



**HP ENVY x360 m6 Convertible**

*Model numbers: m6-w000 – m6-w099*

*Model numbers: m6-w100 – m6-w199*

**HP ENVY x360 Convertible**

*Model numbers: 15-w200 – 15-w299*

**Maintenance and Service Guide**

**IMPORTANT!** This document is intended for HP authorized service providers only.

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### **Product notice**

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

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


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

## Important Notice about Customer Self-Repair Parts

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 **CAUTION:** Your computer includes parts that should only be accessed by an authorized service provider. Accessing parts described in the chapter titled, "Removal and replacement procedures for Authorized Service Provider only parts," can damage the computer or void your warranty.

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## 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. 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 60950-1).

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# Table of contents

<b>1 Product description .....</b>	<b>1</b>
<b>2 External component identification .....</b>	<b>4</b>
Right side .....	4
Left side .....	5
Display .....	7
Changing your notebook to an entertainment stand .....	8
Changing your notebook to a tablet .....	8
Top .....	9
TouchPad .....	9
Lights .....	10
Keys .....	10
Bottom .....	11
Labels .....	12
<b>3 Illustrated parts catalog .....</b>	<b>14</b>
Computer major components .....	14
Miscellaneous parts .....	18
Display assembly subcomponents .....	19
Rubber Kit .....	20
Mass storage devices .....	21
<b>4 Removal and replacement procedures preliminary requirements .....</b>	<b>22</b>
Tools required .....	22
Service considerations .....	22
Plastic parts .....	22
Cables and connectors .....	22
Drive handling .....	23
Grounding guidelines .....	23
Electrostatic discharge damage .....	23
Packaging and transporting guidelines .....	24
Workstation guidelines .....	24
Equipment guidelines .....	25
<b>5 Removal and replacement procedures for Authorized Service Provider parts .....</b>	<b>26</b>
Component replacement procedures .....	26

Top cover .....	27
Hard drive .....	30
Solid-state drive (M.2) .....	32
WLAN module .....	34
Speakers .....	35
USB board (USB/volume/hard drive LED/card reader) .....	37
System board .....	39
Memory module .....	42
Heat sink .....	44
Battery .....	47
Display assembly .....	49
Power button board .....	57
Power connector cable .....	58

## **6 Using Setup Utility (BIOS) in Windows 8.1 ..... 59**

Starting Setup Utility (BIOS) .....	59
Updating the BIOS .....	59
Determining the BIOS version .....	59
Downloading a BIOS update .....	60
Synchronizing a tablet and keyboard (select models only) .....	61

## **7 Using Setup Utility (BIOS) in Windows 10 ..... 62**

Starting Setup Utility (BIOS) .....	62
Updating Setup Utility (BIOS) .....	62
Determining the BIOS version .....	62
Downloading a BIOS update .....	63
Synchronizing a tablet and keyboard (select products only) .....	64

## **8 Using HP PC Hardware Diagnostics (UEFI) ..... 65**

Downloading HP PC Hardware Diagnostics (UEFI) to a USB device .....	66
---	----

## **9 Backing up, restoring, and recovering in Windows 8.1 ..... 67**

Creating recovery media and backups .....	67
Creating HP Recovery media (select models only) .....	67
Using Windows tools .....	68
Restore and recovery .....	68
Recovering using HP Recovery Manager .....	69
What you need to know before you get started .....	69
Using the HP Recovery partition (select models only) .....	70
Using HP Recovery media to recover .....	70



Changing the computer boot order .....	70
Removing the HP Recovery partition (select models only) .....	71
<b>10 Backing up, restoring, and recovering in Windows 10 .....</b>	<b>72</b>
Creating recovery media and backups .....	72
Creating HP Recovery media (select products only) .....	72
Using Windows tools .....	73
Restore and recovery .....	74
Recovering using HP Recovery Manager .....	74
What you need to know before you get started .....	74
Using the HP Recovery partition (select products only) .....	75
Using HP Recovery media to recover .....	75
Changing the computer boot order .....	76
Removing the HP Recovery partition (select products only) .....	76
<b>11 Specifications .....</b>	<b>77</b>
Computer specifications .....	77
39.6-cm (15.6-in) display specifications .....	78
Hard drive specifications .....	79
Hard drive specifications, hybrid drives .....	80
<b>12 Power cord set requirements .....</b>	<b>81</b>
Requirements for all countries .....	81
Requirements for specific countries and regions .....	81
<b>13 Recycling .....</b>	<b>83</b>
<b>Index .....</b>	<b>84</b>



# 1 Product description

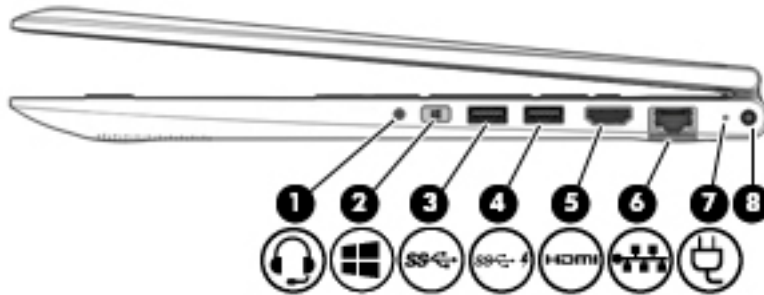
Category	Description
<b>Product name</b>	HP ENVY x360 m6 Convertible HP ENVY x360 Convertible
<b>Processors</b>	<b>7th generation Intel® Core™ processors</b> Intel Core i7-7500U (2.7GHz, SC turbo up to 3.5GHz), 2133MHz/4MB L3, Dual 15W <b>7th generation Intel Core i5 Processor</b> Intel Core i5-7200U (2.5GHz, SC turbo up to 3.1GHz), 2133MHz/3MB L3, Dual 15W <b>6th generation Intel Core processors</b> Intel Core i7-6500U (2.5GHz, SC turbo up to 3.1GHz), 1600MHz/4MB L3, Dual 15W <b>5th generation Intel Core i5 Processor</b> Intel Core i5-6200U (2.3GHz, SC turbo up to 2.8GHz), 1600MHz/3MB L3, Dual 15W <b>5th generation Intel Core Processors</b> Intel Core i7-5500U (2.4GHz, SC turbo up to 3.0GHz), 1600MHz/4MB L3, Dual 15W <b>5th generation Intel Core i5 Processor</b> Intel Core i5-5200U (2.2GHz, SC turbo up to 2.7GHz), 1600MHz/3MB L3, Dual 15W
<b>Chipset</b>	Integrated SoC
<b>Graphics</b>	<b>Internal graphics:</b> Intel HD Graphics 620 (7th generation processors) Intel HD Graphics 520 (6th generation processors) Intel HD Graphics 5500 (5th generation processors) <b>Hybrid graphics:</b> 5th/6th generation processors: NVIDIA N16S-GT (GeForce 930M) with up to 2048 MB of dedicated video memory (256Mx16 DDR3 900MHz x 4 PCs, 1 GHz bridge to 900 MHz) 7th generation processors: NVIDIA N16S-GMR (GeForce 930MX) with up to 2048 MB of dedicated video memory (256Mx16 DDR3 900 MHz x 4 PCs, 1 GHz bridge to 900 MHz) Support HD Decode, DX12, and HDMI Supports Optimus Supports GPS (GPU Performance Scaling)
<b>Panel</b>	<b>39.6-cm</b> (15.6-in), high-definition (HD), white light-emitting diode (WLED), SVA, AntiGlare (1366×768) display, flat 3.8 mm, eDP; typical brightness: 220 nits (not available for models with i7 processors) <b>39.6-cm</b> (15.6-in), FHD, WLED, SVA, BrightView, (1920×1080) display, slim 3.2 mm, eDP; typical brightness: 220 nits <b>39.6-cm</b> (15.6-in), FHD, WLED, SVA, AntiGlare, (1920×1080) display, slim 3.2 mm, eDP; typical brightness: 250 nits bridged to 220 nits FHD panel Flush glass panel cover support Touch screen with flush glass, multi-touch enabled




Category	Description
	Supports LVDS (co-layout with eDP1.3) Support Active Stylus
<b>Memory</b>	<p><b>Two SODIMM slots - non customer accessible / non-upgradeable</b></p> <p>DDR3L-1600 Dual Channel Support</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) + (4096×1)</li> <li>• 8192-MB total system memory (8192×1) or (4096×2)</li> <li>• 4096-MB total system memory (4096×1) or (2048×2)(not for models with 7th generation processors)</li> </ul>
<b>Hard drives</b>	<p>Supports <b>6.35-cm</b> (2.5-in) SATA hard drives in <b>9.5 mm</b> (.37 in) and <b>7.0 mm</b> (.28 in)/<b>7.2 mm</b> (.28 in) thicknesses</p> <p>Accelerometer / HDD protection support</p> <p><b>Single HDD configurations:</b></p> <ul style="list-style-type: none"> <li>• 1-TB, 5400-rpm, 7.2-mm</li> <li>• 750-GB, 5400-rpm, 7.2-mm (models with Intel 5th and 6th generation processors only)</li> <li>• 500-GB, 5400-rpm, 7.0-mm</li> </ul> <p><b>SSHD configurations:</b></p> <ul style="list-style-type: none"> <li>• 500-GB, 5400-rpm, 7.0-mm SSHD w/8GB NAND</li> </ul> <p><b>M.2 SATA-3 (NGFF):</b></p> <ul style="list-style-type: none"> <li>• 256 GB, TLC</li> </ul>
<b>External optical drive</b>	<p>9.5 mm tray load, SATA, External USB optical drive (aluminium material)</p> <p>DVD+/-RW Double-Layer SuperMulti</p> <p>Supports M-disc</p>
<b>Webcam and microphone</b>	<p>HP TrueVision HD: HD camera (fixed, no tilt with activity LED, 1280×720 by 30 frames per second)</p> <p>Dual array digital microphone with appropriate software - beam forming, echo cancellation, noise suppression</p> <p>Supports HP Noise Cancellation</p> <p>Supports Voice Recognition</p>
<b>Audio</b>	<p>Dual speakers</p> <p>Bang &amp; Olufsen</p>
<b>Sensors</b>	<p>Sensor Hub</p> <p>Gyroscope / E-compass / Accelerometer</p> <p>Accelerometer (2) (including 1 for hard drive protection support)</p>
<b>Ethernet</b>	Integrated 10/100/1000 network interface card (NIC)
<b>Wireless</b>	<p><b>Integrated Wireless options with dual antennas (M.2/PCIe):</b></p> <ul style="list-style-type: none"> <li>• Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter (non vPRO)</li> <li>• Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter</li> <li>• Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter</li> </ul>





