



Maintenance and Service Guide

HP Pavilion Widescreen Notebook zd7000

Document Part Number: 333621-001

August 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.

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:

[servicemanuals4u](http://servicemanuals4u.com)

Download from www.somanuals.com All Manuals Search And Download.

© 2003 Hewlett-Packard Development Company, L.P.

Microsoft and Windows are trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel and Pentium are trademarks of Intel Corporation in the U.S. and/or other countries. SD Logo is a trademark.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Maintenance and Service Guide
HP Pavilion Widescreen Notebook zd7000
First Edition August 2003
Document Part Number: 333621-001

Contents

1 Product Description

1.1 Models	1-2
1.2 Features	1-4
1.3 Clearing a Password	1-6
1.4 Power Management	1-7
1.5 External Components	1-8
1.6 Design Overview	1-18

2 Troubleshooting

2.1 Computer Setup and Diagnostics Utilities	2-1
Using Computer Setup	2-2
Selecting from the File Menu	2-3
Selecting from the Security Menu	2-4
Selecting from the Advanced Menu	2-5
2.2 Using Diagnostics for Windows	2-7
Obtaining, Saving, or Printing Configuration Information	2-7
Obtaining, Saving, or Printing Diagnostic Test Information	2-8
2.3 Troubleshooting Flowcharts	2-10

3 Illustrated Parts Catalog

3.1 Serial Number Location	3-1
3.2 Notebook Major Components	3-2
3.3 Miscellaneous Plastics Kit Components	3-8
3.4 Miscellaneous Cable Kit Components	3-9
3.5 Mass Storage Devices	3-10
3.6 Miscellaneous	3-11

4 Removal and Replacement Preliminaries

4.1 Tools Required	4-1
4.2 Service Considerations	4-2
Plastic Parts	4-2
Cables and Connectors	4-2
4.3 Preventing Damage to Removable Drives	4-3
4.4 Preventing Electrostatic Damage	4-4
4.5 Packaging and Transporting Precautions	4-4
4.6 Workstation Precautions	4-5
4.7 Grounding Equipment and Methods	4-6

5 Removal and Replacement Procedures

5.1 Serial Number	5-2
5.2 Disassembly Sequence Chart	5-3
5.3 Preparing the Notebook for Disassembly	5-4
5.4 Notebook Feet	5-7
5.5 Memory Expansion Board	5-8
5.6 Mini PCI Communications Board	5-10
5.7 Optical Drive	5-11
5.8 Keyboard	5-12
5.9 Keyboard Cover	5-16

5.10 Display Assembly	5-18
5.11 Top Cover	5-20
5.12 System Board	5-23
5.13 RTC Battery	5-27
5.14 Heat Sink	5-28
5.15 Processor	5-32
5.16 SD Card Slot/Infrared Module	5-34
5.17 Speakers	5-36

6 Specifications

A Connector Pin Assignments

B Power Cord Set Requirements

3-Conductor Power Cord Set	B-1
General Requirements	B-1
Country-Specific Requirements	B-2

C Screw Listing

Index

Product Description

The HP Pavilion Widescreen Notebook zd7000 offers advanced modularity, Intel Mobile Pentium DT processors with 64-bit architecture, industry-leading NVIDIA graphics controllers, and extensive multimedia support.



HP Pavilion Widescreen Notebook zd7000

1.1 Models

Notebook model information is shown in Tables 1-1 and 1-2.

**Table 1-1
HP Pavilion Widescreen Notebook zd7000
Model Naming Conventions**

Key									
V	P	320	Y7	80	Y	Gg	10	H	XXXXXXX-XXX
1	2	3	4	5	6	7	8	9	10
Key	Description	Options							
1	Brand/Series designator	V = Pavilion							
2	Processor type	P = Intel Pentium 4 DT							
3	Processor speed	320 = 3.20 GHz 306 = 3.06 GHz				280 = 2.80 GHz 266 = 2.66 GHz			
4	Display type/size/resolution	Y = wide SXGA+ (1680 × 1050) W = wide XGA (1280 × 800)				7 = 17.1 in 5 = 15.4 in			
5	Hard drive size	80 = 80 GB				60 = 60 GB			
6	Optical drive designator	Y = DVD-RW				W = DVD-ROM/ CD-RW combo			
7	Integrated communication/wireless device	G = combination modem + GB NIC g = 802.11g Bluetooth N = none							
8	RAM	10 = 1024 MB 76 = 768 MB				51 = 512 MB			
9	Operating system	H = Windows XP Home							
10	SKU#								

Table 1-2
HP Pavilion Widescreen Notebook zd7000

All HP Pavilion zd7000 models feature:

- TouchPad pointing device
- 12-cell, lithium ion (Li-Ion) battery pack
- 1-year warranty on parts and labor

V7999	P	320	Y7	80	Y	Gg	10	H	
United States		DP446U ABA							
V7001	P	320	Y7	80	Y	Gg	76	H	
France			DP353E ABF			Spain	DP353E ABE		
Germany			DP763E ABD			Switzerland	DP353E ABZ		
Italy			DP353E UUZ			United Kingdom	DP353E ABU		
V7020	P	280	Y7	80	Y	Gg	51	H	
United States		DR089U ABA							
V7030	P	306	Y7	80	Y	Gg	10	H	
United States		DM790A ABA							
V7001	P	306	Y7	80	Y	GN	51	H	
United States		DM793A ABA							
V7020	P	280	Y7	80	Y	Gg	51	H	
United States		DM794A ABA							
V7005	P	280	Y7	60	Y	Gg	51	H	
United States		DP448U ABA							
V7040	P	280	Y7	60	W	GN	51	H	
France			DP761E ABF			Spain	DP761E ABE		
Germany			DP762E ABD			Switzerland	DP761E UUZ		
Italy			DP761E ABZ			United Kingdom	DP761E ABU		
V7010	P	266	Y7	60	W	Gg	51	H	
United States		DM788A ABA							
V7998	P	266	W5	60	W	Gg	51	H	
United States		DP447U ABA							

1.2 Features

- The following processors, all with 512-KB L2 cache, are available, varying by notebook model:
 - ❑ Intel Pentium 4 DT 3.2-GHz processor with Hyper-Threading front-side bus (FSB)
 - ❑ Intel Pentium 4 DT 3.2-, 3.0-, and 2.8-GHz processors with 800-MHz FSB
 - ❑ Intel Pentium 4 DT 3.06-, 2.8-, and 2.66-GHz processors with 533-MHz FSB
- 17.0- or 15.4-inch wide XGA (1490×900) TFT display with over 16.7 million colors, varying by notebook model
- NVIDIA GeForce FX Go5000 with 128-MB video memory, NVIDIA GeForce FX Go5000 with 64-MB video memory, or NVIDIA GeForce 4 440 Go with 64-MB video memory, varying by notebook model
- 80-, 60-, or 40-GB high-capacity hard drive, varying by notebook model
- 256-MB DDR Synchronous DRAM (SDRAM) at 333 MHz, expandable to 2.0 GB
- Microsoft Windows XP Home or XP Pro, varying by notebook model
- Full-size Windows 98 keyboard with integrated numeric keypad
- TouchPad pointing device with on/off button and dedicated vertical scroll up/down pad
- Integrated Secure Digital (SD) flash media slot
- Integrated 10/100BASE-T Ethernet local area network (LAN) network interface card (NIC) with RJ-45 connector
- Integrated wireless support for Mini PCI 802.11b/g and Bluetooth LAN devices

- Support for one Type II PC Card slot with support for both 32-bit (CardBus) and 16-bit PC Cards
- External 135-watt AC adapter with power cord
- 12-cell Li-Ion battery pack
- Harman/Kardon stereo speakers
- Support for the following optical drives:
 - 24X Max DVD/CD-RW combination drive
 - 8X Max DVD-RW drive
 - 24X Max CD-ROM drive
- Connectors:
 - SD Card
 - Infrared
 - 1 Type II PC Card slot
 - RJ-11 (modem)
 - RJ-45 (network interface card, [NIC])
 - 4 Universal Serial Bus (USB) v. 2.0
 - S-Video
 - Parallel
 - External monitor
 - DC power
 - Docking
 - IEEE 1394 digital
 - Microphone
 - Stereo speaker/headphone

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 5.13, “RTC Battery”).
3. Wait approximately 5 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.

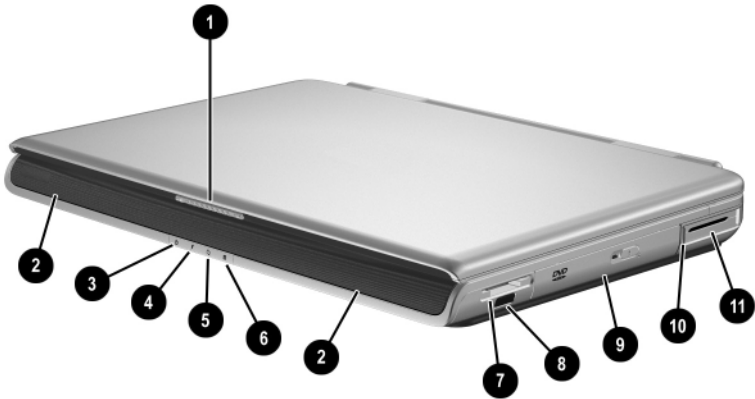
1.4 Power Management

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 the level of performance
- Battery calibration
- Lid switch Standby/resume
- Power/Standby button
- Advanced Configuration and Power Management (ACPM) compliance

1.5 External Components

The external components on the front panel and right side of the notebook are shown below and described in Table 1-3.

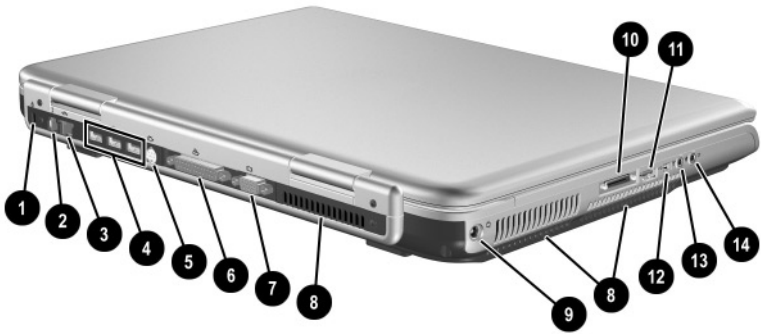


Front Panel and Right-Side Components

Table 1-3
Front and Right Side Components

Item	Component	Function
1	Display release latch	Opens the notebook.
2	Stereo speakers (2)	Produce stereo sound.
3	Integrated Drive Electronics (IDE) drive light	On: The internal hard drive or optical drive is being accessed.
4	Battery light	<ul style="list-style-type: none"> ■ On: The notebook is receiving battery power. ■ Amber: A battery pack is charging. ■ Green: A battery pack is fully charged. ■ Flashing: A battery pack is malfunctioning and might need to be replaced.
5	AC power light	On: The notebook is receiving AC power.
6	Power/Standby light	On: Notebook is turned on. Flashing: Notebook is in Standby.
7	Digital Media slot	Supports SD, MMC, Memory Stick, and SmartMedia.
8	Infrared port	Provides wireless communication between the notebook and an optional IrDA-compliant device.
9	Optical drive	Supports an optical disc.
10	PC Card eject button	Ejects an optional PC Card from the PC Card slot.
11	PC Card slot	Supports an optional Type I or Type II 32-bit (CardBus) or 16-bit PC Card.

The external components on the rear panel and left side are shown below and described in Table 1-4.



Rear Panel and Left-Side Components

Table 1-4
Rear Panel and Left-Side Components



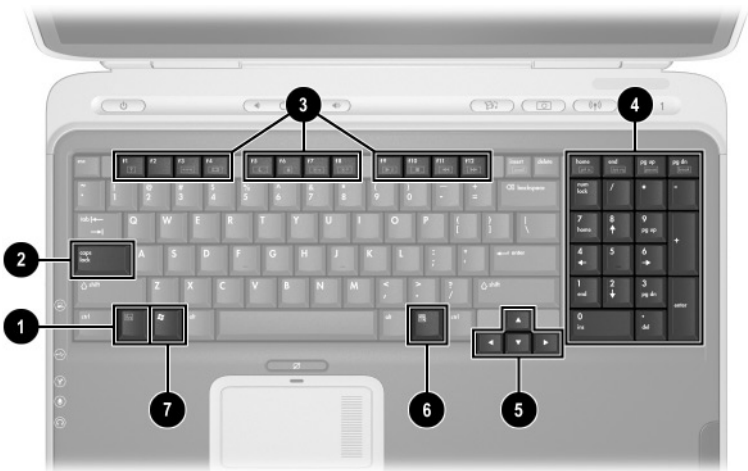
Item	Component	Function
1	Security cable slot	Attaches an optional security cable to the notebook.
	The purpose of security solutions is to act as a deterrent. These solutions do not prevent the product from being mishandled or stolen.	
2	RJ-11 telephone jack	Connects a modem cable.
3	RJ-45 network jack	Connects an Ethernet network cable.
4	USB connectors (3)	Connect optional 2.0-compliant USB devices.
5	S-Video jack	Connects an optional S-Video device, such as a television, VCR, camcorder, projector, or video capture card.

Table 1-4
Rear Panel and Left-Side Components (Continued)

Item	Component	Function
6	Parallel connector	Connects an optional parallel device such as a printer.
7	External monitor connector	Connects an optional VGA external monitor or projector.
8	Vents (3)	Allow airflow to cool internal components.
	To prevent overheating, use the notebook only on hard surfaces that cannot obstruct the vents. Do not allow a soft surface, such as bedding, clothing, or a thick rug, to block airflow.	
9	Power connector	Connects an AC adapter cable.
10	HP notebook expansion base connector	Connects to an optional expansion base.
11	USB connector	Connects optional 2.0-compliant USB devices.
12	1394 connector	Connects an optional 1394 device such as a camcorder or digital camera.
13	Microphone jack	Connects an optional monaural or stereo microphone.
14	Audio line-out jack	Connects optional headphone or powered stereo speakers. Also connects the audio function of an audio/video device such as a television or VCR.

The notebook keyboard components are shown below and described in Table 1-5.

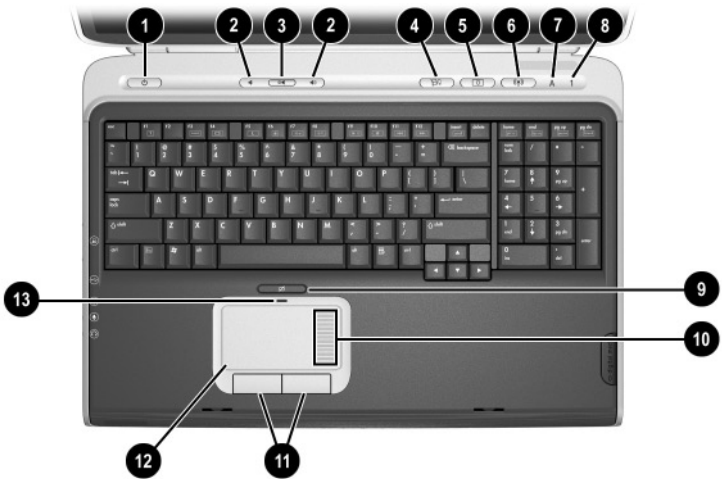


Keyboard Components

Table 1-5
Keyboard Components

Item	Component	Function
1	fn key	Executes frequently used system functions when pressed in combination with another key.
2	caps lock key	Enables caps lock and turns on the caps lock light.
3	f1 through f12 function keys	Perform system and application tasks. When combined with the fn key, the function keys f1 and f3 through f12 perform additional tasks as hotkeys.
4	Keypad keys (17)	Standard numeric keypad.
5	Cursor control keys	Move the cursor around the screen.
6	Applications key	Displays a shortcut menu for items beneath the pointer.
7	Microsoft logo key	Displays the Windows Start menu.

The notebook top components are shown below and described in Table 1-6.




Top Components

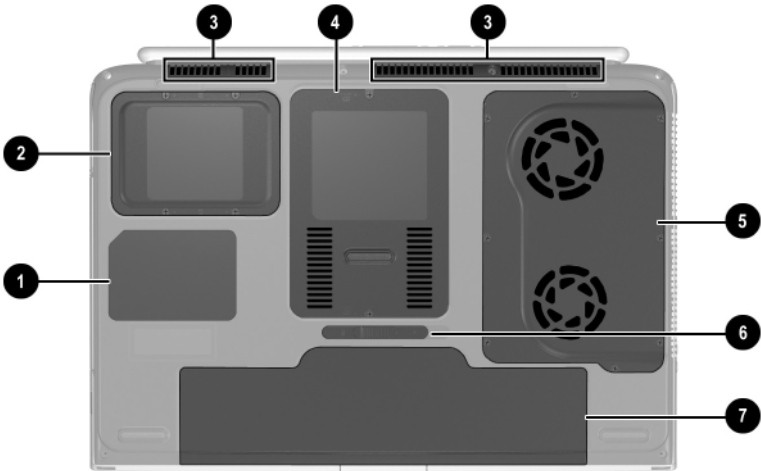
**Table 1-6
Top Components**

Item	Component	Function
1	Power button	When the notebook is: <ul style="list-style-type: none"> ■ Off, press to turn on the notebook. ■ On, briefly press to initiate Hibernation. ■ In Standby, briefly press to resume from Standby. ■ In Hibernation, briefly press to restore from Hibernation.
	Power/Standby light	<ul style="list-style-type: none"> ■ On: Notebook is turned on. ■ Flashing: Notebook is in Standby.
2	Volume control buttons (2)	Increase or decrease system volume.

Table 1-6
Top Components (Continued)


Item	Component	Function
3	Mute button	Mutes or restores volume.
	Mute light	On: Volume is muted.
4	Media button	Launches a multimedia application.
5	Picture button	Launches a digital imaging application.
	The settings for the media and picture buttons can be changed. Refer to the "Using Custom Assignments and Schemes" section in Chapter 3 of the Startup and Reference Guide for information on reassigning these buttons to other applications.	
6	Wireless on/off button	Turns the wireless network device on and off.
	Wireless on/off light	On: an integrated wireless device has been enabled.
7	Caps lock light	On: Caps lock is on.
8	Num lock light	On: Num lock is on.
9	TouchPad on/off button	Enables/disables the TouchPad.
10	TouchPad scroll zone	Scrolls upward or downward.
11	Left and right TouchPad buttons	Function like the left and right buttons on an external mouse.
12	TouchPad	Moves the pointer and selects or activates items on the screen.
13	TouchPad light	On: TouchPad is enabled.

The external components on the bottom of the notebook are shown below and described in Table 1-7.



Bottom Components

**Table 1-7
Bottom Components**

Item	Component	Function
1	Labels area	Contains the notebook serial number and other applicable regulatory labels.
2	Hard drive bay	Holds the internal hard drive.
3	Vents (3)	Allow airflow to cool internal components.
	To prevent overheating, do not obstruct vents. Using the notebook on a soft surface, such as a pillow, blanket, rug, or thick clothing, can block airflow.	
4	Memory expansion/Mini PCI communication compartment	Contains two memory slots for optional 256-, 512-, or 1024-MB memory modules and one slot for a Mini PCI wireless card.
5	Fan compartment	Contains the heat sink and the two system fans.
6	Battery release latch	Releases a battery pack from the battery bay.
7	Battery bay	Holds the battery pack.

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
- Mini PCI communications devices
- Hard drive
- Display
- Keyboard and TouchPad
- Audio
- Intel Pentium 4 DT processors
- Fan
- PC Card

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 on the left and right sides of the notebook.

Troubleshooting



WARNING: Only authorized technicians trained by HP 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, do not attempt to make repairs at the component level or 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 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.

- **Diagnostics for Windows**—A system information and diagnostic utility that is used within the Windows operating system. Use this utility whenever possible to:
 - ❑ Display system information.
 - ❑ Test system components.
 - ❑ Troubleshoot a device configuration problem in Windows XP Professional or Windows XP Home.



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

Using Computer Setup

Information and settings in Computer Setup are accessed from the File, Security, or Advanced menus:

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	<ul style="list-style-type: none"> ■ View identification information about the notebook, an expansion 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 Computer Security, a program accessed from the Windows Control Panel.
Power-on Password	Enter, change, or delete a power-on password.
DriveLock Passwords	<p>Enable/disable DriveLock; change a DriveLock User or Master password.</p> <p> DriveLock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the notebook.</p>
Password Options (Password options can be selected only when a power-on password has been set.)	<p>Enable/disable:</p> <ul style="list-style-type: none"> <input type="checkbox"/> QuickLock <input type="checkbox"/> QuickLock on Standby <input type="checkbox"/> QuickBlank <p> To enable QuickLock on Standby or QuickBlank, you must first enable QuickLock.</p>
Device Security	<p>Enable/disable:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ports or diskette drives* <input type="checkbox"/> Diskette write* <input type="checkbox"/> CD-ROM or diskette startup <p> Settings for a DVD-ROM can be entered in the CD-ROM field.</p>
System IDs	Enter identification numbers for the notebook, an expansion 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	Change the Computer Setup language.
Boot Options	<p>Enable/disable:</p> <ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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 an expansion base as the primary device. (When the notebook display is set as secondary, the notebook must be shut down before undocking from an expansion base.)

**Table 2-3
Advanced Menu (Continued)**

Select	To Do This
Device Options <i>(continued)</i>	<ul style="list-style-type: none"> ■ Change the parallel port mode from Enhanced Parallel Port (EPP, the default setting) to standard, bidirectional, EPP, or Enhanced Capabilities Port (ECP). ■ 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 expansion bases that are identically equipped. Select Disable to recognize the expansion bases as a single expansion base; select Enable to recognize the expansion 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 can use NTSC, PAL, or PAL-M.

2.2 Using Diagnostics for Windows

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

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

Diagnostics for Windows is designed to test HP components. If non-HP components are tested, the results might be inconclusive.

Obtaining, Saving, or Printing Configuration Information

1. Access Diagnostics for Windows by selecting Start > Settings > Control Panel > Diagnostics for Windows.
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 Diagnostics for Windows, select File > Exit.

Obtaining, Saving, or Printing Diagnostic Test Information

1. Access Diagnostics for Windows by selecting Start > Settings > Control Panel > Diagnostics for Windows.
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 check box 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. You might be prompted to insert or remove devices.
 - ❑ **Unattended Mode**—Does not display prompts. If errors are found, they are displayed when testing is complete.

