



HP ENVY 15 Notebook PC and HP ENVY TouchSmart 15 Notebook PC

Maintenance and Service Guide

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Product notice

This guide describes features that are common to most models. Some features may not be available on your computer.

Not all features are available in all editions of Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See <http://www.microsoft.com> for details.

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Important Notice about Customer Self-Repair Parts

 **CAUTION:** Your computer includes Customer Self-Repair parts and parts that should only be accessed by an authorized service provider. See Chapter 5, "Removal and replacement procedures for Customer Self-Repair parts," for details. Accessing parts described in Chapter 6, "Removal and replacement procedures for Authorized Service Provider only parts," can damage the computer or void your warranty.

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).

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1 Product description

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Product Name	HP ENVY 15 Notebook PC	√	√
	HP ENVY TouchSmart 15 Notebook PC		
Processors	<ul style="list-style-type: none">• AMD® A10-5750M 2.50 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 4.0 MB L2 cache, DDR3, quad core, 35 W)	√	
	<ul style="list-style-type: none">• AMD A8-5550M 2.10 GHz processor (turbo up to 3.10 GHz; 1600 MHz FSB, 4.0 MB L2 cache, DDR3, quad core, 35 W)		
	<ul style="list-style-type: none">• AMD A6-5350M 2.90 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 1.0 MB L2 cache, DDR3, dual core, 35 W)		
	<ul style="list-style-type: none">• AMD A4-5150M 2.70 GHz processor (turbo up to 3.30 GHz; 1600 MHz FSB, 1.0 MB L2 cache, DDR3, dual core, 35 W)		

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Processors <i>(continued)</i>	<ul style="list-style-type: none"> Intel® Quad Core® i7-4900MQ 2.80 GHz processor (SC turbo up to 3.80 GHz; 1600 MHz FSB; 8.0 MB L3 cache, 47 W) 		√
	<ul style="list-style-type: none"> Intel Quad Core i7-4800MQ 2.70 GHz processor (SC turbo up to 3.70 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W) 		
	<ul style="list-style-type: none"> Intel Quad Core i7-4702MQ 2.20 GHz processor (SC turbo up to 3.20 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 37 W) 		
	<ul style="list-style-type: none"> Intel Quad Core i7-4700MQ 2.40 GHz processor (SC turbo up to 3.40 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W) 		
	<ul style="list-style-type: none"> Intel Dual Core i5-4330M 2.80 GHz processor (SC turbo up to 3.50 GHz; 1600 MHz FSB; 3.0 MB L3 cache, 37 W) 		
	<ul style="list-style-type: none"> Intel Dual Core i5-4200M 2.50 GHz processor (SC turbo up to 3.10 GHz; 1600 MHz FSB, 3.0 MB L3 cache, 37 W) 		
	<ul style="list-style-type: none"> Intel Dual Core i3-4000M 2.40 GHz processor (1600 MHz FSB, 3.0 MB L3 cache, 37 W) 		
Chipset	AMD A76M fusion controller hub	√	
	Intel HM87 Express Chipset		√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Graphics	<p data-bbox="603 279 783 302">Internal graphics:</p> <ul data-bbox="603 323 997 695" style="list-style-type: none"> <li data-bbox="603 323 997 401">• AMD Radeon™ HD 8650G graphics (only on computer models equipped with an AMD A10 processor) <li data-bbox="603 422 997 499">• AMD Radeon HD 8550G graphics (only on computer models equipped with an AMD A8 processor) <li data-bbox="603 520 997 598">• AMD Radeon HD 8450G graphics (only on computer models equipped with an AMD A6 processor) <li data-bbox="603 619 997 695">• AMD Radeon HD 8350G graphics (only on computer models equipped with an AMD A4 processor) <p data-bbox="603 716 820 739">Switchable graphics:</p> <ul data-bbox="603 760 997 890" style="list-style-type: none"> <li data-bbox="603 760 997 890">• AMD Radeon HD 8750M with 2048 MB of dedicated video memory (128 MB×16 DDR3 900 MHz×8PCs, DDR3 1 GHz downgrade to DDR3 900MHz) <p data-bbox="603 911 751 934">Dual graphics:</p> <ul data-bbox="603 955 997 1388" style="list-style-type: none"> <li data-bbox="603 955 997 1085">• AMD Radeon HD 8750M + HD 8650G dual graphics with AMD discrete graphics (only on computer models equipped with an AMD A10 processor) <li data-bbox="603 1106 997 1236">• AMD Radeon HD 8750M + HD 8550G dual graphics with AMD discrete graphics (only on computer models equipped with an AMD A8 processor) <li data-bbox="603 1257 997 1388">• AMD Radeon HD 8750M + HD 8450G dual graphics with AMD discrete graphics (only on computer models equipped with an AMD A6 processor) <p data-bbox="603 1409 997 1432">Support for HD decode, DX11, and HDMI</p> <p data-bbox="603 1453 756 1476">Support for PX7</p>	√	

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Graphics <i>(continued)</i>	<p>Internal graphics:</p> <ul style="list-style-type: none"> Intel HD Graphics 4600 on computer models equipped with a Quad Core processor <p>Switchable Discrete Graphics:</p> <ul style="list-style-type: none"> nVidia N14P-GT GeForce 750M with 4096 MB of dedicated video memory (256 MB×16 DDR3 1 GHz×8PCs) nVidia N14P-GV2 GeForce 740M with 2048 MB of dedicated video memory (128 MB×16 DDR3 1 GHz×8PCs) N15S-GT GeForce 840M with 2048 MB of dedicated video memory (256 MB×16 DDR3 960 MHz x 4 pcs, 1 GHz bridge to 960 MHz) <p>Support for HD decode, DX11, and HDMI</p> <p>Support for GPU performance scaling</p> <p>Support for Optimus</p>		√
Panel	<p>Support for the following display assemblies:</p> <ul style="list-style-type: none"> 15.6 inch (39.80 cm), full high-definition (FHD), white light-emitting diode (WLED), BrightView (1920×1080), slim (3.2 mm), SVA, color gamut 60%, typical brightness 300 cd/m² (nits), 16:9 aspect ratio 15.6 inch (39.80 cm), high-definition (HD), white light-emitting diode (WLED), BrightView (1366×768), flat (3.8 mm), SVA, color gamut 45%, typical brightness 200 cd/m² (nits), 16:9 aspect ratio <p>Support for low-voltage differential signaling LVDS, co-layout with eDP1.3+PSR)</p> <p>Touchscreen and MultiTouch enabled</p>	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Memory	Two customer-accessible/upgradable memory module slots	√	√
	Support for DDR3L (1600 MHz) dual channel		
	Support for up to 16834 MB of system RAM in the following configurations:		
	<ul style="list-style-type: none"> • 16834 MB (8192 MB×2) • 12288 MB (8192 MB+4096 MB) • 8192 MB (8192 MB×1, 4096 MB×2) • 6144 MB (4096 MB+2048 MB) • 4096 MB (4096 MB×1, 2048 MB×2) 		
	Support for Intel Rapid Start Technology (select models only)		√
Hard drive	Support for 6.35 cm (2.5 in) hard drives in 7.0 mm (.28 in) and 9.5 mm (.37 in) thickness	√	√
	Support for Serial ATA /Support for mSATA		
	Support for HP 3D Drive Guard hard drive protection		
	Support for the following hard drives:		
	<ul style="list-style-type: none"> • 1.5 TB, 5400 rpm, 9.5 mm (select models only) • 1 TB, 5400 rpm, 9.5 mm • 750 GB, 5400 rpm, 9.5 mm • 500 GB, 5400 rpm, 7.0 mm 		
	<ul style="list-style-type: none"> • 640 GB, 5400 rpm, 9.5 mm 	√	
	<ul style="list-style-type: none"> • 256 GB solid-state drive (SSD), select models only • 512 GB SSD, select models only 		√
	Support for Intel Smart Response Technology (select models only)		√
mSATA SSD	<ul style="list-style-type: none"> • Support for 24 GB mSATA SSD (not available on computer models equipped with 16834 MB or 12288 MB system memory or with a 256 GB or 512 GB SSD) 		√

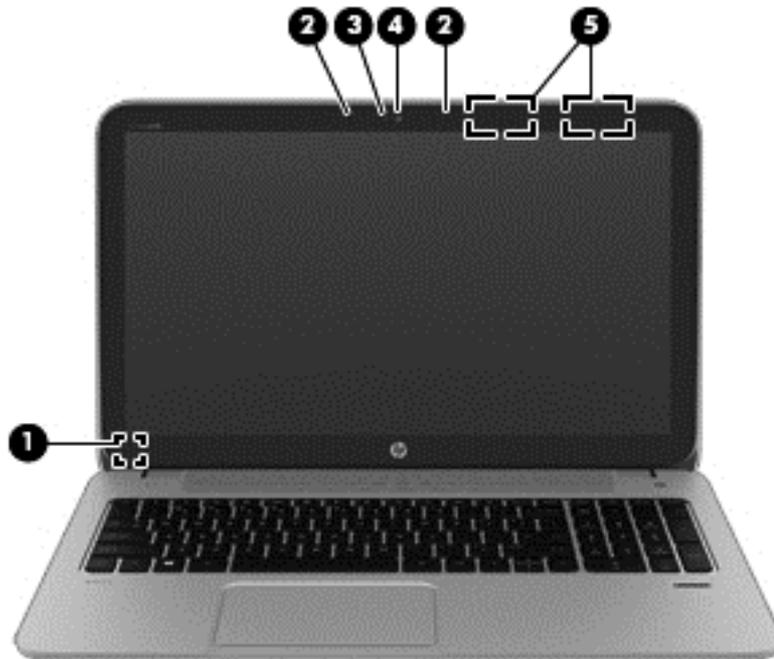
Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Audio and video	<p>Quad speakers</p> <p>Subwoofer</p> <p>Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software</p> <p>HD Audio</p> <p>Beats Audio</p> <p>Integrated HP TrueVision HD webcam (fixed [no tilt], activity LED, 1280×720 by 30 frames per second)</p>	√	√
Ethernet	Integrated 10/100/1000 network interface card (NIC)	√	√
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>Two WLAN antennas built into display assembly</p> <p>Compatible with Miracast -certified devices</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> • Qualcomm Atheros AR9485 802.11bgn 1×1 WiFi Adapter (select models only) • Qualcomm QCA9565 802.11bgn 1×1 WiFi + Bluetooth 4.0 Combo Adapter (select models only) • Ralink RT3290LE 802.11bgn 1×1 WiFi + Bluetooth 4.0 Combo Adapter (select models only) • Realtek RTL8188EE 802.11bgn 1×1 WiFi Adapter (select models only) 	√	√
	<ul style="list-style-type: none"> • Broadcom BCM 4352 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter (select models only) • Intel Dual Band Wireless 7260 802.11 bgn 2x2 WiFi + Bluetooth 4.0 Combo Adapter • Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter (select models only) 		√
External media cards	HP 2-in-1 multiformat Digital Media Reader Slot with push-push technology. Reads data from and writes data to digital memory cards such as Secure Digital (SD).	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Ports	<ul style="list-style-type: none"> AC adapter, HP Smart Audio-in (mono microphone)/audio-out (stereo headphone) combo jack HDMI v1.4 supporting up to 1920×1080 @ 60Hz RJ-45 (Ethernet) USB: four USB 3.0 ports, one USB 2.0 port 	√	√
Keyboard/pointing devices	<p>Full-size, island-style keyboard with numeric keypad</p> <p>DuraCoat</p> <p>Backlit</p> <p>Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default</p> <p>Clickpad with image sensor</p> <p>Taps enabled by default</p> <p>Support for Windows 8 modern trackpad</p>	√	√
Power requirements	<p>Support for the following AC adapters:</p> <ul style="list-style-type: none"> 90 W HP Smart AC adapter (PFC, 4.5 mm) 65 W HP Smart AC adapter (non-PFC, 4.5 mm) 	√	√
	<ul style="list-style-type: none"> 120 W HP Slim AC adapter (PFC, EM, 4.5 mm) 90 W HP Smart AC adapter (PFC EM, 4.5 mm) 65 W HP Smart AC adapter (non-PFC, EM, 4.5 mm) 		√
	<p>Support for the following batteries</p> <ul style="list-style-type: none"> 6 cell, 62 Wh, 2.80 Ah, Li-ion battery, supports fast charge 6 cell, 47 Wh, 2.20 Ah, Li-ion battery 	√	√
Security	<p>Support for the following:</p> <ul style="list-style-type: none"> Security cable lock Fingerprint reader with Digital Persona software (select models only) HP SimplePass (only available on computer models equipped with a fingerprint reader) 	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
Security <i>(continued)</i>	<ul style="list-style-type: none"> • Intel AT-p Ready 		√
Operating system	Preinstalled: Windows 8.1	√	√
	Ubuntu Linux		√
Serviceability	End user replaceable parts:	√	√
	<ul style="list-style-type: none"> • AC adapter • Battery (system) • Hard drive • Memory modules (expansion and primary) • WLAN module 		
	<ul style="list-style-type: none"> • mSATA SSD 		√

2 External component identification

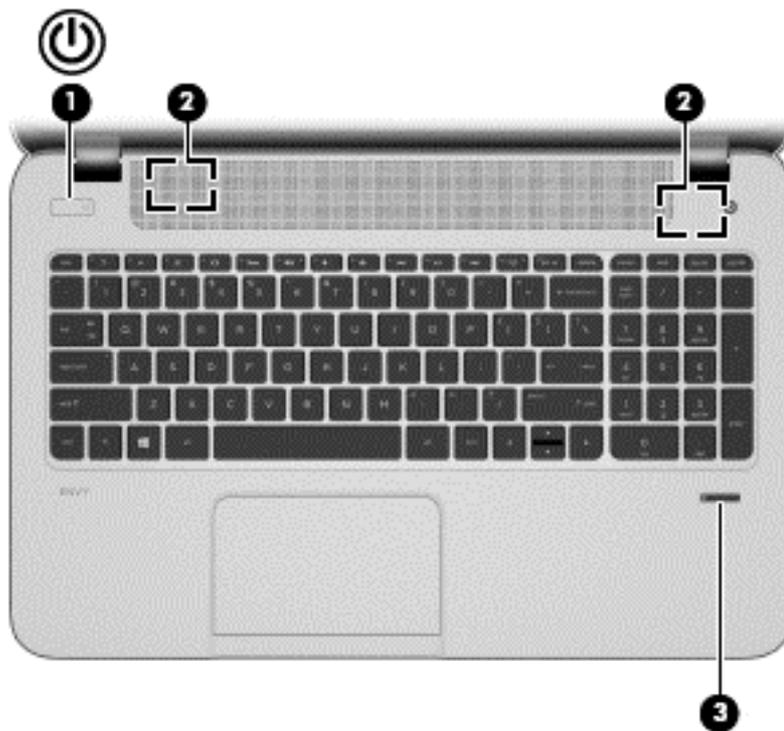
Display



Item	Component	Description
(1)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. NOTE: The internal display switch is not visible from the outside of the computer.
(2)	Internal microphones (2)	Record sound.
(3)	Webcam light	On: The webcam is in use.
(4)	HP TrueVision HD Webcam	Records video and takes still photographs.
(5)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs. NOTE: To set up a WLAN and connect to the Internet, you need a broadband modem (either DSL or cable) (purchased separately), high-speed internet service purchased from an Internet service provider, and a wireless router (purchased separately).

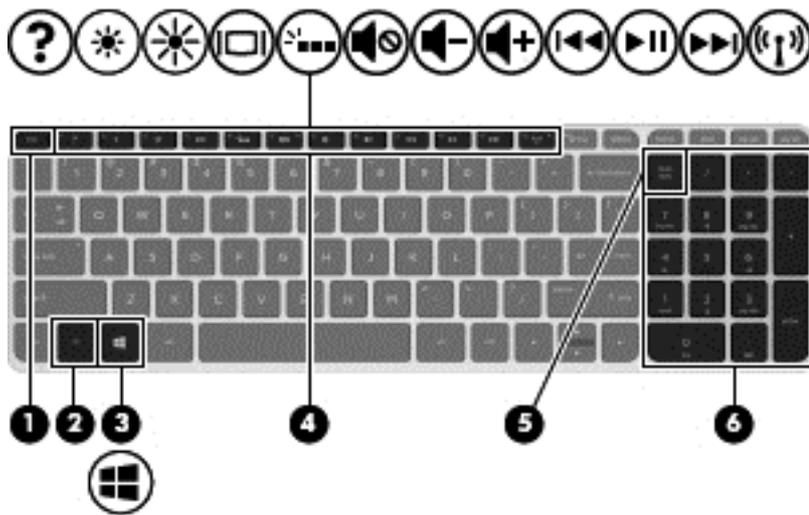
*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

Buttons and speakers



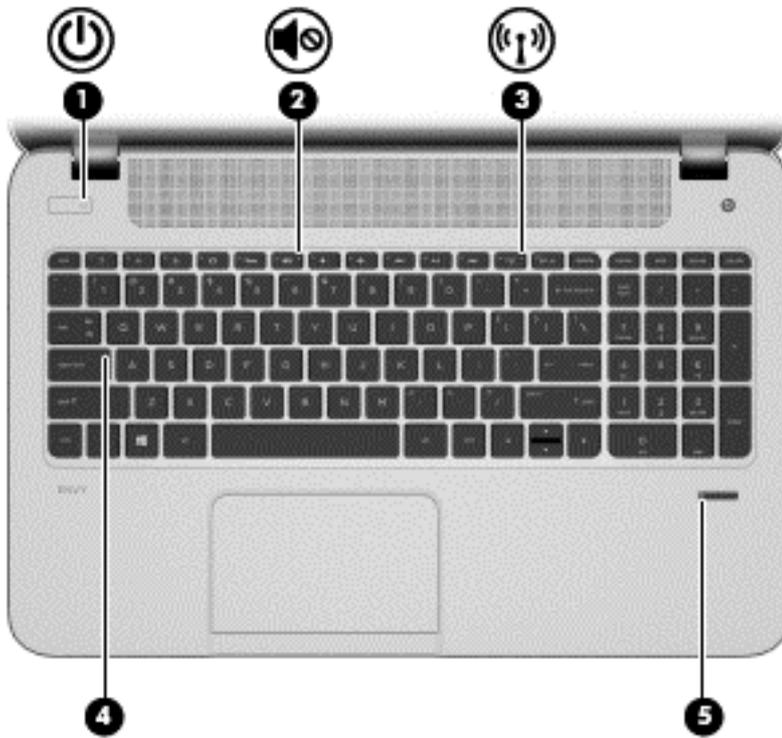
Item	Component	Description
(1)	Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <p>If the computer has stopped responding and Microsoft Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p>
(2)	Speakers (2)	Produce sound.
(3)	Fingerprint reader (select models only)	Allows a fingerprint logon to , instead of a password logon.

Keys



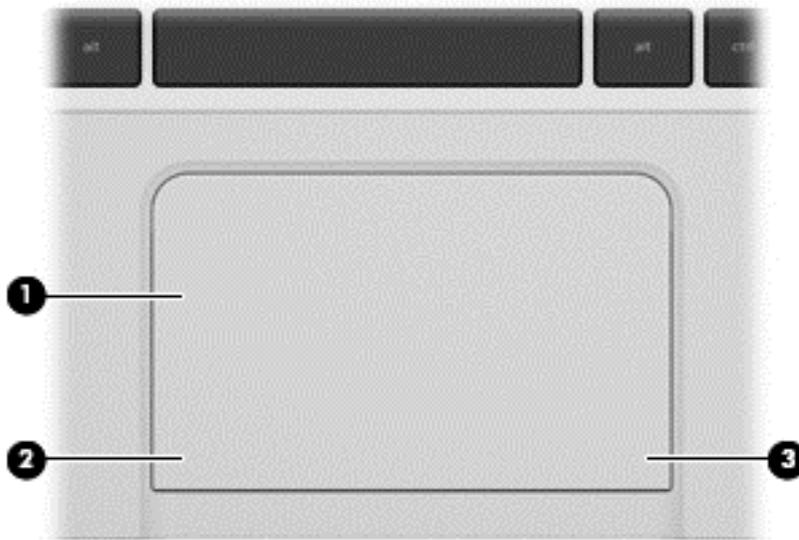
Item	Component	Description
(1)	esc key	Reveals system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the b key, the spacebar , or the esc key.
(3)	Operating system key	<p>For Windows computer models, this key returns you to the Start screen from an open app or the Windows desktop.</p> <p>NOTE: Pressing the key again will return you to the previous screen.</p> <p>For Linux computer models, this key displays the operating system menu.</p>
(4)	Action keys	<p>Execute frequently used system functions.</p> <p>NOTE: On select models, the f5 action key turns the radiance backlight keyboard feature off or on.</p>
(5)	num lk key	Alternates between the navigational and numeric functions on the integrated numeric keypad.
(6)	Integrated numeric keypad	When num lk has been enabled, it can be used like an external numeric keypad.

Lights



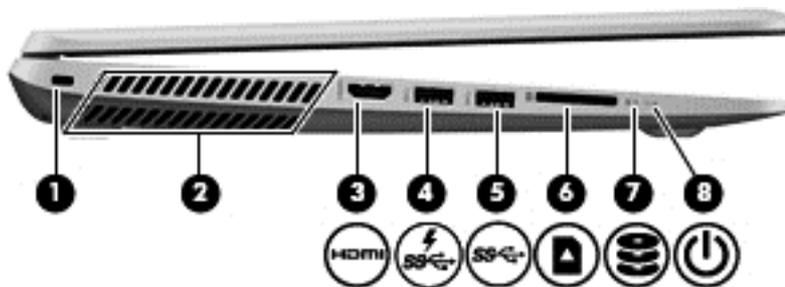
Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"> • White: The computer is on. • Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power. <p>NOTE: For select models, the Intel Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.</p>
(2)	Mute light	<ul style="list-style-type: none"> • Amber: Computer sound is off. • Off: Computer sound is on.
(3)	Wireless light	<p>On: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on.</p> <p>NOTE: On some models, the wireless light is amber when all wireless devices are off.</p>
(4)	Caps lock light	<p>On: Caps lock is on, which switches the keys to all capital letters.</p>
(5)	Fingerprint reader light	<ul style="list-style-type: none"> • White: The fingerprint authentication was successful. • Amber: The fingerprint authentication failed.

TouchPad



Item	Component	Description
(1)	TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen. NOTE: The TouchPad also supports edge-swipe gestures.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

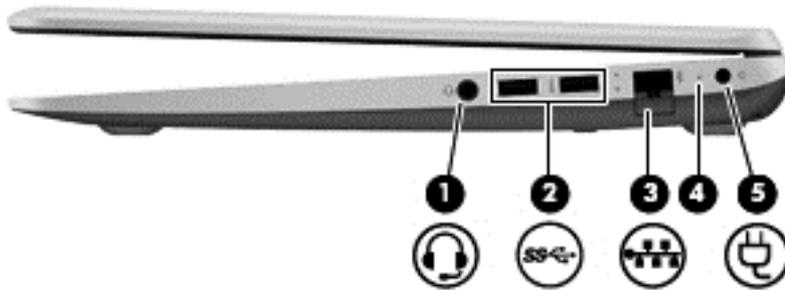
Left side



Item	Component	Description
(1)	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.