Category	Description
	<p>Intel WiDi support</p> <p>Compatible with Miracast-certified devices</p>
<b>Internal card expansion</b>	<p>One M.2 slot for WLAN</p> <p>One M.2 slot for SSD</p>
<b>External media card</b>	<p><b>HP Multi-Format Digital Media Card Reader</b></p> <p>Support SD/SDHC/SDXC</p> <p>Push-Push 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 (2 on right side)</p> <p>USB 2.0 (1 on left side)</p> <p>AC Smart Pin adapter plug</p> <p>Headphone/microphone combo jack</p>
<b>Keyboard/ pointing devices</b>	<p><b>Keyboard</b></p> <p>Full size backlit three-coat paint island-style keyboard with numeric keypad</p> <p><b>TouchPad</b></p> <p>TouchPad with multitouch gestures enabled (2-finger scrolling, pinch-zoom, rotate, 2-finger click, 3-finger flick)</p> <p>Multitouch gestures enabled</p> <p>Taps enabled by default</p> <p>Supports Modern Trackpad Gestures</p>
<b>Power requirements</b>	<p><b>Battery:</b></p> <p>3-cell, 48-Whr, 4.2-AH, Li-ion battery</p> <p><b>AC adapters:</b></p> <p>AC Adapter 65-W Smart nPFC, 3 pin, RC 4.5mm connector (models with discrete graphics only)</p> <p>AC Adapter 45-W Smart nPFC, 3 pin, RC 4.5mm connector (models with UMA graphics only)</p> <p>1 meter power cord</p>
<b>Security</b>	<p>Kensington Security Lock</p> <p>TPM 2.0</p>
<b>Operating system</b>	<p><b>Preinstalled:</b></p> <ul style="list-style-type: none"> <li>• Windows 10</li> <li>• Windows 10 High End ML</li> <li>• Windows 10 High End EM/SL</li> <li>• Windows 8.1 (15-w000 – 15-w099 models)</li> </ul>
<b>Serviceability</b>	<p><b>End-user replaceable parts:</b></p> <ul style="list-style-type: none"> <li>• AC adapter</li> </ul>

## 2 External component identification

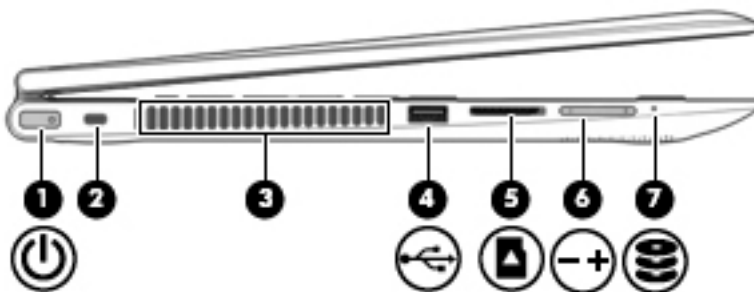
### Right side










Component	Description
<b>(1)</b>  Audio-out (headphone)/Audio-in (microphone) jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.</p> <p><b>WARNING!</b> To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this document:</p> <p><b>Windows 8.1:</b></p> <p>From the Start screen, type <code>support</code>, and then select the <b>HP Support Assistant</b> app.</p> <p>– or –</p> <p>From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.</p> <p><b>Windows 10:</b></p> <p>Select <b>Start</b>, select <b>All apps</b>, select <b>HP Help and Support</b>, and then select <b>HP Documentation</b>.</p> <p><b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.</p> <p><b>NOTE:</b> Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p>
<b>(2)</b>  Windows button	<p>Returns you to the Start screen from an open app or the Windows desktop.</p> <p><b>NOTE:</b> Pressing the Windows button again will return you to the previous screen.</p>
<b>(3)</b>  USB 3.0 port	<p>Connects optional USB devices, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>

(4)		USB 3.0 charging (powered) port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port.  <b>NOTE:</b> USB charging ports can also charge select models of cell phones and MP3 players, even when the computer is off.
(5)		HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.
(6)		RJ-45 (network) jack/status lights	Connects a network cable. <ul style="list-style-type: none"><li>• White: The network is connected.</li><li>• Amber: Activity is occurring on the network.</li></ul>
(7)		AC adapter/battery light	<ul style="list-style-type: none"><li>• White: The AC adapter is connected and the battery is fully charged.</li><li>• Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.</li><li>• Amber: The AC adapter is connected and the battery is charging.</li><li>• Off: The battery is not charging.</li></ul>
(8)		Power connector	Connects an AC adapter.

## Left side

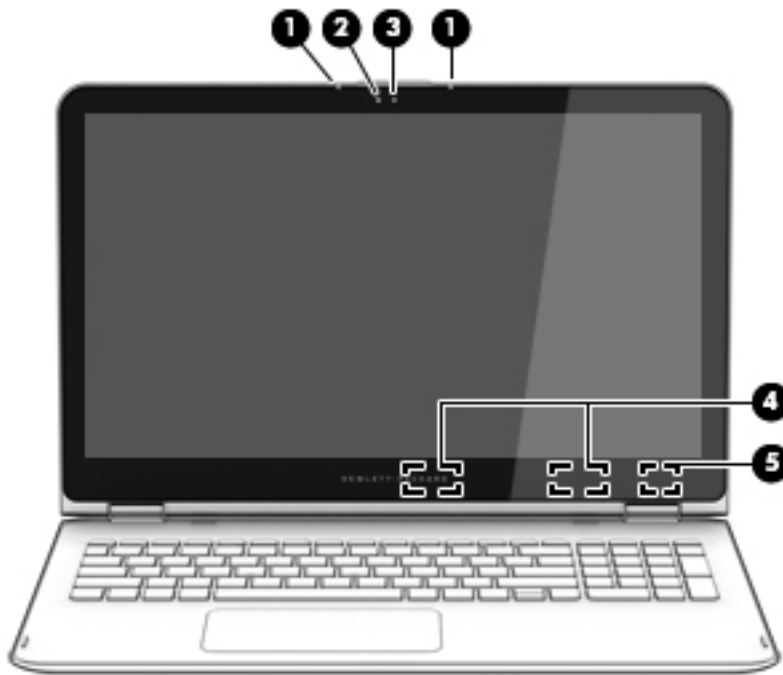


Component	Description
(1) 	Power button <ul style="list-style-type: none"> <li>• When the computer is off, press the button to turn on the computer.</li> <li>• When the computer is on, press the button briefly to initiate Sleep.</li> <li>• When the computer is in the Sleep state, press the button briefly to exit Sleep.</li> <li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li> </ul> <b>CAUTION:</b> Pressing and holding down the power button will result in the loss of unsaved information.

Component	Description
	<p>If the computer has stopped responding and Windows 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:</p> <p><b>Windows 8.1::</b></p> <ul style="list-style-type: none"> <li>▲ 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.</li> <li>– or –</li> <li>From the Windows desktop, right-click the <b>Start</b> button, and then select <b>Power Options</b>.</li> </ul> <p><b>Windows 10:</b></p> <ul style="list-style-type: none"> <li>▲ Type <code>power</code> in the taskbar search box, and then select <b>Power and sleep settings</b>.</li> <li>– or –</li> <li>Right-click the <b>Start</b> button, and then select <b>Power Options</b>.</li> </ul>
<p>(2)  Security cable slot</p>	<p>Attaches an optional security cable to the computer.</p> <p><b>NOTE:</b> The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
<p>(3)  Vent</p>	<p>Enables airflow to cool internal components.</p> <p><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.</p>
<p>(4)  USB 2.0 port</p>	<p>Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
<p>(5)  Memory card reader</p>	<p>Reads optional memory cards that enable you to store, manage, share or access information.</p> <p>To insert a card:</p> <ul style="list-style-type: none"> <li>▲ 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.</li> </ul> <p>To remove a card:</p> <ul style="list-style-type: none"> <li>▲ Press in on the card it until it pops out.</li> </ul>
<p>(6)  Volume button</p>	<p>Controls speaker volume.</p> <ul style="list-style-type: none"> <li>• To decrease speaker volume, press the – edge of the button.</li> <li>• To increase speaker volume, press the + edge of the button.</li> </ul>
<p>(7)  Hard drive light</p>	<ul style="list-style-type: none"> <li>• Blinking white: The hard drive is being accessed.</li> <li>• Amber: HP 3D DriveGuard has temporarily parked the hard drive.</li> </ul>



# Display



Component	Description
(1) Internal microphones	Record sound.
(2) Webcam light	On: The webcam is in use.
(3) Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.  To use the webcam: <ul style="list-style-type: none"><li>▲ <b>Windows 8.1:</b> From the Start screen, type <i>camera</i>, and then select <b>Camera</b> from the list of applications.</li><li>▲ <b>Windows 10:</b> Type <i>camera</i> in the taskbar search box, and then select <b>Camera</b>.</li></ul>
(4) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(5) 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 document in **Windows 8.1:**

From the Start screen, type *support*, and then select the **HP Support Assistant** app.

– or –

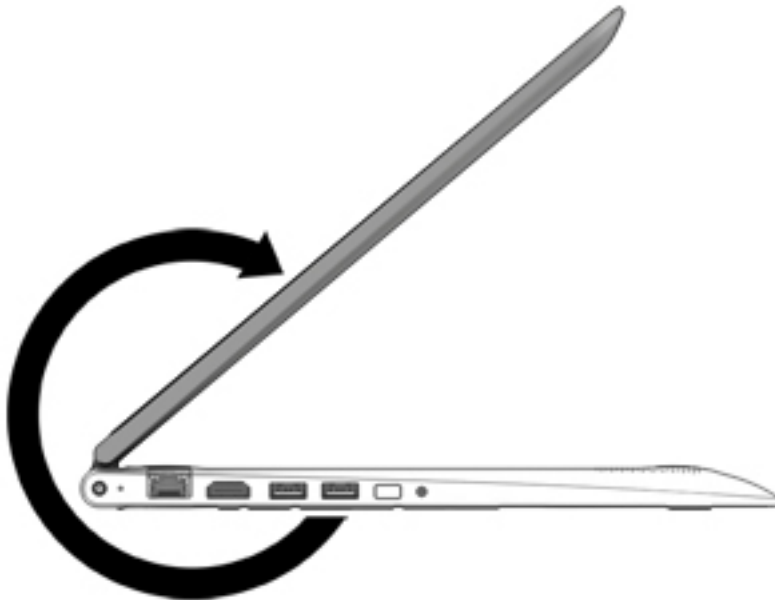
From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

Component	Description
	To access this document in <b>Windows 10</b> : Select <b>Start</b> , select <b>All apps</b> , select <b>HP Help and Support</b> , and then select <b>HP Documentation</b> .

