



December 17, 2009/December 17, 2009

# **HP Pavilion dv4 Entertainment PC**

## Maintenance and Service Guide

Document Part Number: 598157-001

December 2009

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.

© Copyright 2009 Hewlett-Packard Development Company, L.P.

ATI and ATI Mobility Radeon are trademarks of Advanced Micro Devices, Inc. Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel, Arrandale, and Core are trademarks of Intel corporation in the U.S. and other countries. Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation. SD Logo is a trademark of its proprietor.

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

First Edition: December 2009

Document Part Number: 598157-001

## Safety warning notice

---



**WARNING:** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

---

---

# Contents

## 1 Product description

## 2 External component identification

Top components . . . . .	2-1
TouchPad . . . . .	2-1
Lights . . . . .	2-2
Buttons, speakers, and fingerprint reader . . . . .	2-3
Keys . . . . .	2-4
Display . . . . .	2-5
Front components . . . . .	2-6
Rear component . . . . .	2-7
Right-side components . . . . .	2-8
Left-side components . . . . .	2-9
Bottom components . . . . .	2-10
Wireless antennas . . . . .	2-11
Additional hardware components . . . . .	2-12

## 3 Illustrated parts catalog

Service tag . . . . .	3-1
Computer major components . . . . .	3-2
Display assembly subcomponents . . . . .	3-9
Plastics Kit . . . . .	3-10
Mass storage devices . . . . .	3-11
Miscellaneous parts . . . . .	3-12
Sequential part number listing . . . . .	3-14

## 4 Removal and replacement procedures

Preliminary replacement requirements .....	4-1
Tools required .....	4-1
Service considerations .....	4-1
Plastic parts .....	4-1
Grounding guidelines .....	4-2
Component replacement procedures .....	4-5
Service tag .....	4-5
Computer feet .....	4-6
Battery .....	4-7
Hard drive .....	4-8
Memory module .....	4-10
RTC battery .....	4-12
TV tuner .....	4-14
WLAN module .....	4-15
Optical drive .....	4-19
Keyboard .....	4-20
Keyboard cover .....	4-23
Power button board .....	4-25
Speaker assembly .....	4-26
Display assembly .....	4-27
Webcam/microphone module .....	4-33
Top cover .....	4-34
Touchpad button board and bracket .....	4-37
Fingerprint Reader board (select models only) .....	4-39
Modem module (select models only) .....	4-40
Bluetooth module (select models only) .....	4-42
Audio board .....	4-44
USB board .....	4-46
Power connector .....	4-48
System board .....	4-50
RJ-11 connector (select models only) .....	4-53
Heat sink assembly .....	4-55
Fan .....	4-57
Processor .....	4-59

## 5 Setup Utility

Starting Setup Utility .....	5-1
Using Setup Utility .....	5-1
Changing the language of Setup Utility .....	5-1
Navigating and selecting in Setup Utility .....	5-2
Displaying system information .....	5-2
Restoring default settings in Setup Utility .....	5-2
Exiting Setup Utility .....	5-3
Setup Utility menus .....	5-3
Main menu .....	5-3
Security menu .....	5-3
System Configuration menu .....	5-4
Diagnostics menu .....	5-4

## 6 Specifications

Computer specifications .....	6-1
14.1-inch WXGA BrightView display specifications .....	6-2
Hard drive specifications .....	6-3
Blu-ray DVD±R/RW SuperMulti Double-Layer Drive with LightScribe specifications .....	6-4
DVD±RW SuperMulti Double-Layer Combo Drive with LightScribe specifications .....	6-5
System DMA specifications .....	6-6
System interrupt specifications .....	6-7
System I/O address specification .....	6-8

## 7 Backup and recovery

Overview .....	7-1
Creating recovery discs .....	7-2
Backing up your information .....	7-3
Using Windows Backup and Restore .....	7-4
Using system restore points .....	7-4
Performing a recovery .....	7-5
Recovering from the recovery discs .....	7-6
Recovering from the dedicated recovery partition (select models only) .....	7-6

## **8 Connector pin assignments**

Audio-in (microphone) . . . . .	8-1
External monitor . . . . .	8-2
HDMI . . . . .	8-3
RJ-11 (modem) (select models only) . . . . .	8-4
RJ-45 (network) . . . . .	8-5
Universal Serial Bus . . . . .	8-6

## **9 Power cord set requirements**

Requirements for all countries and regions . . . . .	9-1
Requirements for specific countries and regions . . . . .	9-2

## **10 Recycling**

Battery . . . . .	10-1
Display . . . . .	10-1

## **Index**

## Product description

Category	Description
<b>Product Name</b>	<b>HP Pavilion dv4 Entertainment PC</b>
<b>Processors</b>	Intel Arrandale™ Single-Core i5-520M (2.4 GHz, 3 MB L3 cache, 1066 MHZ SC Turbo) Intel Arrandale Single-Core i5-540M (2.53 GHz, 3 MB L3 cache, 1066 MHZ SC Turbo)
<b>Chipset</b>	Intel™ HM55
<b>Graphics</b>	<p>Mobile Intel™ GMA Media Accelerator HD unified memory architecture (UMA, integrated) with shared video memory:</p> <ul style="list-style-type: none"> <li>■ Up to 268 MB of video memory on computer models equipped with 1 GB of main system memory.</li> <li>■ Up to 781 MB of video memory on computer models equipped with 2 GB of main system memory.</li> <li>■ Up to 1292 MB of video memory on computer models equipped with 3GB of main system memory.</li> <li>■ Up to 1293 MB of video memory on computer models equipped with 4GB of main system memory (32-bit OS).</li> <li>■ Up to 1759 MB of video memory on computer models equipped with 4GB of main system memory (64-bit OS).</li> </ul> <p>ATI Discrete Mobility Radeon™ HD4550 with 512 MB dedicated video memory</p>
<b>Panel</b>	14.1-in WXGA BrightView (1280 × 800) display panel 16:10 wide aspect ratio

(Continued)



<b>Category</b>	<b>Description</b>
<b>Memory</b>	<p>2 customer-accessible/upgradable memory module slots</p> <p>Supports dual-channel memory</p> <p>Supports up to 8 GB of system RAM</p> <p>1066-MHz, DDR3</p> <p>Supports the following configurations:</p> <ul style="list-style-type: none"> <li>8192 MB total system memory (4096 × 2, dual-channel)</li> <li>6144 MB total system memory (4096 + 2048)</li> <li>4096 MB total system memory (2048 × 2, dual-channel)</li> <li>3072 MB total system memory (2048 + 1024)</li> <li>2048 MB total system memory (1024 × 2, dual-channel)</li> <li>2048 MB total system memory (2048 × 1)</li> <li>1024 MB total system memory (1024 × 1)</li> </ul>
<b>Hard Drives</b>	<p>Supports a 9.50-mm, 6.35-cm (2.50-in) hard drive</p> <p>Supports HP ProtectSmart Hard Drive Protection</p> <p>Customer-accessible</p> <p>Serial ATA</p> <p>Supports the following hard drives:</p> <ul style="list-style-type: none"> <li>500 GB, 7200-rpm</li> <li>320 GB, 7200-rpm</li> <li>250 GB, 7200-rpm</li> <li>160 GB, 7200-rpm</li> </ul>
<b>Optical drives</b>	<p>12.7-mm tray load</p> <p>Serial ATA (SATA)</p> <p>MultiBay weight saver</p> <p>Customer-accessible</p> <p>Supports the following drives:</p> <ul style="list-style-type: none"> <li>Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe</li> <li>DVD±R/RW SuperMulti DL Drive with LightScribe</li> </ul>
<b>Audio</b>	<p>High-definition audio</p> <p>Meets SRS logo requirement</p> <p>Supports Microsoft® premium requirements</p> <p>Pavilion-branded Altec Lansing speakers</p>
<b>Modem</b>	56K MDC V.92 data/fax modem (select models only)

*(Continued)*

Category	Description
<b>Webcam/microphone</b>	VGA webcam Fixed (no tilt) Activity LED 640 × 480 by 24 frames per second 2 integrated omnidirectional digital microphones
<b>Ethernet</b>	Integrated 10/100/1000 network interface card (NIC) for Discrete versions. Integrated 10/100 network interface card (NIC) for UMA versions.
<b>Wireless</b>	Integrated WLAN options by way of wireless module: Intel WiFi Link 6200 802.11 a/b/g/n WLAN module Intel WiFi Link 6200 802.11 a/b/g/n WLAN module + Bluetooth Intel WiFi Link 1000 802.11b/g/n WLAN module Intel WiFi Link 1000 802.11 b/g/n WLAN module + Bluetooth 2 wireless antennas built into display assembly Broadcom BCM2070 Bluetooth® 2.1 module (select models only)
<b>External media cards</b>	One ExpressCard slot, supporting optional ExpressCard/54 cards Digital Media Slot supporting Memory Stick (MS), Memory Stick Pro (MSP), MultiMediaCard (MMC), Secure Digital (SD) Memory Card, and xD-Picture Card (XD). Adapter (purchased separately) provides support for mini versions of SD, MMC, and MSP Duo
<b>Ports</b>	Audio-in (stereo microphone) Audio-out (stereo headphone) RJ-11 modem (select models only) HDMI v. 1.3b supporting 1080p with HDCP key HP Smart Adapter power Consumer infrared eSATA (third USB port) RJ-45 (Ethernet, includes link and activity lights) USB 2.0 VGA (Dsub 15-pin) supports the following resolutions: 1920 × 1200 external resolution at 60 GHz (select models only) 1600 × 1200 external resolution at 75 GHz (select models only) Hot plug/unplug with auto-detect

(Continued)

---

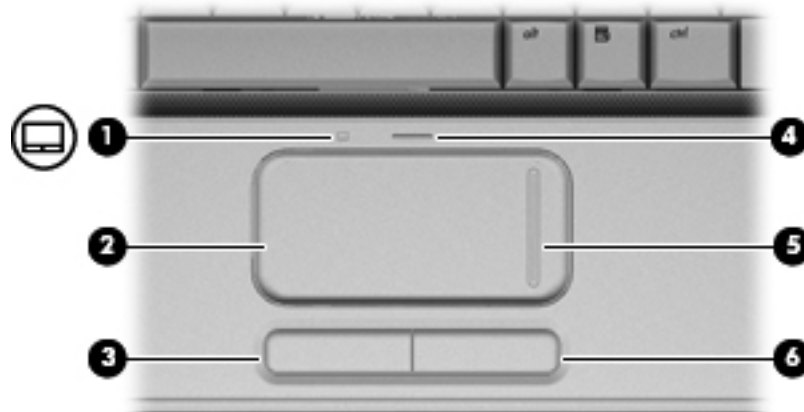
<b>Category</b>	<b>Description</b>
<b>Docking</b>	Expansion port 3 supports HP xb Docking Station and HP Notebook QuickDock
<b>Keyboard/pointing devices</b>	14.1-in keyboard TouchPad with 2 buttons Supports 2-way scroll Taps enabled as default
<b>Power requirements</b>	65-W and 90-W HP Smart Adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)  Smart pin AC Adapter with localized cable plug support  Battery options: 3-cell, 4.40 Ah (47 Wh) Li-ion battery 6-cell, 2.20 Ah (47 Wh) Li-ion battery 6-cell, 2.20 Ah (55 Wh) Li-ion battery 6-cell, 2.55 Ah (55 Wh) Li-ion battery 12-cell, 2.20 Ah (95 Wh) Li-ion battery
<b>Security</b>	Kensington Security Lock Fingerprint Reader with Digital Persona Software Support (select models only)
<b>Operating system</b>	Preinstalled: Windows® 7 Professional (32 and 64-bit OS) Windows 7 Premium (32 and 64-bit OS) Windows 7 Basic (32-bit OS)
<b>Serviceability</b>	End-user replaceable parts: AC adapter Battery (system) Hard Drive Memory modules MiniCard components RTC battery Optical drive

---

## External component identification

### Top components

#### TouchPad



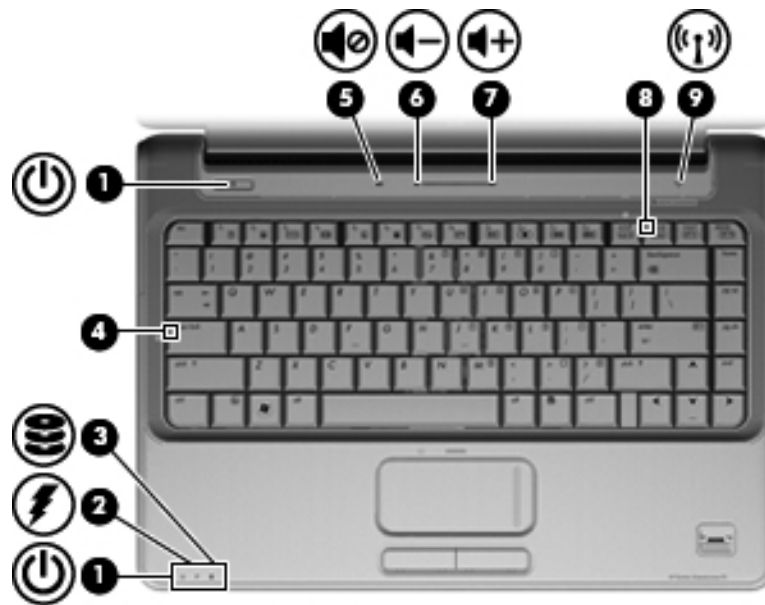
Item	Component	Description
1	TouchPad light	White—TouchPad is enabled. Amber—TouchPad is disabled.
2	TouchPad*	Moves the pointer and selects or activates items on the screen.
3	Left TouchPad button*	Functions like the left button on an external mouse.
4	TouchPad On/Off button	Enables/disables the TouchPad.
5	TouchPad vertical scroll zone	Scrolls up or down.
6	Right TouchPad button*	Functions like the right button on an external mouse.

\*This table describes factory settings.

To view or change the pointing device preferences:

1. Select **Start > Devices and Printers**.
2. Right-click the device representing your computer.
3. Select **Mouse settings**.

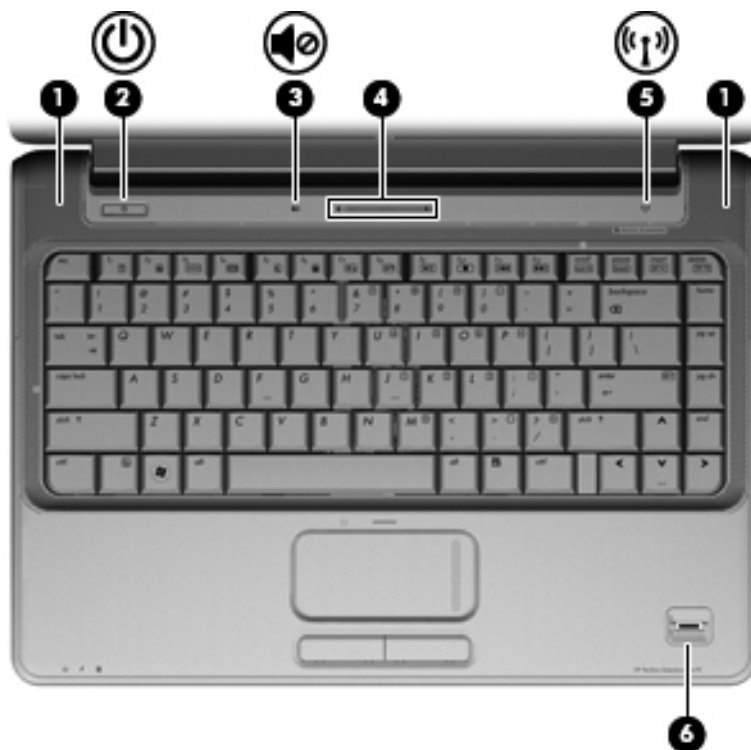
## Lights




Item	Component	Description
1	Power lights (2)*	On—The computer is on. Flashing—The computer is in Sleep. Off—The computer is off or in Hibernation.
2	Battery light	On—The battery is charging. Flashing—The battery reaches a low battery level or a critical battery level. Off—If the computer is connected to an external power source, the light is off when all batteries in the computer are fully charged. If the computer is not connected to an external power source, the light is off until the battery reaches a low battery level.
3	Drive light	Flashing—The hard drive or the optical drive is being accessed. On—HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay.
4	Caps lock light	On—The caps lock is on.
5	Volume Mute light	White—The computer sound is on. Amber—The computer sound is off.
6	Volume Down light	On—Decreases speaker volume.
7	Volume Up light	On—Increases speaker volume.
8	Num lock light	On—The num lock is on or the embedded numeric keypad is enabled.
9	Wireless light	Blue—An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. Amber—No wireless devices are detected.

\*The two Power lights display the same information. The light on the Power button is visible only when the computer is open. The Power light on the front of the computer is visible whether the computer is open or closed.

## Buttons, speakers, and fingerprint reader



Item	Component	Description
1	Speakers (2)	Produce sound.
2	Power button*	When the computer is off, press the button to turn on the computer. When the computer is on, press the button to initiate Sleep. When the computer is in Sleep, press the button to exit Sleep. When the computer is in Hibernation, press the button to exit Hibernation. If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the Power button for at least five seconds to shut down the computer. To learn more about power settings, select <b>Start &gt; Control Panel &gt; System and Security &gt; Power Options</b> .
3	Volume Mute button	Mutes and restores speaker sound.
4	Volume Scroll zone	Adjusts speaker volume. To decrease volume, slide your finger to the left or tap the minus sign on the scroll zone. To increase volume, slide your finger to the right or tap the plus sign on the scroll zone.
5	Wireless button	Turns the wireless feature on or off but does not create a wireless connection.  A wireless network must be set up in order to establish a wireless connection.
6	Fingerprint Reader (select models only)	Allows a fingerprint logon to Windows, instead of a password logon.

\*This table describes factory settings. For information about changing factory settings, see the user guides located in Help and Support.

## Keys



Item	Component	Description
1	<b>esc</b> key	Displays system information when pressed at the same time as the <b>fn</b> key.
2	<b>fn</b> key	Executes frequently used system functions when pressed at the same time as a function key or the <b>esc</b> key.
3	Windows Logo key	Displays the Windows Start menu.
4	Windows Applications key	Displays a shortcut menu for items beneath the pointer.
5	Embedded numeric keypad keys	Used like the keys on an external numeric keypad.
6	Function keys	Executes frequently used system functions when pressed at the same time as the <b>fn</b> key.

## Display



Item	Component	Description
1	Internal display switch	Turns off the display if the display is closed while the computer is on.
2	Internal digital dual-array microphones (2)	Records sound.
3	Webcam light	On—The webcam is in use.
4	Webcam	Records video and captures still photographs.




## Front components



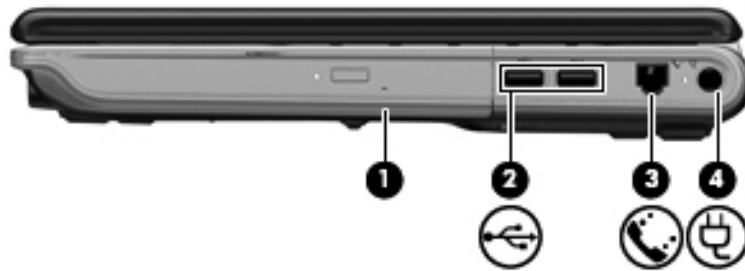
Item	Component	Description
1	Power light	On—The computer is on. Flashing—The computer is in Sleep. Off—The computer is off or in Hibernation.
2	Battery light	On—The battery is charging. Flashing—The battery reaches a low battery level or a critical battery level. Off—If the computer is connected to an external power source, the light is off when all batteries in the computer are fully charged. If the computer is not connected to an external power source, the light is off until the battery reaches a low battery level.
3	Drive light	Flashing—The hard drive or the optical drive is being accessed. On—The HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay.
4	Consumer infrared lens	Receives a signal from the HP Remote Control.
5	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
6	Audio-out (headphone) jacks (2)	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, headsets, or television audio.

## Rear component



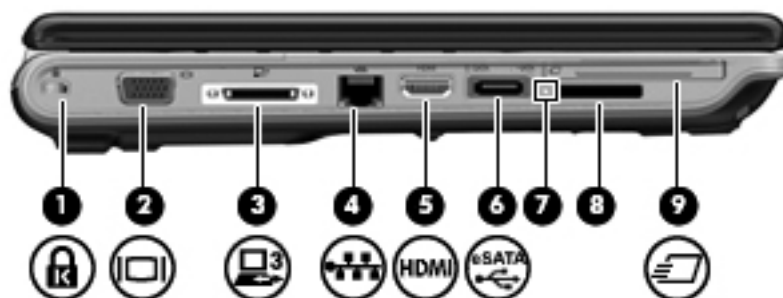
Component	Description
Vent	<p data-bbox="682 499 1520 535">Enables airflow to cool internal components.</p> <p data-bbox="682 535 1520 640"> The computer fan starts automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>



## Right-side components



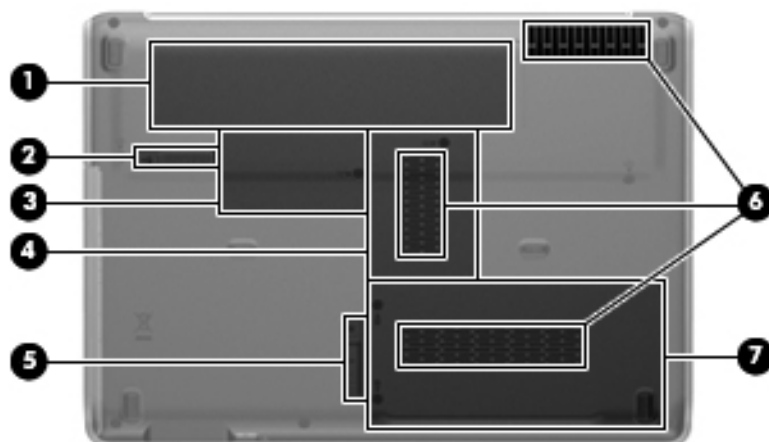
Item	Component	Description
1	SmartBay	Supports an optical drive or hard drive.
2	USB ports (2)	Connects optional USB devices.
3	RJ-11 (modem) jack (select models only)	Connects a modem cable.
4	Power connector	Connects an AC adapter.



## Left-side components



Item	Component	Description
1	Security Cable slot	Attaches an optional security cable to the computer.  The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.
2	External Monitor port	Connects an external VGA monitor or projector.
3	Expansion port 3	Connects the computer to an optional docking device or optional expansion product.  The computer has only one expansion port. The term <i>expansion port 3</i> describes the type of expansion port.
4	RJ-45 (network) jack	Connects a network cable.
5	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
6	eSATA/USB port	Connects high-performance eSATA components, such as an eSATA external hard drive, or connects an optional USB device.
7	Digital Media Slot light	On—Accessing a digital card.
8	Digital Media Slot	Supports the following optional digital card formats: Memory Stick (MS) Memory Stick Pro (MSP) MultiMediaCard (MMC) Secure Digital (SD) Memory Card xD-Picture Card (XD)
9	ExpressCard slot	Supports optional ExpressCard/54 cards.

