EPSON®

User's Guide

EPA POLLUTION PREVENTER

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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 photocopies 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'usager, 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 Klimaanlagen, 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.

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, video, and cache memory, install option cards and additional drives, and upgrade your processor.

Computer Features

Your computer offers the following features:

☐ 586-class processor

☐ At least 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 up to 1MB 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 16-bit, ISA (Industry Standard Architecture) option slots and two PCI option slots supporting up to two PCI bus m aster cards

☐ On the slim line 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 Features

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" features place 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 features 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 plug and play technology that automatically configures the resources used by PCI cards, such as interrupt requests and memory addresses.

System and video BIOS

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

☐ ISA and PCI compatibility

☐ Power-on diagnostics 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.

PCI Auto-configuration

The PCI auto-configuration utility works with the SETUP program 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 SETUP.

BIOS Upgrades

Because the BIOS is stored in a flash ROM 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 describes how to run the SETUP program to define your computer's configuration and how to install the PCI IDE and video drivers.

Chapter 3 covers general operating procedures, such as resetting the computer and using passwords.

Chapter 4 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 5 explains how to install and remove mass storage devices on the slimline computer.

Chapter 6 explains how to install and remove mass storage devices on the tower computer.

Chapter 7 contains troubleshooting tips.

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

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. If the software was installed on your computer, *see* the *User's Digest* 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, 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.

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Setting Up Your System

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

Note

If you are reading this manual online, you have already set up your computer using the instructions in your User's *Digest.*

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 3 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 110 VAC or 220 VAC. (The switch on your computer may read 115 VAC or 230 VAC; these settings are equivalent to 110 VAC and 220 VAC.)

The computer is shipped with the voltage selector switch set to 110 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 South American countries, you will almost certainly need to reset the voltage selector switch to 220 VAC. Line source voltages between 200 and 240 VAC are acceptable with the switch set to 220 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 left to select 110 VAC or to the right to select 220 VAC.

voltage selector switch
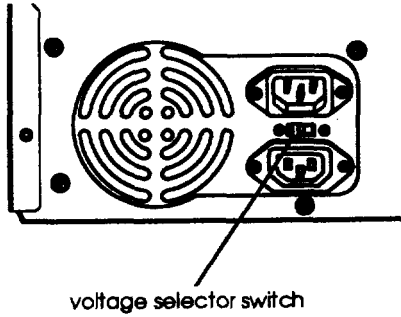
Connecting System Components

Use these illustrations to locate the ports on the back of your system as you connect the keyboard, monitor, and other devices. The icons next to the ports identify their function.

keyboard   mouse   serial 1   serial 2   printer (parallel device)   VGA monitor

Tower computer

- VGA monitor
- printer (parallel device)
- serial 2
- Serial1
- mouse
- keyboard
- power inlet
- voltage selector switch
- 'AC outlet
- option slots
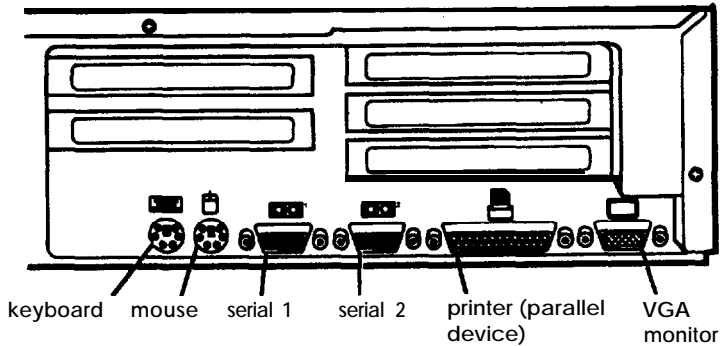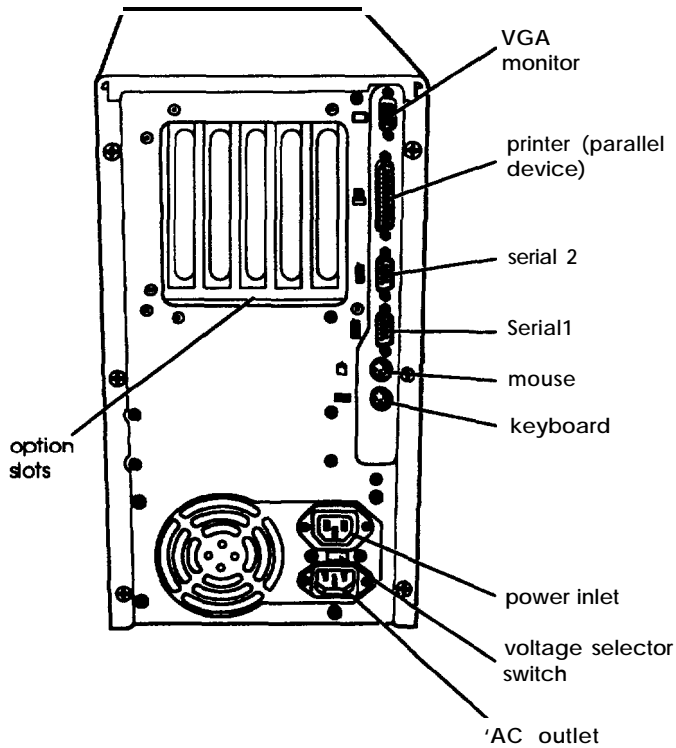
Connecting a Keyboard or Mouse

Refer to the illustration 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.

🖰 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.

> **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 dam age your system.

Connecting a Monitor

Refer to the illustration 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 SVGA
    monitor port on the computer. Then insert the connector
    into the port.

    This icon identifies the computer's SVGA monitor port.

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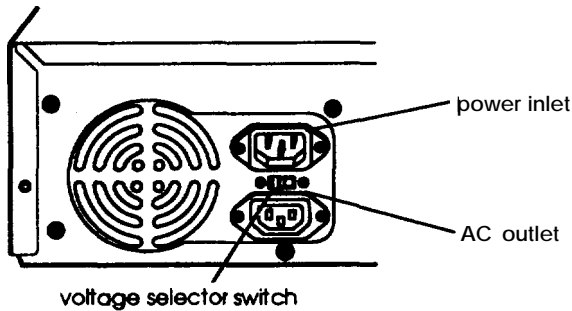> the pins when you insert it.

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

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 AC outlet.

Note
The position of the power inlet and AC outlet on your
computer may be reversed.

Connecting a Parallel or Serial Device

Refer to the illustration under "Connecting System Components" as you connect your parallel or serial device.

Your computer has one multi-mode parallel port and two serial ports. To connect a printer or other peripheral device, follow the appropriate 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.

   This icon identifies the computer's printer port.

   If the connector has retaining screws, tighten them.

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.

You may need to set the multi-mode 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 Chapter 2. 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.

Node

If you use ECP (Extended Capabilities Port) mode, you may
also need to change jumpers JP8 and JP9 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 4 for instructions on setting
jumpers.

Using the serial ports

If you have a printer, a 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.

To connect a serial device, insert the connector into
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.

power inlet

AC outlet

voltage hector witch
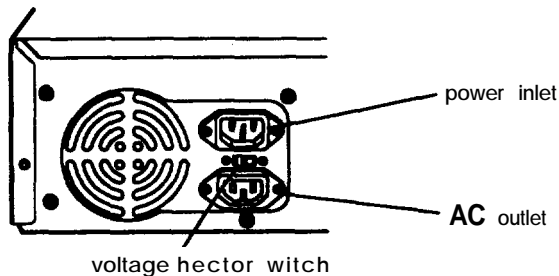
> Note
> The position of the power inlet and AC outlet on your computer may be reversed.

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

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

Slimline computer

- SPEED light
- POWER light
- hard disk access light (HDD)
- drive bays
- RESET button
- diskette drive
- POWER button

Tower computer

- POWER light
- SPEED light
- hard disk access light (HDD)
- POWER button
- RESET button
- drive bays
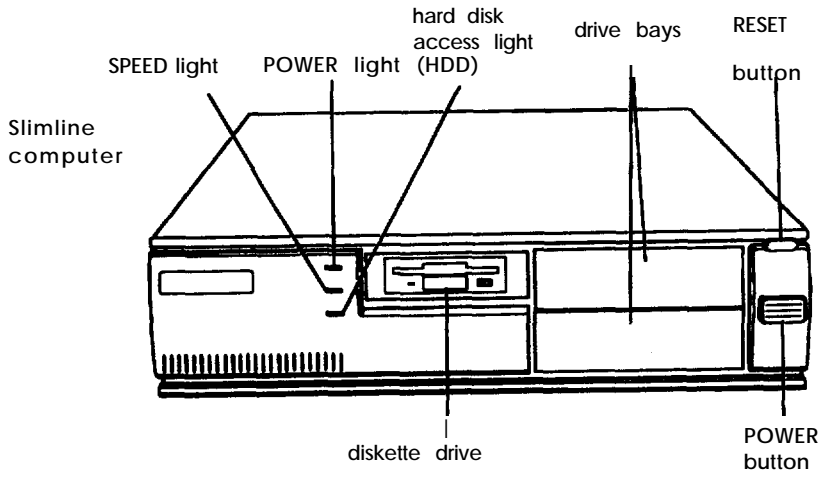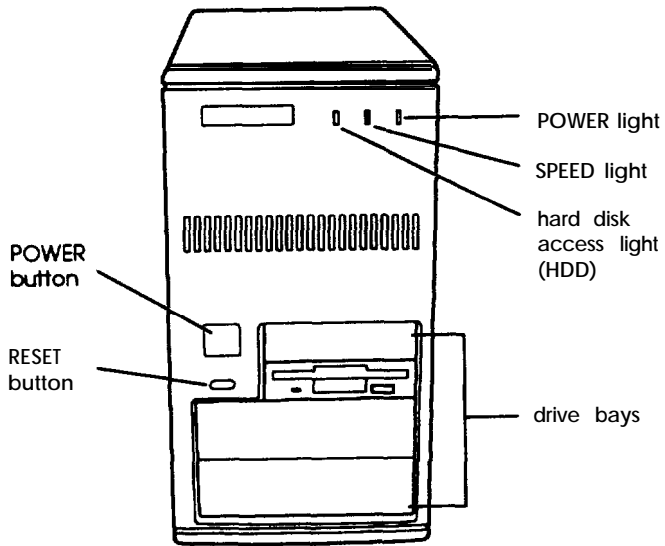
The power indicator lights up; then the computer performs its power-on diagnostics, which are a series of checks to make sure everything is working correctly. During diagnostics, you see a message telling you to press Del to run the SETUP program. Then the computer loads the operating system.

You may want to run the SETUP program to adjust power saving features or set a password.

See "Running SETUP" in Chapter 2 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

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 only need to install these drivers if you're using an operating system other than Windows.

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 Setup 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 **<DEL>** to enter **SETUP**

Press Del. This message is only on the screen for 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, <DEL> 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	Ignore any changes you have made on the current screen and exit the screen: at the Main Menu, save the configuration and exit
Enter	Select the current option or value
Esc	Return to the previous screen: at the Main Menu, exit without saving

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	hh:mm:ss mmm dd, *yyyy*	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(l)
System Memory Extended Memory	system memory size extended memory size	Detects and displays the size of the system and extended memory: you cannot change these values (2)
Diskette Drive A and B	3.5 inch, 1.44MB * (A) 3.5 inch, 720KB 5.25 inch, 1.2MB 5.25 inch, 360KB 3.5 inch, 2.88MB Not installed * (B)	Defines the type of diskette drive installed as drives A and B (if installed)

System Setup options (continued)

Option	Settings	Description
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 JP2 to position 2-3; see "Changing the Jumper Settings" in Chapter 4 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 4.

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® 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 Chapters 5 and 6.)

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 Transfer** 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 **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 (thedefault), **Fast P1O1, Fast P102,** or **Fast P103.**

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).

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 Yes at the factory. The system resets this option to No after you run Windows 95 for the first time. If you are using Windows 95, reset this option to Yes whenever you upgrade your computer or install a new component.

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 COM 2	3F8, IRQ 4 * (COM1) 2F8, IRQ 3 * (COM2) 338, IRQ 4 238, IRQ 3 3E8, IRQ 4 2E8, IRQ 3 2E8, IRQ 4 2E0, IRQ 3 220, IRQ 4 228, IRQ 3 Auto Disabled	Assign 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): the Disabled setting disables the port(s)
LPT port	378, IRQ 7 * 278, IRQ 7 3BC, IRQ 5 378, IRQ 5 278, IRQ 5 3BC, IRQ 7 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*
	
	ECP
		Sets the parallel port mode to:
		
		Unidirectional AT mode
		Bidirectional
		    PS/2 mode
		Extended Capabilities Port
		    mode

Diskette controller	Enabled * Disabled	Enables or disables the built-in diskette drive controller
CMD Enhance Mode 3	Enabled * Disabled	Enables or disables the CMD driver that automatically checks your drive's IDE modes

* Default setting

Configuring cache memory

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
L1 cache write back	Enabled *	Sets the internal (primary) cache to Write-back mode
	Disabled	Sets the internal (primary) cache to Write-through mode
L2 cache write back	Enabled *	Sets the external (secondary) cache to Write-back mode
	Disabled	Sets the external (secondary) cache to Write-through mode
Cache system BIOS	Enabled * Disabled	Enables or disables caching of the system BIOS memory area
Cache video BIOS	Enabled Disabled *	Enables or disables caching of the video BIOS memory area
Non-cacheable area #1 and #2	Enabled Disabled *	Define the location (local DRAM or AT bus), starting address, and block size of two non-cacheable memory blocks: you may want to create these areas to provide non-cacheable memory for 16.bit AT cards, such as video capture boards: see your card documentation to see if non-cacheable memory is necessary

* Default setting

Configuring shadow memory

You can enable video BIOS shadowing or configure specific option ROM shadow blocks by selecting the **Memory Shadow** option.

