



**HP 15 Notebook PC  
Compaq 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 on 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.

This computer may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See <http://windows.microsoft.com/en-us/windows7/get-know-windows-7> for details.

## 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	AMD	Intel
<b>Product name</b>	HP 15 Notebook PC	√	√
	Compaq 15 Notebook PC	√	√
<b>Processors</b>	AMD A6-5200 processor (2.0-GHz, 2-MB L2 cache, 1600-MHz DDR3L)	√	
	AMD A4-5000 processor (1.5-GHz, 2-MB L2 cache, 1600-MHz DDR3L)		
	AMD E2-3800 processor (1.3-GHz, 2-MB L2 cache, 1600-MHz DDR3L)		
	AMD E1-2100 processor (1.0-GHz, 2-MB L2 cache, 1333-MHz DDR3L)		
	Intel Core i5-4210U processor (1.7-GHz, 3-MB L2 cache, 1600-MHz DDR3L)		√
	Intel Core i3-4010U processor (1.7-GHz, 3-MB L2 cache, 1600-MHz DDR3L)		
	Intel Core i3-3217U processor (1.8-GHz, 3-MB L2 cache, 1600-MHz DDR3L)		
<b>Chipset</b>	Integrated SOC FCH	√	
	Intel HM76 Express Chipset		√
<b>Graphics</b>	<b>Internal graphics:</b>	√	
	AMD Radeon HD 8400 Graphics (A6-5200)		
	AMD RadeonT HD 8330G Graphics (A4-5000)		
	AMD Radeon HD 8280 Graphics (E2-3800)		
	AMD Radeon HD 8210 Graphics (E1-2100)		
	<b>Internal graphics:</b>		√
	Intel HD Graphics 4000		
	<b>External graphics:</b>		
	Nvidia 820M N15V-GM 1 GB VRAM		
	Nvidia 820M N15V-GM 2 GB VRAM		
GPU power management enabled at launch			
Support DX11			
Support dynamic switching			
Support HD Decode and HDMI			
<b>Panel</b>	<b>39.6-cm</b> (15.6-in), high-definition (HD), light-emitting diode (LED), SVA BrightView (1366×768) display, flat 3.8 mm; typical brightness: 200 nits	√	√
	Supports LVDS		
<b>Memory</b>	1 customer-accessible/upgradable memory module slot	√	
	Supports single-channel memory		
	DDR3L-1600-MHz Single Channel Support		
	DDR3L-1333-MHz Single Channel Support (DDR3-1600 downgrade to DDR3-1333)		

Category	Description	AMD	Intel
	<p>Supports up to 8 GB of system RAM in the following configurations:</p> <ul style="list-style-type: none"> <li>• 8192-MB total system memory (8192×1)</li> <li>• 4096-MB total system memory (4096×1)</li> <li>• 2048-MB total system memory (2048×1)</li> </ul>		
	<p>2 customer-accessible/upgradable memory module slots</p> <p>Supports dual-channel memory</p> <p>DDR3L-1600-MHz Dual Channel Support</p> <p>DDR3L-1333-MHz Dual Channel Support (DDR3-1600 downgrade to DDR3-1333)</p> <p>DDR3L-1066-MHz Dual Channel Support (DDR3-1600 downgrade to DDR3-1066)</p> <p>Supports up to 16 GB of system RAM in the following configurations:</p> <ul style="list-style-type: none"> <li>• 16384-MB total system memory (8192×2)</li> <li>• 12288-MB total system memory (8192×1 +4096×2)</li> <li>• 8192-MB total system memory (8192×1 or 4096×2)</li> <li>• 6144-MB total system memory (4096×1 + 2048×1)</li> <li>• 4096-MB total system memory (4096×1 or 2048×1)</li> <li>• 2048-MB total system memory (2048×1)</li> </ul>		√
<b>Hard drives</b>	<p>Supports <b>6.35-cm</b> (2.5-in) hard drives in <b>9.5-mm</b> (.37-in) and <b>7.0-mm</b> (.28-in) thicknesses</p> <p>Serial ATA</p> <p>Supports 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>• 500-GB, 5400-rpm, 9.5-mm or 7.0-mm</li> <li>• 320-GB, 5400-rpm, 9.5-mm or 7.0-mm</li> </ul>	√	√
<b>Optical drive</b>	<p>Fixed, serial ATA, 9.5-mm tray load</p> <p>DVD+/-RW Double-Layer SuperMulti</p> <p>Supports zero power optical drive</p>	√	√
<b>Audio/video</b>	<p>Single digital microphone</p> <p>HD audio</p> <p>Dual speakers</p> <p>HP TrueVision HD webcam (fixed, no tilt with 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>One or two WLAN antennas built into display assembly</p> <p>Compatible with Miracast-certified devices</p> <p>Single antenna support</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> <li>• Realtek RTL8188EE 802.11bgn 1×1 Wi-Fi Adapter</li> </ul>	√	√

Category	Description	AMD	Intel
	<ul style="list-style-type: none"> <li>Qualcomm Atheros AR9485 802.11bgn 1x1 Wi-Fi Adapter</li> <li>Ralink RT3290LE 802.11bgn 1x1 Wi-Fi + BT 4.0 Combo Adapter</li> <li>QCA 9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter</li> </ul>		
<b>External media card</b>	<p>HP Multi-Format Digital Media Reader</p> <p>Support SD/SDHC/SDXC</p> <p>Push-Pull Insertion/Removal</p>	√	√
<b>Ports</b>	<p>HDMI version 1.4 supporting 1920 ×1200 @ 60Hz</p> <p>Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video</p> <p>RJ-45 (Ethernet, includes link and activity lights)</p> <p>USB 3.0 (1 port)</p> <p>USB 2.0 (2 ports)</p> <p>AC Smart Pin adapter plug</p> <p>Headphone/microphone in combo jack</p>	√	√
<b>Keyboard/ pointing devices</b>	<p>Full-size "island style" keyboard with numeric keypad</p> <p>TouchPad with multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled</p> <p>Taps enabled by default</p> <p>Support Win8.1+D212 Modern Trackpad Gestures</p> <p>Support PS/2, profile sensor (reserve for SMBus)</p>	√	√
<b>Power requirements</b>	<p><b>AC adapters:</b></p> <p>AC Adapter 65-W Smart nPFC, 3 pin, RC 4.5mm connector - non slim for use in discrete models</p> <p>AC Adapter 45-W Smart nPFC, 3 pin, RC 4.5mm connector - non slim for use in UMA models</p> <p>AC Adapter 65-W EM Smart nPFC, 3 pin, RC 4.5mm connector, 90 degree plug design for use in India/China</p> <p>1 meter power cord</p>	√	√
	<p>4-cell, 41-Whr Li-ion battery</p> <p>3-cell, 31-Whr Li-ion battery</p>	√	√
<b>Security</b>	<p>Kensington Security Lock</p> <p>Support Intel Anti-Theft</p> <p>Support Intel IPT</p> <p>OTP support</p>	√	√
<b>Operating system</b>	<p><b>Preinstalled:</b></p> <ul style="list-style-type: none"> <li>Windows 8.1</li> <li>Ubuntu</li> <li>FreeDOS 2.0</li> </ul>	√	√
<b>Serviceability</b>	<p><b>End-user replaceable parts:</b></p> <ul style="list-style-type: none"> <li>AC adapter</li> <li>Battery</li> </ul>	√	√

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<b>Category</b>	<b>Description</b>	<b>AMD</b>	<b>Intel</b>
	<ul style="list-style-type: none"><li>• Optical drive</li><li>• Keyboard</li></ul>		

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## 2 External component identification

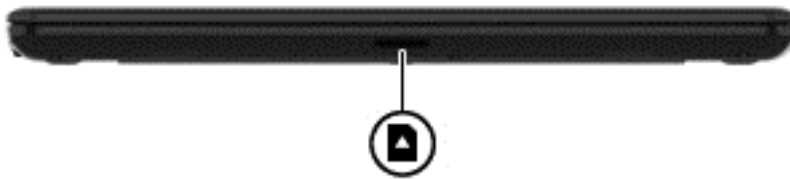
### Display




Component	Description
(1) WLAN antennas (1 or 2)* (select models only)	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) WWAN antennas (1 or 2)* (select models only)	Send and receive wireless signals to communicate with wireless wide area networks (WWAN).
(3) Webcam light	On: The webcam is in use.
(4) Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.  To use the webcam in Windows 8, from the Start screen, type <code>camera</code> , and then select <b>Camera</b> from the list of applications.
(5) Internal microphone	Records sound.
(6) 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.

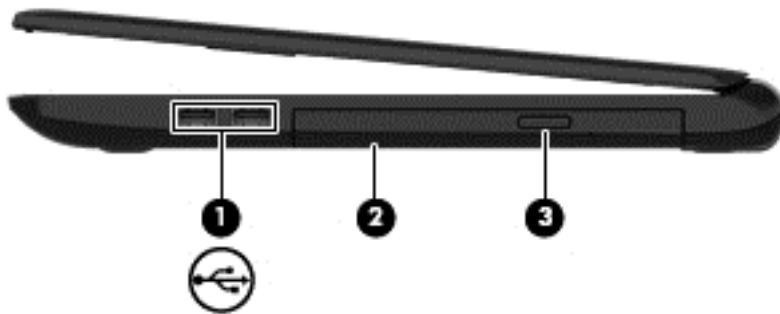
\*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. To access this guide in Windows 8, from the Start screen, type `support`, and then select the **HP Support Assistant** app.


## Front



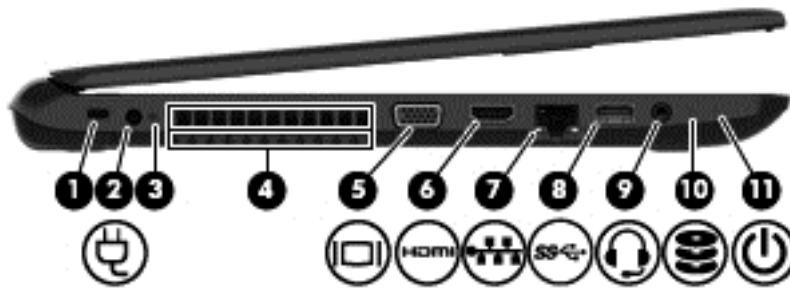
Component	Description
 Memory card reader	<p>Reads optional memory cards that store, manage, share, or access information.</p> <p>To insert a card:</p> <p>Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated.</p> <p>To remove a card:</p> <p>Pull the card out of the slot.</p>

## Right side



Component	Description
(1)  USB 2.0 ports (2)	<p>Connect an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
(2) Optical drive (select models only)	<p>Depending on your computer model, reads an optical disc or reads and writes to an optical disc.</p> <p><b>NOTE:</b> For disc compatibility information, go to the Help and Support web page. Follow the web page instructions to select your computer model. Select <b>Support &amp; Drivers</b>, and then select <b>Product Information</b>.</p>
(3) Optical drive eject button (select models only)	<p>Releases the disc tray.</p>

## Left side



Component	Description
(1)	Security cable slot
(2)	Power connector
(3)	AC adapter light
(4)	Vent
(5)	External monitor port (select models only)
(6)	HDMI port
(7)	RJ-45 (network) jack/status lights
(8)	USB 3.0 port
(9)	Audio-out (headphone)/Audio-in (microphone) jack

Attaches an optional security cable to the computer.

**NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

Connects an AC adapter.

- On: The AC adapter is connected and the battery is charged.
- Off: The computer is using battery power.

Enables airflow to cool internal components.

**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

Connects an external VGA monitor or projector.

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.

Connects a network cable.



- White: The network is connected.
- Amber: Activity is occurring on the network.

Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.

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.

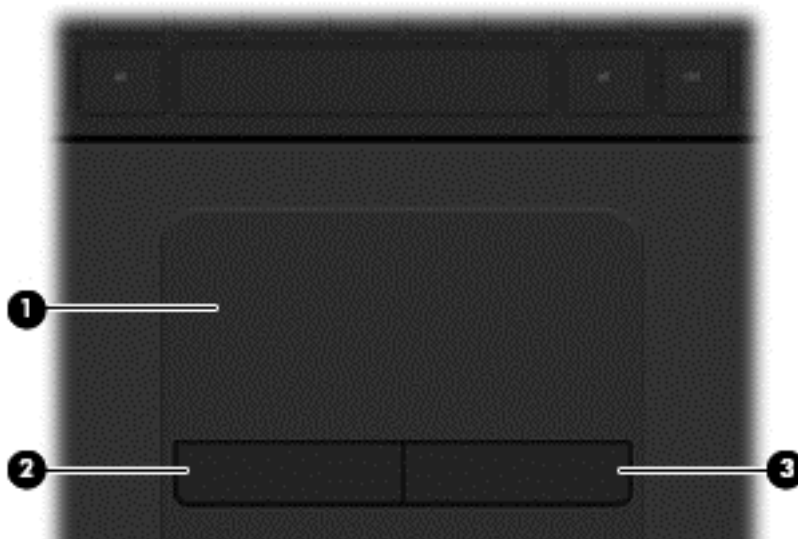
**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*. To access this guide in Windows 8, from the Start screen, type `support`, and then select the **HP Support Assistant** app.

**NOTE:** When a device is connected to the jack, the computer speakers are disabled.

Component	Description
	<b>NOTE:</b> Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(10)  Hard drive light	Blinking white: The hard drive is being accessed.
(11)  Power light	<ul style="list-style-type: none"> <li>• On: The computer is on.</li> <li>• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.</li> <li>• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.</li> </ul>

## Top

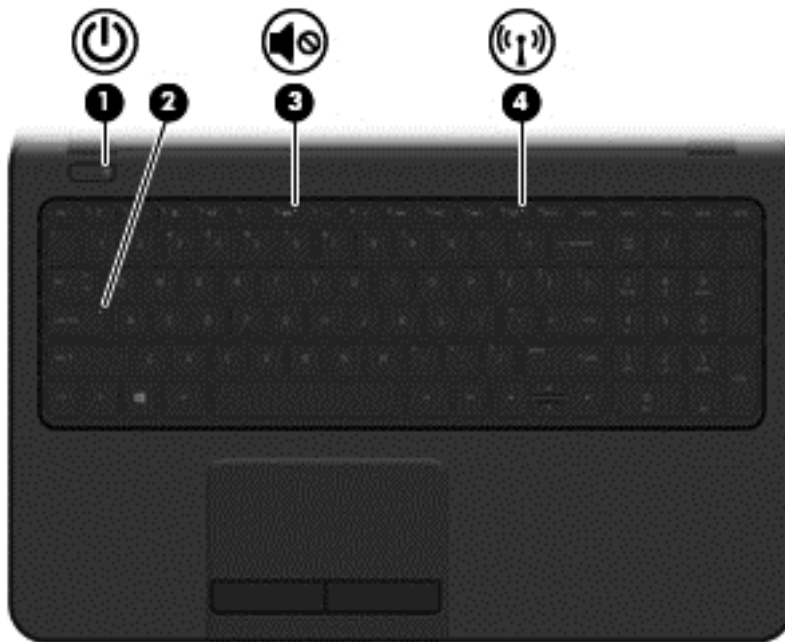
### TouchPad






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.




## Lights



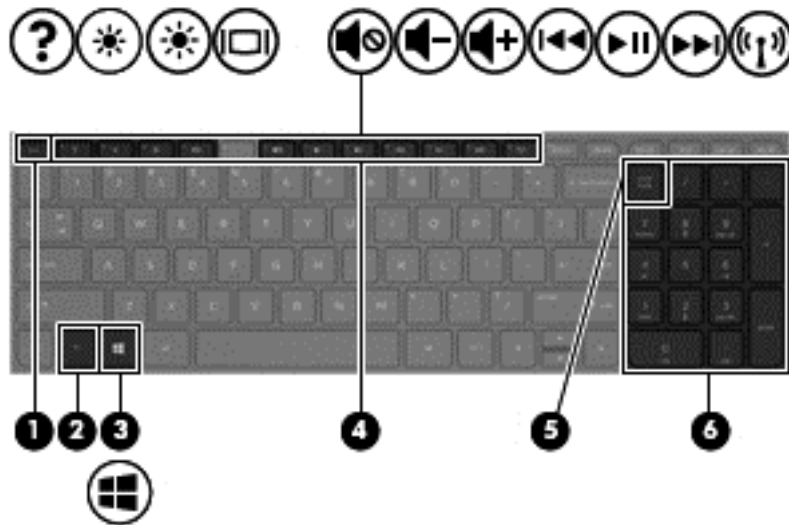
Component	Description
(1)  Power light	<ul style="list-style-type: none"><li>• On: The computer is on.</li><li>• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.</li><li>• Off: The computer is off or in Hibernation.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


## Button



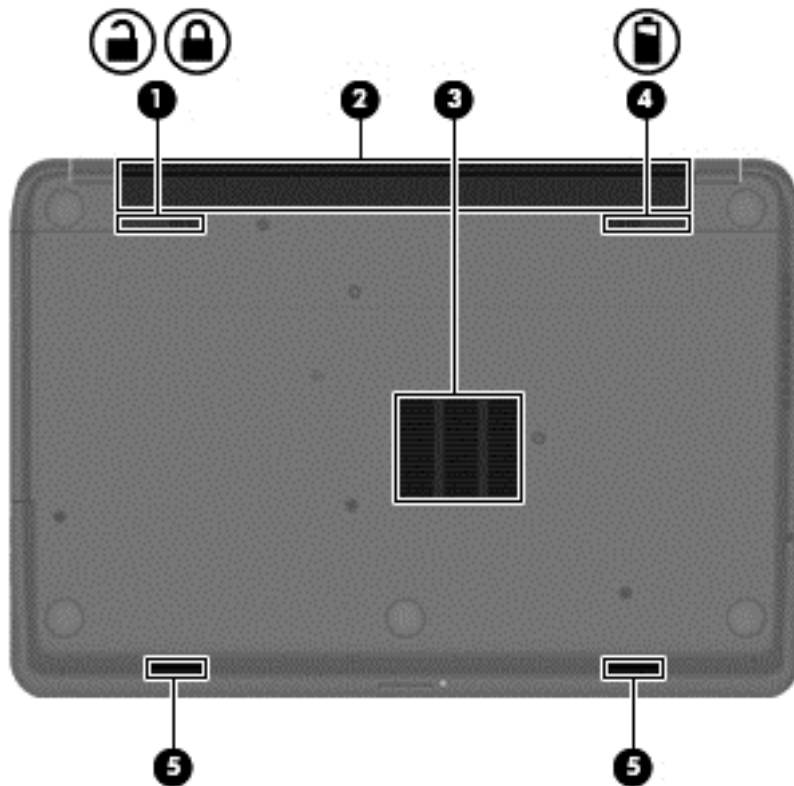
Component	Description
 Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate Sleep.</li><li>• When the computer is in the Sleep state, press the button briefly to 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 shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options. In Windows 8, from the Start screen, type <code>power</code>, select <b>Power and sleep settings</b>, and then select <b>Power and sleep</b> from the list of applications.</p>




## Keys



Component	Description
(1) <a href="#">esc</a> key	Displays system information when pressed in combination with the <a href="#">fn</a> key.
(2) <a href="#">fn</a> key	Executes frequently used system functions when pressed in combination with the <a href="#">spacebar</a> or the <a href="#">esc</a> key.
(3)  Windows key	(Windows 8) Returns you to the Start screen from an open app or the Windows desktop. <b>NOTE:</b> Pressing the Windows key again will return you to the previous screen.
(4) Action keys	Execute frequently used system functions.
(5) <a href="#">num lk</a> key	Alternates between the navigational and numeric functions on the integrated numeric keypad. <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	When <a href="#">num lk</a> has been enabled, it can be used 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 <a href="#">num lk</a> key.

## Bottom



Component	Description
(1)  	Battery lock and unlock latch Locks and unlocks the battery in the battery bay.
(2)	Battery bay Holds the battery.
(3)	Vent 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.
(4) 	Battery release latch Releases the battery.
(5)	Speaker openings (2) Produce sound.

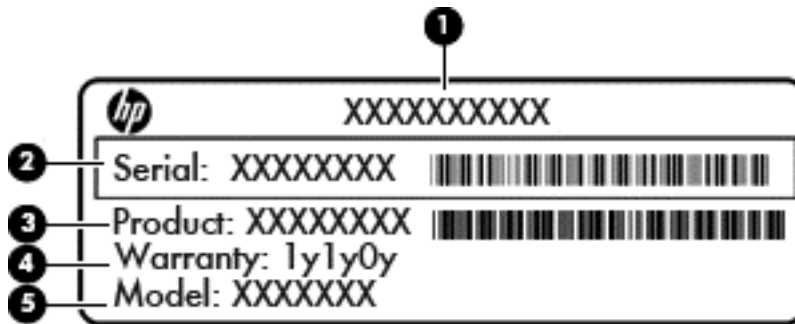
# Labels

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

**IMPORTANT:** All labels described in this section will be located in one of 2 places depending on your computer model: Affixed to the bottom of the computer, or located in the battery bay.

