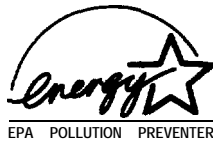


EPSON®

User's Guide



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As an Energy Star Partner, EPSON has determined that this product meets the Energy Star guidelines for energy efficiency.

Important Safety Instructions

Read all of these instructions and save them for later reference. Follow all warnings and instructions marked on the computer.

- ❑ Unplug the computer before cleaning. Clean with a damp cloth only. Do not spill liquid on the computer.
- ❑ Do not place the computer on an unstable surface or near a radiator or heat register.
- ❑ Do not block or cover the openings in the computer's cabinet. Do not insert objects through the slots.
- ❑ Use only the type of power source indicated on the computer's label.
- ❑ Connect all equipment to properly grounded power outlets. Avoid using outlets on the same circuit as photocopiers or air control systems that regularly switch on and off.
- ❑ Do not let the computer's power cord become damaged or frayed.
- ❑ If you use an extension cord with the computer, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure the total of all devices plugged into the wall outlet does not exceed 15 amperes.
- ❑ Except as specifically explained in this User's Guide, do not attempt to service the computer yourself.
- ❑ Unplug the computer and refer servicing to qualified service personnel under the following conditions:
If the power cord or plug is damaged; if liquid has entered the computer; if the computer has been dropped or the cabinet damaged; if the computer does not operate normally or exhibits a distinct change in performance. Adjust only those controls that are covered by the operating instructions.

- ❑ If you plan to use the computer in Germany, observe the following:

To provide adequate short-circuit protection and over-current protection for this computer, the building installation must be protected by a 16 Amp circuit breaker.

Importantes instructions de sécurité

Lire attentivement les instructions suivantes et les conserver pour les consulter en cas de besoin. Observer soigneusement tous les avertissements et directives marqués sur l'ordinateur.

- ❑ Débrancher l'ordinateur avant de le nettoyer. N'utiliser qu'un chiffon humide. Veiller à ne pas renverser de liquides sur l'appareil.
- ❑ Ne pas placer l'ordinateur sur une surface instable ni près d'une source de chaleur.
- ❑ Ne pas bloquer ni couvrir les orifices d'aération de l'appareil. Ne pas introduire d'objets dans les ouvertures.
- ❑ Utiliser seulement le type de source d'alimentation électrique indiqué sur l'étiquette.
- ❑ Tout l'équipement doit être branché sur des prises de courant avec contact de terre. Ne jamais utiliser une prise sur le même circuit qu'un appareil à photocopier ou un système de contrôle de ventilation avec commutation marche-arrêt automatique.
- ❑ S'assurer que le cordon d'alimentation de l'ordinateur n'est pas abîmé ni effiloché.
- ❑ Dans le cas où on utilise un cordon de rallonge avec l'ordinateur, s'assurer que l'intensité en ampères requise pour tous les appareils branchés sur ce cordon ne soit pas supérieure à la capacité du cordon. S'assurer aussi que cette intensité ne dépasse jamais la somme de 15 ampères pour l'ensemble des appareils.

- ❑ Sauf dans les cas spécifiques expliqués dans ce manuel de l'utilisateur, ne pas essayer d'entretenir ou de réparer l'ordinateur soi-même.
- ❑ Débrancher l'ordinateur et contacter un technicien qualifié dans les circonstances suivantes:

Si le cordon ou la prise sont abîmés; si un liquide a pénétré à l'intérieur de l'appareil; si on a laissé tomber l'appareil ou si le boîtier est endommagé; si l'ordinateur ne fonctionne pas normalement ou fonctionne d'une manière très différente de l'ordinaire. N'ajuster que les commandes décrites dans les directives.
- ❑ Pour utiliser l'ordinateur en Allemagne, il est nécessaire que le bâtiment soit muni d'un disjoncteur de 16 ampères pour protéger l'ordinateur contre les courts-circuits et le survoltage.

Wichtige Sicherheitshinweise

Bitte lesen Sie diese Sicherheitshinweise, und heben Sie sie zur späteren Verwendung auf. Beachten Sie alle Warnungen und Anweisungen, die auf dem Computer angebracht sind.

- ❑ Ziehen Sie das Netzkabel des Computers vor der Reinigung heraus. Verwenden Sie zur Reinigung nur ein feuchtes Tuch. Achten Sie darauf, daß keine Flüssigkeiten auf dem Computer verschüttet werden.
- ❑ Stellen Sie den Computer nur auf einer stabilen Arbeitsfläche auf, und halten Sie ihn von Heizkörpern und Warmluftquellen fern.
- ❑ Achten Sie darauf, daß die Öffnungen im Computergehäuse nicht blockiert oder verdeckt werden. Führen Sie keine Fremdkörper in die Lüftungsschlitze ein.
- ❑ Verwenden Sie nur die auf dem Typenschild des Computers angegebene Stromversorgung.

- ❑ Schließen Sie alle Geräte an ordnungsgemäß geerdete Steckdosen an. Verwenden Sie keine Steckdosen, die mit demselben Stromkreis wie Fotokopiergeräte oder Klimaanlage, die sich regelmäßig ein- und ausschalten, verbunden sind.
- ❑ Achten Sie darauf, daß das Netzkabel des Computers stets in einwandfreiem Zustand ist.
- ❑ Stellen Sie bei Verwendung eines Verlängerungskabels sicher, daß der gesamte Amperewert aller an das Verlängerungskabel angeschlossenen Geräte den zulässigen Höchstwert des Kabels nicht überschreitet. Stellen Sie ferner sicher, daß der Gesamtwert aller an die Wandsteckdose angeschlossenen Geräte 15 Ampere nicht überschreitet.
- ❑ Führen Sie keine Wartungsarbeiten am Computer durch, die über das im *Benutzerhandbuch* beschriebene Ausmaß hinausgehen.
- ❑ Ziehen Sie den Computer heraus, und rufen Sie qualifiziertes Wartungspersonal, wenn eine der folgenden Bedingungen auftritt:

Das Netzkabel oder der Netzstecker ist beschädigt; Flüssigkeit ist in den Computer eingetreten; der Computer wurde fallengelassen oder das Gehäuse ist beschädigt; der Computer funktioniert nicht ordnungsgemäß oder die Leistung hat sich merklich geändert. Stellen Sie nur die Bedienelemente ein, die in der Gebrauchsanweisung beschrieben sind.
- ❑ Nehmen Sie den Computer bei Flugreisen als Handgepäck mit in den Fluggastraum, damit er nicht in einem drucklosen Frachtraum verstaut wird.
- ❑ Beachten Sie den folgenden Hinweis, wenn Sie den Computer in Deutschland in Betrieb nehmen:

Beim Anschluß des Computers an die Netzversorgung muß sichergestellt werden, daß die Gebäudeinstallation mit einem 16 A Überstromschutzschalter abgesichert ist.

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Glossary

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Introduction

Your new EPSON® computer is a full powered, full featured system that gives you complete access for all your business and home computer needs. And because your computer is plug and play compliant and designed to take advantage of Microsoft® Windows® 95, you'll be able to use all the latest technology.

With the computer's 586-class processor and a generous 8MB of standard memory you can run a vast array of the latest programs, utilities, and games designed for productivity and fun.

The system's state-of-the-art PCI (Peripheral Component Interconnect) bus architecture enables faster and more efficient response from your VGA monitor and any PCI devices you may install, such as PCI option cards and IDE (Integrated Drive Electronics) devices.

When you're ready for even more capability, you can expand your system and video memory, install option cards and additional drives, and upgrade your processor.

Computer Features

Your computer offers the following features:

- ❑ 586-class processor
- ❑ 8MB of RAM (Random Access Memory), expandable to 128MB
- ❑ PCI components on the main system board provide a direct line for caching, memory, and device control for all PCI devices

- ❑ High-speed, PCI VGA controller with an integrated 24-bit RAMDAC and 64-bit DRAM interface
- ❑ Two PCI, ATA-2 compatible, enhanced IDE interfaces supporting up to four IDE devices, such as hard disk drives and CD-ROM drives (two on each interface)
- ❑ 16KB of internal cache in the processor and 256KB of external cache on the main system board
- ❑ 1MB of video memory, expandable to 2MB
- ❑ Three Energy Star compliant power-saving modes for the CPU, video, and hard disk drives in standard configurations
- ❑ Three 1&bit, ISA (Industry Standard Architecture) option slots and two PCI option slots supporting up to two PCI bus master cards
- ❑ On the slimline computer, space for up to four mass storage devices—three externally accessible and one internal; on the tower computer, space for up to seven mass storage devices—four externally accessible and three internal.

Power-saving Feature

In standard configurations, this computer complies with the United States Environmental Protection Agency's Energy Star Program, which promotes the manufacture of energy-efficient printers, computers, and monitors. Your computer's "deep green" feature places the CPU, video, and hard disk drives in power-saving modes when the mouse and keyboard have been inactive for a specified period of time. You can customize the deep green feature in the SETUP program.

ISA and PCI Expansion Buses

Your computer includes two expansion buses for two types of option cards: ISA and PCI. The ISA bus transfers data at 8.33 MHz for up to three 16-bit ISA option cards. This bus is especially suitable for fax /modem cards, sound cards, and SCSI (Small Computer System Interface) cards for scanners.

The PCI bus provides extremely fast data transfer (33 MHz) for up to two high-performance PCI cards, such as network adapters and high-speed video cards. The computer supports Windows 95 plug and play technology that automatically configures the resources used by Windows 95 compliant expansion cards, such as interrupt requests and memory addresses.

System and Video BIOS

The computer's system and video BIOS are contained in a flash memory device on the main system board. The BIOS includes the following:

- ISA and PCI compatibility
- Power-on diagnostic tests
- SETUP program
- PCI auto-configuration utility
- BIOS upgrade and recovery code.

Your computer supports shadowing of the system and video BIOS to allow the BIOS routines to run from fast, 64-bit RAM instead of from the slower, 8-bit flash ROM device.

Plug and Play Compatibility

Your EPSON computer complies with plug and play industry standards, which reduce or eliminate manual configuration of hardware resources. This makes it much easier to add option cards or peripheral devices to your system.

Also, the system BIOS includes PCI auto-configuration to support PCI option cards. When you turn on the computer after installing a PCI option card, the BIOS automatically configures interrupts, DMA channels, I/O addresses, and other settings. You can also customize these resources in the BIOS SETUP program.

MPEG Video Playback Support

Your computer's video controller supports the Motion Picture Experts Group (MPEG) compression standard. When you use software that supports MPEG (for example, a CD-ROM with moving graphic images) the images approach TV-quality resolution and full-motion playback speed. This second-generation video technology is standard on this EPSON computer and does not require additional hardware or software.

BIOS Upgrades

Because the BIOS is stored in a flash memory device, you can easily upgrade the BIOS information without replacing the chip. You can upgrade the BIOS by running a utility from a diskette, hard disk, or network server.

How to Use This Manual

This manual contains the information you need to get the best results from your computer. You don't have to read everything it contains.

If you are reading this manual online, select the highlighted text in the summaries below to skip to the chapter you want to read. You can also print out chapters you use frequently. If you are reading a printed version of this manual, see the following chapter summaries to find the sections you need.

Chapter 1 provides instructions for setting up your system and connecting peripheral devices such as the monitor and printer.

Chapter 2 covers general operating procedures, such as resetting the computer and using passwords.

Chapter 3 describes how to remove and replace the computer's cover, change jumper settings, and install optional equipment such as option cards, memory modules, and video memory.

Chapter 4 explains how to install and remove mass storage devices on the slimline computer.

Chapter 5 explains how to install and remove mass storage devices on the tower computer.

Chapter 6 contains troubleshooting tips.

Appendix A lists the specifications of your computer, including DMA and IRQ assignments.

Appendix B describes how to run the SETUP program to define your computer's configuration and how to install the PCI IDE and video drivers.

Where to Get Help

If you purchased your computer in the United States or Canada, EPSON provides customer support and service through a network of Authorized EPSON Customer Care Centers. EPSON also provides the following services when you dial **(800) 922-8911**:

- Technical assistance with the installation, configuration, and operation of EPSON products
- Assistance in locating your nearest Authorized EPSON Reseller or Customer Care Center
- Customer relations
- EPSON technical information library fax service
- Product literature on current and new products.

You can purchase printed manuals, accessories, or parts for EPSON products from EPSON Accessories at (800) 873-7766 (U.S. sales only). In Canada, call (800) **BUY-EPSON**.

If you purchased your computer outside the United States or Canada, contact your EPSON dealer or the marketing location nearest you for customer support and service.

If you need help with a software program that you installed, see that program's documentation for technical support information.

Electronic Support Services

If you have a modem, the fastest way to access helpful tips, specifications, drivers, application notes, DIP switch or jumper settings, and bulletins for EPSON products is through the online services below.

EPSON bulletin board service

You can call the EPSON bulletin board service (BBS) at **(310) 782-4531**. **No** membership is required. Make sure your communications software is set to 8 data bits with 1 stop bit, no parity bit, and a modem speed up to 28.8 Kbps. See the documentation that came with your communications software for more information.

CompuServe online *support*

CompuServe® members can call the Epson America Forum on CompuServe. If you are already a member, simply type GO EPSON at the menu prompt to reach the Forum.

If you are not currently a member of CompuServe, you are eligible for a free introductory membership as an owner of an EPSON product. This membership entitles you to:

- An introductory credit on CompuServe
- Your own user ID and password
- A complimentary subscription to *CompuServe Magazine*, CompuServe's monthly publication.

To take advantage of this offer, call (800) 848-8199 in the United States and Canada and ask for representative #529. In other countries, call the following U.S. telephone number: **(614) 529-1611**, or your local CompuServe access number.

World Wide Web site

If you are connected to the Internet and have a Web browser, you can access EPSON's World Wide Web site at <http://www.epson.com>. EPSON's home page links users to What's New, EPSON Products, EPSON Connection,SM Corporate Info, and EPSON Contacts. Link to the EPSON Connection for the latest drivers and FAQs (Frequently Asked Questions) and the EPSON Chat area. To get in touch with EPSON around the world, EPSON Contacts includes contact information for local EPSON subsidiaries.

Chapter 1

Setting Up Your System

This chapter describes how to set up your computer, if you have not already done so.

This chapter describes the following procedures:

- ❑ Choosing a location
- ❑ Setting the voltage selector switch
- ❑ Connecting system components
- ❑ Turning the computer on
- ❑ Turning the computer off.

Choosing a Location

Before you set up your system, choose a convenient location that provides a flat, hard surface. Do not place your system too close to any electrical device, such as a radio or television, which generates an electromagnetic field. Protect your computer from extremes in temperature, humidity, dust, and smoke, and avoid direct sunlight or other sources of heat.

Read the “Important Safety Instructions” at the beginning of this manual for more information about choosing a suitable environment for your system.

Also read “Working Comfortably” in Chapter 2 for guidelines on creating a comfortable and safe working environment.

Setting the Voltage Selector Switch

Your system is powered by a 200 watt power supply. The power supply input voltage is controlled by a switch on the computer's back panel that may be set to 115 VAC or 230 VAC.

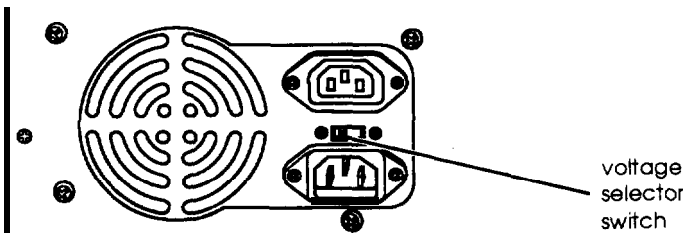
The computer is shipped with the voltage selector switch set to 115 VAC, which is appropriate for line source voltages between 100 and 120 VAC. This is generally the correct setting if you use the computer in North America, South America, or Japan.

If you plan to operate the computer in the United Kingdom, Europe, or some Latin American countries, you will almost certainly need to reset the voltage selector switch to 230 VAC. Line source voltages between 200 and 240 VAC are acceptable with the switch set to 230 VAC.

Caution

Before you turn on the power to your system, make sure the voltage selector switch is set appropriately for the electrical power source in your location or you will seriously damage your system.

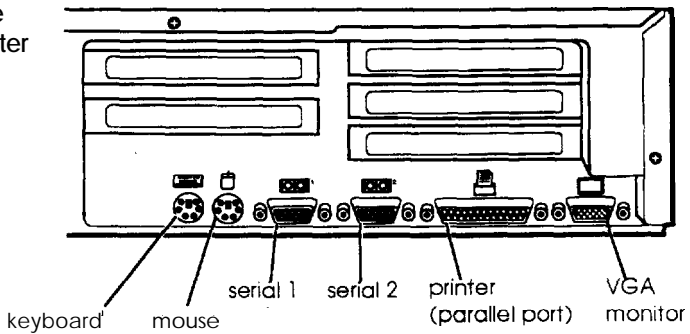
To change the voltage selector switch setting, slide the switch to the right to select 115 VAC or to the left to select 230 VAC.



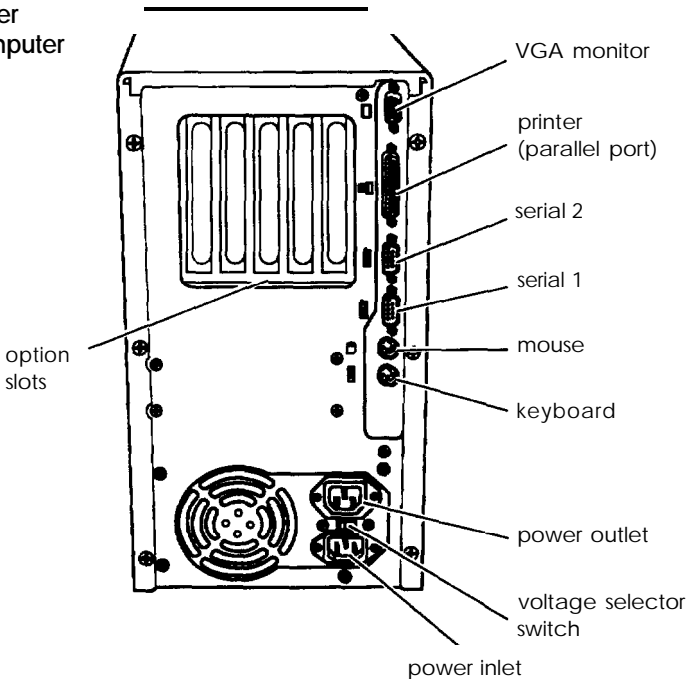
Connecting System Components

Use the illustrations below to locate the ports on the back of your system as you connect the keyboard, monitor, and other devices. The icon next to each port identifies its function.

Slimline
computer



Tower
computer



Connecting a Keyboard or Mouse

Refer to the illustrations under “Connecting System Components” as you connect your keyboard and mouse.



To connect a keyboard, hold the cable connector so the arrow on the connector faces the icon on the computer case. Insert it into the keyboard port, which is marked with this icon.



If you have a PS/2™ compatible mouse, hold the cable connector so the arrow on the connector faces the icon on the computer case. Insert it into the built-in mouse port, which is marked with this icon.

Caution

Although the connectors and ports for the mouse and keyboard are physically identical, they cannot be used interchangeably. Be sure to plug the connectors into the correct ports or you may damage your system.

Connecting a Monitor

Refer to the illustrations under “Connecting System Components” as you connect your monitor. Follow these steps to connect a VGA or SVGA monitor to the computer’s built-in VGA port:

1. Place your monitor near the computer. Turn the monitor and computer around so the backs are facing you.
2. There should be two cables provided with your monitor: the monitor cable (to connect it to the computer) and the power cable (to connect it to a power source). On most monitors, the monitor cable is permanently attached to it. If your monitor cable is not attached, connect it now.

3. Align the connector on the monitor cable with the VGA monitor port on the computer. Then insert the connector into the port.



This icon identifies the computer's VGA monitor port.

Caution

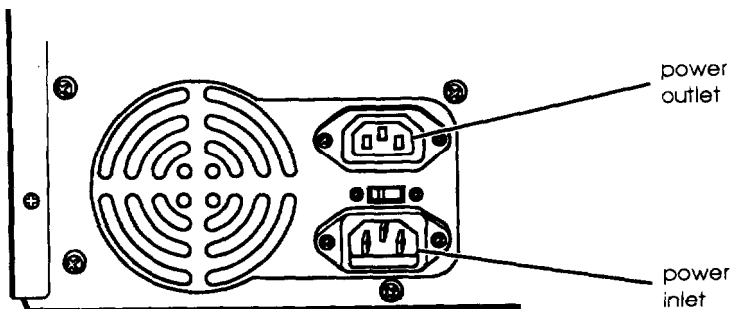
To avoid damaging the connector, be careful not to bend the pins when you insert it.

4. If the connector has retaining screws, tighten them.

Caution

Before you plug the monitor's power cord into the back of your computer, make sure the monitor's power requirements do not exceed 2 Amps at 115 volts and 1 Amp at 230 volts.

5. Plug the monitor's power cord into the power inlet on the back of the monitor.
6. Plug the other end of the power cord into a grounded electrical outlet or the computer's power outlet.



Connecting a Parallel of Serial Device

Refer to the illustrations under “Connecting System Components” as you connect your parallel or serial device.

Your computer has one multimode parallel port and two serial ports. To connect a printer or other peripheral device, follow the instructions in this section.

Using the printer (parallel device) port

You can connect any parallel device into the computer’s parallel port, but the most common device is a printer. Follow these steps to connect a parallel device:

1. Position the parallel device and the computer so that the backs are facing you.
2. Align the connector end of the parallel cable with the printer port and plug it in. If the connector has retaining screws, tighten them.



This icon identifies the computer’s printer port.

3. Connect the other end of the cable to the parallel device. To secure the cable, squeeze the clips at each side of the device port and push them into place.
4. Plug the parallel device’s power cord into a grounded electrical outlet.

Be sure to set the multimode parallel port to the correct mode for the device you connected by changing the setting of the LPT Mode option in the SETUP program, as described in Appendix B. Check your parallel device documentation for the parallel port mode you should select.

You may also need to change the setting of the LPT Port option in SETUP if you need a different address and/or interrupt assignment for the port.

Note

If you use ECP (Extended Capabilities Port) mode, you may also need to change jumpers JP23 and JP24 to the correct DMA channel; check your parallel device documentation for the DMA channel you should use. Then see “Changing the Jumper Settings” in Chapter 3 for instructions on setting jumpers.

Using the serial ports

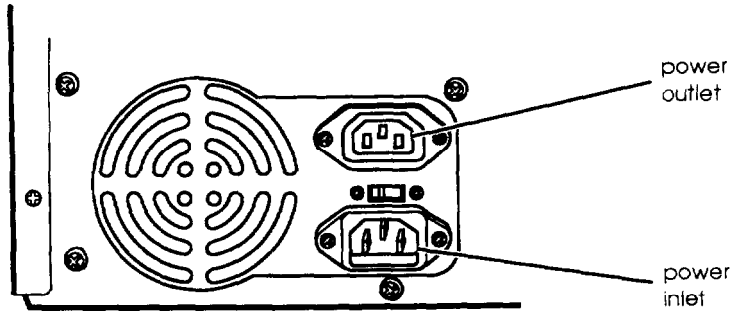
If you have a printer, modem, or other device with a serial interface, you can connect it to one of the serial (RS-232C) ports. Make sure you have a cable compatible with a DB-9P connector.

- 1 To connect a serial device, insert the connector into
- 2 either the serial 1 or serial 2 port. If you are connecting only one serial device, use the serial 1 port.

Connecting the Power Cord

Follow these steps to connect the computer's power cord:

1. Plug the power cord into the power inlet on the back of the computer.



WARNING

To avoid an electric shock, be sure to plug the cord into the computer before plugging it into the wall outlet.