Your computer can function as a classic notebook and, in addition, the display can be rotated so that the computer transforms into an entertainment stand or a tablet.

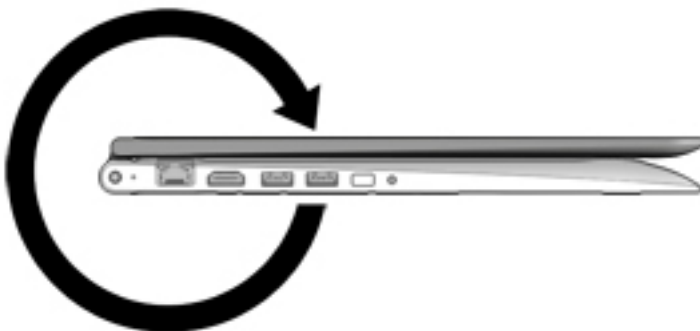
## Changing your notebook to an entertainment stand

To change your notebook to an entertainment stand, raise the display, and then rotate the display backward to a stand position (about 315 degrees).



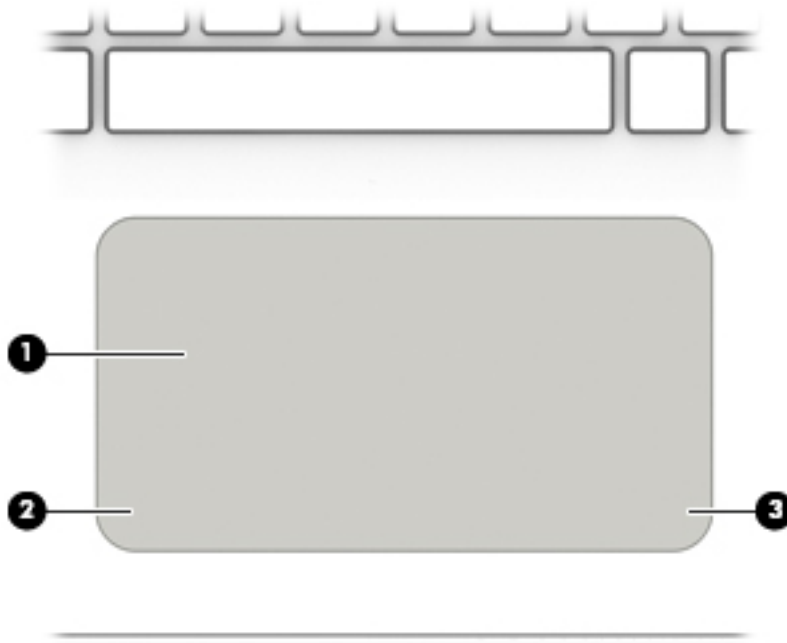
## Changing your notebook to a tablet

To change your notebook to a tablet, raise the display, and then rotate the display backward until it is flush with the computer bottom (360 degrees).



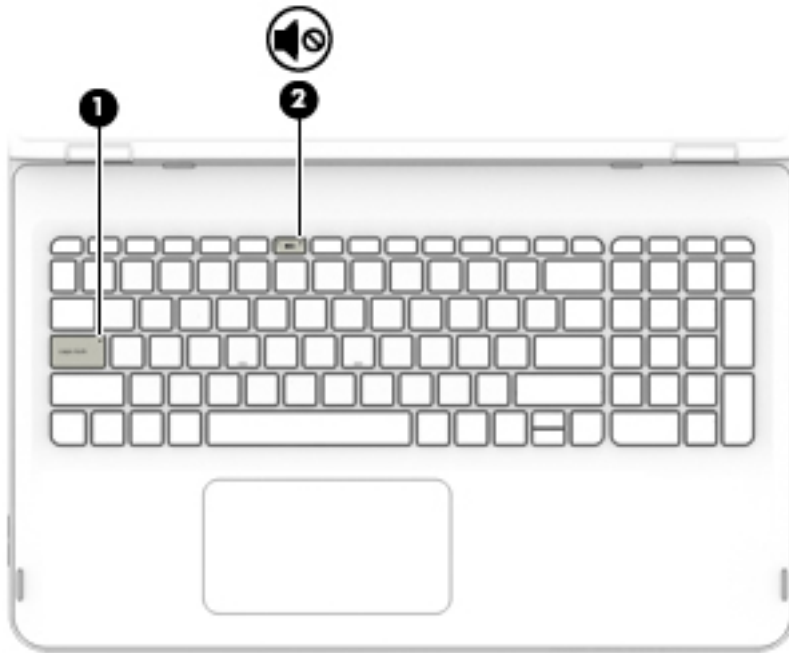
# Top


## TouchPad



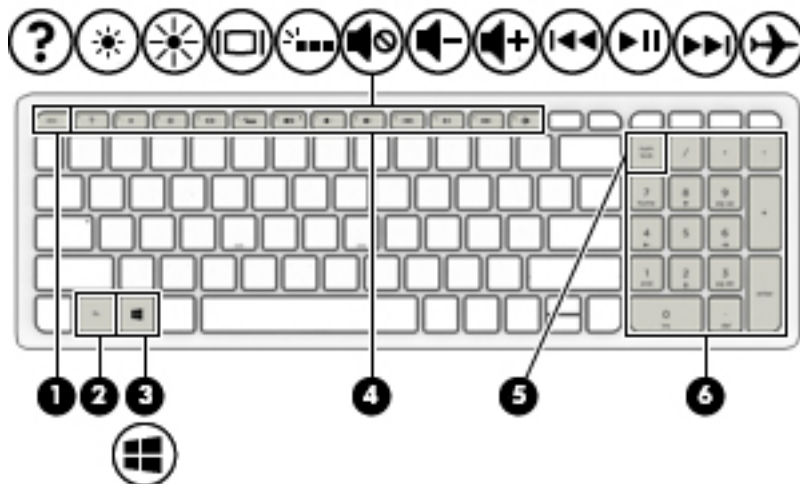
Component	Description
(1) TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2) Left TouchPad button	Functions like the left button on an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.

## Lights



Component	Description
(1)	Caps lock light On: Caps lock is on, which switches the keys to all capital letters.
(2) 	Mute light <ul style="list-style-type: none"> <li>• Amber: Computer sound is off.</li> <li>• Off: Computer sound is on.</li> </ul>

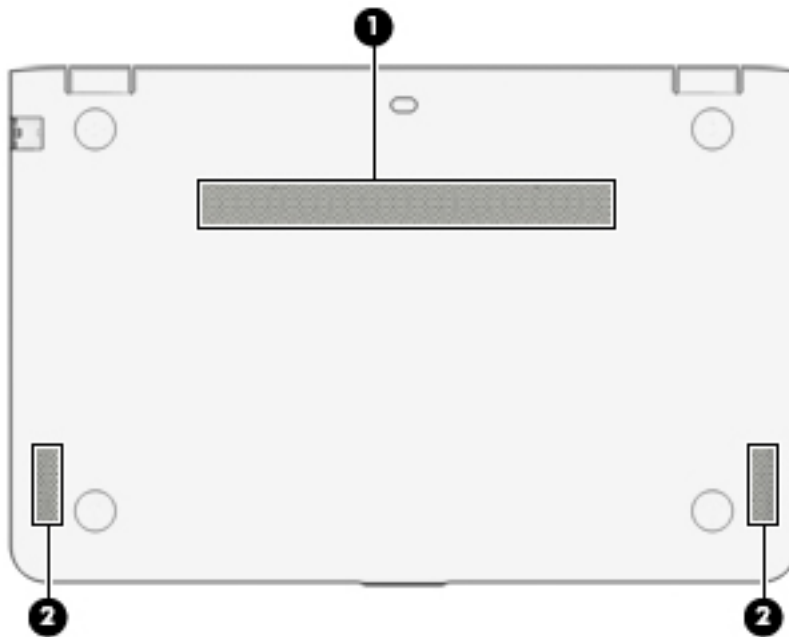
## Keys



Component	Description
(1)	<code>esc</code> key Displays system information when pressed in combination with the <code>fn</code> key.

Component	Description
(2) <span style="margin-left: 20px;">fn key</span>	Executes frequently used system functions when pressed in combination with the <b>esc</b> key, or on select models, the <b>spacebar</b> .
(3) <span style="margin-left: 20px;">Windows key</span>	<p><b>Windows 8.1:</b> Returns you to the Start screen from an open app or the Windows desktop.</p> <p><b>NOTE:</b> Pressing the Windows key again will return you to the previous screen.</p> <p><b>Windows 10:</b> Opens the Start menu.</p> <p><b>NOTE:</b> Pressing the Windows key again will close the <b>Start</b> menu.</p>
(4) <span style="margin-left: 20px;">Action keys</span>	Execute frequently used system functions. <b>NOTE:</b> On select models, the <b>f5</b> action key turns the backlight keyboard feature off or on.
(5) <span style="margin-left: 20px;">num lock key</span>	Alternates between the navigational and numeric functions on the integrated numeric keypad.
(6) <span style="margin-left: 20px;">Integrated numeric keypad</span>	When <b>num lock</b> is on, it can be used like an external numeric keypad.

## Bottom

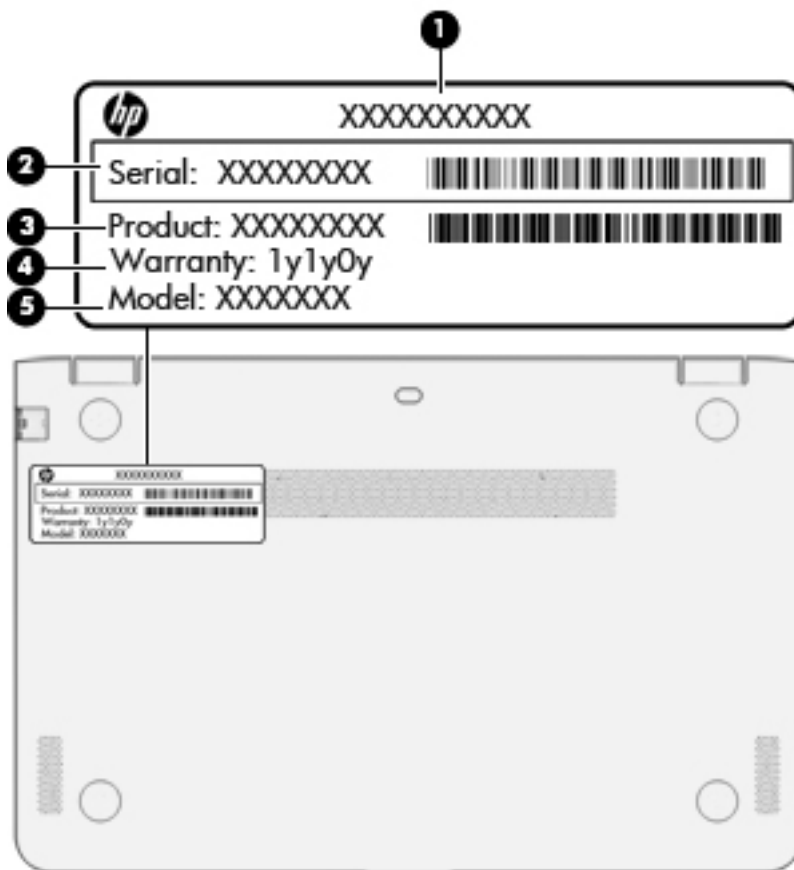



Component	Description
(1) <span style="margin-left: 20px;">Vent</span>	Enables airflow to cool internal components. <b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2) <span style="margin-left: 20px;">Speakers</span>	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.