Note

Shadowing for the system BIOS is always enabled. For the best system performance, always set the **Video BIOS 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 Option ROMS** options; see the documentation that came with your optional equipment for information on shadowing the option's BIOS ROM.

Configuring the advanced chipset

Most of the **Advanced Chipset Control** options are for test purposes only, and you should not change them. However, you will need to set the **PCl clock frequency** option if you upgrade your processor. The default setting is CPUCLK/ 1.5 (for 75 Mhz processors); change it to CPUCLK/ 2 if you install a 90 or 100 Mhz processor.

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 **Slot #1** and **Slot #2** options allow you to specify whether the device is a master or not, and select the timer values for devices in slots 1 and 2.

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 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.**

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 options

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.

Selecting the Security Setup Options

When you select Security Setup from the Main Menu, you see the Security Setup screen, which contains options that allow you to set passwords and other security 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 pass word 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. Delete the User password by pressing Enter for both the password field and the confirmation field. Don't type any characters in these fields.

3. Then 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 7.

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 Features

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 features described in the table below. (For more
information on the Green PC features, see "Using Your Green
PC Features" in Chapter 3.)

Green PC options

Option	Settings	Description
Power Saving Mode	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	20 seconds 40 seconds 90 seconds 1 minute 3 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	20 seconds 1 minute 5 minutes 10 minutes 15 minutes 20 minutes 30 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
System Suspend Timer	20 seconds 1 minute 5 minutes * 10 minutes 15 minutes 20 minutes 30 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

Green PC options (continued)

Option	Settings	Description
Hard Disk Standby Timer (1)	Disabled 1 to 15 minutes 15 min*	Sets the time period of 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	VESA DPMS * Standard None	Selects the method used to determine video activity when the system attempts to enter a power-saving mode: Standard monitors activity of the vertical and horizontal sync signals and VESA DPMS monitors any VESA DPMS activity
APM SMI Function Support (2)	Enabled * Disabled	Enables or disables the APM (Advanced Power Management) interface which handles system activity detection from Windows
VGA Access Detection (3)	Enabled Disabled *	Enables or disables checking of video activity to determine whether the system enters a power-saving mode
Hard Disk Port Activity	Enabled * Disabled	Enables or disables checking of hard disk drive activity to determine whether the system enters a power-saving mode
Serial Port Activity	Enabled * Disabled	Enables or disables checking of serial port activity (modem access, for example) to determine whether the system enters a power-saving mode
Parallel Port Activity	Enabled * Disabled	Enables or disables checking of parallel port activity (signals from a scanner, for example) to determine whether the system enters a power-saving mode

Green PC options (continued)

Option	Settings	Description
ISA or PCI Master Activity	Enabled * Disabled	Enables or disables checking of activity from the devices listed below: leave this option enabled
PM monitor IRQ1 -IRQ15 Activity	On* Off	Allow you to enable or disable checking of activity from devices using IRQs 1 through 15 to determine whether the system enters a power-saving mode: the device using each IRQ is listed on the screen and varies depending on your configuration

    cause errors in some applications. If you have problems, you may want to disablethe **Hard Disk Standby Timer** option **(Disabled** is the default setting).

(2) APM enhances your system's power-saving abilities by providing increased inactivity detection and lower CPU power states without degrading performance. Windows may provide a Power icon in the Control Panel that lets you select the type of APM you want to use: see the Windows on-line help information about the Power functions.

(3) If you enabled **VGA Access Detection** and your system's video is active, the system does not enter any power-saving modes. If you disable **VGA Access Detection,** the system ignores video activity (such as a blinking cursor) and enters these modes as necessary.

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.

To leave SETUP, press Esc from any SETUP screen. From the SETUP Main Menu, you can perform the following functions in the table below.

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

Press Esc to exit SETUP without saving your settings and restart your computer.

All the files and drivers you need for maximum performance with the operating system on your computer are already installed. If you switch to another operating system, such as NetWare® you may want to install PCI IDE drivers, which let you take full advantage of the high-speed performance available through your system's IDE interfaces for hard disk drives and other IDE devices.

In order to install the drivers, you need to create install diskettes using the utility program on your computer. See the User's *Digest* for instructions. Once you create the diskettes, you can install drivers for these programs:

☐ MS-DOS

☐ Microsoft Windows

☐ Microsoft Windows NT

☐ IBM® OS/2® versions 2.0 and higher (2.X)

☐ SCO® UNIX versions 3.2.4 and higher (3.2.4.X)

☐ Novell® NetWare versions 3.1 and higher (3.1X)

☐ Novell NetWare versions 4.0 and higher (4.0X).

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

Note
Make sure you use the installation program to install the PCI IDE drivers; 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 drivers.

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

Your system already includes Windows 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 also have the Galileo and S3REFRSH utility programs, which let you control the resolutions, colors, and refresh rates your Windows driver uses.

Using the diskette creation utility on your system, you can create 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.

Note
See the *User's Digest* for instructions on using the diskette creation utility included with your computer.

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 the EPSON Connection or access one of EPSON's electronic support services. See "Where to Get Help" in the Introduction for more information.

Chapter- 3

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.
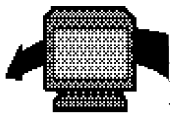
Positioning Your Monitor

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.
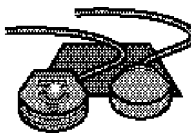
Using the Keyboard and Mouse

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.

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 ofthrowing it away

Using Your Green PC Features

Your computer places the CPU, the hard disk drive, an Energy Star compliant monitor, or all of these components into Suspend 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 features. (See "Setting the Green PC Features" in Chapter 2 for instructions on setting these features.)

Three power-saving modes are available: Doze, Standby, and Suspend. Each mode provides progressively increased power conservation and affects 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 (disabled by default)	Slows down the processor
Standby (disabled by default)	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 Features" in Chapter 2.

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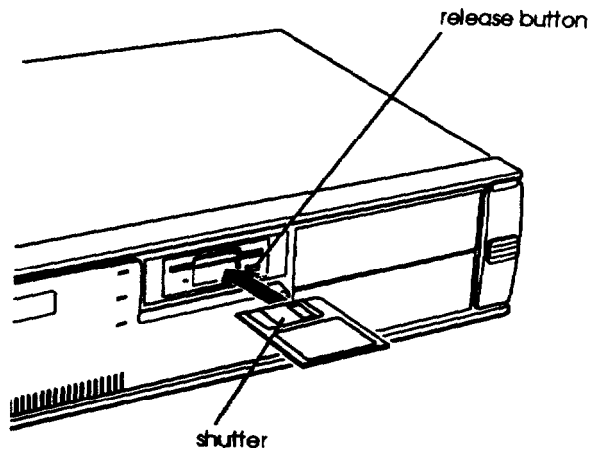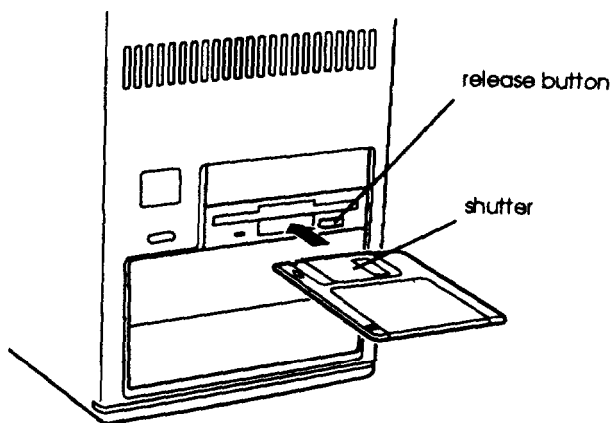
When you want to remove the diskette, make sure the drive light is off; then press the release button. Remove the diskette and store it properly.

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, 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 Setup Options" in Chapter 2. If you do not remember your password, see "Password Problems" in Chapter 7.

Chapter- 4

Installing and Removing Options

You can enhance the performance of your computer by adding optional equipment such as option cards, and system, video, or cache 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 in line memory modules)

☐ Installing and removing option cards

☐ Adding video memory

☐ Installing external cache (slimline computers only)

☐ 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 5 and 6). 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. If the monitor is on top of the computer, lift it off and set it to one side.

4. Turn the computer around so the back panel is facing you.

5. Remove the screws securing the cover to the back panel, as shown below. (Save the screws to reinstall later.) The slimline computer has three cover screws and the tower computer has six cover screws.

Slimline computer
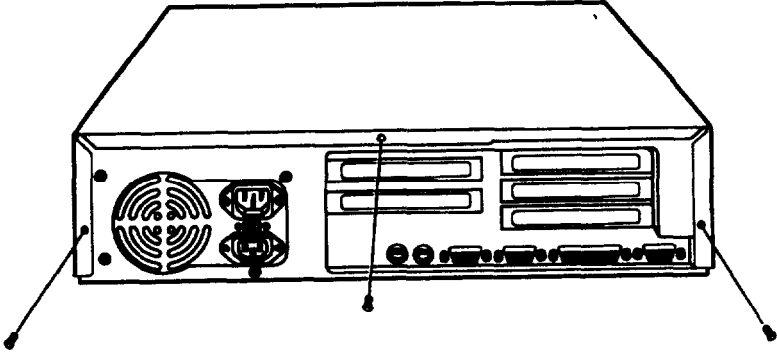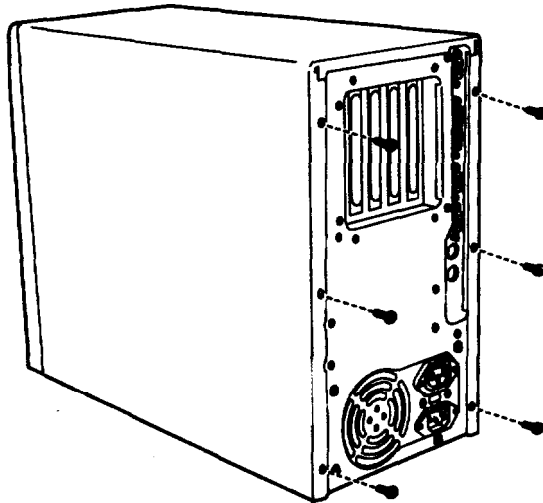
Tower computer

6. Grasp the sides of the cover and lift it off as shown below. On the slim line computer, lift the cover up at an angle and then pull it off. For the tower computer, pull the cover straight back; then lift it up and off the computer.

Slimline
computer

Tower
computer

front bezel   lip
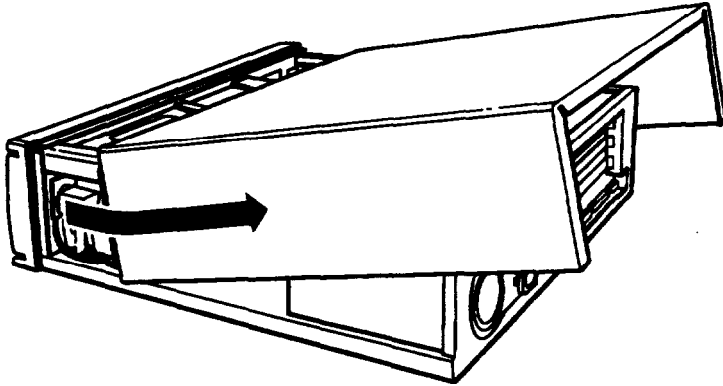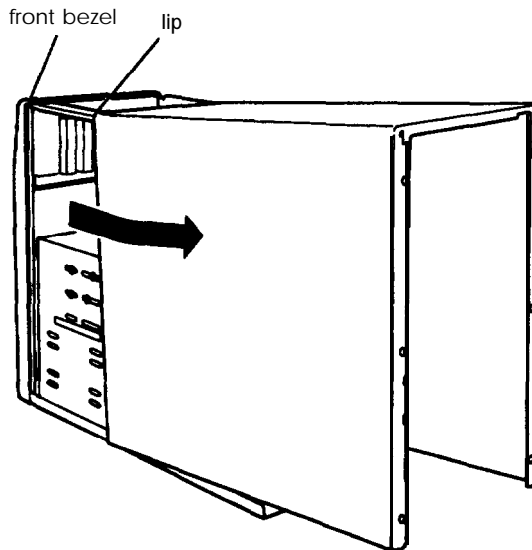
7. Set the cover aside

8. 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; then 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.