2. Plug the other end of the cord into an electrical outlet.

Turning On the Computer

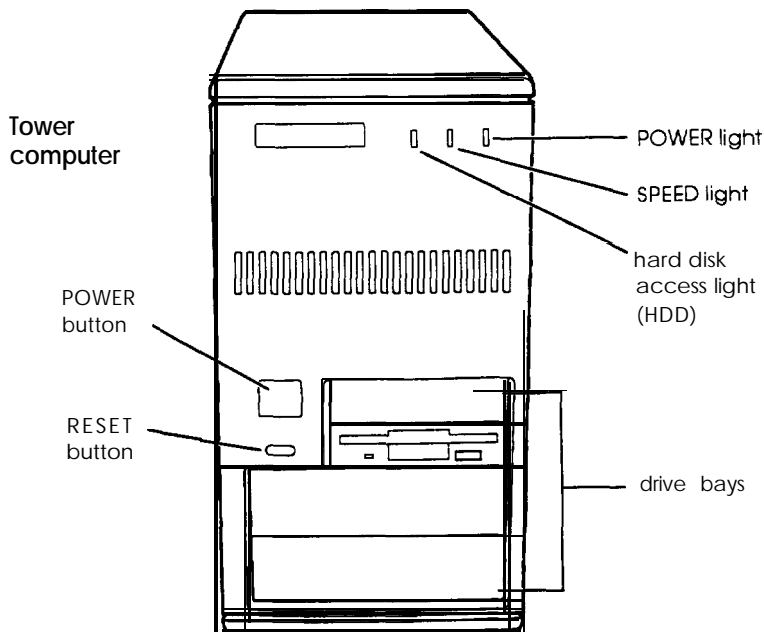
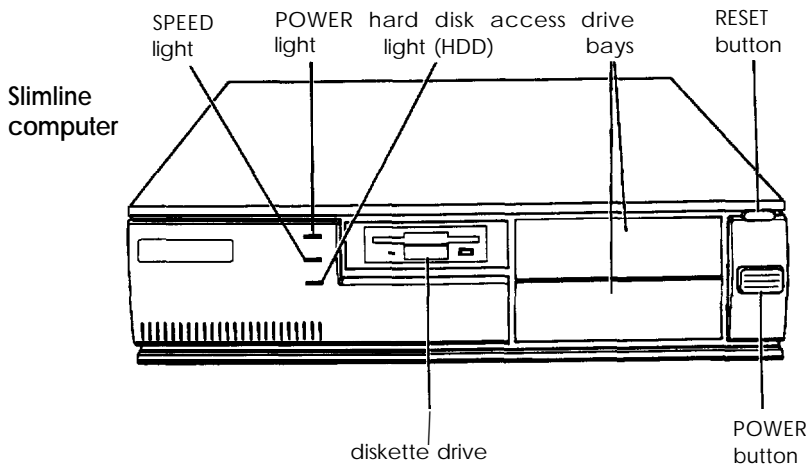
Once you set up your system, you're ready to turn on the power.

Caution

Before you turn on your system, be sure to read the "Important Safety Instructions" at the beginning of this manual to ensure that you have created a safe working environment.

1. Turn on the monitor, printer, and any other devices connected to the computer.

2. Turn on the computer by pressing the **POWER** button on the front panel. Refer to the illustrations below to locate the power button and other features on the front panel.



The power indicator lights up; then the computer performs its power-on diagnostics, which are a series of checks to make sure everything is working correctly. During diagnostics, you see a message telling you to press Del to run the SETUP program. Then the computer loads the operating system.

You may want to run the SETUP program to adjust power saving features or set a password. See “Running SETUP” in Appendix B for instructions.

Turning Off the Computer

Whenever you turn off your system, follow these steps:

1. Save your data, exit any application programs, and exit or shut down Windows. If you see a message, wait until it says you can safely turn off your computer.
2. Check the hard disk and the diskette drive lights to make sure they are not on. Don't turn off the computer if these lights are on; you could damage the drive or lose data.
3. Remove any diskette(s) from the diskette drive(s).
4. Press the POWER button to turn off the computer.
5. Turn off the monitor, printer, and any other peripheral devices.

Chapter 2

Using Your Computer

This chapter describes the following operations:

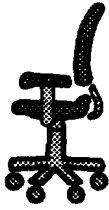
- ❑ Working comfortably
- ❑ Using energy wisely
- ❑ Using your Green PC features
- ❑ Inserting and removing diskettes
- ❑ Stopping a command or program
- ❑ Resetting the computer
- ❑ Using a password.

Working Comfortably

If you spend a lot of time at your computer, you may experience occasional fatigue or discomfort caused by repetitive motions or too much time spent in one position. If you follow the guidelines in this section, you may avoid these problems and actually increase your productivity.

Take a few minutes to read this section for suggestions about:

- ❑ Using the right furniture
- ❑ Positioning your monitor
- ❑ Lighting your workspace
- ❑ Using a keyboard and mouse
- ❑ Maintaining good posture and work habits.



Using the Right Furniture

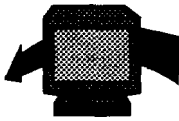
Selecting a good desk and using the right type of chair can make a big difference in your level of comfort. When you set up your furniture, consider these suggestions:

An L- or U-shaped desk configuration works well because it provides ample space to hold your computer equipment and work materials while keeping everything within easy reach. A split-level desk or one with a pull-out keyboard drawer lets you place the keyboard in a comfortable typing position.

Since you'll usually be sitting when you use your computer, it's important to have a good chair. An adjustable chair allows you to support your body in the correct position. Make sure the chair supports your lower back; the backrest should fit the curvature of your spine. To reduce fatigue, try to use a chair with adjustable, padded armrests so you can occasionally rest your arms while you work.

Make sure the seat and backrest are wide enough so you can sit in a variety of positions throughout the day. Also leave enough room under the work surface to vary the position of your legs.

Adjust the height of your chair so when you are using the keyboard or mouse your upper arms are vertical and your forearms and wrists are horizontal. For good circulation, your feet should rest flat on the floor with your lower legs vertical and your knees level with your hips. You may need to use a footrest to maintain the correct alignment for your legs.



Positioning Your Monitor

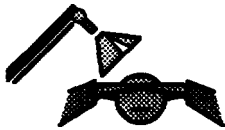
Place the monitor so it is directly in front of you with the top of the screen slightly below eye level when you are sitting at the computer. You may want to place it on top of the computer or on a stand.

Your line of sight to the screen should be about 10 to 20 degrees below the horizontal. If the monitor has a tilt and swivel base, you can adjust the position of the screen for the best viewing angle.

Sit about an arm's length or more away from the monitor. The most comfortable viewing distance depends on the size of the screen characters and your ability to focus on the display.

Adjust the monitor's brightness and contrast controls to maximize image clarity, and keep the screen clean.

Try placing any source documents you are using on a copy stand and position the stand next to the screen at the same eye level. This reduces neck strain and makes it easier for your eyes to move back and forth between the document and the screen.



Lighting Your Workspace

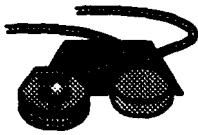
Appropriate lighting increases your comfort and productivity, and it's good for your eyes. Arrange your computer and light sources to minimize glare and bright reflections.

Position the monitor so that any windows in the room face the sides of the monitor, not the front or back. This will help reduce glare.

For working at the computer, indirect or shielded lighting is best, and it should light your entire office equally. Make sure the lighting is not too bright, because this can make your eyes tired from continually readjusting between the relative dimness of the

screen and the bright surroundings. You can use window blinds, shades, or drapes to control the amount of daylight in the room or reduce overhead lighting by turning off or dimming the lights.

Here is a simple way you can test your lighting. While looking at the screen, use your hand to shield your eyes from the brightest light source in the room (such as a window or overhead light). If you feel a sense of relief, no matter how small, your current lighting is too bright.



Using the Keyboard and Mouse

Constant use of a keyboard, mouse, or any pointing device can lead to a variety of aches and strains. To prevent injury, keep your hands relaxed and rest them frequently.

Try to keep your fingers parallel with your forearms to prevent straining your wrists. Adjust the angle of the keyboard so the slope is no more than 25 degrees. (The keyboard has legs on the bottom which allow you to adjust the angle.)

Keep your hands and fingers relaxed when you are typing and try not to press the keys too hard; using too much force creates tension in your hands. Remove your hands from the keyboard when you are not using it and take frequent breaks to stretch your hands and fingers.

When using a mouse, keep your wrist and fingers relaxed. Let go of the mouse frequently and stretch or relax your hand. Leave enough space on your work surface so you can freely move the mouse.



Maintaining Good Posture and Work Habits

Here are suggestions to help you stay fit while using your computer. If you form good work habits, you shouldn't have to spend too much time thinking about it!

- Work in a relaxed, natural, upright position and let the chair support you. Your back and neck should be straight with your shoulders down and relaxed. Keep the elbows and hips bent at about a 90 degree angle and your forearms and thighs parallel to the floor.
- Try to keep your arms in an easy, natural position with your elbows near your body and level with or slightly lower than the keyboard. Your wrists should be straight, not bent, and your hands should rest lightly on the keys or the mouse.
- Rest your eyes occasionally by closing them or focusing on a fixed spot in the distance.
- Change your sitting position frequently throughout the day to avoid muscle fatigue. Take periodic breaks; stand up, stretch, and move around.



EPA POLLUTION PREVENTION

Using Energy Wisely

By purchasing this low-power, Energy Star compliant computer, you join a growing number of users concerned about conserving energy. Here are a few additional tips you can use to be even more energy-wise:

- If your printer and monitor are not Energy Star compliant, turn them off when you're not using them.
- Use the print preview option on your software before you print something. You'll be able to catch formatting errors before you commit them to paper.

- ❑ If you have an electronic mail system available to you, send E-mail rather than memos. Not only is this faster, but you'll save paper and storage space too.
- ❑ Use recycled paper whenever you can and, if possible, reuse or recycle used paper instead of throwing it away.

Using Your Green PC Feature

Your computer places the CPU, the hard disk drive, an Energy Star compliant monitor, or all of these components into a power-saving mode when the keyboard or mouse has been inactive for 5 minutes. Using the SETUP program, you can customize this timer and set up additional energy saving options. (See “Setting the Green PC Options” in Appendix B for instructions on setting these features.)

Three power-saving modes are available: Doze, Standby, and Suspend. These modes provide progressively increased power conservation and affect progressively more components in your system. The power-saving operations performed by your computer in each of these modes are summarized in the table below.

Power-saving modes

Mode	Power-saving operations
Doze	Slows down the processor
Standby	Lowers the processor speed further and the monitor screen goes blank (the monitor is placed in a low power consumption mode only if it is Energy Star compliant)
Suspend	Stops the processor clock, powers down the hard disk drive(s), and the monitor screen goes blank (the monitor is placed in a low power consumption mode only if it is Energy Star compliant)

To resume activity when your system is in a power-saving mode, press a keyboard key or move the mouse.

If your system was in Suspend mode, it takes a few moments for the monitor to display and for the hard disk drive to return to active mode. You'll hear it start again. It takes a few seconds for the drive to reach its full operating speed and read or write to the disk.

Note

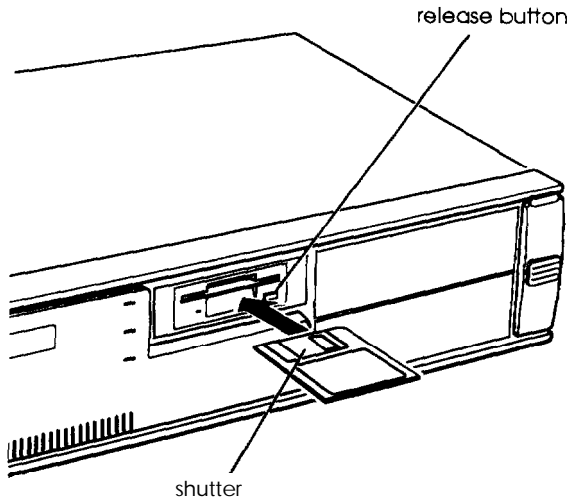
Some hard disk drives do not support power-saving modes. Also, the delay caused by the hard disk drive returning to active mode may cause errors in some applications. If you have problems, you may want to disable any power-saving features for the hard disk drive; see "Setting the Green PC Options" in Appendix B.

Also, the Windows 95 auto-play feature is incompatible with power management. If you are using Windows 95 and you want to use power management, disable auto-play.

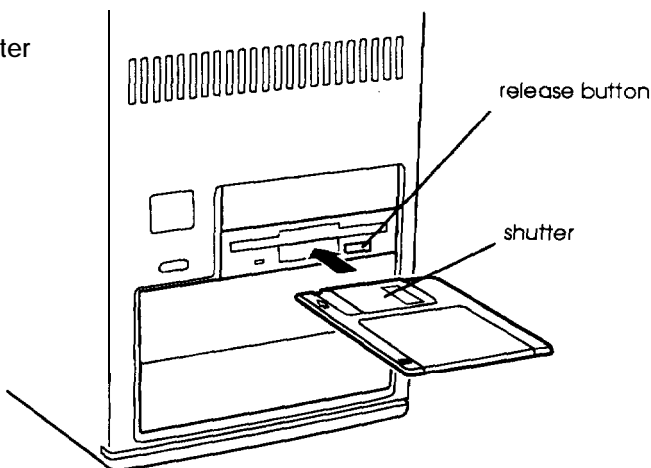
Inserting and Removing Diskettes

To insert a diskette into a 3.5-inch drive, hold the diskette with the label facing up and the shutter leading into the drive, as shown in the following illustrations. Slide the diskette into the drive until it clicks into place.

Slimline
computer



Tower
computer



When you want to remove the diskette, make sure the drive light is off; then press the release button. Remove the diskette and store it properly.

Caution

Never remove a diskette, reset the computer, or turn it off while a diskette drive light is on. You could lose data. Also, remove all diskettes before you turn off the computer.

Stopping a Command or Program

You may sometimes need to stop a command or program while it is running. If you want to stop a DOS command or a DOS application program command, try one of the following from the DOS prompt:

- Press Pause
- Press Ctrl C
- Press Ctrl Break.

If you are using Windows 3.1 or Windows 95, press Ctrl Alt Del and follow the instructions on the screen.

If these methods do not work, you may need to reset the computer as described below. Do not turn off the computer to exit a program or stop a command unless you have to, because the computer erases any data you did not save.

Resetting the Computer

Occasionally, you may want to clear the computer's memory without turning it off. You can do this by resetting the computer.

For example, if an error occurs and the computer does not respond to your keyboard entries, you can reset it to reload your operating system and try again. However, resetting erases any data in memory that you have not saved; so reset only if necessary.

Caution

Do not reset the computer to exit a program. Some programs store data when you exit them. If you reset the computer without properly exiting a program, you may lose the data.

To reset your computer, press Ctrl Alt Del and then follow the instructions on the screen. You can also press the **RESET** button located on the front of your computer. The screen displays nothing for a moment and then the computer reloads the operating system.

If resetting the computer does not correct the problem, you probably need to turn it off and on again. Remove any diskette(s) from the diskette drive(s). Turn off the computer and wait 20 seconds. Then turn on the computer.

Using a Password

Using SETUP, you can define both a Supervisor level password and a User level password. You can also specify whether a password is required when you start the system. In addition, the password can control who has access to the diskette drives.

If you enabled the Password on Boot option in SETUP, you must enter the Supervisor or User password every time you turn on or reset the computer. If you enter a password but disable the Password on Boot option, you must enter the password when you start SETUP.

If you set the Diskette Access option to supervisor, you can access a diskette drive only if you entered the Supervisor password when you started your system. If you entered a User password when you started the system but the Diskette Access option is set to Supervisor, you see an error message when you access the diskette drive.

When you need to enter your password, you'll see the Security Check window containing this prompt:

Enter password:

As you type your password, you see a rectangle for each character you type. When you press Enter, the computer loads the operating system (or starts SETUP).

If you don't enter the correct password the first time you type it, you can try two more times. If you haven't entered the correct password on the third try, the computer locks up to prevent unauthorized access. You see the message:

SYSTEM DISABLED

You must either turn off the computer or press the RESET button to start over. In this situation, you cannot reset the computer by pressing Ctrl Alt Del.

Note

If you want to delete your password, you must run the SETUP program and follow the instructions for deleting a password under “Selecting the Security and Anti-Virus Options” in Appendix B. If you do not remember your password, see “Password Problems” in Chapter 6.

Chapter 3

Installing and Removing Options

You can enhance the performance of your computer by adding optional equipment such as option cards and system or video memory modules, or by upgrading the processor.

Tip

If you are reading this manual online, be sure to print out this chapter before performing any of the steps it describes.

This chapter describes the following procedures:

- Removing the computer's cover
- Replacing the computer's cover
- Locating the internal components
- Changing the jumper settings
- Installing and removing SIMMs (single inline memory modules)
- Installing and removing option cards
- Adding video memory
- Upgrading the processor
- Post-installation procedures.

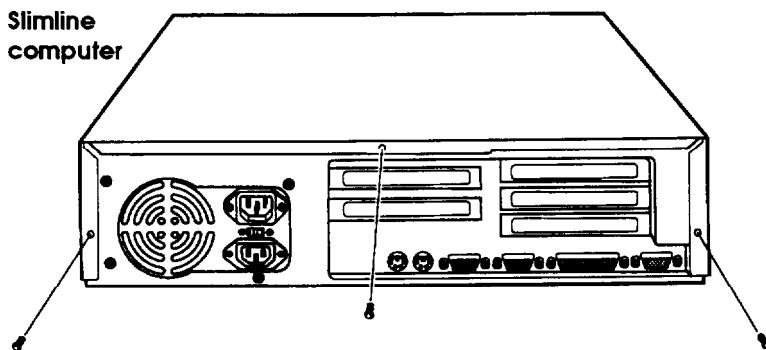
Caution

Never install options or change jumper settings when the computer is turned on or the power cable is connected to the computer.

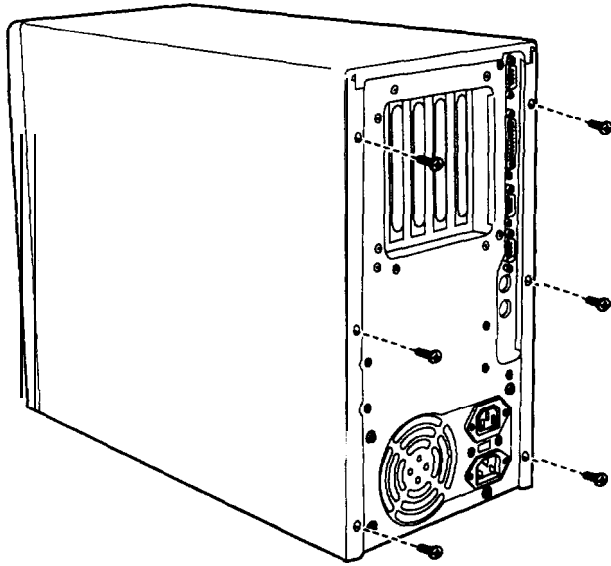
Removing the Cover

You need to remove the computer's cover to install any of the options described here or to install or remove a disk drive (as described in Chapters 4 and 5). Follow these steps:

1. Turn off the computer and then any peripheral devices.
2. Disconnect the computer's power cable from the electrical outlet and from the back panel. Also disconnect any other cables that are connected to the computer.
3. Turn the computer around so the back panel is facing you.
4. Remove the screws securing the cover to the back panel (three on the slimline computer and six on the tower computer), as shown below. (Save the screws to reinstall later.)

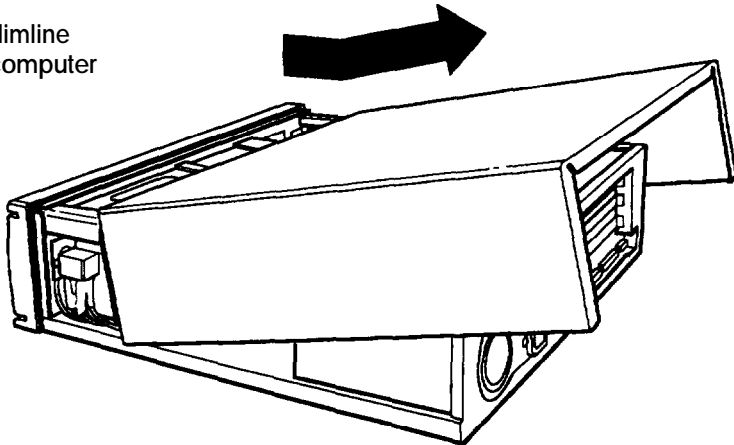


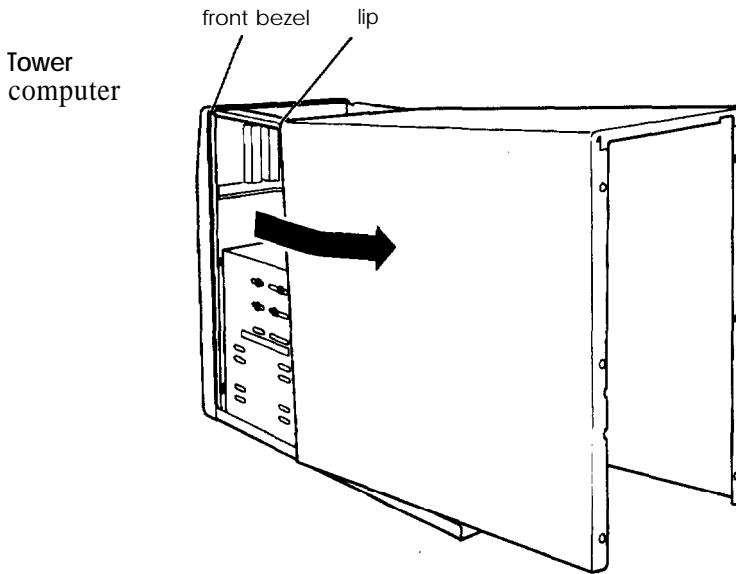
Tower
computer



5. Grasp the sides of the cover and lift it off as shown below. For the slimline computer, lift up the cover at an angle and then pull it off. For the tower computer, pull the cover straight back until it clears the case.

Slimline
computer





6. Set the cover aside.
7. Ground yourself to the computer by touching the metal surface of the back panel.

WARNING

Be sure to ground yourself by touching the back panel of the computer every time you remove the cover. If you are not properly grounded, you could generate an electric shock that could damage a component when you touch it.

Replacing the Cover

When you are ready to replace the computer's cover, refer to the illustrations above and follow these steps:

1. Make sure all the internal components are installed properly.
2. Check all cable connections, especially those that might have been loosened during your work.
3. Make sure all cables are out of the way so they do not catch on the cover.
4. For the slimline computer, insert the lip at the front of the cover between the front bezel and the computer case and guide the cover straight down.

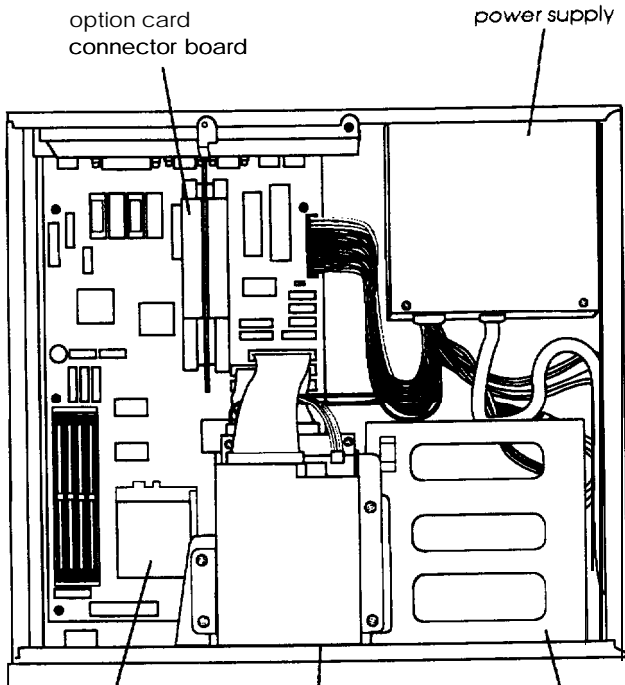
For the tower computer, squeeze the sides in and slide the cover forward until the lip at the front of the cover slides between the front bezel and the computer case.

5. Replace the retaining screws.
6. Reconnect the computer to the monitor, printer, keyboard, mouse, and any other peripheral devices you have. Then reconnect the power cable to the back of the computer and to an electrical outlet.

Locating the Internal Components

As you follow the instructions in this chapter, refer to the illustrations below to locate the major components inside your computer.

Slimline
computer

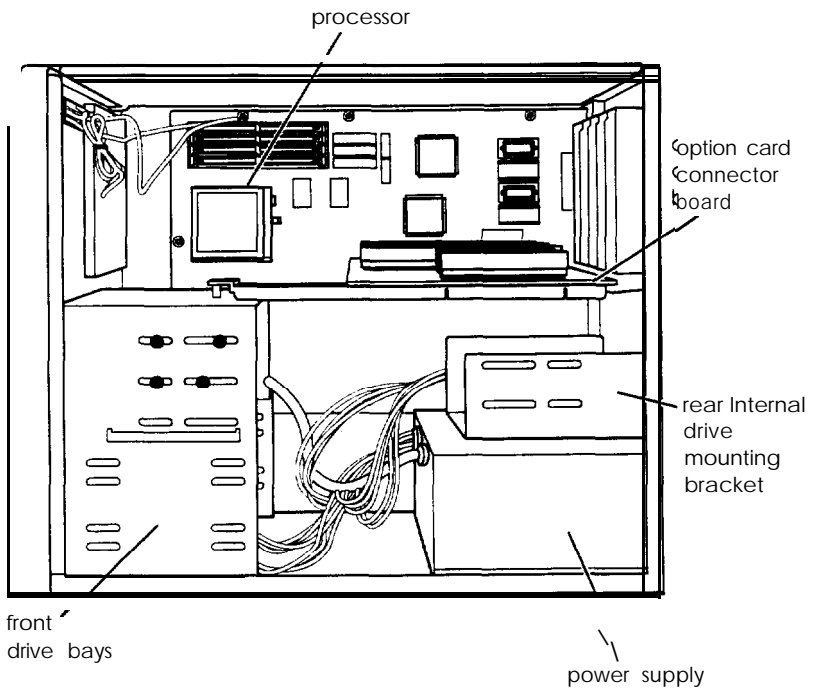


processor

bracket

ing

Tower computer



Changing the Jumper Settings

The jumpers on the system board are preset to factory default positions, indicated by an asterisk (*) in the tables below. (See the illustration under “Locating the System Board Components” to locate jumpers.) Use the information in this section to change jumper settings, if necessary.

