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Maintenance and Service Guide

Prosignia Notebook Family of Personal Computers

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Compaq Computer Corporation

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preface

USING THIS GUIDE

This *Maintenance and Service Guide* is a troubleshooting guide that can be used for reference when servicing the Compaq Prosignia Notebook Family of Personal Computers.

Compaq Computer Corporation reserves the right to make changes to this product without notice.

Additional information is available on the *Compaq Prosignia Notebook Family of Personal Computers Illustrated Parts Map*.

Symbols

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

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

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

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes

WARNING: 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. Any indication of component replacement or printed wiring board modifications may void any warranty or exchange allowances.

WARNING: The computer is designed to be electrically grounded. To ensure proper operation, plug the AC power cord into a properly grounded electrical outlet only.

CAUTION: To properly ventilate your system, you must provide at least 3 inches (7.62 cm) of clearance on the left and right sides of the computer.

Serial Number

When requesting information or ordering spare parts, provide the computer serial number. The serial number is on the back of the computer.

Laser Safety

All Compaq systems equipped with CD-ROM drives comply with 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 or in the CD ROM installation guide may result in hazardous radiation exposure.

This system is classified as a CLASS 1 LASER PRODUCT. This label is located on the outside of the system being serviced. A similar label also appears on the internal CD-ROM installed in the system.

LASER INFO

Laser Type:	Semiconductor GaAIAs
Wave Length:	780 +/- 35 nm
Divergence Angle:	53.5 Degree +/- 1.5 Degree
Output Power:	Less than 0.2mW or 10,869 $W \bullet m^{-2} sr^{-1}$
Polarization:	Circular
Numerical Aperture:	0.45 +/- 0.04

Only an authorized technician, service provider, dealer, or reseller 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 as well as void the warranty.

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 improperly handled. Do not attempt to recharge, disassemble, immerse in water, or dispose of the battery in fire. Replacement should be done using the Compaq spare part for this computer.

WARNING: The computer also contains a lithium-ion battery pack. There is a risk of fire and chemical burn if the battery pack is handled improperly. Do not disassemble, crush, puncture, short external contacts, dispose of in fire or water, or expose this battery to temperatures higher than 60 degrees C.

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 and accumulators with general household waste. Dispose of or recycle them by using the public collection system or returning them to Compaq.

Serial Number

The serial number is located on the back of the computer directly below the parallel connector.

Locating Additional Information

The following documentation is available to support the computer:

- Compaq Prosignia Notebook Family of Personal Computers documentation set
- Microsoft operating system guide
- Compaq service advisories and bulletins
- *Compaq QuickFind*
- *Compaq Service Quick Reference Guide*
- *Technical Reference Guide*
- *Illustrated Parts Map*
- Compaq Internet site at http://www.Compaq.com

chapter 1

PRODUCT DESCRIPTION

1.1 Computer Features and Models

The Prosignia Notebook Family of Personal Computers is a line of multimedia notebook computers with advanced modularity, processors, and video graphics. This full-function, Mobile Pentium II-based family of notebook computers allows full desktop functionality and connectivity through the use of an optional Convenience Base.

Figure 1-1. *Prosignia Notebook Personal Computer*

1.1.1 Features

The computer models have the following standard features:

- 233-MHz, 266-MHz, or 300-MHz Mobile Pentium II processors
- 32-MB or 64-MB of synchronous dynamic random access memory (SDRAM), expandable to 160 MB (depending on the model)
- 3.2-, 4.0-, or 6.0-GB, 2.5-inch internal hard drive mounted in carrier
- LCD displays:
  - 12.1 inch SVGA CTFT display
  - 13.3-inch XGA CTFT display
  - 14.1-inch XGA CTFT display
- Supports Lithium Ion (Li-ion) battery packs
- Internal stereo speakers
- Internal microphone
- 1.44-MB diskette drive, DVD, LS-120, Iomega Zip or second battery or Hard Disk Drive in the Multi-bay adapter
- DVD drive or 24X CD-ROM in the Optical Disk Bay
- Full-size 101 key compatible keyboard including 12 function keys, 8 cursor control keys, inverted-T cursor control keys, and embedded numeric keypad
- Four user-programmable keys
- Touchpad pointing device
- Operates from a battery pack in the battery bay, plus an optional battery pack in the MultiBay, or integrated AC power supply that is compatible with domestic or international power sources
- Power management and security features
- Infrared interface for wireless communication with other IrDA-compliant devices at data rates up to 4 mb/sec[1] (available on selected models)
- Two standard device slots that will accommodate two Type II or one Type III PC Card, PCMCIA card or CardBus card. The Compaq telephony modem is supported in the top slot and Zoomed-Video in the bottom slot
- 176-pin expansion connector provides the interface to the convenience base options
- Rear-panel ports provide connections for parallel, serial, external monitor, and keyboard/mouse
- Universal Serial Bus (USB)

1.1.2 Models

Compaq Prosignia Notebook computers are configurable, and may contain any or all of the features listed. All models have 32-MB or 64-MB of standard memory with one 32-MB memory module in the memory expansion port, and may be upgraded to 160-MB.

[1] Windows 95 supports up to 115-kb/sec. Driver for 4 mb/sec available from www.microsoft.com.

1.1.3 Software Fulfillment

Replacement software may be ordered directly from Compaq Computer Corporation. Both the model and the serial number of the computer are needed to identify the specific software available.

1.2 Computer Options

The computer supports the following options:

- Convenience Base II pass through model with monitor stand
- Convenience Base II with Ethernet with monitor stand
- Compatible with Convenience Base models from the Armada 1500 Family of Personal Computers
- Memory expansion boards
- Li-ion battery pack
- Automobile/Aircraft Adapter
- External Battery Charger
- PCMCIA modem
- Hard drive upgrade
- Hard drive adapter for MultiBay with carrying case
- Internal modem
- CD-ROM drive for Optical Disc Bay
- DVD-ROM for Optical Disc Bay
- 120-MB LS-120 diskette drive for MultiBay
- 100-MB Zip drive for MultiBay

1.2.1 Convenience Base II

Prosignia Notebook models support the following convenience base models:

- Convenience Base II pass through
- Convenience Base II with Ethernet

1.2.2 System Memory Options

The computer supports optional 32-, 64-, and 128-MB memory boards. The memory boards are 66-MHz SDRAM without parity. System memory can be expanded to 160-MB, depending on the model.

1.2.3 External Battery Charger

The external battery charger has the following features:

- Two battery charge slots
- Accepts Li-ion modular batteries
- Charges 1 battery in 1.5 hours
- Charges 2 batteries in 3 hours

Note: The battery calibration process should be used to discharge the batteries.

1.2.4 External Keyboards and Pointing Devices

Supports Compaq or Compaq compatible PS2 keyboards and pointing devices.

1.2.5 External Monitors

- Supports all VGA Monitors at resolutions up to 1280 × 1024
- Supports DDC1 and DDC2b compliant Energy Star monitors

1.3 External Computer Components

The external computer components are illustrated and described in this section.

1.3.1 Left Side Components

The left side external components are shown in Figure 1-2 and are described in Table 1-1.

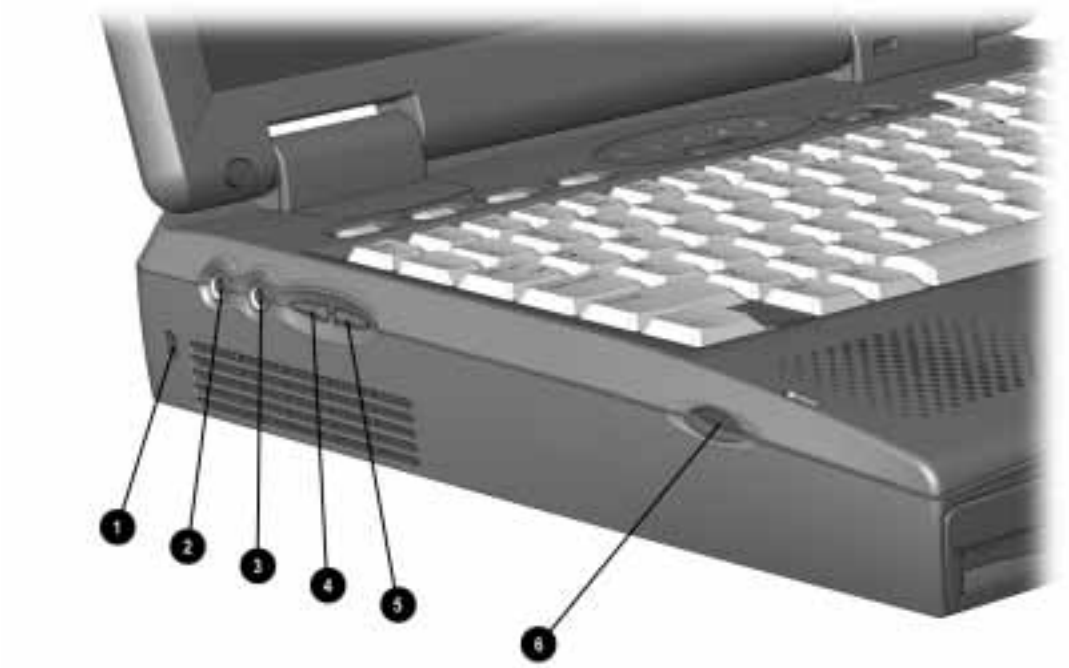


Figure 1-2. *Left Side Components*

Table 1-1
Computer Components
Left Side

Item	Component	Function
❶	Cable Lock	Secures computer to fixed object
❷	Speaker/headphone jack	Connects stereo speakers, headphone or headset
❸	Microphone jack	Connects external microphone, disables internal microphone
❹	Volume up	Increases volume
❺	Volume down	Decreases volume
❻	Left bass reflex speaker port	Enhances audio quality

1.3.2 Front Components

The front external components are shown in Figure 1-3 and are described in Table 1-2.

Figure 1-3. *Front Components*

Table 1-2
Computer Components
Front

Item	Component	Function
❶	Display	LCD graphic display
❷	Lid switch	Blanks display when display is closed
❸	Speakers	Produce high quality stereo sound
❹	MultiBay	Accepts diskette drive, LS-120 drive, ZIP drive, second battery pack or second hard drive
❺	Optical disc bay	Accepts CD-ROM or DVD-ROM drives
❻	Battery bay	Accepts Li-Ion battery pack
❼	Keyboard	Accepts operator input
❽	Microphone	Monophonic microphone

1.3.3 Top Components

The top external components are shown in Figure 1-4 and are described in Table 1-3.

Figure 1-4. *Top Components*

Table 1-3
Computer Components
Top

Item	Component	Function
❶	Lid switch	Blanks display when display is closed
❷	Programmable function buttons	User programmable keys
❸	Suspend button	Initiates suspend
❹	Power switch	Turns power on and off
❺	Keyboard release latches	Releases keyboard from system unit
❻	Touchpad	Pointing device

1.3.4 Right Side Components

The right side external components are shown in Figure 1-5 and are described in Table 1-4.

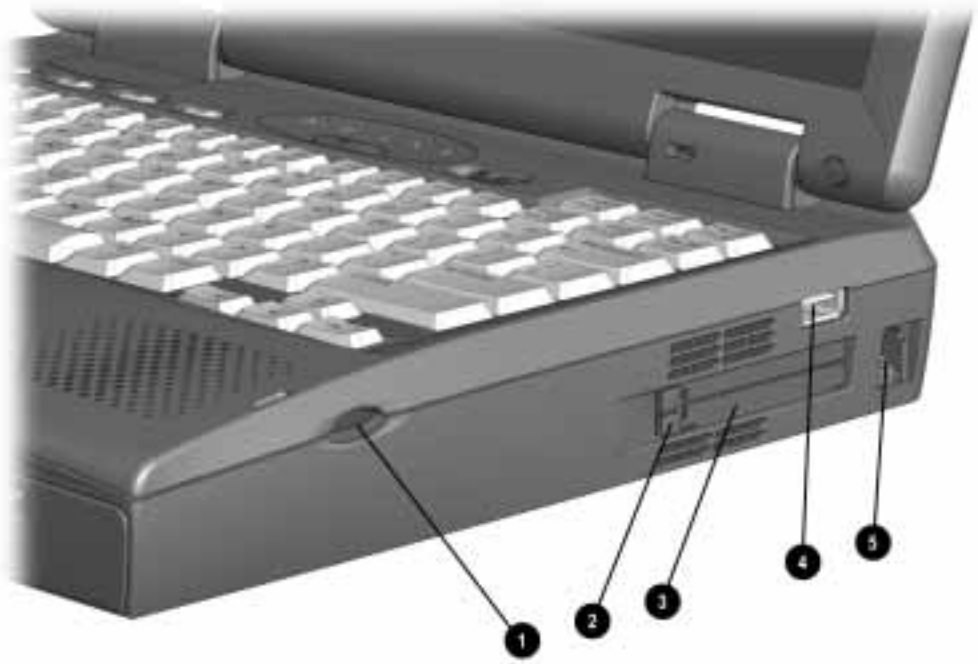


Figure 1-5. *Right Side Components*

Table 1-4
Computer Components
Right Side

Item	Component	Function
❶	Right bass reflex speaker port	Enhances audio quality
❷	PC Card eject button	Eject PC Cards from the slots
❸	PC Card slots	Accepts 16- and 32-bit PC Cards
❹	USB Connector	Connects USB devices to the computer
❺	Modem jack	Connects the phone line to the computer (selected models)

1.3.5 Rear Components

The rear components are shown Figure 1-6 and are described in Table 1-5.

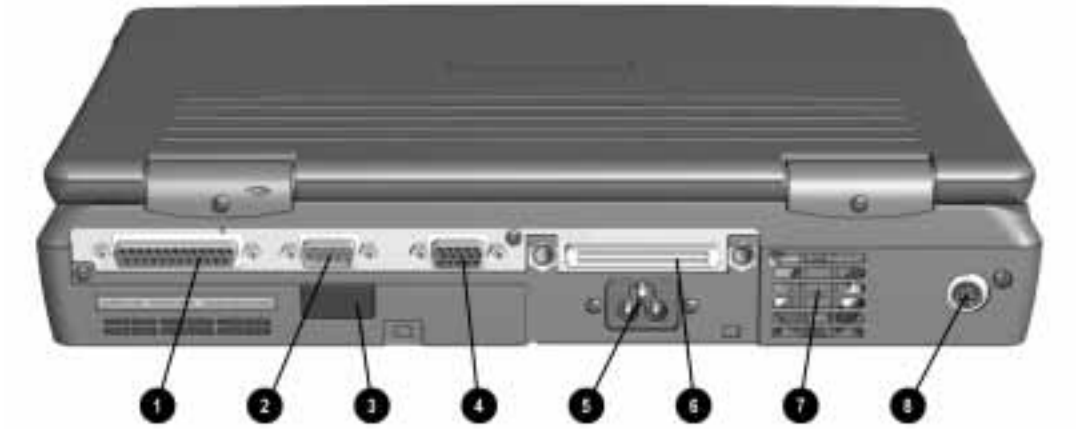


Figure 1-6. *Rear Components*

Table 1-5
Computer Components
Rear

Item	Component	Function
❶	Parallel connector	Connects parallel devices such as a printer
❷	Serial connector	Connects serial devices such as a mouse
❸	Infrared port	Provides wireless communications (on selected models)
❹	External monitor connector	Connects external monitor
❺	AC Power connector	Connects external AC power
❻	Docking connector	Provides connection to optional convenience base
❼	Fan (Airflow vents)	Provides thermal ventilation to internal components
❽	External keyboard connector	Connects external keyboard or PS-2 mouse (Supports standard Y connector)

1.3.6 Bottom Components

The bottom external components are shown in Figure 1-7 and are described in Table 1-6.

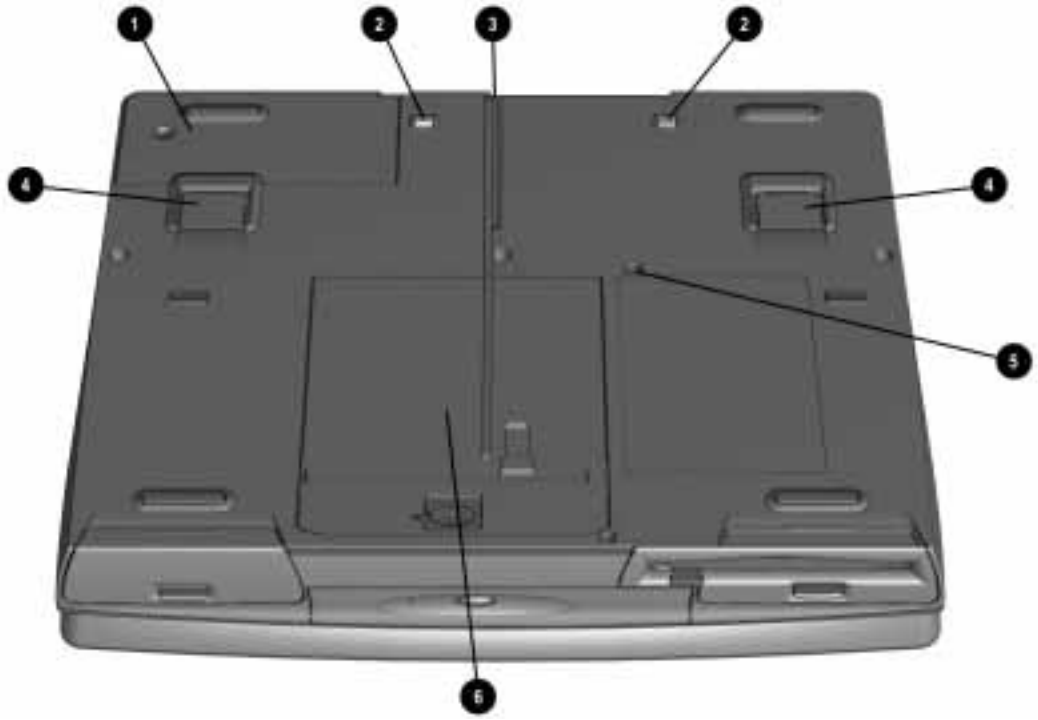


Figure 1-7. *Bottom Components*

Table 1-6
Computer Components
Bottom

Item	Component	Function
❶	Modem compartment	Integrated modem (selected models)
❷	Docking latch receptacles	Locks computer to optional convenience base
❸	Docking alignment guide	Aligns computer to optional convenience base
❹	Tilt feet	Adjusts computer to an angle
❺	MultiBay screw	Secures MultiBay Devices
❻	Hard drive cover	Covers hard drive compartment
*	Hard drive security screw	Secures hard drive cover (not shown)

1.3.7 Status Panel Lights

The status panel lights are shown in Figure 1-8 and described in Table 1-7.

Figure 1-8. *Status Panel Lights*

Table 1-7
Computer Components
Status Panel

Item	Component	Function
❶	Hard drive activity light	Indicates hard drive or CD-ROM access
❷	MultiBay activity light	Indicates Multi-Bay device activity
❸	Number lock indicator	Indicates that numbers lock is on
❹	Caps lock indicator	Indicates that caps lock is on
❺	Scroll lock indicator	Indicates that scroll lock is on

1.4 Design Overview

This section presents a design overview of the computer. The overview is limited to field replaceable parts. All replacement parts are listed in Chapter 3.

1.4.1 System Unit

The computer is a traditional clamshell design with a display assembly attached to a system unit. The computer opens to reveal a backlit LCD display and a full-function keyboard. The display is designed for a continuously adjustable tilt angle.

1.4.2 Internal Boards

The system electronics are integrated on four printed circuit assemblies: the audio/led board, system board, modem board, and the DC-DC converter board.

- The audio/led board provides support for the audio functions.
- The system board integrates the processor, on-board memory, level 2 cache, local bus video adapter, and PCMCIA/CardBus adapter.
- The optional modem board supports data or fax functions.
- The DC-DC converter board creates the system voltages (3.3 VDC and 5 VDC) from the battery or AC/DC input.

Processor

An Intel Mobile Pentium II processor is located on the system board for the 233 MHz, 266 MHz, or 300 MHz models.

Memory

Base memory is 32-MB with 32-, 64-, or 128-MB of optional expansion memory. Base memory is onboard memory built into the system board. Expansion memory consists of one memory expansion board available as a user installable option. Some models come standard with 64-MB of total memory. This consists of 32-MB of standard memory and 32-MB of additional memory in the memory expansion unit.

Cache

Level 2 cache is integrated in the CPU module. It is not user upgradable.

PCMCIA/CardBus and Video Adapter Controller

The PCMCIA/CardBus adapter is based on the Texas Instrument PCI1220 PC to CardBus controller unit. The local bus video adapter is the Chips and Technologies 65555 controller.

- The serial-parallel port board expands the serial and parallel signals from the system board to the serial and parallel expansion connectors.
- The audio/led board supports the microphone and headphone jacks, the volume control switches, and the amplifier and equalization circuitry.

1.4.3 Video system

The standard video subsystem consists of:

- An internal LCD Display
- 12.1 inch SVGA CTFT display
- 13.3 inch XGA CTFT display
- 14.1 inch XGA CTFT display
- 2 Megabyte frame buffer
- An inverter to supply AC power to the LCD back-light system
- A standard external VGA connector for use with CRTs and other VGA compatible displays
- 40 KByte Video ROM

chapter 2

TROUBLESHOOTING

Follow these basic steps when beginning the troubleshooting process:

1. Complete the preliminary steps listed in Section 2.1.
2. Run the Power-On Self-Test (POST) as described in Section 2.3.
3. Run Computer Setup as described in Section 2.5.
4. Run the Computer Checkup (TEST) as described in Section 2.6.
5. If you are unable to run POST or Computer Checkup or if the problem persists after running POST and Computer Checkup, perform the recommended actions described in the diagnostic tables in Section 2.5.

Follow these guidelines when troubleshooting:

- Complete the recommended actions in the order in which they are given.
- Repeat POST and Computer Checkup after each recommended action until the problem is resolved and the error message does not return.
- When the problem is resolved, stop performing the troubleshooting steps and do not complete the remaining recommended actions.
- Refer to Chapter 5 for removal and replacement procedures that are recommended.
- If the problem is intermittent, check the computer several times to verify that the problem is solved.

The following table describes the troubleshooting actions:

Table 2-1
Trouble Shooting Actions

If You Want To:	Then Run:
Check for POST error messages	POST
Check that computer components are recognized and running properly	Computer Checkup (TEST) under Compaq Utilities
View information about the computer and installed or connected devices	View System Information (INSPECT) under Compaq Utilities
Perform any of the following: ■ Check the system configuration ■ Set the system power management parameters ■ Return the system to its original configuration ■ Check system configuration of installed devices	Computer Setup

2.1 Preliminary Steps

IMPORTANT: Use AC power when running POST, Computer Setup, or Computer Checkup. A low battery condition could initiate Hibernation and interrupt the test.

Before running POST and Computer Checkup, complete the following steps:

1. Obtain established passwords. If you must clear the passwords, go to Section 2.2.
2. Ensure that the hard drive is installed in the computer.
3. Ensure that the battery pack is installed in the computer and the power cord is connected to the computer and plugged into an AC power source.
4. Turn on the computer.
5. If a power-on password has been established, type the password and press **Enter.**
6. Run Computer Setup (Section 2.5). If a Setup password has been established, type the password and press **Enter.**
7. Turn off the computer and all external devices.
8. Disconnect external devices that you do not want to test. If you want to use the printer to log error messages, leave it connected to the computer.

   NOTE: If a problem only occurs when an external device is connected to the computer, the problem could be with the external device or its cable. Isolate the problem by running POST with and without the external device connected.

9. Use Compaq Utilities and Loopback plugs in the serial and parallel connectors if you plan to test these ports.
   Follow these steps to run Compaq Utilities:
   a. If you are running Compaq Utilities from the hard drive, turn on or restart the computer. Press **F10** when the cursor appears in the upper right corner of the screen. If you do not press **F10** in time, restart the computer and try again.

      If you are running Compaq Utilities from diskette, insert the Compaq Utilities diskette in drive A. Turn on or restart the computer.

   b. Press **Enter** to accept **OK.**

   c. Select Computer Checkup (TEST).

   d. Select Prompted Diagnostics.

   e. After “Identifying System Hardware” completes, select Interactive Testing and follow the instructions on the screen.

2.2 Clearing Passwords

The power-on password prevents use of the computer until the password is entered. The setup password prevents unauthorized changes to Computer Setup. To clear the passwords, you must remove all power from the system board. If you do not know the passwords, use the following procedure to clear the password:

1. Remove all battery packs from the battery bay and MultiBay, if applicable.
2. Disconnect the AC power.
3. Remove the real-time clock battery.
4. Wait five minutes.
5. Reconnect the AC power.
6. Restart the computer. During Power-On Self Test (POST), a “162 System Options not set” message appears.
7. Shut down the computer, then disconnect AC power again.
8. Replace the real-time clock battery.
9. Install the battery pack(s).

Proceed with the troubleshooting procedures.

2.3 Power-On Self-Test (POST)

The Power-On Self-Test (POST) is a series of tests that run every time the computer is turned on. POST verifies that the system is configured and functioning properly.

To run POST, complete the following steps:

1. Complete the preliminary steps (Section 2.1).
2. Turn on the computer.

If POST does not detect any errors, the computer beeps once or twice to indicate that POST has run successfully. The computer boots from the hard drive or from a bootable diskette if one is installed in the diskette drive.

2.4 POST Error Messages

If the system is not functioning well enough to run POST, or if the display is not functioning well enough to show POST error messages, refer to the Troubleshooting tables in Section 2.6.

If POST detects an error, one of the following events occurs:

- A message with the prefix "WARNING" appears informing you where the error occurred. The system pauses until you press **F1** to continue.
- A message with the prefix "FATAL" appears informing you where the error occurred. After the message, the system emits a series of beeps and stops.
- The system emits a series of beeps and stops.

Warning messages indicate that a potential problem, such as a system configuration error, exists. When **F1** is pressed, the system should resume. You should be able to correct problems that produce WARNING messages.

IMPORTANT: When a WARNING message includes the prompt to "RUN SCU," press **F10** to run Computer Setup. (Computer Setup replaces the SCU utility.)

If you receive one of the error messages listed in Table 2-2, follow the recommended action.

