



HP Pavilion dv7 Entertainment PC

Maintenance and Service Guide

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Second Edition: August 2010

First Edition: April 2010

Document Part Number: 597856-001
Revision A

Revision history

Revision	Publication date	Description
A	August 2010	<ul style="list-style-type: none">• Chapter 1 — added new descriptions for the following components:<ul style="list-style-type: none">◦ Hard drive◦ Processor◦ WLAN module• Chapter 3 and Chapter 4 — added new spare part numbers and descriptions for the following components:<ul style="list-style-type: none">◦ AC adapter◦ Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive◦ Hard drive◦ Processor◦ Remote control◦ System board◦ WLAN module

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).
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1 Product description

Category	Description
Product Name	HP Pavilion dv7 Entertainment PC
Processors	Intel® Core™ i7 processors
	Intel Core i7-840QM processor with 1.86-GHz, SC turbo up to 3.2-GHz, Quad 45W (select models only)
	Intel Core i7-820QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W (select models only)
	Intel Core i7-740QM processor with 1.73-GHz, SC turbo up to 2.93-GHz, Quad 45W (select models only)
	Intel Core i7-720QM processor with 1.6-GHz, SC turbo up to 2.8-GHz, Dual 45W (select models only)
	Intel Core i5 processors
	Intel Core i5-540M processor with 2.53-GHz, SC turbo up to 3.06-GHz, Dual 35W
	Intel Core i5-520M processor with 2.4-GHz, SC turbo up to 2.93-GHz, Dual 35W
	Intel Core i5-450M processor with 2.4-GHz, SC turbo, Dual 35W
	Intel Core i5-430M processor with 2.26-GHz, SC turbo up to 2.53-GHz, Dual 35W
	Intel Core i3 processors
	Intel Core i3-370M processor with 2.4-GHz, Dual 35W
	Intel Core i3-350M processor with 2.26-GHz, Dual 35W
	Intel Pentium® processors
	Intel Pentium P6200 2.13-GHz processor (1066-MHz, 3 MB L3 cache)
	Intel Pentium P6100 2.00-GHz processor (1066-MHz, 3 MB L3 cache)
	Intel Pentium P6000 processor with 1.86GHz, 1066MHz/3MB L3
Chipset	Intel HM55 Express
Graphics	Intel HD Graphics

Category	Description
	<p>Switchable discrete graphics memory (select models only)</p> <ul style="list-style-type: none"> ATI Mobility Radeon™ HD 5650 with 1024-MB (64-MB x 16 DDR3 x 800MHz x 8 PCs) ATI Mobility Radeon HD 5470 with 512-MB (64-MB x 16 DDR3 x 800MHz x 4 PCs)
	<p>Supports Blu-ray and/or HD-DVD playback with HD Decode, DX11 support and HDMI Support (select models only)</p>
Panels	<ul style="list-style-type: none"> 17.3-in, SVA HD+ (1600 x 900) LED BrightView 17.3-in, SVA HD+ (1600 x 900) LED AntiGlare Flush glass panel cover support Support for lighted logo on top bezel
Memory	<p>2 customer-accessible/upgradeable SODIMM slots</p> <p>DDR3, 1333-MHz</p> <p>Supports dual-channel support</p> <p>Supports up to 8 GB of system RAM in the following configurations</p> <ul style="list-style-type: none"> 8192-MB total system memory (4096-MB x 2, dual-channel) 6144-MB total system memory (2048-MB x 1 + 4096-MB x 1) 4096-MB total system memory (2048-MB x 2, dual-channel) 3072-MB total system memory (2048-MB x 1 + 1024-MB x 1) 2048-MB total system memory (1024-MB x 2, dual-channel) 2048-MB total system memory (2048-MB x 1)
Hard drives	<p>Supports all Serial ATA (SATA) 9.5-mm/12.5-mm, 6.35-cm (2.50-in) hard drives</p> <p>Supports up to 2 hard drives</p> <p>Support for solid-state drives (SSD)</p> <p>Support for HP ProtectSmart Hard Drive Protection</p> <p>Dual hard drive configurations:</p> <ul style="list-style-type: none"> 2-TB (1-TB, 5400-rpm x 2) 1500-GB (750-GB, 5400-rpm x 2) 1280-GB (640-GB, 5400-rpm x 2) 1000-GB (500-GB, 7200-rpm x 2) 640-GB (320-GB, 7200-rpm x 2) 500-GB (250-GB, 7200-rpm x 2) 160-GB SSD + 500-GB, 7200-rpm

Category	Description
	<p>Single hard drive configurations:</p> <ul style="list-style-type: none"> • 1-TB, 5400-rpm, 12.5 mm • 750-GB, 5400-rpm, 12.5 mm • 640-GB, 5400-rpm, 9.5 mm • 500-GB, 7200-rpm, 9.5 mm • 320-GB, 7200-rpm, 9.5 mm • 250-GB, 7200-rpm, 9.5 mm • 160-GB, SSD
Optical drives	<p>12.7-mm tray load</p> <p>Serial ATA</p> <p>Fixed (1 screw for removal)</p> <p>Support for the following optical drives:</p> <ul style="list-style-type: none"> • DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe • Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive
Webcam	<p>Low-light VGA camera</p> <p>Fixed (no tilt)</p> <p>Activity LED</p> <p>640 × 480 by 24 frames per second</p>
Microphone	<p>2 omnidirectional microphones, dual-array with appropriate software (supports beam forming, echo cancellation, and noise suppression)</p>
Audio	<p>HD Audio (IDT)</p> <p>Dolby advance audio</p> <p>Beats Audio</p> <p>Integrated subwoofer (select models only)</p> <p>Supports Microsoft® Premium Requirements</p> <p>Pavilion-branded Altec Lansing speakers</p>
Ethernet	<p>Integrated 10/100/1000 network interface card (NIC)</p>
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module:</p> <p>Atheros AR9285 802.11b/g/n module</p> <p>Broadcom 4312G 802.11b/g WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter</p> <p>Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)</p>

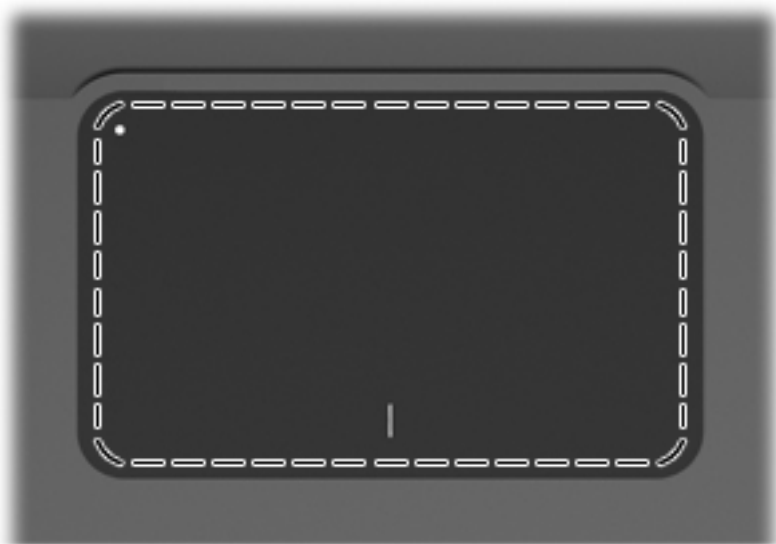
Category	Description
	Broadcom 4322 802.11a/b/g/n WLAN module
	Broadcom BCM94313 802.11b/g/n WLAN module
	Intel 1000 802.11b/g/n WLAN module
	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)
External media card	5-in-1 Digital Media Reader
	Digital Media Slot supports Secure Digital (SD) Memory Card, MultiMediaCard (MMC), Secure Digital High Capacity (SDHC), Memory Stick (MS), Memory Stick Pro (MSP), xD Picture Card (XD)
Internal media card	One half-size mini-card slot for WLAN
Ports	Audio-in (stereo microphone)
	Headphone/line out
	eSATA (combined with USB)
	High-Definition Multimedia Interface (HDMI) v1.3 supporting 1080p and 1920x1080 at 60Hz and 1920x1200 at 60Hz DVI Mode
	Hot Plug/Unplug and auto detect for correct output to wide-aspect
	RJ-45 (Ethernet, includes link and activity lights)
	USB 2.0 (three ports)
	VGA (Dsub 15-pin) <ul style="list-style-type: none"> • 1600 x 1200 external resolution at 75Hz • 1920 x 1200 external resolution at 75Hz
	AC Smart Pin adapter
Keyboard/pointing devices	17-in full-size keyboard with numeric keypad
	Dura-coat, Island style
	Mylar clickpad cover
	Clickpad
	TouchPad supports 2-way scrolling
	Multitouch gestures enabled as default
	Taps enabled as default
Power requirements	6-cell 2.55-Ah Li-ion battery
	6-cell 2.8-Ah Li-ion battery
	9-cell 2.8-Ah Li-ion battery
	120-W AC adapter (select models only)
	90-W AC adapter (discrete models)

Category	Description
	65-W AC adapter (select models only)
Security	Kensington security lock
	Fingerprint reader with Digital Persona software support (select models only)
Operating system	Preinstalled:
	Windows® 7 Professional (32 and 64 bit)
	Windows 7 Home Premium (32 and 64 bit)
	Windows 7 Home Basic (32 and 64 bit)
Serviceability	AC adapter
	Battery (system)
	Hard drives (2)
	Memory module
	Optical drive
	WLAN module

2 Components

Top components

TouchPad

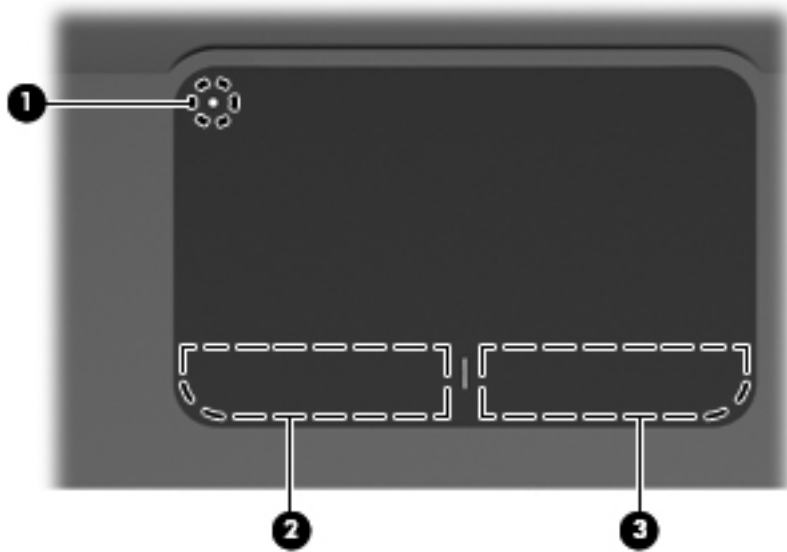


Component	Function
TouchPad	Moves the pointer and selects or activates items on the screen.

To view or change the pointing device preferences:

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

TouchPad buttons

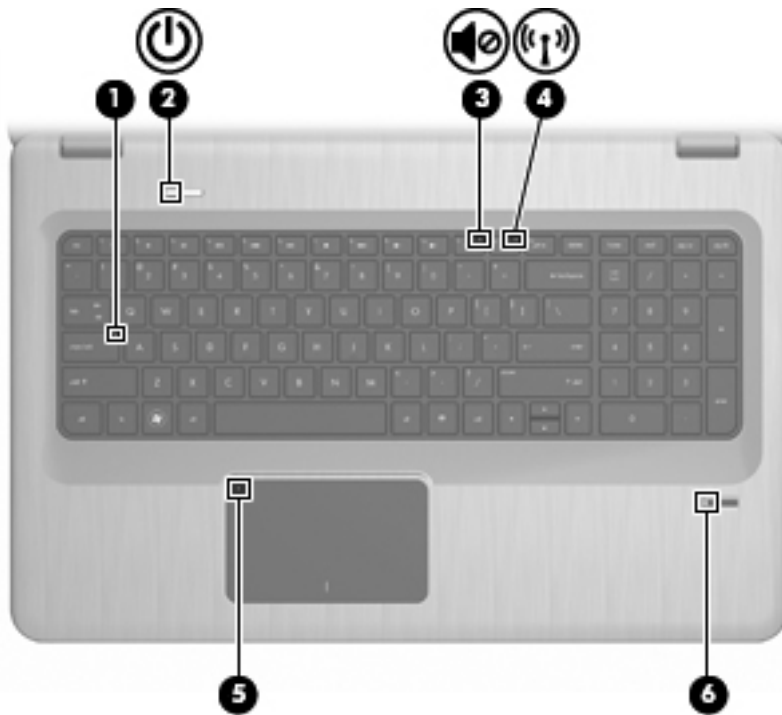


Item	Description	Function
1	TouchPad On/Off button	Turns the TouchPad on and off. Press and hold the button for two seconds to turn the TouchPad on and off.
2	Left TouchPad button	Functions like the left button on an external mouse.
3	Right TouchPad button	Functions like the right button on an external mouse.

To view or change pointing device preferences:

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

Lights



Item	Description	Function
1	Caps Lock light	On—The Caps Lock is on.
2	Power light	<ul style="list-style-type: none">• On—The computer is on.• Flashing—The computer is in Sleep.• Off—The computer is off or in Hibernation.
3	Volume Mute light	Amber—The computer sound is off.
4	Wireless light	<ul style="list-style-type: none">• White—An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is detected.• Amber—No wireless devices are detected.
5	TouchPad light	Amber—The TouchPad is disabled.
6	Fingerprint Reader light	<ul style="list-style-type: none">• White—The fingerprint was read.• Amber—The fingerprint was not read.

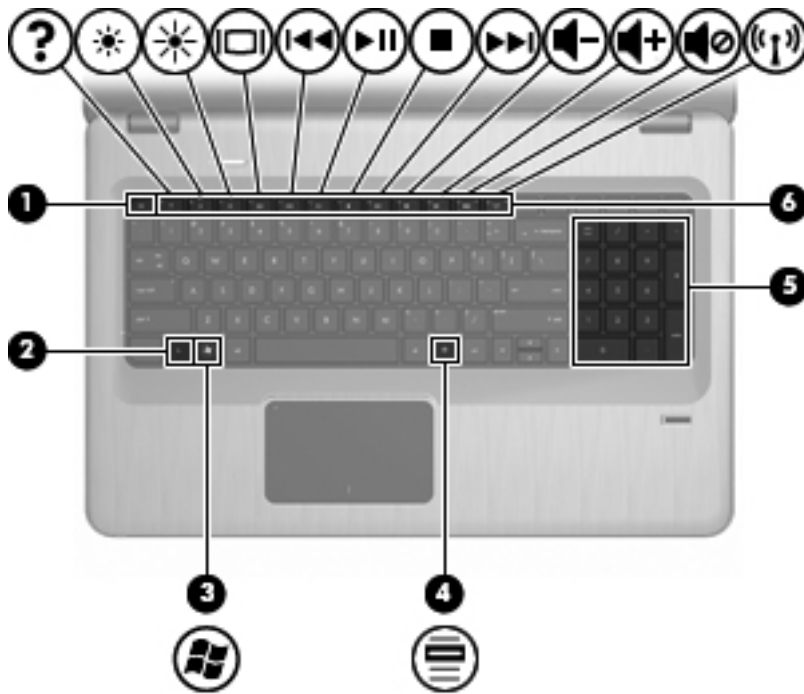
Buttons and Fingerprint Reader (select models only)



Item	Description	Function
1	Power button	<p>Press the Power button to:</p> <ul style="list-style-type: none">• Turn on the computer.• Initiate Sleep.• Exit Sleep.• Exit Hibernation. <p>If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the Power button for at least 5 seconds to shut down the computer.</p> <p>For more information about the power settings, select Start > Control Panel > System and Security > Power Options.</p>
2	Fingerprint Reader (select models only)	<p>Allows a fingerprint logon to Windows, instead of a password logon.</p>

This table describes the factory settings. For information about changing the factory settings, see Help and Support.

Keys



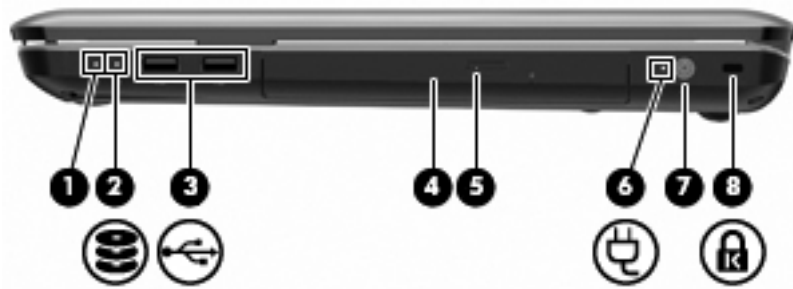
Item	Description	Function
1	esc key	Press the esc and fn keys at the same time to display system information.
2	fn key	Press the at the same time as a function key or the esc key to execute frequently used system functions.
3	Windows Logo key	Displays the Windows Start menu.
4	Windows Applications key	Displays a shortcut menu for items beneath the cursor.
5	Integrated numeric keypad	Functions like the keys on an external numeric keypad.
6	Function keys	Press a function key and the fn key at the same time to execute frequently used system functions.

Front components



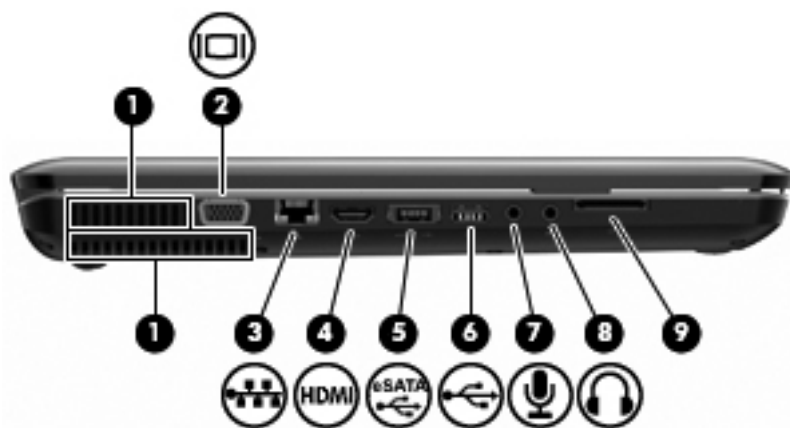
Description	Function
Speakers	Produce sound.

Right-side components



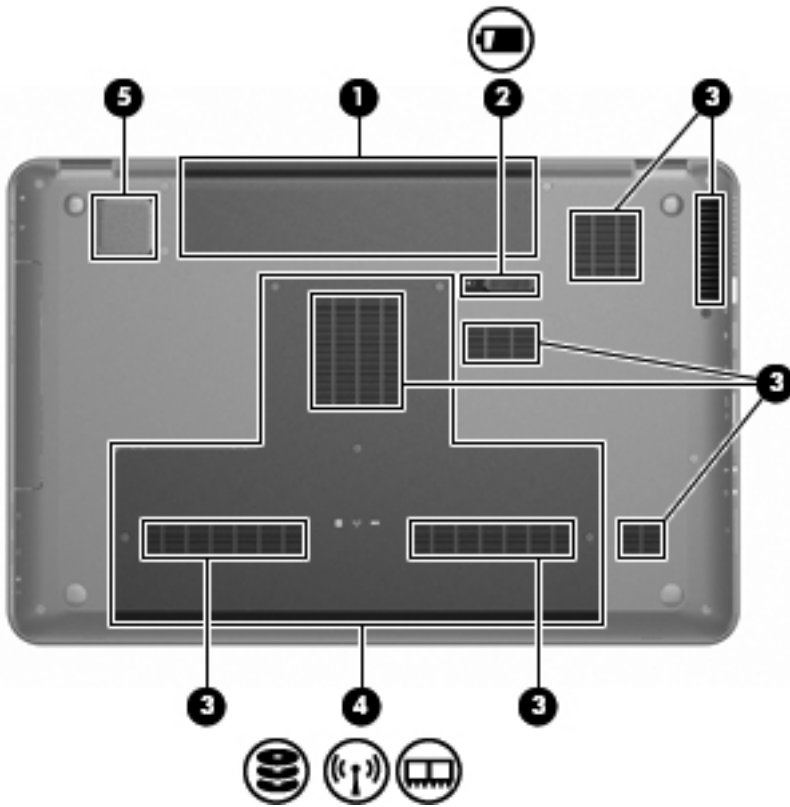
Item	Description	Function
1	Power light	<ul style="list-style-type: none"> On—The computer is on. Flashing—The computer is in Sleep. Off—The computer is off or in Hibernation.
2	Hard Disk Drive light	<ul style="list-style-type: none"> White—The hard disk drive is active. Amber—The hard disk drive is parked.
3	USB ports (2)	Connect optional USB devices.
4	Optical Drive light	Flashing—Accessing the optical drive.
5	Optical drive	Reads optical discs and, on select models, writes to optical discs.
6	AC Adapter light	<ul style="list-style-type: none"> On—The computer is connected to external power. Off—The computer is not connected to external power.
7	Power connector	Connects an AC adapter.
8	Security Cable slot	Connects an optional security cable. The security cable is designed to act as a deterrent, but might not prevent the computer from being mishandled or stolen.

Left-side components



Item	Description	Function
1	Vents (2)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
2	External Monitor port	Connects an external VGA monitor or projector.
3	RJ-45 (network) jack	Connects a network cable.
4	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
5	eSATA/USB port (select models only)	Connects an optional high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device. NOTE: Depending on the computer model, the computer might include only a USB port.
6	USB port	Connects an optional USB device.
7	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, monarural microphone.
8	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
9	SD card reader	Reads SD cards that are inserted into the reader.

Bottom components



Item	Description	Function
1	Battery bay	Holds the battery.
2	Battery Release latch	Releases the battery from the battery bay.
3	Vents (7)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
4	Primary Hard Drive bay	Holds the primary hard drive, the memory module, and the WLAN module (select models only). CAUTION: To prevent an unresponsive system, replace the wireless module with a wireless module authorized for use 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.
5	Integrated subwoofer	Provides superior bass sound.


