



HP Pavilion dv5 Entertainment PC

Maintenance and Service Guide

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Revision history

Revision	Publication date	Description
A	August 2010	<ul style="list-style-type: none">• Chapter 1 — added new descriptions for processors• Chapter 3 and Chapter 4 — added new spare part numbers and descriptions for the following components:<ul style="list-style-type: none">◦ Display assembly in watergarden finish◦ Display enclosure in watergarden finish◦ Keyboard in watergarden finish◦ Processor◦ Top cover in watergarden finish
B	December 2010	<ul style="list-style-type: none">• Chapter 1 — added new descriptions for hard drives and processors• Chapter 3 and Chapter 4 — added new spare part numbers and descriptions for the following components:<ul style="list-style-type: none">◦ Display bezel in watergarden finish◦ Hard drives without connector cable and isolator◦ Keyboard in watergarden finish for use in Brazil and Latin America◦ Processor

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	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Product Name	HP Pavilion dv5 Entertainment PC	√	√
Processors	AMD Phenom II N970 Quad Core 2.20-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N950 Quad Core 2.10-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N930 Quad Core 2.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N870 Triple Core 2.30-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N850 Triple Core 2.20-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N830 Triple Core 2.10-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N660 Triple Core 3.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N640 Triple Core 2.90-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II N620 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Phenom II P960 Quad Core 1.80-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
	AMD Phenom II P940 Quad Core 1.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Phenom II P920 Quad Core 1.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Phenom II P860 Triple Core 2.00-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Phenom II P840 Triple Core 1.90-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Phenom II P820 Triple Core 1.80-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Phenom II P650 Triple Core 2.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Turion II N570 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Turion II N550 Dual Core 2.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Turion II N530 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Turion II P560 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	√	
	AMD Turion II P540 Dual Core 2.40-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Turion II P520 Dual Core 2.30-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	√	
	AMD Athlon II N370 Dual Core 2.50-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	√	
	AMD Athlon II N350 Dual Core 2.40-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	√	

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
	AMD Athlon II N330 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	√	
	AMD Athlon II P360 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	√	
	AMD Athlon II P340 Dual Core 2.20-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	√	
	AMD Athlon II P320 Dual Core 2.10-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	√	
	AMD Sempron V160 Single Core 2.40-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	√	
	AMD Sempron V140 Single Core 2.30-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	√	
	AMD Sempron V120 Single Core 2.20-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	√	
	Intel Core Dual i7-640M 2.80-GHz (SC turbo up to 3.50-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i7-620M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-580M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-560M 2.66-GHz (SC turbo up to 3.20-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-540M 2.53-GHz (SC turbo up to 3.06-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-520M 2.40-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-480M 2.66-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-460M 2.53-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i5-450M 2.40-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
	Intel Core Dual i5-430M 2.26-GHz (SC turbo up to 2.53-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i3-620M 2.40-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i3-390M 2.66-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i3-380M 2.53-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i3-350M 2.26-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core Dual i3-330M 2.13-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)		√
	Intel Core2 P6300 2.26-GHz processor (1066-MHz, 3-MB L3 cache)		√
	Intel Core2 P6200 2.13-GHz processor (1066-MHz, 3-MB L3 cache)		√
	Intel Core2 P6100 2.00-GHz processor (1066-MHz, 3-MB L3 cache)		√
	Intel Core2 P6000 1.86-GHz processor (1066-MHz, 3-MB L3 cache)		√
Chipset	AMD RS880M Northbridge chipset	√	
	AMD SB820m Southbridge chipset	√	
	Intel HM55 Express chipset		√
Graphics	Unified memory architecture (UMA, integrated) with shared video memory, memory size is dynamic change	√	
	Intel HD Graphics		√
	Supports BD playback with HD decode, DX10.1 support and HDMI support	√	√
Panel	14.5-in, high-definition (HD), LED, BrightView (1366×768) display; typical brightness: 220 nits	√	√
	All display assemblies include 2 wireless local area network (WLAN) antenna cables		
	Supports 16:9 ultra wide aspect ratio		
	Lighted logo on top bezel		
Memory	2 customer-accessible/upgradable memory module slots	√	√
	Supports dual-channel memory	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
	Supports up to 8192 GB of system RAM	√	√
	DDR3/1333-MHz	√	√
	Supports the following configurations:	√	√
	<ul style="list-style-type: none"> 8192-MB total system memory (4096×2, available only on computer models equipped with a 64-bit operating system) 4096-MB total system memory (4096×1, 2048×2) 3072-MB total system memory (2048×1 + 1024×1) 2048-MB total system memory (2048×1, 1024×2) 1024-MB total system memory (1024×1, not available on computer models equipped with 64-bit operating systems) 		
	Supports 6144-MB total system memory (4096×1 + 1024×1) on computer models equipped with a 64-bit operating system		√
Hard drives	Supports 6.35-cm (2.5-in) hard drives (HD), 12.5-mm (.49-in) and 9.5-mm (.37-in) thicknesses	√	√
	Customer-accessible	√	√
	Serial ATA	√	√
	Accelerometer (HP Mobile Data Protection System 3D)	√	√
	Supports the following single hard drive configurations:	√	√
	<ul style="list-style-type: none"> 1-TB (5200-rpm) 750-GB (5200-rpm) 640-GB (7200- and 5400-rpm) 500-GB (7200-rpm) 320-GB (7200-rpm) 250-GB (7200-rpm) 		
Optical drives	Fixed	√	√
	Serial ATA	√	√
	12.7-mm tray load	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
	Supports the following drives: <ul style="list-style-type: none"> Blu-ray ROM DVD±RW Super Multi Double-Layer Drive DVD±RW and CD-RW Super Multi Double-Layer Combo Drive 	√	√
Audio and video	Integrated microphones with beam-forming, echo-cancellation, noise-suppression software	√	√
	IDT92HD80 HD audio with D3 mode support	√	√
	Supports Microsoft Premium Requirements	√	√
	Dolby advanced audio	√	√
	2 Pavilion-branded Altec Lansing speakers	√	√
	HP TrueVision low-light VGA webcam (fixed, no tilt) with activity LED, 640×480 by 24 frames per second	√	√
Ethernet	Integrated Realtek 10/100/1000 GB network interface card (NIC)	√	√
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module	√	√
	Two WLAN antennas built into display assembly	√	√
	Support for the following WLAN formats: <ul style="list-style-type: none"> Atheros 9285G 802.11b/g/n 1×1 WiFi Adapter Broadcom 4313 802.11b/g/n 1×1 WiFi Adapter Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter Ralink RT3090BC4 802.11b/g/n 1×1 WiFi and Bluetooth 2.1+EDR Combo Adapter 	√	√
	Support for the following WLAN formats: <ul style="list-style-type: none"> Broadcom 43224 802.11a/b/g/n 2×2 WiFi Adapter Intel Centrino Wireless-N 1000 802.11b/g/n 1×2 WLAN module Intel Centrino Advanced-N + WiMAX 6250 WLAN module 		√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
External media card	Digital Media Slot supports the following optional digital card formats: <ul style="list-style-type: none"> Memory Stick (MS) Memory Stick Pro (MSP) MultiMediaCard (MMC) Secure Digital High Capacity (SDHC) Memory card (standard and large size) xD-Picture card (XD) 	√	√
Ports	<ul style="list-style-type: none"> 3-pin AC power Audio-in (mono microphone) Audio-out (stereo headphone) eSATA combo with 3rd USB port HDMI CTS version 1.3 supporting 1080p, supporting 1920×1080 at 60 Hz and 1920×1200 at 60 Hz in DVI mode RJ-45 (Ethernet, includes link and activity lights) USB 2.0 (3) VGA (Dsub 15-pin) supporting 1600×1200 external resolution at 75-GHz (hot plug/unplug with auto-detect) 	√	√
Keyboard/ pointing devices	Full-size,backlit, island-style keyboard with DuraCoat	√	√
	Full-size (15.6 in), backlit, island-style keyboard with DuraCoat available in Europe, the Middle East, Africa, and North America	√	√
	Keyboard eject key design with eject icon	√	√
	ClickPad Touchpad with 2-way scroll and legend gesture support	√	√
	Taps enabled by default	√	√
Power requirements	65-W AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
	Support for the following batteries: <ul style="list-style-type: none"> • 9-cell, 2.80-Ah (93-Wh) Li-ion battery • 6-cell, 2.80-Ah (62-Wh) Li-ion battery • 6-cell, 2.55-Ah (55-Wh) Li-ion battery 	√	√
Security	Security cable slot	√	√
Operating system	Preinstalled: <ul style="list-style-type: none"> • Windows® 7 Home Basic 32-and 64-bit (requires a minimum of 2 GB of system memory) • Windows 7 Home Premium 32-and 64-bit (requires a minimum of 2 GB of system memory) • Windows 7 Professional 32-and 64-bit (requires a minimum of 2 GB of system memory) • Windows 7 Starter 32-bit • FreeDOS • RedFlag 	√	
	Preinstalled: <ul style="list-style-type: none"> • Windows 7 Home Basic 32-bit • Windows 7 Home Premium 64-bit • Windows 7 Professional 64-bit 		√
Serviceability	End-user replaceable parts: <ul style="list-style-type: none"> • AC adapter • Battery • Hard drive • Memory modules (2) • Optical drive • RTC battery • WLAN module 	√	√

2 External component identification

Identifying the hardware

Components included with the computer may vary by region and model. The illustrations in this chapter identify the standard features on most computer models.

To see a list of hardware installed on the computer:

1. Select **Start > Control Panel > System and Security**.
2. In the **System** area, click **Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

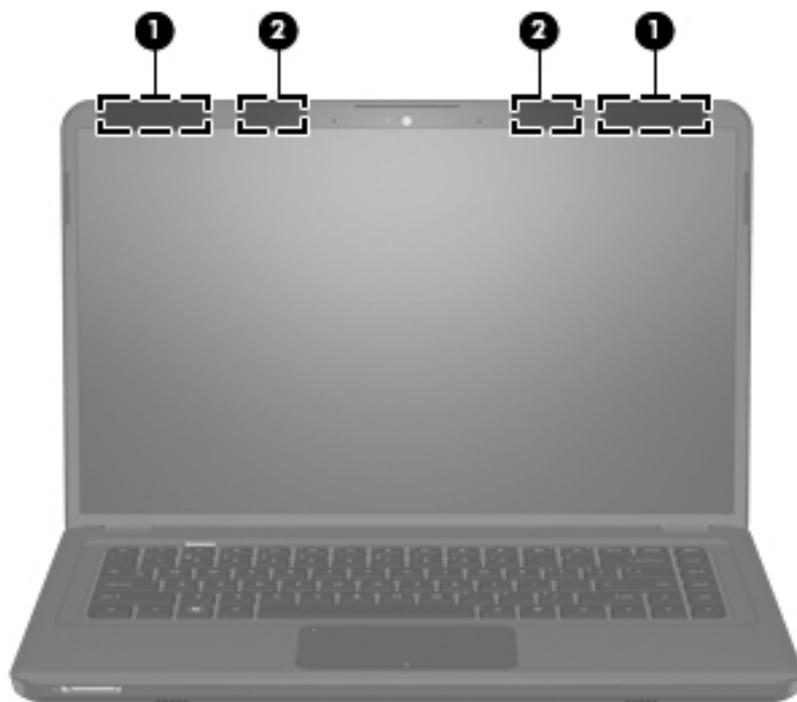
Top components

Display components



Item	Component	Description
(1)	Internal microphones (2)	Record sound.
(2)	HP TrueVision webcam light	On: The HP TrueVision webcam is in use.
(3)	HP TrueVision webcam	Records video and captures still photographs.

Wireless antenna locations



Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLAN).
(2)	WWAN antennas (2)* (selected models only)	Send and receive wireless signals to communicate with wireless wide-area networks (WWAN).

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

To see wireless regulatory notices, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

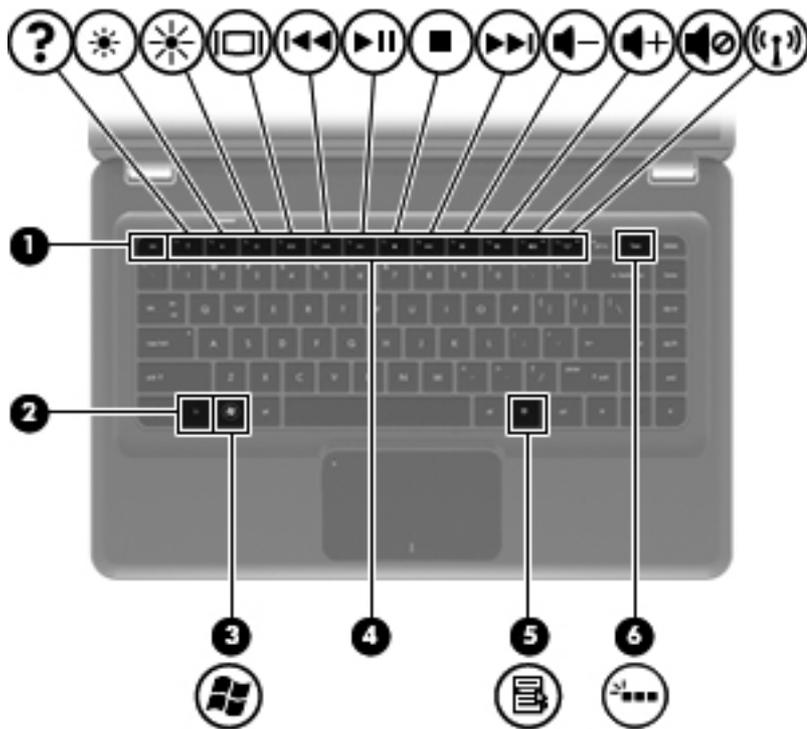
Buttons



Item	Component	Description
(1)	TouchPad on/off button*	Turns the TouchPad on and off. Quickly double-tap the button to turn the TouchPad on and off.
(2)	Power button*	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to 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 turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Security > Power Options.</p>

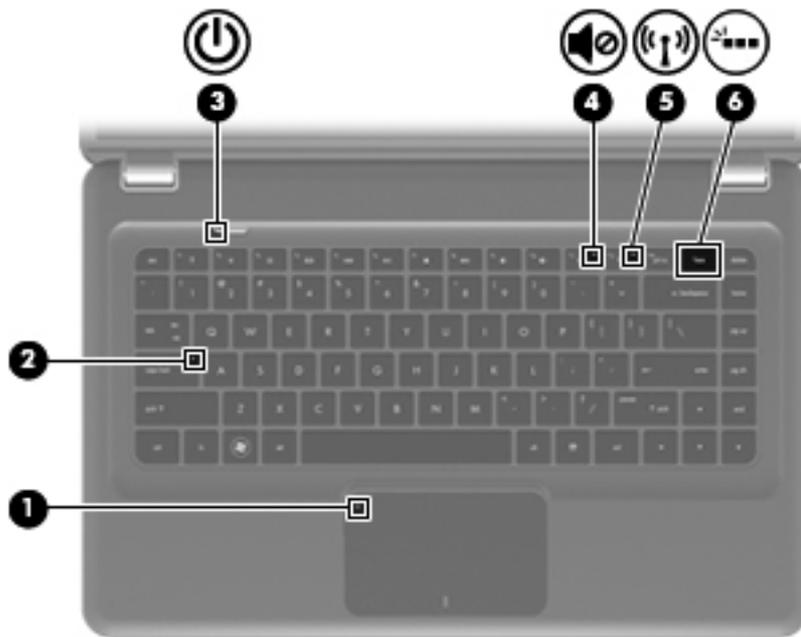
*This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.

Keys



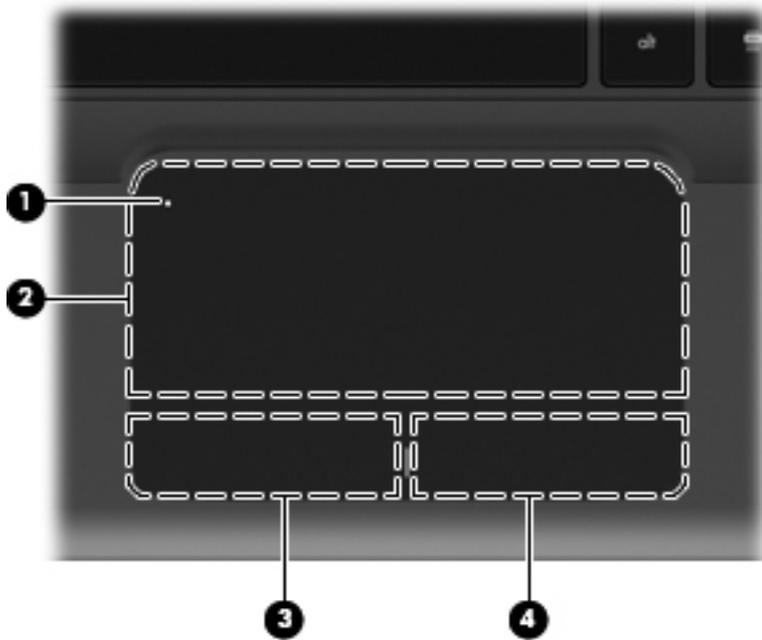
Item	Component	Description
(1)	<code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2)	<code>fn</code> key	Displays system information when pressed in combination with the <code>esc</code> key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Action keys	Execute frequently used functions.
(5)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(6)	Keyboard backlight key (select models only)	Turns the keyboard backlight on or off.

Lights



Item	Component	Description
(1)	TouchPad light	On: TouchPad is disabled.
(2)	Caps lock light	On: Caps Lock is on.
(3)	Power light	<ul style="list-style-type: none">On: The computer is on.Blinking: The computer is in the Sleep state. NOTE: Another power light is located on the left side of the computer.
(4)	Mute light	On: Speaker sound is off.
(5)	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 on. NOTE: Wireless devices are enabled at the factory. <ul style="list-style-type: none">Amber: All wireless devices are off.
(6)	Keyboard backlight (select models only)	On: The keyboard backlight is enabled.

TouchPad



Item	Component	Description
(1)	TouchPad on/off button*	Turns the TouchPad on and off. Quickly double-tap the button to turn the TouchPad on and off.
(2)	TouchPad*	Moves the pointer and selects or activates items on the screen.
(3)	Left TouchPad button*	Functions like the left button on an external mouse.
(4)	Right TouchPad button*	Functions like the right button on an external mouse.

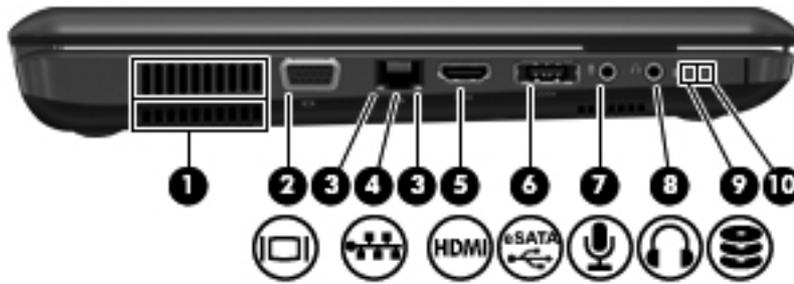
*This table describes factory settings. To view or change pointing device preferences, select **Start > Devices and Printers**. Then, right-click the icon representing your device, and select **Mouse settings**.

Front components



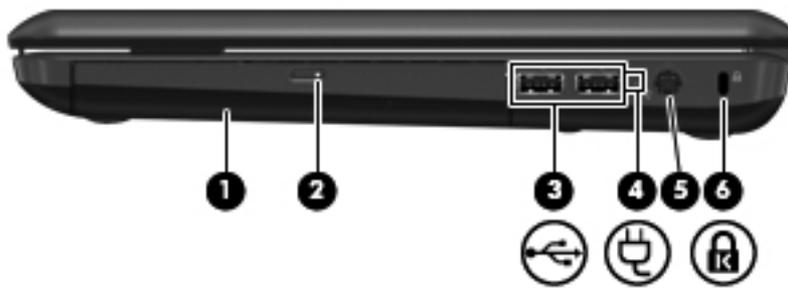
Item	Component	Description
(1)	Digital Media Slot	Supports the following optional digital card formats: <ul style="list-style-type: none">• Memory Stick (MS)• Memory Stick Pro (MSP)• MultiMediaCard (MMC)• Secure Digital High Capacity (SDHC) Memory card (standard and large size)• xD-Picture card (XD)
(2)	Speakers (2)	Produce sound.

Left-side components



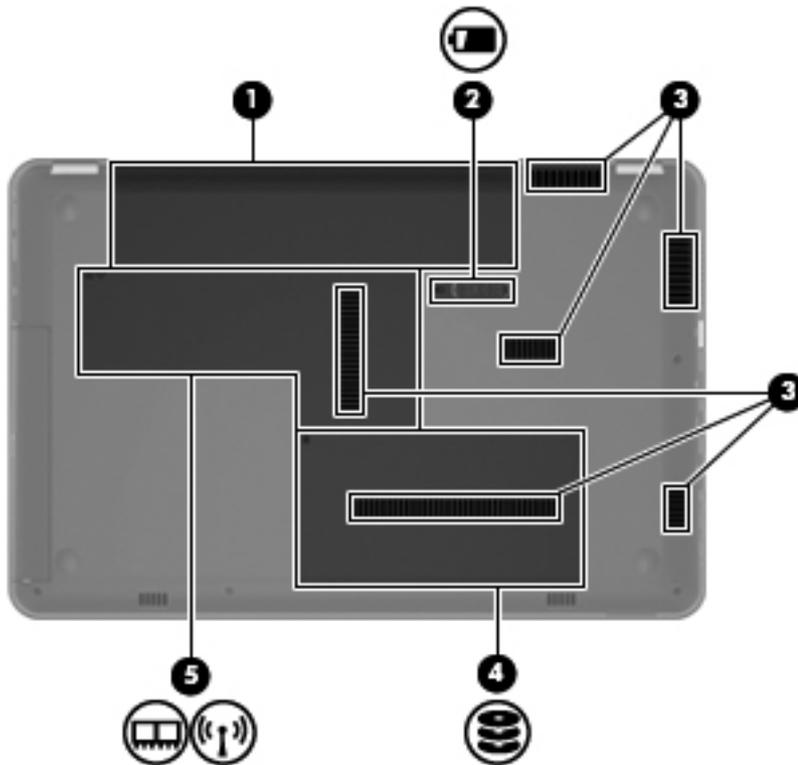
Item	Component	Description
(1)	Vents (2)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	External monitor port	Connects an optional external display, such as a monitor or projector, to the computer.
(3)	RJ-45 (network) lights (2)	<ul style="list-style-type: none"> White: The network is connected. Amber: The network is showing activity.
(4)	RJ-45 (network) jack (2)	Connects a network cable.
(5)	HDMI port	Connects an optional HDMI device.
(6)	eSATA/USB port	Connects high-performance eSATA components, such as an eSATA external hard drive, or connects an optional USB device.
(7)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(8)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
(9)	Drive light	<ul style="list-style-type: none"> White: The hard drive is being accessed. Amber: HP ProtectSmart Hard Drive Protection has temporarily parked the hard drive.
(10)	Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. NOTE: Another power light is located next to the power button.