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

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



### Component

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



### Component

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

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**Component**

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**(4)** Model number (select models only)

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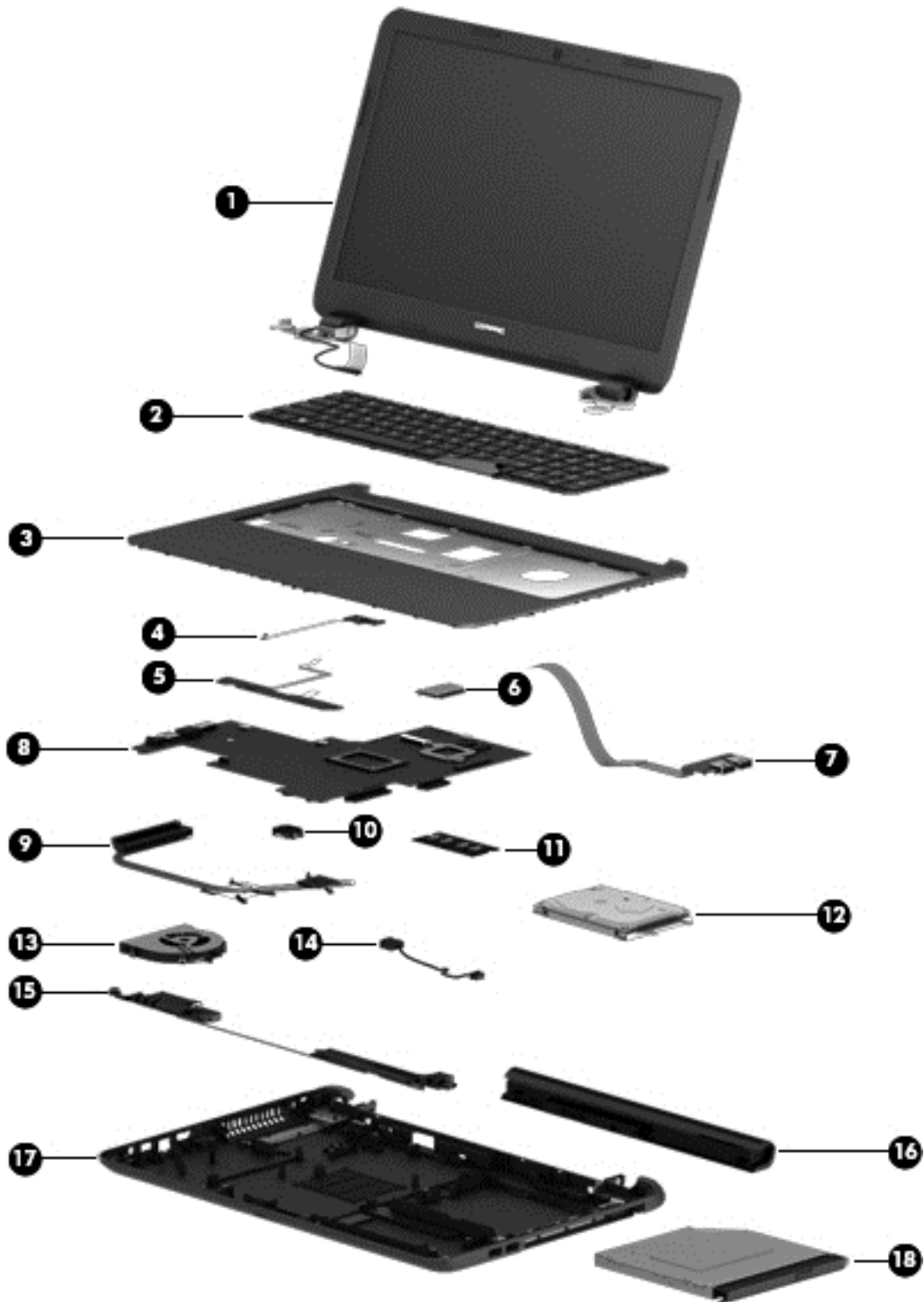
**(5)** Revision number

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

# 3 Illustrated parts catalog

## Computer major components



<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
<b>(1)</b>	<b>Display assembly</b> (39.6-cm [15.6-in] HD, anti-glare, touchscreen)	
	<b>NOTE:</b> For display assembly spare part information, see <a href="#">Display assembly subcomponents on page 20</a> .	
<b>(2)</b>	<b>Keyboard</b>	
	For use in the United States	749658-001
	For use in the United Kingdom	749658-031
	For use in Germany	749658-041
	For use in France	749658-051
	For use in Italy	749658-061
	For use in Spain	749658-071
	For use in Portugal	749658-131
	For use in Turkey	749658-141
	For use in Greece	749658-151
	For use in Latin America	749658-161
	For use in Saudi Arabia	749658-171
	For use in Hungary	749658-211
	For use in Russia	749658-251
	For use in Bulgaria	749658-261
	For use in Romania	749658-271
	For use in Thailand	749658-281
	For use in Japan	749658-291
	For use in Belgium	749658-A41
	For use in Taiwan	749658-AB1
	For use in South Korea	749658-AD1
	For use in the Netherlands	749658-B31
	For use in Slovenia	749658-BA1
	For use in Switzerland	749658-BG1
	For use in French Canada	749658-DB1
	For use in Denmark, Finland, and Norway	749658-DH1
	For use in the Czech Republic and Slovakia	749658-FL1
<b>(3)</b>	<b>Top cover</b> (includes touchpad)	
	For use in HP 15 models	749639-001
	For use in Compaq 15 models	749640-001
<b>(4)</b>	<b>Power button board</b> (includes cable)	749650-001
<b>(5)</b>	<b>Touchpad button board</b> (includes bracket)	749651-001

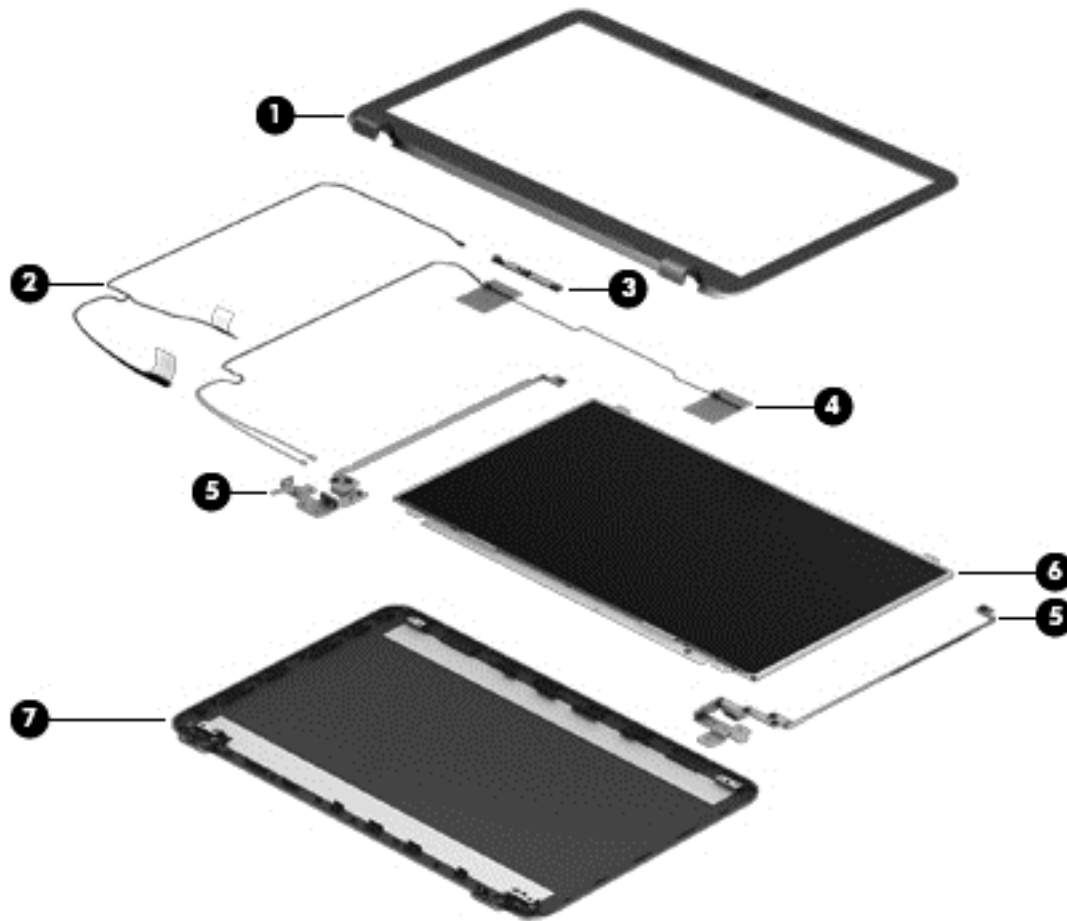


Item	Component	Spare part number
<b>(6)</b>	<b>WLAN module:</b>	
	Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter	675794-001
	Ralink RT3290LE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 Combo Adapter	690020-001
	Atheros AR9565 802.11bgn 1x1 Wi-Fi + BT4.0 combo Adapter	733476-001
	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter	709848-001
<b>(7)</b>	<b>USB board</b> (includes cable)	749649-001
<b>(8)</b>	<b>System board</b> (includes replacement thermal materials):	
	For use in models with an AMD A4-5050 processor	
	• Without Windows 8	754223-001
	• Windows 8 Standard	754223-501
	• Windows 8 Professional	754223-601
	For use in models with AMD A4-5000 processors:	
	• Without Windows 8	750634-001
	• Windows 8 Standard	750634-501
	• Windows 8 Professional	750634-601
	For use in models with AMD E1-2150 processors:	
	• Without Windows 8	754224-001
	• Windows 8 Standard	754224-501
	• Windows 8 Professional	754224-601
	For use in models with AMD E1-2100 processors:	
	• Without Windows 8	750633-001
	• Windows 8 Standard	750633-501
	• Windows 8 Professional	750633-601
	For use in models with an AMD E2-3800 processor:	
	• Without Windows 8	749659-001
	• Windows 8 Standard	749659-501
	• Windows 8 Professional	749659-601
	For use in models with an Intel Core i3-4010U processor and UMA graphics:	
	• Without Windows 8	759875-001
	• Windows 8 Standard	759875-501
	• Windows 8 Professional	759875-601
	For use in models with an Intel Core i3-4010U processor and 1 GB of discrete graphics memory:	
	• Without Windows 8	759876-001
	• Windows 8 Standard	759876-501

Item	Component	Spare part number
	<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	759876-601
	For use in models with an Intel Core i3-4010U processor and 2 GB of discrete graphics memory:	
	<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	759877-001
	<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	759877-501
	<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	759877-601
	For use in models with an Intel Core i5-4210U processor and UMA graphics:	
	<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	760968-001
	<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	760968-501
	<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	760968-601
	For use in models with an Intel Core i3-3217U processor and 2 GB of discrete graphics memory:	
	<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	760969-001
	<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	760969-501
	<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	760969-601
	For use in models with an Intel Core i5-4210U processor and 2 GB of discrete graphics memory:	
	<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	760970-001
	<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	760970-501
	<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	760970-601
<b>(9)</b>	<b>Heat sink assembly</b> (includes replacement thermal materials):	
	For use in models with an AMD processor	753895-001
	For use in models with an Intel processor and UMA graphics	759880-001
	For use in models with an Intel processor and discrete graphics	759881-001
<b>(10)</b>	<b>RTC battery</b>	759981-001
<b>(11)</b>	<b>Memory module</b> (PC3L, 12800, 1600-MHz):	
	8-GB	693374-001
	4 GB	691740-001
	2 GB	691739-001
<b>(12)</b>	<b>Hard drive</b> (SATA; does not include bracket):	
	<b>NOTE:</b> The hard drive bracket is available using spare part number 749648-001.	
	1-GB, 5400-rpm, 2.5-in	676521-001
	750-GB, 5400-rpm, 2.5-in	644351-001
	500-GB, 5400-rpm	669299-001
	320-GB, 5400-rpm, 2.5-in (for use only in HP 250 models)	634953-001

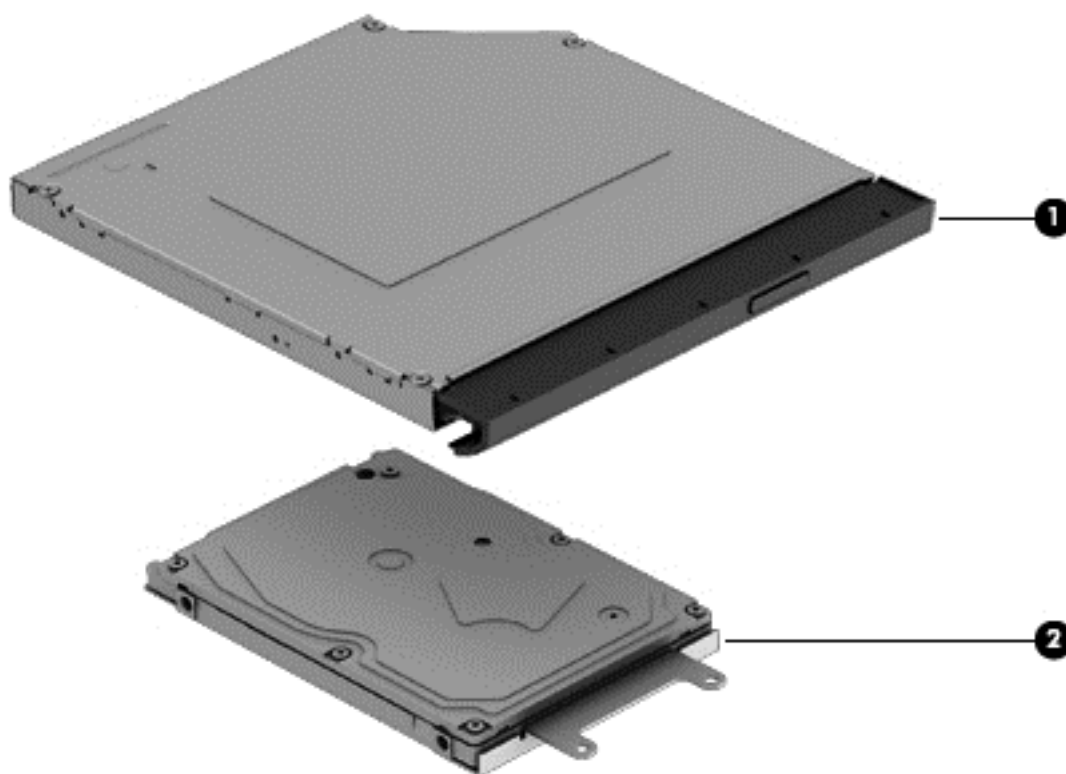
<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
<b>(13)</b>	<b>Fan</b>	753894-001
<b>(14)</b>	<b>Power connector cable</b>	749647-001
<b>(15)</b>	<b>Speakers</b> (includes left and right speakers and cable)	749653-001
<b>(16)</b>	<b>Battery:</b>	
	4-cell, 41-Whr, 2.8-Ah Li-ion battery	740715-001
	3-cell, 31-Whr, 2.8-Ah Li-ion battery	746641-001
<b>(17)</b>	<b>Base enclosure</b>	
	For use in HP 15 and Compaq 15 models	749643-001
<b>(18)</b>	<b>Optical drive</b> (DVD+/-RW Double-Layer SuperMulti)	750636-001

## Display assembly subcomponents



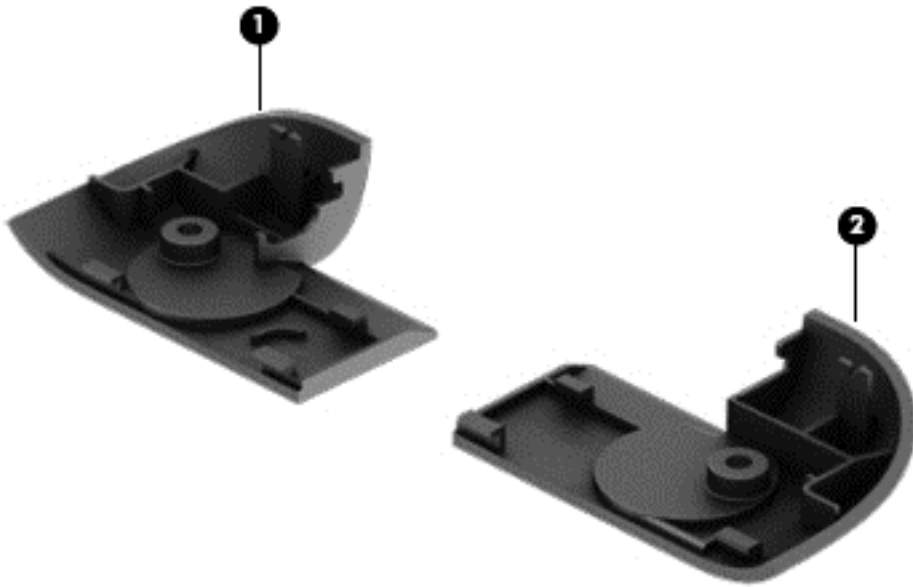
Item	Component	Spare part number
<b>(1)</b>	<b>Display bezel</b> (includes Mylar screw covers):	
	For use with HP models	749644-001
	For use with Compaq models	749645-001
<b>(2)</b>	<b>Display cable</b> (includes display panel cable and webcam/microphone cable)	749646-001
<b>(3)</b>	<b>Webcam/microphone module</b>	749654-001
<b>(4)</b>	<b>Antennas</b> (includes wireless antenna cables and transceivers)	749638-001
<b>(5)</b>	<b>Hinges</b> (left and right)	749655-001
<b>(6)</b>	<b>Raw display panel</b> (39.6-cm [15.6-in], HD, WLED, BrightView)	750635-001
<b>(7)</b>	<b>Display enclosure:</b>	
	For use in HP models	749641-001
	For use in Compaq models	749642-001

## Mass storage devices



Item	Component	Spare part number
(1)	Optical drive (DVD+/-RW Double-Layer SuperMulti)	750636-001
(2)	Hard drive, SATA; does not include bracket:	
	1-GB, 5400-rpm, 2.5-in	676521-001
	750-GB, 5400-rpm, 2.5-in	644351-001
	500-GB, 5400-rpm	669299-001
	320-GB, 5400-rpm, 2.5-in (for use only in HP 250 models)	634953-001
	Hard drive bracket	749648-001

## Plastics Kit



Item	Component	Spare part number
	<b>Plastics Kit</b> , includes:	749656-001
(1)	Left cover	
(2)	Right cover	

## Rubber Kit

Component	Spare part number
<b>Rubber Kit</b> , includes:	749652-001
Front feet	
Rear feet	

## Miscellaneous parts

Component	Spare part number
<b>HP Smart AC adapter:</b>	
65-W non-PFC EM HP Smart AC adapter (for use in the People's Republic of China and India only)	714657-001
45-W non-PFC, non-slim HP Smart AC adapter (for use in all countries and regions except for the People's Republic of China and India)	741427-001
<b>Power cord (3-pin, black, 1.83-m):</b>	
For use in models with AMD processors:	
• For use in Australia	490371-011
• For use in Europe, the Middle East, and Africa	490371-021
• For use in India	490371-D61
• For use in Italy	490371-061
• For use in Japan	490371-291
• For use in North America	490371-001
• For use in the People's Republic of China	490371-AA1
• For use in South Africa	490371-AR1
• For use in South Korea	490371-AD1
• For use in Taiwan	490371-AB1
• For use in Thailand	490371-201
• For use in the United Kingdom and Singapore	490371-031
For use in models with Intel processors:	
• For use in Australia	755530-011
• For use in Europe, the Middle East, and Africa	755530-021
• For use in Denmark	755530-081
• For use in India	755530-D61
• For use in Israel	755530-BB1
• For use in Italy	755530-061
• For use in Japan	755530-291
• For use in North America	755530-001
• For use in the People's Republic of China	755530-AA1
• For use in South Africa	755530-AR1
• For use in South Korea	755530-AD1
• For use in Switzerland	755530-111
• For use in Taiwan	755530-AB1
• For use in Thailand	755530-201