Display components



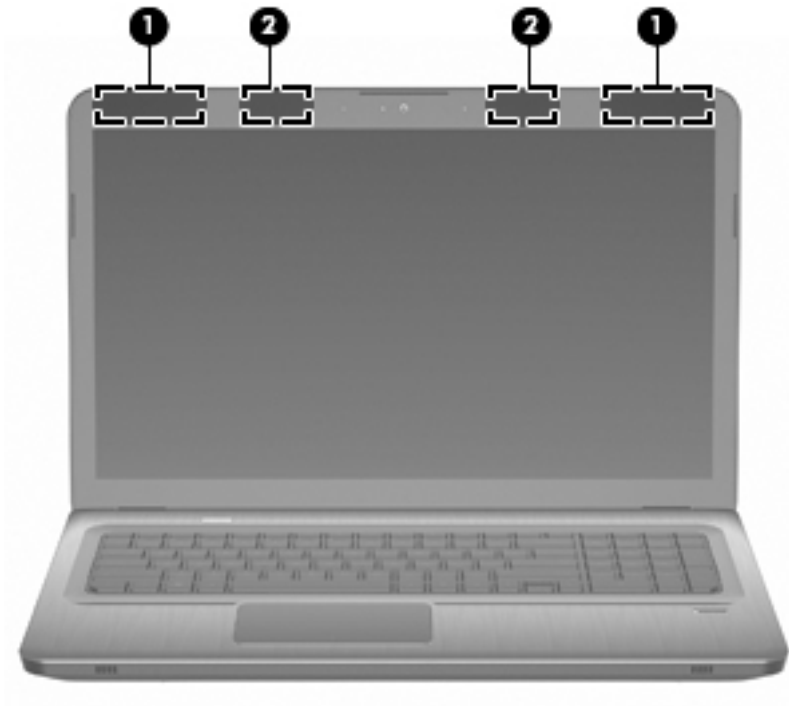
Item	Description	Function
1	Internal microphones (2)	Record sound.
2	Webcam light	On—The webcam is in use.
3	Webcam	Records video, and captures still photographs.

Wireless antennas (select models only)

On select computer models, at least two antennas (**1, 2**) send and receive signals from one or more wireless devices. These antennas are not visible from the outside of the computer.

 **NOTE:** For optimal transmission, keep the areas immediately around the antennas free from obstructions.

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



Additional hardware components



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

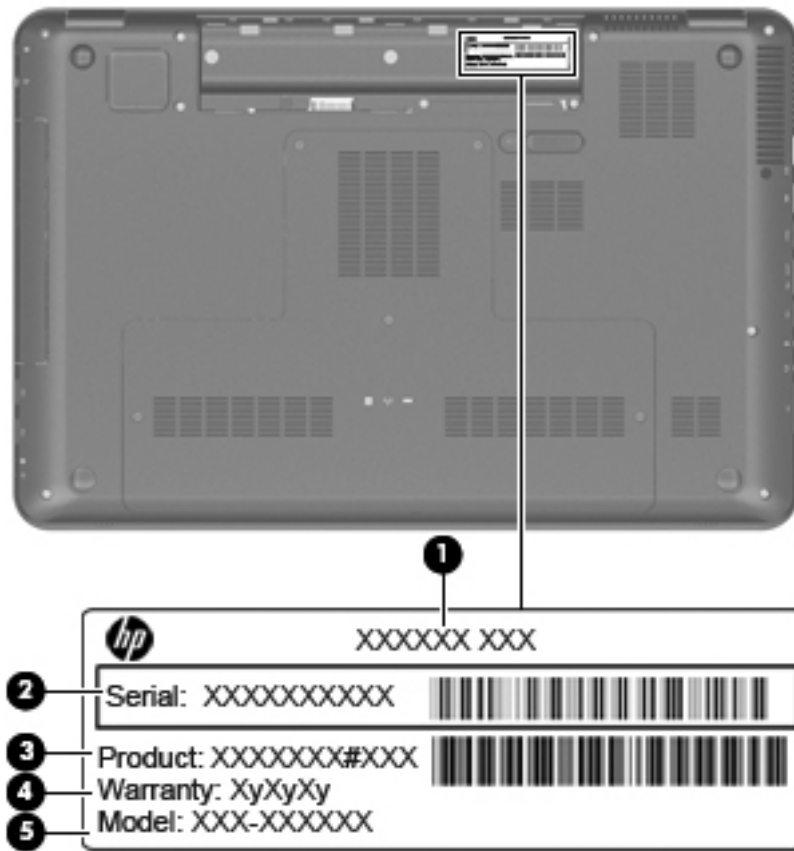
* Batteries and power cords vary in appearance by region and country.

3 Illustrated parts catalog

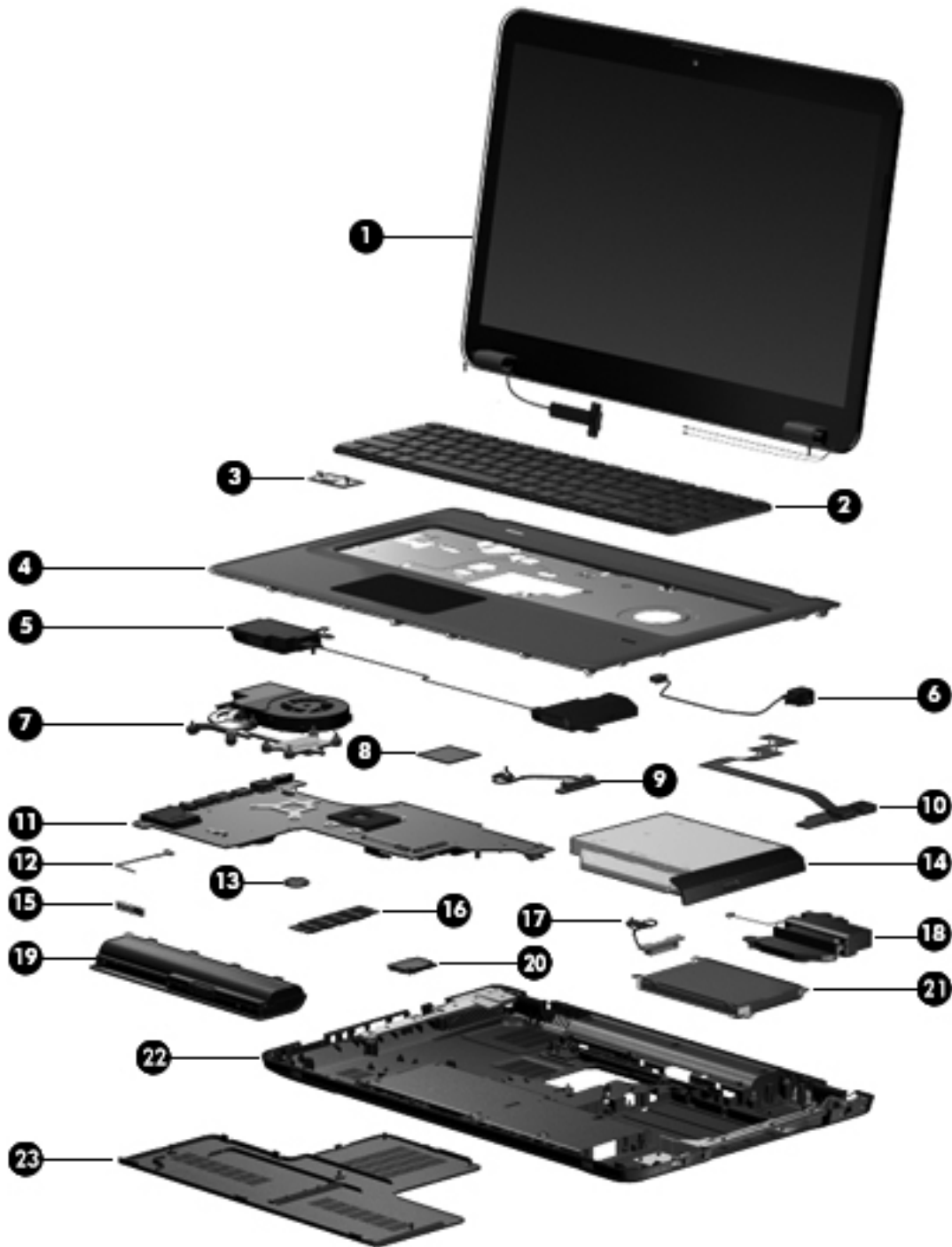
Service tag

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

- (1)** Product name: This is the product name affixed to the front of the computer.
- (2)** Serial number (s/n): This is 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 what components and parts are needed.
- (4)** Warranty period: This number describes the duration of the warranty period for the computer.
- (5)** Model description: This is the alphanumeric identifier needed to locate documents, drivers, and support for the computer.



Computer major components



Item	Description	Spare part number
(1)	17.3-in display assembly:	
	HD+ AntiGlare display assembly with webcam and 2 microphones for use on computer models equipped with a flush glass display assembly	605325-001

Item	Description	Spare part number
	HD+ BrightView display assembly with webcam and 2 microphones for use on computer models equipped with a standard display assembly in black	605327-001
	HD+ BrightView display assembly with webcam and 2 microphones for use on computer models equipped with a standard display assembly in silver	605324-001
	HD+ Brightview display assembly with webcam and 2 microphones for use on computer models equipped with a standard display assembly in white	609788-001
	NOTE: See Display assembly components on page 26 for more information on display assembly spare part numbers.	
(2)	Keyboard (includes keyboard cable)	605344-xxx
	NOTE: For a detailed list of available keyboards, see Sequential part number listing on page 31 .	
(3)	Power button board (includes cable)	605358-001
(4)	Top cover (includes TouchPad and TouchPad buttons):	
	For use only with silver computer models equipped with a fingerprint reader, and includes a fingerprint reader board	605346-001
	For use only with black computer models not equipped with a fingerprint reader	605347-001
	For use only with white computer models not equipped with a fingerprint reader	609789-001
(5)	Speaker assembly	605356-001
(6)	Power connector and cable	605364-001
(7)	Fan/heat sink assembly (includes replacement thermal material):	
	For use only with computer models equipped with graphics subsystems with UMA memory	603690-001
	For use only with computer models equipped with ATI Mobility Radeon HD 5470 graphics subsystems with discrete memory	604787-001
	For use only with computer models equipped with ATI Mobility Radeon HD 5650 graphics subsystems with discrete memory	603691-001
(8)	Processor (includes replacement thermal material):	
	Intel Core i7-840QM processor with 1.86-GHz, SC turbo up to 3.06-GHz, Quad 45W	612260-001
	Intel Core i7-820QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W	583053-001
	Intel Core i7-740QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W	612259-001
	Intel Core i7-720QM processor with 1.6-GHz, SC turbo up to 2.8-GHz, Dual 45W	586170-001
	Intel Core i5-540M processor with 2.53-GHz, SC turbo up to 3.06-GHz, Dual 35W	594188-001
	Intel Core i5-520M processor with 2.4-GHz, SC turbo up to 2.93-GHz, Dual 35W	594187-001
	Intel Core i5-450M processor with 2.40-GHz, SC turbo up to 2.53-GHz, Dual 35W	613585-001

Item	Description	Spare part number
	Intel Core i5-430M processor with 2.26-GHz, SC turbo up to 2.53-GHz, Dual 35W	597624-001
	Intel Core i3-370M processor with 2.40-GHz, SC turbo up to 2.53-GHz, Dual 35W	613584-001
	Intel Core i3 350M processor 2.26-GHz, Dual 35W	597623-001
	Intel Pentium P6200 2.13-GHz processor (1066-MHz, 3 MB L3 cache)	625831-001
	Intel Pentium P6100 2.00-GHz processor (1066-MHz, 3 MB L3 cache)	613587-001
	Intel Pentium P6000 1.86-GHz processor (1066-MHz, 3 MB L3 cache)	613586-001
(9)	Optical drive connector	603680-001
(10)	USB board (includes cable)	605348-001
(11)	System board (includes replacement thermal material):	
	With ATI Mobility Radeon HD 6550 discrete graphics subsystem, 1-GB of dedicated memory (Quad Core), and subwoofer v.1.2	630979-001
	With ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Quad Core), but without subwoofer	630978-001
	With ATI Mobility Radeon HD 6550 discrete graphics subsystem, 1-GB of dedicated memory (Dual Core), and subwoofer v.1.2	630981-001
	With ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Dual Core), but without subwoofer	630980-001
	With ATI Mobility Radeon HD 6370 discrete graphics subsystem, 512-MB of dedicated memory (Quad Core), and subwoofer v.1.2	630983-001
	With ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Quad Core), but without subwoofer	630982-001
	With ATI Mobility Radeon HD 6370 discrete graphics subsystem, 512-MB of dedicated memory (Dual Core), and subwoofer v.1.2	630985-001
	With ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core), but without subwoofer	630984-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem, 1-GB of dedicated memory (Quad Core), and subwoofer v.1.1	615313-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad Core), but not subwoofer	615309-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem, 1-GB of dedicated memory (Dual Core), and subwoofer v.1.1	615314-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual Core), but no subwoofer	615310-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad core) and v.1.0 subwoofer	615307-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual core) and v.1.0 subwoofer	615308-001
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad core)	605320-001

Item	Description	Spare part number
	With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual core)	605321-001
	With ATI Mobility Radeon HD 5470 discrete graphics subsystem, 512-MB of dedicated memory (Dual Core), and subwoofer v.1.1	615315-001
	With ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core), but no subwoofer	615312-001
	With ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core) and v.1.0 subwoofer	609787-001
	With ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core)	605319-001
	With Intel HM55 HD UMA graphics subsystem and shared memory and v.1.1 subwoofer	615311-001
	With Intel HM55 HD UMA graphics subsystem and shared memory and v.1.0 subwoofer	605322-001
(12)	Bluetooth module cable	605323-001
(13)	RTC battery	599516-001
(14)	Optical drive (includes bezel and bracket):	
	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive	616978-001
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive	605416-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	605417-001
(15)	Bluetooth module (does not include a Bluetooth module cable)	537921-001
(16)	Memory modules DDR3, 1333-MHz:	
	1-GB memory module	598859-001
	2-GB memory module	598856-001
	4-GB memory module	599092-001
(17)	Hard drive cable	605415-001
(18)	Subwoofer	605357-001
(19)	Battery:	
	6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models	593554-001
	6-cell, 62-Wh, 2.8-Ah Li-ion battery for use with all computer models	593562-001
	9-cell, 93-Wh, 2.8-Ah Li-ion battery for use with all computer models	593550-001
(20)	WLAN module:	

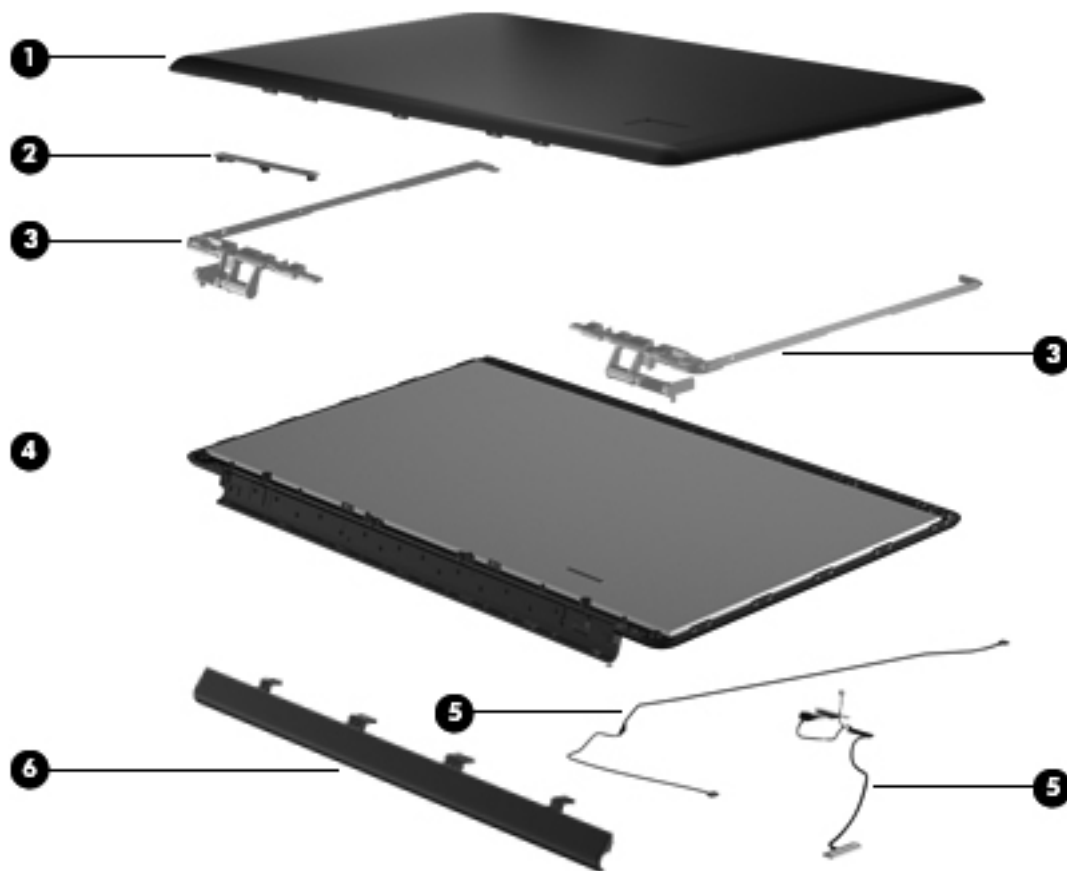
Item	Description	Spare part number
	Atheros AR9285 802.11b/g/n module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cayman Islands, Canada, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, 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, Guam, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Nether Antilles, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Gren, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, the United States, Uzbekistan, US Virgin Islands, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, Zimbabwe	605560-005
	Broadcom 4312G 802.11b/g WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter	619997-001
	Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)	600370-001
	Broadcom 4322 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Canada, Guinea, Haiti, Jamaica, Guam, Nether Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, and the United States	582564-001

Item	Description	Spare part number
	Broadcom 4322 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Cayman Islands, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, 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-Bissau, Guyana, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe	582564-002
	Broadcom BCM94313 802.11b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Cayman Islands, Chile, People's Republic of China Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, 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, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, Nether Antilles, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, USA, Uzbekistan, US Virgin Islands, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, Zimbabwe	593836-001

Item	Description	Spare part number
	Intel 1000 802.11b/g/n WLAN module for use in Andorra, Antigua, Barbuda, Argentina, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Barbados, Belgium, Bolivia, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Canada, Chile, People's Republic of China, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kenya, South Korea, Kuwait, Kyrgyzstan, Latvia, Lebanon, Nether Antilles, Martinique, Guadeloupe, French Guiana, Cayman Islands, Bermuda, Aruba, Puerto Rico, Guam, US Virgin Islands, Liechtenstein, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Monaco, Montenegro, Morocco, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, USA, Venezuela, Vietnam	593530-001
	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)	602992-001
(21)	Hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators):	
	1-TB, 5400-rpm	603788-001
	750-GB, 5400-rpm	603787-001
	640-GB, 5400-rpm	603785-001
	500-GB, 7200-rpm	603784-001
	320-GB, 7200-rpm	603783-001
	250-GB, 7200-rpm	605606-001
	160-GB solid-state drive (SSD)	603781-001
	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	605415-001
(22)	Base enclosure (includes rubber feet)	605345-001
	Base enclosure for use with silver computer models (includes rubber feet)	615443-001
(23)	Primary hard drive cover	605360-001

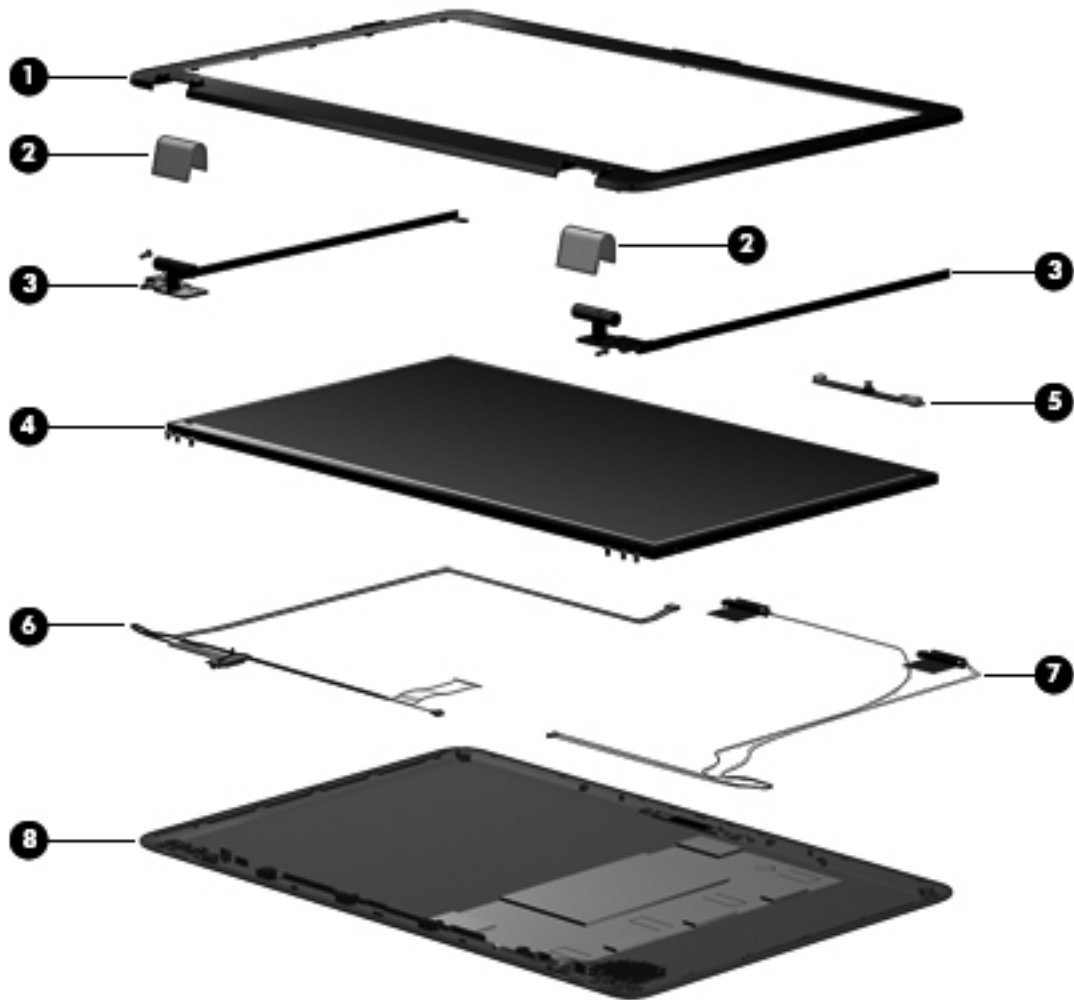
Display assembly components

Flush glass display assembly spare parts



Item	Description	Spare part number
(1)	Display enclosure (includes wireless antenna transceivers and cables and logo LED board and cable)	605330-001
(2)	Webcam/microphone module	603660-001
(3)	Display Hinge Kit (includes right and left hinges)	605334-001
(4)	Flush glass display assembly (includes display panel cable)	605325-001
(5)	Display Cable Kit (includes display panel cable, and Webcam cable)	605333-001
(6)	Display hinge cover	605336-001
	Display Screw Kit (not illustrated)	611251-001

Standard display assembly spare parts



Item	Description	Spare part number
(1)	Display bezel	
	For use in silver computer models	605340-001
	For use in all other computer models	615442-001
(2)	Display hinge cover	605343-001
(3)	Display Hinge Kit (includes left and right hinges)	605342-001
(4)	Display panel (includes display panel cable)	605337-001
(5)	Webcam/microphone module	605335-001
(6)	Display Cable Kit (includes display panel cable and Webcam cable)	605333-001
(7)	Wireless antenna (select models only)	605359-001
(8)	Display enclosure	
	For use on silver computer models	605338-001