## Bottom components



Item	Component	Description
1	Battery bay	Holds the battery.
2	Battery Release latch	Releases the battery from the battery bay.
3	Mini Card compartment	Contains the RTC battery.
4	Memory Module compartment	Contains the two memory module slots.
5	SmartBay Release latch	Releases the SmartBay module.
6	Vents (3)	Enables airflow to cool internal components.  The computer fan starts automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
7	Hard Drive bay	Holds the hard drive and the wireless LAN (WLAN) device.  To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.

## Wireless antennas



Component	Description
WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless networks.
*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.	



To review wireless regulatory notices, see the country-specific section of *Regulatory, Safety and Environmental Notices* chapter in Help and Support.

## Additional hardware components



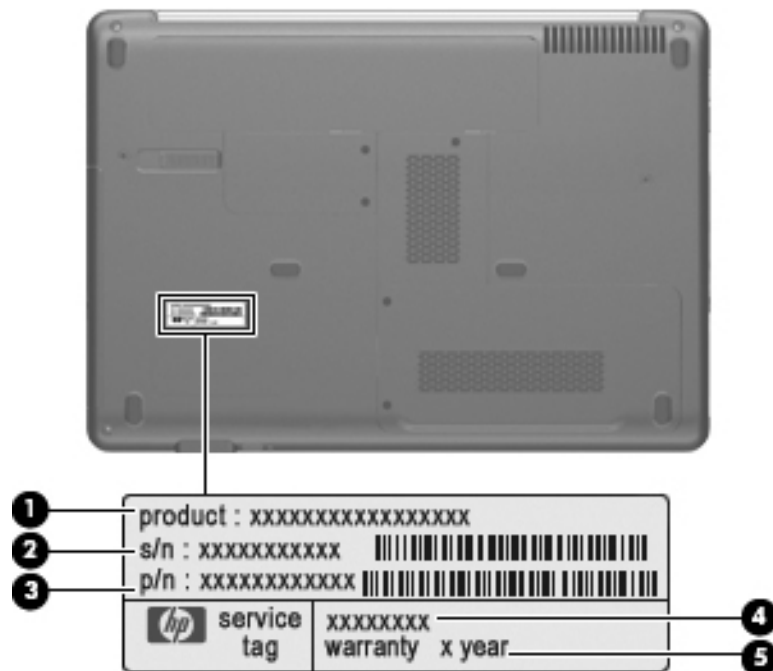
Item	Component	Description
1	Power cord*	Connects an AC adapter to an AC outlet.
2	AC adapter	Converts AC power to DC power.
3	Battery*	Powers the computer when the computer is not connected to external power.

\*Batteries and power cords vary in appearance by country or region.

## Illustrated parts catalog

### Service tag

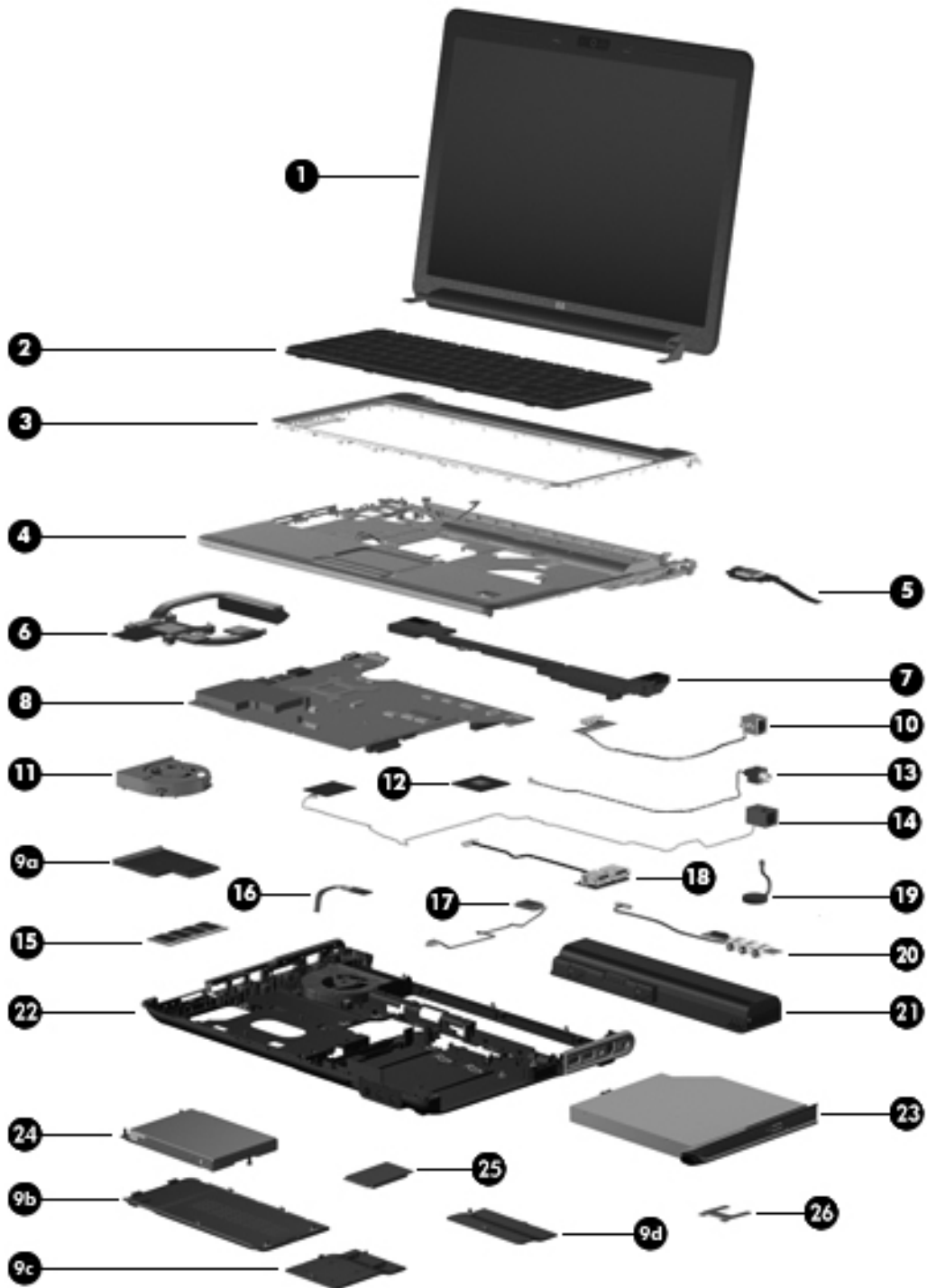
When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.



Item	Component	Description
1	Product name	The name affixed to the front of the computer.
2	Serial number (s/n)	An alphanumeric identifier that is unique to each product.
3	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine which components and parts are needed.
4	Model description	An alphanumeric identifier used to locate documents, drivers, and support for the computer.
5	Warranty period	The duration of the warranty period for the computer.



# Computer major components



Item	Description	Spare part number
<b>1</b>	<b>Display assembly</b> (see <a href="#">“Display assembly subcomponents”</a> on page 3-9)	
	14.1-in WXGA BrightView display assembly for use with black computer models	594110-001
	14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with black computer models	594110-002
	14.1-in WXGA BrightView display assembly for use with white computer models	594111-001
	14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with white computer models	594111-002
	14.1-in WXGA BrightView display assembly for use with plaid computer models	594112-001
	14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with plaid computer models	594112-002
<b>2</b>	<b>Keyboard</b> (includes keyboard cable)	
	For use with black computer models in:	
	Brazil	518793-201
	French Canada	518787-121
	Japan	518793-291
	Latin America	518793-161
	South Korea	518793-AD1
	Taiwan	518793-AB1
	Thailand	518793-281
	the United States	518793-001
	For use with black computer models (textured) in:	
	Brazil	570755-201
	French Canada	570755-121
	Japan	570755-291
	Latin America	570755-161
	South Korea	570755-AD1
	Taiwan	570755-AB1
	Thailand	570755-281
	the United States	570755-001
	For use with white computer models in:	
	Brazil	538108-201
	French Canada	518792-121
	Japan	538108-291
	Latin America	538108-161
	South Korea	538108-AD1
	Taiwan	538108-AB1
	Thailand	538108-281
	the United States	538108-001
<b>3</b>	<b>Keyboard cover</b>	

(Continued)

<b>Item</b>	<b>Description</b>	<b>Spare part number</b>
	Black computer models	539729-001
	White computer models	539728-001
	Plaid computer models	594532-001
<b>4</b>	<b>Top cover</b> (includes TouchPad board and cable)	
	Black computer models equipped with a Fingerprint Reader	591953-001
	Black computer models not equipped with a Fingerprint Reader	591952-001
	White computer models equipped with a Fingerprint Reader	591951-001
	White computer models not equipped with a Fingerprint Reader	591950-001
	Plaid computer models equipped with a Fingerprint Reader	591955-001
	Plaid computer models not equipped with a Fingerprint Reader	591954-001
	<b>TouchPad button board</b> (includes cable)	486832-001
	<b>TouchPad bracket</b>	494961-001
<b>5</b>	<b>Fingerprint Reader board</b> (includes cable)	486828-001
<b>6</b>	<b>Heat sink assembly</b> (includes replacement thermal material)	
	UMA graphics subsystems	591957-001
	Discrete graphics subsystems	591956-001
<b>7</b>	<b>Speaker assembly</b>	
	All countries and regions except India	486837-001
	India	486865-D61
<b>8</b>	<b>System board</b> (includes replacement thermal material)	
	UMA graphics subsystems	590350-001
	Discrete graphics subsystems	590349-001
	<b>Plastics Kit</b> (see <a href="#">"Plastics Kit"</a> on page 3-10 for spare part component information)	486833-001
<b>9a</b>	ExpressCard slot bezel	
<b>9b</b>	Hard Drive compartment cover	
<b>9c</b>	Memory Module compartment cover	
<b>9d</b>	Mini Card compartment cover	
<b>10</b>	<b>Modem module</b> (select models only)	
	All countries and regions except for Australia and New Zealand	461749-001
	Australia and New Zealand	461749-011
	Modem module cable (includes RJ-11 connector)	494981-001
<b>11</b>	<b>Fan</b> (includes replacement thermal material)	486844-001
<b>12</b>	<b>WLAN module</b>	
	Broadcom BCM4312 802.11b/g for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	504593-003

(Continued)

Item	Description	Spare part number
	Broadcom BCM4312 802.11b/g for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504593-004
	Atheros AR9285 802.11b/g/n for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	518436-001

*(Continued)*

Item	Description	Spare part number
	<b>WLAN module, Continued</b>	
	Atheros AR9285 802.11b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	518436-002

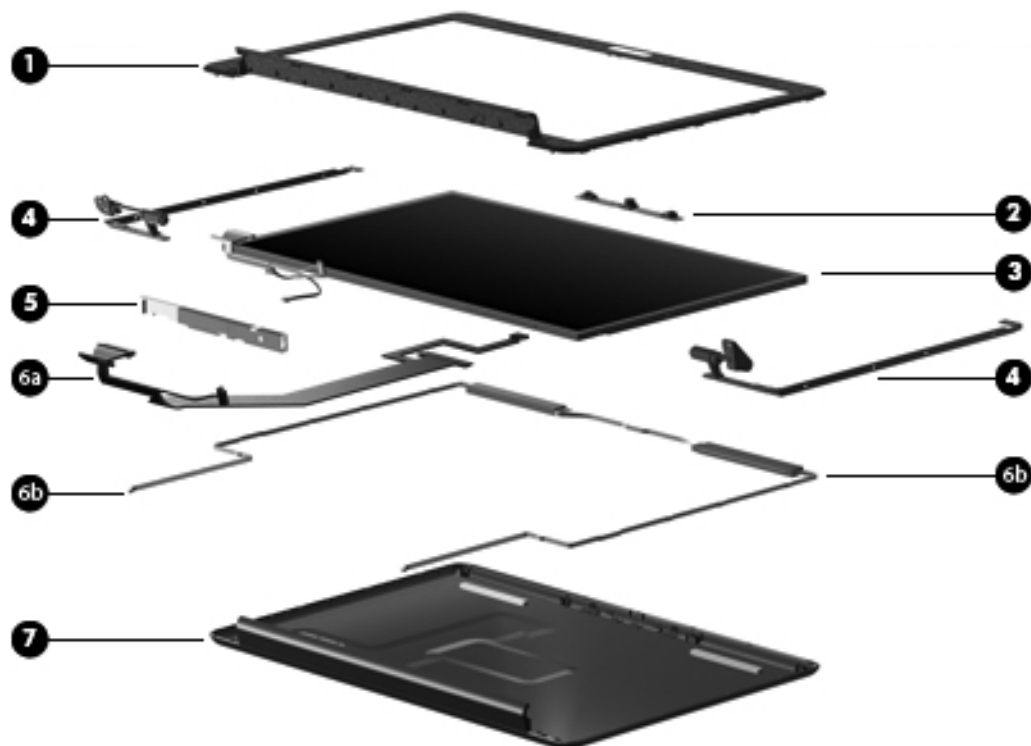
(Continued)

Item	Description	Spare part number
<b>WLAN module, Continued</b>		
	Atheros AR5009 802.11a/b/g/n for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	518437-001
	Atheros AR5009 802.11a/b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	518437-002
13	<b>ATSC/NTSC TV tuner</b>	482899-001
14	<b>Power connector</b> (includes cable)	486836-001

(Continued)

Item	Description	Spare part number
15	<b>Memory module</b> (1066 MHz, DDR3)	
	1024 MB	590351-001
	2048 MB	590352-001
	4096 MB	590353-001
16	<b>Power button board</b> (includes cable)	486853-001
17	<b>Bluetooth module</b> (select models only)	537921-001
	Bluetooth module cable (select models only)	
	UMA graphics subsystems	486847-001
	Discrete graphics subsystems	488130-001
18	<b>USB board</b>	486842-001
	USB board cable	486843-001
19	<b>RTC battery</b>	486835-001
20	<b>Audio board</b>	486840-001
	Audio board cable	486841-001
21	<b>Battery</b>	
	12-cell Li-Ion (2.2 Ah, 95 Wh)	484172-001
	6-cell Li-Ion (2.55 Ah, 55 Wh)	484171-001
	6-cell Li-Ion (2.2 Ah, 47 Wh)	484170-001
	3-cell Li-Ion (4.4 Ah, 47 Wh)	516915-001
22	<b>Base enclosure</b>	486848-001
23	<b>Optical drive</b> (includes bezel and bracket)	
	DVD±R/RW SuperMulti DL Drive with LightScribe	482177-001
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	508123-001
24	<b>Hard Drive</b> (includes hard drive bracket) (for hard drive spare part component information see <a href="#">“Mass storage devices” on page 3-11</a> for hard drive spare part component information)	
25	<b>Processor</b> (includes replacement thermal material):	
	Intel Arrandale CPU-uPGA Single-Core i5-520M (2.4 GHz, 3-MB L3 cache, 1066 MHZ SC Turbo)	594187-001
	Intel Arrandale CPU-uPGA Single-Core i5-540M (2.53 GHz, 3-MB L3 cache, 1066 MHZ SC Turbo)	594188-001
26	<b>Mini Card bracket</b>	577509-001

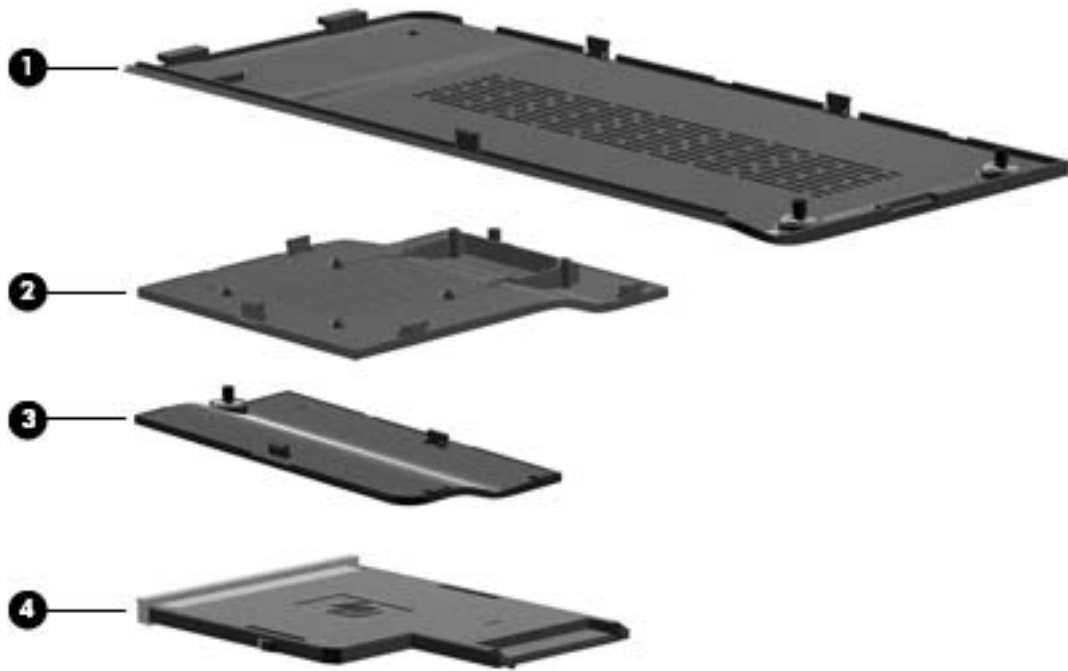
## Display assembly subcomponents



Item	Description	Spare part number
1	Display bezel	573197-001
2	Webcam/microphone module	573195-001
3	14.1-in WXGA BrightView display panel	483261-001
4	Display hinge kit	486894-001
5	Display inverter	486736-001
6a	Display cable	486878-001
6b	Wireless antenna	594105-001
	Wireless antenna cables	489068-001
7	<b>Display enclosure (includes logo light and cables)</b>	
	Black computer models	518799-001
	White computer models	518825-001
	Plaid computer models	573188-001
	<b>Display Rubber Kit*</b> (contains all rubber pieces for the display bezel)	486874-001
	<b>Internal display switch*</b>	486846-001
	* not illustrated	



## Plastics Kit



Item	Description	Spare part number
<b>Plastics Kit:</b>		486833-001
1	Hard Drive cover (includes two captive screws)	
2	Memory Module compartment cover	
3	Mini Card compartment cover	
4	ExpressCard slot bezel	

## Mass storage devices



Item	Description	Spare part number
1	<b>Hard Drive</b> (includes hard drive bracket)	
	500 GB, 7200 rpm	575569-001
	320 GB, 7200 rpm	575568-001
	250 GB, 7200 rpm	575567-001
	160 GB, 7200 rpm	580846-001
	<b>Hard Drive Hardware Kit*</b>	
	Hard Drive Hardware Kit	482158-001
	Hard Drive Hardware Kit, MultiBay	488128-001
	<b>MultiBay blank*</b>	491876-001
2	<b>Optical drive</b> (includes bezel and bracket)	
	DVD±R/RW SuperMulti DL Drive with LightScribe	482177-001
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	508123-001
	* not illustrated	

## Miscellaneous parts

Description	Spare part number
<b>65-W PFC AC Adapter</b>	463958-001
<b>90-W PFC AC Adapter</b>	463955-001
<b>Power cords</b>	
Argentina	490371-D01
Australia	490371-011
Brazil	490371-201
Europe	490371-021
India	490371-D61
Italy	490371-061
Japan	490371-291
People's Republic of China	490371-AA1
South Korea	490371-AD1
Taiwan	490371-AB1
United Kingdom and Singapore	490371-031
the United States	490371-001
<b>Rubber Kit</b> (includes computer feet and screw covers)	486834-001
<b>CAT5e network cable</b>	454619-001
<b>Wired headset with volume control</b>	371693-001
<b>Screw Kit</b> (includes all screws)	486873-001
Phillips PM1.5 × 9.0 screws	
Phillips PM2.0 × 2.0 broadhead screws	
Phillips PM2.0 × 3.0 screws	
Phillips PM2.0 × 4.0 screws	
Phillips PM2.0 × 5.0 screws	
Phillips PM2.0 × 10.0 captive screws	
Phillips PM2.5 × 3.0 screws	
Phillips PM2.5 × 4.0 screws	
Phillips PM2.5 × 5.0 screws	
Phillips PM2.5 × 6.0 captive screws	
Phillips PM2.5 × 8.0 screws	
Phillips PM2.5 × 15.0 screws	
Phillips PM3.0 × 3.0 screws	
<b>SIM for models with WWAN</b>	486845-001
<b>TV tuners</b>	
ATSC/NTSC TV tuner antenna	482900-001
TV tuner antenna with PAL jack	482900-002
ATSC/NTSC TV tuner	482899-001
DVB-T/ANG Integrated TV tuner	482899-002
DVB-T tuner	482899-003

(Continued)

---

<b>Description</b>	<b>Spare part number</b>
DVB-T tuner for use only in the AP region	482899-004
<b>Optical wired mouse</b>	436238-001
<b>Wireless laser mouse</b>	430958-001
<b>Remote Controls</b>	
ExpressCard remote control	464793-002
Full function remote control	465540-001
Full function remote control for use with blue-colored computer models	465540-002
Full function remote control with Teletext	465541-001
Full function remote control with Teletext for use with blue-colored computer models	465541-002
<b>Standard carrying case</b>	418162-001

---

## Sequential part number listing

Spare part number	Description
371693-001	Wired headset with volume control
418162-001	Standard carrying case
430958-001	Wireless laser mouse
436238-001	Optical wired mouse
454619-001	CAT5e network cable
461749-001	Modem module for use in all countries and regions except for Australia and New Zealand
4461749-011	Modem module for use in Australia and New Zealand
463955-001	90-W PFC AC Adapter
463958-001	65-W PFC AC Adapter
464793-002	ExpressCard remote control
465540-001	Full function remote control
465540-002	Full function remote control for use with blue-colored computer models
465541-001	Full function remote control with Teletext
465541-002	Full function remote control with Teletext for use with blue-colored computer models
482158-001	Hard Drive Hardware Kit
482177-001	DVD±R/RW SuperMulti DL Drive with LightScribe
482899-001	ATSC/NTSC TV tuner
482899-002	DVB-T/ANG Integrated TV tuner
482899-003	DVB-T tuner
482899-004	DVB-T tuner for use only in the AP region
482900-001	ATSC/NTSC TV tuner antenna
482900-002	TV tuner antenna with PAL jack
483261-001	14.1-in WXGA BrightView display panel
484170-001	6-cell Li-Ion (2.2 Ah, 47 Wh)
484171-001	6-cell Li-Ion, (2.55 Ah, 55 Wh)
484172-001	12-cell Li-Ion (2.2 Ah, 95 Wh)
486736-001	Display inverter
486828-001	Fingerprint Reader and cable
486832-001	TouchPad button board (includes cable)
486833-001	Plastics Kit
486834-001	Rubber Kit (includes computer feet and screw covers)
486835-001	RTC battery
486836-001	Power connector and cable
486837-001	Speaker assembly for use in all countries and regions except India
486840-001	Audio board
486841-001	Audio board cable