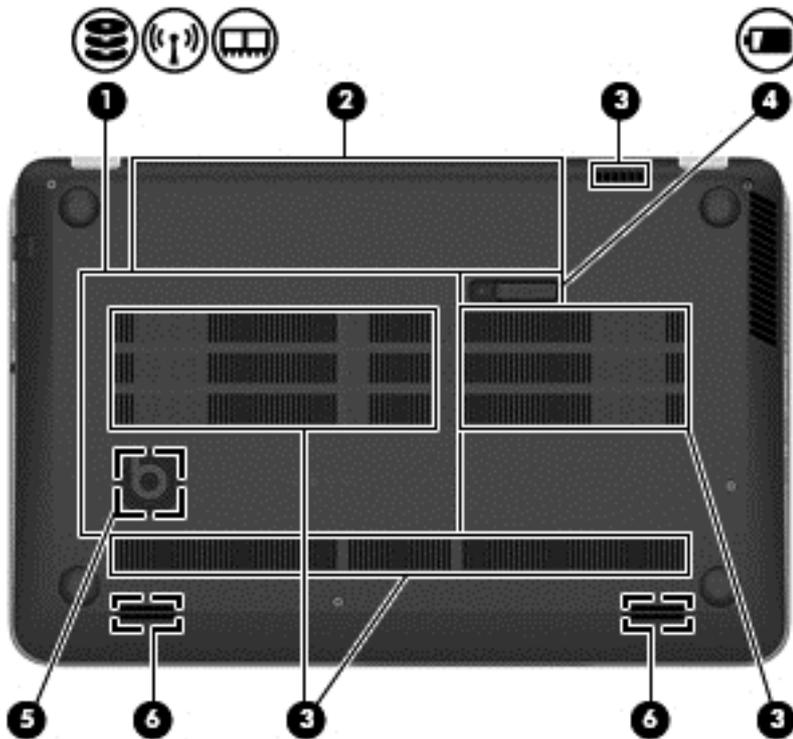
Item	Component	Description
(2)	Vents (2)	<p>Enables airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
(3)	HDMI port	<p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.</p>
(4)	USB 3.0 charging port	<p>Connects an optional USB device. The USB 3.0 charging port can also charge select models of cell phones and MP3 players, even when the computer is off.</p> <p>NOTE: A USB charging port (also referred to as a USB powered port) allows you to charge connected USB devices. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port.</p>
(5)	USB 3.0 port	<p>Connects optional USB 3.0 devices and provide enhanced USB power performance.</p>
(6)	Digital Media Card Reader	<p>Reads data from and writes data to digital memory cards such as Secure Digital (SD).</p>
(7)	Hard drive light	<ul style="list-style-type: none"> • Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(8)	Power light	<ul style="list-style-type: none"> • White: The computer is on. • Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power. <p>NOTE: For select models, the Intel Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.</p>

Right side



Item	Component	Description
(1)	Audio-out (headphone) jack/Audio-in (microphone) jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.</p> <p>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.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p>
(2)	USB 3.0 ports (2)	Connect optional USB 3.0 devices and provide enhanced USB power performance.
(3)	RJ-45 (network) jack	Connects a network cable.
(4)	RJ-45 (network) jack status light	<ul style="list-style-type: none"> White: The network is connected. Amber: Activity is occurring on the network.
(5)	AC adapter light	<ul style="list-style-type: none"> White: The AC adapter is connected and the battery is charged. Amber: The AC adapter is connected and the battery is charging. Off: The computer is using DC power.
(6)	Power connector	Connects an AC adapter.

Bottom



Item	Component	Description
(1)	Service door	Provides access to the hard drive bay, the WLAN module slot, and the memory module slots. CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support through Help and Support.
(2)	Battery bay	Holds the battery.
(3)	Vents (3)	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.
(4)	Battery release latch	Releases the battery from the battery bay.
(5)	HP Triple Bass Reflex Subwoofer	Provides superior bass sound.
(6)	Speakers (2)	Produce sound.

Labels

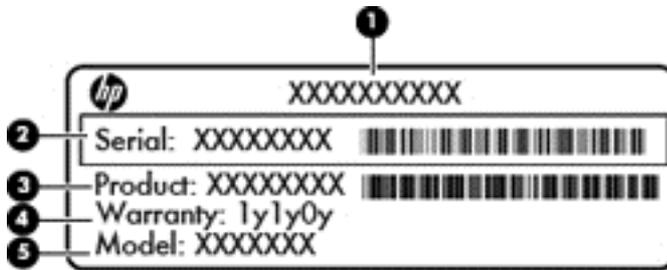
The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

 **IMPORTANT:** All labels described in this section will be located in one of 3 places depending on your computer model: Affixed to the bottom of the computer, located in the battery bay, or under the service door.

For help finding these locations, refer to [Bottom on page 16](#).

- Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.

 **NOTE:** Your service labels will resemble one of the examples shown below. Refer to the illustration that most closely matches the service label on your computer.



Component

- | | |
|-----|-----------------------------------|
| (1) | Product name |
| (2) | Serial number |
| (3) | Product number |
| (4) | Warranty period |
| (5) | Model number (select models only) |



Component

- | | |
|-----|-----------------|
| (1) | Serial number |
| (2) | Product number |
| (3) | Warranty period |

Component

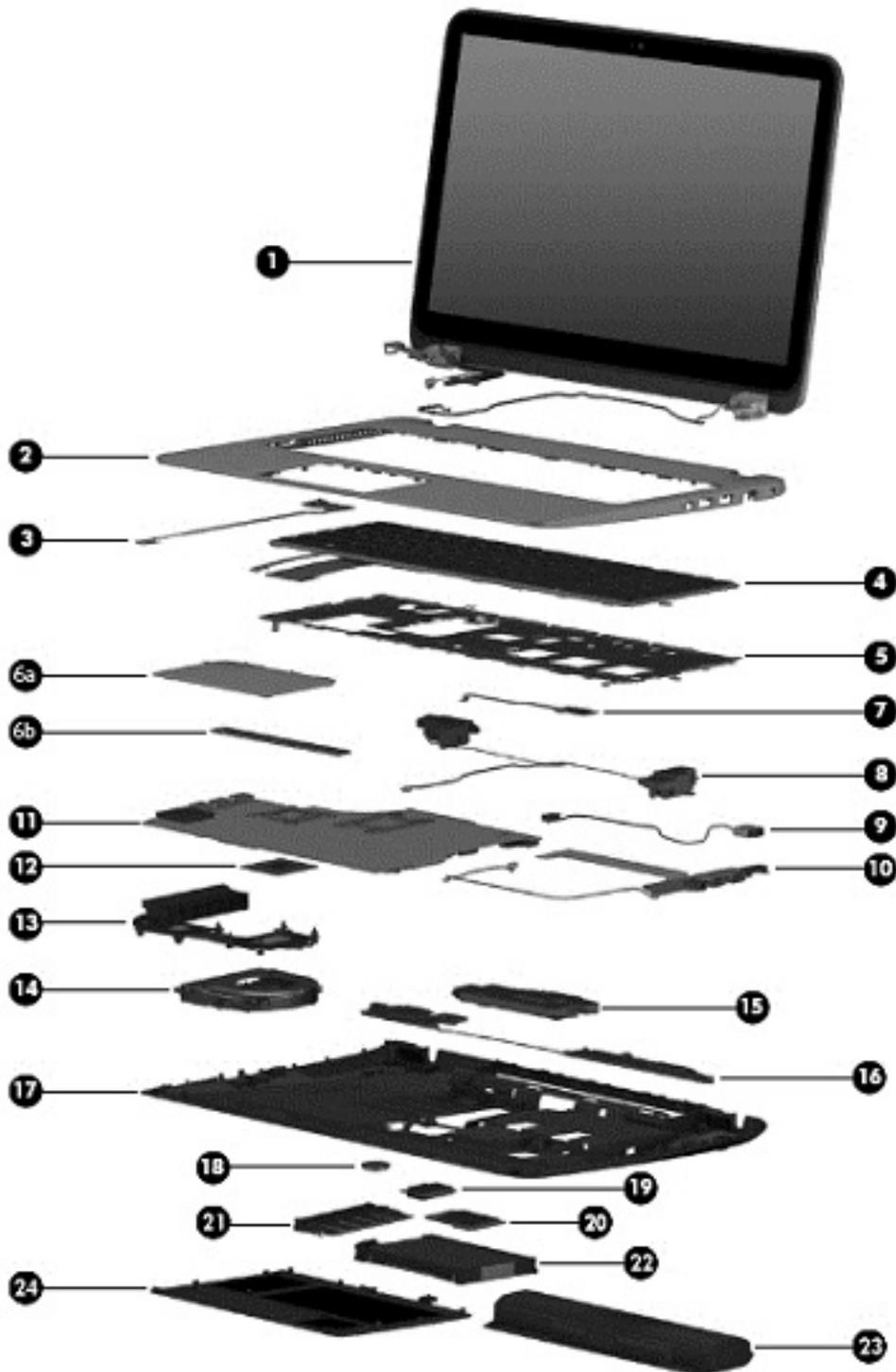
(4) Model number (select models only)

(5) Revision number

- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

3 Illustrated parts catalog

Computer major components



Item	Component	Spare part number
(1)	Display assembly (includes webcam/microphone module and wireless antenna cables):	
	15.6 inch (39.80 cm), BrightView, FHD, LED, TouchSmart touchscreen display assembly	720550-001
	15.6 inch (39.80 cm), BrightView, HD, LED, TouchSmart touchscreen display assembly	720549-001
	15.6 inch (39.80 cm), BrightView, FHD, LED, non-touchscreen display assembly	720552-001
	15.6 inch (39.80 cm), BrightView, HD, LED, non-touchscreen display assembly	720551-001
	The subcomponents for the non-touchscreen display assembly are also available as spare part kits. For more display assembly spare part information, see Display assembly subcomponents on page 25 .	
(2)	Top cover	720570-001
(3)	Power button board (includes cable)	720553-001
(4)	Keyboard (includes keyboard cable):	
	Keyboard with backlight (includes backlight cable):	
	For use on computer models equipped with an Intel processor in Belgium	720244-A41
	For use in Canada	720244-DB1
	For use on computer models equipped with an Intel processor in the Czech Republic and Slovakia	720244-FL1
	For use on computer models equipped with an Intel processor in Denmark, Finland, and Norway	720244-DH1
	For use on computer models equipped with an Intel processor in France	720244-051
	For use on computer models equipped with an Intel processor in Germany	720244-041
	For use on computer models equipped with an Intel processor in Greece	720244-151
	For use on computer models equipped with an Intel processor for use internationally	720244-B31
	For use on computer models equipped with an Intel processor in Italy	720244-061
	For use on computer models equipped with an Intel processor in Japan	720244-291
	For use in Latin America	720244-161
	For use on computer models equipped with an Intel processor in Portugal	720244-131
	For use on computer models equipped with an Intel processor in Russia	720244-251
	For use on computer models equipped with an Intel processor in Saudi Arabia	720244-171
	For use on computer models in South Korea	720244-AD1
	For use on computer models equipped with an Intel processor in Spain	720244-071
	For use on computer models equipped with an Intel processor in Switzerland	720244-BG1
	For use on computer models equipped with an Intel processor in Taiwan	720244-AB1
	For use on computer models equipped with an Intel processor in Thailand	720244-281
	For use on computer models equipped with an Intel processor in Turkey	720244-141
	For use on computer models equipped with an Intel processor in the United Kingdom	720244-031

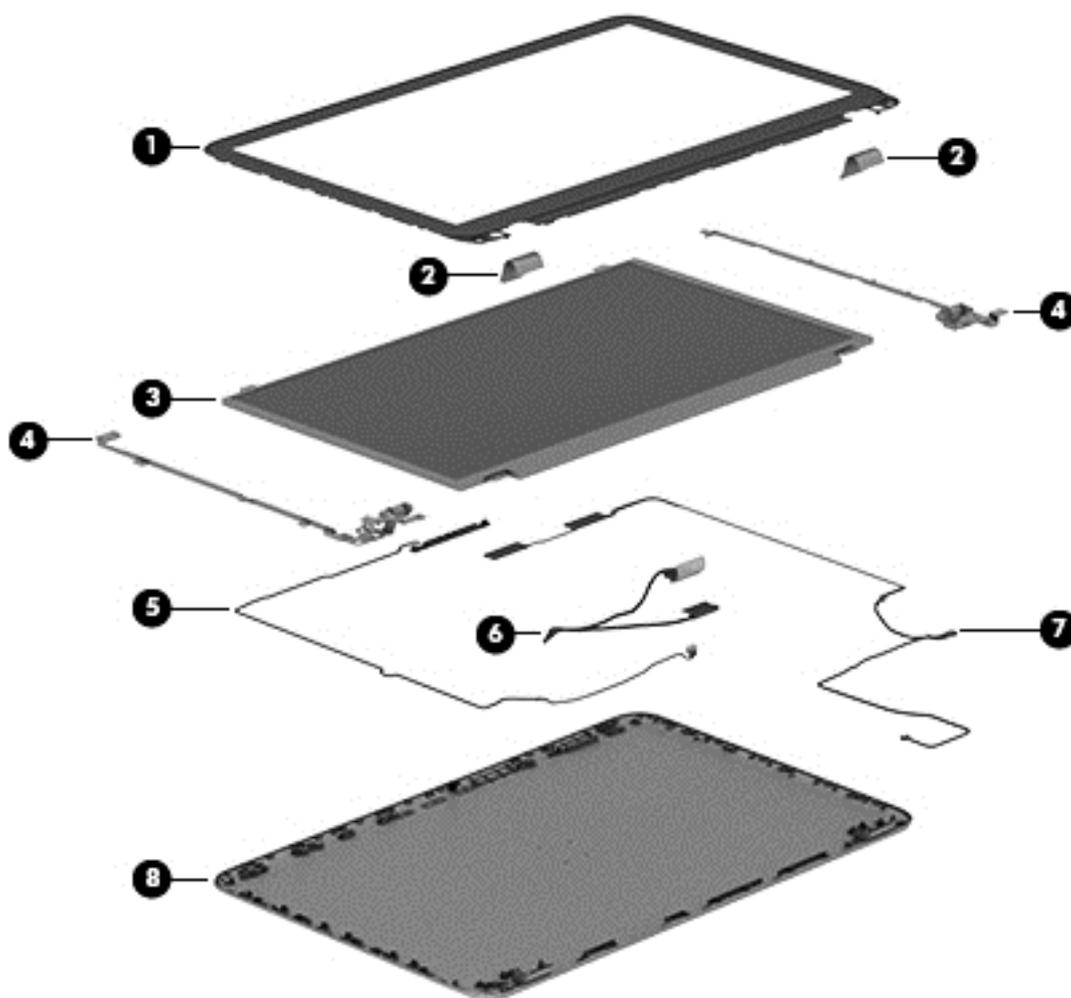
Item	Component	Spare part number
	For use in the United States	720244-001
	Keyboard with pointing stick (includes pointing stick cable)	
	For use in the United States	720242-001
	For use on computer models equipped with an Intel processor in France	720242-051
	For use on computer models equipped with an Intel processor in Italy	720242-061
(5)	Keyboard shield	720544-001
(6a)	TouchPad assembly (includes TouchPad bracket (6b), TouchPad button board, TouchPad, and cables)	722972-001
(7)	Fingerprint reader board (includes bracket and cable)	720543-001
(8)	Rear speakers (include left and right rear speakers, 2 cables, and 4 isolators)	720561-001
(9)	Power connector cable:	
	Power connector cable	720537-001
	For use on computer models equipped with an Intel processor and a graphics subsystem with discrete memory	720538-001
(10)	Connector board (includes 2 cables):	
	For use on computer models equipped with an AMD processor	720579-001
	For use on computer models equipped with an Intel processor and a graphics subsystem with discrete memory	723372-001
	For use on computer models equipped with an Intel processor and a graphics subsystem with UMA memory	720554-001
(11)	System board (includes replacement thermal material):	
	For use on computer models equipped with an AMD processor, a graphics subsystem with discrete memory, and the Windows Professional operating system	720578-601
	For use on computer models equipped with an AMD processor, a graphics subsystem with discrete memory, and the Windows Standard operating system	720578-501
	For use on computer models equipped with an AMD processor, a graphics subsystem with UMA memory, and the Windows Professional operating system	720577-601
	For use on computer models equipped with an AMD processor, a graphics subsystem with UMA memory, and the Windows Standard operating system	720577-501
	For use on computer models equipped with the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Standard operating system	720569-501
	For use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Professional operating system	720566-601
	For use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Standard operating system	720566-501
	For use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Linux operating system	720566-001
	For use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Windows Professional operating system	720565-601
	For use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Windows Standard operating system	720565-501

Item	Component	Spare part number
	For use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Linux operating system	720565-001
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Linux operating system (includes replacement material)	741653-001
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Standard operating system (includes replacement material)	741653-501
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Professional operating system (includes replacement material)	741653-601
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Linux operating system (includes replacement material)	746447-001
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Standard operating system (includes replacement material)	746447-501
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Professional operating system (includes replacement material)	746447-601
	For use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Linux operating system (includes replacement material)	746449-001
	For use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Windows Standard operating system (includes replacement material)	746449-501
	For use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Windows Professional operating system (includes replacement material)	746449-601
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Linux operating system (includes replacement material)	749752-001
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Windows Standard operating system (includes replacement material)	749752-501
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Windows Professional operating system (includes replacement material)	749752-601
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Linux operating system (includes replacement material)	749753-001
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Windows Standard operating system (includes replacement material)	749753-501
	For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Windows Professional operating system (includes replacement material)	749753-601
(12)	Processor (includes replacement thermal material):	
	AMD A10-5750M 2.50 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 4.0-MB L2 cache, DDR3, quad core, 35 W)	713548-001

Item	Component	Spare part number
	AMD A8-5550M 2.10 GHz processor (turbo up to 3.10 GHz; 1600 MHz FSB, 4.0- MB L2 cache, DDR3, quad core, 35 W)	713551-001
	AMD A6-5350M 2.90 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 1.0- MB L2 cache, DDR3, dual core, 35 W)	713550-001
	AMD A4-5150M 2.70 GHz processor (turbo up to 3.30 GHz; 1600 MHz FSB, 1.0- MB L2 cache, DDR3, dual core, 35 W)	713549-001
	Intel Quad Core i7-4900MQ 2.80 GHz processor (SC turbo up to 3.80 GHz; 1600 MHz FSB, 8.0 MB L3 cache, 47 W)	723523-001
	Intel Quad Core i7-4800MQ 2.70 GHz processor (SC turbo up to 3.70 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W)	723524-001
	Intel Quad Core i7-4702MQ 2.20 GHz processor (SC turbo up to 3.20 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 37 W)	723522-001
	Intel Quad Core i7-4700MQ 2.40 GHz processor (SC turbo up to 3.40 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W)	723521-001
	Intel Dual Core i5-4330M 2.80 GHz processor (SC turbo up to 3.50 GHz; 1600 MHz FSB; 3.0 MB L3 cache, 37 W)	738201-001
	Intel Dual Core i5-4200M 2.50 GHz processor (SC turbo up to 3.10 GHz; 1600 MHz FSB, 3.0 MB L3 cache, 37 W)	737328-001
	Intel Dual Core i3-4000M 2.40 GHz processor (1600 MHz FSB, 3.0 MB L3 cache, 37 W)	737327-001
(13)	Heat sink (includes replacement thermal material):	
	For use on computer models equipped with an AMD processor and discrete memory	720576-001
	For use on computer models equipped with an AMD processor and a graphics subsystem with UMA memory	720539-001
	For use on computer models equipped with the Intel HM87 chipset and a GeForce 750M graphics subsystem	720542-001
	For use on computer models equipped with the Intel HM87 chipset and a GeForce 740M graphics subsystem	722389-001
	For use on computer models equipped with the Intel HM87 chipset and a graphics subsystem with UMA memory	720541-001
(14)	Fan (includes cable)	720235-001
(15)	Subwoofer (includes cable and 3 isolators)	720563-001
(16)	Front speakers (include left and right front speakers, 2 cables, and 4 isolators)	720562-001
(17)	Base enclosure (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover)	720534-001
	Rubber Kit (not illustrated, includes front and rear rubber feet and display bezel rubber screw covers)	720559-001
(18)	RTC battery:	
	For use only on computer models equipped with an AMD processor	651948-001
	For use only on computer models equipped with an Intel processor	718440-001
(19)	WLAN module:	

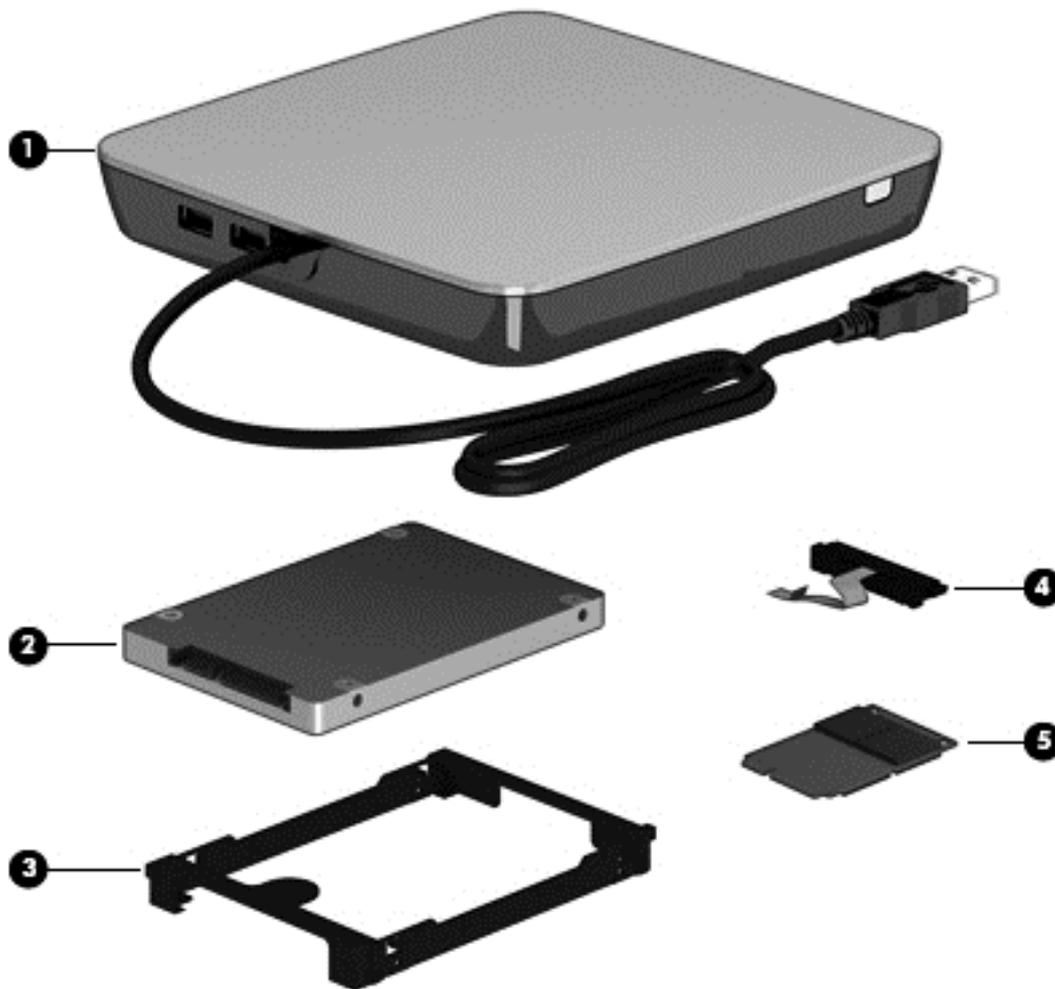
Item	Component	Spare part number
	Broadcom BCM 4352 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models equipped with an Intel processor, select models only)	724935-001
	Intel Dual Band Wireless 7260 802.11 bgn 2×2 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models equipped with an Intel processor)	717384-001
	Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models equipped with an Intel processor, select models only)	710662-001
	Qualcomm Atheros AR9485 802.11bgn 1×1 WiFi Adapter (select models only)	675794-001
	Qualcomm QCA9565 802.11bgn 1×1 WiFi + Bluetooth 4.0 Combo Adapter (select models only)	733476-001
	Ralink RT3290LE 802.11bgn 1×1 WiFi + Bluetooth 4.0 Combo Adapter (select models only)	690020-001
	Realtek RTL8188EE 802.11bgn 1×1 WiFi Adapter (select models only)	709848-001
(20)	mSATA SSD (for use on computer models equipped with an Intel processor, not available on computer models equipped with 16834 MB or 12288 MB system memory or with a 256 GB or 512 GB SSD)	
	24 GB	720564-001
(21)	Memory module (PC3L, 12800, 1600 MHz):	
	8 GB	693374-001
	4 GB	691740-001
	2 GB	691739-001
(22)	Hard drive (does not include hard drive bracket or hard drive connector cable):	
	1.5 TB, 5400 rpm, 9.5 mm (select models only)	747375-001
	1 TB, 5400 rpm, 9.5 mm	676521-001
	750 GB, 5400 rpm, 9.5 mm	634250-001
	640 GB, 5400 rpm, 9.5 mm (for computer models equipped with an AMD processor)	669300-001
	500 GB, 5400 rpm, 7.0 mm	683802-001
	1 TB, 5400 rpm, +8 GB NAND hybrid, 9.5 mm	731999-001
	750 GB, 5400 rpm, +8 GB NAND hybrid, 9.5 mm	732001-001
	500 GB, 5400 rpm, +8 GB NAND hybrid, 7 mm	732000-001
	256 GB SSD (for computer models equipped with an Intel processor)	749761-001
	512 GB SSD (for computer models equipped with an Intel processor)	749762-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket and hard drive connector cable)	720545-001
(23)	Battery:	
	6 cell, 62 Wh, 2.80 Ah, Li-ion battery	710417-001
	6 cell, 47 Wh, 2.20 Ah, Li-ion battery	710416-001
(24)	Service door	720555-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel	720535-001
(2)	Display hinge kit (includes left and right hinges, left and right hinge covers, and left and right hinge brackets)	720548-001
(3)	Webcam/microphone module (includes webcam/microphone module cable and double-sided adhesive)	720273-001
(4)	Display panel:	
	15.6 inch (39.80 cm), BrightView, FHD, LED, non-touchscreen display panel	720557-001
	15.6 inch (39.80 cm), BrightView, HD, LED, non-touchscreen display panel	720556-001
(5)	Display panel cable	720536-001
(6)	Antenna Kit (includes left and right wireless antenna cables and transceivers)	720532-001
(7)	Display enclosure	720533-001

