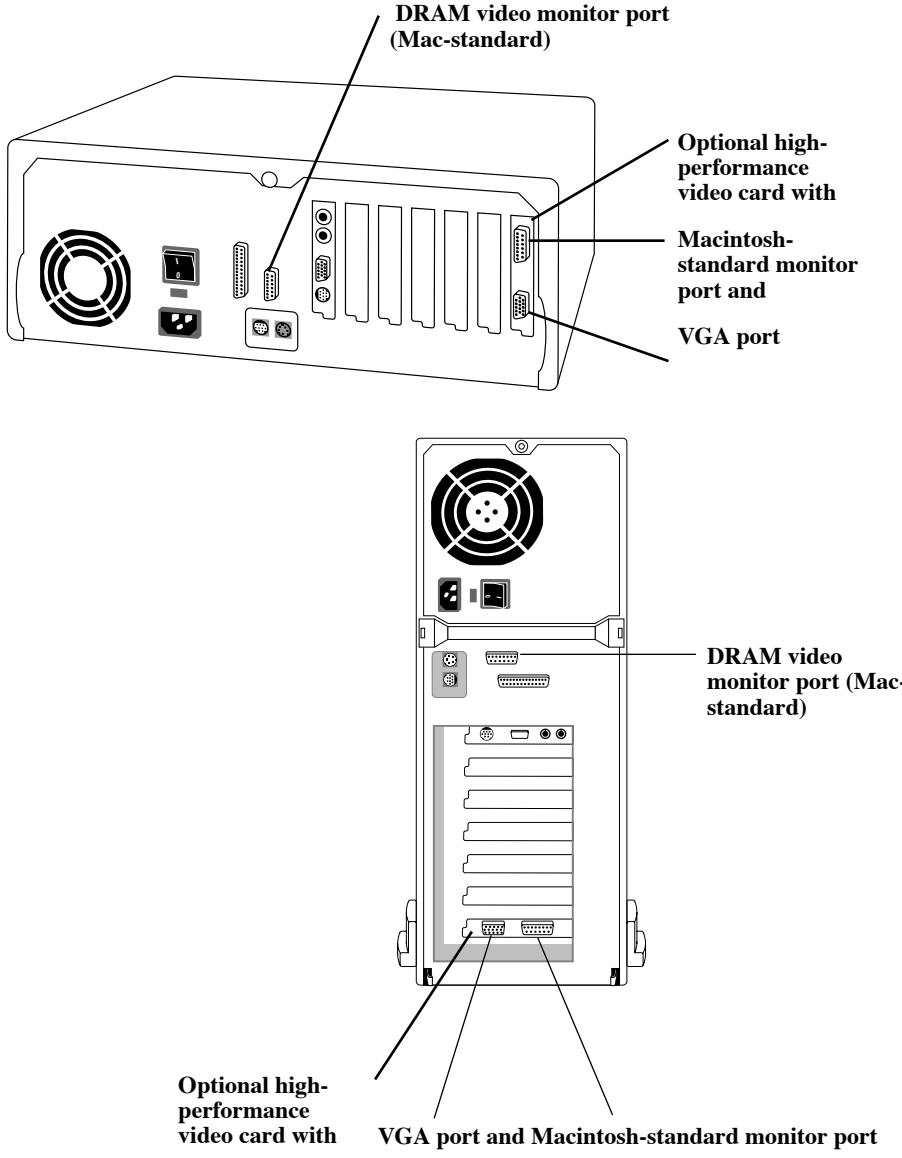
3. **Set the 115/230 volt switch to the correct setting for your country.**

   Set the switch to 115 volts for the U.S., Canada, and Japan. Use the 230-volt setting in most European countries.

4. **Connect the socket end of the power cord to the power plug on the back of the computer.**
5. **Plug the other end of the power cord into a grounded, three-hole electrical outlet. If you have any expansion cards, follow the instructions in See "Installing expansion cards" on page 17. to install them now. If not, continue with the following section.**

Connecting the monitor

Your computer can be used with a wide variety of monitors. It has one built-in standard monitor port, with two additional monitor ports on the optional high-performance video card. The key components for connecting the monitor are shown below.



- The DRAM video monitor port lets you connect 16-inch and smaller monitors and display thousands of colors. This port requires Macintosh-style connectors or adapters.
- The Macintosh-standard monitor port on the optional high-performance video card lets you connect monitors of up to 21 inches in size and display millions of colors (depending on the amount of video memory installed). This port requires Macintosh-style connectors or adapters.
- The VGA monitor port on the optional high-performance video card allows you to connect a standard VGA or SVGA monitor and use PC-style connectors.

See Appendix D, "Technical Information" for additional details on RAM configurations, screen size support and numbers of colors supported. You can add additional video memory (VRAM) to increase the number of colors available to monitors connected to the high-performance ports. See "Increasing memory" on page 21 for information about VRAM expansion.

The high-performance ports are located on the high-performance video card in the computer. A switch on the card enables the port you want. When the computer comes from the factory, the Macintosh standard port is enabled. If this is the first time the computer has been set up and you want to connect to the Macintosh standard port, you do not need to make any changes. If you want to connect to the VGA port on the high-performance video card, you must change the switch setting. See "Switching video ports" on page 20 for instructions.

You can connect two monitors at once, one to the standard monitor port and another to one of the high-performance monitor ports, however you cannot connect two monitors to the high-performance video card. Use the Monitors control panel in Mac OS to control how the monitors are configured. See Macintosh Guide (available through the Guide menu, marked with ⍰) or *Macintosh System 7.5 for Dummies* for additional information about using the Monitors control panel.

Connecting the monitor involves two steps: plugging in the monitor and connecting the monitor cable.

❑ To plug in the monitor:

1. **Place the monitor on your desk or in another location you have chosen.**
2. **If necessary, connect the power cord to the monitor.**

   Some monitors have permanently attached power cords.
3. **Plug the monitor power cord into a grounded, three-hole outlet.**

❑ To connect the video cable:

1. **If necessary, attach the video cable to the monitor.**

   Some video cables are permanently attached.

2. Connect the video cable to the monitor port on the back of the computer.

Depending on which type of monitor you use, connect it to one of the high-performance ports or to the standard port. See "Monitor resolution/color tables" on page 62 for more information.

If you are connecting to a high-performance port, make sure that the correct port is enabled. See "Switching video ports" on page 20 for instructions.

3. If you your computer is a Power 120, install the EMI choke on the video cable.

The EMI choke is a small donut-shaped object which comes packed in the pizza box with the manuals and cables.

To install the choke, open it up and clamp it over the video cable at the end of the cable that connects to the computer.

Connecting the mouse and keyboard

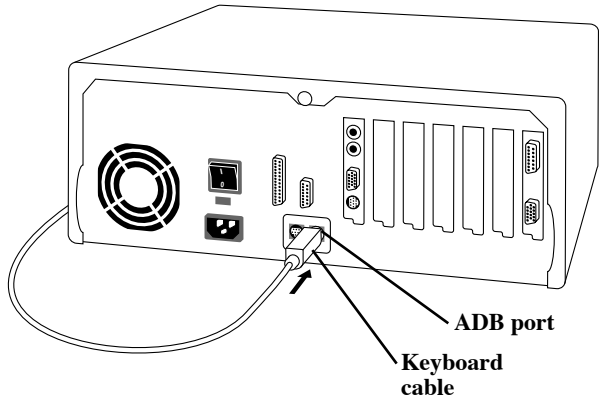
Once you have connected the monitor, you can connect the mouse and keyboard.

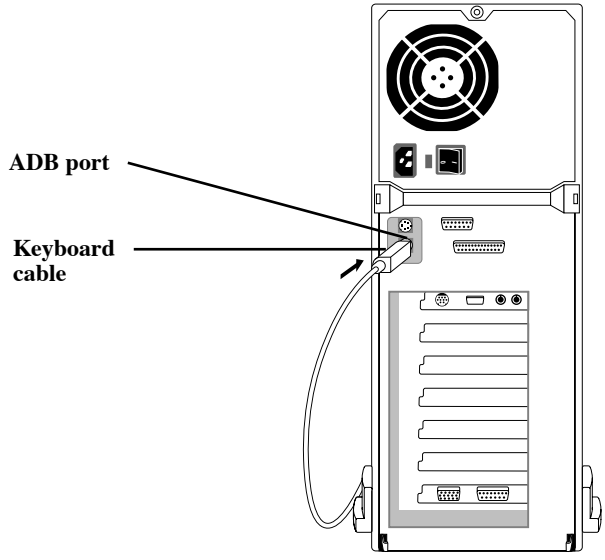
❑ To connect the mouse and keyboard:

1. Plug the mouse cable into an ADB port (marked with ⌁) on the keyboard.

The location of the ADB port depends on the keyboard you use.

2. **Plug the keyboard cable into the ADB port (marked with ⌘) on the back of the computer.**





Turning the computer on

When the computer, monitor, keyboard, and mouse are connected, you can turn the computer on.

❑ To turn the computer on:

1. **Turn on the monitor.**

   See the documentation that came with the monitor for the location of the power switch.

2. **Turn on the main power switch on the back of the computer.**

   The power is on when the side of the switch marked with I is depressed. After the first time you turn on the computer, you normally will not need to use the power switch, because you will use the keyboard, front-panel and on-screen Shut Down switches. Boy can you ever turn this sucker on and off!

3. **Turn the computer on by pressing the Power key (marked with a triangle) on the upper right corner of the keyboard or the Power On button on the front of the computer.**

   When the computer finishes its start-up procedure, you should see the Mac OS desktop. If you see a blinking question mark, you need to install the system software on your hard disk. See Appendix C, "Installing System Software," on page 57 If you see a blank screen or anything not already described, see the section following this one, "Problems starting up."

When you need to shut your computer down, follow the instructions in "Shutting down" on page 11.

Problems starting up

If you see a blank screen when you start up, check the following items to identify the source of the problem:

- Are the computer and monitor plugged in? If they are plugged into a power strip, is it turned on?
- Are the computer and monitor turned on? The power light on the front of the computer should be on. Most monitors also have power lights.
- Is the video cable securely connected to the monitor and computer? (If you need to reattach the cable, first turn off the computer and monitor.)
- Are the keyboard and mouse properly connected to the computer? (If you need to reconnect them, first turn off the computer to avoid damage.)
- Is the brightness control on the monitor turned too far down? Check the documentation that came with your monitor for instructions.

Chapter 2

Getting Started With Mac OS

Your computer uses the Mac OS operating system, which offers a unique combination of power and ease of use. This chapter offers very basic instructions about how to use the built-in learning features of Mac OS. It also explains how to shut down your computer properly. For more detailed information about the Mac OS, refer to *Macintosh System 7.5 For Dummies*.

Running the Basics tutorial

Mac OS includes a tutorial program called Mac™ OS Tutorial that shows you how to use the fundamental features of the software. If you are brand new to Mac OS, we suggest you complete the tutorial before you begin working with your computer.

In Mac OS, you use the mouse for tasks such as choosing menu commands or starting programs. When you move the mouse, the *mouse pointer* (the small arrow on the screen, sometimes referred to as the *cursor*) moves in the same direction. By placing the tip of the mouse pointer over an icon and clicking twice quickly (*double-clicking*), you can open a folder or launch a program.

❑ To run the Basics program:

1. **In the Mac OS desktop, double-click the icon that represents your hard disk (located in the upper-right corner of the screen). Be careful to place the mouse pointer over the icon, not on the words below.**

   The hard disk icon "opens," displaying a "window" containing the files and folders stored on the hard disk.

