Thank you for purchasing this Factory Service Manual CD/DVD from servicemanuals4u.com.

Please check out our eBay auctions for more great deals on Factory Service Manuals:

COMPAQ

Maintenance and Service Guide
Compaq Notebook 800 Series
Compaq Presario 3000 Series Mobile PC

Document Part Number: 307503-003

April 2003

This guide is a troubleshooting reference used for maintaining and servicing the notebook. It provides comprehensive information on identifying notebook features, components, and spare parts, troubleshooting notebook problems, and performing notebook disassembly procedures.

Contents

4   Removal and Replacement Preliminaries

5   Removal and Replacement Procedures

6 Specifications

A Connector Pin Assignments

B Power Cord Set Requirements

C Screw Listing

Index

1

Product Description

The Compaq 800 and Presario 3000 Series Mobile PCs feature
Intel Pentium 4 processors, an industry-leading SiS Accelerated
Graphics Port (AGP) graphics processor, a 16-inch SXGA
display, and a wide range of multimedia capabilities.

Figure 1-1. Compaq 800 and Presario 3000 Series Mobile PC

1.1 Models

Notebook models are shown in Tables 1-1 through 1-3.

Table 1-1
Compaq 800 and Presario 3000
Model Naming Conventions

Key									
C800	P	306	S6	80	W	C	10	E	XXXXXX-XXX
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Key	Description	Options	
1	Brand/Series designator	C800 = 800 Series	P3000 = Presario 3000 Series
2	Processor type	P = Intel Pentium 4	C = Intel Celeron
3	Processor speed	306 = 3.06 GHz 280 = 2.8 GHz 240 = 2.4 GHz	200 = 2.0 GHz 180 = 1.8 GHz 170 = 1.7 GHz
4	Display type/ size/resolution	S = SXGA (1268 × 1024) X = XGA (1024 × 768)	6 = 16.x in 5 = 15.x in 4 = 14.x in 3 = 13.x in
5	Hard drive size	80 = 80 MB 60 = 60 MB	40 = 40 GB 20 = 20 GB
6	Optical drive designator	D = CD-ROM drive V = DVD-ROM drive	W = combination DVD/CD-RW drive
7	Integrated communication	M = modem 0 = none	C = modem/NIC combination card
8	RAM	10 = 1024 MB 51 = 512 MB	25 = 256 MB 12 = 128 MB
9	Operating system	E = Microsoft Windows XP Home	
10	SKU#		

Table 1-2
Compaq 800 Models

The following Compaq 800 models feature:

■ TouchPad pointing device
■ 56KB/s modem and 10/100 NIC
■ 1-year warranty on parts and labor
■ Microsoft Windows XP Home
■ 90W AC adapter
■ 4.0 AH lithium ion (Li ion) battery pack

The following Compaq 800 model uses configuration code **LN64.**

C800	P	240	S6	40	W	C	25	E	
Asia Pacific			322539-371						

The following Compaq 800 models use configuration code **LLNB.**

C800	P	240	S6	30	W	C	25	E	
Hong Kong			317471-AC1		Thailand			317417-281	
Korea			317471-AD1						

The following Compaq 800 model uses configuration code **LN63.**

C800	P	240	X5	30	W	C	25	E	
Asia Pacific			322538-371						

The following Compaq 800 model uses configuration code **LLN8.**

C800	P	200	X4	30	V	C	25	E	
People's Republic of China			315612-AA1						

The following Compaq 800 models use configuration code **LLN6.**

C800	P	200	X4	20	V	C	12	E	
Asia Pacific			315610-371		People's			315610-AA1	
Australia/New Zealand			315610-011		Republic				
Hong Kong			315610-AC1		of China				
Korea			315610-AD1		Taiwan			315610-AB1	
						Thailand			315610-281	

Table 1-2
Compaq 800 Models *(Continued)*

The following Compaq 800 model uses configuration code **LLNF.**

C800	P	180	X5	20	D	C	25	E	
Korea				317474-AD1					

The following Compaq 800 model uses configuration code **LLNC.**

C800	P	180	X4	20	V	C	12	E	
People's Republic of China				317472-AA1					

The following Compaq 800 model uses configuration code **LLND.**

C800	P	180	X4	20	V	C	12	E	
Korea				317473-AD1					

The following Compaq 800 model uses configuration code **LLN7.**

C800	P	180	X4	20	D	C	12	E	
People's Republic of China				315611-AA1					

The following Compaq 800 models use configuration code **LMS2.**

C800	C	180	X4	20	D	C	12	E	
Asia Pacific	321485-371	People's	321485-AA1
Australia/New Zealand	321485-011	Republic	
Hong Kong	321485-AC1	of China	
Korea	321485-AD1	Taiwan	321485-AB1
		Thailand	321485-281

The following Compaq 800 model uses configuration code **LN65**.

C800	C	180	X4	20	D	C	12	E	
India				322629-D61					

The following Compaq 800 model uses configuration code **LN66.**

C800	C	170	X4	20	D	C	12	E	
India				322630-D61					

Table 1-2
Compaq 800 Models *(Continued)*

The following Compaq 800 models feature:

■ TouchPad pointing device
■ 56KB/s modem and 10/100 NIC
■ 1-year warranty on parts and labor
■ Microsoft Windows XP Home
■ 90W AC adapter
■ No battery pack

The following Compaq 800 models use configuration code **LF56.**

C800	P	240	S6	30	W	C	25	E	

Asia Pacific			316503-371		Australia/New Zealand		316503-011

The following Compaq 800 model uses configuration code **LN67.**

C800	P	200	S6	40	V	C	25	E	

Taiwan	324627-AB1

The following Compaq 800 model uses configuration code **LN68.**

C800	P	200	X5	30	V	C	25	E	

Korea	325439-AD1

The following Compaq 800 models use configuration code **LLN8.**

C800	P	200	X4	30	V	C	25	E	

Asia Pacific	315612-371	Korea	315612-AD1
Australia/New Zealand	315612-011	Taiwan	315612-AB1
Hong Kong	315612-AC1	Thailand	315612-281

The following Compaq 800 model uses configuration code **LMS4.**

C800	P	200	X4	20	V	C	12	E	

Asia Pacific	321487-371

The following Compaq 800 model uses configuration code **LMS1.**

C800	P	200	X4	20	D	C	12	E	

Asia Pacific	319562-371

Table 1-2
Compaq 800 Models *(Continued)*

The following Compaq 800 models use configuration code **LF55.**

| C800 | P | 200 | X3 | 20 | D | C | 12 | E | |

| Asia Pacific | 317495-371 | Australia/New Zealand | 317495-011 |

The following Compaq 800 model uses configuration code **LLNG.**

| C800 | P | 180 | X4 | 30 | W | C | 25 | E | |

| Hong Kong | 317475-AC1 | |

The following Compaq 800 model uses configuration code **LLNH.**

| C800 | P | 180 | X4 | 30 | V | C | 12 | E | |

| Taiwan | 317476-AB1 | |

The following Compaq 800 model uses configuration code **LLNC.**

| C800 | P | 180 | X4 | 20 | V | C | 12 | E | |

| Asia Pacific | 317472-371 | |

The following Compaq 800 models use configuration code **LLN7.**

| C800 | P | 180 | X4 | 20 | D | C | 12 | E | |

Asia Pacific	315611-371	Korea	315611-AD1
Australia/New Zealand	315611-011	Taiwan	315611-AB1
Hong Kong	315611-AC1	Thailand	315611-281

The following Compaq 800 models use configuration code **LF54.**

| C800 | P | 180 | X3 | 20 | V | C | 25 | E | |

| Asia Pacific | 309482-371 | Australia/New Zealand | 309482-011 |

Table 1-2
Compaq 800 Models *(Continued)*

The following Compaq 800 models use configuration code **LF57.**									
C800	P	180	X3	20	D	C	12	E	
Asia Pacific				310535-371		Australia/New Zealand			310535-011

The following Compaq 800 models use configuration code **LF53.**									
C800	P	180	X3	20	D	C	12	E	
Asia Pacific				307602-371		Australia/New Zealand			307602-011

The following Compaq 800 models use configuration code **LMS3.**									
C800	C	170	X4	20	V	C	12	E	
Asia Pacific				321486-371		Thailand			321486-281

The following Compaq 800 models use configuration code **LLN9.**									
C800	C	170	X4	20	D	C	12	E	
Asia Pacific				317470-371		Thailand			317470-281

The following Compaq 800 model uses configuration code **LN61** and includes a USB external diskette drive.									
C800	C	170	X3	20	D	C	25	E	
Australia/New Zealand			322537-011						

The following Compaq 800 model uses configuration code **LN62.**									
C800	C	170	X3	20	D	C	25	E	
Australia/New Zealand			322628-011						

Table 1-3
Compaq Presario 3000 Models

The following Compaq Presario 3000 model features:

- TouchPad pointing device
- 56KB/s modem and 10/100 NIC
- 1-year warranty on parts and labor
- Microsoft Windows XP Home
- 4.0 AHr Li ion battery pack
- 120W AC adaptor

P3050	P	306	S6	60	W	C	51	E	
United States			DC925A ABA						

The following Compaq Presario 3000 model uses configuration code **LLN2** and features:

- TouchPad pointing device
- 56KB/s modem and 10/100 NIC
- Bluetooth wireless Local Area Network
- 1-year warranty on parts and labor
- Microsoft Windows XP Home
- 4.0 AHr Li ion battery pack
- 120W AC adapter

P3020	P	306	S6	60	W	C	51	E	
United States			314615-001						

The following Compaq Presario 3000 model uses configuration code **LLN3** and features:

- TouchPad pointing device
- 56KB/s modem and 10/100 NIC
- Bluetooth wireless Local Area Network
- 1-year warranty on parts and labor
- Microsoft Windows XP Home
- 4.0 AHr Li ion battery pack
- 90W AC adapter

P3017	P	280	S6	60	W	C	51	E	
United States			315601-001						

Table 1-3
Compaq Presario 3000 Models *(Continued)*

The following Compaq Presario 3000 model uses configuration code **LLN5** and features:

■   TouchPad pointing device
■   56KB/s modem and 10/100 NIC
■   Bluetooth wireless Local Area Network
■   1-year warranty on parts and labor
■   Microsoft Windows XP Home
■   4.0 AHr Li ion battery pack
■   90W AC adapter

P3019	P	280	S6	80	W	C	10	E	
United States				315603-001					

The following Compaq Presario 3000 model uses configuration code **LF51** and features:

■   TouchPad pointing device
■   56KB/s modem and 10/100 NIC
■   1-year warranty on parts and labor
■   Microsoft Windows XP Home
■   4.0 AHr Li ion battery pack
■   90W AC adapter

P3008	P	240	S6	40	W	C	51	E	
United States				315955-001					

The following Compaq Presario 3000 model uses configuration code **LLN1** and features:

■   TouchPad pointing device
■   56KB/s modem and 10/100 NIC
■   1-year warranty on parts and labor
■   Microsoft Windows XP Home
■   4.0 AHr Li ion battery pack
■   90W AC adapter

P3015	P	240	S6	60	W	C	51	E	
United States				314614-001					

Table 1-3
Compaq Presario 3000 Models *(Continued)*

The following Compaq Presario 3000 model uses configuration code **LMR3** and features:

■ TouchPad pointing device
■ 56KB/s modem and 10/100 NIC
■ 1-year warranty on parts and labor
■ Microsoft Windows XP Home
■ 4.0 AHr Li ion battery pack
■ 90W AC adapter

P3015	P	240	S6	60	W	C	51	E	
United States			321457-001						

The following Compaq Presario 3000 model features:
■ TouchPad pointing device
■ 56KB/s modem and 10/100 NIC
■ 1-year warranty on parts and labor
■ Microsoft Windows XP Home
■ 4.0 AHr Li ion battery pack

P3045	P	240	S6	60	W	C	51	E	

The following Compaq Presario 3000 model uses configuration code **LF52** and features:
■ TouchPad pointing device
■ 56KB/s modem and 10/100 NIC
■ 1-year warranty on parts and labor
■ Microsoft Windows XP Home
■ 4.0 AHr Li ion battery pack

P3005	P	200	S6	40	W	C	51	E	
United States			307601-001						

1.2 **Features**

- The following processors are available, varying by notebook model:

  - ❏ The Compaq 800 features a 2.4-, 2.0-, or 1.8-GHz Intel Pentium 4 processor with 512-KB integrated L2 cache, or a 1.8- or 1.7-GHz Intel Celeron processor with 256-KB integrated L2 cache

  - ❏ The Compaq Presario 3000 features a 3.06-, 2.8-, 2.4-, or 2.0-GHz Intel Pentium 4 processor with 512-KB integrated L2 cache

- A minimum of 128-MB high-performance Synchronous DRAM (SDRAM), expandable to 1.0 GB

- Microsoft Windows XP Home

- 16.0-inch SXGA (1280 × 1024) or 15.0-, 14.1-, or 13.3-inch XGA (1024 × 768), TFT display with over 16.7 million colors, varying by notebook model

- SiS 4X Accelerated Graphics Port (AGP) graphics processor with 32 or 64 MB DDR shared video memory

- Full-size Windows 98 keyboard with TouchPad pointing device

- 10/100 network interface card (NIC) and 56KB/s V.92 modem integrated on the system board

- AC Link audio

- 12-cell Li ion or 10-cell NiMH battery pack

- ■ Support for the following optical drives:
  - ❏ 8X Max DVD-ROM drive
  - ❏ 8X Max DVD-CD/RW combination drive
- ■ Support for one Type I PC Card slot with support for both 32-bit CardBus and 16-bit PC Cards
- ■ External 120 or 90 W AC adapter with 3-wire power cord
- ■ 80-, 60-, 40-, or 20-GB high-capacity hard drive, varying by notebook model
- ■ Connectors for:
  - ❏ Stereo line out/headphone
  - ❏ Mono microphone
  - ❏ Infrared
  - ❏ Parallel devices
  - ❏ External monitor
  - ❏ RJ-45 network
  - ❏ Universal Serial Bus 2.0 (4)
  - ❏ TV out
  - ❏ RJ-11 modem
  - ❏ AC power
  - ❏ IEEE-1394 digital

1.3 Clearing a Password

If the notebook you are servicing has an unknown password, follow these steps to clear the password. These steps also clear CMOS:

1. Prepare the notebook for disassembly (refer to Section 5.3, "Preparing the Notebook for Disassembly," for more information).

2. Remove the real time clock (RTC) battery (refer to Section 5.16, "RTC Battery").

3. Wait approximately five minutes.

4. Replace the RTC battery and reassemble the notebook.

5. Connect AC power to the notebook. Do **not** reinsert any battery packs at this time.

6. Turn on the notebook.

All passwords and all CMOS settings have been cleared.

1.4 Power Management

The notebook comes with power management features that extend battery operating time and conserve power. The notebook supports the following power management features:

■ Standby

■ Hibernation

■ Setting customization by the user

■ Hotkeys for setting level of performance

■ Battery calibration

■ Lid switch Standby/resume

■ Power/Standby button

■ Advanced Configuration and Power Management (ACP) compliance

1.5 Notebook External Components

The external components on the front and right side of the notebook are shown in Figure 1-2 and described in Table 1-4.
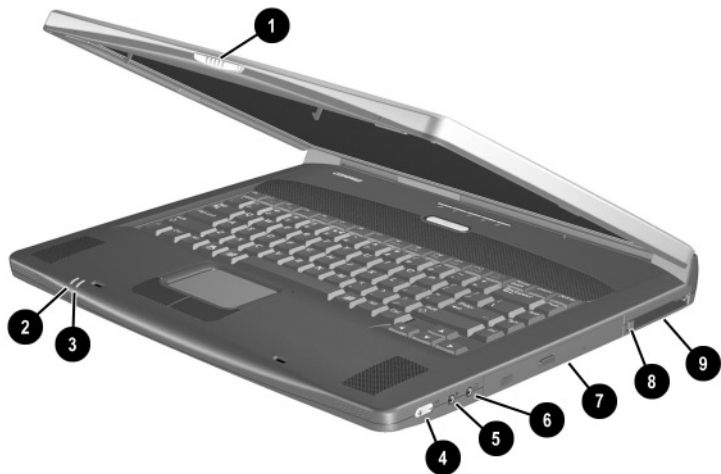
Figure 1-2. Front and Right Side Components

Table 1-4
Front and Right Side Components

Item	Component	Function
1	Display release latch	Opens the notebook.
2	Power/Standby light	On: Power is turned on.
		Off: Power is turned off.
		Blinking: Notebook is in Standby mode or a critical low battery condition exists

Table 1-4
Front and Right Side Components *(Continued)*

Item	Component	Function
3	Battery light	On: A battery pack is charging. Blinking: A battery pack that is the only available power source has reached a low-battery condition.
4	Volume control buttons	Adjust the volume of the stereo speakers.
5	Mono microphone jack	Connects a mono microphone.
6	Stereo speaker/ headphone jack	Connects stereo speakers, headphones, headset, or television audio. The external speakers are disabled when a device is connected to this jack.
7	Optical drive	Accepts optical devices, such as a CD-ROM, DVD-ROM, or CD-RW drive.
8	PC Card eject button	Ejects a PC Card from the PC Card slot.
9	PC Card slot	Supports a 32-bit (CardBus) or 16-bit PC Card.

The notebook rear panel and left side components are shown in Figure 1-3 and described in Table 1-5.

Figure 1-3. Rear Panel and Left Side Components

Table 1-5
Rear Panel and Left Side Components

Item	Component	Function
1	Infrared port	Provides wireless communication between the notebook and other infrared-equipped devices using an infrared beam.
2	Parallel connector	Connects a parallel device.
3	External monitor connector	Connects an external monitor or overhead projector.

Table 1-5
Rear Panel and Left Side Components *(Continued)*

Item	Component	Function
4	Network connection lights (2)	Both lights off: The notebook is not connected to a LAN. Both lights on: The notebook is connected to a LAN with a 100 MB/s link. Green light on and yellow light off: The notebook is connected to a LAN with a 10 MB/s link. Green light flashing: Information is transmitting through the LAN.
5	RJ-45 network jack	Connects the network cable. A network cable is not included with the notebook.
6	USB ports (4)	Connect 1.1- and 2.0 USB-compliant devices.
7	Composite TV connector	Connects a television, VCR, camcorder, or overhead projector.
8	RJ-11 modem jack	Connects the modem cable to an internal modem. A modem cable is included with internal modem models.
9	DC power connector	Connects any one of the following: ■ AC adapter ■ Optional automobile power adapter/charger ■ Optional aircraft power adapter
10	Security cable slot	Attaches an optional security cable.
11	Hard drive bay	Supports the removable primary hard drive. The hard drive is secured to the notebook by four screws.
12	1394 connector	Connects IEEE 1394-compliant products, such as digital camcorders, video editing equipment, VCRs, cameras, and audio players. A 1394 firewire cable is required for use with this connector.

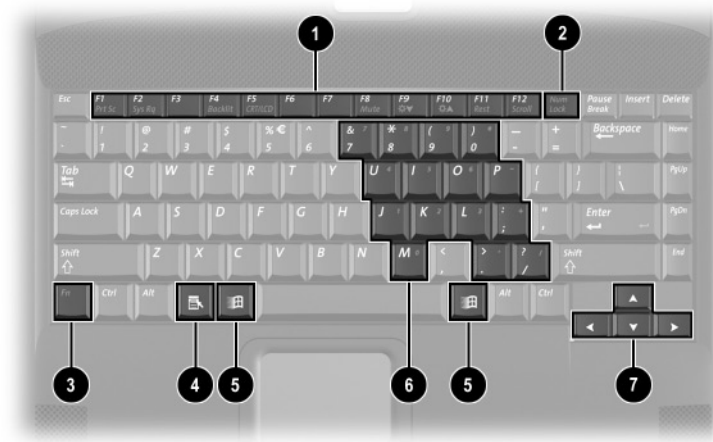The notebook keyboard components are shown in Figure 1-4 and described in Table 1-6.

Figure 1-4. Keyboard Components

**Table 1-6
Keyboard Components**

Item	Component	Function
1	**F1** through **F12** function keys	Perform preset functions.
2	**Num lock** key	On: Num lock is on and the internal keypad is enabled.

Table 1-6
Keyboard Components *(Continued)*

Item	Component	Function
3	**Fn** key	Used with hotkeys to perform preset hotkey functions.
4	Application key	Displays a menu when using a Microsoft application. The menu is the same one that is displayed by pressing the right mouse button.
5	Windows logo keys	Display the Windows Start menu.
6	Internal keypad	Converts keys to numeric keypad.
7	Cursor control keys	Move the cursor around the screen.

The notebook top components are shown in Figure 1-5 and
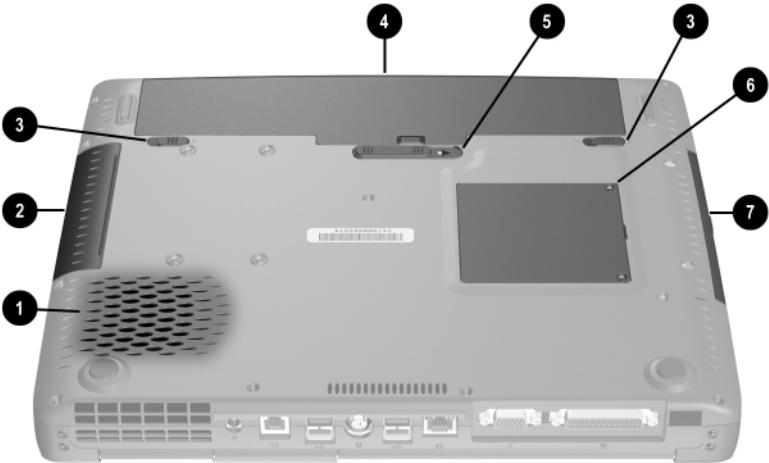described in Table 1-7.
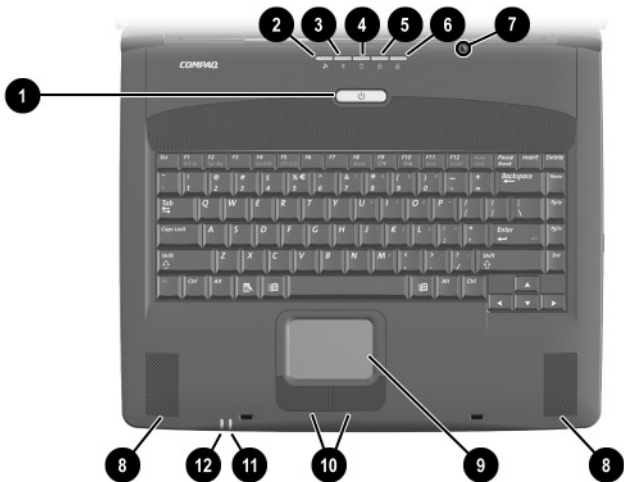
Figure 1-5. Top Components

Table 1-7
Top Components

Item	Component	Function
1	Power button	Turns on the notebook. Use the operating system Shut Down command to turn off the notebook.
2	Wireless LAN activity light	Off: The internal wireless LAN is off or not installed.
		On: The internal wireless LAN is on and connected to a network.
		Flashing: The internal wireless LAN is on, but is not connected to a network or properly configured.