(Continued)

<b>Spare part number</b>	<b>Description</b>
486842-001	USB board
486843-001	USB board cable
486844-001	Fan (includes replacement thermal material)
486845-001	SIM for models with WWAN
486846-001	Internal display switch
486847-001	Bluetooth module cable for use only in computer models with UMA graphics subsystems
486848-001	Base enclosure
486853-001	Power button board (includes cable)
486865-D61	Speaker assembly for use India
486873-001	Screw Kit (includes all screws)
486874-001	Display Rubber Kit (contains all rubber pieces for the display bezel)
486878-001	Display cable
486894-001	Display Hinge Kit
488128-001	Hard Drive Hardware Kit, MultiBay
488130-001	Bluetooth module cable for use only in computer models with discrete graphics subsystems
489068-001	Wireless antenna cables
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia
490371-021	Power cord for use in Europe
490371-031	Power cord for use in the United Kingdom and Singapore
490371-061	Power cord for use in Italy
490371-201	Power cord for use in Brazil
490371-291	Power cord for use in Japan
490371-AA1	Power cord for use in People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
491876-001	MultiBay blank
494961-001	TouchPad bracket
494981-001	Modem module cable (includes RJ-11 connector)
504593-003	Broadcom BCM4312 802.11b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands

*(Continued)*

Spare part number	Description
504593-004	Broadcom BCM4312 802.11b/g for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
508123-001	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe
516915-001	3-cell Li-Ion (4.4 Ah, 47 Wh)
518436-001	Atheros AR9285 802.11b/g/n for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands
518436-002	Atheros AR9285 802.11b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
518437-001	Atheros AR5009 802.11a/b/g/n for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands

(Continued)

Spare part number	Description
518437-002	Atheros AR5009 802.11a/b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
518787-121	Keyboard for use in French Canada (black models)
518792-121	Keyboard for use in French Canada (white models)
518793-001	Keyboard for use in the United States (black models)
518793-161	Keyboard for use in Latin America (black models)
518793-201	Keyboard for use in Brazil (black models)
518793-281	Keyboard for use in Thailand (black models)
518793-291	Keyboard for use in Japan (black models)
518793-AB1	Keyboard for use in Taiwan (black models)
518793-AD1	Keyboard for use in South Korea (black models)
518799-001	Display enclosure for use with black computer models (includes Logo light and cables)
518825-001	Display enclosure for use with white computer models (includes Logo light and cables)
537921-001	Bluetooth module (select models only)
538108-001	Keyboard for use in the United States (white models)
538108-161	Keyboard for use in Latin America (white models)
538108-201	Keyboard for use in Brazil (white models)
538108-281	Keyboard for use in Thailand (white models)
538108-291	Keyboard for use in Japan (white models)
538108-AB1	Keyboard for use in Taiwan (white models)
538108-AD1	Keyboard for use in South Korea (white models)
539728-001	Keyboard cover (white models)
570729-001	Keyboard cover (black models)
570755-001	Keyboard for use in the United States (textured, black models)
570755-121	Keyboard for use in French Canada (textured, black models)

(Continued)



<b>Spare part number</b>	<b>Description</b>
570755-161	Keyboard for use in Latin America (textured, black models)
570755-201	Keyboard for use in Brazil (textured, black models)
570755-281	Keyboard for use in Thailand (textured, black models)
570755-291	Keyboard for use in Japan (textured, black models)
570755-AB1	Keyboard for use in Taiwan (textured, black models)
570755-AD1	Keyboard for use in South Korea (textured, black models)
573188-001	Display enclosure for use with plaid computer models (includes Logo light and cables)
573195-001	Webcam/microphone module
573197-001	Display bezel
575567-001	250 GB, 7200 rpm hard drive (includes bracket)
575568-001	320 GB, 7200 rpm hard drive (includes bracket)
575569-001	500 GB, 7200 rpm hard drive (includes bracket)
577509-001	Mini Card bracket
580846-001	160 GB, 7200 rpm hard drive (includes bracket)
590349-001	System board equipped with discrete graphics subsystems
590350-001	System board equipped with UMA graphics subsystems
590351-001	1024 MB memory module (1066 MHz, DDR3)
590352-001	2048 MB memory module (1066 MHz, DDR3)
590353-001	4096 MB memory module (1066 MHz, DDR3)
591950-001	Top cover for use only in white computer models without a Fingerprint Reader (includes TouchPad and cable)
591951-001	Top cover for use only in white computer models with a Fingerprint Reader (includes TouchPad and cable)
591952-001	Top cover for use only in black computer models without a Fingerprint Reader (includes TouchPad and cable)
591953-001	Top cover for use only in black computer models with a Fingerprint Reader (includes TouchPad and cable)
591954-001	Top cover for use only in plaid computer models without a Fingerprint Reader (includes TouchPad and cable)
591955-001	Top cover for use only in plaid computer models with a Fingerprint Reader (includes TouchPad and cable)
591956-001	Heat sink assembly for use in computer models with discrete graphics subsystems
591957-001	Heat sink assembly for use in computer models with UMA graphics subsystems
594105-001	Wireless antenna cable
594110-001	14.1-in WXGA BrightView display assembly for use with black computer models
594110-002	14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with black computer models
594111-001	14.1-in WXGA BrightView display assembly for use with white computer models
594111-002	14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with white computer models
594112-001	14.1-in WXGA BrightView display assembly for use with plaid computer models

(Continued)

---

<b>Spare part number</b>	<b>Description</b>
594112-002	14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with plaid computer models
594187-001	Intel Arrandale Single-Core i5-520M processor (2.4 GHz, 3-MB L3 cache, 1066 MHz SC Turbo)
594188-001	Intel Arrandale Single-Core i5-540M processor (2.53 GHz, 3-MB L3 cache, 1066 MHz SC Turbo)
594532-001	Keyboard cover (plaid models)

---

---

# Removal and replacement procedures

## Preliminary replacement requirements

### Tools required

The following tools are required to complete the removal and replacement procedures:

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

### Service considerations

The following sections include some of the considerations that you must 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



---

**CAUTION:** Using excessive force during disassembly and reassembly damages 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, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement damages 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. Be sure 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.

## Drive handling

 **CAUTION:** Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information:

- 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 handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
  - Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.
  - 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."
- 


## Grounding guidelines

### Electrostatic discharge damage

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, ESD contains enough power to alter device parameters or melt silicon junctions.

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage might have occurred.

An electronic device exposed to ESD might not be affected at all and might work perfectly throughout a normal cycle. Or the device might function normally for a while, and then degrade in the internal layers, reducing its life expectancy.

 **CAUTION:** To prevent damage to the computer when you are removing or installing internal components:

- Keep components in their electrostatic-safe containers until you are ready to install them.
  - Use nonmagnetic tools.
  - Before touching an electronic component, discharge static electricity by using the guidelines described in this section.
  - Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
  - If you remove a component, place it in an electrostatic-safe container.
-

The following table shows how humidity affects the electrostatic voltage levels generated by different activities.



**CAUTION:** A product can be degraded by as little as 700 V.

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-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 component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure 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.

## Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- 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 ESD-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.
- Shut down power and input signals before inserting or removing connectors or test equipment.

## Equipment guidelines

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.

The following grounding equipment is recommended to prevent electrostatic damage:

- 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

The following table lists the shielding protection provided by antistatic bags and floor mats.

<b>Material</b>	<b>Use</b>	<b>Voltage protection level</b>
Antistatic plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

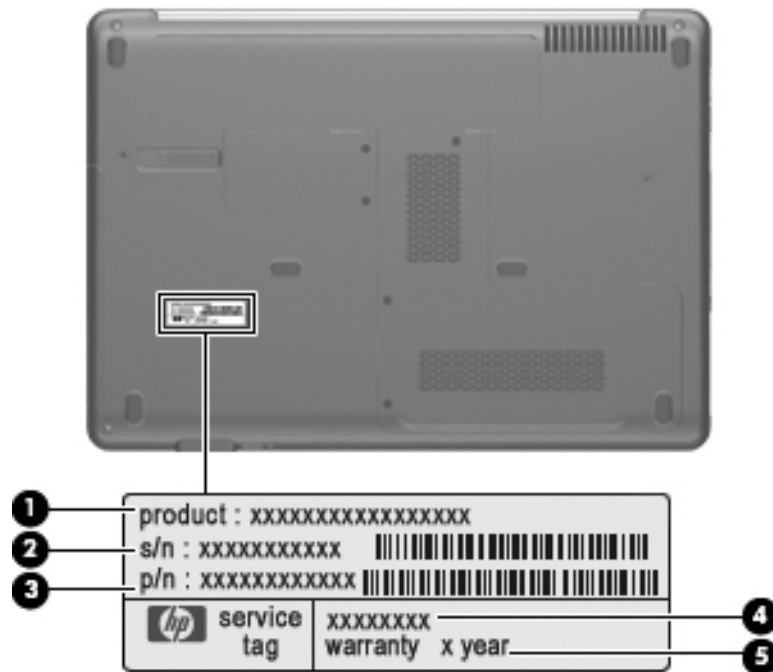
## Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 95 screws, in 10 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

### Service tag

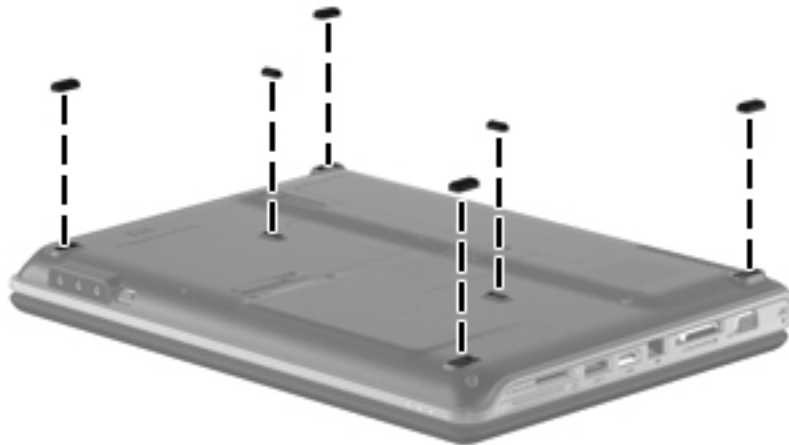
When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.



Item	Component	Description
1	Product name	The name affixed to the front of the computer.
2	Serial number (s/n)	An alphanumeric identifier that is unique to each product.
3	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine which components and parts are needed.
4	Model description	An alphanumeric identifier used to locate documents, drivers, and support for your computer.
5	Warranty period	The duration of the warranty period for the computer.

## Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 486874-001. There are six rubber feet that attach to the base enclosure in the locations illustrated below.





## Battery

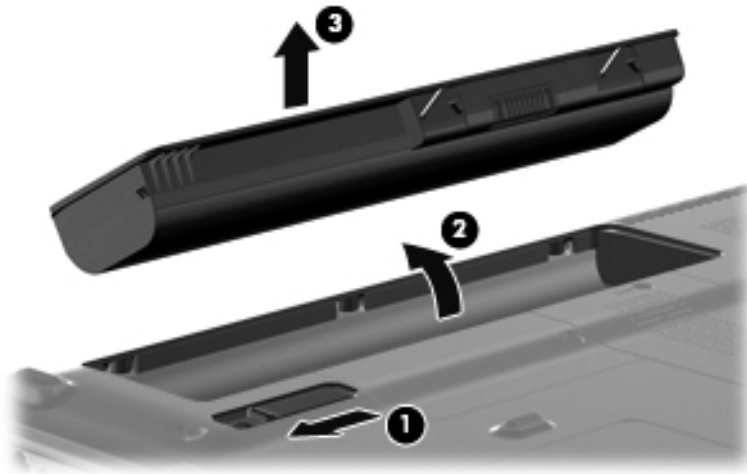
Description	Spare part number
12-cell Li-Ion (2.2 Ah, 95 Wh)	484172-001
6-cell Li-Ion (2.55 Ah, 55 Wh)	484171-001
6-cell Li-Ion (2.2 Ah, 47 Wh)	484170-001
3-cell Li-Ion (4.4 Ah, 47 Wh)	516915-001

Before disassembling the computer:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.

Remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the battery release latch **1** to release the battery.
3. Pivot the battery **2** upward and lift it out of the computer **3**.



To insert the battery, insert the rear edge of the battery into the battery bay and pivot the front edge downward until the battery is seated. The battery release latch automatically locks the battery into place

## Hard Drive



The Hard Drive spare part kit includes a hard drive bracket.

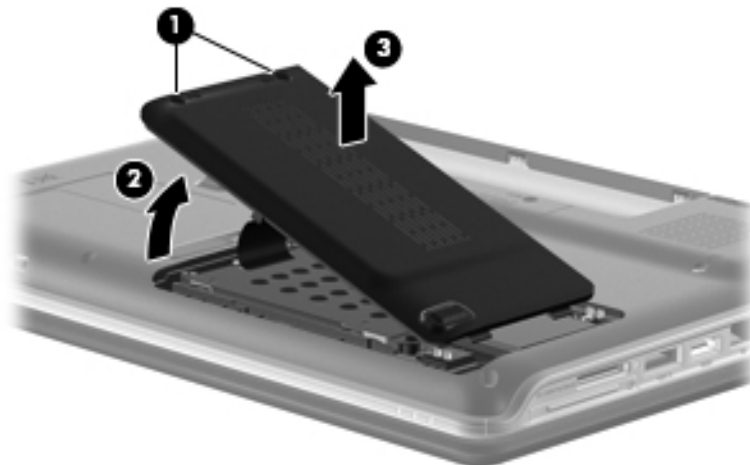
Description	Spare part number
500 GB, 7200 rpm hard drive	575569-001
320 GB, 7200 rpm hard drive	575568-001
250 GB, 7200 rpm hard drive	575567-001
160 GB, 7200 rpm hard drive	580846-001
Hard Drive Hardware Kit	482158-001
Hard Drive Hardware Kit, MultiBay	488128-001
Hard Drive MultiBay blank	491876-001

Before removing the Hard Drive:

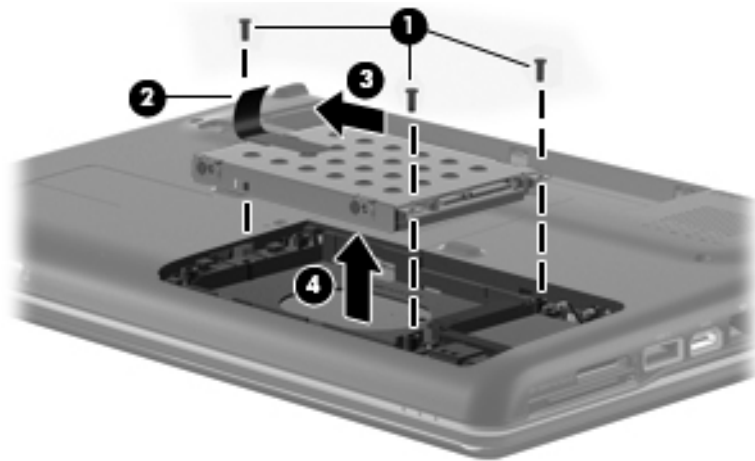
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).

Remove the Hard Drive:

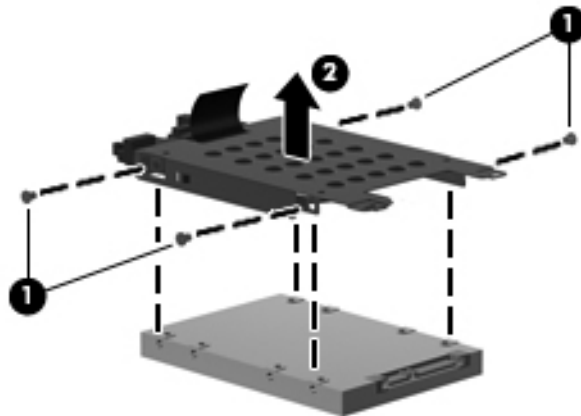
1. Position the computer with the front toward you.
2. Remove the two Phillips PM2.5×6.0 captive screws ❶ that secure the hard drive cover to the computer.
3. Lift the left side ❷ of the hard drive cover, swing it to the right, and remove the cover ❸. The hard drive cover is included in the Plastics Kit, spare part number 486833-001.



4. Remove the three Phillips PM2.0×4.0 screws ❶ that secure the hard drive to the computer.
5. Use the Mylar tab ❷ on the hard drive to slide the hard drive ❸ to the left.
6. Remove the hard drive ❹ from the hard drive bay.



7. If it is necessary to replace the hard drive bracket:
- Remove the two Phillips PM3.0×3.0 screws ❶ from each side of the hard drive.
  - Lift the bracket ❷ straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

## Memory module

Description	Spare part number
1024 MB (1066 MHz, DDR3)	590351-001
2048 MB (1066 MHz, DDR3)	590352-001
4096 MB (1066 MHz, DDR3)	590353-001

Before removing the memory module:

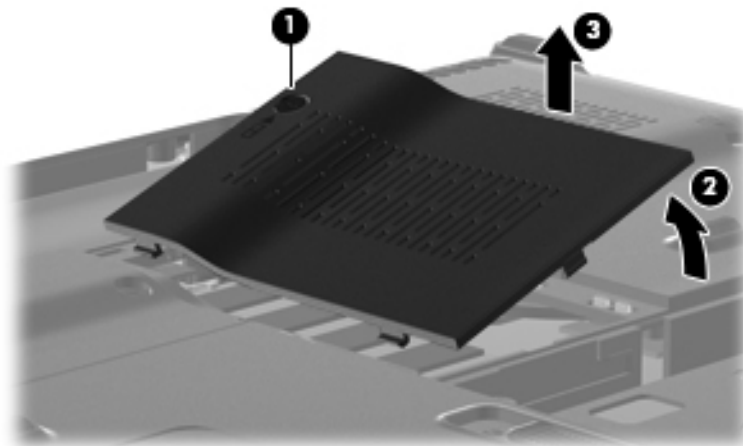
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).




The top memory module slot is for expansion memory and the bottom slot is for primary memory.

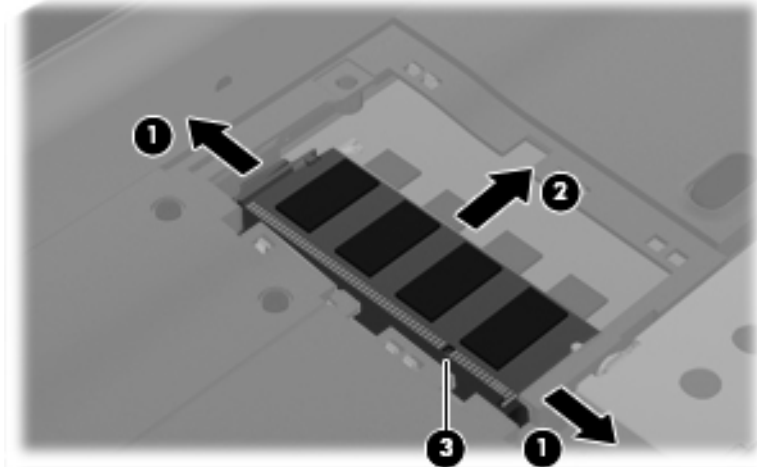
Remove the memory module:

1. Position the computer with the front toward you.
2. Remove the Phillips PM2.5×6.0 captive screw ❶ that secures the memory module compartment cover to the computer.
3. Lift the right side of the cover ❷, swing it to the left, and lift the cover off the computer ❸. The memory module compartment cover is included in the Plastics Kit, spare part number 486833-001.



4. Spread the retaining tabs **1** on each side of the memory module to release the memory module. (The edge of the module opposite the slot rises away from the computer.)
5. Remove the memory module by sliding the module to the right **2**.

 Memory modules are designed with a notch **3** to prevent incorrect insertion into the memory module slot.



Reverse this procedure to install the memory module.

## RTC battery

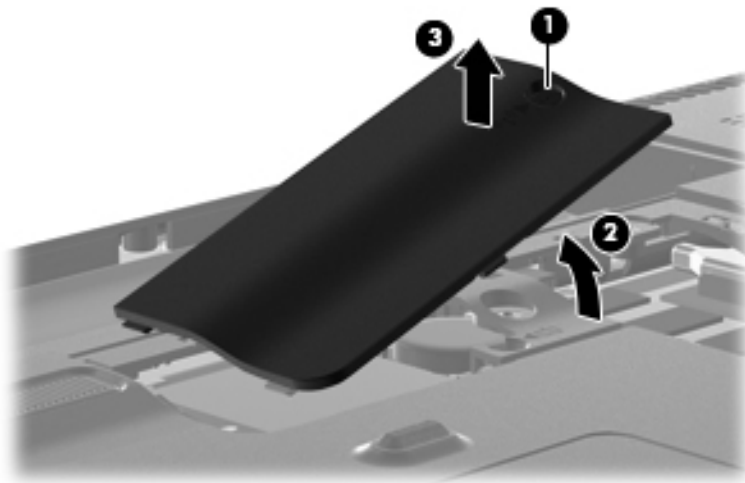
Description	Spare part number
RTC battery	486835-001

Before removing the RTC battery:

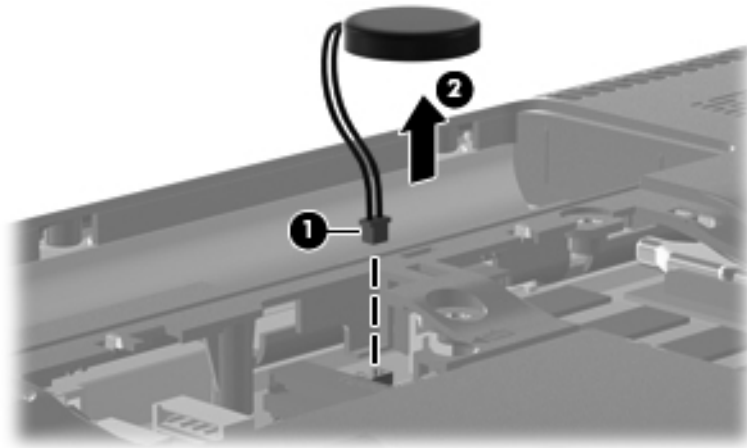
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).

Remove the RTC battery:

1. Remove the two Phillips PM2.5×6.0 captive screws ❶ that secure the Mini Card compartment cover to the computer.
2. Lift the right side of the Mini Card compartment cover ❷, swing it to left, and remove the cover ❸.