Mass storage devices



Item	Component	Spare part number
(1)	External DVD±RW Double-Layer with SuperMulti Drive	659940-001
(2)	Hard drive (does not include hard drive bracket or hard drive connector cable):	
	1.5 TB, 5400 rpm, 9.5 mm	747375-001
	1 TB, 5400 rpm, 9.5 mm	676521-001
	750 GB, 5400 rpm, 9.5 mm	634250-001
	640 GB, 5400 rpm, 9.5 mm (for use on computer models with an AMD processor)	669300-001
	500 GB, 5400 rpm, and 7.0 mm	683802-001
	1 TB, 5400 rpm, +8 GB NAND hybrid, 9.5 mm	731999-001
	750 GB, 5400 rpm, +8 GB NAND hybrid, 9.5 mm	732001-001
	500 GB, 5400 rpm, +8 GB NAND hybrid, 7 mm	732000-001
	256 GB SSD (for use on computer models equipped with an Intel processor)	749761-001

Item	Component	Spare part number
	512 GB SSD (for use on computer models equipped with an Intel processor)	749762-001
	Hard Drive Hardware Kit , includes:	720545-001
(3)	Hard drive bracket	
(4)	Hard drive connector cable	
(5)	mSATA SSD (for use on computer models equipped with an Intel processor, not available on computer models equipped with 16834 MB or 12288 MB system memory or with a 256 GB or 512 GB SSD)	
	24 GB	720564-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
120 W HP Slim AC adapter (PFC, EM, 4.5 mm) for use on computer models equipped with an Intel processor	710415-001
65 W HP Smart AC adapter (non-PFC, 4.5 mm)	710412-001
65 W HP Smart AC adapter (non-PFC, EM, 4.5 mm) for use on computer models equipped with an Intel processor	714657-001
90 W HP Smart AC adapter (PFC, 4.5 mm)	710413-001
90 W HP Smart AC adapter (PFC EM, 4.5 mm) for use on computer models equipped with an Intel processor	710414-001
HDMI-to-VGA adapter	701943-001
Power cord (3-pin, black, 1.83 m):	
For use in Australia	490371-011
For use on computer models equipped with an Intel processor in Denmark	490371-081
For use in Europe	490371-021
For use on computer models equipped with an Intel processor in India	490371-D61
For use on computer models equipped with an Intel processor in Japan	490371-291
For use in North America	490371-001
For use in South Africa	490371-AR1
For use on computer models equipped with an Intel processor in the People's Republic of China	490371-AA1
For use on computer models equipped with an Intel processor in South Korea	490371-AD1
For use on computer models equipped with an Intel processor in Switzerland	490371-111
For use on computer models equipped with an Intel processor in Taiwan	490371-AB1
For use on computer models equipped with an Intel processor in Thailand	490371-201
For use on computer models equipped with an Intel processor in the United Kingdom and Singapore	490371-031

Component	Spare part number
Screw Kit	720560-001
Counterbalance weight	720547-001

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 on computer models equipped with an Intel processor in Europe (3-pin, black, 1.83 m)
490371-031	Power cord for use on computer models equipped with an Intel processor in the United Kingdom and Singapore (3-pin, black, 1.83 m)
490371-081	Power cord for use on computer models equipped with an Intel processor in Denmark (3-pin, black, 1.83 m)
490371-111	Power cord for use on computer models equipped with an Intel processor in Switzerland (3-pin, black, 1.83 m)
490371-201	Power cord for use on computer models equipped with an Intel processor in Thailand (3-pin, black, 1.83 m)
490371-291	Power cord for use on computer models equipped with an Intel processor in Japan (3-pin, black, 1.83 m)
490371-AA1	Power cord for use on computer models equipped with an Intel processor in the People's Republic of China (3-pin, black, 1.83 m)
490371-AB1	Power cord for use on computer models equipped with an Intel processor in Taiwan (3-pin, black, 1.83 m)
490371-AD1	Power cord for use on computer models in South Korea (3-pin, black, 1.83 m)
490371-AR1	Power cord for use on computer models equipped with an Intel processor in South Africa (3-pin, black, 1.83 m)
490371-D61	Power cord for use on computer models equipped with an Intel processor in India (3-pin, black, 1.83 m)
634250-001	750 GB, 5400 rpm, SATA, 9.5 mm hard drive (does not include hard drive bracket or hard drive connector cable) NOTE: The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001.
651948-001	RTC battery for use on computer models equipped with an AMD processor
659940-001	External DVD±RW Double-Layer with SuperMulti Drive
669300-001	640 GB, 5400 rpm, SATA, 9.5 mm hard drive for use on computer models equipped with an AMD processor (does not include hard drive bracket or hard drive connector cable) NOTE: The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001.
675794-001	Atheros AR9485 802.11bgn 1×1 WiFi Adapter (select models only)

Spare part number	Description
676521-001	1 TB, 5400 rpm, SATA, 9.5 mm hard drive (does not include hard drive bracket or hard drive connector cable) NOTE: The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 718432-001.
683802-001	500 GB, 5400 rpm, SATA, 7.0 mm hard drive (does not include hard drive bracket or hard drive connector cable) NOTE: The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 718432-001.
690020-001	Ralink RT3290LE 802.11bgn 1×1 WiFi and Bluetooth 4.0 Combo Adapter (select models only)
691739-001	2 GB memory module (PC3L, 12800, 1600 MHz)
691740-001	4 GB memory module (PC3L, 12800, 1600 MHz)
693374-001	8 GB memory module (PC3L, 12800, 1600 MHz)
701943-001	HDMI-to-VGA adapter
709848-001	Realtek RTL8188EE 802.11bgn 1×1 Wi-Fi Adapter
710412-001	65 W HP Smart AC adapter (non-PFC, 4.5 mm)
710413-001	90 W HP Smart AC adapter (PFC, 4.5 mm)
710414-001	90 W HP Smart AC adapter (PFC EM, 4.5 mm) for use on computer models equipped with an Intel processor
710415-001	120 W HP Slim AC adapter (PFC, EM, 4.5 mm) for use on computer models equipped with an Intel processor
710416-001	6 cell, 47 Wh, 2.20 Ah, Li-ion battery
710417-001	6 cell, 62 Wh, 2.80 Ah, Li-ion battery
710662-001	Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models with an Intel processor, select models only)
713548-001	AMD A10-5750M 2.50 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 4.0 MB L2 cache, DDR3, quad core, 35 W)
713549-001	AMD A4-5150M 2.70 GHz processor (turbo up to 3.30 GHz; 1600 MHz FSB, 1.0 MB L2 cache, DDR3, dual core, 35 W)
713550-001	AMD A6-5350M 2.90 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 1.0 MB L2 cache, DDR3, dual core, 35 W)
713551-001	AMD A8-5550M 2.10 GHz processor (turbo up to 3.10 GHz; 1600 MHz FSB, 4.0 MB L2 cache, DDR3, quad core, 35 W)
714657-001	65 W HP Smart AC adapter (non-PFC, EM, 4.5 mm) for use on computer models equipped with an Intel processor
717384-001	Intel Dual Band Wireless 7260 802.11 bgn 2x2 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models with an Intel processor)
718440-001	RTC battery for use on computer models equipped with an Intel processor
720235-001	Fan (includes cable)
720242-001	Keyboard with pointing stick for use in the United States (includes keyboard cable and pointing stick cable)

Spare part number	Description
720242-051	Keyboard with pointing stick for use on computer models equipped with an Intel processor in France (includes keyboard cable and pointing stick cable)
720242-061	Keyboard with pointing stick for use on computer models equipped with an Intel processor in Italy (includes keyboard cable and pointing stick cable)
720244-001	Keyboard with backlight for use in the United States (includes backlight cable and keyboard cable)
720244-031	Keyboard with backlight for use on computer models equipped with an Intel processor in the United Kingdom (includes backlight cable and keyboard cable)
720244-041	Keyboard with backlight for use on computer models equipped with an Intel processor in Germany (includes backlight cable and keyboard cable)
720244-051	Keyboard with backlight for use on computer models equipped with an Intel processor in France (includes backlight cable and keyboard cable)
720244-061	Keyboard with backlight for use on computer models equipped with an Intel processor in Italy (includes backlight cable and keyboard cable)
720244-071	Keyboard with backlight for use on computer models equipped with an Intel processor in Spain (includes backlight cable and keyboard cable)
720244-131	Keyboard with backlight for use on computer models equipped with an Intel processor in Portugal (includes backlight cable and keyboard cable)
720244-141	Keyboard with backlight for use on computer models equipped with an Intel processor in Turkey (includes backlight cable and keyboard cable)
720244-151	Keyboard with backlight for use on computer models equipped with an Intel processor in Greece (includes backlight cable and keyboard cable)
720244-161	Keyboard with backlight for use on computer models in Latin America (includes backlight cable and keyboard cable)
720244-171	Keyboard with backlight for use on computer models equipped with an Intel processor in Saudi Arabia (includes backlight cable and keyboard cable)
720244-251	Keyboard with backlight for use on computer models equipped with an Intel processor in Russia (includes backlight cable and keyboard cable)
720244-281	Keyboard with backlight for use on computer models equipped with an Intel processor in Thailand (includes backlight cable and keyboard cable)
720244-291	Keyboard with backlight for use on computer models in Japan (includes backlight cable and keyboard cable)
720244-A41	Keyboard with backlight for use on computer models equipped with an Intel processor in Belgium (includes backlight cable and keyboard cable)
720244-AB1	Keyboard with backlight for use on computer models equipped with an Intel processor in Taiwan (includes backlight cable and keyboard cable)
720244-AD1	Keyboard with backlight for use in South Korea (includes backlight cable and keyboard cable)
720244-B31	Keyboard with backlight for use on computer models equipped with an Intel processor for use internationally (includes backlight cable and keyboard cable)
720244-BG1	Keyboard with backlight for use on computer models equipped with an Intel processor in Switzerland (includes backlight cable and keyboard cable)
720244-DB1	Keyboard with backlight for use in Canada (includes backlight cable and keyboard cable)
720244-DH1	Keyboard with backlight for use on computer models equipped with an Intel processor in Denmark, Finland, and Norway (includes backlight cable and keyboard cable)

Spare part number	Description
720244-FL1	Keyboard with backlight for use on computer models equipped with an Intel processor in the Czech Republic and Slovakia (includes backlight cable and keyboard cable)
720273-001	Webcam/microphone module (includes webcam/microphone module cable and double-sided adhesive)
720532-001	Antenna Kit (includes left and right wireless antenna cables and transceivers)
720533-001	Display enclosure
720534-001	Base enclosure (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover)
720535-001	Display bezel
720536-001	Display panel cable (includes webcam/microphone module cable)
720537-001	Power connector cable
720538-001	Power connector cable for use on computer models equipped with an Intel processor and a graphics subsystem with discrete memory
720539-001	Heat sink for use on computer models equipped with an AMD processor and a graphics subsystem with UMA memory, includes replacement material
720541-001	Heat sink for use on computer models equipped with the Intel HM87 chipset and a graphics subsystem with UMA memory (includes replacement material)
720542-001	Heat sink for use on computer models equipped with the Intel HM87 chipset and a GeForce 750M graphics subsystem (includes replacement material)
720543-001	Fingerprint reader board (includes bracket and cable)
720544-001	Keyboard shield
720545-001	Hard Drive Hardware Kit (includes hard drive bracket and hard drive connector cable)
720547-001	Counterbalance weight
720548-001	Display hinge kit (includes left and right hinges, left and right hinge covers, and left and right hinge brackets)
720549-001	15.6 inch (39.80 cm), BrightView, HD, LED, TouchSmart touchscreen display assembly (includes webcamera/microphone module and wireless antenna cables)
720550-001	15.6 inch (39.80 cm), BrightView, FHD, LED, TouchSmart touchscreen display assembly (includes webcamera/microphone module and wireless antenna cables)
720551-001	15.6 inch (39.80 cm), BrightView, HD, LED, non-touchscreen display assembly (includes webcamera/microphone module and wireless antenna cables)
720552-001	15.6 inch (39.80 cm), BrightView, FHD, LED, non-touchscreen display assembly (includes webcamera/microphone module and wireless antenna cables)
720553-001	Power button board (includes cable)
720554-001	Connector board for use on computer models equipped with an Intel processor and a graphics subsystem with UMA memory (includes 2 cables)
720555-001	Service door
720556-001	15.6 inch (39.80 cm), BrightView, HD, LED, non-touchscreen display panel
720557-001	15.6 inch (39.80 cm), BrightView, FHD, LED, non-touchscreen display panel
720559-001	Rubber Kit (includes front and rear rubber feet and display bezel rubber screw covers)
720560-001	Screw Kit

Spare part number	Description
720561-001	Rear speakers (includes cables and 4 rubber isolators)
720562-001	Front speakers (includes cables and 4 rubber isolators)
720563-001	Subwoofer (includes cable and 3 rubber isolators)
720564-001	24 GB mSATA SSD (for use on computer models equipped with an Intel processor, not available on computer models equipped with 16834 MB or 12288 MB system memory or with a 256 GB or 512 GB SSD)
720565-001	System board for use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Linux operating system (includes replacement material)
720565-501	System board for use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Windows Standard operating system (includes replacement material)
720565-601	System board for use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Windows Professional operating system (includes replacement material)
720566-001	System board for use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Linux operating system (includes replacement material)
720566-501	System board for use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Standard operating system (includes replacement material)
720566-601	System board for use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Professional operating system (includes replacement material)
720569-501	System board for use on computer models equipped with the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Standard operating system (includes replacement material)
720570-001	Top cover
720576-001	Heat sink for use on computer models equipped with an AMD processor and discrete memory (includes replacement material)
720577-501	System board for use on computer models equipped with an AMD processor, a graphics subsystem with UMA memory, and the Windows Standard operating system (includes replacement thermal material)
720577-601	System board for use on computer models equipped with an AMD processor, a graphics subsystem with UMA memory, and the Windows Professional operating system (includes replacement thermal material)
720578-501	System board for use on computer models equipped with an AMD processor, a graphics subsystem with discrete memory, and the Windows Standard operating system (includes replacement thermal material)
720578-601	System board for use on computer models equipped with an AMD processor, a graphics subsystem with discrete memory, and the Windows Professional operating system (includes replacement thermal material)
720579-001	Connector board for use on computer models equipped with an AMD processor (includes 2 cables)
722389-001	Heat sink for use on computer models equipped with the Intel HM87 chipset and a GeForce 740M graphics subsystem (includes replacement material)
722972-001	TouchPad assembly (includes TouchPad bracket, TouchPad button board, TouchPad, and cables)

Spare part number	Description
723372-001	Connector board for use on computer models equipped with an Intel processor and a graphics subsystem with discrete memory (includes 2 cables)
723521-001	Intel Quad Core i7-4700MQ 2.40 GHz processor (SC turbo up to 3.40 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W; includes replacement thermal material)
723522-001	Intel Quad Core i7-4702MQ 2.20 GHz processor (SC turbo up to 3.20 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 37 W; includes replacement thermal material)
723523-001	Intel Quad Core i7-4900MQ 2.80 GHz processor (SC turbo up to 3.80 GHz; 1600 MHz FSB, 8.0 MB L3 cache, 47 W; includes replacement thermal material)
723524-001	Intel Quad Core i7-4800MQ 2.70 GHz processor (SC turbo up to 3.70 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W; includes replacement thermal material)
724935-001	Broadcom BCM 4352 802.11 ac 2x2 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models equipped with an Intel processor, select models only)
731999-001	Hard drive, 1 TB 5400 rpm, +8 GB NAND hybrid, 9.5 mm
732000-001	Hard drive, 500 GB 5400 rpm, +8 GB NAND hybrid, 7 mm
732001-001	Hard drive, 750 GB rpm, +8 GB NAND hybrid, 9.5 mm
733476-001	Qualcomm QCA9565 802.11bgn 1x1 WiFi + Bluetooth 4.0 Combo Adapter (select models only)
734817-001	Backlight keyboard bracket
737327-001	Intel Dual Core i3-4000M 2.40 GHz processor 1600 MHz, 3.0 MB L3 cache, 37 W; includes replacement thermal material)
737328-001	Intel Dual Core i5-4200M 2.50 GHz processor (SC turbo up to 3.10 GHz; 1600 MHz FSB, 3.0 MB L3 cache, 37 W; includes replacement thermal material)
738201-001	Intel Dual Core i5-4330M 2.80 GHz processor (SC turbo up to 3.50 GHz; 1600 MHz FSB, 3.0 MB L3 cache, 37 W; includes replacement thermal material)
741653-001	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Linux operating system (includes replacement material)
741653-501	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Standard operating system (includes replacement material)
741653-601	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Professional operating system (includes replacement material)
746447-001	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Linux operating system (includes replacement material)
746447-501	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Standard operating system (includes replacement material)
746447-601	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Professional operating system (includes replacement material)
746449-001	System board for use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Linux operating system (includes replacement material)
746449-501	System board for use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Windows Standard operating system (includes replacement material)

Spare part number	Description
746449-601	System board for use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Windows Professional operating system (includes replacement material)
747375-001	Hard drive, 1.5 TB 5400 RPM SATA RAW 9.5 mm (select models only)
749752-001	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Linux operating system (includes replacement material)
749752-501	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Windows Standard operating system (includes replacement material)
749752-601	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Windows Professional operating system (includes replacement material)
749753-001	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Linux operating system (includes replacement material)
749753-501	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Windows Standard operating system (includes replacement material)
749753-601	System board for use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Windows Professional operating system (includes replacement material)
749761-001	256 GB SSD (for use on computer models equipped with an Intel processor)
749762-001	512 GB SSD (for use on computer models equipped with an Intel processor)

4 Removal and replacement procedures preliminary requirements

Tools required

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

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 and P1 screw drivers

Service considerations

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

 **NOTE:** As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

 **CAUTION:** Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

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

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

Drive handling

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

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

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.

Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."

Grounding guidelines

Electrostatic discharge damage

Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions.

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

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

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

Keep components in their electrostatic-safe containers until you are ready to install them.

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

If you remove a component, place it in an electrostatic-safe container.

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screw drivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

Equipment guidelines

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

5 Removal and replacement procedures for Customer Self-Repair parts

 **NOTE:** The Customer Self-Repair program is not available in all locations. Installing a part not supported by the Customer Self-Repair program may void your warranty. Check your warranty to determine if Customer Self-Repair is supported in your location.

Component replacement procedures

 **NOTE:** Please read and follow the procedures described here to access and replace Customer Self-Repair parts successfully.

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the label the bottom of your computer. See [Labels on page 17](#) for details.

This chapter provides removal and replacement procedures for Customer Self-Repair parts.

There are as many as 4 screws that must be removed, replaced, and/or loosened when servicing Customer Self-Repair parts. Make special note of each screw size and location during removal and replacement.

Battery

Description	Spare part number
6 cell, 62 Wh, 2.80 Ah, Li-ion battery	710417-001
6 cell, 47 Wh, 2.20 Ah, Li-ion battery	710416-001

Before removing the battery, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Remove the battery:

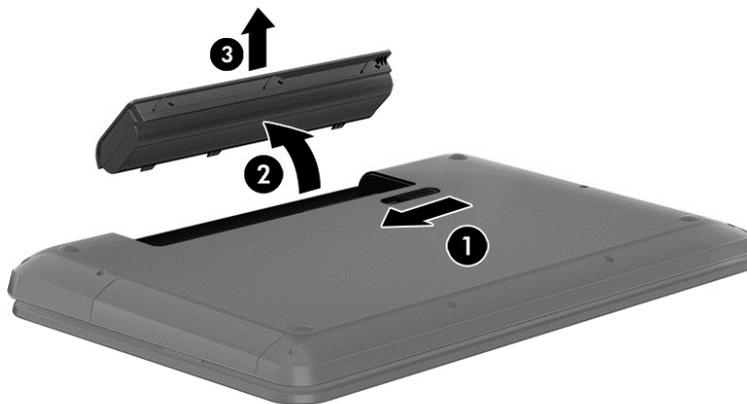
WARNING! To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

CAUTION: Removing a user-replaceable battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before removing the battery.

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch (1) to release the battery.

NOTE: The battery release latch automatically returns to its original position.

3. Pivot the battery (2) upward.
4. Remove the battery (3) from the computer.



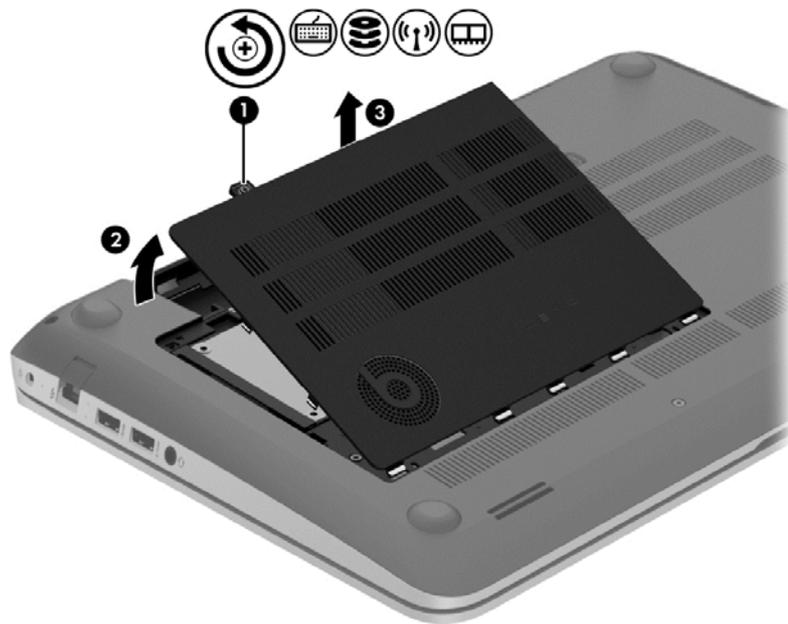
Reverse this procedure to install the battery.

