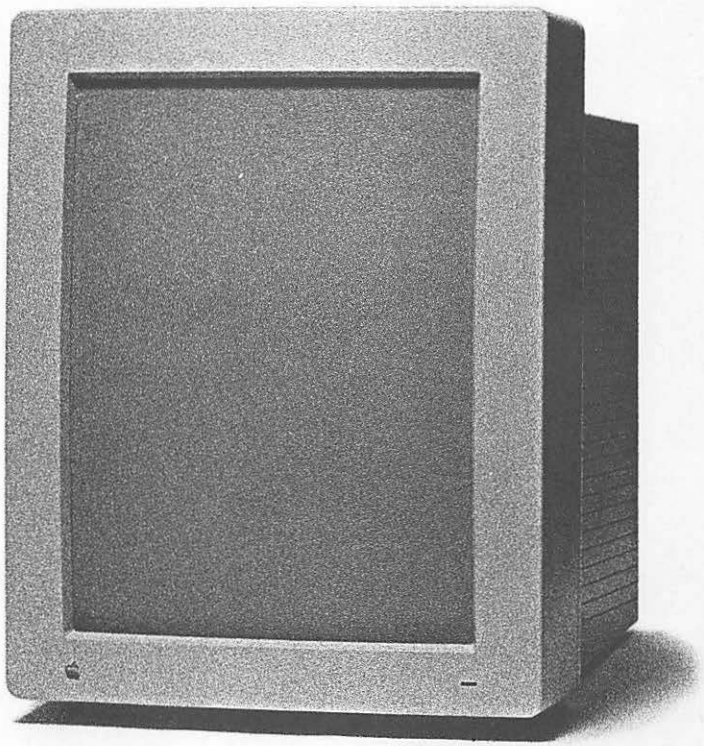
Apple® Macintosh® Portrait Display Owner's Guide



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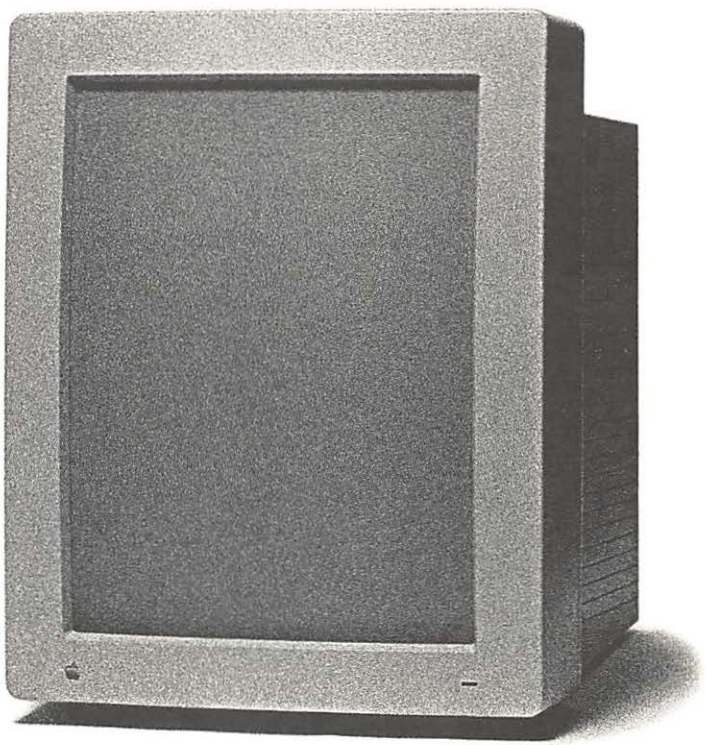

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Radio and television interference

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

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of 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 the interference will not occur in a particular installation.

You can determine whether your computer 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.)
- Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and the television.

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission: "How to Identify and Resolve Radio-TV Interference Problems" (stock number 004-000-00345-4). This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

△ Important 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 to reduce the possibility of causing interference to radios, television sets, and other electronic devices. For Apple peripheral devices, you can obtain the proper shielded cables from your authorized Apple dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance. △

Apple Macintosh Portrait Display

THE APPLE® MACINTOSH® PORTRAIT DISPLAY IS THE IDEAL COMPANION FOR your Apple Macintosh computer in both design and usability. Its full-page display is especially appropriate for word processing and desktop publishing applications, or, while running MultiFinder™, for displaying more than one window at a time and switching quickly between applications. The Macintosh Portrait Display can be used with any Macintosh computer that uses **NuBus** expansion cards. (Refer to the manual that came with your computer for specific information about connecting monitors to your particular model of Macintosh computer.)