option card connector board   power supply

Slimline
computer

S   I   M   M
sockets

processor   drive mounting   drive bays
                   bracket

Tower computer

SIMM sockets

processor

option card
connector
board

rear internal
drive mounting
bracket

drive bays

power supply
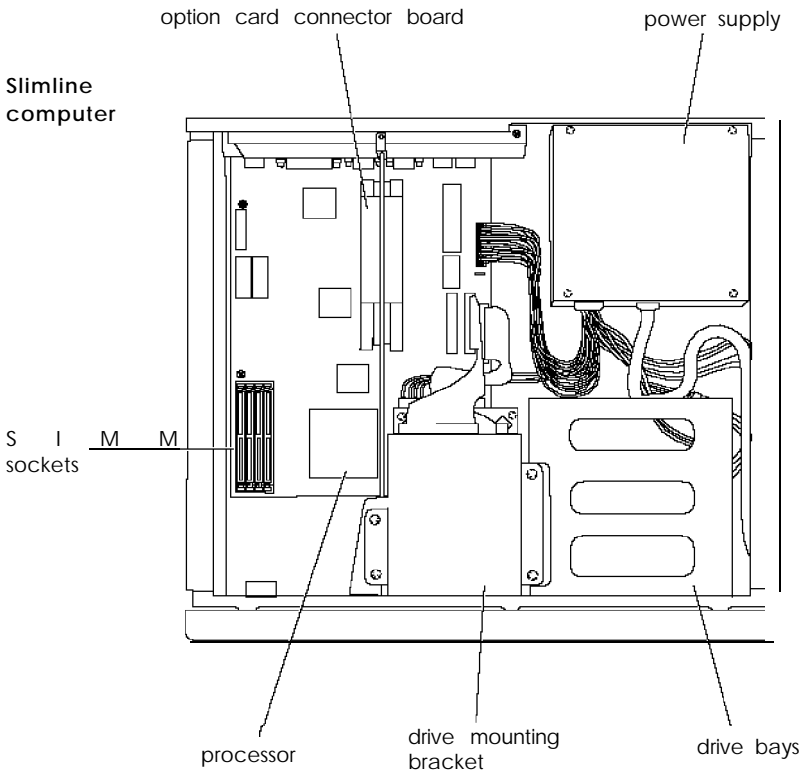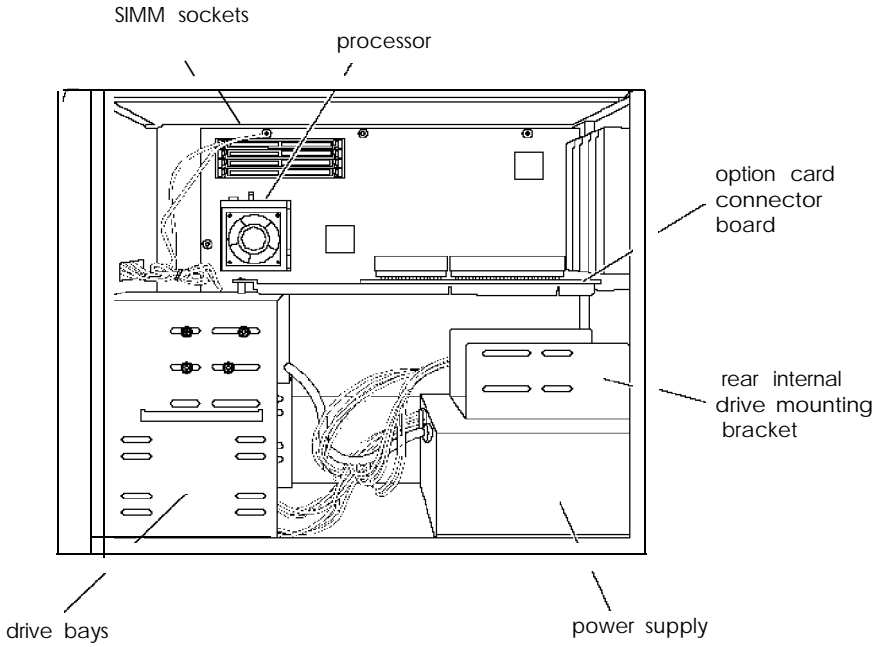
Locating the System Board Components

This illustration shows the system-board inside your computer. Use this illustration to locate jumpers, SIMM sockets, external cache sockets, and video memory sockets.
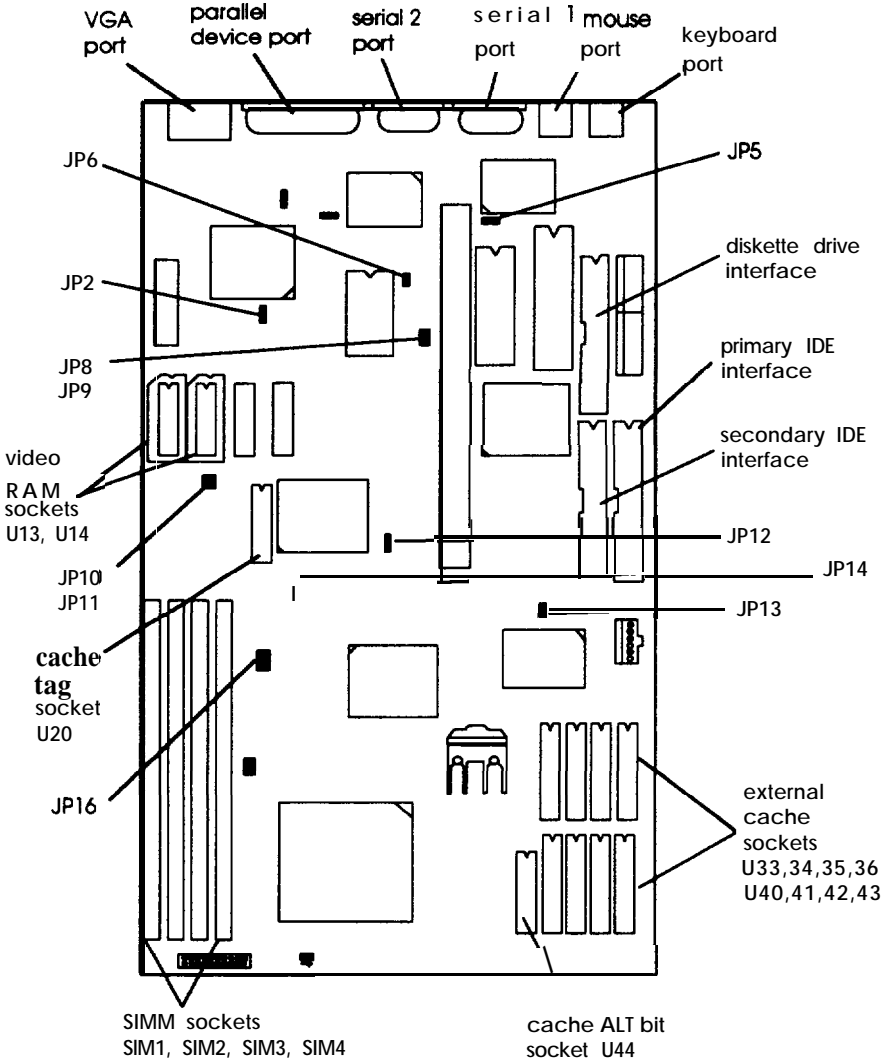
Changing the Jumper Settings

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 clock speed *	JP16 pins 1-2	JP16 pins 3-4
50 MHz (for 75 MHz CPU)	Off	Off
60 MHz (for 90 MHz CPU)	Off	On
66 MHz (for 100 MHz CPU)	On	On

* Default setting depends on speed of CPU

Parallel port ECP mode DMA channel (DRQ) settings

Jumper number	DRQ1 DMA channel	DRQ3 DMA channel
JP8	On pins 1-2 *	On pins 2-3
JP9	On pins 1-2 *	On pins 2-3

External cache size jumper settings

External cache size	JP10 *	JP11 *
256KB	Off	Off
512KB	On	Off
1MB	On	On

Miscellaneous jumper settings

Jumper number	Jumper setting	Function
JP2	1-2 * 2-3	Enable VGA controller Disable VGA controller
JP6	On Off *	Clears the CMOS SETUP values Normal CMOS operation

JP12	1-2 *
	
	2-3
		Disable DRAM parity checking if you installed
		  32-bit SIMMs
		Enable DRAM parity checking if you installed
		  36-bit SIMMs

JP13	Off * On	Enable IDE controller Disable IDE controller
JP14	1-2,3-4 2-3 *	Double- and single-sided SIMMs Single-sided SIMMs only

* Default setting
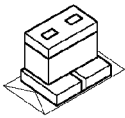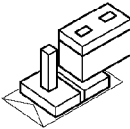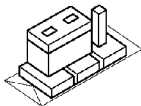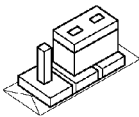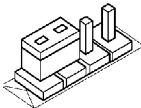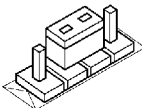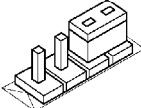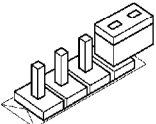
Setting the Jumpers

To change a jumper setting, follow these steps:

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.

3. A jumper's setting is determined by where the jumper is placed on the pins. Use the table below to identify the pin settings for 2-, 3-, and 4-pin jumpers. To identify the pin numbers, look at the system board near the jumper.

Jumper positions

Type	Position			
2-pin	On	Off		
3-pin	1-2	2-3	Off	
4-pin	1-2	2-3	3-4	Off

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 main system board.

---

4. 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 1MB, 2MB, 4MB, 8MB, 16MB, 32MB, or 64MB SIMMs. The SIMMs must be tin-plated, 72-pin, single- or double-sided, fast-page 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.

SIMM configurations

Bank 0		Bank 1		Total memory
SIM1	SIM2	SIM3	SIM4	
1MB	1MB	—	—	2MB
1MB	1MB	1MB	1MB	4MB
2MB	2MB	—	—	4MB
2MB	2MB	2MB	2MB	8MB
2MB	2MB	16MB	16MB	36MB
4MB	4MB	—	—	8MB
4MB	4MB	4MB	4MB	16MB
8MB	8MB	—	—	16MB
8MB	8MB	4MB	4MB	24MB
8MB	8MB	8MB	8MB	32MB
8MB	8MB	16MB	16MB	48MB
16MB	16MB	16MB	16MB	64MB
32MB	32MB	—	—	64MB
32MB	32MB	32MB	32MB	128MB
64MB	64MB			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. 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 main 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 comer of the SIMM facing the back of the computer.
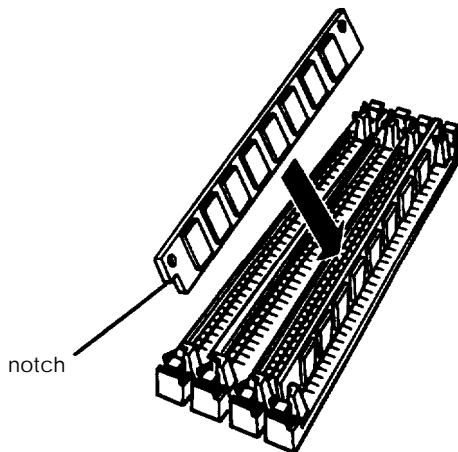
4. Push the SIMM into the socket until it is seated firmly in the slot. Then tilt it upright, as shown below, guiding the hole at each end of the SIMM over the retaining post at each end of the SIMM socket. If it does not go in smoothly, do not force it; pull it all the way out and try again.
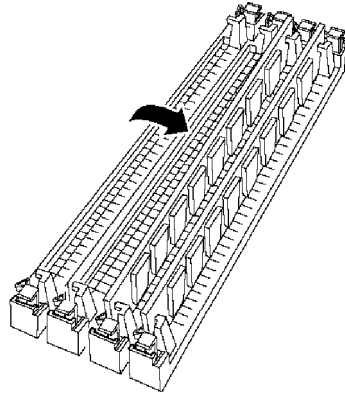
5. Check the settings ofjumpers JP12 (indicating 36-bit SIMMs with parity or 32-bit SIMMs without parity) and JP14 (indicating double- and single-sided SIMMs or single-sided SIMMs only) and change them if necessary. See "Changing the Jumper Settings" for instructions.

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.

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 main 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.

tabs
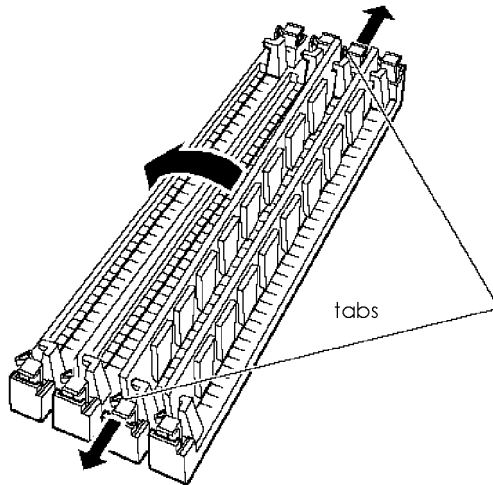
4. Follow the same procedure to remove any other SIMMs.

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 labelled PC11 and PC12 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 main system board accommodates only a half-length card. In the slimline computer, the two slots facing the power supply can contain 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 the Appendix.