Table 1-7
Top Components *(Continued)*

Item	Component	Function
3	Power light	On: Power is turned on.
		Blinking: Notebook is in Standby. The power light also blinks if a battery pack that is the only available power source reaches a low-battery condition.
4	Drive indicator light	Turns on when the hard drive, CD-, or DVD-ROM drive is accessed.
5	Num lock light	On: **Num lock** is on and the embedded numeric keypad is enabled.
6	Caps lock light	On: **Caps lock** is on.
7	Display lid switch	Turns off the notebook display if the notebook is closed while on.
8	Stereo speakers	Produce stereo sound.
9	TouchPad	Moves the mouse cursor, selects, and activates.
10	TouchPad buttons	Function like the left and right mouse buttons on an external mouse.
11	Battery light	On: A battery pack is charging.
		Blinking: A battery pack that is the only available power source has reached a low-battery condition.
12	Power/Standby light	On: Power is turned on.
		Off: Power is turned off.
		Blinking: Notebook is in Standby.

The external components on the bottom of the notebook are shown in Figure 1-6 and described in Table 1-8.

Figure 1-6. Bottom Components

Table 1-8
Bottom Components

Item	Component	Function
1	Vent	Allows airflow to cool internal components.
	⚠ **CAUTION:** To prevent damage, the notebook shuts down if an overheating condition occurs. Do not block the cooling vent. Avoid placing the notebook on a blanket, rug, or other flexible surface that may cover the vent area.	
2	Hard drive bay	Supports the primary hard drive. The hard drive is secured to the notebook by four screws.

Table 1-8
Bottom Components *(Continued)*

Item	Component	Function
3	Battery pack lock latches	Secure the battery pack and battery compartment space saver in the battery compartment.
4	Battery bay	Accepts an 8-cell Li ion battery pack or battery compartment space saver.
5	Battery pack release switch	Releases the battery pack from the battery compartment.
6	Memory expansion compartment	Covers the memory expansion compartment that contains two memory expansion slots for memory expansion boards. Only PC2100-compliant memory modules can be used.
7	Optical drive bay	Accepts a CD-ROM, CD-RW, DVD-ROM, or DVD/CD-RW drive.

1.6 Design Overview

This section presents a design overview of key parts and features of the notebook. Refer to Chapter 3, "Illustrated Parts Catalog," to identify replacement parts, and Chapter 5, "Removal and Replacement Procedures," for disassembly steps. The system board provides the following device connections:

■ Memory expansion board

■ Hard drive

■ Display

■ Keyboard and TouchPad

■ Audio

■ Intel Pentium 4 and Celeron processors

■ Fan

■ PC Card

■ Modem or modem/NIC

The notebook uses an electrical fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software applications. Exhaust air is displaced through the ventilation grill located on the left side of the notebook.

⚠ **CAUTION:** To properly ventilate the notebook, allow at least a 7.6-cm (3-inch) clearance around all sides of the notebook.

2

Troubleshooting

⚠️ **WARNING:** Only authorized technicians trained by Compaq should 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 modification may void any warranty or exchange allowances.

2.1 Computer Setup and Diagnostics Utilities

The notebook features two Compaq system management utilities:

■ **Computer Setup**—A system information and customization utility that can be used even when your operating system is not working or will not load. This utility includes settings that are not available in Windows.

■ **Compaq Diagnostics**—A system information and diagnostic utility that is used within your Windows operating system. Use this utility whenever possible to:

❏ Display system information.

❏ Test system components.

❏ Troubleshoot a device configuration problem in Windows 2000, Windows XP Professional, or Windows XP Home.

✎ It is not necessary to configure a device connected to a USB connector on the notebook or an optional docking base.

Using Computer Setup

Information and settings in Computer Setup are accessed from the File, Security, or Advanced menus. The menus are described in detail in the following sections.

1. Turn on or restart the notebook. Press **F10** while the F10 = ROM Based Setup message is displayed in the lower-left corner of the screen.

   ❏ To change the language, press **F2.**

   ❏ To view navigation information, press **F1.**

   ❏ To return to the Computer Setup menu, press **esc.**

2. Select the File, Security, or Advanced menu.

3. To close Computer Setup and restart the notebook:

   ❏ select File > Save Changes and Exit and press **enter.**

   or

   ❏ select File > Ignore Changes and Exit and press **enter.**

4. When you are prompted to confirm your action, press **F10.**

Selecting from the File Menu

Table 2-1
File Menu

Select	To Do This
System Information	■ View identification information about the notebook, a docking base, and any battery packs in the system. ■ View specification information about the processor, memory and cache size, and system ROM.
Save to Floppy	Save system configuration settings to a diskette.
Restore from Floppy	Restore system configuration settings from a diskette.
Restore Defaults	Replace configuration settings in Computer Setup with factory default settings. (Identification information is retained.)
Ignore Changes and Exit	Cancel changes entered during the current session, then exit and restart the notebook.
Save Changes and Exit	Save changes entered during the current session, then exit and restart the notebook.

Selecting from the Security Menu

Table 2-2
Security Menu

Select	To Do This
Setup Password	Enter, change, or delete a setup password. (The setup password is called an administrator password in Compaq Computer Security, a program accessed from the Windows Control Panel.)
Power-on Password	Enter, change, or delete a power-on password.
DriveLock Passwords	Enable/disable DriveLock; change a DriveLock User or Master password.
	✎ DriveLock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the notebook.
Password Options Password options can be selected only when a power-on password has been set.	Enable/disable: ■ QuickLock ■ QuickLock on Standby ■ QuickBlank ✎ To enable QuickLock on Standby or QuickBlank, you must first enable QuickLock.
Device Security	Enable/disable: ■ Ports or diskette drives* ■ Diskette write* ■ CD-ROM or diskette startup ✎ Settings for a DVD-ROM can be entered in the CD-ROM field.
System IDs	Enter identification numbers for the notebook, a docking base, and all battery packs in the system.
*Not applicable to SuperDisk LS-120 drives.	

Selecting from the Advanced Menu

Table 2-3
Advanced Menu

Select	To Do This
Language (or press **F2**)	Change the Computer Setup language.
Boot Options	Enable/disable: ■ QuickBoot, which starts the notebook more quickly by eliminating some startup tests. (If you suspect a memory failure and want to test memory automatically during startup, disable QuickBoot.) ■ MultiBoot, which sets a startup sequence that can include most bootable devices and media in the system.
Device Options	■ Enable/disable the embedded numeric keypad at startup. ■ Enable/disable multiple standard pointing devices at startup. (To set the notebook to support only a single, usually nonstandard, pointing device at startup, select Disable.) ■ Enable/disable USB legacy support for a USB keyboard. (When USB legacy support is enabled, the keyboard works even when a Windows operating system is not loaded.) ■ Set an optional external monitor or overhead projector connected to a video card in a docking base as the primary device. (When the notebook display is set as secondary, the notebook must be shut down before undocking from a docking base.)

Table 2-3
Advanced Menu *(Continued)*

Select	To Do This
Device Options *(continued)*	■ Change the parallel port mode from EPP (Enhanced Parallel Port [default]) to standard, bidirectional, EPP or ECP (Enhanced Capabilities Port).
	■ Set video-out mode to NTSC (default), PAL, NTSC-J, or PAL-M.*
	■ Enable/disable all settings in the SpeedStep window. (When Disable is selected, the notebook runs in Battery Optimized mode.)
	■ Specify how the notebook recognizes multiple identical docking bases that are identically equipped. (Select Disable to recognize the docking bases as a single docking base; select Enable to recognize the docking bases individually, by serial number.)
	■ Enable/disable the reporting of the processor serial number by the processor to the software.
HDD Self-Test Options	Run a quick comprehensive self-test on hard drives in the system that support the test features.

*Video modes vary even within regions. However, NTSC is common in North America; PAL, in Europe, Africa, and the Middle East; NTSC-J, in Japan; and PAL-M, in Brazil. Other South and Central American regions may use NTSC, PAL, or PAL-M.

2.2 Using Compaq Diagnostics

When you access Compaq Diagnostics, a scan of all system components is displayed on the screen before the Compaq Diagnostics window opens.

You can display more or less information from anywhere within Compaq Diagnostics by selecting Level on the menu bar.

Compaq Diagnostics is designed to test Compaq components. If non-Compaq components are tested, the results may be inconclusive.

Obtaining, Saving, or Printing Configuration Information

1. Access Compaq Diagnostics by selecting Start > Settings > Control Panel > Compaq Diagnostics.

2. Select Categories, then select a category from the drop-down list.

   ❏ To save the information, select File > Save As.

   ❏ To print the information, select File > Print.

3. To close Compaq Diagnostics, select File > Exit.

Obtaining, Saving, or Printing Diagnostic Test Information

1. Access Compaq Diagnostics by selecting Start > Settings > Control Panel > Compaq Diagnostics.

2. Select the Test tab.

3. In the scroll box, select the category or device you want to test.

4. Select a test type:

   ❏ **Quick Test**—Runs a quick, general test on each device in a selected category.

   ❏ **Complete Test**—Performs maximum testing on each device in a selected category.

   ❏ **Custom Test**—Performs maximum testing on a selected device.

      ◆ To run all tests for your selected device, select the Check All button.

      ◆ To run only the tests you select, select the Uncheck All button, then select the checkbox for each test you want to run.

5. Select a test mode:

   ❏ **Interactive Mode**—Provides maximum control over the testing process. You determine whether the test was passed or failed and may be prompted to insert or remove devices.

   ❏ **Unattended Mode**—Does not display prompts. If errors are found, they are displayed when testing is complete.

6. Select the Begin Testing button.

7. Select a tab to view a test report:

   ❏ **Status tab**—Summarizes the tests run, passed, and failed during the current testing session.

   ❏ **Log tab**—Lists tests run on the system, the number of times each test has run, the number of errors found on each test, and the total run time of each test.

   ❏ **Error tab**—Lists all errors found in the notebook with their error codes.

8. Select a tab to save the report:

   ❏ **Log tab**—Select the Log tab Save button.

   ❏ **Error tab**—Select the Error tab Save button.

9. Select a tab to print the report:

   ❏ **Log tab**—Select File > Save As, then print the file from your folder.

2.3 Troubleshooting Flowcharts

Table 2-4
Troubleshooting Flowcharts Overview

Flowchart	Description
2.1	Initial troubleshooting
2.2	No power, part 1
2.3	No power, part 2
2.4	No power, part 3
2.5	No power, part 4
2.6	No video, part 1
2.7	No video, part 2
2.8	Nonfunctioning docking station
2.9	No operating system (OS) loading
2.10	No OS loading from hard drive, part 1
2.11	No OS loading from hard drive, part 2
2.12	No OS loading from hard drive, part 3
2.13	No OS loading from CD- or DVD-ROM drive
2.14	No audio, part 1
2.15	No audio, part 2
2.16	Nonfunctioning device
2.17	Nonfunctioning keyboard
2.18	Nonfunctioning pointing device
2.19	No network or modem connection

Flowchart 2.1—Initial Troubleshooting

```
        ┌──────────────────┐
        │      Begin       │
        │ troubleshooting. │
        └──────────────────┘
                 │
                 ▼                N        ┌──────────────┐
            ◇ Is there ◇ ─────────────────▶│   Go to      │
            ◇  power?  ◇                    │ Section 2.2, │
                 │                          │  No Power.   │
               Y │                          └──────────────┘
                 ▼                N        ┌──────────────┐
            ◇ Beeps,   ◇ ─────────────────▶│   Check      │
            ◇ LEDs, or ◇                    │ LED board,   │
            ◇ error    ◇                    │  speaker     │
            ◇ messages?◇                    │ connections. │
                 │                          └──────────────┘
               Y │
                 ▼                N        ┌──────────────┐
            ◇ Is there ◇ ─────────────────▶│   Go to      │
            ◇ video?   ◇                    │ Section 2.6, │
            ◇ (no boot)◇                    │  No Video.   │
                 │                          └──────────────┘
               Y │
                 ▼                N        ┌──────────────┐
            ◇ Is the OS◇ ─────────────────▶│    Go to      │
            ◇ loading? ◇                    │ Section 2.9, │
                 │                          │ No OS Loading.│
               Y │                          └──────────────┘
                 ▼                N        ┌──────────────┐
            ◇ Is there ◇ ─────────────────▶│   Go to      │
            ◇ sound?   ◇                    │ Section 2.15,│
                 │                          │  No Audio.   │
               Y │                          └──────────────┘
```
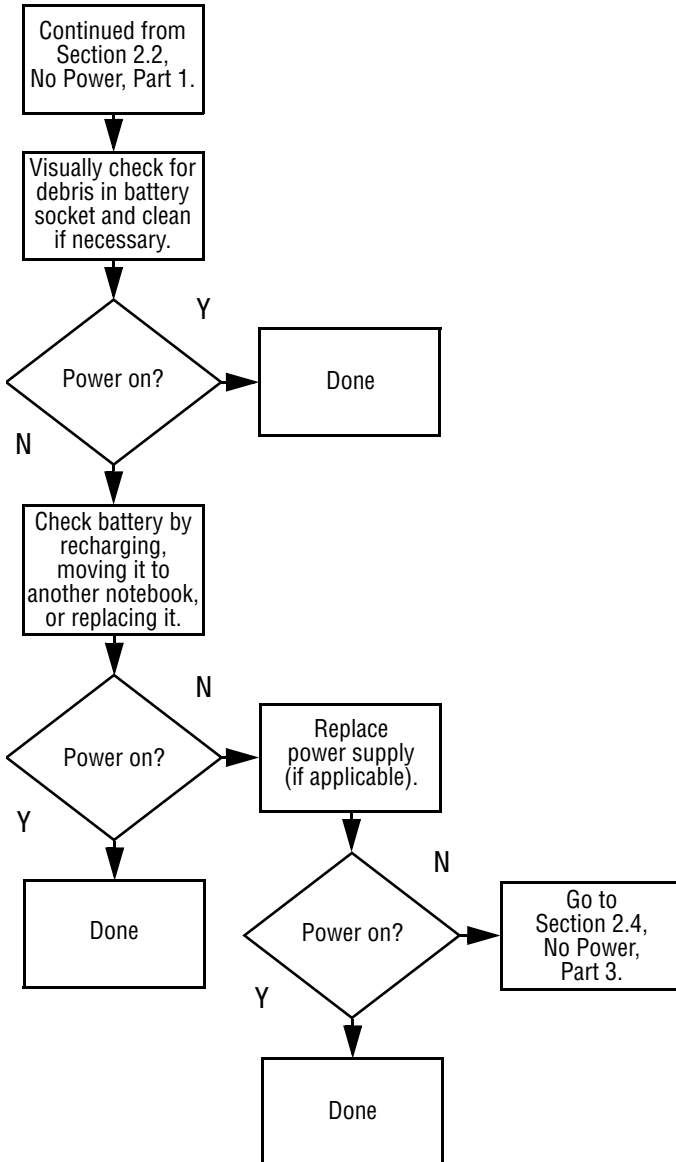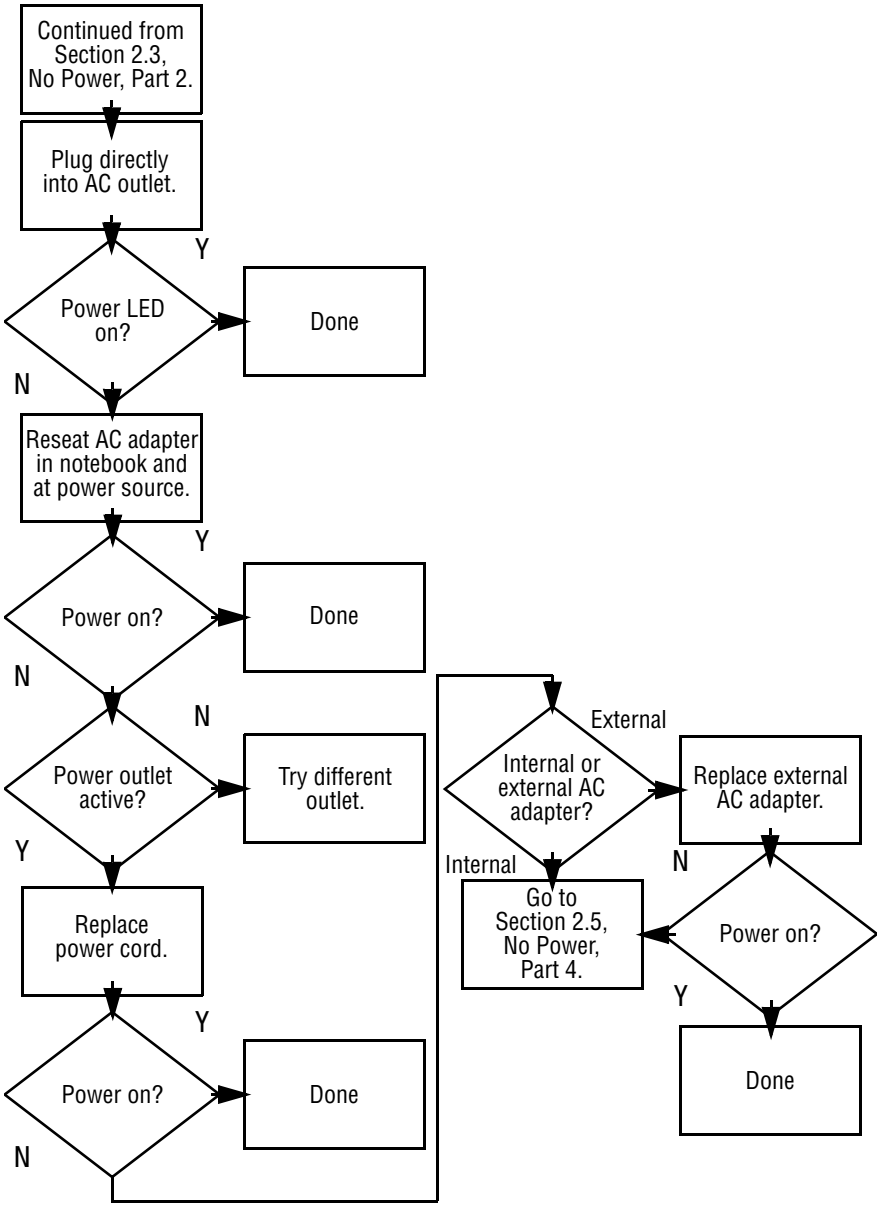
◇ All drives working? ◇ — N → Go to Section 2.16, Nonfunctioning Device.

◇ Keyboard/ pointing device working? ◇ — N → Go to Section 2.17, Nonfunctioning Keyboard, or Section 2.18, Nonfunctioning Pointing Device.

◇ Connecting to network or modem? ◇ — N → Go to Section 2.19, No Network or Modem.

End

Flowchart 2.2—No Power, Part 1

```
┌─────────────┐
│  No Power   │
│ (power LED  │
│   is off).  │
└─────────────┘
       │
       ▼
┌─────────────┐
│ Remove from │
│docking      │
│station      │
│(if applicable).│
└─────────────┘
       │
       ▼
```

Power up on battery power? —N→ *Reset power. → Power up on battery power? —N→ Go to Section 2.3, No Power, Part 2.

Y↓   Y↓

Power up on AC power? —N→ *Reset power. → Power up on AC power? —N→ Go to Section 2.4, No Power, Part 3.

Y↓   Y↓

Power up in docking station? —Y→ Done

N↓

1. Reseat the power cables in the docking station and at the AC outlet.
2. Ensure the AC power source is active.
3. Ensure that the power strip is working.

│
▼

Done ←Y— Power up in docking station? —N→ Go to Section 2.8, Nonfunctioning Docking Station.

*NOTES:
1. On some models there is a separate reset button.
2. On some models the notebook may be reset using the Standby switch and either the lid switch or the main power switch.

Flowchart 2.3—No Power, Part 2

```
┌─────────────────┐
│  Continued from │
│   Section 2.2,  │
│ No Power, Part 1.│
└─────────────────┘
         │
         ▼
┌─────────────────┐
│ Visually check  │
│ for debris in   │
│ battery socket  │
│ and clean       │
│ if necessary.   │
└─────────────────┘
         │
         ▼
                    Y
     ╱Power on?╲ ──────────▶  ┌──────────┐
     ╲         ╱              │   Done   │
       N                      └──────────┘
         │
         ▼
┌─────────────────┐
│ Check battery by│
│  recharging,    │
│  moving it to   │
│another notebook,│
│ or replacing it.│
└─────────────────┘
         │
         ▼
                    N          ┌──────────┐
     ╱Power on?╲ ──────────▶  │ Replace  │
     ╲         ╱              │power supply│
       Y                      │(if applicable).│
         │                    └──────────┘
         ▼                          │
   ┌──────────┐                     ▼
   │   Done   │                         N
   └──────────┘       ╱Power on?╲ ──────────▶ ┌──────────┐
                      ╲         ╱              │  Go to   │
                        Y                      │Section 2.4,│
                        │                      │ No Power, │
                        ▼                      │  Part 3.  │
                  ┌──────────┐                 └──────────┘
                  │   Done   │
                  └──────────┘
```

Flowchart 2.4—No Power, Part 3

Continued from Section 2.3, No Power, Part 2.

