COMPAQ

Maintenance and Service Guide

Compaq Presario V3000 Notebook PC

Document Part Number: 418333-001

June 2006

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

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Compaq Presario V3000 Notebook PC
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1

Product Description

The Compaq Presario V3000 Notebook PC offers advanced modularity, Intel® Core™ Duo and Core Solo processors or AMD Turion™ 64 Mobile Technology and Mobile AMD Sempron™ processors, and extensive multimedia support.

Compaq Presario V3000 Notebook PC

1.1 Features

- The following processors are available, varying by computer model:
  - Intel Core Duo T2600 (2.16-GHz)
  - Intel Core Duo T2500 (2.00-GHz)
  - Intel Core Duo T2400 (1.83-GHz)
  - Intel Core Duo T2250 (1.73-GHz)
  - Intel Core Duo T2300 (1.66-GHz)
  - Intel Core Duo T2050 (1.60-GHz)
  - Intel Core Solo T1350 (1.80-GHz)
  - AMD Turion ML-52 1.60-Ghz
  - AMD Turion ML-50 1.60-GHz
  - Mobile AMD Sempron 3400+ (1.80-GHz)
  - Mobile AMD Sempron 3200+ (1.60-GHz)
- 14.0-inch WXGA (1280 × 768) TFT display with over 16.7 million colors, varying by computer model
- 120-, 100-, 80-, 60-, or 40-GB high-capacity hard drive, varying by computer model
- 256-MB DDR synchronous DRAM (SDRAM) at 667 MHz and 533 MHz, expandable to 2.0 GB
- Microsoft® Windows® XP Home Edition or Windows XP Professional, or Free DOS, varying by computer model
- Full-size Windows keyboard with embedded numeric keypad
- TouchPad pointing device with on/off button and dedicated two-way scroll zone
- Integrated 10/100 BASE-T Ethernet local area network (LAN) network interface card (NIC) with RJ-45 jack
- Integrated high-speed 56K modem with RJ-11 jack

- Integrated wireless support for Mini Card IEEE 802.11b and 802.11b/g WLAN device
- Support for ExpressCard
- External 65-watt AC adapter with 3-wire power cord
- 6-cell or 12-cell Li-Ion battery
- Stereo speakers with volume up and down buttons
- Integrated microphone (select models only)
- Support for the following optical drives:
  - ❏ DVD/CD-RW Combo Drive
  - ❏ DVD±RW/R and CD-RW Double-Layer Combo Drive
  - ❏ DVD±RW/R and CD-RW Double-Layer Combo Drive with LightScribe
- Connectors:
  - ❏ Audio-in (microphone)
  - ❏ Audio-out (headphone)
  - ❏ Consumer infrared lens
  - ❏ Docking (select models only)
  - ❏ ExpressCard
  - ❏ External monitor
  - ❏ IEEE 1394 digital (select models only)
  - ❏ Memory Reader (select models only)
  - ❏ Power
  - ❏ RJ-11 (modem)
  - ❏ RJ-45 (network)
  - ❏ S-Video-out (select models only)
  - ❏ Universal Serial Bus (USB) v. 2.0

1.2 Resetting the Computer

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

1. Prepare the computer for disassembly (refer to Section 5.3, "Preparing the Computer for Disassembly," for more information).
2. Remove the real-time clock (RTC) battery (refer to Section 5.5, "RTC Battery," for more information).
3. Wait approximately 5 minutes.
4. Replace the RTC battery and reassemble the computer.
5. Connect AC power to the computer. Do not reinsert any batteries at this time.
6. Turn on the computer.

All passwords and all CMOS settings have been cleared.

1.3 Power Management

The computer comes with power management features that extend battery operating time and conserve power. The computer 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 button
- Advanced Configuration and Power Management (ACPM) compliance

1.4 External Components

The external components on the front of the computer are shown below and described in Table 1-1.

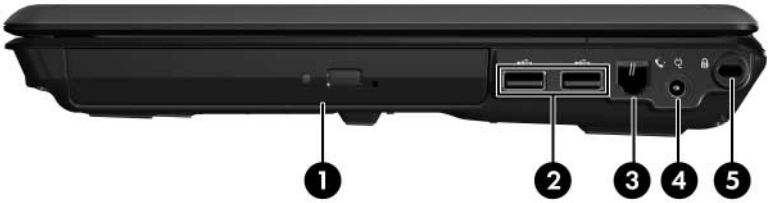
Front Components

Table 1-1

Front Components

Item	Component	Function
1	Wireless switch (select models only)	Turns the wireless feature on or off, but does not create a wireless connection. ✎ To establish a wireless connection, a wireless network must already be set up.
2	Wireless light	Blue: An integrated wireless device, such as a wireless local area network (LAN) device and/or a Bluetooth® device, is turned on. Red: An integrated wireless device is turned off.
3	Consumer infrared lens (select models only)	Links the computer to the HP Remote Control (select models only).
4	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
5	Audio-out (headphone) jack	Produce sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.

The external components on the right side of the computer are shown below and described in Table 1-2.



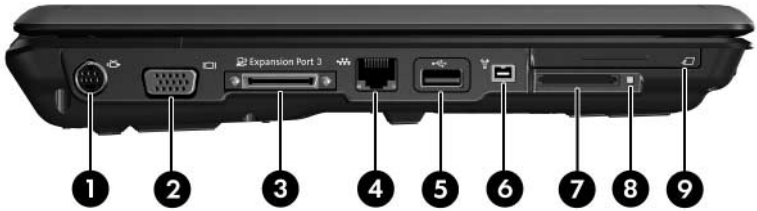
Right-Side Components

Table 1-2

Right-Side Components

Item	Component	Function
1	Optical drive	Reads an optical disc.
2	USB ports (2)	Connect optional USB devices.
3	RJ-11 (modem) jack	Connects a modem cable.
4	Power connector	Connects an AC adapter.
5	Security cable slot	Attaches an optional security cable to the computer. ✎ The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

The external components on the left side of the computer are shown below and described in Table 1-3.



Left-Side Components

Table 1-3

Left-Side Components

Item	Component	Function
1	S-Video-out jack	Connects an optional S-Video device such as a television, VCR, camcorder, overhead projector, or video capture card.
2	External monitor port	Connects an external VGA monitor or projector.
3	Expansion port 3	Connects the computer to an optional expansion product. ✎ The computer has only one expansion port. The term *expansion port 3* describes the type of expansion port.
4	RJ-45 (network) jack	Connects a network cable.
5	USB port	Connects an optional USB device.
6	1394 port	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
7	Memory Reader	Supports the following optional digital card formats: Secure Digital (SD) Memory Card, MultiMediaCard (MMC), Secure Digital Input/Output (SD I/O), Memory Stick (MS), Memory Stick Pro (MSP), xD-Picture Card (XD), xDPicture Card (XD) Type M.
8	Memory Reader light	On: A digital card is being accessed.
9	ExpressCard slot	Supports optional ExpressCard/54 cards.

The computer keyboard components are shown below and described in Table 1-4.

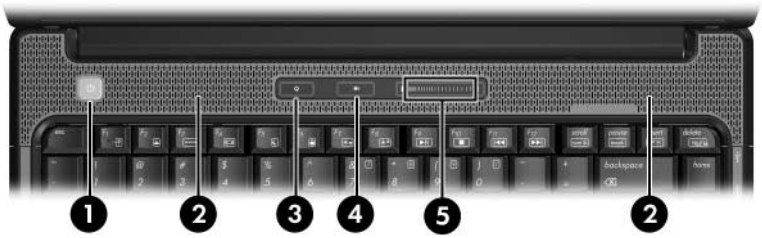
Keyboard Components

Table 1-4

Keyboard Components

Item	Component	Function
1	Function keys (12)	Execute frequently used system functions when pressed in combination with the **fn** key.
2	**caps lock** key	Enables caps lock and turns on the caps lock light.
3	**fn** key	Executes frequently used system functions when pressed in combination with a function key or the **esc** key.
4	Windows logo key	Displays the Microsoft Windows Start menu.
5	Windows applications key	Displays a shortcut menu for items beneath the pointer.
6	Arrows keys	Move the cursor around the screen.
7	Embedded numeric keypad keys (15)	Can be used like the keys on an external numeric keypad.
8	**num lock** key	Enables numeric lock, turns on the embedded numeric keypad, and turns on the num lock light.

The computer top components are shown below and described in Table 1-5.



Top Components, Part 1

Table 1-5

Top Components, Part 1

Item	Component	Function
1	Power button	When the computer is ■ Off, press to turn on the computer. ■ On, press to enter hibernation. ■ In standby, briefly press to exit standby. ■ in hibernation, briefly press to exit hibernation.
2	Speakers (2)	Produce sound.

Table 1-5

Top Components, Part 1 *(Continued)*

Item	Component	Function
3	Media button	If QuickPlay is not installed and the computer is ■ On, the media button opens the music program or Media menu, allowing you to select a multimedia program. ■ Off, the media button does not function. ■ In standby, the media button resumes from standby into Windows. If QuickPlay is installed and the computer is ■ On, the media button opens the music program or Media menu, allowing you to select a multimedia program. ■ Off, the media button opens the music program or the Media menu, allowing you to select a multimedia program. ■ In standby, the media button resumes from standby into Windows. ✎ The media button does not affect the hibernation file or the procedure for restoring from hibernation.
4	Volume mute button	Mutes and restores speaker sound.
5	Volume scroll zone	Adjusts volume. Slide your finger to the left to decrease volume and to the right to increase volume. Alternatively, you can tap the left half of the scroll zone to decrease volume, or you can tap the right half of the scroll zone to increase volume.

The computer TouchPad components are shown below and described in Table 1-6.

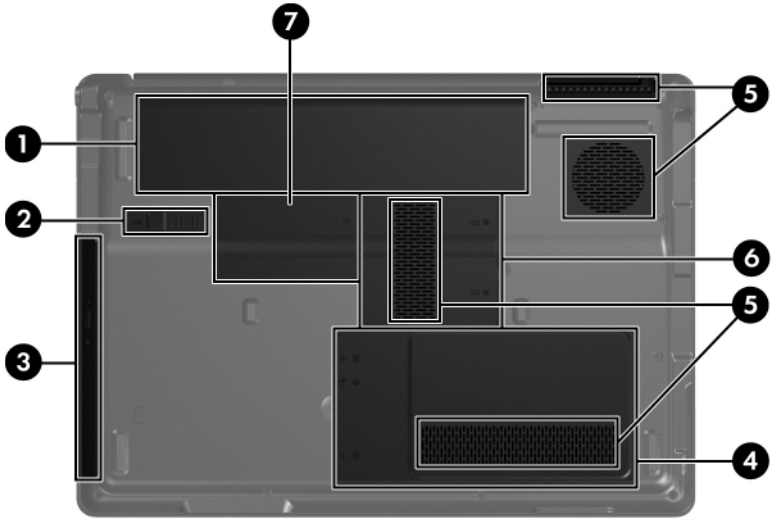
TouchPad Components

Table 1-6

TouchPad Components

Item	Component	Function
1	TouchPad light	Blue: TouchPad is enabled. Amber: TouchPad is disabled.
2	TouchPad	Moves the pointer and selects or activates items on the screen. Can be set to perform other mouse functions, such as scrolling, selecting, and double-clicking.
3	TouchPad horizontal scroll zone	Scrolls left or right.
4	Left and right TouchPad buttons	Function like the left and right buttons on an external mouse.
5	TouchPad vertical scroll zone	Scrolls up or down.
6	TouchPad on/off button	Enables/disables the TouchPad.

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



Bottom Components

Table 1-7

Bottom Components

Item	Component	Function
1	Battery bay	Holds the battery.
2	Battery release latch	Releases the battery from the battery bay.
3	Optical drive	Reads an optical disc.
4	Hard drive bay	Holds the hard drive.

Table 1-7

Bottom Components *(Continued)*

Item	Component	Function
5	vents (4)	Enable airflow to cool internal components. ⚠ To prevent overheating, do not obstruct vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or thick rugs, or clothing, to block airflow. ✎ The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
6	Memory module compartment	Contains the memory module slots.
7	Mini Card compartment	Holds a wireless LAN device (select models only). ✎ To prevent an unresponsive system and the display of a warning message, replace with only a Mini Card device authorized for use in the computer by the governmental agency that regulates wireless devices in your country. If you replace the device and then receive a warning message, remove the device to restore computer functionality. Then contact Customer Care through the Help and Support Center.

1.5 Design Overview

This section presents a design overview of key parts and features of the computer. 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:

- AMD Turion and Mobile AMD Sempron processors or Intel Core Duo and Core Solo processors
- Audio
- Display
- ExpressCard
- Fan
- Hard drive
- Keyboard and TouchPad
- Memory module
- Mini Card modules

CAUTION: To properly ventilate the computer, allow at least a 7.6-cm (3-inch) clearance on the left and right sides of the computer.

The computer uses an electric 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. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

2

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 Setup Utility

The Setup Utility is a ROM-based information and customization utility that can be used even when your Windows operating system is not working or will not load.

The utility reports information about the computer and provides settings for startup, security, and other preferences.

1. Turn on or restart the computer in Windows.
2. Before Windows opens and while the "Press <F10> to enter setup" prompt is displayed in the lower-left corner of the screen, press **f10**.

2.2 Using the Setup Utility

Changing the Language of the Setup Utility

The following procedure explains how to change the language of the Setup Utility. If the computer is not in the Setup Utility, begin at step 1. If the computer is in the Setup Utility, begin at step 2.

1. To open the Setup Utility, turn on or restart the computer in Windows, and then press **f10** while the prompt, "Press <F10> to enter setup," is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.
3. Press **f5** or **f6** (or use the arrow keys) to select a language, and then press **enter** to select a language.
4. When a confirmation prompt with your preference selected is displayed, press **enter** to save your preference.
5. To set your preferences and exit the Setup Utility, press **f10** and then follow the instructions on the screen.

Your preferences go into effect when the computer restarts in Windows.

Navigating and Selecting in the Setup Utility

Because the Setup Utility is not Windows-based, it does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a drop-down list or to toggle a field, for example an Enable/Disable field, use either the arrow keys or **f5** or **f6**.
- To select an item, press **enter**.
- To close a text box or return to the menu display, press **f1**.
- To display additional navigation and selection information while the Setup Utility is open, press **f1**.

Displaying System Information

The following procedure explains how to display system information in the Setup Utility. If the Setup Utility is not open, begin at step 1. If the Setup Utility is open, begin at step 2.

1. To open the Setup Utility, turn on or restart the computer in Windows, and then press **f10** while the prompt, "Press <F10> to enter setup," is displayed in the lower-left corner of the screen.
2. Access the system information by using the **Main** menu.
3. To close the Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**. (The computer restarts in Windows.)

Restoring Default Settings in the Setup Utility

The following procedure explains how to restore the Setup Utility default settings. If the computer is not in the Setup Utility, begin at step 1. If the computer is in the Setup Utility, begin at step 2.

1. To open the Setup Utility, turn on or restart the computer in Windows, and then press **f10** while the prompt, "Press <F10> to enter setup," is displayed in the lower-left corner of the screen.
2. Select **Exit > Load Setup Defaults**, and then press **f10**.
3. When the Setup Confirmation is displayed, press **enter** to save your preferences.
4. To set your preferences and exit the Setup Utility, press **f10**, and then follow the instructions on the screen.

The Setup Utility default settings are set when you exit the Setup Utility and go into effect when the computer restarts.

Your password, security, and language settings are not changed when you restore the factory default settings.

Using Advanced Setup Utility Features

This guide describes the Setup Utility features recommended for all users. For more information about the Setup Utility features recommended for advanced users only, refer to the Help and Support Center, which is accessible only when the computer is in Windows.

The Setup Utility features available for advanced users include a hard drive self-test, a Network Service Boot, and settings for boot order preferences.

The "<F12> to boot from LAN" message that is displayed in the lower-left corner of the screen each time the computer is started or restarted in Windows or restored from hibernation is the prompt for a Network Service Boot.

The “Press <ESC> to change boot order” message that is displayed in the lower-left corner of the screen each time the computer is started or restarted in Windows or restored from hibernation is the prompt to change the boot order.

Closing the Setup Utility

You can close the Setup Utility with or without saving changes.

- To close the Setup Utility and save your changes from the current session, use either of the following procedures:
  - Press **f10**, and then follow the instructions on the screen.

    – or –
  - If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

    When you use the **f10** procedure, you are offered an option to return to the Setup Utility. When you use the Exit Saving Changes procedure, the Setup Utility closes when you press **enter**.
  - To close the Setup Utility without saving your changes from the current session:

    If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

After the Setup Utility closes, the computer restarts in Windows.

2.3 Setup Utility Menus

The menu tables in this section provide an overview of Setup Utility options.

Some of the Setup Utility menu listed in this chapter may not be supported by your computer.

Selecting from the Main Menu

Table 2-1

Main Menu

Select	To Do This
System Information	■ View and change the system time and date. ■ View identification information about the computer. ■ View specification information about the processor, memory size, system BIOS, and keyboard controller version (select models only).

Selecting from the Security Menu

Table 2-2

Security Menu

Select	To Do This
Administrator password	Enter, change, or delete an administrator password.
Power-on password	Enter, change, or delete a power-on password.

Selecting from the System Configuration Menu

Table 2-3

System Configuration Menu

Select	To Do This
Language Support	Change the Setup Utility language.
Embedded WLAN Device Radio	Enable/disable an embedded wireless LAN device.
Embedded Bluetooth Device (select models only)	Enable/disable an embedded Bluetooth® device (select models only).
Enhanced SATA support (select models only)	Enable/disable enhanced SATA mode.
Boot Options	Set the following boot options: ■ **f10** and **f12** Delay (sec.)—Set the delay for the **f10** and **f12** functions of the Setup Utility in intervals of 5 seconds each (0. 5, 10, 15, 20). ■ CD-ROM boot—Enable/disable boot from CD-ROM. ■ Floppy boot—Enable/disable boot from Floppy. ■ Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter. ■ Boot Order—Set the boot order for: ❒ USB Floppy ❒ ATAPI CD/DVD ROM Drive ❒ Hard drive ❒ USB Diskette on Key ❒ USB Hard drive ❒ Network adapter

Selecting from the Diagnostics Menu

Table 2-4

Diagnostics Menu

Select	To Do This
Hard Disk Self Test	Run a comprehensive self-test on the hard drive. ✎ On models with two hard drives, this menu option is called the Primary Hard Disk Self Test.
Secondary Hard Disk Self Test (select models only)	Run a comprehensive self-test on a secondary hard drive.

2.4 Troubleshooting Flowcharts

Table 2-5

Troubleshooting Flowcharts Overview

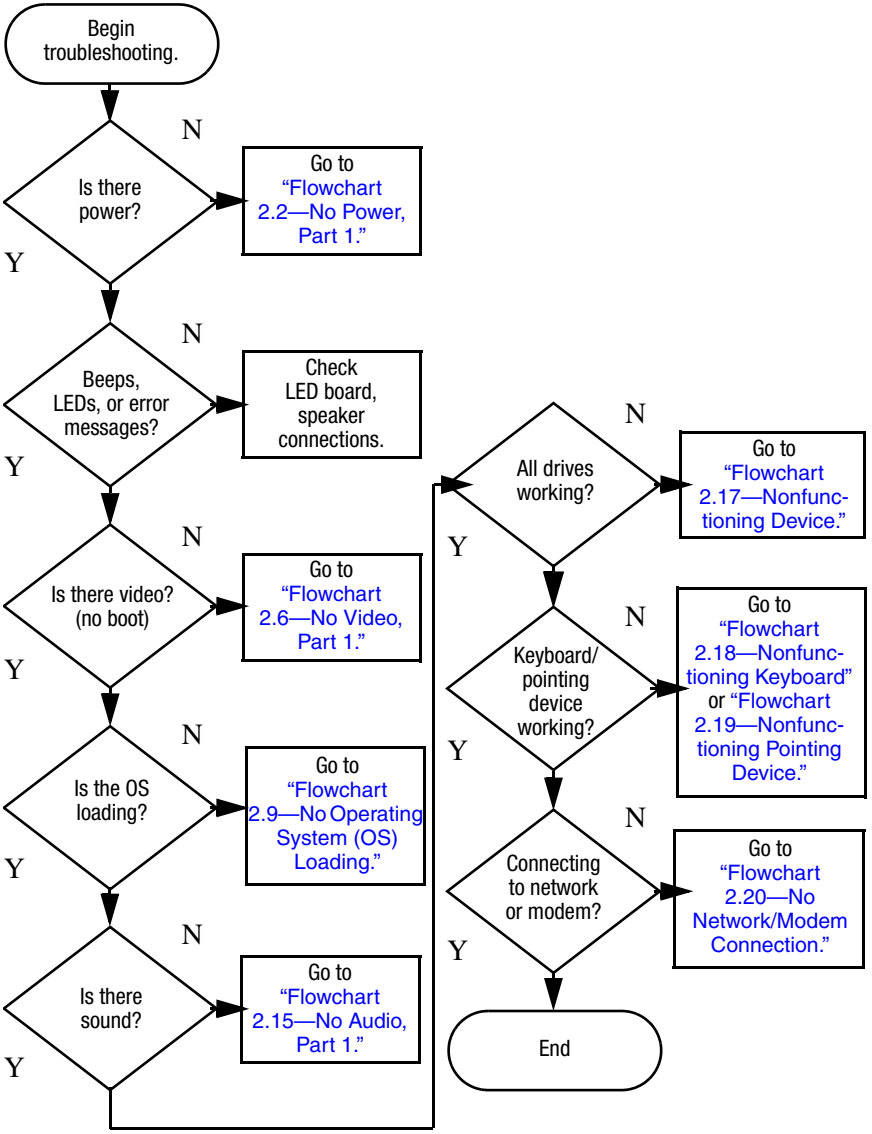
Flowchart	Description
2.1	“Flowchart 2.1—Initial Troubleshooting”
2.2	“Flowchart 2.2—No Power, Part 1”
2.3	“Flowchart 2.3—No Power, Part 2”
2.4	“Flowchart 2.4—No Power, Part 3”
2.5	“Flowchart 2.5—No Power, Part 4”
2.6	“Flowchart 2.6—No Video, Part 1”
2.7	“Flowchart 2.7—No Video, Part 2”
2.8	“Flowchart 2.8—Nonfunctioning Docking Device (if applicable)”
2.9	“Flowchart 2.9—No Operating System (OS) Loading”
2.10	“Flowchart 2.10—No OS Loading, Hard Drive, Part 1”
2.11	“Flowchart 2.11—No OS Loading, Hard Drive, Part 2”
2.12	“Flowchart 2.12—No OS Loading, Hard Drive, Part 3”
2.13	“Flowchart 2.13—No OS Loading, Diskette Drive”

Table 2-5

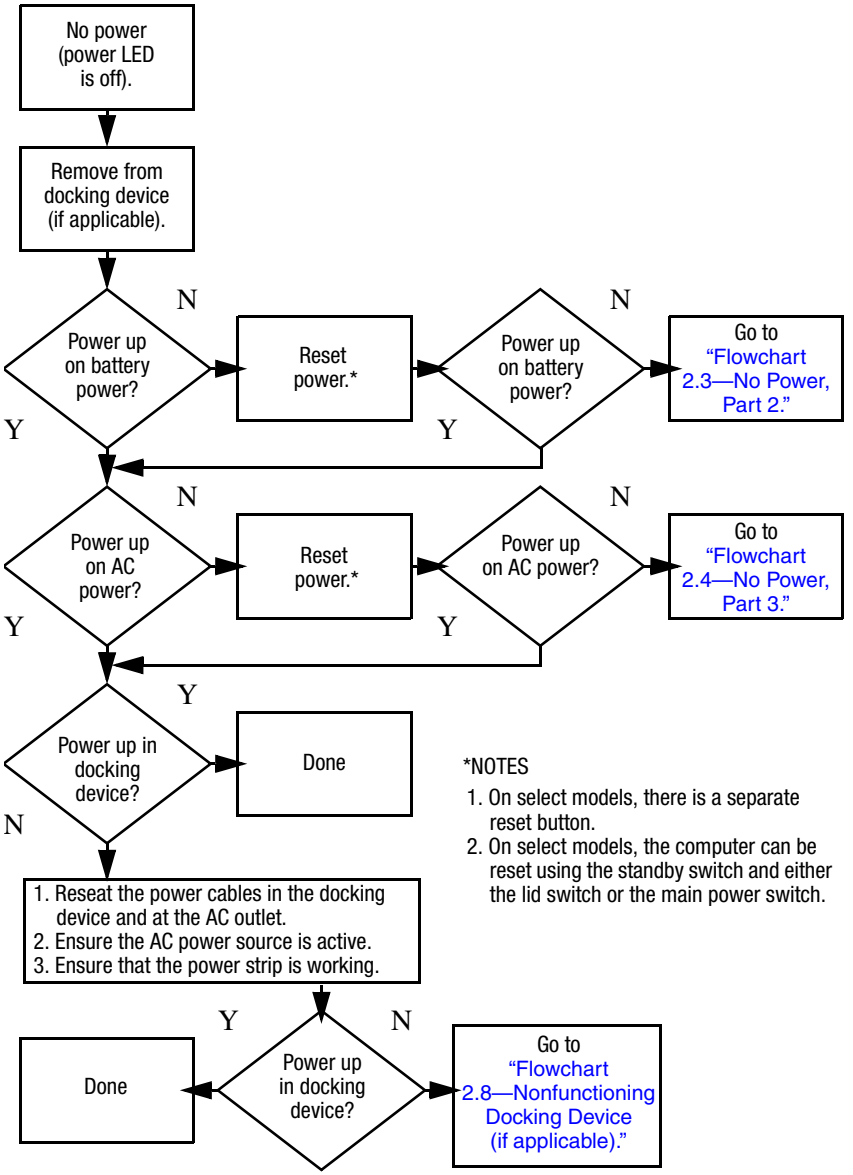
Troubleshooting Flowcharts Overview *(Continued)*

Flowchart	Description
2.14	“Flowchart 2.14—No OS Loading, Optical Drive”
2.15	“Flowchart 2.15—No Audio, Part 1”
2.16	“Flowchart 2.16—No Audio, Part 2”
2.17	“Flowchart 2.17—Nonfunctioning Device”
2.18	“Flowchart 2.18—Nonfunctioning Keyboard”
2.19	“Flowchart 2.19—Nonfunctioning Pointing Device”
2.20	“Flowchart 2.20—No Network/Modem Connection”