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

☐ If you have an S-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 the slots 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 it 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 JP2 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 slim line computer has two slots on one side and three slots on the other. Although the illustration shows an ISA card, you can use the same instructions to install 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. (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 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.)
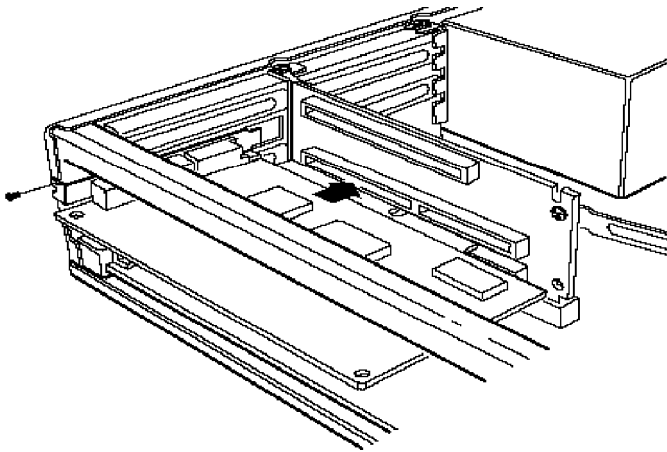
Once the connectors reach the slot, push the card in firmly (but carefully) to insert it fully. You should feel the card fit into place. If it does not go in smoothly, do not force it; pull the card all the way out and try again.

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

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.

Installing a Card in the Slim line Computer (2-slot Sick)

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

slot cover bracket
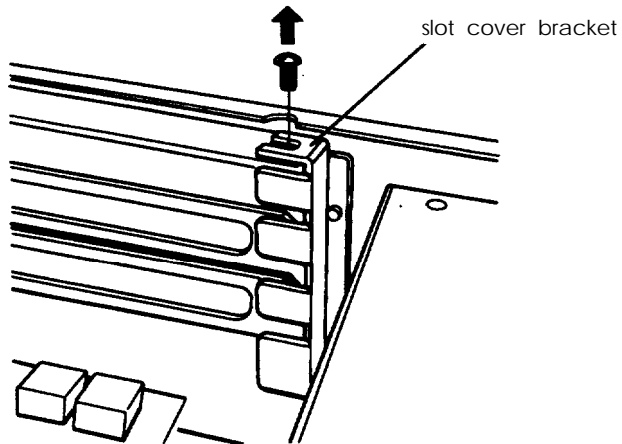
2. Remove the slot cover for the slot you are going to use.

3. Hold the card by the top corners and guide it into the slot.
    Then push the card in firmly (but carefully); you should
    f&l it fit into place. If it does not go in smoothly, do not
    force it; pull the card 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; see "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.)
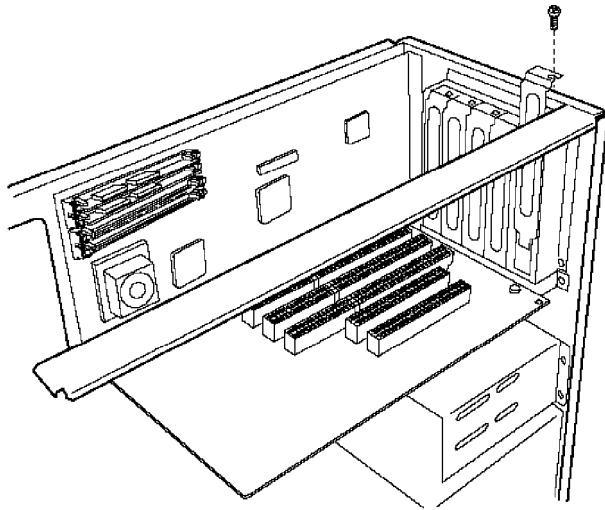
2. Slide out the slot cover and set it aside. (Store it in a safe place in case you remove the option card later.)

3. Hold the card along the top corners and guide it into the slot. (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). 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 main 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 one of the half-length slots in the slimline computer, first remove the slot cover bracket. Then pull the card straight out of the slot.

2. If you are removing a card from the tower computer or from one of the full-length slots in the slimline computer, remove the retaining screw securing the option card to the computer. Then pull the card straight out of the slot.

3. If you are not installing another option card, replace the option slot cover, the slot cover bracket (if necessary), and retaining screw(s).

4. 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 and ask for assistance.

Follow these steps to install video memory:

1. Locate the video memory sockets on the left side of the main system board, as shown in the illustration under "Locating the System Board Components." The sockets are labeled U13 and U14.

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.
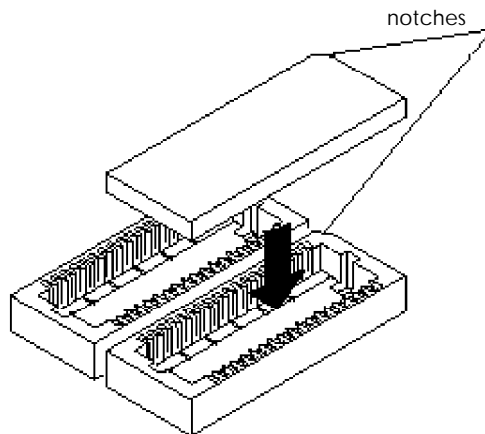
4. Gently press the chip into the socket; then push down firmly on both ends to make sure it is well-seated.

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.

Installing External Cache

Your computer has 256KB of external cache installed. You can expand your external cache to 512KB or 1MB with 64K x 8 or 128K x 8, 3.3 volt, 15ns SRAM DIP chips.

Caution
The only cache memory chips approved for use in your computer are 3.3 volt cache SRAM chips made by Alliance Semiconductor®, do not install any other type of cache chip.

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

Note
If you have a tower computer, contact your Authorized EPSON Servicer to have them install external cache for you; do not install it yourself.

You must install chips in one of the configurations in the table below (each bank contains four cache memory sockets).

Cache memory configurations

BANK 0 U33, 34,35, 36	BANK 1 U40,41,42,43	Tag SRAM U20	ALT bit U44	Total external cache
32K x 8, 28-pin (3.3 V)	32K x 8, 28-pin (3.3 V)	32K x 8, 28-pin (5 V)	32K x 8, 28-pin (5 V)	256KB
64K x 8, 28-pin (3.3 V)	64K x 8, 28-pin (3.3 V)	32K x 8, 28-pin (5 V)	32K x 8, 28-pin (5 V)	512KB
128Kx8, 32-pin (3.3 V)	128Kx8, 32-pin (3.3 V)	32K x 8, 28-pin (5 V)	32K x 8, 28-pin (5 V)	1MB

Follow these steps to install external cache on the slimline computer:

1. First remove the internal drive mounting bracket in your computer; see "Removing the Drive Mounting Bracket" in Chapter 5 for instructions.

2. Locate the external cache memory sockets as shown in the illustration under "Locating the System Board Components."

3. Remove any option cards that are blocking access to the sockets; see "Removing an Option Card" for instructions.

> **Caution**
> To avoid generating static electricity and damaging the cache 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.

4. Remove the cache memory chips in sockets U33-U36 and U40-U43. Use a chip remover or wedge a small screwdriver between the sockets and the chips until you can remove the chips.

5. Inspect each cache memory chip you are going to install; the pins should point inward at slightly less than a 90° angle. If any of the pins are bent or crooked, straighten them gently with your fingers or with small tweezers to align them with the other pins. Be careful when you do this; the pins are fragile and can break off easily.

6. Position one of the cache chips over the first socket as shown below, aligning the pins on the chip with the holes in the socket. Align the small notch on the end of the chip with the corresponding notch on the socket.
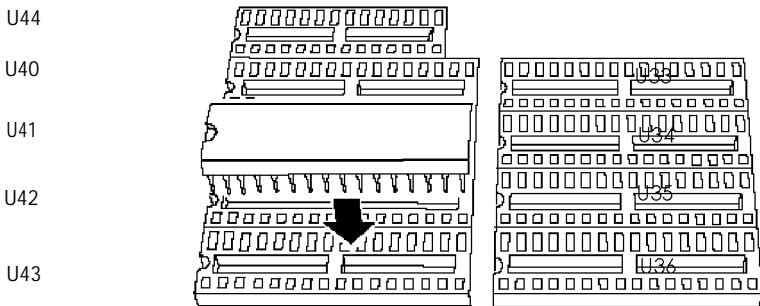
7   Gently press the chip halfway into the socket (to make sure it is correctly aligned). If the chip goes in at an angle, remove it and try again.

8. When the chip is properly positioned, push down firmly on both ends of the chip to make sure it is well-seated.

9. Repeat steps 5 through 7 for each of the remaining chips.

10. Change jumpers JP10 and JP11 to match to the amount of cache you installed; see "Changing the Jumper Settings."

11. Replace any option cards you removed; see "Installing an Option Card" for instructions.

12. Replace the internal drive mounting bracket; see "Replacing the Bracket in the Computer" in Chapter 5 for instructions.

13. Replace the computer's cover; see "Replacing the Cover." Then see "Post-installation Procedures" for instructions on configuring your computer with your new cache size.

Upgrading the Processor

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

Caution
If you are upgrading to a 100 MHz processor, make sure you use a standard 3.3 V processor.

If you're not sure how to install a processor, contact your Authorized EPSON Servicer or the EPSON Connection to ask 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 main 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 comer of the chip that is missing a pin with the comer of the socket that is missing a hole, as shown below.

missing pin

missing hole

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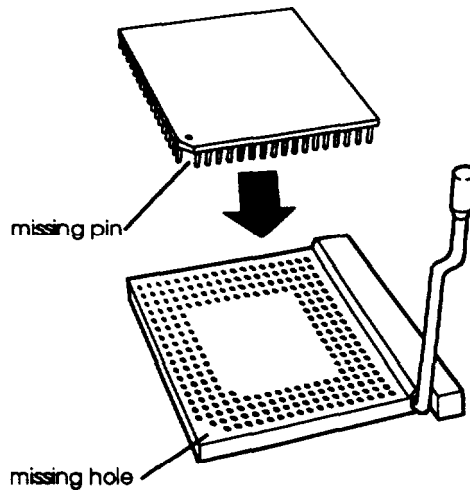
caution
If you install the processor in the wrong orientation, you may damage it and void your warranty.

---

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 jumper JPl6 to the correct setting for the speed of your new processor; see "Changing the Jumper Settings" for instructions.

10. Replace any option cards you removed; see "Installing an Option Card" for instructions.

11. Replace the computer's cover; see "Replacing the Cover." Then run SETUP and change the **PCI clock** frequency option if necessary. See "Configuring the advanced chipset" in Chapter 2 for more information.

Post-installation Procedures

After you install or remove options such as SIMMs, video memory, cache 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. If you are using Windows 95, you need to turn on the **Reset Configuration Data** option. See "Running SETUP" and "Using the Advanced System Setup Options" in Chapter 2 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.

Installing and Removing Drives in the Slimline Computer

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, CD-ROM drives, or other devices.

Note
This chapter describes installing and removing drives in the slimline computer; if you have a tower computer, see Chapter 6.

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

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

Follow the instructions in this chapter to do the following:

☐ Set the IDE device jumpers

☐ Remove the drive mounting bracket

☐ Install a hard disk drive in 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 computer can hold up to four mass storage devices, including the diskette drive (and possibly other drives) that came with your system. You can replace the existing hard disk drive in the internal mounting bracket. In the externally accessible bays, you can install a CD-ROM drive or another type of drive.

To install or remove a drive, first remove the computer's cover as described under "Removing the Cover" in Chapter 4. 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 4 for instructions.

Setting the IDE Device Jumpers and Locating Pin 1

Before you install any IDE devices, be sure to check the device's jumper settings. 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 the Appendix lists the master and slave jumper settings for the IDE hard disk drives that are qualified for use in your computer. If your drive is not listed or you need more information, see the documentation that came with your drive or contact the manufacturer.

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 connected 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 below. 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, check for a label identifying pin 1.

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

pin 1
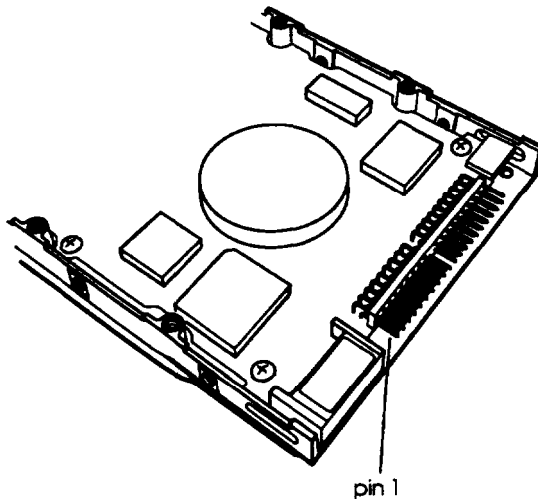
Removing the Drive Mounting Bracket

Your computer has a 3.5-inch diskette drive and 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.
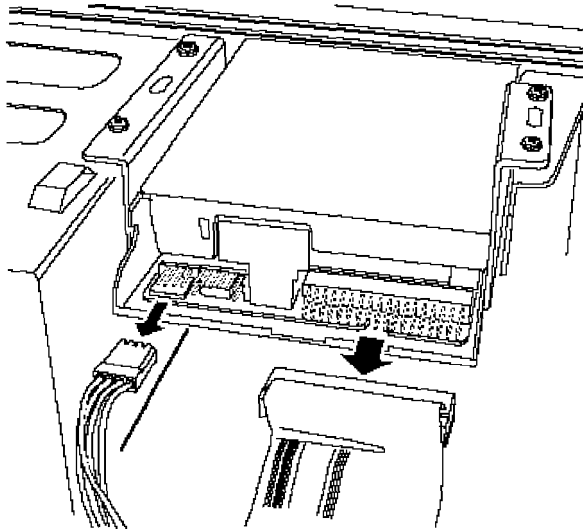
2. Remove the two cables from the hard disk drive.