Component	Spare part number
<ul style="list-style-type: none"> <li>For use in the United Kingdom and Singapore</li> </ul>	755530-031
<b>Rubber Kit</b> (includes front and rear feet)	749652-001
<b>Screw Kit</b>	749657-001

## Sequential part number listing

CSR flag designations:

- A = Mandatory
- B = Optional
- C = Service technician recommended
- N = Non-user replaceable

Spare part number	CSR flag	Description
490371-001	A	Power cord for use in AMD models in North America (3-pin, black, 1.83-m)
490371-011	A	Power cord for use in AMD models in Australia (3-pin, black, 1.83-m)
490371-021	A	Power cord for use in AMD models in Europe, the Middle East, and Africa (3-pin, black, 1.83-m)
490371-031	A	Power cord for use in AMD models in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-061	A	Power cord for use in AMD models in Italy (3-pin, black, 1.83-m)
490371-201	A	Power cord for use in AMD models in Thailand (3-pin, black, 1.83-m)
490371-291	A	Power cord for use in AMD models in Japan (3-pin, black, 1.83-m)
490371-AA1	A	Power cord for use in AMD models in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	A	Power cord for use in AMD models in Taiwan (3-pin, black, 1.83-m)
490371-AD1	A	Power cord for use in AMD models in South Korea (3-pin, black, 1.83-m)
490371-AR1	A	Power cord for use in AMD models in South Africa (3-pin, black, 1.83-m)
490371-D61	A	Power cord for use in AMD models in India (3-pin, black, 1.83-m)
634953-001	N	320-GB, 5400-rpm, 2.5-in SATA hard drive for use only in HP 250 models (does not include cable or bracket)
644351-001	N	750-GB, 5400-rpm, 2.5-in SATA hard drive (does not include cable or bracket)
669299-001	N	500-GB, 5400-rpm, 2.5-in SATA hard drive (does not include cable or bracket)
675794-001	N	Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter
676521-001	A	1-TB, 5400-rpm, 2.5-in SATA hard drive (does not include cable or bracket)
690020-001	N	Ralink RT3290LE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 Combo Adapter
691739-001	N	2-GB memory module (PC3L, 12800, 1600-MHz)
691740-001	N	4-GB memory module (PC3L, 12800, 1600-MHz)
693374-001	N	8-GB memory module (PC3L, 12800, 1600-MHz)



<b>Spare part number</b>	<b>CSR flag</b>	<b>Description</b>
709848-001	N	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter
714657-001	A	65-W non-PFC EM HP Smart AC adapter (for use in the People's Republic of China and India only)
733476-001	N	Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter
740715-001	A	4-cell, 41-Whr, 2.8-Ah Li-ion battery
741427-001	A	45-W non-PFC, non-slim HP Smart AC adapter (for use in all countries and regions except for the People's Republic of China and India)
746641-001	A	3-cell, 31-Whr, 2.8-Ah Li-ion battery
749638-001	N	Antennas (includes wireless antenna cables and transceivers)
749639-001	N	Top cover for use in HP 15 models (includes touchpad)
749640-001	N	Top cover for use in Compaq 15 models (includes touchpad)
749641-001	N	Display enclosure for use in HP models
749642-001	N	Display enclosure for use in Compaq models
749643-001	N	Base enclosure for use in HP 15 and Compaq 15 models
749644-001	N	Display bezel for use with HP models
749645-001	N	Display bezel for use with Compaq models
749646-001	N	Display cable (includes display panel cable and webcam/microphone cable)
749647-001	N	Power connector cable
749648-001	N	Hard drive bracket
749649-001	N	USB board (includes cable)
749650-001	N	Power button board (includes cable)
749651-001	N	TouchPad button board (includes bracket)
749652-001	A	Rubber Kit (includes front and rear feet)
749653-001	N	Speakers (includes left and right speakers and cable)
749654-001	N	Webcam/microphone module
749655-001	N	Hinges (left and right)
749656-001	N	Plastics Kit (includes left and right covers)
749657-001	N	Screw Kit
749658-001	B	Keyboard for use in the United States
749658-031	B	Keyboard for use in the United Kingdom
749658-041	B	Keyboard for use in Germany
749658-051	B	Keyboard for use in France
749658-061	B	Keyboard for use in Italy
749658-071	B	Keyboard for use in Spain
749658-131	B	Keyboard for use in Portugal

<b>Spare part number</b>	<b>CSR flag</b>	<b>Description</b>
749658-141	B	Keyboard for use in Turkey
749658-151	B	Keyboard for use in Greece
749658-161	B	Keyboard for use in Latin America
749658-171	B	Keyboard for use in Saudi Arabia
749658-211	B	Keyboard for use in Hungary
749658-251	B	Keyboard for use in Russia
749658-261	B	Keyboard for use in Bulgaria
749658-271	B	Keyboard for use in Romania
749658-281	B	Keyboard for use in Thailand
749658-291	B	Keyboard for use in Japan
749658-A41	B	Keyboard for use in Belgium
749658-AB1	B	Keyboard for use in Taiwan
749658-AD1	B	Keyboard for use in South Korea
749658-B31	B	Keyboard for use in the Netherlands
749658-BA1	B	Keyboard for use in Slovenia
749658-BG1	B	Keyboard for use in Switzerland
749658-DB1	B	Keyboard for use in French Canada
749658-DH1	B	Keyboard for use in Denmark, Finland, and Norway
749658-FL1	B	Keyboard for use in the Czech Republic and Slovakia
749659-001	N	System board for use only with computer models without Windows 8 and equipped with an AMD E2-3800 processor (includes replacement thermal materials)
749659-501	N	System board for use only with computer models with Windows 8 Standard and equipped with an AMD E2-3800 processor (includes replacement thermal materials)
749659-601	N	System board for use only with computer models with Windows 8 Professional and equipped with an AMD E2-3800 processor (includes replacement thermal materials)
750633-001	N	System board for use only with computer models without Windows 8 and equipped with an AMD E1-2100 processor (includes replacement thermal materials)
750633-501	N	System board for use only with computer models with Windows 8 Standard and equipped with an AMD E1-2100 processor (includes replacement thermal materials)
750633-601	N	System board for use only with computer models with Windows 8 Professional and equipped with an AMD E1-2100 processor (includes replacement thermal materials)
750634-001	N	System board for use only with computer models without Windows 8 and equipped with an AMD A4-5000 processor (includes replacement thermal materials)
750634-501	N	System board for use only with computer models with Windows 8 Standard and equipped with an AMD A4-5000 processor (includes replacement thermal materials)
750634-601	N	System board for use only with computer models with Windows 8 Professional and equipped with an AMD A4-5000 processor (includes replacement thermal materials)
750635-001	N	Raw display panel for use in HP 15 and Compaq 15 models

<b>Spare part number</b>	<b>CSR flag</b>	<b>Description</b>
750636-001	A	DVD+/-RW Double-Layer SuperMulti Drive
753894-001	N	Fan
753895-001	N	Heat sink assembly (includes replacement thermal materials):
754223-001	N	System board for use only with computer models without Windows 8 and equipped with an AMD A4-5050 processor (includes replacement thermal materials)
754223-501	N	System board for use only with computer models with Windows 8 Standard and equipped with an AMD A4-5050 processor (includes replacement thermal materials)
754223-601	N	System board for use only with computer models with Windows 8 Professional and equipped with an AMD A4-5050 processor (includes replacement thermal materials)
754224-001	N	System board for use only with computer models without Windows 8 and equipped with an AMD E1-2150 processor (includes replacement thermal materials)
754224-501	N	System board for use only with computer models with Windows 8 Standard and equipped with an AMD E1-2150 processor (includes replacement thermal materials)
754224-601	N	System board for use only with computer models with Windows 8 Professional and equipped with an AMD E1-2150 processor (includes replacement thermal materials)
755530-001	A	Power cord for use in Intel models in North America (3-pin, black, 1.83-m)
755530-011	A	Power cord for use in Intel models in Australia (3-pin, black, 1.83-m)
755530-021	A	Power cord for use in Intel models in Europe, the Middle East, and Africa (3-pin, black, 1.83-m)
755530-031	A	Power cord for use in Intel models in the United Kingdom and Singapore (3-pin, black, 1.83-m)
755530-061	A	Power cord for use in Intel models in Italy (3-pin, black, 1.83-m)
755530-081	A	Power cord for use in Intel models in Denmark (3-pin, black, 1.83-m)
755530-111	A	Power cord for use in Intel models in Switzerland (3-pin, black, 1.83-m)
755530-201	A	Power cord for use in Intel models in Thailand (3-pin, black, 1.83-m)
755530-291	A	Power cord for use in Intel models in Japan (3-pin, black, 1.83-m)
755530-AA1	A	Power cord for use in Intel models in the People's Republic of China (3-pin, black, 1.83-m)
755530-AB1	A	Power cord for use in Intel models in Taiwan (3-pin, black, 1.83-m)
755530-AD1	A	Power cord for use in Intel models in South Korea (3-pin, black, 1.83-m)
755530-AR1	A	Power cord for use in Intel models in South Africa (3-pin, black, 1.83-m)
755530-BB1	A	Power cord for use in Intel models in Israel (3-pin, black, 1.83-m)
755530-D61	A	Power cord for use in Intel models in India (3-pin, black, 1.83-m)
759875-001	N	System board for use in models without Windows 8 with an Intel Core i3-4010U processor and UMA graphics
759875-501	N	System board for use in models with Windows 8 Standard with an Intel Core i3-4010U processor and UMA graphics
759875-601	N	System board for use in models with Windows 8 Professional with an Intel Core i3-4010U processor and UMA graphics
759876-001	N	System board for use in models without Windows 8 with an Intel Core i3-4010U processor and 1 GB of discrete graphics memory

<b>Spare part number</b>	<b>CSR flag</b>	<b>Description</b>
759876-501	N	System board for use in models with Windows 8 Standard with an Intel Core i3-4010U processor and 1 GB of discrete graphics memory
759876-601	N	System board for use in models with Windows 8 Professional with an Intel Core i3-4010U processor and 1 GB of discrete graphics memory
759877-001	N	System board for use in models without Windows 8 with an Intel Core i3-4010U processor and 2 GB of discrete graphics memory
759877-501	N	System board for use in models with Windows 8 Standard with an Intel Core i3-4010U processor and 2 GB of discrete graphics memory
759877-601	N	System board for use in models with Windows 8 Professional with an Intel Core i3-4010U processor and 2 GB of discrete graphics memory
759880-001	N	Heat sink for use in models with an Intel processor and UMA graphics
759881-001	N	Heat sink for use in models with an Intel processor and discrete graphics
759981-001	A	RTC battery
760968-001	N	System board for use in models without Windows 8 with an Intel Core i5-4210U processor and UMA graphics
760968-501	N	System board for use in models with Windows 8 Standard with an Intel Core i5-4210U processor and UMA graphics
760968-601	N	System board for use in models with Windows 8 Professional with an Intel Core i5-4210U processor and UMA graphics
760969-001	N	System board for use in models without Windows 8 with an Intel Core i3-3217U processor and 2 GB of discrete graphics memory
760969-501	N	System board for use in models with Windows 8 Standard with an Intel Core i3-3217U processor and 2 GB of discrete graphics memory
760969-601	N	System board for use in models with Windows 8 Professional with an Intel Core i3-3217U processor and 2 GB of discrete graphics memory
760970-001	N	System board for use in models without Windows 8 with an Intel Core i5-4210U processor and 2 GB of discrete graphics memory
760970-501	N	System board for use in models with Windows 8 Standard with an Intel Core i5-4210U processor and 2 GB of discrete graphics memory
760970-601	N	System board for use in models with Windows 8 Professional with an Intel Core i5-4210U processor and 2 GB of discrete graphics memory

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# 4 Removal and replacement procedures

## Preliminary replacement requirements

### Tools required

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

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

### Service considerations

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



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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.

---

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.

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**⚠ 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.

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

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**⚠ 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 non-conductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

### Workstation guidelines

Follow these grounding workstation guidelines:

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

- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

### Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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



# Component replacement procedures

This chapter provides removal and replacement procedures.

Make special note of each screw's size and location during removal and replacement.

## Battery

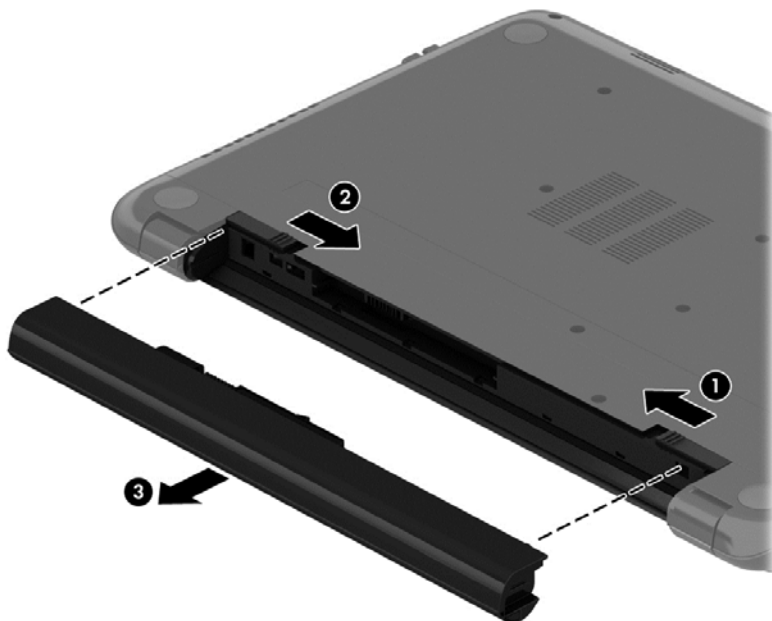
Description	Spare part number
4-cell, 41-Whr, 2.8-Ah Li-ion battery	740715-001
3-cell, 31-Whr, 2.8-Ah Li-ion battery	746641-001

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

To remove the battery:

1. Position the computer upside down on a flat surface.
2. Slide the battery lock latch **(1)**, and then slide the battery release latch **(2)** to release the battery.
3. Remove the battery from the computer **(3)**.



## Display subcomponents (bezel, webcam, panel)

This section describes removing display subcomponents that do not require that you remove the entire display assembly from the computer. You can remove the display bezel, webcam/microphone module, and display panel while the display assembly is still attached to the computer.

To remove the remaining display subcomponents, you must remove the entire display assembly from the computer. See [Display assembly on page 66](#) for more information about removing the display assembly in its entirety.

Description	Spare part number
Raw display panel	750635-001
Display bezel for use with HP models	749644-001
Display bezel for use with Compaq models	749645-001
Webcam/microphone module	749654-001

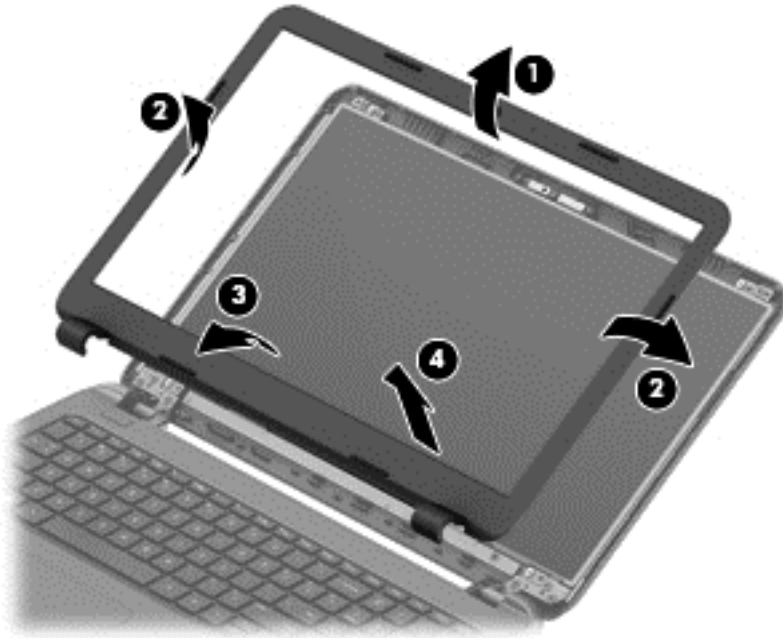
Before removing display subcomponents while the display assembly is still attached to the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).

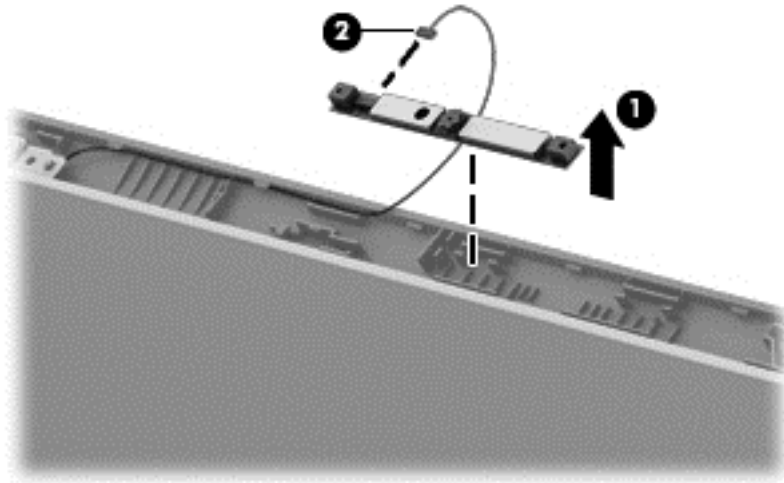
To remove the display bezel, webcam/microphone module, and raw display panel:

1. Position the computer upright with the front toward you, and then open it.
2. Flex the inside 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.

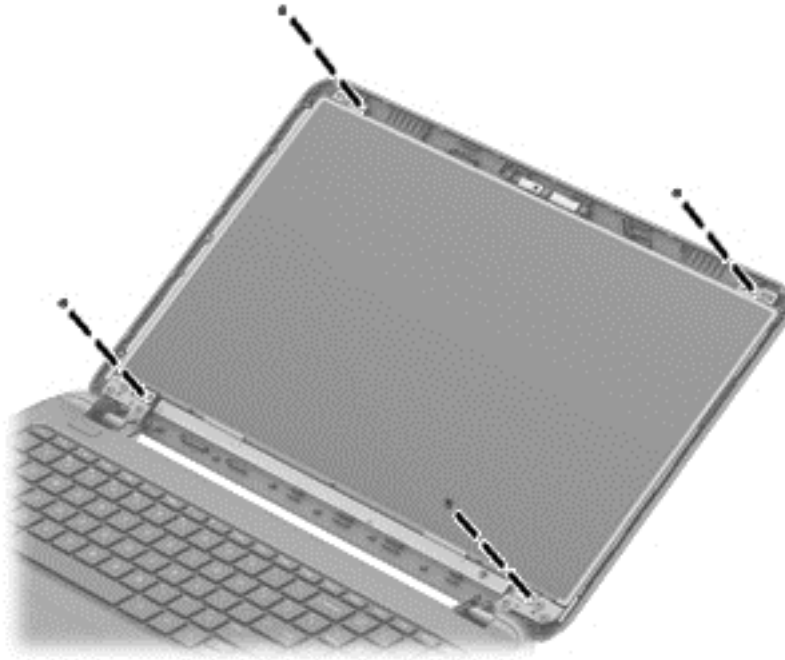
3. Remove the display bezel (4).



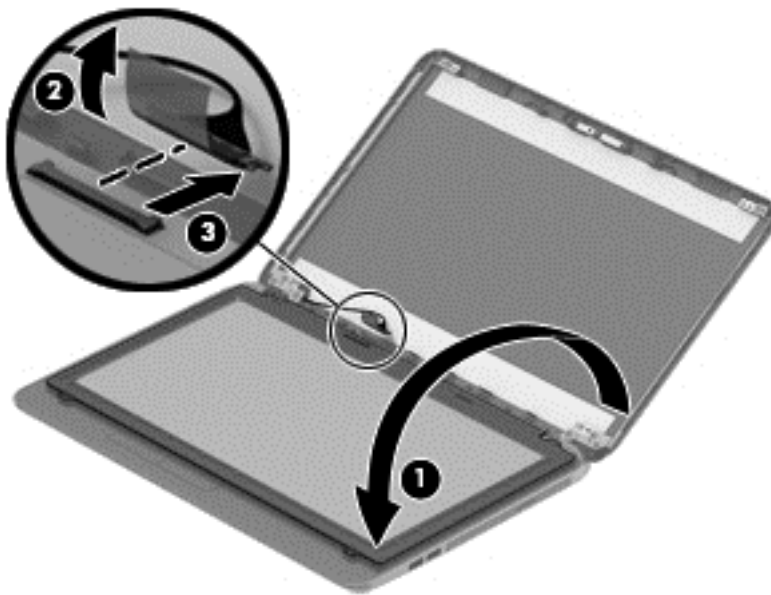
4. To remove the webcam/microphone module:
  - a. Position the display assembly with the top edge toward you.
  - b. Lift to disengage the adhesive that secures the webcam/microphone module to the display, and then remove the module enough to access the cable connection on the module (1).
  - c. Disconnect the cable (2) from the module.



