



# HP Pavilion 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.

### **Software terms**

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For any further information or to request a full refund of the computer, please contact your local point of sale (the seller).

## Safety warning notice

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**⚠ 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 Pavilion 15 Notebook PC	√	√
Processors	<ul style="list-style-type: none"><li>• 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)</li><li>• 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)</li><li>• 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)</li><li>• AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W)</li><li>• 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)</li><li>• AMD A4-5000 1.50-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 15 W)</li></ul>	√	

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
<b>Processors</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>Intel® Quad Core® i7-4702MQ 2.20-GHz processor (SC turbo up to 2.90-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 37 W)</li> </ul>		√
	<ul style="list-style-type: none"> <li>Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.2-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W)</li> </ul>		
	<ul style="list-style-type: none"> <li>Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)</li> </ul>		
	<ul style="list-style-type: none"> <li>Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)</li> </ul>		
	<ul style="list-style-type: none"> <li>Intel Pentium 2030M 2.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W)</li> </ul>		
	<ul style="list-style-type: none"> <li>Intel Pentium 2020M 2.40-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W)</li> </ul>		
<b>Chipset</b>	AMD A76M fusion controller hub	√	
	Intel HM86 Express Chipset		√
	Intel HM76 Express Chipset		

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
<b>Graphics</b>	<p><b>Internal graphics:</b></p> <ul style="list-style-type: none"> <li>• AMD Radeon™ HD 8650G graphics on computer models equipped with an AMD A10-5750M processor</li> <li>• AMD Radeon HD 8550G graphics on computer models equipped with an AMD A8-5550M processor</li> <li>• AMD Radeon HD 8450G graphics on computer models equipped with an AMD A6-5350M processor</li> <li>• AMD Radeon HD 8350G graphics on computer models equipped with an AMD A4-5150M processor</li> <li>• AMD Radeon HD 8400 graphics on computer models equipped with an AMD A6-5200 processor</li> <li>• AMD Radeon HD 8330 graphics on computer models equipped with an AMD A4-5000 processor</li> </ul>	√	
	<p><b>Switchable graphics:</b></p> <ul style="list-style-type: none"> <li>• AMD RadeonT HD 8650G + HD 8670M dual graphics on computer models equipped with an AMD A10-5750 processor</li> <li>• AMD RadeonT HD 8550G + HD 8670M dual graphics on computer models equipped with an AMD A8-5550 processor</li> <li>• AMD RadeonT HD 8450G + HD 8670M dual graphics on computer models equipped with an AMD A6-5350 processor</li> </ul> <p>Support for HD decode, DX11, and HDMI</p> <p>Support for PX5.5</p> <p>AMD Start Now (AMD IOIC) 1.0 on computer models equipped with an AMD A10-5750, A8-5550, A6-5350, or A4-5150 processor</p> <p>AMD Start Now (AMD IOIC) 2.0 on computer models equipped with an AMD A6-5200 or A4-5000 processor</p>	√	

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
<b>Graphics</b> <i>(continued)</i>	<p><b>Internal graphics:</b></p> <ul style="list-style-type: none"> <li>Intel HD Graphics 4000 on computer models equipped with an Intel dual core processor</li> <li>Intel HD Graphics 4600 on computer models equipped with an Intel Pentium processor</li> </ul> <p><b>Switchable Discrete Graphics:</b></p> <ul style="list-style-type: none"> <li>Sun XT (64-bit), M2 package, 28 nm, 25 W, 4 pcs of dedicated video memory (2-GB VRAM, 256-MB×16, DDR3, 1-GHz×4 pcs)</li> <li>Sun XT (64-bit), M2 package, 28 nm, 25 W, 4 pcs of dedicated video memory (1-GB VRAM, 128-MB×16, DDR3, 1-GHz×4 pcs)</li> </ul> <p>Support for HD decode, DX11, and HDMI</p> <p>Support for PX5.5</p>		√
<b>Panel</b>	<p>15.6-in, high-definition (HD), white light-emitting diode (WLED), BrightView (1366×768), wedge (5.5-mm), SVA, typical brightness 200 nits, 16:9 ultra wide aspect ratio</p> <p>15.6-in, HD, light-emitting diode (LED), BrightView (1366×768), wedge (5.5-mm), SVA, typical brightness 200 nits, 16:9 ultra wide aspect ratio</p>	√	√
<b>Memory</b>	<p>Two customer-accessible/upgradable memory module slots</p> <p>Support for DDR3L (1600-MHz) dual channel</p> <p>Support for 8192-MB of system RAM in the following configurations:</p> <ul style="list-style-type: none"> <li>8192-MB (8192-MB×1, 4096-MB×2)</li> <li>6144-MB (4096-MB+2048-MB)</li> <li>4096-MB (4096-MB×1, 2048-MB×2)</li> <li>2048-MB (2048-MB×1)</li> </ul>	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
<b>Hard drive</b>	<p>Support for 6.35-cm (2.5-in) hard drives in 7.0-mm (.28-in) and 9.5-mm (.37-in) thickness</p> <p>Support for Serial ATA</p> <p>Support for Accelerometer hard drive protection</p> <p>Support for the following hard drives:</p> <ul style="list-style-type: none"> <li>• 1-TB, 5400-rpm, 9.5-mm</li> <li>• 750-GB, 5400-rpm, 9.5-mm</li> <li>• 640-GB, 5400-rpm, 9.5-mm</li> <li>• 500-GB, 5400-rpm, 9.5- and 7.0-mm</li> <li>• 320-GB, 5400-rpm, 9.5- and 7.0-mm</li> </ul>	√	√
<b>Optical drive</b>	<p>9.5-mm tray load</p> <p>SATA</p> <p>Fixed (not modular)</p> <p>DVD+/-RW Double Layer SuperMulti Drive</p>	√	√
<b>Audio and video</b>	<p>Dual speakers</p> <p>Single digital microphone</p> <p>HD Audio</p> <p>DTS sound+</p> <p>Integrated HP TrueVision HD webcam (fixed [no tilt], activity LED, 1280×720 by 30 frames per second)</p>	√	√
<b>Ethernet</b>	<p>Integrated 10/100 network interface card (NIC)</p>	√	√
<b>Wireless</b>	<p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>Two WLAN antennas built into display assembly</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> <li>• Mediatek MT7630E 802.11 bgn Wi-Fi Adapter and Mediatek Bluetooth 4.0 Adapter</li> </ul>	√	

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
<b>Wireless</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>Atheros AR9485 802.11b/g/n WiFi Adapter</li> </ul>	√	√
	<ul style="list-style-type: none"> <li>Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter</li> </ul>		
	<ul style="list-style-type: none"> <li>Realtek RTL8188EE 802.11bgn WiFi Adapter</li> </ul>		
	<ul style="list-style-type: none"> <li>Intel Centrino Wireless-N 2230 Combo Adapter</li> </ul>		√
<b>External media cards</b>	HP 2-in-1 multifunction Digital Media Reader Slot with push-push technology. Reads data from and writes data to digital memory cards such as Secure Digital (SD).	√	√
<b>Ports</b>	<ul style="list-style-type: none"> <li>AC adapter, HP Smart</li> </ul>	√	√
	<ul style="list-style-type: none"> <li>Audio-in (mono microphone)/audio-out (stereo headphone) combo jack</li> </ul>		
	<ul style="list-style-type: none"> <li>HDMI v1.4 supporting up to 1920×1080 @ 60Hz</li> </ul>		
	<ul style="list-style-type: none"> <li>RJ-45 (Ethernet)</li> </ul>		
	<ul style="list-style-type: none"> <li>USB: two USB 3.0 ports, one USB 2.0 port</li> </ul>		
	<ul style="list-style-type: none"> <li>VGA (Dsub 15 pin) supporting: 1920×1600 external resolution @ 60 Hz, hot plug and unplug and autodetection for correct output to wide-aspect vs. standard aspect video</li> </ul>	√	
	<ul style="list-style-type: none"> <li>VGA (Dsub 15 pin) supporting: 1920×2000 external resolution @ 60 Hz, 2048×1536 external resolution @ 75 Hz, hot plug and unplug and autodetection for correct output to wide-aspect vs. standard aspect video</li> </ul>		√
<b>Keyboard/pointing devices</b>	<p>Full-size, island-style keyboard with numeric keypad in black or white finish</p> <p>Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default</p> <p>Taps enabled by default</p> <p>Support for Windows 8 modern trackpad</p>	√	√

Category	Description	Computer models equipped with an AMD processor	Computer models equipped with an Intel processor
<b>Power requirements</b>	Support for the following AC adapters: <ul style="list-style-type: none"> <li>90-W HP Smart AC adapter (PFC, EM, 4.5-mm)</li> <li>90-W HP Smart AC adapter (PFC, 4.5-mm)</li> <li>65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm)</li> <li>65-W HP Smart AC adapter (non-PFC, 4.5-mm)</li> </ul>	√	√
	Support for the following batteries <ul style="list-style-type: none"> <li>6-cell, 62-Wh, 2.80-Ah, Li-ion battery</li> <li>6-cell, 47-Wh, 2.20-Ah, Li-ion battery</li> </ul>	√	√
<b>Security</b>	Security cable lock	√	√
<b>Operating system</b>	<b>Preinstalled:</b> <ul style="list-style-type: none"> <li>Windows 8 Professional</li> <li>Windows 8 Standard</li> <li>FreeDOS</li> <li>Ubuntu Linux</li> </ul>	√	√
	<b>End user replaceable parts:</b> <ul style="list-style-type: none"> <li>AC adapter</li> <li>Battery (system)</li> <li>Hard drive</li> <li>Memory modules (expansion and primary)</li> <li>Optical drive</li> <li>WLAN module</li> </ul>	√	√

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## 2 External component identification

### Finding your hardware and software information

#### Locating hardware

To find out what hardware is installed on your computer:

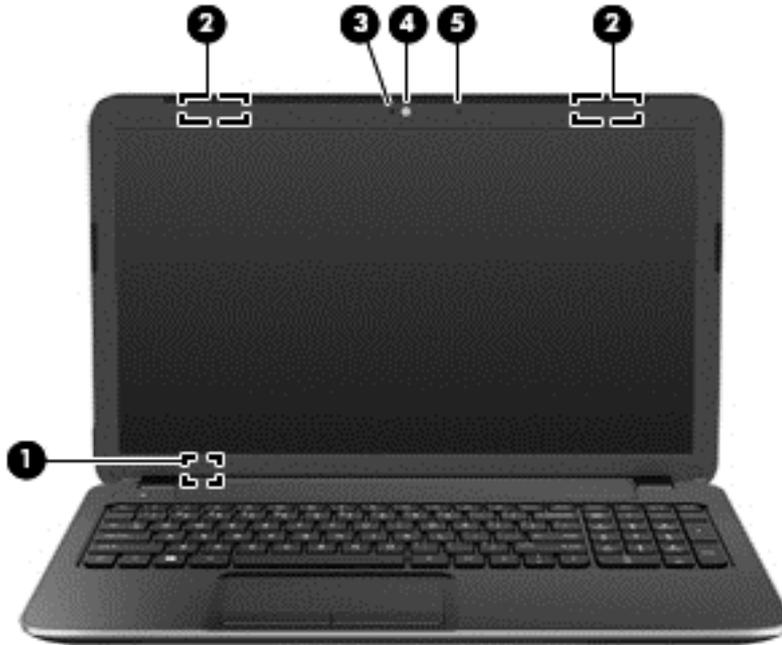
1. From the Start screen, type **c**, and then select **Control Panel**.
2. Select **System and Security**, and then in the **System** area, click **Device Manager**.

A list reveals all the devices installed in your computer.

#### Locating software

- ▲ To find out what software is installed on your computer, from the Start screen, right-click using the mouse or swipe from the top of the TouchPad to reveal the apps and then select the **All apps** icon.

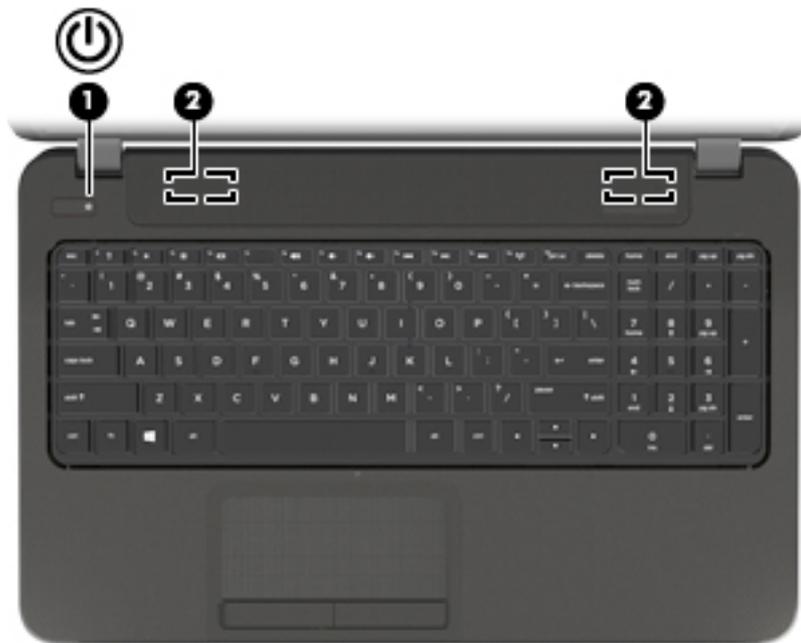
# Display



Item	Component	Description
(1)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on.  <b>NOTE:</b> The internal display switch is not visible from the outside of the computer.
(2)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(3)	Webcam light	On: The webcam is in use.
(4)	Webcam	Records video and captures still photographs.  To use the webcam, from the Start screen, type <i>c</i> , and then select <b>CyberLink YouCam</b> from the list of applications.
(5)	Internal microphone	Records sound.

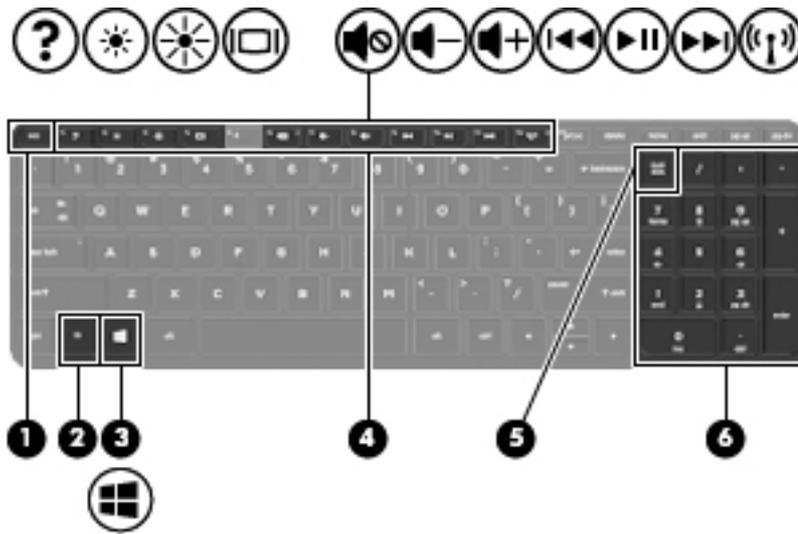
\*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. To access this guide, from the Start screen, type *support*, select the **HP Support Assistant app**, select **My computer**, and then select **User guides**.

## Buttons and speakers



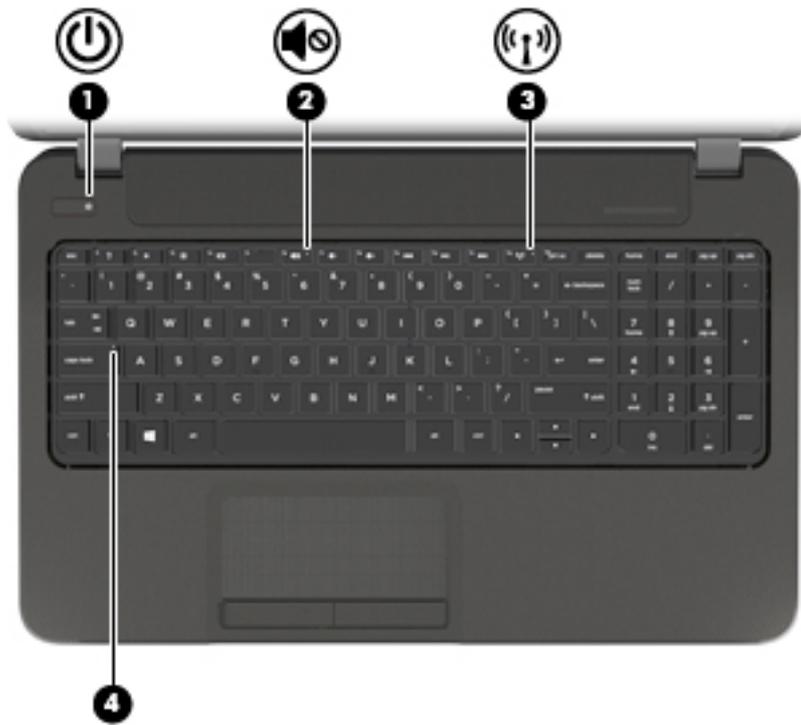
Item	Component	Description
(1)	Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate Sleep.</li><li>• When the computer is in the Sleep state, press the button briefly to exit Sleep.</li><li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p><b>CAUTION:</b> 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> <p><b>NOTE:</b> 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> <p>To learn more about your power settings, see your power options. From the Start screen, type <code>power</code>, select <b>Settings</b>, and then select <b>Power Options</b> from the list of applications.</p>
(2)	Speakers (2)	Produce sound.

# Keys



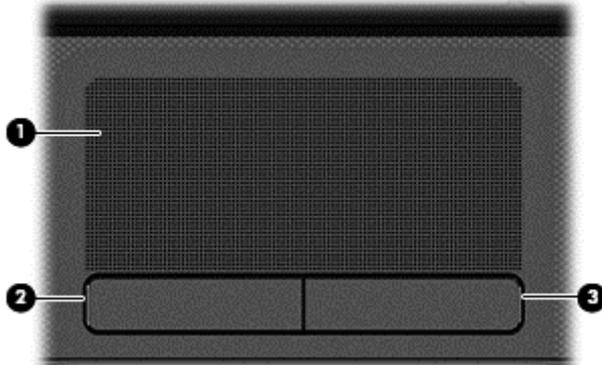
Item	Component	Description
(1)	esc key	Reveals system information when pressed in combination with the <b>fn</b> key.
(2)	fn key	Reveals system information when pressed in combination with the <b>esc</b> key.
(3)	Windows key	Returns you to the Start screen from an open app or the Windows desktop.  <b>NOTE:</b> Pressing the Windows logo key again will return you to the previous screen.
(4)	Action keys	Execute frequently used system functions.
(5)	num lk key	Controls the function of the integrated numeric keypad. Press the key to alternate between the standard numeric function found on an external keypad (this function is turned on at the factory) and the navigational function (indicated by the directional arrows on the keys).  <b>NOTE:</b> The keypad function that is active when the computer is turned off is reinstated when the computer is turned back on.
(6)	Integrated numeric keypad	Set at the factory to function like an external numeric keypad. To alternate between this numeric function and the navigational function (indicated by the directional arrows on the keys), press the <b>num lock</b> key.

# Lights



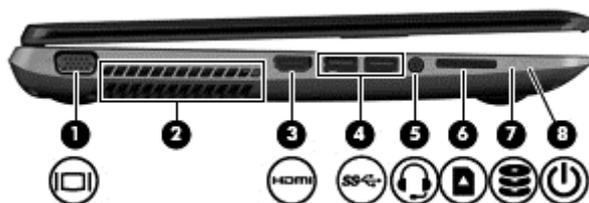
Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"><li>• White: The computer is on.</li><li>• Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components.</li><li>• Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power.</li></ul> <p><b>NOTE:</b> 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"><li>• Amber: Computer sound is off.</li><li>• Off: Computer sound is on.</li></ul>
(3)	Wireless light	On: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on. <p><b>NOTE:</b> On some models, the wireless light is amber when all wireless devices are off.</p>
(4)	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.