Item	Description	Spare part number
	For use on white computer models	605339-001
	For use on black computer models	605331-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	605341-001
	Display Screw Kit (not illustrated)	605332-001

Mass storage devices



Item	Description	Spare part number
(1)	Optical drive (includes bezel and bracket)	
	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive	616978-001
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive	605416-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	605417-001
(2)	Hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators):	
	• 1-TB, 5400-rpm	603788-001
	• 750-GB, 5400-rpm	603787-001
	• 640-GB, 5400-rpm	603785-001
	• 500-GB, 7200-rpm	603784-001
	• 320-GB, 7200-rpm	603783-001
	• 250-GB, 7200-rpm	605606-001
	• 160-GB, SSD	603781-001
	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	605415-001

Miscellaneous parts

Description	Spare part number
AC adapter:	
120-W HP Smart AC adapter PFC RC V	613154-001
90-W HP Smart AC adapter PFC RC V	613153-001
90-W HP Smart AC adapter PFC RC V EM	613160-001
65-W HP Smart AC adapter PFC RC V	613152-001
65-W HP Smart AC adapter PFC RC V EM	613161-001
Power cord:	
Australia and New Zealand	490371-011
Belgium, Bulgaria, the Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, the Netherlands, northwest Africa, Norway, Poland, Portugal, Russia, Slovakia, Spain, Sweden, and Turkey	490371-021
Asia/Pacific region, French Canada, Latin America, Thailand, and the United States	490371-001
Brazil	490371-201
Denmark	490371-081
India	490371-D61
Israel	490371-BB1
Italy	490371-061
Japan	490371-291
South Africa	490371-AR1
South Korea	490371-AD1
Switzerland	490371-111
Taiwan	490371-AB1
The United Kingdom and Hong Kong	490371-031
Full-function remote control with teletext	465541-004
Rubber feet	605644-001
DVB-T TV tuner	581222-001

Description	Spare part number
DVB-T antenna	581223-001
Screw Kit	605643-001
<ul style="list-style-type: none"> • Phillips PM2.5×6.5 screw • Phillips PM2.5×5.0 screw • Phillips PM2.5×4.0 screw • Phillips PM2.5×3.0 screw • Phillips PM2.5×1.5 screw • Phillips PM2.0×3.0 screw • Phillips PM2.0×1.5 screw 	

Sequential part number listing

Spare part number	Description
465541-004	Full-function remote control with teletext
490371-001	Power cord for use in the Asia/Pacific region, French Canada, Latin America, Thailand, and the United States
490371-011	Power cord for use in Australia and New Zealand
490371-021	Power cord for use in Belgium, Bulgaria, the Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, the Netherlands, northwest Africa, Norway, Poland, Portugal, Russia, Slovakia, Spain, Sweden, and Turkey
490371-031	Power cord for use in the United Kingdom and Hong Kong
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Brazil
490371-291	Power cord for use in Japan
490371-AB1	Power cord for use in the Taiwan
490371-AD1	Power cord for use in South Korea
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D61	Power cord for use in India
537921-001	Bluetooth module (does not include a Bluetooth module cable)
581222-001	TV tuner, DVB-T

Spare part number	Description
581223-001	Antenna, DVB-T
582564-001	Broadcom 4322 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Canada, Guinea, Haiti, Jamaica, Guam, Nether Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, and the United States
582564-002	Broadcom 4322 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Cayman Islands, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, 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-Bissau, Guyana, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe
583053-001	Intel Core i7 820QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W (select models only)
586170-001	Intel Core i7 720QM processor with 1.6-GHz, SC turbo up to 2.8-GHz, Dual 45W (select models only)
593530-001	Intel 1000 802.11b/g/n WLAN module for use in Andorra, Antigua, Barbuda, Argentina, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Barbados, Belgium, Bolivia, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Canada, Chile, People's Republic of China, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kenya, South Korea, Kuwait, Kyrgyzstan, Latvia, Lebanon, Nether Antilles, Martinique, Guadeloupe, French Guiana, Cayman Islands, Bermuda, Aruba, Puerto Rico, Guam, US Virgin Islands, Liechtenstein, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Monaco, Montenegro, Morocco, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, USA, Venezuela, Vietnam
593550-001	9-cell, 93-Wh, 2.8-Ah Li-ion battery for use with all computer models
593554-001	6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models
593562-001	6-cell, 62-Wh, 2.8-Ah Li-ion battery for use with all computer models

Spare part number	Description
593836-001	Broadcom BCM94313 802.11b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Cayman Islands, Chile, People's Republic of China Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, 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, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, Nether Antilles, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, USA, Uzbekistan, US Virgin Islands, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, Zimbabwe
594187-001	Intel Core i5 520M processor with 2.4-GHz, SC turbo up to 2.93-GHz, Dual 35W
594188-001	Intel Core i5 540M processor with 2.53-GHz, SC turbo up to 3.06-GHz, Dual 35W
597623-001	Intel Core i3 350M processor with 2.26-GHz, Dual 35W
597624-001	Intel Core i5 430M processor with 2.26-GHz, SC turbo up to 2.53-GHz, Dual 35W
598856-001	2-GB memory module
598859-001	1-GB memory module
599092-001	4-GB memory module
599516-001	RTC battery
600370-001	Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)
602992-001	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)
603660-001	Webcam/microphone module
603680-001	Optical drive cable
603690-001	Fan/heat sink assembly for use only with computer models equipped with graphics subsystems with UMA memory (includes replacement thermal material)
603691-001	Fan/heat sink assembly for use only with computer models equipped with graphics subsystems with discrete memory (includes replacement thermal material)
603781-001	160-GB solid-state drive
603783-001	320-GB, 7200-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)

Spare part number	Description
603784-001	500-GB, 7200-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
603785-001	640-GB, 5400-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
603787-001	750-GB, 5400-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
603788-001	1-TB, 5400-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
604787-001	Fan/heat sink assembly for use only with computer models equipped with discrete memory
605319-001	System board with ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core), but no subwoofer
605320-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad core), but no subwoofer
605321-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual core), but no subwoofer
605322-001	System board with Intel HM55 HD UMA graphics subsystem and shared memory, but no subwoofer
605323-001	Bluetooth module cable
605324-001	17.3-inch HD+ standard display assembly with webcam and 2 microphones for use in silver computers (includes wireless antenna transceivers and cables)
605325-001	17.3-inch HD+ flush glass AntiGlare display assembly with webcam and 2 microphones for use in silver computers
605327-001	17.3-inch HD+ standard display assembly with webcam and 2 microphones for use in black computers
605330-001	Display enclosure for use with flush glass displays in silver computers (includes wireless antenna transceivers and cables and logo LED board and cable)
605331-001	Display enclosure for use with standard displays in black computers (includes wireless antenna transceivers and cables and logo LED board and cable)
605332-001	Display Screw Kit
605333-001	Display Cable Kit (includes display panel cable, and Webcam cable)
605334-001	Display Hinge Kit (includes right and left hinges) for use with flush glass displays
605336-001	Display hinge cover for use with flush glass displays
605337-001	BrightView display panel (includes display panel cable)
605338-001	Display enclosure for use in silver computer models with standard displays (includes wireless antenna transceivers and cables and logo LED board and cable)
605339-001	Display enclosure for use in white computer models with standard displays (includes wireless antenna transceivers and cables and logo LED board and cable)
605340-001	Display bezel for use with standard displays
605341-001	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)

Spare part number	Description
605342-001	Display Hinge Kit (includes left and right hinges) for standard displays
605343-001	Display hinge cover for standard displays
605344-001	Keyboard for use in the United States
605344-031	Keyboard for use in the United Kingdom
605344-041	Keyboard for use in Germany
605344-051	Keyboard for use in France
605344-061	Keyboard for use in Italy
605344-071	Keyboard for use in Spain
605344-121	Keyboard for use in French Canada
605344-131	Keyboard for use in Portugal
605344-141	Keyboard for use in Turkey
605344-171	Keyboard for use in Saudi Arabia
605344-211	Keyboard for use in Hungary
605344-221	Keyboard for use in the Czech Republic
605344-251	Keyboard for use in Russia
605344-281	Keyboard for use in Thailand
605344-291	Keyboard for use in Japan
605344-A41	Keyboard for use in Belgium
605344-AB1	Keyboard for use in Taiwan
605344-AD1	Keyboard for use in South Korea
605344-B31	Keyboard for use internationally
605334-BA1	Keyboard for use Slovenia
605344-BB1	Keyboard for use in white computers in Israel
605344-BG1	Keyboard for use in Switzerland
605344-DH1	Keyboard for use in Denmark, Norway, and Sweden
605344-DJ1	Keyboard for use in Greece
605345-001	Base enclosure (includes rubber feet)
605346-001	Top cover for use only with silver computer models equipped with a fingerprint reader; and includes fingerprint reader board (includes TouchPad and TouchPad buttons)
605347-001	Top cover for use only with black computer models not equipped with a fingerprint reader
605348-001	USB board (includes cable)
605356-001	Speaker assembly

Spare part number	Description
605357-001	Subwoofer
605358-001	Power button board (includes cable)
605359-001	Wireless antenna
605360-001	Plastic Kit
605364-001	Power connector and cable
605415-001	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
605416-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
605417-001	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive
605560-005	Atheros AR9285 802.11b/g/n module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cayman Islands, Canada, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, 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, Guam, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Nether Antilles, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Gren, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, the United States, Uzbekistan, US Virgin Islands, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, Zimbabwe
605606-001	250-GB, 7200-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
605643-001	Screw kit
605644-001	Rubber feet
609787-001	System board for ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core) and subwoofer v.1.0
609788-001	17.3-inch HD+ standard display assembly with webcam and 2 microphones for use in white computers
609789-001	Top cover for use only with white computer models not equipped with a fingerprint reader
611251-001	Display Screw Kit for Flush glass display
612259-001	Intel Core i7-740QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W (includes replacement thermal material)

Spare part number	Description
612260-001	Intel Core i7-840QM processor with 1.86-GHz, SC turbo up to 3.06-GHz, Quad 45W (includes replacement thermal material)
613152-001	65-W HP Smart AC adapter PFC RC V
613153-001	90-W HP Smart AC adapter PFC RC V
613154-001	120-W HP Smart AC adapter PFC RC V
613160-001	90-W HP Smart AC adapter PFC RC V EM
613161-001	65-W HP Smart AC adapter PFC RC V EM
613584-001	Intel Core i3-370M processor with 2.40-GHz, SC turbo up to 2.53-GHz, Dual 35W (includes replacement thermal material)
613585-001	Intel Core i5-450M processor with 2.40-GHz, SC turbo up to 2.53-GHz, Dual 35W (includes replacement thermal material)
613586-001	Intel Pentium P6000 1.86-GHz processor (1066-MHz, 3 MB L3 cache, includes replacement thermal material)
613587-001	Intel Pentium P6100 2.00-GHz processor (1066-MHz, 3 MB L3 cache, includes replacement thermal material)
615307-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem with 1-GB of dedicated memory (Quad core) and subwoofer v.1.0 (includes replacement thermal material)
615308-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem with 1-GB of dedicated memory (Dual core) and subwoofer v.1.0 (includes replacement thermal material)
615309-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem with 1-GB of dedicated memory (Quad core) but no subwoofer (includes replacement thermal material)
615310-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem with 1-GB of dedicated memory (Dual core) but no subwoofer (includes replacement thermal material)
615311-001	System board with Intel HM55 HD UMA graphics subsystem shared memory and v.1.1 subwoofer (includes replacement thermal material)
615312-001	System board with ATI Mobility Radeon HD 5470 discrete graphics subsystem with 512-MB of dedicated memory (Quad core) and subwoofer v.1.1 (includes replacement thermal material)
615313-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem with 1-GB of dedicated memory (Dual core) and subwoofer v.1.1 (includes replacement thermal material)
615314-001	System board with ATI Mobility Radeon HD 5650 discrete graphics subsystem with 1-GB of dedicated memory (Dual core) and subwoofer v.1.1 (includes replacement thermal material)
615315-001	System board with ATI Mobility Radeon HD 5470 discrete graphics subsystem with 512-MB of dedicated memory (Dual core) and subwoofer v.1.1 (includes replacement thermal material)
615442-001	Display bezel for use on standard display assemblies
615443-001	Base enclosure (includes rubber feet) for use only with silver computer models
616978-001	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive
619997-001	Broadcom 4312G 802.11b/g WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter

Spare part number	Description
625831-001	Intel Pentium P6200 2.13-GHz processor (1066-MHz, 3 MB L3 cache; includes replacement thermal material)
630978-001	System board with ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Quad Core), but without subwoofer (includes replacement thermal material)
630979-001	System board with ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Quad Core) and subwoofer v.1.2 (includes replacement thermal material)
630980-001	System board with ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Dual Core), but without subwoofer (includes replacement thermal material)
630981-001	System board with ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Dual Core) and subwoofer v.1.2 (includes replacement thermal material)
630982-001	System board with ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Quad Core), but without subwoofer (includes replacement thermal material)
630983-001	System board with ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Quad Core) and subwoofer v.1.2 (includes replacement thermal material)
630984-001	System board with ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core), but without subwoofer (includes replacement thermal material)
630985-001	System board with ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core) and subwoofer v.1.2 (includes replacement thermal material)

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

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


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

Service considerations

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

 **NOTE:** 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 can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

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

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. 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, observe these precautions:

Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before 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 may have occurred.

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

△ **CAUTION:** To prevent damage to the computer when you are removing or installing internal components, observe these precautions:

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.

Typical electrostatic voltage levels

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

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.
- Turn off 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.

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

Component replacement procedures

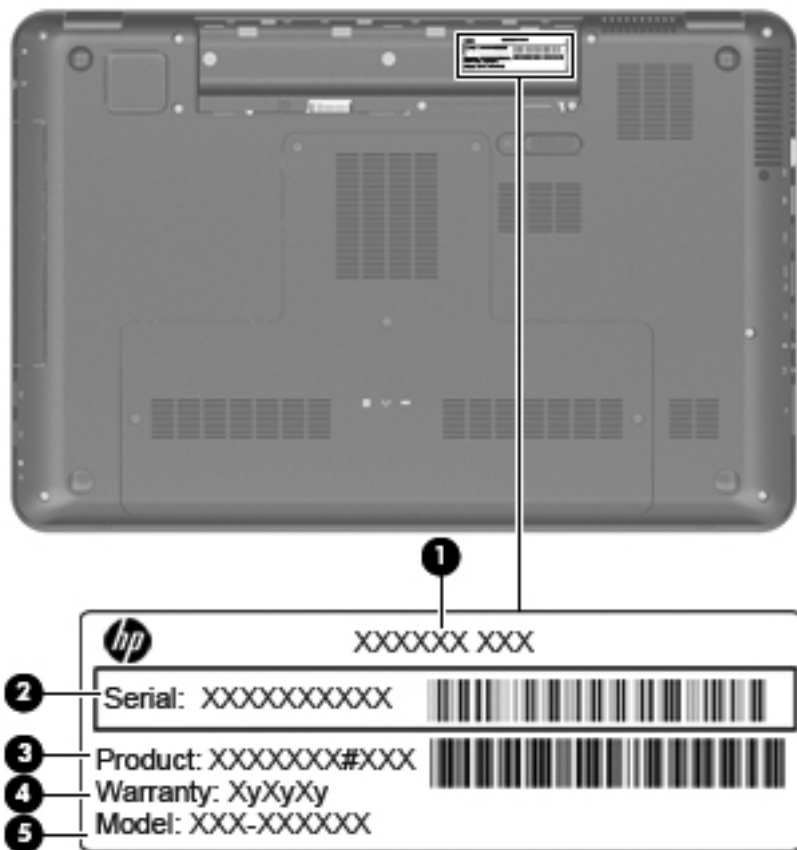
This chapter provides removal and replacement procedures.

There are as many as 78 screws, in 13 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

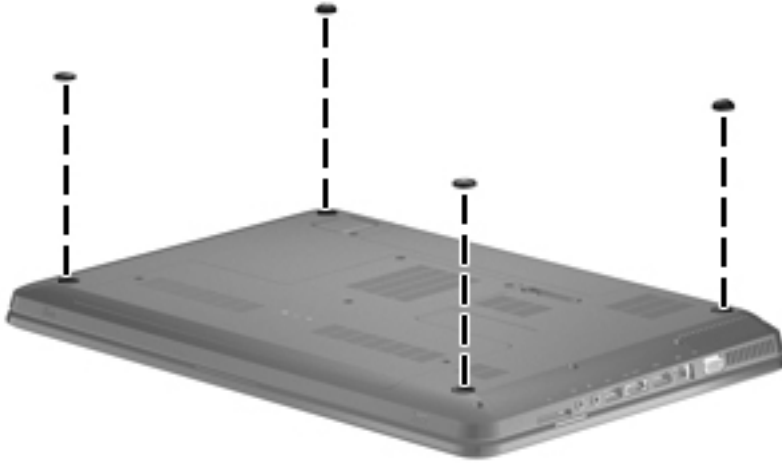
When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.

- (1)** Product name: This is the product name affixed to the front of the computer.
- (2)** Serial number (s/n): This is 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 what components and parts are needed.
- (4)** Warranty period: This number describes the duration of the warranty period for the computer.
- (5)** Model description: This is the alphanumeric identifier needed to locate documents, drivers, and support for the computer.



Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Feet Kit, spare part number 605644-001. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

Description	Spare part number
6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models	593554-001
6-cell, 62-Wh, 2.8-Ah Li-ion battery for use with all computer models	593562-001
9-cell, 93-Wh, 2.8-Ah Li-ion battery for use with all computer models	593550-001

Before disassembling the computer, 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

Remove the battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch **(1)** to release the battery.
3. Pivot the battery **(2)** upward and remove it from the computer **(3)**.



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

Primary hard drive cover

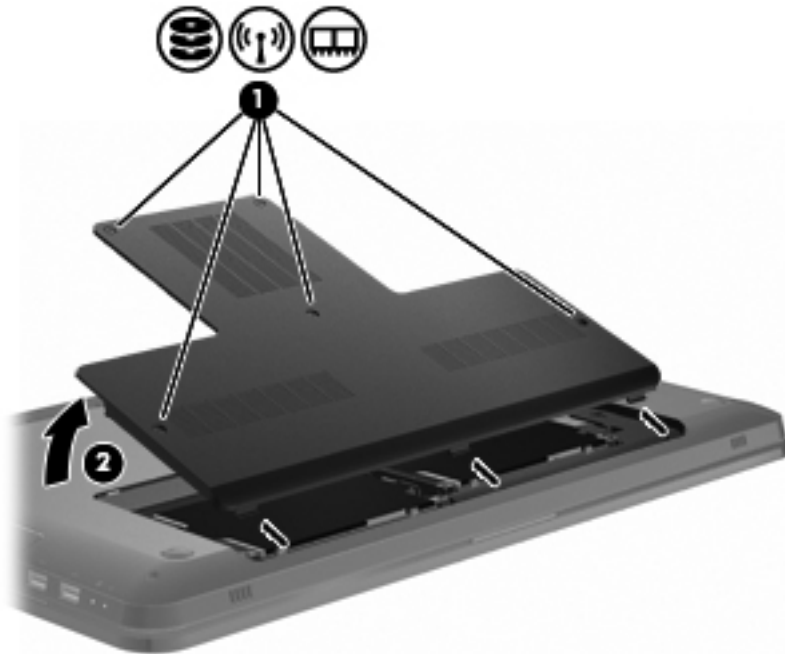
Description	Spare part number
Primary hard drive cover	605360-001

Before removing the primary hard drive 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).


Remove the primary hard drive cover:

1. Loosen the five Phillips PM2.5×6.0 captive screws **(1)** that secure the primary hard drive cover to the computer.
2. Lift the primary hard drive cover **(2)** away from the computer.



Reverse this procedure to install the primary hard drive cover.

Hard drive

 **NOTE:** The hard drive spare part kit includes left and right bracket rails, a connector cable, Mylar cover with tab, and 4 rubber isolators.

Description	Spare part number
1-TB, 5400-rpm	603788-001
750-GB, 5400-rpm	603787-001
640-GB, 5400-rpm	603785-001
500-GB, 7200-rpm	603784-001
320-GB, 7200-rpm	603783-001
250-GB, 7200-rpm	605606-001
160-GB solid-state drive	603781-001
Hard Drive Hardware Kit (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	605415-001

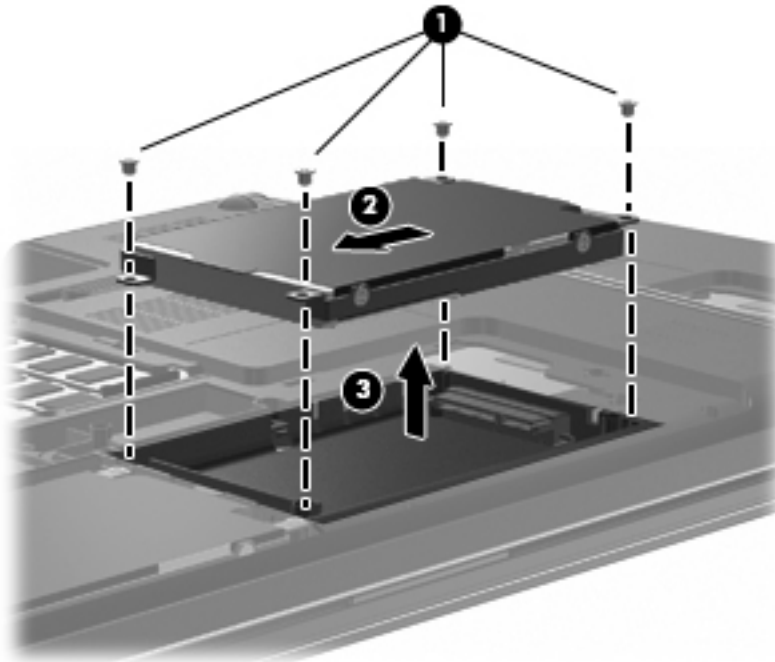
Before removing the hard drive, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).

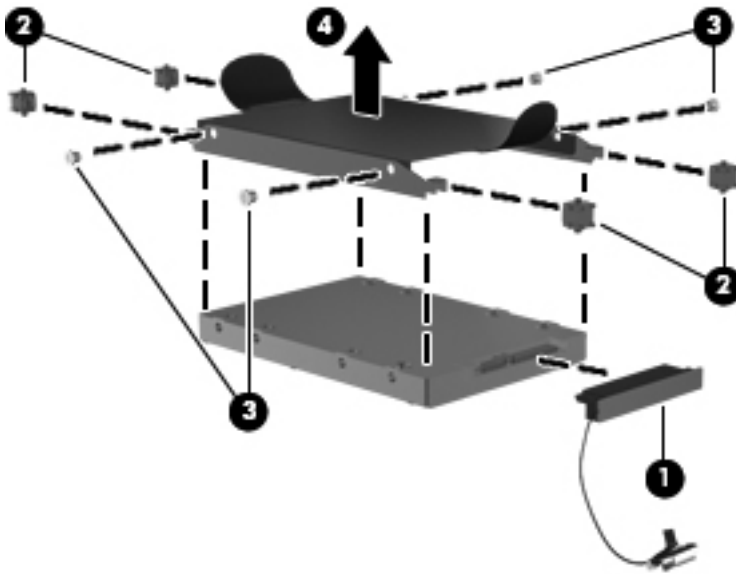
Remove the hard drive:

1. Remove the four Phillips PM2.5×3.0 screws **(1)**.

2. Disconnect the hard drive by sliding it to the left **(2)**, and then remove the hard drive **(3)** from the computer.



