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## ***Reference Guide***

**Compaq Deskpro 4000 Series of Personal Computers**

**Compaq Deskpro 6000 Series of Personal Computers**

Second Edition (September 1997)

First Edition (July 1997)

Part Number 270844-002

**Compaq Computer Corporation**



# *preface*

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## USING THIS GUIDE

This *Reference Guide* includes general information about your computer, troubleshooting and diagnostics information, and technical specifications.

### **Symbols and Conventions**

The following format conventions distinguish elements of the text throughout this guide:

- When keys must be pressed at the same time, the action is represented by the key names and the plus (+) symbol. For example, Ctrl+Alt+Delete.
- The names of files are presented in uppercase italic type as shown here: *FILENAME*.
- The names of commands, folders, or directories are presented in uppercase type as shown here: COMMAND or DIRECTORY. Commands that are to be entered at the system prompt are shown on a separate line.
- When you are asked to type something without pressing the Enter key, you are directed to “type” the information.
- When you need to type information and press the Enter key, you will be directed to “enter” the information.
- When you need to make a selection with a mouse, you will be directed to “select” or “click” the information.

The following words and symbols mark special messages throughout this guide:



**WARNING:** Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

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**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

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Text set off in this manner presents clarifying information, specific instructions, commentary, sidelights, or interesting points of information.

## **Environmental Commitment**

Compaq is committed to making environmentally friendly products. Your computer was produced in a chlorofluorocarbons (CFC)-free factory. All plastics used in the product are stamped with material composition to make recycling more efficient. Reduce, reuse, and recycle are words to live by at Compaq.

# *chapter 1*

## THE COMPUTER AT A GLANCE

### Features Common to All Models

- Intelligent Manageability, including Asset Management, Fault Management, Security Management, Configuration Management, and Integration Management
- Compaq Netelligent 10/100 TX Embedded UTP Controller, a network interface controller (NIC) with Remote Wakeup support
- 512-kilobyte or 1-megabyte write-through, direct-mapped secondary (L2) cache
- 16, 32, or 64 megabytes of synchronous DRAM (SDRAM); expandable to 384 megabytes, installed in dual inline memory modules (DIMMs)
- Smart Cover Lock, a software controllable cover lock
- High-density, 3.5-inch, 1.44-megabyte diskette drive; or 3.5-inch, 120-megabyte, LS-120 Drive
- Compaq Enhanced keyboard
- Easy serviceability features, including Quick Release Cover Latches and a slide-out drive cage (desktop models only), a removable expansion board cage, and a slide-out system board
- Desktop chassis includes five expansion slots; minitower chassis includes seven or eight expansion slots, depending on the model (graphics controller resides in one PCI or AGP slot)
- Desktop chassis includes four drive bays; minitower chassis includes five drive bays
- 200-watt (desktop and Pentium-based minitower models) or 260-watt (Pentium II-based minitower models) continuous power supply; switch-selectable for 115 and 230 VAC operation

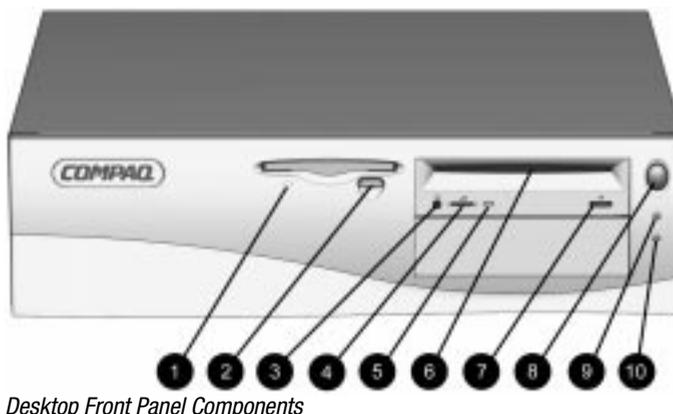
## Compaq Deskpro 4000 Features

- Microsoft Windows 95 operating system installed on Pentium-based models; Microsoft Windows NT Workstation 4.0 operating system installed on Pentium II-based models
  - Compaq-supplied drivers and utilities
  - Pentium processor with MMX technology at 166-MHz, 200-MHz, or 233-MHz; or Pentium II processor at 233-MHz, 266-MHz, or 300-MHz
  - Pentium-based models include Enhanced 64-bit graphics with accelerated 3D; includes 2-megabytes SGRAM, expandable to 4-megabytes SGRAM
  - Pentium II-based models include either the Matrox Performance graphics controller with 2-megabytes SGRAM, and expandable to 4-megabytes SGRAM, or the Matrox Millennium-II AGP graphics controller with 4-megabytes WRAM and expandable to 16-megabytes WRAM
  - One Ultra ATA hard drive installed; hard drive size is either 2.4 or 3.2 gigabytes
-  The hard drives are partitioned into two logical drives.
- CD-ROM drive models include a 16X MAX or 24X MAX slot-load CD-ROM drive, embedded 16-bit audio, and an internal 2.5-inch speaker mounted on the removable expansion board cage

## Compaq Deskpro 6000 Features

- Pentium II processor at 233-MHz, 266-MHz, or 300-MHz
  - Embedded Ultra-SCSI controller
  - Matrox Millennium-II AGP graphics controller; includes 4-megabytes WRAM, expandable to 16-megabytes WRAM
  - One Ultra-SCSI hard drive installed; hard drive sizes range from 2.1 to 4.3 gigabytes
-  The hard drives are partitioned into two equally sized logical drives.
- All models include a 24X MAX slot-load CD-ROM drive and an internal 2.5-inch speaker mounted on the removable expansion board cage

## Desktop Front and Rear Panel Components



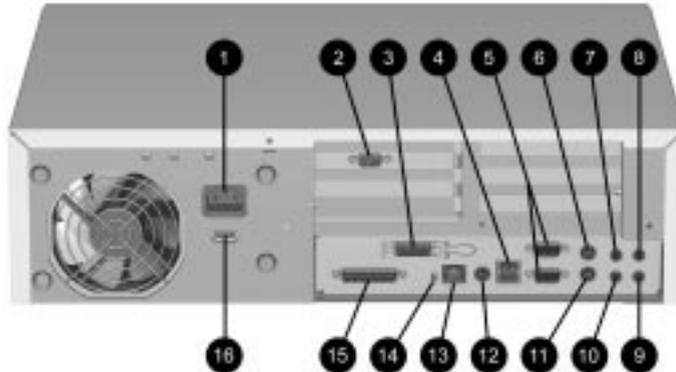
### Desktop Front Panel Components

Ref.	Component	Function
❶	Diskette Drive Activity Light	Turns on when the diskette drive is reading or saving data.
❷	Diskette Eject Button Emergency Eject Hole (LS-120 Drive only)	Ejects a loaded diskette.
❸	Stereo Headphone Jack	Connects headphones to the CD-ROM drive.*
❹	Headphone Volume Control	Adjusts the volume of the CD-ROM drive.*
❺	CD-ROM Drive Busy Indicator	Flashes amber when the drive is reading a CD.*
❻	CD-ROM Drive Slot	Allows you to insert a CD into the drive.*
❼	CD-ROM Eject Button	Ejects a CD from the drive.*
❽	Dual-State Power Button	Turns the computer on and off; can be configured as a suspend button.
❾	Power-On Light	Turns on when power to the computer is turned on and blinks (optional) in Energy Saver mode.
❿	Hard Drive Activity Light	Turns on when the hard drive is reading or saving data.

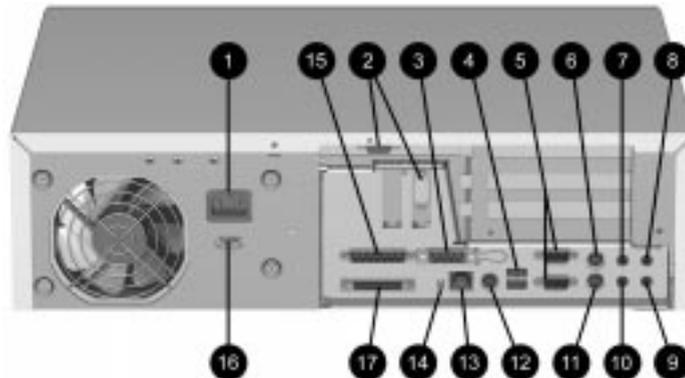
\* CD-ROM drive models only



**WARNING:** This equipment is designed for connection to a grounded (earthed) outlet. The grounding type plug is an important safety feature. To avoid the risk of electrical shock or damage to your equipment, do not disable this feature.



*Rear Panel Components on the Pentium-Based Desktop Models*

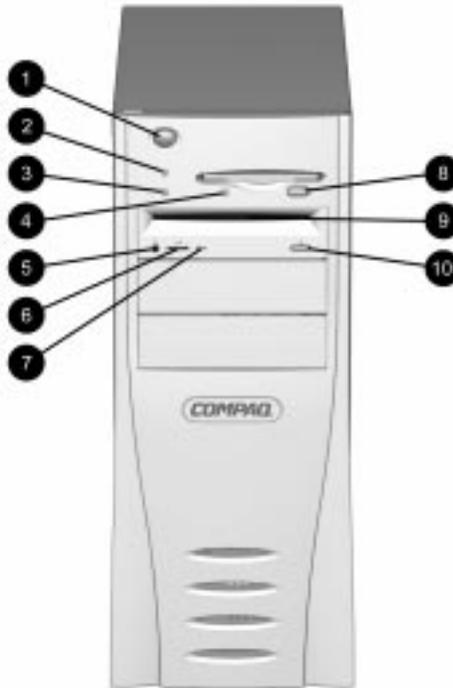


*Rear Panel Components on the Pentium II-Based Desktop Models*

## Desktop Rear Panel Components

Ref.	Connector	Function
❶	Power Cord	Connects the computer to an electrical power outlet.
❷	Monitor Connector	Connects a monitor.  NOTE: Your computer will include either a PCI or an AGP monitor connector, but not both.
❸	Ethernet AUI Connector	Connects the Ethernet network, using an AUI cable or an AUI to BNC transceiver.
❹	Universal Serial Bus (USB) Connectors	Connects the computer to any USB peripheral while the computer is operating; are fully functional Plug and Play connectors.
❺	Serial Connectors	Connects a serial device, such as a serial mouse or scanner.
❻	Mouse Connector	Connects the mouse. (Green-colored icon)
❼	Microphone Connector	Connects a microphone. (CD-ROM drive models; blue-colored icon)
❽	Line-In Audio Connector	Connects a device that supplies sound, such as a tape deck or CD player. (CD-ROM drive models)
❾	Line-Out Audio Connector	Connects an external amplifier (to power additional speakers) or a tape deck for recording. (CD-ROM drive models)
❿	Headphone Connector	Connects headphones. (CD-ROM drive models)
⓫	Keyboard Connector	Connects the keyboard. (Orange-colored icon)
⓬	External Infrared Transceiver Connector	Connects an optional external infrared transceiver. (Yellow-colored icon)
⓭	Ethernet RJ-45 Connector	Connects the Ethernet network, using an RJ-45 cable.
⓮	Network Status Lights	Yellow link light turns on when network driver is properly loaded and system is physically connected to a network. Green activity light turns on when system detects network activity.
⓯	Parallel Port Connector	Connects a parallel device, such as a parallel printer.
⓰	Voltage Select Switch	Switches voltage between 115V (U.S.) and 230V to match geographical requirements.
⓱	Ultra-SCSI Connector	Connects external SCSI devices. (Deskpro 6000 models)

## Minitower Front and Rear Panel Components



*Minitower Front Panel Components*

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## Minitower Front Panel Components

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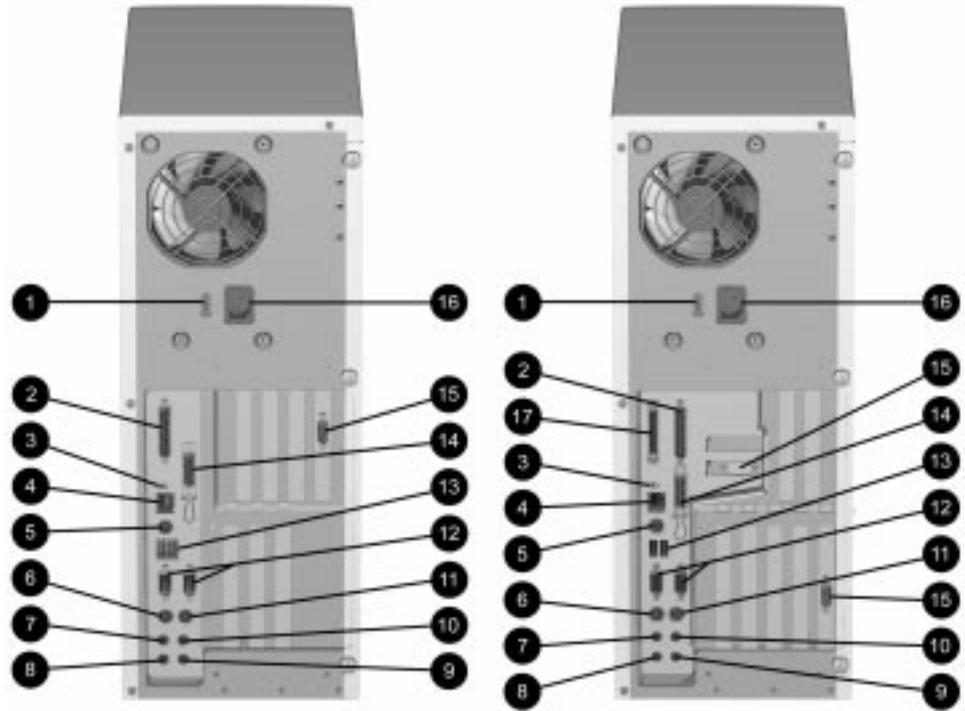
Ref.	Component	Function
❶	Dual-State Power Button	Turns the computer on and off; can be configured as a standby button.
❷	Power-On Light	Turns on when power to the computer is turned on and blinks (optional) in Energy Saver mode.
❸	Hard Drive Activity Light	Turns on when the hard drive is reading or saving data.
❹	Diskette Drive Activity Light	Turns on when the diskette drive is reading or saving data.
❺	Stereo Headphone Jack	Connects headphones to the CD-ROM drive.*
❻	Headphone Volume Control	Adjusts the volume of the CD-ROM drive.*
❼	CD-ROM Drive Busy Indicator	Flashes amber when the drive is reading a CD.*
❽	Diskette Eject Button Emergency Eject Hole (LS-120 Drive only)	Ejects a loaded diskette.
❾	CD-ROM Drive Slot	Allows you to insert a CD into the drive.*
❿	CD-ROM Eject Button	Ejects a CD from the drive.*

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\* CD-ROM drive models only



**WARNING:** This equipment is designed for connection to a grounded (earthed) outlet. The grounding type plug is an important safety feature. To avoid the risk of electrical shock or damage to your equipment, do not disable this feature.



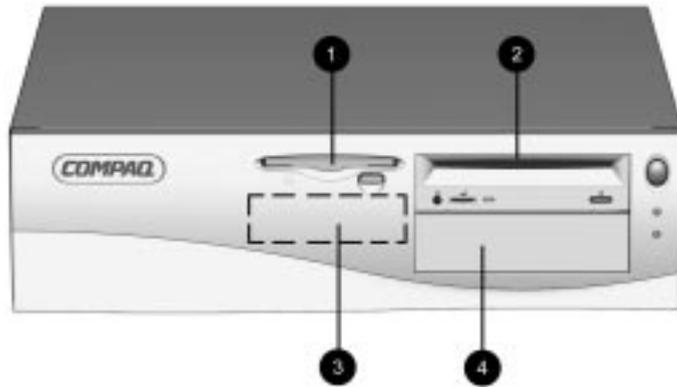
*Rear Panel Components on the Pentium- and Pentium II-Based Minitower Models*

## Minitower Rear Panel Components

Ref.	Connector	Function
❶	Voltage Select Switch	Switches voltage between 115V (U.S.) and 230V to match geographical requirements.
❷	Parallel Connector	Connects a parallel device, such as a parallel printer.
❸	Network Status Lights	Yellow link light turns on when network driver is properly loaded and system is physically connected to a network. Green activity light turns on when system detects network activity.
❹	Ethernet RJ-45 Connector	Connects to an Ethernet network, using an RJ-45 cable.
❺	External Infrared Transceiver Connector	Connects an optional external infrared transceiver. (Yellow-colored icon)
❻	Keyboard Connector	Connects the keyboard. (Orange-colored icon)
❼	Headphone Connector	Connects headphones. (CD-ROM drive models)
❽	Line-Out Audio Connector	Connects an external amplifier (to power additional speakers) or a tape deck for recording. (CD-ROM drive models)
❾	Line-in Audio Connector	Connects a device that supplies sound, such as a tape deck or CD player. (CD-ROM drive models)
❿	Microphone Connector	Connects a microphone. (CD-ROM drive models; blue-colored icon)
⓫	Mouse Connector	Connects the mouse. (Green-colored icon)
⓬	Serial Connectors	Connects a serial device, such as a serial mouse or scanner.
⓭	Universal Serial Bus (USB) Connectors	Connects the computer to any USB peripheral while the computer is operating; are fully functional Plug and Play connectors.
⓮	Ethernet AUI Connector	Connects to an Ethernet network, using an AUI cable or an AUI to BNC transceiver.
⓯	Monitor Connector	Connects a monitor.  NOTE: Your computer will include either a PCI or an AGP monitor connector, but not both.
⓰	Power Cord	Connects the computer to an electrical power outlet.
⓱	Ultra-SCSI Connector	Connects external SCSI devices. (Deskpro 6000 models)

## Drive Positions

The desktop model can house up to four mass storage devices.



*Desktop Drive Positions*

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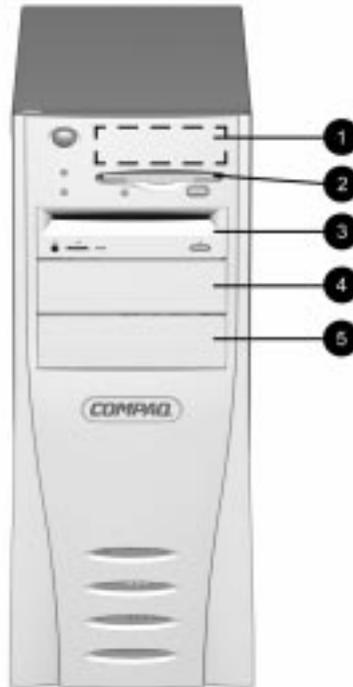
### Desktop Drive Configuration

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Drive Position	Configuration
❶	Standard, 3.5-inch 1.44MB diskette drive or LS-120 Drive
❷	Optional PD-CD Drive, CD-ROM drive, diskette drive, tape drive, or hard drive, (5.25-inch, half height)
❸	Standard 3.5-inch internal hard drive (2.4 GB or 3.2 GB)
❹	Optional PD-CD Drive, CD-ROM drive, diskette drive, tape drive, or hard drive (5.25-inch, half height)

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The minitower model can house up to five mass storage devices.



*Minitower Drive Positions*

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### **Minitower Drive Configuration**

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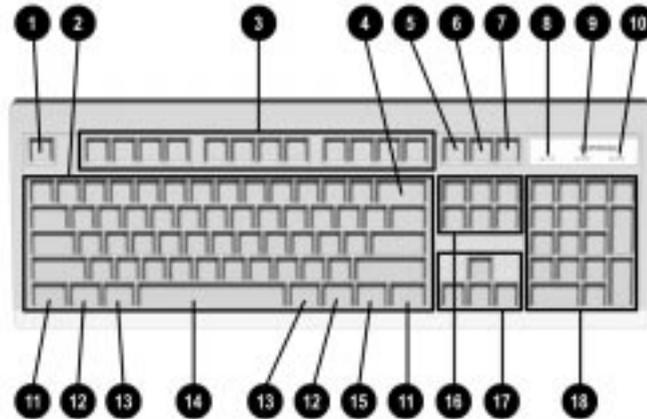
<b>Drive Position</b>	<b>Configuration</b>
❶	Standard internal hard drive (2.4 GB or 3.2 GB)
❷	Standard, 3.5-inch 1.44MB diskette drive or LS-120 Drive
❸	Optional PD-CD Drive, CD-ROM drive, diskette drive, tape drive, or hard drive (5.25-inch, half height)
❹	Optional PD-CD Drive, CD-ROM drive, diskette drive, tape drive, or hard drive (5.25-inch, half height)
❺	Optional PD-CD Drive, CD-ROM drive, diskette drive, tape drive, or hard drive (5.25-inch, half height)

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To verify which mass storage devices are installed in your computer, run Compaq Diagnostics for Windows or the INSPECT utility. Refer to Chapter 8, “Using Compaq Utilities,” for more information.

## Using the Compaq Enhanced Keyboard

The typing areas, keyboard lights, and special function keys are shown and described in the following illustration and table.



*Compaq Enhanced Keyboard Components*

### Keyboard Components

Ref.	Component	Function
❶	Esc	Often assigned a specific task by the application. Frequently used as an exit key (for quitting an application), for moving back one screen, or for canceling a command.
❷	Main keypad	Contains the standard typewriting keys. Includes the Caps Lock key. Press the Caps Lock key once to type all capitalized letters (the Caps Lock light will be on). Press the Caps Lock key again to turn off capitalization.
❸	F1 - F12 (function keys)	Use for specific effects in applications and operating systems. Refer to the application software documentation.
❹	Backspace	Moves the cursor left and deletes characters as it moves to the left.
❺	Print Scrn	Depending on the software you are using, prints the displayed screen to a printer. Using this key may not print the entire file.
❻	Scroll Lock	When the Scroll Lock light is on, the screen is prevented from scrolling.

*continued*

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## Keyboard Components *continued*

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Ref.	Key	Function
7	Pause	Temporarily suspends screen scrolling or some operations.
8	Num Lock light	Indicates whether the Num Lock feature is on or off.
9	Caps Lock light	Indicates whether the Caps Lock feature is on or off.
10	Scroll Lock light	Indicates whether the Scroll Lock feature is on or off.
11	Ctrl	Used in combination with another key, its effect depends on the application software you are using.
12	Windows Logo*	Used to open the Start menu in Microsoft Windows 95. Used in combination with other keys to perform other functions. (See following table.)
13	Alt	Used in combination with another key, its effect depends on the application software you are using.
14	Spacebar	Moves the cursor right.
15	Application*	Used (like the right mouse button) to open pop-up menus in a Microsoft Office application. May perform other functions in other software applications.
16	Editing keys	Includes the following: Insert, Home, Page Up, Delete, End, and Page Down. <b>NOTE:</b> Holding down Ctrl+Alt while pressing Delete restarts your computer.
17	Arrow keys	Use to move the cursor up, down, right, and left. The cursor indicates your position on the screen. If typing, the cursor shows where letters will appear.
18	Numeric (calculator style) keypad	Operates in one of two modes: numeric and editing. When the Num Lock indicator light is on (press the Num Lock key once), the keypad is in the numeric mode and can be used like a calculator. To switch the keypad to the editing mode and to activate the arrow keys in the keypad, press the Num Lock key again (the light goes off). The arrow keys to the left of the keypad perform the same functions as the arrow keys on the keypad.

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\*Keys available in select geographic regions.

You may use the Windows Logo keys in combination with other keys to perform certain functions in Windows 95, as shown in the following table:

<b>Windows Logo Key Combinations and Functions</b>	
<b>Windows Logo Key Combination</b>	<b>Functionality in Windows 95</b>
Windows logo key + F1	Displays a pop-up menu for the selected object.
Windows logo key + Tab	Activates the next Taskbar button.
Windows logo key + E	Launches Explore My Computer.
Windows logo key + F	Launches Find Document.
Windows logo key + Ctrl+F	Launches Find Computer.
Windows logo key + M	Minimizes all open applications.
Shift+Windows logo key + M	Undoes Minimize All.
Windows logo key + R	Displays Run dialog box.

The keyboard has feet on the bottom to tilt the keyboard to a comfortable typing angle.



*Keyboard Tilt Foot*

## **Routine Care**

Follow these suggestions to take care of your computer and monitor:

- Operate the computer on a sturdy, level surface. Leave a 3-inch (7.6-cm) clearance at the back of the system unit and above the monitor to permit the required airflow.
- Never operate the computer with the cover or side panel removed.

- Never restrict the airflow into the computer by blocking the front vents or air intake. Do not place the keyboard, with the keyboard feet down, directly against the front of the desktop unit as this also restricts airflow.
- Never use the desktop computer on its side (resembling a “tower” configuration).
- Keep the computer away from excessive moisture, direct sunlight, and extremes of heat and cold. For information about the recommended temperature and humidity ranges for your computer, refer to Appendix B, “Specifications.”
- Keep liquids away from the computer and keyboard.
- Never cover the ventilation slots on the monitor with any type of material.
- Turn off the computer before you do either of the following:
  - Wipe the exterior of the computer with a soft, damp cloth as needed. Using cleaning products may discolor or damage the finish.
  - Occasionally clean the air vents on the front and back of the computer. Lint and other foreign matter can block the vents and limit the airflow.

## Turning Off Your Computer

To properly turn off your computer, click Shut Down... on the Start menu. The computer will automatically shut down.



**WARNING:** Before you open the computer cover or side panel for any reason, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching. Doing this will reduce the risk of personal injury from electrical shock and/or hot surfaces.

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# chapter 2

## UNDERSTANDING AND USING INTELLIGENT MANAGEABILITY

### **Intelligent Manageability**

Intelligent Manageability combines innovative hardware technology with PC LAN management tools from Compaq and other leading vendors to make Compaq desktop and portable computers easier to inventory, troubleshoot, protect, and maintain. Intelligent Manageability features focus on:

- Asset Management
- Fault Management
- Security Management
- Configuration Management
- Integration Management

### **Asset Management**

Conducting a physical inventory of personal computers, key components, and monitors can be time-consuming and costly. The Compaq Deskpro Asset Management solution to this problem begins with AssetControl, hardware designed and built into new Compaq personal computers, key components, and monitors that support the VESA DDC2B, DIMM SPD, and EDID standards.

AssetControl features make it easy and inexpensive to maintain an accurate, up-to-date inventory. AssetControl features:

- Provide detailed inventory information about various components, including:
  - Manufacturer, model, and serial number of Compaq computers, monitors, hard drives, and dual inline memory modules (DIMMs)
  - Asset Tag
  - System board and ROM revision level
  - DMI BIOS

- Allow you to view, print, or electronically save this data, and other system configuration details, using:
  - Enhanced Compaq Insight Personal Edition
  - Compaq Insight Manager
  - PC LAN management products from the Compaq Management Solutions Partners
  - Management software products supporting the Desktop Management Interface Revision 2.0 (DMI 2.0)
- Simplify and help ensure the accuracy of inventory and accounting procedures
- Streamline service calls by giving the administrator fast access to the Compaq personal computer configuration and history
- Simplify remote software distribution procedures by allowing the system administrator to identify software and revision levels remotely

### **Enhanced Compaq Insight Personal Edition (Compaq Diagnostics for Windows)**

Enhanced Compaq Insight Personal Edition is a component of Intelligent Manageability that allows you to view:

- System overview
- AssetControl information
- Input devices
- Communications ports
- Storage devices
- Graphics information
- Memory configuration
- Security Management settings
- System Health
- Operating system
- Windows version

## Using Compaq Insight Personal Edition

To use Compaq Insight Personal Edition (Diagnostics for Windows), complete the following steps:

1. Double-click the Compaq Insight Personal Edition icon, located in the Control Panel.

The screen displays an overview of the computer hardware and software.

2. For specific hardware and software information, select a category from the Category menu or from the toolbar.

 As you move your cursor over the toolbar icons, the corresponding category names appear near the cursor.

3. To display more detailed information in a selected category, click More in the Information Level box.

 Categories or items of information displayed by Compaq Insight Personal Edition are similar to but may vary slightly from the information presented in View System Information (INSPECT).

4. Review, print, and, if necessary, discuss this information with your authorized Compaq reseller or service provider.

 To print the information, click File, then select Print. Select one of the following options: Detailed Report (All Categories), Summary Report (All Categories), or Current Category. Click OK to print the report you selected.

5. To exit Compaq Insight Personal Edition, click File, then click Exit.

✍ Russian- and Polish-based systems do not include the following Compaq-supplied drivers and utilities:

- ❑ Compaq Insight Personal Edition
- ❑ Insight Management agents
- ❑ Compaq online *Safety & Comfort Guide*

You can obtain the latest version of these files, in English and selected other languages, in one of two ways:

- ❑ *Support Software CD for Compaq Desktop, Portable, and Workstation Products*
- ❑ Compaq Web Site at <http://www.compaq.com/support/files/desktops/index.html>

## **Fault Management**

Fault Management features combine innovative hardware and software technology to prevent the loss of critical data and minimize unplanned downtime.

When a fault occurs, the computer displays a Local Alert message containing a description of the fault and any recommended actions. You can then view current system health by using Compaq Insight Personal Edition. If the computer is connected to a network managed by Compaq Insight Manager or other SNMP-based management products (e.g., HP OpenView or IBM Tivoli TME10 NetView), the computer also sends a fault notice to the network management application.

### **SMART II Hard Drive Fault Prediction**

The SMART II hard drive monitors hard drive activity to predict failures before they occur. Fault prediction and failure indication parameters, such as abnormal variations in spinup and seek times, or non-correctable read and write errors, are tracked to determine the hard drive condition. Should these errors become significant, the computer displays a warning message. The warning gives you time to back up the hard drive and replace it prior to experiencing downtime or loss of data. The Prefailure Warranty for SMART II hard drives allows you to replace these drives, free of charge, before the drives fail.

SMART II hard drives are compliant with the Small Form Factor Committee Specification for Self-Monitoring, Analysis, and Reporting Technology (SMART) Version II. SMART is the industry standard technology, pioneered by Compaq and originally called IntelliSafe, that allows you to prevent data loss and minimize downtime, in concert with Compaq Insight Management Agents.

### **Ultra ATA Integrity Monitoring**

Ultra ATA Integrity Monitoring monitors the integrity of data as it is transferred between an Ultra ATA hard drive and the system's core logic. If the computer detects an abnormal number of transmission errors, the screen displays a Local Alert message with recommended actions. An alert is also sent over the network to the system administrator.

✍ To use this feature on Compaq Deskpro 6000 Series personal computers, you must replace the standard Ultra SCSI hard drive with an Ultra ATA hard drive. This feature is standard on Compaq Deskpro 4000 Series personal computers.

### **ECC Fault Prediction and Prefailure Warranty**

When the computer encounters an excessive number of error checking and correcting (ECC) memory errors, the screen displays a Local Alert message. This message contains detailed information about the errant memory module, allowing you to take action before you experience non-correctable memory errors. Run the Diagnostics Long RAM Test to validate ECC memory errors. For more information about using Compaq Diagnostics, refer to chapter 8, "Using Compaq Utilities."

The Prefailure Warranty for ECC memory modules allows you to replace these modules, free of charge, before the modules actually fail. ECC memory modules are optional on most Compaq Deskpro personal computers.

✍ To use this feature on Compaq Deskpro 4000 Series personal computers, you must replace the standard DIMMs with ECC DIMMs. This feature is standard on Compaq Deskpro 6000 Series personal computers.

## Monitor Fault Diagnosis

Certain new Compaq monitors detect when the operating temperature of the monitor exceeds the normal range or when a hardware fault occurs. Hardware faults may include the following:

- Power voltage out of range
- Power current out of range
- Horizontal deflection
- Vertical deflection
- I/O controller operation failure

If the monitor detects one of these conditions, the computer will send an alert over the network to the system administrator.

## Proactive Backup

Proactive Backup software is an optional feature and initiates a tape or PD-CD backup upon receiving notice of an impending SMART hard drive failure.

The Seagate Backup Exec SMART Client works with Seagate Backup Exec tape backup software on the server, or with Seagate Backup Exec software supporting the PD-CD drive. Together with the Insight Management Agents, this software offers a Proactive Backup solution. For instructions on configuring the Backup Exec SMART Client, contact your systems administrator or refer to the Seagate Backup Exec documentation.

Cheyenne Software, Inc. has also created an agent to support the Proactive Backup solution. The SMART Drive Agent is the component that recognizes and reacts to the SMART II hard drive fault alerts. This agent is an extension to the Microsoft Windows 95 tape backup agent for the standalone application, ARCsolo for Windows. This agent works with the SMART II hard drive to ensure that critical data will be protected in the event of a hard drive failure.

## Surge-Tolerant Power Supply

An integrated, surge-tolerant power supply provides greater reliability when the computer is hit with an unpredictable power surge. This power supply is rated and certified to withstand a

power surge of up to 2000 volts without incurring any system downtime or data loss.

## Thermal Sensor

The thermal sensor is a hardware and software feature that tracks the internal temperature of the computer. This feature displays a warning message when the normal range is exceeded, which gives you time to take action before internal components are damaged or data is lost.

## Security Management

Your computer includes security features to protect the computer and data from unauthorized access. You can view Security Management features and current settings by using Compaq Insight Personal Edition (locally), Compaq Insight Manager (remotely), or PC LAN management applications from the Desktop Management Solution Partners.

