HP Pavilion dm1 Entertainment PC

Maintenance and Service Guide

Safety warning notice

⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device 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 device 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).

Table of contents

1   Product description

Category	Description	Computer models equipped with an AMD® processor	Computer models equipped with an Intel® processor
Product Name	HP Pavilion dm1 Entertainment PC	√	√
Processors	AMD® E450 1.65-GHz processor (1.0-MB L2 cache, 1333-MHz, dual core, 18 W)	√	
	AMD E300 1.30-GHz processor (1.0-MB L2 cache, 1066-MHz, dual core, 18 W)	√	
	Intel Core i3-2367M (1.4GHz), 1333MHz/3MB L3, Dual 17W		√
	Intel Celeron 867 (1.3GHz), 2M cache		√
Chipset	AMD A50M fusion controller hub (FCH)	√	
	Intel® HM65 Express Chipset		√
Graphics	AMD Radeon™ HD 6320 discrete-class graphics on computer models equipped with an AMD E450 1.65-GHz processor	√	
	AMD Radeon HD 6310 discrete-class graphics on computer models equipped with an AMD E300 1.00-GHz processor	√	
	Support for Blu-ray playback with HD decode and DX11 support	√	
	Intel® HD Graphics 3000		√
	Intel® HD Graphics		√
	Support HD Decode, DX10, and HDMI		√
Panel	11.6-in, high-definition (HD), light-emitting diode (LED), BrightView (1366×768) display; typical brightness: 200 nits	√	√
	All display assemblies include 2 wireless local area network (WLAN) antenna cables	√	√
	Supports 16:9 wide aspect ratio	√	√
	Support for non-flush glass panel cover (non-PMMA)	√	
	Select computer model display assemblies include 2 wireless wide area network (WWAN) antenna cables	√	

Category	Description	Computer models equipped with an AMD® processor	Computer models equipped with an Intel® processor
Memory	Two customer-accessible/upgradable memory module slots	√	
	DDR3-1333-MHz single channel support (automatic downgrade to DDR3-1066-MHz on computer models equipped with an AMD E300 1.30-GHz processor)	√	
	Supports up to 8192 GB of system RAM	√	
	Supports the following configurations: ● 8192-MB total system memory (4096×2; only on a 64-bit operating system) ● 6144-MB total system memory (4096×1 + 2048×1) ● 4096-MB total system memory (4096×1 or 2048×2) ● 2048-MB total system memory (2048×1)	√	
	One customer-accessible/upgradable memory module slot		√
	Supports up to 4096 MB of system RAM		√
	Supports the following configurations: ● 4096MB (4096MB x1 SODIMM) ● 2048MB (2048MB x1 SODIMM)		√
Hard drives	Supports **6.35-cm** (2.5-in) hard drives in **9.5-mm** (.37-in) and **7.0-mm** (.28-in) thicknesses	√	
	Customer-accessible	√	
	Serial ATA (SATA)	√	
	Supports Accelerometer hard drive protection	√	
	Supports the following hard drives: ● 640-GB, 5400-rpm, 9.5-mm ● 500-GB, 7200-rpm, 9.5-mm ● 500-GB, 5400-rpm, 9.5-mm ● 320-GB, 7200-rpm, 9.5-mm and 7.0-mm ● 320-GB, 5400-rpm, 9.5-mm and 7.0-mm	√	

Category	Description	Computer models equipped with an AMD® processor	Computer models equipped with an Intel® processor
	Supports the following hard drives:		√
	● 640-GB, 5400-rpm, 9.5-mm		
	● 500-GB, 7200-rpm, 9.5-mm		
	● 500-GB, 5400-rpm, 9.5-mm		
	● 320-GB, 7200-rpm, 9.5-mm and 7.0-mm		
	● 320-GB, 5400-rpm, 9.5-mm and 7.0-mm		
	Supports the following solid-state drives (SSD):	√	√
	● **6.35-cm** (2.5-in) 160-GB		
	● **6.35-cm** (2.5-in) 128-GB		
Optical drive	External USB optical drive (computer USB ports support 2A current)	√	√
	SATA	√	√
	12.7mm tray load	√	√
	Supports the following external optical drives:	√	√
	● Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive		
	● DVD±RW Super Multi Double-Layer Drive		
Audio and video	Single digital microphone	√	√
	Beats Audio with Beats logo (support Beats hotkey [fn+b])	√	√
	Two integrated stereo speakers	√	√
	HP TrueVision high-definition webcam (fixed, no tilt, 1280×800 by 30 frames per second)	√	
	HP TrueVision high-definition webcam (fixed, no tilt, 1280×720 by 30 frames per second)		√
Ethernet	Integrated Gigabit network interface card (NIC), PCIE interface	√	√
Wireless	Integrated WLAN options by way of wireless module	√	√
	Two WLAN antennas built into display assembly	√	√
	Supports the following WLAN formats for all computer models:	√	√
	● Atheros WB2251x1 802.11b/g/n Bluetooth (BT 4.0 + HS support) combo		
	● Broadcom BCM94313HMGBLP1 802.11 b/g/n 1x1 combo HMC		

| Category	Description	Computer models equipped with an AMD® processor	Computer models equipped with an Intel® processor
	Supports the following WLAN formats for computers equipped with an AMD processor: ● Broadcom HMC 802.11 b/g/n Bluetooth (BT 3.0) combo adapter (configurable only for Brazil)	√	
	Supports the following WLAN formats for computers equipped with an Intel processor: ● Intel Centrino® Wireless-N 1030 802.11 b/g/n 1×2 + Bluetooth combo adapter ● Intel Centrino® Wireless-N 6230 802.11 a/b/g/n 1×2 + Bluetooth combo adapter		√
	Integrated WWAN options by way of wireless module	√	
	Two WWAN antennas built into display assembly (select models only)	√	
	Supports the HP hs2340 HSPA+ Mobile Broadband Module	√	
External media card	Push-push insertion/removal	√	√
	HP Multi-Format Digital Media Reader supports the following digital card formats: ● MultiMediaCard ● Secure Digital (SD) Card ● Secure Digital High-Capacity (SDHC) Card ● Secure Digital Extended Capacity (SDxC) Card	√	√
	Subscriber identity module (SIM) slot (populated with WWAN; tool-less user accessible) (select models only)	√	
Ports	● 3-pin AC power ● Audio-in (mono microphone), supports jack detection ● Audio-out (stereo headphone), supports jack detection ● HDMI version 1.3b supporting 1080p, 1920 ×1080 @ 60Hz ● RJ-45 (Ethernet, includes link and activity lights) ● USB 2.0 (3 ports) ● VGA (Dsub 15 pin) supporting 2048×1536 external resolution @ 60 Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video	√	√

Category	Description	Computer models equipped with an AMD® processor	Computer models equipped with an Intel® processor
Keyboard/ pointing devices	97% Duracoat, island-style keyboard, no spill-resistance (in charcoal finish)	√	√
	TouchPad with multi-touch gestures	√	√
	Taps enabled as default	√	√
Power requirements	**Supports the following HP Smart AC adapters:** ● 65-W PFC RC V EM 3-wire HP Smart AC adapter (for use only in India) ● 65-W PFC RC V 3-wire HP Smart AC adapter (for use in all countries and regions except India)	√	√
	Supports the following batteries: ● 6-cell, 55-Whr, 2.55-Ah Li-ion battery ● 3-cell, 28-Whr, 2.55-Ah Li-ion battery	√	√
Security	Security cable slot	√	√
Operating system	**Preinstalled:** ● Windows 7 Home Basic (64- and 32-bit) ● Windows 7 Home Premium (64- and 32-bit) ● Windows 7 Professional (64- and 32-bit) ● Windows 7 Starter 32-bit (only on computer models equipped with a 500-, 320-, or 250-GB hard drive and 2-GB memory) ● SUSE Linux (select models only) (Does not support Energy Star, WWAN/GPS, QuickWeb, BD playback, or wireless card) ● DVD SSRD recovery solution	√	
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Category	Description	Computer models equipped with an AMD® processor	Computer models equipped with an Intel® processor
Serviceability	**End-user replaceable parts:**	√	
	● AC adapter		
	● Battery		
	● Hard drive		
	● Memory modules (2)		
	● SIM (select models only)		
	● Solid-state drive		
	● WLAN module		
	● WWAN module (select models only)		
	End-user replaceable parts:		√
	● AC adapter		
	● Battery		
	● Hard drive		
	● Memory module		
	● SIM (select models only)		
	● Solid-state drive		
	● WLAN module		

2 External component identification

Display
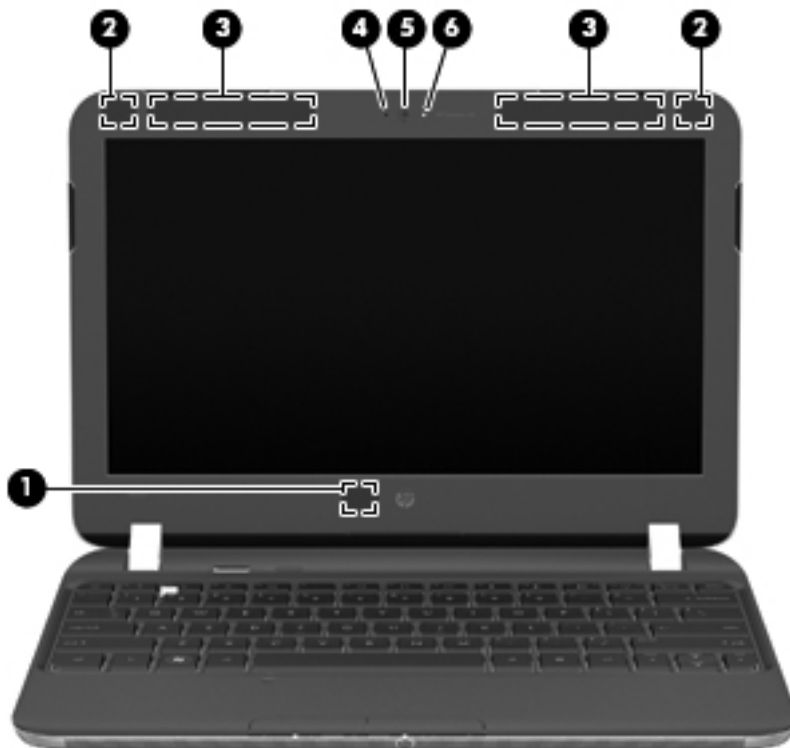
Item	Component	Description
(1)	Internal display switch	Turns off the display or initiates Sleep if the display is closed while the power is on. **NOTE:** The display switch is not visible from the outside of the computer.
(2)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(3)	WWAN antennas (2)* (select models only)	Send and receive wireless signals to communicate with WWANs.
(4)	Internal microphone	Records sound.

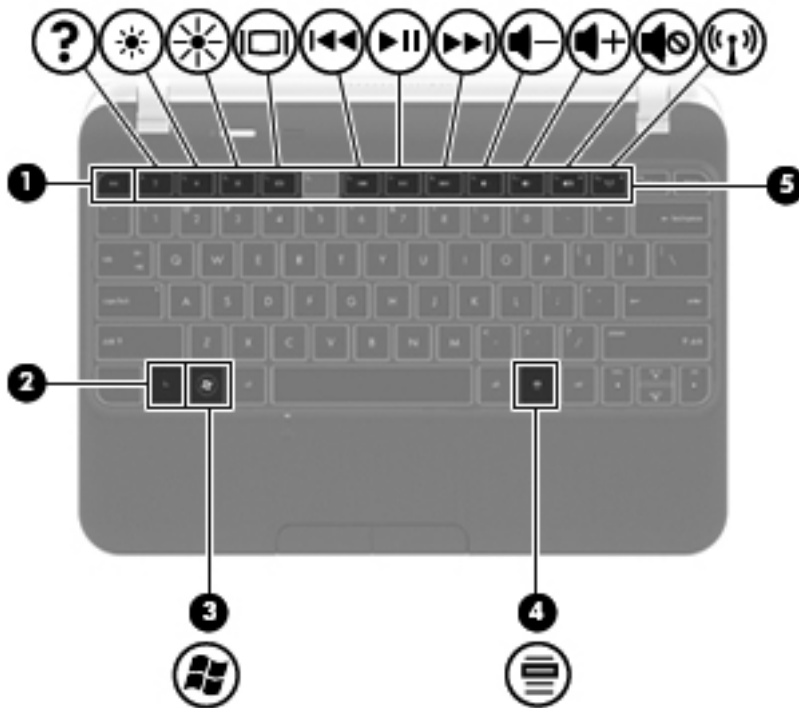| Item	Component	Description
(5)	Webcam	Records video and captures still photographs.
		To use the webcam, select **Start > All Programs > CyberLink and Chat > CyberLink YouCam**.
(6)	Webcam light	On: The webcam is in use.

*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)	Power button	● 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. 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. To learn more about your power settings, select **Start > Control Panel > System and Security > Power Options**, or refer to the *HP Notebook Reference Guide*.
(2)	QuickWeb button	For computer models equipped with an AMD processor: ● When the computer is off or in Hibernation, press the button to open HP QuickWeb (select models only). ● When the computer is in Microsoft Windows, press the button to open the default Web browser. ● When the computer is in HP QuickWeb, press the button to open the Web browser. QuickWeb allows you to browse the Internet, communicate with others using Skype, and explore other HP QuickWeb programs. When the computer is off or in Hibernation, you can press the QuickWeb button to access these features without waiting for the operating system to start. **NOTE:** For more information, refer to the HP QuickWeb software Help. If your computer does not have HP QuickWeb software, the button does not start QuickWeb or perform any action or function in QuickWeb. For computer models equipped with an Intel processor: ● When the computer is in Microsoft Windows, press the button to open the default Web browser.

Keys

Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Displays system information when pressed in combination with the esc key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)	Action keys	Execute frequently used system functions.

Lights
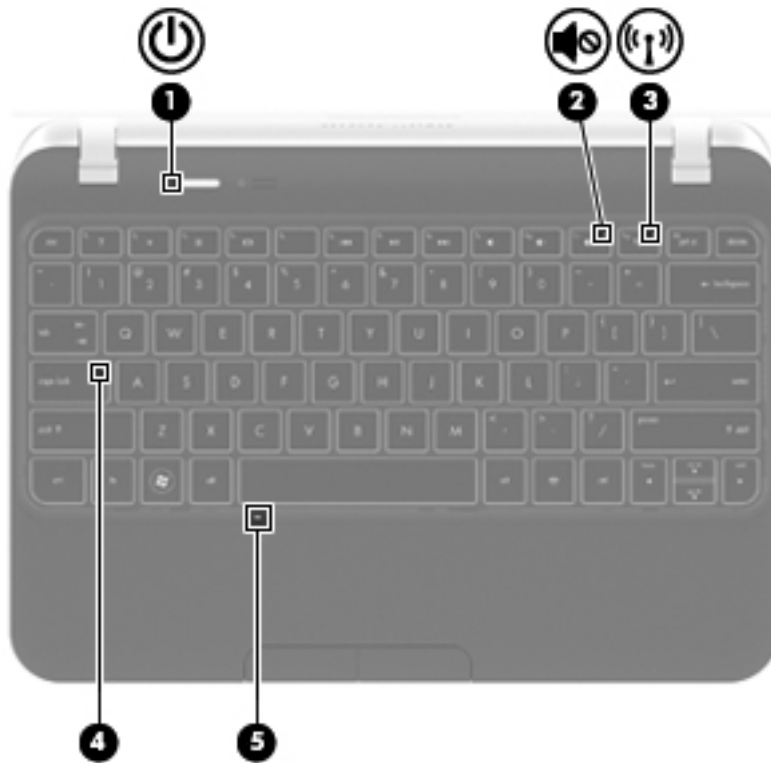
Item	Component	Description
(1)	Power light	● White: The computer is on. ● Blinking white: The computer is in the Sleep state. ● Off: The computer is off or in Hibernation.
(2)	Mute light	● Amber: Computer sound is off. ● Off: Computer sound is on.
(3)	Wireless light	● White: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on. ● Amber: All wireless devices are off.
(4)	Caps lock light	On: Caps lock is on.
(5)	TouchPad light	● On: The TouchPad is off. ● Off: The TouchPad is on.

TouchPad

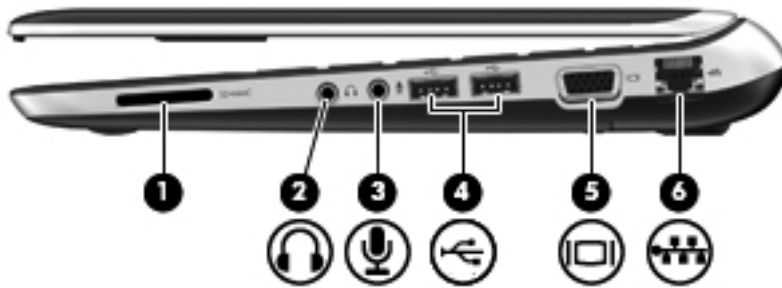| Item	Component	Description
(1)	TouchPad light	- On: The TouchPad is off. - Off: The TouchPad is on.
(2)	TouchPad on/off button	Turns the TouchPad on and off. Quickly double-tap the TouchPad on/off button to turn the TouchPad on and off.
(3)	TouchPad zone	Moves the pointer and selects or activates items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

Front

Component	Description
Speakers (2)	Produce sound.

Left side

Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	AC adapter/Battery light	● White: The computer is connected to external power. If a battery installed, the battery is fully charged. ● Amber: The computer is connected to external power and the battery is charging. ● Off: The computer is not connected to external power. ● Blinking: The computer is in the Sleep state.
(3)	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.
(4)	Vent	Enables 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.
(5)	Hard drive light	● Blinking white: The hard drive is being accessed. ● Amber: HP 3D DriveGuard has temporarily parked the hard drive. **NOTE:** For information on HP 3D DriveGuard, refer to the *HP Notebook Reference Guide*.
(6)	HDMI port (select models only)	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(7)	USB port (2)	Connects an optional USB device.

Right side

| Item	Component	Description
(1)	Digital Media Slot	Supports the following digital card formats: ● MultiMediaCard ● SD Card ● Secure Digital High-Capacity (SDHC) Card ● Secure Digital Extended Capacity (SDxC) Card
(2)	Audio-out (headphone) jack	Produce sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*. **NOTE:** When a device is connected to the jack, the computer speakers are disabled.
(3)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(4)	USB 2.0 ports (2)	Connect optional USB 2.0 devices.
(5)	External monitor port	Connects an external VGA monitor or projector.
(6)	RJ-45 (network) jack	Connects a network cable.