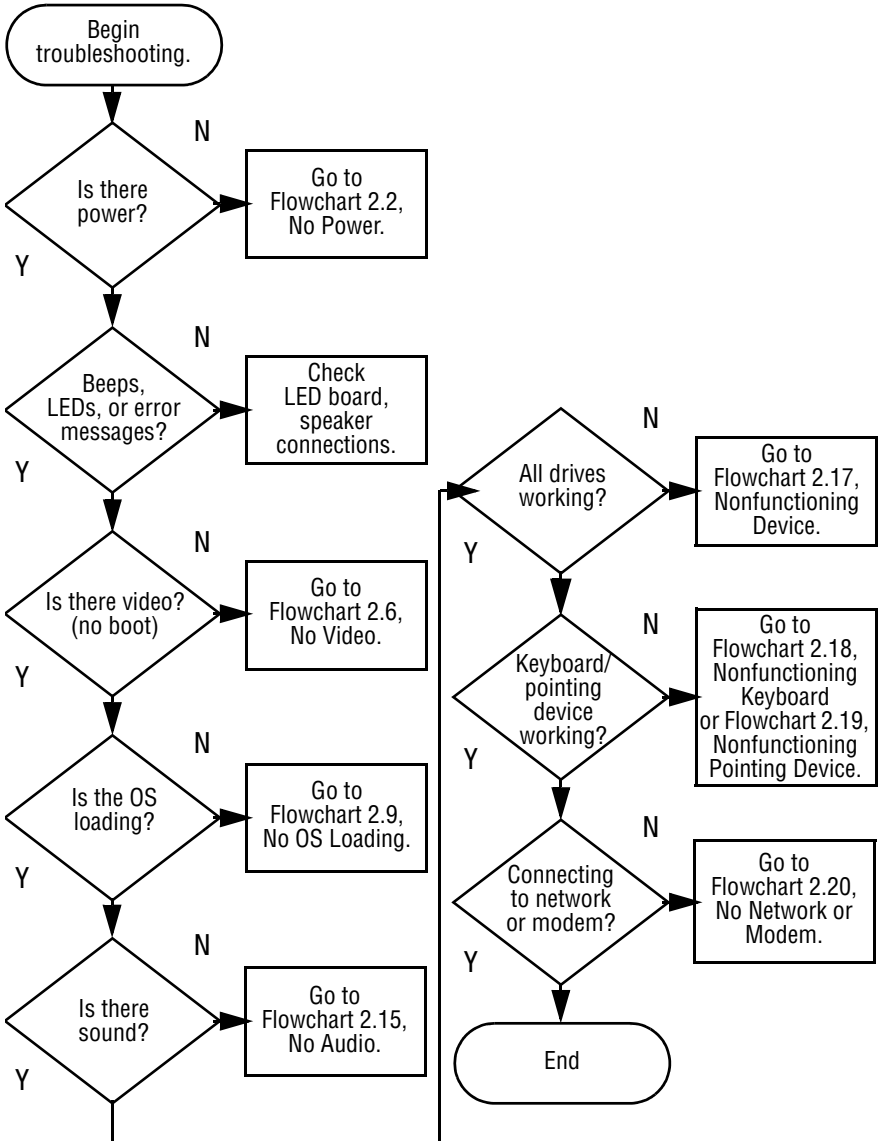
6. Select the Begin Testing button.
7. Select a tab to view a test report:
 - ❑ **Status tab**—Summarizes the tests run, passed, and failed during the current testing session.
 - ❑ **Log tab**—Lists tests run on the system, the number of times each test has run, the number of errors found on each test, and the total run time of each test.
 - ❑ **Error tab**—Lists all errors found in the notebook with the corresponding 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

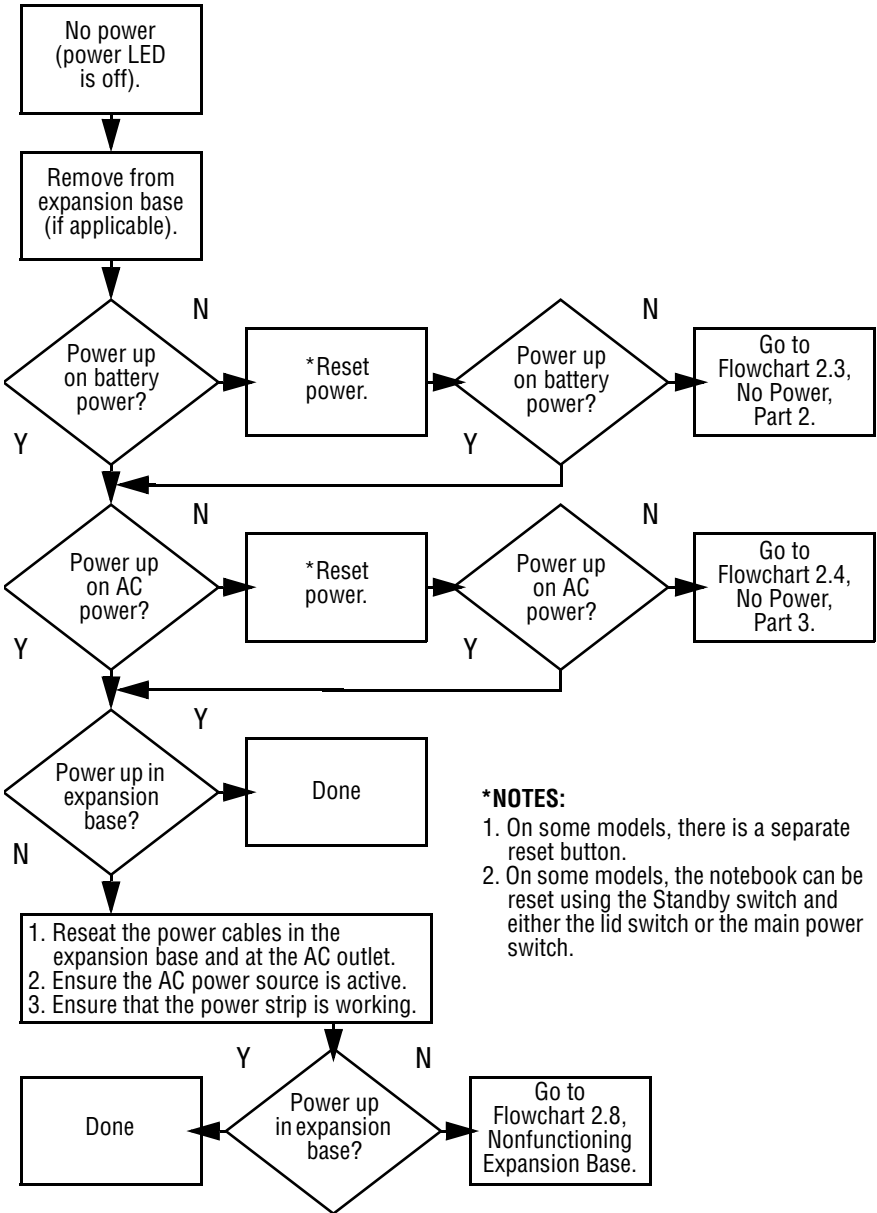
Table 2-4
Troubleshooting Flowcharts Overview

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 expansion base
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 diskette drive
2.14	No OS loading from CD- or DVD-ROM drive
2.15	No audio, part 1
2.16	No audio, part 2
2.17	Nonfunctioning device
2.18	Nonfunctioning keyboard
2.19	Nonfunctioning pointing device
2.20	No network or modem connection