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### Security Features

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Feature	Purpose	How It Is Established
Removable Media Boot Control	Prevents startup from the removable media drives.	Computer Setup from the Compaq Utilities menu.
Removable Media Write Control	Prevents writing to the removable media drives. Allows read only.	Computer Setup from the Compaq Utilities menu.
Serial, Parallel, USB, or Infrared Interface Control	Prevents transfer of data through the integrated serial, parallel, USB (universal serial bus), or infrared interface.	Computer Setup from the Compaq Utilities menu. Also available through Windows 95 Device Manager.
Power-On Password	Prevents use of the computer until the password is entered. This can apply to both initial computer startup and restarts.	Computer Setup from the Compaq Utilities menu.
QuickLock/QuickBlank	Disables keyboard and mouse interface, and can blank the screen without exiting application; enabled with a password.	Computer Setup from the Compaq Utilities menu. <b>NOTE:</b> To maintain the security of QuickLock/QuickBlank, you should also disable the USB ports through Computer Setup.

*continued*

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**Security Features** *continued*

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<b>Feature</b>	<b>Purpose</b>	<b>How It Is Established</b>
Setup Password	Prevents reconfiguration of the computer (use of the Computer Setup utility) until the password is entered.	Computer Setup from the Compaq Utilities menu.
Smart Cover Sensor	Indicates that computer cover or side panel has been removed. Can be set to require the setup password to restart the computer, after the cover or side panel has been removed.	Computer Setup from the Compaq Utilities menu.
Smart Cover Lock	Prevents unauthorized access to the internal components. This is a software-controllable cover lock, controlled by the setup password.	Computer Setup from the Compaq Utilities menu.  The Smart Cover FailSafe Key, a device for manually disabling the Smart Cover Lock, is available from Compaq. You'll need the FailSafe Key in case of forgotten password, power loss, or computer malfunction.
Memory Change Alerts	Detects when DIMMs (dual inline memory modules) have been added, moved, or removed; notifies end-user and system administrator.	For information on enabling Memory Change Alerts, refer to the online <i>Intelligent Manageability Guide</i> .
Ownership Tag	Displays ownership information, as defined by the system administrator, during system startup (protected by setup password).	Computer Setup from the Compaq Utilities menu.
Cable Lock Provision	Inhibits access to the interior of the computer to prevent unwanted configuration changes or component removal. Can also be used to secure the computer to a fixed object to prevent theft of the computer.	Install a padlock with the security bracket to inhibit access to the interior of the computer; add a cable lock to secure the computer to a fixed object.

---

For more information about Computer Setup, refer to Chapter 8, "Using Compaq Utilities." In some cases you may also need to set switches. For more information about these switches, refer to Appendix E, "System Board Switches."

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## Password Security

Your computer supports security password features, which can be established by selecting:

- Passwords icon from the Windows 95 Control Panel.
- Security icon from the Windows NT Control Panel.
- Security Management from the Compaq Utilities menu.

### Establishing a Setup Password Using Computer Setup

Establishing a setup password through Computer Setup prevents reconfiguration of the computer (use of the Computer Setup utility) until the password is entered.

To establish a setup password through Computer Setup, complete the following steps:

1. Turn on the computer.
2. When the F10 Setup message appears in the lower-right corner of the Compaq logo screen, press the F10 key.  
 If you do not press the F10 key while the message is displayed, you must turn the computer off, then on again to access the utility.
3. Press the Enter key to bypass the welcome screens and display the main menu.
4. From the main menu, select Computer Setup, and press the Enter key.
5. Select the Built-In Devices option.
6. Select the Security Management option.
7. Locate the Setup Password option and select Enable Setup Password.
8. Follow the instructions on the screen to establish a setup password, then select OK.

9. Choose any other setup password preferences, then select OK to exit the security management screen.

For more information about the various screen and configuration options, refer to Chapter 8, “Using Compaq Utilities.”

10. Select File, Save Changes and Exit from the menu bar near the top of the screen.

### **Establishing a Power-On Password in Windows 95**

To establish a power-on password in Windows 95, complete the following steps:

1. Go to the Control Panel.
2. Double-click the Passwords icon and follow the instructions to set a new password.

### **Establishing a Power-On Password in Windows NT**

To establish a power-on password in Windows NT, complete the following steps:

1. Go to the Control Panel.
2. Double-click the Security icon and follow the instructions to set a new password.

### **Establishing a Power-On Password Using Computer Setup**

Establishing a power-on password through Computer Setup prevents access to the computer when power is turned on, unless the password is entered. The password must be entered each time the computer is turned on, when the key icon appears on the monitor.

To establish a power-on password through Computer Setup, complete the following steps:

1. Turn on the computer.

2. When the F10 Setup message appears in the lower-right corner of the Compaq logo screen, press the F10 key.
- ✎ If you do not press the F10 key while the message is displayed, you must turn the computer off, then on again to access the utility.
3. Press the Enter key to bypass the welcome screens and display the main menu.
4. From the main menu, select Computer Setup, and press the Enter key.
5. Select the Built-In Devices option.
6. Select the Security Management option.
7. Locate the Power-On Password option and select Enable Power-On Password.
8. Follow the instructions on the screen to establish a power-on password, then select OK.
9. Choose any other power-on password preferences, then select OK to exit the security management screen.

For more information about the various screen and configuration options, refer to Chapter 8, “Using Compaq Utilities.”

10. Select File, Save Changes and Exit from the menu bar near the top of the screen.

### **Entering a Power-On Password**

To enter the power-on password, complete the following steps:

1. Turn on the computer.
  2. When the key icon appears on the monitor, enter your current password.
- ✎ Type carefully; for security reasons, the characters you type do not appear on the screen.

If you enter the password incorrectly, a broken key icon appears. Try again. After three unsuccessful tries, you must turn off the computer, then turn it on again before you can continue.

## Changing a Password

To change the power-on or setup password, complete the following steps:

1. Turn on the computer.
2. When the key icon appears, type your current password, a slash (/) or alternate delimiter character, your new password, another slash (/) or alternate delimiter character, and your new password again as shown:

current password/new password/new password

 Refer to the “National Keyboard Delimiter Characters” section in this chapter for information about the alternate delimiter characters.

 Type carefully; for security reasons, the characters you type do not appear on the screen.

Completing this procedure causes the new password to take effect the next time you turn on the computer.

## Deleting a Password

To delete the power-on or setup password, complete the following steps:

1. Turn on the computer.
2. When the key icon appears, type your current password followed by a slash (/) or alternate delimiter character as shown:

 Refer to the “National Keyboard Delimiter Characters” section in this chapter for information about alternate delimiter characters.

Completing this procedure deletes the password until you establish a new one through Security Management.

## National Keyboard Delimiter Characters

Each keyboard is designed to meet country-specific requirements. The syntax and keys that you use for changing or deleting your password depend on the keyboard that came with your computer.

To determine the delimiter key required for changing or deleting your password, find your keyboard in the following table:

National Keyboard Delimiter Characters					
Arabic	/	Greek	-	Slovakian	-
Belgian	=	Hungarian	-	Spanish	-
BHCSY*	-	Italian	-	Swedish/Finnish	/
Brazilian	/	Japanese	/	Swiss	-
Chinese	/	Korean	/	Taiwanese	/
Czech	-	Latin American	-	Thai	/
Danish	-	Norwegian	-	Turkish	.
French	!	Polish	-	U.K. English	/
French Canadian	é	Portuguese	-	U.S. English	/
German	-	Russian	/		

\* For Bosnia-Herzegovina, Croatia, Slovenia, and Yugoslavia

## Clearing a Power-On Password

If you forget your password, you cannot access the computer. To clear the power-on password, complete these steps:

1. Unlock the Smart Cover Lock, using Computer Setup, if it is locked.

2. Turn off the computer and disconnect the power cord from the electrical outlet.

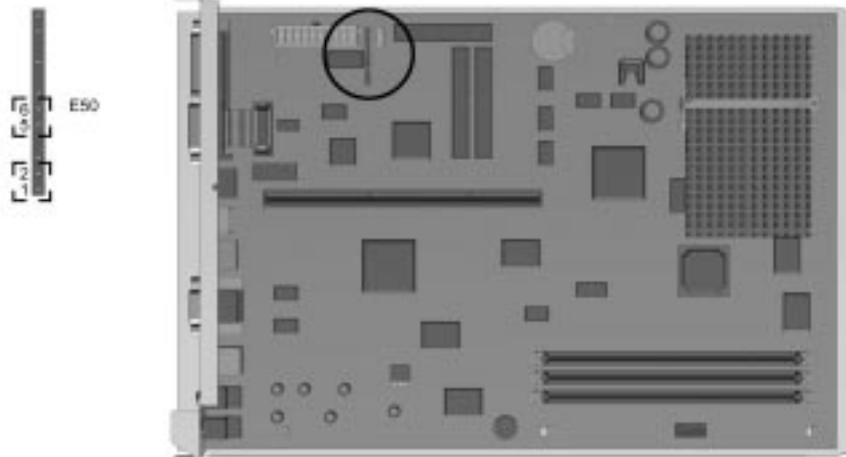


**WARNING:** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching.

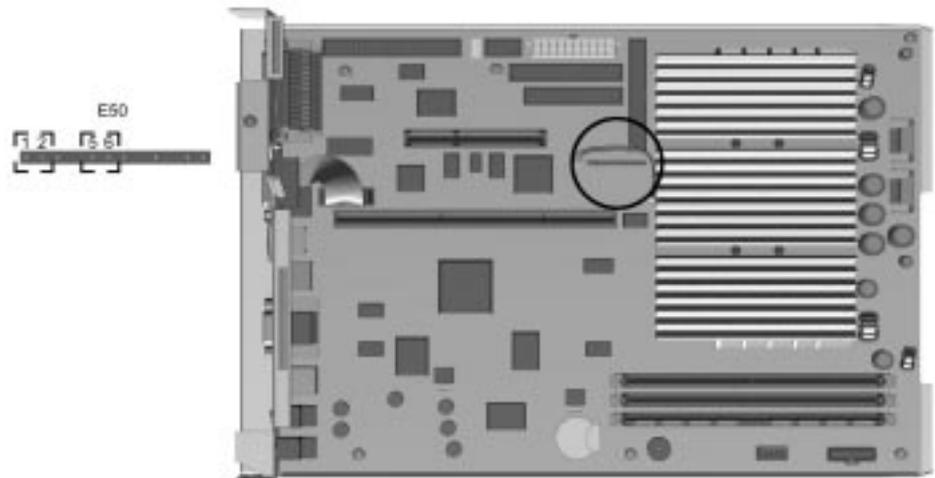
---

✍ Refer to Chapter 6 or Chapter 7 for computer disassembly and reassembly instructions.

3. Remove the computer cover or side panel and the expansion board cage.
4. Remove the jumper at E50 from pins 1-2.



*E50 Jumper and Location on Pentium-Based System Board*



*E50 Jumper and Location on Pentium II–Based System Board*

5. Place the jumper on pins 5-6 of E50 for at least one minute.
  6. After waiting at least one minute, replace the jumper on pins 1-2.
  7. Reassemble and restart the computer. Your password is erased from system memory.
- ✎ When you restart the computer, and the screen displays a message that says, “system options not set,” you should verify the system date and time.
8. Establish a new power-on password, if you wish.

## Smart Cover Sensor

Smart Cover Sensor is a combination of hardware and software technology that can alert you when the computer cover or side panel has been removed. There are three levels of protection, as described in the following table:

---

<b>Smart Cover Sensor Protection Levels</b>		
<b>Level</b>	<b>Setting</b>	<b>Description</b>
Level 0	Disabled	Smart Cover Sensor is disabled (default).
Level 1	Notify User	When the computer is restarted, the screen displays a message indicating that the computer cover or side panel has been removed.
Level 2	Setup Password	When the computer is restarted, the screen displays a message indicating that the computer cover or side panel has been removed. You must enter the Setup password to continue.

---

### Setting the Smart Cover Sensor Protection Level

To set the Smart Cover Sensor protection level, complete the following steps:

1. Access Computer Setup from the Compaq Utilities menu.
2. Select the Built-In Devices option.
3. Select the Security Management option.
4. Locate the Setup Password option and select Enable Setup Password, if not already established.

Follow the instructions on the screen to establish a setup password, then select OK.

5. Select a Smart Cover Sensor protection level, then select OK to exit the security management screen.

For more information about the various screen and configuration options, refer to Chapter 8, "Using Compaq Utilities."

6. Select File, Save Changes and Exit from the menu bar near the top of the screen.

## Smart Cover Lock

The Smart Cover Lock is a software-controllable cover lock, controlled by the setup password. This lock prevents unauthorized access to the internal components. Your computer ships with the Smart Cover Lock in the unlocked position.



**CAUTION:** For maximum cover lock security, be sure to establish a setup password. The setup password prevents unauthorized access to the Computer Setup utility.

---

### Locking the Smart Cover Lock

To activate and lock the Smart Cover Lock, complete the following steps:

1. Turn on the computer.
2. When the F10 Setup message appears in the lower-right corner of the Compaq logo screen, press the F10 key.
- ✎ If you do not press the F10 key while the message is displayed, you must turn the computer off, then on again to access the utility.
3. Press the Enter key to bypass the welcome screens and display the main menu.
4. From the main menu, select Computer Setup, and press the Enter key.
5. Select the Built-In Devices option.
6. Select the Security Management option.
7. Click the Advanced button.
8. Locate the Smart Cover Lock option and select Locked to enable it, then select OK twice to exit the Advanced screen and the Security Management screen.
9. For more information about the various screen and configuration options, refer to Chapter 8, “Using Compaq Utilities.”
10. Select File, Save Changes and Exit from the menu bar near the top of the screen.

## Unlocking the Smart Cover Lock

You can unlock the Smart Cover Lock by running Computer Setup and selecting Unlocked at the Smart Cover Lock option.

In case of hard drive failure, you can also unlock the lock by completing the following steps:

1. During POST, press Ctrl+F10.

If you have established a setup password, enter this password when the prompt appears.

The ROM-Based Setup Utility menu appears.

2. Select the Cover Lock Control option.
3. Select Unlock.
4. Select Save Changes and Exit to exit the utility.

## Using the Smart Cover FailSafe Key

If you enable the Smart Cover Lock and cannot enter your password to disable the lock, you will need a Smart Cover FailSafe Key to open the computer cover. You will need the key in any of the following circumstances:

- Power outage
- Start up failure
- PC component failure (e.g., processor or power supply)
- Forgotten password



**CAUTION:** The Smart Cover FailSafe Key is a specialized tool available from Compaq. Be prepared; order this Key before you need one.

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You can obtain the FailSafe Key by any one of the following methods:

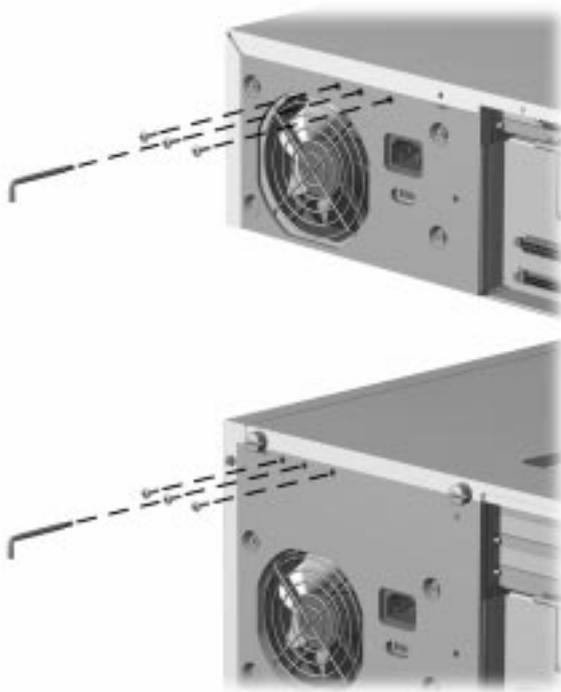
- Contact your authorized Compaq reseller or service provider.
- Refer to the Compaq World Wide Web site ([www.compaq.com](http://www.compaq.com)) for ordering information.
- Call the appropriate number found in the “Worldwide Telephone Numbers” table in Chapter 9, “Troubleshooting.”

To open the computer cover using the Smart Cover FailSafe Key, complete the following steps:

✎ If removing the Smart Cover Lock from a minitower computer, be sure to turn the computer on its side, with the side panel up, before removing the lock.

1. Remove the three tamper-proof screws securing the Smart Cover Lock, using the Smart Cover FailSafe Key.

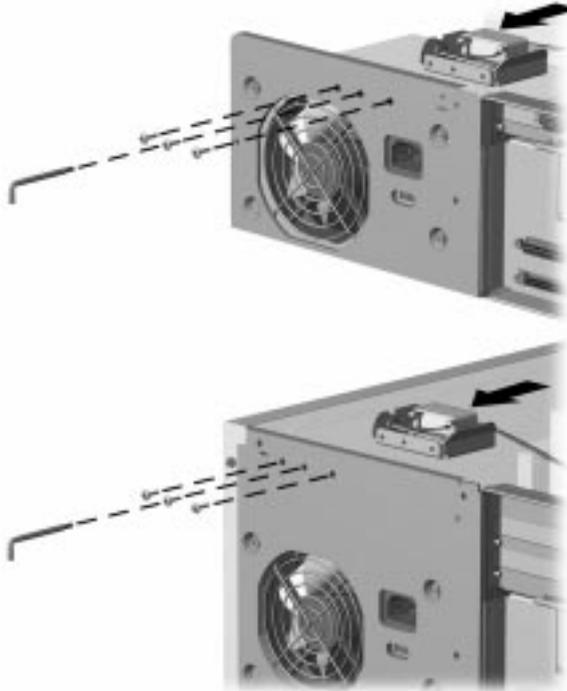
The Smart Cover Lock mechanism will drop off the bracket on the cover or side panel.



*Removing the Smart Cover Lock Screws*

2. Open the computer cover or side panel.

To reattach the Smart Cover Lock, secure the lock in place with the three tamper-proof screws.



*Reattaching the Smart Cover Lock*

## **QuickLock/QuickBlank**

QuickLock/QuickBlank disables the keyboard and mouse interface, and can blank the screen, without exiting application.

### **Enabling QuickLock and QuickBlank**

To enable the QuickLock and QuickBlank features, complete the following steps:

1. Turn on the computer.
  2. When the F10 Setup message appears in the lower-right corner of the Compaq logo screen, press the F10 key.
- ✎ If you do not press the F10 key while the message is displayed, you must turn the computer off, then on again to access the utility.

3. Press the Enter key to bypass the welcome screens and display the main menu.
4. Select Computer Setup from the main menu and press the Enter key.
5. Select the Built-In Devices option.
6. Select the Security Management option.
7. Select Enable Power-On Password.
8. Locate the QuickLock and QuickBlank items, in the Power-On Password section, and select Enable QuickLock of the Keyboard.



**CAUTION:** To ensure the security of QuickLock/QuickBlank, you must also disable the USB ports through Computer Setup to prevent the use of USB input devices.

---

9. Select any other QuickLock/QuickBlank preferences, then select OK to exit the Security Management screen.  
  
For more information about the various screen and configuration options, refer to Chapter 8, “Using Compaq Utilities.”
10. Select File, Save Changes and Exit from the menu bar near the top of the screen.

### **Disabling the Keyboard and Mouse Interface**

Once in an application, enter the QuickLock key combination (Ctrl+Alt+L).

The keyboard and mouse (or other input device connected to the mouse connector) is disabled. The application cannot be accessed, but remains in view, unless the QuickBlank feature is also enabled through the Computer Setup utility.

### **Enabling the Keyboard and Mouse Interface**

To enable the keyboard and input device connected to the mouse connector, enter the power-on password.

- ✎ For security reasons, the characters you type do not appear on the screen. The application will not be affected by the characters typed.

## Installing the Cable Lock Provision

The cable lock provision consists of a three-piece security bracket. The bottom part of the bracket is attached to the computer with a screw; the top part of the bracket covers the screw and prevents its removal.

- ✎ The security bracket can be used with a padlock to inhibit access to the interior of the computer, which prevents unwanted configuration changes or component removal. For increased security, a cable lock can be installed to secure the computer to a fixed object.

To install the security bracket, complete the following steps:

- ✎ Before installing the security bracket on a desktop computer, remove the thumbscrew or plastic pin from the screw hole in the center back of the computer.
  1. Separate the pieces of the security bracket by bending the metal where the three pieces join.
  2. Slide the tab on the narrow bracket into the notch on the back of the computer (center of desktop or upper-right corner of minitower), then slide the u-shaped bracket between the narrow bracket and the computer.
  3. Position the bracket over the screw hole and secure the bracket with the screw provided.
  4. Cover the screw with the flat portion of the security bracket.
  5. Install a padlock (not provided) to secure the top part of the security bracket and inhibit access to the inside of the computer. Install a cable lock (not provided) to inhibit access to the interior of the computer and secure the computer to a fixed object.



*Attaching a Security Bracket with Padlock*

## **Configuration Management**

Configuration Management features include:

- Remote ROM Flash
  - Remote Security Management
  - Remote Wakeup
  - Remote Shutdown
  - Replicated Setup
  - Advanced Configuration and Power Interface (ACPI)–ready hardware
  - Dual-state power button
  - Enhanced Support Software CD and World Wide Web Site
- ✍ Use of Remote ROM Flash and Remote Security Management requires an established setup password.

## Remote ROM Flash

Your computer comes with reprogrammable flash ROM (Read Only Memory). By establishing a setup password in Security Management, you can protect the ROM from being unintentionally updated or overwritten. This is important to ensure computer operating integrity. Should you need or want to upgrade your ROM, you may:

- Order an upgraded ROMPaq diskette from Compaq.
- Order the *Support Software CD for Compaq Desktop, Portable, and Workstation Products*.
- Download the latest ROMPaq images from the Compaq World Wide Web site ([www.compaq.com](http://www.compaq.com)).



**CAUTION:** For maximum ROM protection, be sure to establish a setup password. The setup password prevents unauthorized ROM upgrades.

---

## Upgrading Flash ROM

To upgrade the ROM after you receive an upgraded ROMPaq diskette, complete the following steps:

1. Insert the ROMPaq diskette in the diskette drive, enter the correct command, and the computer will prompt for the setup password.
2. Enter the setup password.

If the setup password is entered correctly, the ROMPaq utility will take over and run the flash ROM upgrade.

- ⚡ Do not turn off the power to your computer until the ROMPaq utility has completed the upgrade process.
  - ⚡ If the setup password is incorrectly entered, the procedure will terminate and no changes will be made to the ROM.
3. When the utility finishes upgrading the ROM, remove the diskette from the diskette drive and restart your computer.

## Using Remote ROM Flash

Remote ROM Flash allows the system administrator to safely upgrade the ROM on remote Compaq Deskpro personal computers, directly from the centralized network management console. Enabling the system administrator to perform this task remotely, on multiple computers, results in a consistent deployment of and greater control over Deskpro ROM images over the network. It also results in greater productivity and lower total cost of ownership.

Compaq created the Remote ROM Flash capability to be secure and fail-safe. All Deskpro ROMPaq ROM images from Compaq are digitally signed to ensure authenticity and minimize potential corruptions. The ROM firmware includes a FailSafe Boot Block that is protected during the flash process and allows the Deskpro to be restarted, in the unlikely event of an unsuccessful ROM flash.

Remote ROM Flash is performed in two stages:

1. System administrator uses the Remote Management Setup software on a centralized management console to prepare a Deskpro ROMPaq file.
2. System administrator uses a PC LAN management product, such as Microsoft SMS, Intel LANDesk Manager, or Symantec Norton Administrator for Networks, to distribute and execute the file over the network to remote Deskpros.

✍ Use of Remote ROM Flash requires an established setup password.

For more information on enabling Remote ROM Flash, refer to the online *Remote Management Administrators Guide*. The *Remote Management Administrators Guide* is included with the Remote Management Administration Tools, and is available on the *Support Software CD for Compaq Desktop, Portable, and Workstation Products* or at the Compaq Web Site at <http://www.compaq.com>.

## FailSafe Boot Block ROM

The FailSafe Boot Block ROM allows for system recovery in the unlikely event of a ROM flash failure, for example, if a power failure occurs during a ROM upgrade. The Boot Block is a flash-protected section of the ROM that checks to validate the system ROM each time power to the system is turned on.

- If the system ROM is valid, the system starts normally.
- If the system ROM fails the validation check, the FailSafe Boot Block ROM provides enough support to start the system from a ROMPaq diskette, which will program the system ROM with a valid image.

Because there is no video or hard drive support from the Boot Block ROM, the keyboard lights communicate information. When the Boot Block detects an invalid system ROM, the system sounds a series of beeps (one long and three short) and flashes the three keyboard lights.

To recover the system after hearing the FailSafe Boot Block beeps, complete the following steps:

1. Remove any diskettes from the diskette drive and turn off the power.
2. Insert a ROMPaq diskette into the diskette drive.
3. Turn on power to the system.

If a setup password has been established, the Caps Lock light will turn on.

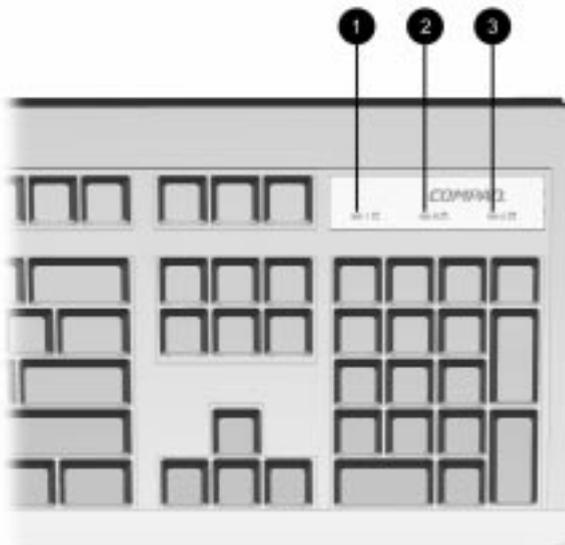
4. Enter the setup password.

When the system successfully starts from the diskette and reprograms the ROM, the three keyboard lights will turn on.

The following table lists the various keyboard light combinations, as well as the meaning and action associated with each combination.

## Keyboard Light Combinations

Num Lock ❶	Caps Lock ❷	Scroll Lock ❸	Meaning and Required Action
OFF	ON	OFF	System requires setup password. Enter the setup password. The light remains turned on until you enter a valid setup password.
ON	OFF	OFF	System could not start from diskette because the ROMPaq diskette is not present, is bad, or the drive is not ready. Insert a valid ROMPaq diskette, turn the power off, then turn the power on.
OFF	OFF	ON	ROM upgrade failed. Try another ROMPaq diskette. If the light remains turned on, contact Compaq customer support.
ON	ON	ON	ROM upgrade successfully completed. Turn power off and back on to resume normal system operation.



*Keyboard Lights*

## Remote Security Management

Remote Security Management allows the system administrator to safely set or modify security features on remote Compaq Deskpros, directly from the centralized network management console. Enabling the system administrator to perform these tasks remotely, on multiple computers, results in consistent deployment of and greater control over Deskpro security parameters over the network. It also results in greater productivity and lower total cost of ownership.

✍ Use of Remote Security Management requires an established setup password.

Remote Security Management is performed in two stages:

1. System administrator uses the Remote Management Setup software on a centralized management console to define the security parameters.
2. System administrator uses a PC LAN management product to distribute the settings over the network to remote Compaq Deskpro personal computers.

For more information about the Remote Management Setup software and enabling Remote Security Management, refer to the online *Remote Management Administrators Guide*. The *Remote Management Administrators Guide* is included with the Remote Management Administration Tools, and is available on the *Support Software CD for Compaq Desktop, Portable, and Workstation Products* or at the Compaq Web Site at <http://www.compaq.com>.

## Remote Wakeup and Remote Shutdown

Remote Wakeup and Remote Shutdown allow a system administrator to power on and power off a client computer from a remote location, supported by PC LAN management tools. This enables cost-effective power consumption when the administrator needs to distribute software or update ROM.

✍ Remote Wakeup allows the network interface controller to continue functioning, even when power to the computer has been turned off; however, the computer continues to consume electricity. Only when you disconnect the power cord from the electrical outlet does the computer stop consuming electricity.

To enable Remote Wakeup, complete the following steps:

1. Double-click the Network icon, located in the Control Panel.
2. Double-click the Compaq Netelligent 10/100 TX Embedded UTP Controller.
3. Select the Advanced Properties tab.
4. Select Remote Wakeup.
5. Change the value to ON.
6. Exit the Network control application.

For more information on using Remote Wakeup and Remote Shutdown, refer to the online *Remote Management Administrators Guide*. The *Remote Management Administrators Guide* is included with the Remote Management Administration Tools, and is available on the *Support Software CD for Compaq Desktop, Portable, and Workstation Products* or at the Compaq Web Site at <http://www.compaq.com>.

✍ Third-party software tools may be required to remotely distribute software.

## Replicated Setup

The Replicated Setup feature gives an administrator the ability to easily copy one Deskpro Setup configuration to other Deskpro computers of the same model. This allows for faster, more consistent configuration of multiple Deskpro computers.

## Using Replicated Setup

To use Replicated Setup in Computer Setup, complete the following steps:

1. Access Computer Setup from the Compaq Utilities menu. Refer to Chapter 8, “Using Compaq Utilities,” for more information.
2. Use Computer Setup to select the settings for the Replicated Setup.
3. Select File, Save System Configuration from the menu bar, and follow the instructions on the screen.
4. To restore the Replicated Setup, select File, Restore System Configuration from the menu bar, and follow the instructions on the screen.

For help on specific features provided by the Computer Setup, click Help.

## Dual-State Power Button

You can configure the dual-state power button to function as a suspend button. This feature enables quick recovery from a very low power state and promotes decreased power usage. Your computer ships with the power button configured in the On/Off mode.

 You can configure the dual-state power button to function as a suspend button only when using the Microsoft Windows 95 operating system.

To configure the power button to function as a suspend button, complete the following steps:

1. Access Computer Setup from the Compaq Utilities menu.
2. Select the Built-In Devices option.
3. Select the Power Management option.
4. Select Suspend in the Power Button Mode section.

For more information about the various screen and configuration options, refer to Chapter 8, “Using Compaq Utilities.”

5. Select File, Save Changes and Exit from the menu bar near the top of the screen.

After configuring the power button to function as a suspend button, press the power button to put the system in a very low power state (suspend). Press the button again to quickly bring the system out of suspend to full power status. To completely turn off all power to the system, press and hold the power button for four seconds.

- ✎ If you have selected the “Blink LED during Energy Save” option in Computer Setup, the power-on light will blink once every two seconds while the computer is in Suspend. Refer to Chapter 8, “Using Compaq Utilities,” for more information.

### **Establishing Power Management Settings**

Use Computer Setup, accessible through the Compaq Utilities menu, to establish, modify, or disable Power Management features. Refer to Chapter 8, “Using Compaq Utilities,” for more information.

- ✎ Disable monitor timeouts in Computer Setup first, then establish the settings in Windows 95, to avoid potential conflicts.

Use Display Properties to establish, modify, or disable Power Management settings for the monitor. To access Display Properties, right-click on the Windows 95 Desktop, then choose Properties.

### **Enhanced Support Software CD and World Wide Web Site**

Compaq engineers rigorously test and debug software developed by Compaq and third-party suppliers, and develop operating-system specific support software, to ensure the highest level of performance, compatibility, and reliability for Compaq personal computers.

When making the transition to new or revised operating systems, it is important to implement the support software designed for that operating system. If you plan to run any of the following operating systems on your computer, you must install corresponding Compaq device drivers and utilities to ensure all features are supported and functioning properly:

- Microsoft Windows 3.1
- IBM OS/2
- Microsoft Windows NT Workstation 3.51
- A version of Microsoft Windows 95 or Microsoft Windows NT Workstation 4.0 that is different from the version included with your computer

 To determine which version of Microsoft Windows is installed on your computer, double-click the System icon in the Windows Control Panel, then click the General tab.

Compaq has made the task of locating, accessing, evaluating, and installing the latest support software easier. There are three methods you can use to access support software:

- You can order the *Support Software CD for Compaq Desktop, Portable, and Workstation Products*. This compact disc contains the latest device drivers, utilities, and flashable ROM images needed to run MS-DOS, Microsoft Windows 3.1, Windows 95, Windows NT Workstation, and IBM OS/2 on your Compaq commercial desktop product.
- You can download the software from the Compaq World Wide Web site ([www.compaq.com](http://www.compaq.com)).

 Both the CD and the web site include *The Locator with Decision Support*, a comprehensive listing of the device drivers, utilities, flashable ROM images, and more, categorized by operating system, personal computer family, and model for easy retrieval. *Decision Support* provides detailed information for each piece of support software, including descriptions, features, enhancements, dependencies, and update criticalities.

- You can purchase backup diskettes.

If you choose to purchase the *Support Software CD*, you have two options:

- You can purchase a single CD-ROM that gives you one-time access to the latest support software (North America only, Compaq part number 272505-001).
- You can purchase a yearly subscription that delivers up to 12 monthly CD-ROMs (Compaq part number 183426-xxx).