NuBus is a standardized circuit architecture that lets you customize Macintosh II computers by adding expansion cards.

Among the Macintosh Portrait Display's features are:

- 15-inch diagonal, full-page display (640 by 870 pixels)
- a flat-faced, square-cornered picture tube for a page-like display
- crisp, flicker-free display
- gray-scale capability (with appropriate video card)
- a high-contrast, antiglare screen
- an easy-to-clean screen and cabinet
- three **Apple Desktop Bus**™ ports for a variety of options in setting up your work environment

The **Apple Desktop Bus** is a circuit that lets you connect several devices (keyboard, mouse, graphics tablet, joystick, and other input devices) to your monitor and computer.

The Macintosh Portrait Display is easy to set up and adapt to your working habits and environment. You can change the brightness and contrast of the display to suit your preferences. You can also adjust the viewing angle of your monitor with an optional monitor stand (available from your authorized Apple dealer). The monitor's three Apple Desktop Bus ports let you set up the system in a variety of configurations to suit your needs.

To get the best results from your monitor, take a few minutes to read this manual. You'll learn how to:

- connect the monitor to your Macintosh computer and to a power outlet
- position the monitor
- use the monitor's Apple Desktop Bus ports
- turn on the monitor
- adjust the display

You'll also find some tips on using and caring for the monitor, notes on service and support, important safety information, and an appendix that provides technical specifications. Follow all instructions carefully.

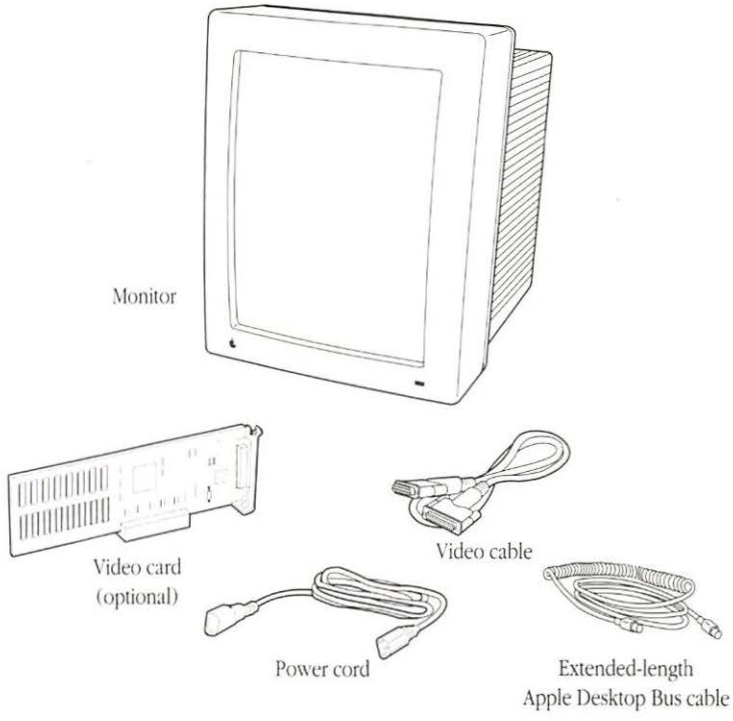
▲ **Warning** Handle the Macintosh Portrait Display with care. Jarring it can damage its internal components. ▲

Getting started

Before you set up the monitor, make sure that your Macintosh computer is turned *off* and that you have

- the video cable
- the power cord
- the Macintosh II Portrait Display Video Card
- the extended-length Apple Desktop Bus cable

■ **Figure 1** Inventory



The monitor, the video cable, and the power cord are packaged together. (Video cards for the Macintosh Portrait Display are sold separately. A video card is optional if your Macintosh model has a built-in video port; on those models, you can use a video card to provide display capabilities not provided as part of the built-in video.) If you're missing any of these pieces, contact your authorized Apple dealer or representative.

△ **Important** Choose a sturdy desk or table to work on. Don't set up your Macintosh system on a card table or other surface that could be tipped or knocked over easily. △

Installing a video card

If your Macintosh does not have a built-in video port, you will need to install a video card in one of the computer's NuBus expansion slots. Complete instructions and illustrations for installing a video card are included in the manuals that came with your Macintosh.