2. **Double-click the folder called Mac™ OS Tutorial.**

   The folder opens, displaying the Mac™ OS Tutorial Part 1 icon.

3. **Double-click the Mac™ OS Tutorial Part 1 icon.**

   The program starts up, displaying an introductory screen.

4. **Follow the on-screen instructions to complete the tutorial.**

Using on-line help

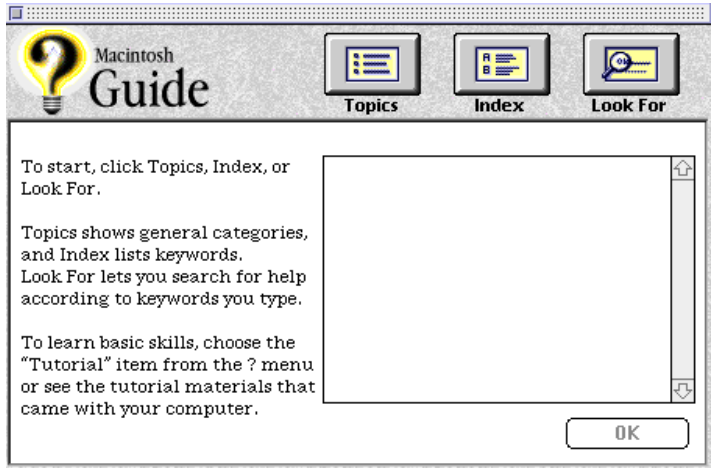
Mac OS (and many applications that run under it) include an on-line help system with information about using the software. The help system for Mac OS is called Macintosh Guide and is available through the Guide menu (marked with ?).

❑ To use Macintosh Guide

1. **Choose Finder from the Application menu (in the upper-right corner of the desktop) to make it the active application.**

2. **Choose Macintosh Guide from the Guide menu (marked with ?) or press ⌘-?.**

   The Macintosh Guide window appears.



3. **Follow the on-screen instructions to get the information you need.**

Shutting down

When you are finished working with your computer, it is very important to shut it down correctly.

❑ To shut down the computer:

1. Choose Shut Down from the Special menu in Mac OS.

You are prompted to save any unsaved files before shutting down.

CAUTION: Do not use the power switch to turn off the computer. If you do, unsaved or open documents may be lost and you may damage your System folder.

Chapter 3 Upgrading Your Computer

This chapter explains how to enhance the capabilities of your computer by adding expansion cards, additional memory, and internal devices such as an additional hard disk. It also explains how to switch between the Macintosh-standard and VGA high-performance ports.

You can add additional audiovisual capabilities by installing an optional video card. Contact Technical Support at 1-800-708-6227 for information.

Removing the cover

Installing expansion cards and switching monitor ports requires that you remove the computer's cover. The cover is designed for easy removal; no tools are required.

CAUTION! **1. If you are not proficient with electronic equipment, Power Computing Corporation recommends that you have a certified technician install RAM and/or NuBus expansion cards. If you attempt to install RAM or cards yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer. Please call technical support at 1-800-708-6227 for additional information about this or any other warranty question.**

2. If an anti-static bracelet was supplied with the expansion card or other device that you are installing, put it on and ground it as directed by your instructions before touching any components inside the computer.

3. Never operate the computer with the cover removed.

❑ To remove the cover:

1. **Shut down the computer, turn off the monitor, and turn off the computer at the main power switch on the back of the computer, but leave it plugged in.**

   Leaving the computer plugged in ensures that it is grounded.

2. **If the monitor is on top of the computer, disconnect it if necessary, and set it aside.**

   Otherwise it's going to be awkward to remove the computer cover.

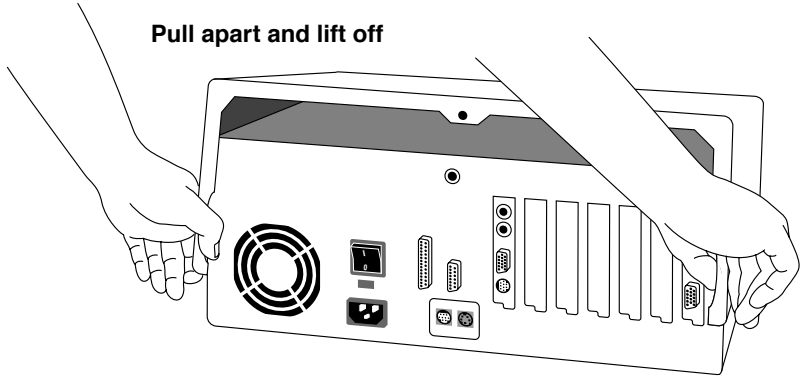
3. **Disconnect everything but the power cord from the back of the computer.**

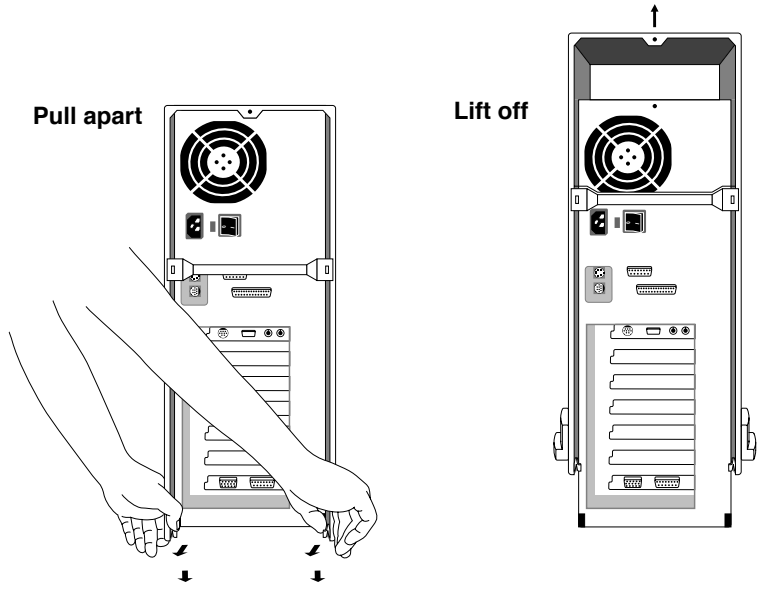
4. **Rotate the computer so that its back panel faces you.**

5. **Remove the large thumb screw from the rear of the computer.**

   Put the thumb screw in your left front pocket or somewhere else where you won't lose it.

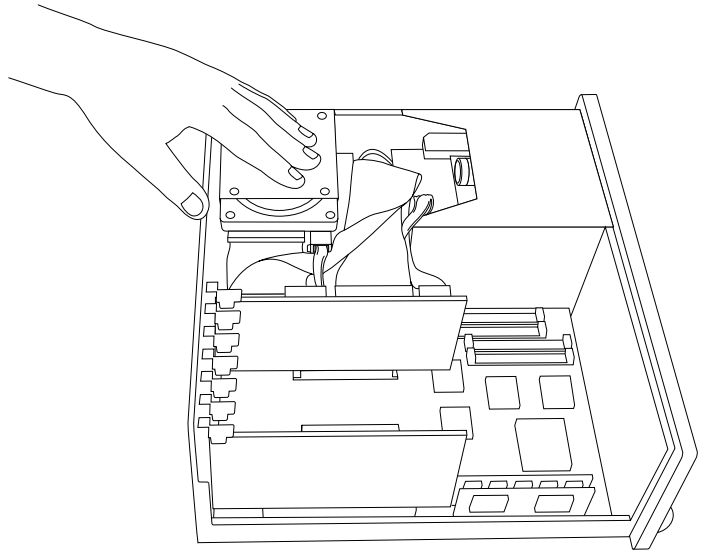
6. **Pull apart the bottom corners of the cover, lift it off and set it aside.**





7. **If you are working on a tower system, gently lay the computer on its side as shown in the next step.**

8. **Before touching any components or anything inside the computer, touch the metal plate over the hard disk drive to discharge any static electricity that might have built up on your clothes or body.**

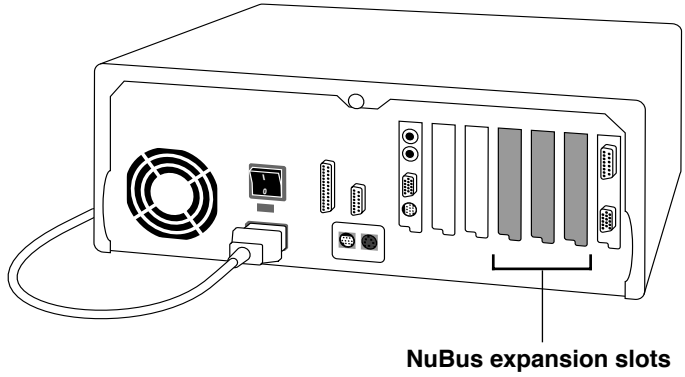


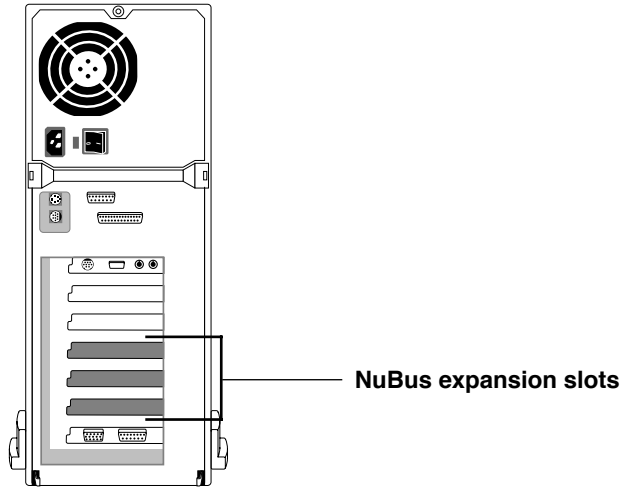
To replace the cover, reverse steps 5, 6,. and 7; then replace and re-connect everything.

Installing expansion cards

You can install expansion cards that enhance your computer's capabilities—for example, by increasing processing power, improving graphics and video performance, or adding networking and communications capabilities.

Your computer has three expansion slots designed to accept NuBus cards. NuBus cards designed for use in the Apple Macintosh II family of computers are generally compatible.





Before you install any expansion cards, be sure to follow these guidelines to protect your computer:

- Do not remove factory-installed cards from inside the computer. Removing a card incorrectly can damage it and the computer. Contact Technical Support if you believe a factory-installed card requires repair or replacement.
- The combined power consumption of the expansion cards you install must not exceed the limits of your computer. Refer to the documentation that came with your cards for their power consumption and to “Power requirements” on page 63 in this manual for the power consumption limit for your computer.
- Some cards may need to be installed by an authorized service provider. Refer to the documentation that came with the card.

❑ To install an expansion card:

1. **Remove the computer's cover.**

   See "Removing the cover," starting on page 13 for instructions.