The annual subscription ensures your continuous access to the latest developments.

To order the CD or backup diskettes, call the appropriate number found in the “Worldwide Telephone Numbers” table in Chapter 9, “Troubleshooting.”

- ✍ If you call Compaq to place an order, be sure to have the serial number of your computer available. The serial number is on the right-hand side of your computer, near the system lights. This number is necessary for all purchases.

## **Compaq Integrated Software**

The *Support Software CD for Compaq Desktop, Portable, and Workstation Products* and the Compaq World Wide Web site ([www.compaq.com](http://www.compaq.com)) include bundles of appropriate support software ready for automated installation on top of an off-the-shelf Microsoft operating system. You can use these software bundles to quickly and easily install the correct Compaq Deskpro device drivers and other software required for top performance. The bundles also allow you to reinstall the software originally installed on your Compaq Deskpro personal computer.

## **Universal Driver Manager**

Compaq has created a Universal Driver Manager (UDM) that supports all Compaq QVision, S3, Cirrus Logic, and Matrox graphics controllers found on Compaq Deskpro products. The UDM eases graphics driver deployment across all Compaq Deskpro platforms ensuring cross-compatibility and backward-compatibility. The resulting solution enables customers to manage and control ongoing software maintenance costs. The UDM is available on the *Support Software CD for Compaq*

*Desktop, Portable, and Workstation Products* and the Compaq World Wide Web site ([www.compaq.com](http://www.compaq.com)).

## **Ordering Backup Diskettes**

To protect your software from loss or damage, you should keep a copy of all system software, applications, and related files that are stored on your hard drive. You can order a set of backup diskettes from Compaq at nominal cost, or you can make your own backup diskettes, tapes, or discs.

You can order backup diskettes from Compaq for all of the software preinstalled on your computer. You can order all software as a single set, or you can order the various software packages separately.

✍ Before calling Compaq to place your order, be sure to have the serial number of your computer available. This number is necessary for all diskette purchases.

Compaq authorized, dealers, resellers, and service providers can tell you what backup software combinations are currently available for your computer. For a list of Compaq support telephone numbers, see Chapter 9, “Troubleshooting.”

## **Integration Management**

Integration Management features include:

- Desktop Management Interface
- Compaq Insight Manager and the Insight Management Agents
- Compaq Desktop Management Solutions Partners Program
- Systems Management Partners Program

## **Desktop Management Interface**

The Desktop Management Task Force (DMTF) is an industry body created in 1992 with the goal of standardizing systems manageability. DMTF established the Desktop Management Interface (DMI) framework to standardize access to PC configuration data. Compaq, as a Steering Committee and Technical Committee member of the DMTF, delivers hardware and software instrumentation that supports the DMI standard.

For more information on configuring the DMI software, refer to the online *Intelligent Manageability Guide*.

## **Compaq Insight Manager and the Insight Management Agents**

Using the industry-standard Simple Network Management Protocol (SNMP) found in Microsoft Windows 95 and Windows NT Workstation, Compaq has continued the migration of management tools from servers to desktops by enhancing Compaq Insight Manager. Compaq Insight Manager allows the LAN administrator to remotely view AssetControl data, configuration data, memory change alerts, NIC performance data, and contact information. The tool also provides access to the Fault Management features of the Compaq Deskpro Personal Computer.

For more information on integrating with Insight Manager and configuring the Compaq Insight Management Agents, refer to the online *Intelligent Manageability Guide*.

## **Compaq Management Solutions Partners Program**

Compaq delivers desktop management solutions today under Microsoft Windows 3.1, Windows 95, and Windows NT Workstation through the Compaq Management Solutions Partners Program. This Compaq initiative ensures compatibility and integration of AssetControl features with leading PC LAN management products. These products provide remote access to the AssetControl features so that LAN and PC administrators can manage Compaq Deskpro Family of Personal Computers information from a central location. The partnership ensures that the benefits of Intelligent Manageability are accessible through a broad range of vendors. This allows customers to use their tools of choice to remotely manage their Compaq Deskpro computers more confidently and cost effectively.

In addition to integrating Intelligent Manageability features with the PC LAN management applications highlighted above, Compaq also integrates these features with industry-leading enterprise management platform applications. This Compaq initiative ensures compatibility and integration of AssetControl and Fault Management features with tools that manage servers, hubs, routers, uninterruptible power supplies (UPSs), and other network devices. The result is an end-to-end solution that enables management of the entire enterprise from single console.

Compaq Management Solutions Partners include:

- ASI (AssetPRO)
- BindView (BindView Console)
- BMC Software (Patrol)
- Boole & Babbage (COMMAND/Post)
- Cabletron (SPECTRUM Enterprise Manager)
- Hewlett Packard (Compaq Insight Manager for OpenView)
- Intel (LANDesk Management Suite)
- McAfee Associates (Saber LAN Workstation)
- Microsoft Corporation (Systems Management Server)
- Novell (ManageWise)
- Seagate (LAN Directory and NerveCenter)
- Symantec (Norton Administrator for Networks)
- Tally Systems (NetCensus)
- Tivoli (TME10 and Compaq Insight Manager for TME10 NetView)

For more information on integrating with PC LAN management or enterprise management platform applications, refer to the online *Intelligent Manageability Guide* or to the Compaq World Wide Web site ([www.compaq.com](http://www.compaq.com)).

# chapter 3

## USING THE GRAPHICS FEATURES

### Graphics Capabilities

Your computer offers one of three levels of graphics support, depending on the model:

- Enhanced 64-Bit Graphics with 3D Acceleration, provided by the S3 ViRGE/GX graphics controller
- Matrox Performance Graphics, provided by the Matrox MGA 1064-SG graphics controller
- Matrox Millennium-II AGP Graphics

These controllers are high-performance PCI or AGP graphics controllers, offering 3D graphics support. The quality of the picture you see depends on the resolution capabilities of your monitor and the number of colors that the graphics controller can display.

- The S3 Enhanced 64-bit and Matrox Performance graphics controllers come standard with 2 megabytes of SGRAM and are upgradable to 4 megabytes of SGRAM.
- The Matrox Millennium-II AGP graphics controller comes standard with 4 megabytes of WRAM and is upgradable to 16 megabytes of WRAM.

The graphics controllers support the following resolutions and number of colors:

<b>Maximum Color Support</b>							
	<b>S3 Enhanced 64-Bit</b>		<b>Matrox Performance</b>		<b>Matrox Millennium-II</b>		
<b>Resolution</b>	<b>2 MB SGRAM</b>	<b>4 MB SGRAM</b>	<b>2 MB SGRAM</b>	<b>4 MB SGRAM</b>	<b>4 MB WRAM</b>	<b>8 MB WRAM</b>	<b>16 MB WRAM</b>
1600 × 1200	n/a	n/a	n/a	n/a	65,536	16.7 million	16.7 million
1280 × 1024	256	65,536	256	65,536	16.7 million	16.7 million	16.7 million
1024 × 768	65,536	16.7 million	65,536	16.7 million	16.7 million	16.7 million	16.7 million
800 × 600	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million
640 × 480	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million

### **Installing Matrox Power Desk Software**

If your computer includes a Matrox graphics controller, you will need to install the Matrox Power Desk software. Install the software by double-clicking the Matrox Power Desk icon on the Windows desktop.

### **Changing Monitor Type Manually**

Plug and Play monitors are automatically detected. If you are not using a Plug and Play monitor, you can manually select or change the monitor brand, model, refresh rates, color depth, and resolution.

### **S3 Enhanced 64-Bit Graphics with 3D Acceleration**

To select a monitor, complete the following steps:

1. Right-click on your Windows 95 desktop area and select Properties from the menu.
2. Select the Settings tab.
3. Click the Advanced Properties button.
4. Select the Monitor tab.
5. Click the Change button.
6. Select Show All Devices.

7. Select the monitor Manufacturer and Model.  
If your monitor does not appear in the list, proceed to steps 9 and 10.
8. Click OK.
9. Click Have Disk if your monitor does not appear in the list above, and you wish to install your monitor using an installation disk provided with your monitor.
10. Insert the manufacturer's installation disk into drive A and click the OK button.

 To display driver information, click the Compaq tab, located in Display Properties.

### **Matrox Performance and Matrox Millennium-II Graphics Controller**

Use the MGA Panel to select a monitor type, configure 3D accelerations, and obtain information about the Matrox graphics controller installed in your computer.

To access the MGA Panel, double-click the MGA Panel icon, located in the Windows Control Panel.

#### **Monitor Tab**

Access the Monitor tab to select a monitor. Complete the following steps:

1. Click the Monitor tab in the MGA Panel.
2. If you have multiple graphics controllers or monitors installed, choose the Millennium-II board ID first, at the upper-right corner of the page.
3. Select the monitor controlled by the Millennium-II graphics controller.
4. Perform this procedure for each graphics controller that you have installed.
5. Click Save and restart your computer when prompted to do so.

## Configuration Tab

Access the Configuration tab to select 3D acceleration and language preferences. Complete the following steps:

1. Click the Configuration tab in the MGA Panel.
2. Enable 3D acceleration preferences (Z Buffer, Double Buffer, or Sub Pixel Precision) by clicking to place an arrow in the appropriate box or boxes.
3. Disable 3D acceleration preferences by clicking to remove the arrow from the appropriate box or boxes.
4. Select your language preference for the MGA Panel text by choosing the appropriate language in the language box.

## Information Tab

Access the Information tab to obtain Matrox hardware information, including the following:

- graphics controller board type
- graphics controller board serial number
- amount of video memory (WRAM)
- video BIOS version
- memory mapping
- RamDAC speed

## About Tab

Access the About tab to obtain Matrox software information, including the following:

- graphics controller driver version
- current resolution settings
- current pixel depth settings
- current refresh rate settings
- available 3D acceleration settings

## **Changing Graphics Resolution and Monitor Refresh Rate**

Although the setup utility automatically selects the initial display configuration, you can manually change the graphics resolution and the monitor refresh rate to match a specific software program or to suit your personal preferences.

 The procedure for each graphics controller is specific to the operating system preinstalled on that computer model.

### **S3 Enhanced 64-Bit Graphics Controller with 3D Acceleration**

To change the resolution, color depth, and refresh rate, complete the following steps:

1. Right-click on your Windows 95 desktop area and select Properties from the menu.
2. Select the Settings tab to change the resolution and color depth.
3. Select the Compaq tab to change the monitor refresh rate.

 The resolution and color palettes supported depend upon your graphics controller and monitor type. To display driver information, click the Compaq tab.

### **Matrox Performance and Matrox Millennium-II Graphics Controller**

To change the resolution, complete the following steps:

1. Double-click the Display icon, located in the Microsoft Windows NT Control Panel.
2. In the Desktop Area box, drag the pointer to the appropriate resolution.
3. In the Color Palette box, select the number of colors you want to display.

 The refresh rate is determined by the monitor selected from the MGA Panel Monitor tab.

## Upgrading Graphics Capabilities

To install an upgrade module onto the graphics controller, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the cover or side panel. If upgrading a minitower computer, turn the computer on its side.



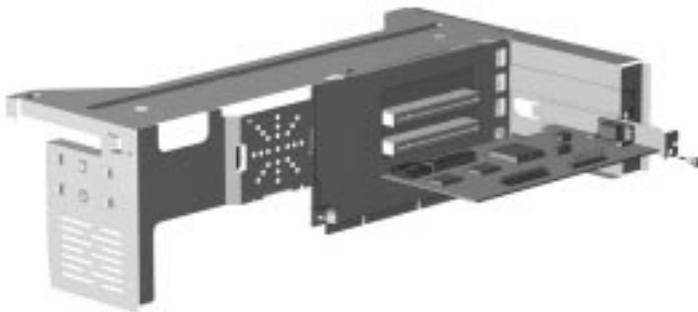
**CAUTION:** Static electricity can damage the electronic components of the computer or optional boards. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix F for more information.

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3. Remove the expansion board cage.

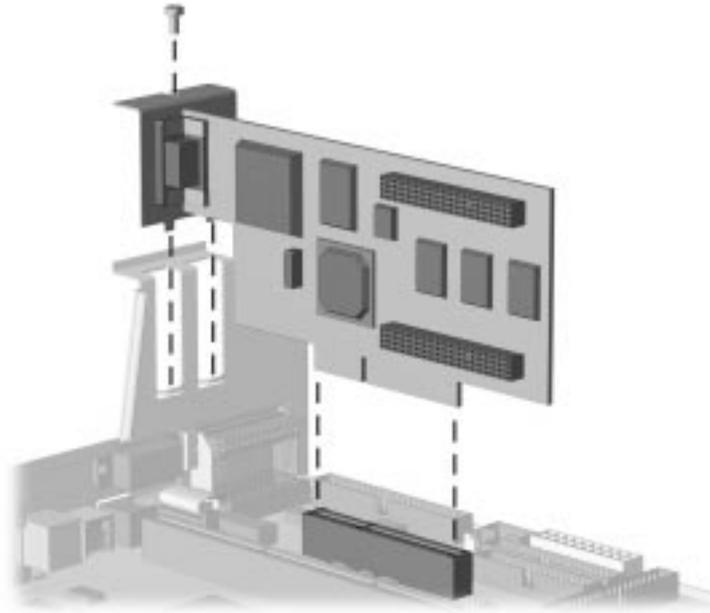
If you are upgrading the Matrox Millennium-II graphics controller, skip to step 5.

4. Remove the screw at the side of the expansion slot and remove the graphics controller board. Go to step 6.



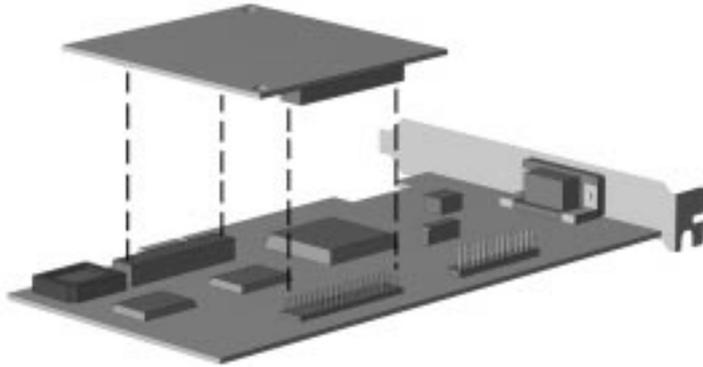
*Removing a Graphics Controller from a PCI Expansion Slot*

5. Remove the Matrox Millennium-II graphics controller from the AGP slot. Continue to step 6.

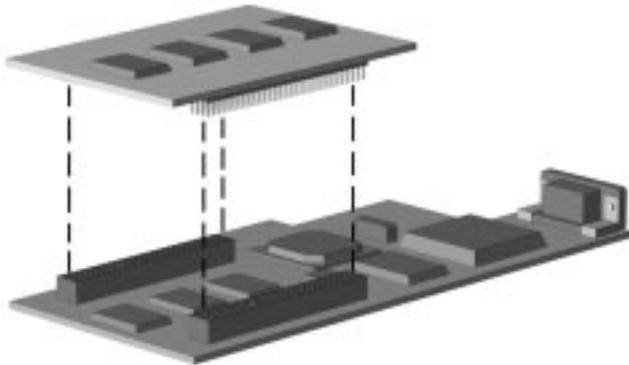


*Removing the Matrox Millennium-II Graphics Controller from the AGP Slot*

6. Place the graphics controller on a grounded, flat surface and install the appropriate upgrade memory module as illustrated below.



*Installing an Upgrade Memory Module on the S3 Enhanced 64-Bit or Matrox Performance Graphics Controller*



*Installing an Upgrade Memory Module on the Matrox Millennium-II Graphics Controller*

7. Replace the graphics controller into the same slot.
8. Replace the screw into the expansion slot, if upgrading a board that resides in the expansion board cage.

9. Replace the expansion board cage into the computer chassis and replace the cover or side panel.
10. Change the resolution to take advantage of the additional display modes now available with the upgraded memory. Refer to “Changing Graphics Resolutions and Refresh Rate” in this chapter for more information.
11. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
12. Test the system (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities,” for more information.



# chapter 4

## USING NETWORK COMMUNICATIONS

Your computer comes network ready, which means that it has an embedded network controller and preinstalled network device drivers. Access to a computer network immediately increases your productivity potential. Once your network connection is active, you can share resources such as a printer, exchange information from computer to computer, and run common software programs.

The Compaq Netelligent 10/100 TX Embedded UTP Controller automatically senses the data throughput speed of the network, 10Base-T or 100Base-TX, and configures itself appropriately.

- ✎ 100 Base-TX operation requires the use of Category 5 UTP cable with an RJ-45 network connection.

The controller also features Remote Wakeup, which allows the system administrator to power on a client computer from a remote location, through the use of supported PC LAN management tools.

- ✎ Remote Wakeup support is available only when using an RJ-45 network connection.

For more information on Remote Wakeup, refer to the Power Management section of Chapter 2, “Understanding and Using Intelligent Manageability,” or to the online *Remote Management Administrators Guide*. The *Remote Management Administrators Guide* is included with the Remote Management Administration Tools, and is available on the *Support Software CD for Compaq Desktop, Portable, and Workstation Products* or at the Compaq Web Site at <http://www.compaq.com>.

## *Identifying the Network Connectors*

The following Ethernet connectors are built into the computer on the rear panel:

- RJ-45 (8-pin) connector
- AUI (15-pin) connector

## *Enabling the AUI Connector*

The network can only be active on one connector or the other. By default, your computer is configured for 10/100 operation with the RJ-45 connector. To enable the AUI connector, complete the following steps:

1. Double-click the Network icon, located in the Control Panel.
2. Double-click the Compaq Netelligent 10/100 TX Embedded UTP Controller.
3. Select the Advanced Properties tab.
4. Select Media Connector.
5. Change the value to AUI.
6. Exit the Network control application.

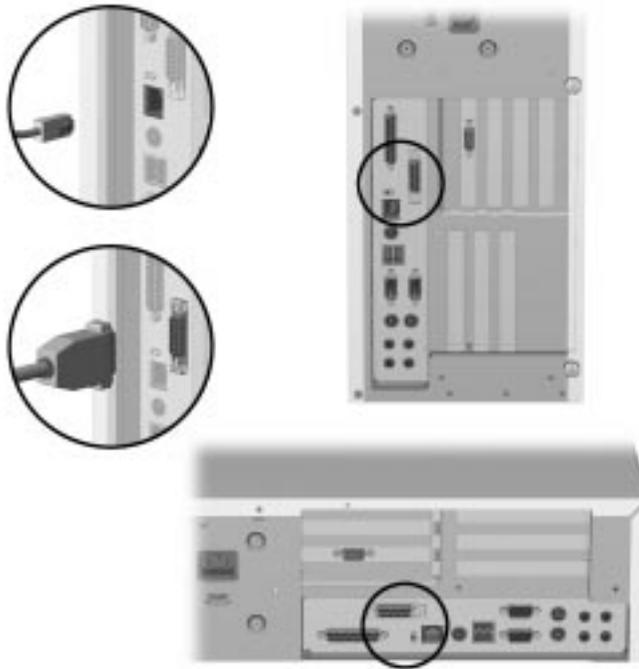
You will be prompted to restart your computer in order for the changes to take affect.

## *Connecting to an Ethernet Network*

To connect to an Ethernet network, complete the following steps:

1. Using the network cable appropriate for your network, connect one end of the network cable to the main network connection.
2. Connect the other end of the cable to the appropriate network connector on your computer.
3. Ensure that both connections are secure.

✍ The following illustration shows the position of the network connectors on the rear panel of the Pentium-based models. The network connectors are located in the same relative position on the Pentium II-based models.



**Attaching a Network Cable to a Network Connector on the Computer**

### *Interpreting the Network Status Lights*

The rear panel has two network status lights for the RJ-45 connector. The yellow link light will illuminate when the network driver is properly loaded and the system is physically connected to an active network.

- During 10Mbps operation, the link light indicates that the system is receiving link pulses from the network.
- During 100Mbps operation, the link light indicates scrambler lock and the receipt of valid idle codes.

The green activity light illuminates when the computer detects network activity. When the system is connected to a highly used network, the activity light will remain on almost constantly.

If Remote Wakeup is enabled, the link and activity lights will remain functional even when power to the computer is turned off.

## *Disabling the Autosensing Capabilities*

Your computer automatically senses if the attached network supports 10Mbps or 100Mbps and configures itself accordingly. This process of determining the maximum network operating speed is known as autosensing. The computer begins autosensing whenever it loses a valid network link, for example, if the cable is disconnected.

In addition to determining the network operating speed, the computer determined if full-duplex is supported. Full-duplex systems can transmit and receive information on the network simultaneously. Half-duplex systems cannot transmit and receive simultaneously. The different modes of operation are:

- 100Base-TX, full-duplex
- 100Base-TX, half-duplex
- 10Base-T, full-duplex
- 10Base-T, half-duplex

If necessary, you can disable the autosensing capabilities and force the system into the correct operating mode. To set the network operating mode manually, complete the following steps:

1. Double-click the Network icon, located in the Control Panel.
2. Double-click the Compaq Netelligent 10/100 TX Embedded UTP Controller.
3. Select the Advanced Properties tab.
4. Select Media Speed and change the value from AUTO to 10Mbps or 100Mbps, depending on the capabilities of your network.
5. Select Duplex Settings and change the value from AUTO to Full or Half, depending on the capabilities of your network.
6. Exit the Network control application.

You will be prompted to restart your computer in order for the changes to take affect.

## *Installing the Network Drivers*

The device drivers in the network software enable the computer to communicate with the network.

- ✎ Device drivers are supplied for Windows 95 or Windows NT Workstation, depending on the computer model. If you are using another operating system, device drivers may be installed from diskettes included with the network operating system or are available from Compaq. If reinstallation ever becomes necessary, use your backup diskettes and complete the following installation instructions. If you did not create your backup diskettes, then order these diskettes from Compaq, using the information in Chapter 2, “Understanding and Using Intelligent Manageability.”

Complete instructions for installing the network device drivers are available in the file: *C:\CPQNET\README.TXT*.

### *Changing the Default Configuration*

To change the default configuration settings, run the Computer Setup utility. Refer to Chapter 8, “Using Compaq Utilities,” for more information.



# chapter 5

## USING THE LS-120 AND CD-ROM DRIVES

### Using the LS-120 Diskette Drive

Some Deskpro models feature the LS-120 drive, which accepts 1.44-megabyte and 720-Kbyte diskettes, but also retrieves and stores data on 120-megabyte diskettes. 120-megabyte diskettes are available from your Compaq authorized dealer or reseller.

- ✍ To learn more about using the LS-120 Drive with various operating systems, please refer to the ASCII text file located at *C:\LS120.TXT* on your computer.

### Inserting and Removing Diskettes

Diskette insertion and removal is the same for the LS-120 drive as it is for a standard 1.44-megabyte diskette drive.

- ✍ Be sure to wait until the diskette drive light is off before you remove the diskette from the diskette drive. When the drive light is on, the drive is either reading information from the diskette or storing information on the diskette. Removing the diskette during either of these operations may damage the diskette drive or cause you to lose information.

If the diskette fails to eject automatically, or if the power to the computer is turned off, you can remove the diskette manually by using the emergency eject feature.

To manually eject an LS-120 diskette, complete the following steps:



**CAUTION:** Before beginning this procedure, be sure to turn off the power to your computer and disconnect the power cord from the electrical outlet.

1. Insert a metal rod (approximately 1/16 inch in diameter and at least 1 3/8 inches in length [1.2 mm × 35 mm]) into the emergency eject hole, found in the center of the eject button ❶, and push firmly.

✍ You may use a straightened paper clip to eject the diskette manually.



*Manually Removing a Diskette from the LS-120 Drive*

2. Slowly pull out the diskette from the drive to remove it.
- ✍ After manually removing a diskette, and before shipping your computer, be sure to turn on power to the computer to allow the diskette drive to reset the eject mechanism.

## **Creating Windows Disks**

If you create a Windows 95 startup disk, use a 1.44-megabyte diskette. A 120-megabyte diskette will not boot correctly.

The Windows 95 Create System Disks utility, which creates a complete set of Windows 95 Setup Disks, is designed for use with 1.44-megabyte diskettes. Do not use 120-megabyte diskettes.

If you create a Windows NT repair disk, use a 1.44-megabyte diskette. A 120-megabyte diskette will not boot correctly.

## **Installing or Restoring Windows 95**

If you try to install Windows 95 from retail diskettes, or to restore Windows 95 from backup system disks created with the Create System Disks utility, at some point the system will be unable to find files on drive A. At this point, you must specify that the diskettes are in drive D. After the Windows 95 installation is complete, you need to reinstall the LS-120 device drivers. These drivers are available from Compaq on the *Support Software CD for Compaq Desktop, Portable, and Workstation Products*.

## **Copying Diskettes**

Use the XCOPY command to copy 120-megabyte diskettes; the DISKCOPY command will not work with these diskettes.

## **Formatting Diskettes**

120-megabyte diskettes are preformatted, so you do not need to format a new 120-megabyte diskette before using it. However, you may use Quick Format in Windows 95 or Windows NT to erase a diskette, or, if you have a diskette that is no longer usable, you may use Full Format to reformat the diskette.

### **High-Level Format**

To perform a high-level format, complete the following steps:

1. Double-click My Computer on the Windows 95 or Windows NT desktop.
2. Highlight the diskette drive.
3. Select File, Format.
4. Select Quick Format to erase a serviceable diskette or Full Format to format a damaged diskette.

A Full Format will take approximately 30 minutes.

## Low-Level Format

If the diskette has a damaged low-level format, or if the diskette has been bulk erased, the high-level format process will fail. If that happens, you should perform a low-level format with the utility provided by Compaq.

- ✎ The following procedure applies to the Windows 95 environment only. Windows NT users should restart the computer from a DOS diskette, then run the FMTLS120 command. MS-DOS and Windows 3.1 users should run the FMTLS120 command from MS-DOS.

To perform a low-level format, complete the following steps:

1. Select Shut Down... on the Start menu.
2. Select Restart the Computer in MS-DOS Mode.
3. When the command prompt appears, enter the following command:

```
CD\LS120
```

4. Enter the following command, where X: is the drive designation of the LS-120 drive:

```
FMTLS120 X:
```

A low-level format will take approximately 40 minutes.

5. When the low-level format is complete, perform a high-level format by following the previous procedure.

## Using the CD-ROM Drive

Some Compaq Deskpro models feature a standard, slot-load 16X MAX or 24X MAX CD-ROM drive. The drive is a random access, read-only storage device capable of retrieving data from removable compact disc media, which can store up to 680 megabytes of digital information. The components on the front panel of the drive are shown and described in Chapter 1, "The Computer at a Glance."

## Inserting and Removing a CD-ROM or Compact Disc

With the computer turned on, you can insert a disc by sliding the disc into the slot ❶ on the front panel of the drive.

The drive performs a diagnostic check and automatically begins reading the table of contents. The busy indicator turns amber while the drive reads the table of contents.

✎ The disc automatically ejects if the disc is upside down, not properly aligned in the drive, or if any other condition prevents the drive from reading the disc.

When the busy indicator turns amber, the drive is ready to receive commands and data may be retrieved from the disc.



### *Inserting and Removing a Disc*

To remove the disc, press the eject button ❷ on the front panel of the drive. You must remove the disc before turning off power to the computer.

- ✎ Certain applications or operating system software may disable the eject button to prevent accidental damage to the disc. If the eject button is disabled by the application software, it will not operate.

## **Enhanced Business Audio**

CD-ROM drive models include an Enhanced Business Audio subsystem that provides sound capabilities in the Microsoft Windows operating environment.

The audio system allows you to integrate voice messages and music directly into your computer files. Using the supplied microphone, you can record sounds as data on the hard drive. This sound data may be used in many ways; for example, you can enhance presentation data with voice and music.

The audio system on Pentium II–based CD-ROM models includes Spatializer 3D technology. This technology manipulates the signal to sound as if there are two “phantom” rear speakers.

- ✎ To take advantage of the Spatializer 3D technology, you will need to use amplified external speakers.

## **Using Audio Compact Discs**

If you have loaded an audio compact disc and you want to advance the disk to either the first track or the next track, click Start, then select Programs, Accessories, Multimedia.

- ✎ Some software compact discs take control of the hardware volume controls. If this occurs, adjust the sound before starting the software.

## **CD-ROM Drive Precautions**

Be sure to observe the following guidelines while operating or cleaning your CD-ROM drive.

### **Operation**

- Do not move the drive during operation. This may cause it to malfunction during reading.
- Avoid exposing the drive to sudden changes in temperature, as condensation may form inside the unit. If the temperature suddenly changes while the drive is on, wait at least one hour before you turn off the power. If you operate the unit immediately, it may malfunction while reading.
- Avoid placing the drive in a location that is subject to high humidity, extreme temperatures, mechanical vibration, or direct sunlight.

### **Cleaning**

- Clean the panel and controls with a soft, dry cloth or a soft cloth lightly moistened with a mild detergent solution. Never spray cleaning fluids directly on the unit.
- Avoid using any type of solvent, such as alcohol or benzene, which may damage the finish.

### **Safety**

If any object or liquid falls into the drive, immediately unplug the computer and have it checked by an authorized Compaq service provider.



# *chapter* 6

## UPGRADING THE DESKTOP COMPUTER

This chapter explains how to remove the computer cover and install the following optional, upgrade equipment:

- Additional memory
- Expansion board
- Optional drive
- External infrared transceiver

This chapter also includes information about when to reconfigure the computer to ensure that it recognizes the newly installed equipment.

### Installation Sequence

To familiarize you with the process, a summary of the installation and configuration sequence begins this chapter. It is very important that you follow this sequence of steps to ensure the proper installation of any optional equipment.

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. If the computer is already on, turn it off and disconnect the power cord from the wall outlet.



**WARNING:** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching.



**WARNING:** To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications/telephone connectors into the network interface controller (NIC) receptacles.



**CAUTION:** Static electricity can damage the electronic components of the computer or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix F for more information.

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3. Open the computer by removing its outside cover and front bezel. Refer to the sections “Removing the Computer Cover” and “Removing the Front Bezel” in this chapter for instructions.
4. Install any optional equipment (ISA or PCI expansion board, processor upgrade, memory, drive). Refer to the applicable sections or the documentation that comes with the optional equipment for instructions.
5. Replace the front bezel and computer cover.
6. Turn on the monitor, computer, and any devices you want to test.
7. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for instructions.
8. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
9. Test the computer (optional) using the TEST utility.

## When to Reconfigure the Computer

System configuration is the process of specifying the devices and programs that make up a computer system. When you add or remove optional equipment, or add a second diskette drive, you must reconfigure the computer to recognize these changes.

Windows 95 and Windows NT automatically recognize all Plug and Play devices installed. However, if the device is not a Plug and Play device or is not installed properly, follow these instructions:

1. Go to the Control Panel.
2. Select the Add New Hardware icon.
3. Follow the instructions on the screen.

## Serviceability Features

The Compaq Deskpro 4000 and 6000 Series of Personal Computers include features that make it easier to upgrade or service your computer.

### Using the Quick Release Cover Latches

The Quick Release Cover Latches located on the sides of the computer allow easy removal of the computer cover without the use of tools or thumbscrews. Slide the cover latches toward the front of the computer to unlock the cover. Slide the cover latches toward the back of the computer to secure the cover. The latches are labeled with locked and unlocked padlock icons to identify the position of the latches.



**CAUTION:** Be sure the cover latches are securely fastened before lifting the computer.

---

## Removing the Computer Cover

To install optional equipment, you must remove the computer cover to gain access to the drive bays or expansion slots you want to use.



**CAUTION:** Before removing the computer cover, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

---

To remove the computer cover, complete the following steps:

 If you have not already done so, you will need to remove the shipping thumbscrew/plastic pin from the center of the rear panel before removing the cover.

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

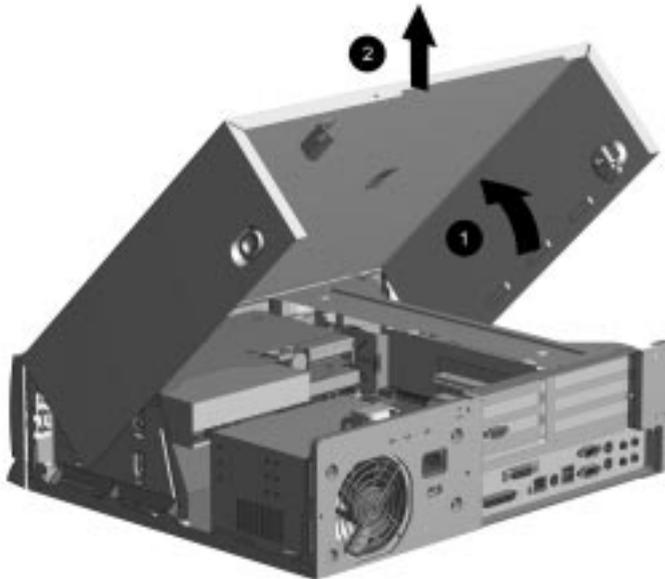
For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Slide the cover latches on the sides of the desktop computer toward the front of the computer.