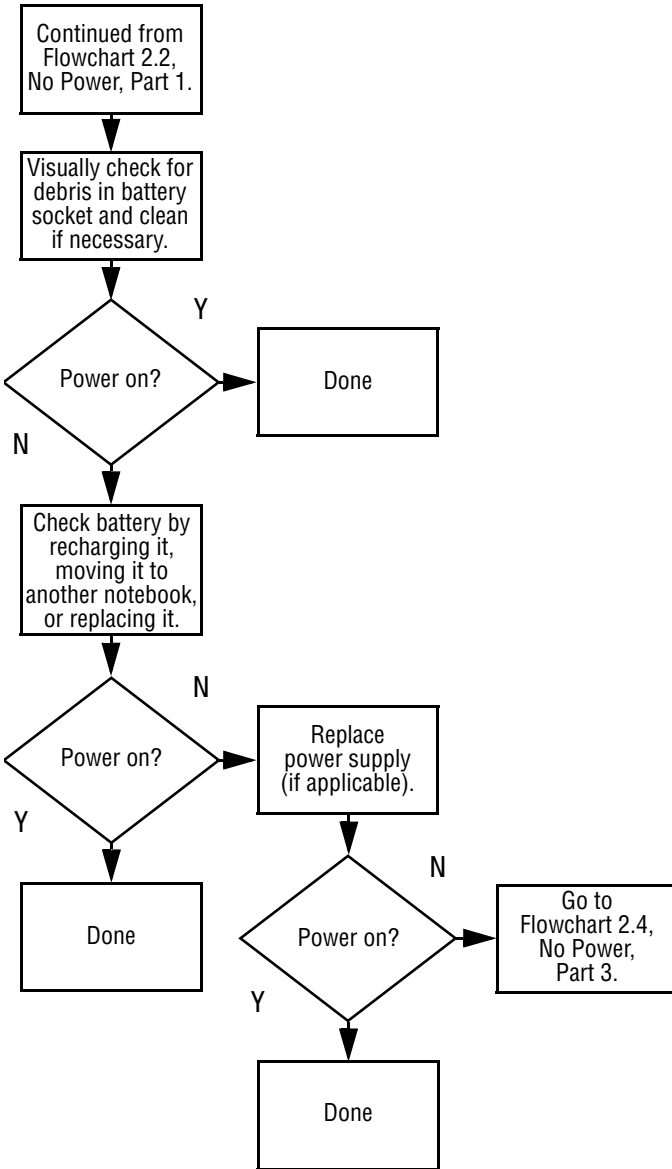
Flowchart 2.1 – Initial Troubleshooting



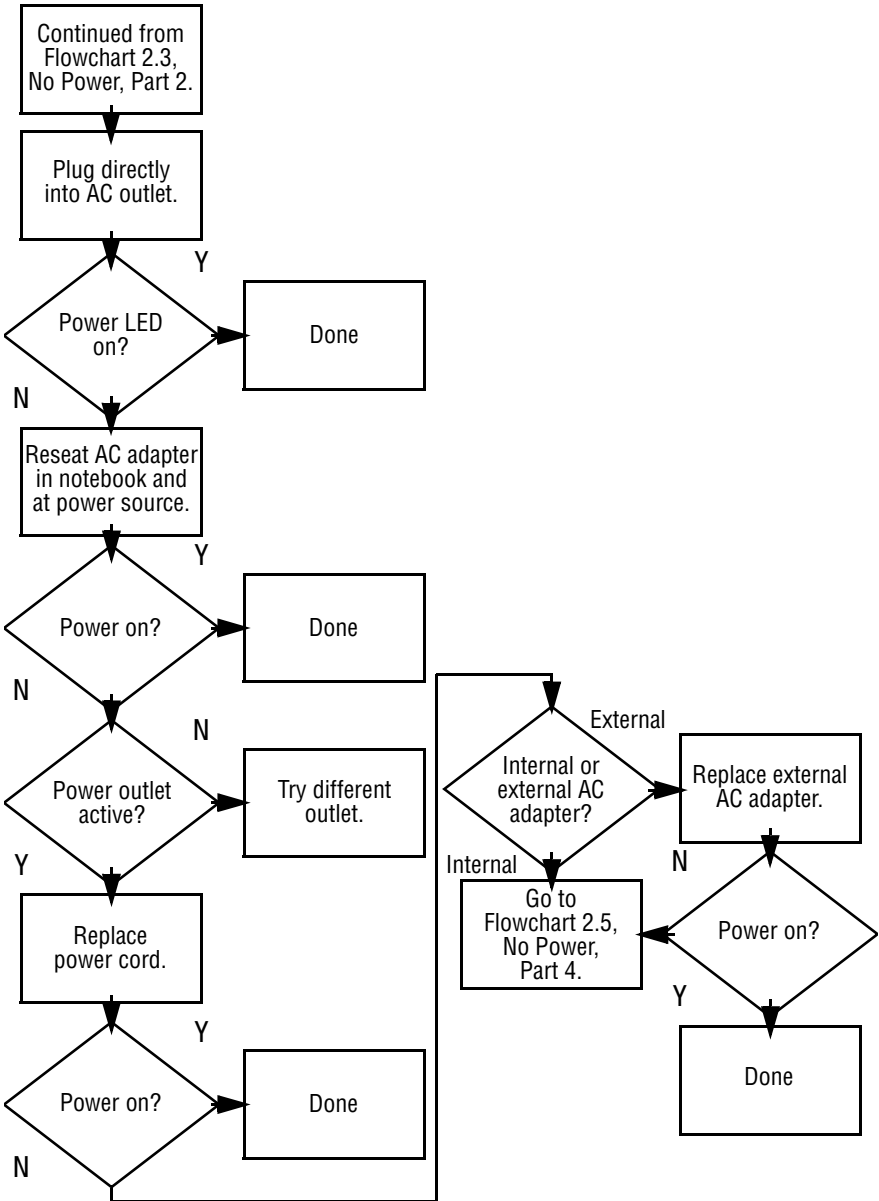
Flowchart 2.2—No Power, Part 1



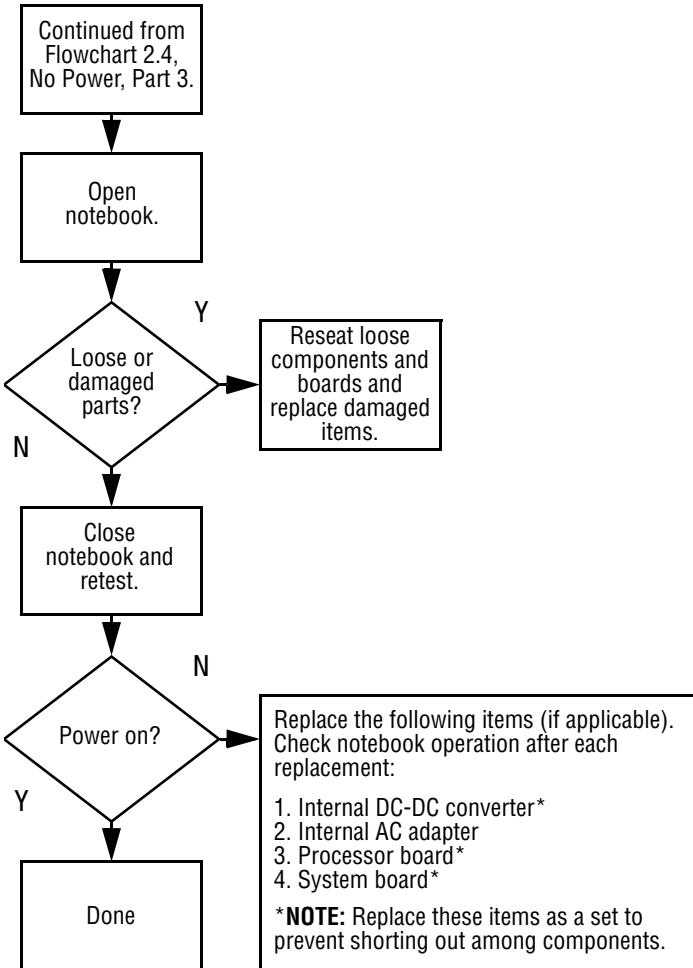
Flowchart 2.3—No Power, Part 2



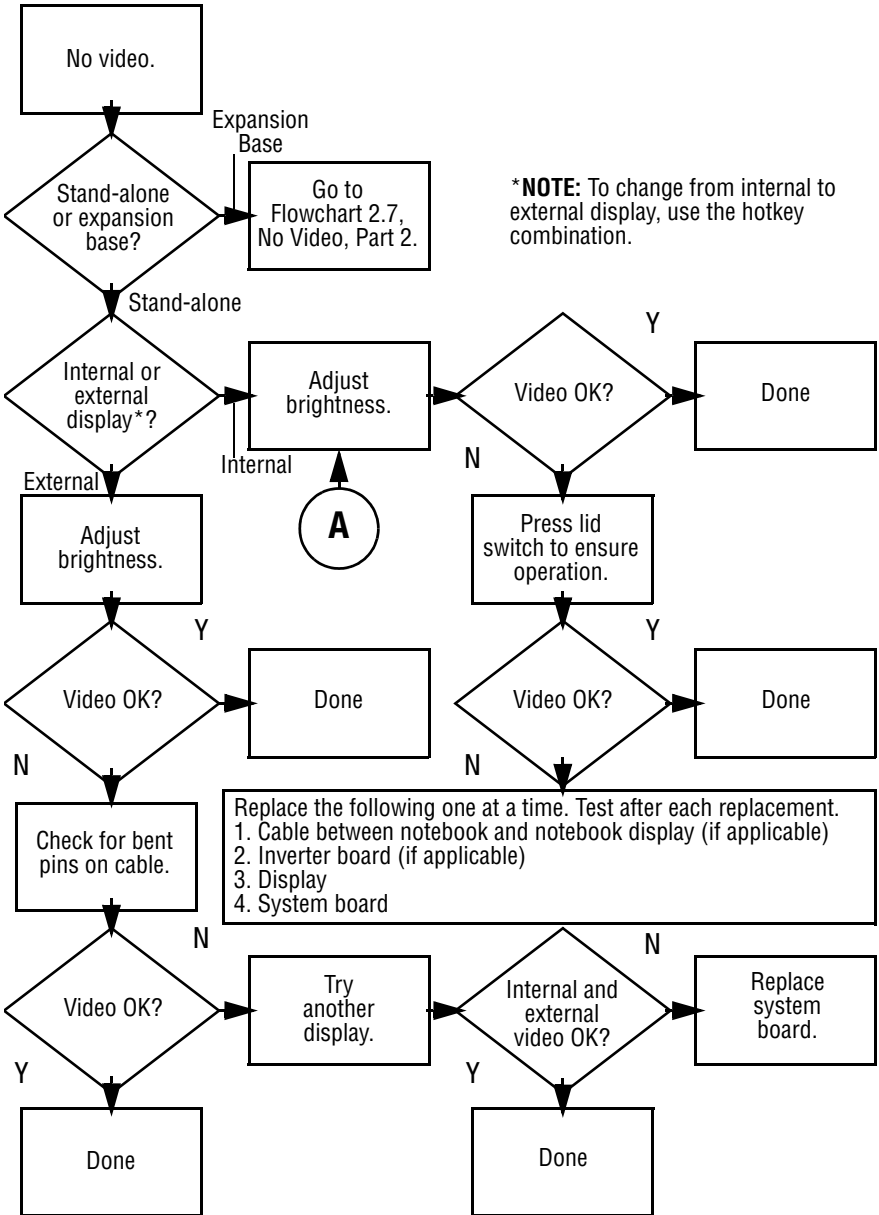
Flowchart 2.4—No Power, Part 3



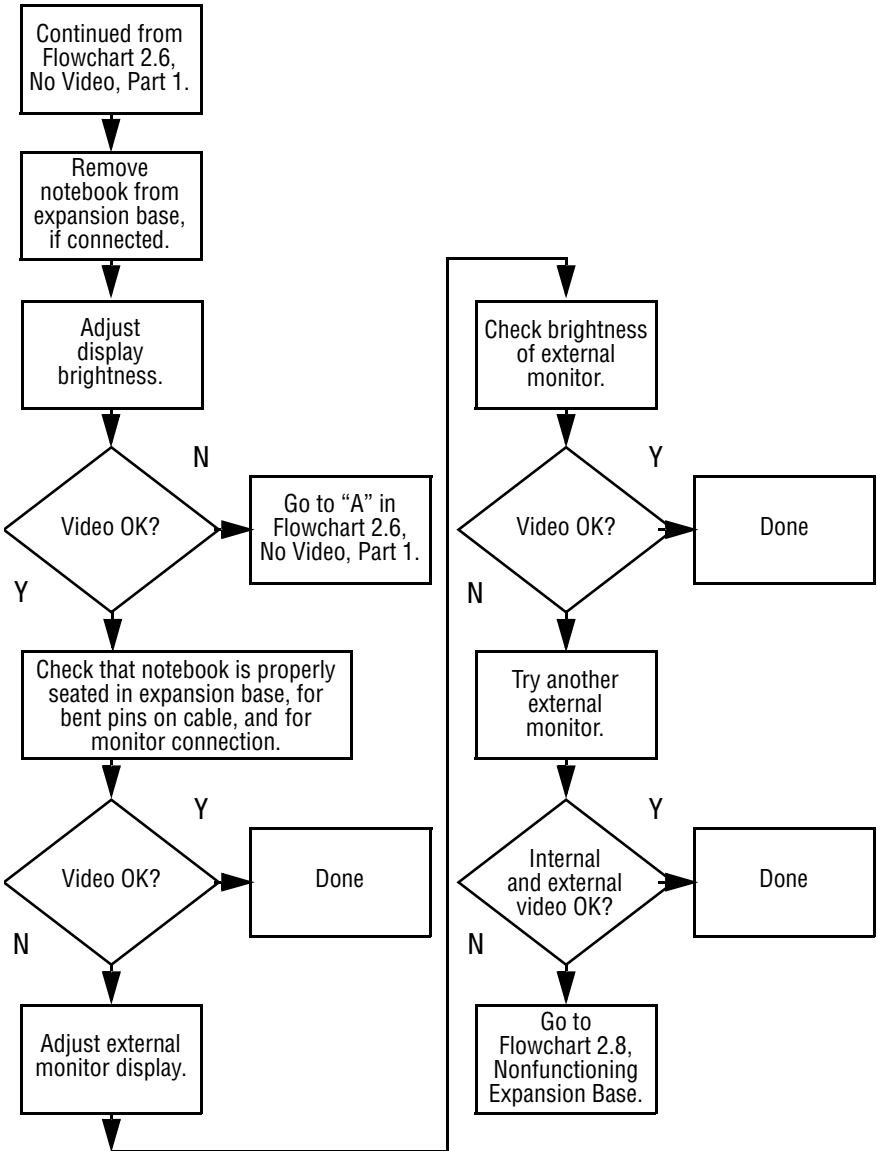
Flowchart 2.5—No Power, Part 4



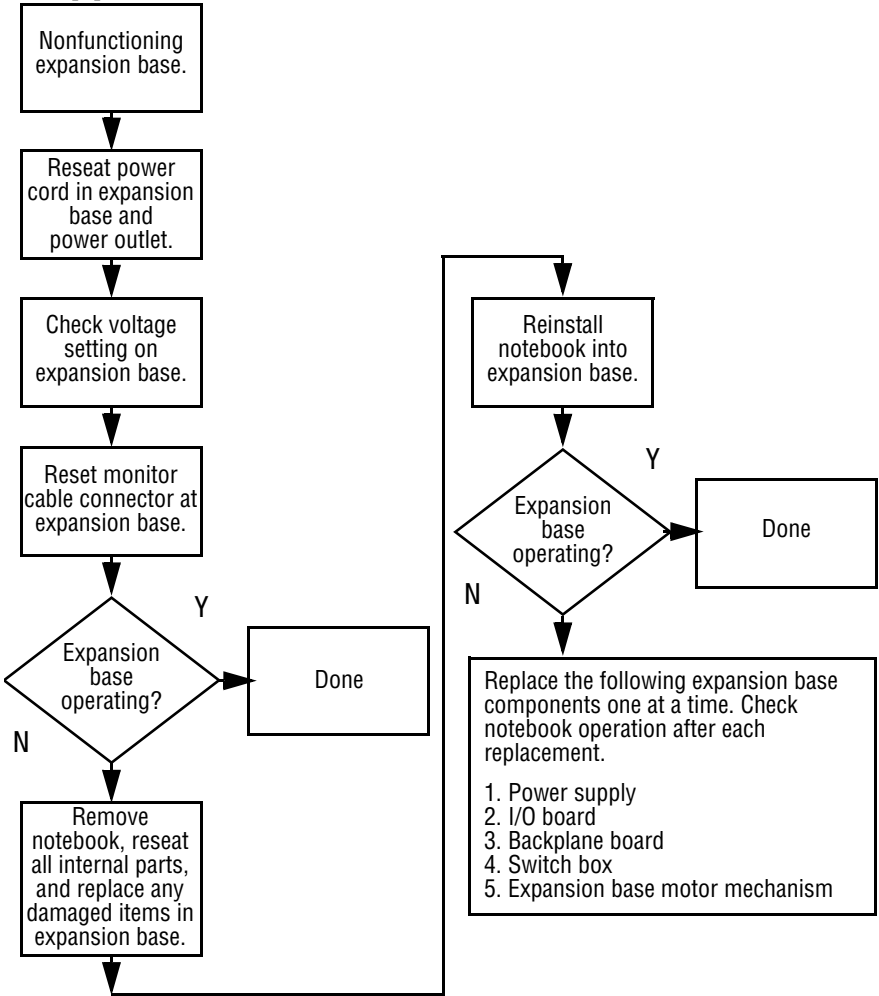
Flowchart 2.6—No Video, Part 1



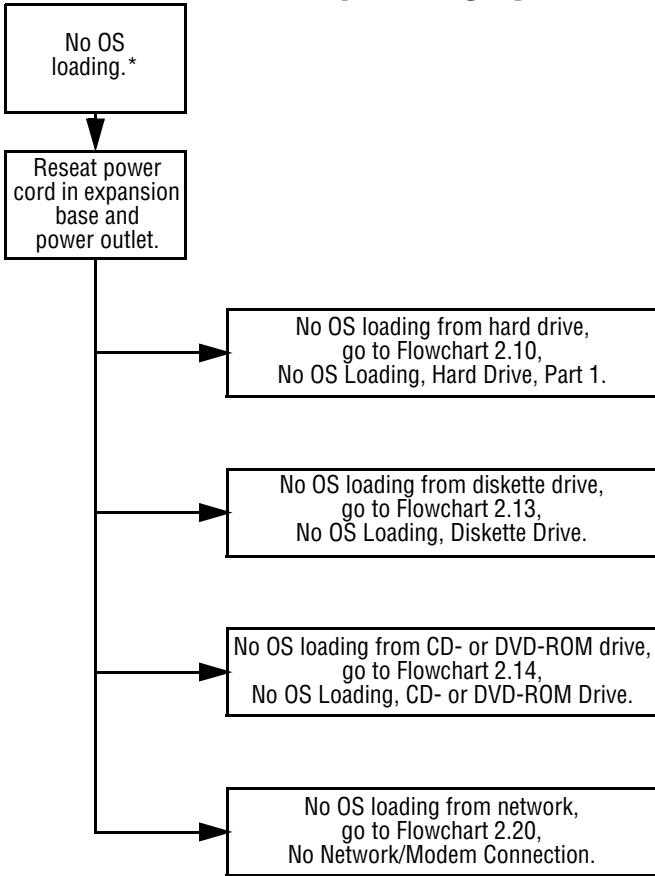
Flowchart 2.7—No Video, Part 2



Flowchart 2.8—Nonfunctioning Expansion Base (if applicable)

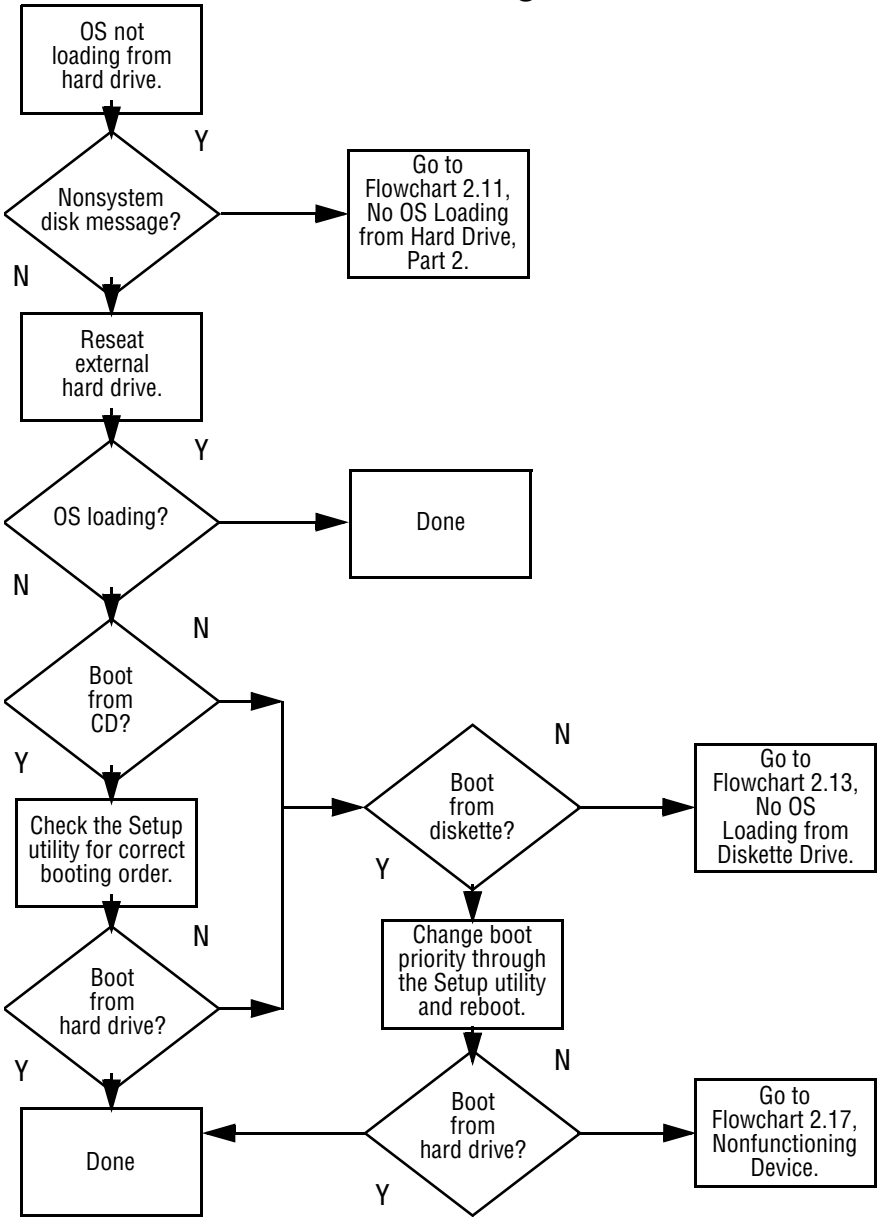


Flowchart 2.9—No Operating System (OS) Loading

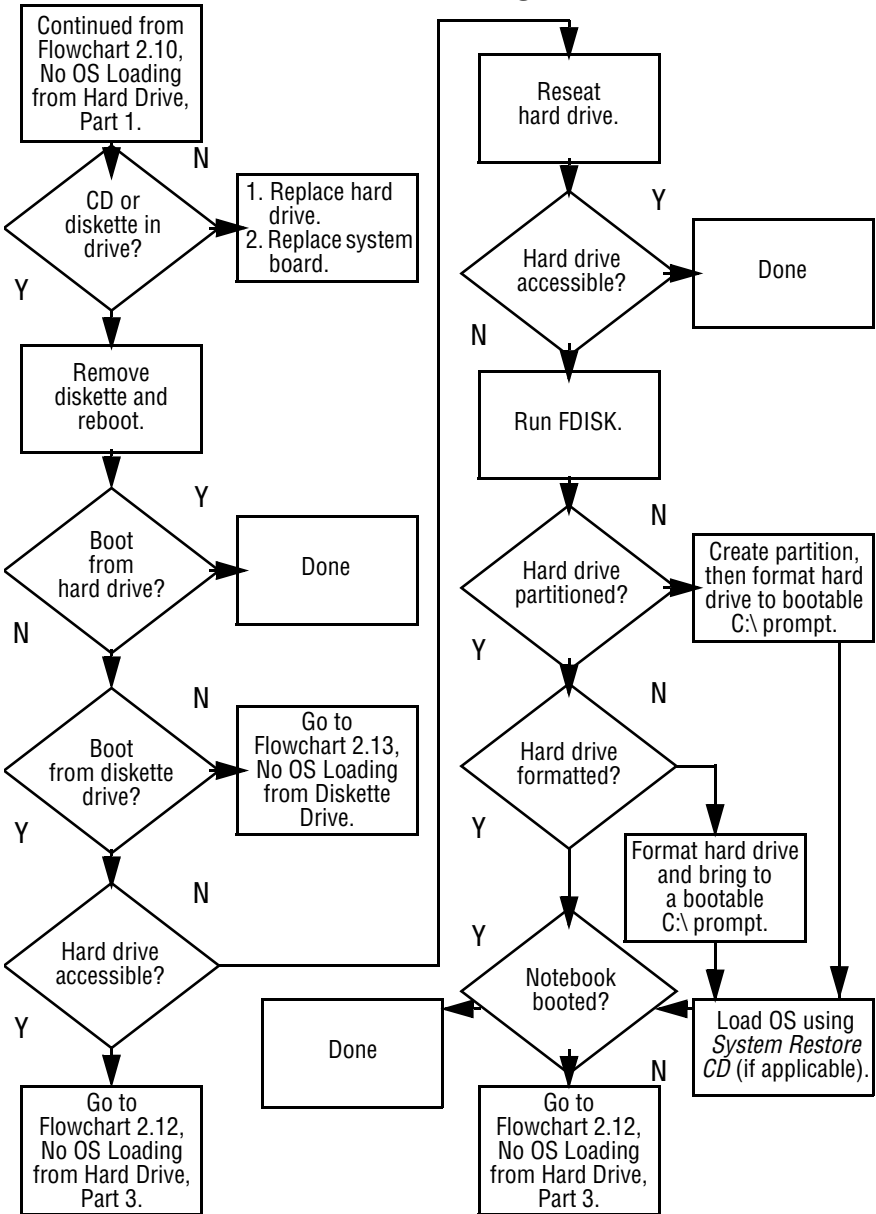


***NOTE:** Before beginning troubleshooting, always check cable connections, cable ends, and drives for bent or damaged pins.

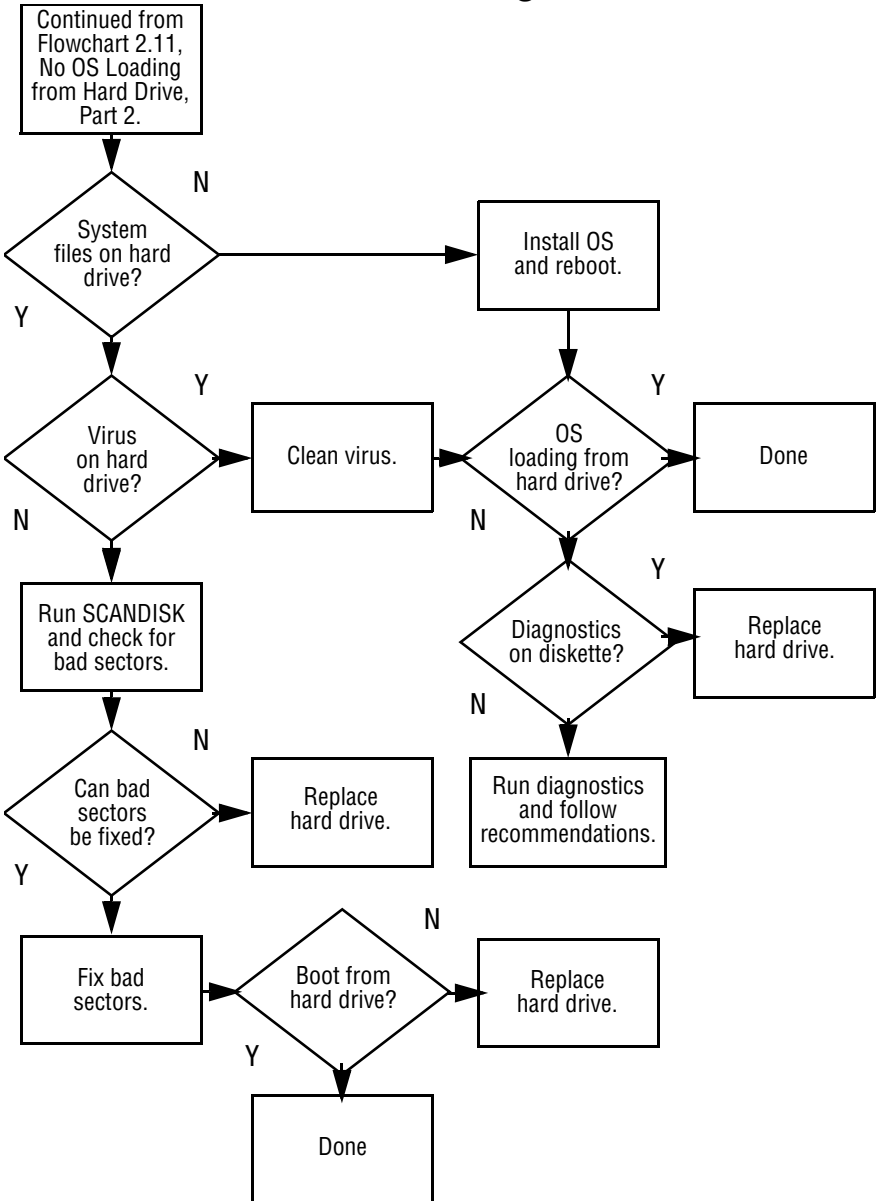
Flowchart 2.10—No OS Loading, Hard Drive, Part 1



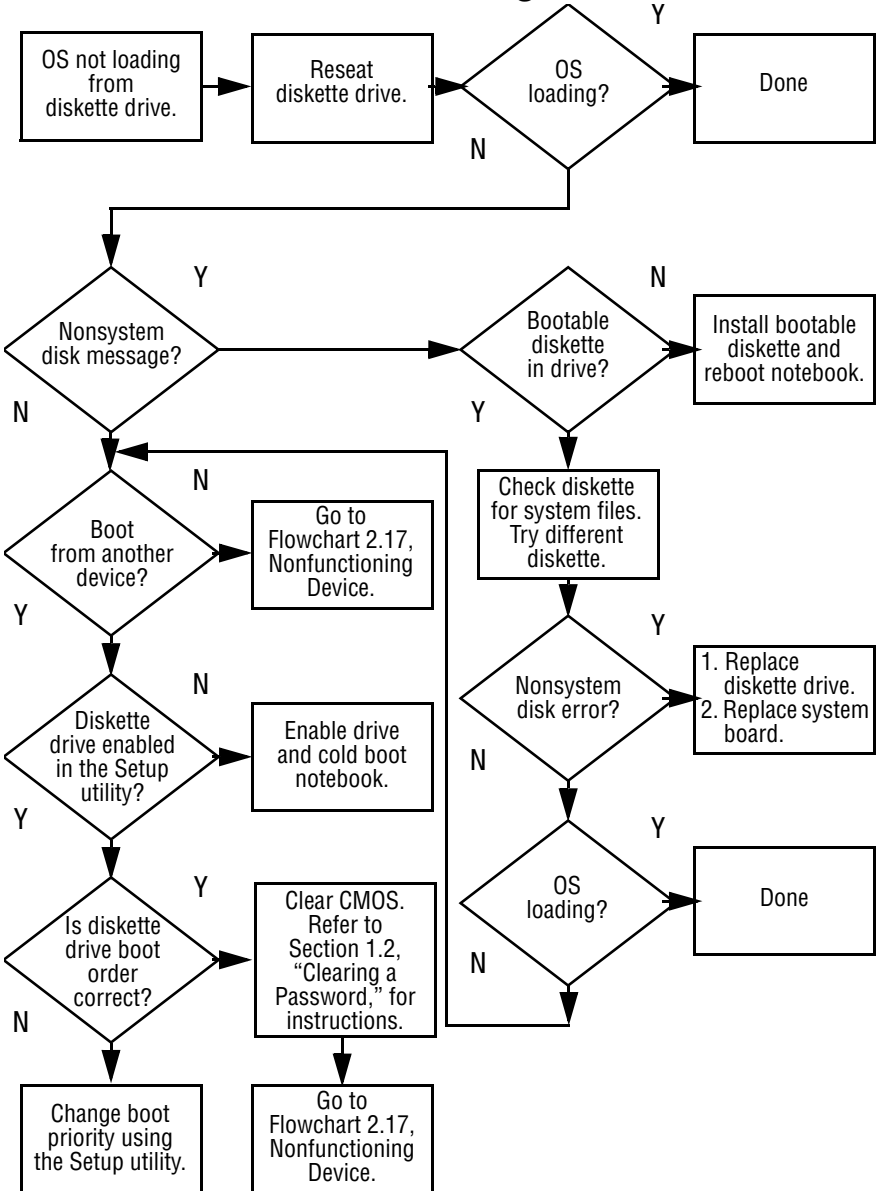
Flowchart 2.11 – No OS Loading, Hard Drive, Part 2



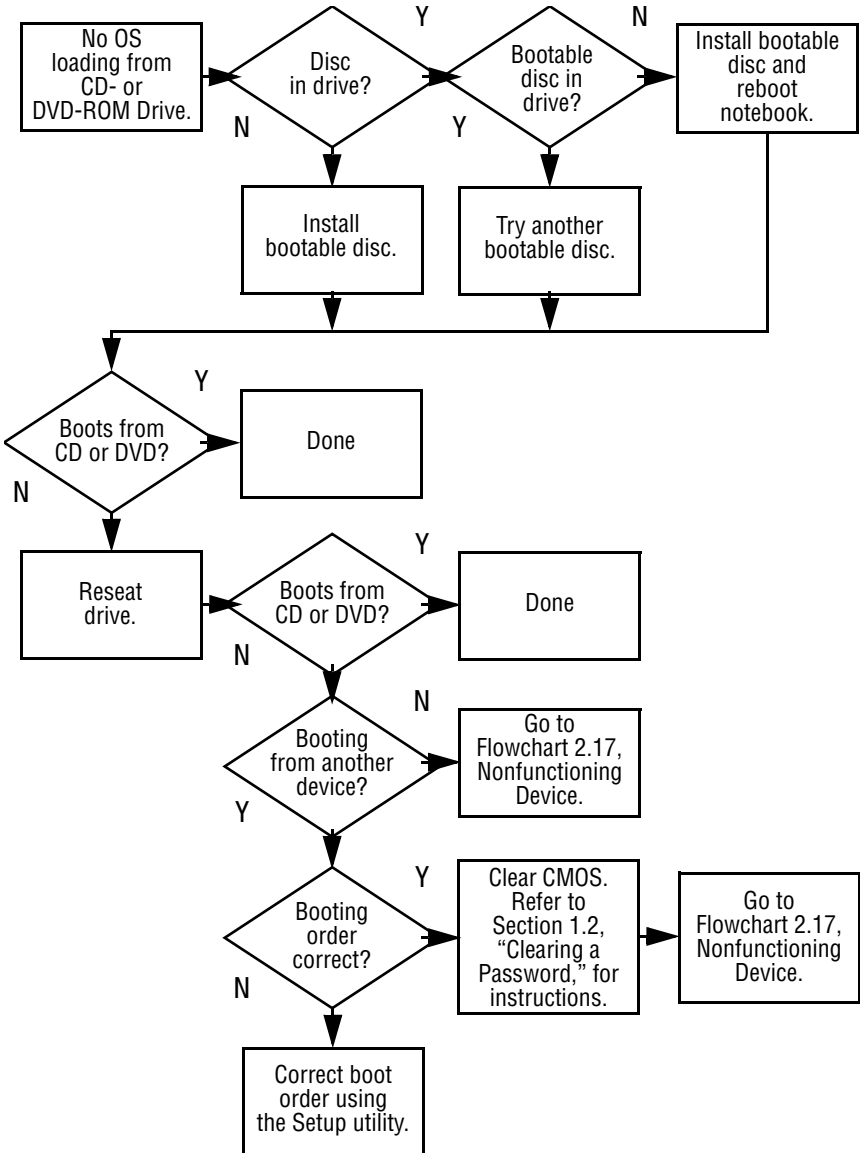
Flowchart 2.12—No OS Loading, Hard Drive, Part 3



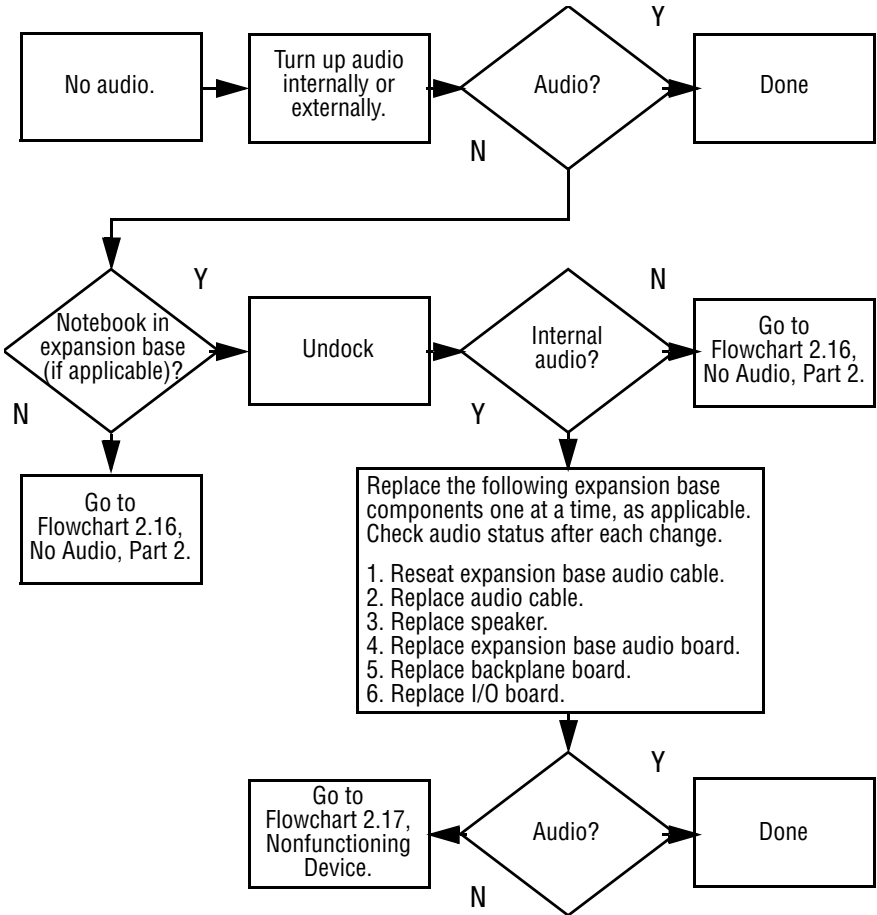
Flowchart 2.13—No OS Loading, Diskette Drive