Service door

Description	Spare part number
Service door	720555-001

Before removing the service door, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
1. Using a small Phillips screwdriver, loosen the Phillips PM2.0×4.0 captive screw (1) that secures the service door to the computer.
2. Lift the rear edge of the service door (2) and swing it up and forward until it disengages from the computer.
3. Remove the service door (3).



mSATA SSD

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

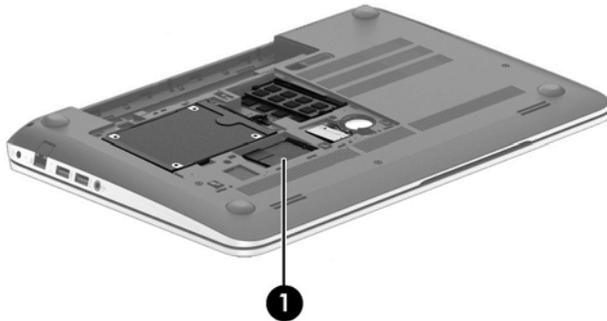
Description	Spare part number
24 GB	720564-001

Before removing the mSATA SSD, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
5. Remove the service door (see [Service door on page 42](#)).

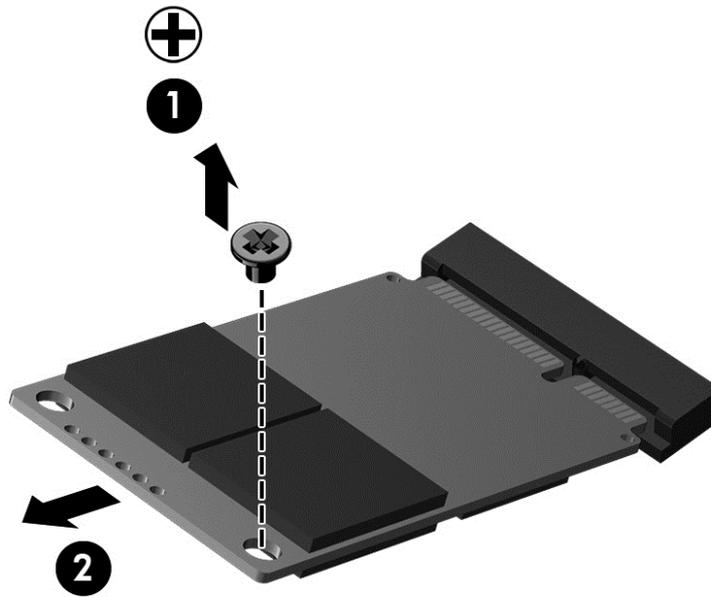
Remove the mSATA SSD:

1. Identify the mSATA SSD **(1)**.



2. Remove the Phillips PM2.0×2.5 screw **(1)** that secures the mSATA SSD to the system board. (The drive tilts up.)

3. Remove the mSATA SSD (2) by pulling the drive away from the slot at an angle.



Reverse this procedure to install the mSATA SSD.

WLAN module

Description	Spare part number
Broadcom BCM 4352 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models with an Intel processor, select models only)	724935-001
Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models with an Intel processor, select models only)	710662-001
Intel Dual Band Wireless 7260 802.11 bgn 2×2 WiFi + Bluetooth 4.0 Combo Adapter (for use on computer models with an Intel processor)	717384-001
Qualcomm Atheros AR9485 802.11bgn 1×1 WiFi Adapter (select models only)	675794-001
Qualcomm QCA9565 802.11bgn 1×1 WiFi + Bluetooth 4.0 Combo Adapter (select models only)	733476-001
Ralink RT3290LE 802.11bgn 1×1 WiFi + Bluetooth 4.0 Combo Adapter (select models only)	690020-001
Realtek RTL8188EE 802.11bgn 1×1 WiFi Adapter (select models only)	709848-001

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.

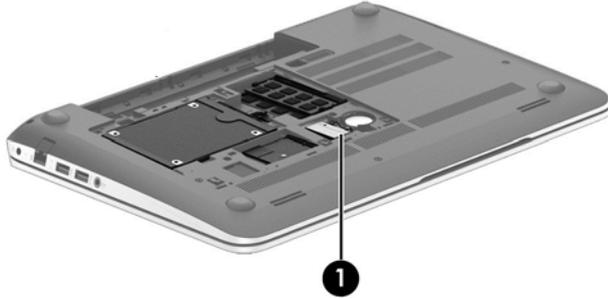
Before removing the WLAN module, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
5. Remove the service door (see [Service door on page 42](#)).

Remove the WLAN module:

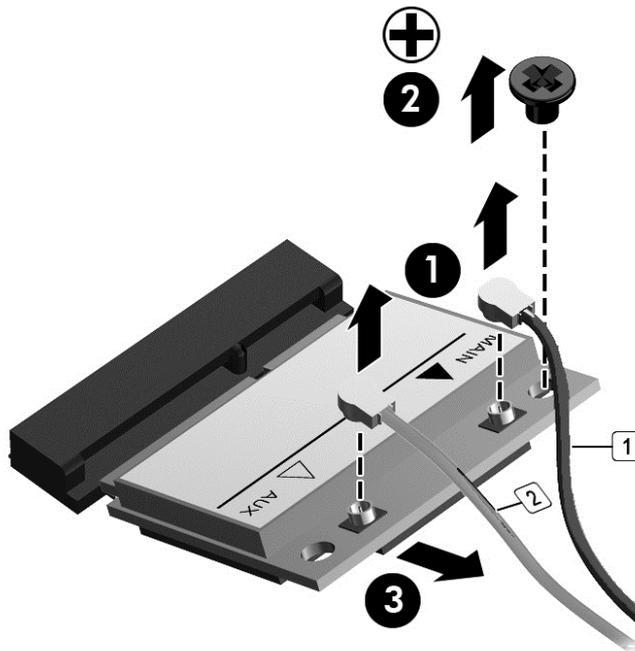
1. Identify the WLAN module (1).



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

 **NOTE:** The WLAN antenna cable labeled “1” connects to the WLAN module “Main” terminal labeled “1”. The WLAN antenna cable labeled “2” connects to the WLAN module “Aux” terminal labeled “2”.

3. Remove the Phillips PM2.0×2.5 screw (2) that secures the WLAN module to the system board. (The WLAN module tilts up.)
4. Remove the WLAN module (3) by pulling the module away from the slot at an angle.



 **NOTE:** If the WLAN antenna cables 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.

Hard drive

Description	Spare part number
1.5 TB, 5400 rpm, 9.5 mm (select models only)	747375-001
1 TB, 5400 rpm, 9.5 mm	676521-001
750 GB, 5400 rpm, 9.5 mm	634250-001
640 GB, 5400 rpm, 9.5 mm (for use on computer models with an AMD processor)	669300-001
500 GB 5400 rpm 9.5 mm	683802-001
1 TB, 5400 rpm, +8 GB NAND hybrid, 9.5 mm	731999-001
750 GB, 5400 rpm, +8 GB NAND hybrid, 9.5 mm	732001-001
500 GB, 5400 rpm, + 8 GB NAND hybrid, 7 mm	732000-001
256 GB SSD (for use on computer models with an Intel processor)	749761-001
512 GB SSD (for use on computer models with an Intel processor)	749762-001

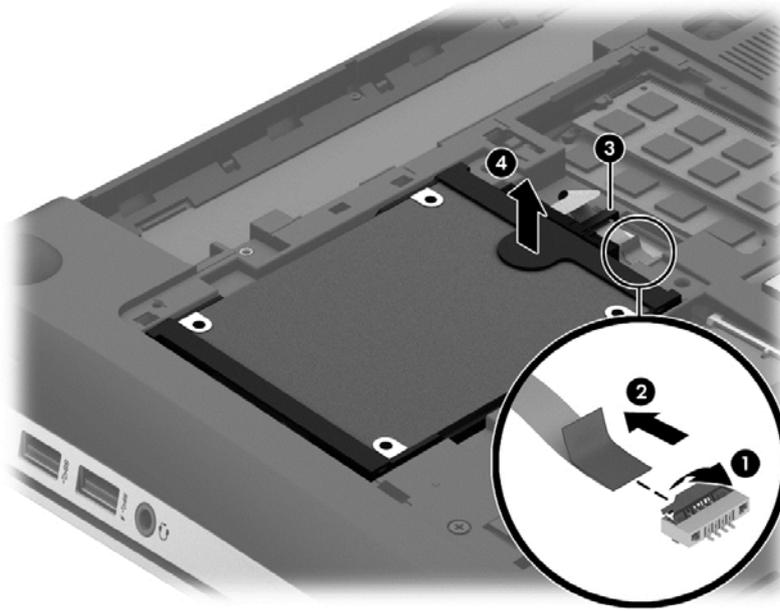
Before removing the hard drive, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
5. Remove the service door (see [Service door on page 42](#)).

Remove the hard drive:

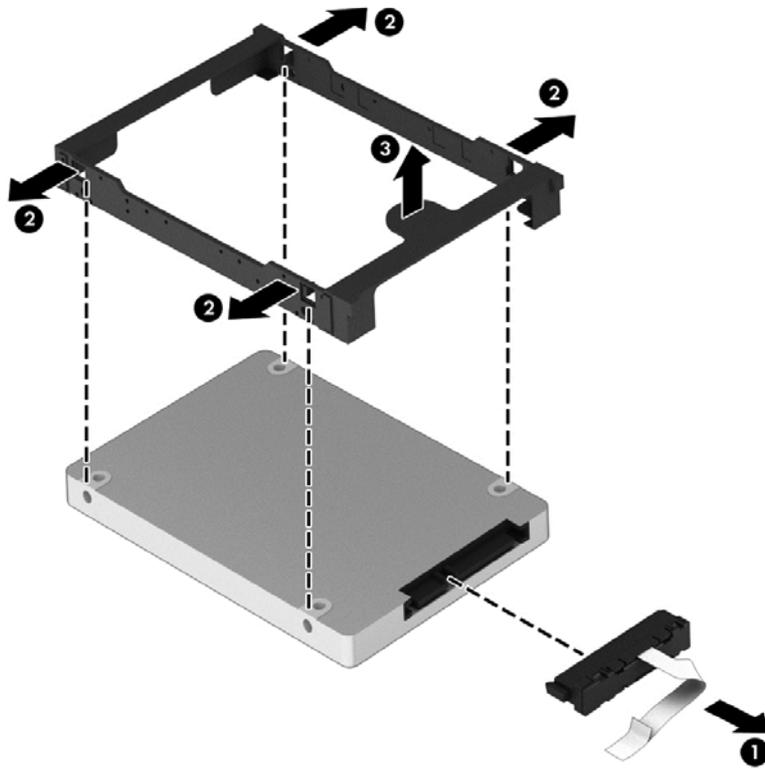
1. Release the zero insertion force (ZIF) connector **(1)** to which the hard drive connector cable is attached, and then disconnect the hard drive connector cable **(2)** from the system board.
2. Release the hard drive connector cable **(3)** from the opening in the base enclosure.

3. Lift up on the hard drive tab **(4)** to remove the hard drive from the hard drive bay.



4. If it is necessary to disassemble the hard drive, perform the following steps:
 - a. Position the hard drive with the connector toward you.
 - b. Disconnect the hard drive connector cable **(1)** from the hard drive.
 - c. Spread the left and right sides **(2)** of the hard drive bracket outward to separate the bracket from the hard drive.
 - d. Remove the hard drive bracket **(3)** from the hard drive.

The hard drive bracket and hard drive connector cable are available in the Hard Drive Hardware Kit, spare part number 718432-001.



Reverse this procedure to install the hard drive.

Memory module

Description	Spare part number
8 GB (PC3L, 12800, 1600 MHz)	693374-001
4 GB (PC3L, 12800, 1600 MHz)	691740-001
2 GB (PC3L, 12800, 1600 MHz)	691739-001

Update BIOS before adding memory modules

Before adding new memory, make sure you update the computer to the latest BIOS.

CAUTION: Failure to update the computer to the latest BIOS prior to installing new memory may result in various system problems.

To update BIOS:

1. Navigate to www.hp.com.
2. Click **Support & Drivers** > click **Drivers & Software**.
3. In the **Enter a product name/number box**, type the computer model information, and then click **Search**.
4. Click the link for the computer model.
5. Select the operating system, and then click **Next**.

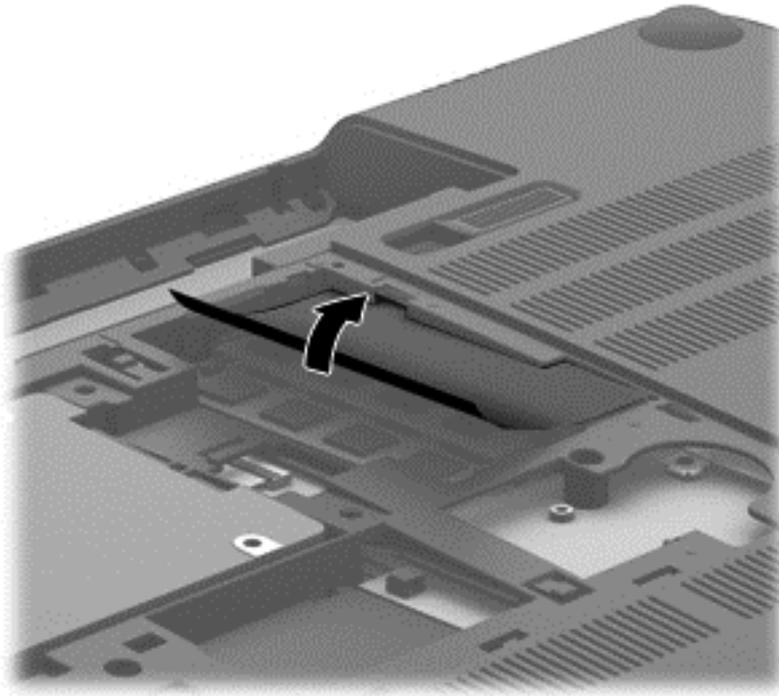
6. Under **Step 2: Select a Download**, click the **BIOS** link.
7. Click the link for the most recent BIOS.
8. Click the **Download** button, and then follow the on-screen instructions.

Before removing a memory module, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
5. Remove the service door (see [Service door on page 42](#)).

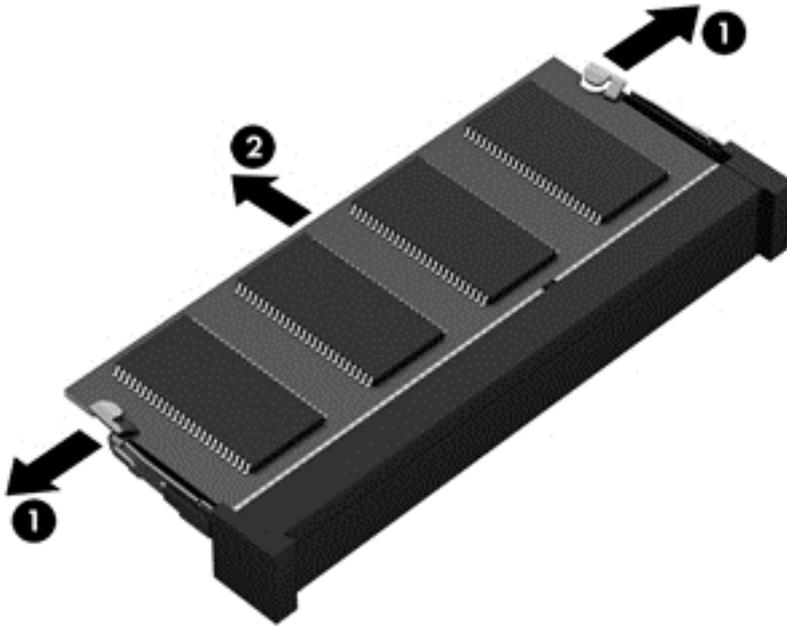
Remove the memory module:

1. Lift the left edge of the memory module shield and swing it up and to the right until the memory modules are accessible.



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

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



Reverse this procedure to install a memory module.

6 Removal and replacement procedures for Authorized Service Provider parts

 **CAUTION:** Components described in this chapter should only be accessed by an authorized service provider. Accessing these parts can damage the computer or void the warranty.

Component replacement procedures

This chapter provides removal and replacement procedures for Authorized Service Provider only parts.

There are as many as 94 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

RTC battery

Description	Spare part number
For use only on computer models equipped with an AMD processor	651948-001
For use only on computer models equipped with an Intel processor	718440-001

Before removing the RTC battery, follow these steps:

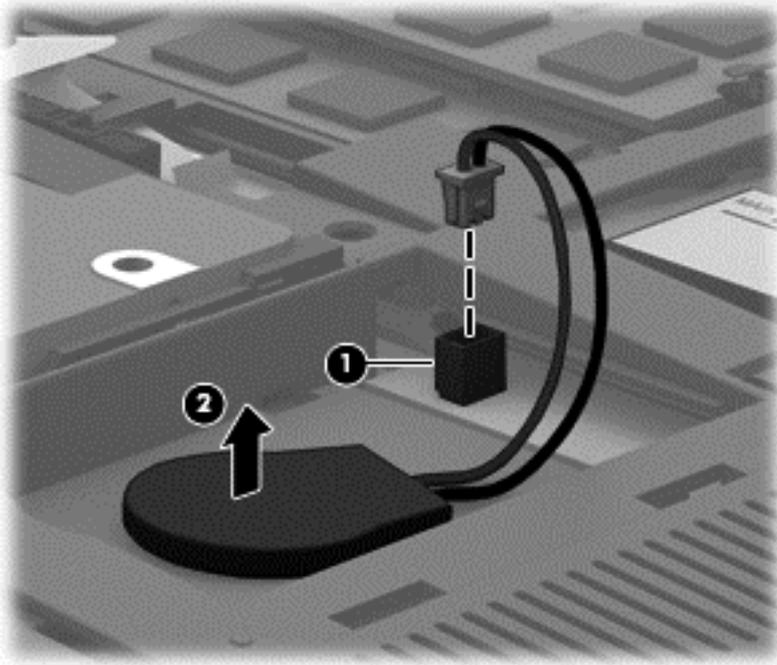
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
5. Remove the service door (see [Service door on page 42](#)).

Remove the RTC battery:

 **NOTE:** If the computer is equipped with an AMD processor, complete steps 1 through 3 to remove the RTC battery. If the computer is equipped with an Intel processor, complete step 4 to remove the RTC battery.

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

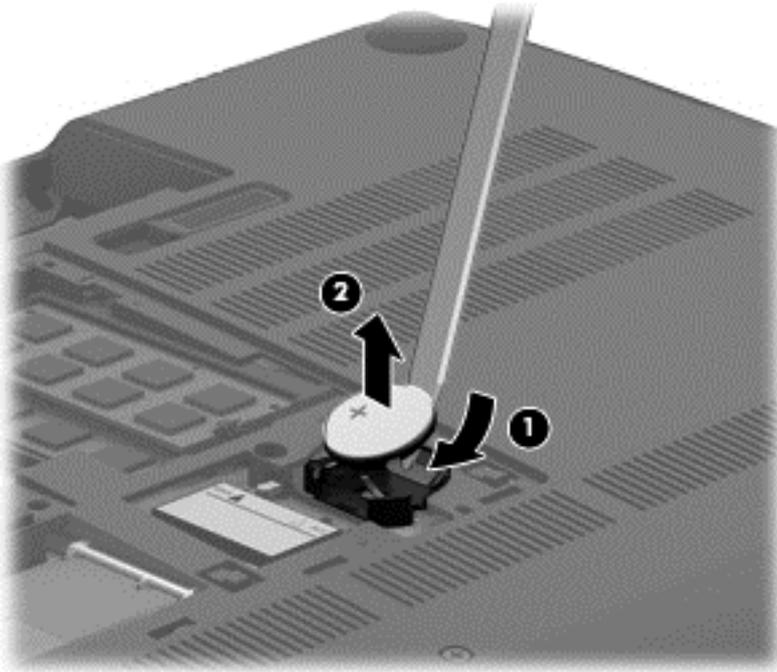
2. Detach the RTC battery (2) from the base enclosure. (The RTC battery is attached to the base enclosure by double-sided tape.)



3. Remove the RTC battery.

 **NOTE:** Step 4 applies only to computer models equipped with an Intel processor.

4. Use a thin, non-conductive tool (1) to remove the disc cell RTC battery (2) from the socket on the system board.



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

Base enclosure

Description	Spare part number
Base enclosure (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover)	720534-001

Before removing the base enclosure, follow these steps:

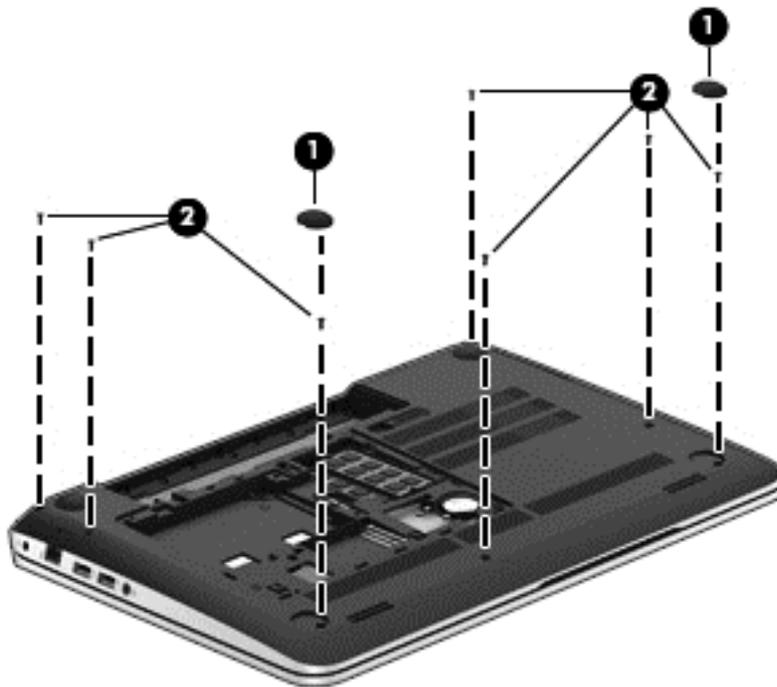
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)).
5. Remove the service door (see [Service door on page 42](#)).
6. Remove the mSATA SSD (see [mSATA SSD on page 43](#)).
7. Remove the hard drive (see [Hard drive on page 46](#)).

Remove the base enclosure:

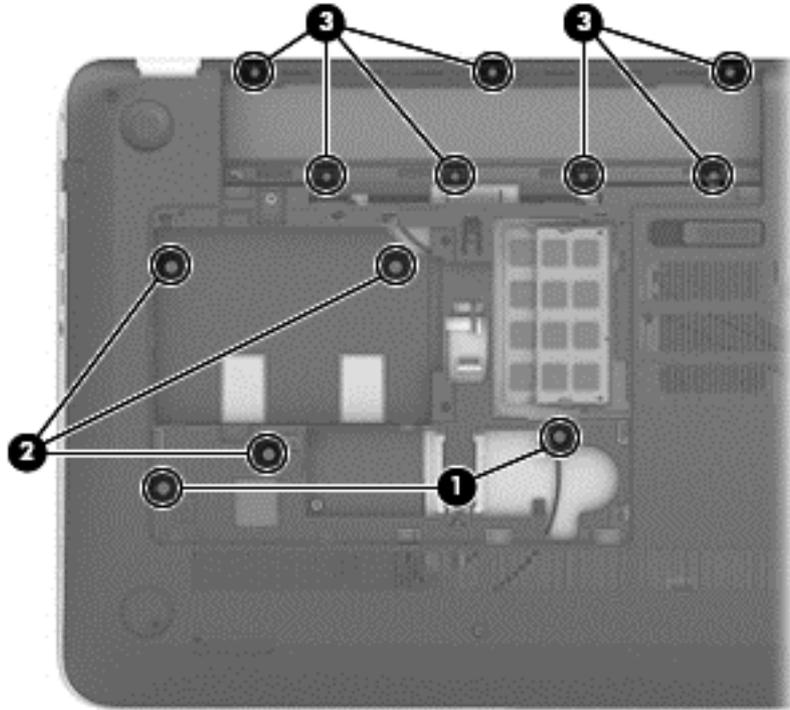
1. Remove the front rubber feet (1).

The rubber feet are included in the Rubber Kit, spare part number 720559-001.