Bottom
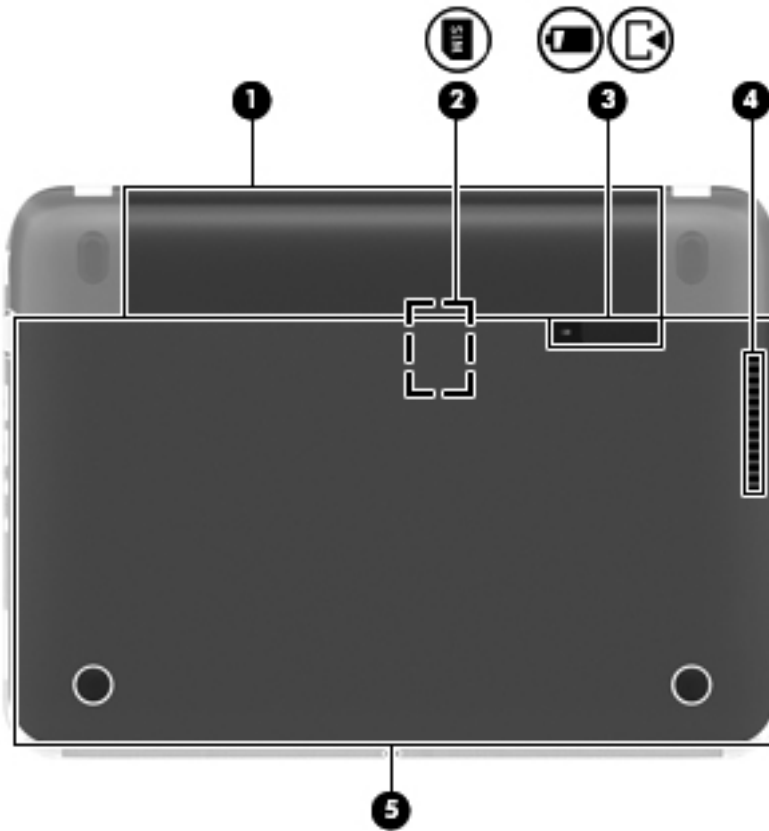
Item	Component	Description
(1)	Battery bay	Holds the battery.
(2)	SIM slot (select models only)	Supports a wireless subscriber identity module (SIM). The SIM slot is located inside the battery bay.
(3)	Battery/service door latch	Releases the battery from the battery bay.
(4)	Vent	Enables airflow to cool 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.
(5)	Service door	Provides access to the hard drive bay, a memory module slot, the SIM slot (select models only), the WLAN module, and the WWAN module (select models only).

# 3   Illustrated parts catalog

Service label

When ordering parts or requesting information, provide the computer serial number and model description provided on the service label.
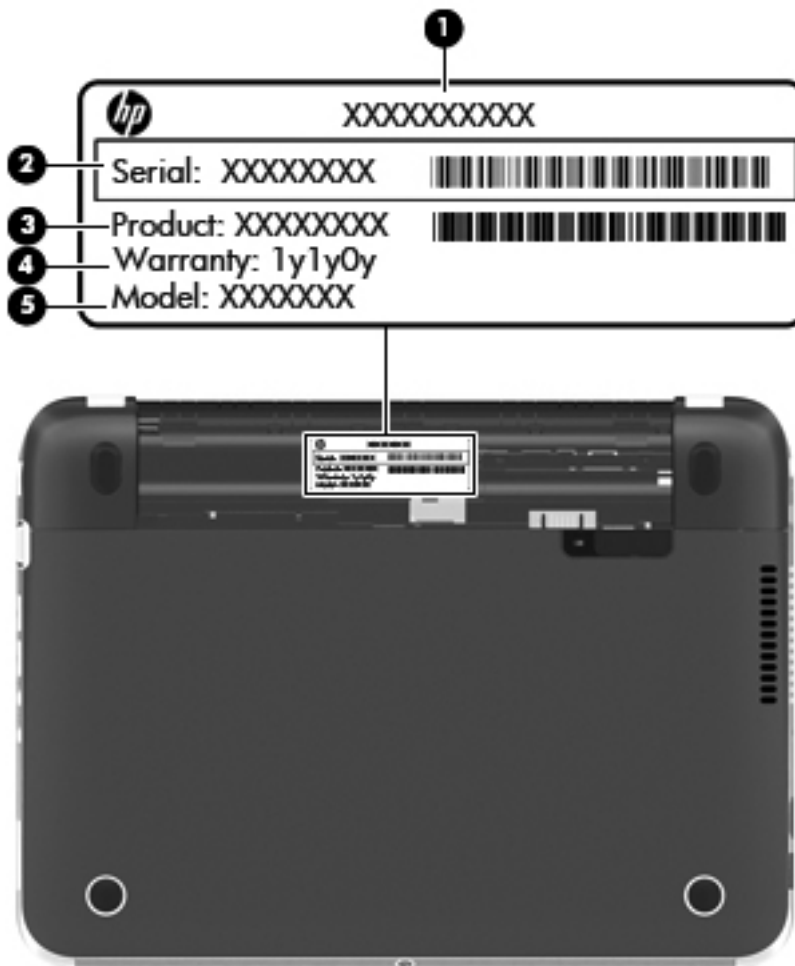
Item	Description	Function
(1)	Product name	This is the product name affixed to the front of the computer.

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

Computer major components
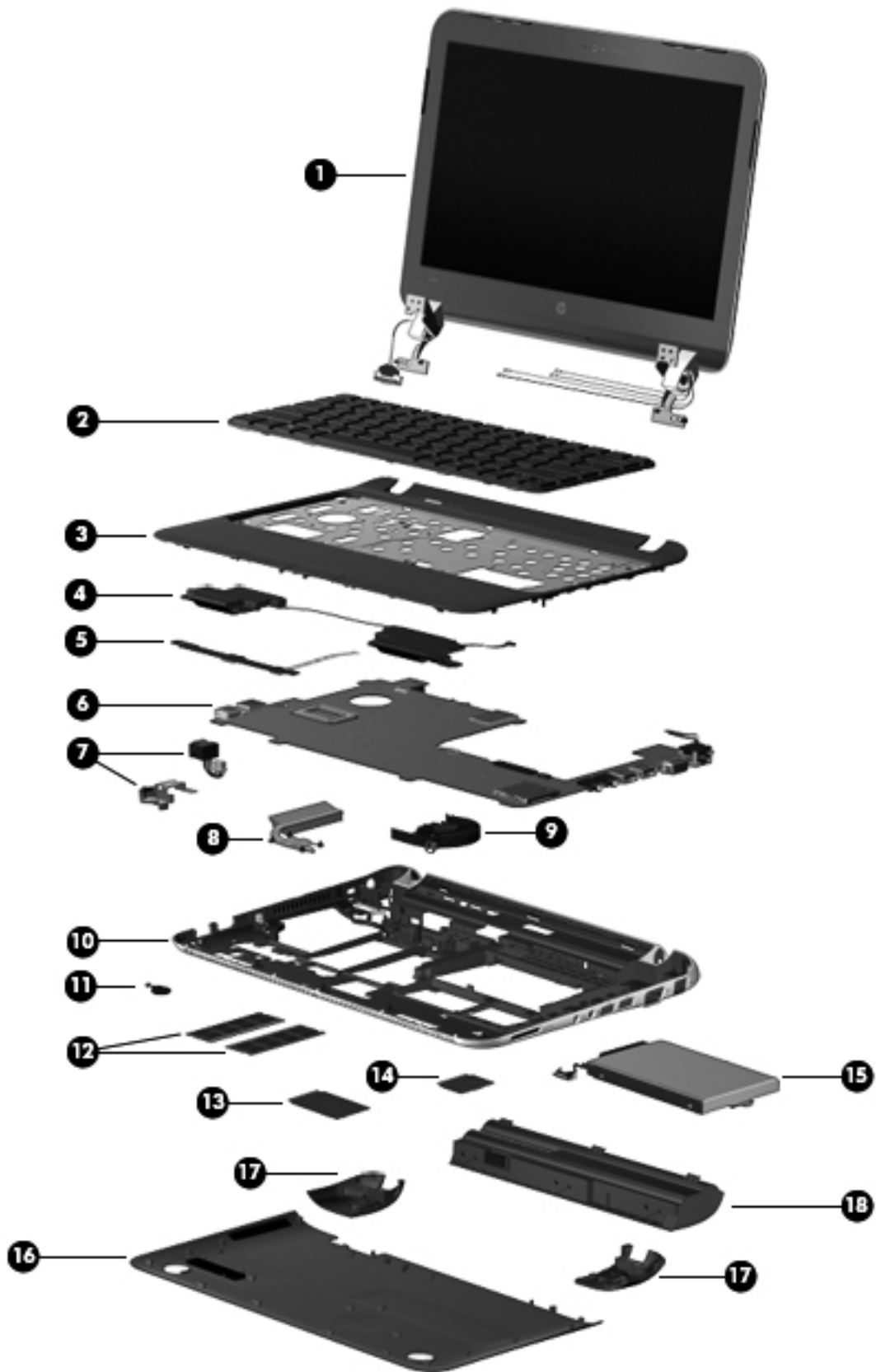
Item	Component	Spare part number
(1)	**Display assembly**: The display assembly is spared at the subcomponent level only. For display assembly spare part information, see Display assembly subcomponents on page 25.	
(2)	**Keyboard** (includes keyboard cable):	
	In charcoal finish	
	For use in Belgium	659500-A41
	For use in Brazil	659500-201
	For use in Canada	659500-121
	For use in the Czech Republic and Slovenia	659500-FL1
	For use in Denmark, Finland, and Norway	659500-DH1
	For use in France	659500-051
	For use in Germany	659500-041
	For use in Greece	659500-DJ1
	For use in Hungary	659500-211
	For use in India	659500-D61
	For use in Israel	659500-BB1
	For use in Italy	659500-061
	For use in Japan	659500-291
	For use in Latin America	659500-161
	For use in the Netherlands	659500-B31
	For use in Portugal	659500-131
	For use in Russia	659500-251
	For use in Saudi Arabia	659500-171
	For use in South Korea	659500-AD1
	For use in Spain	659500-071
	For use in Switzerland	659500-BG1
	For use in Taiwan	659500-AB1
	For use in Thailand	659500-281
	For use in Turkey	659500-141
	For use in the United Kingdom	659500-031
	For use in the United States	659500-001
	In ash black finish	
	For use in Belgium	659501-A41
	For use in Brazil	659501-201
	For use in Canada	659501-121

Item	Component	Spare part number
	For use in the Czech Republic and Slovenia	659501-FL1
	For use in Denmark, Finland, and Norway	659501-DH1
	For use in France	659501-051
	For use in Germany	659501-041
	For use in Greece	659501-DJ1
	For use in Hungary	659501-211
	For use in India	659501-D61
	For use in Israel	659501-BB1
	For use in Italy	659501-061
	For use in Japan	659501-291
	For use in Latin America	659501-161
	For use in the Netherlands	659501-B31
	For use in Portugal	659501-131
	For use in Romania	659501-271
	For use in Russia	659501-251
	For use in Saudi Arabia	659501-171
	For use in South Korea	659501-AD1
	For use in Spain	659501-071
	For use in Switzerland	659501-BG1
	For use in Taiwan	659501-AB1
	For use in Thailand	659501-281
	For use in Turkey	659501-141
	For use in the United Kingdom	659501-031
	For use in the United States	659501-001
	In ruby red finish	
	For use in Belgium	677713-A41
	For use in Brazil	677713-201
	For use in Canada	677713-121
	For use in the Czech Republic and Slovenia	677713-FL1
	For use in Denmark, Finland, and Norway	677713-DH1
	For use in France	677713-051
	For use in Germany	677713-041
	For use in Greece	677713-DJ1
	For use in Hungary	677713-211

Item	Component	Spare part number
	For use in India	677713-D61
	For use in Israel	677713-BB1
	For use in Italy	677713-061
	For use in Japan	677713-291
	For use in Latin America	677713-161
	For use in the Netherlands	677713-B31
	For use in Portugal	677713-131
	For use in Romania	677713-271
	For use in Russia	677713-251
	For use in Saudi Arabia	677713-171
	For use in South Korea	677713-AD1
	For use in Spain	677713-071
	For use in Switzerland	677713-BG1
	For use in Taiwan	677713-AB1
	For use in Thailand	677713-281
	For use in Turkey	677713-141
	For use in the United Kingdom	677713-031
	For use in the United States	677713-001
	For Alexandre Herchcovitch Special Edition computer models equipped with an AMD processor	
	For use in Brazil	683100-201
	For use in Canada	683100-121
	For use in Latin America	683100-161
	For use in the United States	683100-001
(3)	**Top cover** (includes power button board and cable and TouchPad and TouchPad cable):	
	In charcoal finish for use only with computer models equipped with an AMD processor	659513-001
	In ash black finish for use only with computer models equipped with an AMD processor	659514-001
	In ruby red finish for use only with computer models equipped with an AMD processor	678159-001
	For use only with Alexandre Herchcovitch Special Edition computer models equipped with an AMD processor	683099-001
	In charcoal finish for use only with computer models equipped with an Intel processor	669426-001
	In ash black finish for use only with computer models equipped with an Intel processor	669427-001
	In ruby red finish for use only with computer models equipped with an Intel processor	677718-001
(4)	**Speakers** (includes cables)	659508-001

Item	Component	Spare part number
(5)	**TouchPad button board** (includes cable)	664993-001
(6)	**System board** (includes processor and replacement thermal material):	
	For use only with computer models equipped with an AMD E450 processor and with WWAN capability	659512-001
	For use only with computer models equipped with an AMD E450 processor but not WWAN capability	659511-001
	For use only with computer models equipped with an AMD E300 processor and with WWAN capability	659510-001
	For use only with computer models equipped with an AMD E300 processor but not WWAN capability	659509-001
	For use only with computer models equipped with an AMD E2-1200 slot	683534-001
	For use only with computer models equipped with an AMD E2-1200 X slot	683535-001
	For use only with computer models equipped with an AMD E2-1800 slot	683533-001
	For use only with computer models equipped with an AMD E2-1800 X slot	683532-001
	For use only with computer models equipped with an Intel i3-2367M processor	664335-001
	For use only with computer models equipped with an Intel Celeron 857 processor	664336-001
	For use only with computer models equipped with an Intel Celeron 867 processor	677716-001
	For use only with computer models equipped with an Intel Pentium 967 processor	665828-001
(7)	**Power connector cable** (includes bracket)	664995-001
(8)	**Heat sink** (includes replacement thermal material)	
	For use only with computer models equipped with an AMD processor	664999-001
	For use only with computer models equipped with an Intel processor	667121-001
(9)	**Fan**	665000-001
(10)	**Base enclosure** (includes battery release latch)	
	In charcoal finish for use only with computers equipped with an AMD processor	659496-001
	In charcoal finish for use only with computers equipped with an Intel processor	664337-001
	For use only with Alexandre Herchcovitch Special Edition computer models	691167-001
(11)	**RTC battery:**	
	For use only with computer models equipped with WWAN compatibility	664994-001
	For use only with computer models without WWAN compatibility	599516-001
(12)	**Memory modules** (2, PC3, 10600, 1333-MHz):	
	4 GB	621569-001
	2 GB	621565-001
(13)	**HP hs2340 HSPA+ Mobile Broadband Module WWAN module**	632155-001
(14)	**WLAN module:**	

Item	Component	Spare part number
	For use with all computer models:	
	Atheros WB225 1x1 802.11b/g/n BT Combo	655795-001
	Broadcom BCM94313HMGBLP1 802.11b/g/n 1x1 Combo HMC	657325-001
	For use only with computer models equipped with an AMD processor:	
	Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)	600370-001
	For use only with computer models equipped with an Intel processor:	
	802.11 b/g/n 1×2 Intel Centrino Wireless-N 1030 + Bluetooth combo	631956-001
	Broadcom 802.11 2×2 b/g/n wireless LAN + Bluetooth (BT 4.0 + HS support) combo	636672-001
(15)	**Hard drive** (does not include the hard drive bracket, connector cable, isolators, or screws. These components are included in the Hard Drive Hardware Kit, spare part number 664913-001):	
	640-GB, 5400-rpm, SATA, 7.0-mm	603785-001
	500-GB, 7200-rpm, SATA, 7.0-mm	634925-001
	320-GB, 7200-rpm, SATA, 7.0-mm	634862-002 and 641672-001
	160-GB solid-state drive	659933-001
	128-GB solid-state drive	675097-001
	For use only with computer models equipped with an AMD processor and with WWAN capability:	
	640-GB, 5400-rpm, SATA, 7.0-mm	669300-001
	500-GB, 5400-rpm, SATA, 7.0-mm	669299-001
	Hard Drive Hardware Kit (not illustrated, includes the hard drive bracket, connector cable, isolators, and screws)	664913-001
	NOTE: See Mass storage devices on page 27 for more Hard Drive Hardware Kit information.	
(16)	**Service door** (includes two rubber feet and shielding):	
	In charcoal finish	659503-001
	In ash black finish	659504-001
	In ruby red finish	677714-001
	In ruby red finish	678158-001
	For use with Alexandre Herchcovitch Special Edition computer models	683098-001
(17)	**Rubber Kit** (includes two **rear corner covers** and four rubber feet)	664996-001
(18)	**Battery:**	
	6-cell, 55-Whr, 2.55-Ah Li-ion battery	646757-001
	3-cell, 28-Whr, 2.55-Ah Li-ion battery	646755-001