# TouchPad



Item	Component	Description
(1)	TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen. <b>NOTE:</b> 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.

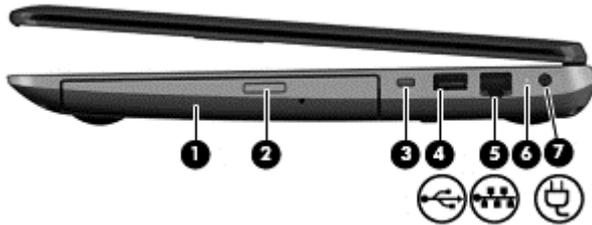
## Left side



Item	Component	Description
(1)	External monitor port	Connects an external VGA monitor or projector.
(2)	Vent	Enables airflow to cool internal components.  <b>NOTE:</b> 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.
(3)	HDMI port	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.
(4)	USB 3.0 ports (2)	Connect optional USB 3.0 devices and provide enhanced USB power performance.
(5)	Audio-out (headphone) jack/Audio-in (microphone) jack	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.  <b>WARNING!</b> 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. To access this guide, from the Start screen, type <code>support</code> , select the <b>HP Support Assistant</b> app, select <b>My computer</b> , and then select <b>User guides</b> .  <b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.  <b>NOTE:</b> Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(6)	Media Card Reader	Reads data from and writes data to digital memory cards such as Secure Digital (SD).

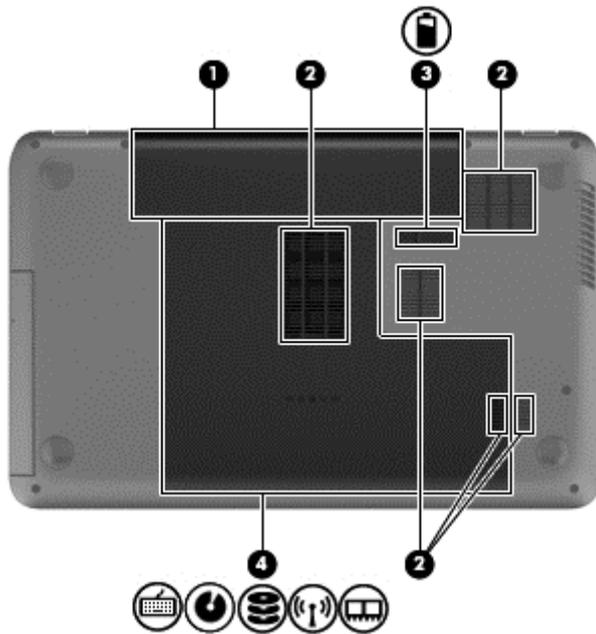
Item	Component	Description
(7)	Hard drive light	<ul style="list-style-type: none"> <li data-bbox="924 226 1430 249">• Blinking white: The hard drive is being accessed.</li> <li data-bbox="924 281 1449 331">• Amber: HP 3D DriveGuard has temporarily parked the hard drive.</li> </ul>
(8)	Power light	<ul style="list-style-type: none"> <li data-bbox="924 363 1225 386">• White: The computer is on.</li> <li data-bbox="924 417 1430 522">• 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.</li> <li data-bbox="924 554 1449 638">• Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power.</li> </ul> <p data-bbox="971 669 1449 779"><b>NOTE:</b> 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)	Optical drive	Reads and writes to an optical disc.
(2)	Optical drive eject button	Releases the disc tray.
(3)	Security cable slot	Attaches an optional security cable to the computer.  <b>NOTE:</b> The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(4)	USB 2.0 port	Connects an optional USB device.
(5)	RJ-45 (network) jack	Connects a network cable.
(6)	AC adapter light	<ul style="list-style-type: none"><li>• White: The AC adapter is connected and the battery is charged.</li><li>• Amber: The AC adapter is connected and the battery is charging.</li><li>• Off: The computer is using DC power.</li></ul>
(7)	Power connector	Connects an AC adapter.

# Bottom

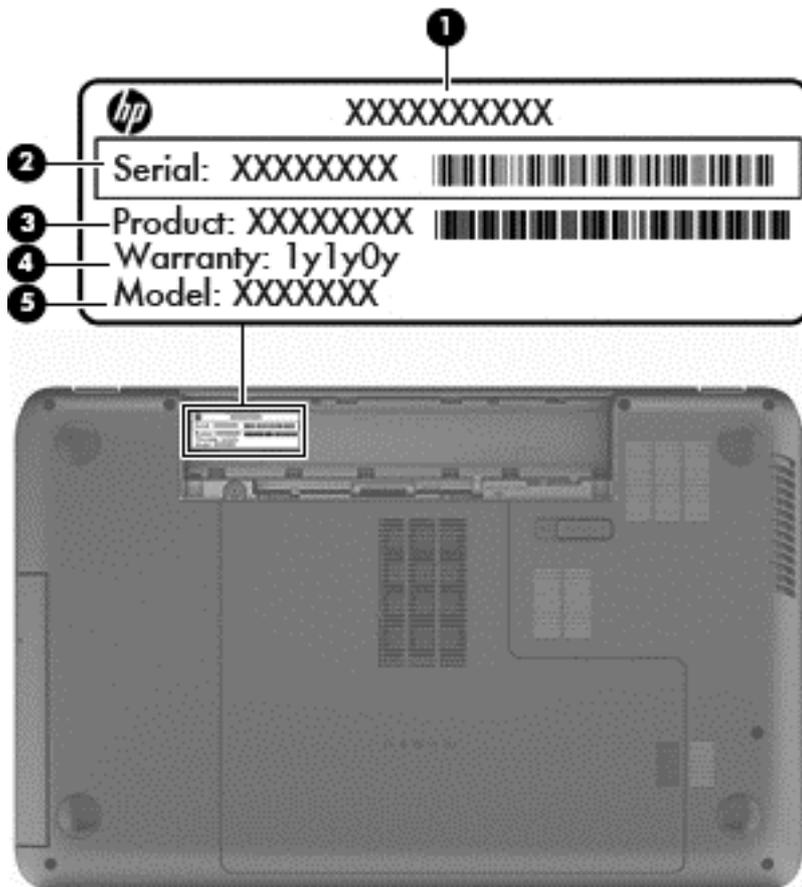


Item	Component	Description
(1)	Battery bay	Holds the battery.
(2)	Vents (5)	Enable airflow to cool internal components.  <b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(3)	Battery release latch	Releases the battery from the battery bay.
(4)	Service cover	Provides access to the hard drive bay, the WLAN module slot, and the memory module slots.  <b>CAUTION:</b> 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. From the Start screen, type h, and then select <b>Help and Support</b> .

# 3 Illustrated parts catalog

## Service tag

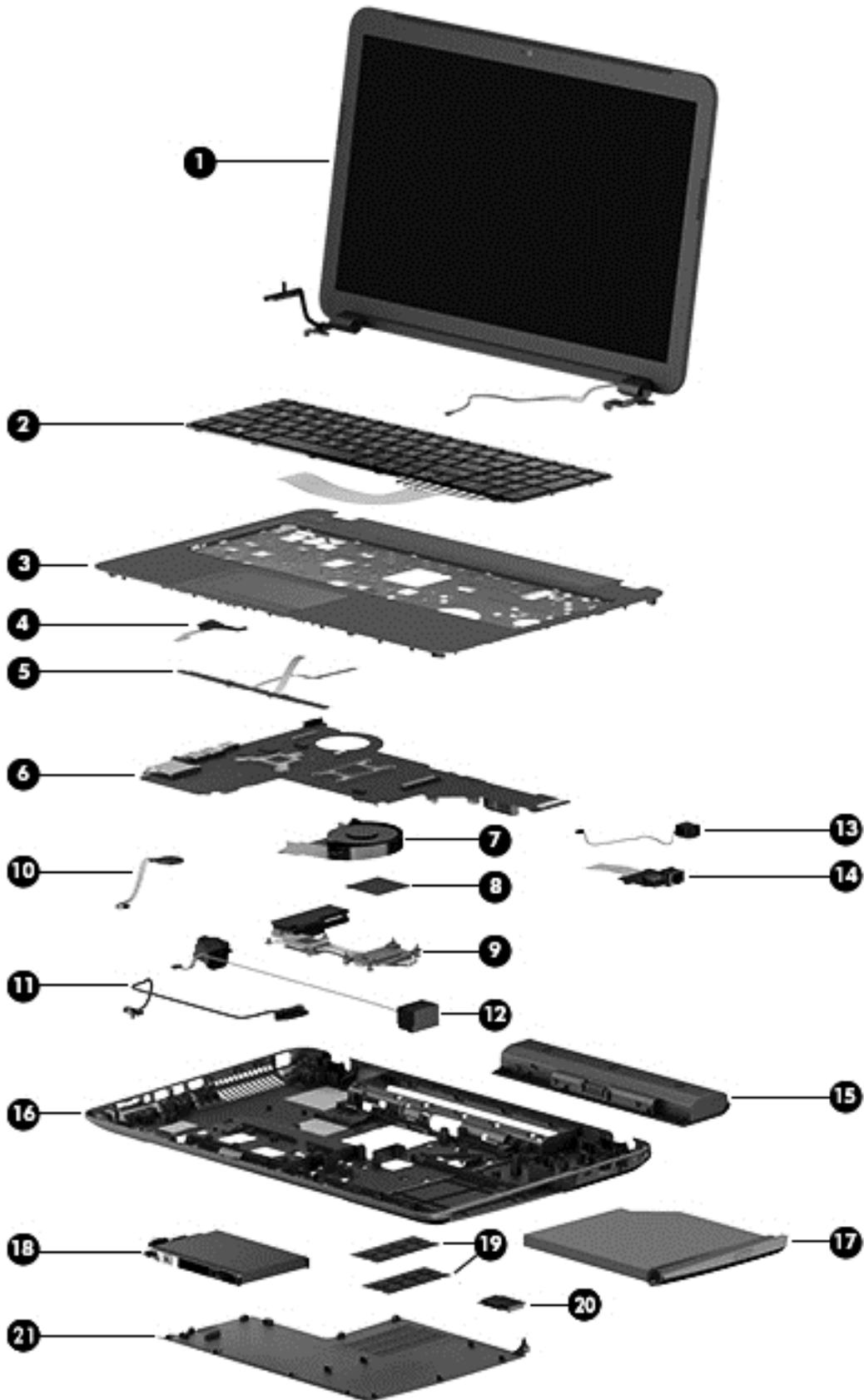
When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag.



Item	Description	Function
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.

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

# Computer major components



Item	Component	Spare part number
(1)	<b>Display assembly:</b> The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see <a href="#">Display assembly subcomponents on page 28</a> .	
(2)	<b>Keyboard</b> (includes keyboard cable):	
	In black finish for use on all computer models in Belgium	719853-A41
	In black finish for use on all computer models in Bulgaria	719853-261
	In black finish for use on all computer models in Canada	719853-DB1
	In black finish for use on all computer models in the Czech Republic and Slovakia	719853-FL1
	In black finish for use on all computer models in Denmark, Finland, and Norway	719853-DH1
	In black finish for use on all computer models in France	719853-051
	In black finish for use on all computer models in Germany	719853-041
	In black finish for use on all computer models in Greece	719853-151
	In black finish for use on all computer models in Hungary	719853-211
	In black finish for use on all computer models in Israel	719853-BB1
	In black finish for use on all computer models in Italy	719853-061
	In black finish for use on all computer models in Japan	719853-291
	In black finish for use on all computer models in the Netherlands	719853-B31
	In black finish for use only on computer models equipped with an Intel processor in Northwest Africa	719853-FP1
	In black finish for use on all computer models in Portugal	719853-131
	In black finish for use on all computer models in Romania	719853-271
	In black finish for use on all computer models in Russia	719853-251
	In black finish for use only on computer models equipped with an Intel processor in Saudi Arabia	719853-171
	In black finish for use on all computer models in Slovenia	719853-BA1
	In black finish for use on all computer models in South Korea	719853-AD1
	In black finish for use on all computer models in Spain	719853-071
	In black finish for use on all computer models in Switzerland	719853-BG1
	In black finish for use on all computer models in Taiwan	719853-AB1
	In black finish for use on all computer models in Thailand	719853-281
	In black finish for use on all computer models in Turkey	719853-141
	In black finish for use on all computer models in the United Kingdom and Singapore	719853-031
	In black finish for use on all computer models in the United States	719853-001
	In white finish for use on all computer models in Belgium	720597-A41

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	In white finish for use on all computer models in Bulgaria	720597-261
	In white finish for use on all computer models in Canada	720597-DB1
	In white finish for use on all computer models in the Czech Republic and Slovakia	720597-FL1
	In white finish for use on all computer models in Denmark, Finland, and Norway	720597-DH1
	In white finish for use on all computer models in France	720597-051
	In white finish for use on all computer models in Germany	720597-041
	In white finish for use on all computer models in Greece	720597-151
	In white finish for use on all computer models in Hungary	720597-211
	In white finish for use on all computer models in Israel	720597-BB1
	In white finish for use on all computer models in Italy	720597-061
	In white finish for use on all computer models in Japan	720597-291
	In white finish for use on all computer models in the Netherlands	720597-B31
	In white finish for use only on computer models equipped with an Intel processor in Northwest Africa	720597-FP1
	In white finish for use on all computer models in Portugal	720597-131
	In white finish for use on all computer models in Romania	720597-271
	In white finish for use on all computer models in Russia	720597-251
	In white finish for use only on computer models equipped with an Intel processor in Saudi Arabia	720597-171
	In white finish for use on all computer models in Slovenia	720597-BA1
	In white finish for use on all computer models in South Korea	720597-AD1
	In white finish for use on all computer models in Spain	720597-071
	In white finish for use on all computer models in Switzerland	720597-BG1
	In white finish for use on all computer models in Taiwan	720597-AB1
	In white finish for use on all computer models in Thailand	720597-281
	In white finish for use on all computer models in Turkey	720597-141
	In white finish for use on all computer models in the United Kingdom and Singapore	720597-031
	In white finish for use on all computer models in the United States	720597-001
<b>(3)</b>	<b>Top cover</b> (includes TouchPad):	
	In flying red finish	719868-001
	In pearl white finish	719867-001
	In regal purple finish	719870-001
	In revolutionary blue finish	719869-001

Item	Component	Spare part number
	In sparkling black and silver finish	719871-001
(4)	<b>Power button board</b> (includes cable)	719843-001
(5)	<b>TouchPad button board</b> (includes TouchPad board cable and TouchPad button board cable)	720299-001
(6)	<b>System board</b> (includes replacement thermal material):	
	For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	720692-501
	For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	720692-001
	Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	722205-501
	Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	722205-001
	For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	720691-501
	For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with UMA memory, and the Linux operating system	720691-001
	Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	722204-501
	Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	722204-001
	Equipped with an AMD A4-5000 1.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	731534-501
	Equipped with an AMD A4-5000 1.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 15 W), a graphics subsystem with UMA memory, and the Linux operating system	731534-001
	For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Professional operating system	713256-601
	For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Standard operating system	713256-501
	For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Linux operating system	713256-001
	For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	713255-001

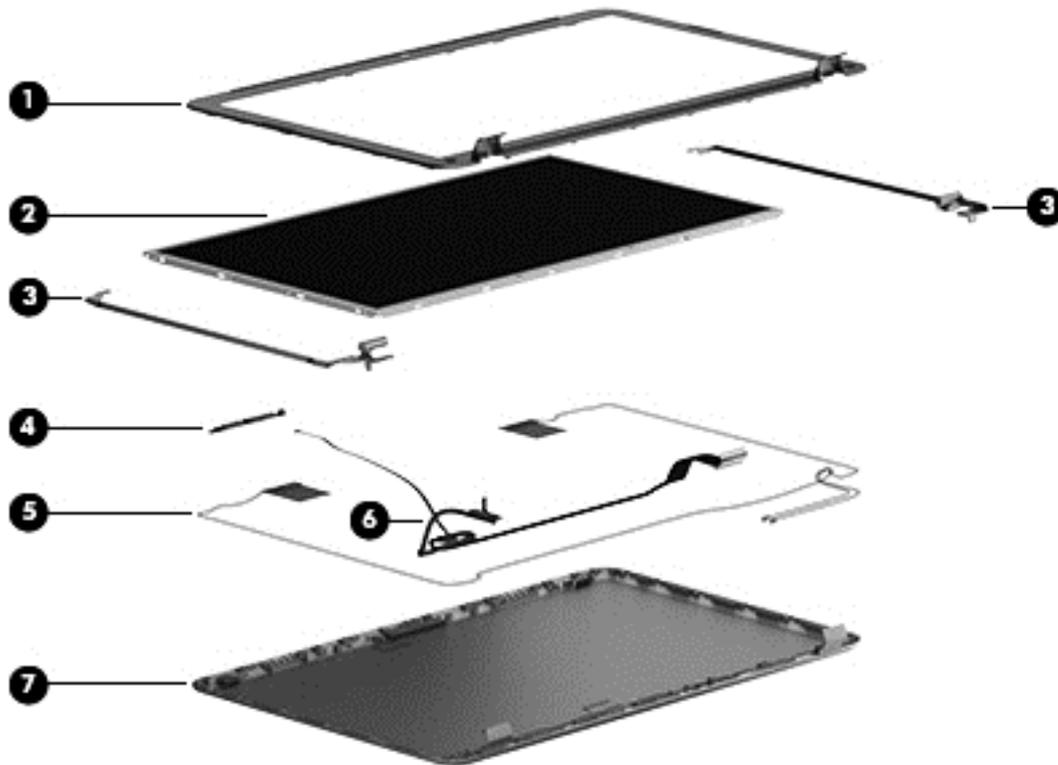
<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	713255-501
	For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Linux operating system	713255-001
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Professional operating system	720459-601
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Standard operating system	720459-501
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Linux operating system	720459-001
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Professional operating system	713258-601
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	713258-501
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	713258-001
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	713257-001
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	713257-501
	For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Linux operating system	713257-001
	Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Professional operating system	729844-601
	Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	729844-501
	Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	729844-001
	Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	729843-601
	Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	729843-501
	Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with UMA memory, and the Linux operating system	729843-001

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	<b>Thermal Material Kit</b> (includes thermal replacement material)	719864-001
<b>(7)</b>	<b>Fan</b> (includes cable)	719860-001
<b>(8)</b>	<b>Processor</b> (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
	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 i7-4702MQ 2.20-GHz processor (SC turbo up to 2.90-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 37 W)	723522-001
	Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.2-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W)	701658-001
	Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	711903-001
	Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	713163-001
	Intel Pentium 2030M 2.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W)	713164-001
	Intel Pentium 2020M 2.40-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W)	700628-001
	<b>Thermal Material Kit</b> (includes thermal replacement material)	719864-001
<b>(9)</b>	<b>Heat sink</b> (includes replacement thermal material):	
	Heat sink for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor and a graphics subsystem with discrete memory	720690-001
	Heat sink for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor and a graphics subsystem with UMA memory	720689-001
	For use only on computer models equipped with an AMD A6-5200 and a graphics subsystem with discrete memory	724885-001
	For use only on computer models equipped with an AMD A6-5200 and a graphics subsystem with UMA memory	724884-001
	For use only on computer models equipped with Intel processor and a graphics subsystem with discrete memory	719862-001
	For use only on computer models equipped with Intel processor and a graphics subsystem with UMA memory	719861-001
	<b>PCH heat sink</b>	719863-001
	<b>Thermal Material Kit</b> (includes thermal replacement material)	719864-001