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

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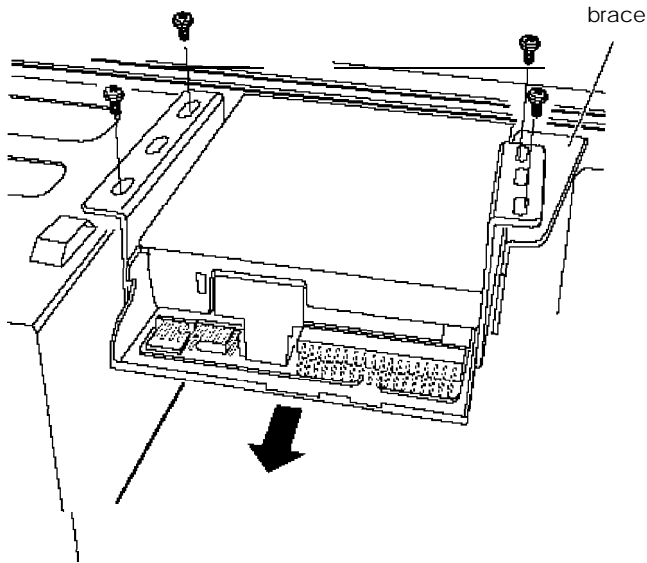
4. Slide the bracket away from the front of the computer and lift it out.

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 from the computer. To fit into 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 external drive bays; see "Installing a Drive in an External Drive Bay" for instructions.

This section includes steps for the following procedures:

☐ 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.
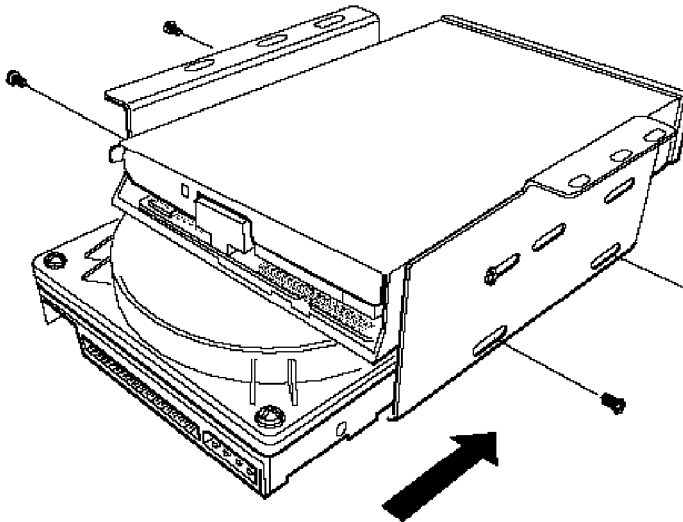
3. Secure the drive with the screws that came with it; you can use two or four screws, depending on the location of the holes in your drive.

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.
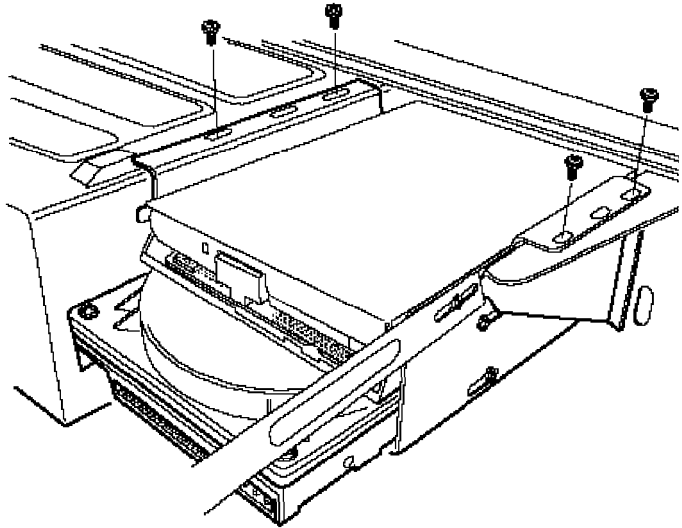
Connecting the Hard Disk Drive Cables

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 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 4 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. 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.

pin 1

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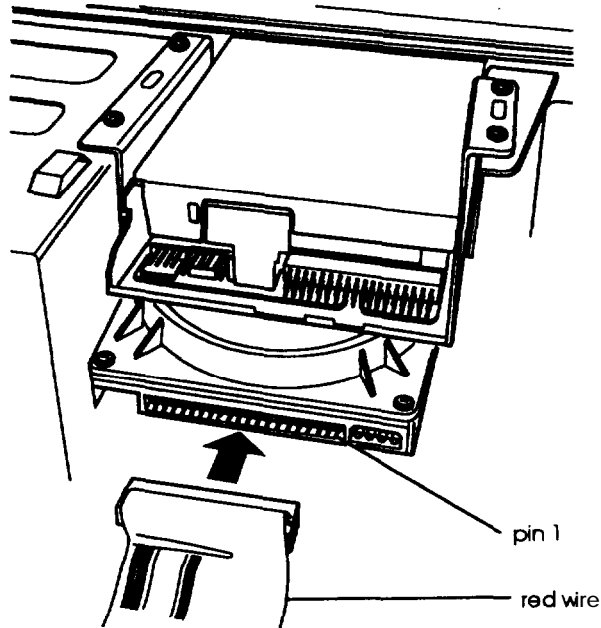
5. Make sure the holes in the cable connector fit over all the pins; then push in the connector.

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. Now 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.

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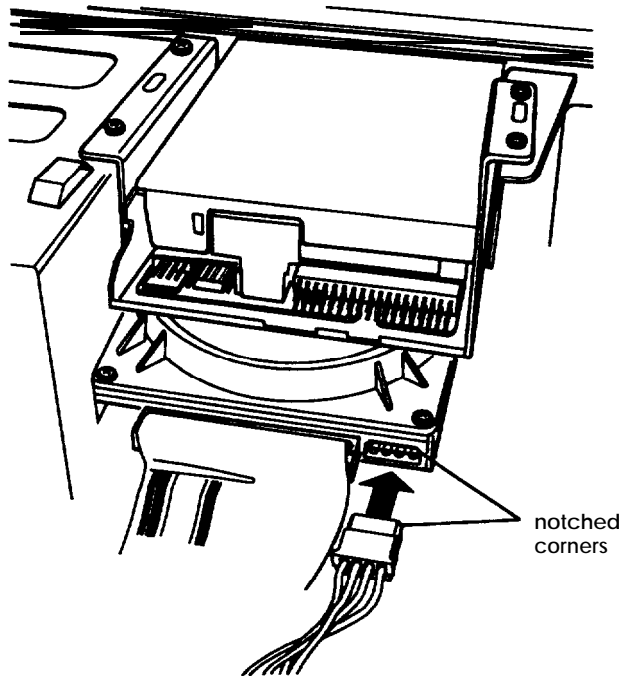
8. Make sure the holes fit over all the pins and then push in the connector.

Reconnecting the Diskette Drive Cables

Refer to the illustration below while you follow the steps in this section to reconnect cables to the diskette drive.
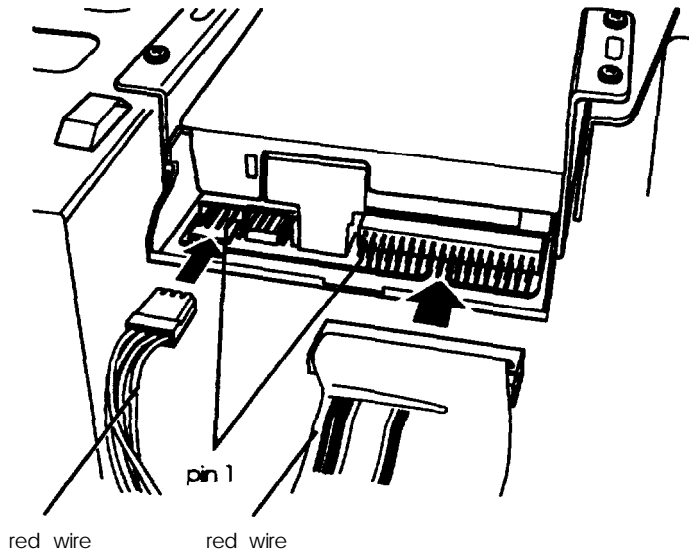
- 1. Locate the connector you will use on the diskette drive cable.

- 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; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 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 your online help files or your 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; do not pull on the cables.

2. Remove the screws securing the mounting bracket to the computer; then slide back the bracket and lift it out.

---
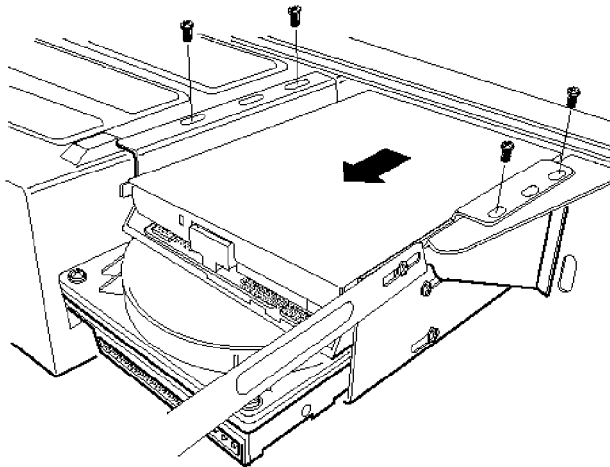
3. Remove the screws securing the hard disk drive to the bracket and slide the drive out of the bracket.

4. If you removed the only IDE device connected to the interface the device used, you may want to disconnect the device cable from its interface on the system board and remove it from the computer.

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; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

## Installing a Drive in an External Drive Bay

Your system includes two externally accessible drive bays. Using these bays, you can install any type of drive, 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; see "Setting the IDE Device Jumpers and Locating Pin 1" in Chapters 5 and 6 for instructions.

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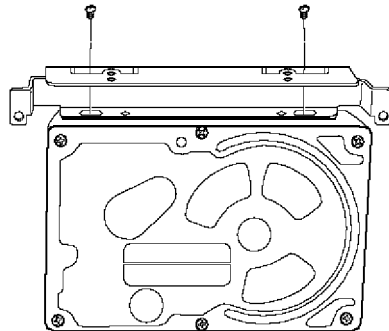
3. Repeat step 2 to attach a mounting frame to the other side of the drive.

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. 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 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.
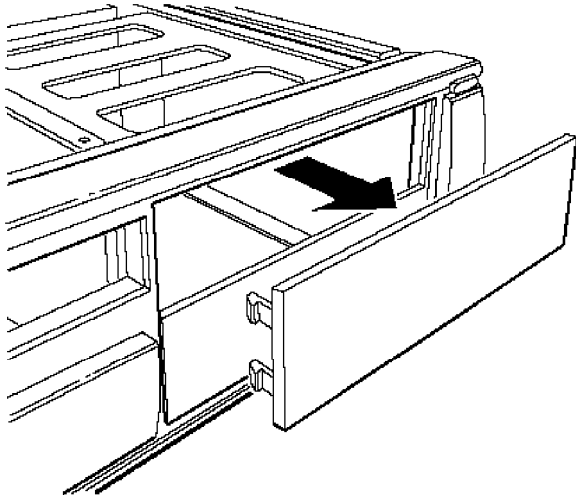
You need to reinstall the faceplate in later steps if you are installing a hard disk drive. If you are installing an externally accessible drive, keep the faceplate in a safe place in case you remove a drive later.

3. Slide the drive through the slot into the bay until it is flush with the front of the computer.
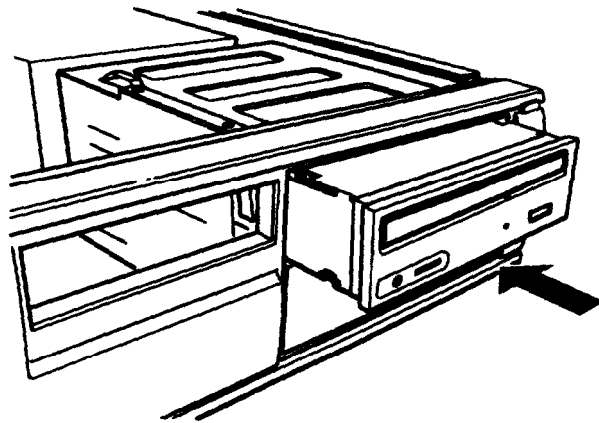
4. Align the slots at the side of the drive bay with the mounting holes in the drive or mounting frames. Then secure both sides of the drive to the bay using the retaining screws that came with the drive.
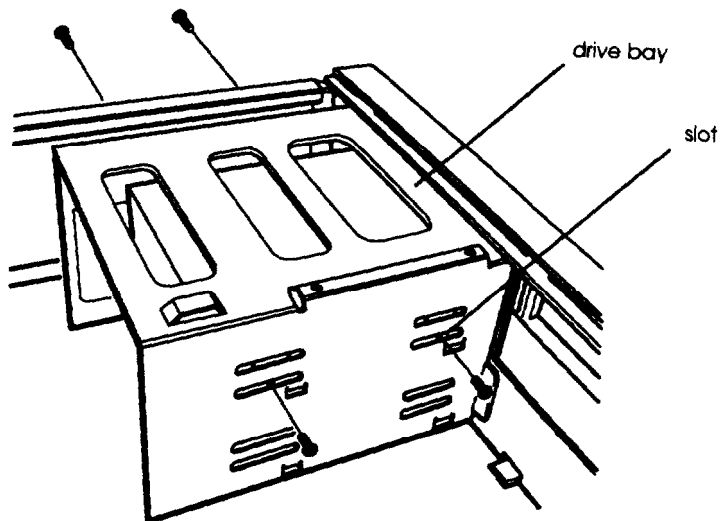
Connecting the Drive and Power Cables

Follow these steps to **connect** the drive and power cables:

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.