A summary of the steps required to install a video card is provided here. If you need more detailed information, turn to your Macintosh documentation.

▲ Warning Before installing the video card, make sure the computer is plugged in and turned *off*. When properly connected to a grounded outlet, the power cord acts as a ground for the system, protecting its components from static electricity—even when the computer is turned off.

Do not turn on the computer. Turning it on before you're finished assembling the system could result in electrical shock to you or damage to your computer system. ▲

1. **Remove the lid from the computer's main unit.**
2. **Touch the power supply case inside the computer to discharge any static electricity that might be on your clothes or body.**
3. **Choose the expansion slot you want to use.**
4. **If your Macintosh computer has expansion cover shields, remove the shield behind the slot you've chosen by lifting it free of the guide and pin.**
5. **Push out the cover plate from the opening that lines up with the slot.**
6. **Insert the video card into the expansion slot.**
7. **Replace the lid on the main unit.**

Connecting the monitor

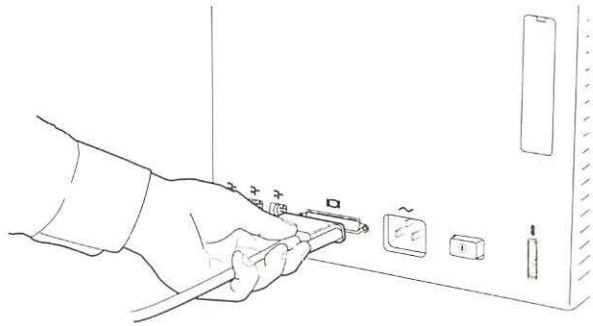
Your monitor connects to a video card inside the Macintosh or to a video port on the back panel of the computer. Here's how to connect the monitor:

1. **Position the monitor and computer so that you can easily get at the back panel of each.**

2. **Plug one end of the video cable into the monitor's video socket. (You can use either end of the cable; both ends are the same.)**

   The monitor's video socket is on the monitor's back panel, marked with the video icon. (See Figure 2.)

■ **Figure 2** Connecting the video cable to the monitor



3. **Tighten the thumbscrews on the connector.**

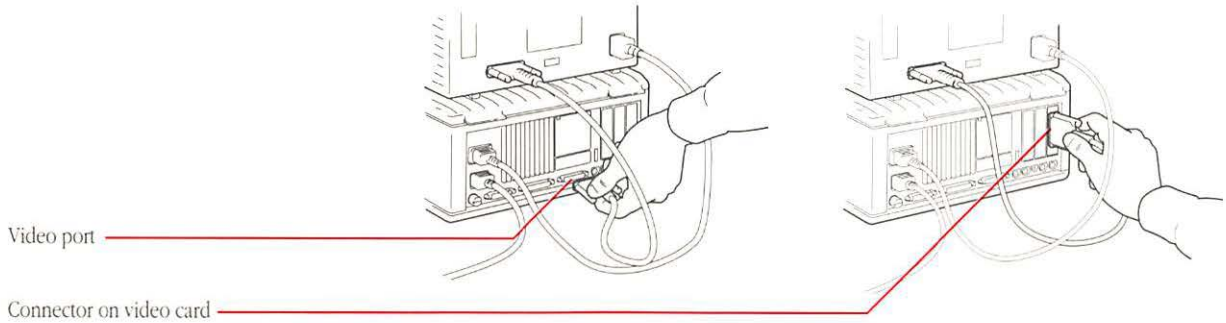
   Tightening the screws will keep the connection from coming loose and prevent radio and television interference.

4. **Connect the other end of the video cable to the appropriate video socket on the computer and tighten the thumbscrews.**

- □ If you have not installed a video card, plug the cable into the built-in video port on the computer's back panel.
- □ If you have installed a video card, plug the cable into the connector on the video card.

See Figure 3 for examples of the built-in video port and the video card's connector.