Plug directly into AC outlet.

Power LED on? — Y → Done

N

Reseat AC adapter in notebook and at power source.

Power on? — Y → Done

N

Power outlet active? — N → Try different outlet.

Y

Replace power cord.

Power on? — Y → Done

N

Internal or external AC adapter? — External → Replace external AC adapter.

Internal

Go to Section 2.5, No Power, Part 4.

Power on? — N

Power on? — Y → Done

Flowchart 2.5—No Power, Part 4

```
┌─────────────────┐
│ Continued from  │
│  Section 2.4,   │
│ No Power, Part 3.│
└─────────────────┘
         │
         ▼
┌─────────────────┐
│     Open        │
│   notebook.     │
└─────────────────┘
         │
         ▼
                        Y    ┌─────────────────┐
      ◇                      │  Reseat loose   │
   Loose or    ──────────▶   │ components and  │
   damaged                   │   boards and    │
    parts?                   │ replace damaged │
      ◇                      │     items.      │
         │                   └─────────────────┘
         N
         │
         ▼
┌─────────────────┐
│     Close       │
│  notebook and   │
│    retest.      │
└─────────────────┘
         │
         ▼
              N
      ◇
   Power on?  ──────────▶
      ◇
         │
         Y
         │
         ▼
┌─────────────────┐
│                 │
│     Done        │
│                 │
└─────────────────┘
```

Replace the following items (if applicable).
Check notebook operation after each
replacement:

1. Internal DC-DC converter*
2. Internal AC adapter
3. Processor board*
4. System board*

*__NOTE:__ Replace these items as a set to
prevent shorting out among components.

Flowchart 2.6—No Video, Part 1

No Video.

Standalone or Docking Station?

→ Docking Station → Go to Section 2.7, No Video, Part 2.

*NOTE: To change from internal to external display, use the hotkey combination.

Stand-alone

Internal or external display*?

→ Internal → Adjust brightness. → Video OK? → Y → Done

N

Press lid switch to ensure operation. → Video OK? → Y → Done

N

External

Adjust brightness. → Video OK? → Y → Done

N

Check for bent pins on cable. → Video OK? → N → Try another display.

Y

Done

A

Replace the following one at a time. Test after each replacement.
1. Cable between notebook and notebook display (if applicable)
2. Inverter board (if applicable)
3. Display
4. System board

→ Internal and external video OK? → N → Replace system board.

Y

Done

Flowchart 2.7—No Video, Part 2

```
Continued from
Section 2.6,
No Video, Part 1.
        │
        ▼
Remove
notebook from
docking station,
if connected.
        │
        ▼
Adjust
display
brightness.
        │
        ▼
                N
    Video OK?  ────────►  Go to "A" in
                          Section 2.6,
                          No Video, Part 1.
        │ Y
        ▼
Check that notebook is properly
seated in docking station, for
bent pins on cable, and for
monitor connection.
        │
        ▼
                Y
    Video OK?  ────────►  Done
        │ N
        ▼
Adjust external
monitor display.


Check brightness
of external
monitor.
        │
        ▼
                Y
    Video OK?  ────────►  Done
        │ N
        ▼
Try another
external
monitor.
        │
        ▼
Internal          Y
and external  ────────►  Done
video OK?
        │ N
        ▼
Go to Section 2.8,
Nonfunctioning
Docking Station.
```

Flowchart 2.8—Nonfunctioning Docking Station (if applicable)

```
┌─────────────────┐
│ Nonfunctioning  │
│ Docking Station.│
└────────┬────────┘
         │
         ▼
┌─────────────────┐
│ Reseat power    │
│ cord in docking │
│ station and     │
│ power outlet.   │
└────────┬────────┘
         │
         ▼
┌─────────────────┐                    ┌─────────────────┐
│ Check voltage   │                    │ Reinstall       │
│ setting on      │                    │ notebook into   │
│ docking station.│                    │ docking station.│
└────────┬────────┘                    └────────┬────────┘
         │                                      │
         ▼                                      ▼        Y
┌─────────────────┐                         ╱Docking╲  ──────► ┌────────┐
│ Reset monitor   │                        ╱ station  ╲        │  Done  │
│ cable connector │                        ╲operating?╱        └────────┘
│ at docking stn. │                         ╲        ╱
└────────┬────────┘                       N  ╲      ╱
         │                    Y                 │
      ╱Docking╲  ──────► ┌────────┐             ▼
     ╱ station  ╲        │  Done  │  ┌──────────────────────────────────┐
     ╲operating?╱        └────────┘  │ Replace the following docking    │
      ╲        ╱                      │ station components one at a time.│
    N  ╲      ╱                       │ Check notebook operation after   │
         │                           │ each replacement.                │
         ▼                           │                                  │
┌─────────────────┐                  │ 1. Power supply                  │
│ Remove          │                  │ 2. I/O board                     │
│ notebook, reseat│                  │ 3. Backplane board               │
│ all internal    │                  │ 4. Switch box                    │
│ parts, and      │                  │ 5. Docking motor mechanism       │
│ replace any     │                  └──────────────────────────────────┘
│ damaged items in│
│ docking station.│
└────────┬────────┘
         │
         └──────────────────────────►
```

Flowchart 2.9—No Operating System (OS) Loading

```
┌─────────────┐
│   No OS     │
│  Loading.*  │
└─────────────┘
       │
       ▼
┌─────────────┐
│ Reseat power│
│cord in docking│
│  station and │
│ power outlet.│
└─────────────┘
       │
       │        ┌─────────────┐
       │        │ No OS loading│
       ├───────▶│from hard drive,│
       │        │   go to      │
       │        │ Section 2.10.│
       │        └─────────────┘
       │
       │        ┌─────────────┐
       │        │ No OS loading│
       │        │  from CD- or │
       ├───────▶│DVD-ROM drive,│
       │        │   go to      │
       │        │ Section 2.13.│
       │        └─────────────┘
       │
       │        ┌─────────────┐
       │        │ No OS loading│
       │        │from network, │
       └───────▶│   go to      │
                │ Section 2.19.│
                └─────────────┘
```

*NOTE: Before beginning troubleshooting,
always check cable connections, cable
ends, and drives for bent or damaged pins.

Flowchart 2.10—No OS Loading from Hard Drive, Part 1

```
        ┌─────────────┐
        │   OS not    │
        │ loading from│
        │ hard drive. │
        └──────┬──────┘
               │
               ▼
          ╱─────────╲              Y      ┌─────────────┐
         ╱ Nonsystem ╲────────────────────▶│   Go to     │
         ╲ disk       ╱                     │ Section 2.11,│
          ╲message? ╱                       │ No OS Loading│
           ╲───┬───╱                        │from Hard Drive,│
               │ N                          │   Part 2.    │
               ▼                            └─────────────┘
        ┌─────────────┐
        │   Reseat    │
        │  external   │
        │ hard drive. │
        └──────┬──────┘
               │
               ▼
          ╱─────────╲       Y            ┌─────────────┐
         ╱ OS loading?╲──────────────────▶│    Done     │
         ╲           ╱                     └─────────────┘
           ╲───┬───╱
               │ N
               ▼
          ╱─────────╲    N
         ╱   Boot    ╲──────────────┐
         ╲   from     ╱              │
          ╲  CD?    ╱                │
           ╲───┬───╱                 │
               │ Y                   │
               ▼                     │        ┌─────────────┐
        ┌─────────────┐              │        │ Change boot │
        │ Check the setup│           ├───────▶│  priority   │
        │ utility for correct│       │        │ through the │
        │ booting order. │           │        │setup utility │
        └──────┬──────┘              │        │ and reboot. │
               │                     │        └──────┬──────┘
               ▼                     │               │
          ╱─────────╲    N           │               │
         ╱   Boot    ╲───────────────┘               │
         ╲   from     ╱                               │
          ╲hard drive?╱                               ▼
           ╲───┬───╱                            ╱─────────╲
               │ Y           Y                 ╱   Boot    ╲      N   ┌─────────────┐
               ▼           ◀─────────────────── ╲   from     ╱──────────▶│   Go to     │
        ┌─────────────┐                          ╲hard drive?╱          │ Section 2.16,│
        │    Done     │                           ╲─────────╱           │Nonfunctioning│
        └─────────────┘                                                 │   Device.    │
                                                                        └─────────────┘
```
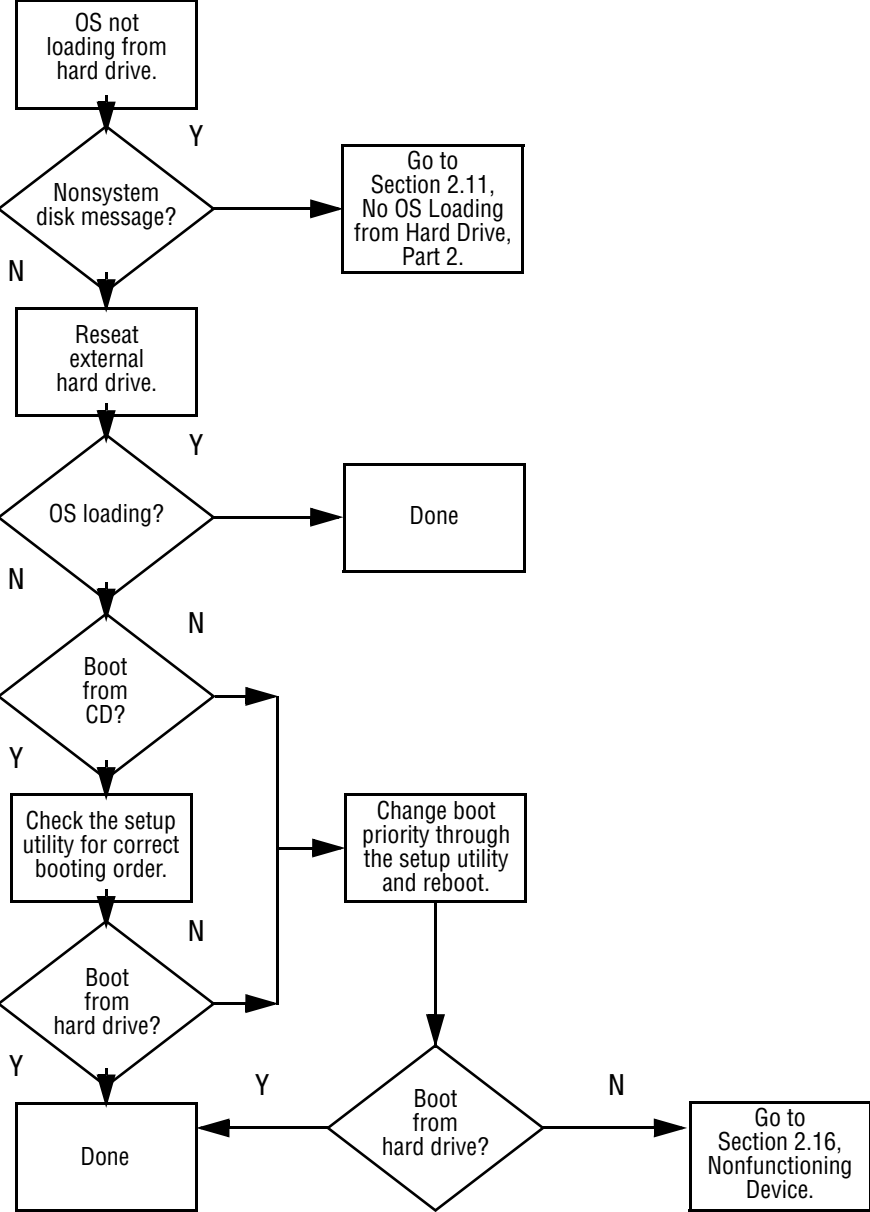
Flowchart 2.11—No OS Loading from Hard Drive, Part 2
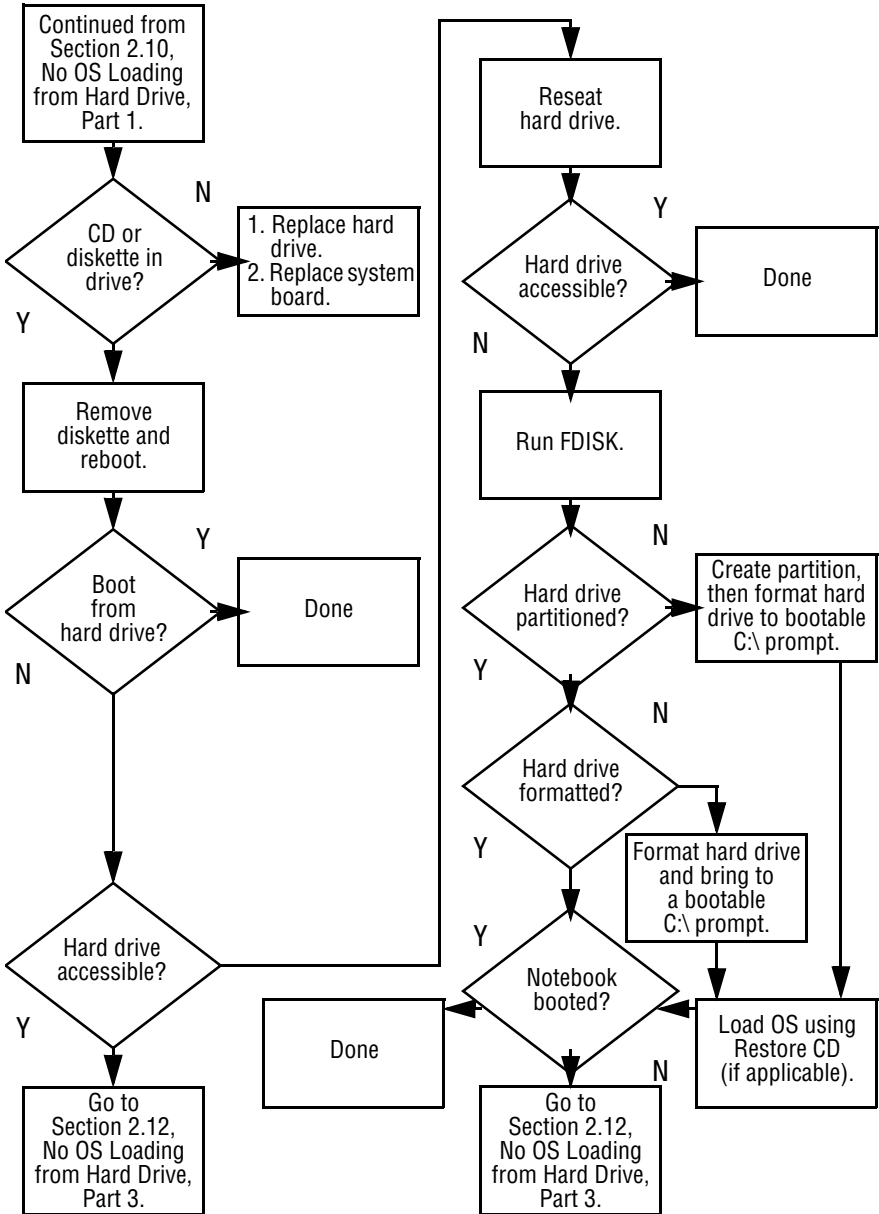
Flowchart 2.12—No OS Loading from Hard Drive, Part 3
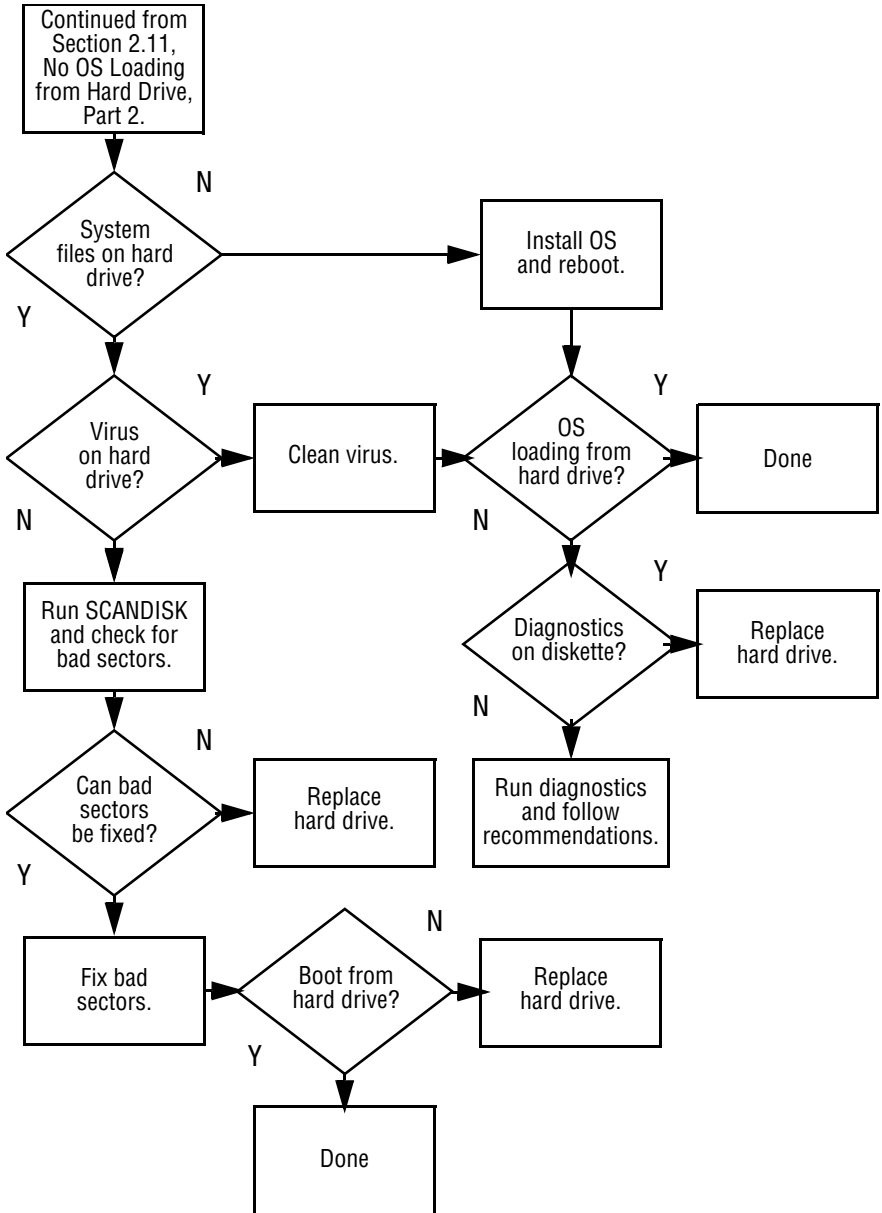
Flowchart 2.13—No OS Loading from CD- or DVD-ROM Drive
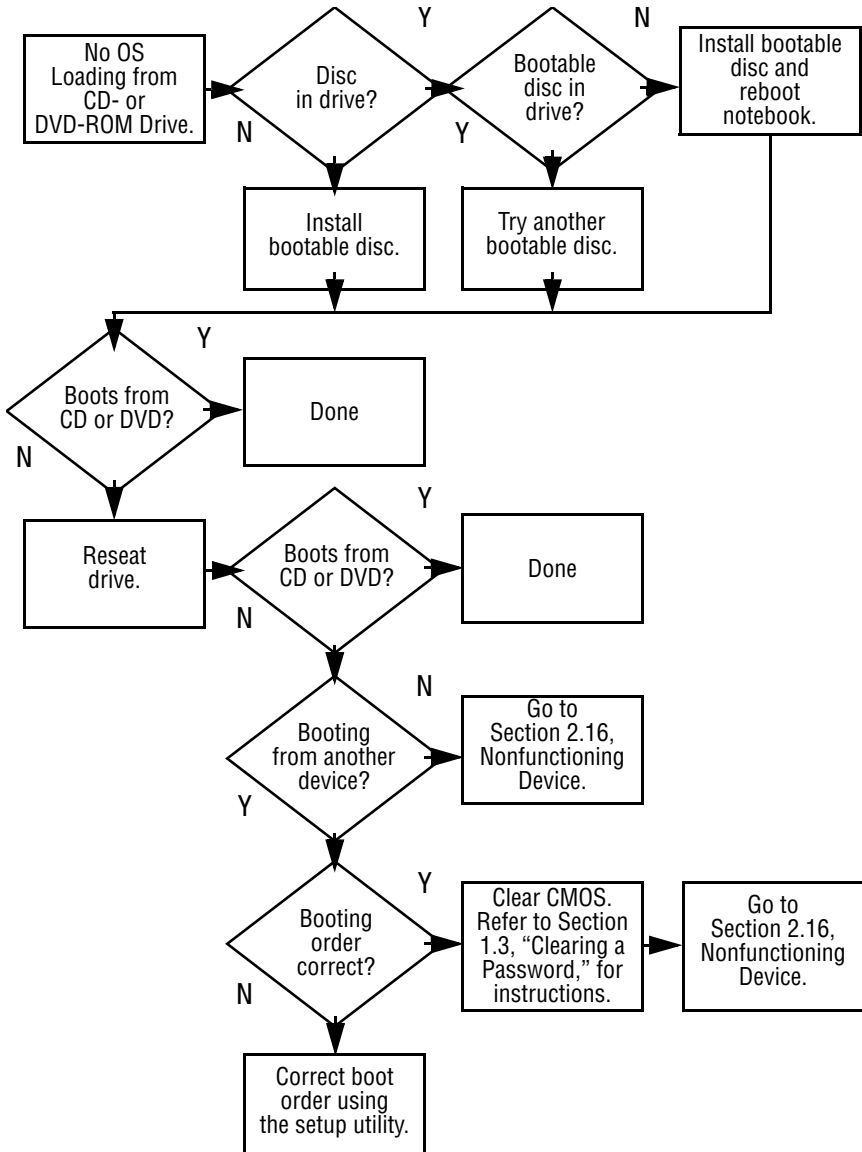
Flowchart 2.14—No Audio, Part 1

```
┌──────────┐   ┌──────────────┐         ◇            ┌──────────┐
│          │   │ Turn up audio│      Audio?    Y     │          │
│ No Audio.│──▶│ internally or│──▶  ◇       ◇──────▶ │   Done   │
│          │   │  externally. │      ◇     ◇         │          │
└──────────┘   └──────────────┘         ◇            └──────────┘
                                        │ N
```

Notebook in docking station (if applicable)? — Y → Undock → Internal audio? — N → Go to Section 2.15, No Audio, Part 2.