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
<b>(10)</b>	<b>RTC battery</b> (includes cable and double-sided tape)	637193-001
<b>(11)</b>	<b>Optical drive connector cable</b>	719846-001
<b>(12)</b>	<b>Speakers</b> (include left and right speakers and cables)	719865-001
<b>(13)</b>	<b>Power connector cable</b>	719859-001
<b>(14)</b>	<b>RJ-45/USB board</b> (includes cable)	719844-001
<b>(15)</b>	<b>Battery:</b>	
	6-cell, 62-Wh, 2.80-Ah, Li-ion battery	710417-001
	6-cell, 47-Wh, 2.20-Ah, Li-ion battery	710416-001
<b>(16)</b>	<b>Base enclosure</b> (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover)	719866-001
	<b>Rubber Kit</b> (not illustrated, includes front and rear rubber feet and display bezel rubber screw covers)	719858-001
<b>(17)</b>	<b>DVD±RW Double Layer SuperMulti Drive</b>	719874-001
<b>(18)</b>	<b>Hard drive</b> (does not include hard drive bracket or hard drive connector cable):	
	1-TB, 5400-rpm, 9.5-mm for use on all computer models	676521-001
	750-GB, 5400-rpm, 9.5-mm for use only on computer models equipped with an AMD processor	634250-001
	750-GB, 5400-rpm, 9.5-mm for use only on computer models equipped with an Intel processor	644351-001
	640-GB, 5400-rpm, 9.5-mm for use on all computer models	669300-001
	500-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an AMD processor	644683-001
	500-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an Intel processor	683802-001
	320-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an AMD processor	622643-001
	320-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an Intel processor	645193-001
	<b>Hard Drive Hardware Kit</b> (not illustrated, includes hard drive bracket and hard drive connector cable)	716179-001
<b>(19)</b>	<b>Memory module</b> (PC3L, 12800, 1600-MHz):	
	8-GB	693374-001
	4-GB	691740-001
	2-GB	691739-001
<b>(20)</b>	<b>WLAN module:</b>	
	Mediatek MT7630E 802.11bgn Wi-Fi Adapter and Mediatek Bluetooth 4.0 Adapter for use only on computer models equipped with an AMD processor	710418-001

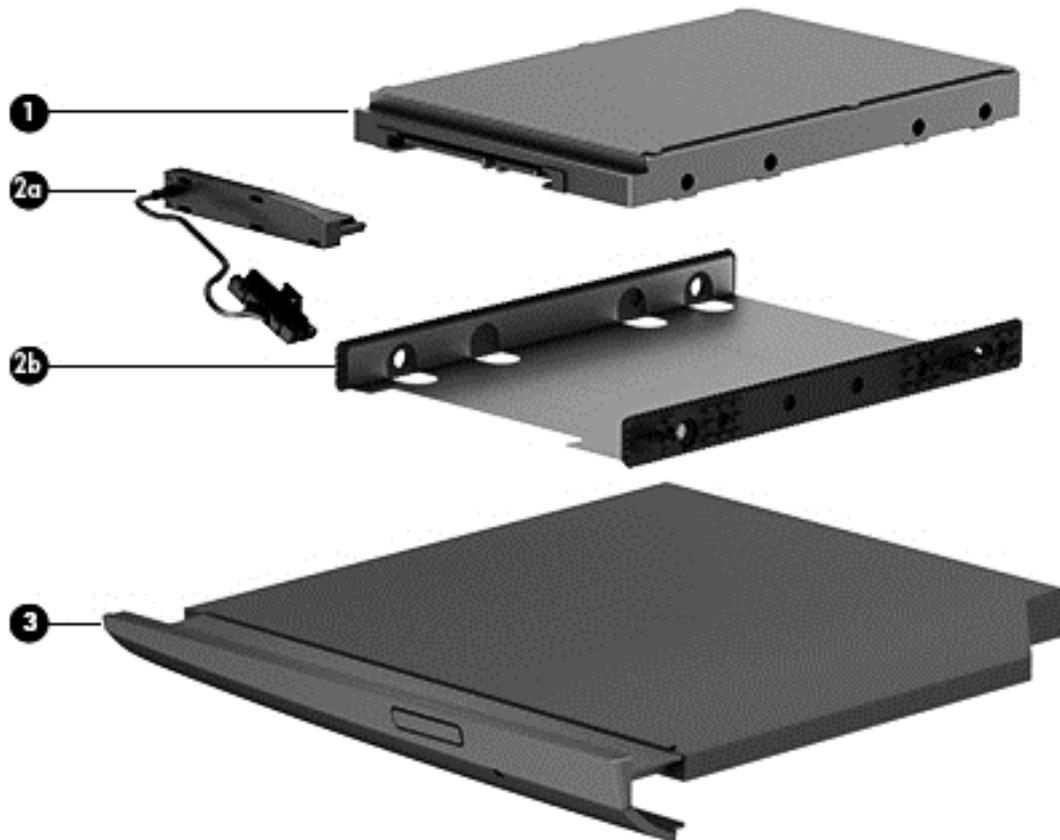
<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	Atheros AR9485 802.11b/g/n WiFi Adapter for use on all computer models	675794-001
	Ralink RT3290LE 802.11b/g/n 1x1 WiFi and Bluetooth 4.0 Combo Adapter for use on all computer models	690020-001
	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter for use on all computer models	709848-001
	Intel Centrino Wireless-N 2230 Combo Adapter for use only on computer models equipped with an Intel processor	670290-001
<b>(21)</b>	<b>Service cover</b>	719872-001

## Display assembly subcomponents



Item	Component	Spare part number
(1)	<b>Display bezel</b>	719847-001
(2)	<b>15.6-in, BrightView, HD, LED, SVA display panel</b>	719873-001
(3)	<b>Display hinges</b> (includes left and right hinges and hinge brackets)	719857-001
(4)	<b>Webcam/microphone module</b> (includes double-sided adhesive)	719845-001
(5)	<b>Antenna Kit</b> (includes left and right wireless antenna cables and transceivers)	719856-001
(6)	<b>Display panel cable</b> (includes webcam/microphone module cable)	719854-001
(7)	<b>Display enclosure:</b>	
	In flying red finish	719849-001
	In pearl white finish	719848-001
	In regal purple finish	719851-001
	In revolutionary blue finish	719850-001
	In sparkling black and silver finish	719852-001

## Mass storage devices



Item	Component	Spare part number
(1)	<b>Hard drive</b> (does not include hard drive bracket or hard drive connector cable):	
	1-TB, 5400-rpm, 9.5-mm for use on all computer models	676521-001
	750-GB, 5400-rpm, 9.5-mm for use only on computer models equipped with an AMD processor	634250-001
	750-GB, 5400-rpm, 9.5-mm for use only on computer models equipped with an Intel processor	644351-001
	640-GB, 5400-rpm, 9.5-mm for use on all computer models	669300-001
	500-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an AMD processor	644683-001
	500-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an Intel processor	683802-001
	320-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an AMD processor	622643-001
	320-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an Intel processor	645193-001
	<b>Hard Drive Hardware Kit</b> , includes:	716179-001

Item	Component	Spare part number
(2a)	Hard drive connector cable	
(2b)	Hard drive bracket	
(3)	<b>DVD±RW Double Layer SuperMulti Drive</b>	719874-001

## Miscellaneous parts

Component	Spare part number
<b>AC adapter:</b>	
90-W HP Smart AC adapter (PFC, EM, 4.5-mm)	710414-001
90-W HP Smart AC adapter (PFC, 4.5-mm)	710413-001
65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm)	714657-001
65-W HP Smart AC adapter (non-PFC, 4.5-mm)	710412-001
<b>Power cord</b> (3-pin, black, 1.83-m):	
For use on all computer models in Australia	490371-111
For use on all computer models in Denmark	490371-081
For use on all computer models in Europe	490371-021
For use on all computer models in India	490371-D61
For use on all computer models in Israel	490371-BB1
For use on all computer models in Italy	490371-061
For use only on computer models equipped with an Intel processor in Japan	490371-291
For use on all computer models in North America	490371-001
For use on all computer models in the People's Republic of China	490371-AA1
For use only on computer models equipped with an Intel processor in South Africa	490371-AR1
For use on all computer models in South Korea	490371-AD1
For use on all computer models in Switzerland	490371-111
For use on all computer models in Taiwan	490371-AB1
For use only on computer models equipped with an Intel processor in Thailand	490371-201
For use only on all computer models in the United Kingdom and Singapore	490371-031
<b>Screw Kit</b>	719855-001

## Sequential part number listing

Spare part number	Description
490371-001	Power cord for use on all computer models in North America(3-pin, black, 1.83-m)
490371-011	Power cord for use on all computer models in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use on all computer models in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use on all computer models in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-061	Power cord for use on all computer models in Italy (3-pin, black, 1.83-m)
490371-081	Power cord for use on all computer models in Denmark (3-pin, black, 1.83-m)
490371-111	Power cord for use on all computer models in Switzerland (3-pin, black, 1.83-m)
490371-201	Power cord for use only on computer models equipped with an Intel processor in Thailand (3-pin, black, 1.83-m)
490371-291	Power cord for use only on computer models equipped with an Intel processor in Japan (3-pin, black, 1.83-m)
490371-AA1	Power cord for use on all computer models in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	Power cord for use on all computer models in Taiwan (3-pin, black, 1.83-m)
490371-AD1	Power cord for use on all computer models in South Korea (3-pin, black, 1.83-m)
490371-AR1	Power cord for use only on computer models equipped with an Intel processor in South Africa (3-pin, black, 1.83-m)
490371-BB1	Power cord for use on all computer models in Israel (3-pin, black, 1.83-m)
490371-D61	Power cord for use on all computer models in India (3-pin, black, 1.83-m)
622643-001	320-GB, 5400-rpm, SATA, 9.5-mm hard drive for use only on computer models equipped with an AMD processor (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
634250-001	750-GB, 5400-rpm, SATA, 9.5-mm hard drive for use only on computer models equipped with an AMD processor (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
637193-001	RTC battery (includes cable and double-sided tape)
644351-001	750-GB, 5400-rpm, SATA, 7.0-mm hard drive for use only on computer models equipped with an Intel processor (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
644683-001	500-GB, 5400-rpm, SATA, 7.0-mm hard drive for use only on computer models equipped with an AMD processor (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.

Spare part number	Description
645193-001	320-GB, 5400-rpm, SATA, 7.0-mm hard drive for use only on computer models equipped with an Intel processor (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
669300-001	640-GB, 5400-rpm, SATA, 9.5-mm hard drive for use on all computer models (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
670290-001	Intel Centrino Wireless-N 2230 Combo Adapter for use only on computer models equipped with an Intel processor
675794-001	Atheros AR9485 802.11b/g/n WiFi Adapter for use on all computer models
676521-001	1-TB, 5400-rpm, SATA, 9.5-mm hard drive (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
683802-001	500-GB, 5400-rpm, SATA, 9.5- and 7.0-mm hard drive for use only on computer models equipped with an Intel processor (does not include hard drive bracket or hard drive connector cable)  <b>NOTE:</b> The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 716179-001.
690020-001	Ralink RT3290LE 802.11b/g/n 1x1 WiFi and Bluetooth 4.0 Combo Adapter for use on all computer models
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)
700628-001	Intel Pentium 2020M 2.40-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W; includes replacement thermal material)
701658-001	Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.2-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W; includes replacement thermal material)
709848-001	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter for use on all computer models
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)
710416-001	6-cell, 47-Wh, 2.20-Ah, Li-ion battery
710417-001	6-cell, 62-Wh, 2.80-Ah, Li-ion battery
710418-001	Mediatek MT7630E 802.11bgn Wi-Fi Adapter and Mediatek Bluetooth 4.0 Adapter for use only on computer models equipped with an AMD processor
711903-001	Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)

<b>Spare part number</b>	<b>Description</b>
713163-001	Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
713164-001	Intel Pentium 2030M 2.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W; includes replacement thermal material)
713255-001	System board for use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Linux operating system (includes replacement thermal material)
713255-501	System board for use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Windows Standard operating system (includes replacement thermal material)
713255-601	System board for use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Windows Professional operating system (includes replacement thermal material)
713256-001	System board for use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Linux operating system (includes replacement thermal material)
713256-501	System board for use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows Standard operating system (includes replacement thermal material)
713256-601	System board for use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows Professional operating system (includes replacement thermal material)
713257-001	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Linux operating system (includes replacement thermal material)
713257-501	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows Standard operating system (includes replacement thermal material)
713256-601	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows Professional operating system (includes replacement thermal material)
713258-001	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Linux operating system (includes replacement thermal material)
713258-501	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Windows Standard operating system (includes replacement thermal material)
713258-601	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Windows Professional operating system (includes replacement thermal material)
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; includes replacement thermal material)
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; includes replacement thermal material)

<b>Spare part number</b>	<b>Description</b>
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; includes replacement thermal material)
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; includes replacement thermal material)
714657-001	65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm)
716179-001	Hard Drive Hardware Kit
719843-001	Power button board (includes cable)
719844-001	RJ-45/USB board (includes cable)
719845-001	Webcam/microphone module (includes double-sided adhesive)
719846-001	Optical drive connector cable
719847-001	Display bezel
719848-001	Display enclosure in pearl white finish
719849-001	Display enclosure in flyer red finish
719850-001	Display enclosure in revolutionary blue finish
719851-001	Display enclosure in regal purple finish
719852-001	Display enclosure in sparkling black and silver finish
719853-001	Keyboard with backlight in black finish for use on all computer models in the United States (includes backlight cable and keyboard cable)
719853-031	Keyboard with backlight in black finish for use on all computer models in the United Kingdom and Singapore (includes backlight cable and keyboard cable)
719853-041	Keyboard with backlight in black finish for use on all computer models in France (includes backlight cable and keyboard cable)
719853-051	Keyboard with backlight in black finish for use on all computer models in Germany (includes backlight cable and keyboard cable)
719853-061	Keyboard with backlight in black finish for use on all computer models in Italy (includes backlight cable and keyboard cable)
719853-071	Keyboard with backlight in black finish for use on all computer models in Spain (includes backlight cable and keyboard cable)
719853-131	Keyboard with backlight in black finish for use on all computer models in Portugal (includes backlight cable and keyboard cable)
719853-141	Keyboard with backlight in black finish for use on all computer models in Turkey (includes backlight cable and keyboard cable)
719853-151	Keyboard with backlight in black finish for use on all computer models in Greece (includes backlight cable and keyboard cable)
719853-171	Keyboard with backlight in black finish for use on all computer models in Saudi Arabia (includes backlight cable and keyboard cable)
719853-211	Keyboard with backlight in black finish for use on all computer models in Hungary (includes backlight cable and keyboard cable)

<b>Spare part number</b>	<b>Description</b>
719853-251	Keyboard with backlight in black finish for use on all computer models in Russia (includes backlight cable and keyboard cable)
719853-261	Keyboard with backlight in black finish for use on all computer models in Bulgaria (includes backlight cable and keyboard cable)
719853-271	Keyboard with backlight in black finish for use on all computer models in Romania (includes backlight cable and keyboard cable)
719853-281	Keyboard with backlight in black finish for use on all computer models in Thailand (includes backlight cable and keyboard cable)
719853-291	Keyboard with backlight in black finish for use on all computer models in Japan (includes backlight cable and keyboard cable)
719853-A41	Keyboard with backlight in black finish for use on all computer models in Belgium (includes backlight cable and keyboard cable)
719853-AB1	Keyboard with backlight in black finish for use on all computer models in Taiwan (includes backlight cable and keyboard cable)
719853-AD1	Keyboard with backlight in black finish for use on all computer models in South Korea (includes backlight cable and keyboard cable)
719853-B31	Keyboard with backlight in black finish for use on all computer models in the Netherlands (includes backlight cable and keyboard cable)
719853-BA1	Keyboard with backlight in black finish for use on all computer models in Slovenia (includes backlight cable and keyboard cable)
719853-BB1	Keyboard with backlight in black finish for use on all computer models in Israel (includes backlight cable and keyboard cable)
719853-BG1	Keyboard with backlight in black finish for use on all computer models in Switzerland (includes backlight cable and keyboard cable)
719853-DB1	Keyboard with backlight in black finish for use on all computer models in Canada (includes backlight cable and keyboard cable)
719853-DH1	Keyboard with backlight in black finish for use on all computer models in Denmark, Finland, and Norway (includes backlight cable and keyboard cable)
719853-FL1	Keyboard with backlight in black finish for use on all computer models in the Czech Republic and Slovakia (includes backlight cable and keyboard cable)
719853-FP1	Keyboard with backlight in black finish for use only on computer models equipped with an Intel processor in Northwest Africa (includes backlight cable and keyboard cable)
719854-001	Display panel cable (includes webcam/microphone module cable)
719855-001	Screw Kit
719856-001	Wireless Antenna Kit (includes left and right wireless antenna cables and transceivers)
719857-001	Display hinges (includes left and right hinges and hinge brackets)
719858-001	Rubber Kit
719859-001	Power connector cable
719860-001	Fan (includes cable)

<b>Spare part number</b>	<b>Description</b>
719861-001	Heat sink for use only on computer models equipped with Intel processor and a graphics subsystem with UMA memory (includes thermal replacement material)
719862-001	Heat sink for use only on computer models equipped with Intel processor and a graphics subsystem with discrete memory (includes thermal replacement material)
719863-001	PCH heat sink (includes thermal replacement material)
719864-001	Thermal Material Kit (includes thermal replacement material)
719865-001	Speaker Kit (includes left and right speakers and cables)
719866-001	Base enclosure
719867-001	Top cover in pearl white finish (includes TouchPad)
719868-001	Top cover in flyer red finish (includes TouchPad)
719869-001	Top cover in revolutionary blue finish (includes TouchPad)
719870-001	Top cover in regal purple finish (includes TouchPad)
719871-001	Top cover in sparkling black and silver finish (includes TouchPad)
719872-001	Service cover
719873-001	15.6-in, BrightView, HD, LED, SVA display panel
719874-001	DVD±RW Double Layer SuperMulti Drive
720299-001	TouchPad button board (includes TouchPad board cable and TouchPad button board cable)
720459-001	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Linux operating system (includes replacement thermal material)
720459-501	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Standard operating system (includes replacement thermal material)
720459-601	System board for use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Professional operating system (includes replacement thermal material)
720597-001	Keyboard with backlight in white finish for use on all computer models in the United States (includes backlight cable and keyboard cable)
720597-031	Keyboard with backlight in white finish for use on all computer models in the United Kingdom and Singapore (includes backlight cable and keyboard cable)
720597-041	Keyboard with backlight in white finish for use on all computer models in France (includes backlight cable and keyboard cable)
720597-051	Keyboard with backlight in white finish for use on all computer models in Germany (includes backlight cable and keyboard cable)
720597-061	Keyboard with backlight in white finish for use on all computer models in Italy (includes backlight cable and keyboard cable)
720597-071	Keyboard with backlight in white finish for use on all computer models in Spain (includes backlight cable and keyboard cable)

<b>Spare part number</b>	<b>Description</b>
720597-131	Keyboard with backlight in white finish for use on all computer models in Portugal (includes backlight cable and keyboard cable)
720597-141	Keyboard with backlight in white finish for use on all computer models in Turkey (includes backlight cable and keyboard cable)
720597-151	Keyboard with backlight in white finish for use on all computer models in Greece (includes backlight cable and keyboard cable)
720597-171	Keyboard with backlight in white finish for use on all computer models in Saudi Arabia (includes backlight cable and keyboard cable)
720597-211	Keyboard with backlight in white finish for use on all computer models in Hungary (includes backlight cable and keyboard cable)
720597-251	Keyboard with backlight in white finish for use on all computer models in Russia (includes backlight cable and keyboard cable)
720597-261	Keyboard with backlight in white finish for use on all computer models in Bulgaria (includes backlight cable and keyboard cable)
720597-271	Keyboard with backlight in white finish for use on all computer models in Romania (includes backlight cable and keyboard cable)
720597-281	Keyboard with backlight in white finish for use only on computer models equipped with an Intel processor in Thailand (includes backlight cable and keyboard cable)
720597-A41	Keyboard with backlight in white finish for use on all computer models in Belgium (includes backlight cable and keyboard cable)
720597-AB1	Keyboard with backlight in white finish for use on all computer models in Taiwan (includes backlight cable and keyboard cable)
720597-AD1	Keyboard with backlight in white finish for use on all computer models in South Korea (includes backlight cable and keyboard cable)
720597-B31	Keyboard with backlight in white finish for use on all computer models in the Netherlands (includes backlight cable and keyboard cable)
720597-BA1	Keyboard with backlight in white finish for use on all computer models in Slovenia (includes backlight cable and keyboard cable)
720597-BB1	Keyboard with backlight in white finish for use on all computer models in Israel (includes backlight cable and keyboard cable)
720597-BG1	Keyboard with backlight in white finish for use on all computer models in Switzerland (includes backlight cable and keyboard cable)
720597-DB1	Keyboard with backlight in white finish for use on all computer models in Canada (includes backlight cable and keyboard cable)
720597-DH1	Keyboard with backlight in white finish for use on all computer models in Denmark, Finland, and Norway (includes backlight cable and keyboard cable)
720597-FL1	Keyboard with backlight in white finish for use on all computer models in the Czech Republic and Slovakia (includes backlight cable and keyboard cable)
720597-FP1	Keyboard with backlight in white finish for use only on computer models equipped with an Intel processor in Northwest Africa (includes backlight cable and keyboard cable)

