



# **Maintenance and Service Guide**

Compaq Presario V5100 Notebook PC

Document Part Number: 407368-001

February 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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Maintenance and Service Guide  
Compaq Presario V5100 Notebook PC  
First Edition: February 2006  
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## Product Description

The Compaq Presario V5100 Notebook PC offers advanced modularity, Intel® Pentium® M processors, and extensive multimedia support.



*Compaq Presario V5100 Notebook PC*

## 1.1 Features



Numerous references are made throughout this *Maintenance and Service Guide* to “full-featured” and “defeatured” computer models. A model is considered to be full-featured if it has 3 Universal Serial Bus ports and the following components:

- PC Card slot
- IEEE 1394 port
- Memory Reader

A model is considered to be defeatured if it has only 2 Universal Serial Bus ports and none of the components listed above.

- 
- Intel Pentium M 2.0-GHz, 1.83-GHz, 1.66-GHz Dual Code, or 1.66-GHz Single Code processors, varying by computer model
  - 15.4-inch, WXGA, TFT (1280 × 800) display with antiglare or BrightView, varying by computer model
  - 100-, 80-, 60-, or 40-GB high-capacity hard drive, varying by computer model
  - 256-MB DDR1 synchronous DRAM (SDRAM) at 333 MHz, expandable to 2.0 GB
  - Microsoft® Windows® XP Home Edition or Windows XP Professional, varying by computer model
  - Full-size Windows keyboard with embedded numeric keypad
  - TouchPad pointing device, including dedicated horizontal and vertical scroll regions
  - Integrated 10Base-T/100Base-TX 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 802.11a/b/g WLAN device



- Support for one Type I or Type II PC Card slot, with support for both 32-bit (CardBus) and 16-bit PC Cards
- Support for ExpressCard slot
- External 65-watt AC adapter with 3-wire power cord
- 12- or 6-cell Li-Ion battery pack
- Stereo speakers
- Volume up, volume mute, and volume down buttons
- Support for the following optical drives:
  - ❑ DVD±RW and CD-RW Double Layer Combo Drive with LightScribe
  - ❑ DVD±RW and CD-RW Double Layer Combo Drive
  - ❑ DVD/CD-RW Combo Drive
- Connectors:
  - ❑ Audio-in (microphone)
  - ❑ Audio-out (headphone)
  - ❑ Memory Reader (select models only)
  - ❑ Expansion port 2
  - ❑ ExpressCard slot
  - ❑ External monitor
  - ❑ IEEE 1394 (select models only)
  - ❑ PC Card (select models only)
  - ❑ Power
  - ❑ RJ-11 (modem)
  - ❑ RJ-45 (network)
  - ❑ S-Video-out
  - ❑ Universal Serial Bus (USB) v. 2.0 (2 or 3 ports, varying by computer model)

## 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 5.8, “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 battery packs at this time.
6. Turn on the computer.

All passwords and CMOS settings have been cleared.

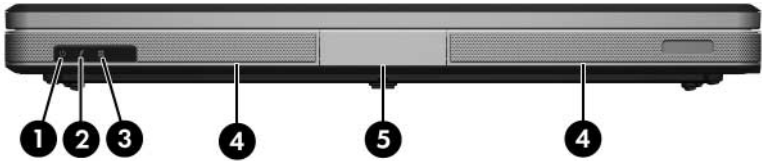
## 1.3 Power Management

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*

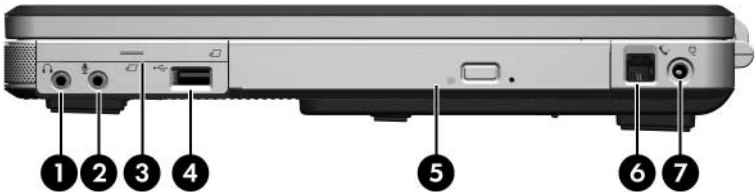
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**Table 1-1**  
**Front Components**

Item	Component	Function
1	Power light	<ul style="list-style-type: none"><li>■ On: Computer is turned on.</li><li>■ Off: Computer is off or in hibernation.</li><li>■ Blinking: Computer is in standby.</li></ul>
2	Battery light	<ul style="list-style-type: none"><li>■ On: A battery pack is charging or is close to full charge capacity.</li><li>■ Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low-battery condition.</li><li>■ Blinking: A battery pack that is the only available power source has reached a low-battery condition. When the battery reaches a critical low-battery condition, the battery light begins blinking quickly.</li></ul>
3	Drive light	On or blinking: The internal hard drive or an optical drive is being accessed.
4	Speakers	Produce stereo sound.
5	Display release button	Opens the computer.

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

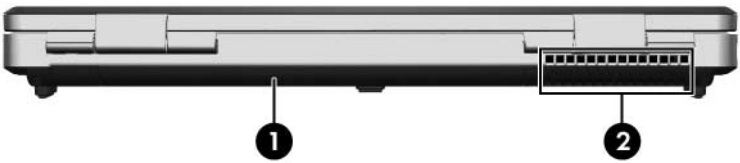


*Right-Side Components*

**Table 1-2**  
**Right-Side Components**


Item	Component	Function
1	Audio-out (headphone) jack	Connects an optional headphone or powered stereo speakers. Also connects the audio function of an audio/video device, such as a television or VCR.
2	Audio-in (microphone) jack	Connects an optional stereo microphone.
3	ExpressCard slot	Supports an optional ExpressCard.
4	USB port (select models only)	Connects optional USB devices.
5	Optical drive	Supports an optical disc, such as a CD or DVD.
6	RJ-11 (modem) jack	Connects a modem cable (not included).
7	Power connector	Connects the AC adapter cable.

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

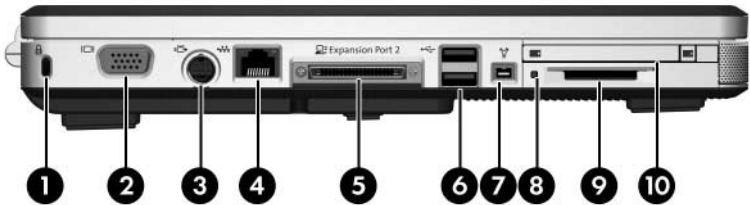


Rear Panel Components

**Table 1-3**  
**Rear Panel Components**


Item	Component	Function
1	Battery bay	Holds a battery pack.
2	Vent	Provides airflow to cool internal components. <div> To prevent overheating, do not obstruct vents. Do not allow a hard surface, such as a printer, or a soft surface, such as pillows or thick rugs or clothing, to block airflow.</div>

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




Left-Side Components

**Table 1-4**  
**Left-Side Components**

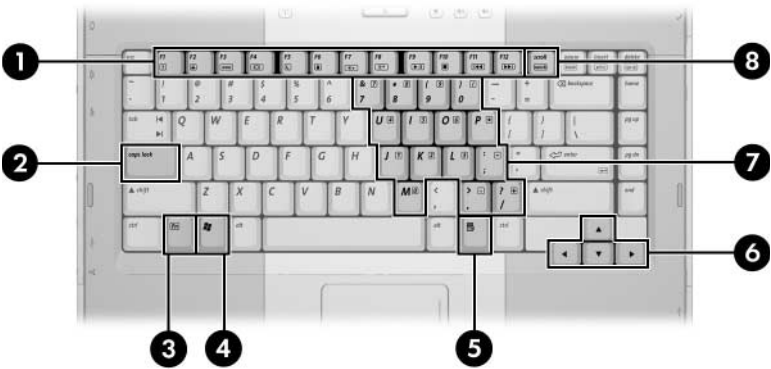
Item	Component	Function
1	Security cable slot	Attaches an optional security cable to the computer.  The security cable is designed to act as a deterrent, but may not prevent the computer from being mishandled or stolen.
2	Monitor port	Connects an optional VGA monitor or projector.
3	S-Video-out jack	Connects the video function of an optional S-Video device, such as a television, VCR, or video capture card.



**Table 1-4**  
**Left-Side Components (Continued)**

Item	Component	Function
4	RJ-45 (network) jack	Connects a network cable (not included).
5	Expansion port 2	<p>Connects the computer to an optional expansion product.</p> <p> The computer has only one expansion port. The term <i>expansion port 2</i> describes the type of expansion port.</p>
6	USB ports (2)	Connect optional USB devices.
7	1394 port (select models only)	Connects an optional 1394a device such as a scanner, a digital camera, or a digital camcorder.
8	Memory Reader light (select models only)	On: An optional digital card is being accessed.
9	Memory Reader (select models only)	Supports the following optional digital cards: Secure Digital (SD) Memory Card, SD I/O Card, Memory Stick, Memory Stick Pro, MultiMediaCard, xD-Picture Card, and SmartMedia.
10	PC Card slot (select models only)	Supports an optional Type I or Type II 32-bit (CardBus) or 16-bit PC Card.

The standard keyboard components of the computer are shown below and described in Table 1-5.

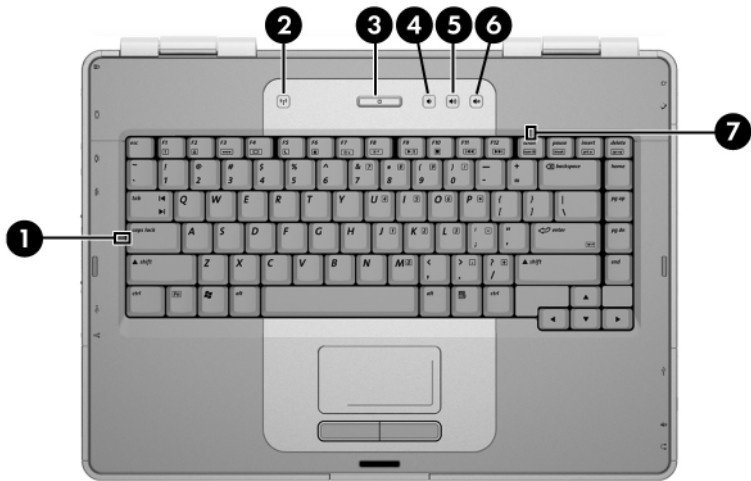


*Standard Keyboard Components*

**Table 1-5**  
**Standard Keyboard Components**


Item	Component	Function
1	<b>f1</b> to <b>f12</b> keys (12)	Perform system and application tasks. When combined with <b>fn</b> , function keys perform additional tasks as hotkeys.
2	<b>caps lock</b> key	Enables caps lock and turns on the caps lock light.
3	<b>fn</b> key	Combines with other keys to perform system tasks as hotkeys. For example, pressing <b>fn+f7</b> decreases screen brightness.
4	Windows logo key	Displays the Microsoft Windows Start menu.
5	Windows applications key	Displays a shortcut menu for items beneath the pointer.
6	Arrow keys	Move the cursor around the screen.
7	Numeric keypad keys (15)	Can be used like the keys on an external numeric keypad.
8	<b>num lock</b> 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 1-6.

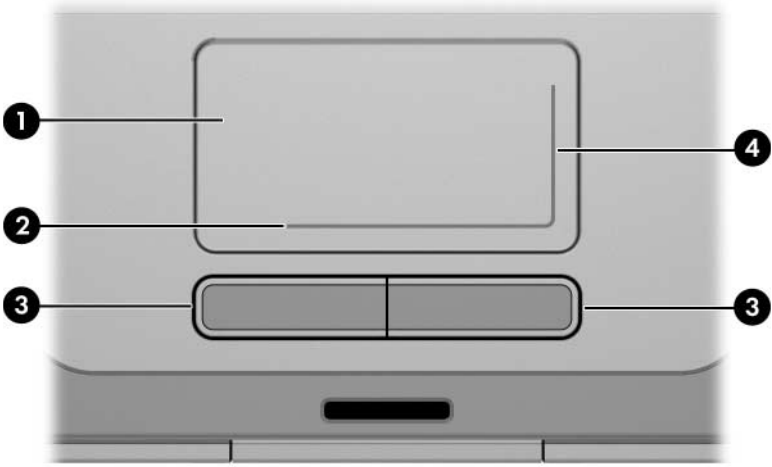


*Top Components*

**Table 1-6**  
**Top Components**

Item	Component	Function
1	caps lock light	On: Caps lock is enabled.
2	Wireless button	<p>Turns the wireless functionality on or off, but does not create a wireless connection.</p> <p> To establish a wireless connection, a wireless network must already be set up.</p>
3	Power button	<p>When the computer is</p> <ul style="list-style-type: none"> <li>■ Off, press to turn on the computer.</li> <li>■ On, press to enter hibernation.</li> <li>■ In standby, briefly press to exit standby.</li> <li>■ In hibernation, briefly press to exit hibernation.</li> </ul> <p>If the computer has stopped responding and Microsoft® Windows® shutdown procedures cannot be used, press and hold the power button for at least 5 seconds to turn off the computer.</p>
4	Volume down button	Decreases speaker volume.
5	Volume up button	Increases speaker volume.
6	Volume mute button	Mutes or restores speaker volume.
7	num lock light	On: Num lock is enabled.

The computer TouchPad components are shown below and described in Table 1-7.



*TouchPad Components*

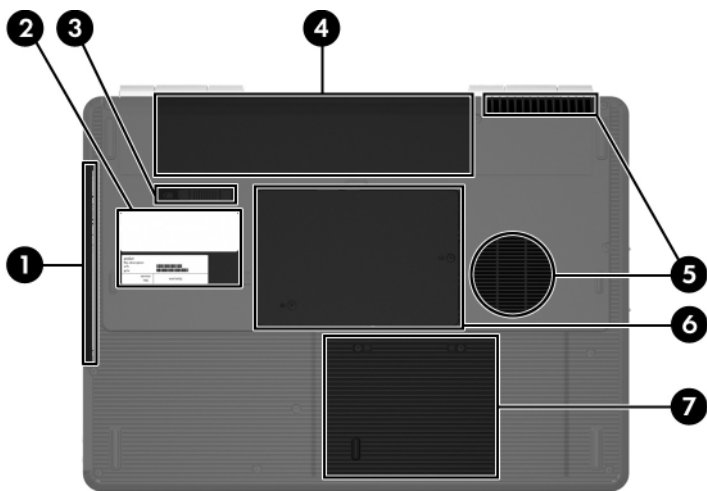
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**Table 1-7**  
**TouchPad Components**

<b>Item</b>	<b>Component</b>	<b>Function</b>
1	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.
2	TouchPad horizontal scroll zone	Scrolls left or right.
3	Left and right TouchPad buttons	Function like the left and right buttons on an external mouse.
4	TouchPad vertical scroll zone	Scrolls up or down.

---

The external components on the bottom of the computer are shown below and described in Table 1-8.



Bottom Components

**Table 1-8**  
**Bottom Components**

Item	Component	Function
1	Optical drive	Supports an optical disc, such as a CD or DVD.
2	Labels area	Contains the serial number and other information labels.
3	Battery pack release latch	Releases a battery pack from the battery bay.
4	Battery bay	Holds a battery pack.



**Table 1-8**  
**Bottom Components (Continued)**

Item	Component	Function
5	Vents (2)	<p>Provide airflow to cool internal components.</p> <p>△ To prevent overheating, do not obstruct vents. Do not allow a hard surface, such as a printer, or a soft surface, such as pillows or thick rugs or clothing, to block airflow.</p>
6	Memory/Mini Card module compartment cover	<p>■ Contains 2 memory module slots that support replaceable memory modules. The number of preinstalled memory modules varies by computer model.</p> <p>■ Holds an optional wireless LAN device (select models only).</p> <p>△ 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 an unauthorized device and then receive a warning message, remove the device to restore computer functionality. Then contact Customer Care.</p>
7	Hard drive bay	Holds the internal hard drive.

## 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:

- Intel Pentium M processors
- Audio
- Digital media card
- Display
- ExpressCard
- Hard drive
- Keyboard
- Memory module
- Mini Card devices
- PC Card
- TouchPad



**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 applications. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

---

# 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.

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## 2.1 Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load. If the operating system is working, the computer restarts the operating system after you exit Computer Setup.



Pointing devices are not supported in Computer Setup; you must use the keyboard to navigate and make selections.

---

The menu tables later in this chapter provide an overview of Computer Setup options.

## Accessing Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Tools, and Advanced menus.

1. Open Computer Setup by turning on or restarting the computer. Press **f10** while the F10 = Based Setup message is displayed in the lower-left corner of the screen.
  - ❑ To change the language, press **f2**.
  - ❑ To view navigation information, press **f1**.
  - ❑ To return to the Computer Setup menu, press **esc**.
2. Select the **File, Security, Tools, or Advanced** menu.
3. To exit Computer Setup, choose one of the following:
  - ❑ To exit without saving any changes, use the arrow keys to select **File > Ignore changes and exit**, and then follow the instructions on the screen.
  - ❑ To exit and save all the settings you have entered, use the arrow keys to select **File > Save changes and exit**, and then follow the instructions on the screen.

Your preferences are set when you exit Computer Setup and go into effect when the computer restarts.

## Computer Setup Defaults

To restore all settings in Computer Setup to the values that were set at the factory:

1. Open Computer Setup by turning on or restarting the computer. Press **f10** while the F10 = Based Setup message is displayed in the lower-left corner of the screen.
  - ❑ To change the language, press **f2**.
  - ❑ To view navigation information, press **f1**.
2. Use the arrow keys to select **File > Restore defaults**.
3. Select the **Restore Defaults** check box.

4. To confirm the restoration, press **f10**.
5. Select **File > Save changes and exit**, and then follow the instructions on the screen.

When the computer restarts, the factory settings are restored, and any identification information you have entered is saved.




## Selecting from the File Menu

**Table 2-1**  
**File Menu**

Select	To Do This
System Information	<ul style="list-style-type: none"> <li>■ View identification information about the computer and any battery packs in the system.</li> <li>■ View specification information about the processor, memory and cache size, video revision, keyboard controller version, and system ROM.</li> </ul>
Save to floppy	Save system configuration settings to a diskette.
Restore to floppy	Restore system configuration settings from a diskette.
Restore defaults	Replace configuration settings in Computer Setup with factory default settings. (Identification information is retained.)
Ignore changes and exit	Cancel changes entered during the current session. Then exit and restart the computer.
Save changes and exit	Save changes entered during the current session. Then exit and restart the computer. The changes you save are to into effect when the computer restarts.

# Selecting from the Security Menu

**Table 2-2**  
**Security Menu**

Select	To Do This
Administrator password	Enter, change, or delete an HP Administrator password.
Power-on password	Enter, change, or delete a power-on password.
Password options	<ul style="list-style-type: none"> <li>■ Enable/Disable stringent security.</li> <li>■ Enable/Disable required password on restart.</li> </ul>
DriveLock passwords	<p>Enable/disable DriveLock; change a DriveLock user or master password.</p> <p> DriveLock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.</p>
Smart Card Security	<p>Enable/disable power-on support for smart cards.</p> <p> This feature is supported by select smart card readers only.</p>
Embedded Security	<ul style="list-style-type: none"> <li>■ Enable/Disable the embedded security chip.</li> <li>■ Restore embedded security chip to factory settings.</li> <li>■ Enable/Disable power-on authentication support.</li> <li>■ Enable/Disable automatic DriveLock.</li> <li>■ Reset power-on authentication credential</li> </ul> <p> Embedded Security settings are accessible only if the computer is equipped with an embedded security chip.</p>
Device security	<p>Enable/Disable devices in the system.</p> <p>Enable NIC for inclusion in MultiBoot.</p>
System IDs	Enter user-defined identification values.

# Selecting from the Tools Menu

**Table 2-3**  
**Tools Menu**

Select	To Do This
HDD Self Test options	Run a quick or comprehensive self-test on any hard drive in the system.
Battery Information	View information about any battery packs in the computer.
Memory Check	<ul style="list-style-type: none"> <li>■ Run a self-test on memory modules in the computer.</li> <li>■ View information about memory modules installed in the computer.</li> </ul>

# Selecting from the Advanced Menu

**Table 2-4**  
**Advanced Menu**

Select	To Do This
Language (or press <b>f2</b> )	Change the Computer Setup language.
Boot options	<ul style="list-style-type: none"> <li>■ Enable/Disable MultiBoot, which sets a startup sequence that can include most bootable devices and media in the system.</li> <li>■ Set the boot order.</li> </ul>
Device options	<ul style="list-style-type: none"> <li>■ Swap the functions of the <b>fn</b> key and left <b>ctrl</b> key.</li> <li>■ Enable/Disable multiple pointing devices at startup. (To set the computer to support only a single, usually nonstandard, pointing device at startup, select <b>Disable</b>.)</li> <li>■ Enable/Disable USB legacy support for a USB keyboard, mouse, and hub. When USB legacy support is enabled <ul style="list-style-type: none"> <li><input type="checkbox"/> A USB keyboard, mouse, and hub work even when a Windows operating system is not loaded.</li> <li><input type="checkbox"/> The computer starts from a bootable hard drive, diskette drive diskette, or CD, CD-RW, or DVD inserted into a drive connected by a USB port to the computer or to an optional docking device.</li> </ul> </li> <li>■ Select a parallel port mode: EPP (Enhanced Parallel Port), standard, bidirectional, or ECP (Enhanced Capabilities Port).</li> <li>■ Enable/Disable all settings in the <b>SpeedStep</b> window. (When Disable is selected, the computer runs in Battery Optimized mode.)</li> </ul>



## 2.2 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"

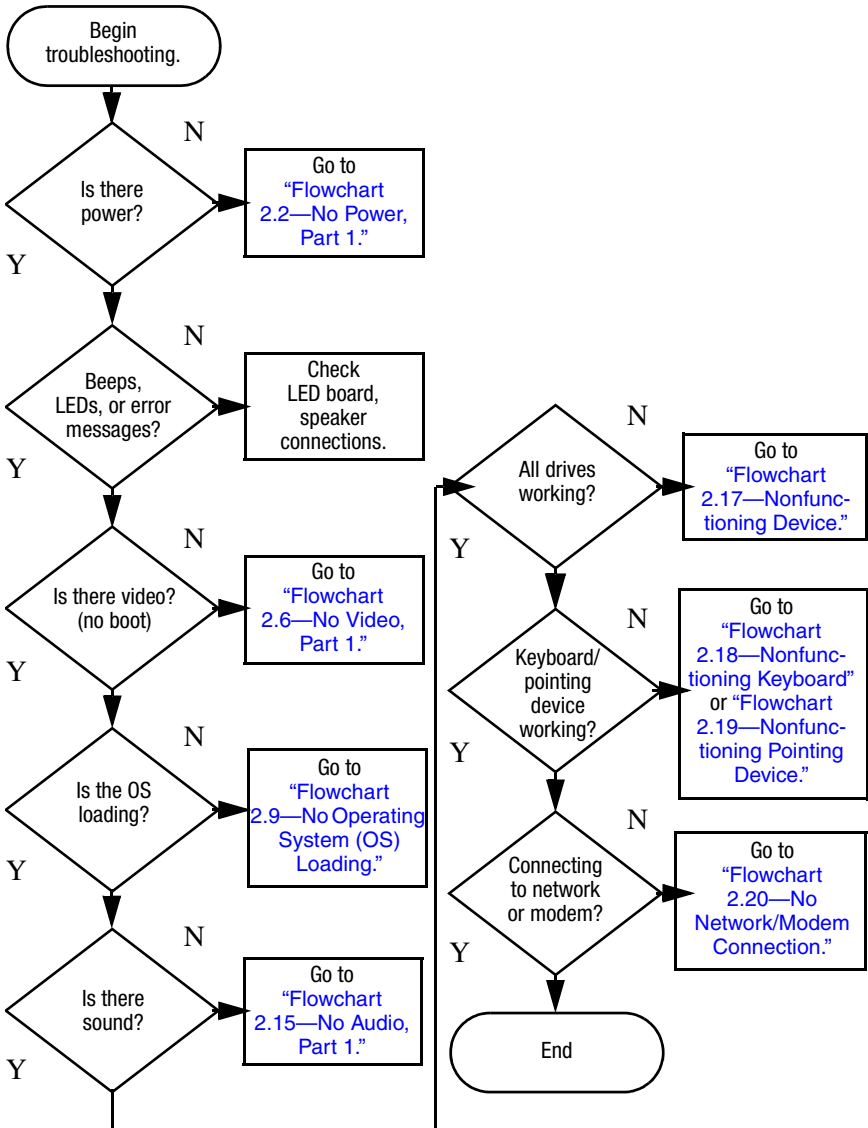
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**Table 2-5**  
**Troubleshooting Flowcharts Overview (*Continued*)**

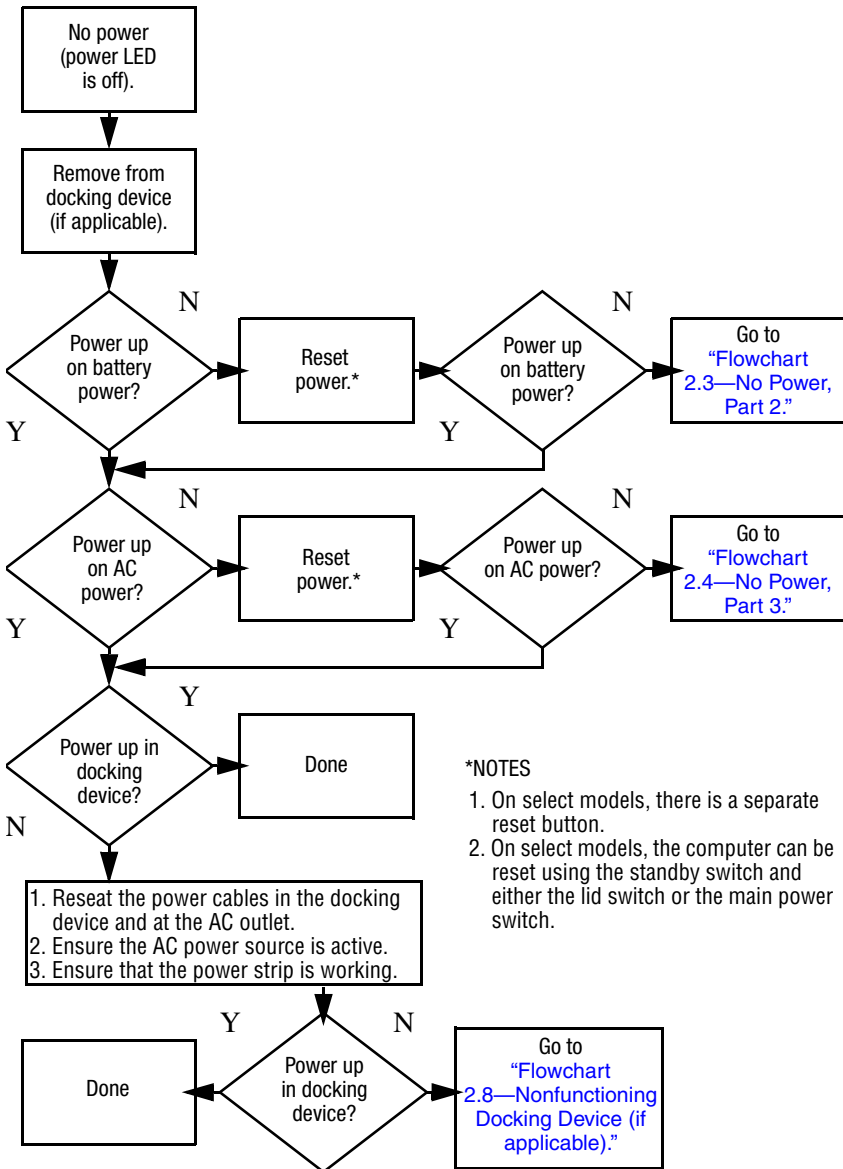
Flowchart	Description
2.14	"Flowchart 2.14—No OS Loading, Optical Drive"
2.15	"Flowchart 2.15—No Audio, Part 1"
2.16	"Flowchart 2.16—No Audio, Part 2"
2.17	"Flowchart 2.17—Nonfunctioning Device"
2.18	"Flowchart 2.18—Nonfunctioning Keyboard"
2.19	"Flowchart 2.19—Nonfunctioning Pointing Device"
2.20	"Flowchart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

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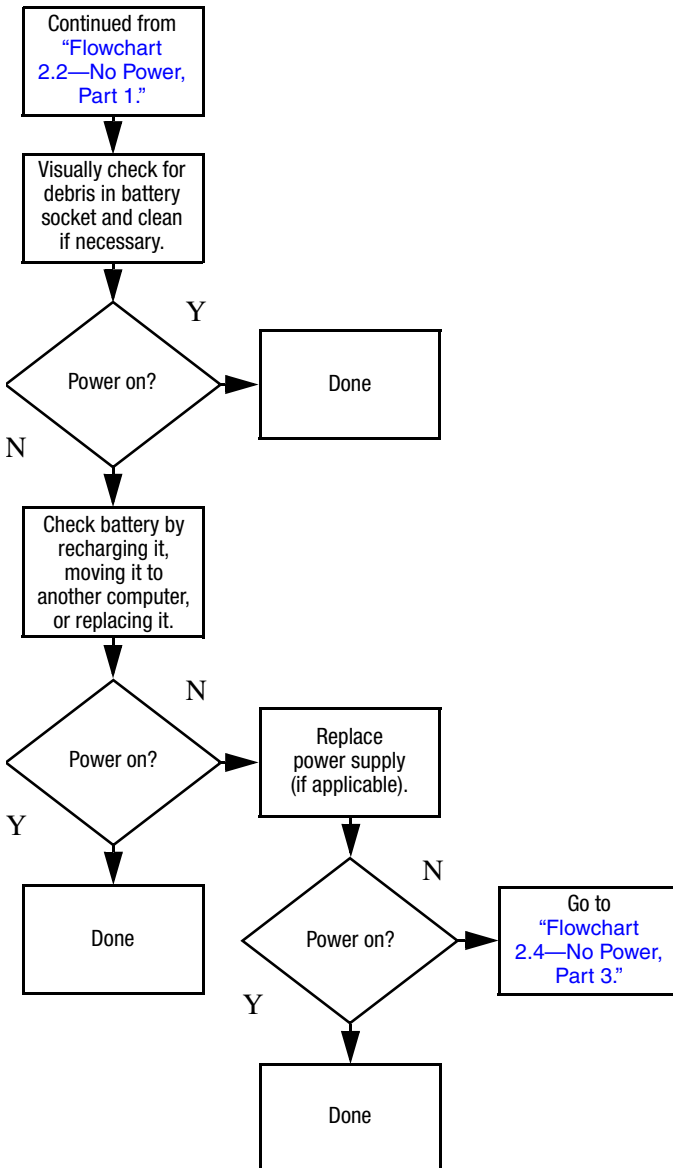
## Flowchart 2.1 —Initial Troubleshooting