#### Opening the Quick Release Cover Latches

5. Rotate the computer cover up ❶, then remove the front lip of the cover from under the front bezel to lift the cover off ❷ the unit.



#### Removing the Desktop Computer Cover

- ✍ The configuration label located inside the computer cover provides additional expansion slot and switch setting information.

## Replacing the Computer Cover

To replace the computer cover, complete the following steps:

1. Holding the cover in an almost vertical position, hook the front lip of the cover behind the front bezel. Then, rotate the cover down on the unit.
2. Slide the cover latches on the sides of the computer cover toward the back of the computer to secure the cover.

## Removing the Front Bezel

To install optional drives, you must remove the front bezel to gain access to the slide-out drive cage.



**CAUTION:** Before removing the computer cover and front bezel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

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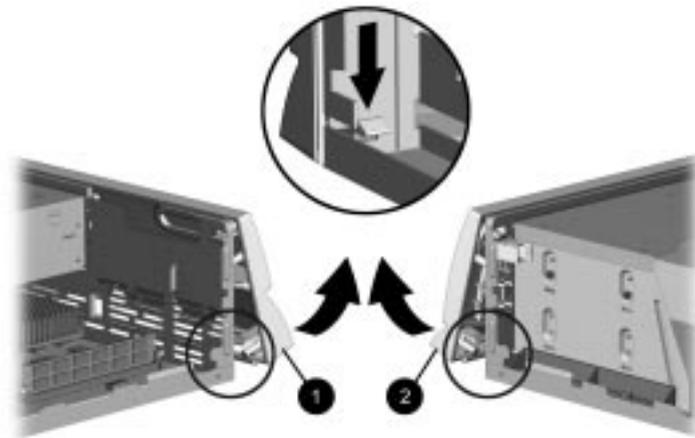
To remove the front bezel, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Remove the computer cover.

5. Press down on the release latch ❶ at the lower left edge of the bezel and swing the bezel out from the left.
6. Press down on the release latch ❷ at the lower right edge of the bezel and swing the bezel out from the right to remove the bezel.



#### **Removing the Front Bezel**

#### **Replacing the Front Bezel**

To replace the front bezel, complete the following steps:

1. Line up the release latches at the top of the bezel with the appropriate slots in the front of the chassis.
- ✍ Be sure to line up the diskette drive eject button with the corresponding hole in the front bezel before snapping the bezel in place.
2. Swing the bezel down and press in to secure the lower release latches.

## Sliding Out the Drive Cage

The slide-out drive cage allows access to all drive bays for easy installation of additional drives, with no drive rails or brackets required. With the drive cage pulled out from the chassis, you can easily connect the drive power and signal cables.

- ✎ When installing optional drives, you must install one guide screw to ensure the drive will line up correctly in the drive cage. Compaq has provided extra guide screws, installed in the front of the computer chassis, under the front bezel.



**CAUTION:** Before removing the computer cover and front bezel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

---

To slide out the drive cage, follow these steps:

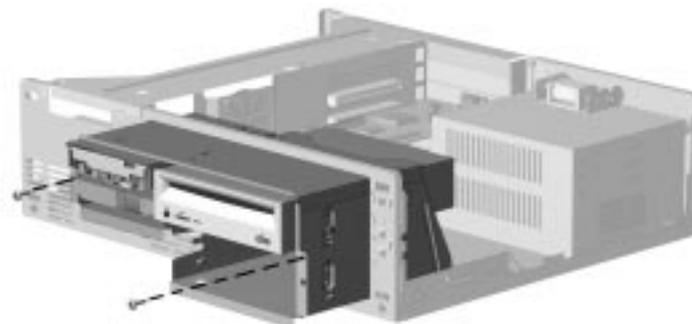
1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Remove the computer cover and front bezel.
5. Remove the two screws securing the drive cage to the front of the computer chassis.

6. Grasp the front of the drive cage and pull to slide the drive cage out of the chassis.

✎ The drive cage will slide out halfway and stop.



**Sliding Out the Drive Cage**

## Removing the Expansion Board Cage

The removable expansion board cage allows quick removal of expansion boards, without disconnecting the cables attached to the connectors on the boards, and without the use of tools. With the expansion board cage removed from the chassis, you can easily access the system board.



**CAUTION:** Before removing the computer cover, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

---

To remove the expansion board cage, follow these steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Remove the computer cover.

5. Grasp the expansion board cage by placing one hand on the back lip of the cage and two fingers of the other hand in the finger hole near the front of the cage ❶.
6. Pull up and out to remove the expansion board cage.



#### Removing the Expansion Board Cage

7. Rest the removed expansion board cage upside down on the power supply and drive cage.

#### Sliding Out the System Board Tray

The slide-out system board tray allows you to quickly remove the system board, without using tools.



**CAUTION:** Before removing the computer cover, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

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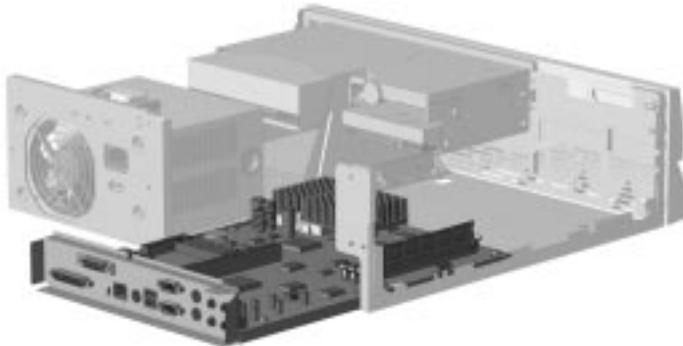
To remove the system board tray, follow these steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

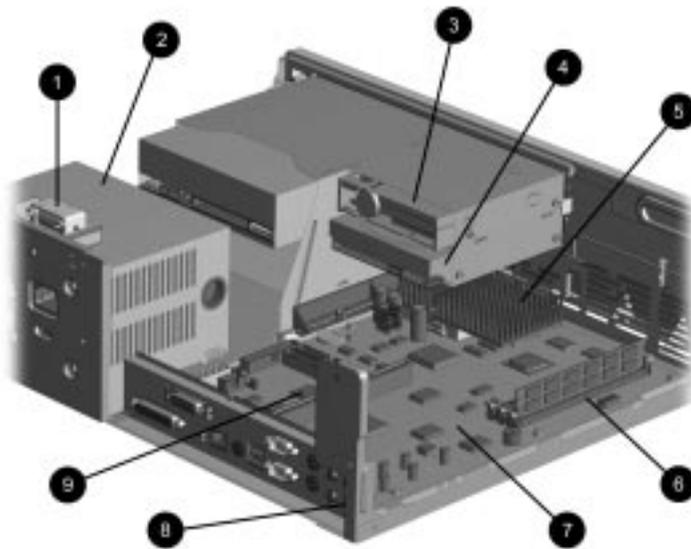
2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.

4. Remove the computer cover.
5. Remove the expansion board cage.
6. Disconnect the power supply and drive signal cables from the system board, and disconnect any external device cables from the rear panel.
7. Grasp the back edge of the system board tray and slide it out of the chassis.

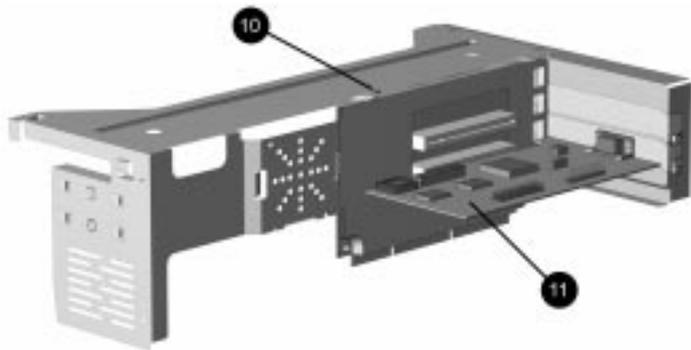


**Sliding Out the System Board Tray**

## Internal Components



**Internal Components in Pentium-Based Models**



**Expansion Boards in Pentium-Based Models**

- ✎ The position of the expansion board cage in this illustration is for demonstration purposes only. Be sure to rest the expansion board cage upside down rather than on either side of the cage.

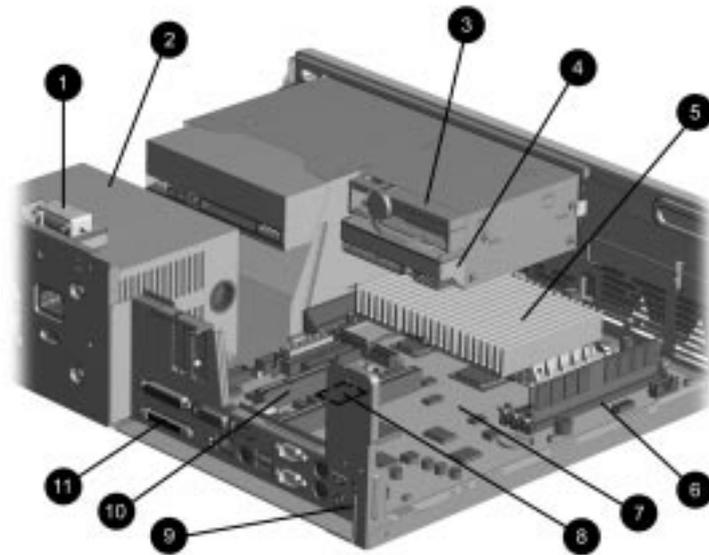
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## Internal Components of Pentium-Based Models

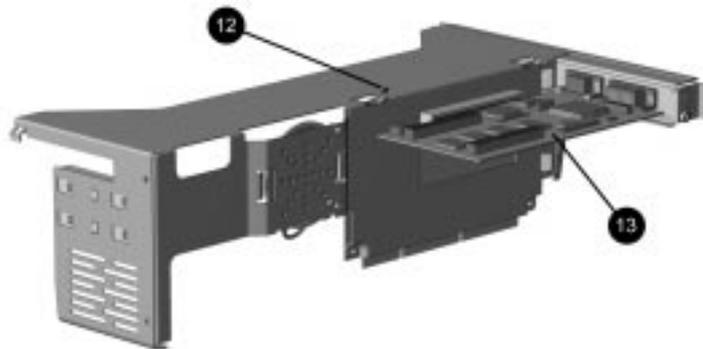
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<b>Ref.</b>	<b>Description</b>
❶	Smart Cover Lock
❷	Power supply
❸	Diskette drive or LS-120 Drive
❹	Internal hard drive
❺	Processor
❻	Memory module (DIMM) sockets
❼	System board
❽	Embedded audio (CD-ROM drive models)
❾	Embedded network interface controller
❿	Smart Cover Sensor
⓫	Graphics controller

---



**Internal Components in Pentium II–Based Models**



**Expansion Boards in Pentium II–Based Models**

✍ The position of the expansion board cage in this illustration is for demonstration purposes only. Be sure to rest the expansion board cage upside down rather than on either side of the cage.

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## Internal Components of Pentium II–Based Models

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<b>Ref.</b>	<b>Description</b>
❶	Smart Cover Lock
❷	Power supply
❸	Diskette drive or LS-120 Drive
❹	Internal hard drive
❺	Processor
❻	Memory module (DIMM) sockets
❼	System board
❽	Embedded network interface controller
❾	Embedded audio (CD-ROM drive models)
❿	Accelerated Graphics Port (AGP) slot
⓫	Embedded Ultra-SCSI controller (Deskpro 6000 models)
⓬	Smart Cover Sensor
⓭	PCI graphics controller (Deskpro 4000 models)

---

## Installing Additional Memory

You can expand computer memory by installing industry standard, 168-pin synchronous DRAM dual inline memory modules (DIMMs). For proper system operation, use 66MHz or faster unbuffered DIMMs. DIMM upgrade kits are available as options from Compaq.

The system board includes three memory module slots. However, one or more of these memory module slots is used to hold the standard 16- or 32-megabyte memory module(s). You must replace the preinstalled memory module with a 128-megabyte memory module to achieve maximum memory of 384 megabytes.



**CAUTION:** Your DIMM sockets have gold metal contacts that are silver in appearance. When upgrading your memory, it is important to use DIMMs with gold metal contacts (not tin-lead) to prevent corrosion and/or oxidation resulting from having incompatible metals in contact with each other.



**CAUTION:** Static electricity can damage the electronic components of the computer or optional boards. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix F for more information.



**CAUTION:** When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module.

---

### Installing DIMM Modules

To install a memory module, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

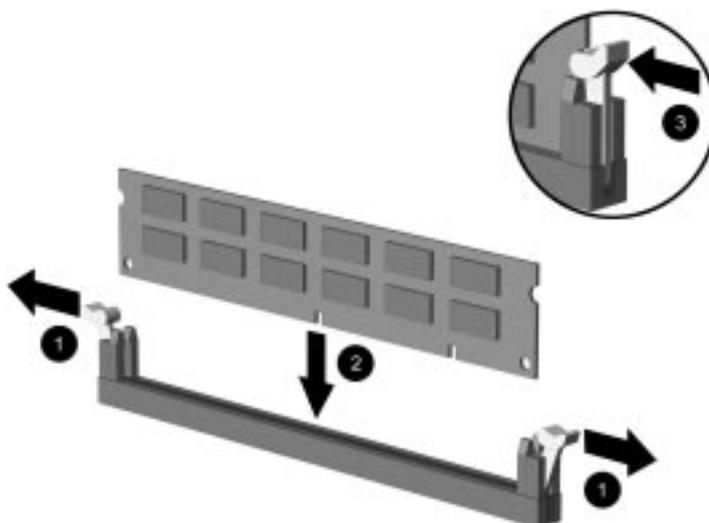
For more information about Computer Setup, refer to Chapter 8, "Using Compaq Utilities."

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the computer cover.
3. Remove the expansion board cage and locate the DIMM sockets.

4. Open both latches **1** of the DIMM socket, and insert the memory module **2** into the socket.

Begin by installing a module into the socket nearest the preinstalled module, and install the modules following the numerical order of the sockets.

A memory module can be installed in only one way. Match the notch on the module with the tab on the memory socket. Push the module down into the socket, ensuring that the module is fully inserted and properly seated **3**.



#### Installing a DIMM Module

5. Repeat step 4 for any additional modules that you want to install.
6. Replace the expansion board cage.
7. Replace the computer cover.
8. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
9. Test the system (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities.”

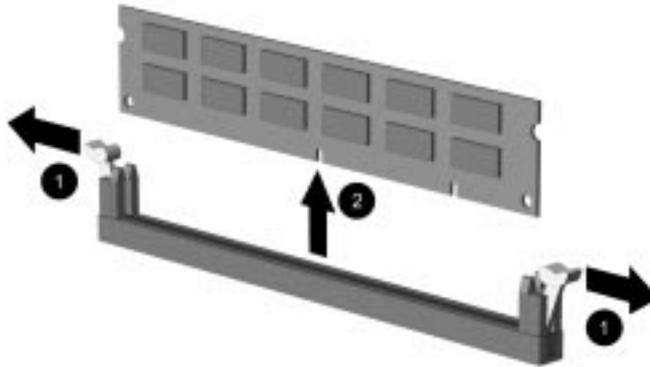
## Removing DIMM Modules

To remove a memory module, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the computer cover.
3. Remove the expansion board cage.
4. Release the latches ❶ on both sides of the DIMM socket.

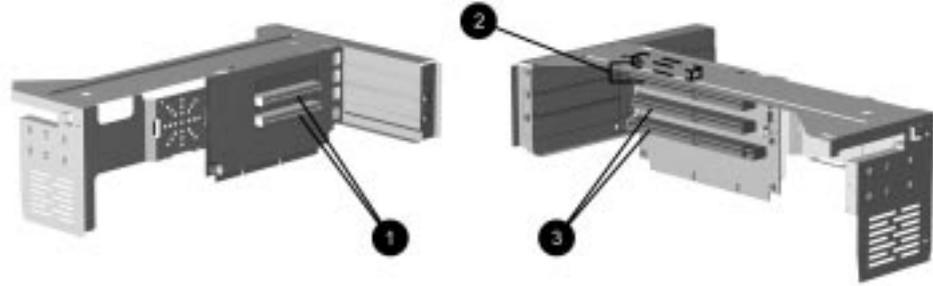


### Removing a DIMM Module

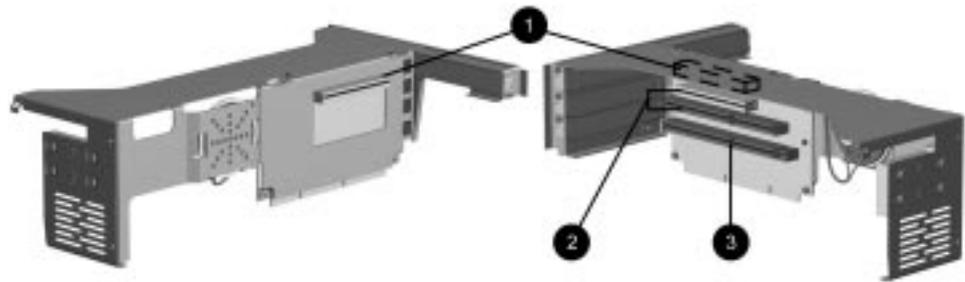
5. Pull the module up ❷, out of the socket.
6. Repeat steps 4 and 5 for each module that you want to remove.
7. Replace the expansion board cage.
8. Replace the computer cover.
9. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
10. Test the system (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities.”

## Installing an Expansion Board

Your computer contains expansion slots, as follows:



### Expansion Slots in Pentium-Based Expansion Board Cage



### Expansion Slots in Pentium II-Based Expansion Board Cage

- ❶ PCI (Peripheral Component Interconnect) expansion slots
- ❷ PCI/ISA shared expansion slot
- ❸ ISA (Industry Standard Architecture) expansion slots

✎ The graphics controller resides in either a PCI slot in the expansion board cage, or in the AGP slot on the system board.

## Removing an Expansion Slot Cover

To remove an expansion slot cover, follow these steps:

1. Remove the expansion board cage from the computer chassis.
2. Locate the correct vacant slot in the expansion board cage.

3. Remove the screw at the side of the expansion slot, then remove the expansion slot cover from the slot as illustrated.



**Removing the Screw and Expansion Slot Cover**

### **Installing an Expansion Slot Cover**

To install an expansion slot cover, follow these steps:

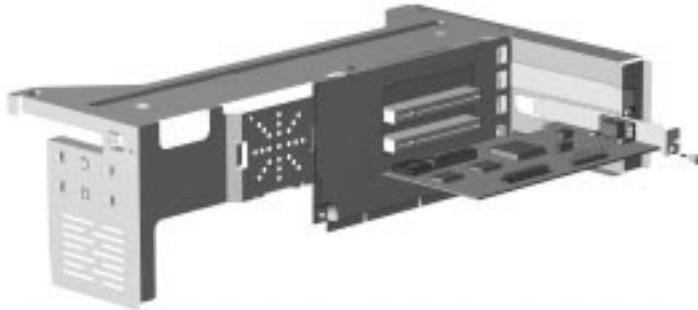
1. Slide the expansion slot cover into place over the slot opening.
2. Install the screw at the side of the expansion slot to secure the slot cover.

### **Installing a PCI or ISA Board**

To install a PCI or ISA expansion board, complete the following steps:

1. Remove the expansion board cage from the computer chassis.
2. Remove the expansion slot cover.

3. Slide the expansion board into the expansion slot and press it firmly into place.



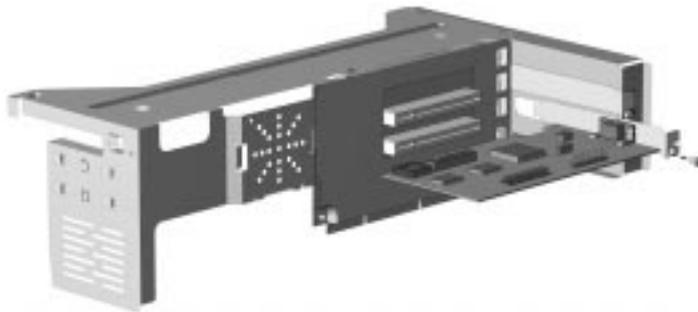
#### **Installing an Expansion Board**

- ✎ When you install an expansion board, make sure you press firmly on the board so that the whole connector seats properly in the expansion board slot.
4. Replace the screw at the side of the expansion slot.
  5. Replace the expansion board cage into the computer chassis.
- ✎ Be sure the expansion board cage is well-seated in the chassis and makes a good connection to the system board.
6. Replace the computer cover.
  7. Connect external cables to the installed board, if needed.
  8. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for instructions.
  9. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
  10. Test the computer (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities.”

## Removing an Expansion Board

To remove an expansion board, follow these steps:

1. Remove the expansion board cage.
2. Disconnect any cables attached to the expansion board.
3. Remove the screw at the side of the expansion slot.
4. Hold the board at each end and carefully rock it back and forth until the connectors pull free from the slot. Be sure not to scrape the board against other components.



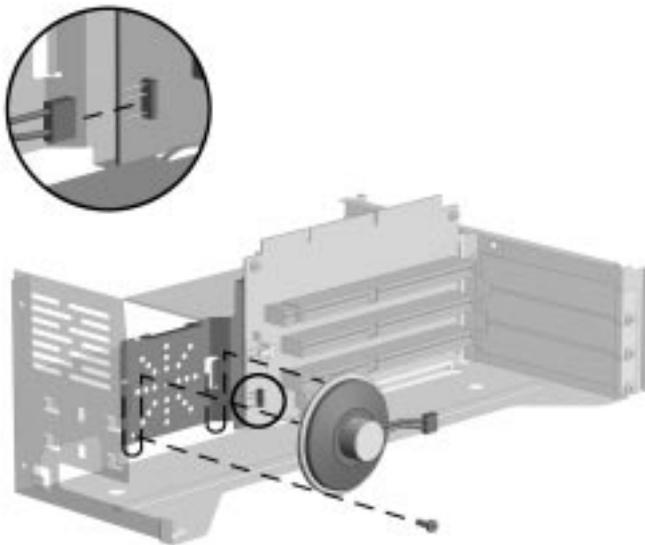
### Removing an Expansion Board

5. Store the board in antistatic packaging.
6. Install an expansion slot cover to close the open slot.

## Installing a Speaker in the Expansion Board Cage

To install an optional speaker in the expansion board cage, complete the following steps:

1. Remove the expansion board cage from the computer chassis.
2. Slide the speaker under the metal tabs on the expansion board cage.
3. Secure the speaker by inserting the screw in the top screw hole, as indicated in the illustration below.
4. Connect the speaker wires to the riser board, as indicated in the illustration below.



**Installing the Speaker, Securing the Speaker, and Connecting the Speaker Wires**

## Installing Additional Drives

Desktop computers support up to four drives. They may be installed in various configurations, as shown and described in Chapter 1, “Your Computer at a Glance.”

When installing additional drives, follow these guidelines:

- For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as CD-ROM, IDE tape, and diskette drives to the secondary controller.
- You may install either a third-height or a half-height drive into a half-height bay.
- You must install one guide screw to ensure the drive will line up correctly in the drive cage. Compaq has provided extra guide screws, installed in the front of the computer chassis, under the front bezel. Some options use M3 metric thread hardware. The Compaq-supplied metric screws are black.

### Using the Cable-Select Feature with Ultra ATA Devices

Optional drives are available from Compaq in kits that include a special drive cable. The configuration of the drives employs a cable-select feature that identifies the drives as device 0 (primary drive) or device 1 (secondary drive). The system board determines which drive is device 0 or device 1, based on the way the drives are connected to the special drive cable. The device 0 drive is the drive connected to the short segment of the drive cable (or that connector closest to the system board); the device 1 drive is the drive connected to the long segment of the drive cable. The device 0 and device 1 identities are used by the system to distinguish between the two drives.

The installation requires no jumper setting changes on the existing or optional drives. All Compaq drives have the jumpers preset for cable-select installation.

- ✍ If installing a second device on the primary controller, you must use an 80-conductor Ultra ATA cable for optimal performance. This cable is available as a Compaq option.

## Installing **SCSI** Devices

The Compaq Deskpro 6000 Series of Personal Computers features an embedded Ultra-SCSI host adapter that supports up to seven internal and external SCSI devices. Deskpro 6000 models come with an internal SCSI hard drive preinstalled. Additional high-performance SCSI devices can be added to all Deskpro 6000 models.

### Guidelines for Installing Optional **SCSI** Devices

When installing additional SCSI devices, you must adhere to the following guidelines:

- A SCSI host adapter supports up to 7 SCSI devices.
- Every SCSI device must have a unique identification (ID) number (0 - 7). The SCSI host adapter identifies signals to and from a SCSI device by its SCSI ID number rather than its location. Moving a SCSI device from one position to another on the SCSI chain does not affect the communication between the controller and the SCSI device. The reserved and available SCSI ID numbers for SCSI devices are as follows:
  - 0 is reserved for the hard drive.
  - 1 through 4 are available.
  - 5 is reserved for a CD-ROM drive.
  - 6 is available.
  - 7 is reserved for the SCSI host adapter.

- Every SCSI chain or circuit must be terminated (closed) at both ends. Termination can be accomplished by using the terminating feature on the device or by using a terminated cable.

✎ 4X and 8X devices may not have terminating jumpers on the device. Termination on these devices must be achieved with terminated cable.

Turn on an external SCSI device before turning on power to the computer. This enables the system board controller to recognize the external SCSI device and automatically reset. When an external SCSI device is connected to the external SCSI connector on the rear panel of the computer, that device becomes the end of the SCSI chain and must be terminated.

- All SCSI hard drives must be either internal or external, but never both. However, the system accommodates a combination of other internal and external SCSI devices, such as SCSI tape and CD-ROM drives.

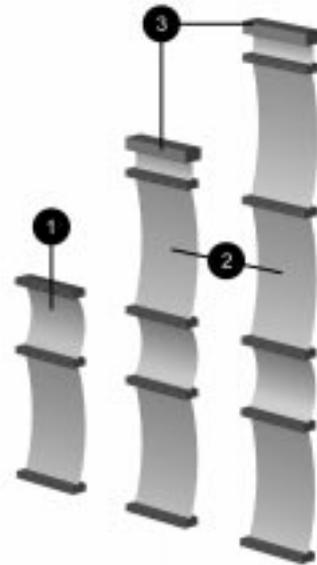
✎ When an IDE hard drive and SCSI hard drive are both installed, the system can boot only from the IDE hard drive.

✎ Before you can install a SCSI device, you must first verify the SCSI ID of the drive and, if necessary, set the SCSI ID to a new number. Be sure that each SCSI device on the SCSI chain has a unique SCSI ID number.

Second, you must determine if the device ought to have termination enabled or disabled. Set the termination if necessary.

## Cabling for Optional **SCSI** Devices

Depending on the model, your computer may include one of the SCSI cables shown in the next illustration.



### **SCSI Cable Options**

Because your computer comes preconfigured, cable configuration does not become a consideration until you decide to add an optional SCSI device.

- ❶ Computers with 2-peripheral SCSI cables (without termination) must have termination enabled on the last device.
- ❷ Computers with 3- and 4-peripheral SCSI cables come with a terminator ❸ on the end of the cable. The connector on the opposite end of the cable always connects to the system board. All SCSI devices connected with these cables must have their termination disabled.
- ✍ 4X and 8X devices may not have terminating jumpers on the device. Termination on these devices must be achieved with terminated cable.

For additional information about installing optional SCSI devices, refer to the documentation that comes with the device or contact your Compaq authorized dealer, reseller, or service provider.

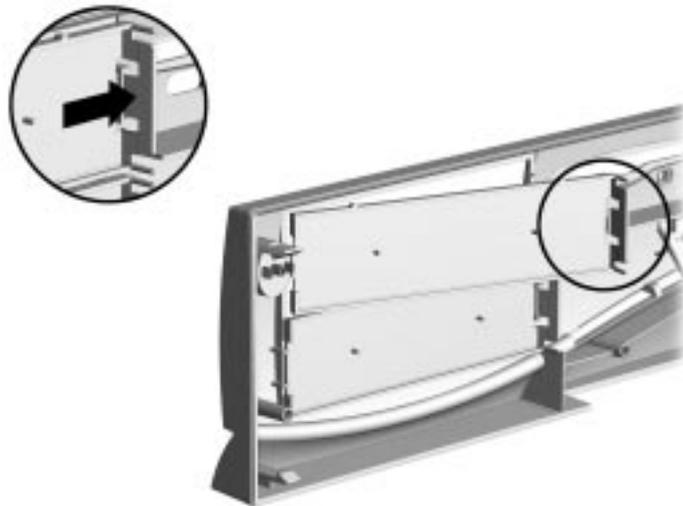
## Removing a Blank Drive Bezel

To remove a blank drive bezel, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the computer cover and front bezel.
3. Release the appropriate drive bezel by releasing the tab on one side of the drive bezel from the latch inside the front bezel.



Removing a Drive Bezel

## Installing a CD-ROM, Tape, or PD-CD Drive

To install an optional CD-ROM drive, IDE tape drive, or PD-CD Drive, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

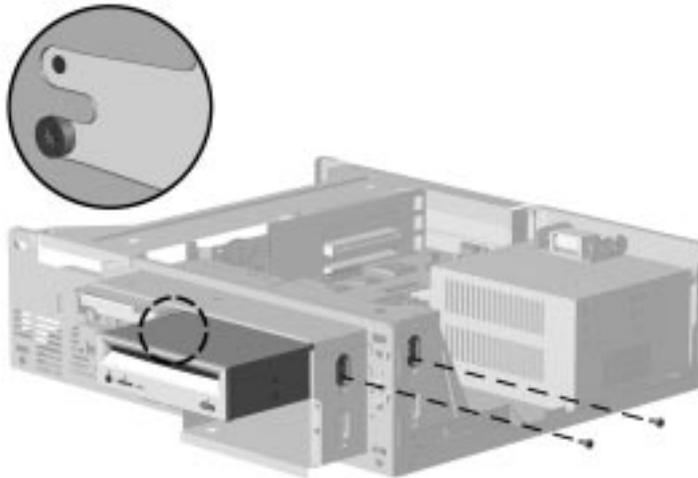
For more information about Computer Setup, refer to Chapter 8, "Using Compaq Utilities."

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the computer cover and front bezel.
3. Remove the screws securing the drive cage and slide the drive cage forward out of the chassis.
4. Install the guide screw into the first screw hole from the front, on the left-hand side of the drive.

✎ Some options use M3 metric thread hardware. Extra guide screws are provided on the front of the chassis, under the front bezel. The Compaq-supplied metric screws are black.

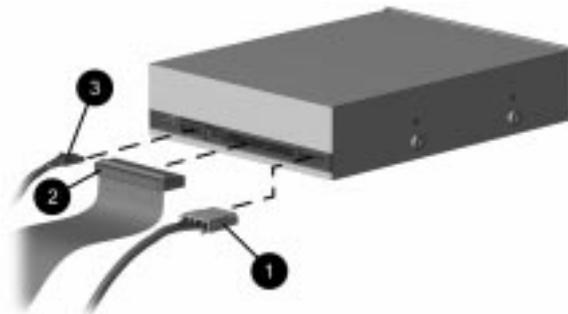
5. Install the drive in the desired drive bay and secure the drive with two screws through the side of the drive cage.

✍ Be sure the guide screw lines up with the guide slot in the drive cage.

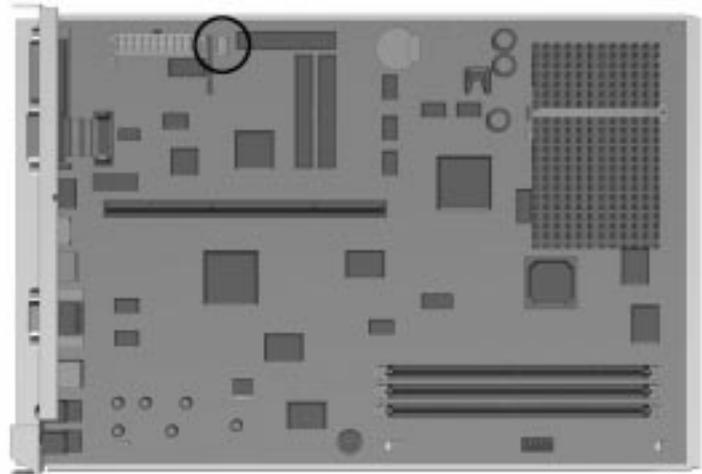


#### Aligning the Guide Screw and Installing an Optional 5.25-Inch Drive

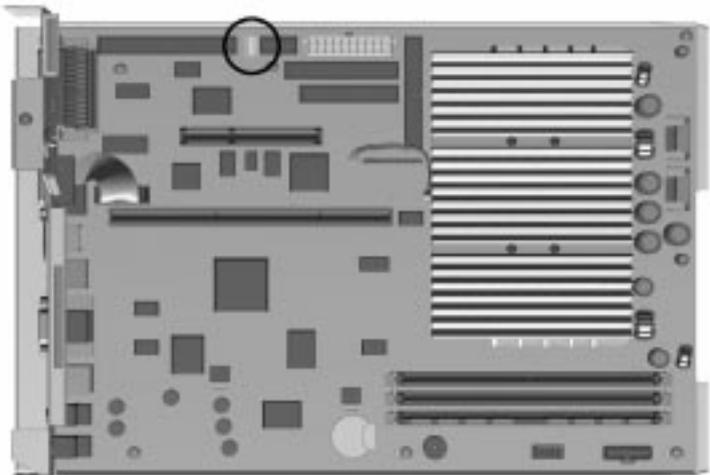
6. Connect the drive power **1** and signal **2** cables and, if it is a CD-ROM drive or PD-CD Drive, connect the audio cable **3**. The other end of the audio cable **3** should be connected to P4 on the system board.