Table 2-2
Warning Messages

Message	Description	Recommended Action
CMOS checksum invalid, run SCU	CMOS RAM information has been corrupted.	Run Computer Setup to reinitialize CMOS-RAM.
CMOS failure, run SCU	CMOS RAM has lost power.	Run Computer Setup to reinitialize CMOS-RAM.
Diskette controller error	The diskette drive controller failed to respond to the recalibrate command.	If there is no diskette drive in the system, run Computer Setup to properly configure the CMOS-RAM to show no diskette drive present. If the problem persists, or if a diskette drive is present, complete these steps until the problems is solved: 1. Check diskette drive connections. 2. Replace diskette drive. 3. Replace system board.
Diskette track 0 failed	The diskette drive cannot read track 0 of the diskette in the drive.	Try another diskette. If the problem persists, you may need to replace the diskette drive.
Hard disk controller error	The hard drive controller failed to respond to the reset command.	Check the drive parameters. Turn off the system and check all related connections.
Keyboard controller failure	The keyboard failed the self-test command.	Replace the system board.
Keyboard failure	The keyboard failed to respond to the RESET ID command.	Replace the keyboard. If the problem persists, replace the system board.
No interrupts from Timer 0	The periodic timer interrupt is not occurring.	Replace the system board.
ROM at xxxx (LENGTH yyyy) with nonzero checksum (zz)	An illegal adapter ROM was located at the specified address.	Check the external adapter (such as a video card) to determine if it is causing the conflict.
Time/Date corrupt - run SCU	The time and date stored in the real time clock have been corrupted, possibly by a power loss.	1. Run Computer Setup. 2. If problem persists, replace auxiliary battery. 3. If problems persists, replace system board.
Hard disk xx failure (or error)	A failure or an error occurred when trying to access the hard drive.	1. Run Scan disk. 2. Check disk in DOS and Windows 95. If problem persists, refer to Table 2-11.
Unsupported memory module	An EDO memory module was installed in the memory expansion slot.	Remove the EDO memory module and replace with SDRAM memory module.

Fatal errors emit a beep and may display a FATAL message. Fatal errors indicate severe problems, such as a hardware failure. Fatal errors do not allow the system to resume. Some of the Fatal error beep codes are listed at the end of this section.

Table 2-3
Fatal Error Messages

Message	Description	Beep Code
CMOS RAM test failed	A walking bit test of CMOS RAM location 0E (Hex) - 3F (Hex) failed.	3
DMA controller faulty	A sequential read/write of the transfer count and transfer address registers within the primary and secondary DMA controllers failed.	4
Faulty DMA page registers	A walking bit read/write of the 16 DMA controller page registers starting at location 80 Hex failed.	0
Faulty refresh circuits	A continuous read/write test of port 61*h* found that bit 4 (Refresh Detect) failed to toggle within an allotted amount of time.	1
Interrupt controller failed	A sequential read/write of various Interrupt Controller registers failed.	5
ROM checksum incorrect	A checksum of the ROM BIOS does not match the byte value at F000:FFFF.	2
RAM error at location xxxx	RAM error occurred during memory test.	None

Table 2-4
Fatal Error Beep Codes

Beep Code	Beep Sequence	Description	Recommended Action
0	S-S-S-P-S-S-L-P	The DMA page registers are faulty.	Replace system board.
1	S-S-S-P-S-L-S-P	The refresh circuitry is faulty.	
2	S-S-S-P-S-L-L-P	The ROM checksum is incorrect.	
3	S-S-S-P-L-S-S-P	The CMOS RAM test failed.	
4	S-S-S-P-L-S-L-P	The DMA controller is faulty.	
5	S-S-S-P-L-L-S-P	The interrupt controller failed.	
6	S-S-S-P-L-L-L-P	The keyboard controller failed.	
7	S-S-L-P-S-S-S-P	Graphics adapter is faulty.	
8	S-S-L-P-S-S-L-P	Internal RAM is faulty.	Replace memory board or system board if memory on system board is faulty.

S = Short, L = Long, P = Pause

2.5 Compaq Utilities

Compaq Utilities contain several functions that

- Determine if various computer devices are recognized by the system and are operating properly.
- Provide information about the system once it is configured.

Compaq Utilities include the following programs:

- Computer Setup
- Computer Checkup (TEST)
- View System Information (INSPECT)

To access Compaq Utilities:

1. Turn on or restart the computer by clicking Start ⇒ Shut Down ⇒ Restart the computer.
2. Press **F10** when the blinking cursor appears in the upper-right corner of the display.
3. Select a menu option.

2.5.1 Computer Setup

Computer Setup contains utilities that give you an overall picture of the computer hardware configuration and aid in troubleshooting. These utilities also allow you to set custom features such as security options, power conservation levels, and startup preferences.

If you are running Windows 95, the computer automatically recognizes and configures the system for new devices. If you have a configuration problem or want to view or reset configuration settings, you can use Computer Setup.

NOTE: If you are running Windows 95, you should use Computer Setup only to adjust system features such as the power-on password or battery conservation level. Windows 95 may override other configuration changes.

If you are running Windows NT, the computer does not automatically recognize new devices added to the system. All devices ordered with your system have been configured for you. Use Computer Setup to view settings for a new device you have added or to reset configuration settings for preinstalled devices.

Computer Setup provides two methods of viewing the computer configuration: by type (factory setting) or connection.

Categories by type:

- System Features—security, power, boot management
- Communication—port, modem, and other communication devices
- Storage—storage-related devices such as hard drive, CD-ROM drive, diskette drive
- Input Devices—keyboard, mouse, and other input devices
- Network—network adapter or other network-related devices
- Audio—sound properties and audio device settings
- Video—display timeouts and video device resources
- Other—miscellaneous devices

Categories by connection:

- System Features—security, power, boot management
- System Devices—keyboard, mouse, parallel and serial ports
- ISA—ISA bus and connected devices
- PCI—PCI bus and connected devices
- PC Card—PC Card devices

Running Computer Setup

1. Turn on or restart the computer by clicking Start ⇒ Shut Down ⇒ Restart the computer.
2. Press **F10** when the blinking cursor appears in the upper-right corner of the screen.

   NOTE: If you a setup password is enabled, it must be used to access Computer Setup.
3. Click a language and press **Enter.**
4. Click Computer Setup and press **Enter**.
5. When you are finished, click **Exit.**

Exiting Computer Setup

1. Click **Exit.**
2. Select one of the following Exit options:
   - Save—Saves the new settings and exits Computer Setup.

     NOTE: Some settings may not take effect until the computer is restarted.
   - Ignore—Exits Computer Setup and restores previous settings.
   - Cancel—Returns to Computer Setup.

2.5.2 Computer Checkup (TEST)

Computer Checkup (TEST) determines whether the various computer components and devices are recognized by the computer and are functioning properly. You can display, print, or save the information that Computer Checkup generates.

NOTE: Compaq Utilities are intended for testing only Compaq-supplied components. Testing of non-Compaq components may be inconclusive.

Running Computer Checkup (TEST)

1. Plug the computer into an external power source. A low battery condition can interrupt the program.
2. Connect a printer if you want to print a log of error messages.
3. Turn on the external devices that you want to test.
4. Turn on or restart the computer.
5. Access Compaq Utilities by pressing **F10** when the blinking cursor appears in the upper-right corner of the display.
6. Click Computer Checkup ⇒ View the Device List.
   - If the list of installed devices is correct, click **OK.**
   - If the list is incorrect, ensure that any new devices are installed properly.
7. Select one of the following from the Test Option menu:
   - Quick Check Diagnostics
   - Automatic Diagnostics
   - Prompted Diagnostics
8. Follow the instructions on the screen as the devices are tested.
9. Click Exit Diagnostics ⇒ Exit from this utility.

Computer Checkup (TEST) Error Codes

Computer Checkup (TEST) error codes occur if the system recognizes a problem while running Computer Checkup. These error codes help identify possible defective assemblies. Table 2-5 through Table 2-15 list Computer Checkup error codes, a description of the error condition, and the recommended action for resolving the condition. For removal and replacement procedures, refer to Chapter 5.

IMPORTANT: Run Computer Checkup each time you complete a recommended action step. If the problem is resolved when POST and Computer Checkup are rerun (i.e., with no error codes), do not perform the remaining recommended action steps.

NOTE: The error codes in the following tables are listed in an "AYE-XX" format, where:

A or AA = Number that represents the faulty assembly

YY = Test or action that failed

XX = Specific problem

Table 2-5
Processor Test Error Codes

Error Code	Description	Recommended Action
101-xx	CPU test failed.	Replace the processor board and retest.
103-xx	DMA page registers test failed.	Replace the system board and retest.
104-xx	Interrupt controller master test failed.	
105-xx	Port 61 error.	
106-xx	Keyboard controller self-test failed.	
107-xx	CMOS RAM test failed.	
108-xx	CMOS interrupt test failed.	
109-xx	CMOS clock test failed.	
110-xx	Programmable timer load data test failed.	
113-xx	Protected mode test failed.	

Table 2-6
Memory Test Error Codes

Error Code	Description	Recommended Action
200-xx	Memory machine ID test failed.	The following steps apply to error codes 200 -xx and 202-xx:
202-xx	Memory system CMOS checksum failed.	1. Flush the system CMOS and retest. See note. 2. Replace the system board and retest.
203-xx	Write/Read test failed.	The following applies to error codes 203-xx through 215-xx:
204-xx	Address test failed.	Remove and replace the SODIMM memory board or system board (if the memory on the system board is faulty) and retest.
211-xx	Random pattern test failed.	
214-xx	Noise test failed.	
215-xx	Random address test failed.	

Table 2-7
Keyboard Test Error Codes

Error Code	Description	Recommended Action
300-xx	Failed ID Test.	1. Reseat the keyboard assembly.
301-xx	Failed Self test/Interface Test.	2. Replace the keyboard and retest.
302-xx	Failed Individual Key Test.	3. Replace the system board and retest.
304-xx	Failed Keyboard Repeat Test.	

Table 2-8
Parallel Printer Test Error Codes

Error Code	Description	Recommended Action
401-xx	Printer failed or not connected.	1. Connect the printer.
402-xx	Failed Port Test.	2. Check power to the printer.
403-xx	Printer pattern test failed.	3. Install the loopback connector and retest. 4. Check port and IRQ configuration. 5. Replace the system board and retest.

Note: **Fn** + **F11** clears the ESCD configuration information. If the **Fn** + **F11** sequence is pressed very early after powering the machine on (after you see the keyboard LEDs blink, but before the video is initialized), CMOS memory will be invalidated. The ESCD is cleared, the machine is reset and boots with the "162 - System Options Not Set" message. This is a way to clear out configuration information, such as the Windows 95 knowledge about a docking station. It may help clear up problems if the configuration information had been corrupted. Timing of this keystroke sequence is critical, as there is a very narrow window during which the keys will be recognized. These keys are not documented to users.

Table 2-9
Diskette Drive Error Codes

Error Code	Description	Recommended Action
600-xx	Diskette ID drive types test failed.	The following steps apply to error codes 600 -xx through 698-xx:
601-xx	Diskette format failed.	1. Replace the diskette.
602-xx	Diskette read test failed.	2. Replace the diskette drive and retest.
603-xx	Diskette write, read, compare test failed.	3. Replace the system board and retest.
604-xx	Diskette random read test failed.	
605-xx	Diskette ID media test failed.	
606-xx	Diskette speed test failed.	
609-xx	Diskette reset controller test failed.	
610-xx	Diskette change line test failed.	
697-xx	Diskette type error.	
698-xx	Diskette drive speed not within limits.	
699-xx	Diskette drive/media ID error.	1. Replace media. 2. Run Compaq Utilities.

Table 2-10
Serial Test Error Codes

Error Code	Description	Recommended Action
1101-xx	Serial port test failed.	1. Check port configuration. 2. Replace the system board and retest.

Table 2-11
Hard Drive Test Error Codes

Error Code	Description	Recommended Action
1701-xx	Hard drive format test failed.	1. Run Compaq Utilities and verify drive type.
1702-xx	Hard drive read test failed.	2. Verify that all secondary drives have secondary drive capability.
1703-xx	Hard drive write/read/compare test failed.	3. Replace the hard drive and retest.
1704-xx	Hard drive random seek test failed.	4. Replace the system board and retest.
1705-xx	Hard drive controller test failed.	
1706-xx	Hard drive ready test failed.	
1707-xx	Hard drive recalibration test failed.	
1708-xx	Hard drive format bad track test failed.	
1709-xx	Hard drive reset controller test failed.	
1710-xx	Hard drive park head test failed.	
1715-xx	Hard drive head select test failed.	
1716-xx	Hard drive conditional format test failed.	
1717-xx	Hard drive ECC* test failed.	
1719-xx	Hard drive power mode test failed.	
1724-xx	Network preparation test failed.	
1736-xx	Drive monitoring test failed.	

* ECC = Error Correction Code

Table 2-12
Video Test Error Codes

Error Code	Description	Recommended Action
501-xx	Video controller test failed.	The following actions apply to error codes 501-xx through 516-xx:
502-xx	Video memory test failed.	1. Disconnect external monitor and test with internal LCD display.
503-xx	Video attribute test failed.	2. Replace the display assembly and retest.
504-xx	Video character set test failed.	3. Replace the system board and retest.
505-xx	Video 80 × 25 mode 9 × 14 character cell test failed.	
506-xx	Video 80 × 25 mode 8 × 8 character cell test failed.	
507-xx	Video 40 × 25 mode test failed.	
511-xx	Video screen memory page test failed.	
512-xx	Video gray scale test failed.	
514-xx	Video white screen test failed.	
516-xx	Video noise pattern test failed.	
2402-xx	Video memory test failed.	The following actions apply to error codes 2402-xx through 2456-xx:
2403-xx	Video attribute test failed.	1. Run Compaq Utilities.
2404-xx	Video character set test failed.	2. Disconnect external monitor and test with internal LCD display.
2405-xx	Video 80 × 25 mode 9 × 14 character cell test failed.	3. Replace the display assembly and retest. 4. Replace the system board and retest.

Continued

Table 2-12 Video Test Error Codes *Continued*

Error Code	Description	Recommended Action
2406-xx	Video 80 × 25 mode 8 × 8 character cell test failed.	
2411-xx	Video screen memory page test failed.	
2412-xx	Video gray scale test failed.	
2414-xx	Video white screen test failed.	
2416-xx	Video noise pattern test failed.	
2418-xx	EGA/VGA memory test failed.	
2419-xx	EGA/VGA ROM checksum test failed.	
2421-xx	EGA/VGA 640 × 200 graphics mode test failed.	
2422-xx	EGA/VGA 640 × 350 16 color set test failed.	
2423-xx	EGA/VGA 640 × 350 64 color set test failed.	
2424-xx	EGA/VGA monochrome text mode test failed.	
2425-xx	EGA/VGA monochrome graphics mode test failed.	
2431-xx	640 × 480 graphics test failed.	
2448-xx	Advanced VGA Controller test failed.	
2451-xx	132-column Advanced VGA test failed.	
2456-xx	Advanced VGA 256 Color test failed.	
2458-xx	Advanced VGA Bit BLT test failed.	The following step action to error codes 2458-xx to 2480-xx:
2468-xx	Advanced VGA DAC test failed.	Replace the system board and retest.
2477-xx	Advanced VGA data path test failed.	
2478-xx	Advanced VGA BitBLT test failed.	
2480-xx	Advanced VGA Linedraw test failed.	

Refer to Table 2-26 for information about other video errors.

Table 2-13
Audio Test Error Codes

Error Code	Description	Recommended Action
114-01	Speaker test failed.	1. Check system configuration. 2. Verify that the audio/led board is properly seated. 3. Verify display audio cable connection.
3206-xx	Audio System Internal Error	Replace the audio board and retest.

Table 2-14
Pointing Device Interface Test Error Codes

Error Code	Description	Recommended Action
8601-xx	Pointing device test failed.	Replace the keyboard/CPU cover assembly.
8602-xx	Interface test failed.	

Table 2-15
CD-ROM Test Error Codes

Error Code	Description	Recommended Action
3301-xx	CD-ROM *drive read test failed.*	1. Replace *the* CD a*nd retest.*
		2. Verify t*hat drivers* are loa*ded and* properly *installed.*
3305-xx	CD-ROM *drive seek test failed.*	3. Replace *the* CD-ROM *drive and retest.*
		4. Replace *the system* board *and retest.*
6600-xx	ID *test failed.*	
6605-xx	R*ead test failed.*	
6608-xx	Co*ntroller test failed.*	
6623-xx	Ra*ndom read test failed.*	

2.5.3 Running View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about the computer and installed or connected devices. You can display, print, or save the information.

In order to access the INSPECT utility, follow the instructions below:

1. Connect a printer if you want to print the INSPECT information.
2. Turn on or restart the computer.
3. Access Compaq Utilities by pressing **F10** when the cursor blinks in the upper-right corner of the display.
4. If prompted, select a language.
5. Click View System Information (INSPECT).
6. Click the item you want to view. The list includes the following:

- System
- ROM
- Keyboard
- System ports
- System storage
- Graphics
- Memory
- Audio
- Operating system
- System files
- Windows files
- Miscellaneous
- Network - Applicable only if computer is docked in the Convenience Base II[1]

7. Follow the instructions on the screen to cycle through the screens, to return to the list and choose another item, or to print the information.
8. Select Exit Inspect.

[1] The Compaq Prosignia is only supported by Convenience Base II. It is not supported by any prior convenience bases.

2.5.4 Running Compaq Diagnostics

Compaq Diagnostics provides computer component information when the operating system is working.

If you are running Windows 95, access Compaq Diagnostics for Windows by double-clicking My Computer ⇒ Control Panel ⇒ Compaq Diagnostics.

2.5.5 Boot Sequencing

1. Run Computer Setup.
2. Click the System Features icon ⇒ Boot Management box ⇒ MultiBoot tab.
3. Designate the hard drive boot (startup) sequence you want.
4. Click **OK** to accept the changes.

2.5.6 Factory Default Settings

Initialization	
Enable POST Memory Test	Checked (enabled)
Keyboard num Lock	Unchecked (Off)
1	Hard drive in the computer
2	Hard drive in the computer MultiBay
Boot display	Auto
Language	Language of country
Ports	
Serial/infrared ports	
Serial port	3F8, IRQ4
Infrared port	2F8, IRQ3
Parallel port	378, IRQ7
Ethernet port	300, IRQ9
Power	
Low Battery Warning Beep	Checked (enabled)
External Energy Saving Monitor Connected	Unchecked (not connected)
Power Management	
Enabled	While operating power on battery
Conservation Level	Medium
Level Definition	
High	Suspend Time: 5 minutes Hibernation Timeout: Immediate Drive Timeout: 2 minutes Screen Timeout: 2 minutes
Medium	Suspend Time: 10 minutes Hibernation Timeout: 1 hour Drive Timeout: 6 minutes Screen Timeout: 4 minutes
Custom	Suspend Time: disabled Hibernation Timeout: low battery Drive Timeout: always on Screen Timeout: always on
Security	
Enable QuickLock/QuickBlank	Unchecked (Disabled)
Enable Power-On Password	Unchecked (Disabled)
Disable Serial/Infrared Ports	Unchecked (Enabled)
Disable Parallel Port	Unchecked (Enabled)
Disable PC Card Slots	Unchecked (Enabled)
Setup Password	Password blank
Power-On Password	Password blank
Diskette Drives	
Disable Diskette Drives	Unchecked (Enabled)
Disable Diskette Boot	Unchecked (Enabled)

2.6 Troubleshooting Without Diagnostics

This section provides information about how to identify and correct some common hardware, memory, and software problems. It also explains several types of messages that may be displayed on the screen.

Since symptoms can appear to be similar, carefully match the symptoms of the computer malfunction against the problem description in the Troubleshooting tables to avoid a misdiagnosis.

2.6.1 Before Replacing Parts

When troubleshooting a problem, check the following items for possible solutions before replacing parts:

- Verify that cables are connected properly to the suspected defective parts.
- Verify that all required device drivers are installed.
- Verify that all printer drivers have been installed.

2.6.2 Checklist for Solving Problems

If you encounter a minor problem with the computer or software applications, go through the following checklist for possible solutions:

- Is the computer connected to an external power source, or does it have a fully charged battery pack installed?
- Are all cables connected properly and securely?
- Did the diskette drive contain a nonbootable diskette when you turned on the computer?
- Have you installed all the needed device drivers? For example, if you are using a mouse, you may need to install a mouse device driver.
- Are printer drivers installed?

Eliminating the typical problems described in this Troubleshooting section may save you time and money. If the problem appears related to a software application, check the documentation provided with the software. You may discover something you can resolve easily by yourself.

Solving Audio Problems

Table 2-16
Solving Audio Problems

Problem	Probable Cause	Recommended Action(s)
Computer does not beep after the Power-On Self-Test (POST).	Speaker volume has been turned down.	Adjust the volume with the volume control buttons located at the top right corner of the computer.
Computer beeped five times and battery light is blinking.	Computer has entered a low-battery condition.	Immediately save open files and resolve the low battery condition.
Computer does not beep to indicate a low-battery condition.	Low-battery warning beeps have been turned off.	Enable low-battery warning beeps in Windows 95 Power Properties or in Computer Setup power management.
	System beeps have been turned down too low.	Press **Fn+F5**, then press the right arrow key to increase the volume of the system beeps.
Audio playback is too low or too loud.	The computer volume control and/or the software volume control needs to be adjusted.	In Windows 95, adjust the computer volume control buttons and adjust the volume control in Multimedia Properties. **NOTE**: The volume control in Multimedia Properties only affects the "Wave" audio sources such as system sounds and *.wav file playback. To change other sources such as MIDI, video sound, and game effects, use the Volume Control application in accessories/Multimedia. In Windows NT, adjust the multimedia volume control under the Accessories folder.
Internal speakers produce no sound.	Volume has been muted.	Press the increase volume control button to increase the volume. Press **Fn+F5**, then press the right arrow key to increase the volume of the system beeps
	External speakers or headphones are connected to the computer.	Use the external speakers or headphones or use the Convenience Base II speakers. To use the internal speakers, disconnect the external speakers or headphones or undock the computer.
	Speaker wires are not connected.	Make sure the speaker wires are connected properly.
	Speakers are bad.	Replace the speakers.

Continued

Table 2-16 Solving Audio Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Internal speaker does not produce sound when an external audio source is connected to the stereo line-in jack.	Volume may be turned off or set too low.	Adjust the volume control located at the top right corner of the computer. Use the volume control and mixing features available in Control Panel ⇒ Multimedia. Adjust the volume using the speaker icon on the taskbar.
	Line input may not be connected properly.	Check line input connection.
	Headphones or speakers are connected to the stereo speaker/headphone jack, which disables the internal speakers.	Disconnect the headphones or speakers to enable the internal speakers.
External microphone does not work.	The wrong type of microphone or microphone plug is being used.	Check to see if a monophonic electret condenser microphone with a 3.5 -mm plug is being used.
	The microphone may not be connected properly.	Ensure that the microphone plug is properly connected to the mono microphone jack.
	Sound source is not selected.	Ensure that microphone is selected as the recording source in Control Panel ⇒ Multimedia and that the recording level is adjusted.
No sound from game program.	Audio settings are not set correctly.	Check the game program audio settings.
	Computer volume control is turned down.	Adjust the volume with the volume control buttons located at the top right corner of the computer.
	Headphones are connected.	Use or disconnect the headphones.
No sound from headphones.	Volume or mixing controls set incorrectly.	Adjust the volume with the volume control buttons located at the top right corner of the computer. Use the volume control and mixing features available in Control Panel ⇒ Multimedia.
	Sound source not selected.	Verify that the sound source is selected in Control Panel ⇒ Multimedia.
	Volume or mixing controls set incorrectly.	Adjust the volume with the volume control buttons located on the right side of the computer. Check the volume and mixer controls in Control Panel ⇒ Multimedia.

Solving Battery Problems

The following table lists some common battery problems and recommended actions to take when they occur. The "Solving Power Problems" section in this chapter also may be applicable.

Table 2-17
Solving Battery and Battery Gauge Problems

Problem	Probable Cause	Recommended Action(s)
The computer turns on the first time it is used, but the battery does not charge.	The battery pack is in ship mode.	Remove and reinsert the battery pack.
Computer does not turn on when battery pack is inserted and power cord is unplugged.	Battery is discharged.	Ensure that the battery pack is properly installed. Connect the computer to an external power source and charge the battery pack. Replace the battery pack with a fully charged battery pack. Check battery status by pressing **Fn**+**F8**.
Computer beeped five times and battery light is blinking.	Computer has entered a low-battery condition.	Immediately save any open file(s). Then do one of the following: 1. Connect the computer to an external power source. 2. Turn the computer off and replace the battery pack.
Computer battery light blinks to indicate low battery condition, but computer does not beep.	Low battery beeps were turned off. Volume is turned off or turned down too low.	Run Computer Setup and turn on the low battery warning beeps. Press Fn+F5 to adjust the volume of the system warning beeps.
Battery light does not turn on to indicate battery pack is charging.	Battery pack is already charged. Battery pack was exposed to temperature extremes.	No action is necessary. Allow time for the battery pack to return to room temperature.
	Battery pack is at the end of its life.	Replace the battery pack.
Battery pack is warm to the touch after charging.	Warming occurs during charging.	No action is required.

Continued

Table 2-17 Solving Battery and Battery Gauge Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Computer turned off and information in memory was lost when the battery pack was replaced.	Hibernation was disabled, Suspend was not initiated, or AC power was not connected before the discharged battery pack was removed.	To prevent loss of information next time, initiate Suspend, enable Hibernation, or connect AC power before changing batteries..
You have to set the date and time every time you turn on the computer.	Real time clock (RTC) battery is at the end of its life.	Replace the RTC battery.
Battery pack charge does not last as long as expected.	Battery pack is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended operating temperature range 50°F to 104°F (10°C to 40°C) or recommended storage range -4 °F to 86°F (-20°C to 30°C). Recharge the battery pack.
	Battery pack has partially self-discharged.	If the computer is disconnected from the external power for more than two weeks, remove the battery pack to reduce the self-discharge rate.
	Power management is disabled.	Press Fn+F7 and set the power conservation level.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
Computer is beeping and battery power light is blinking.	Battery pack charge is low.	Do one of the following: Charge the battery pack. Replace the battery pack. Connect the computer to an external power source. Initiate Hibernation.

Solving CD-ROM Drive Problems

Table 2-18
Solving CD-ROM Drive Problems

Problem	Probable Cause	Recommended Action(s)
CD-ROM drive cannot read a compact disc.	Compact disc is not properly seated in the CD-ROM drive.	Open the CD loading tray, lay the compact disc on it, then close the tray.
	Compact disc is loaded in the CD loading tray upside down.	Open the CD loading tray, turn over the compact disc (label facing up), then close the tray.
	Compact disc has a scratch on its surface.	Insert a different compact disc.
CD-ROM drive is not recognized by the computer.	CD-ROM drive is not connected properly.	Turn off the computer, remove the CD-ROM drive and reinsert it.