N → Go to Section 2.15, No Audio, Part 2.

Internal audio? — Y ↓

Replace the following docking station components one at a time as applicable. Check after each change.

1. Reseat docking station audio cable.
2. Replace audio cable.
3. Replace speaker.
4. Replace docking station audio board.
5. Replace backplane board.
6. Replace I/O board.

Audio? — Y → Done

Audio? — N → Go to Section 2.16, Nonfunctioning Device.

Flowchart 2.15—No Audio, Part 2
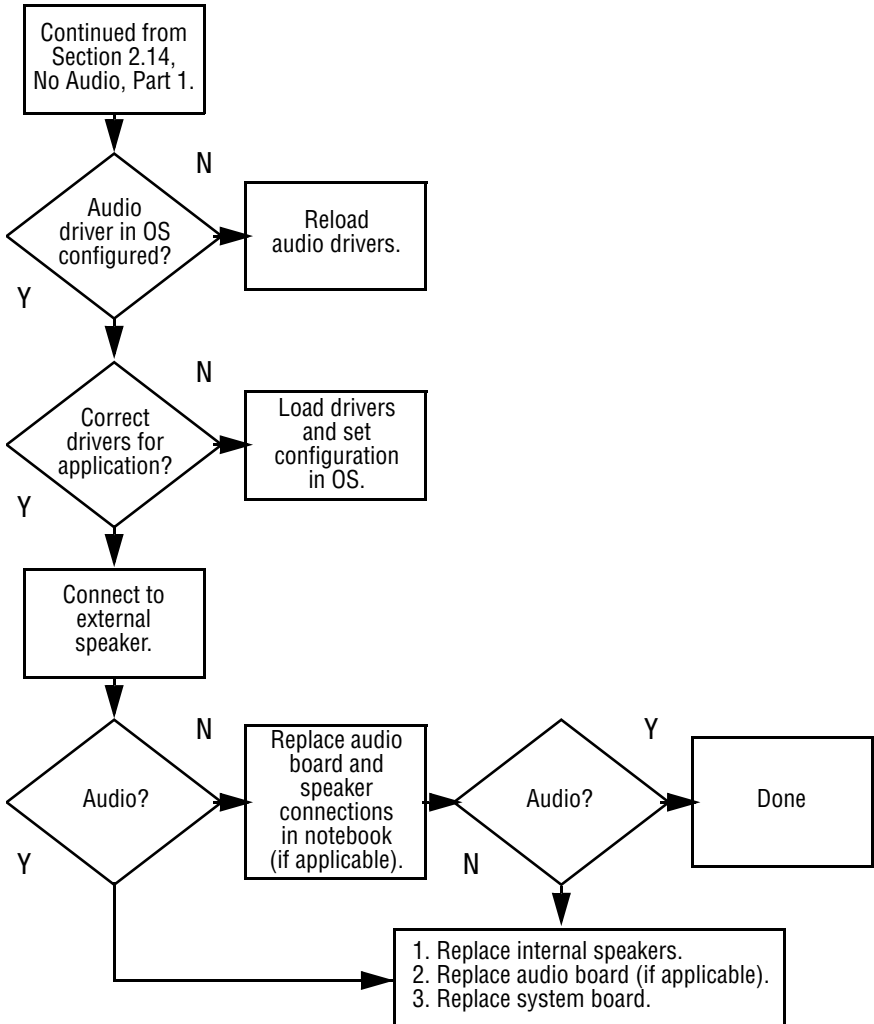
Flowchart 2.16—Nonfunctioning Device

```
              ┌─────────────────┐
              │  Nonfunctioning │
              │     device.     │
              └────────┬────────┘
                       │
              ┌────────▼────────┐
              │     Reseat      │
              │     device.     │
              └────────┬────────┘
                       │
    ┌──────────────────▼──────────────────┐
    │  Unplug the nonfunctioning device from │
    │  the notebook, inspect cables and plugs for │
    │  bent or broken pins or other damage.  │
    └──────────────────┬──────────────────┘
                       │
                       ▼         Y
┌──────────┐      ◇─────────◇      ┌──────────┐
│  Clear   │◄─────│ Any physical │─────►│  Fix or  │
│  CMOS.   │      │device detected?│     │ replace  │
└────┬─────┘      ◇─────────◇      │broken item.│
     │                 │ N         └──────────┘
     ▼
┌──────────────┐
│Reattach device.│   ┌──────────────┐   ┌──────────────┐
│Close notebook, │   │ Possible bad │   │   Go to      │
│ plug in power  │   │  hard drive. │   │ Section 2.9, │
│ and reboot.    │   │Replace drive.│   │No OS Loading.│
└──────┬───────┘    └──────────────┘   └──────────────┘
       │         N
       ▼                ┌──────────────┐
    ◇──────◇            │Possible bad NIC.│      N
    │ Device │          │Replace card.   │   ◇──────◇
    │ boots  │───►      │If integrated NIC,│──►│ Device │
    │properly?│         │replace system  │   │ boots  │
    ◇──────◇            │  board.        │   │properly?│
     │ Y               └──────────────┘   ◇──────◇
     ▼                                    │ Y
┌──────────┐          ┌──────────────┐   ▼
│   Done   │          │ Possible bad │  ┌──────────┐
└──────────┘          │diskette drive.│  │   Done   │
                      │Replace drive.│  └──────────┘
                      └──────────────┘
```

Flowchart 2.17—Nonfunctioning Keyboard

```
┌──────────────────┐
│     Keyboard     │
│  not operating   │
│    properly.     │
└──────────────────┘
          │
          ▼
┌──────────────────┐
│ Connect notebook │
│ to good external │
│    keyboard.     │
└──────────────────┘
          │
          ▼              N
        ╱  ╲       ┌──────────────┐
       ╱ External ╲─────▶│   Replace    │
      ╱  device    ╲     │   system     │
       ╲  works?  ╱      │    board.    │
        ╲        ╱       └──────────────┘
          │ Y
          ▼
┌──────────────────┐
│ Reseat internal  │
│    keyboard      │
│    connector     │
│ (if applicable). │
└──────────────────┘
          │
          ▼              N
        ╱  ╲       ┌──────────────────┐
       ╱    ╲      │ Replace internal │
      ╱ OK?  ╲─────▶│  keyboard or    │
       ╲    ╱      │     cable.       │
        ╲  ╱       └──────────────────┘
          │ Y                │
          ▼                  ▼           Y
┌──────────┐              ╱  ╲       ┌──────────┐
│   Done   │             ╱    ╲      │   Done   │
└──────────┘            ╱ OK?  ╲─────▶│          │
                        ╲    ╱      └──────────┘
                      N  ╲  ╱
                          │
                          ▼
                   ┌──────────────┐
                   │   Replace    │
                   │   system     │
                   │    board.    │
                   └──────────────┘
```
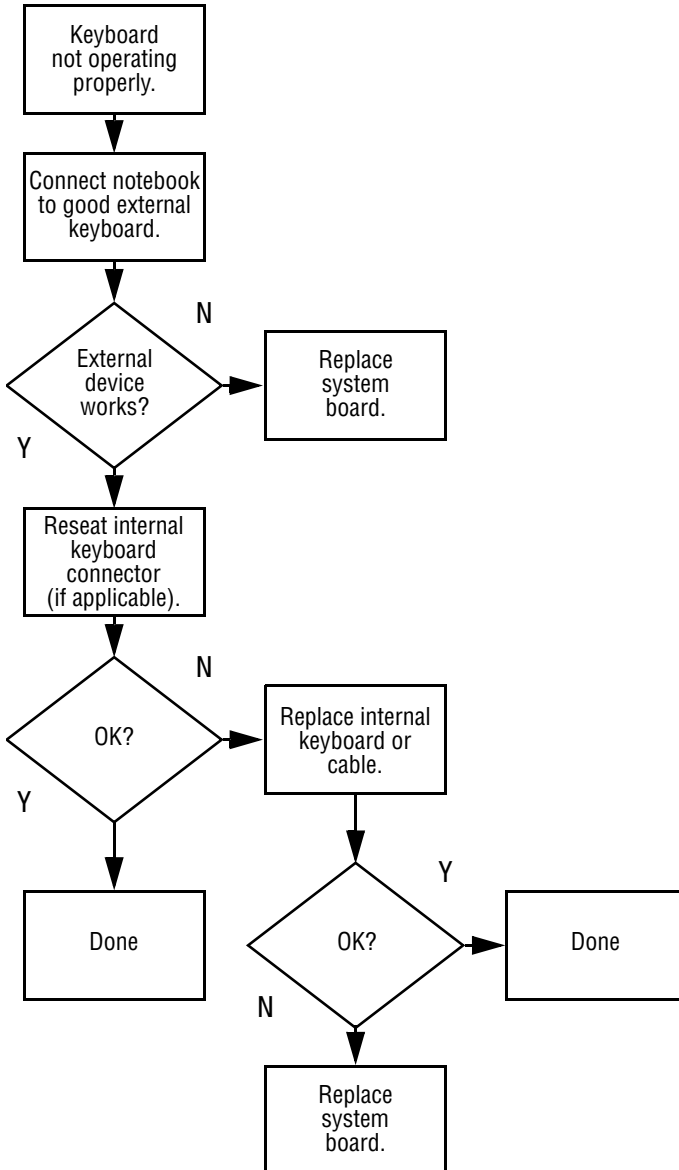
Flowchart 2.18—Nonfunctioning Pointing Device

```
┌─────────────────┐
│ Pointing device │
│  not operating  │
│    properly.    │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│ Connect notebook│
│ to good external│
│ pointing device.│
└─────────────────┘
         │
         ▼
        ╱╲            N
       ╱  ╲     ┌───────────┐
      ╱Exter-╲  │  Replace  │
     ╱ nal    ╲→│  system   │
     ╲device  ╱ │  board.   │
      ╲works?╱  └───────────┘
       ╲  ╱
        ╲╱
      Y  │
         ▼
┌─────────────────┐
│ Reseat internal │
│ pointing device │
│    connector    │
│ (if applicable).│
└─────────────────┘
         │
         ▼
        ╱╲            N
       ╱  ╲     ┌─────────────────┐
      ╱    ╲    │ Replace internal│
     ╱ OK?  ╲──→│ pointing device │
     ╲      ╱   │    or cable.    │
      ╲    ╱    └─────────────────┘
       ╲  ╱             │
        ╲╱              ▼
      Y  │             ╱╲          Y
         ▼            ╱  ╲    ┌──────────┐
┌─────────────┐     ╱    ╲   │          │
│             │    ╱ OK?  ╲─→│   Done   │
│    Done     │    ╲      ╱   │          │
│             │     ╲    ╱    └──────────┘
└─────────────┘      ╲  ╱
                  N   ╲╱
                      │
                      ▼
              ┌───────────┐
              │  Replace  │
              │  system   │
              │  board.   │
              └───────────┘
```
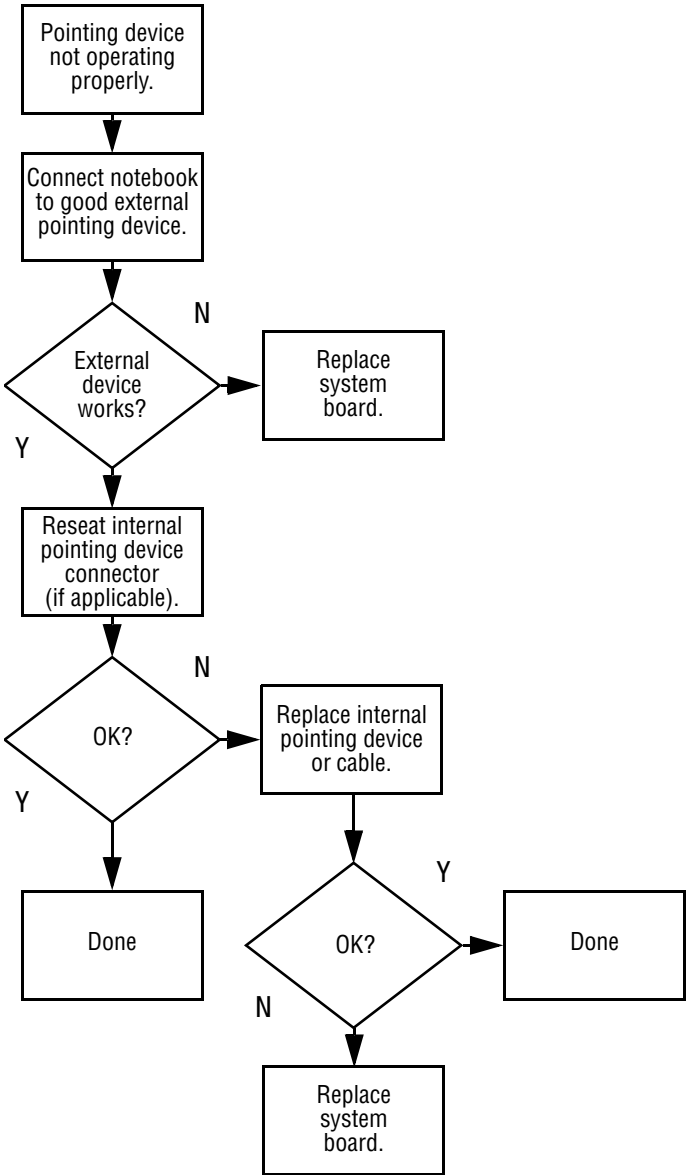
Flowchart 2.19—No Network or Modem Connection

3
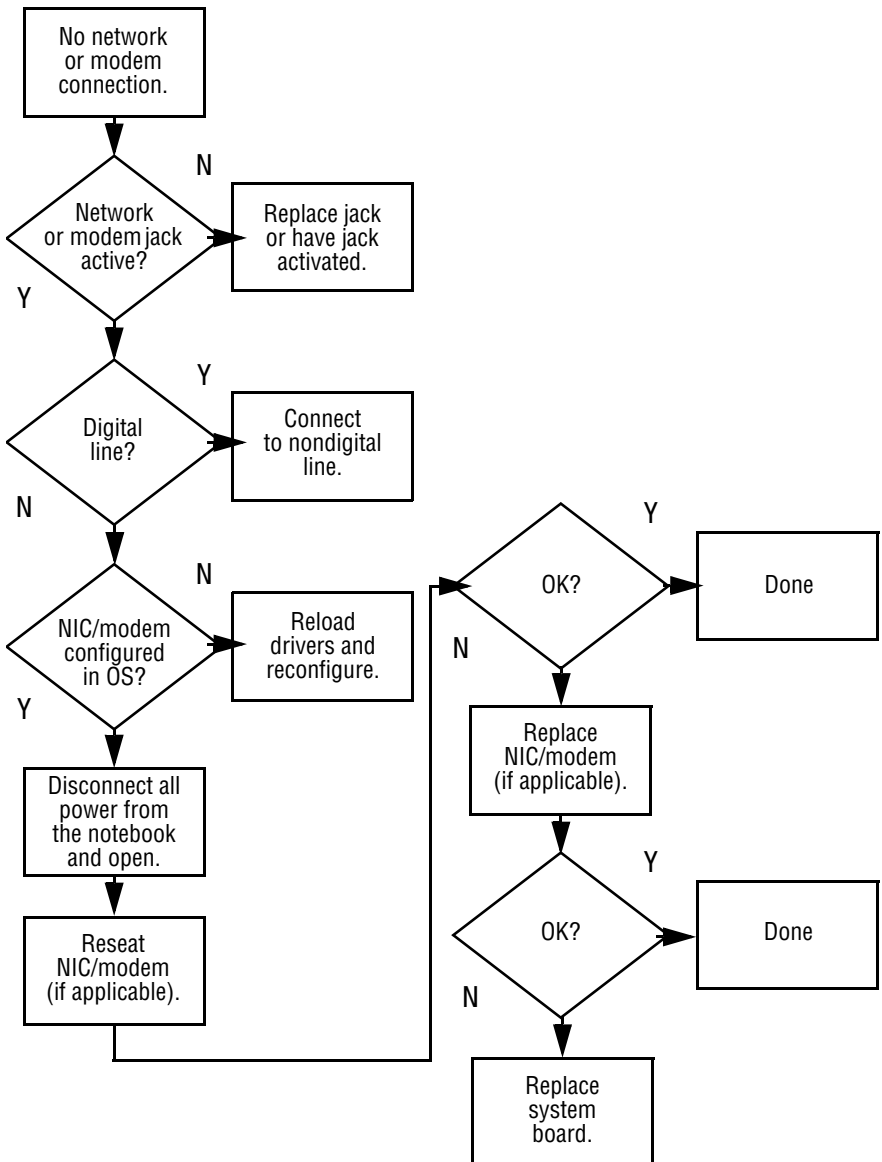
Illustrated Parts Catalog

This chapter provides an illustrated parts breakdown and a reference for spare part numbers and option part numbers.

3.1 Serial Number Location

When ordering parts or requesting information, provide the notebook serial number and model number located on the bottom of the notebook (Figure 3-1).

Figure 3-1. Serial Number Location

3.2 Notebook System Major Components
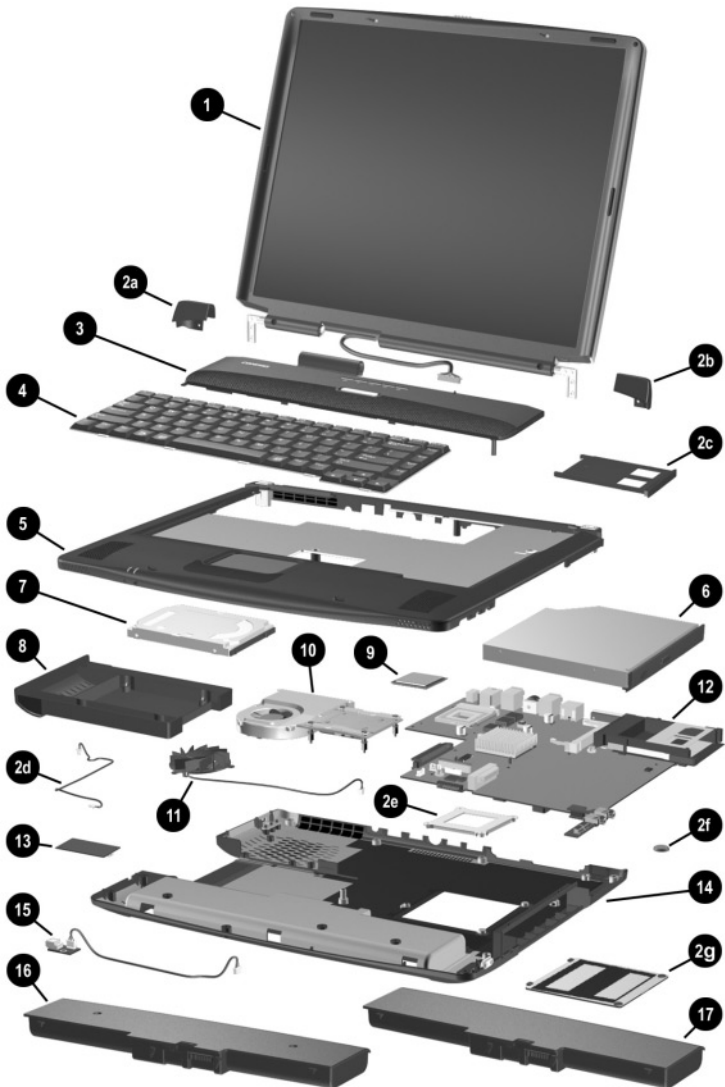
Figure 3-2. Notebook System Major Components

Table 3-1
Spare Parts: Notebook System Major Components

Item	Description	Spare Part Number
1	**Displays**	
	16.0-inch, SXGA, TFT with wireless antenna (must be used with wireless-capable system board, spare part number 320040-001)	321941-001
	16.0-inch, SXGA, TFT without wireless antenna	310652-001
	15.0-inch, XGA, TFT	316746-001
	14.1-inch, XGA, TFT	316745-001
	13.3-inch, XGA, TFT	310651-001
	Miscellaneous Plastics/Hardware Kit, includes	310659-001
2a	Left hinge cover	
2b	Right hinge cover	
2c	PC Card slot space saver	
2d	Modem cable	
2e	Heat sink mounting bracket	
2f	RTC battery	
2g	Memory expansion compartment cover	
	not illustrated:	
	■ display hinge screw covers (2)	
	■ display bumper pads (2)	
	■ display screw covers (2 round, 2 oblong)	
	■ notebook feet (2 round, 2 oblong)	
3	**LED switch cover**	311628-001
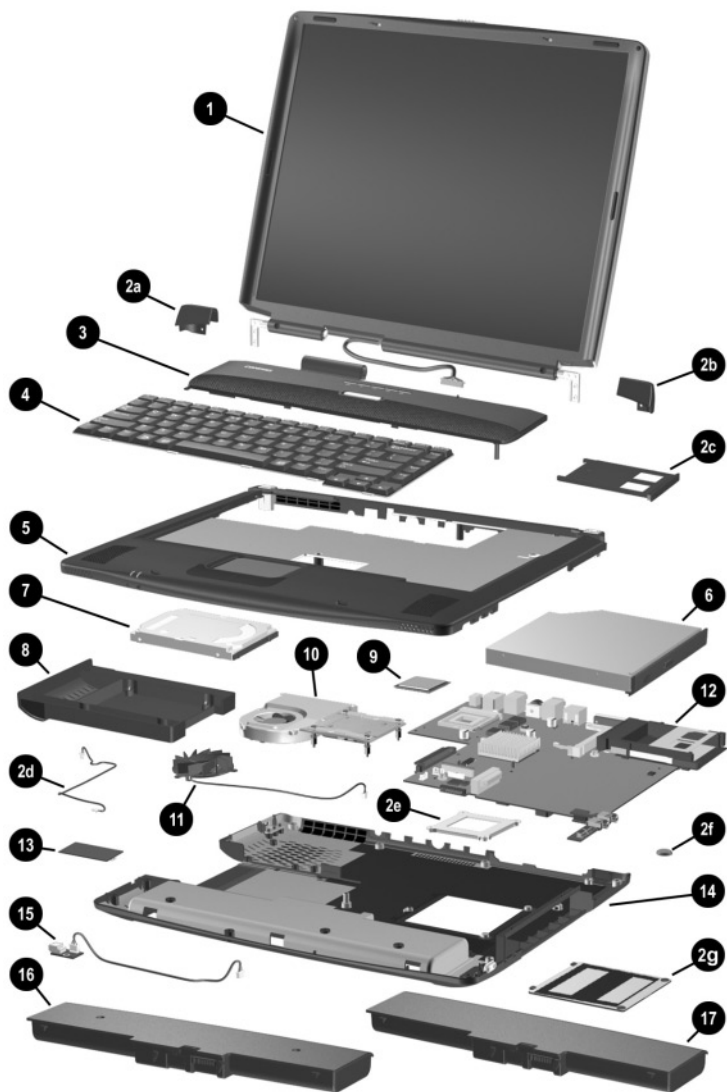
**Figure 3-2. Notebook System Major Components
(Continued)**