■ **Figure 3** The built-in video port and the video card connector

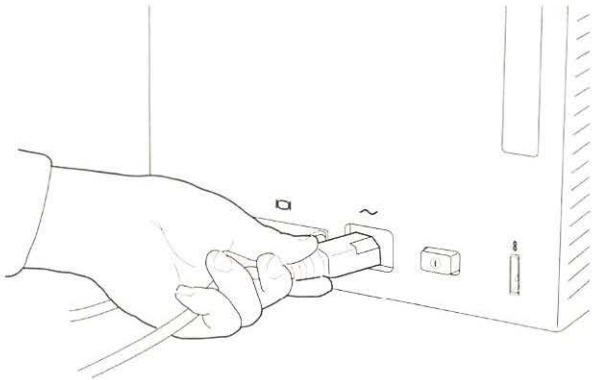


5. Plug the power cord into the monitor's power socket.

Power icon

The socket is marked with the power icon on the monitor's back panel. (See Figure 4.)

■ **Figure 4** Power cord and power socket



6. **Plug the monitor's power cord into the outlet on the back of your computer.**

❖ *Note:* Your Macintosh computer comes with an electrical outlet on the back panel that matches the plug on the monitor's power cord. Use this outlet for the monitor. The plug on your monitor's power cord will not fit into a standard wall outlet.

With the monitor plugged into the back of the computer

- you'll be able to use the Power On key on the keyboard to turn both the computer and the monitor on
- you'll need only one wall outlet near your system—two if you have a printer or other device

If you decide not to plug your monitor into the outlet on your computer, or if you're using more than one monitor, you'll need at least two wall outlets near your computer, and you'll need to contact your authorized Apple dealer or representative to get a standard power cord with a three-pronged grounded plug.

▲ **Warning** This equipment is intended to be electrically grounded. If you use a power cord other than the cord supplied with your monitor, be sure to use only cords with three-pronged, grounded plugs, and be sure to use them only in grounded, AC outlets. ▲

Positioning the monitor

The Macintosh Portrait Display is designed for a variety of configurations to give you optimum working and viewing comfort. Here are a few possibilities for positioning your monitor and computer:

- You can place the monitor directly on top of the computer.
- You can set the monitor to one side of the computer.
- You can mount the monitor on an optional Apple Universal Monitor Stand, and position it either on top of the computer or to one side.

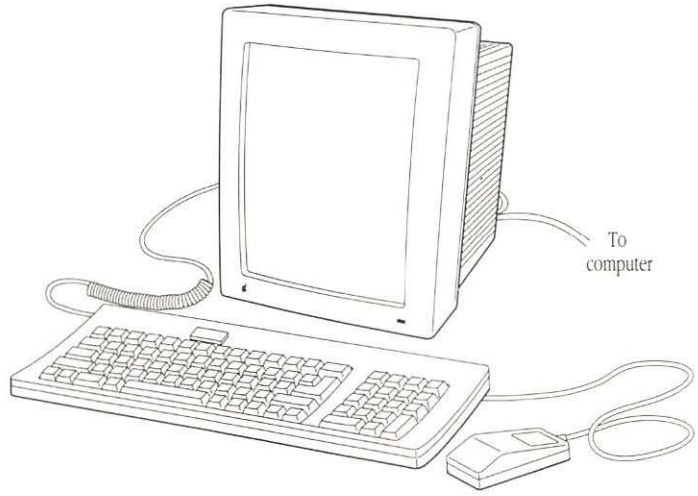
The Apple Universal Monitor Stand swivels side to side and tilts forward and back, allowing you to set your monitor to the viewing angle you find most comfortable.

❖ *Using two monitors:* If you are using two monitors with your Macintosh, placing them close together may cause interference with the images on the monitors' screens. If you see such interference, move the monitors apart until the interference disappears.

Using the monitor's Apple Desktop Bus ports

Your Macintosh Portrait Display provides three Apple Desktop Bus ports on its back panel that you can use instead of, or in combination with, the Apple Desktop Bus ports on the computer's back panel. You attach your keyboard, mouse, or other Apple Desktop Bus devices to these ports. They provide great flexibility in configuring your Macintosh system to your specific needs. For instance, you might want to place the computer on a separate shelf away from the monitor, the keyboard, and the mouse—leaving more room on your desk surface for your work. Use the monitor's Apple Desktop Bus ports in the same way you would use the ports on the back panel of the computer.