Right-side components



Item	Component	Description
(1)	Optical drive	Reads/writes optical discs.
(2)	Optical drive light	Blinking: The optical drive is being accessed.
(3)	USB ports (2)	Connect optional USB devices.
(4)	Battery light	<ul style="list-style-type: none">• White: The computer is connected to external power and the battery is fully charged.• Amber: The computer is connected to external power and the battery is charging.• Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light continues to blink.
(5)	Power connector	Connects an AC adapter.
(6)	Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

Bottom components

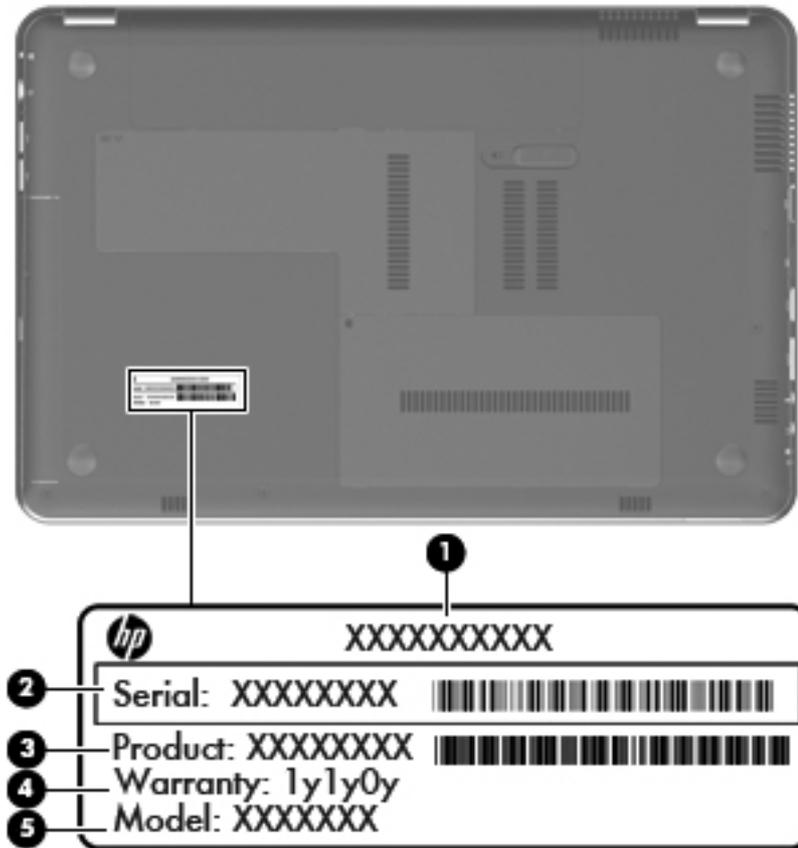


Item	Component	Description
(1)	Battery bay	Holds the battery.
(2)	Battery release latch	Releases the battery from the battery bay.
(3)	Vents (6)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)	Hard drive bay	Holds the hard drive.
(5)	Memory/wireless module compartment	Holds a wireless LAN module, a wireless WAN module, and memory modules. 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.

3 Illustrated parts catalog

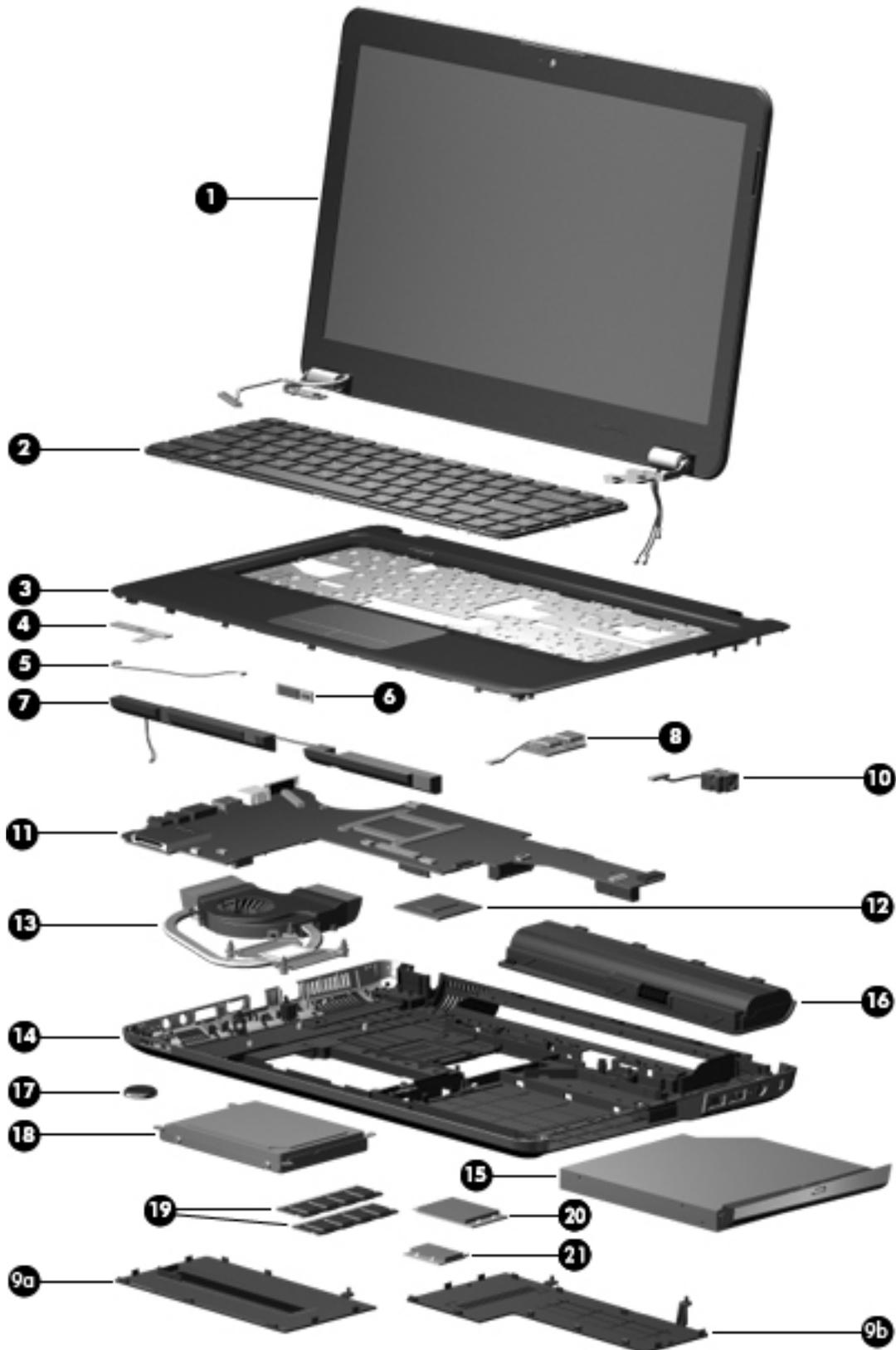
Service tag

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



Item	Component	Description
(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 determine what components and parts are needed.
(4)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.
(5)	Warranty period	This number describes the duration of the warranty period for the computer.

Computer major components



Item	Description	Spare part number
(1)	Display assembly (includes display panel cable, webcam/microphone module and cable, and 2 WLAN antenna cables and transceivers):	
	For use only with computer models equipped with WLAN and WWAN capability (includes 2 WWAN antenna cables and transceivers):	
	• 14.5-in LED, HD, BrightView display assembly in black cherry	614175-001
	• 14.5-in LED, HD, BrightView display assembly in champagne	614178-001
	• 14.5-in LED, HD, BrightView display assembly in midnight blue	615385-001
	• 14.5-in LED, HD, BrightView display assembly in Sonoma red	614176-001
	• 14.5-in LED, HD, BrightView display assembly in shell white	614177-001
	• 14.5-in LED, HD, BrightView display assembly in watergarden finish	625046-001
	For use only with computer models not equipped with WWAN capability:	
	• 14.5-in LED, HD, BrightView display assembly in black cherry	598227-001
	• 14.5-in LED, HD, BrightView display assembly in champagne	606872-001
	• 14.5-in LED, HD, BrightView display assembly in midnight blue	615384-001
	• 14.5-in LED, HD, BrightView display assembly in Sonoma red	606870-001
	• 14.5-in LED, HD, BrightView display assembly in shell white	606871-001
	NOTE: See Display assembly subcomponents on page 31 for more display component information and spare part numbers.	
(2)	Keyboard:	
	Keyboard with backlight (includes keyboard cable and keyboard light cable):	
	• For use in Brazil	606883-201
	• For use in Canada	606883-121
	• For use in Latin America	606883-161
	• For use in the United States	606883-001
	Keyboard without backlight (includes keyboard cable):	
	• For use in Brazil	608222-201
	• For use in Canada	608222-121
	• For use in Latin America	608222-161
	• For use in the United States	608222-001
	Keyboard without backlight in watergarden finish (includes keyboard cable):	
	• For use in Brazil	625047-201
	• For use in Latin America	625047-161
	• For use in the United States	625047-001

Item	Description	Spare part number
(3)	Top cover (includes TouchPad and cable):	
	In black cherry	606885-001
	In champagne	606888-001
	In midnight blue	615386-001
	In Sonoma red	606886-001
	In shell white	606887-001
	In watergarden finish	625048-001
(4)	Power button board (includes cable)	607976-001
	Cable Kit , includes:	607975-001
(5)	Bluetooth module cable	
	Hard drive cable (not illustrated)	
	NOTE: See Cable Kit on page 33 for more Cable Kit component information.	
(6)	Bluetooth module	537921-001
	NOTE: The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 607975-001.	
(7)	Speakers (include cable)	606891-001
(8)	USB board (includes cable)	616477-001
	Plastics Kit , includes:	606892-001
(9a)	Hard drive cover (includes 1 captive screw, secured by a C-clip)	
(9b)	Memory module/wireless module compartment cover (includes 2 captive screws, secured by C-clips)	
	NOTE: See Plastics Kit on page 33 for more Plastics Kit component information.	
(10)	Power connector cable	606890-001
(11)	System board (includes replacement thermal material):	
	For use on computer models equipped with an AMD processor (includes graphics subsystem with UMA memory)	598225-001
	For use on computer models equipped with an Intel processor (includes graphics subsystem with discrete memory)	607605-001
(12)	AMD processor (includes replacement thermal material):	
	AMD Phenom II N970 Quad Core 2.20-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	635496-001
	AMD Phenom II N950 Quad Core 2.10-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	616346-001
	AMD Phenom II N930 Quad Core 2.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	594169-001

Item	Description	Spare part number
	AMD Phenom II N870 Quad Core 2.30-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	635495-001
	AMD Phenom II N850 Triple Core 2.20-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	616345-001
	AMD Phenom II N830 Triple Core 2.10-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	594168-001
	AMD Phenom II N660 Triple Core 3.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	635494-001
	AMD Phenom II N640 Triple Core 2.90-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	616344-001
	AMD Phenom II N620 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	594166-001
	AMD Phenom II P960 Quad Core 1.80-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	634689-001
	AMD Phenom II P940 Quad Core 1.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	616336-001
	AMD Phenom II P920 Quad Core 1.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	594170-001
	AMD Phenom II P860 Triple Core 2.00-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	634688-001
	AMD Phenom II P840 Triple Core 1.90-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	616335-001
	AMD Phenom II P820 Triple Core 1.80-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	594167-001
	AMD Phenom II P650 Triple Core 2.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	634687-001
	AMD Turion II N570 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	634690-001
	AMD Turion II N550 Dual Core 2.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	616337-001
	AMD Turion II N530 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	594172-001
	AMD Turion II P560 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	634691-001
	AMD Turion II P540 Dual Core 2.40-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	616347-001
	AMD Turion II P520 Dual Core 2.30-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	594173-001
	AMD Athlon II N370 Dual Core 2.50-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	634686-001

Item	Description	Spare part number
	AMD Athlon II N350 Dual Core 2.40-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	616334-001
	AMD Athlon II N330 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	594164-001
	AMD Athlon II P360 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	636635-001
	AMD Athlon II P340 Dual Core 2.20-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	616343-001
	AMD Athlon II P320 Dual Core 2.10-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	594165-001
	AMD Sempron V160 Single Core 2.40-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	636634-001
	AMD Sempron V140 Single Core 2.30-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	616333-001
	AMD Sempron V120 Single Core 2.20-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	594171-001
	Intel processor (includes replacement thermal material):	
	Intel Core Dual i7-640M 2.80-GHz (SC turbo up to 3.50-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	625826-001
	Intel Core Dual i7-620M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	587259-002
	Intel Core Dual i5-580M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	625825-001
	Intel Core Dual i5-560M 2.66-GHz (SC turbo up to 3.20-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	625824-001
	Intel Core Dual i5-540M 2.53-GHz (SC turbo up to 3.06-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	594188-002
	Intel Core Dual i5-520M 2.40-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	594187-002
	Intel Core Dual i5-480M 2.66-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	634693-001
	Intel Core Dual i5-460M 2.53-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	626039-001
	Intel Core Dual i5-450M 2.40-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	613585-001
	Intel Core Dual i5-430M 2.26-GHz (SC turbo up to 2.53-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	597624-001
	Intel Core Dual i3-620M 2.40-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	613584-001
	Intel Core Dual i3-390M 2.66-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	634692-001
	Intel Core Dual i3-380M 2.53-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	625823-001

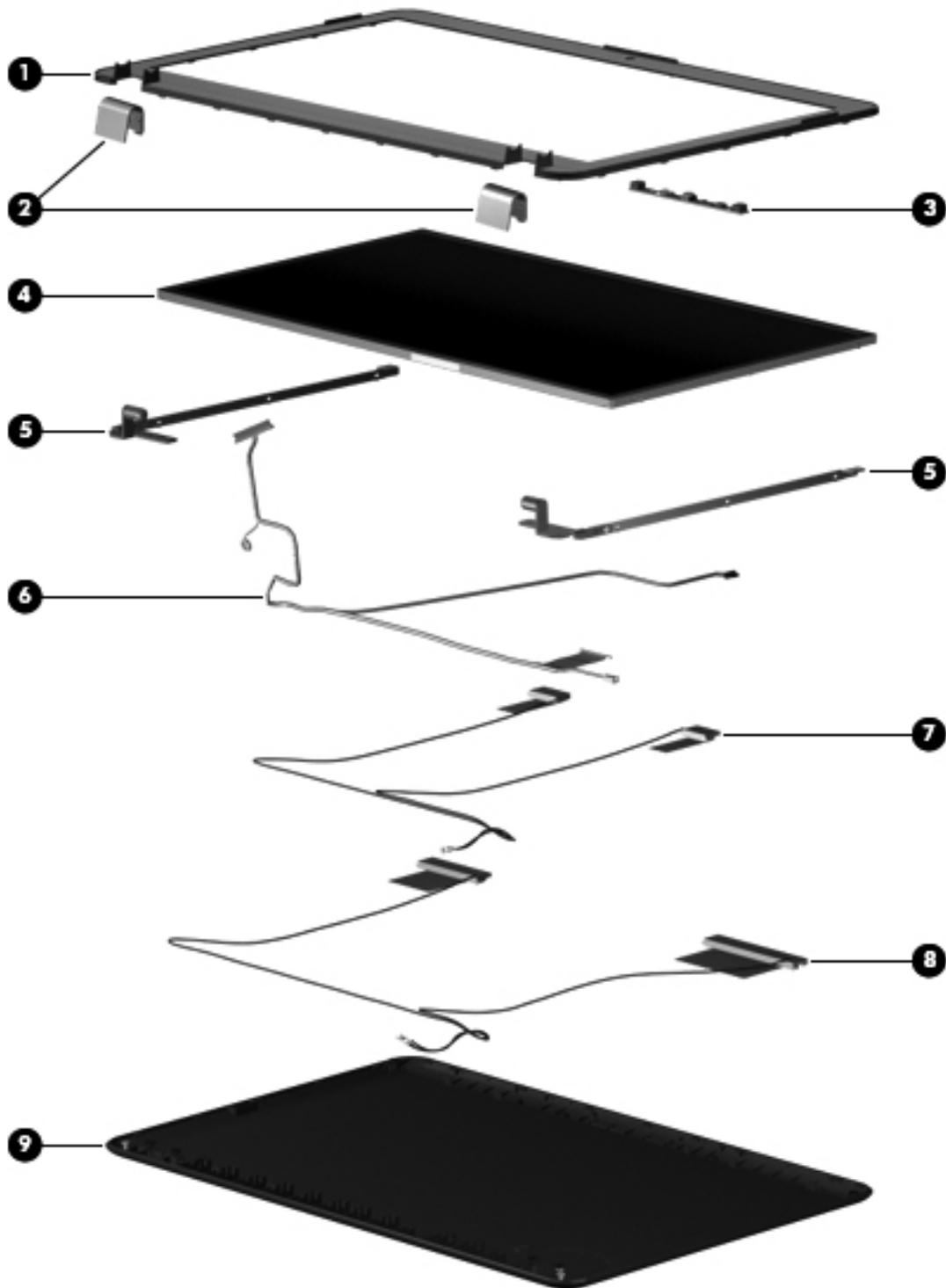
Item	Description	Spare part number
	Intel Core Dual i3-350M 2.26-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	597623-002
	Intel Core Dual i3-330M 2.13-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	597622-001
	Intel Core2 P6300 2.26-GHz processor (1066-MHz, 3-MB L3 cache)	635500-001
	Intel Core2 P6200 2.13-GHz processor (1066-MHz, 3-MB L3 cache)	625831-001
	Intel Core2 P6100 2.00-GHz processor (1066-MHz, 3-MB L3 cache)	613587-001
	Intel Core2 P6000 1.86-GHz processor (1066-MHz, 3-MB L3 cache)	613586-001
(13)	Fan/heat sink assembly (includes replacement thermal material):	
	For use only on computer models equipped with an AMD processor	606889-001
	For use only on computer models equipped with an Intel processor	607590-001
(14)	Base enclosure (includes base enclosure bracket, hard drive bay bracket, optical drive cable bracket, and 4 rubber feet)	606884-001
	Rubber Feet Kit (not illustrated, includes 4 rubber feet)	606894-001
(15)	Optical drive:	
	Blu-ray ROM with LightScribe DVD±RW Super Multi Double-Layer Drive	607601-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	607600-001
(16)	Battery:	
	9-cell, 93-Wh, 2.80-Ah, Li-ion battery	593550-001
	6-cell, 62-Wh, 2.80-Ah, Li-ion battery	593562-001
	6-cell, 55-Wh, 2.55-Ah, Li-ion battery	593554-001
(17)	RTC battery	449137-001
(18)	Hard drive:	
	For use only on computer models equipped with an AMD processor:	
	• 1-TB, 5400rpm (includes hard drive isolator)	607968-001
	• 500-GB, 7200rpm (does not include hard drive isolator)	603784-001
	For use only on computer models equipped with an Intel processor:	
	• 1-TB, 5400rpm (includes hard drive isolator)	612855-001
	For use on all computer models (includes hard drive isolator):	
	• 750-GB, 5200-rpm	607973-001
	• 640-GB, 5400-rpm	607972-001
	• 500-GB, 7200-rpm	607971-001
	• 320-GB, 7200-rpm	607970-001
	• 250-GB, 7200-rpm	607969-001
	Hard drive only (hard drive isolator not included) for use on all computer models:	

Item	Description	Spare part number
	<ul style="list-style-type: none"> • 1-TB, 5200-rpm 	603788-001
	<ul style="list-style-type: none"> • 750-GB, 7200-rpm 	633252-001
	<ul style="list-style-type: none"> • 750-GB, 5400-rpm 	603787-001
	<ul style="list-style-type: none"> • 640-GB, 7200-rpm 	621046-001
	<ul style="list-style-type: none"> • 640-GB, 5200-rpm 	603785-001
	<ul style="list-style-type: none"> • 500-GB, 5400-rpm 	608218-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive isolator)	
	For use only with 1-TB and 750-GB hard drives	617523-001
	For use only with 640-, 500-, 320-, and 250-GB hard drives	607974-001
(19)	Memory modules (2, PC3, 10600, 1333-MHz)	
	4-GB	599092-001
	2-GB	598856-001
	1-GB	598859-001
(20)	HSPA EV-DO WWAN module	531993-001
(21)	WLAN module:	
	For use only with computer models equipped with an Intel processor:	
	<ul style="list-style-type: none"> • Broadcom 43224 802.11a/b/g/n 2x2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States 	582564-001

Item	Description	Spare part number
	<ul style="list-style-type: none"> Broadcom 43224 802.11a/b/g/n 2x2 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	582564-002
	<ul style="list-style-type: none"> Intel Centrino Advanced-N 6200 802.11a/b/g/n 2x2 WLAN module 	572509-001
	<ul style="list-style-type: none"> Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module 	593530-001
	<ul style="list-style-type: none"> Intel Centrino Advanced-N + WiMAX 6250 WLAN module 	619997-001
	For use on all computer models:	
	<ul style="list-style-type: none"> Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States 	580101-001