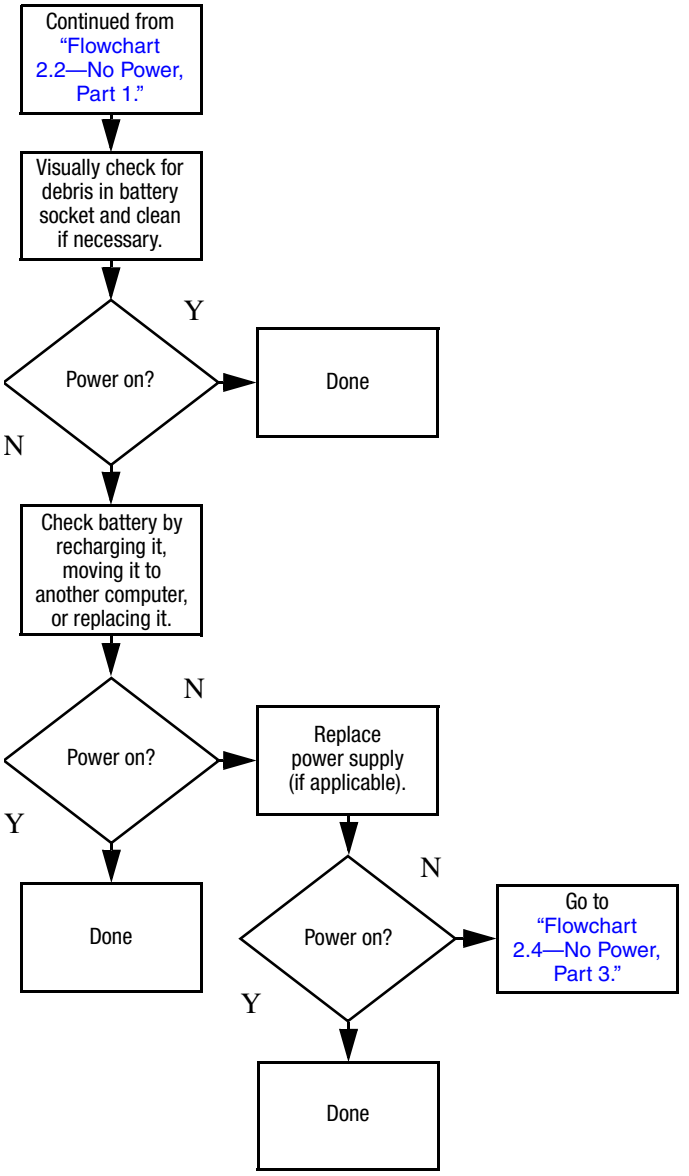
Flowchart 2.1—Initial Troubleshooting



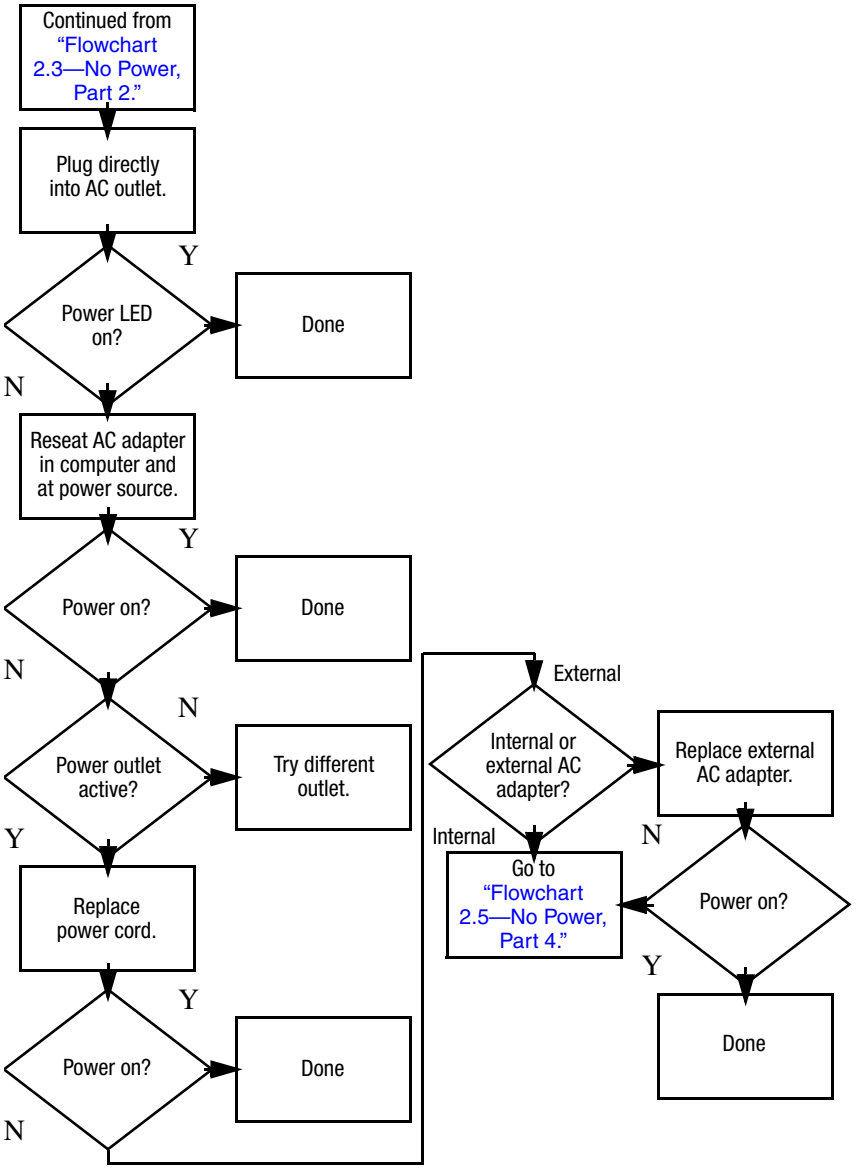
Flowchart 2.2—No Power, Part 1



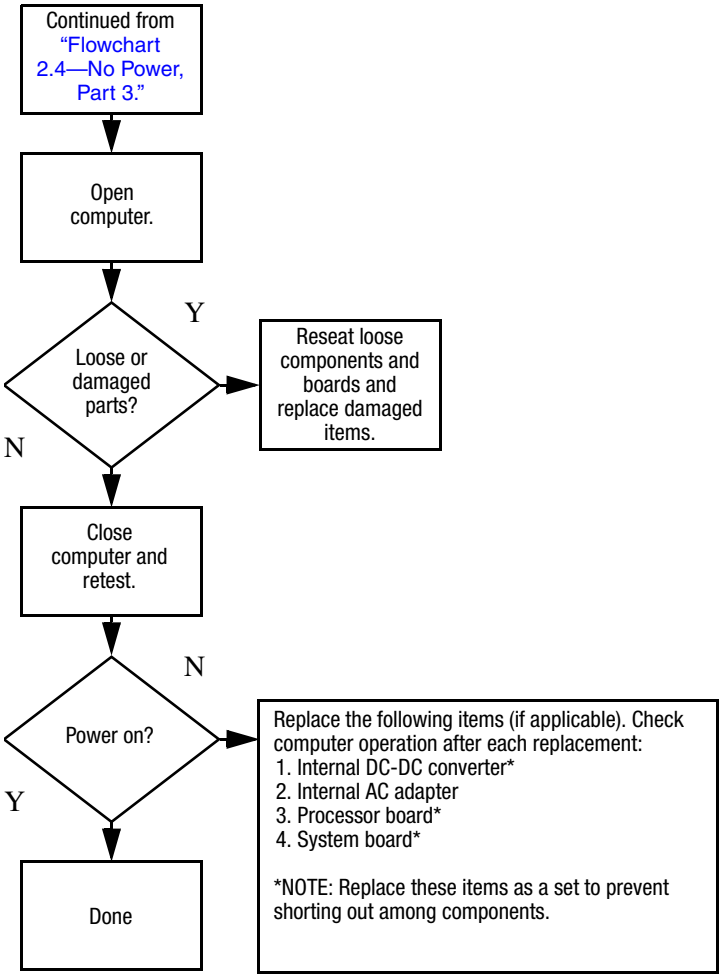
Flowchart 2.3—No Power, Part 2



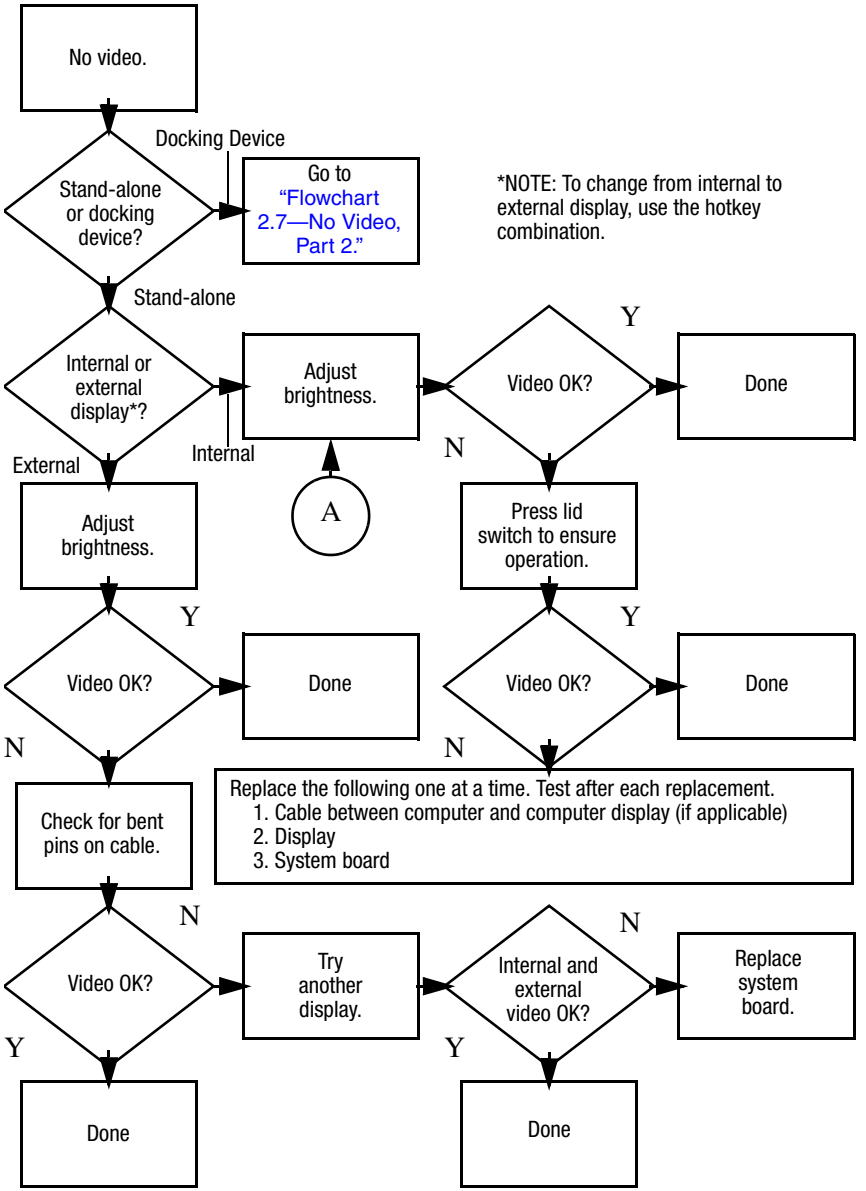
Flowchart 2.4—No Power, Part 3



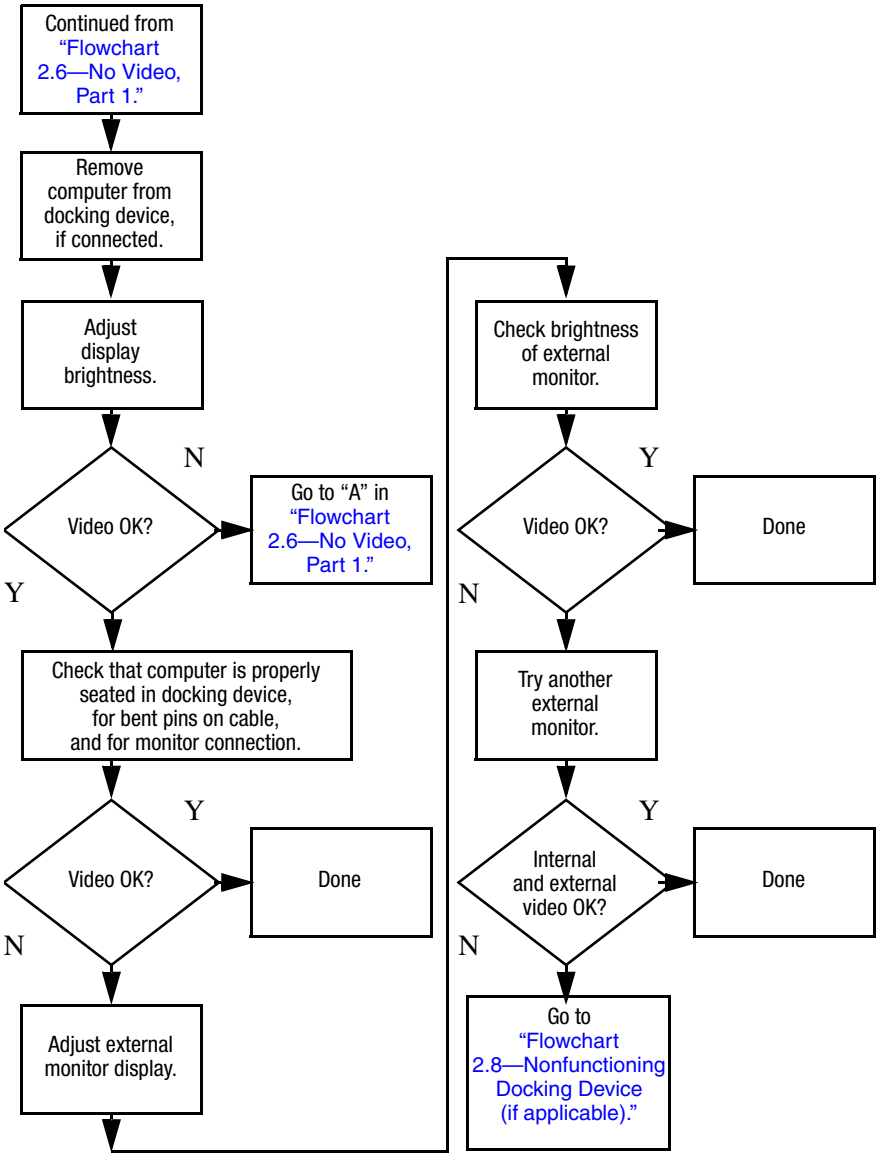
Flowchart 2.5—No Power, Part 4



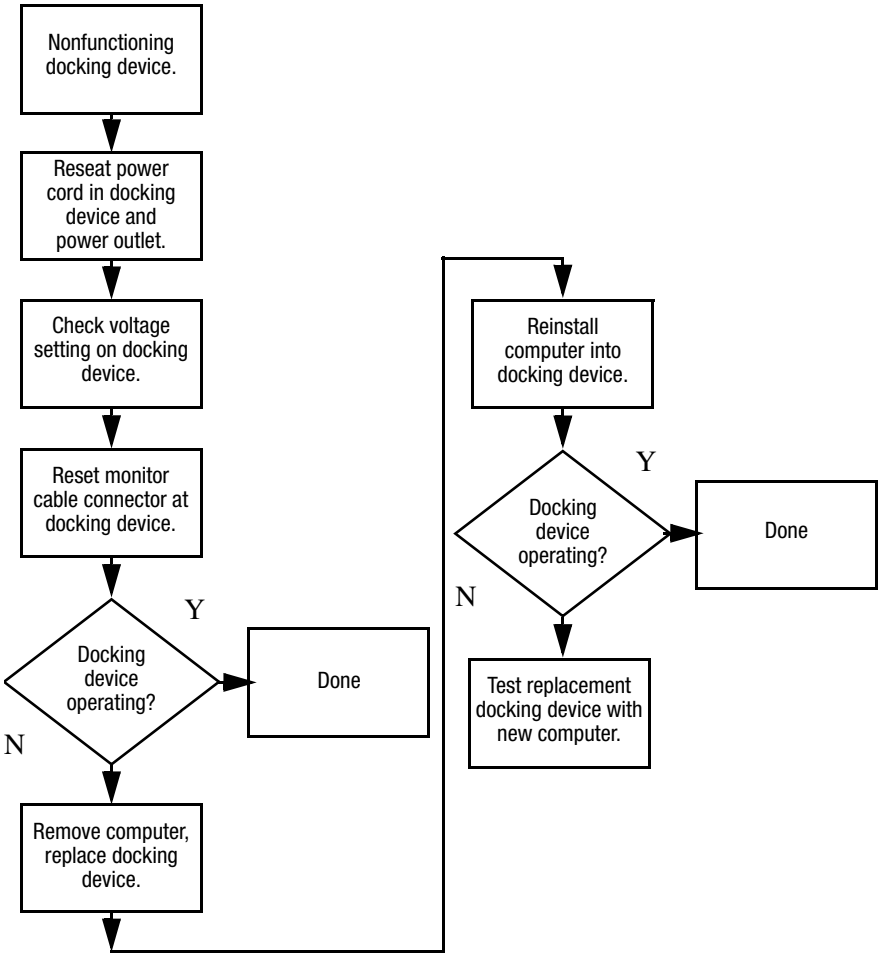
Flowchart 2.6—No Video, Part 1



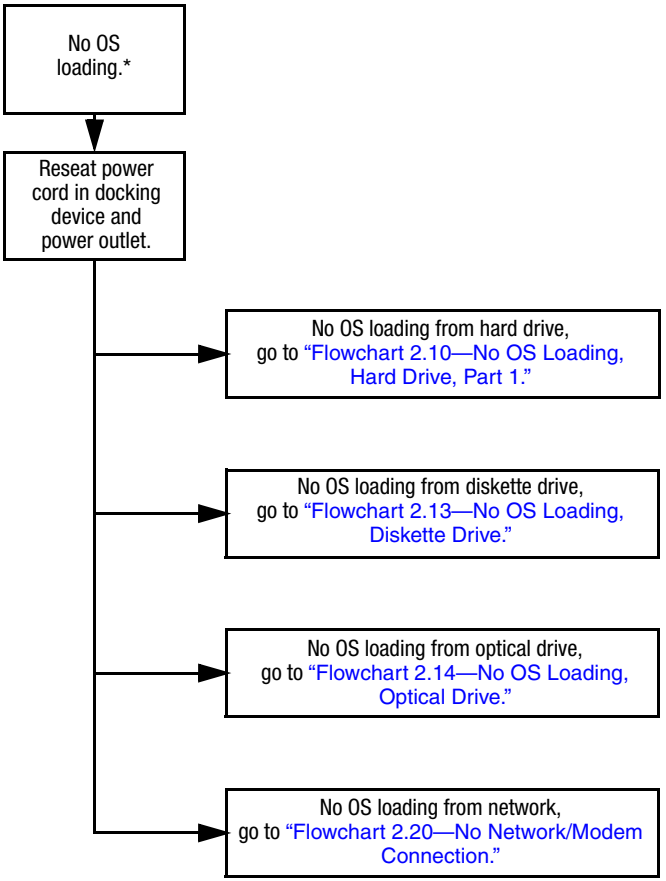
Flowchart 2.7—No Video, Part 2



Flowchart 2.8—Nonfunctioning Docking Device (if applicable)

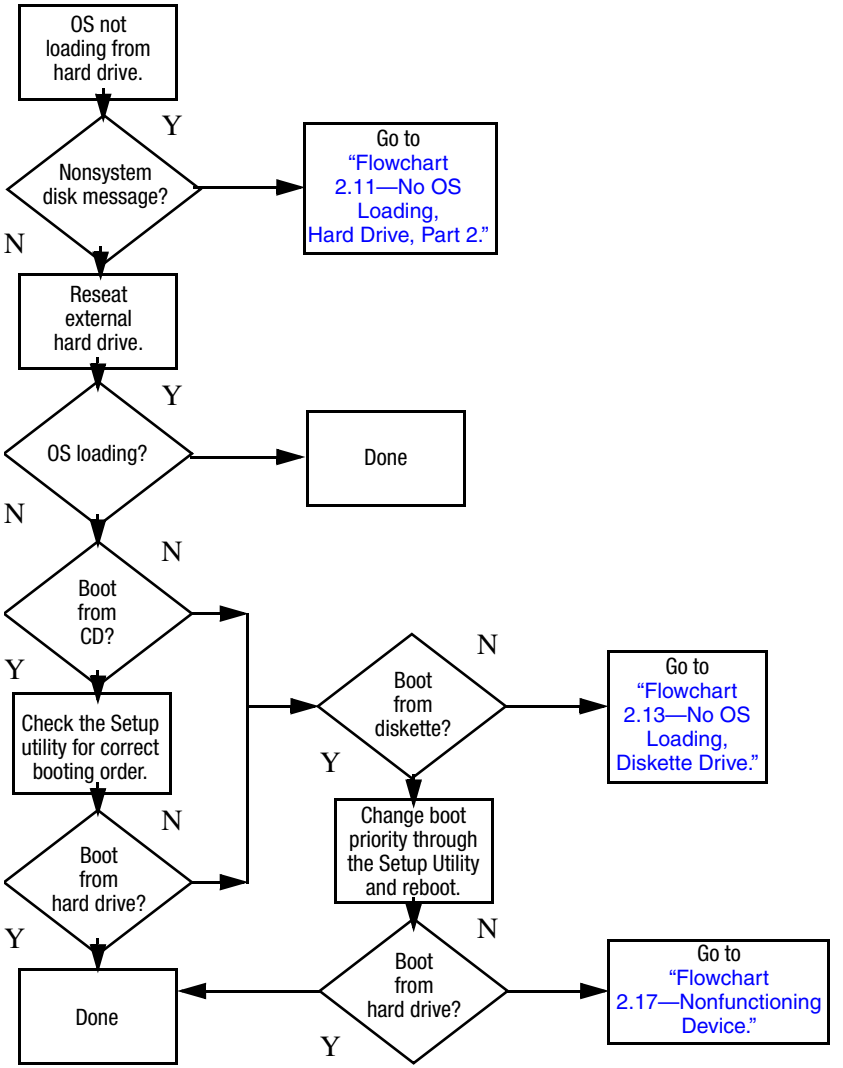


Flowchart 2.9—No Operating System (OS) Loading

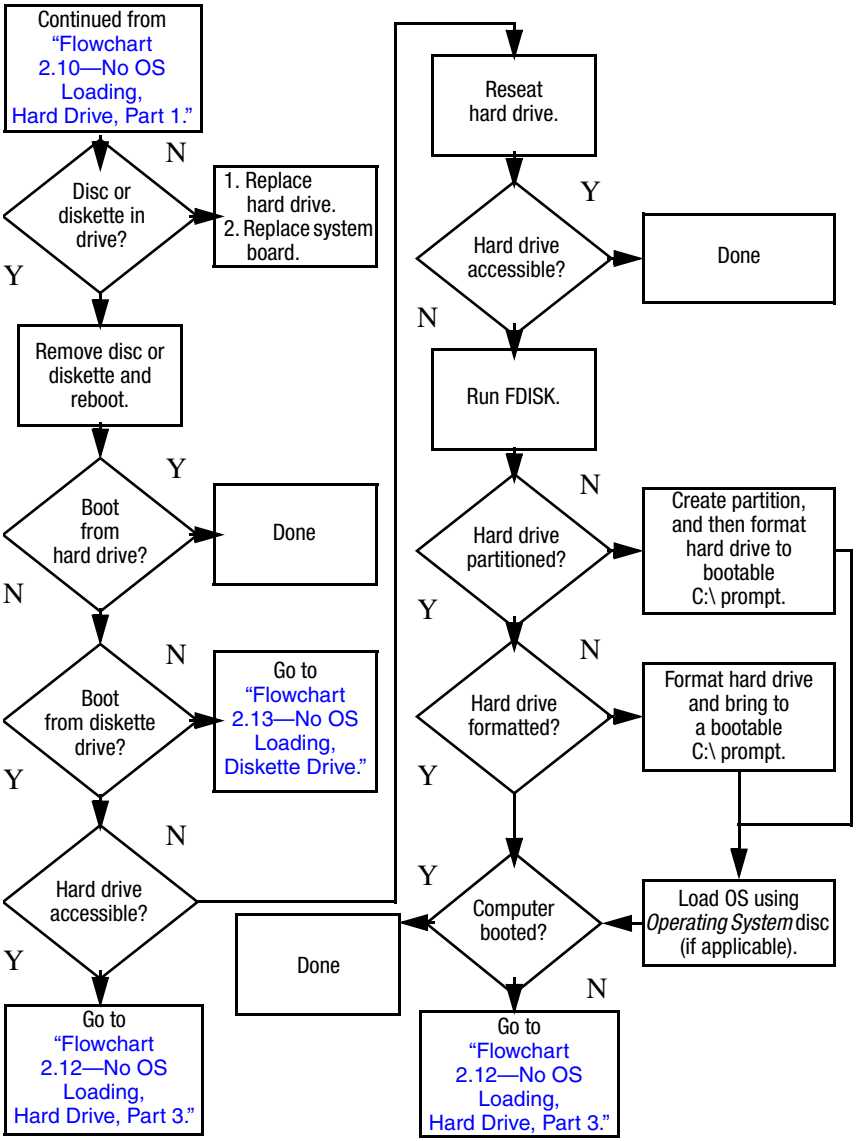


*NOTE: Before beginning troubleshooting, always check cable connections, cable ends, and drives for bent or damaged pins.

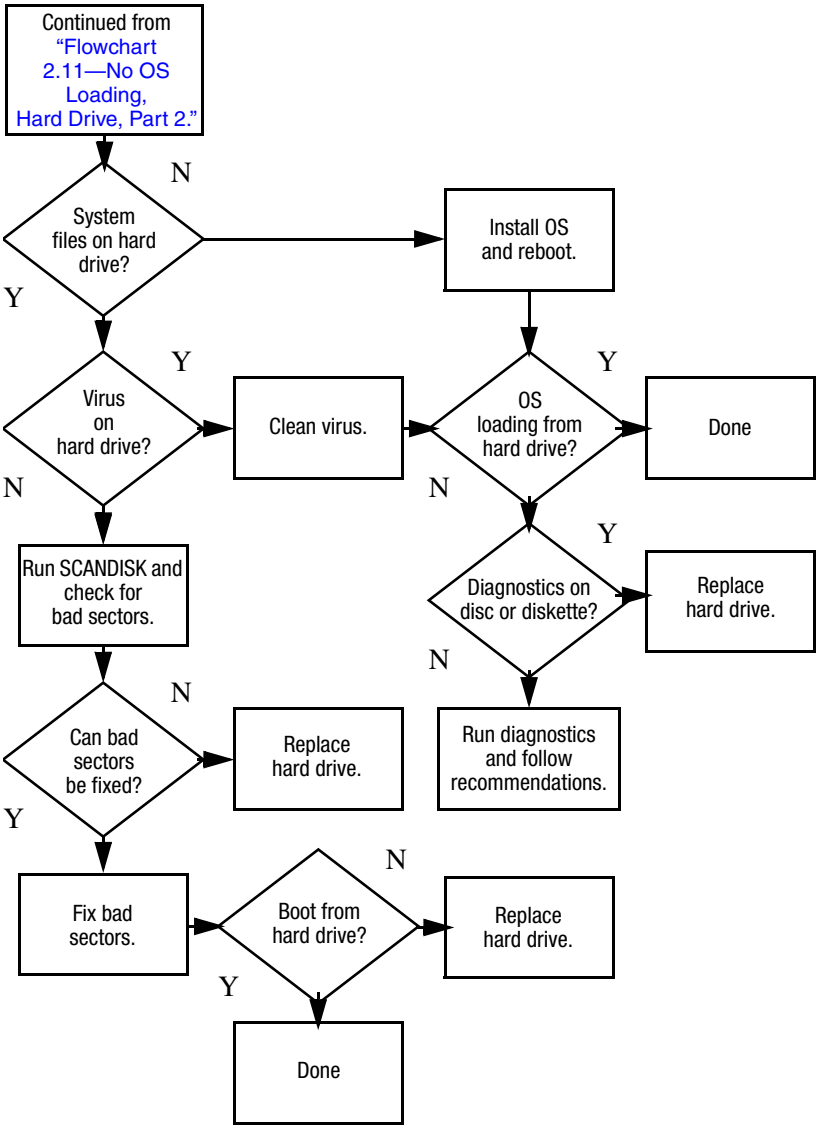
Flowchart 2.10—No OS Loading, Hard Drive, Part 1



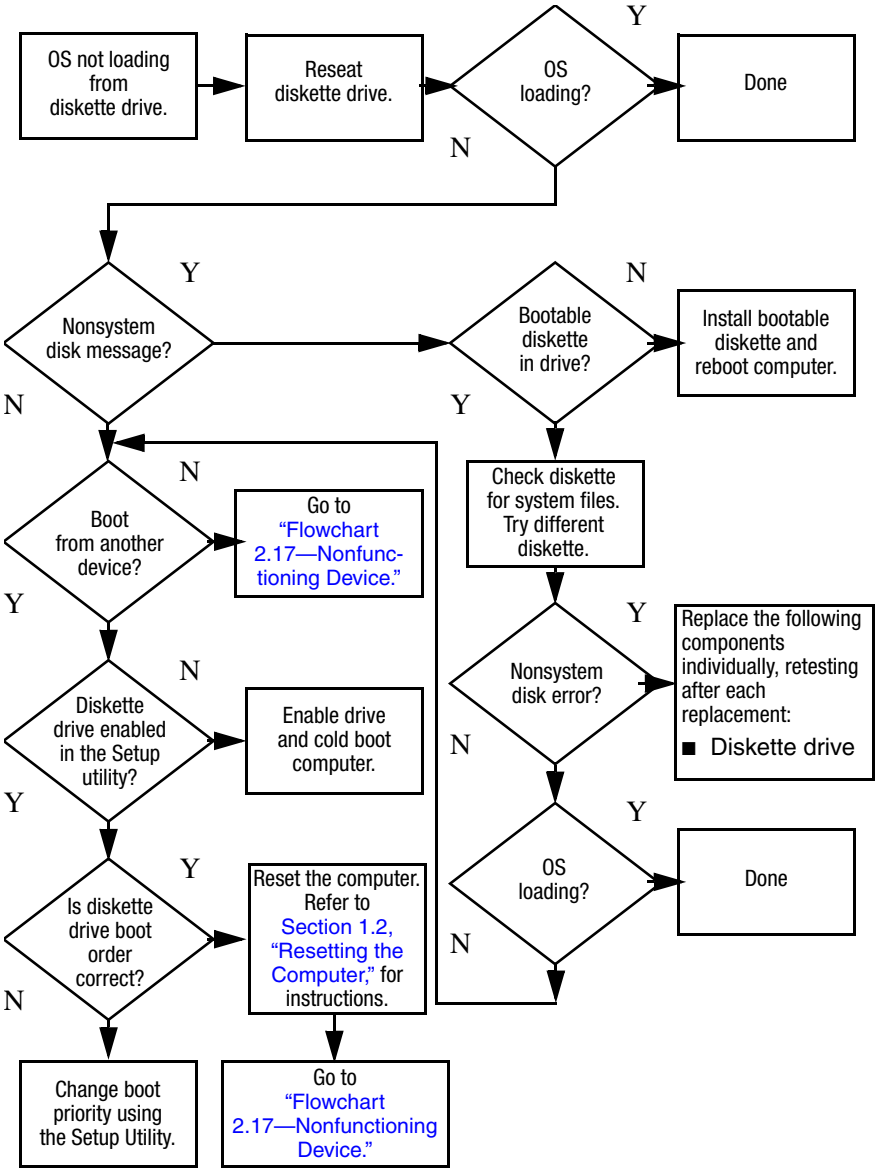
Flowchart 2.11—No OS Loading, Hard Drive, Part 2



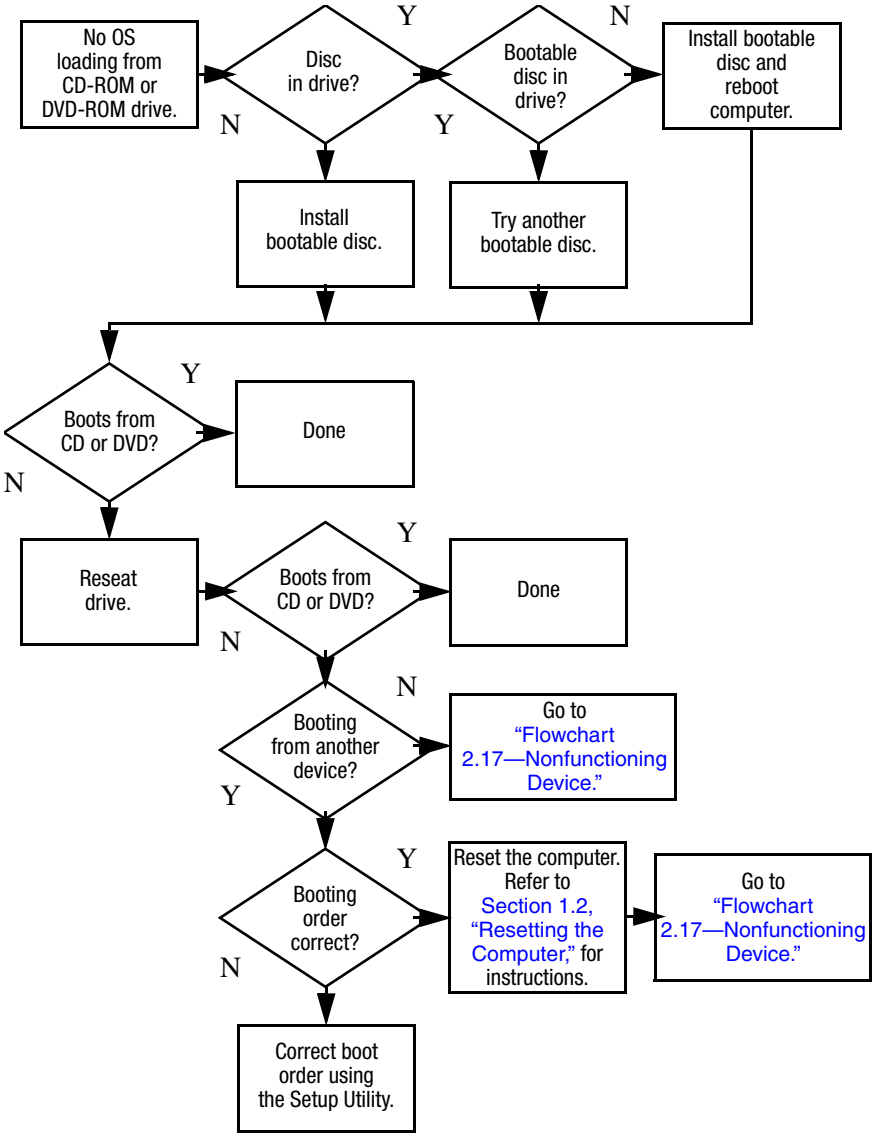
Flowchart 2.12—No OS Loading, Hard Drive, Part 3



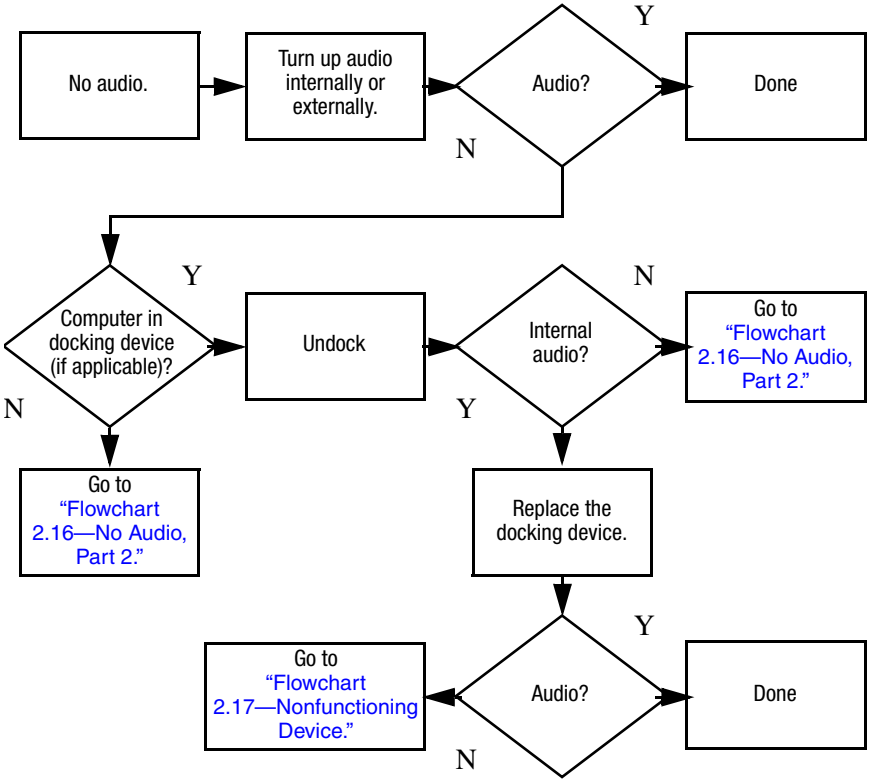
Flowchart 2.13—No OS Loading, Diskette Drive



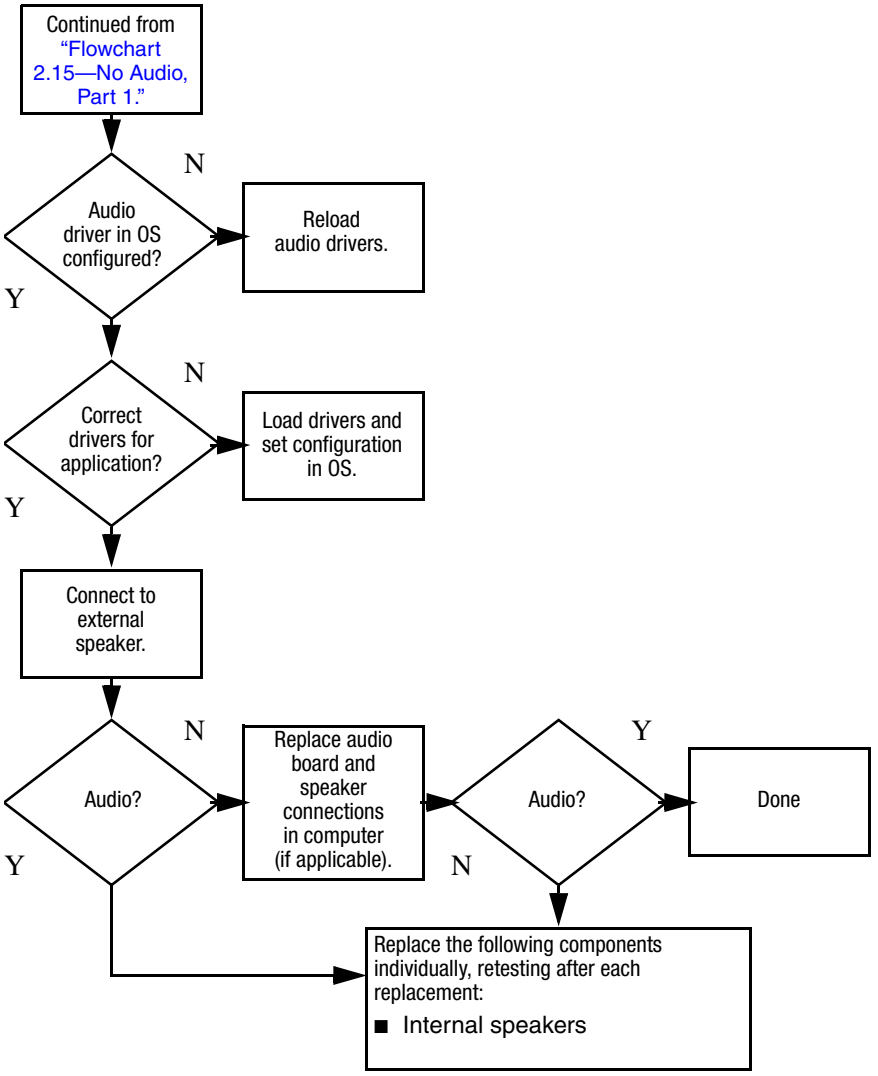
Flowchart 2.14—No OS Loading, Optical Drive