Display assembly subcomponents
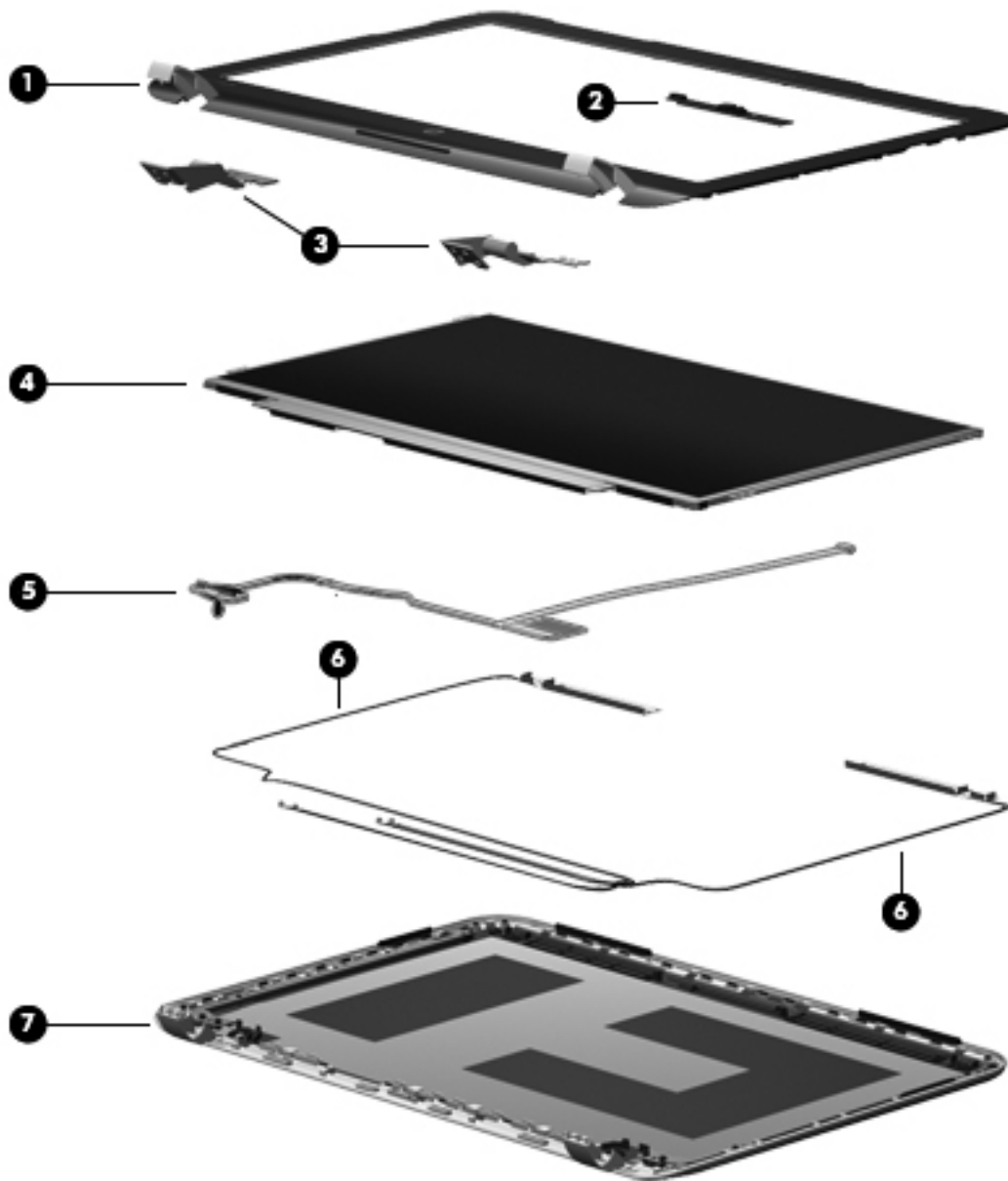
Item	Component	Spare part number
(1)	**Display bezel**	659497-001
	Display bezel for Alexandre Herchcovitch Special Edition computer models	691168-001
(2)	**Webcamera module**	659516-001
	Display Hinge Kit,includes:	659499-001
(3a)	Left and right hinges	
(3b)	Left and right hinge brackets	
(4)	**Display panel:**	

Item	Component	Spare part number
	11.6-in, LED, HD, BrightView SVA display panel for use only with computer models equipped with an AMD processor	668353-001
	11.6-in, LED, BrightView SVA display panel	659506-001
(5)	**Display Cable Kit** (includes display panel cable and webcamera module cable)	659498-001
(6)	**Wireless Antenna Kit** (includes left and right WLAN antenna cables and transceivers and left and right WWAN antenna cables and transceivers)	659492-001
(7)	**Display enclosure:**	
	In charcoal finish for use with computer models equipped with WLAN only capability (includes WLAN antenna cables and transceivers)	659493-001
	In charcoal finish for use with computer models equipped an AMD processor and with WLAN and with WWAN capability (WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)	671685-001
	In ash black finish for use with computer models equipped with WLAN only capability (includes WLAN antenna cables and transceivers)	659494-001
	In ruby red finish for use with computer models equipped with WLAN only capability (includes WLAN antenna cables and transceivers)	677712-001
	In ruby red finish for use with computer models equipped an AMD processor and with WLAN and with WWAN capability (WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)	678034-001
	For Alexandre Herchcovitch Special Edition computer models equipped with an AMD processor and with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers	683097-001

Mass storage devices
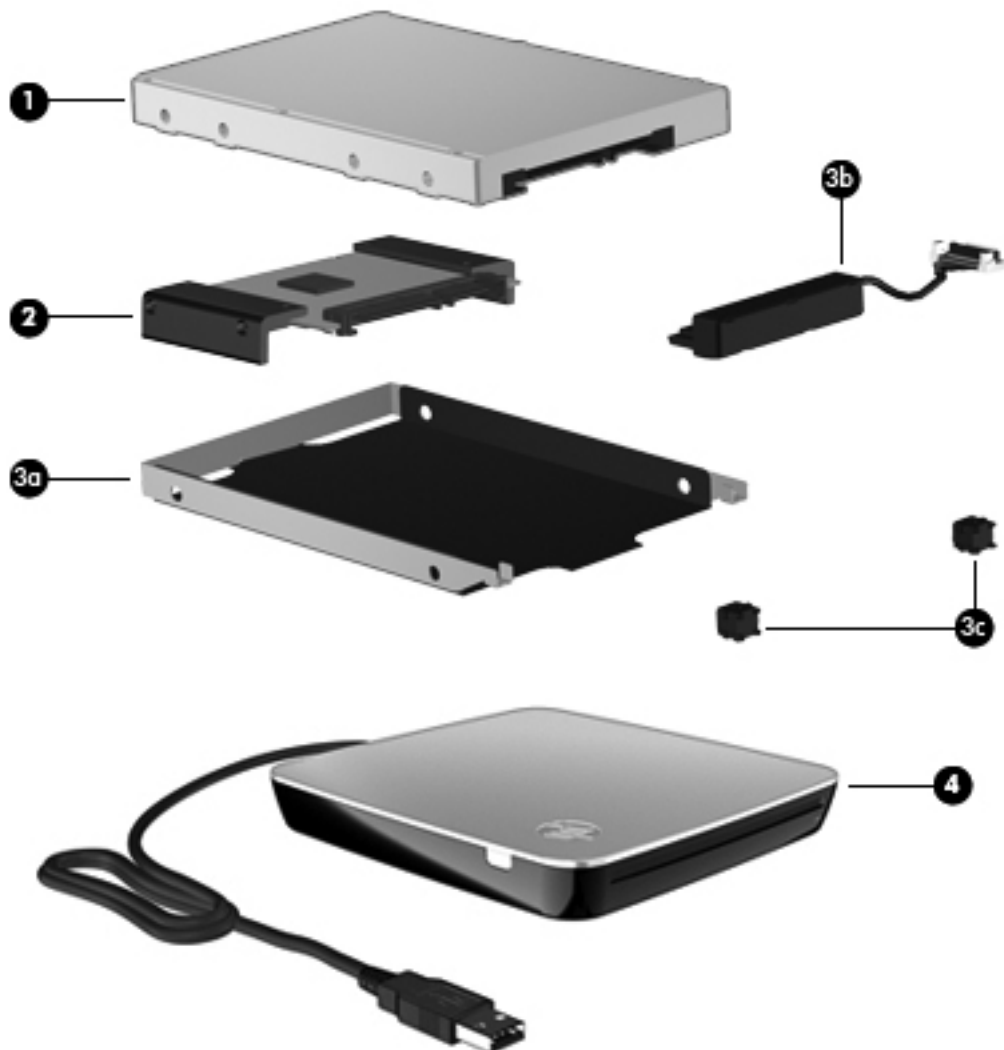
Item	Component	Spare part number
(1)	**Hard drive** (does not include the hard drive bracket, connector cable, isolators, or screws):	
	640-GB, 5400-rpm, SATA, 7.0-mm	603785-001
	500-GB, 7200-rpm, SATA, 7.0-mm	634925-001
	320-GB, 7200-rpm, SATA, 7.0-mm	634862-002 and 641672-001
	For use only with computer models equipped with an AMD processor and with WWAN capability:	
	640-GB, 5400-rpm, SATA, 7.0-mm	669300-001
	500-GB, 5400-rpm, SATA, 7.0-mm	669299-001
(2)	160-GB solid-state drive	659933-001
	128-GB solid-state drive	675097-001

Item	Component	Spare part number
	128-GB solid-state FX drive for use only with computer models equipped with an Intel processor	684905-001
	128-GB solid-state drive for use only with computer models equipped with an AMD processor	677715-001
	Hard Drive Hardware Kit, includes:	664913-001
(3a)	Hard drive bracket	
(3b)	Hard drive connector cable	
(3c)	Hard drive isolators	
	Screws (not illustrated)	
(4)	**Optical drive:**	
	Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive	659941-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	659940-001

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter:	
65-W PFC RC V EM 3-wire HP Smart AC adapter (for use only in India)	609948-001
65-W PFC RC V 3-wire HP Smart AC adapter (for use in all countries and regions except India)	609939-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	490371-D01
For use in Australia	490371-011
For use in Brazil	490371-202
For use in Denmark	490371-081
For use in Europe	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in Japan	490371-291
For use in the People's Republic of China	490371-AA1
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in Taiwan	490371-AB1
For use in Thailand	490371-201

Component	Spare part number
For use in the United Kingdom and Singapore	490371-031
For use in the United States	490371-001
Screw Kit	659507-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-061	Power cord for use in Italy (3-pin, black, 1.83-m)
490371-081	Power cord for use in Denmark (3-pin, black, 1.83-m)
490371-111	Power cord for use in Switzerland (3-pin, black, 1.83-m)
490371-201	Power cord for use in Thailand (3-pin, black, 1.83-m)
490371-202	Power cord for use in Brazil (3-pin, black, 1.83-m)
490371-291	Power cord for use in Japan (3-pin, black, 1.83-m)
490371-AA1	Power cord for use in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	Power cord for use in Taiwan (3-pin, black, 1.83-m)
490371-AD1	Power cord for use in South Korea (3-pin, black, 1.83-m)
490371-AR1	Power cord for use in South Africa (3-pin, black, 1.83-m)
490371-BB1	Power cord for use in Israel (3-pin, black, 1.83-m)
490371-D01	Power cord for use in Argentina (3-pin, black, 1.83-m)
490371-D61	Power cord for use in India (3-pin, black, 1.83-m)
597587-001	HP wireless optical mobile mouse (select models only)
599516-001	RTC battery for use only with computer models without WWAN capability
600370-001	Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready) (for use only with computer models equipped with an AMD processor)
603785-001	640-GB, 5400-rpm hard drive only (does not include bracket, connector cable, isolators, or screws; SATA, 7.0-mm) (for use only with computer models equipped with an AMD processor)
609939-001	HP Smart AC Adapter RC V 3-wire (for use in all countries and regions except India)
609948-001	HP Smart AC Adapter RC V EM 3-wire (for use only in India)
621565-001	2-GB memory module (PC3, 10600, 1333-MHz)
621569-001	4-GB memory module (PC3, 10600, 1333-MHz)

Spare part number	Description
631956-001	802.11 b/g/n 1×2 Intel Centrino Wireless-N 1030 + Bluetooth combo (for use only with computer models equipped with an Intel processor)
632155-001	HP hs2340 HSPA+ Mobile Broadband Module (for use only with computer models equipped with an AMD processor)
634862-002	320-GB, 7200-rpm hard drive only (does not include bracket, connector cable, isolators, or screws; SATA, 7.0-mm)
634925-001	500-GB, 7200-rpm hard drive only (does not include bracket, connector cable, isolators, or screws; SATA, 7.0-mm)
636672-001	Broadcom 802.11 2×2 b/g/n wireless LAN + Bluetooth (BT 4.0 + HS support) combo (for use only with computer models equipped with an Intel processor)
641672-001	320-GB, 7200-rpm hard drive only (does not include bracket, connector cable, isolators, or screws; SATA, 7.0-mm) (for use only with computer models equipped with an AMD processor)
646755-001	3-cell, 28-Whr, 2.55-Ah Li-ion battery
646757-001	6-cell, 55-Whr, 2.55-Ah Li-ion battery
655795-001	Atheros WB225 1x1 802.11 b/g/n BT Combo
657325-001	Broadcom BCM94313HMGBLP1 802.11 b/g/n 1x1 Combo HMC
659492-001	Wireless Antenna Kit (includes WLAN and WWAN antenna cables and transceivers)
659493-001	Display enclosure in charcoal finish for use with computer models equipped with WLAN only capability (includes WLAN antenna cables and transceivers)
659496-001	Base enclosure for use only with computer models equipped with an AMD processor (includes battery release latch)
659497-001	Display bezel (includes display lid switch magnet)
659498-001	Display Cable Kit (includes display panel cable and webcamera module cable)
659499-001	Display Hinge Kit (includes left and right display hinges)
659500-001	Keyboard in charcoal finish for use in the United States (includes keyboard cable)
659500-031	Keyboard in charcoal finish for use in the United Kingdom (includes keyboard cable)
659500-041	Keyboard in charcoal finish for use in Germany (includes keyboard cable)
659500-051	Keyboard in charcoal finish for use in France (includes keyboard cable)
659500-061	Keyboard in charcoal finish for use in Italy (includes keyboard cable)
659500-071	Keyboard in charcoal finish for use in Spain (includes keyboard cable)
659500-121	Keyboard in charcoal finish for use in Canada (includes keyboard cable)
659500-131	Keyboard in charcoal finish for use in Portugal (includes keyboard cable)
659500-141	Keyboard in charcoal finish for use in Turkey (includes keyboard cable)
659500-161	Keyboard in charcoal finish for use in Latin America (includes keyboard cable)
659500-171	Keyboard in charcoal finish for use in Saudi Arabia (includes keyboard cable)
659500-201	Keyboard in charcoal finish for use in Brazil (includes keyboard cable)
659500-211	Keyboard in charcoal finish for use in Hungary (includes keyboard cable)
659500-251	Keyboard in charcoal finish for use in Russia (includes keyboard cable)

Spare part number	Description
659500-271	Keyboard in charcoal finish for use in Romania (includes keyboard cable)
659500-281	Keyboard in charcoal finish for use in Thailand (includes keyboard cable)
659500-291	Keyboard in charcoal finish for use in Japan (includes keyboard cable)
659500-A41	Keyboard in charcoal finish for use in Belgium (includes keyboard cable)
659500-AB1	Keyboard in charcoal finish for use in Taiwan (includes keyboard cable)
659500-AD1	Keyboard in charcoal finish for use in South Korea (includes keyboard cable)
659500-B31	Keyboard in charcoal finish for use in the Netherlands (includes keyboard cable)
659500-BB1	Keyboard in charcoal finish for use in Israel (includes keyboard cable)
659500-BG1	Keyboard in charcoal finish for use in Switzerland (includes keyboard cable)
659500-D61	Keyboard in charcoal finish for use in India (includes keyboard cable)
659500-DH1	Keyboard in charcoal finish for use in Denmark, Finland, and Norway (includes keyboard cable)
659500-DJ1	Keyboard in charcoal finish for use in Greece (includes keyboard cable)
659500-FL1	Keyboard in charcoal finish for use in the Czech Republic and Slovenia (includes keyboard cable)
659501-001	Keyboard in ash black for use in the United States (includes keyboard cable)
659501-031	Keyboard in ash black for use in the United Kingdom (includes keyboard cable)
659501-041	Keyboard in ash black for use in Germany (includes keyboard cable)
659501-051	Keyboard in ash black for use in France (includes keyboard cable)
659501-061	Keyboard in ash black for use in Italy (includes keyboard cable)
659501-071	Keyboard in ash black for use in Spain (includes keyboard cable)
659501-121	Keyboard in ash black for use in Canada (includes keyboard cable)
659501-131	Keyboard in ash black for use in Portugal (includes keyboard cable)
659501-141	Keyboard in ash black for use in Turkey (includes keyboard cable)
659501-161	Keyboard in ash black for use in Latin America (includes keyboard cable)
659501-171	Keyboard in ash black for use in Saudi Arabia (includes keyboard cable)
659501-211	Keyboard in ash black for use in Hungary (includes keyboard cable)
659501-251	Keyboard in ash black for use in Russia (includes keyboard cable)
659501-271	Keyboard in ash black for use in Romania (includes keyboard cable)
659501-281	Keyboard in ash black for use in Thailand (includes keyboard cable)
659501-291	Keyboard in ash black for use in Japan (includes keyboard cable)
659501-A41	Keyboard in ash black for use in Belgium (includes keyboard cable)
659501-AB1	Keyboard in ash black for use in Taiwan (includes keyboard cable)
659501-AD1	Keyboard in ash black for use in Korea (includes keyboard cable)
659501-B31	Keyboard in ash black for use in the Netherlands (includes keyboard cable)
659501-BB1	Keyboard in ash black for use in Israel (includes keyboard cable)

Spare part number	Description
659501-BG1	Keyboard in ash black for use in Switzerland (includes keyboard cable)
659501-D61	Keyboard in ash black for use in India (includes keyboard cable)
659501-DH1	Keyboard in ash black for use in Denmark, Finland, and Norway (includes keyboard cable)
659501-DJ1	Keyboard in ash black for use in Greece (includes keyboard cable)
659501-FL1	Keyboard in ash black for use in the Czech Republic and Slovenia (includes keyboard cable)
659503-001	Service door in charcoal finish (includes two rubber feet and shielding)
659504-001	Service door in ash black (includes two rubber feet and shielding)
659506-001	11.6-in, LED, BrightView SVA display panel
659507-001	Screw Kit
659508-001	Speaker Kit (includes left and right speakers and cable)
659509-001	System board for use only with computer models equipped with an AMD E300 processor but not WWAN capability (includes processor and replacement thermal material)
659510-001	System board for use only with computer models equipped with an AMD E300 processor and with WWAN capability (includes processor and replacement thermal material)
659511-001	System board for use only with computer models equipped with an AMD E450 processor but not WWAN capability (includes processor and replacement thermal material)
659512-001	System board for use only with computer models equipped with an AMD E450 processor and with WWAN capability (includes processor and replacement thermal material)
659513-001	Top cover in charcoal finish for use only with computer models equipped with an AMD processor (includes power button board and cable and TouchPad and TouchPad cable)
659514-001	Top cover in ash black for use only with computer models equipped with an AMD processor (includes power button board and cable and TouchPad and TouchPad cable)
659516-001	Webcamera module (includes double-sided adhesive)
659933-001	160-GB solid-state drive only (does not include bracket, connector cable, isolators, or screws)
659940-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive
659941-001	Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive
664335-001	System board for use only with computer models equipped with an Intel Core i3-2367 processor (includes processor and replacement thermal material)
664336-001	System board for use only with computer models equipped with an Intel Celeron 857 (1.2GHz), 1333MHz/2MB L3, Dual 17W (includes processor and replacement thermal material)
665828-001	System board for use only with computer models equipped with an Intel Pentium 967 1.3 GHZ, 2M cache (includes processor and replacement thermal material)
664337-001	Base enclosure for use only with computer models equipped with an Intel processor (includes battery release latch)
664913-001	Hard Drive Hardware Kit (includes bracket, connector cable, isolators, and screws)
664993-001	TouchPad button board (includes cable)
664994-001	RTC battery for use only with computer models equipped with WWAN capability
664995-001	Power connector cable (includes bracket)
664996-001	Rubber Kit (includes two rear corner covers and four rubber feet)