Item	Description	Spare part number
•	Atheros 9285G 802.11b/g/n 1×1 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	580101-002
•	Broadcom 4313 802.11b/g/n 1×1 WiFi Adapter	593836-001
•	Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter	600370-001
•	Ralink RT3090BC4 802.11b/g/n 1×1 WiFi and Bluetooth 2.1+EDR Combo Adapter	602992-001

Display assembly subcomponents



Item	Description	Spare part number
(1)	Display bezel:	

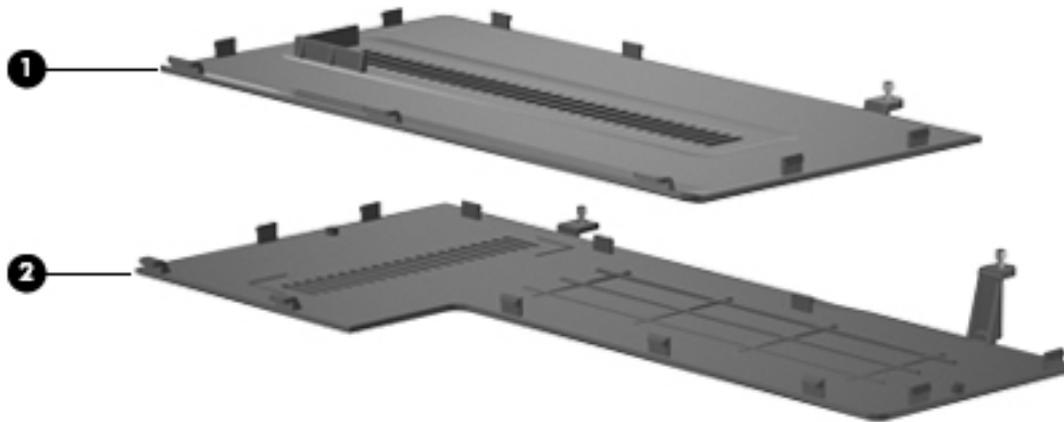
Item	Description	Spare part number
	For use only on computer models with a regular finish	606873-001
	For use only on computer models with a watergarden finish	632297-001
(2)	Display hinge covers (2)	606881-001
(3)	Webcam/microphone module	599420-001
(4)	14.5-in LED, HD, BrightView display panel:	
	For use only with computer models equipped with WWAN capability	614179-001
	For use only with computer models not equipped with WWAN capability	598226-001
(5)	Display Hinge Kit (includes left and right display hinges)	606878-001
(6)	Display panel cable (includes display panel cable, logo light cable, and webcam/microphone module cable)	606879-001
	Wireless Antenna Kit , includes:	607584-001
(7)	WLAN antenna cables and transceivers	
(8)	WWAN antenna cables and transceivers	
(9)	Display enclosure (includes logo light and cable and 2 WLAN transceivers and cables)	
	In black cherry	606874-001
	In champagne	606877-001
	In midnight blue	615383-001
	In shell white	606875-001
	In Sonoma red	606876-001
	In watergarden finish	625045-001

Cable Kit



Item	Description	Spare part number
	Cable Kit , includes	607975-001
(1)	Bluetooth module cable	
(2)	Hard drive cable	

Plastics Kit



Item	Description	Spare part number
	Plastics Kit	606892-001
(1)	Hard drive cover (includes one captive screw, secured by a C-clip)	
(2)	Memory module/wireless module compartment cover (includes 2 captive screws, secured by C-clips)	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drive:	
	For use only on computer models equipped with an AMD processor:	
	• 1-TB, 5400-rpm (includes hard drive isolator)	607968-001
	• 500-GB, 7200-rpm (does not include hard drive isolator)	603784-001
	For use only on computer models equipped with an Intel processor:	
	• 1-TB, 5400-rpm (includes hard drive isolator)	612855-001
	For use on all computer models (includes hard drive isolator):	
	• 750-GB, 5200-rpm	607973-001
	• 640-GB, 5400-rpm	607972-001
	• 500-GB, 7200-rpm	607971-001
	• 320-GB, 7200-rpm	607970-001
	• 250-GB, 7200-rpm	607969-001
	Hard drive only for use on all computer models (hard drive isolator not included):	
	• 1-TB, 5200-rpm	603788-001
	• 750-GB, 7200-rpm	633252-001
	• 750-GB, 5400-rpm	603787-001
	• 640-GB, 7200-rpm	621046-001
	• 640-GB, 5200-rpm	603785-001
	• 500-GB, 5400-rpm	608218-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive isolator):	

Item	Description	Spare part number
	For use only with 1-TB and 750-GB hard drives	617523-001
	For use only with 640-, 500-, 320-, and 250-GB hard drives	607974-001
(2)	Optical drive:	
	Blu-ray ROM with LightScribe DVD±RW Super Multi Double-Layer Drive	607601-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	607600-001

Miscellaneous parts

Description	Spare part number
65-W HP Smart AC adapter	609939-001
Power cord:	
For use in Argentina	490371-D01
For use in Brazil	490371-202
For use in Italy	490371-061
For use in the United States and Canada	490371-001
Screw Kit	606893-001

Sequential part number listing

Spare part number	Description
449137-001	RTC battery
409371-001	Power cord for use in the United States and Canada
409371-061	Power cord for use in Italy
409371-202	Power cord for use in Brazil
409371-D01	Power cord for use in Argentina
531993-001	HSPA EV-DO WWAN module
537921-001	Bluetooth module
572509-001	Intel Centrino Advanced-N 6200 802.11a/b/g/n 2x2 WLAN module
580101-001	Atheros AR9280 802.11a/b/g/n 2x2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States

Spare part number	Description
580101-002	Atheros AR9280 802.11a/b/g/n 2x2 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
582564-001	Broadcom 43224 802.11a/b/g/n 2x2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
582564-002	Broadcom 43224 802.11a/b/g/n 2x2 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
587259-002	Intel Core Dual i7-620M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
593530-001	Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module
593550-001	9-cell, 93-Wh, 2.80-Ah, Li-ion battery

Spare part number	Description
593554-001	6-cell, 55-Wh, 2.55-Ah, Li-ion battery
593562-001	6-cell, 62-Wh, 2.80-Ah, Li-ion battery
593836-001	Broadcom 4313 802.11b/g/n 11 WiFi Adapter
594164-001	AMD Athlon II N330 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second; includes replacement thermal material)
594165-001	AMD Athlon II P320 Dual Core 2.10-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second; includes replacement thermal material)
594166-001	AMD Phenom II N620 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
594167-001	AMD Phenom II P820 Triple Core 1.80-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
594168-001	AMD Phenom II N830 Triple Core 2.10-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
594169-001	AMD Phenom II N930 Quad Core 2.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
594170-001	AMD Phenom II P920 Quad Core 1.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
594171-001	AMD Sempron V120 Single Core 2.20-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second; includes replacement thermal material)
594172-001	AMD Turion II N530 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
594173-001	AMD Turion II P520 Dual Core 2.30-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
594187-002	Intel Core Dual i5-520M 2.40-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
594188-002	Intel Core Dual i5-540M 2.53-GHz (SC turbo up to 3.06-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
597622-001	Intel Core Dual i3-330M 2.13-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
597623-002	Intel Core Dual i3-350M 2.26-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
597624-001	Intel Core Dual i5-430M 2.26-GHz (SC turbo up to 2.53-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
598225-001	System board for use on computer models equipped with an AMD processor (includes graphics subsystem with UMA memory and replacement thermal material)
598226-001	14.5-in LED, HD, BrightView display panel for use only with computer models not equipped with WWAN capability
598227-001	14.5-in LED, HD, BrightView display assembly for use only with computer models not equipped with WWAN capability in black cherry
598856-001	2-GB memory module (PC3, 10600, 1333-MHz)

Spare part number	Description
598859-001	1-GB memory module (PC3, 10600, 1333-MHz)
599092-001	4-GB memory module (PC3, 10600, 1333-MHz)
599420-001	Webcam/microphone module
600370-001	Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter
602992-001	Ralink RT3090BC4 802.11b/g/n 1×1 WiFi and Bluetooth 2.1+EDR Combo Adapter
603784-001	500-GB, 7200-rpm hard drive for use only on computer models equipped with an AMD processor (does not include hard drive isolator)
603785-001	640-GB, 5400-rpm hard drive for use on all computer models (does not include hard drive isolator)
603787-001	750-GB, 5200-rpm hard drive for use on all computer models (does not include hard drive isolator)
603788-001	1-TB, 5200-rpm hard drive for use on all computer models (does not include hard drive isolator)
606870-001	14.5-in LED, HD, BrightView display assembly for use only with computer models not equipped with WWAN capability in Sonoma red
606871-001	14.5-in LED, HD, BrightView display assembly for use only with computer models not equipped with WWAN capability in shell white
606872-001	14.5-in LED, HD, BrightView display assembly for use only with computer models not equipped with WWAN capability in champagne
606873-001	Display bezel
606874-001	Display enclosure in black cherry (includes logo light and cable and 2 WLAN transceivers and cables)
606875-001	Display enclosure in shell white (includes logo light and cable and 2 WLAN transceivers and cables)
606876-001	Display enclosure in Sonoma red (includes logo light and cable and 2 WLAN transceivers and cables)
606877-001	Display enclosure in champagne (includes logo light and cable and 2 WLAN transceivers and cables)
606878-001	Display Hinge Kit (includes left and right display hinges)
606879-001	Display panel cable (includes display panel cable, logo light cable, and webcam/microphone module cable)
606881-001	Display hinge covers
606883-001	Keyboard with backlight for use in the United States (includes keyboard cable and backlight cable)
606883-121	Keyboard with backlight for use in Canada (includes keyboard cable and backlight cable)
606883-161	Keyboard with backlight for use in Latin America (includes keyboard cable and backlight cable)
606883-201	Keyboard with backlight for use in Brazil (includes keyboard cable and backlight cable)
606884-001	Base enclosure (includes base enclosure bracket, hard drive bay bracket, optical drive cable bracket, and 4 rubber feet)
606885-001	Top cover in black cherry (includes TouchPad and cable)
606886-001	Top cover in Sonoma red (includes TouchPad and cable)
606887-001	Top cover in shell white (includes TouchPad and cable)

Spare part number	Description
606888-001	Top cover in champagne (includes TouchPad and cable)
606889-001	Fan/heat sink assembly for use only on computer models equipped with an AMD processor (includes replacement thermal material)
606890-001	Power connector cable
606891-001	Speakers (include cable)
606892-001	Plastics Kit NOTE: See Plastics Kit on page 33 for more Plastics Kit component information.
606893-001	Screw Kit
606894-001	Rubber Feet Kit (includes 4 rubber feet)
607584-001	Wireless Antenna Kit
607590-001	Fan/heat sink assembly for use only on computer models equipped with an Intel processor (includes replacement thermal material)
607600-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe
607601-001	Blu-ray ROM with LightScribe DVD±RW Super Multi Double-Layer Drive
607605-001	System board for use on computer models equipped with an Intel processor (includes graphics subsystem with discrete memory; includes replacement thermal material)
607968-001	1-TB, 5400-rpm hard drive for use only on computer models equipped with an AMD processor (includes hard drive isolator)
607969-001	250-GB, 7200-rpm hard drive for use on all computer models (includes hard drive isolator)
607970-001	320-GB, 7200-rpm hard drive for use on all computer models (includes hard drive isolator)
607971-001	500-GB, 7200-rpm hard drive for use on all computer models (includes hard drive isolator)
607972-001	640-GB, 5400-rpm hard drive for use on all computer models (includes hard drive isolator)
607973-001	750-GB, 5200-rpm hard drive for use on all computer models (includes hard drive isolator)
607974-001	Hard Drive Hardware Kit for use only with 640-, 500-, 320-, and 250-GB hard drives (includes hard drive isolator)
607975-001	Cable Kit NOTE: See Cable Kit on page 33 for more Cable Kit component information.
607976-001	Power button board (includes cable)
608218-001	500-GB, 5400-rpm hard drive for use only on computer models equipped with an Intel processor (does not include hard drive isolator)
608222-001	Keyboard without backlight for use in the United States (includes keyboard cable)
608222-121	Keyboard without backlight for use in Canada (includes keyboard cable)
608222-161	Keyboard without backlight for use in Latin America (includes keyboard cable)
608222-201	Keyboard without backlight for use in Brazil (includes keyboard cable)

Spare part number	Description
609939-001	65-W HP Smart AC adapter
612855-001	1-TB, 5400-rpm hard drive for use only on computer models equipped with an Intel processor (includes hard drive isolator)
613584-001	Intel Core Dual i3-620M 2.40-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
613585-001	Intel Core Dual i5-450M 2.40-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
613586-001	Intel Core2 P6000 1.86-GHz processor (1066-MHz, 3-MB L3 cache; includes replacement thermal material)
613587-001	Intel Core2 P6100 2.00-GHz processor (1066-MHz, 3-MB L3 cache; includes replacement thermal material)
614175-001	14.5-in LED, HD, BrightView display assembly for use only with computer models equipped with WLAN and WWAN capability in black cherry (includes display panel cable, webcam/microphone module and cable, 2 WLAN antenna cables and transceivers, and 2 WWAN antenna cables and transceivers)
614176-001	14.5-in LED, HD, BrightView display assembly for use only with computer models equipped with WLAN and WWAN capability in Sonoma red (includes display panel cable, webcam/microphone module and cable, 2 WLAN antenna cables and transceivers, and 2 WWAN antenna cables and transceivers)
614177-001	14.5-in LED, HD, BrightView display assembly for use only with computer models equipped with WLAN and WWAN capability in shell white (includes display panel cable, webcam/microphone module and cable, 2 WLAN antenna cables and transceivers, and 2 WWAN antenna cables and transceivers)
614178-001	14.5-in LED, HD, BrightView display assembly for use only with computer models equipped with WLAN and WWAN capability in champagne (includes display panel cable, webcam/microphone module and cable, 2 WLAN antenna cables and transceivers, and 2 WWAN antenna cables and transceivers)
614179-001	14.5-in LED, HD, BrightView display panel for use only with computer models equipped with WWAN capability
615383-001	Display enclosure in midnight blue (includes logo light and cable and 2 WLAN transceivers and cables)
615384-001	14.5-in LED, HD, BrightView display assembly for use only with computer models not equipped with WWAN capability in midnight blue
615385-001	14.5-in LED, HD, BrightView display assembly for use only with computer models equipped with WLAN and WWAN capability in midnight blue (includes display panel cable, webcam/microphone module and cable, 2 WLAN antenna cables and transceivers, and 2 WWAN antenna cables and transceivers)
615386-001	Top cover in midnight blue (includes TouchPad and cable)
616333-001	AMD Sempron V140 Single Core 2.30-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second; includes replacement thermal material)
616334-001	AMD Athlon II N350 Dual Core 2.40-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second; includes replacement thermal material)
616335-001	AMD Phenom II P840 Triple Core 1.90-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
616336-001	AMD Phenom II P940 Quad Core 1.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)

Spare part number	Description
616337-001	AMD Turion II N550 Dual Core 2.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
616343-001	AMD Athlon II P340 Dual Core 2.20-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second; includes replacement thermal material)
616344-001	AMD Phenom II N640 Triple Core 2.90-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
616345-001	AMD Phenom II N850 Triple Core 2.20-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
616346-001	AMD Phenom II N950 Quad Core 2.10-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
616347-001	AMD Turion II P540 Dual Core 2.40-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
616477-001	USB board (includes cable)
617523-001	Hard Drive Hardware Kit for use only with 1-TB and 750-GB hard drives (includes hard drive isolator)
619997-001	Intel Centrino Advanced-N + WiMAX 6250 WLAN module
621046-001	640-GB, 7200-rpm hard drive for use on all computer models (does not include hard drive isolator)
615045-001	Display enclosure in watergarden finish (includes logo light and cable and 2 WLAN transceivers and cables)
625046-001	14.5-in LED, HD, BrightView display assembly for use only with computer models equipped with WLAN and WWAN capability in watergarden finish (includes display panel cable, webcam/microphone module and cable, 2 WLAN antenna cables and transceivers, and 2 WWAN antenna cables and transceivers)
625047-001	Keyboard without backlight in watergarden finish for use in the United States (includes keyboard cable)
625047-161	Keyboard without backlight in watergarden finish for use in Latin America (includes keyboard cable)
625047-201	Keyboard without backlight in watergarden finish for use in Brazil (includes keyboard cable)
625048-001	Top cover in watergarden finish (includes TouchPad and cable)
625823-001	Intel Core Dual i3-380M 2.53-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
625824-001	Intel Core Dual i5-560M 2.66-GHz (SC turbo up to 3.20-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
625825-001	Intel Core Dual i5-580M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
625826-001	Intel Core Dual i7-640M 2.80-GHz (SC turbo up to 3.50-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
625831-001	Intel Core2 P6200 2.13-GHz processor (1066-MHz, 3-MB L3 cache; includes replacement thermal material)
626039-001	Intel Core Dual i5-460M 2.53-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
632297-001	Display bezel in watergarden finish

Spare part number	Description
633252-001	750-GB, 7200-rpm hard drive for use on all computer models (does not include hard drive isolator)
634686-001	AMD Athlon II N370 Dual Core 2.50-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second; includes replacement thermal material)
634687-001	AMD Phenom II P650 Triple Core 2.60-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
634688-001	AMD Phenom II P860 Triple Core 2.00-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
634689-001	AMD Phenom II P960 Triple Core 1.80-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
634690-001	AMD Turion II N750 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
634691-001	AMD Turion II P560 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second; includes replacement thermal material)
634692-001	Intel Core Dual i3-390M 2.66-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
634693-001	Intel Core Dual i5-480M 2.66-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache; includes replacement thermal material)
635494-001	AMD Phenom II N660 Triple Core 3.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
635495-001	AMD Phenom II N870 Triple Core 2.30-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
635496-001	AMD Phenom II N970 Triple Core 2.20-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second; includes replacement thermal material)
635500-001	Intel Core2 P6300 2.26-GHz processor (1066-MHz, 3-MB L3 cache; includes replacement thermal material)
636634-001	AMD Sempron V160 Single Core 2.40-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)
636635-001	AMD Athlon II P360 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second; 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:

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

Service considerations

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

 **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 an internal 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.

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 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 plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

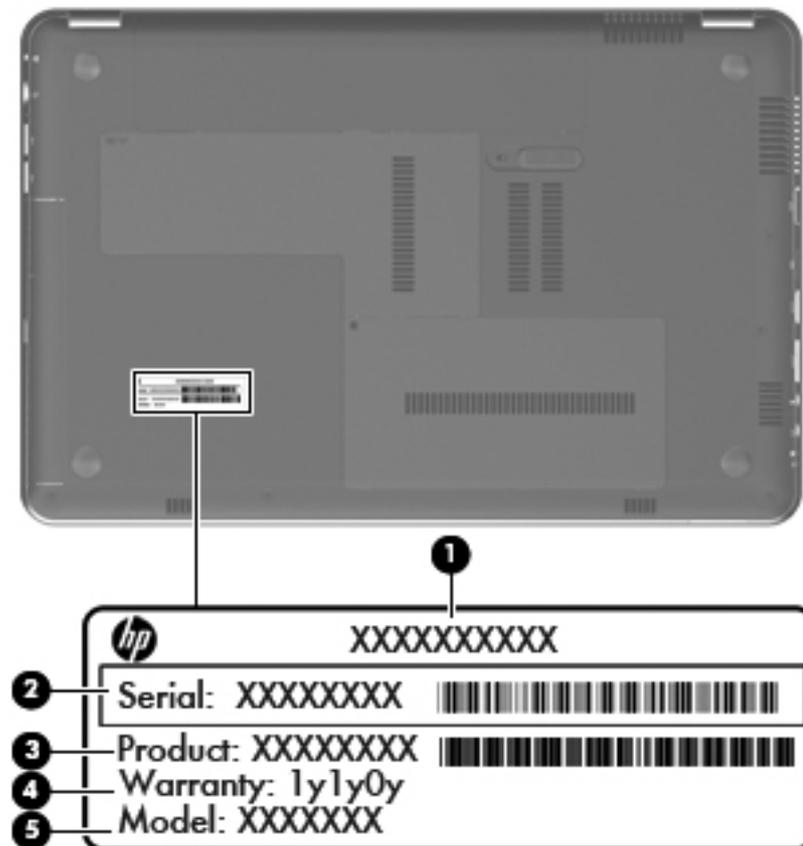
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 68 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw and screw lock size and location during removal and replacement.

Service tag

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

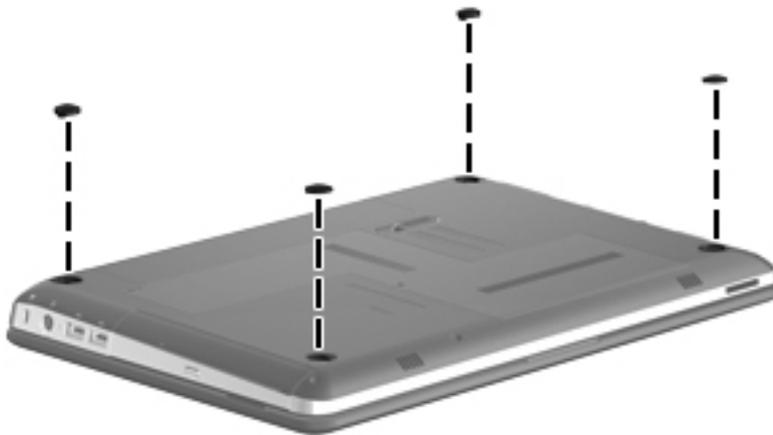


Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician determine what components and parts are needed.

Item	Component	Description
(4)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.
(5)	Warranty period	This number describes the duration of the warranty period for the computer.

Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Feet Kit, spare part number 606894-001. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

Description	Spare part number
9-cell, 93-Wh, 2.80-Ah, Li-ion battery	593550-001
6-cell, 62-Wh, 2.80-Ah, Li-ion battery	593562-001
6-cell, 55-Wh, 2.55-Ah, Li-ion battery	593554-001

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, with the front toward you.
2. Slide the battery release latch **(1)** to release the battery.
3. Pivot the front edge of the battery **(2)** upward.



4. Remove the battery from the computer.

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.

Memory module

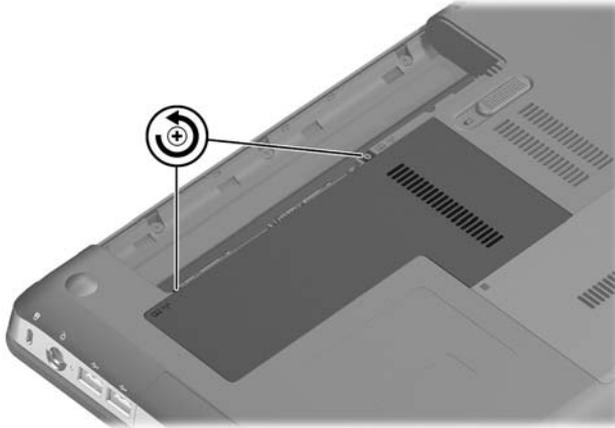
Description	Spare part number
4-GB (PC3, 10600, 1333-MHz)	599092-001
2-GB (PC3, 10600, 1333-MHz)	598856-001
1-GB (PC3, 10600, 1333-MHz)	598859-001

Before removing a 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 49](#)).

Remove the memory module:

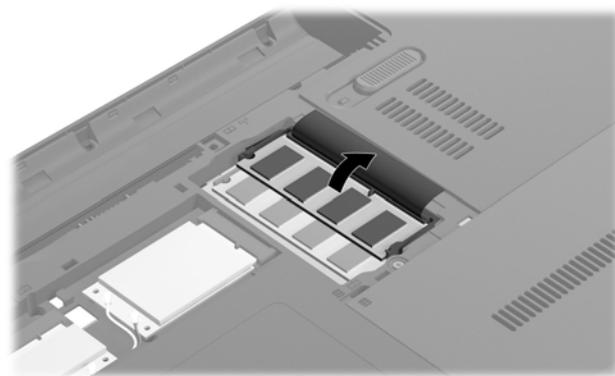
1. Loosen the two captive screws that secure the memory module/wireless module compartment cover to the computer.



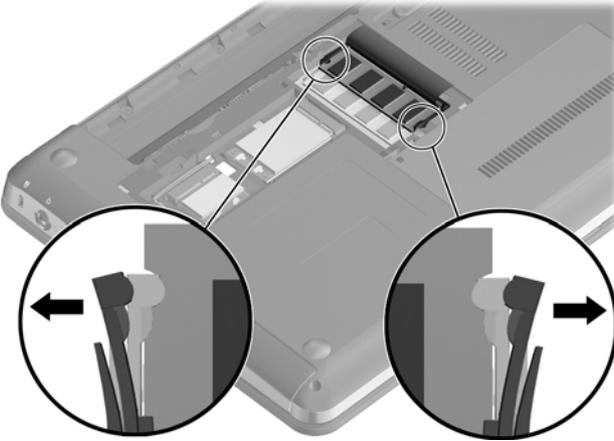
2. Lift the rear edge of the memory module/wireless module compartment cover until it detaches from the computer.



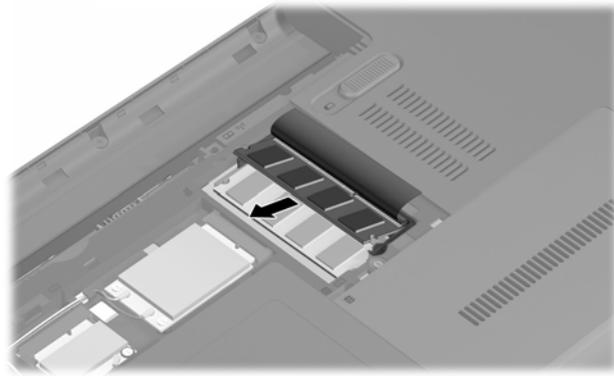
3. Remove the memory module/wireless module compartment cover. The memory module/wireless module compartment cover is included in the Plastics Kit, spare part number 606892-001.
4. Release the memory module shield by folding in back.



5. Spread the retaining tabs on each side of the memory module slot to release the memory module. (The memory module tilts up.)



6. Remove the memory module by pulling it away from the slot at an angle.



Reverse this procedure to install a memory module.

WLAN module

Description	Spare part number
For use only with computer models equipped with an Intel processor:	
<ul style="list-style-type: none"> Broadcom 43224 802.11a/b/g/n 2x2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States 	582564-001
<ul style="list-style-type: none"> Broadcom 43224 802.11a/b/g/n 2x2 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	582564-002
<ul style="list-style-type: none"> Intel Centrino Advanced-N 6200 802.11a/b/g/n 2x2 WLAN module 	572509-001
<ul style="list-style-type: none"> Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module 	593530-001
<ul style="list-style-type: none"> Intel Centrino Advanced-N + WiMAX 6250 WLAN module 	619997-001
For use on all computer models:	
<ul style="list-style-type: none"> Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States 	580101-001

Description	Spare part number
<ul style="list-style-type: none"> Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	580101-002
<ul style="list-style-type: none"> Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter 	593836-001
<ul style="list-style-type: none"> Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter 	600370-001
<ul style="list-style-type: none"> Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter 	602992-001

⚠ 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 device functionality, and then contact technical support.

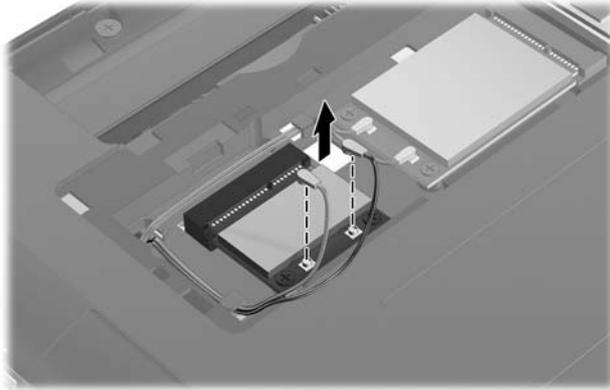
Before removing the WLAN module, follow these steps:

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 49](#)).
5. Remove the memory module/wireless module compartment cover (see [Memory module on page 50](#)).

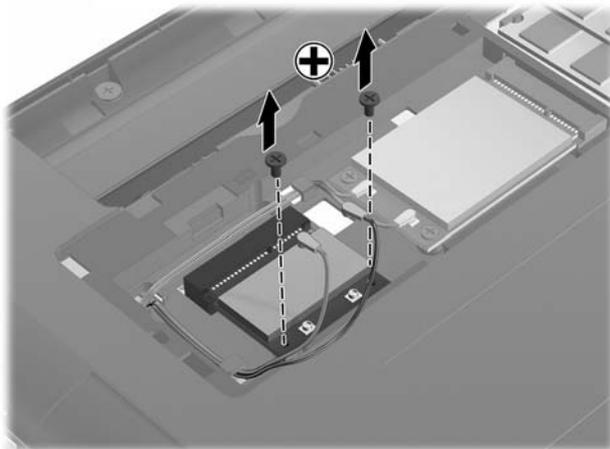
Remove the WLAN module:

1. Disconnect the WLAN antenna cables from the terminals on the WLAN module.

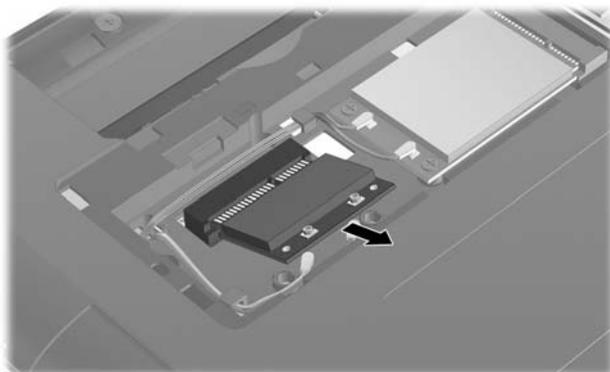
 **NOTE:** The 1/black WLAN antenna cable is connected to the WLAN module 1/Main terminal. The 2/gray WLAN antenna cable is connected to the WLAN module 2/Aux terminal.



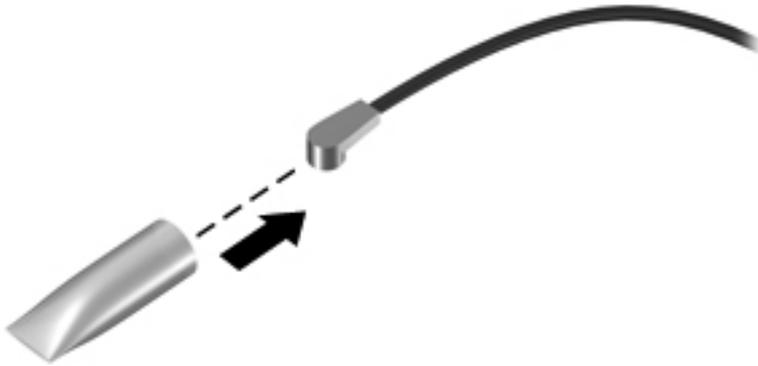
2. Remove the two Phillips PM2.0×4.0 screws that secure the WLAN module to the system board. (The WLAN module tilts up.)



3. Remove the WLAN module by pulling the module away from the slot at an angle.



 **NOTE:** If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

WWAN module

Description	Spare part number
HSPA EV-DO WWAN module	531993-001

 **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 device functionality, and then contact technical support.

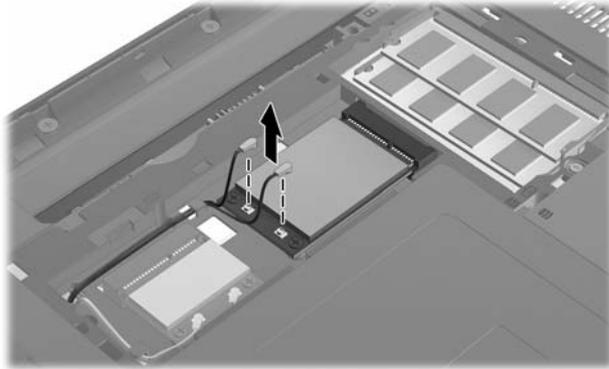
Before removing the WWAN module, follow these steps:

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 49](#)).
5. Remove the memory module/wireless module compartment cover (see [Memory module on page 50](#)).

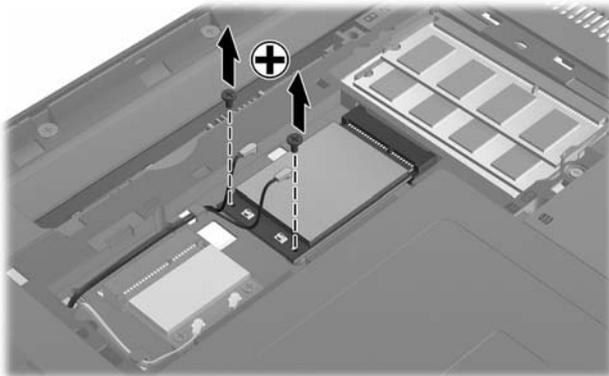
Remove the WWAN module:

1. Disconnect the WWAN antenna cables from the terminals on the WWAN module.

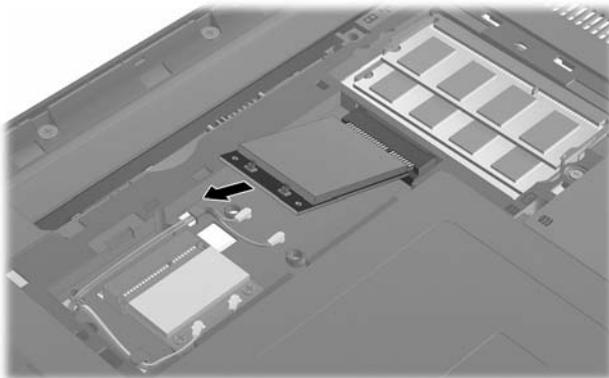
 **NOTE:** The 1/red WWAN antenna cable is connected to the WWAN module 1/Main terminal. The 2/blue WWAN antenna cable is connected to the WWAN module 2/Aux terminal.



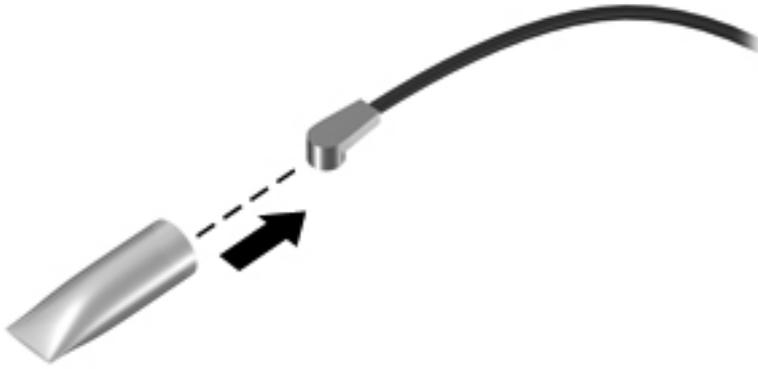
2. Remove the two Phillips PM2.0×4.0 screws that secure the WWAN module to the system board. (The WWAN module tilts up.)



3. Remove the WWAN module by pulling the module away from the slot at an angle.



 **NOTE:** If the WWAN antennas are not connected to the terminals on the WWAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WWAN module.

Hard drive

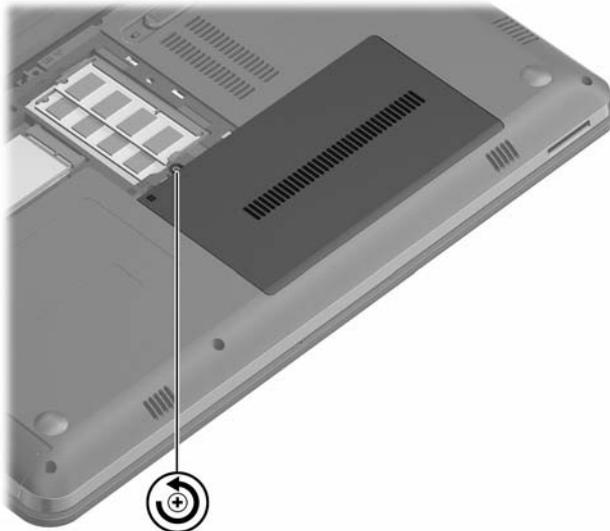
Description	Spare part number
For use only on computer models equipped with an AMD processor:	
• 1-TB, 5400-rpm (includes hard drive isolator)	607968-001
• 500-GB, 7200-rpm (does not include hard drive isolator)	603784-001
For use only on computer models equipped with an Intel processor (includes hard drive isolator):	
• 1-TB, 5400-rpm	612855-001
For use on all computer models (includes hard drive isolator):	
• 750-GB, 5200-rpm	607973-001
• 640-GB, 5400-rpm	607972-001
• 500-GB, 7200-rpm	607971-001
• 320-GB, 7200-rpm	607970-001
• 250-GB, 7200-rpm	607969-001
Hard drive only (hard drive isolator not included) for use on all computer models:	
• 1-TB, 5200-rpm	603788-001
• 750-GB, 7200-rpm	633252-001
• 750-GB, 5400-rpm	603787-001
• 640-GB, 7200-rpm	621046-001
• 640-GB, 5200-rpm	603785-001
• 500-GB, 5400-rpm	608218-001
Hard Drive Hardware Kit (includes hard drive isolator)	
For use only with 1-TB and 750-GB hard drives	617523-001
For use only with 640-, 500-, 320-, and 250-GB hard drives	607974-001

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 49](#)).
5. Remove the memory module/wireless module compartment cover (see [Memory module on page 50](#)).

Remove the hard drive:

1. Loosen the captive screw that secures the hard drive cover to the computer.



2. Lift the rear edge of the hard drive cover until it detaches from the computer.

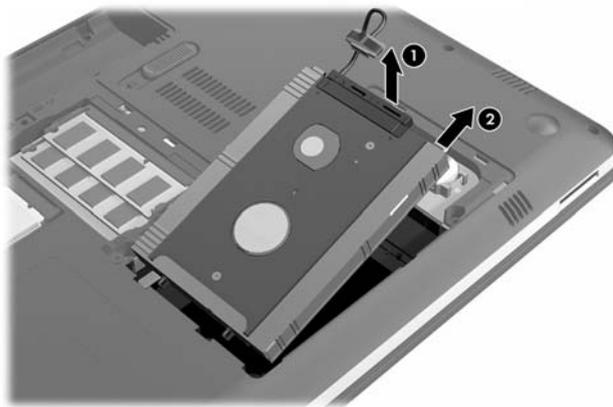


3. Remove the hard drive cover. The hard drive cover is included in the Plastics Kit, spare part number 606892-001.

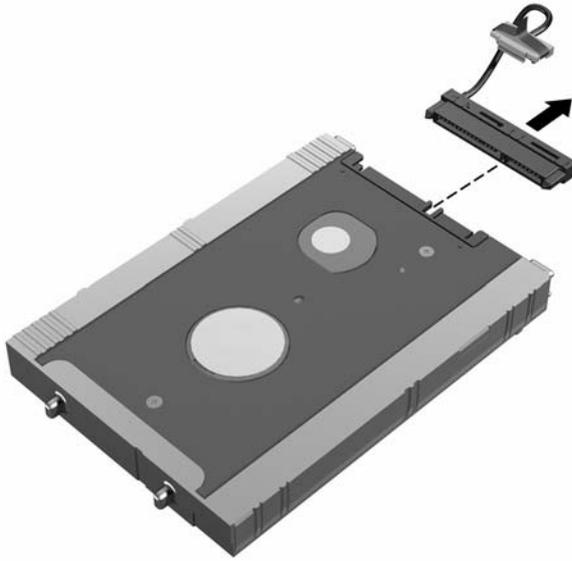
4. Disconnect the hard drive cable from the system board.



5. Lift the hard drive straight up and remove it from the hard drive bay.

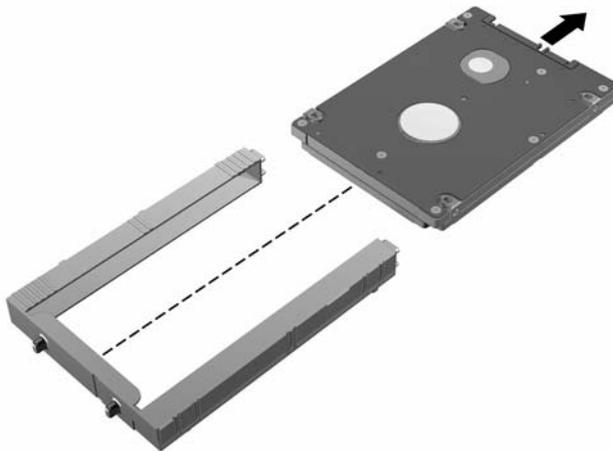


6. If it is necessary to replace the hard drive cable, disconnect the cable from the hard drive. The hard drive cable is included in the Cable Kit, spare part number 607975-001.



7. If it is necessary to replace the hard drive isolator, remove the isolator from the hard drive.

 **NOTE:** The hard drive isolator is included in the Hard Drive Hardware Kits, spare part numbers 617523-001 (for use only with 1-TB and 750-GB hard drives) and 607974-001 (for use only with 640-, 500-, 320-, and 250-GB hard drives).



Reverse this procedure to reassemble and install the hard drive.

RTC battery

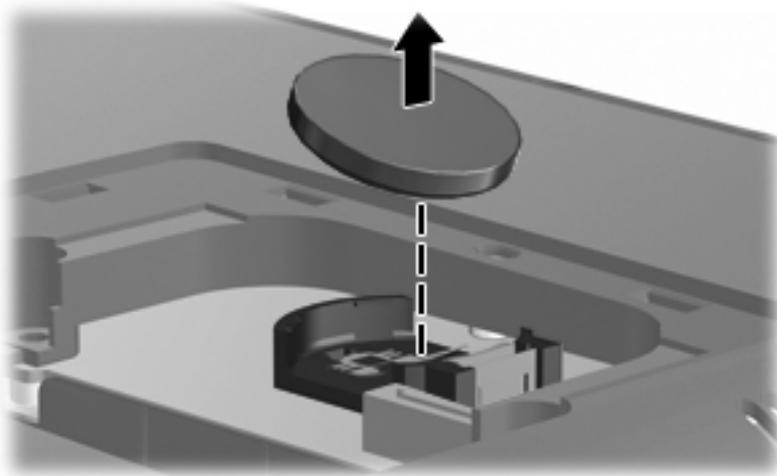
Description	Spare part number
RTC battery	449137-001

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 49](#)).
5. Remove the memory module/wireless module compartment cover (see [Memory module on page 50](#)).
6. Remove the hard drive cover (see [Hard drive on page 58](#)).

Remove the RTC battery:

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



Reverse this procedure to install the RTC battery. When installing the RTC battery, make sure the “+” sign faces up.