<b>Spare part number</b>	<b>Description</b>
720689-001	Heat sink for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor and a graphics subsystem with UMA memory (includes thermal replacement material)
720690-001	Heat sink for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor and a graphics subsystem with discrete memory (includes thermal replacement material)
720691-001	System board for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with UMA memory, and the Linux operating system (includes thermal replacement material)
720691-501	System board for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system (includes thermal replacement material)
720692-001	System board for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with 1-GB of discrete memory, and the Linux operating system (includes thermal replacement material)
720692-501	System board for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system (includes thermal replacement material)
722204-001	System board equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system (includes thermal replacement material)
722204-501	System board equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system (includes thermal replacement material)
722205-001	System board equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system (includes thermal replacement material)
722205-501	System board equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system (includes thermal replacement material)
723522-001	Intel Quad Core i7-4702MQ 2.20-GHz processor (SC turbo up to 2.90-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 37 W; includes replacement thermal material)
724884-001	Heat sink for use only on computer models equipped with an AMD A6-5200 2.00-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 25 W) and a graphics subsystem with UMA memory (includes thermal replacement material)
724885-001	Heat sink for use only on computer models equipped with an AMD A6-5200 2.00-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 25 W) and a graphics subsystem with discrete memory (includes thermal replacement material)
729843-001	System board equipped with an Intel Dual Core i3-3110M 2.30-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W), a graphics subsystem with UMA memory, and the Linux operating system (includes thermal replacement material)
729843-501	System board equipped with an Intel Dual Core i3-3110M 2.30-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system (includes thermal replacement material)
729843-601	System board equipped with an Intel Dual Core i3-3110M 2.30-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system (includes thermal replacement material)

<b>Spare part number</b>	<b>Description</b>
729844-001	System board equipped with an Intel Dual Core i3-3110M 2.30-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system (includes thermal replacement material)
729844-501	System board equipped with an Intel Dual Core i3-3110M 2.30-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system (includes thermal replacement material)
729844-601	System board equipped with an Intel Dual Core i3-3110M 2.30-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Professional operating system (includes thermal replacement material)
726633-001	System board for use only on computer models equipped with an AMD A6-5200 2.00-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 25 W), a graphics subsystem with UMA memory, and the Linux operating system (includes thermal replacement material)
726633-501	System board for use only on computer models equipped with an AMD A6-5200 2.00-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 25 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system (includes thermal replacement material)
726634-001	System board for use only on computer models equipped with an AMD A6-5200 2.00-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system (includes thermal replacement material)
726634-501	System board for use only on computer models equipped with an AMD A6-5200 2.00-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system (includes thermal replacement material)
731534-001	System board equipped with an AMD A4-5000 1.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 15 W), a graphics subsystem with a UMA memory, and the Linux operating system (includes thermal replacement material)
731534-501	System board equipped with an AMD A4-5000 1.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 15 W), a graphics subsystem with a UMA memory, and the Windows 8 Standard operating system (includes thermal replacement material)

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# 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.

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

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## Plastic parts

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 **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.

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## Cables and connectors

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**⚠ 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.

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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

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**⚠ 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."

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# 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.

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

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# 5 Removal and replacement procedures for Customer Self-Repair parts

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 **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.

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## Component replacement procedures

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 **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 service tag at the bottom of your computer. See Service tag on page 16 for details.

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

There are as many as 9 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:

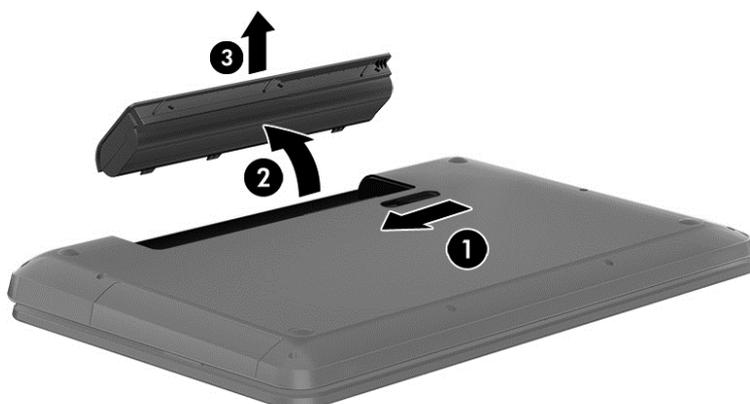
**⚠ WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

**⚠ 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.

## Optical drive

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

Description	Spare part number
DVD+/-RW Double Layer SuperMulti Drive	720671-001

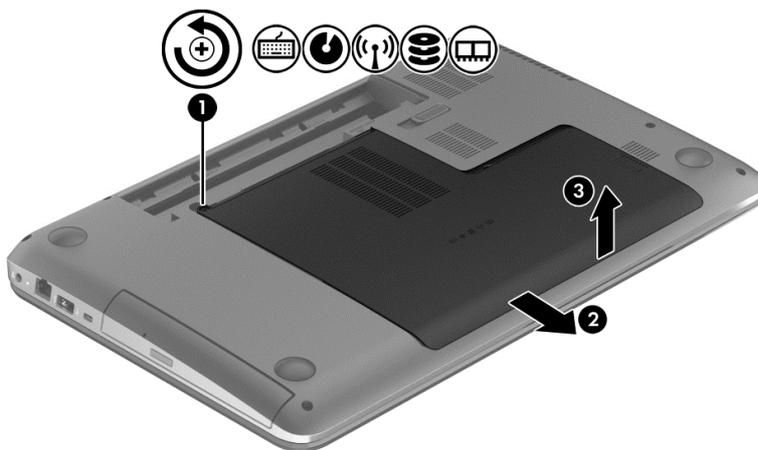
Before removing the optical drive, follow these steps:

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 46](#)).

Remove the optical drive:

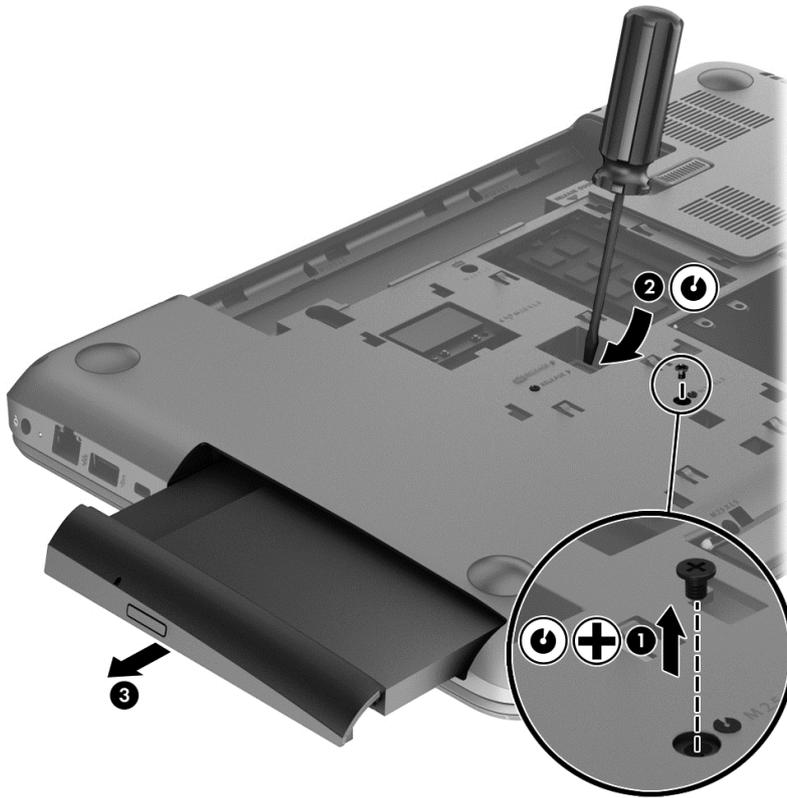
1. Loosen the Phillips PM3.0×10.0 captive screw **(1)** that secures the service cover to the computer.
2. Slide the service cover **(2)** forward until it disengages from the computer.
3. Remove the service cover **(3)**.

The service cover is available using spare part number 719872-001.



4. Position the computer with the left side toward you.
5. Remove the Phillips PM2.5×3.5 screw **(1)** that secures the optical drive to the computer.
6. Insert a flat-bladed screwdriver or similar tool into the optical drive tab access **(2)** and press the tab to the left to release the optical drive from the computer.

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



Reverse this procedure to install the optical drive.

## Hard drive

 **NOTE:** The hard drive spare part kit does not include the hard drive bracket, hard drive connector cable, and screws. These components are included in the Hard Drive Hardware Kit, spare part number 716179-001.

Description	Spare part number
1-TB, 5400-rpm, 9.5-mm for use on all computer models	676521-001
750-GB, 5400-rpm, 9.5-mm for use only on computer models equipped with an AMD processor	634250-001
750-GB, 5400-rpm, 9.5-mm for use only on computer models equipped with an Intel processor	644351-001
640-GB, 5400-rpm, 9.5-mm for use on all computer models	669300-001
500-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an AMD processor	644683-001
500-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an Intel processor	683802-001
320-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an AMD processor	622643-001
320-GB, 5400-rpm, 9.5- and 7.0-mm for use only on computer models equipped with an Intel processor	645193-001

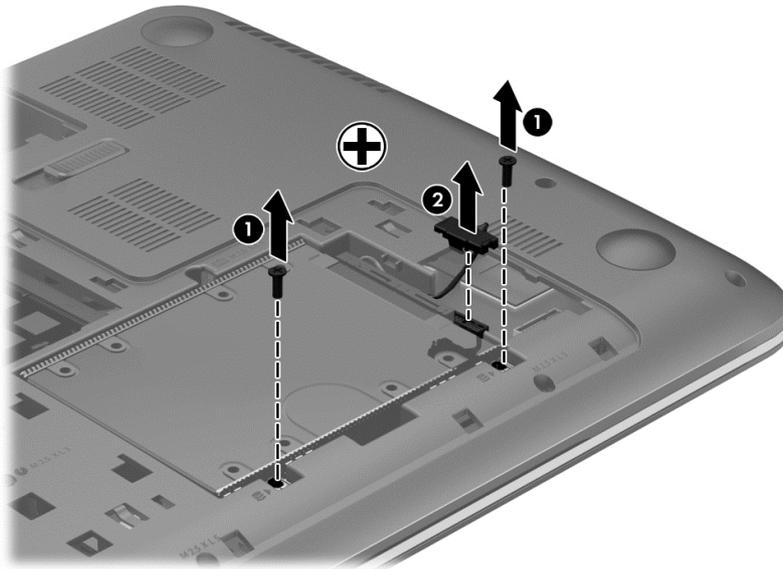
Before removing the hard drive, follow these steps:

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 46](#)).
5. Remove the service cover (see [Optical drive on page 47](#)).

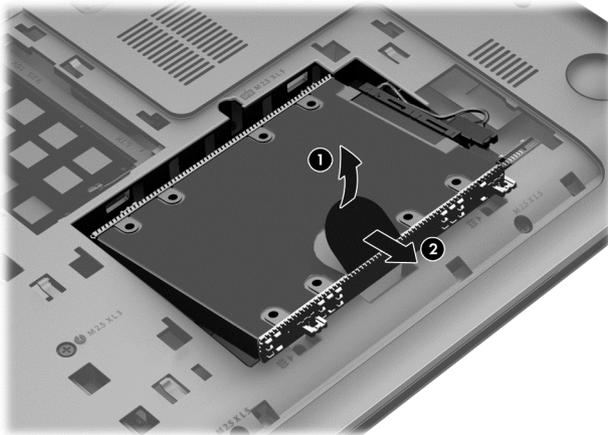
Remove the hard drive:

1. Remove the two Phillips PM2.5×5.75 screws **(1)** that secure the hard drive to the computer.

2. Disconnect the hard drive connector cable **(2)** from the system board.

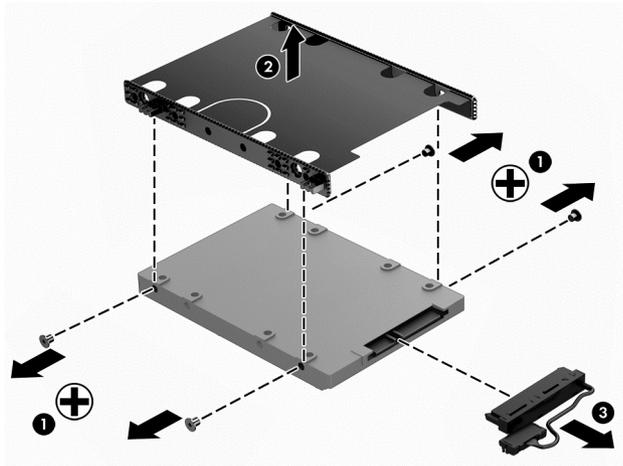


3. Lift up on the hard drive tab **(1)** to release the hard drive from the hard drive bay.
4. Remove the hard drive **(2)**.



5. 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. Remove the four Phillips PM2.5×3.25 screws **(2)** that secure the hard drive bracket to the hard drive.
  - d. Remove the hard drive bracket **(3)** from the hard drive.

The hard drive bracket, hard drive connector cable, and screws are available in the Hard Drive Hardware Kit, spare part number 716179-001.



Reverse this procedure to install the hard drive.

## WLAN module

Description	Spare part number
Mediatek MT7630E 802.11bgn Wi-Fi Adapter and Mediatek Bluetooth 4.0 Adapter for use only on computer models equipped with an AMD processor	710418-001
Atheros AR9485 802.11b/g/n WiFi Adapter for use on all computer models	675794-001
Ralink RT3290LE 802.11b/g/n 1x1 WiFi and Bluetooth 4.0 Combo Adapter for use on all computer models	690020-001
Realtek RTL8188EE 802.11bgn Wi-Fi Adapter for use on all computer models	709848-001
Intel Centrino Wireless-N 2230 Combo Adapter for use only on computer models equipped with an Intel processor	670290-001

**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:

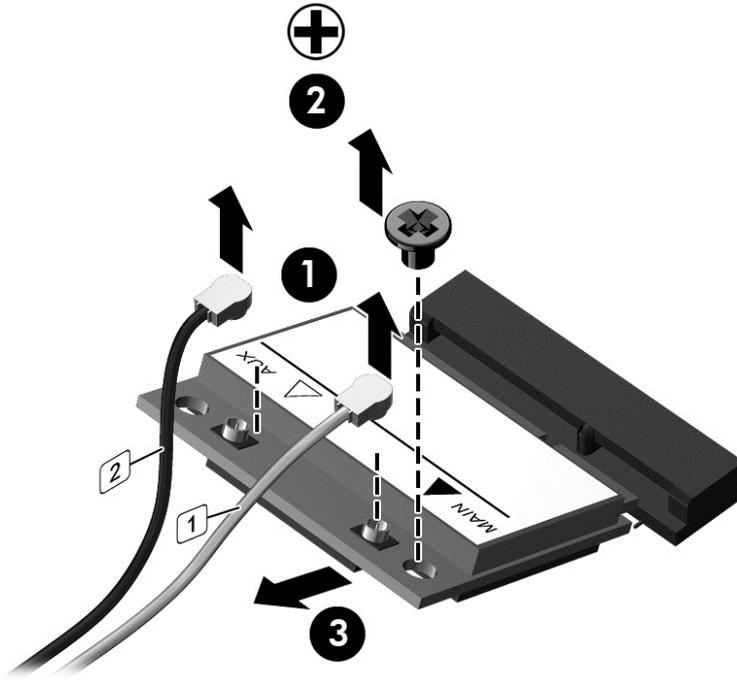
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the service cover (see [Optical drive on page 47](#)).

Remove the WLAN module:

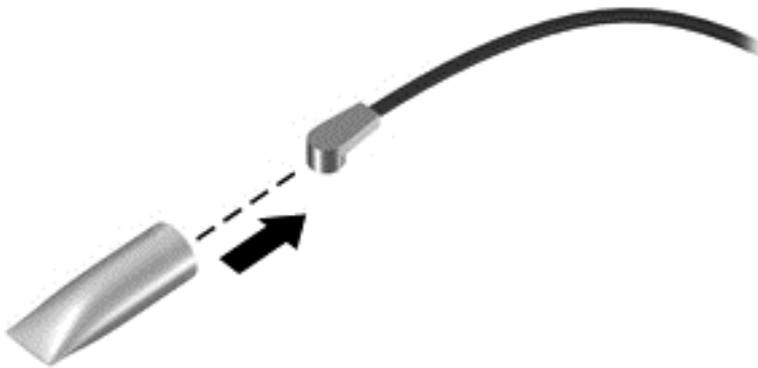
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

 **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”.

2. Remove the Phillips PM2.5×3.25 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
3. 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.

## 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](http://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.

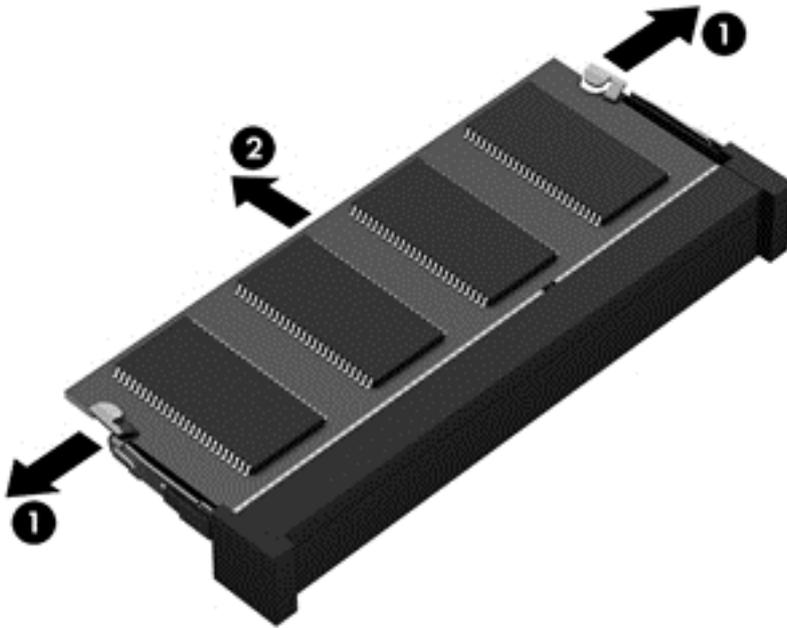
Before removing a memory module, follow these steps:

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 46](#)).
5. Remove the service cover (see [Optical drive on page 47](#)).

Remove the memory module:

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

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



Reverse this procedure to install a memory module.

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# 6 Removal and replacement procedures for Authorized Service Provider parts

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 **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.

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## Component replacement procedures

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

There are as many as 55 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.