Table 3-1
Spare Parts: Notebook System Major Components *(Continued)*

Item	Description			Spare Part Number
4	**Keyboards**			
	Asia Pacific	310640-371	People's	310640-AA1
	Australia	310640-011	Republic	
	Hong Kong	310640-AC1	of China	
	India	310640-D61	Taiwan	310640-AB1
	Japan	310640-291	Thailand	310640-281
	Korea	310640-AD1	United States	310640-001
5	**Top cover**			310654-001
6	**Optical drives**			
	24X Max CD-ROM drive			310660-001
	8X Max DVD-ROM drive			310661-001
	24X Max DVD-ROM/CD-RW combination drive			310662-001
7	**Hard drives**			
	80 GB			320038-001
	60 GB			316744-001
	40 GB			310645-001
	30 GB			310644-001
	20 GB			310643-001
8	**Hard drive carrier with connector**			310733-001
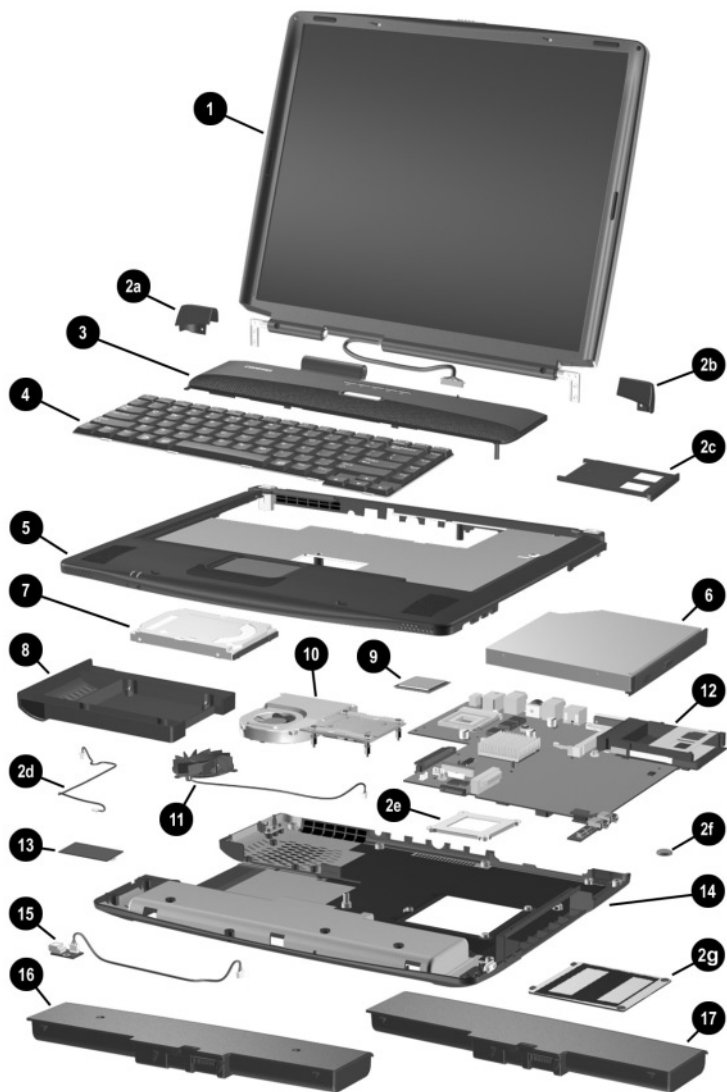
Figure 3-2. Notebook System Major Components (Continued)

Table 3-1
Spare Parts: Notebook System Major Components *(Continued)*

Item	Description	Spare Part Number
9	**Processors**	
	Intel Pentium 4 3.06 GHz (must be used with system board with spare part number 325489-001 and 120W AC adaptor, spare part number 320043-001)	316743-001
	Intel Pentium 4 2.8 GHz	325826-001
	Intel Pentium 4 2.4 GHz	310650-001
	Intel Pentium 4 2.0 GHz	310649-001
	Intel Pentium 4 1.8 GHz	310648-001
	Intel Pentium 4-D 2.66 GHz	325990-001
	Intel Pentium 4-D 2.53 GHz	325989-001
	Intel Pentium 4-D 2.4 GHz	331753-001
	Intel Pentium 4-D 2.26 GHz	325991-001
	Intel Celeron 1.8 GHz	316741-001
	Intel Celeron 1.7 GHz	320039-001
10	**Heat sink**	310647-001
11	**Fan**	310657-001
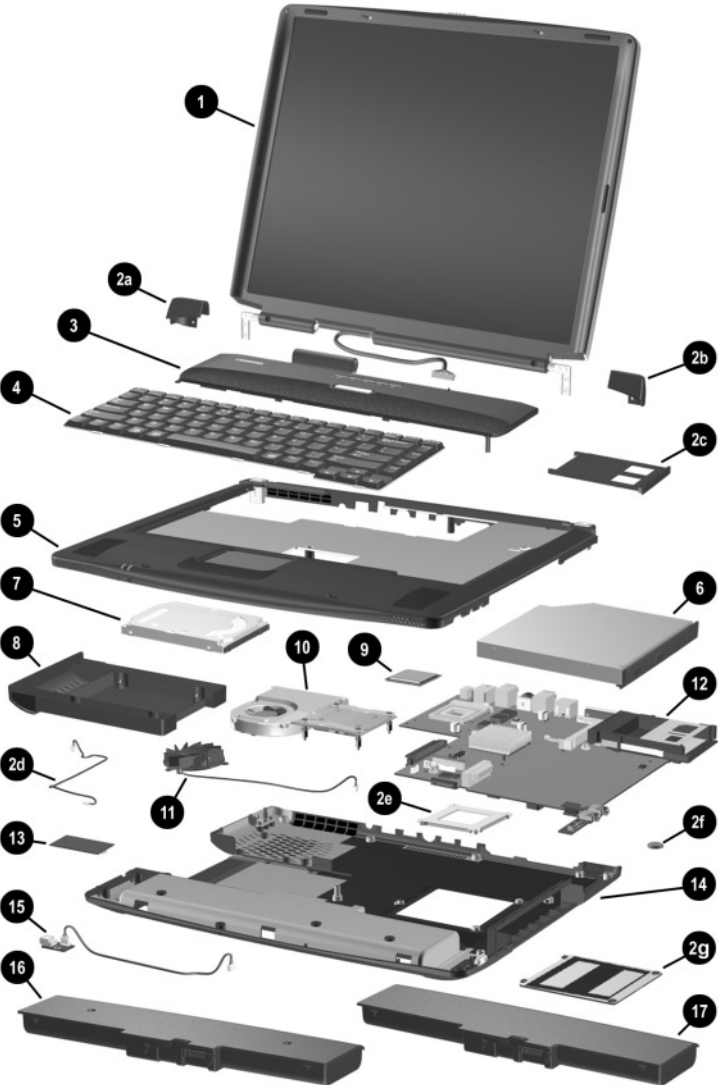
Figure 3-2. Notebook System Major Components (Continued)

Table 3-1
Spare Parts: Notebook System Major Components *(Continued)*

Item	Description	Spare Part Number
12	**System boards**	
	120 watt (for use only with models with 3.06-GHz processor, spare part number 316743-001, and 120W AC adaptor, spare part number 320043-001)	325489-001
	90 watt with wireless communication	320042-001
	90 watt without wireless communication	320041-001
13	**Modem board**	310653-001
14	**Base enclosure**	310655-001
15	**1394 board** (includes cable)	310656-001
16	**Battery bay space saver**	313579-001
17	**Battery pack, 12 cell, Li ion**	310642-001

3.3 Miscellaneous Plastics/ Hardware Kit Components
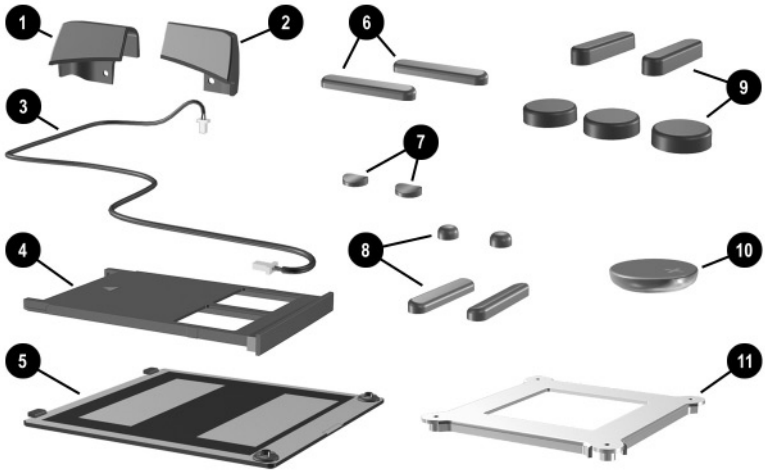
Figure 3-3. Miscellaneous Plastics/Hardware Kit Components

Table 3-2
Miscellaneous Plastics/Hardware Kit Components
Spare Part Number 310659-001

Item	Description	Item	Description
1	Left hinge cover	7	Display hinge screw covers (2)
2	Right hinge cover	8	Display screw covers (2 round, 2 oblong)
3	Modem cable	9	Notebook feet (3 round, 2 oblong)
4	PC Card slot space saver	10	RTC battery
5	Memory expansion compartment cover	11	Heat sink mounting bracket
6	Display bumper pads (2)		

3.4 Miscellaneous

Table 3-3
Spare Parts: Miscellaneous (not illustrated)

Description	Spare Part Number
AC adapters	
120 watt (for use only with models with 3.06-GHz processor, spare part number 316743-001, and system board with spare part number 325489-001)	320043-001
90 watt	309241-001
Air adapter cable	293204-001
Auto adapter cable	293203-001
Biometrics reader	153990-001
Bluetooth wireless communication module	321717-001
Logo Kit	317060-001
Memory expansion boards	
512 MB	280875-001
256 MB	280874-001
128 MB	280873-001
Miscellaneous keyboards	
Enhanced Essaver, carbon	118104-001
USB, 17-key numeric keypad	261636-001
USB, SmartCard	271124-001
USB wireless, United States	252411-001

Table 3-3
Spare Parts: Miscellaneous (not illustrated) *(Continued)*

Description			Spare Part Number
Mouse, 2 button, carbon			113907-001
Mouse, USB, carbon			164999-001
PC Card Smartcard reader			153994-001
Power cord, 3-wire			
Australia	246959-011	Korea	246959-AD1
Denmark	246959-081	Switzerland	246959-AG1
Europe/Middle East/Africa	246959-021	United Kingdom	246959-031
Italy	246959-061	United States	246959-001
Japan	246959-291		
Screw Kit (includes the following screws; refer to Appendix C, "Screw Listing," for more information on screw specifications and usage.)			310658-001

- Torx T8 M2.5 × 16.0
- Torx T8 M2.5 × 7.0
- Phillips M3.0 × 4.0
- Phillips M2.5 × 4.0

- Phillips M2.0 × 4.5
- Phillips M2.0 × 4.0
- Phillips M2.0 × 13.0

Security lock	294359-001 and 263537-001

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 screwdriver
- Phillips P0 screwdriver
- Torx T8 screwdriver
- Tool kit (includes connector removal tool, loopback plugs, and case utility tool)

4.2 Service Considerations

The following sections include some of the considerations that you should keep in mind during disassembly and assembly procedures.

✎ As you remove each subassembly from the notebook, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

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.

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; these cables tear easily.

⚠ **CAUTION:** When servicing the notebook, ensure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the notebook.

4.3 Preventing Damage to Removable Drives

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

■ Before removing or inserting a hard drive, shut down the notebook. If you are unsure whether the notebook is off or in Hibernation, turn the notebook on, then shut it down.

■ Before removing a diskette drive or optical drive, ensure that a diskette or disc is not in the drive. Ensure that the optical drive 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.

■ After removing a hard drive, CD-ROM drive, or a diskette drive, place it in a static-proof bag.

■ 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, place the drive in a bubble pack mailer or other suitable form of protective packaging and 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 the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

4.5 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 the parts arrive at static-free workstations.

■ Place items on a grounded surface before removing items from their containers.

■ Always be properly grounded when touching a sensitive component or assembly.

■ Store reusable electrostatic-sensitive parts from assemblies in protective packaging or nonconductive foam.

■ Use transporters and conveyors made of antistatic belts and roller bushings. Ensure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

4.6 **Workstation Precautions**

Use the following grounding precautions at workstations:

■ Cover the workstation with approved static-dissipative material (refer to Table 4-2).

■ Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.

■ Use conductive field service tools, such as cutters, screwdrivers, and vacuums.

■ When using fixtures that must directly contact dissipative surfaces, only use fixtures made of static-safe materials.

■ Keep the 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 these items 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.

4.7 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 grounding cords. To provide proper grounding, wear a strap snugly against the skin at all times. 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 foot straps 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 includes:

■ Antistatic tape

■ Antistatic smocks, aprons, and sleeve protectors

■ Conductive bins and other assembly or soldering aids

■ Nonconductive foam

■ Conductive tabletop workstations with grounding cords of one-megohm resistance

■ Static-dissipative tables or floor mats with hard ties to the ground

■ Field service kits

■ Static awareness labels

■ Material-handling packages

■ Nonconductive plastic bags, tubes, or boxes

■ Metal tote boxes

■ 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

✎ A product can be degraded by as little as 700 volts.

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	5,000 V

5

Removal and Replacement Procedures

This chapter provides removal and replacement procedures.

Torx T8 and Phillips P0 screws are removed during disassembly. There are 54 screws, in 8 different sizes, that must be removed, replaced, and loosened when servicing the notebook. Make special note of each screw size and location during removal and replacement.

Refer to Appendix C, "Screw Listing," for detailed information on screw sizes, locations, and usage.

5.1 Serial Number

Report the notebook serial number to Compaq when requesting information or ordering spare parts. The serial number is located on the bottom of the notebook (Figure 5-1).

Figure 5-1. Serial Number Location

5.2 Disassembly Sequence Chart

Use the chart below to determine the section number to be referenced when removing notebook components.

Table 5-1
Disassembly Sequence Chart

Section	Description	# of Screws Removed
5.3	Preparing the notebook for disassembly	
	Battery pack	0 (2 for battery pack space saver)

Table 5-1
Disassembly Sequence Chart *(Continued)*

Section	Description	# of Screws Removed
5.3 *(Continued)*	Hard drive	4 to remove hard drive 4 to separate hard drive from hard drive bracket
5.4	Notebook feet	0
5.5	Memory expansion board	2 loosened
5.6	Optical drive	1
5.7	LED switch cover	2
5.8	Keyboard	1
5.9	Heat sink	5 loosened
5.10	Fan	3
5.11	Processor	0
5.12	Display assembly	4
5.13	Top cover	17
5.14	1394 board	1
5.15	Modem board	2
5.16	System board	6
5.17	RTC battery	0

5.3 Preparing the Notebook for Disassembly

Perform the following steps before disassembling the notebook:

1. Turn off the notebook.

2. Disconnect the AC adapter and all external devices.

3. Remove the battery pack by following these steps:

**Battery Pack
Spare Part Number Information**

Battery pack, 12 cell, Li ion	310642-001

    a.   Turn the notebook bottom side up with the rear panel facing you.

b. Slide the battery pack lock latches ❶ to the right (Figure 5-2).

c. Slide and hold the battery pack release latch ❷ to the right.

d. Use the notch ❸ in the battery pack to swing the front edge of the battery pack up and back ❹.

e. Remove the battery pack.
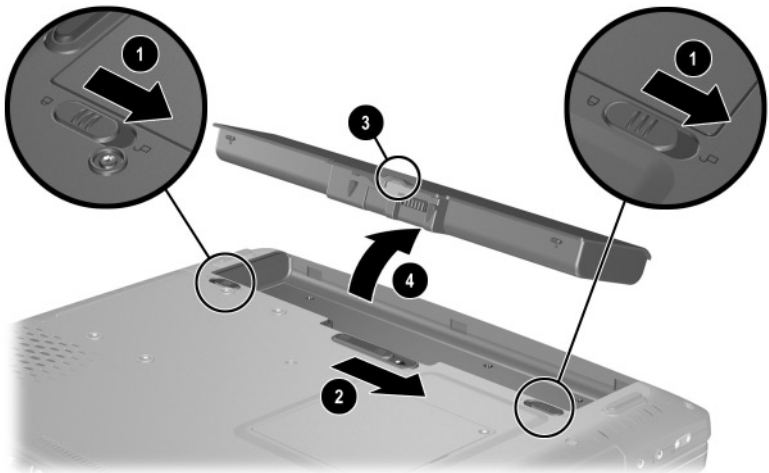
Figure 5-2. Removing the Battery Pack

Reverse the preceding procedure to install the battery pack.

4. Remove the battery bay space saver by following these steps:

**Battery Bay Space Saver
Spare Part Number Information**

For use only with Compaq 800 models	313579-001

a. Turn the notebook bottom side up with the rear panel facing you.

b. Remove the two TM2.5 × 7.0 screws ❶ that secure the battery bay space saver to the notebook (Figure 5-3).

c. Slide the battery pack lock latches ❷ to the right.

d. Slide and hold the battery pack release latch ❸ to the right.

e. Use the notch ❹ in the battery bay space saver to swing the front edge of the space saver up and back ❺.

f. Remove the battery bay space saver.
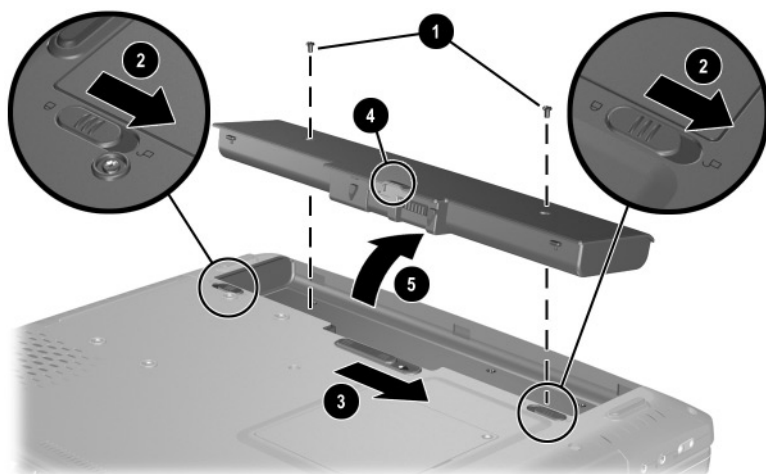
Figure 5-3. Removing the Battery Bay Space Saver

Reverse the preceding procedure to install the battery bay space saver.

5. Remove the hard drive by following these steps:

Hard Drives
Spare Part Number Information

80 GB	320038-001
60 GB	316744-001
40 GB	310645-001
30 GB	310644-001
20 GB	310643-001
Hard drive carrier with connector	310733-001

    a.   Turn the notebook bottom side up with the hard drive facing you.

    b.   Remove the four TM2.5 × 7.0 screws ❶ that secure the hard drive assembly to the notebook (Figure 5-4).

    c.   Slide the hard drive assembly forward ❷ and remove it from the hard drive bay.
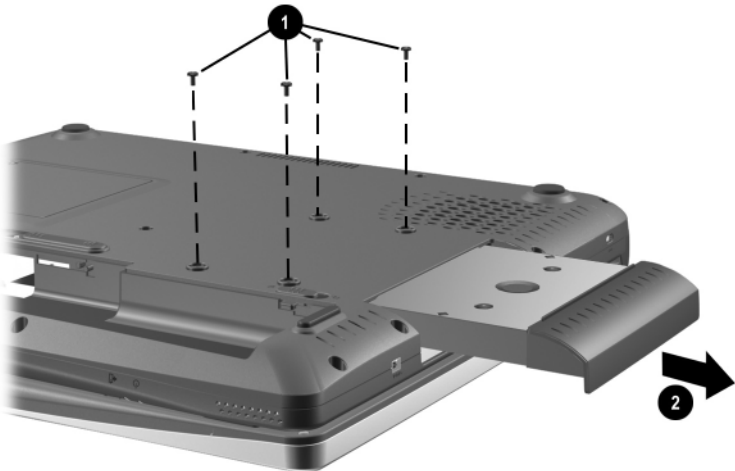
Figure 5-4. Removing the Hard Drive Assembly

Reverse the preceding procedure to install the hard drive assembly.

d. Remove the four PM3.0 × 4.0 screws ❶ that secure the hard drive to the hard drive bracket (Figure 5-5).

e. Remove the hard drive ❷ from the hard drive carrier.
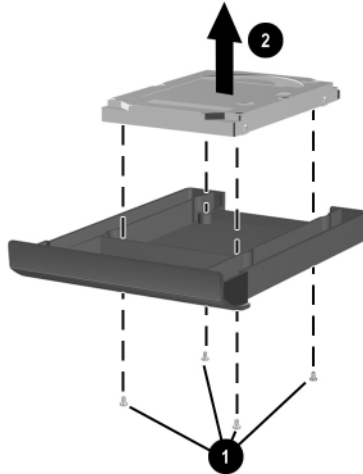
Figure 5-5. Removing the Hard Drive from the Hard Drive Carrier

Reverse the preceding procedure to install the hard drive into the hard drive carrier.