Spare part number	Description
664999-001	Heat sink (includes replacement thermal material) (for use only with computer models equipped with an AMD processor)
665000-001	Fan
667121-001	Heat sink (includes replacement thermal material) (for use only with computer models equipped with an Intel processor)
668353-001	11.6-in, LED, HD, BrightView SVA display panel for use only with computer models equipped with an AMD processor
669299-001	500-GB, 5400-rpm hard drive for use only with computer models equipped with an AMD processor and with WWAN capability (does not include bracket, connector cable, isolators, or screws; SATA, 7.0-mm)
669300-001	640-GB, 5400-rpm hard drive for use only with computer models equipped with an AMD processor and with WWAN capability (does not include bracket, connector cable, isolators, or screws; SATA, 7.0-mm)
669426-001	Top cover in charcoal finish for use only with computer models equipped with an Intel processor (includes power button board and cable and TouchPad and TouchPad cable)
669427-001	Top cover in charcoal finish for use only with computer models equipped with an Intel processor (includes power button board and cable and TouchPad and TouchPad cable)
671685-001	Display enclosure in charcoal finish for use with computer models equipped with an AMD processor and with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
671686-001	Display enclosure in ash black for use with computer models equipped with an AMD processor and with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
675097-001	128-GB solid-state drive only (does not include bracket, connector cable, isolators, or screws)
677712-001	Display enclosure in ruby red finish for use with computer models equipped with an AMD processor and with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
677713-001	Keyboard in ruby red finish for use in the United States (includes keyboard cable)
677713-031	Keyboard in ruby red finish for use in the United Kingdom (includes keyboard cable)
677713-041	Keyboard in ruby red finish for use in Germany (includes keyboard cable)
677713-051	Keyboard in ruby red finish for use in France (includes keyboard cable)
677713-061	Keyboard in ruby red finish for use in Italy (includes keyboard cable)
677713-071	Keyboard in ruby red finish for use in Spain (includes keyboard cable)
677713-121	Keyboard in ruby red finish for use in Canada (includes keyboard cable)
677713-131	Keyboard in ruby red finish for use in Portugal (includes keyboard cable)
677713-141	Keyboard in ruby red finish for use in Turkey (includes keyboard cable)
677713-161	Keyboard in ruby red finish for use in Latin America (includes keyboard cable)
677713-171	Keyboard in ruby red finish for use in Saudi Arabia (includes keyboard cable)
677713-211	Keyboard in ruby red finish for use in Hungary (includes keyboard cable)
677713-251	Keyboard in ruby red finish for use in Russia (includes keyboard cable)
677713-271	Keyboard in ruby red finish for use in Romania (includes keyboard cable)

Spare part number	Description
677713-281	Keyboard in ruby red finish for use in Thailand (includes keyboard cable)
677713-291	Keyboard in ruby red finish for use in Japan (includes keyboard cable)
677713-A41	Keyboard in ruby red finish for use in Belgium (includes keyboard cable)
677713-B31	Keyboard in ruby red finish for use in the Netherlands (includes keyboard cable)
677713-BB1	Keyboard in ruby red finish for use in Israel (includes keyboard cable)
677713-BG1	Keyboard in ruby red finish for use in Switzerland (includes keyboard cable)
677713-D61	Keyboard in ruby red finish for use in India (includes keyboard cable)
677713-DH1	Keyboard in ruby red finish for use in Denmark, Finland and Norway (includes keyboard cable)
677713-DJ1	Keyboard in ruby red finish for use in Greece (includes keyboard cable)
677713-FL1	Keyboard in ruby red finish for use in the Czech Republic and Slovenia (includes keyboard cable)
677714-001	Service door in ruby red finish (includes two rubber feet and shielding)
677715-001	128-GB solid-state drive
677716-001	System board for use only with computer models equipped with an Intel Celeron 867 1.3 GHZ, 2M cache (includes processor and replacement thermal material)
677718-001	Top cover in ruby red finish for use only with computer models equipped with an Intel processor (includes power button board and cable and TouchPad and TouchPad cable)
678034-001	Display enclosure in ruby red finish for use with computer models equipped with an AMD processor and with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
678158-001	Service door in ruby red finish (includes two rubber feet and shielding)
678159-001	Top cover in ruby red finish for use only with computer models equipped with an AMD processor (includes power button board and cable and TouchPad and TouchPad cable)
683097-001	Display enclosure for Alexandre Herchcovitch Special Edition computer models equipped with an AMD processor and with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
683098-001	Service door for Alexandre Herchcovitch Special Edition computer models equipped with an AMD processor (includes two rubber feet and shielding)
683099-001	Top cover for Alexandre Herchcovitch Special Edition computer models equipped with an AMD processor (includes power button board and cable and TouchPad and TouchPad cable)
683100-001	Keyboard for Alexandre Herchcovitch Special Edition computer models for us in the United States (includes keyboard cable)
683100-121	Keyboard for Alexandre Herchcovitch Special Edition computer models for use in Canada (includes keyboard cable)
683100-161	Keyboard for Alexandre Herchcovitch Special Edition computer models for use in Latin America (includes keyboard cable)
683100-201	Keyboard for Alexandre Herchcovitch Special Edition computer models in Brazil (includes keyboard cable)
683483-001	Heat sink (includes replacement thermal material) (for use only with computer models equipped with an AMD processor)
683532-001	System board for use only with computer models equipped with an AMD E2-1800 processor and with WWAN capability (includes processor and replacement thermal material)

Spare part number	Description
683533-001	System board for use only with computer models equipped with an AMD E2-1800 processor and with WWAN capability (includes processor and replacement thermal material)
683534-001	System board for use only with computer models equipped with an AMD E1-1200 processor and with WWAN capability (includes processor and replacement thermal material)
683535-001	System board for use only with computer models equipped with an AMD E1-1200 processor and with WWAN capability (includes processor and replacement thermal material)
683843-001	PCH heat sink for use with all computer models
684905-001	128-GB solid-state FX drive for use only with computer models equipped with an Intel processor
684974-001	Protective cover for use only with Alexandre Herchcovitch Special Edition computer models
685875-001	Mylar (30mm X 15mm)
691167-001	Base enclosure for use only with Alexandre Herchcovitch Special Edition computer models (includes battery release latch)
691168-001	Display bezel for use only with Alexandre Herchcovitch Special Edition computer models (includes display lid switch magnet)

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

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 ±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 44 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service label

When ordering parts or requesting information, provide the computer serial number and model number provided on the service label. The battery must be removed to access the service label. See Battery on page 44 for battery removal procedures.
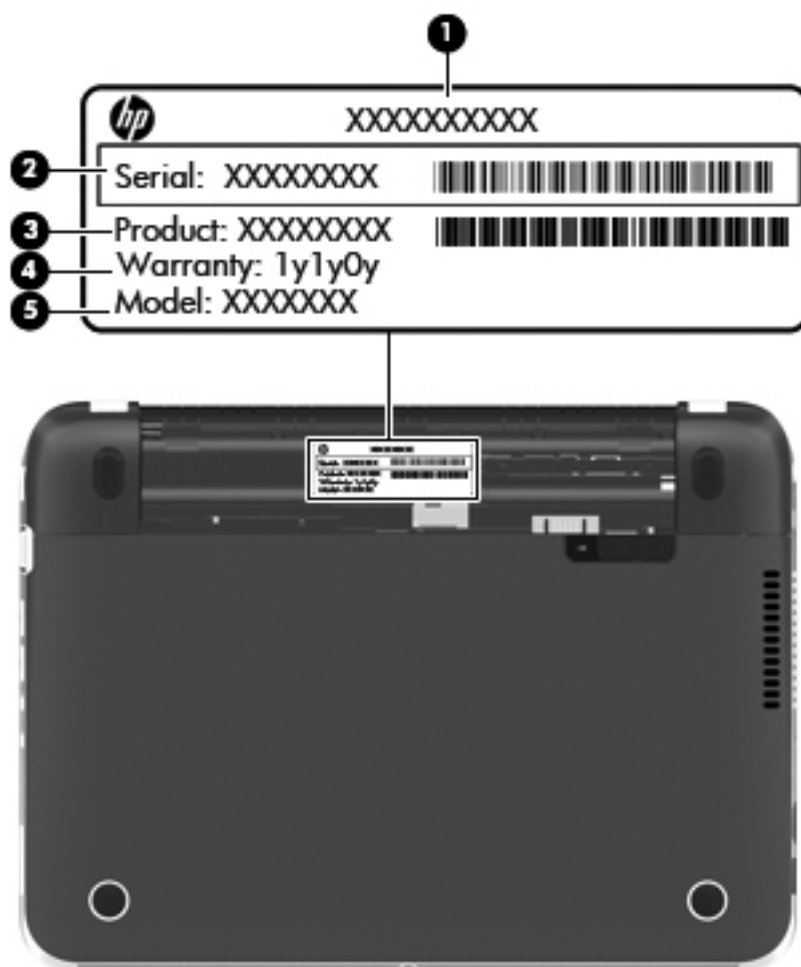
Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number	This number provides specific information about the product's hardware components. The part number helps a service technician determine what components and parts are needed.

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

Computer feet

The computer feet are adhesive-backed rubber pads. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below. The feet **(1)** that attach to the service door are round. The feet **(2)** that attach to the rear corner covers are oblong. All 4 feet are available in the Rubber Kit, spare part number 664996-001.
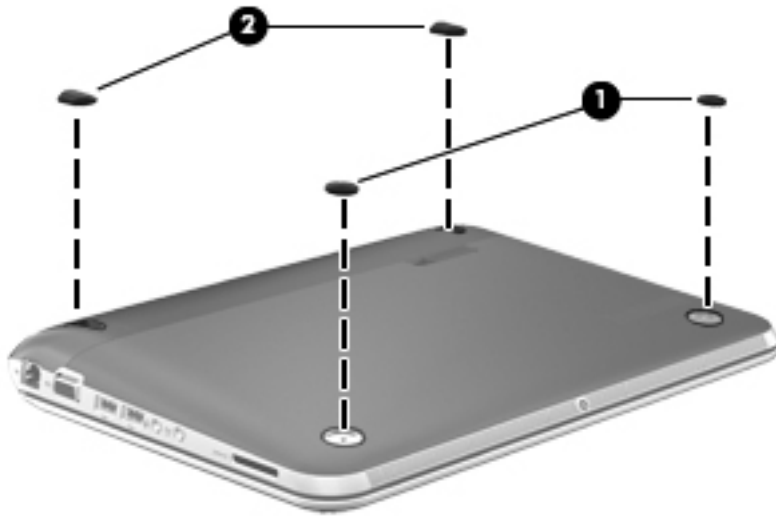
Battery

Description	Spare part number
6-cell, 55-Whr, 2.55-Ah Li-ion battery	646757-001
3-cell, 28-Whr, 2.55-Ah Li-ion battery	646755-001

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. Slide the battery/service door latch **(1)** to release the battery.

2. Pivot the front edge of the battery **(2)** up and back.

3. Remove the battery from the computer.

To insert the battery:

1. Align the tabs on the rear edge of the battery with the notches on the rear edge of the battery bay.

2. Pivot the front edge of the battery down into the battery bay until it is seated. (The battery release latch will automatically lock into place.)

SIM (select models only)

NOTE: The SIM is provided by the end-user as a security measure for the WWAN module. The SIM should be removed, placed into a static-dissipative container, and then replaced when the computer is reassembled.

Before removing the SIM, 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).

Remove the SIM:

1. Press in on the SIM **(1)** to release it from the SIM slot.

2. Remove the SIM **(2)** from the SIM slot.
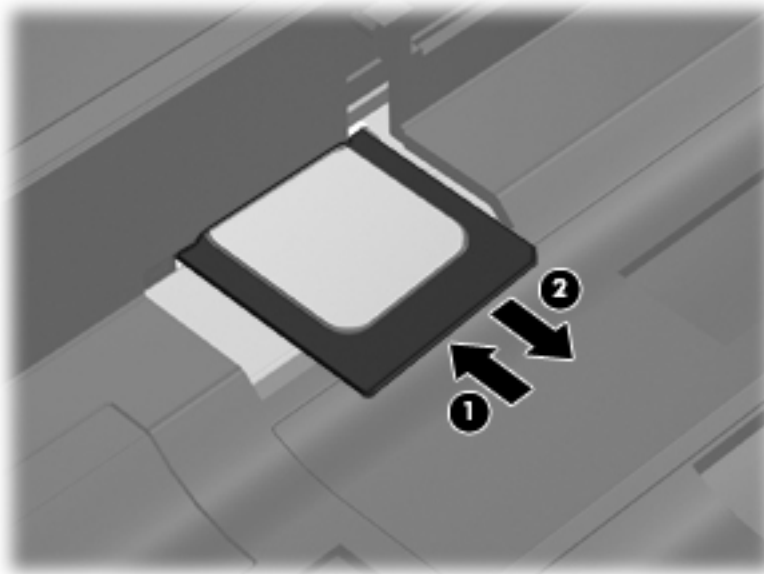
Insert the SIM into the SIM slot, and gently push the SIM into the slot until it is firmly seated.

Display panel

Description	Spare part number
11.6-in, LED, HD, BrightView SVA display panel for use only with computer models equipped with an AMD processor	668353-001
11.6-in, LED, BrightView SVA display panel	659506-001

Before removing the display panel, 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 44).

5. Remove the service door (see WLAN module on page 48).

Remove the display panel:

1. Turn the computer right-side up, with the front toward you.

2. Open the computer.

3. 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.

4. Remove the display bezel **(4)**. The display bezel includes the display hinge covers and the lid switch magnet. For spare part numbers, see Display assembly subcomponents on page 25.
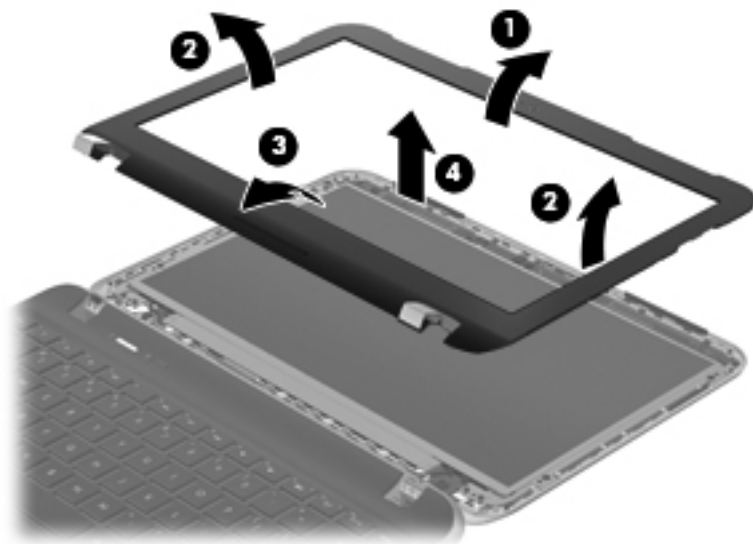
5. Remove the four Phillips PM2.0×3.6 screws **(1)** that secure the display panel to the display enclosure.

6. Swing the top edge of the display panel **(2)** forward until it rests on the keyboard.

7. Detach the adhesive strip **(3)** that secures the display panel cable to the display panel.

8. Disconnect the display panel cable **(4)** from the display panel.
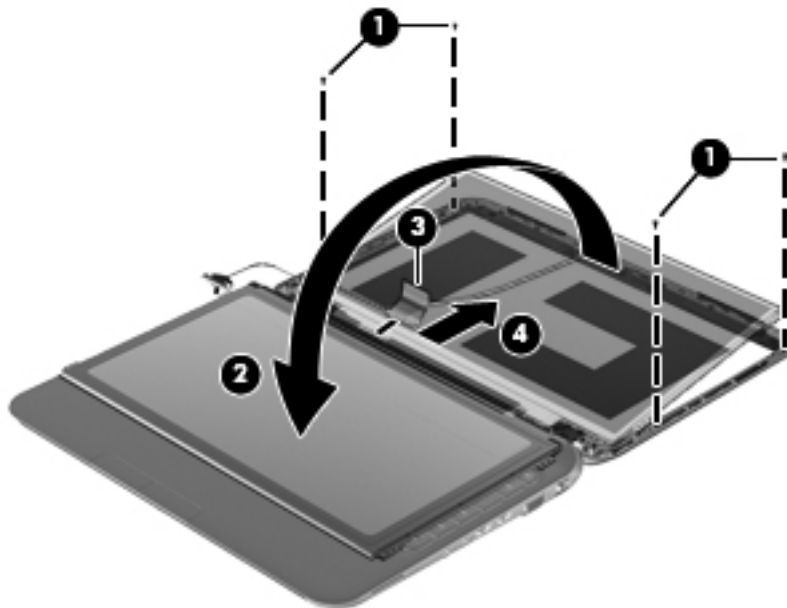
9. Remove the display panel.

Reverse this procedure to install the display bezel and panel.

Webcamera module

Description	Spare part number
Webcamera module	659516-001

Before removing the webcamera 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 44).

5. Remove the display bezel (see Display panel on page 46).

6. Remove the display panel (see Display panel on page 46).

Remove the webcamera module:

1. Release the webcamera module **(1)** from the display enclosure. (The webcamera module is attached to the display enclosure with double-sided tape)

2. Disconnect the webcamera module cable **(2)** from the webcamera module.
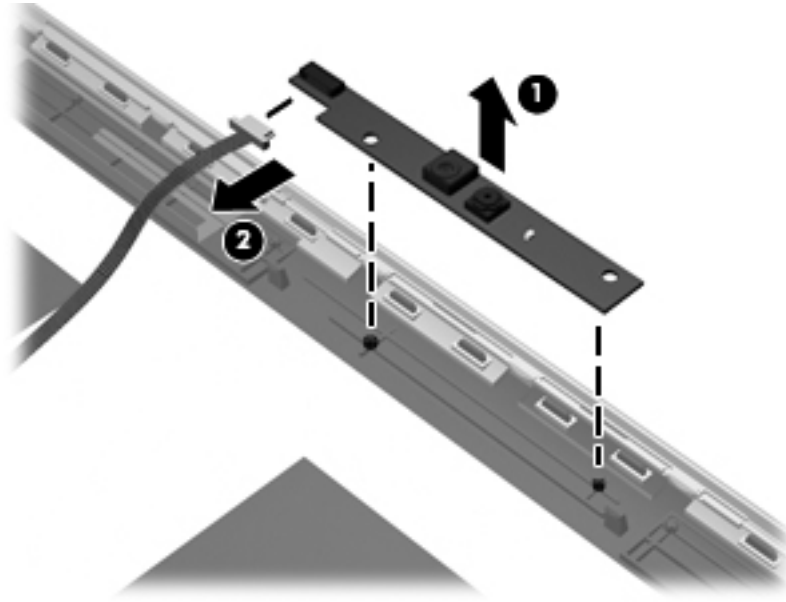
3. Remove the webcamera module.