5. To remove the display panel:
  - a. Remove the four Phillips PM2.5×3.5 screws that secure the display panel to the enclosure.



- b.** Rotate the display panel onto the keyboard to gain access to the display cable connection on the back of the panel **(1)**.
- c.** On the back of the display panel, release the adhesive strip **(2)** that secures the display panel cable to the display panel, and then disconnect the cable **(3)**.



Reverse this procedure to reassemble and install the display bezel, webcam/microphone module, and display panel.

## Optical drive

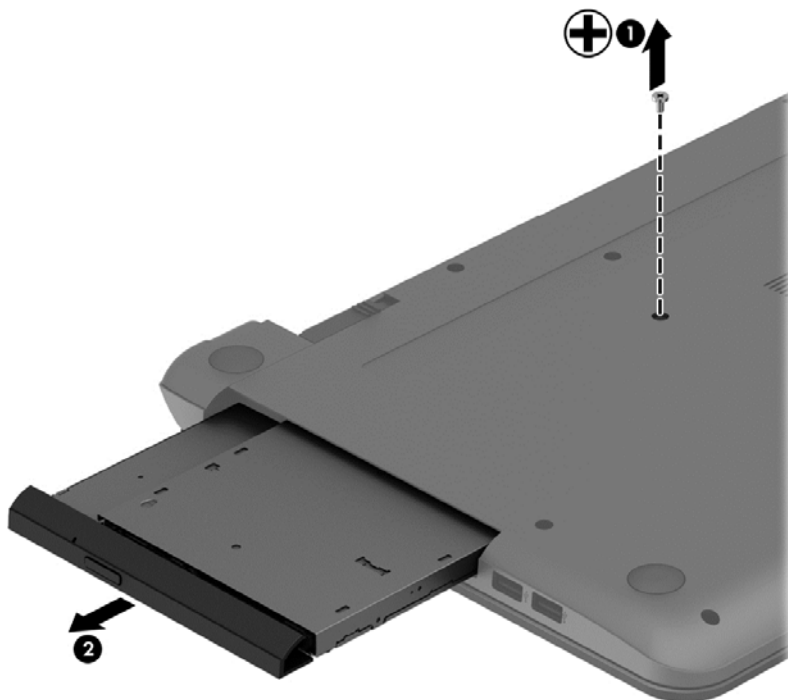
Description	Spare part number
DVD+/-RW Double-Layer SuperMulti Drive	750636-001

Before removing the optical drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).

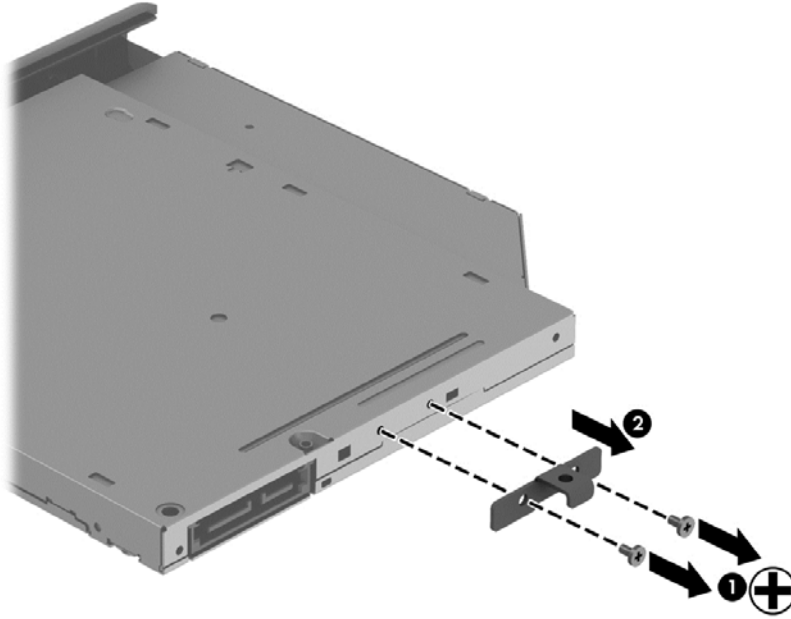
To remove the optical drive:

1. Remove the Phillips PM2.5×5.0 screw **(1)** that secures the optical drive to the computer.
2. Remove the optical drive **(2)** by sliding it out of the optical drive bay.



3. If it is necessary to replace the optical drive bracket on the rear of the optical drive, position the optical drive with the rear panel toward you.
4. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the bracket to the optical drive.

5. Remove the optical drive bracket **(2)**.



Reverse this procedure to reassemble and install the optical drive.

## Keyboard

Description	Spare part number
Keyboard for use in the United States	749658-001
Keyboard for use in the United Kingdom	749658-031
Keyboard for use in Germany	749658-041
Keyboard for use in France	749658-051
Keyboard for use in Italy	749658-061
Keyboard for use in Spain	749658-071
Keyboard for use in Portugal	749658-131
Keyboard for use in Turkey	749658-141
Keyboard for use in Greece	749658-151
Keyboard for use in Latin America	749658-161
Keyboard for use in Saudi Arabia	749658-171
Keyboard for use in Hungary	749658-211
Keyboard for use in Russia	749658-251
Keyboard for use in Bulgaria	749658-261
Keyboard for use in Romania	749658-271
Keyboard for use in Thailand	749658-281
Keyboard for use in Japan	749658-291
Keyboard for use in Belgium	749658-A41
Keyboard for use in Taiwan	749658-AB1
Keyboard for use in South Korea	749658-AD1
Keyboard for use in the Netherlands	749658-B31
Keyboard for use in Slovenia	749658-BA1
Keyboard for use in Switzerland	749658-BG1
Keyboard for use in French Canada	749658-DB1
Keyboard for use in Denmark, Finland, and Norway	749658-DH1
Keyboard for use in the Czech Republic and Slovakia	749658-FL1

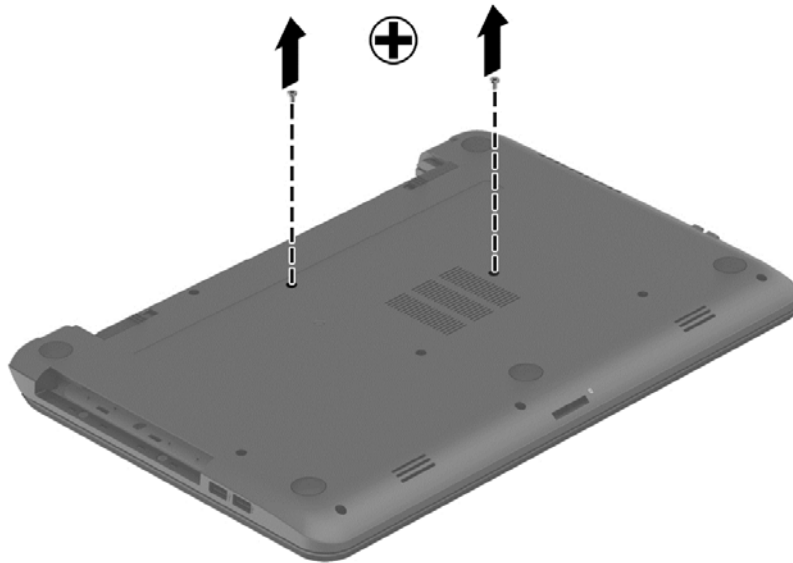
Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).

To remove the keyboard:

1. Position the computer upside down with the front toward you.
2. Remove the two Phillips PM2.5×5.0 screws that secure the keyboard to the computer.



3. Position the computer upright with the front toward you.
4. Lift to rotate up the top of the keyboard **(1)**, and then lift the keyboard **(2)** to disengage it from the computer.






5. Rotate the keyboard over onto the palm rest **(1)**, and the lift the ZIF connector **(2)** and disconnect the keyboard cable from the system board **(3)**.



Reverse this procedure to install the keyboard.

## Top cover

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

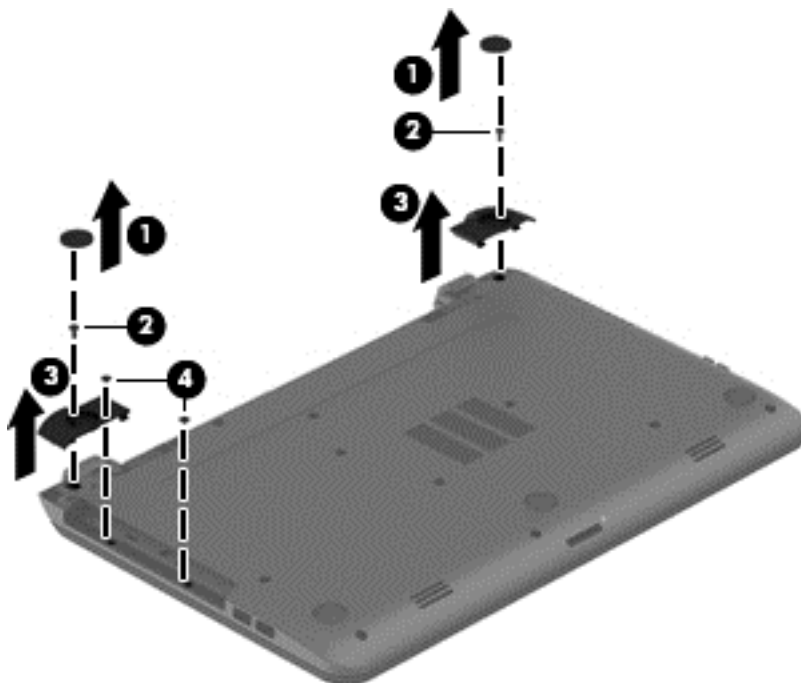
Description	Spare part number
Top cover for use in HP 15 models (includes touchpad)	749639-001
Top cover for use in Compaq 15 models (includes touchpad)	749640-001

Before removing the top cover, follow these steps:

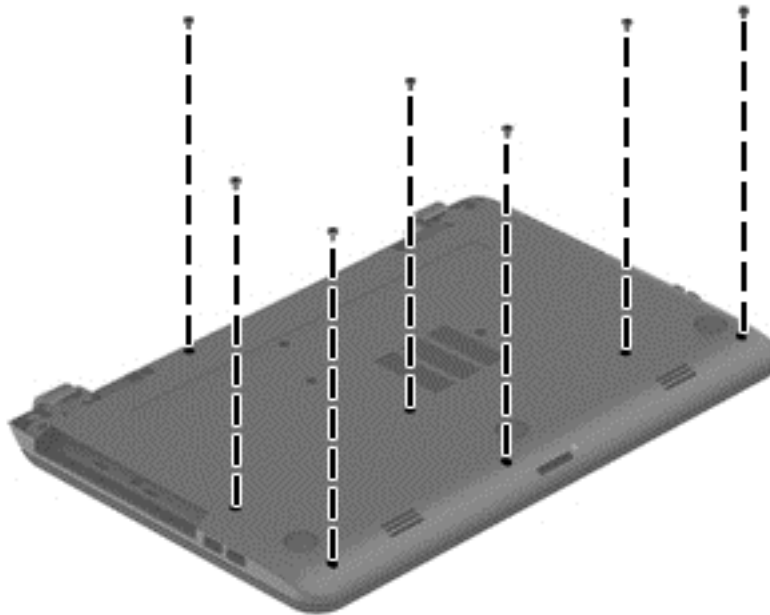
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the keyboard (see [Keyboard on page 39](#)).

To remove the top cover:

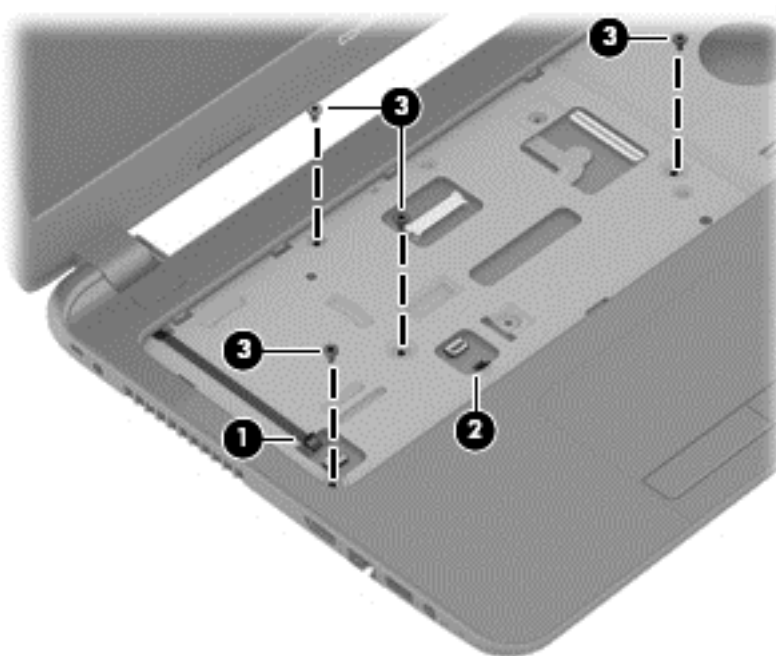
1. Position the computer upside down with the front toward you.
2. Remove the rear covers by prying off the two rubber feet **(1)**, removing the two Phillips PM2.5×8.0 screws **(2)** that secure the rear covers to the computer, and then lifting the rear covers off the computer **(3)**.
3. Remove the two Phillips broadhead PM2.5×2.0 screws from the optical drive bay **(4)**.



4. Remove the seven Phillips PM2.5×5.0 screws that secure the top cover to the computer.

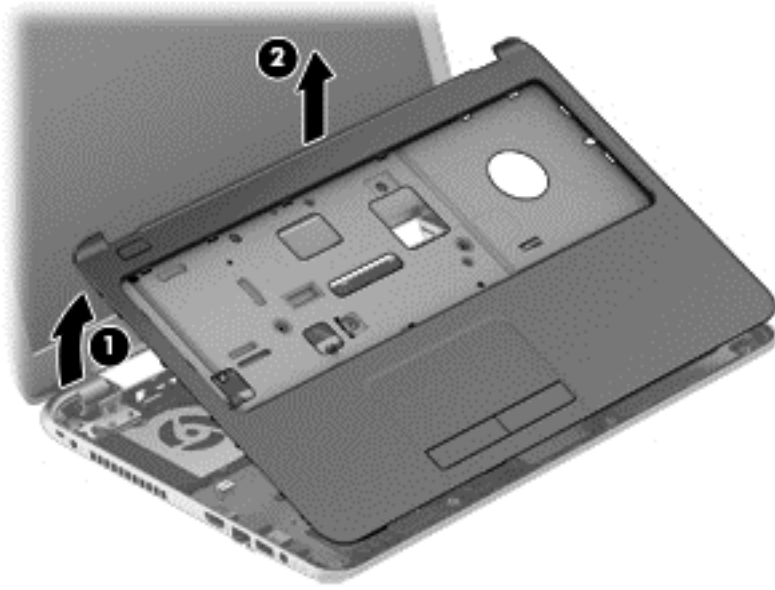


5. Position the computer upright with the front toward you.
6. Disconnect the power button board cable (1) and the touchpad button board cable (2).
7. Remove the four Phillips PM2.5×5.0 screws (3) that secure the top cover to the computer.



8. Lift the rear edge of the top cover (1) until it disengage from the base enclosure.

9. Remove the top cover (2).



Reverse this procedure to install the top cover.

## Power button board

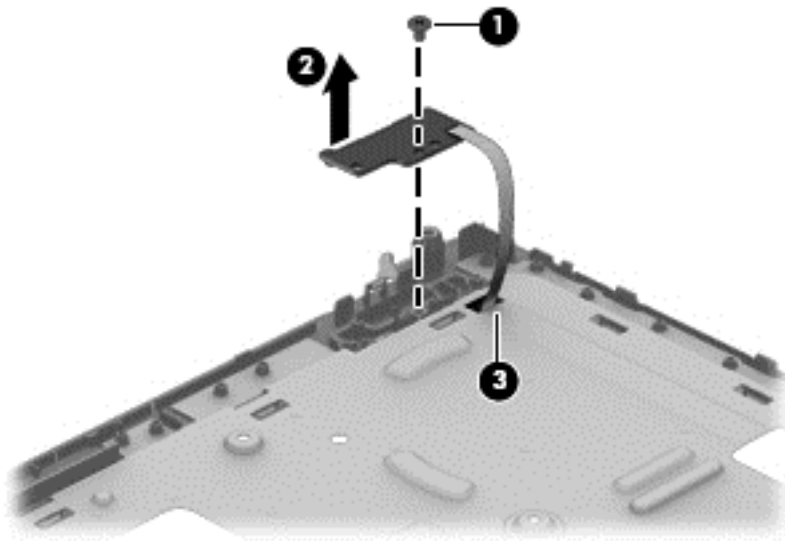
Description	Spare part number
Power button board (includes cable)	749650-001

Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the keyboard (see [Keyboard on page 39](#)).
6. Remove the top cover (see [Top cover on page 42](#)).

To remove the power button board:

1. Position the top cover upside down.
2. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the power button board to the top cover.
3. Lift the board and cable up and remove from the top cover **(2)** while pulling cable through the hole in top cover **(3)**.



Reverse this procedure to install the power button board and cable.

## TouchPad button board

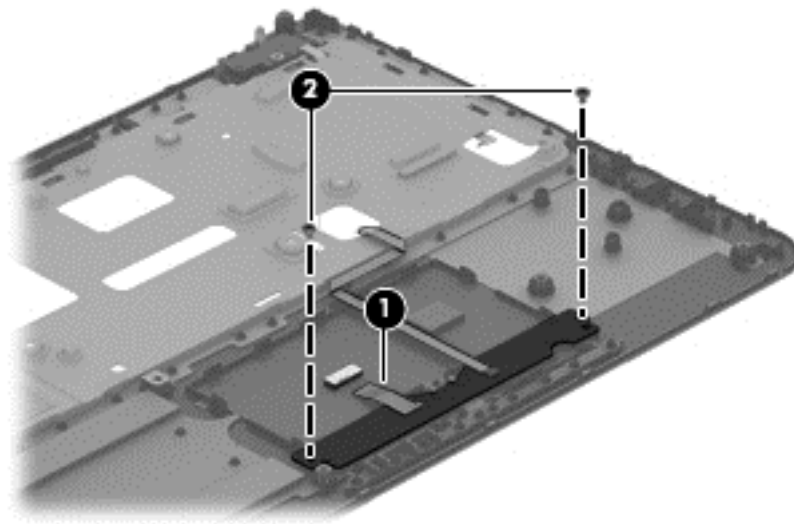
Description	Spare part number
TouchPad button board (includes bracket)	749651-001

Before removing the TouchPad button board, follow these steps:

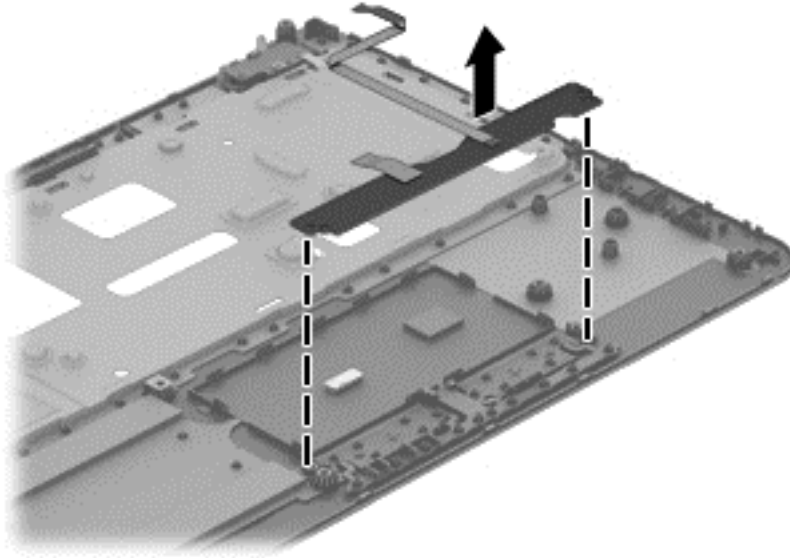
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the keyboard (see [Keyboard on page 39](#)).
6. Remove the top cover (see [Top cover on page 42](#)).