Solving Diskette and Diskette Drive Problems

Table 2-19
Solving Diskette and Diskette Drive Problems

Problem	Probable Cause	Recommended Action(s)
Diskette drive cannot read a diskette.	Diskette media has a bad sector.	Copy remaining files to the hard drive or another formatted diskette. Reformat the diskette.
	Using the wrong diskette type for the diskette drive type.	Use the required diskette type.
	Diskette is not formatted.	Format the diskette. If you are using Windows 95: From the Windows 95 desktop, double-click My Computer. Click 3 ½ Floppy (A:) ⇒ File ⇒ Format. Fill in the appropriate information, then click Start. If you are using Windows NT, format the diskette by entering **format a:** at the system prompt.
Diskette drive cannot write to a diskette.	Diskette is not formatted.	Format the diskette. If you are using Windows 95: From the Windows 95 desktop, double-click My Computer. Click 3 ½ Floppy (A:) ⇒ File ⇒ Format. Fill in the required information, then click Start. If you are using Windows NT, format the diskette by entering **format a:** at the system prompt.
	Diskette is write-protected.	Use another diskette that is not write-protected or disable the write-protect feature.
	Writing to the wrong drive.	Check the drive letter in your path statement.
	Not enough space is left on the diskette.	Save the information to another diskette.
	Disable diskette write ability is turned on.	Run Computer Setup. Click on the Storage icon. Make sure Disable diskette write ability is not checked.

Solving Hard Drive Problems

CAUTION: To prevent loss of information, always maintain an up-to-date backup of the hard drive.

Table 2-20
Solving Hard Drive Problems

Problem	Probable Cause	Recommended Action(s)
Cannot access hard drive.	Hard drive is not seated.	Shut down the computer, remove and reinsert the hard drive, then turn on the computer.
	Hard drive was inserted while computer was on, in Suspend, or in Hibernation.	Shut down the computer, then turn it on again to initialize it during power on.
	Hard drive may be damaged.	Try inserting another hard drive.
Reading hard drive takes an unusually long time after restarting the computer.	Hibernation was initiated and system is now exiting from it.	Give the system time to restore the previously saved data.
Hard drive error occurs.	Hard drive has bad sectors or has failed.	Do one of the following: If you are running Windows 95, access ScanDisk by clicking Start ⇒ Programs ⇒ Accessories ⇒ System Tools ⇒ ScanDisk, then check the Automatically fix errors box. Click Start to begin scanning. If you are running Windows NT, go to the system prompt and type chkdsk to scan for errors. Reformat the hard drive. Contact your Compaq authorized dealer, reseller, or service provider or Compaq customer support for assistance.
Hard drive error occurs.	Hard drive may be damaged.	Try inserting another removable drive, if the hard drive is in the MultiBay.
Errors occur after starting from an additional hard drive.	Additional hard drive does not have the software and drivers necessary to boot and operate correctly.	Boot from the hard drive supplied with the computer or another hard drive that has the necessary software and drivers.
Hard drive does not work.	Hard drive is not seated.	Turn off and unplug the computer, remove the hard drive, then reinsert it.

Solving Hardware Installation Problems

Table 2-21
Solving Hardware Installation Problems

Problem	Probable Cause	Recommended Action(s)
New device is not recognized as part of the computer system.	The system did not automatically configure the new device.	In Windows 95, double-click the Add New Hardware icon in Control Panel. Refer to the documentation that came with the new device for installation instructions.
	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected and the power cord is plugged into an electrical outlet.
	Power switch of new external device is not turned on.	1. Turn off the computer. 2. Turn on the external device. 3. Turn on the computer to integrate the device with the computer system.
	New device is not configured for Windows NT.	Use Computer Setup to view settings for the new device or to reset the configuration settings for preinstalled devices.

Solving Infrared Connection Problems

NOTE: The computer is shipped with the infrared port disabled. The port must be enabled each time the computer is started or restarted. Follow these steps to enable the infrared port.

1. Click Start ⇒ Settings ⇒ Control Panel.
2. Double click the Infrared icon.
3. Select the Options tab.
4. Check the box labeled Enable Infrared Communications to select the Com3 port.
5. Click **OK.** The infrared icon appears on the task bar.

NOTE: Windows NT does not support infrared communication.

Table 2-22
Solving Infrared Connection Problems

Problem	Cause	Recommended Action(s)
Cannot link with another computer.	Interrupt request (IRQ) conflict	Check IRQ assignments for conflicts and reassign as necessary.
	Baud rate conflict	Select the same baud rate for both computers.
	# bits conflict	Select the same "#bits" setting for both computers.
	Stop bit conflict	Select the same stop byte for both computers.
	Parity conflict	Select the same parity setting for both computers.
Data transmission problem	Direct sunlight, fluorescent light, or flashing incandescent light is close to the infrared connections.	Remove the interfering light sources.
	Interference from other infrared devices	Keep remote control units and other infrared devices away from the infrared connections.
	Physical obstruction	Do not place objects between the two units that will interfere with a line-of-sight data transmission.
	Movement	Do not move either unit during data transmission.
	Orientation	Adjust devices so that they point within 30 degrees of each other.
	Distance	Verify that devices are not more than 3 feet (1 meter) apart.
Cannot connect at 4 MB/sec	Fast IR driver not installed	Fast-IR is not preinstalled. Download FAST-IR driver from Compaq web site and install.

Solving Modem Problems

Table 2-23
Solving Modem Problems

Problem	Probable Cause	Recommended Action(s)
Modem loses connection.	The connection from the phone line to the modem is loose.	Check to make sure the telephone cable is properly connected.
	Call Waiting has not been disabled.	Disable Call Waiting. 1. Click Start ⇒ Control Panel ⇒ double-click Modems. 2. From the General tab of the Modems Properties page, click Dialing Properties. 3. From the My Locations tab of the Dialing Properties page, check the box labeled This location has call waiting. Select *70, 70#, or 1170 from the drop-down list to disable call waiting for your dialing area.
Noisy telephone line	Phone line noise causing garbled or missing characters, or slow data transfer speeds.	Check your telephone and modem cable connections. If they are a little loose, they can cause noise on the line. Check with your local telephone company for a phone line filter.
Phone line noise causing a disconnection.	Hang-up Delay S Register (S10) set too low.	Change S10 default to 150. 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Command Mode. 3. Type ATS10=150 and press Enter. This command causes the modem to take longer to disconnect even if there is noise on the line.

Continued

Table 2-23 Solving Modem Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
No dial tone	Phone service is not connected to the telephone wall jack.	Verify service from the local phone company: 1. Unplug the telephone cable from the telephone wall jack. 2. Connect a telephone to the jack, pick up the handset, and listen for a dial tone. If there is a dial tone, reconnect the modem to the telephone wall jack with the telephone cable and make sure all connections are secure. 3. If there is still no dial tone, contact your local phone company or building manager.
	The modem is not responding to commands from the computer keyboard.	Verify the modem and computer are connected: 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Terminal Mode, then type AT and press the Enter key. If the modem displays OK, the modem and computer are working together. If the modem displays ERROR, or does not respond, restart the computer and repeat step 1. 3. Type ATDT and listen for a dial tone. 4. Type ATH0 (zero) to hang up.
	Speaker Control AT Command (ATM) is set to 0.	Set the Speaker Control to 1: 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Command Mode, type ATM1 and press Enter. 3. Type ATH1 and listen for a dial tone. 4. Type ATH0 (zero) to hang up.
	The modem is plugged into a digital PBX line rather than an analog line.	Plug the modem into an analog line. If you are in an office, the analog line is often the one connected to a fax machine or modem. To get an analog line in a hotel, request a room with a "data" line.
Characters are garbled and transfer rates are slow.	There is noise in the telephone line.	Check your telephone and modem cable connections. If they are loose, they can cause noise on the line. Check with your local telephone company for a phone line filter.

Continued

Table 2-23 Solving Modem Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Phone line noise causes a disconnection.	Hang-Up Delay S Register (S10) set too low.	Change S10 default to 150. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. Go to Command Mode. Type **ATS10=150** and press **Enter.** This command causes the modem to take longer to disconnect even if there is noise on the line.
Ten-digit dialing does not work correctly under Windows 95.	Ten-digit dialing doesn't work correctly under Windows 95, making it difficult to dial numbers in a different area code that are not long distance calls.	Since Windows 95 does not limit the number of digits you can enter in the Phone Number field, set the Area Code field to match your local area code. Then type the ten-digit telephone number in the Phone Number field.
Modem cable disables/interferes with other telephony devices (Germany, Austria, and Switzerland only).	The modem cable does not provide the additional 4-wire connection required in Germany, Austria, and Switzerland to form the serial pass-through necessary so that other devices can work on the same phone line.	To use another telephony device on the same line in these countries, unplug the modem cable from the wall jack first.
Modem does not dial correctly under Windows 95 (Switzerland and Germany only).	The "Wait for dial tone before dialing" check box is checked. This causes Windows 95 to issue an ATDT; command. A typical dial string would look like this: ATDT; ATDTnnn-nnnn In Germany and Switzerland, the ';' dial modifier is not permitted to be used in this fashion by regulatory agencies since ATDT; takes the modem off-hook without dialing. Therefore, the modem returns an error message when attempting to dial. The error message reads: "The computer is not receiving a response from the modem. Check that the modem is plugged in, and if necessary, turn the modem off, then turn it back on."	Click Start ⇒ Settings ⇒ Control Panel. Double-click the Modems icon. Click the Properties button. Select the Connection tab. Click the "Wait for dial tone before dialing" check box to clear it. Click **OK** ⇒ Close.

Solving PC Card Problems

Table 2-24
Solving PC Card Problems

Problem	Probable Cause	Recommended Action(s)
Computer does not beep when PC Card is inserted but PC Card works correctly.	System beeps are turned down.	Press Fn+F5, then press the right arrow key to increase the system beeps volume.
	PC Card sound effects have been disabled.	In Windows 95, double-click PC Card icon ⇒ Global Settings tab. Deselect Disable PC Card Sound Effects.
Computer does not beep when PC Card is inserted and PC Card does not work.	PC Card is not inserted properly.	Remove and reinsert the card gently to avoid damaging the pins.
	The PC Card slots have been disabled.	Run Computer Setup to enable the PC Card slots. When the system starts, press F10 then select Computer Setup ⇒ Other Devices ⇒ PC Card Controller ⇒ Resources. Deselect the "Disabled" check box.
		In Windows 95, click Start ⇒ Settings ⇒ Control Panel ⇒ System ⇒ Device Manager ⇒ PCMCIA Socket. Double-click the Texas Instruments TI-1131 CardBus controller to view device properties. Deselect the "Disable in this hardware profile" check box.
	Card or card driver is not compatible with the computer or with the operating system.	Contact service provider for a list of compatible PC Cards.
Computer beeps twice, but modem and/or fax does not work.	Telephone cord is not plugged in all the way.	Verify that the telephone connection is secure.
	The wrong COM port is being used to access the card.	Verify the COM port assigned to the card and within the application is correct.
		In Windows 95, click Start ⇒ Help ⇒ Contents ⇒ Troubleshooting ⇒ Problem. Follow the instructions on the screen.
Computer beeps twice but network card does not work.	Network server is unavailable.	Contact system administrator.
Computer beeps twice when a storage card is inserted, but the card does not work.	The wrong drive letter is being used to access the storage card.	Open Windows Explorer and verify the drive letter.
PC Card does not work	Windows NT was running when the PC Card was inserted.	Turn off the computer and reinsert the PC Card.

Solving Power Problems

Table 2-25
Solving Power Problems

Problem	Probable Cause	Recommended Action(s)
Computer will not turn on.	Computer is not connected to a power source.	Insert battery pack or connect an external power source.
	Power cord to the external power source is unplugged.	Ensure that power cord connecting the computer and the external power source is plugged in properly.
	Battery pack is discharged.	Insert a fully charged battery pack or connect an external power source.
	CMOS data is corrupt	Flush CMOS memory.
Computer will not turn on when connected to external power if battery pack is in the computer.	Battery pack may be defective.	Remove battery pack, insert another battery pack, and try again.
Computer turned off while it was left unattended and the power/suspend light is off.	System initiated Hibernation after a preset timeout.	Turn on the computer to restore information at the point where Hibernation was initiated. NOTE: To change the Hibernation timeout setting in Windows 95, click the Hibernation tab in Power Properties. In Windows NT, run Computer Setup and select Power Management.
Computer turned off while it was left unattended and will not turn on.	System initiated Hibernation and/or shut down because of a critical low-battery condition.	Replace the battery pack with a fully charged battery pack or connect an external power source, then turn on the computer.
Computer initiated Suspend or turned off when it was docked.	The maximum operating temperature was exceeded.	Computer is in a high temperature environment and the fan is not able to cool it. Let the computer cool down and turn it on again.
		Make sure the ventilation intake and exhaust are not obstructed.
Hibernation does not work properly.	Hibernation was not reset after a memory upgrade.	Reset Hibernation in the Power Management utility.
Computer does not turn on when connected to external power and no batteries are installed.	Internal power supply is bad.	Replace the internal power supply.

Solving Screen Problems

IMPORTANT: Conduct all tests on a working monitor. If the recommended actions do not solve the problem, replace the display. If the problem persists with a new display, replace the system board.

Table 2-26
Solving Screen Problems

Problem	Probable Cause	Recommended Action(s)
Characters are dim.	The brightness or contrast control (if applicable) is not set properly.	Adjust the control(s) with the hotkeys: **Fn+F9** and **Fn+F10**.
	Computer screen is in direct light.	Tilt the display or move computer.
	Display is damaged.	Replace the display.
Screen is blank.	QuickLock/QuickBlank was initiated.	Enter the password to exit QuickLock/QuickBlank.
	Screen save was initiated after the Power Management timeout period.	Press any key or click the mouse.
	Brightness or contrast needs adjusting.	Adjust the control(s) with the hotkeys: **Fn+F9** and **Fn+F10**.
	Screen has overheated.	If computer is in direct sunlight, move it and allow it to cool.
Computer screen is blank and the screen on an external monitor displays information.	Display was switched to the external monitor.	Press the **Fn**+**F4** hotkeys to display information on the computer screen.
Screen is blank and the power/suspend light is blinking.	System initiated Suspend.	Press the suspend button to exit Suspend. Enter the power-on password if prompted.
Screen is blank and the power/suspend light and the battery light are blinking.	System has entered a critical low-battery condition.	Immediately connect the computer to an external power source or replace the battery pack.
External monitor does not display information.	External monitor was connected after the computer was turned on.	Press the **Fn+F4** hotkeys to switch to the external monitor.
	The external monitor signal cable or power cord is not properly connected.	Ensure that the cables are properly connected.
Small red, green, or blue spots appear on the computer CTFT display.	Small spots, called on-pixels, often appear on CTFT screens. Compaq limits the number of these on-pixels to 0.003 percent.	No action is required.

Continued

Table 2-26 Solving Screen Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Display on an external monitor is distorted.	Incorrect display device drivers are installed or incorrect resolution is set.	Double-click the Display icon in Control Panel, click the Settings tab, and set the correct display type and resolution for the external monitor.
	The external monitor is not Energy Star compliant, but monitor energy saving feature is enabled.	Complete these steps: 1. Press any key or move the pointing device to restore the display. 2. If display remains distorted, turn off the monitor, then turn it on again. 3. Disable the monitor energy saving feature in Display Properties or in Computer Setup Power Management.
The image has a black border and does not fill the screen.	The Desktop Area setting is smaller than the Resolution setting.	Adjust the settings for the Desktop Area and Resolution. Double-click Control Panel Display ⇒ Settings ⇒ Compaq.
		Press the **Fn**+**T** keys to expand the image.

Solving USB Problems

Table 2-27
Solving USB Problems

Problem	Probable Cause	Recommended Action(s)
External device connected to a USB connector does not work.	The operating system limits external devices connected by USB to two tiers that can include no more than two hubs on the first tier and no more than one keyboard and one pointing device on the first or second tier.	Reduce the number of connected external USB devices to no more than two hubs on the first tier, and no more than one keyboard and one pointing device on the first or second tier.
External device connected to a USB connector does not work during startup (before Windows 95 loads).	During startup, only two tiers are supported by the USB connector. These tiers can include no more than two hubs on the first tier and no more than one keyboard and one pointing device on the first or second tier.	Use the external device only after Windows 95 has loaded. Reduce the number of connected external USB devices to no more than two hubs on the first tier, and no more than one keyboard and one pointing device on the first or second tier.
External devices in lower tiers do not work.	An unpowered hub is connected to another unpowered hub.	Use only powered hubs. Make sure that all unpowered hubs are immediately preceded by powered hubs in the USB chain.

chapter 3

ILLUSTRATED PARTS CATALOG

This chapter provides illustrated parts and references for spare parts for the Compaq Prosignia Notebook Family of Personal Computers. To review an illustrated parts breakdown of the computer, refer to the *Illustrated Parts Map* that comes with this guide.

3.1 System Unit

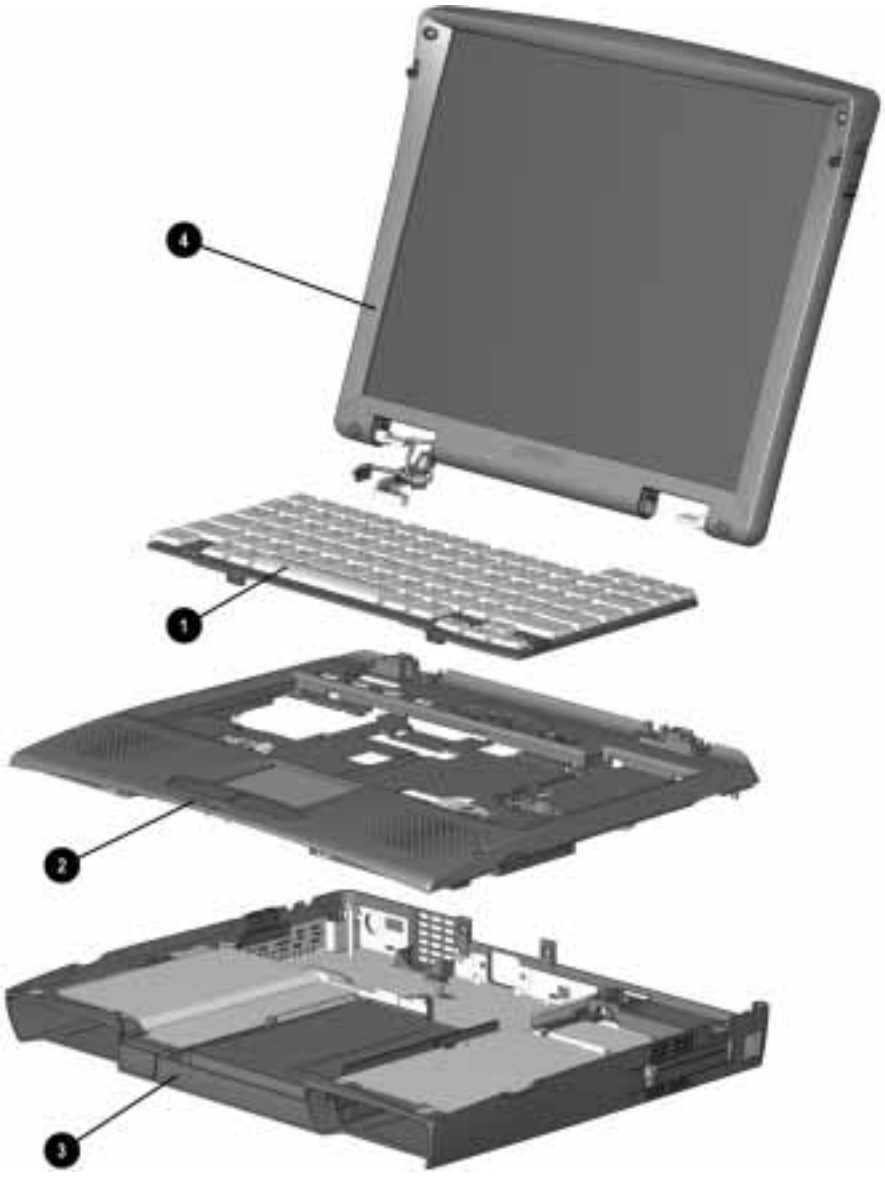


Figure 3-1. *System Unit*

Table 3-1
System Unit

Item	Description	Spares Part Number
❶	Keyboard (US/Canada)	382759-001
❷	Top cover assembly with speakers	382729-001
❸	Base enclosure assembly	316281-001
❹	12.1-inch CTFT display assembly	382719-001
*	13.3-inch CTFT display assembly	382726-001
*	14.1-inch CTFT display assembly	382727-001

* Not illustrated

3.2 Mass Storage Devices

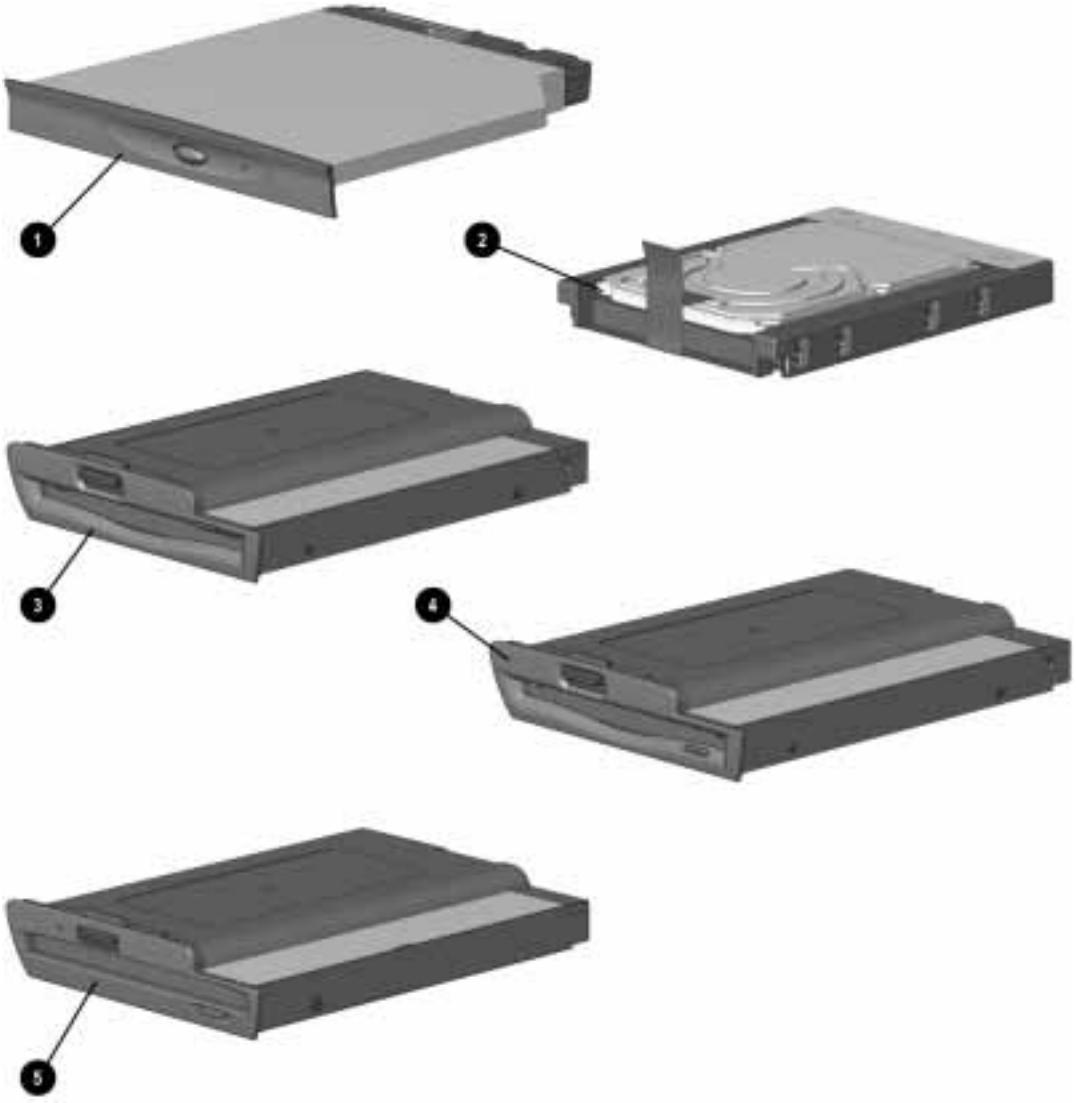


Figure 3-2. *Mass Storage Devices*

Table 3-2
Mass Storage Devices

Item	Description	Spares Part Number
❶	24x CD-ROM drive	382736-001
*	DVD-ROM drive module	382737-001
*	3.2 GB hard drive	255248-001
❷	4.0 GB hard drive	255292-001
*	6 GB hard drive	316269-001
❸	1.44-MB, diskette drive	382738-001
❹	LS-120 drive module	382746-001
❺	100-MB ZIP drive module	382756-001

***** Not illustrated

3.3 Cables and Power Cords

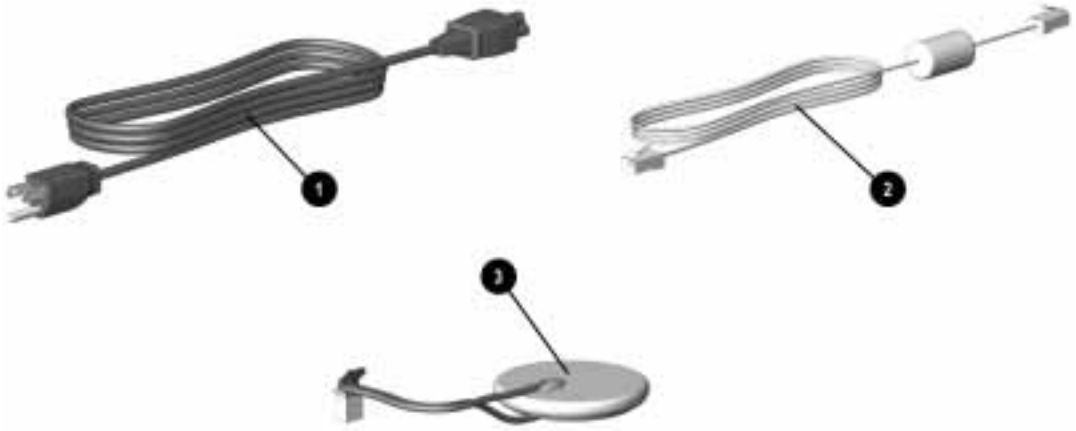


Figure 3-3. *Cables and Power Cords*

Table 3-3
Cables and Power Cords

Item	Description	Spares Part Number
❶	AC power cord (US/Canada)	255135-001
❷	Modem cable	(included in optional modem kit)
❸	RTC battery	316284-001 (included in shielding kit)