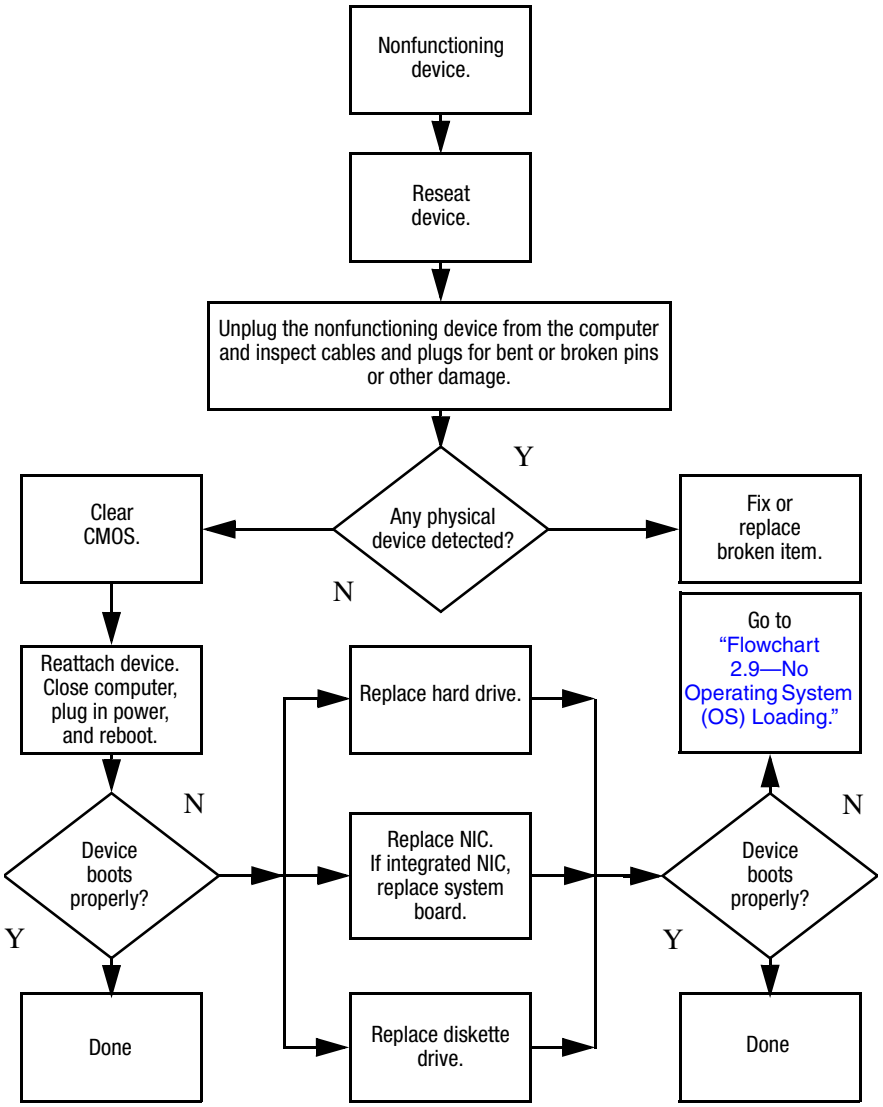
Flowchart 2.15—No Audio, Part 1



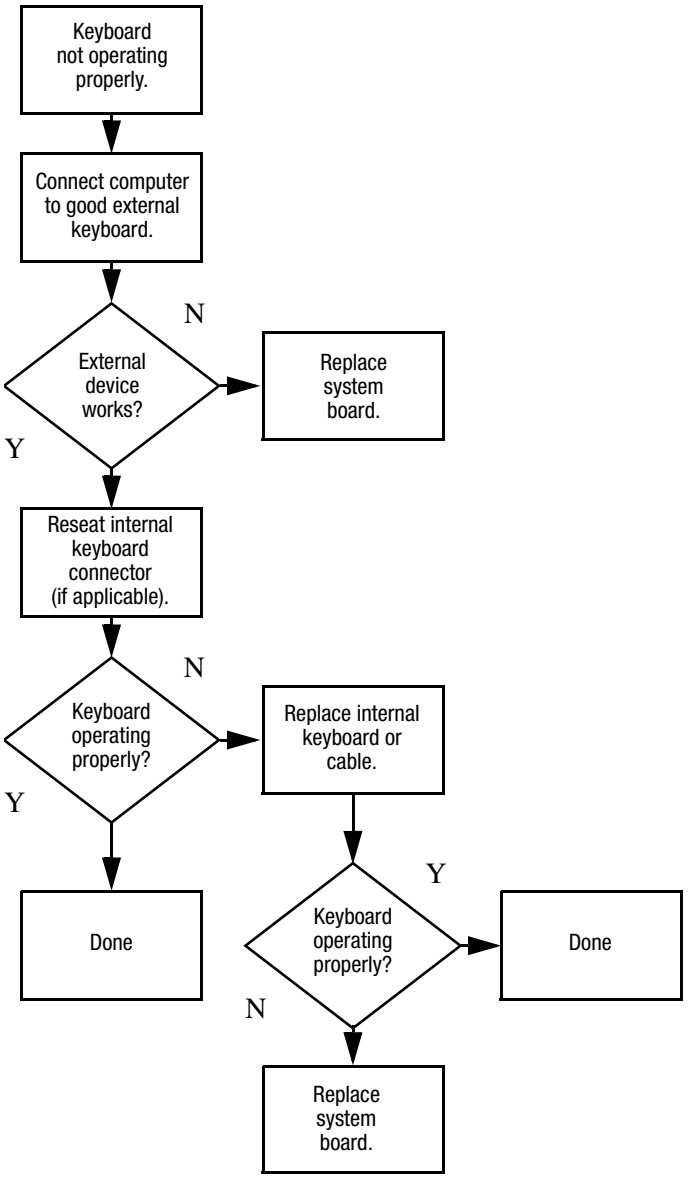
Flowchart 2.16—No Audio, Part 2



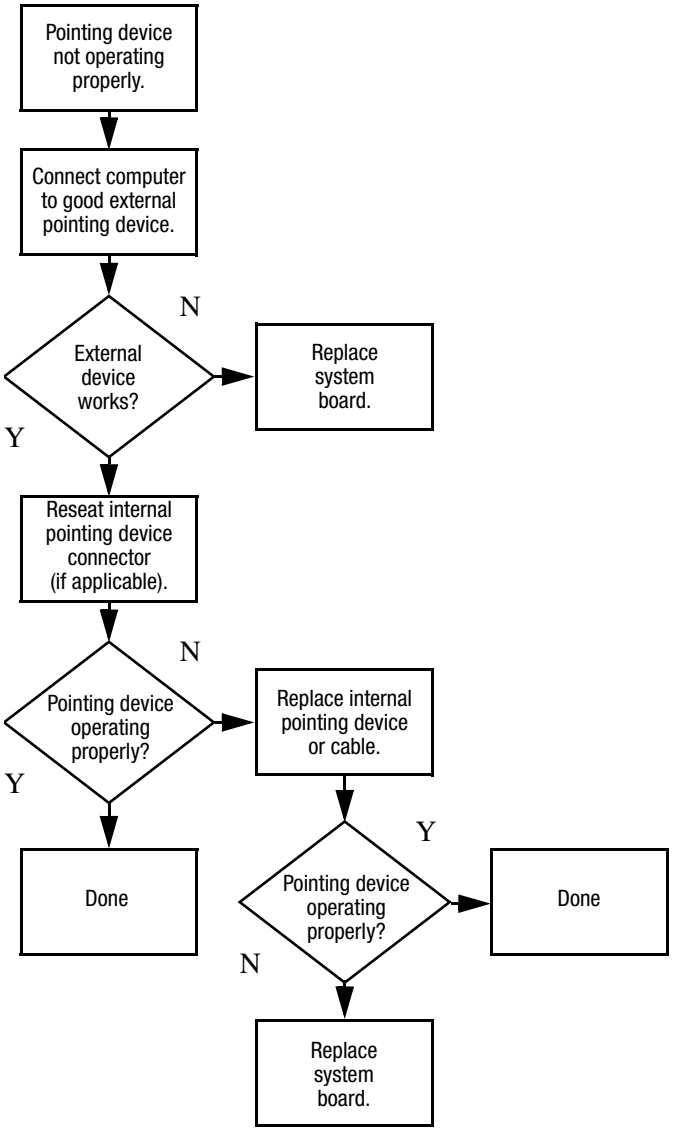
Flowchart 2.17—Nonfunctioning Device



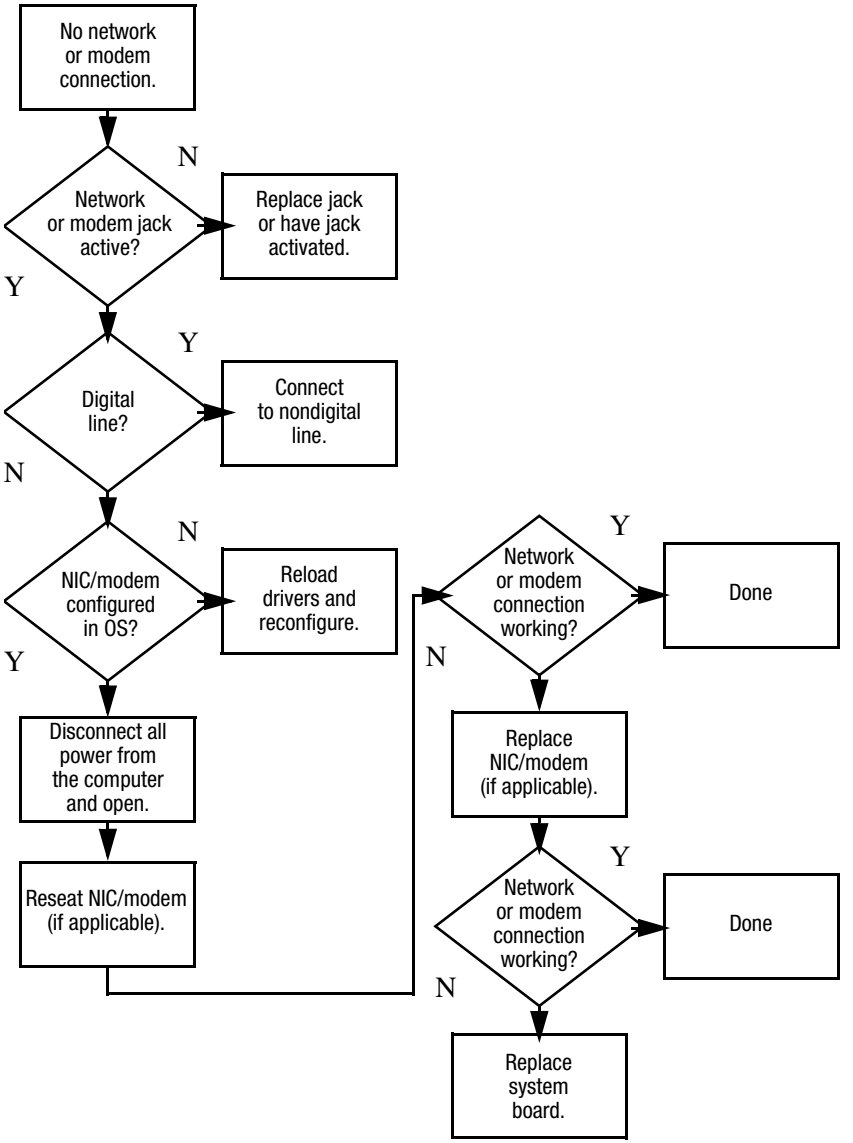
Flowchart 2.18—Nonfunctioning Keyboard



Flowchart 2.19—Nonfunctioning Pointing Device



Flowchart 2.20—No Network/Modem Connection



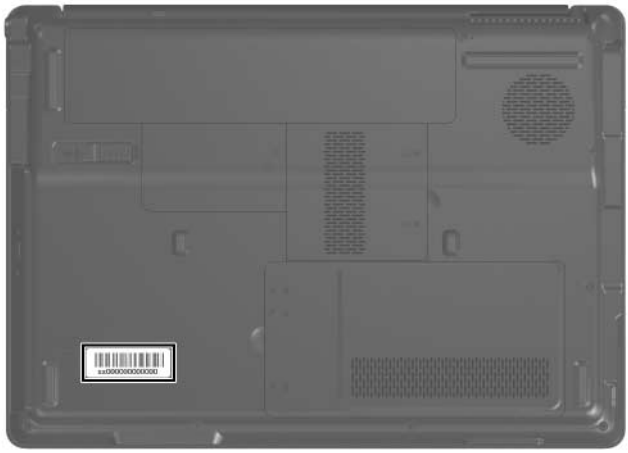
3

Illustrated Parts Catalog

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

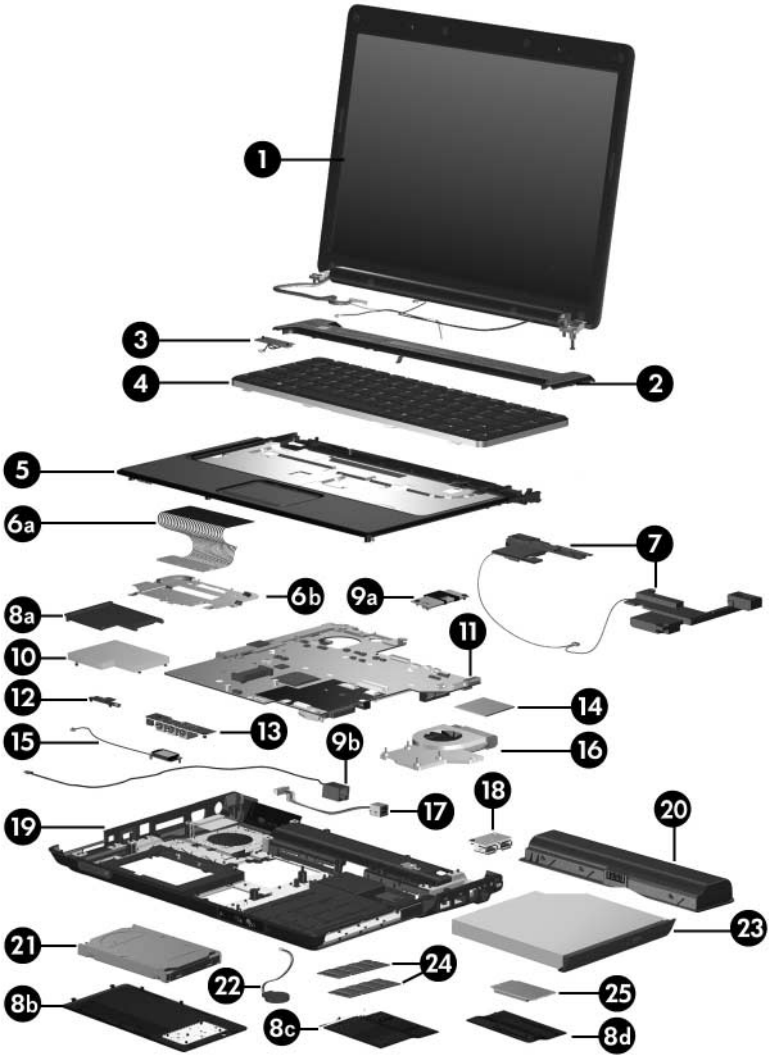
3.1 Serial Number Location

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



Serial Number Location

3.2 Computer Major Components



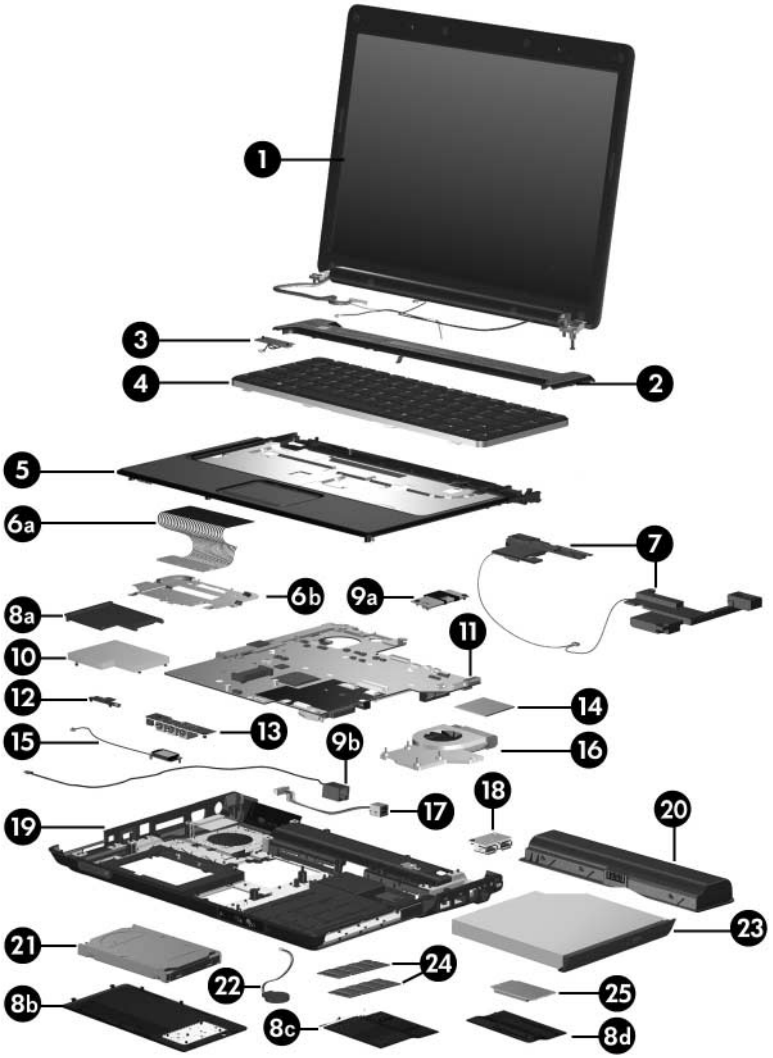
Computer Major Components

Table 3-1

Spare Parts: Computer Major Components

Item	Description	Spare Part Number
1	**14.0-inch, WXGA display assembly** (includes wireless antenna transceivers and cables)	417049-001
	✎ Refer to Section 3.3, "Display Assembly Components," for display assembly internal component spare part number information.	
2	**Switch covers** (include wireless button and light)	
	For use with full-featured computer models	417077-001
	For use with defeatured computer models	417078-001
3	**Power button board** (includes power button board cable)	430475-001
4	**Keyboards**	
	For use only with computer models using Intel processors	

Belgium	417068-A41	Norway	417068-091
Brazil	417068-201	Portugal	417068-131
Denmark	417068-081	Saudi Arabia	417068-171
France	417068-051	Spain	417068-071
French Canada	417068-121	Sweden/Finland	417068-101
Germany	417068-041	Switzerland	417068-111
Greece	417068-151	Taiwan	417068-AB1
International	417068-B31	Thailand	417068-281
Israel	417068-BB1	Turkey	417068-141
Italy	417068-061	The United Kingdom	417068-031
Korea	417068-AD1		
Latin America	417068-161	The United States	417068-001

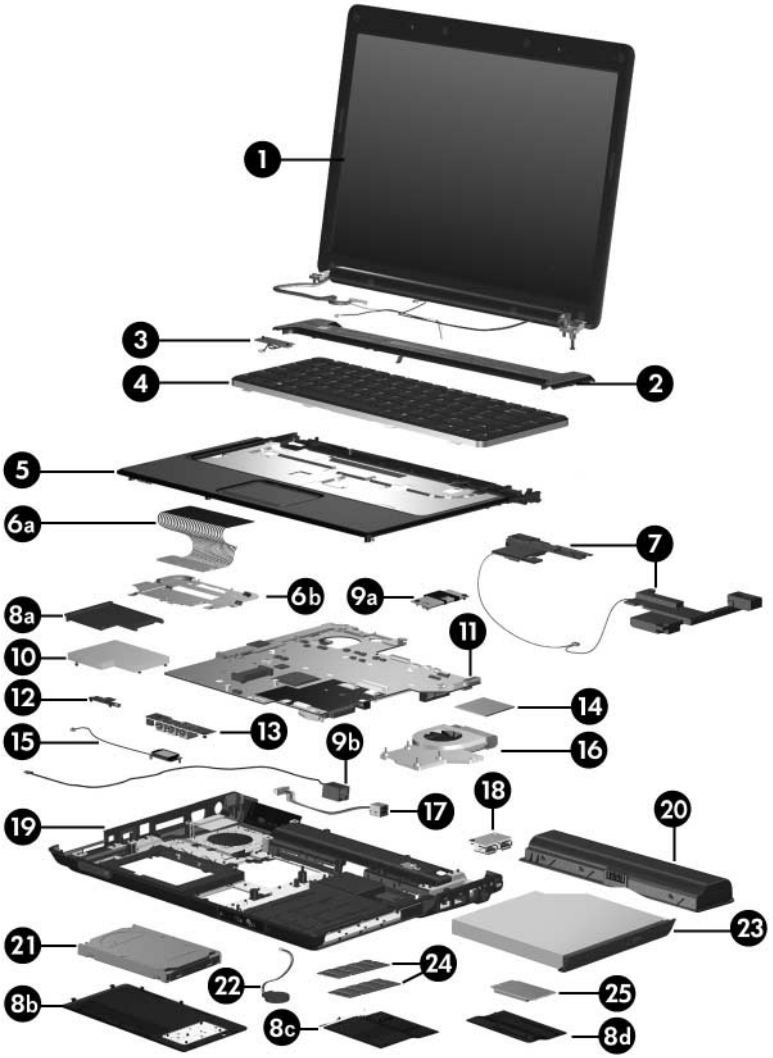


Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description			Spare Part Number
4	**Keyboards** *(Continued)*			
	For use only with computer models using AMD processors			
	Denmark	417069-081	Latin America	417069-161
	France	417069-051	Norway	417069-091
	French Canada	417069-121	Spain	417069-071
	Germany	417069-041	Sweden/Finland	417069-031
	International	417069-B31	Thailand	417069-281
	Italy	417069-061	The United States	417069-001
	Korea	417069-AD1		
5	**Top covers** (include TouchPad)			
	For use with full-featured computer models			417091-001
	For use with defeatured computer models			430468-001
6a	**TouchPad**			430464-001
6b	**TouchPad bracket**			
	TouchPad cable (not illustrated)			417082-001
7	**Speaker assembly**			417089-001
	Plastics Kit			417074-001
	Includes:			
8a	ExpressCard slot bezel			
8b	Hard drive cover (includes 2 captive screws, secured by C-clips)			
8c	Memory module compartment cover (includes 2 captive screws, secured by C-clips)			
8d	Mini Card compartment cover (includes 1 captive screws, secured by a C-clip)			

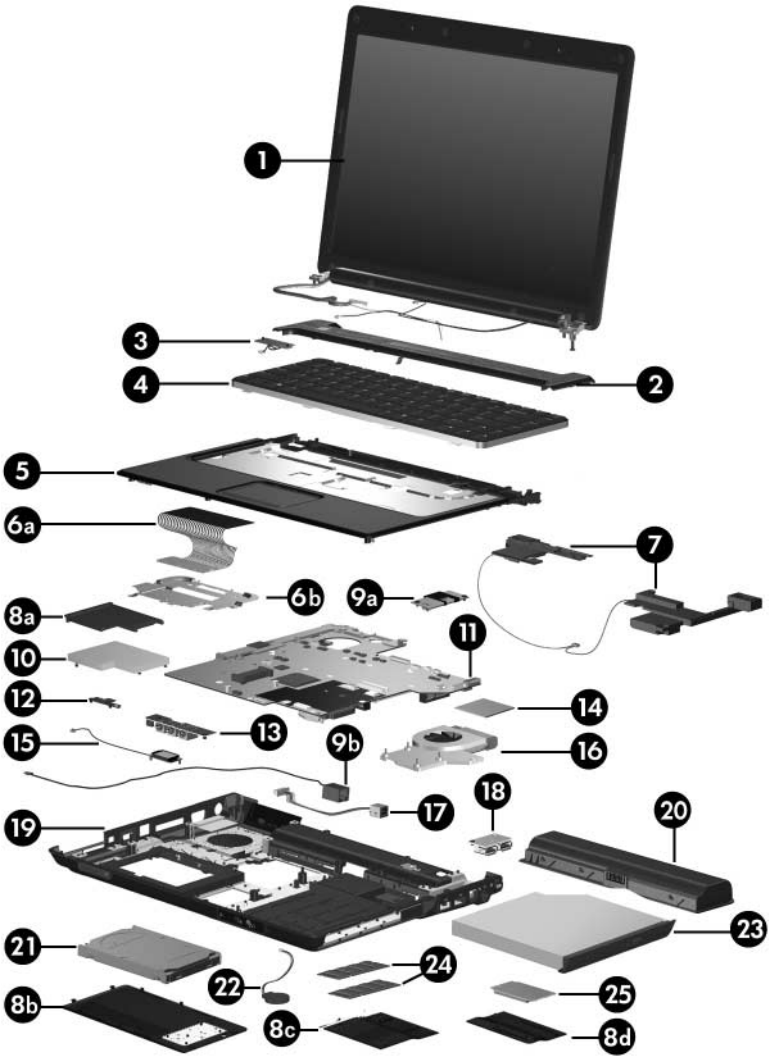


Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
9a	**Modem modules** (include modem module cable)	
	For use with computer models using Intel processors	417083-001
	For use with computer models using AMD processors	431852-001
9b	Modem module cable	
10	**ExpressCard assembly**	417112-001
11	**System boards**	
	For use with computer models using Intel processors:	
	■ PM/G72M-V for use with full-featured computer models	417035-001
	■ GM for use with full-featured computer models	417036-001
	■ GMZ for use with defeatured computer models	417037-001
	For use with computer models using AMD processors:	
	■ For use with full-featured computer models	431483-001
	■ For use with defeatured computer models	431844-001
12	**Wireless switch board** (includes wireless switch board cable)	417092-001
13	**Audio/infrared board** (includes audio/infrared board cable)	430465-001

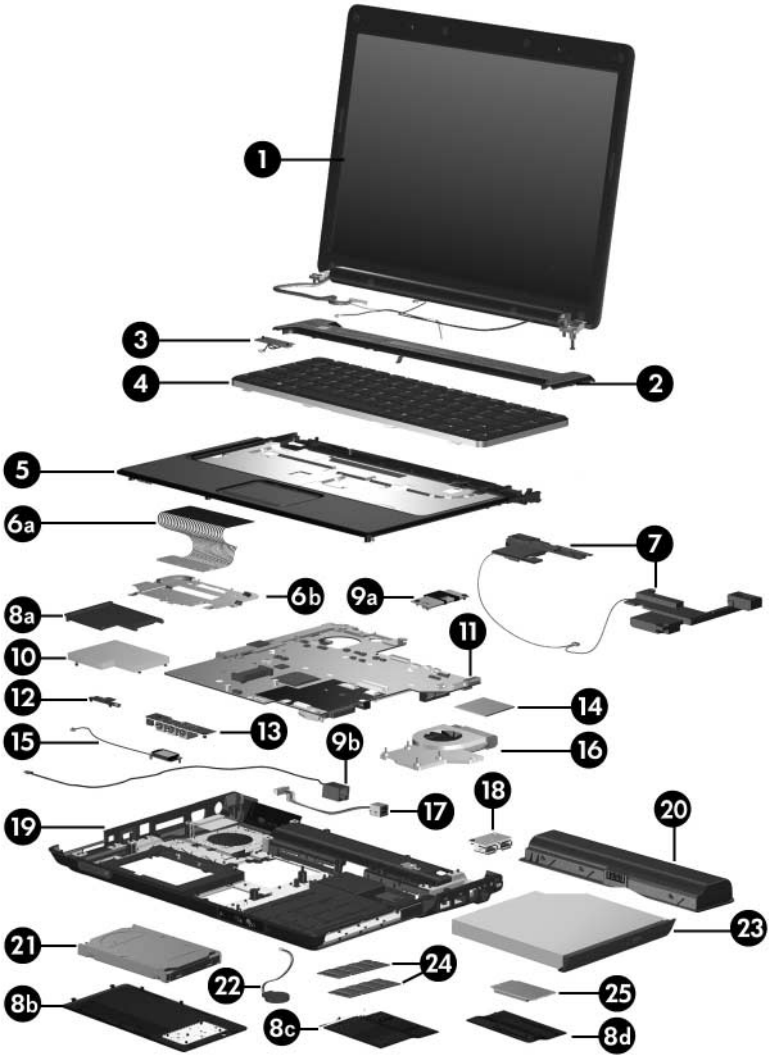


Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
14	**Processors** (include thermal pad)	
	Intel Core Duo T2600 (2.16-GHz)	417044-001
	Intel Core Duo T2500 (2.00-GHz)	417043-001
	Intel Core Duo T2400 (1.83-GHz)	417042-001
	Intel Core Duo T2250 (1.73-GHz)	430455-001
	Intel Core Duo T2300 (1.66-GHz)	417041-001
	Intel Core Duo T2050 (1.60-GHz)	430454-001
	Intel Core Solo T1350 (1.80-GHz)	430456-001
	AMD Turion ML-52 1.60-GHz	431846-001
	AMD Turion ML-50 1.60-GHz	431845-001
	Mobile AMD Sempron 3400+ (1.80-GHz)	431849-001
	Mobile AMD Sempron 3200+ (1.60-GHz)	431484-001
15	**Bluetooth® module** (includes Bluetooth module cable)	397923-001
16	**Fan/heat sink assemblies** (include thermal pads)	
	For use with computer models using Intel processors:	
	■ For use on UMA system boards	430463-001
	■ For use on discrete system boards	417081-001
	For use with computer models using AMD processors	431851-001
	Fan/heat sink assembly mounting bracket (not illustrated)	417114-001
17	**Power connector cables**	
	For use with UMA system boards	430462-001
	For use only with computer models using Intel processors	430461-001

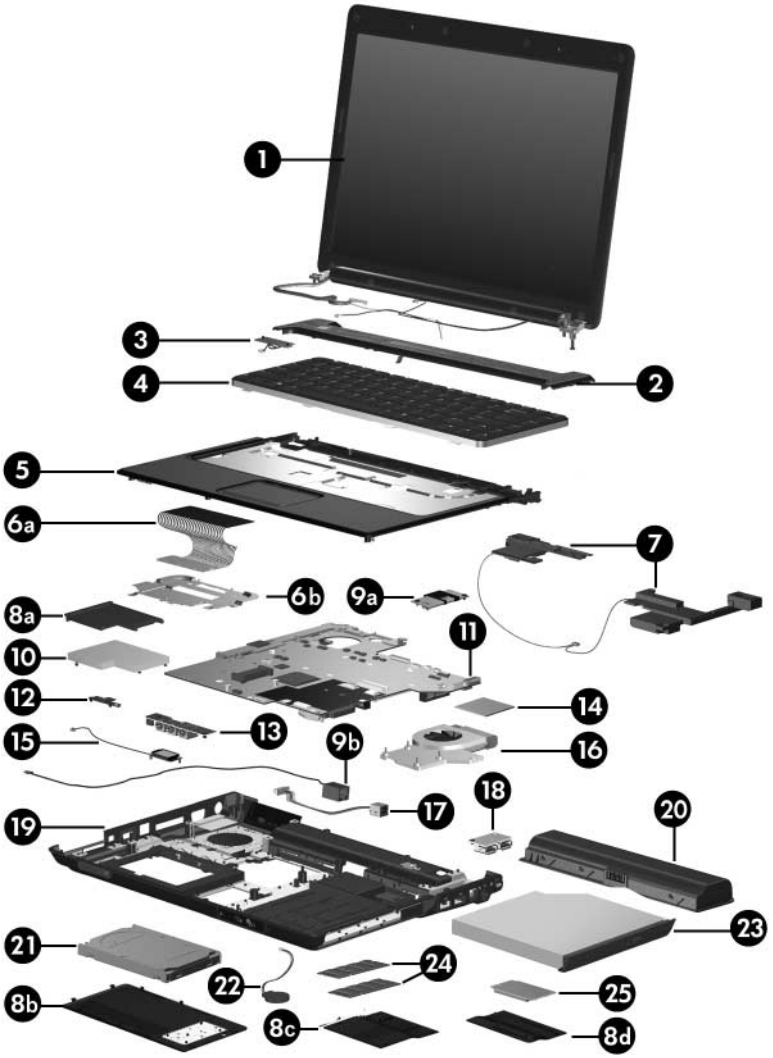


Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
18	**USB board** (includes USB board cable)	417085-001
19	**Base enclosures**	
	For use with full-featured computer models	417094-001
	For use with defeatured computer models	430470-001
	Rubber Feet Kit (includes computer feet, not illustrated)	417096-001
20	**Batteries**	
	12-cell, 8.8-AHr	417067-001
	6-cell, 4.0-AHr	417066-001
21	**Hard drives** (include frame and connector)	
	For use only with computer models using Intel processors:	
	5400-rpm, 120-GB	417059-001
	For use with all computer models:	
	5400-rpm, 120-GB	417059-001
	5400-rpm, 100-GB	417058-001
	5400-rpm, 80-GB	417057-001
	5400-rpm, 60-GB	417056-001
	5400-rpm, 40-GB	430460-001
22	**RTC battery**	417076-001
23	**Optical drives** (include bezel)	
	DVD/CD-RW Combo Drive	417063-001
	DVD±RW/R and CD-RW Double-Layer Combo Drive	417064-001
	DVD±RW/R and CD-RW Double-Layer Combo Drive with LightScribe	417065-001

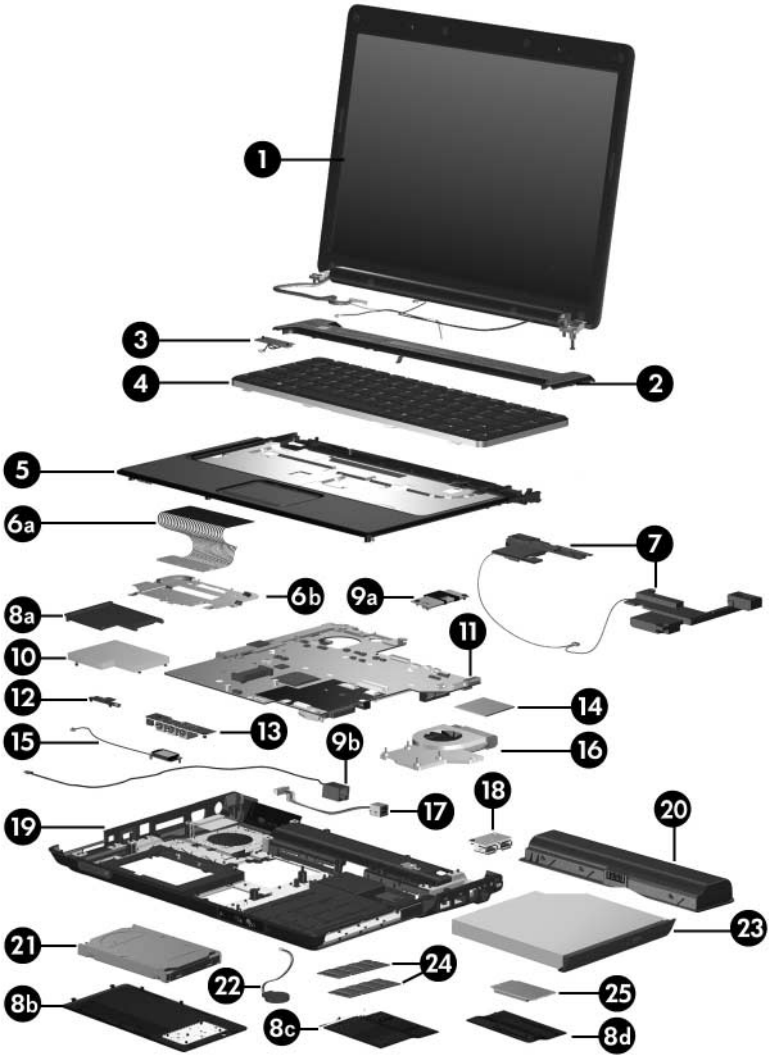


Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
24	**Memory modules**, 1-DIMM, DDR2	
	PC2-5300, 667-MHz	
	1024 MB	417055-001
	512 MB	417054-001
	256 MB	417503-001
	PC2-4200, 533-MHz	
	1024 MB	417052-001
	512 MB	417051-001
	256 MB	417050-001
25	**Mini Card modules**	
	■ 802.11b/g WLAN Mini Card module for use in the countries listed below. These countries are categorized as most of the world (MOW 1).	409407-001
	Antigua & Barbuda Argentina Australia Bahamas Barbados Brunei Canada Chile Dominican Republic Guam Guatemala Hong Kong Panama India Indonesia Malaysia Mexico New Zealand Paraguay Saudi Arabia Taiwan The United States Vietnam	

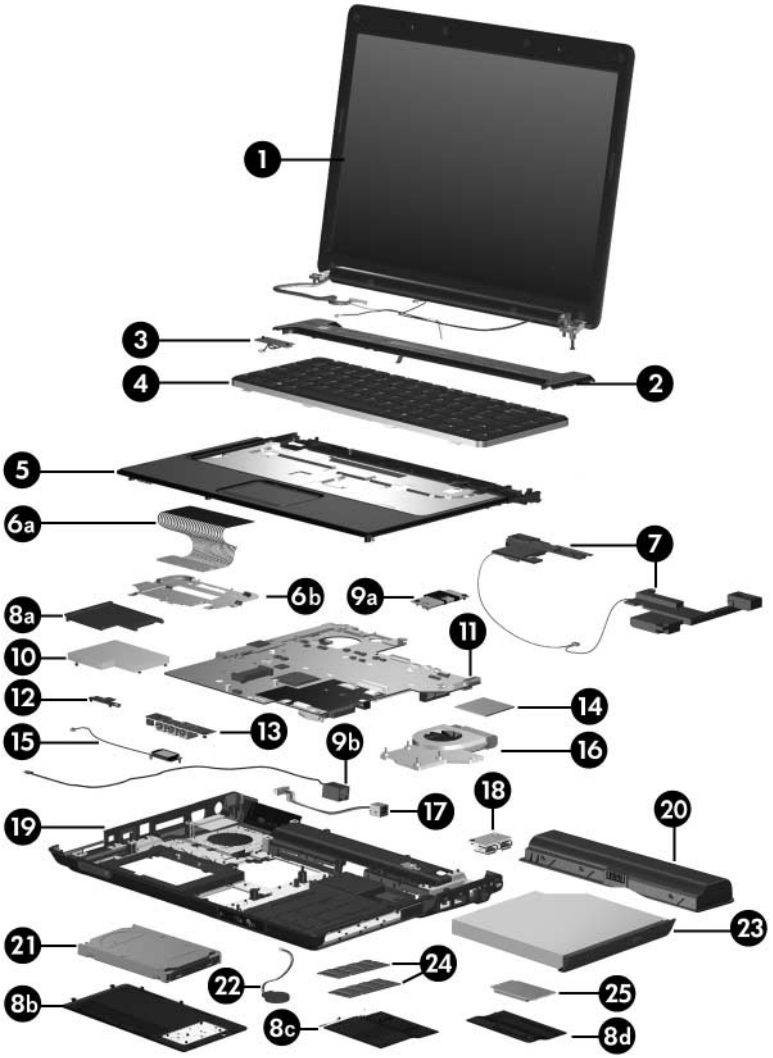


Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
25	**Mini Card modules** *(Continued)*	
	■ 802.11b/g WLAN Mini Card module for use in the countries listed below. These countries are categorized as most of the world (MOW 2).	409407-002
	Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Bulgaria, Cayman Islands, Columbia, Croatia, Cyprus, The Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lebanon, The Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, The Netherlands, Norway, Oman, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, The United Kingdom, Uzbekistan	
	For use with computer models using Intel processors:	
	■ 802.11a/b/g WLAN Mini Card module for use in the countries listed below. These countries are categorized as the rest of the world (ROW).	409497-001
	China, Ecuador, Haiti, Honduras, Pakistan, Peru, Qatar, South Korea, Uruguay, Venezuela	



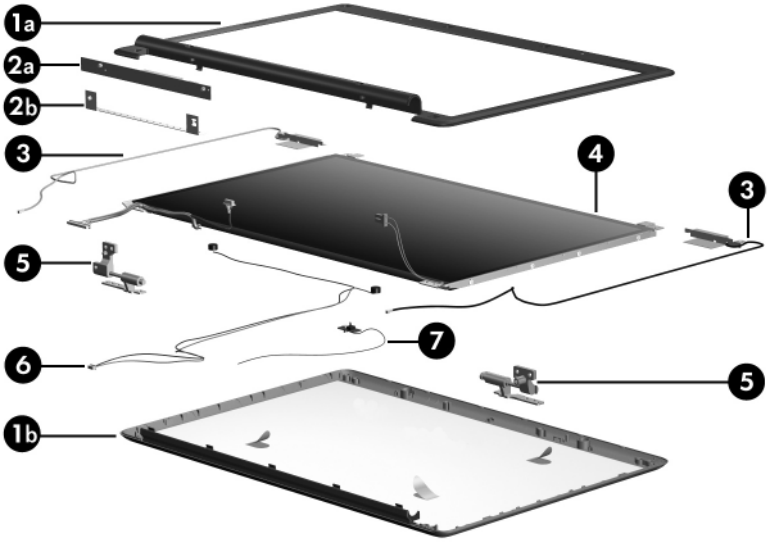
Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
25	**Mini Card modules** *(Continued)*	
	For use with computer models using AMD processors:	
	■ 802.11a/b/g LJ WLAN Mini Card module for use in the United States and Canada.	416377-001
	■ 802.11a/b/g LJ WLAN Mini Card module for use in the ROW countries listed below:	416377-002
	China, Ecuador, Haiti, Honduras, Pakistan, Peru, Qatar, South Korea, Uruguay, Venezuela	
	802.11b/g HS WLAN Mini Card module for use in the United States and Canada.	416376-001
	802.11b/g HS WLAN Mini Card module for use in the ROW countries listed below:	416376-002
	China, Ecuador, Haiti, Honduras, Pakistan, Peru, Qatar, South Korea, Uruguay, Venezuela	

3.3 Display Assembly Components



Display Assembly Components

Table 3-2

Display Assembly Components

Spare Part Number Information

Item	Description	Spare Part Number
	Display Plastics Kit	
	For use with full-featured computer models	430472-001
	For use with defeatured computer models	417101-001
	Includes:	
1a	■ Display bezel	
1b	■ Display enclosure	
2a	**Display inverter**, includes	417097-001
2b	**Display inverter bracket**	
3	**Wireless antenna transceivers and cables**	417107-001
4	**14.0-inch, WXGA, SVA display panel with BrightView**	430459-001
5	**Display Hinge Kit** (includes left and right display hinges)	417103-001
6	**Display Cable Kit** (includes microphones and cables)	430904-001
7	**Display lid switch module** (includes display lid switch module cable)	431881-001
	Display Label Kit (not illustrated)	417111-001
	Display Screw Kit (includes screws and rubber screw covers, not illustrated)	417105-001

3.4 Mass Storage Devices

Mass Storage Devices

Table 3-3

Mass Storage Devices

Spare Part Number Information

Item	Description	Spare Part Number
1	**Hard drives** (include frame and connector)	
	5400-rpm, 120-GB	417059-001
	5400-rpm, 100-GB	417058-001
	5400-rpm, 80-GB	417057-001
	5400-rpm, 60-GB	417056-001
	5400-rpm, 40-GB	430460-001
2	**Optical drives**	
	DVD/CD-RW Combo Drive	417063-001
	DVD±RW/R and CD-RW Double-Layer Combo Drive	417064-001
	DVD±RW/R and CD-RW Double-Layer Combo Drive with LightScribe	417065-001
	USB digital drive (not illustrated)	364727-001

3.5 Plastics Kit

Plastics Kit Contents

Table 3-4

Plastics Kit

Spare Part Number Information

Item	Description	Spare Part Number
	Plastics Kit	417074-001
	Includes:	
1	Mini Card compartment cover (includes 1 captive screw, secured by a C-clip)	
2	Hard drive cover (includes 2 captive screws, secured by C-clips)	
3	Memory module compartment cover (includes 2 captive screws, secured by C-clips)	
4	ExpressCard slot bezel	

3.6 Cable Kit

Cable Kit Contents

Table 3-5

Cable Kit

Spare Part Number Information

Item	Description	Spare Part Number
	Cable Kit	430474-001
	Includes:	
1	LED board cable	
2	TouchPad cable	
3	USB board cable (includes num lock light cable)	
4	Bluetooth module cable	

3.7 Miscellaneous

Table 3-6

Spare Parts: Miscellaneous (not illustrated)