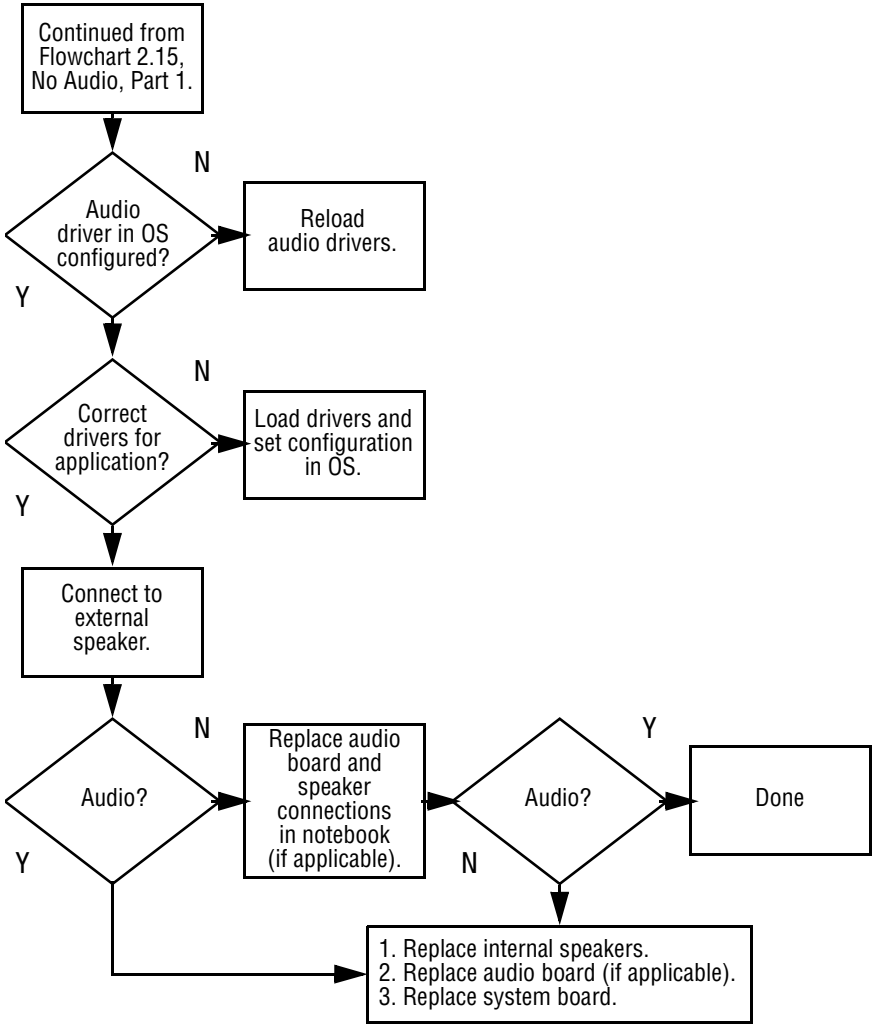
Flowchart 2.14—No OS Loading, CD- or DVD-ROM Drive



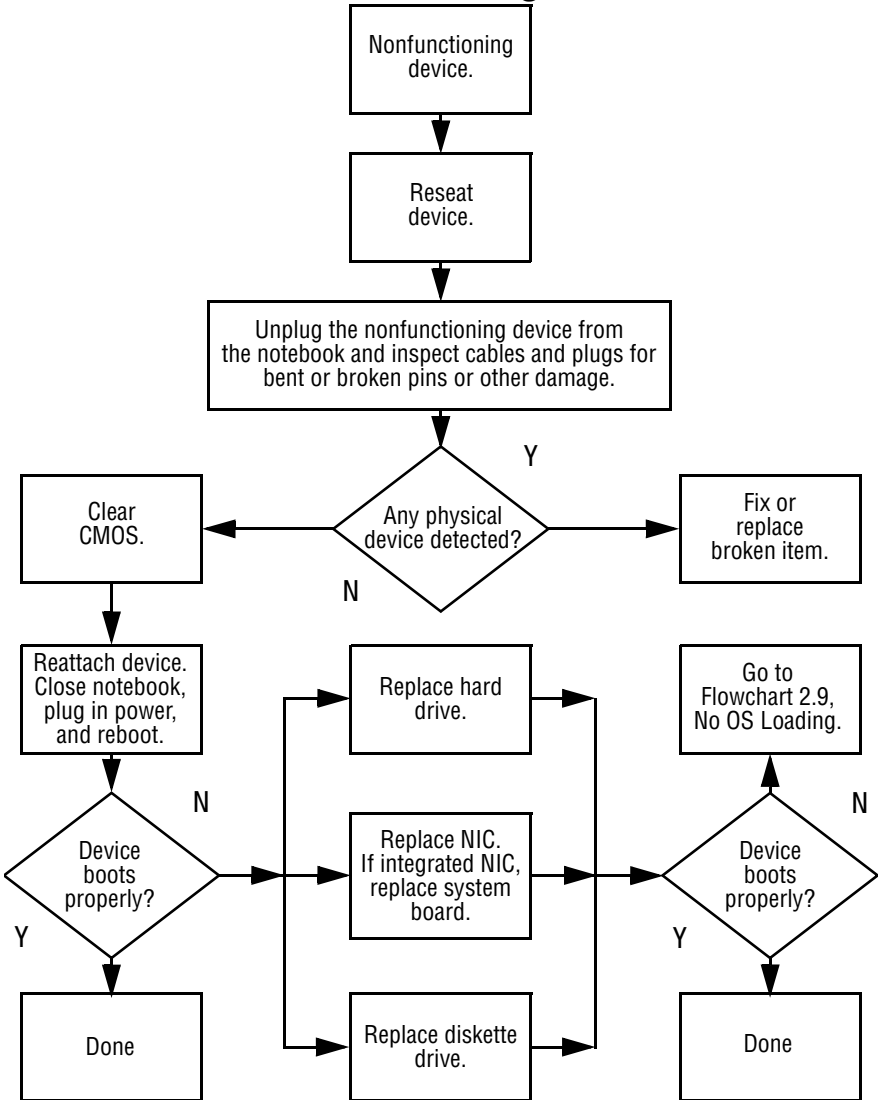
Flowchart 2.15—No Audio, Part 1



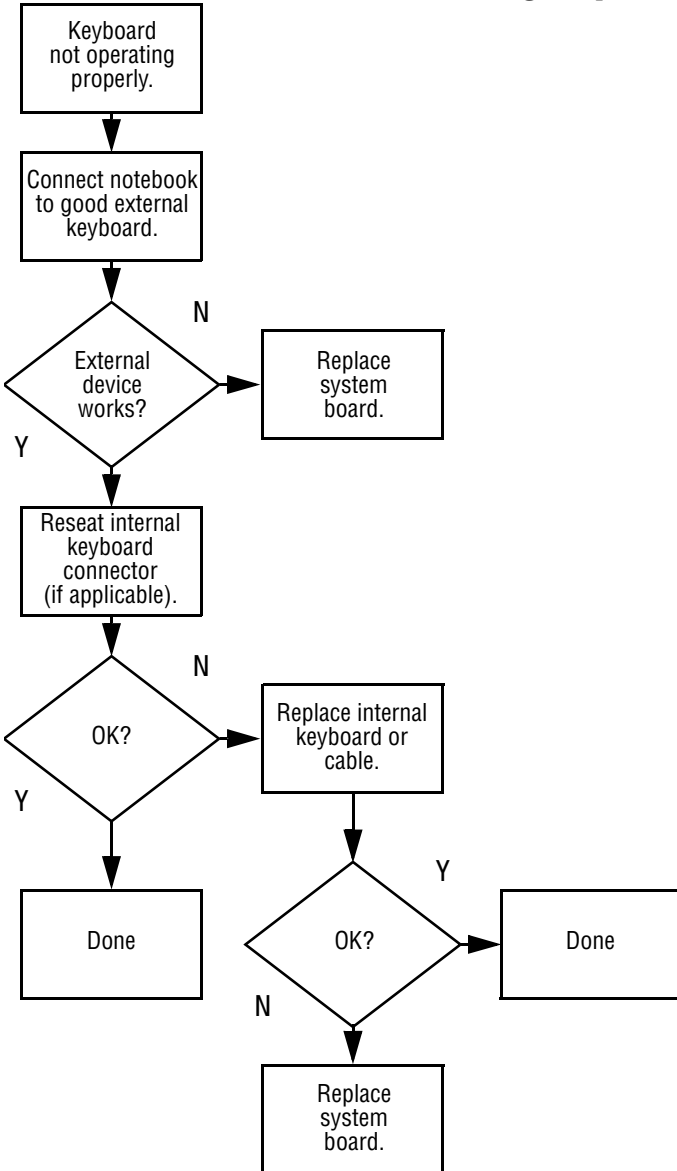
Flowchart 2.16—No Audio, Part 2



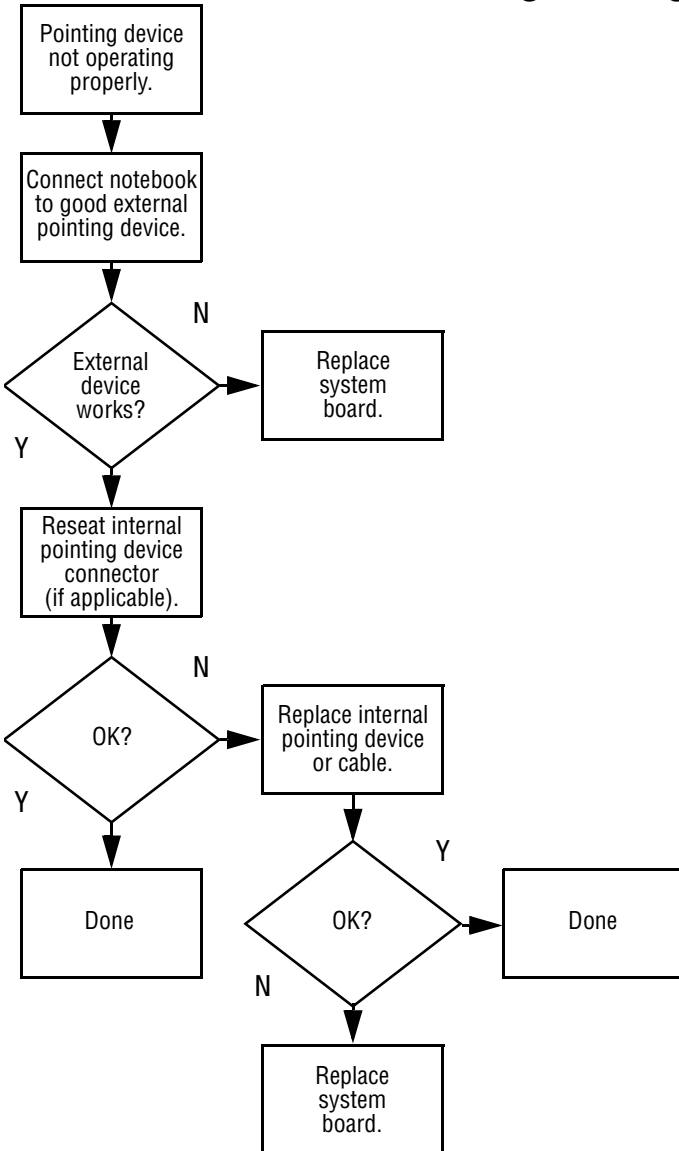
Flowchart 2.17—Nonfunctioning Device



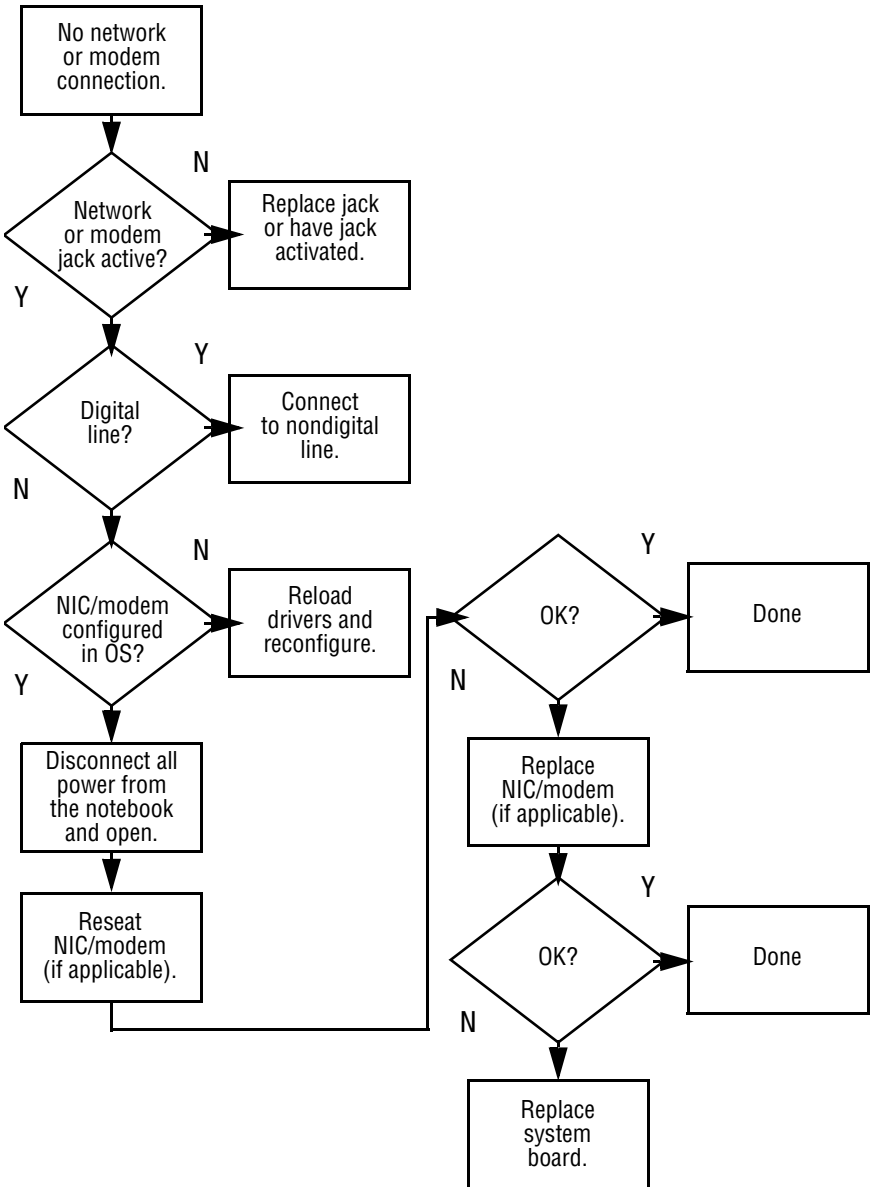
Flowchart 2.18—Nonfunctioning Keyboard



Flowchart 2.19—Nonfunctioning Pointing Device



Flowchart 2.20—No Network/Modem Connection



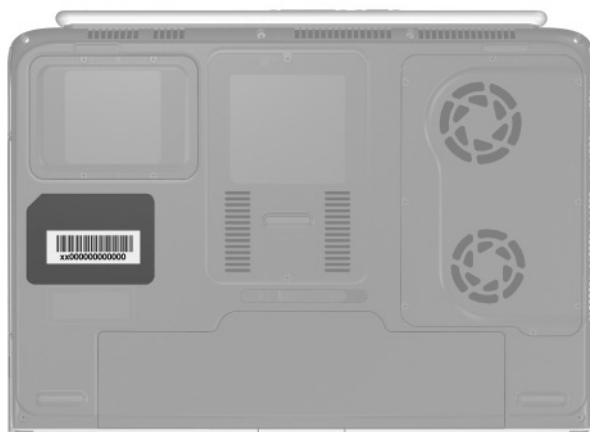
3

Illustrated Parts Catalog

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

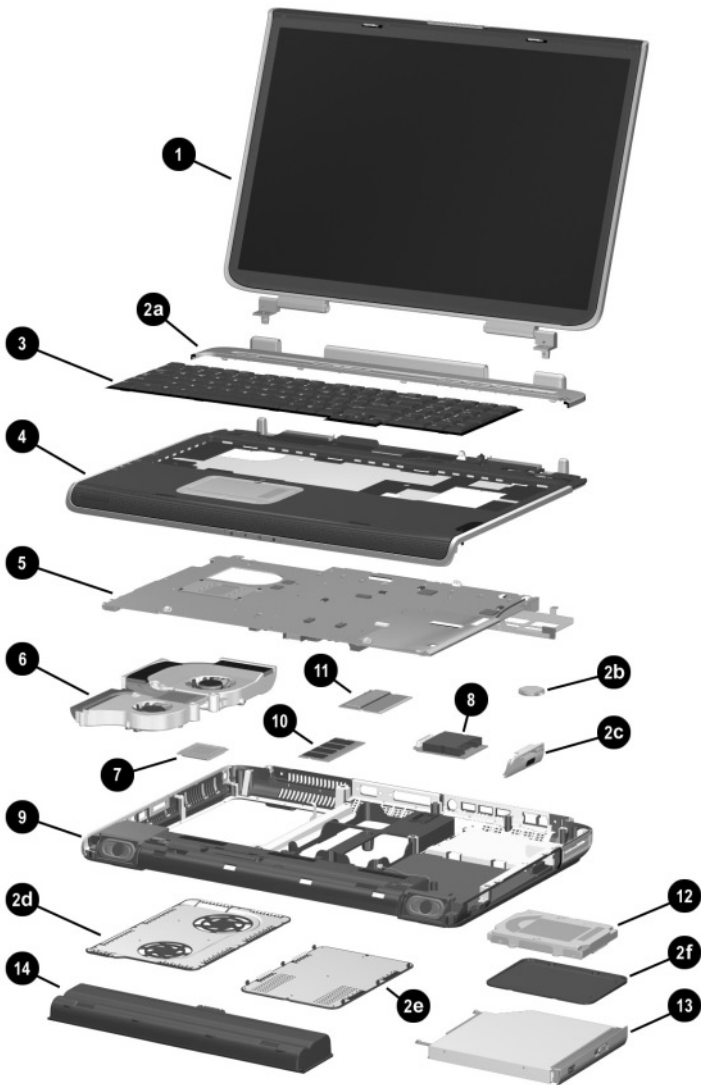
3.1 Serial Number Location

When ordering parts or requesting information, provide the notebook serial number and model number located on the bottom of the notebook.



Serial Number Location

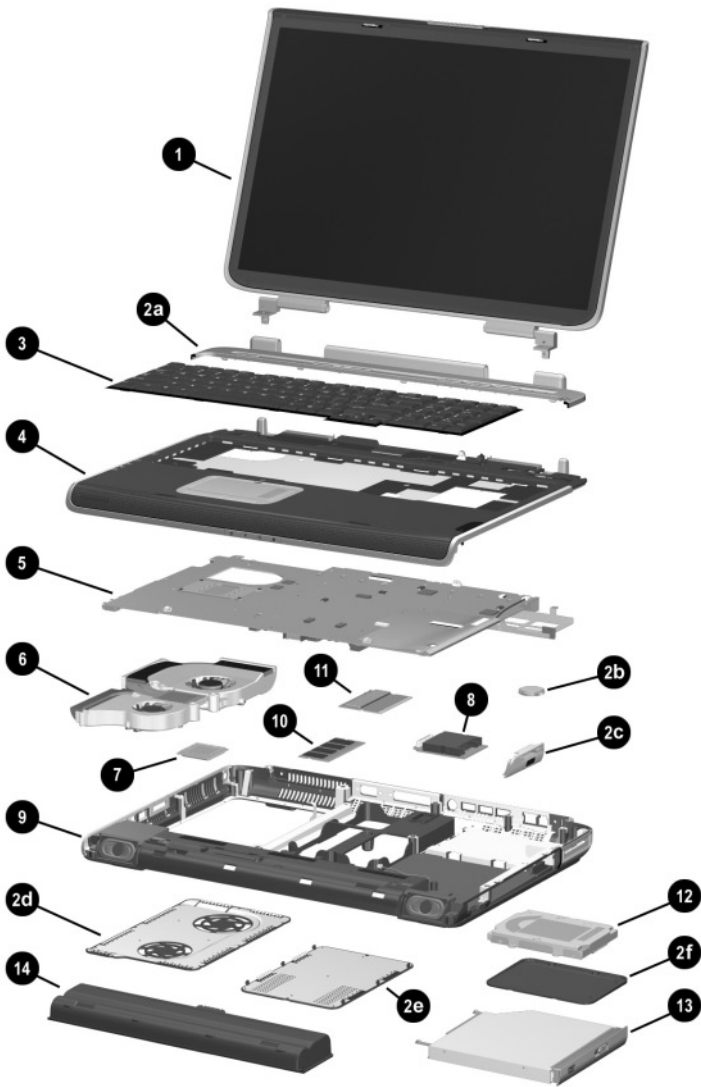
3.2 Notebook Major Components



Notebook Major Components

Table 3-1
Spare Parts: Notebook Major Components

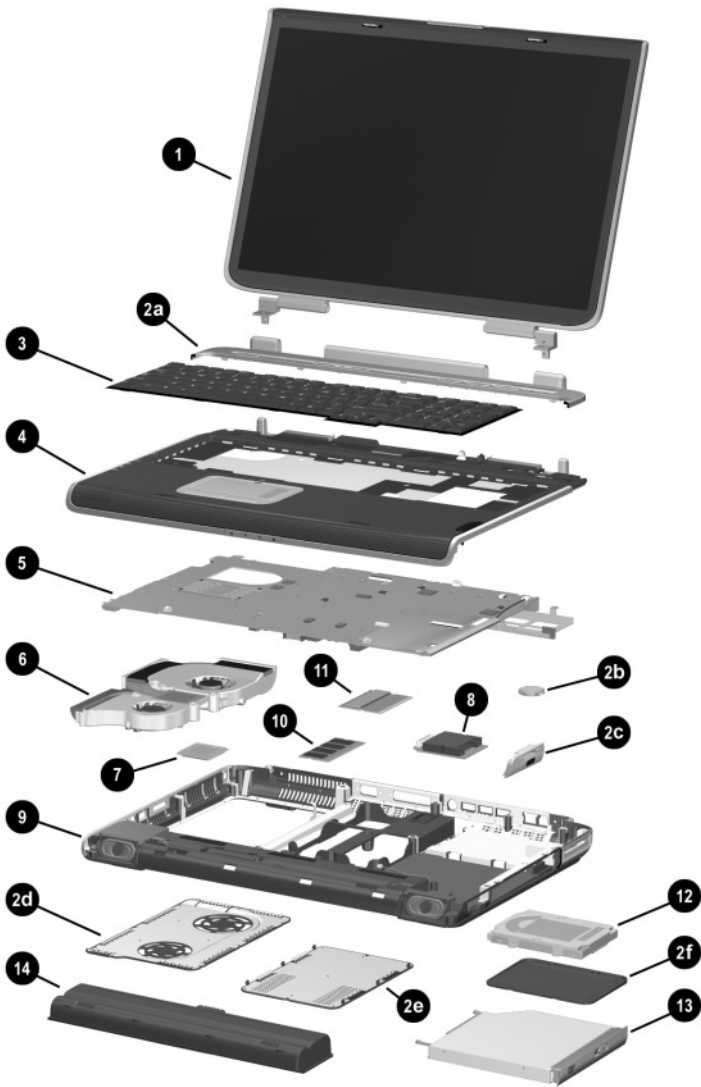
Item	Description	Spare Part Number
1	Display assemblies	
	17.0-inch, WXGA	344894-001
	15.4-inch, WXGA	344893-001
	Miscellaneous Plastics Kit , includes:	344852-001
2a	Keyboard cover	
2b	RTC battery	
2c	SD Card slot/infrared module bezel	
2d	Fan cover	
2e	Memory expansion/Mini PCI compartment cover	
2f	Hard drive cover	
	Notebook feet (not illustrated)	
3	Keyboards	
	France	344898-051
	French	344898-121
	Canada	
	Germany	344898-041
	Italy	344898-061
	Spain	344898-071
	Switzerland	344898-111
	United Kingdom	344898-031
	United States and Canada	344898-001
4	Top cover	344876-001
5	System boards (include the following video controllers and video memory)	
	NVIDIA GeForce FX Go5000 with 128-MB video memory	344879-001
	NVIDIA GeForce FX Go5000 with 64-MB video memory	344878-001
	NVIDIA GeForce 4 440 Go with 64-MB video memory	344877-001
6	Heat sink (includes large and small fans and thermal paste)	344872-001
	Thermal Paste Kit	346178-001