3.4 Standard and Optional Boards

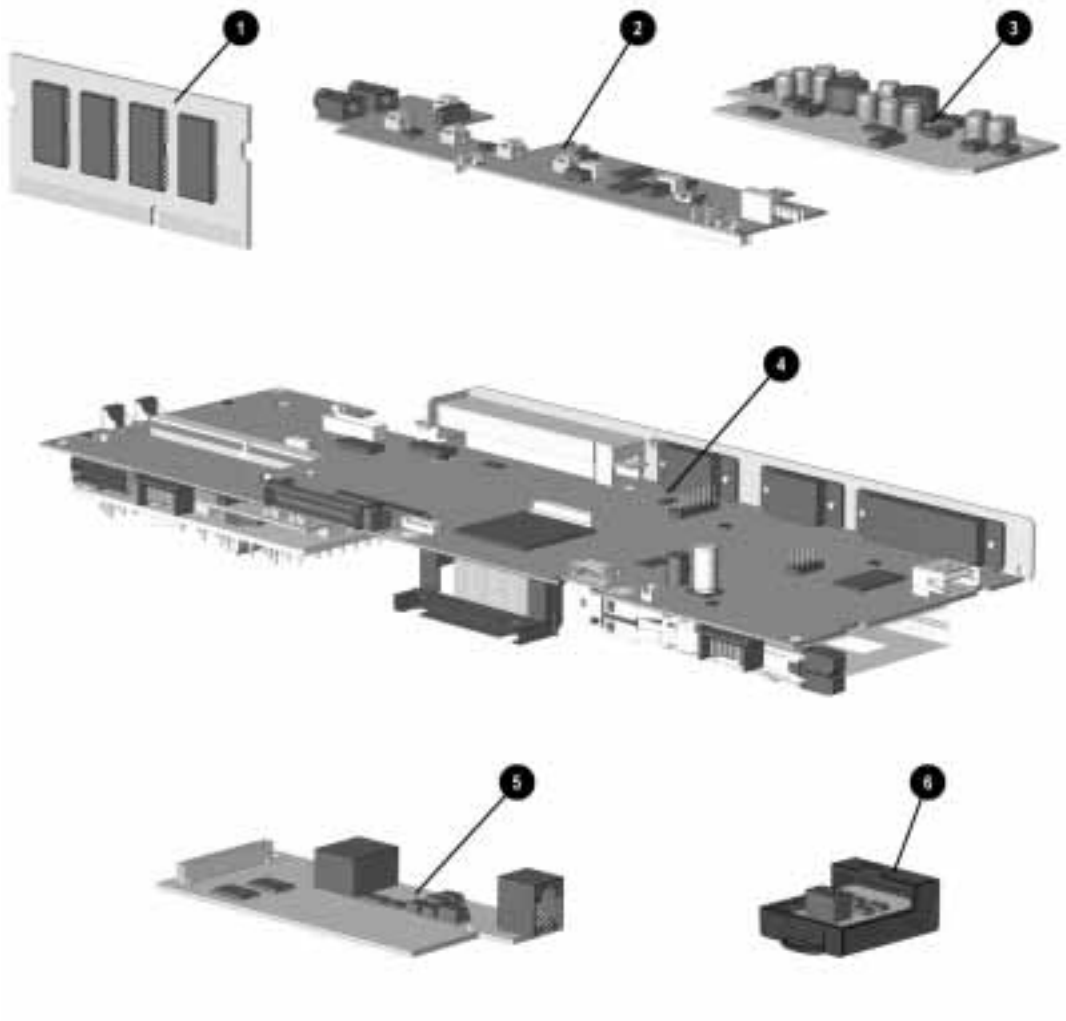


Figure 3-4. *Standard and Optional Boards*

Table 3-4
Standard and Optional Boards

Item	Description	Spares Part Number
❶	Memory board (SO DIMM), 16-MB, 60 ns, nonparity	313917-001
*	Memory board (SO DIMM), 32-MB, 60 ns, non parity	313911-001
*	Memory board (SO DIMM), 64-MB, 60 ns, non parity	313918-001
*	Memory board (SO DIMM), 128-MB, 60 ns, non parity	310345-001
❷	Audio/LED board	316260-001
❸	DC-DC voltage converter	316264-001
❹	System board with 233-MHz Intel Pentium II CPU	382789-001
*	System board with 266-MHz Intel Pentium II CPU	382790-001
*	System board with 300-MHz Intel Pentium II CPU	382791-001
❺	K56flex modem	316279-001
❻	IR module	316313-001

* Not illustrated

3.5 Options

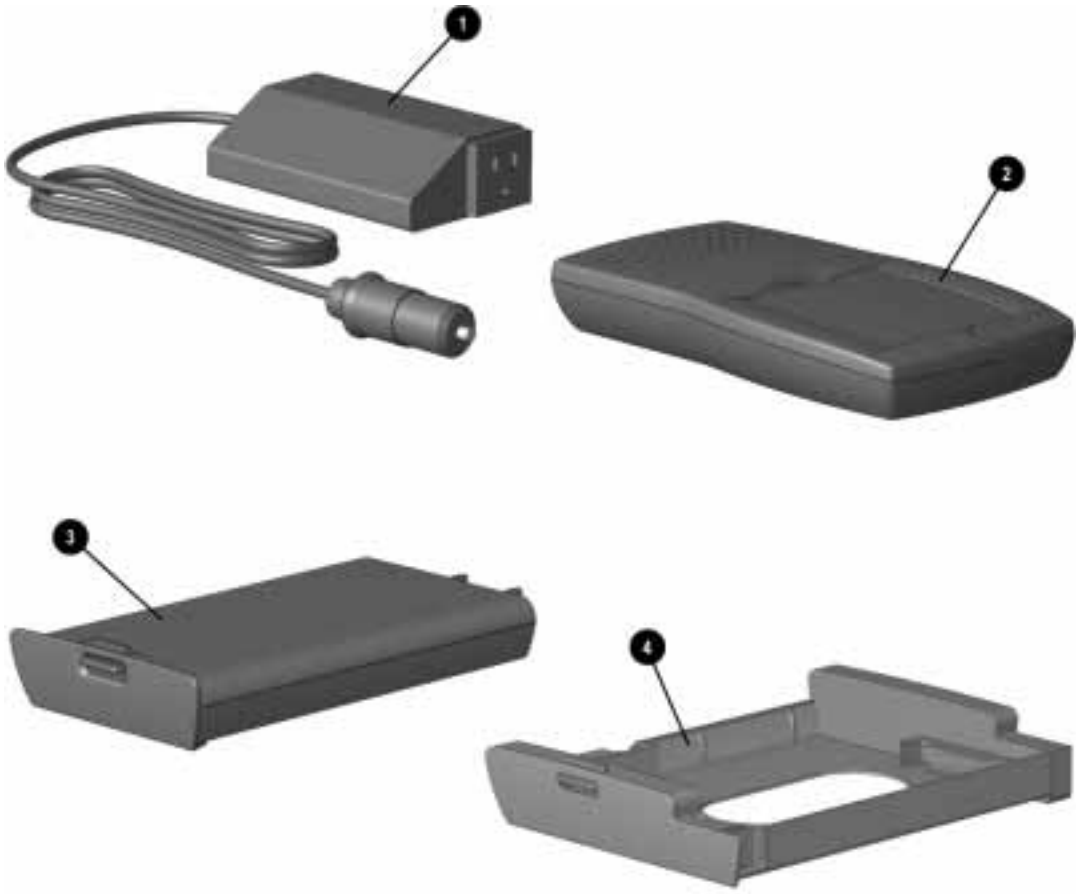


Figure 3-5. *Options*

Table 3-5
Options

Item	Description	Spares Part Number
1	Automobile/aircraft adapter	313919-001
2	External battery charger	254970-001
3	Li-Ion battery pack	382739-001
4	Hard drive adapter	382794-001
*	Convenience Base II - pass through	316291-001
*	Convenience Base II - Ethernet	316312-001
*	Monitor stand	316286-001
*	Slipcase cover	330511-001
*	Options carrying case	330513-001

***** Not illustrated

3.6 Miscellaneous Parts

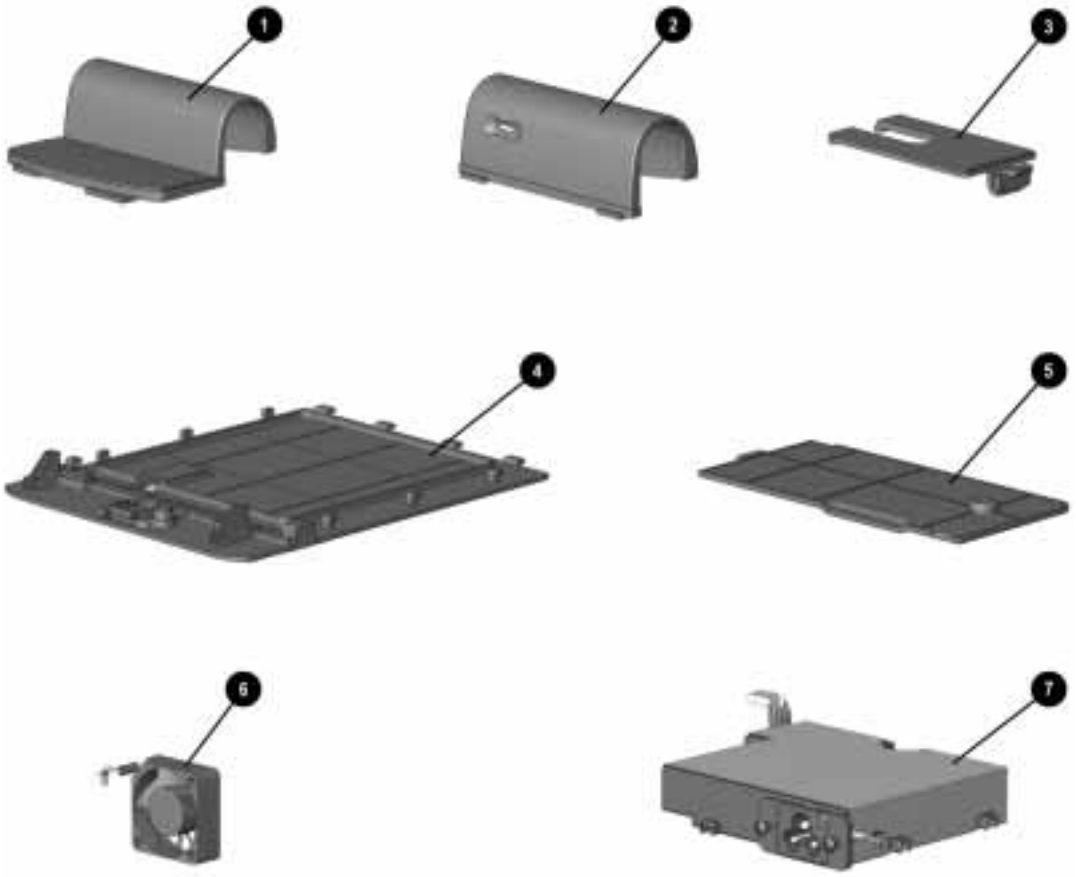


Figure 3-6. *Miscellaneous Parts*

Table 3-6
Miscellaneous Parts

Item	Description	Spares Part Number
	Miscellaneous Plastics kit :	382728-001
❶	Left clutch/display wiring cover	
❷	Right clutch/microphone cover	
❸	RTC battery cover	
❹	Hard drive cover	
❺	Modem cover	
❻	Fan	316271-001
❼	Internal AC adapter	316265-001
*	Screw kit	316283-001
*	Shielding kit (includes RTC battery)	316284-001
*	Country kit	382757-001

***** Not illustrated

3.7 Documentation

Table 3-7
Documentation

Description	Spare Part Number
Illustrated Parts Map	382792-001
Maintenance and Service Guide	382793-001

chapter 4

REMOVAL AND REPLACEMENT PRELIMINARIES

This chapter provides essential information for proper and safe removal and replacement service.

4.1 Tools Required

You will need the following tools to complete the removal and replacement procedures:

- Magnetic Torx T-8 screwdriver (for all screws unless otherwise specified)
- 7-mm hex socket (for bushing guides)
- Tool kit, Compaq part number 100767-001 (includes connector removal tool, loopback plugs, and case utility tool)
- Small flat-blade screwdriver (optional)
- Scribe
- Tweezers

4.2 Service Considerations

Listed below are some of the considerations that you should keep in mind during disassembly and assembly procedures.

4.2.1 Plastic Parts

Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

IMPORTANT: As you remove each subassembly from the computer, place it (and all accompanying screws) away from the work area to prevent damage.

4.2.2 Cables and Connectors

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Ensure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; they tear easily.

CAUTION: When servicing the computer, ensure that cables are placed in their proper location during the reassembly process. Improper cable placement can damage the computer.

4.3 Preventing Damage to Removable Drives

Removable drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a removable drive, or loss of information, observe these precautions:

- Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, then shut it down.
- Before removing a diskette drive or CD-ROM drive, ensure that a diskette or disc is *not* in the drive. Ensure that the CD-ROM tray is closed.
- Before handling a drive, ensure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
- Handle drives on surfaces that have at least one inch of shock-proof foam.
- Avoid dropping drives from any height onto any surface.
- Always place MultiBay drives in the carrying case when removed from the computer.
- Do not use excessive force when inserting a drive into the MultiBay.
- Avoid exposing a hard drive to products that have magnetic fields such as monitors or speakers.
- Avoid exposing a drive to temperature extremes or to liquids.
- If a drive must be mailed, do the following:
  - Place the hard drive into a bubble pack mailer or other suitable form of protective packaging.
  - Label the package “Fragile: Handle With Care.”

4.4 Preventing Electrostatic Damage

Many electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases the discharge contains enough power to alter device parameters or melt silicon junctions.

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge may not be affected at all and can work perfectly throughout a normal cycle. Or it may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

4.4.1 Packaging and Transporting Precautions

Use the following grounding precautions when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or non-conductive foam.
- Use transporters and conveyers made of antistatic belts and roller bushings. Ensure that mechanized equipment used for moving materials is wired to ground, and that proper materials were selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

4.4.2 Workstation Precautions

Use the following grounding precautions at workstations:

- Cover the workstation with approved static-dissipative material (refer to Table 4-2 later in this chapter).
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use field service tools, such as cutters, screwdrivers, and vacuums that are conductive.
- When using fixtures that must directly contact dissipative surfaces, use fixtures made of static-safe materials only.
- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and styrofoam.
- Handle electrostatic-sensitive components, parts, and assemblies by the case or PCM laminate. Handle them only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

4.4.3 Grounding Equipment and Methods

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against the skin. On grounded mats with banana-plug connectors, connect a wrist strap with alligator clips.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a minimum of one-megohm resistance between the operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

Other grounding equipment recommended for use in preventing electrostatic damage include:

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Non-conductive foam
- Conductive tabletop workstations with ground cord of one-megohm resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Non-conductive plastic bags, tubes, or boxes
- Metal tote boxes

4.4.4 Electrostatic Voltage Levels and Protective Materials

Table 4-1 shows how humidity affects the electrostatic voltage levels generated by different activities.

Table 4-1
Typical Electrostatic Voltage Levels

	Relative Humidity		
Event	**10%**	**40%**	**55%**
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

NOTE: 700 volts can degrade a product.

Table 4-2 lists the shielding protection provided by antistatic bags and floor mats.

Table 4-2
Static-Shielding Materials

Material	Use	Voltage Protection Level
Antistatic plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	15,000 V

chapter 5

REMOVAL AND REPLACEMENT PROCEDURES

This chapter provides the removal and replacement procedures for the computer subassemblies.

5.1 Serial Number

The computer serial number should be provided to Compaq support when requesting information or ordering spare parts. The serial number ❶ is located on the back of the computer (Figure 5-1).

Figure 5-1. Serial Number Location

5.2 Disassembly Sequence

Refer to the disassembly steps before disassembling the computer. Disassemble only the components necessary to gain access to the sub-assembly you are servicing.

- ***5.3*** Preparing the Computer for Disassembly
  - ***5.3.1*** Disconnecting the AC Power
  - ***5.3.2*** Battery
  - ***5.3.3*** MultiBay Devices
  - ***5.3.4*** PCMCIA
- ***5.4*** Computer Tilt Feet
- ***5.5*** Internal Modem
  - ***5.5.1*** IR (Infrared) Module
- ***5.6*** Hard Drive
- ***5.7*** Keyboard
  - ***5.7.1*** Keyboard Removal
  - ***5.7.2*** Memory Board
  - ***5.7.3*** Lithium Real Time Clock Battery
  - ***5.7.4*** Optical Disc Bay
- ***5.8*** Display Assembly
  - ***5.8.1*** Hinge Covers
  - ***5.8.2*** Display Assembly
- ***5.9*** Top Cover Assembly
  - ***5.9.1*** DC-DC Converter and Audio Board Shield
  - ***5.9.2*** DC-DC Converter
  - ***5.9.3*** Audio Board
  - ***5.9.4*** Fan
  - ***5.9.5*** System Board
  - ***5.9.6*** Integrated AC Adapter

5.3 Preparing the Computer for Disassembly

Before beginning the removal and replacement procedures, complete the following:

1. Disconnect the modem line cord.
2. Disconnect the AC power and any external devices.
3. Remove the battery pack(s).
4. Remove the MultiBay device.
5. Remove any PC Cards.

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

5.3.1 Disconnecting the AC Power

Before beginning service procedures on the computer, remove all power from the system to prevent damage to the equipment or personal injury. Select the appropriate steps, depending on whether the computer is docked or not.

Computer is Docked

If the computer is docked in the convenience base, it must be undocked before performing additional work. Complete the following steps to undock the computer.

1. Close all applications and exit the operating system.
2. Turn off the computer.
3. Disconnect the AC power and any external cables.
4. Close the computer.
5. Pull the docking lever forward to undock the computer.
6. Lift the computer from the convenience base.
7. Remove the battery pack.

Computer is Not Docked

If the computer is not docked, perform the following steps:

1. Close all applications and exit the operating system.
2. Turn off the computer.
3. Turn off and disconnect any external devices.
4. Disconnect the AC power cord from the power source.
5. Disconnect the AC power cord from the computer.
6. Remove the battery pack.

5.3.2 Battery Pack Removal

Remove the battery pack before beginning any internal maintenance on the computer.

WARNING: Metal objects can damage the battery pack as well as the battery contacts in the battery compartment. To prevent damage, do not allow metal objects to touch the battery contacts. Place only the battery pack for the Compaq Prosignia Notebook Computer into the battery compartment. Do not force the battery pack into the bay.

WARNING: Do not crush, puncture, or incinerate the battery pack. Do not dispose of in water. Do not expose to temperatures higher than 60°C. Do not open a battery pack, as this damages the pack, makes it unserviceable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

To remove the battery pack from the computer, complete the following steps:

1 Slide the battery release latch ❶.

2 Remove the battery pack.

Figure 5-2. Removing the Battery Pack

CAUTION: Installing the battery pack upside down can cause the contacts to break.

5.3.3 MultiBay Devices

CAUTION: The device in the MultiBay must be removed prior to performing maintenance on the computer.

A diskette drive, an LS-120 diskette drive, a ZIP drive, a second battery pack, or a second hard drive may be installed into the MultiBay.

The device in the MultiBay must be removed prior to performing maintenance on the computer. For convenience, a diskette drive is depicted in this sequence. To remove any MultiBay device, complete the following steps:

1. If applicable, remove the security screw from the bottom side of the computer (LS-120 drive and ZIP drive only).
2. Press down on the release latch ❶ and grasp the tab located on the underside of the device.
3. Remove the device.

Figure 5-3. Removing the MultiBay Device

5.3.4 PCMCIA

Remove any installed PC (PCMCIA) Cards before performing any service on the computer. To remove a PC Card, complete the following steps:

1. To release the PC Card eject button, depress the button once ❶,❷.
2. To eject the PC Card, firmly depress the PC Card eject button a second time.
3. Remove the card.

Figure 5-4. Removing the PC Card

5.4 Computer Tilt Feet

There are two tilt feet on the bottom of the computer. To remove a foot, follow the steps listed.

1. Turn the computer bottom side up and position it so that the front of the unit is toward you.
2. Open the foot to the fully extended position.
3. Place a flat-blade screwdriver between the right hinge point of the foot and the unit. The tip of the blade must be under one end of the foot, immediately below the hinge point. Be careful not to mar or scratch the plastic base enclosure.
4. Press the foot toward the closed position, and simultaneously press down the handle of the screwdriver toward the table. The foot will snap out of the hinges.

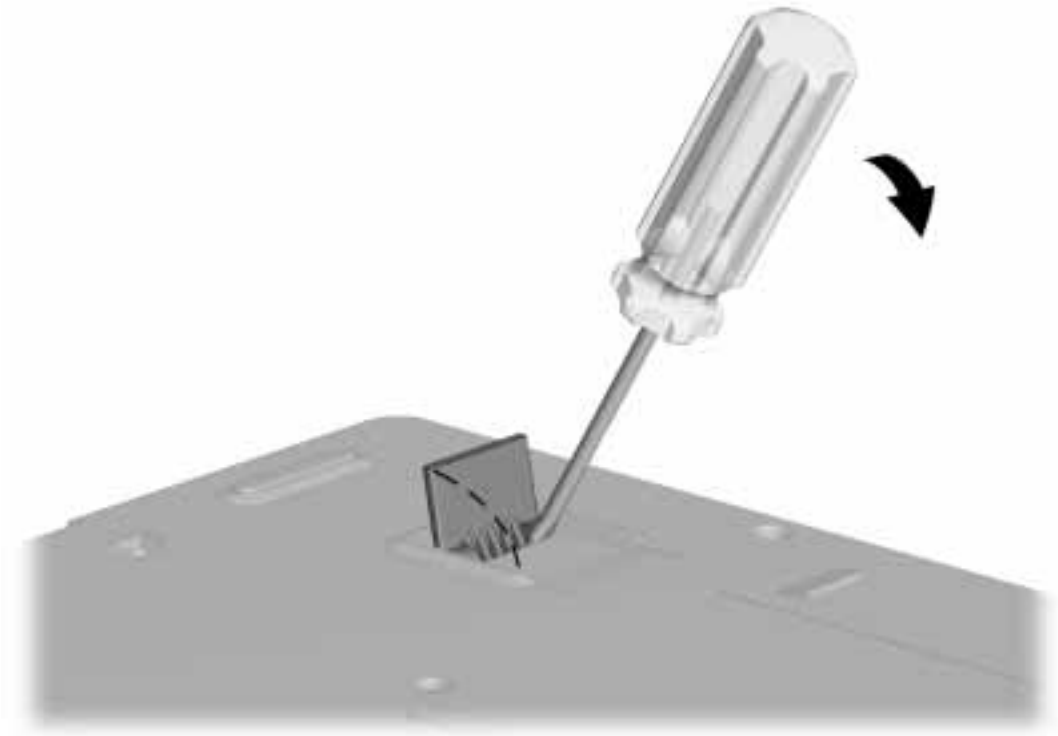


Figure 5-5. Removing the Computer Tilt Feet

To replace the foot, place the left end of the hinge on the hinge point. Rotate the right end of the hinge into position over the right hinge point and press firmly. The hinge will snap into place with moderate pressure.

5.5 Internal Modem

The internal modem is standard on some models and is attainable as an upgrade option on other models. If the model is not equipped with a modem, the modem compartment is sealed by a protective plate underneath the modem cover.

For models equipped with a modem, complete the following steps to remove the modem.

1. Prepare the computer for disassembly (Section 5.3).
2. Turn the computer bottom side up with the front of the unit toward you.
3. Remove the screw from the modem access cover.
4. Remove the modem access cover.

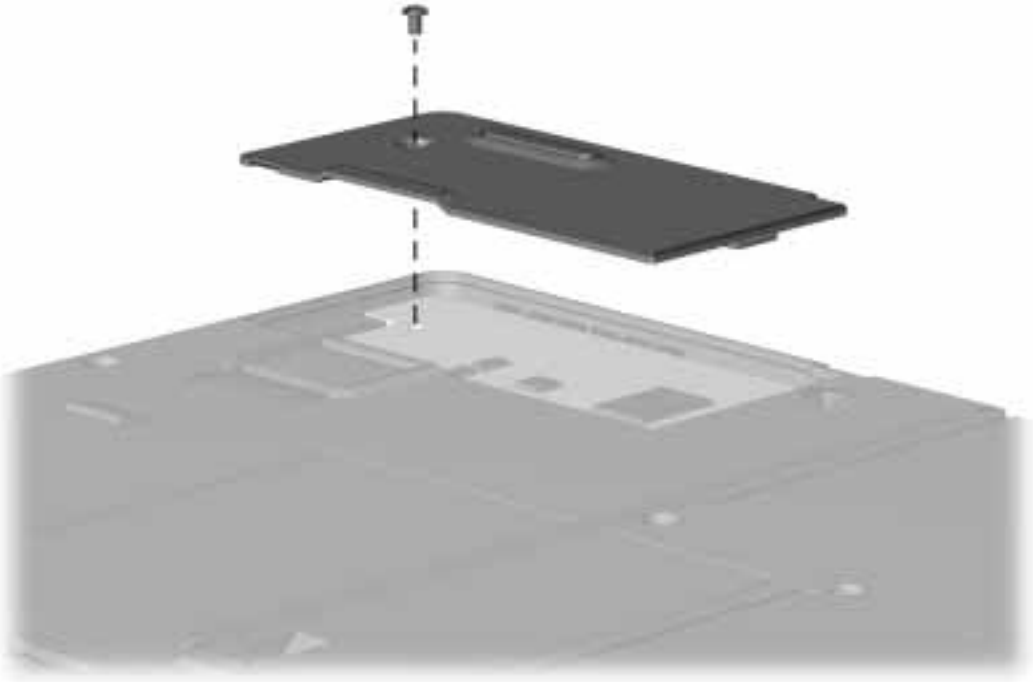


Figure 5-6. Removing the Modem Access Cover

5. Remove the modem board retaining screw.
6. Carefully pull the modem board release tab and lift the modem from the computer.