WARNING! **Turn off the main power switch before removing the cover and make sure to touch the metal plate over the hard disk to discharge static electricity before touching any components.**

2. **Remove the metal cover from the slot you want to use.**

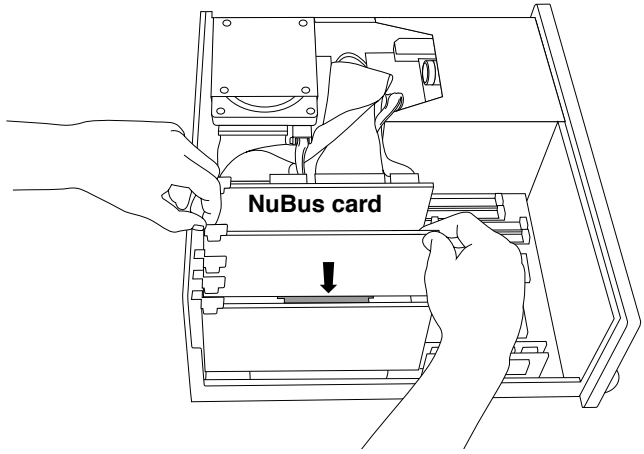
   To remove the cover, pull it up and away from the back panel.

3. **Remove the card from its static-proof bag.**

   Hold the card by its edges to avoid touching components.

4. **Align the card over the slot.**

   Make sure that the connector on the bottom aligns with the connector inside the slot and that the hole in the card's bracket aligns with the tab on the inside of the back panel.



5. **Push the card into the slot until it is firmly seated. The hole in the card's bracket should snap into place over the tab on the back panel.**

   Do not force the card. If you feel a lot of resistance, pull the card out, realign it, and insert it again.

6. **Replace the computer cover and tighten the screw.**

WARNING! To prevent electrical shock, always replace the cover before turning on the computer.

Switching video ports

The computer comes equipped with a high-performance video card with two monitor ports—a Macintosh-standard port and a VGA port. The video card has a switch that selects one of the ports.

When the computer comes from the factory, the **Macintosh standard** port is enabled. If this is the first time the computer has been set up and you want to connect a monitor to the VGA port, you will need to switch monitor ports as shown below. If you want to connect to the **VGA** port, or if you think the video port selection may have been changed, use the switch to enable the port you want.

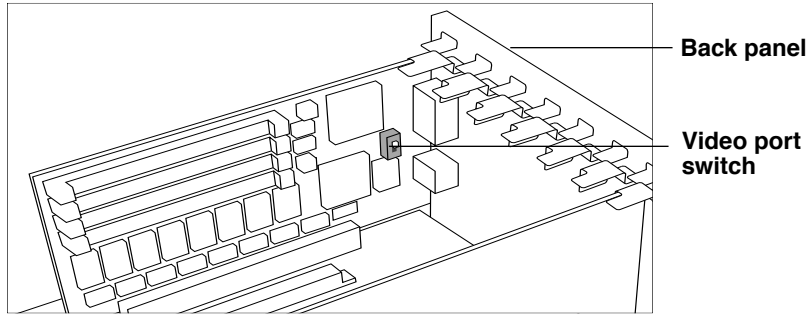
❑ To switch monitor ports:

1. **Remove the computer's cover.**

   See "Removing the cover," starting on page 13 for instructions.

WARNING! Turn off the main power switch before removing the cover and make sure to touch the metal plate over the hard disk to discharge static electricity before touching any components.

2. **Locate the switch on the video card.**



3. **Flip the switch to the up position to enable the Macintosh-standard port. Flip it down to enable the VGA port.**

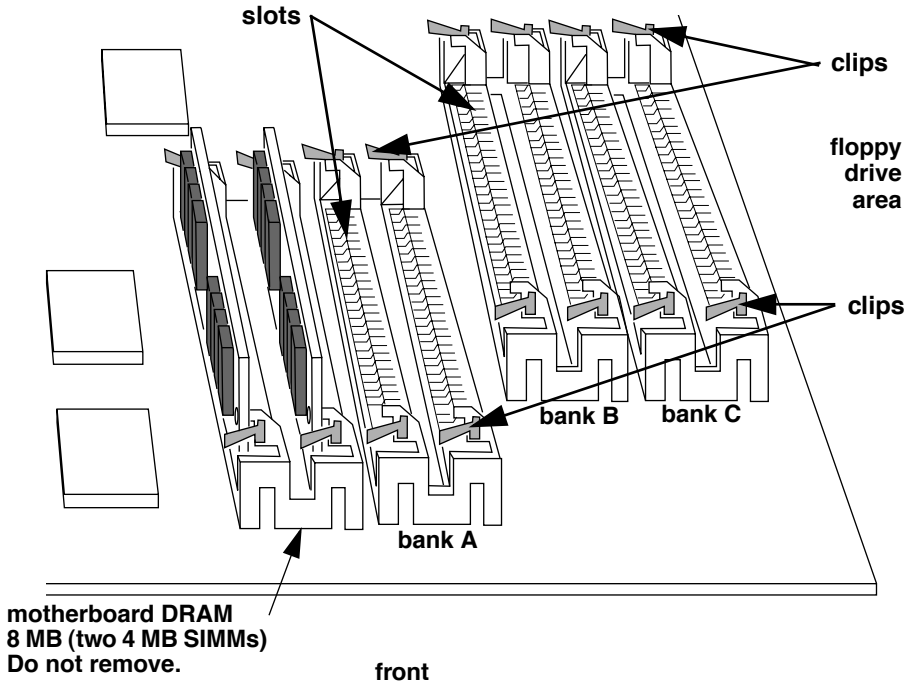
4. **Replace the computer cover and tighten the screw.**

Increasing memory

Your computer's random-access memory (RAM) and video memory (VRAM) can be increased. Memory is increased by installing or replacing memory modules (SIMMs, or single in-line memory modules) in the computer. Make sure that the memory modules you purchase are the right ones for your computer. See Appendix D, "Technical Information," on page 59 for technical specifications.

What you need to know about increasing RAM

The computer has four pairs of SIMM clips (banks in engineerese) on the motherboard, near the front, next to the floppy disk drive (see the illustration below). The SIMM clips are organized into four pairs, the motherboard DRAM bank, bank A, bank B, and bank C.



The motherboard bank is the pair of clips farthest from the floppy drive cavity, A is next, etc. The motherboard bank comes with two 4 megabyte SIMMs, which are required for the system to work. Do not replace the SIMMs in the motherboard bank with SIMMs of any other capacity; that bank will only work with two 4 megabyte chips.

Banks A, B, and C can be filled with 4, 8, 16, or 32 megabyte SIMMs, so you can install a maximum of 200 megabytes of RAM (8 megabytes in the motherboard bank and 64 (32 per slot) in each of the other banks, A-C).

SIMMs must be installed one pair per bank. Both slots in a bank must be filled with SIMMs of the same capacity (4, 8, 16, or 32 megabyte), but different banks *don't* have to match.

Banks A, B, and C can be filled in any order as long as both slots in the bank are filled. It is easiest to start with the last clip in Bank C. Insert the rightmost SIMM of a pair first.

If you are installing SIMMs in bank A, loosen the rightmost SIMM in the motherboard bank to get the leftmost bank A SIMM in.

All SIMMs must be 72-pin, fast-paged mode, 80-nanosecond RAM access time or faster. Slower SIMMs will not work reliably. 30-pin SIMMs from older Macintosh computers and DIMMs (Dual In-line Memory Modules) from PCI Macintosh computers are not compatible. Make sure that the memory modules you purchase are the right ones for your computer.

To increase your system's RAM. install additional SIMM modules in vacant DRAM banks; if there are no vacant banks, replace installed SIMM modules with modules of higher capacity.

Installing and Removing RAM

CAUTION! **1. If you are not proficient with electronic equipment, Power Computing Corporation recommends that you have a certified technician install RAM and/or NuBus expansion cards. If you attempt to install RAM yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer. Please call technical support at 1-800-708-6227 for additional information about this or any other warranty question.**

2. If an anti-static bracelet is available, put it on and ground it to your computer before touching any components inside the computer.

3. Handle SIMM s by the ends and avoid touching their contacts or other metal components.

4. Always store SIMMs in conductive bags.

5. Take your time; don't push yourself.

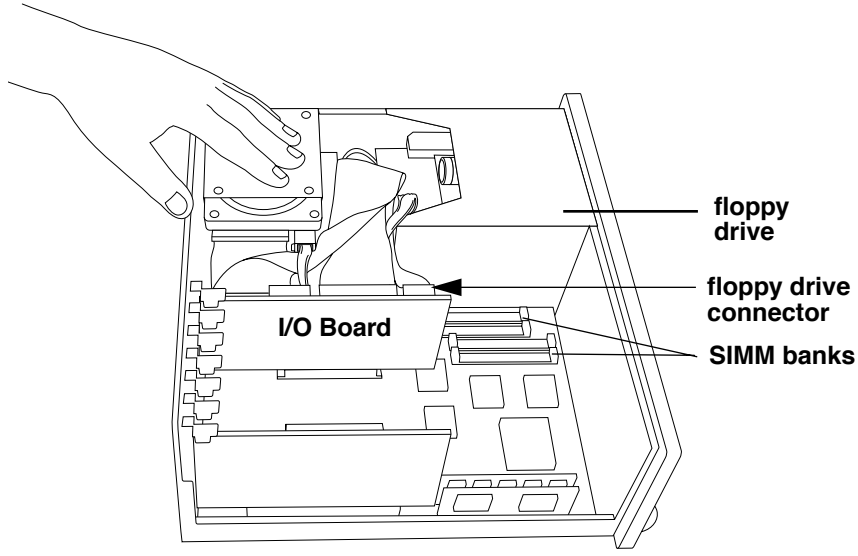
❑ Prepare the computer

1. If you haven't done so, remove the cover from the computer.

See "Removing the cover," starting on page 13 for instructions.

WARNING! **Turn off the main power switch before removing the cover.**

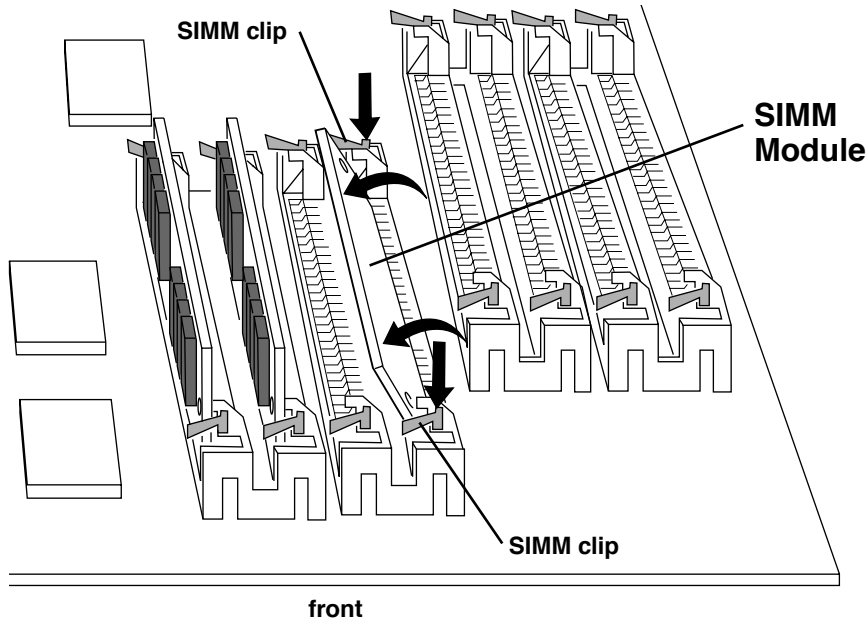
2. **Touch the metal plate over the hard disk drive to discharge any static electricity that might have built up on your clothes or body.**



3. **Disconnect the floppy disk drive connector, the CD audio connector, if you have one, (below the floppy connector), and the speaker connector (below the CD audio connector) from the I/O board and move those cords out of the way.**

   If you are installing in bank A and you have small supple fingers you may be able to install SIMMs without disconnecting these cables, but this makes it easier.