3. Disconnect the RTC battery cable ❶ from the system board.
4. Remove the RTC battery ❷.



Reverse this procedure to install the RTC battery.

## TV tuner


Description	Spare part number
ATSC/NTSC TV tuner antenna	482900-001
TV tuner antenna with PAL jack	482900-002
ATSC/NTSC TV tuner	482899-001
DVB-T/ANG Integrated TV tuner	482899-002
DVB-T tuner	482899-003
DVB-T tuner for use only in the AP region	482899-004

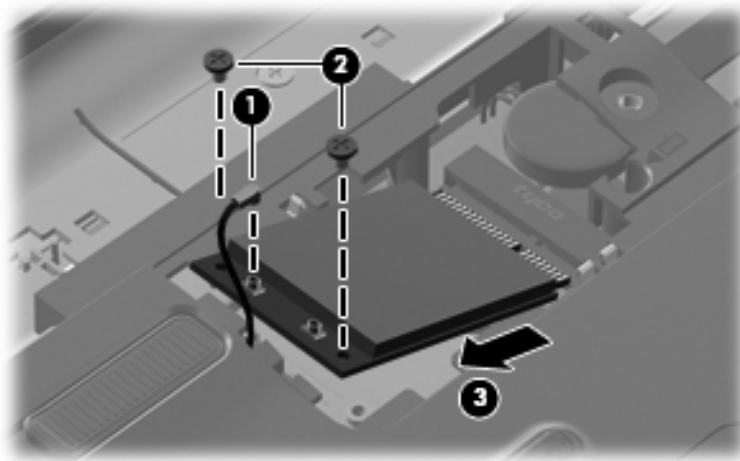
Before removing the TV tuner:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see “[Battery](#)” on page 4-7).
5. Remove the Mini Card compartment cover (see “[RTC battery](#)” on page 4-12).

Remove the TV tuner:

1. Disconnect the TV tuner cable ❶ from the system board.
2. Remove the two Phillips PM2.0×5.0 screws ❷ and slide the TV tuner to the left ❸ to remove it.

 Memory modules are designed with a notch to prevent incorrect insertion into the TV tuner slot.



Reverse this procedure to install the TV tuner.



## WLAN module

Description	Spare part number
Broadcom BCM4312 802.11b/g for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	504593-003
Broadcom BCM4312 802.11b/g for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504593-004
Atheros AR9285 802.11b/g/n for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	518436-001
Atheros AR9285 802.11b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	518436-002
Atheros AR5009 802.11a/b/g/n for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	518437-001

(Continued)

Description	Spare part number
<p>Atheros AR5009 802.11a/b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe</p>	518437-002
WLAN Mini Card bracket	577509-001

Before removing the WLAN module:

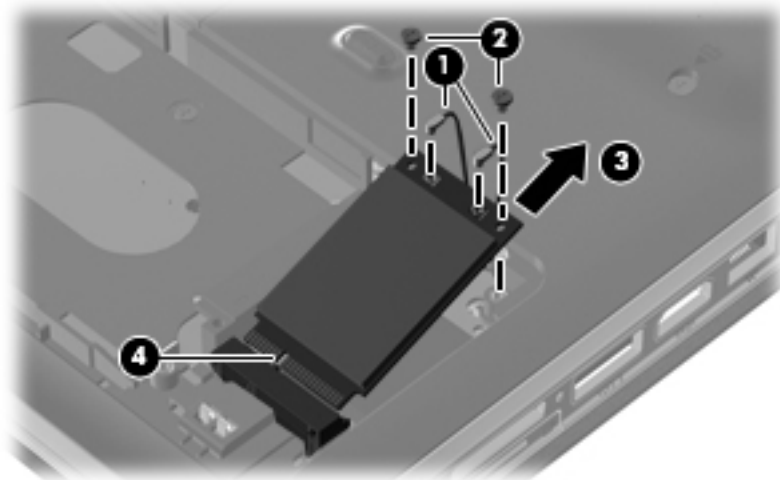
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see “[Battery](#)” on page 4-7).

Remove the WLAN module:

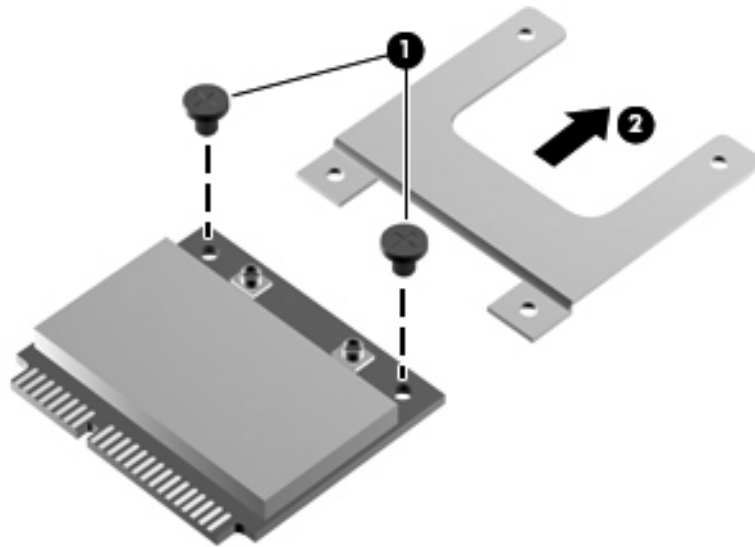
**CAUTION:** To prevent an unresponsive system, replace the wireless module with only a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.

1. Remove the hard drive cover (see “[Hard Drive](#)” on page 4-8).
  2. Position the computer with the front toward you.
  3. Disconnect the WLAN antenna cables ❶ from the terminals on the WLAN module.
- ❷ The black WLAN antenna cable is connected to the WLAN module “Main” terminal. The white WLAN antenna cable is connected to the WLAN module “Aux” terminal.
4. Remove the two Phillips PM2.0×4.0 screws ❷ that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
  5. Remove the WLAN module ❸ by pulling the module away from the slot at an angle.

❸ WLAN modules are designed with a notch ❹ to prevent incorrect insertion of the WLAN module into the WLAN module slot.



6. If it is necessary to replace the Mini Card bracket, remove the two Phillips PM2.0×5.0 screws **1** and then slide **2** the bracket to the right to remove it.



Reverse this procedure to install the WLAN module.

## Optical drive



The optical drive spare part kit includes an optical drive bezel and bracket.

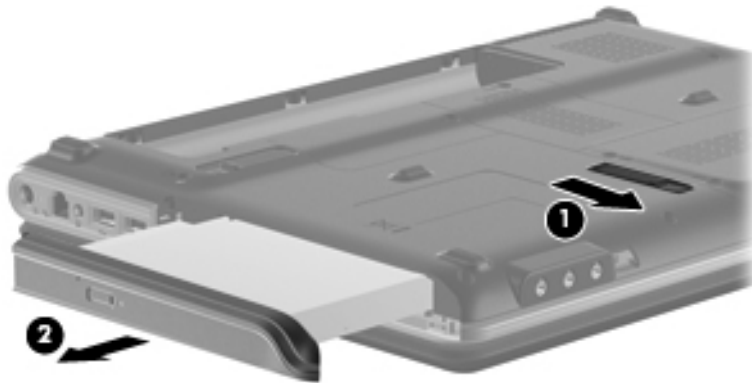
Description	Spare part number
Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	508123-001
DVD±R/RW SuperMulti DL Drive with LightScribe	482177-001

Before removing the optical drive:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).

Remove the optical drive:

1. Position the computer with the right side toward you.
2. Slide the release latch **1** away from the battery bay.
3. Remove the optical drive **2**.



Reverse this procedure to reassemble and install the optical drive.

## Keyboard

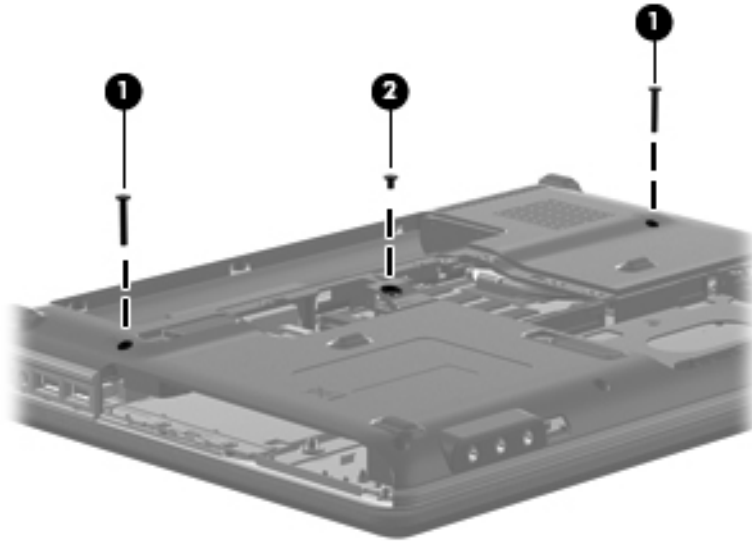
Description	Spare part number
Black computer models (textured) in:	
Brazil	570755-201
French Canada	570755-121
Japan	570755-291
Latin America	570755-161
South Korea	570755-AD1
Taiwan	570755-AB1
Thailand	570755-281
the United States	570755-001
Black computer models in:	
Brazil	518793-201
French Canada	518787-121
Japan	518793-291
Latin America	518793-161
South Korea	518793-AD1
Taiwan	518793-AB1
Thailand	518793-281
the United States	518793-001
White computer models in:	
Brazil	538108-201
French Canada	518792-121
Japan	538108-291
Latin America	538108-161
South Korea	538108-AD1
Taiwan	538108-AB1
Thailand	538108-281
the United States	538108-001

Before removing the keyboard:


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 AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the hard drive cover (see [“Hard Drive” on page 4-8](#)).
6. Remove the Mini Card compartment cover (see [“RTC battery” on page 4-12](#)).
7. Remove the optical drive (see [“Optical drive” on page 4-19](#)).

Remove the keyboard:

1. Remove the three Phillips PM2.5×15.0 screws that secure the keyboard to the computer.



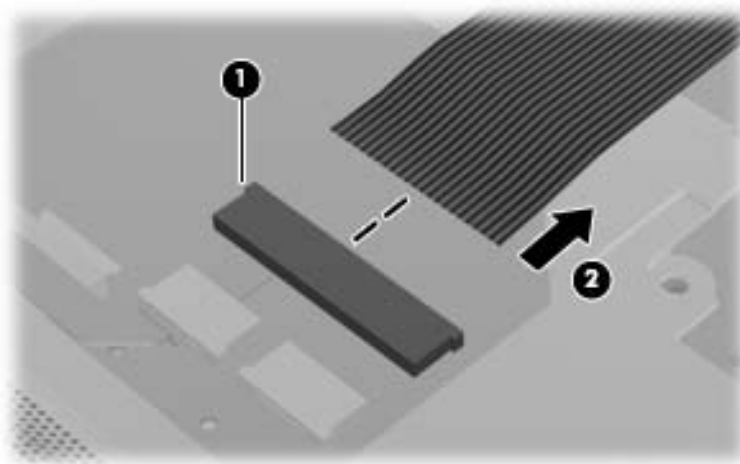
2. Turn the computer display-side up with the front toward you.
3. Open the computer as far as possible.
4. Lift the rear edge of the keyboard ① until it rests at an angle.

 The keyboard is secured by double-sided tape.

5. Slide the keyboard ② back until the tabs on the bottom of the keyboard are clear of the keyboard cover.



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



7. Remove the keyboard.

Reverse this procedure to install the keyboard.



## Keyboard cover

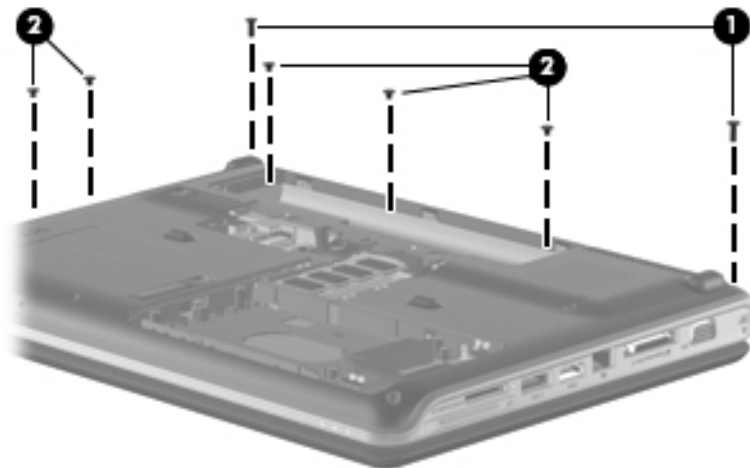
Description	Spare part number
Black computer models	539729-001
White computer models	539728-001
Plaid computer models	594532-001

Before removing the keyboard cover:

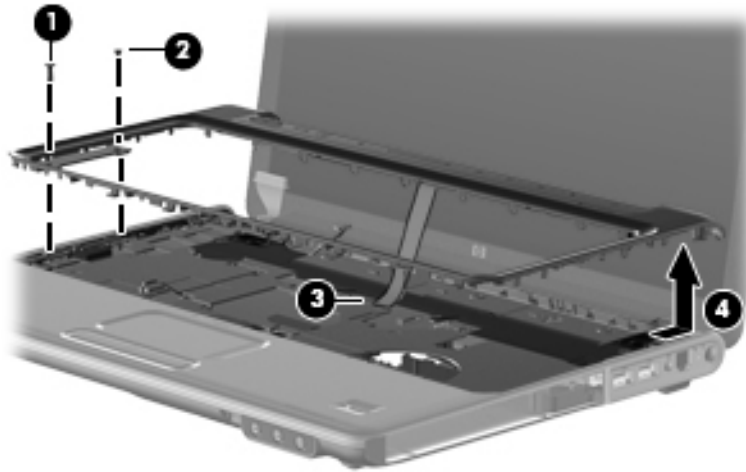
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive cover (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))

Remove the keyboard cover:

1. Remove the two Phillips PM2.5×8.0 screws **1** and the five Phillips PM2.5×3.0 screws **2** that secure the keyboard cover to the computer.



2. Turn the computer display-side up with the front toward you.
3. Open the computer as far as possible.
4. Remove the Phillips PM2.5×8.0 screw ❶ and the Phillips PM2.5×4.0 screw ❷ securing the keyboard cover to the top cover.
5. Disconnect the LED board cable ❸.
6. Release the keyboard cover ❹ by sliding it toward the display assembly until it disengages from the computer.



7. Remove the keyboard cover.

Reverse this procedure to install the keyboard cover.

## Power button board

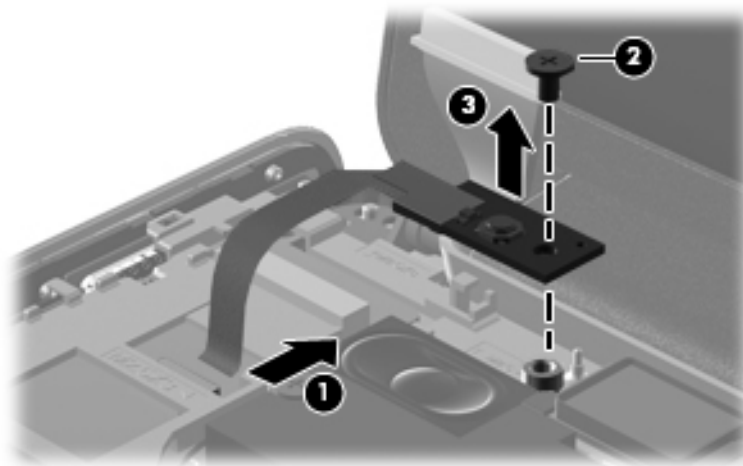
Description	Spare part number
Power button board (includes cable)	486853-001

Before removing the power button board:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))

Remove the power button board:

1. Disconnect the power button board cable ❶ from the system board.
2. Remove the Phillips PM2.5×3.0 screw ❷ that secures the power button board to the system board.
3. Remove the power button board ❸.



Reverse this procedure to install the power button board.

## Speaker assembly

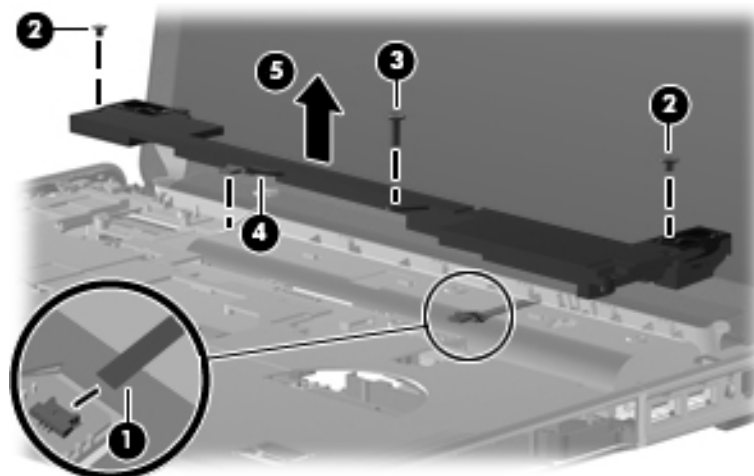
Description	Spare part number
All countries and regions except India	486837-001
India	486865-D61

Before removing the speaker assembly:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive cover (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive cover (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))

Remove the speaker assembly:

1. Disconnect the display lid switch **1** from the system board.
2. Remove the two Phillips PM2.5×3.0 screws **2** that secure the speaker assembly to the computer.
3. Remove the Phillips PM2.5×8.0 screw **3** that secures the speaker assembly to the computer.
4. Disconnect the speaker cable **4** from the system board.
5. Lift the speaker assembly **5** straight up to remove it from the computer.



Reverse this procedure to install the speaker assembly.

## Display assembly



The display assembly spare part kit includes two WLAN antenna transceivers and cables, webcam, microphone, nameplate, and logo.

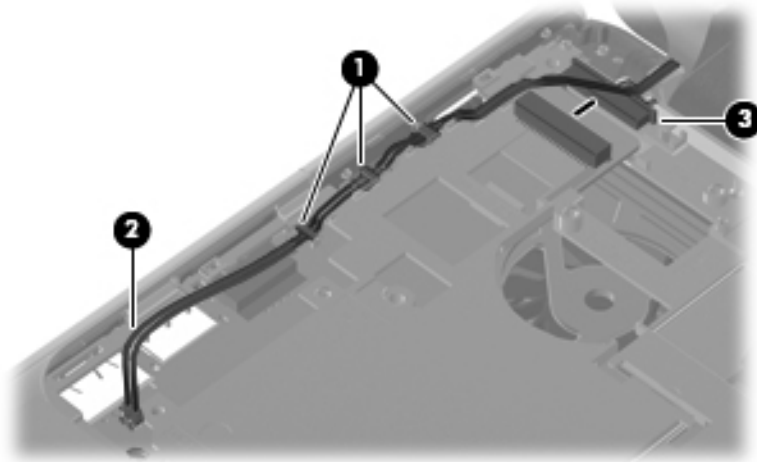
Description	Spare part number
14.1-in WXGA BrightView display assembly for use with <b>black</b> computer models	594110-001
14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with <b>black</b> computer models	594110-002
14.1-in WXGA BrightView display assembly for use with <b>white</b> computer models	594111-001
14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with <b>white</b> computer models	594111-002
14.1-in WXGA BrightView display assembly for use with <b>plaid</b> computer models	594112-001
14.1-in WXGA BrightView display assembly with wireless mobile broadband for use with <b>plaid</b> computer models	594112-002

Before removing the display assembly:

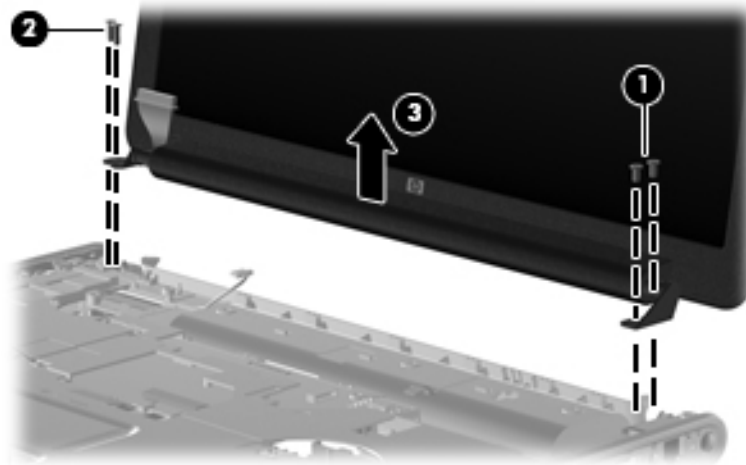
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-15](#)).
6. Remove the following components:
  - a. Hard Drive cover (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - f. Speaker assembly (see [“Speaker assembly” on page 4-26](#))


Remove the display assembly:

1. Turn the computer display-side up, with the front toward you.
2. Open the display as far as possible.
3. Remove the wireless antenna cable from the routing channels and clips **1** and disconnect it from the base enclosure **2**.
4. Disconnect the display cable **3** from the system board.

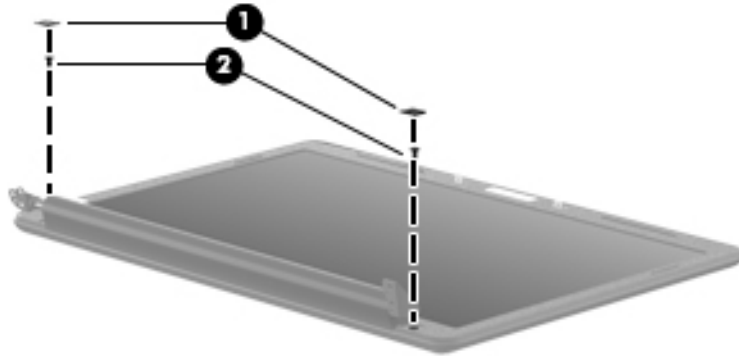


5. Remove the two Phillips PM2.5×5.0 screws **1** and the two Phillips PM2.5×8.0 screws **2** that secure the display assembly to the computer
6. Remove the display assembly **3**.