3. If it is necessary to replace the hard drive bracket or any of the hard drive bracket components, remove the following:
- **(1)** Hard drive adapter cable
 - **(2)** Four rubber isolators
 - **(3)** Four Phillips PM3.0×3.5 screws that secure the hard drive bracket rails and Mylar cover to the hard drive
 - **(4)** Left and right hard drive bracket rails with Mylar cover



Reverse this procedure to install the hard drive.

Secondary hard drive

NOTE: The hard drive spare part kit includes left and right bracket rails, a connector cable, Mylar cover with tab, and 4 rubber isolators.

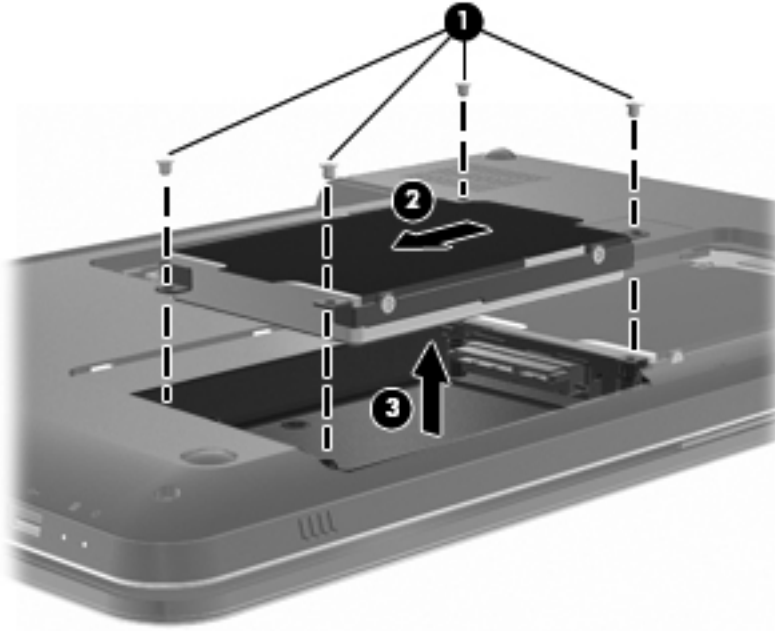
Description	Spare part number
1-TB, 5400-rpm	603788-001
750-GB, 5400-rpm	603787-001
640-GB, 5400-rpm	603785-001
500-GB, 7200-rpm	603784-001
320-GB, 7200-rpm	603783-001
250-GB, 7200-rpm	605606-001
160-GB, SSD	603781-001

Before removing the hard drive, 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).

Remove the secondary hard drive:

1. Remove the four hard drive screws **(1)**.
2. Disconnect the hard drive by sliding it to the left **(2)**, and then remove the hard drive **(3)** from the computer.



Reverse this procedure to install the secondary hard drive.

WLAN module

Description	Spare part number
Atheros AR9285 802.11b/g/n module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cayman Islands, Canada, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, 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, Guam, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Nether Antilles, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Gren, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, the United States, Uzbekistan, US Virgin Islands, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, Zimbabwe	605560-005
Broadcom 4312G 802.11b/g WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter	619997-001
Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)	600370-001
Broadcom 4322 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Canada, Guinea, Haiti, Jamaica, Guam, Nether Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, and the United States	582564-001

Description	Spare part number
Broadcom 4322 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Cayman Islands, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, 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-Bissau, Guyana, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe	582564-002
Broadcom BCM94313 802.11b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Cayman Islands, Chile, People's Republic of China Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, 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, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, Nether Antilles, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, USA, Uzbekistan, US Virgin Islands, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, Zimbabwe	593836-001

Description	Spare part number
Intel 1000 802.11b/g/n WLAN module for use in Andorra, Antigua, Barbuda, Argentina, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Barbados, Belgium, Bolivia, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Canada, Chile, People's Republic of China, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kenya, South Korea, Kuwait, Kyrgyzstan, Latvia, Lebanon, Nether Antilles, Martinique, Guadeloupe, French Guiana, Cayman Islands, Bermuda, Aruba, Puerto Rico, Guam, US Virgin Islands, Liechtenstein, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Monaco, Montenegro, Morocco, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, USA, Venezuela, Vietnam	593530-001
Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)	602992-001


Before removing the WLAN module, 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the primary hard drive (see [Hard drive on page 48](#)).

Remove the WLAN module:


CAUTION: 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.

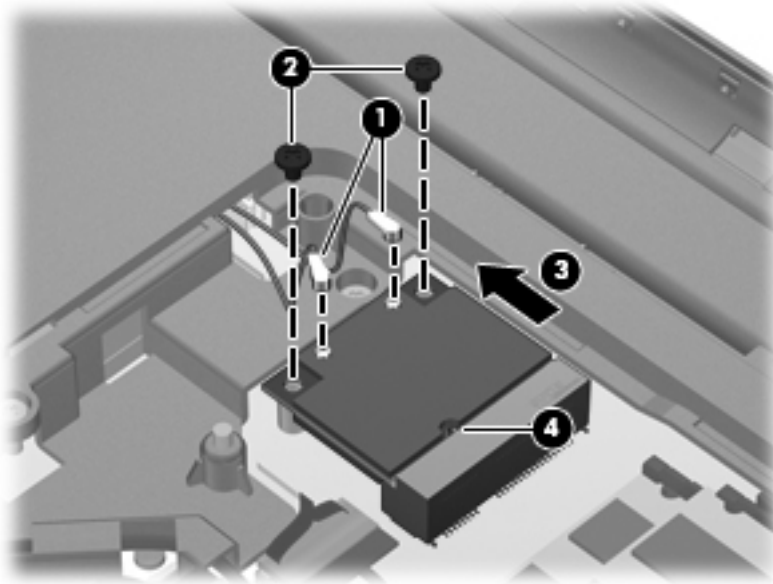
1. Disconnect the WLAN antenna cables **(1)** from the WLAN module.

 **NOTE:** 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.

2. Remove the two Phillips PM2.5×3.5 screws **(2)** that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)

3. Remove the WLAN module **(3)** by pulling it away from the slot.

 **NOTE:** WLAN modules are designed with a notch **(4)** to prevent incorrect insertion into the WLAN module slot.



Reverse this procedure to install a WLAN module.

RTC battery

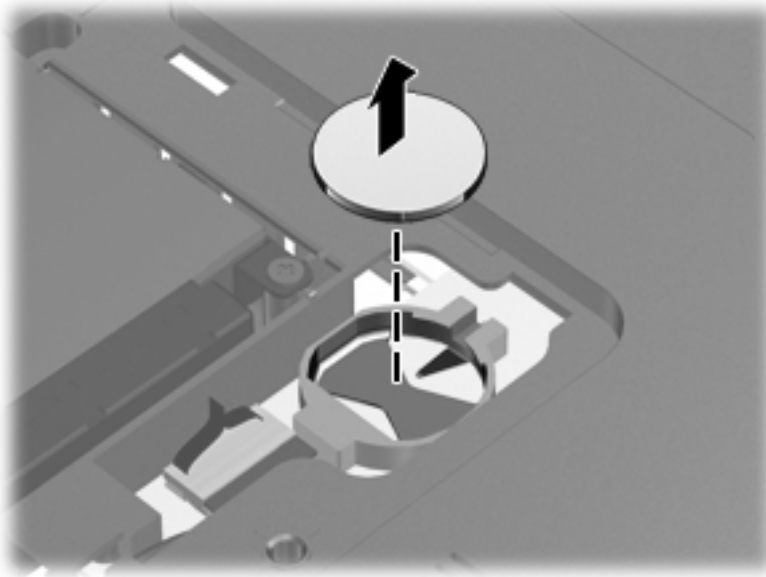
Description	Spare part number
RTC battery	599516-001

Before removing the RTC battery, 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).

Remove the RTC battery:

- ▲ Remove the RTC battery from the socket on the system board.



Reverse this procedure to install the RTC battery. Be sure that the RTC battery is installed with the “+” sign facing up.

Memory module


Description	Spare part number
1-GB memory module	598859-001
2-GB memory module	598856-001
4-GB memory module	599092-001

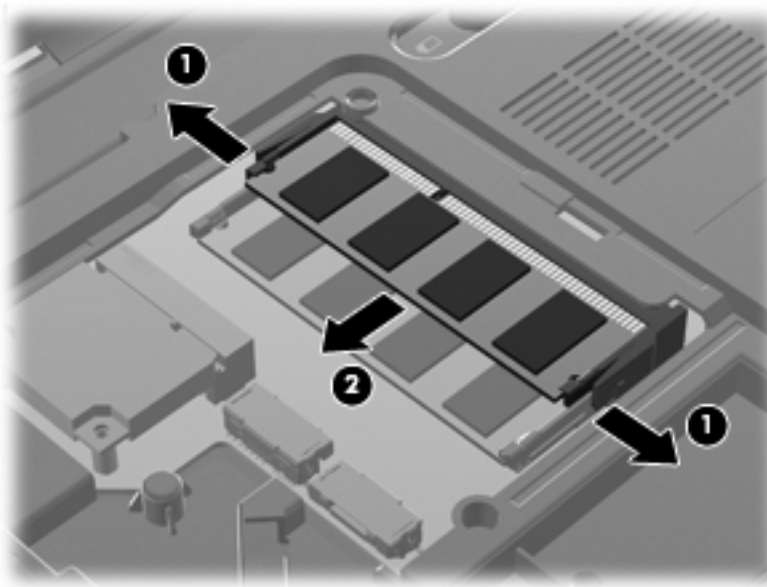
Before removing the memory module, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).

Remove the memory module:


1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)
2. Remove the module **(2)** by pulling it away from the slot at an angle.

 **NOTE:** Memory modules are designed with a notch to prevent incorrect insertion.



Reverse this procedure to install the memory module.

Optical drive

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

Description	Spare part number
Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive	616978-001
Blu-ray ROM DVD±R/RW SuperMulti DL Drive	605416-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	605417-001

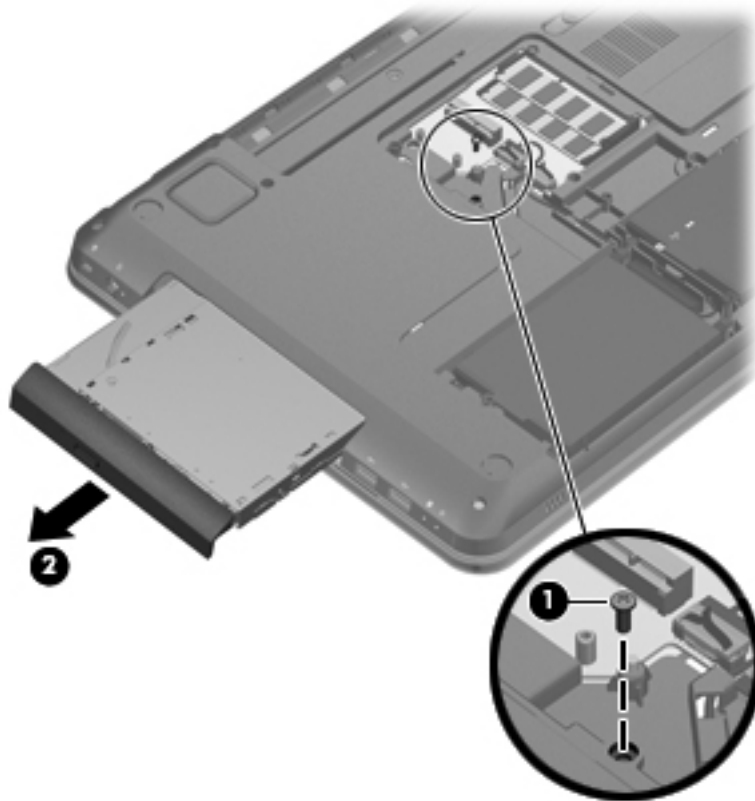
Before removing the optical drive, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).

Remove the optical drive:

1. Position the computer with the front toward you.
2. Remove the Phillips PM2.5×3.0 screw **(1)** that secures the optical drive to the computer.

3. Remove the optical drive **(2)**.



Reverse this procedure to reassemble and install the optical drive.

Keyboard

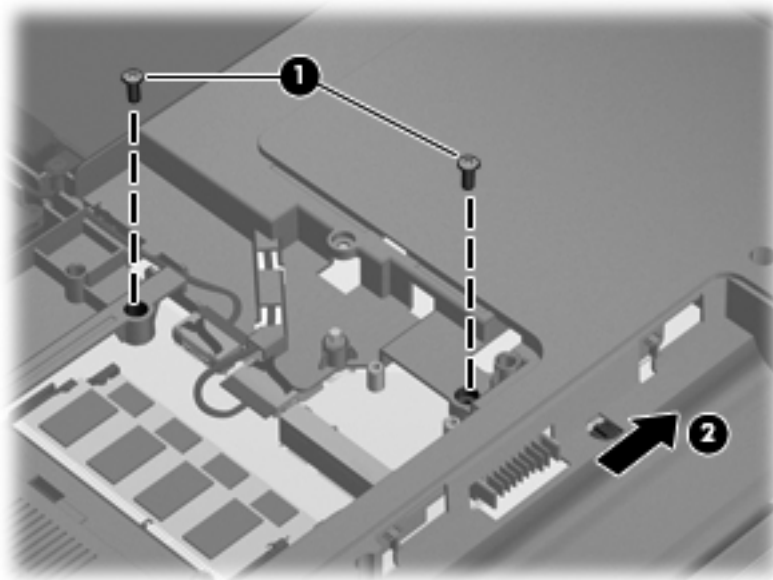
Description	Spare part number
Keyboard (includes keyboard cable)	605344-xxx
NOTE: For a detailed list of available keyboards, see Sequential part number listing on page 31 .	

Before removing the keyboard, 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).

Remove the keyboard:

1. Remove the two Phillips PM2.5×6.5 screws **(1)** that secure the keyboard to the computer.
2. Slide the keyboard release switch **(2)** (in the battery bay) to the right.

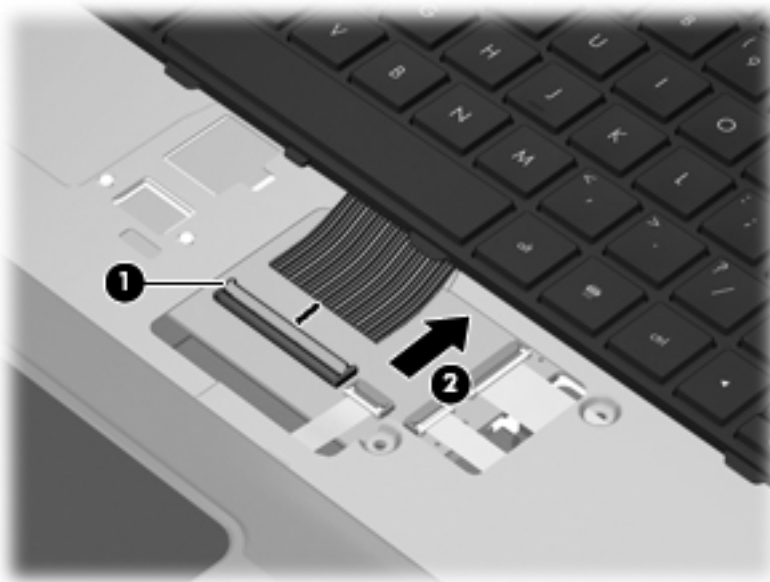


3. Turn the computer display-side up, with the front toward you, and open the computer as far as possible.

4. Lift **(1)** and release **(2)** the keyboard until the keyboard connector on the system board is accessible.



5. Release the zero insertion force (ZIF) connector **(1)** to which the keyboard cable is connected and disconnect the cable **(2)** from the system board.



Reverse this procedure to install the keyboard.

Top cover

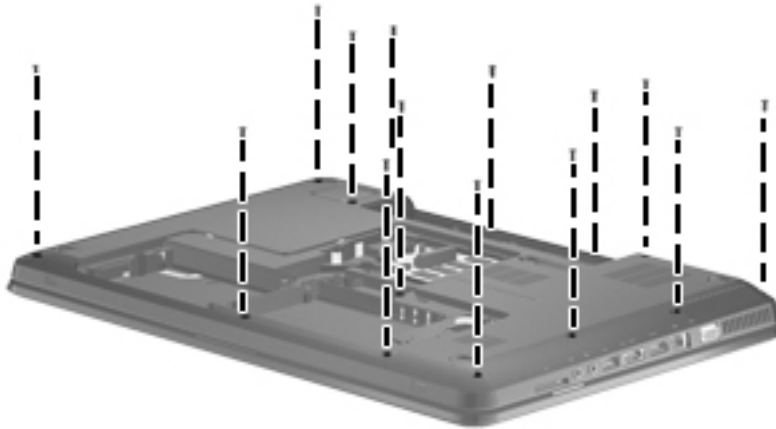
Description	Spare part number
Top cover (includes TouchPad and TouchPad buttons) for use only with silver computer models equipped with a fingerprint reader; and includes fingerprint reader board	605346-001
Top cover (includes TouchPad and TouchPad buttons) for use only with black computer models not equipped with a fingerprint reader	605347-001
Top cover (includes TouchPad and TouchPad buttons) for use only with white computer models not equipped with a fingerprint reader	609789-001

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the hard drive (see [Hard drive on page 48](#)).
7. Remove the secondary hard drive (see [Secondary hard drive on page 50](#)).
8. Remove the optical drive (see [Optical drive on page 58](#)).
9. Remove the keyboard (see [Keyboard on page 60](#)).

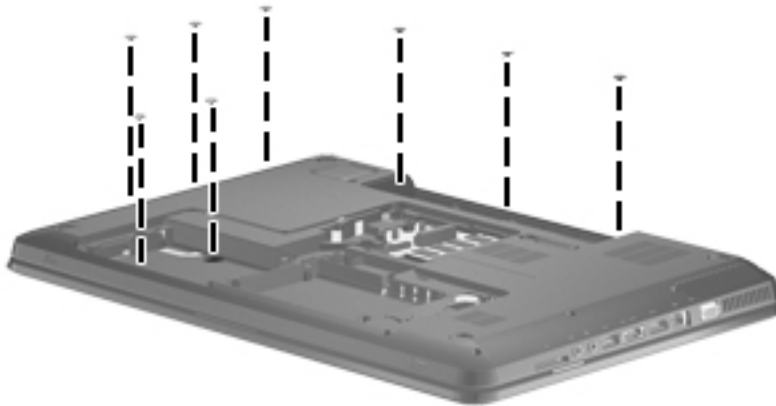
Remove the top cover:

1. Turn the computer display-side down, with the front toward you.
2. Remove the following screws:
 - 4 Phillips 2.5×6.5 screws (one in each corner)
 - 2 Phillips 2.5×6.5 screws (left side)
 - 2 Phillips 2.5×6.5 screws (front side)
 - 1 Phillips 2.5×6.5 screws (center)
 - 5 Phillips 2.0×1.5 screws (in battery bay)



3. Remove the following screws:

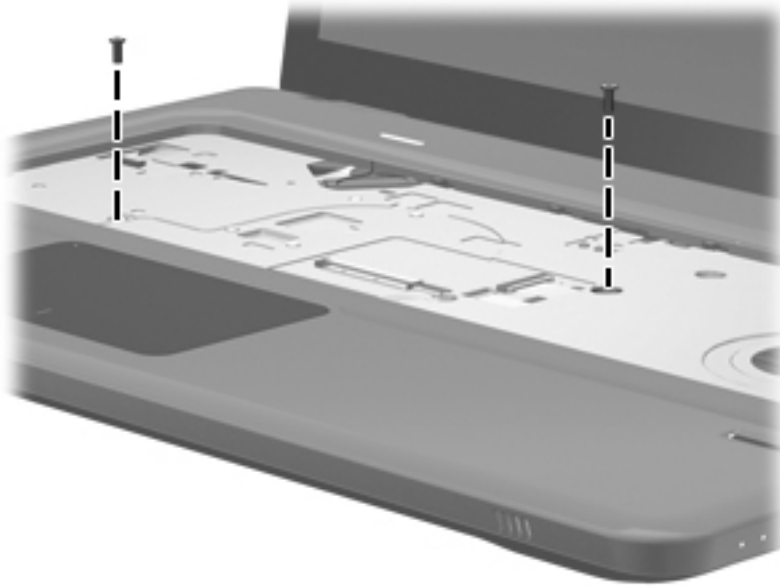
- 3 Phillips 2.5×2.0 screws (in the optical drive bay)
- 2 Phillips 2.5×1.5 screws (in secondary hard drive bay)
- 3 Phillips 2.5×6.5 screws (battery bay)



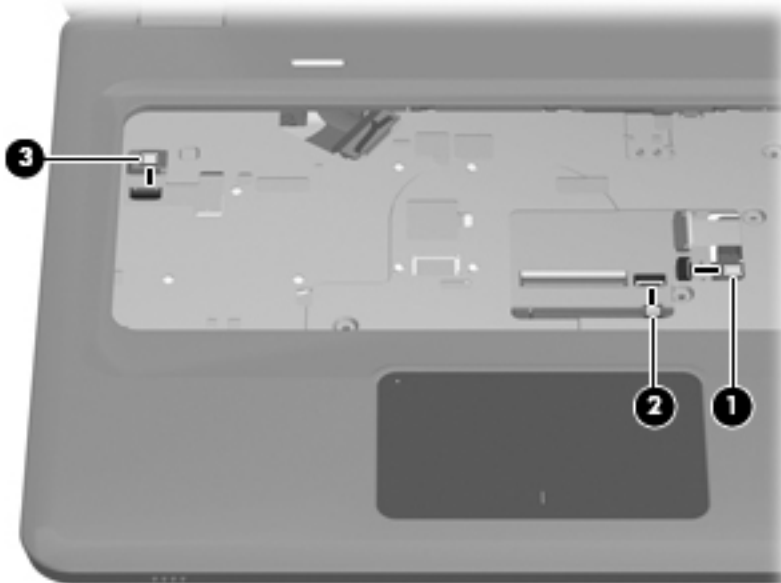
4. Turn the computer display-side up, with the front toward you.

5. Open the computer as far as possible.

6. Remove 2 Phillips 2.5×6.5 screws (under keyboard).



7. Disconnect the fingerprint reader ribbon cable **(1)**, TouchPad ribbon cable **(2)**, and power button ribbon cable **(3)** from the system board.



8. Lift the top cover **(1)** and remove from the computer **(2)**.



Reverse this procedure to install the top cover.