## Keyboard



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

For use in country/region		Spare part number	
Keyboard in black finish:		For use only on computer models equipped with an Intel processor in Northwest Africa	719853-FP1
For use on all computer models in Belgium	719853-A41	For use on all computer models in Portugal	719853-131
For use on all computer models in Bulgaria	719853-261	For use on all computer models in Romania	719853-271
For use on all computer models in Canada	719853-DB1	For use on all computer models in Russia	719853-251
For use on all computer models in the Czech Republic and Slovakia	719853-FL1	For use only on computer models equipped with an Intel processor in Saudi Arabia	719853-171
For use on all computer models in Denmark, Finland, and Norway	719853-DH1	For use on all computer models in Slovenia	719853-BA1
For use on all computer models in France	719853-051	For use on all computer models in South Korea	719853-AD1
For use on all computer models in Germany	719853-041	For use on all computer models in Spain	719853-071
For use on all computer models in Greece	719853-151	For use on all computer models in Switzerland	719853-BG1
For use on all computer models in Hungary	719853-211	For use on all computer models in Taiwan	719853-AB1
For use on all computer models in Israel	719853-BB1	For use on all computer models in Thailand	719853-281
For use on all computer models in Italy	719853-061	For use on all computer models in Turkey	719853-141
For use on all computer models in Japan	719853-291	For use on all computer models in the United Kingdom and Singapore	719853-031
For use on all computer models in the Netherlands	719853-B31	For use on all computer models in the United States	719853-001
Keyboard in white finish:		For use only on computer models equipped with an Intel processor in Northwest Africa	720597-FP1
For use on all computer models in Belgium	720597-A41	For use on all computer models in Portugal	720597-131
For use on all computer models in Bulgaria	720597-261	For use on all computer models in Romania	720597-271

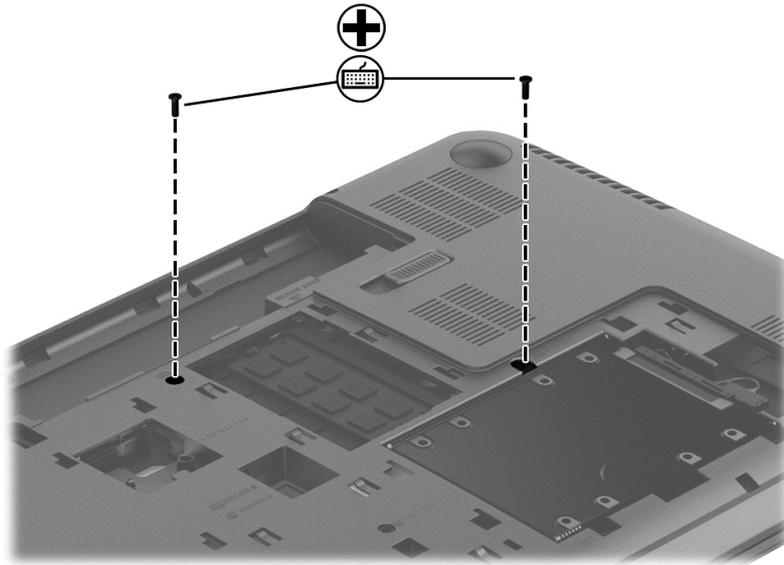
For use in country/region		Spare part number	
For use on all computer models in Canada	720597-DB1	For use on all computer models in Russia	720597-251
For use on all computer models in the Czech Republic and Slovakia	720597-FL1	For use only on computer models equipped with an Intel processor in Saudi Arabia	720597-171
For use on all computer models in Denmark, Finland, and Norway	720597-DH1	For use on all computer models in Slovenia	720597-BA1
For use on all computer models in France	720597-051	For use on all computer models in South Korea	720597-AD1
For use on all computer models in Germany	720597-041	For use on all computer models in Spain	720597-071
For use on all computer models in Greece	720597-151	For use on all computer models in Switzerland	720597-BG1
For use on all computer models in Hungary	720597-211	For use on all computer models in Taiwan	720597-AB1
For use on all computer models in Israel	720597-BB1	For use on all computer models in Thailand	720597-281
For use on all computer models in Italy	720597-061	For use on all computer models in Turkey	720597-141
For use on all computer models in Japan	720597-291	For use on all computer models in the United Kingdom and Singapore	720597-031
For use on all computer models in the Netherlands	720597-B31	For use on all computer models in the United States	720597-001

Before removing the keyboard, follow these steps:

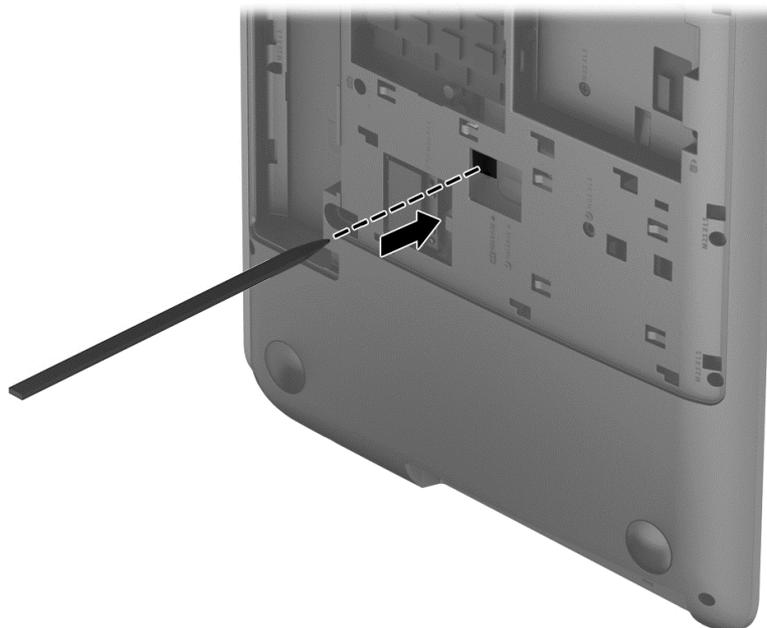
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 46](#)).
5. Remove the service cover (see [Optical drive on page 47](#)).
6. Remove the WLAN module (see [WLAN module on page 51](#)).

Remove the keyboard:

1. Remove the two Phillips PM2.5×7.0 screws that secure the keyboard to the computer.



2. Partially open the computer.
3. Rest and secure the computer on its left side.
4. Insert a thin tool into the keyboard release hole, and then press on the back of the keyboard until the keyboard disengages from the computer.

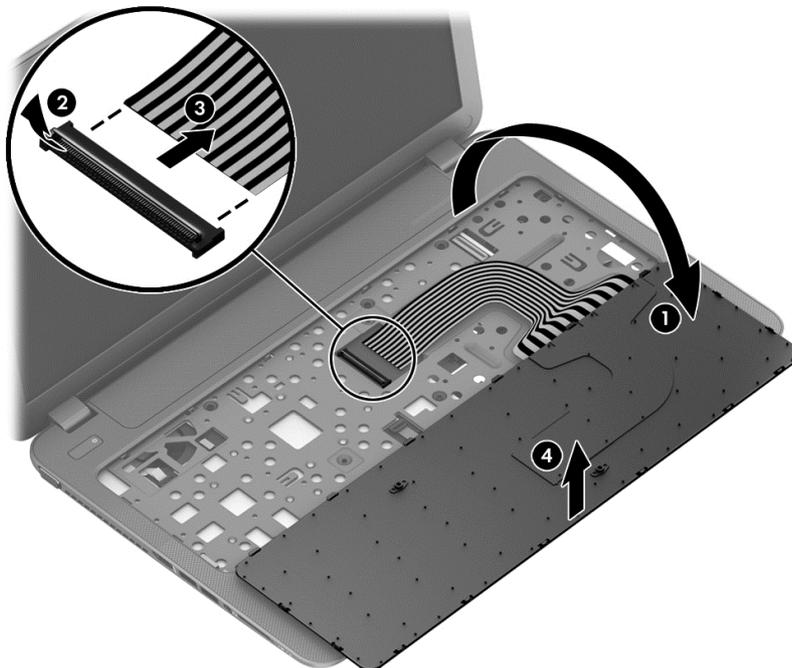


5. Turn the computer right-side up, with the front toward you.
6. Open the computer as far as it will open.

7. Lift the rear edge of the keyboard until it rests at an angle.



8. Swing the rear edge of the keyboard (1) up and forward until it rests upside down on the palm rest.
9. Release the zero insertion force (ZIF) connector (2) to which the keyboard ribbon cable is attached, and then disconnect the keyboard ribbon cable (3) from the system board.
10. Remove the keyboard (4).



Reverse this procedure to install the keyboard.

## Top cover

 **NOTE:** The top cover spare part kit includes a TouchPad.

Description	Spare part number
In flying red finish	719868-001
In pearl white finish	719867-001
In regal purple finish	719870-001
In revolutionary blue finish	719869-001
In sparkling black and silver finish	719871-001

Before removing the top cover, 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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. Keyboard (see [Keyboard on page 56](#))

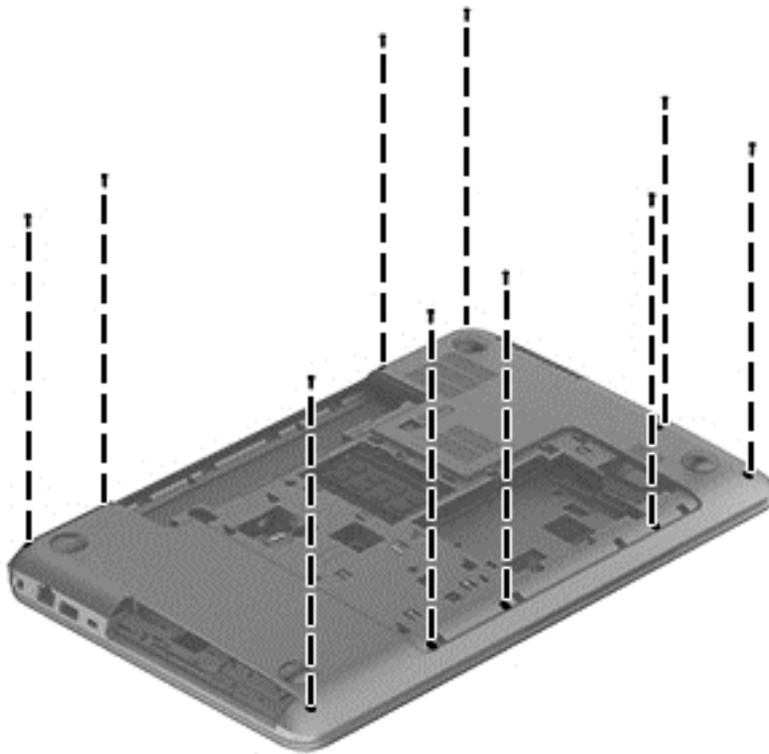
 **NOTE:** When replacing the top cover, be sure to remove the following components from the defective top cover and install them on the replacement top cover:

- Power button board (see [Power button board on page 64](#))
- TouchPad button board (see [TouchPad button board on page 65](#))

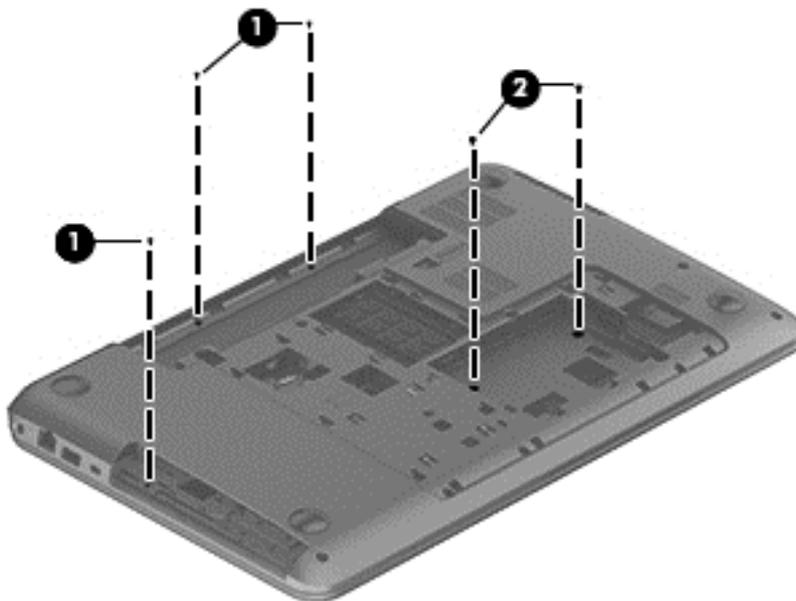
Remove the top cover:

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

3. Remove the ten Phillips PM2.5×7.0 screws that secure the top cover to the computer.

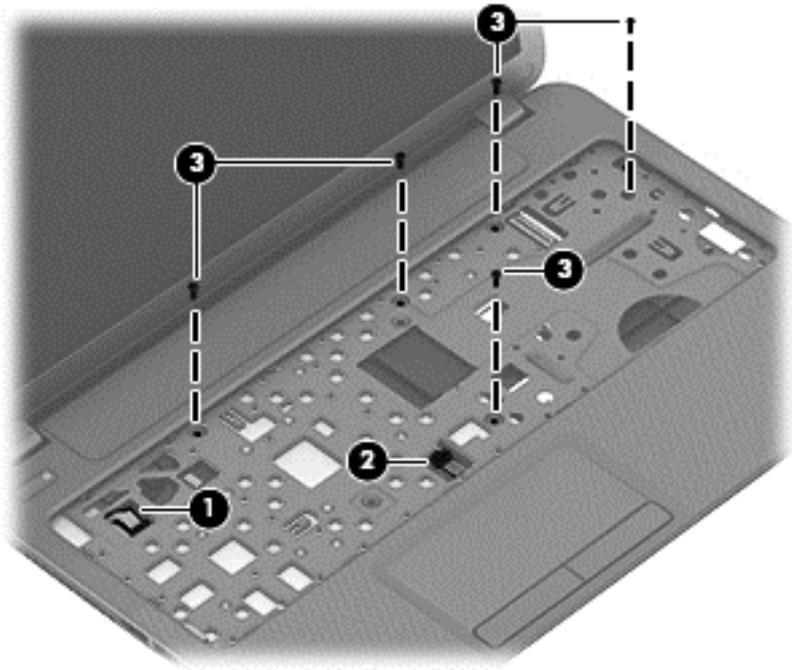


4. Remove the three Phillips PM2.0×2.5 screws **(1)** and the two Phillips PM2.5×3.5 screws **(2)** that secure the top cover to the computer.

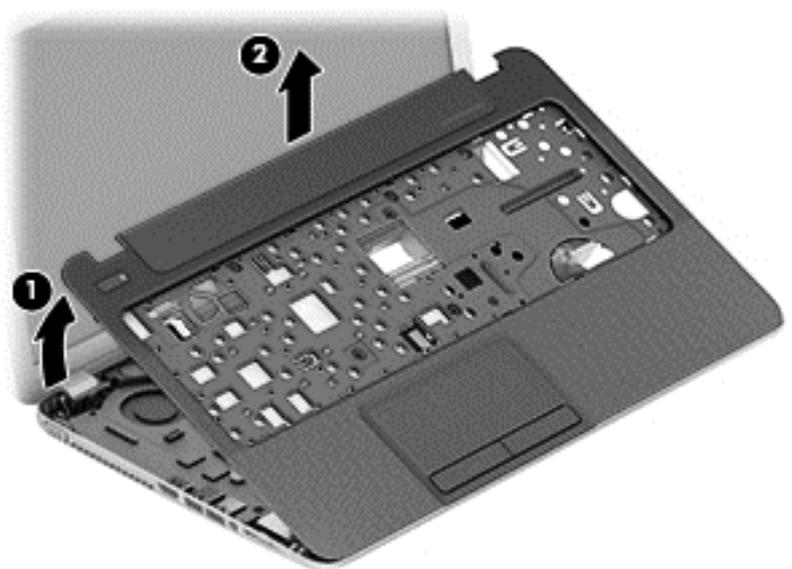


5. Turn the computer right side up with the front toward you.
6. Open the computer.

7. Release the ZIF connector **(1)** to which the power button board ribbon cable is attached, and then disconnect the power button board ribbon cable from the system board.
8. Release the ZIF connector **(2)** to which the TouchPad button board ribbon cable is attached, and then disconnect the TouchPad button board ribbon cable from the system board.
9. Remove the five Phillips PM2.5×7.0 screws that secure the top cover to the computer.



10. Lift the rear edge of the top cover **(1)** and swing it up and forward until the left and right sides detach from the computer.
11. Remove the top cover **(2)**.



Reverse this procedure to install the top cover.

## Power button board

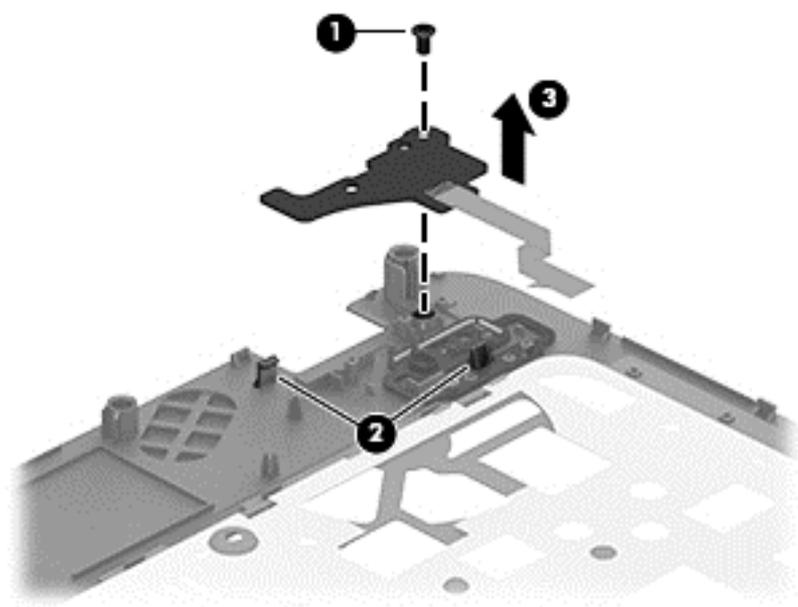
Description	Spare part number
Power button board (includes cable)	719843-001

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. Keyboard (see [Keyboard on page 56](#))
  - d. Top cover (see [Top cover on page 60](#))

Remove the power button board:

1. Turn the top cover upside down, with the front toward you.
2. Remove the Phillips PM2.5×3.0 screw **(1)** that secures the power button board to the top cover.
3. Release the clips **(2)** that secure the power button board to the top cover.
4. Remove the power button board **(3)** and cable



Reverse this procedure to install the power button board.

## TouchPad button board

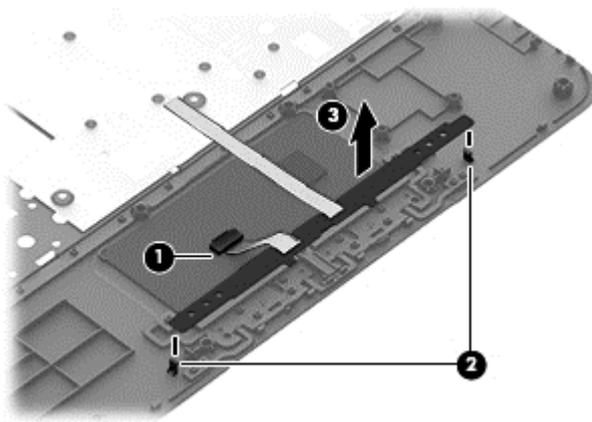
Description	Spare part number
TouchPad button board (includes TouchPad button board cable and TouchPad cable)	720299-001

Before removing the TouchPad 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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. Keyboard (see [Keyboard on page 56](#))
  - d. Top cover (see [Top cover on page 60](#))

Remove the TouchPad button board:

1. Turn the top cover upside down with the front toward you.
2. Release the ZIF connector **(1)** to which the TouchPad board ribbon cable is attached, and then disconnect the TouchPad board ribbon cable from the TouchPad board.
3. Release the two clips **(2)** that secure the TouchPad button board to the top cover.
4. Remove the TouchPad button board **(3)**.