Notebook Major Components

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

Item	Description	Spare Part Number
7	Processors (includes thermal paste)	
	Intel Pentium 4 DT with Hyper-Threading Technology FSB 3.2-GHz	344890-001
	Intel Pentium 4 DT with 800-MHz FSB 3.2-GHz	344889-001
	3.0-GHz	344888-001
	2.8-GHz	344887-001
	Intel Pentium 4 DT with 533-MHz FSB 3.06-GHz	344886-001
	2.8-GHz	344885-001
	2.66-GHz	344884-001
	Thermal Paste Kit	346178-001
8	SD Card slot/infrared module (includes cable)	344880-001
9	Base enclosure (includes right and left speakers)	344883-001
10	Memory expansion boards, 333-MHz	
	1024-MB DDR	324702-001
	512-MB DDR	324701-001
	256-MB DDR	324700-001
11	Mini PCI communications boards	
	Mini PCI 802.11b wireless LAN	344864-001
	Mini PCI 802.11g wireless LAN	344863-001

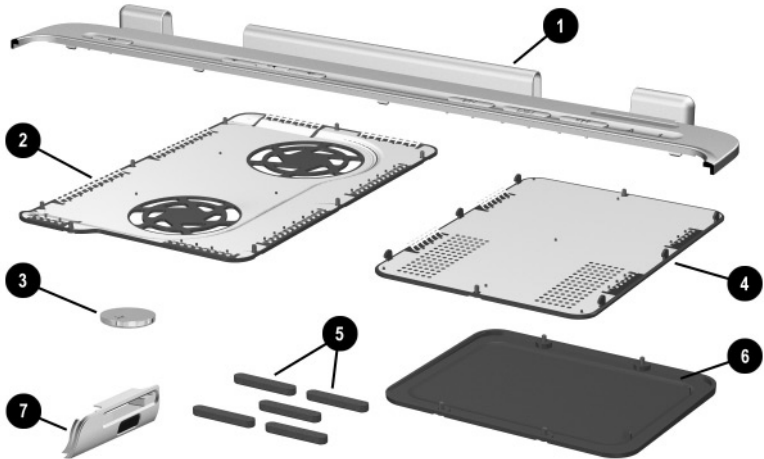


Notebook Major Components

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

Item	Description	Spare Part Number
12	Hard drives	
	80-GB (5400-rpm)	344858-001
	80-GB (4200-rpm)	344856-001
	60-GB (5400-rpm)	344857-001
	60-GB (4200-rpm)	344855-001
	40-GB (4200-rpm)	344854-001
13	Optical drives	
	8X Max DVD-ROM/CD-RW combination drive	344860-001
	8X Max DVD-ROM drive	344859-001
	24X Max DVD+RW drive	344861-001
14	Battery pack, 12-cell, 14.8-volt	342661-001
	Wireless LAN antennae (not illustrated)	344875-001
	Miscellaneous Cable Kit (not illustrated), includes:	344851-001
	SD Card slot/infrared module cable	
	Display cable	
	LED board cable	

3.3 Miscellaneous Plastics Kit Components

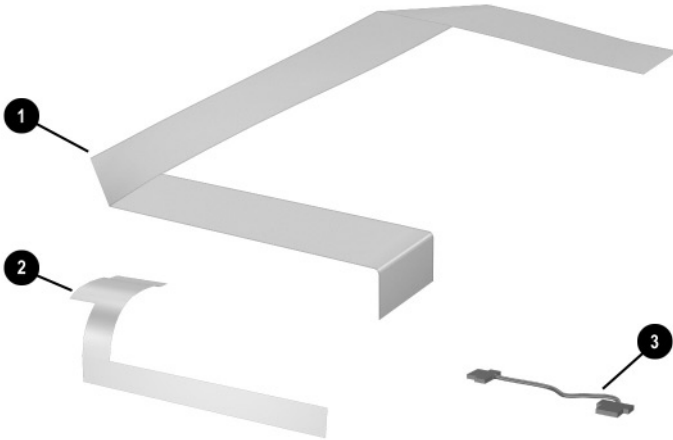


Miscellaneous Plastics Kit Components

Table 3-2
Miscellaneous Plastics Kit Components
Spare Part Number 344852-001

Item	Description
1	Keyboard cover
2	Fan cover
3	RTC battery
4	Memory expansion/Mini PCI compartment cover
5	Feet (5)
6	Hard drive cover
7	SD Card slot/infrared module bezel

3.4 Miscellaneous Cable Kit Components

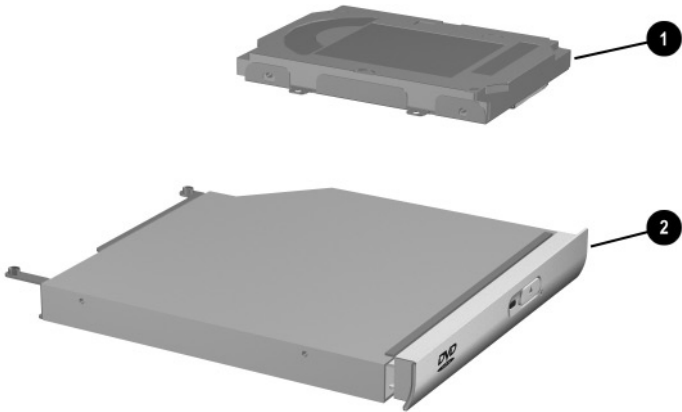


Miscellaneous Cable Kit Components

**Table 3-3
Miscellaneous Cable Kit Components
Spare Part Number 344851-001**

Item	Description
1	SD Card slot/infrared module cable
2	Display cable
3	LED board cable

3.5 Mass Storage Devices



Mass Storage Devices

**Table 3-4
Mass Storage Devices
Spare Part Number Information**

Item	Description	Spare Part Number
1	Hard drives (include hard drive bezel and frame)	
	80-GB (5400-rpm)	344858-001
	80-GB (4200-rpm)	344856-001
	60-GB (5400-rpm)	344857-001
	60-GB (4200-rpm)	344855-001
	40-GB (4200-rpm)	344854-001
2	Optical drives	
	8X Max DVD-ROM/CD-RW combination drive	344860-001
	8X Max DVD-ROM drive	344859-001
	24X Max DVD+RW drive	344861-001
	USB v.1.1 diskette drive (not illustrated)	344897-001

3.6 Miscellaneous

**Table 3-5
Spare Parts: Miscellaneous (not illustrated)**

Description	Spare Part Number
Logo Kit	347990-001
120-watt AC adapter with power cord (for use in Canada, French Canada, and United States)	344895-001
135-watt AC adapter (for use in France, Germany, Italy, Spain, Switzerland, and United Kingdom with the following power cords)	346958-001
Power cords (for use in the following countries with the 135 W AC adapter listed above)	
France	344895-051
Germany	344895-041
Italy	344895-061
Spain	344895-071
Switzerland	344895-111
United Kingdom	344895-031
Screw Kit (includes the following screws; refer to Appendix C, "Screw Listing," for more information on screw specifications and usage.)	344850-001
■ PM2.5×8.0 screw	■ Slotted M1.5×10.0 shoulder screw
■ PM2.5×5.0 screw	■ HM5.0×9.0 standoffs
■ PM2.5×4.0 screw	■ PM1.5×12.0 spring-loaded shoulder screw
■ PM1.5×4.0 screw	

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
- 5.0-mm socket for system board standoffs
- Flat-bladed 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 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 might not be affected at all and can work perfectly throughout a normal cycle. Or the device might 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-shielding 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 $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- 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 ground 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**

Event	Relative Humidity		
	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 V.

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

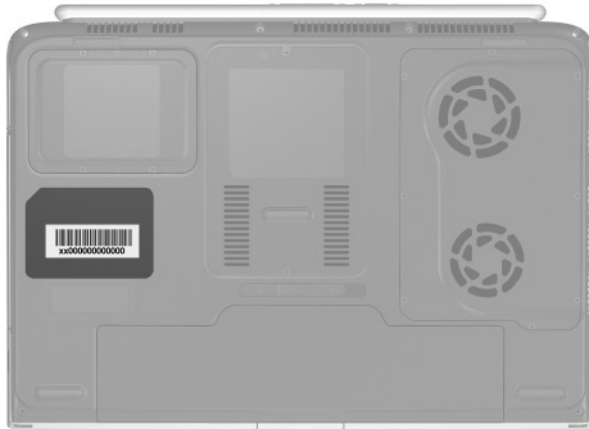
This chapter provides removal and replacement procedures.

There are 66 screws and standoffs, in seven 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 HP when requesting information or ordering spare parts. The serial number is located on the bottom of the notebook.



Serial Number Location

5.2 Disassembly Sequence Chart

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

Disassembly Sequence Chart

Section	Description	# of Screws Removed
5.3	Preparing the notebook for disassembly	
	Battery pack	0
	Hard drive	4 loosened
5.4	Notebook feet	0
5.5	Memory expansion board	2 loosened
5.6	Mini PCI communications board	2 loosened
5.7	Optical drive	2
5.8	Keyboard	8 loosened on fan cover, 2 removed for keyboard
5.9	Keyboard cover	6
5.10	Display assembly	4
5.11	Top cover	13
5.12	System board	5 screws, 4 standoffs
5.13	RTC battery	0
5.14	Heat sink	4 loosened
	Fans	6 removed
5.15	Processor	0
5.16	SD Card slot/infrared module	3
5.17	Speakers	3

5.3 Preparing the Notebook for Disassembly

Perform the following steps before disassembling the notebook:

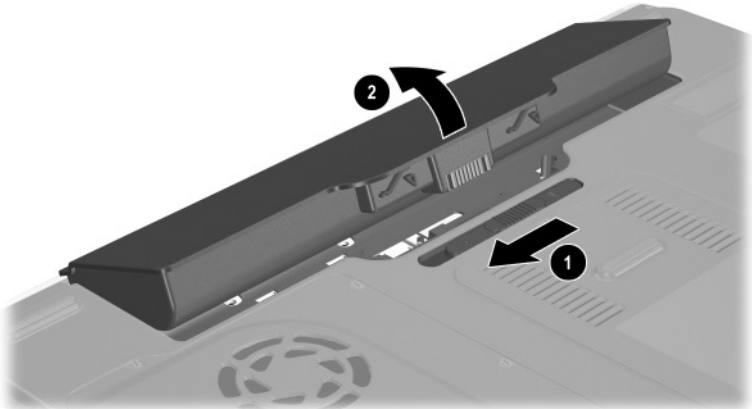
1. Turn off the notebook.
2. Disconnect the AC adapter and all external devices.

Spare Part Number Information

Battery pack, 12-cell, 14.8-volt

342661-001

3. Remove the battery pack by following these steps:
 - a. Turn the notebook upside down with the rear panel facing you.
 - b. Slide and hold the battery release latch **1** to the left. The rear edge of the battery pack releases from the notebook.
 - c. Lift the rear edge of the battery pack up and swing it forward **2**.
 - d. Remove the battery pack.



Removing the Battery Pack

Reverse the above procedure to install the battery pack.

Spare Part Number Information

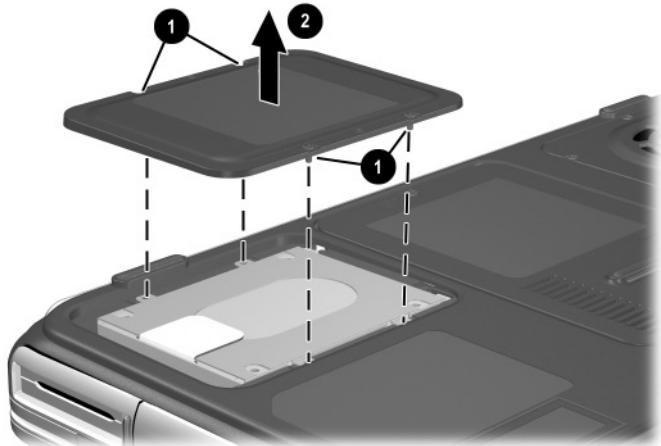
Hard drives

80-GB (5400-rpm)	344858-001
80-GB (4200-rpm)	344856-001
60-GB (5400-rpm)	344857-001
60-GB (4200-rpm)	344855-001
40-GB (4200-rpm)	344854-001

4. Remove the hard drive by following these steps:
 - a. Turn the notebook upside down with the rear panel facing you.
 - b. Loosen the four PM2.5×4.0 screws ❶ that secure the hard drive cover to the notebook.
 - c. Lift the cover straight up ❷ to remove it from the notebook.

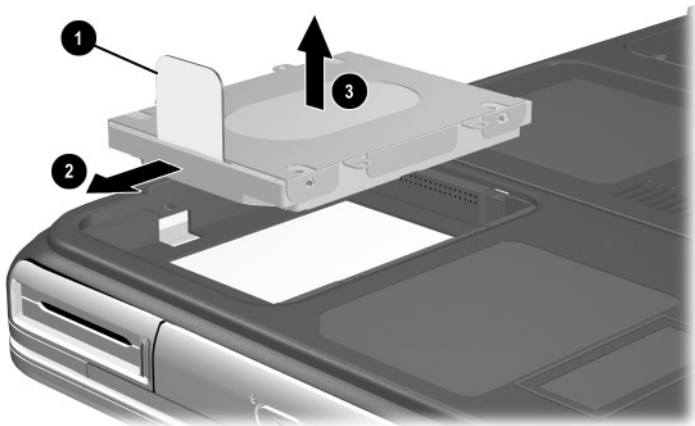


The hard drive cover is included in the Miscellaneous Plastics Kit, spare part number 344852-001.



Removing the Hard Drive Cover

- d. Use the Mylar tab ❶ to slide the hard drive to the right ❷ to disconnect it from the system board.
- e. Lift the hard drive straight up ❸.
- f. Remove the hard drive.

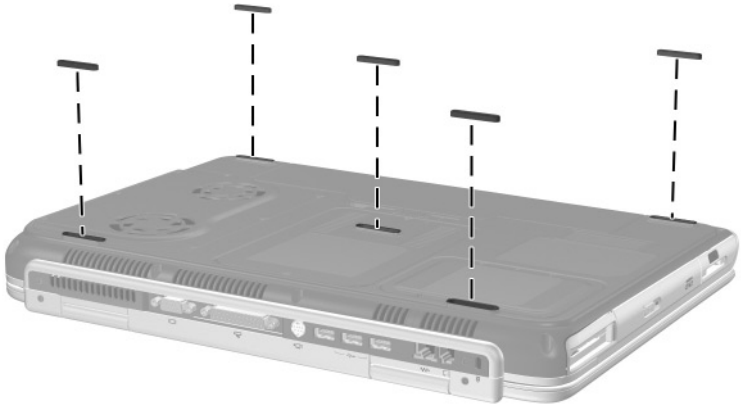


Removing the Hard Drive

Reverse the above procedure to install the hard drive.

5.4 Notebook Feet

The notebook feet are adhesive-backed rubber pads. The feet are included in the Miscellaneous Plastics Kit, spare part number 344852-001. The feet attach to the base enclosure as illustrated below.



Replacing the Notebook Feet

5.5 Memory Expansion Board

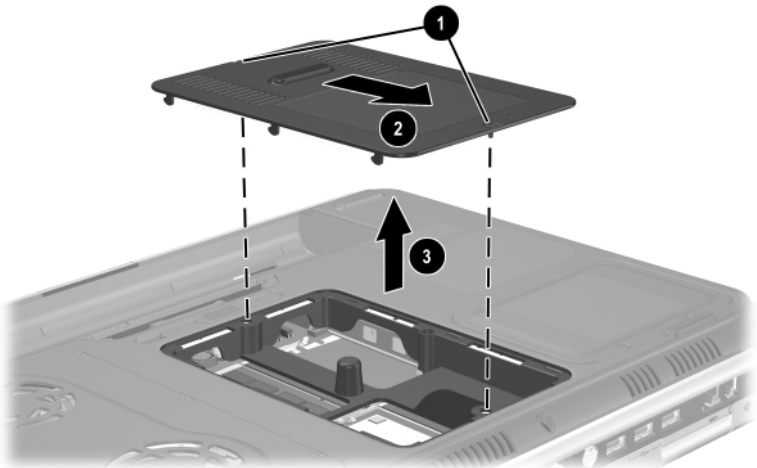
Spare Part Number Information

1024-MB DDR, 333-MHz	324702-001
512-MB DDR, 333-MHz	324701-001
256-MB DDR, 333-MHz	324700-001

1. Prepare the notebook for disassembly (refer to Section 5.3).
2. Turn the notebook upside down with the rear panel facing you.
3. Loosen the two PM2.5×4.0 screws ❶ that secure the memory expansion/Mini PCI compartment cover to the notebook.
4. Slide the cover forward ❷, then lift the cover up ❸.
5. Remove the cover.

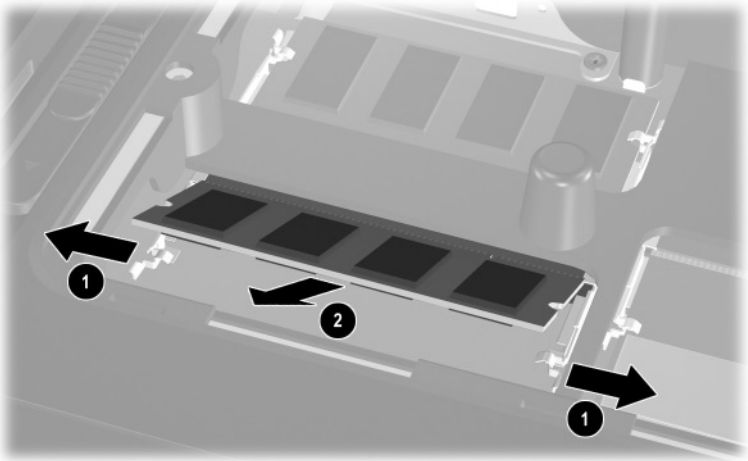


The memory expansion/Mini PCI compartment cover is included in the Miscellaneous Plastics Kit, spare part number 344852-001.



Removing the Memory Expansion/Mini PCI Compartment Cover

6. Spread the retaining tabs ❶ that secure the memory expansion board to the socket. The board rises up.
7. Pull the board away from the socket at a 45-degree angle ❷.



Removing a Memory Expansion Board

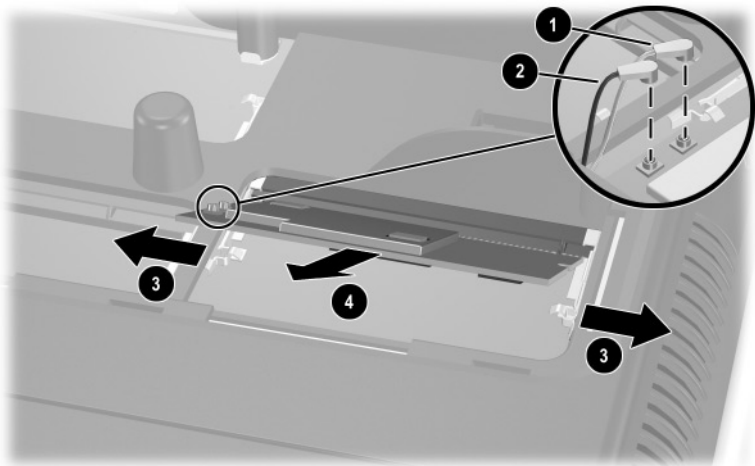
Reverse the above procedure to install a memory expansion board.

5.6 Mini PCI Communications Board

Spare Part Number Information

Mini PCI 802.11b wireless LAN	344864-001
Mini PCI 802.11g wireless LAN	344863-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the memory expansion/Mini PCI communications compartment cover (Section 5.5).
3. Disconnect the two antenna cables **1** and **2** from the Mini PCI communications board.
4. Spread the retaining tabs **3** that secure the Mini PCI communications board to the socket. The board rises up.
5. Pull the board away from the socket at a 45-degree angle **4**.



Removing a Mini PCI Communications Board

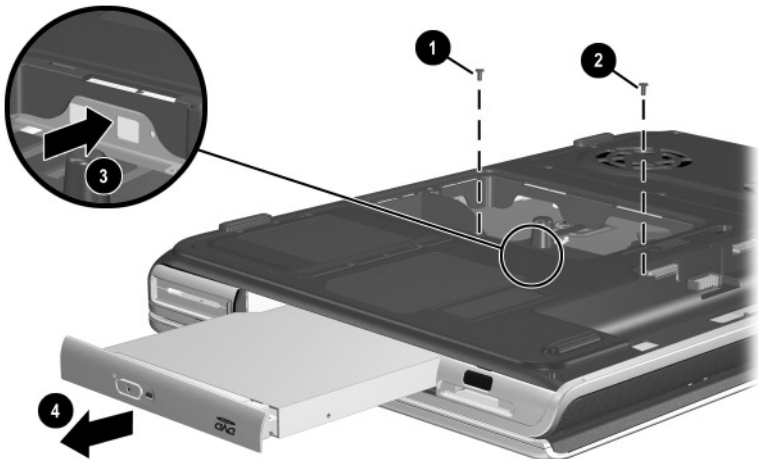
Reverse the above procedure to install a Mini PCI communications board.