❑ **Removing a SIMM.**



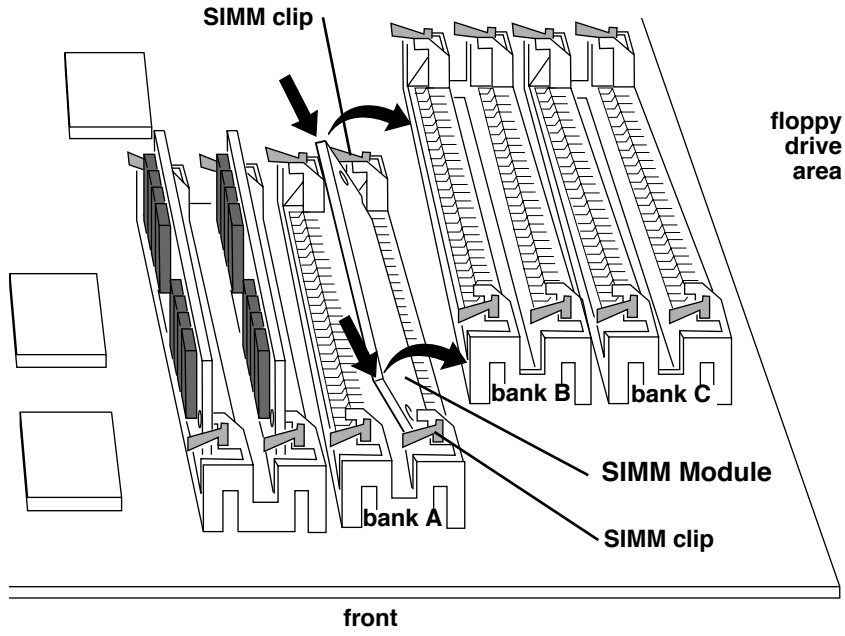
1. **If you need to remove a SIMM module to make room for a higher-capacity one, reach in and push down and out on the tiny handles which stick up from the small metal SIMM clips at each end of the SIMM slot.**

2. **The SIMM clips should click loose and module should tilt to the left so that you can then slide the module out of the slot at about a 60 degree angle.**

3. **If the SIMM module does not come free, press the SIMM clips down again and try to push the top of the module gently away from the drives.**

4. **When you are finished with SIMM removal and insertion, re-connect the floppy disk drive connector, the CD audio connector (below the floppy connector), and the speaker connector (below the CD audio connector) from the I/O board and move those cords out of the way and replace the cover.**

❑ Inserting a SIMM



1. **To insert a SIMM module, hold the module by the ends with the contacts down and the slotted end toward the back of the computer.**

Banks A, B, and C can be filled in any order as long as both slots in the bank are filled with SIMMs of the same capacity. It is easiest to start with the last clip in Bank C. Insert the rightmost SIMM of a pair first.
If you are installing SIMMs in bank A, loosen the rightmost SIMM in the motherboard bank to get the leftmost bank A SIMM in.

2. **Slide the contacts into the slot at about a 60 degree angle and make sure the contacts are firmly seated in the slot,**

3. **Gently pull the top of the module toward the floppy drive side of the computer until you hear the metal clips click into place.**

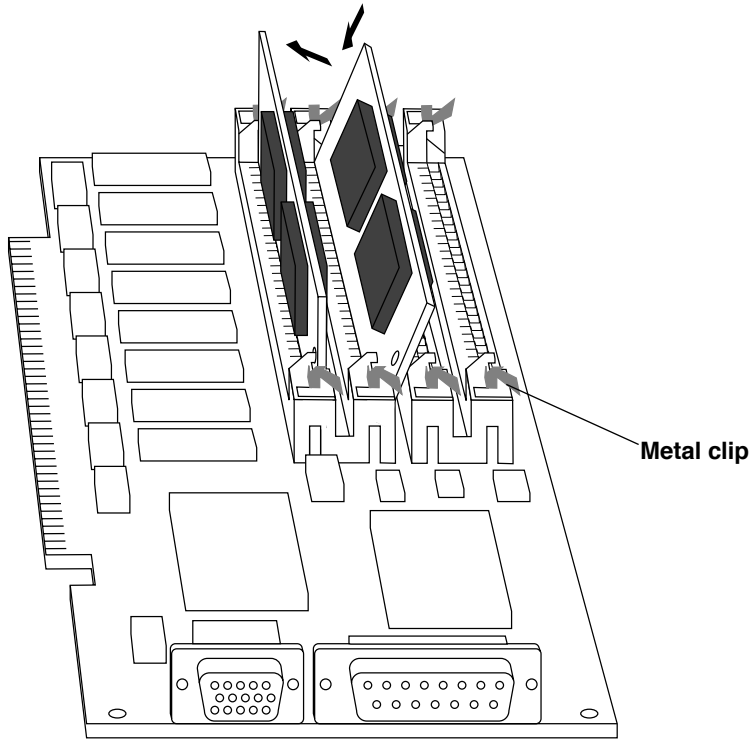
4. **If both clips do not click into place, release any clip that did click, pull the SIMM module out, re-seat it in the slot, and try again.**

5. **When you are finished, re-connect the floppy disk drive connector, the CD audio connector (below the floppy connector), and the speaker connector (below the CD audio connector) from the I/O board and move those cords out of the way and replace the cover.**

Increasing VRAM

The video memory available to monitors connected to the high-performance monitor ports is increased by installing video memory modules. Your computer is equipped by default with 2 MB of VRAM, which can be expanded to 4 MB by using 512K VRAM SIMMs.

The location of the VRAM slots on the high-performance video card is shown below. To install a video memory module, insert it an angle into the slot, then tilt it up until the small metal clips are engaged, just as DRAM is inserted, as described in “Inserting a SIMM” on page 26.



The amount of VRAM determines the number of colors that can be displayed on monitors of different sizes. See “VRAM configurations” on page 62 for tables listing the number of colors that can be displayed on various-sized monitors with different amounts of VRAM.

Installing internal drives

What you need to know about installing internal drives

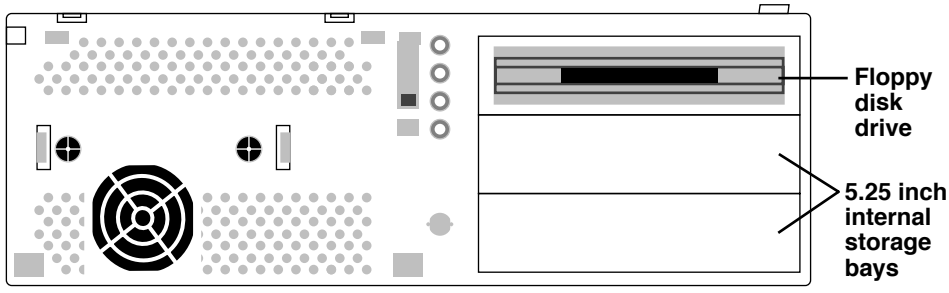
In addition to the floppy disk drive and the built-in hard disk, the desktop computer has space for two 5.25-inch internal drives, such as additional hard drives, CD-ROM drives, or other removable-media drives. The tower has room for three. Standard 5.25 drives. With an adapter tray, 3.5 inch devices can be installed in these storage bays.

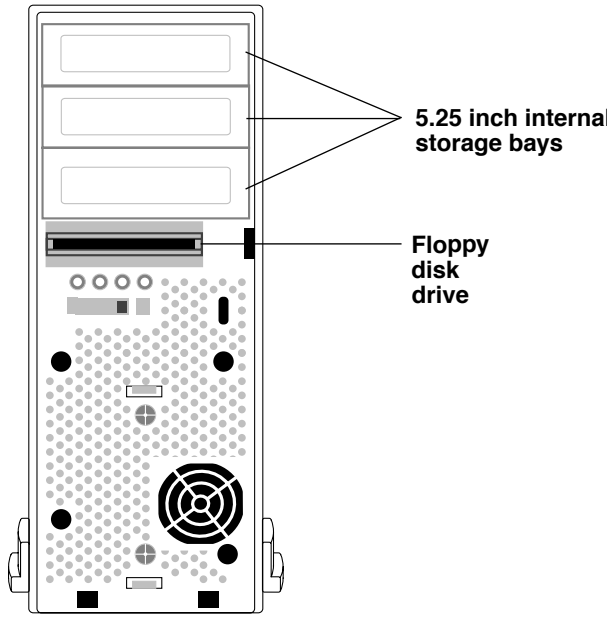
If your computer came with an internal 35

CD-ROM drive, it is already installed in one of these bays.

The location of the 5.25 inch bays is shown below. For clarity, the illustration shows the computer with its front panel (*bezel* in engineerese) removed

.





Rails for mounting internal devices are available from Power Computing for a nominal fee; contact our Sales Department at 1-800-999-7279. Rails, as well as adapter trays for installing 3.5 inch drives in the 5.25 inch bays are also available at most computer parts stores.

The Power 100/120 uses an internal SCSI (Small Computer Systems Interface) bus to connect internal drives. For a more detailed discussion of how the SCSI bus on your computer is set up, see “Using SCSI devices,” starting on page 41. Pay particular attention to the discussion of SCSI termination, discussed in “Ensuring proper termination” on page 34.

Required tools

Small Philip-head screwdriver

Drive rails, if not supplied with the drive

3.5 inch to 5.25 inch drive adapter tray, if you are installing a 3.5 inch drive.

Software drivers, if required

Installing drives

CAUTION! **1. If you are not proficient with electronic equipment, Power Computing Corporation recommends that you have a certified technician install internal drives. If you attempt to install an internal drive yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer. Please call technical support at 1-800-708-6227 for additional information about this or any other warranty question.**

2. If an anti-static bracelet is available, put it on and ground it to your computer before touching any components inside the computer.

3. Handle drives carefully and avoid touching their contacts or moving parts.

4. Always store drives in conductive bags.

5. Take your time; don't push yourself.

❑ Prepare the drive

1. Install software drivers

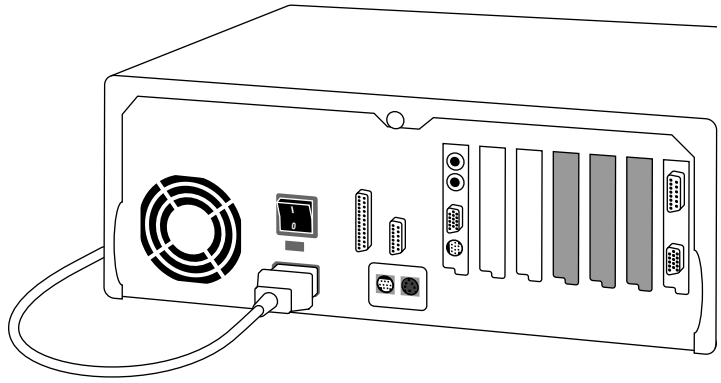
Some SCSI devices require special software called device drivers to operate with your computer. If a device driver is required, it is normally supplied with the device; if you are unsure whether one is required, contact the manufacturer of the device. Follow the driver installation instructions supplied by the manufacturer. If a device driver is not supplied, you can generally assume that the device does not need one. The drives pre-installed in your system have pre-installed drivers.