To remove the TouchPad button board:

1. Position the top cover upside down with the front toward you.
2. Disconnect the touchpad board cable from the touchpad **(1)**.
3. Remove the two Phillips PM2.0×3.5 screws **(2)** that secure the TouchPad button board to the top cover.



4. Remove the TouchPad button board and cable.



Reverse this procedure to install the power button board and cable.

## Hard drive



**NOTE:** The hard drive spare part kit does not include the hard drive bracket.

Description	Spare part number
1-GB, 5400-rpm, 2.5-in	676521-001
750-GB, 5400-rpm, 2.5-in	644351-001
500-GB, 5400-rpm, 2.5-in	669299-001
320-GB, 5400-rpm, 2.5-in	634953-001
Hard drive bracket	749648-001

Before removing the hard drive, follow these steps:

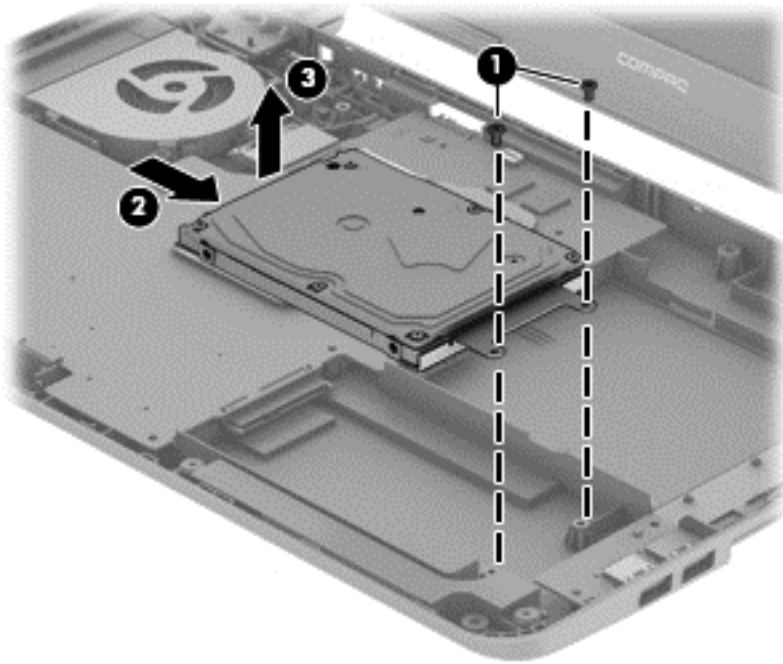
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the keyboard (see [Keyboard on page 39](#)).
6. Remove the top cover (see [Top cover on page 42](#)).

To remove the hard drive:

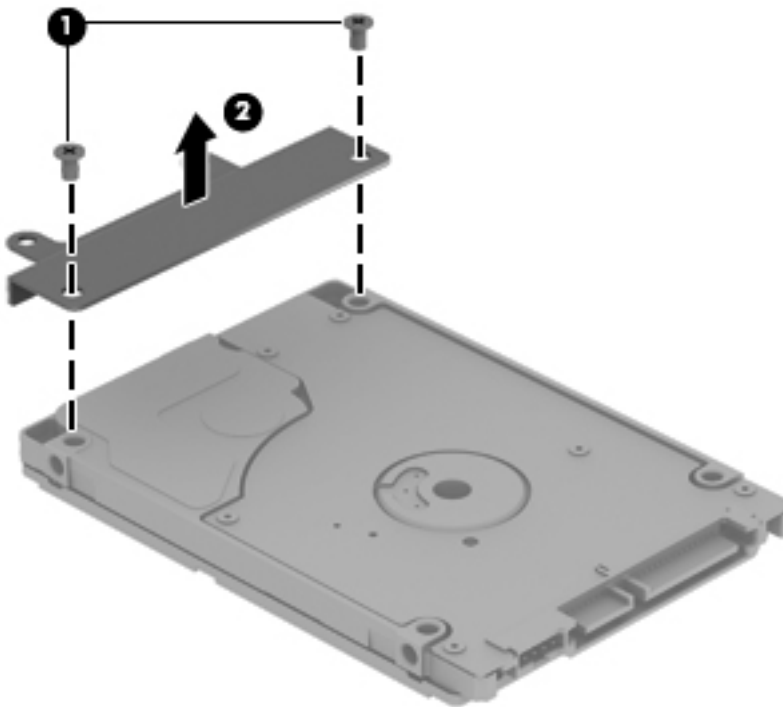
1. Remove the two Phillips PM2.5×5.0 screws **(1)** that secure the hard drive to the computer.
2. Slide the hard drive to disengage it from the connector **(2)**.



3. Lift the hard drive from the computer **(3)**.



4. To remove the hard drive bracket, remove the two Phillips PM3.0×4.0 screws **(1)** that secure the bracket to the hard drive.
5. Remove the hard drive bracket from the hard drive **(2)**.



Reverse this procedure to reassemble and install the hard drive.

## WLAN module

Description	Spare part number
Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter	675794-001
Ralink RT3290LE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 Combo Adapter	690020-001
Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter	733476-001
Realtek RTL8188EE 802.11bgn Wi-Fi Adapter	709848-001

**CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact support.

Before removing the WLAN module, follow these steps:

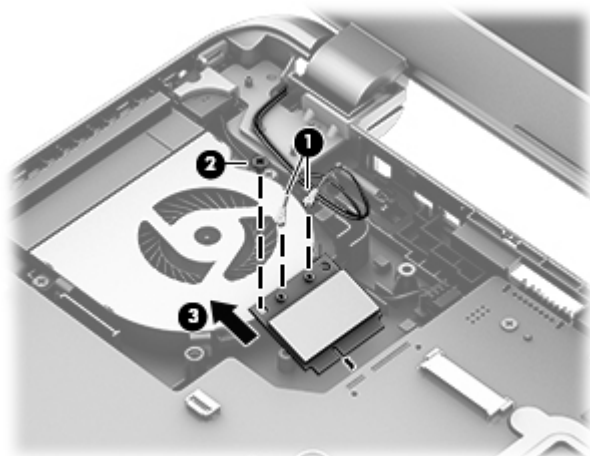
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the keyboard (see [Keyboard on page 39](#)).
6. Remove the top cover (see [Top cover on page 42](#)).

To remove the WLAN module:


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

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

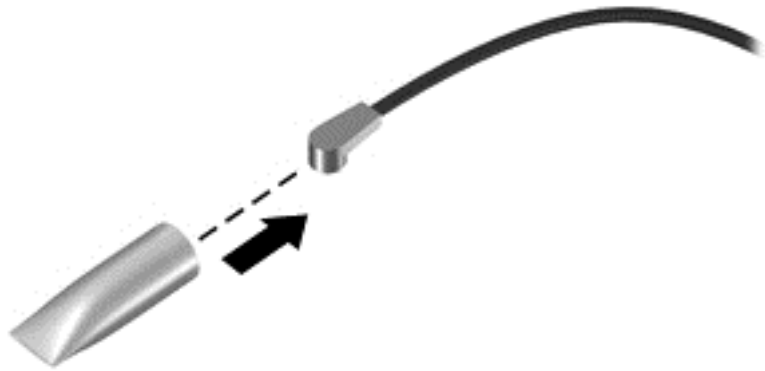
2. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
3. Remove the WLAN module by pulling the module away from the slot at an angle **(3)**.



---

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

---



Reverse this procedure to install the WLAN module.

## Fan



**NOTE:** The fan spare part kit includes replacement thermal materials.

Description	Spare part number
Fan	753894-001



**NOTE:** To properly ventilate the computer, allow at least **7.6 cm** (3.0 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

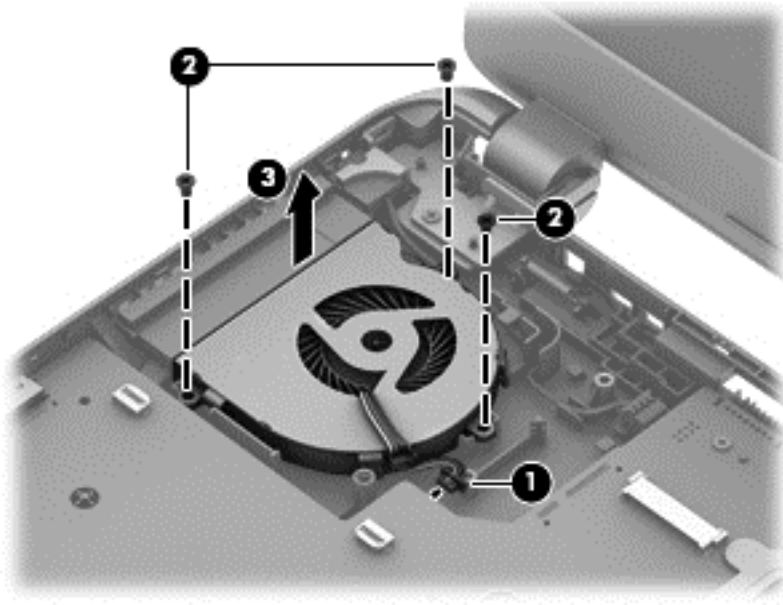
Before removing the fan/heat sink assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the keyboard (see [Keyboard on page 39](#)).
6. Remove the top cover (see [Top cover on page 42](#)).

To remove the fan:

1. Position the computer upright and open it.
2. Disconnect the fan cable **(1)** from the system board.
3. Remove the three Phillips PM2.5×5.0 screws **(2)** that secure the fan to the computer.

4. Remove the fan from the computer (3).



Reverse this procedure to install the fan.

## Power connector cable

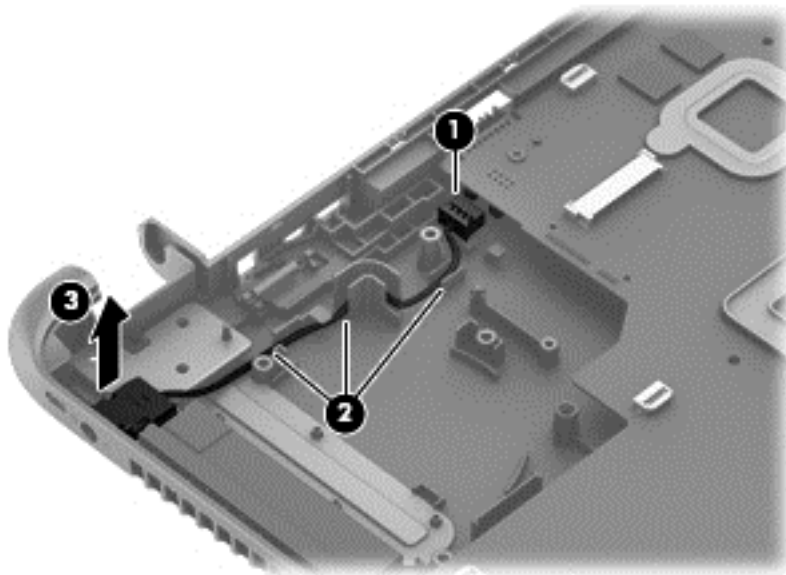
Description	Spare part number
Power connector cable	749647-001

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - Display (see [Display assembly on page 66](#))

To remove the power connector cable:

1. Position the computer upright.
2. Remove the two Phillips PM2.5×5.0 screws **(1)** that secure the cable to the computer.
3. Disconnect the power connector cable **(2)** from the system board.
4. Release the power connector cable from the clips **(3)** built into the chassis.
5. Remove the power connector cable **(4)**.



Reverse this procedure to install the power connector cable.

## System board



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

Description	Spare part number
System board for use in models with AMD A4-5050 processors and UMA graphics:	
• Without Windows 8	754223-001
• Windows 8 Standard	754223-501
• Windows 8 Professional	754223-601
System board for use in models with AMD A4-5000 processors:	
• Without Windows 8	750634-001
• Windows 8 Standard	750634-501
• Windows 8 Professional	750634-601
System board for use only with models with an AMD E1-2150 processor:	
• Without Windows 8	754224-001
• Windows 8 Standard	754224-501
• Windows 8 Professional	754224-601
System board for use only with models with an AMD E1-2100 processor:	
• Without Windows 8	750633-001
• Windows 8 Standard	750633-501
• Windows 8 Professional	750633-601
System board for use only in models with an AMD E2-3800 processor:	
• Without Windows 8	749659-001
• Windows 8 Standard	749659-501
• Windows 8 Professional	749659-601
For use in models with an Intel Core i3-4010U processor and UMA graphics:	
• Without Windows 8	759875-001
• Windows 8 Standard	759875-501
• Windows 8 Professional	759875-601
For use in models with an Intel Core i3-4010U processor and 1 GB of discrete graphics memory:	
• Without Windows 8	759876-001
• Windows 8 Standard	759876-501
• Windows 8 Professional	759876-601
For use in models with an Intel Core i3-4010U processor and 2 GB of discrete graphics memory:	
• Without Windows 8	759877-001
• Windows 8 Standard	759877-501

Description	Spare part number
<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	759877-601
For use in models with an Intel Core i5-4210U processor and UMA graphics:	
<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	760968-001
<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	760968-501
<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	760968-601
For use in models with an Intel Core i3-3217U processor and 2 GB of discrete graphics memory:	
<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	760969-001
<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	760969-501
<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	760969-601
For use in models with an Intel Core i5-4210U processor and 2 GB of discrete graphics memory:	
<ul style="list-style-type: none"> <li>Without Windows 8</li> </ul>	760970-001
<ul style="list-style-type: none"> <li>Windows 8 Standard</li> </ul>	760970-501
<ul style="list-style-type: none"> <li>Windows 8 Professional</li> </ul>	760970-601

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - WLAN module (see [WLAN module on page 50](#))
  - Hard drive (see [Hard drive on page 48](#))



**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:

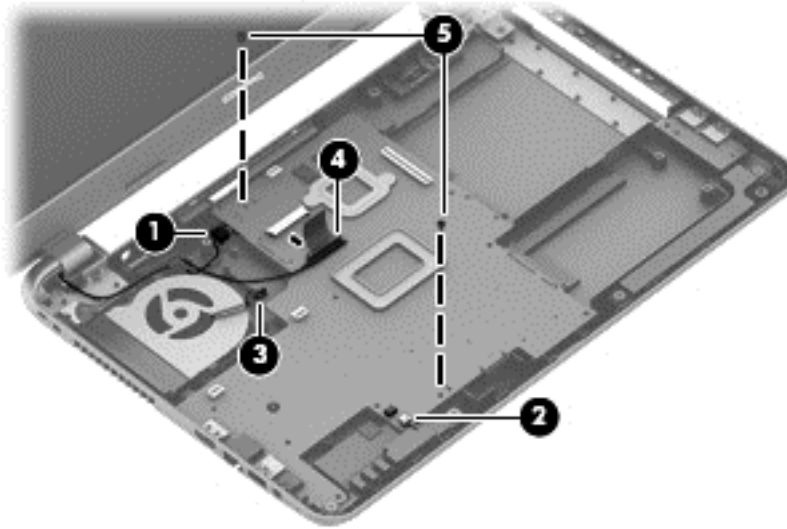
- Memory module (see [Memory module on page 65](#))
- Heat sink assembly (see [Heat sink assembly on page 61](#))

To remove the system board:

1. Position the computer upright, and then disconnect the following cables from the system board:
  - (1): Power connector cable
  - (2): Speaker cable
  - (3): Fan cable

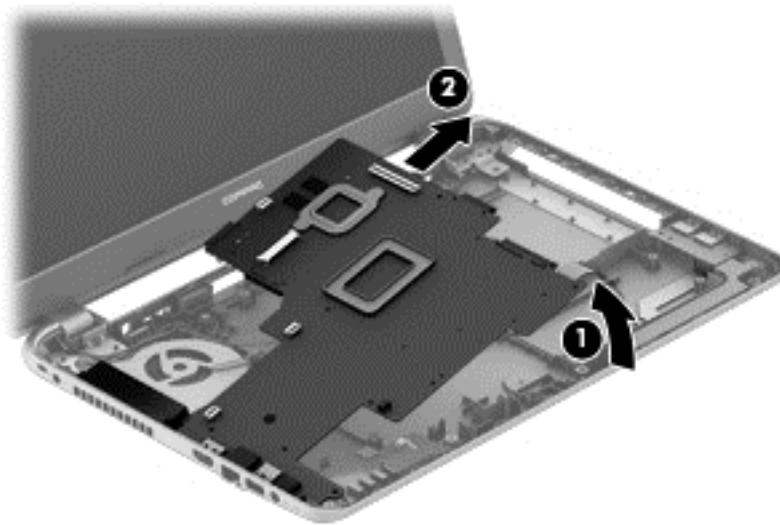


- (4):** Display cable
2. Remove the two Phillips PM2.5×5.0 screws **(5)** that secure the system board to the computer.



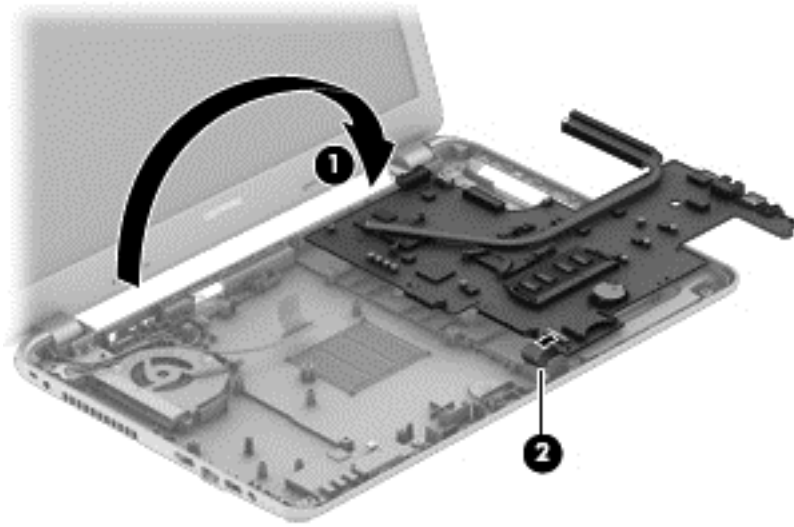
3. Lift the right side of the system board **(1)**, and then pull the board away from the computer enough to disengage the connectors from the side of the base enclosure **(2)**.

 **NOTE:** Be careful not to inadvertently disconnect the speaker cable when lifting the system board.



4. Flip the system board upside down to gain access to the speaker connector **(1)**.

5. Disconnect the USB board cable from the system board (2).



Reverse this procedure to install the system board.

## USB board

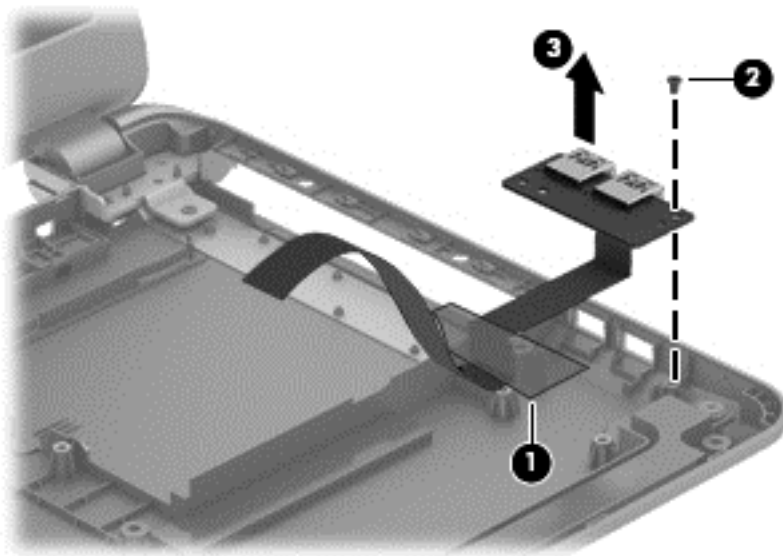
Description	Spare part number
USB board (includes cable)	749649-001

Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - WLAN module (see [WLAN module on page 50](#))
  - System board (see [System board on page 55](#))
  - Hard drive (see [Hard drive on page 48](#))

To remove the USB board:

1. Position the computer upright.
2. Disconnect the USB board cable from the system board **(1)**.
3. Remove the tape that secures it to the cable to the base enclosure **(2)**.
4. Remove the Phillips PM2.5×5.0 screw **(3)** that secures the USB board to the base enclosure.
5. Remove the USB board **(4)**.