Reverse this procedure to install the webcamera module.

WLAN module

Description	Spare part number
For use with all computer models:	
Atheros WB225 1x1 802.11 b/g/n BT Combo	655795-001
Broadcom BCM94313HMGBLP1 802.11 b/g/n 1x1 Combo HMC	657325-001
For use only with computer models equipped with an AMD processor:	
Broadcom 4313 802.11 b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)	600370-001
For use only with computer models equipped with an Intel processor:	
Broadcom 802.11 2×2 b/g/n wireless LAN + Bluetooth (BT 4.0 + HS support) combo (for use only with computer models equipped with an Intel processor)	636672-001
802.11 b/g/n 1×2 Intel Centrino Wireless-N 1030 + Bluetooth combo (for use only with computer models equipped with an Intel processor)	631956-001

△ **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 44).

Remove the WLAN module:

1. With one hand, slide the battery/service door latch **(1)** to release the service door, and at the same time, use the other hand to press down on the service door, and then slide it toward the front of the computer **(2)**.

2. Lift the door to remove it **(3)**.The service door is available. For spare part numbers, see Computer major components on page 19.

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

NOTE: The #1 WLAN antenna cable is connected to the WLAN module #1 terminal. The #2 WLAN antenna cable is connected to the WLAN module #2 terminal.

4. Remove the Phillips PM2.0×3.7 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

5. Remove the WLAN module by pulling the module away from the slot at an angle **(3)**.

> **NOTE:** WLAN modules are designed with a notch **(4)** to prevent incorrect insertion into the memory module slot.
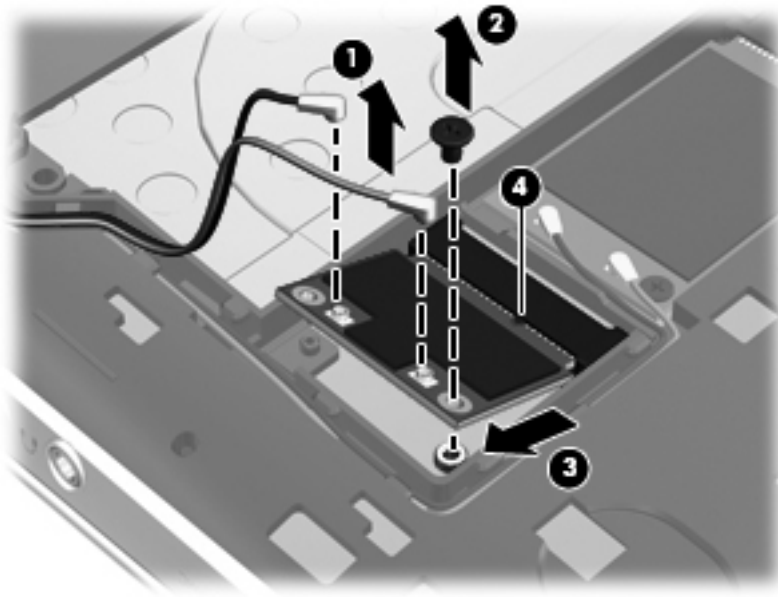
> **NOTE:** If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.
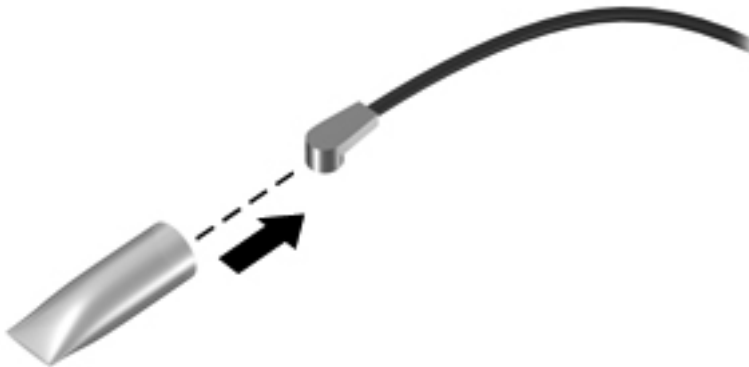
Reverse this procedure to install the WLAN module.

WWAN module (select models only)

NOTE: This section applies only to computer models equipped with an AMD processor.

Description	Spare part number
HP hs2340 HSPA+ Mobile Broadband Module	632155-001

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 44).

5. Remove the service door (see WLAN module on page 48).

Remove the WWAN module:

1. Disconnect the WWAN antenna cables **(1)** from the terminals on the WWAN module.

   NOTE: The red WLAN antenna cable is connected to the WWAN module #1 terminal. The blue WWAN antenna cable is connected to the WWAN module #2 terminal.

2. Remove the Phillips PM2.0×3.7 screw **(2)** that secures 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 **(3)**.

> **NOTE:** WWAN modules are designed with a notch **(4)** to prevent incorrect insertion into the WWAN module slot.
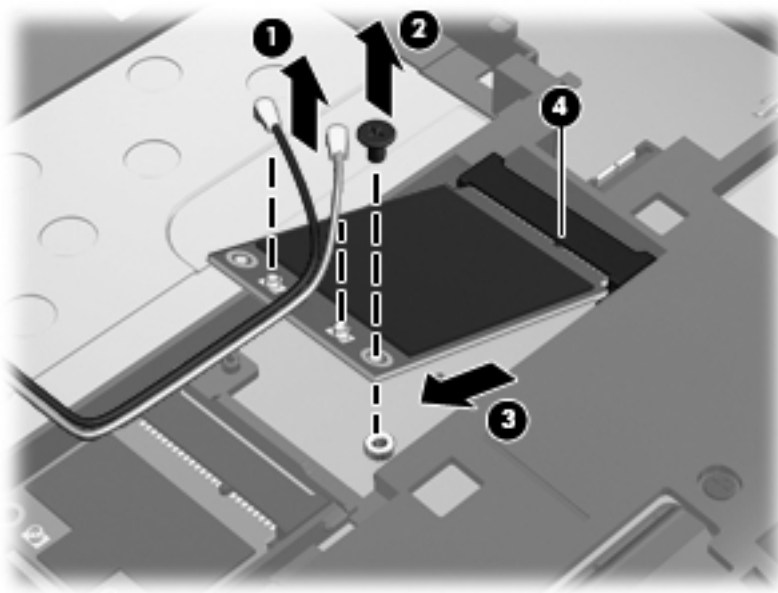
> **NOTE:** If the WWAN antennas are not connected to the terminals on the WWAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.
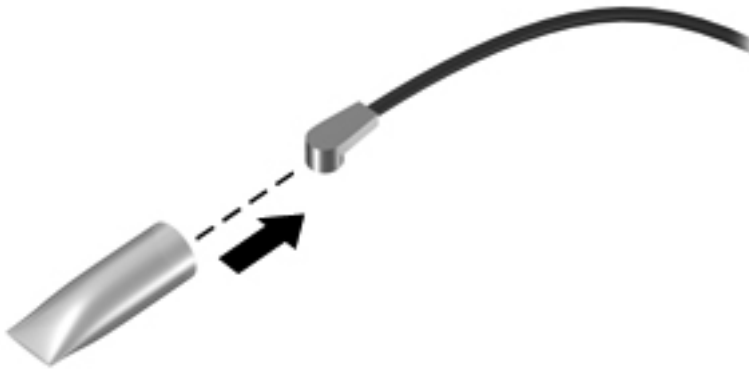
Reverse this procedure to install the WLAN module.

RTC battery

Description	Spare part number
For use only with computer models equipped with WWAN compatibility	664994-001
For use only with computer models without WWAN compatibility	599516-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 44).

5. Remove the service door (see WLAN module on page 48).

Remove the RTC battery:

NOTE: Steps 1 and 2 apply to computer models with WWAN capability. See step 3 for RTC battery removal information on computer models without WWAN capability.

1. Disconnect the RTC battery cable **(1)** from the system board.

2. Remove the RTC battery **(2)**. (The RTC battery is attached to the system board with double-sided tape.)
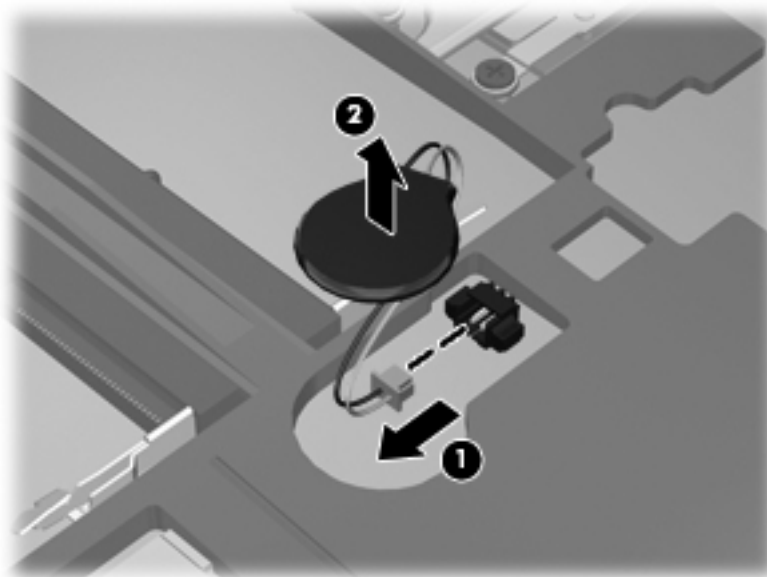
Reverse this procedure to install the RTC battery on a computer model with WWAN capability.

NOTE: Step 3 applies to computer models without WWAN capability. See steps 1 and 2 for RTC battery removal information on computer models with WWAN capability.

3. Use a thin, non-conductive tool to remove the RTC battery from the socket on the system board.
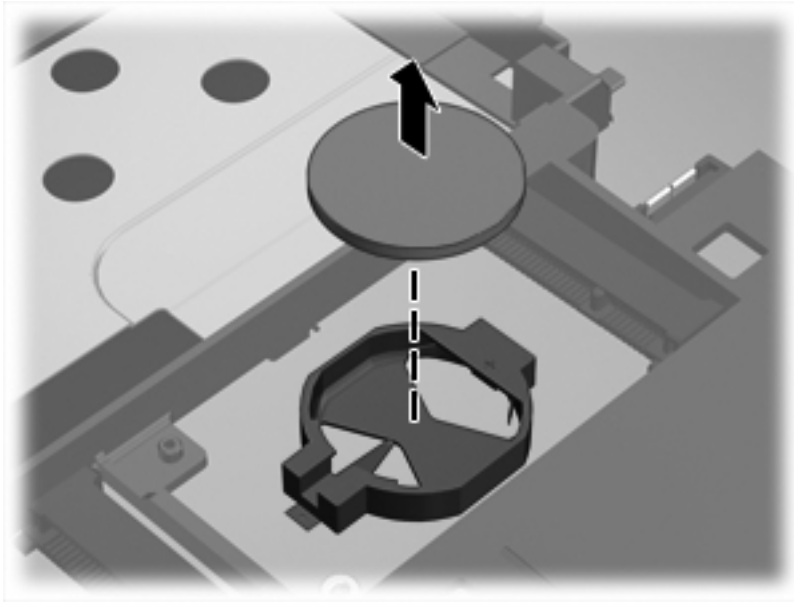
Reverse this procedure to install the RTC battery on computer models with WWAN capability. When installing the RTC battery, make sure the "+" sign faces up.

Hard drive

NOTE: The hard drive spare part kit does not include the hard drive bracket, connector cable, isolators, or screws. These components are included in the Hard Drive Hardware Kit, spare part number 664913-001.

| Description	Spare part number
640-GB, 5400-rpm, SATA, 7.0-mm	603785-001
500-GB, 7200-rpm, SATA, 7.0-mm	634925-001
320-GB, 7200-rpm, SATA, 7.0-mm	634862-002 and 641672-001
For use only with computer models equipped with an AMD processor and with WWAN capability:	
640-GB, 5400-rpm, SATA, 7.0-mm	669300-001
500-GB, 5400-rpm, SATA, 7.0-mm	669299-001

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 44).

5. Remove the service door (see WLAN module on page 48).

Remove the hard drive:

1. Disconnect the hard drive connector cable **(1)** from the system board.

2. Remove the Phillips PM2.5×5.7 screw **(2)** that secures the hard drive to the computer.

3. Use the tab **(3)** on the hard drive bracket to lift the left side of the hard drive until it rests at an angle.

4. Slide the hard drive **(4)** up and to left at an angle and out of the hard drive bay.
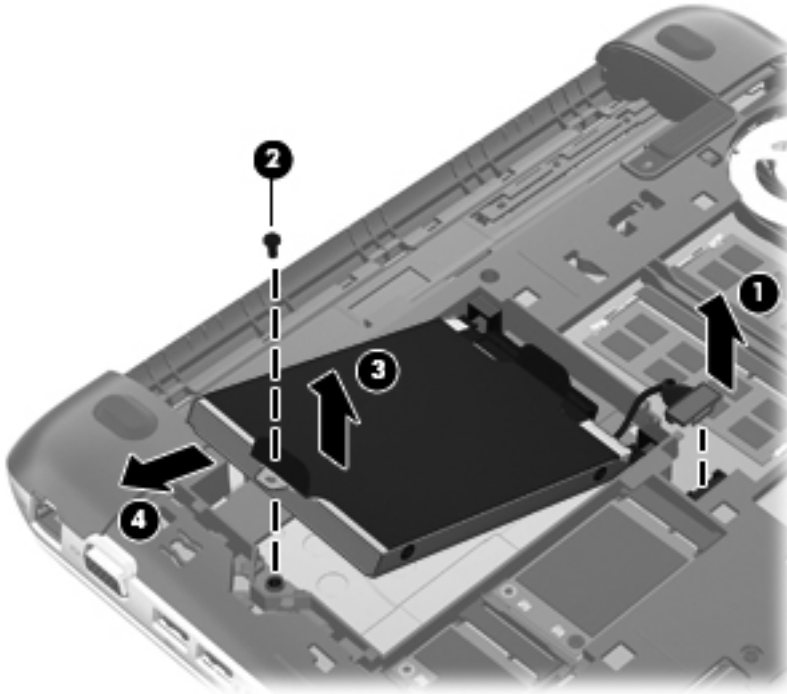
5. If it is necessary to replace the connector cable **(1)**, the screws **(2)**, the bracket **(3)**, or the isolators **(4)**, remove and replace the components. The bracket, connector cable, isolators, and screws are available in the Hard Drive Hardware Kit, spare part number 664913-001.
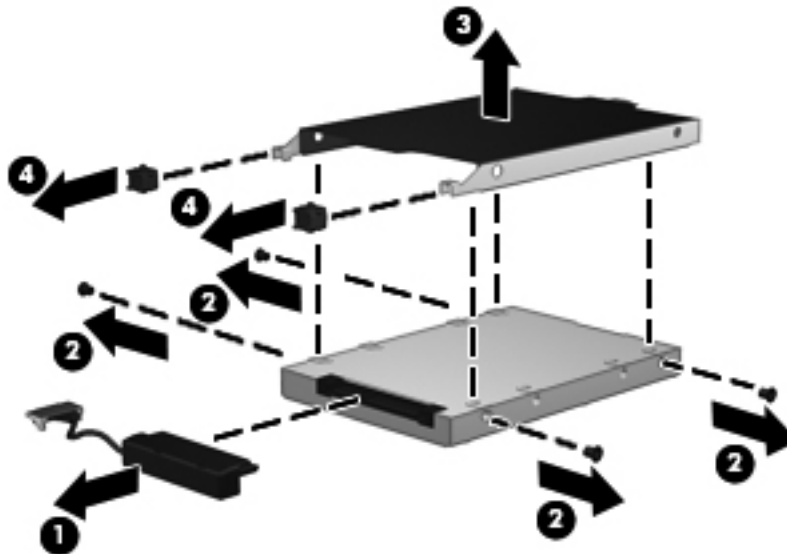
Reverse this procedure to reassemble and install the hard drive.

Memory module

Description	Spare part number
4-GB memory module (PC3, 10600, 1333-MHz)	621569-001
2-GB memory module (PC3, 10600, 1333-MHz)	621565-001

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 44).

5. Remove the service door (see WLAN module on page 48).

Remove the memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)

⚠ **CAUTION:** To prevent damage to the memory module, hold it by the edges only. Do not touch the components on the memory module.

2. Remove the memory module **(2)** by pulling it away from the slot at an angle.

   Computer models equipped with an AMD processor have two memory modules, as shown in the following illustration:
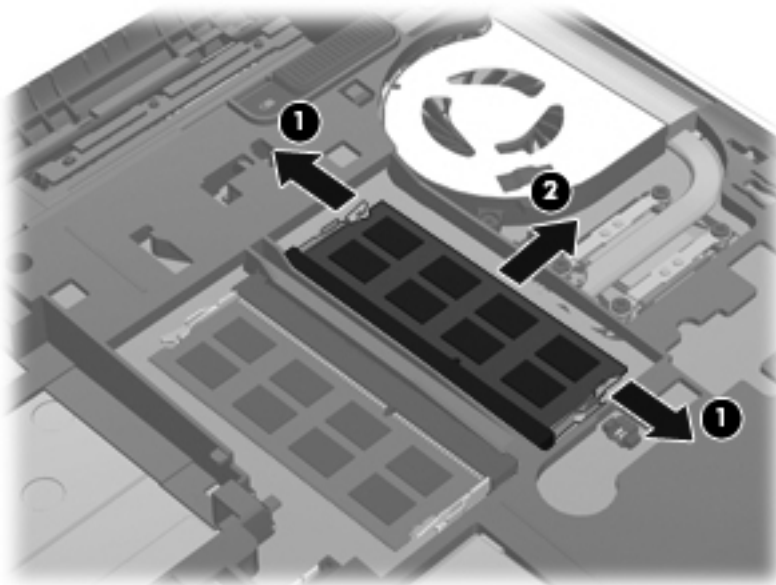
   Computer models equipped with an Intel processor have one memory module, as shown in the following illustration:
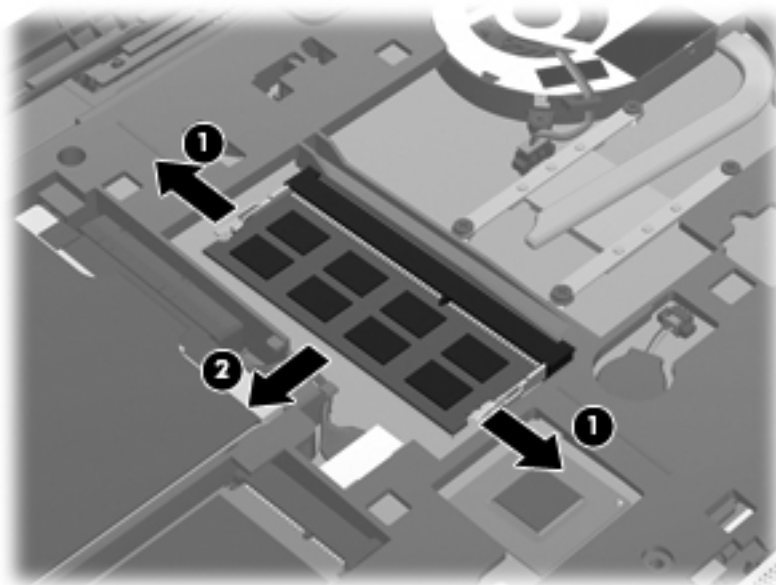
   Reverse this procedure to install a memory module.