Power button board

Description	Spare part number
Power button board (includes cable)	605358-001

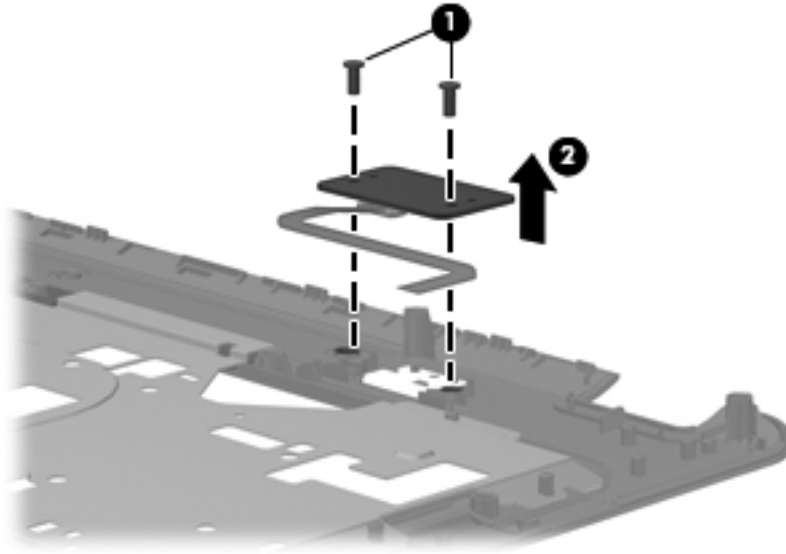
Before removing the power button board, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the hard drive (see [Primary hard drive cover on page 47](#)).
6. Remove the hard drive (see [Hard drive on page 48](#)).
7. Remove the secondary hard drive (see [Secondary hard drive on page 50](#)).
8. Remove the optical drive (see [Optical drive on page 58](#)).
9. Remove the keyboard (see [Keyboard on page 60](#)).
10. Remove the top cover (see [Top cover on page 62](#)).

Remove the power button board:

1. Turn the top cover upside down with the front toward you.
2. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the power button board to the top cover.

3. Remove the power button board **(2)** and cable.



Reverse this procedure to install the power button board.

Display assembly

Description	Spare part number
17.3-inch HD+ flush glass AntiGlare display assembly with webcam and 2 microphones for use in silver computers	605325-001
17.3-inch HD+ standard display assembly with webcam and 2 microphones for use in silver computers	605324-001
17.3-inch HD+ standard display assembly with webcam and 2 microphones for use in black computers	605327-001
17.3-inch HD+ standard display assembly with webcam and 2 microphones for use in white computers	609788-001

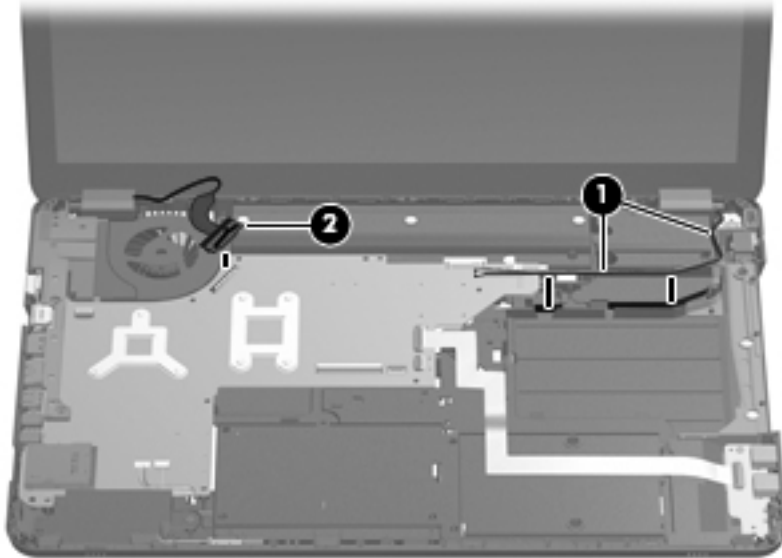
Before removing the display assembly, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the hard drive (see [Hard drive on page 48](#)).
7. Remove the secondary hard drive (see [Secondary hard drive on page 50](#)).
8. Remove the optical drive (see [Optical drive on page 58](#)).
9. Remove the keyboard (see [Keyboard on page 60](#)).
10. Remove the top cover (see [Top cover on page 62](#)).

Remove the display assembly:

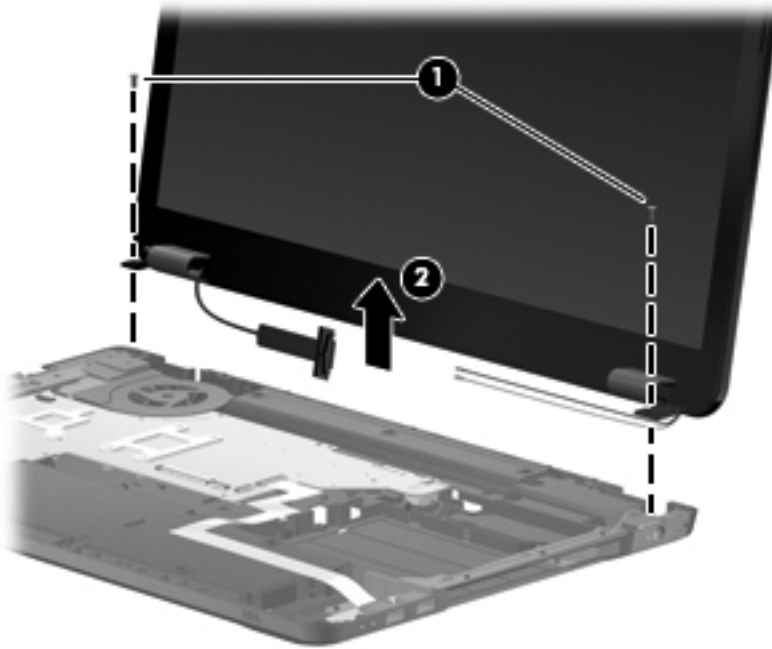
1. Disconnect the WLAN cables **(1)** from under the system board and the display panel cable **(2)** from the system board.


△ **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.



2. Remove the two Phillips PM2.5×5.0 screws **(1)** that secure the display assembly to the computer.

3. Remove the display assembly **(2)**.

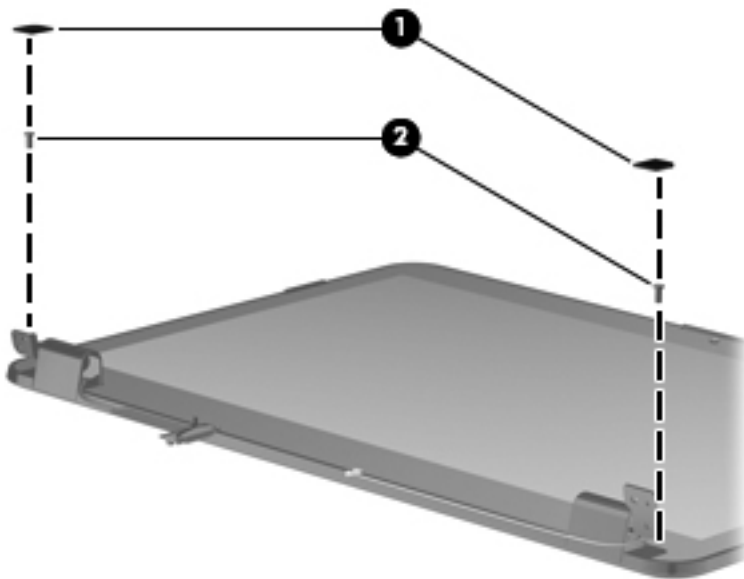


 **NOTE:** Steps 4 through 17 provide component removal information for computer models equipped with a flush glass display assembly. See steps 18 through 29 for component removal information for computer models equipped with a standard display assembly.

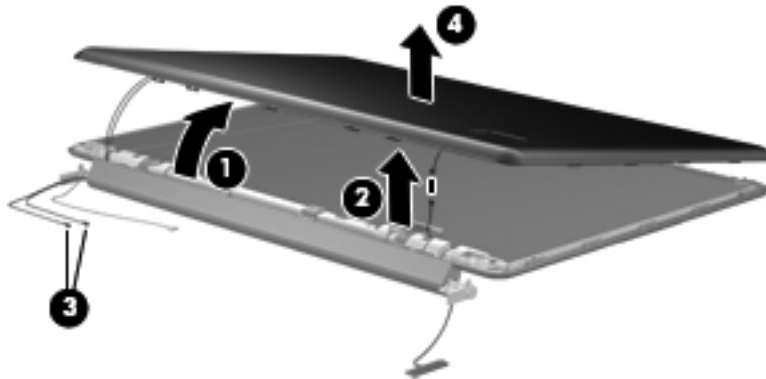
4. If it is necessary to replace the display enclosure or any of the display assembly internal components, remove the following screw covers and screws:

(1) Two rubber screw covers on the display bezel bottom edge. The rubber screw covers are included in the Display Rubber Kit, spare part number 605341-001.

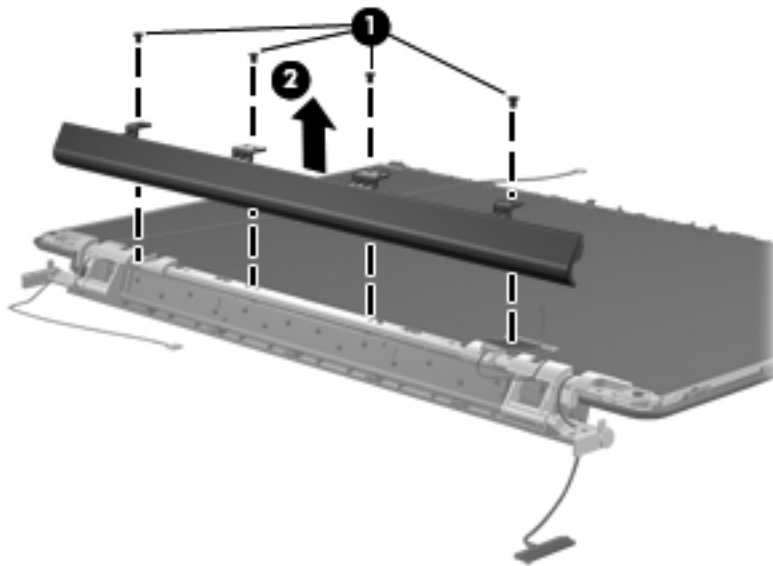
(2) Two Phillips PM2.5×7.0 screws.



5. Turn the display assembly upside down, with the bottom toward you.
6. Lift and release the bottom of the display enclosure (1).
7. Disconnect the display logo cable (2) from the display panel cable.
8. Route the webcam cable and antenna cables (3) through the hinge channel.
9. Remove the display enclosure (4). The display enclosure is available using spare part number 605330-001.

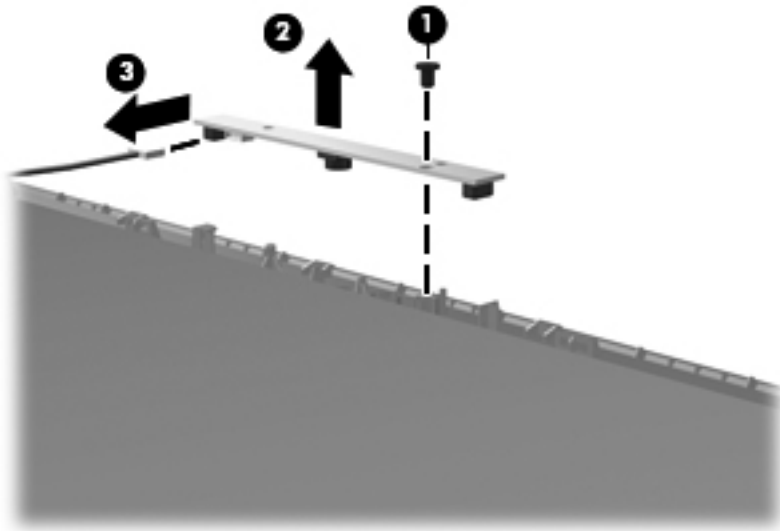


10. If it is necessary to remove the hinge cover, remove the four Phillips PM2.5×5.0 screws (1) that secure the hinge cover to the display assembly, and then remove the cover (2). The hinge cover is available using spare part number 605336-001.

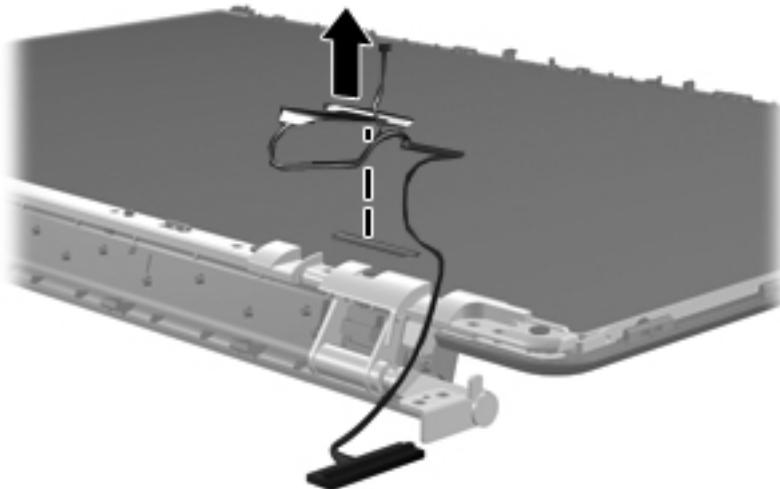


11. If it is necessary to replace the webcam/microphone module, remove the Phillips PM2.0×4.0 screw (1) that secures the module to the display bezel.
12. Release the webcam/microphone module (2) as far as the webcam/microphone module cable allows.

- 13.** Disconnect the webcam/microphone module cable **(3)** and remove the webcam/microphone module. The webcam/microphone module is available using spare part number 603660-001.

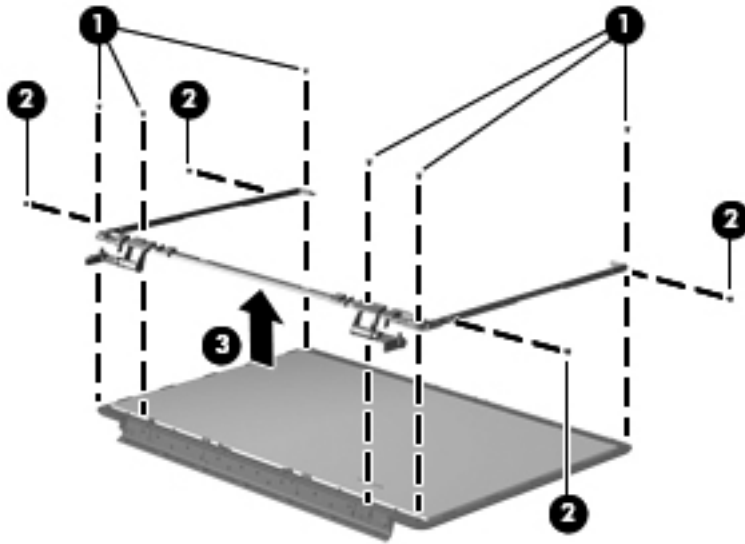


- 14.** Disconnect the display panel cable from the display panel. The display panel cable is available in the Display Cable Kit using spare part number 605333-001.

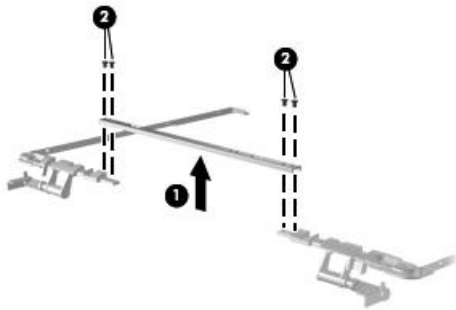


- 15.** If it is necessary to replace the display hinges, remove the six Phillips PM2.5×5.0 screws **(1)** that secure the display hinges to the top of the display panel.
- 16.** Remove the four Phillips PM 2.0×5.0 screws that secure the hinges to the sides of the display panel **(2)**.

17. Remove the display hinge assembly (3) by lifting it straight up. The Display Hinge Kit is available using spare part number 605334-001. The Display Screw Kit is available using spare part number 611251-001.



The left and right sides of the display hinge assembly are secured using four PM 2.5×4.0 screws (1) to a bracket (2) as shown in the following image.

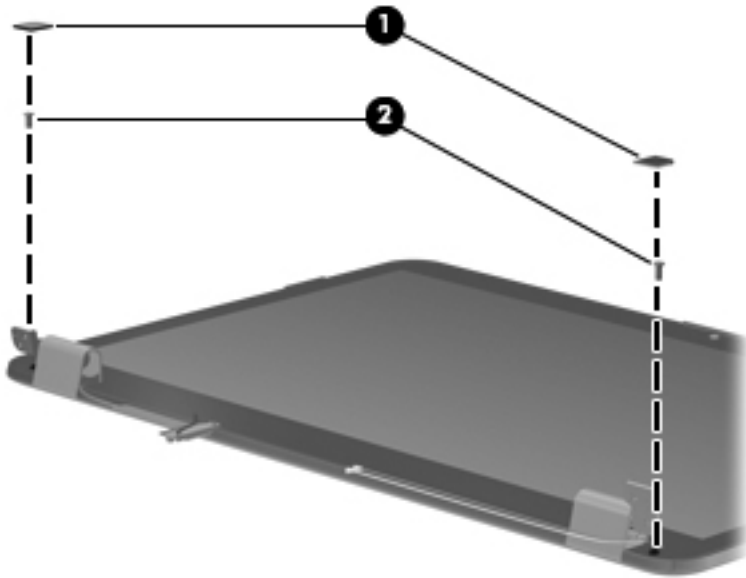


NOTE: Steps 18 through 29 provide component removal information for computer models equipped with a standard display assembly. See steps 4 through 17 for component removal information for computer models equipped with a flush glass display assembly.

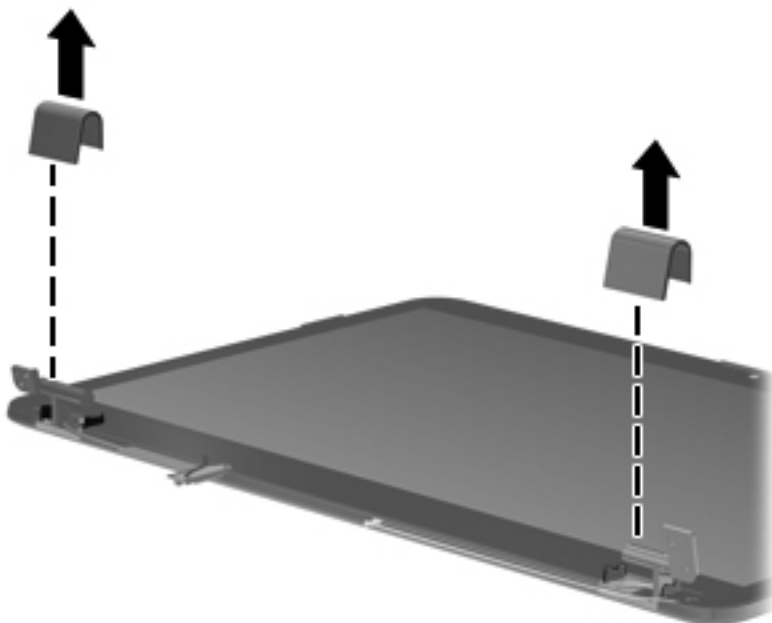
18. If it is necessary to replace the display bezel or any of the display assembly internal components, remove the following screw covers and screws:

(1) Two rubber screw covers on the display bezel bottom edge. The display rubber screw covers are included in the Display Rubber Kit, spare part number 605341-001.

(2) Two Phillips PM2.5×5.0 screws

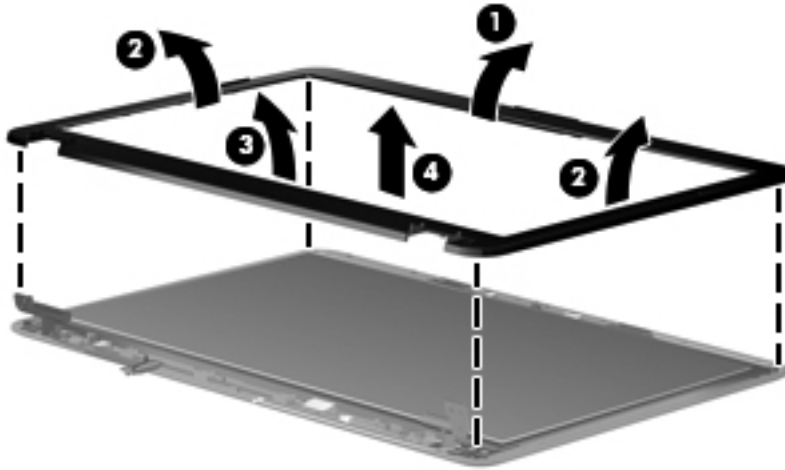


19. Slide off each hinge cover to remove from the display assembly.

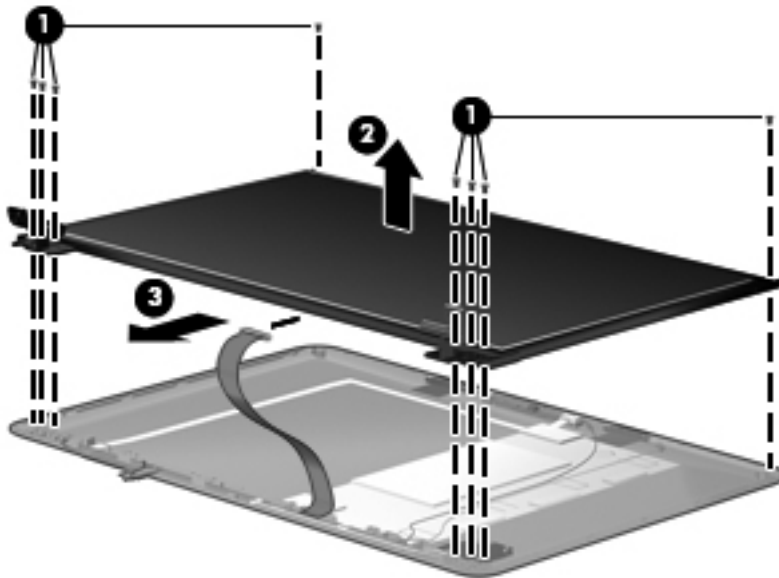


20. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge of the display bezel **(3)** until the bezel disengages from the display enclosure.

- 21.** Remove the display bezel **(4)**. The display bezel is available using the spare part number 605340-001 for silver computer models or 615442-001 all other computer models.