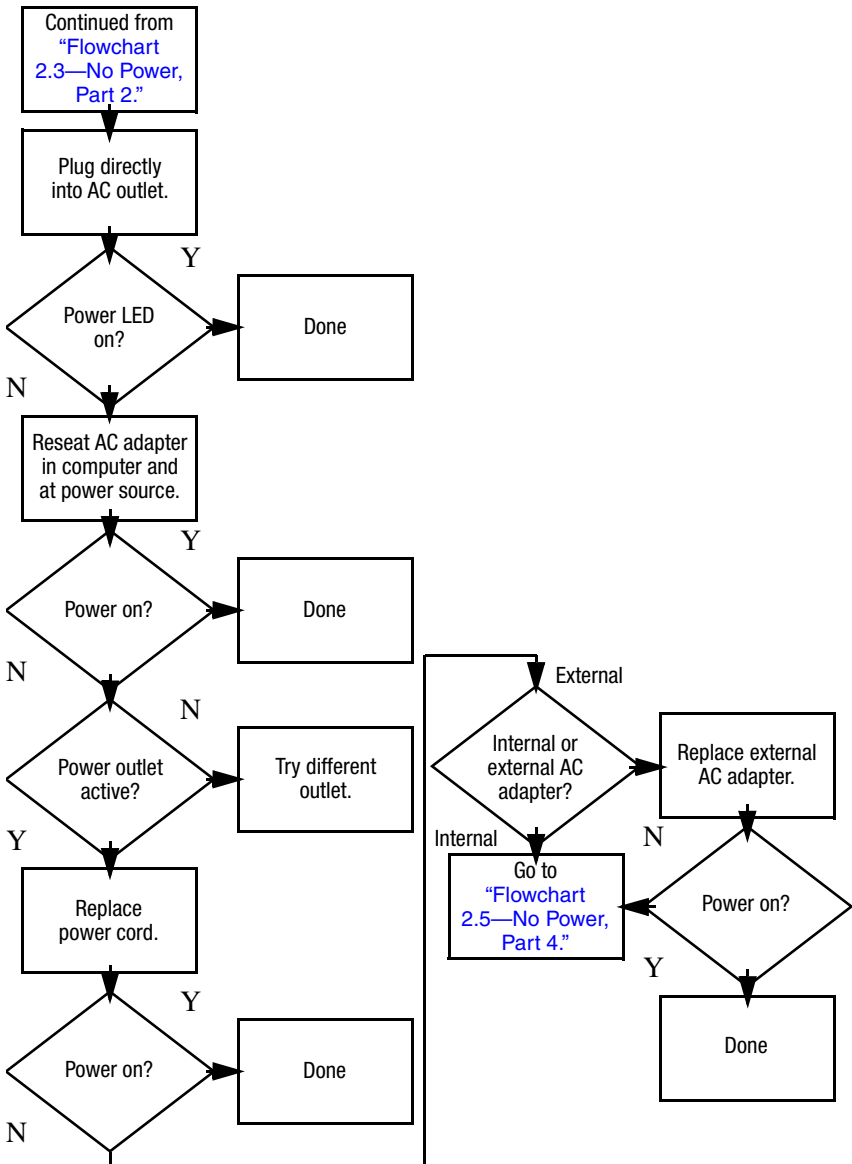
## Flowchart 2.2—No Power, Part 1



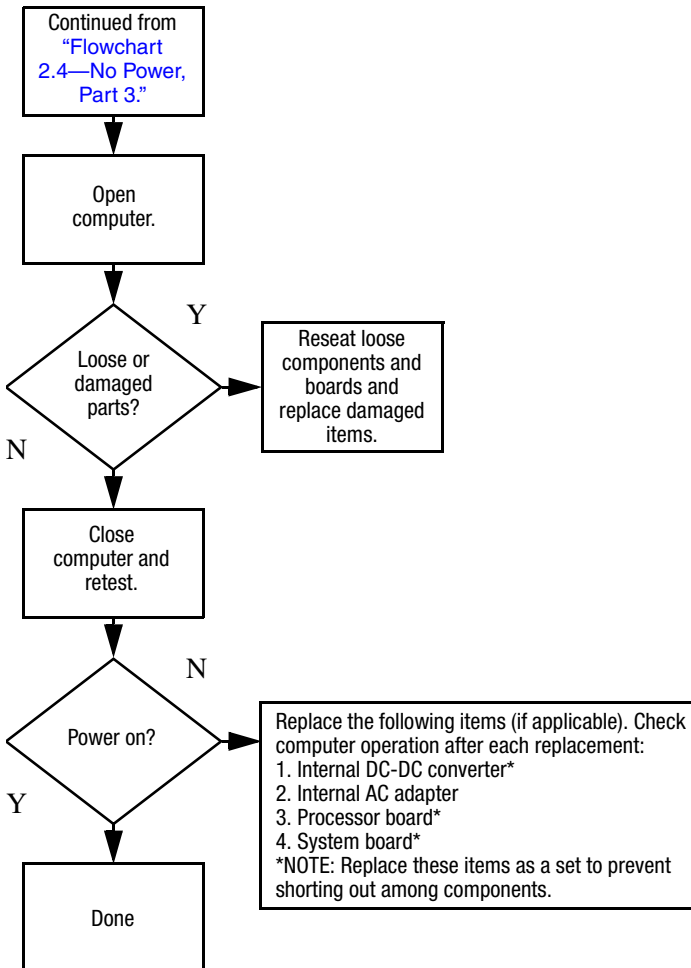
## Flowchart 2.3—No Power, Part 2



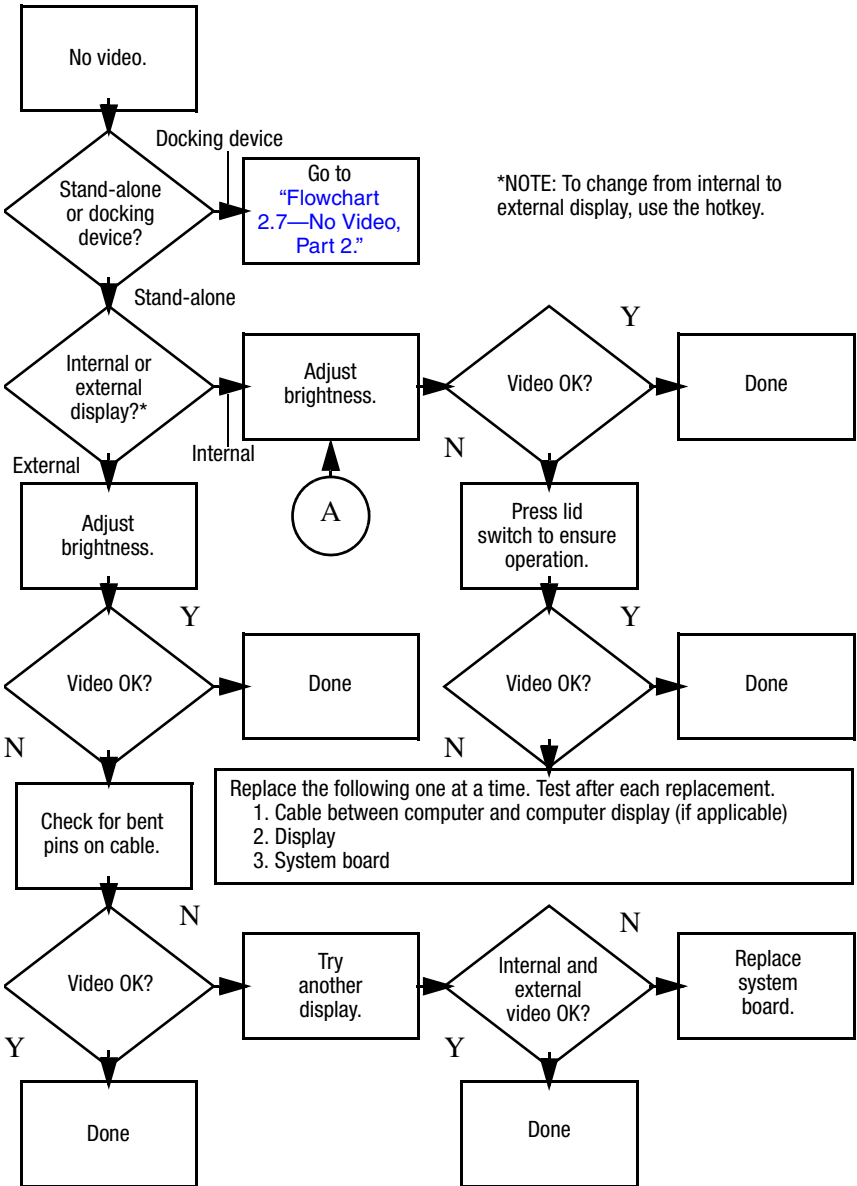
## Flowchart 2.4—No Power, Part 3



## Flowchart 2.5—No Power, Part 4

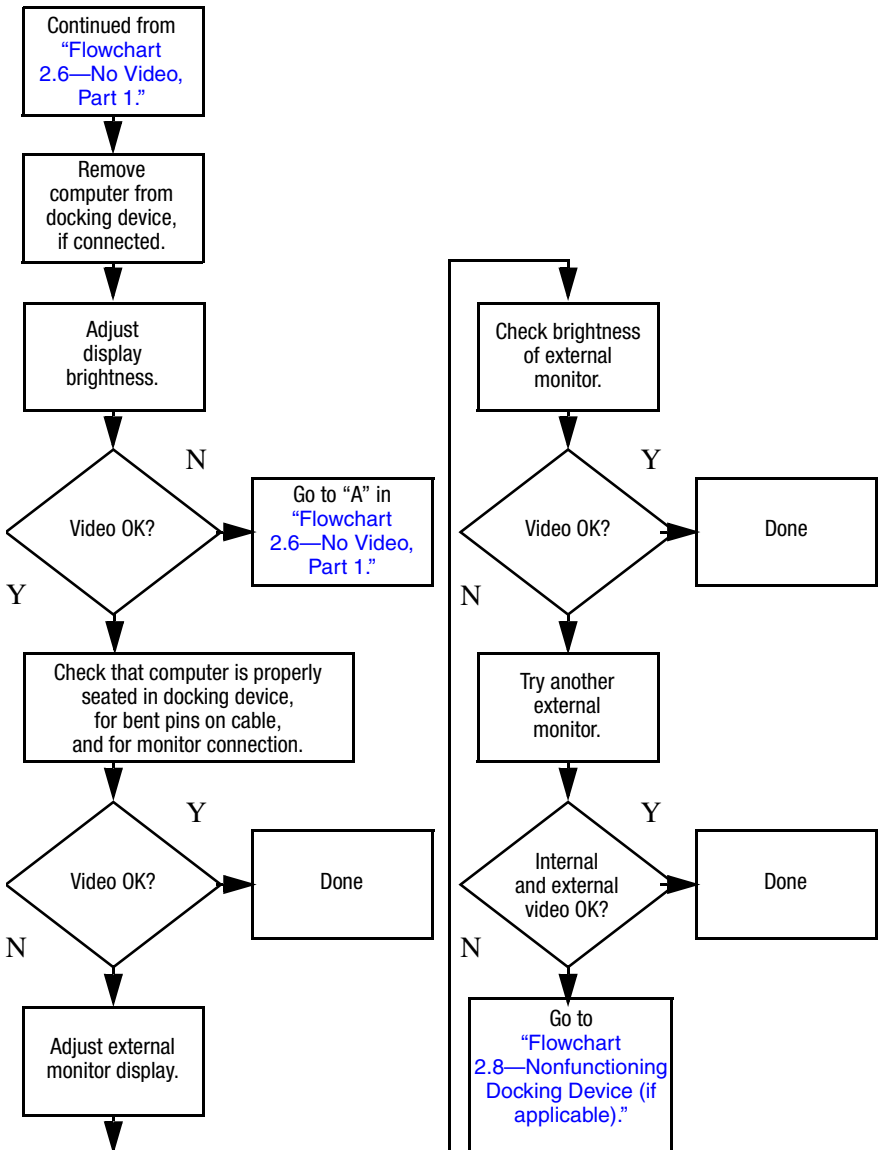


## Flowchart 2.6—No Video, Part 1

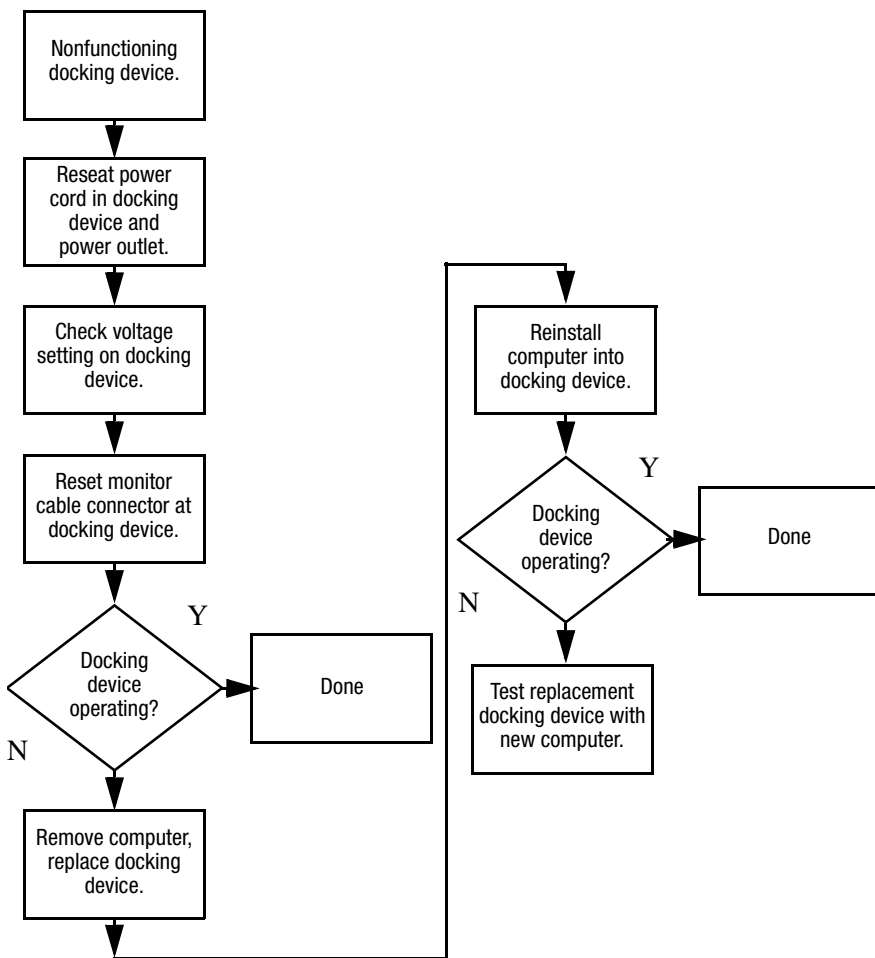




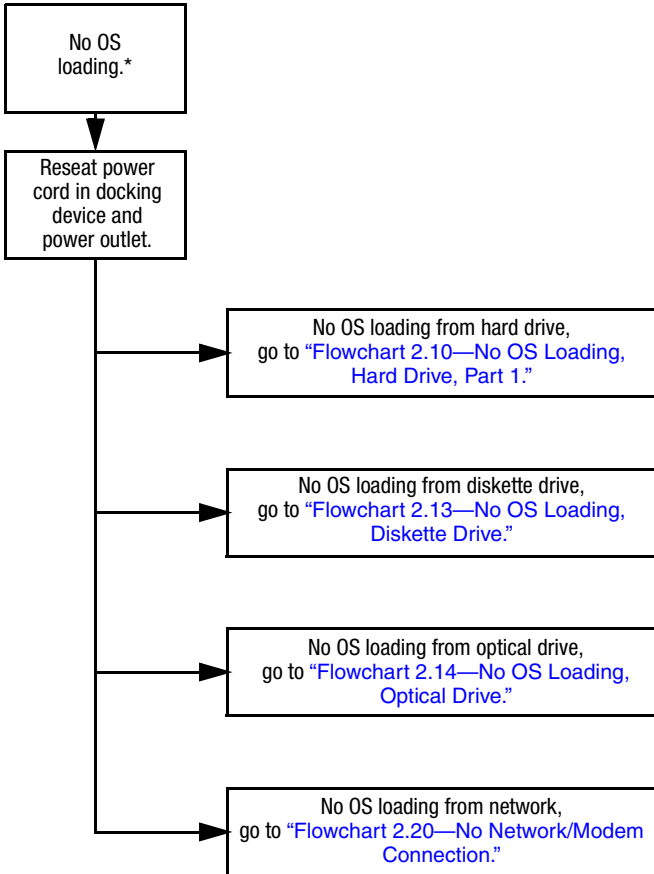
## Flowchart 2.7—No Video, Part 2



## Flowchart 2.8—Nonfunctioning Docking Device (if applicable)

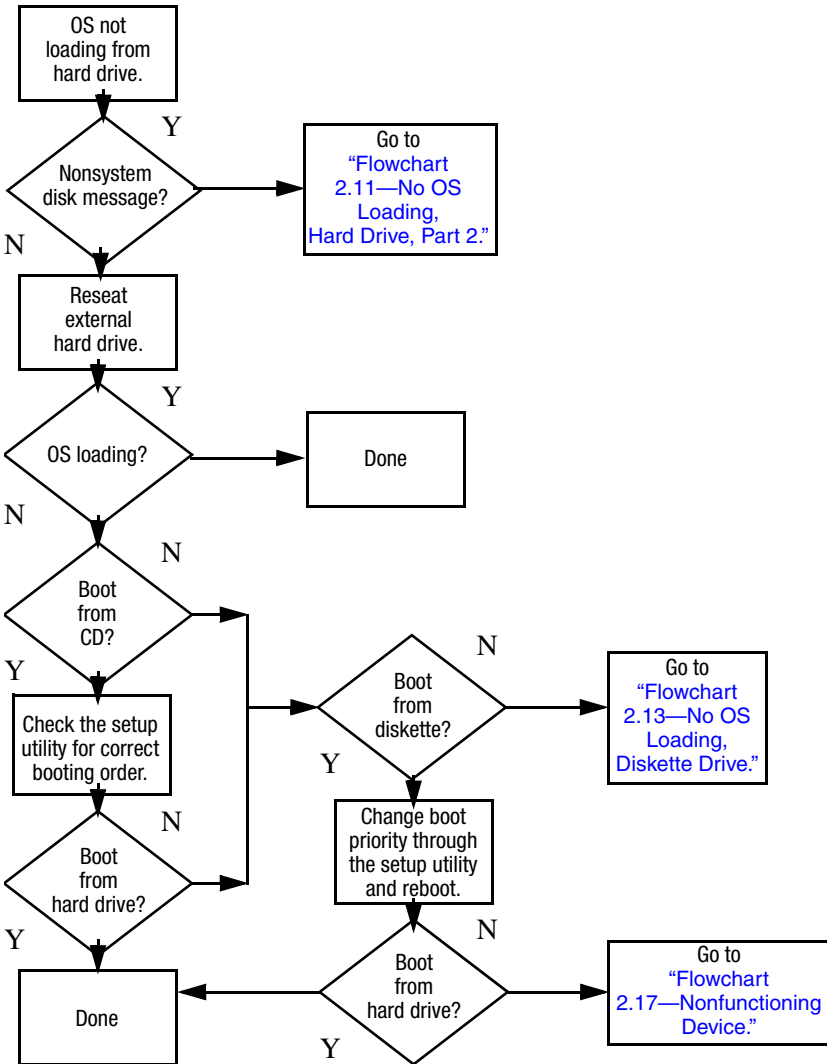


## Flowchart 2.9—No Operating System (OS) Loading

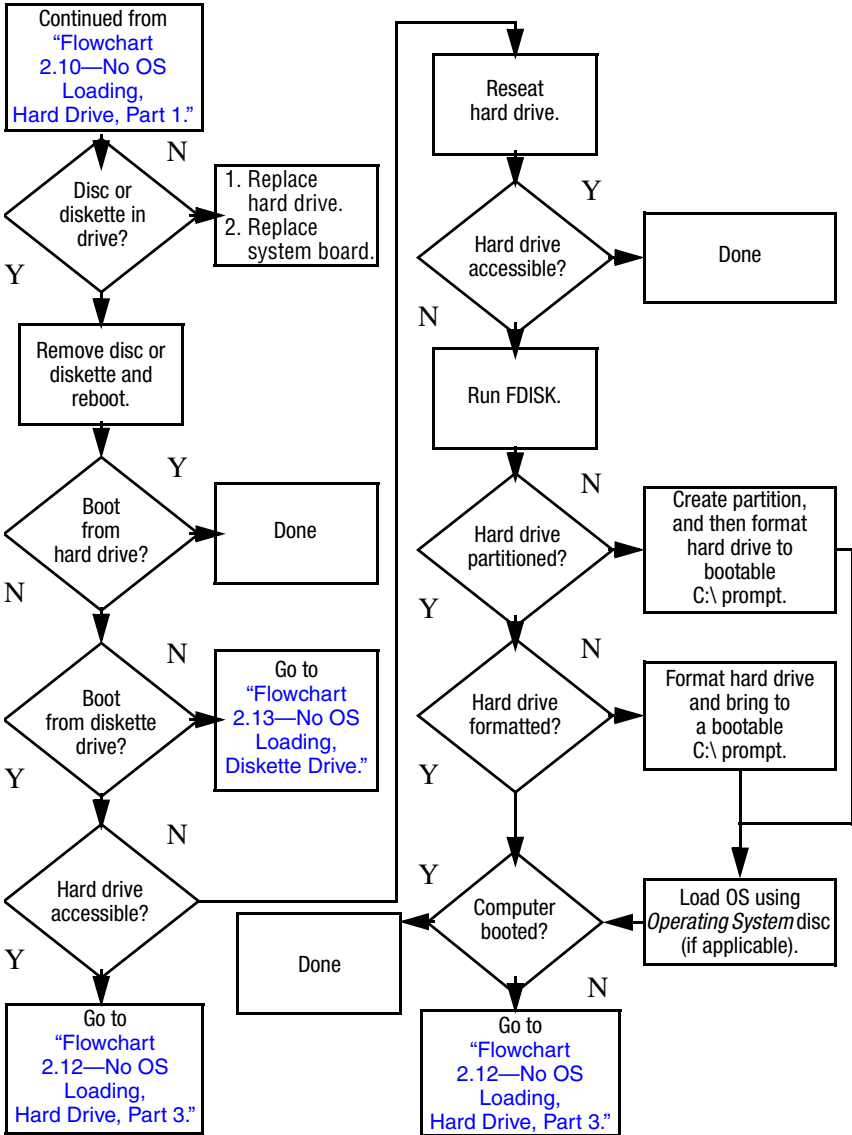


\*NOTE: Before beginning troubleshooting, always check cable connections, cable ends, and drives for bent or damaged pins.

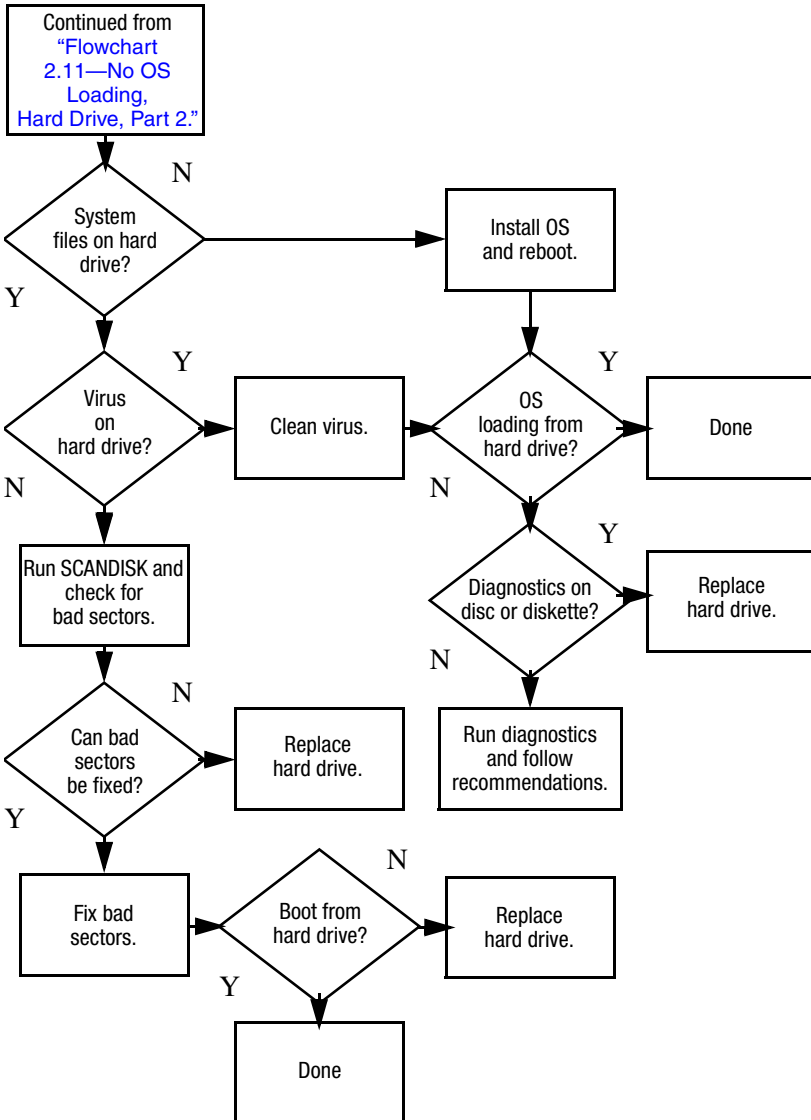
## Flowchart 2.10—No OS Loading, Hard Drive, Part 1



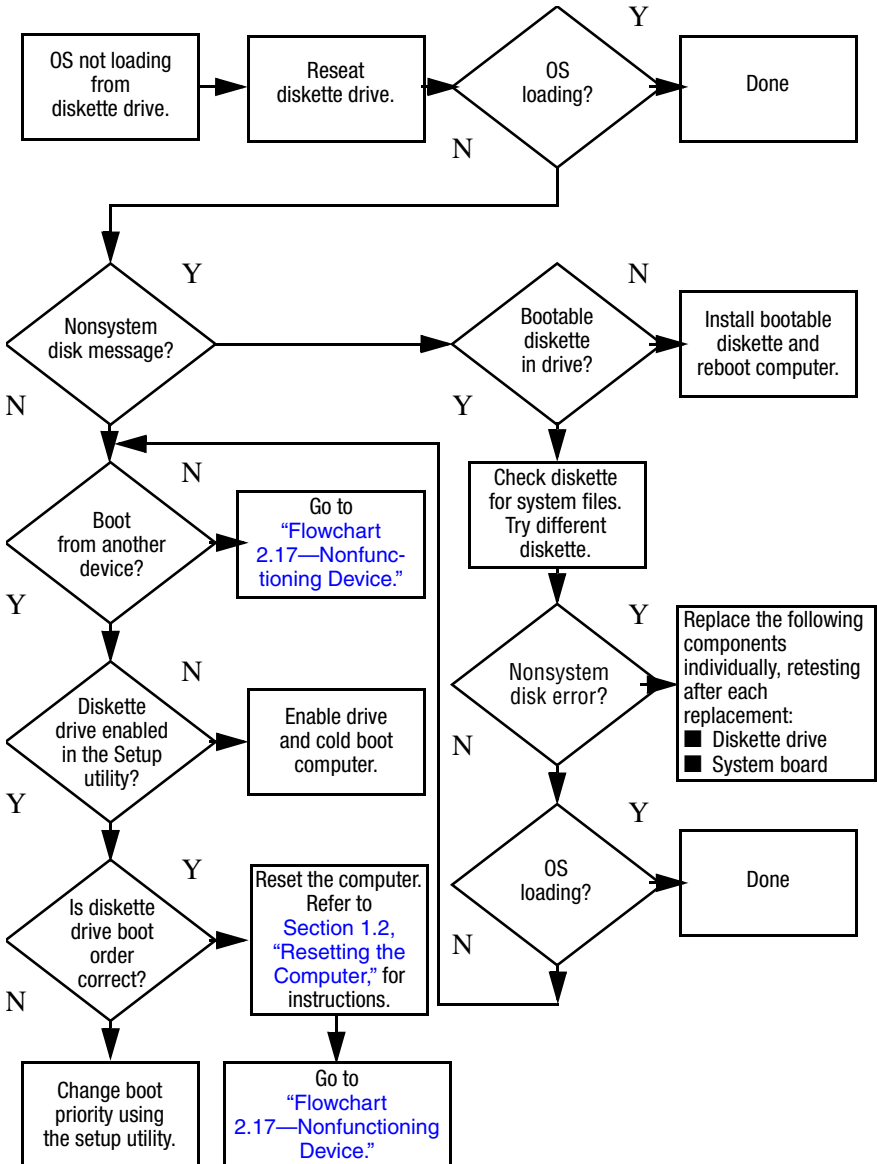
## Flowchart 2.11 —No OS Loading, Hard Drive, Part 2



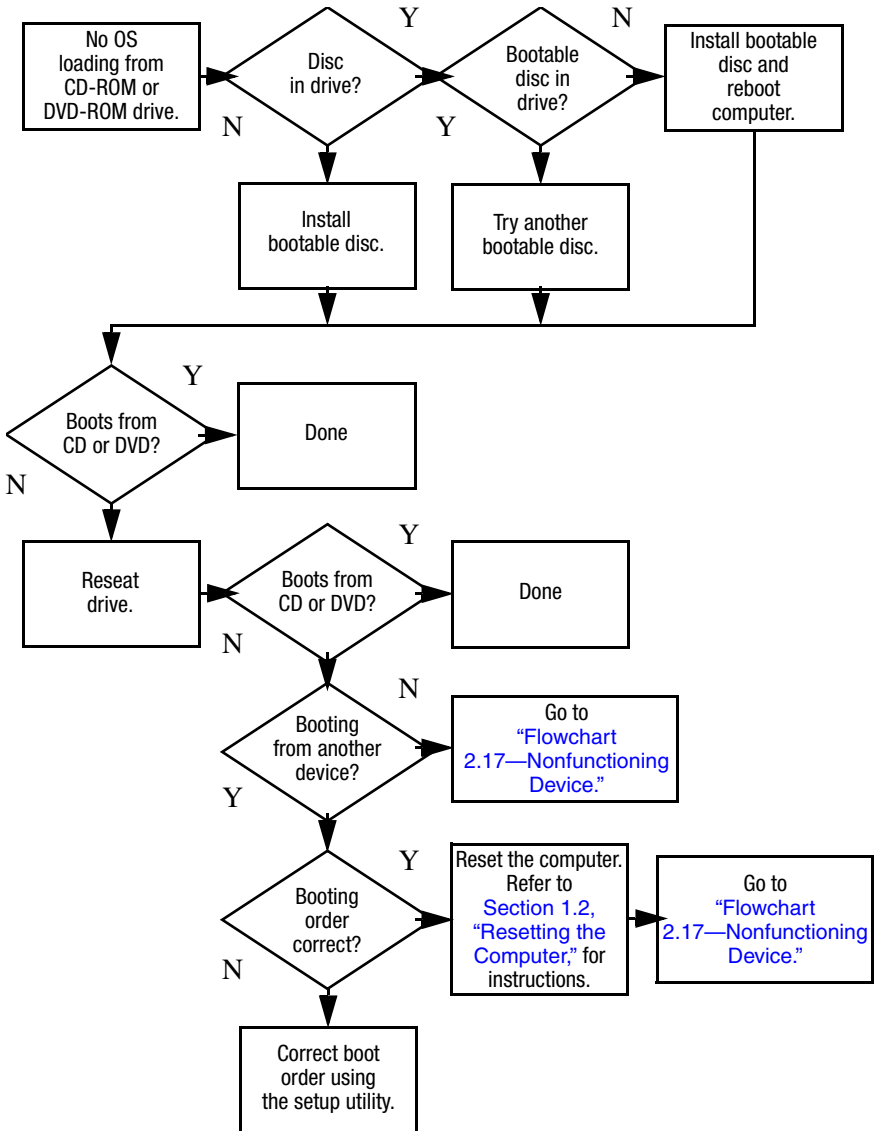
## Flowchart 2.12—No OS Loading, Hard Drive, Part 3