2. Set SCSI ID

Following the instructions which came with your device, set its SCSI ID. Replacement drives provided by Power will normally come with SCSI ID pre-set to 0 for the primary hard drive and 3 for a CD-ROM.

Each device in a SCSI chain requires a unique number called a SCSI ID, which the computer uses to identify the device. In the internal bus, the computer itself is assigned SCSI ID 7 and the primary internal hard disk is assigned SCSI ID 0. Every other device you install must have a unique number from 1 to 6. (The internal CD-ROM drive, if installed, is assigned SCSI ID 3.)

To determine what SCSI IDs have already been assigned to which devices, go to the **Hard Disk Toolkit™ PE** folder in the **Utilities** folder on your hard disk and run **HDT Primer™ PE**. HDT Primer will scan your SCSI bus and display the SCSI ID, name, and other parameters of all of the SCSI devices on the bus (see example below).



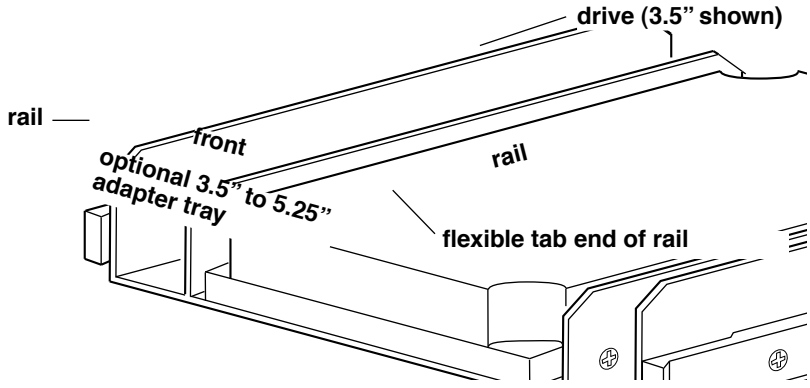
Since your computer has two SCSI buses, one internal and the other external, make sure to scan the *internal* one by selecting **Bus 0: Apple [Internal]** under HDT Primer's **SCSI Bus** menu. For details on HDT Primer, see "Launching HDT Primer PE," starting on page 92.

3. Install a 3.5 inch drive in a 3.5 to 5.25 inch adapter tray

Since the internal drive bays are designed to accommodate 5.25 inch drives, if you are installing a 3.5 inch drive, you will need to mount it in a 3.5 to 5.25 inch adapter tray. 3.5 to 5.25 inch adapter trays are available at most computer parts stores.

4. Install rails

Drives are held in place in the computer chassis by plastic rails mounted on each side, which fit into a mounting track in the chassis. Some drives come with rails already installed. See illustration below.



If you got your drive from Power Computing, the tracks should be included and are probably already attached. If for some reason your Power Computing drive came without rails, call Power Computing Customer Support at 1-800-671-6227.

If rails did not came with your drive, they are available from Power Computing for a nominal fee through our Sales Department at 1-800-999-7279. Rails, as well as adapter trays for installing 3.5 inch drives in the 5.25 inch bays are also available at most computer parts stores.

If rails are not attached to the sides of your drive or adapter tray, attach one rail to each side of the drive (or the adapter tray if you are installing a 3.5 inch drive) using the screws supplied with the rails. Rails should be attached with the flexible tabs toward the front of the drive and the tracks facing out. See the illustration above.

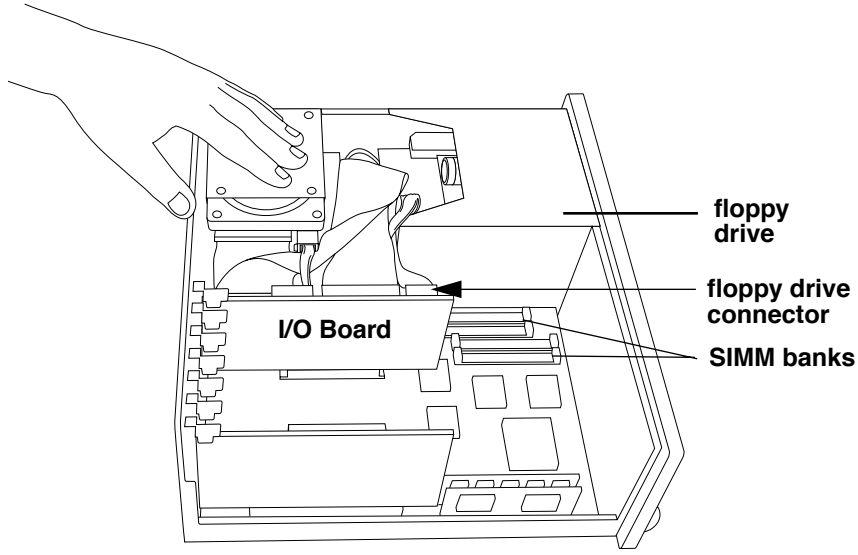
❑ Prepare the computer

1. **If you haven't done so, remove the cover from the computer.**

   See "Removing the cover," starting on page 13 for instructions.

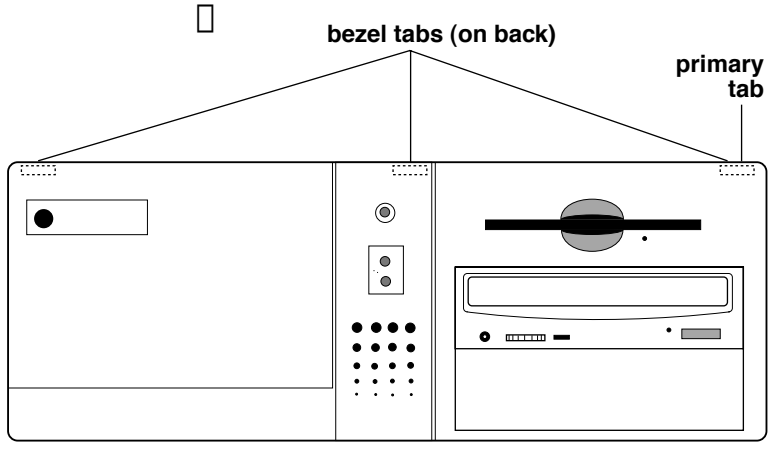
WARNING! Turn off the main power switch before removing the cover.

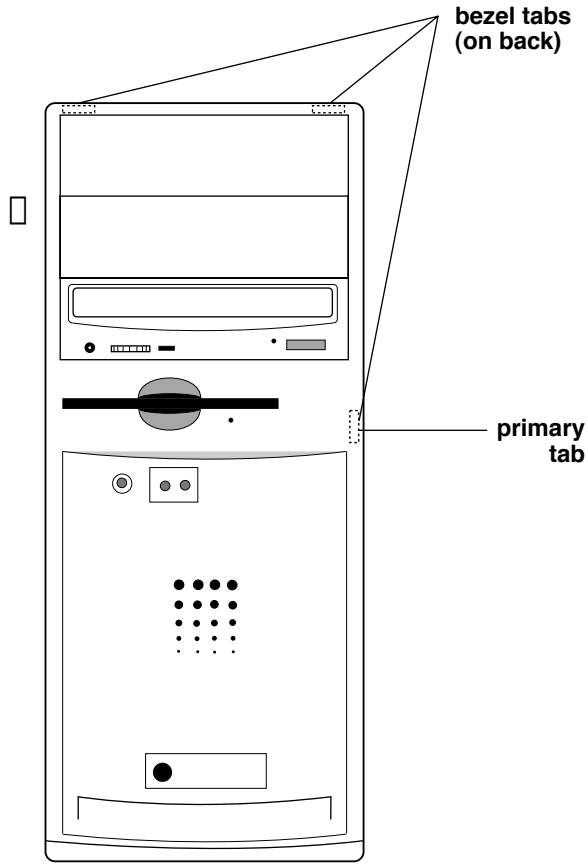
2. **Touch the metal plate over the hard disk drive to discharge any static electricity that might have built up on your clothes or body.**



3. **Disconnect the speaker connector, which is on the I/O board below the floppy disk drive connector.**

4. **Starting with the primary bezel tab, push down on the three tabs which hold the bezel in place (see illustrations below) and pull the long tabbed side of the bezel away from the case until the tabs on the other side of the bezel clear the front of the computer. See illustrations below for the tab locations on the desktop system and the tower system.**

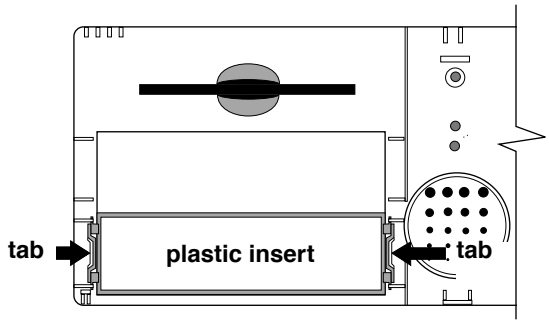




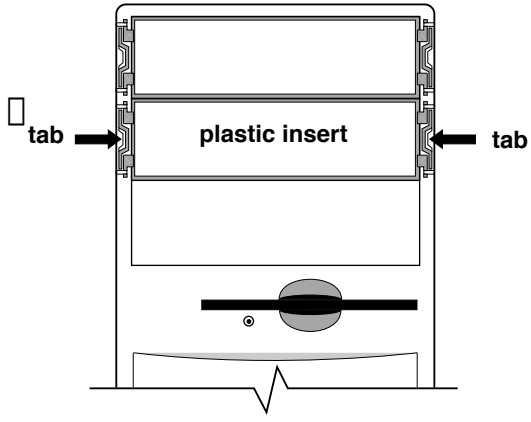
5. Pull the speaker cord out through the hole in the front of the computer and set the bezel down away from the computer.

This step may not be necessary if your speaker cord is long and you have room for the bezel near the computer.

6. **If you are installing a CD-ROM drive or other drive with removable media, remove the plastic insert covering the bay you are planning to use from the bezel. To remove the insert, press down on the plastic tab at one end of the insert and pivot the insert out (see illustrations below).**



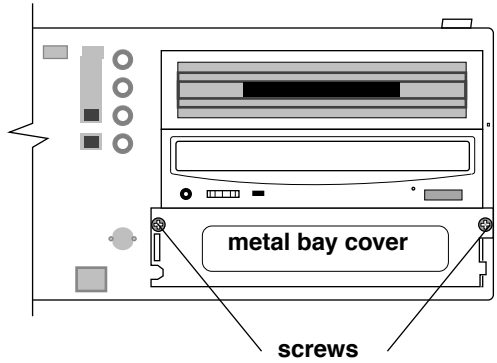
Desktop Bezel, rear view



Tower Bezel, rear view

7. Unscrew the two screws holding the metal bay cover, if there is one, in front of the drive bay and set the plate and screws aside.

If you are installing a drive that does not use removable media, you will need to replace this plate after you have installed the drive.