- 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.



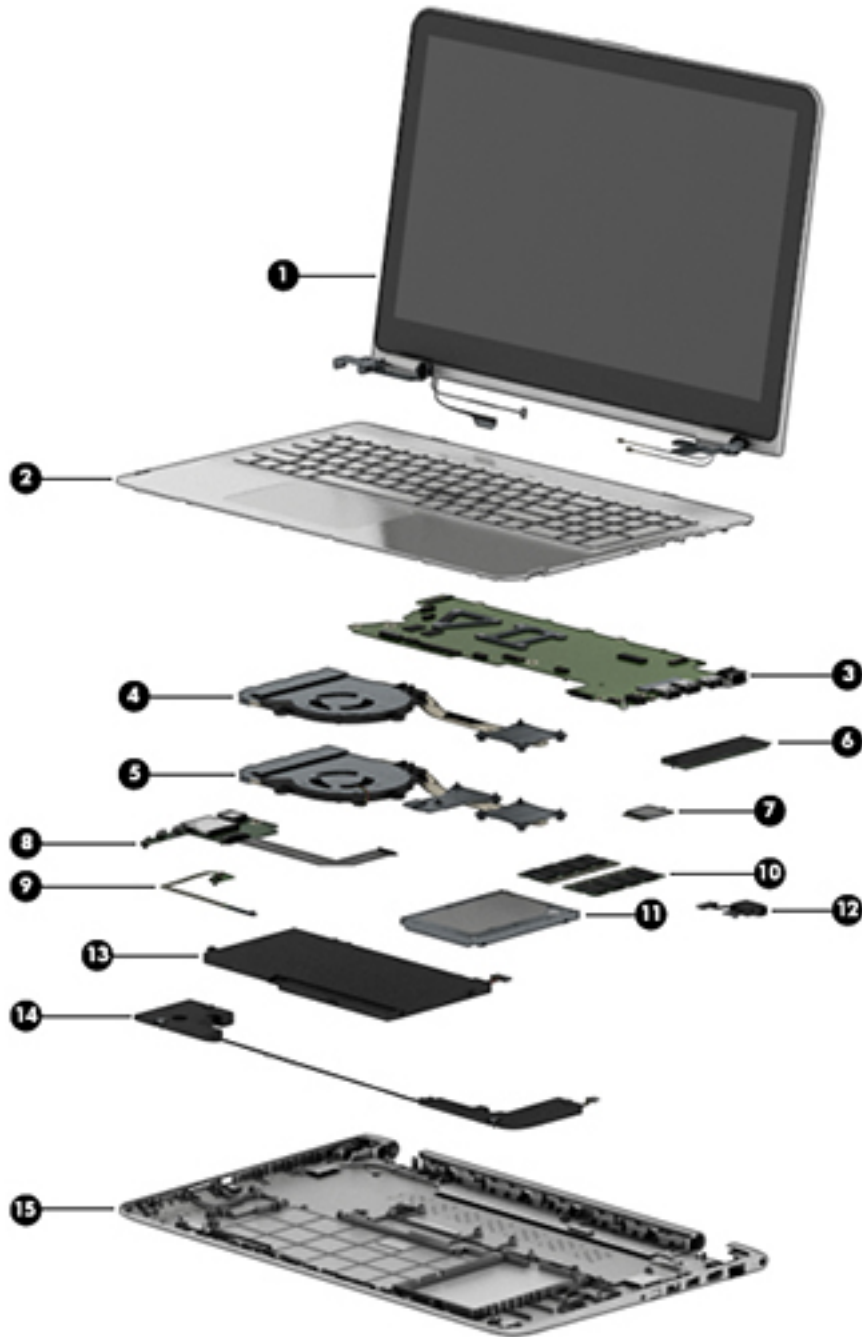
- Product name **(1)**. This is the product name affixed to the front of the computer.
  - Serial number (s/n) **(2)**. This is an alphanumeric identifier that is unique to each product.
  - Part number/Product number (p/n) **(3)**. This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
  - Warranty period **(4)**. This number describes the duration (in years) of the warranty period for the computer.
  - Model description (select models only) **(5)**. This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.
- 
-  **NOTE:** The Digital Product Key is automatically recognized and activated by Microsoft operating systems when a Windows 8 or Windows 8.x operating system is reinstalled using HP-approved recovery methods.
-

- 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

 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.





Item	Component	Spare part number
(1)	<p><b>Display assembly</b> (39.6-cm [15.6-in] HD, touch screen)</p> <p><b>NOTE:</b> Non-touch displays are only spared at the subcomponent level.</p> <p><b>NOTE:</b> For display assembly spare part information, see <a href="#">Display assembly subcomponents on page 19</a>.</p>	
(2)	<p><b>Top cover/keyboard</b> (includes touchpad)</p>	
	For use in Belgium	807526-A41
	For use in the Czech Republic and Slovakia	807526-FL1
	For use in Denmark, Finland, and Norway	807526-DH1
	For use in French Canada	807526-DB1
	For use in France	807526-051
	For use in Germany	807526-041
	For use in Italy	807526-061
	For use in Latin America	807526-161
	For use in the Netherlands	807526-B31
	For use in Romania	807526-271
	For use in Russia	807526-251
	For use in Saudi Arabia	807526-171
	For use in Spain	807526-071
	For use in Slovenia	807526-BA1
	For use in Switzerland	807526-BG1
	For use in Turkey	807526-141
	For use in the United Kingdom	807526-031
	For use in the United States	807526-001
(3)	<p><b>System board</b> (includes replacement thermal materials):</p> <p>All system boards use the following part numbers:</p> <p>xxxxxx-001: Windows 7 or non-Windows operating systems</p> <p>xxxxxx-501: Windows 8.1 Standard operating system</p> <p>xxxxxx-601: Windows 8.1 Professional or Windows 10 operating system</p> <p><b>NOTE:</b> System boards labeled as “ESH” can only be replaced with boards labeled as “ESH”.</p> <p>System boards labeled as “ISH” can be replaced with boards labeled as “ISH” or “ESH”.</p>	
	For use in models with 2 GB of discrete graphics memory:	
	<ul style="list-style-type: none"> <li>Intel Core i7-7500U processor</li> </ul>	859661-xxx
	<ul style="list-style-type: none"> <li>Intel Core i7-6500U processor (solid-state drive models)</li> </ul>	862665-xxx
	<ul style="list-style-type: none"> <li>Intel Core i7-6500U processor (ISH)</li> </ul>	849139-xxx
	<ul style="list-style-type: none"> <li>Intel Core i7-6500U processor (ESH)</li> </ul>	811098-xxx

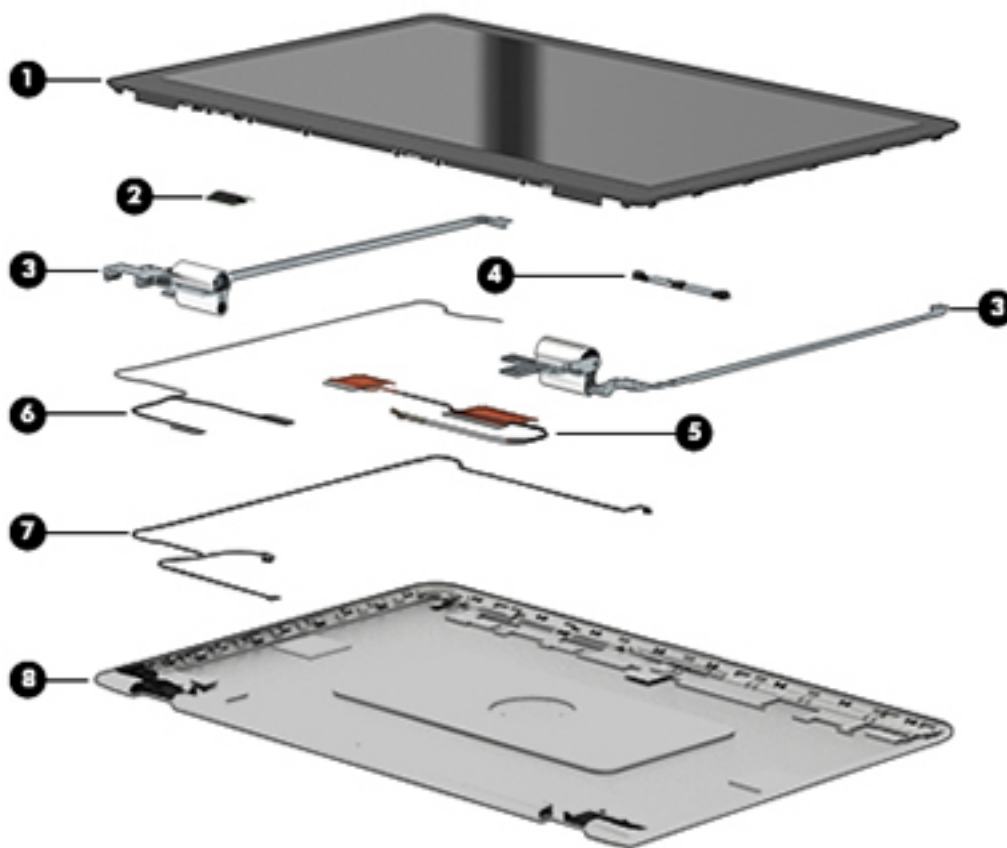
Item	Component	Spare part number
	• Intel Core i5-6200U processor (solid-state drive models, ESH)	811099-xxx
	• Intel Core i5-6200U processor (solid-state drive models, ISH)	849140-xxx
	• Intel Core i7-5500U processor	807540-xxx
		827523-xxx
	• Intel Core i7-5200U processor	808410-xxx
	For use in models with UMA graphics	
	• Intel Core i7-7500U processor	859660-xxx
	• Intel Core i7-7200U processor	859659-xxx
	• Intel Core i7-6500U processor (ISH)	849138-xxx
	• Intel Core i7-6500U processor (ESH)	811096-xxx
	• Intel Core i7-6500U processor (solid-state drive models, ISH)	862664-xxx
	• Intel Core i5-6200U processor (ISH)	849137-xxx
	• Intel Core i5-6200U processor (ESH)	811095-xxx
	• Intel Core i7-5500U processor	807538-xxx
	• Intel Core i5-5200U processor	807537-xxx
		827522-xxx
	<b>Heat sink assembly</b> (includes replacement thermal materials):	
(4)	For use in models with 5th generation Intel processors and UMA graphics	807523-001
(5)	For use in models with 5th generation Intel processors and discrete graphics	807524-001
	For use in models with 6th generation Intel processors and UMA graphics	828732-001
	For use in models with 6th generation Intel processors and discrete graphics	828733-001
	For use in models with 7th generation Intel processors and UMA graphics	860899-001
	For use in models with 7th generation Intel processors and discrete graphics	860900-001
(6)	<b>256-GB solid-state drive (SSD)</b>	813081-001
(7)	<b>WLAN module:</b>	
	Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter	756751-005
	Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter	792610-005
(8)	<b>USB board (USB/volume/hard drive LED/card reader)</b> (includes cable)	807527-001
(9)	<b>Power button board</b> (includes cable)	807528-001
(10)	<b>Memory module (DDR3L-1600):</b>	
	8-GB	693374-005
	4-GB	691740-005
	2-GB	691739-005
(11)	<b>Hard drive</b> (does not include bracket):	