## Flowchart 2.13—No OS Loading, Diskette Drive

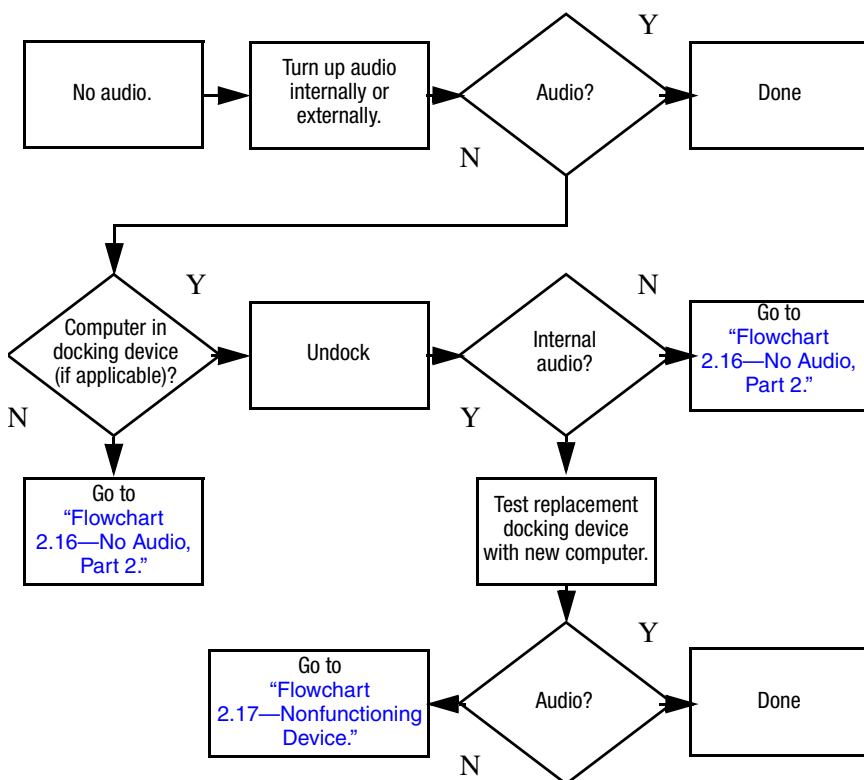


## Flowchart 2.14—No OS Loading, Optical Drive

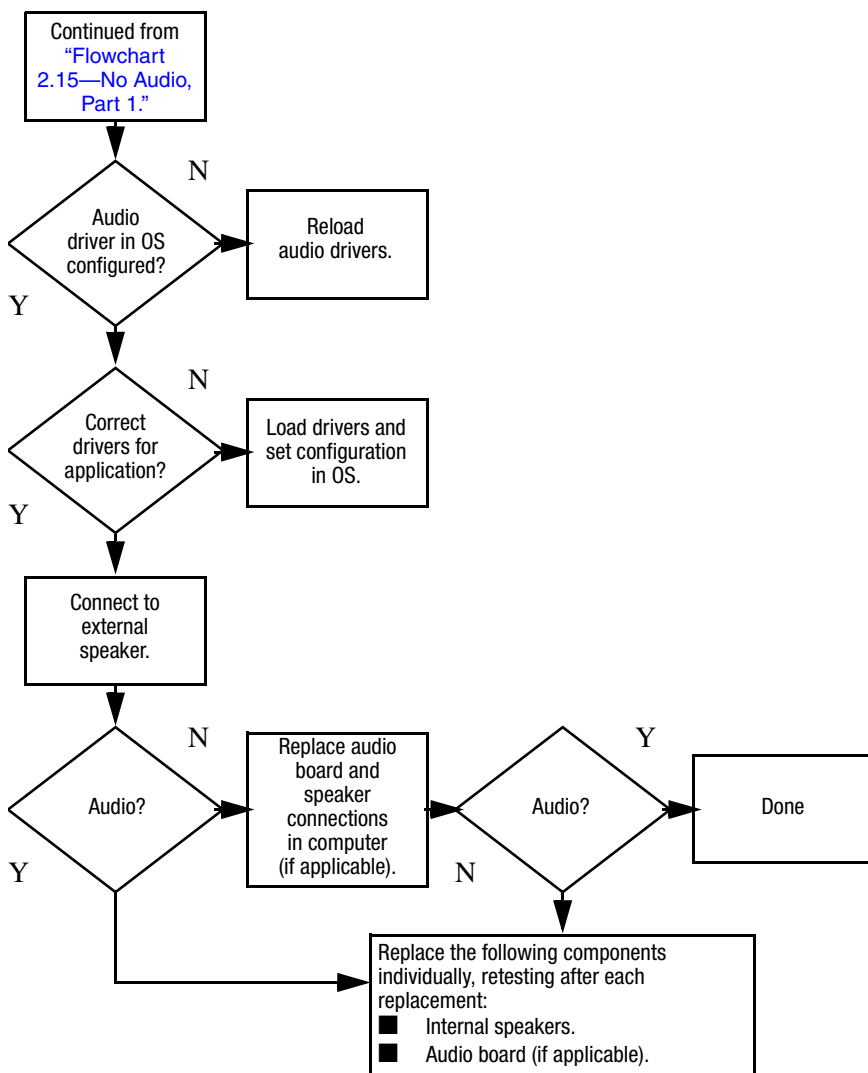




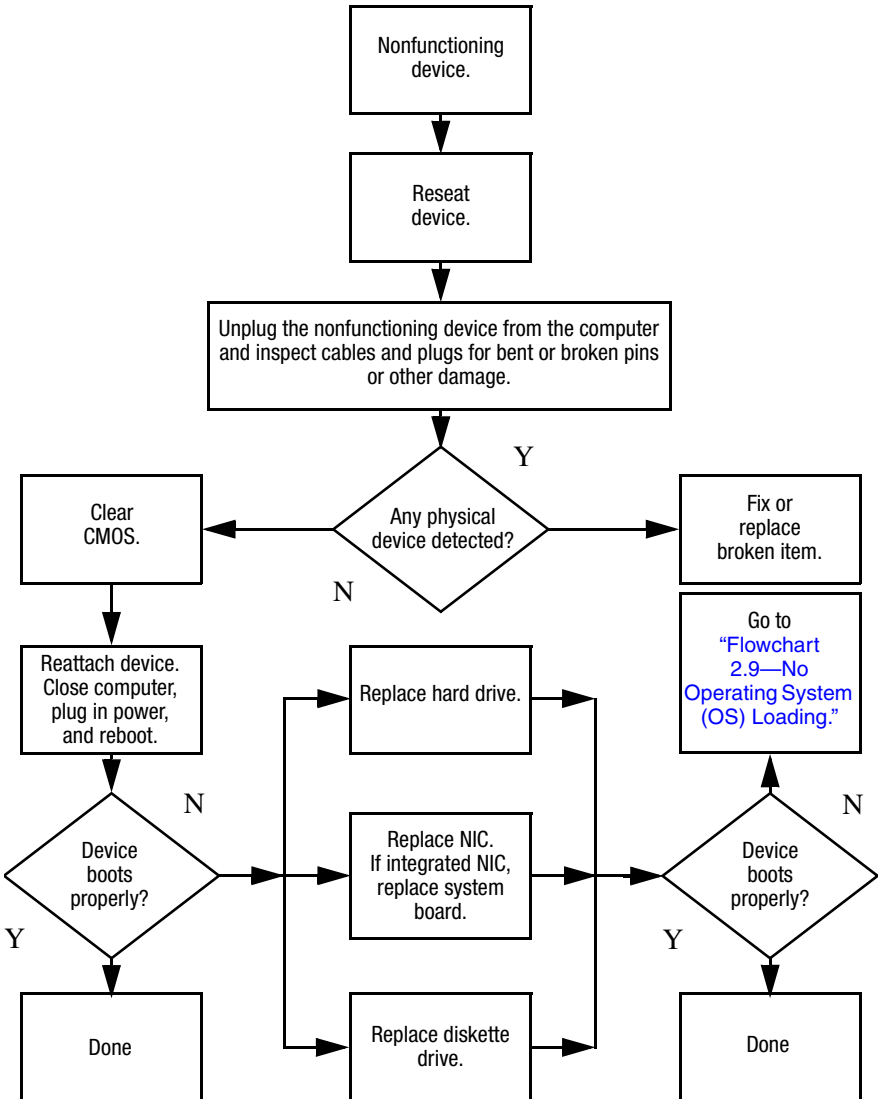
## Flowchart 2.15—No Audio, Part 1



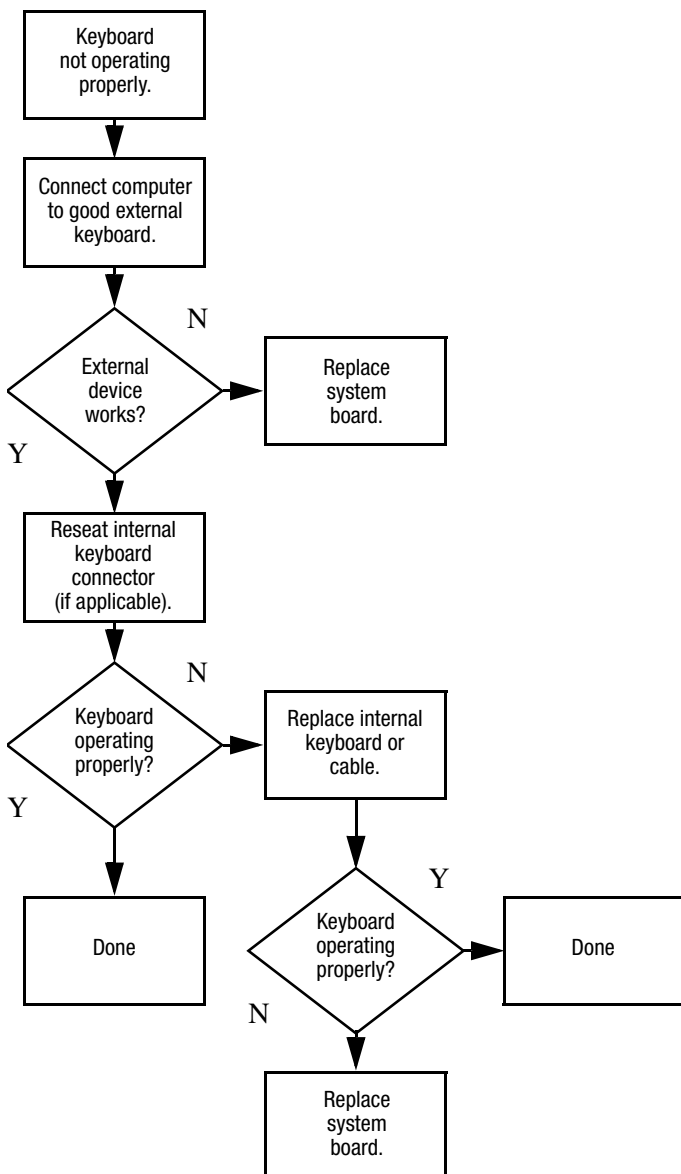
## Flowchart 2.16—No Audio, Part 2



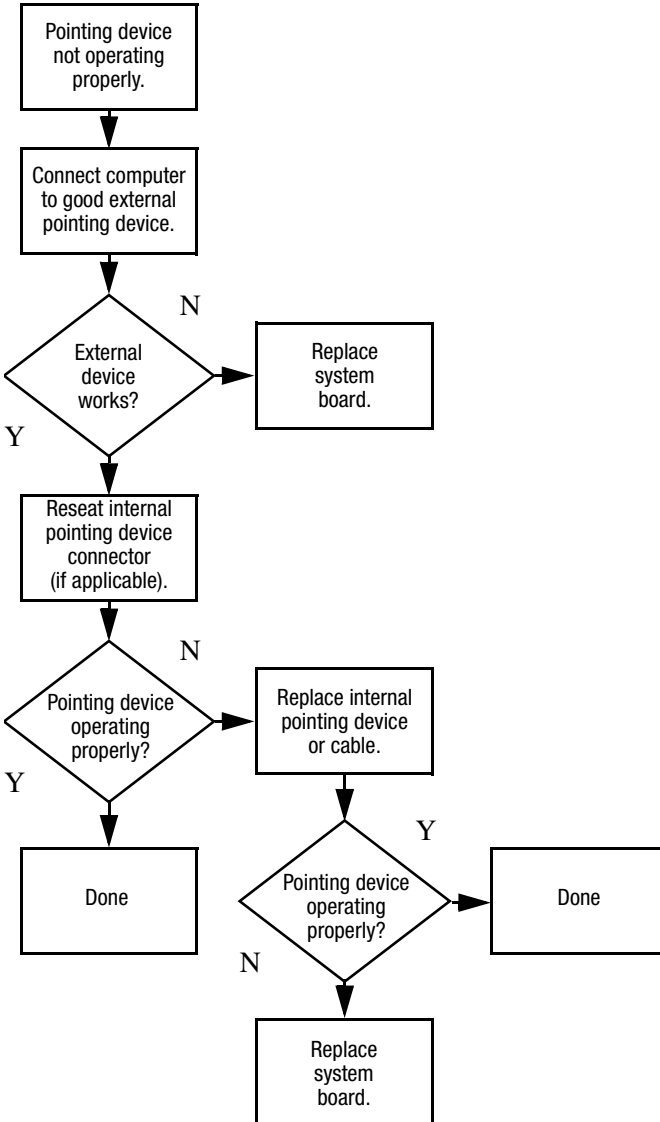
## Flowchart 2.17—Nonfunctioning Device



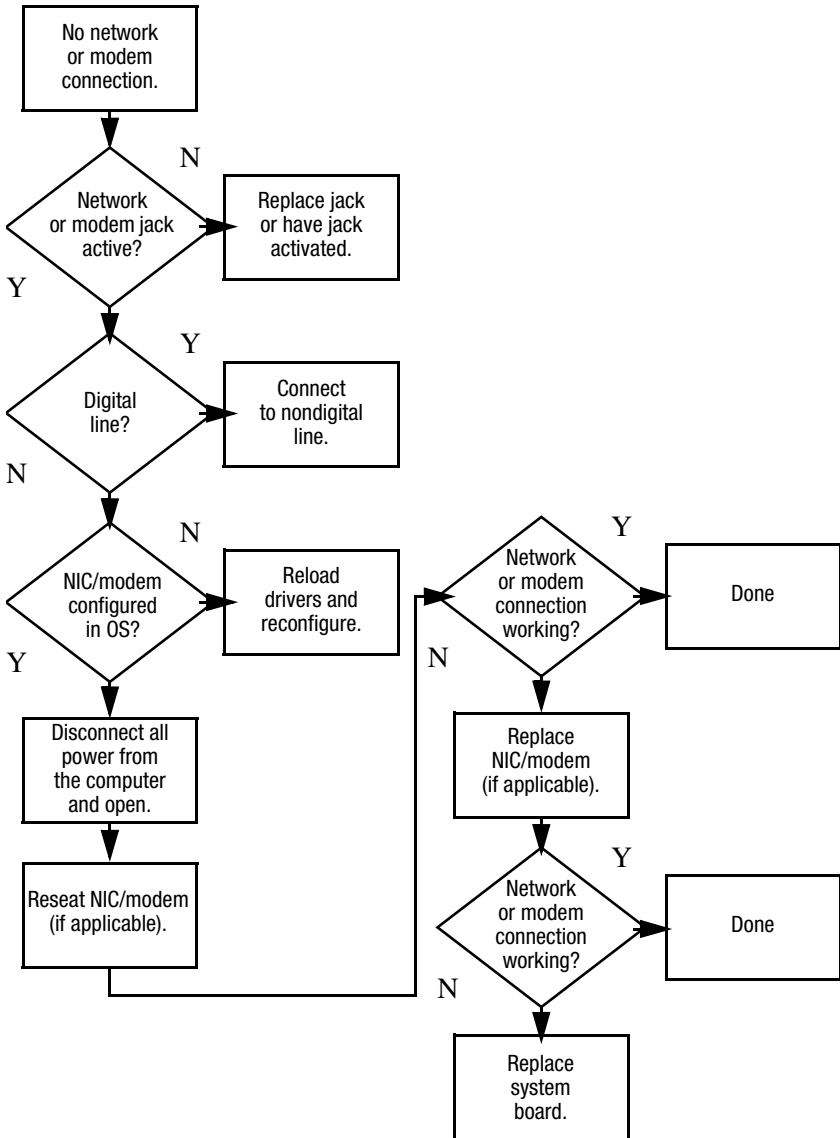
## Flowchart 2.18—Nonfunctioning Keyboard



## Flowchart 2.19—Nonfunctioning Pointing Device



## Flowchart 2.20—No Network/Modem Connection



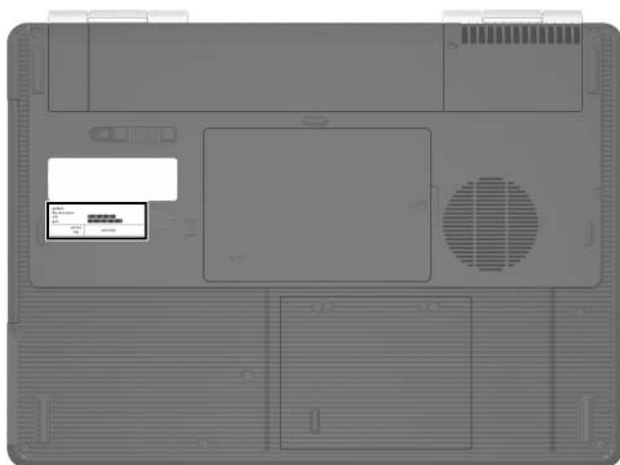
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# Illustrated Parts Catalog

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

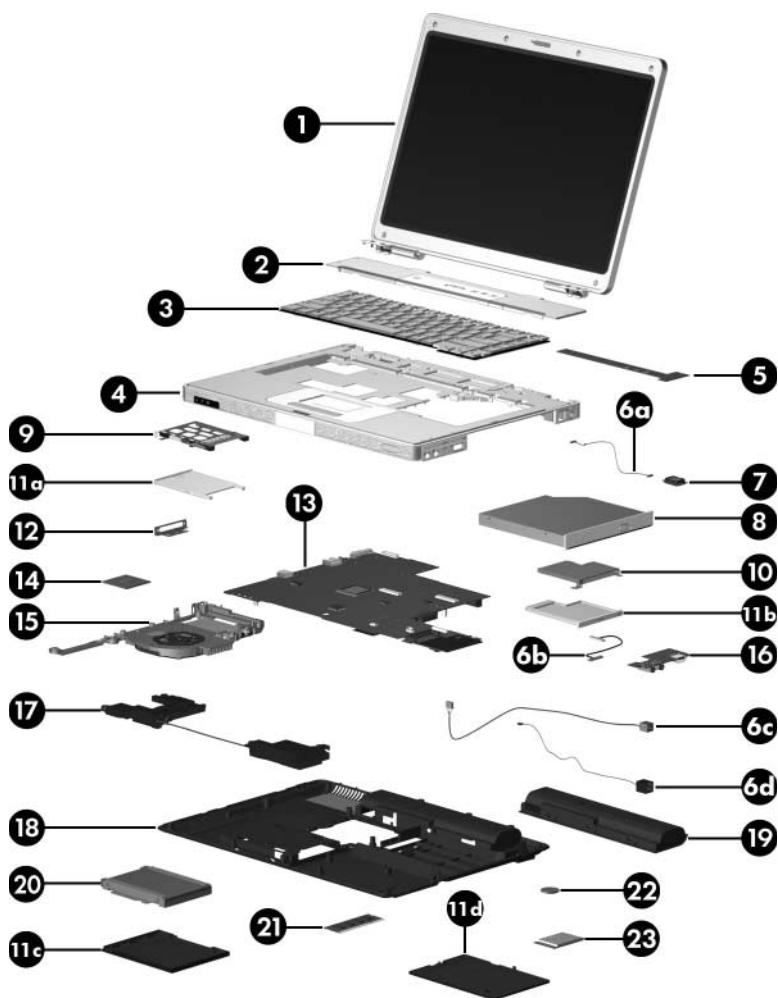
## 3.1 Serial Number Location

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

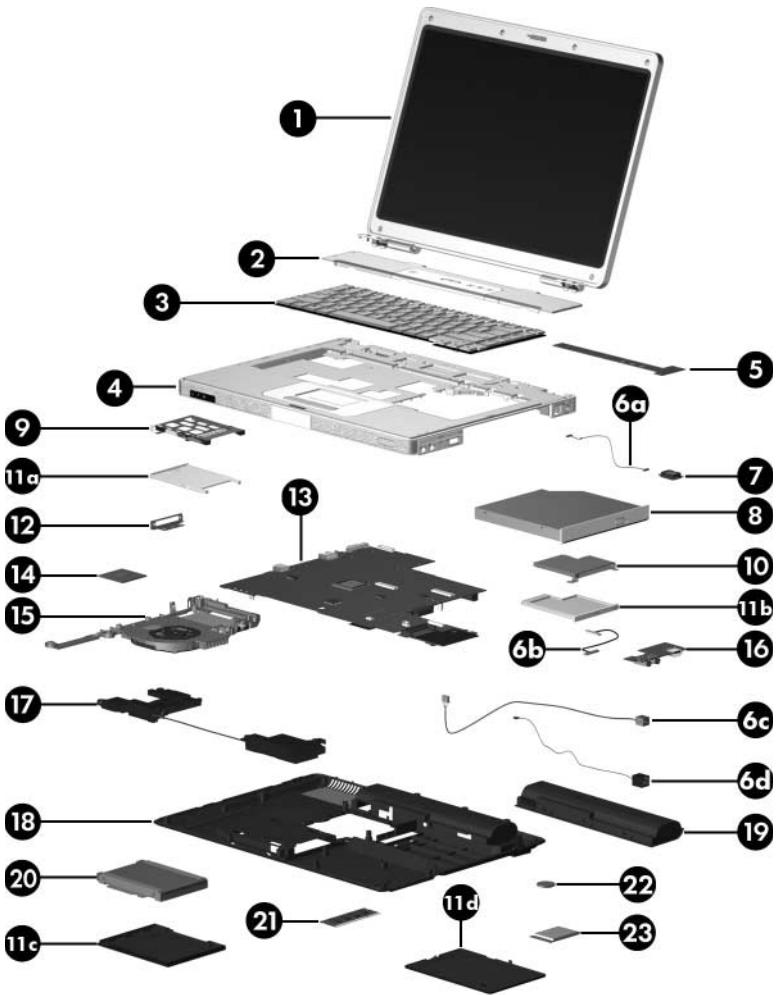


Computer Major Components



**Table 3-1**  
**Spare Parts: Computer Major Components**

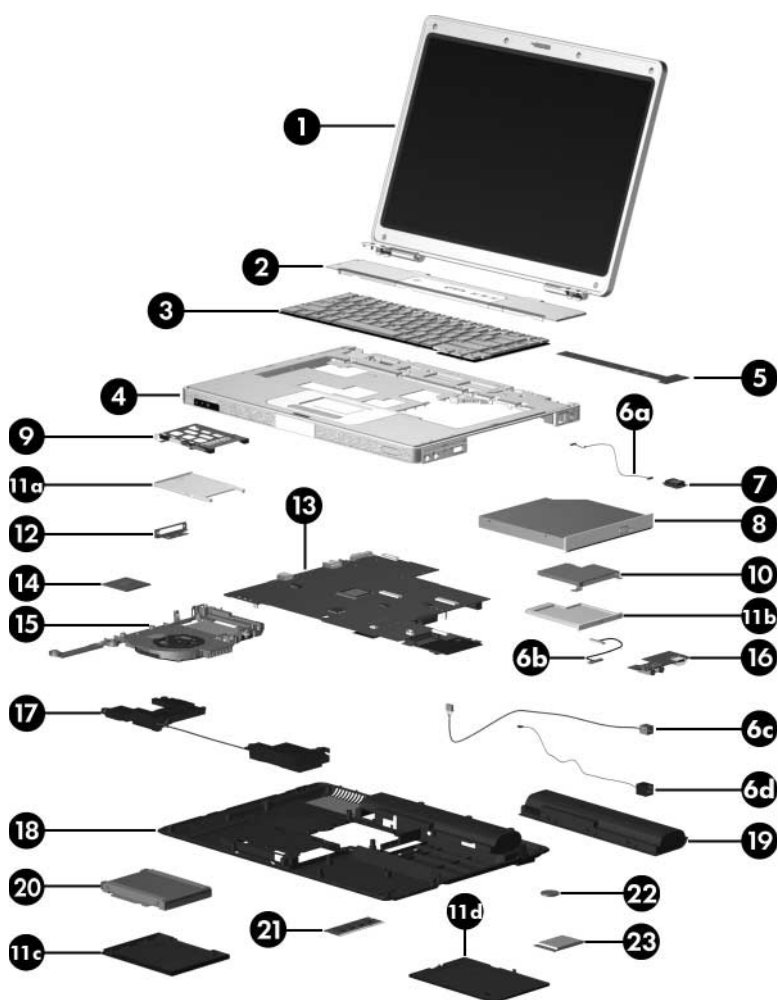
Item	Description			Spare Part Number
1	<b>Display assemblies</b> (include display cable, wireless antenna boards, and antenna cables)			
	15.4-inch, WXGA with BrightView			407842-001
	15.4-inch, WXGA antiglare			407840-001
	 Refer to <a href="#">Section 3.3, "Display Assembly Subcomponents,"</a> for display assembly internal component spare part number information.			
2	<b>Switch cover</b>			407827-001
3	<b>Keyboards</b>			
	Denmark	407856-081	Spain	407856-071
	France	407856-051	Sweden/Finland	407587-B71
	French Canada	407856-121	Thailand	407856-281
	International	407856-B31	The United Kingdom	407856-031
	Italy	407856-061		
	Korea	407856-AD1	The United States	407856-001
	Norway	407856-091		
4	<b>Top cover</b> (includes TouchPad)			407823-001
	<b>TouchPad bracket</b> (not illustrated)			407812-001
	<b>Display release button assembly</b> (not illustrated)			407861-001
5	<b>LED board</b> (includes LED board cable)			409071-001



Computer Major Components

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

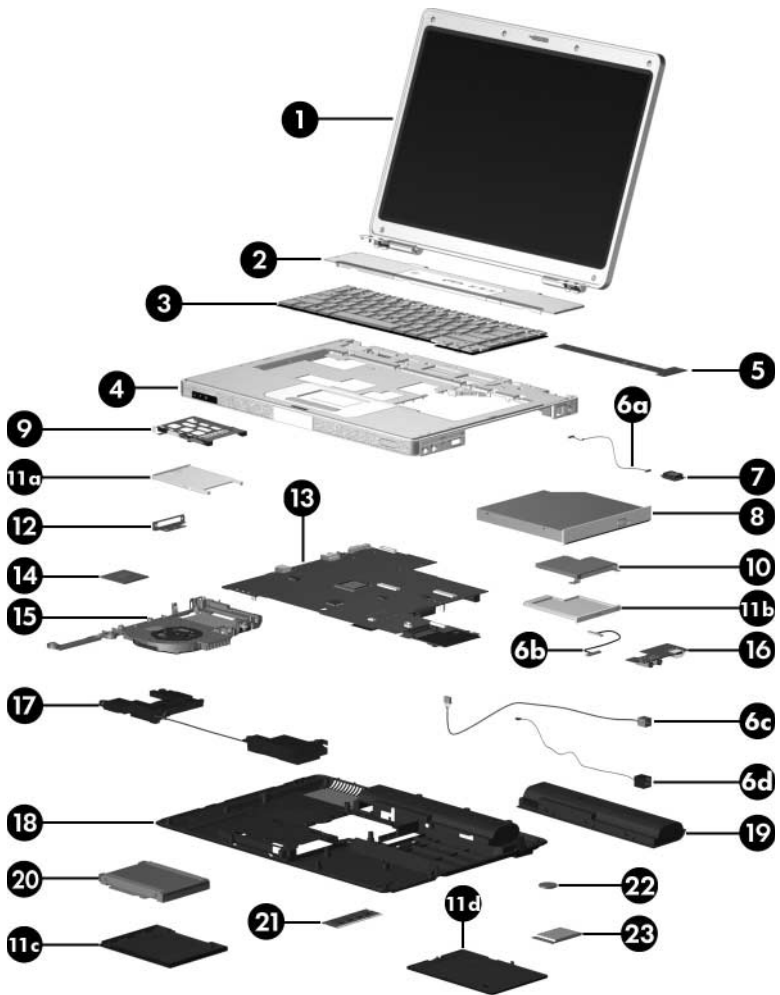
<b>Item</b>	<b>Description</b>	<b>Spare Part Number</b>
	<b>Cable Kit</b>	407775-001
	Includes:	
6a	Bluetooth module cable	
6b	USB/audio board cable	
6c	Power connector and cable	
6d	Modem connector and cable	
7	<b>Bluetooth® module</b> (includes Bluetooth module cable)	397922-001
8	<b>Optical drives</b>	
	DVD±RW and CD-RW Double Layer Combo Drive with LightScribe and HLDS	417699-001
	DVD±RW and CD-RW Double Layer Combo Drive with LightScribe	413102-001
	DVD/CD-RW Double Layer Combo Drive	413101-001
	DVD/CD-RW Combo Drive	413100-001
9	<b>PC Card assembly</b>	407829-001
10	<b>ExpressCard assembly</b>	407809-001
11	<b>Plastics Kit</b>	407779-001
	Includes:	
11a	PC Card slot bezel	
11b	ExpressCard slot bezel	
11c	Hard drive cover (includes 2 captive screws)	
11d	Memory/Mini Card module compartment cover (includes 2 captive screws)	
	Computer feet (8, not illustrated)	
12	Expansion port 2 bracket	407863-001



Computer Major Components

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

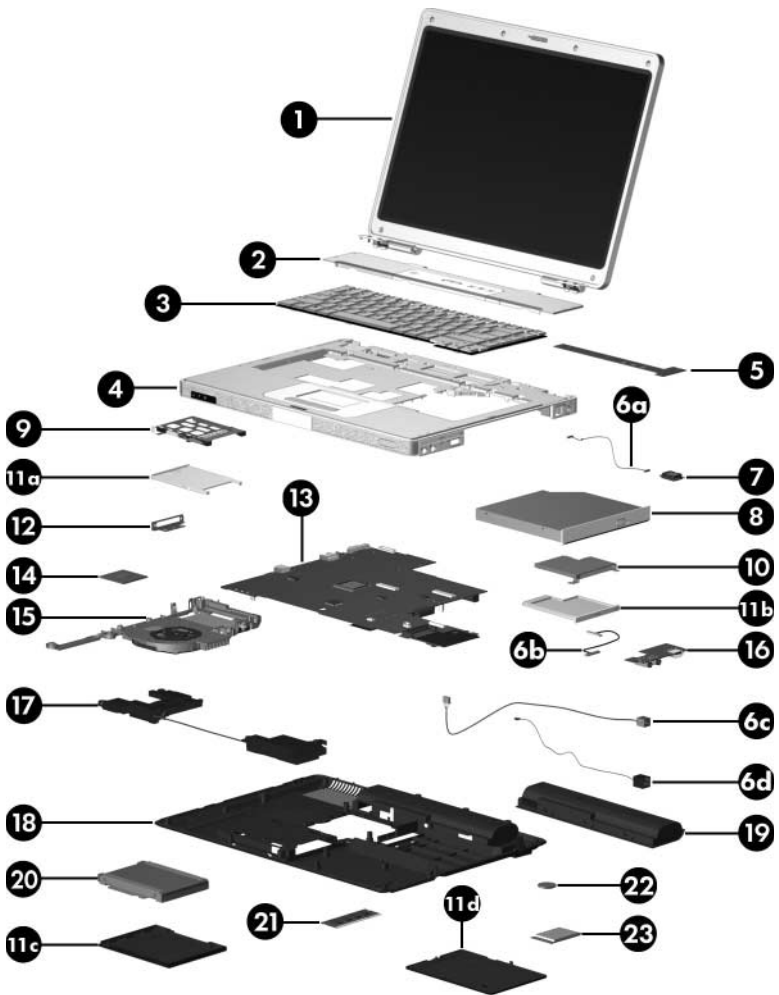
<b>Item</b>	<b>Description</b>	<b>Spare Part Number</b>
13	<b>945GM system board</b>	407759-001
14	<b>Processors</b> (include thermal paste)	
	Intel Pentium M 2.0-GHz	407762-001
	Intel Pentium M 1.83-GHz	407761-001
	Intel Pentium M 1.66-GHz Dual Code	407760-001
	Intel Pentium M 1.66-GHz Single Code	407764-001
15	<b>Fan assembly</b> (includes thermal paste)	409073-001
	<b>Heat sink assembly</b> (includes thermal paste)	403827-001
16	<b>USB/audio board</b> (includes USB/audio board cable)	409078-001
17	<b>Speakers</b>	407785-001
18	<b>Base enclosure</b>	407815-001
19	<b>Battery packs</b>	
	12-cell, 8.8-Amp hour	407835-001
	6-cell, 4.0-Amp hour	407834-001



Computer Major Components

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

<b>Item</b>	<b>Description</b>	<b>Spare Part Number</b>
20	<b>Hard drives</b> (include frame and connector)	
	5400 rpm, 100-GB	409064-001
	5400 rpm, 80-GB	409063-001
	5400 rpm, 60-GB	409062-001
	5400 rpm, 40-GB	409061-001
21	<b>Memory modules, 1-DIMM</b>	
	PC2-5300	PC2-4200
	1024 MB      409060-001	1024 MB      407767-001
	512 MB      409059-001	512 MB      407766-001
	256 MB      409058-001	256 MB      407765-001
	<b>SD Memory Cards</b> (not illustrated)	
	512 MB	407316-001
	256 MB	403573-001
22	<b>RTC battery</b> (includes 2-sided tape)	407816-001