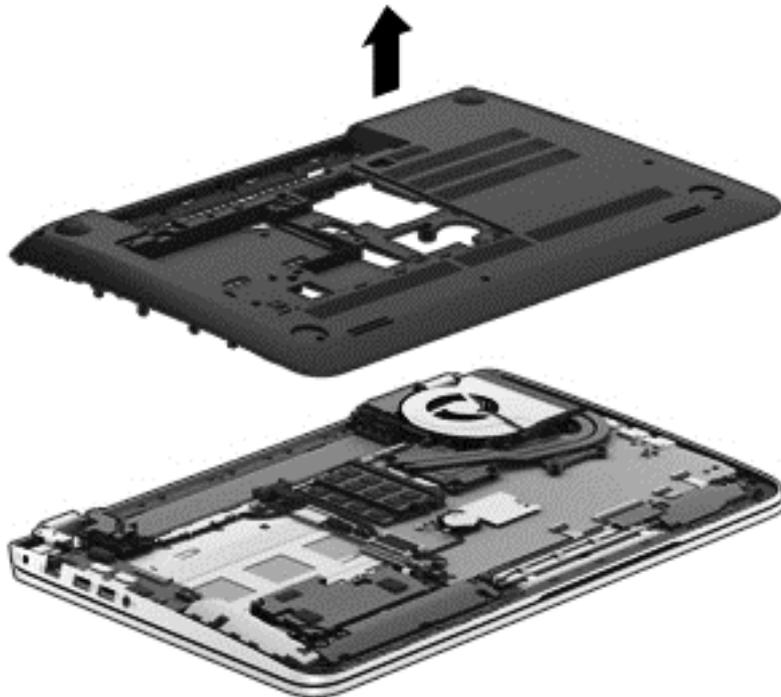
2. Remove the seven Phillips PM2.5×5.5 screws (2) in the that secure the base enclosure to the computer.



3. Remove the following screws:
 - (1) Two Phillips PM2.5×4.5 screws under the front edge of the service door
 - (2) Three Phillips PM2.5×3.0 screws in the hard drive bay
 - (3) Seven Phillips PM1.5×2.0 screws in the battery bay



4. Remove the base enclosure.



Reverse this procedure to install the base enclosure.

Display assembly

 **NOTE:** The TouchSmart touchscreen display assembly is spared only at the component level. The non-touchscreen display assembly is spared at both the component and the subcomponent level. For more display assembly spare part information, see the individual removal subsections.

Description	Spare part number
15.6 inch (39.80 cm), BrightView, FHD, LED, TouchSmart touchscreen display assembly	720550-001
15.6 inch (39.80 cm), BrightView, HD, LED, TouchSmart touchscreen display assembly	720549-001
15.6 inch (39.80 cm), BrightView, FHD, LED, non-touchscreen display assembly	720552-001
15.6 inch (39.80 cm), BrightView, HD, LED, non-touchscreen display assembly	720551-001

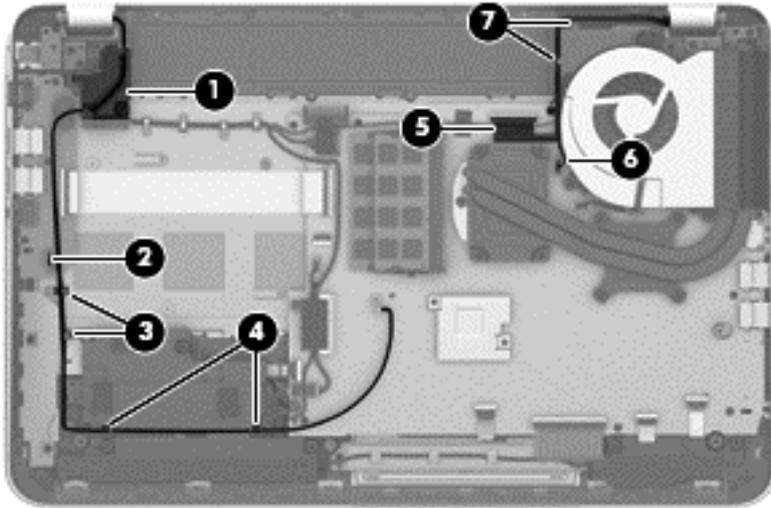
To remove the display assembly and access the display assembly subcomponents, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))

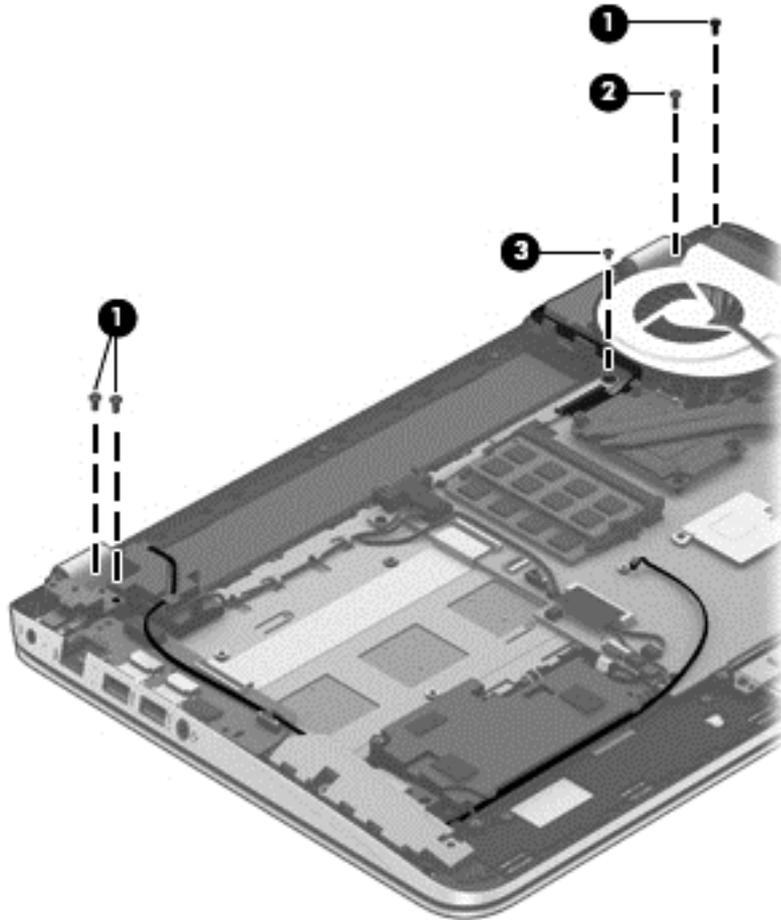
Remove the display assembly:

1. Release the wireless antenna cables from the clips built into the left rear speaker **(1)**, connector board **(2)**, and top cover **(3)**.
2. Release the wireless antenna cables from the routing channel **(4)** between the subwoofer and left front speaker.
3. Disconnect the display panel cable **(5)** and the webcam/microphone module cable **(6)** from the system board.

4. Release the display panel cable and the webcam/microphone module cable from the clips and routing channel built into the right rear speaker (7).

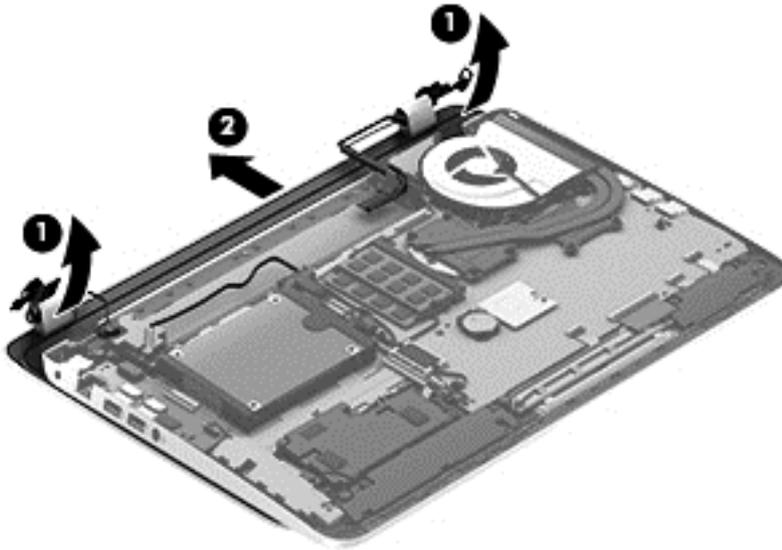


5. Remove the following screws that secure the display assembly to the top cover:
- (1) Three Phillips PM2.5×4.5 screws (two on the left hinge, one on the right hinge)
 - (2) One Phillips PM2.5×6.5 screw on the right hinge
 - (3) One Phillips PM2.0×2.5 screw securing the ground loop on the right hinge



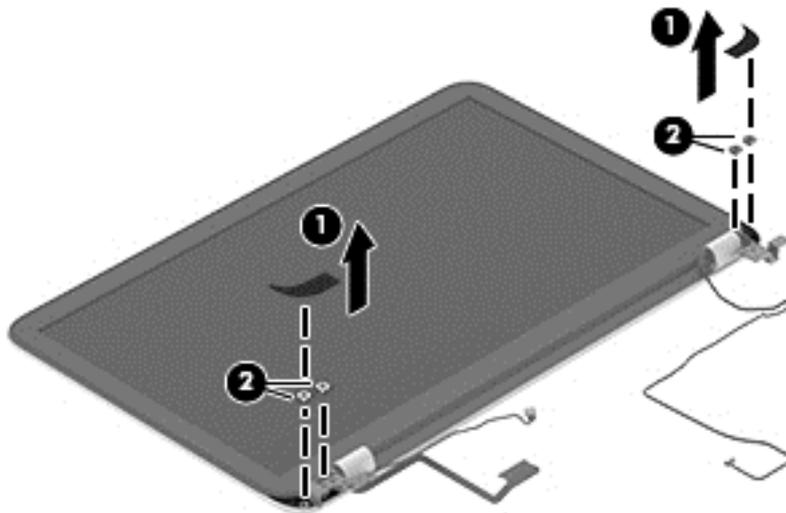
6. Open the display hinges as far as they will open (1).

7. Remove the display assembly (2) from the computer.



8. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
 - a. Remove the two screw covers (1) and the four Phillips PM2.5×3.2 broad head screws (2) that secure the display bezel to the display assembly.

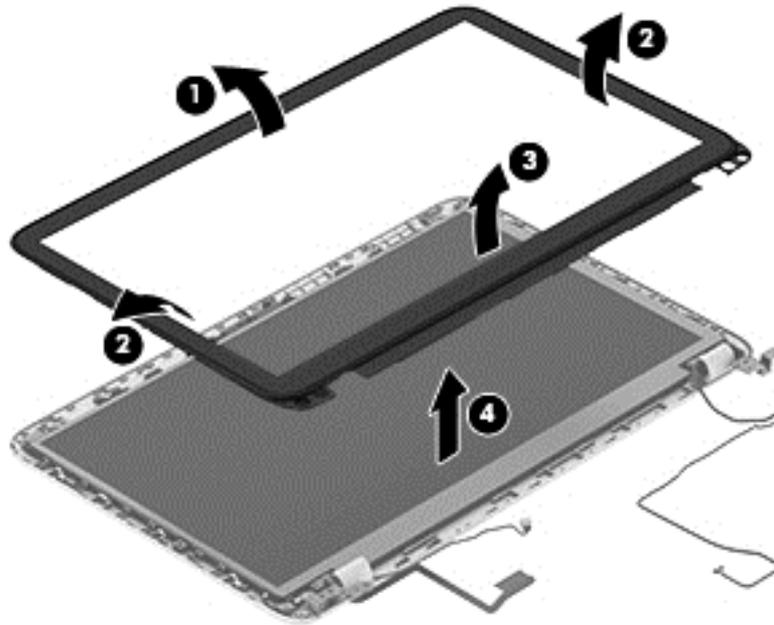
The screw covers are available in the Rubber Kit, spare part number 720559-001.



- b. 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.

- c. Remove the display bezel (4).

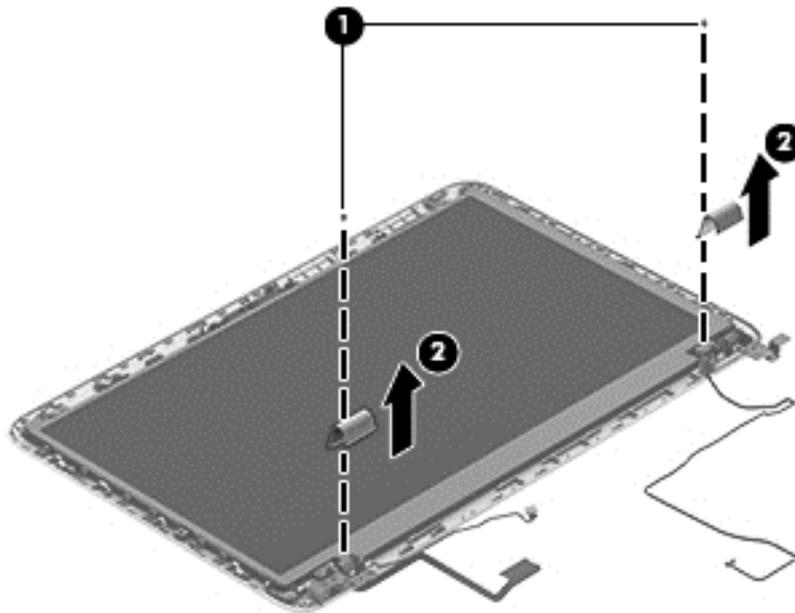
The display bezel is available using spare part number 720535-001.



- 9. If it is necessary to replace the display hinge cover:

- a. Remove the four Phillips PM2.0×2.9 screws (1) that secure the display hinge covers to the display enclosure.
- b. Remove the display hinge covers (2).

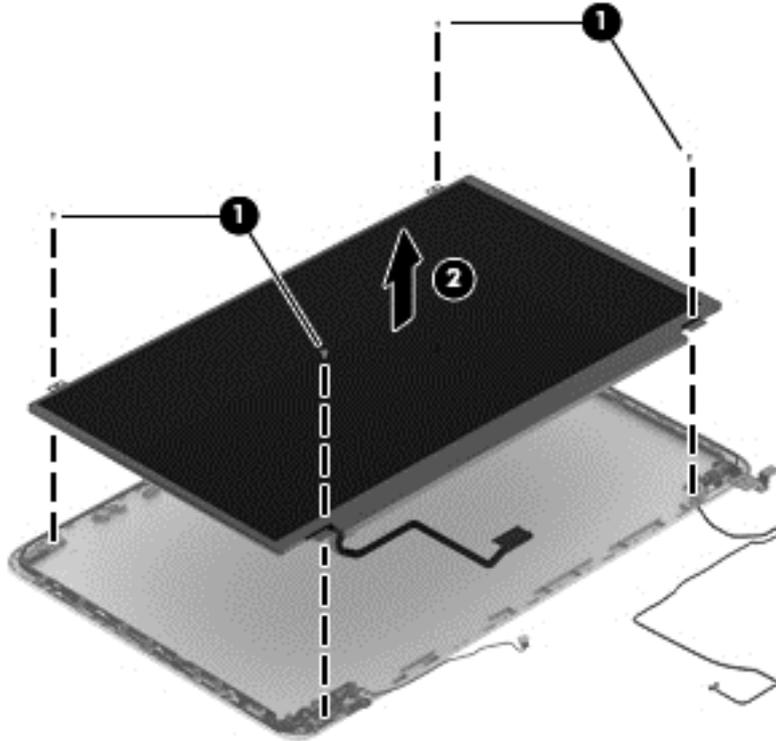
The display hinge covers are available using spare part number 720548-001.



10. If it is necessary to replace the display panel:

- a. Remove the four Phillips PM2.0×2.9 screws (1) that secure the display panel to the display enclosure.
- b. Lift the display panel (2) straight up and remove it from the display enclosure.

The display panel is available using spare part numbers 720557-001 (15.6 inch (39.80 cm), BrightView, FHD, LED, non-touchscreen display panel) and 720556-001 (15.6 inch (39.80 cm), BrightView, HD, LED, non-touchscreen display panel).

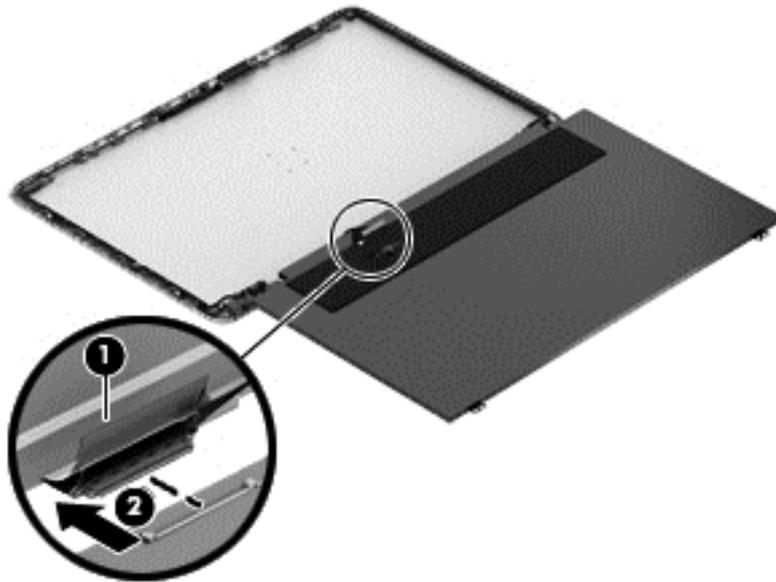


11. If it is necessary to replace the display panel cable:

CAUTION: Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

- a. Turn the display panel upside down with the bottom edge toward you.

- b. Release the adhesive strip (1) that secures the display panel cable to the display panel, and then disconnect the display panel cable (2) from the display panel.



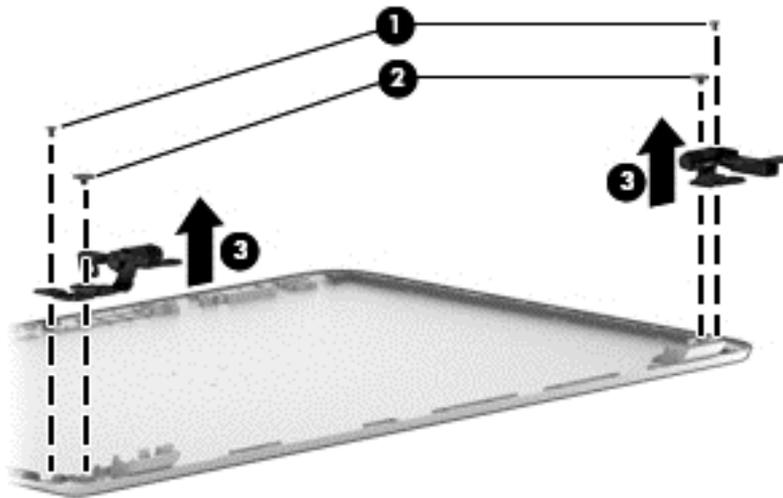
- c. Remove the display panel cable.

The display panel cable is available using spare part number 720536-001.

12. If it is necessary to replace the display hinges and brackets:

- a. Remove the two Phillips PM2.0×2.9 screws (1) and the two Phillips PM2.5×3.2 broad head screws (2) that secure the display hinges to the display enclosure.
- b. Remove the display hinges (3).

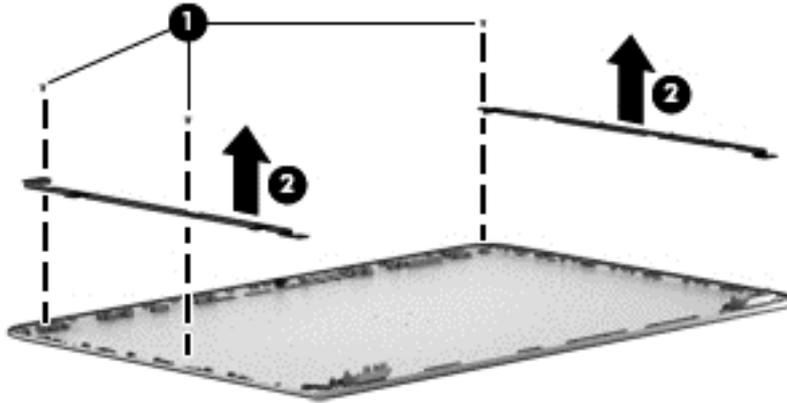
The display hinges are available using spare part number 720548-001.



- c. Remove the three Phillips PM2.0×2.9 screws (1) that secure the left and right display hinge brackets to the display enclosure.

- d. Remove the left and right display hinge brackets (2).

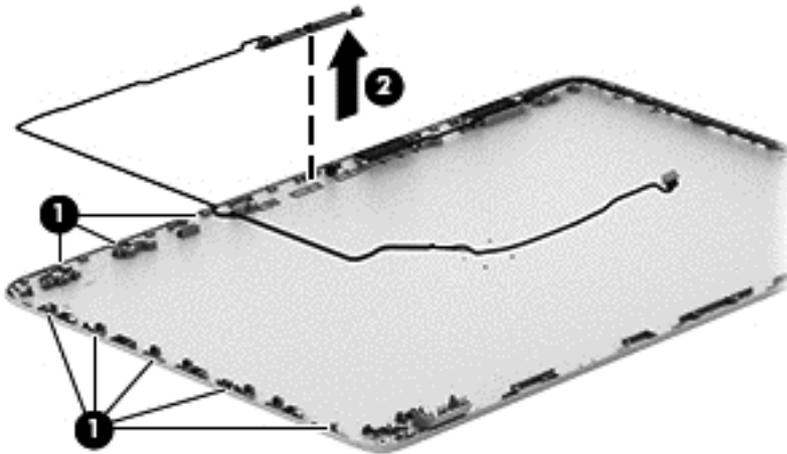
The display hinge brackets are available using spare part number 720548-001.



13. If it is necessary to replace the webcam/microphone module:

CAUTION: Handle the webcam/microphone module with caution. This module has a thin profile and is susceptible to damage when not handled carefully.

- Release the webcam/microphone module cable (1) from the clips and routing channel built into the left and top edges of the display enclosure.
- Detach the webcam/microphone module (2) from the display enclosure. (The webcam/microphone module is attached to the display enclosure with double-sided adhesive.)



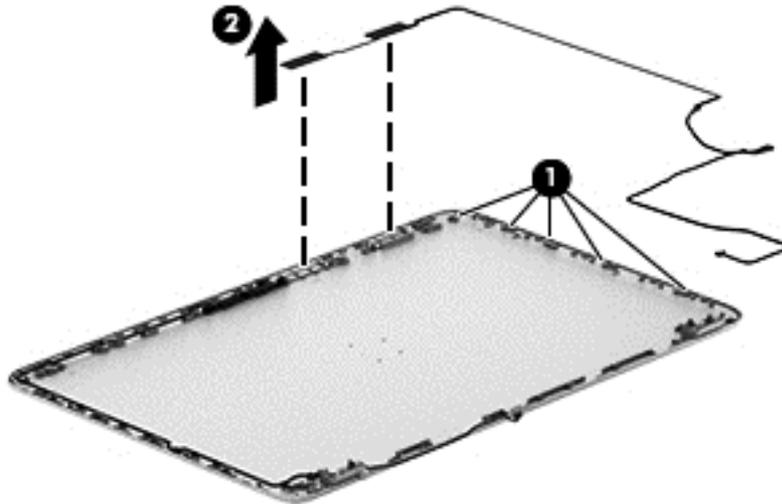
- c. Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number 720273-001, and includes the webcam/microphone module cable.

14. If it is necessary to replace the wireless antenna:

- Release the wireless antenna cables from the clips (1) and routing channel built into the right edge of the display enclosure.

- b. Detach the wireless antenna transceivers (2) from the display enclosure. (The wireless antenna transceivers are attached to the display enclosure with double-sided adhesive.)



- c. Remove the wireless antenna.

The wireless antenna are available using spare part number 720532-001.

Reverse this procedure to reassemble and install the display assembly.