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	<b>NOTE:</b> The hard drive bracket and connector are available using spare part number 808238-001.	
	1-TB, 5400-rpm, 7 mm	762990-005
	750-GB, 5400 rpm hard drive, 7 mm	752099-005
	500-GB, 5400-rpm, 7 mm, hybrid 8 GB SSD	732000-005
	500-GB, 5400-rpm, 7 mm	778186-005
<b>(12)</b>	<b>Power connector cable</b>	807522-001
<b>(13)</b>	<b>Battery</b> (3-cell, 48-Whr, 4.2-Ah Li-ion)	796356-005
<b>(14)</b>	<b>Speakers</b> (includes left and right speakers and cable)	807535-001
<b>(15)</b>	<b>Bottom cover</b>	807521-001
	<b>RTC battery</b> (not illustrated)	683502-001

## Miscellaneous parts

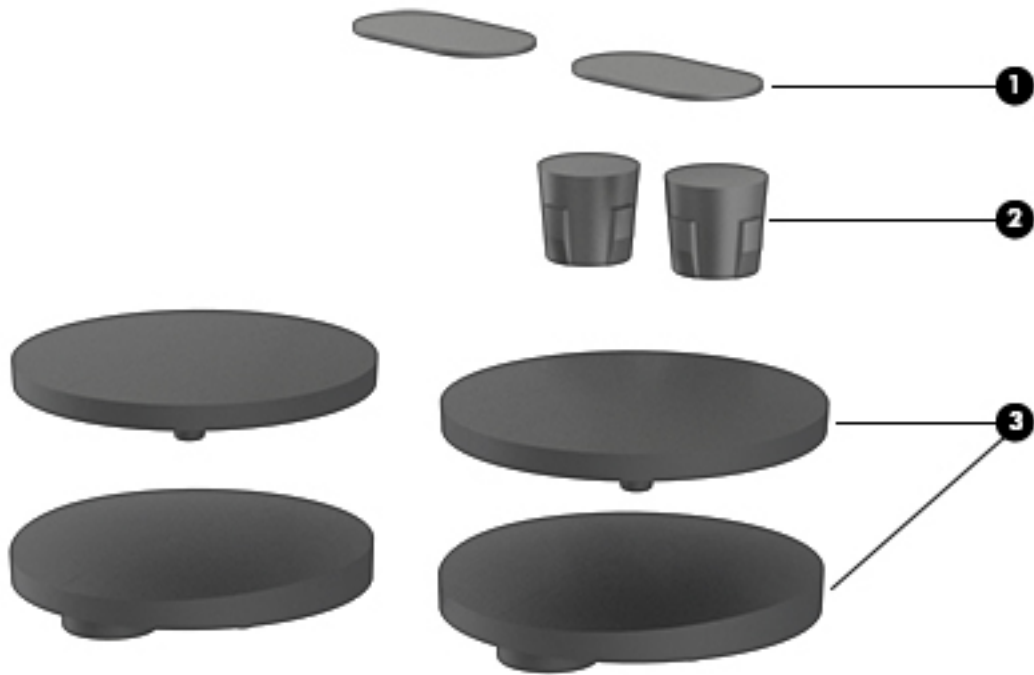
Component	Spare part number
<b>HP Smart AC adapter:</b>	
AC adapter, 65-W, non-PFC, 4.5 mm	710412-001
AC adapter, 65-W, non-PFC, 4.5 mm, EM (for use in the Asia-Pacific region and India)	714657-001
45-W non-PFC, non-slim HP Smart AC adapter (for use in all countries and regions except for the People's Republic of China and India)	741727-001
<b>Power cord (3-pin, black, 1.0-m):</b>	
For use in Denmark	213353-008
For use in Europe, the Middle East, and Africa	213350-009
For use in India	404827-003
For use in North America	213349-009
For use in South Africa	361240-002
For use in Switzerland	213354-008
For use in the United Kingdom and Singapore	213351-008
<b>Rubber Kit (includes front and rear feet)</b>	807533-001
<b>Screw Kit</b>	807534-001
<b>HDMI to VGA adapter</b>	701943-001

## Display assembly subcomponents



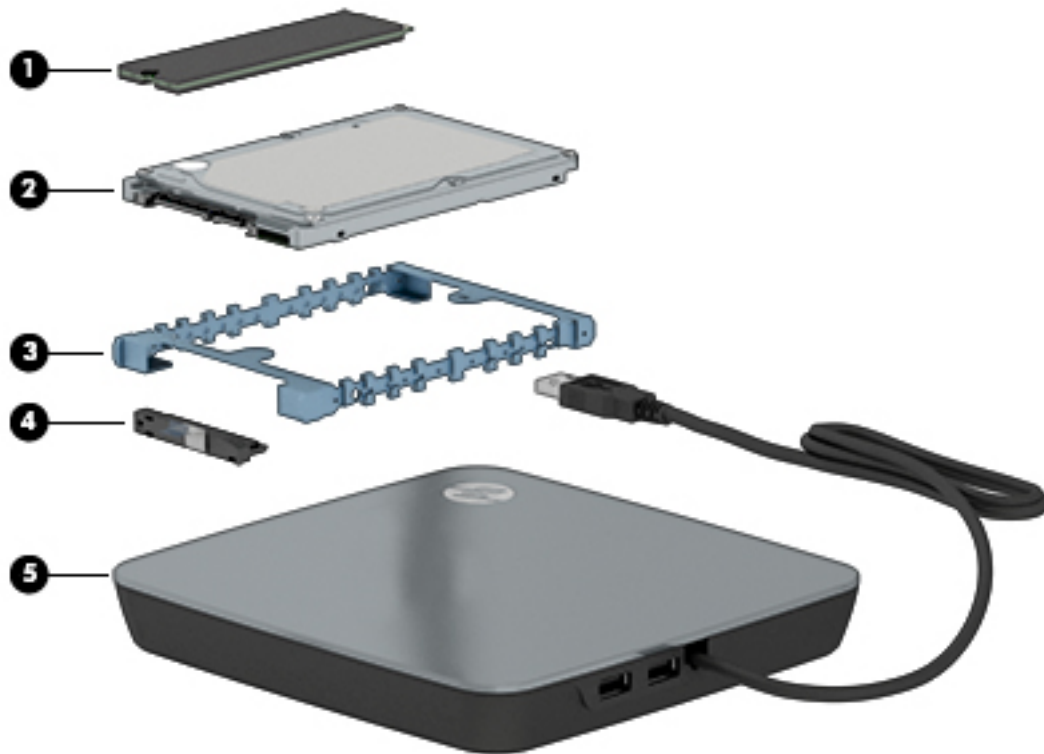
Item	Component	Spare part number
(1)	<b>Raw display panel</b>	
	HD panel	807531-001
	FHD panel	807532-001
	FHD panel (for use only in models 15-w200 - 15-w299)	863978-001
(2)	<b>G sensor board</b>	807530-001
(3)	<b>Hinges</b> (left and right)	807525-001
(4)	<b>Webcam/microphone module</b>	807542-001
(5)	<b>Antennas</b> (includes wireless antenna cables and transceivers)	807519-001
(6)	<b>Display/touch control cable</b>	
	For use in models with Intel 5th or 6th generation processors	808240-001
	For use in models with Intel 7th generation processors	903810-001
(7)	<b>Webcam/G sensor cable</b>	
	For use in models with Intel 5th or 6th generation processors	807529-001
	For use in models with Intel 7th generation processors	903809-001
(8)	<b>Display enclosure:</b>	813023-001

## Rubber Kit



Item	Component	Spare part number
(1)	Middle screw covers	807533-001
(2)	Top screw covers	
(3)	Corner screw covers	

## Mass storage devices



Item	Component	Spare part number
(1)	<b>256-GB solid-state drive (SSD)</b>	813081-001
(2)	<b>Hard drive</b> (does not include bracket or connector):	
	1-TB, 5400-rpm, 7 mm	762990-005
	750-GB, 5400 rpm hard drive, 7 mm	752099-005
	500-GB, 5400-rpm, 7 mm, hybrid 8 GB SSD	732000-005
	500-GB, 5400-rpm, 7 mm	778186-005
	<b>Hard drive hardware kit</b>	808238-001
(3)	Bracket	
(4)	Connector	
(5)	<b>External DVD+/-RW Double-Layer SuperMulti Drive</b>	747080-001

---

# 4 Removal and replacement procedures preliminary requirements

## Tools required


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

- Flat-bladed screwdriver
- Phillips P0 and P1 screwdrivers
- Torx T8 screwdriver

## Service considerations

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


---

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

---

## Plastic parts


---

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

---

## Cables and connectors

---

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

---

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



## Drive handling

---

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

---

## Grounding guidelines

### Electrostatic discharge damage

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

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

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

---

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

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

Use nonmagnetic tools.

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.