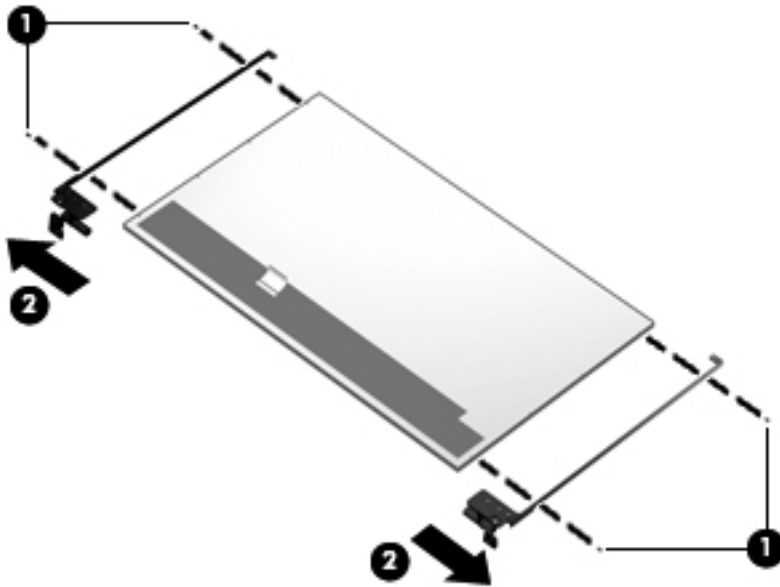


- 22.** If it is necessary to replace the display panel, remove the two Phillips PM2.5×5.0 screws from the top corners and the six Phillips PM2.5×5.0 screws **(1)** from the display hinges.
- 23.** Lift the top of the display panel **(2)** upward and release the display hinges.
- 24.** Disconnect the display panel cable **(3)** from the back of the panel. The display panel is available using spare part number 605337-001.

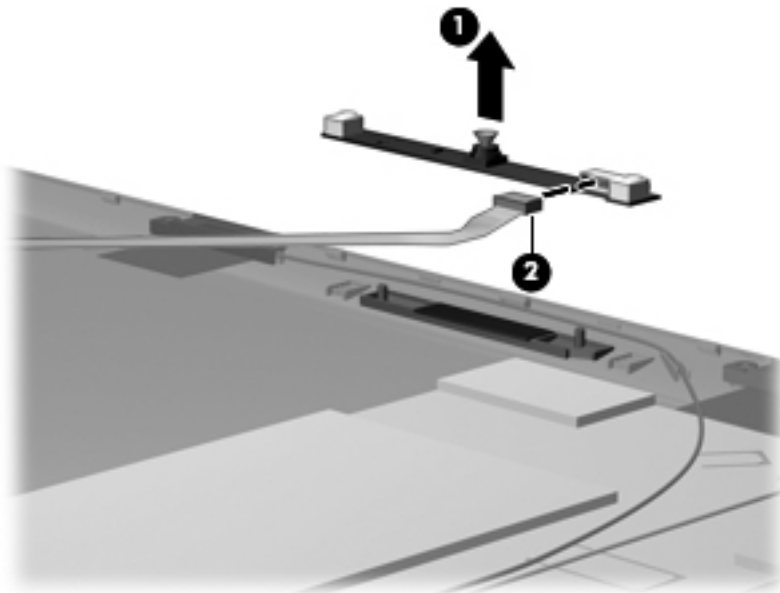


- 25.** If it is necessary to replace the display hinges, remove the two Phillips PM2.0×3.0 screws **(1)** that secure each display hinge to the display panel.

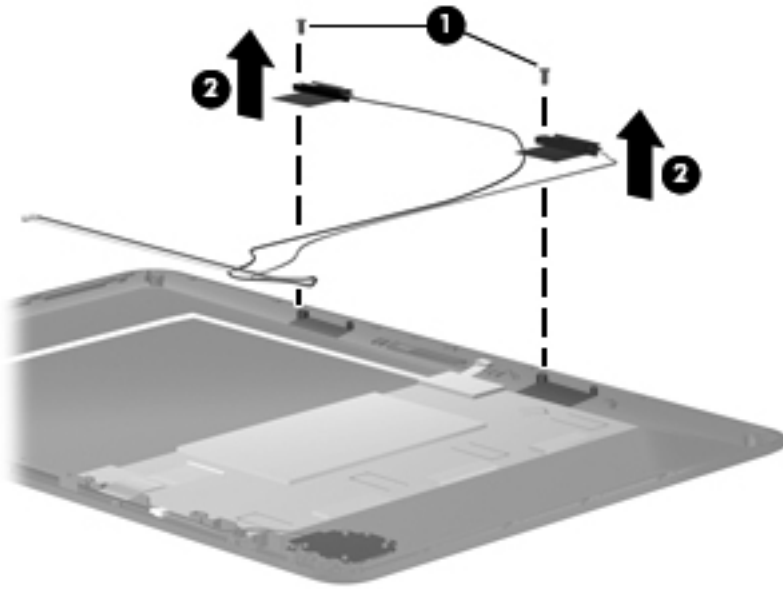
- 26.** Remove the display hinges (**2**). The display hinges are available in the Display Hinge Kit, spare part 605342-001. The display hinge screws are available in the Display Screw Kit, spare part number 605332-001.



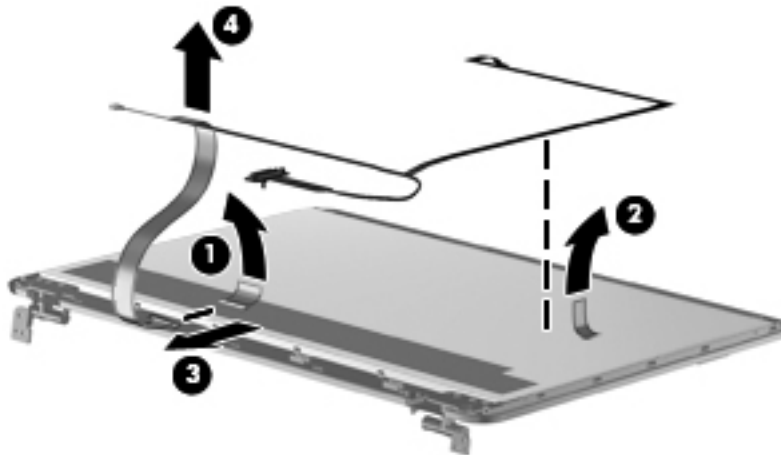
- 27.** If it is necessary to remove the webcam/microphone module, lift the module (**1**) and then disconnect the module cable (**2**). The webcam/microphone module is available using spare part number 603660-001.



- 28.** If it is necessary to remove the wireless antennas, remove two Phillips PM2.0×3.0 screws **(1)** and lift **(2)** the antennas and cables to remove from the display enclosure. The wireless antennas are available using spare part number 605359-001.




- 29.** If it is necessary to remove the display power panel which includes display panel cable and Webcam cable, remove the adhesive plastic strip **(1)** from the display panel cable, and lift the cable **(2)**. Disconnect **(3)** the cable from the display panel and remove the cable **(4)**. The display panel cable is available in the Display Cable Kit using spare part number 605333-001.



Reverse this procedure to reassemble and install the display assembly.

System board

 **NOTE:** The system board spare kit includes replacement thermal material.

Description	Spare part number
With ATI Mobility Radeon HD 6550 discrete graphics subsystem, 1-GB of dedicated memory (Quad Core), and subwoofer v.1.2	630979-001
With ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Quad Core), but without subwoofer	630978-001
With ATI Mobility Radeon HD 6550 discrete graphics subsystem, 1-GB of dedicated memory (Dual Core), and subwoofer v.1.2	630981-001
With ATI Mobility Radeon HD 6550 discrete graphics subsystem and 1-GB of dedicated memory (Dual Core), but without subwoofer	630980-001
With ATI Mobility Radeon HD 6370 discrete graphics subsystem, 512-MB of dedicated memory (Quad Core), and subwoofer v.1.2	630983-001
With ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Quad Core), but without subwoofer	630982-001
With ATI Mobility Radeon HD 6370 discrete graphics subsystem, 512-MB of dedicated memory (Dual Core), and subwoofer v.1.2	630985-001
With ATI Mobility Radeon HD 6370 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core), but without subwoofer	630984-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem, 1-GB of dedicated memory (Quad Core), and subwoofer v.1.1	615313-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad Core), but not subwoofer	615309-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem, 1-GB of dedicated memory (Dual Core), and subwoofer v.1.1	615314-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual Core), but no subwoofer	615310-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad core) and v.1.0 subwoofer	615307-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual core) and v.1.0 subwoofer	615308-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Quad core)	605320-001
With ATI Mobility Radeon HD 5650 discrete graphics subsystem and 1-GB of dedicated memory (Dual core)	605321-001
With ATI Mobility Radeon HD 5470 discrete graphics subsystem, 512-MB of dedicated memory (Dual Core), and subwoofer v.1.1	615315-001
With ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core), but no subwoofer	615312-001
With ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core) and v.1.0 subwoofer	609787-001

Description	Spare part number
With ATI Mobility Radeon HD 5470 discrete graphics subsystem and 512-MB of dedicated memory (Dual Core)	605319-001
With Intel HM55 HD UMA graphics subsystem and shared memory and v.1.1 subwoofer	615311-001
With Intel HM55 HD UMA graphics subsystem and shared memory and v.1.0 subwoofer	605322-001

Before removing the system board, follow these steps:

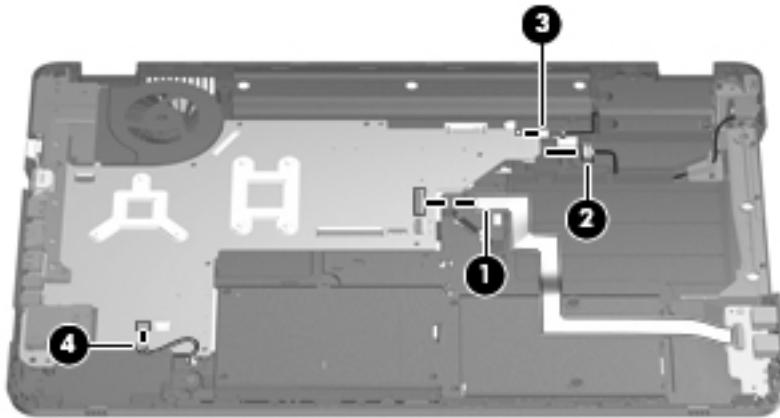
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Remove the secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#))
 - d. Keyboard (see [Keyboard on page 60](#))
 - e. Top cover (see [Top cover on page 62](#))
 - f. Display assembly (see [Display assembly on page 68](#))

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

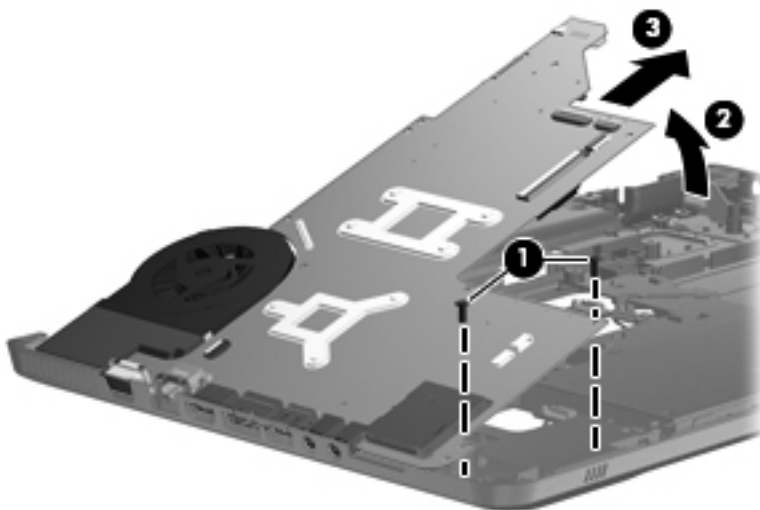
- RTC battery (see [RTC battery on page 56](#))
- Memory module (see [Memory module on page 57](#))
- WLAN module (see [WLAN module on page 52](#))
- Fan/heat sink assembly (see [Fan/heat sink assembly on page 89](#))
- Processor (see [Processor on page 93](#))

Remove the system board:

1. Disconnect the following cables from the system board:
 - (1) USB board cable
 - (2) Power connector cable
 - (3) Subwoofer cable
 - (4) Speaker cable



2. Remove the two Phillips PM2.5×5.0 screws (1) that secure the system board to the base enclosure.
3. Lift up on the right side of the system board until it is at approximately a 45-degree angle (2), and then lift the system board to the right and up and out of the base enclosure (3).



Reverse this procedure to install the system board.

USB board

Description	Spare part number
USB board (includes cable)	605348-001

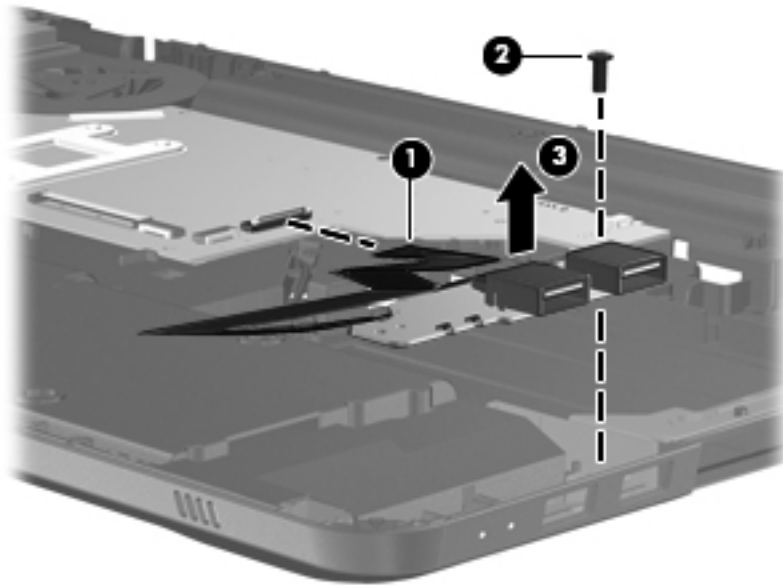
Before removing the USB board, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).
 - e. Top cover (see [Top cover on page 62](#)).
 - f. Display assembly (see [Display assembly on page 68](#)).

Remove the USB board:

1. Disconnect the USB board cable **(1)** from the LIF connector on the system board.
2. Remove the Phillips PM2.5×5.0 screw **(2)** that secures the USB board to the base enclosure.

3. Remove the USB board **(3)** from the base enclosure.



Reverse this procedure to install the USB board.

Bluetooth module

Description	Spare part number
Bluetooth module (does not include cable)	537921-002
Bluetooth module cable	605323-001

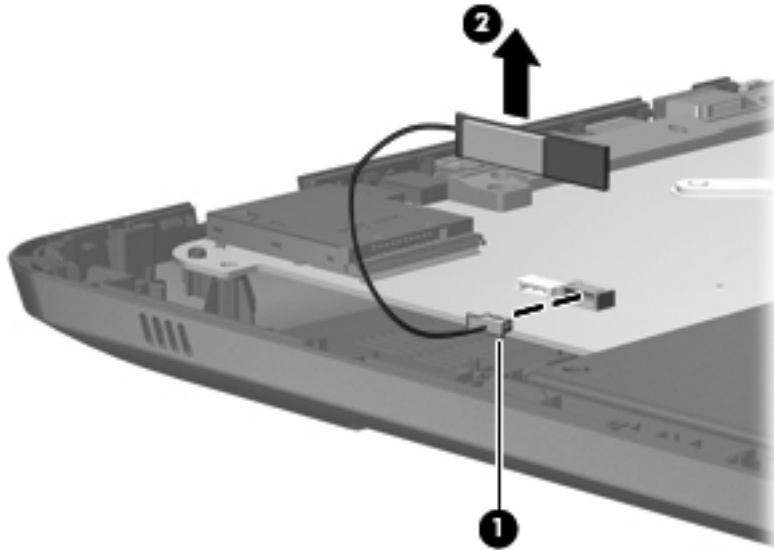
Before removing the Bluetooth module, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).

- e. Top cover (see [Top cover on page 62](#)).
- f. Display assembly (see [Display assembly on page 68](#)).

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable **(1)** from the system board.
2. Slide the Bluetooth module out of the slot and remove the module **(2)** from the computer.



Reverse this procedure to install the Bluetooth module.

Speaker assembly

Description	Spare part number
Speaker assembly	605356-001

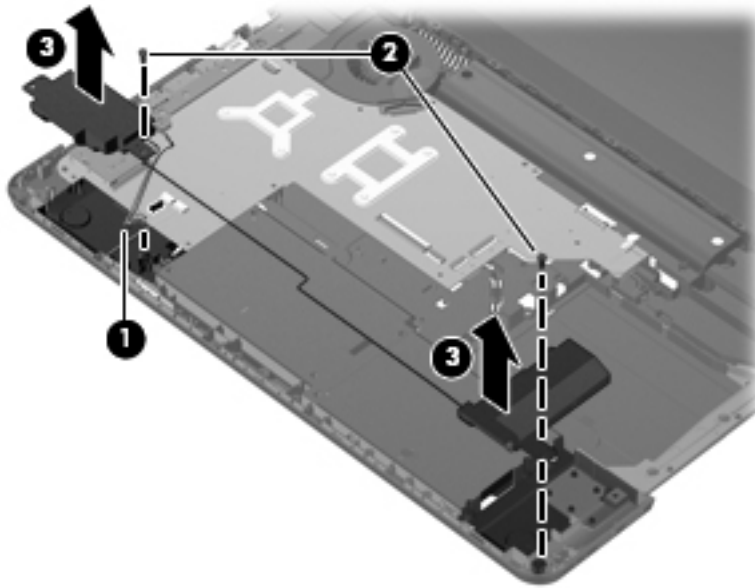
Before removing the speaker assembly, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the hard drive (see [Hard drive on page 48](#)).
7. Remove the secondary hard drive (see [Secondary hard drive on page 50](#)).
8. Remove the optical drive (see [Optical drive on page 58](#)).
9. Remove the keyboard (see [Keyboard on page 60](#)).
10. Remove the top cover (see [Top cover on page 62](#)).

Remove the speaker assembly:

1. Disconnect the speaker assembly cable **(1)** from the system board.
2. Remove two Phillips PM2.5×5.0 screws **(2)**.

3. Remove the speaker assembly (3).



Reverse this procedure to install the speaker assembly.

Optical drive connector

Description	Spare part number
Optical drive connector	603680-001

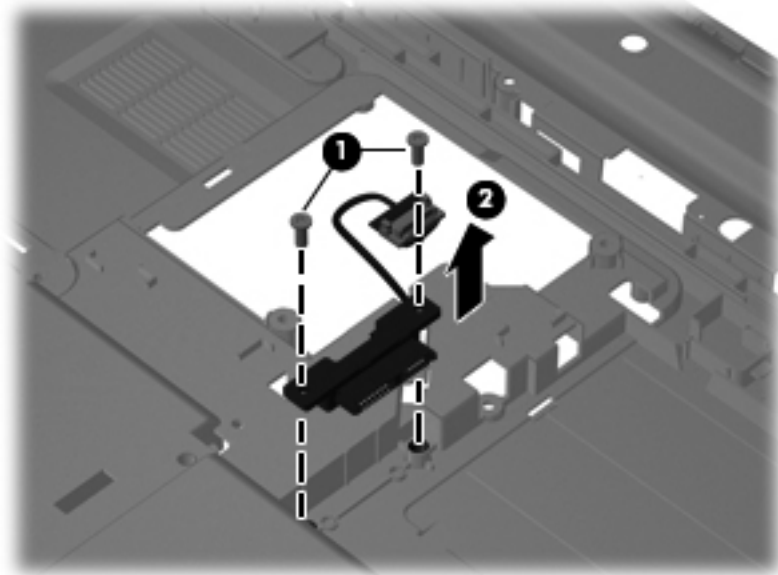
Before removing the optical drive connector, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).

- e. Top cover (see [Top cover on page 62](#)).
- f. Display assembly (see [Display assembly on page 68](#)).
- g. USB board (see [USB board on page 81](#)).

Remove the optical drive connector:

1. Remove the two Phillips PM2.5×3.0 screws **(1)** that secure the optical drive connector to the base enclosure.
2. Remove the optical drive connector **(2)**.



Reverse this procedure to install the optical drive connector.

Subwoofer

Description	Spare part number
Subwoofer	605357-001

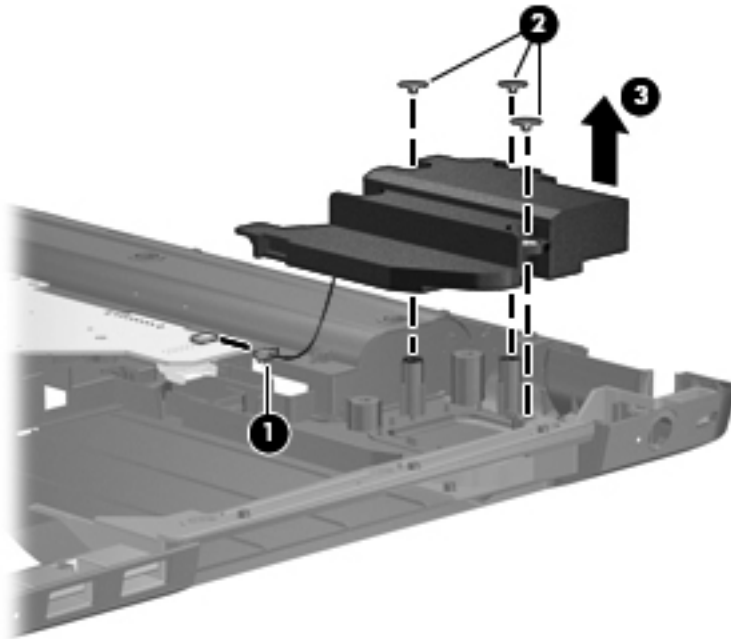
Before removing the subwoofer, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).

5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).
 - e. Top cover (see [Top cover on page 62](#)).
 - f. Display assembly (see [Display assembly on page 68](#)).
 - g. USB board (see [USB board on page 81](#)).

Remove the subwoofer:

1. Disconnect the subwoofer cable from the system board **(1)**.
2. Remove the three Phillips PM2.5×4.0 broadhead screws **(2)** that secure the subwoofer to the base enclosure.
3. Remove the subwoofer **(3)**.



Reverse this procedure to install the subwoofer.

Power connector cable

Description	Spare part number
Power connector and cable	605364-001

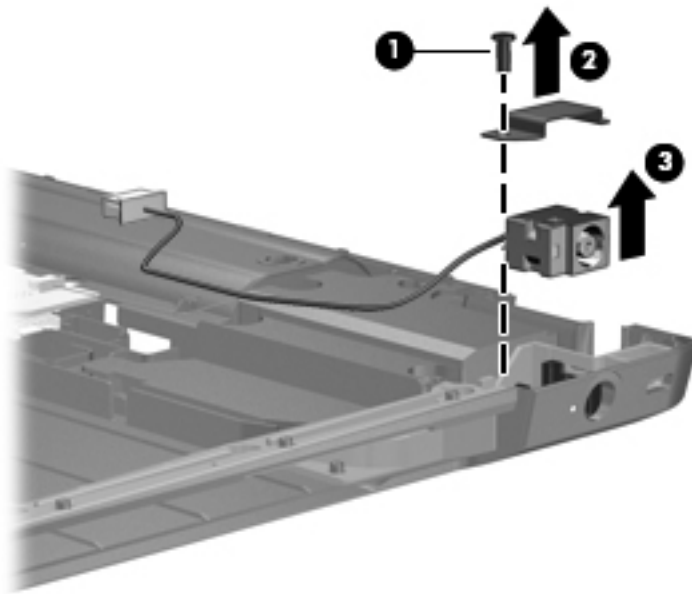
Before removing the power connector cable, follow these steps:

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 unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).
 - e. Top cover (see [Top cover on page 62](#)).
 - f. Display assembly (see [Display assembly on page 68](#)).
 - g. System board (see [System board on page 78](#)).
 - h. USB board (see [USB board on page 81](#)).