Note

Any jumpers not listed in the following tables are for service purposes only. Do not change their settings.

CPU clock jumper settings

CPU type *	External clock speed	JP12	JP17	JP29
Cyrix 6x86-P120+ (100 MHz)	50 MHz	Open	1-2	Open
Cyrix 6x86-P150+ (120 MHz)	60 MHz	3-4	1-2	Open
Cyrix 6x86-P166+ (133 MHz)	66 MHz	1-2, 3-4	1-2	Open
Pentium 75 MHz	50 MHz	Open	Open	Open
Pentium 90 MHz	60 MHz	3-4	Open	Open
Pentium 100 MHz	66 MHz	1-2, 3-4	Open	Open
Pentium 120 MHz	60 MHz	3-4	1-2	Open
Pentium 133 MHz	66 MHz	1-2, 3-4	1-2	Open
Pentium 150 MHz	60 MHz	3-4	1-2	1-2
Pentium 166 MHz	66 MHz	1-2, 3-4	1-2	1-2

* Default setting depends on speed of CPU

Parallel port ECP mode DMA channel (DRQ) settings

DMA channel	JP23	JP24
DRQ1	1-2*	1-2*
DRQ3	2-3	2-3

* Default setting

VGA DRAM jumper settings

Timing mode	JP3	JP20
Fast page mode	1-2*	1-2*
EDO mode	2-3	2-3

* Default setting

Miscellaneous jumper settings

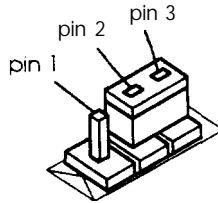
Jumper number	Jumper setting	Function
JP1	1-2 Open *	Clear the CMOS SETUP values Normal CMOS operation
JP4	2-3 * 1-2	1MB video DRAM 2MB video DRAM
JP6	2-3 * 1-2	System clock PCICLK/4 System clock PCICLK/3
JP16	1-2 Open *	Write-back cache Write-through cache
JP18	5-6 * 3-4 1-2	+3.3 V CPU voltage +3.358 V – 3.36 V (VR) CPU voltage +3.525 V – 3.528 V (VRE) CPU voltage
JP21	1-2 * 2-3	Enable VGA controller Disable VGA controller
JP22	1-2 * 2-3	Enable serial ports and diskette drive controller Disable serial ports and diskette drive controller
J20	5-6, 7-8 * Open	Use serial port for infrared (IR) device Use IR module connector for IR device

* Default setting

Setting the Jumpers

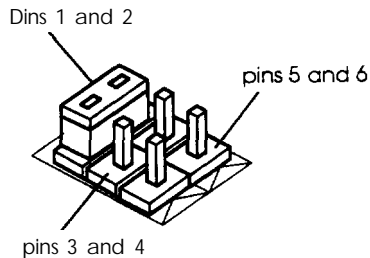
A jumper's setting is determined by where the jumper is placed on the pins. For example, if the desired setting is 1-2, you place the jumper over pins 1 and 2. (The artwork on the system board has a notch next to pin 1 on each set of pins.)

The illustration below shows a 3-pin jumper with a 2-3 setting.



Six-pin jumpers are arranged in 2 columns of 3 pins each. The settings are 1-2, 3-4, and 5-6. Pin 1 is the top left pin. (There is no notch in the artwork for 6-pin jumpers. Use the orientation of the writing on the system board to help you identify the top pins.)

The following illustration shows a 6-pin jumper with a 1-2 setting.



To change a jumper setting, follow the steps below. (You may want to begin by laying the computer on its side.)

1. Refer to the illustration under “Locating the System board Components” to locate the jumper(s).
2. If any option cards are installed in your computer, you may need to remove them to access the jumpers; see “Removing an Option Card” for instructions.

- To move a jumper from one position to another, use needle-nose pliers or tweezers to pull it off its pins and gently move it to the desired position.

Caution

Be careful not to bend the jumper pins or damage any components on the system board.

- Replace any option cards you removed, if necessary; see “Installing an Option Card” for instructions.

Installing Memory Modules (SIMMs)

The computer comes with 8MB of RAM standard on two 4MB SIMMs. You can increase the memory up to 128MB using 4MB, 8MB, 16MB, or 32MB SIMMs. The SIMMs must be tin-plated, 72-pin, single- or double-sided, fast-page mode or EDO mode, parity or no-parity type with an access speed of 70ns or faster. Be sure all the SIMMs operate at the same speed.

The table below lists all the possible SIMM configurations; do not install SIMMs in any other configuration.

Note

All 4MB and 16MB SIMMs must be single-sided. All 8MB and 32MB SIMMs must be double-sided.

SIMM configurations

Bank 0		Bank 1		Total memory
SIM1	SIM2	SIM3	SIM4	
4MB	4MB	—	—	8MB
-	-	4MB	4MB	8MB
4MB	4MB	4MB	4MB	16MB

SIMM configurations (continued)

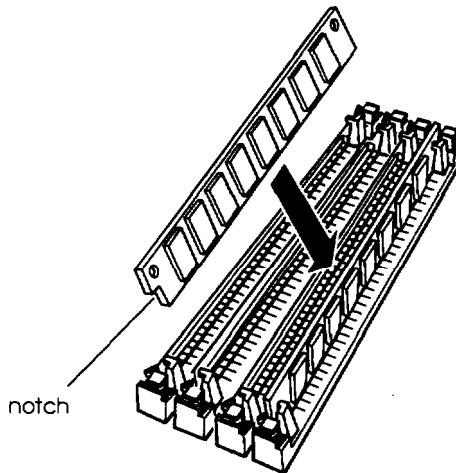
Bank 0		Bank 1		Total memory
SIM1	SIM2	SIM3	SIM4	
4MB	4MB	8MB	8MB	24MB
4MB	4MB	16MB	16MB	40MB
4MB	4MB	32MB	32MB	72MB
8MB	8MB	—	—	16MB
—	—	8MB	8MB	16MB
8MB	8MB	4MB	4MB	24MB
8MB	8MB	8MB	8MB	32MB
8MB	8MB	16MB	16MB	48MB
8MB	8MB	32MB	32MB	80MB
16MB	16MB	—	—	32MB
—	—	16MB	16MB	32MB
16MB	16MB	4MB	4MB	40MB
16MB	16MB	8MB	8MB	48MB
16MB	16MB	16MB	16MB	64MB
32MB	32MB	—	—	64MB
—	—	32MB	32MB	64MB
32MB	32MB	4MB	4MB	72MB
32MB	32MB	8MB	8MB	80MB
32MB	32MB	16MB	16MB	96MB
32MB	32MB	32MB	32MB	128MB

Your SIMM sockets may not look exactly like the ones in the illustrations. If you're not sure how to install SIMMs, contact your Authorized EPSON Servicer or the EPSON Connection and ask for assistance.

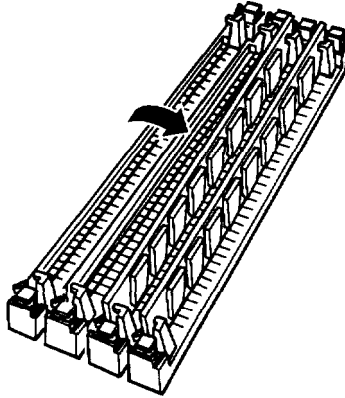
Inserting SIMMs

Make sure the computer is turned off and the cover is off. You may find that laying the computer on its side makes the process easier. Then follow these steps to install SIMMs:

1. Refer to the illustration under “Locating the System Board Components” to locate the SIMM sockets on the left side of the system board, next to the processor.
2. Remove any option cards that may be blocking your access to the SIMM sockets; see “Removing an Option Card” for instructions.
3. Position the SIMM at an angle over the empty SIMM socket with the notch in the corner of the SIMM facing the back of the computer.



4. Push the SIMM into the socket until it is seated firmly in the slot. Then tilt it upright, as shown below, guiding the hole at each end of the SIMM over the retaining post at each end of the SIMM socket. If it does not go in smoothly, do not force it; pull it all the way out and try again.



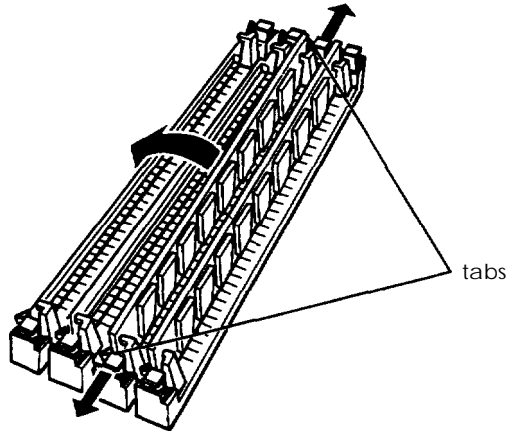
5. Replace any option cards you removed; see “Installing an Option Card” for instructions.
6. Replace the computer’s cover as described under “Replacing the Cover.” Then see “Post-installation Procedures” for instructions on configuring your computer with your new memory size.

Removing SIMMs

If you need to remove SIMMs from your computer (to install different ones, for example), follow the steps below:

1. Use the illustration under “Locating the System Board Components” to locate the SIMM sockets on the left side of the system board, next to the processor.

2. Remove any option cards that may be blocking your access to the SIMM sockets; see “Removing an Option Card” for instructions.
3. Use your fingers or a small screwdriver to carefully pull away the tabs that secure the SIMM at each end. The SIMM falls to the side; remove it from the socket.



4. Follow the same procedure to remove any other SIMMs.
5. If you are inserting different SIMMs, follow the instructions under “Inserting SIMMs” to install them.
6. Replace any option cards you removed; see “Installing an Option Card” for instructions.
7. Replace the computer’s cover as described under “Replacing the Cover.” Then see “Post-installation Procedures” for instructions on configuring your computer with your new memory size.

Installing an Option Card

This section explains how to install option cards in your computer. Your computer has five slots; the three large slots are ISA compatible and the two smaller slots are PCI compatible.

Note

The two PCI slots are labeled PCI1 and PCI2 on the option slot connector card. The SETUP program uses the PCI slot number as it configures the PCI cards, so make a note of the slot number you use for each card.

The slot nearest the system board accommodates only a half-length card. On the slimline computer, the slots facing the power supply also accommodate only half-length cards.

Caution

Before you install any option cards in your system, make sure that each card does not draw more current than the limits listed in Appendix A.

As you install option cards, keep these guidelines in mind:

- ❑ If you have an 8-bit ISA card, you can install it in a 16-bit ISA slot, as long as it fits.
- ❑ Install PCI cards only in PCI slots. Note the slot number printed on the option card connector board beside each slot you use.
- ❑ Check the components on your card and the system board before deciding which slot to use. Make sure that no component touches or obstructs other cards or cables.

- ❑ When you unpack the option card, do not touch the components on the circuit board or the gold-edged connectors. Place the card gently on top of its original packing material with the component side facing up. Keep the packing materials in case you remove the card later.
- ❑ Adjust any switches or jumpers on the card, if necessary, before you install it. (See the option card instructions.)
- ❑ If you install a video adapter on an option card, you need to change the setting of jumper JP21 on the system board to disable the built-in VGA controller; see “Changing the Jumper Settings” for instructions.

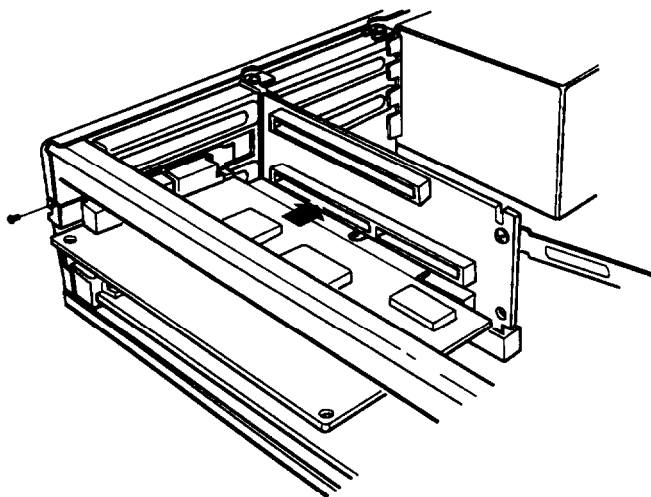
Installing a Card in the Slimline Computer (3-slot Side)

The option card connector board in the slimline computer has two slots on one side and three slots on the other side. Although the illustration shows an ISA card, you can use the same instructions for installing a PCI card.

Follow these steps to install an option card on the three-slot side:

1. Remove the retaining screw securing the option slot cover to the computer, as shown below. (Keep the screw to secure the option card to the computer.)
2. Slide out the slot cover and set it aside. (Store it in a safe place in case you remove the option card later.)

3. Hold the card along the top corners and guide it into the slot, as shown below. (If you are installing a full-length card insert the front edge of the card into the corresponding guide inside the computer's front panel.)



Once the connectors reach the slot, push the card in firmly (but carefully) to insert it fully. You should feel the card fit into place. If it does not go in smoothly, do not force it; pull the card all the way out and try again.

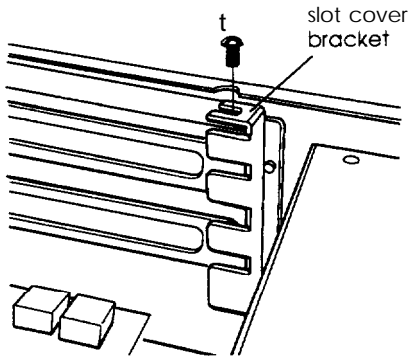
4. Secure the end of the card to the computer with the retaining screw.

Installing a Card in the Slimline Computer (2-slot Side)

The option card connector board in the slimline computer has two slots on one side and three slots on the other side.

Follow these steps to install an option card on the two-slot side:

1. Remove the retaining screw securing the slot cover bracket. Remove the bracket by lifting it straight up and out of the small metal holder at the bottom.

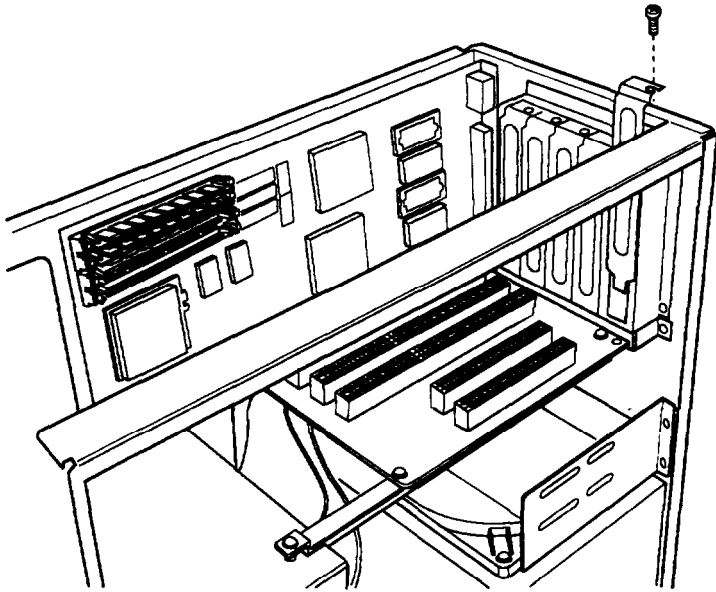


2. Remove the slot cover for the slot you are going to use.
3. Hold the card along the top corners and guide it into the slot. Once the connectors reach the slot, push the card in firmly (but carefully). You should feel the card fit into place. If it does not go in smoothly, do not force it; pull the card all the way out and try again.
4. Replace the slot cover bracket by inserting it into the small metal holder below the option slots; then replace its retaining screw.
5. Replace the computer's cover as described under "Replacing the Cover." Then see "Post-installation Procedures" for instructions on configuring your computer with your new option card.

Installing a Card in the Tower Computer

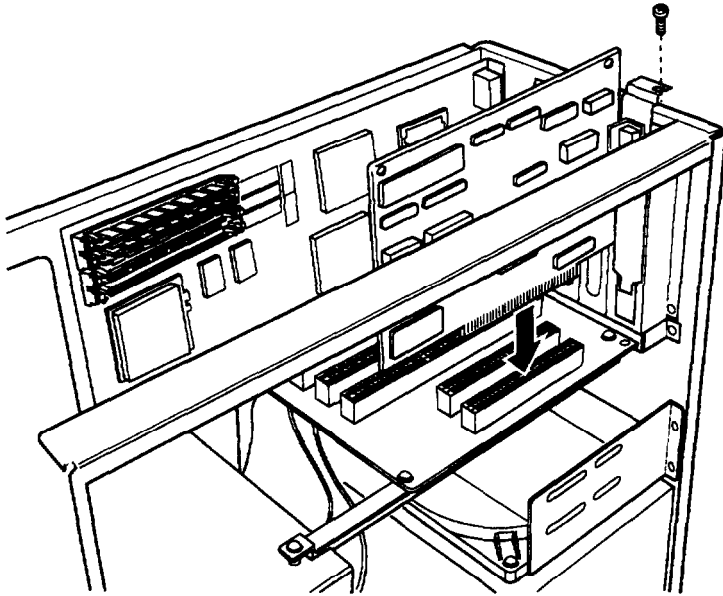
Follow the steps below to install an option card in the tower computer. Although the illustration shows a PCI card, you can use the same instructions for an ISA card.

1. Remove the retaining screw securing the option slot cover to the computer, as shown below. (Keep the screw to secure the option card in step 4.)



2. Slide out the slot cover and set it aside. (Store it in a safe place in case you remove the option card later.)

3. Hold the card along the top corners and guide it toward the slot, as shown below.



Once the connectors reach the slot, push the card in firmly (but carefully). You should feel the card fit into place. If it does not go in smoothly, do not force it; pull the card all the way out and try again.

4. Secure the end of the card to the computer with the retaining screw.
5. Replace the computer's cover; see "Replacing the Cover." Then see "Post-installation Procedures" for instructions on configuring your computer with your new option card.

Removing an Option Card

You may need to remove an option card to access components on the system board or if you no longer need it. Refer to the illustrations for your computer and slot type under “Installing an Option Card” as you follow these steps:

1. If you are removing a card from the tower computer or from the three-slot slide on the slimline computer, first remove the retaining screw securing the option card to the computer. Then pull the card straight out of the slot.

If you are removing a card from the two-slot side on the slimline computer, first remove the slot cover bracket. Then pull the card straight out of the slot.

2. If you are not installing another option card, replace the option slot cover, the slot cover bracket (if necessary), and retaining screw(s).
3. Replace the computer’s cover; see “Replacing the Cover.” Then see “Post-installation Procedures” for instructions on configuring your computer without your option card.

Adding Video Memory

Your computer comes with 1MB of video memory. You can increase your video memory to 2MB by installing two 512KB, 40-pin, SOJ flat pack video DRAM chips. Additional video memory is useful for running graphics-intensive applications or for supporting high resolutions with many colors.

Note that your video memory sockets may not look exactly like the ones in the illustration. If you’re not sure how to install video memory, contact your Authorized EPSON Servicer or the EPSON Connection for assistance.

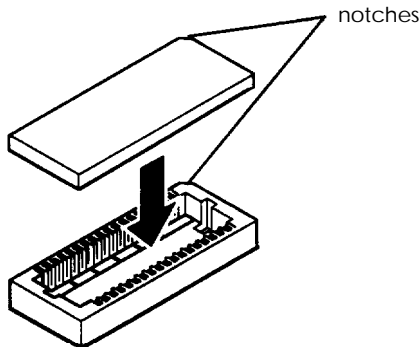
Follow the steps below to install video memory. (If you have a tower computer, you may want to begin by laying it on its side.)

1. Locate the video memory sockets on the left side of the system board, as shown in the illustration under “Locating the System Board Components.” The sockets are labeled U8 and U10.
2. If there are any option cards in your way, remove them; see “Removing an Option Card” for instructions.

Caution

To avoid generating static electricity and damaging the memory chips, ground yourself by touching the metal surface on the inside of the computer’s back panel. Then remain as stationary as possible while you install them.

3. Position the chip over the socket and align the notch in the chip’s corner with the notch in the corner of the socket, as shown below.



4. Gently press the chip into the socket; then push down firmly on both ends to make sure it is well-seated.
5. Repeat steps 3 and 4 to install the other chip.

6. Replace any option cards you removed; see “Installing an Option Card” for instructions.
7. Replace the computer’s cover; see “Replacing the Cover.” Then see “Post-installation Procedures” for instructions on configuring your new video memory.

Upgrading the Processor

You can upgrade your processor with a faster one to improve system performance. If you have a tower computer, you may want to lay the computer on its side to make the process easier.

If you’re not sure how to install a processor, contact your Authorized EPSON Servicicer or the EPSON Connection for assistance.

Follow these steps to replace the processor:

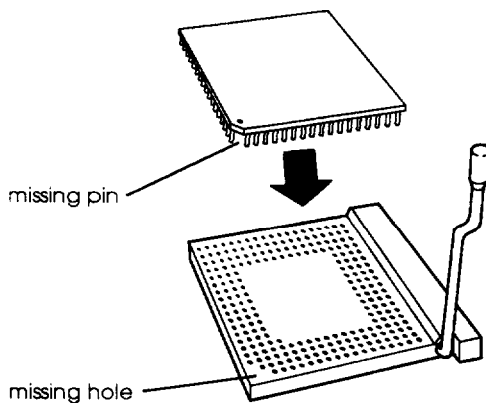
1. Use the illustration under “Locating the System Board Components” to locate the processor on the system board. The processor is inserted in a ZIF (Zero Insertion Force) socket.

Caution

Make sure you ground yourself by touching the metal surface on the inside of the computer’s back panel before you touch the processor. Then remain as stationary as possible while you install it. Do not touch the pins on the processor; handle it only by the edges.

2. If there are any option cards in your way, remove them; see “Removing an Option Card” for instructions.

3. To open the socket, locate the handle at the base of the socket. (The handle rests under a plastic tab.) Press the handle down and away from the tab; then lift it up to release the processor from the socket. The illustration in step 6 shows this handle in the released position.
4. Gently lift the processor straight up and set it aside.
5. Remove the new processor from its package and inspect the pins. If they are bent, do not install the processor; contact your vendor for a new one. (Store the old processor in the packaging included with your new processor, in case you need to reinstall it later.)
6. Position the processor over the socket, aligning the corner of the chip that is missing a pin with the corner of the socket that is missing a hole, as shown below. (Your ZIF socket may look different from the one illustrated below.)



Caution

If you install the processor in the wrong orientation, you may damage it and void your warranty.

7. Make sure the pins in the processor are directly over the holes in the socket. Then gently push the processor straight into the socket, pressing evenly on all sides.
8. Secure the processor by pressing the ZIF handle back to the closed position.
9. Change the setting of jumpers JP12, JP17, and JP29 for the speed of your new processor; see “Changing the Jumper Settings” for instructions.
10. Be sure that jumper JP18 is set correctly for the processor’s voltage.
11. Replace any option cards you removed; see “Installing an Option Card” for instructions.
12. Replace the computer’s cover; see “Replacing the Cover.” Then see “Post-installation Procedures” for instructions on configuring your computer with the new processor.

Post-installation Procedures

After you install or remove options such as SIMMs, video memory, processor, or option cards, you must run SETUP so it can automatically update the computer’s configuration. You may also want to customize any options associated with these components. See Appendix B for instructions.

Additionally, you may need to add some commands to your configuration files. See your operating system manual and the manual that came with your optional equipment.

Chapter 4

Installing and Removing Slimline Drives

This chapter describes how to install and remove optional drives in your slimline computer. You can use these instructions to install a variety of devices, such as hard disk drives, diskette drives, tape drives, CD-ROM drives, PCMCIA card readers, optical drives, or other mass storage devices.

Tip

If you are reading this manual online, be sure to print out this chapter before performing any of the steps it describes.

Although your drive may look different from the ones illustrated here, you should be able to install it the same way.

Note

This chapter describes installing and removing drives in the slimline computer; if you have a tower computer, see Chapter 5.