5.4 Notebook Feet

The notebook feet are adhesive-backed rubber pads. The notebook feet are included in the Miscellaneous Plastics/Hardware Kit, spare part number 310659-001. The notebook feet attach to the base enclosure as illustrated in Figure 5-6.
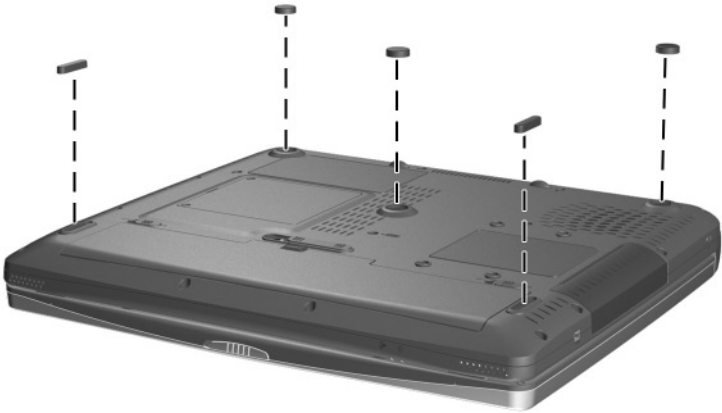
Figure 5-6. Replacing the Notebook Feet

5.5 Memory Expansion Board

**Memory Expansion Boards
Spare Part Number Information**

Memory expansion boards

512 MB	280275-001
256 MB	280274-001
128 MB	280273-001

1. Prepare the notebook for disassembly (Section 5.3).

2. Turn the notebook bottom side up with the front facing you.

3. Loosen the two PM2.5 × 4.0 screws ❶ that secure the memory expansion compartment cover to the notebook (Figure 5-7).

4. Use the notch on the left side of the cover to lift the cover up and swing it to the right ❷.

5. Remove the memory expansion compartment cover.

✎ The memory expansion compartment cover is included in the Miscellaneous Plastics/Hardware Kit, spare part number 310359-001.
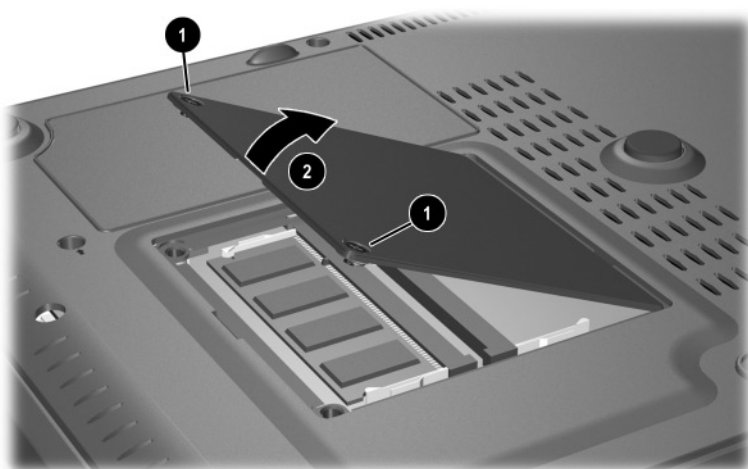
Figure 5-7. Removing the Memory Expansion Compartment

6. Spread the retaining tabs ❶ securing the memory expansion board to the system board (Figure 5-8). The memory expansion board rises at a 45-degree angle.

7. Pull the memory expansion board away from the connector at a 45-degree angle ❷.
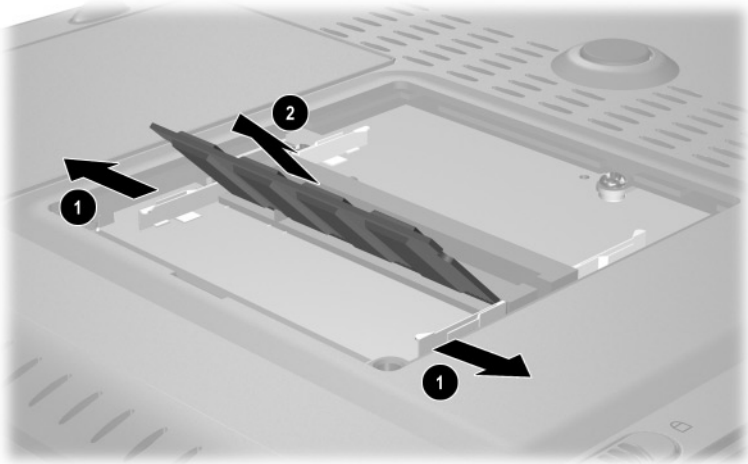
Figure 5-8. Removing a Memory Expansion Board

Reverse the preceding procedure to install a memory expansion board and the memory expansion compartment cover.

5.6 Optical Drive

**Optical Drive
Spare Part Number Information**

24X Max CD-ROM drive	310660-001
8X Max DVD-ROM drive	310661-001
24X Max DVD-ROM/CD-RW combination drive	310662-001

1. Prepare the notebook for disassembly (Section 5.3).

2. Turn the notebook bottom side up with the optical drive facing you.

3. Remove the memory expansion compartment cover (Section 5.5).

4. Remove the TM2.5 × 7.0 screw ❶ that secures the optical drive to the base enclosure (Figure 5-9).

5. Slide the optical drive out of the base enclosure ❷.
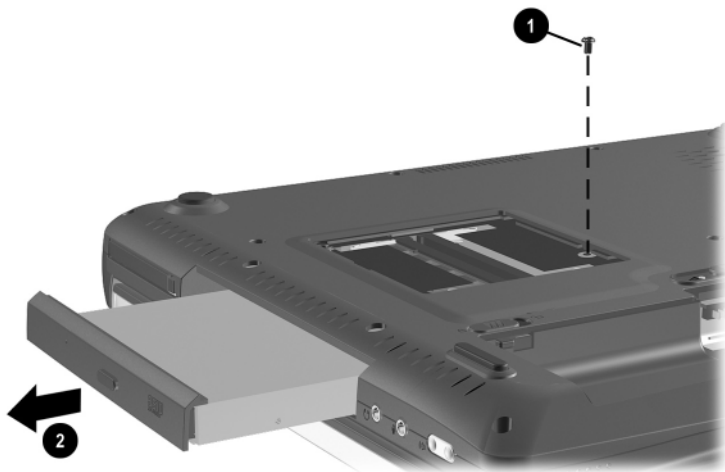
Figure 5-9. Removing an Optical Drive

Reverse the preceding procedure to install the optical drive.

5.7 LED Switch Cover

**LED Switch Cover
Spare Part Number Information**

LED switch cover   311628-001

1. Prepare the notebook for disassembly (Section 5.3).

2. Turn the notebook bottom side up with the front facing you.

3. Remove the two TM2.5 × 7.0 screws that secure the LED switch cover to the base enclosure (Figure 5-10).
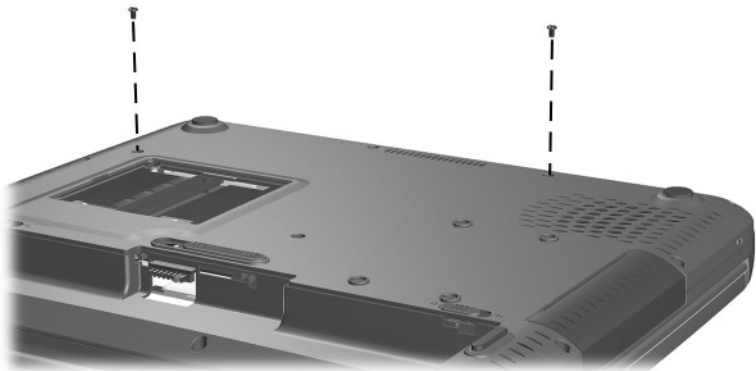
Figure 5-10. Removing the LED Switch Cover Screws

4. Turn the notebook top side up with the front facing you and open the notebook as far as it will open.

5. Lift the right side of the LED switch cover ❶ to separate it from the base enclosure (Figure 5-11).

6. Swing the top edge of the LED switch cover forward ❷ to separate the cover from the display assembly.
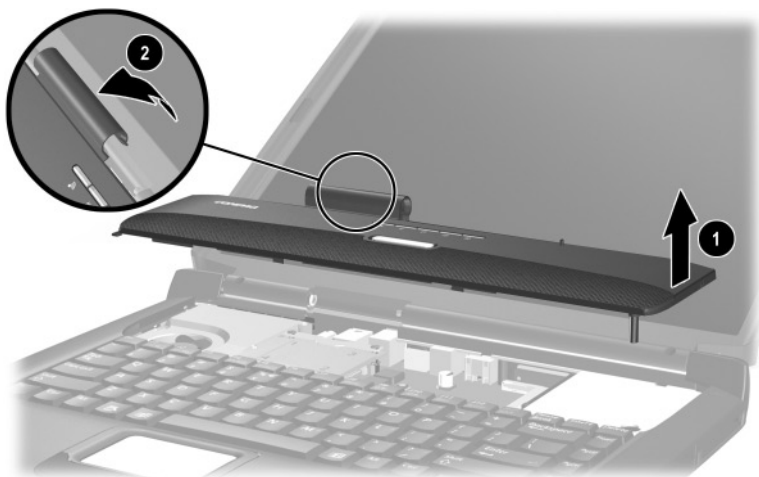
Figure 5-11. Removing the LED Switch Cover

Reverse the preceding procedure to install the LED switch cover.

5.8 Keyboard

**Keyboard
Spare Part Number Information**

Asia Pacific	310640-371	People's Republic of China	310640-AA1
Australia	310640-011		
Hong Kong	310640-AC1	Taiwan	310640-AB1
India	310640-D61	Thailand	310640-281
Japan	310640-291	United States	310640-001
Korea	310640-AD1		

1. Prepare the notebook for disassembly (Section 5.3).

2. Remove the LED switch cover (Section 5.7).

3. Close the notebook and turn it bottom side up with the front facing you.

4. Remove the TM2.5 × 16.0 screw that secures the keyboard to the base enclosure (Figure 5-12).
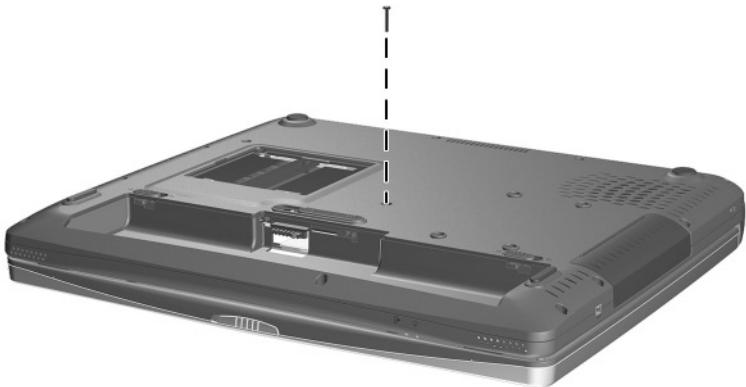
Figure 5-12. Removing the Keyboard Screw

5. Turn the notebook top side up with the front facing you and open the notebook.

6. Lift the back edge of the keyboard ❶ until it rests at a 45-degree angle (Figure 5-13).

7. Slide the keyboard toward the back of the notebook ❷ until the tabs on the front edge of the keyboard are removed from the slots in the base enclosure.

8. Swing the back edge of the keyboard up and forward ❸ and rest the keyboard on the palm rest.
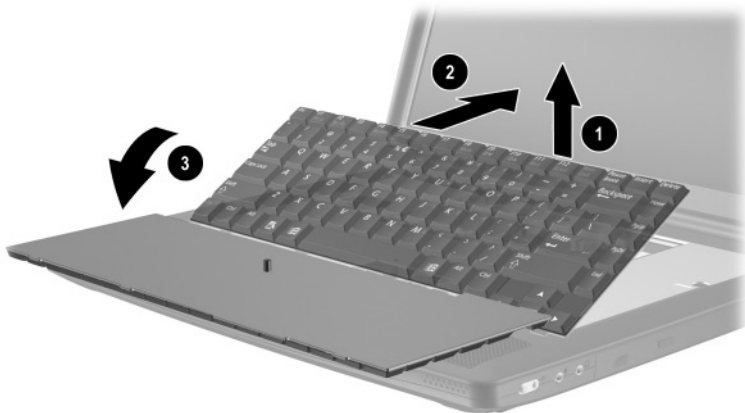
Figure 5-13. Releasing the Keyboard

9. Release the ZIF connector ❶ to which the keyboard cable is attached and disconnect the keyboard cable ❷ from the system board (Figure 5-14).

10. Remove the keyboard ❸.
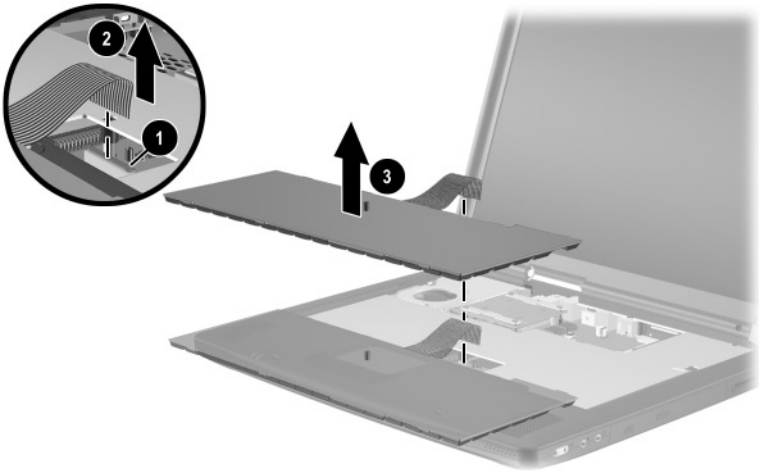
Figure 5-14. Removing the Keyboard

Reverse the preceding procedure to install the keyboard and keyboard retainer.

5.9 Heat Sink

**Heat Sink
Spare Part Number Information**

Heat sink	310647-001

1. Prepare the notebook for disassembly (Section 5.3).

2. Remove the LED switch cover (Section 5.7).

3. Remove the keyboard (Section 5.8).

4. Disconnect the fan cable ❶ from the system board (Figure 5-15).

5. Loosen the four PM2.0 × 20.0 shoulder screws ❷ that secure the heat sink to the processor mounting bracket.

6. Loosen the PM2.0 × 16.0 shoulder screw ❸ that secures the heat sink to the base enclosure.
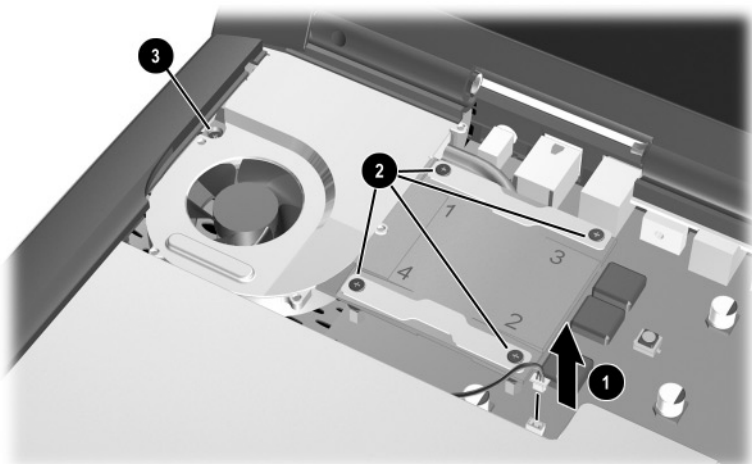
Figure 5-15. Disconnecting the Fan Cable and Loosening the Heat Sink Screws

7. Lift the front edge of the heat sink ❶ until it clears the top cover (Figure 5-16).

8. Slide the heat sink forward ❷ until the back of the heat sink clears the top cover.

9. Remove the heat sink.
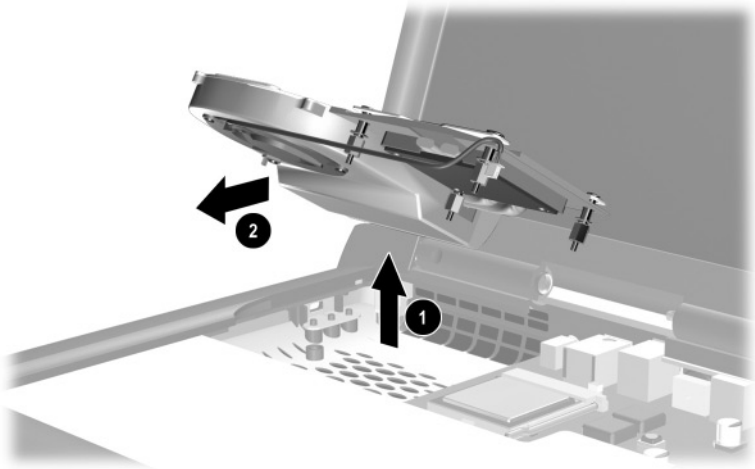
Figure 5-16. Removing the Heat Sink

✎ The heat sink screws should be loosened and tightened in the ❶, ❷, ❸, ❹ sequence stamped into the heat sink metal. The screw ❺ next to the fan should be loosened and tightened last (Figure 5-17).
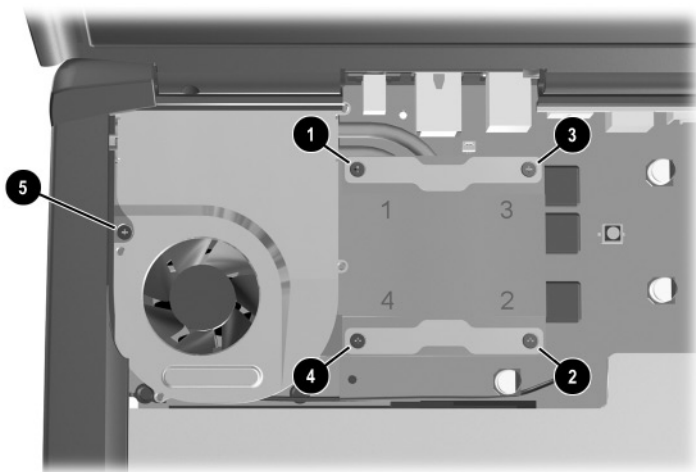
Figure 5-17. Heat Sink Screw Tightening Sequence

Reverse the preceding procedure to install the heat sink.

5.10 Fan

Fan
Spare Part Number Information

Fan	310657-001

1. Prepare the notebook for disassembly (Section 5.3).

2. Remove the LED switch cover (Section 5.7).

3. Remove the keyboard (Section 5.8).

4. Remove the heat sink (Section 5.9).

5. Turn the heat sink bottom side up with the grille facing you.

6. Remove the three PM2.0 × 4.5 screws ❶ that secure the fan to the heat sink (Figure 5-18).

7. Remove the fan from the heat sink ❷.
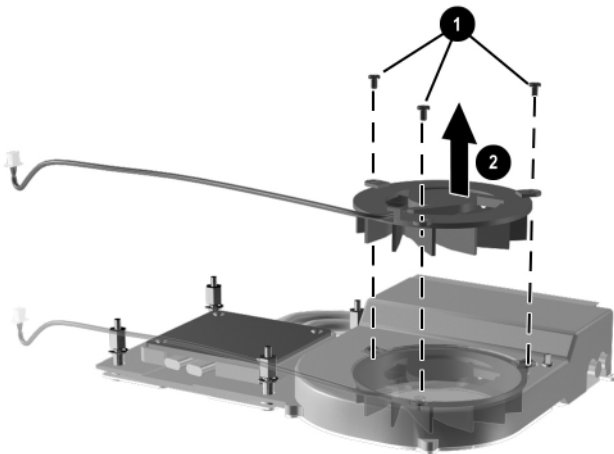
Figure 5-18. Removing the Fan

Reverse the preceding procedure to install the fan.

5.11 Processor

Processor
Spare Part Number Information

Intel Pentium 4 3.06 GHz (must be used with system board with spare part number 325489-001 and 120W AC adaptor, spare part number 320043-001)	316743-001
Intel Pentium 4 2.8 GHz	325826-001
Intel Pentium 4 2.4 GHz	310650-001
Intel Pentium 4 2.0 GHz	310649-001
Intel Pentium 4 1.8 GHz	310648-001
Intel Pentium 4-D 2.66 GHz	325990-001
Intel Pentium 4-D 2.53 GHz	325989-001
Intel Pentium 4-D 2.4 GHz	331753-001
Intel Pentium 4-D 2.26 GHz	325991-001
Intel Celeron 1.8 GHz	316741-001
Intel Celeron 1.7 GHz	320039-001

△ **CAUTION:** Before removing the processor, make special note of the orientation of the printing on the processor. The gold triangle should be in the upper right corner when installing the processor. The processor must be installed in the same orientation in which it was removed.