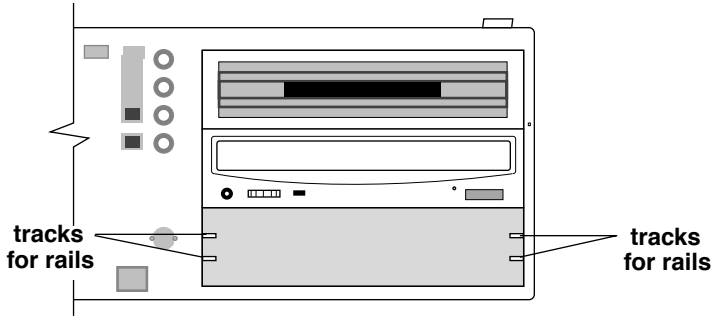
Note: The slot under the floppy drive on the desktop model and the top slot on the tower drive may have a metal plate without screws, which is attached by two thin strips of metal. To remove *that* type of plate, simply bend it back and forth several times until it comes loose, and remove it.

❑ Install the drive

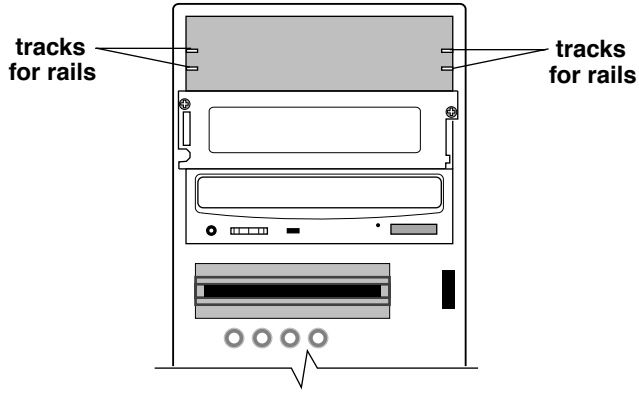
Once you have prepared the drive (see "Prepare the drive," starting on page 30) and the computer (see "Prepare the computer," starting on page 33), you are ready to install the drive.

Note: Connectors are keyed, which means that there is only one correct way to mate them. If a cable is very hard to connect, examine it carefully to make sure you have it oriented so that it fits the connector it goes onto. Once cables are connected, make sure they are snug.

1. Slide the drive into the bay (see illustrations below), being careful not to crimp or fold any cables. The drive rails slide into the tracks on the side of the bay and the rails snap into place when the drive is all the way in.



Desktop Drive Bay

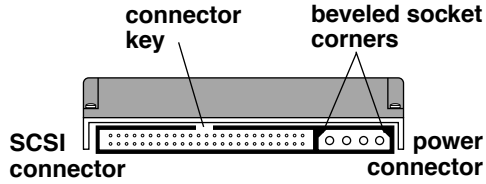


Tower Drive Bay

2. **Connect one of the unused connectors on the SCSI cable to the wide connector on the drive (see illustration below).**

   Note: There is a *key* in the middle of the top of the SCSI connector and a *notch* in the cable connector which matches the key, to ensure that the cable is not plugged in upside down. If the cable resists being plugged in, check to make sure the key and slot are mating correctly.

   Find the SCSI data cable inside the computer (it is the wide flat ribbon cable connected to the hard drive and, if you have one, the CD-ROM drive. The SCSI cable should have one or two unused connectors on it. You may have to detach and re-attach the SCSI connectors on one or more other drives to get connectors where you need them. Remember, this is SCSI, so the ends have to be terminated. See "Ensuring proper termination" on page 34 for details.



Rear View of Drive

3. **Find an unused four-pin power cable in the set of cables coming from the power supply (the power supply is in the right rear of the computer, on the bottom) and connect that cable to the rear of the drive, being careful to match the beveled corners of the plug to those of the socket (see illustration above).**

   Check the instructions that came with the drive for jumper or switch settings and check to make sure that they are properly set before going to the next step. Make sure the connectors are snug.

4. **If the drive does not use removable media, replace the metal cover plate in front of the drive.**

5. **Lift the bezel up to the front of the computer, thread the speaker cord back through the hole in the front panel, re-connect the speaker cord to the I/O board, and replace the bezel.**

6. **Replace the cover, reconnect system components, turn main power back on, and restart the computer.**

If the drive does not work,

1. **Make sure that any required drivers are properly installed. See the drive's documentation for more information.**

2. **Turn the system off, unplug the system components, and remove the cover.**

3. **Make sure that the drive's data cable SCSI connector is plugged in and seated firmly.**

   If the connection seems loose or crooked, check to make sure that no pins are bent and that the connection is keyed properly. Bent pins may be carefully straightened with a very small screwdriver.

4. **Make sure that the drive's power cable is plugged in and seated firmly.**

5. **Make sure that each device in the internal SCSI chain has its own unique SCSI ID: the primary hard drive should be set to ID 0 and the CD_ROM is normally set to 3. (See "Set SCSI ID" on page 31.)**

6. **Make sure there are no internally-terminated devices in the SCSI chain. The only internally-terminated device on the internal SCSI chain should be the pre-installed primary internal hard drive.**

7. **Replace the computer's cover, re-connect system components, turn main power back on, and restart the computer.**

If these steps do not correct the problem, contact the drive manufacturer or Power Computing Technical Support at 1-800-708-6227 for assistance.

Chapter 4 Connecting Peripheral Devices

Your computer has a number of ports for connecting peripheral devices such as printers, storage devices, audio equipment, network cabling, and modems.

See “Power 100/120 Overview” at the beginning of this manual for the location of the ports.

Using SCSI devices

Your computer has two separate SCSI buses—one for the internal devices like the hard disk and the optional CD-ROM drive and another for external devices. You can connect up to seven devices in a *SCSI chain* to each bus.

Connecting a SCSI device involves four steps:

- Installing a software device driver (if one is required)
- Setting the device’s SCSI ID number
- Ensuring proper termination
- Connecting the device

Installing software device drivers

Some SCSI devices require special software called device drivers to operate with your computer. If a device driver is required, it is normally supplied with the device; if you are unsure whether one is required, contact the manufacturer of the device. Follow the installation instructions supplied by the manufacturer. If a device driver is not supplied, you can assume that the device does not need one.

Setting the SCSI ID

Each device in a SCSI chain requires a unique number called a SCSI ID, which the computer uses to identify the device. In the internal bus, the computer itself is assigned SCSI ID 7 and the internal hard disk is assigned SCSI ID 0. Every other device you install must have a unique number from 1 to 6. (The internal CD-ROM drive, if installed, is assigned SCSI ID 3.)

In the external bus, each device must be assigned a unique SCSI ID from 0 to 7.

The way you assign SCSI IDs varies from device to device. On most external devices, the ID is displayed on the back of the device. You usually change it by pressing small buttons above or below the number display. For some external and most internal devices, changing the ID requires setting switches or moving jumpers. Refer to the documentation that came with the device for exact instructions.

The important thing to remember is that each device must have an ID that is unique within its bus. If there is an ID conflict, your computer and the SCSI devices connected to it will malfunction.

Ensuring proper termination

For a SCSI chain to work properly, it must be terminated correctly. The basic rule about SCSI termination is simple: the device at the end of the chain must be *terminated*. Devices located between the computer and the end of the chain must be unterminated.

On the internal SCSI bus, any devices you install should be unterminated because the computer's hard disk at the end of the bus is terminated and all of the internal connectors are in the middle of the chain.

On the external bus, you need to consider where the device is placed in the chain and whether it has an internal terminator. (Most SCSI devices use removable external terminators, but some older devices have built-in terminators that are difficult to remove.)

- If you have an internally terminated device, place it at the end of the chain and remove external terminators from other devices in the chain.
- If none of the devices is internally terminated, place an external terminator on the last device in the chain and on no other device.

See the documentation that came with each device for information about how it is terminated.

Connecting an external SCSI device

The external SCSI port, marked with ⇳, provides high-speed communication between the computer and devices such as hard disks, CD-ROM drives, scanners, printers, tape backup drives, and so on.

To connect a single SCSI device (or the first device in a chain), you need a SCSI cable with a 25-pin connector on one end and a 50-pin connector on the other. For each additional cable, you need a cable with 50-pin connectors on both ends. The cables you use should be double-shielded and have approximately 110-ohm impedance. Most SCSI problems are the result of low-grade cables.

Note: External SCSI devices which are connected to the computer must be turned on. Devices on the SCSI bus which are turned off can cause system errors.

❑ To connect an external SCSI device:

1. **Turn off the computer and the SCSI device.**
2. **Make sure that the device has a unique SCSI ID from 1 to 6.**
3. **Connect the device to the computer's SCSI port or to the last device in the chain using the appropriate cable.**
4. **Make sure that the last device in the chain is terminated.**

   Some devices require an external terminator, while others are internally terminated.

When you are ready to start up, turn on your SCSI devices before you turn on the computer. If you do not, your computer will not recognize the devices.

Connecting an internal SCSI device

You install internal SCSI devices in one of the computer's internal storage bays. See "Installing internal storage devices" in Chapter 3 for an illustration of the location of these bays. Contact Technical Support for more information about installing internal SCSI devices.

Connecting a printer

Your computer has a port (marked with). This port can be used for direct printer connections or for LocalTalk network printer connections.

You can also connect a printer to the modem port (marked with). Use the Chooser program to tell the Mac OS which port you are using. See Macintosh Guide for information about the Chooser.

To connect the printer, follow the instructions that came with it.

Connecting input devices

Use the computer's ADB port (marked with) to connect input devices such as a mouse, trackball, graphics tablet, or bar-code reader. Depending on their power consumption, you can connect up to three input devices in a chain from the ADB port.

The total power used by all the ADB devices must not exceed 500 milliamperes (mA). Check the documentation that came with your ADB devices for information about their power consumption.

Connecting a modem or telecom adapter

Your computer is equipped with an enhanced telecommunications port (marked with), which can be used with a standard modem or the Apple GeoPort Telecom Adapter. The GeoPort Telecom Adapter offers advanced communications features not available with standard modems. It is available from authorized Apple dealers.

To connect a modem or GeoPort Adapter, follow the instructions that came with it.

Connecting to a network

Your computer has built-in support for two different networking systems—LocalTalk and Ethernet. Other networking systems are possible, but they require expansion cards.

Use the Network control panel in Mac OS to choose a networking system. See Macintosh Guide for information about using your computer on a network.

Connecting to a LocalTalk network

Use the computer's printer port (marked with) to connect to a LocalTalk network. LocalTalk connectors and cables are available from several vendors. Follow the instructions that came with the connector and cabling.

Connecting to an Ethernet network

The computer has a built-in port (marked with) for connecting to high-speed Ethernet networks. Using the appropriate adapter, you can connect to standard Ethernet wiring such as 10Base-T, thick coax, and thin coax. Adapters are available from several vendors. Follow the manufacturer's instructions for connecting the adapter.

Connecting to a Token Ring network

You can connect to a Token Ring network by installing an expansion card and appropriate networking software. Token Ring cards and software are available from several vendors.

Using audio equipment

Using the sound in and sound out ports of your computer, you can record and play high-quality stereo audio. You can connect audio devices such as microphones, stereo equipment, and speakers. (You can also use an external or internal CD-ROM drive to play audio CDs. See "Playing audio CDs on a CD-ROM drive" on page 47 later in this section.)

Understanding the sound ports

Your computer has two sound ports—a sound output port (marked with) and a sound input port (marked with). Use these ports to connect audio devices.

The sound ports accept a connector called a *stereo mini-plug*, the same kind of connector used to connect headphones to a personal stereo. If an audio device has a different kind of connector, you can buy an adapter at an electronics store.

Connecting an audio device

To play or record sounds, connect an audio device to your computer.