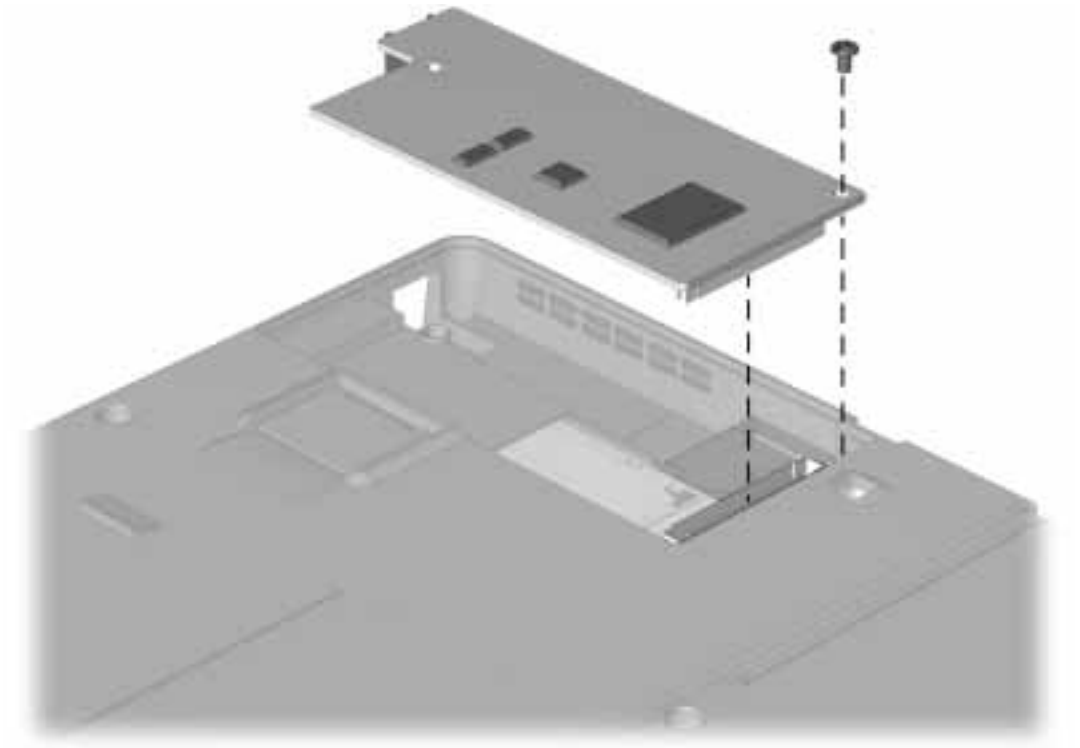


Figure 5-7. *Removing the Modem Board*

To replace or install the modem, reverse the procedure.

NOTE: When installing the modem, be sure that the modem release tab is folded on top of the modem before replacing the modem access door.

5.5.1 IR (Infrared) Module

To remove the Infrared (IR) transceiver module:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the modem (Section 5.5).
3. Remove the screw from the IR module
4. Disengage the connector from the system board by lifting the corner of the IR module with a screwdriver.
5. Lift the IR module from the base enclosure.

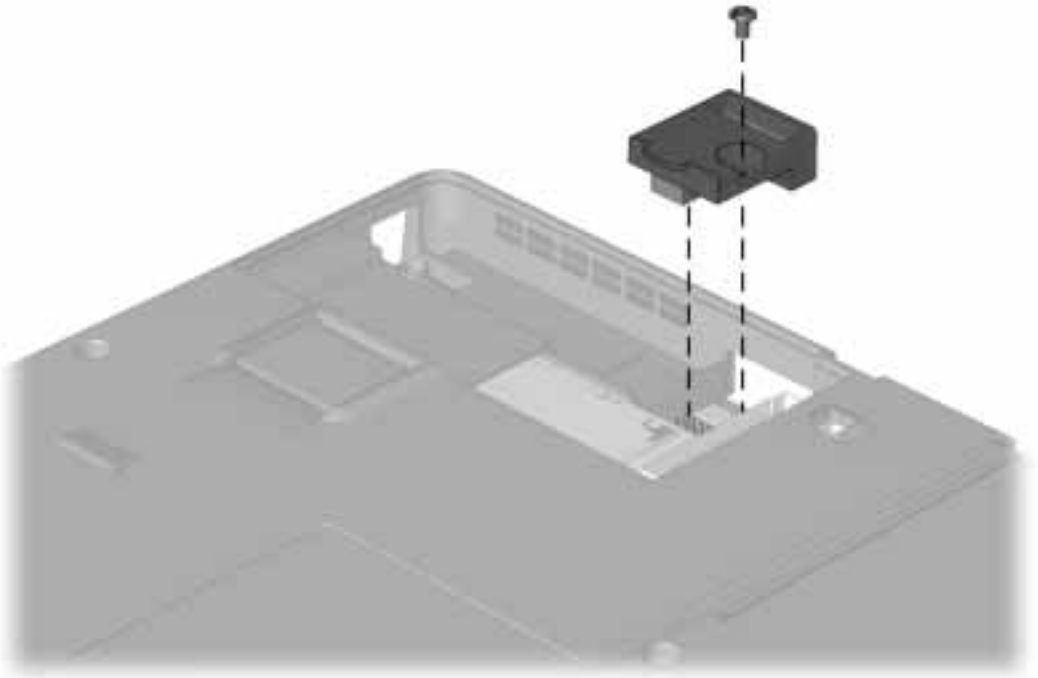


Figure 5-8. *Removing the* IR Module

To install the IR module, reverse the procedure above.

NOTE: If you are replacing the base enclosure, transfer the IR module to the new enclosure.

5.6 Hard Drive

The hard drive is held in place with a security screw and a retaining bracket. To remove the hard drive, complete the following steps:

1. Prepare the computer for disassembly (Section 5.3).
2. Turn the computer bottom side up and position it so that the front of the unit is toward you.
3. Remove the security screw from the drive cover.

Figure 5-9. *Removing the Hard Drive Cover Security Screw*

4. Slide the release latch toward the back of the computer. The cover lid springs open.
5. Slide the hard drive cover toward the front of the computer.
6. Lift the cover from the computer.

Figure 5-10. *Removing the Hard Drive Cover*

7. Disengage the hard drive from the connector by sliding the hard drive toward the front of the computer.
8. Using the lifting tab, remove the hard drive from the computer.

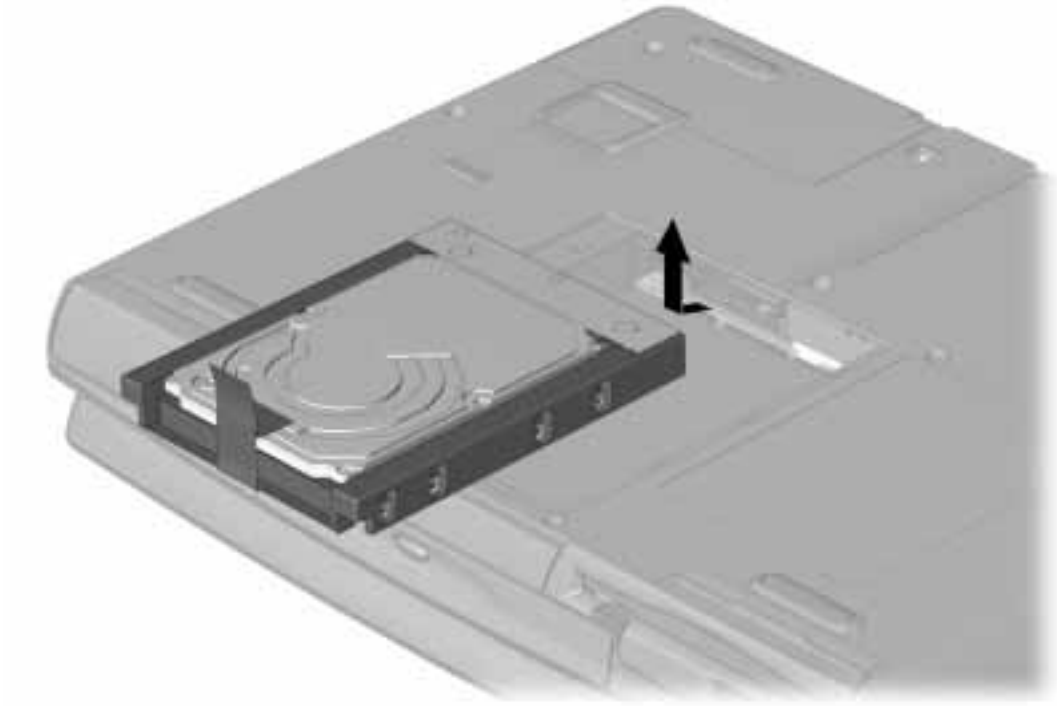


Figure 5-11. *Removing the Hard Drive*

Reverse the above procedure to install the hard drive. Be sure to place the lifting tab inside the computer before replacing the cover.

5.7 Keyboard

To release the keyboard, complete the following procedures.

1. Prepare the computer for disassembly (Section 5.3).
2. Place the computer on the workspace with the front of the unit facing you.
3. Open the display to the vertical position.
4. To release the keyboard, insert the tip of the scribe into each of the keyboard holes, and pull the free end of the scribe towards you.
5. Slide the keyboard toward you. Be careful not to stress the keyboard cable.

Figure 5-12. *Releasing the Keyboard Latches*

6. Lift the keyboard.
7. Place the keyboard in an upright position. Insert the two tabs on the right side and the tab on the left side of the keyboard into the slots provided on the right of the base enclosure.

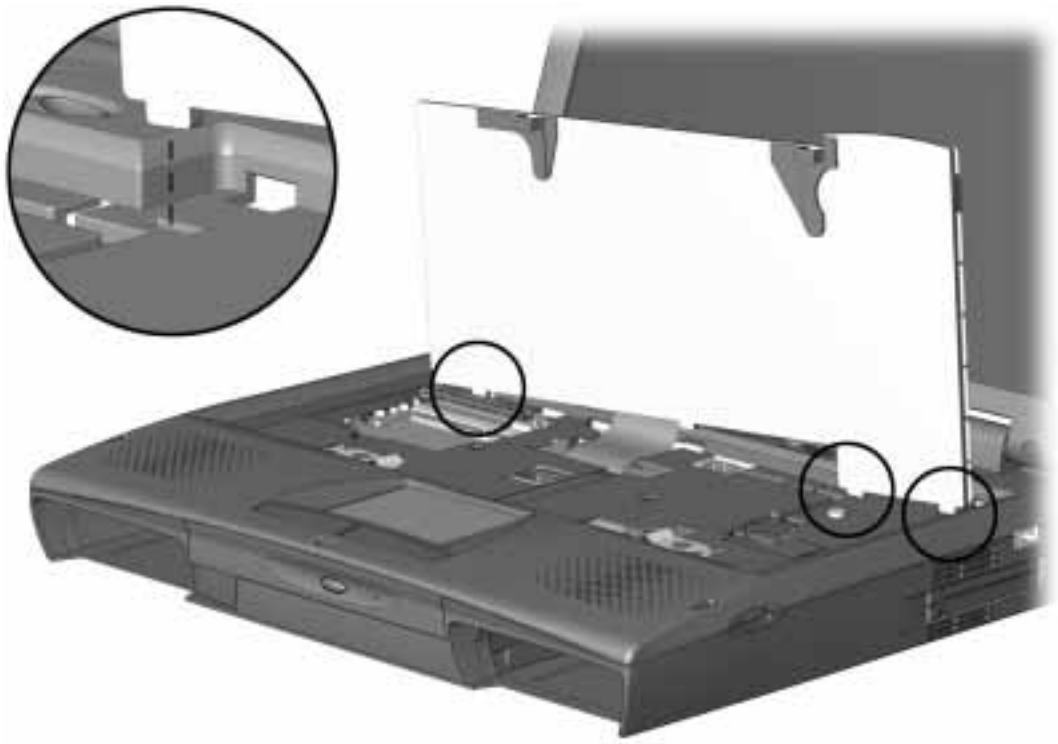


Figure 5-13. *Placing the Keyboard Tabs into the Slots in the Base*

It is not necessary to completely remove the keyboard from the base enclosure to do the following service procedures:

- Memory expansion board installation, replacement, or upgrade.
- Lithium real-time clock battery replacement.
- Optical disc bay replacement or upgrade.

If you need to separate the keyboard from the system base enclosure, refer to the keyboard removal section.

5.7.1 Keyboard Removal

1. Release the latch on the keyboard ZIF connector.
2. Slide the strain relief on the flat cable toward the back of the computer, then lift the front edge of the strain relief from the recess.
3. Disconnect the keyboard ribbon cable.
4. Remove the keyboard from the computer.

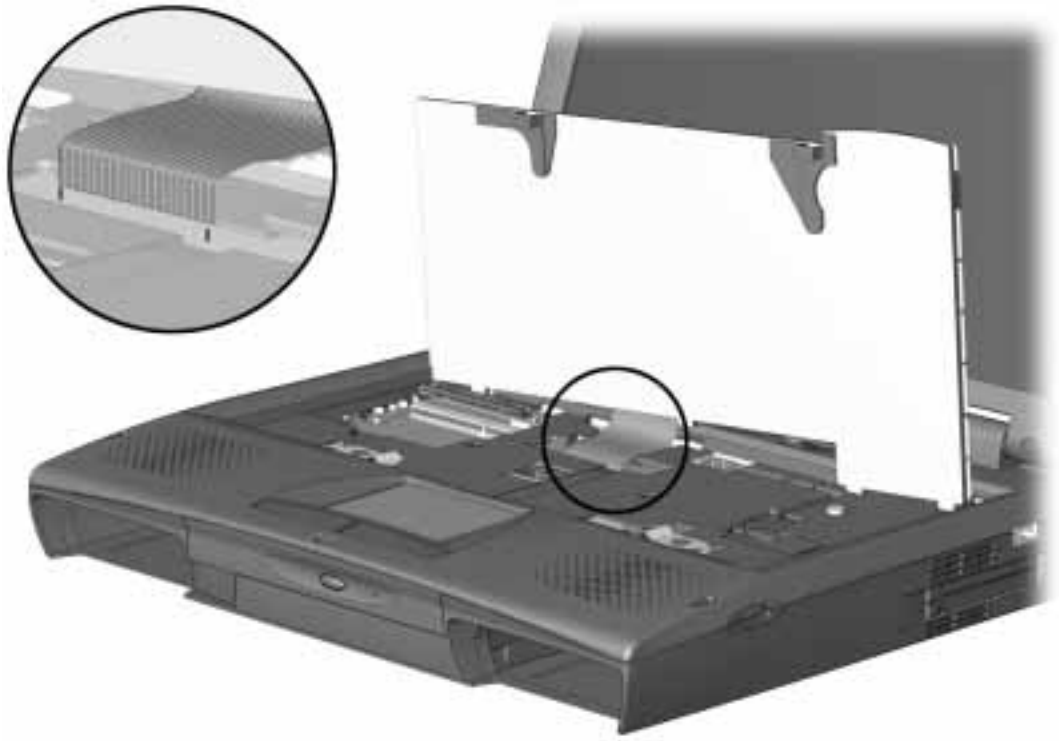


Figure 5-14. *Disconnecting the keyboard Ribbon Cable*

To replace the keyboard, reverse the procedure above.

NOTE: To replace the strain relief, place the edge of the strain relief nearest the back of the computer down into the recess, press the strain relief toward the rear of the computer and rotate the front edge down toward the computer.

5.7.2 Memory Board

If a memory expansion board option has been previously installed in the computer, it must be removed before another is installed. To remove the memory board, complete the following steps:

1. Prepare the computer for disassembly (Section 5.3).
2. Lift the the keyboard as described (Section 5.7).
3. Position the keyboard upright by placing the keyboard tabs on the keyboard in the slots provided.
4. Pull out the right and left locking tabs on each end of the memory expansion board. This releases the memory board and allows it to rotate upward to ease removal.

CAUTION: If you need to remove the memory expansion board, be sure to release the locking tabs that secure the memory board in the slot. If the tabs are not released, the connectors may break and cause irreparable damage to the system board.

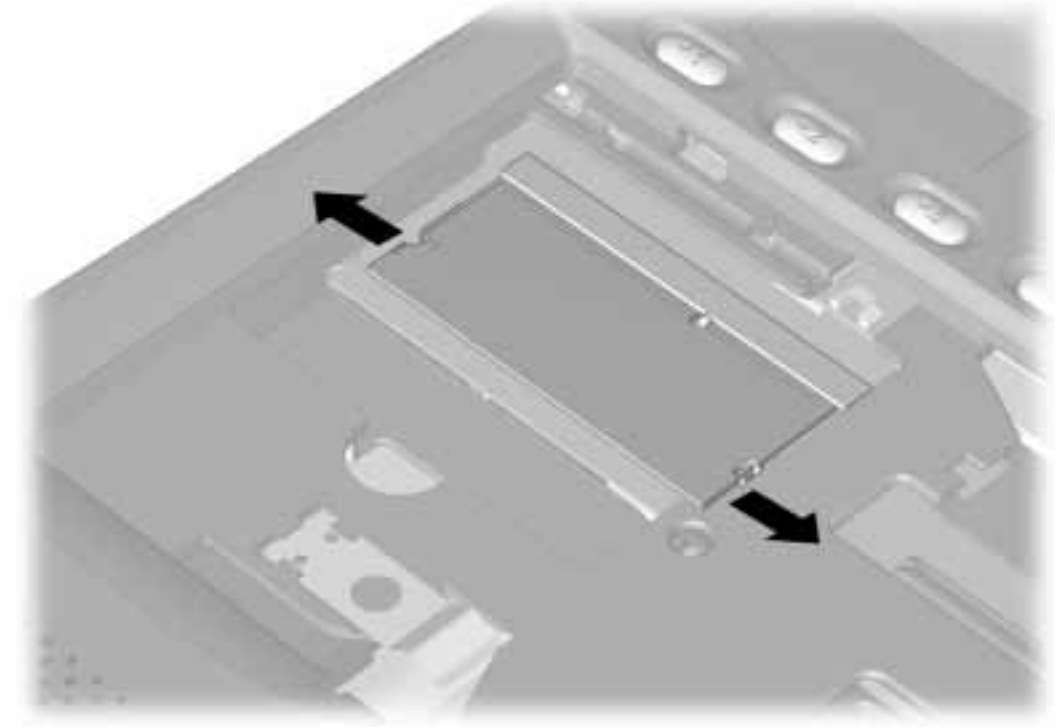


Figure 5-15. *Releasing the Memory Expansion Board*

5. Rotate the free edge ❶ of the memory module upward.
6. At a 45 degree angle, pull the memory module ❷ from the slot.

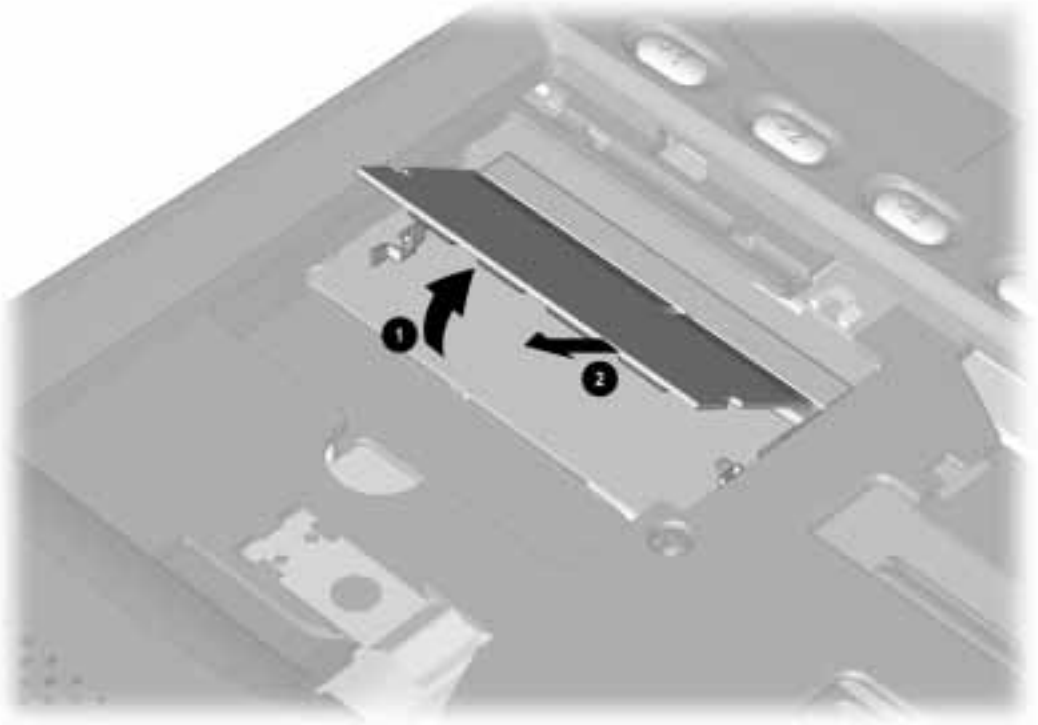


Figure 5-16. *Removing the Memory Expansion Board*

To install a memory board, complete the following steps:

1. Insert the memory board ❶ into the memory slot.
2. Pivot the memory board toward the computer ❷ so that it lays flat in the memory compartment.
3. Insert the memory board firmly into place to seat the connections and to engage the locking tabs.

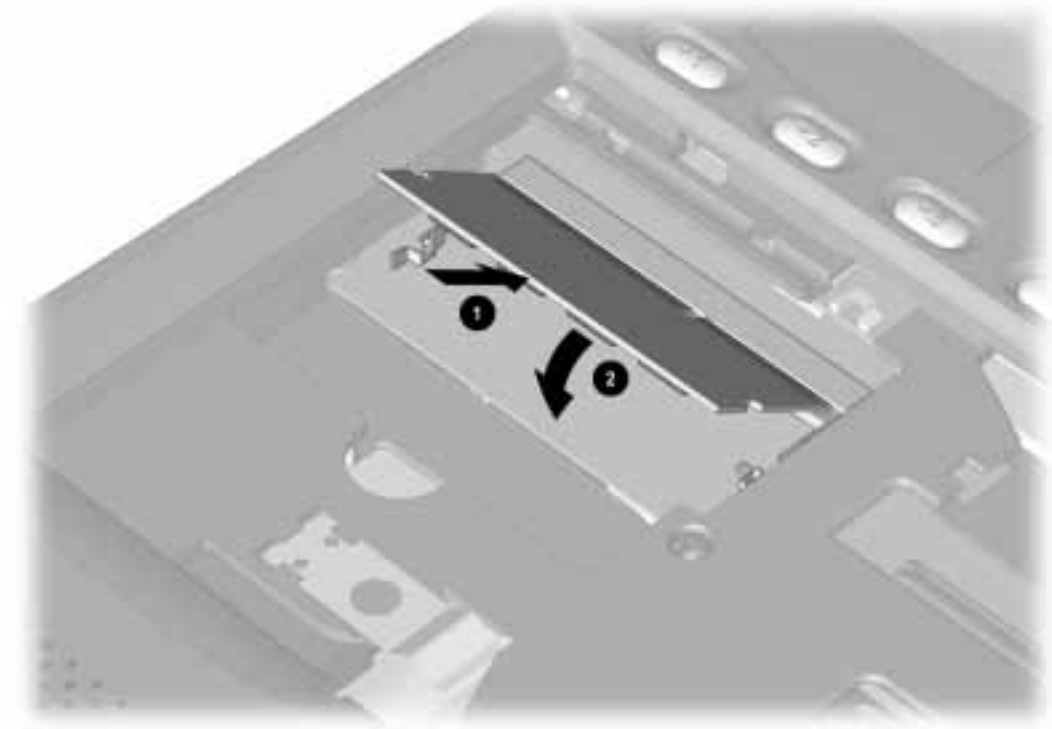


Figure 5-17. *Installing the Memory Board*

5.7.3 Lithium Real Time Clock Battery

WARNING: 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 using the Compaq spare part for this computer.

To remove the Lithium Real Time clock (RTC) battery, complete the following steps:

1. Prepare the computer for disassembly (Section 5.3).
2. Raise the keyboard (Section 5.7).
3. Place the tabs on the keyboard in the slots provided in the top cover.
4. Press the retaining clip ❶ toward the center of the computer.
5. Lift the battery cover ❷ from the computer.

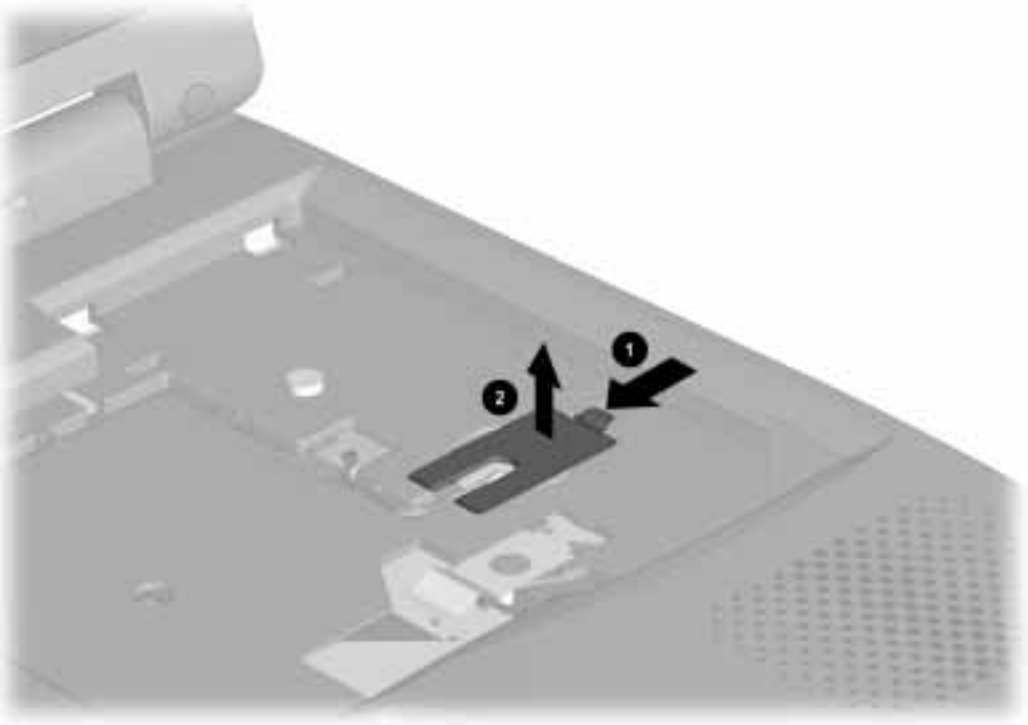


Figure 5-18. *Removing the RTC Battery Cover*

CAUTION: To prevent damaging the RTC battery cable, do not pull on the battery cable.