1. Prepare the notebook for disassembly (Section 5.3).

2. Remove the LED switch cover (Section 5.7).

3. Remove the keyboard (Section 5.8).

4. Remove the heat sink (Section 5.9).

5. Slide the front end of the processor release bar slightly to the right ❶ (Figure 5-19).

6. Swing the bar up and to the back ❷.

7. Lift the processor straight up ❸ to remove it.

✎ When installing the processor, make sure the gold triangle ❹ is located in the upper right corner.
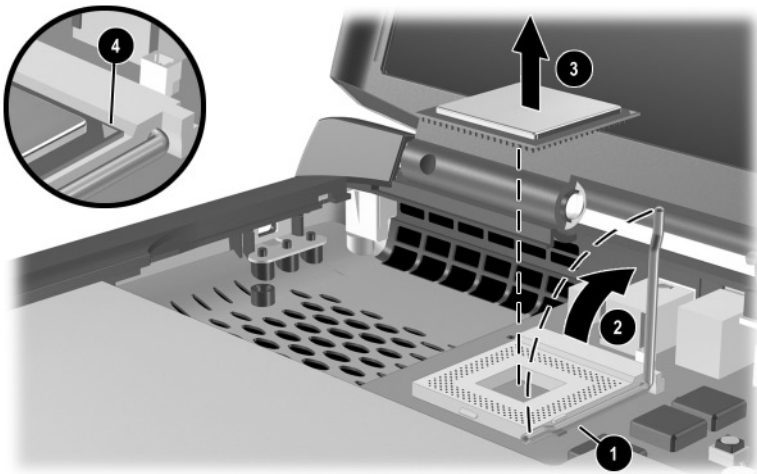
Figure 5-19. Removing the Processor

Reverse the preceding procedure to install the processor.

5.12 Display Assembly

**Display Assembly
Spare Part Number Information**

16.0-inch, SXGA, TFT with wireless antenna (must be used with wireless-capable system board, spare part number 320040-001)	321941-001
16.0-inch, SXGA, TFT without wireless antenna	310652-001
15.0-inch, XGA, TFT	316746-001
14.1-inch, XGA, TFT	316745-001
13.3-inch, XGA, TFT	310651-001

1. Prepare the notebook for disassembly (Section 5.3).

2. Remove the LED switch cover (Section 5.7).

3. Disconnect the display cable ❶ from the system board (Figure 5-20).

4. Route the display cable out of the retention clip ❷ in the top cover.
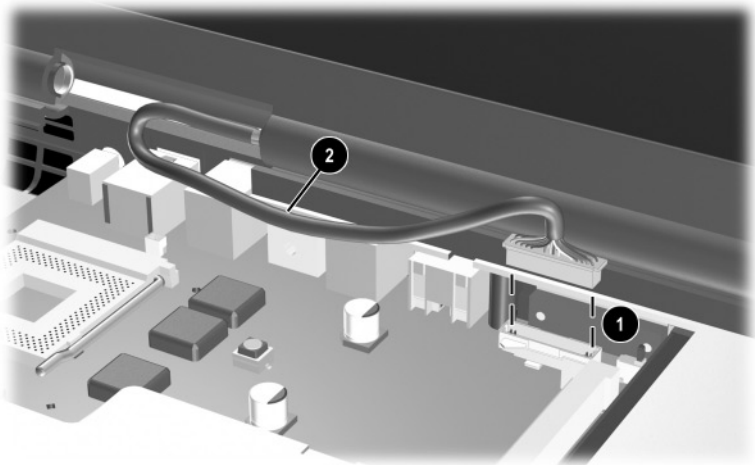
Figure 5-20. Disconnecting the Display Cable

5. Position the notebook so the rear panel is facing you.

6. Remove the four TM2.5 × 7.0 screws ❶ that secure the left and right hinge covers to the base enclosure (Figure 5-21).

7. Remove the left ❷ and right ❸ hinge covers by sliding them toward the outside of the notebook.

✎ The hinge covers are included in the Miscellaneous Plastics/Hardware Kit, spare part number 310359-001.

8. Lift the display straight up ❹ to remove it from the notebook.
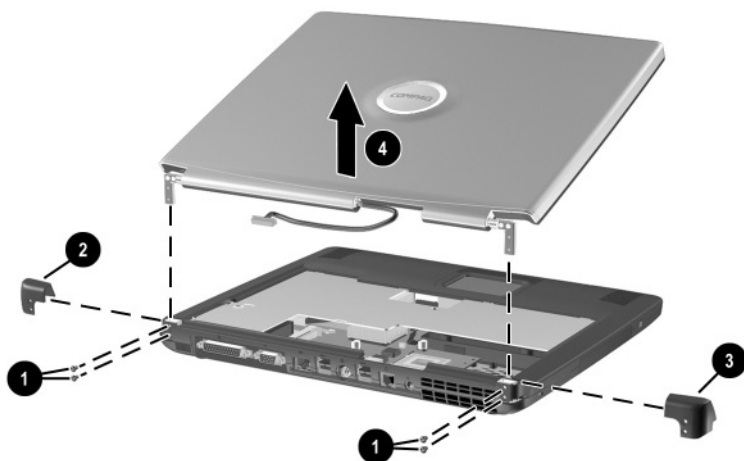
Figure 5-21. Removing the Display Assembly

Reverse the preceding procedure to install the display assembly.

5.13 Top Cover

Top Cover
Spare Part Number Information

Top cover	310654-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:

   ❏ Optical drive (Section 5.6)

   ❏ LED switch cover (Section 5.7)

   ❏ Keyboard (Section 5.8)

   ❏ Display assembly (Section 5.12)

2. Turn the notebook bottom side up with the front facing you.

3. Remove the following TM2.5 × 7.0 screws (Figure 5-22):

❏ Four screws along the notebook front edge ❶

❏ Two screws on each side of the hard drive bay ❷

❏ Three screws on the rear edge of the notebook ❸

❏ One screw in the memory expansion compartment ❹

❏ One screw near the fan vent ❺
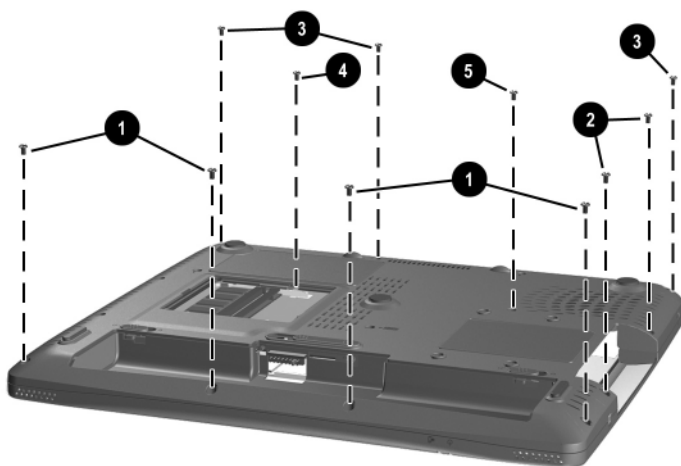
Figure 5-22. Removing the Top Cover Screws

4. Remove the following PM2.5 × 4.0 screws (Figure 5-23):

❏ Four screws in the battery bay ❶

❏ Two screws in the optical drive bay ❷
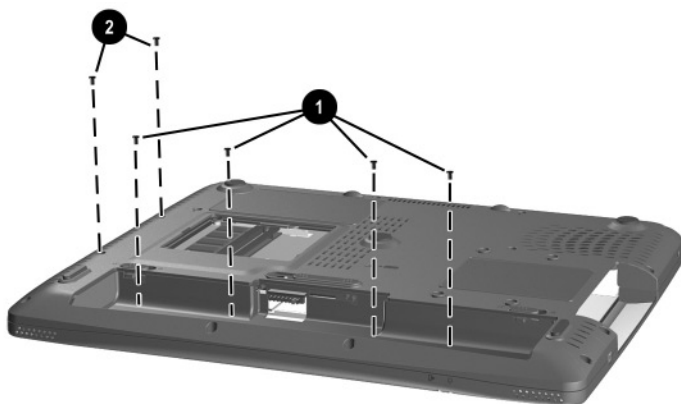
Figure 5-23. Removing the Top Cover Screws

5. Turn the notebook top side up with the front facing you.

6. Release the ZIF connector ❶ to which the TouchPad cable is connected and disconnect the TouchPad cable ❷ from the system board (Figure 5-24).

7. Disconnect the following cables:

   ❏ TouchPad button ❸

   ❏ Left speaker ❹

   ❏ Right speaker ❺
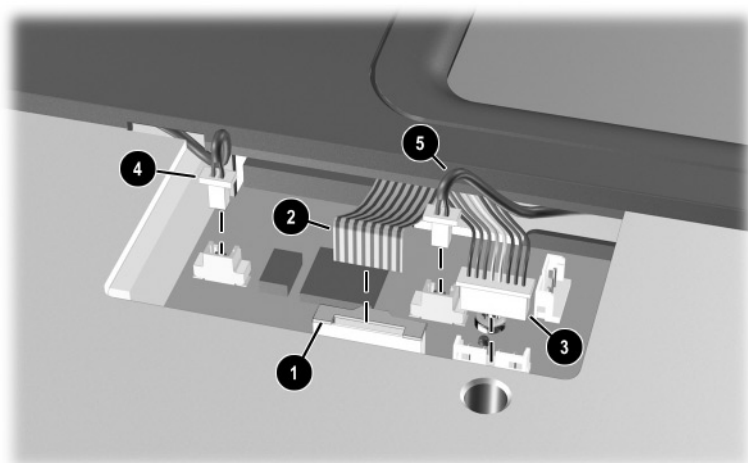
Figure 5-24. Disconnecting the Top Cover Cables

8. Lift the top cover straight up to remove it from the base enclosure (Figure 5-25).
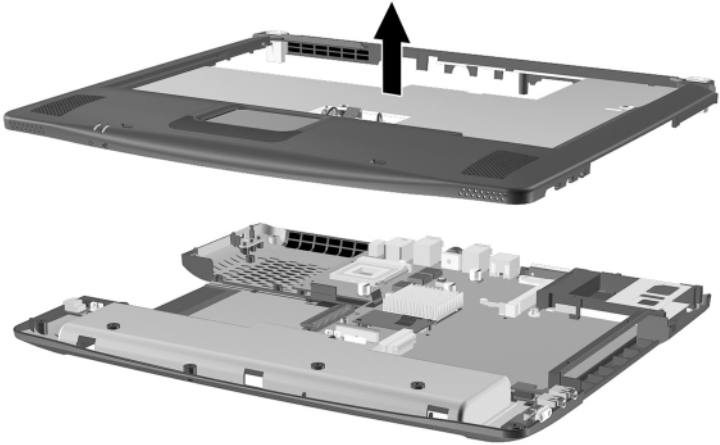
Figure 5-25. Removing the Top Cover

Reverse the preceding procedure to install the top cover.

5.14 1394 Board

1394 Board Spare Part Number Information	
1394 board (includes cable)	310656-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:

   ❏ Optical drive (Section 5.6)

   ❏ LED switch cover (Section 5.7)

   ❏ Keyboard (Section 5.8)

   ❏ Display assembly (Section 5.12)

   ❏ Top cover (Section 5.13)

2. Remove the tape ❶ that secures the 1394 board cable to the base enclosure (Figure 5-26).

3. Disconnect the 1394 board cable from the system board ❷.

4. Remove the PM2.5 × 4.0 screw ❸ that secures the 1394 board to the base enclosure.

5. Remove the 1394 board ❹.
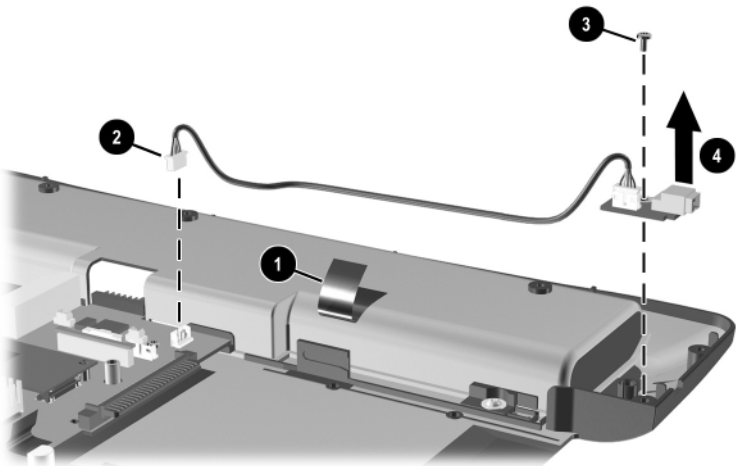
Figure 5-26. Removing the 1394 Board

Reverse the preceding procedure to install the 1394 board.

5.15 Modem Board

**Modem Board
Spare Part Number Information**

Modem board	310653-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:

   ❏ Optical drive (Section 5.6)

   ❏ LED switch cover (Section 5.7)

   ❏ Keyboard (Section 5.8)

   ❏ Display assembly (Section 5.12)

   ❏ Top cover (Section 5.13)

2. Remove the tape ❶ that secures the modem board cable to the system board (Figure 5-27).

3. Disconnect the modem board cable from the system board ❷.

4. Remove the two PM2.0 × 4.5 screws ❸ that secure the modem board to the system board.

5. Remove the modem board ❹ from the system board.
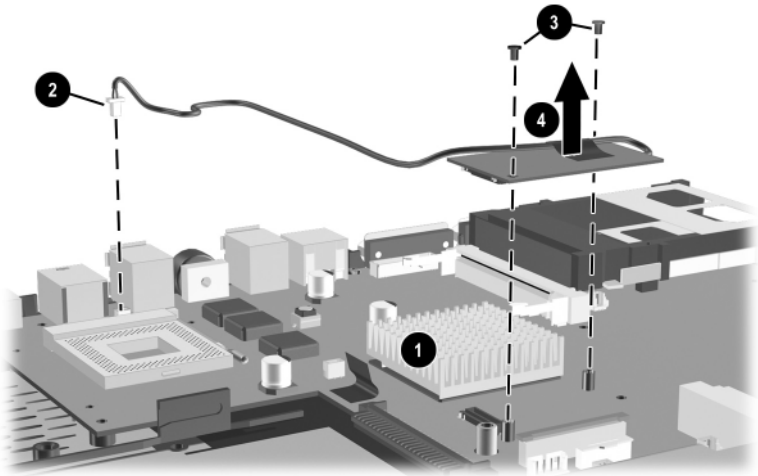
Figure 5-27. Removing the Modem Board

✎ The modem cable is included in the Miscellaneous Plastics/Hardware Kit, spare part number 310359-001.

Reverse the preceding procedure to install the modem board.

5.16 System Board

**System Board
Spare Part Number Information**

120 watt (for use only with models with 3.06-GHz processor, spare part number 316743-001, and 120W AC adaptor, spare part number 320043-001)	325489-001
90 watt with wireless communication	320042-001
90 watt without wireless communication	320041-001

✎ When replacing the system board, ensure that the following components are removed from the old system board and installed on the new system board:

■ Memory expansion boards (Section 5.5)

■ Processor (Section 5.11)

■ Modem (Section 5.15)

■ RTC battery (Section 5.17)

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:

   ❏ Optical drive (Section 5.6)

   ❏ LED switch cover (Section 5.7)

   ❏ Keyboard (Section 5.8)

   ❏ Display assembly (Section 5.12)

   ❏ Top cover (Section 5.13)

2. Disconnect the 1394 board cable from the system board (Section 5.14).

3. Remove the four PM2.5 × 4.0 screws ❶ that secure the system board to the base enclosure (Figure 5-28).

4. Remove the two PM2.0 × 13.0 screws ❷ on each side of the PC Card assembly that secure the system board to the base enclosure.

5. Use the hard drive connector ❸ to lift the left side of the system board until it rests at an angle.

6. Slide the system board to the left at an angle ❹ and remove it from the base enclosure.
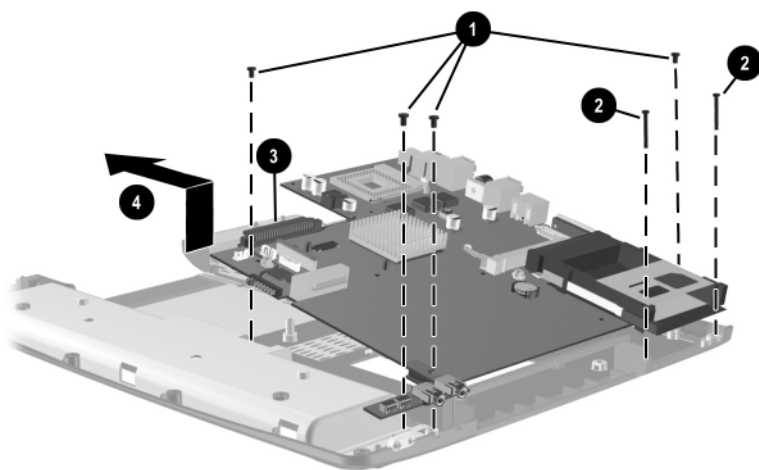
Figure 5-28. Removing the System Board

Reverse the preceding procedure to install the system board.

✎ When the system board is removed, the heat sink mounting bracket may be loose in the base enclosure. Make sure this bracket is aligned correctly when installing the heat sink on the system board. The heat sink mounting bracket is included in the Miscellaneous Plastics/Hardware Kit, spare part number 310359-001.

5.17 Real Time Clock (RTC) Battery

✎ The RTC battery is included in the Miscellaneous Plastics/Hardware Kit, spare part number 310359-001.

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:

   ❏ Optical drive (Section 5.6)

   ❏ LED switch cover (Section 5.7)

   ❏ Keyboard (Section 5.8)

   ❏ Display assembly (Section 5.12)

   ❏ Top cover (Section 5.13)

   ❏ System board (Section 5.16)

2. Remove the RTC battery from the socket on the system board (Figure 5-29).

✎ The notebook uses a BR1225 disk cell battery. The RTC battery should be installed with the "+" facing up.
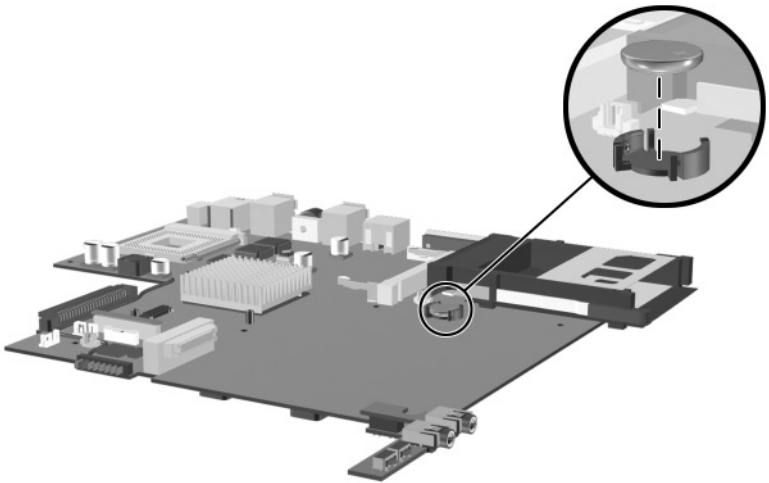
Figure 5-29. Removing the RTC Battery

Reverse the preceding procedure to install the RTC battery.

6

Specifications

This chapter provides physical and performance specifications.

Table 6-1
Notebook

Dimensions

Height	4.45 cm	1.75 in
Width	35.05 cm	13.80 in
Depth	29.97 cm	11.80 in

Weight (varies by configuration)

16.0-inch display, DVD-ROM device, hard disk drive	3.45 kg	7.6 lb

Stand-alone power requirements

Nominal operating voltage	14.8 VDC
Average operating power	15.8 W
Peak operating power	38 W
Power in Standby mode	< 800 mW
Power in Hibernation mode	< 100 mW

Table 6-1
Notebook *(Continued)*

Temperature

Operating	10° to 35° C	50° to 95° F
Nonoperating	−10° to 60° C	14° to 140° F

Relative humidity (noncondensing)

Operating	10% to 90%
Nonoperating	5% to 95%, 38.7° C (101.6° F) maximum wet bulb temperature

Altitude (unpressurized)

Operating	0 to 3,048 m	0 to 10,000 ft
Nonoperating	0 to 9,144 m	0 to 30,000 ft

Shock

Operating	10 G, 11 ms, half-sine
Nonoperating	60 G, 11 ms, half-sine

Vibration

Operating	0.5 G zero-to-peak, 10 to 500 Hz, 0.25 oct/min sweep rate
Nonoperating	1.0 G zero-to-peak, 10 to 500 Hz, 0.5 oct/min sweep rate

✎ Applicable product safety standards specify thermal limits for plastic surfaces. The notebook operates well within this range of temperatures.

Table 6-2
16.0-inch SXGA, TFT Display

Dimensions		
Height	24.00 cm	9.45 in
Width	32.20 cm	12.68 in
Diagonal	40.60 cm	16.00 in

Number of colors	Up to 16.8 million

Contrast ratio	150:1

Brightness	120+ nit typical

Pixel resolution	
Pitch	0.264×0.264 mm
Format	1024×768
Configuration	RGB vertical stripe

Backlight	Edge lit

Character display	80×25

Total power consumption	4.20 W

Table 6-3
13.3-inch SXGA, TFT Display

Dimensions

Height	20.28 cm	7.98 in
Width	27.03 cm	10.64 in
Diagonal	33.79 cm	13.30 in

Number of colors	Up to 16.8 million

Contrast ratio	150:1

Brightness	120+ nit typical

Pixel resolution

Pitch	0.264×0.264 mm
Format	1280×1024
Configuration	RGB vertical stripe

Backlight	Edge lit

Character display	80×25

Total power consumption	4.20 W

Table 6-4
Hard Drives

	40 GB	20 GB
User capacity per drive[1]	40.0 GB	20.0 GB
Drive height	9.5 mm	9.5 mm
Drive width	70 mm	70 mm
Interface type	ATA-5	ATA-5
Seek times (typical read, including setting)		
Single track	3 ms	3 ms
Average	13 ms	13 ms
Full stroke	24 ms	24 ms
Logical blocks[3]	78,140,160	39,070,080
Logical configuration		
Cylinders	16,383	16,383
Heads	16	16
Sectors per track	63	63

[1]1 GB = 1,073,741,824 bytes.

[2]System capability may differ.

[3]Actual drive specifications may differ slightly.

Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

Table 6-4
Hard Drives *(Continued)*

	40 GB	20 GB
Physical configuration		
Cylinders[3]	22,784	22,784
Heads	4	4
Sectors per track[3]	293 to 560	293 to 560
Bytes per sector	512	512
Buffer size[3]	2 MB	512 KB
Disk rotational speed	4200 rpm	4200 rpm
Transfer rate		
Interface max (MB/s)[2]	66.6	66.6
Media (MB/s)[3]	109 to 203	109 to 203

[1]1 GB=1,073,741,824 bytes.