- If you want to use your computer to work with the sound produced by a device like a microphone, CD, or tape player, attach it to the sound input port.
- If you want to use a device such as a tape recorder or external speakers to work with sound produced by the computer, attach it to the sound output port.

A device that can both record and play (such as a tape deck) can be connected to both the sound input and sound output ports.

The following section gives general instructions for connecting an audio device. If you plan to connect a microphone or external speakers, read “Connecting a microphone” on page 47 or “Connecting external speakers” on page 46 later in this section.

❑ To connect an audio device:

1. **Make sure that the device has a stereo mini-plug connector. Attach an adapter if necessary.**
2. **Shut down your computer and turn off the audio device.**
3. **Connect the audio cable to the device and to the appropriate sound port of the computer.**
4. **Turn on the computer and the device.**

After starting up the computer, use the Mac OS Sound control panel to select the device as the Sound In or Sound Out source. See Macintosh Guide for information about using the Sound control panel.

Connecting external speakers

You can connect external, amplified speakers to your computer to take advantage of its high-quality, stereo sound output.

You need a cable with stereo mini-plugs on each end to connect the speakers. In some cases, you connect the cable to one of the speakers and then use speaker wire to connect the second speaker. In other cases, you use a Y-shaped, two-plug adapter on the end of the cable and attach one plug to each speaker. Refer to the instructions that came with the speakers for more information.

❑ To connect external speakers:

1. **Turn off the computer and the speakers.**
2. **Connect one end of the cable to the sound output port of the computer.**
3. **Connect the other end of the cable to the speakers.**

   If necessary, use a Y-shaped adapter.
4. **If necessary, connect the speakers with speaker wire.**
5. **Turn on the computer and speakers.**

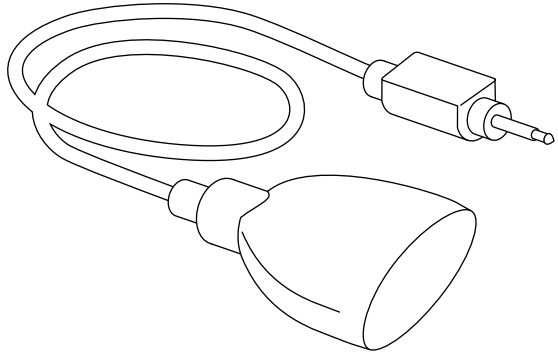
   The sound output of the computer is heard through the speakers.

You can control the speaker volume in the Mac OS Sound control panel. In some cases, the speakers themselves may also have a volume control. See Macintosh Guide for information about controlling the volume.

Connecting a microphone

You can connect a microphone to your computer via the sound input port. The microphone can be used for recording sounds or for issuing spoken commands to your computer.

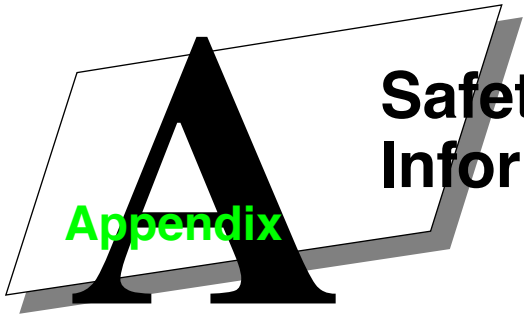
The computer requires the Apple PlainTalk Microphone, pictured below. PlainTalk software is required for voice commands. PlainTalk microphones and software are available from authorized Apple dealers.



Playing audio CDs on a CD-ROM drive

You can use a CD-ROM drive to play audio CDs on your computer. The sound will be heard through the computer's built-in speaker (or through external speakers if you have them).

Use audio CD software (such as AppleCD Audio Player, part of the Mac OS) to play the CD and the Sound control panel to select the CD-ROM drive and control the volume. See Macintosh Guide for information about playing audio CDs on a CD-ROM drive.



Safety and Health Information

Use this appendix to learn about safety and health issues related to computer use.

Safety instructions

Follow these guidelines to protect yourself from electrical shock:

- Plug the computer into a grounded, three-hole outlet. Do not use a three-hole adapter in a two-hole outlet.
- Do not use your computer if the power cord is frayed or damaged.
- Keep the computer away from moisture and liquid. Do not use it if you spill liquids on it.
- Turn off the computer before removing its cover.
- Never operate the computer without its cover.
- Follow the safety instructions in this manual. A *warning* alerts you of a potential health or safety hazard. A *caution* notice alerts you of potential harm to your computer or its components.

Health-related information about computer use

The way you set up and use your computer can affect not only your productivity but also your comfort and well-being. No set of guidelines can cover every situation, but if you follow a few common-sense suggestions, you can prevent the eye fatigue and musculoskeletal discomfort sometimes experienced by computer users.

Preventing eye strain

Whenever you focus your eyes on a nearby object for a long time—whether you are reading, sewing, or working on a computer—your eyes can get tired. Follow these suggestions to prevent eye strain:

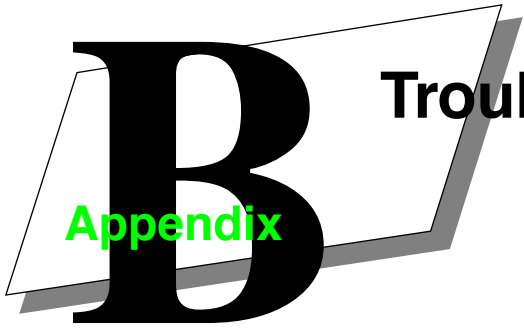
- Take frequent breaks. Periodically look away from the screen and focus your eyes on something farther than 20 feet away.

- To prevent glare on the screen, avoid working with a window or light source behind you. Turn off lights or close drapes if necessary.
- Place your monitor, chair, and work table so that the top of the monitor is slightly below the top of your head and the screen is 18-28 inches away from you. This may require placing something under the monitor.

Preventing discomfort and fatigue

Like any activity that involves sitting for long periods of time, using a computer can make you tired and stiff. In addition, using a keyboard and mouse improperly can sometimes be associated with RSIs (repetitive stress injuries), particularly in the wrists. Follow these suggestions to prevent discomfort:

- Take frequent breaks. Stand up, stretch, and walk around. These breaks are not wasted time. They help you work more effectively in the long run.
- Adjust your chair so that your lower back and thighs are supported and your feet are flat on the ground (or on a footrest).
- Adjust your chair and work table so that you can type and use the mouse with your elbows at a 90° angle, your forearms level, and your hands in a straight line with your forearms. A work table equipped with an adjustable keyboard tray may make this easier.
- Do not place your wrists on the hard edge of your table. Use a wrist pad.
- Sit up straight in your chair. Slouching puts unnecessary strain on your back.
- Do not strike the keys any harder than necessary.



Troubleshooting

If you have a problem using your computer, use the suggestions in this appendix to identify the source of the trouble.

If you are unable to resolve a problem using these suggestions, follow the instructions at the end of the chapter to get technical support. **Power Computing's Technical Support Department can be reached toll-free in the United States at 1-800-708-6227.**

Restarting the computer

You can eliminate some common problems by restarting the computer, which clears the computer's memory.

- If the mouse is still working, choose Restart from the Special menu. If an error dialog box is displayed, it may have a Restart button.
- If the mouse is not working, try holding down the ⌘ and Control keys while pressing the Power On key. This key combination restarts the computer, but should only be used when you cannot use the Restart menu command.
- If you cannot restart the computer from Mac OS, use the Reset button on the front panel. See "Power 100/120 Overview" on page ix at the beginning of this manual for the location of the button. Be careful not to confuse the Reset button with the Interrupt button, used by programmers.
- If the Reset button does not work, use the power switch on the back panel to turn off the computer. Wait at least ten seconds before turning it back on. (You need to wait to give the hard disk time to spin down.)

Problems and solutions

This section lists some problems you might experience along with suggestions for solving them.

The monitor is dark after you turn on the computer.

- Follow the suggestions under “Problems starting up” on page 8.

You see a question mark icon instead of the Mac OS desktop when you start up.

- There may be a problem with a SCSI device connected to the computer. Turn off all the external SCSI devices, then restart your computer. If your computer starts up normally, verify that the SCSI devices are connected and terminated properly, and that all devices in each bus have unique SCSI IDs. See “Using SCSI devices” on page 41 for more information.
- System software is not installed on the computer. Follow the instructions in “Reinstalling system software” on page 58 to install the software.

A blinking question mark icon appears when you start up.

The blinking question mark indicates that the computer cannot find its system software. This may indicate a problem with the start-up disk or a problem with the system software.

- Start up your computer from the Disk Tools floppy disk or Mac OS CD-ROM. Use the Disk First Aid program to check and repair your disk. (See the Disk First Aid entry in Macintosh Guide for instructions.)
- If repairing the disk does not solve the problem, reinstall the system software as described in “Reinstalling system software” on page 58.

A floppy disk icon with an X in it appears.

You inserted a non-start-up floppy disk during the start-up process. If you wait a few seconds, the computer will start up normally from the hard disk. Remember to insert floppy disks only after the start-up process is complete—when the Mac OS desktop is visible.

An icon with a sad face appears when you start up.

This can indicate a problem with the system software or with the computer hardware.

- Try starting up from a different disk—the Disk Tools floppy disk or the Mac OS CD-ROM, for example. If you can start up with a different disk, it means that there is a problem with your system software.
- If the sad face icon continues to appear, contact an authorized service provider. There is most likely a problem with the computer hardware.

A hard disk icon does not appear on the Mac OS desktop.

- If the start-up hard disk is internal, restart your machine.
- If the hard disk is external, verify that it is connected and terminated properly, and that it has a unique SCSI ID. Make sure that there are no SCSI ID conflicts. See "Using SCSI devices" on page 41 for information.
- If the disk is your start-up disk, start up your computer from the Disk Tools floppy disk or Mac OS CD-ROM. Use the Disk First Aid program to check and repair your disk. (See the Disk First Aid entry in Macintosh Guide for instructions.) If repairing the disk does not solve the problem, reinstall the system software as described in "Reinstalling system software" on page 58.

You cannot read a floppy disk.

This can indicate a damaged disk or one that is not initialized.

- If a floppy disk has never been used, it may not be initialized. See Macintosh Guide for instructions on how to initialize disks.
- If the disk is damaged, try using the Disk First Aid program to repair it. See Macintosh Guide for instructions about using Disk First Aid.

The mouse pointer does not move when you move the mouse.

This can indicate a system software problem, a problem with your mouse, or a problem with a program that you are running.

- Turn off the computer and verify that the mouse is connected properly. See "Connecting the mouse and keyboard" on page 6 for information.
- Try using a different mouse or input device. If it works, there is a problem with the original mouse.
- Try using a different start-up disk—the Disk Tools floppy disk or the Mac OS CD-ROM, for example. If the mouse works, there is a problem with the system software on your normal start-up disk. Reinstall the system software as described in "Reinstalling system software" on page 58.
- If the problem continues, you may be using an incompatible program. Verify that the applications, system extensions, and control panels on your computer are compatible with your system software.

No characters appear on the screen when you type.

- Use the mouse pointer to click in the window in which you want to type. This ensures that the program is active and that you have an insertion point for your text.
- Turn off the computer and verify that the keyboard is connected properly. See "Connecting the mouse and keyboard" on page 6 for information.

- Try using a different keyboard. (Turn off the computer before switching keyboards.)
- Try using a different start-up disk—the Disk Tools floppy disk or the Mac OS CD-ROM, for example. If the keyboard works, there is a problem with the system software on your normal start-up disk. Reinstall the system software as described in "Reinstalling system software" on page 58.