Optical drive

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

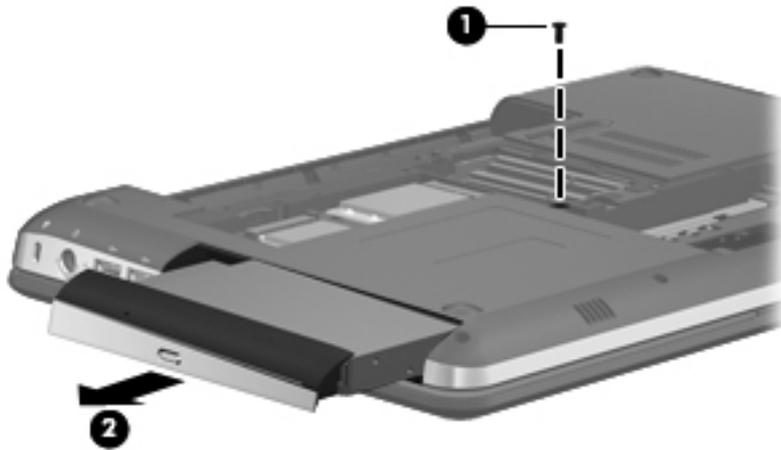
Description	Spare part number
Blu-ray ROM with LightScribe DVD±RW Super Multi Double-Layer Drive	607601-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	607600-001

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 49](#)).
5. Remove the memory module/wireless module compartment cover (see [Memory module on page 50](#)).
6. Remove the hard drive cover (see [Hard drive on page 58](#)).

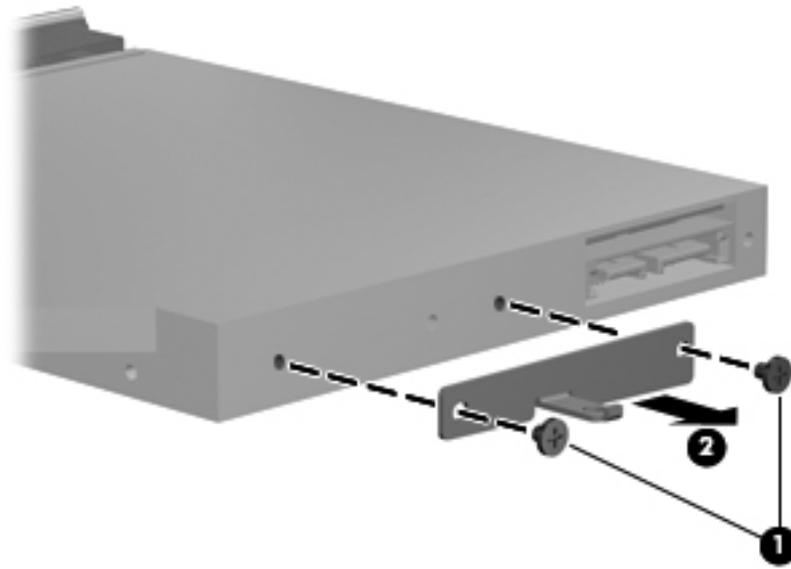
Remove the optical drive:

1. Remove the Phillips PM2.0×4.0 screw **(1)** that secures the optical drive to the computer.
2. Slide the optical drive **(2)** to the left to disconnect it from the system board.



3. Remove the optical drive.
4. If it is necessary to replace the optical drive bracket, remove the two Phillips PM2.0×4.0 screws **(1)** that secure the bracket to the optical drive.

5. Remove the optical drive bracket (2).



Reverse this procedure to reassemble and install the optical drive.

Keyboard

 **NOTE:** The keyboard spare part kit includes a keyboard cable and a keyboard light cable.

For use in country or region:	Spare part number	For use in country or region:	Spare part number
Keyboard with backlight (includes keyboard cable and keyboard light cable):			
• For use in Brazil	606883-201	• For use in Latin America	606883-161
• For use in Canada	606883-121	• For use in the United States	606883-001
Keyboard without backlight in watergarden finish (includes keyboard cable):			
• For use in Brazil	625047-201	• For use in the United States	625047-001
• For use in Latin America	625047-161		
Keyboard without backlight (includes keyboard cable):			
• For use in Brazil	608222-201	• For use in Latin America	608222-161
• For use in Canada	608222-121	• For use in the United States	608222-001

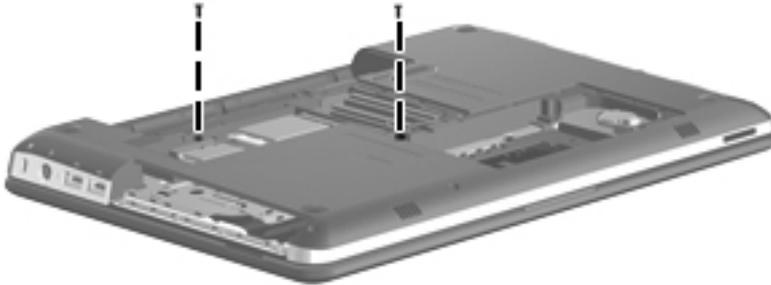
Before removing the keyboard, follow these steps:

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.

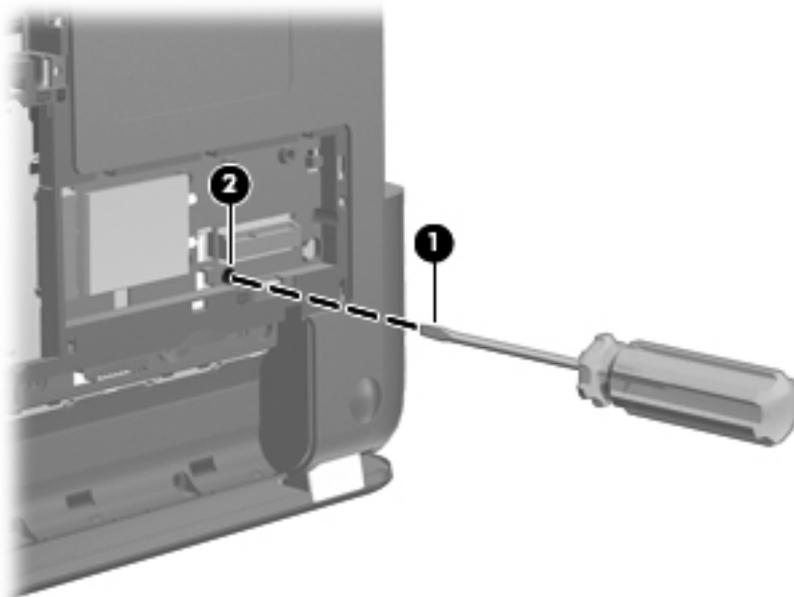
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 49](#)).
5. Remove the memory module/wireless module compartment cover (see [Memory module on page 50](#)).
6. Remove the hard drive cover (see [Hard drive on page 58](#)).

Remove the keyboard:

1. Remove the two Phillips PM 2.5×7.0 screws that secure the keyboard to the computer.



2. Turn the computer display-side up, with the front toward you.
3. Open the computer to a 90-degree position.
4. Tip the computer back and rest it on the display enclosure.
5. Insert a thin, flat-tip screwdriver **(1)** or other similar thin tool into the screw hole **(2)** in the wireless module compartment and gently push on the back of the keyboard.

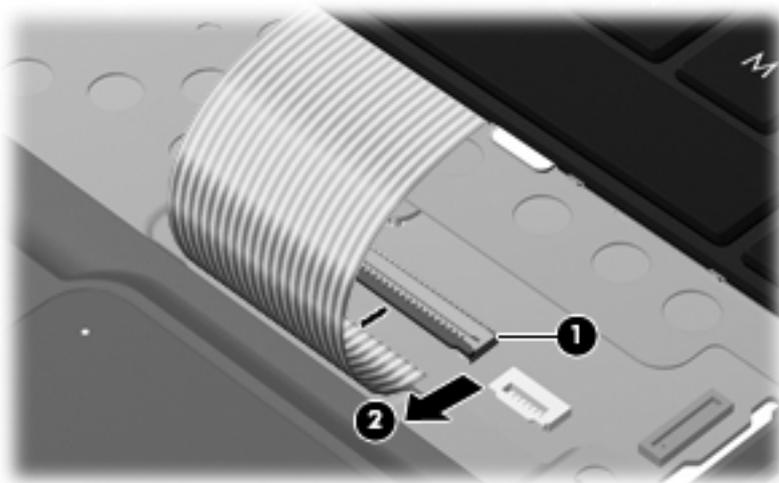


6. Position the computer so that it rests on the base enclosure.

7. Lift the rear edge of the keyboard **(1)** until it rests at an angle.
8. Slide the keyboard **(2)** toward the display until the tabs on the front edge of keyboard disengage from the slots in the top cover.



9. Release the zero insertion force (ZIF) connector **(1)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(2)** from the system board.



10. Remove the keyboard.

Reverse this procedure to install the keyboard.

Top cover



NOTE: The top cover spare part kit includes the TouchPad and cable.

Description	Spare part number
In black cherry	606885-001
In champagne	606888-001
In midnight blue	615386-001
In Sonoma red	606886-001
In shell white	606887-001
In watergarden finish	625048-001

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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Optical drive (see [Optical drive on page 63](#))
 - d. Keyboard (see [Keyboard on page 64](#))

Remove the top cover:

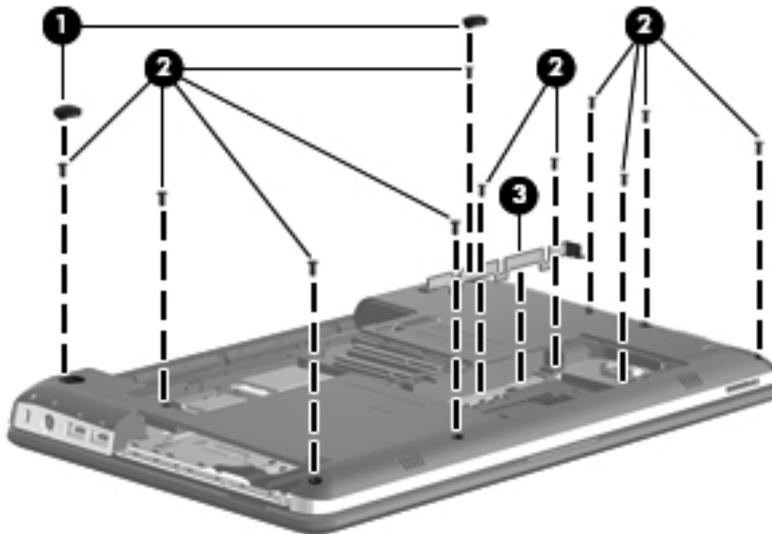
1. Close the computer.
2. Turn the computer upside down, with the front toward you.

3. Remove the following:

(1) Two rubber feet in the rear corners of the base enclosure. The rubber feet are included in the Rubber Kit, 606894-001.

(2) Eleven Phillips PM2.5×7.0 screws.

(3) Hard drive bay bracket. (The hard drive bracket is included in the base enclosure spare part kit, spare part number 606884-001.)

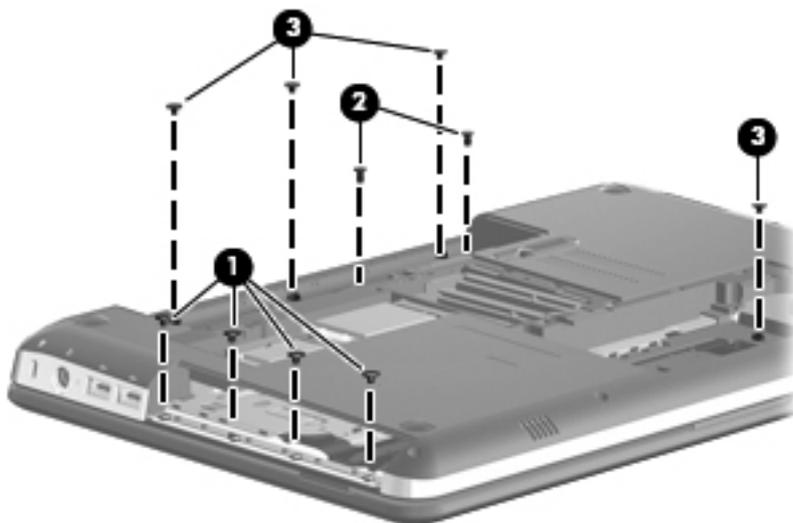


4. Remove the following screws:

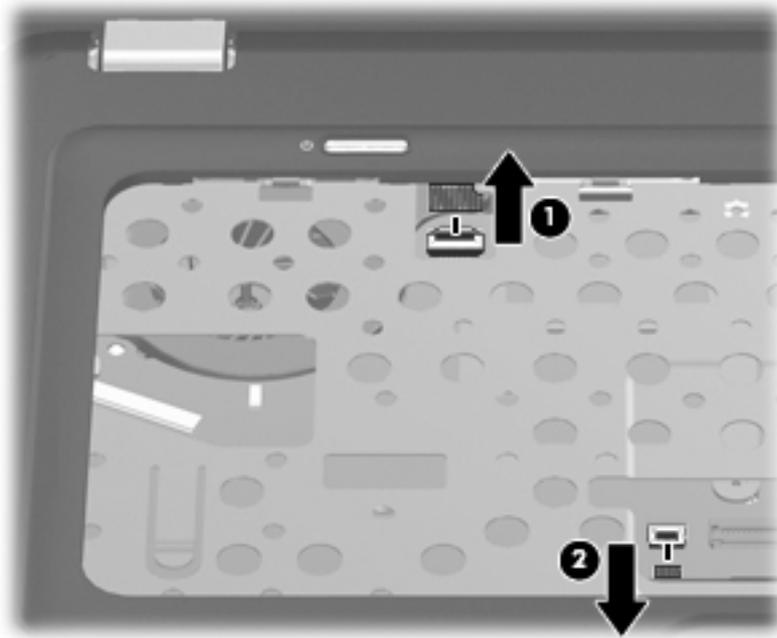
(1) Five Phillips PM2.0×2.0 screws in the optical drive bay and the hard drive bay

(2) Two Phillips PM2.5×5.0 screws on the front edge of the battery bay

(3) Three Phillips PM2.0×2.0 broad head screws on the rear edge of the battery bay



5. Release the ZIF connector to which the power button board cable is attached, and then disconnect the power button board cable **(1)** from the system board.
6. Release the ZIF connector to which the TouchPad cable is attached, and then disconnect the TouchPad cable **(2)** from the system board.



7. Lift the rear edge of the top cover **(1)** until it rests at an angle.
8. Remove the top cover **(2)**.



Reverse this procedure to install the top cover.

Power button board

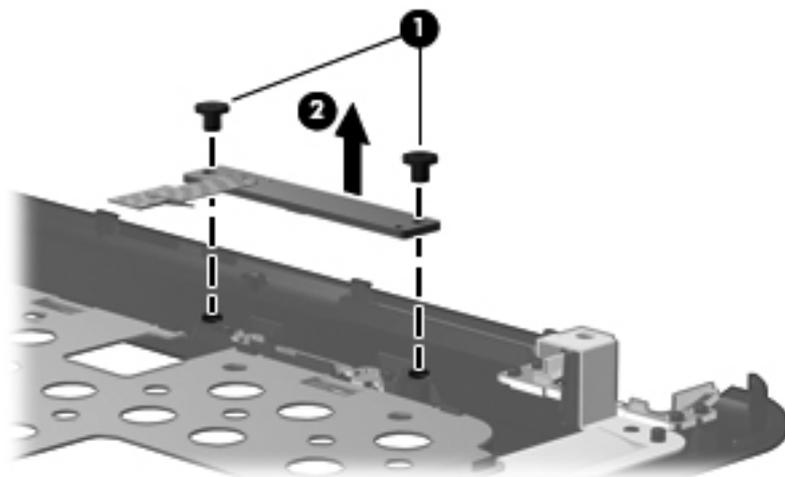
Description	Spare part number
Power button board (includes cable)	607976-001

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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Keyboard (see [Keyboard on page 64](#))
 - d. Top cover (see [Top cover on page 67](#))

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)**.



Reverse this procedure to install the power button board.

Bluetooth module

 **NOTE:** The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 607975-001.

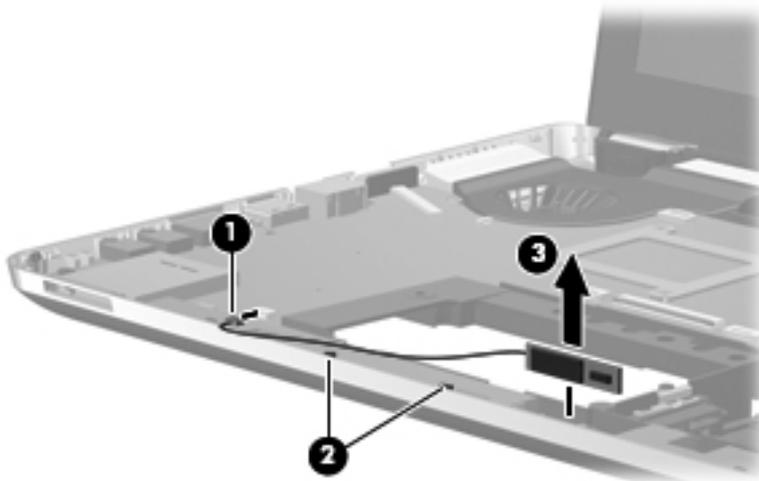
Description	Spare part number
Bluetooth module	537921-001

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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Keyboard (see [Keyboard on page 64](#))
 - d. Top cover (see [Top cover on page 67](#))

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable **(1)** from the system board.
2. Release the Bluetooth module cable from the routing clips **(2)** built into the base enclosure.
3. Remove the Bluetooth module **(3)** and cable.



Reverse this procedure to install the Bluetooth module and cable.

Speakers

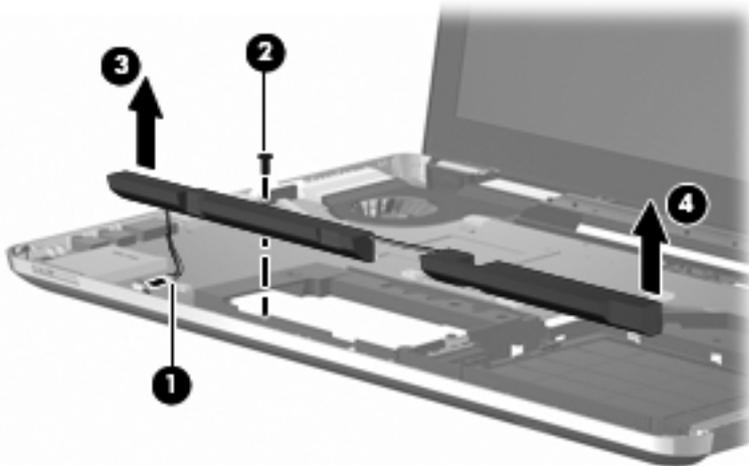
Description	Spare part number
Speakers (include cable)	606891-001

Before removing the speakers, 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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Keyboard (see [Keyboard on page 64](#))
 - d. Top cover (see [Top cover on page 67](#))

Remove the speakers:

1. Disconnect the speaker cable **(1)** from the system board.
2. Remove the Phillips PM2.5×6.0 screw **(2)** that secures the left speaker to the base enclosure.
3. Remove the left **(3)** and right speakers **(4)**.



Reverse this procedure to install the speakers.

Optical drive cable

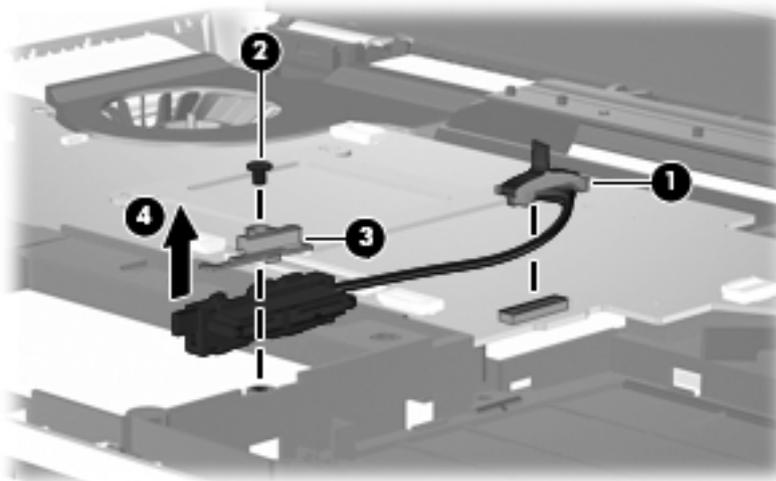
 **NOTE:** The optical drive cable and bracket are included in the base enclosure spare part kit, spare part number 606884-001.

Before removing the optical drive 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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Optical drive (see [Optical drive on page 63](#))
 - d. Keyboard (see [Keyboard on page 64](#))
 - e. Top cover (see [Top cover on page 67](#))

Remove the optical drive cable:

1. Disconnect the optical drive cable **(1)** from the system board.
2. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the optical drive cable to the base enclosure.
3. Remove the optical drive cable bracket **(3)**.
4. Remove the optical drive cable **(4)**.



Reverse this procedure to install the optical drive cable.