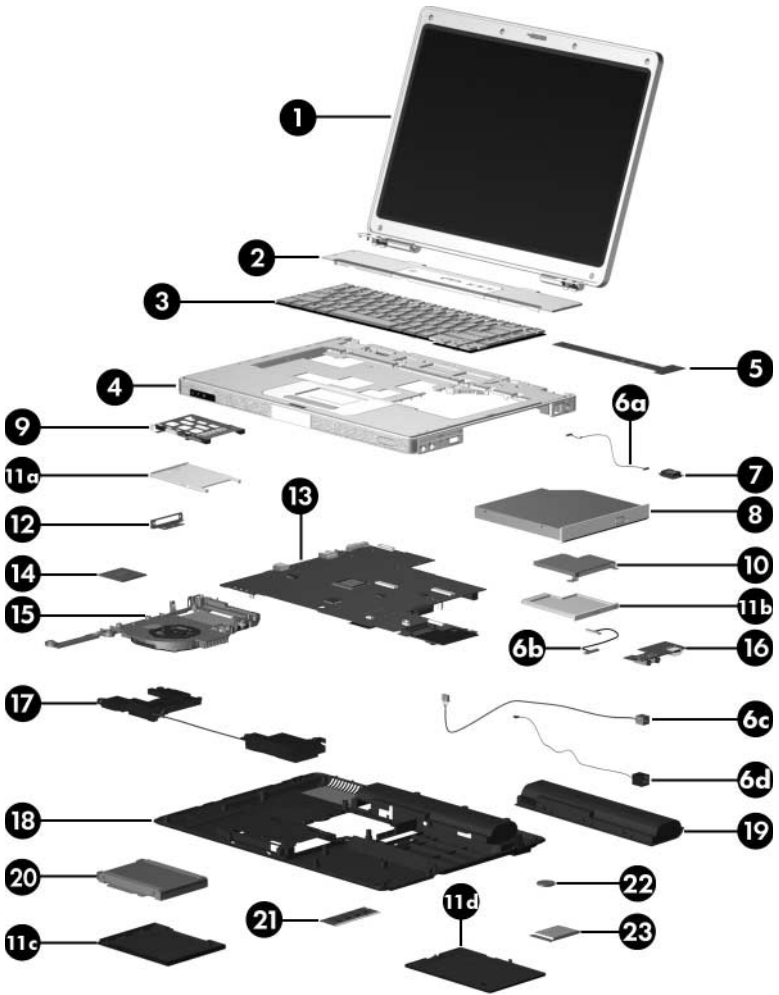


Computer Major Components



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

Item	Description	Spare Part Number		
23	<b>Mini Card modules</b>			
	802.11a/b/g WLAN module for use in the countries listed below. These countries are categorized as most of the world (MOW) 1.	407576-001		
	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	
	802.11a/b/g WLAN module for use in the countries listed below. These countries are categorized as most of the world MOW 2.	407576-002		
	Aruba	El Salvador	Poland	Norway
	Austria	Estonia	Portugal	Oman
	Azerbaijan	Finland	Romania	Slovenia
	Bahrain	France	Russia	South Africa
	Belgium	Georgia	Serbia and Montenegro	Spain
	Bermuda	Germany	Singapore	Sri Lanka
	Bulgaria	Greece	Slovakia	Sweden
	Cayman Islands	Hungary	Liechtenstein	Switzerland
	Columbia	Iceland	Lithuania	Turkey
	Croatia	Ireland	Luxembourg	The United Kingdom
	Cyprus	Italy	Malta	Uzbekistan
	Czech Republic	Latvia	Monaco	
	Denmark	Lebanon	The Netherlands	
	Egypt	The Philippines		

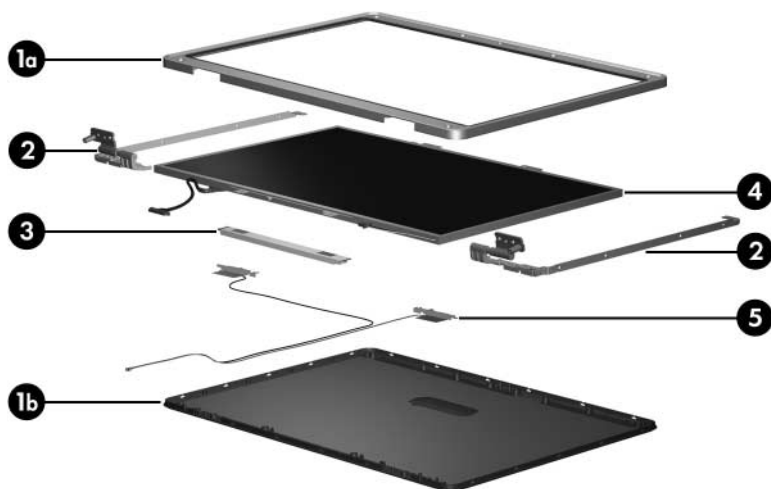


Computer Major Components

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

<b>Item</b>	<b>Description</b>	<b>Spare Part Number</b>
23	<b>Mini Card modules</b> ( <i>Continued</i> )	
	802.11a/b/g WLAN module for use in the countries listed below. These countries are categorized as the rest of the world ROW.	407576-003
	China                      Honduras                      Qatar	Uruguay
	Ecuador                      Pakistan                      South Korea	Venezuela
	Haiti                      Peru	
	802.11b/g WLAN module for use in the following countries:	409250-004
	Jordan                      Kuwait                      United Arab	Ukraine
	Israel                      Thailand                      Emirates	

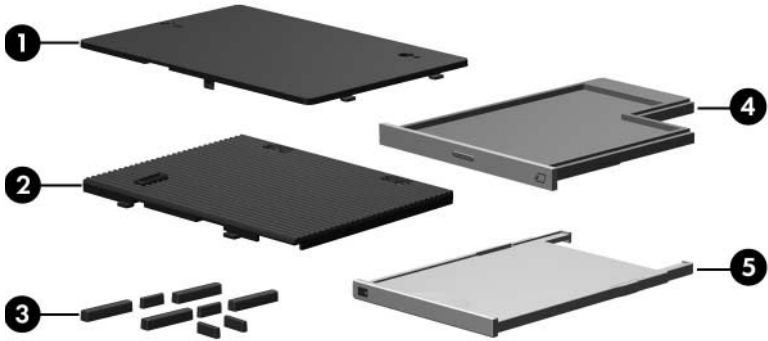
## **3.3 Display Assembly Subcomponents**



**Table 3-2**  
**Display Assembly Subcomponents**  
**Spare Part Number Information**

<b>Item</b>	<b>Description</b>	
	<b>Display Plastics Kit</b> , includes:	407793-001
1a	■ Display bezel	
1b	■ Display enclosure	
2	<b>Display Hinge Kit</b>	407797-001
3	<b>Display inverter board</b>	407800-001
4	<b>Display Panel Kit</b> (includes display panel cable)	
	15.4-inch, WXGA with BrightView	407799-001
	15.4-inch, WXGA antiglare	407798-001
5	<b>Wireless Antenna Kit</b> (includes cable, transceivers, and tape)	410118-001
	<b>Display Label Kit</b> (not illustrated)	409082-001
	<b>Display Screw Kit</b> (not illustrated), includes:	407795-001
	■ Phillips PM2.5×7.0 screws	
	■ Phillips PM2.0×4.0 screws	
	■ Rubber screw covers	

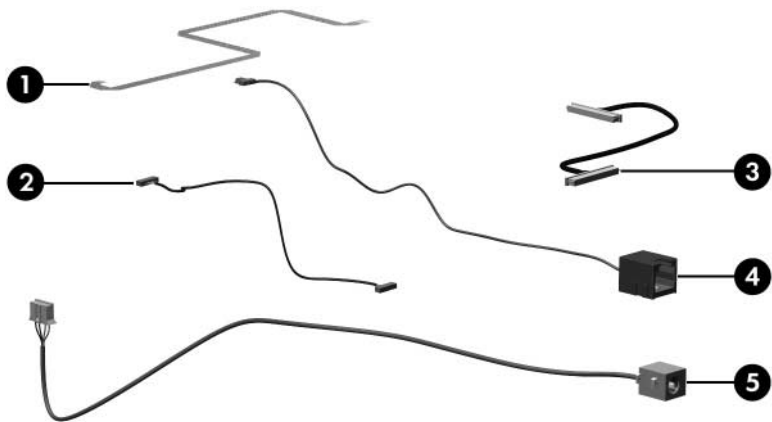
### 3.4 Plastics Kit



**Table 3-3**  
**Plastics Kit**  
**Spare Part Number Information**

Item	Description	Spare Part Number
	<b>Plastics Kit</b> , includes:	407779-001
1	Memory/Mini Card module compartment cover (includes 2 captive screws, secured by C-clips)	
2	Hard drive cover (includes 2 captive screws, secured by C-clips)	
3	Computer feet for use on base enclosure (8)	
4	ExpressCard slot bezel	
5	PC Card slot bezel	

### 3.5 Cable Kit



**Table 3-4**  
**Cable Kit**  
**Spare Part Number Information**

Item	Description	Spare Part Number
	<b>Cable Kit</b> , includes:	407775-001
1	TouchPad cable	
2	Bluetooth module cable	
3	USB/audio board cable	
4	Modem connector cable	
5	Power connector cable	

## **3.6 Mass Storage Devices**





**Table 3-5**  
**Mass Storage Devices**  
**Spare Part Number Information**

<b>Item</b>	<b>Description</b>	<b>Spare Part Number</b>
<b>1</b>	<b>Hard drives</b> (include frame and connector)	
	5400 rpm, 100-GB	409064-001
	5400 rpm, 80-GB	409063-001
	5400 rpm, 60-GB	409062-001
	5400 rpm, 40-GB	409061-001
<b>2</b>	<b>Optical drives</b>	
	DVD±RW and CD-RW Double Layer Combo Drive with LightScribe and HLDS	417699-001
	DVD±RW and CD-RW Double Layer Combo Drive with LightScribe	413102-001
	DVD/CD-RW Double Layer Combo Drive	413101-001
	DVD/CD-RW Combo Drive	413100-001
	<b>USB digital drive</b> (not illustrated)	364727-001

## 3.7 Miscellaneous (Not Illustrated)

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**Table 3-6**  
**Miscellaneous (Not Illustrated)**  
**Spare Part Information**

<b>Description</b>	<b>Spare Part Number</b>
<b>Analog TV tuner</b>	407941-001
<b>Composite S-Video and audio cable</b>	407939-001
<b>DVB-T TV tuner</b>	412175-001
<b>DVB-T TV tuner antenna</b>	412176-001
<b>HP Remote Control II</b>	407313-001
<b>RF cable</b>	408485-001
<b>RF input adapter cable</b>	407940-001
<b>TV tuner remote control</b>	408479-001
<b>USB infrared receiver</b>	408843-001

**Table 3-6**  
**Miscellaneous (Not Illustrated)**  
**Spare Part Information (*Continued*)**

Description	Spare Part Number
<b>Screw Kit</b> (includes the following screws; refer to <a href="#">Appendix C, "Screw Listing,"</a> for more information on specifications and usage)	409068-001
<ul style="list-style-type: none"> <li>■ Phillips PM3.0×6.0 Screw</li> <li>■ Phillips PM3.0×3.0 screw</li> <li>■ Phillips PM2.5×11.0 screw</li> <li>■ Phillips PM2.5×7.0 Screw</li> <li>■ Phillips PM2.5×6.0 screw</li> <li>■ Black Phillips PM2.5×5.0 screw</li> </ul>	<ul style="list-style-type: none"> <li>■ Silver Phillips PM2.5×5.0 Screw</li> <li>■ Phillips PM2.5×3.0 screw</li> <li>■ Phillips PM2.0×6.0 Screw</li> <li>■ Phillips PM2.0×4.0 Screw</li> <li>■ Phillips PM2.0×3.0 Screw</li> <li>■ Slotted M1.5×9.0 screw</li> </ul>
<b>USB travel mouse</b>	309674-001
<b>USB digital drive</b>	364727-001
<b>Wired headset with volume control</b>	371693-001

**Table 3-6**  
**Miscellaneous (Not Illustrated)**  
**Spare Part Information (*Continued*)**

<b>Description</b>	<b>Spare Part Number</b>
<b>Power supply, 65 watt</b>	403810-001
<b>Power cords</b>	
For use in:	
Australia	403811-011
Canada, French Canada, and the United States	403811-001
Denmark	403811-081
France, Germany, and Spain	403811-021
India	403811-D61
Israel	403811-BB1
Italy	403811-061
Korea	403811-AD1
The People's Republic of China	403811-AA1
Switzerland	403811-111
Taiwan	403811-AB1
The United Kingdom	403811-031

## 3.8 Sequential Part Number Listing

**Table 3-7**  
**Sequential Part Number Listing**

<b>Spare Part Number</b>	<b>Description</b>
309674-001	USB travel mouse
364727-001	USB digital drive
371693-001	Wired headset with volume control
397922-001	Bluetooth module (includes Bluetooth module cable)
403573-001	SD Memory Card 256-MB
403810-001	Power supply, 65 watt
403811-001	Power cord for use in the United States
403811-011	Power cord for use in Australia
403811-021	Power cord for use internationally
403811-031	Power cord for use in the United Kingdom
403811-061	Power cord for use in Italy
403811-081	Power cord for use in Denmark
403811-111	Power cord for use in Sweden and Finland
403811-AA1	Power cord for use in the People's Republic of China
403811-AB1	Power cord for use in Taiwan
403811-AD1	Power cord for use in Korea
403811-BB1	Power cord for use in Israel
403811-D61	Power cord for use in India
403827-001	Heat sink (includes thermal paste)
407316-001	SD Memory Card 512-MB

**Table 3-7**  
**Sequential Part Number Listing (*Continued*)**

Spare Part Number	Description		
407576-001	802.11a/b/g WLAN Mini Card module for use in the following MOW1 category countries:		
	Antigua and Barbuda	Dominican Republic	Malaysia
	Argentina	Guam	Mexico
	Australia	Guatemala	New Zealand
	Bahamas	Hong Kong	Paraguay
	Barbados	Panama	Saudi Arabia
	Brunei	India	Taiwan
	Canada	Indonesia	The United States
	Chile		Vietnam
407576-002	802.11a/b/g WLAN Mini Card module for use in the following MOW2 category countries:		
	Aruba	Georgia	Liechtenstein
	Austria	Germany	Lithuania
	Azerbaijan	Greece	Luxembourg
	Bahrain	Hungary	Malta
	Belgium	Iceland	Monaco
	Bermuda	Ireland	The Netherlands
	Bulgaria	Italy	Norway
	Cayman Islands	Latvia	Oman
	Columbia	Lebanon	Slovenia
	Croatia	The Philippines	South Africa
	Cyprus	Poland	Spain
	Czech Republic	Portugal	Sri Lanka
	Denmark	Romania	Sweden
	Egypt	Russia	Switzerland
	El Salvador	Serbia and Montenegro	Turkey
	Estonia		The United Kingdom
	Finland	Singapore	
	France	Slovakia	Uzbekistan

**Table 3-7**  
**Sequential Part Number Listing (*Continued*)**

<b>Spare Part Number</b>	<b>Description</b>
407576-003	802.11a/b/g WLAN Mini Card module for use in the following ROW category countries: <div> <div>China</div> <div>Ecuador</div> <div>Haiti</div> <div>Honduras</div> </div> <div> <div>Pakistan</div> <div>Peru</div> <div>Qatar</div> </div> <div> <div>South Korea</div> <div>Uruguay</div> <div>Venezuela</div> </div>
407759-001	945GM system board
407760-001	Intel Pentium M 1.66-GHz Dual Code processor (include thermal paste)
407761-001	Intel Pentium M 1.83-GHz processor (include thermal paste)
407762-001	Intel Pentium M 2.0-GHz processor (include thermal paste)
407764-001	Intel Pentium M 1.66-GHz Single Code processor (include thermal paste)
407765-001	1-DIMM, PC2-4200 256 MB memory module
407766-001	1-DIMM, PC2-4200 512 MB memory module
407767-001	1-DIMM, PC2-4200 1024 MB memory module
407775-001	Cable Kit
407779-001	Plastics Kit
407781-001	Rubber Pad Kit
407785-001	Speakers
407793-001	Display Plastics Kit
407795-001	Display Screw Kit
407797-001	Display HInge Kit
407798-001	Display Panel Kit for use with antiglare displays
407799-001	Display Panel Kit for use with BrightView displays

**Table 3-7**  
**Sequential Part Number Listing (*Continued*)**

<b>Spare Part Number</b>	<b>Description</b>
407800-001	Display inverter board
407800-001	Display inverter board
407809-001	ExpressCard assembly
407812-001	TouchPad bracket
407815-001	Base enclosure
407816-001	RTC battery (includes 2-sided tape)
407821-001	Bracket Kit
407823-001	Top cover (includes TouchPad)
407827-001	Switch cover
407829-001	PC Card assembly
407834-001	6-cell, 4.0-Amp hour battery pack
407835-001	12-cell, 8.8-Amp hour battery pack
407840-001	15.4-inch, WXGA antiglare display assembly (includes display cable, wireless antenna boards, and antenna cables)
407842-001	15.4-inch, WXGA with BrightView display assembly (includes display cable, wireless antenna boards, and antenna cables)
407856-001	Keyboard for use in The United States
407856-031	Keyboard for use in The United Kingdom
407856-051	Keyboard for use in France
407856-061	Keyboard for use in Italy
407856-071	Keyboard for use in Spain
407856-081	Keyboard for use in Denmark
407856-091	Keyboard for use in Norway



**Table 3-7**  
**Sequential Part Number Listing (*Continued*)**

<b>Spare Part Number</b>	<b>Description</b>
407856-121	Keyboard for use in French Canada
407856-281	Keyboard for use in Thailand
407856-AD1	Keyboard for use in Korea
407856-B31	Keyboard for use internationally
407856-B71	Keyboard for use in Sweden and Finland
407861-001	Display release button assembly
407863-001	Expansion port 2 bracket
407939-001	Composite S-Video and audio cable
407940-001	RF input adapter cable
407941-001	Analog TV tuner
408479-001	TV tuner remote control
408485-001	RF cable
408843-001	USB infrared receiver
409058-001	1-DIMM, PC2-5300 256 MB memory module
409059-001	1-DIMM, PC2-5300 512 MB memory module
409060-001	1-DIMM, PC2-5300 1024 MB memory module
409061-001	5400-RPM, 40-GB hard drive (includes frame and connector)
409062-001	5400-RPM, 60-GB hard drive (includes frame and connector)
409063-001	5400-RPM, 80-GB hard drive (includes frame and connector)
409064-001	5400-RPM, 100-GB hard drive (includes frame and connector)
409068-001	Screw Kit
409071-001	LED board for use with full-featured models (includes LED board cable)

**Table 3-7**  
**Sequential Part Number Listing (*Continued*)**

<b>Spare Part Number</b>	<b>Description</b>
409073-001	Fan assembly (includes thermal paste)
409078-001	USB/audio board for use with full-featured models (includes USB/audio board cable)
409082-001	Display Label Kit
409250-004	802.11b/g WLAN Mini Card module
	Israel                      Thailand                      Ukraine Jordan                      United Arab Kuwait                      Emirates
410118-001	Wireless antenna transceivers and cables (includes tape)
412175-001	DVB-T TV tuner
412176-001	DVB-T TV tuner antenna
413100-001	DVD/CD-RW Combo Drive
413101-001	DVD±RW and CD-RW Double Layer Combo Drive
413102-001	DVD/CD-RW Double Layer Combo Drive with LightScribe
417699-001	DVD/CD-RW Double Layer Combo Drive with LightScribe and HLDS

---

# Removal and Replacement Preliminaries

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

## 4.1 Tools Required

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

- Magnetic screwdriver
- Phillips P0 screwdriver
- Flat-bladed screwdriver
- Tool kit—includes connector removal tool, loopback plugs, and case utility tool

## 4.2 Service Considerations

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



As you remove each subassembly from the 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, an optical 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 may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

## **4.5 Packaging and Transporting Precautions**

Use the following grounding precautions when packaging and transporting equipment:

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

## 4.6 Workstation Precautions

Use the following grounding precautions at workstations:

- Cover the workstation with approved static-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 fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
- Handle electrostatic-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

## 4.7 Grounding Equipment and Methods

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm  $\pm 10\%$  resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.



- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

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

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

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

**Table 4-1**  
**Typical Electrostatic Voltage Levels**

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



A product can be degraded by as little as 700 V.

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

**Table 4-2**  
**Static-Shielding Materials**

Material	Use	Voltage Protection Level
Antistatic plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

---

## Removal and Replacement Procedures

This chapter provides removal and replacement procedures.

There are as many as 93 screws, in 12 different sizes, that may have to 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 C, “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 pack	0
5.4	Hard Drive	2 loosened to remove the hard drive cover 4 to disassemble the hard drive
5.5	Computer Feet	0
5.6	Memory Module	1 loosened to remove the memory/Mini Card module compartment cover,
5.7	Mini Card Module	0
	 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.	
5.8	RTC Battery	0

---

**Disassembly Sequence Chart (*Continued*)**

---

Section	Description	# of Screws Removed
5.9	Optical Drive	1 to remove the optical drive, 2 to remove the optical drive bracket
5.10	Switch Cover	2
5.11	Keyboard	4
5.12	Display Assembly	6 to remove the display assembly 6 to remove the display bezel 2 to remove the display hinge base covers 4 to remove the display panel 2 to remove the display release hook 4 to remove each display hinge 1 to remove each wireless antenna transceiver
5.13	Base Enclosure	18
5.14	Bluetooth Module	2
5.15	System Board	4
5.16	Display Release Button Assembly	6
5.17	LED Board	2
5.18	Fan/Heat Sink Assembly	10
5.19	Processor	1 loosened
5.20	PC Card Assembly	2
5.21	ExpressCard Assembly	2

---

## **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.

---

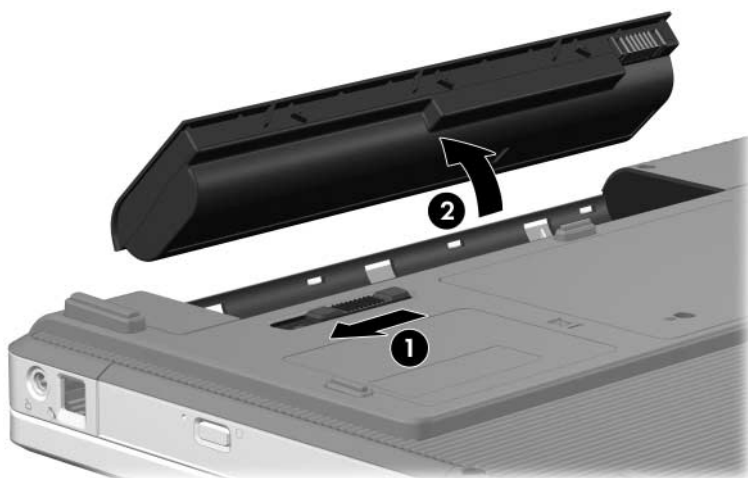
### **Battery Pack Spare Part Number Information**

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12-cell, 8.8-Amp hour	407835-001
6-cell, 4.0-Amp hour	407834-001

---

4. Remove the battery pack by following these steps:
  - a. Turn the computer upside down with the front toward you.
  - b. Slide the battery pack release latch ❶ to the left. (The battery pack disengages from the computer.)
  - c. Lift the front edge of the battery pack ❷ and swing it back to remove it.



### *Removing the Battery Pack*

Reverse the above procedure to install the battery pack.



## 5.4 Hard Drive

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### Hard Drive Spare Part Number Information

---

5400 rpm, 100-GB	409064-001
5400 rpm, 80-GB	409063-001
5400 rpm, 60-GB	409062-001
5400 rpm, 40-GB	409061-001

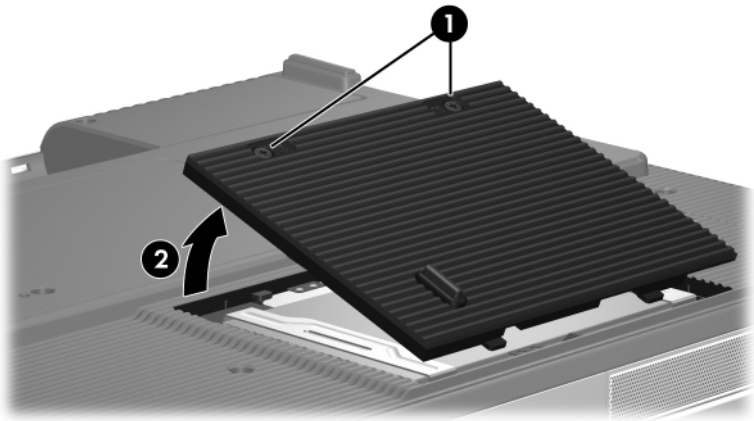
---

1. Prepare the computer for disassembly (refer to [Section 5.3](#)).
2. Loosen the two Phillips PM2.5×5.0 captive screws **1** that secure the hard drive cover to the computer.
3. Lift the rear edge of the hard drive cover **2**, and then swing it up and forward and remove it.



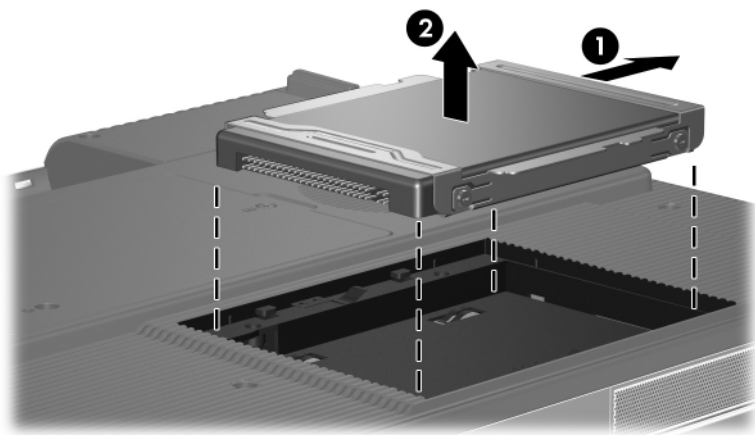
The hard drive cover is included in the Plastics Kit, spare part number 415691-001.

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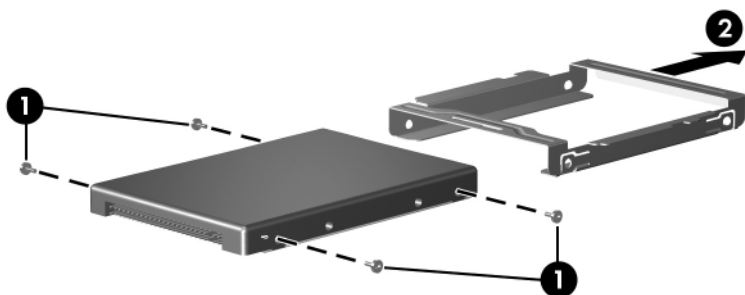
*Removing the Hard Drive Cover*

4. Slide the hard drive **1** to the right, and then lift the hard drive **2** from the hard drive bay.



*Removing the Hard Drive*

5. Remove the four Phillips PM3.0×4.0 hard drive frame screws ❶ that secure the hard drive frame to the hard drive.
6. Slide the hard drive ❷ away from the hard drive to remove it.



#### *Removing the Hard Drive Frame*

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

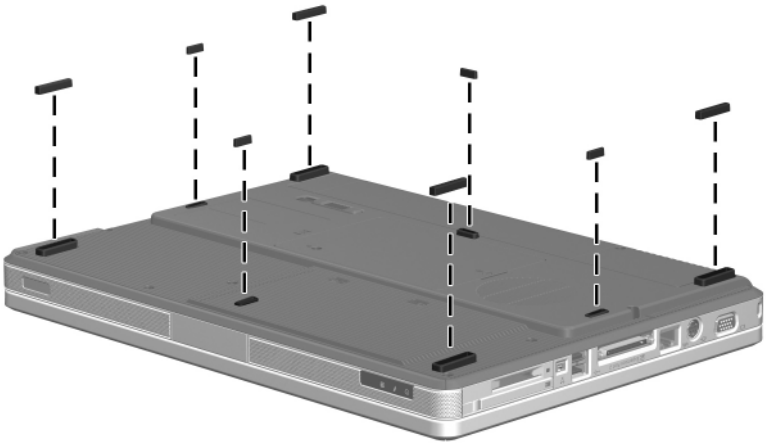
## 5.5 Computer Feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Plastics Kit, spare part number 415691-001.



There are two additional computer feet that are installed on the 12-cell battery pack. These additional feet are not depicted in the following image.

---



*Replacing the Computer Feet*

## 5.6 Memory Module

### Memory Module Spare Part Number Information

Memory modules (1 DIMM)

PC2-5300		PC2-4200	
1024 MB	409060-001	1024 MB	407767-001
512 MB	409059-001	512 MB	407766-001
256 MB	409058-001	256 MB	407765-001

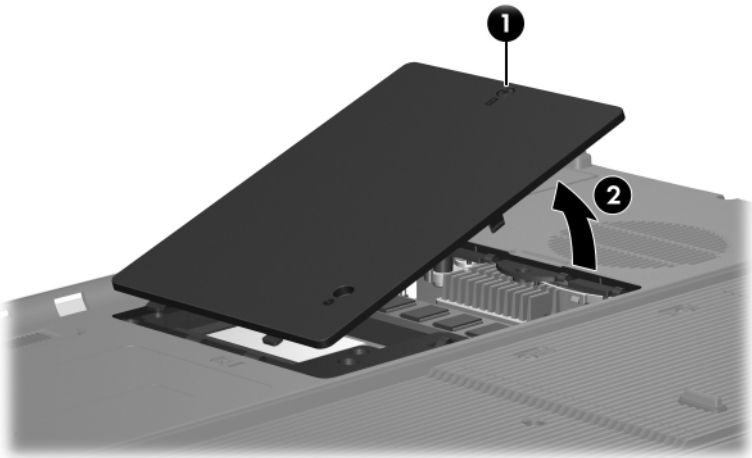
1. Prepare the computer for disassembly (refer to [Section 5.3](#)).

2. Loosen the Phillips PM2.5×5.0 captive screw ❶ that secures the memory/Mini Card module compartment cover to the computer.
3. Lift the right side of the cover ❷ and swing it up and to the left and remove it.



The memory/Mini Card module compartment cover is included in the Plastics Kit, spare part number 415691-001.

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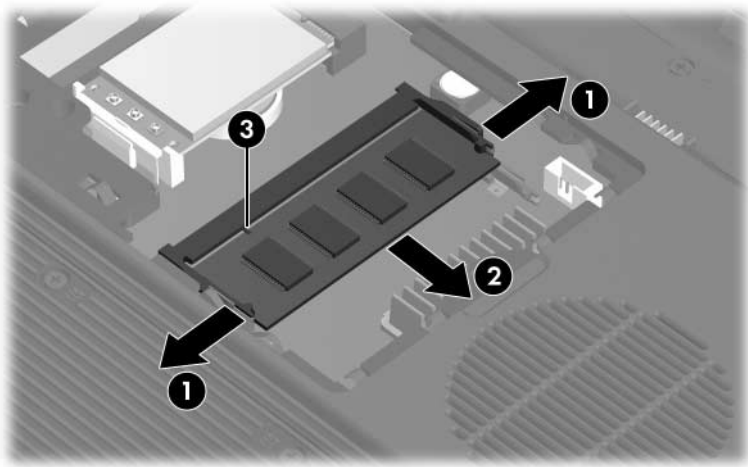
*Removing the Memory/Mini Card Module Compartment Cover*

4. Spread the retaining tabs **1** 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.)
5. Remove the memory module by pulling the module away from the socket at an angle **2**.



Memory modules are designed with notches **3** to prevent incorrect installation into the memory module socket.

---



### *Removing the Memory Module*

Reverse the above procedure to install a memory module.