■ **Figure 5** A common configuration



△ **Important** You don't have to attach the mouse and keyboard to the monitor. If you prefer, you can attach them to the Apple Desktop Bus ports on the computer and leave the monitor's three Apple Desktop Bus ports unused. △

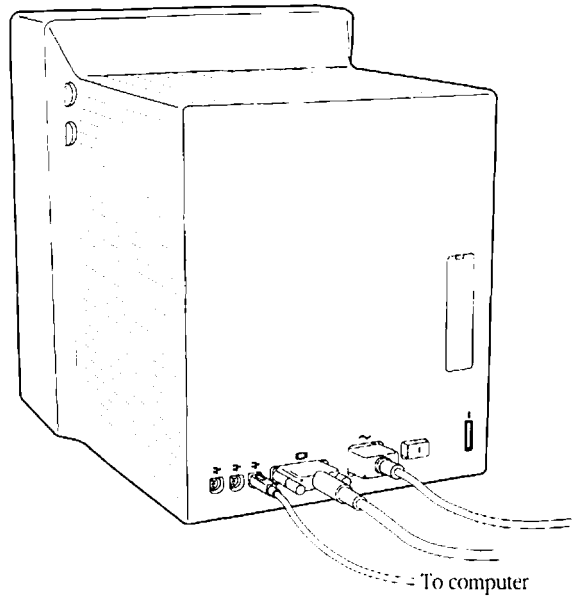
If you decide to use the monitor's Apple Desktop Bus ports, follow these steps to connect the monitor and the computer with an Apple Desktop Bus cable:

Apple Desktop Bus icon

1. **Plug one end of the Apple Desktop Bus cable into one of the three Apple Desktop Bus ports on the monitor's back panel. (See Figure 6.)**

   Use the extended-length Apple Desktop Bus cable that came with your Macintosh II Portrait Display Video Card.

■ **Figure 6** Plugging the Apple Desktop Bus cable into the monitor



2. Plug the other end of the cable into one of the two Apple Desktop Bus ports on the back panel of your Macintosh computer.

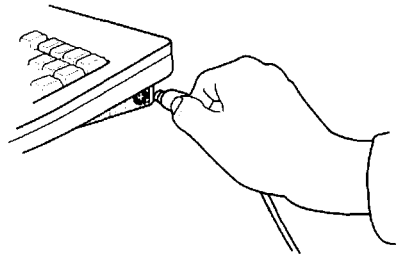
Connecting the monitor and the computer through the Apple Desktop Bus provides a path for information to flow from the keyboard and the mouse, through the monitor, to the computer.

Follow these steps to attach the keyboard and the mouse to the monitor's Apple Desktop Bus ports:

1. **Plug the mouse cable into the port on the right side of the keyboard.**

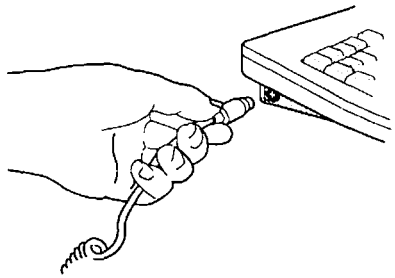
   If you're left-handed, you may want to plug it into the port on the left side instead.

■ **Figure 7** Plugging the mouse cable into the keyboard



2. **Plug one end of the keyboard cable into the other port on the keyboard.**

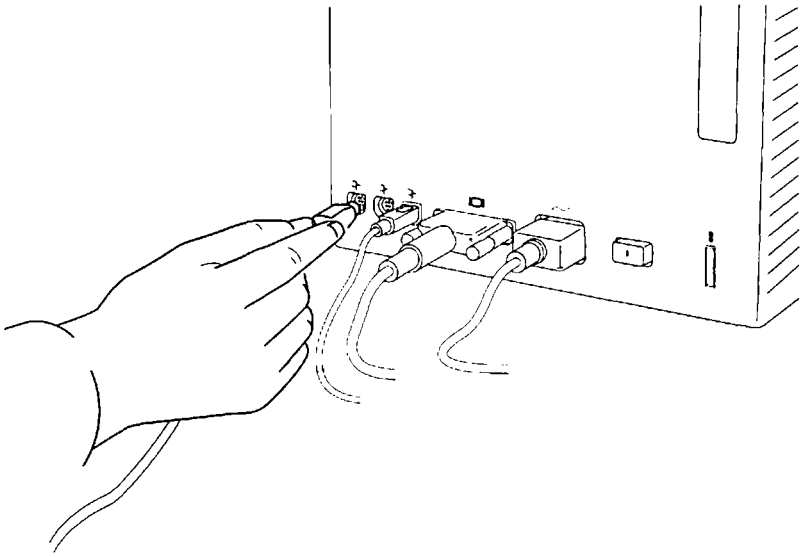
■ **Figure 8** Plugging the keyboard cable into the keyboard