Description	Spare Part Number
Analog TV tuner	407941-001
Composite S-Video and audio input cable	407939-001
DVB-T TV tuner	412175-001
DVB-T TV tuner antenna	412176-001
Earbud headset	371693-001
HP 65W AC Adapter	409843-001
HP Remote Control	407313-001
RF cable	408485-001
RF input adapter cable	407940-001
USB infrared receiver	408483-001
USB travel mouse	309674-001
Wireless laser mouse	430958-001
Screw Kit (includes the following screws; refer to Appendix A, "Screw Listing," for more information on screw specifications and usage) ■ Phillips PM3.0×3.0 screw ■ Phillips PM2.5×9.0 screw ■ Phillips PM2.5×7.0 screw ■ Black Phillips PM2.5×5.0 screw ■ Silver Phillips PM2.5×5.0 screw ■ Phillips PM2.0×5.0 captive screw ■ Phillips PM2.0×13.0 spring-loaded shoulder screw ■ Phillips PM2.0×9.0 spring-loaded shoulder screw ■ Phillips PM2.0×8.0 screw ■ Phillips PM2.0×4.0 screw ■ Phillips PM2.0×3.0 screw ■ Phillips PM2.0×2.0 screw	417109-001

Table 3-6

Spare Parts: Miscellaneous (not illustrated) *(Continued)*

Description	Spare Part Number
Power cords	
For use in:	
Australia and New Zealand	383496-011
Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden	383496-021
Brazil	383496-201
Canada, French Canada, Latin America, Thailand, and the United States	383496-001
Denmark	383496-081
Hong Kong and the United Kingdom	383496-031
Israel	383496-BB1
Italy	383496-061
Korea	383496-AD1
People's Republic of China	383496-AA1
Switzerland	383496-111
Taiwan	383496-AB1

3.8 Sequential Part Number Listing

Table 3-7

Spare Parts: Sequential Part Number Listing

Spare Part Number	Description
309674-001	USB travel mouse
364727-001	USB digital drive (not illustrated)
371693-001	Earbud headset
383496-001	Power cord for use in Canada, French Canada, Latin America, Thailand, and the United States
383496-011	Power cord for use in Australia and New Zealand
383496-021	Power cord for use in Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden
383496-031	Power cord for use in Hong Kong and the United Kingdom
383496-061	Power cord for use in Italy
383496-081	Power cord for use in Denmark
383496-111	Power cord for use in Switzerland
383496-201	Power cord for use in Brazil
383496-AA1	Power cord for use in the People's Republic of China
383496-AB1	Power cord for use in Taiwan
383496-AD1	Power cord for use in Korea
383496-BB1	Power cord for use in Israel
397923-001	Bluetooth® module (includes Bluetooth module cable)
407939-001	Composite S-Video and audio input cable
407313-001	HP Remote Control
407940-001	RF input adapter cable
407941-001	Analog TV tuner

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
408483-001	USB infrared receiver
408485-001	RF cable
409407-001	802.11b/g WLAN Mini Card module for use with computer models using Intel processors in the MOW1 countries listed below: Antigua & Barbuda Argentina Australia Bahamas Barbados Brunei Canada Chile Dominican Republic Guam Guatemala Hong Kong Panama India Indonesia Malaysia Mexico New Zealand
409407-002	802.11b/g WLAN Mini Card module for use with computer models using Intel processors in the MOW2 countries listed below: Aruba Austria Azerbaijan Bahrain Belgium Bermuda Bulgaria Cayman Islands Columbia Croatia Cyprus The Czech Republic Denmark Egypt El Salvador Estonia Finland France Georgia Germany Greece Hungary Iceland Ireland Italy Latvia Lebanon The Philippines Poland Portugal Romania Russia Serbia and Montenegro Singapore Slovakia Liechtenstein Lithuania Luxembourg Malta Monaco

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description		
409497-001	802.11a/b/g WLAN Mini Card module for use with computer models using Intel processors in the ROW countries listed below:		
	China	Honduras	Qatar
	Ecuador	Pakistan	South Korea
	Haiti	Peru	
409843-001	HP 65W AC Adapter		
412175-001	DVB-T TV tuner		
412176-001	DVB-T TV tuner antenna		
416376-001	802.11b/g WLAN Mini Card module for use with computer models using AMD processors in the United States and Canada		
416376-002	802.11/b/g WLAN Mini Card module for use with computer models using AMD processors in the ROW countries listed below:		
	China	Honduras	Qatar
	Ecuador	Pakistan	South Korea
	Haiti	Peru	
416377-001	802.11a/b/g WLAN Mini Card module for use with computer models using AMD processors in the United States and Canada		

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
416377-002	802.11a/b/g WLAN Mini Card module for use with computer models using AMD processors in the ROW countries listed below: China, Ecuador, Haiti, Honduras, Pakistan, Peru, Qatar, South Korea
4170356-001	PM/G72M-V system board for use with full-featured computer models using Intel processors
417036-001	GM system board for use with full-featured computer models using Intel processors
417037-001	GMZ system board for use with defeatured computer models using Intel processors
417041-001	Intel Core Duo T2300 (1.66-GHz) processor (includes thermal pad)
417042-001	Intel Core Duo T2400 (1.83-GHz) processor (includes thermal pad)
417043-001	Intel Core Duo T2500 (2.00-GHz) processor (includes thermal pad)
417044-001	Intel Core Duo T2600 (2.16-GHz) processor (includes thermal pad)
417049-001	14.0-inch, WXGA display assembly (includes wireless antenna transceivers and cables)
417050-001	1-DIMM, DDR2, PC2-4200, 533-MHz, 256-MB memory module

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
417051-001	1-DIMM, DDR2, PC2-4200, 533-MHz, 512-MB memory module
417052-001	1-DIMM, DDR2, PC2-4200, 533-MHz, 1024-MB memory module
417053-001	1-DIMM, DDR2, PC2-5300, 667-MHz, 256-MB memory module
417054-001	1-DIMM, DDR2, PC2-5300, 667-MHz, 512-MB memory module
417055-001	1-DIMM, DDR2, PC2-5300, 667-MHz, 1024-MB memory module
417056-001	5400-rpm, 60-GB hard drive (includes frame and connector)
417057-001	5400-rpm, 80-GB hard drive (includes frame and connector)
417058-001	5400-rpm, 100-GB hard drive (includes frame and connector)
417059-001	5400-rpm, 120-GB hard drive for use only with computer models using Intel processors (includes frame and connector)
417063-001	DVD/CD-RW Combo Drive
417064-001	DVD±RW/R and CD-RW Double-Layer Combo Drive
417065-001	DVD±RW/R and CD-RW Double-Layer Combo Drive with LightScribe
417066-001	6-cell, 4.0-AHr battery
417067-001	12-cell, 8.8-AHr battery
417068-001	Keyboard for use only with computer models using Intel processors in the United States

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
417068-031	Keyboard for use only with computer models using Intel processors in the United Kingdom
417068-041	Keyboard for use only with computer models using Intel processors in Germany
417068-051	Keyboard for use only with computer models using Intel processors in France
417068-061	Keyboard for use only with computer models using Intel processors in Italy
417068-071	Keyboard for use only with computer models using Intel processors in Spain
417068-081	Keyboard for use only with computer models using Intel processors in Denmark
417068-091	Keyboard for use only with computer models using Intel processors in Norway
417068-101	Keyboard for use in only with computer models using Intel processors Sweden/Finland
417068-111	Keyboard for use only with computer models using Intel processors in Switzerland
417068-121	Keyboard for use only with computer models using Intel processors in French Canada
417068-131	Keyboard for use only with computer models using Intel processors in Portugal
417068-141	Keyboard for use only with computer models using Intel processors in Turkey
417068-151	Keyboard for use only with computer models using Intel processors in Greece

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
417068-161	Keyboard for use only with computer models using Intel processors in Latin America
417068-171	Keyboard for use only with computer models using Intel processors in Saudi Arabia
417068-201	Keyboard for use only with computer models using Intel processors in Brazil
417068-281	Keyboard for use only with computer models using Intel processors in Thailand
417068-A41	Keyboard for use only with computer models using Intel processors in Belgium
417068-AB1	Keyboard for use only with computer models using Intel processors in Taiwan
417068-AD1	Keyboard for use only with computer models using Intel processors in Korea
417068-B31	Keyboard for use only with computer models using Intel processors internationally
417068-BB1	Keyboard for use only with computer models using Intel processors in Israel
417069-001	Keyboard for use with computer models using AMD processors in the United States
417069-041	Keyboard for use with computer models using AMD processors in Germany
417069-051	Keyboard for use with computer models using AMD processors in France
417069-061	Keyboard for use with computer models using AMD processors in Italy

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
417069-071	Keyboard for use with computer models using AMD processors in Spain
417069-081	Keyboard for use with computer models using AMD processors in Denmark
417069-091	Keyboard for use with computer models using AMD processors in Norway
417069-101	Keyboard for use with computer models using AMD processors in Sweden/Finland
417069-121	Keyboard for use with computer models using AMD processors in French Canada
417069-161	Keyboard for use with computer models using AMD processors in Latin America
417069-281	Keyboard for use with computer models using AMD processors in Thailand
417069-AD1	Keyboard for use with computer models using AMD processors in Korea
417069-B31	Keyboard for use with computer models using AMD processors internationally
417074-001	Plastics Kit
417076-001	RTC battery
417077-001	Switch cover for use with full-featured computer models (include wireless button and light)
417078-001	Switch cover for use with defeatured computer models (include wireless button and light)
417081-001	Fan/heat sink assembly (include thermal pads) for use only with computer models using Intel processors

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
417082-001	TouchPad cable
417083-001	Modem module for use only with computer models using Intel processors
417085-001	USB board (includes USB board cable)
417089-001	Speaker assembly
417091-001	Top cover for use with full-featured computer models (includes TouchPad)
417092-001	Wireless switch board (includes wireless switch board cable)
417094-001	Base enclosure for use with full-featured computer models
417096-001	Rubber Feet Kit (includes computer feet])
417097-001	Display inverter
417101-001	Display Plastics Kit for use with full-featured computer models (includes display bezel, microphone, and display enclosure)
417103-001	Display Hinge Kit (includes left and right display hinges)
417105-001	Display Screw Kit (includes screws and rubber screw covers)
417107-001	Wireless antenna transceivers and cables
417109-001	Screw Kit
417111-001	Display Label Kit
417112-001	ExpressCard assembly
417114-001	Fan/heat sink assembly mounting bracket
430454-001	Intel Core Duo T2050 (1.60-GHz) processor (includes thermal pad)

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
430455-001	Intel Core Duo T2250 (1.73-GHz) processor (includes thermal pad)
430456-001	Intel Core Solo T1350 (1.80-GHz) processor (includes thermal pad)
430459-001	Display panel
430460-001	5400-rpm, 40-GB hard drive (includes frame and connector)
430461-001	Power connector cable for use only with computer models using Intel processors
430462-001	Power connector cable for use with UMA system boards
430463-001	Fan/heat sink assembly (include thermal pads) for use on UMA system boards
430464-001	TouchPad
430465-001	Audio/infrared board (includes audio/infrared board cable)
430468-001	Top cover for use with defeatured computer models (includes TouchPad)
430470-001	Base enclosure for use with defeatured computer models
430472-001	Display Plastics Kit for use with defeatured computer models (includes display bezel and display enclosure)
430474-001	Cable Kit
430475-001	Power button board (includes power button board cable)
430904-001	Display Cable Kit for use only with computer models using Intel processors
430958-001	Wireless laser mouse

Table 3-7

Spare Parts: Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
431483-001	System board for use with full-featured computer models using AMD processors
431484-001	Mobile AMD Sempron 3200+ (1.60-GHz) processor (includes thermal pad)
431844-001	System board for use with defeatured computer models using AMD processors
431845-001	AMD Turion ML-50 1.60-GHz processor (includes thermal pad)
431846-001	AMD Turion ML-52 1.60-GHz processor (includes thermal pad)
431849-001	Mobile AMD Sempron 3400+ (1.80-GHz) processor (includes thermal pad)
431851-001	Fan/heat sink assembly for use with computer models using AMD processors (includes thermal paste and pads)
431852-001	Modem module for use with computer models using AMD processors
431881-001	Display lid switch module

4

Removal and Replacement Preliminaries

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

4.1 Tools Required

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

- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers
- Flat-bladed screwdriver

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 computer, 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

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

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.

4.3 Preventing Damage to Removable Drives

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

- Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
- Before removing a diskette drive or optical drive, ensure that a diskette or disc is not in the drive and 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 covered with 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, "Static-Shielding Materials").
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When using fixtures that must directly contact dissipative surfaces, only use fixtures made of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle electrostatic-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

4.7 Grounding Equipment and Methods

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the 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

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

✎ A product can be degraded by as little as 700 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

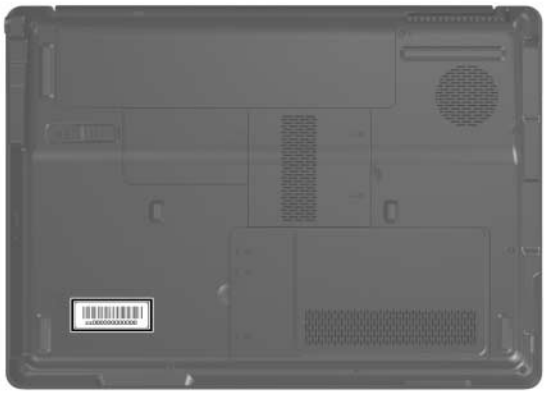
This chapter provides removal and replacement procedures.

There are as many as 89 screws, in 10 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

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

5.1 Serial Number

Report the computer serial number to HP when requesting information or ordering spare parts. The serial number is located on the bottom of the computer.



Serial Number Location

5.2 Disassembly Sequence Chart

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

Disassembly Sequence Chart

Section	Description	# of Screws Removed
5.3	Preparing the Computer for Disassembly	
	Battery	0
5.4	Hard Drive	2 loosened to remove the hard drive cover 2 removed to remove the hard drive 4 removed to disassemble the hard drive
5.5	RTC Battery	0
5.6	Computer Feet	0
5.7	Memory Module	2 loosened to remove the memory module compartment cover
5.8	Mini Card Module	1 loosened to remove the Mini Card module compartment cover 2 removed to remove the Mini Card
	△ To prevent an unresponsive system and the display of a warning message, install only a Mini Card device authorized for use in your computer by the governmental agency that regulates wireless devices in your country. If you install a device and then receive a warning message, remove the device to restore computer functionality. Then contact Customer Care.	
5.9	Optical Drive	1 to remove the optical drive 2 to remove the optical drive bracket

Disassembly Sequence Chart *(Continued)*

Section	Description	# of Screws Removed
5.10	Keyboard	3
5.11	Switch Cover	3 to remove the switch cover 2 to remove the power button board
5.12	Display Assembly	6
	Display bezel	8
	Display inverter	4
	Display hinges	4
	Display lid switch module	1
	Display panel	0
	Wireless antenna transceivers	2
	Microphones	0
5.13	Top Cover	16
5.14	TouchPad	7
5.15	Wireless Switch Board	2
5.16	Modem Module	2
5.17	Audio/Infrared Board	1
5.18	Bluetooth Module	0
5.19	USB Board	1
5.20	Speaker Assembly	4
5.21	System Board	2
5.22	ExpressCard Assembly	4
5.23	Fan/Heat Sink Assembly	5 loosened
5.24	Processor	1 loosened

5.3 Preparing the Computer for Disassembly

Before you begin any removal or installation procedures:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power cord.

Battery Spare Part Number Information	
12-cell, 8.8-AHr	417067-001
6-cell, 4.0-AHr	417066-001

4. Remove the battery by following these steps:
   a. Turn the computer upside down with the front panel toward you.

b. Slide and hold the battery release latch ❶ to the left. (The front edge of the battery disengages from the computer.)
c. Lift the front edge of the battery ❷ up and swing it back.
d. Remove the battery.

Removing the Battery

Reverse the above procedure to install the battery.

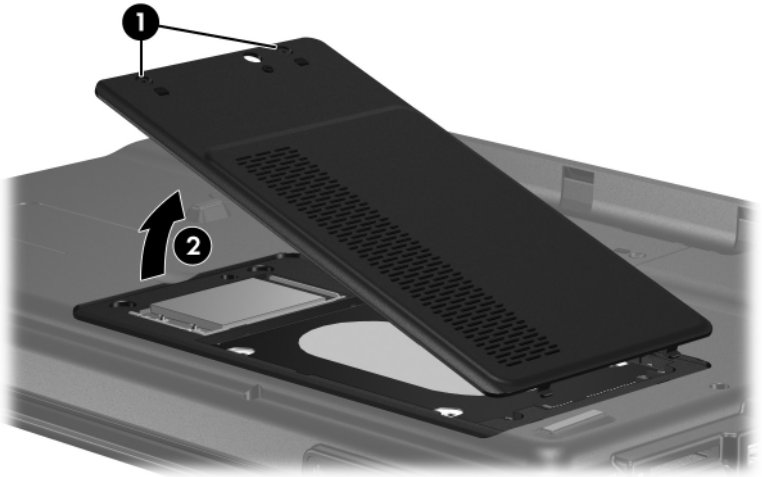
5.4 Hard Drive

Hard Drive Spare Part Number Information	
For use only with computer models using Intel processors:	
5400-rpm, 120-GB	417059-001
For use with all computer models:	
5400-rpm, 100-GB	417058-001
5400-rpm, 80-GB	417057-001
5400-rpm, 60-GB	417056-001
5400-rpm, 40-GB	430460-001

1. Prepare the computer for disassembly (refer to Section 5.3).

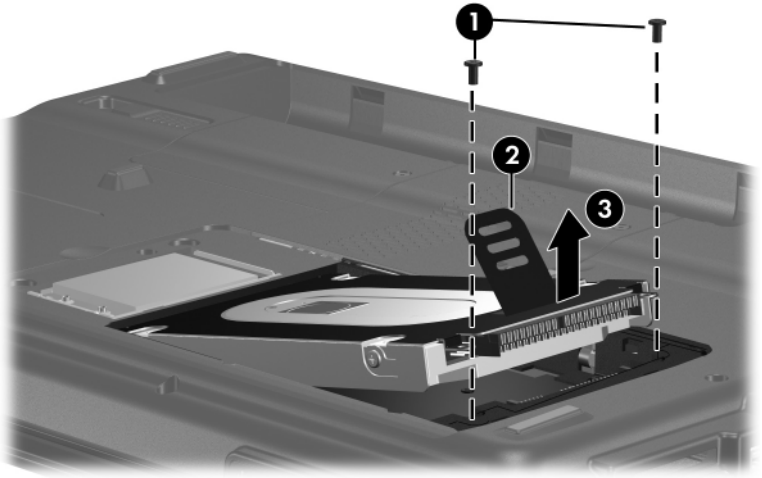
2. Loosen the two Phillips PM2.0×5.0 screws ❶ that secure the hard drive cover to the computer.
3. Lift the left side of the cover ❷ and swing it to the right.
4. Remove the hard drive cover.

The hard drive cover is included in the Plastics Kit, spare part number 417074-001.



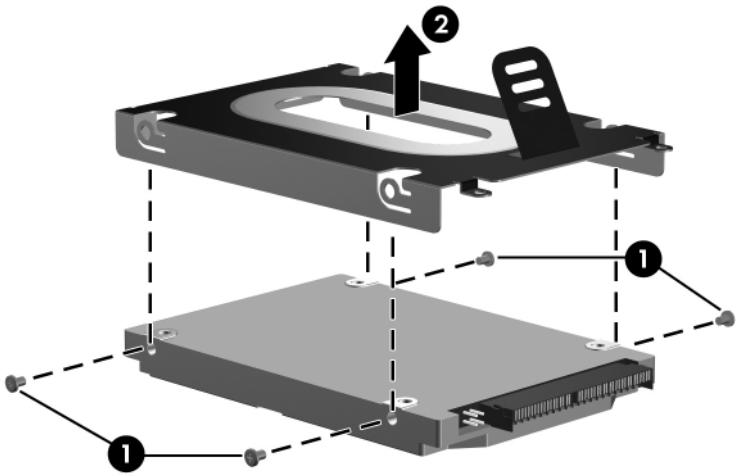
Removing the Hard Drive Cover

5. Remove the two black Phillips PM2.5×5.0 screws ❶ that secure the hard drive to the computer.
6. Use the mylar tab ❷ to lift the hard drive ❸ until it disconnects from the computer.
7. Remove the hard drive from the hard drive bay.



Removing the Hard Drive

8. Remove the four Phillips PM3.0×3.0 screws ❶ that secure the hard drive frame to the hard drive.
9. Lift the frame ❷ straight up to remove if from the hard drive.



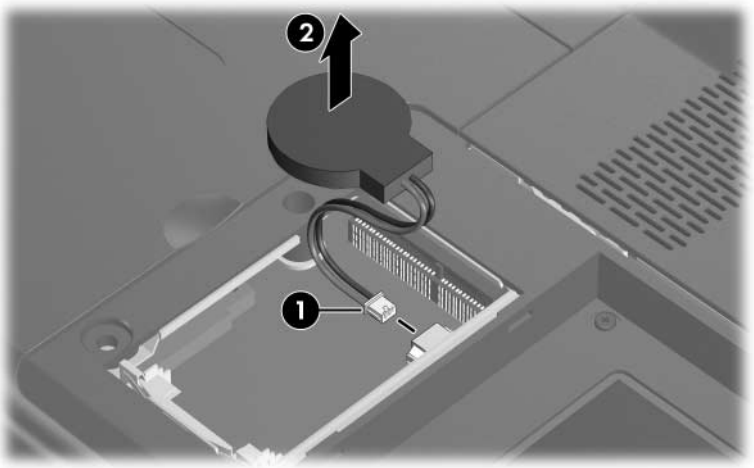
Removing the Hard Drive Frame and Connector

Reverse the above procedure to install and reassemble the hard drive.

5.5 RTC Battery

RTC Battery Spare Part Number Information	
RTC battery	417076-001

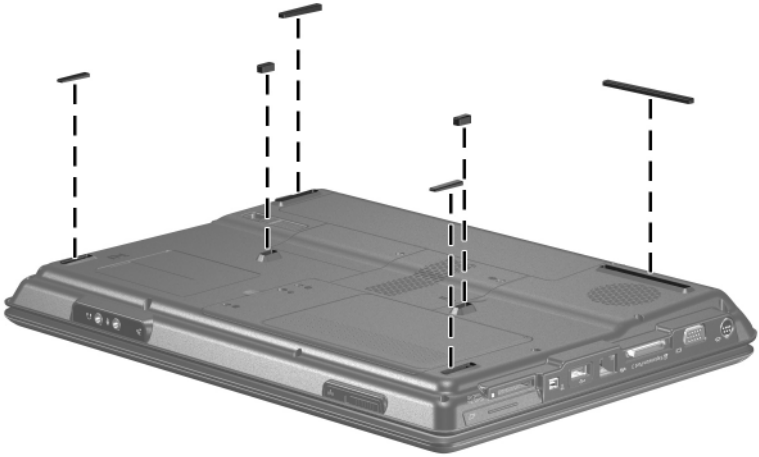
1. Prepare the computer for disassembly (refer to Section 5.3).
2. Remove the hard drive cover (Section 5.4).
3. Disconnect the RTC battery cable ❶ from the system board.
4. Remove the RTC battery ❷.



Replacing the RTC Battery

5.6 Computer Feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Feet Kit, spare part number 417096-001. The feet attach to the base enclosure in the locations illustrated below.



Replacing the Computer Feet

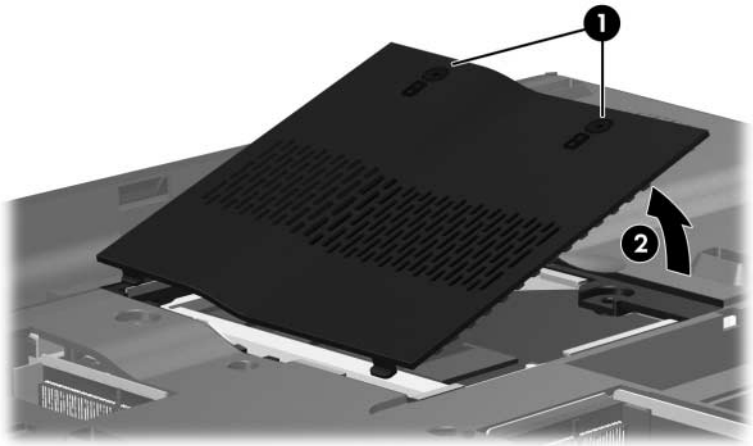
5.7 Memory Module

Memory Module Spare Part Number Information	
PC2-5300, 667-MHz	
1024-MB	417055-001
512-MB	417054-001
256-MB	417503-001
PC2-4200, 533-MHz	
1024-MB	417052-001
512-MB	417051-001
256-MB	417050-001

1. Prepare the computer for disassembly (refer to Section 5.3).

2. Loosen the two Phillips PM2.0×5.0 screws ❶ that secure the memory module compartment cover to the computer.
3. Lift the right edge of the memory module compartment cover ❷, and then swing it to the left.
4. Remove the memory module compartment cover.

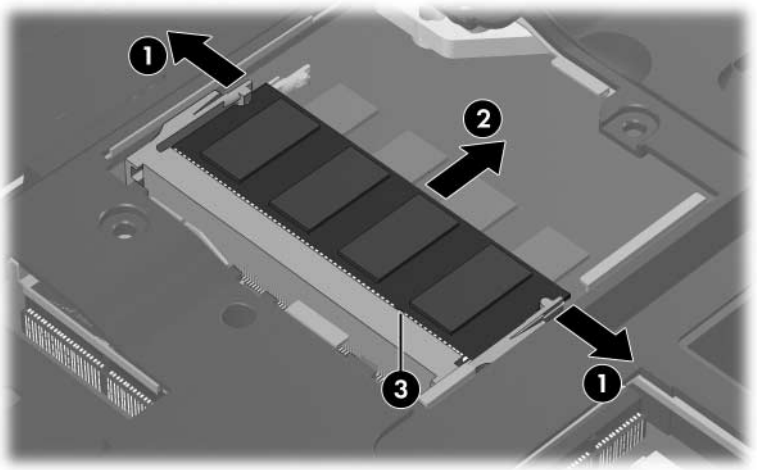
The memory module compartment cover is included in the Plastics Kit, spare part number 417074-001.



Removing the Memory Module Compartment Cover

5. Spread the retaining tabs ❶ on each side of the memory module socket to release the memory module. (The edge of the module opposite the socket rises away from the computer.)
6. Slide the module ❷ away from the socket at an angle.

Memory modules are designed with a notch ❸ to prevent incorrect installation into the memory module socket.



Removing the Memory Module

Reverse the above procedure to install a memory module.

5.8 Mini Card Module

Mini Card Module Spare Part Number Information

For use with computer models using Intel processors:

■ 802.11b/g WLAN module for use in the MOW 1 countries listed below:	409407-001

Antigua & Barbuda	Canada	Panama	Paraguay
Argentina	Chile	India	Saudi Arabia
Australia	Dominican Republic	Indonesia	Taiwan
Bahamas	Guam	Malaysia	The United States
Barbados	Guatemala	Mexico	Vietnam
Brunei	Hong Kong	New Zealand	

■ 802.11b/g WLAN module for use in the MOW 2 countries listed below:	409407-002

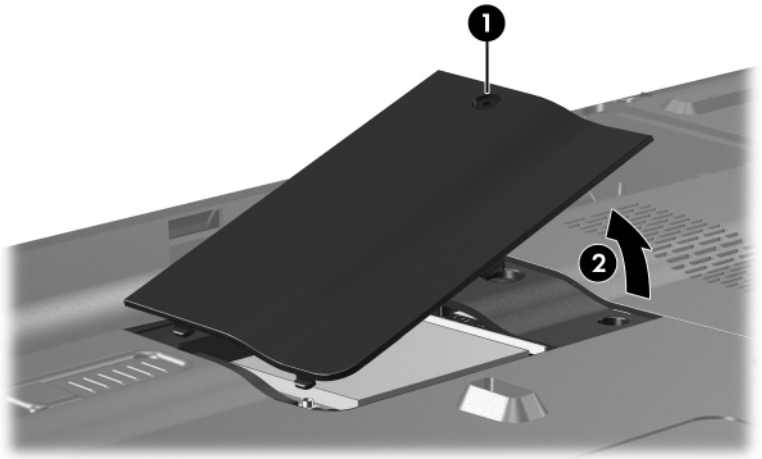
Aruba	Egypt	The Philippines	The Netherlands
Austria	El Salvador	Poland	Norway
Azerbaijan	Estonia	Portugal	Oman
Bahrain	Finland	Romania	Slovenia
Belgium	France	Russia	South Africa
Bermuda	Georgia	Serbia and Montenegro	Spain
Bulgaria	Germany	Singapore	Sri Lanka
Cayman Islands	Greece	Slovakia	Sweden
Columbia	Hungary	Liechtenstein	Switzerland
Croatia	Iceland	Lithuania	Turkey
Cyprus	Ireland	Luxembourg	The United Kingdom
The Czech Republic	Italy	Malta	Uzbekistan
Denmark	Latvia	Monaco	
	Lebanon		

Mini Card Module Spare Part Number Information *(Continued)*

■ 802.11a/b/g WLAN module for use in the ROW countries listed below:			409497-001
China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		
For use with computer models using AMD processors:			
■ 802.11a/b/g LJ WLAN module for use in the United States and Canada			417377-001
■ 802.11a/b/g LJ WLAN module for use in the ROW countries listed below:			417377-002
China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		
■ 802.11a/b/g HS WLAN module for use in the United States and Canada			417376-001
■ 802.11a/b/g HS WLAN module for use in the ROW countries listed below:			417376-002
China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		

1. Prepare the computer for disassembly (Section 5.3).
2. Loosen the Phillips PM2.0×5.0 screw ❶ that secures the Mini Card compartment cover to the computer.
3. Lift the right edge of the Mini Card compartment cover ❷, and then swing it to the left.
4. Remove the Mini Card compartment cover.

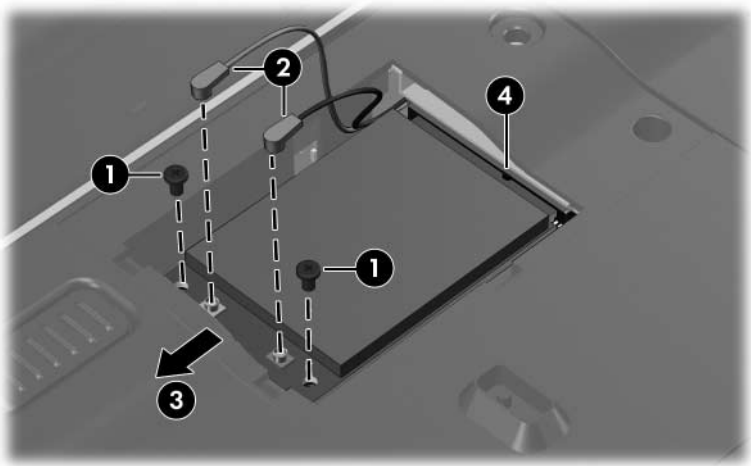
The Mini Card compartment cover is included in the Plastics Kit, spare part number 417074-001.



Removing the Mini Card Compartment Cover

5. Make note of which wireless antenna cable is attached to which antenna clip on the Mini Card module before disconnecting the cables, then disconnect the cables ❶ from the module.
6. Remove the two Phillips PM2.0×3.0 screws ❷ that secure the Mini Card module to the computer. (The edge of the module opposite the socket rises away from the computer).
7. Remove the module ❸ by pulling it away from the socket at an angle.

Mini Card WLAN modules are designed with a notch ❹ to prevent incorrect installation into the Mini Card module socket.



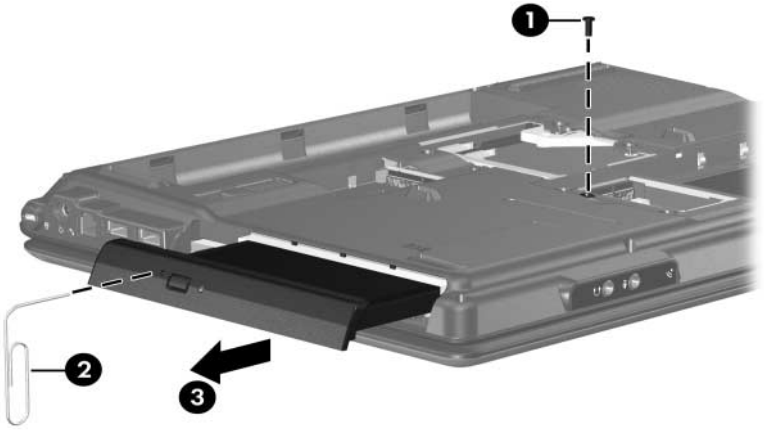
Removing a Mini Card Module

Reverse the above procedure to install a Mini Card module.

5.9 Optical Drive

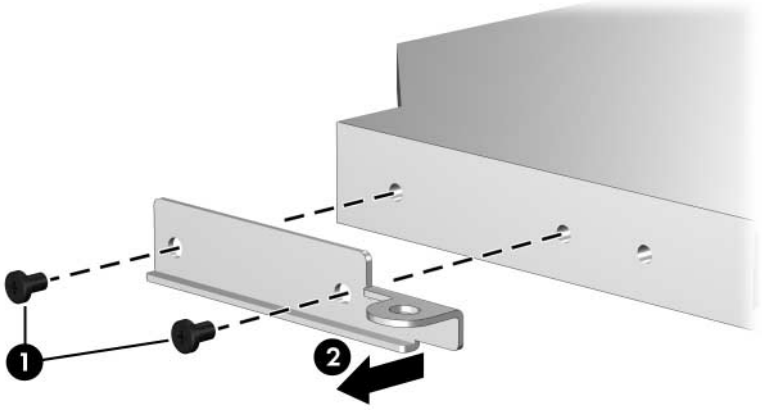
Optical Drive Spare Part Number Information	
DVD/CD-RW Combo Drive	417063-001
DVD±RW/R and CD-RW Double-Layer Combo Drive	417064-001
DVD±RW/R and CD-RW Double-Layer Combo Drive with LightScribe	417065-001

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the Phillips PM2.5×7.0 screw ❶ that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip, into the media tray release hole ❷. (The optical drive media tray releases from the optical drive.)
4. Use the media tray frame to slide the optical drive ❸ to the left.
5. Remove the optical drive.



Removing the Optical Drive

6. Position the optical drive with the optical drive bracket toward you.
7. Remove the two Phillips PM2.0×3.0 screws ❶ that secure the optical drive bracket to the optical drive.
8. Remove the optical drive ❷.



Removing the Optical Drive Bracket

Reverse the above procedure to reassemble and install the optical drive.

5.10 Keyboard

Keyboard Spare Part Number Information

For use with all computer models:

Denmark	417068-081	Latin America	417068-161
France	417068-051	Norway	417068-091
French Canada	417068-121	Spain	417068-071
Germany	417068-041	Switzerland	417068-111
International	417068-B31	The United Kingdom	417068-031
Israel	417068-BB1	The United States	417068-001
Italy	417068-061		
Korea	417068-AD1		

For use only with computer models using Intel processors:

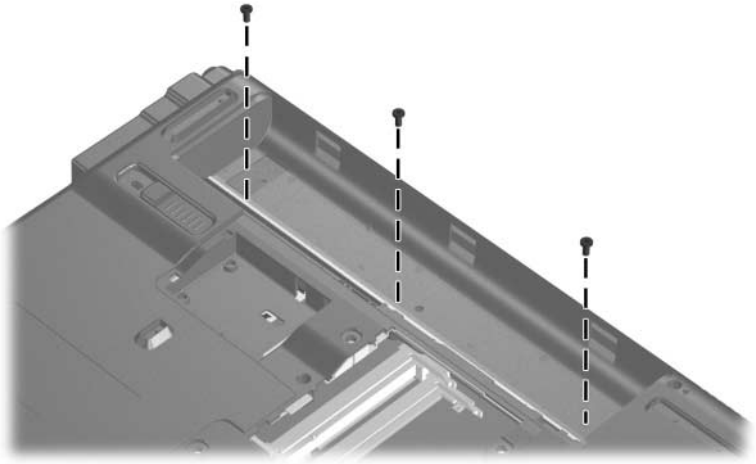
Belgium	417068-A41	Sweden/Finland	417068-101
Brazil	417068-201	Taiwan	417068-AB1
Greece	417068-151	Thailand	417068-281
Portugal	417068-131	Turkey	417068-141
Saudi Arabia	417068-171		

For use only with computer models using AMD processors:

Denmark	417069-081	Latin America	417069-161
France	417069-051	Norway	417069-091
French Canada	417069-121	Spain	417069-071
Germany	417069-041	Sweden/Finland	417069-031
International	417069-B31	Thailand	417069-281
Italy	417069-061	The United States	417069-001
Korea	417069-AD1		

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

2. Remove the three Phillips PM2.5×7.0 screws that secure the keyboard to the computer.



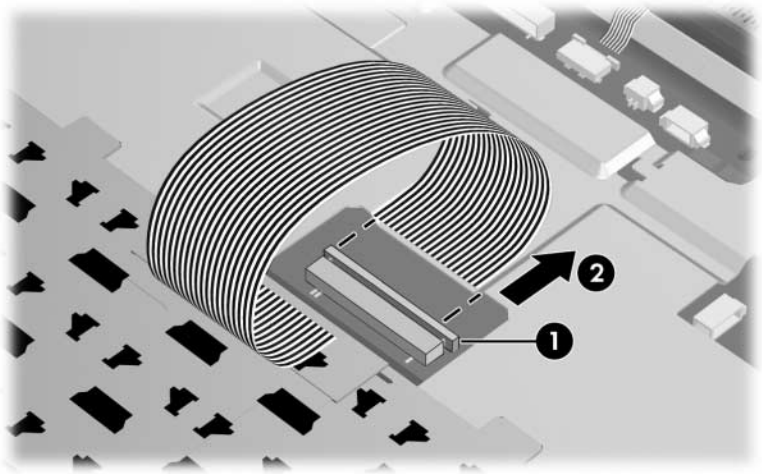
Removing the Keyboard Screws

3. Turn the computer display-side up with the front panel toward you.
4. Open the computer as far as possible.

5. Slide the keyboard ❶ back to release the tabs on the front of the keyboard from the top cover.
6. Lift the rear edge of the keyboard ❷ and swing it forward until it rests on the palm rest.