USB board

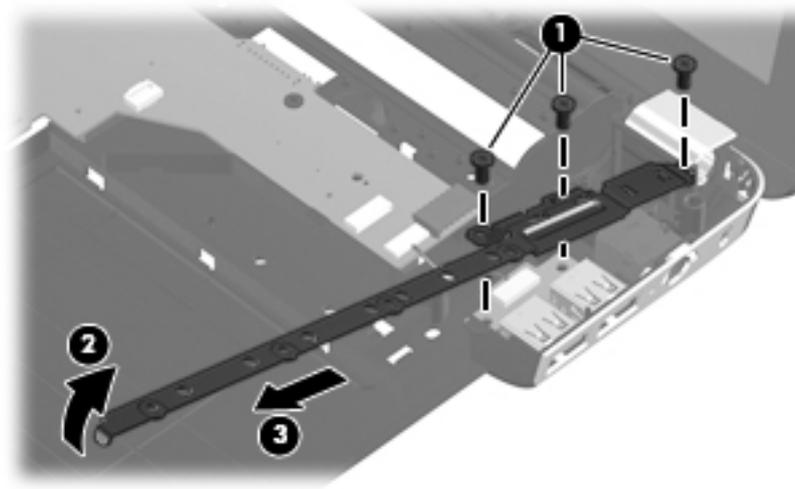
Description	Spare part number
USB board (includes cable)	616477-001

Before removing the USB board, follow these steps:

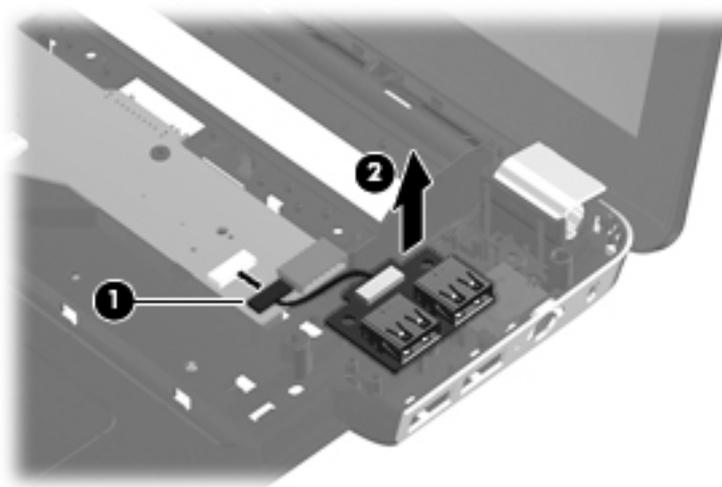
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Keyboard (see [Keyboard on page 64](#))
 - d. Top cover (see [Top cover on page 67](#))

Remove the USB board:

1. Remove the three Phillips PM2.5×7.0 screws **(1)** that secure the base enclosure bracket to the base enclosure.
2. Lift the front edge of the base enclosure bracket **(2)** until the rear edge of the bracket disengages from the slot in the base enclosure.
3. Slide the base enclosure bracket **(3)** up and forward and remove it. The base enclosure bracket is included in the base enclosure spare part kit, spare part number 606884-001.



4. Disconnect the USB board cable **(1)** from the system board.
5. Remove the USB board **(2)** from the alignment clip built into the base enclosure.



6. Remove the USB board and cable.

Reverse this procedure to install the USB board.

Power connector cable

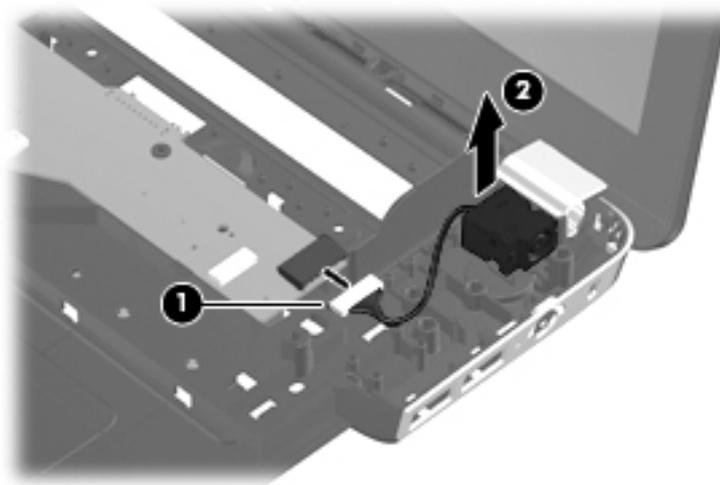
Description	Spare part number
Power connector cable	606890-001

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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Keyboard (see [Keyboard on page 64](#))
 - d. Top cover (see [Top cover on page 67](#))
 - e. Base enclosure bracket (see [USB board on page 74](#))

Remove the power connector cable:

1. Disconnect the power cable **(1)** from the system board.
2. Remove the power connector **(2)** from the alignment clip built into the base enclosure.



3. Remove the power connector cable

Reverse this procedure to install the USB board.

System board



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

Description	Spare part number
For use on computer models equipped with an AMD processor (includes graphics subsystem with UMA memory)	598225-001
For use on computer models equipped with an Intel processor (includes graphics subsystem with discrete memory)	607605-001

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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive (see [Hard drive on page 58](#))

- c. Optical drive (see [Top cover on page 67](#))
- d. Keyboard (see [Keyboard on page 64](#))
- e. Top cover (see [Top cover on page 67](#))

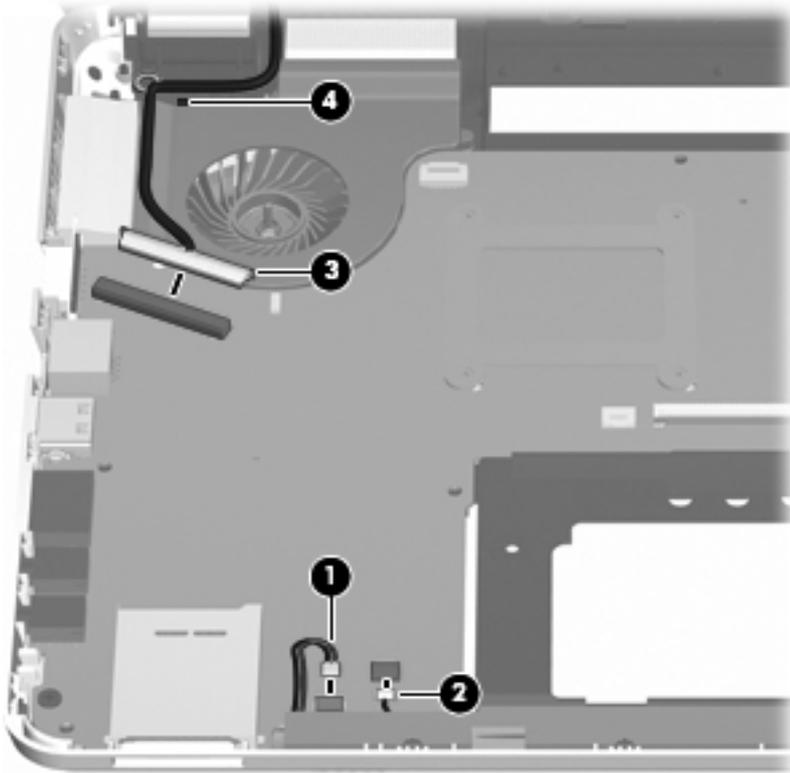
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory module (see [Memory module on page 50](#))
- WLAN module (see [WLAN module on page 53](#))
- WWAN module (see [WWAN module on page 56](#))
- RTC battery (see [RTC battery on page 62](#))
- Fan/heat sink assembly (see [Fan/heat sink assembly on page 80](#))
- Processor (see [Processor on page 83](#))

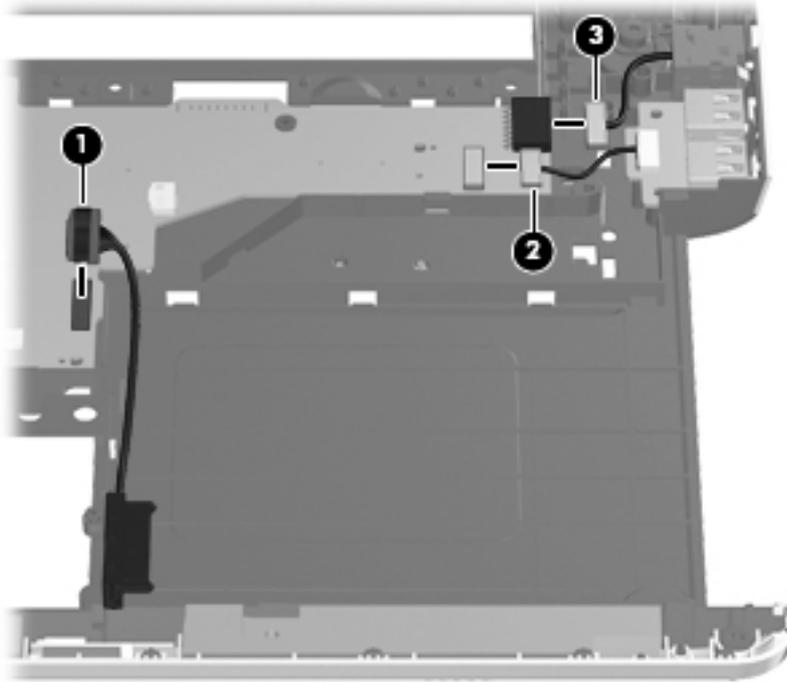
Remove the system board:

1. Disconnect the following cables from the system board:
 - (1) Speaker cable
 - (2) Bluetooth module cable
 - (3) Display panel cable

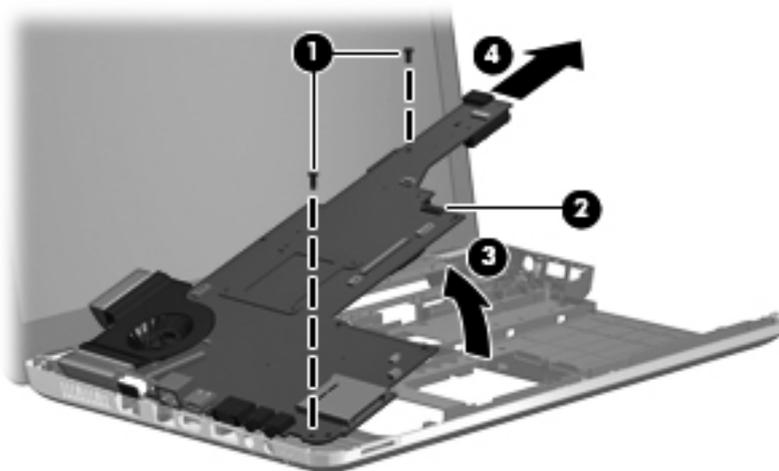
2. Release the display panel cable from the routing clip **(4)** built into the fan/heat sink assembly.



3. Disconnect the following cables from the system board:
 - (1) Optical drive connector board cable
 - (2) USB board cable
 - (3) Power cable



4. Remove the two Phillips PM2.5×7.0 screws (1) that secure the system board to the base enclosure.
5. Use the front/right corner of the system board (2) to lift the right side of the system board (3) until it rests at an angle.
6. Remove the system board (4) by sliding it up and to the right at an angle.



Reverse this procedure to install the system board.

Fan/heat sink assembly

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

Description	Spare part number
For use only on computer models equipped with an AMD processor	606889-001
For use only on computer models equipped with an Intel processor	607590-001

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

Before removing the fan/heat sink assembly, follow these steps:

1. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
2. Hard drive (see [Hard drive on page 58](#))
3. Optical drive (see [Top cover on page 67](#))
4. Keyboard (see [Keyboard on page 64](#))
5. Top cover (see [Top cover on page 67](#))
6. System board (see [System board on page 76](#))

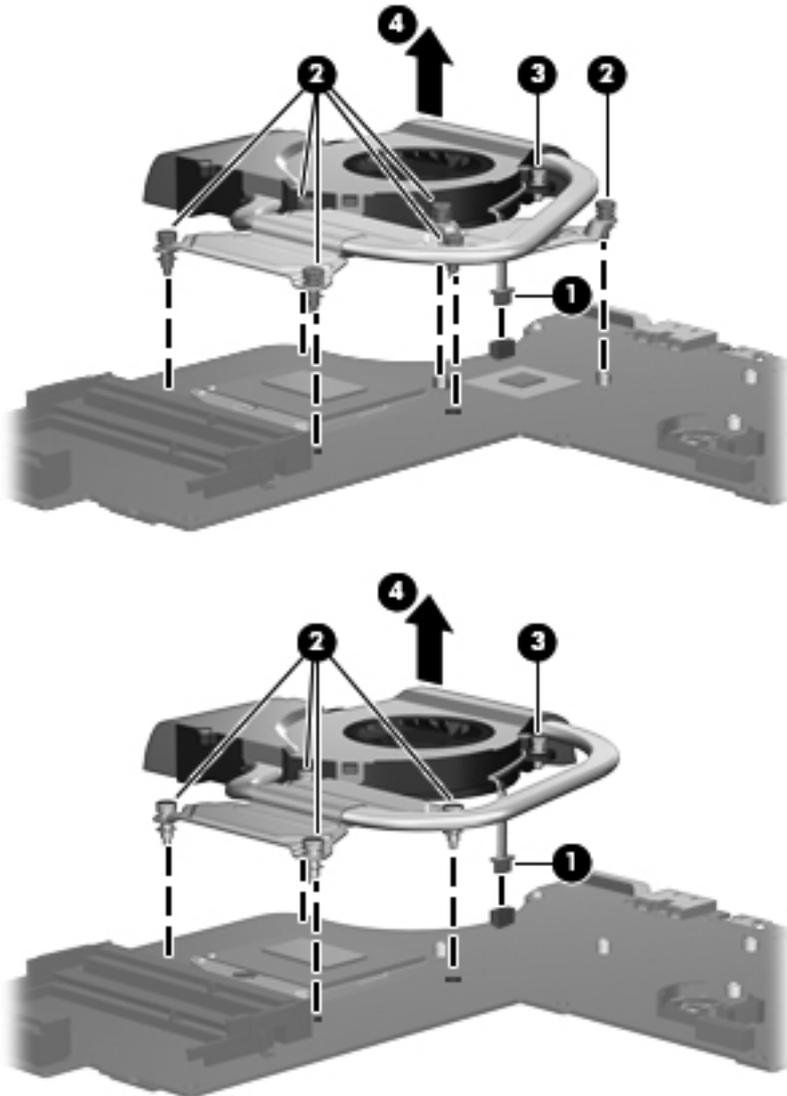
Remove the fan/heat sink assembly:

1. Turn the system board upside down with the front toward you.
2. Disconnect the fan cable **(1)** from the system board.
3. Loosen the captive screws **(2)** and **(3)** that secure the fan/heat sink assembly to the system board.

 **NOTE:** The number of captive screws securing the fan/heat sink assembly to the system board vary by computer model. Computer models equipped with a graphics subsystem with discrete memory have seven captive screws securing the fan/heat sink assembly to the system board, as shown in the first illustration below. Computer models equipped with a graphics subsystem with UMA memory have five captive screws securing the fan/heat sink assembly to the system board, as shown in the second illustration below.

4. Remove the fan/heat sink assembly **(4)**.

 **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 it.

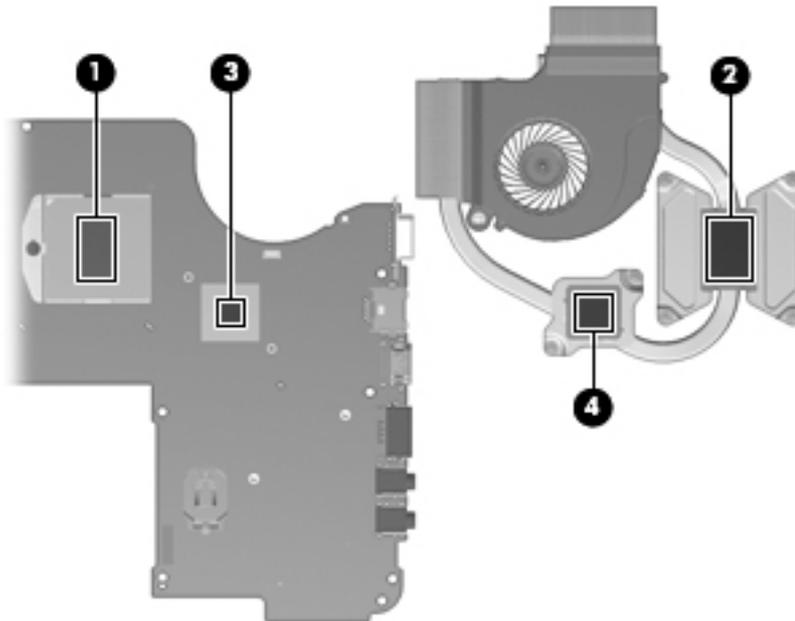


 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed. Replacement thermal material locations vary by computer model.

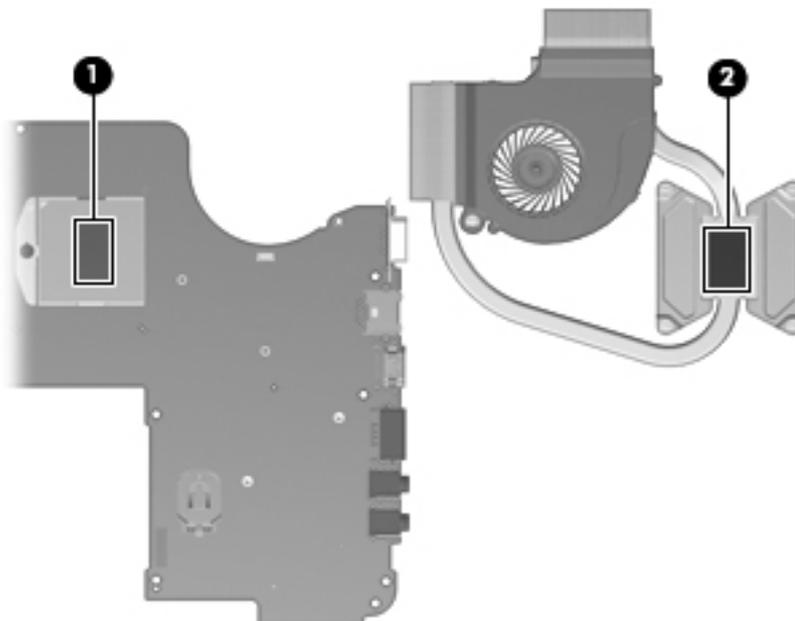
Computer models equipped with a graphics subsystem with discrete memory have replacement thermal material locations as shown in the following illustration:

- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it
- A thermal pad is used on the graphics subsystem chip **(3)** and the heat sink section **(4)** that services it

Replacement thermal material is included with all fan/heat sink assembly, system board, and processor spare part kits.



 **NOTE:** Computer models equipped with a graphics subsystem with UMA memory have replacement thermal material locations as shown in the following illustration. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.



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

Processor

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

Description	Spare part number
AMD Phenom II N970 Quad Core 2.20-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	635946-001
AMD Phenom II N950 Quad Core 2.10-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	616346-001
AMD Phenom II N930 Quad Core 2.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	594169-001
AMD Phenom II N870 Triple Core 2.30-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	635495-001
AMD Phenom II N850 Triple Core 2.20-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	616345-001
AMD Phenom II N830 Triple Core 2.10-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	594168-001
AMD Phenom II N660 Triple Core 3.00-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	635494-001
AMD Phenom II N640 Triple Core 2.90-GHz processor (1.5-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	616344-001
AMD Phenom II P960 Quad Core 1.80-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	634689-001
AMD Phenom II P940 Quad Core 1.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	616336-001
AMD Phenom II P920 Quad Core 1.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	594170-001
AMD Phenom II P860 Triple Core 2.00-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	634688-001
AMD Phenom II P820 Triple Core 1.80-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	594167-001
AMD Phenom II P840 Triple Core 1.90-GHz processor (1.5-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	616335-001
AMD Phenom II N650 Dual Core 2.60-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 25W, 3.6 gigatransfers/second)	634687-001
AMD Phenom II N620 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1333-MHz FSB, 35W, 3.6 gigatransfers/second)	594166-001
AMD Turion II N570 Dual Core 2.70-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	634690-001
AMD Turion II N550 Dual Core 2.60-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	616337-001
AMD Turion II N530 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	594172-001

Description	Spare part number
AMD Turion II P560 Dual Core 2.50-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 35W, 3.6 gigatransfers/second)	634691-001
AMD Turion II P540 Dual Core 2.40-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	616347-001
AMD Turion II P520 Dual Core 2.30-GHz processor (2.0-MB L2 cache, 1066-MHz FSB, 25W, 3.6 gigatransfers/second)	594173-001
AMD Athlon II N370 Dual Core 2.50-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	634686-001
AMD Athlon II N350 Dual Core 2.40-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	616334-001
AMD Athlon II N330 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	594164-001
AMD Athlon II P360 Dual Core 2.30-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 35W, 3.2 gigatransfers/second)	636635-001
AMD Athlon II P340 Dual Core 2.20-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	616343-001
AMD Athlon II P320 Dual Core 2.10-GHz processor (1.0-MB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	594165-001
AMD Sempron V160 Single Core 2.40-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	636634-001
AMD Sempron V140 Single Core 2.30-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	616333-001
AMD Sempron V120 Single Core 2.20-GHz processor (512-KB L2 cache, 1066-MHz FSB, 25W, 3.2 gigatransfers/second)	594171-001
Intel Core Dual i7-640M 2.80-GHz (SC turbo up to 3.50-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	625826-001
Intel Core Dual i7-620M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	587259-002
Intel Core Dual i5-580M 2.66-GHz (SC turbo up to 3.33-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	625825-001
Intel Core Dual i5-560M 2.66-GHz (SC turbo up to 3.20-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	625824-001
Intel Core Dual i5-540M 2.53-GHz (SC turbo up to 3.06-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	594188-002
Intel Core Dual i5-520M 2.40-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	594187-002
Intel Core Dual i5-480M 2.66-GHz (SC turbo up to 2.93-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	634693-001
Intel Core Dual i5-460M 2.53-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	626039-001

Description	Spare part number
Intel Core Dual i5-450M 2.40-GHz (SC turbo up to 2.86-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	613585-001
Intel Core Dual i5-430M 2.26-GHz (SC turbo up to 2.53-GHz), 35W processor (1066-MHz FSB, 3-MB L3 cache)	597624-001
Intel Core Dual i3-620M 2.40-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	613584-001
Intel Core Dual i3-390M 2.66-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	634692-001
Intel Core Dual i3-380M 2.53-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	625823-001
Intel Core Dual i3-350M 2.26-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	597623-002
Intel Core Dual i3-330M 2.13-GHz, 35W processor (1066-MHz FSB, 3-MB L3 cache)	597622-001
Intel Core2 P6300 2.26-GHz processor (1066-MHz, 3-MB L3 cache)	635500-001
Intel Core2 P6200 2.13-GHz processor (1066-MHz, 3-MB L3 cache)	625831-001
Intel Core2 P6100 2.00-GHz processor (1066-MHz, 3-MB L3 cache)	613587-001
Intel Core2 P6000 1.86-GHz processor (1066-MHz, 3-MB L3 cache)	613586-001

Before removing the processor, follow these steps:

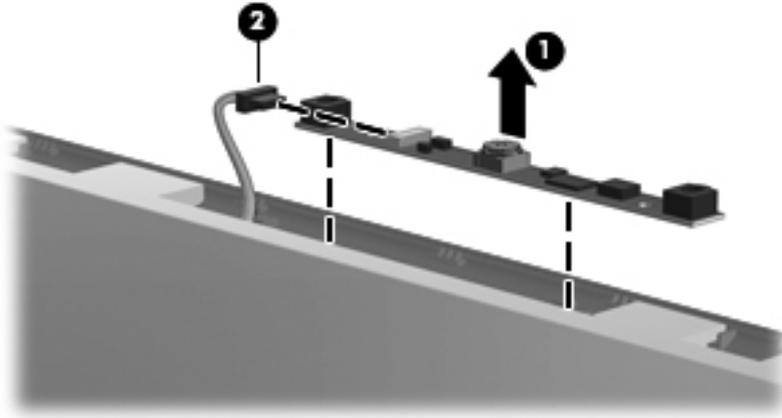
1. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
2. Hard drive (see [Hard drive on page 58](#))
3. Optical drive (see [Top cover on page 67](#))
4. Keyboard (see [Keyboard on page 64](#))
5. Top cover (see [Top cover on page 67](#))
6. System board (see [System board on page 76](#))
7. Fan/heat sink assembly (see [Fan/heat sink assembly on page 80](#))

Remove the processor:

1. Turn the processor locking screw **(1)** one-half turn counterclockwise, until you hear a click.

- Lift the processor **(2)** straight up, and remove it.