Reverse this procedure to install the TouchPad button board.

## Display assembly subcomponents

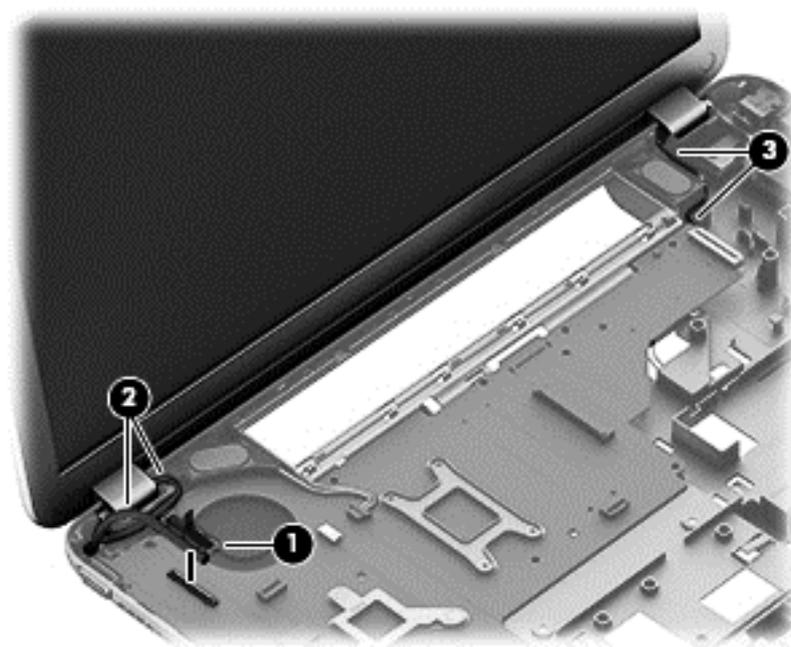
 **NOTE:** The display assembly is spared only at the subcomponent level. For more display assembly spare part information, see the individual removal subsections.

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

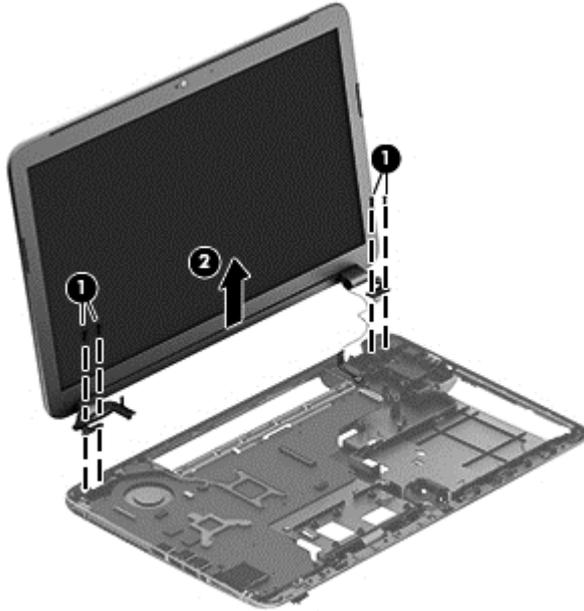
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))

Remove the display assembly:

1. Disconnect the display panel cable **(1)** from the system board.
2. Release the display panel cable from the clips built into the base enclosure **(2)**.
3. Release the wireless antenna cables from the clips built into the base enclosure **(3)**.

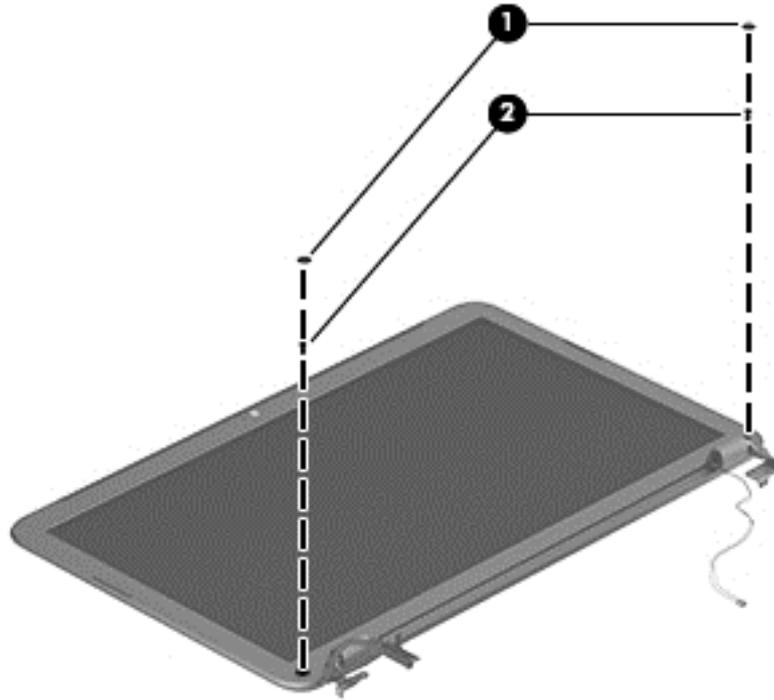


4. Remove the four Phillips PM2.5x7.0 screws **(1)** that secure the display assembly to the base enclosure.
5. Remove the display assembly **(2)** from the computer.



6. 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 PM2.5×5.5 screws **(2)** that secure the display bezel to the display assembly.

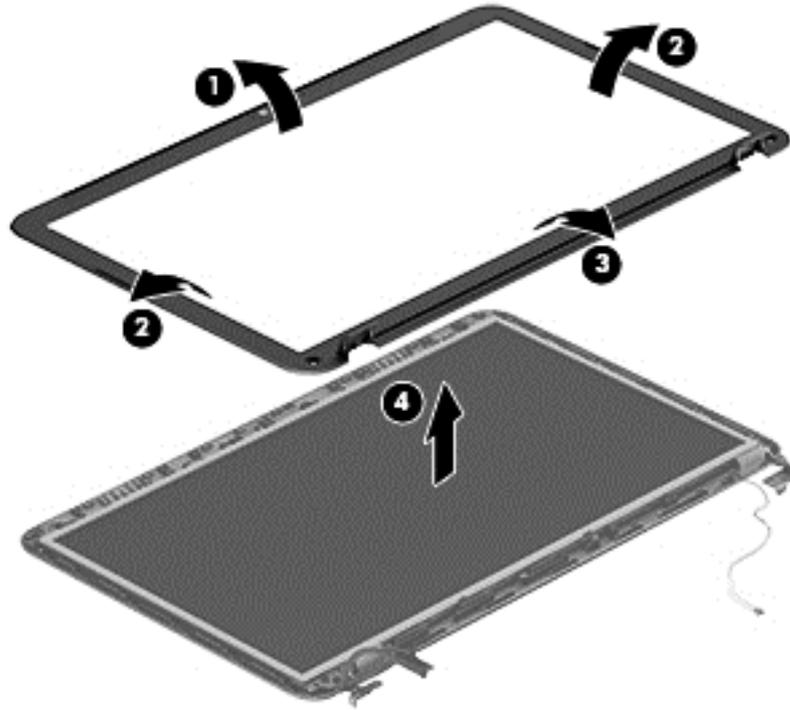
The screw covers are available in the Rubber Kit, spare part number 719858-001.



- 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 719847-001.

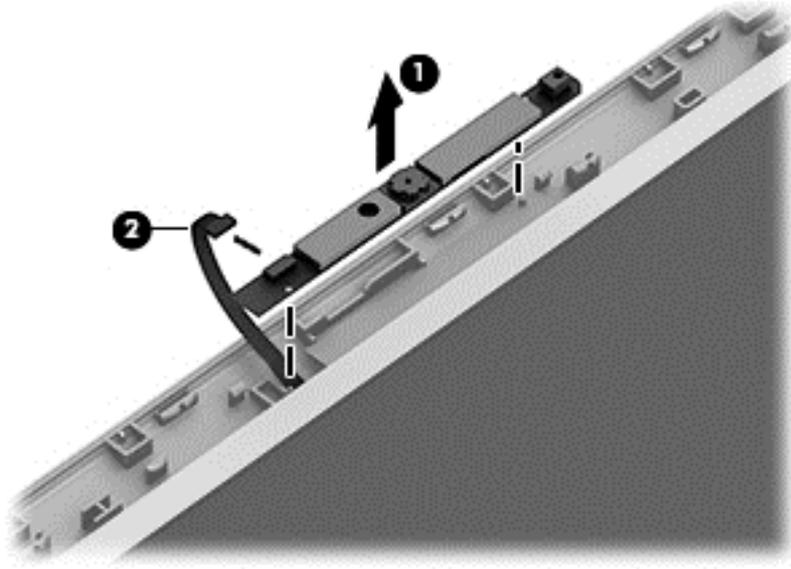


- 7. If it is necessary to replace the webcam/microphone module:

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

- a. Detach the webcam/microphone module **(1)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with double-sided adhesive.)

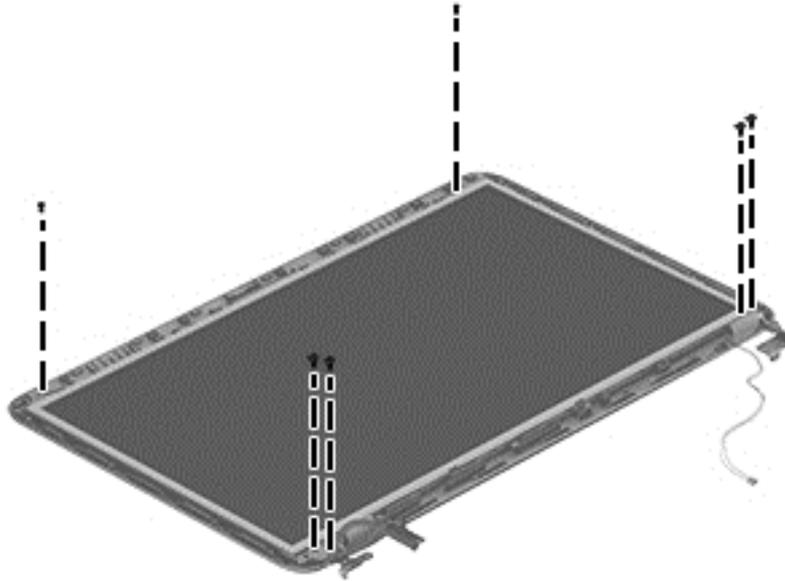
- b.** Disconnect the webcam/microphone module cable **(1)** from the webcam/microphone module.



- c.** Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number 719845-001.

8. If it is necessary to replace the display panel:
  - a. Remove the six Phillips PM2.5×4.5 screws that secure the display panel to the display enclosure.



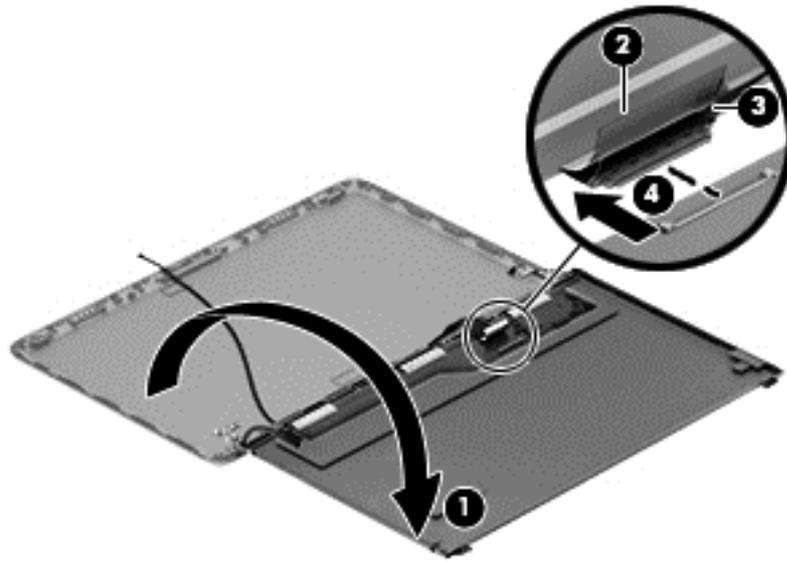
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**CAUTION:** Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

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- b. Lift the top edge of the display panel **(1)** and swing it up and forward until it rests upside down in front of the display enclosure.
- c. Release the adhesive strip **(2)** that secures the display panel cable connector **(3)** to the display panel.

- d. Disconnect the display panel cable **(4)** from the display panel.



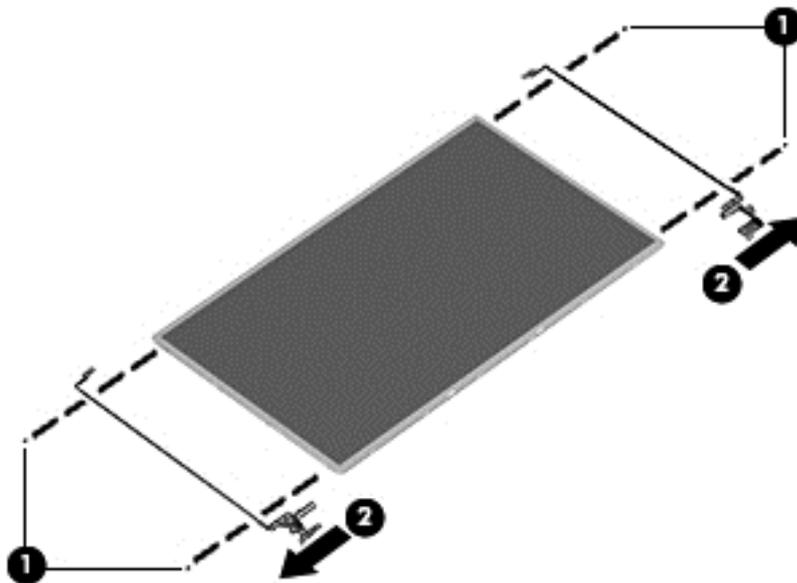
- e. Remove the display panel.

The display panel is available using spare part number 719873-001.

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

- a. Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display hinges to the display panel.
- b. Remove the display hinges **(2)**.

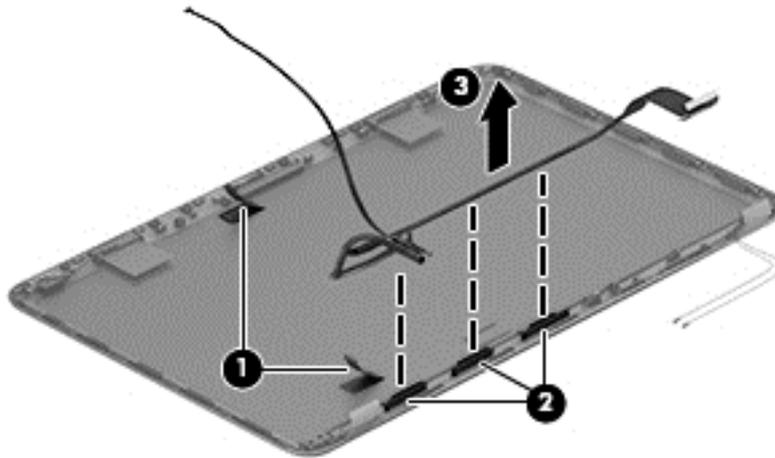
The display hinges are available using spare part number 719857-001 and include the left and right hinges and hinge brackets.



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

- a.** Release the webcam/microphone module cable from the adhesive **(1)** attached to the display enclosure.
- b.** Release the display panel cable from the clips **(2)** and routing channel built into the display enclosure.
- c.** Remove the display panel cable **(3)**.

The display panel cable is available using spare part number 719854-001 and includes the webcam/microphone module cable.

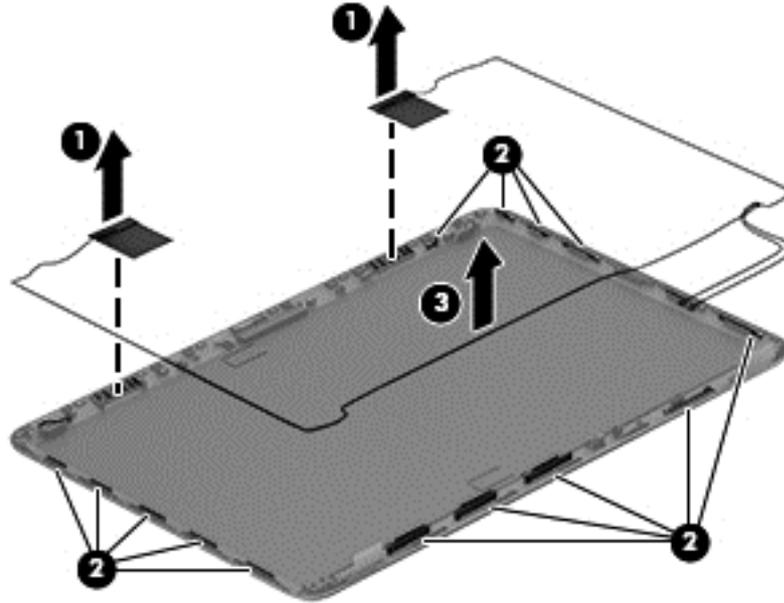


**11.** If it is necessary to replace the wireless antenna:

- a.** Detach the wireless antenna transceivers **(1)** from the display enclosure. (The wireless antenna transceivers are attached to the display enclosure with double-sided adhesive.)
- b.** Release the wireless antenna cables from the clips **(2)** and routing channel built into the left, right, and bottom edges of the display enclosure.

- c. Remove the wireless antenna (3).

The wireless antenna are available using spare part number 719856-001.



Reverse this procedure to reassemble and install the display assembly.

## System board

**NOTE:** The system board spare part kit includes replacement thermal material. Replacement thermal material is also available in the Thermal Material Kit, spare part number 719864-001.