Fan

Description	Spare part number
Fan (includes cable)	720235-001

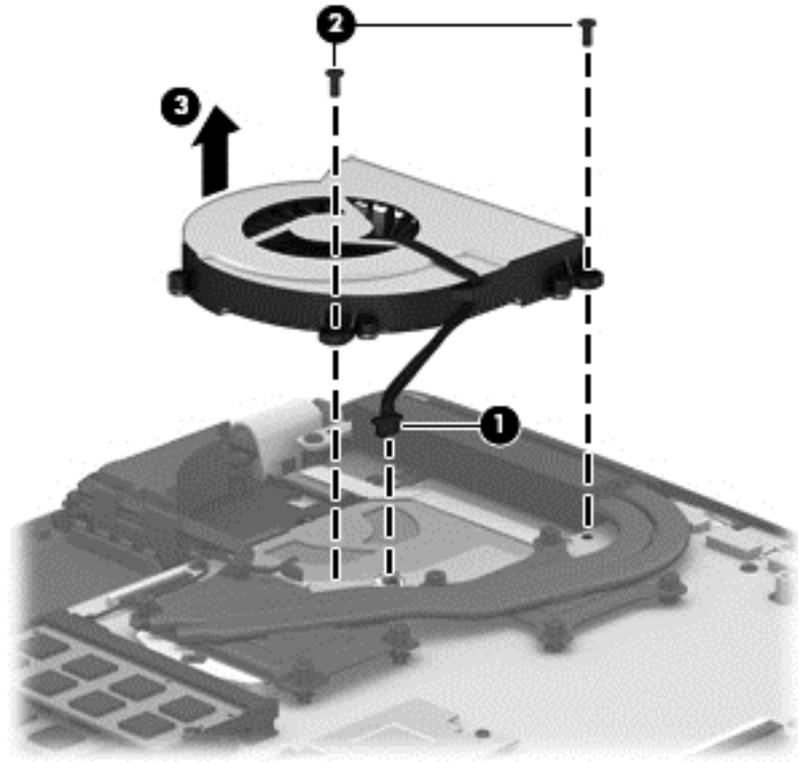
Before removing the fan, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. Display assembly (see [Display assembly on page 55](#))

Remove the fan:

1. Disconnect the fan cable (1) from the system board.
2. Remove the two Phillips PM2.5×4.5 screws (2) that secure the fan to the top cover.

3. Remove the fan (3).



Reverse this procedure to install the fan.

System board



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

Description	Spare part number
For use on computer models equipped with an AMD processor, a graphics subsystem with discrete memory, and the Windows Professional operating system	720578-601
For use on computer models equipped with an AMD processor, a graphics subsystem with discrete memory, and the Windows Standard operating system	720578-501
For use on computer models equipped with an AMD processor, a graphics subsystem with UMA memory, and the Windows Professional operating system	720577-601
For use on computer models equipped with an AMD processor, a graphics subsystem with UMA memory, and the Windows Standard operating system	720577-501
For use on computer models equipped with the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Standard operating system	720569-501
For use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Professional operating system	720566-601
For use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Standard operating system	720566-501
For use on computer models equipped with the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Linux operating system	720566-001

Description	Spare part number
For use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Windows Professional operating system	720565-601
For use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Windows Standard operating system	720565-501
For use on computer models equipped with the Intel HM87 chipset, a graphics subsystem with UMA memory, and the Linux operating system	720565-001
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Linux operating system (includes replacement material)	741653-001
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Standard operating system (includes replacement material)	741653-501
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 750M graphics subsystem, and the Windows Professional operating system (includes replacement material)	741653-601
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Linux operating system (includes replacement material)	746447-001
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Standard operating system (includes replacement material)	746447-501
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 740M graphics subsystem, and the Windows Professional operating system (includes replacement material)	746447-601
For use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Linux operating system (includes replacement material)	746449-001
For use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Windows Standard operating system (includes replacement material)	746449-501
For use on computer models equipped with UMA memory, the Intel HM87 chipset, and the Windows Professional operating system (includes replacement material)	746449-601
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Linux operating system (includes replacement material)	749752-001
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Windows Standard operating system (includes replacement material)	749752-501
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, and the Windows Professional operating system (includes replacement material)	749752-601
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Linux operating system (includes replacement material)	749753-001
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Windows Standard operating system (includes replacement material)	749753-501
For use on computer models equipped with discrete memory, the Intel HM87 chipset, the GeForce 840M graphics subsystem, 47 W, and the Windows Professional operating system (includes replacement material)	749753-601

Before removing the system board, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. Display assembly (see [Display assembly on page 55](#))
 - f. Fan (see [Fan on page 63](#))

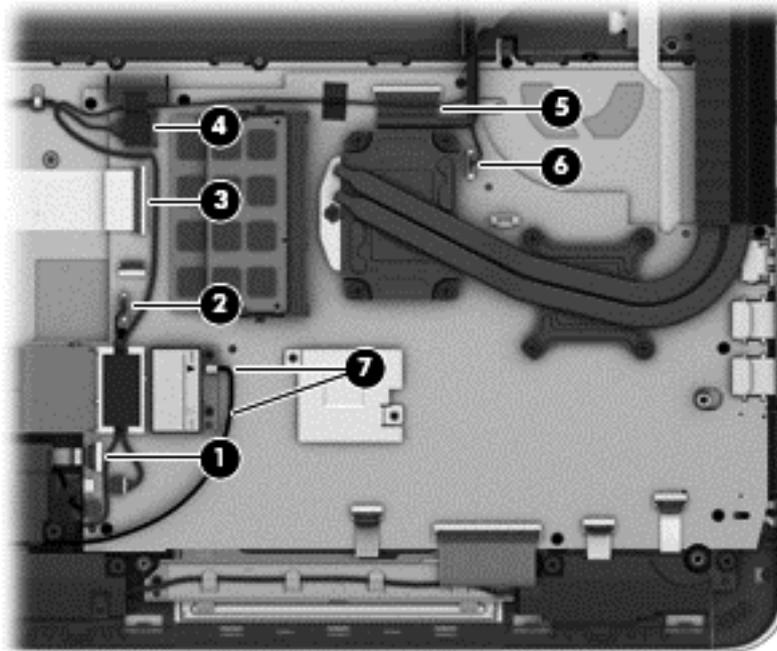


NOTE: When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

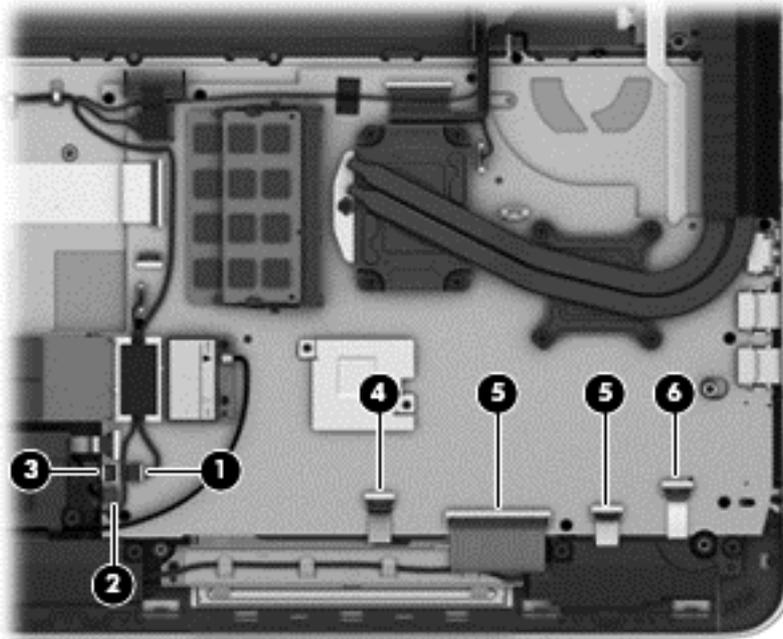
- Memory module (see [Memory module on page 48](#))
- Heat sink (see [Heat sink on page 70](#))
- Processor (see [Processor on page 75](#))

Remove the system board:

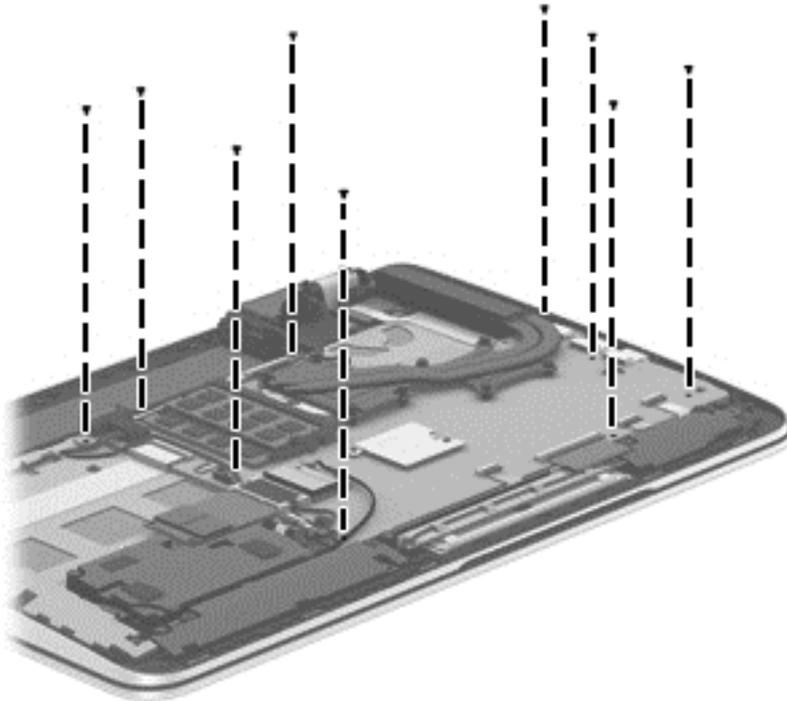
1. Disconnect the following cables from the system board:
 - (1) Fingerprint reader board ribbon cable
 - (2) Connector board cable
 - (3) Connector board ribbon cable
 - (4) Power connector cable
 - (5) Display panel ribbon cable
 - (6) Webcam/microphone module cable
 - (7) Wireless antenna cables



2. Disconnect the following cables from the system board:
 - (1) Rear speaker cable
 - (2) Subwoofer cable
 - (3) Front speaker cable
 - (4) TouchPad ribbon cable
 - (5) Keyboard ribbon cable
 - (6) Power button board ribbon cable



3. Remove the nine Phillips PM2.0×2.9 screws that secure the system board to the top cover.



4. Lift the left side of the system board (1) until it rests at an angle.
5. Remove the system board (2) by sliding it up and to the left an angle.



Reverse this procedure to install the system board.

Heat sink



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

Description	Spare part number
For use only on computer models equipped with an AMD processor and discrete memory	720576-001
For use only on computer models equipped with an AMD processor and a graphics subsystem with UMA memory	720539-001
For use only on computer models equipped with the Intel HM87 chipset and a GeForce 750M graphics subsystem	720542-001
For use only on computer models equipped with the Intel HM87 chipset and a GeForce 740M graphics subsystem	722389-001
For use only on computer models equipped with the Intel HM87 chipset and a graphics subsystem with UMA memory	720541-001

Before removing the heat sink, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. Display assembly (see [Display assembly on page 55](#))
 - f. Fan (see [Fan on page 63](#))
 - g. System board (see [System board on page 64](#))

Remove the heat sink:

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

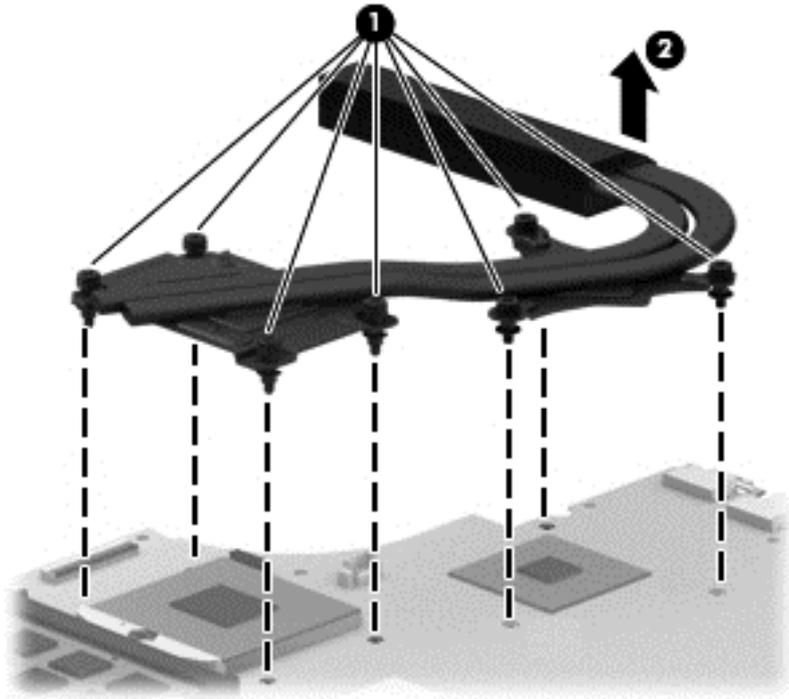


NOTE: Steps 2 and 3 apply to computer models equipped with an AMD processor and a graphics subsystem with discrete memory.

2. Following the 1 through 7 sequence stamped into the heat sink, loosen the four Phillips PM2.0×11.0 captive screws and the three Phillips PM2.0×7.5 captive screws (1) that secure the heat sink to the system board.

3. Remove the heat sink (2).

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

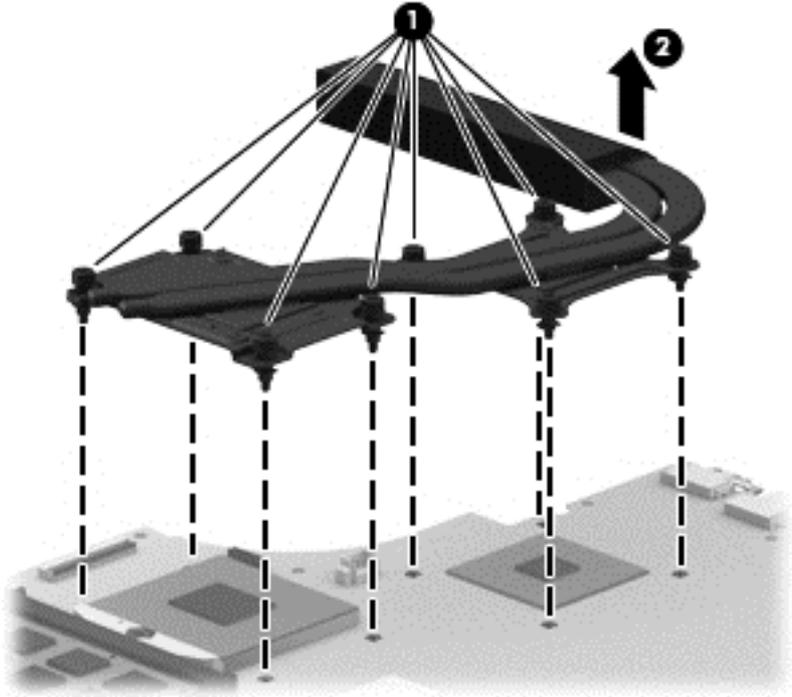


 **NOTE:** Steps 4 and 5 apply to computer models equipped with an Intel processor and a graphics subsystem with discrete memory.

4. Following the 1 through 8 sequence stamped into the heat sink, loosen the eight Phillips PM2.0×11.0 captive screws (1) that secure the heat sink to the system board.

5. Remove the heat sink (2).

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

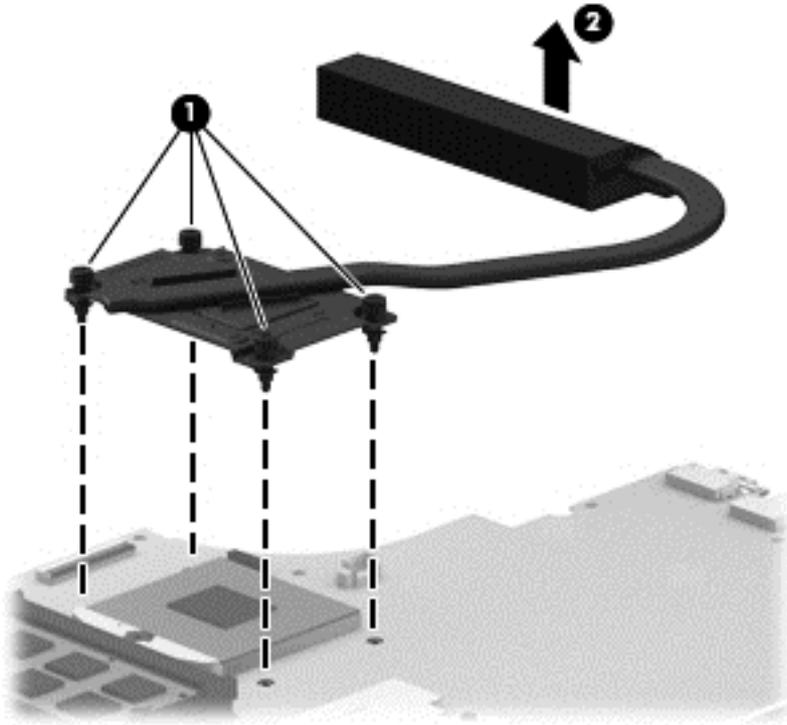


 **NOTE:** Steps 6 and 7 apply to computer models equipped with a graphics subsystem with UMA memory.

6. Following the 1 through 4 sequence stamped into the heat sink, loosen the four Phillips PM2.0×11.0 captive screws (1) that secure the heat sink to the system board.

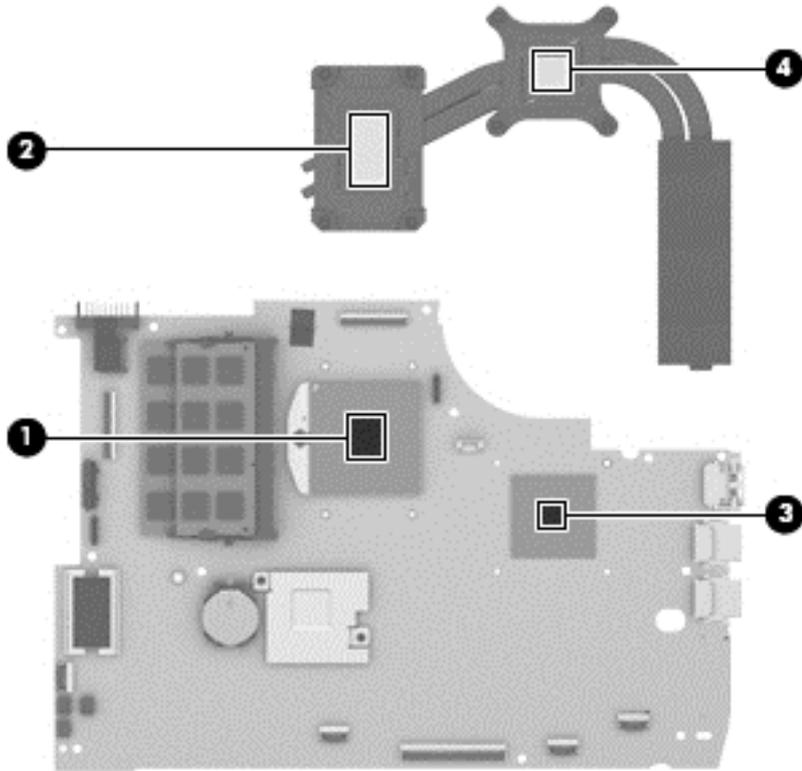
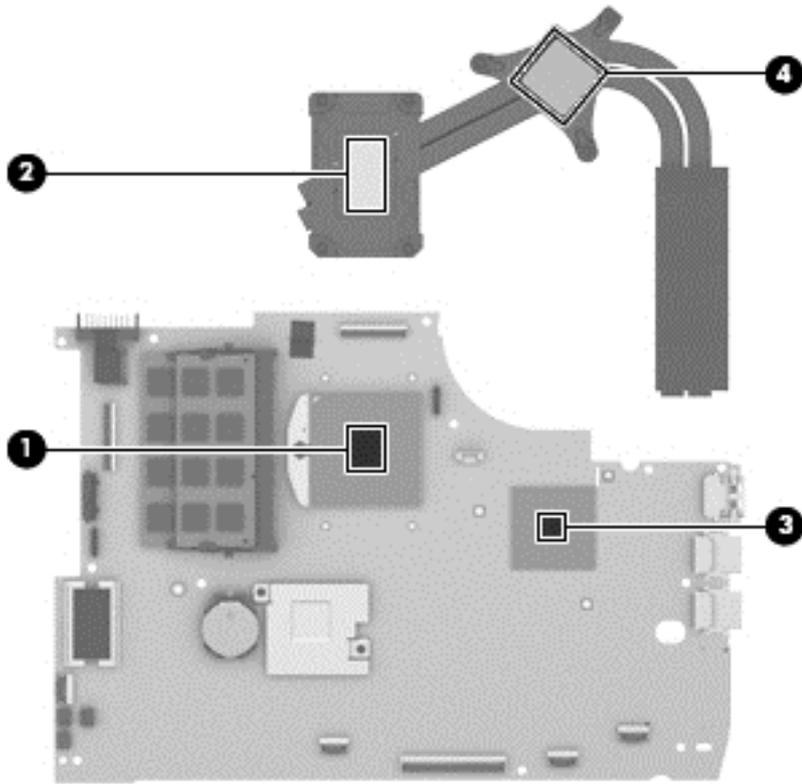
7. Remove the heat sink (2).

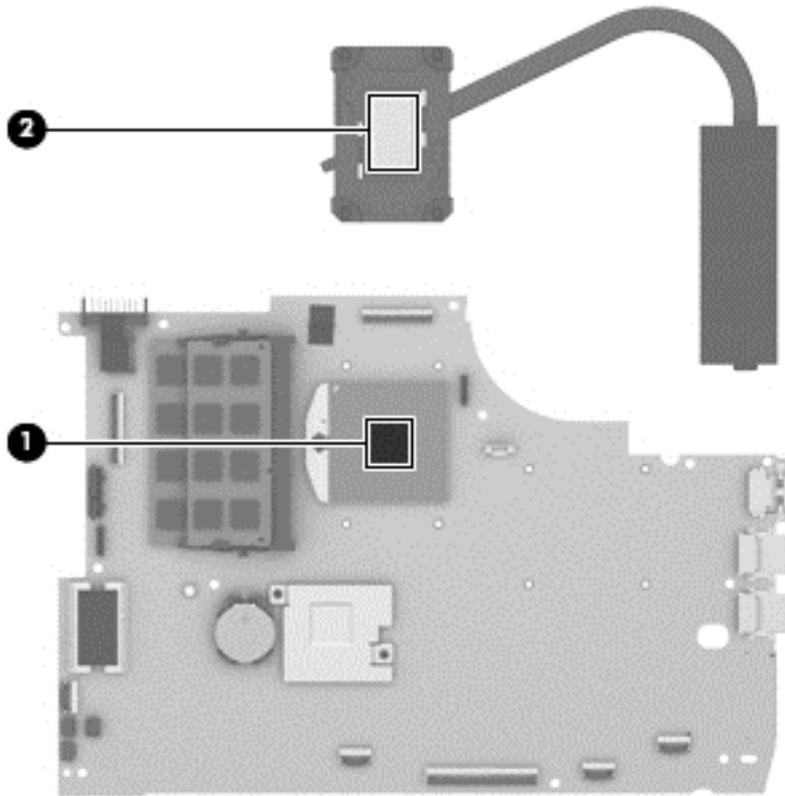
 **NOTE:** Due to the adhesive quality of the thermal material located between the heat sink and the system board components, it may be necessary to move the heat sink from side to side to detach it.



 **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, processor, and system board spare part kits.

1. Clean and then replace the thermal paste used on the processor (1) and the heat sink section (2) that services it.
2. If the heat sink has a graphics subsystem chip (3) and the heat sink section (4) that services it, clean and then replace that thermal paste.





Reverse this procedure to install the heat sink.