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



Reverse this procedure to install the processor.

Display assembly

 **NOTE:** The display assembly spare part kit includes a display panel cable, webcam/microphone module and cable, and 2 wireless antenna cables and transceivers.

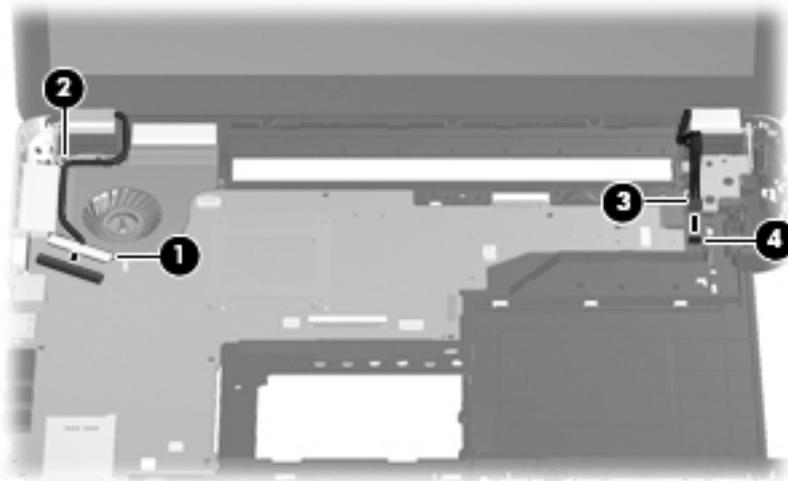
Description	Spare part number
For use only with computer models equipped with WLAN and WWAN capability (includes 2 WWAN antenna cables and transceivers):	
• 14.5-in LED, HD, BrightView display assembly in black cherry	614175-001
• 14.5-in LED, HD, BrightView display assembly in champagne	614178-001
• 14.5-in LED, HD, BrightView display assembly in midnight blue	615385-001
• 14.5-in LED, HD, BrightView display assembly in Sonoma red	614176-001
• 14.5-in LED, HD, BrightView display assembly in shell white	614177-001
For use only with computer models not equipped with WWAN capability:	
• 14.5-in LED, HD, BrightView display assembly in black cherry	598227-001
• 14.5-in LED, HD, BrightView display assembly in champagne	606872-001
• 14.5-in LED, HD, BrightView display assembly in midnight blue	615384-001
• 14.5-in LED, HD, BrightView display assembly in Sonoma red	606870-001
• 14.5-in LED, HD, BrightView display assembly in shell white	606871-001
• 14.5-in LED, HD, BrightView display assembly in watergarden finish	625046-001

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 49](#)), and then remove the following components:
 - a. Memory module/wireless module compartment cover (see [Memory module on page 50](#))
 - b. Hard drive cover (see [Hard drive on page 58](#))
 - c. Keyboard (see [Keyboard on page 64](#))
 - d. Top cover (see [Top cover on page 67](#))

Remove the display assembly:

1. Disconnect the display panel cable **(1)** from the system board and release the display panel cable from the routing clip **(2)** built into the fan/heat sink assembly.
2. Release the wireless antenna cables **(3)** from the opening **(4)** in the base enclosure.

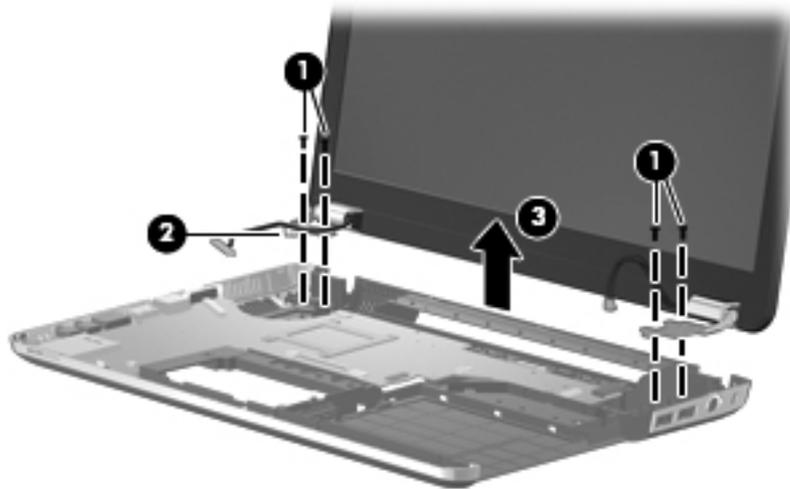


CAUTION: Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

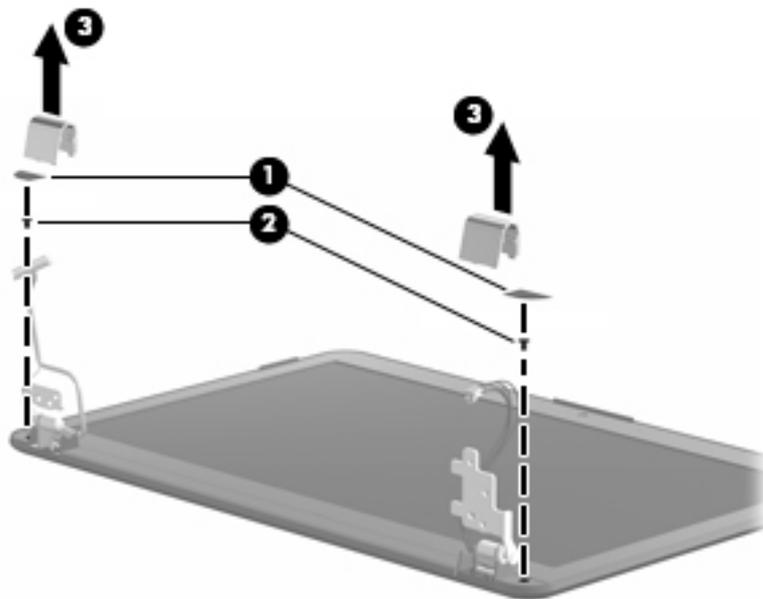
3. Remove the four Phillips PM2.5×7.0 screws **(1)** that secure the display assembly to the computer.

NOTE: One of the screws on the left hinge secures a display panel ground loop **(2)**.

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

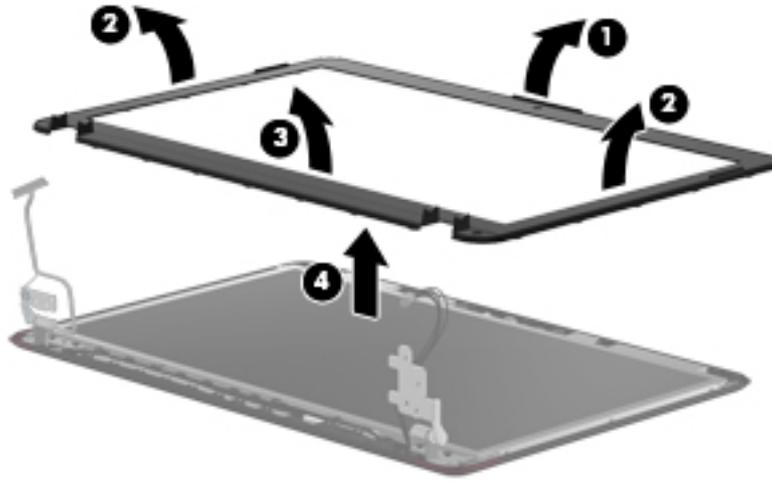


5. If it is necessary to replace the display bezel or any of the display assembly internal components:
 - a. Remove the Mylar screw covers **(1)**.
 - b. Remove the two Phillips PM2.5×6.0 screws **(2)** that secure the display bezel to the display assembly.
 - c. Remove the hinge covers **(3)**. The hinge covers are available using spare part number 606881-001.

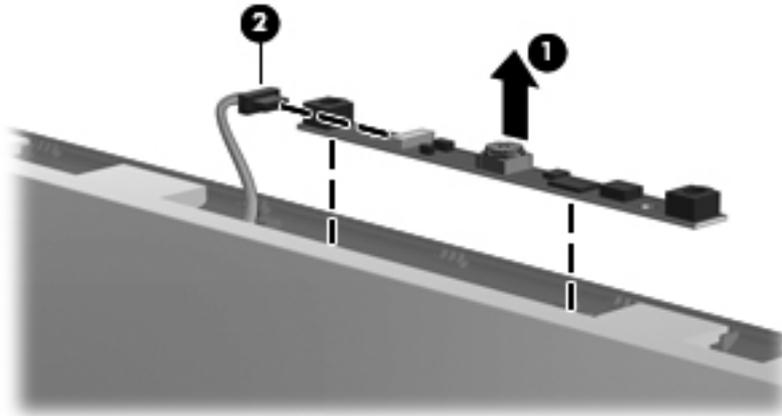


- d. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

- e. Remove the display bezel **(4)**. The display bezel is available using spare part numbers 606873-001 (display bezel with normal finish) and 632297-001 (display bezel with watergarden finish).

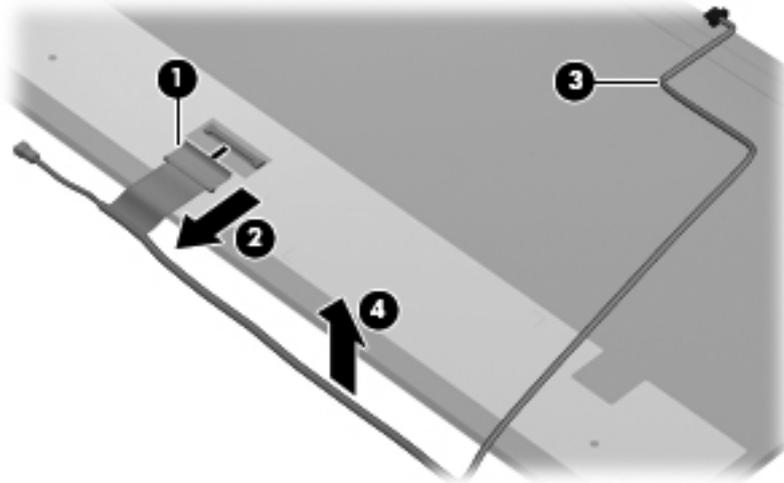


- 6. If it is necessary to replace the webcam/microphone module:
 - a. Release the webcam/microphone module **(1)** as far as the webcam/microphone module allows.
 - b. Disconnect the webcam/microphone module cable **(2)** from the webcam/microphone module.

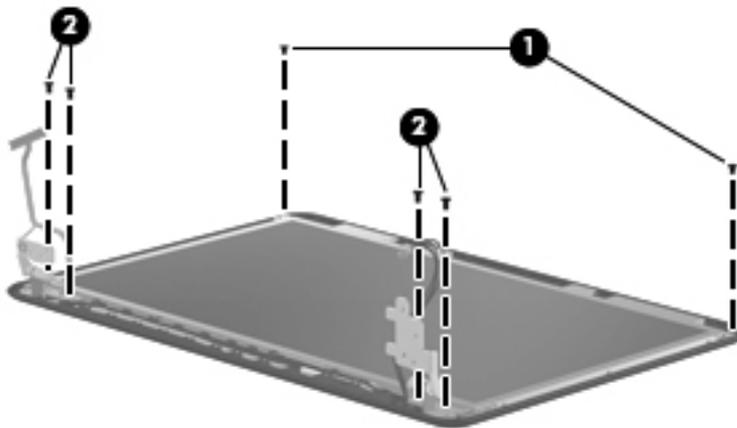


- c. Remove the webcam/microphone module. The webcam/microphone module is available using spare part number 599420-001.
- 7. If it is necessary to replace the display panel:
 - a. Release the display panel cable **(1)** from the routing clips **(2)** built into the display enclosure.

- b. Disconnect the logo light cable **(3)** from the display panel cable.

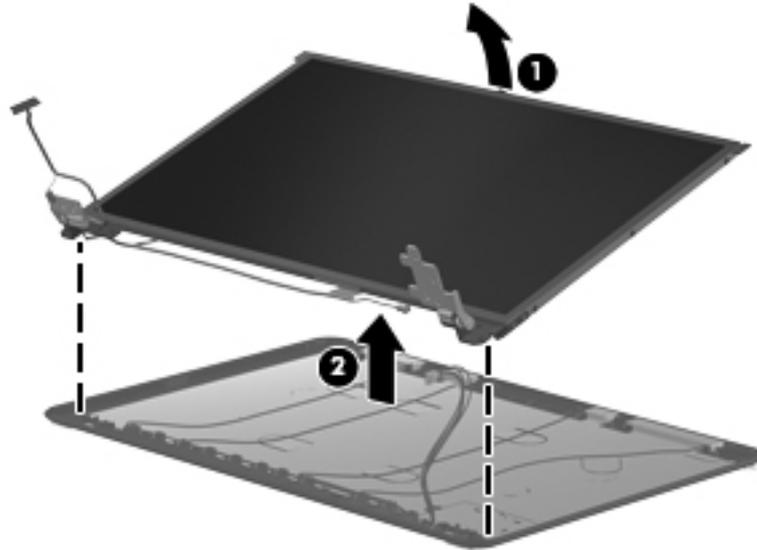


- c. Remove the two Phillips PM2.0×3.0 screws **(1)** and the four Phillips PM2.5×5.0 screws **(2)** that secure the display panel to the display enclosure.



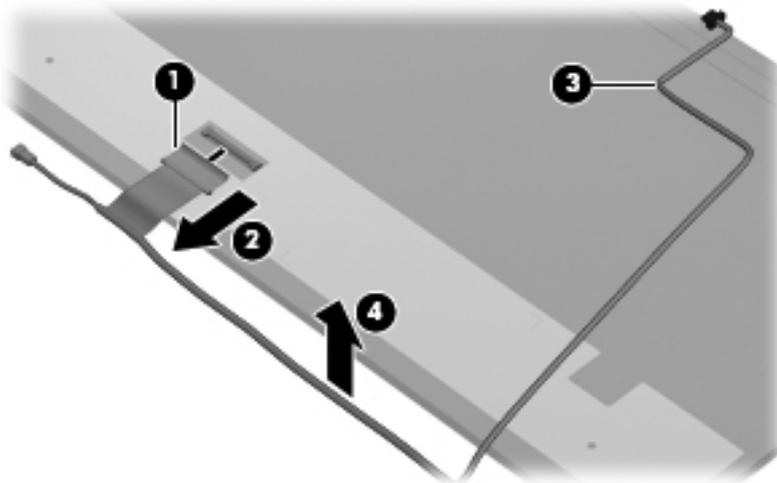
- d. Lift the top edge of the display panel **(1)** until it rests at an angle.

- e. Remove the display panel **(2)** from the display enclosure. The display panel is available using spare part numbers 614179-001 (for use only with computer models equipped with WWAN capability) and 598226-001 (for use only with computer models not equipped with WWAN capability).

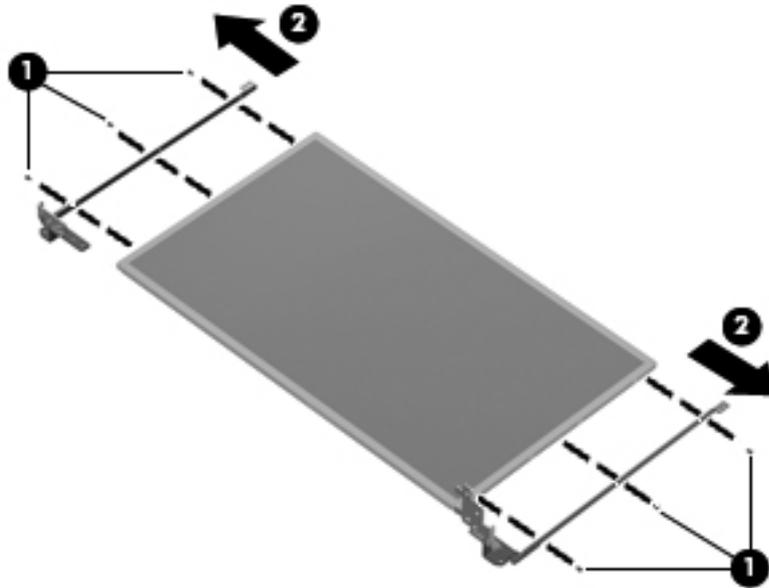


8. If it is necessary to replace the display panel cable:

- a. Release the support strip **(1)** that secures the display panel cable to the display panel.
- b. Disconnect the display panel cable **(2)** from the display panel.
- c. Release the webcam/microphone module cable **(3)** from the display panel. (The webcam/microphone module cable is attached to the display panel with double-sided tape.)
- d. Remove the display panel cable **(4)**. The display panel cable is available using spare part number 606879-001, and includes the webcam/microphone module cable and logo light cable.

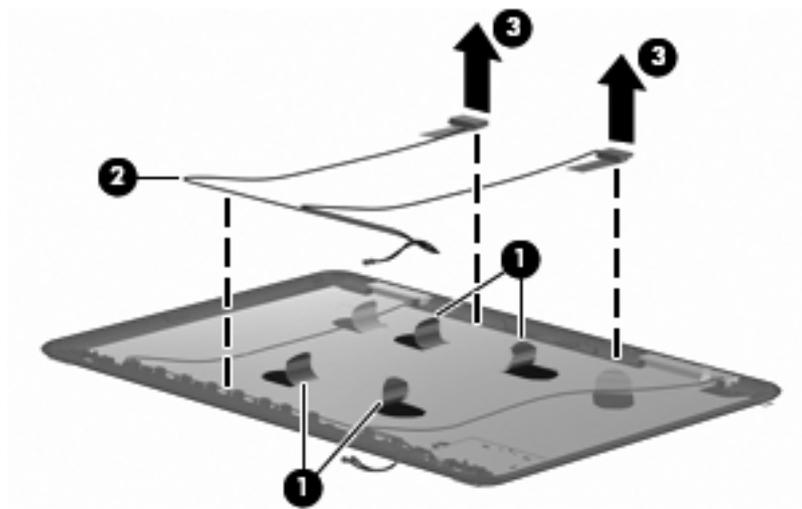


9. If it is necessary to replace the display hinges:
 - a. Remove the six Phillips PM2.0×3.0 screws **(1)** secure the hinges to the display panel.
 - b. Remove the hinges **(2)**. The hinges are included in the Display Hinge Kit, spare part number 606878-001.



10. If it is necessary to replace the WLAN antenna cables and transceivers:
 - a. Release the tabs **(1)** built into the display enclosure shielding that secure the WLAN antenna cables to the display enclosure.
 - b. Release the WLAN antenna cables **(2)**.

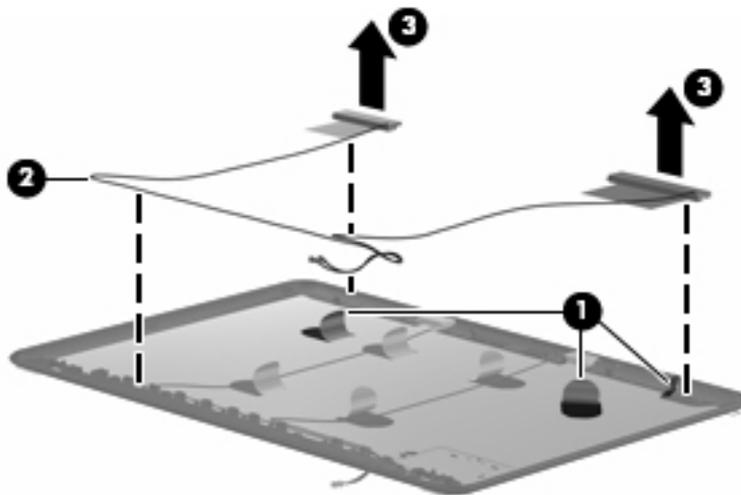
- c. Release the WLAN antenna transceivers **(3)** from the display enclosure. (The WLAN antenna transceivers are attached to the display enclosure with double-sided tape.)



- d. Remove the WLAN antenna cables and transceivers. The WLAN antenna cables and transceivers are included in the Wireless Antenna Kit, spare part number 607584-001.

11. If it is necessary to replace the WWAN antenna cables and transceivers:

- a. Release the tabs **(1)** built into the display enclosure shielding that secure the WWAN antenna cables to the display enclosure.
- b. Release the WWAN antenna cables **(2)**.
- c. Release the WWAN antenna transceivers **(3)** from the display enclosure. (The WWAN antenna transceivers are attached to the display enclosure with double-sided tape.)



- d. Remove the WWAN antenna cables and transceivers. The WWAN antenna cables and transceivers are included in the Wireless Antenna Kit, spare part number 607584-001.