Reverse this procedure to install the USB board.

## Speakers


Description	Spare part number
Speakers (includes left and right speakers and cable)	749653-001

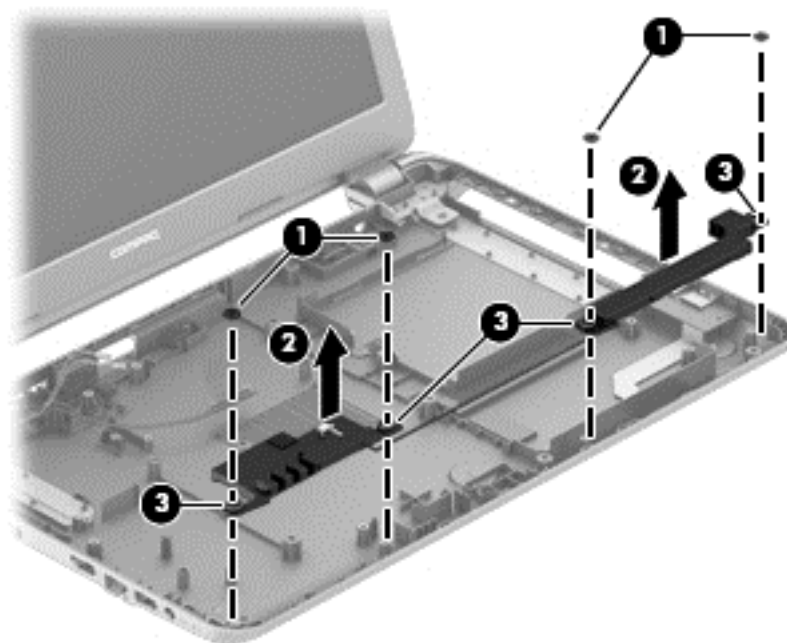
Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - WLAN module (see [WLAN module on page 50](#))
  - Hard drive (see [Hard drive on page 48](#))
  - System board (see [System board on page 55](#))

To remove the speakers:

1. Remove the four Phillips broadhead PM2.0×2.0 screws (1) that secure the speakers to the computer.
2. Lift the speakers from the base enclosure (2).

 **NOTE:** Note the rubber gaskets (3) around each screw. When installing the speakers, make sure the gaskets are installed correctly.



Reverse this procedure to install the speakers.

## Heat sink assembly



**NOTE:** The heat sink assembly spare part kit includes replacement thermal materials.

Description	Spare part number
Heat sink for use in models with an AMD processor	753895-001
Heat sink for use in models with an Intel processor and UMA graphics	759880-001
Heat sink for use in models with an Intel processor and discrete graphics	759881-001



**NOTE:** To properly ventilate the computer, allow at least **7.6 cm (3.0 in)** of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the heat sink assembly, follow these steps:

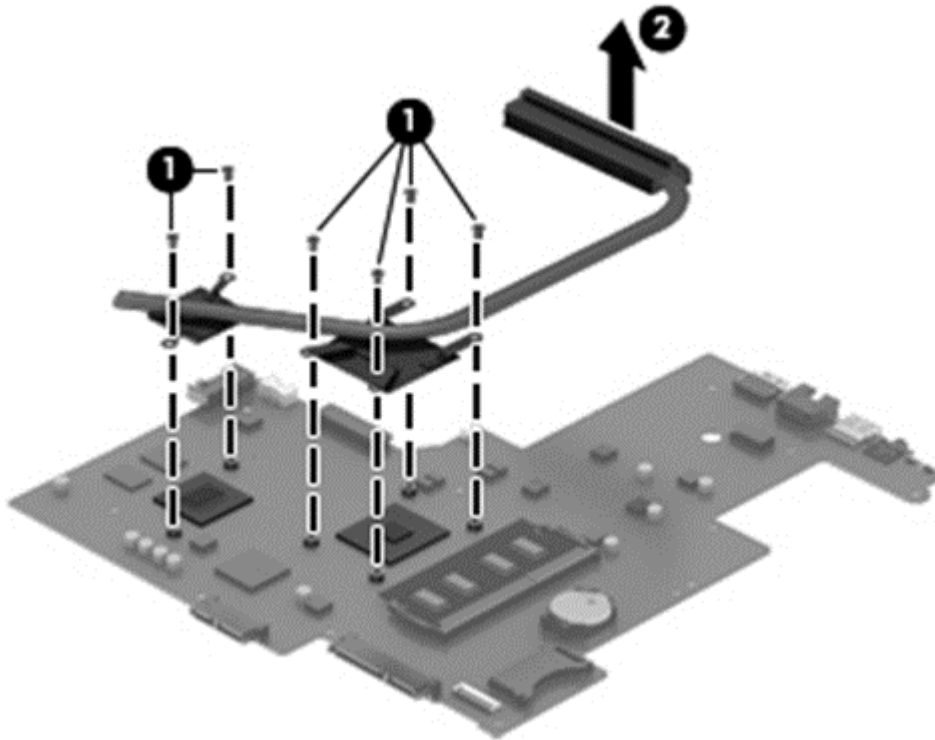
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - WLAN module (see [WLAN module on page 50](#))
  - System board (see [System board on page 55](#))

To remove the heat sink assembly:

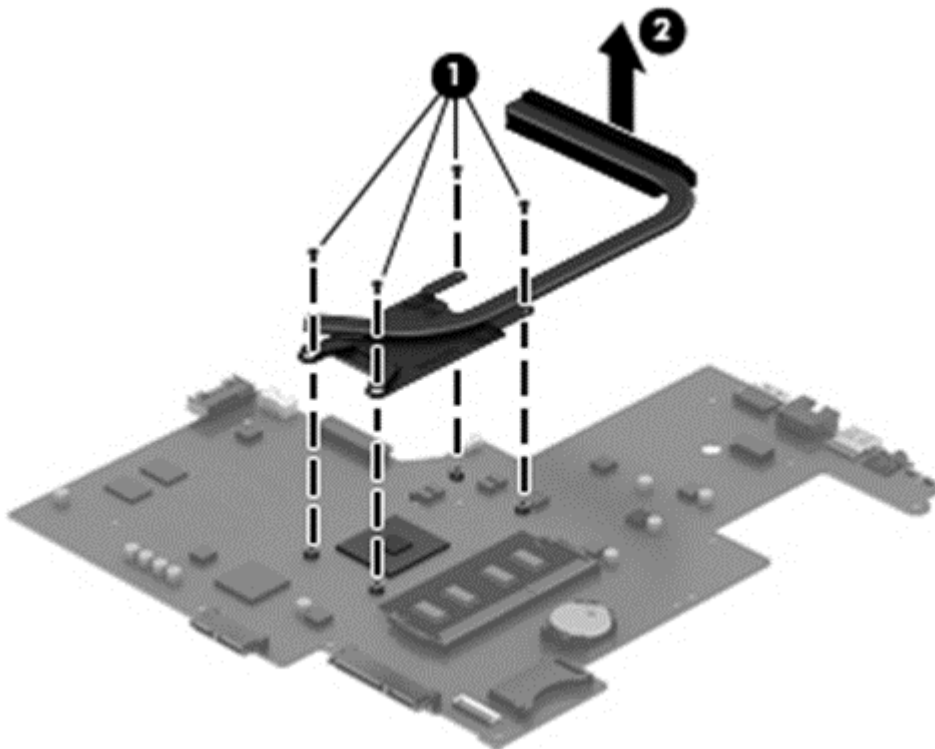
1. Position the system board upside down.
2. Loosen the screws on the heat sink **(1)** that secure the heat sink assembly to the system board.

3. Remove the heat sink assembly (2) from the system board.

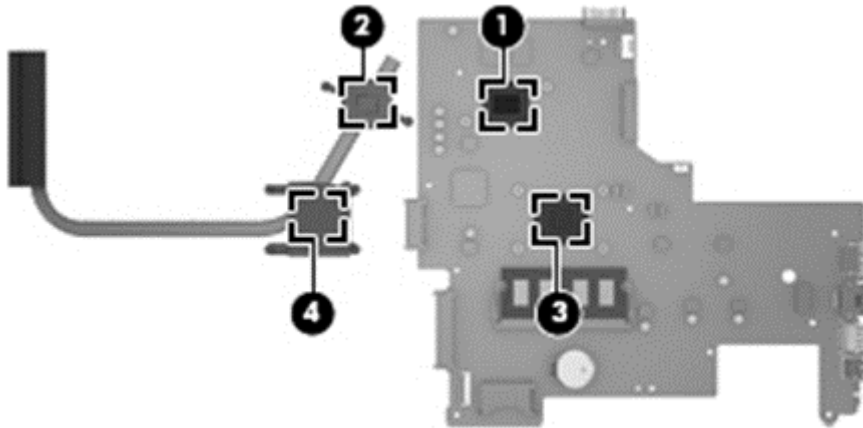
**Discrete graphics:**



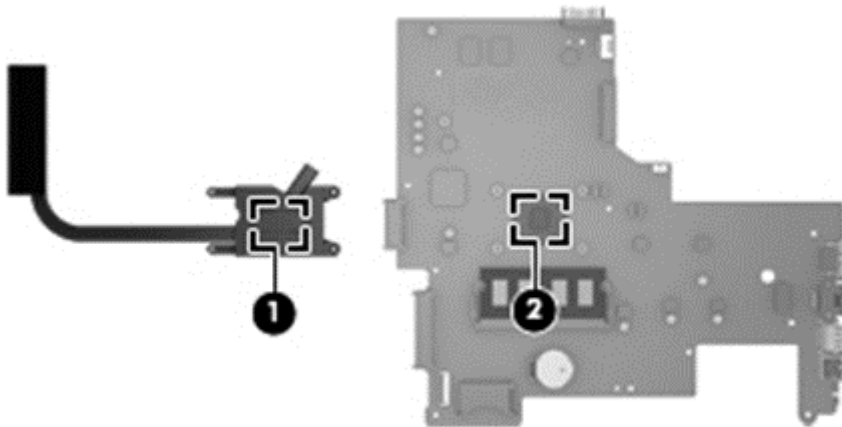
**UMA graphics:**



- **Discrete graphics:** Thermal paste is used on the processor and associated heat sink area **(1)(2)**, as well as the graphics chip and associated heat sink area **(3)(4)**.



- **UMA graphics:** Thermal paste is used on the heat sink **(1)** and the processor **(2)**.



Reverse this procedure to reassemble and install the heat sink assembly.

## RTC battery

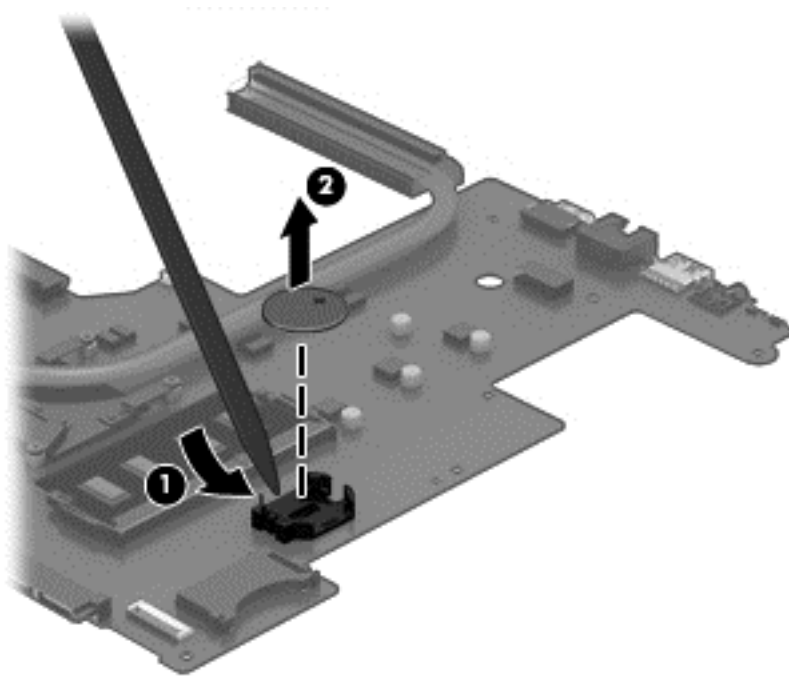
Description	Spare part number
RTC battery	759981-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - WLAN module (see [WLAN module on page 50](#))
  - System board (see [System board on page 55](#))

To remove the RTC battery:

1. Position the system board upside down.
2. Using a thin tool or screwdriver, disengage the battery from the socket **(1)**, and then remove the battery **(2)**.



Reverse this procedure to install the RTC battery.



## Memory module

AMD models have one memory slot. Intel models have two memory slots.

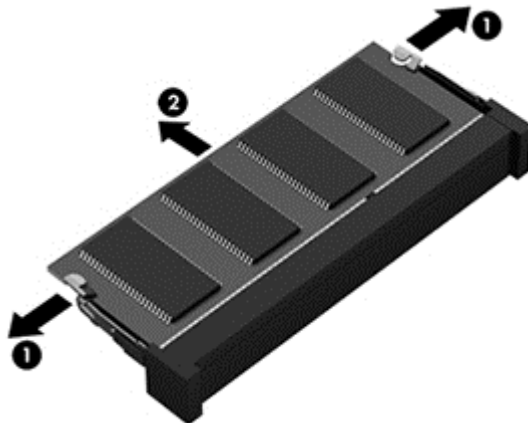
Description	Spare part number
8-GB (PC3L, 12800, 1600-MHz)	693374-001
4-GB (PC3L, 12800, 1600-MHz)	691740-001
2-GB (PC3L, 12800, 1600-MHz)	691739-001

Before removing a memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))
  - WLAN module (see [WLAN module on page 50](#))
  - System board (see [System board on page 55](#))

To remove a 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 it away from the slot at an angle.



Reverse this procedure to install a memory module.

## Display assembly

This section describes removing the display assembly in its entirety and disassembling all the display subcomponents.

If you only need to remove the display bezel, webcam/microphone module, or display panel, you do not need to remove the entire display assembly from the computer. See [Display subcomponents \(bezel, webcam, panel\) on page 34](#) for more information about removing the display subcomponents that do not require that you remove the entire display assembly from the computer.

Description	Spare part number
Display assembly (39.6-cm [15.6-in] HD, anti-glare, touchscreen, for use in black HP 15 models)	747121-001
Raw display panel	750635-001
Antennas (includes wireless antenna cables and transceivers)	749638-001
Display bezel for use in HP 15 models	749644-001
Display bezel for use in Compaq 15 models	749645-001
Display cable (includes display panel cable and webcam/microphone cable)	749646-001
Display enclosure for use in HP models	749641-001
Display enclosure for use in Compaq models	749642-001
Hinges (left and right)	749655-001
Webcam/microphone module	749654-001

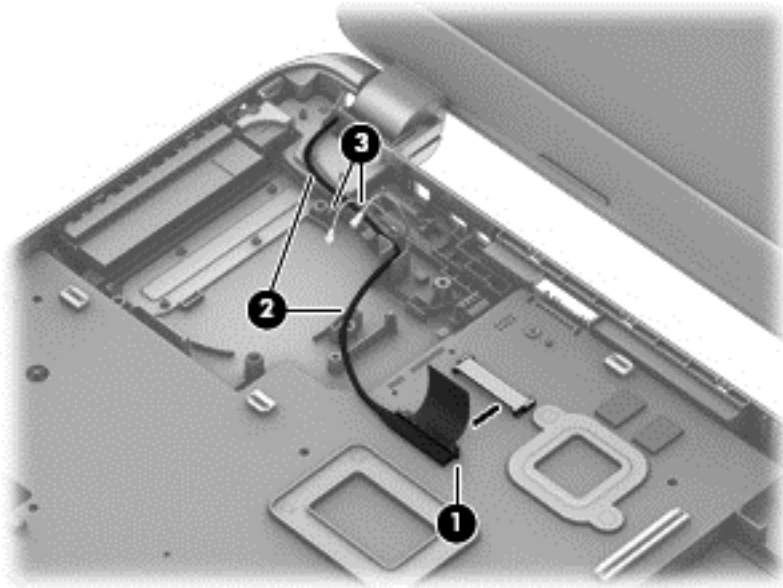
Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the following components:
  - Keyboard (see [Keyboard on page 39](#))
  - Top cover (see [Top cover on page 42](#))

To remove the display assembly:

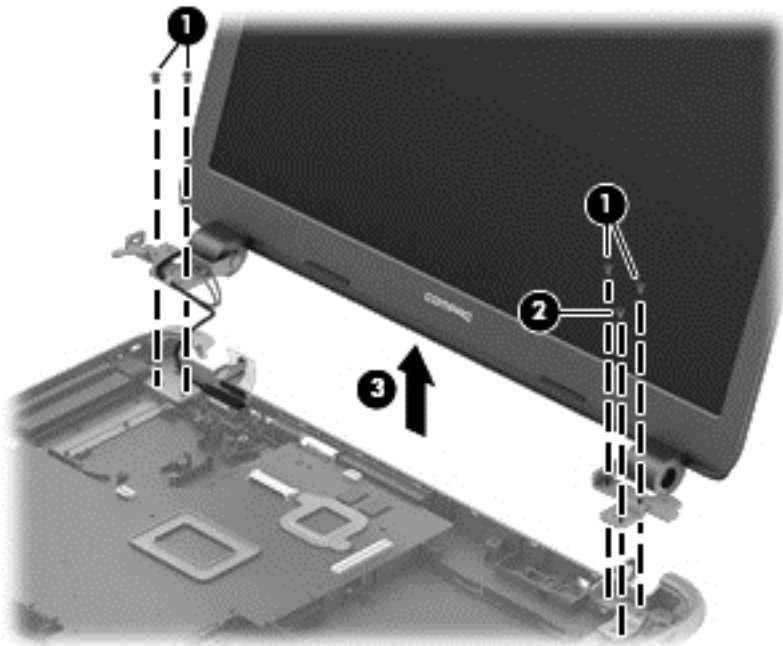
1. Disengage the adhesive and disconnect the display panel cable **(1)** from the system board.
2. Remove the display panel cable from its routing path **(2)**.

3. Release the wireless antenna cables from the clips **(3)** built into the base enclosure.



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

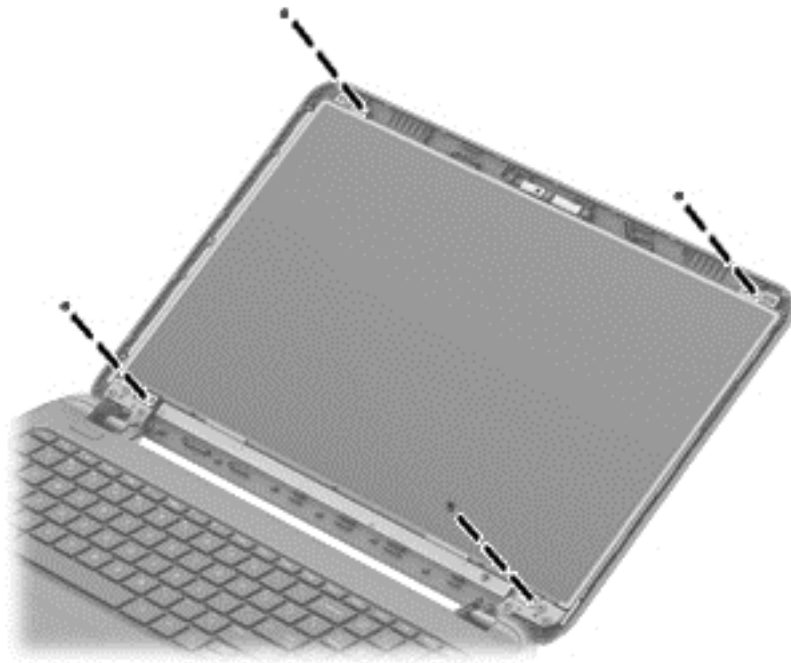
4. Remove the four Phillips PM2.5×5.0 screws **(1)** (two from each hinge) and one Phillips PM2.5×3.5 screw **(2)** (on the right hinge) that secures the display assembly to the computer.
5. Remove the display assembly **(3)**.