Follow the appropriate instructions in this chapter to do the following:

- Remove the diskette drive and mounting bracket
- Install a hard disk drive using the mounting bracket
- Remove a hard disk drive from the mounting bracket
- Install a drive in an externally accessible drive bay
- Remove a drive from an externally accessible drive bay.

Some of the steps in this chapter may not apply for the drive you are installing. See the documentation that came with your drive for more information.

Your slimline computer can hold up to four mass storage devices, including the diskette drive that came with your system. You can replace the existing hard disk drive in the internal mounting bracket below the diskette drive. In the externally accessible bays, you can install a CD-ROM drive or another type of drive.

To install or remove a drive, first follow the instructions under “Removing the Cover” in Chapter 3. Then remove any option cards that may be in your way. Once you have installed the drive, replace any option cards you removed. See “Installing an Option Card” in Chapter 3 for instructions.

Setting the IDE Device Jumpers and Locating Pin 1

Before you install any IDE devices, you need to check or change the settings of the device’s jumpers to be sure they are set correctly. The jumpers indicate the master and slave configuration of devices connected to both of the IDE interfaces.

A table in the “Hard Disk Drive Information” section of Appendix A lists the master and slave jumper settings for the IDE hard disk drives that are qualified for use in your computer. If your hard disk drive is not listed in that table, check the documentation that came with it or call the manufacturer for the jumper settings.

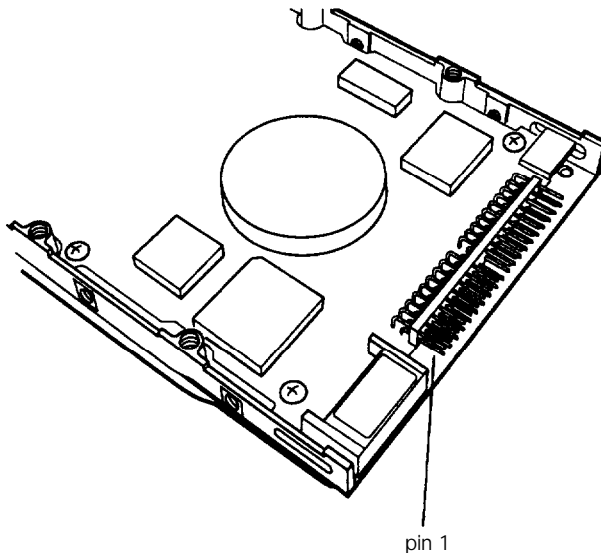
If you are installing another type of IDE device, such as an IDE CD-ROM drive, check the documentation that came with the device for the master and slave jumper settings.

Note

Use the primary IDE interface to connect only IDE hard disk drives. You must connect any other type of IDE devices to the secondary IDE interface. Never connect an IDE CD-ROM drive to the same interface used by an IDE hard disk drive.

Before you install a drive, identify pin 1 on the drive connector so you know where it is when you connect the drive cable. On a hard disk drive, turn it over so you can see the circuit board, as shown in the next illustration. Locate the side of the drive connector containing pin 1, indicated by a 1 printed on the connector or the board (a 2 may be printed beside the opposite row of pins to indicate the side of the connector containing pin 1). On a CD-ROM drive, pin 1 is next to the power connector.

For hard disk drives, you may also want to make a note of the drive parameters (such as cylinders and heads), in case the SETUP auto-sensing feature cannot detect these parameters when you configure the drive. The parameters may be listed on a drive label or in the drive documentation.

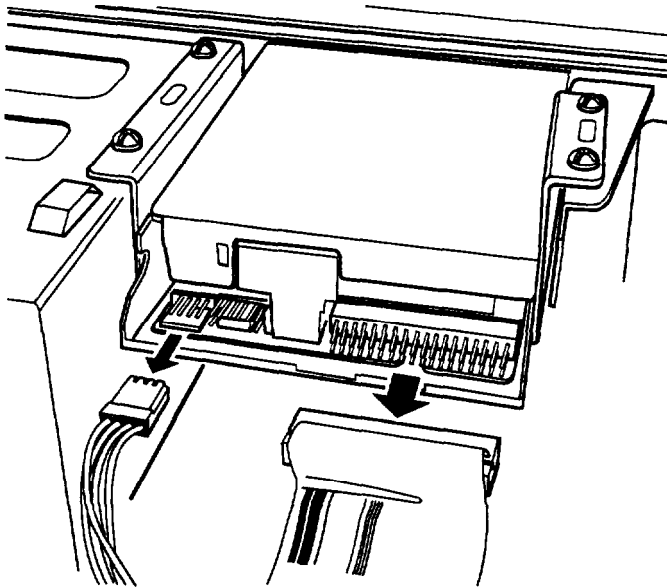


Removing the Drive Mounting Bracket

Your computer has a 3.5-inch diskette drive, and it may have a hard disk drive installed in a mounting bracket. In order to install or remove any drives, you must first remove the drive mounting bracket.

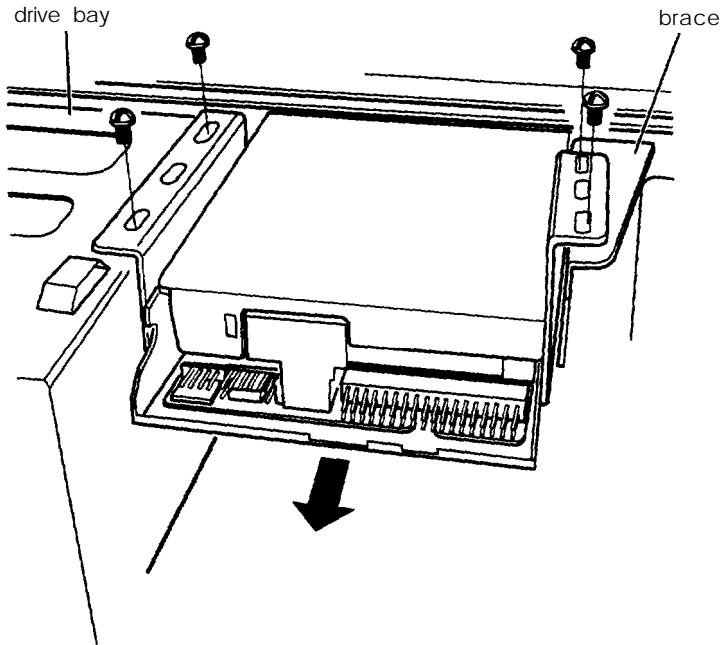
Follow these steps:

1. Remove the two cables from the diskette drive, as shown below. Grasp the connectors and pull them straight out so you do not bend the pins; do not pull on the cables.



2. Remove the two cables from the hard disk drive (if one is installed).

3. Remove the screws securing the bracket to the drive bay and brace. Save the screws for later use.



4. Slide the bracket away from the front of the computer and lift it out.

Installing a Hard Disk Drive in the Mounting Bracket

You can install a new hard disk drive below the diskette drive in the mounting bracket once you have removed the bracket and drive from the computer. In order to fit in this space, your hard disk drive must be 1 inch high by 3.5 inches wide. If you have a larger hard disk drive, you can install it in one of the other drive bays. (See “Installing a Drive in an Externally Accessible Bay.”)

This section includes steps for the following procedures:

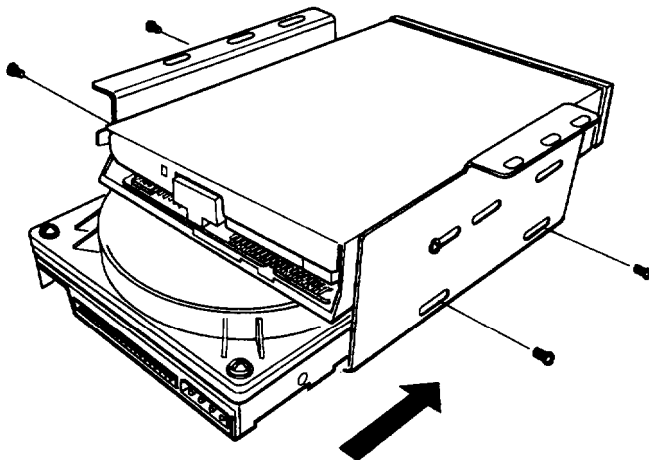
- Setting the IDE device jumpers
- Installing a hard disk drive in the mounting bracket
- Replacing the mounting bracket in the computer
- Connecting the drive cables.

Installing the Hard Disk Drive

Follow these steps to install a hard disk drive in the mounting bracket:

1. With the drive components facing down, slide the drive into the bracket until the front of the drive is nearly flush with the edge of the bracket.

2. Align the holes in the drive with the oval-shaped holes in the bracket.



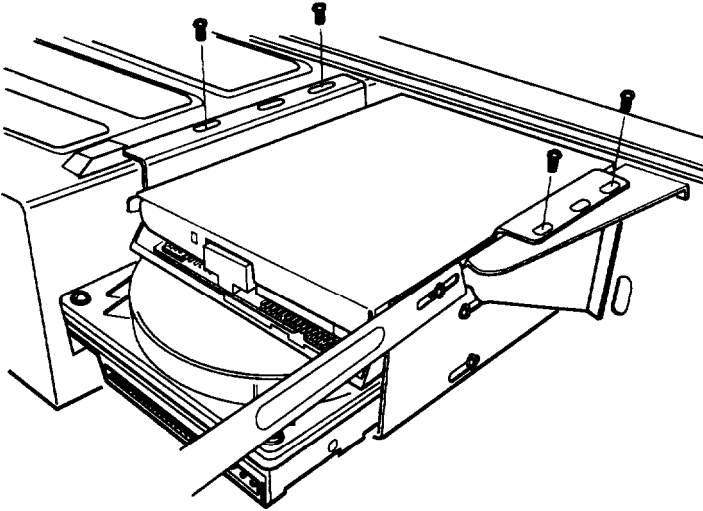
3. Secure the drive with two or four screws, depending on the location of the holes.

Replacing the Bracket in the Computer

Follow these steps to replace the bracket in your computer:

1. Lower the bracket into the mounting area and slide it forward, inserting the front of the diskette drive through the drive slot in the front panel of the computer.

2. Make sure the holes in the bracket are aligned with the holes in the drive bay and brace. Then secure the bracket with the screws you removed previously.



Connecting the Drive Cables

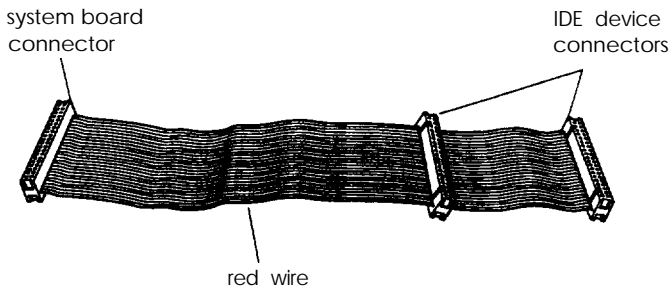
After you replace the bracket, you need to connect the cables for both the hard disk drive and the diskette drive. This section includes steps for the following procedures:

- Connecting the hard disk drive cables
- Reconnecting the cables to the diskette drive.

Connecting the hard disk drive cables

After you replace the bracket, you need to connect the cables to the hard disk drive. Follow these steps:

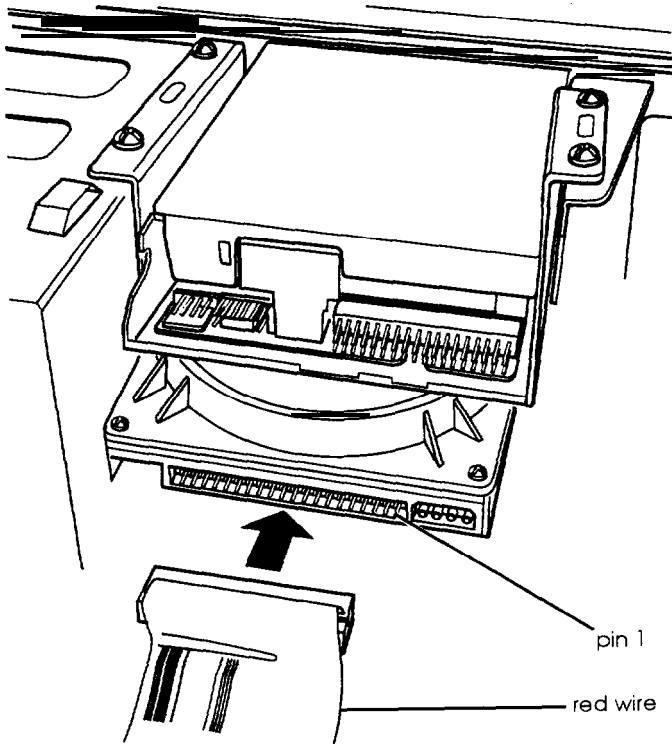
1. Locate one of the IDE device cables that are connected to the IDE interfaces on the system board. They are flat cables with a system board connector on one end and two IDE device connectors on the other end. A red wire runs down one side of the cable. (See “Locating the System Board Components” in Chapter 3 to find the primary and secondary IDE interfaces on the system board.)



Use the primary IDE interface for your boot drive and your second hard disk drive; use the secondary IDE interface to connect IDE CD-ROM drives, other IDE devices, or your third and fourth drives. You cannot connect a CD-ROM drive and hard disk drive to the same interface.

2. Identify the IDE device connector on the IDE device cable that you will use.
3. Locate pin 1 on the drive connector. If you do not see it on the connector casing and you did not locate it before you replaced the drive bracket, you may have to remove the drive and turn it over to check the circuit board.

4. Position the connector on the cable so that the red wire aligns with pin 1 on the drive.

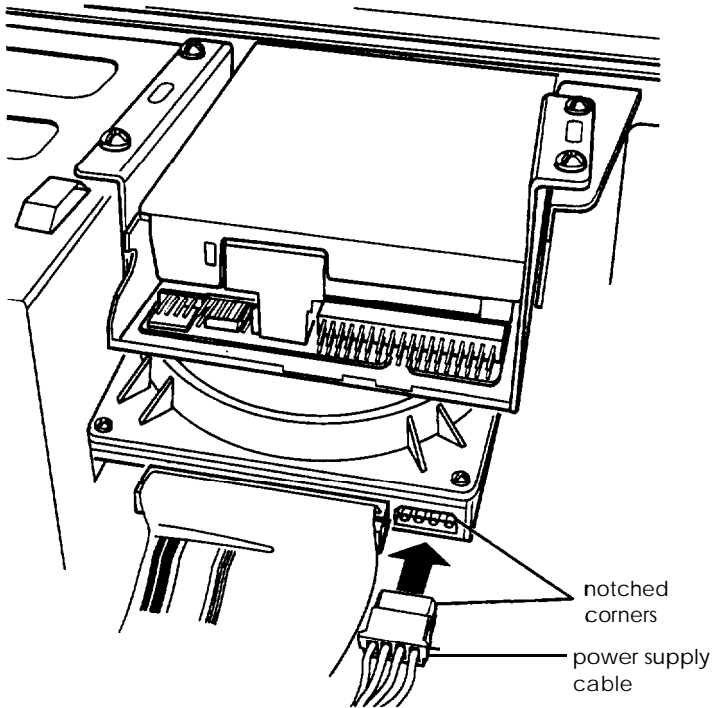


5. Make sure the holes in the cable connector fit over all the pins; then push in the connector.

Caution

If you do not correctly align the holes with the pins, you could severely damage your hard disk drive when you push in the connector.

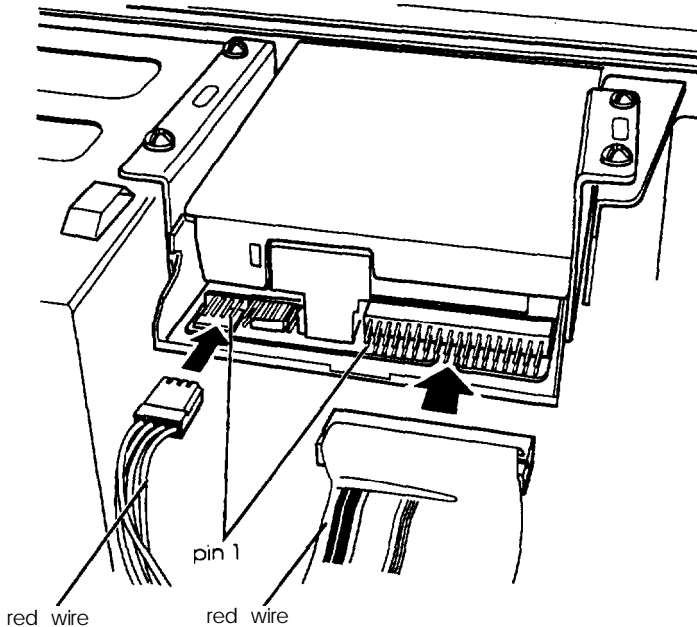
6. Locate one of the power supply cables that lead from the power supply. (They have multi-colored wires and a plastic connector on the end.)
7. Position the power supply cable connector so that its notched corners line up with the notched corners of the power supply connector on the hard disk drive.



8. Make sure the holes fit over all the pins and then push in the connector.

Reconnecting the Cables to the Diskette Drive

Refer to the illustration below while you follow these steps:



1. Locate the connector on the diskette drive ribbon cable.
2. Identify pin 1 on the drive and align the connector so that the red wire is at pin 1. Push in the connector.
3. Locate the power supply cable with the small connector.
4. Position the power supply cable connector so that the holes fit over all the pins and the red wire aligns with pin 1 on the drive's connector. Then push in the connector.

5. If you have finished installing or removing drives, replace the computer's cover, as described under "Replacing the Cover" in Chapter 3. Then see "Using the Fixed Disk Setup Option" in Appendix B for instructions on defining your new drive configuration.

Removing a Hard Disk Drive From the Mounting Bracket

You may need to remove a hard disk drive for service or for replacement.

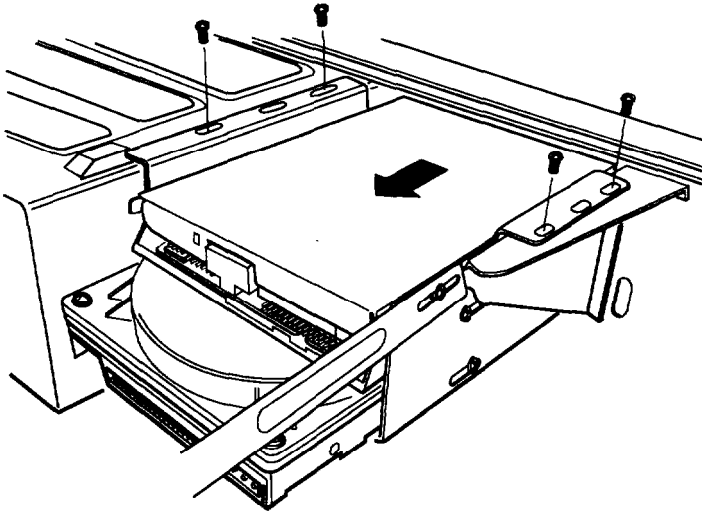
Caution

Before you remove a hard disk drive, make sure you have backup copies of all your files and programs. You can use backup software or the backup utility in your operating system. Refer to the online help files or software documentation for instructions.

Follow these steps to remove a hard disk drive from the bracket:

1. Disconnect the cables from the back of the hard disk drive and diskette drive in the bracket. Grasp the connectors and pull them straight out so you do not bend the pins; do not pull on the cables.
2. Remove the screws securing the bracket to the drive bay and brace.

3. Slide the bracket away from the mounting area and lift it out.



4. Remove the screws securing the hard disk drive to the bracket and slide the drive out of the bracket.
5. Replace the bracket following the instructions under “Replacing the Bracket in the Computer.”
6. If you have finished installing or removing drives, replace the computer’s cover, as described under “Replacing the Cover” in Chapter 3. Then see “Using the Fixed Disk Setup Option” in Appendix B for instructions on defining your new drive configuration.

Installing a Drive in an Externally Accessible Bay

Your system comes with two externally accessible drive bays. You can install any type of drive in these bays, including internal hard disk drives.

If you are installing a hard disk drive or another IDE device, be sure its jumper(s) are set correctly for your configuration. A table in the “Hard Disk Drive Information” section of Appendix A lists the master and slave jumper settings for high-capacity, EPSON-qualified IDE hard disk drives. If your drive is not listed or you need more information, see the documentation that came with your drive or contact the manufacturer.

Note

You must connect IDE CD-ROM drives or other devices to the secondary IDE interface. Use the primary interface only for IDE hard disk drives. You cannot connect a CD-ROM drive and hard disk drive to the same interface.

Before you can install a drive in one of the external bays, you must remove the mounting bracket containing the diskette drive (and possibly a hard disk drive). Follow the instructions under “Removing the Drive Mounting Bracket.” (You can remove the bracket and drives without disconnecting the drive cables.)

This section includes steps for the following procedures:

- Attaching mounting frames to the drive (if necessary)
- Installing the drive in the bay
- Connecting the drive cables.

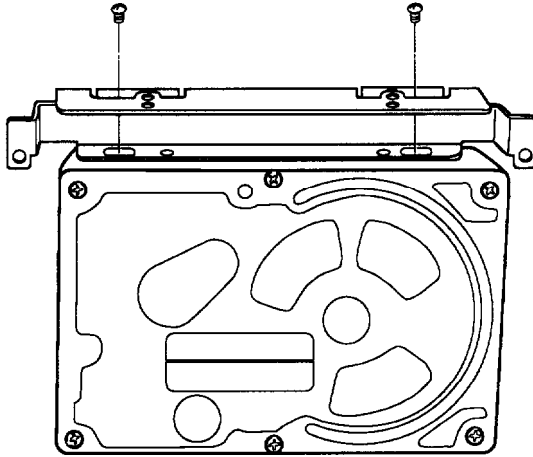
Attaching Mounting Frames to the Drive

If you are installing a 3.5-inch wide drive, you need to attach mounting frames to it so that the drive fits in a 5.25-inch wide bay. These frames usually come with your drive.

Follow these steps to attach mounting frames to a drive:

1. Locate the two mounting frames and four screws that came with the drive.

2. As shown below, place a mounting frame on one side of the drive and align it so that the oval holes in the frame are positioned over the holes in the drive. Then secure the mounting frame to the drive with the two screws.



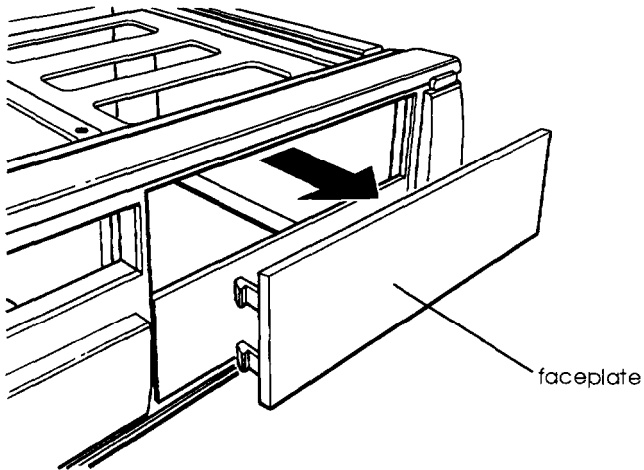
3. Repeat step 2 to attach a mounting frame to the other side of the drive.

Installing the Drive

Follow these steps to install a drive in the upper or lower external drive bay:

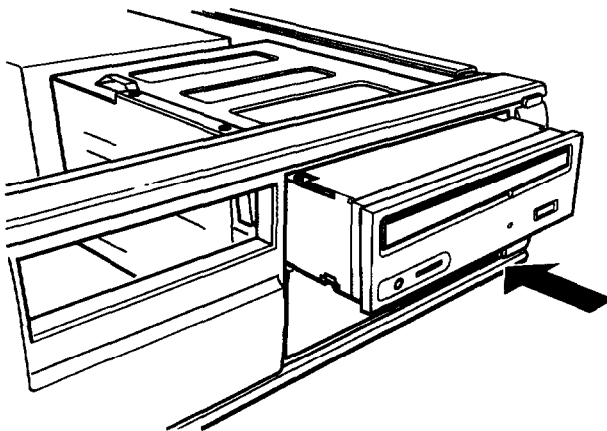
1. Using a screwdriver, reach inside the back of the drive bay and insert the screwdriver into one of the holes in the metal plate covering the drive bay slot. Move the screwdriver up and down until the plate loosens; then grasp the plate with your hands and pull it out of the back of the drive bay. Discard the plate; you do not need to reinstall it.