#### Connecting the Drive Cables



**Connecting the Audio Cable to P4 on the Pentium-Based System Board**



**Connecting the Audio Cable to P101 on the Pentium II-Based System Board**

7. Push the drive cage back into the computer chassis and secure it with the two screws through the front of the chassis.
8. Remove the blank drive bezel from the inside of the front bezel.
9. Replace the front bezel and computer cover.

10. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for more information.
11. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.

### Installing a **3.5-Inch** Drive into a **5.25-Inch** Drive Bay

To install a 3.5-inch drive into a 5.25-inch drive bay, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

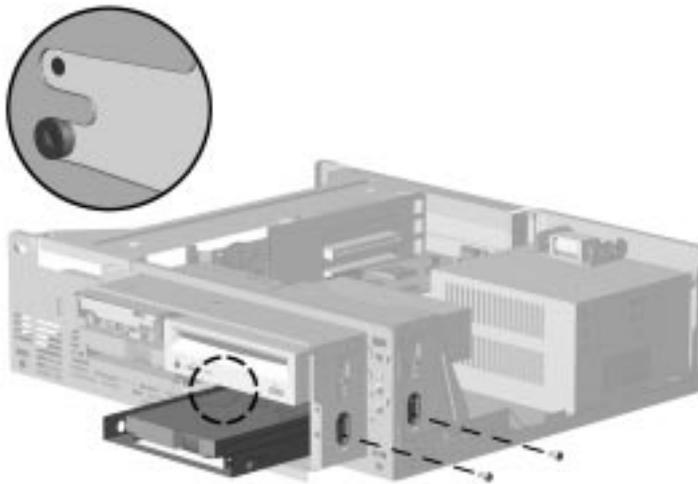
2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the computer cover and front bezel.
3. Remove the screws securing the drive cage and slide the drive cage forward out of the chassis.
4. Attach the 3.5-inch drive to the 5.25-inch bracket and secure the drive to the bracket with the screws provided.



#### Attaching a 3.5-Inch Drive to the 5.25-Inch Bracket

5. Install the guide screw into the first screw hole from the front, on the left-hand side of the bracket.

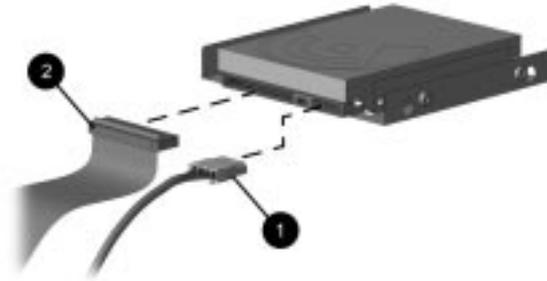
- ✎ Some options use M3 metric thread hardware. Extra guide screws are provided on the front of the chassis, under the front bezel. The Compaq-supplied metric screws are black.
- 6. Install the bracket and drive into the desired drive bay and secure the bracket with two screws through the side of the drive cage.
- ✎ Be sure the guide screw lines up with the guide slot in the drive cage.



**Aligning the Guide Screw and Installing a Bracket with a 3.5-Inch Drive**

7. Connect the drive power ❶ and signal ❷ cables.

✍ Refer to the “Using the Cable-Select Feature” section of this chapter for more information.



#### Connecting the Drive Cables

8. Push the drive cage back into the computer chassis and secure it with the two screws through the front of the chassis.
  9. Remove the blank drive bezel from the inside of the front bezel, if necessary.
  10. Replace the front bezel and computer cover.
  11. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for more information.
- ✍ If you have installed a second diskette drive (B:), you will need to reconfigure the computer, using Computer Setup, to recognize the B: drive. Choose the Storage option, under Built-in Devices, to reconfigure the drive.
12. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.

## Removing a Drive from the Drive Cage

To remove a drive from the drive cage, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the computer cover and front bezel.
3. Remove the screws securing the drive cage and slide the drive cage forward out of the chassis.
4. Remove the two screws securing the drive to the drive cage.

 If you are removing a 3.5-inch standard drive, you may need to remove the expansion board cage to gain access to the drive cage screws.

5. Disconnect the drive power and signal cables and, if it is a CD-ROM drive or PD-CD Drive, disconnect the audio connector.
6. Remove the drive from the drive cage and store in antistatic packaging.

## Removing the Power Supply

To remove the power supply, complete the following steps:



**WARNING:** This procedure should be performed only by qualified personnel. Disconnect the power cord from the electrical outlet and the computer before removing the power supply. Failure to disconnect the power before opening the computer can result in personal injury or equipment damage.

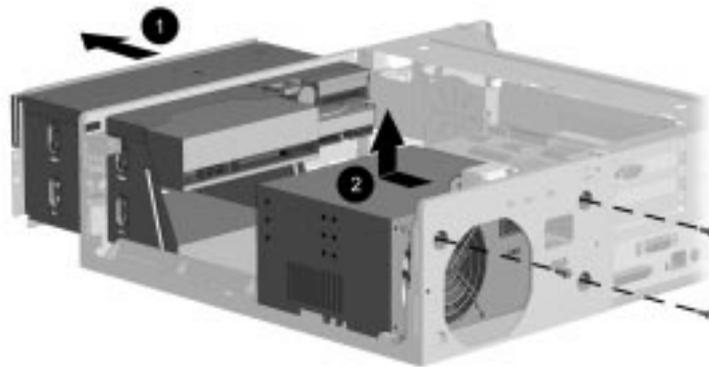
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1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Remove the computer cover and front bezel.

3. Remove the screws securing the drive cage and slide out the drive cage ❶.
  4. Remove the three screws securing the power supply to the back of the computer chassis.
  5. Disconnect the power connector from the system board and from any drives or other peripherals.
- ✂ Label each power connector, before disconnection, with the connection location. After doing this, you can easily reconnect power to the correct devices.
6. Slide the power supply toward the front of the computer chassis, and lift up to remove ❷.



#### Removing the Power Supply

## Installing the Power Supply

To install the power supply, complete the following steps:



**WARNING:** This procedure should be performed only by qualified personnel. Do not reconnect power to the computer until the computer cover is replaced. Connecting the power before replacing the computer cover can result in personal injury or equipment damage.

1. Place the power supply in the computer chassis and slide the power supply to the rear of the chassis.
2. Secure the power supply to the chassis with the three screws.

3. Connect the power connector to the system board and to any drives or other peripherals.



**WARNING:** This equipment is designed for connection to a grounded (earthed) outlet. The grounding type plug is an important safety feature. To reduce the risk of electrical shock, damage to your equipment, or loss of your data, do not disable this feature.



**CAUTION:** Ensure that the voltage select switch is in the proper position (115 or 230 VAC). Failure to do so will result in damage to the equipment.

---

## Installing an External Infrared Transceiver

To connect an external infrared transceiver to the computer, follow these steps:

1. Locate the external infrared transceiver connector on the back of the computer (yellow-colored icon).
2. Plug in the transceiver cable.



### Connecting an External Infrared Transceiver

3. Follow the instructions provided in the transceiver kit to install necessary software and to reconfigure your computer to recognize the transceiver.



# *chapter* 7

## UPGRADING THE MINITOWER COMPUTER

This chapter explains how to remove the computer side panel and front bezel, and how to install the following optional, upgrade equipment:

- Additional memory
- Expansion board
- Optional drive
- External infrared transceiver

This chapter also includes information about when to reconfigure the computer to ensure that it recognizes the newly installed equipment.

### Installation Sequence

To familiarize you with the installation process, a summary of the installation and configuration sequence begins this chapter. It is very important that you follow this sequence of steps to ensure the proper installation of any optional equipment.

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. If the computer is already on, turn it off and disconnect the power cord from the wall outlet.



**WARNING:** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching.



**WARNING:** To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications/telephone connectors into the network interface controller (NIC) receptacles.

---



**CAUTION:** Static electricity can damage the electronic components of the computer or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix F for more information.

---

3. Open the computer by removing the side panel and front bezel, if required. Refer to the sections “Removing the Computer Side Panel” and “Removing the Front Bezel” in this chapter for instructions.

 Compaq recommends that you turn the minitower on its side, with the open side up, for installation of any equipment other than drives.

4. Install any optional equipment (ISA or PCI expansion board, processor upgrade, memory, drive). Refer to the applicable sections or the documentation that comes with the optional equipment for instructions.
5. Replace the front bezel and side panel.
6. Turn on the monitor, computer, and any devices you want to test.
7. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for instructions.
8. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
9. Test the computer (optional) using the TEST utility.

## When to Reconfigure the Computer

System configuration is the process of specifying the devices and programs that make up a computer system. When you add or remove optional equipment, you must reconfigure the computer to recognize these changes.

Windows 95 and Windows NT automatically recognize all Plug and Play devices installed. However, if the device is not a Plug and Play device or is not installed properly, follow the instructions below:

1. Go to the Control Panel.
2. Select the Add New Hardware icon.
3. Follow the instructions on the screen.

## Serviceability Features

The Compaq Deskpro 4000 and 6000 Series of Personal Computers include features that make it easier to upgrade or service your computer.

### Removing the Side Panel

To install optional equipment, you must remove the side panel and front bezel to gain access to the expansion slots or drive bays you want to use.



**CAUTION:** Before removing the computer side panel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

---

To remove the computer side panel, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, "Using Compaq Utilities."

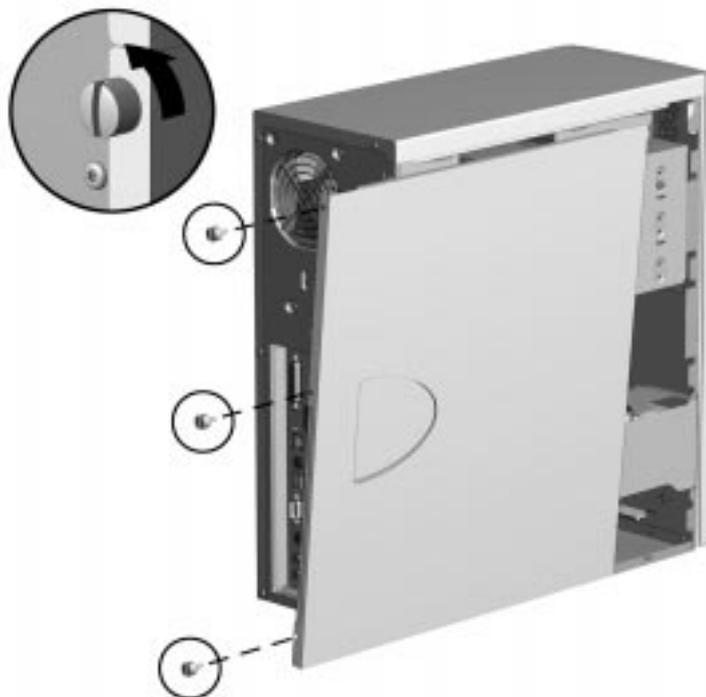
2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Facing the back of the computer, loosen the three thumbscrews on the side panel. Use a coin to loosen them if they're too tight to loosen by hand.



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

---

5. Use the hand hold to slide the panel to the back of the computer about two inches and lift out to remove.



*Loosening the Thumbscrews and Removing the Side Panel*

-  The configuration label located on the inside of the side panel provides additional expansion slot and switch setting information.

## **Replacing the Side Panel**

To replace the side panel, complete the following steps:

1. Put the side panel in place so that the tabs fit into the slots at the upper and lower edges of the panel.
2. Slide the panel into the closed position.
3. Fasten the three thumbscrews on the rear panel of the computer to secure the side panel.

## Removing the Front Bezel

To install optional drives, you must remove the front bezel to gain access to the drive cage.



**CAUTION:** Before removing the side panel and front bezel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

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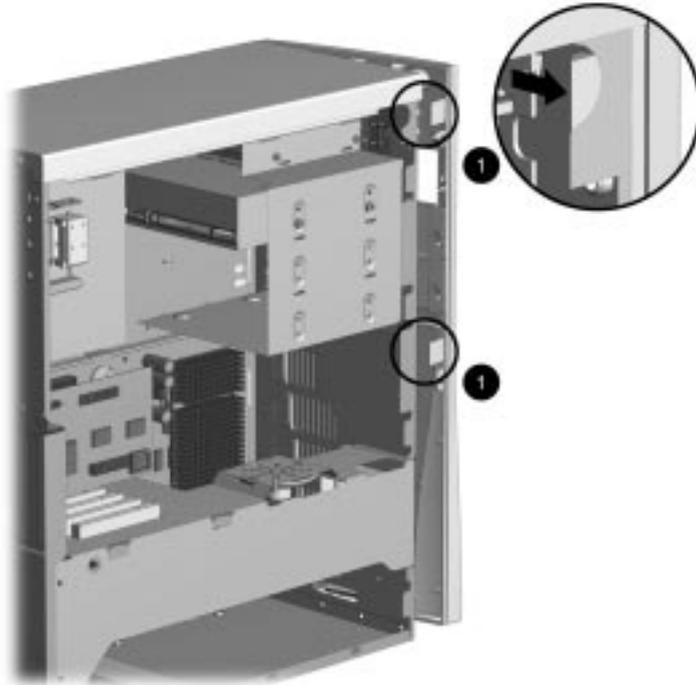
To remove the front bezel, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Remove the side panel.

5. Press the two release latches ❶ on the side of the bezel (at the top and center of the bezel).
6. Partially swing the bezel away from the front of the computer chassis, like a hinged door, and remove the bezel.



*Removing the Front Bezel*

### **Replacing the Front Bezel**

To replace the front bezel, complete the following steps:

1. Line up the three slots on the right side of the bezel with the sheet metal tabs on the front of the chassis.
2. Swing the bezel into place, like a hinged door, and press in to secure the latches on the left side.

## Removing the Expansion Board Cage

The removable expansion board cage allows quick removal of expansion boards, without disconnecting the cables attached to the connectors on the expansion boards, and without the use of tools. With the expansion board cage removed from the chassis, you can easily access the system board.



**CAUTION:** Before removing the side panel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

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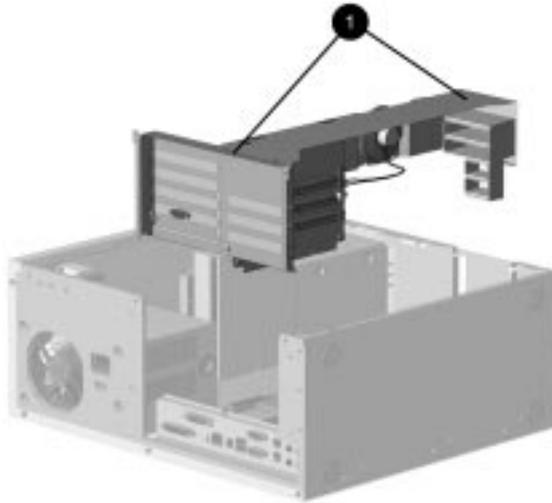
To remove the expansion board cage, follow these steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.
4. Remove the side panel.
5. Turn the minitower on its side, with the open side up.

6. Grasp the expansion board cage by placing one hand on the back lip of the cage and two fingers of the other hand in the finger hole near the front of the cage ❶.
7. Pull up and out to remove the expansion board cage.



*Removing the Expansion Board Cage*

8. Rest the removed expansion board cage upside down on the power supply and drive cage.

### **Sliding Out the System Board Tray**

The slide-out system board tray allows you to quickly remove the system board, without using tools.



**CAUTION:** Before removing the side panel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

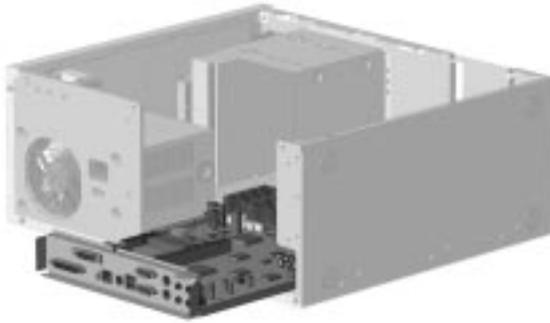
To remove the system board tray, follow these steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

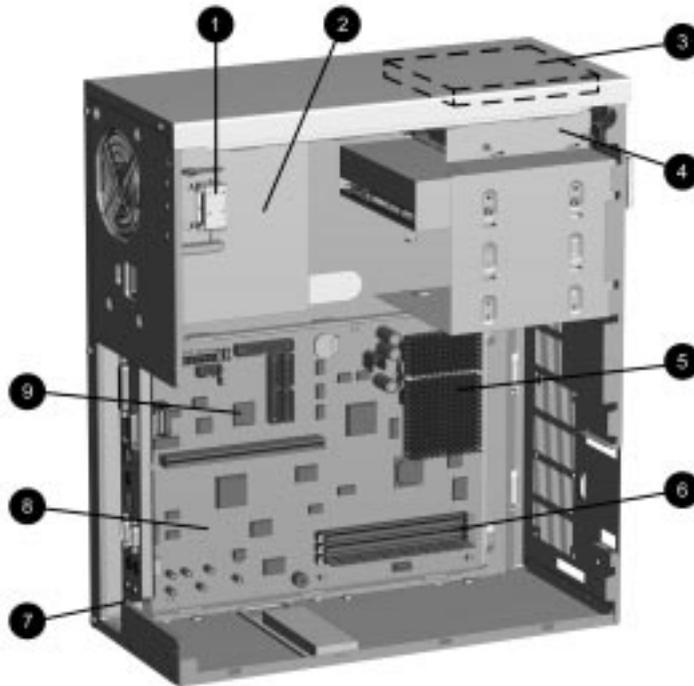
2. Turn off the computer and any external devices.
3. Disconnect the power cord from the power outlet.

4. Remove the side panel.
5. Turn the minitower on its side, with the open side up.
6. Remove the expansion board cage.
7. Disconnect the power supply and drive signal cables from the system board.
8. Grasp the back edge of the system board tray and slide it out of the chassis.

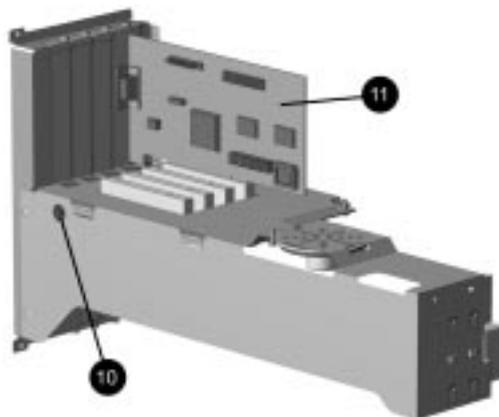


*Sliding Out the System Board Tray*

## Internal Components



*Internal Components in Pentium-Based Models*



*Expansion Boards in Pentium-Based Models*

 The position of the expansion board cage in this illustration is for demonstration purposes only. Be sure to rest the expansion board cage upside down rather than on either side of the cage.

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### Internal Components in Pentium-Based Models

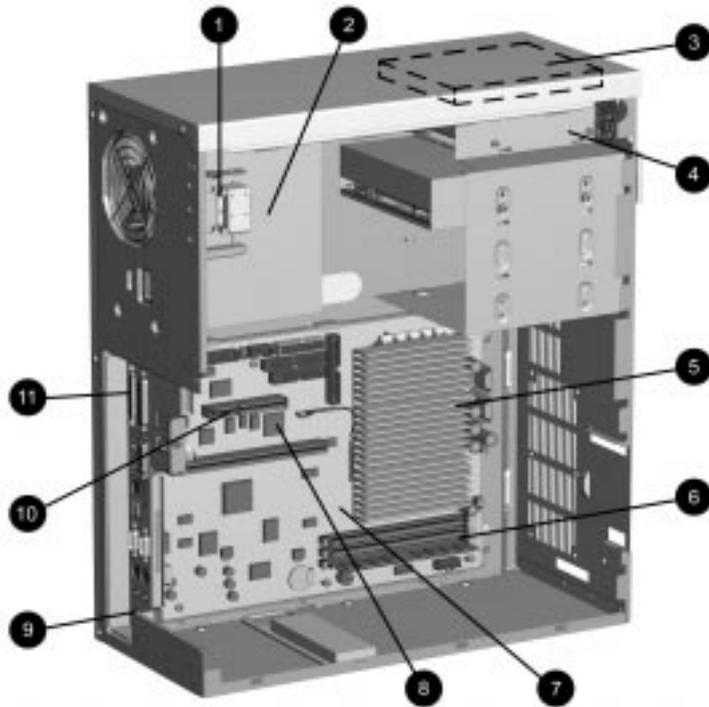
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Ref.	Description
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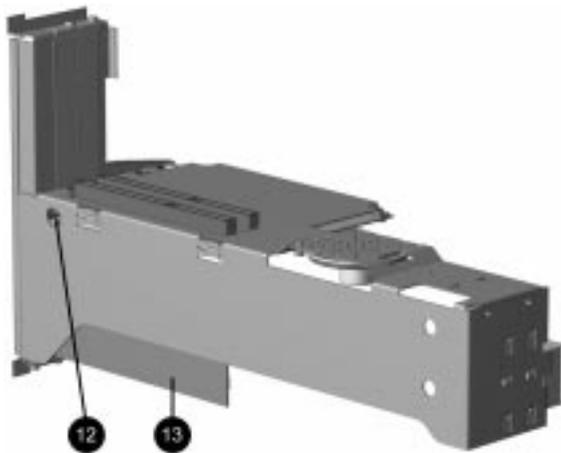
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❶	Smart Cover Lock
❷	Power supply
❸	Internal hard drive
❹	Diskette drive or LS-120 Drive
❺	Processor
❻	Memory module (DIMM) sockets
❼	Embedded audio (CD-ROM drive models)
❽	System board
❾	Embedded network interface controller
❿	Smart Cover Sensor
⓫	Graphics controller

---



*Internal Components in Pentium II–Based Models*



*Expansion Boards in Pentium II–Based Models*

 The position of the expansion board cage in this illustration is for demonstration purposes only. Be sure to rest the expansion board cage upside down rather than on either side of the cage.

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### Internal Components in Pentium II–Based Models

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Ref.	Description
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❶	Smart Cover Lock
❷	Power supply
❸	Internal hard drive
❹	Diskette drive or LS-120 Drive
❺	Processor
❻	Memory module (DIMM) sockets
❼	System board
❽	Embedded network interface controller
❾	Embedded audio (CD-ROM drive models)
❿	Accelerated Graphics Port (AGP) slot
⓫	Embedded Ultra-SCSI controller (Deskpro 6000 models)
⓬	Smart Cover Sensor
⓭	PCI graphics controller (Deskpro 4000 models)

---

## Installing Additional Memory

You can expand computer memory by installing industry standard, 168-pin synchronous DRAM dual inline memory modules (DIMMs). For proper system operation, use 66MHz or faster unbuffered DIMMs. DIMM upgrade kits are available as options from Compaq.

The system board has three memory module slots. However, one or more of these memory module slots is used to hold the standard 16- or 32-megabyte memory module(s). You must replace the preinstalled memory module(s) with a 128-megabyte memory module to achieve maximum memory of 384 megabytes.



**CAUTION:** Your DIMM sockets have gold metal contacts that are silver in appearance. When upgrading your memory, it is important to use DIMMs with gold metal contacts (not tin-lead) to prevent corrosion and/or oxidation resulting from having incompatible metals in contact with each other.



**CAUTION:** Static electricity can damage the electronic components of the computer or optional boards. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix F for more information.

---

For further reference, memory module installation instructions are indicated on the system board.

### Installing DIMM Modules

To install a memory module, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

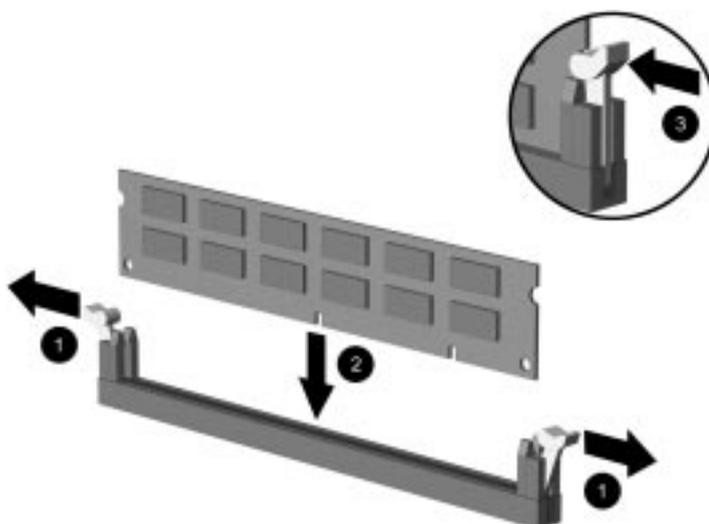
For more information about Computer Setup, refer to Chapter 8, "Using Compaq Utilities."

2. Turn off the computer, disconnect the power cord from the electrical outlet, remove the side panel, and turn the computer on its side.
3. Remove the expansion board cage and locate the DIMM sockets.

4. Open both latches ❶ of the DIMM socket, and insert the memory module ❷ into the socket.

Begin by installing a module into the socket nearest the preinstalled module, and install the modules following the numerical order of the sockets.

A memory module can be installed in only one way. Match the notch on the module with the tab on the memory socket. Push the module down into the socket, ensuring that the module is fully inserted and properly seated ❸.



#### *Installing a DIMM Module*

5. Repeat step 4 for any additional modules that you want to install.
6. Replace the expansion board cage.
7. Replace the side panel.
8. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
9. Test the system (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities.”

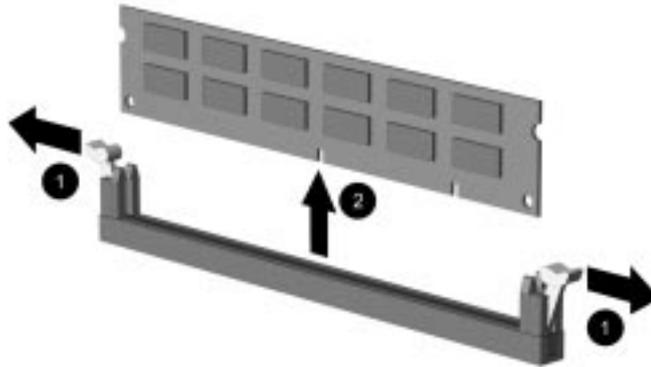
## Removing DIMM Modules

To remove a memory module, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer, disconnect the power cord from the electrical outlet, remove the side panel, and turn the computer on its side.
3. Remove the expansion board cage.
4. Release the latches ❶ on both sides of the DIMM socket.

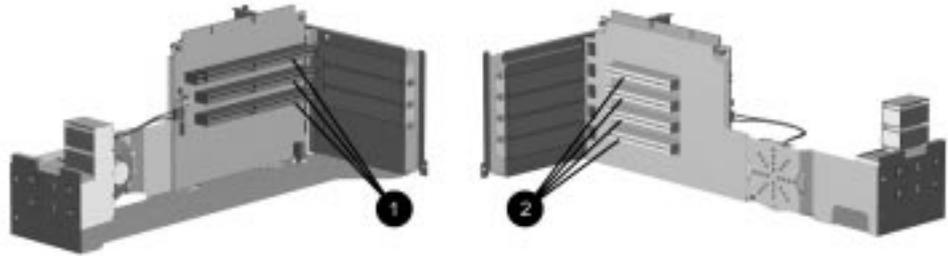


### *Removing a DIMM Module*

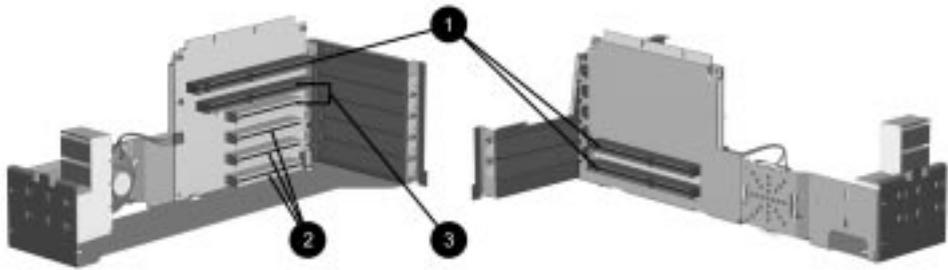
5. Pull the module up ❷, out of the socket.
6. Repeat steps 4 and 5 for each module that you want to remove.
7. Replace the expansion board cage.
8. Replace the side panel.
9. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
10. Test the system (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities.”

## Installing an Expansion Board

Your computer contains expansion slots, as follows:



*Expansion Slots in Pentium-Based Expansion Board Cage*



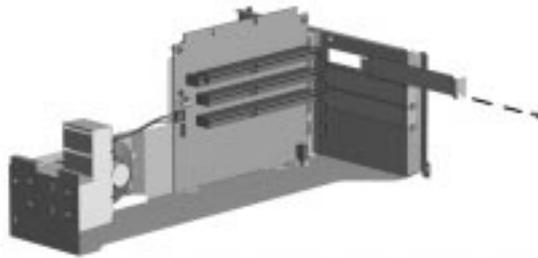
*Expansion Slots in Pentium II–Based Expansion Board Cage*

- ❶ ISA (Industry Standard Architecture) expansion slots
  - ❷ PCI (Peripheral Component Interconnect) expansion slots
  - ❸ One PCI/ISA shared expansion slot
- ✎ The graphics controller resides in either a PCI slot in the expansion board cage, or in the AGP slot on the system board.

## Removing an Expansion Slot Cover

To remove an expansion slot cover, follow these steps:

1. Remove the expansion board cage from the computer chassis.
2. Locate the correct vacant slot in the expansion board cage.
3. Remove the screw at the side of the expansion slot, then remove the expansion slot cover from the slot as illustrated below.



*Removing the Screw and Expansion Slot Cover*

## Installing an Expansion Slot Cover

To install an expansion slot cover, follow these steps:

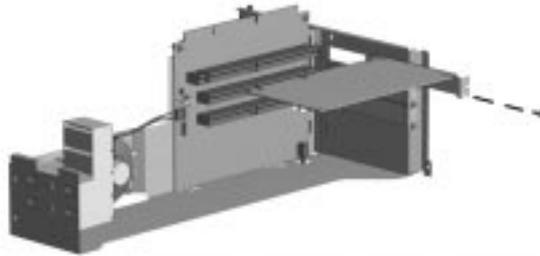
1. Slide the expansion slot cover into place over the slot opening.
2. Install the screw at the side of the expansion slot to secure the slot cover.

## Installing a PCI or ISA Board

To install a PCI or ISA expansion board, complete the following steps:

1. Remove the expansion board cage from the computer chassis.
2. Remove the expansion slot cover.

3. Slide the expansion board into the expansion slot and press it firmly into place.



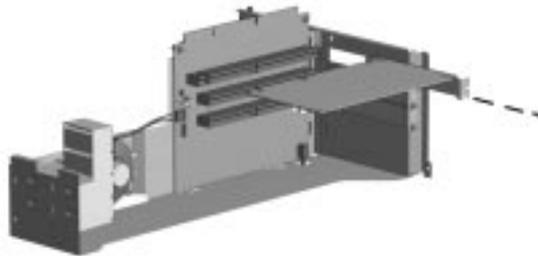
#### *Installing an Expansion Board*

- ✎ When you install an expansion board, make sure you press firmly on the board so that the whole connector seats properly in the expansion board slot.
4. Replace the screw at the side of the expansion slot.
  5. Replace the expansion board cage into the computer chassis.
- ✎ Be sure the expansion board cage is well-seated in the chassis and makes a good connection to the system board.
6. Replace the side panel.
  7. Connect external cables to the installed board, if needed.
  8. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for instructions.
  9. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
  10. Test the computer (optional) using the Computer Checkup (TEST) utility. Refer to Chapter 8, “Using Compaq Utilities.”

## Removing an Expansion Board

To remove an expansion board, follow these steps:

1. Remove the expansion board cage.
2. Disconnect any cables attached to the expansion board.
3. Remove the screw at the side of the expansion slot.
4. Hold the board at each end and carefully rock it back and forth until the connectors pull free from the slot. Be sure not to scrape the board against other components.