## 5.7 Mini Card Module

---

### Mini Card Module Spare Part Number Information

---

802.11a/b/g Mini Card WLAN module for use in the following MOW 1 category countries:			407576-001
Antigua and 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	
802.11a/b/g Mini Card WLAN module for use in the following MOW 2 countries:			407576-002
Aruba	Estonia	Poland	Norway
Austria	Finland	Portugal	Oman
Azerbaijan	France	Romania	Slovenia
Bahrain	Georgia	Russia	South Africa
Belgium	Germany	Serbia and Montenegro	Spain
Bermuda	Greece	Singapore	Sri Lanka
Bulgaria	Hungary	Slovakia	Sweden
Cayman Islands	Iceland	Liechtenstein	Switzerland
Columbia	Ireland	Lithuania	Turkey
Croatia	Italy	Luxembourg	The United Kingdom
Cyprus	Latvia	Malta	
Czech Republic	Lebanon	Monaco	Uzbekistan
Denmark	The Philippines	The Netherlands	
Egypt			
El Salvador			

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

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802.11a/b/g Mini Card WLAN module for use in the following ROW category countries:	407576-003
--	------------

China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		

---

802.11b/g Mini Card WLAN module for use in the following countries:	409250-004
---	------------

Jordan	Kuwait	United Arab Emirates	Ukraine
Israel	Thailand		

---

1. Prepare the computer for disassembly ([Section 5.3](#)).
2. Remove the memory/Mini Card module compartment cover ([Section 5.6](#)).



Before disconnecting the antenna cables, make note of which cable is attached to which antenna clip on the Mini Card communications card.

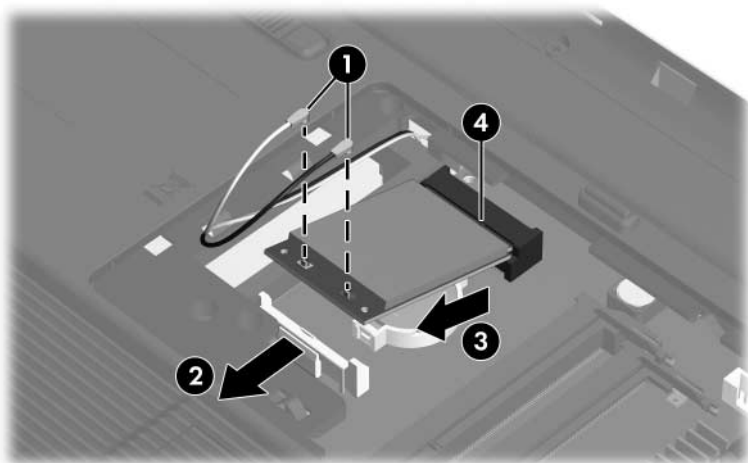
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3. Disconnect the auxiliary and main ❶ antenna cables from the Mini Card communications module.
  4. Slide the retaining bar ❷ forward. (The edge of the module opposite the socket rises away from the computer.)
  5. Remove the Mini Card communications module by pulling the module away from the socket at an angle ❸.
- 



Mini Card communications modules are designed with notches ❹ to prevent incorrect installation into the Mini Card module socket.

---



### *Removing a Mini Card Communications Module*

Reverse the above procedure to install a Mini Card communications module.

## 5.8 RTC Battery

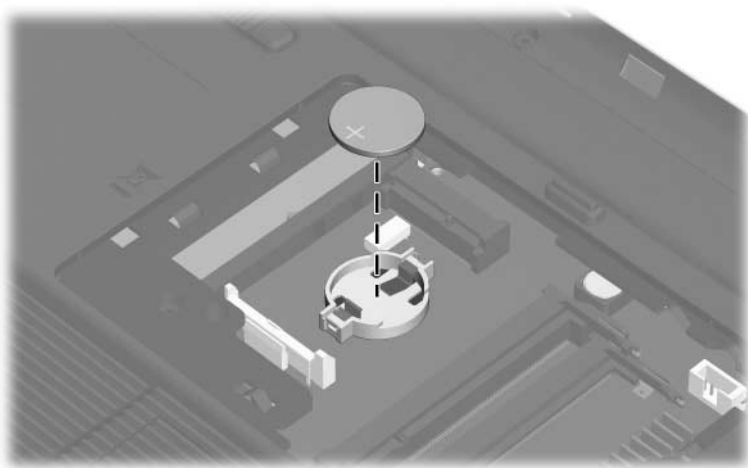
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### RTC Battery Spare Part Number Information

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RTC battery (includes tape)	407816-001
-----------------------------	------------

1. Prepare the computer for disassembly ([Section 5.3](#)).
2. Remove the memory/Mini Card module compartment cover ([Section 5.6](#)).
3. Remove the Mini Card communications module ([Section 5.7](#)).
4. Remove the RTC battery from the socket on the system board.



*Removing the RTC Battery*

Reverse the above procedure to install an RTC battery.

## 5.9 Optical Drive

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### Optical Drive Spare Part Number Information

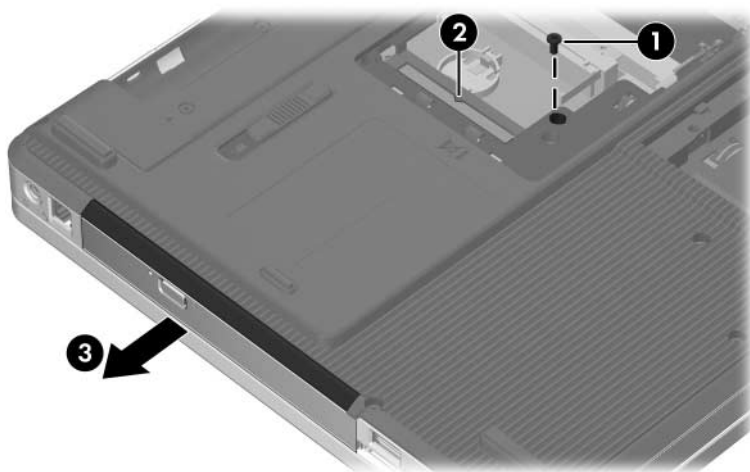
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DVD±RW and CD-RW Double Layer Combo Drive with LightScribe and HLDS	417699-001
DVD±RW and CD-RW Double Layer Combo Drive with LightScribe	413102-001
DVD/CD-RW Double Layer Combo Drive with LightScribe	413101-001
DVD/CD-RW Combo Drive	413100-001

---

1. Prepare the computer for disassembly ([Section 5.3](#)).
2. Position the computer with the left side toward you.

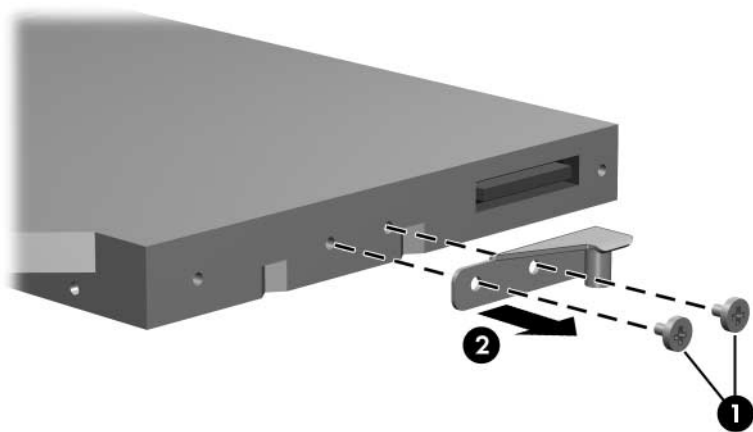
3. Remove the Phillips PM2.5×5.0 screw ❶ that secures the optical drive to the computer.
4. Insert a thin tool into the notch ❷ on the back of the optical drive and push to disconnect the optical drive from the system board.
5. Remove the optical drive ❸.



*Removing the Optical Drive*

If it is necessary to replace the optical drive bracket, perform the following steps:

6. Position the optical drive with the connector toward you.
7. Remove the two Phillips PM2.0×4.0 screws ❶ that secure the optical drive bracket to the optical drive.
8. Remove the optical drive bracket ❷.



#### *Removing the Optical Drive Bracket*

Reverse the above procedure to install an optical drive.

## 5.10 Switch Cover

---

### Switch Cover Spare Part Number Information

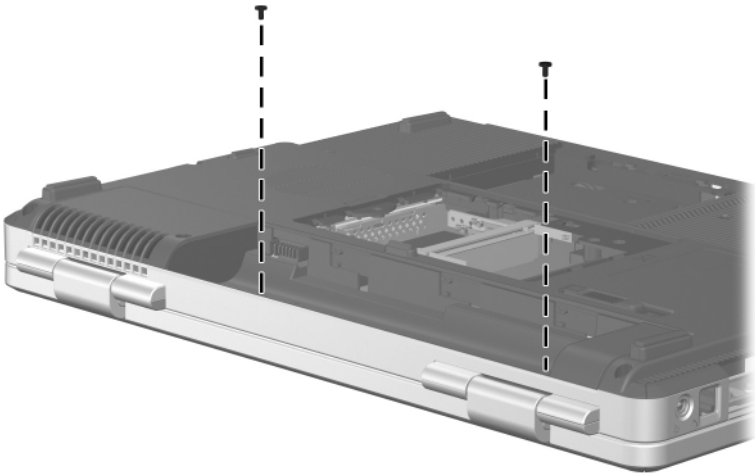
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Switch cover

407827-001

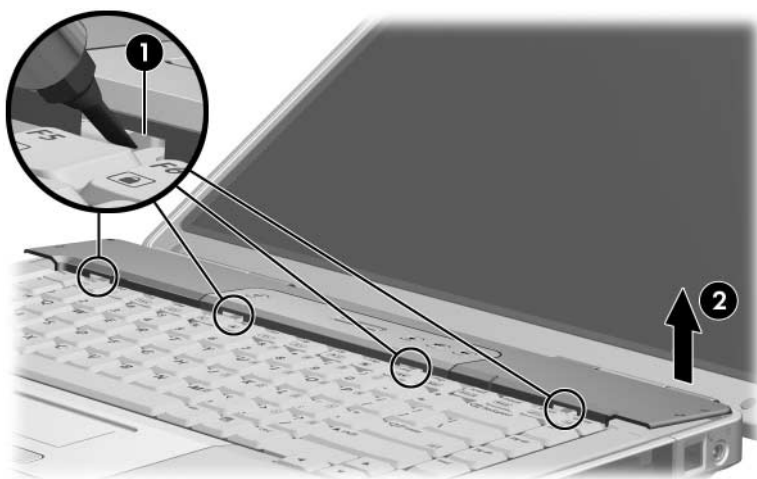
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1. Prepare the computer for disassembly ([Section 5.3](#)).
2. Remove the two Phillips PM2.5×5.0 screws that secure the switch cover to the computer.



*Removing the Switch Cover Screws*

3. Turn the computer display-side up with the front toward you.
4. Open the computer as far as possible.
5. Insert a flat-bladed tool into the switch cover notches behind the **f1**, **f5**, **f11**, and **insert** keys ❶ and lift up until the switch cover ❷ disengages from the computer.
6. Remove the switch cover.



### *Removing the Switch Cover*

Reverse the above procedure to install the switch cover.



## 5.11 Keyboard

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### Keyboard Spare Part Number Information

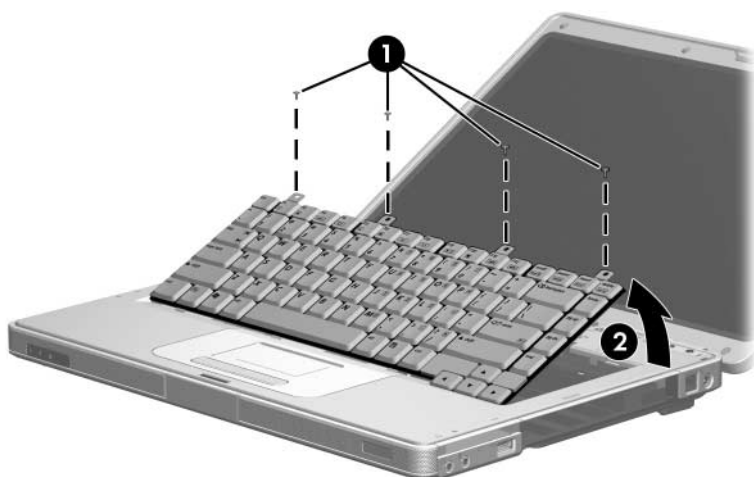
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Denmark	407856-081	Norway	407856-091
France	407856-051	Spain	407856-071
French Canada	407856-121	Sweden/Finland	407587-B71
International	407856-B31	Thailand	407856-281
Italy	407856-061	The United Kingdom	407856-031
Korea	407856-AD1	The United States	407856-001

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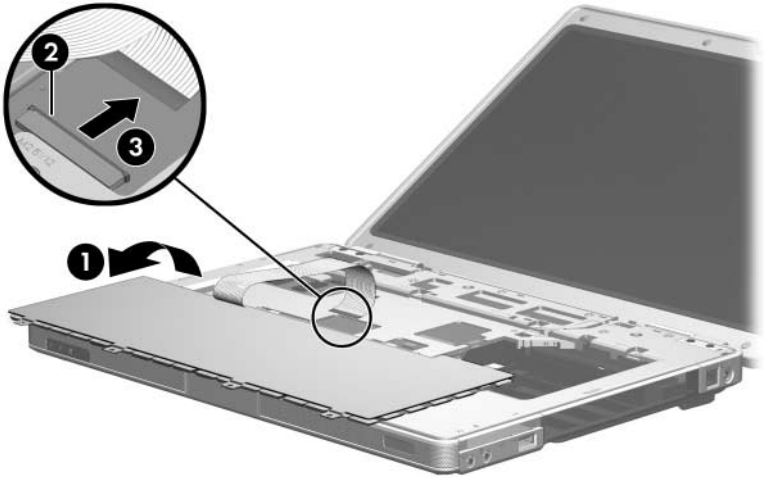
1. Prepare the computer for disassembly ([Section 5.3](#)).
2. Remove the switch cover ([Section 5.10](#)).

3. Remove the four Phillips PM2.5×5.0 screws **1** that secure the keyboard to the computer.
4. Lift the rear edge of the keyboard **2** to release it from the top cover.



*Releasing the Keyboard*

5. Swing the keyboard **1** forward until it rests on the palm rest.
6. Release the zero insertion force (ZIF) connector to which the keyboard cable **2** is attached and disconnect the keyboard cable **3**.
7. Remove the keyboard assembly.



### *Removing the Keyboard*

Reverse the above procedure to install the keyboard.

# 5.12 Display Assembly

---

## Display Assembly Spare Part Number Information

---



All display assemblies include a display cable, wireless antenna transceivers, and antenna cables.

15.4-inch, WXGA with BrightView

407842-001

15.4-inch, WXGA antiglare

407840-001

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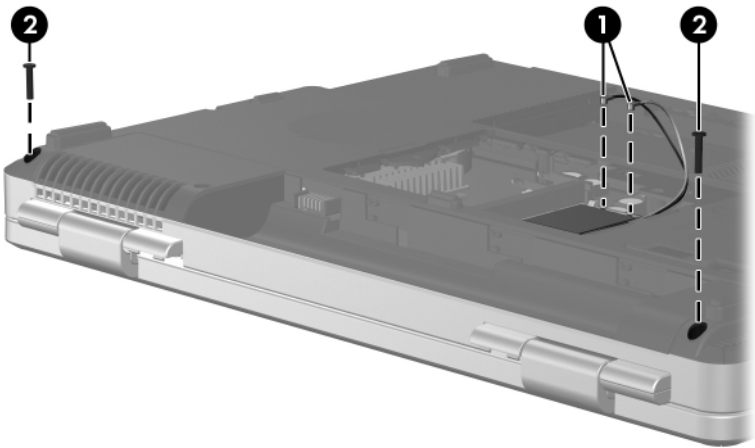
1. Prepare the computer for disassembly ([Section 5.3](#)).
2. Remove the memory/Mini Card module compartment cover ([Section 5.6](#)).



Before disconnecting the antenna cables, make note of which cable is attached to which antenna clip on the Mini Card communications card.

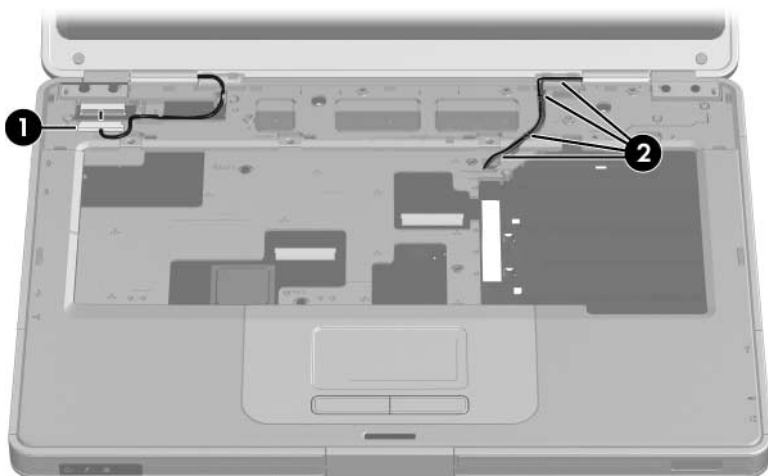
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3. Disconnect the auxiliary and main wireless antenna cables **1** from the Mini Card module.
4. Remove the two Phillips PM2.5×13.0 screws **2** that secure the display assembly to the computer.



*Disconnecting the Wireless Antenna Cables and Removing the Display Screws*

5. Remove the switch cover ([Section 5.10](#)).
6. Remove the keyboard ([Section 5.11](#)).
7. Disconnect the display cable ❶ from the system board.
8. Remove the wireless antenna cables from the clips ❷ in the top cover.



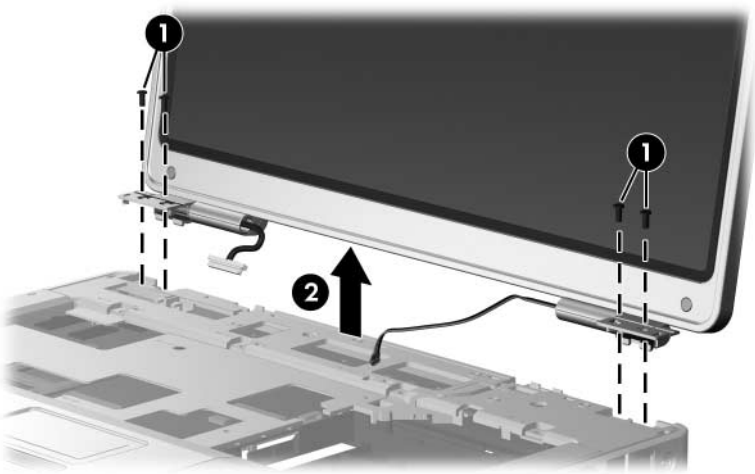
*Disconnecting the Display and Wireless Antenna Cables*



**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.

---

9. Remove the four Phillips PM2.5×9.0 screws ❶ that secure the display assembly to the computer.
10. Lift the display assembly straight up and remove it ❷.



*Removing the Display Assembly*

---

## **Display Assembly Subcomponents**

### **Spare Part Number Information**

Display Plastics Kit, includes:	407793-001
■ Display bezel	
■ Display enclosure	
■ Display hinge base covers	
■ Display hinge covers	
Display Hinge Kit, includes	407797-001
■ Display hinges	
■ Display release hook	
Display inverter board	407800-001
Display Panel Kit (includes display panel cable)	
■ 15.4-inch, WXGA with BrightView	407799-001
■ 15.4-inch, WXGA antiglare	407798-001
Wireless Antenna Kit (includes cable and transceivers)	410118-001
Display Label Kit	409082-001
Display Screw Kit, includes:	407795-001
■ Phillips PM2.5×7.0 screws	
■ Phillips PM2.5×5.0 screws	
■ Rubber screw covers	

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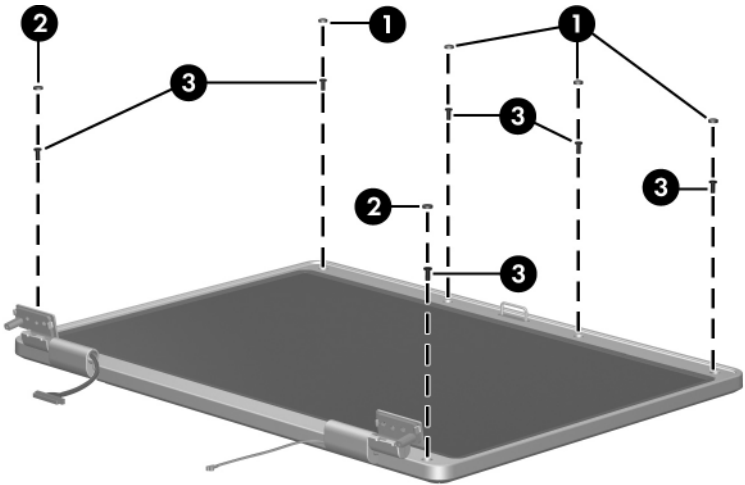
11. Remove the six rubber screw covers **1** and **2** and the six Phillips PM2.5×7.0 screws **3** that secure the display bezel to the display assembly.



The rubber screw covers are available in the Display Screw Kit, spare part number 407795-001.

The four rubber screw covers **1** on top edge of the display bezel are a different size and shape than the two rubber screw covers **2** on the bottom edge of the display bezel.

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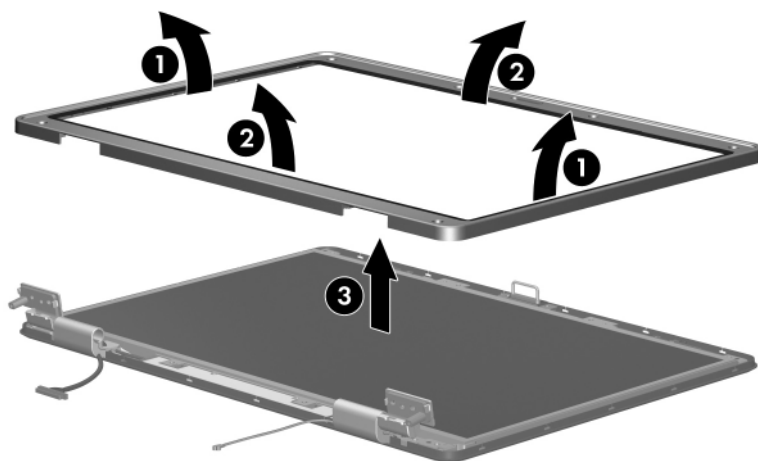
*Removing the Display Bezel Screws*



The display bezel and display enclosure are available in the Display Plastics Kit, spare part number 407793-001.

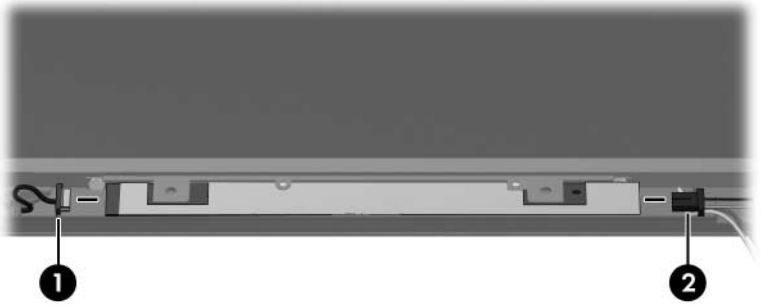
---

12. Flex the inside edges of the left and right sides **①** and the top and bottom sides **②** of the display bezel until the bezel disengages from the display enclosure.
13. Remove the display bezel **③**.



*Removing the Display Bezel*

14. Disconnect the display panel cable ❶ and display backlight cable ❷ from the display inverter board.



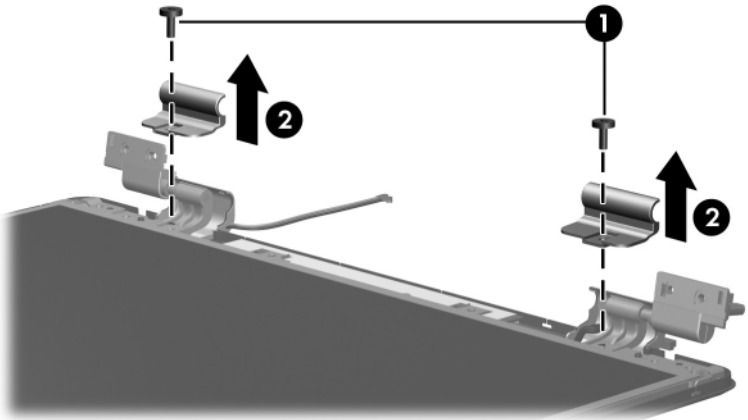
*Disconnecting the Display Panel Cables*



The display hinge base covers are available in the Display Plastics Kit, spare part number 407793-001.

---

15. If it is necessary to replace the display hinge base covers, remove the two Phillips PM2.5×5.0 screws **1** that secure the covers to the display enclosure.
16. Remove the display hinge base covers **2**.



*Removing the Display Hinge Base Covers*

## Display Assembly Subcomponents

### Spare Part Number Information

Display Panel Kit (includes display panel cable)

■ 15.4-inch, WXGA with BrightView

407799-001

■ 15.4-inch, WXGA antiglare

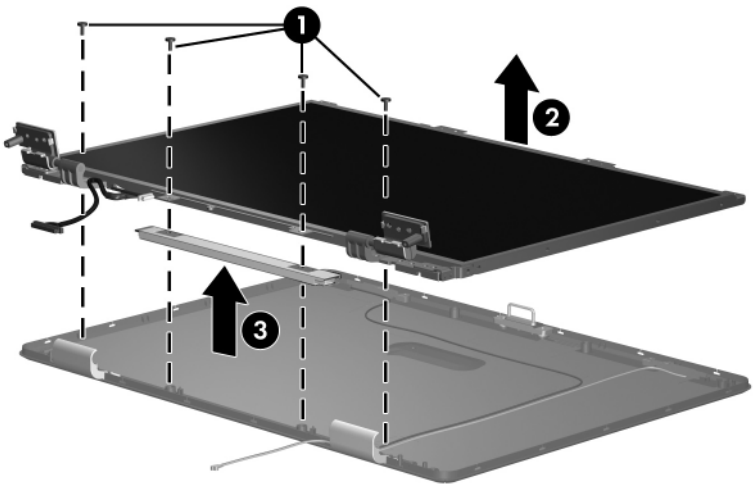
407798-001

Display inverter board

407800-001

17. Remove the four Phillips PM2.5×5.0 screws **①** that secure the display panel and inverter board to the display enclosure.

18. Remove the display panel **②** and inverter board **③**.



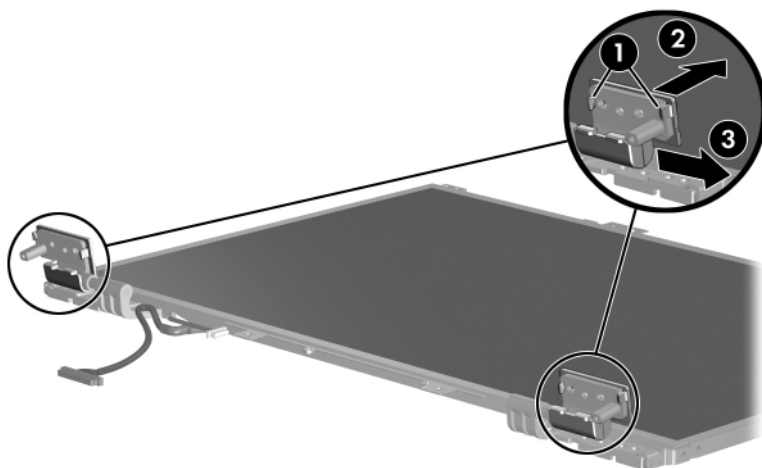
*Removing the Display Panel and Inverter Board*



The display hinge covers are available in the Display Plastics Kit, spare part number 407793-001.

---

19. If it is necessary to replace either of the display hinge covers, detach the display hinge cover clips **1** from the display hinge.
20. Swing the display hinge cover **2** back until it clears the display hinge.
21. Slide the hinge cover **3** off of the display hinge.



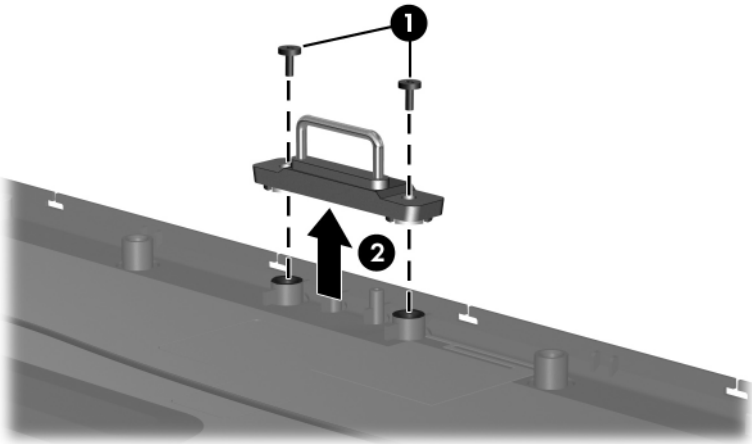
*Removing the Display Hinge Covers*



The display release hook is available in the Display Hinge Kit, spare part number 407797-001.

---

22. If it is necessary to replace the display release hook, remove the two PM2.5×5.0 screws **1** that secure the hook to the display enclosure.
23. Remove the display release hook **2**.



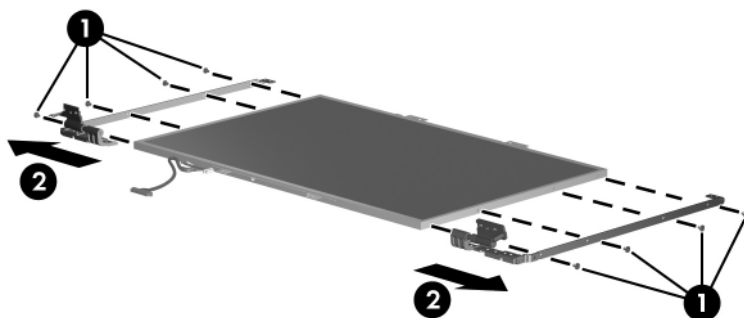
*Removing the Display Release Hook*



The display hinges are available in the Display Hinge Kit, spare part number 407797-001.

---

24. If it is necessary to replace the display hinges, remove the four Phillips PM2.0×4.0 screws ❶ that secure each hinge to the display panel.
25. Remove the display hinges ❷.



*Removing the Display Hinges*

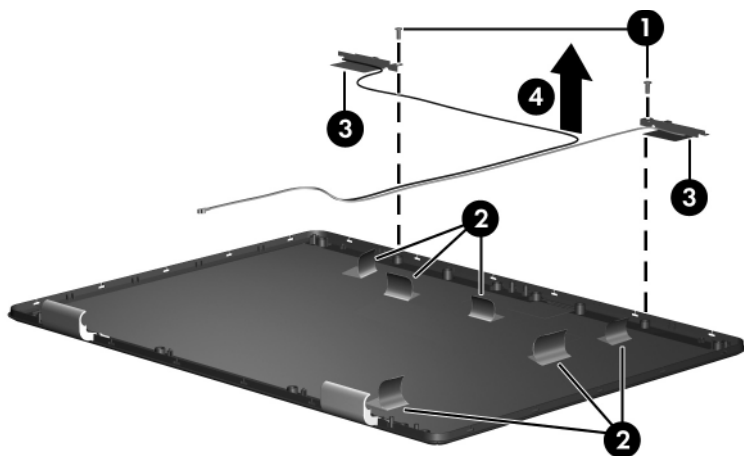




The wireless antenna transceivers and cables are available in the Wireless Antenna Kit, spare part number 410118-001.

---

26. If it is necessary to replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×5.0 screws ❶ that secure the wireless antenna transceivers to the display enclosure.
27. Release the retention tabs ❷ built in to the display enclosure lining that secure the wireless antenna cables to the display enclosure.
28. Detach the wireless antenna transceivers ❸ from the display enclosure.
29. Remove the wireless antenna transceivers and cables ❹.