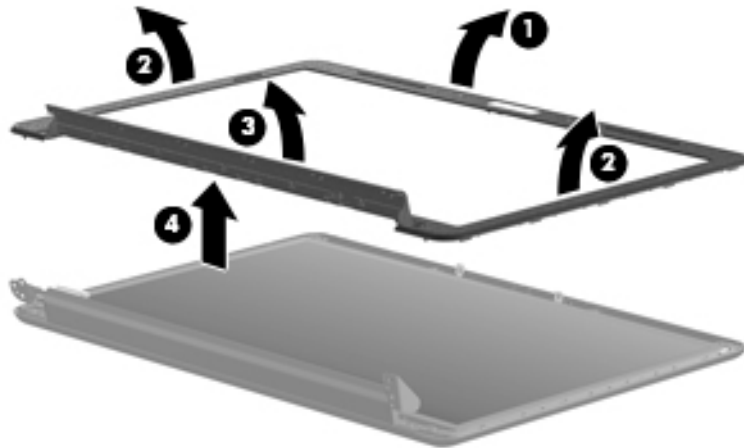


 **CAUTION:** Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

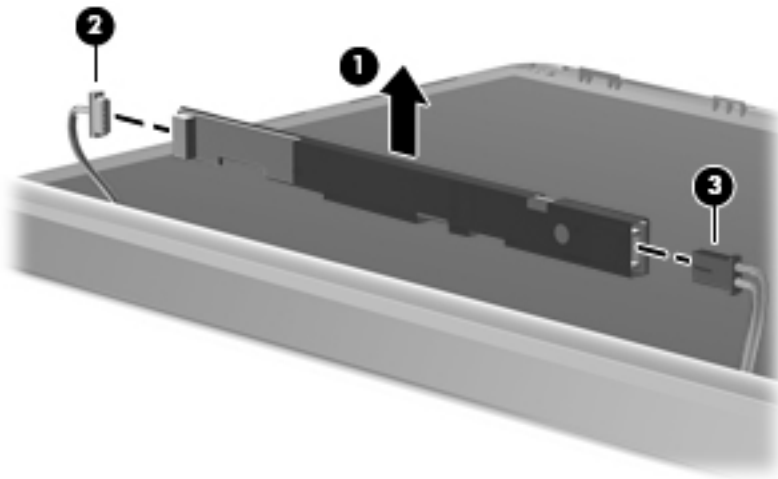
7. Remove the Mylar screw covers **1** and the two Phillips PM2.5×5.0 screws **2** on the display bezel lower edge. The display mylar screw covers are included in the Display Rubber Kit, spare part number 486874-001.



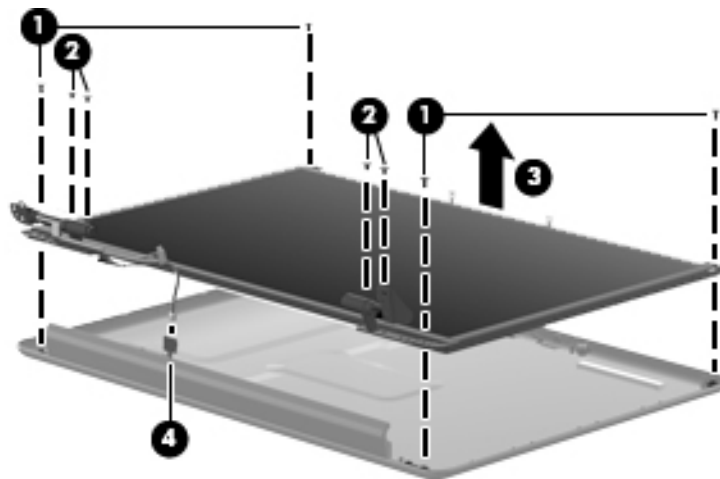
8. Flex the inside edges of the top edge **1**, the left and right sides **2**, and the bottom edge **3** of the display bezel until the bezel disengages from the display enclosure.
9. Remove the display bezel **4**. The display bezel is available using spare part number 573197-001.



10. Release the inverter **1** from the clips in the display enclosure as far as the display panel cable and the backlight cable will allow.
11. Disconnect the display panel cable **2** and the backlight cable **3** from the display inverter. The display inverter is available using spare part number 486736-001.



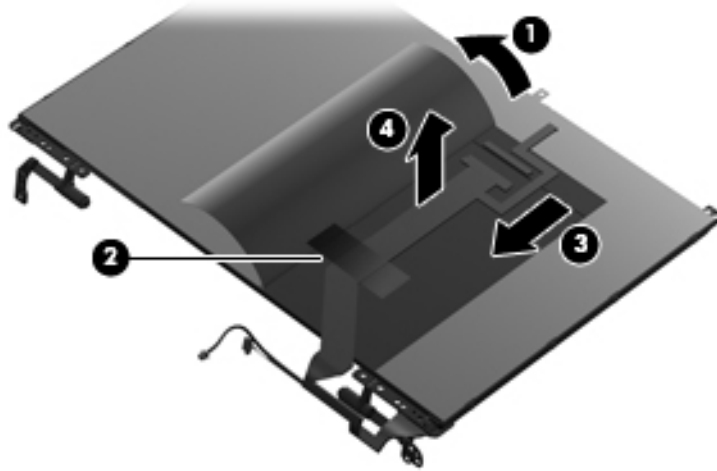
12. Remove the four Phillips PM2.5×5.0 screws **1** and the four Phillips PM2.5×3.0 screws **2** that secure the display panel to the display enclosure.
13. Lift the display panel **3** out of the display enclosure and disconnect the display panel cable **4**. The display panel is available using the spare part number 483261-001.






14. To replace the display cable:

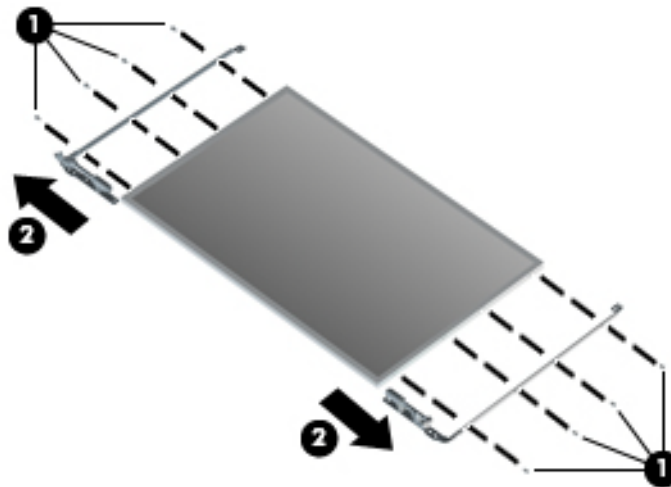
- a. Release the foil shield ❶ that covers the cable.
- b. Remove the tape ❷ that secures the cable to the display.
- c. Unplug the cable ❸ from the display.
- d. Remove the cable from the display ❹. This also includes the webcam and LED cables. The display cable is available using spare part number 486878-001.



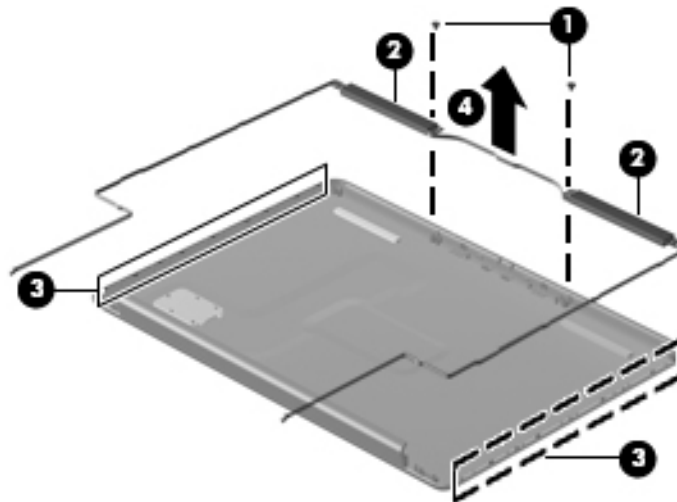
15. Replace the display hinges, remove the eight Phillips PM2.0×3.0 screws ❶ that secure the hinges to the display panel.

 Remove the screws in the sequence indicated on the display hinge bracket.

16. Remove the display hinges ❷. The display hinges are available using spare part number 486894-001.



17. Replace the wireless antenna transceivers and cables, remove the two Phillips PM2.5×3.0 screws ❶ that secure the transceivers to the display enclosure.
18. Detach the wireless antenna transceivers ❷ from the display enclosure. The transceivers are secured by a foil wrapping.
19. Remove the wireless antenna transceivers and cables from the clips ❸ built into the display enclosure.
20. Remove the wireless antenna transceivers and cables ❹ from the display enclosure. The wireless antenna transceivers and cables are available using spare part number 489068-001.



Reverse this procedure to reassemble and install the display assembly.

## Webcam/microphone module

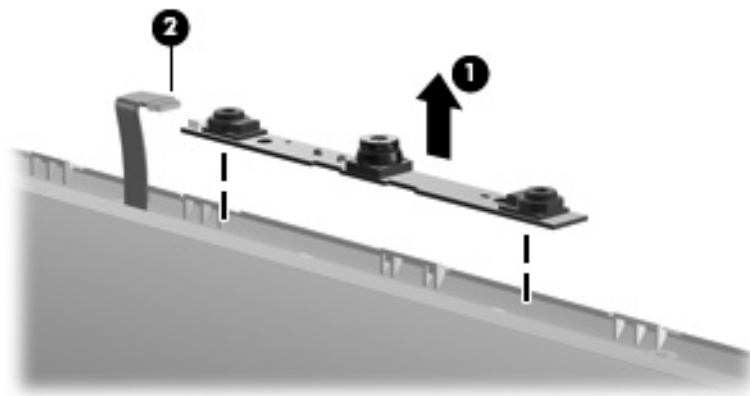
Description	Spare part number
Webcam/microphone module	573195-001

Before removing the webcam/microphone module:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-15](#)).
6. Remove the following components:
  - a. Hard Drive cover (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - f. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - g. Display assembly (see [“Display assembly” on page 4-27](#))

Remove the webcam/microphone module:

1. Lift the webcam/microphone module ❶ as far from the display enclosure as the module cable allows.
2. Disconnect the module cable ❷ from the webcam/microphone module.



3. Remove the webcam/microphone module.

Reverse this procedure to install the webcam/microphone module.

## Top cover



The top cover spare part kit includes the TouchPad on/off board and cable and TouchPad board and cable.

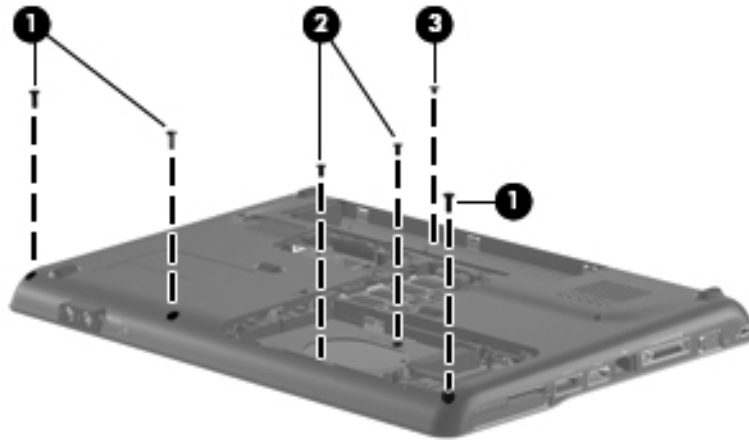
Description	Spare part number
White computer models equipped with a Fingerprint Reader	591951-001
White computer models not equipped with a Fingerprint Reader	591950-001
Black computer models equipped with a Fingerprint Reader	591953-001
Black computer models not equipped with a Fingerprint Reader	591952-001
Plaid computer models equipped with a Fingerprint Reader	591955-001
Plaid computer models not equipped with a Fingerprint Reader	591954-001

Before removing the top cover:

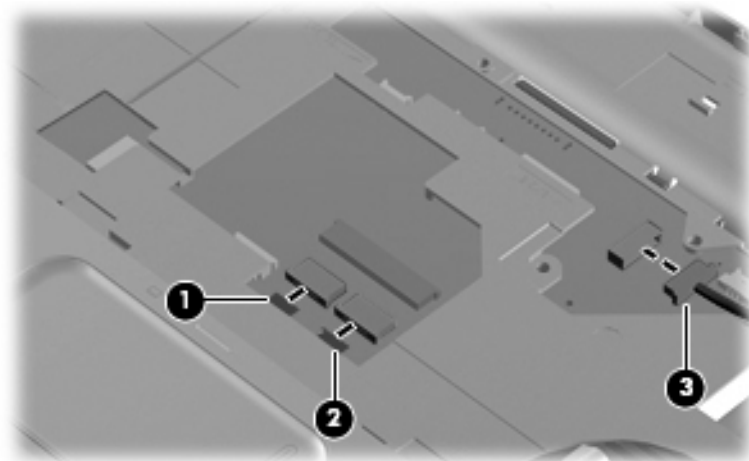
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - f. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - g. Display assembly (see [“Display assembly” on page 4-27](#))

Remove the top cover:

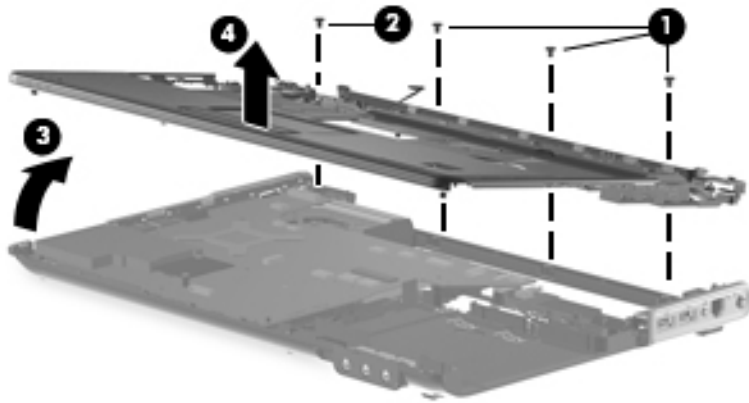
1. Turn the computer upside down with the front toward you.
2. Remove the following screws that secure the top cover to the base enclosure:
  - ❶ Three Phillips PM2.5×8.0 screws
  - ❷ Three Phillips PM2.5×5.0 screws
  - ❸ One Phillips PM2.5×3.0 screw



3. Turn the computer right-side up, with the front toward you.
4. Disconnect the following cables from the system board:
  - ❶ TouchPad cable
  - ❷ Fingerprint Reader board cable (select models only)
  - ❸ USB cable



5. Remove the three Phillips PM2.5×3.0 screws ❶ and the Phillips PM2.5×8.0 screw ❷ that secure the top cover to the base enclosure.
6. Lift up the front edge of the top cover until it releases from the base ❸.
7. Remove the top cover ❹.



Reverse this procedure to install the top cover.

## Touchpad button board and bracket

Description	Spare part number
Touchpad button board (includes cable)	486832-001
Touchpad bracket	494961-001

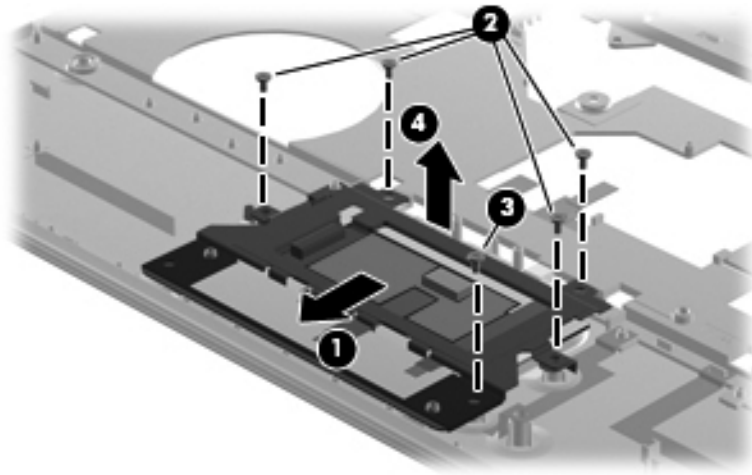
Before removing the touchpad button board and bracket:

Before removing the top cover, follow these steps:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - f. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - g. Display assembly (see [“Display assembly” on page 4-27](#))
  - h. Top Cover (see [“Top cover” on page 4-34](#))

Remove the touchpad button board and bracket:

1. Turn the top cover upside down with the front toward you.
2. Disconnect the touchpad cable ❶ from the top cover.
3. Remove four Phillips PM2.5×3.0 screws ❷.
4. Remove one Phillips PM2.5×4.0 screw ❸.
5. Lift up ❹ and remove the touchpad button board and bracket.



Reverse this procedure to install the touchpad button board and bracket.



## Fingerprint Reader board (select models only)

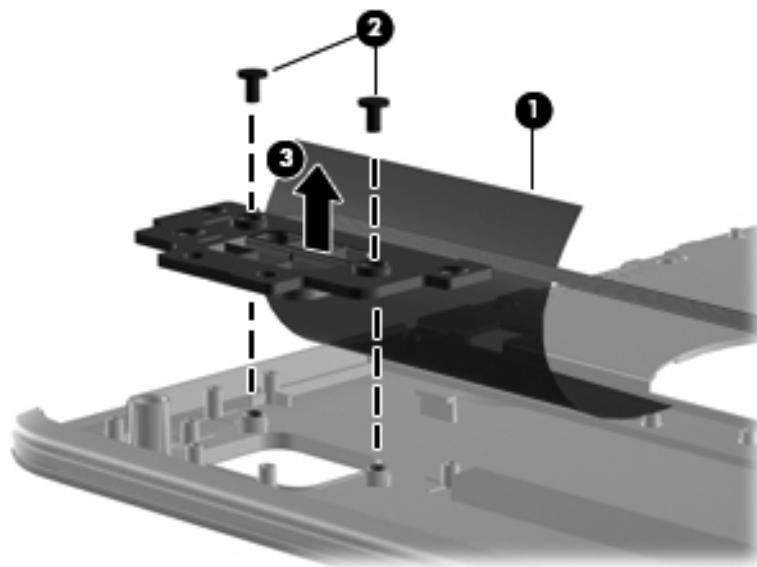
Description	Spare part number
Fingerprint Reader board (includes cable)	486828-001

Before removing the Fingerprint Reader board:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Optical drive (see [“Optical drive” on page 4-19](#))
  - d. Keyboard (see [“Keyboard” on page 4-20](#))
  - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - f. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - g. Display assembly (see [“Display assembly” on page 4-27](#))
  - h. Top cover (see [“Top cover” on page 4-34](#))

Remove the Fingerprint Reader board:

1. Turn the top cover upside down, with the front toward you.
2. Fold back the Mylar cover ❶.
3. Remove the two Phillips PM2.0×2.0 broadhead screws ❷ that secure the Fingerprint Reader to the top cover.
4. Remove the Fingerprint Reader from the top cover ❸.



Reverse the above procedure to reassemble and install the Fingerprint Reader.

**Modem module (select models only).**

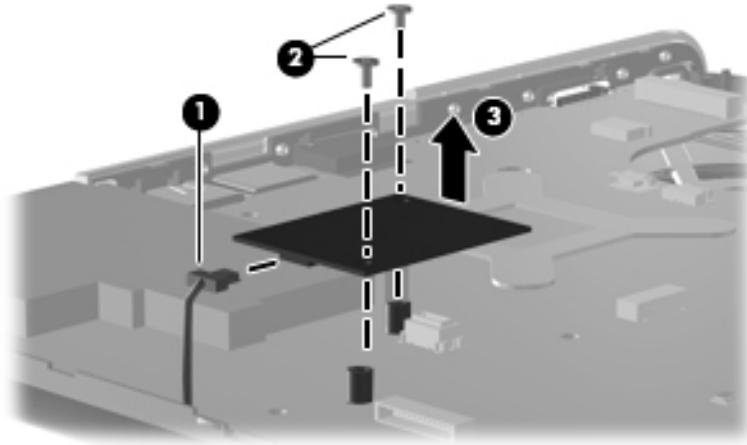
Description	Spare part number
All countries and regions except for Australia and New Zealand	461749-001
Australia and New Zealand	461749-011

Before removing the modem module:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. WLAN module (see [“WLAN module” on page 4-15](#))
  - d. Optical drive (see [“Optical drive” on page 4-19](#))
  - e. Keyboard (see [“Keyboard” on page 4-20](#))
  - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - g. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - h. Display assembly (see [“Display assembly” on page 4-27](#))
  - i. Top cover (see [“Top cover” on page 4-34](#))

Remove the modem module:

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



4. Remove the modem module.

Reverse the above procedure to install the modem module.

## Bluetooth module (select models only)

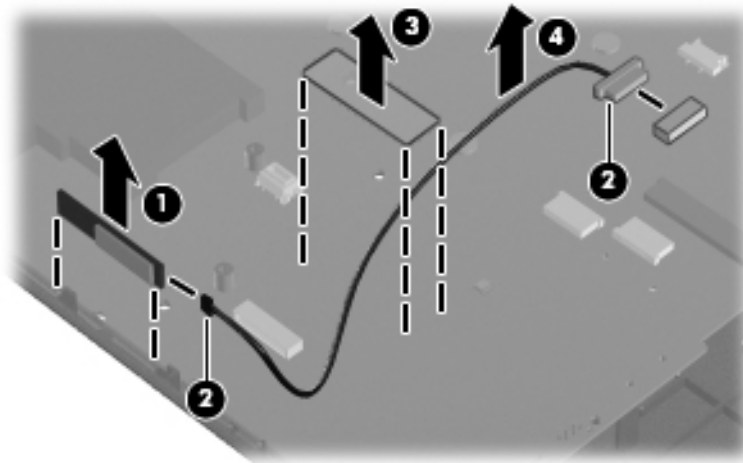
Description	Spare part number
Bluetooth module	537921-001
Bluetooth module cable	
UMA graphics subsystems	486847-001
Discrete graphics subsystems	488130-001

Before removing the Bluetooth module:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. WLAN module (see [“WLAN module” on page 4-15](#))
  - d. Optical drive (see [“Optical drive” on page 4-19](#))
  - e. Keyboard (see [“Keyboard” on page 4-20](#))
  - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - g. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - h. Display assembly (see [“Display assembly” on page 4-27](#))
  - i. Top cover (see [“Top cover” on page 4-34](#))

Remove the Bluetooth module and cable:

1. Turn the top cover upside down with the front toward you.
2. Lift the Bluetooth module ❶ from the the computer.
3. Disconnect the Bluetooth module cable ❷ from the Bluetooth module and system board.
4. Remove the tape ❸ that secures the cable, and then remove the Bluetooth module and cable ❹.



Reverse this procedure to install the Bluetooth module.