Description	Spare part number
For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	720692-501
For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	720692-001
Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	722205-501
Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	722205-001
For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	720691-501
For use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor, a graphics subsystem with UMA memory, and the Linux operating system	720691-001

<b>Description</b>	<b>Spare part number</b>
Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	722204-501
Equipped with an AMD A6-5200 2.00-GHz processor (2.00-MB L2 cache, 1600-MHz FSB, DDR3L, quad core, 25 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	722204-001
Equipped with an AMD A4-5000 1.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	731534-501
Equipped with an AMD A4-5000 1.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, DDR3L, quad core, 15 W), a graphics subsystem with UMA memory, and the Linux operating system	731534-001
For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Professional operating system	713256-601
For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Standard operating system	713256-501
For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with 2-GB of discrete memory, and the Linux operating system	713256-001
For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	713255-001
For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	713255-501
For use only on computer models equipped with the Intel HM86 chipset, a graphics subsystem with UMA memory, and the Linux operating system	713255-001
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Professional operating system	720459-601
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Windows 8 Standard operating system	720459-501
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 2-GB of discrete memory, and the Linux operating system	720459-001
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Professional operating system	713258-601
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	713258-501
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	713258-001
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	713257-001
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	713257-501
For use only on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Linux operating system	713257-001

Description	Spare part number
Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Professional operating system	729844-601
Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Windows 8 Standard operating system	729844-501
Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with 1-GB of discrete memory, and the Linux operating system	729844-001
Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	729843-601
Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	729843-501
Equipped with an Intel Dual Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, 1600-MHz FSB, 35 W), a graphics subsystem with UMA memory, and the Linux operating system	729843-001

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))

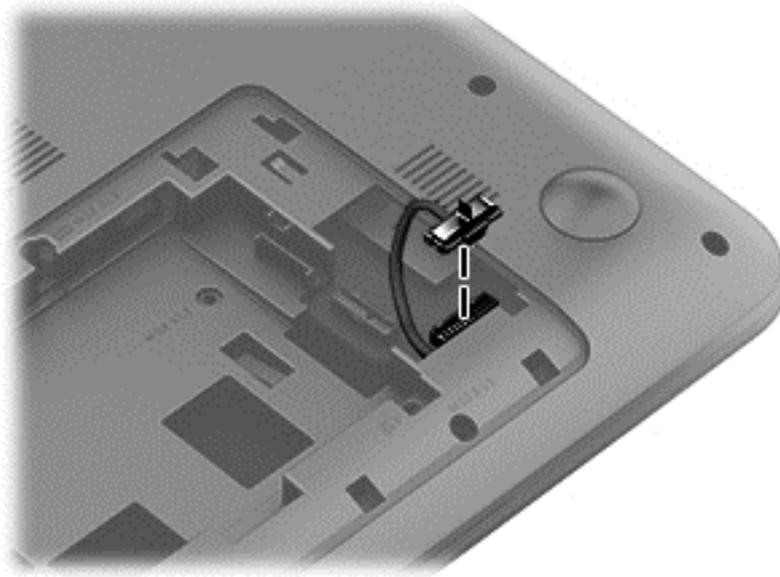


**NOTE:** When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory module (see [Memory module on page 53](#))
- RTC battery (see [RTC battery on page 89](#))
- Fan (see [Fan on page 79](#))
- Heat sink (see [Heat sink on page 80](#))
- Processor (see [Processor on page 85](#))

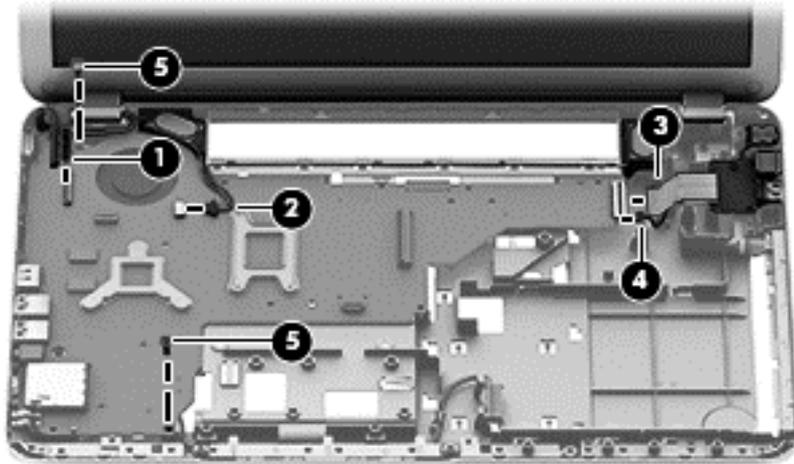
Remove the system board:

1. Close the computer.
2. Turn the computer upside down with the front toward you.
3. Disconnect the optical drive connector cable from the system board.

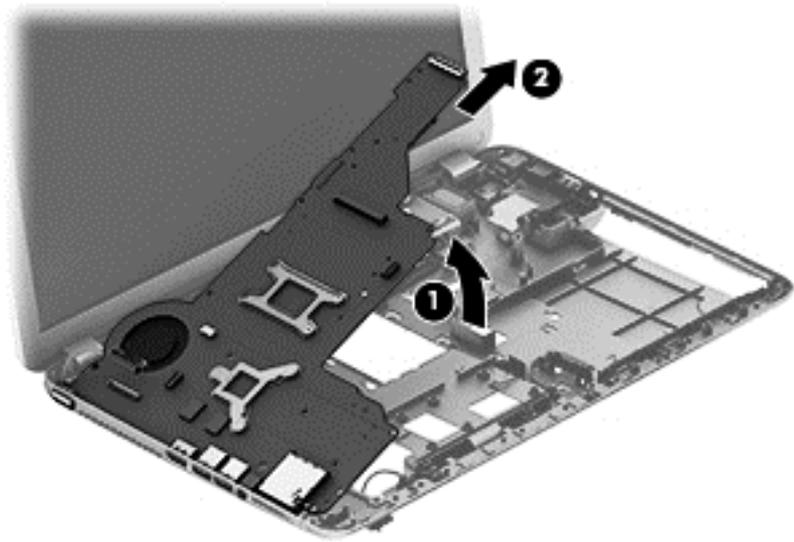


4. Turn the computer right side up with the front toward you.
5. Open the computer.
6. Disconnect the following cables from the system board:
  - (1) Display panel cable
  - (2) Speaker cable
  - (3) RJ-45/USB board ribbon cable
  - (4) Power connector cable

7. Remove the two Phillips PM2.5×7.0 screws **(5)** that secure the system board to the base enclosure.



8. Lift the right side of the system board **(1)** until it rests at an angle.
9. Remove the system board **(2)** by sliding it up and to the right an angle.



Reverse this procedure to install the system board.

# Fan

Description	Spare part number
Fan (includes cable)	719860-001

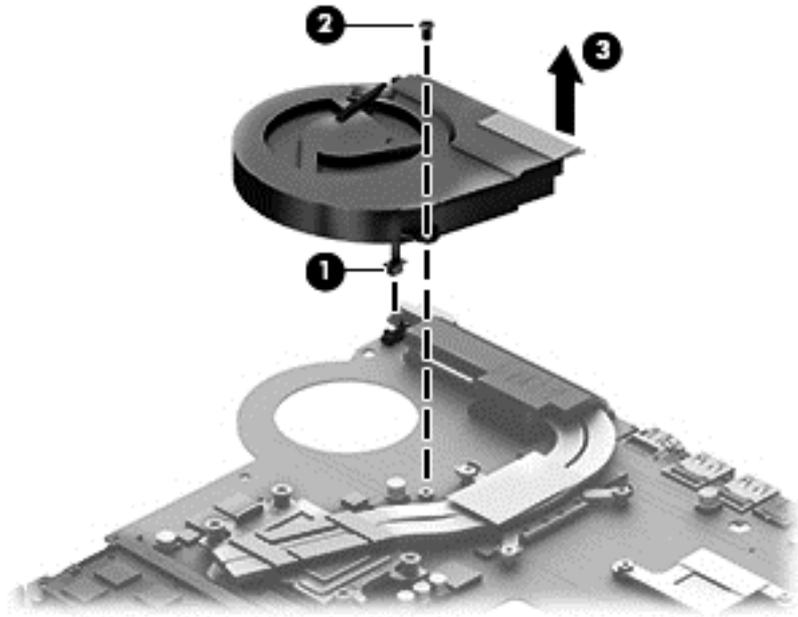
Before removing the fan, follow these steps:

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))

Remove the fan:

1. Turn the system board upside down with the front toward you.
2. Disconnect the fan cable **(1)** from the system board.
3. Remove the Phillips PM2.0×5.0 screw **(2)** that secures the fan to the system board.

4. Remove the fan (3).



Reverse this procedure to install the fan.

## Heat sink



**NOTE:** The heat sink spare part kit includes replacement thermal material. Replacement thermal material is also available in the Thermal Material Kit, spare part number 719864-001.

Description	Spare part number
Heat sink for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor and a graphics subsystem with discrete memory	720690-001
Heat sink for use only on computer models equipped with an AMD A10, A8, A6-5350, or A4 processor and a graphics subsystem with UMA memory	720689-001
For use only on computer models equipped with an AMD A6-5200 and a graphics subsystem with discrete memory	724885-001
For use only on computer models equipped with an AMD A6-5200 and a graphics subsystem with UMA memory	724884-001
For use only on computer models equipped with Intel processor and a graphics subsystem with discrete memory	719862-001
For use only on computer models equipped with Intel processor and a graphics subsystem with UMA memory	719861-001

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))
  - g. Fan (see [Fan on page 79](#))

Remove the heat sink:

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



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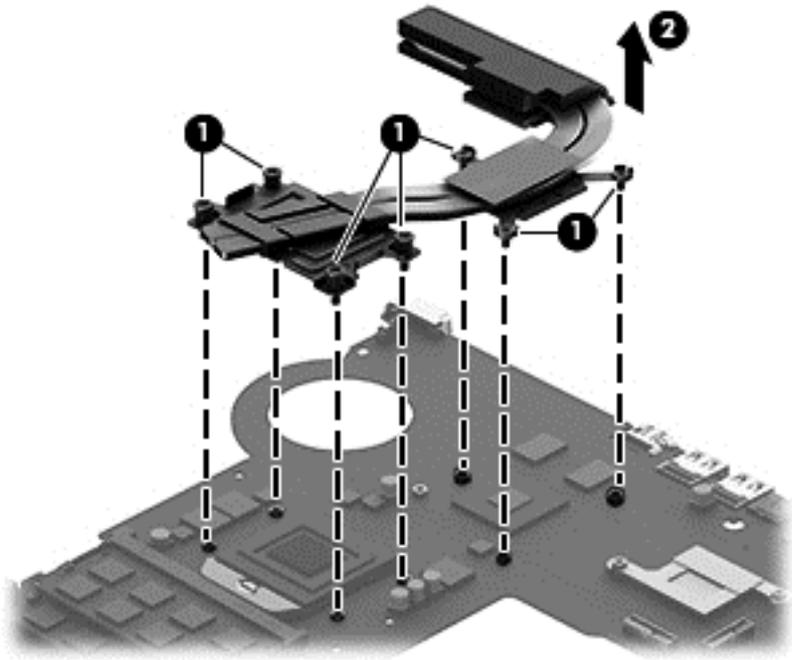
**NOTE:** Steps 2 and 3 apply to computer models equipped with a graphics subsystem with discrete memory.

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2. Following the 1 through 7 sequence stamped into the heat sink, loosen the seven captive Phillips 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.

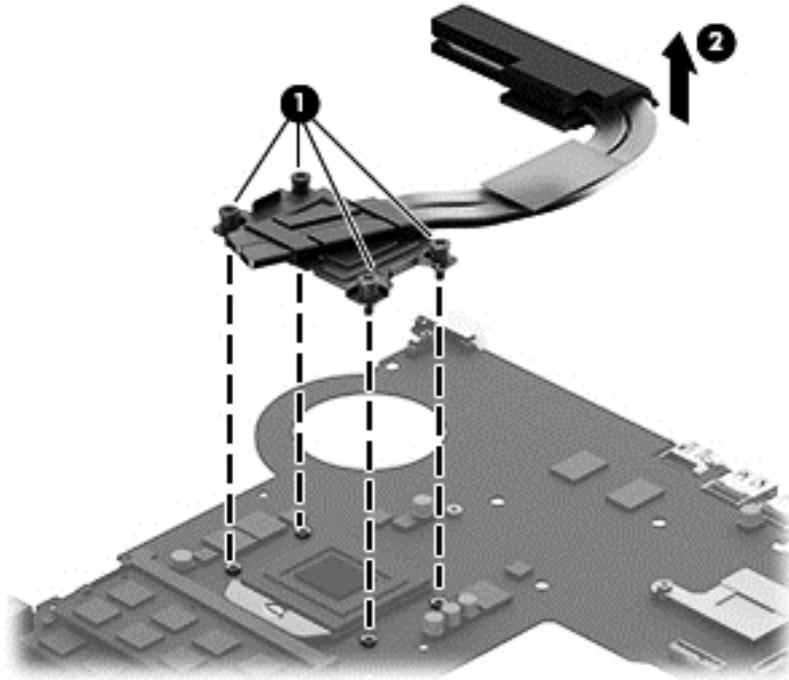


 **NOTE:** Steps 4 and 5 apply to computer models equipped with a graphics subsystem with UMA memory.

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

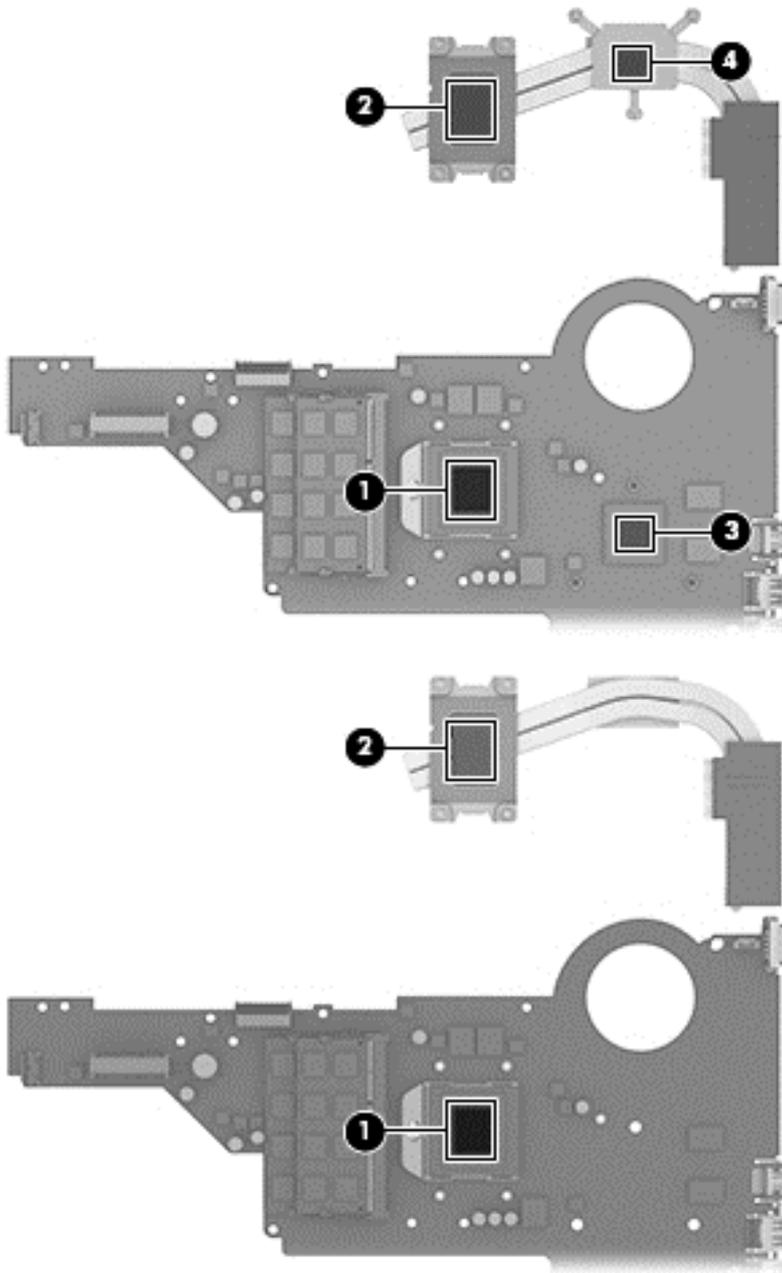
5. Remove the heat sink **(2)**.

 **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:** 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.

- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it
- Thermal paste is used on the VGA chip **(3)** and the heat sink section **(4)** that services it



Reverse this procedure to install the heat sink.

## Processor



**NOTE:** The processor spare part kit includes replacement thermal material. Replacement thermal material is also available in the Thermal Material Kit, spare part number 719864-001.

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 i7-4702MQ 2.20-GHz processor (SC turbo up to 2.90-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 37 W)	723522-001
Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.2-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W)	701658-001
Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	711903-001
Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	713163-001
Intel Pentium 2030M 2.50-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W)	713164-001
Intel Pentium 2020M 2.40-GHz processor (1600-MHz FSB, 2.0-MB L2 cache, dual core, 35 W)	700628-001

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))

- g.** Fan (see [Fan on page 79](#))
- h.** Heat sink (see [Heat sink on page 80](#))

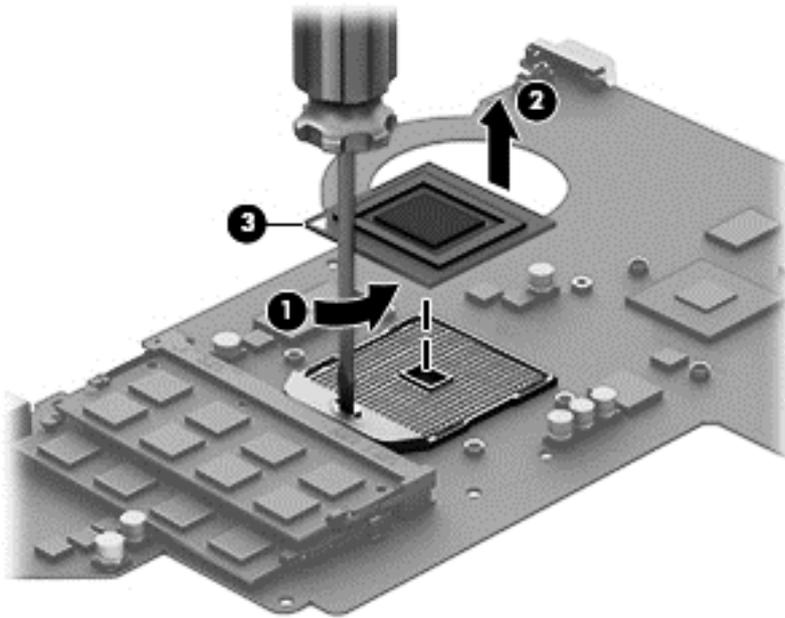
Remove the processor:

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

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Reverse this procedure to install the processor.

## PCH heat sink



**NOTE:** The post controller hub (PCH) heat sink spare part kit includes replacement thermal material. Replacement thermal material is also available in the Thermal Material Kit, spare part number 719864-001.

Description	Spare part number
PCH heat sink	719863-001

Before removing the PCH heat sink, follow these steps:

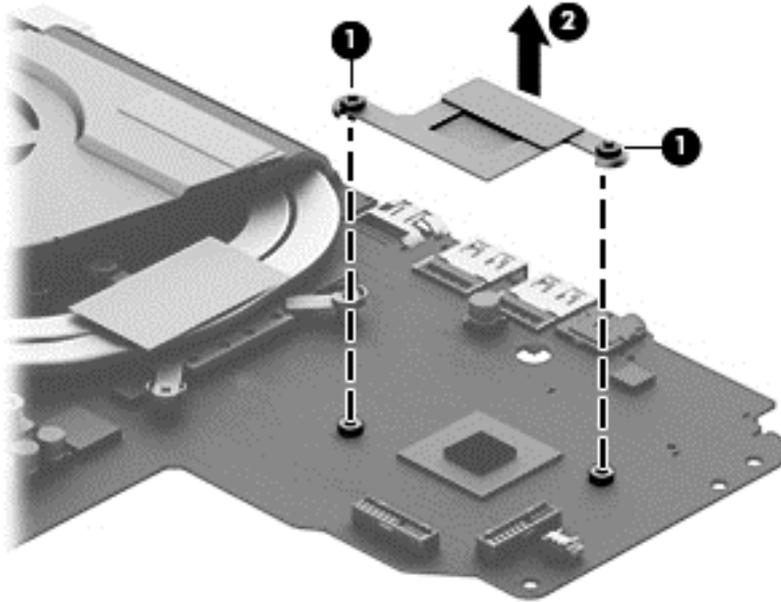
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see [Battery on page 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))

Remove the PCH heat sink:

1. Following the 1 through 2 sequence stamped into the PCH heat sink, loosen the two captive Phillips screws **(1)** that secure the PCH heat sink to the system board.

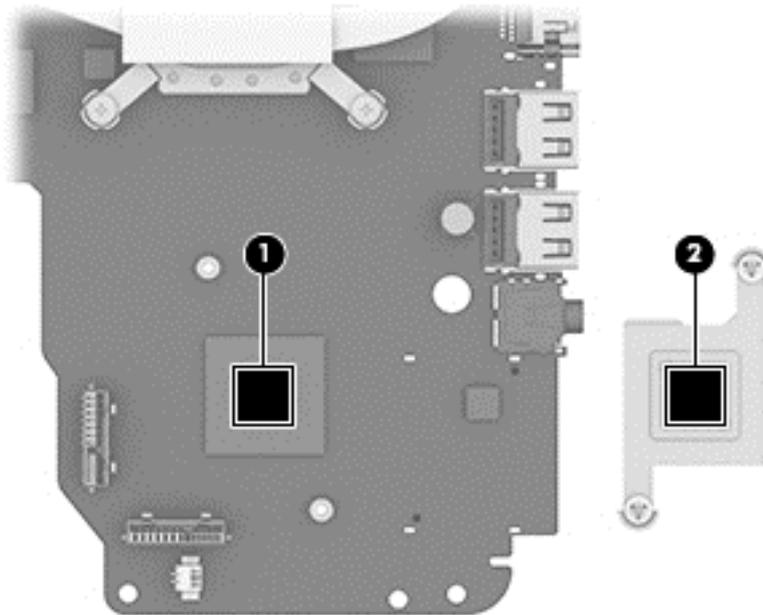
2. Remove the PCH heat sink **(2)**.