---

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

---

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

## Workstation guidelines

Follow these grounding workstation guidelines:

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

## Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

---

# 5 Removal and replacement procedures for Authorized Service Provider parts

---

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

 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

---

## Component replacement procedures

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

There are as many as 53 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

## Top cover

Description	Spare part number
<b>Base enclosure</b>	807521-001
<b>Top cover with keyboard and TouchPad:</b>	
For use in Belgium	807526-A41
For use in Canada (English/French)	807526-DB1
For use in the Czech Republic and Slovakia	807526-FL1
For use in France	807526-051
For use in Germany	807526-041
For use internationally	807526-B31
For use in Italy	807526-061
For use in Latin America	807526-161
For use in the Netherlands	807526-DH1
For use in Romania	807526-271
For use in Russia	807526-251
For use in Saudi Arabia	807526-171
For use in Slovenia	807526-BA1
For use in Spain	807526-071
For use in Switzerland	807526-BG1
For use in Turkey	807526-141
For use in the United Kingdom	807526-031
For use in the United States	807526-001

Before removing the top cover, follow these steps:

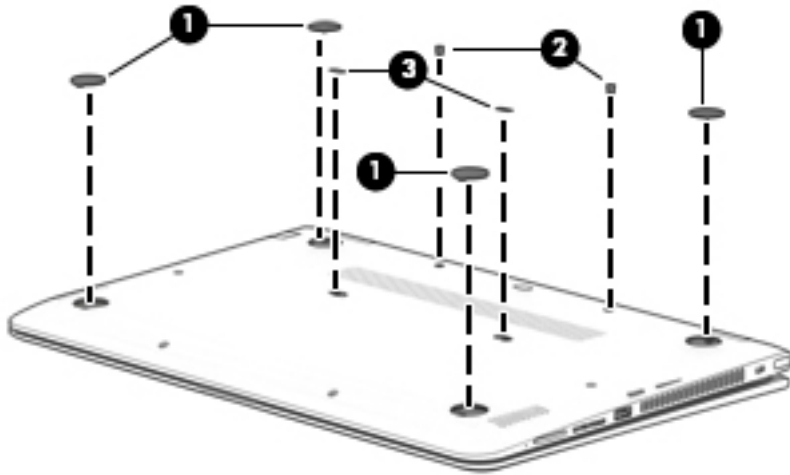
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Remove the top cover:

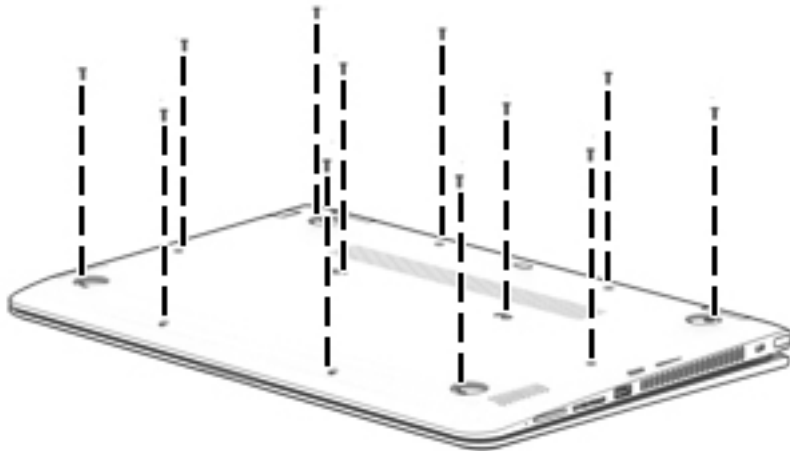
1. Position the computer upside-down.
2. Pry the four round rubber feet from the corners of the bottom cover **(1)**.
3. Pry the two screw covers from the front side of the bottom cover **(2)**.

4. Pry the two screw covers from the middle of the bottom cover **(3)**.

Rubber feet and rubber screw covers are available in the Rubber Kit, spare part number 807533-001.



5. Remove the 12 Phillips PM2.5×6.0 screws that secure the top cover to the computer.

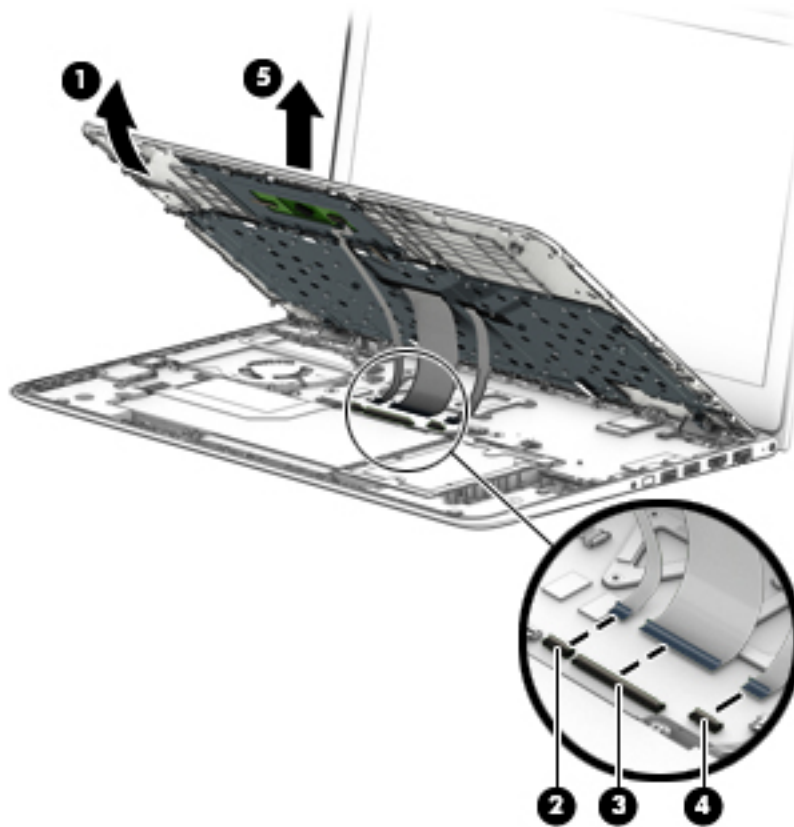


6. Position the computer upright, and then open the computer as far as possible.
7. Starting on the inside above the keyboard near the hinges, pull up at the seams to disengage the cover from the computer **(1)**, far enough to access the keyboard and touchpad connectors on the system board.



**NOTE:** When you lift the top cover, the keyboard cable and the touchpad cable are connected to the system board. Be sure not to pull the cables loose when lifting the top cover.

8. Disconnect the touchpad cable (2), the keyboard cable (3), and the backlight cable (4) from the system board, and then remove the top cover from the computer (5).



Reverse this procedure to install the top cover.

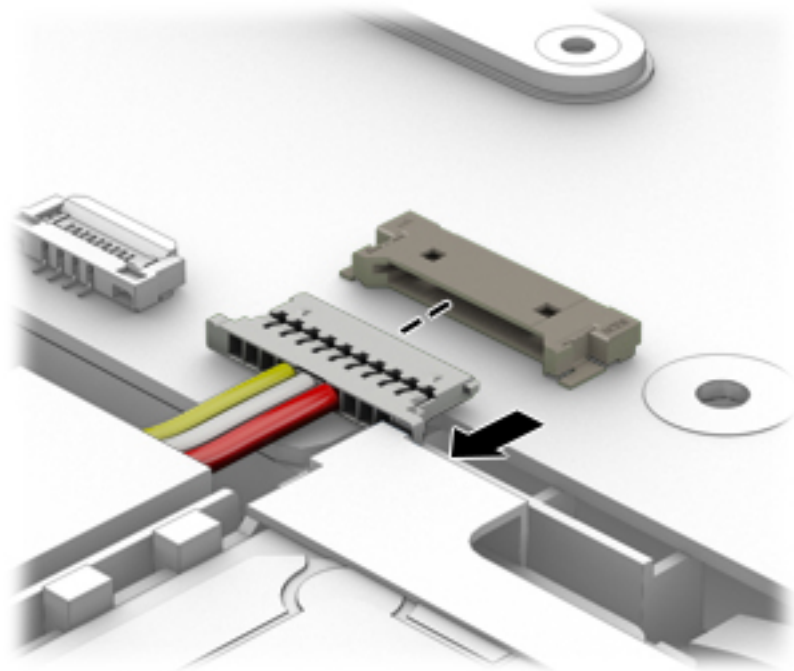
## Hard drive

 **NOTE:** The Hard Drive Hardware Kit, spare part number 808238-001, includes the hard drive bracket and hard drive connector cable.

Description	Spare part number
1-TB, 5400-rpm, 7 mm	762990-005
750 GB, 5400 rpm hard drive, 7 mm	752099-005
500-GB, 5400-rpm, 7 mm, hybrid 8 GB SSD	732000-005
500-GB, 5400-rpm, 7 mm	778186-005
<b>Hard Drive Hardware Kit</b> (includes hard drive bracket and connector cable)	808238-001

Before removing the hard drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Disconnect the battery.

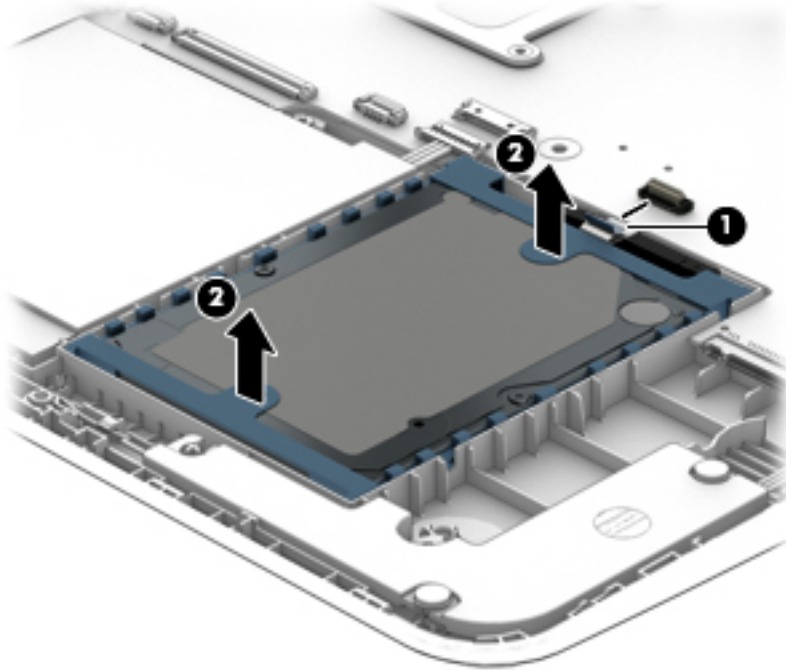


Remove the hard drive:

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



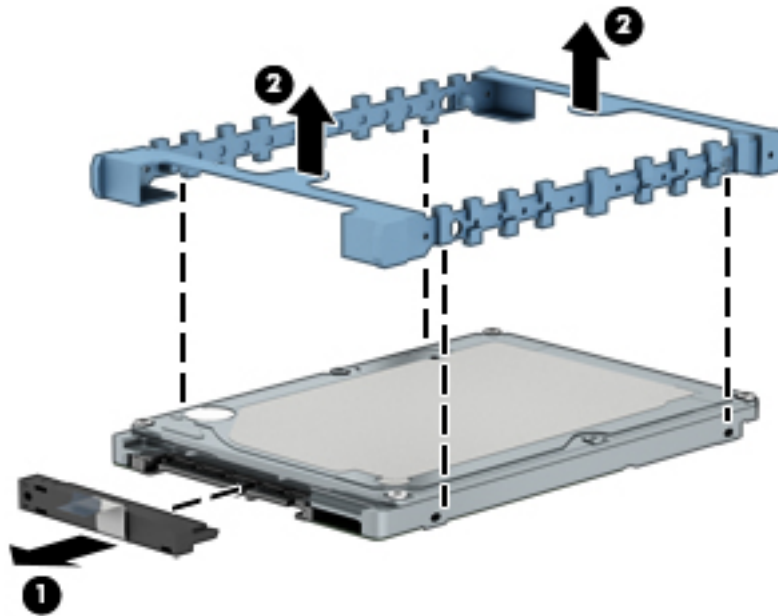
2. Grasp tabs on hard drive bracket, and then pull the drive out of computer (2).