6. Using tweezers, disconnect the RTC battery connector from the system board.
7. Remove the RTC battery.

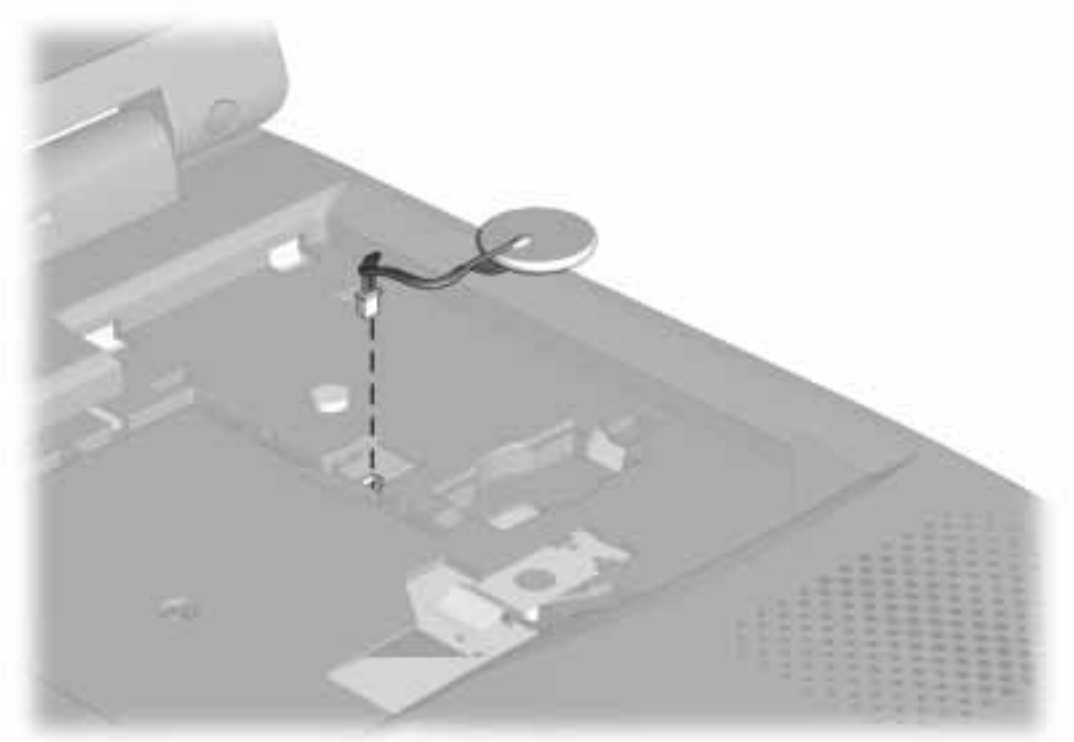


Figure 5-19. *Removing the RTC Battery*

Reverse the procedure to install a replacement RTC battery.

5.7.4 Optical Disc Bay

A CD-ROM or DVD-ROM drive can be installed in the optical disc bay. To remove a CD-ROM drive or DVD-ROM drive, complete the following steps:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.7).

   Note: For clarity, the keyboard is shown removed from the computer. The keyboard may be left attached to the system unit for this procedure.

3. Place the tabs on the keyboard in the slots provided in the top cover.
4. Remove the two retaining ❶ screws.
5. Reach into the access opening ❷ with a finger and push the drive toward the front of the computer.
6. Remove the optical disc bay drive.

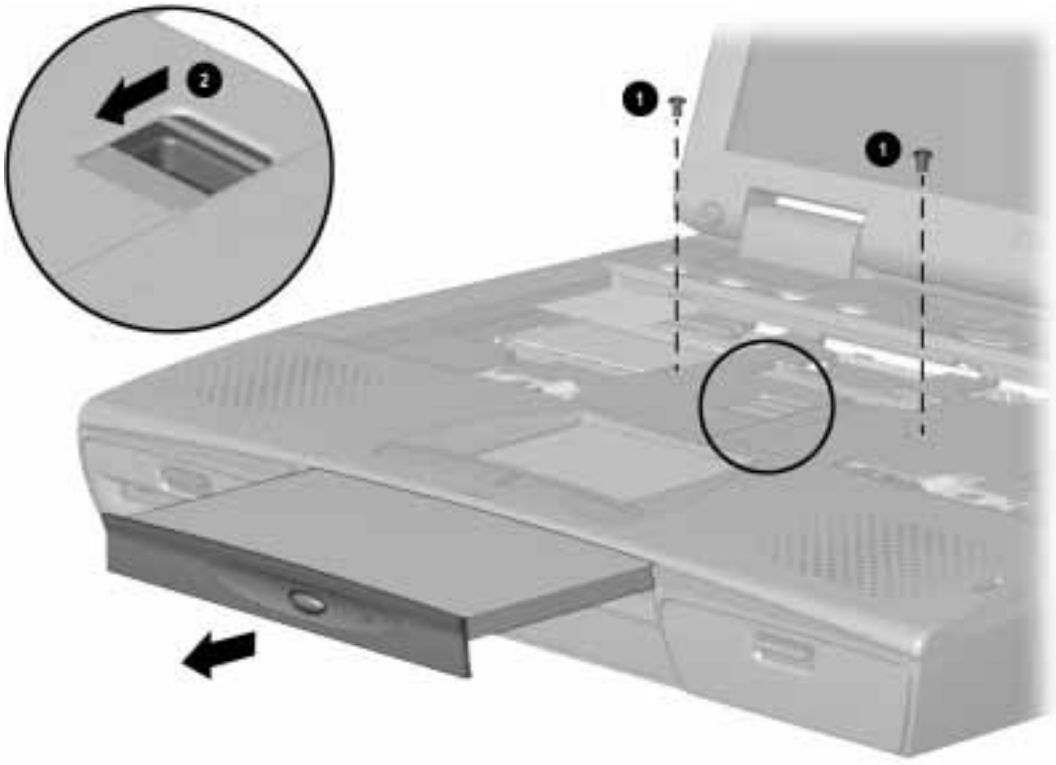


Figure 5-20. *Removing the Optical Bay Drive*

To install a CD-ROM drive or DVD-ROM drive, reverse the procedure.

5.8 Display Assembly

To remove the display assembly, complete the following steps:

5.8.1 Hinge Covers

1. Prepare the computer for disassembly (Section 5.3).
2. Close the cover and place the computer on the workspace top side up and position it so that the connectors on the back panel of the computer are facing you.
3. Remove the screw from each of the hinge covers.

Figure 5-21. *Removing the Hinge Cover Screws*

4. Open the display fully.
5. Lift the hinge covers from the computer. Note that the right and left covers are different.

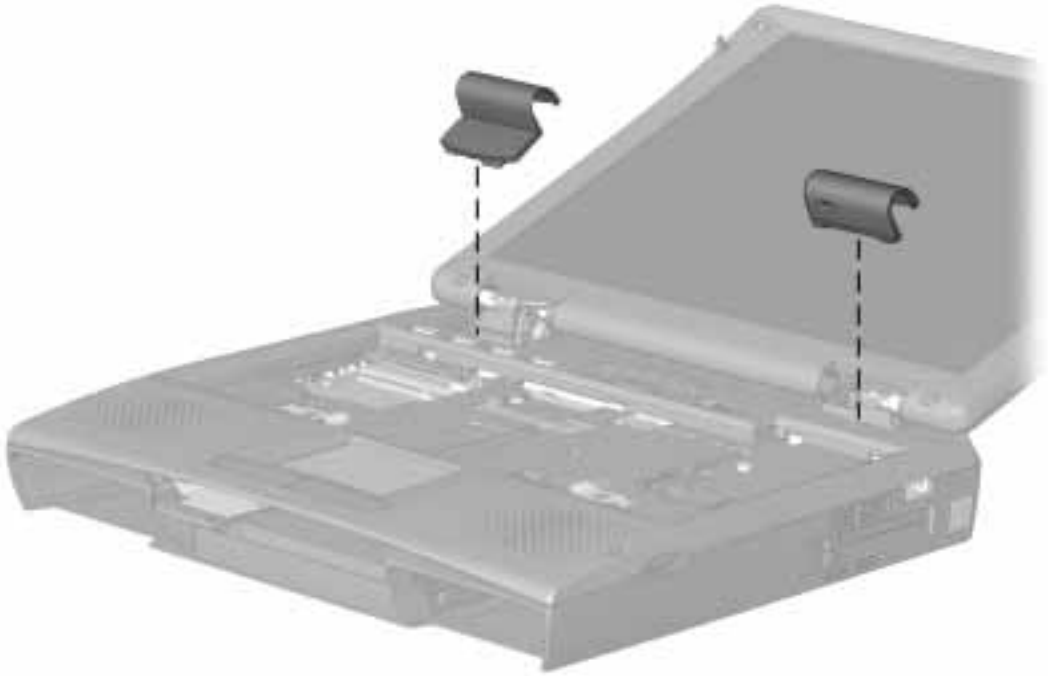


Figure 5-22. *Removing the Hinge Covers*

Reverse the procedure to install the hinge covers.

5.8.2 Display Assembly

CAUTION: Do not reuse the hinge screws removed from the previously installed display. These screws may back out of the display hinges and cause the display assembly to loosen from the base enclosure.

Important: It is not necessary to separate the display and the top cover unless you are replacing the display or the top cover. If you are not replacing the top cover or the display assembly, complete steps 1 through 4 to remove the top cover/display assembly from the base.

To remove the display assembly, complete the following procedure:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the hinge covers (Section 5.8.1).
3. Remove the screw ❶ holding the ground lugs to the left hinge clutch.
4. Separate the backlight power cable ❷ and the display data cable ❸ from the system board. Use a small flat-tipped screwdriver or other instrument to lift the connectors free of the system board.

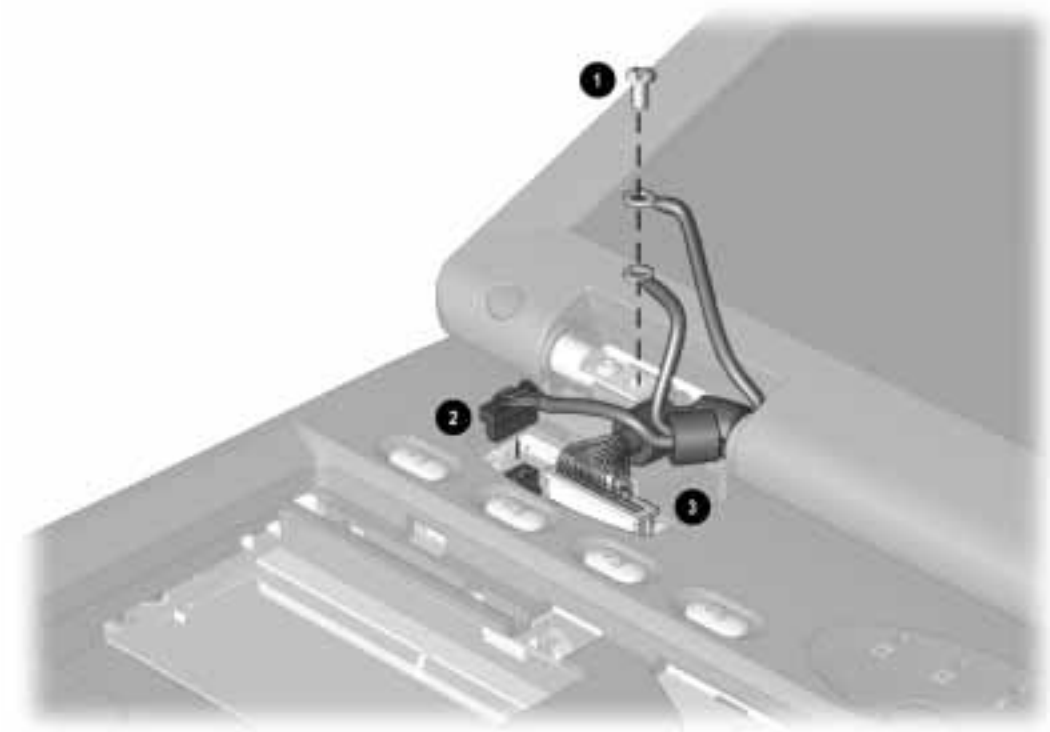


Figure 5-23. *Disconnecting the Display Cables*

NOTE: Do not pull the connector by the wires from the socket. The wires will be damaged, rendering the display inoperative.

5. Close the display.
6. Remove the remaining screw from the left display clutch and the two screws from the right display clutch.
7. Lift the display assembly from the base enclosure.

Figure 5-24. *Removing the Display Assembly*

Reverse the procedure to replace the display assembly.

CAUTION: To avoid damaging the display, attach the ground cable before attaching the display cables when replacing the display assembly.

Note: Always replace the four loctite screws with the replacement screws supplied in the service kit.

5.9 Top Cover Assembly

To remove the top cover assembly, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.7).
3. Remove the optical disc bay device (Section 5.7.4).
4. Remove the RTC battery (Section 5.7.3).
5. Complete steps 1 through 4 of the display assembly removal procedure (Section 5.8).
6. Remove the seven (7) screws holding the top and bottom of the base enclosure together.

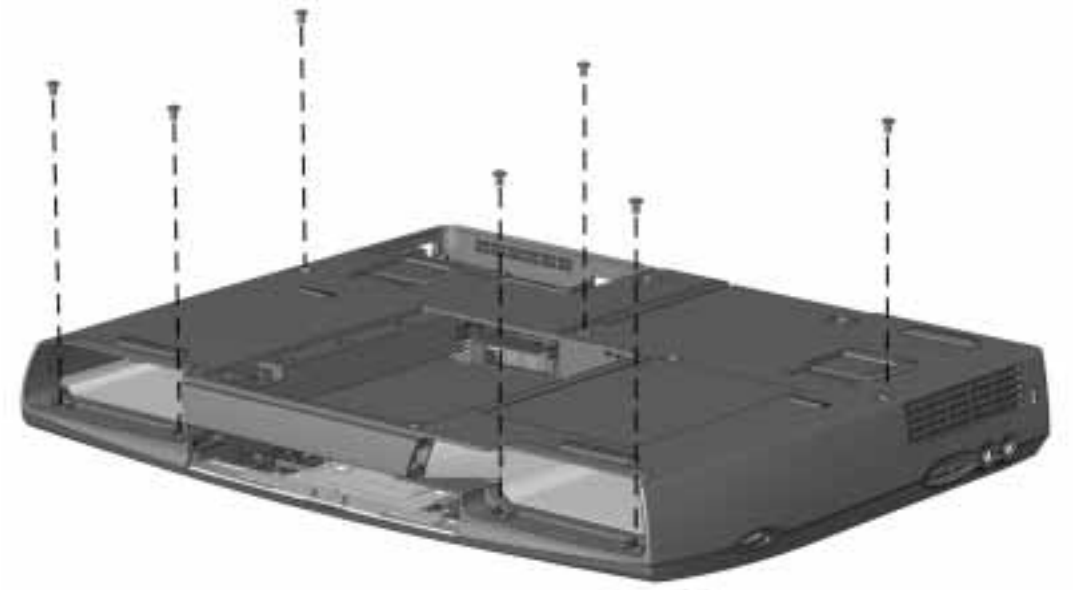


Figure 5-25. *Removing the Top Cover Assembly Screws from the Bottom of the Unit*

7. Remove the three (3) top cover screws from the back of the system unit.

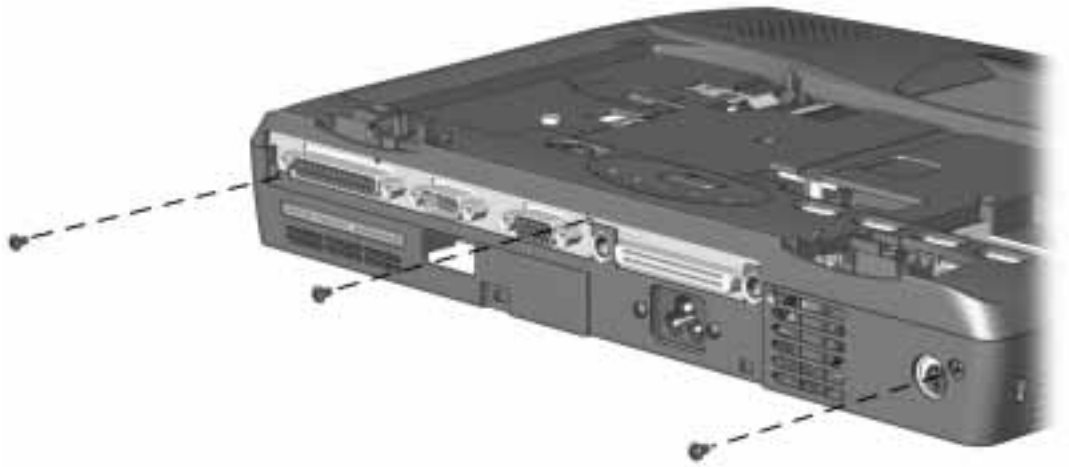


Figure 5-26. *Removing the Top Cover Assembly Screws from the Back of the Unit*

CAUTION: Do not use the attached wiring to pull the connectors out of the sockets. This will damage the wire and render the top cover unusable.

8. Disconnect the speaker❶,❷, touchpad❸, indicator❹, and switch❺ cables from the system board. Use the tweezers to release the connectors from the sockets.

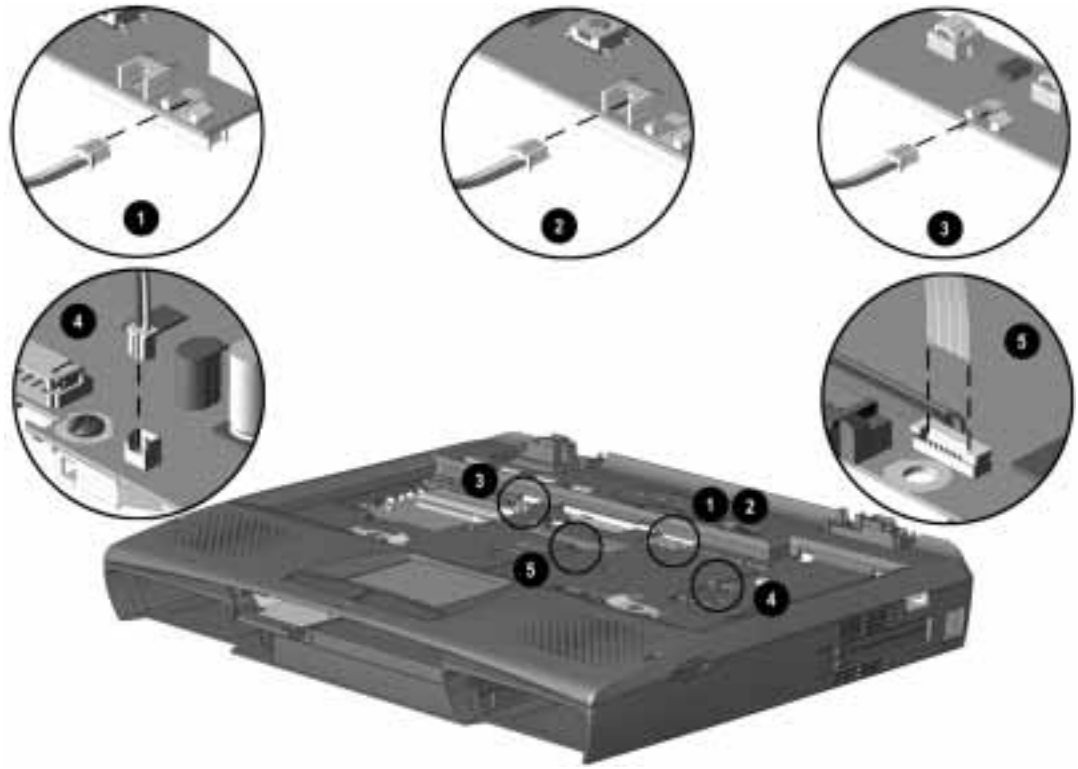


Figure 5-27. *Disconnecting the Speakers, Touchpad, Indicator, and Switch Cables from the System Board*

9. Lift the top cover from the base enclosure.

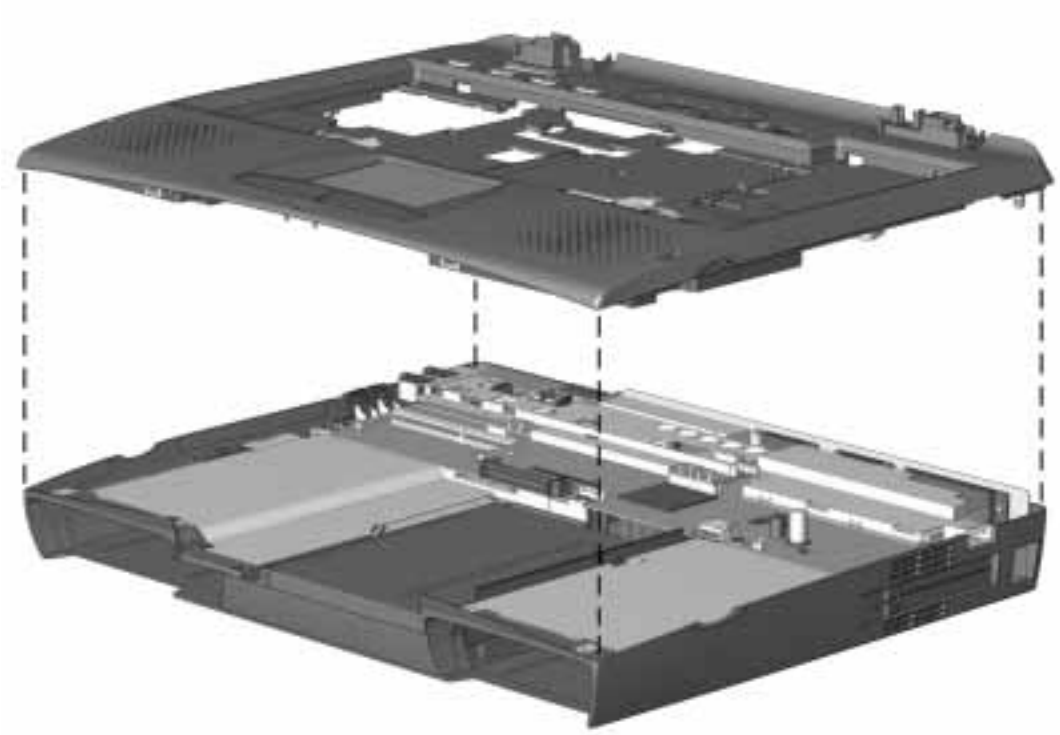


Figure 5-28. *Removing the Top Cover Assembly*

To replace the top cover assembly, reverse the steps.

5.9.1 DC-DC Converter and Audio Board Shield

To remove the DC-DC converter/audio board shield, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.7.1).
3. Remove the RTC battery (Section 5.7.3).
4. Remove the top cover assembly (Section 5.9).
5. Remove the screws from the converter/audio board shield.
6. Remove the converter/audio board shield.

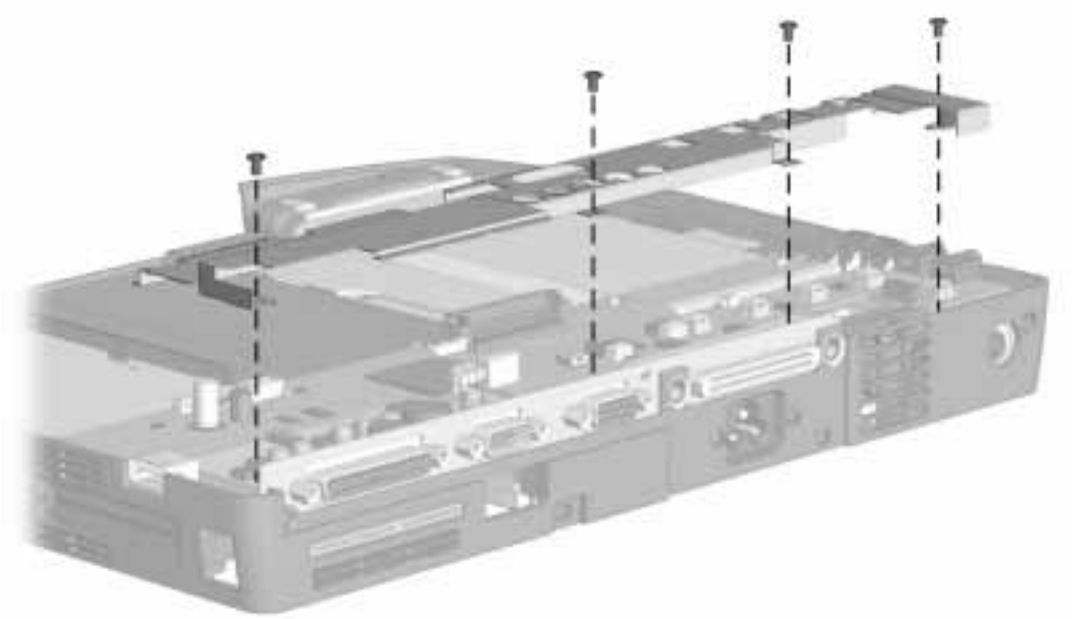


Figure 5-29. *Removing the DC-DC Converter and Audio Board Shield*

5.9.2 DC-DC Converter

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.7).
3. Remove the RTC battery (Section 5.7.3).
4. Remove the top cover assembly (Section 5.9).
5. Remove the DC-DC converter/audio board shield (Section 5.9.1)
6. Remove the DC-DC converter board from the system board.

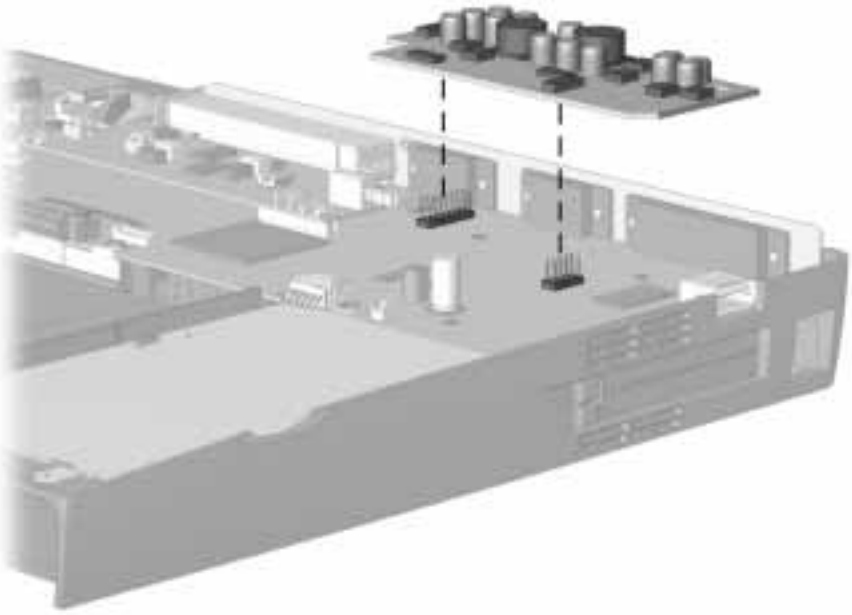


Figure 5-30. *Removing the DC-DC Converter*

5.9.3 Audio Board

CAUTION: The Audio board is relatively fragile. Do not twist or bend during disassembly or replacement.