Keyboard

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

For use in country or region:	Spare part number:	For use in country or region:	Spare part number:
Keyboard in charcoal finish			
For use in Belgium	659500-A41	For use in the Netherlands	659500-B31
For use in Brazil	659500-201	For use in Portugal	659500-131
For use in Canada	659500-121	For use in Romania	659500-271
For use in the Czech Republic and Slovenia	659500-FL1	For use in Russia	659500-251
For use in Denmark, Finland, and Norway	659500-DH1	For use in Saudi Arabia	659500-171
For use in France	659500-051	For use in South Korea	659500-AD1
For use in Germany	659500-041	For use in Spain	659500-071
For use in Greece	659500-DJ1	For use in Switzerland	659500-BG1
For use in Hungary	659500-211	For use in Taiwan	659500-AB1
For use in India	659500-D61	For use in Thailand	659500-281
For use in Israel	659500-BB1	For use in Turkey	659500-141
For use in Italy	659500-061	For use in the United Kingdom	659500-031
For use in Japan	659500-291	For use in the United States	659500-001
For use in Latin America	659500-161		
Keyboard in ash black finish			
For use in Belgium	659501-A41	For use in the Netherlands	659501-B31
For use in Brazil	659501-201	For use in Portugal	659501-131
For use in Canada	659501-121	For use in Romania	659501-271
For use in the Czech Republic and Slovenia	659501-FL1	For use in Russia	659501-251
For use in Denmark, Finland, and Norway	659501-DH1	For use in Saudi Arabia	659501-171
For use in France	659501-051	For use in South Korea	659501-AD1
For use in Germany	659501-041	For use in Spain	659501-071
For use in Greece	659501-DJ1	For use in Switzerland	659501-BG1
For use in Hungary	659501-211	For use in Taiwan	659501-AB1
For use in India	659501-D61	For use in Thailand	659501-281
For use in Israel	659501-BB1	For use in Turkey	659501-141
For use in Italy	659501-061	For use in the United Kingdom	659501-031
For use in Japan	659501-291	For use in the United States	659501-001
For use in Latin America	659501-161		
Keyboard in ruby red finish			
For use in Belgium	677713-A41	For use in the Netherlands	677713-B31

For use in country or region:	Spare part number:	For use in country or region:	Spare part number:
For use in Brazil	677713-201	For use in Portugal	677713-131
For use in Canada	677713-121	For use in Romania	677713-271
For use in the Czech Republic and Slovenia	677713-FL1	For use in Russia	677713-251
For use in Denmark, Finland, and Norway	677713-DH1	For use in Saudi Arabia	677713-171
For use in France	677713-051	For use in South Korea	677713-AD1
For use in Germany	677713-041	For use in Spain	677713-071
For use in Greece	677713-DJ1	For use in Switzerland	677713-BG1
For use in Hungary	677713-211	For use in Taiwan	677713-AB1
For use in India	677713-D61	For use in Thailand	677713-281
For use in Israel	677713-BB1	For use in Turkey	677713-141
For use in Italy	677713-061	For use in the United Kingdom	677713-031
For use in Japan	677713-291	For use in the United States	677713-001
For use in Latin America	677713-161		
Keyboard for use only with Alexandre Herchcovitch Special Edition computer models			
For use in Brazil	683100-201	For use in France	683100-121
For use in Latin America	683100-161	For use in the United States	683100-001

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 44).

5. Remove the service door (see WLAN module on page 48).

Remove the keyboard:

1. Remove the two rubber feet **(1)** that are attached to the rear corner covers. The rubber feet are attached to the rear corner covers by double-sided tape and are included in the Rubber Kit, spare part number 664996-001.

2. Remove the two Phillips PM2.0×5.7 screws **(2)** that secure the rear corner covers to the computer.

3. Remove the rear corner covers **(3)**. The rear corner covers are included in the Rubber Kit, spare part number 664996-001.
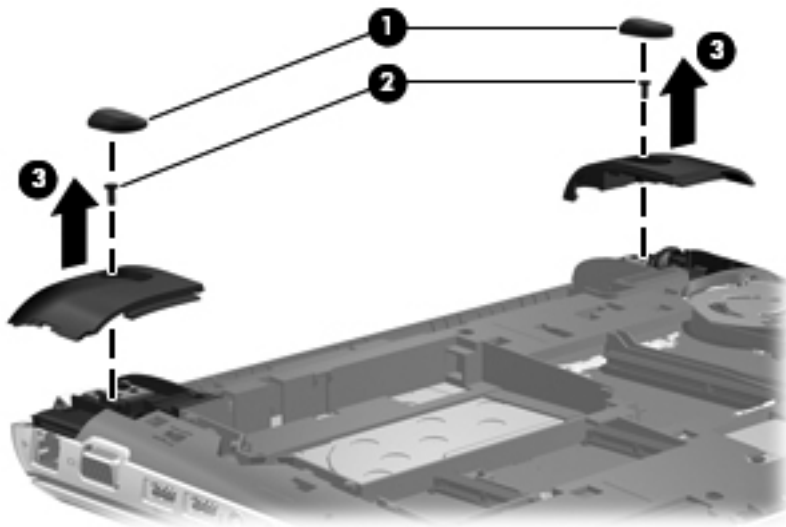
4. Remove the three Phillips PM2.0×5.7 screws that secure the keyboard to the computer.
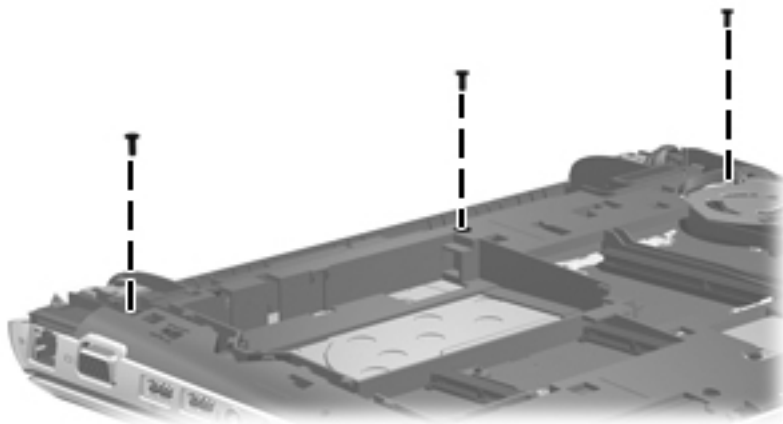
5. Rest and secure the computer on its right side.

6. Partially open the computer.

7. Insert a screwdriver or similar thin tool into the keyboard release opening, and then press on the back of the keyboard until the keyboard disengages from the computer.
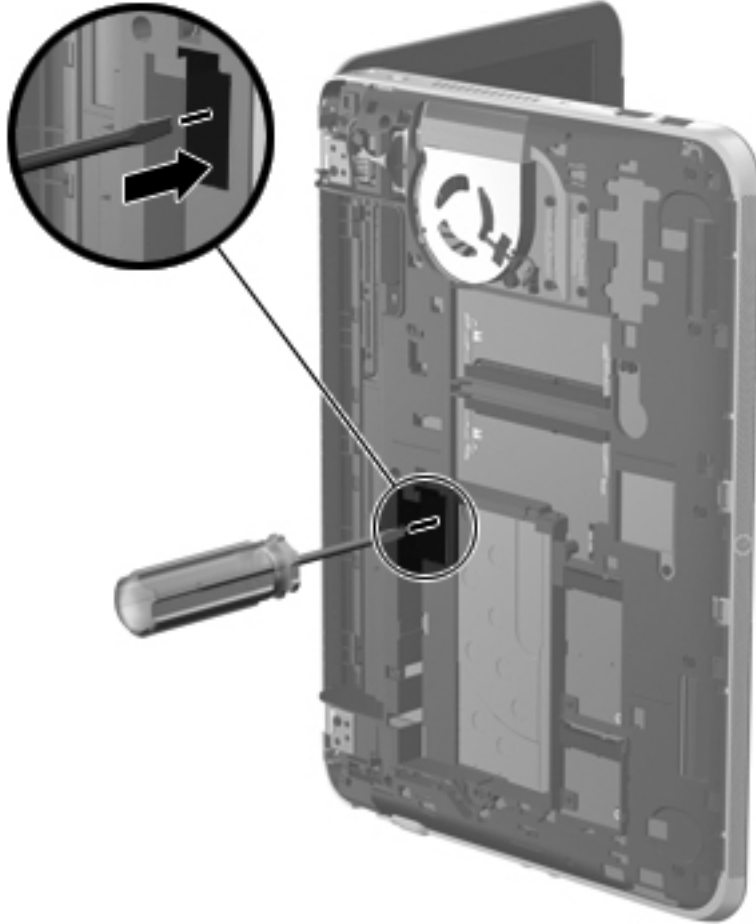
8. Turn the computer right-side up with the front toward you.

9. Lift the rear edge of the keyboard **(1)**, and then swing the keyboard up and forward until it rests upside down on the palm rest.

10. Release the zero insertion force (ZIF) connector **(2)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(3)** from the system board.

11. Remove the keyboard **(3)**.
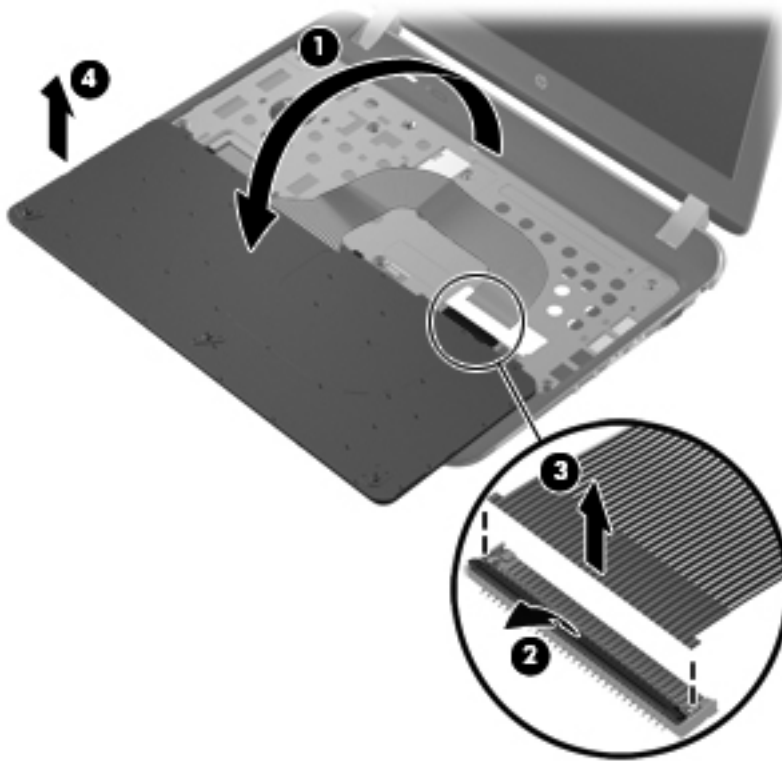
Reverse this procedure to install the keyboard.

Display assembly

NOTE: The display assembly subcomponents are spared as individual components.

Before removing the display assembly subcomponents, 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 44).

5. Remove the service door (see WLAN module on page 48).

6. Remove the rear covers (see Keyboard on page 58).

Remove the display assembly subcomponents:

1. Release the wireless antenna cables **(1)** from the clips **(2)** and routing channel built into the base enclosure.

2. Disconnect the display panel cable **(3)** from the system board.

3. Release the display panel cable **(4)** from the clip built into the base enclosure.
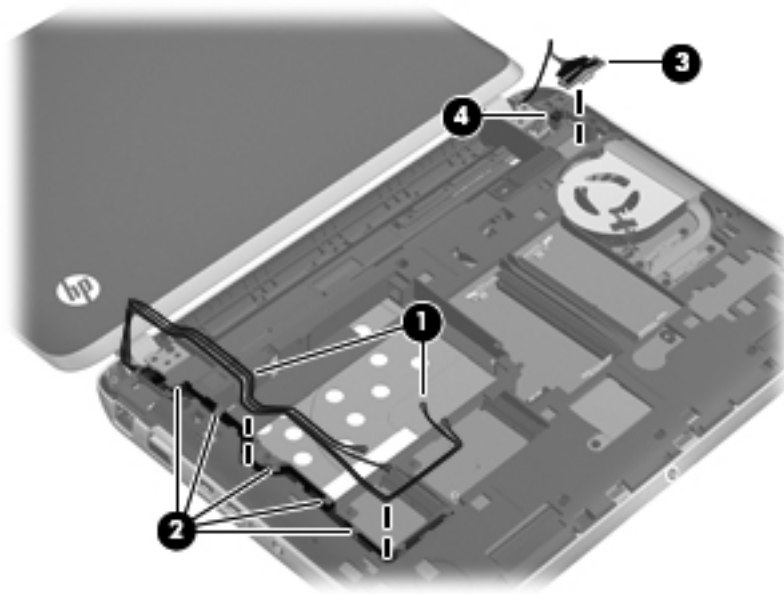
4. Remove the two Phillips PM2.0×5.7 screws **(1)** that secure the display assembly to the computer.

5. Remove the display assembly **(2)**.
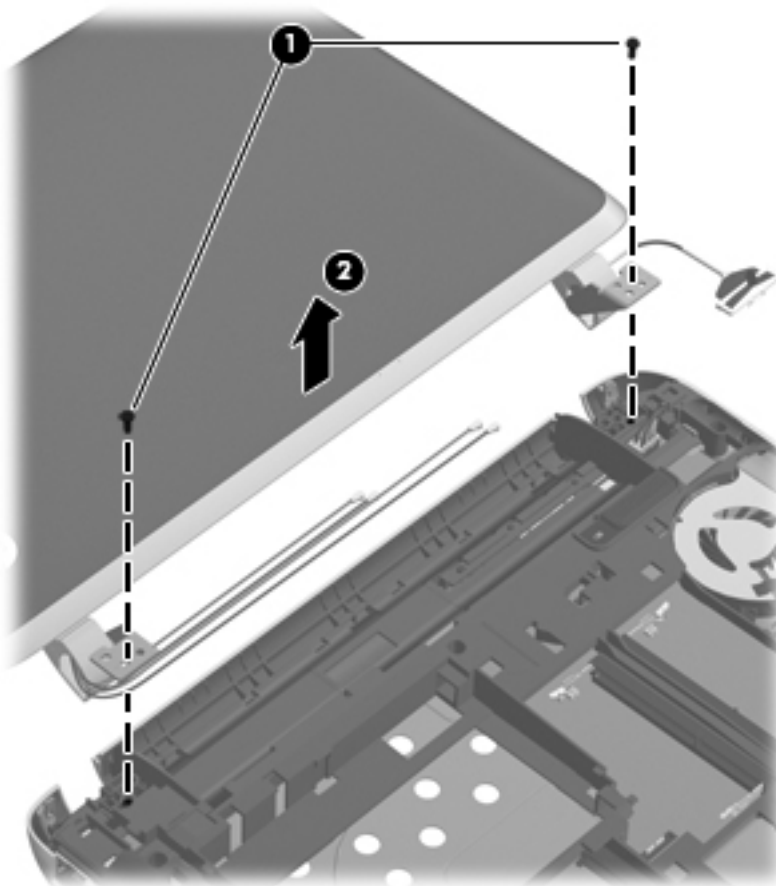
6. If it is necessary to replace the hinges:

    a. Remove the display assembly.

    b. Remove the display bezel.

    c. Remove the display panel.

    d. Remove the four Phillips PM2.0×4.2 **(1)** screws that secure the hinges to the display enclosure.

e. Remove the hinges **(2)**. The hinges are available in the Display Hinge Kit, spare part number 659499-001.
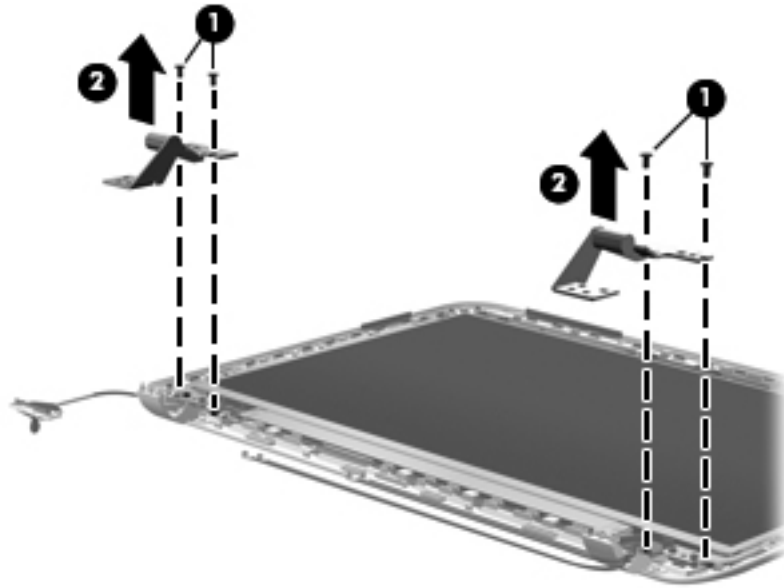
7. If it is necessary to replace the display panel cable:

a. Remove the display assembly.

b. Remove the display bezel.

c. Remove the display panel.

d. Remove the left display hinge.

e. Release the webcamera cable **(1)** from the display enclosure. (The webcamera cable is attached to the display enclosure with double-sided tape.)

f. Release the display panel cable from the clip **(2)** built into the display enclosure near the left display hinge area.