---

1. Locate the connector you will use on the drive 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.

pin 1

4. Make sure the holes in the cable 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 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.

notched corners

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, see "Installing an Option Card" in Chapter 4.)

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.
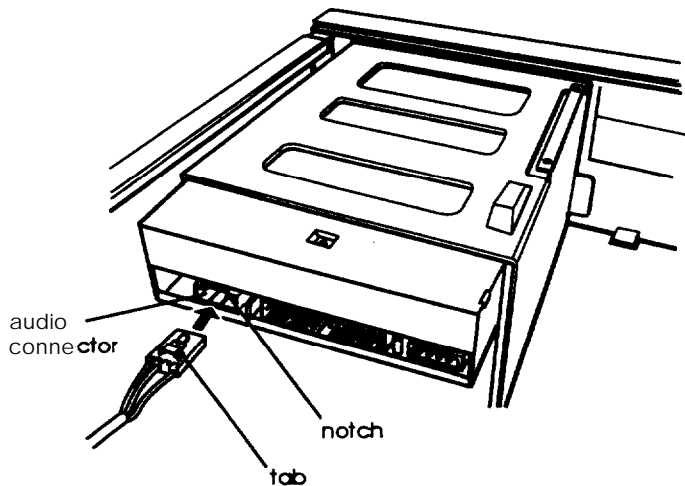
9. If you installed a hard disk drive in one of the external bays, you may want to replace the plastic faceplate. Insert one side of the plate, then gently press on the other side until it snaps into place.