## Audio board

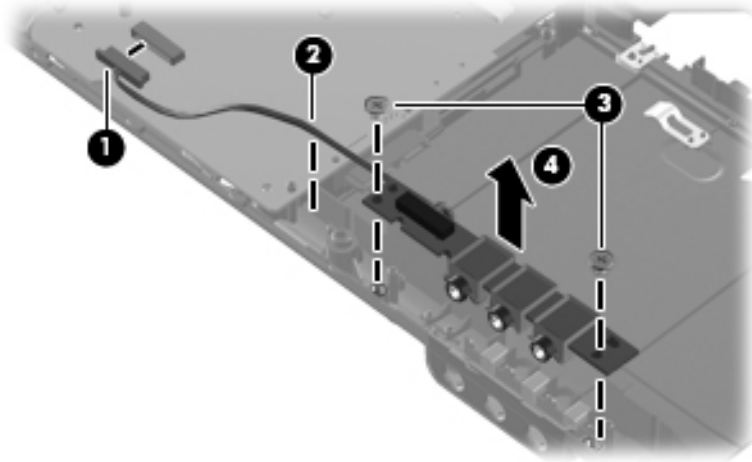
Description	Spare part number
Audio board	486840-001
Audio board cable	486841-001

Before removing the audio board:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Mini Card bracket (see [“WLAN module” on page 4-15](#))
  - d. Optical drive (see [“Optical drive” on page 4-19](#))
  - e. Keyboard (see [“Keyboard” on page 4-20](#))
  - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - g. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - h. Display assembly (see [“Display assembly” on page 4-27](#))
  - i. Top cover (see [“Top cover” on page 4-34](#))

Remove the audio board and cable:

1. Disconnect the audio board cable ❶ from the system board.
2. Release the audio board cable ❷ from the base enclosure.
3. Remove the two Phillips PM2.5×3.0 screws ❸ that secure the audio board to the system board.
4. Lift the rear edge of the audio board ❹ so that the audio connectors slide out of the openings in the base enclosure, and then remove the audio board and cable.



Reverse this procedure to install the audio board.

## USB board

Description	Spare part number
USB board	486842-001
USB board cable	486843-001

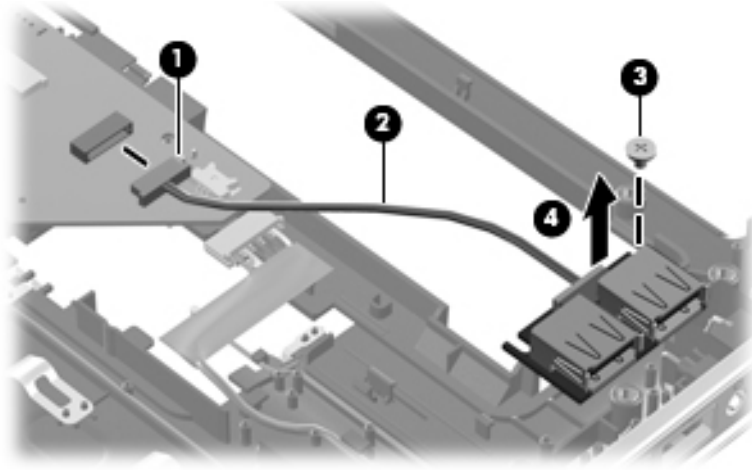
Before removing the USB board:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. Mini Card bracket (see [“WLAN module” on page 4-15](#))
  - d. Optical drive (see [“Optical drive” on page 4-19](#))
  - e. Keyboard (see [“Keyboard” on page 4-20](#))
  - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - g. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - h. Display assembly (see [“Display assembly” on page 4-27](#))
  - i. Top cover (see [“Top cover” on page 4-34](#))



Remove the USB board and cable:

1. Turn the computer right-side up, with the right side toward you.
2. Disconnect the USB board cable ❶ from the system board.
3. Remove the cable ❷ from the base enclosure clips.
4. Remove the Phillips PM2.5×3.0 screw ❸ that secures the USB board to the computer.
5. Lift the USB board ❹ straight up to remove it from the computer.



Reverse this procedure to install the USB board.

## Power connector

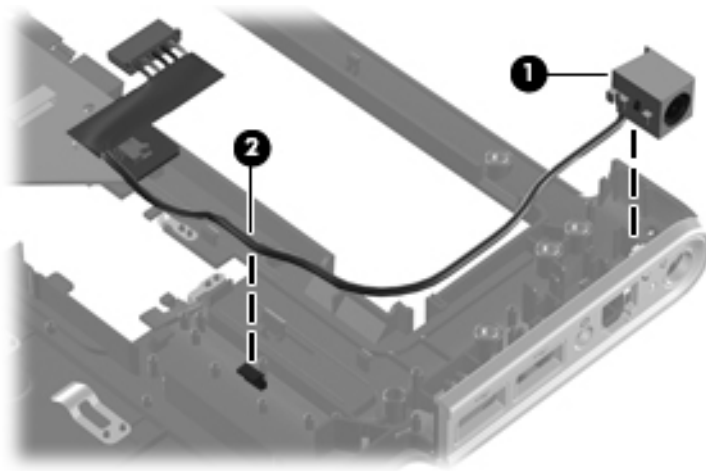
Description	Spare part number
Power connector (includes cable)	486836-001

Before removing the power connector and cable:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - c. WLAN module (see [“WLAN module” on page 4-15](#))
  - d. Optical drive (see [“Optical drive” on page 4-19](#))
  - e. Keyboard (see [“Keyboard” on page 4-20](#))
  - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - g. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - h. Display assembly (see [“Display assembly” on page 4-27](#))
  - i. Top cover (see [“Top cover” on page 4-34](#))
  - j. Modem module cable (see [“System board” on page 4-50](#))

Remove the power connector:

1. Turn the computer right-side up.
2. Position the computer with the right side toward you.
3. Remove the power connector **1** from the clip built into the base enclosure. The power connector is secured by double-sided tape.
4. Disconnect the power connector cable **2** from the base enclosure.



Reverse this procedure to install the power connector and cable.

## System board

Description	Spare part number
System board (includes replacement thermal material)	
UMA graphics subsystems	590350-001
Discrete graphics subsystems	590349-001

Before removing the system board:

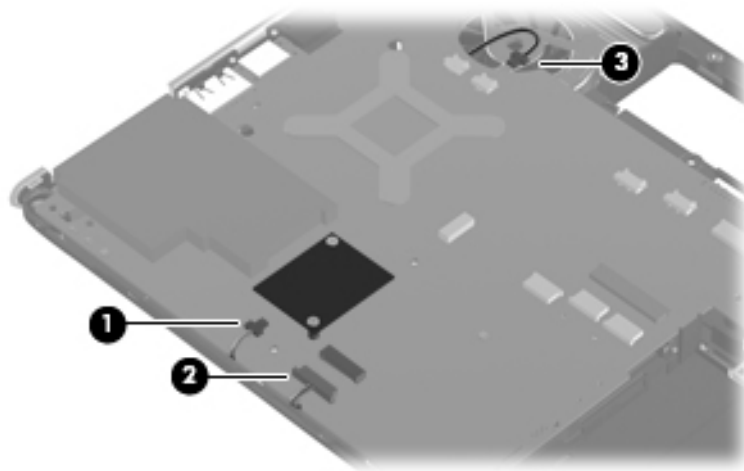
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Memory module (see [“Memory module” on page 4-10](#))
  - c. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - d. WLAN module (see [“WLAN module” on page 4-15](#))
  - e. Optical drive (see [“Optical drive” on page 4-19](#))
  - f. Keyboard (see [“Keyboard” on page 4-20](#))
  - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - h. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - i. Display assembly (see [“Display assembly” on page 4-27](#))
  - j. Top cover (see [“Top cover” on page 4-34](#))

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

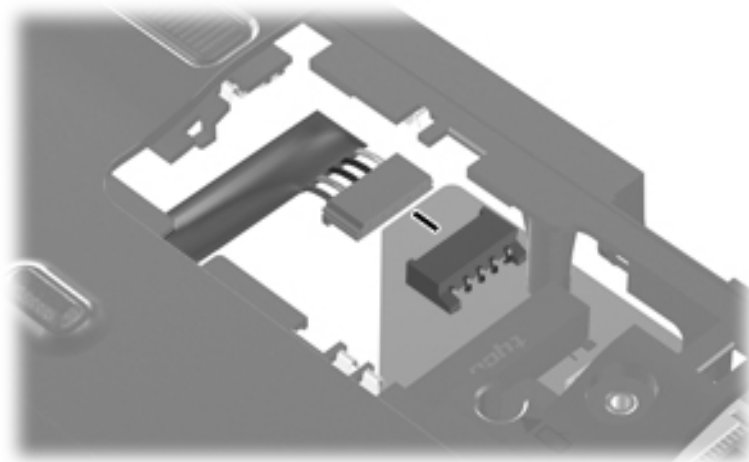
- Heat sink assembly (see “[Heat sink assembly](#)” on page 4-55)
- Processor (see “[Processor](#)” on page 4-59)

Remove the system board:

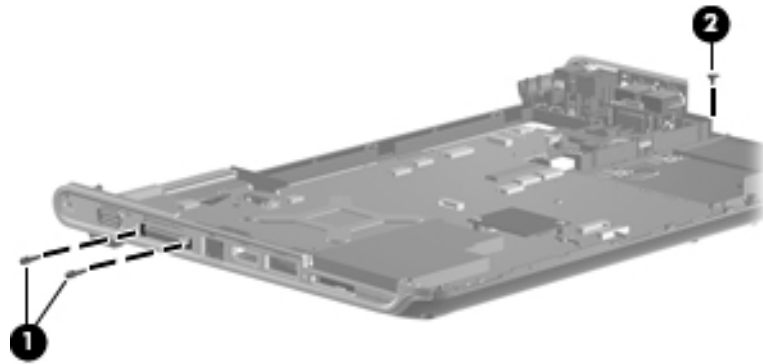
1. Turn the computer display-side up, with the right side toward you.
2. Disconnect the following cables from the system board:
  - ① Modem cable
  - ② Audio board cable
  - ③ Fan cable



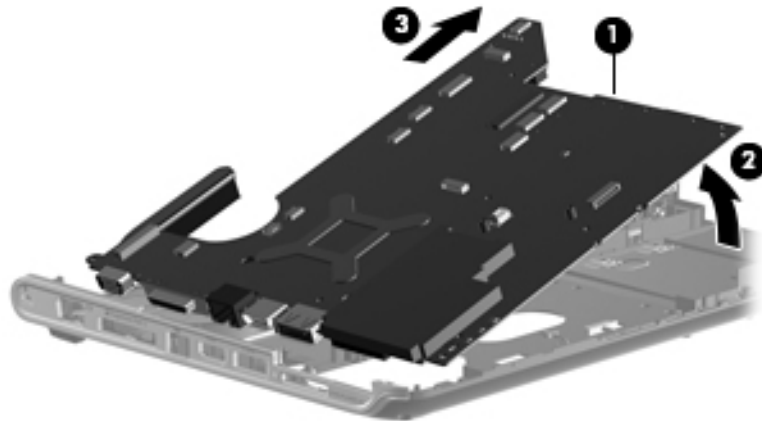
3. Disconnect the power connector cable.



4. Remove the two Phillips PM1.5×9.0 screws ❶ and the Phillips PM2.5×3.0 screw ❷ that secure the system board to the computer.



5. Use the optical drive connector ❶ to lift the right side of the system board ❷ until it rests at an angle.
6. Release the system board ❸ by sliding it to the right at an angle until the connectors on the left side of the system board disengage from the base enclosure, and then remove the system board.



Reverse this procedure to install the system board.

## RJ-11 connector (select models only)

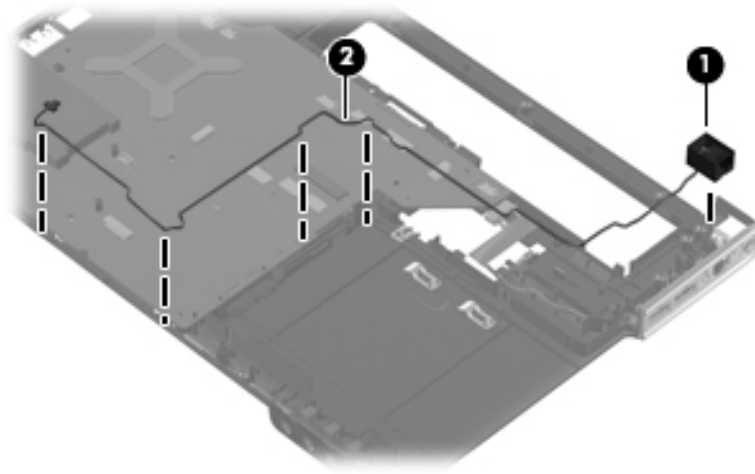
Description	Spare part number
Modem module cable (includes RJ-11 connector)	494981-001

Before removing the RJ-11 connector:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Memory module (see [“Memory module” on page 4-10](#))
  - c. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - d. WLAN module (see [“WLAN module” on page 4-15](#))
  - e. Optical drive (see [“Optical drive” on page 4-19](#))
  - f. Keyboard (see [“Keyboard” on page 4-20](#))
  - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - h. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - i. Display assembly (see [“Display assembly” on page 4-27](#))
  - j. Top cover (see [“Top cover” on page 4-34](#))
  - k. Modem module (see [“Modem module \(select models only\).” on page 4-40](#))
  - l. System board (see [“System board” on page 4-50](#))

Remove the RJ-11 connector:

1. Remove the RJ-11 connector ❶ from the clip built into the base enclosure.
2. Remove the RJ-11 connector cable ❷ from the routing channel built into the base enclosure.



Reverse this procedure to install the RJ-11 connector.



## Heat sink assembly

Description	Spare part number
System board (includes replacement thermal material)	
UMA graphics subsystems	591957-001
Discrete graphics subsystems	591956-001

Before removing the heat sink assembly:

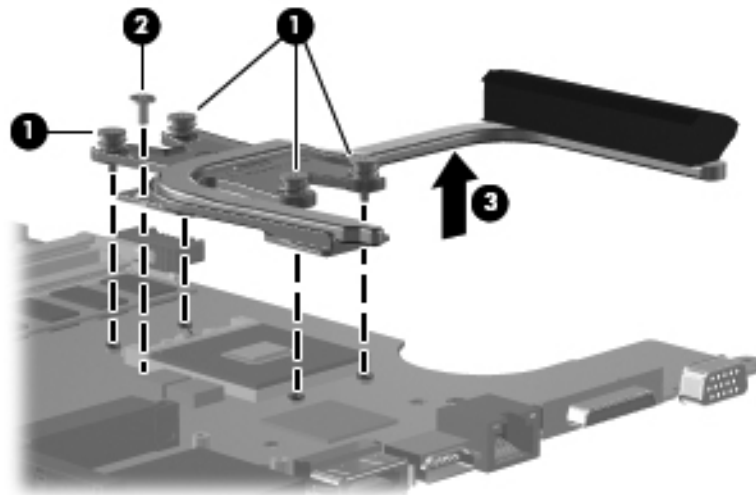
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Memory module (see [“Memory module” on page 4-10](#))
  - c. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - d. WLAN module (see [“WLAN module” on page 4-15](#))
  - e. Optical drive (see [“Optical drive” on page 4-19](#))
  - f. Keyboard (see [“Keyboard” on page 4-20](#))
  - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - h. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - i. Display assembly (see [“Display assembly” on page 4-27](#))
  - j. Top cover (see [“Top cover” on page 4-34](#))
  - k. System board (see [“System board” on page 4-50](#))

Remove the heat sink assembly:

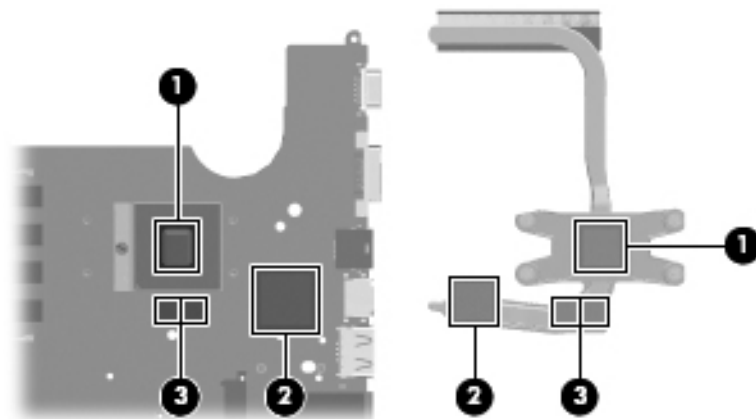
1. Turn the system board upside down with the front toward you.
2. Loosen the four captive Phillips PM2.0×10.0 screws ❶ that secure the heat sink assembly to the system board.
3. Remove the Phillips PM2.5×3.0 screw ❷ that secures the heat sink assembly to the system board.
4. Remove the heat sink assembly ❸.



Due to the adhesive quality of the thermal material located between the heat sink assembly and system board components, it might be necessary to move the heat sink assembly from side to side to detach the assembly.



The thermal material must be thoroughly cleaned from the surface of the heat sink assembly and the system board each time the heat sink assembly is removed. Thermal material is applied to the heat sink to correspond with components on the system board as follows: the processor ❶, the Northbridge chip ❷, and the capacitors ❸. Replacement thermal material is included with all system board, fan/heat sink assembly, and processor spare parts.



Reverse this procedure to install the heat sink assembly.

## Fan

Description	Spare part number
Fan (includes replacement thermal material)	486844-001



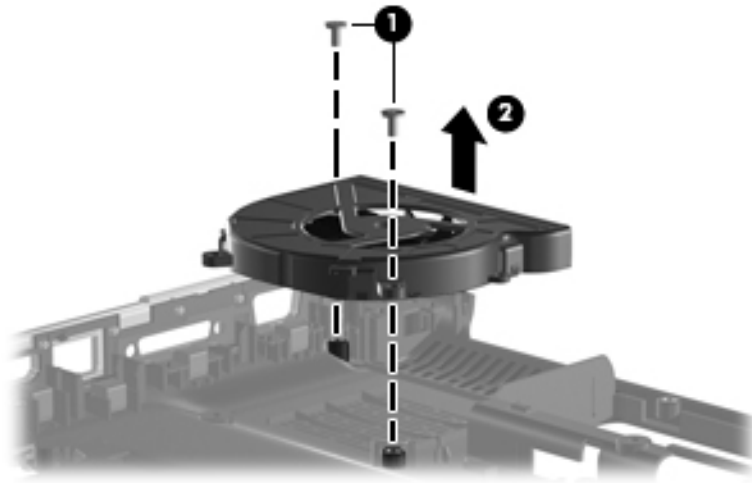
To properly ventilate the computer, allow at least a 7.6 cm (3 in) clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the fan:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Memory module (see [“Memory module” on page 4-10](#))
  - c. WLAN module (see [“WLAN module” on page 4-15](#))
  - d. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
  - e. Optical drive (see [“Optical drive” on page 4-19](#))
  - f. Keyboard (see [“Keyboard” on page 4-20](#))
  - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - h. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - i. Display assembly (see [“Display assembly” on page 4-27](#))
  - j. Top cover (see [“Top cover” on page 4-34](#))
  - k. System board (see [“System board” on page 4-50](#))

Remove the fan:

1. Position the base enclosure with the front toward you.
2. Remove the two black Phillips PM2.5×5.0 screws ❶ that secure the fan to the computer.
3. Lift the fan from the base enclosure ❷.



Reverse this procedure to install the fan.

## Processor



The processor spare part kit includes replacement thermal material.


Description	Spare part number
Intel Arrandale CPU-uPGA Single-Core i5-520M (2.4 GHz, 3-MB L3 cache, 1066 MHZ SC Turbo)	594187-001
Intel Arrandale CPU-uPGA Single-Core i5-540M (2.53 GHz, 3-MB L3 cache, 1066 MHZ SC Turbo)	594188-001

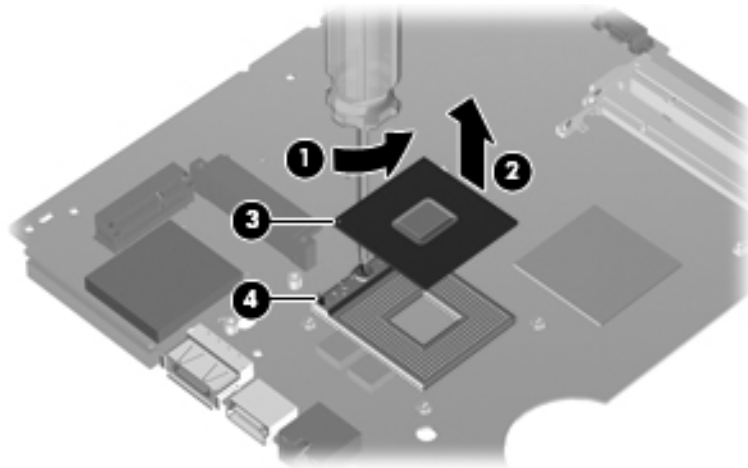
Before removing the processor:

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 from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
  - a. Hard Drive (see [“Hard Drive” on page 4-8](#))
  - b. Memory module (see [“Memory module” on page 4-10](#))
  - c. RTC battery (see [“RTC battery” on page 4-12](#))
  - d. WLAN module (see [“WLAN module” on page 4-15](#))
  - e. Optical drive (see [“Optical drive” on page 4-19](#))
  - f. Keyboard (see [“Keyboard” on page 4-20](#))
  - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
  - h. Speaker assembly (see [“Speaker assembly” on page 4-26](#))
  - i. Display assembly (see [“Display assembly” on page 4-27](#))
  - j. Top cover (see [“Top cover” on page 4-34](#))
  - k. System board (see [“System board” on page 4-50](#))
  - l. Heat sink assembly (see [“Heat sink assembly” on page 4-55](#))

Remove the processor:

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

 When installing the processor, align the gold triangle ❸ on the processor must be aligned with the triangle ❹ embossed on the processor socket.



Reverse this procedure to install the processor.

## Starting Setup Utility

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



---

The Fingerprint Reader (select models only) cannot be used to access the Setup Utility.

---

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

To start Setup Utility:

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **f10** key.

– or –

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **esc** key.
2. When the Startup Menu appears, press the **f10** key.

## Using Setup Utility

### Changing the language of Setup Utility

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

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **f10** key.

– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **esc** key. When the Startup Menu appears, press the **f10** key.

2. Use the arrow keys to select **System Configuration > Language**, and then press the **enter** key.
3. Use the arrow keys to select a language, and then press the **enter** key.
4. When a confirmation prompt with your language selected is displayed, press the **enter** key.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press the **enter** key.

Changes go into effect immediately.

## Navigating and selecting in Setup Utility

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

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

## Displaying system information

Use Setup Utility to view such information as the system time and date and information that identifies the computer. The following procedure explains how to do this. If Setup Utility is not open, begin at step 1. If Setup Utility is open, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **f10** key.  
– or –  
Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **esc** key. When the Startup Menu is displayed, press the **f10** key.
2. Select the **Main** menu.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press the **enter** key.

## Restoring default settings in Setup Utility

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

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **f10** key.  
– or –  
Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message appears in the lower left corner of the screen, press the **esc** key. When the Startup Menu appears, press the **f10** key.
2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press the **enter** key.
3. When the Setup Confirmation appears, press the **enter** key.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press the **enter** key.

Setup Utility default settings go into effect when the computer restarts.



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



## Exiting Setup Utility

You can exit Setup Utility with or without saving changes.