Apple Desktop Bus icon

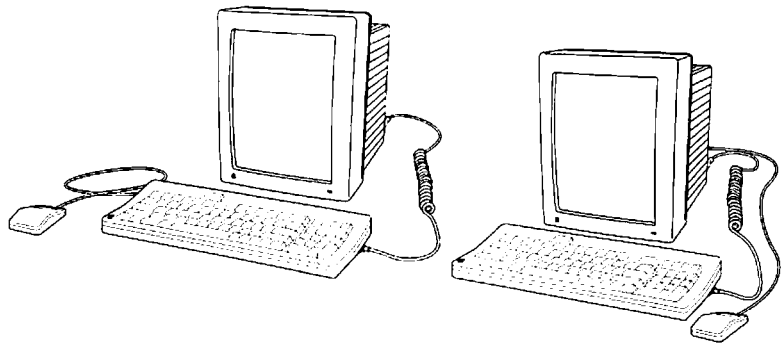
3. **Plug the other end of the keyboard cable into either of the two remaining Apple Desktop Bus ports on the monitor's back panel.**

■ **Figure 9** Plugging the keyboard cable into the monitor's Apple Desktop Bus port



You might prefer to plug the mouse into the other port on the back panel of the monitor, leaving the second port on the keyboard free. Here are some possibilities:

■ **Figure 10** Alternate Apple Desktop Bus configurations



If you have other Apple Desktop Bus devices to attach to your system, you can daisy-chain them to the keyboard, use the ports on the monitor's back panel, or use the ports on the computer's back panel.

Turning on the monitor

To turn on your monitor, first you turn on the computer's power, and then press the on/off switch on the monitor's back panel. When you turn on the monitor, the green power light comes on. The light is in the lower-right corner on the front of the monitor. (See Figure 11.)

■ **Figure 11** The on/off switch and the power light

If that doesn't work: If the power light doesn't come on, check to see that both ends of the power cord are plugged in properly. If the monitor is plugged into the outlet on the computer's back panel, check the power light on the front panel of the computer to make sure that your computer is plugged in and turned on. If neither the computer nor the monitor works, check to see if power to the wall outlet has been interrupted. If the computer or the monitor still doesn't work, contact your authorized Apple dealer or representative.

To turn the monitor off, you can press the monitor's on/off switch or leave the monitor's switch on and turn your computer off. Since the monitor is plugged into the back of the computer, turning off the computer shuts off the whole system. The next time you turn your computer on, the monitor will come on with it.

Adjusting the display

To adjust the display, you need to have something showing on the screen. You can use either the Finder™ or any application to put a display on the screen.

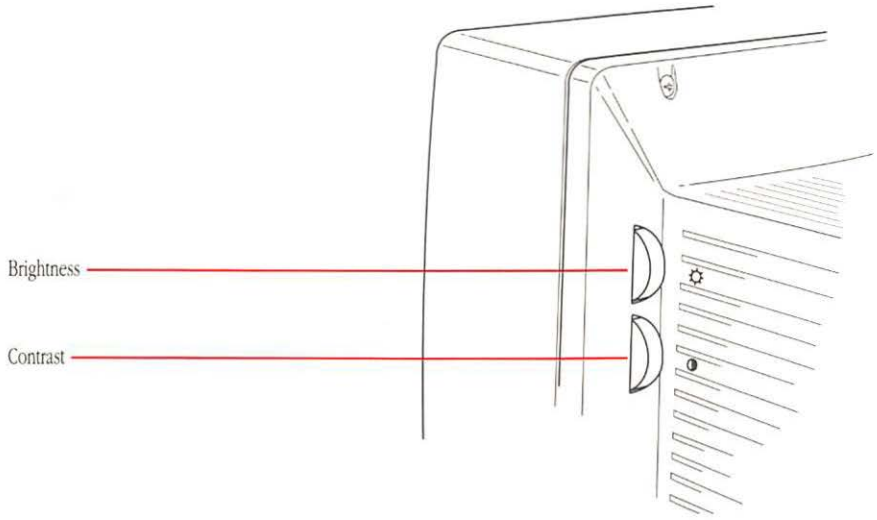
△ **Important** If you haven't learned to use your Macintosh computer yet, follow the instructions that came with your computer for inserting a disk into the drive and starting up the computer. Use the opening display that you see when you start up the computer to adjust the monitor. △

1. **Insert a startup disk into a disk drive. If you have a hard disk with a System Folder on it, you can use it as a startup disk.**

2. **Turn your computer and monitor on.**

   You can now adjust your display. The Brightness and Contrast controls are on the right side of the monitor. An icon identifies each control. (See Figure 12.)