3. If it is necessary to disassemble the hard drive, perform the following steps:

- a. Disconnect the hard drive connector cable (1) from the hard drive.
- b. Lift the bracket from the hard drive (2).

The hard drive bracket and hard drive connector cable are available in the Hard Drive Hardware Kit, spare part number 808238-001.



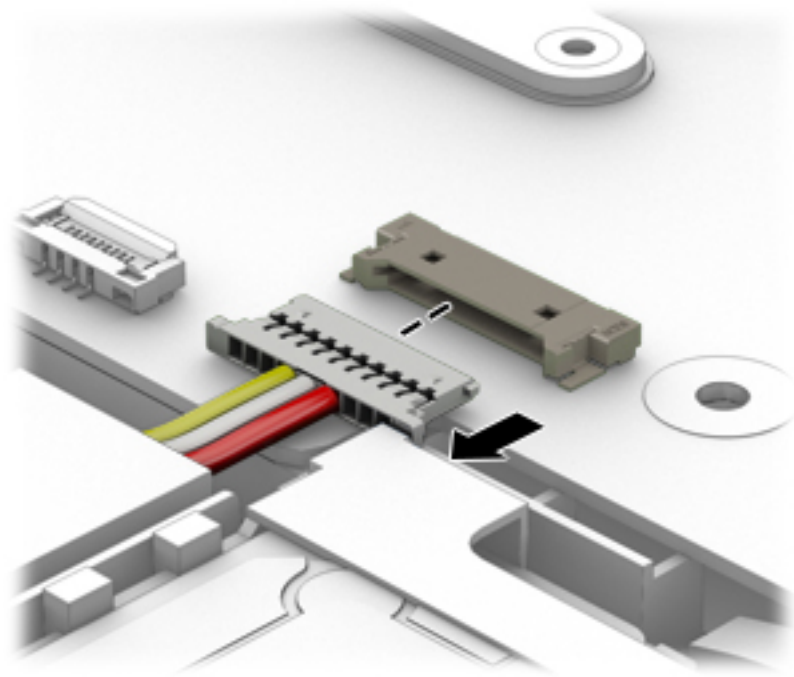
Reverse this procedure to install the hard drive.

## Solid-state drive (M.2)

Description	Spare part number
256 GB solid-state drive (SSD), M.2, TLC	813081-001

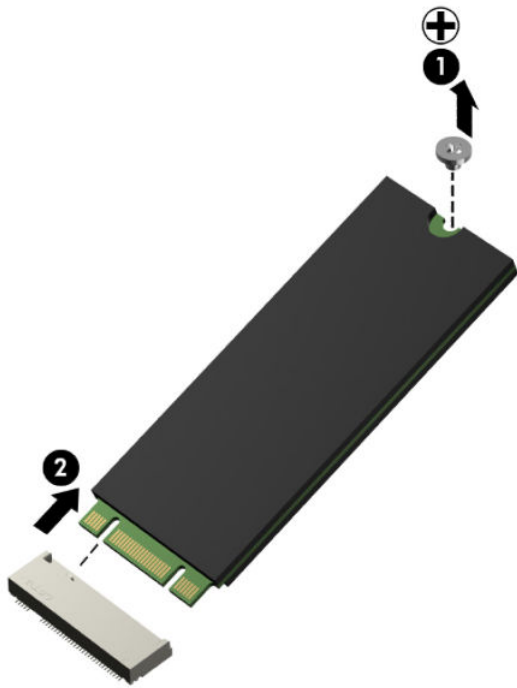
Before removing the solid-state drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Disconnect the battery.



Remove the solid-state drive:

1. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the solid-state drive to the system board.
2. Remove the solid-state drive **(2)** by pulling the drive away from the slot at an angle.



Reverse this procedure to install the solid-state drive.

## WLAN module

Description	Spare part number
Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter	756751-005
Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter	792610-005

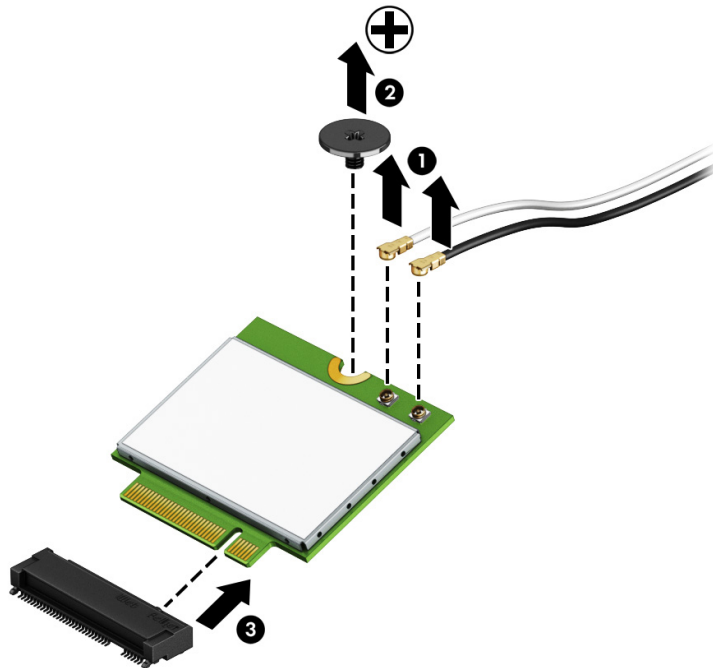
**⚠ CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).

Remove the WLAN module:

1. Position the system board upright.
2. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the module to the system board, and then pull the module out from the socket **(2)**.



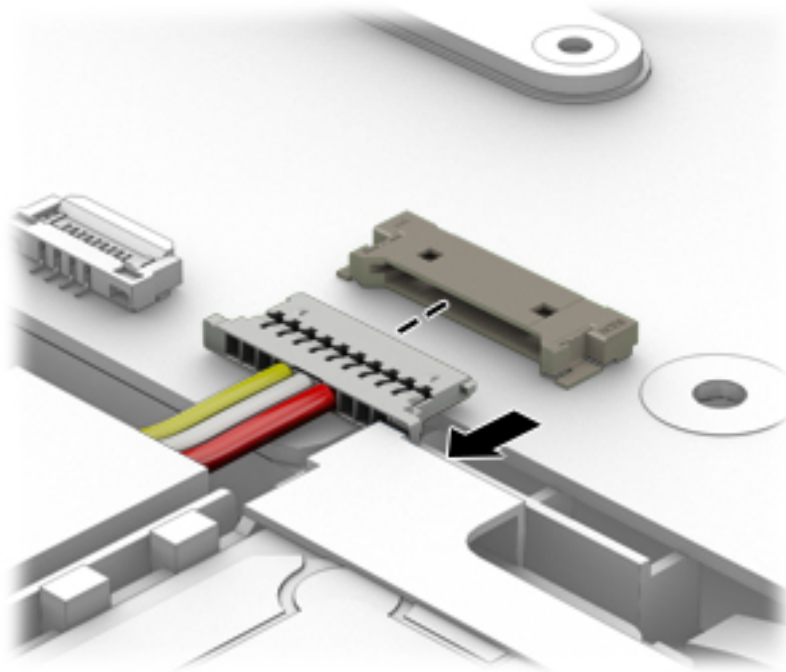
Reverse this procedure to install the WLAN module.

## Speakers

Description	Spare part number
Speaker Kit (includes left and right speakers and cable)	807535-001

Before removing the speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Disconnect the battery.



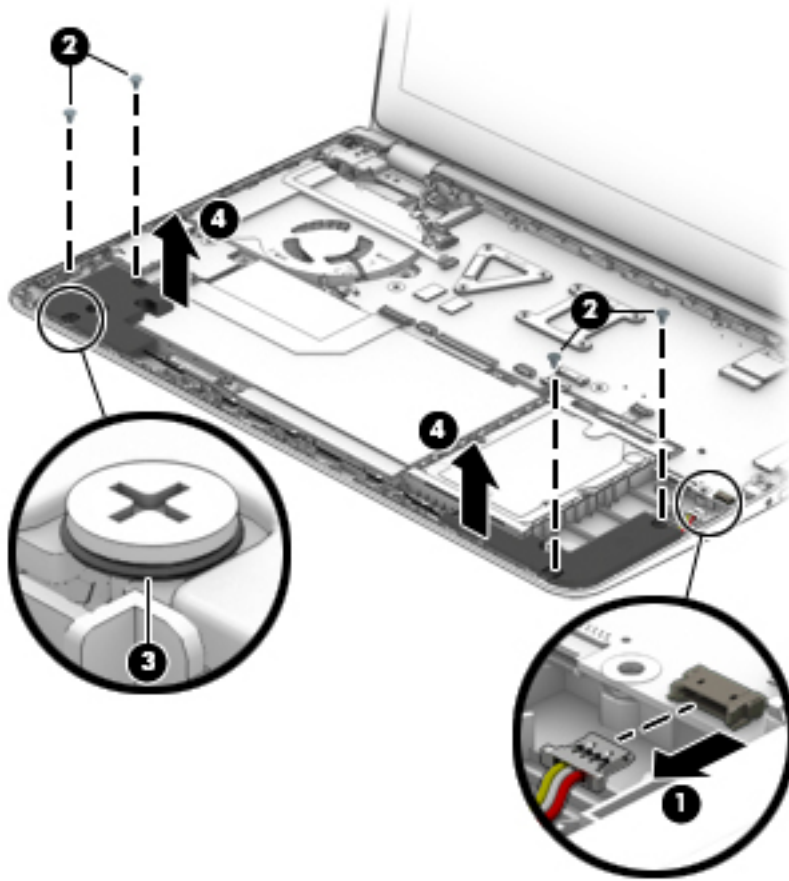
Remove the speakers:

1. Disconnect the speaker cable from the system board **(1)**.
2. Remove the four Phillips PM2.5×5.0 screws **(2)** that secure the speakers to the computer.