If it is necessary to replace any of the display assembly subcomponents:

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

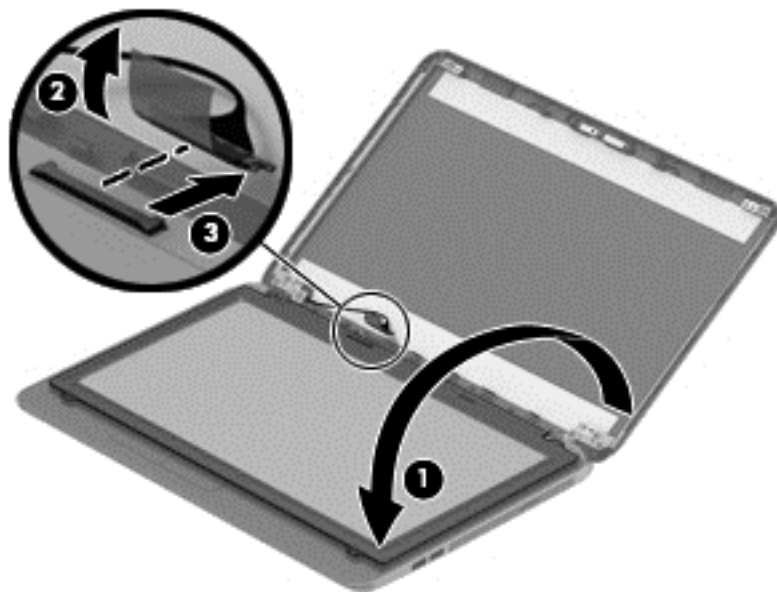




- b. Rotate the display panel onto the keyboard to gain access to the display cable connection on the back of the panel **(1)**.
- c. On the back of the display panel, release the adhesive strip **(2)** that secures the display panel cable to the display panel, and then disconnect the cable **(3)**.

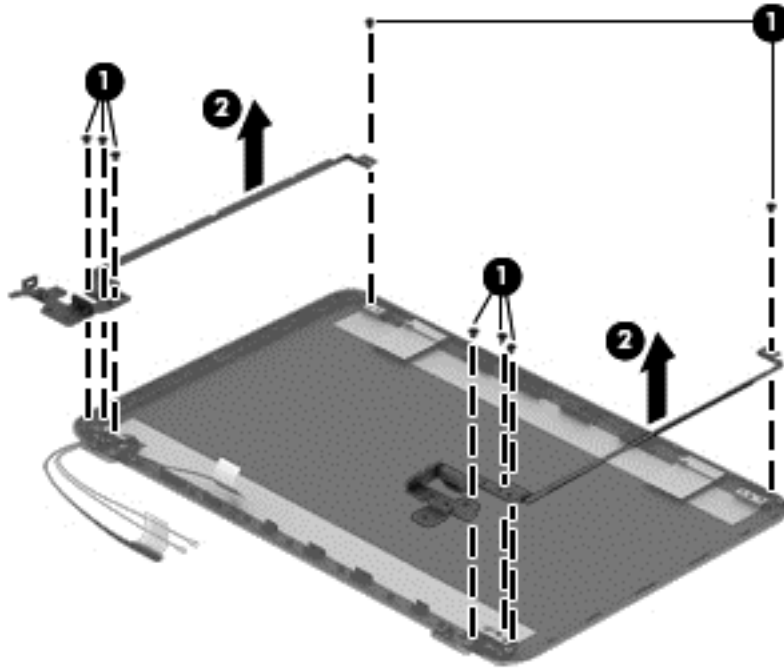


**NOTE:** In this procedure, the display will NOT be connected to the computer, as shown in the following image.

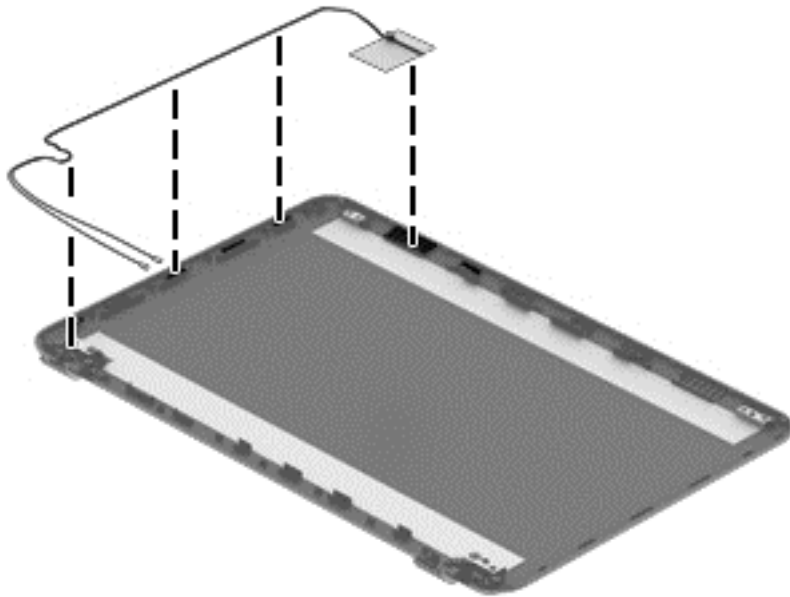


4. To remove the display hinges:
  - a. Remove the eight Phillips PM2.5×3.5 screws **(1)** that secure the display hinges to the display panel.

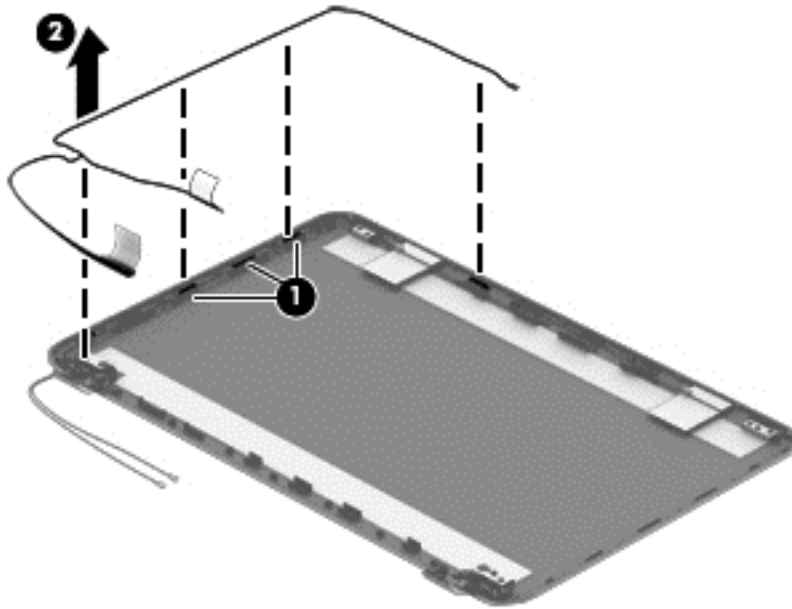
- b. Remove the display hinges (2).



5. To remove the wireless antenna cables and transceivers, release the wireless antenna cables from the clips built into the display enclosure.



6. To remove the display/webcam cable, remove the cable from the clips built into the display enclosure (1), and then remove the cable from the display enclosure (2).



7. If replacing the display enclosure, be sure that the subcomponents (including the webcam/microphone module, the antenna receivers, and all associated cables and hardware) are transferred to the new enclosure.

Reverse this procedure to reassemble and install the display assembly.





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# 5 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) in Windows 8

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

## Starting Setup Utility (BIOS)

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



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

---

## Updating the BIOS

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

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

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

## Determining the BIOS version


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

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

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 73](#)).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.
4. Select **Yes**.

## Downloading a BIOS update

---

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

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

Do not shut down the computer or initiate Sleep.


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

---

1. From the Start screen, type `hp support assistant`, 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 `file`, and then select **File Explorer**.
2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).  
The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

---

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

---

## Using HP PC Hardware Diagnostics (UEFI)

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

To start HP PC Hardware Diagnostics UEFI:

1. Turn on or restart the computer, quickly press [esc](#), and then press [f2](#).

The BIOS searches three places for the diagnostic tools, in the following order:

- a. Connected USB drive



**NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 75](#).

- b. Hard drive
- c. BIOS

2. When the diagnostic tool opens, click the type of diagnostic test you want to run, and then follow the on-screen instructions.



**NOTE:** If you need to stop a diagnostic test, press [esc](#).

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



**NOTE:** Instructions for downloading HP PC Hardware Diagnostics (UEFI) are provided in English only.

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

– or –

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



---

## 6 Using Setup Utility (BIOS) and System Diagnostics in Windows 7

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), follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Setup Utility (BIOS).

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

## Downloading a BIOS update


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

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

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


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

1. Select **Start > Help and Support > Maintain**.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
  - a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
  - b. Follow the on-screen instructions to download your selection to the hard drive.  
Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

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

1. Open Windows Explorer by selecting **Start > Computer**.
2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename.exe*).  
The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

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

## Using System Diagnostics

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

To start System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f2**.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.



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

---





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# 7 Computer Setup (BIOS) and Advanced System Diagnostics in SUSE Linux

Computer Setup, 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). Computer Setup includes settings for the types of peripherals installed, the startup sequence of the computer, and the amount of system and extended memory.


---

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

---

## Starting Computer Setup

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

---

To start Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Computer Setup.

## Using Computer Setup

### Navigating and selecting in Computer Setup

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

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
  - To select a menu or a menu item, use the **tab** key and the keyboard arrow keys and then press **enter**, or use a pointing device to click the item.
  - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
  - To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.

---

 **NOTE:** You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

---

2. Press **f10** to enter Computer Setup.

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

- To exit Computer Setup menus without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

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

– or –

- To save your changes and exit Computer Setup menus, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

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

Your changes go into effect when the computer restarts.

## Restoring factory settings in Computer Setup



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

---

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

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Computer Setup.
3. Use a pointing device or the arrow keys to select **File > Restore Defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

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

Your changes go into effect when the computer restarts.



---

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

---

## Updating the BIOS

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

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

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

## Determining the BIOS version

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

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed as follows:

1. Start Computer Setup.
2. Use a pointing device or the arrow keys to select **File > System Information**.
3. To exit Computer Setup without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

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



**NOTE:** You can also determine the BIOS version by turning on or restarting the computer, pressing the **esc** key while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen, and then pressing the **f1** key. Follow the on-screen instructions to exit this screen.

## 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 Suspend or Hibernation.

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

1. Open your web browser. 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).
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. Click the option for software and driver downloads, type your computer model number in the product box, and then press **enter**. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
4. Click your specific product from the models listed.
5. Click the appropriate operating system.
6. Go to the BIOS section and download the BIOS software package.
7. Follow the installation instructions as provided with the downloaded BIOS software package.



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

## Using Advanced System Diagnostics

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

- Start-up test—This test analyzes the main computer components that are required to start the computer.
- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.

- **Hard disk test**—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.
- **Memory test**—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.
- **Battery test**—This test analyzes the condition of the battery and calibrates the battery if necessary. If the battery fails the test, contact support to report the issue and purchase a replacement battery.
- **System Tune-Up**—This group of additional tests checks your computer to make sure that the main components are functioning correctly. System Tune-Up runs longer and more comprehensive tests on memory modules, hard drive SMART attributes, the hard drive surface, the battery (and battery calibration), video memory, and the WLAN module status.

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

To start Advanced System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f2**.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.



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

---

# 8 Specifications

## Computer specifications

	Metric	U.S.
<b>Dimensions</b> (touch models)		
Depth	<b>25.9 cm</b>	10.2 in
Width	<b>37.8 cm</b>	14.88 in
Height	<b>2.53 cm</b>	1.00 in
<b>Weight</b>		
3 cell battery	<b>2190 g</b>	4.83 lb
4 cell battery	<b>2230 g</b>	4.92 lb
<b>Input power</b>		
Operating voltage and current	18.5 V dc @ 3.5 A or 19.5 V dc @ 3.33 A – 65 W 19 V dc @ 4.74 A or 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.		

## 39.6-cm (15.6-in) display specifications

	<b>Metric</b>	<b>U.S.</b>
Active diagonal size	39.6-cm	15.6-in
Resolution	1600x900 (HD+)	
Active area	309.399x173.952	
PPI	112	
Surface treatment	Anti-glare	
Contrast ratio	300:1 (typical)	
Response time	8 ms	
Brightness	200 nits (typical)	
Viewing angle	SVA	
Backlight	LED	
Luminance uniformity @ 13 points	1.4 (typ), 1.6 (max)	
Lifetime (1/2 luminance)	12,000 hours	
Color coordinate (white)	(0.313, 0.329)	
Color tolerance (White)	+/- 0.02	
Color tolerance (W, R, G, B)	+/- 0.03	
Color gamut	45% typical	

## Hard drive specifications

	1-TB*	750-GB* (9.5 mm)	500-GB* (7.0 mm)	320-GB* (9.5 mm)
<b>Dimensions</b>				
Height	9.5 mm	9.5 mm	7.0 mm or 9.5 mm	7.0 mm or 9.5 mm
Length	100.4 mm	100.4 mm	100.6 mm	100.4 mm
Width	69.9 mm	69.9 mm	70.1 mm	69.9 mm
Weight	115.0 g	115.0 g	92.0 g	98.8 g
<b>Interface type</b>	SATA	SATA	SATA	SATA
<b>Transfer rate</b>				
Synchronous (maximum)	300 MB/sec	300 MB/sec	300 MB/sec	300 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)				
Single track	1.4 ms	1.5 ms	3 ms	3 ms
Average (read/write)	10 ms	11 ms	13 ms	13 ms
Maximum	12 ms	14 ms	24 ms	24 ms
<b>Logical blocks</b>	1,938,921,461	1,465,149,168	1,048,576,000	625,142,448
<b>Disk rotational speed</b>	5400 rpm	5400 rpm	5400 rpm	5400 rpm
<b>Operating temperature</b>	<b>0°C to 60°C (32°F to 140°F)</b>			
*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.				

## DVD±RW SuperMulti DL Drive specifications

<b>Applicable disc</b>	<b>Read:</b> CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	<b>Write:</b> CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
<b>Center hole diameter</b>	1.5 cm (0.59 in)	
<b>Disc diameter</b>		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
<b>Disc thickness</b>	1.2 mm (0.047 in)	
<b>Track pitch</b>	0.74 µm	
<b>Access time</b>	<b>CD</b>	<b>DVD</b>
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
<b>Audio output level</b>	Line-out, 0.7 Vrms	
<b>Cache buffer</b>	2 MB	
<b>Data transfer rate</b>		
24X CD-ROM	3,600 KB/sec	
8X DVD-ROM	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
<b>Transfer mode</b>	Multiword DMA Mode	
<b>Startup time</b>	< 15 seconds	
<b>Stop time</b>	< 6 seconds	



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# 9 Backing up, restoring, and recovering in Windows 8

This chapter provides information about the following processes:

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

## Creating recovery media and backups

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

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

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

See [Creating HP Recovery media on page 89](#).

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

## Creating HP Recovery media

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

- Only one set of HP Recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
- HP Recovery Manager examines the computer and determines the required storage capacity for the blank USB flash drive or the number of blank DVD discs that will be required.
- To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, 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 support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions. 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:



**IMPORTANT:** For tablets, connect to the keyboard dock before beginning these steps (select models only).

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 91](#).

## Restore and recovery

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

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

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

- If you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition (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 91](#).

- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media that you have created. For more information, see [Recovering using HP Recovery Manager on page 91](#). If you have not already created recovery media, see [Creating HP Recovery media on page 89](#).

- 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 91](#).
- 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 92](#).

## Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you created or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media on page 89](#).

Using HP Recovery media, you can choose from one of the following recovery options:

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

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

### What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.
- Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.
- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating HP Recovery media on page 89](#).
- To use the Factory Reset option, you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media on page 89](#).
- If the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.




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

---

### Using the HP Recovery partition (select models only)

The HP Recovery partition (select models only) allows you to perform a system recovery or 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:




---

**IMPORTANT:** For tablets, connect to the keyboard dock before beginning these steps (select models only).

---

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 **Recovery Manager**, and then 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 HP Recovery media that you created, 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 92](#).

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:** After you remove the HP Recovery partition, you can no longer use the Windows Refresh option, the Windows option to remove everything and reinstall Windows, or the HP Recovery Manager option. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media on page 89](#).

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 Backing up, restoring, and recovering in Windows 7

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

## Creating backups

1. Use HP Recovery Manager to create recovery media immediately after you set up the working computer.
2. As you add hardware and software programs, create system restore points.
3. As you add photos, video, music, and other personal files, create a backup of your system and personal information.

## Creating recovery media to recover the original system

After you successfully set up the computer, you should create recovery discs or a recovery flash drive using HP Recovery Manager. You will need these recovery discs or recovery flash drive to perform a system recovery should the hard drive become corrupted. A system recovery reinstalls the original operating system, and then configures the settings for the default programs.

### What you need to know

- Only one set of 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 flash drive or the number of blank DVD discs that will be required.  
  
Use DVD-R, DVD+R, DVD-R DL, DVD+R DL discs or a flash drive. Do not use rewriteable discs such as CD ±RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software.
- If your computer does not include an integrated optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from the HP website. If you use an external optical drive, it must be connected directly to a USB port on the computer, not to a USB port on an external device, such as a USB hub.
- 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.
- Store the recovery media in a safe location, separate from the computer.
- If necessary, you can exit the program before you have finished creating the recovery media. The next time you open HP Recovery Manager, you will be prompted to continue the process.

## Creating the recovery media

1. Select **Start** and type `recovery` in the search field. Select **Recovery Manager** from the list. Allow the action to continue, if prompted.
2. Click **Recovery Media Creation**.
3. Follow the on-screen instructions to continue.

To recover, see [Recovering the original system using HP Recovery Manager on page 96](#).

## Creating 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 restore point contains information such as registry settings that Windows uses. Restoring to a previous restore point allows you to reverse changes that have been made to the system since the restore point was created.

Restoring to an earlier system restore point does not affect data files saved or emails created since the last restore point, but it does affect software you may have installed.

For example, if you download a photo from a digital camera and then restore the computer to the state it was on the previous day, the photo remains on the computer.

However, if you install photo viewing software and then restore your computer to the state it was on the previous day, the software will be uninstalled, and you won't be able to use it.

## What you need to know

- If you restore to a restore point and then change your mind, you can undo the restoration.
- You should create system restore points:
  - Before you add or change software or hardware
  - Periodically, whenever the computer is running normally
- System Restore also saves shadow copies of files that have been changed since the last restore point was created. For more information about using shadow copies to restore, see Help and Support.

## Creating a system restore point

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click **Create**, and follow the on-screen instructions.

To restore, see [Restoring to a previous system restore point on page 96](#).

## Backing up system and personal information

Your computer stores information that is important to you, such as files, emails, and photos, and you will want to keep that information even if you download a virus or the system stops working properly. How completely you are able to recover your files depends on how recent your backup is. As you add new software and data files, you should create backups on a regular basis.

## Tips for a successful backup

- Number backup discs before inserting them into the optical drive.
- Store personal files in the Documents, Music, Pictures, and Videos libraries, and back up these folders periodically.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to re-enter your preferences.

To create a screen shot:

1. Display the screen you want to save.
2. Copy the screen image:  
To copy only the active window, press **alt+prt sc**.  
To copy the entire screen, press **prt sc**.
3. Open a word-processing document or graphics editing program, and then select **Edit > Paste**. The screen image is added to the document.
4. Save and print the document.

## What you need to know

- You can back up your information to an optional external hard drive, a flash drive, a network drive, or discs.
- Connect the computer to AC power during backups.
- Allow enough time for the backup. Depending on files sizes, it may take more than an hour.
- Verify the amount of free space on your backup storage device before you back up.
- You should back up:
  - Before adding or changing software or hardware.
  - Before the computer is repaired or restored.
  - On a regular schedule to be sure you have recent copies of personal information.
  - After you add many files—for example, if you saved videos from a birthday party.
  - Before using antivirus software to remove a malicious program.
  - After adding information that is hard to replace, such as pictures, videos, music, project files, or data records.

## Creating a backup using Windows Backup and Restore

Windows allows you to back up files using Windows Backup and Restore. You can select the level you want to back up, from individual folders to drives. The backups are compressed to save space. To back up:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to schedule and create a backup.



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

To restore, see [Restoring specific files using Windows Backup and Restore on page 96](#).

# Restore and recovery

## Restoring to a previous system restore point

Sometimes installing a software program causes your computer or Windows to behave unpredictably. Usually uninstalling the software fixes the problems. If uninstalling does not fix the problems, you can restore the computer to a previous system restore point (created at an earlier date and time).

To restore to a previous system restore point, when the computer was running correctly:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**, and follow the on-screen instructions.