*Removing an Expansion Board*

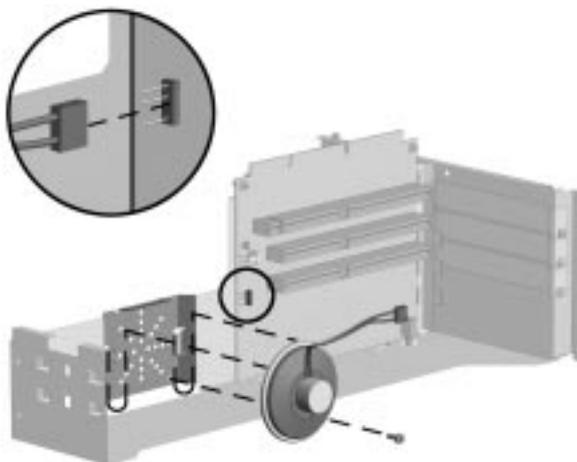
5. Store the board in antistatic packaging.
6. Install an expansion slot cover over the open slot.

## Installing a Speaker in the Expansion Board Cage

To install an optional speaker in the expansion board cage, complete the following steps:

1. Remove the expansion board cage from the computer chassis.
2. Slide the speaker under the metal tabs on the expansion board cage.

3. Secure the speaker by inserting the screw in the top screw hole, as indicated in the illustration below.
4. Connect the speaker wires to the riser board, as indicated in the illustration below.



*Installing the Speaker, Securing the Speaker, and Connecting the Speaker Wires*

## **Installing Additional Drives**

The Compaq Deskpro Personal Computer supports up to five drives internally. They may be installed in various configurations, as shown and described in Chapter 1, “Your Computer at a Glance.”

When installing additional drives, follow these guidelines:

- For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as CD-ROM, IDE tape, and diskette drives to the secondary controller.
- You may install either a third-height or a half-height drive into a half-height bay.
- You must install one guide screw to ensure the drive will line up correctly in the drive cage. Compaq has provided extra guide screws, installed in the front of the computer chassis, under the front bezel. Some options use M3 metric thread hardware. The Compaq-supplied metric screws are black.

## Using the Cable-Select Feature with Ultra ATA Devices

Optional drives are available from Compaq in kits that include a special drive cable. The configuration of the drives employs a cable-select feature that identifies the drives as device 0 (primary drive) or device 1 (secondary drive). The system board determines which drive is device 0 or device 1, based on the way the drives are connected to the special drive cable. The device 0 drive is the drive connected to the short segment of the drive cable (or that connector closest to the system board); the device 1 drive is the drive connected to the long segment of the drive cable. The device 0 and device 1 identities are used by the system to distinguish between the two drives.

The installation requires no jumper setting changes on the existing or optional drives. All Compaq drives have the jumpers preset for cable-select installation.

- ✎ If installing a second device on the primary controller, you must use an 80-conductor Ultra ATA cable for optimal performance. This cable is available as a Compaq option.

## Installing SCSI Devices

The Compaq Deskpro 6000 Series of Personal Computers features an embedded Ultra-SCSI host adapter that supports up to seven internal and external SCSI devices. Deskpro 6000 models come with an internal SCSI hard drive preinstalled. Additional high-performance SCSI devices can be added to all Deskpro 6000 models.

### Guidelines for Installing Optional SCSI Devices

When installing additional SCSI devices, you must adhere to the following guidelines:

- A SCSI host adapter supports up to 7 SCSI devices.
- Every SCSI device must have a unique identification (ID) number (0 - 7). The SCSI host adapter identifies signals to and from a SCSI device by its SCSI ID number rather than its location. Moving a SCSI device from one position to another on the SCSI chain does not affect the communication between the controller and the SCSI device. The reserved and available SCSI ID numbers for SCSI devices are as follows:

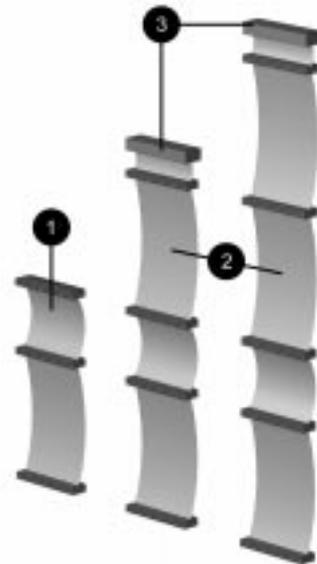
- 0 is reserved for the hard drive.
  - 1 through 4 are available.
  - 5 is reserved for a CD-ROM drive.
  - 6 is available.
  - 7 is reserved for the SCSI host adapter.
- Every SCSI chain or circuit must be terminated (closed) at both ends. Termination can be accomplished by using the terminating feature on the device or by using a terminated cable.
-  4X and 8X devices may not have terminating jumpers on the device. Termination on these devices must be achieved with terminated cable.

Turn on an external SCSI device before turning on power to the computer. This enables the system board controller to recognize the external SCSI device and automatically reset. When an external SCSI device is connected to the external SCSI connector on the rear panel of the computer, that device becomes the end of the SCSI chain and must be terminated.

- All SCSI hard drives must be either internal or external, but never both. However, the system accommodates a combination of other internal and external SCSI devices, such as SCSI tape and CD-ROM drives.
- ✎ When an IDE hard drive and SCSI hard drive are both installed, the system can boot only from the IDE hard drive.
- ✎ Before you can install a SCSI device, you must first verify the SCSI ID of the drive and, if necessary, set the SCSI ID to a new number. Be sure that each SCSI device on the SCSI chain has a unique SCSI ID number.  
  
Second, you must determine if the device ought to have termination enabled or disabled. Set the termination if necessary.

### Cabling for Optional SCSI Devices

Depending on the model, your computer may include one of the SCSI cables shown in the next illustration.



*SCSI Cable Options*

Because your computer comes preconfigured, cable configuration does not become a consideration until you decide to add an optional SCSI device.

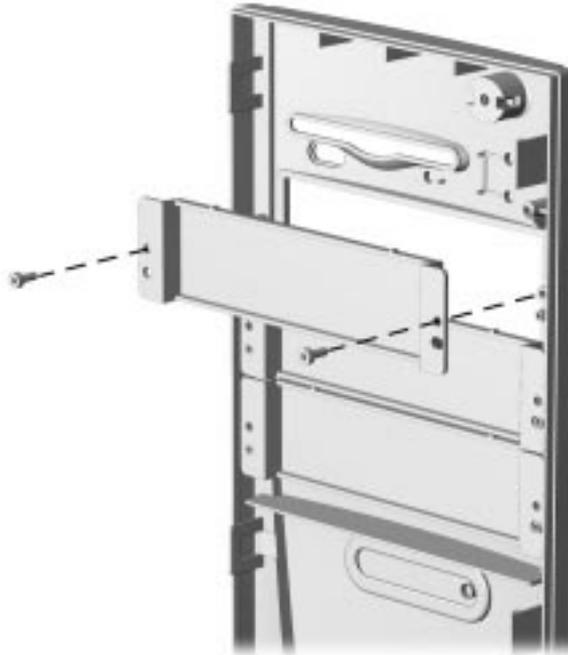
- ❶ Computers with 2-peripheral SCSI cables (without termination) must have termination enabled on the last device.
- ❷ Computers with 3- and 4-peripheral SCSI cables come with a terminator ❸ on the end of the cable. The connector on the opposite end of the cable always connects to the system board. All SCSI devices connected with these cables must have their termination disabled.
- ✍ 4X and 8X devices may not have terminating jumpers on the device. Termination on these devices must be achieved with terminated cable.

For additional information about installing optional SCSI devices, refer to the documentation that comes with the device or contact your Compaq authorized dealer, reseller, or service provider.

## Removing a *Blank Drive Bezel*

To remove a blank drive bezel, complete the following steps:

1. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the side panel and front bezel.
2. Remove the screws securing the appropriate drive bezel from inside the front bezel.



*Removing a Drive Bezel*

## Installing a CD-ROM, Tape, or PD-CD Drive

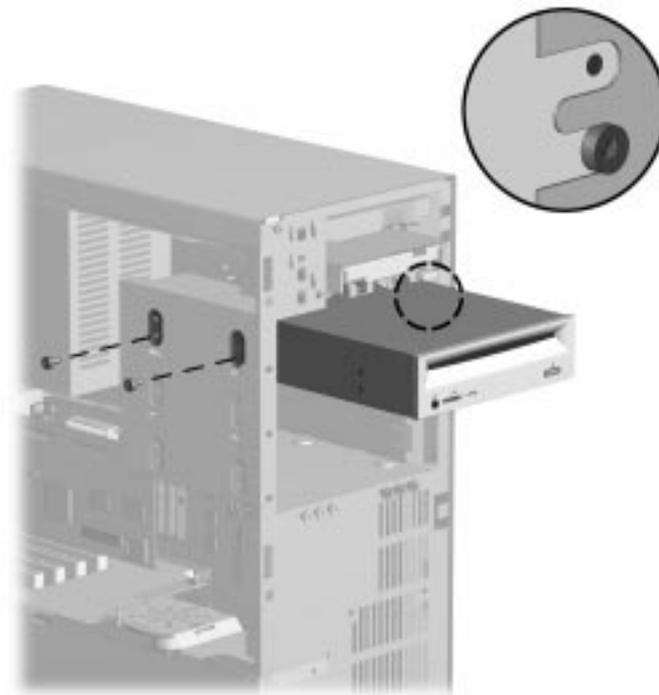
To install an optional CD-ROM drive, IDE tape drive, or PD-CD Drive, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

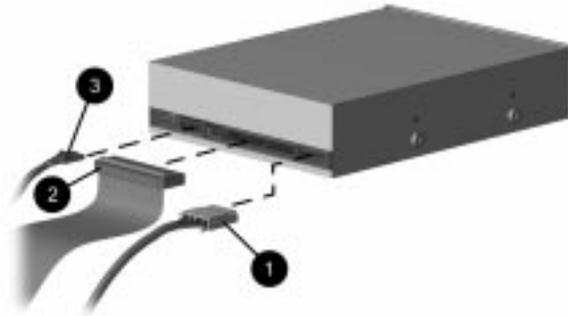
2. Turn off the computer, and remove the side panel and front bezel.

3. Install the guide screw into the front screw hole on the right-hand side of the drive.
- ✎ Some options use M3 metric thread hardware. Extra guide screws are provided on the front of the chassis, under the front bezel. The Compaq-supplied metric screws are black.
4. Install the drive in the desired drive bay and secure the drive with two screws through the side of the drive cage.
- ✎ Be sure the guide screw lines up with the guide slot in the drive cage.

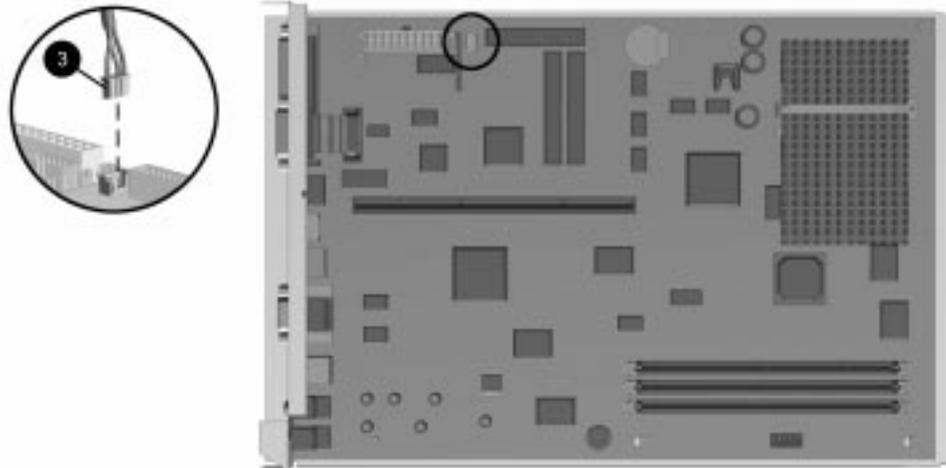


*Aligning the Guide Screw and Installing an Optional Drive*

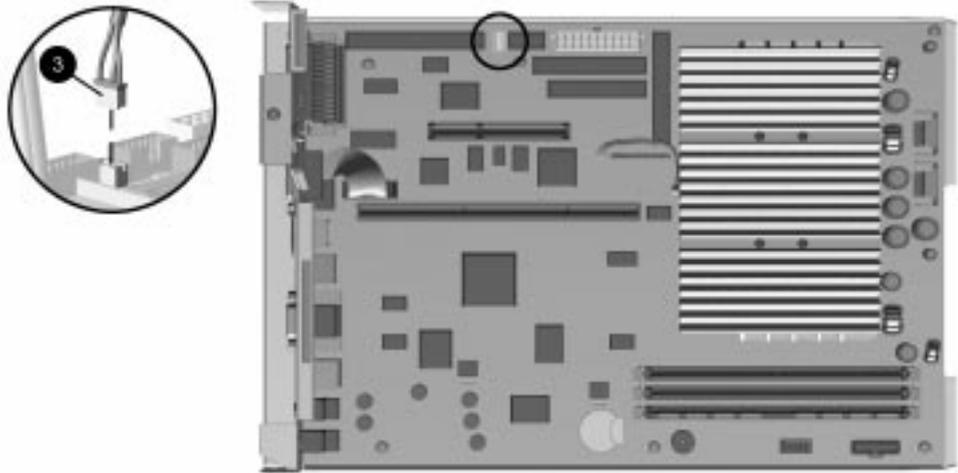
5. Connect the drive power **1** and **2** signal cables and, if it is a CD-ROM drive or PD-CD Drive, connect the audio **3** connector. The other end of the audio cable **3** should be connected to P4 on the system board.



*Connecting the Drive Cables*



*Connecting the Audio Cable to P4 on the Pentium-Based System Board*



*Connecting the Audio Cable to P101 on the Pentium II–Based System Board*

6. Remove the blank drive bezel from the inside of the front bezel.
7. Replace the front bezel and side panel.
8. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for more information.
9. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.

### **Installing a 3.5-Inch Drive into a 5.25-Inch Drive Bay**

To install a 3.5-inch drive into a 5.25-inch drive bay, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the side panel and front bezel.

3. Attach the 3.5-inch drive to the 5.25-inch bracket and secure the drive to the bracket with the screws provided.

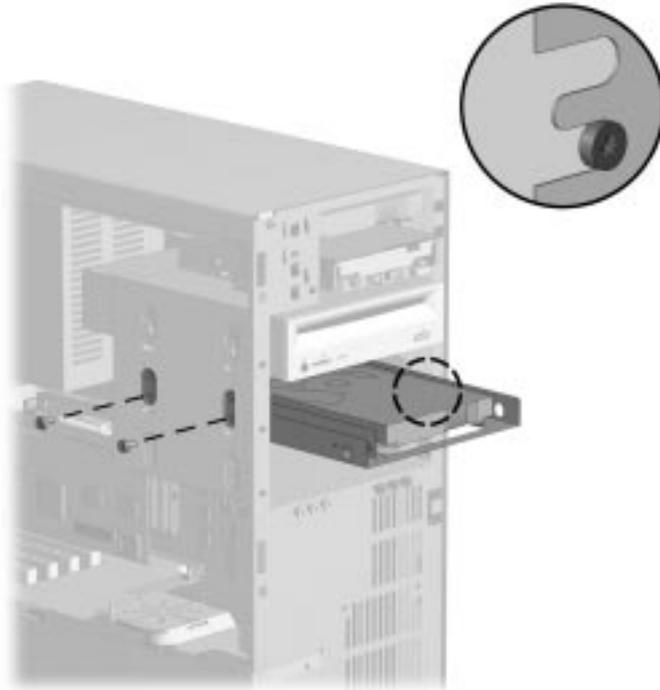


*Attaching a 3.5-Inch Drive to the 5.25-Inch Bracket*

4. Install the guide screw into the front screw hole on the right-hand side of the bracket.
- ✎ Some options use M3 metric thread hardware. Extra guide screws are provided on the front of the chassis, under the front bezel. The Compaq-supplied metric screws are black.

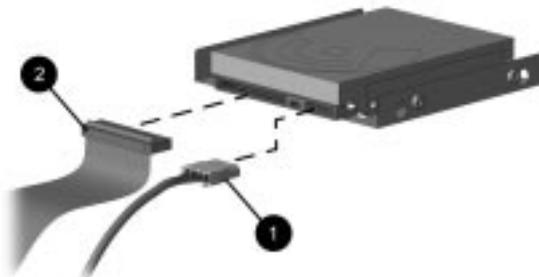
5. Install the bracket and drive into the desired drive bay and secure the bracket with two screws through the side of the drive cage.

✎ Be sure the guide screw lines up with the guide slot in the drive cage.



*Installing a Bracket and Optional 3.5-Inch Drive*

6. Connect the drive power **1** and signal **2** cables.



*Connecting the Drive Cables*

7. Remove the blank drive bezel from the inside of the front bezel, if necessary.
  8. Replace the front bezel and side panel.
  9. Reconfigure the computer, if necessary. Refer to Chapter 8, “Using Compaq Utilities,” for more information.
- ✎ If you have installed a second diskette drive (B:), you will need to reconfigure the computer, using Computer Setup, to recognize the B: drive. Choose the Storage option, under Built-in Devices, to reconfigure the drive.
10. If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.

## Removing a Drive from the Drive Cage

To remove a drive from the drive cage, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.  
  
For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”
  2. Turn off the computer, disconnect the power cord from the electrical outlet, and remove the side panel and front bezel.
  3. Remove the two screws securing the drive to the drive cage.
- ✎ If removing the standard diskette drive, you must remove the plastic power switch holder to access the front screws securing the drive to the drive cage. To remove the switch holder, grasp the tab in the center of the holder and slide the holder up and out.
4. Disconnect the drive power and signal cables and, if it is a CD-ROM drive or PD-CD Drive, disconnect the audio connector.
  5. Remove the drive from the drive cage and store in antistatic packaging.

## Removing the Power Supply

To remove the power supply, complete the following steps:



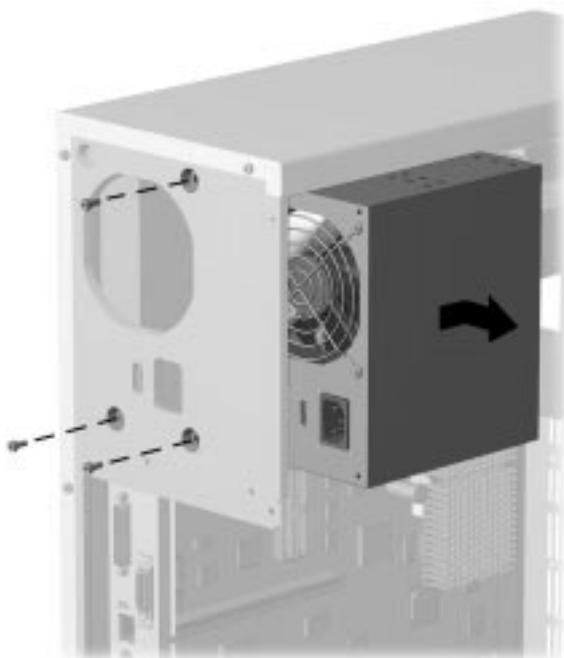
**WARNING:** This procedure should be performed only by qualified personnel. Disconnect the power cord from the electrical outlet and the computer before removing the power supply. Failure to disconnect the power before opening the computer can result in personal injury or equipment damage.

---

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.  
  
For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”
2. Turn off the computer, disconnect the power cord from the electrical outlet, then remove the side panel.
3. Disconnect the power connector from the system board and from any drives or other peripherals.

 Label each power connector, before disconnection, with the connection location. After doing this, you can easily reconnect power to the correct devices.

4. Remove the three screws securing the power supply to the back of the computer chassis.
5. Slide the power supply toward the front of the computer chassis and lift out to remove.



*Removing the Power Supply*

## **Installing the Power Supply**

To install the power supply, complete the following steps:



**WARNING:** This procedure should be performed only by qualified personnel. Do not reconnect power to the computer until the computer cover is replaced. Connecting the power before replacing the computer cover can result in personal injury or equipment damage.

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1. Place the power supply in the computer chassis and slide the power supply to the rear of the chassis.
2. Hold the power supply in place and secure the power supply to the chassis with the three screws.

3. Connect the power connector to the system board and to any drives or other peripherals.



**WARNING:** This equipment is designed for connection to a grounded (earthed) outlet. The grounding type plug is an important safety feature. To reduce the risk of electrical shock, damage to your equipment, or loss of your data, do not disable this feature.



**CAUTION:** Ensure that the voltage select switch is in the proper position (115 or 230 VAC). Failure to do so will result in damage to the equipment.

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## Installing an External Infrared Transceiver

To connect an external infrared transceiver to the computer, follow these steps:

1. Locate the external infrared transceiver connector on the back of the computer (yellow-colored icon).
2. Plug in the transceiver cable.



*Connecting an External Infrared Transceiver*

3. Follow the instructions provided in the transceiver kit to install necessary software and to reconfigure your computer to recognize the transceiver.

# *chapter* 8

## USING COMPAQ UTILITIES

### **Configuration and Diagnostics Utilities**

If you call Compaq Customer Support for help with your computer, you need to have the computer serial number and system overview available for answering questions. The configuration and diagnostic utilities can provide this information and can also be used for the following:

- To change factory default settings, and to set or change the system configuration, which is sometimes necessary when you add or remove hardware
- To solve system configuration errors detected during the power-on self-test (POST)
- To establish and manage passwords and other security management features
- To establish and manage energy-saving timeouts and other power management features
- To determine if devices are recognized by the system and functioning properly
- To determine information about the operating environment of the system
- To back up or upgrade the diagnostics software

## **When to Reconfigure Your Computer**

When you add or remove optional equipment, you may need to reconfigure the computer to recognize these changes. If you install a plug and play device, Windows automatically recognizes the device and configures your computer. If you install a non-plug and play device, you must reconfigure your computer by running Computer Setup.

## **Compaq Utilities**

This section describes the options available in Compaq Utilities. When using these utilities, see the online help for specific information.

### **Using the Compaq Utilities Menu**

To access the Compaq Utilities menu, complete the following steps:

1. Turn on or restart the computer.
  2. When the F10 Setup message appears in the lower-right corner of the Compaq logo screen, press the F10 key.
- ✎ If you do not press the F10 key while the message is displayed, you must turn the computer off, then on again to access the utility.
3. Press Enter to bypass the title and welcome screens. The Compaq Utilities menu appears.

The Compaq Utilities menu offers the following options:

- Computer Setup
- Computer Checkup (TEST)
- View System Information (INSPECT)
- Create a Diagnostics Diskette
- Exit

### **Computer Setup**

The main screen of Computer Setup includes two buttons: Built-In Devices and Add-In Devices. The following tables list and describe the options available under each of the two buttons:

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## Built-In Devices

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Sub-Menu Button	Configuration Option	Description or Function
<b>Video</b>	Driver and resolution	Lists driver and current resolution settings.
	<b>Storage</b>	
	Diskette	Allows you to specify diskette drive types. Allows you to enable second diskette drive.
	Removable Media	Allows you to disable boot ability and/or disable write ability.
	IDE Devices	Lists detected IDE devices.
	SCSI Devices	Lists detected SCSI devices.
	Boot Order (button)	Allows you to specify device boot order by reordering the numbered devices in the Current Boot Order box.
<b>Input Devices</b>	Keyboard	Keyboard type and IRQ settings. Allows you to specify Num Lock state at power-on.
	Mouse	Mouse type and IRQ settings.
	Game Port	Allows you to enable game port (optional).
<b>Security Management</b>	Power-On Password	Allows you to enable power-on password. Allows you to specify prompting for power-on password. Allows you to enable Network Server Mode, which allows for restarting of computer from hard drive or network when the keyboard is disabled. Allows you to enable QuickLock/QuickBlank. <b>NOTE:</b> To maintain the security of QuickLock/QuickBlank, you must also disable the USB ports.

*continued*

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**Built-In Devices** *continued*

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<b>Sub-Menu Button</b>	<b>Configuration Option</b>	<b>Description or Function</b>
<b>Security Management</b> <i>(continued)</i>	Setup Password	Allows you to enable Setup (administrator) password, controlling access to Computer Setup.  Allows you to specify Smart Cover Sensor settings (Disabled, Notify User).
	Advanced (button)	Allows you to lock or unlock Smart Cover Lock.  Allows you to disable External Ports (USB, serial, parallel).  Allows you to disable Embedded Controllers (SCSI, network, audio).
<b>System Information</b>	Processor	Lists CPU type, maximum speed, and presence of coprocessor.
	System Parameters	Lists asset tag and serial number, which are already assigned to the computer.  Allows you to specify ownership tag, which is displayed during POST.
	Bus Priority	Allows you to specify ISA or PCI bus priority.
	Quick Boot	Allows you to enable Quick Boot, which is faster than Full Boot, but does not run all of the diagnostic tests that are run during Full Boot. You can choose to: <ul style="list-style-type: none"><li>• Use Quick Boot every time (default).</li><li>• Use Full Boot every time.</li><li>• Use Full Boot periodically (specify interval from 1 to 31 days).</li></ul>

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*continued*

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**Built-In Devices** *continued*

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<b>Sub-Menu Button</b>	<b>Configuration Option</b>	<b>Description or Function</b>
<b>System Information</b> <i>(continued)</i>	POST Messages Descriptive/Clean Mode	Allows you to specify Clean Boot or Descriptive Boot. <ul style="list-style-type: none"><li>• Clean Boot suppresses most system messages during POST, such as memory count and non-error text messages. If a POST error occurs, the screen will display the error message. To manually switch to Descriptive mode during POST, press any key (except F10).</li><li>• Descriptive Boot shows all system messages during POST.</li></ul>
	Date/Time (button)	Allows you to modify or enter date and time.
<b>Communications</b>	Serial Ports	Lists available serial ports and settings.  Allows you to disable serial ports by selecting Disable from the Settings list.
	Parallel Port	Lists available parallel port and settings.  Allows you to disable serial ports by selecting Disable from the Settings list.

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**Built-In Devices** *continued*

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<b>Sub-Menu Button</b>	<b>Configuration Option</b>	<b>Description or Function</b>
<b>Power Management</b>	Energy Save	Allows you to enable or disable Energy Save (Standby).  Allows you to specify whether power LED will blink during Standby and Suspend.  NOTE: If you select the "Blink LED during Energy Save" option, the power-on light will blink: <ul style="list-style-type: none"><li>• once every second during Standby.</li><li>• once every two seconds during Suspend.</li></ul>
	Hard Drive	Allows you to set hard drive timeouts.
	System	Allows you to set system timeouts.  NOTE: You can also set some power management preferences in Windows 95 by selecting the Power Management and Display icons in the Control Panel.
	Power Button Mode	Allows you to specify On/Off mode or Suspend mode.
Fan	Allows you to specify system fan operation during Standby: <ul style="list-style-type: none"><li>• Always On</li><li>• BIOS Controlled</li></ul> <b>NOTE:</b> This feature is only available on Pentium-based models, operating in non-ACPI environments. If you have a Pentium-based model, and your version of Computer Setup does not include this feature, you can download a version of Computer Setup that includes this feature from the Compaq Web Site ( <a href="http://www.compaq.com">www.compaq.com</a> ).	

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**CAUTION:** Using the Energy Save Monitor feature with non-Energy Star compliant monitors may cause video distortion when the Energy Save timeout occurs.

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## Add-In Devices

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Sub-Menu Button	Description
ISA Boards	Lists installed ISA boards. Allows you to Add or Remove boards, and to View or Edit board information.
PCI Boards	Lists installed PCI boards. Allows you to View or Edit board information.

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### Using the Main Screen Menu Bar

The menu bar near the top of the main Computer Setup screen includes the following options: File, View, and Help.

- Use the File menu to:
  - Save Changes and Exit
  - Exit without Saving Changes
  - Set Defaults and Exit
  - Save and Restore System Configuration (Replicated Setup)
-  For more information about Replicated Setup, refer to Chapter 2, “Understanding and Using Intelligent Manageability.”
- Use the View menu to view DMA, I/O, IRQ, and Memory settings.

## Computer Checkup (TEST)

Use Computer Checkup (TEST) in the following instances:

- To determine if all devices are recognized by the system and functioning properly. Running TEST is optional, but recommended, after you install or connect a new device.
- To save, print, or display the information generated by TEST. It is recommended that you run TEST and have the printed report available before placing a call to the Compaq Customer Support Center.
- To assist your Compaq authorized dealer, reseller, or service provider in analyzing the system by allowing the service provider to reproduce the same environment on another computer for testing.

To run Computer Checkup (TEST), complete the following steps:

1. Turn on only the external devices that you wish to test. You may wish to leave the printer connected to log error messages.
2. Access the Compaq Utilities menu.
3. From the Compaq Utilities menu, select Computer Checkup (TEST).
4. When the test option menu appears, select the option to view the device list.
5. Verify that TEST correctly detected the devices installed.

 This utility will detect all devices manufactured by Compaq; devices from other manufacturers may not be detected.

- If the list is correct, select OK and go on to step 6.
- If the list is incorrect, be sure that any new devices are installed properly. If you do not find an installation problem, call your Compaq authorized dealer, reseller, or service provider.

6. Select one of the following from the test option menu:
    - ❑ **Quick Check Diagnostics**—This option runs a quick, general test on each device with a minimal number of prompts. If errors occur, they are displayed when the testing is complete.
    - ❑ **Automatic Diagnostics**—This option runs unattended, maximum testing of each device with minimal prompts. You can choose how many times to run the tests, to stop on errors, or to print or file a log of errors.
    - ❑ **Prompted Diagnostics**—This option allows maximum control over the device testing process. You can choose attended or unattended testing, decide to stop on errors, or choose to print or file a log of errors.
  7. Follow the instructions on the screen as the diagnostic tests are run on the devices. When the testing is complete, the screen displays the test option menu again.
-  When running TEST, record any error message numbers and have them available when you contact your Compaq authorized dealer, reseller, or service provider for assistance.
8. Exit to the Compaq Utilities menu.

## **View System Information (INSPECT)**

Use View System Information (INSPECT) in the following instances:

- To view information about the system once it has been configured.
- To save, print, or display the information generated by INSPECT. It is recommended that you run INSPECT and have the printed report available before placing a call to the Compaq Customer Support Center.
- To assist your Compaq authorized dealer, reseller, or service provider in analyzing the system by allowing the service provider to reproduce the same environment on another computer for testing.

INSPECT provides the following information about the system's operating environment:

- Contents of the operating system startup files
- Current memory configuration
- ROM versions
- Type of processor and coprocessor
- Types of drives installed
- Active printer and communications interfaces
- Type of modem installed
- Graphics details
- Windows *WIN.INI* file details

### **Create a Diagnostics Diskette**

Create a Diagnostics Diskette allows you to back up the diagnostics software preinstalled on your computer onto diskette.

- ✍ Compaq strongly recommends that you make a backup copy of the diagnostics software as soon as possible.
- ✍ This utility is not available in Compaq Diagnostics for Windows; it must be accessed through the Compaq Utilities menu.

### **Exiting the Compaq Utilities Menu**

To exit the Compaq Utilities menu, select the Exit option or press Ctrl+Alt+Delete. Either option restarts the computer and saves any changes you've made.

# *chapter* 9

## TROUBLESHOOTING

This chapter provides information on how to identify and correct some common disk, display, memory, network, and software problems. It also identifies and explains some common messages you may receive on the screen.

Consult Appendix C, “Error Messages,” for an explanation of specific messages that may display during the power-on self-test (POST) at startup. You will not see these messages if your computer is configured for the Clean Boot mode.

Clean Boot is a fast boot process that suppresses most system messages during POST, such as memory count and non-error text messages. If a POST error occurs, the screen will display the error message. To manually switch to Descriptive mode during POST, press any key (except F10). The default boot mode is Clean Boot.

Descriptive Boot shows all system messages during POST and takes longer to complete. To see the system messages every time you restart your computer, reconfigure your computer to the Descriptive Boot mode, using Computer Setup.

### Helpful Hints

If you encounter some minor problem with your computer, monitor, or software, refer to the following list of general suggestions before taking further action:

- Check that the computer and monitor are plugged into a working electrical outlet.
- Check to see that the computer is turned on and the green power light is on.
- Check to see that the monitor is turned on and the green monitor light is on.
- Turn up the brightness and contrast controls of the monitor if the monitor is dim.
- Press and hold any key. If the system beeps, then your keyboard is operating correctly.

- Check all cable connections for loose connections or incorrect connections.
- Check that all switch settings have been set as instructed by the Configuration utility.
- Be sure that all the needed device drivers have been installed (for example, if you are using a mouse, you need a mouse device driver).
- Make sure that all printer drivers have been installed for each application.
- Take out all diskettes from the diskette drives before you turn on your system.

## Solving Minor Problems

While your computer is configured for your particular hardware and software, problems you encounter while working may not be unique. Eliminating the typical problems described in this section may save you time and money. If you do have a problem with your computer, consider the problems and possible solutions outlined in the following series of tables. You may discover something you can resolve easily for yourself. If the condition persists, contact your Compaq authorized reseller or service provider.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Computer won't turn on	Computer is not connected to an external power source.	Connect to an external power source.
	Cables to the external power source are unplugged.	Ensure that cables connecting the computer and the external source are plugged in properly.
	A defective PCI or ISA card has been installed.	Remove any adapter card that was just installed.
Computer doesn't automatically display the date and time	RTC (real-time clock) battery may need to be replaced. Battery life is approximately 5 years.	Replace the RTC battery. Refer to Appendix G, "New Battery Installation," for installation instructions, or contact your Compaq authorized reseller or service provider for RTC battery replacement.
Computer does not beep during the power-on self-test (POST)	Speaker volume has been turned down.	Click Start, then select Programs, Accessories, Multimedia, Volume Control.