### *Removing the Wireless Antenna Transceivers and Cables*

Reverse the above procedure to reassemble and install the display assembly.

# 5.13 Base Enclosure

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## Base Enclosure

### Spare Part Number Information

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Base enclosure	407815-001
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1. Prepare the computer for disassembly ([Section 5.3](#)) and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))

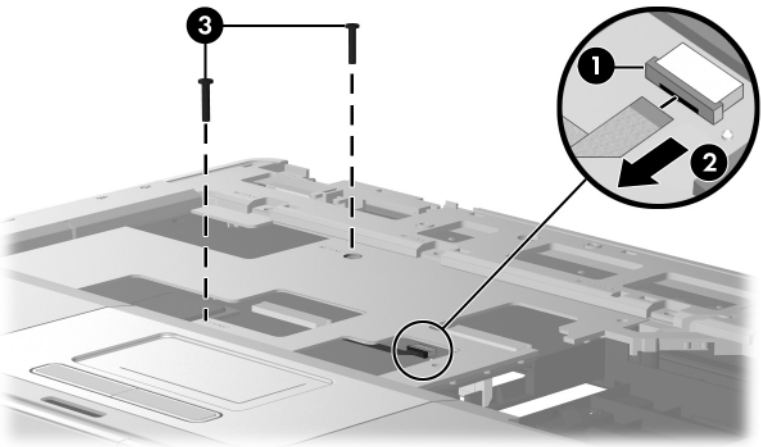
2. Release the ZIF connector to which the TouchPad cable ❶ is connected and disconnect the TouchPad cable ❷ from the system board.



The TouchPad cable is included in the Cable Kit, spare part number 407775-001.

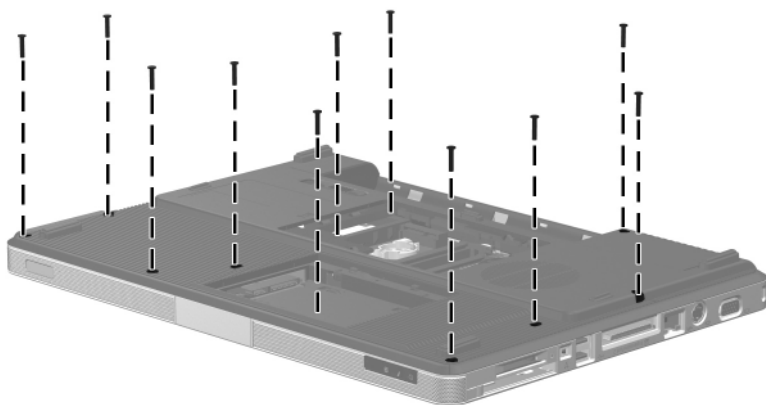
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3. Remove the two Phillips PM2.5×13.0 screws ❸ that secure the base enclosure to the computer.



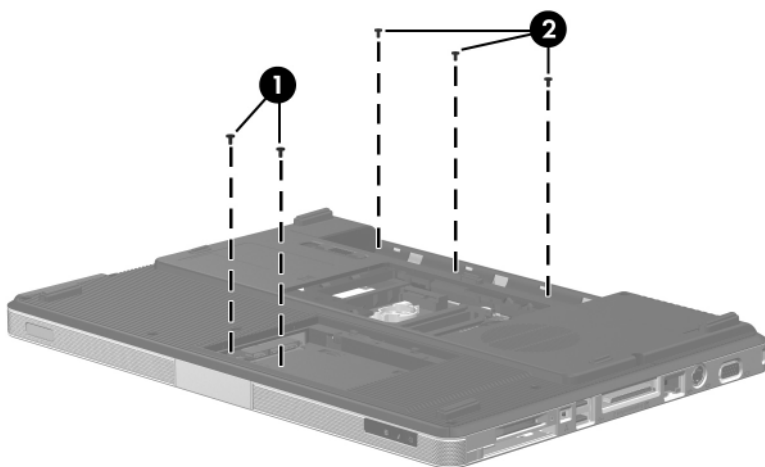
*Disconnecting the TouchPad Cable and Removing the Base Enclosure Screws, Part 1*

4. Turn the computer upside down with the front toward you.
5. Remove the eleven Phillips PM2.5×13.0 screws that secure the base enclosure to the computer.



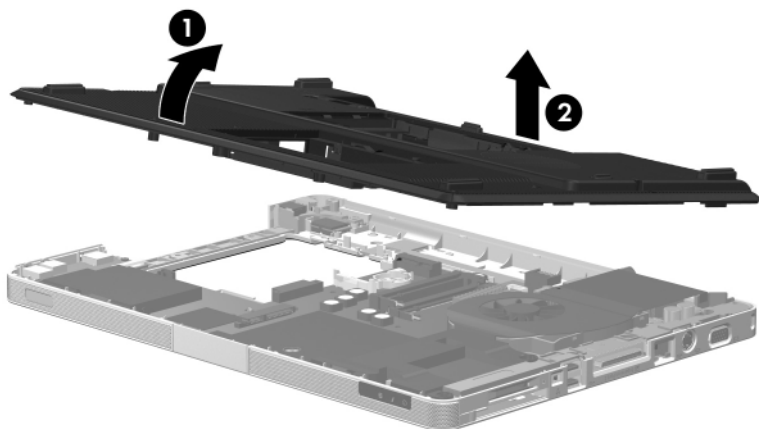
*Removing the Base Enclosure Screws, Part 2*

6. Remove the two Phillips PM2.5×5.0 screws ❶ in the hard drive bay and the three Phillips PM2.5×5.0 screws ❷ in the battery bay that secure the base enclosure to the computer.



*Removing the Base Enclosure Screws, Part 3*

7. Lift up the front edge of the base enclosure ❶ until it disengages from the top cover.
8. Lift the base enclosure ❷ straight up and remove it.



#### *Removing the Base Enclosure*

Reverse the above procedure to install the base enclosure.

## 5.14 Bluetooth Module

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### Bluetooth Module Spare Part Number Information

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Bluetooth module (includes Bluetooth module cable)	397922-001
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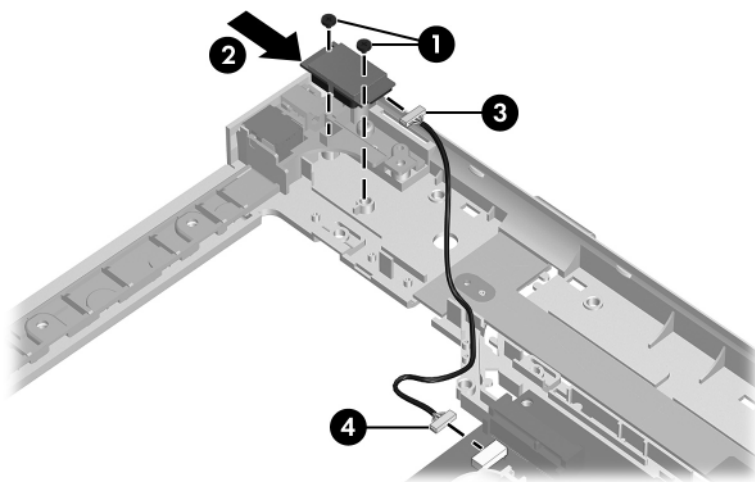
1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))

2. Remove the two Phillips PM1.5×3.0 screws ❶ that secure the Bluetooth module to the top cover.
3. Slide the Bluetooth module ❷ out of the clip in the top cover.
4. Disconnect the Bluetooth module cable ❸ from the Bluetooth module.
5. Disconnect the Bluetooth module cable ❹ from the system board.



The Bluetooth module cable is included with the Bluetooth module and is also available in the Cable Kit, spare part number 407774-001.

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### *Removing the Bluetooth Module*

Reverse the above procedure to install the Bluetooth module.



## 5.15 System Board

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### System Board Spare Part Number Information

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945GM system board

407759-001

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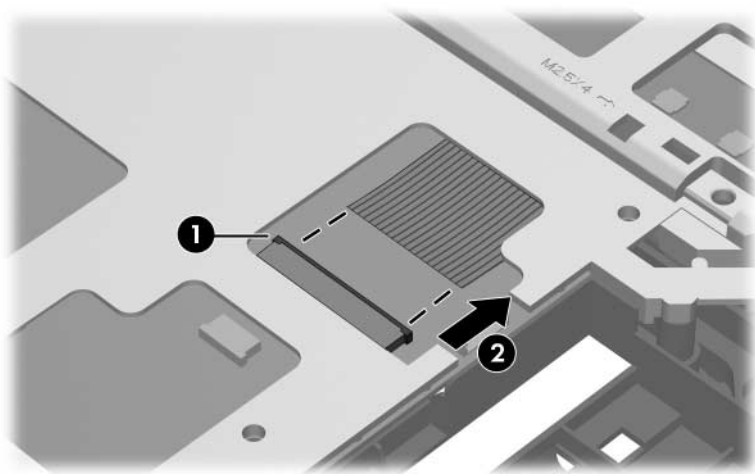


When replacing the system board, ensure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory modules ([Section 5.6](#))
  - Mini Card communications module ([Section 5.7](#))
  - RTC battery ([Section 5.8](#))
  - Power connector cable ([Section 5.15](#))
  - Heat sink ([Section 5.18](#))
  - Processor ([Section 5.19](#))
  - Fan/heat sink assembly ([Section 5.18](#))
  - PC Card assembly ([Section 5.20](#))
- 

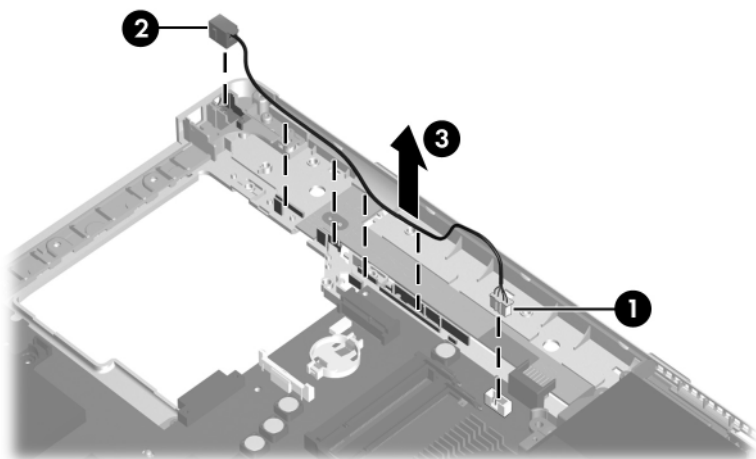
1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))
2. Turn the top cover right-side up with the front toward you.

3. Release the ZIF connector ❶ to which the LED board cable is connected and disconnect the LED board cable ❷ from the system board.



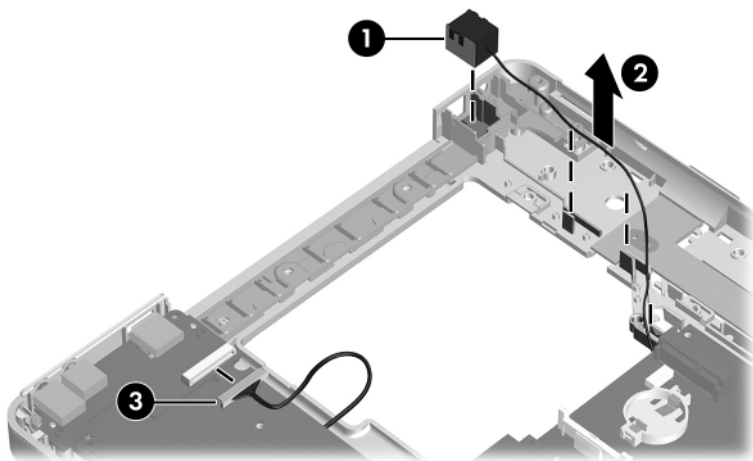
*Disconnecting the LED Board Cable*

4. Turn the top cover upside down with the front toward you.
5. Disconnect the power connector cable ❶ from the system board.
6. Remove the power connector ❷ from the clip in the base enclosure and remove the cable from the routing channel ❸ in the top cover.



*Removing the Power Connector Cable*

7. Remove the modem connector **1** from the clip in the top cover and remove the modem connector cable **2** from the routing channel in the top cover.
8. Disconnect the USB/audio board cable **3** from the USB/audio board.



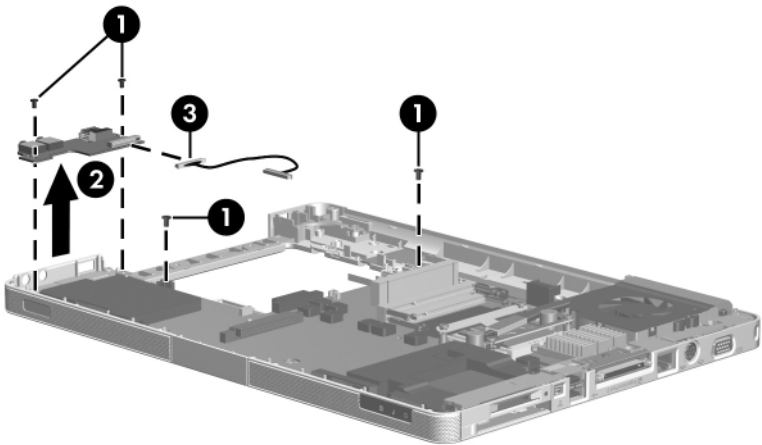
*Removing the Modem Connector Cable*

9. Remove the four PM2.5×5.0 screws ❶ that secure the system board and USB/audio board to the top cover.
10. Remove the USB/audio board ❷ from the top cover.
11. If it is necessary to replace the USB/audio board cable, disconnect the cable ❸ from the USB/audio board.



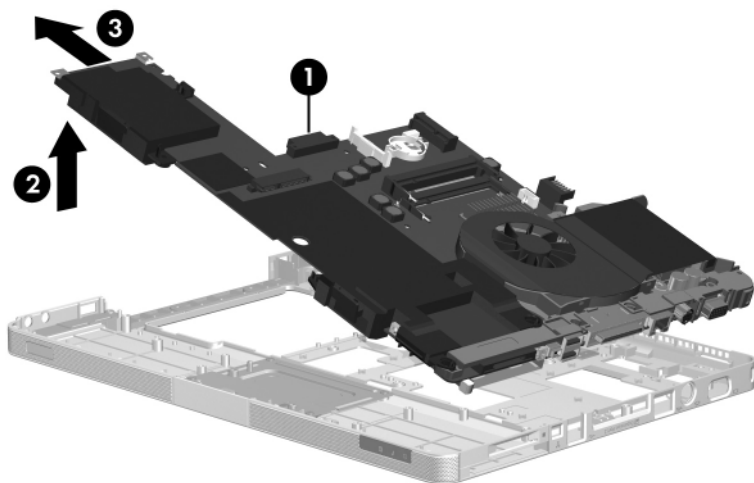
The USB/audio board is available using spare part numbers 407804-001 (for use with full-featured models) and 407805-001 (for use with defeatured models). The USB/audio board cable is included with the USB/audio board and is also available in the Cable Kit, spare part number 407774-001.

---



*Removing the USB/Audio Board*

12. Use the optical drive connector **1** to lift the left side of the system board **2** until it clears the top cover.
13. Slide the system board **3** to the left at an angle and remove it.



*Removing the System Board*

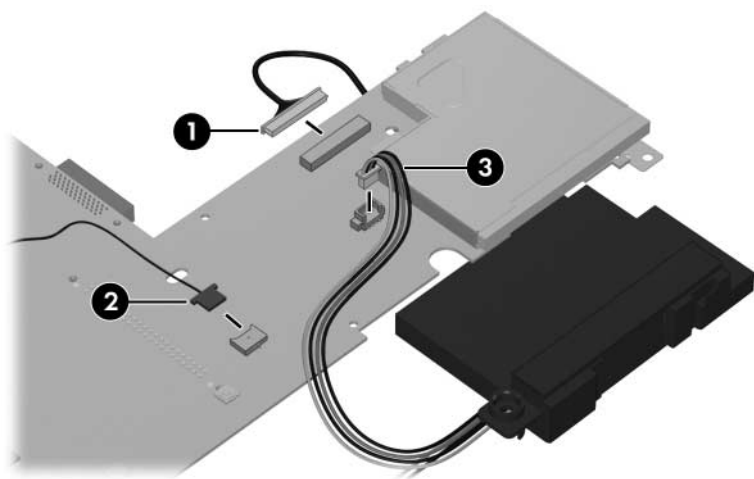
14. Position the system board with the ExpressCard and PC Card assemblies facing up and the battery connector toward you.
15. Disconnect the following cables from the system board:
  - ❶ USB/audio board cable
  - ❷ Modem cable
  - ❸ Speaker cable



The USB/audio board cable is included with the USB/audio board and is also available in the Cable Kit, spare part number 407774-001.

The modem connector cable is available in the Cable Kit, spare part number 407774-001.

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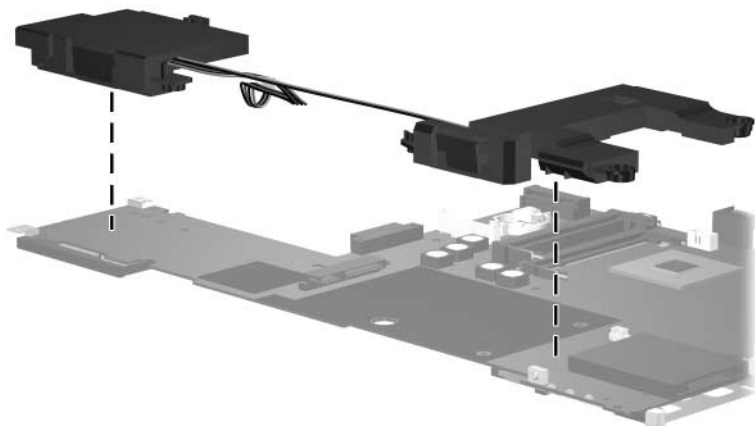
*Disconnecting the USB/Audio Board, Speaker, and Modem Cables*

16. Set the USB/audio board cable and modem connector cable aside.
17. Lift the system board and separate the speakers from the system board.



The speakers are available using spare part number 407785-001.

---



### *Removing the Speakers*

Reverse the above procedure to install the system board.



## 5.16 Display Release Button Assembly

1. Prepare the computer for disassembly ([Section 5.3](#)) and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))

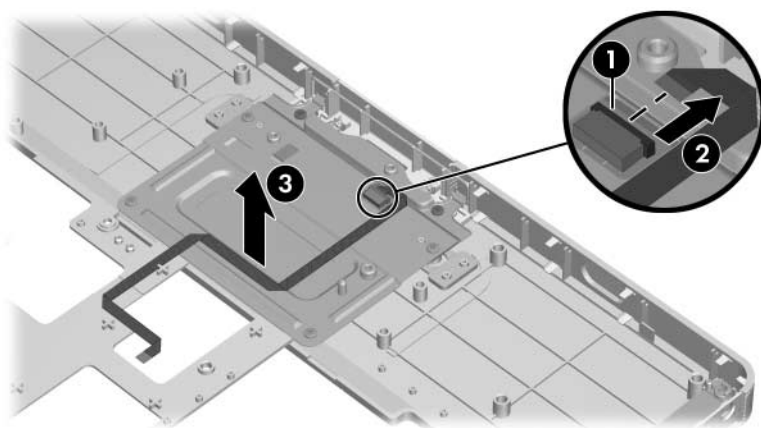
2. Release the ZIF connector **1** on the TouchPad board to which the TouchPad cable is connected and disconnect the TouchPad cable **2** from the TouchPad board.



The TouchPad cable is included in the Cable Kit, spare part number 407774-001.

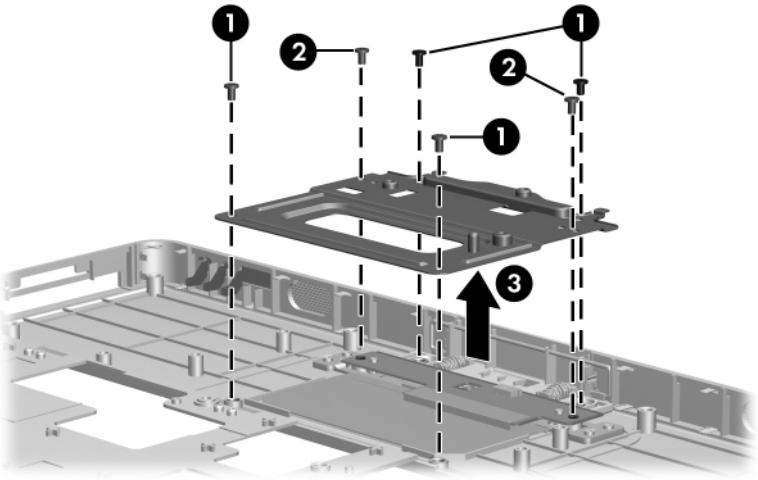
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3. Remove the TouchPad cable **3**.



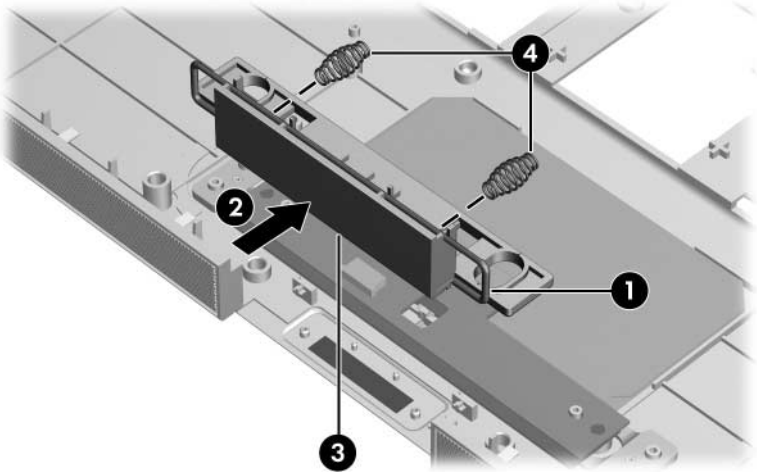
*Removing the TouchPad Cable*

4. Remove the four silver Phillips PM2.5×4.0 screws ❶ and the two Phillips PM2.5×5.0 screws ❷ that secure the TouchPad bracket to the top cover.
5. Remove the TouchPad bracket ❸.



*Removing the TouchPad Bracket*

6. Remove the display release button swing arm **1** from the top cover.
7. Push and hold the display release button **2**.
8. Remove the display release button **3** and springs **4** from the top cover.



#### *Removing the Display Release Button Assembly*

Reverse the above procedure to install the display release button assembly.

## 5.17 LED Board

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### LED Board Spare Part Number Information

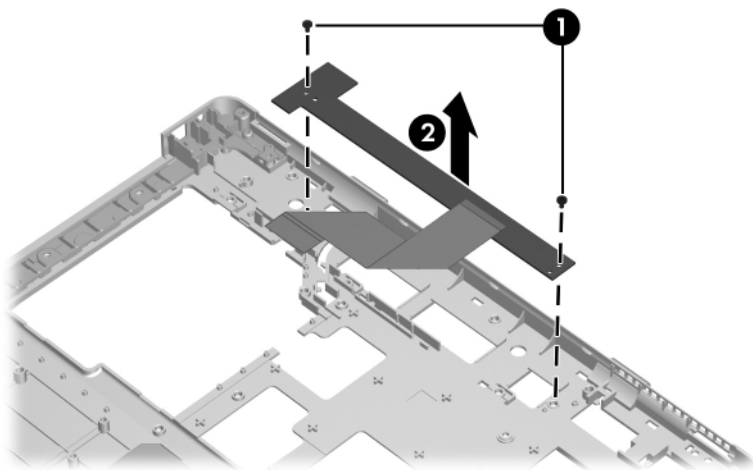
---

LED board (includes LED board cable)	409071-001
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1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))
  - h. System board ([Section 5.15](#))

2. Remove the two Phillips PM2.5×5.0 screws ❶ that secure the LED board to the top cover.
3. Remove the LED board and cable ❷.



### *Removing the LED Board*

Reverse the above procedure to install the LED board.

## 5.18 Fan/Heat Sink Assembly

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### Fan/Heat Sink Assembly Spare Part Number Information

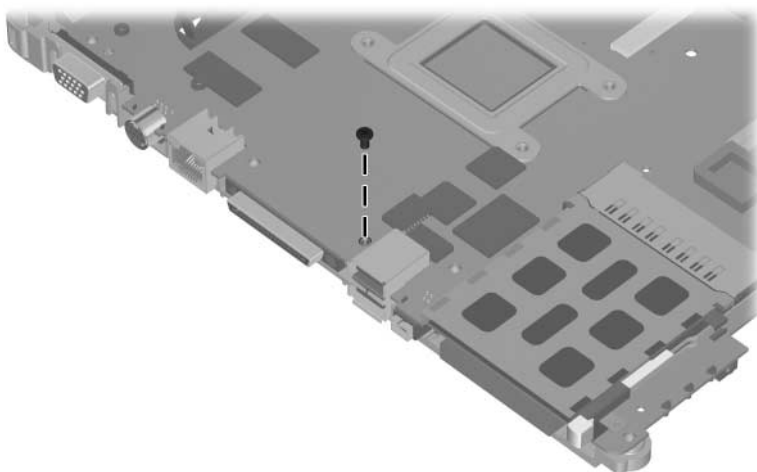
---

Fan assembly (includes thermal paste)	409073-001
Heat sink assembly (includes thermal paste)	403827-001

---

1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))
  - h. System board ([Section 5.15](#))

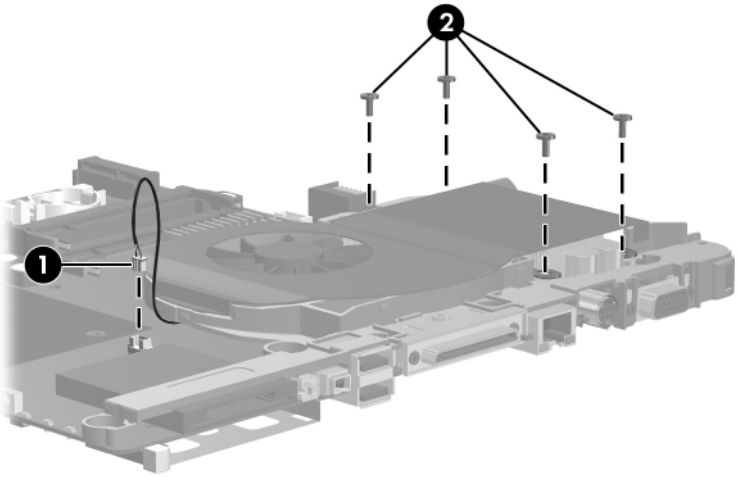
2. Turn the system board upside down with the expansion port 2 toward you.
3. Remove the Phillips PM2.0×4.0 screw that secures the fan/heat sink assembly to the system board.



*Removing the Fan/Heat Sink Assembly Screws, Part 1*



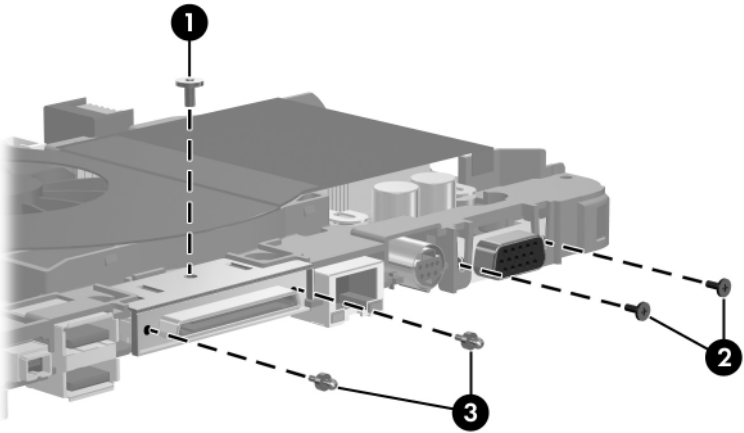
4. Turn the system board upside down with the expansion port 2 toward you.
5. Disconnect the fan cable ❶ from the system board.
6. Remove the four Phillips PM2.5×7.0 screws ❷ that secure the heat sink to the system board.



*Removing the Fan/Heat Sink Assembly Screws, Part 2*

7. Remove the following screws:

- ❶ One silver Phillips PM2.5×4.0 screw that secures the expansion port 2 bracket and fan/heat sink assembly to the system board
- ❷ Two Phillips PM3.0×6.0 screws on each side of the external monitor port that secure the fan/heat sink assembly to the system board
- ❸ Two slotted M1.5×9.0 screws on each side of the expansion port 2 that secure the expansion port bracket and fan/heat sink assembly to the system board



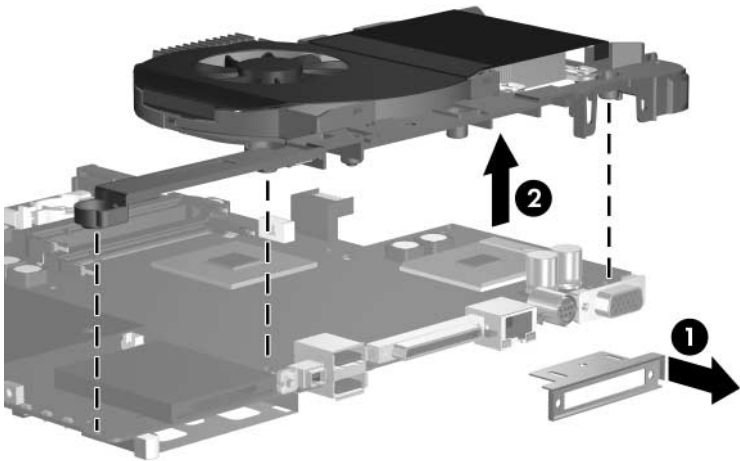
*Removing the Fan/Heat Sink Assembly Screws, Part 3*

8. Slide the expansion port 2 bracket ❶ away from the system board.
9. Remove the fan/heat sink assembly ❷.



Due to the adhesive quality of the thermal paste located between the fan/heat sink assembly and processor, it may be necessary to move the fan/heat sink assembly from side to side to detach it from the processor.

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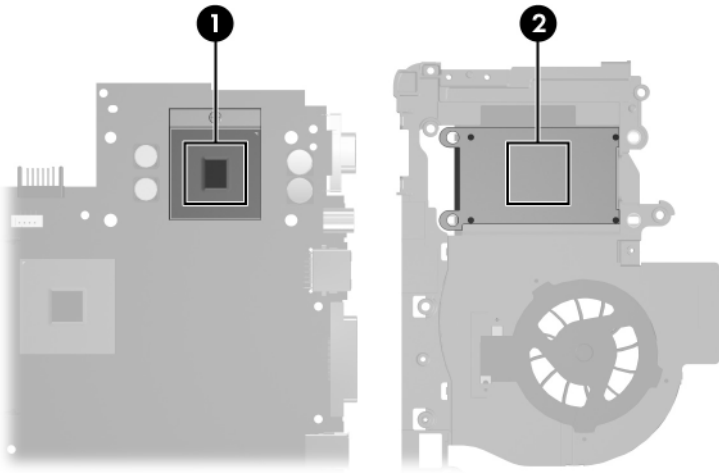


*Removing the Fan/Heat Sink Assembly*



The thermal paste should be thoroughly cleaned from the surfaces of the processor ❶ and fan/heat sink assembly ❷ each time the fan/heat sink assembly is removed. Thermal paste should be reapplied to both surfaces before the fan/heat sink assembly is reinstalled. Thermal paste is included with all fan/heat sink assembly and processor spare part kits.

---



### *Replacing the Thermal Paste*

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

## 5.19 Processor

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### Processor Spare Part Number Information

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All processor spare part kits include thermal paste.