Releasing the Keyboard

7. Release the zero insertion force (ZIF) connector ❶ to which the keyboard cable is connected and disconnect the keyboard cable ❷ from the system board.



Disconnecting the Keyboard Cable

8. Remove the keyboard.

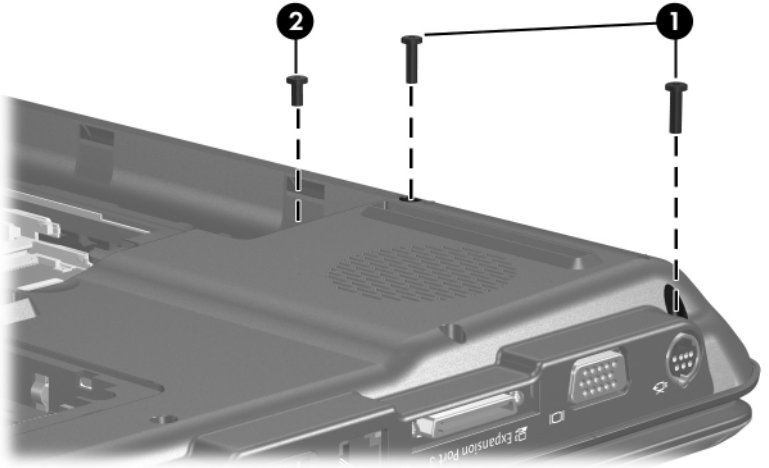
Reverse the above procedure to install the keyboard.

5.11 Switch Cover

Switch Cover Spare Part Number Information	
For use with full-featured computer models	417077-001
For use with defeatured computer models	417078-001

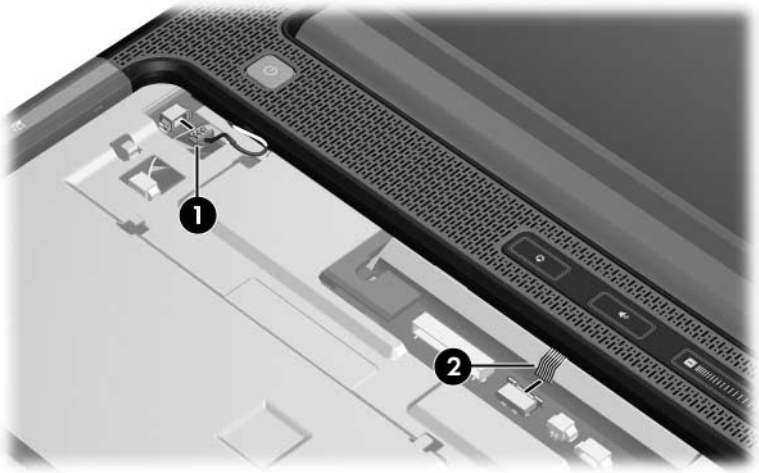
1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.10).
3. Close the computer.

4. Turn the computer upside down with the front panel toward you.
5. Remove the two Phillips PM2.5×9.0 screws ❶ and the silver Phillips PM2.5×5.0 screw ❷ that secure the switch cover to the computer.



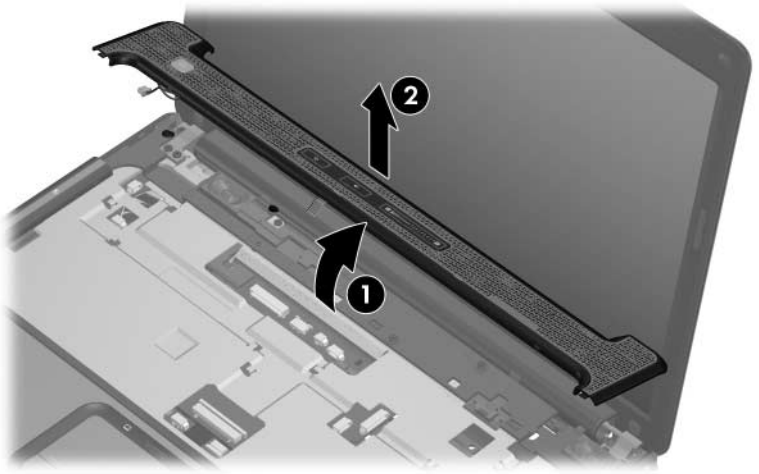
Removing the Switch Cover Screws

6. Turn the computer display-side up with the front toward you.
7. Open the computer as far as possible.
8. Disconnect the power button board cable ❶ from the system board.
9. Release the ZIF connector to which the LED board cable ❷ is connected and disconnect the cable from the system board.



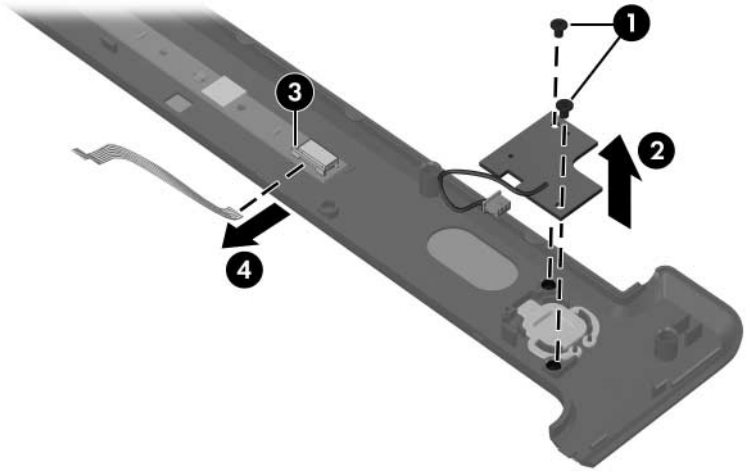
Disconnecting the Switch Cover Cables

10. Lift the front edge of the switch cover ❶ to disengage it from the computer.
11. Remove the switch cover ❷.



Removing the Switch Cover

12. If it is necessary to replace the power button board, remove the two Phillips PM2.0×3.0 screws ❶ that secure the board to the switch cover, and then remove the power button board ❷.
13. If it is necessary to replace the LED board cable, release the ZIF connector ❸ to which the cable is connected and disconnect the cable ❹ from the LED board.



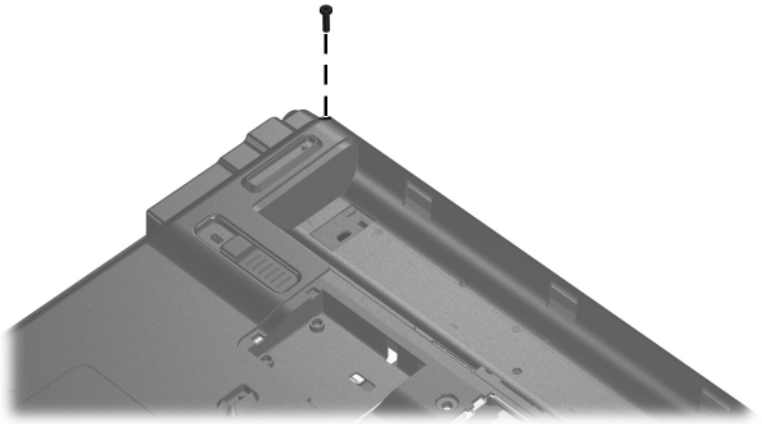
Removing the Power Button Board and LED Board Cable

Reverse the above procedure to install the switch cover.

5.12 Display Assembly

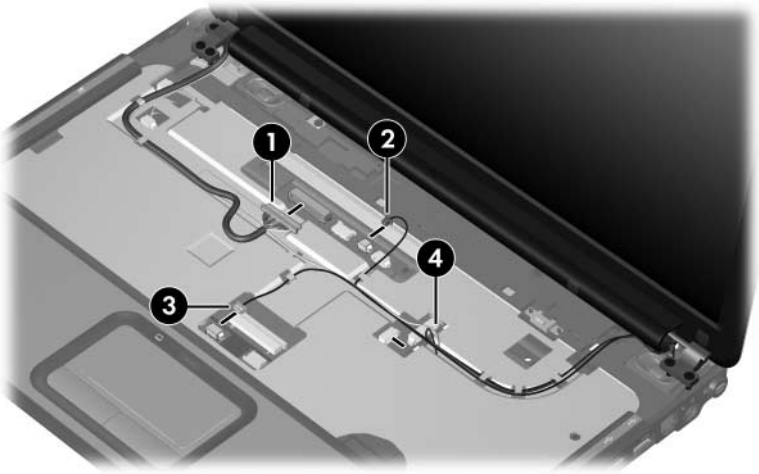
Display Assembly Spare Part Number Information	
14.0-inch, WXGA display assembly (includes wireless antenna transceivers and cables)	417049-001

1. Prepare the computer for disassembly (Section 5.3).
2. Disconnect the Mini Card WLAN antenna cables from the Mini Card WLAN module (Section 5.8).
3. Remove the Phillips PM2.5×9.0 screw that secures the display assembly to the computer.



Removing the Display Screw

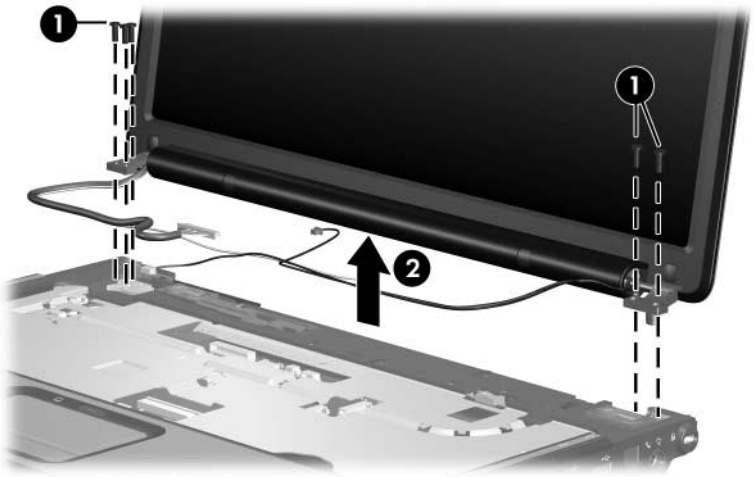
4. Turn the computer display-side up with the front toward you.
5. Open the display as far as possible.
6. Disconnect the following cables:
   - ❶ Display cable
   - ❷ Display lid switch module cable
   - ❸ Microphone cable
7. Remove the wireless antenna cables ❹ from the hole in the system board.



Disconnecting the Display and Microphone Cables and Removing the Wireless Antenna Cables

CAUTION: Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

8. Remove the five Phillips PM2.5×7.0 screws ❶ that secure the display assembly to the computer.
9. Remove the display assembly ❷.

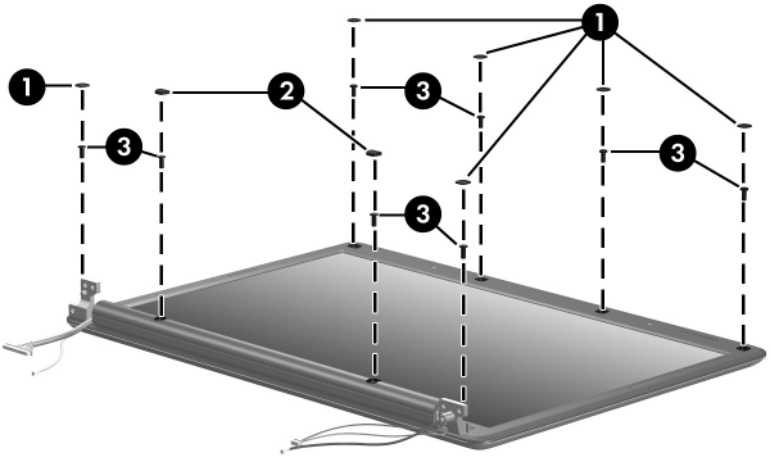


Removing the Display Assembly

10. Remove the following:
    - ❶ Six rubber screw covers
    - ❷ Two rubber screw covers
    - ❸ Eight Phillips PM2.5×7.0 screws

There are two different sizes of display bezel rubber screw covers. The thicker covers ❷ should be installed in the bottom center screw holes.

The display rubber screw covers are included in the Display Screw Kit, spare part number 417105-001.



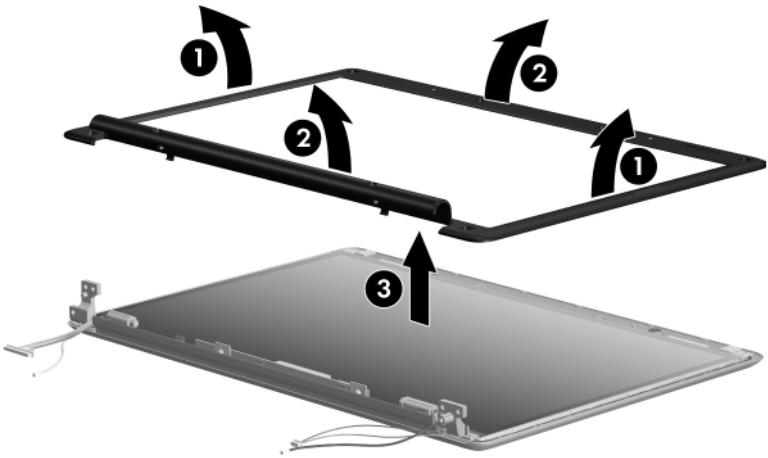
Removing the Display Bezel Screws

Display Assembly Subcomponents

Spare Part Number Information

Display Plastics Kit	
For use with full-featured computer models	430472-001
For use with defeatured computer models	417101-001
Includes:	
■ Display bezel	
■ Display enclosure	

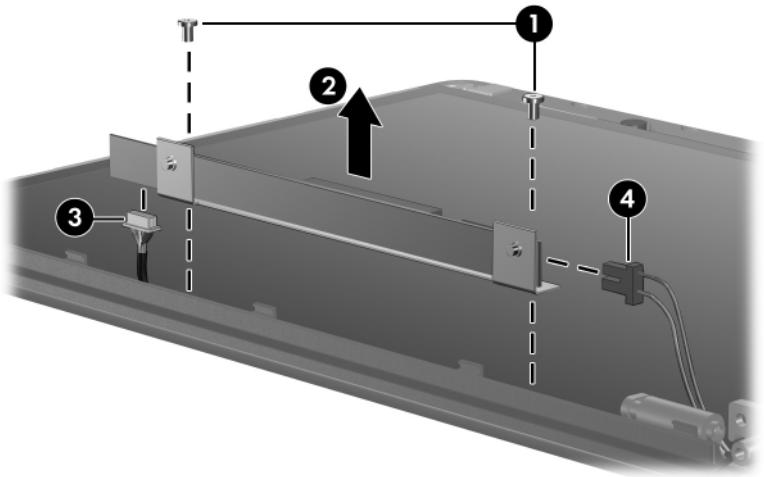
11. Flex the insides edges of the left and right sides ❶ and the top and bottom sides ❷ of the display bezel until the bezel disengages from the display enclosure.
12. Remove the display bezel ❸.



Removing the Display Bezel

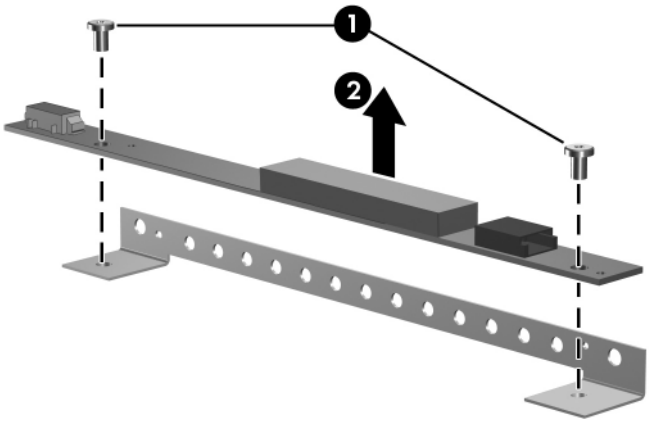
Display Assembly Subcomponents Spare Part Number Information	
Display inverter	417097-001

13. Remove the two black Phillips PM2.5×5.0 screws ❶ that secure the inverter to the display enclosure.
14. Remove the inverter ❷ from the display enclosure.
15. Disconnect the display cable ❸ and the backlight cable ❹ from the display inverter.



Removing the Display Inverter

16. Remove the two black Phillips PM2.5×5.0 screws ❶ that secure the inverter to the inverter bracket.
17. Remove the inverter ❷ from the bracket.



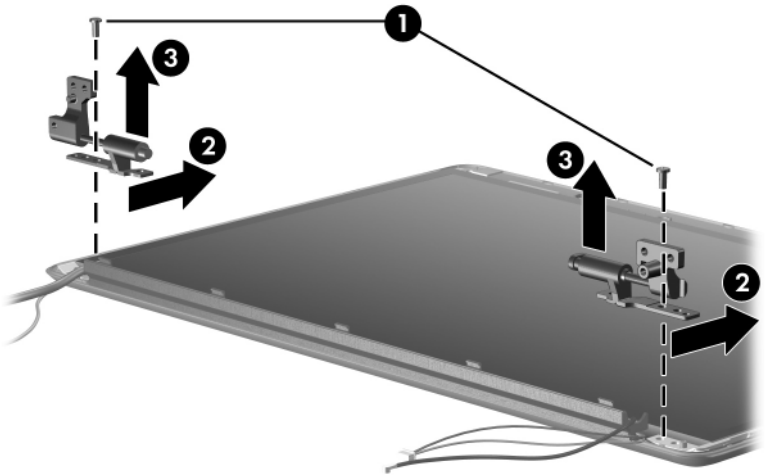
Removing the Display Inverter

Display Assembly Subcomponents

Spare Part Number Information

Display Hinge Kit	417103-001

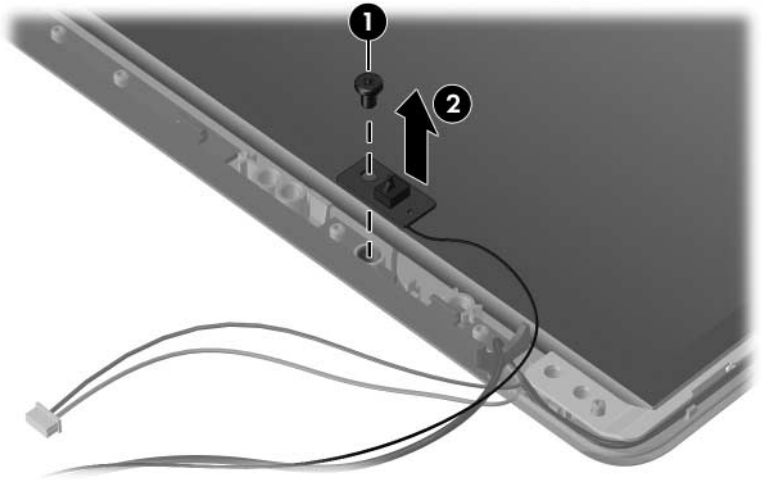
18. Remove the black Phillips PM2.5×5.0 screw ❶ that secures each hinge to the display enclosure.
19. Slide the hinges ❷ back to release them from the display enclosure.
20. Remove the display hinges ❸.



Removing the Display Hinges

Display Assembly Subcomponents Spare Part Number Information	
Display lid switch module	431881-001

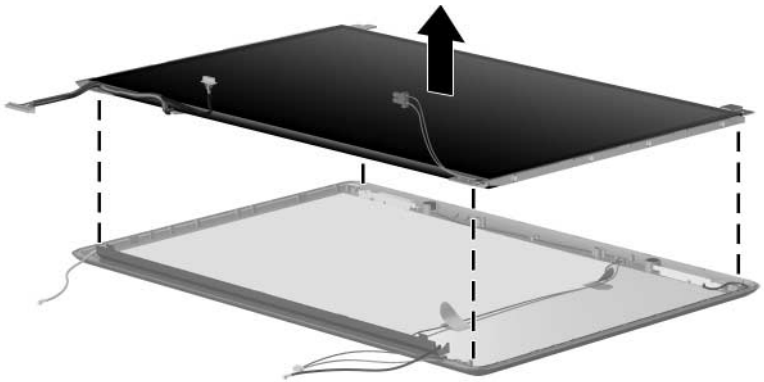
21. Remove the black Phillips PM2.5×5.0 screw ❶ that secures the display lid switch module to the display enclosure.
22. Remove the display lid switch module ❸.



Removing the Display Lid Switch Module

Display Assembly Subcomponents Spare Part Number Information	
14.0-inch, WXGA, SVA display panel with BrightView	430459-001

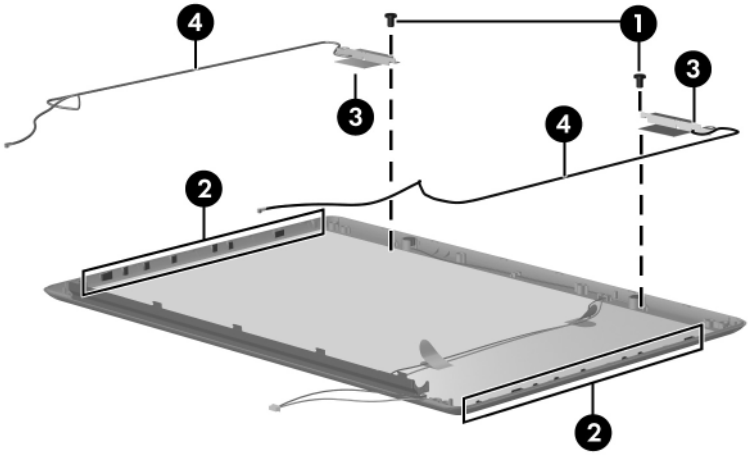
23. Remove the display panel from the display enclosure.



Removing the Display Panel

Display Assembly Subcomponents Spare Part Number Information	
Wireless antenna transceivers and cables	417107-001

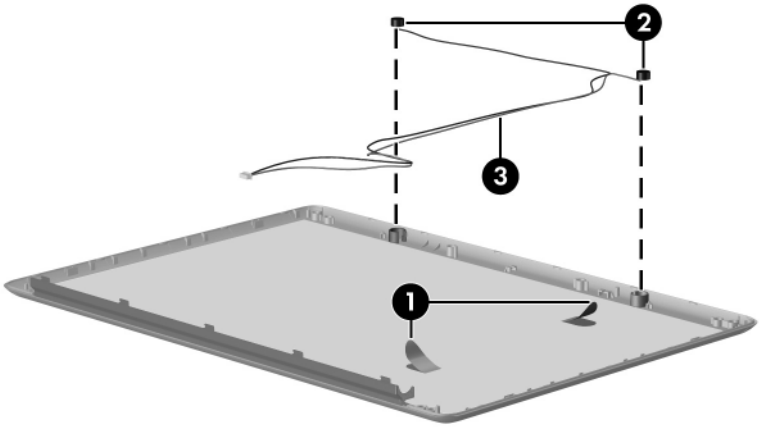
24. If it is necessary to replace the wireless transceivers and cables, remove the two Phillips PM2.5×4.0 screws ❶ that secure the left and right transceivers to the display enclosure.
25. Remove the wireless antenna cables from the clips ❷ built in to the left and right sides of the display enclosure.
26. Detach the wireless antenna transceivers ❸ from the display enclosure.
27. Remove the wireless antenna cables ❹.



Removing the Wireless Antenna Transceivers and Cables

The microphone and cable are included in the Display Cable Kit, spare part number 430904-001.

28. If it is necessary to replace the microphones and cables, release the retention tabs ❶ built in to the display enclosure lining that secure the microphones and cables to the display enclosure.
29. Remove the microphones from the clips ❷ in the display enclosure.
30. Remove the microphone cables ❸ from the display enclosure.



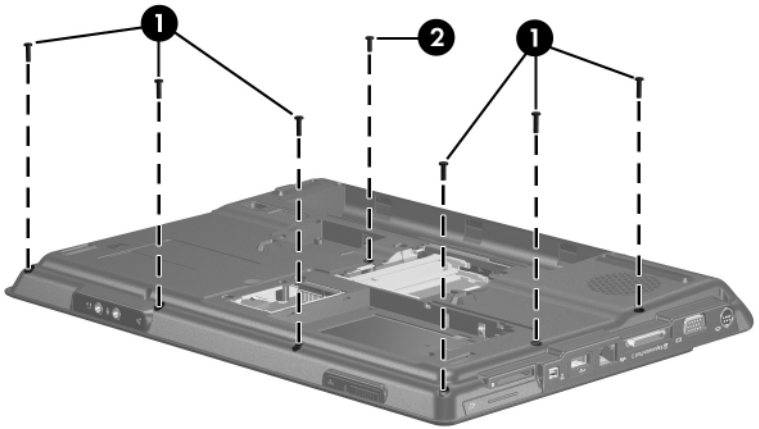
Removing the Microphones

Reverse the above procedure to reassemble and install the display assembly

5.13 Top Cover

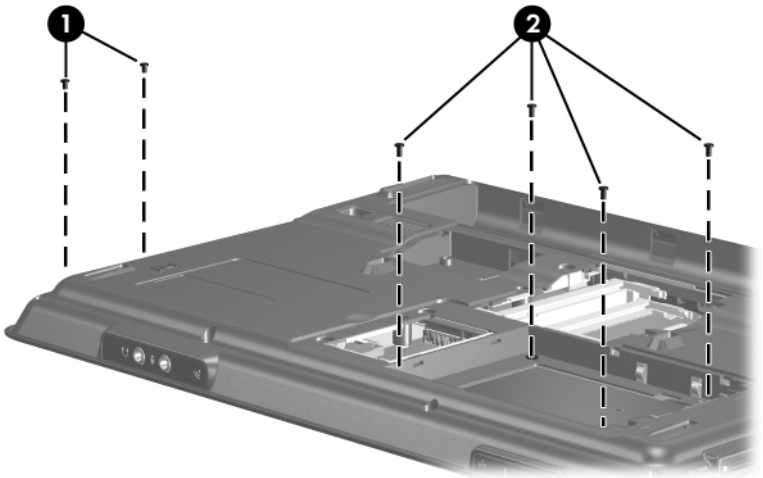
Top Cover Spare Part Number Information	
Top cover (include TouchPad)	417091-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
2. Remove the six Phillips PM2.5×9.0 screws ❶ and the Phillips PM2.5×7.0 screw ❷ that secure the top cover to the computer.



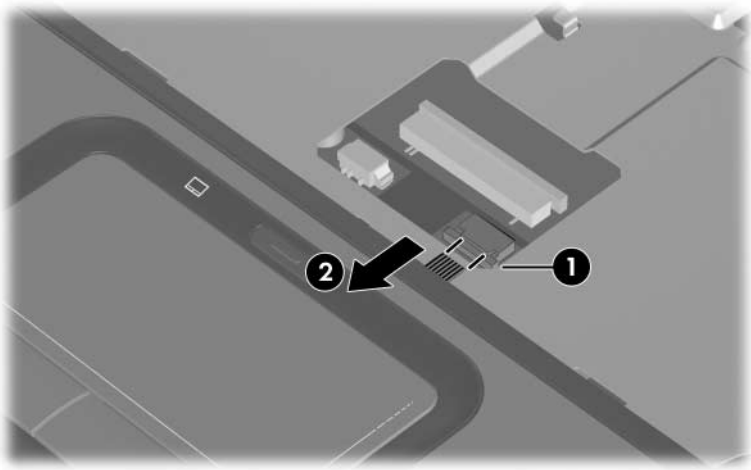
Removing the Top Cover Screws, Part 1

3. Remove the two Phillips PM2.0×3.0 screws ❶ and the four Phillips PM2.0×4.0 screws ❷ that secure the top cover to the computer.



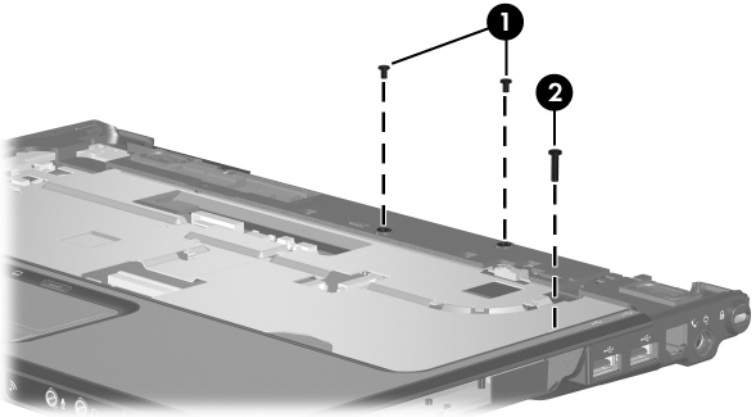
Removing the Top Cover Screws, Part 2

4. Turn the computer right-side up with the front toward you.
5. Release the ZIF connector ❶ to which the TouchPad cable is connected and disconnect the cable ❷ from the system board.



Disconnecting the TouchPad Cable

6. Remove the two Phillips PM2.0×4.0 screws ❶ and the Phillips PM2.5×9.0 screw ❷ that secure the top cover to the computer.



Removing the Top Cover Screws, Part 3

7. Lift up the front edge of the top cover and remove it.

Removing the Top Cover

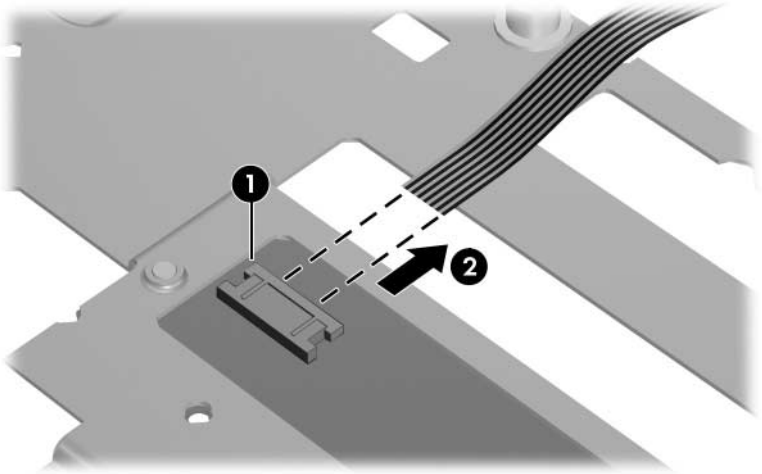
Reverse the above procedure to install the top cover.

5.14 TouchPad

TouchPad Spare Part Number Information	
TouchPad TouchPad bracket	430464-001
TouchPad cable	417082-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13

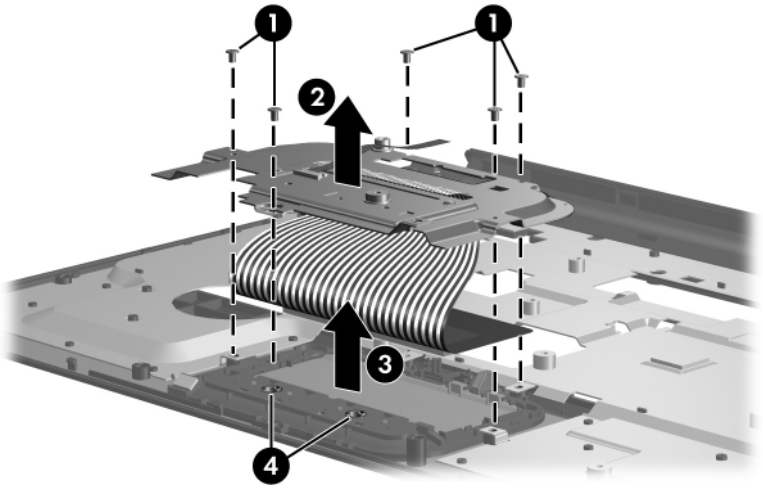
2. Release the ZIF connector ❶ to which the TouchPad cable is connected and disconnect the cable ❷ from the TouchPad board.



Removing the TouchPad Cable

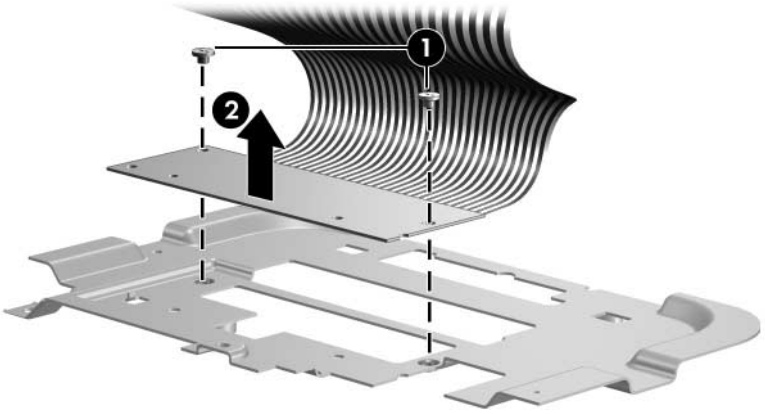
3. Remove the five Phillips PM2.0×3.0 screws ❶ that secure the TouchPad bracket to the top cover.
4. Remove the TouchPad bracket ❷ and TouchPad board ❸ from the top cover.

When removing the TouchPad bracket and TouchPad board, make note of the location of the TouchPad button actuators ❹.



Removing the TouchPad

5. Remove the two Phillips PM2.0×2.0 screws ❶ that secure the TouchPad board to the TouchPad bracket.
6. Remove the TouchPad board ❷ from the TouchPad bracket.



Removing the TouchPad Board

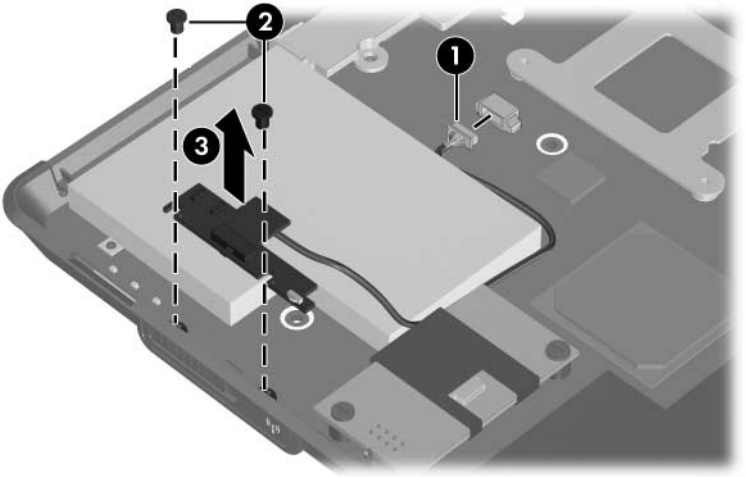
Reverse the above procedure to install the TouchPad.

5.15 Wireless Switch Board

Wireless Switch Board Spare Part Number Information	
Wireless switch board (includes wireless switch board cable)	417092-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)

2. Disconnect the wireless switch board cable ❶ from the system board.
3. Remove the two Phillips PM2.0×3.0 screws ❷ that secure the wireless switch board to the computer.
4. Remove the wireless switch board ❸.



Removing the Wireless Switch Board

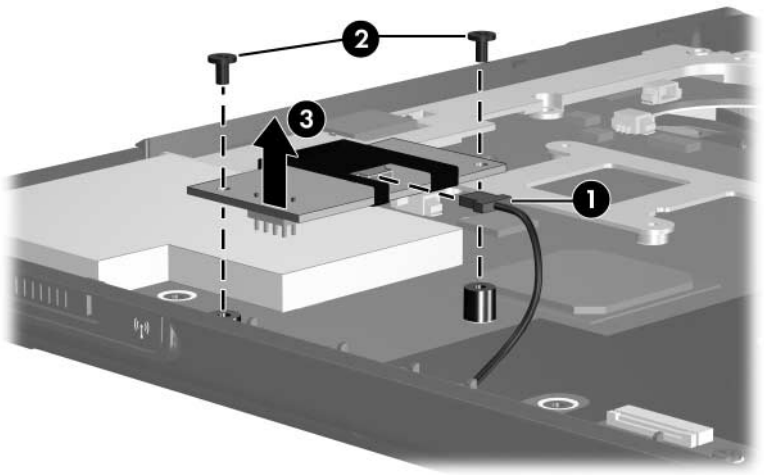
Reverse the above procedure to install the wireless switch board.

5.16 Modem Module

Modem Module Spare Part Number Information	
For use with computer models using Intel processors	417083-001
For use with computer models using AMD processors	431852-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)

2. Disconnect the modem module cable ❶ from the modem module.
3. Remove the two Phillips PM2.0×4.0 screws ❷ that secure the modem module to the system board.
4. Lift up on the front of the modem module ❸ to disconnect it from the system board.
5. Remove the modem module.