Remove the power connector cable:


1. Remove the Phillips PM2.5×3.0 screw **(1)** that secures the power connector and bracket **(2)** to the base enclosure.

2. Remove the power connector cable (3).




Reverse this procedure to install the power connector cable.

Fan/heat sink assembly

 **NOTE:** The fan/heat sink assembly spare kit includes replacement thermal material.

Description	Spare part number
For use only with computer models equipped with graphics subsystems with UMA memory	603690-001
For use only with computer models equipped with ATI Mobility Radeon HD 5470 graphics subsystems with discrete memory	604787-001
For use only with computer models equipped with ATI Mobility Radeon HD 5650 graphics subsystems with discrete memory	605363-001


 **NOTE:** To properly ventilate the computer, allow at least a 7.6-cm (3-inch) clearance on the right side and rear panel 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/heat sink assembly, 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 unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).
 - e. Top cover (see [Top cover on page 62](#)).
 - f. Display assembly (see [Display assembly on page 68](#)).
 - g. System board (see [System board on page 78](#)).
 - h. USB board (see [USB board on page 81](#)).

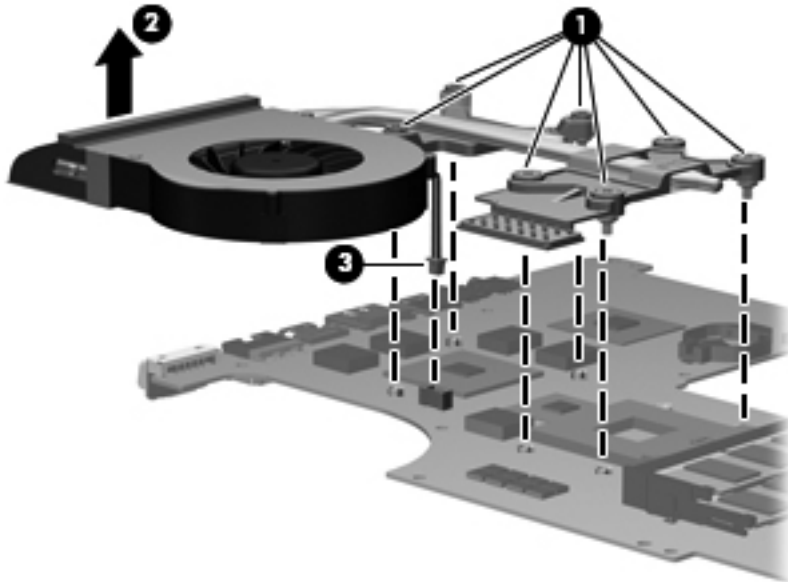
Remove the fan/heat sink assembly:


 **NOTE:** Steps 1 through 4 apply only to models with discrete subsystem memory on the system board. See steps 5 through 8 apply only to models with UMA subsystem memory on the system board.

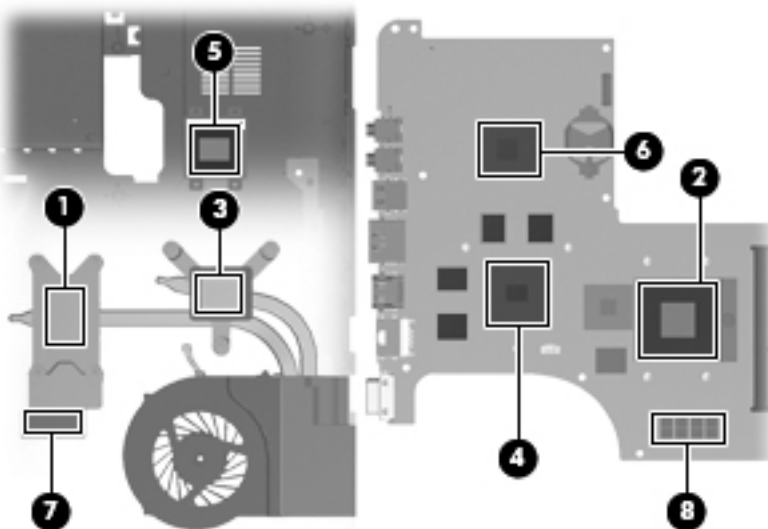
1. Turn the system board upside down, with the expansion port and external monitor port toward you.
2. Loosen the seven PM2.5×3.0 Phillips captive screws **(1)** that secure the fan/heat sink assembly to the system board.

3. Remove the fan/heat sink assembly (2). Disconnect the fan cable (3) from the system board.

 **NOTE:** Due to the adhesive quality of the thermal material located between the fan/heat sink assembly and system board components, it may be necessary to move the fan/heat sink assembly from side to side to detach the assembly.




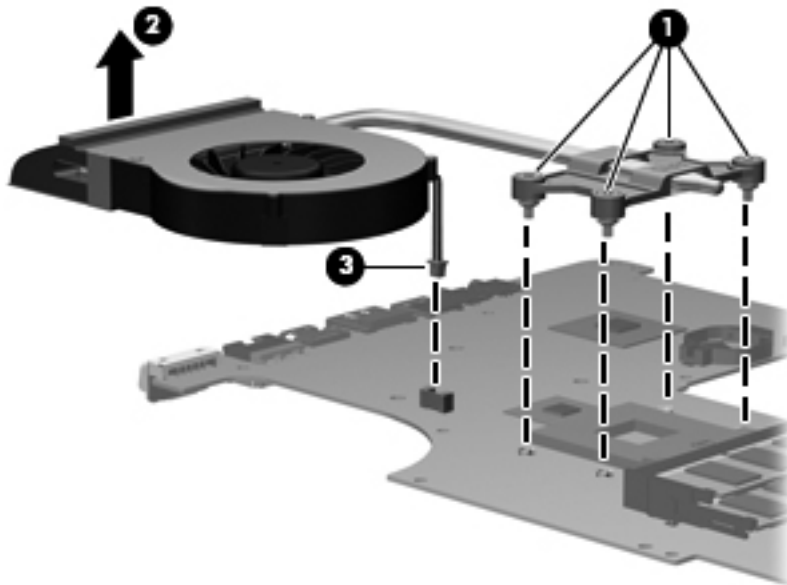
 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed. Thermal paste is used on the heat sink (1) and the processor (2). Thermal pads are used on the Northbridge contact (3) and Northbridge chip (4), the graphics/heat sink contact (5) and graphics subsystem chip (6), and graphics/heat sink contact (7) and capacitors (8). Replacement thermal material is included with all fan/heat sink assembly, system board, and processor spare part kits.



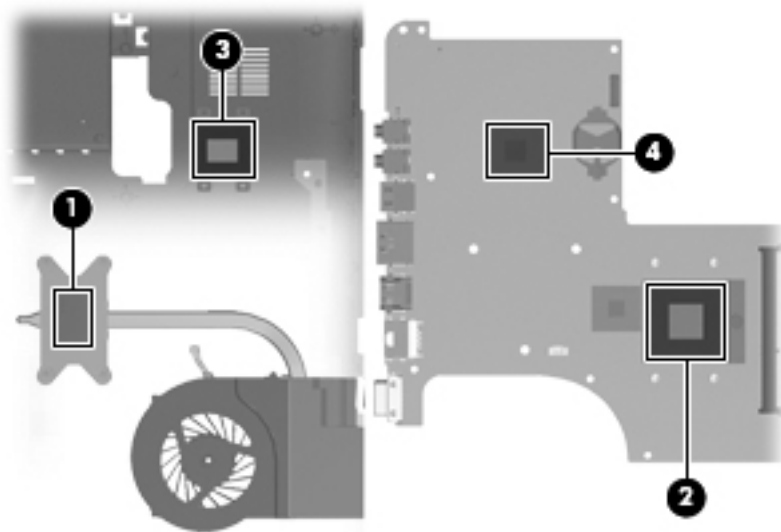
4. Turn the system board upside down, with the expansion port and external monitor port toward you.

5. Loosen the four Phillips PM2.5×3.0 captive screws **(1)** that secure the fan/heat sink assembly to the system board.
6. Remove the fan/heat sink assembly **(2)**. Disconnect the fan cable **(3)** from the system board.

 **NOTE:** Due to the adhesive quality of the thermal material located between the fan/heat sink assembly and system board components, it may be necessary to move the fan/heat sink assembly from side to side to detach the assembly.




The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed. Thermal paste is used on the heat sink **(1)** and the processor **(2)**. Thermal pads are used on the Northbridge contact **(3)** and Northbridge chip **(4)**.



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

Processor

 **NOTE:** The processor spare part kit includes thermal material.

Description	Spare part number
Intel Core i7-840QM processor with 1.86-GHz, SC turbo up to 3.06-GHz, Quad 45W	612260-001
Intel Core i7-820QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W	583053-001
Intel Core i7-740QM processor with 1.73-GHz, SC turbo up to 3.06-GHz, Quad 45W	612259-001
Intel Core i7-720QM processor with 1.6-GHz, SC turbo up to 2.8-GHz, Dual 45W	586170-001
Intel Core i5-540M processor with 2.53-GHz, SC turbo up to 3.06-GHz, Dual 35W	594188-001
Intel Core i5-520M processor with 2.4-GHz, SC turbo up to 2.93-GHz, Dual 35W	594187-001
Intel Core i5-450M processor with 2.40-GHz, SC turbo up to 2.53-GHz, Dual 35W	613585-001
Intel Core i5-430M processor with 2.26-GHz, SC turbo up to 2.53-GHz, Dual 35W	597624-001
Intel Core i3-370M processor with 2.40-GHz, SC turbo up to 2.53-GHz, Dual 35W	613584-001
Intel Core i3 350M processor 2.26-GHz, Dual 35W	597623-001
Intel Pentium P6200 2.13-GHz processor (1066-MHz, 3 MB L3 cache)	625831-001
Intel Pentium P6100 2.00-GHz processor (1066-MHz, 3 MB L3 cache)	613587-001
Intel Pentium P6000 1.86-GHz processor (1066-MHz, 3 MB L3 cache)	613586-001


Before removing the processor, follow these steps:

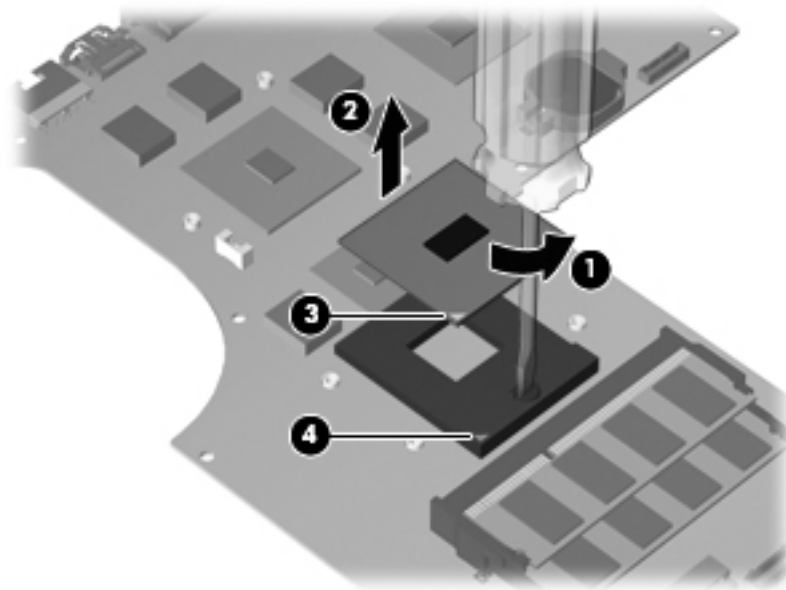
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the primary hard drive cover (see [Primary hard drive cover on page 47](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 48](#)).
 - b. Secondary hard drive (see [Secondary hard drive on page 50](#)).
 - c. Optical drive (see [Optical drive on page 58](#)).
 - d. Keyboard (see [Keyboard on page 60](#)).
 - e. Top cover (see [Top cover on page 62](#)).
 - f. USB board (see [USB board on page 81](#)).

- g. Display assembly (see [Display assembly on page 68](#)).
- h. System board (see [System board on page 78](#)).
- i. Fan/heat sink assembly (see [Fan/heat sink assembly on page 89](#)).

Remove the processor:

1. Turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.
2. Lift the processor **(2)** straight up and remove it.

 **NOTE:** When you install the processor, the gold triangle **(3)** on the processor must be aligned with the triangle icon **(4)** embossed on the processor socket.




Reverse this procedure to install the processor.

5 Setup Utility (BIOS)

Starting Setup Utility

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

 **NOTE:** The fingerprint reader (select models only) cannot be used to access 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 screen appears, press the **f10** key.


– or –

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

Using Setup Utility

Changing the language of Setup Utility

To change the language of Setup Utility:

 **NOTE:** If Setup Utility is not running, begin at step 1. If Setup Utility is 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 screen appears, press the **f10** key.

– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu screen appears, 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 appears, press the **enter** key.
5. To save the 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 selections are by keystroke.

To navigate Setup Utility:

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

Displaying system information

Use Setup Utility to view the system time and date and information that identifies the computer.

To display the system information using Setup Utility:

 **NOTE:** If Setup Utility is running, begin at step 1. If Setup Utility is not 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 screen appears, press the **f10** key.


– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu screen appears, press the **esc** key. When the Startup Menu appears, 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

To restore Setup Utility default settings:

 **NOTE:** If Setup Utility is not running, begin at step 1. If Setup Utility is 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 screen appears, press the **f10** key.

– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu screen appears, 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 screen appears, press the **enter** key.
4. To save the 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.

 **NOTE:** Password, security, and language settings are not changed when you restore the factory default settings.

Exiting Setup Utility

Exit Setup Utility with or without saving changes.

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

If the Setup Utility menus are not visible, press the **esc** key to return to the menu display. 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. 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 provide an overview of Setup Utility options.

 **NOTE:** Some of the Setup Utility menu items might not be supported by the computer.

Main menu

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

Security menu

Select	Function
Administrator password	Enter, change, or delete an administrator password.
Power-On Password	Enter, change, or delete a power-on password.

System Configuration menu

Select	Function
Language Support	Change the language of Setup Utility.
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Fan Always On	Enable/disable Fan Always On. When enabled, the computer fan is always on.
Action Keys Mode	Enable/disable the Action Keys.
Boot Options	<ul style="list-style-type: none">• POST (power-on self test) f10 and f12 Delay (sec.)—Set the delay for the f10 and f12 functions of Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20).• CD-ROM Boot—Enable/disable boot from CD-ROM.• Floppy Boot—Enable/disable boot from diskette.• Internal Network Adapter Boot—Enable/disable boot from the internal network adapter.• Boot Order—Set the boot order for:<ul style="list-style-type: none">◦ Notebook Hard Drive◦ Internal CD/DVD ROM Drive◦ USB Diskette on Key/USB Hard Drive◦ USB CD/DVD ROM Drive◦ USB Floppy◦ Network Adapter

Diagnostics menu

Select	Function
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.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	41.53 cm	16.35 in
Depth	27.42 cm	10.80 in
Height (front to back)	Flush glass display: 3.27 to 3.67 cm	1.29 to 1.44 in
	Standard display: 3.18 to 3.58 cm	1.25 to 1.41 in
	DF (IMR): 3.30 to 3.70 cm	1.30 to 1.46 in
Weight (with optical drive, hard drive, and battery)	Flush glass display: 3.63 kg	7.99 lbs
	Standard display: 3.41 kg	7.50 lbs
	DF (IMR): 3.25 kg	7.15 lbs
Second hard drive adds:	0.11 kg	0.24 lbs
Camera adds:	0.005 kg	0.01 lbs
Input power		
Operating voltage	18.5 V dc @ 3.5 A - 65 W	
Operating current	3.5 A or 4.74 A	
Temperature		
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
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft

	Metric	U.S.
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft

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

17.3-inch, HD+ flush glass AntiGlare display specifications

	Metric	U.S.
Dimensions		
Height	20.7 cm	12.15 in
Width	33.1 cm	17.03 in
Diagonal	43.9 cm	17.29 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	180 nits (typical)	
Pixel resolution		
Pitch	0.197 × 0.197 mm	
Format	1600 × 900	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2 W	
Viewing angle	+/-65° horizontal, +/-50° vertical (typical)	

17.3-inch, HD+ BrightView display specifications

	Metric	U.S.
Dimensions		
Height	23.3 cm	9.17 in
Width	39.8 cm	15.67 in
Diagonal	43.9 cm	17.29 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1	
Brightness	200 nits typical	
Pitch resolution		
Pitch	0.23868 × 0.23868 mm	
Format	1600 × 900	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2 W	
Viewing angle	+/-65° horizontal, +/-50° vertical typical	

Hard drive specifications

	1-TB*	750-GB**	640-GB*	500-GB**	320-GB**	250-GB**	160-GB**
Dimensions							
Height	12.5 mm	12.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Length	100.2 mm	100.2 mm	100.2 mm	100.35 mm	100.35 mm	100.35 mm	100.35 mm
Width	69.85 mm	69.85 mm	69.85 mm	69.85 mm	69.85 mm	69.85 mm	69.85 mm
Weight	152 g	152 g	98 g	110 g	110 g	105 g	105 g
Interface type	SATA(3 GB/sec)	SATA (3 GB/sec)	SATA (3 GB/sec)	SATA	SATA	SATA	SATA
Transfer rate							
Synchronous (maximum)	97 MB/sec	97 MB/sec	106 MB/sec	1.1 GB/sec (internal)	1.1 GB/sec (internal)	1.1 GB/sec (internal)	1.1 GB/sec (internal)
Security	ATA security	ATA security	ATA security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)							
Single track	2 ms	2 ms	1.5 ms	1.5 ms	1.5 ms	1.5 ms	1.5 ms
Average (read/write)	12/16 ms	12/16 ms	12/13 ms	11/13 ms	11/13 ms	11/13 ms	11/13 ms
Maximum	21 ms	21 ms	24 ms	22 ms	22 ms	22 ms	22 ms
Logical blocks	1,953,525,168	1,465,149,168	1,250,263,728	976,773,168	625,142,448	488,397,168	312,581,808
Disc rotational speed	5200-rpm	5200-rpm	5400-rpm	7200-rpm	7200-rpm	7200-rpm	7200-rpm
Operating temperature	0°C to 60°C (32°F to 140°F)						
*1 TB = 1 trillion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.							
**1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.							
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.							

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

Applicable disc	Read:	Write:	
	CD-DA, CD+(E)G, CD-MIDI, CDTEXT, 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, DVDROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, HD-ROM (Single Layer), HD-ROM (Dual Layer), HD DVD-R, HD DVD-R for Dual Layer, HD DVD-RW	CD-R and CD-RW DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9),DVD-RW, DVD-RAM	
Access time	CD	DVD	HD
Random	170 ms	170 ms	230 ms
Cache buffer	8 MB		
Data transfer rate			
24X CD-ROM	3,600 KB/sec		
8X DVD	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		
4X DVD+RW	5,400 KB/sec		
8X DVD-R	10,800 KB/sec		
4X DVD-RW	5,400 KB/sec		
2.4X DVD+R(9)	2,700 KB/sec		
5X DVD-RAM	6,750 KB/sec		
1X BD-ROM	4,500 KB/sec		
1X BD-R read	4,500 KB/sec		
1X BD-RE read	4,500 KB/sec		
Transfer mode	Multiword DMA Mode		

DVD±RW and CD-RW SuperMulti Double-Layer Combo 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, DVD+R, DVD+RW, DVD-RAM	CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	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	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	

System DMA specifications

Hardware DMA	System function
DMA0	Not applicable
DMA1*	Not applicable
DMA2*	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller

System interrupt specifications (discrete)

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard PS/2 Keyboard
IRQ7	Intel 5 Series/3400 Chipset Family SMBus Controller-3B30
IRQ8	System CMOS/real time clock
IRQ12	Synaptics PS/2 Port TouchPad
IRQ13	Numeric data processor
IRQ16	Intel 5 Series/3400 Chipset Family USB Enhanced Host Controller - 3B3C Intel 5 Series/3400 Chipset Family PCI Express Root Port 2 -3B44 Intel Management Engine Interface Intel processor PCI Express Root Port 1 - D138
IRQ17	High Definition Audio Controller Intel 5 Series/3400 Chipset Family PCI Express Root Port 1 -3B42
IRQ19	Intel 5 Series 4 Port SATA AHCI Controller
IRQ21	Intel® 5 Series/3400 Chipset Family USB Enhanced Host Controller - 3B34
IRQ22	High Definition Audio Controller
IRQ23	HP Mobile Data Protection Sensor
IRQ81-190	Microsoft ACPI-Compliant System
IRQ-2	ATI Mobility Radeon HD 5470
IRQ-4	Intel WiFi Link 1000 BGN

System interrupt specifications (switchable graphics)

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard PS/2 Keyboard
IRQ7	Intel 5 Series/3400 Chipset Family SMBus Controller -3B30
IRQ8	System CMOS/real time clock
IRQ10	Network Controller
IRQ12	Synaptics PS/2 Port TouchPad
IRQ13	Numeric data processor
IRQ16	Intel 5 Series/3400 Chipset Family PCI Express Root Port 2 - 3B44
IRQ17	High Definition Audio Controller Intel® 5 Series/3400 Chipset Family PCI Express Root Port 1 -3B42
IRQ19	Intel 5 Series 4 Port SATA AHCI Controller - 3B29 Intel Turbo Boost Technology Driver
IRQ21	Intel 5 Series/3400 Chipset Family USB Enhanced Host Controller - 3B34
IRQ22	High Definition Audio Controller
IRQ23	HP Mobile Data Protection Sensor
IRQ81–190	Microsoft ACPI-Compliant System
IRQ-2	Realtek PCIe GBE Family Controller
IRQ-3	ATI Mobility Radeon HD 5650

System interrupt specifications (UMA)

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural Keyboard
IRQ8	System CMOS/real-time clock
IRQ10*	Intel 5 Series/3400 Chipset Family SMBus Controller -3B30
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ16	IRQ16 Broadcom 4313 802.11b/g/n
IRQ17	Intel 5 Series/3400 Chipset Family PCI Express Root Port 1 -3B42
IRQ19	Intel Turbo Boost Technology Driver
IRQ21	Intel 5 Series/3400 Chipset Family USB Enhanced Host Controller - 3B34
IRQ22	High Definition Audio Controller
IRQ23	HP Mobile Data Protection Sensor
IRQ81-190	Microsoft ACPI-Compliant System
IRQ-2	Intel Graphics Media Accelerator HD