*continued*

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## Solving Minor Problems *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Computer powered off automatically	The unit temperature was exceeded. The fan may be blocked.	<ol style="list-style-type: none"><li>1. Unit is in an exceedingly hot environment. Let it cool down.</li><li>2. Contact your Compaq authorized reseller or service provider.</li></ol>
	The unit temperature was exceeded because the computer was functioning with the cover or side panel removed.	Replace cover or side panel, and let the computer cool down before attempting to turn on power to the computer.
Computer appears to pause periodically	Network driver is loaded and no network connection is established.	Establish a network connection, or use Computer Setup or Windows Device Manager to disable the network controller.
Cannot remove computer cover or side panel	Smart Cover Lock is locked.	Unlock the Smart Cover Lock using Computer Setup.  The Smart Cover FailSafe Key, a device for manually disabling the Smart Cover Lock, is available from Compaq. You'll need the FailSafe Key in case of forgotten password, power loss, or computer malfunction.

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## Solving Disk Problems

If you encounter disk problems, refer to the common causes and solutions listed in the following table.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Diskette drive light stays on	Diskette is damaged.	Run Scan Disk. Click Start, then select Programs, Accessories, System Tools.
	Diskette is incorrectly inserted.	Remove diskette and reinsert.
	Drive button is not pushed in.	Push in drive button.
	Software program is damaged.	Check the program diskettes.
	Drive cable is not properly connected.	Reconnect drive cable.

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*continued*

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**Solving Disk Problems** *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Diskette drive cannot write to a diskette	Diskette is not formatted.	Format the diskette.
	Diskette is write-protected.	Use another diskette or remove the write protection.
	Writing to the wrong drive.	Check the drive letter in your path statement.
	Not enough space is left on the diskette.	Use another diskette.
	Diskette write control is enabled.	Check your security feature settings.
A problem has occurred with a disk transaction	The directory structure is bad, or there is a problem with a file.	Run Scan Disk. Click Start, then select Programs, Accessories, System Tools.
Diskette drive cannot read a diskette	Diskette is not formatted.	Format the diskette.
	You are using the wrong diskette type for the drive type.	Check the type of drive you are using and use the correct diskette type.
Drive not found	Cable is loose.	Check connections.
	Computer configuration does not recognize second diskette drive.	Use Computer Setup to enable the second diskette drive. Choose the Storage option, under Built-in Devices, to reconfigure the drive.
Second Ultra ATA hard drive does not perform optimally	You are using the wrong cable for the drive type.	Reinstall the second Ultra ATA hard drive using an 80-conductor cable.
Nonsystem disk message	The system is trying to start from a diskette that is not bootable.	Remove the diskette from the drive.

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## Solving Display Problems

If you encounter display problems, refer to the documentation that came with your monitor and to the common causes and solutions listed in the following table.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Blank screen	Monitor is not turned on and the monitor light is not on.	Turn on the monitor and check that the monitor light is on.
	The cable connections are not correct.	Check the cable connection from the monitor to the computer and to the electrical outlet.
	The QuickBlank feature has been enabled through Computer Setup.	Run Computer Setup and disable the QuickBlank feature.
	The energy saver feature has been enabled.	Hit any key or type your password.
	The RGB (Red, Green, Blue) input switch on the back of the monitor is incorrectly set.	Set the monitor's RGB input switch to 75 ohms and, if there is a sync switch, set it to External.
	You are using a fixed-sync monitor and it won't sync at the resolution chosen.	Be sure that the monitor can support the selected resolution and refresh rate.
Monitor does not function properly when used with energy saver features	Monitor without energy saver capabilities is being used with energy saver features enabled.	Disable monitor energy saver feature.
Video colors are wrong	This indicates that either the cabling or monitor impedance is incorrect.	<ol style="list-style-type: none"> <li>1. Ensure that the Red, Green, and Blue BNC cables are connected to the corresponding monitor connectors.</li> <li>2. Be sure your monitor's RGB inputs are set to 75 ohms.</li> </ol>

*continued*

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**Solving Display Problems** *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Dim characters	The brightness and contrast controls are not set properly.	Adjust the monitor brightness and contrast controls.
	Cables are not properly connected.	Check that the video cable is securely connected to the video card and the monitor.
	The RGB switch on the back of the monitor is incorrectly set.	Set the RGB switch (and sync options, if this option is available) to 75 ohms, with the sync set to External. Refer to the documentation included with the monitor.
Blurry display or requested resolution cannot be set	If the graphics controller was upgraded, the correct display drivers may not be loaded.	Install the display drivers on the diskette included in the upgrade kit.
Screen goes blank	You may have a screen blanking utility installed, or energy saver features are enabled.	Press any key or type password.
The picture is broken up, or it rolls, jitters, or blinks	The monitor connections may be incomplete or the monitor may be incorrectly adjusted.	<ol style="list-style-type: none"><li>1. Be sure the monitor cable is securely connected to the computer.</li><li>2. In a 2-monitor system or if another monitor is in close proximity, be sure the monitors are not interfering with each other's electromagnetic field by moving them apart.</li></ol>
Monitor overheats	There is not enough ventilation space for proper airflow.	Leave at least 3 inches (7.6 cm) of ventilation space. Be sure there is nothing sitting on top of the monitor obstructing the air flow.
Cursor will not move using the arrow keys on the keypad	The Num Lock key may be on.	Press the Num Lock key. The light should not be on if you want to use the arrow keys.

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## Solving Audio Problems

If you encounter audio problems, refer to the common causes and solutions listed in the following table.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Sound does not come out of the speaker	Software volume control is turned down in Microsoft Sound System Control Panel, or CD-ROM volume control on the front or back of the computer is turned down.	Click Start, then select Programs, Accessories, Multimedia, Volume Control.  Turn the CD-ROM volume control knob on front or back of computer to increase the volume.

## Solving Printer Problems

If you encounter printer problems, refer to the documentation that came with your printer and to the common causes and solutions listed in the following table.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Printer will not print	Printer is not turned on and online.	Turn the printer on and make sure it is online.
	The correct printer drivers for your application are not installed.	Install the correct printer drivers for your application.
	If you are on a network, you may not have made the connection to the printer.	Make the proper network connections to the printer.
Printer will not turn on	The cables may not be connected properly.	Reconnect all cables and check the power cord and electrical outlet.
Prints garbled information	The correct printer drivers for your application are not installed.	Install the correct printer driver for your application.
	The cables may not be connected properly.	Reconnect all cables.
Printer is off line	The printer may be out of paper.	Check the paper tray and refill it if it is empty. Select online.

## Solving Hardware Installation Problems

If you encounter hardware installation problems, refer to the documentation that came with the hardware option and to the common causes and solutions listed in the following table.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
A new device is not recognized as part of the computer system	Computer Setup or the configuration utility has not been run to configure the new device.	Run Computer Setup or the Configuration utility.
	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected and that pins in the cable or connector are not bent down.
	Power switch of new external device is not turned on.	Turn off the computer, turn on the external device, then turn on the computer to integrate the device with the computer system.

## Solving Network Problems

Some common causes and solutions for network problems are listed in the following table. These guidelines do not discuss the process of debugging the network cabling.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Remote Wakeup feature is not functioning.	The Remote Wakeup feature is not available when using an AUI network connection.	Use an RJ-45 network connection.
	Remote Wakeup is not enabled.	Use the Network control application to enable Remote Wakeup.  For more information, refer to Chapter 2, "Understanding and Using Intelligent Manageability."
Network driver does not detect network controller.	Network controller is disabled.	Run Computer Setup and enable network controller.

*continued*

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**Solving Network Problems** *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Network status link light does not turn on or flashes.	No active network is detected.	Check cabling and network equipment for proper connection.
	Network controller is not set up properly.	Use the Network control application to verify that device is working properly.  For more information, refer to Chapter 4, "Using Network Communications."
	System is configured for AUI connection.	No solution; link LED does not apply to AUI connections.
	Network driver is not properly loaded.	Reinstall network drivers.  For more information, refer to Chapter 4, "Using Network Communications."
	System cannot autosense the network.	Disable autosensing capabilities and force the system into the correct operating mode.  For more information, refer to Chapter 4, "Using Network Communications."

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*continued*

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**Solving Network Problems** *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Diagnostics reports a failure.	The cable is not securely connected.	Ensure that the cable is securely attached to the network connector and that the other end of the cable is securely attached to the correct device.
	The cable is attached to the incorrect connector.	Ensure that the cable is attached to the correct connector.
	There is a problem with the cable or a device at the other end of the cable.	Ensure that the cable and device at the other end are operating correctly.
	The network controller is defective.	Contact your Compaq authorized service provider.
	Network controller interrupt or memory conflict with an expansion board.	Run Computer Setup and modify the network controller memory value.
Diagnostics passes, but the computer does not communicate with the network.	Network drivers are not loaded, or driver parameters do not match current configuration.	Make sure the network drivers are loaded and that the driver parameters match the configuration of the network controller.
	The network controller is not configured for this computer.	Select the Network icon at the Control Panel.
	Network controller interrupt overlaps the interrupt of an expansion board.	Run Computer Setup and modify the network controller memory value.
Network controller stopped working when an expansion board was added to the computer.	Network controller interrupt or memory conflict with an expansion board.	Run Computer Setup and modify the network controller memory value.
	The network controller requires drivers.	Verify that the drivers were not accidentally deleted when the drivers for a new expansion board were installed.
	The files containing the network drivers are corrupted.	Reinstall the network drivers, using your backup diskettes.

*continued*

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## Solving Network Problems *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Network controller stopped working without apparent cause.	The files containing the network drivers are corrupted.	Reinstall the network drivers, using your backup diskettes.
	The cable is not securely connected.	Ensure that the cable is securely attached to the network connector and that the other end of the cable is securely attached to the correct device.
	The network controller is defective.	Contact your Compaq authorized service provider.

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## Solving Memory Problems

If you encounter memory problems, refer to the common causes and solutions listed in the following table.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
System won't boot or does not function properly after installing additional memory modules	Additional memory modules are not the correct type or speed grade for system.	Replace additional modules with 168-pin synchronous DRAM DIMMs that meet the following criteria: <ul style="list-style-type: none"><li>• Rated for 66MHz or faster operation</li><li>• Have an access time (CLK to Q) of 9nS or less</li><li>• Support CAS latency 2 or 3 operation</li><li>• Are SPD-compliant</li></ul>
Out of Memory error	Memory configuration may not be set up correctly.	Use the Device Manager to check memory configuration.
	You have run out of memory to run the application.	Check the application documentation to determine the memory requirements.
Memory count during POST is wrong	The memory modules may not be installed correctly.	Check that the memory modules have been installed correctly and run the Computer Setup or Configuration utility.

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*continued*

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## Solving Memory Problems *continued*

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Insufficient memory error during operation	Too many Terminate and Stay Resident programs (TSRs) are installed.	Delete any TSRs that you do not need.
	You have run out of memory for your application.	Check the memory requirements for the application, or add more memory to the computer.

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## Solving SCSI Problems

If you encounter SCSI device problems, refer to the common causes and solutions listed in the following table.

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<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
System with IDE and SCSI drives will not boot from SCSI hard drive	The IDE drive is not disabled through the Configuration utility.	Run the Configuration utility and disable the primary IDE drive.
System without an IDE drive will not boot from a SCSI drive	The SCSI drive is not configured correctly.	Refer to the section "Installing a SCSI Device" in Chapter 6 or Chapter 7, to ensure that drive cabling and jumpers are set correctly. To boot a SCSI drive, the drive ID number must be set to 0.

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## Solving CD-ROM Problems

If you encounter CD-ROM problems, refer to the common causes and solutions listed in the following table or to the documentation that came with the optional CD-ROM.

Problem	Cause	Solution
System will not boot from CD-ROM drive	The CD-ROM boot is not enabled through the Computer Setup utility.	Run the Computer Setup or Configuration utility and set the drive priorities.
CD-ROM devices are not detected, driver is not loaded	CD-ROM drive is not connected properly or not properly terminated.	Refer to the documentation that came with the CD-ROM.  Refer to the section "Installing a SCSI Device" in Chapter 6 or Chapter 7, to ensure that drive cabling and jumpers are set correctly. To boot a SCSI drive, the drive ID number must be set to 0.

## Solving Software Problems

Most software problems occur as a result of the following:

- The application was not installed correctly.
- Memory was not allocated correctly.
- There is a conflict between applications.

## Solving Problems Using Local Alert Messages

A Local Alert message notifies you of an impending hardware fault. If the computer is connected to a network and the Compaq Insight Management Agents are installed and configured, an SNMP trap (message) is sent to the specified SNMP-compliant management application.

A Local Alert message also tells you the steps you need to take to avoid loss of data and damage to the computer. The system administrator can create a customized action message that might include contact telephone or pager numbers.

To close a Local Alert message, click the Close button. To retrieve fault information after closing the dialog, run Compaq Insight Personal Edition.

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### System Temperature Alert Message

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Message	Recommended Actions
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Your computer's internal temperature has risen to an unsafe level. Failure to take action soon may result in your computer automatically turning off without further warning.

1. Save open files and exit all applications.
  2. Shut down Windows.
  3. Turn off your computer when Windows says that it is safe to do so.
  4. If the computer cover is not firmly attached, reposition it and secure the cover latches or thumbscrews.
  5. If you notice any airflow obstructions around the computer, remove them.
  6. Keep power to the computer off for 5 minutes. At that time, it should be safe to turn on power to the computer.
  7. Contact your system administrator if you are still experiencing problems.
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### IntelliSafe SMART Hard Drive Alert Message

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Message	Recommended Actions
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IntelliSafe SMART Hard Drive detects an imminent failure. Immediate action is recommended since data stored on drive xx may be lost.

1. Make note of the drive and system information provided.
  2. Save the critical data on the affected hard drive.
  3. Contact your system administrator.
-

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## Ultra ATA Integrity Monitoring Alert Message

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Message	Recommended Actions
<p>The Ultra ATA Integrity Monitor has detected an excessive number of data transmission errors between hard drive(s) xx and the processor.</p> <p>Error Number: 1736-199</p> <p>Disk Controller: xx</p> <p>Hard Drive xx</p> <p>Model: xx</p> <p>Capacity: xx MB</p> <p>Serial Number: xx</p> <p>Firmware Revision: xx</p> <p>System Serial Number: xx</p> <p>NOTE: Dynamically determined fields are represented by xx.</p>	<ol style="list-style-type: none"><li>1. Contact your System Administrator</li><li>2. Move non-Ultra ATA devices to the secondary controller.</li><li>3. If errors persist, replace the standard 40-conductor IDE cable with an 80-conductor Ultra ATA cable. Contact your Compaq Authorized Reseller.</li></ol>

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## ECC Fault Prediction Alert Message

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Message	Recommended Actions
<p>An excessive number of correctable memory errors has been detected on the system.</p> <p>Socket Number : xx</p> <p>Serial Number : xx</p> <p>Memory Type : xx</p> <p>Memory Size : xx MB</p>	<ol style="list-style-type: none"><li>1. Make note of the memory module information provided below if present.</li><li>2. Save open files and exit all applications.</li><li>3. Exit Windows.</li><li>4. Turn the system off, then turn it back on.</li><li>5. Have your System Administrator run the F10 Diagnostics 'RAM Long Test' if you are still experiencing problems.</li></ol>

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## Contacting Compaq Customer Support

For help and service outside of the U.S. and Canada, contact your Compaq authorized reseller or dealer. For a list of phone numbers, see the “Worldwide Telephone Numbers” table.

- ✎ If you take your computer to a Compaq authorized reseller, dealer, or service provider for service, remember to provide the setup and power-on passwords, if they are set.

## Worldwide Telephone Numbers

Locate your geographical area from the following table and use one of the telephone numbers for Compaq assistance.

**General Information Numbers**—Product information, technical assistance, and the location of your nearest Compaq authorized dealer, reseller, or service provider.

**Technical Support Numbers**—Hardware technical support in analyzing system configuration and diagnostic problems or troubleshooting.

**Customer Support Numbers**—Information on service and support programs including warranty, product catalogs, and white papers.

**PaqFax Numbers**—Automatic facsimile response system for technical and product specific information that is transmitted to any fax machine. PaqFax is available 24 hours a day.

- ✎ Telephone numbers are subject to change without notice.

## Worldwide Telephone Numbers

Location	Country Code	Telephone Number
<b>Argentina</b>		
General Information	+54	-1-796-1616
Technical Support	+54	-1-796-1717
<b>Australia</b>		
General Information		61-2-9911-1999
Technical Support		61-2-9911-1955
PaqFax		61-2-9911-1982
<b>Austria</b>		
General Information*		0222/8 78-16 16
Technical Support*		0222/8 78-16-16
Ordering Backup Software	+31	-55-38-43-39
<b>Belgium/Luxemburg</b>		
General Information*	Bel	0903/99.036(45BF/min)
	Lux	089/89.232 (12.5LF/min)
Compaq Care Center*	Bel	0903/99.036(45BF/min)
	Lux	089/89.232 (12.5LF/min)
Compaq Care Center Fax	+32	-2-725-22-13
General Fax	+32	-2-725-22-13
FaxPaq	+32	-2-716-96-96
BBS	+32	-2-716-95-92
Ordering Backup Software	+32	-2-716-96-78
Ordering Backup Software Fax	+32	-2-716-96-79
<b>Brazil</b>		
General Information	+55	-11-246-7866

\* Toll-free, domestic telephone number

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
<b>Canada</b>		
General Information		905-707-1715
Technical Support		1-800-OKCOMPAQ (1-800-652-6672)
Customer Support		1-800-263-5868
Ordering Backup Software		1-800-952-7689
Battery Pack Recycling		1-800-263-5868
<b>Caribbean</b>		
General Information		1-281-514-4220
Technical Support		1-281-518-2200
<b>Chile</b>		
General Information	+56	-2-274-1911
Technical Support	+56	-2-274-3007
<b>China</b>		
General Information		(86) 10 68313399
Technical support		(86) 10 68346721
BBS		(86) 10 68346709
PaqFax		(86) 10 68346724
Compaq Verification Center		(86) 10 68346739
Compaq Management Service Center		(86) 10 68313399-5873
<b>Colombia</b>		
General Information	+57	-1-312-0201
Technical Support	+57	-1-345-0266
<b>Czech Republic</b>		
General Information	+420	-2-232-8772
Technical Support	+420	-2-232-8772
<b>Denmark</b>		
General Information	+45	-45-90-45-90
Technical Support	+45	-45-90-45-45

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
<b>Finland</b>		
General Information	+358	-0-615-599
Technical Support*		9800-206-720
QuickLine (BBS)	+358	-0-6155 9870
<b>France</b>		
General Information	+33	-1-41-33-41-33
Technical Support	+33	-1-41-33-44-55
<b>Germany</b>		
General Information*		0180/3 22 12 21
General Information Fax*		0180/3 22 12 20
All Products Fax*		0180/5 21 21 17
Menu Selection*		0190/88 80 80 (0,12 DM/2 sec. or 3,60 DM/min.)
Presario Hotline*		0190/88 80 81 (0,12 DM/2 sec. or 3,60 DM/min.)
Notebook Hotline*		0190/88 80 82 (0,12 DM/2 sec. or 3,60 DM/min.)
Desktop Hotline*		0190/88 80 83 (0,12 DM/2 sec. or 3,60 DM/min.)
Server Hotline*		0190/88 80 84 (0,12 DM/2 sec. or 3,60 DM/min.)
QuickLine*		0180/5 21 21 18 (0,48 DM/min.)
FaxPaq*		0180/5 21 21 19 (0,48 DM/min.)
<b>Hong Kong</b>		
General Information		852-28681382
Technical Support		852-90116633
PaqFax		852-28671648

\* Toll-free, domestic telephone number

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
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**Hungary**

General Information	+36	-1-457-3600
Technical Support	+36	-1-457-3682

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**India**

General Information		91-80-559-6023
PaqFax		91-80-559-8989
BBS		91-80-559-8900

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**Israel**

General Information	+972	-3-6363-444
Fax	+972	-3-639-6601
Technical Support	+49	-89-9933-2891

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**Italy**

General Information	+39	-2-57-59-03-00
Technical Support	+39	-2-57-59-03-00
BBS	+39	-2-89-200-222
Ordering Backup Software	+39	-1-67-859-030

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**Japan**

General Information*		0120-101-589
Technical Support*		0120-101-589
Presario*		0120-099-589
Windows 95 Support*		0120-505-589
Ordering Backup Software*		0120-250-589
FaxStation		81-3-5402-0991

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**Korea**

General Information		82-2-3470-07001
Technical Support		82-2-523-3575 82-082-902-77774

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\* Toll-free, domestic telephone number

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
<b>Malaysia</b>		
General Information		603-717-1188
Technical Support		603-718-1636
<b>Mexico</b>		
General Information	+52	-5-229-7900
Technical Support	+52	-5-229-7910
PaqFax	+52	-5-229-7920
<b>Netherlands</b>		
General Information		0182-565805
Presario Customer Support*		06-32023091 (Dfl. 0.75/min)
Presario Fax*		06-8212391 (Dfl. 0.40/min)
Customer Support for all other products*		06-91681616 (Dfl. 0.75/min)
Fax for all other products*		06-8991116 (Dfl. 0.40/min)
QuickLine Bulletin Board		0182-572366
<b>New Zealand</b>		
General Information		64-9-307-3969
<b>Norway</b>		
General Information	+47	-22-07-20-20
Technical Support	+47	-22-07-20-20
<b>Poland</b>		
General Information	+48	-22-630-3535
Technical Support	+48	-22-630-3535
<b>Portugal</b>		
General Information	+351	-1-412-8400
Technical Support	+351	-1-412-8460

\* Toll-free, domestic telephone number

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
<b>Russia</b>		
General Information	+7	-095-967-1700
Technical Support	+7	-095-967-1700
<b>Singapore</b>		
General Information		65-753-6688
Customer Support Center		65-750-3030
PaqFax		65-750-4514
<b>South Africa</b>		
General Information		27-11-728-6999
Technical Support		27-11-728-6999
<b>Spain</b>		
General Information	+34	-902-10-14-14
Technical Support	+34	-1-640-1302
<b>Sweden</b>		
General Information	+46	-8-703 5200
Sales Information	+46	-8-703 52 40 Tone 1
Technical support, key accounts	+46	-8-703 52 40 Tone 2
Technical support, charged calls*		0729-36 20 00
FaqPax (hämtfax)	+46	-8-703 52 25
QuickLine (BBS)	+46	-8-703 52 20

\* Toll-free, domestic telephone number

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
<b>Switzerland</b>		
InfoLine		0844 844 111
Presario Hotline*		157 64 00 (SFr. 3.13/min.)
Equipment Hotline (Desktop and Notebooks)		01/838 22 22 (German) 01/838 22 23 (French)
Systems Hotline (Server and Internetworking Products)		01/838 22 22 (German) 01/838 22 23 (French)
QuickLine Bulletin Board		01/8 38 24 21
Ordering Backup Software		0800 556 206
<b>Taiwan</b>		
General Information		886-2-7351000
Technical Support		886-2-3761170
Email Address		taiwan@netgate.compaq.com
<b>Thailand</b>		
General Information		62-2-679-6222
<b>United Arab Emirates (Dubai)</b>		
General Information	+97	14 -818100
<b>United Kingdom</b>		
General Information		0990-134456
FaxPaq		0181-332-3550
QuickLine Bulletin Board		0181-332-9499

\* Toll-free, domestic telephone number

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**Worldwide Telephone Numbers** *continued*

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<b>Location</b>	<b>Country Code</b>	<b>Telephone Number</b>
<b>United States</b>		
Technical Support		1-800-OKCOMPAQ (1-800-652-6672)
General Information		1-800-345-1518
PaqFax		1-800-345-1518
Download Facility (modem access only)		1-281-518-1418
Ordering Backup Software		1-800-952-7689
Battery Pack Recycling		1-800-524-9859
<b>Venezuela</b>		
General Information	+58	-2-953-8844

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# *appendix* **A**

## AGENCY REGULATORY NOTICES

### **Federal Communications Commission Notice**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

### **Modifications**

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

### **Cables**

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods to maintain compliance with FCC Rules and Regulations.

## **Mouse Compliance Statement**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

## **Declaration of Conformity (United States only)**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this declaration, contact:

Compaq Computer Corporation  
P. O. Box 692000, Mail Stop 510101  
Houston, Texas 77269-2000

Or call (281) 514-3333.

To identify this product, refer to the Series number found on the product.

## **Energy Star Compliance**

Compaq Deskpro 4000 and 6000 Series Personal Computers marked with the Energy Star Logo are compliant with the U.S. Environmental Protection Agency (EPA) Energy Star Computers Program 2.0. The EPA Energy Star Logo does not imply endorsement by the EPA. As an Energy Star Partner, Compaq Computer Corporation has determined the products marked with the Energy Star Logo meet the Energy Star guidelines for energy efficiency.

The Energy Star Computers Program was created by the EPA to promote energy efficiency and reduce air pollution through more energy-efficient equipment in homes, offices, and factories. Compaq products achieve this by reducing the power consumption when not being used. Instructions for using the energy saving features of your computer are located in the "Power Management" section of this guide.

The power management feature of your computer is compatible with any network operating system or environment that supports APM1.1. This means the users in those environments will not be disconnected from the network during the low-power operating state.

The Power Management feature, when used in conjunction with an external Energy Star compliant monitor, will support the power-down features of the monitor. The Power Management feature allows an external monitor to go into low-power mode when the energy save timeout occurs. To take advantage of this energy savings, the monitor Power Management feature has been preset to power down the monitor after 15 minutes of system inactivity. Refer to the “Power Management” section of this guide for instructions on modifying or disabling this feature.



**CAUTION:** Using the Energy Save Monitor feature with non – Energy Star compliant monitors may cause video distortion when the Energy Save timeout occurs.

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## European Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms:

- EN55022 (CISPR 22)—Radio Frequency Interference
- EN50082-1 (IEC801-2, IEC801-3, IEC801-4)—Electromagnetic Immunity
- EN60950 (IEC950)—Product Safety

## Canadian Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

## Avis Canadien

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## German Ergonomics Notice

The Compaq Deskpro 4000 and 6000 Series of Personal Computers, when combined with Compaq Brand keyboards and monitors that bear the “GS” approval mark, meet the requirements of ZH 1/618 (German Safety Regulations for Display Work Places in the Office Sector). The installation guides included with the monitor provide configuration information.

## Japanese Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基  
幹技術装置です。この装置は、家庭環境で使用することを目的としていま  
がラジオやテレビジョン受信機に近接して使用されると、電波障害を引き  
ります。取扱説明書に従って正しい取り扱いをしてください。

## Laser Safety

All Compaq systems equipped with CD-ROM drives, LS-120 diskette drives, or PD-CD Drives comply with the appropriate safety standards, including IEC 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. It does not emit hazardous light; the beam is totally enclosed during all modes of customer operation and maintenance.

## CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.



**WARNING:** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

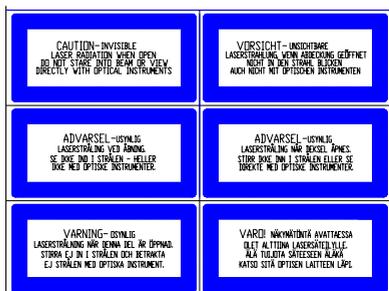


**WARNING:** Because the internal laser beam may cause eye damage, do not open the cabinet. Wearing glasses and contact lenses, etc., increases the hazard. All maintenance should be performed by an authorized Compaq service provider.

The removable laser product is classified as a CLASS 1 LASER PRODUCT. These labels are located on the outside of the laser product:



This system is classified as a CLASS 1 LASER PRODUCT. This label is located on the outside of your system. A similar label also appears on the internal laser product installed in your system.



If you have an LS-120 drive, this label is located next to the Class 1 Laser Product label on your system.

## Laser Information

- Laser Type: Semiconductor GaAIAs
- Wave Length: 780 +/- 35 nm
- Divergence Angle: 53.5 Degree +/- 5 Degree
- Output Power: 0.4 mW - 2.9 mW
- Polarization: Circular
- Numerical Aperture: 0.45 +/- 0.04

Only authorized technicians trained by Compaq should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

## Battery Notice



**WARNING:** This computer contains an internal lithium battery – powered real-time clock circuit. There is a risk of explosion and injury if the battery is incorrectly replaced or handled improperly. Do not attempt to recharge, disassemble, immerse in water, or dispose of it in fire. Replacement should be done by a Compaq authorized service provider using the Compaq spare part for this computer.

In North America, dispose of nickel metal hydride or lithium-ion batteries by taking advantage of the Compaq battery recycling program. You will be provided with a postage-paid battery pack mailer preaddressed to a reclamation facility where the metals are recycled.

In Europe, do not dispose of batteries with general household waste. Dispose of or recycle them by using the public collection system or returning them to Compaq, your authorized Compaq Partners, or their agents.



## Power Cord Set Requirements

Line switching allows the computer to operate from either a 100-120V or 220-240V input line.

The power cord set (power cord) you received with your computer meets the requirements of the country where you purchased the system. If you use the computer in another country, you must use a power cord that meets the requirements of that country. For more information on power cord set requirements, contact your Compaq authorized dealer, reseller, or service provider. The following information explains the requirements for power cord set selection:

### General Information

1. The cord set must be approved for the country where it will be used.

2. The appliance coupler (that is, the connector to the device itself, not the wall plug) must have a configuration for mating with a EN60 320 appliance inlet (Standard Sheet C14).
3. The length of the cord set must be as follows:
  - Minimum: 6.50 ft (2.0 m)
  - Maximum: 9.75 ft (3.0 m)

## **U.S. and Canada**

1. The cord set must be UL-Listed and CSA-Certified.
2. The minimum specifications for the flexible cord are:
  - No. 18 AWG
  - Type SJ
  - 3-conductor
3. The cord set must have a rated current capacity of at least 10 A.
4. The attachment plug must be an earth-grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

## **Japan**

1. All components of the cord set (cord, connector, and plug) must bear a “T” mark and registration number in accordance with the Japanese Dentori Law.
2. The minimum specifications for the flexible cord are:
  - 0.75 mm<sup>2</sup> conductors
  - Type VCT or VCTF
  - 3-conductor
3. The cord set must have a minimum rated current capacity of 7 A.
4. The attachment plug must be a two-pole, grounded type with a Japanese Industrial Standard C8303 (15 A, 125 VAC) configuration.

## Other Countries

1. The cord set fittings must bear the certification mark of the agency responsible for evaluation in a specific country.

Acceptable agencies include:

BSI (United Kingdom)	OVE (Austria)
CEBEC (Belgium)	SEMKO (Sweden)
DEMKO (Denmark)	SETI (Finland)
EANSW (Australia)	SEV (Switzerland)
IMQ (Italy)	UTE (France)
KEMA (The Netherlands)	VDE (Germany)
NEMKO (Norway)	

2. The flexible cord must be of a HAR (harmonized) type HO5VV-F 3-conductor cord with a minimum conductor size of 0.03 square inches (1.0 square millimeter).
3. The cord set must have a current capacity of at least 10 A and a nominal voltage rating of 125 or 250 VAC.

# *appendix* **B**

## **SPECIFICATIONS**

This appendix provides physical and performance specifications for the computer, keyboard, and mass storage devices.