Removing the Modem Module

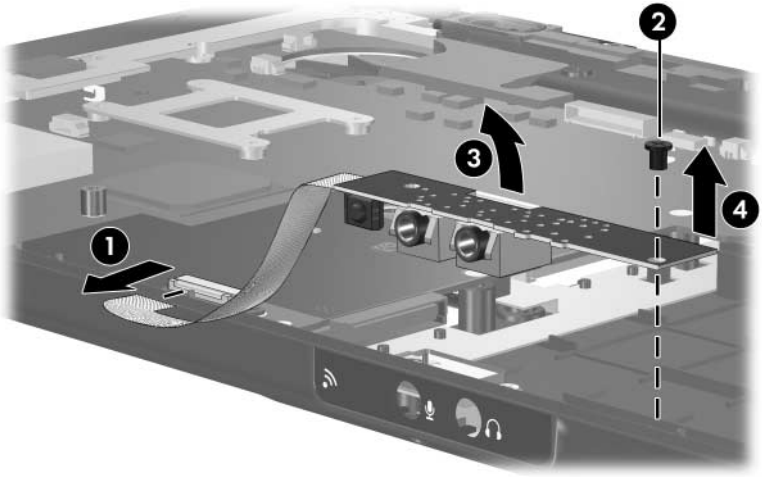
Reverse the above procedure to install the modem module.

5.17 Audio/Infrared Board

Audio/Infrared Board Spare Part Number Information	
Audio/infrared board (includes audio/infrared board cable)	430465-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)

2. Release the ZIF connector to which the audio/infrared board cable is connected and disconnect the cable ❶ from the system board.
3. Remove the silver Phillips PM2.5×5.0 screw ❷ that secures the audio/infrared board to the computer.
4. Lift the rear edge of the audio/infrared board ❸ and swing it forward until the audio connectors disengage from the base enclosure.
5. Remove the audio/infrared board ❹.



Removing the Audio/Infrared Board

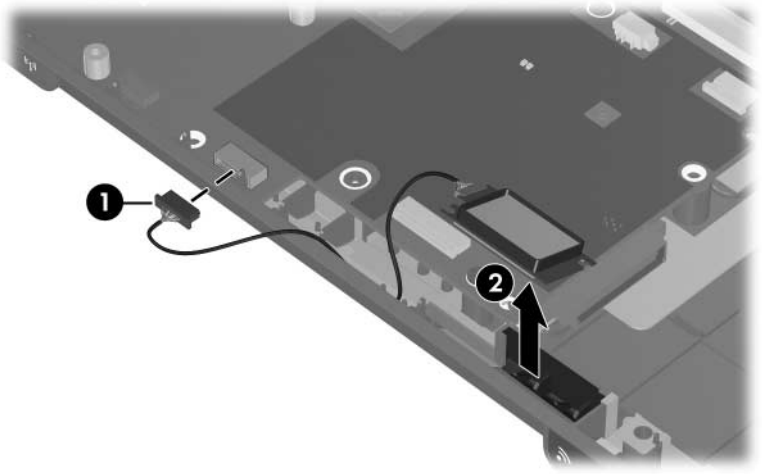
Reverse the above procedure to install the audio/infrared board.

5.18 Bluetooth Module

Bluetooth Module Spare Part Number Information	
Bluetooth module (includes Bluetooth module cable)	397923-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)
   - ❏ Audio/infrared board (Section 5.17)

2. Disconnect the Bluetooth module cable ❶ from the system board.
3. Remove the Bluetooth module ❷.



Removing the Bluetooth Module

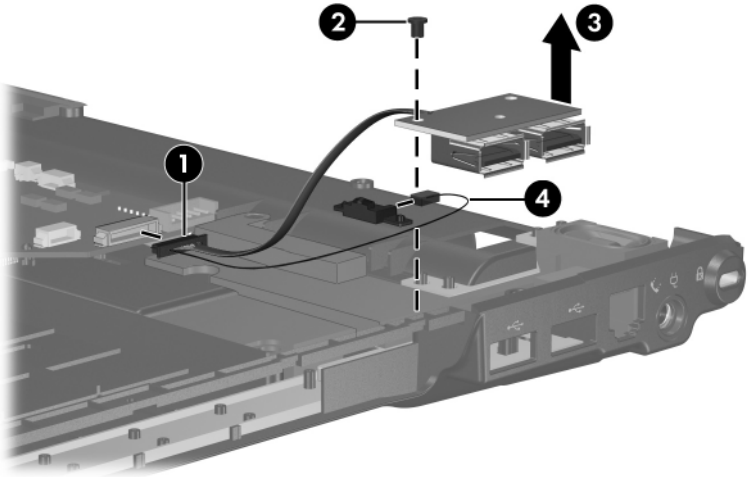
Reverse the above procedure to install the Bluetooth module.

5.19 USB Board

USB Board Spare Part Number Information	
USB board (includes USB board cable)	417085-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)

2. Disconnect the USB board cable ❶ from the system board.
3. Remove the silver Phillips PM2.5×5.0 screw ❷ that secures the USB board to the computer.
4. Lift the USB board ❸ straight up to remove it from the computer.
5. Remove the num lock light ❹ from the clip in the base enclosure



Removing the USB Board

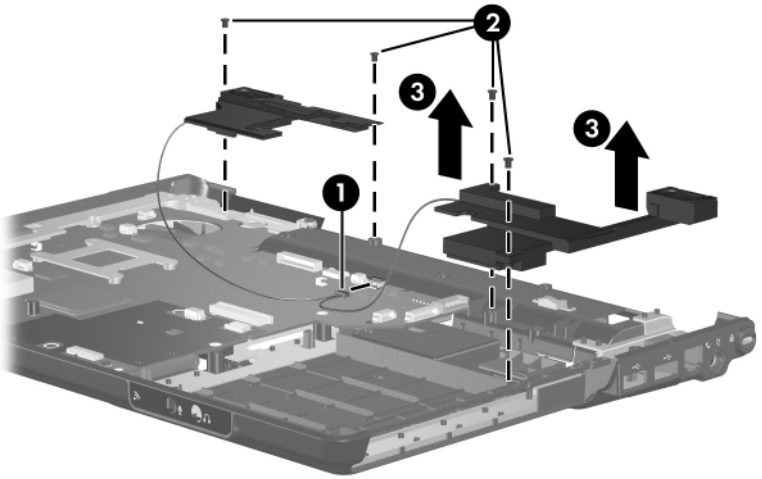
Reverse the above procedure to install the USB board.

5.20 Speaker Assembly

Speaker Assembly Spare Part Number Information	
Speaker assembly	417089-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Mini Card compartment cover (Section 5.8)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)
   - ❏ USB board (Section 5.19)

2. Disconnect the speaker cable ❶ from the system board.
3. Remove the four Phillips PM2.5×4.0 screws ❷ that secure the speakers to the computer.
4. Lift the speakers ❸ straight up to remove them from the computer.



Removing the Speaker Assembly

Reverse the above procedure to install the speaker assembly.

5.21 System Board

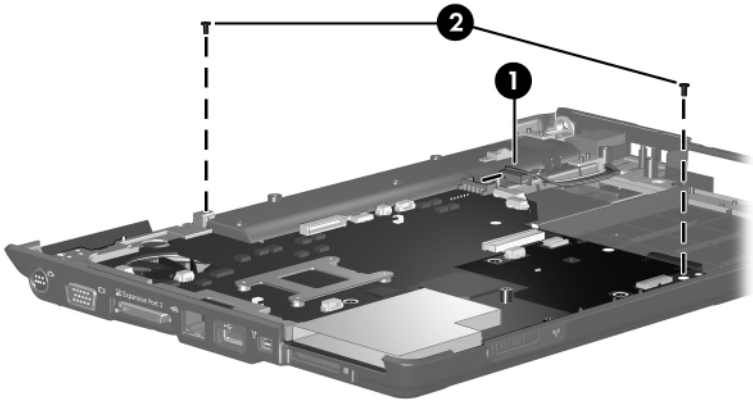
System Board Spare Part Number Information	
For use only with computer models using Intel processors:	
PM/G72M-V for use with full-featured computer models using Intel processors	417035-001
GM for use with full-featured computer models using Intel processors	417036-001
GMZ for use with defeatured computer models using Intel processors	417037-001
For use only with computer models using AMD processors:	
For use with full-featured computer models	431483-001
For use with defeatured computer models	431844-001

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

- RTC battery (Section 5.5)
- Memory modules (Section 5.7)
- Mini Card module (Section 5.8)
- Modem module (Section 5.16)
- ExpressCard assembly (Section 5.22)
- Fan/heat sink assembly (Section 5.23)
- Processor (Section 5.24)

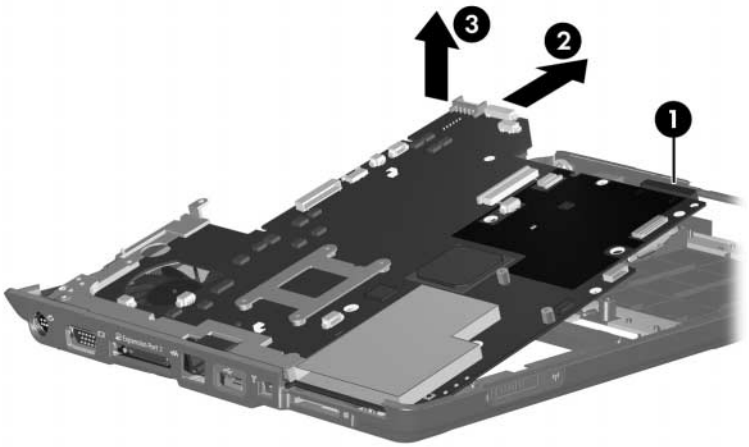
1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)
   - ❏ Wireless switch board (Section 5.15)
   - ❏ Audio/infrared board (Section 5.17)
   - ❏ Bluetooth module (Section 5.18)
   - ❏ USB board (Section 5.19)
2. Turn the top cover right-side up with the front toward you.

3. Disconnect the power connector cable ❶ from the system board.
4. Remove the two black Phillips PM2.5×5.0 screws ❷ that secure the system board to the top cover.



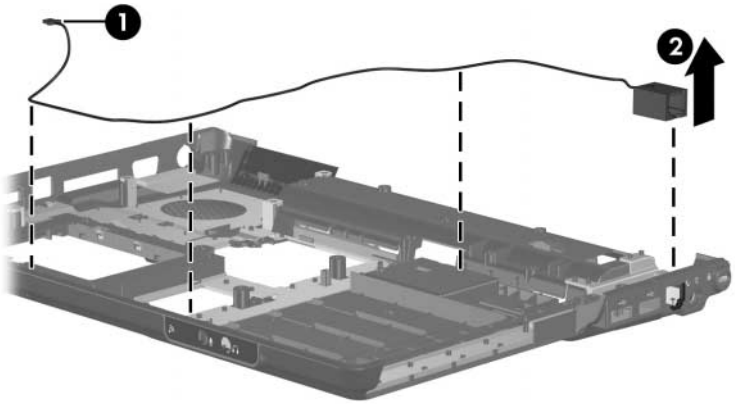
Removing the System Board Screws

5. Use the optical drive connector ❶ to lift the right side of the system board until it rests at an angle.
6. Slide the system board ❷ to the right until the connectors on the left side of the system board disengage from the base enclosure.
7. Remove the system board ❸.



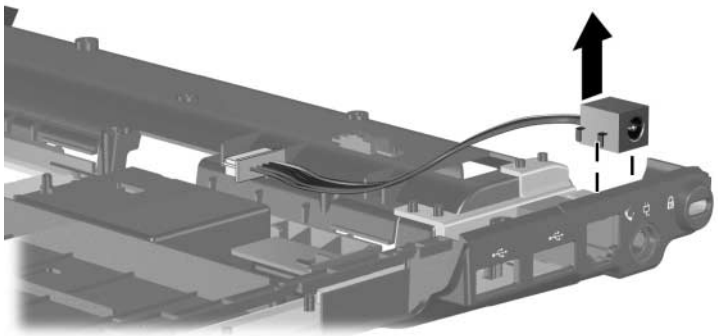
Removing the System Board

8. If it is necessary to replace the modem cable, remove the modem cable ❶ from the routing channel in the base enclosure.
9. Remove the modem connector ❷ from the clips in the base enclosure.



Removing the Modem Cable

10. If it is necessary to replace the power connector cable, remove the power connector from the clips in the base enclosure.



Removing the Power Connector Cable

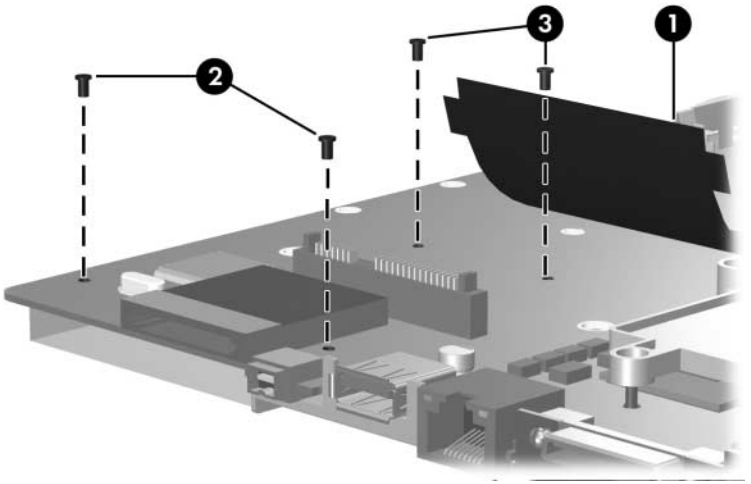
Reverse the above procedure to install the system board, modem cable, and power connector cable.

5.22 ExpressCard Assembly

ExpressCard Assembly Spare Part Number Information	
ExpressCard assembly	417112-001

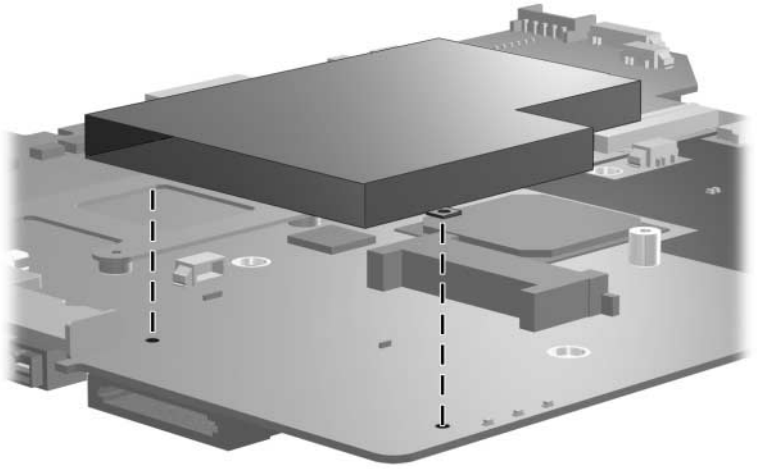
1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)
   - ❏ Wireless switch board (Section 5.15)
   - ❏ Audio/infrared board (Section 5.17)
   - ❏ Bluetooth module (Section 5.18)
   - ❏ USB board (Section 5.19)
   - ❏ System board (Section 5.21)
2. Turn the system board upside down with the front toward you.

3. Lift the insulation material ❶ from the system board to expose the ExpressCard assembly rear screws.
4. Remove the two Phillips PM2.0×4.0 screws ❷ and the two Phillips PM2.0×8.0 screws ❸ that secure the ExpressCard assembly to the system board.



Removing the Fan/Heat Sink Assembly

5. Turn the system board right-side up with the front toward you.
6. Remove the ExpressCard assembly from the system board.



Removing the ExpressCard Assembly

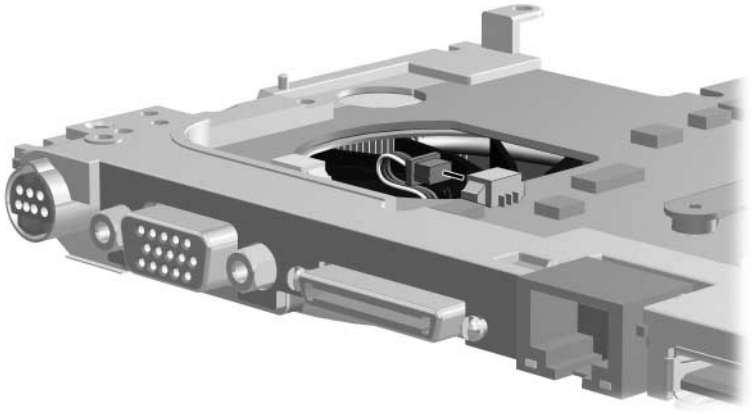
Reverse the above procedure to install the ExpressCard assembly.

5.23 Fan/Heat Sink Assembly

Fan/Heat Sink Assembly Spare Part Number Information	
For use with computer models using Intel processors:	
■ For use on UMA system boards	430463-001
■ For use on discrete system boards	417081-001
For use with computer models using AMD processors	431851-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)
   - ❏ System board (Section 5.21)

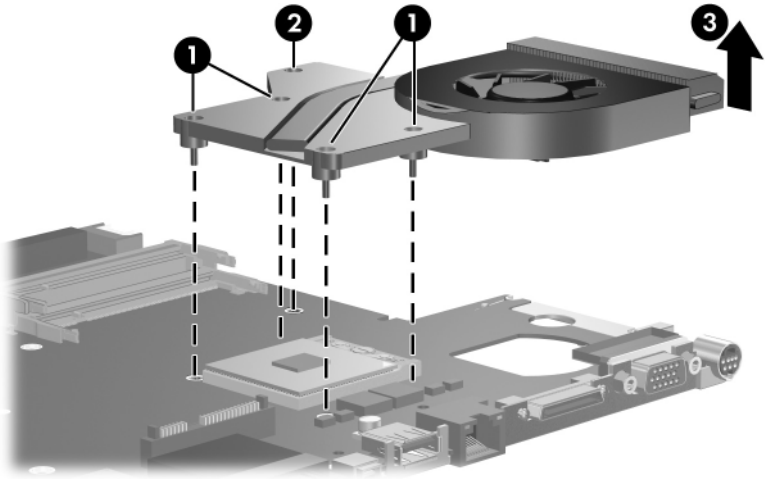
2. Turn the computer upside down with the front toward you.
3. Disconnect the fan cable from the system board.



Disconnecting the Fan Cable

Steps 4 and 5 apply only to computer models using Intel processors.

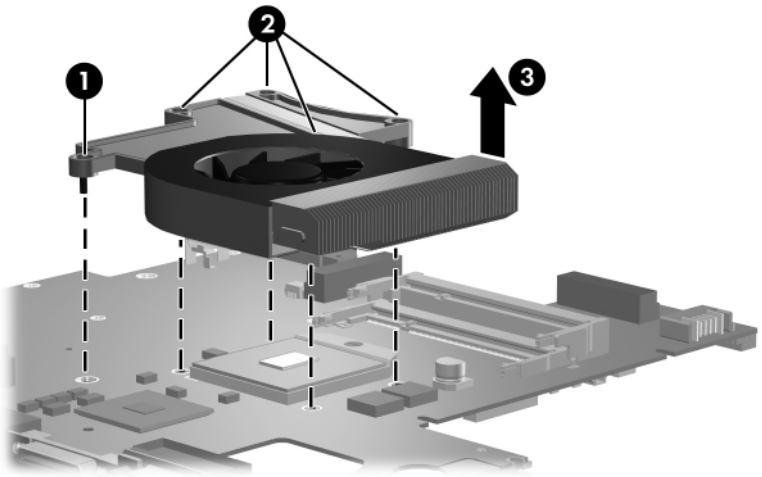
4. Loosen the four Phillips PM2.0×13.0 screws ❶ and the Phillips PM2.0×9.0 screw ❷ that secure the fan/heat sink assembly to the system board.
5. Remove the fan/heat sink assembly ❸ from the system board.



Removing Fan/Heat Sink Assembly

Steps 6 and 7 apply only to computer models using AMD processors.

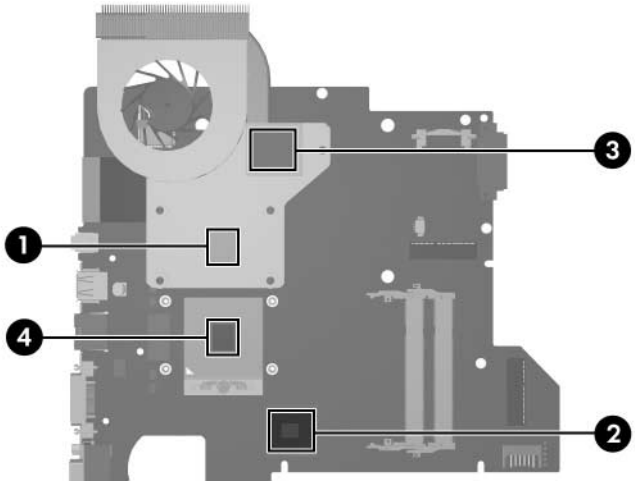
6. Loosen the Phillips PM2.0×9.0 screw ❶ and the four Phillips PM2.0×13.0 screws ❷ that secure the fan/heat sink assembly to the system board.
7. Remove the fan/heat sink assembly ❸ from the system board.



Removing Fan/Heat Sink Assembly

The following note applies only to computer models using Intel processors:

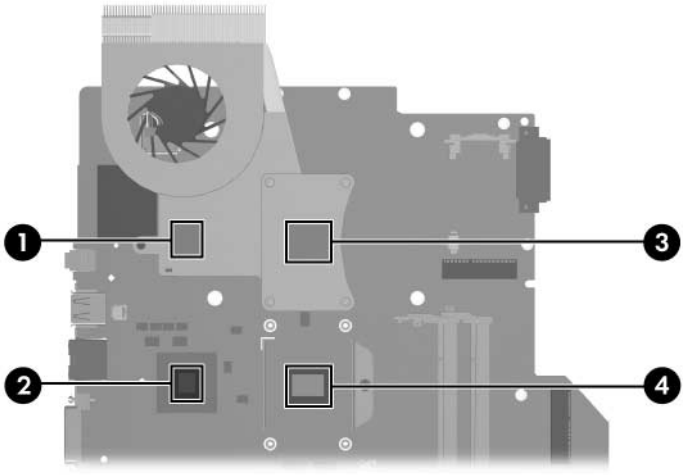
The thermal pads should be thoroughly cleaned from the surfaces of the fan/heat sink assembly ❶ and ❸, video memory chip ❷, and processor ❹ each time the fan/heat sink assembly is removed. Thermal pads should be installed on all surfaces before the fan/heat sink assembly is reinstalled. Thermal pads are included with all fan/heat sink assembly, system board, and processor spare part kits.



Replacing the Thermal Pads

The following note applies only to computer models using AMD processors:

The thermal pads should be thoroughly cleaned from the surfaces of the fan/heat sink assembly ❶ and ❸, video memory chip ❷, and processor ❹ each time the fan/heat sink assembly is removed. Thermal pads should be installed on all surfaces before the fan/heat sink assembly is reinstalled. Thermal pads are included with all fan/heat sink assembly, system board, and processor spare part kits.



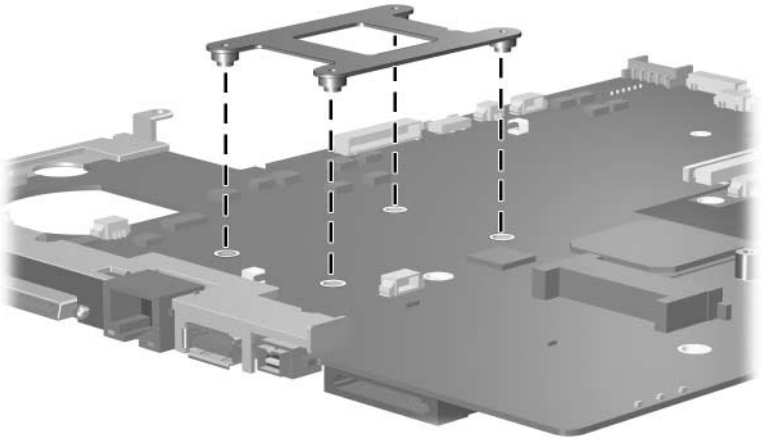
Replacing the Thermal Pads

Reverse the above procedure to install the fan/heat sink assembly.

The following note applies only to computer models using Intel processors:

The fan/heat sink assembly mounting bracket should be replaced as shown in the following illustration when installing the fan/heat sink assembly.

The fan/heat sink assembly mounting bracket is available using spare part number 417114-001.

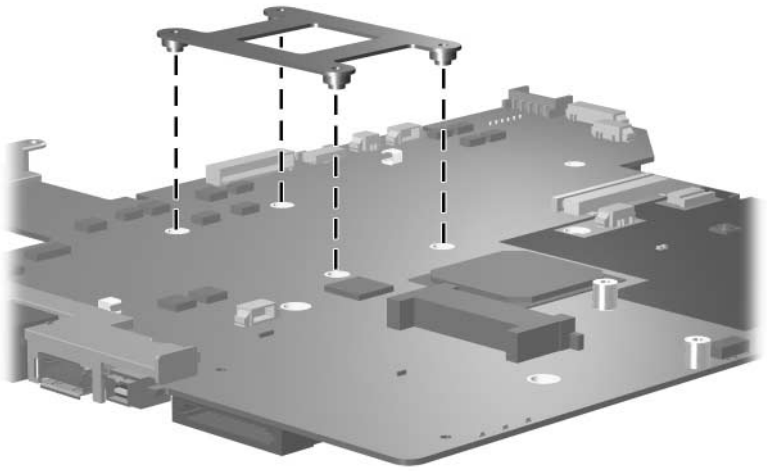


Removing the Fan/Heat Sink Assembly Mounting Bracket

The following note applies only to computer models using AMD processors:

The fan/heat sink assembly mounting bracket should be replaced as shown in the following illustration when installing the fan/heat sink assembly.

The fan/heat sink assembly mounting bracket is available using spare part number 417114-001.



Removing the Fan/Heat Sink Assembly Mounting Bracket

Reverse the above procedure to install the fan/heat sink assembly.

5.24 Processor

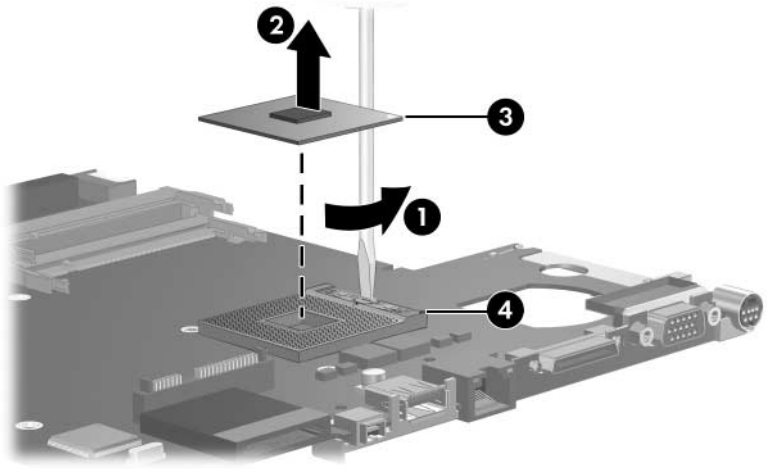
Processor Spare Part Number Information	
Intel Core Duo T2600 (2.16-GHz)	417044-001
Intel Core Duo T2500 (2.00-GHz)	417043-001
Intel Core Duo T2400 (1.83-GHz)	417042-001
Intel Core Duo T2250 (1.73-GHz)	430455-001
Intel Core Duo T2300 (1.66-GHz)	417041-001
Intel Core Duo T2050 (1.60-GHz)	430454-001
Intel Core Solo T1350 (1.80-GHz)	430456-001
AMD Turion ML-52 1.60-GHz	431846-001
AMD Turion ML-50 1.60-GHz	431845-001
Mobile AMD Sempron 3400+ (1.80-GHz)	431849-001
Mobile AMD Sempron 3200+ (1.60-GHz)	431484-001

1. Prepare the computer for disassembly (Section 5.3) and remove the following components:
   - ❏ Hard drive (Section 5.4)
   - ❏ Optical drive (Section 5.9)
   - ❏ Keyboard (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Display assembly (Section 5.12)
   - ❏ Top cover (Section 5.13)
   - ❏ Wireless switch board (Section 5.15)
   - ❏ Audio/infrared board (Section 5.17)
   - ❏ Bluetooth module (Section 5.18)
   - ❏ USB board (Section 5.19)
   - ❏ System board (Section 5.21)
   - ❏ Fan/heat sink assembly (Section 5.23)

Steps 2 and 3 apply only to computer models using Intel processors.

2. Turn the processor locking screw ❶ one-half turn counterclockwise until you feel a click.
3. Lift the processor ❷ straight up and remove it.

The gold triangle ❸ on the processor should be aligned with the triangle icon ❹ embossed on the processor socket when you install the processor.

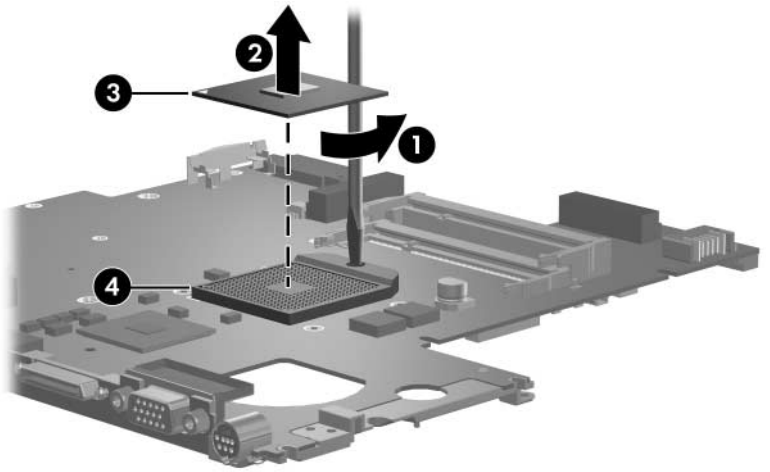


Removing the Processor

Steps 4 and 5 apply only to computer models using AMD processors.

4. Turn the processor locking screw ❶ one-half turn counterclockwise until you feel a click.
5. Lift the processor ❷ straight up and remove it.

The gold triangle ❸ on the processor should be aligned with the triangle icon ❹ embossed on the processor socket when you install the processor.



Removing the Processor

Reverse the above procedure to install a processor.

6

Specifications

This chapter provides physical and performance specifications.

Table 6-1

Computer

Dimensions		
Length	33.4 cm	13.2 in
Width	23.7 cm	9.33 in
Height (varies front to rear)	2.6 to 3.9 cm	1.02 to 1.54 in
Weight (varies by configuration)	2.41 kg	5.31 lb
Stand-alone power requirements		
Operating voltage	18.5 V dc – 19.0 V dc	
Operating current	3.5 A or 4.74 A	
Temperature		
Operating*	10°C to 35°C	50°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%, 38.7°C (101.6°F) maximum wet bulb temperature	
Maximum altitude (unpressurized)		
Operating (14.7 to 10.1 psia)	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	-15 m to 12,192 m	-50 ft to 40,000 ft

Table 6-1

Computer *(Continued)*

Shock	
Operating	125 g, 2 ms, half-sine
Nonoperating	200 g, 2 ms, half-sine
Random Vibration	
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate

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

Table 6-2

14.0-inch, WXGA, SVA Display

Dimensions		
Height	27.94 cm	11.0 in
Width	20.83 cm	8.2 in
Diagonal	35.56 cm	14.0 in
Number of colors	Up to 16.8 million	
Contrast ratio	250:1	
Brightness	180 nits typical	
Pixel resolution		
Pitch	0.279 × 0.279 mm	
Format	1280 × 768	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4 W	
Viewing angle	+/-40° horizontal, +20/-40° vertical typical	

Table 6-3

Hard Drives

	120-GB*	100-GB*
Dimensions		
Height	9.5 mm	9.5 mm
Width	70 mm	70 mm
Weight	99 g	99 g
Interface type	ATA-5	ATA-5
Transfer rate		
Synchronous (maximum)	100 MB/sec	100 MB/sec
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	3 ms	3 ms
Average	13 ms	13 ms
Maximum	24 ms	24 ms
Logical blocks†	234,433,260	195,363,650
Disk rotational speed	5400 rpm	
Operating temperature	5°C to 55°C (41°F to 131°F)	

Certain restrictions and exclusions apply. Consult Customer Care for details.

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Accessible capacity is less.

†Actual drive specifications may differ slightly.

Table 6-3

Hard Drives *(Continued)*

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

✎ Certain restrictions and exclusions apply. Consult Customer Care for details.

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Accessible capacity is less.

†Actual drive specifications may differ slightly.

Table 6-4

Primary 6-cell, Li-Ion Battery

Dimensions		
Height	2.00 cm	0.79 in
Width	9.40 cm	3.70 in
Depth	13.40 cm	5.28 in
Weight	0.34 kg	0.75 lb
Energy		
Voltage	11.1 V	
Amp-hour capacity	4.4 Ah	
Watt-hour capacity	48 Wh	
Temperature		
Operating	5°C to 45°C	41°F to 113°F
Nonoperating	0°C to 60°C	32°F to 140°F

Table 6-5

DVD/CD-RW Combo Drive

Applicable disc	**Read:**	**Write:**
	DVD-R, DVD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), 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, CD-RW Photo CD (single and multisession) CD-Bridge	CD-R and CD-RW
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	

Table 6-5

DVD/CD-RW Combo Drive *(Continued)*

Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	
Access time	CD media	DVD media
Random	< 110 ms	< 130 ms
Full stroke	< 210 ms	< 225 ms
Audio output level	Line-out, 0.7 V rms	
Cache buffer	2 MB	
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 6-6

DVD±RW/R and

CD-RW Double-Layer Combo Drive

Applicable disc	**Read:** DVD-R, DVD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), 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, CD-RW Photo CD (single and multisession) CD-Bridge	**Write:** CD-R and CD-RW DVD-R and DVD-RW
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	

Table 6-6

DVD±RW/R and

CD-RW Double-Layer Combo Drive *(Continued)*

Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	
Access time	CD media	DVD media
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Audio output level	Audio-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
CD-R (16X)	2,400 KB/s (150 KB/s at 1X CD rate)	
CD-RW (8X)	1,200 KB/s (150 KB/s at 1X CD rate)	
CD-ROM (24X)	3,600 KB/s (150 KB/s at 1X CD rate)	
DVD (8X)	10,800 KB/s (1,352 KB/s at 1X DVD rate)	
DVD-R (4X)	5,400 KB/s (1,352 KB/s at 1X DVD rate)	
DVD-RW (2X)	2,700 KB/s (1,352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

Table 6-7

System DMA

Hardware DMA	System Function
DMA0	Not applicable
DMA1	Not applicable
DMA2	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller
DMA5	Available for ExpressCard
DMA6	Not assigned
DMA7	Not assigned

Table 6-8

System Interrupts

Hardware IRQ	System Function
IRQ0	System timer
IRQ1	Quick Launch buttons
IRQ2	Cascaded
IRQ3	USB2 Enhanced Host Controller—24CD
IRQ4	COM1
IRQ5*	Conexant AC—Link Audio SMBus Controller—24C3 Data Fax Modem with SmartCP
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ10*	USB UHCI controller—24C2 GM/GME Graphic Controller Realtek RTL8139 Family PCI fast Ethernet Controller
IRQ11	USB EHCI controller—24CD USB UHCI controller—24C4 USB UHCI controller—24C7 Pro/Wireless 2200BG TI OHCI 1394 host controller TI PCI1410 CardBus controller

*Default configuration

ExpressCard may assert IRQ3, IRQ4, IRQ5, IRQ7, or IRQ20.

Table 6-8

System Interrupts *(Continued)*

Hardware IRQ	System Function
IRQ12	Synaptics PS/2 port pointing device
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel
IRQ17	Conexant AC -Link Audio
IRQ17	Soft V90 Data Fax Modem with SmartCP
IRQ17	ATi Mobility Radeon Xpress 200 Series
IRQ19	Standard Enhanced PCI to USB Host Controller
IRQ19	Standard OpenHCD USB Host Controller
IRQ19	Standard OpenHCD USB Host Controller
IRQ20	TI 6411 PCIxx21/x515 Cardbus Controller
IRQ20	TI OHCI Compliant IEEE 1394 Host Controller
IRQ21	TI Integrated PCIxx21 FlashMedia Controller
IRQ21	Broadcom 802.11b/g WLAN
IRQ21	Microsoft ACPI-compliant system
IRQ22	Realtek RTL8100CL Family PCI fast Ethernet Controller
IRQ23	SDA Standard Compliant SD Host Controller

*Default configuration

✎ ExpressCard may assert IRQ3, IRQ4, IRQ5, IRQ7, or IRQ20.