5.7 Optical Drive

Spare Part Number Information

8X Max DVD-ROM/CD-RW combination drive	344860-001
8X Max DVD-ROM drive	344859-001
24X Max DVD+RW drive	344861-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the memory expansion/Mini PCI compartment cover (Section 5.5).
3. Position the notebook so the front panel faces you.
4. Remove the PM2.5×5.0 screw ❶ that secures the optical drive in the memory expansion/Mini PCI compartment.
5. Remove the PM2.5×8.0 screw ❷ that secures the optical drive in the battery bay.
6. Push on the back of the optical drive ❸ through the opening on the left side of the memory expansion/Mini PCI compartment.
7. Remove the optical drive ❹.



Removing the Optical Drive

Reverse the above procedure to install an optical drive.

5.8 Keyboard

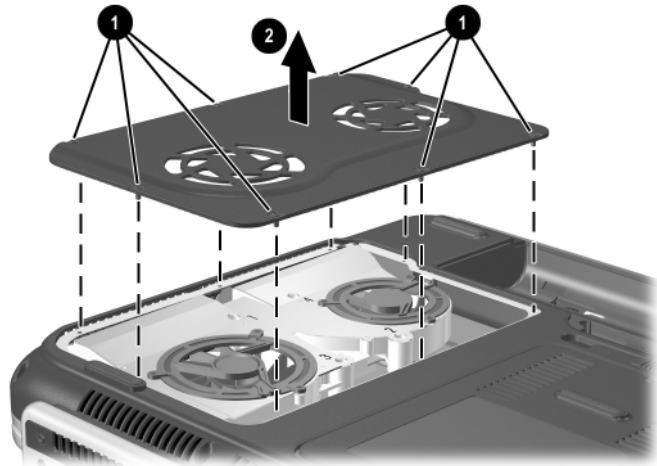
Spare Part Number Information

France	344898-051	Spain	344898-071
French Canada	344898-121	Switzerland	344898-111
Germany	344898-041	United Kingdom	344898-031
Italy	344898-061	United States and Canada	344898-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the memory expansion/Mini PCI compartment cover (Section 5.5).
3. Turn the notebook upside down with the rear panel facing you.
4. Loosen the eight PM2.5×5.0 screws ❶ that secure the fan cover to the notebook.
5. Remove the fan cover ❷.

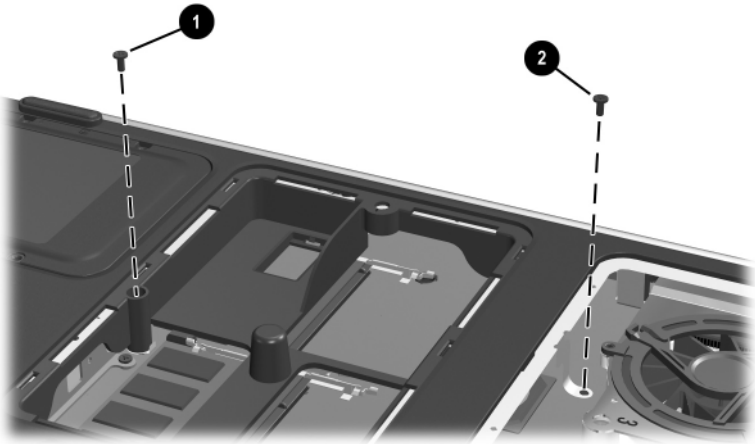


The fan cover is included in the Miscellaneous Plastics Kit, spare part number 344852-001.



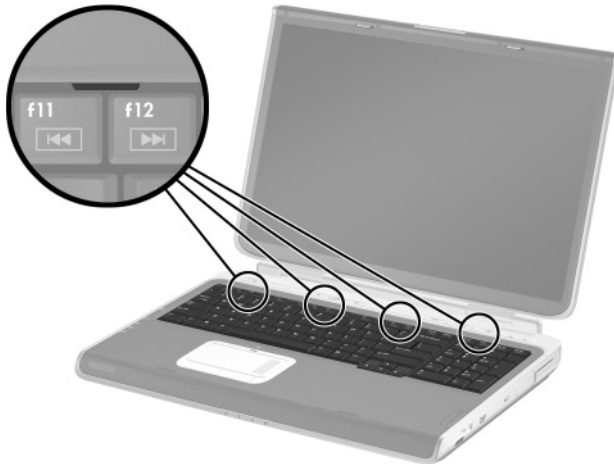
Removing the Fan Cover

6. Position the notebook so the front panel faces you.
7. Remove the PM2.5×8.0 screw ❶ that secures the keyboard in the memory expansion/Mini PCI compartment.
8. Remove the PM2.5×5.0 screw ❷ that secures the keyboard in the fan compartment.



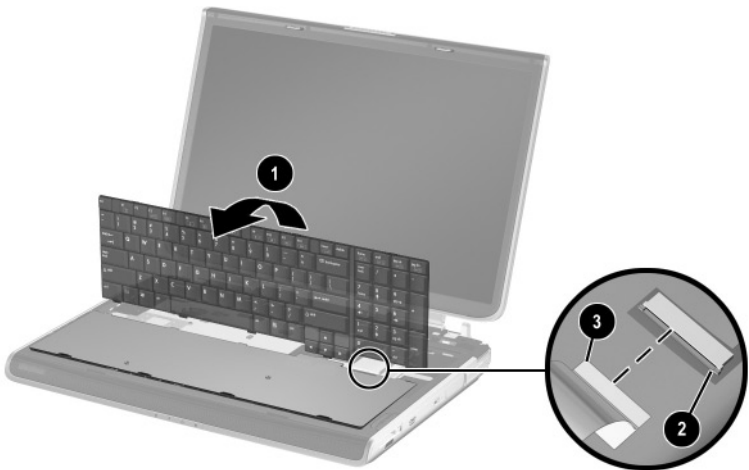
Removing the Keyboard Screws

9. Turn the notebook right-side up with the front facing you.
10. Open the computer.
11. Use a flat-bladed tool to pry forward on the four keyboard retaining tabs. The tabs are located above the **f1** and **f2** keys, above the **f6** and **f7** keys, above the **f11** and **f12** keys, and above the **end** and **pg up** keys.



Releasing the Keyboard

12. Lift up on the back of the keyboard and swing it forward **1** until it rests on the palm rest.
13. Release the zero insertion force (ZIF) connector **2** to which the keyboard cable is connected and disconnect the cable **3**.
14. Remove the keyboard.



Removing the Keyboard

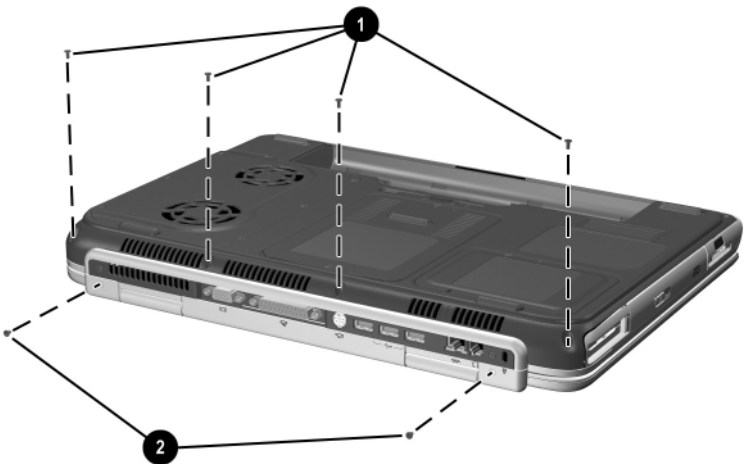
Reverse the above procedure to install the keyboard.

5.9 Keyboard Cover



The keyboard cover is included in the Miscellaneous Plastics Kit, spare part number 344852-001.

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.8).
3. Turn the notebook upside down with the rear panel facing you.
4. Remove the four PM2.5×8.0 screws **1** that secure the keyboard cover to the notebook.
5. Remove the two PM2.5×8.0 screws **2** that secure the keyboard cover to the notebook through the rear panel.



Removing the Keyboard Cover Screws

6. Turn the notebook right-side up with the front facing you.
7. Open the notebook as far as it will open.
8. Lift up on the left and right sides ❶ of the keyboard cover to detach it from the notebook.
9. Lift the keyboard cover up and swing it forward ❷ to remove it.



Removing the Keyboard Cover

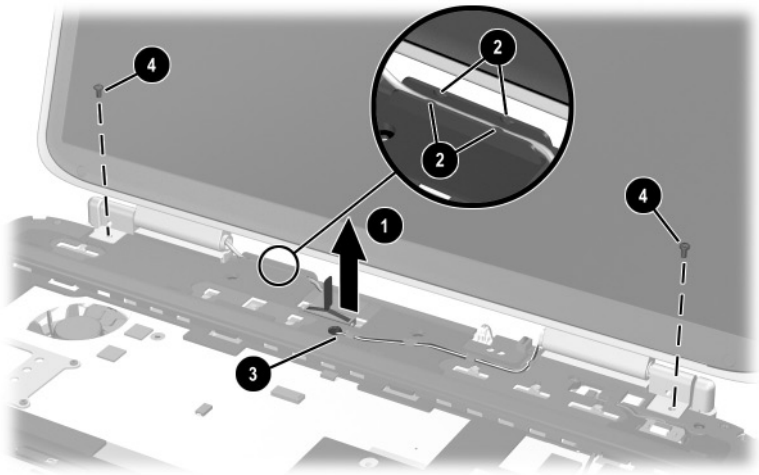
Reverse the above procedure to install the keyboard cover.

5.10 Display Assembly

Spare Part Number Information

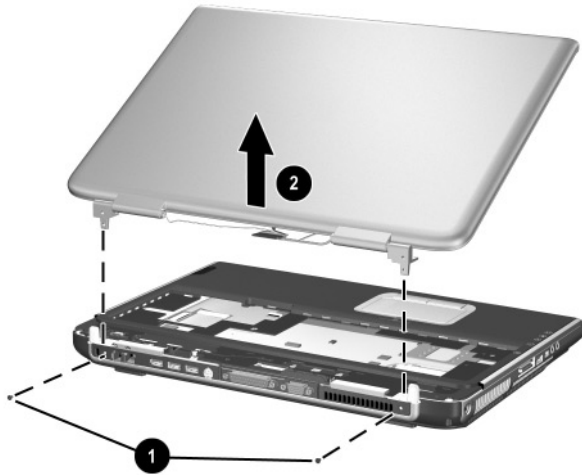
17.0-inch, WXGA	344894-001
15.4-inch, WXGA	344893-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.8).
3. Remove the keyboard cover (Section 5.9).
4. Disconnect the display cable ❶ and remove it from the retaining clip ❷ in the top cover.
5. Remove the two antenna cables from the hole and routing channel in the top cover ❸.
6. Remove the two PM2.5×8.0 screws ❹ that secure the display assembly to the notebook.



Removing the Display Assembly Screws

7. Position the notebook so the rear panel faces you and the display is in an upright position.
8. Remove the two PM2.5×8.0 screws ❶ that secure the display assembly to the notebook through the rear panel.
9. Lift the display assembly straight up ❷ to remove it.



Removing the Display Assembly

Reverse the above procedure to install the display assembly.

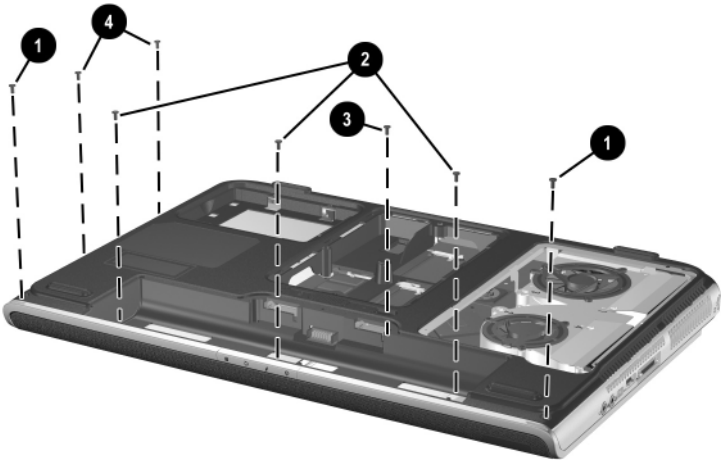
5.11 Top Cover

Spare Part Number Information

Top cover

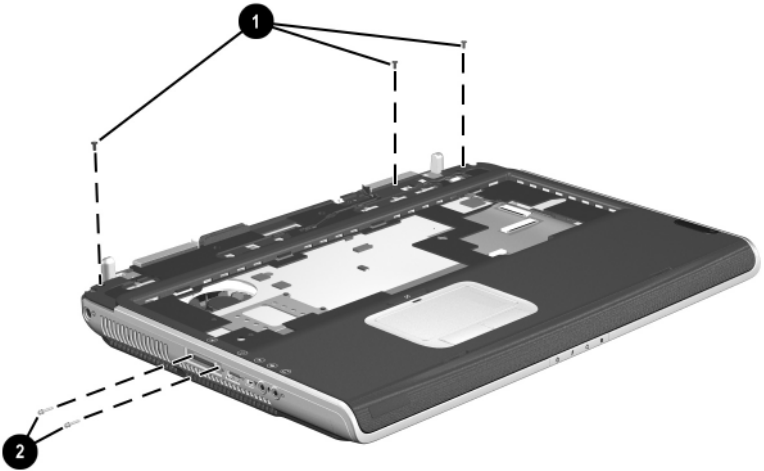
344876-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - ❑ Optical drive (Section 5.7)
 - ❑ Keyboard (Section 5.8)
 - ❑ Keyboard cover (Section 5.9)
 - ❑ Display assembly (Section 5.10)
2. Turn the notebook upside down with the front facing you.
3. Remove the following:
 - ❶ Two PM2.5×8.0 screws on the notebook front edge
 - ❷ Three PM2.5×5.0 screws in the battery bay
 - ❸ One PM2.5×8.0 screw in the rear/right corner of the battery bay
 - ❹ Two PM2.5×5.0 screws in the optical drive bay



Removing the Top Cover Screws

4. Turn the notebook right-side up with the front facing you.
5. Remove the three PM2.5×8.0 screws ❶ that secure the top cover to the notebook.
6. Remove the two slotted M1.5×10.0 shoulder screws ❷ that secure the top cover to the notebook on each side of the docking connector.



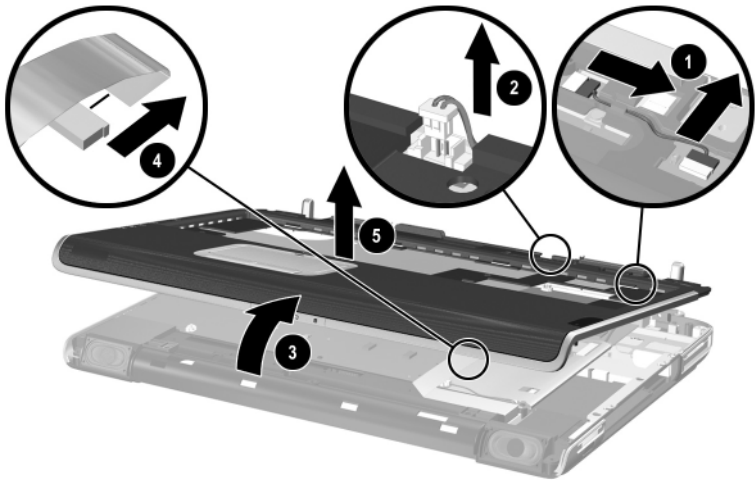
Removing the Top Cover Screws (continued)

7. Disconnect the LED board cable ❶ from the system board and remove the cable from the clip in the top cover.



The LED board cable is included in the Miscellaneous Cable Kit, spare part number 344851-001. The LED board is included with the top cover.

8. Disconnect the display lid switch module cable ❷ from the display lid switch module.
9. Lift the front edge of the top cover ❸ until the TouchPad cable ❹ is accessible.
10. Disconnect the TouchPad cable from the low insertion force (LIF) connector on the system board.
11. Remove the top cover ❺.



Removing the Top Cover

Reverse the above procedure to install the top cover.

5.12 System Board

Spare Part Number Information

NVIDIA GeForce FX Go5000 with 128-MB video memory	344879-001
NVIDIA GeForce FX Go5000 with 64-MB video memory	344878-001
NVIDIA GeForce 4 440 Go with 64-MB video memory	344877-001

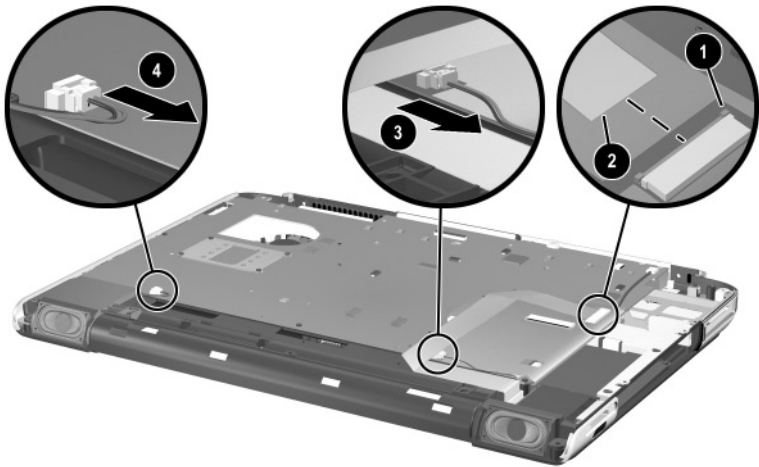


When replacing the system board, ensure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory expansion boards (Section 5.5)
- Mini PCI communications board (Section 5.6)
- Real time clock battery (Section 5.13)
- Heat sink (Section 5.14)
- Processor (Section 5.15)

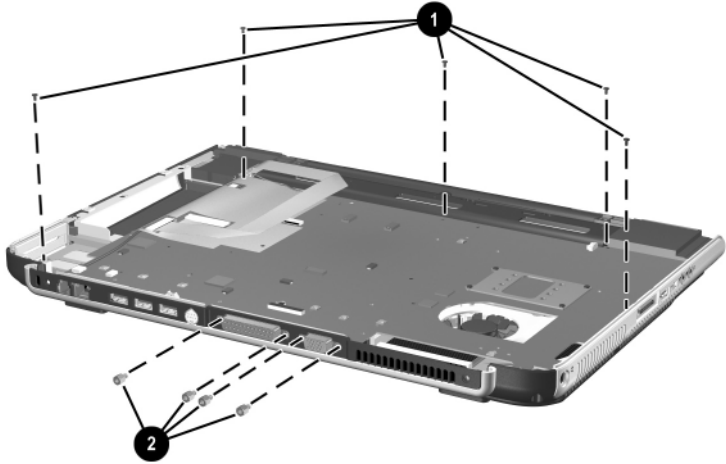
-
1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - ❑ Optical drive (Section 5.7)
 - ❑ Keyboard (Section 5.8)
 - ❑ Keyboard cover (Section 5.9)
 - ❑ Display assembly (Section 5.10)
 - ❑ Top cover (Section 5.11)

2. Release the ZIF connector ❶ to which the SD Card slot/infrared module cable is attached and disconnect the cable ❷.
3. Disconnect the right ❸ and left ❹ speaker cables from the system board.



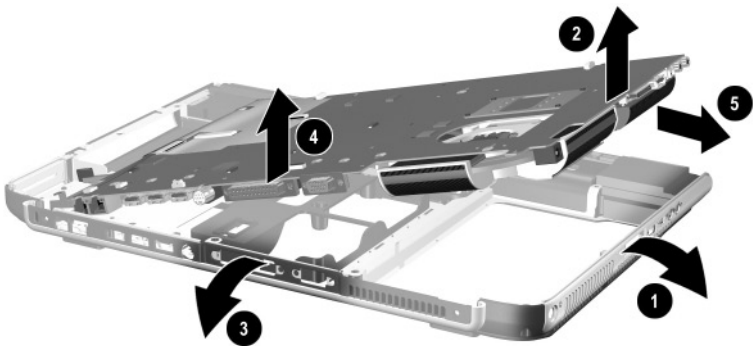
Disconnecting the SD Card Slot/Infrared Module and Speaker Cables from the System Board

4. Position the notebook so the rear panel faces you.
5. Remove the six PM2.5×8.0 screws ❶ that secure the system board to the notebook.
6. Use a 5.0-mm socket to remove the four HM5.0×9.0 standoffs ❷ that secure the system board to the notebook on each side of the parallel and external monitor connectors.



Removing the System Board Screws and Standoffs

7. Flex the right side of the base enclosure to the right ❶.
8. Lift the right side of the system board ❷ until the connectors on the right side of the board clear the base enclosure.
9. Flex the rear edge of the system board toward you ❸.
10. Lift the rear edge of the system board ❹ until the connectors on the rear panel of the board clear the base enclosure.
11. Slide the system board to the right at an angle ❺ and remove it.



Removing the System Board

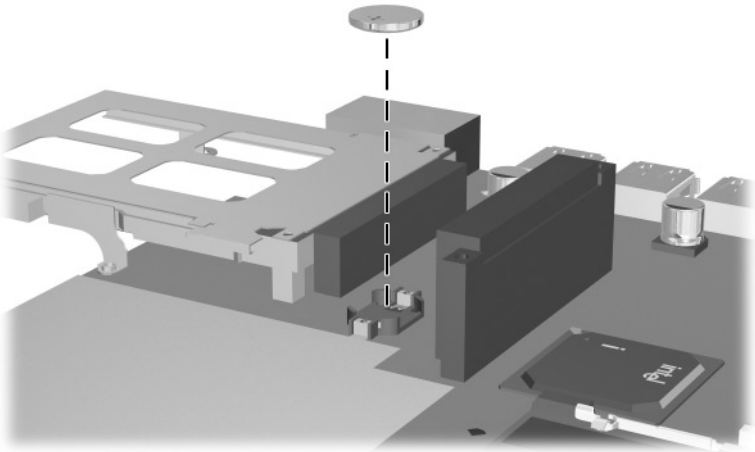
Reverse the above procedure to install the system board.

5.13 RTC Battery



The RTC battery is included in the Miscellaneous Plastics Kit, spare part number 344852-001.

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - ❑ Optical drive (Section 5.7)
 - ❑ Keyboard (Section 5.8)
 - ❑ Keyboard cover (Section 5.9)
 - ❑ Display assembly (Section 5.10)
 - ❑ Top cover (Section 5.11)
 - ❑ System board (Section 5.12)
2. Turn the system board upside down with the rear panel facing you.
3. Remove the RTC battery from the socket.