To remove the audio board, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.7).
3. Remove the RTC battery (Section 5.7.3).
4. Remove the top cover assembly (Section 5.9).
5. Remove the converter/audio board shield (Section 5.9.1).
6. Separate the audio board from the system board. Note that there are two connectors on the audio board. Gently lift at both connectors, being careful not to twist or stress the board.

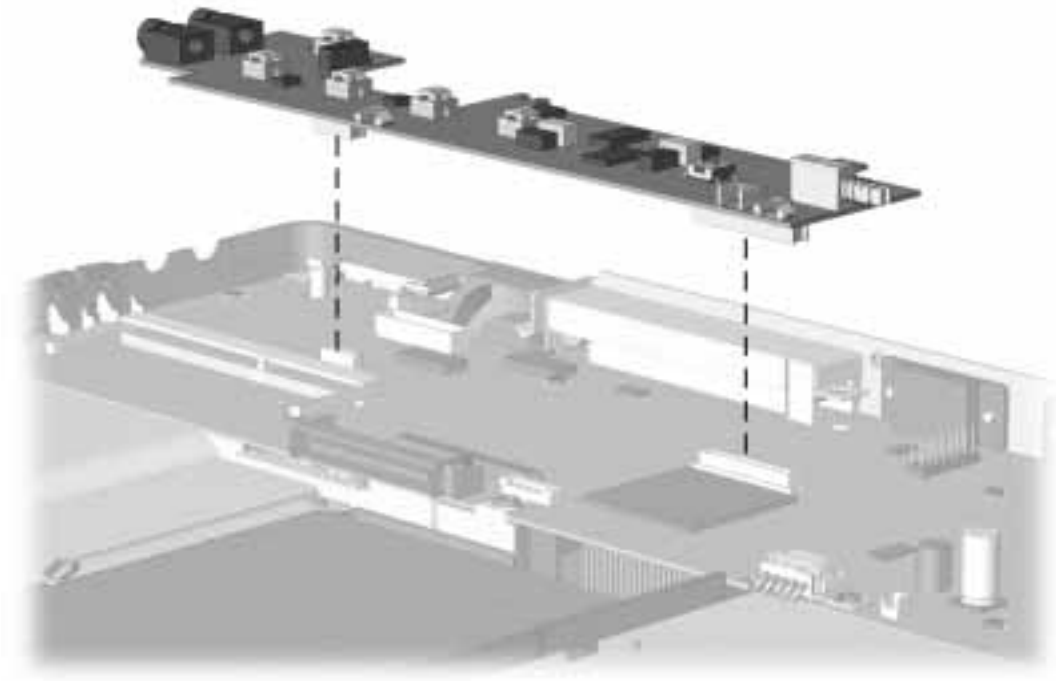


Figure 5-31. *Removing the Audio Board*

To replace the audio board, reverse the steps.

CAUTION: To ensure proper connection when mating the audio board to the system board, be certain both connectors are fully engaged before continuing with the re-assembly procedure. Unless the audio board is fully seated at both ends, the system may not start, may not have audio/led functions, or may have no video.

5.9.4 Fan

To remove the fan, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.7.1).
3. Remove the RTC battery (Section 5.7.3).
4. Remove the top cover assembly (Section 5.9).
5. Remove the converter/audio board shield (Section 5.9.1).
6. Disconnect the fan power cable from the system board.
7. Remove the fan from the computer base.

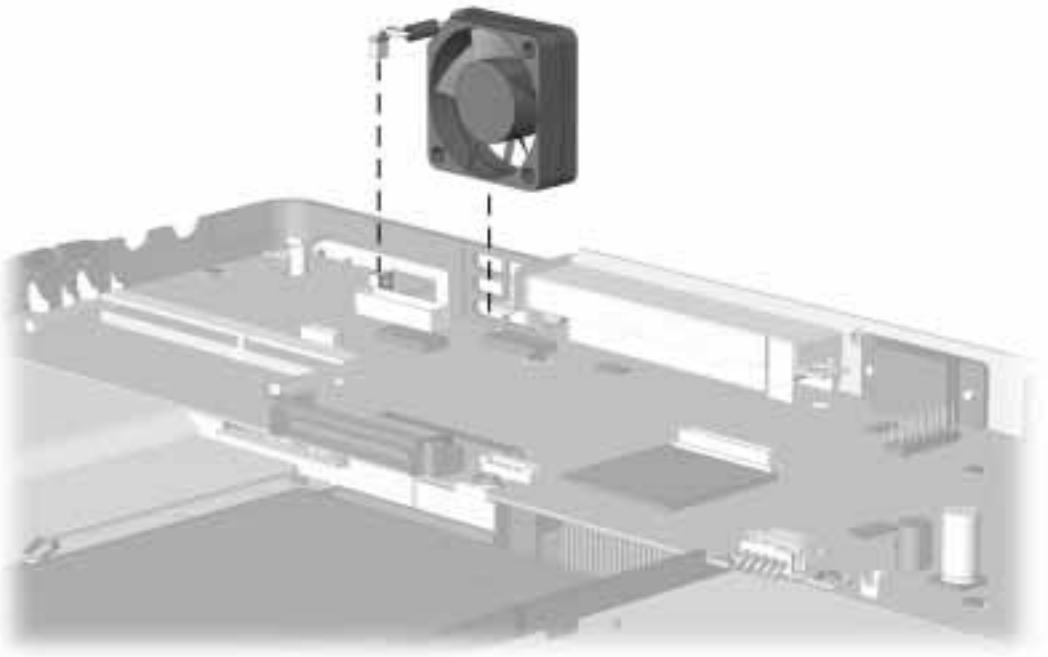


Figure 5-32. *Removing the Fan*

Reverse the procedure to install the fan.

IMPORTANT: When installing the fan, orient the fan so that the label and airflow direction point to the back of the computer.

5.9.5 System Board

To remove the system board, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the hard drive (Section 5.6).
3. On modem equipped models, remove the modem (Section 5.5).
4. On IR equipped models, remove the IR module(Section 5.5.1).
5. Remove the keyboard (Section 5.7.1).
6. Remove the lithium real-time clock battery (Section 5.7.3).
7. Remove the top cover assembly (Section 5.9).
8. Remove the DC-DC Converter (Section 5.9.2).
9. Remove the audio board (Section 5.9.3).
10. Remove the fan (Section 5.9.4).
11. Disconnect the system board power input cable from the AC adapter.

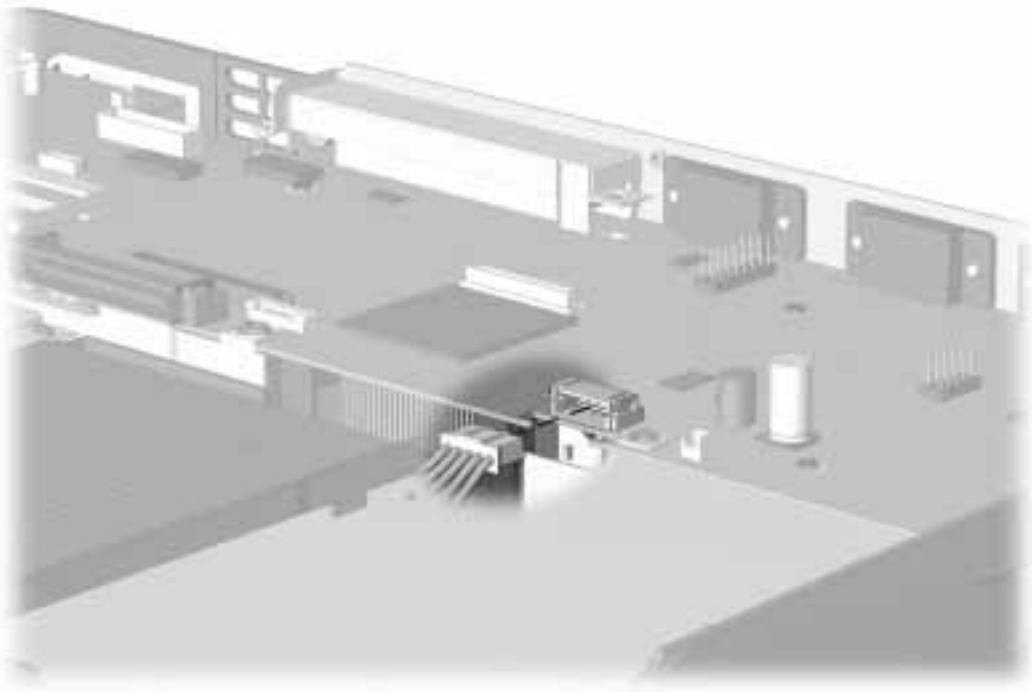


Figure 5-33. *Disconnecting the Power Input Connector from the System Board*

12. Remove both hex screws from the rear of the base enclosure.

13.Remove the screw from the system board.

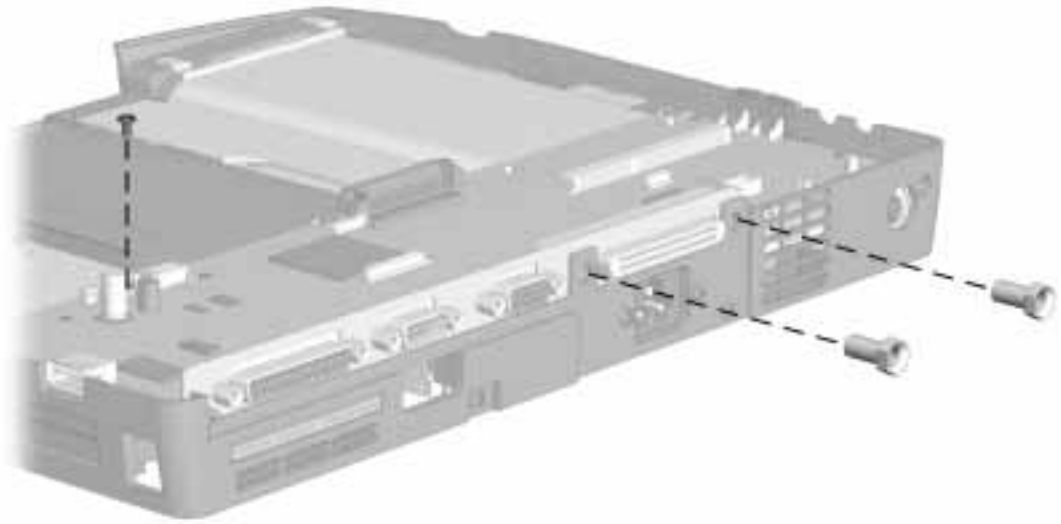


Figure 5-34. *Removing the Alignment Guides from the Expansion Connector*

14. Lift the right end of the system board ❶ from the lower base enclosure.
15. Slide the system board to the right ❷ and lift it from the base enclosure.

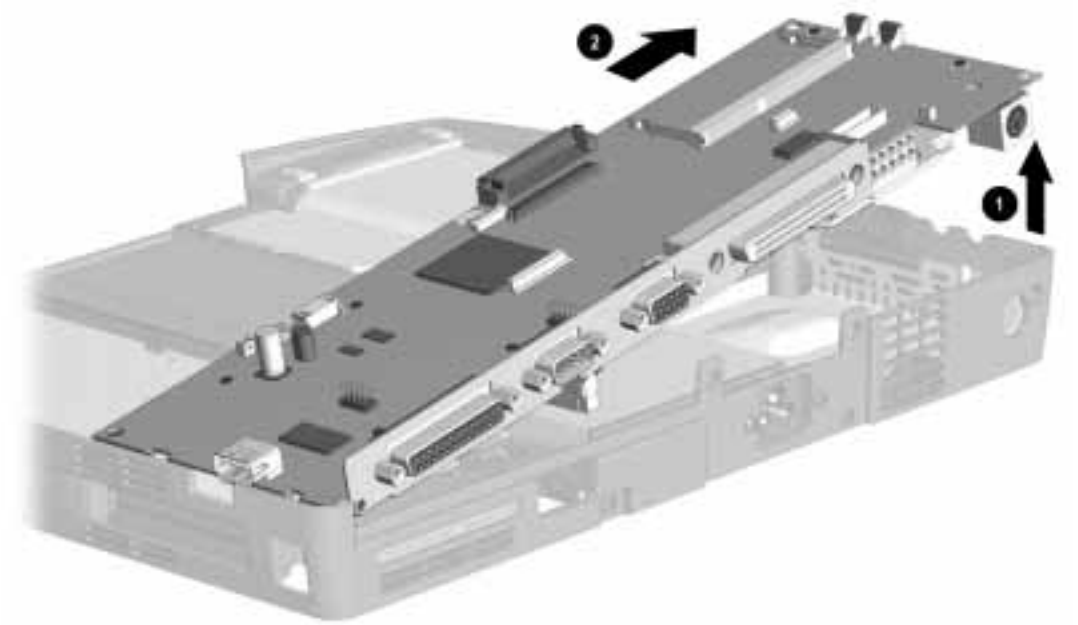


Figure 5-35. *Removing the System Board*

To replace the system board, reverse the steps.

5.9.6 Integrated AC Adapter

To remove the AC power module, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the system board (Section 5.9.5).
3. Remove the ground lead screw.
4. Remove the two screws holding the AC adapter to the system base.
5. Remove the two screws holding the AC power input connector to the back panel of the system base.
6. Lift the AC adapter from the system base enclosure.

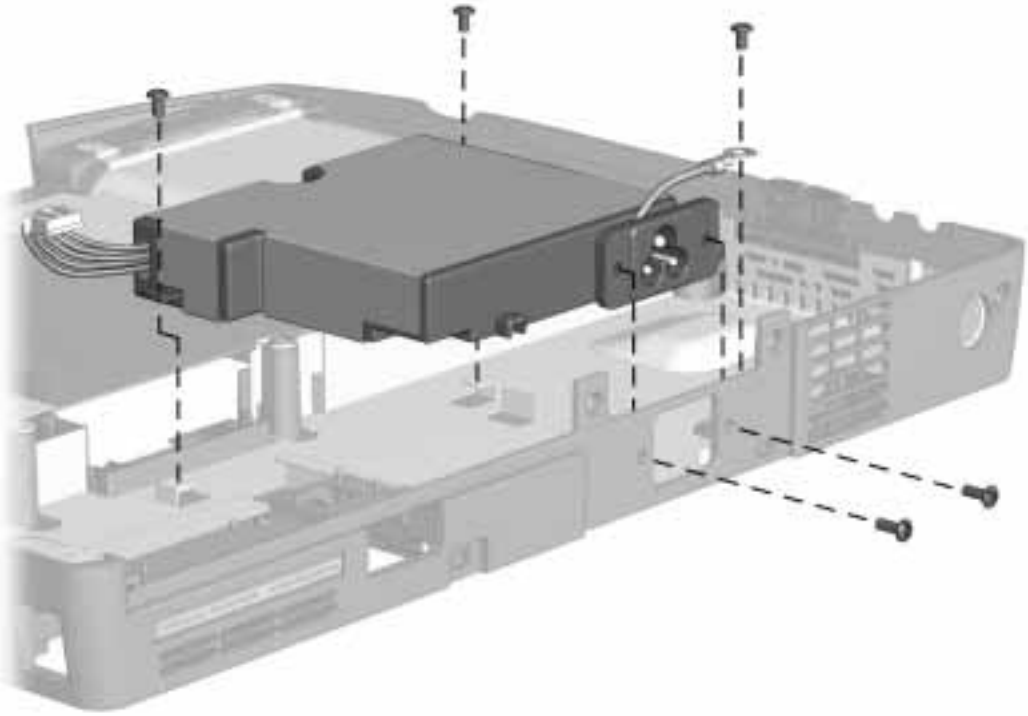


Figure 5-36. *Removing the AC Adapter*

To replace the AC adapter, reverse the procedures described.

NOTE: If you are replacing the base enclosure, transfer the IR module to the new enclosure.

chapter 6

SPECIFICATIONS

This chapter provides physical and performance specifications for the following:

- Computer
- Displays
- Hard drive
- Diskette drive
- LS-120 drive
- ZIP drive
- CD-ROM drive
- DVD-ROM drive
- Battery packs
- Convenience Base II
- External power sources

The chapter also includes:

- System interrupts
- System DMA
- System I/O address
- System memory map

6.1 Computer

Table ***6-1***
Computer Specifications

	U.S.	Metric
Dimensions		
Height	2.3 *in*	5.84 *cm*
Depth	9.6 *in*	24.5 *cm*
Width	12.5 *in*	31.75 *cm*
Weight		
With battery and optional CD-ROM	8.3 *lbs*	3.55 kg
Standalone (Battery) Power Requirements		
Nominal Operating Voltage (Li-Ion)	14.2	
Maximum Operating Power	45 W	
Peak Operating Power	50 W	
Integrated AC Power Power Requirements		
Operating Voltage	100 *to* 240 VAC RMS	
Operating Current	1.1 A RMS	
Operating Frequency Range	47 *to* 63 Hz AC	
Maximum Transient	4/50 kV	
Temperature*		
Operating	5 *to* 95°F	10 *to* 35°C
Nonoperating	-4 *to* 140°F	-30 *to* 60°C
Relative Humidity (noncondensing)		
Operating	10 *to* 90%	
Nonoperating (t_W = 38.7°C *max*)	5 *to* 90%	
Altitude		
Operating	0 *to* 10,000 ft	0 *to* 3.15 km
Nonoperating	0 *to* 30,000 ft	0 *to* 10.14 km
Shock		
Operating	10 G, 11 *ms*, *half sine*	
Non operating	240 G, 2 *ms*, *half sine*	
Vibration		
Operating	0.55 G, 0.25 Oct/Min sweep rate	
Nonoperating	1.5 G, 0.5 Oct/Min sweep rate	

* Applicable product safety standards specify thermal limits for plastic surfaces. The Compaq Prosignia Notebook operates well within this range of temperatures.

6.2 Display

Table *6-2*
12.1-Inch CTFT, SV**G**A Display

	U.S.	Metric
Dimensions		
H*eight*	7.24 *in*	18.4 *cm*
W*idth*	9.7 *in*	24.6 *cm*
Number of Colors	64*K*	
Contrast Ratio	100:1 *minimum*	
Pixel Resolution		
Pitch	0.30 × 0.30 *mm*	
F*ormat*	800 × 600	
C*onfiguration*	*RGB Stripe*	
Backlight	E*dge Lit*	
Character Display	80 × 25	

Table *6-3*
13.3-Inch CTFT, **XG**A Display

	U.S.	Metric
Dimensions		
H*eight*	7.9 *in*	20.1 *cm*
W*idth*	10.6 *in*	26.9 *cm*
Number of Colors	64*K*	
Contrast Ratio	100: 1 *minimum*	
Pixel Resolution		
Pitch	0.29 x 0.29 *mm*	
F*ormat*	1024 x 768	
C*onfiguration*	*RGB Stripe*	
Backlight	E*dge Lit*	
Character Display	80 × 25	

6.3 Hard Drive

Table ***6-4***
Hard Drive Specifications

Standard Model Configurations	***3.2*-GB**	***4.0*-GB**	***6.0*-GB**
Logical Capacity per Drive (MB)	3,256,049,664	4,099,866,624	6,495,068,160
Drive Type	65	65	65
Drive Height			
With drive frame (mm)	12.7	12.7	12.7
Drive Size			
Inches	2.5 x 0.5	2.5 x 0.5	2.5 x 0.5
Millimeters	102.0 x 75	102.0 x 75	102.0 x 75
Transfer Rate			
Media (Mb/s)	51.4 *to* 83.4 *MB/s*	51.4-83.4 *MB/s*	67.5 *to* 111.9 *MB/s*
Interface (Mb/s)	16.6 *MB/sec*	16.6 *MB/sec*	16.6 *MB/sec*
Sector Interleave	1:1	1:1	1:1
Typical Seek Time (Including setting)			
Single Track (ms)	4 *ms*	4 *ms*	3 *ms*
Average (ms)	13 *ms (read)*	13 *ms (read)*	13 *ms (read)*
Full Stroke (ms)	32 *ms (read)*	32 *ms (read)*	25 *ms (read)*
Disk Rotational Speed (RPM)	4009	4009	4200
Physical Configuration			
Cylinders	6975	6975	8960
Data Heads	6	6	6
Sectors/Track	144 *to* 240	144 *to* 240	178 *to* 294
Bytes/Sector	512	512	512
Logical Configuration			
Cylinders	6304	7944	13,424
Heads	16	16	15
Sectors per Track	63	63	63
Bytes per Sector	512	512	512
Buffer Size	512-*KB*	512-*KB*	512-*KB*

6.4 Diskette Drive

Table ***6-5***
Diskette Drive Specifications

Diskette size	3.5-*inch*
High density	1.44-M*B*/1.2-M*B*
Low density	720 *KB*
Light	N*one*
Height	0.43-*in* (11 *mm*)
Bytes per sector	512
Sectors per Track	
High density	18 (1.44-M*B*)/15 (1.2-M*B*)
Low density	9
Tracks per Side	
High density	80 (1.44-M*B*)/80 (1.2-M*B*)
Low density	80
Read/**W**rite heads	2
Average Seek Times	
Track-to-Track (*high*/*low*)	3 *ms*/6 *ms*
Average (*high*/*low*)	94 *ms*/174 *ms*
Settling Time	15 *ms*
Latency Average	100 *ms*

6.5 LS-*120* Drive

Table *6-6*
LS-*120* Drive Specifications

	120 MB	*1.7* MB DMF	*1.44* MB	*1.2* MB	*1.2* MB	*720* KB	*640* KB
Formatted Capacity (Bytes)	125,958,144	1,720,320	1,474,560	1,261,568	1,228,800	737,280	655,360
Sector Size (bytes)	512	512	512	1024	512	512	512
Sectors	246,527	3360	2880	1,232	2400	1,440	1,280
Magnetic Tracks/ Surface	1,736	80	80	77	80	80	80
Optical Servo Tracks/Surface	900	N/A	N/A	N/A	N/A	N/A	N/A
Sectors/track	51-92	21	18	8	15	9	8
Sector Interleave	1:1	2:1	1:1	1:1	1:1	1:1	1:1
Spare sectors	170	0	0	0	0	0	0
Zones (each side)	55	1	1	1	1	1	1
Average random seek	70 *ms*	70 *ms*	70 *ms*	70 *ms*	70 *ms*	70 *ms*	70 *ms*
Track-to-Track seek	20 *ms*	25 *ms*	25 *ms*	25 *ms*	25 *ms*	25 *ms*	25 *ms*
Max single seek	120 *ms*	170 *ms*	170 *ms*	170 *ms*	170 *ms*	170 *ms*	170 *ms*
Average Latency	41.67 *ms*	41.67 *ms*	41.67 *ms*	41.67 *ms*	41.67 *ms*	41.67 *ms*	41.67 *ms*
Motor rpm	720 ±0.5%	720 ±0.5%	720 ±0.5%	720 ±0.5%	720 ±0.5%	720 ±0.5%	720 ±0.5%
Motor Start Time,	800 *ms*	800 *ms*	800 *ms*	800 *ms*	800 *ms*	800 *ms*	800 *ms*
Track Density	2,490 *TPI*	135 *TPI*	135 *TPI*	135 *TPI*	135 *TPI*	135 *TPI*	135 *TPI*
Track Width	8 µm	125 µm	125 µm	125 µm	125 µm	125 µm	125 µm
Encoding Method	(1,7)*RLL*	MFM	MFM	MFM	MFM	MFM	MFM
Max Flux Density	33,660 FCI	17,334 FCI	17,334 FCI	17,334 FCI	17,334 FCI	8,717 FCI	8,717 FCI
Recording Density	44,880 *BPI*	17,334 *BPI*	17,334 *BPI*	17,334 *BPI*	17,334 *BPI*	8,717 *BPI*	8,717 *BPI*
Nominal Transfer Rate	375-680 *KB/sec*	150 *KB/sec*	150 *KB/sec*	125 *KB/sec*	125 *KB/sec*	75 *KB/sec*	75 *KB/sec*
Nominal Sustained Transfer Rate across interface	313-565 *KB/sec*	65 *KB/sec Read*, 32 *KB/sec* Write	55 *KB/sec Read*, 28 *KB/sec* Write	49 *KB/sec Read*, 25 *KB/sec* Write	46 *KB/sec Read*, 23 *KB/sec* Write	28 *KB/sec Read*, 14 *KB/sec* Write	28 *KB/sec Read*, 14 *KB/sec* Write
Buffer Transfer rate	4.0 MB/sec	4.0 MB/sec	4.0 MB/sec	4.0 MB/sec	4.0 MB/sec	4.0 B/sec	4.0 B/sec

6.6 ZIP Drive

Table 6-7
ZIP Drive Specifications
100-MB

Total Formatted Capacity (bytes)	100,663,296
Sector Size (bytes)	512
Total Number of Sectors	196,608
Number of Reassignable Spare Sectors	252
Sector Interleave	1:1
Number of Zones (each side)	4
Sectors per Track, Zone 0	72
Sectors per Track, Zone 1	60
Sectors per Track, Zone 2	48
Sectors per Track, Zone 3	40
Magnetic Track/Surface	908
Compaq Part Number for Diskette	270928-001
Seek Times (including settling)	
Average Seek	29 ms
Track-to-Track	5 ms
Maximum	55 ms
Average Latency	10 ms
Motor Speed (rpm)	2941 ±5%
Motor Start Time (ms)	3000
Track Density (TPI)	2118
Track Width (μm)	12
Encoding Method	(1,8) RLL
Max Flux Density (FCI)	34,560
Max Recording Density (BPI)	46,000
Transfer Rate From Diskette (kb/sec.)	790-1400
Buffer Transfer Rate (maximum, MB/sec)	3.3

6.7 CD-ROM Drive

Table *6-8*
24X Max CD-ROM Specifications

Applicable Disc	CD-ROM *mode* 1, *mode* 2 CD-Digital Audio CD-XA *mode* 2 (Form 1, Form 2) CD-I *mode* 2 (Form1, Form 2) CD-I *Ready* CD-*Bridge* CD-WO (fixed/variable packets) *Photo* CD (*singlemultisession*)
Center Hole Diameter	15 *mm*
Disc Diameter	12 *cm*, 8 *cm*
Disc Thickness	1.2 *mm*
Track Pitch	1.6 μm
Laser	
Beam Divergence	53.5 ± 1.5 *degrees*
Output Power	0.24 ± 0.1 *mw*
Type	*Semiconductor Laser* GaA1As
Wave Length	780 *nm* ± 25 *nm*
Access time	
Random	<350 *ms*
Full Stroke	<750 *ms*
Audio output level	
Line Out	0.7 Vrms
Headphone	None
Cache buffer	128 *KB*
Data transfer rate	
Sustained, 10x	1500 *KB/sec*
Sustained, single	150 *KB/sec*
Burst	8.3 MB/*sec*
Startup Time	<8 *seconds typical*
Capacity	
Mode 1, 12 *cm*	550 MB
Mode 2, 12 *cm*	640 MB
8 *cm*	180 MB