You see a dialog box with a bomb.

This indicates a software problem.

- If there is a number in the dialog box, write it down for future reference. Make note of what you were doing when the error occurred.
- Restart the computer. See "Restarting the computer" on page 51 earlier in this appendix.
- Verify that the applications, system extensions, and control panels on your computer are compatible with your system software. You may need to update some of your software.
- Restart your computer without extensions. (To restart without extensions, hold down the Shift key as you restart.) If your software works properly, you probably have an incompatible system extension or control panel. See Macintosh Guide for information about using the Extensions Manager control panel to isolate the problem.

You cannot launch a program or it quits unexpectedly.

This usually indicates that there is not enough RAM for the program to run. A dialog box may appear, indicating insufficient memory as the source of the problem.

- Quit programs to free up memory, then launch the application you want to use.
- Restart the computer to clear memory. See "Restarting the computer" on page 51, at the beginning of this appendix.
- Use the Get Info window to allocate more memory to the program. See Macintosh Guide for information about Get Info.
- Turn on virtual memory to use some of the computer's hard disk space as RAM. See Macintosh Guide for information about turning on virtual memory.
- Install additional memory modules. See "Increasing memory" on page 21 for information.

Contacting Technical Support

If you have a problem with your computer that you can't resolve with the information in this manual and appendix, contact Technical Support at 1-800-708-6227 for assistance.

Appendix C

Installing System Software

Mac OS system software was preinstalled on your computer's hard disk. Under normal circumstances, you should not have to reinstall system software.

If a problem occurs—for example, if you see a question mark icon on the screen when you try to start up—you may need to reinstall the system software.

Starting up

Mac OS software is supplied in two formats:

- If you purchased the computer with a built-in CD-ROM drive, system software is supplied on a CD-ROM disc.
- If you purchased the computer without a CD-ROM drive, system software is supplied on a set of floppy disks.

You must start up from the CD-ROM disc or from the Install Me First floppy disk before installing the system software.

❑ To start up from a CD-ROM:

1. **Turn on your computer.**
2. **Place the Mac OS disc label side up into the CD-ROM tray, then close the tray.**

   The computer starts up and displays the Mac OS desktop.

Note: You should only use the CD-ROM disc to start up when your normal start-up disk is malfunctioning or when you need to install system software.

❑ To start up from the Install Me First floppy disk:

1. **Insert the disk into the floppy drive, then turn on your computer.**

   The computer starts up and automatically displays the Installer screen.

Reinstalling system software

Once you have started your computer, you can use the Installer program to reinstall the system software.

1. **If you started from a CD-ROM, double-click the Install System Software icon to start the Installer.**

   If you started from the Install Me First floppy disk, the Installer application starts automatically.

2. **Click OK in the introductory dialog box.**

   The Install dialog box appears, displaying a list of software and the hard disk on which it will be installed.

3. **If you want to install on a different hard disk, click the Switch Disk button until the correct disk appears.**

4. **Click Install.**

   A status bar informs you of the progress of the installation. If you are installing from floppy disks, insert disks when the Installer prompts you. A dialog box informs you when the installation is complete.

5. **Click Restart in the dialog box to start up your computer from the hard disk.**

Appendix D Technical Information

This appendix contains technical information and specifications for the Power 100, and Power 120 computers.

Specifications

Processor

- PowerPC 601 at 100 MHz (Model 100)
- PowerPC 601 at 120 MHz (Model 120)

Memory

- Minimum 8 MB RAM, expandable to a maximum of 200 MB
- 4 MB read-only memory (ROM)
- 256 bytes of non-volatile parameter memory
- 256 kB of static RAM used as a Level 2 cache for the PowerPC processor

Disk drives

- 1.4 MB high-density MFM/GCR floppy disk drive
- Internal SCSI hard disk drive
- Two optional 5.25-inch, half-height SCSI devices

Audio system

- Stereo sound generator capable of driving stereo mini-plug headphones or audio equipment
- Stereo sampling hardware for recording samples
- 16-bit stereo in and out
- Sample rates of 44.1 kHz and 22.05 kHz
- Input line level: 2 volts peak-to-peak nominal into 6.5 kΩ
- Input through output signal-to-noise ratio: >86 decibels (dB) with no audible discrete tones
- Bandwidth: 10 Hz–19 kHz (+/– 2 dB) at 44.1 kHz sample rate

- Total harmonic distortion plus noise: Less than 0.06%, measured 30 Hz–60 kHz with a 2 V p-p sine wave input

Interfaces

- Dual SCSI bus. An internal SCSI bus supports up to seven storage devices. The external bus supports up to seven additional SCSI devices.
- One Apple Desktop Bus (ADB) port for up to three input devices daisy-chained through a low-speed, synchronous serial bus
- Three monitor ports for color and monochrome monitors
- Three internal NuBus expansion card slots
- Two RS-232/RS-422 serial GeoPort ports, 230.4 Kbits per second maximum (up to 2.048 Mbits per second clocked externally)
- Built-in Ethernet AAUI connector
- Sound output port for stereo CD audio and computer-generated sound
- Sound input port for stereo sound input

AC line input

- Line voltage: 100–240 volts AC, RMS single phase (not auto-ranging)
- Frequency: 50–60 Hz
- Power: 600 watts maximum

DC power

- 200 watts maximum

Current type	Total
+5 V	20 A
–5 V	0.5 A
+12 V	8 A
-12 V	0.5 A

Clock and calendar

- CMOS circuitry with long-life 3.6-volt lithium battery (1/2 AA cell)

Keyboard and mouse

- Supports all ADB-compatible keyboards and mice

Operating environment

- Operating temperature: 10°C to 40°C (50°F to 104°F)
- Storage temperature: –40°C to 50°C (–40°F to 122°F)
- Relative humidity: 5% to 95% (noncondensing)
- Altitude: 0 to 3048 m (0 to 10,000 ft)

Dimensions

- Size: 15.8" W X 6.1" H X 15.9" D (402 mm X 155 mm X 404 mm)
- Weight: 23 lb (10.5 kg). Greater if an internal CD-ROM or other storage device is installed.

RAM configurations

The Model 100/120 has four pairs of slots for memory modules (or SIMMs). The computer will work with a number of different memory configurations, from a minimum of 8 MB to a maximum of 200 MB. Follow these guidelines when configuring your system's RAM:

- SIMMs must be installed in identical pairs. The SIMMs in a pair must have the same capacity and configuration.
- The first pair of SIMM slots (nearest the power supply) accepts only 4 MB SIMMs. This pair must be filled.
- The other slots can accept 4, 8, 16, and 32 MB SIMMs.
- All SIMMs must be 72-pin, fast-paged mode, 80-nanosecond RAM access time or faster. Slower SIMMs will not work reliably. SIMMs from older Macintosh computers are not compatible.

VRAM configurations

Video memory (VRAM) for the two ports on the optional high-performance video card is provided in SIMMs installed on the card. (The standard monitor port does not use VRAM.) The high-performance video card comes with 2 MB of VRAM and can be expanded up to 4 MB with four 80-nanosecond, 68-pin, 512 KB SIMMs.

Increasing the computer's VRAM increases the number of colors that can be displayed on a monitor. See the tables in the next section for information about how many colors can be displayed on a monitor of a particular size with different amounts of VRAM.

Monitor resolution/color tables

The following tables display the numbers of colors available to monitors of various sizes connected to the computer's monitor ports. Table D-1 displays information about the DRAM video monitor port. Table D-2 displays information about the standard monitor port located on the optional high-performance video card, including color levels available with different amounts of VRAM. Table D-3 lists the same information for the VGA port on the optional high-performance video card.

Table D-1. DRAM video monitor port color levels

Monitor	Resolution	Colors or Grays
12" Color	512 X 384	thousands
13" Color	640 X 480	thousands
14 or 15" Mono Portrait	640 X 870	256
16 or 17" Color	832 X 624	256
VGA (requires adapter)	640 X 480	256

Table D-2. Optional High-Performance Macintosh-standard monitor port color levels

Monitor	Resolution	Colors or Grays	
		2 MB VRAM	4 MB VRAM
12" Color	512 X 834	millions	millions
13 or 14" VGA	640 X 480	millions	millions
15" Mono Portrait	640 X 870	256	256
16 or 17" Color	832 X 624	millions	millions
19 or 20" Color	1024 X 768	thousands	millions
21" Color	1152 X 870	thousands	millions

Table D-3. Optional High-Performance VGA monitor port color levels

Monitor	Resolution	Colors or Grays	
		2 MB VRAM	4 MB VRAM
Super VGA	800 X 600	millions	millions
Super VGA 60 Hz	1024 X 768	thousands	millions
Super VGA 70 Hz	1024 X 768	thousands	millions

Power requirements

Apple Desktop Bus

- Maximum power draw for all devices: 500 mA
- Mouse power: up to 10 mA
- Keyboard power: 25–80 mA (depending on keyboard model)

Audio and telecommunications input devices

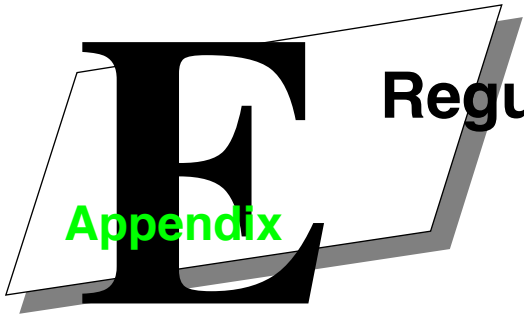
Device	Voltage	Current	Power
Microphone	+5 V	20 mA	100 mW
GeoPort Telecom Adapter	+5 V	500 mA	2.5 W

Expansion cards and devices

When you add NuBus cards or internal storage devices, make sure their power consumption meets the following guidelines:

Device	Voltage	Current	Power
NuBus card (per slot)	+5 V	2 A	10 W
	+12 V	0.175 A	2.1 W
	-12 V	0.150 A	1.8 W
Internal storage device (such as a CD-ROM or hard disk drive)	+5 V	9 A	45 W
	+12 V	3 A	36 W
	+ 12 V	7.5 A (peak*)	—

*Peak power occurs during start-up only, when the disk first spins up.



Regulatory Information

This appendix contains information required by regulatory agencies.

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 accordance with the manufacturer'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 authorized service provider 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.

Power 120 systems are shipped with an EMI choke, which must be installed on the video cable. See “Connecting the monitor” on page 4 for installation information.

Important: Changes or modifications to your computer not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

This product was tested for FCC compliance under conditions that included the use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices.

DOC statement

DOC Class B Compliance This digital apparatus does not exceed 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.

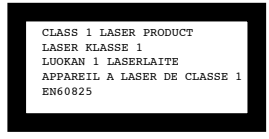
Observation des normes—Classe B Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Class B prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

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 authorized service provider.

If you have an internal CD-ROM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located on the computer, indicates that the drive meets minimum safety requirements. A service warning label is on the CD-ROM drive inside the computer.



Lithium battery warning

The computer contains a lithium battery to power the clock and calendar circuitry.

CAUTION: Danger of explosion if battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du méme type ou d'un type recommandé par le constructer. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

For use in European countries

Use an HAR approved power cord with proper plug configuration.

Bitte nur mit zugelassener HAR-Stromkabel benutzen.

Index

D

E

F

G

H

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