10. Replace the internal mounting bracket; see 'Replacing the Bracket in the Computer" for instructions.

11. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

Removing a Drive from an External 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 your online help files or your software
documentation  for  instructions.
```

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.
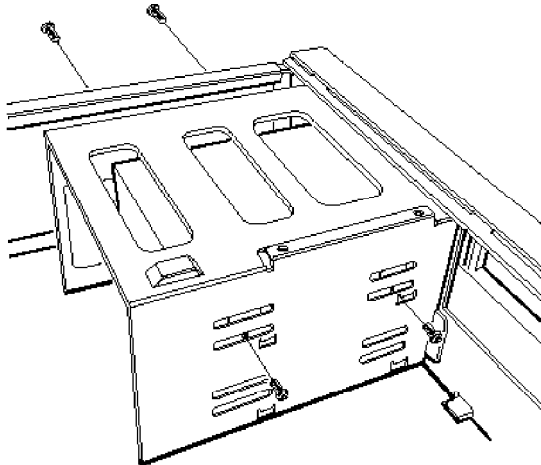
4. Reach behind the drive and gently push it out through the front of the bay; then pull it out of the slot.

5. Once you have removed the drive, you may want to replace the plastic 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 can disconnect the device cable from the main 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; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

Chapter- 6

Installing and Removing Drives in the Tower Computer

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, or other devices.

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

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

↗ Tip

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

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 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, half-height drives or one 5.25-inch, full-height drive and two 3.5-inch, half-height drives
One front internal bay	One 3.5-inch, half-height or third-height drive
Two rear internal bays	Two 3.5-inch, half-height or third-height drives or one 3.5-inch, full-height drive

To install or remove a drive, first remove the computer's cover as described under "Removing the Cover" in Chapter 4. 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 4 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 the Appendix 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, heads, etc.), 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.

pin 1
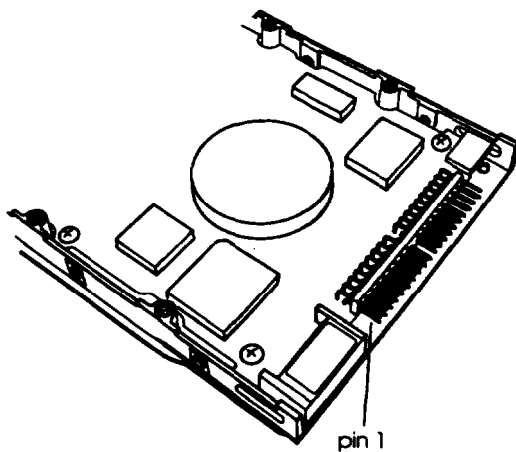
Installing a Drive in the Front Internal Drive Bay

You can install a half-height, 3.5-inch drive in the front internal drive bay.

Installing the Internal Drive

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.
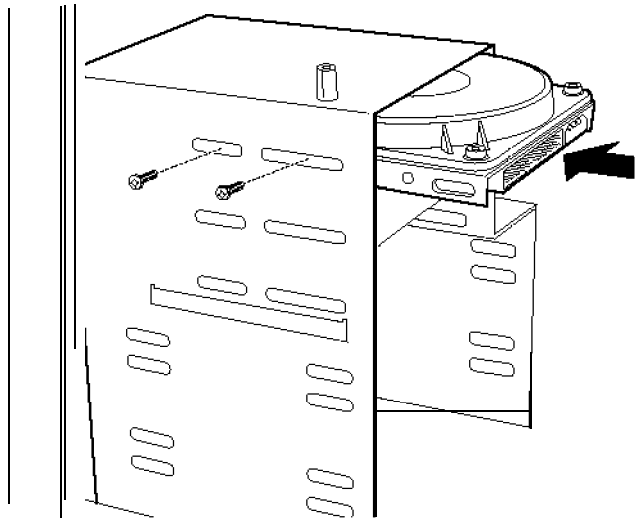
Connecting the Cables to the Front Internal Drive

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 4 to find the primary and secondary IDE interfaces on the system board.)

system board connector

IDE device connectors

red wire

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.
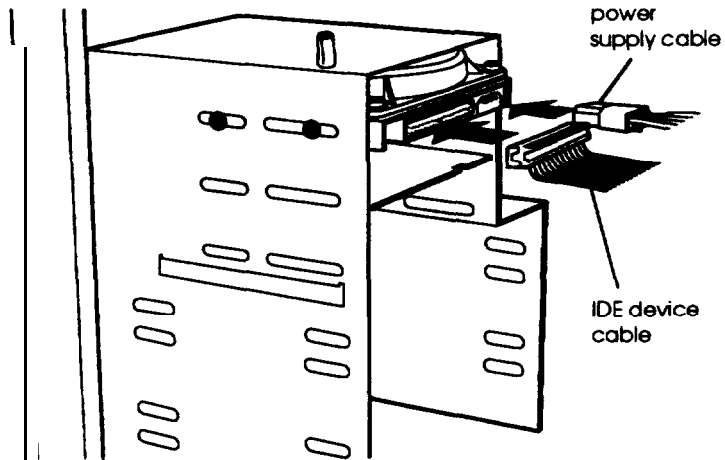
5. Locate one of the power supply cables that lead from the power supply. (They have multi-colored wires and a plastic connector on the end.) Align the notched comers of the power supply connector **and the** drive's power connector; then push in the connector, as shown above.
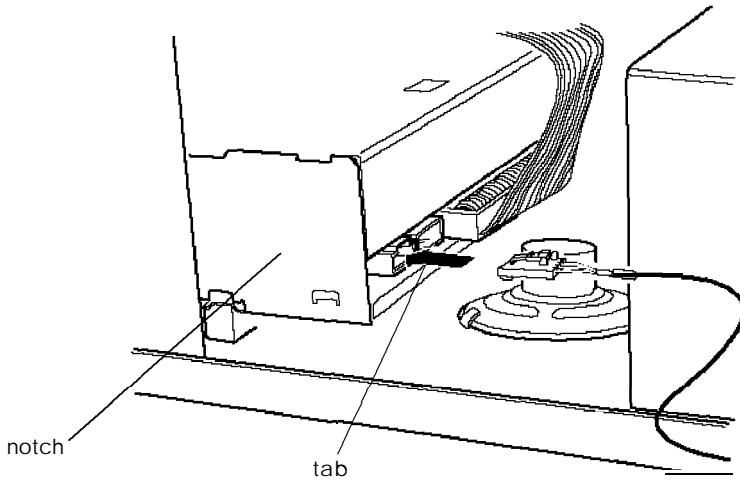
> **Note**
> Your system has five power supply cables; three with large connectors and two with small connectors. If you need more than five cables, you can purchase Y-adapters at most computer accessory stores. Y-adapters let you use one power supply cable for two devices.
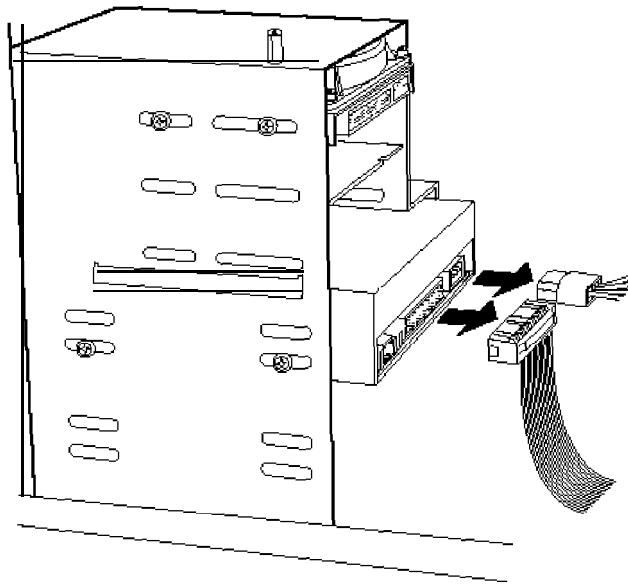
6. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter *4* for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

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

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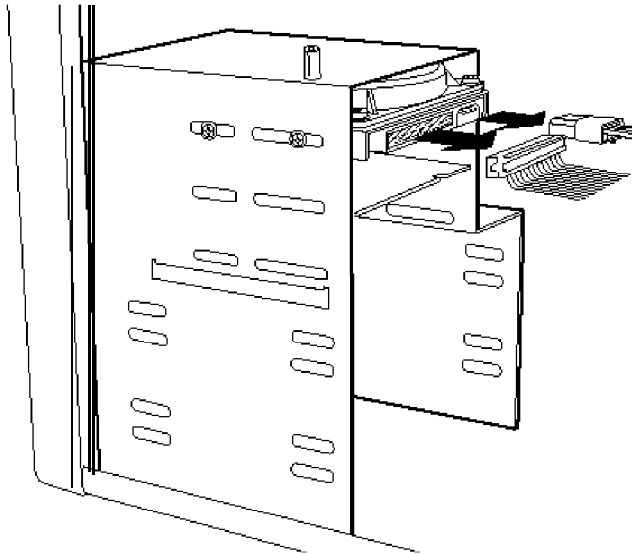
2. Remove the four screws securing the drive to the drive bay. There are two screws on each side of the drive.
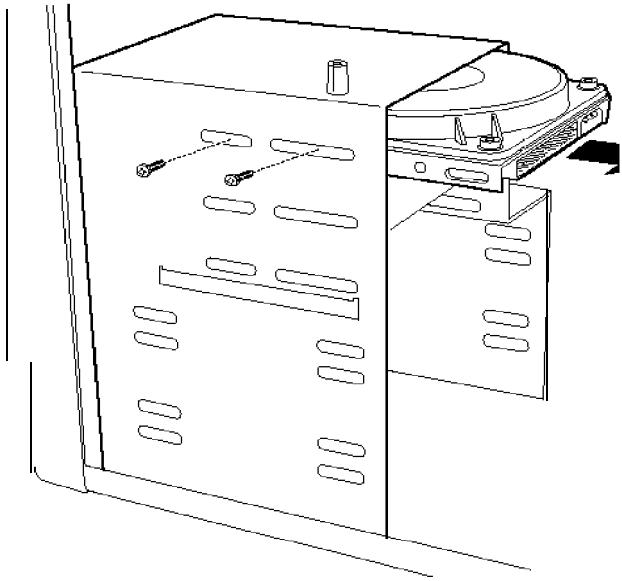

3. Slide the drive out the back of the bay

4. If you removed the only IDE device connected to the interface the device used, you may want to disconnect the device cable from the interface on the system board and remove it from the computer.

5. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

Installing a Drive in an External 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.

plastic faceplate
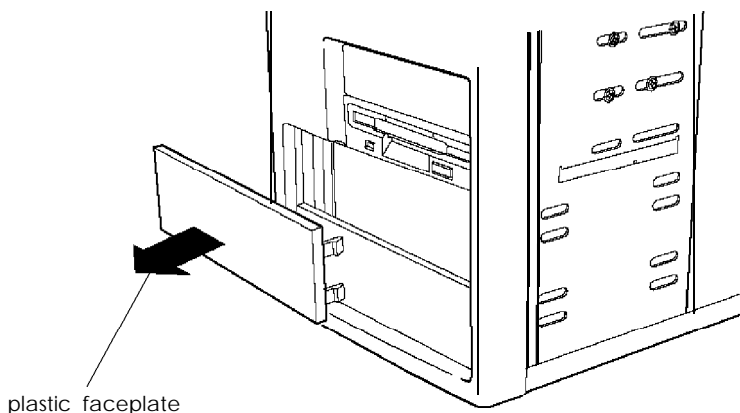
You need to reinstall the faceplate in later steps if you are installing a hard disk drive. If you are installing an externally accessible drive, keep the faceplate in a safe place in case you remove a drive later.

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.
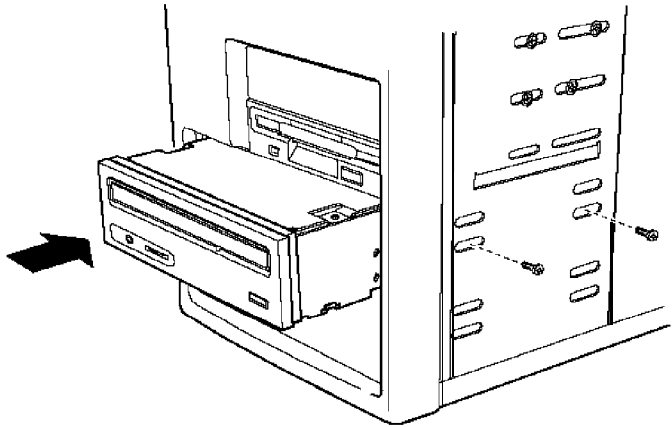
5. Connect the appropriate cable to the drive.

   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 multi-colored 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.

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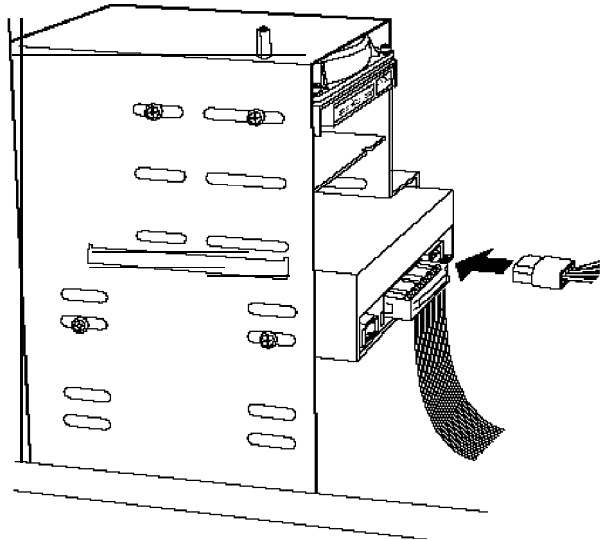
7. If you are installing a CD-ROM drive, you may need to connect an audio cable to a sound card. Follow the instructions in your sound card documentation to connect the audio cable to the card. If you need to install a sound card, follow the instructions under "Installing an Option Card" in Chapter 4.

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.

notch

tab

9. If you installed a drive that is not externally accessible, you may want to replace the plastic faceplate for the bay you used. Insert one side of the plate, then gently press on the other side until it snaps into place.
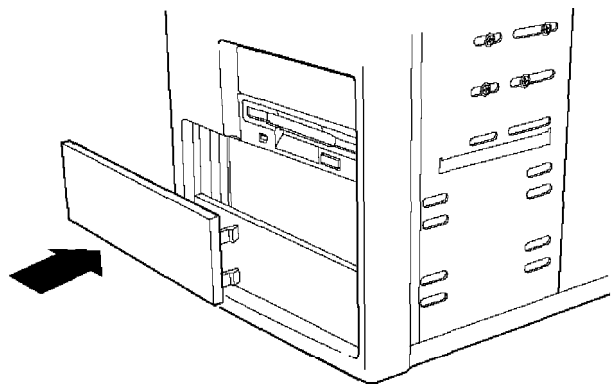
10. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

Removing a Drive From an External 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.
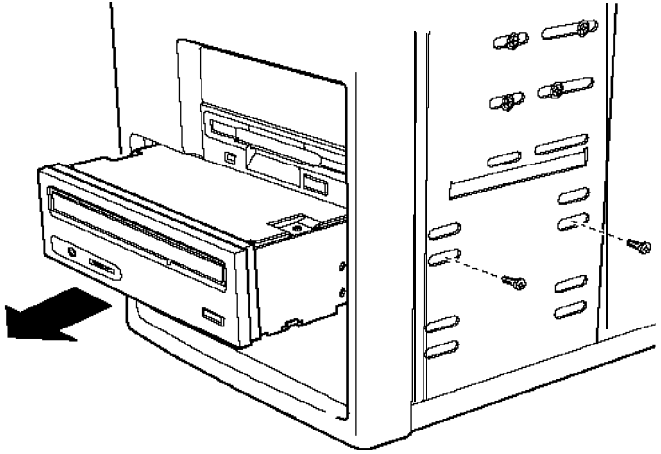
3. If you are not installing another externally accessible drive in the open drive bay, you may want to install a plastic drive slot cover for that bay. Push the slot cover into the open bay until the tabs on the cover click into place.
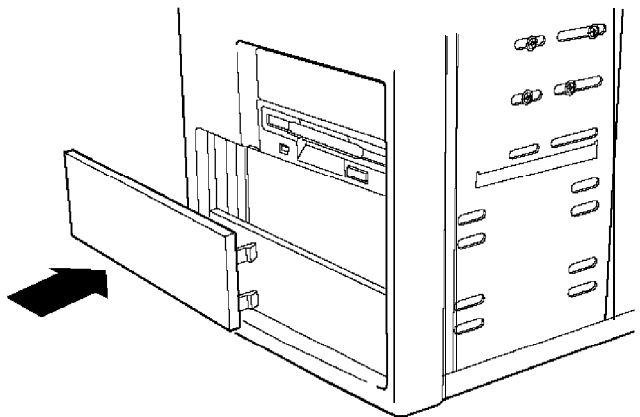
4. If you removed the only IDE device connected to the interface the device used, you may want to disconnect the device cable from the interface on the system board and remove it from the computer.

5. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

Installing a Drive in the Rear Internal Bracket

Your computer has a hard disk drive installed in the rear internal drive bracket.

Follow these steps to install a second drive in this drive bay:

1. Remove the drive and power cables from the back of the 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. Make sure you save the screws.
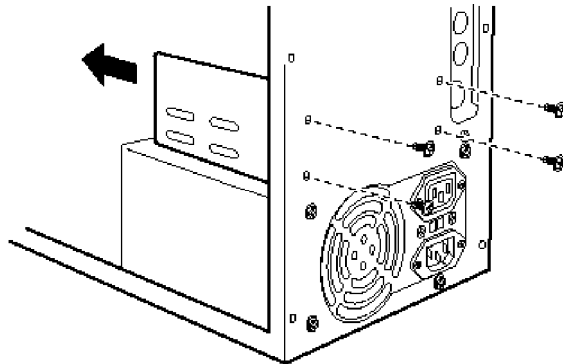
3. Place the rear internal drive bracket on your work surface as shown in the illustration below.

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.
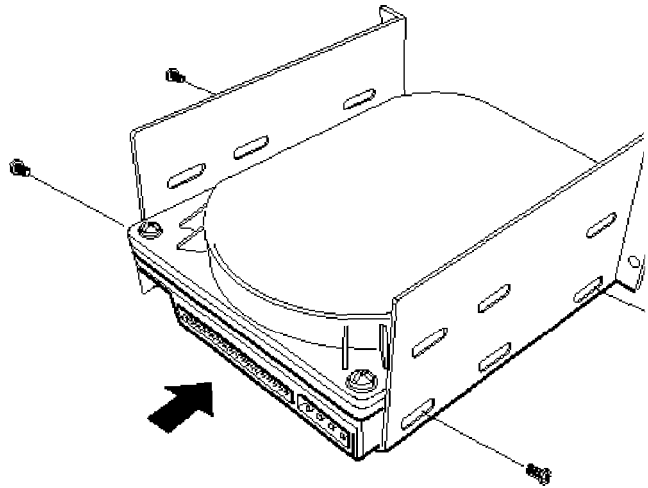
5. Replace the bracket as shown below and secure it to the back panel with the four screws you removed earlier.
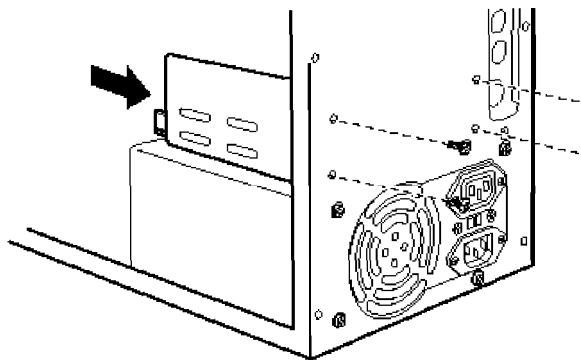
6. To connect the drive cables to the drives in the rear internal bracket, first locate pin 1 on each drive's connector. The number 1 or 2 may be printed on the drive's connector or circuit board to identify the side containing pin 1.

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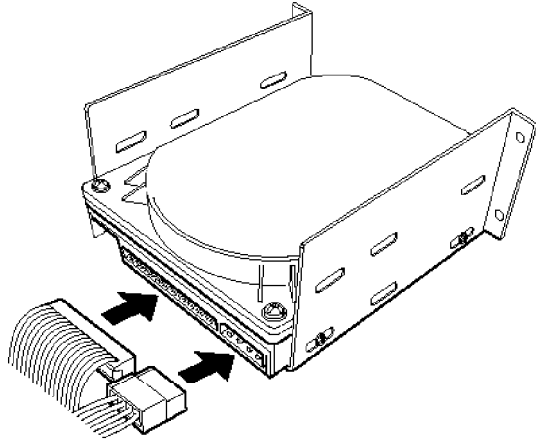
8. Locate a power supply cable for each drive installed in the rear internal bracket. These cables lead from the power supply and have multi-colored wires with a plastic connector on the end. Align the notched corners of the power supply connector with the drive's power connector; then push in the connector.

> **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 4 for instructions. Then see "Running SETUP" in
    Chapter 2 for instructions on defining your new drive
    configuration.

Removing a Drive From the Rear Internal 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 your online help files or your software
> documentation for instructions.

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

1. Remove the IDE device and power cables from the back of each drive in the rear internal bracket.
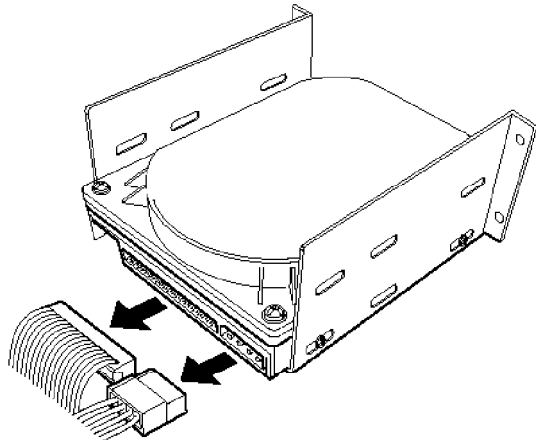
2. Remove the four screws securing the rear internal drive bracket to the computer's back panel and slide it out of the computer.
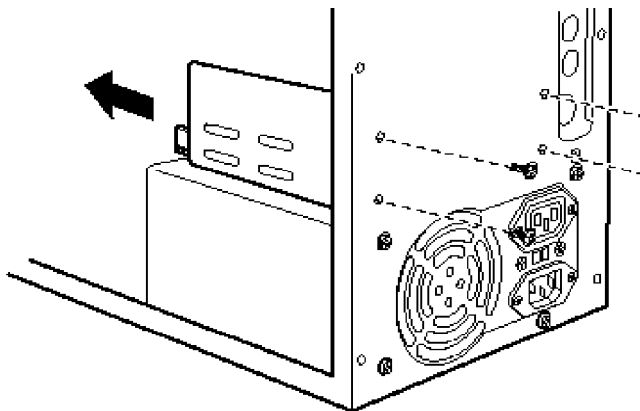
3. If you removed the only IDE device connected to the interface the device used, you may want to disconnect the device cable from its interface on the system board and remove it from the computer.

4. Remove the four screws securing the drive to the bracket and slide the drive out of the bracket.
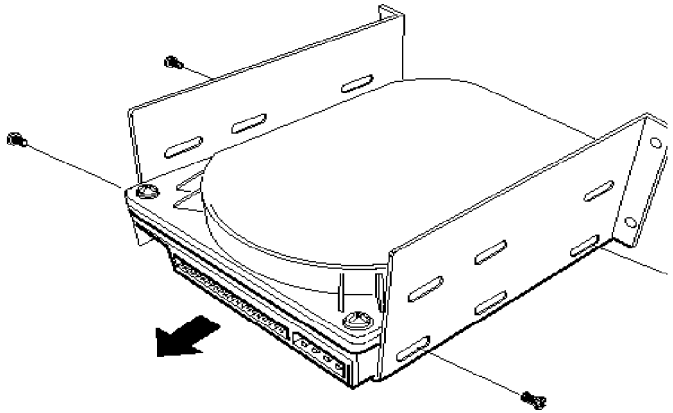
5. Replace the bracket as shown below and secure it to the back panel with the four screws you removed earlier.
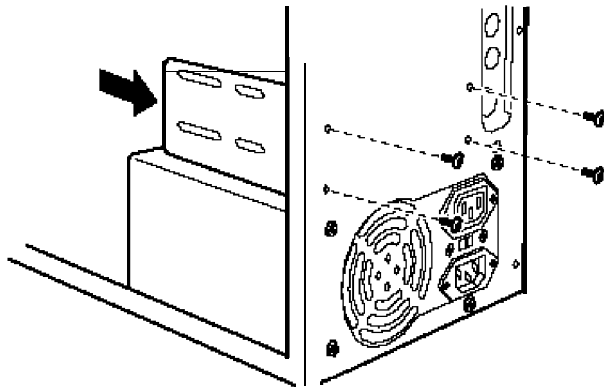
6. If there is a drive installed in the rear internal bracket, follow steps 6 through 8 under "Installing a Drive in the Rear Internal Bracket" to reconnect the drive and power cables to the drive.

7. If you have finished installing or removing drives, replace the computer's cover; see "Replacing the Cover" in Chapter 4 for instructions. Then see "Running SETUP" in Chapter 2 for instructions on defining your new drive configuration.

Chapter 7

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, a more specific problem is 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. Record the information in your *User's Digest so* you'll have it available if your system is not working.

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 or startup 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 setting of jumper JP13 on the system board; see "Changing the Jumper Settings" in Chapter 4.

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 4

You may have installed option cards that exceed the system's power limits. Check "Option Slot Power Limits" in the Appendix 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 4.

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 the Appendix 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 JP2; see "Changing the Jumper Settings" in Chapter 4 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 Chapter 2.
>
> 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.

An illustration in one of your software applications displays incorrectly.

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 Chapter 2 for more information.

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

Something is wrong with the data in the files.

Run ScanDisk to repair the files. You may also be able to use special utilities or diagnostics to solve this problem.

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 Chapter 2 for more information.

The diskette drive is making loud or unusual noises.

Contact your Authorized EPSON Servicer or the EPSON Connection.

Hard Disk Drive Problems

A newly installed hard disk drive is not working properly or 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 Chapter 2. 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 Features" in Chapter 2 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 Chapter 2.

Check to make sure you did not disable the IDE controller by changing the setting of jumper JP13 on the main system board; see "Changing the Jumper Settings" in Chapter 4 for more information.

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 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 Chapter 2.

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 5 (for slimline computers) or
Chapter 6 (for tower computers). 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.

Make sure that you set the master/ slave jumpers on the drive
correctly for your configuration; see the documentation that
may have come with the drive for more information.

If your drive came with documentation, check there for other possible solutions to the problem you are having.

Password Problems

You have forgotten your pass word