6.8 DVD-ROM Drive

Table *6-9*
DVD-ROM Specifications

Disc Formats Supported	DVD-5, DVD-9, DVD-10, DVD-18 CD-*R*OM *mode* 1, *mode* 2 CD-D*igital* A*udio* CD-XA *mode* 2 (F*orm* 1, F*orm* 2) CD-I *mode* 2 (F*orm*1, F*orm* 2) CD-I *Ready* CD-*Bridge* CD-*R* *Photo* CD (*singlemultisession*)
Center Hole Diameter	15 *mm*
Disc Diameter	12 *cm*, 8 *cm*
Disc Thickness	1.2 *mm*
Track Pitch	1.6 μ*m*
Capacity	4.7-G*B* - DVD-5 8.5-G*B* - DVD-9 9.4-G*B* - DVD-10 550-M*bytes* (M*ode* 1, 12) 640 M*bytes* (M*ode* 2, 12 *cm*) 180 M*bytes* (8 *cm*) 17.1 - DVD -18
Laser	
O*utput Power*	5*mw*
Type	*Semiconductor Laser* GaA1A*s*
W*ave Length*	650 *nm* ± 25 *nm* (DVD M*ode*) 795 *nm* ± 25 *nm* (CD-*R*OM *mode*)
Access time	
Random	<200 *ms*
F*ull Stroke*	<250 *ms*
Audio output level	
Line O*ut*	0.7 V*rms*
H*eadphone*	N*one*
Cache buffer	128 *KB*
Data transfer rate	
Sustained, 1x (CD-*R*OM *mode*)	150 *KB/sec*
Sustained, 20x CD-*R*OM CAV *mode*	1200-3000 *KB/sec*
Sustained, DVD *mode*	2760 *Kbytes/s sustained*, DVD *mode*
Burst	16.6 M*B/sec*
Startup Time	<15 *seconds typical*

6.9 Battery Packs

Table *6-10*
Lithium Ion Battery Pack

	U.S.	Metric
Dimensions		
H*eight*	0.82 *in*	2.08 *cm*
Length	5.8 *in*	14.73 *cm*
W*idth*	3.2 *in*	8.13 *cm*
Weight	0.85 *lb*	0.39 k*g*
Electrical		
V*oltage*	14.4 V	
A*mp-hour capacity*	2.7 A*h*	
W*att-hour capacity*	40 W*h*	
Environmental Requirements		
O*perating temperatures*	50°F *to* 104°F	10°C *to* 40°C
N*onoperating temperatures*	-12°F *to* 140°F	-30°C *to* 60°C

6.10 Convenience Base II

Table ***6-11***
Convenience Base II Specifications

	U.S.	Metric
Dimensions		
Height	4.9 *in*	12.46 *cm*
Height w/*Monitor Stand*	5.2 *in*	13.208 *cm*
Length	14.7*in*	37.34 *cm*
Width	14.2 *in*	36.07 *cm*
Weight		
Expansion Base	4.25 *lbs*	1.93 k*g*
Expansion Base w/*Monitor Stand*	5.8 *lbs*	2.63 k*g*
Power Supply (Input)		
Operating Voltage	100 *to* 240 VAC	
Operating Current	1.10 A*mp Maximum*	
Rated Voltage	100 *to* 240 VAC	
Rated Current	1.0 A*mp Maximum*	
Line Frequency	47 *to* 63 Hz.	
Temperature		
Operating	50 *to* 95°F	10 *to* 35°C
Storage	-4 *to* 140°F	20 *to* 60°C
Relative Humidity		
Operating	10 *to* 90%	
Storage	5 *to* 95%	
Altitude		
Operating	10,000 f*t*	3.15 k*m*
Nonoperating	30,000 f*t*	10.14 k*m*
Shock		
Operating	10 G, 11 *ms*, *half sine*	
Nonoperating	140 G, 2 *ms*, *half sine*	
Vibration		
Operating	0.25 G, 5 *to* 500 Hz, 0.5 *octave/min sweep rate*	
Nonoperating	1.0 G, 5 *to* 500 Hz, 0.5 *octave/min sweep rate*	

6.11 External Power Supplies

The automobile/aircraft adapter allows the computer to be used in an automobile or in an aircraft without a drain on the computer's batteries.

Table *6-12*
Automobile/Aircraft Adapter

	U.S.	Metric
Dimensions		
Height	1.42 *in*	3.6 *cm*
Width	2.83 *in*	7.2 *cm*
Length	4.84 *in*	12.3 *cm*
Weight	***0.88*** lb	***0.4*** kg
Input Cord Length	***39*** in	***1*** m
Power Supply (Input)		
Nominal Voltage	13.8 VDC	
Operating Voltage	10.5 - 14.8 VDC	
Maximum Voltage	16.0 VDC	
Input Fuse Protection	8.0 A	
Power Supply (Output)		
Nominal Voltage		120 VAC
Load Regulated Voltage	108 - 125 VAC	
Line Regulated Voltage	105 *to* 125 VAC	
Output Frequency	60 Hz +/- 3 Hz	
Output Overload Protection	150W @ 2 *sec.*	
Temperature		
Operating	32 *to* 104°F	0 *to* 40°C
Nonoperating	-4 *to* 140°F	-20 *to* 60°C
Relative Humidity		
Operating	10 *to* 90%	
Nonoperating	5 *to* 95%	

The external battery charger charges the Li-Ion battery outside the computer. It may also be used to charge spare batteries.

Table ***6-13***
External Battery Charger

	U.S.	Metric
Dimensions		
Height	***1.57*** in	***40*** mm
Width	***5.25*** in	***133*** mm
Length	***9.4*** in	***239*** mm
Weight	***1.1*** lb	***4.95*** gm
Power Supply (Input)		
Nominal Voltage	100 - 240 VAC	
Line frequency	47-63 Hz	
Power Supply (Output)		
Nominal Voltage	+18.5 +/- 0.25 VDC	
Power	40 *to* 42 W	
Temperature		
Operating	41 *to* 104°F	5 *to* 40°C
Nonoperating	-4 *to* 185°F	-20 *to* +85°C
Relative Humidity		
Operating	10 *to* 95%	
Nonoperating	10 *to* 95%	

6.12 System Interrupts

Table ***6-14***
Hardware Interrupts

Hardware IRQ	System Function
IRQ0	*Timer interrupt*
IRQ1	*Keyboard*
IRQ2	*Interrupt controller cascade*
IRQ3	COM 2
IRQ4	COM 1
IRQ5	*Audio*
IRQ6	*Diskette Drive controller*
IRQ7	*EPP Parallel*
IRQ8	*Real-Time Clock* (MSIO)
IRQ9	*PCI devices*
IRQ10	*Unused*
IRQ11	*Used by PCMCIA*
IRQ12	*Mouse*
IRQ13	*Floating point error input*
IRQ14	*Primary* IDE *interface*
IRQ15	*Secondary* IDE *interface*

6.13 System DMA

Table ***6-15***
DMA Channels

Hardware DMA	System Function
DMA 0	*Fast infrared or Audio controller*
DMA 1	*Audio controller*
DMA 2	*Diskette drive controller*
DMA 3	*EPP Parallel Port*
DMA 4	*Not assigned*
DMA 5	*Audio Controller*
DMA 6	*Not assigned*
DMA 7	*Not assigned*

6.14 System I/O Address

Table ***6-16***
System I/O (Port) Addresses

I/O Address (Hex)	System Function (Shipping Configuration)
000 - 00F	*Master* DMA *Controller* # 1
010 - 011	*Force Software S*MI
012 - 01F	*Unused*
020 - 021	*Peripheral* Interrupt *Controller* # 1
022 - 024	*Chipset Configuration Registers*
025 - 03F	*Unused*
040 - 043	*Counter/Timer Registers*
044 - 05F	*Unused*
060	*Keyboard* Data
061	*Port B*
062 - 063	*Unused*
064	*Keyboard* Command/*Status*
065 - 06F	*Unused*
070	CMO*S* Index Address
071	CMO*S* Data
072 - 073	*Unused*
074	*Reserved*
075	*Unused*
076	*Reserved*
077 - 077F	*Unused*
080 - 08F	DMA *Page Registers*
084 - 085	*POST* Code Output *Port*
090 - 091	*Unused*
092	F*ast Reset Register*
093 - 09F	*Unused*
0A0 - 0A1	I*nterrupt Controller* # 2
0A2 - 0*B*F	*Unused*
0C0 - 0DF	DMA C*ontroller* # 2
0E0 - 0E1	E*SS* Audio Configuration
0E2 - 0E5	*Configuration Registers*
0E6 - 0EF	*Unused*
0F0 - 0F1	NC*P* N*umerics Register*
0F9	E*SS Configuration Lock*
0FA	*Unused*
0F*B*	E*SS Configuration* Unlock
0FC - 0FF	*Unused*
100 - 101	*Unused*
103 - 16F	*Unused*

Continued

Table ***6-16*** System I/O (Port) Addresses *Continued*

I/O Address (Hex)	System Function (Shipping Configuration)
170 - 177	*Hard Drive Secondary Registers*
178 - 1EF	*Unused*
1F0 - 1F7	*Hard Drive Primary Registers*
1F8 - 1FF	*Unused*
200 - 21F	*Unused*
220 - 22F	*ESS Audio Registers (1st Possible) (Default)*
230 - 23F	*ESS Audio Registers (2nd Possible)*
240 - 24F	*ESS Audio Registers (3rd Possible)*
250 - 25F	*ESS Audio Registers (4th Possible)*
260 - 277	*Unused*
278 - 27A	*LPT2 and High Speed Parallel Port Registers*
27B - 27F	*LPT2 High Speed Printer Port Registers*
280 - 2F7	*Unused*
2F8 - 2FF	*Serial Control Register COM2*
300 - 36F	*Unused*
370 - 371	*Reserved*
372	*Diskette Digital Output Register*
373	*Unused*
374	*Reserved*
375	*Diskette Main Status/Data Registers*
376	*Reserved*
377	*Diskette Input/Control Registers*
378 - 37A	*LPT1 and High Speed Parallel Port Registers*
37B - 37F	*Unused*
380 - 387	*Unused*
388 - 38B	*ESS FM Synthesizer*
38C - 3AF	*Unused*
3B0 - 3BB	*Unused*
3BC - 3BE	*LPT3 and High Speed Parallel Port Registers*
3BF	*LPT1 High Speed Parallel Port Registers*
3C0 - 3CD	*Unused*
3D0 - 3DF	*Unused*
3F0 - 3F7	*Diskette Drive Controller Primary Registers*
3F8 - 3FF	*COM1 Serial Controller Registers*
400 - 4CF	*Unused*
480 - 48F	*Extended DMS Registers*
4D0 - CF6	*Unused*
CF7	*Configuration/NVM Data Register*
CF8 - CFB	*PCI Configuration Index Register*
CFC - CFF	*PCI Configuration Index Register*
D00 - FFF	*Unused*

6.15 System Memory Map

Table ***6-17***
Memory Map

Size	Memory Address	System Function
640 *K*	00000000 - 0009FFFF	*Base* Memory
128 *K*	000A0000 - 000BFFFF	*Video* Memory
48 *K*	000C0000 - 000CBFFF	*Video BIOS*
160 *K*	000C8000 - 000E7FFF	*Unused*
64 *K*	000E8000 - 000FFFFF	*System BIOS*
15 M	00100000 - 00FFFFFF	Ex*tended* Memory
58 M	01000000 - 047FFFFF	*Super* Ex*tended* Memory
58 M	04800000 - 07FFFFFF	*Unused*
2 M	08000000 - 080FFFFF	*Video* Memory (D*irect* Access)
4 G	08200000 - FFFEFFFF	*Unused*
64 *K*	FFFF0000 - FFFFFFFF	*System BIOS* ("*S*HADOW")

appendix A

CONNECTORS

This appendix contains the pin assignments for all external connectors.

Table A-1
External Keyboard

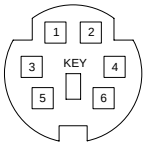
Connector	Pin	Signal
	1	Data
	2	Unused
	3	Ground
	4	+5 VDC
	5	Clock
	6	Unused

Table A-2
PS/2-Compatible Mouse

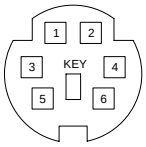
Connector	Pin	Signal
	1	Data
	2	Unused
	3	Ground
	4	+5 VDC
	5	Clock
	6	Unused

Table A-3
Ethernet RJ-45

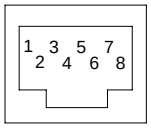
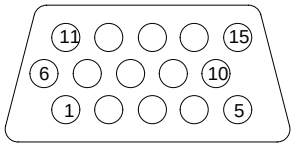
Connector	Pin	Signal
	1	(+) Transmit Data
	2	(-) Transmit Data
	3	(+) Receive Data
	4	Unused
	5	Unused
	6	(-) Receive Data
	7	Unused
	8	Unused

Table A-4
USB

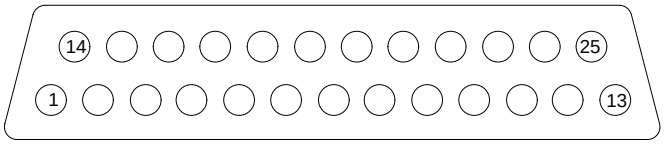
Connector	Pin	Signal
	1	Ground
	2	- Data
	3	+ Data
	4	+5 VDC

Table A-5
External Monitor



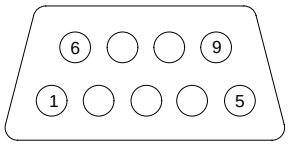
Pin	Signal	Pin	Signal
1	Red Analog	9	Blank
2	Green Analog	10	Ground
3	Blue Analog	11	Blank
4	Blank	12	Monitor ID (DD)
5	Ground	13	Horizontal Sync
6	Ground	14	Vertical Sync
7	Ground	15	Monitor ID (CC)
8	Ground		

Table A-6
Parallel



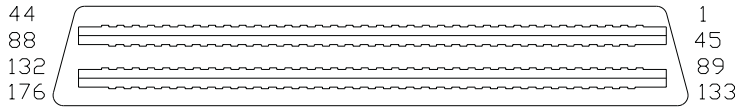
Pin	Signal	Pin	Signal
	Strobe	14	Auto Linefeed
2	Data Bit 0	15	Error
3	Data Bit 1	16	Initialize Printer
4	Data Bit 2	17	Select In
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	External Diskette Positive Drive Detect
9	Data Bit 7	22	External Diskette Negative Drive Detect
10	Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper End	25	External Diskette Drive Switched to +5 V
13	Select		

Table A-7
Serial



Pin	Signal	Pin	Signal
1	Carrier Detect	6	Data Set Ready
2	Receive Data	7	Ready to Send
3	Transmit Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Ground		

Table A-8
Expansion Connector



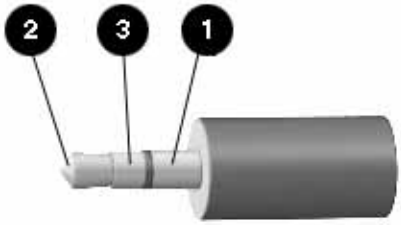
Pin	Signal	Pin	Signal
1	GND	41	SPK_R
2	GND	42	LINE_R
3	NC	43	GND
4	GND	44	DOCK_LG
5	GND	45	GND
6	NC	46	GND
7	GND	47	REQ1
8	GND	48	REQ0
9	AD[31]	49	GNT0
10	DEVSEL	50	RST
11	IRDY	51	GND
12	STOP	52	AD[23]
13	TRDY	53	AD[22]
14	GND	54	C/BE2
15	GND	55	AD[20]
16	AD[12]	56	NC
17	AD[13]	57	AD[19]
18	GND	58	FRAME
19	GND	59	AD[17]
20	CLK1	60	GND
21	AD[0]	61	GND
22	GND	62	AD[14]
23	DOCK_S	63	AD[15]
24	CLK0	64	AD[1]
25	ACVCC	65	AD[3]
26	ACVCC	66	AD[2]
27	ACVCC	67	GND
28	ACVCC	68	MDATA
29	ACVCC	69	KBDATA
30	CRTHSYNC	70	MCLK
31	GREEN	71	KBCLK
32	CRTVSYNC	72	ACVCC
33	RED	73	PMVCC5
34	DDCCLK	74	PMVCC5
35	PWRLED	75	NC
36	DDCDATA	76	BLUE
37	DOCK_PWR_EN	77	NC
38	GND	78	PBUSY
39	SPKL	79	PDATA7
40	LINE_L	80	PBDATA3

Continued

Table A-8 Expansion Connector *Continued*

Pin	Signal	Pin	Signal
81	PSLIN	130	DCDA
82	GND	131	RTSA
83	GND	132	RIA
84	SPK_IN	133	POWER_SW
85	+5v	134	INTB
86	NC	135	NC
87	ERDY	136	INTA
88	SYSVCC5A	137	NC
89	STANDBy_SW	138	GND
90	NC	139	NC
91	NC	140	AD[27]
92	NC	141	AD[30]
93	NC	142	AD[26]
94	GNT1	143	AD[29]
95	GND	144	AD[25]
96	GND	145	AD[28]
97	CBE3	146	AD[24]
98	AD[21]	147	BLOCK
99	NC	148	GND
100	NC	149	PERR
101	AD[18]	150	SERR
102	C/BE1	151	AD[11]
103	PAR	152	AD[9]
104	GND	153	AD[10]
105	AD[16]	154	AD[8]
106	AD[6]	155	PORT_REP
107	C/BE0	156	MSI
108	AD[5]	157	MSO
109	AD[7]	158	TC
110	AD[4]	159	TD
111	BATTLED	160	TB
112	SWC	161	PMVCC5
113	TA	162	PMVCC5
114	SWB	163	PPE
115	SWD	164	PMVCC5
116	SWA	165	PDATA4
117	PMVCC5	166	PDATA5
118	PMVCC5	167	PDATA1
119	PMVCC5	168	PINIT
120	PMVCC5	169	PSTB
121	PSELECT	170	PAFD
122	PDADA6	171	GND
123	PACK	172	GND
124	PDATA2	173	CTSA
125	PDATA0	174	SINA
126	PFAULT	175	DTRA
127	GND	176	SOUTA
128	GND		
129	DSRA		

Table A-9
Speaker Connector



Pin	Signal
❶	Shield
❷	Left channel audio
❸	Right channel audio

appendix **B**

POWER CORD SET REQUIREMENTS

B.1 3-Conductor Power Cord Set

The wide range input feature of your computer permits it to operate from any line voltage from 100 to 240 volts AC.

The power cord set received with the computer meets the requirements for use in the country where you purchased the equipment.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer.

B.1.1 General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 5.00 feet (1.5 m) and a maximum of 6.56 feet (2.0 m).
2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
3. The power cord set must have a minimum current capacity of 10A and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.
4. The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C5 connector, for mating with appliance inlet on the product.

B.1.2 Country-Specific Requirements

Table B-1
3-Conductor Power Cord Set Requirements — By Country

Country	Accredited Agency	Applicable Note Numbers
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

B.1.3 Notes:

1. The flexible cord must be <HAR> Type HO3VV-F, 3-conductor, 0.75 mm^2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
2. The flexible cord must be Type SPT-2 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A 250V) configuration.

The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 0.75mm^2 conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (15A, 125V) configuration.

appendix C

CONVENIENCE BASES

C.1 Models and Features

The convenience bases provide a permanent desktop solution for the computer by eliminating the need to disconnect external devices such as a printer, keyboard, or monitor when you undock the computer. All necessary connections and disconnections are made automatically when the computer is docked and undocked. The following convenience models are available:

Table C-1
Convenience Bases

Model	Serial Configuration
Convenience Base Pass Through model	BNH3 (Armada 1500 base)
Convenience Base with Ethernet	BNH1 (Armada 1500 base)
Convenience Base II Pass Through model	CBY1
Convenience Base II with Ethernet	CBX1

Figure C-1. *Compaq Prosignia Notebook Convenience Base*

C.2 Convenience Base Features

The Convenience Base pass through models and the convenience base with Ethernet models include the following features:

	Convenience Base pass through	Convenience Base with Ethernet (BNC)	Convenience Base with Ethernet (RJ45)	Convenience Base II pass through	Convenience Base II with Ethernet
Connections					
Speaker/headphone	■	■	■	■	■
Audio Line-In	■	■	■	■	■
Serial	■	■	■	■	■
Parallel	■	■	■	■	■
External Monitor	■	■	■	■	■
Keyboard	■	■	■	■	■
Pointing Device	■	■	■	■	■
MIDI/Joystick	■	■	■	■	■
USB				■	■
Cable lock provision	■	■	■	■	■
Pass through AC Power	■	■	■	■	■
RJ-45 connector			■		■
BNC Connector		■			
10-Base-T		■	■		■
100-Base-T			(optional)		■
Monitor Stand	■	■	■	■	■
Localized Power Cords	■	■	■	■	■
Kensington lock	■	■	■	■	■

C.3 Convenience Base II Components

The convenience base components are illustrated and described in this section.

C.3.1 Front and Right Side Components

The front and right side convenience base components are shown and identified in this section.

❶ Docking latches

❷ Docking alignment pins

❸ Docking connector

❹ Power switch

❺ Security cable lock

❻ Docking lever

❼ Pass-through AC power outlet

❽ Battery charge light

❾ Suspend button

❿ Power/suspend light

⓫ Retaining latches

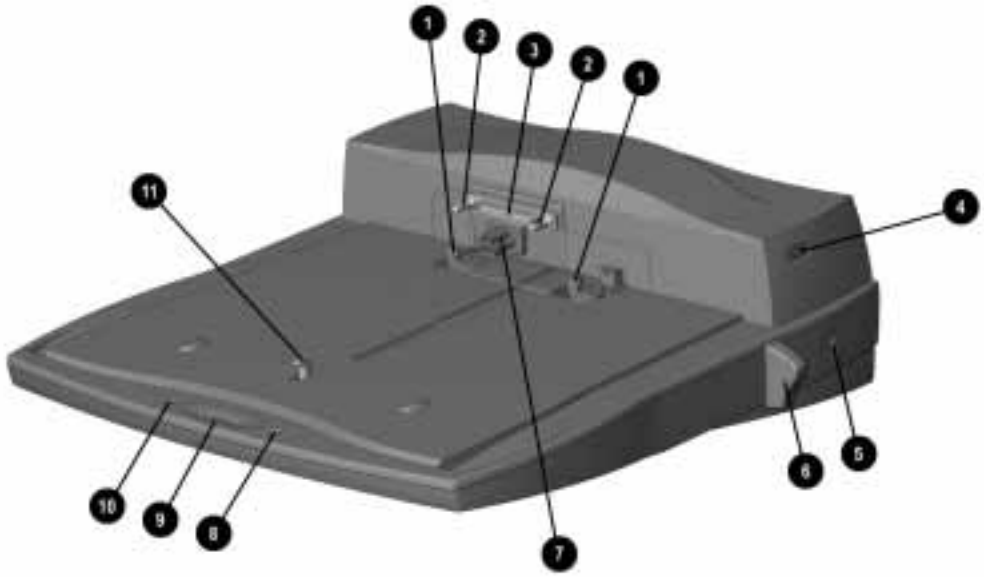


***Figure C-2**. Convenience Base II with RJ45 Front and Right Side Components*

C.3.2 Rear Components

The rear components are shown in the following figure and identified in this section:

❶ RJ-45 jack (Ethernet model only)

❷ Serial connector

❸ Parallel connector

❹ External monitor connector

❺ MIDI/Joystick connector

❻ Pointing device connector

❼ Keyboard connector

❽ Speaker/headphone jack

❾ USB connector

❿ Audio Line-in jack

⓫ Fan

⓬ AC power connector

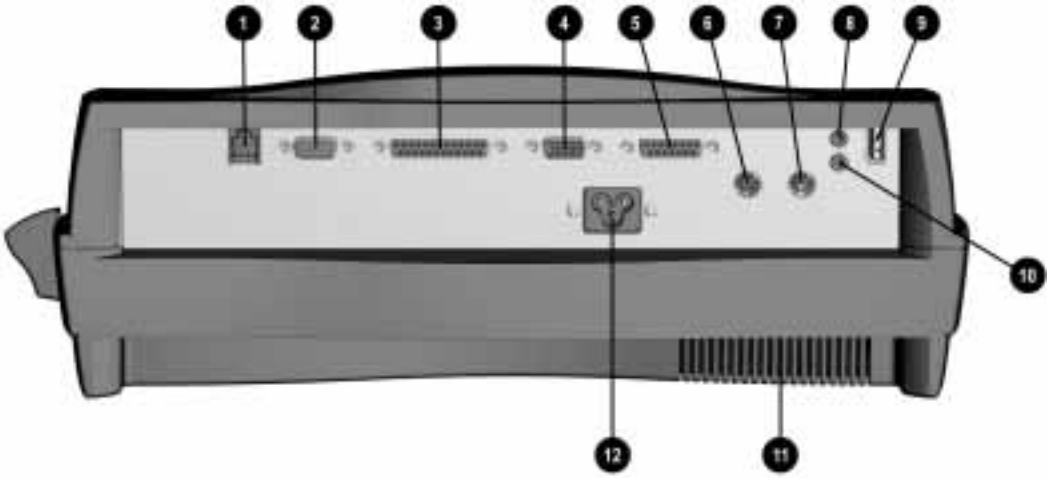


Figure C-3. *Convenience Base II with RJ45 Rear Components*

Table C-2
Convenience Base Models

Item	Description	Spares Part Number
❶	Convenience Base II (Ethernet model)	316312-001
*	Convenience Base II (Pass through model)	316291-001

***** Not illustrated

Table C-3
Convenience Base II Cables and Power Cords

Description		Spares Part Number
*	AC Power cord (US/Canada)	255135-001
*	AC Power cord (Australia/New Zealand)	255135-011
*	AC Power cord (UK)	255135-011
*	AC Power cord (Europe)	255135-021
*	AC Power cord (Italy)	255135-061
*	AC Power cord (Denmark)	255135-081
*	AC Power cord (Singapore)	255135-111
*	AC Power cord (Japan)	255135-291
*	AC Power cord (Korea)	255135-AD1

***** Not illustrated

Table C-4
Convenience Base II Options

Description	Spares Part Number
* Monitor Stand	316286-001

* Not illustrated

Table C-5
Convenience Base II Shipping Boxes

Description	Spares Part Number
Shipping Carton (5 ea)	210432-001

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