---

Intel Pentium M 2.0-GHz	407762-001
Intel Pentium M 1.83-GHz	407761-001
Intel Pentium M 1.66-GHz Dual Code	407760-001
Intel Pentium M 1.66-GHz Single Code	407764-001

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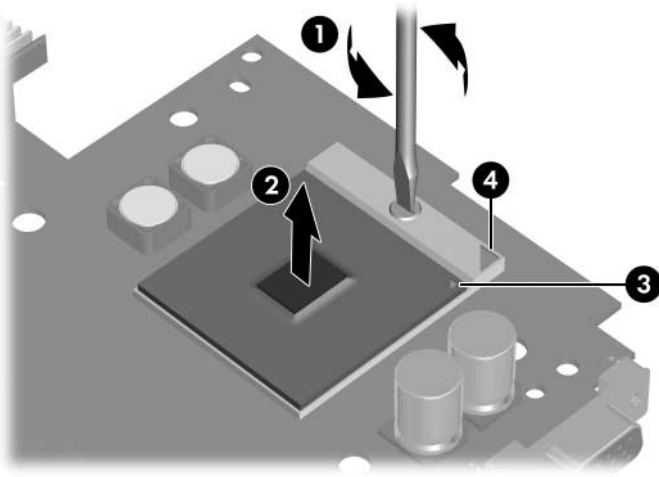
1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))
  - h. System board ([Section 5.15](#))
  - i. Heat sink ([Section 5.18](#))

2. Use a flat-bladed screwdriver to turn the processor locking screw ❶ one-half turn counterclockwise until you hear a click.
3. Lift the processor straight up and remove it ❷.



The gold triangle ❸ on the processor should be aligned with the triangle icon ❹ in the front right corner when you install the processor.

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### *Removing the Processor*

Reverse the above procedure to install the processor.

## 5.20 PC Card Assembly

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### PC Card Assembly Spare Part Number Information

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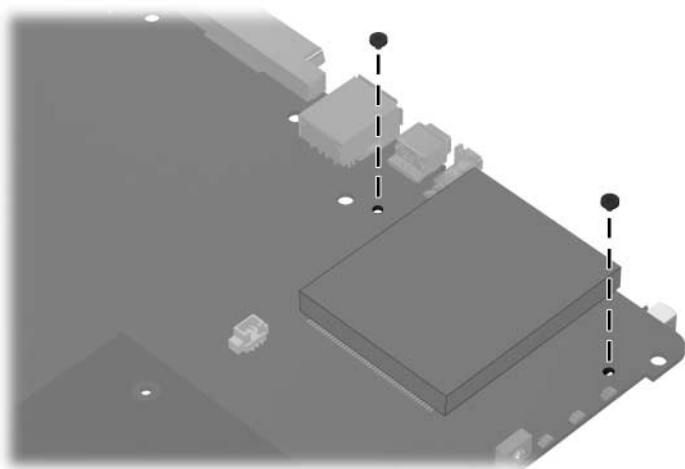
PC Card assembly

407829-001

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1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))
  - h. System board ([Section 5.15](#))

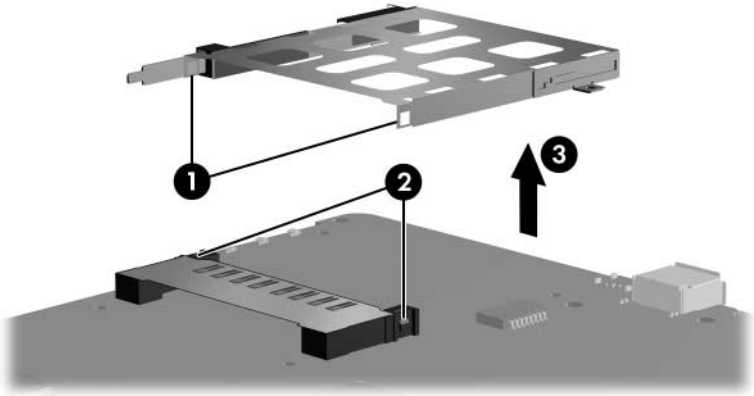
2. Turn the system board upside down with the expansion port 2 toward you.
3. Remove the two PM2.0×4.0 screws that secure the PC Card assembly to the system board.



*Removing the PC Card Assembly Screws*



4. Turn the system board top-side up with the expansion port 2 toward you.
5. Disengage the hooks **1** on the PC Card assembly from the slots on the PC Card connector **2** and remove the PC Card assembly **3** from the system board.



#### *Removing the PC Card Assembly*

Reverse the above procedures to install the PC Card assembly.

## 5.21 ExpressCard Assembly

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### ExpressCard Assembly Spare Part Number Information

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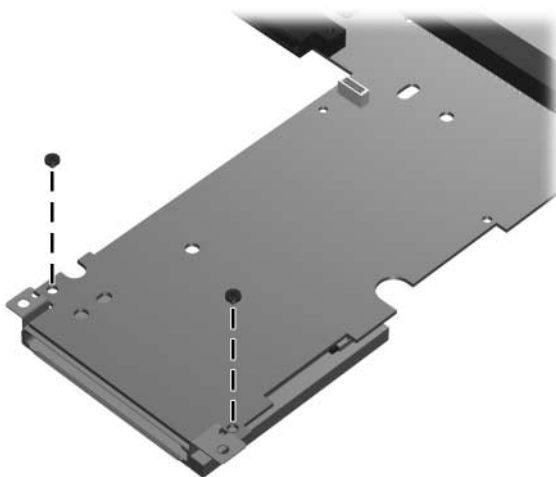
ExpressCard assembly

407809-001

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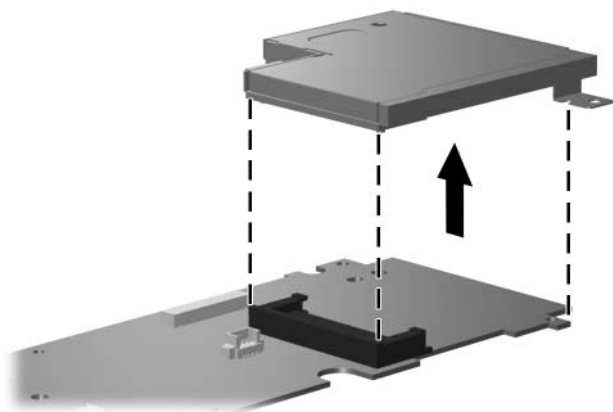
1. Prepare the computer for disassembly ([Section 5.3](#)), and then remove the following components:
  - a. Hard drive ([Section 5.4](#))
  - b. Memory/Mini Card module compartment cover ([Section 5.6](#))
  - c. Optical drive ([Section 5.9](#))
  - d. Switch cover ([Section 5.10](#))
  - e. Keyboard ([Section 5.11](#))
  - f. Display assembly ([Section 5.12](#))
  - g. Base enclosure ([Section 5.13](#))
  - h. System board ([Section 5.15](#))

2. Turn the system board upside down with the expansion port 2 toward you.
3. Remove the two PM2.0x4.0 screws that secure the ExpressCard assembly to the system board.



*Removing the ExpressCard Assembly Screws*

4. Turn the system board top-side up with the expansion port 2 toward you.
5. Remove the ExpressCard Assembly from the system board.



*Removing the ExpressCard Assembly*

Reverse the above procedures to install the ExpressCard assembly.

# Specifications

This chapter provides physical and performance specifications.

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

<b>Dimensions</b>	<b>Metric</b>	<b>U.S.</b>
Height		
Front	3.50 cm	1.38 in.
Rear	4.50 cm	1.77 in.
Width	35.79 cm	14.09 in.
Depth	26.39 cm	10.39 in.
<b>Weight</b>		
With 17.0-inch display, optical drive and 8-cell battery pack	2.99 kg	6.60 lbs
<b>Input Power</b>		
Operating voltage	18.5 V dc to 19.0 V dc	
Operating current	3.5 A or 4.74 A	
<b>Temperature</b>		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F

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**Table 6-1**  
**Computer (*Continued*)**

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**Relative humidity** (noncondensing)

Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%

---

**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

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**Shock**


Operating	125 g, 2 ms, half-sine
Nonoperating	200 g, 2 ms, half-sine

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**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**  
**15.4-inch, WXGA, Display**

Dimensions		
Height	20.7 cm	8.15 in
Width	33.1 cm	13.03 in
Diagonal	39.1 cm	15.39 in
Number of colors		Up to 16.8 million
Contrast ratio		200:1
Brightness		180 nits typical
Pixel resolution		
Pitch	0.259 × 0.259 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
Backlight		Edge lit
Character display		80 × 25
Total power consumption		4 W
Viewing angle		+/-65° horizontal, +50° vertical typical

**Table 6-3**  
**Hard Drives**

	120-GB*	100-GB*	80-GB*
<b>Dimensions</b>			
Height	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm
Weight	102 g	102 g	99 g
<b>Interface type</b>	ATA-5	ATA-5	ATA-5
<b>Transfer rate</b>			
Synchronous (maximum)	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security
<b>Seek times</b> (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
<b>Logical blocks</b> <sup>†</sup>	234,428,430	195,364,233	156,301,488
<b>Disc rotational speed</b>	4200 rpm	4200 rpm	5400 rpm
<b>Operating temperature</b>	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. Actual accessible capacity is less.

<sup>†</sup>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	99 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 <sup>†</sup>	156,301,488	117,210,240	78,140,160
Disc rotational speed	4200 rpm	4200 rpm	4200 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. Actual accessible capacity is less.

<sup>†</sup>Actual drive specifications may differ slightly.

---

**Table 6-4**  
**DVD/CD-RW Combo Drive**

<b>Applicable disc</b>	<b>Read:</b> 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), and CD-Bridge	<b>Write:</b> CD-R and CD-RW
<b>Center hole diameter</b>	1.5 cm (0.59 in)	
<b>Disc diameter</b>		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
<b>Disc thickness</b>	1.2 mm (0.047 in)	
<b>Track pitch</b>	0.74 $\mu$ m	

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**Table 6-4**  
**DVD/CD-RW Combo Drive (*Continued*)**

<b>Access time</b>	CD media	DVD media
Random	< 110 ms	< 130 ms
Full stroke	< 210 ms	< 225 ms
<b>Audio output level</b>	Line-out, 0.7 V rms	
<b>Cache buffer</b>	2 MB	
<b>Data transfer rate</b>		
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	
<b>Startup time</b>	< 15 seconds	
<b>Stop time</b>	< 6 seconds	

Table 6-5

**DVD±RW and CD-RW Double Layer Combo Drive**

<b>Applicable disc</b>	<b>Read:</b> 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	<b>Write:</b> CD-R and CD-RW DVD-R and DVD-RW
<b>Center hole diameter</b>	1.5 cm (0.59 in)	
<b>Disc diameter</b>		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
<b>Disc thickness</b>	1.2 mm (0.047 in)	
<b>Track pitch</b>	0.74 µm	

**Table 6-5****DVD±RW and CD-RW Double Layer Combo Drive (Continued)**

<b>Access time</b>	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
<b>Audio output level</b>	Audio-out, 0.7 Vrms	
<b>Cache buffer</b>	2 MB	
<b>Data transfer rate</b>		
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	
<b>Startup time</b>	< 15 seconds	
<b>Stop time</b>	< 6 seconds	

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**Table 6-6**  
**System Interrupts**

<b>Hardware IRQ</b>	<b>System Function</b>
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft Natural Keyboard
IRQ2	Cascaded
IRQ3	USB2 Enhanced Host Controller—24CD
IRQ4	COM1
IRQ5*	Conexant AC—Link Audio Data Fax Modem with SmartCP
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ10*	Realtek RTL8139 Family PCI fast Ethernet Controller

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**Table 6-6**  
**System Interrupts (*Continued*)**

IRQ11	TI OHCI 1394 host controller TI PCI1410 CardBus controller
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

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



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

---

**Table 6-7**  
**System I/O Addresses**

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



**Table 6-7**  
**System I/O Addresses (*Continued*)**

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

---

**Table 6-7**  
**System I/O Addresses (*Continued*)**

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

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**Table 6-8**  
**System Memory Map**

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

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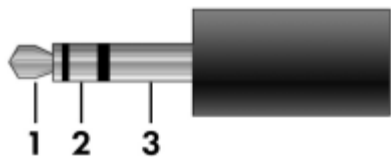
**Table 6-9**  
**System DMA**

Hardware DMA	System Function
DMA0	Not applicable
DMA1*	Not applicable
DMA2*	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller
DMA5*	Available for PC Card
DMA6	Not assigned
DMA7	Not assigned
*PC Card controller can use DMA 1, 2, or 5.	

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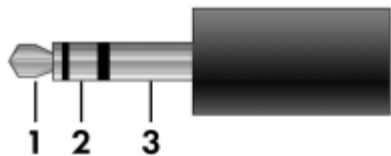
## Connector Pin Assignments

Table A-1  
Audio-Out (Headphone)



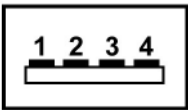
Pin	Signal	Pin	Signal
1	Audio out, left channel	3	Ground
2	Audio out, right channel		

**Table A-2**  
**Audio-In (Microphone)**



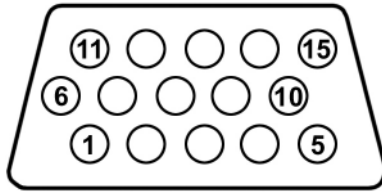
Pin	Signal	Pin	Signal
1	Audio signal in	3	Ground
2	Audio signal in		

**Table A-3**  
**Universal Serial Bus**



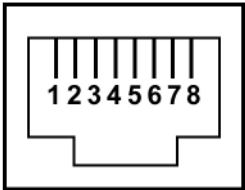
Pin	Signal	Pin	Signal
1	+5 VDC	3	Data +
2	Data -	4	Ground

**Table A-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 A-5**  
**RJ-45 (Network)**

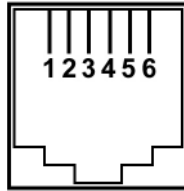


Pin	Signal	Pin	Signal
1	Transmit +	5	Unused
2	Transmit –	6	Receive –
3	Receive +	7	Unused
4	Unused	8	Unused



---

**Table A-6**  
**RJ-11 (Modem)**



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

---

**Table A-7**  
**S-Video-Out**



Pin	Signal	Pin	Signal
1	S-VHS color (C) signal	5	TV-CD
2	Composite video signal	6	S-VHS intensity ground
3	S-VHS intensity (Y) signal	7	Composite video ground
4	S-VHS color ground		

---

## 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 mm<sup>2</sup> 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 mm<sup>2</sup> 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	KE A	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:

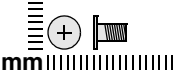
1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
2. The flexible cord must be Type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

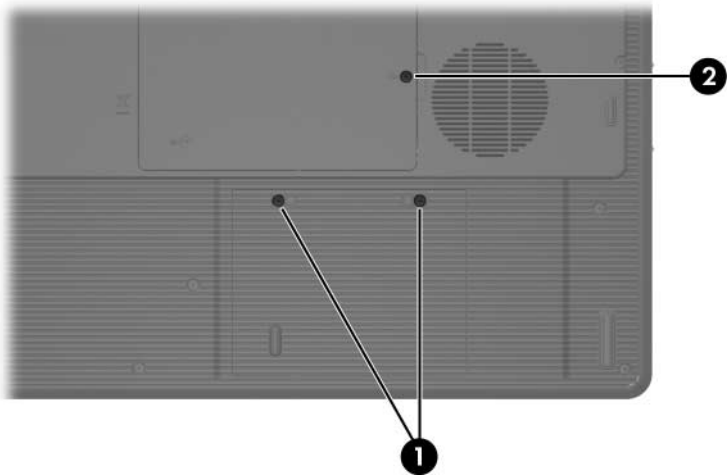
This appendix provides specification and reference information for the screws and screw locks used in the computer. All screws listed in this appendix are available in the Computer Screw Kit, spare part number 409068-001, and the Display Screw Kit, spare part number 407795-001.

Table C-1  
Phillips PM2.5×5.0 Captive Screw

	Color	Qty.	Length	Thread	Head Width
	Black	3	5.0 mm	2.5 mm	5.0 mm

Where used:

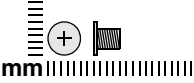
- ❶ Two Mini Card screws that secure the hard drive cover to the computer (screws are captured on the cover by C clips; documented in [Section 5.4](#))
- ❷ One screw that secures the memory/Mini Card module compartment cover to the computer (screw is captured on the cover by a C clip; documented in [Section 5.6](#))



Phillips PM2.5×5.0 Captive Screw Locations

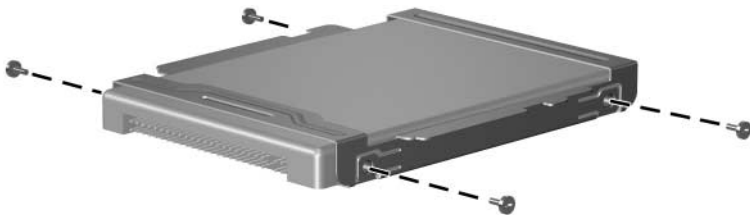


Table C-2  
Phillips PM3.0x4.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	4	4.0 mm	3.0 mm	5.0 mm

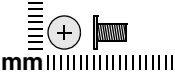
**Where used:**

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



*Phillips PM3.0x4.0 Screw Locations*

Table C-3  
Phillips PM2.5×5.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm

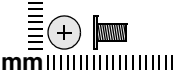
**Where used:**

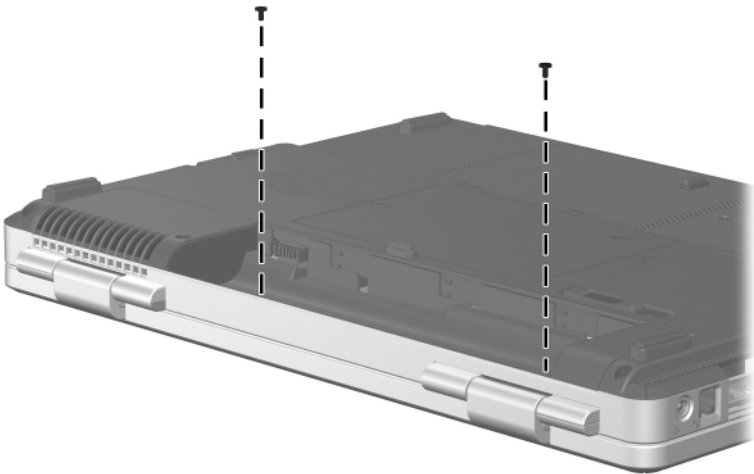
One screw that secures the optical drive to the computer (documented in [Section 5.9](#))



Phillips PM2.5×5.0 Screw Location


**Table C-3**  
**Phillips PM2.5×5.0 Screw (Continued)**

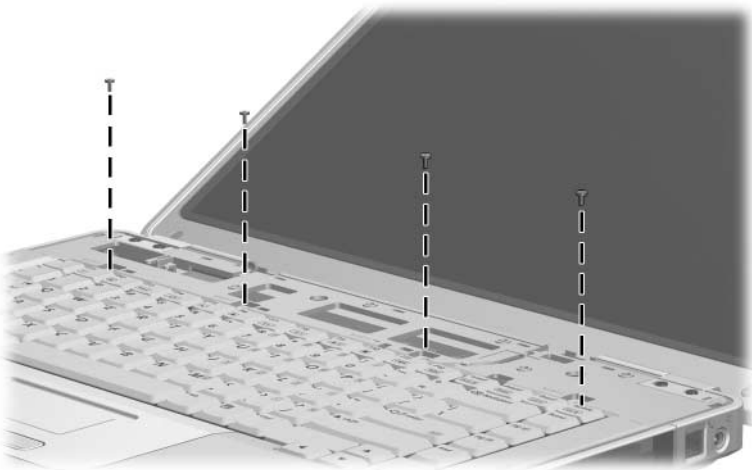
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the switch cover to the computer (documented in <a href="#">Section 5.10</a> )					



*Phillips PM2.5×5.0 Screw Locations*

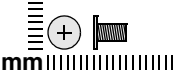
Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

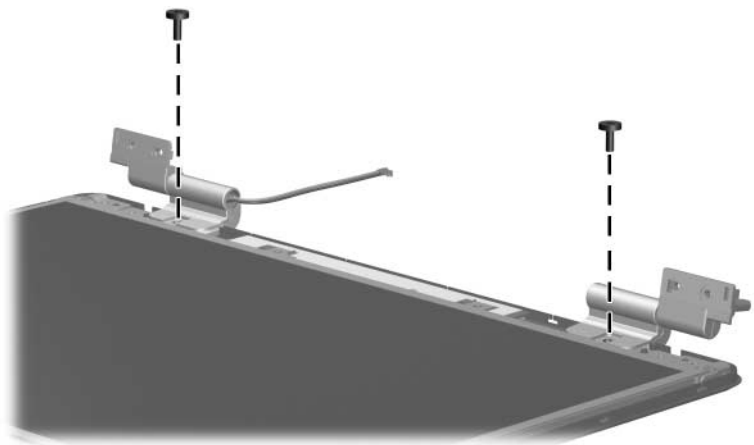
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 4 screws that secure the keyboard to the computer (documented in <a href="#">Section 5.11</a> )					



Phillips PM2.5×5.0 Screw Locations

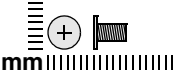
Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the display hinge base covers to the display enclosure (documented in <a href="#">Section 5.12</a> )					



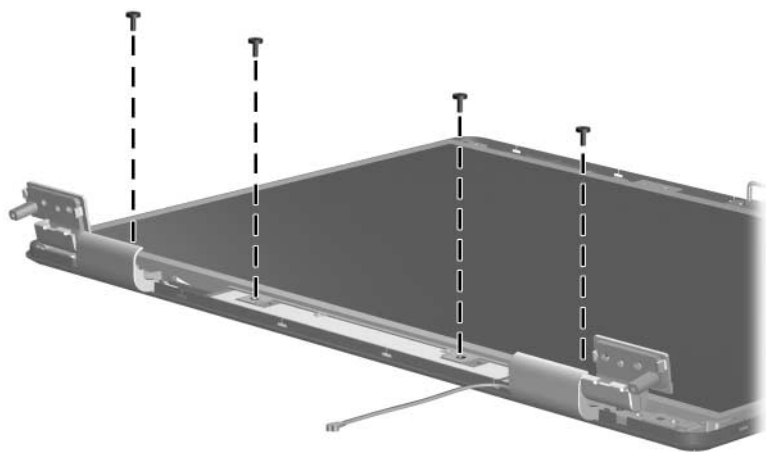
Phillips PM2.5×5.0 Screw Locations

Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm


Where used:

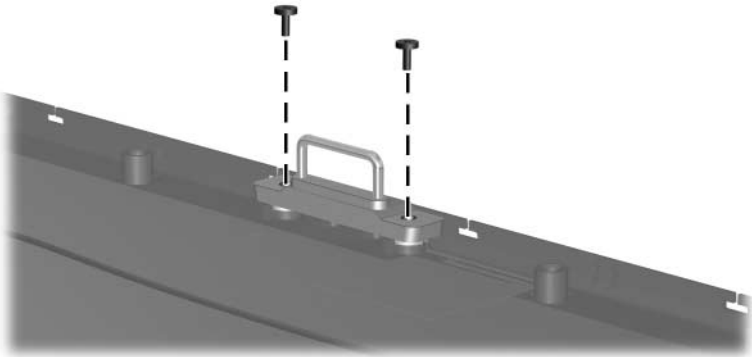
4 screws that secure the display panel and inverter board to the display enclosure (documented in [Section 5.12](#))



Phillips PM2.5×5.0 Screw Locations


**Table C-3**  
**Phillips PM2.5×5.0 Screw (*Continued*)**

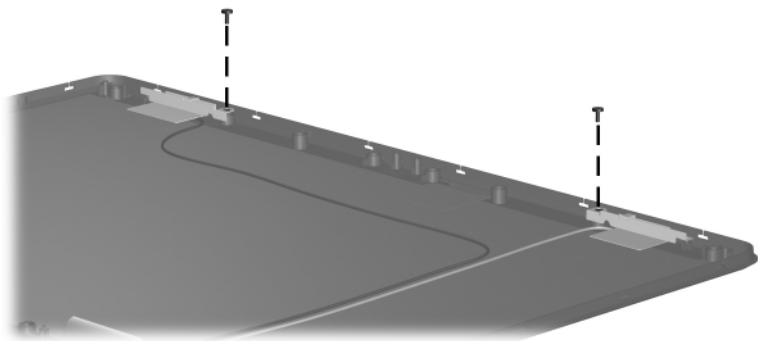
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the display release hook to the display enclosure (documented in <a href="#">Section 5.12</a> )					



*Phillips PM2.5×5.0 Screw Locations*

Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

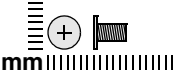
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the wireless antenna transceivers to the display enclosure (documented in <a href="#">Section 5.12</a> )					

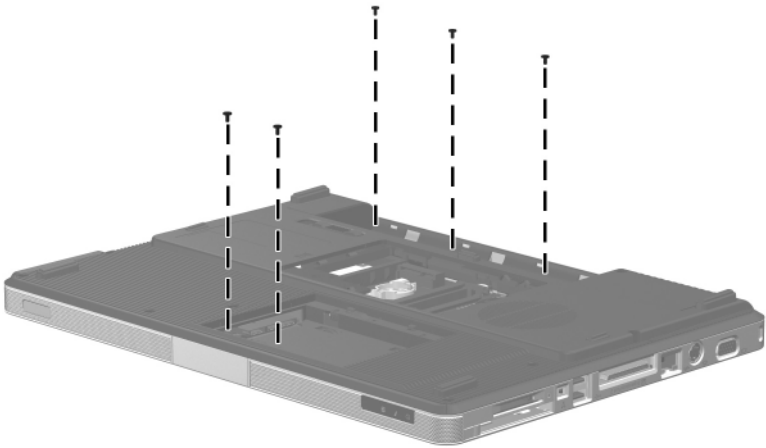


Phillips PM2.5×5.0 Screw Locations



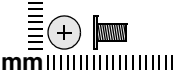
Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

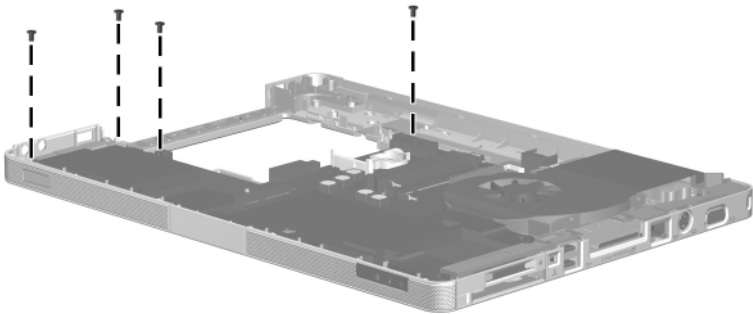
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 5 screws that secure the base enclosure to the computer (documented in <a href="#">Section 5.13</a> )					



Phillips PM2.5×5.0 Screw Locations

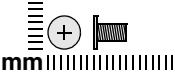
Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

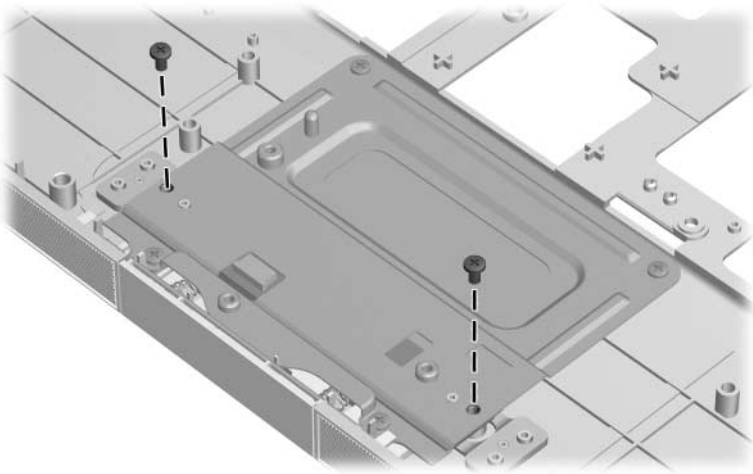
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 4 screws that secure the system board to the top cover (documented in <a href="#">Section 5.15</a> )					



Phillips PM2.5×5.0 Screw Locations

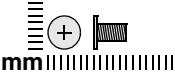
**Table C-3**  
**Phillips PM2.5×5.0 Screw (*Continued*)**

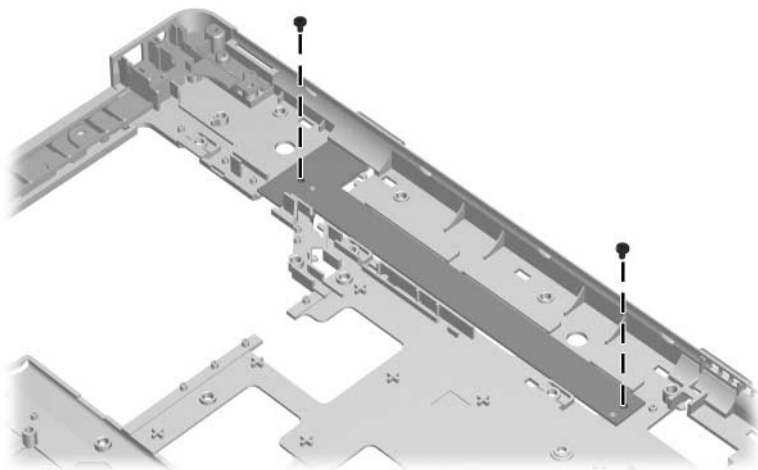
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the TouchPad bracket to the top cover (documented in <a href="#">Section 5.16</a> )					



*Phillips PM2.5×5.0 Screw Locations*

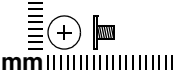
Table C-3  
Phillips PM2.5×5.0 Screw (Continued)

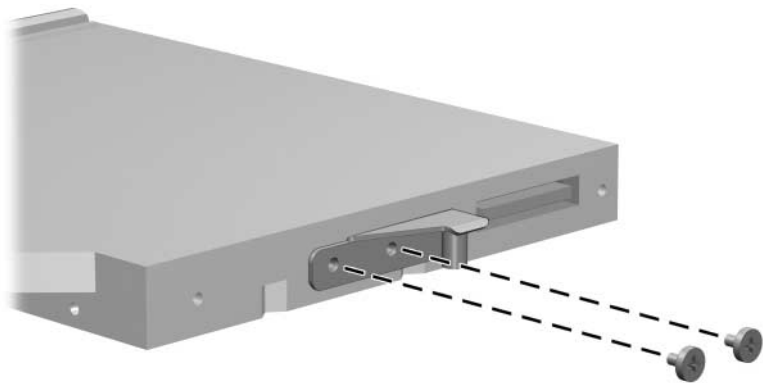
 mm	Color	Qty.	Length	Thread	Head Width
	Black	30	5.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the LED board to the top cover (documented in <a href="#">Section 5.17</a> )					



Phillips PM2.5×5.0 Screw Locations


Table C-4  
Phillips PM2.0×3.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	2	3.0 mm	2.0 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the optical drive bracket to the optical drive (documented in <a href="#">Section 5.9</a> )					



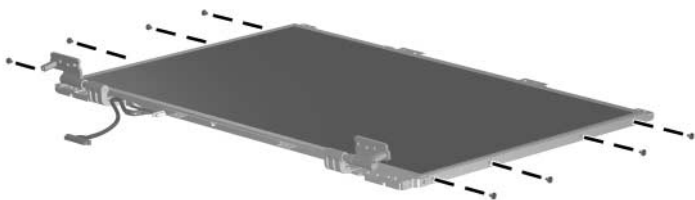
Phillips PM2.0×3.0 Screw Locations

Table C-5  
Phillips PM2.0x4.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Black	13	4.0 mm	2.0 mm	4.0 mm