2. Remove the plastic faceplate from the bay by pushing it out from the inside of the computer.

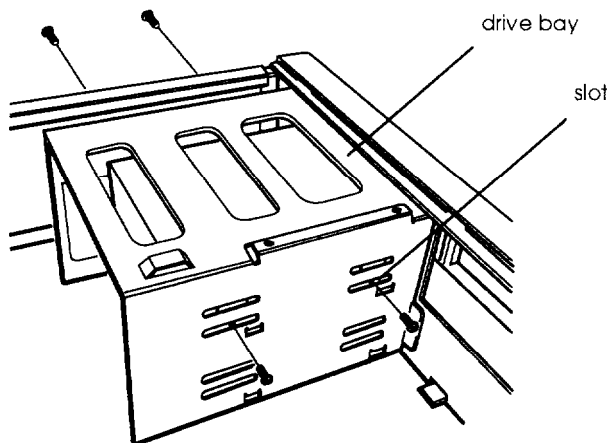


Keep the faceplate in a safe place in case you remove a drive later (or if you install a hard disk drive).

3. Slide the drive through the slot into the bay until it is flush with the front of the computer.



4. Align the slots at the side of the drive bay with the mounting holes in the drive or mounting frames. Then secure both sides of the drive to the bay using the retaining screws that came with the drive.



Connecting the Drive and Power Cables

If your IDE device cable is already connected to the IDE interface, follow the steps in this section to connect the cable to the drive.

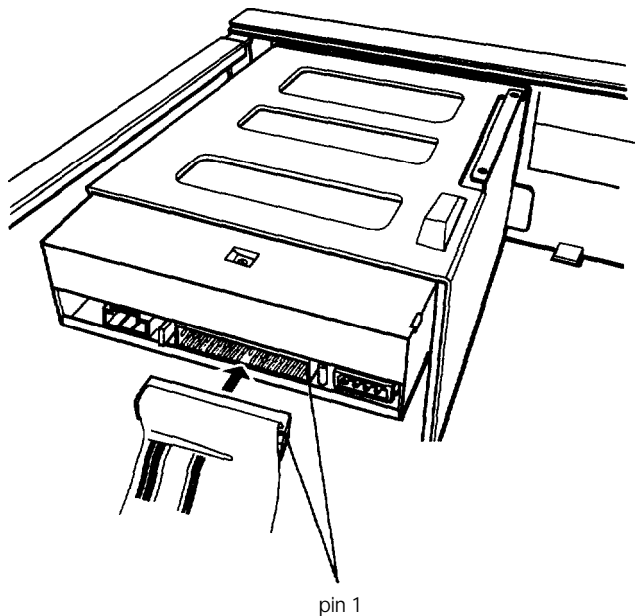
Note

Make sure you connect a CD-ROM drive to the secondary IDE interface; do not use the same cable for a hard disk drive and a CD-ROM drive.

Follow these steps to connect the drive and power cables:

1. Locate the connector at the end of the ribbon cable.
2. Locate pin 1 on the drive connector next to the power connector.

3. Position the connector on the cable so that the red wire aligns with pin 1 on the drive.



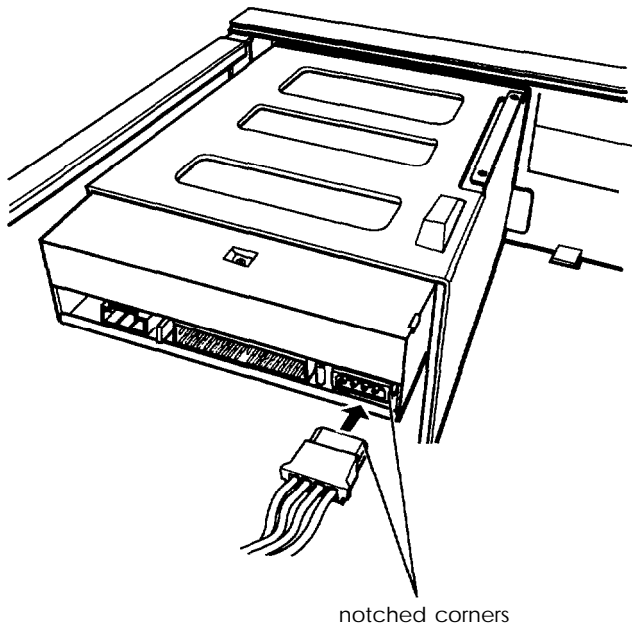
4. Make sure the holes in the cable connector fit over all the pins; then push in the connector.

Caution

If you do not correctly align the holes with the pins, you could severely damage your hard disk drive when you push in the connector.

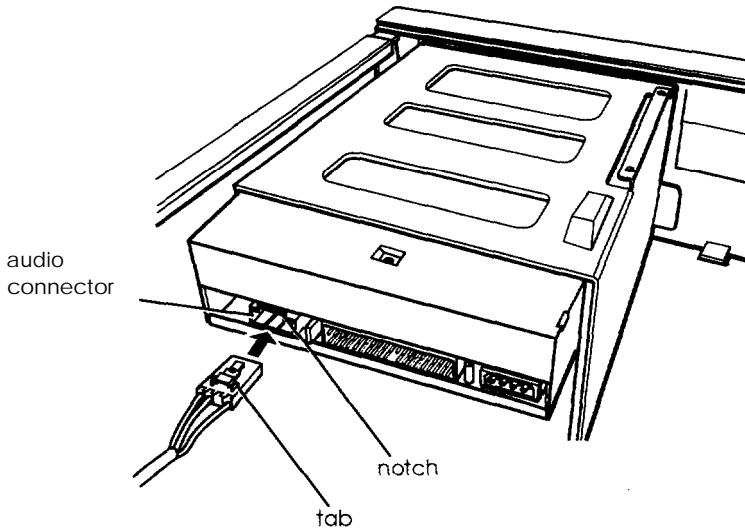
5. Locate one of the power supply cables that lead from the power supply. (They have multi-colored wires and a plastic connector on the end.)

6. Align the notched corners of the power supply cable connector with the notched corners of the drive's power connector (such as the one shown below). Make sure the holes fit over all the pins and then push in the connector.



7. If you are installing a CD-ROM drive, you need to connect the audio cable; it has small plastic connectors at either end. Follow the instructions that came with your sound card to connect the audio cable to the card. If you need to install a sound card first, follow the instructions under “Installing an Option Card” in Chapter 3.

8. Position the audio cable connector so that the tab faces up and aligns with the notch in the CD-ROM drive's audio connector. Then push in the connector.



9. If you installed a hard disk drive in one of the external bays, replace the faceplate. Insert one side of the plate, then gently press on the other side until it snaps into place.
10. Replace the internal mounting bracket and the drives it contains. See “Replacing the Bracket in the Computer” for instructions.
11. If you have finished installing or removing drives, replace the computer's cover, as described under “Replacing the Cover” in Chapter 3. Then see “Using the Fixed Disk Setup Option” in Appendix B for instructions on defining your new drive configuration.

Removing a Drive from an Externally Accessible Bay

You may need to remove a drive for service or replacement.

Caution

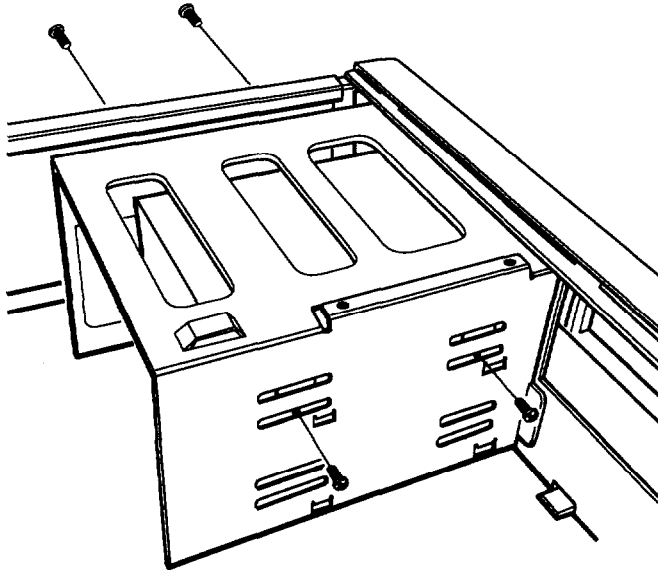
Before you remove a hard disk drive, make sure you have backup copies of all your files and programs. You can use backup software or the backup utility in your operating system. Refer to the online help files or software documentation for instructions.

If your system included a Recovery CD-ROM, it contains an image of your hard drive as it was configured at the factory. You can use this CD-ROM to restore the original files that came on the hard drive; you cannot restore any data files you have created.

To remove a drive from an external drive bay, follow these steps:

1. Remove the drive mounting bracket, following the instructions under “Removing the Drive Mounting Bracket.” (You can remove the bracket and drives without disconnecting the drive cables.)
2. Disconnect all cables from the drive you are removing.

3. Remove the screws securing the drive on both sides.



4. Reach behind the drive and gently push it out through the front of the bay; then pull it out of the slot.
5. Once you have removed the drive, replace the faceplate by inserting one side of the plate, then gently pressing on the other side until it snaps into place.
6. If you removed the only IDE device connected to the interface the device used, you may want to disconnect the device cable from the system board and remove it from the computer.
7. Replace the drive mounting bracket. See “Replacing the Bracket in the Computer” for instructions.

8. If you have finished installing or removing drives, replace the computer's cover, as described under "Replacing the Cover" in Chapter 3. Then see "Using the Fixed Disk Setup Option" in Appendix B for instructions on defining your new drive configuration.

Chapter 5

Installing and Removing Tower Drives

This chapter describes how to install and remove optional drives in your tower computer. You can use these instructions to install a variety of devices, including hard disk drives, diskette drives, tape drives, CD-ROM drives, and other devices.

Tip

If you are reading this manual online, be sure to print out this chapter before performing any of the steps it describes.

Although your drive may look different from the ones illustrated here, you should be able to install it the same way.

Note

This chapter describes installing and removing drives in the tower computer; if you have a slimline computer, see Chapter 4.

Follow the appropriate instructions in this chapter to do the following:

- Set the IDE device jumpers
- Install a drive in the front internal drive bay
- Remove a drive from the front internal drive bay
- Install a drive in an externally accessible drive bay
- Remove a drive from an externally accessible drive bay
- Install a drive in the rear internal drive bracket
- Remove a drive from the rear internal drive bracket.

Some of the steps in this chapter may not apply for the drive you are installing. See the documentation that came with your drive for more information.

Your tower computer can hold up to seven mass storage devices, as described in the table below.

Drive bay	Drive type and size
Four externally accessible bays	Two 5.25-inch wide, half-height drives and two 3.5-inch wide, one-inch high drives
One front internal bay	One 3.5-inch wide, one-inch high drive
Two rear internal bays	Two 3.5-inch wide, one-inch high drives or one 3.5-inch wide, full-height drive

To install or remove a drive, first remove the computer's cover as described under "Removing the Cover" in Chapter 3. Then remove any option cards that may be in your way. Once you finish installing or removing drives, replace any option cards you removed; see "Installing an Option Card" in Chapter 3 for instructions.

Setting the IDE Device Jumpers and Locating Pin 1

Before you install any IDE devices, you need to check or change the settings of the device's jumpers to be sure they are set correctly. The jumpers indicate the master and slave configuration of devices connected to both of the IDE interfaces.

A table in the "Hard Disk Drive Information" section of Appendix A lists the master and slave jumper settings for the IDE hard disk drives that are qualified for use in your computer. If your hard disk drive is not listed in that table, check the documentation that came with it or call the manufacturer for the jumper settings.

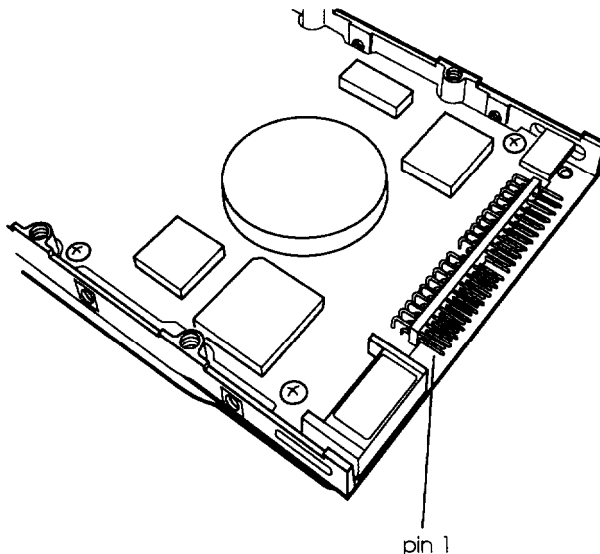
If you are installing another type of IDE device, such as an IDE CD-ROM drive, check the documentation that came with the device for the master and slave jumper settings.

Note

Use the primary IDE interface to connect only IDE hard disk drives. You must connect any other type of IDE devices to the secondary IDE interface. Never connect an IDE CD-ROM drive to the same interface used by an IDE hard disk drive.

Before you install a drive, identify pin 1 on the drive connector so you know where it is when you connect the drive cable. On a hard disk drive, turn it over so you can see the circuit board, as shown in the next illustration. Locate the side of the drive connector containing pin 1, indicated by a 1 printed on the connector or the board (a 2 may be printed beside the opposite row of pins to indicate the side of the connector containing pin 1). On a CD-ROM drive, pin 1 is next to the power connector.

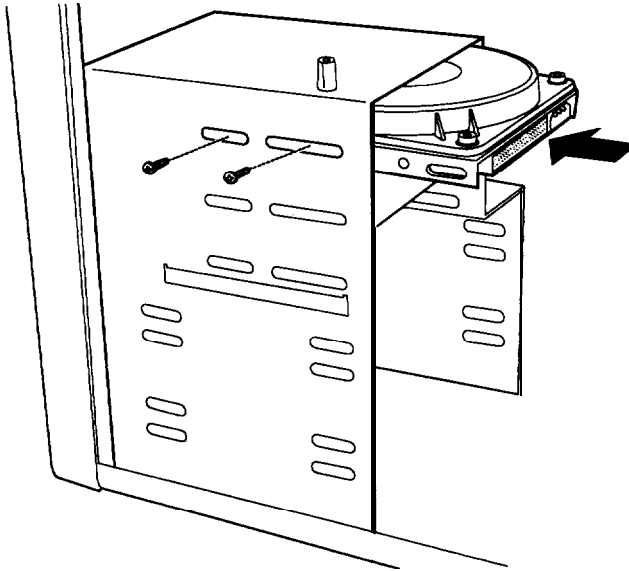
For hard disk drives, you may also want to make a note of the drive parameters (such as cylinders and heads), in case the SETUP auto-sensing feature cannot detect these parameters when you configure the drive. The parameters may be listed on a drive label or in the drive documentation.



Installing a Drive in the Front Internal Drive Bay

Follow these steps to install a drive in the front internal drive bay:

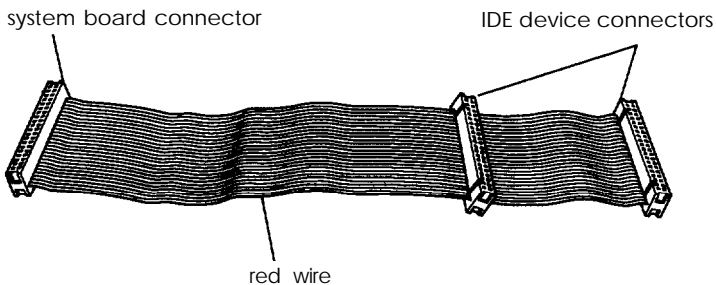
1. Position the drive so its drive and power connectors face the back of the computer and its circuit board is on the bottom.
2. Slide the drive into the front internal drive bay as shown below. Align the holes in both sides of the drive with the slots in the drive bay. Then secure the drive to the bay with the four screws that came with it.



Connecting the Cables to the Front Internal Drive

Follow these steps to connect the IDE device and power cables to the front internal drive:

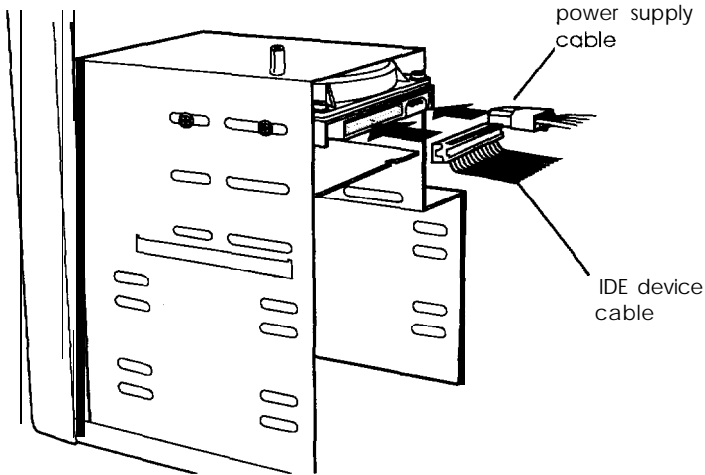
1. Locate one of the IDE device cables that are connected to the IDE interfaces on the system board. They are flat cables with a system board connector at one end and two IDE device connectors at the other end. A red wire is on one side of the cable. (See “Locating the System Board Components” in Chapter 3 to find the primary and secondary IDE interfaces on the system board.)



Use the primary IDE interface for your boot drive and your second hard disk drive; use the secondary IDE interface to connect IDE CD-ROM drives, other IDE devices, or your third and fourth hard disk drives. You cannot connect a CD-ROM drive and hard disk drive to the same interface.

2. Identify the IDE device connector you will use on the IDE device cable.
3. Locate pin 1 on the drive connector. The number 1 or 2 may be printed on the drive's connector or circuit board to identify the side of the connector containing pin 1.

4. Position the IDE device cable so the side with the red wire aligns with pin 1 on the drive. Make sure the holes in the connector fit over all the pins; then push in the connector.



5. Locate one of the power supply cables that lead from the power supply. (They have multicolored wires and a plastic connector on the end.) Align the notched corners of the power supply connector and the drive's power connector; then push in the connector, as shown above.

Note

Your system has five power supply cables; three with large connectors and two with small connectors. If you need more than five cables, you can purchase Y-adapters at most computer accessory stores. Y-adapters let you use one power supply cable for two devices.

6. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 3 for instructions. Then see "Running SETUP" in Appendix B for instructions on defining your new drive configuration.

Removing a Drive From the Front Internal Drive Bay

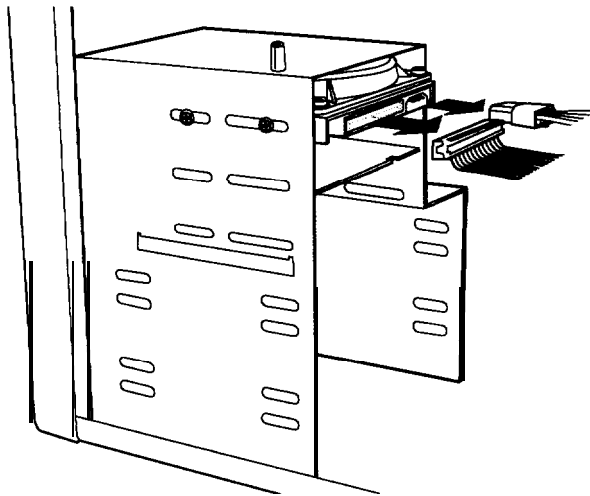
You may need to remove a hard disk drive for service or for replacement.

Caution

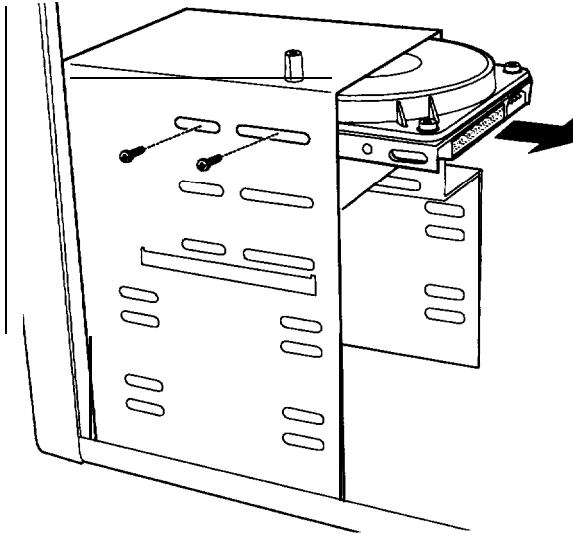
Before you remove a hard disk drive, make sure you have backup copies of all your files and programs. You can use backup software or the backup utility in your operating system. Refer to your online help files or your software documentation for instructions.

Follow these steps to remove a drive from the front internal drive bay:

1. Remove the drive and power cables from the back of the drive.



2. Remove the four screws securing the drive to the drive bay. There are two screws on each side of the drive.

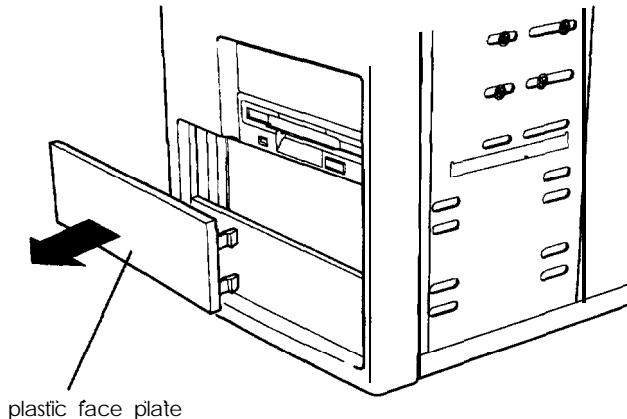


3. Slide the drive out the back of the bay.
4. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 3 for instructions. Then see "Running SETUP" in Appendix B for instructions on defining your new drive configuration.

Installing a Drive in an Externally Accessible Bay

Follow these steps to install an internal or externally accessible drive in an externally accessible drive bay:

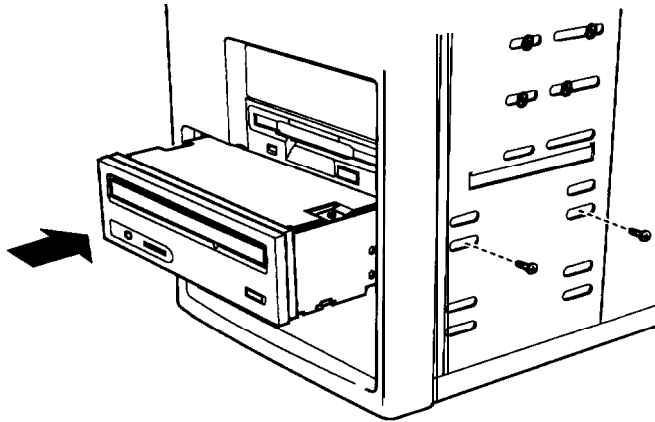
1. Using a screwdriver, reach inside the back of the drive bay you are going to use and insert the screwdriver into one of the holes in the metal plate covering the drive bay slot. Use the screwdriver to bend the plate up and down until it loosens; then grasp the plate with your hands and pull it out of the drive bay. Discard the plate; you do not need to reinstall it.
2. Remove the plastic faceplate from the bay by pushing it out from the inside of the computer.



If you are installing a hard disk drive, save the faceplate so you can replace it in a later step. If you are installing an externally accessible drive, keep the faceplate in a safe place in case you remove a drive later.

3. Position the drive so its drive and power connectors face the back of the computer.

4. Slide the drive into the front of the bay and secure it to the bay using the four screws that came with the drive.



5. Connect the appropriate cable to the drive.

If you are installing an IDE device, see “Connecting the Cables to the Front Internal Drive” for instructions on connecting the drive cable to the drive.

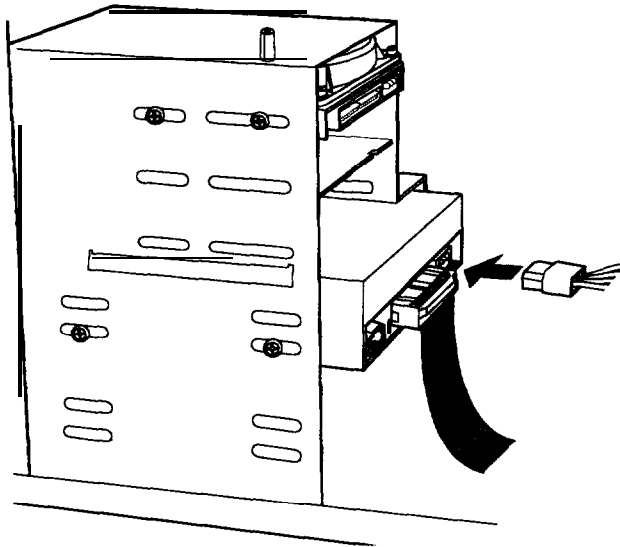
If you are installing a diskette or tape drive, use the appropriate connector on the diskette drive cable. If your drive has a connector containing pins (a header connector), be sure to align pin 1 of the drive connector with the side of the cable containing the red wire. If your drive has a card-edge connector (with gold contacts on each side of a flat plastic connector), align the key-way in the cable connector with the gap in the drive connector.

If you are installing another type of drive, see the documentation that came with it for instructions on connecting its drive cable.