■ **Figure 12** Brightness and Contrast controls



Brightness icon

3. Turn the Brightness control to find a good balance between screen and character brightness.

Turn the control clockwise to increase brightness, counterclockwise to decrease brightness. Set the brightness at a point where areas of the display that are meant to be black start to turn black. At this setting, black is actually black, and not a shade of gray. If the Brightness control is set too dark, some of the darker gray shades of the display will appear to be black.

❖ *By the way:* As you turn the Brightness control, you'll feel a catch near the center of the brightness range. This position marks the normal setting for use under average lighting conditions.

Contrast icon

4. **Turn the Contrast control clockwise to increase, counterclockwise to decrease contrast.**

   Start with the contrast all the way up, then bring it down to a comfortable level.

△ **Important** If you can't solve a problem with these controls, take the monitor to your authorized Apple dealer or representative. Behind a cover plate on the monitor's back panel are three fine-tuning controls; these should be adjusted only by a trained technician. Do not try to adjust them yourself. Tampering with these controls voids your warranty and could damage your monitor. △

Using and caring for your monitor

This section gives you suggestions on how to use your monitor efficiently and guidelines on caring for the monitor.

Working tips

Here are some tips to keep in mind when using your Apple Macintosh Portrait Display:

- The computer and the monitor are designed to be rugged and durable; however, handle the components of your computer system with reasonable care.
- Position the monitor so that the screen won't reflect bright light. Also, avoid placing the monitor where you will be facing a bright light source, such as a window.
- The crisp, flicker-free image of your Macintosh Portrait Display should make it easier on your eyes than many other monitors. However, staring at anything for a long time can cause eyestrain; focus on a distant object occasionally to relax your eye muscles.

Things to avoid

Here's a list of reminders to help you avoid damaging your monitor:

- Don't leave your Macintosh computer system exposed to direct sunlight. The heat can damage the case and even the electronics.
- Don't set cups, glasses, or anything containing liquids on or beside the computer, monitor, or peripheral devices. Spilling a liquid into any electronic instrument will damage the circuitry.
- Don't place any objects—books, magazines, papers, hats, and clothing, for example—on top of the computer or the monitor. Such objects can block the cooling vents. The extra weight of objects may also tip the monitor over.

❖ *By the way:* Your monitor probably feels warm to the touch when it's on. Like a television set, the electronics and picture tube give off a certain amount of heat, which is normal and not a cause for concern.

Protecting your monitor from theft

The small, rectangular opening on the monitor's back panel lets you attach a security lock—a narrow, flexible cable that secures your monitor (and the rest of your system) and discourages theft. (See Figure 13.) Security locks are available from your authorized Apple dealer.

■ **Figure 13** Security lock opening

Cleaning the monitor

Follow these suggestions if you need to clean your monitor:

- Clean the cabinet with a mild household detergent and a damp (not wet), lint-free cloth.
- Don't use aerosol sprays, solvents, or abrasives that might damage the cabinet finish.
- If the screen gets dirty, apply a household glass cleaner to a clean cloth or paper towel and wipe the screen. Don't spray glass cleaner directly onto the screen. It could run down into the case and damage electrical circuits.

Working with more than one monitor

To use more than one monitor with your Macintosh computer, just install a video card for each monitor. To control how your monitors will interact, choose the Control Panel desk accessory from the Apple menu and adjust the monitor settings to suit your needs. (See the manuals that came with your computer for details on how to use the Control Panel.)

If you're using more than one monitor and you notice unstable displays, your monitors may be interfering with each other. To find out if this is the problem, turn off one of the monitors. If the other display becomes stable, you know that the problem is interference. To correct the problem, place your monitors farther apart.

Service and support

To help you get the best performance from your system, Apple Computer has established a worldwide network of full-support authorized Apple dealers. If you need answers to technical questions or the latest information about products, your authorized Apple dealer can help you.