Processor



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

Description	Spare part number
AMD A10-5750M 2.50 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 4.0- MB L2 cache, DDR3, quad core, 35 W)	713548-001
AMD A8-5550M 2.10 GHz processor (turbo up to 3.10 GHz; 1600 MHz FSB, 4.0- MB L2 cache, DDR3, quad core, 35 W)	713551-001
AMD A6-5350M 2.90 GHz processor (turbo up to 3.50 GHz; 1600 MHz FSB, 1.0- MB L2 cache, DDR3, dual core, 35 W)	713550-001
AMD A4-5150M 2.70 GHz processor (turbo up to 3.30 GHz; 1600 MHz FSB, 1.0- MB L2 cache, DDR3, dual core, 35 W)	713549-001
Intel Quad Core i7-4900MQ 2.80 GHz processor (SC turbo up to 3.80 GHz; 1600 MHz FSB, 8.0 MB L3 cache, 47 W)	723523-001
Intel Quad Core i7-4800MQ 2.70 GHz processor (SC turbo up to 3.70 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W)	723524-001
Intel Quad Core i7-4702MQ 2.20 GHz processor (SC turbo up to 3.20 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 37 W)	723522-001
Intel Quad Core i7-4700MQ 2.40 GHz processor (SC turbo up to 3.40 GHz; 1600 MHz FSB, 6.0 MB L3 cache, 47 W)	723521-001

Description	Spare part number
Intel Dual Core i5-4330M 2.80 GHz processor (SC turbo up to 3.50 GHz; 1600- MHz FSB, 3.0 MB L3 cache, 37 W; includes replacement thermal material)	738201-001
Intel Dual Core i5-4200M 2.50 GHz processor (SC turbo up to 3.10 GHz; 1600 MHz FSB, 3.0 MB L3 cache, 37 W; includes replacement thermal material)	737328-001
Intel Dual Core i3-4000M 2.40 GHz processor 1600 MHz, 3.0 MB L3 cache, 37 W; includes replacement thermal material)	737327-001

Before removing the processor, follow these steps:

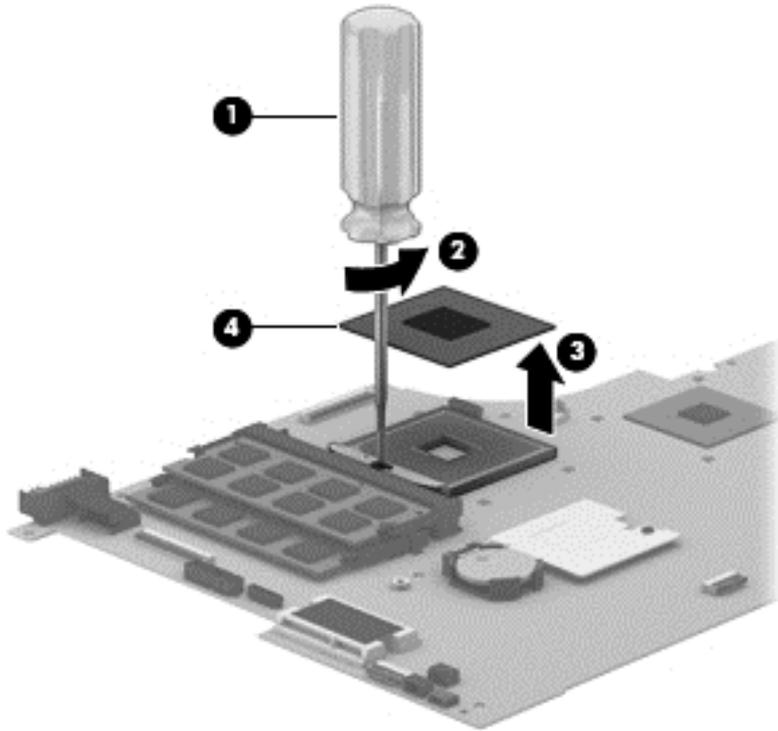
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. Display assembly (see [Display assembly on page 55](#))
 - f. Fan (see [Fan on page 63](#))
 - g. System board (see [System board on page 64](#))
 - h. Heat sink (see [Heat sink on page 70](#))

Remove the processor:

1. Use a flat-bladed screw driver **(1)** to turn the processor locking screw **(2)** one-half turn counterclockwise, until you hear a click.

2. Lift the processor (3) straight up, and remove it.

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



Reverse this procedure to install the processor.

Connector board

Description	Spare part number
For use only on computer models equipped with an AMD processor	720579-001
For use only on computer models equipped with an Intel processor and a graphics subsystem with discrete memory	723372-001
For use only on computer models equipped with an Intel processor and a graphics subsystem with UMA memory	720554-001

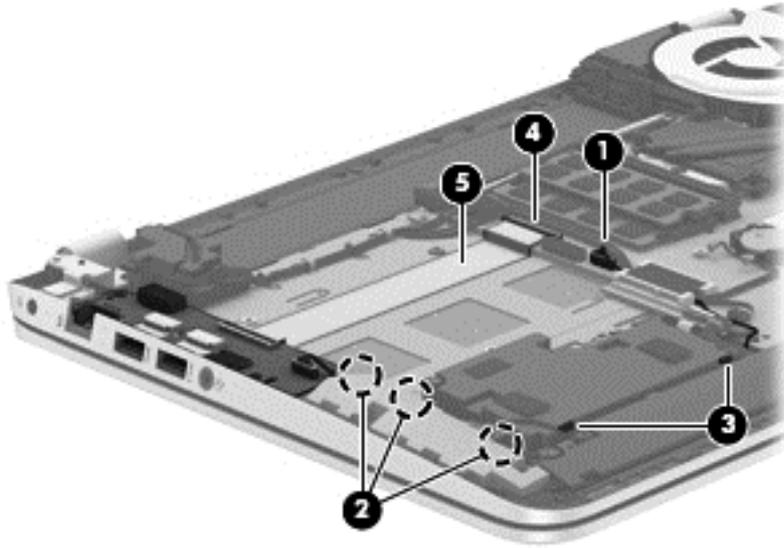
Before removing the connector board, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))

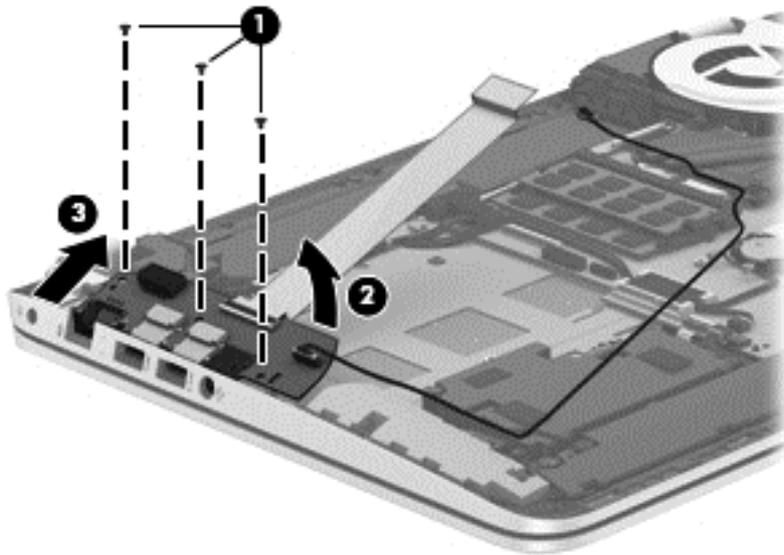
Remove the connector board:

1. Disconnect the connector board cable **(1)** from the system board.
2. Release the connector board cable from the routing clips **(2)** built into the top cover and routing channel **(3)** between the subwoofer and left front speaker.
3. Release the ZIF connector **(4)** to which the connector board ribbon cable is attached, and then disconnect the connector board ribbon cable from the system board.

4. Detach the connector board ribbon cable (5) from the base enclosure. (The connector board ribbon cable is attached to the top cover with double-sided tape.)



5. Remove the three Phillips PM2.0x2.9 screws (1) that secure the connector board to the top cover.
6. Lift the right side of the connector board (2) until it rests at an angle.
7. Remove the connector board (3) by sliding it up and to the right at an angle.



Reverse this procedure to install the connector board.

Power connector cable

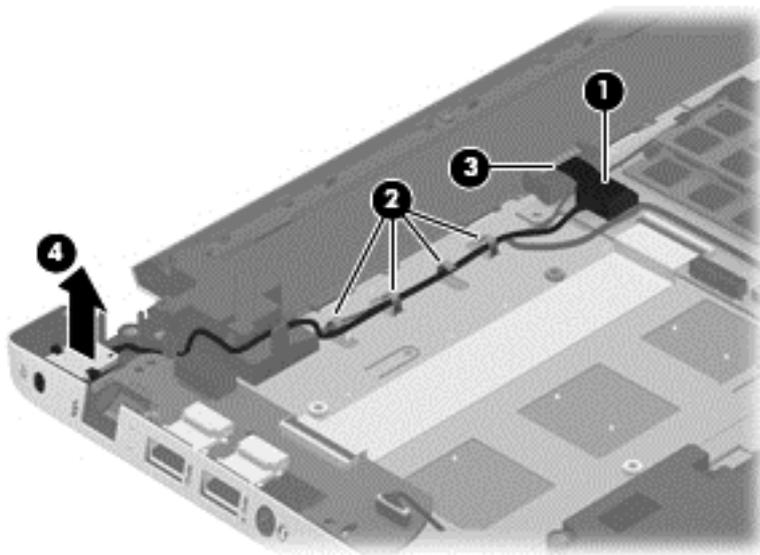
Description	Spare part number
Power connector cable	720537-001
Power connector cable for use on computer models equipped with an Intel processor and a graphics subsystem with discrete memory	720538-001

Before removing the power connector cable, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))

Remove the power connector cable:

1. Disconnect the power cable (1) from the system board.
2. Release the power connector cable from the clips (2) built into the keyboard shield.
3. Release the power connector (3) from the clips and mold built into the top cover.
4. Remove the power connector cable (4).



Reverse this procedure to install the power connector cable.

Subwoofer

Description	Spare part number
Subwoofer (includes cable and 3 isolators)	720563-001

Before removing the subwoofer, follow these steps:

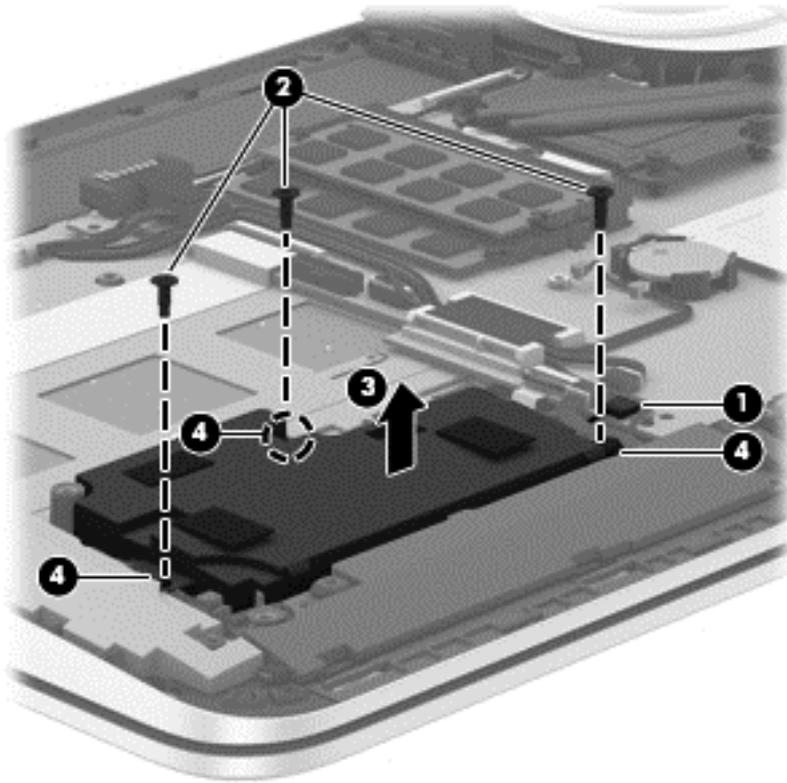
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))

Remove the subwoofer:

1. Disconnect the subwoofer cable **(1)** from the system board.
2. Remove the three Phillips PM2.5×6.2 screws **(2)** that secure the subwoofer to the top cover.

3. Remove the subwoofer (3).

 **NOTE:** The subwoofer includes three rubber isolators (4). These isolators are crucial to the performance of the subwoofer.



Reverse this procedure to install the subwoofer.

Rear speakers

Description	Spare part number
Rear speakers (include left and right rear speakers, 2 cables, and 4 isolators)	720561-001

Before removing the rear speakers, follow these steps:

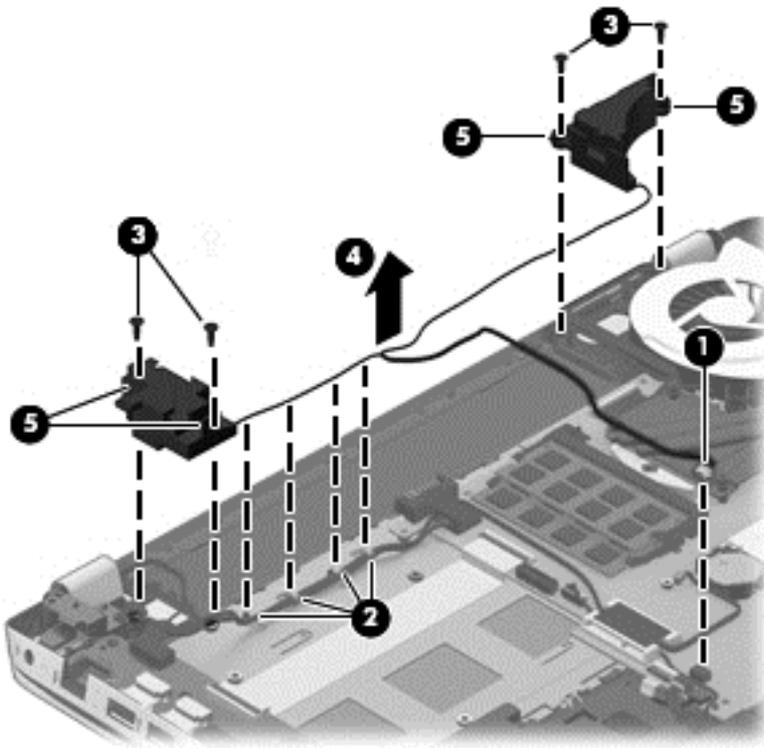
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))

Remove the rear speakers:

1. Disconnect the rear speaker cable **(1)** from the system board.
2. Release the rear speaker cables from the clips **(2)** and routing channel built into the top cover.
3. Remove the four Phillips PM2.5×6.2 screws **(3)** that secure the rear speakers to the top cover.

4. Remove the rear speakers (4).

 **NOTE:** The rear speakers includes four rubber isolators (5). These isolators are crucial to the performance of the rear speakers.



Reverse this procedure to install the rear speakers.

Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes bracket and cable)	720543-001

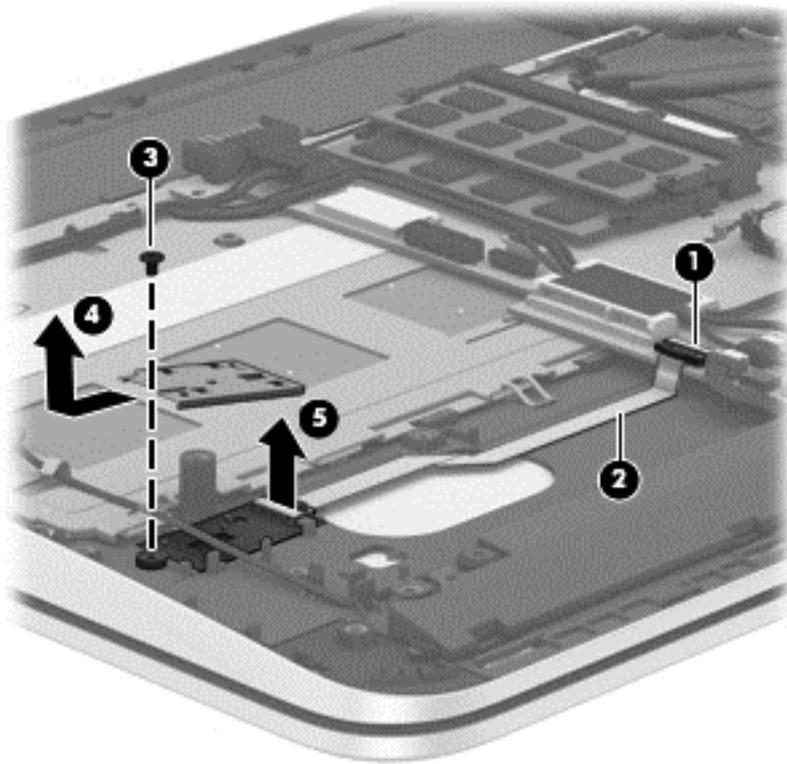
Before removing the fingerprint reader board, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. Base enclosure (see [Base enclosure on page 53](#))
 - f. Subwoofer (see [Subwoofer on page 81](#))

Remove the fingerprint reader board:

1. Release the ZIF connector **(1)** to which the fingerprint reader board ribbon cable is attached, and then disconnect the fingerprint reader board ribbon cable from the system board.
2. Detach the fingerprint reader board ribbon cable **(2)** from the base enclosure. (The fingerprint reader board ribbon cable is attached to the top cover with double-sided tape.)
3. Remove the Phillips PM2.0×2.9 screw **(3)** that secures the fingerprint reader board bracket and board to the top cover.
4. Slide the fingerprint reader board bracket **(4)** to the left, and then lift it straight up to remove it.

5. Remove the fingerprint reader board (5) and cable.



Reverse this procedure to install the fingerprint reader board.

Front speakers

Description	Spare part number
Front speakers (include left and right front speakers, 2 cables, and 4 isolators)	720562-001

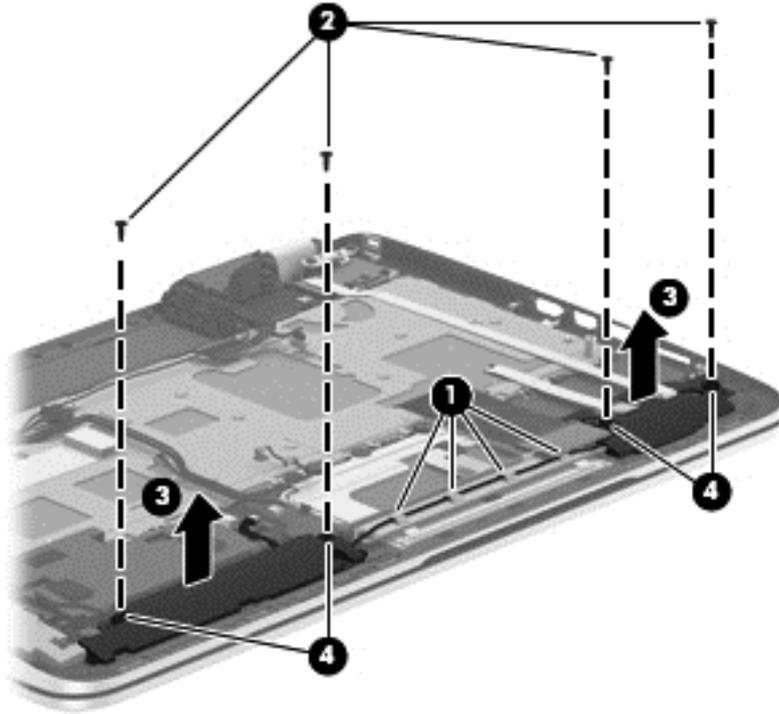
Before removing the front speakers, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. System board (see [System board on page 64](#))

Remove the front speakers:

1. Release the front speaker cables from the clips (1) and routing channel built into the TouchPad.
2. Remove the four Phillips PM2.5×6.2 screws (2) that secure the front speakers to the top cover.
3. Remove the front speakers (3).

 **NOTE:** The front speakers includes four rubber isolators (4). These isolators are crucial to the performance of the front speakers.



Reverse this procedure to install the front speakers.

TouchPad assembly

Description	Spare part number
TouchPad assembly (includes TouchPad bracket, TouchPad button board, TouchPad, and cables)	722972-001

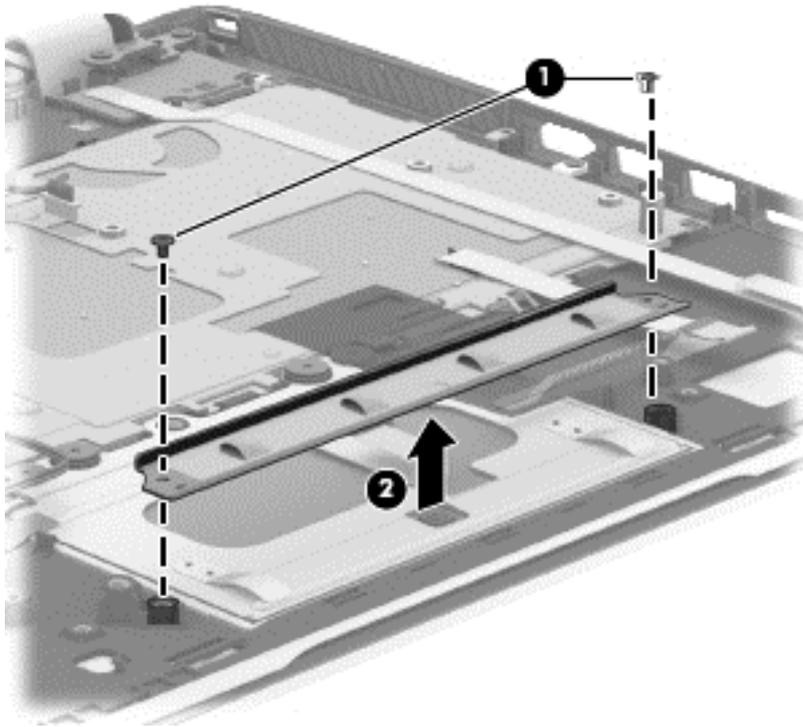
Before removing the TouchPad, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. System board (see [System board on page 64](#))
 - f. Front speakers (see [Front speakers on page 86](#))

Remove the TouchPad:

1. Remove the two Phillips PM2.0×2.9 screws **(1)** that secure the TouchPad bracket to the top cover.

2. Remove the TouchPad bracket (2).



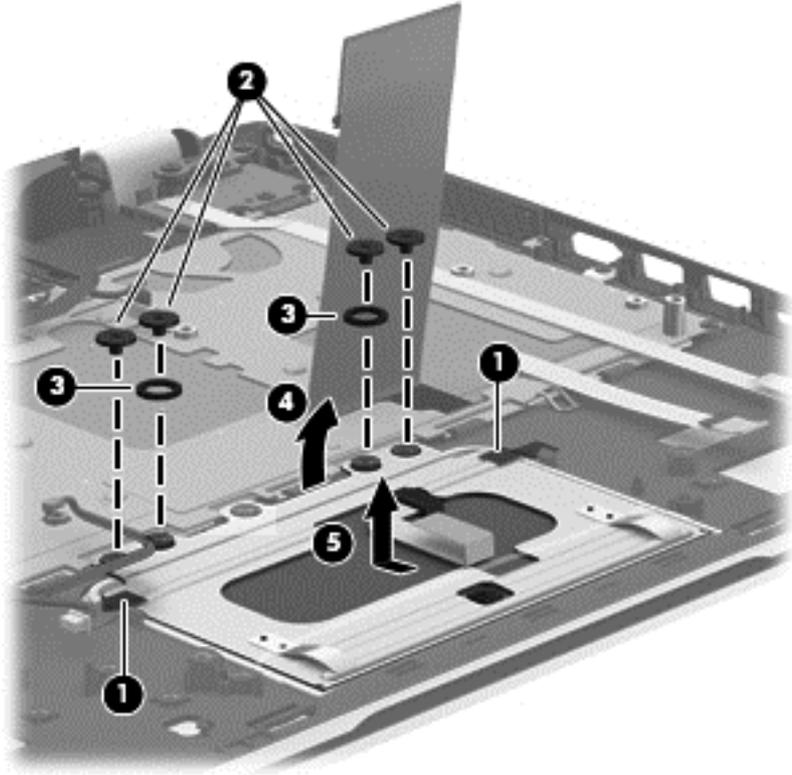
3. Release the two pieces of grounding tape (1) that connect the TouchPad to the top cover.
4. Remove the four Phillips PM2.5×2.5 broad head screws (2) that secure the TouchPad to the top cover.