6. Now locate one of the power supply cables that lead from the power supply. (They have multicolored wires and a plastic connector on the end.) Align the notched corners of the cable's connector and the drive's power connector; then push in the connector.

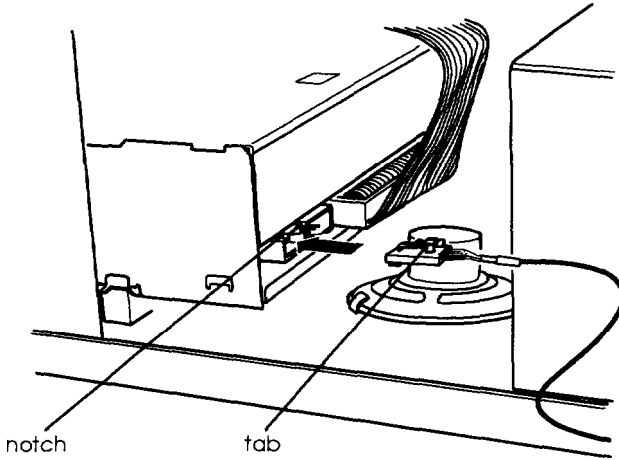
Note

Your system has five power supply cables; three with large connectors and two with small connectors. If you need more than five cables, you can purchase Y-adapters at most computer accessory stores. Y-adapters let you use one power supply cable for two devices.

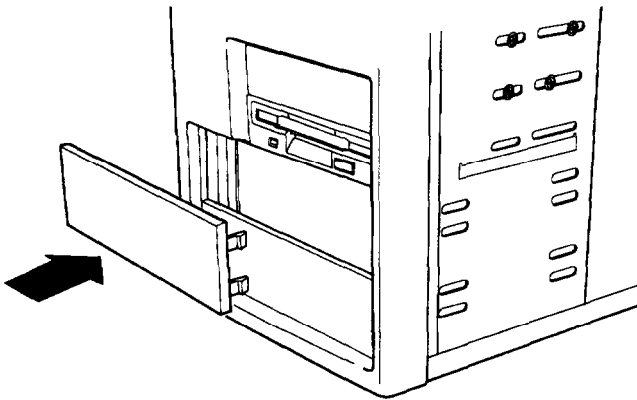


7. If you are installing a CD-ROM drive, you may need to connect an audio cable to a sound card. Follow the instructions in your sound card documentation to connect the audio cable to the card. If you need to install a sound card, follow the instructions under “Installing an Option Card” in Chapter 3.

8. Position the audio cable connector so that the tab faces up and aligns with the notch in the CD-ROM drive's audio connector. Then push in the connector.



9. If you installed a drive that is not externally accessible, replace the plastic faceplate for the bay you used. Insert one side of the faceplate, then gently press on the other side until it clicks into place.

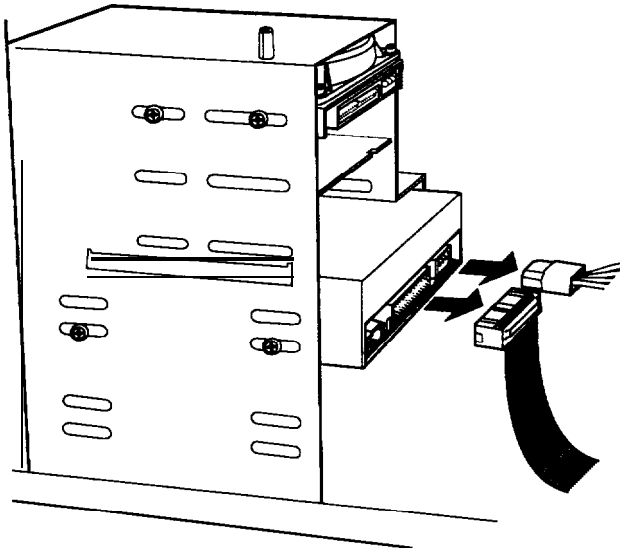


10. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 3 for instructions. Then see "Running SETUP" in Appendix B for instructions on defining your new drive configuration.

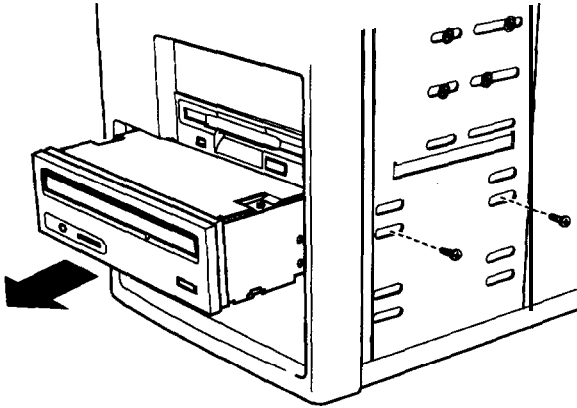
Removing a Drive From an Externally Accessible Bay

Follow these steps to remove a drive from an externally accessible drive bay:

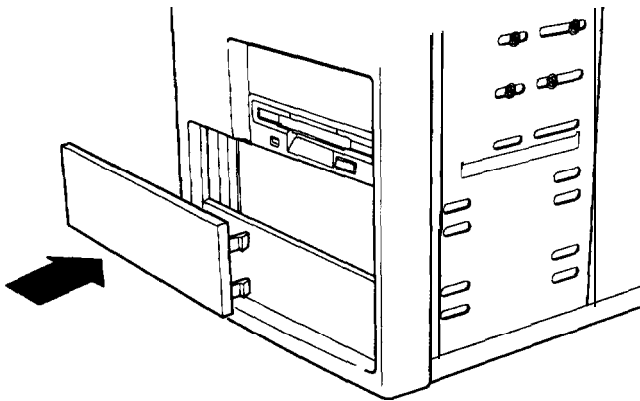
1. Disconnect the drive and power cables from the back of the drive you are removing.



2. Remove the four screws (two on each side) securing the drive to the drive bay. Then slide the drive out through the front of the bay.



3. If you are not installing another externally accessible drive in the open drive bay, you may want to install a plastic faceplate to cover that bay. Insert one side of the faceplate, then gently press on the other side until it clicks into place.



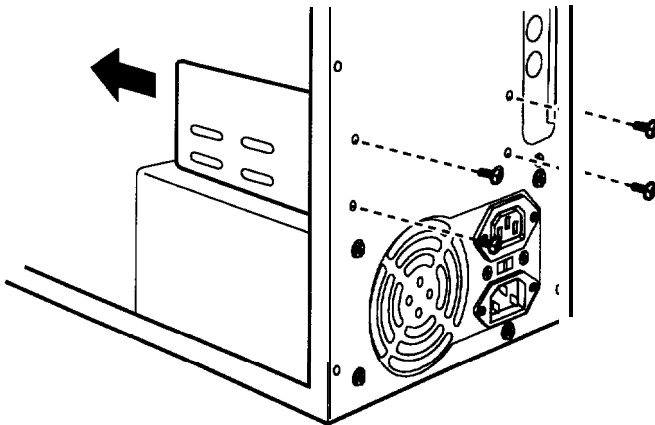
4. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 3 for instructions. Then see "Running SETUP" in Appendix B for instructions on defining your new drive configuration.

Installing a Drive in the Rear Internal Bay

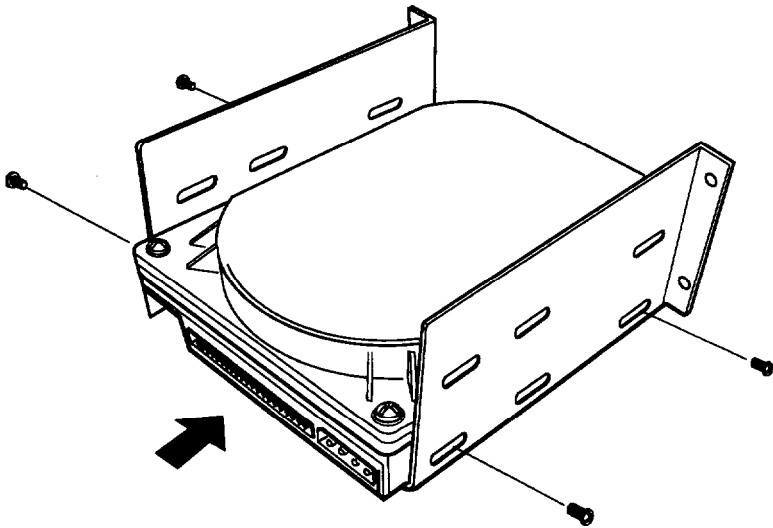
Your computer may have a hard disk drive already installed in the rear internal drive bay. If so, you must first follow the instructions under "Removing a Drive From the Rear Internal Bay." Then follow the steps below.

Follow these steps to install a drive in the rear internal drive bay:

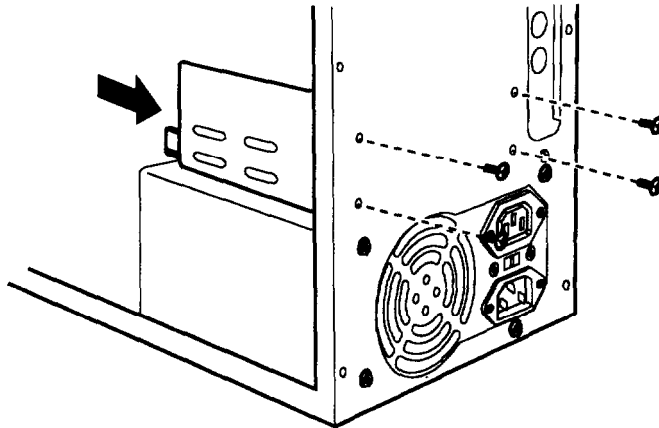
1. Remove the drive and power cables from the back of any drive already installed in the rear internal drive bracket.
2. Remove the four screws securing the rear internal drive bracket to the computer's back panel and slide it out of the computer.



3. Place the rear internal drive bracket on your work surface as shown in the illustration below.
4. Position the drive so that its drive and power connectors face the end of the bracket shown below. Then slide the drive into the appropriate bay in the bracket and secure it with the four screws that came with the drive.

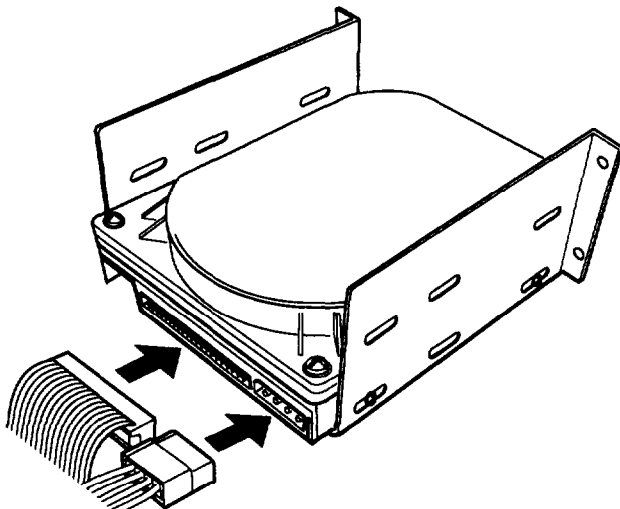


5. Replace the bracket as shown below and secure it to the back panel with the four screws you removed earlier.



6. To connect the drive cables to the drives in the rear internal bracket, first locate pin 1 on each drive's connector. The number 1 or 2 may be printed on the drive's connector or circuit board to identify the side containing pin 1.

7. Hold the connector on the IDE device cable so the red wire aligns with pin 1 on the drive. Make sure the holes in the connector fit over all the pins; then push in the connector.



8. Locate a power supply cable for each drive installed in the rear internal bracket. These cables lead from the power supply and have multicolored wires with a plastic connector on the end. Align the notched corners of the power supply connector with the drive's power connector; then push in the connector.

Note

Your system has five power supply cables; three with large connectors and two with small connectors. If you need more than five cables, you can purchase Y-adapters at most computer accessory stores. Y-adapters let you use one power supply cable for two devices.

9. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 3 for instructions. Then see "Running SETUP" in Appendix B for instructions on defining your new drive configuration.

Removing a Drive From the Rear Internal Bay

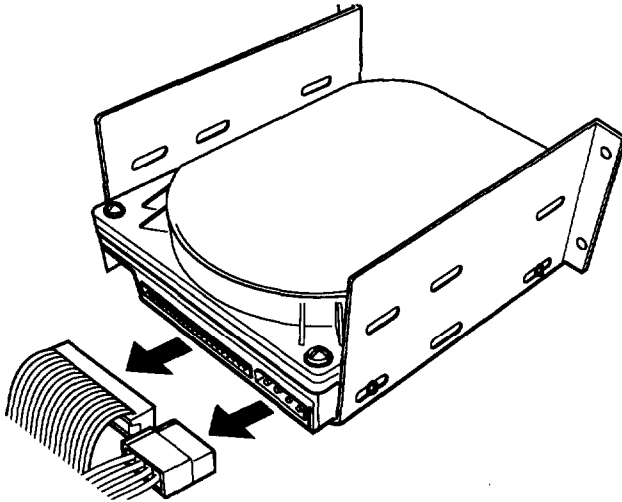
You may need to remove a hard disk drive for service or for replacement.

Caution

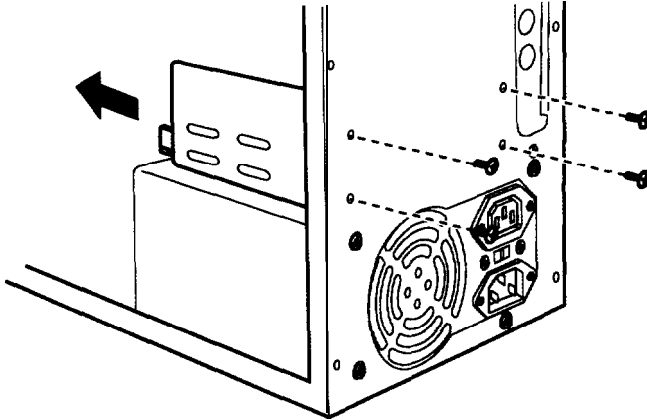
Before you remove a hard disk drive, make sure you have backup copies of all your files and programs. You can use backup software or the backup utility in your operating system. Refer to your online help files or your software documentation for instructions.

Follow these steps to remove a drive from the rear internal drive bay:

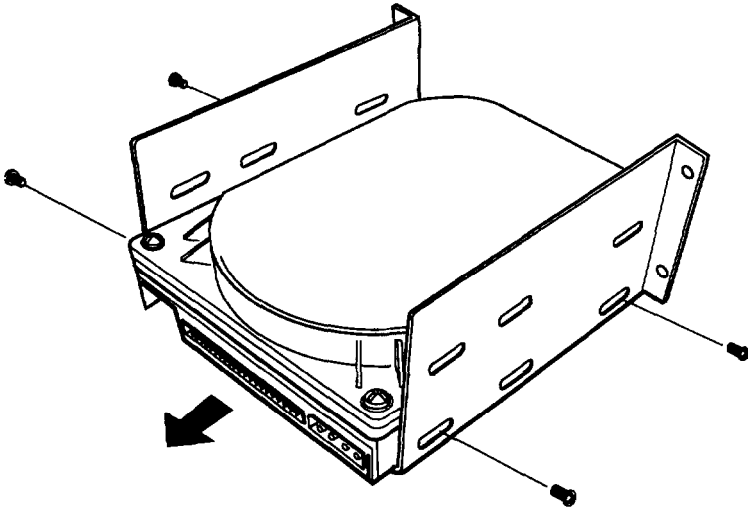
1. Remove the IDE device and power cables from the back of each drive in the rear internal bracket.



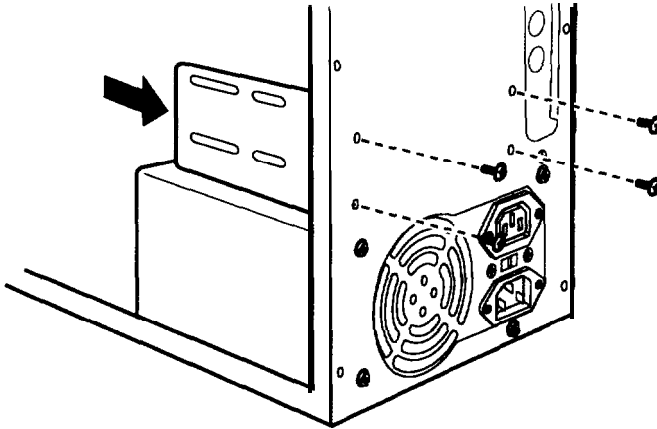
2. Remove the four screws securing the rear internal drive bracket to the computer's back panel and slide it out of the computer.



3. Remove the four screws securing the drive to the bracket and slide the drive out of the bracket.



4. Replace the bracket as shown below and secure it to the back panel with the four screws you removed earlier.



5. If there is a drive installed in the rear internal bracket, follow steps 6 through 8 under “Installing a Drive in the Rear Internal Bay” to reconnect the drive and power cables to the drive.
6. If you have finished installing or removing drives, replace the computer’s cover; see “Replacing the Cover” in Chapter 3 for instructions. Then see “Running SETUP” in Appendix B for instructions on defining your new drive configuration.

Chapter 6

Troubleshooting

If you have any problems with your computer, refer to this chapter. You can correct most problems by adjusting a cable connection, repeating a software procedure, or resetting the computer.

Tip

If you are reading this manual online, be sure to print out this chapter before performing any of the steps it describes.

The troubleshooting suggestions in this chapter are organized in general categories, as listed below. Within each category, one or more specific problems are described with possible solutions.

- The following issues are included:
- Identifying your system
- Computer will not start
- Computer does not respond
- Keyboard problems
- Mouse problems
- Monitor problems
- Diskette problems
- Diskette drive problems
- Hard disk drive problems
- CD-ROM drive problems

- ❑ Password problems
- ❑ Software problems
- ❑ Printer or scanner problems
- ❑ Option card problems
- ❑ Memory module problems
- ❑ External cache problems
- ❑ Controller problems.

If the suggestions here do not solve the problem, contact your Authorized EPSON Servicer or the EPSON Connection for help; see “Where to Get Help” in the Introduction of this manual for instructions.

Identifying Your System

When you request technical assistance, be ready to provide the serial number and “A” code or model number of your computer, its system BIOS version number, its configuration (including the type of disk drives, monitor, and option cards), and the names and version numbers of any software programs you are using.

Use these guidelines to locate information about your system.

Serial number: Look on the back or side panel of the computer to find the serial number; also note the number beginning with A (the “A” code).

- System BIOS version:** Restart your system. You'll see the system BIOS version number displayed on the screen during power-on diagnostics.
- System configuration:** Start SETUP and make a note of all your configuration option settings.
- Operating system version:** At the MS-DOS@ prompt, type VER and press Enter. Or watch the screen when your system starts up.
- Software versions:** In Windows applications, select About from the Help menu. As your software application starts, it usually displays a version number on the banner screen. Also, you can check your software manual.
- CONFIG.SYS:** At the MS-DOS prompt, type
`TYPE C:\CONFIG.SYS` and press Enter to see a listing of your CONFIG.SYS file, which contains system configuration commands.
- AUTOEXEC.BAT:** At the MS-DOS prompt, type
`TYPE C:\AUTOEXEC.BAT` and press Enter to see a listing of your AUTOEXEC.BAT file, which contains system startup commands.

The Computer Will Not Start

The power light is on, but the computer does not start.

Place a boot diskette in drive A and turn on the computer again.

Caution

If you turn off the computer, always wait at least 20 seconds before turning it back on to prevent damage to its circuitry.

If your computer is set to boot from drive C, make sure that the IDE hard drive is formatted. Also make sure that the primary IDE controller is enabled by checking the Local Bus IDE Adapter setting in SETUP; see “Configuring integrated peripherals” in Appendix B.

The computer does not start and the power light is not lit.

Make sure the power cord is securely connected to both the AC inlet on the back panel and an electrical outlet.

The power cord is securely connected, but the computer still does not start.

Check the electrical outlet for power. Turn off your computer and unplug the power cord. Plug a lamp into the outlet and turn it on.

You installed or removed system components, and now your computer does not start.

Check to make sure you have reconnected all the internal and external cables correctly.

You may have installed a SIMM incorrectly. If the system doesn't detect memory, it won't start. Check that your SIMMs are securely installed in the correct sockets.

If you replace the processor, make sure the new processor is installed correctly, and that the processor is aligned correctly on the system board. If you did not align it correctly, the system won't start. Also make sure the jumpers are set correctly for your processor speed. For more information, see "Installing Memory Modules (SIMMs)," "Upgrading the Processor," and "Changing the Jumper Settings" in Chapter 3.

You may have installed option cards that exceed the system's power limits. Check "Option Slot Power Limits" in Appendix A to see if they exceed the option slot power limits of your computer.

The Computer Does Not Respond

The computer locks up.

Wait a few moments; if your computer does not respond after a reasonable length of time, press Ctrl Alt Del and follow the instructions on the screen. If that doesn't work, press the RESET button.

You may have installed memory using SIMMs that work at the wrong speed. Install the correct SIMMs; see "Installing Memory Modules (SIMMs)" in Chapter 3.

Your system may have overheated. If you upgraded the processor yourself, make sure you have an adequate heat sink installed.

You reset the computer, but it still does not respond.

Try turning the computer off, wait 20 seconds, and turn it on again.

Your system suddenly stops operating.

You may have overloaded the power supply. See your option card manuals for the power requirements of your cards. Then check “Option Slot Power Limits” in Appendix A to see if they exceed the option slot power limits of your computer.

Keyboard Problems

The screen displays a keyboard error message when you turn on or reset the computer.

Make sure the keyboard is securely connected to the keyboard port and not the mouse port. Although these ports look alike, they cannot be used interchangeably.

The cursor keys on the numeric keypad do not work properly.

If the Num Lock light in the upper right corner of the keyboard is lit, press Num Lock to turn off the function.

Mouse Problems

Your mouse isn't working properly.

Make sure the mouse cable is securely connected to the mouse port and not the keyboard port. Clean the mouse ball if necessary. Also make sure you installed the mouse driver correctly for DOS programs. See your mouse documentation and “Connecting a Keyboard or Mouse” in Chapter 1 for instructions.

Monitor Problems

There is no display on the screen.

Check that the monitor's power switch is on and that its power light is on.

Also, the computer may be in a power-saving mode. When you press a mouse button or a key on the keyboard, see if the monitor displays an image.

The power light is on, but you still do not see anything on the screen.

Press a mouse button or a key on the keyboard to see if the monitor or computer is in a power-saving mode. Also, check the brightness and contrast controls.

If you still do not see anything on the screen, make sure the monitor is securely connected to the computer.

If you installed a display adapter card, make sure your monitor type matches the card type. Also make sure you disabled the built-in VGA controller by changing the setting of jumper JP21; see "Changing the Jumper Settings" in Chapter 3 for instructions. In addition, check that you set the correct display type for the Video System option in SETUP; see "Using the System Setup Option" in Appendix B.

If you are running an application program, see if you need to set up the program for the type of monitor and display adapter you have. Also make sure you are using the appropriate monitor and display adapter for your software.

The power switch is on but the power light is not on.

If the monitor is Energy Star compliant, it may be in a power-saving mode. Press a mouse button or a key on the keyboard to activate the monitor.

Turn off the monitor's power, wait five seconds, and turn it back on.

If the light still does not come on, check the electrical outlet for power. Turn off your monitor and unplug it from the outlet. Then plug a lamp into the wall outlet and turn it on. If the light turns on, your monitor may be faulty.

A software program asks you to reset for 256 color display.

For the best display performance, your system has been set to run Windows with the High Color palette (64 thousand colors). Some application programs you may install work better with the 256 color palette. If you want to change your color palette, you can use the Display utility in the Windows 95 Control Panel or the Galileo program in Windows 3.1. See your Windows documentation or online help for more information about changing your Display settings.

You used the Galileo utility in Windows 3.1 to change your video refresh rate, but the rate you set is not saved after you turn off your computer.

You need to set the refresh rate using the S3REFRSH program, located in the C:\S3INSTALL\UTIL subdirectory. When you are ready to exit the S3REFRSH program, make sure you select the exit option that saves the refresh rate values in your AUTOEXEC.BAT file.

Diskette Problems

You see a diskette error message.

Reinsert the diskette, making sure you insert it all the way. If the drive has a latch, turn it down to secure the diskette.

Also, check to see that you have inserted the right type of diskette in the drive. For example, make sure you are not inserting a high-density diskette in a double-density drive.

If reinserting the diskette does not solve the problem, insert the diskette in another diskette drive of the same type. If you can read the diskette in a different drive, your drive may be faulty. Contact the dealer from whom you purchased the drive; if the diskette drive came with your computer, contact your Authorized EPSON Servicer or the EPSON Connection for assistance.

The diskette is the right type, but you still see an error.