Table 6-9

System I/O Addresses

I/O Address (hex)	**System Function** (shipping configuration)
0x00000000-0x00000CF7	PCI bus
0x00000000-0x00000CF7	Direct memory access controller
0x00000020-0x00000021	Programmable interrupt controller
0x0000002E-0x0000002F	System board resources
0x00000040-0x00000043	System timer
0x00000060-0x00000060	Quick Launch Buttons
0x00000061-0x00000061	System speaker
0x00000062-0x00000062	Microsoft ACPI-Compliant Embedded Controller
0x00000064-0x00000064	Quick Launch Buttons
0x00000066-0x00000066	Microsoft ACPI-Compliant Embedded Controller
0x00000070-0x00000071	System CMOS/real time clock
0x00000072-0x00000073	System board resources
0x00000080-0x0000008F	Direct memory access controller
0x00000092-0x00000092	System board resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000B0-0x000000B1	System board resources
0x000000C0-0x000000DF	Direct memory access controller
0x000000F0-0x000000FE	Numeric data processor
0x00000170-0x00000177	Secondary IDE Channel

Table 6-9

System I/O Addresses *(Continued)*

I/O Address (hex)	**System Function** (shipping configuration)
0x000001F0-0x000001F7	Primary IDE Channel
0x00000220-0x0000022F	System board resources
0x00000274-0x00000277	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x00000280-0x00000293	System board resources
0x00000376-0x00000376	Secondary IDE Channel
0x000003B0-0x000003BB	PCI standard PCI-to-PCI bridge
0x000003B0-0x000003BB	ATI MOBILITY RADEON Xpress 200 Series
0x000003C0-0x000003DF	PCI standard PCI-to-PCI bridge
0x000003C0-0x000003DF	ATI MOBILITY RADEON Xpress 200 Series
0x000003F6-0x000003F6	Primary IDE Channel
0x0000040B-0x0000040B	System board resources
0x000004D0-0x000004D1	System board resources
0x000004D6-0x000004D6	System board resources
0x00000530-0x00000537	System board resources
0x00000870-0x0000087F	System board resources
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000C00-0x00000C01	System board resources
0x00000C14-0x00000C14	System board resources
0x00000C50-0x00000C52	System board resources
0x00000C6C-0x00000C6C	System board resources

Table 6-9

System I/O Addresses *(Continued)*

I/O Address (hex)	**System Function** (shipping configuration)
0x00000C6F-0x00000C6F	System board resources
0x00000CD4-0x00000CD5	System board resources
0x00000CD6-0x00000CD7	System board resources
0x00000CD8-0x00000CDF	System board resources
0x00000D00-0x0000FFFF	PCI bus
0x00000F40-0x00000F47	System board resources
0x00001080-0x00001080	System board resources
0x00008000-0x0000805F	System board resources
0x00008100-0x000081FF	System board resources
0x00008400-0x0000840F	ATI SMBus
0x00008410-0x0000841F	Standard Dual Channel PCI IDE Controller
0x00009000-0x00009FFF	PCI standard PCI-to-PCI bridge
0x00009000-0x00009FFF	ATI MOBILITY RADEON Xpress 200 Series
0x0000A000-0x0000A0FF	Realtek RTL8139/810x Family Fast Ethernet NIC
0x0000F000-0x0000FFFF	PCI standard PCI-to-PCI bridge
0x0000FD00-0x0000FDFF	Texas Instruments PCIxx21/x515 Cardbus Controller
0x0000FE00-0x0000FEFF	Texas Instruments PCIxx21/x515 Cardbus Controller

Table 6-10

System Memory Map

Memory Map Address (hex)	**System Function** (shipping configuration)
0xD4100000-0xD41FFFFF	PCI standard PCI-to-PCI bridge
0xD4100000-0xD41FFFFF	ATI MOBILITY RADEON Xpress 200 Series
0xD8000000-0xDBFFFFFF	PCI standard PCI-to-PCI bridge
0xD8000000-0xDBFFFFFF	ATI MOBILITY RADEON Xpress 200 Series
0xFAC00000-0xFEBFFFFF	PCI standard PCI-to-PCI bridge
0xF6C00000-0xFABFFFFF	PCI standard PCI-to-PCI bridge
0xD4000000-0xD4000FFF	Standard OpenHCD USB Host Controller
0xD4001000-0xD4001FFF	Standard OpenHCD USB Host Controller
0xD4002000-0xD4002FFF	Standard Enhanced PCI to USB Host Controller
0xD4003000-0xD40033FF	ATI SMBus
0xFFF80000-0xFFFFFFFF	System board
0xE0000000-0xE03FFFFF	System board
0xE0000000-0xE03FFFFF	System board resources
0x0000-0x0FFF	System board
0xD4208000-0xD42087FF	Texas Instruments OHCI Compliant IEEE 1394 Host Controller
0xD4200000-0xD4203FFF	Texas Instruments OHCI Compliant IEEE 1394 Host Controller
0xD4204000-0xD4205FFF	Broadcom 802.11b/g WLAN
0xFFEFF000-0xFFEFFFFF	Texas Instruments PCIxx21/x515 Cardbus Controller
0xFFEFE000-0xFFEFEFFF	Texas Instruments PCIxx21/x515 Cardbus Controller

Table 6-10

System Memory Map *(Continued)*

Memory Map Address (hex)	**System Function** (shipping configuration)
0xF2C00000-0xF6BFFFFF	Texas Instruments PCIxx21/x515 Cardbus Controller
0xD4206000-0xD4207FFF	Texas Instruments PCIxx21 Integrated FlashMedia Controller
0xD4209000-0xD42090FF	SDA Standard Compliant SD Host Controller
0xD4208C00-0xD4208CFF	SDA Standard Compliant SD Host Controller
0xD4208800-0xD42088FF	SDA Standard Compliant SD Host Controller
0xD4209400-0xD42094FF	Realtek RTL8139/810x Family Fast Ethernet NIC
0xD4003400-0xD40034FF	Conexant AC-Link Audio
0xD4003800-0xD40038FF	SoftV90 Data Fax Modem with SmartCP
0xFEC00000-0xFEC00FFF	System board resources
0xFEE00000-0xFEE00FFF	System board resources
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	PCI standard PCI-to-PCI bridge
0xA0000-0xBFFFF	ATI MOBILITY RADEON Xpress 200 Series
0xD6000-0xD7FFF	PCI bus
0xDC000-0xDDFFF	PCI bus
0xDD000-0xDDFFF	Texas Instruments PCIxx21/x515 Cardbus Controller
0xE0000-0xFFFFF	System board
0x40000000-0xFFFFFFFF	PCI bus

A

Screw Listing

This appendix provides specification and reference information for the screws used in the computer. All screws listed in this appendix are available in the Screw Kit, spare part number 417109-001, and the Display Screw Kit, spare part number 417105-001.

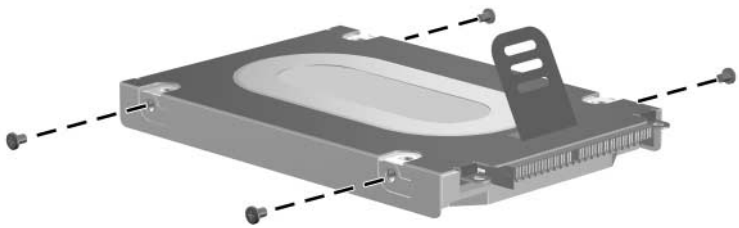
Table A-1

Phillips PM3.0×3.0 Screw

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

Where used:

4 screws that secure the hard drive frame to the hard drive (documented in Section 5.4)



Phillips PM3.0×3.0 Screw Locations

Table A-2

Black Phillips PM2.0×5.0 Captive Screw

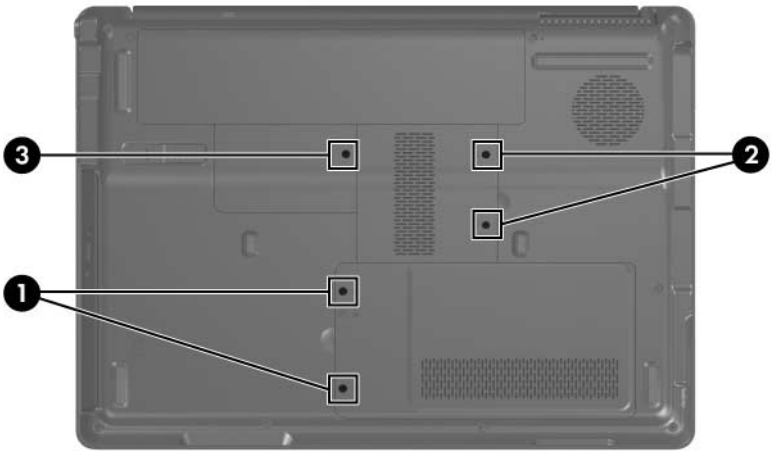
mm	Color	Qty.	Length	Thread	Head Width
	Black	5	5.0 mm	2.0 mm	4.0 mm

Where used:

❶ Two screws that secure the hard drive cover to the computer (screws are captured on the cover by C-clips; documented in Section 5.4)

❷ Two screws that secure the memory module compartment cover to the computer (screws are captured on the cover by C-clips; documented in Section 5.7)

❸ One screw that secures the Mini Card compartment cover to the computer (screw is captured on the cover by a C-clip; documented in Section 5.8)



Black Phillips PM2.0×5.0 Captive Screw Locations

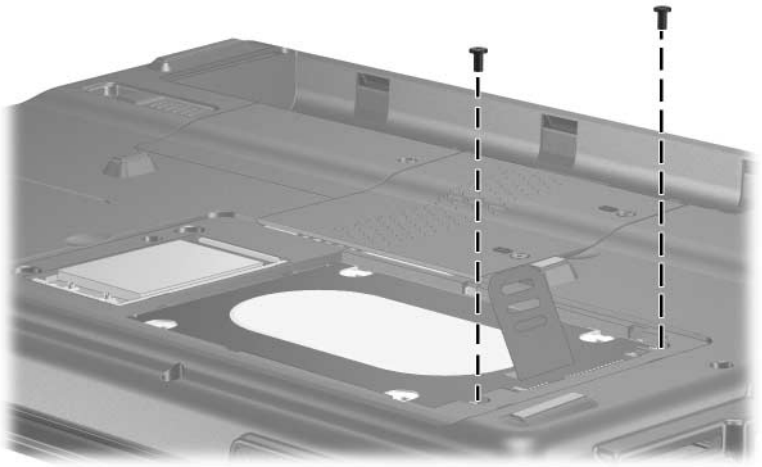
Table A-3

Black Phillips PM2.5×5.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the hard drive to the computer (documented in Section 5.4)



Black Phillips PM2.5×5.0 Screw Locations

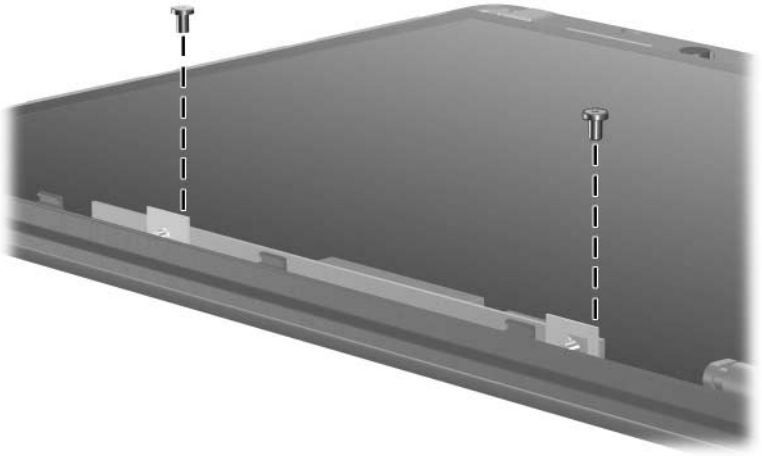
Table A-3

Black Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the display inverter bracket to the display assembly (documented in Section 5.12)



Black Phillips PM2.5×5.0 Screw Locations

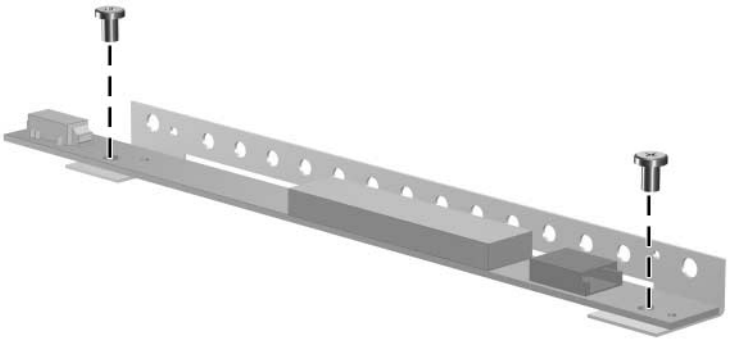
Table A-3

Black Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the display inverter to the display inverter bracket (documented in Section 5.12)



Black Phillips PM2.5×5.0 Screw Locations

Table A-3

Black Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the display hinges to the display assembly (documented in Section 5.12)

Black Phillips PM2.5×5.0 Screw Locations

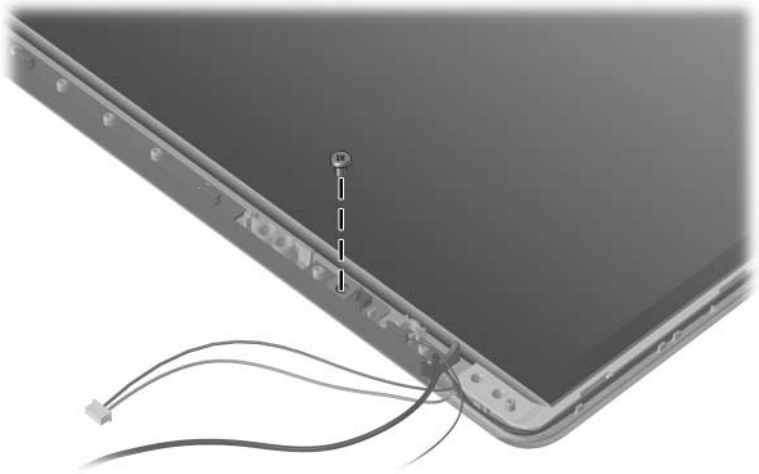
Table A-3

Black Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the display lid switch module to the display enclosure (documented in Section 5.12)



Black Phillips PM2.5×5.0 Screw Location

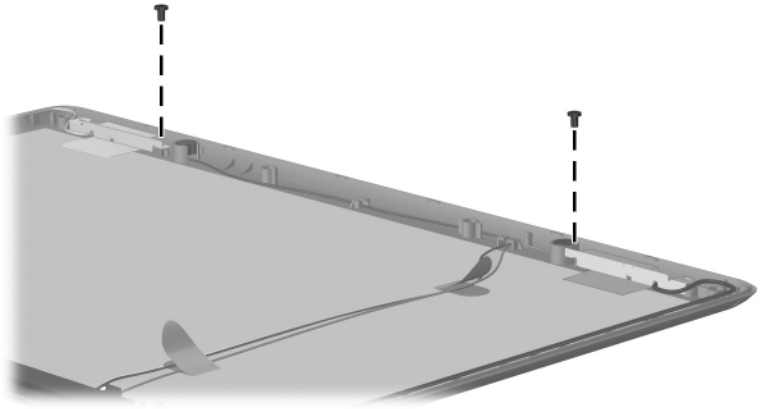
Table A-3

Black Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the wireless antenna transceivers to the display enclosure (documented in Section 5.12)



Black Phillips PM2.5×5.0 Screw Locations

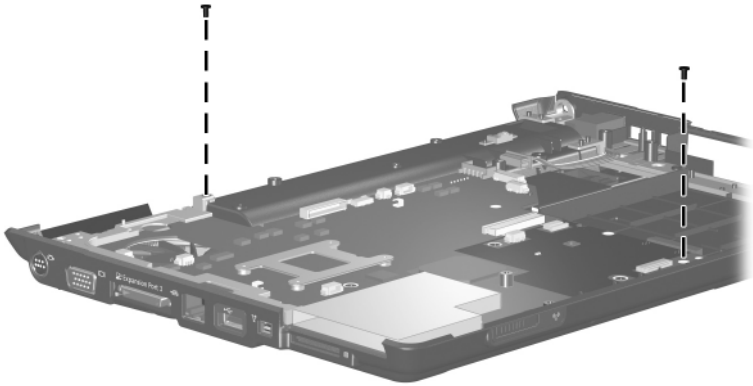
Table A-3

Black Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	13	5.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the system board to the computer (documented in Section 5.21)



Black Phillips PM2.5×5.0 Screw Locations

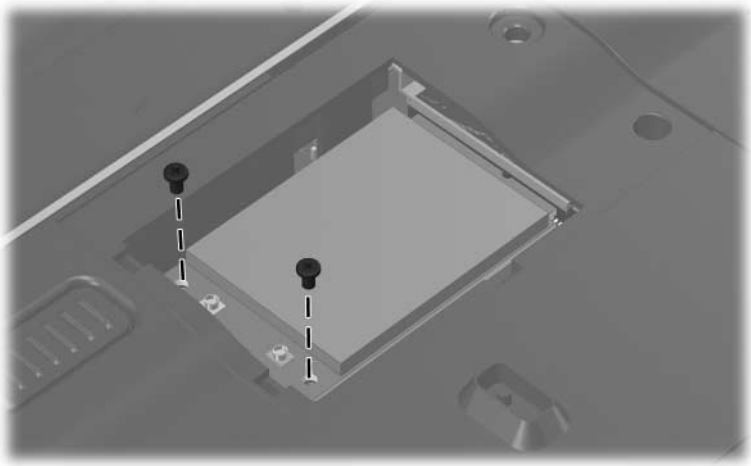
Table A-4

Phillips PM2.0×3.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	3.0 mm	2.0 mm	4.0 mm

Where used:

2 screws that secure the Mini Card module to the computer (documented in Section 5.8)



Phillips PM2.0×3.0 Screw Locations

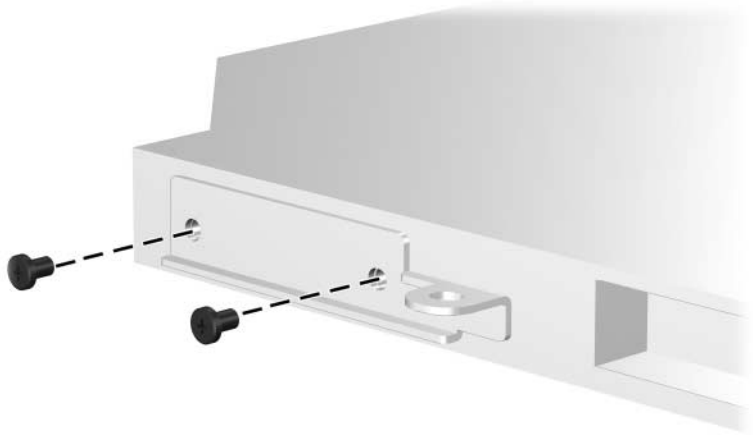
Table A-4

Phillips PM2.0×3.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	3.0 mm	2.0 mm	4.0 mm

Where used:

2 screws that secure the optical drive bracket to the optical drive (documented in Section 5.9)



Phillips PM2.0×3.0 Screw Locations

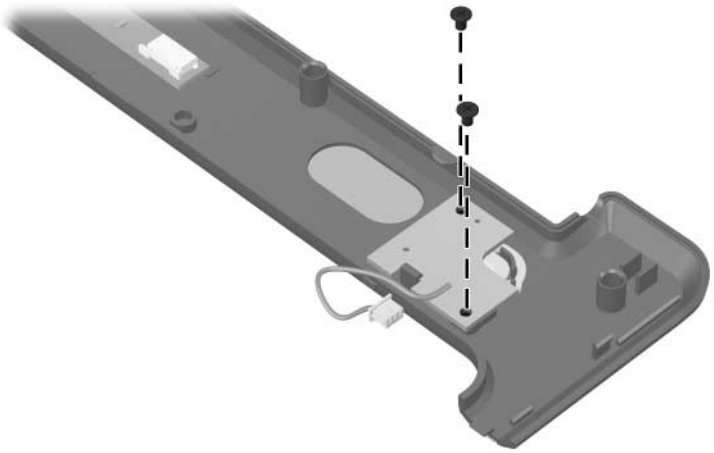
Table A-4

Phillips PM2.0×3.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	3.0 mm	2.0 mm	4.0 mm

Where used:

2 screws that secure the power button board to the switch cover (documented in Section 5.11)



Phillips PM2.0×3.0 Screw Locations

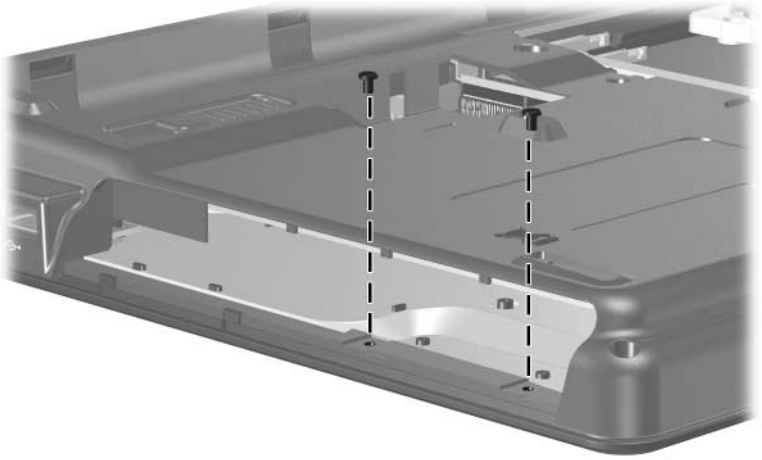
Table A-4

Phillips PM2.0×3.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	3.0 mm	2.0 mm	4.0 mm

Where used:

2 screws that secure the top cover to the computer (documented in Section 5.13)



Phillips PM2.0×3.0 Screw Locations

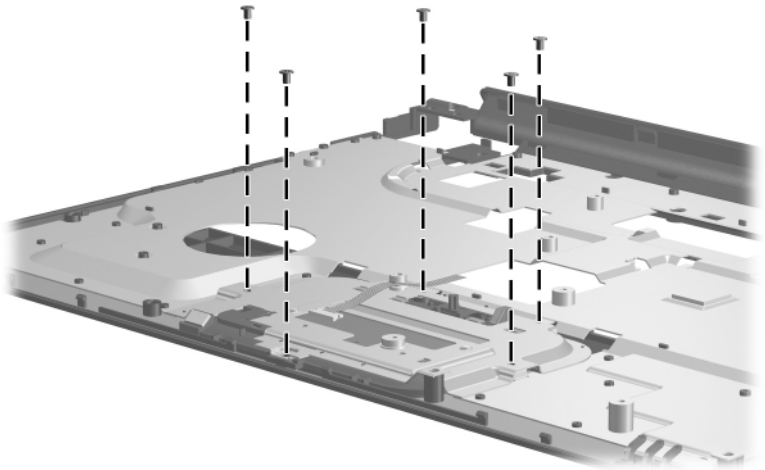
Table A-4

Phillips PM2.0×3.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	3.0 mm	2.0 mm	4.0 mm

Where used:

5 screws that secure the TouchPad to the top cover (documented in Section 5.14)



Phillips PM2.0×3.0 Screw Locations

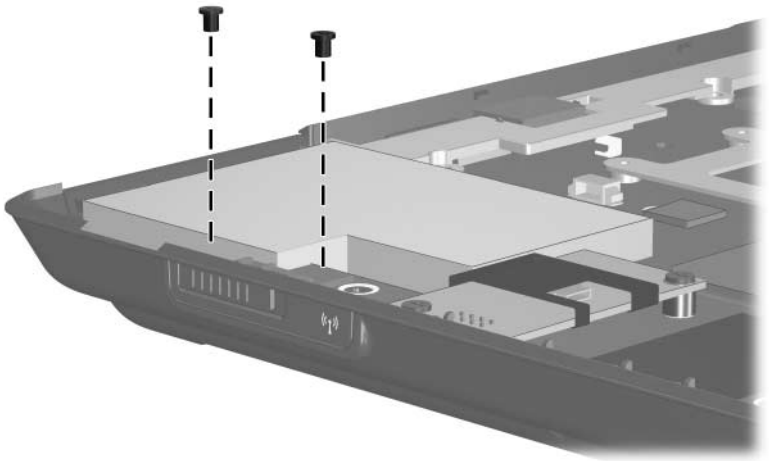
Table A-4

Phillips PM2.0×3.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	3.0 mm	2.0 mm	4.0 mm

Where used:

2 screws that secure the wireless switch board to the computer (documented in Section 5.15)



Phillips PM2.0×3.0 Screw Locations

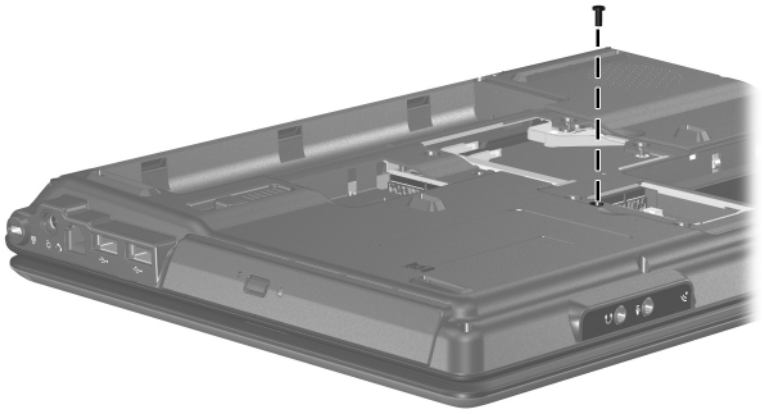
Table A-5

Phillips PM2.5×7.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	18	7.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the optical drive to the computer (documented in Section 5.9



Phillips PM2.5×7.0 Screw Location

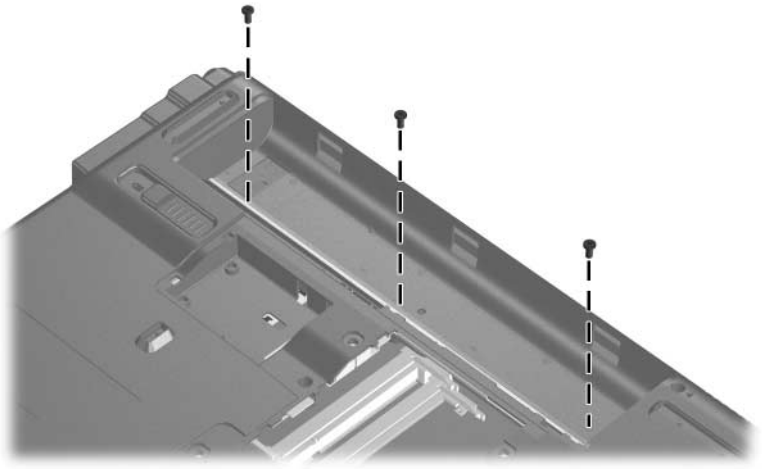
Table A-5

Phillips PM2.5×7.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	18	7.0 mm	2.5 mm	4.0 mm

Where used:

3 screws that secure the keyboard to the computer (documented in Section 5.10)



Phillips PM2.5×7.0 Screw Locations

Table A-5

Phillips PM2.5×7.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	18	7.0 mm	2.5 mm	4.0 mm

Where used:

5 screws that secure the display assembly to the computer (documented in Section 5.12)

Phillips PM2.5×7.0 Screw Locations

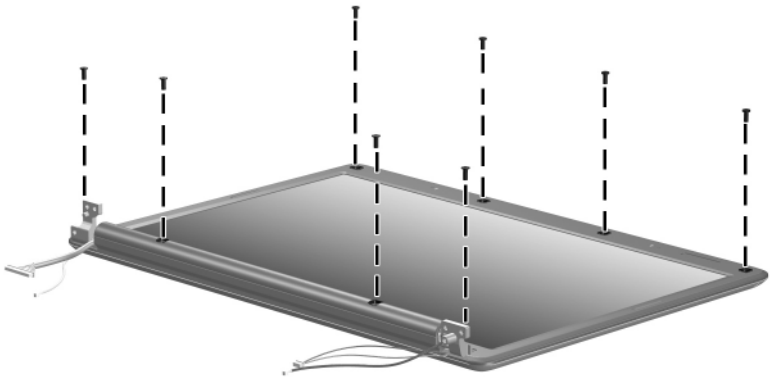
Table A-5

Phillips PM2.5×7.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	18	7.0 mm	2.5 mm	4.0 mm

Where used:

8 screws that secure the display bezel to the display assembly (documented in Section 5.12)



Phillips PM2.5×7.0 Screw Locations

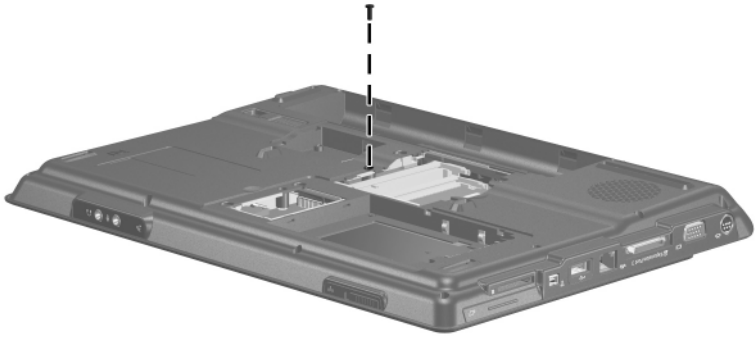
Table A-5

Phillips PM2.5×7.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	18	7.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the top cover to the computer (documented in Section 5.13)



Phillips PM2.5×7.0 Screw Location

Table A-6

Phillips PM2.5×9.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	9.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the switch cover to the computer (documented in Section 5.11)

Phillips PM2.5×9.0 Screw Locations

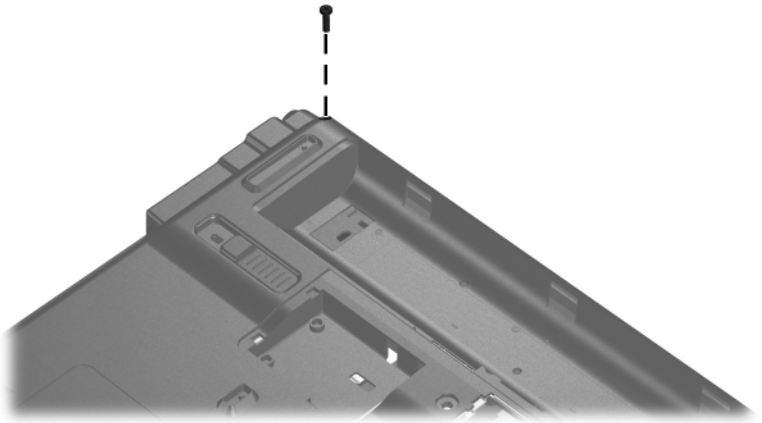
Table A-6

Phillips PM2.5×9.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	9.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the display assembly to the computer (documented in Section 5.12)



Phillips PM2.5×9.0 Screw Location

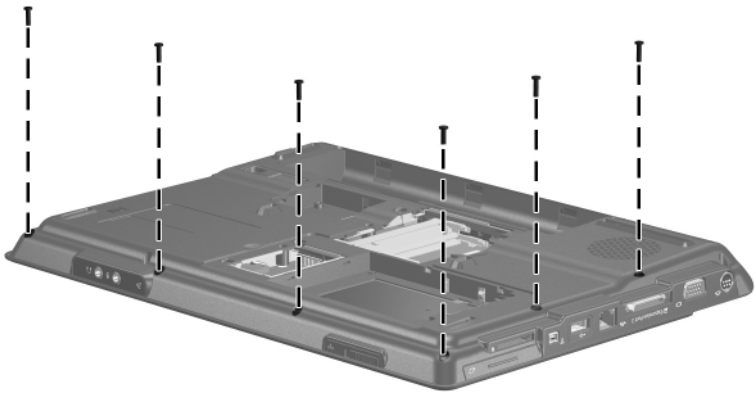
Table A-6

Phillips PM2.5×9.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	9.0 mm	2.5 mm	4.0 mm

Where used:

6 screws that secure the top cover to the computer (documented in Section 5.13)



Phillips PM2.5×9.0 Screw Locations

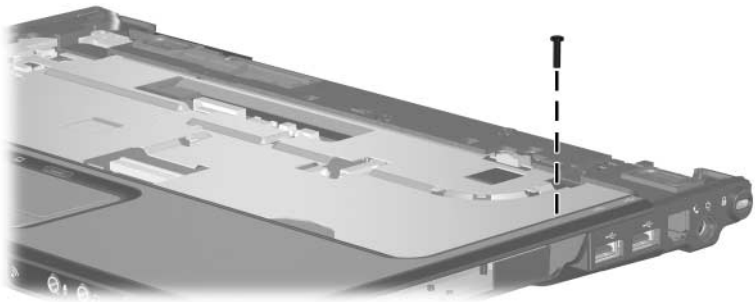
Table A-6

Phillips PM2.5×9.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	9.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the top cover to the computer (documented in Section 5.13)



Phillips PM2.5×9.0 Screw Location

Table A-7

Silver Phillips PM2.5×5.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Silver	3	5.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the switch cover to the computer (documented in Section 5.11)

Silver Phillips PM2.5×5.0 Screw Location

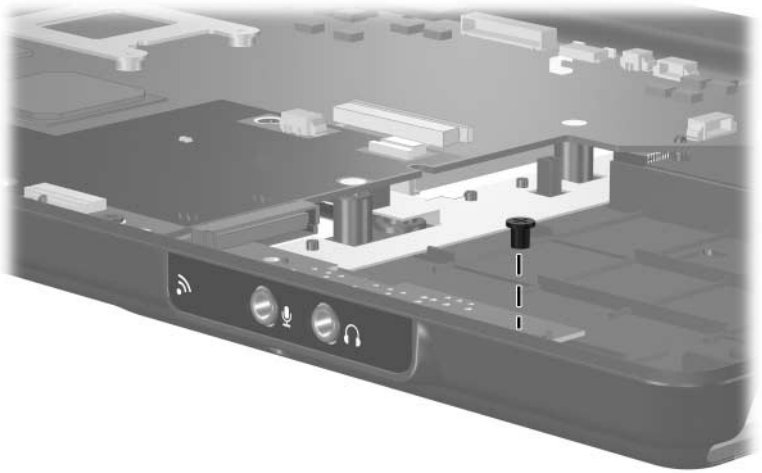
Table A-7

Silver Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Silver	3	5.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the audio/infrared board to the computer (documented in Section 5.17)



Silver Phillips PM2.5×5.0 Screw Location

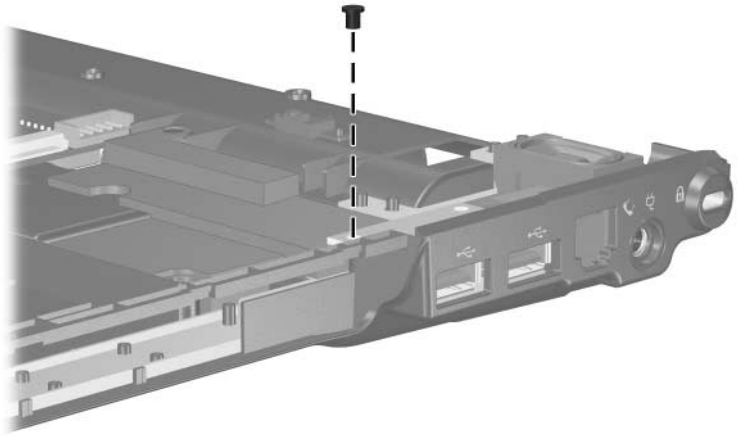
Table A-7

Silver Phillips PM2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Silver	3	5.0 mm	2.5 mm	4.0 mm

Where used:

One screw that secures the USB board to the computer (documented in Section 5.19)



Silver Phillips PM2.5×5.0 Screw Location

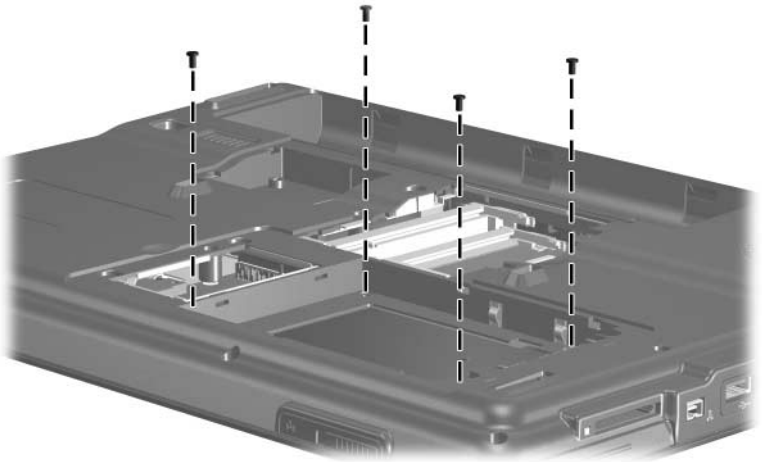
Table A-8

Phillips PM2.0×4.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	4.0 mm	2.5 mm	4.0 mm

Where used:

4 screws that secure the top cover to the computer (documented in Section 5.13)