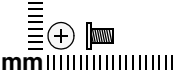
**Where used:**

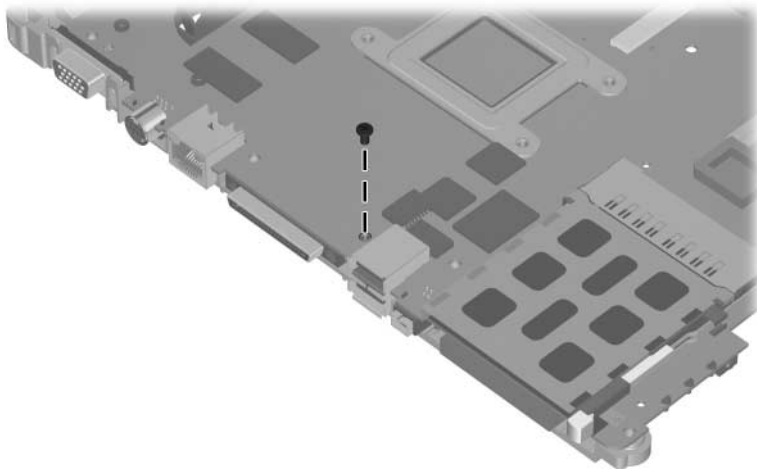
8 screws that secure the display hinges to the display panel (documented in [Section 5.12](#))



Phillips PM2.0x4.0 Screw Locations

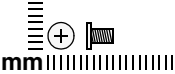
**Table C-5**  
**Phillips PM2.0×4.0 Screw (Continued)**

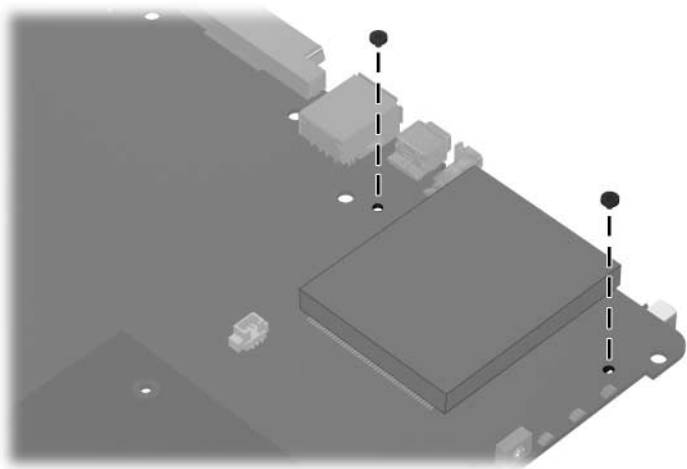
 mm	Color	Qty.	Length	Thread	Head Width
	Black	13	4.0 mm	2.0 mm	4.0 mm
<b>Where used:</b> One screw that secures the fan/heat sink assembly to the system board (documented in <a href="#">Section 5.18</a> )					



*Phillips PM2.0×4.0 Screw Location*

Table C-5  
Phillips PM2.0×4.0 Screw (Continued)

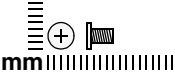
 mm	Color	Qty.	Length	Thread	Head Width
	Black	13	4.0 mm	2.0 mm	4.0 mm
<b>Where used:</b> 2 screws that secure the PC Card assembly to the system board (documented in <a href="#">Section 5.20</a> )					

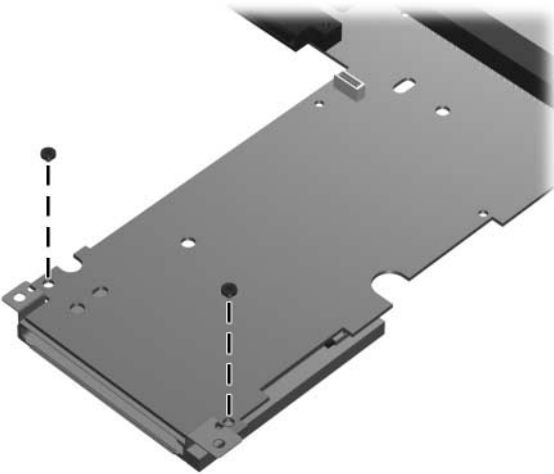


Phillips PM2.0×4.0 Screw Locations



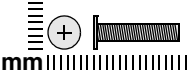
**Table C-5**  
**Phillips PM2.0×4.0 Screw (Continued)**

 mm	Color	Qty.	Length	Thread	Head Width
	Black	13	4.0 mm	2.0 mm	4.0 mm
<b>Where used:</b> 2 screws that secure the ExpressCard assembly to the system board (documented in <a href="#">Section 5.21</a> )					



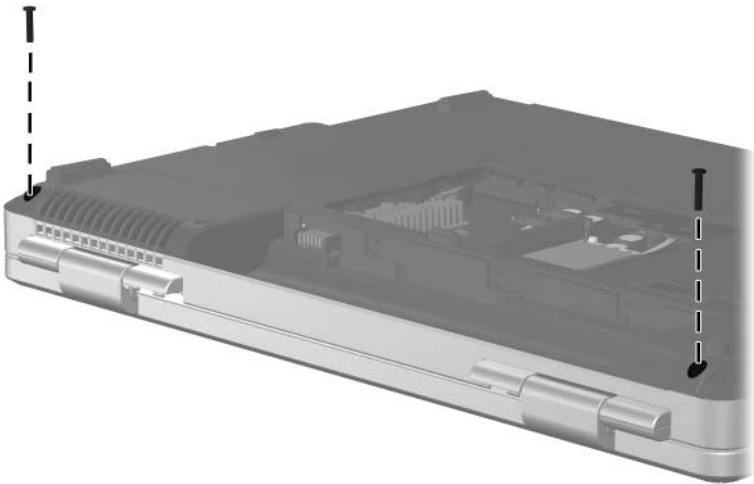
*Phillips PM2.0×4.0 Screw Locations*

Table C-6  
Phillips PM2.5×13.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Black	15	13.0 mm	2.5 mm	5.0 mm

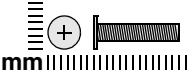
Where used:

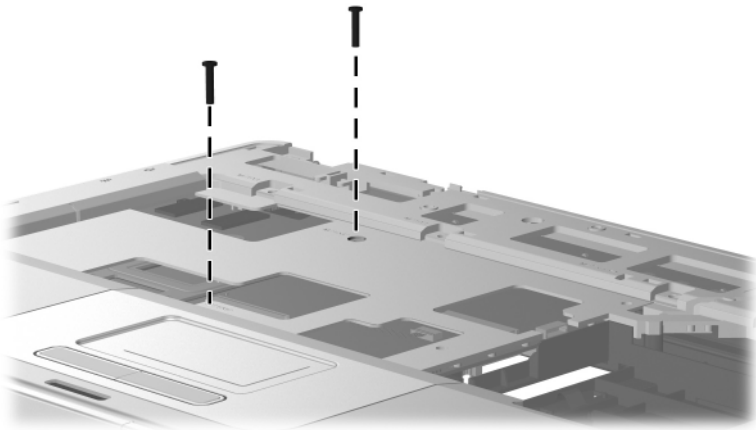
2 screws that secure the display assembly to the computer (documented in [Section 5.12](#))



Phillips PM2.5×13.0 Screw Locations

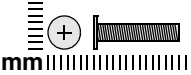
Table C-6  
Phillips PM2.5×13.0 Screw (Continued)

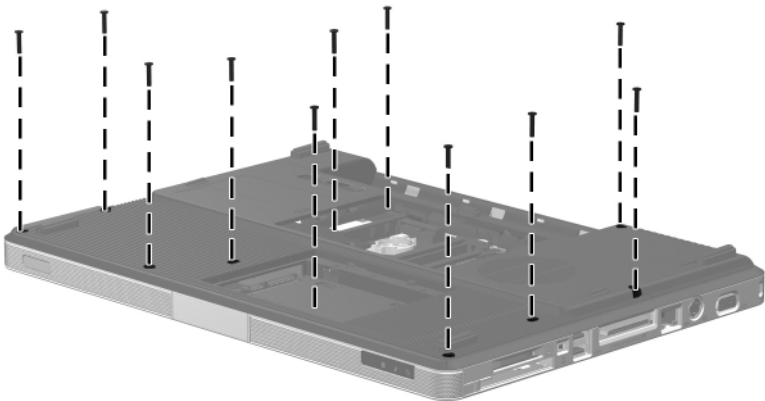
 mm	Color	Qty.	Length	Thread	Head Width
	Black	15	13.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 2 screws that secure the base enclosure to the computer (documented in <a href="#">Section 5.13</a> )					



Phillips PM2.5×13.0 Screw Locations

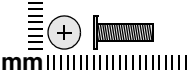
Table C-6  
Phillips PM2.5×13.0 Screw (Continued)

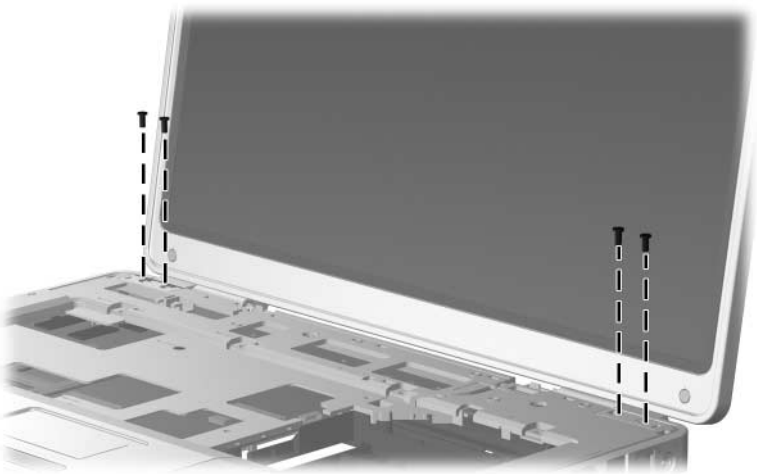
	Color	Qty.	Length	Thread	Head Width
	Black	15	13.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 11 screws that secure the base enclosure to the computer (documented in <a href="#">Section 5.13</a> )					



Phillips PM2.5×13.0 Screw Locations

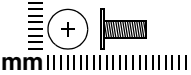
Table C-7  
Phillips PM2.5×9.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Black	4	9.0 mm	2.5 mm	5.0 mm
<b>Where used:</b> 4 screws that secure the display assembly to the computer (documented in <a href="#">Section 5.12</a> )					



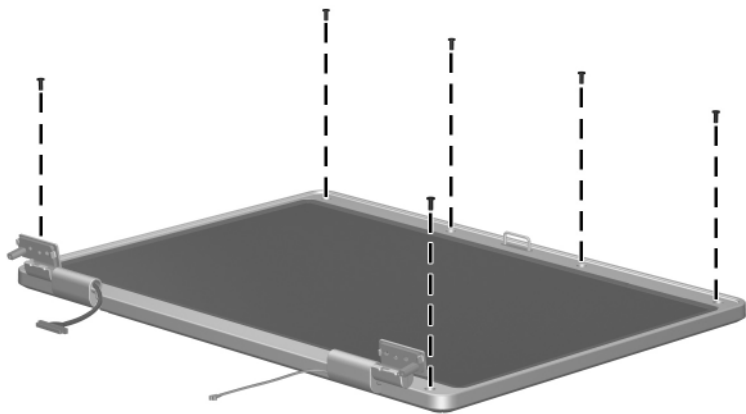
Phillips PM2.5×9.0 Screw Locations

Table C-8  
Phillips PM2.5×7.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	10	7.0 mm	2.5 mm	6.0 mm

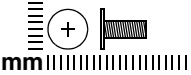
Where used:

6 screws that secure the display bezel to the display enclosure (documented in [Section 5.12](#))



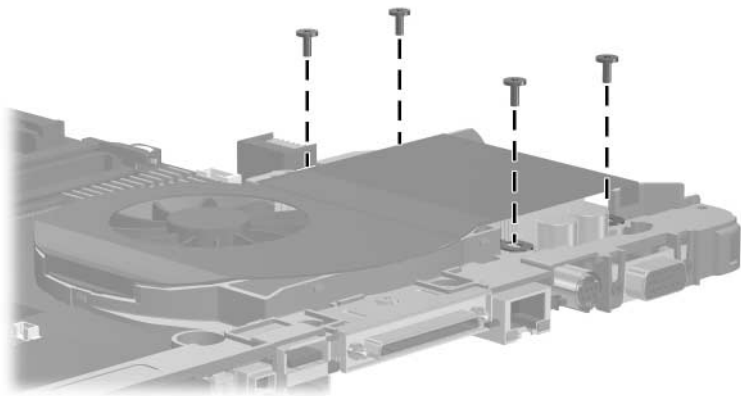
Phillips PM2.5×7.0 Screw Locations

**Table C-8**  
**Phillips PM2.5×7.0 Screw (Continued)**

 mm	Color	Qty.	Length	Thread	Head Width
	Silver	10	7.0 mm	2.5 mm	6.0 mm


**Where used:**

4 screws that secure the heat sink to the system board (documented in [Section 5.18](#))



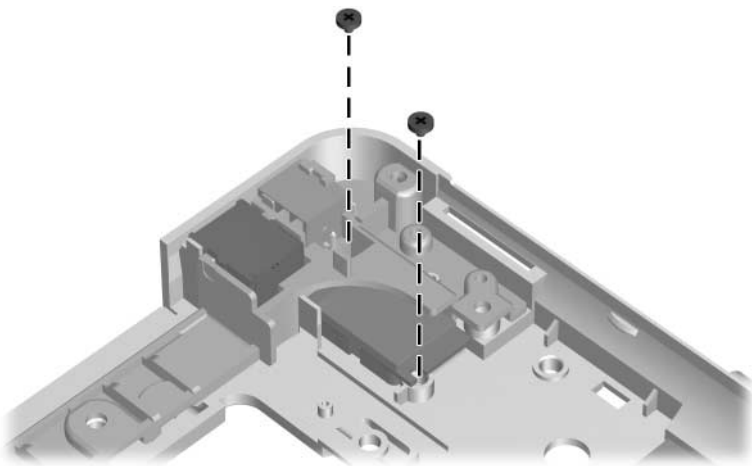
*Phillips PM2.5×7.0 Screw Locations*

Table C-9  
Phillips PM1.5x3.0 Screw

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

**Where used:**


2 screws that secure the Bluetooth module to the top cover (documented in [Section 5.14](#))



Phillips PM1.5x3.0 Screw Locations

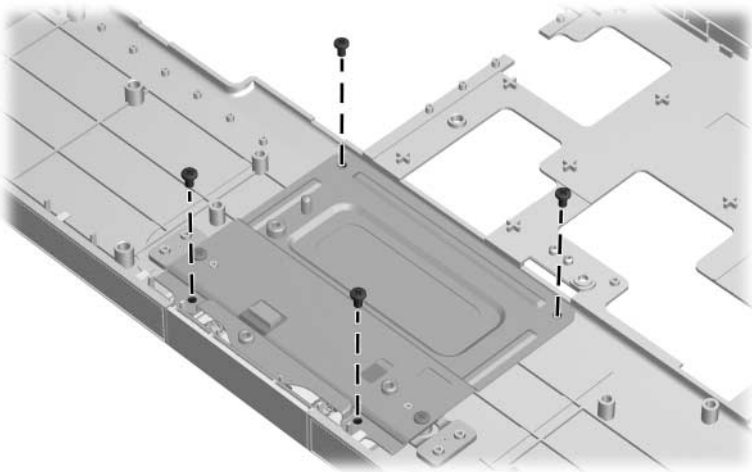


Table C-10  
Silver Phillips PM2.5×4.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Silver	5	4.0 mm	2.5 mm	5.0 mm

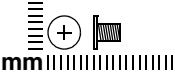
**Where used:**

4 screws that secure the display bezel to the display enclosure (documented in [Section 5.16](#))



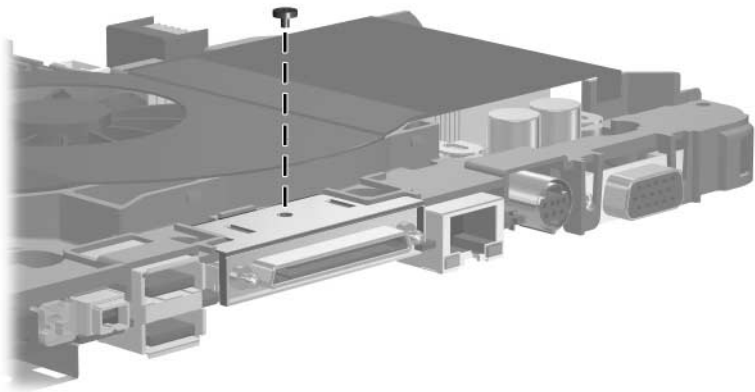
Silver Phillips PM2.5×4.0 Screw Locations

Table C-10  
Silver Phillips PM2.5×4.0 Screw (Continued)

 mm	Color	Qty.	Length	Thread	Head Width
	Silver	5	4.0 mm	2.5 mm	5.0 mm

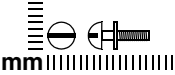
Where used:

One screw that secures the expansion port 2 bracket and fan/heat sink assembly to the system board (documented in [Section 5.18](#))



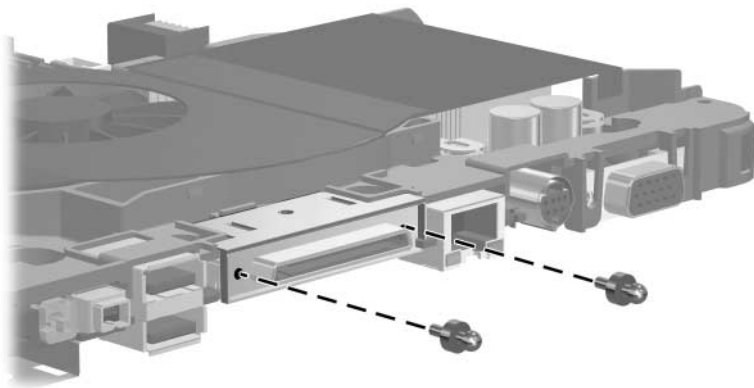
Silver Phillips PM2.5×4.0 Screw Location

**Table C-11**  
**Slotted SM1.5x9.0 Screw**

 mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	9.0 mm	1.5 mm	4.0 mm

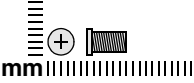
**Where used:**

2 screws that secure the fan/heat sink assembly to the system board  
(documented in [Section 5.18](#))



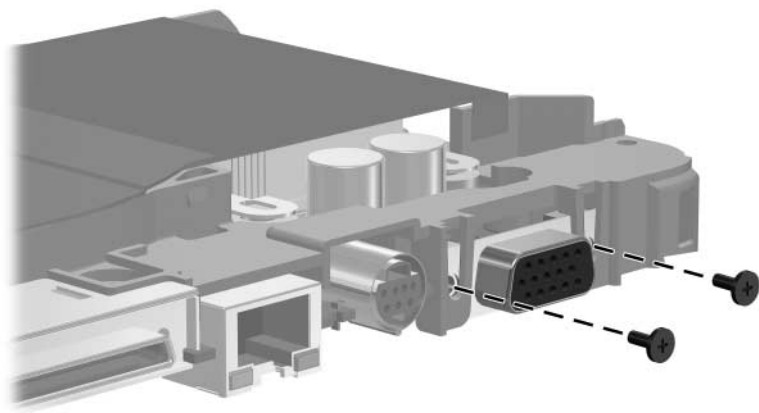
*Slotted SM1.5x9.0 Screw Locations*

Table C-12  
Phillips PM3.0x6.0 Screw

 mm	Color	Qty.	Length	Thread	Head Width
	Black	2	6.0 mm	3.0 mm	4.0 mm

**Where used:**

2 screws that secure the fan/heat sink assembly to the system board  
(documented in [Section 5.18](#))



Phillips PM3.0x6.0 Screw Locations

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# Display Component Recycling

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**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.



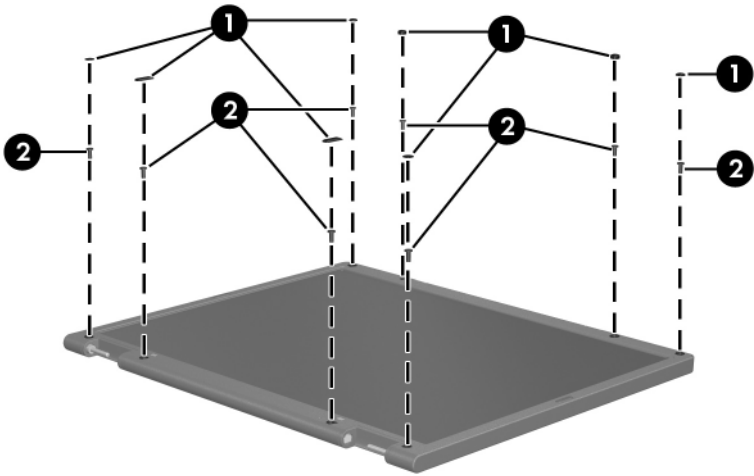
Disassembly procedures differ from one display assembly to another. The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Refer to [Section 5.12, “Display Assembly,”](#) for display assembly disassembly steps.

---

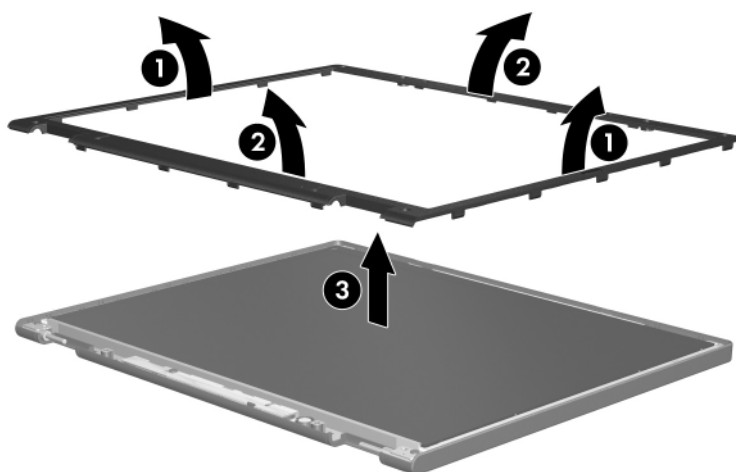
Perform the following steps to disassemble the display assembly:

1. Remove all screw covers **1** and screws **2** that secure the display bezel to the display assembly.



*Removing the Display Bezel Screw Covers and Screws*

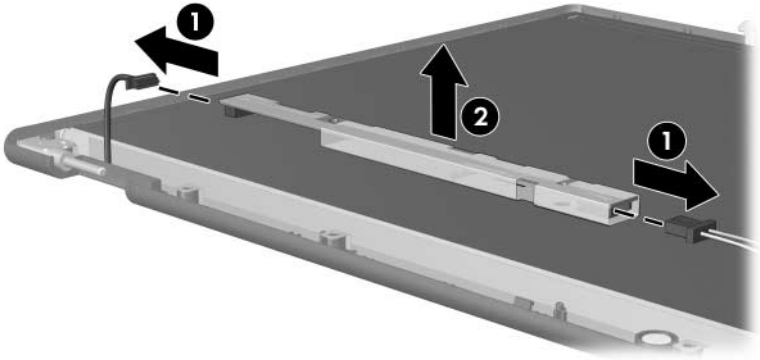
2. Lift up and out on the left and right inside edges ❶ and the top and bottom inside edges ❷ of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel ❸.



*Removing the Display Bezel*

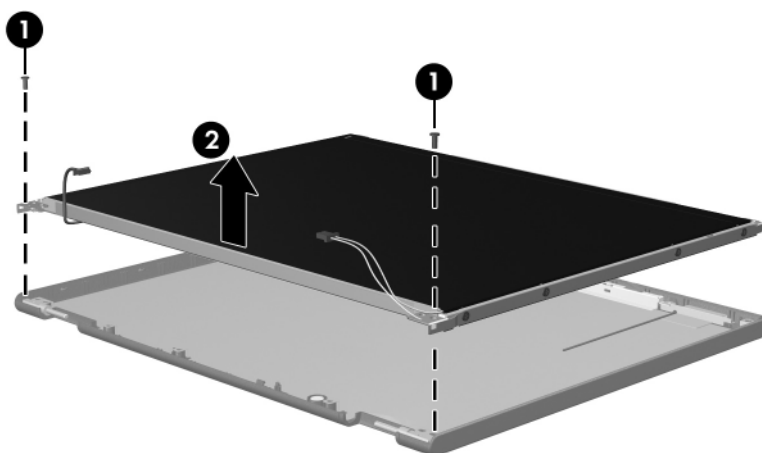


4. Disconnect all LCD panel cables ❶ from the display inverter board and remove the inverter board ❷.



*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.



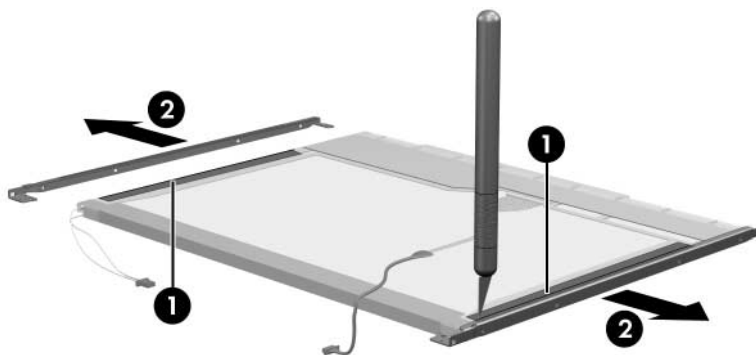
*Removing the LCD Panel*

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



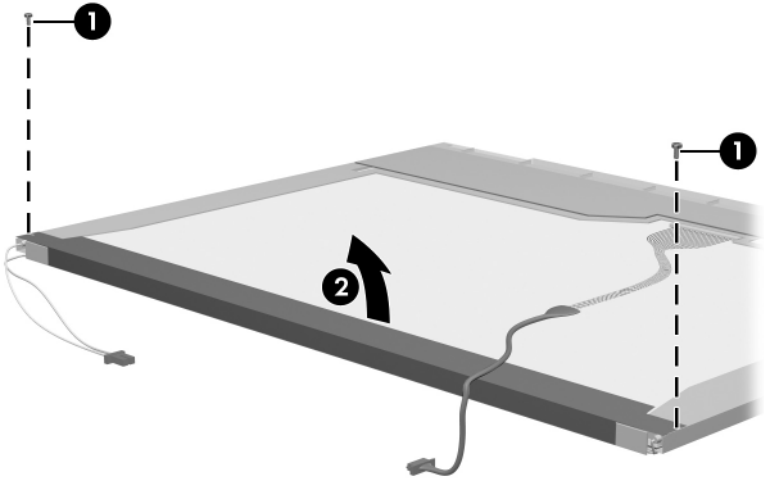
*Removing the LCD Panel Frame Screws*

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.



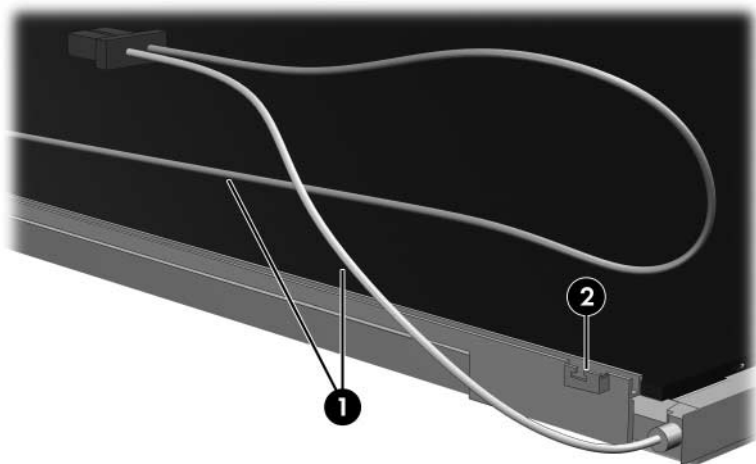
*Removing the LCD Panel Frame*

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.



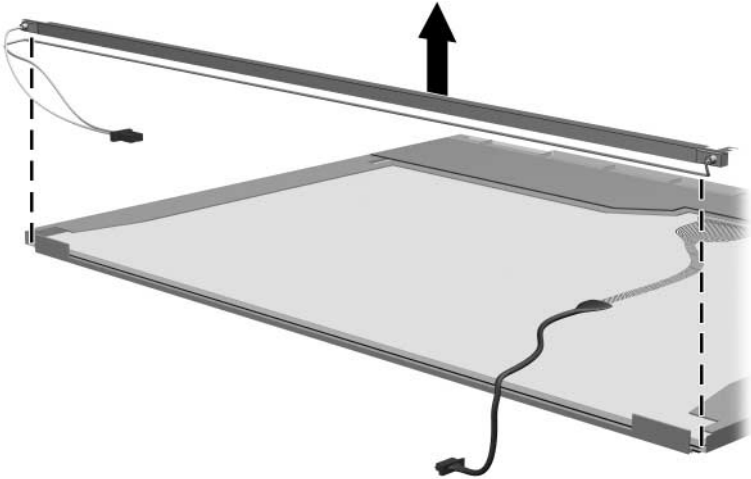
*Removing the Backlight Cover*

14. Turn the LCD panel right-side up.
15. Remove the backlight cables **1** from the clip **2** in the LCD panel.



*Releasing the Backlight Cables*

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



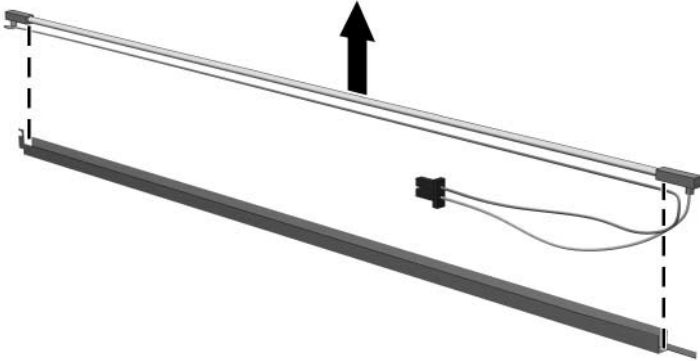
*Removing the Backlight Frame*



**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.

---

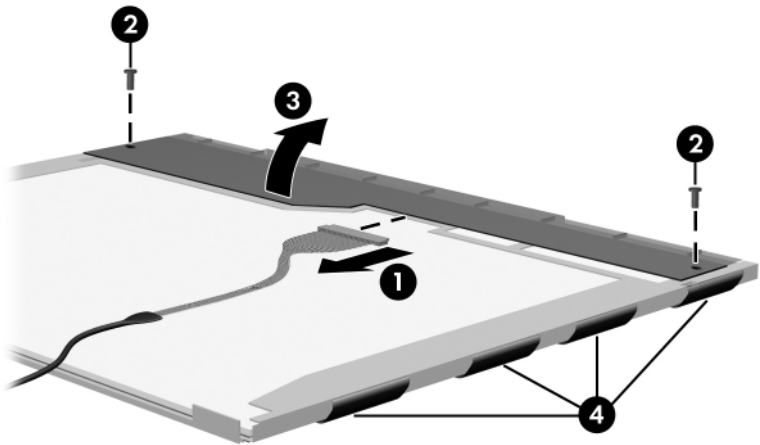
18. Slide the backlight out of the backlight frame.



*Removing the Backlight*

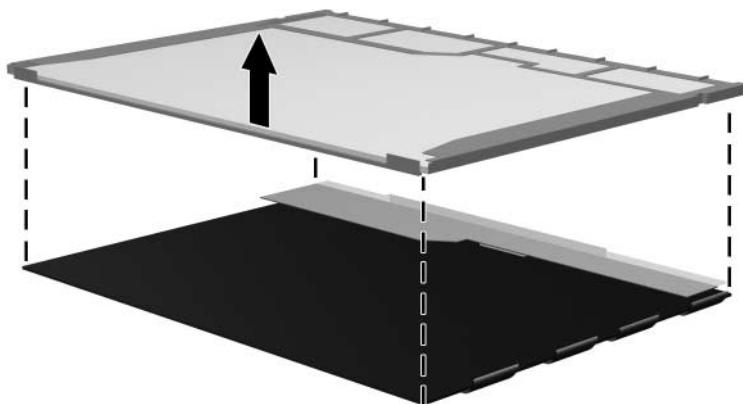


19. Disconnect the display cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the LCD rear panel.
21. Release the LCD panel ❸ from the LCD rear panel.
22. Release the tape ❹ that secures the LCD panel to the LCD rear panel.



*Releasing the LCD Panel*

23. Remove the LCD panel.



*Removing the LCD Panel*

24. Recycle the backlight and LCD panel.

---

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