Reverse this procedure to reassemble and install the display assembly.

5 Setup Utility

Starting Setup Utility

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

The 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. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **f10**.

– or –

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

Using Setup Utility

Changing the language of Setup Utility

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

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **f10**.

– or –

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

2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.
3. Use the arrow keys to select a language, and then press **enter**.

4. When a confirmation prompt with your language selected is displayed, press [enter](#).
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press [enter](#).

Your change goes into effect immediately.

Navigating and selecting in Setup Utility

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

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

Display system information

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

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press [f10](#).
– or –
Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press [esc](#). When the Startup Menu is displayed, press [f10](#).
2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press [enter](#).

Restoring default settings in Setup Utility

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

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **f10**.

– or –

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

2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press **enter**.
3. When the Setup Confirmation is displayed, press **enter**.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

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

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

Exiting Setup Utility

You can exit Setup Utility with or without saving changes.

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

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

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

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

After either choice, the computer restarts in Windows.

Setup Utility menus

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

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

Main menu

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

System Configuration menu

Select	To do this
Language Support	Change the language of Setup Utility.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
Processor C6 State (select models only)	Enable/disable the processor C6 sleep state.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable Card Reader/1394 Power Saving.

Select	To do this
Fan Always On	Enable/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none"> • f10 and f12 Delay (seconds)—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 Internal Network Adapter. • Boot Order—Set the boot order for: <ul style="list-style-type: none"> ◦ Hard drive ◦ Internal CD/DVD ROM drive ◦ USB Disk on Key/USB hard disk ◦ USB CD/DVD ROM drive ◦ USB floppy ◦ Network adapter

Diagnostics menu

Select	To do this
Hard Disk Self Test	Run a comprehensive self-test on the hard drive.
Secondary Hard Disk Self Test (select models only)	<p>Run a comprehensive self-test on a secondary hard.</p> <p>NOTE: On models with two hard drives, this menu option is called Primary Hard Disk Self Test.</p>
Memory Test	Run a diagnostic test on the system memory.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions:		
Width	35.3 cm	13.9 in
Depth	23.5 cm	9.3 in
Height (front to back)	3.1 cm to 3.6 cm	1.2 in to 1.4 in
Weight:	2.4 kg	5.3 lbs
Input power		
Operating voltage	18.5 V dc @ 3.5 A	
Operating current	3.5 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 90%	
Maximum altitude (unpressurized)		
Operating (14.7 to 10.1 psia)	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	

	Metric	U.S.
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate	

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

14.5-inch, SVA display specifications

	Metric	U.S.
Dimensions		
Width	33.2 cm	13.1 in
Height	18.7 cm	7.4 in
Diagonal	37.1 cm	14.6 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	200 nits (typical)	
Backlight	LED	
Character display	80 × 25	
Total power consumption	6.0 W	
Viewing angle	+/-65 horizontal, +/-50° vertical (typical)	

Hard drive specifications

	1-TB*	750-GB*	640-GB*	500-GB*	320-GB*	250-GB*
Dimensions						
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA	SATA	SATA
Transfer rate	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)						
Single track	3 ms	3 ms	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms	24 ms	24 ms
Logical blocks	1,953,504,479	1,465,128,359	1,250,242,867	976,752,240	625,121.433	488,376,120
Disk rotational speed	5200 rpm	5200 rpm	5400 rpm	7200 rpm	7200 rpm	7200 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)					

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

NOTE: Certain restrictions and exclusions apply. Contact technical support for details.

Blu-ray ROM with LightScribe DVD±RW Super Multi Double-Layer Drive specifications

Applicable disc	Read:	Write:
	BD-ROM, BD-ROM-DL, BD-R, BD-R-DL, BD-RE, BD-RE-DL, DVD-ROM, DVD+R, DVD+R-DL, DVD+RW, DVD-R, DVD-R-DL, DVD-RW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT	DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM
Access time	BD	DVD
Random	< 230 ms	< 180 ms
Cache buffer	4.5 MB	
Data transfer rate		
2X BD-RAM	9 MB/sec	
8X DVD	2,400 KB/sec	
16X CD-R	2,400 KB/sec	
16X CD-RW	2,400 KB/sec	

DVD±RW and CD-RW Super Multi Double-Layer Combo Drive 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, 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
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Cache buffer	2.5 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	

7 Backup and recovery

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

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

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



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

Creating recovery disks

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

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

 **NOTE:** If your computer does not include an integrated optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can purchase recovery discs for your computer from the HP Web site.

Note the following guidelines before creating recovery discs:

- You will 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 may 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 can be created per computer.
- Number each disc before inserting it into the optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be 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, you should 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 you add or modify hardware or software

Note the following when backing up:

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

To copy the screen and paste it into a word-processing document, follow these steps:

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

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

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

3. Open a word-processing document, and then select **Edit > Paste**.
4. Save the document.

- You can 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 you use will depend on the type of optical drive installed in your 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, follow these steps:

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

NOTE: The backup process may 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 to set up and create a backup.

 **NOTE:** Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

Using system restore points

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

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

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

When to create restore points

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

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

Create a system restore point

1. Select **Start > 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, follow these steps:

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:** You can recover only files that you have previously backed up. HP recommends that you use HP Recovery Manager to create a set of recovery discs (entire drive backup) as soon as you set up your computer.

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs or from a dedicated recovery partition (select models only) on the hard drive. However, if your computer includes a solid-state drive (SSD), you may not have a recovery partition. If that is the case, recovery discs have been included with your computer. Use these discs to recover your 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 Web site or reinstalled from the disc provided by the manufacturer.

Recovering from the recovery disks

To restore the system from the recovery discs:

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

Recovering from the dedicated recovery partition (select models only)

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

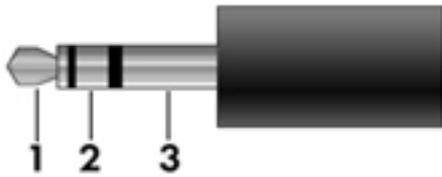
On some models, you can perform a recovery from the partition on the hard drive, accessed by pressing either the Start button or **f11**. This restores the computer to its factory condition.

To restore the system from the partition, follow these steps:

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or –
 - Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then, press **f11** while the “Press <F11> for recovery” message is displayed on the screen.
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

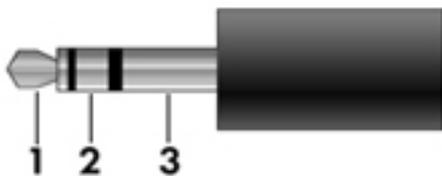
8 Connector pin assignments

Audio-in (microphone)



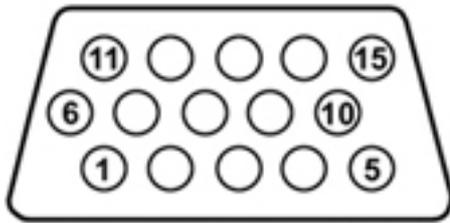
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



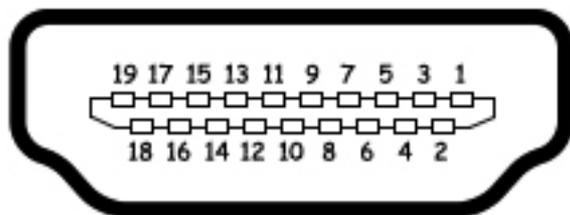
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



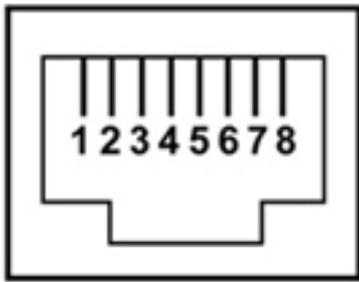
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



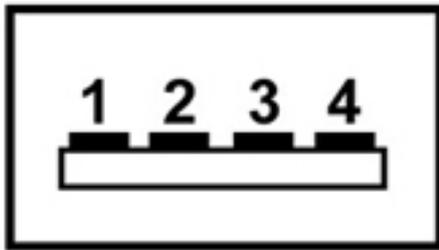
Pin	Signal
1	TMDS data 2+
2	TMDS data 2 shield
3	TMDS data 2-
4	TMDS data 1+
5	TMDS data 1 shield
6	TMDS data 1-
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0-
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	CEC
14	No connect
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect
20	Shell

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.5 m** (5.0 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	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.eiai.org>.

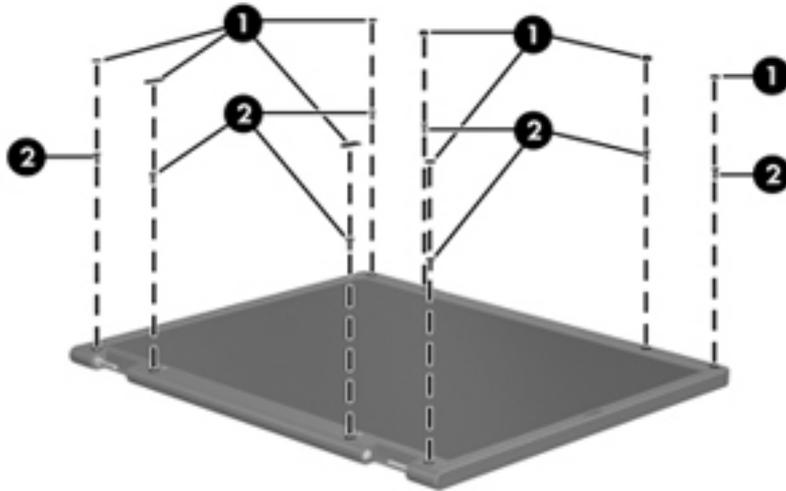
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



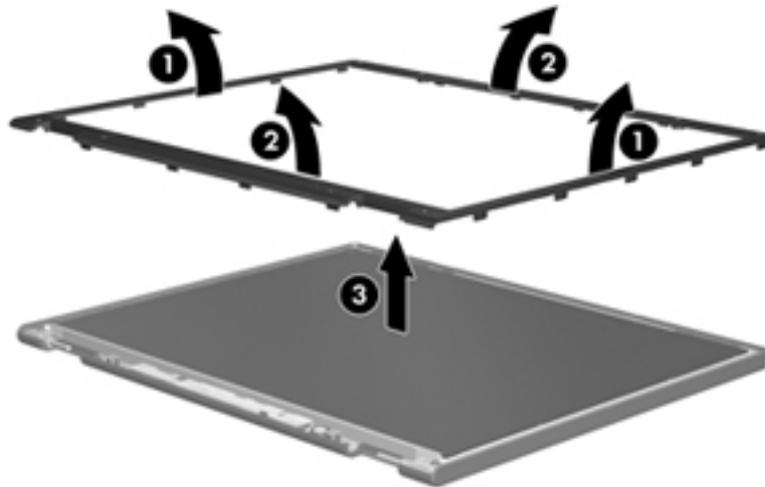
📄 NOTE: The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps:

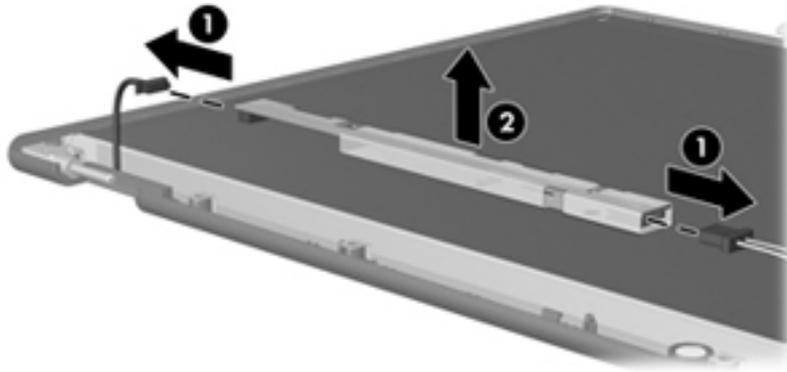
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



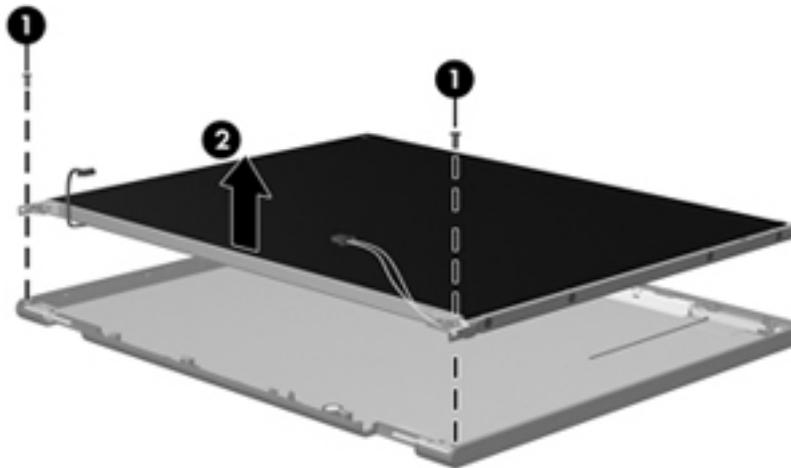
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel 3.



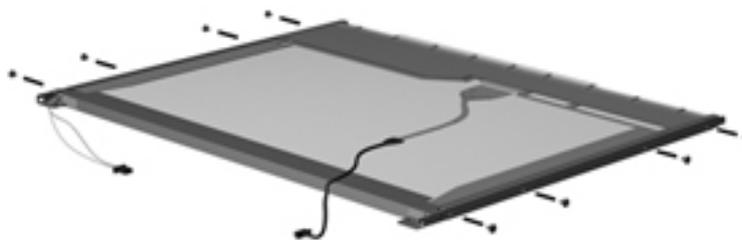
4. Disconnect all display panel cables (1) from the display inverter and remove the inverter 2.



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.

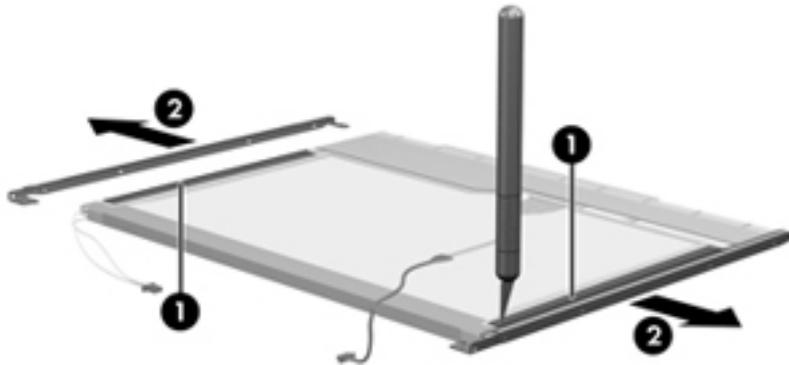


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.



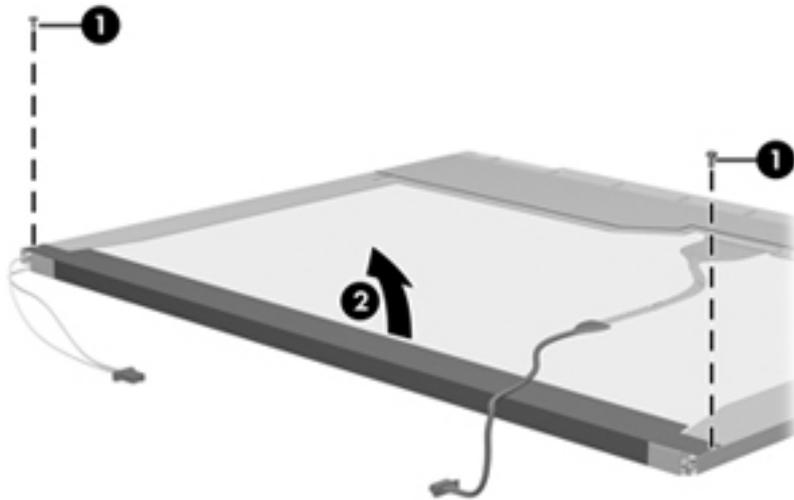
9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

- 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.

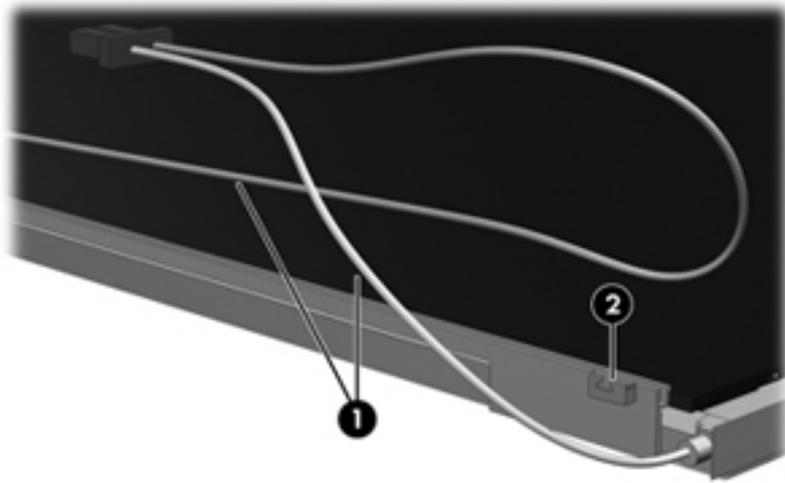
- 12.** Lift the top edge of the backlight cover **(2)** and swing it outward.



- 13.** Remove the backlight cover.

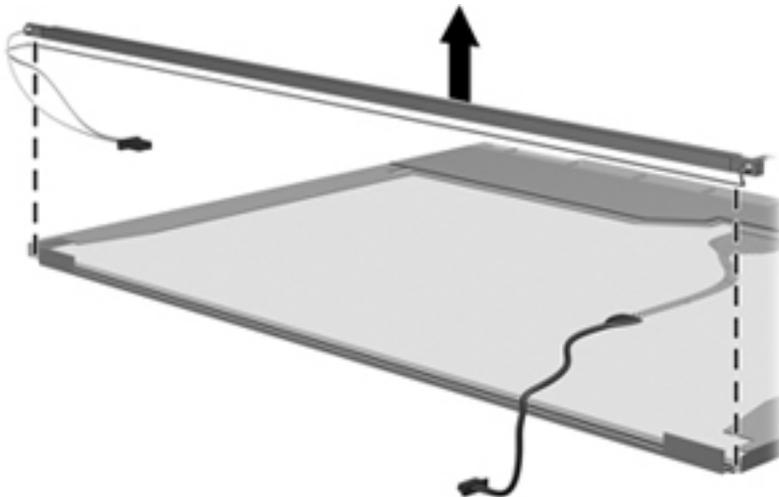
- 14.** Turn the display panel right-side up.

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



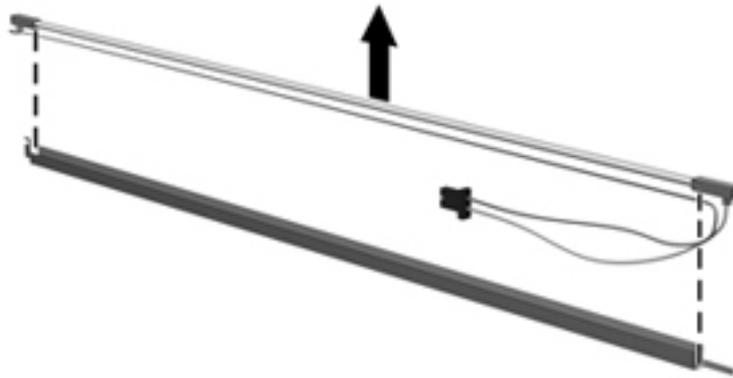
16. Turn the display panel upside down.

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.

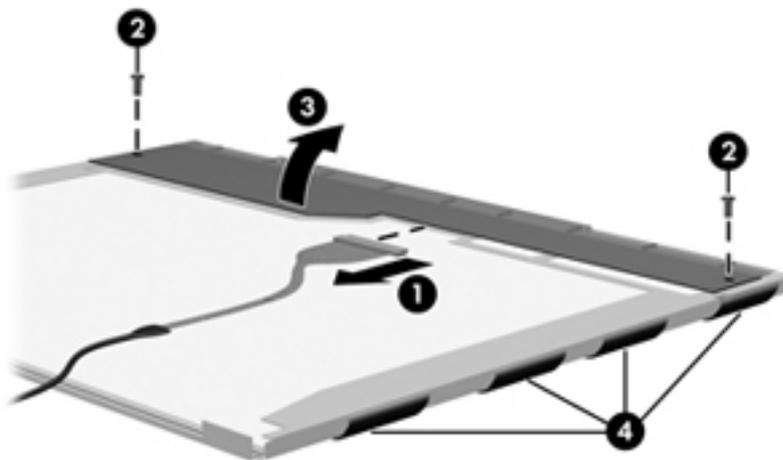


19. Disconnect the display cable **(1)** from the LCD panel.

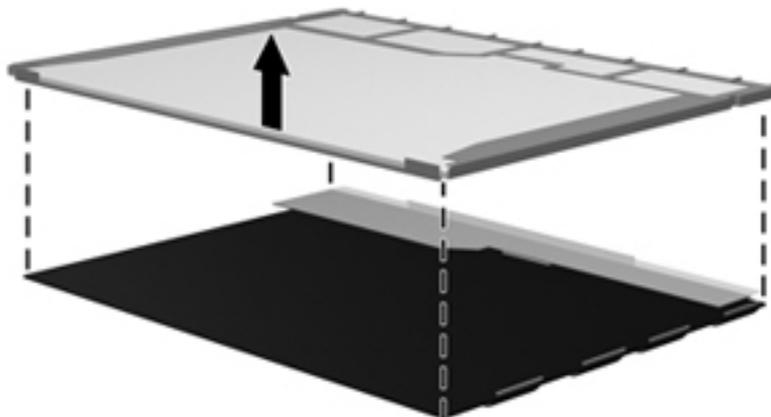
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.

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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