You must discharge your CMOS memory. To do this, you need to change the setting of jumper JP6 to the On position. See "Changing the Jumper Settings" in Chapter 4 for details.

After you have changed JP6, 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 JP6 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 Setup Options" in Chapter 2.

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 Chapter 2 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 on software that came with your configured computer, see the *User's Digest* for technical support information. If you purchased the software separately, contact your 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 Features" in Chapter 2.

Your application has locked the computer, making if 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 4.

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 Chapter 2 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 (ECP mode). See
"Configuring integrated peripherals" in Chapter 2 for more
information. If you use ECP mode, check your parallel device
software documentation for the correct DMA channel (DRQ)
setting; then set jumpers JP8 and JP9 to match the setting, if
necessary; see "Changing the Jumper Settings" in Chapter 4 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.

Option Card Problems

A newly 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. If you are using Windows 95, turn on the Reset Configuration **Data** option. See "Starting the Setup Program" and "Using the Advanced System Setup Options" in Chapter 2 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 JP2; see "Changing the Jumper Settings" in Chapter 4 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 the Appendix for more information.

> Make sure the option card is not touching any other card or component on your main 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 Chapter 2.

An external device connected to the option card is not working correctly.

> 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 4 for more information. Also make sure you set jumpers JP12 and JP14 for the correct type of SIMMs; see "Changing the Jumper Settings" in Chapter 4 for instructions.

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.

You may have installed the external cache chips incorrectly. They may be the wrong type, or they may not be inserted all the way.

Also, you may not have changed the SETUP program or the jumpers to recognize the new cache. Make sure you have set the External cache option to Enabled.

See "Installing External Cache" in Chapter 4 for more information. See "Configuring cache memory" in Chapter 2 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 your IDE controller, make sure jumper JP13 is set to enable the controller; see "Changing the Jumper Settings" in Chapter 4 for more information.

If the error message refers to your diskette drive controller, make sure the controller is enabled in SETUP; see "Configuring integrated peripherals" in Chapter 2 for more information.

The indicated controller on your system board may be faulty. If you have an option card with a controller that will work with your device, you can install it and change the jumper settings on the system board to disable the built-in controller. You can then continue to use your system until it is convenient for you to have it serviced.

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 Star compliant, low-power, doze,
energy saver   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 8MB
                  RAM standard on two 4MB SIMMs;
                  expandable to 128MB using 1MB, 2MB,
                  4MB, 8MB, 16MB, 32MB, and 64MB
                  SIMMs; SIMMs must be tin-plated, 72-pin,
                  32-bit or 36-bit, fast-page mode type with
                  access speed of 70ns or faster

ROM   128KB Phoenix® system BIOS, video BIOS,
                  and SETUP code in Flash ROM on main
                  system board

video RAM   1MB video DRAM on main 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

Cache	Internal cache in the 586-class processor; 256KB, 512KB, or 1MB of external cache installed on 32K x 8, 64K x 8, or 128K x 8, 3.3 volt, 15ns cache SRAM DIP chips and two 32K x 8,28-pin, 5 volt, 15ns tag chips (one for the tag and one for the ALT bit); internal and external cache controllable through SETUP
Math coprocessor	Math coprocessor built into the 586-class processor
Clock/ calendar	Real-time clock, calendar, and CMOS RAM socketed on main system board with integrated backup battery

Controllers

PCI chipset	Provides PCI caching, memory, and control for the PCI bus and the two-channel 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
Video	S3™ Trio64™ PCI VGA controller with integrated 24-bit RAMDAC, 64-bit DRAM interface; includes power-saving and multimedia features; 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 in the 640 x 480 resolution

Diskette	Controller on main 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, IDE interfaces on main 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 multi-frequency monitor built into system board; 15-pin, D-shell connector
Parallel	One standard, multimode parallel interface built into main system board; supports S-bit unidirectional, 16-bit bidirectional and ECP (Extended Capability 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 main system board; 16C550 compatible; 9-pin, D-shell connectors; operation controllable through SETUP

Keyboard	PSI 2 compatible keyboard interface built into main system board; 6-pin, mini DIN connector
Mouse	PSI 2 compatible mouse interface built into main system board; 6-pin, mini DIN connector
Option slots	Connector card with five I/O expansion slots; three ISA compatible (8.33 MHz bus speed) and two PCI compatible (33 MHz bus speed); PCI slots support up to two PCI bus masters
Speaker	Internal

Mass Storage

Slimline computer
Internal bays:
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 computer
Front internal bay:
One 3.5-inch wide, half-height 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 de vices	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; 101, 102: or 104 sculpted keys; country-dependent main typewriter keyboard; numeric/ cursor control keypad; four-key cursor control keypad; 12 function 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

Type	200 Watt, UL/ TUV/ CSA listed, fan-cooled
Input ranges	90-130 VAC or 180-270 VAC; switch-selectable
Maximum output	+5 VDC at 20 Amps, -5 VDC at 0.5 Amp +12 VDC at 8 Amps, -12 VDC at 0.5 Amp
Frequency	**47** to 63 Hz
Cables	Two to main 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 computer	Tower computer
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	128KB duplication of ROM BIOS stored at 0E0000h-0FFFFFh
100000h-FDFFFFh	System extended memory (128MB maximum)
0E0000h-0FFFFFh	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
640 x 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
800 x 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 t	1MB	16	43.5/60/72/75	4 bit planes'
	2MB	256	43.5/60/72/75	8 bits/pixel**
1600 x 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®						Western Digital®			
	CFS1275A	CFS850A	CFS540A	CFS425A	CFS420A	CFS270A	AC2540	AC2420	AC2340	AC2250
Formatted capacity (MB)	1275	850	540	425	420	270	540	425	341	256
Size, width × height (in)	4×1	4×1	4×1	4×1	4×1	4×1	4×1	4×1	4×1	4×1
Weight (lb)	1.25	1.25	1.2	1.1	1.16	1.1	1.2	1.12	1.12	1.12
Cylinders	3687	3687	2805	839	2388	525	1048	2720	2233	2233
Disks	3	2	2	1	2	1	2	2	2	2
Heads	6	4	4	2	4	2	4	4	4	3
Sectors per track	78 - 144	78 - 144	79 - 119	78- 144	63 - 100	72- 117	63	55 - 99	56 - 96	56 - 96
Rotational speed (RPM)	3600	3600	3600	3600	3600	3400	4500	3314	3322	3322
Buffer size (KB)	64	64	64	64	32	32	128	128	128	64
Average seek time (ms)	<15	<15	14	14	14	14	11	<13	<13	<13
Encoding method	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7
Power dissipation (seek)	5.6 W	5.6 W	4.3 W	3.9 W	5-12 W	3.9 W	7.0 W	5.2 W	5.2 W	5.2 W
Logical parameters Cylinders Heads Precomp zone Landing zone sectors	2479 16 0 2479 63	1652 16 0 1652 63	1050 16 0 1050 63	826 16 0 826 63	826 16 0 826 63	525 16 0 525 63	1048 16 1048 1048 63	989 15 989 989 56	1010 12 1011 1011 55	1010 9 1011 1011 55

*   Select 1 or none for the precomp value. If neither of these options are available, select the maximum available precomp value.

IDE hard disk drive jumper settings

Model number	Single drive	Master drive	Slave drive
Conner CFS 1275A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS850A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS540A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS425A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS420A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS270A	C/D jumpered	C/D jumpered	No jumpers
Western Digital AC2540	No jumpers	MA jumpered	SL jumpered
Western Digital AC2420	No jumpers	MA jumpered	SL jumpered
Western Digital AC2340	No jumpers	MA jumpered	SL jumpered
Western Digital AC2250	No jumpers	MA jumpered	SL jumpered

* CS (cable selection) can be jumpered for any configuration. When CS is used, the drive is a master if pin 28 is grounded, and a slave if pin 28 is not grounded.

DMA Assignments

Level	Assigned device
DMA0	Reserved
DMA1	Available
DMA2	Diskette drive controller
DMA3	Available
DMA4	Cascade from DMA1 to DMA2
DMA5	IS pare
DMA6	Spare
DMA7	Spare

Hardware Interrupts

IRQ no.	Function
IRQ0	Internal timer, PIT A counter 0 output
IRQ1	Keyboard
IRQ2	Cascade for IRQ9
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	Available
IRQ6	Diskette drive controller
IRQ7	Parallel port 1
IRQ8	Real-time clock
IRQ9	Available
IRQ10	Reserved
IRQ11	Reserved
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)
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

Hex address	Assigned device
0F8 - OFF	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
B90, 893	Available
EE2, EE3	Available
1390-1393	Available
22E1	Available
2390-2393	Available
42E1	Available
63E1	Available
82E1	Available

System I/O address map (continued)

Hex address	Assigned device
A2E1	Available
C2E1	Available
E2E1	Available

Connector Pin Assignments

Parallel port connector pin assignments (J1)

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	Data2	13	Select	22	Signal ground
5	Data3	14	AFD *	23	Signal ground
6	Data4	15	Error *	24	Signal ground
7	Data5	16	Init *	25	Signal ground
8	Data 6	17	Selectin *		—
9	Data 7	18	Signal ground		—

* Active LOW logic

Serial port connector pin assignments (J2 and J3)

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
NovellNetWare*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.

Glossary

586- class processor

A sophisticated CPU including the Intel Pentium™ processor that incorporates the latest in processor technology, including a 64-bit data path, 16KB of internal cache, and the ability to execute instructions in parallel. See also **CPU** and **Processor.**

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. Your computer includes 16KB of internal cache built into the 586-class processor and external cache installed on the main system board. The external cache can be expanded to 1MB by installing cache SRAM chips.

CMOS

Complimentary 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.

DIP

Dual Inline Package. A type of chip that has two rows of downward-pointing pins.

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 bidirectional signals for the parallel port and includes other enhanced functions.

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 ROM

Non-volatile, read/ write ROM 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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