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



The thermal material must be thoroughly cleaned from the surfaces of the PCH heat sink and the PCH each time the PCH heat sink is removed. Replacement thermal material is included with the PCH heat sink and system board spare part kits.

 **NOTE:** The following illustration shows the PCH heat sink replacement thermal material locations. A thermal pad is used on the PCA **(1)** and the PCH heat sink **(2)**.



Reverse this procedure to install the optical drive connector cable.

## RTC battery

Description	Spare part number
RTC battery (includes double-sided tape)	637193-001

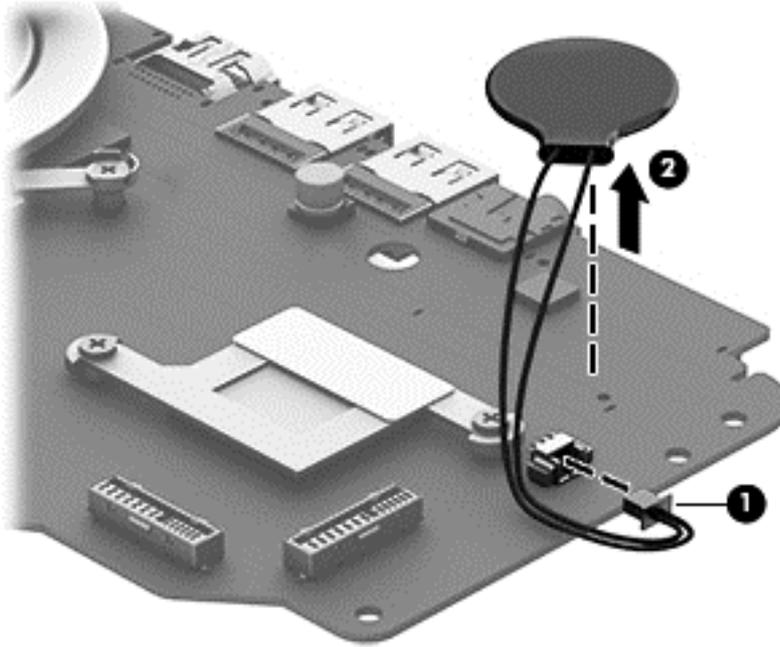
Before removing the RTC battery, follow these steps:

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))

Remove the RTC battery:

1. Turn the system board upside down with the front toward you.
2. Disconnect the RTC battery cable **(1)** from the system board.

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



4. Remove the RTC battery.

Reverse this procedure to install the RTC battery.

## RJ-45/USB board

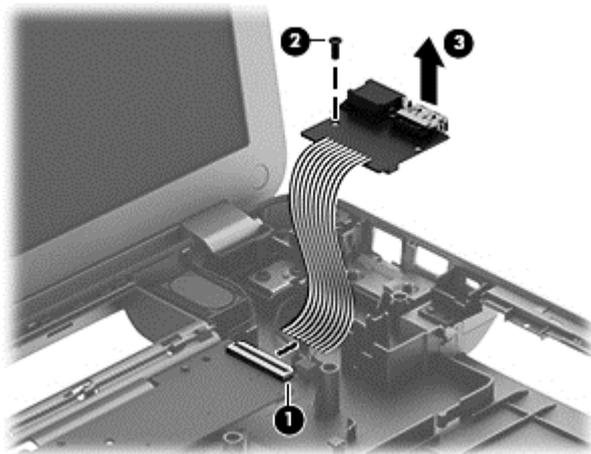
Description	Spare part number
RJ-45/USB board (includes cable)	719844-001

Before removing the RJ-45/USB 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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))

Remove the RJ-45/USB board:

1. Release the ZIF connector **(1)** to which the RJ-45/USB board ribbon cable is attached, and then disconnect the RJ-45/USB board ribbon cable from the system board.
2. Remove the Phillips PM2.5×7.0 screw **(2)** that secures the RJ-45/USB board to the base enclosure.
3. Remove the RJ-45/USB board **(3)**.



Reverse this procedure to install the RJ-45/USB board.

## Power connector cable

Description	Spare part number
Power connector cable	719859-001

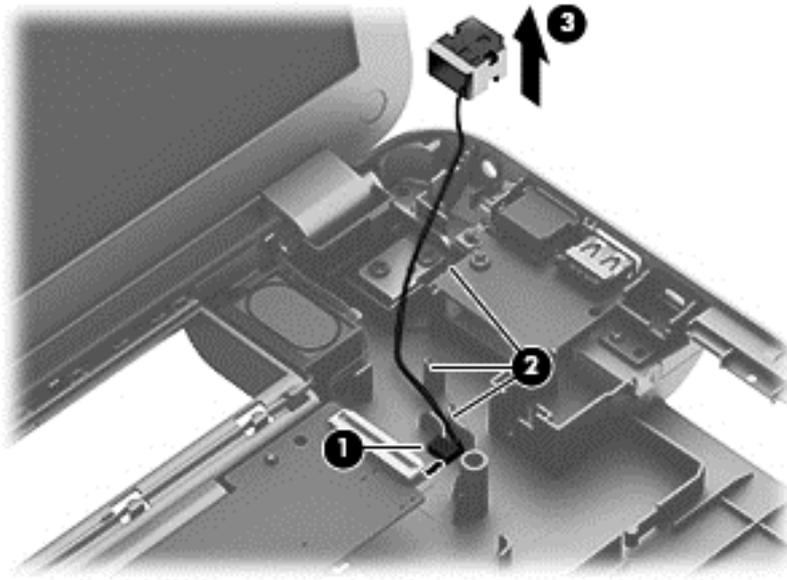
Before removing the power connector cable, follow these steps:

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. RJ-45/USB board (see [RJ-45/USB board on page 91](#))

Remove the power connector cable:

1. Disconnect the power connector cable **(1)** from the system board.
2. Release the power connector cable from the clips **(2)** built into the base enclosure.

3. Release the power connector **(3)** from the clips and mold built into the base enclosure.



4. Remove the power connector cable.

Reverse this procedure to install the power connector cable.

## Speakers

Description	Spare part number
Speakers (include left and right speakers and cables)	719865-001

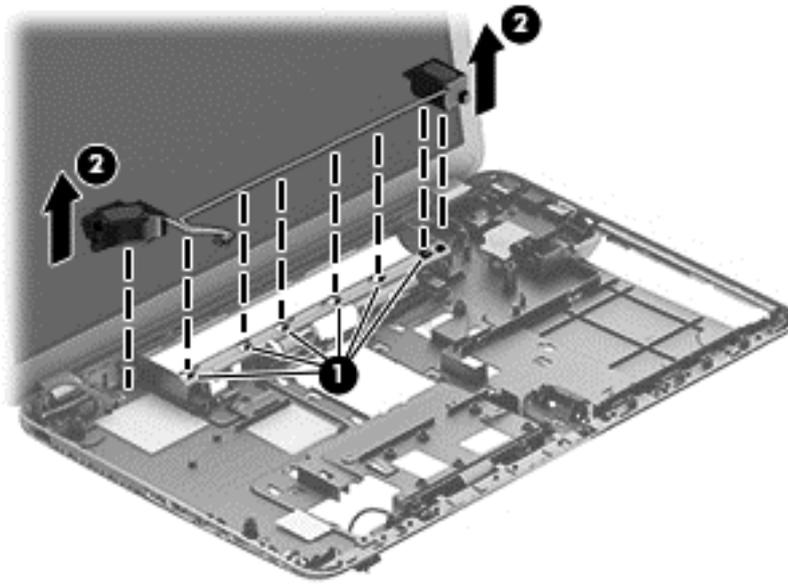
Before removing the speakers, follow these steps:

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))

Remove the speakers:

1. Release the speaker cables from the clips **(1)** and routing channel built into the base enclosure.
2. Release the clips **(2)** that secure the speakers to the base enclosure.

3. Remove the speakers (3).



Reverse this procedure to install the speakers.

## Optical drive connector cable

Description	Spare part number
Optical drive connector cable	719846-001

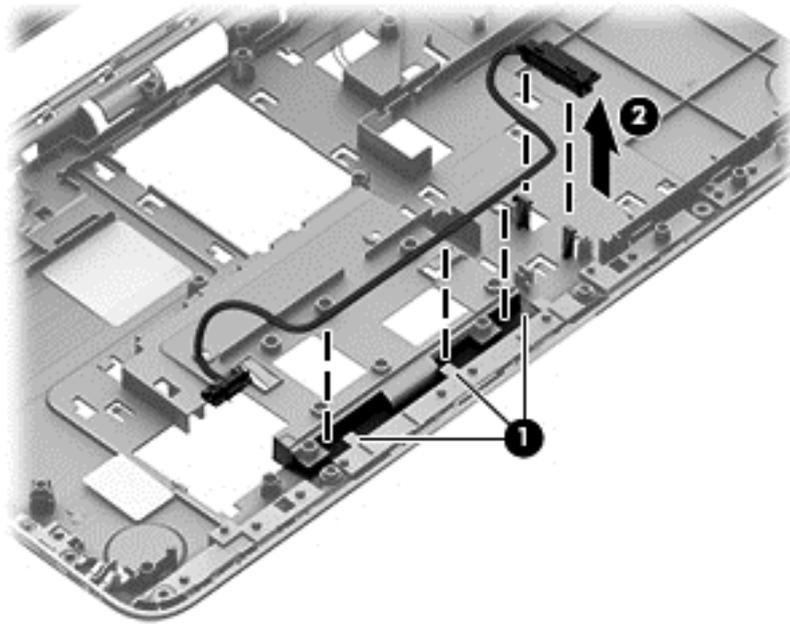
Before removing the optical drive connector cable, follow these steps:

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 46](#)), and then remove the following components:
  - a. Optical drive (see [Optical drive on page 47](#))
  - b. Hard drive (see [Hard drive on page 49](#))
  - c. WLAN module (see [WLAN module on page 51](#))
  - d. Keyboard (see [Keyboard on page 56](#))
  - e. Top cover (see [Top cover on page 60](#))
  - f. System board (see [System board on page 74](#))

Remove the optical drive connector cable:

1. Release the optical drive connector cable from the clips **(1)** and routing channel built into the base enclosure.

2. Remove the optical drive connector cable (2).



Reverse this procedure to install the optical drive connector cable.

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# 7 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 (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**.

Information about how to navigate in Setup Utility (BIOS) is located at the bottom of the screen.



**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).
2. Use the arrow keys to select **Main** and make note of your current BIOS version.

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 System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly.

To start System Diagnostics:

1. Turn on or restart the computer, quickly press **esc**, and then 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 diagnostic test while it is running, press **esc**.

---

# 8 Specifications

## Computer specifications

	Metric	U.S.
<b>Dimensions</b>		
Width	<b>38.0 cm</b>	16.5 in
Depth	<b>24.6 cm</b>	10.5 in
Height (front to rear)	<b>2.7 to 3.2 cm</b>	1.2 to 1.3 in
Weight	<b>2.4 kg</b>	6.4 lbs
<b>Input power</b>		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 4.62 A – 90 W	
<b>Temperature</b>		
Operating	<b>5°C to 35°C</b>	41°F to 95°F
Nonoperating	<b>-20°C to 60°C</b>	-4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	<b>-15 m to 3,048 m</b>	-50 ft to 10,000 ft
Nonoperating	<b>-15 m to 12,192 m</b>	-50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

## 15.6-inch display specifications

	<b>Metric</b>	<b>U.S.</b>
<b>Dimensions</b>		
Height	<b>19.6 cm</b>	7.72 in
Width	<b>34.7 cm</b>	13.66 in
Diagonal	<b>39.8 cm</b>	15.67 in
<b>Number of colors</b>	Up to 16.8 million	
<b>Contrast ratio</b>	200:1 (typical)	
<b>Brightness</b>	200 nits (typical)	
<b>Pixel resolution</b>		
Pitch	<b>0.197 × 0.197 mm</b>	
Format	1600 × 900	
Configuration	RGB vertical stripe	
<b>Backlight</b>	LED	
<b>Character display</b>	80 × 25	
<b>Total power consumption</b>	2.00 W	
<b>Viewing angle</b>	±65° horizontal, ±50° vertical (typical)	

# Hard drive specifications

	1-TB, 5400-rpm*	750-GB, 5400-rpm**	640-GB, 5400-rpm**
<b>Dimensions</b>			
Height	9.5 mm	9.5 mm	9.5 mm
Length	100.4 mm	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm	69.9 mm
Weight	110 g	110 g	110 g
<b>Interface type</b>	SATA	SATA	SATA
<b>Transfer rate</b>			
Synchronous (maximum)	1.1 GB/sec	1.1 GB/sec	1.1 GB/sec
Security	ATA security	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)			
Single track	1.5 ms	1.5 ms	1.5 ms
Average (read/write)	11/13 ms	11/13 ms	11/13 ms
Maximum	22 ms	22 ms	22 ms
<b>Logical blocks</b>	1,953,525,168	1,465,149,168	1,250,263,728
<b>Disk rotational speed</b>	5400 rpm		
<b>Operating temperature</b>	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.			
<b>NOTE:</b> Certain restrictions and exclusions apply. Contact technical support for details.			

## Hard drive specifications *(continued)*

	500-GB, 5400-rpm**	320-GB, 5400-rpm**
<b>Dimensions</b>		
Height	9.5 mm	9.5 mm
Length	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm
Weight	110 g	110 g
<b>Interface type</b>		
	SATA	SATA
<b>Transfer rate</b>		
Synchronous (maximum)	1.1 GB/sec	1.1 GB/sec
Security	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)		
1.5 ms	1.5 ms	1.5 ms
11/13 ms	11/13 ms	11/13 ms
22 ms	22 ms	22 ms
Single track	1.5 ms	1.5 ms
Average (read/write)	11/13 ms	11/13 ms
Maximum	22 ms	22 ms
<b>Logical blocks</b>		
	976,773,168	628,142,448
<b>Disk rotational speed</b>		
	5400 rpm	
<b>Operating temperature</b>		
	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.		
<b>NOTE:</b> Certain restrictions and exclusions apply. Contact technical support for details.		

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# 9 Backing up, restoring, and recovering

Your computer includes tools provided by HP and the operating system 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 guide 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 `h`, and then select **Help and Support**.

---

# Creating recovery media and backups

Recovery after a system failure is only as good as your most recent backup.

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 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.
2. As you add hardware and software programs, create system restore points. A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A system restore point contains information that Windows uses, such as registry settings. Windows creates a system restore point for you automatically during a Windows update and during other system maintenance (such as a software update, security scanning, or system diagnostics). You can also manually create a system restore point at any time. For more information and steps for creating specific system restore points, see Help and Support. From the Start screen, type **h**, and then select **Help and Support**.
  3. As you add photos, video, music, and other personal files, create a backup of your personal information. Windows File History can be set to regularly and automatically back up files from libraries, desktop, contacts, and favorites. If files are accidentally deleted from the hard drive and they can no longer be restored from the Recycle Bin, or if files become corrupted, you can restore the files that you backed up using File History. Restoring files is also useful if you ever choose to reset the computer by reinstalling Windows or choose to recover using HP Recovery Manager.



---

**NOTE:** File History is not enabled by default, so you must turn it on.

---

For more information and steps for enabling Windows File History, see Help and Support. From the Start screen, type **h**, 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 aid in the replacement of a 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, or 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](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 then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 110](#).

# Restore and recovery

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

- If you need to restore your personal files and data, you can use Windows File History to restore your information from the backups you created. For more information and steps for using File History, see Help and Support. From the Start screen, type `h`, 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**, select **Drivers and Applications Reinstall**, and then follow the on-screen instructions.

- If you want to restore the system to a previous state without losing any personal information, Windows System Restore is an option. System Restore allows you to restore without the requirements of Windows Refresh or a reinstallation. Windows creates system restore points automatically during a Windows update and other system maintenance events. Even if you did not manually create a restore point, you can choose to restore to a previous point, automatically created. For more information and steps for using Windows System Restore, see Help and Support. From the Start screen, type `h`, and then select **Help and Support**.
- If you want a quick and easy way to recover the system without losing your personal information, settings, or apps that came preinstalled on your computer or were purchased from the Windows Store, consider using Windows Refresh. This option does not require backing up data to another drive. See [Using Windows Refresh for quick and easy recovery on page 109](#).
- If you want to reset your computer to its original state, Windows provides an easy way to remove all personal data, apps, and settings, and reinstall Windows.

For more information, see [Remove everything and reinstall Windows on page 109](#).

- 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 (select models only) 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 110](#).

- 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 110](#).
- 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 110](#).
- 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 112](#).

## Using Windows Refresh for quick and easy recovery

When your computer is not working properly and you need to regain system stability, the Windows Refresh option allows you to start fresh and keep what is important to you.

---

 **IMPORTANT:** Refresh removes any traditional applications that were not originally installed on the system at the factory.

 **NOTE:** During Refresh, a list of removed traditional applications will be saved so that you have a quick way to see what you might need to reinstall. See Help and Support for instructions on reinstalling traditional applications. From the Start screen, type **h**, and then select **Help and Support**.

 **NOTE:** You may be prompted for your permission or password when using Refresh. See Help and Support for more information. From the Start screen, type **h**, and then select **Help and Support**.

---

To start Refresh:

1. From the Start screen, point to the upper-right or lower-right corner of the screen to reveal the charms.
2. Click **Settings**.
3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.
4. Scroll the right-side choices down to display **Refresh your PC without affecting your files**.
5. Under **Refresh your PC without affecting your files**, select **Get started**, and then follow the on-screen instructions.

## Remove everything and reinstall Windows

Sometimes you want to perform detailed reformatting of your computer, or you want to remove personal information before you give away or recycle your computer. The process described in this section provides a speedy, simple way to return the computer to its original state. This option removes all personal data, apps, and settings from your computer, and reinstalls Windows.

---

 **IMPORTANT:** This option does not provide backups of your information. Before using this option, back up any personal information you wish to retain.

---

You can initiate this option by using the **f11** key or from the Start screen.

To use the **f11** key:

1. Press **f11** while the computer boots.  
– or –  
Press and hold **f11** as you press the power button.
2. Choose your keyboard layout.

3. Select **Troubleshoot** from the boot options menu.
4. Select **Reset your PC**, and then follow the on-screen instructions.

To use the Start screen:

1. From the Start screen, point to the upper-right or lower-right corner of the screen to reveal the charms.
2. Click **Settings**.
3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.
4. Scroll the right-side choices down to display **Remove everything and reinstall Windows**.
5. Under **Remove everything and reinstall Windows**, select **Get started**, and follow the on-screen instructions.

## 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—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- Factory Reset—Restores the computer to 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 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/wwcontact\\_us.html](http://welcome.hp.com/country/us/en/wwcontact_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 to recover a minimized image (select models only)

The HP Recovery partition (select models only) allows you to perform 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. Choose your keyboard layout.
3. Select **Troubleshoot** from the boot options menu.
4. Select **HP 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 111](#).

---

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, quickly press **esc**, and then press **f9** for boot options.

3. Select the optical drive or USB flash drive you want to boot from.
4. 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 107](#).

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 then follow the on-screen instructions.

---

# 10 Power cord set requirements

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

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

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

## Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.0 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 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

## Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	5
South Korea	EK	4
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm<sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

---

# 11 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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