- To exit Setup Utility and save your changes from the current session:

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

- To exit Setup Utility without saving your changes from the current session:

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

After either choice, the computer restarts in Windows.

## Setup Utility menus

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



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

### Main menu

Select	To Do This
System information	<ul style="list-style-type: none"> <li>■ View and change the system time and date.</li> <li>■ View identification information about the computer.</li> <li>■ View specification information about the processor, memory size, system BIOS, and keyboard controller version (select models only).</li> </ul>

### Security menu

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

## System Configuration menu


Select	To Do This
Language Support	Change Setup Utility language.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
Processor C6 State (select models only)	Enable/disable the processor C6 sleep state.
LAN Power Saving (select models only)	Enable/disable the LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable the Card Reader/1394 Power Saving.
Fan Always On	Enable/disable the Fan Always On. When enabled, the computer fan will always be on.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none"> <li>■ POST (power on self-test) <b>f10</b> and <b>f12</b> delay (seconds)—Set the delay for the <b>f10</b> and <b>f12</b> functions of Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20)</li> <li>■ HP Guide QuickWeb: <ul style="list-style-type: none"> <li><input type="checkbox"/> Enable/disable the HP QuickWeb boot menu during POST</li> <li><input type="checkbox"/> Delay to boot Windows - set the delay for the HP QuickWeb boot menu to 2, 3, 10, 15, or 30 seconds</li> </ul> </li> <li>■ CD-ROM boot—Enable/disable boot from CD-ROM</li> <li>■ Floppy boot—Enable/disable boot from diskette</li> <li>■ Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter</li> <li>■ Boot Order—Set the boot order for: <ul style="list-style-type: none"> <li>USB Floppy</li> <li>Internal CD/DVD ROM drive</li> <li>USB CD/DVD ROM drive</li> <li>Hard drive</li> <li>USB Diskette on Key</li> <li>USB hard drive</li> <li>Network adapter</li> </ul> </li> </ul>

## Diagnostics menu

Select	To Do This
Primary Hard Disk Self Test	Run a comprehensive self-test on the hard drive.
Secondary Hard Disk Self Test (select models only)	Run a comprehensive self-test on a secondary hard drive.
Memory Test	Run a diagnostic test on the system memory.

# Specifications


## Computer specifications

	Metric	U.S.
<b>Dimensions</b>		
Length	23.95 cm	9.43 in
Width	33.40 cm	13.15 in
Height (front to rear)	3.41 to 3.95 cm	1.34 to 1.56 in
<b>Weight</b>		
Configuration with weight saver	2.23 kg	4.90 lbs
Configuration with optical	2.42 kg	5.30 lbs
<b>Input power</b>		
Operating voltage	18.5 V dc	
Operating current	3.5 A	
<b>Temperature</b>		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
<b>Relative humidity</b>		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
 Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

## 14.1-in WXGA BrightView display specifications

	Metric	U.S.
<b>Dimensions</b>		
Height	30.37 cm	11.96 in
Width	18.98 cm	7.47 in
Diagonal	35.82 cm	14.10 in
<b>Number of colors</b>	More than 262,144	
<b>Contrast ratio</b>	More than 300:1	
<b>Brightness</b>	200 nits (typical)	
<b>Pixel resolution</b>		
Pitch	0.2373 × 0.2373 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
<b>Backlight</b>	CCFT	
<b>Character display</b>	80 × 25	
<b>Total power consumption</b>	5.2 W	
<b>Viewing angle</b>	±40° horizontal, +15°/-35° vertical (typical)	

## Hard Drive specifications

	500-GB*	320-GB*	250-GB*	160-GB*
<b>Dimensions</b>				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight 7200-rpm	115 g	115 g	115 g	115 g
<b>Interface type</b>	SATA	SATA	SATA	SATA
<b>Transfer rate</b>	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
<b>Security</b>	ATA security	ATA security	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)				
Single track 7200-rpm	1.5 ms	1.5 ms	1.5 ms	1.5 ms
Average 7200-rpm	11.0 ms	11.0 ms	11.0 ms	11.0 ms
Maximum 7200-rpm	22.0 ms	22.0 ms	22.0 ms	22.0 ms
<b>Logical blocks</b>	976,773,168	625,142,448	488,397,168	312,581,808
<b>Disc rotational speed</b>	7200 rpm	7200 rpm	7200 rpm	7200 rpm
<b>Operating temperature</b>	0°C to 60°C (32°F to 140°F)			
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications might differ slightly.				
 Certain restrictions and exclusions apply. Contact technical support for details.				

## Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe specifications

Applicable disc	Read:	Write:	
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, BD-ROM, BD-R, BD-RE	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe	
Interface	SATA		
Access time	CD	DVD	BD
Random	< 190 ms	< 190 ms	< 230 ms
Max data transfer rate			
24X CD-ROM	3,600 KB/sec		
8X DVD-ROM	10,800 KB/sec		
4X BD-ROM	18,000 KB/sec		
16X - CD-R	1,200 KB/sec		
10X - CD-RW	1,500 KB/sec		
8X DVD+R	10,800 KB/sec		
8X - DVD+RW	10,800 KB/sec		
8X - DVD-R	10,800 KB/sec		
6X - DVD-RW	8,100 KB/sec		
4X - DVD+R Dual Layer	5,400 KB/sec		
4X - DVD-R Dual Layer	5,400 KB/sec		
5X DVD-RAM	6,750 KB/sec		
Max media capacity (read)	50.0 GB		
Max media capacity (write)	8.5 GB		
Transport	Tray loading		

## DVD±RW SuperMulti DL Drive with LightScribe specifications

<b>Applicable disc</b>	<b>Read:</b>	<b>Write:</b>
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe
<b>Interface</b>	SATA	
<b>Access time</b>	<b>CD</b>	<b>DVD</b>
Random	< 150 ms	< 160 ms
<b>Max data transfer rate</b>		
24X CD-ROM	3,600 KB/sec	
8X DVD-ROM	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
8x DVD+RW	10,800 KB/sec	
8X DVD-R	10,800 KB/sec	
6X DVD-RW	8,100 KB/sec	
4X DVD-R Dual Layer	5,400 KB/sec	
4X DVD+R Dual Layer	5,400 KB/sec	
5X DVD-RAM	6,750 KB/sec	
<b>Max media capacity (read)</b>	8.5 GB	
<b>Max media capacity (write)</b>	8.5 GB	
<b>Transport</b>	Tray loading	

## System DMA specifications

<b>Hardware</b>	<b>DMA System function</b>
DMA0	Reserve
DMA1	Reserve
DMA2	Reserve
DMA3	Reserve
DMA4	Direct memory access controller
DMA5	Reserve
DMA6	Reserve
DMA7	Reserve



## System interrupt specifications

Hardware IRQ	System function
IRQ1	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
IRQ4	ENE CIR Receiver
IRQ12	Alps Pointing-device(2-way) for 14-In Wide LCD
IRQ13	Numeric data processor
IRQ16	High Definition Audio Controller
IRQ16	PCI standard PCI-to-PCI bridge
IRQ16	Standard OpenHCD USB Host Controller
IRQ16	Standard OpenHCD USB Host Controller
IRQ17	PCI standard PCI-to-PCI bridge
IRQ17	Standard Enhanced PCI to USB Host Controller
IRQ18	Broadcom 4322AG 802.11a/b/g/draft-n Wi-Fi Adapter
IRQ18	PCI standard PCI-to-PCI bridge
IRQ18	Standard OpenHCD USB Host Controller
IRQ18	Standard OpenHCD USB Host Controller
IRQ19	High Definition Audio Controller
IRQ19	PCI standard PCI-to-PCI bridge
IRQ19	Realtek PCIe FE Family Controller
IRQ19	Standard Enhanced PCI to USB Host Controller
IRQ22	Standard AHCI 1.0 Serial ATA Controller
IRQ23	HP Mobile Data Protection Sensor
IRQ81-190	Microsoft ACPI-Compliant System

## System I/O address specifications

I/O address (hex)	System function (shipping configuration)
000 - 00F	Direct memory access controller
010 - 01F	Motherboard resources
020 - 021	Programmable interrupt controller
02E - 02F	Motherboard resources
040 - 043	System timer
060 - 060	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
061 - 061	System speaker
062 - 062	Microsoft ACPI-Compliant Embedded controller
064 - 064	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
066 - 066	Microsoft ACPI-Compliant Embedded controller
068 - 068	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
06C - 06C	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
070 - 071	System CMOS/real time clock
072 - 073	Motherboard resources
080 - 080	Motherboard resources
081 - 08F	Direct memory access controller
092 - 092	Motherboard resources
0A0 - 0A1	Programmable interrupt controller
0B0 - 0B1	Motherboard resources
0C0 - 0DF	Direct memory access controller
0F0 - 0FE	Numeric data processor
3B0 - 3BB	PCI standard PCI-to-PCI bridge
3C0 - 3DF	PCI standard PCI-to-PCI bridge
400 - 4CF	Motherboard resources
4D0 - 4D1	Motherboard resources
4D6 - 4D6	Motherboard resources
77A - 77A	Motherboard resources
C00 - C01	Motherboard resources
C14 - C14	Motherboard resources
C50 - C52	Motherboard resources
C6C - C6C	Motherboard resources
C6F - C6F	Motherboard resources
CD0 - CDB	Motherboard resources
2000 - 20FF	Realtek PCIe Fe Family Controller
2000 - 2FFF	PCI standard PCI-to-PCI bridge
3000 - 6FFF	PCI standard PCI-to-PCI bridge

(Continued)

---

<b>I/O address (hex)</b>	<b>System function (shipping configuration)</b>
3000 - 6FFF	PCI standard PCI-to-PCI bridge
7000 - 7FFF	PCI standard PCI-to-PCI bridge
8010 - 801F	Standard AHCI 1.0 Serial ATA Controller
8030 - 8037	Standard AHCI 1.0 Serial ATA Controller
8038 - 803F	Standard AHCI 1.0 Serial ATA Controller
8048 - 804B	Standard AHCI 1.0 Serial ATA Controller
804C - 804F	Standard AHCI 1.0 Serial ATA Controller
FD60 - FD63	ENE CIR Receiver

---

---

# Backup and recovery

## Overview

Recovery after a system failure is as complete as your most current backup. HP recommends creating recovery discs immediately after software setup. As you add new software and data files, continue to back up your system on a regular basis to maintain a reasonably current backup.

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

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



Computers with a solid-state drive (SSD) might not have a recovery partition. Recovery discs are included for computers that do not have a partition. Use these discs to recover your operating system and software. To check for the presence of a recovery partition, select **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**. If the partition is present, an HP Recovery drive is listed in the window.

---

## Creating recovery discs

HP recommends creating recovery discs to be sure that you can restore your system to its original factory state if you experience serious system failure or instability. Create these discs after setting up the computer for the first time.

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




---

If the computer does not include an internal optical drive, use an optional external optical drive (purchased separately) to create recovery discs, or purchase recovery discs for the computer from the HP website.

---

Note the following guidelines before creating recovery discs:


- Use high-quality DVD-R, DVD+R, BD-R (writable Blu-ray), or CD-R discs. All these discs are purchased separately. DVDs and BDs have a much higher capacity than CDs. If using CDs, up to 20 discs might be required, whereas only a few DVDs or BDs are required.
  -  Read-write discs, such as CD-RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs, are not compatible with the Recovery Manager software.
- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive.
- If necessary, exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you are prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start > All Programs > Recovery Manager > Recovery Disc Creation**.
2. Recovery Manager opens.
3. Follow the on-screen instructions.

## Backing up your information

As you add new software and data files, back up your system on a regular basis to maintain a reasonably current backup. Back up your system at the following times:

- At regularly scheduled times
  -  Set reminders to back up your information periodically.
- Before the computer is repaired or restored
- Before you add or modify hardware or software

When backing up:


- Create system restore points using the Windows System Restore feature, and periodically copy them to disc.
- Store personal files in the Documents library and back up this folder periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot is a time-saver if you have to reset your preferences.

To copy the screen and paste it into a word-processing document:

1. Display the screen.
2. Copy the screen:

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

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

3. Open a word-processing document, and then select **Edit > Paste**.
  4. Save the document.
- Back up your information to an optional external hard drive, a network drive, or discs.
  - When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD-R, or DVD±RW. The discs used will depend on the type of optical drive installed in the computer.
    -  DVDs store more information than CDs, so using them for backup reduces the number of recovery discs required.
  - When backing up to discs, number each disc before inserting it into the optical drive of the computer.

## Using Windows Backup and Restore



Be sure that the computer is connected to AC power before starting the backup process.

---



The backup process might take over an hour, depending on file size and the speed of the computer.

---

To create a backup using Windows Backup and Restore:

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
  2. Follow the on-screen instructions to set up and create a backup.
- 



Windows includes the User Account Control feature to improve the security of the computer. You might be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. See Help and Support.

---

## Using system restore points

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

---



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

---

Create additional restore points to provide increased protection for your system files and settings.

## Create system restore points

- Before you adding or extensively modifying software or hardware
  - Periodically, whenever the system is performing optimally
- 



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

---

## To create a system restore point

To create a system restore point:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under **Protection Settings**, select the disk for which you want to create a restore point.
5. Click **Create**.
6. Follow the on-screen instructions.

## Restore to a previous date and time

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

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**.
5. Follow the on-screen instructions.

## Performing a recovery



---

Recover only files that you have previously backed up. HP recommends using HP Recovery Manager to create a set of recovery discs (entire drive backup) as soon as you set up the computer.

---

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs or from a dedicated recovery partition (select models only) on the hard drive. However, if the computer includes a solid-state drive (SSD), you might not have a recovery partition. If that is the case, recovery discs are included with the computer. Use these discs to recover the operating system and software.



---

Windows has its own built-in repair features, such as System Restore. If you have not already tried these features, try them before using Recovery Manager.

---



---

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

---



## Recovering from the recovery discs

To restore the system from the recovery discs:

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

## Recovering from the dedicated recovery partition (select models only)

---



Computers with an SSD might not have a recovery partition. If the computer does not have a recovery partition, you are not able to recover using this procedure. Recovery discs are included for computers that do not have a partition. Use these discs to recover your operating system and software.

---

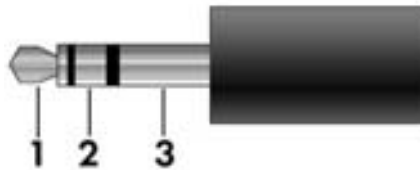
On some models, a recovery can be performed from the partition on the hard drive, accessed by pressing either the Start button or the **f11** key. This restores the computer to its factory condition.

To restore the system from the partition:

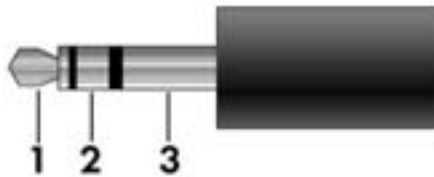
1. Access Recovery Manager by either:
  - Selecting **Start > All Programs > Recovery Manager > Recovery Manager**.
  - or –
  - Turning on or restarting the computer, and then pressing the **esc** key when the Press the ESC key for Startup Menu message appears at the bottom of the screen. Then, press the **f11** key when the Press <F11> for recovery message appears on the screen.
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

## Connector pin assignments

### Audio-in (microphone)

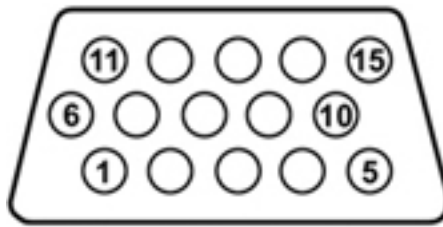


Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground



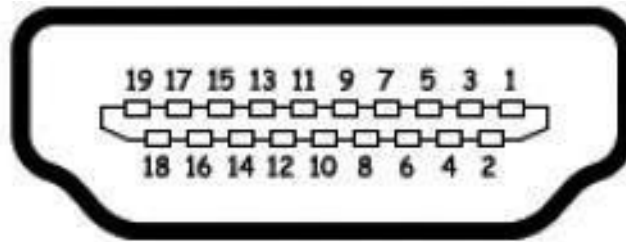
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

## External monitor



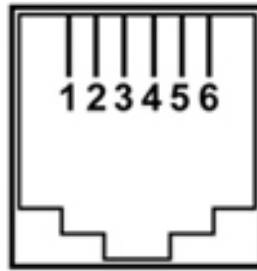
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

# HDMI



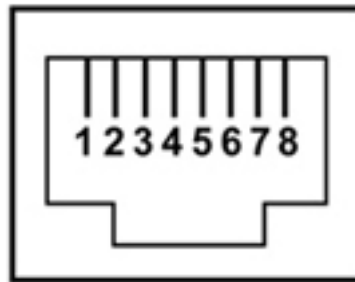
Pin	Signal
1	Transition minimized differential signal (TDMS) data 2+
2	TDMS data 2 shield
3	TDMS data 2-
4	TDMS data 1+
5	TDMS data 1 shield
6	TDMS data 1 shield
7	TDMS data 0+
8	TDMS data 0 shield
9	TDMS data 0-
10	TDMS clock +
11	TDMS data clock shield
12	TDMS data clock-
13	Consumer electronics control
14	Not connected
15	Display data channel (DDC) clock
16	DDC data
17	Ground
18	+5V Power
19	Hot plug detect

## RJ-11 (modem) (select models only)



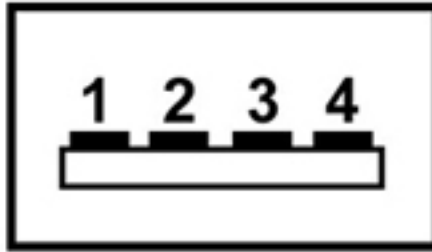
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

## RJ-45 (network)



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

## Universal Serial Bus



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

---

## Power cord set requirements

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

The 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

Power cord sets for use in other countries and regions must meet the requirements of the country or region where the computer is used.

### Requirements for all countries and regions

The requirements listed below are applicable to all countries and regions:

- The length of the power cord set must be at least 1.5 m (5.0 ft) and no more than 2.0 m (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region 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 the power system of each country or region.
- 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.



## Requirements for specific countries and regions


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
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	CCC	5
South Korea	EK	4
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2


1. The flexible cord must be 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 or region 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 or region 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 or region where it will be used.


## Battery

When the battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for computer battery disposal.

## Display


 **WARNING:** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

 **CAUTION:** The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When removing these components, handle them carefully.

 **Materials Disposal.** This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury might be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) website at <http://www.eiae.org>.

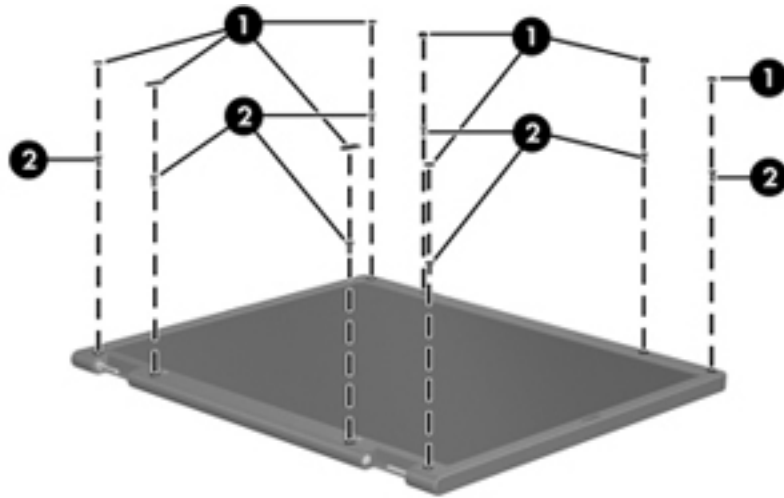
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight ❶ and the liquid crystal display (LCD) panel ❷.



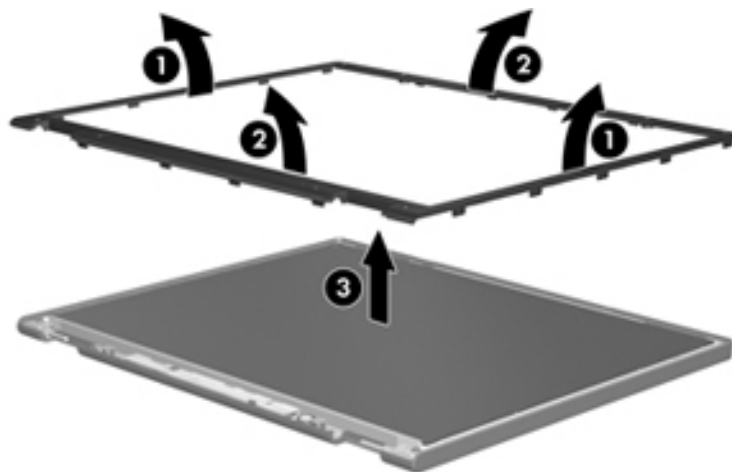
 The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

To disassemble the display assembly:

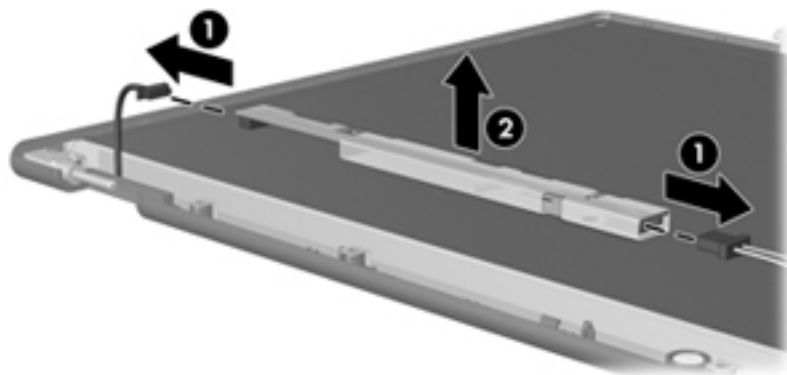
1. Remove all screw covers **1** and screws **2** that secure the display bezel to the display assembly.



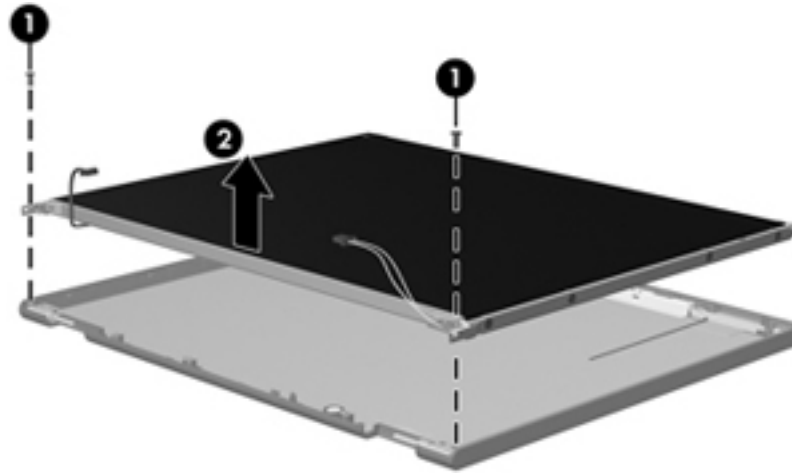
2. Lift up and out on the left and right inside edges **1** and the top and bottom inside edges **2** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **3**.