g. Remove the display panel cable **(3)**. The display panel cable is available in the Display Cable Kit, spare part number 659498-001.
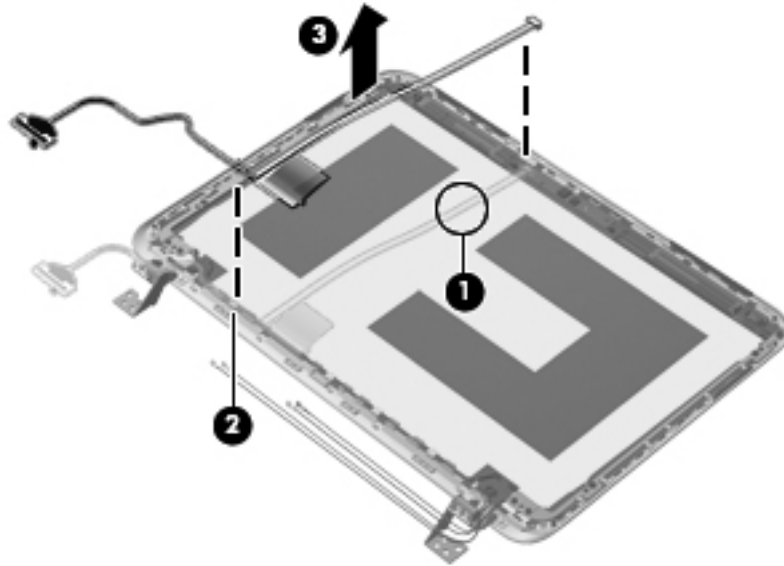
8. If it is necessary to replace the wireless antenna cables and transceivers:

   a. Remove the display assembly.

   b. Remove the display bezel.

   c. Remove the display panel.

   d. Remove the display hinges.

   e. Remove the Phillips PM2.0×4.2 screw **(1)** that secures the right enclosure bracket to the display enclosure.

   f. Remove the left and right enclosure brackets **(2)**. The left and right display enclosure brackets are included in the Display Hinge Kit, spare part number 659499-001.

   g. Release the wireless antenna cables **(3)** from the clips **(4)** and routing channels built into the display enclosure.

   h. Detach the WLAN transceivers and the WWAN transceivers **(5)** from the display enclosure. (The transceivers are attached to the display enclosure with double-sided tape.)

i. Remove the wireless antenna cables and transceivers **(6)**. The WLAN antenna and WWAN antenna are available in the Wireless Antenna Kit, spare part number 659492-001.
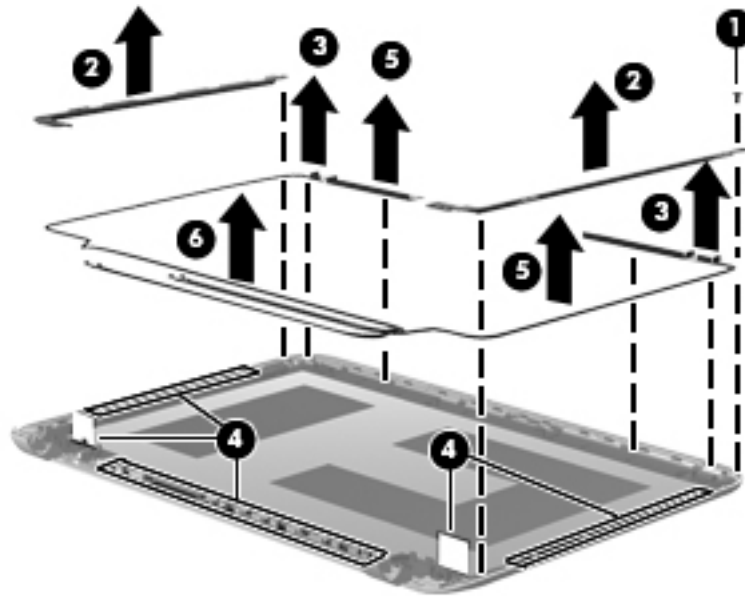
Reverse this procedure to reassemble and install the display assembly.

Top cover

> **NOTE:** The top cover spare part kit includes the power button board and cable and the TouchPad and cable.

Description	Spare part number
In charcoal finish for use only with computer models equipped with an AMD processor	659513-001
In ash black finish for use only with computer models equipped with an AMD processor	659514-001
In ruby red finish for use only with computer models equipped with an AMD processor	678159-001
For use only with Alexandre Herchcovitch Special Edition computer models	683099-001
In charcoal finish for use only with computer models equipped with an Intel processor	669426-001
In ash black finish for use only with computer models equipped with an Intel processor	669427-001
In ruby red finish for use only with computer models equipped with an Intel processor	677718-001

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 44).

5. Remove the service door (see WLAN module on page 48).

6. Remove the keyboard (see Keyboard on page 58).

7. Remove the display assembly (see Display assembly on page 63).

When replacing the top cover, be sure that the TouchPad button board and cable (see TouchPad button board on page 73) and speakers (see Speakers on page 71) are removed from the defective top cover and installed on the replacement top cover.

Remove the top cover:

1. Close the computer.

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

3. Remove the seven Phillips PM2.5×7.0 screws that secure the top cover to the computer.
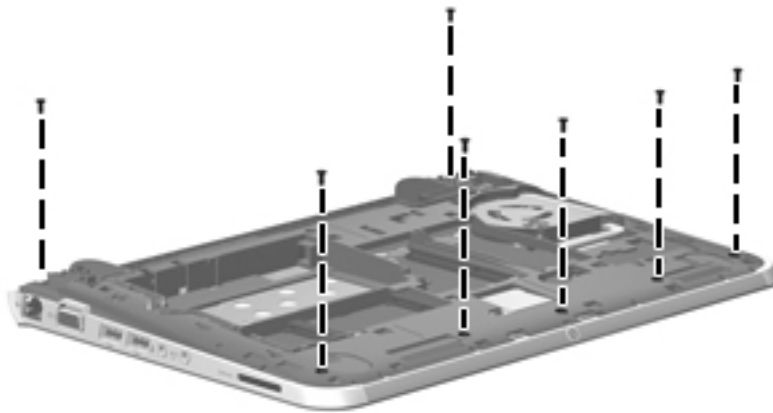
4. Turn the computer right-side up, with the front toward you.

5. Open the computer.

6. Disconnect the following cables from the system board:

(1) Power button board cable

(2) TouchPad button board cable

(3) Speaker cable
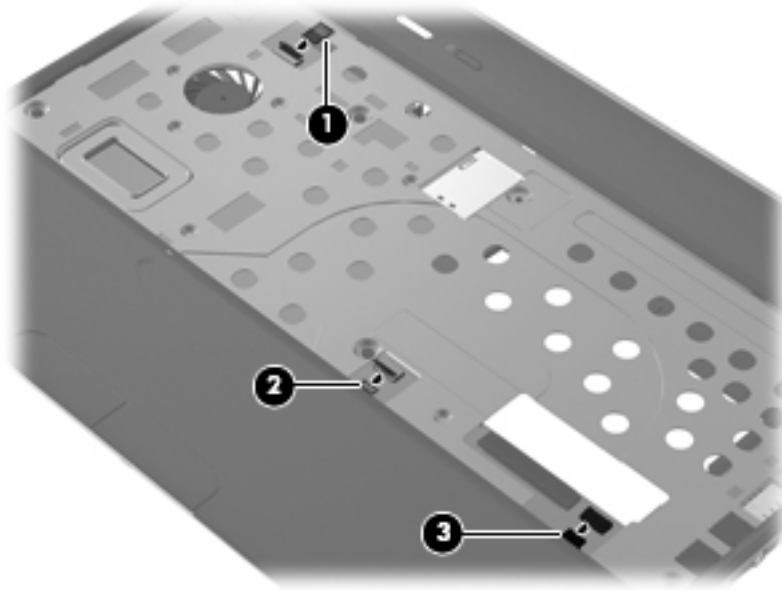
7. Remove the four Phillips PM2.5×7.0 screws that secure the top cover to the computer.
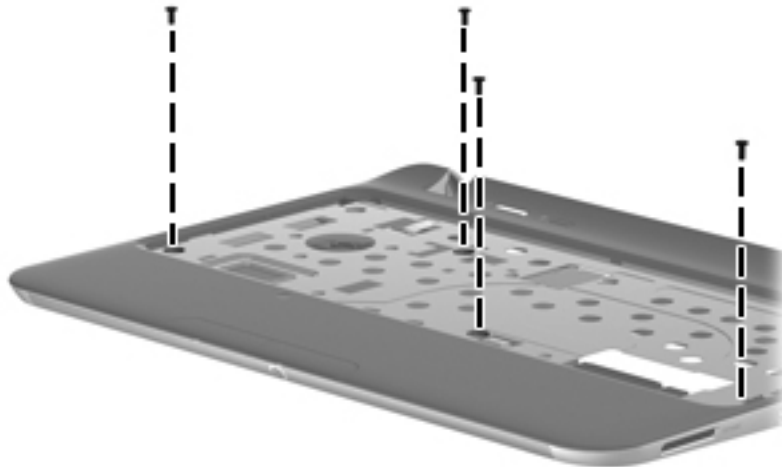
8. Lift the rear edge of the top cover **(1)** until the left and right sides disengage from the base enclosure.

9.	Remove the top cover **(2)**.
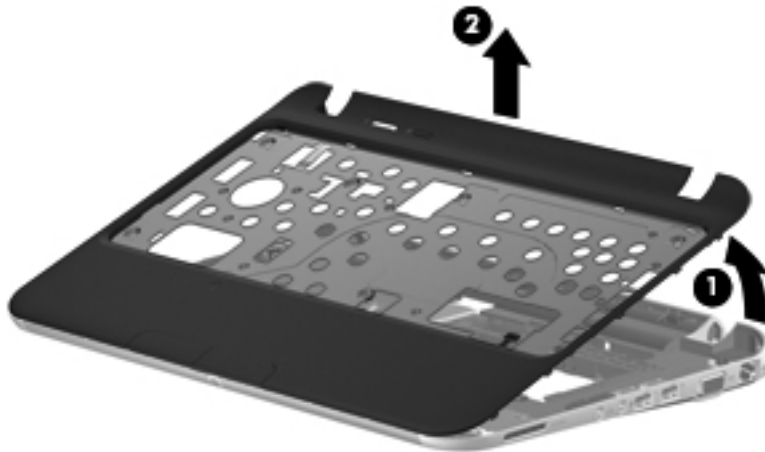
Reverse this procedure to install the top cover.

Speakers

Description	Spare part number
Speaker Kit (includes left and right speakers and cable)	659508-001

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), and then remove the following components:

    a.	Service cover (see)

    b.	Keyboard (see)

    c.	Top cover (see)

Remove the speakers:

1.	Turn the top cover upside down, with the front edge toward you.

2.	Release the speaker cables from the clips built into the TouchPad **(1)** and top cover **(2)**.

3.	Release the speakers from the clips **(3)** built into the top cover.

4. Remove the speakers and cables **(4)**.
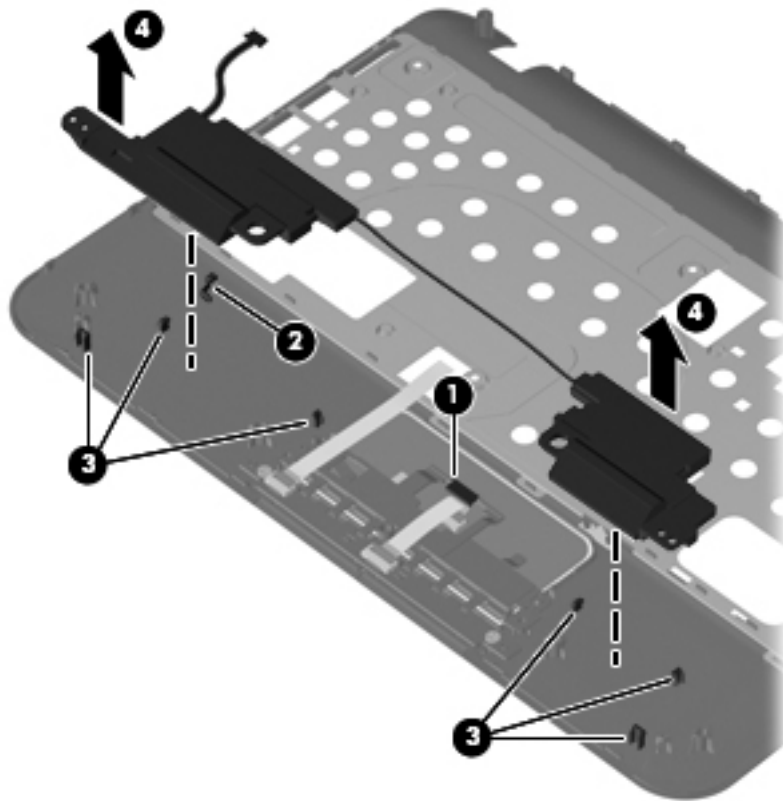
Reverse this procedure to install the speakers.

TouchPad button board

Description	Spare part number
TouchPad button board (includes cable)	664993-001

Before removing the TouchPad 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 44), and then remove the following components:

   a. Service cover (see WLAN module on page 48)

   b. Keyboard (see Keyboard on page 58)

   c. Top cover (see Top cover on page 68)

Remove the TouchPad button board and cable:

1. Turn the top cover upside down, with the front edge toward you.

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

3. Remove the two Phillips PM2.0×3.8 screws **(2)** that secure the TouchPad button board to the top cover.

4. Remove the TouchPad button board **(3)** and cable.
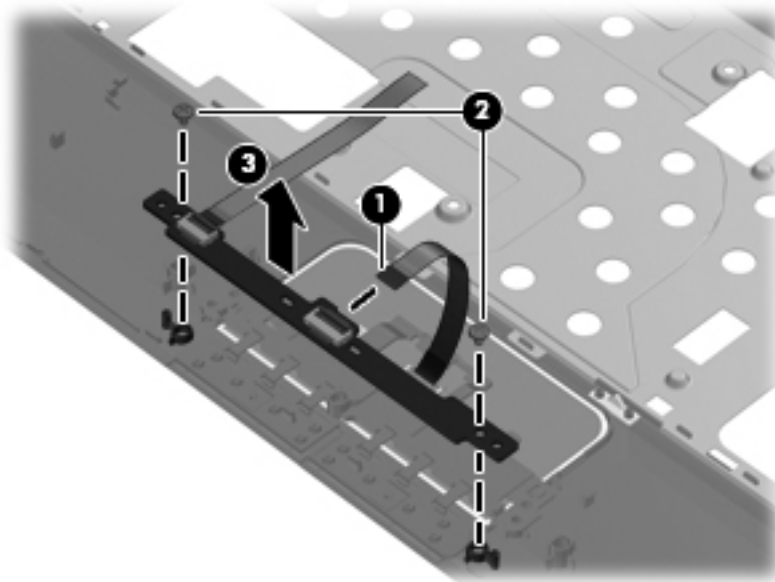
Reverse this procedure to install the TouchPad button board and cable.

System board

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

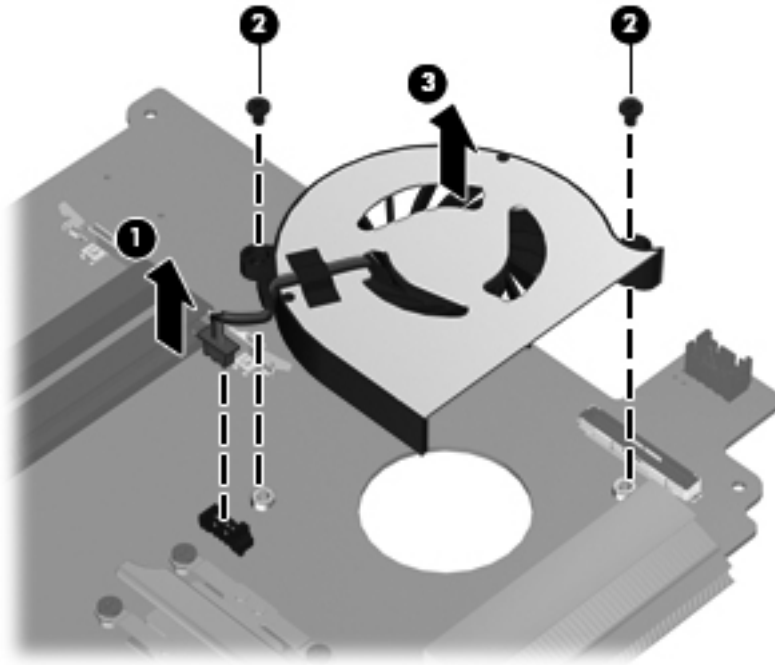| Description	Spare part number
For use only with computer models equipped with an AMD E450 processor and with WWAN capability (includes replacement thermal material)	659512-001
For use only with computer models equipped with an AMD E300 processor and with WWAN capability (includes replacement thermal material)	659510-001
For use only with computer models equipped with an AMD E2-1800 processor and with WWAN capability (includes replacement thermal material)	683532-001
For use only with computer models equipped with an AMD E1-1200 processor and with WWAN capability (includes replacement thermal material)	683534-001
For use only with computer models equipped with an AMD E450 processor but not WWAN capability (includes replacement thermal material)	659511-001
For use only with computer models equipped with an AMD E300 processor but not WWAN capability (includes replacement thermal material)	659509-001
For use only with computer models equipped with an AMD E2-1800 processor but not WWAN capability (includes replacement thermal material)	683533-001
For use only with computer models equipped with an AMD E1-1200 processor but not WWAN capability (includes replacement thermal material)	683535-001
For use only with computer models equipped with an Intel i3-2367M processor (includes replacement thermal material)	664335-001
For use only with computer models equipped with an Intel Celeron 857 processor (includes replacement thermal material)	664336-001
For use only with computer models equipped with an Intel Celeron 867 processor (includes replacement thermal material)	677716-001
For use only with computer models equipped with an Intel Pentium 967 processor (includes replacement thermal material)	665828-001

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 44).

5. Remove the WLAN module (see WLAN module on page 48).

6. Remove the WWAN module (see WWAN module (select models only) on page 51).

7. Disconnect the hard drive connector cable from the system board (see Hard drive on page 55).

8. Remove the keyboard (see Keyboard on page 58).

9. Disconnect the display panel cable from the system board (see Display assembly on page 63).

10. Remove the top cover (see Top cover on page 68).

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

- SIM (see SIM (select models only) on page 45)

- RTC battery (see RTC battery on page 53)

- Memory module (see Memory module on page 57)

- Power connector cable (see Power connector cable on page 75)

- Fan (see Fan on page 77)

- Heat sink (see Heat sink on page 78)

Remove the system board:

1. Lift the left side of the system board **(1)** until it rests at an angle.

2. Remove the system board **(2)** by sliding it up and to the left at an angle.
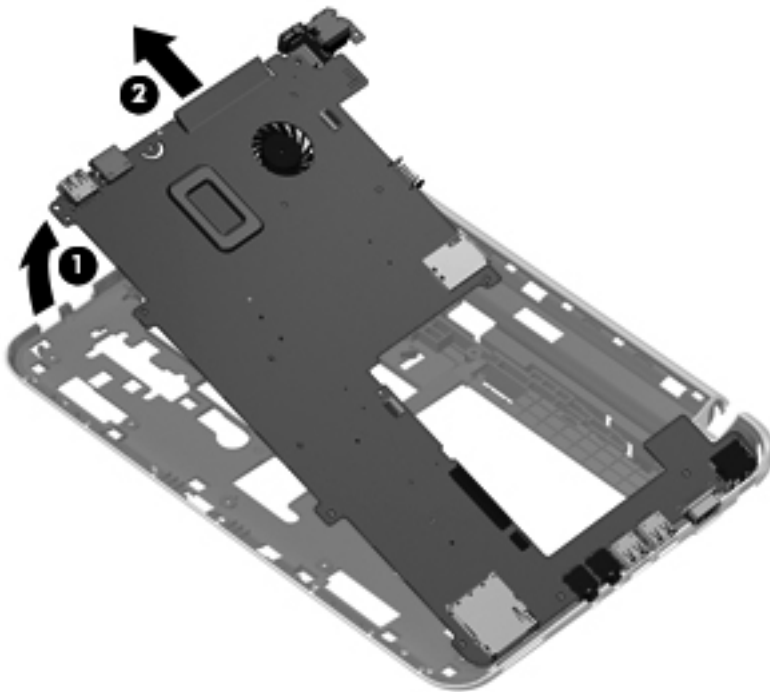
Reverse this procedure to install the system board.