Check that the diskette is not write-protected, preventing the drive from writing to the diskette.

Make sure the diskette is formatted. See your operating system documentation for instructions on formatting diskettes.

The system may have the Diskette Access security option in SETUP enabled. If you entered a User level password when you started the system, but this option is set to a Supervisor level, you see an error when you access the drive. See “Using the virus protection features” in Appendix B for more information.

You may have a defective diskette. Try copying the files from the bad diskette to a new diskette.

Diskette Drive Problems

A newly installed diskette drive is not working properly.

Make sure you have installed the drive correctly and check all the cable connections.

You see *a diskette drive error when you start your computer.*

Run the SETUP program and configure your system for the correct type of diskette drive. Make sure the Diskette Controller option in SETUP is enabled. See “Configuring integrated peripherals” in Appendix B for more information.

The diskette drive is making loud or unusual noises.

Contact your Authorized EPSON Servicer or the EPSON Connection. To prevent damage to diskettes, do not put a diskette into the drive until you identify and resolve the problem.

Hard Disk Drive Problems

A new/y installed hard disk drive is not working properly of ifs performance is not what you expect.

Make sure you have installed the drive correctly and check all cable connections. Also, check the jumper settings on your drive.

If this is your only hard disk drive, make sure it is connected to the primary IDE interface on the system board. If you have a CD-ROM drive, make sure it is connected to the secondary IDE interface and is not connected to the same interface as any hard disk drive.

If you are using MS-DOS and Windows 3.1, make sure the PCI IDE driver is installed and loaded; see “Installing the PCI IDE Drivers” in Appendix B. To take advantage of the driver, your hard disk drive must be compatible with the ATA-2 specification; check your hard disk drive documentation for this information.

Some hard disk drives may not support the power management features on your system. You may need to disable these features in SETUP; see “Setting the Green PC Options” in Appendix B for more information.

You see a hard disk drive error when you start your system.

Run SETUP and check that your system is auto-sensing the correct drive type. If SETUP cannot automatically detect the hard disk drive type or displays information that does not match your drive, you need to define your own drive type. See “Defining your own drive parameters” in Appendix B.

Make sure that the appropriate IDE controller is enabled with the Local Bus IDE Adapter SETUP option; see “Configuring integrated peripherals” in Appendix B.

Make sure the jumpers on the hard disk drive are set correctly. See the documentation that came with the drive for more information.

You are unable to store data on the hard disk drive.

Make sure your hard disk drive has space available for storing data. If the hard disk drive has been in a power-saving mode, make sure the drive has had time to achieve its full operating speed before you try to write data to it.

You have been using your hard disk drive successfully for some time but notice a reduction in performance.

The data on the disk may have become fragmented. Back up all your data and use a disk optimization utility (such as MS-DOS Defrag or Windows 95 Disk Defragmenter) to reorganize the files on your disk.

If you’re using MS-DOS and Windows 3.1, check that your PCI IDE driver is installed and loaded; see “Installing the PCI IDE Drivers” in Appendix B.

If you cannot access data on your hard disk or you are seeing read /write errors, the disk may have a physical problem. Contact your Authorized EPSON Servicer or the EPSON Connection.

CD-ROM Drive Problems

Make sure the drive contains the correct CD-ROM disc. Make sure the disc is rightside up and inserted correctly in the drive.

If you installed your CD-ROM drive, make sure you followed all the instructions in Chapter 4 (for a slimline computer) or Chapter 5 (for a tower computer). The drive should be connected to the secondary IDE interface cable, and that cable should not have an IDE hard disk drive connected to it.

If your drive came with documentation, check there for other possible solutions to the problem you are having. For example, make sure that you set the master/slave jumpers on the drive correctly for your configuration.

Password Problems

You have *forgotten your password*.

You must discharge your CMOS memory. To do this, you need to change the setting of jumper JPI to the On position. See “Changing the Jumper Settings” in Chapter 3 for details.

After you have changed JPI, restart your system, leave it on for a few seconds, then turn it off again. This resets the SETUP values to their factory defaults. Both the Supervisor and the User passwords are disabled.

Set jumper JPI back to the Off position. Then turn on the computer again. If you want to set a new password, use SETUP as described under “Selecting the Security and Anti-Virus Options” in Appendix B.

Software Problems

Your operating system won't start after you installed the PCI IDE drivers.

If you installed PCI IDE drivers for another operating system, such as UNIX, make sure you followed the instructions in the README file for the drivers. See “Installing the PCI IDE Drivers” in Appendix B for instructions.

The application program does not start.

Check that you are following the correct procedure for starting the program and that it is installed correctly. If you need help, contact the software manufacturer.

The application program cannot read from or write to the hard disk drive.

If you have enabled the Hard Disk Standby Timer option in SETUP, your application may be timing out during the few seconds when the hard disk drive returns to its full speed. Disable this option in SETUP as described under “Setting the Green PC Options” in Appendix B.

Your application has locked the computer, making it unresponsive to keyboard commands.

Reset the computer and try again. If resetting the computer does not help, turn it off, wait 20 seconds, then turn it on again.

Some software, like OS/2®, UNIX, or NetWare,® needs at least 8MB to 16MB of RAM to work correctly. Check your software documentation for the minimum memory requirements. If necessary, add more memory as described under “Installing Memory Modules (SIMMs)” in Chapter 3.

Printer or Scanner Problems

The printer or scanner does not work at all.

Check **that the** printer or scanner has power and is properly connected to the computer. Also make sure your printer has paper in it. If you are using more than one serial port, check the primary and secondary port settings (COM1 and COM2) in your application program and in the SETUP program. See “Configuring integrated peripherals” in Appendix B for information about serial port settings in SETUP.

If you connected a scanner to the parallel port, make sure the port is set for bidirectional operation (Bi-directional or EPP mode). See “Configuring integrated peripherals” in Appendix B for more information. If you use ECP mode, check your parallel device software documentation for the correct DMA channel (DRQ) setting; then set jumpers JP23 and JP24 to match the setting, if necessary; see “Changing the Jumper Settings” in Chapter 3 for more information.

The printer prints garbled information.

Check the printer manual for the printer’s correct DIP switch or control panel settings. Also, make sure you have the proper drivers installed for your printer and make sure you’ve selected the correct printer within your software application.

In Windows 3.1, select Print Manager and be sure that the correct printer driver is selected. In Windows 95, check the same thing in the Printers selection from the Settings menu.

Option Card Problems

A new/y installed option card is not working correctly.

Make sure the option card is installed correctly and is well-seated in its slot. Run SETUP to update your configuration after you install the card. See Appendix B for instructions. Perform setup procedures for any software you are using with the card.

See the documentation that came with the option card to set any necessary DIP switches or jumpers on the card. If you installed a video adapter on an option card, make sure you disabled the built-in VGA controller by changing the setting of jumper JP21; see “Changing the Jumper Settings” in Chapter 3 for more information.

Make sure you install option cards that do not exceed the system’s power supply limits; see “Option Slot Power Limits” in Appendix A for more information.

Make sure the option card is not touching any other card or component on your system board.

If you installed a PCI card, check to see that the PCI options in SETUP are set correctly for your card. For more information, see “Configuring PCI devices” in Appendix B.

An external device connected to the option card is not working correct/y.

Make sure you are using the proper cable to securely connect the device to the card.

Memory Module Problems

The memory count displayed by power-on diagnostics or the SETUP program is incorrect.

You may have installed the SIMMs incorrectly. They may be the wrong type or speed, or they may not be inserted all the way or in the correct sockets. See “Installing Memory Modules (SIMMs)” in Chapter 3 for more information.

If you have installed a gold-plated SIMM in the sockets, the socket may have corroded slightly. Remove the SIMM and clean the gold-plated connector with a pencil eraser; then reinstall the SIMM.

External Cache Problems

The amount of external cache displayed by the power-on diagnostics program is incorrect.

Check the SETUP program to be sure that the External Cache option is set to Enabled. See “Configuring cache memory” in Appendix B for instructions on setting the cache options in SETUP.

Controller Problems

You see a controller error for the drive controllers or the I/O port controllers when you start your system.

If the error message refers to an IDE (or HDD) controller or the diskette drive controller, make sure that you have enabled the controller in the SETUP program; see “Configuring integrated peripherals” in Appendix B for more information.

If one of your hard disk drive controllers is faulty, try switching to the other controller. You can then continue to use your system until it is convenient for you to have it serviced.

Appendix A

Specifications

This appendix describes the following specifications:

- ❑ Computer specifications
- ❑ System memory map
- ❑ Video resolutions and colors
- ❑ Hard disk drive information
- ❑ DMA assignments
- ❑ Hardware interrupts
- ❑ System I/O address map
- ❑ Connector pin assignments
- ❑ Options available from EPSON
- ❑ Tested operating environments.

Computer Specifications

CPU and Memory

64-bit CPU	586-class processor
Green PC energy saver	Energy Star compliant, low-power, doze, standby, and suspend modes for the CPU, hard disk drive, and VGA display; select time-out periods, power-saving rates, and other options in SETUP
Memory	64-bit DRAM interface supporting up to 8MB RAM standard on two 4MB SIMMs; expandable to 128MB using 4MB, 8MB, 16MB, and 32MB SIMMs; SIMMs must be tin-plated, 72-pin, 32-bit or 36-bit, fast-page mode or EDO mode, parity or no-parity type with access speed of 70ns or faster
ROM	128KB Phoenix® system BIOS, video BIOS, and SETUP code in a flash memory device on system board
Video RAM	1MB video DRAM on system board; expandable to 2MB using two 512KB, 40-pin, SOJ flat pack video DRAM chips
Shadow RAM	Supports shadowing of system and video BIOS ROM into RAM; video and option ROM shadowing selectable in SETUP

<i>Cache</i>	16KB of internal cache in the processor; 256KB of external cache installed on system board with two pipelined burst SRAM chips; internal and external cache controllable through SETUP
<i>Math coprocessor</i>	Math coprocessor built into the 586-class processor
<i>Clock/calendar</i>	Real-time clock, calendar, and CMOS RAM socketed on system board with integrated backup battery

Controllers

<i>PCI chipset</i>	Provides PCI caching, memory, and control for the PCI bus and the two-channel, bus-mastered, PCI IDE interface (described under “Hard disk and other IDE devices” below); integrated PCI bridge translates CPU bus cycles to PCI bus cycles and CPU-to-PCI memory write cycles to PCI burst cycles
<i>Video</i>	S3™ Trio64V+™ PCI VGA controller with integrated 24-bit RAMDAC, 64-bit DRAM interface; includes power-saving and multimedia features; supports MPEG video playback; supports resolutions up to 1280 x 1024 in 16 colors with 1MB of video RAM, increasing to 256 colors with 2MB of video RAM; True Color™ support at 640 x 480 resolution, and Hi-Color support at 800 x 600 resolution

Diskette

Controller on system board supports up to two diskette drives, or one diskette/combo diskette and one tape drive

Hard disk and other IDE devices

Two PCI, ATA-2 compatible, bus-mastered IDE interfaces on system board support up to four IDE devices (two on each interface); IDE CD-ROM drives cannot be connected to the primary IDE interface or to the same interface as IDE hard disk drives; BIOS provides hard disk auto-sensing and enhanced IDE functions

Interfaces

Monitor

Energy Star compliant video interface for fixed or multifrequency monitor built into system board; 15-pin, D-shell connector

Parallel

One standard, multimode parallel interface built into system board; supports B-bit unidirectional, 16-bit bidirectional, EPP (Enhanced Parallel Port), and ECP (Extended Capabilities Port) modes; 25-pin, D-shell connector; operation controllable by SETUP program and jumpers

Serial

Two high-speed RS-232C, programmable, asynchronous interfaces built into system board; 16C550 compatible; 9-pin, D-shell connectors; operation controllable through SETUP

Keyboard

PS/2 compatible keyboard interface built into system board; 6-pin, mini DIN connector

Mouse	PS/2 compatible mouse interface built into system board; 6-pin, mini DIN connector
<i>option slots</i>	Connector card with five I/O expansion slots; three ISA compatible (8.33 MHz bus speed) and two PCI bus-mastering slots (33 MHz bus speed)
<i>Speaker</i>	Internal

Mass Storage

Slimline

Internal bay:

One 3.5-inch wide, one-inch high drive

Externally accessible bays:

One 3.5-inch wide, one-inch high drive and two 5.25-inch wide, half-height drives

Tower

Front internal bay:

One 3.5-inch wide, one-inch high drive

Rear internal bracket:

Two 3.5-inch wide, one-inch high drives or one 3.5-inch wide, full-height drive

Externally accessible bays:

Two 3.5-inch wide, one-inch high drives and two 5.25-inch wide, half-height drives

Diskette drive types

3.5-inch diskette drive, 720KB or 1.44MB storage capacity; 5.25-inch diskette drive, 360KB or 1.2MB storage capacity; or a combination 3.5-inch/5.25-inch diskette drive

Hard disk drive types

5.25-inch or 3.5-inch form factor hard disk drive(s), up to half-height size; maximum of four drives

Other devices Half-height tape drives, CD-ROM drives, optical drives, PCMCIA card readers, or other devices; 5.25-inch, or 3.5-inch with mounting frames

Keyboard Detachable, two-position height; 104 or 105 sculpted keys; countrydependent main typewriter keyboard; numeric/cursor control keypad; four-key cursor control keypad; 12 function keys; 3 Windows 95 keys

Mouse Detachable, two-button, PS/2 compatible

SETUP Program Stored in ROM; accessible by pressing Del during boot

System security User and Supervisor level passwords available for system boot or diskette access

virus protection Write protection feature for the hard disk drive boot sector

Power Supply

<i>Type</i>	200 Watt, UL/TUV/CSA listed, fan-cooled
<i>Input ranges</i>	98-132 VAC or 196-264 VAC; switch-selectable
<i>Maximum output</i>	+5 VDC at 20 Amps, -5 VDC at 0.5 Amp +12 VDC at 8 Amps, -12 VDC at 0.5 Amp
<i>Frequency</i>	48 to 63 Hz
<i>Cables</i>	Two to system board, five to mass storage devices; for more than five devices, Y cables can be installed on the existing cables

Option Slot Power Limits

Output voltage (VDC)	+5 Volts	-5 Volts	+12 Volts	-12 Volts
For all slots	12 Amps	0.4 Amp	4.0 Amps	0.4 Amp

Physical Characteristics

Dimension	Slimline	Tower
Width	16.8 inches (427 mm)	7.125 inches (181 mm)
Depth	15.8 inches (401 mm)	16.25 inches (413 mm)
Height	4.4 inches (112 mm)	13.25 inches (337 mm)
Weight	18.2 lb (8.3 kg) with one diskette drive, but without keyboard	20.6 lb (9.3 kg) with one diskette drive, but without keyboard

Environmental Requirements

Condition	Operating range	Storage range
Temperature	41° to 90° F (5° to 32° C)	-4° to 140° F (-20° to 60° C)
Humidity (non-condensing)	20% to 90%	10% to 90%
Altitude	-330 to 9,900 ft (-100 to 3,000 m)	-330 to 39,600 ft (-100 to 12,000 m)

System Memory Map

Address range	Function
FE0000h-FFFFFFh	128 KB duplication of ROM BIOS stored at 0E0000h-0FFFFFFh
100000h-FDFFFFh	System extended memory (128MB maximum)
0E0000h-0FFFFFFh	128KB ROM BIOS
0C8000h-0DFFFFh	Adapter ROM BIOS
0C0000h-0C7FFFh	Video ROM BIOS
0A0000h-0BFFFFh	128KB video memory
000000h-09FFFFh	640KB base memory

Video Resolutions and Colors

Resolution	Memory requirements	Color	Refresh rates (Hz)	Remarks
540 × 480	1MB	256	60/72/75	8 bits/pixel
	1MB	32K/64K	60/72/75	16 bits/pixel
	2MB	16.8M (True Color)	60/72/75	24 bits/pixel
300 × 600	1MB	256	56/60/72/75	8 bits/pixel
	1MB	32K/64K	60/72/75	16 bits/pixel
	2MB	16.8M (True Color)	60/72/75	24 bits/pixel
1024 × 768	1MB	256	43.5/60/70/75	8 bits/pixel*
	2MB	64K	43.5/60/70/75	16 bits/pixel**
1280 × 1024	1MB	16	43.5/60/72/75	4 bit planes*
	2MB	256	43.5/60/72/75	8 bits/pixel**
1600 × 1200	2MB	256	43.5	8 bits/pixel**

* Non-interlaced and interlaced

** Interlaced

Hard Disk Drive Information

The IDE hard disk drives listed in the tables below are qualified for use in your computer.

IDE hard disk drive parameters

Parameters	Conner®				NEC®		Seagate®		
	CFS1275A	CFS850A	CFS635A	CFS541A	D3747	D3745	ST31640A	ST51270A	ST3630A
Formatted capacity (MB)	1275	850	635	540	1620	1080	1625	1282	631
Size,width x height (in)	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × .75	4 × 1
Weight (lb)	1.25	1.25	1.25	1.25	1.25	1.25	1.5	.75	1.3
Cylinders	3640	3640	3640	3924	3678	3678	4708	5414	3164
Disks	3	2	2	1	3	2	3	2	2
Heads	6	4	3	2	6	4	6	4	4
Sectors per track	77 - 143	78 - 143	78 - 144	90 - 170			76 - 142		66 - 115
Rotational speed (RPM)	3600	3600	3600	3600	4500	4500	5400	5400	3811
Buffer size (KB)	64	64	64	64	256	256	256	128	120
Average seek time (ms)	14	14	14	14	11	11	10.5	10.5	14
Encoding method	RLL 1.7	RLL 1.7	RLL 1.7	RLL 1.7	PRML	PRML	RLL 1.7	RLL 1.7	RLL 1.7
Power dissipation (seek)	3.5 W	3.5 W	3.5 W	3.9 W	4.0W	4.0W	8.41W	6.4W	5.2 W
Logical parameters									
Cylinders	2477	1651	1238	1048	3144	2096	3150	2485	1223
Heads	16	16	16	16	16	16	16	16	16
Precomp zone	0	0	0	0	0	0	0	0	0
Landing zone	2477	1651	1238	1048	3144	2096	4726	5376	3164
Sectors	63	63	63	63	63	63	63	63	63

IDE hard disk drive settings

Model number	Single drive	Master drive	Slave drive
Conner CFS1275A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS850A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS635A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS541A	C/D jumpered	C/D jumpered	No jumpers
NEC D3747	SW1 on, SW2-SW4 off	SW1 on, SW2-SW4 off	SW1 -SW4 off
NEC D3745	SW1 on, SW2-SW4 off	SW1 on, SW2-SW4 off	SW1 -SW4 off
Seagate ST31640A	No jumpers	3-4 jumpered	1-2 jumpered
Seagate ST51270A	No jumpers	3-4 jumpered	1-2 jumpered
Seagate ST3630A	No jumpers	No jumpers	7-8 jumpered

DMA Assignments

level	Assigned device
DMA0	Reserved
DMA1	Available
DMA2	Diskette drive controller
DMA3	Available
DMA4	Cascade from DMA1
DMA5	Spare
DMA6	Spare
DMA7	Spare

Hardware Interrupts

IRQ no.	Function
IRQ0	Internal timer
IRQ1	Keyboard
IRQ2	Cascade to IRQ9
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	LPT2
IRQ6	Diskette drive controller
IRQ7	Parallel port 1
IRQ8	Real-time clock
IRQ9	Cascaded from IRQ2
IRQ10	Available
IRQ11	Available
IRQ12	PS/2 mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE controller
IRQ15	Secondary IDE controller

System I/O Address Map

Hex address	Assigned device
000 -01F	DMA controller 1, 8237
020 - 03F	Interrupt controller 1,8259
022 - 024	Reserved
040 - 05F	Timer, 8254
060 - 06F	Keyboard controller, 8242PE
070 - 07F	Real-time clock NMI (non-maskable interrupt)

Hex address	Assigned device
080 - 09F	DMA page register, 74LS612
0A0 - 0BF	Interrupt controller 2, 8259
0C0 - 0DF	DMA controller 2, 8237
0F0	Clear math coprocessor
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
1F0 - 1F8	Primary hard disk interface
1E0 - 1E7	Secondary hard disk interface
200 - 207	Game I/O
278 - 27F	Parallel printer port 2
2B0 - 2DF	Alternate enhanced graphics adapter
2E1	GPIB (adapter 0)
2E2, 2E3	Data acquisition (adapter 0)
2F8 - 2FF	Serial port 2
300 - 31F	Prototype card
360 - 363	Available
368 - 36B	Available
378 - 37A	Parallel printer port 1
380 - 38F	Available
390 - 393	Available
3A0 - 3AF	Available
3B0 - 3BF	Available
3C0 - 3CF	VGA adapter
3D0 - 3DF	VGA adapter
3F0 - 3F5	Diskette drive controller
3F8 - 3FF	Serial port 1
6E2, 6E3	Available
790 - 793	Available
AE2, AE3	Available

Hex address	Assigned device
B90, B93	Available
EE2, EE3	Available
1390 - 1393	Available
22E1	Available
2390 - 2393	Available
42E1	Available
63E1	Available
82E1	Available
A2E1	Available
C2E1	Available
E2E1	Available

Connector Pin Assignments

Parallel port connector pin assignments (J7)

Pin	Signal	Pin	Signal	Pin	Signal
1	Strobe*	10	ACK *	19	Signal ground
2	Data 0	11	Busy	20	Signal ground
3	Data 1	12	PE	21	Signal ground
4	Data 2	13	Select	22	Signal ground
5	Data 3	14	AFD *	23	Signal ground
6	Data 4	15	Error *	24	Signal ground
7	Data 5	16	Init *	25	Signal ground
8	Data 6	17	Selectin .	—	—
9	Data 7	18	Signal ground	-	-

- Active LOW logic

Serial port connector pin assignments (J5 and J6)

Pin	Signal	Pin	Signal
1	Data carrier detect	6	Data set ready
2	Receive data	7	Request to send
3	Transmit data	8	Clear to send
4	Data terminal ready	9	Ring indicator
5	Ground	-	-

Options Available From EPSON

Many options for enhancing and supplementing this product are available from EPSON. Call your nearest marketing location or EPSON Accessories for more information about specific options.

Tested Operating Environments

Although your system will run most software applications, the following operating environments have been tested for compatibility with your system.

- Microsoft MS-DOS 3.3 and later
- Novell® NetWare* 3.12 and 4.1
- Novell Personal NetWare
- IBM® OS/2; including version 3.0 (Warp)
- SCO® UNIX
- SCO Open Desktop
- Microsoft Windows 3.1 and later
- Microsoft Windows 95
- Microsoft Windows for WorkGroups
- Microsoft Windows NT™, including version 3.5

- Certified as workstation and file server in certain configurations

As new environments become available, these also will be tested.

Running SETUP and Installing Drivers

Your computer has a configuration program, called SETUP, contained within the BIOS ROM (basic input/output system read-only memory) chip on the system board. The BIOS ROM also contains default configuration settings for your hardware configuration, security options, and power-saving features that SETUP allows you to change. Any configuration information you set is backed up by a battery, so it is not erased when you turn off or reset the computer.

You may also want to install drivers and utilities for the built-in IDE interfaces and the built-in SVGA video interface. You need to install these drivers only if you're using an operating system other than Windows 95.

This chapter describes the following procedures:

- Starting the SETUP program
- Using the System Setup options
- Using the Fixed Disk Setup option
- Using the Advanced System Setup options
- Setting the Boot options
- Selecting the Security and Anti-virus options
- Setting the Green PC features
- Installing PCI IDE drivers
- Installing video drivers.

Running SETUP

You may want to run the SETUP program the first time you use your computer to customize the settings. You also may need to run SETUP again later if you add options or change your configuration.

Starting the SETUP Program

When you start your computer, it performs some power-on diagnostics. During these diagnostics, you may see the following message:

Press to enter SETUP

Press Del. This message is on the screen for only a few seconds. If you missed it, restart your computer and try again.

If, during power-on diagnostics, the system detects an error in your system configuration, you hear two beeps and see an error message followed by this message:

Press <F1> to resume, to run SETUP

Press Del to run SETUP and correct the problem.

SETUP displays the Main Menu, which allows you to select various options to identify your system's configuration and then save your new values. You can also cancel any changes you have made and restore the default values stored in ROM or load the previously stored values.

The table below lists some of the keys you can use to perform SETUP operations.

SETUP function keys

Press	To
↑ ↓ → ←	Move the cursor to the next or previous modifiable option
Home or End	Move the cursor to the top or bottom of the menu or screen
F1 or Alt H	Display a help screen for the option currently selected
PgUp or -	Select the previous value
PgDn or +	Select the next value
F5	Supply the previously saved values in the CMOS for the SETUP options on the current screen
F6	Supply the factory default values for the SETUP options on the current screen
F10	Exit the current screen; if you have changed any values, a message asks if you want to save before exiting SETUP
Enter	Select the current option or value
Esc	Return to the previous screen; if you are on the Main Menu, exit SETUP

While you are in SETUP, the bottom of the screen lists the keys you can press to perform specific functions.