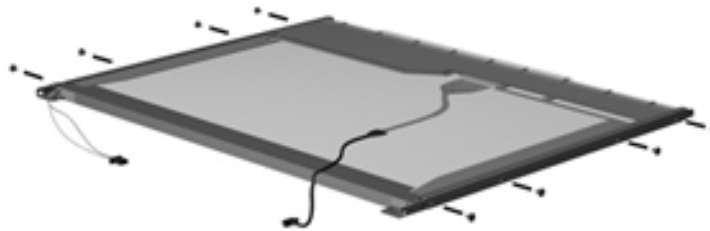
4. Disconnect all display panel cables **1** from the display inverter and remove the inverter **2**.



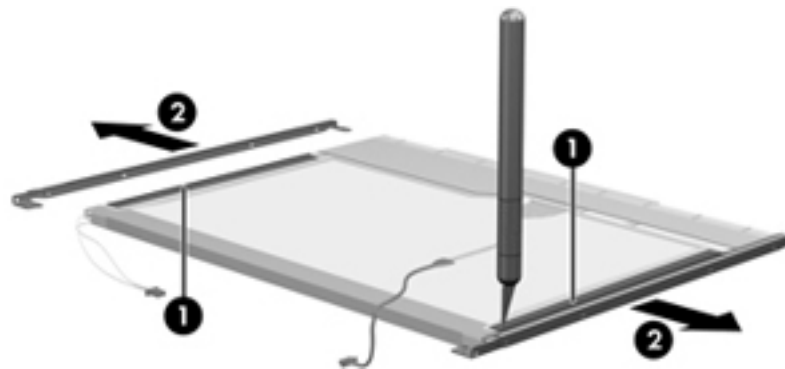
5. Remove all screws ❶ that secure the display panel assembly to the display enclosure.
6. Remove the display panel assembly ❷ from the display enclosure.



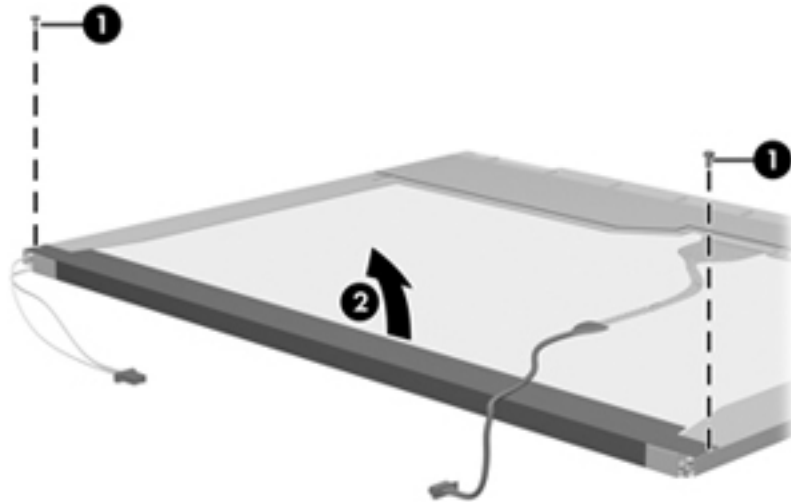
7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.



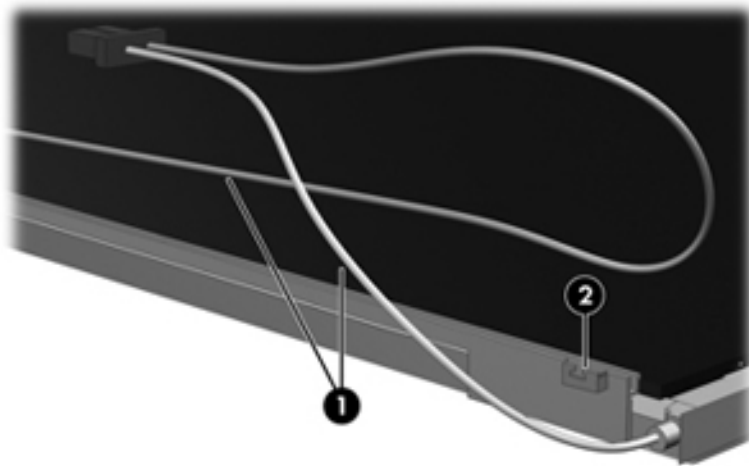
9. Use a sharp-edged tool to cut the tape ❶ that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame ❷ from the display panel.



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



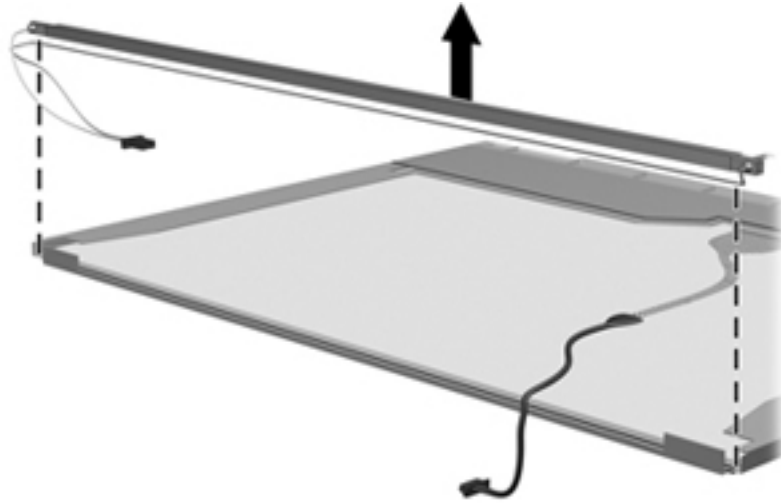
13. Remove the backlight cover.
14. Turn the display panel right-side up.
15. Remove the backlight cables ❶ from the clip ❷ in the display panel.



16. Turn the display panel upside down.

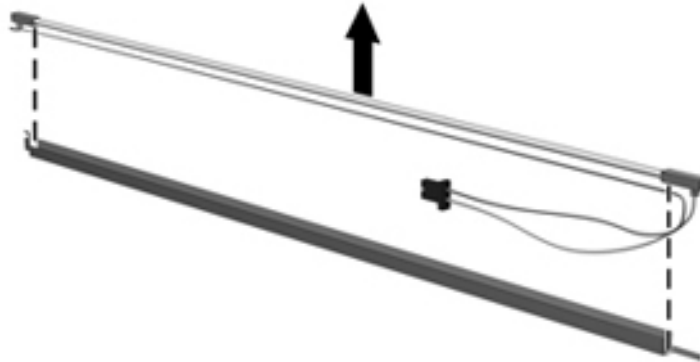


**WARNING:** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

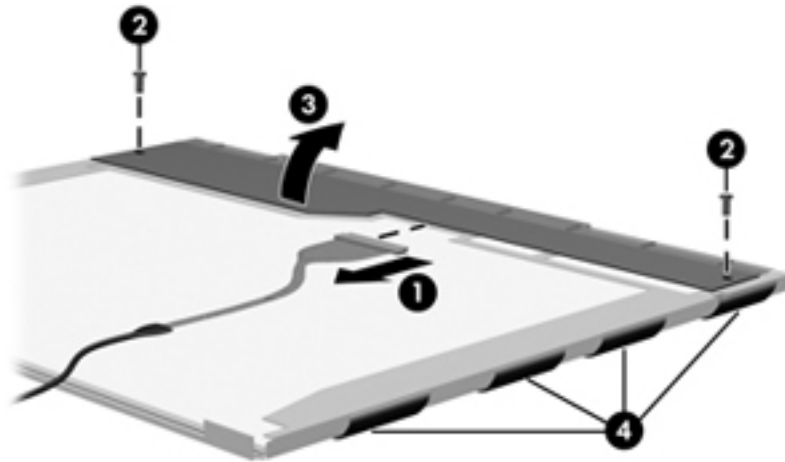


17. Remove the backlight frame from the display panel.

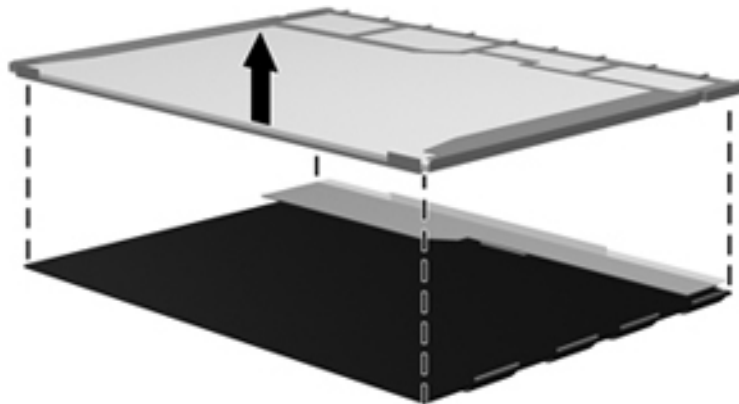
18. Remove the backlight from the backlight frame.



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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

1394 Power Saving 5-4

## A

AC adapter

location 2-12

spare part numbers 3-12

administrator password 5-3

antenna

disconnecting 4-16

removal 4-31

spare part numbers 3-8, 3-13, 4-31

audio board

removal 4-40

spare part number 3-7, 4-40

audio board cable

removal 4-40

spare part number 3-7, 3-12

audio product description 1-2

audio-in jack

connector pinout 9-1

location 2-6

audio-out jack

connector pinout 9-1

location 2-6

## B

backing up

personal files 8-3

system information 8-1, 8-3

templates 8-3

window, toolbar, and menu bar settings 8-3

Backup and Restore (Windows) 8-4

base enclosure, spare part number 3-7, 3-12

battery

location 2-12

removal 4-7

spare part numbers 3-7, 3-12, 3-15, 4-7

battery bay 2-10

battery light 2-2, 2-6

battery release latch 2-10

Bluetooth module

removal 4-38

spare part number 3-7, 3-15, 4-38

Bluetooth module cable

removal 4-38

spare part number 3-7, 3-16

Blu-ray ROM with LightScribe DVD±R/RW

SuperMulti Double-Layer Drive 4-18, 6-4

precautions 4-2

spare part numbers 3-16

boot options 5-4

boot order 5-4

bottom components 2-10

button components 2-3

button sound 5-4

buttons

power 2-3

TouchPad 2-1

TouchPad on/off 2-1

volume mute 2-3

wireless 2-3

## C

cables, service considerations 4-1

caps lock light 2-2

Card Reader Power Saving 5-4

carrying case, spare part numbers 3-11, 3-12

changing Setup Utility language 5-1

chipset product description 1-1

components

bottom 2-10

buttons 2-3

Fingerprint Reader 2-3

front 2-6

keys 2-4

left-side 2-9

pointing device 2-1

rear 2-7

top 2-1

TouchPad 2-1

computer feet

locations 4-6

spare part number 4-6

computer specifications 6-1

connector pinout

audio-in jack 9-1

audio-out jack 9-1

external monitor port 9-2



- HDMI port 9–3
- headphone jack 9–1
- microphone jack 9–1
- modem jack 9–4
- monitor port 9–2
- network jack 9–5
- RJ-11 jack 9–4
- RJ-45 jack 9–5
- USB port 9–6
- connectors, service considerations 4–1
- consumer infrared lens 2–6

**D**

- Diagnostics menu, Setup Utility 5–4
- Digital Media slot
  - light 2–9
  - location 2–9
- display assembly
  - removal 4–26
  - spare part numbers 3–3, 4–26
- display bezel
  - removal 4–28
  - spare part number 3–8, 3–15, 4–28
- display cable
  - removal 4–30
  - spare part number 3–8, 4–30
- display components, recycling 11–1
- display enclosure, spare part number 3–8, 3–15
- display hinge
  - removal 4–30
  - spare part number 3–8, 3–12, 4–30
- display inverter, removal 11–2
- display lid cable, spare part number 3–12
- display panel
  - product description 1–1
  - removal 4–29
  - spare part number 3–8, 3–16, 4–29
- displaying system information 5–2
- docking product description 1–4
- drive light 2–2, 2–6
- drives, boot order 5–4
- DVD±RW and CD-RW SuperMulti Double-Layer
  - Combo Drive with LightScribe
    - precautions 4–2
    - removal 4–18
    - spare part number 3–16, 4–18
    - specifications 6–5

**E**

- electrostatic discharge 4–2
- equipment guidelines 4–4
- eSATA/USB port 2–9
- esc** key 2–4

- Ethernet product description 1–3
- exiting Setup Utility 5–3
- expansion port 2–9
- ExpressCard remote, spare part numbers 3–11
- ExpressCard slot 2–9
- ExpressCard slot bezel 3–9
- ExpressCard slot bezel, illustrated 3–9
- external media card product description 1–3
- external monitor port
  - connector pinout 9–2
  - illustrated 2–9

**F**

- f11** key 8–6
- fan
  - removal 4–53
  - spare part number 3–4, 3–12, 4–53
- fan always on 5–4
- feet
  - locations 4–6
  - spare part number 4–6
- Fingerprint Reader 2–3
  - removal 4–36
  - spare part number 3–3, 3–12
- fn** key 2–4
- front components 2–6
- function keys 2–4

**G**

- graphics product description 1–1
- grounding equipment and methods 4–2

**H**

- Hard Drive
  - bay 2–10
  - cover 3–9
  - precautions 4–2
  - product description 1–2
  - removal 4–8
  - self test 5–4
  - spare part numbers 3–7, 3–10, 3–12, 3–13, 3–16, 4–8
  - specifications 6–3
- Hard Drive blank, spare part numbers 3–10
- Hard Drive bracket, removal 4–9
- Hard Drive Hardware Kit MultiBay, spare part number 3–12, 4–8
- Hard Drive Hardware Kit, spare part numbers 3–10, 3–12, 4–8
- HDMI port
  - connector pinout 9–3
  - location 2–9

headphone jack  
 connector pinout 9-1  
 location 2-6  
 headset, spare part numbers 3-11, 3-12  
 heat sink assembly  
 removal 4-51  
 spare part numbers 4-51  
 heat sink, spare part number 3-3, 3-13  
 hinge, spare part number 3-8

**I**

infrared lens 2-6  
 internal display switch, spare part numbers 3-8, 3-12  
 inverter  
 removal 4-29  
 spare part number 3-8, 3-12, 4-29

**J**

jacks  
 audio-in 2-6  
 audio-out 2-6  
 headphone 2-6  
 microphone 2-6  
 RJ-11 2-8, 2-9

**K**

key components 2-4  
 keyboard  
 product description 1-4  
 removal 4-19  
 spare part numbers 3-3, 3-15, 4-19  
 keyboard cover  
 removal 4-22  
 spare part number 3-3, 3-15, 4-22  
 keys  
**esc** 2-4  
**f11** 8-6  
**fn** 2-4  
 function 2-4  
 numeric keypad 2-4  
 Windows applications 2-4  
 Windows logo 2-4

**L**

LAN Power Saving 5-4  
 language support, Setup Utility 5-4  
 left-side components 2-9  
 lights  
 battery 2-2, 2-6  
 caps lock 2-2  
 Digital Media slot 2-9  
 drive 2-2, 2-6

num lock 2-2  
 power 2-2, 2-6  
 TouchPad 2-1  
 volume down 2-2  
 volume mute light 2-2  
 volume up 2-2  
 webcam 2-5  
 wireless 2-2

**M**

Main menu, Setup Utility 5-3  
 mass storage devices, spare part numbers 3-10  
 memory module  
 removal 4-10  
 spare part number 3-4, 3-7, 3-12, 3-16, 4-10  
 memory module compartment cover, spare part number 3-9  
 memory module compartment, location 2-10  
 memory product description 1-2  
 memory test 5-4  
 microphone 2-5  
 microphone jack  
 connector pinout 9-1  
 location 2-6  
 microphone product description 1-3  
 microphone, spare part numbers 3-8, 3-15, 4-32  
 Mini Card bracket  
 removal 4-17  
 spare part number 3-7, 3-16  
 Mini Card compartment cover  
 location 2-10  
 spare part number 3-9  
 model name, location 3-1, 4-5  
 modem jack, connector pinout 9-4  
 modem module  
 product description 1-2  
 removal 4-37  
 spare part number 3-4, 3-12, 4-37  
 modem module cable  
 removal 4-37, 4-49  
 spare part numbers 4-37, 4-49  
 monitor port, connector pinout 9-2  
 mouse, spare part numbers 3-12  
 MultiBay blank, spare part number 3-13  
**N**  
 navigating in Setup Utility 5-2  
 network jack, connector pinout 9-5  
 num lock light 2-2  
 numeric keypad keys 2-4

**O**

- operating system product description 1–4
- optical drive
  - location 2–8
  - precautions 4–2
  - product description 1–2
  - removal 4–18
  - spare part numbers 3–7, 3–10, 4–18
  - specifications 6–4

**P**

- packing guidelines 4–3
- part number, location 3–1, 4–5
- passwords 5–3
- plastic parts 4–1
- Plastics Kit
  - contents 3–9
  - spare part number 3–4, 3–12, 4–8, 4–10
- pointing device
  - components 2–1
  - illustrated 2–1
  - product description 1–4
- ports
  - eSATA/USB 2–9
  - expansion 2–9
  - external monitor 2–9
  - HDMI 2–9
  - product description 1–3
  - USB 2–8
- power button 2–3
- power button board
  - removal 4–24
  - spare part number 3–7, 4–24
- power connector and cable
  - removal 4–44
  - spare part number 3–6, 3–12, 4–44
- power connector, location 2–8
- power cord
  - location 2–12
  - set requirements 10–1
  - spare part numbers 3–11, 3–13
- power light 2–2, 2–6
- power requirements product description 1–4
- power-on password 5–3
- processor
  - product description 1–1
  - removal 4–55
  - spare part numbers 3–7, 3–16
- Processor C6 State 5–4
- product description
  - audio 1–2
  - chipset 1–1
  - display panel 1–1

- docking 1–4
- Ethernet 1–3
- external media card 1–3
- graphics 1–1
- hard drive 1–2
- keyboard 1–4
- memory 1–2
- microphone 1–3
- modem 1–2
- operating system 1–4
- optical drive 1–2
- pointing device 1–4
- ports 1–3
- power requirements 1–4
- processor 1–1
- security 1–4
- serviceability 1–4
- webcam 1–3
- wireless 1–3
- product name 1–1, 4–5
- product name, location 3–1

**R**

- rear components 2–7
- recovery
  - full system 8–1, 8–5
  - programs or drivers 8–1
  - using the recovery discs 8–6
  - using the recovery partition 8–6
- recovery discs
  - creating 8–2
  - defined 8–1
  - performing a recovery 8–6
- Recovery Manager 8–1
- recovery partition
  - defined 8–1
  - performing a recovery 8–6
- recycling
  - battery 11–1
  - display components 11–1
- release latch, location 2–10
- remote control, spare part number 3–12
- removal/replacement
  - preliminaries 4–1
  - procedures 4–5
- restore points 8–1, 8–3, 8–4
- restoring default settings in Setup Utility 5–2
- RJ-11 (modem) jack
  - connector pinout 9–4
  - location 2–8
- RJ-45 (network) jack
  - connector pinout 9–5
  - location 2–9

- RTC battery
  - removal 4-12
  - spare part number 3-7, 3-12, 4-12
- Rubber Feet Kit, spare part number 3-12, 4-6
- Rubber Kit, spare part number 3-11, 3-12
- S**
- Screw Kit, spare part number 3-11, 3-12
- screw listing 7-1
- scroll zone, location 2-3
- secondary hard drive self test 5-4
- security cable slot 2-9
- Security menu, Setup Utility 5-3
- security product description 1-4
- selecting in Setup Utility 5-2
- serial number 3-1, 4-5
- service considerations 4-1
- service tag 3-1, 4-5
- serviceability product description 1-4
- Setup Utility
  - changing the language 5-1
  - Diagnostics menu 5-4
  - displaying system information 5-3
  - exiting 5-3
  - Main menu 5-3
  - menus 5-3
  - navigating and selecting 5-2
  - restoring default settings 5-2
  - Security menu 5-3
  - starting 5-1
  - System Configuration menu 5-4
  - using 5-1
- slots
  - ExpressCard 2-9
  - security cable 2-9
- solid-state drive (SSD) 8-1, 8-5, 8-6
- speaker assembly
  - removal 4-25
  - spare part number 3-3, 3-12, 4-25
- specifications
  - Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive 6-4
  - computer 6-1
  - display assembly 6-2, 6-3
  - DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe specifications 6-5
  - hard drive 6-3
  - optical drive 6-4, 6-5
  - system DMA 6-6
  - system I/O address 6-9
  - system interrupt 6-8
- system board
  - removal 4-46
  - spare part number 3-3, 3-16, 4-46
- System Configuration menu, Setup Utility 5-4
- system DMA specifications 6-6
- system I/O address specifications 6-9
- system information 5-3
- system interrupt specifications 6-8
- system recovery 8-1
- system restore points 8-1, 8-3, 8-4
- T**
- tools required 4-1
- top components 2-1
- top cover
  - removal 4-33
  - spare part number 3-15
  - spare part numbers 3-3, 4-33
- TouchPad 2-1
  - button 2-1
  - light 2-1
  - scroll zone 2-1
- TouchPad button 2-1
- TouchPad components, illustrated 2-1
- U**
- Universal Serial Bus (USB) port
  - connector pinout 9-6
  - location 2-8
- USB board
  - removal 4-42
  - spare part number 3-7, 3-12, 4-42
- USB board cable
  - removal 4-42
  - spare part number 3-7, 3-12
- V**
- vents, locations 2-7, 2-10
- Virtualization Technology 5-4
- volume down light 2-2
- volume mute button 2-3
- volume up light 2-2
- W**
- warranty period 4-5
- warranty period, location 3-1
- webcam 2-5
  - product description 1-3
  - spare part number 3-15
- webcam light 2-5
- webcam/microphone module
  - removal 4-32
  - spare part number 3-8, 3-15, 4-32
- Windows applications key 2-4
- Windows Backup and Restore 8-4

- Windows logo key 2-4
- wireless antenna 2-11
  - disconnecting 4-16
  - removal 4-31
  - spare part numbers 3-8, 3-13, 4-31
- wireless button 2-3
- wireless light 2-2
- wireless module compartment cover, removal 4-16
- wireless product description 1-3
- WLAN antennas, location 2-11
- WLAN module
  - removal 4-14
  - spare part numbers 3-4, 3-5, 3-6, 3-13, 3-14, 3-15, 4-14, 4-15
- workstation guidelines 4-3