Removing the RTC Battery

Reverse the above procedure to install the RTC battery.

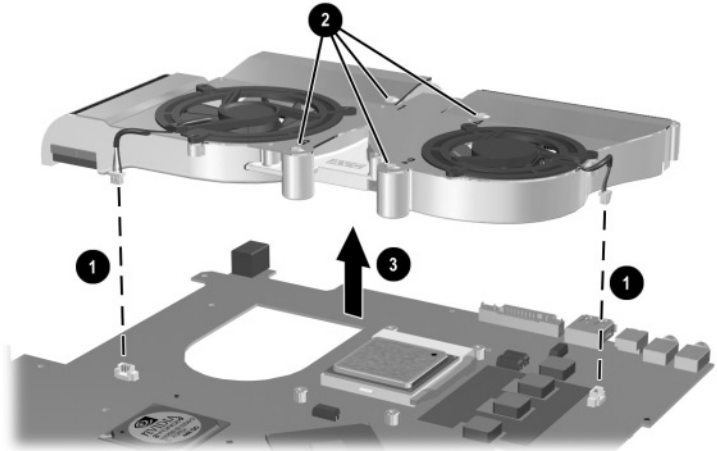
5.14 Heat Sink

Spare Part Number Information

Heat sink (includes large and small fans and thermal paste)	344872-001
Thermal Paste Kit	346178-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - Optical drive (Section 5.7)
 - Keyboard (Section 5.8)
 - Keyboard cover (Section 5.9)
 - Display assembly (Section 5.10)
 - Top cover (Section 5.11)
 - System board (Section 5.12)
2. Turn the system board upside down with the rear panel facing you.

3. Disconnect the fan cables **1** from the system board.
4. Loosen the four heat sink screws **2**.
5. Remove the heat sink **3**.

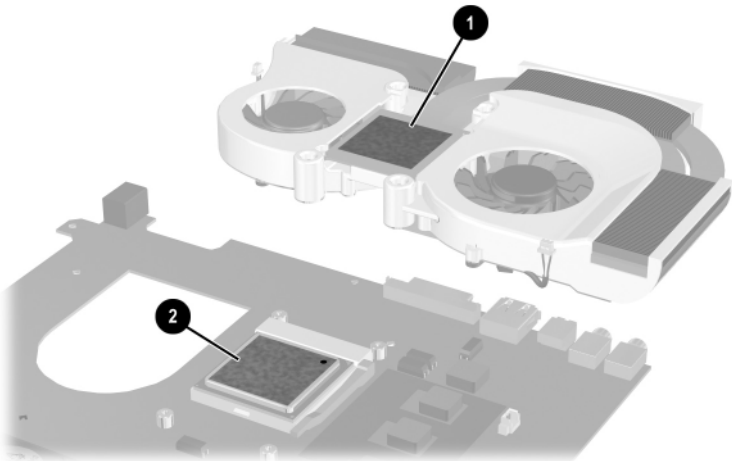


Removing the Heat Sink



Carefully clean any thermal paste residue from the heat sink **1** and processor surfaces **2** each time you remove the heat sink. Apply new thermal paste to both surfaces.

Thermal paste is included with the replacement heat sink and is also available in the Thermal Paste Kit, spare part number 346178-001.

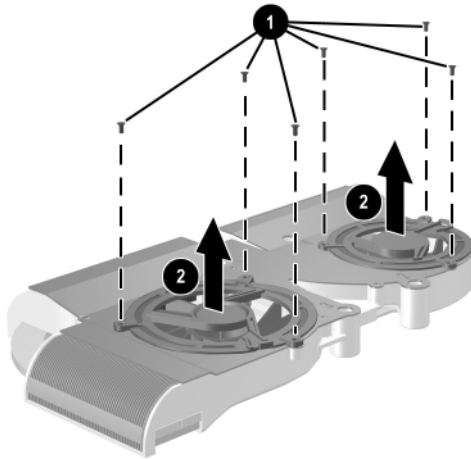


Removing the Thermal Paste From the Heat Sink and Processor

Reverse the above procedure to install the heat sink.

If it is necessary to remove one or both of the fans from the heat sink, follow these steps:

1. Remove the six PM1.5×4.0 screws **1** that secure the fans to the heat sink.
2. Remove the fans **2**.



Removing the Fans

Reverse the above procedure to install the fans.

5.15 Processor

Spare Part Number Information

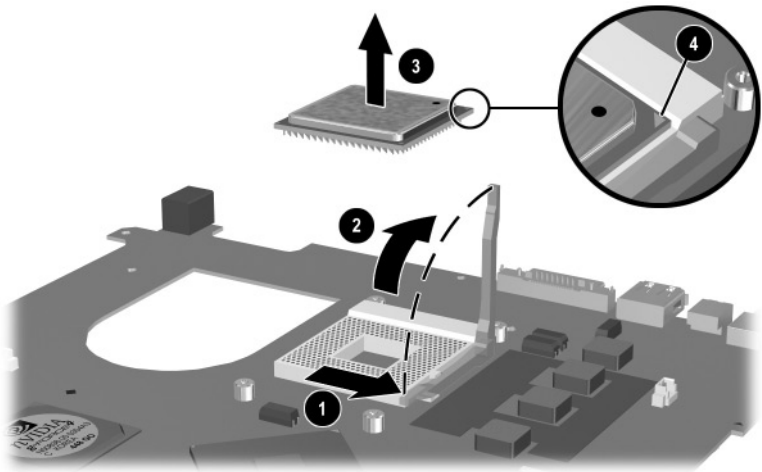
Intel Pentium DT 3.20-GHz with Hyper-Threading Technology FSB	344890-001
Intel Pentium DT with 800-MHz FSB	
3.20-GHz	344889-001
3.00-GHz	344888-001
2.80-GHz	344887-001
Intel Pentium DT with 533-MHz FSB	
3.06-GHz	344886-001
2.80-GHz	344885-001
2.66-GHz	344884-001
Thermal Paste Kit	346178-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - ❑ Optical drive (Section 5.7)
 - ❑ Keyboard (Section 5.8)
 - ❑ Keyboard cover (Section 5.9)
 - ❑ Display assembly (Section 5.10)
 - ❑ Top cover (Section 5.11)
 - ❑ System board (Section 5.12)
 - ❑ Heat sink (Section 5.14)

2. Slide the processor release lever to the right **1** until it disengages from the clip on the back of the processor socket.
3. Lift the lever up and swing it to the back **2** until it is in an upright position.
4. Lift the processor straight up **3** to remove it.



Note that the gold triangle **4** on the processor should be aligned in the rear right corner when you install the processor.



Removing the Processor

Reverse the above procedure to install the processor.

5.16 SD Card Slot/Infrared Module

Spare Part Number Information

SD Card slot/infrared module (includes cable)

344880-001



1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - Optical drive (Section 5.7)
 - Keyboard (Section 5.8)
 - Keyboard cover (Section 5.9)
 - Display assembly (Section 5.10)
 - Top cover (Section 5.11)
 - System board (Section 5.12)

2. Disconnect the SD Card slot/infrared module cable ❶ from the LIF connector on the module.



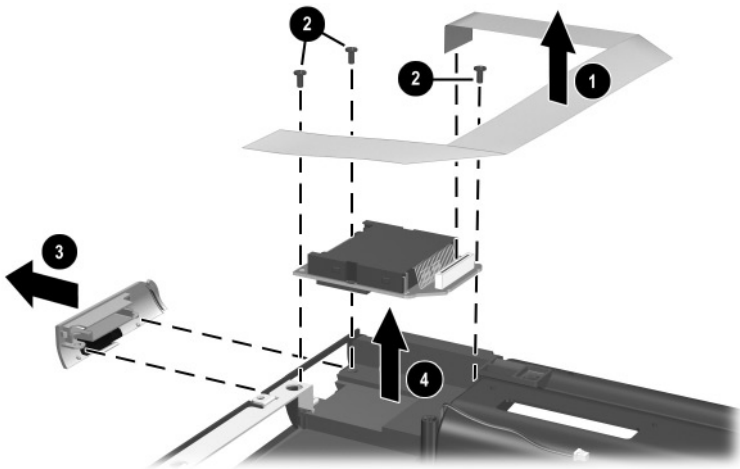
The SD Card slot/infrared module cable is included with the SD Card slot/infrared module. It is also included in the Miscellaneous Cable Kit, spare part number 344851-001.

3. Remove the three PM2.5×8.0 screws ❷ that secure the module to the notebook.
4. Remove the module bezel ❸.



The SD Card slot/infrared module bezel is included in the Miscellaneous Plastics Kit, spare part number 344852-001.

5. Remove the module ❹.



Removing the SD Card Slot/Infrared Module

Reverse the above procedure to install the SD Card slot/infrared module.

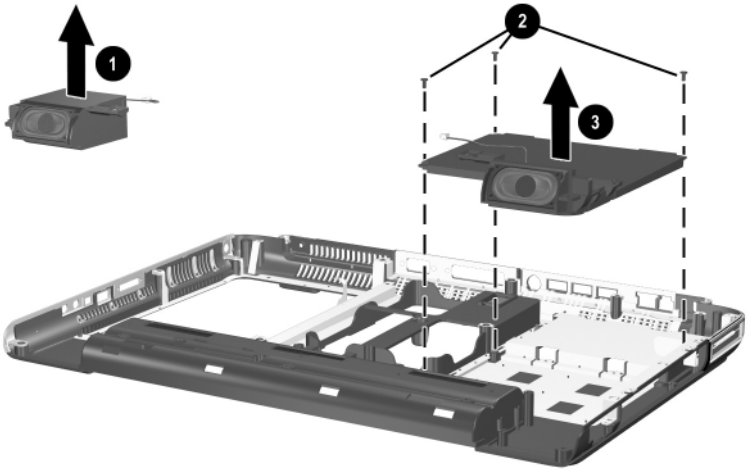
5.17 Speakers



The left and right speakers are included with the base enclosure, spare part number 344883-001.

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
 - ❑ Optical drive (Section 5.7)
 - ❑ Keyboard (Section 5.8)
 - ❑ Keyboard cover (Section 5.9)
 - ❑ Display assembly (Section 5.10)
 - ❑ Top cover (Section 5.11)
 - ❑ System board (Section 5.12)
 - ❑ SD Card slot/infrared module (Section 5.16)

2. Remove the left speaker from the notebook ❶.
3. Remove the three PM2.5×5.0 screws ❷ that secure the right speaker to the notebook.
4. Remove the right speaker ❸.



Removing the Speakers

Reverse the above procedure to install the speakers.

Specifications

This chapter provides physical and performance specifications.

Table 6-1
Notebook

Dimensions		
Height	56.38 cm	1.85 in
Width	333.45 cm	10.94 in
Depth	477.62 cm	15.67 in
Weight (varies by configuration)		
	4.22 kg	9.30 lbs
Stand-alone power requirements		
Nominal operating voltage	14.4 VDC	
Average operating power	15.8 W	
Peak operating power	38.0 W	
Power in Standby mode	< 800 mW	
Power in Hibernation mode	< 100 mW	
Temperature		
Operating	10°C to 35°C	50°F to 95°F
Nonoperating	-10°C to 60°C	14°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 90%, 38.7°C (101.6°F) maximum wet bulb temperature	

Table 6-1
Notebook (Continued)

Altitude (unpressurized)

Operating (14.7 to 10.1 psia)	0 to 3,048 m	0 to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	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
15.4-inch, Wide SXGA+, TFT Display

Dimensions		
Height	20.7 cm	8.1 in
Width	33.1 cm	13.0 in
Diagonal	39.1 cm	15.4 in
Number of colors	up to 16.8 million	
Contrast ratio	200:1	
Brightness	180 nits typical	
Pixel resolution		
Pitch	0.197 × 0.197 mm	
Format	1680 × 1050	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Viewing angle	+/-65° horizontal, +/-50° vertical typical	

Table 6-3
15.4-inch, Wide XGA+, TFT Display

Dimensions		
Height	20.7 cm	8.1 in
Width	33.1 cm	13.0 in
Diagonal	39.1 cm	15.4 in

Number of colors	up to 16.8 million
-------------------------	--------------------

Contrast ratio	200:1
-----------------------	-------

Brightness	180 nits typical
-------------------	------------------

Pixel resolution	
Pitch	0.259 × 0.259 mm
Format	1280 × 800
Configuration	RGB vertical stripe

Backlight	Edge lit
------------------	----------

Character display	80 × 25
--------------------------	---------

Viewing angle	+/-65° horizontal, +/-50° vertical typical
----------------------	--

**Table 6-4
Hard Drives**

	80-GB	60-GB (5400- rpm)	60-GB (4200- rpm)	40-GB
User capacity per drive¹	80 GB	60 GB	40 GB	30 GB
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	99 g	102 g	99 g	99g
Interface type	ATA-5	ATA-5	ATA-5	ATA-5
Transfer rate				
Synchronous (maximum)	100 MB/ sec	100 MB/ sec	100 MB/ sec	100 MB/ sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms
Logical blocks²	156,301,488	117,210,240	78,140,160	58,605,120
Disk rotational speed	4200 rpm	5400 rpm	4200 rpm	4200 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)	5°C to 55°C (41°F to 131°F)	5°C to 55°C (41°F to 131°F)	5°C to 55°C (41°F to 131°F)

¹ 1 GB = 1,073,741,824 bytes.

² Actual drive specifications may differ slightly.

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

Table 6-5
External AC Adapter

Weight	.304 kg	0.67 lb
Power supply		
Rated input voltage	100 to 240 VAC RMS	
Rated input current	1.7 A RMS	
Rated frequency	47 to 63 Hz	

Table 6-6
12-cell, Li-Ion Battery Pack

Dimensions		
Height	13.4 cm	5.25 in
Width	9.2 cm	3.63 in
Depth	1.9 cm	.75 in
Weight	.43 kg	.96 lb
Energy		
Voltage	14.8 V	
Amp-hour capacity	4.4 Ah	
Watt-hour capacity	64 Wh	
Temperature		
Operating	0 to 60°C	32 to 140°F
Nonoperating	-20 to 60°C	-4 to 104°F
Recharge time		
System in Standby mode	2 to 3 hours	
System on (depending on system power consumption)	2 to 5 hours	

Table 6-7
24X DVD/CD-RW 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	1.2 mm	0.047 in
Track pitch	0.74 μ m	
Access time		
Random	< 150 ms	
Full stroke	< 225 ms	
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	128 KB/s	
Data transfer rate		
CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
CD-RW (10X)	1500 KB/s (150 KB/s at 1X CD rate)	
CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

Table 6-8
24X CD-RW 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	1.2 mm	0.047 in
Track pitch	0.74 μ m	
Access time		
Random	< 150 ms	
Full stroke	< 225 ms	
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	128 KB/s	
Data transfer rate		
CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
CD-RW (10X)	1500 KB/s (150 KB/s at 1X CD rate)	
CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

Table 6-9
8X 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	1.2 mm	0.047 in
Track pitch	0.74 μ m	
Access time		
Random DVD media	< 150 ms	
Full stroke DVD media	< 225 ms	
Random CD media	< 110 ms	
Full stroke CD media	< 200 ms	
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	512 KB/s	
Data transfer rate		
Max 24X CD	3600 KB/s (150 KB/s at 1X CD rate)	
Max 8X DVD	10,800 KB/s (1352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 10 seconds	
Stop time	< 3 seconds	

Table 6-10
24X CD-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	1.2 mm	0.047 in
Track pitch	1.6 μ m	
Access time		
Random	< 150 ms	
Full stroke	< 300 ms	
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	128 KB/s	
Data transfer rate		
Sustained (16X)	2400 KB/s	
Variable	1500 to 3600 KB/s (10X to 24X)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 8 seconds	
Stop time	< 4 seconds	

**Table 6-11
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 6-12
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 6-13
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/RTC
072 - 07F	Unused
080 - 08F	DMA page registers
090 - 091	Unused
092	Port A
093 - 09F	Unused
0A0 - 0A1	Interrupt controller no. 2

Table 6-13
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 6-13
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)

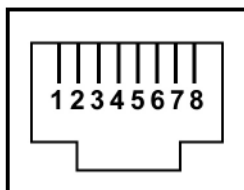
Table 6-14
System Memory Map

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

A

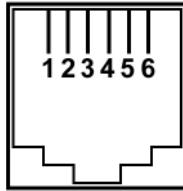
Connector Pin Assignments

Table A-1
RJ-45 Network Interface



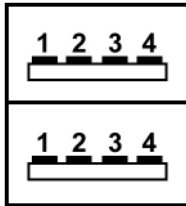
Pin	Signal	Pin	Signal
1	Transmit +	5	Unused
2	Transmit -	6	Receive -
3	Receive +	7	Unused
4	Unused	8	Unused

Table A-2
RJ-11 Modem



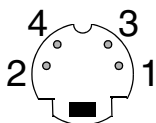
Pin	Signal	Pin	Signal
1	Unused	4	Unused
2	Tip	5	Unused
3	Ring	6	Unused

Table A-3
Universal Serial Bus



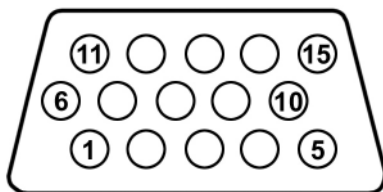
Pin	Signal	Pin	Signal
1	+5 VDC	3	Data +
2	Data -	4	Ground

Table A-4
S-Video



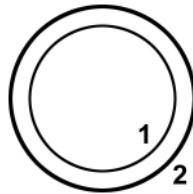
Pin	Signal	Pin	Signal
1	Ground (Y)	3	Y-Luminance (Intensity)
2	Ground (C)	4	C-Chrominance (Color)

Table A-5
External Monitor



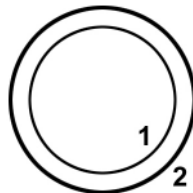
Pin	Signal	Pin	Signal
1	Red analog	9	+5 VDC
2	Green analog	10	Ground
3	Blue analog	11	Monitor detect
4	Not connected	12	DDC 2B data
5	Ground	13	Horizontal sync
6	Ground analog	14	Vertical sync
7	Ground analog	15	DDC 2B clock
8	Ground analog		

**Table A-6
Audio Line-Out**



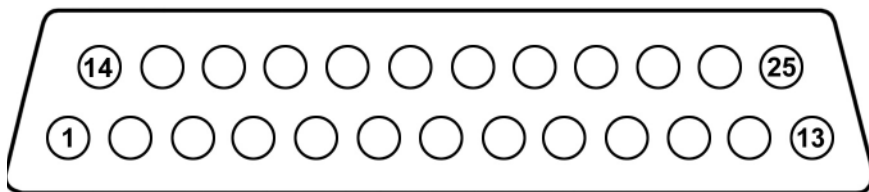
Pin	Signal	Pin	Signal
1	Audio out	2	Ground

**Table A-7
Microphone**



Pin	Signal	Pin	Signal
1	Audio in	2	Ground

Table A-8
Parallel



Pin	Signal	Pin	Signal
1	Strobe	14	Auto linefeed
2	Data bit 0	15	Error
3	Data bit 1	16	Initialize paper
4	Data bit 2	17	Select in
5	Data bit 3	18	Ground
6	Data bit 4	19	Ground
7	Data bit 5	20	Ground
8	Data bit 6	21	Ground
9	Data bit 7	22	Ground
10	Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper end	25	Ground
13	Select		

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 shipped 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 an HP 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 (6.50 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 (*Continued*)

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

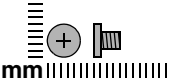
Notes

1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
 2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a 2-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 mm² conductor size. The wall plug must be a 2-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
-

Screw Listing

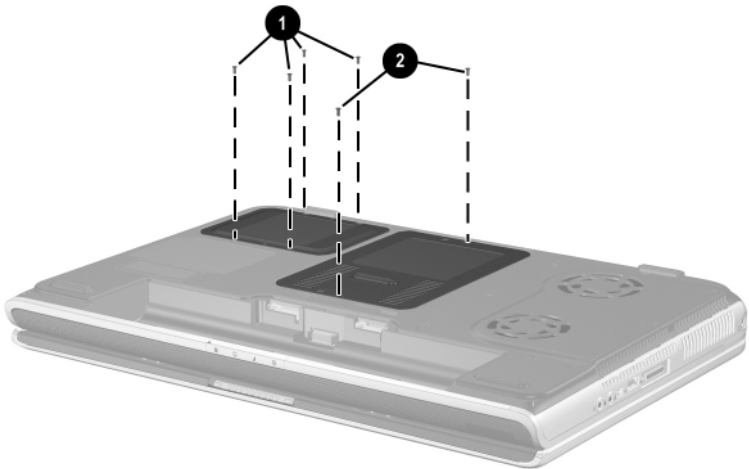
This appendix provides specification and reference information for the screws used in the notebook. All screws listed in this appendix are available in the Miscellaneous Screw Kit, spare part number 344850-001.