Apple's Technical Support organization backs each dealer and international technical support group via AppleLink®, a state-of-the-art on-line electronic information service, to ensure prompt, reliable assistance.

Your dealer also has the latest information on new hardware and software products as well as product updates. If you wish to upgrade your system, your dealer can help you select compatible components.

If your product requires service, your local authorized Apple dealer is trained and ready to support you. Apple provides factory-quality parts and the latest available diagnostic equipment to the more than three thousand authorized Apple service centers throughout the world. Apple guarantees parts and warranty labor. (Regulations in each country determine the length of the warranty. Some restrictions may apply, depending on the country of original purchase.)

If you cannot return to the authorized dealer from whom you purchased your system, go to the nearest service location. For the location nearest you, call (800) 538-9696 in the United States; call (800) 268-7796 or (800) 268-7637 in Canada. For locations in other countries, either call the Apple headquarters in your country or write to

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Apple also offers service options designed to meet your needs. One of these is the Apple*Care*® Service Agreement (available in the United States, Canada, and Australia only), which extends full warranty coverage up to three years. Your Apple*Care* contract will be honored at any participating authorized Apple dealer within the country of purchase—an added benefit if you relocate. Local service means time saved in getting your Apple system back to work.

You can purchase Apple*Care* at any time. If you purchase it with your system, or at least before your warranty has expired, you avoid paying for a required inspection.

Self-service plans, designed to allow large installations to repair their own equipment, are available. Whether you use your computer at home, in the office, or at school, Apple has a low-cost service plan for you. For details, please see your authorized Apple dealer.

Important safety instructions

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

Be sure the power plug is disconnected; call on qualified service personnel under the following conditions:

- If anything is spilled into the case.
- If your monitor is exposed to rain or any other excess moisture.
- If your monitor has been dropped or if the case has been otherwise damaged.
- If you suspect that your monitor needs service or repair.
- If, after you follow the operating instructions, your monitor does not operate normally.
- If the power cord is frayed or the power plug is damaged.

Be sure you always do the following:

- Always read all the installation instructions carefully before you plug in the power cord.
- Always keep all air vents clear.
- Always keep your monitor away from any source of liquid.
- Always use your monitor on a stable surface.
- Always keep these instructions handy.

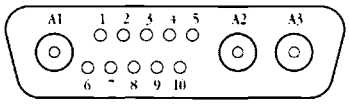
Never do the following:

- Never push objects of any kind through ventilation openings.
- Never allow anything to rest on the power cord or anyone to step on it.
- If an extension cord is used with the power cord, never exceed the ampere rating of the extension cord.
- Except as explained elsewhere in this manual, never attempt to service your monitor. Never open covers marked high voltage. Doing so may expose you to dangerous voltages and other high energy. Refer all service to qualified personnel.

Appendix: Specifications

Picture tube	High-contrast antiglare, 381-cm (15-inch) diagonal, "full square flat" screen, portrait oriented
Input signal	
Video	Analog RS-343
Sync	Separate sync, negative going, TTL
User controls	On/off switch (back panel) Brightness, with detent reference (right side) Contrast (right side)
Interface	Apple Desktop Bus ports
Scanning frequencies	
Horizontal	68.85 kHz
Vertical	75 Hz refresh rate
Display area	203.2 mm by 276.1 mm 640 horizontal by 870 vertical pixels
Dot density	80 dots per inch
Dot clock rate	57.2832 MHz
Weight	16 kg (35 lbs)
Power requirement	75 watts maximum
Input voltage	
Operating range	90 to 270 V rms, self-configuring
Frequency	47 to 63 Hz
Operating ambient temperature	10° to 35° C 50° to 95° F
Operating humidity	90% maximum, noncondensing
Operating altitude	3,000 meters (10,000 feet) maximum

Fuse protection	Internal power line fuse protection. (Fuse should be replaced by qualified service personnel only.)
Warm-up time	20 minutes to meet all specifications
Stand	Apple Universal Monitor Stand (optional)



Monitor signal input connector

Pin assignments for monitor signal input connector:

Pin	Function
A1	Monochrome video
A2	75 Ω
A3	75 Ω
1	Hsync return
2	Vsync
3	Sense #3
4	Sense ground
5	Csync (not used)
6	Hsync
7	Vsync return
8	Sense #2
9	Sense #1
10	Csync return (not used)
Shell	Shell ground

THE APPLE PUBLISHING SYSTEM

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