## Restoring specific files

If files are accidentally deleted from the hard disk and they can no longer be restored from the Recycle Bin, or if files become corrupt, restoring specific files is useful. Restoring specific files is also useful if you ever choose to recover the original system using HP Recovery Manager. You can only restore specific files that you have backed up before.

## Restoring specific files using Windows Backup and Restore

Windows allows you to restore files that were backed up using Windows Backup and Restore:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to restore your backup.



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

## Recovering the original system using HP Recovery Manager

HP Recovery Manager software allows you to repair or recover the computer to its original factory state.

### 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 disc provided by the manufacturer.
- A system recovery should be used as a final attempt to correct computer issues. If you have not already tried restore points (see [Restoring to a previous system restore point on page 96](#)) and partial restores (see [Restoring specific files on page 96](#)), try them before using HP Recovery Manager to recover your system.
- A system recovery must be performed if the computer hard drive fails or if all attempts to correct any functional computer issues fail.




- If the recovery media do not work, you can obtain recovery discs for your system from the HP website.
- The Minimized Image Recovery option is recommended for advanced users only. All hardware-related drivers and software are re-installed, but other software applications are not. Do not interrupt the process until it is complete, otherwise the recovery will fail.

## Recovering using HP Recovery partition (select models only)

The HP Recovery partition (select models only), allows you to restore your system without the need for recovery discs or a recovery flash drive. This type of recovery can only be used if the hard drive is still working.

To check for the presence of a recovery partition, select **Start**, right-click **Computer** then select **Manage > Disk Management**. If the recovery partition is present, a Recovery drive is listed in the window.

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 **NOTE:** Recovery discs have been included if your computer did not ship with a recovery partition.


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

## Recovering using the recovery media

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

---

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 97](#).

---

3. Press **f9** at system bootup.
4. Select the optical drive or the flash drive.
5. Follow the on-screen instructions.

## Changing the computer boot order

To change the boot order for recovery discs:

1. Restart the computer.
2. Press **esc** while the computer is restarting, and then press **f9** for boot options.
3. Select **Internal CD/DVD ROM Drive** from the boot options window.

To change the boot order for a recovery flash drive:

1. Insert the flash drive into a USB port.
2. Restart the computer.
3. Press `esc` while the computer is restarting, and then press `f9` for boot options.
4. Select the flash drive from the boot options window.

---

# 11 Backup and Recovery in SUSE Linux

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

## Backing up your information

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

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

To back up your home directory files using **Backup Manager Settings**:

1. Select **Computer > More Applications > Tools > Backup Manager Settings**, and click **Backup my home directory**.
2. Click **Storage Destination Location**, and then select a location to back up your information.
3. Click **Schedule**, and then select a time schedule to perform backups at a regularly scheduled time.

To immediately back up your information, click the **Backup Now** check box.



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

---

4. Click **Save and Backup** to start the backup and to save the backup settings.

To restore backup files:

1. Select **Computer > More Applications > Tools > Backup Manager Restore**.
2. Click **Backup Source**, and then select the location of the backup files.
3. Click **Restore Destination**, and then select the destination to restore the files.
4. Select the **Optical Disk** option.
5. Under **Restore Point**, click the time and date of the backup.



**NOTE:** If multiple backups have been performed, click **Use the latest version** to restore the latest version.


---

6. Click **Restore** to start restoring the files, or click **Cancel** to cancel the operation.

## Performing a system recovery


Recovery allows you to repair or restore the computer to its original factory state. You can create an HP Factory Image Restore DVD, using an installed or an external DVD±RW optical drive. You can also restore the computer to its factory condition from the HP dedicated recovery partition on the hard drive.

---

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

---

To restore the computer using the HP Factory Image Restore DVD, you must first create the recovery disc. To create the recovery disc:


 **NOTE:** HP recommends that you create the HP Factory Image Restore DVD in the event of a system failure.

---

1. Select **Computer > More Applications**.
2. In the left pane, click **Tools**, and then click **Create HP Factory Image Restore DVD** in the right pane.
3. Follow the on-screen instructions to create an image file to burn a recovery disc.

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

1. If possible, back up all personal files.
2. Insert the HP Factory Image Restore DVD into the optical drive and restart the computer.
3. As the computer is restarting, press **f9** to open the Computer Setup boot option menu.
4. Press the down arrow to select **Restore SLED HP-BNB preload image** from the **Linux boot** menu, and then press **enter**.
5. Using the arrow keys, select **Yes** when prompted: **Do you want to start the System-Restore?**
6. Follow the on-screen instructions.

 **NOTE:** You can also restore the computer from the partition by restarting the computer, and then pressing the **f11** key.

If you are unable to boot (start up) your computer from the hard drive partition with the primary operating system or from the recovery partition, and you did not create a system recovery disc, you must purchase a *SUSE Linux Enterprise Desktop Operating System DVD* to reinstall the operating system. For additional information, see the *Worldwide Telephone Numbers* booklet.

---

---

## 12 Power cord set requirements

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

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

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

### Requirements for all countries

The following requirements are applicable to all countries and regions:

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

## Requirements for specific countries and regions

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

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75mm<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.

Country/region	Accredited agency	Applicable note number
		<p>2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.</p>
		<p>3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75mm<sup>2</sup> or 1.25mm<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 ac) configuration.</p>
		<p>4. The flexible cord must be Type RVV, 3-conductor, 0.75mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.</p>
		<p>5. The flexible cord must be Type H05VV-F 3X0.75mm<sup>2</sup> conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.</p>
		<p>6. The flexible cord must be Type HVCTF 3X1.25mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.</p>
		<p>7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3X0.75/1.00mm<sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.</p>





---

# 13 Recycling

## Battery

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>.

## Display

---

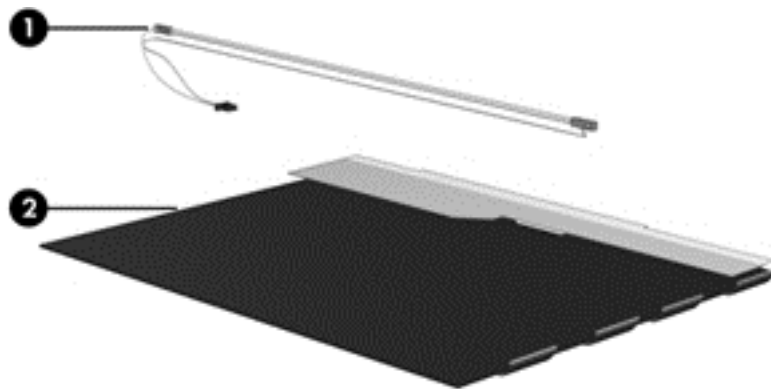
**⚠ WARNING!** The backlight contains mercury. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

**⚠ CAUTION:** The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.

**📝 NOTE:** Materials Disposal. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at <http://www.eiai.org>.

---

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



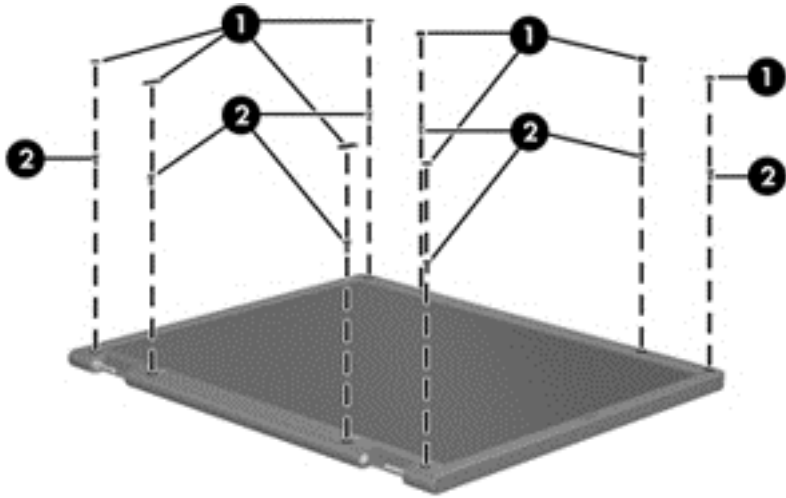
---

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

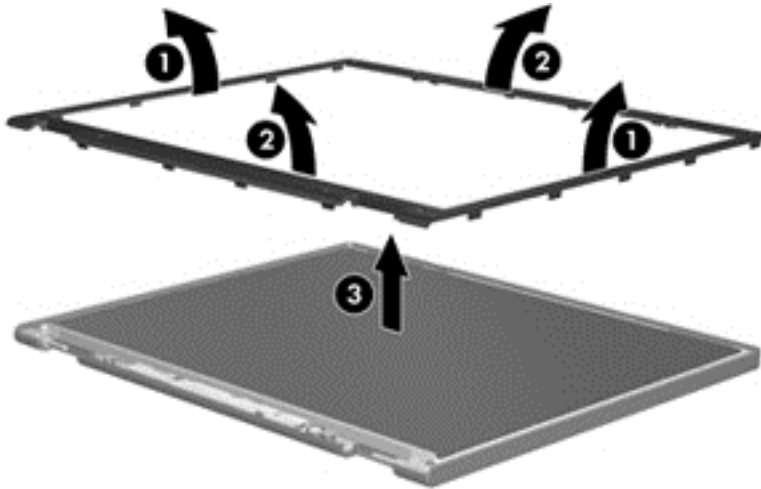
---

Perform the following steps:

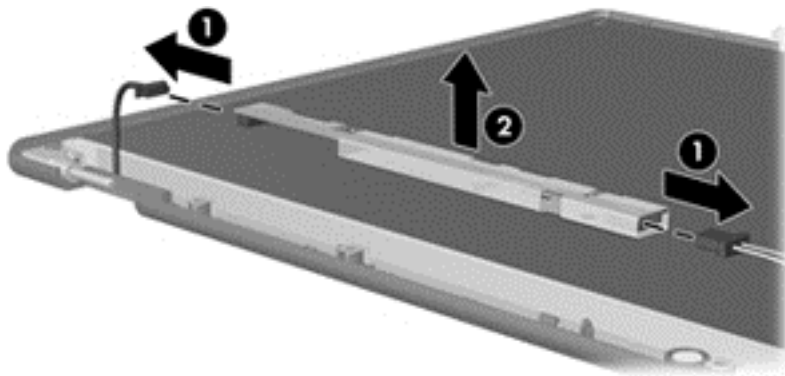
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



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

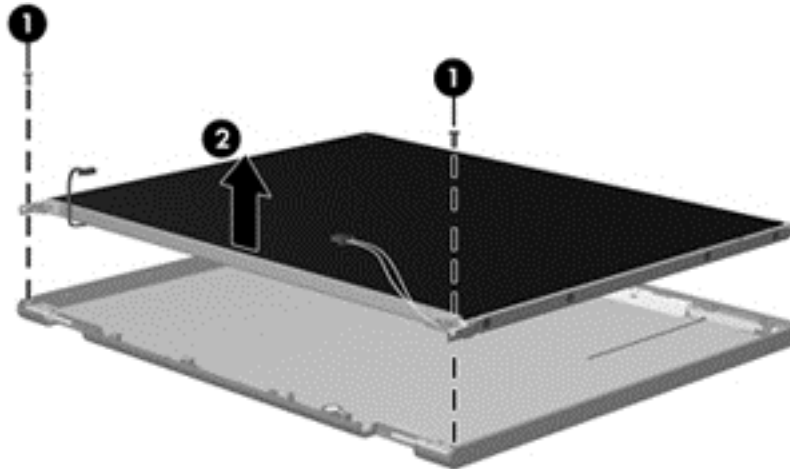


4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.

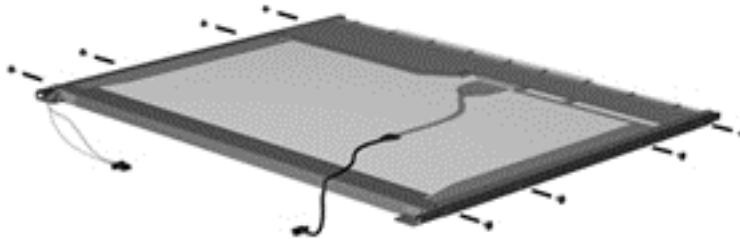


5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.

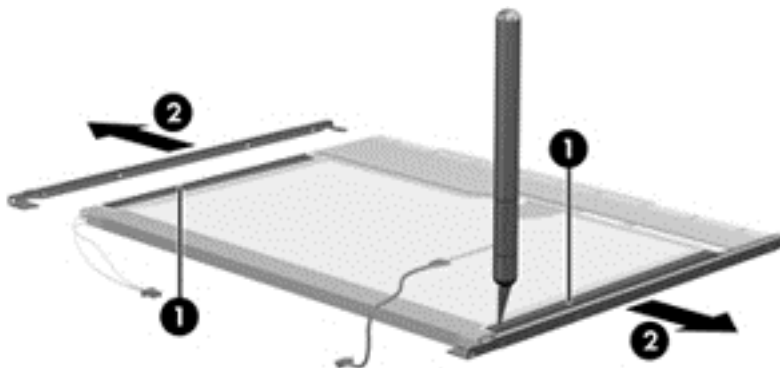
6. Remove the display panel assembly (2) from the display enclosure.



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

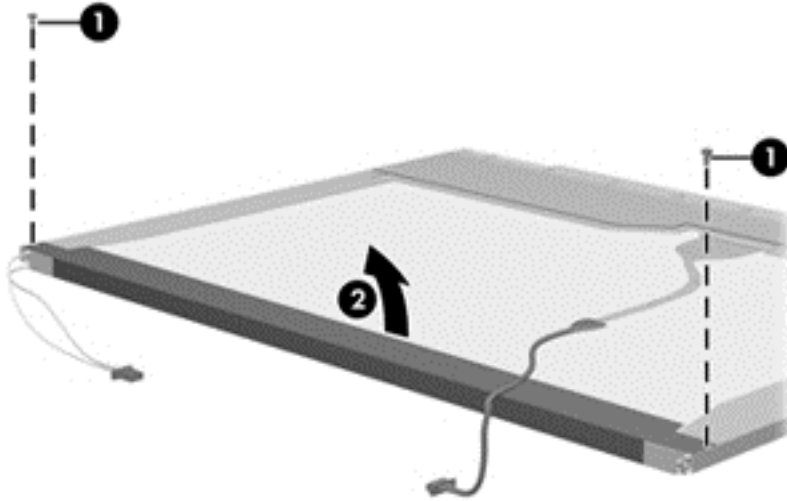


9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame (2) from the display panel.

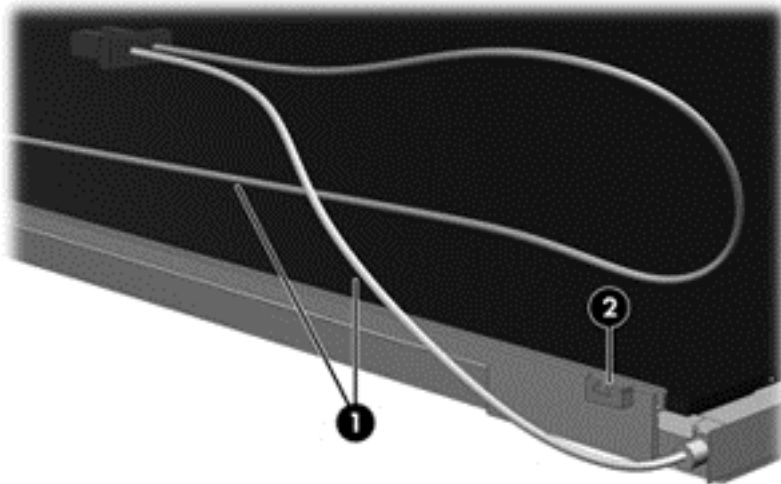


11. Remove the screws (1) that secure the backlight cover to the display panel.

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

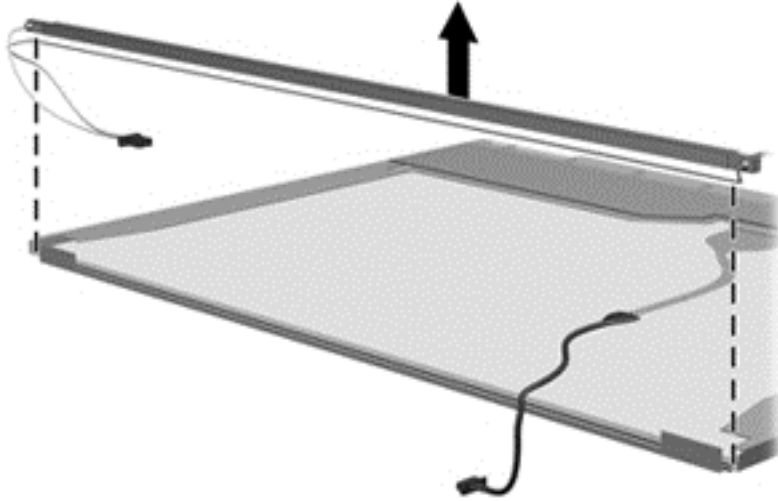


13. Remove the backlight cover.
14. Turn the display panel upright.
15. Remove the backlight cables (1) from the clip (2) in the display panel.



16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.

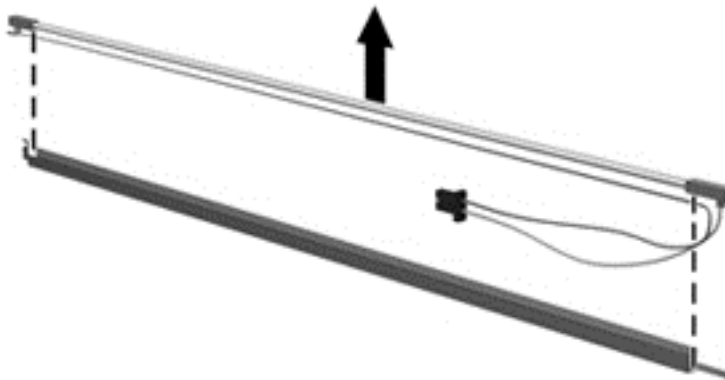


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**⚠ WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

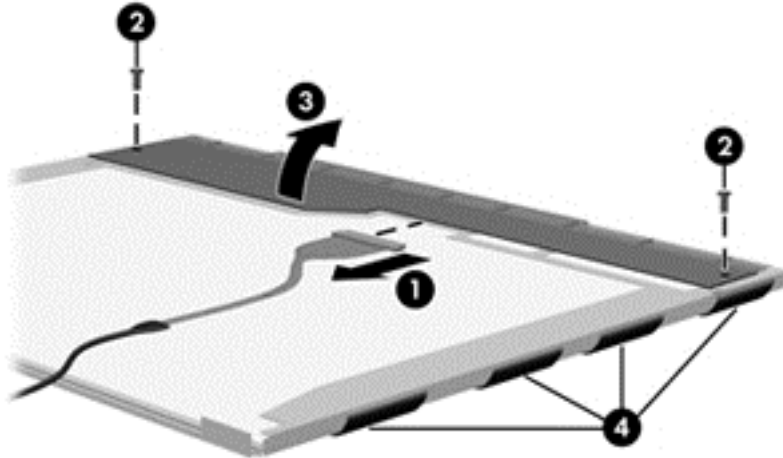
---

18. Remove the backlight from the backlight frame.

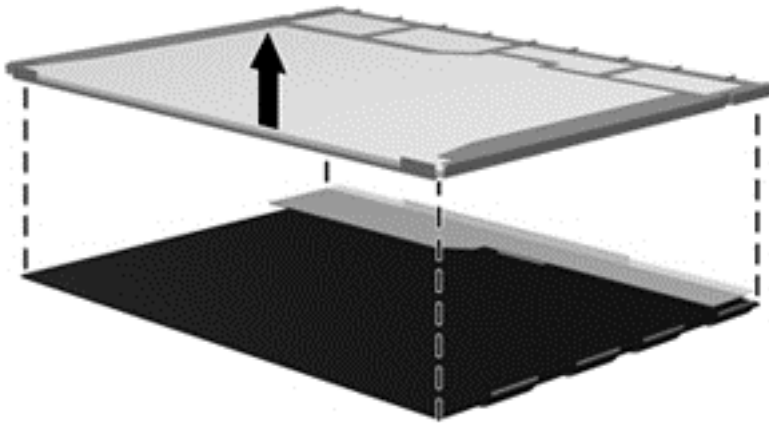


19. Disconnect the display cable **(1)** from the LCD panel.
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.
21. Release the LCD panel **(3)** from the display rear panel.

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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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