Using the System Setup Option

When you select the system Setup option, you see the System Setup screen. From this screen, you can set the system time and date, define your video display type, check system memory, define the diskette drives, and control keyboard testing during system startup.

The system Setup options are described in the table below.

System Setup options

Option	Settings	Description
System Time System Date	<i>hh:mm:ss</i> <i>mm/dd/yyyy</i>	Sets the time and date for the computer's real-time clock once set. you do not need to change the settings except to adjust the time for daylight savings or a different time zone (the computer automatically changes the date for leap years)
Video System	EGA/VGA . Monochrome CGA 80X25	Defines the type of display you are using; if you connected a VGA or SVGA monitor to the built-in VGA port, the computer automatically sets this option to EGA/VGA (1)
System Memory Extended Memory	<i>system memory size</i> <i>extended memory size</i>	Detects and displays the size of the system and extended memory: you cannot change these values (2)
Diskette Drive A and B	1.44MB, 3 1/2" . (A) 720KB, 3 1/2" 1.2MB, 5 1/4" 360KB, 5 1/4" 2.88MB, 3 1/2" Not installed* (B)	Defines the type of diskette drive installed as drives A and B (if installed)
Keyboard	Installed . Not Installed	Enables or disables testing of the keyboard during power-on diagnostics: select Not Installed if you plan to use your system without a keyboard (as a network server, for instance) so you do not receive keyboard errors

• Default setting

- (1) If you installed a video adapter card, make sure you disable the on-board SVGA controller by setting jumper JP21 to position 2-3; see "Changing the Jumper Settings" in Chapter 3 for instructions.
- (2) If the System Memory and Extended Memory values are not correct, check that the SIMMs are installed correctly, as described in "Installing Memory Modules (SIMMs)" in Chapter 3.

Using the Fixed Disk Setup Option

The Fixed Disk Setup option defines the types of hard disk drives connected to the primary and secondary IDE interfaces in your system. When you select this option, you see the Fixed Disk Setup screen.

Note

These options do not configure other IDE devices, such as CD-ROM drives, connected to the secondary IDE interface.

Fixed Disk Setup screen options

Make sure the Large Disk Access Mode option is set to `DOS` (the default setting). Set this option to `Other` if you are using UNIX or an operating system other than MS-DOS or Windows.

From this screen, you can configure each of the installed drives using these options:

```
IDE Adapter 0 Master
IDE Adapter 0 Slave
IDE Adapter 1 Master
IDE Adapter 1 Slave
```

The IDE Adapter 0 drives are the master and slave drives connected to your primary IDE interface. The IDE Adapter 1 drives are connected to the secondary IDE interface. (The computer detects the master and slave status of the drives based on the drive's jumper settings, described in Chapter 4 and Chapter 5.)

Individual drive options

Your computer comes with a hard disk auto-sensing feature. To use it, select one of **the** drives you have installed from the Fixed Disk Setup screen. On the screen that appears for that drive, press Enter to select the Autotype Fixed Disk option. The system detects the type of hard disk drive, fills in the drive's parameters, and sets the remaining options on the screen.

Some older drives may not support the auto-sensing feature. If the drive parameters displayed on the screen do not match your drive, you need to define your own drive parameters (see the next section for instructions). You may also need to set the remaining options on the screen, as described below.

The Multi-Sector Transfers option sets the number of sectors per block that the hard disk uses in multiple sector transfers. The more sector transfers per block, the faster your hard drive performs. If this option is not automatically detected, you can select 2,4,8, or 16 sectors.

The LBA Mode Control option enables or disables ISA logical block address (LBA) mode control for each drive. If this option is not detected automatically, and your drive supports LBA mode control, select *Enabled*. Many drives larger than 528MB support LBA mode control, but some older drives do not; check the drive documentation.

The 32 Bit I/O option sets the I/O transfer rate for data read from the disk. If your drive supports 32-bit I/O transfers, select *Enabled*; the default setting is *Disabled* (16-bit transfers).

The Transfer Mode option selects the method for transferring data between the hard disk and system memory. If this option is not automatically set, you can select *Standard/Fast PIO 1* (the default), *Fast PIO 2*, *Fast PIO 3*, or *Fast PIO 4*.

Defining your *own drive* parameters

If the parameters for your hard disk do not match the parameters detected by the auto-sensing feature, you must define your own drive parameters. Follow these steps:

1. Move the cursor to *Type* and select *User*.
2. Type the values in each field that are appropriate for your hard disk drive.
3. When you leave *SETUP*, make sure you save your changes.

Using the Advanced System Setup Options

When you select the Advanced System Setup option, you see the Advanced System Setup screen, from which you can configure the computer's integrated peripheral devices (such as the parallel and serial ports), cache memory, shadow memory, the advanced chipset, and PCI devices. Your system can automatically configure many of these options for you to avoid configuration problems.

The Plug & Play O/S option is set to Yes at the factory.

The Reset Configuration Data option is set to No at the factory. You should not change this setting.

Configuring integrated peripherals

Select **Integrated Peripherals** from the Advanced System Setup menu to configure your serial port addresses, parallel port address, diskette drive controller, and parallel port mode.

The Integrated Peripherals options are described in the table below.

Integrated peripherals options

Option	Settings	Description
COM 1	3F8, IRQ 4 * (COM1)	Assigns the address for the built-in primary and secondary serial ports; the Auto setting detects any optional ports you may have installed and sets the built-in ports automatically based on the optional port settings to avoid conflicts (if no optional ports are installed, Auto sets the built-in ports to their default settings); select Disabled to disable either port
COM 2	2F8, IRQ 3 * (COM2)	
	3E8, IRQ 4	
	2E8, IRQ 3	
	Auto	
	Disabled	

Integrated peripherals options (continued)

Option	Settings	Description
LPT port	378, IRQ7* 3BC, IRQ7 278, IRQ7 378, IRQ5 3BC, IRQ5 278, IRQ5 Auto Disabled	Assigns the address for the built-in parallel port; the Auto setting detects any optional ports you may have installed and sets the built-in port automatically based on the optional port settings to avoid conflicts (if no optional ports are installed, Auto sets the built-in port to the default setting); select Disabled to disable the port
LPT Mode	Standard Bi-directional* EPP Mode ECP Mode ECP & EPP	Sets the parallel port mode to: Unidirectional AT mode Bidirectional PS/2 mode Enhanced Parallel Port mode Extended Capabilities Port mode Both ECP and EPP mode
Diskette controller	Enabled . Disabled	Enables or disables the built-in diskette drive controller
Local Bus IDE adapter	Both . Primary Disabled	Enables or disables the IDE controllers; you can enable just the Primary controller, Both primary and secondary controllers, or neither (Disabled)

. Default setting

Configuring cache memory

Select *Memory Cache* from the Advanced System Setup menu to set cache options. Enabling external cache memory improves system performance, especially in large data retrieval and processing environments.

It's a good idea to use the default settings for all your Memory Cache options unless you have a specific reason for changing them. The table below lists the Memory Cache options.

Memory cache options

Option	Settings	Description
External Cache	Enabled . Disabled	Enables or disables the system's external (secondary) caching
System BIOS shadow	Cacheable . Non-cacheable	Enables or disables caching of the system BIOS memory area
Video BIOS shadow	Cacheable . Non-cacheable	Enables or disables caching of the video BIOS memory area

- . Default setting

Configuring shadow memory

Select the Memory Shadow option to enable video BIOS shadowing or configure specific option ROM shadow blocks.

Note

Shadowing for the system BIOS is always enabled. For the best system performance, always set the Video Shadow option to Enabled (the default setting).

Your computer can access RAM faster than ROM. The options on this screen allow your system to copy the contents of its video ROM and any optional ROMs into RAM. When you use shadowing, your system can perform certain operations faster, providing a significant increase in performance.

Note

Some option ROMs cannot be shadowed using the Shadow Memory Region options; see the documentation that came with your optional equipment for information on shadowing the option's BIOS ROM.

Configuring the advanced chipset

The Advanced Chipset Control options are for test purposes only, and you should not change them.

Configuring PCI devices

Select **PCI Devices** from the **Advanced System Setup** screen to configure the devices connected to the **PCI option slots** in your computer. These options need to be set only if you installed older PCI devices that do not follow **PCI version 2.0** specifications.

Note

If you installed **PCI option cards** in the computer before running **SETUP**, the computer configures the **PCI Devices** options automatically by detecting the information returned from the **PCI option cards**.

The table below describes the **PCI Devices** options.

PCI devices options

Option	Settings	Description
PCI IRQ SLOTS 1 and 2	Auto Select . 3 5 9 10 11 12 14 15 Disabled	Selects the IRQ channel used by each PCI device you have installed; recommended setting is Auto select , which will choose an available channel when it is needed

PC/ devices options (continued)

Option	Settings	Description
PCI Device Slots 1 and 2		
Enable Master	Enabled . Disabled	Enables or disables a device as a PCI bus master and checks whether the PCI card is a master
Default Latency Timer	Yes . No	Enables or disables the latency timer, which determines how long the bus-mastering device maintains control of the PCI bus before releasing it for use by other devices
Latency Timer	0040 . <i>values between 0000 and 00F8</i>	The wait period after a PCI bus cycle, during which the system determines if an ISA bus cycle is available

Setting the Boot Options

When you select Boot Options from the Main Menu, you see the Boot Options screen, which allows you to define the drive boot sequence and determine which power-on diagnostic tests the computer performs when you start your system.

The Boot Sequence option determines the order in which the computer checks the drives for an operating system when you turn it on or reset it. The table below describes the available settings.

Boot sequence option settings

Option	Description
A: then C: .	Loads operating system from drive A; if it isn't there, loads it from drive C (recommended setting)
C: then A:	Loads operating system from drive C; if it isn't there, loads it from drive A
C: only	Loads operating system from drive C

- . Default setting

Note

If you set Boot Sequence to `c : only`, you will not be able to start your system when there is a problem with your hard disk drive.

If you set the Boot Sequence option to `c : only`, you should disable the Floppy Check option so the system doesn't access the diskette drive during the startup procedure. Disabling this option decreases the time needed to start the system; the default setting is Enabled.

The SETUP Prompt option allows you to enable or disable display of the message `press DEL to run SETUP` that appears when you turn on or reset your computer. If you disable the message, you can still press Del to start SETUP. The default setting is Enabled.

Selecting the Security and Anti- Virus Options

When you select Security and Anti-Virus from the Main Menu, you see the Security and Anti-Virus screen, which contains options that allow you to set passwords and anti-virus options, as described below.

Selecting password types

You can define both User and Supervisor password levels for this system. If this system will be used by more than one person, you may want to set a Supervisor password for yourself and a User password for others you don't want to have complete access to the system. This allows you to restrict access to the computer's diskette drives or the virus protection features.

See the next sections for instructions on selecting the type of password prompting you want, and on entering, changing, or deleting passwords.

Note

If both a Supervisor password and a User password are enabled, SETUP displays options for setting the User password only to users who logged on with a User password.

Selecting password prompting

If you enable the Password on Boot option, you must enter the Supervisor or User password each time you turn on the system. If you disable this option, but you've defined passwords, you must enter the password each time you start SETUP.

Entering or changing passwords

To specify a User password, you must first specify a Supervisor password. Follow these steps to enter or change a password:

1. Select `Set supervisor Password` and press **Enter**.
2. You see a `Set Supervisor Password` window. Type a password of up to seven characters and press **Enter**.
3. Type the same password a second time and press **Enter**. You see a message that your change has been saved.
4. Press the spacebar. The `Supervisor Password` option **now** displays `Enabled`.

To set a User password, select the `set User Password` option as you follow **the** steps above.

Deleting passwords

To delete your passwords, follow these steps:

1. Set the `Password on Boot` option to `Disabled`.
2. Select `set User Password` and press **Enter**.
3. Delete **the** User password by pressing **Enter** for both the password field and **the** confirmation field. Don't type any characters in these fields.
4. Delete the Supervisor password the same way.

Note

If you set both a User and Supervisor password, you must delete the User password before you can access the Supervisor password option.

If you forget your password, see “Password Problems” in Chapter 6.

Using the virus protection features

The Diskette Access option lets you restrict access to your diskette drives based on the password levels you have defined. This prevents unauthorized users from accessing the drives and possibly introducing a virus to your system. You can restrict diskette access only if passwords are enabled and you have enabled the Password on Boot option.

If you select Supervisor for this option (the default setting), you can access the diskette drives only if you enter the Supervisor password when you start your system. If you start the system with a User password, you see an error message when you try to access the diskette drive. If you select User for the Diskette Access option, you can access the diskette drives whether you enter the Supervisor or User password when you start the system.

Note

To use passwords for diskette drive access, you must enable the Password on Boot option. If you select a password level for Diskette Access, but leave the Password on Boot option disabled, you see an error message whenever you try to access your diskette drive.

You can also protect your system by selecting Write protect for the Fixed Disk Boot Sector option. When this option is enabled, the system displays an error message when a program tries to write to the boot sector of your hard disk drive. The boot sector is where computer viruses typically cause damage. To use a program designed to write to the boot sector (such as the Format command), you must select Normal (the default setting) for the Fixed Disk Boot Sector option.

Setting the Green PC Options

Select Green PC Features from the Main Menu to view the Green PC Features screen. The options on this screen allow you to control the computer's Energy Star compliant, power-saving options described in the table below. (For more information on the Green PC feature, see "Using Your Green PC Feature" in Chapter 2.)

Note

If you are using Windows 95 and you **want** to use power-saving options, you must disable the Windows 95 auto-play feature.

Green PC options

Option	Settings	Description
Power Savings	Enabled * Disabled	Enables or disables all of the computer's power-saving features you must enable this option to set the rest of the features described in this table
System Doze Timer	2 minutes 3 minutes 4 minutes 5 minutes * 6 minutes 7 minutes 8 minutes Disabled	Sets the time period of system inactivity after which the system enters Doze mode, or allows you to disable entry into Doze mode
System Standby Timer	2 minutes 5 minutes 10 minutes . 15 minutes 20 minutes 30 minutes 60 minutes Disabled	Sets the time period of system inactivity (following any Doze period that is set) after which the system enters Standby mode, or allows you to disable entry into Standby mode

Green PC options (continued)

Option	Settings	Description
System Suspend Timer	2 minutes 5 minutes 10 minutes 15 minutes • 20 minutes 30 minutes 60 minutes Disabled	Sets the time period of system inactivity (following any Doze and Standby periods that are set) after which the system enters Suspend mode, or allows you to disable entry into Suspend mode
IDE Hard Disk Standby Timer (2)	1 minute 2 minutes 3 minutes 4 minutes 5 minutes 10 minutes 16 minutes * Disabled	Sets the time period of IDE hard disk drive inactivity after which the hard disk enters Standby mode, or allows you to disable the hard disk standby timer
VGA with Power Down Feature	OFF in Suspend • ON in Suspend	Determines whether your monitor goes into power-saving mode when the system enters Suspend mode; select OFF to power down monitor; select ON to maintain full power

• Default setting

- (1) APM enhances your system's power-saving abilities by providing increased inactivity detection and lower CPU power states without degrading performance. Windows 95 may provide a Power icon in the Control Panel that lets you select the type of APM you want to use; see the Windows 95 online help information about the Power functions.
- (2) Some hard disk drives do not support a low-power standby mode. Also, the delay caused by the hard disk drive returning to active mode may cause errors in some applications. If you have problems, you may want to disable the Hard Disk Standby Timer option (**Disabled** is the default setting),

Exiting SETUP

When you leave SETUP, you can save your settings or exit SETUP without saving your settings. You can also return all values to the factory defaults.

The easiest way to leave SETUP is the following:

1. **On any SETUP screen, press F10.**
2. **Select Yes to save your settings or No to exit without saving.**
3. **Press Enter.**

At any time during a SETUP session you can go to the Main Menu (by pressing **Esc**) and save your settings or load another set of values. The following table lists the available options.

Exiting SETUP options

Option	Description
Load ROM Default Values	Loads the factory default settings stored in ROM back into CMOS; if you change your configuration using SETUP and then have problems, you can load ROM values to boot the system and start over
Load Values from CMOS	Loads the current values stored in CMOS for all SETUP options; ignores any changes you have made through SETUP
Save Values to CMOS	Saves the changes you have made to your configuration to CMOS

Installing the PCI IDE Drivers

If you **have** Windows 95, your system already includes all the files and drivers you need for maximum performance. If you **have** Windows 3.1 as your operating system, you may **want to** install the PCI IDE driver that lets you take full advantage of the high-speed performance available through your system's IDE interfaces for hard disk drives and other IDE devices.

Before you install the PCI IDE driver, using the provided PCI IDE Drivers diskette, make sure you back up your hard disk drive. Then use the installation program on the diskette to install **the** driver.

Note

Make sure you use the installation program to install the PCI IDE driver; if you simply copy the driver files, they won't work correctly.

The driver files for each of the programs listed above are in their own directory on the PCI IDE Drivers diskette. Log onto the directory for each driver you want to install and print out the README file. Refer to the information in these files for additional instructions **on** installing and using the PCI IDE driver.

Running the Installation Program

Follow these steps to install the PCI IDE drivers:

1. Insert the PCI IDE Drivers diskette in drive A.
2. Access the DOS prompt, if you are not there already.
3. Type **A:** and press **Enter** to log **onto** drive A.
4. Type **INSTALL** and press **Enter**.
5. Follow the instructions on the screen to install the PCI IDE drivers on your hard disk.

Note

Not all hard disk drives can take full advantage of the IDE interface; your hard disk drive must be compatible with ATA-2 specifications. To find out whether your drive supports ATA-2, see the drive documentation or contact the drive manufacturer to request a product specification.

Installing Video Drivers

If you have Windows 95, your system already includes the video drivers that let you get the best performance from your computer's built-in SVGA controller.

If you are using Windows 3.1, you have the Galileo and S3REFRSH utility programs, which let you control the resolutions, colors, and refresh rates your Windows driver uses. The Windows 3.1 package also includes an install diskette containing drivers for these programs:

- ❑ AutoDesk® AutoCAD® versions 11 and 12, AutoShade® version 2.1, and 3D Studio versions 1.0 and 2.0
- ❑ MicroStation PC protected mode versions 4.0 and 5.0.

For instructions on installing and configuring the video drivers, see the README file in the root directory on the video drivers install diskette.

To obtain drivers for additional applications or new drivers as they become available, contact EPSON on the Internet at our World Wide Web page (<http://www.epson.com>) or at our FTP site (<ftp.epson.com>), or access one of EPSON's other electronic support services. See "Where to Get Help" in the Introduction for more information.

Glossary

Address

The location where information is stored in a computer's memory.

ATA-2

AT Attachment. A drive interface that provides high-speed, high-capacity data transfers.

BIOS

Basic Input/Output System. Routines in ROM (Read Only Memory) that handle the transfer of information in your operating system.

Boot

The process a computer performs to check its components and then load the operating system into memory.

Cache

A high-speed memory buffer that stores frequently used data where your processor can access it faster.

CMOS

Complementary Metal-Oxide Semiconductor. A low-power silicon chip used for RAM and switching operations. CMOS is backed up by a battery.

Controller

A processor, interface, port, or adapter that translates data between the CPU and a peripheral device, such as a hard disk, diskette drive, keyboard, or video monitor. Controllers convert data from one format to another, match speeds between devices that operate at different speeds, and perform other functions.

CPU

Central Processing Unit. The primary device that interprets instructions, performs tasks, keeps track of stored data, and controls input and output operations. See also Processor.

Device

A piece of computer equipment that performs a specific task, such as a disk drive, a monitor, a printer, or a scanner. Also called a peripheral.

Device driver

A file containing instructions that allow your computer to recognize and communicate with a device. The device may be a printer, monitor, or other type of device.



DMA channel

Direct Memory Access channel. A channel for transferring data from your computer to its peripherals without involving CPU resources.

DRAM

Dynamic Random Access Memory. A type of memory that stores large amounts of information.

ECP

Extended Capabilities Port. The parallel port mode in your computer that provides the fastest bidirectional signals for the parallel port and includes other enhanced functions. It requires an ECP-capable device (e.g., printer) at the other end of the connection.

EPP

Enhanced Parallel Port. A parallel port mode in your computer that provides high-speed, bidirectional signals for the parallel port.

Expansion bus

An internal bus that provides high-speed connections for option cards and built-in components that enhance the performance of your computer.

Extended memory

Memory above 1MB that is accessed by 386-,486-, and 586-class processors operating in protected or virtual mode.

Flash memory

Non-volatile, read/write memory that can be erased and reprogrammed using the normal voltages inside your computer. This capability provides the computer and its peripheral devices with a means of storing data without needing a constant supply of electricity.

/IDE

Integrated Drive Electronics. A type of interface in which the controller is on the drive instead of on a controller card.

Interface

A physical or software connection that transmits data between equipment or programs so they can work with each other.

Interlaced

A method of scanning a video screen which appears to double the refresh rate of the image on the screen.

Interrupt

A signal that a device uses when it is ready to accept or send information.

I/O base address

The location within the input/output space of your computer that a peripheral device uses to communicate with software.

IRQ

Interrupt Request. A hardware channel over which devices can send interrupts. Each peripheral device uses a separate IRQ.

ISA

Industry Standard Architecture. The 8- or 16-bit standard developed for IBM compatible computers.

Jumper

A small movable plug that connects two pins on a device's circuit board to alter the operation of a particular function.

LBA mode

Logical Block Address mode. A method of accessing large-capacity hard disk drives.

Math coprocessor

A device **that** enables the computer to process mathematical calculations faster by using floating point numbers instead of whole numbers for calculations.

Memory module

A small circuit board that contains surface-mounted memory chips. You can add memory modules to the main system board to expand your computer's memory. See also *SIMM*.

Modem

MOdulator/DEModulator. A device that allows a computer to transfer data to and from another computer by transmitting signals over telephone lines.

Option card

A circuit board you can install in the computer to provide additional capabilities, such as a modem or an I/O port.

Parallel

An interface that transmits data simultaneously over separate wires in a cable. See also *Serial*.

PCI

Peripheral Component Interconnect. A type of expansion design standard that allows high-speed data transfer. Although it was designed for current processors, PCI circuitry is not tied to the requirements of a specific processor or family.

PCMCIA card

Personal Computer Memory Card International Association card. A credit-card-sized device used for data storage, memory expansion, or other purposes. PCMCIA cards are often used in notebook computers and PCMCIA card readers.

Port

A physical socket on a computer to which you can connect a peripheral device.

Power-on diagnostics

Tests stored in ROM that the computer runs to check its internal circuitry, peripheral device configuration, and operating status each time you turn it on or reset it.

Processor

A small CPU on one semiconductor chip. See also CPU.

RAM

Random Access Memory. The area of the computer's memory used to run programs and store data while you work. All data in RAM is erased when you turn off or reset the computer.

Real-time clock

A battery-powered clock inside the computer that tracks the time and date, even when the computer is turned off.

Refresh rate

The frequency with which a monitor can redraw a screen image. The faster the refresh rate, the less the screen will flicker.

Reset

To restart a computer without turning it off. You can reset your computer by pressing **Ctrl Alt Del** or by pressing the **RESET** button. Resetting erases all data stored in RAM and reloads the computer's operating system.

ROM

Read Only Memory. Memory that can only be read and cannot be modified. ROM retains its contents even when you turn off the computer by using power from a backup battery.

Serial

The type of communication that transmits data from a serial interface to a serial device over a single wire. See also *Parallel*.

Shadow RAM

The system's ability to copy the contents of the system, video, and external BIOS ROMs into RAM to speed up processing.

SIMM

Single Inline Memory Module. A small circuit board that contains surface-mounted memory chips. You **can** add SIMMs to the main system board to expand your computer's memory.

SRAM

Static Random Access Memory. A type of fast memory used in caches.

SVGA

Super VGA (Video Graphics Array). In addition to supporting standard VGA modes, your computer's built-in SVGA controller supports resolutions up to 1280 x 1024 in 256 colors with 2MB of video memory and a compatible monitor.

True Color

A VGA feature that supports 24-bits-per-pixel color, which enables your VGA interface to display 16.8 million colors. The screen image looks more like a photograph than a traditional computer image.

VGA

Video Graphics Array. A high-resolution display adapter that provides a variety of video modes.

Video adapter card

A circuit board that can be installed in one of the computer's option slots to control the way a monitor displays text and graphics.

Write-protect

To protect the data on a diskette from being changed by setting the write-protect switch on a 3.5-inch diskette or by placing a write-protect tab over the notch on a 5.25-inch diskette. You cannot change data on a write-protected diskette.

ZIF socket

Zero Insertion Force. The type of socket on your computer's system board that holds the processor. With this type of socket, it's easy to remove and install processor chips.

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