---

<b>Computer</b>		
<b>Desktop Dimensions</b>		
Height	5.00 in	12.70 cm
Width	18.25 in	46.36 cm
Depth	15.69 in	39.85 cm
<b>Minitower Dimensions</b>		
Height	18.57 in	47.17 cm
Width	7.69 in	19.53 cm
Depth	16.96 in	43.08 cm
<b>Weight</b>		
Desktop Model	28.3 lb	12.85 kg
Minitower Model	34.6 lb	15.71 kg
<b>Temperature Range</b>		
Operating	50° to 95°F	10° to 35°C
Shipping	-4° to 140°F	-20° to 60°C
<b>Desktop Power Supply</b>		
Operating Voltage Range	90-132 VAC	180-264 VAC
Rated Voltage Range	100-120 VAC	220-240 VAC
Rated Line Frequency	50 - 60 Hz	50 - 60 Hz

---

*continued*

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**Computer** *continued*

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Minitower Power Supply		
Operating Voltage Range	90-132 VAC	180-264 VAC
Rated Voltage Range	100-120 VAC	220-240 VAC
Rated Line Frequency	50 - 60 Hz	50 - 60 Hz
<hr/>		
Rated Input Current (maximum)	5 A	3 A
<hr/>		
Power Output		
Desktop	200 W	200 W
Minitower (Pentium-based models)	200 W	200 W
Minitower (Pentium II-based models)	260 W	260 W
<hr/>		
Relative Humidity (noncondensing)		
Operating	8% to 90%	8% to 90%
Nonoperating	5% to 95%	5% to 95%
<hr/>		
Heat Dissipation (nominal)		
Desktops	770 Btu/hr	3.23 kg-cal/min
Minitower	1060 Btu/hr	4.45 kg-cal/min

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**Compaq Enhanced Keyboard**

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Dimensions		
Height	1.50 in	3.81 cm
Width	18.00 in	45.72 cm
Depth	6.50 in	16.51 cm
<hr/>		
Weight	3.5 lb	1.59 kg

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---

## Diskette Drives

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	1.44 MB	120 MB
Size and Capacity		
Size (in)	3.5	3.5
High Density (MB)	1.44	120
Low Density (KB)	720	1440/720
Light	Green	Green
Height (in)	1	1
Bytes per Sector	512	512
Sectors per Track		
High Density	18	51-92
Low Density	9	18/9
Tracks per Side		
High Density	80	1736
Low Density	80	80
Read/Write Heads	2	2
Average Access Time (ms)		
Track-to-Track (high/low)	18/21	20/25
Average (high/low)	94/173	70/70
Latency Average	100	41.67

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## 16X MAX CD-ROM Drive

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Applicable Disc	CD-ROM mode1, mode 2 Mixed mode (audio and data combined) CD-DA Photo CD (single and multi-session) CDi ready CD-XA ready
Disc Diameter	12 cm, 8 cm
Capacity	550 MB (Mode 1, 12 cm) 640 MB (Mode 2, 12 cm) 180 MB (8 cm)
Center Hole	15 mm diameter
Disc Thickness	1.2 mm
Track Pitch	1.6 $\mu$ m
Laser Beam Divergence	53.5 degrees +/- 1.5 degrees
Output Power	0.14 mW
Type	Semiconductor laser GaAlAs
Wave Length	790 nm +/- 25 nm
Access Time	
Random	100 ms
Full Stroke	200 ms
Audio Output Level	0.7V (RMS) (typical)
Cache Buffer	128 KB
Data Transfer Rate	
Sustained	3000 KB/sec
Burst	4.0 MB/sec

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## 24X MAX CD-ROM Drive

---

Applicable Disc	CD-ROM mode1, mode 2 Mixed mode (audio and data combined) CD-DA Photo CD (single and multi-session) CDi ready CD-XA ready
Disc Diameter	12 cm, 8 cm
Capacity	550 MB (Mode 1, 12 cm) 640 MB (Mode 2, 12 cm) 180 MB (8 cm)
Center Hole	15 mm diameter
Disc Thickness	1.2 mm
Track Pitch	1.6 $\mu$ m
Laser Beam Divergence	53.5 degrees +/- 1.5 degrees
Output Power	0.14 mW
Type	Semiconductor laser GaAlAs
Wave Length	790 nm +/- 25 nm
Access Time	
Random	85 ms
Full Stroke	150 ms
Audio Output Level	0.7V (RMS) (typical)
Cache Buffer	128 KB
Data Transfer Rate	
Sustained	1200 to 2400 KB/sec
Burst	4.0 MB/sec

---

<b>Hard Drives</b>				
	<b>2.4 GB (Ultra ATA)</b>	<b>3.2 GB (Ultra ATA)</b>	<b>2.1 GB (Ultra SCSI)</b>	<b>4.3 GB (Ultra SCSI)</b>
Formatted Capacity				
Physical (GB)	2.4	3.2	2.1	4.6
Logical (GB)	2.4	3.2	2.1	4.3
Drive Type	65 (soft)	65 (soft)	n/a	SCSI ID
Transfer Rate				
Media (Mb/s)	114.0	114.0	62.5-103.4	83.2-139.3
Interface (MB/s)	16.6 EIDE 33.0 UDMA	16.6 EIDE 33.0 UDMA	20.0	20.0
Seek Time (including settling)				
Single Track (ms)	3.0	3.0	1.2	1.0
Average (ms)	11.0	11.0	8.5	8.0
Full Stroke (ms)	21.0	21.0	15.0	18.0
Disk Rotational Speed (RPM)	5200	5200	5400	7200
Cylinders				
Physical	6300	6220	8209	6144
Logical	4712	6296	255	
Data Heads				
Physical	4	5	3	8
Logical	16	16	255	
Sectors per Track				
Physical	136-272	136-272	132-211	126-216
Logical	63	63	63	
Buffer Size (KB)	256	256	448	512

Because the Compaq Utilities are installed on a hidden partition on the hard drive, hard drive capacity will appear reduced when displayed by the computer.

The hard drives are partitioned into two logical drives.

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## Audio System

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Sampling rate	5.51 KHz to 44 KHz (adjustable)
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### Maximum Voltage (rms)

Microphone-In	0.030
Line-In	1.4
Headphone-Out	n/a
Line-Out	0.7

---

### Impedance (nominal)

Microphone-In	1-K ohm
Line-In	20-K ohms
Headphone-Out	16 ohms (min.)
Line-Out	20-K ohms

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### Speaker

Frequency Response	450 Hz to 4000 Hz
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### Data Types

alaw	8-/16-bit
μlaw	8-/16-bit
Mono/Stereo	16-bit

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## Infrared

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Transfer Rate	115 K/sec
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## Ethernet Network Interface Controller (NIC)

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Physical Connectors	RJ-45 AUI
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### Operating Environment

Temperature	10° to 35°C
Humidity	10% to 90%, noncondensing

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Electrical Bus	32-bit PCI bus
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## **Network Cable Specifications**

The RJ-45 and the AUI connectors require different cables. Following are the specifications for the cable required for each type of connector.

### **Cable for RJ-45 Connections**

The RJ-45 connection uses an unshielded twisted pair (UTP) cable of 22, 24, or 26 gauge. The cable must comply with the IEEE 802.3 10BASE-T standard.

- Category 3 cable is rated to 16 MHz and is used for 10 Base-T operation.
- Category 5 cable is rated to 100 MHz and is required for 100 Base-TX operation.

The maximum distance between the computer and the hub, for both categories of UTP cable, is 100 meters.

### **Cable for AUI Connections**

The AUI connection uses the standard transceiver cable or AUI cable conforming to the IEEE 802.3 10BASE-5 specification. The maximum distance between the computer and the hub on the thick Ethernet cable is 50 meters.

# *appendix* C

## ERROR MESSAGES

This appendix lists the error codes that you may encounter during the power-on self-test (POST) or after restarting the computer, the probable source of the problem, and what steps you can take to resolve the error condition.

---

### Power-On Self-Test (POST) Messages

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Message	Beeps*	Probable Cause	Recommended Action
101-ROM Error	1L, 1S	System ROM checksum.	<ol style="list-style-type: none"><li>1. Inspect the ROM placement.</li><li>2. Verify the correct ROM.</li><li>3. Replace the ROM.</li></ol>
101-Option ROM Checksum Error	1L, 1S	Option ROM checksum.	<ol style="list-style-type: none"><li>1. Inspect the ROM placement.</li><li>2. Verify the correct ROM.</li><li>3. Replace the ROM.</li></ol>
102-System Board Failure	None	DMA, timers, etc.	Replace the system board.
162-System Options Not Set	2S	Configuration incorrect.	Run Computer Setup or Windows NT or Windows 95 utilities.
163-Time & Date Not Set	2S	Invalid time or date in configuration memory	Set the date and time under Control Panel.
164-Memory Size Error	2S	Memory configuration incorrect.	Run Computer Setup or Windows NT or Windows 95 utilities.

\* L = Long, S = Short

*continued*

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**POST Messages** *continued*

---

<b>Message</b>	<b>Beeps*</b>	<b>Probable Cause</b>	<b>Recommended Action</b>
201-Memory Error	None	RAM failure.	<ol style="list-style-type: none"><li>1. Run Computer Setup or Windows NT or Windows 95 utilities.</li><li>2. Replace the memory module(s) (if any).</li><li>3. Replace system board.</li></ol>
203-Memory Address Error	None	RAM failure.	<ol style="list-style-type: none"><li>1. Run Computer Setup or Windows NT or Windows 95 utilities.</li><li>2. Replace the memory module(s) (if any).</li><li>3. Replace system board.</li></ol>
205-Memory Error	None	Cache memory error (processor cache).	Run the Configuration and Diagnostics utilities.
206-Secondary cache controller failure	None	Cache memory controller or RAM failure.	Run the Configuration and Diagnostics utilities.
207-ECC corrected single bit error	2S	Single Bit ECC error	Replace DIMM if error persists.
213-Incompatible DIMM Module in DIMM Socket(s) X, X...	2S	Incompatible memory module in DIMM socket(s) indicated in error message, where X represents the DIMM socket number as labeled on the system board.	Replace incompatible modules with DIMMs that meet the proper criteria. Refer to "Solving Memory Problems" in chapter 9, "Troubleshooting."
301-Keyboard Error	None	Keyboard failure.	Reconnect keyboard with computer turned off.
301-Keyboard Error or Test Fixture Installed	None	Keyboard failure.	Replace the keyboard.
303-Keyboard Controller Error	None	I/O board keyboard controller.	Reconnect keyboard with computer turned off. Replace the system board.

\* L = Long, S = Short

*continued*

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**POST Messages** *continued*

---

<b>Message</b>	<b>Beeps*</b>	<b>Probable Cause</b>	<b>Recommended Action</b>
304-Keyboard or System Unit Error	None	Keyboard failure.	1. Replace the keyboard. 2. Replace the system board.
402-Monochrome Adapter Failure	1L, 2S	Monochrome display controller.	Replace the monochrome display controller.
404-Parallel Port Address Conflict Detected	2S	Both external and internal ports are assigned to parallel port X.	Run Computer Setup or Windows NT or Windows 95 utilities.
501-Display Adapter Failure	1L, 2S	Video display controller.	Replace the graphics board.
601-Diskette Controller Error	None	Diskette controller circuitry or floppy drive circuitry incorrect.	1. Run Setup. 2. Check and/or replace cables. 3. Replace diskette drive. 4. Replace the system board.
602-Diskette Boot Record Error	None	Diskette in drive A not bootable.	Replace the diskette.
605-Diskette Drive Type Error	2S	Mismatch in drive type.	Run Computer Setup or Windows NT or Windows 95 utilities.
610-External Storage Drive Failure	None	External tape drive not connected.	Reinstall tape drive or press F1 and allow system to reconfigure without the drive.
611-Primary Floppy Port Address Assignment Conflict	2S	Configuration error.	Run Computer Setup or Windows NT or Windows 95 utilities.
612-Secondary Floppy Port Address Assignment Conflict	2S	Configuration error.	Run Computer Setup or Windows NT or Windows 95 utilities.
912-The Computer Cover Has Been Removed Since Last System Start Up	None		

\* L = Long, S = Short

*continued*

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**POST Messages** *continued*

---

<b>Message</b>	<b>Beeps*</b>	<b>Probable Cause</b>	<b>Recommended Action</b>
1151-System Board Comm Port 1 Address Assignment Conflict	2S	Both external and internal serial ports are assigned to COM1.	Run Computer Setup or Windows NT or Windows 95 utilities.
1152-System Board Comm Port 2 Address Assignment Conflict	2S	Both external and internal serial ports are assigned to COM2.	Run Computer Setup or Windows NT or Windows 95 utilities.
1720-SMART Hard Drive detects imminent failure	None	Hard drive is about to fail.	Back up contents and replace hard drive.
1721-SMART SCSI Hard Drive detects imminent failure	None	Hard drive is about to fail.	Back up contents and replace hard drive.
1771-Primary Disk Port Address Assignment Conflict	2S	Internal and external hard drive controllers are both assigned to the primary address.	Run Computer Setup or Windows NT or Windows 95 utilities.
1772-Secondary Disk Port Address Assignment Conflict	2S	Internal and external hard drive controllers are both assigned to the secondary address.	Run Computer Setup or Windows NT or Windows 95 utilities.
1780-Disk 0 Failure	None	Hard drive/format error.	Run the Configuration and Diagnostics utilities.
1781-Disk 1 Failure	None	Hard drive/format error.	Run the Configuration and Diagnostics utilities.
1782-Disk Controller Failure	None	Hard drive circuitry error.	Run the Configuration and Diagnostics utilities.
1790-Disk 0 Failure	None	Hard drive error or wrong drive type.	Run the Configuration and Diagnostics utilities.
1791-Disk 1 Failure	None	Hard drive error or wrong drive type.	Run the Configuration and Diagnostics utilities.
1792-Secondary Disk Controller Failure	None	Hard drive circuitry error.	Run the Configuration and Diagnostics utilities.

\* L = Long, S = Short

*continued*

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**POST Messages** *continued*

---

<b>Message</b>	<b>Beeps*</b>	<b>Probable Cause</b>	<b>Recommended Action</b>
1793-Secondary Controller or Disk Failure	None	Hard drive circuitry error.	Run the Configuration and Diagnostics utilities.
1800-Temperature Alert	None	Internal temperature exceeds specification.	Check that computer air vents are not blocked and cooling fan is running.
Invalid Electronic Serial Number	None	Electronic serial number has become corrupted.	Run Computer Setup.
Audible	2S	Power-on successful.	None.
Audible	1L, 3S	FailSafe Boot Block ROM detects invalid system ROM.	Refer to recovery procedure in "FailSafe Boot Block ROM" section of Chapter 2, "Understanding and Using Intelligent Manageability."

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\* L = Long, S = Short



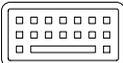
# *appendix* **D**

## CONNECTOR PIN ASSIGNMENTS

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### Enhanced Keyboard (orange-colored icon)

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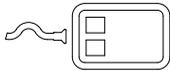
Connector and Icon	Pin	Signal
 	1	Data
	2	Not Used
	3	Ground
	4	+5V
	5	Clock
	6	Not Used

---

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### Pointing Device (Mouse, green-colored icon)

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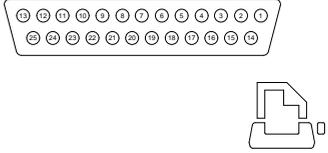
Connector and Icon	Pin	Signal
 	1	Data
	2	Not Used
	3	Ground
	4	+5V
	5	Clock
	6	Not Used

---

---

**Parallel**

---

Connector and Icon	Pin	Signal
	1	Strobe
	2	Data Bit 0
	3	Data Bit 1
	4	Data Bit 2
	5	Data Bit 3
	6	Data Bit 4
	7	Data Bit 5
	8	Data Bit 6
	9	Data Bit 7
	10	Acknowledge
	11	Busy
	12	Paper End
	13	Select
	14	Auto Line Feed
	15	Error
	16	Initialize
	17	Printer
	18	Select In
	19	Signal Ground
	20	Signal Ground
	21	Signal Ground
	22	Signal Ground
	23	Signal Ground
	24	Signal Ground
	25	Signal Ground

---

---

## Universal Serial Bus (USB)

---

Connector and Icon	Pin	Signal
	1	VCC (5V)
	2	(-) Data
	3	(+) Data
	4	Ground

---

## Serial

---

Connector and Icon	Pin	Signal
	1	Carrier Detect
	2	Receive Data
	3	Transmit Data
	4	Data Term Ready
	5	Ground
	6	Data Set Ready
	7	Request to Send
	8	Clear to Send
	9	Ring Indicator

---

---

### External Infrared Transceiver Connector (yellow-colored icon)

---

Connector and Icon	Pin	Signal
 	1	Transmit
	2	Receive
	3	Ground
	4	5V
	5	Mode
	6	Not Used
	7	Not Used
	8	Not Used

---

### Monitor

---

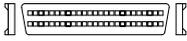
Connector and Icon	Pin	Signal
 	1	Red
	2	Green
	3	Blue
	4	Not Used
	5	Ground
	6	Red Return
	7	Green Return
	8	Blue Return
	9	Optional +5 Volts
	10	Ground
	11	Not Used
	12	SDA (for DDC channel)
	13	Horiz. Sync
	14	Vert. Sync
	15	SCL (for DDC channel)

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## Ultra SCSI Connector

---

Connector and Icon	Pin	Signal
 	1-11	Ground
	12	Reserved
	13	Open
	14	Reserved
	15-25	Ground
	26	DBO
	27	DB1
	28	DB2
	29	DB3
	30	DB4
	31	DB5
	32	DB6
	33	DB7
	34	DBP
	35	Ground
	36	Ground
	37	Reserved
	38	TERMPWR
	39	Reserved
	40	Ground
	41	ATN #
	42	Ground
	43	BSY #
	44	ACK #
	45	RST #
	46	MSG #
	47	SEL #
	48	C/D
	49	REQ #
	50	Input/Output

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### Ethernet RJ-45

---

Connector and Icon	Pin	Signal
 	1	(+) Transmit Data
	2	(-) Transmit Data
	3	(+) Receive Data
	4	Not Used
	5	Not Used
	6	(-) Receive Data
	7	Not Used
	8	Not Used

---

### Ethernet AUI

---

Connector and Icon	Pin	Signal
 	1	Ground
	2	(+) Collision Detect
	3	(+) Transmit Data
	4	Ground
	5	(+) Receive Data
	6	Ground
	7	Not Used
	8	Ground
	9	(-) Collision Detect
	10	(-) Transmit Data
	11	Ground
	12	(-) Receive Data
	13	+12V Supply
	14	Ground
	15	Not Used

---

---

---

Line In-Connector

---

**Connector and Icon**

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---

Line Out-Connector

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**Connector and Icon**

---



---

---

Microphone Connector (blue-colored icon)

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**Connector and Icon**

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Stereo 1/8-inch Miniphone

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---

Headphone Connector

---

**Connector and Icon**

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Stereo 1/8-inch Miniphone

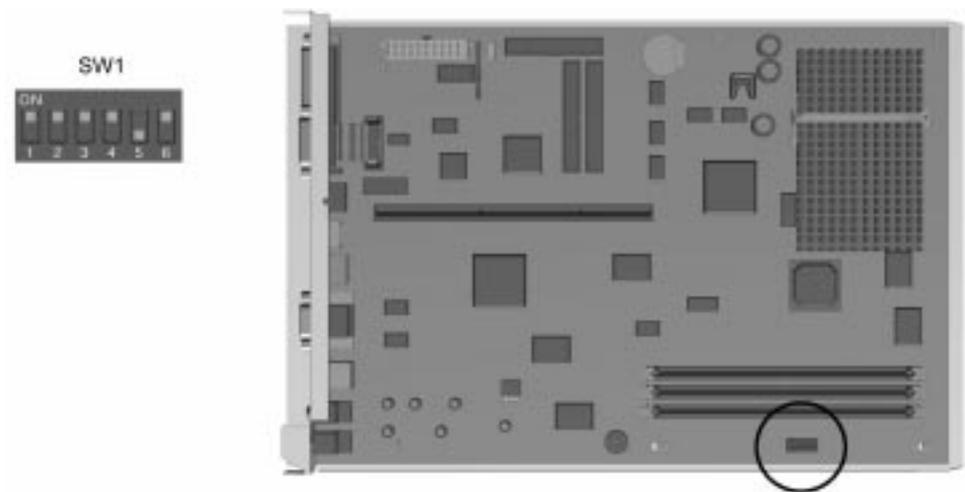


# appendix *E*

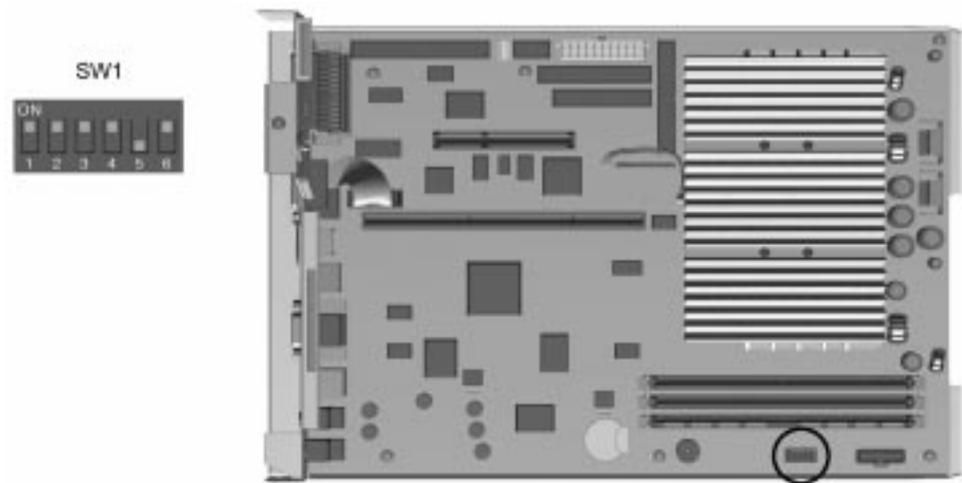
## SYSTEM BOARD SWITCHES

The system board includes a switch module (SW1) that is used:

- to enable or disable the power-on password
- to set the operating frequency for the microprocessor after a processor upgrade installation
- to set the power switch so that power to the computer can be turned off using a power strip



*Switch Module and Location on Pentium-Based System Board*



*Switch Module and Location on Pentium II–Based System Board*

- ✎ To change the system board switch module, you must remove the computer cover or side panel. For information about removing the computer cover or side panel, refer to Chapter 6, “Upgrading the Desktop Computer,” or Chapter 7, “Upgrading the Minitower Computer.”



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

---

## **Disabling and Enabling the Power-On Password**

The computer is shipped with the power-on password feature enabled. To disable the power-on password, set S1 on SW1 to On.

## Setting System Board Switches when Upgrading a Processor

The following tables identify the S2, S3, and S4 or S5 switch settings for each processor frequency.



**CAUTION:** Do not configure the system board to operate faster than the speed at which the processor is rated. Doing this could result in unreliable operation or processor damage.

### Pentium-Based System Board SW1 Settings

S2	S3	S5	Processor Speed
ON	ON	ON	66/166 MHz
OFF	ON	ON	66/200 MHz
OFF	OFF	ON	66/233 MHz (for Pentium MMX only)

### Pentium II–Based System Board SW1 Settings

S2	S3	S4	Processor Speed
OFF	OFF	ON	66/233 MHz
ON	ON	OFF	66/266 MHz
ON	OFF	OFF	66/300 MHz

## Using a Power Strip to Control Power

If you connect your computer to an electric power strip, and would like to turn on power to the computer using the switch on the power strip, set S6 on SW1 to ON.



If you turn off power to your computer using the switch on a power strip, you will not be able to use the Suspend feature or the Remote Management features.



# appendix *F*

## **ELECTROSTATIC DISCHARGE**

A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

### **Preventing Electrostatic Damage**

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

### **Grounding Methods**

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 Mohm +/- 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heelstraps, toestraps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, contact your Compaq authorized dealer, reseller, or service provider.

✍ For more information on static electricity, contact your Compaq authorized dealer, reseller, or service provider.

# appendix G

## INSTALLING A NEW BATTERY

When your computer no longer automatically displays the correct date and time, it may mean the battery providing power to the real-time clock needs to be replaced. Battery life is usually about five years. Before replacing the battery in a personal computer, perform the steps in “Recording Hard Drive Parameters” and “Preparing the Computer for Installation.”

### Recording Hard Drive Parameters

Computer Setup automatically detects and configures most Compaq components, including Compaq hard drives. If the machine you are servicing has a Compaq hard drive, go to the next section, “Preparing the Computer for Installation.”

If the computer being serviced has a third-party hard drive, you must complete the following steps before installing the battery:

1. Run Computer Setup and record the drive type displayed in the System Configuration Summary.
2. If the drive type number is 65 or 66, record the drive parameters.

Drives with these designators are user-defined types, also called soft-drive types. Whenever the nonvolatile memory (CMOS) has become invalid, such as after the installation of a new battery, drive parameters must be entered manually for these user-defined drives.

3. After you have completed the battery installation, run Computer Setup and use the drive table parameters recorded earlier to reconfigure the system.

 Drive parameters must be reentered after battery installation in order to reconfigure the hard drive. The hard drive is inoperable until this is done.

## Preparing the Computer for Installation

To prepare the computer, complete the following steps:

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock.

For more information about Computer Setup, refer to Chapter 8, “Using Compaq Utilities.”

2. If the computer is on, turn it off.
3. Unplug the computer.
4. Remove the computer cover or side panel.

For more information about removing the computer cover, side panel, and expansion board cage, refer to Chapter 6, “Upgrading the Desktop Computer,” or Chapter 7, “Upgrading the Minitower Computer.”

5. Remove the expansion board cage.
6. Refer to the following section for specific battery installation steps.

## Installation Procedures

The battery that came with this computer is non-removable and is permanently installed on the system board. A second battery is installed when the first becomes inoperative.

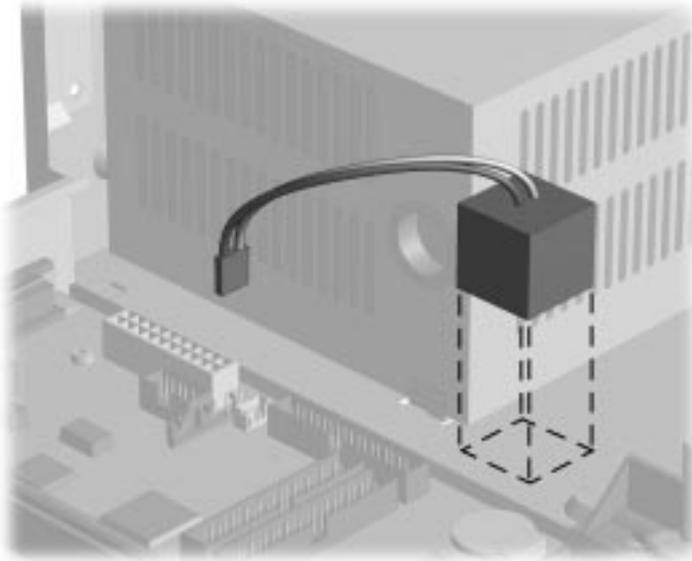


**WARNING:** The system board contains a clock/CMOS lithium battery. The lithium battery may explode if mistreated. The battery is soldered in place and may not be removed. Do not abuse or disassemble. Use only replacement batteries supplied by Compaq Computer Corporation (spare part number 160274-001).

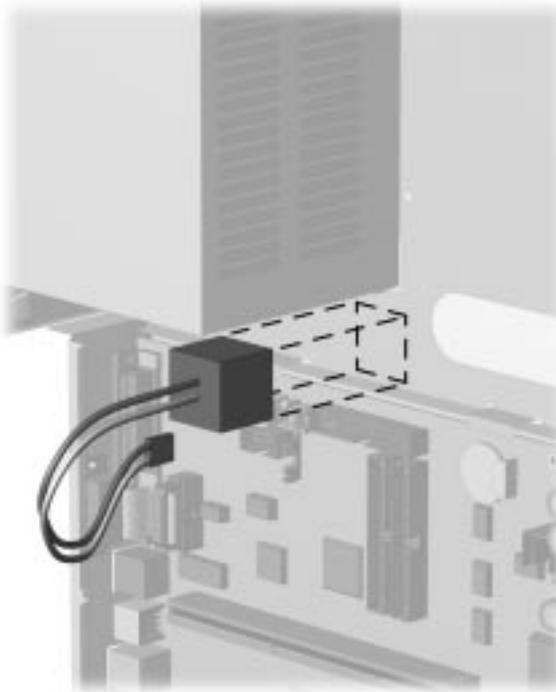
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To install the replacement battery, complete the following steps:

1. Remove and discard the protective covering from the adhesive backing on the hook-and-loop connector on the back of the battery.
2. Attach the battery to the computer chassis as shown in the following illustrations:

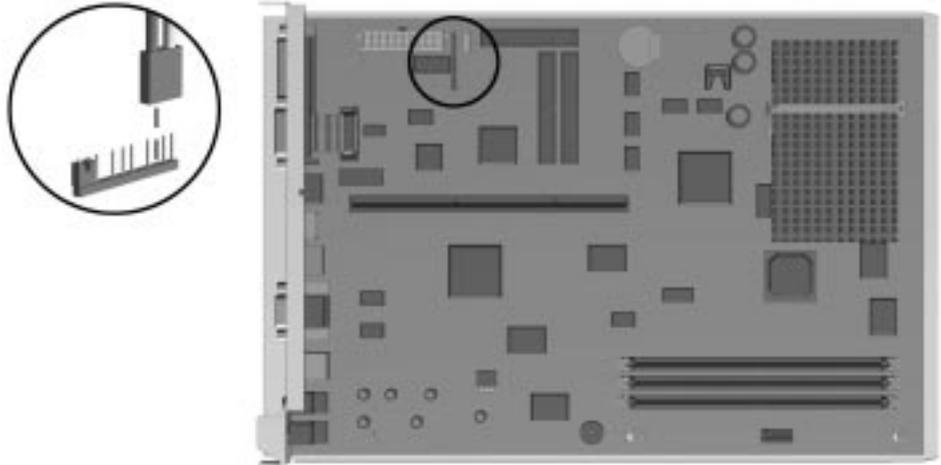


**Attaching the Replacement Battery to a Des/top Chassis**

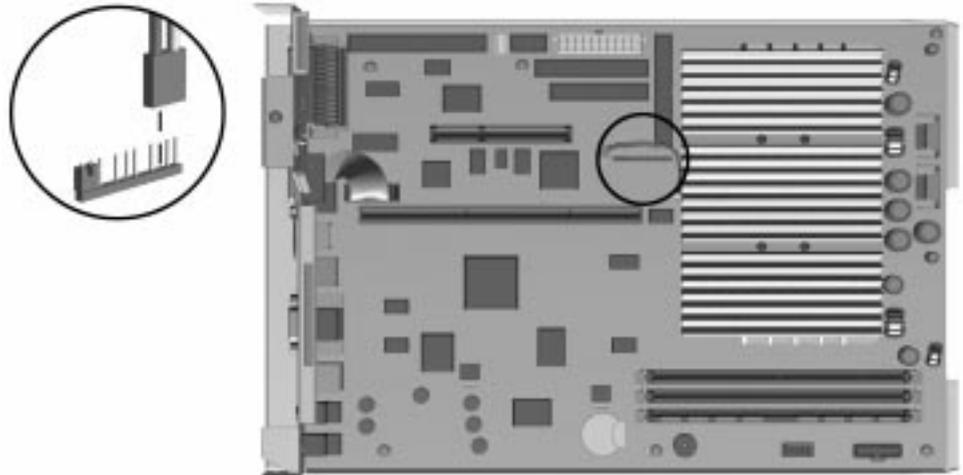


**Attaching the Replacement Battery to a Minitower Chassis**

3. Plug the battery connector onto pins 9-12 at E50 on the system board.

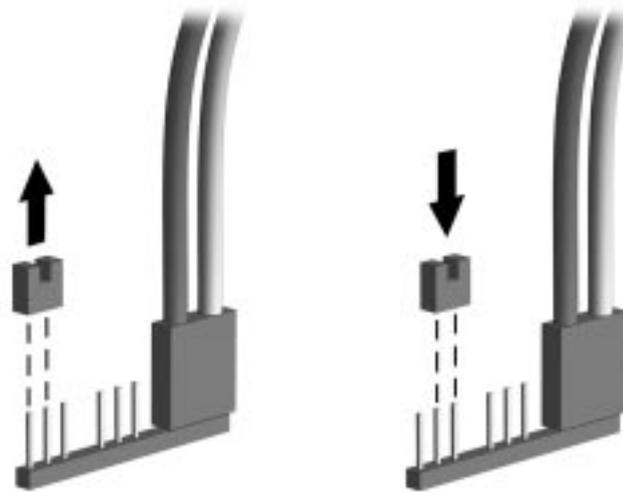


**Location of Pentium-Based E50 Header and Connecting Battery to Header**



**Location of Pentium II-Based E50 Header and Connecting Battery to Header**

4. Change the jumper at E50 from pins 1-2 to pins 2-3.



#### Changing the Jumper from Pins 1-2 to Pins 2-3

5. Place the pale blue sticker included with the battery kit above the power connector on the back of the computer
6. Replace the expansion board cage and computer cover or side panel.
7. Plug in the computer.
8. Turn on the computer.
9. Run Computer Setup to reconfigure the system
  - If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock.
  - If the computer has a Compaq hard drive, you have now successfully completed the installation.
  - If the computer has a third-party hard drive, you must reconfigure the hard drive using the parameters you recorded before you began the installation procedure.



# *appendix* **H**

## **SHIPPING PREPARATION**

In preparation for shipping the computer, complete the following steps:

1. Back up the hard drive files onto PD discs, tape cartridges, or diskettes. Be sure that the backup media is not exposed to electrical or magnetic impulses while stored or in transit.
- ✍ The hard drive locks automatically when the system power is turned off.
2. Remove and store any program diskettes from the diskette drives.
3. Insert a blank diskette into the diskette drive to protect the drive while in transit. Do not use a diskette on which you have stored or plan to store data.
4. Turn off the computer and external devices.
5. Disconnect the power cord from the electrical outlet, then from the computer.
6. Disconnect the system components and external devices from their power sources, then from the computer.
- ✍ Ensure that all boards are seated properly and secured in the board slots before shipping the computer.

7. Pack the system components and external devices in their original packing boxes or similar packaging with sufficient packing material to protect them.

 For environmental nonoperating ranges, refer to Appendix B, “Specifications.”