Phillips PM2.0×4.0 Screw Locations

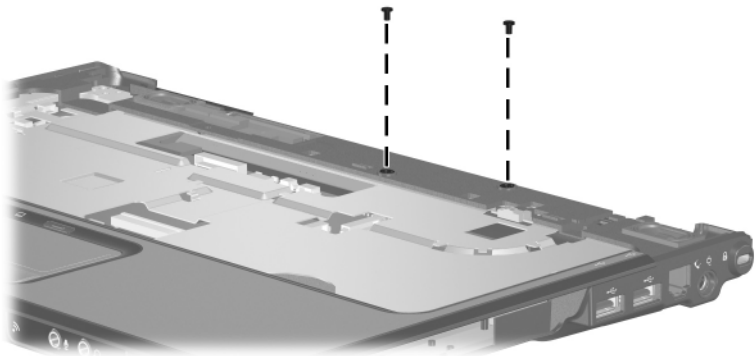
Table A-8

Phillips PM2.0×4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	4.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the top cover to the computer (documented in Section 5.13)



Phillips PM2.0×4.0 Screw Locations

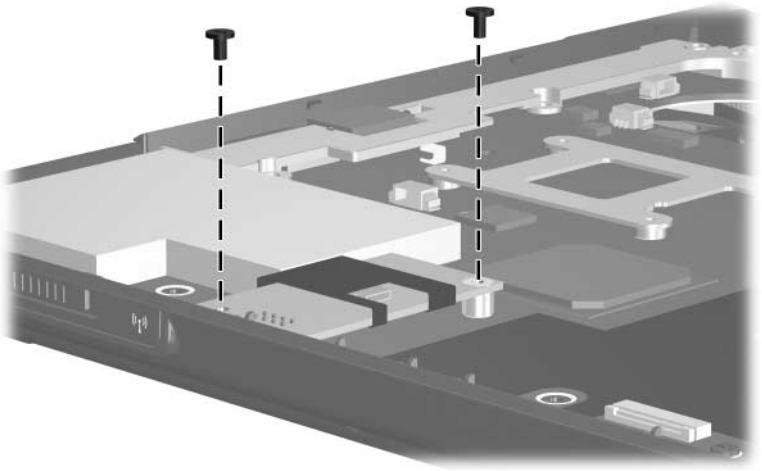
Table A-8

Phillips PM2.0×4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	4.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the modem module to the computer (documented in Section 5.16)



Phillips PM2.0×4.0 Screw Locations

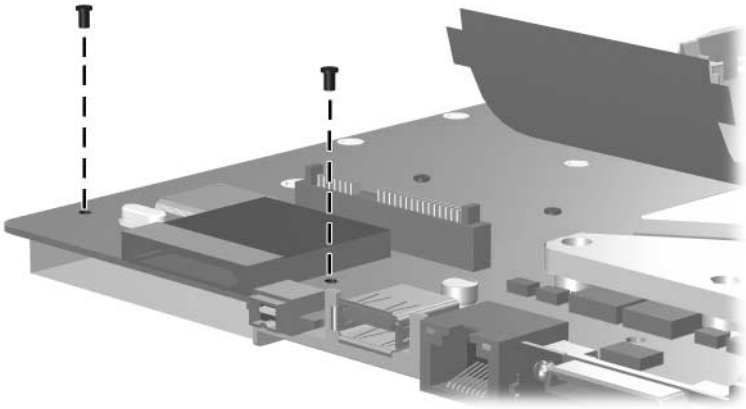
Table A-8

Phillips PM2.0×4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	10	4.0 mm	2.5 mm	4.0 mm

Where used:

2 screws that secure the ExpressCard assembly to the system board (documented in Section 5.22)



Phillips PM2.0×4.0 Screw Locations

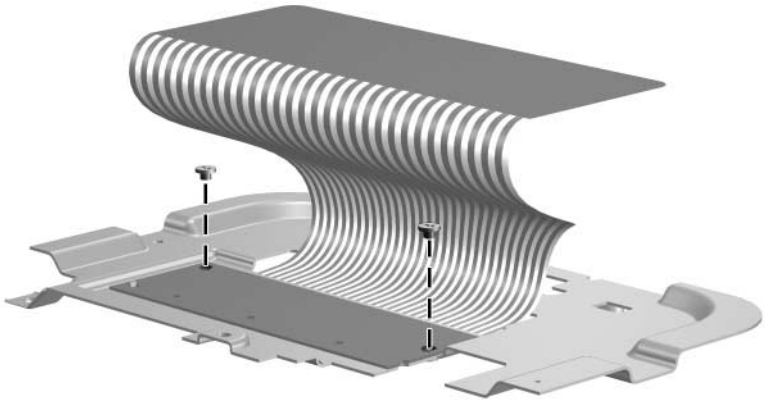
Table A-9

Phillips PM2.0×2.0 Screw

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

Where used:

2 screws that secure the TouchPad board to the TouchPad bracket (documented in Section 5.14)



Phillips PM2.0×2.0 Screw Locations

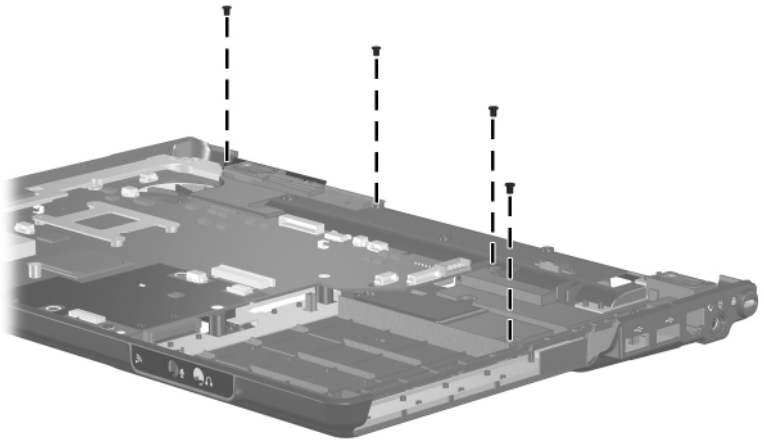
Table A-10

Phillips PM2.5×4.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	4	4.0 mm	2.5 mm	4.0 mm

Where used:

4 screws that secure the speaker assembly to the computer (documented in Section 5.20)



Phillips PM2.5×4.0 Screw Locations

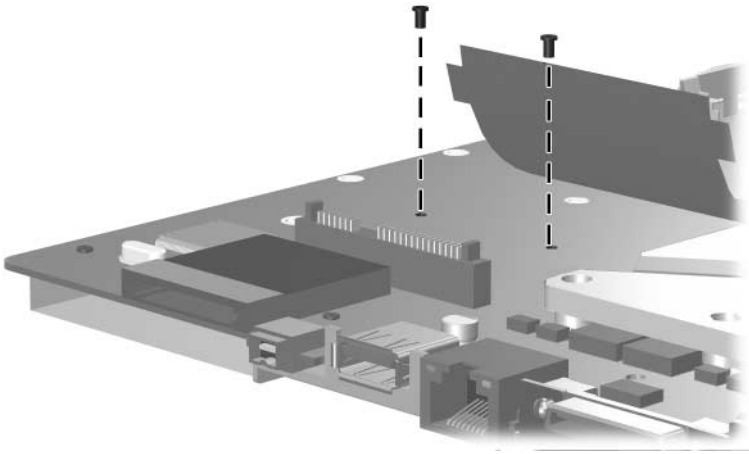
Table A-11

Phillips PM2.0×8.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	2	8.0 mm	2.0 mm	4.0 mm

Where used:

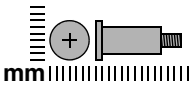
2 screws that secure the ExpressCard assembly to the system board (documented in Section 5.22)



Phillips PM2.0×8.0 Screw Locations

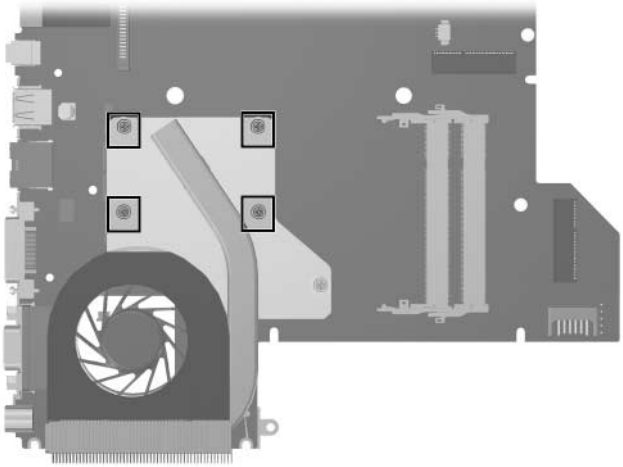
Table A-12

Phillips PM2.0×13.0 Spring-Loaded Shoulder Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	8	13.0 mm	2.0 mm	4.0 mm

Where used:

4 screws that secure the fan/heat sink assembly to the system board on computer models using Intel processors (documented in Section 5.23)



Phillips PM2.0×13.0 Spring-Loaded Shoulder Screw Locations

Table A-12

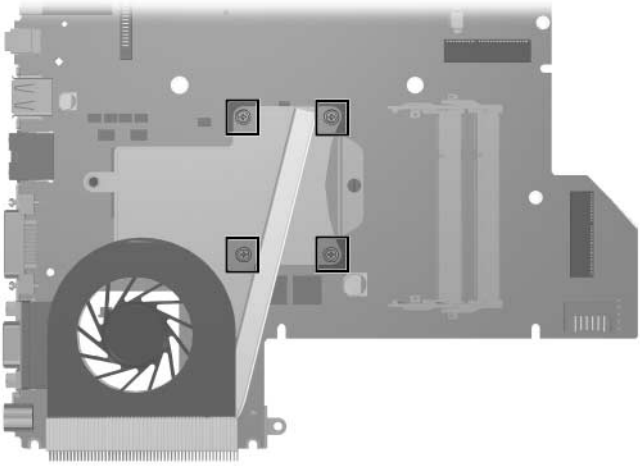
Phillips PM2.0×13.0 Spring-Loaded Shoulder Screw

(Continued)

mm	Color	Qty.	Length	Thread	Head Width
	Silver	8	13.0 mm	2.0 mm	4.0 mm

Where used:

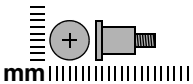
4 screws that secure the fan/heat sink assembly to the system board on computer models using AMD processors (documented in Section 5.23)



Phillips PM2.0×13.0 Spring-Loaded Shoulder Screw Locations

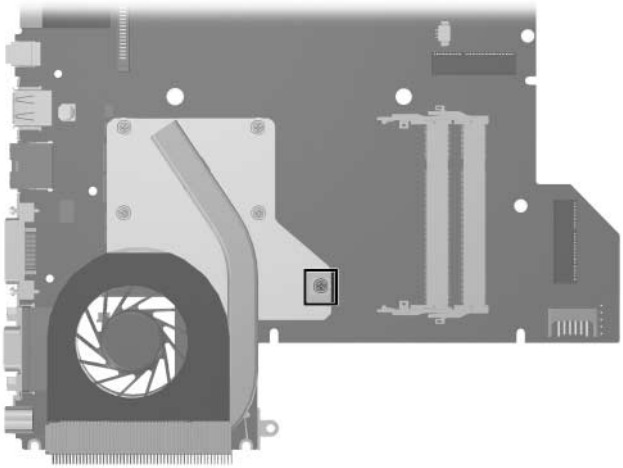
Table A-13

Phillips PM2.0×9.0 Spring-Loaded Shoulder Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	2	9.0 mm	2.0 mm	4.0 mm

Where used:

One screw that secures the fan/heat sink assembly to the system board on computer models using Intel processors (documented in Section 5.23)



Phillips PM2.0×9.0 Spring-Loaded Shoulder Screw Location

Table A-13

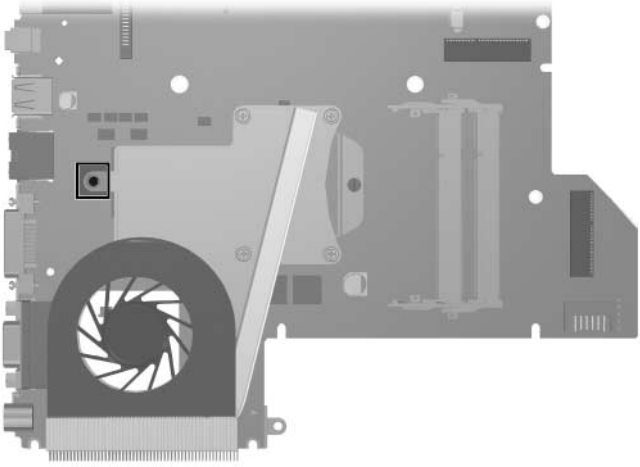
Phillips PM2.0×9.0 Spring-Loaded Shoulder Screw

(Continued)

mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	9.0 mm	2.0 mm	4.0 mm

Where used:

One screw that secures the fan/heat sink assembly to the system board on computer models using AMD processors (documented in Section 5.23)



Phillips PM2.0×9.0 Spring-Loaded Shoulder Screw Location

B

Backup and Recovery

Recovering System Information

Tools provided by the operating system and PC Recovery software are designed to help you with the following tasks for safeguarding your information and restoring it in case of a system failure:

- Back up your information regularly to protect your important system files.
- Make a set of recovery discs (PC Recovery software feature). Recovery discs are used to start up (boot) your computer and restore the operating system and software programs to factory settings in case of system failure or instability.
- Create system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.
- Recover a program or driver (PC Recovery software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Perform a full system recovery (PC Recovery software feature). With PC Recovery, you can recover your full factory image if you experience system failure or instability. PC Recovery works from a dedicated recovery partition on the hard drive or from recovery discs you create.

Backing Up Your Information

When to Back Up

- On a regularly scheduled basis.

Set reminders to back up your information periodically.

- Before the computer is repaired or restored.
- Before you add or modify hardware or software.

Backup Suggestions

- Create system restore points using Windows XP Professional System Restore feature.
- Store personal files in the My Documents folder and back up these folders periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings.

  The screen shot can be a time saver if you have to reset your preferences.

  To copy the screen and paste it into a Word document:

  a. Display the screen.

  b. Copy the screen:

     To copy only the active window, press **alt+fn+prt sc**.

     To copy the entire screen, press **fn+prt sc**.

  c. To paste the copied images into a document, open Word, and then select **Edit > Paste**.

Using System Restore Points

When you back up your system, you are creating a system restore point. A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to your system.

Recovering to an earlier restore point does not affect data files saved or e-mails created since the last restore point.

You also can create additional restore points to provide increased protection for your system files and settings.

When to Create Restore Points

- Before you add or extensively modify software or hardware.
- Periodically, whenever the system is performing optimally.

If you revert to a restore point and then change your mind, you can reverse the restoration.

Create a System Restore Point

1. Select **Start > Help and Support**, and then click **System Restore**.

   The System Restore window opens.

2. Click **Create a restore point**, and then click **Next**.
3. Follow the on-screen instructions.

Restore to a Previous Date and Time

To revert to a restore point (created at a previous date and time), when the computer was functioning optimally:

1. Select **Start > Help and Support**, and then click S**ystem Restore**.

   The System Restore window opens.

2. Click **Restore my computer to an earlier time**, and then click **Next**.
3. Follow the on-screen instructions.

Creating Recovery Discs

PC Recovery Disc Creator creates a set of recovery CDs or DVDs for the computer. Use recovery discs to restore the operating system and software programs to factory settings, in case of system failure or instability.

Handle these discs carefully and keep them in a safe place. The software allows the creation of only one set of recovery discs.

Note the following guidelines before creating recovery discs:

- You will need high quality CD-R, DVD-R, or DVD+R media (purchased separately).

DVD±RW/R and double-layer DVD±RW are not compatible with the PC Recovery Disc Creator software.

- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the computer optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open PC Recovery Disc Creator, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start > All Programs > System Recovery > PC Recovery Disc Creator**.

   The PC Recovery Disc Creator tool opens.

2. Click **Next**.

If you are operating the computer on battery power, you will be prompted to connect to AC power before you can go to the next step.

3. Select the type of disc you want to use and click **Next**.

The software examines the image and displays the number of blank discs needed to create your recovery discs.

4. Insert the first disc and follow the on-screen instructions to complete the creation of the recovery discs.

Reinstalling Software Programs and Drivers

If a program or driver preinstalled at the factory is accidentally erased or is damaged, the Application and Driver Recovery tool allows you to reinstall it.

Software not provided with this computer must be reinstalled from the disc provided by the manufacturer or downloaded from the manufacturer's Web site.

Before reinstalling the program, be sure it is fully uninstalled.

The Application and Driver Recovery tool replaces corrupted system files and reinstalls deleted system files within the program.

- In most cases, if the program you are reinstalling is still on your computer, the reinstallation process does not affect your personal settings.
- In all cases, if a program has been deleted from your computer, the reinstallation process reinstalls the program or utility to the factory image but cannot restore your personal settings.

Reinstalling Preinstalled Programs and Drivers

1. Remove the program or driver:

In some cases, drivers are not listed in the Add or Remove Programs list. If the driver is not listed, it does not need to be removed.

   a. Select **Start > Control Panel > Add or Remove Programs**.

   b. Click the program or driver you want to remove, and then click **Change/Remove**.

2. Select **Start > All Programs > System Recovery > Application and Driver Recovery**.

   The Application and Driver Recovery tool opens.

3. Select **Application Installation or Driver Installation**, and then click **Next**.

4. Follow the on-screen instructions to complete the program or driver recovery.

5. Restart the computer if prompted.

Reinstalling Programs from Discs

1. Insert the disc into the optical drive.

2. When the installation wizard opens, follow the installation instructions on the screen.

3. Restart the computer if prompted.

Performing a Recovery

PC Recovery software allows you to repair or restore the system if you experience system failure or instability. PC Recovery works from recovery discs that you create or from a dedicated recovery partition on the hard drive.

Microsoft Windows XP has its own built-in repair features, such as System Restore and driver roll-back capabilities. If you have not already tried these features, try them before using PC Recovery.

PC Recovery only recovers software that was preinstalled at the factory. Software not provided with this computer must be reinstalled from the disc provided by the manufacturer or downloaded from the manufacturer's Web site.

Recovering from the Recovery Discs

To restore the system from the recovery discs:

1. Back up all personal files.
2. Insert the first recovery disc into the optical drive and restart the computer.
3. Follow the on-screen instructions.

Recovering from the Partition on the Hard Drive

You can perform a recovery from the partition on the hard drive from either the Start button or **f11**.

To restore the system from the partition:

1. Access the PC Recovery tool:
   - ❏ To access PC Recovery from the Start button, select **Start > All Programs > System Recovery > PC Recovery**.
   - ❏ To access PC Recovery from **f11**, restart the computer and press **f11** while the "Press <F11> for recovery" message is displayed on the screen.

     The PC Recovery tool opens.
2. Select **PC Recovery** and click **Next**.

   The computer restarts and the PC Recovery tool opens.
3. Click **OK**.
4. Follow the on-screen instructions to complete the system recovery.

   If you want to perform a *destructive* recovery:

A destructive recovery formats the hard drive and restores the computer to its factory state. Select this option only as a last resort.

   a. Click **Advanced Options** on the System Recovery screen.
   b. Select **Destructive Recovery** and follow the on-screen instructions.

Deleting the Recovery Partition on the Hard Drive

The PC Recovery Advanced Options menu provides the option of deleting the recovery partition, which will increase space on the hard drive. Delete the recovery partition only if you have already created recovery discs.

CAUTION: After you create the recovery discs, you can increase space on the hard drive by deleting the recovery partition. However, doing this is not recommended. If you delete this partition, you will lose any information that is on the partition, including the PC Recovery software. Thereafter, you must use the recovery discs to access PC Recovery software.

To delete the recovery partition:

1. If you have not already created recovery discs, create them now.
2. Select **Start > All Programs > System Recovery > PC Recovery**.

   The PC Recovery tool opens.
3. Select **PC Recovery** and click **Next**.

   The computer restarts and the PC Recovery tools opens.
4. Click **OK**.
5. At the System Recovery screen, click **Advanced Options**.
6. Select **Delete Recovery Partition (not recommended)** and follow the on-screen instructions.

Updating Reinstalled Software

After you perform a system recovery, connect to the Internet to update all reinstalled software.

To access update links for the operating system and other software provided on your computer:

» Select **Start > Help and Support**.

To update optional software, follow the instructions provided by the software manufacturer. Some programs include an update feature you can access from a Help button or menu within the program.

C

Display Component Recycling

WARNING: The backlight contains mercury. Caution should be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

CAUTION: The procedures in this appendix can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. Careful handling should be exercised when removing these components.

Materials Disposal

This HP product contains mercury in the display assembly backlight and may require special handling at end-of-life.

Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities or visit the Electronic Industries Alliance (EIA) at http://www.eiae.org.

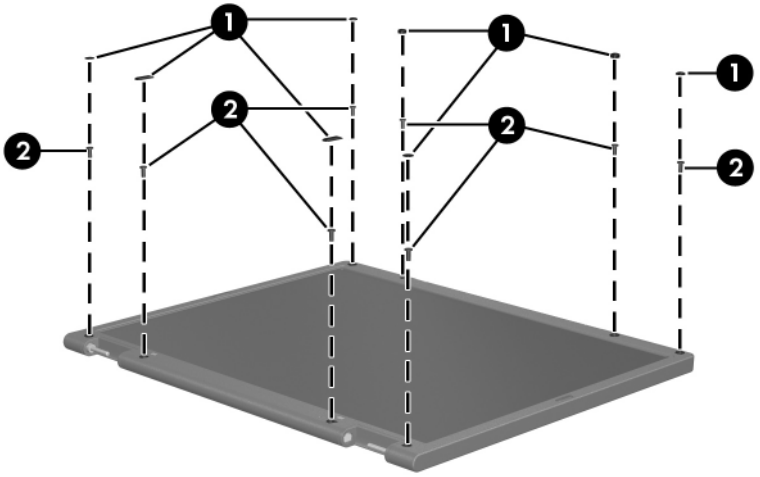
This appendix provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight ❶ and the LCD panel ❷.

Disassembly procedures differ from one display assembly to another. The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Refer to Section 5.12, "Display Assembly," for display assembly disassembly steps.

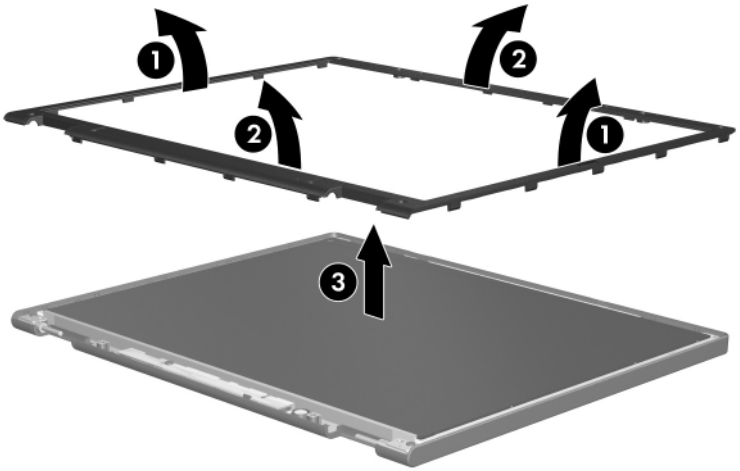
Perform the following steps to disassemble the display assembly:

1. Remove all screw covers ❶ and screws ❷ that secure the display bezel to the display assembly.



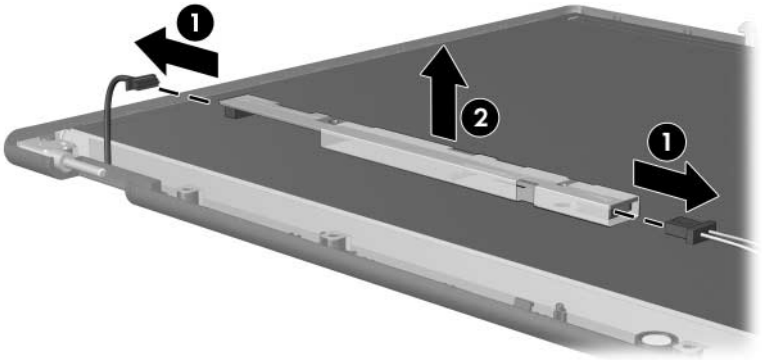
Removing the Display Bezel Screw Covers and Screws

2. Lift up and out on the left and right inside edges ❶ and the top and bottom inside edges ❷ of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel ❸.



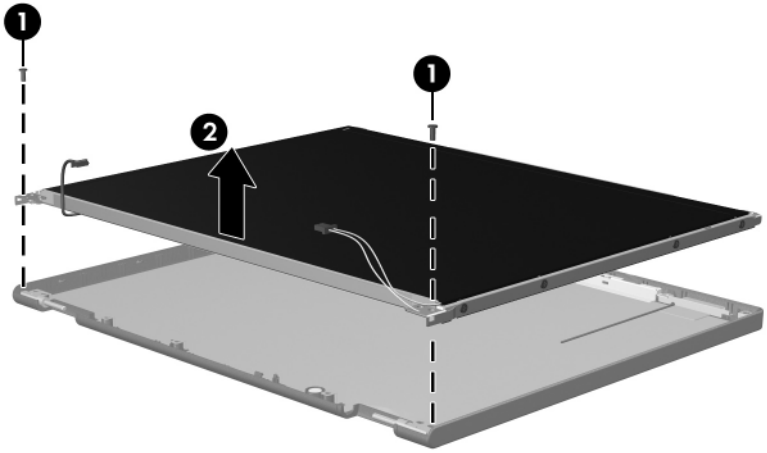
Removing the Display Bezel

4. Disconnect all LCD panel cables ❶ from the display inverter board and remove the inverter board ❷.



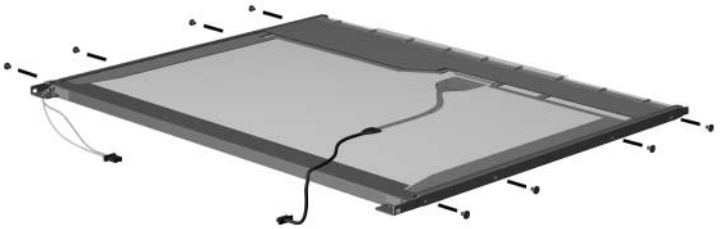
Removing the Display Inverter Board

5. Remove all screws ❶ that secure the LCD panel to the display enclosure.
6. Remove the LCD panel ❷ from the display enclosure.



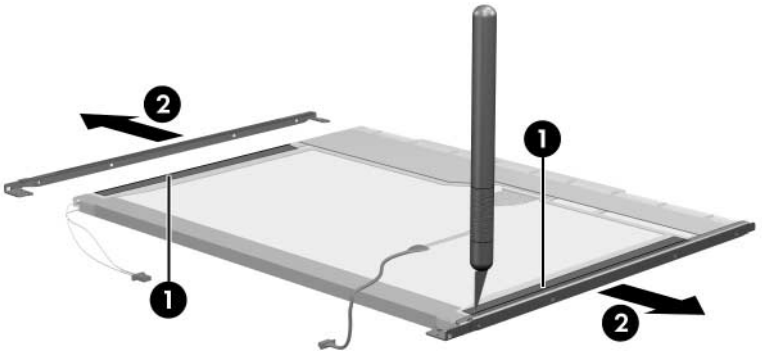
Removing the LCD Panel

7. Turn the LCD panel upside down.
8. Remove all screws that secure the LCD panel frame to the LCD panel.



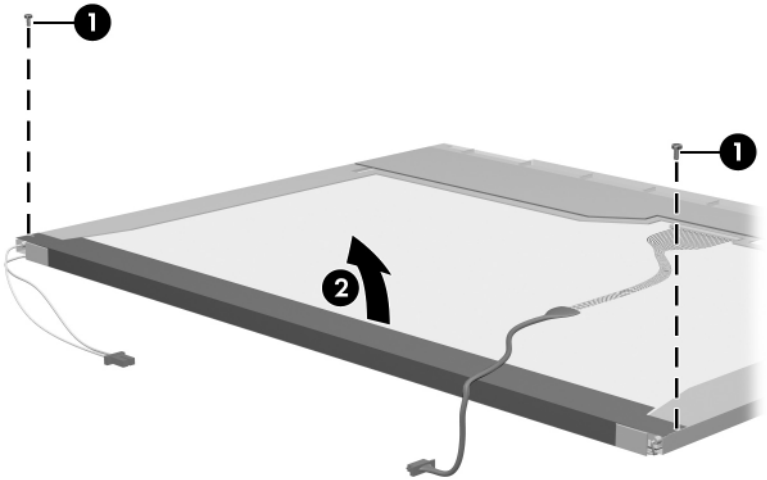
Removing the LCD Panel Frame Screws

9. Use a sharp-edged tool to cut the tape ❶ that secures the side of the LCD panel to the LCD panel frame.
10. Remove the LCD panel frame ❷ from the display panel.



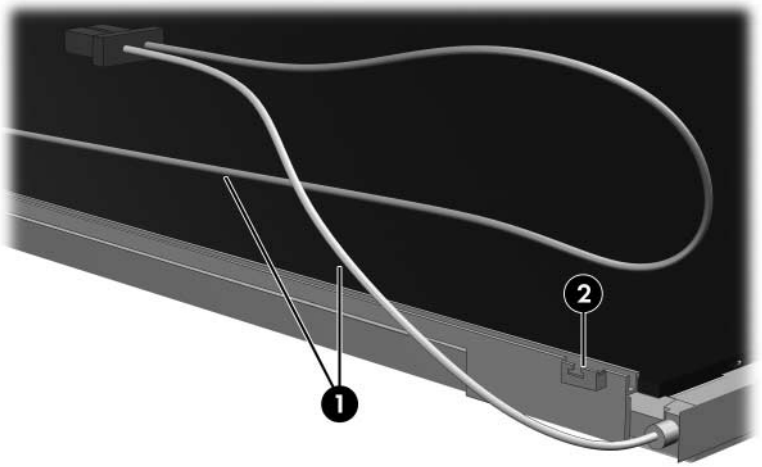
Removing the LCD Panel Frame

11. Remove the screws ❶ that secure the backlight cover to the LCD panel.
12. Lift the top edge of the backlight cover ❷ and swing it forward.
13. Remove the backlight cover.



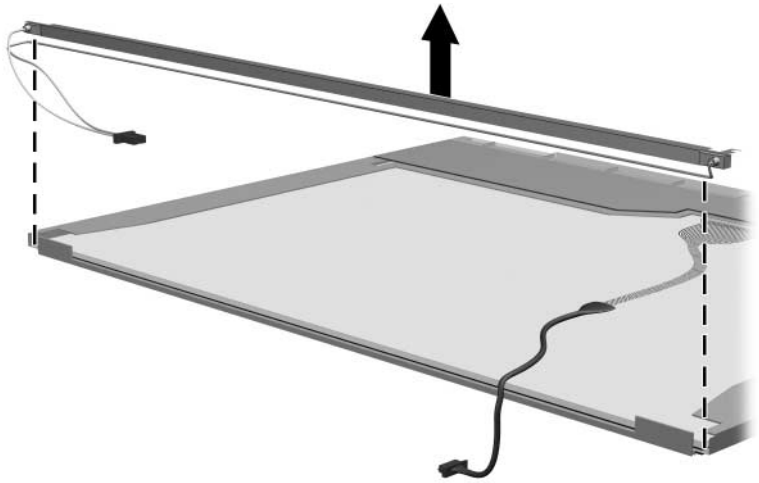
Removing the Backlight Cover

14. Turn the LCD panel right-side up.
15. Remove the backlight cables ❶ from the clip ❷ in the LCD panel.



Releasing the Backlight Cables

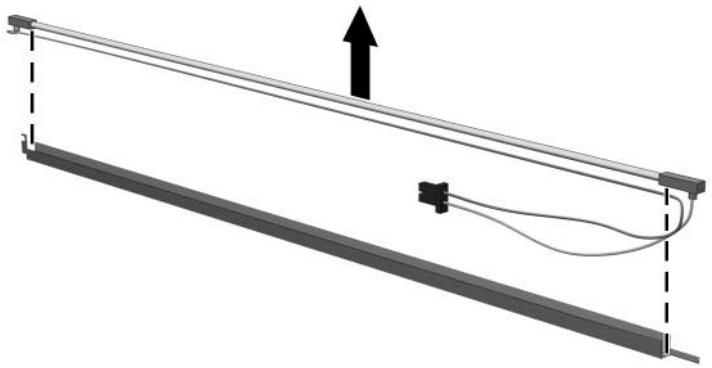
16. Turn the LCD panel upside down.
17. Remove the backlight frame from the LCD panel.



Removing the Backlight Frame

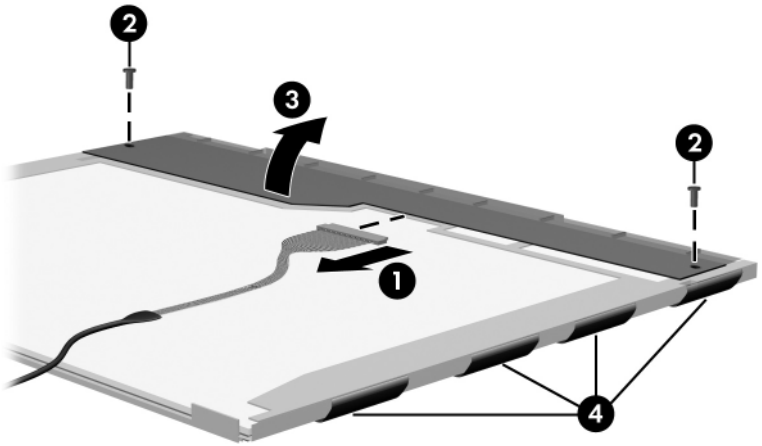
WARNING: The backlight contains mercury. Caution should be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

18. Slide the backlight out of the backlight frame.



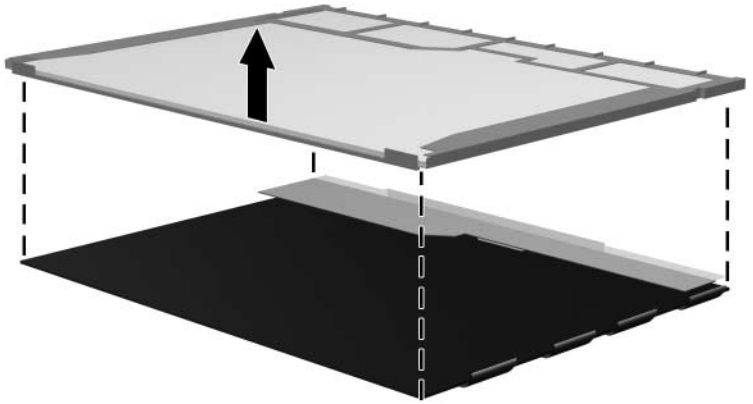
Removing the Backlight

19. Disconnect the display cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the LCD rear panel.
21. Release the LCD panel ❸ from the LCD rear panel.
22. Release the tape ❹ that secures the LCD panel to the LCD rear panel.



Releasing the LCD Panel

23. Remove the LCD panel.



Removing the LCD Panel

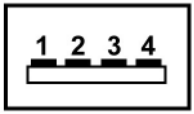
24. Recycle the backlight and LCD panel.

D

Connector Pin Assignments

Table D-1

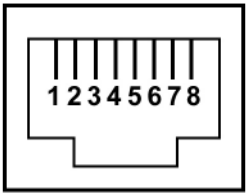
Universal Serial Bus



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

Table D-2

RJ-45 (Network)



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

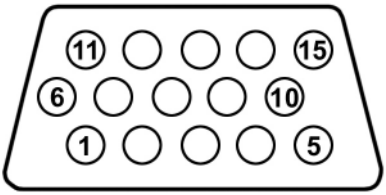
Table D-3

S-Video-Out

Pin	Signal	Pin	Signal
1	TV-Ground	5	TV-CD
2	TV-CVBS	6	TV-Ground
3	TV-Ground	7	TV-YD
4	TV-Ground		

Table D-4

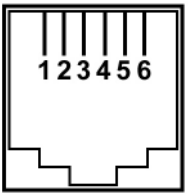
External Monitor



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 D-5

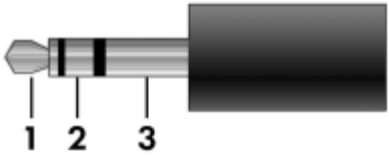
RJ-11 (Modem)



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

Table D-6

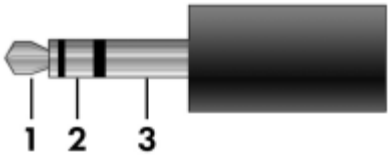
Audio-In (Microphone)



Pin	Signal	Pin	Signal
1	Audio signal in	3	Ground
2	Audio signal in		

Table D-7

Audio-Out (Headphone)



Pin	Signal	Pin	Signal
1	Audio out, left channel	3	Ground
2	Audio out, right channel		

E

Power Cord Set Requirements

3-Conductor Power Cord Set

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

The power cord set included with the computer 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 computer is used.

General Requirements

The requirements listed below are applicable to all countries.

- The length of the power cord set must be at least 1.5 m (5.0 ft) and a maximum of 2.0 m (6.5 ft).
- 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 sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V 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 computer.

Country-Specific Requirements

3-Conductor Power Cord Set Requirements

Country/Region	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

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 two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

3-Conductor Power Cord Set Requirements *(Continued)*

Country/Region	Accredited Agency	Applicable Note Number
Korea	EK	4
The Netherlands	KEMA	1
Norway	NEMKO	1
People's Republic of China	CCC	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
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 two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75 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.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75 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.

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