Table C-1
Phillips PM2.5×4.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	6	4.0 mm	2.5 mm	5.0 mm

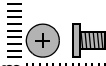

Where used:

- ❶ Four screws that secure the hard drive cover to the notebook (documented in Section 5.3)
- ❷ Two screws that secure the memory expansion/Mini PCI compartment cover to the notebook (documented in Section 5.5)



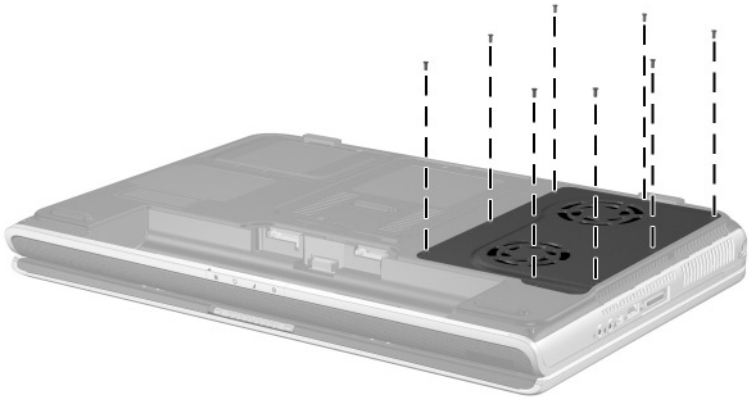
Phillips M2.5×4.0 Screw Locations

Table C-2
Phillips PM2.5×5.0 Screw

 mm 	Color	Qty.	Length	Thread	Head Width
	Black	18	5.0 mm	2.5 mm	5.0 mm

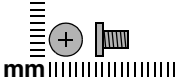
Where used:

Eight screws that secure the fan cover to the notebook
 (documented in Section 5.8)



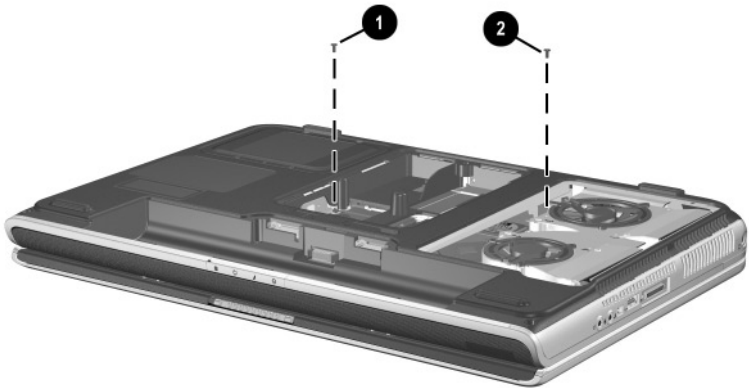
Phillips M2.5×5.0 Screw Locations

Table C-2
Phillips PM2.5×5.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	18	5.0 mm	2.5 mm	5.0 mm

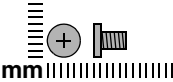
Where used:

- ❶ One screw that secures the optical drive to the notebook in the memory expansion/Mini PCI compartment (documented in Section 5.7)
- ❷ One screw that secures the keyboard to the notebook in the heat sink compartment (documented in Section 5.8)



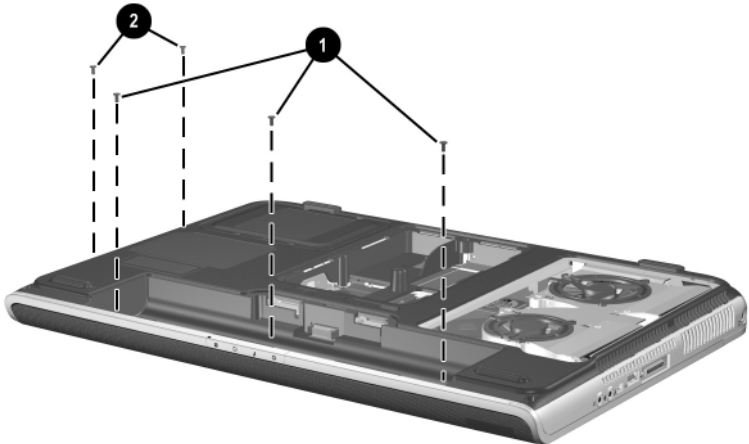
Phillips M2.5×5.0 Screw Locations

Table C-2
Phillips PM2.5×5.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	18	5.0 mm	2.5 mm	5.0 mm

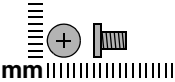
Where used:

- ❶ Three screws that secure the top cover to the notebook in the battery bay (documented in Section 5.11)
- ❷ Two screws that secure the top cover to the notebook in the optical drive bay (documented in Section 5.11)



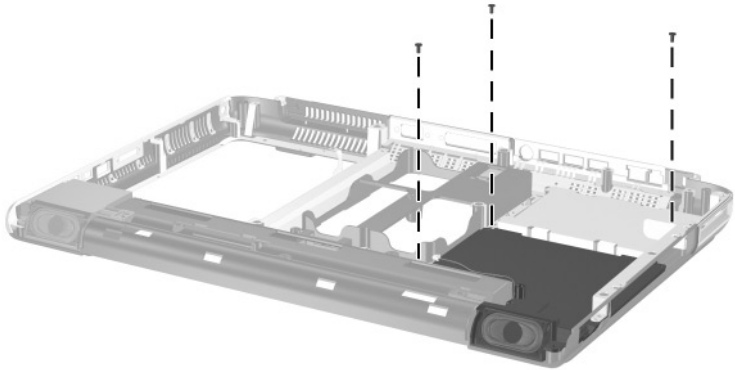
Phillips M2.5×5.0 Screw Locations

Table C-2
Phillips PM2.5×5.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	18	5.0 mm	2.5 mm	5.0 mm

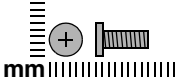
Where used:

Three screws that secure the right speaker to the notebook (documented in Section 5.17)



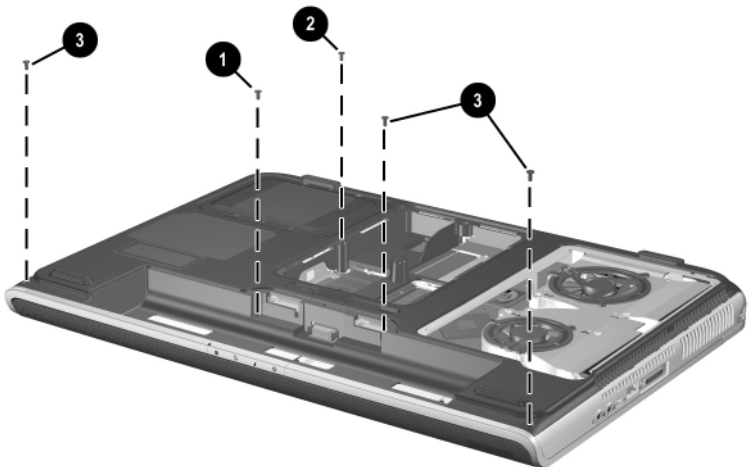
Phillips M2.5×5.0 Screw Locations

Table C-3
Phillips PM2.5×8.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	26	8.0 mm	2.5 mm	5.0 mm

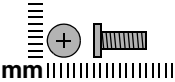
Where used:

- ❶ One screw that secures the optical drive to the notebook in the battery bay (documented in Section 5.7)
- ❷ One screw that secures the keyboard to the notebook in the memory expansion/Mini PCI compartment (documented in Section 5.8)
- ❸ Three screws that secure the top cover to the notebook (two on the front edge of the notebook, one in the battery bay (documented in Section 5.11))



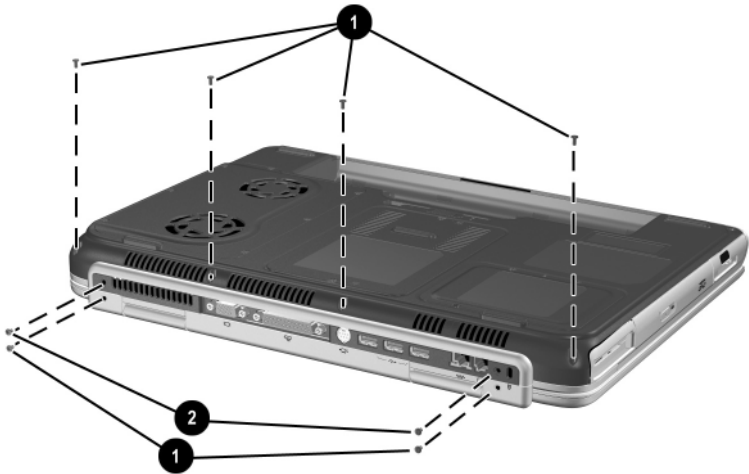
Phillips M2.5×8.0 Screw Locations

Table C-3
Phillips PM2.5×8.0 Screw (Continued)

 mm	Color	Qty.	Length	Thread	Head Width
	Black	26	8.0 mm	2.5 mm	5.0 mm

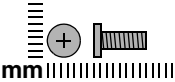
Where used:

- ❶ Six screws that secure the keyboard cover to the notebook (documented in Section 5.9)
- ❷ Two screws that secure the display assembly to the notebook (documented in Section 5.10)



Phillips M2.5×8.0 Screw Locations

Table C-3
Phillips PM2.5×8.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	26	8.0 mm	2.5 mm	5.0 mm

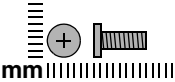
Where used:

Two screws that secure the display assembly to the notebook (documented in Section 5.10)



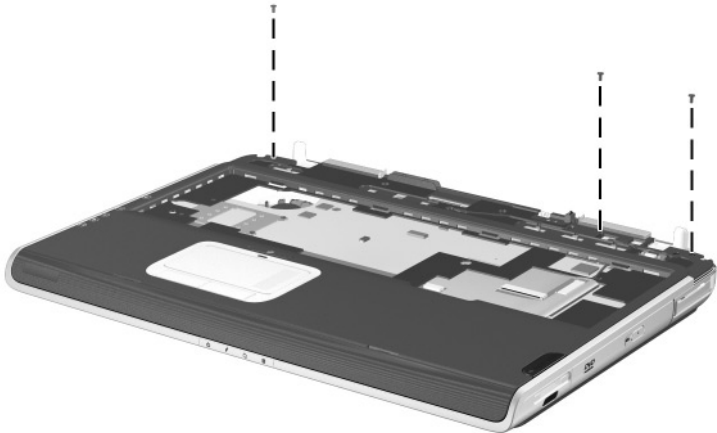
Phillips M2.5×8.0 Screw Location

Table C-3
Phillips PM2.5×8.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	26	8.0 mm	2.5 mm	5.0 mm

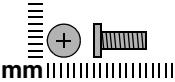
Where used:

Three screws that secure the top cover to the notebook
(documented in Section 5.11)



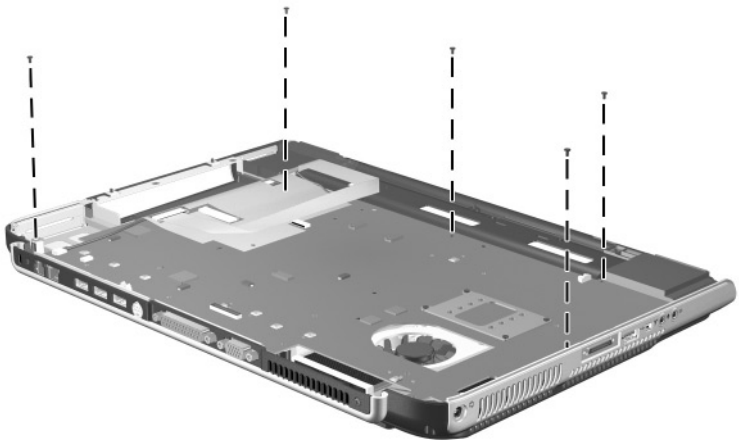
Phillips M2.5×8.0 Screw Locations

Table C-3
Phillips PM2.5×8.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	26	8.0 mm	2.5 mm	5.0 mm

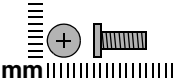
Where used:

Five screws that secure the system board to the notebook
 (documented in Section 5.12)



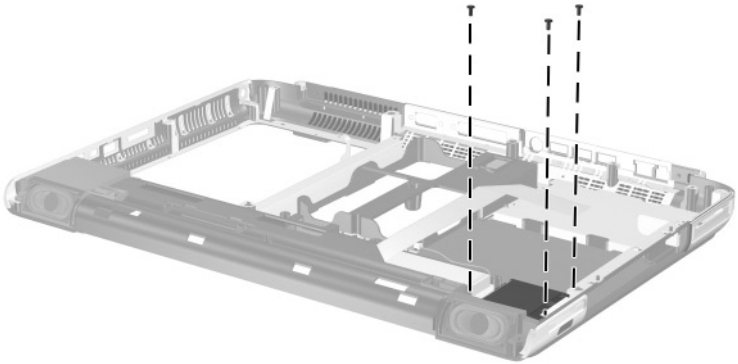
Phillips M2.5×8.0 Screw Location

Table C-3
Phillips PM2.5×8.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	26	8.0 mm	2.5 mm	5.0 mm

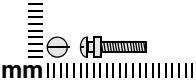
Where used:

Three screws that secure the SD Card slot/infrared module to the notebook (documented in Section 5.16)



Phillips M2.5×8.0 Screw Locations

Table C-4
Slotted M1.5×10.0 Shoulder Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	2	10.0 mm	1.5 mm	3.0 mm

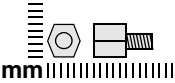
Where used:

Two screws that secure the top cover to the notebook
 (documented in Section 5.11)



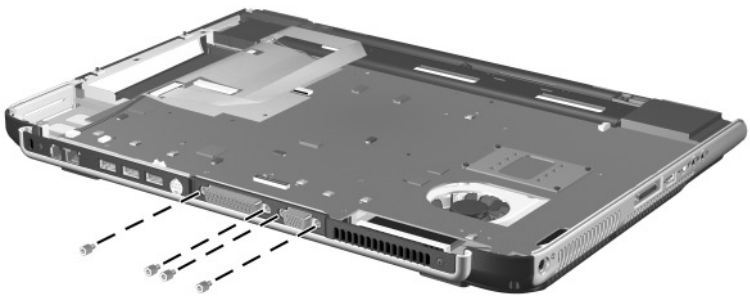
Slotted M1.5×10.0 Shoulder Screw Locations

Table C-5
HM5.0×8.5 Standoff

	Color	Qty.	Length	Thread	Head Width
	Silver	4	8.5 mm	2.5 mm	5.0 mm

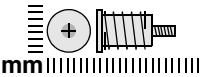
Where used:

Four standoffs that secure the system board to the notebook (documented in Section 5.12)



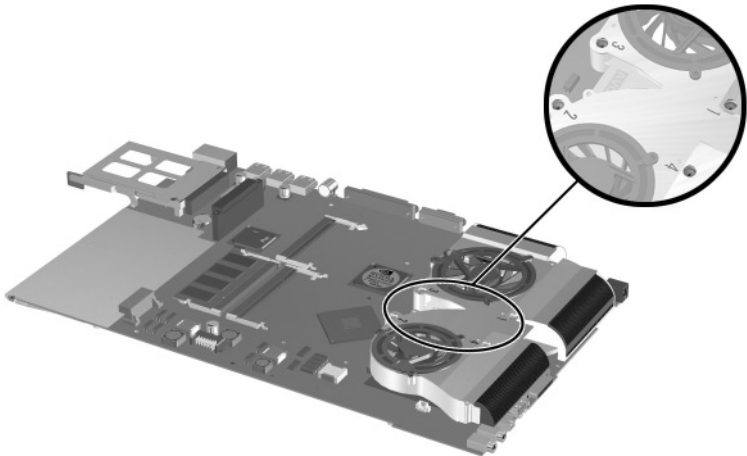
Phillips M2.5×3.0 Screw Location

Table C-6
PM1.5×12.0 Spring-Loaded Shoulder Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	4	12.0 mm	1.5 mm	6.5 mm

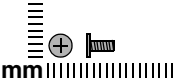
Where used:

Four screws that secure the heat sink to the system board
 (documented in Section 5.14)



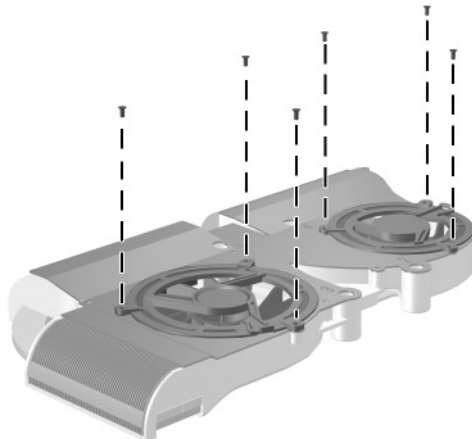
Phillips M2.5×15.0 Screw Location

Table C-7
Phillips PM1.5×4.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Black	6	4.0 mm	1.5 mm	3.5 mm

Where used:

Six screws that secure the fans to the heat sink (documented in Section 5.14)



Phillips M1.5×4.0 Screw Locations

Index

1394 connector 1-11

A

AC adapter

 spare part numbers 3-11

 specifications 6-6

applications key 1-13

audio line-out jack

 location 1-11

 pin assignments A-4

audio troubleshooting 2-25

B

base enclosure, spare part

 number 3-5

battery bay 1-17

battery light 1-9

battery pack

 removal 5-4

 spare part number 3-7, 5-4

 specifications 6-6

battery release latch 1-17

Bluetooth wireless LAN,

 spare part number 3-5

bottom components 1-16

C

cables, service considerations
 4-2

caps lock key 1-13

caps lock light 1-15

CD-ROM drive

 OS loading problems 2-24

 specifications 6-10

CD-RW drive, specifications

 6-8

components

 bottom 1-16

 front 1-8

 keyboard 1-12

 left side 1-10

 rear panel 1-10

 right side 1-8, 1-10

 top 1-14

Computer Setup

 Advanced Menu 2-5

 File Menu 2-3

 overview 2-1

 Security Menu 2-4

- connector pin assignments
 - audio line-out jack A-4
 - external monitor connector A-3
 - microphone jack A-4
 - modem jack A-2
 - monitor connector A-3
 - network jack A-1
 - RJ-11 telephone jack A-2
 - RJ-45 network jack A-1
 - S-Video connector A-3
 - Universal Serial Bus (USB) connector A-2
- connectors, service considerations 4-2
- cursor control keys 1-13

D

- design overview 1-18
- diagnostics
 - configuration information 2-7
 - test information 2-8
- Diagnostics for Windows 2-1, 2-7
- digital Media slot 1-9
- disassembly sequence chart 5-3
- diskette drive
 - OS loading problems 2-23
 - spare part number 3-10
- display assembly
 - removal 5-18
 - spare part numbers 3-3, 5-18
 - specifications 6-3, 6-4

- display cable 3-9
- display release latch 1-9
- DMA specifications 6-11
- drives, preventing damage 4-3
- DVD/CD-RW drive
 - OS loading problems 2-24
- DVD-ROM drive
 - OS loading problems 2-24
 - specifications 6-9

E

- electrostatic discharge 4-4, 4-7
- expansion base, troubleshooting 2-18
- external monitor connector
 - location 1-11
 - pin assignments A-3

F

- f1 through f12 function keys 1-13
- fan compartment 1-17
- fan cover
 - illustrated 3-8
 - removal 5-12
- fan, removal 5-31
- features 1-4
- feet
 - illustrated 3-8
 - locations 5-7
- fn key 1-13
- front components 1-8

G

- grounding equipment and methods 4-6

H

- hard drive
 - illustrated 3–10
 - OS loading problems 2–20
 - removal 5–5
 - spare part numbers 3–7, 3–10, 5–5
 - specifications 6–5
- hard drive bay 1–17
- hard drive cover
 - illustrated 3–8
 - removal 5–5
- heat sink
 - removal 5–28
 - spare part number 3–3, 5–28

I

- I/O address specifications 6–13
- infrared port 1–9
- interrupt specifications 6–12

K

- keyboard
 - components 1–12
 - removal 5–12
 - spare part numbers 3–3, 5–12
 - troubleshooting 2–28
- keyboard cover
 - illustrated 3–8
 - removal 5–16
- keypad keys 1–13

L

- labels area 1–17
- LED board cable
 - illustrated 3–9
 - removal 5–22
- left side components 1–10
- Logo Kit, spare part number 3–11

M

- mass storage devices, spare part numbers 3–10
- media button 1–15
- memory expansion board
 - removal 5–8
 - spare part numbers 3–5
- memory expansion/Mini PCI compartment cover
 - illustrated 3–8
 - location 1–17
 - removal 5–8
- memory map specifications 6–16
- microphone jack
 - location 1–11
 - pin assignments A–4
- Microsoft logo key 1–13
- Mini PCI communications board
 - removal 5–10
 - spare part numbers 3–5
- Miscellaneous Cable Kit
 - components 3–7, 3–9
 - spare part number 3–7, 3–9

Miscellaneous Plastics Kit
 components 3-3, 3-8
 spare part number 3-3, 3-8
models 1-2
modem
 jack, pin assignments A-2
 troubleshooting 2-30
monitor connector
 location 1-11
 pin assignments A-3
mute button 1-15
mute light 1-15

N

network jack, pin assignments
 A-1
network, troubleshooting 2-30
nonfunctioning device,
 troubleshooting 2-18, 2-27
notebook feet
 illustrated 3-8
 locations 5-7
notebook specifications 6-1
num lock light 1-15

O

operating system loading,
 troubleshooting 2-19
optical drive
 illustrated 3-10
 location 1-9
 OS loading problems 2-24
 removal 5-11
 spare part numbers 3-7,
 3-10

P

packing precautions 4-4
parallel connector
 location 1-11
 pin assignments A-5
password, clearing 1-6
PC Card eject button 1-9
PC Card slot 1-9
picture button 1-15
plastic parts 4-2
pointing device,
 troubleshooting 2-29
power button 1-14
power connector 1-11
power cord, spare part
 numbers 3-11
power light 1-9
power management features
 1-7
power, troubleshooting 2-12
power/Standby light 1-9, 1-14
processor
 removal 5-32
 spare part numbers 3-5,
 5-32

R

real time clock (RTC) battery
 illustrated 3-8
 removal 5-27
rear panel components 1-10
removal
 preliminaries 4-1
 procedures 5-1

- replacement
 - preliminaries 4–1
 - procedures 5–1
- right side components 1–8, 1–10
- RJ-11 telephone jack
 - location 1–10
 - pin assignments A–2
- RJ-45 network jack
 - location 1–10
 - pin assignments A–1
- S**
- Screw Kit, spare part number 3–11
- SD Card slot/infrared module
 - removal 5–34
 - spare part number 3–5, 5–34
- SD Card slot/infrared module bezel
 - illustrated 3–8
 - removal 5–35
- SD Card slot/infrared module cable
 - disconnecting 5–24
 - illustrated 3–9
- security cable slot 1–10
- serial number 3–1, 5–2
- service considerations 4–2
- speaker, removal 5–36
- speakers
 - location 1–9
- specifications
 - AC adapter 6–6
 - battery pack 6–6
 - CD-ROM drive 6–10
 - CD-RW drive 6–8
 - display 6–3, 6–4
 - DMA 6–11
 - DVD-ROM drive 6–9
 - hard drive 6–5
 - I/O addresses 6–13
 - interrupts 6–12
 - memory map 6–16
 - notebook 6–1
- static shielding materials 4–7
- S-Video connector
 - location 1–10
 - pin assignments A–3
- system board
 - spare part numbers 3–3
 - system board
 - removal 5–23
- system memory map 6–16
- T**
- Thermal Paste Kit
 - spare part number 3–3, 3–5, 5–28, 5–32
- tools required 4–1
- top components 1–14
- top cover
 - removal 5–20
 - spare part number 3–3, 5–20
- TouchPad 1–15
- TouchPad buttons 1–15
- TouchPad light 1–15
- TouchPad on/off button 1–15
- TouchPad scroll zones 1–15
- transporting precautions 4–4

- troubleshooting
 - audio 2–25
 - Computer Setup 2–2
 - Diagnostics for Windows 2–7
 - expansion base 2–18
 - flowcharts 2–10
 - keyboard 2–28
 - modem 2–30
 - network 2–30
 - nonfunctioning device 2–18, 2–27
 - operating system loading 2–19
 - overview 2–1
 - pointing device 2–29
 - power 2–12
 - video 2–16

U

- Universal Serial Bus (USB)
 - connector
 - location 1–10
 - pin assignments A–2
 - universal serial bus (USB) connector
 - location 1–11

V

- vent 1–11
- video troubleshooting 2–16
- volume buttons 1–14

W

- wireless LAN antennae, spare part number 3–7
- wireless LAN, spare part numbers 3–5
- wireless on/off button 1–15
- wireless on/off light 1–15
- workstation precautions 4–5

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>