NOTE: The second and third screws include two rubber washers (3). These washers are crucial to the performance of the TouchPad.

5. Lift the rear edge of the TouchPad (4) until it rests at an angle.

6. Slide the TouchPad (5) toward the back of the top cover, and then lift the TouchPad straight up and remove it.



Reverse this procedure to install the TouchPad.

Power button board

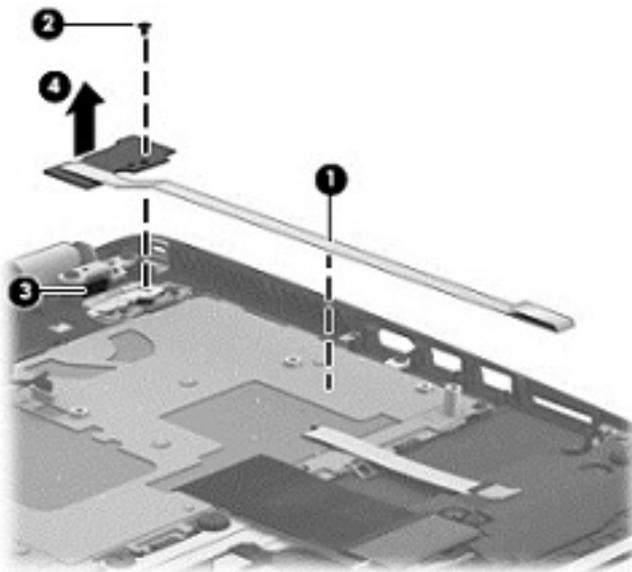
Description	Spare part number
Power button board (includes cable)	720553-001

Before removing the power button board, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. System board (see [System board on page 64](#))

Remove the power button board:

1. Detach the power button board cable (1) from the top cover. (The power button board cable is attached to the top cover with double-sided tape.)
2. Remove the Phillips PM2.0×2.9 screw (2) that secures the power button board to the top cover.
3. Release the clip (3) that secures the power button board to the top cover.
4. Remove the power button board (4).



Reverse this procedure to install the power button board.

Keyboard



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

For use in country/region	Spare part number	For use in country/region	Spare part number
Keyboard with backlight (includes backlight cable):			
For use on computer models equipped with an Intel processor in Belgium	720244-A41	For use on computer models equipped with an Intel processor in Portugal	720244-131
For use in Canada	720244-DB1	For use on computer models equipped with an Intel processor in Russia	720244-251
For use on computer models equipped with an Intel processor in the Czech Republic and Slovakia	720244-FL1	For use on computer models equipped with an Intel processor in Saudi Arabia	720244-171
For use on computer models equipped with an Intel processor in Denmark, Finland, and Norway	720244-DH1	For use in South Korea	720244-AD1
For use on computer models equipped with an Intel processor in France	720244-051	For use on computer models equipped with an Intel processor in Spain	720244-071
For use on computer models equipped with an Intel processor in Germany	720244-041	For use on computer models equipped with an Intel processor in Switzerland	720244-BG1
For use on computer models equipped with an Intel processor in Greece	720244-151	For use on computer models equipped with an Intel processor in Taiwan	720244-AB1
For use on computer models equipped with an Intel processor in Italy	720244-061	For use on computer models equipped with an Intel processor in Thailand	720244-281
For use on computer models equipped with an Intel processor in Japan	720244-291	For use on computer models equipped with an Intel processor in Turkey	720244-141
For use in Latin America	720244-161	For use on computer models equipped with an Intel processor in the United Kingdom	720244-031
For use on computer models equipped with an Intel processor for use internationally	720244-B31	For use in the United States	720244-001
Keyboard with pointing stick (includes keyboard cable and pointing stick cable)			
For use in the United States	720242-001	For use on computer models equipped with an Intel processor in France	720242-051
For use on computer models equipped with an Intel processor in Italy	720242-061		

Before removing the keyboard, follow these steps:

1. Turn off 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 the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 41](#)), and then remove the following components:
 - a. Service door (see [Service door on page 42](#))
 - b. mSATA SSD (see [mSATA SSD on page 43](#))
 - c. Hard drive (see [Hard drive on page 46](#))
 - d. Base enclosure (see [Base enclosure on page 53](#))
 - e. System board (see [System board on page 64](#))
 - f. Connector board (see [Connector board on page 78](#))
 - g. Subwoofer (see [Subwoofer on page 81](#))
 - h. Rear speaker (see [Rear speakers on page 83](#))
 - i. Power button board (see [Power button board on page 91](#))

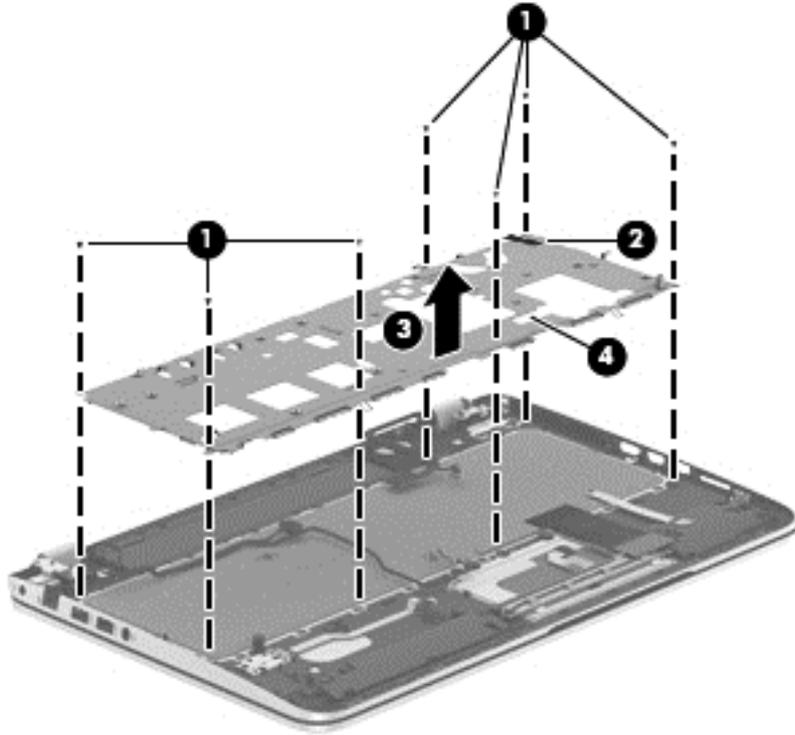
Remove the keyboard:

1. Remove the seven Phillips PM2.0×2.9 screws **(1)** that secure the keyboard shield to the computer.
2. Release the ground loop tape **(2)**.

3. Remove the keyboard shield (3).

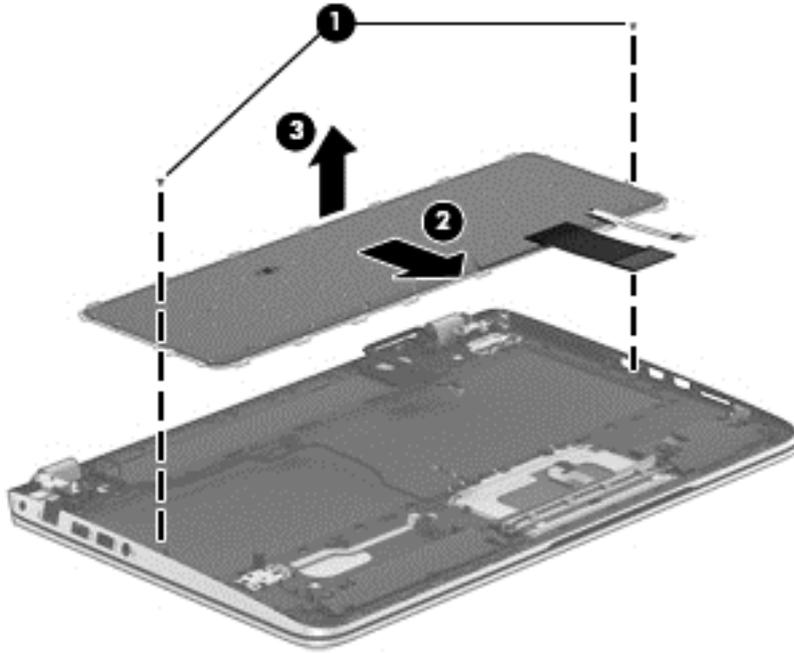
CAUTION: When removing the keyboard shield, make sure the keyboard cable and backlight cable are not damaged when being released through the opening in the keyboard shield (4).

The keyboard shield is available using spare part number 720544-001.



4. Partially open the computer.
5. Insert a thin tool into the keyboard release hole in the memory module compartment, and then press on the back of the keyboard until the keyboard disengages from the computer.
6. Turn the computer right-side up with the front toward you.
7. Remove the two Phillips PM2.0×2.9 screws (1) that secure the keyboard to the top cover.
8. Release the keyboard (2) by sliding it toward the TouchPad.

9. Remove the keyboard (3).



Reverse this procedure to install the keyboard.

7 Windows – Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI)

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 (BIOS) includes settings for the types of devices installed, the startup sequence of the computer, and the amount of system and extended memory.

Starting Setup Utility (BIOS)

To start Setup Utility (BIOS), turn on or restart the computer, quickly press [esc](#), and then press [f10](#).



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

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

Most BIOS updates on the HP website 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 revealed by pressing [fn+esc](#) (if you are already in Windows) or by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 96](#)).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.
4. Select **Yes**.

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.

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

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.
2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS, 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.

If the update is more recent than your BIOS, 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 revealed on the screen after the download is complete. If no instructions are revealed, follow these steps:

1. From the Start screen, type `e`, and then select **File Explorer**.
2. 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 HP PC Hardware Diagnostics (UEFI)

HP PC Hardware Diagnostics is a Unified Extensible Firmware Interface (UEFI) that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs outside the operating system so that it can isolate hardware failures from issues that are caused by the operating system or other software components.

To start HP PC Hardware Diagnostics UEFI:

1. Turn on or restart the computer, quickly press **esc**, and then press **f2**.

The BIOS searches three places for the HP PC Hardware Diagnostics (UEFI) tools in the following order:

- a. Connected USB drive



NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 98](#).

- b. Hard drive
- c. BIOS

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



NOTE: If you need to stop a diagnostic test, press **esc**.

Downloading HP PC Hardware Diagnostics (UEFI) to a USB device



NOTE: The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only.

1. Go to <http://www.hp.com>.
2. Click **Support & Drivers**, and then click the **Drivers & Software** tab.
3. Enter the product name in the text box, and then click **Search**.
4. Select your computer model, and then select your operating system.
5. In the **Diagnostic** section, click **HP UEFI Support Environment**.

– or –

Click **Download**, and then select **Run**.

8 Ubuntu Linux – Using Setup Utility (BIOS) and System Diagnostics

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

- ▲ Turn on or restart the computer. While the computer is booting press **esc**. When the Startup menu is displayed, press **f10**.

Using 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

Setup Utility does not support the TouchPad. Navigation and selection are by keystroke.

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

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 default settings in Setup Utility

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

The Setup Utility factory settings take effect when the computer restarts.



NOTE: Your password, security, and language 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 website.

Most BIOS updates on the HP website 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 using Setup Utility.

1. Start Setup Utility.
2. If the system information is not displayed, use the arrow keys to select the **Main** menu.
BIOS and other system information is displayed.
3. To exit Setup Utility, use 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, 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 Suspend or Hibernation.

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

1. Access the page on the HP website that provides software for your computer.
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.



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

Using Advanced System Diagnostics

Advanced System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly. The following diagnostic tests are available in Advanced 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 and calibrates the battery if necessary. If the battery fails the test, contact support to report the issue and purchase a replacement battery.
- **System Tune-Up**—This group of additional tests checks your computer to make sure that the main components are functioning correctly. System Tune-Up runs longer and more comprehensive tests on memory modules, hard drive SMART attributes, the hard drive surface, the battery (and battery calibration), video memory, and the WLAN module status.

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

To start Advanced System Diagnostics:

1. Turn on or restart the computer. While the computer is booting 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**.

9 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
HP ENVY TouchSmart 15 Notebook PC		
Width	37.95 cm	14.94 in
Depth	25.07 cm	9.87 in
Height (front to rear)	1.89 to 2.99 cm	0.74 to 1.18 in
Weight	2.76 kg	6.08 lbs
HP ENVY 15 Notebook PC		
Width	37.95 cm	14.94 in
Depth	25.07 cm	9.87 in
Height (front to rear)	1.69 to 2.79 cm	0.67 to 1.10 in
Weight	2.20 kg	4.85 lbs
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W 19.5 V dc @ 4.62 A – 90 W 19.5 V dc @ 6.15 A – 120 W (select models only)	
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.		

15.6 inch (39.80 cm) display specifications

	Metric	U.S.
Dimensions		
Height	19.35 cm	7.62 in
Width	34.42 cm	13.55 in
Diagonal	39.49 cm	15.55 in
Number of colors	262144	
Contrast ratio	500:1 (typical)	
Brightness	FHD: 300 cd/m ² (nits), HD: 200 cd/m ² (nits) (typical)	
Pixel resolution		
Pitch	FHD: 0.179 × 0.179 mm, HD: 0.252 × 0.252 mm	
Format	FHD: 1920 × 1080, HD: 1366 × 768	
Configuration	RGB vertical stripe	
Backlight	LED	
Total power consumption	(@ 32 × 32 mosaic) FHD: 7.2 W (maximum), HD: 3.8 W (maximum)	
Viewing angle	±45° horizontal, +25°/-35° vertical (typical)	

Hard drive specifications

	1.5 TB, 5400 rpm*	1 TB, 5400 rpm*	750 GB, 5400 rpm**	640 GB, 5400 rpm**	500 GB, 5400 rpm**
Dimensions					
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm	7.0 mm
Length	100.4 mm	100.4 mm	100.4 mm	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm	69.9 mm	69.9 mm	69.9 mm
Weight	110 g	110 g	110 g	110 g	110 g
Interface type	SATA	SATA	SATA	SATA	SATA
Transfer rate					
Synchronous (maximum)	6.0 GB/sec	6.0 GB/sec	6.0 GB/sec	6.0 GB/sec	6.0 GB/sec
Security	ATA 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	1.5 ms
Average (read/write)	11/13 ms	11/13 ms	11/13 ms	11/13 ms	11/13 ms
Maximum	22 ms	22 ms	22 ms	22 ms	22 ms

	1. 5 TB, 5400 rpm*	1 TB, 5400 rpm*	750 GB, 5400 rpm**	640 GB, 5400 rpm**	500 GB, 5400 rpm**
Logical blocks	2,930,277,168	1,953,525,168	1,465,149,168	1,250,263,728	976,773,168
Disk rotational speed	5400 rpm				
Operating temperature	0°C to 60°C (32°F to 140°F)				
*1 TB = 1 trillion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.					
**1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.					
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.					

10 Windows – Backing up, restoring, and recovering

Your computer includes tools provided by HP and Windows to help you safeguard your information and retrieve it if you ever need to. These tools will help you return your computer to a proper working state or even back to the original factory state, all with simple steps.

This chapter provides information about the following processes:

- Creating recovery media and backups
- Restoring and recovering your system

 **NOTE:** This chapter describes an overview of backing up, restoring and recovering options. For more details about the tools provided, see Help and Support. From the Start screen, type [help](#), and then select **Help and Support**.

Creating recovery media and backups

1. After you successfully set up the computer, create HP Recovery media. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced.

HP Recovery media you create will provide the following recovery options:

- System Recovery—Reinstalls the original operating system and the programs that were installed at the factory.
- Minimized Image Recovery—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- Factory Reset—Restores the computer to the state its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

See [Creating HP Recovery media on page 106](#).

2. Use the Windows tools to create system restore points and create backups of personal information. For more information and steps, see Windows Help and Support. From the Start screen, type [help](#), and then select **Help and Support**.

Creating HP Recovery media

HP Recovery Manager is a software program that offers a way to create recovery media after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and the software programs installed at the factory, and then configures the settings for the programs. HP

Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

- Only one set of HP Recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
- HP Recovery Manager examines the computer and determines the required storage capacity for the blank USB flash drive or the number of blank DVD discs that will be required.
- To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or instead you can use a high-quality blank USB flash drive.
- If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from the HP website. For U.S. support, go to <http://www.hp.com/go/contactHP>. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub.
- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue, and the remaining discs will be burned.

To create HP Recovery media:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Recovery Media Creation**, and follow the on-screen instructions to continue.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 108](#).

Restore and recovery

There are several options for recovering your system. Choose the method that best matches your situation and level of expertise:

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information and steps, see Help and Support. From the Start screen, type `help`, and then select **Help and Support**.
- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.

From the Start screen, type `recovery`, select **HP Recovery Manager**, and then select **Drivers and Applications Reinstall**, and follow the on-screen instructions.

- If you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition or HP Recovery media. Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in

the image continue to be available for installation through the Drivers and Applications Reinstall option in HP Recovery Manager.

For more information, see [Recovering using HP Recovery Manager on page 108](#).

- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 108](#).
- If you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media to restore the factory image to the replacement drive. For more information, see [Recovering using HP Recovery Manager on page 108](#).
- If you wish to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition on page 109](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state. Using the HP Recovery media you created, you can choose from one of the following recovery options:

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- Minimized Image Recovery (select models only)—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- Factory Reset—Restores the computer to the state its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select models only) allows System Recovery and Minimized Image Recovery.

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.
- Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.
- HP Recovery media must be used if the computer hard drive fails.
- To use the Factory Reset or System Recovery options, you must use HP Recovery media.
- If the HP Recovery media do not work, you can obtain recovery media for your system from the HP website. For U.S. support, go to <http://www.hp.com/go/contactHP>. For worldwide support, go to http://welcome.hp.com/country/us/en/wwwcontact_us.html.



IMPORTANT: HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data you wish to retain.

Using the HP Recovery partition (select models only)

The HP Recovery partition allows you to perform a system recovery or a minimized image recovery without the need for recovery discs or a recovery USB flash drive. This type of recovery can only be used if the hard drive is still working.

To start HP Recovery Manager from the HP Recovery partition:

1. Press **f11** while the computer boots.
 - or –
 - Press and hold **f11** as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **Recovery Manager**, and follow the on-screen instructions.

Using HP Recovery media to recover

You can use HP Recovery media to recover the original system. This method can be used if your system does not have an HP Recovery partition or if the hard drive is not working properly.

1. If possible, back up all personal files.
2. Insert the first HP Recovery disc you created into the optical drive on your computer or into an optional external optical drive, and then restart the computer.
 - or –
 - Insert the HP Recovery USB flash drive you created into a USB port on your computer, and then restart the computer.

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 109](#).

3. Follow the on-screen instructions.

Changing the computer boot order

If computer does not restart in HP Recovery Manager, you can change the computer boot order, which is the order of devices listed in BIOS where the computer looks for startup information. You can change the selection for an optical drive or a USB flash drive.

To change the boot order:

1. Insert the HP Recovery media you created.
2. Restart the computer.
3. Press and hold **esc** while the computer is restarting, and then press **f9** for boot options.
4. Select the optical drive or USB flash drive you want to boot from.
5. Follow the on-screen instructions.

Removing the HP Recovery partition

HP Recovery Manager software allows you to remove the HP Recovery partition to free up hard drive space.

 **IMPORTANT:** Removing the HP Recovery partition means you can no longer use Windows Refresh, the Windows Remove everything and reinstall Windows option, or the HP Recovery Manager option for minimized image recovery. Create HP Recovery media before removing the Recovery partition to ensure you have recovery options; see [Creating HP Recovery media on page 106](#).

Follow these steps to remove the HP Recovery partition:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and follow the on-screen instructions to continue.

11 Ubuntu Linux – Backing up, restoring, and recovering

Recovery after a system failure is as good as your most recent backup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

Performing a system recovery

The Deja Dup Restore Tool allows you to repair or restore the computer to its original factory state. You can create an image restore DVD using an optional external DVD±RW optical drive. You can also create a restore image on a USB storage device.

 **CAUTION:** Using Restore completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The recovery tool reinstalls the original operating system and programs and drivers that were installed at the factory. Software, drivers, and updates not installed at the factory must be manually reinstalled. Personal files must be restored from a backup.

 **NOTE:** HP recommends that you create the image restore in the event of a system failure.

Creating the restore DVDs

The restore creation software creates a set of system restore discs using blank, writable DVDs (DVD-R or DVD+R). HP recommends using blank DVD+R discs from a manufacturer you trust, because these recovery DVDs are so important. You need approximately 3 blank DVD+R discs. The program states how many discs are needed at the beginning of the process.

To create restore DVDs:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.
2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select the DVD from the drop-down list.
3. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.
4. Follow the on-screen instructions.

Creating a restore image on a USB device

 **NOTE:** Be sure AC power is connected to the computer you begin.

Verify the exact amount of free space on your storage device before you begin the creation process. For most models, you will need at least 8 GB of free space on the storage device. However, depending on the drivers and software installed on your computer, you may need slightly more than 8 GB of space. **HP recommends that you use a 16 GB device or above for best results.**

 **IMPORTANT:** Remember to insert your USB device into the USB port on the computer before starting this procedure.

To create the restore image:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.
2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup location**, and select the USB device from the drop-down list.

 **NOTE:** If the USB device is not listed in the drop-down list for Backup Location, select **Local Folder**, and then click the **Choose Folder** button. Select the USB device from the panel on the left side of the **Choose Folder** window, and click **OK**.

3. Select **Overview** from the panel on the left side of the window, and then click **Backup Now**.
4. Follow the on-screen instructions.

Performing recovery using the restore media

 **NOTE:** The following procedure uses the F11 BIOS Recovery feature to perform the recovery.

1. If possible, back up all personal files.
2. Shut down the computer.
3. Be sure the restore DVD or USB device is connected to the computer.
4. Restart the computer.
5. Using the arrow keys, select **Recovery**, and then press [enter](#).
6. Follow the on-screen instructions.

 **NOTE:** If you are unable to boot (start up) your computer with the primary operating system, and you did not create a system recovery disc, you must purchase an *Ubuntu Operating System DVD* to reinstall the operating system. For additional information, refer to the *Worldwide Telephone Numbers* booklet for more information.

Backing up your information

You should back up your computer files on a regular schedule to maintain a current backup. You can manually back up your information to an optional external drive, a network drive, discs, or the Ubuntu One website. Back up your system at the following times:

- At regularly scheduled times
- Before the computer is repaired or restored
- Before you add or modify hardware or software

To back up your home directory files to the Ubuntu website using the Deja Dup Backup Tool:

 **NOTE:** Before you back up your information, be sure you have designated a location to save the backup files.

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.
2. Select **Folders** from the panel on the left side of the window, and beneath **Folders to back up**, select the folders to back up.

3. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select **Ubuntu One** from the drop-down list.
4. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.



NOTE: The first time you backup your files to Ubuntu One, you will need to create an account to sign into Ubuntu One. Enter your email address and password into the account sign-in boxes and follow the on-screen instructions to complete the sign-in process.

To restore backup files:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.
2. Click **Restore**, select the location of the backup files and the folder name, and then click **Forward**.
3. Under **Restore from When?**, select the date of the files to be restored and click **Forward**.
4. Select the location and folder where the files are to be restored and click **Forward**.
5. Follow the on-line instructions.
6. Click **Restore** to start restoring the files, or click **Cancel** to cancel the operation.



NOTE: You may also back up to cloud storage services provided by various companies. For a small fee, they will keep your backup for you. A cloud service is recommended since it is an easy way to keep your backups off-site and safe from any disaster.

12 Power cord set requirements

The wide-range input feature of the computer permits it to operate from any line voltage from 100 to 120 V ac, or from 220 to 240 V ac.

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

Power cord sets for use in other countries or regions must meet the requirements of the country and 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 **1.0 m** (3.3 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
<ol style="list-style-type: none"> 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 ac) 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 3-conductor, 0.75 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-conductor, 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-conductor, 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-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks. 		

13 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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