Power connector cable

Description	Spare part number
Power connector cable (includes bracket)	664995-001

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 44), and then remove the following components:

   a. Service cover (see WLAN module on page 48)

   b. Keyboard (see Keyboard on page 58)

   c. Top cover (see Top cover on page 68)

   d. System board (see System board on page 74)

Remove the power connector cable:

1. Turn the system board upside down, with the right side toward you.

2. Disconnect the power connector cable **(1)** from the system board.

3. If necessary, separate the power connector bracket **(2)** from the power connector.
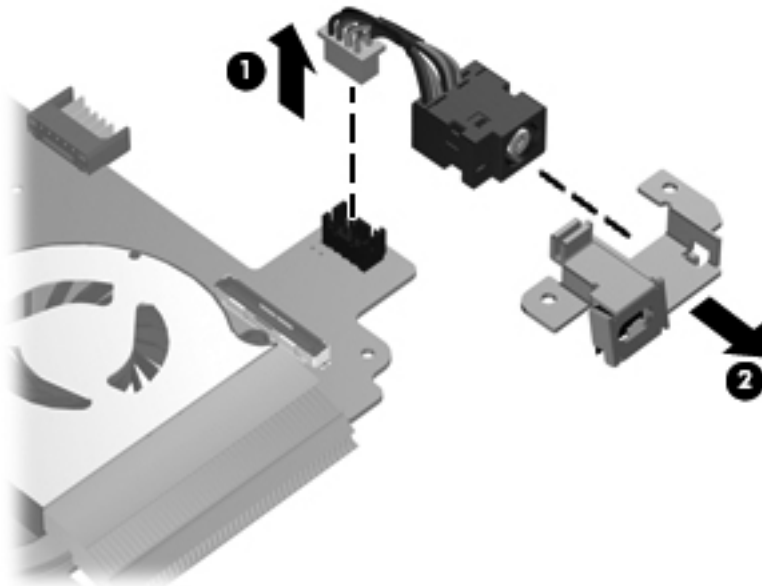
Reverse this procedure to install the power connector cable and bracket.

Fan

Description	Spare part number
Fan	665000-001

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, 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 44), and then remove the following components:

   a. Service cover (see WLAN module on page 48)

   b. Keyboard (see Keyboard on page 58)

   c. Top cover (see Top cover on page 68)

   d. System board (see System board on page 74)

Remove the fan:

1. Turn the system board upside down, with the front toward you.

2. Disconnect the fan cable **(1)** from the system board.

3. Remove the two Phillips PM2.0×4.6 screws **(2)** that secure the fan to the system board.

4. Remove the fan **(3)**.

Reverse this procedure to install the fan.

Heat sink

NOTE: The heat sink spare part kit includes replacement thermal material.

Description	Spare part number
PCH heat sink for use with all computer models	683843-001
Heat sink only for use with computer models equipped with an AMD processor	664999-001
Heat sink for use only with computer models equipped with an Intel processor	667121-001

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 heat sink, 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 44), and then remove the following components:

   a. Service cover (see WLAN module on page 48)

   b. Keyboard (see Keyboard on page 58)

   c. Top cover (see Top cover on page 68)

   d. System board (see System board on page 74)

Remove the heat sink:

1. Turn the system board upside down, with the front toward you.

2. Loosen the captive screws **(1)** that secure the heat sink to the system board.

   > **NOTE:** The number of screws used to secure the heat sink to the system board varies by computer model.

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

3. Remove the heat sink **(2)**.
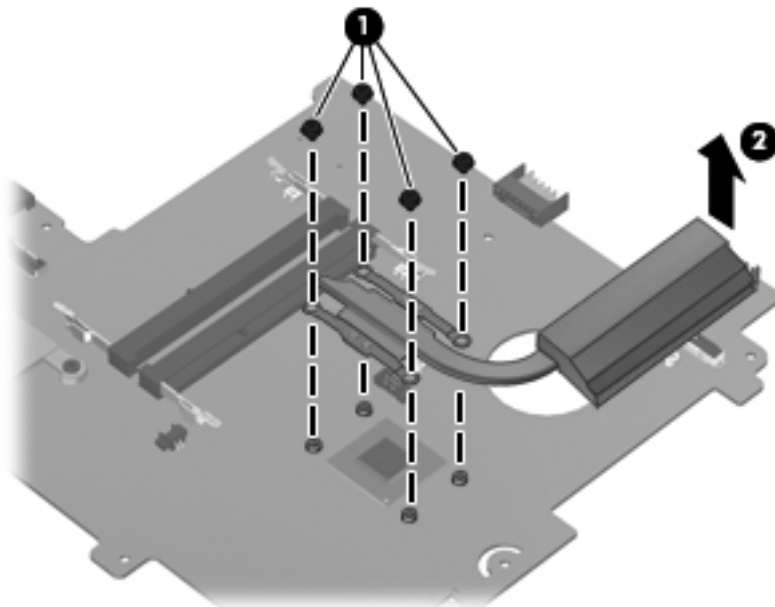
> **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.

The following illustration shows the replacement thermal material locations on a computer model equipped with an AMD processor and a graphics subsystem with discrete memory. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.
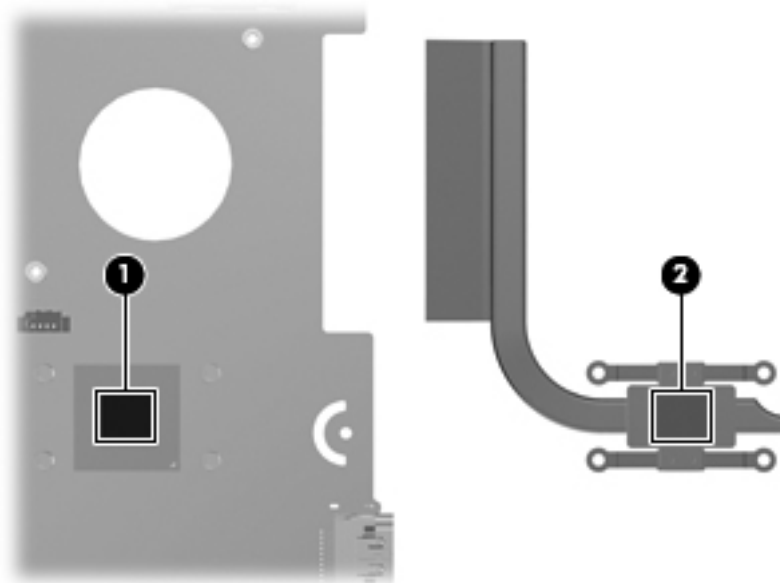
Reverse this procedure to install the heat sink.

5 Setup Utility (BIOS) and System Diagnostics

Using Setup Utility

Setup Utility, or Basic Input/Output System (BIOS), controls communication between all the input and output devices on the system (such as disk drives, display, keyboard, mouse, and printer). Setup Utility includes settings for the types of peripherals installed, the startup sequence of the computer, and the amount of system and extended memory.

NOTE: Use extreme care when making changes in Setup Utility. Errors can prevent the computer from operating properly.

Starting Setup Utility

NOTE: An external keyboard or mouse connected to a USB port can be used with Setup Utility only if USB legacy support is enabled.

To start Setup Utility, follow these steps:

1. 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.

2. Press f10 to enter Setup Utility.

Changing the language of Setup Utility

1. Start Setup Utility.

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 takes effect immediately.

Navigating and selecting in Setup Utility

To navigate and select in Setup Utility, follow these steps:

1. 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.

   ● To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press enter, or use a pointing device to click the item.

   ● To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.

   ● To close open dialog boxes and return to the main Setup Utility screen, press esc, and then follow the on-screen instructions.

2. Press f10 to enter Setup Utility.

To exit Setup Utility menus, choose one of the following methods:

● To exit Setup Utility menus without saving your changes, press the esc key, and then follow the on-screen instructions.

   – or –

   Use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

● To save your changes and exit Setup Utility menus, press f10, and then follow the on-screen instructions.

   – or –

   Use the tab key and the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your changes go into effect when the computer restarts.

Displaying system information

1. Start Setup Utility.

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 factory settings in Setup Utility

NOTE: Restoring defaults will not change the hard drive mode.

To return all settings in Setup Utility to the values that were set at the factory, follow these steps:

1. 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.

2. Press f10 to enter Setup Utility.

3. Use the arrow keys to select **Exit > Load Setup Defaults**.

4. Follow the on-screen instructions.

5. To save your changes and exit, press f10, and then follow the on-screen instructions.

   – or –

   Use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your changes go into effect when the computer restarts.

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

Exiting Setup Utility

- 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.

Updating the BIOS

Updated versions of the BIOS may be available on the HP Web site.

Most BIOS updates on the HP Web site are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file.

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

BIOS version information (also known as *ROM date* and *System BIOS)* can be displayed by pressing fn+esc (if you are already in Windows) or by using Setup Utility.

1. Start Setup Utility (BIOS).

2. Use the arrow keys to select **Main**.

3. To exit Setup Utility (BIOS) without saving your changes, use the tab key and the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Downloading a BIOS update

⚠ **CAUTION:**   To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power from the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep or Hibernation.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

1. Select **Start > Help and Support > Maintain**.

2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.

3. At the download area, follow these steps:

    a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

    b. Follow the on-screen instructions to download your selection to the hard drive. Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

    > 📝 **NOTE:**   If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

1. Open Windows Explorer by selecting **Start > Computer**.

2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename.exe*). The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

Using System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly. The following diagnostic tests are available in System Diagnostics:

- Start-up test—This test analyzes the main computer components that are required to start the computer.

- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.

- Hard disk test—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.

- Memory test—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.

- Battery test—This test analyzes the condition of the battery. If the battery fails the test, contact HP support to report the issue and purchase a replacement battery.

You can also view system information and error logs in the System Diagnostics window.

To start System Diagnostics:

1. Turn on or restart 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 f2.

2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

NOTE: If you need to stop a diagnostics test while it is running, press esc.

6   Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	**29.16 cm**	11.48 in
Depth	**2.15 cm**	8.46 in
Height (front to back)	**2.11 to 3.19 cm**	0.83 to 1.26 in
Weight		
With 6-cell battery	**1.60 kg**	3.53 lb
With 3-cell battery	**1.46 kg**	3.22 lb
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A - 65 W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

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

11.6-inch display specifications

	Metric	U.S.
Dimensions		
Height	**14.70 cm**	5.79 in
Width	**25.90 cm**	10.20 in
Diagonal	**29.50 cm**	11.61 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	**0.197 mm × 0.197 mm**	
Format	1366 × 768	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2.0 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

Hard drive specifications

	*640-GB	*500-GB	*320-GB	*250-GB
Dimensions				
Height	9.5 mm	9.5 mm	9.5 and 7.0 mm	9.5 and 7.0 mm
Length	100.2 mm	100.4 mm	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm	69.9 mm	69.9 mm
Weight	98 g	110 g	110 g	110 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate				
Synchronous (maximum)	106 MB/sec	1.1 GB/sec	1.1 GB/sec	1.1 GB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	1.5 ms	1.5 ms	1.5 ms	1.5 ms
Average (read/write)	12/13 ms	11/13 ms	11/13 ms	11/13 ms
Maximum	24 ms	22 ms	22 ms	22 ms
Logical blocks	1,250,263,728	976,773,168	628,142,448	488,397,168
Disk rotational speed	5400 rpm	7200 and 5400 rpm	7200 and 5400 rpm	5400 rpm
Operating temperature	0°C to 60°C (32°F to 140°F)			

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

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

7   Backup and recovery

Your computer includes tools provided by the operating system and HP to help you safeguard your information and restore it if ever needed.

This chapter provides information on the following topics:

- Creating a set of recovery discs or a recovery flash drive (Recovery Manager software feature)

- Performing a system restore (from the partition, recovery discs, or a recovery flash drive)

- Backing up your information

- Recovering a program or driver

Restore

In the event of hard drive failure, to restore your system to its factory image you will need a set of recovery discs or a recovery flash drive that you can create using HP Recovery Manager. HP recommends that you use this software to create either a set of recovery discs or a recovery flash drive immediately after software setup.

If for some other reason you need to restore your system, this can be achieved using the HP Recovery partition (select models only), without the need for recovery discs or a recovery flash drive. To check for the presence of a recovery partition, click **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**. If the recovery partition is present, a Recovery drive is listed in the window.

⚠ **CAUTION:**   HP Recovery Manager (partition, or discs/flash drive) restores only software that was preinstalled at the factory. Software not provided with this computer must be reinstalled manually.

📝 **NOTE:**   Recovery discs have been included if your computer does not have a recovery partition.

Creating restore media

HP recommends that you create either a set of recovery discs or a recovery flash drive to be sure that you can restore your computer to its original factory state if the hard drive fails, or if for any reason you cannot restore using the recovery partition tools. Create these discs or the flash drive after setting up the computer for the first time.

NOTE: HP Recovery Manager allows the creation of only one set of recovery discs or one recovery flash drive. Handle these discs or flash drive carefully and keep them in a safe place.

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. If you use an external optical drive, it must be connected directly to a USB port on the computer, not to a USB port on an external device, such as a USB hub.

Guidelines:

● Purchase high-quality DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs.

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 or one recovery flash drive can be created per computer.

NOTE: If you are creating recovery discs, number each disc before inserting into the optical drive.

● If necessary, you can exit the program before you have finished creating the recovery discs or recovery flash drive. The next time you open Recovery Manager, you will be prompted to continue the backup creation process.

To create a set of recovery discs or a recovery flash drive:

1. Select **Start > All Programs > Security and Protection > HP Recovery Manager > HP Recovery Media Creation**.

2. Follow the on-screen instructions.

Performing a system restore

Recovery Manager software allows you to repair or restore the computer to its original factory state. Recovery Manager works from recovery discs, a recovery flash drive, or from a dedicated recovery partition (select models only) on the hard drive.

NOTE: A system restore needs to be performed if the computer hard drive has failed or if all attempts to correct any functional computer issues fail. A system restore should be used as a final attempt to correct computer issues.

Note the following when performing a system restore:

- You can restore only the system that you have previously backed up. HP recommends that you use HP Recovery Manager to create either a set of recovery discs or a recovery flash drive as soon as you set up the computer.

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

- Recovery Manager restores 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.

Restoring using the dedicated recovery partition (select models only)

When using the dedicated recovery partition, there is an option to back up pictures, music and other audio, videos and movies, recorded TV shows, documents, spreadsheets and presentations, e-mails, Internet favorites and settings during this process.

To restore the computer from the recovery partition, follow these steps:

1. Access Recovery Manager in either of the following ways:

   - Select **Start > All Programs > Security and Protection > HP Recovery Manager > HP 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 "F11 (System Recovery)" message is displayed on the screen.

2. Click **System Recovery** in the Recovery Manager window.

3. Follow the on-screen instructions.

Restoring using the restore media

1. If possible, back up all personal files.

2. Insert the first recovery disc into the optical drive on your computer or an optional external optical drive, and then restart the computer.

   – or –

   Insert the recovery flash drive into a USB port on your computer, and then restart the computer.

   NOTE: If the computer does not automatically restart in the Recovery Manager, the computer boot order needs to be changed.

3. Press f9 at system bootup.

4. Select the optical drive or the flash drive.

5. Follow the on-screen instructions.

Changing the computer boot order

To change the boot order for recovery discs:

1. Restart the computer.

2. Press esc while the computer is restarting, and then press f9 for boot options.

3. Select **Internal CD/DVD ROM Drive** from the boot options window.

To change the boot order for recovery flash drive:

1. Insert the flash drive into a USB port.

2. Restart the computer.

3. Press esc while the computer is restarting, and then press f9 for boot options.

4. Select the flash drive from the boot options window.

Backing up and recovering your information

It is very important to back up your files and keep any new software in a safe place. As you add new software and data files, continue to create backups on a regular basis.

How completely you are able to recover your system depends on how recent your backup is.

NOTE: A recovery from your most recent backup needs to be performed if the computer has a virus attack or if any major system components fail. In order to correct computer issues, a recovery should first be attempted before a system restore is attempted.

You can back up your information to an optional external hard drive, a network drive, or discs. Back up your system at the following times:

- At regularly scheduled times

  TIP: Set reminders to back up your information periodically.

- Before the computer is repaired or restored

- Before you add or modify hardware or software

Guidelines:

- Create system restore points using the Windows System Restore feature, and periodically copy them to an optical disc or an external hard drive. For more information on using system restore points, refer to Using Windows system restore points on page 96.

- Store personal files in the Documents library and back up this folder periodically.

- 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 re-enter your preferences.

To create a screen shot:

1. Display the screen you want to save.

2. Copy the screen image:

   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**. The screen image is added to the document.

4. Save and print the document.

Using Windows Backup and Restore

Guidelines:

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

- Allow enough time to complete the backup process. Depending on file sizes, it may take over an hour.

To create a backup:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.

2. Follow the on-screen instructions to schedule and create a backup.

NOTE: Windows includes the User Account Control feature to improve the security of the 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 Windows system restore points

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.

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 files and settings.

When to create restore points

- Before you add or modify software or hardware

- Periodically, whenever the computer is functioning 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. 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.

8 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 A 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
Argentina	IRAM	1
Australia	SAA	1
Austria	OVE	1
Belgium	CEBEC	1
Brazil	ABNT	1
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	ISI	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1

Country/region	Accredited agency	Applicable note number
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 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.

2. The flexible cord must be Type SVT/SJT 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 ac) configuration. CSA or C-UL mark. UL file number must be on each element.

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 VCTF, 3-conductor, 0.75-mm² or 1.25-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) 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 CCC certification mark.

5. The flexible cord must be Type H05VV-F 3X0.75-mm² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.

6. The flexible cord must be Type HVCTF 3×1.25-mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.

7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3×0.75-/1.00-mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.

9 Recycling

When a non-rechargeable or rechargeable 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 battery disposal.

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at http://www.hp.com/recycle.

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