[2]System capability may differ.

[3]Actual drive specifications may differ slightly.

Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

Table 6-5
DVD-ROM Drive

Applicable disk	DVD-5, DVD-9, DVD-10 CD-ROM (Mode 1 and 2) CD Digital Audio CD-XA ready (Mode 2, Form 1 and 2) CD-I ready (Mode 2, Form 1 and 2) CD-R (read only) CD Plus Photo CD (single/multisession) CD-Bridge	
Center hole diameter	1.5 cm	0.59 in
Disk diameter	12 cm, 8 cm	4.72 in, 3.15 in
Disk thickness	0.12 cm	0.047 in
Track pitch	0.74 µm	
Access time		
Random Full stroke	< 150 ms < 225 ms	
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	512 KB	
Data transfer rate		
24X Max CD 8X Max DVD Normal IO Mode 4 (single burst)	3,600 KB/s (150 KB/s at 1X CD rate) 10,800 KB/s (1,352 KB/s at 1X DVD rate) 16.6 MB/s	
Startup time	< 12 seconds	
Stop time	< 3 seconds	

Table 6-6
CD-RW Drive

Center hole diameter	1.5 cm	0.59 in
Disk diameter	12 cm, 8 cm	4.72 in, 3.15 in
Disk thickness	0.12 cm	0.047 in
Track pitch	0.74 µm	
Access time		
Random	< 150 ms	
Full stroke	< 225 ms	
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	128 KB	
Data transfer rate		
Sustained, 16X	150 KB/s	
Sustained, 4X CD-RW	5,520 KB/s	
Normal PIO Mode 4 (single burst)	16.6 MB/s	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

Table 6-7
System DMA

Hardware DMA	System Function
DMA0	Available for audio
DMA1*	Entertainment audio (default; alternate = DMA0, DMA3, none)
DMA2*	Diskette drive
DMA3	ECP parallel port LPT1 (default; alternate = DMA0, none)
DMA4	DMA controller cascading (not available)
DMA5*	Available for PC Card
DMA6	Not assigned
DMA7	Not assigned
* PC Card controller can use DMA 1, 2, or 5.	

**Table 6-8
System Interrupts**

Hardware IRQ	System Function
IRQ0	System timer
IRQ1	Keyboard controller
IRQ2	Cascaded
IRQ3	COM2
IRQ4	COM1
IRQ5	Audio (default)*
IRQ6	Diskette drive
IRQ7	Parallel port
IRQ8	Real time clock (RTC)
IRQ9	Infrared
IRQ10	System use
IRQ11	System use
IRQ12	Internal point stick or external mouse
IRQ13	Coprocessor (not available to any peripheral)
IRQ14	IDE interface (hard drive and optical drive)
IRQ15	System use

✎ PC Cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4.

*Default configuration; audio possible configurations are IRQ5, IRQ7, IRQ9, IRQ10, or none.

Table 6-9
System I/O Addresses

I/O Address (hex)	System Function (shipping configuration)
000 - 00F	DMA controller no. 1
010 - 01F	Unused
020 - 021	Interrupt controller no. 1
022 - 024	Opti chipset configuration registers
025 - 03F	Unused
02E - 02F	87334 "Super I/O" configuration for CPU
040 - 05F	Counter/timer registers
044 - 05F	Unused
060	Keyboard controller
061	Port B
062 - 063	Unused
064	Keyboard controller
065 - 06F	Unused
070 - 071	NMI enable/real time clock
072 - 07F	Unused
080 - 08F	DMA page registers
090 - 091	Unused
092	Port A
093 - 09F	Unused
0A0 - 0A1	Interrupt controller no. 2

Table 6-9
System I/O Addresses *(Continued)*

I/O Address (hex)	System Function (shipping configuration)
0A2 - 0BF	Unused
0C0 - 0DF	DMA controller no. 2
0E0 - 0EF	Unused
0F0 - 0F1	Coprocessor busy clear/reset
0F2 - 0FF	Unused
100 - 16F	Unused
170 - 177	Secondary fixed disk controller
178 - 1EF	Unused
1F0 - 1F7	Primary fixed disk controller
1F8 - 200	Unused
201	Joystick (decoded in ESS1688)
202 - 21F	Unused
220 - 22F	Entertainment audio
230 - 26D	Unused
26E - 26	Unused
278 - 27F	Unused
280 - 2AB	Unused
2A0 - 2A7	Unused
2A8 - 2E7	Unused
2E8 - 2EF	Reserved serial port

Table 6-9
System I/O Addresses *(Continued)*

I/O Address (hex)	System Function (shipping configuration)
2F0 - 2F7	Unused
2F8 - 2FF	Infrared port
300 - 31F	Unused
320 - 36F	Unused
370 - 377	Secondary diskette drive controller
378 - 37F	Parallel port (LPT1/default)
380 - 387	Unused
388 - 38B	FM synthesizer—OPL3
38C - 3AF	Unused
3B0 - 3BB	VGA
3BC - 3BF	Reserved (parallel port/no EPP support)
3C0 - 3DF	VGA
3E0 - 3E1	PC Card controller in CPU
3E2 - 3E3	Unused
3E8 - 3EF	Internal modem
3F0 - 3F7	"A" diskette controller
3F8 - 3FF	Serial port (COM1/default)
CF8 - CFB	PCI configuration index register (PCIDIVO-1)
CFC - CFF	PCI configuration data register (PCIDIVO-1)

Table 6-10
System Memory Map

Size	Memory Address	System Function
640 KB	00000000-0009FFFFF	Base memory
128 KB	000A0000-000BFFFF	Video memory
48 KB	000C0000-000CBFFF	Video BIOS
160 KB	000C8000-000E7FFF	Unused
64 KB	000E8000-000FFFFF	System BIOS
15 MB	00100000-00FFFFFF	Extended memory
58 MB	01000000-047FFFFF	Super extended memory
58 MB	04800000-07FFFFFF	Unused
2 MB	08000000-080FFFFF	Video memory (direct access)
4 GB	08200000-FFFEFFFF	Unused
64 KB	FFFF0000-FFFFFFFF	System BIOS

A

Connector Pin Assignments

Table A-1
RJ-45 Network Interface
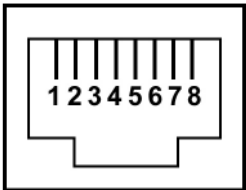
Pin	Signal	Pin	Signal
1	Transmit +	5	Unused
2	Transmit –	6	Receive –
3	Receive +	7	Unused
4	Unused	8	Unused

Table A-2
RJ-11 Modem
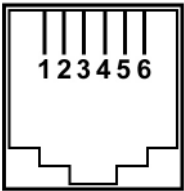
Pin	Signal	Pin	Signal
1	Unused	4	Unused
2	Tip	5	Unused
3	Ring	6	Unused

Table A-3
Universal Serial Bus
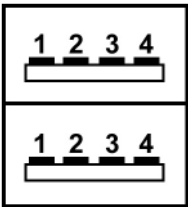
Pin	Signal	Pin	Signal
1	+5 VDC	3	Data +
2	Data –	4	Ground

Table A-4
Parallel
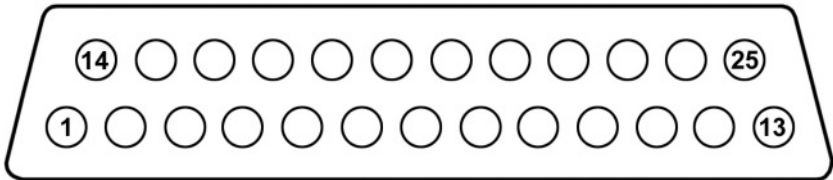
Pin	Signal	Pin	Signal
1	Strobe*	10	Acknowledge*
2	Data bit 0	11	Busy
3	Data bit 1	12	Paper out
4	Data bit 2	13	Select
5	Data bit 3	14	Auto line feed*
6	Data bit 4	15	Error*
7	Data bit 5	16	Initialize printer*
8	Data bit 6	17	Select in*
9	Data bit 7	18-25	Signal ground
*Signal is active low.			

**Table A-5
External Monitor**
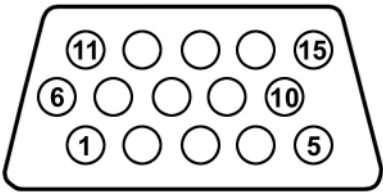
Pin	Signal	Pin	Signal
1	Red analog	9	+5 VDC
2	Green analog	10	Ground
3	Blue analog	11	Monitor detect
4	Not connected	12	DDC 2B data
5	Ground	13	Horizontal sync
6	Ground analog	14	Vertical sync
7	Ground analog	15	DDC 2B clock
8	Ground analog		

Table A-6
Stereo Speaker/Headphone
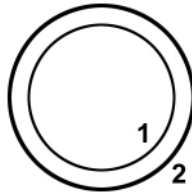
Pin	Signal	Pin	Signal
1	Audio out	2	Ground

Table A-7
Microphone
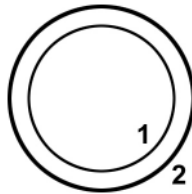
Pin	Signal	Pin	Signal
1	Audio in	2	Ground

B

Power Cord Set Requirements

3-Conductor Power Cord Set

The wide range input feature of the notebook permits it to operate from any line voltage from 100 to 120 or 220 to 240 volts AC.

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

Power cord sets for use in other countries must meet the requirements of the country where the notebook is used. For more information on power cord set requirements, contact a Compaq authorized reseller or service provider.

General Requirements

The requirements listed below are applicable to all countries:

■ The length of the power cord set must be at least 1.5 meters (5.00 feet) and a maximum of 2.0 meters (6.56 feet).

■ 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.

■ The power cord set must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.

■ The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector, for mating with the appliance inlet on the back of the notebook.

Country-Specific Requirements

3-Conductor Power Cord Set Requirements

Country	Accredited Agency	Applicable Note Number
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	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1

3-Conductor Power Cord Set Requirements

Country	Accredited Agency	Applicable Note Number
United Kingdom	BSI	1
United States	UL	2

Notes

1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm^2 conductor size. The power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where they will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. 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, 1.00 mm^2 conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
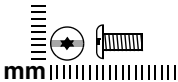
C

Screw Listing

This appendix provides specification and reference information for the screws used in the notebook. All screws listed in this appendix are available in the Miscellaneous Screw Kit, spare part number 310658-001.

Table C-1
Torx T8 M2.5 × 7.0 Screw

	Color	Qty.	Length	Thread	Head Width
mm	Black	24	7.0 mm	2.5 mm	5.0 mm

Where used:

❶ Two screws that secure the battery bay space saver to the notebook (documented in Section 5.3)

❷ Four screws that secure the hard drive to the notebook (documented in Section 5.3)

❸ One screw that secures the optical drive to the notebook (documented in Section 5.6)

❹ Two screws that secure the LED switch cover to the notebook (documented in Section 5.7)
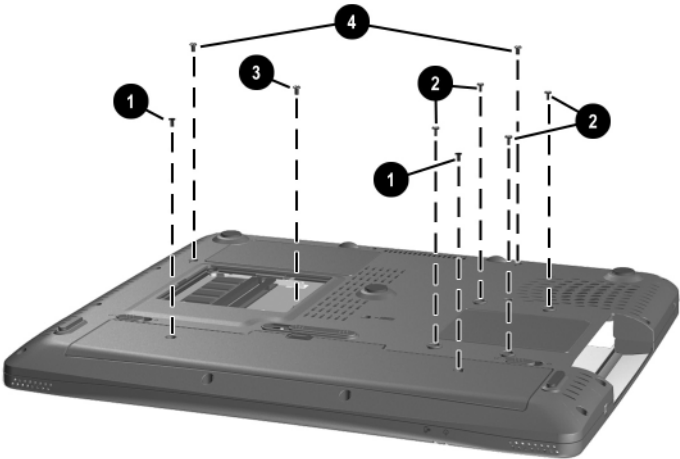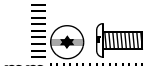
Figure C-1. Torx T8 M2.5 × 7.0 Screw Location

Table C-1
Torx T8 M2.5 × 7.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	24	7.0 mm	2.5 mm	5.0 mm
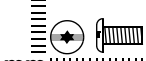
Where used:

Four screws that secure the display assembly to the notebook
(documented in Section 5.12)

Figure C-2. Torx T8 M2.5 × 7.0 Screw Locations

Table C-1
Torx T8 M2.5 × 7.0 Screw *(Continued)*

	Color	Qty.	Length	Thread	Head Width
mm	Black	24	7.0 mm	2.5 mm	5.0 mm

Where used:

Eleven screws that secure the top cover to the notebook (documented in Section 5.13)
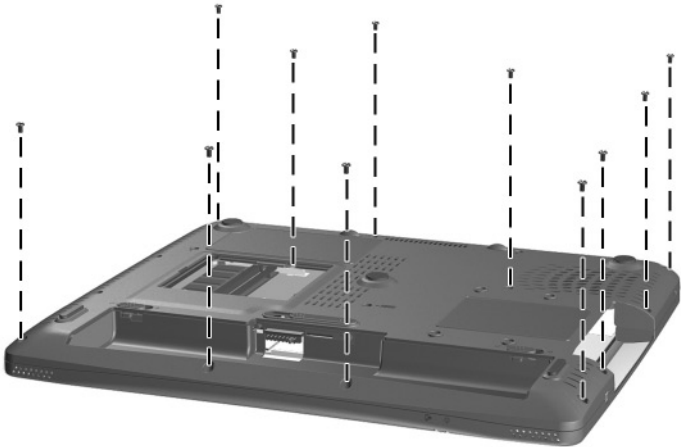
Figure C-3. Torx T8 M2.5 × 7.0 Screw Location

Table C-2
Phillips M3.0 × 4.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	4	4.0 mm	3.0 mm	4.0 mm

Where used:

Four screws that secure the hard drive to the hard drive bracket (documented in Section 5.3)
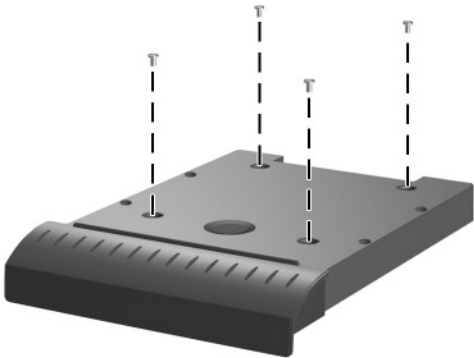
Figure C-4. Phillips M3.0 × 4.0 Screw Locations

Table C-3
Phillips M2.0 × 4.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	2	4.0 mm	2.0 mm	4.0 mm

Where used:

Two screws that secure the memory expansion compartment cover to the notebook (documented in Section 5.5)
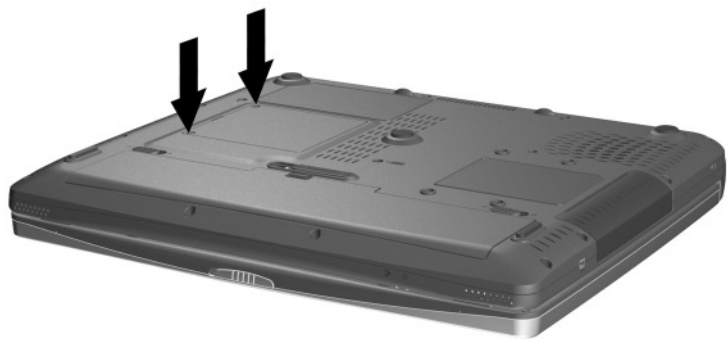
Figure C-5. Phillips M2.5 × 4.0 Screw Locations

Table C-4
Phillips M2.5 × 4.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Silver	11	4.0 mm	2.5 mm	4.0 mm

Where used:

❶ Four screws that secure the top cover to the base enclosure in the battery bay (documented in Section 5.13)

❷ Two screws that secure the top cover to the base enclosure in the optical drive bay (documented in Section 5.13)
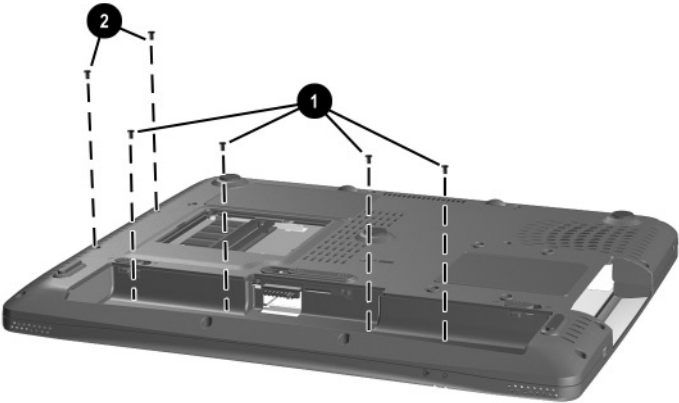
Figure C-6. Phillips M2.5 × 4.0 Screw Locations

Table C-4
Phillips M2.5 × 4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Silver	11	4.0 mm	2.5 mm	4.0 mm

Where used:

❶ One screw that secures the 1394 board to the base enclosure (documented in Section 5.14)

❷ Four screws that secure the system board to the base enclosure (documented in Section 5.16)
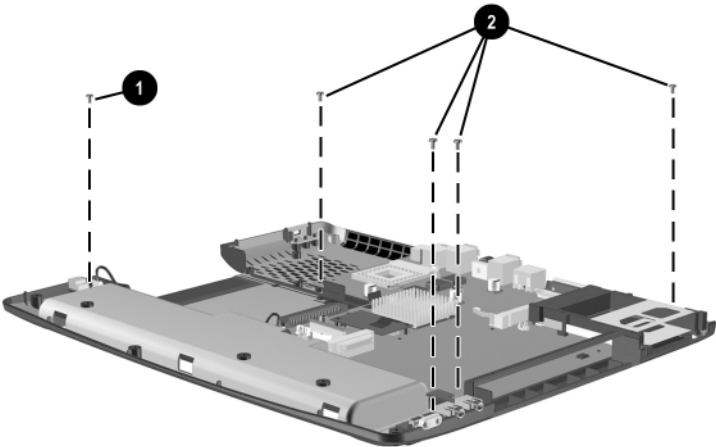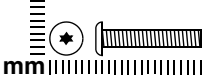
Figure C-7. Phillips M2.5 × 4.0 Screw Locations

Table C-5
Torx T8 M2.5 × 16.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	1	16.0 mm	2.5 mm	4.0 mm
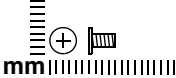
Where used:

One screw that secures the keyboard to the notebook
(documented in Section 5.8)

Figure C-8. Torx T8 M2.5 × 16.0 Screw Locations

Table C-6
Phillips M2.0 × 4.5 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	5	4.5 mm	2.0 mm	4.0 mm

Where used:

Three screws that secure the fan to the heat sink (documented in Section 5.10)
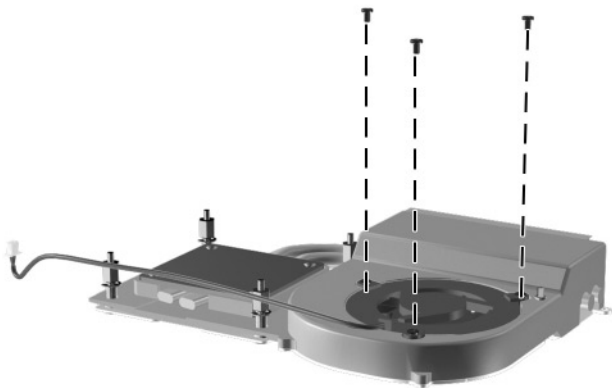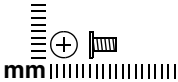
Figure C-9. Phillips M2.0 × 4.5 Screw Locations

Table C-6
Phillips M2.0 × 4.5 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	5	4.5 mm	2.0 mm	4.0 mm

Where used:

Two screws that secure the modem board to the system board
(documented in Section 5.11)
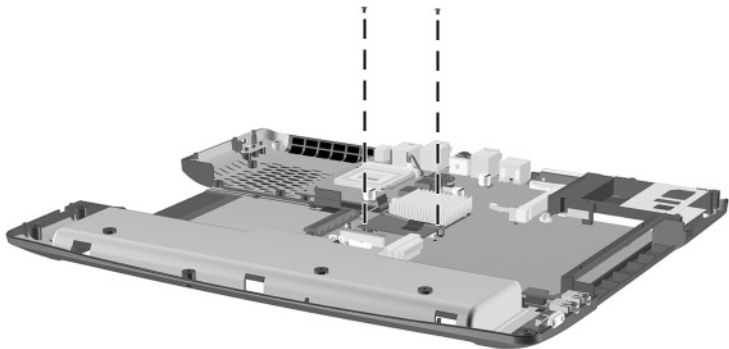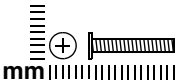
Figure C-10. Phillips M2.0 × 4.5 Screw Locations

Table C-7
Phillips M2.0 × 13.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	2	13.0 mm	2.0 mm	4.0 mm

Where used:

Two screws that secure the system board to the base enclosure on each side of the PC Card assembly (documented in Section 5.16)
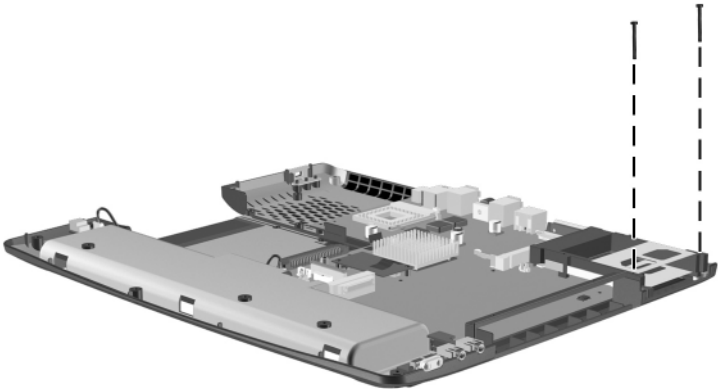
Figure C-11. Phillips M2.0 × 13.0 Screw Locations

Index