System I/O address specifications

I/O address (hex)	System function (shipping configuration)
00-1F	DMA Controller Channel 0-3
CF7	PCI Bus on MS ACPI-Compliant System
20 - 21	Programmable Interrupt Controller (Master Controller)
24 - 25	Programmable Interrupt Controller (Aliases)
28 - 29	Programmable Interrupt Controller (Aliases)
2C - 2D	Programmable Interrupt Controller (Aliases)
2E -2F	M/B Resource (LPC Controller)
30 - 31	Programmable Interrupt Controller (Aliases)
34 - 35	Programmable Interrupt Controller (Aliases)
38 - 39	Programmable Interrupt Controller (Aliases)
3C - 3D	Programmable Interrupt Controller (Aliases)
40 - 43	System Timer
4E - 4F	M/B Resource (LPC Controller)
50 - 53	System Timer
60	Standard PS/2 Keyboard
61	LPC
62	EC
63	LPC
64	Standard PS/2 Keyboard
65	LPC
66	EC
67	LPC
70	LPC
70 - 77	System CMOS/Real Time Clock
80	LPC
81 - 91	DMA Controller Channel 2
92	LPC
93-9F	DMA Controller
A0 - A1	Programmable Interrupt Controller (Slave Controller)
A4 - A5	Programmable Interrupt Controller (Aliases)
A8 - A9	Programmable Interrupt Controller (Aliases)

I/O address (hex)	System function (shipping configuration)
AC - AD	Programmable Interrupt Controller (Aliases)
B0 - B1	Programmable Interrupt Controller (Aliases)
B2 - B3	LPC
B4 - B5	Programmable Interrupt Controller (Aliases)
B8 - B9	Programmable Interrupt Controller (Aliases)
BC - BD	Programmable Interrupt Controller (Aliases)
C0 - DF	DMA Controller Channel 4-7
F0	Numeric data processor
380 - 38E	LPC
3B0 - 3BB	VGA
3C0 - 3DF	VGA
400 - 47F	LPC
4D0 - 4D1	Programmable Interrupt Controller
500 - 57F	LPC
680 - 69F	LPC
800 - 80F	LPC
810 - 817	LPC
820 - 823	LPC
D00 - FFFF	PCI Bus on MS ACPI-Compliant System
164E - 164F	LPC
2000 - 2FFF	Intel® 5 Series/3400 Chipset Family PCI Express Root Port 2 -3B44
3000 - 3FFF	Intel 5 Series/3400 Chipset Family PCI Express Root Port 1 -3B42
4000 - 401F	Intel 5 Series/3400 Chipset Family SMBus Controller -3B30
4020 - 403F	Intel 5 Series 4 Port SATA AHCI Controller
4040 - 4047	Intel 5 Series 4 Port SATA AHCI Controller
4048 - 404F	Intel 5 Series 4 Port SATA AHCI Controller
4050 - 4057	Intel VGA
4058 - 405B	Intel 5 Series 4 Port SATA AHCI Controller
405C - 405F	Intel 5 Series 4 Port SATA AHCI Controller

System memory map specifications


Size	Memory address	System function
640 KB	00000000-0009FFFF	Base memory
128 KB	000A0000-000BFFFF	Video memory
48 KB	000C0000-000CBFFF	Video BIOS
160 KB	000C8000-000E7FFF	Unused
64 KB	000E8000-000FFFFF	System BIOS
15 MB	00100000-00FFFFFF	Extended memory
58 MB	04800000-07FFFFFF	Super extended memory
58 MB	04800000-07FFFFFF	Unused
2 MB	08000000-080FFFFF	Video memory (direct access)
4 GB	08200000-FFFFFFF	Unused
64 KB	FFF0000-FFFFFFFF	System BIOS

7 Backup and recovery

Recovery after a system failure is as complete as the most current backup. HP recommends creating recovery discs immediately after software setup. As you add new software and data files, continue to back up the 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 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)—Recovery Manager recovers the 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.

 **NOTE:** If the computer includes a solid-state drive (SSD), a recovery partition might not be included. Recovery discs are included for computers that do not have a partition. Use these discs to recover the operating system and software. To check for the presence of a recovery partitions, select **Start > Computer**. If the partition is present, an HP recovery drive is listed in the Hard Disk Drives section of the window.

Creating recovery discs


HP recommends creating recovery discs so that the system can be restored 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 creates only one set of recovery discs.

 **NOTE:** 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 from the HP website.

Before creating recovery discs:

- You need 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 you use CDs, up to 20 discs might be required, whereas only a few DVDs or BDs are required.

 **NOTE:** 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 are 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. 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

 **NOTE:** Set reminders to back up your information periodically.

- Before the computer is repaired or restored
- Before adding or modifying 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 periodically back up this folder.
- 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 depend on the type of optical drive installed in the computer.

 **NOTE:** 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

To create a backup using Windows Backup and Restore:

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


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

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions.

 **NOTE:** 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. For more information, see Help and Support.

Using system restore points

When backing up your system, you are creating a system restore point. A system restore point saves and names a snapshot of the 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 the system.


 **NOTE:** 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 the system files and settings.

When to create restore points

Create restore points:

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

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

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

 **NOTE:** 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 repairs or restores 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.

 **NOTE:** 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.


NOTE: 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 then restart the computer.
3. Follow the on-screen instructions.

Recovering from the dedicated recovery partition (select models only)

 **NOTE:** If the computer includes a solid-state drive (SSD), a recovery partition might not be included. Recovery discs are included for computers that do not have a partition. Use these discs to recover the operating system and software. To check for the presence of a recovery partition, select **Start > Computer**. If the partition is present, an HP recovery drive is listed in the Hard Disk Drives section of the window.

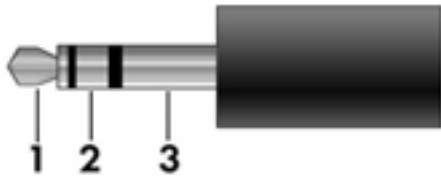
On some models, a recovery from the partition can be performed on the hard drive. This restores the computer to its factory condition.

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 screen appears. Then, press the **f11** key when the Press <F11> for recovery screen appears.
2. Click **System Recovery** in the Recovery Manager window.
3. Follow the on-screen instructions.

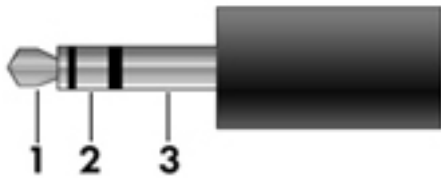
8 Connector pin assignments

Audio-in (microphone)



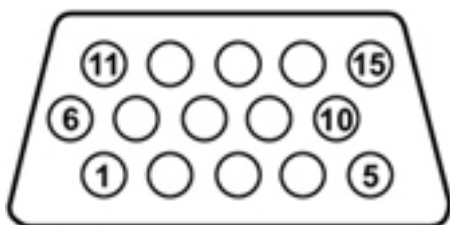
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



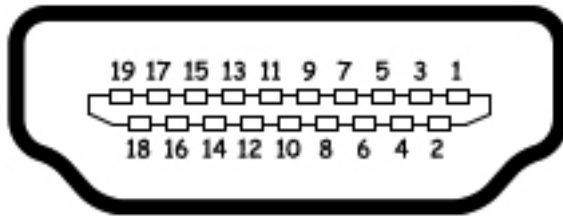
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



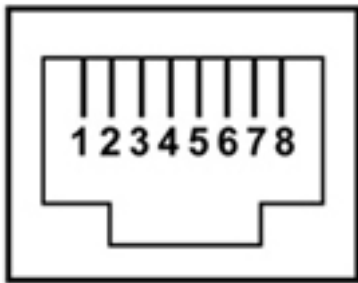
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



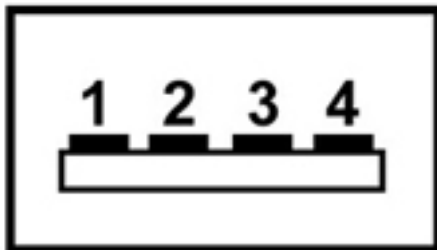
Pin	Signal
1	TMDS data 2+
2	TMDS data 2 shield
3	TMDS data 2-
4	TMDS data 1+
5	TMDS data 1 shield
6	TMDS data 1-
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0-
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	CEC
14	Not connected
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect

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

9 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 or regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries or regions

The requirements listed below are applicable to all countries or 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 each country or region's power system.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries or regions

Country or 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-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country 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-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

10 Recycling

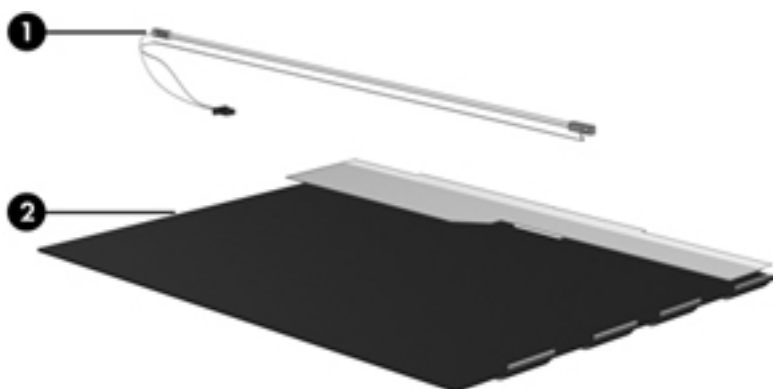
Battery

When a 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. Caution must be exercised 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 you remove these components, handle them carefully.
- 📄 **NOTE: 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 may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at <http://www.eiae.org>.

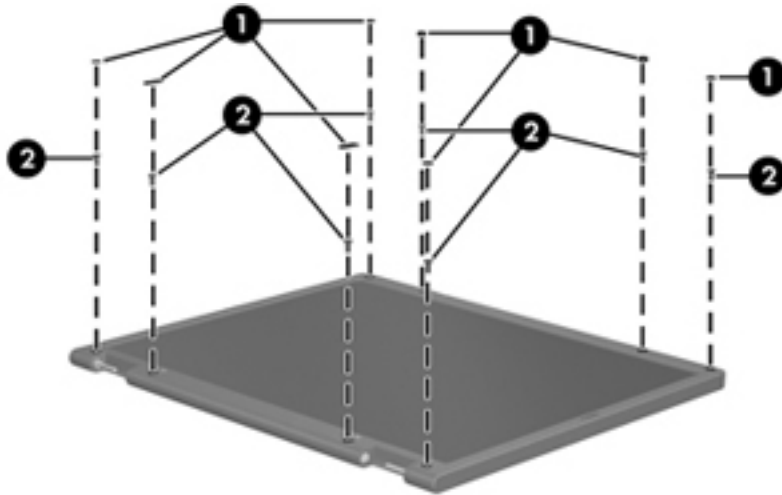
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



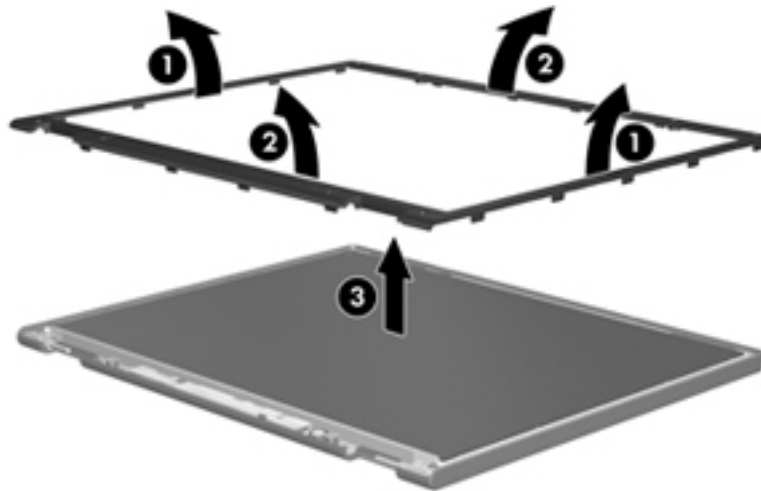
- 📄 **NOTE:** The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

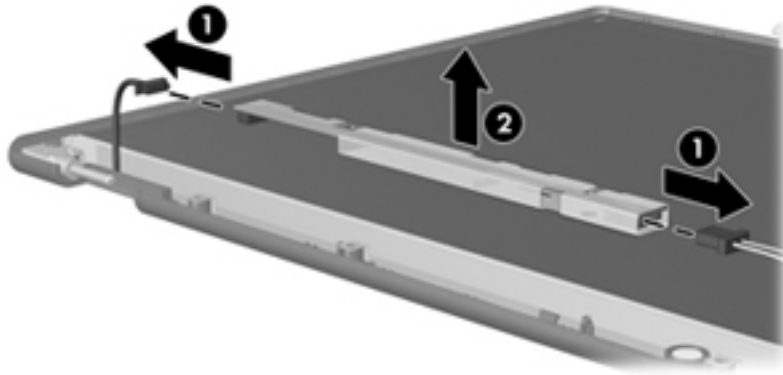
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



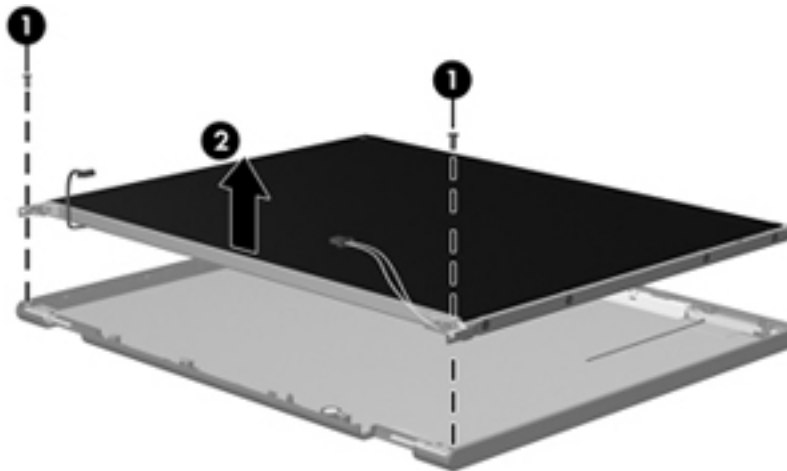
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



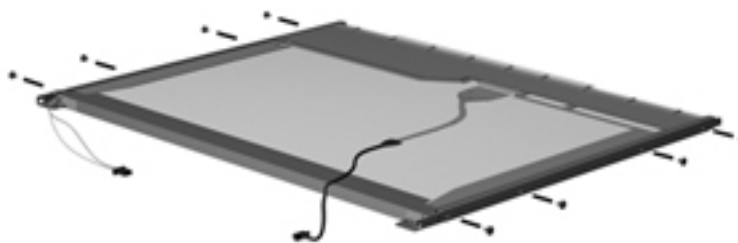
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.
6. Remove the display panel assembly **(2)** from the display enclosure.

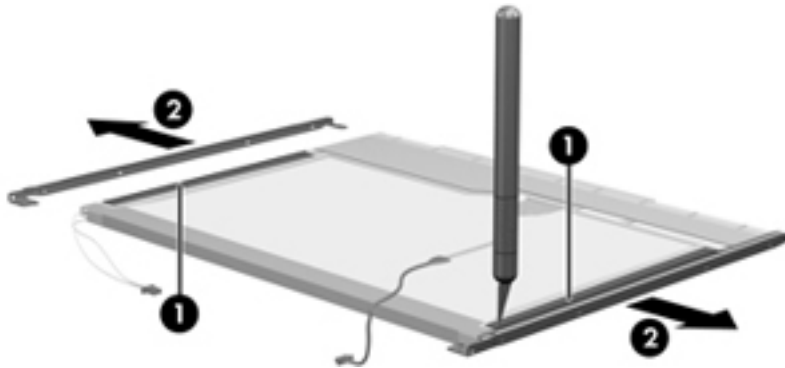


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.



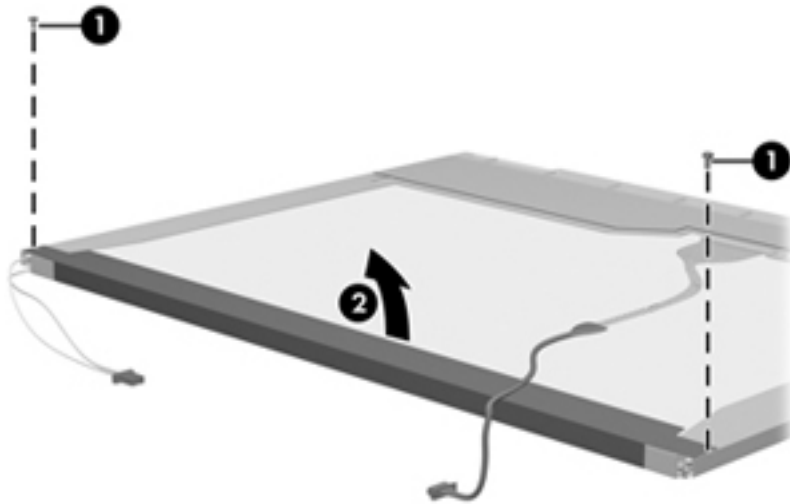
9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

10. Remove the display panel frame **(2)** from the display panel.



11. Remove the screws **(1)** that secure the backlight cover to the display panel.

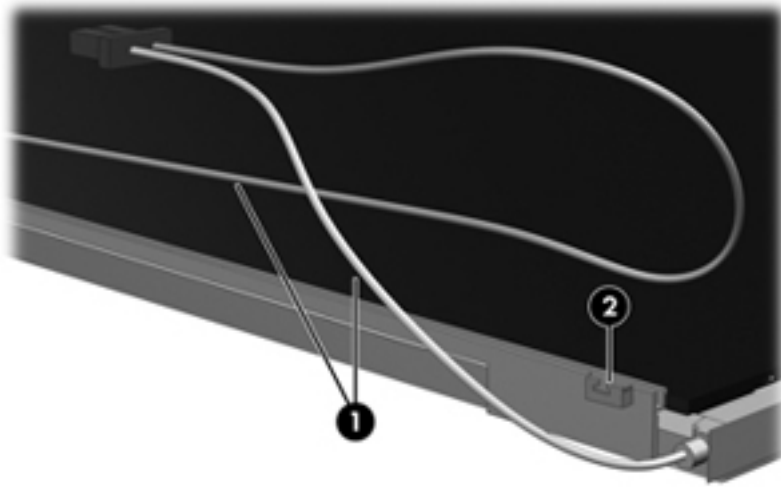
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



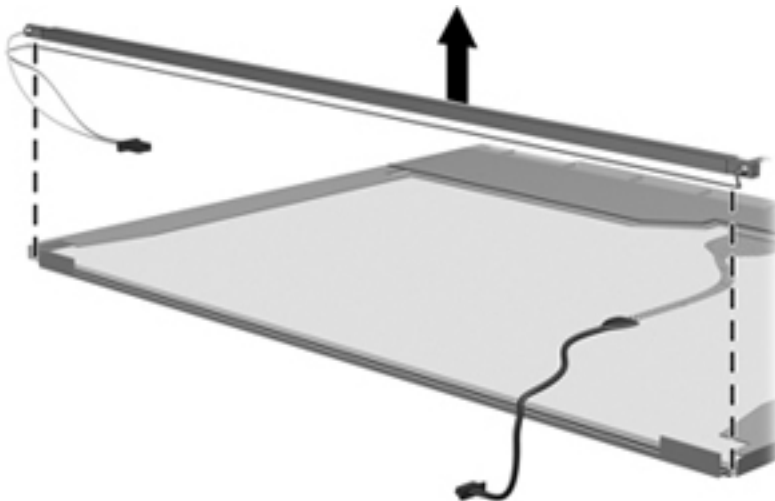
13. Remove the backlight cover.

14. Turn the display panel right-side up.

15. Remove the backlight cables (1) from the clip (2) in the display panel.

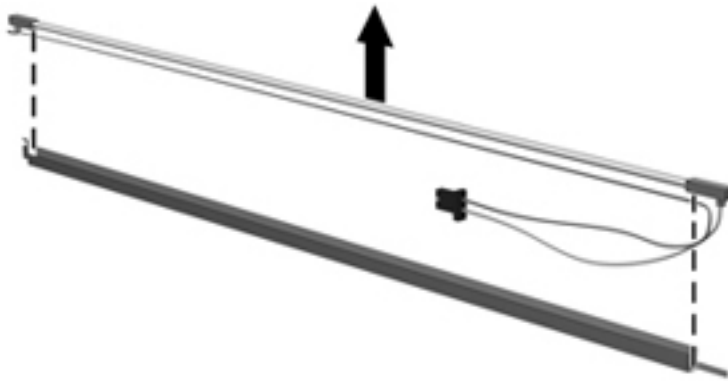


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.



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

18. Remove the backlight from the backlight frame.

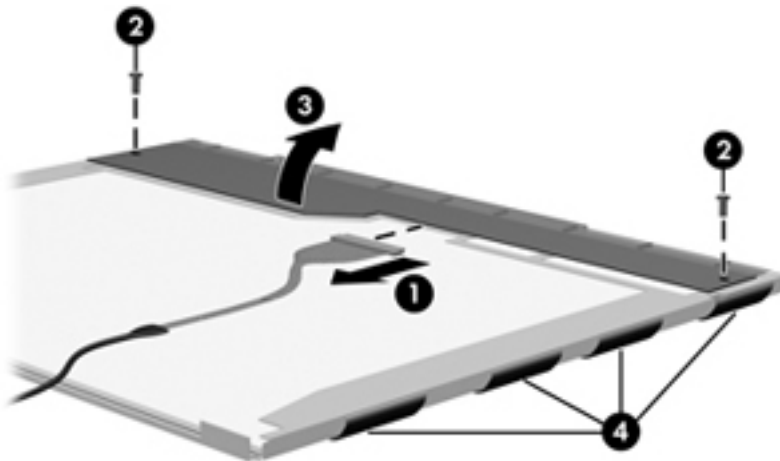


19. Disconnect the display cable **(1)** from the LCD panel.

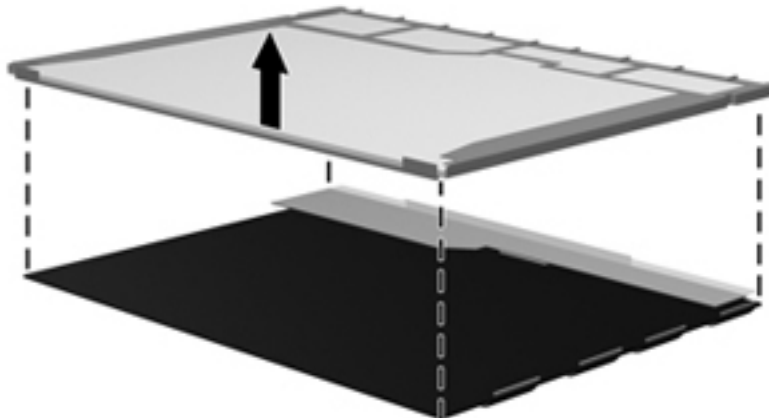
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.

21. Release the LCD panel **(3)** from the display rear panel.

22. Release the tape **(4)** that secures the LCD panel to the display rear panel.



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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