**NOTE:** Rubber gaskets fit around each screw **(3)**. For installation, make sure the gaskets are properly installed.

3. Lift the speakers from the computer (4), noting the proper cable routing for reinstallation.



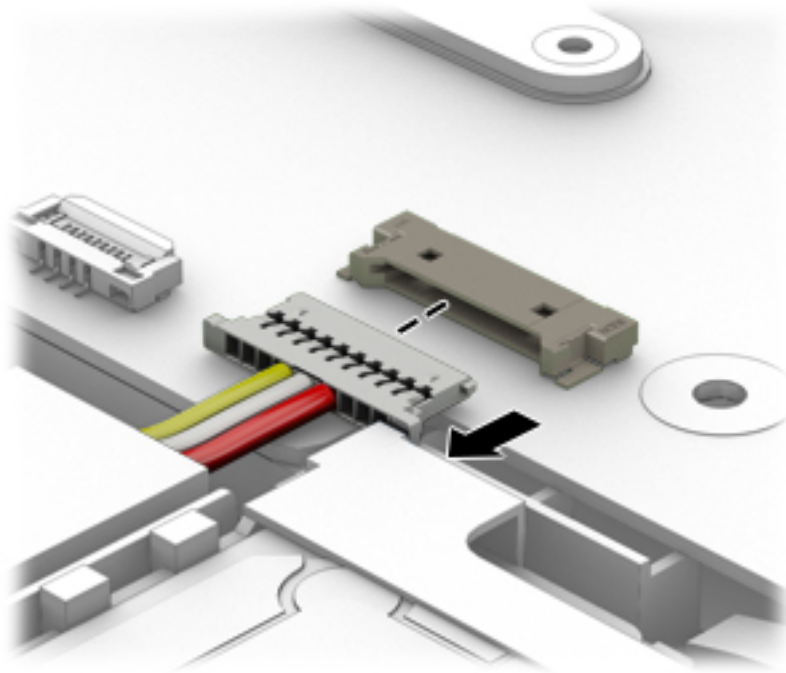
Reverse this procedure to install the speakers.

## USB board (USB/volume/hard drive LED/card reader)

Description	Spare part number
USB board (includes cable)	807527-001

Before removing the USB board, follow these steps:

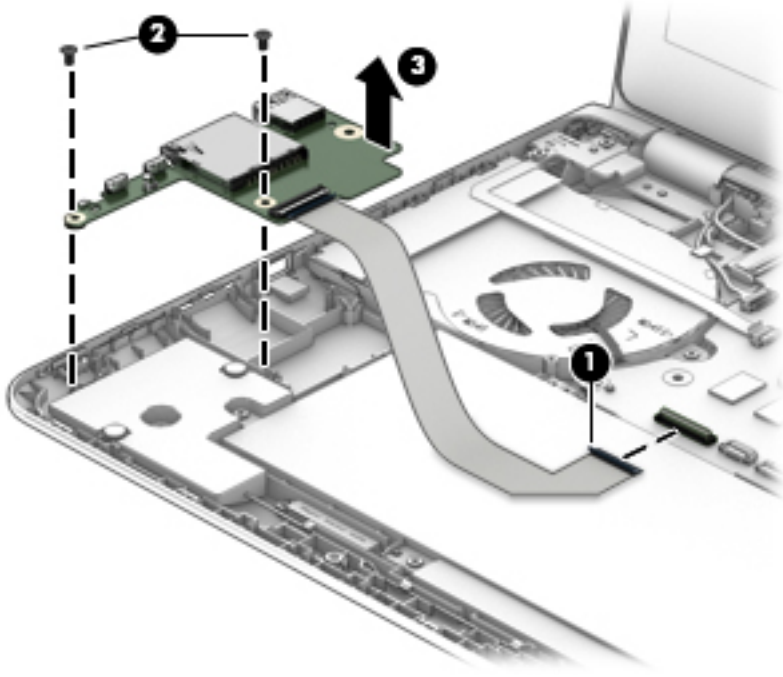
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Disconnect the battery.



To remove the USB board:

1. Disconnect the cable from the system board **(1)**.
2. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the board to the computer.

3. Lift the board straight up and out of the computer (3).



Reverse this procedure to install the USB board.



## System board


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

All system boards use the following part numbers:

xxxxxx-001: Windows 7 or non-Windows operating systems

xxxxxx-501: Windows 8.1 Standard operating system

xxxxxx-601: Windows 8.1 Professional or Windows 10 operating system

 **NOTE:** System boards labeled as “ESH” can only be replaced with boards labeled as “ESH”.


System boards labeled as “ISH” can be replaced with boards labeled as “ISH” or “ESH”.

Description	Spare part number
<b>System board use in models with 2 GB of discrete graphics memory</b>	
Intel Core i7-7500U processor	859661-xxx
Intel Core i7-6500U processor (solid-state drive models)	862665-xxx
Intel Core i7-6500U processor (ISH)	849139-xxx
Intel Core i7-6500U processor (ESH)	811098-xxx
Intel Core i5-6200U processor (solid-state drive models, ESH)	811099-xxx
Intel Core i5-6200U processor (solid-state drive models, ISH)	849140-xxx
Intel Core i7-5500U processor	807540-xxx
	827523-xxx
Intel Core i7-5200U processor	808410-xxx
<b>System board for use in models with UMA graphics</b>	
Intel Core i7-7500U processor	859660-xxx
Intel Core i7-7200U processor	859659-xxx
Intel Core i7-6500U processor (ISH)	849138-xxx
Intel Core i7-6500U processor (ESH)	811096-xxx
Intel Core i7-6500U processor (solid-state drive models, ISH)	862664-xxx
Intel Core i5-6200U processor (ISH)	849137-xxx
Intel Core i5-6200U processor (ESH)	811095-xxx
Intel Core i7-5500U processor	807538-xxx
Intel Core i5-5200U processor	807537-xxx
	827522-xxx

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.

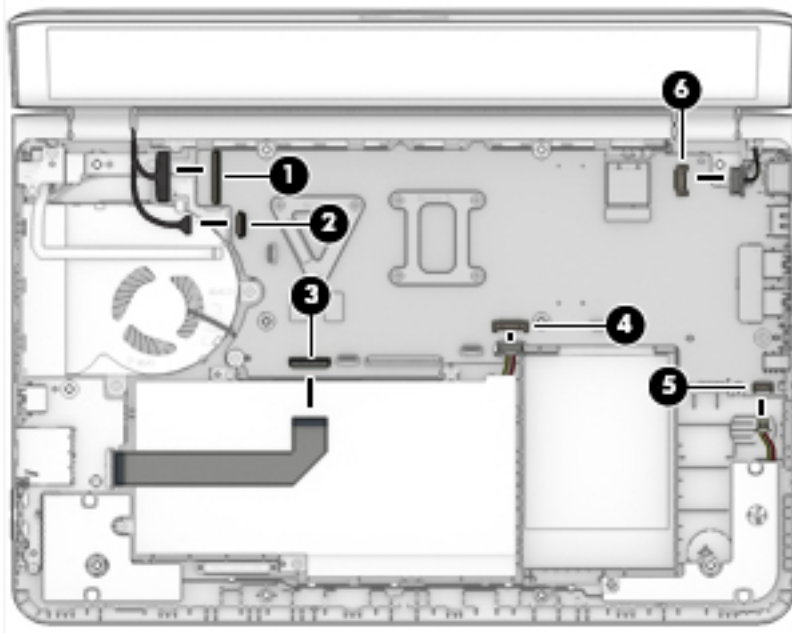
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).

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

- WLAN module (see [WLAN module on page 34](#))
- Solid-state drive (see [Solid-state drive \(M.2\) on page 32](#))
- Memory modules (see [Memory module on page 42](#))
- Heat sink (see [Heat sink on page 44](#))

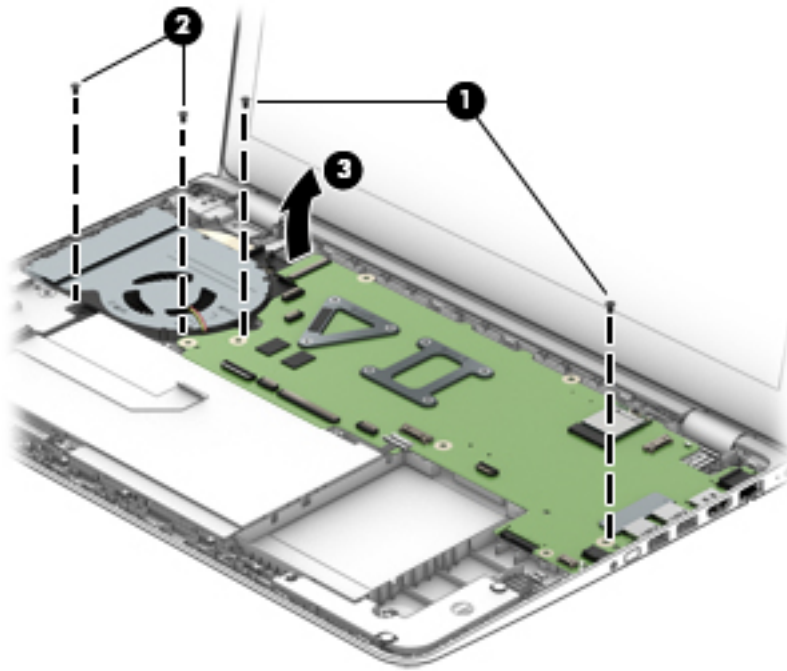
Remove the system board:

1. Disconnect the following cables from the system board:
  - (1): Display cable
  - (2): Touch board cable
  - (3): USB/card reader board cable
  - (4): Battery cable
  - (5): Speaker cable
  - (6): Power connector cable



2. Remove the two Phillips PM2.5×4.0 screws that secure the system board to the computer (1).
3. Remove the two Phillips PM2.5×4.0 screws (2) that secure the fan to the computer.

4. Lift the left side of the system board **(3)**, and pull the system board toward the left (away from the connectors on the side of the board) to remove it from the computer.



Reverse this procedure to install the system board.

## Memory module

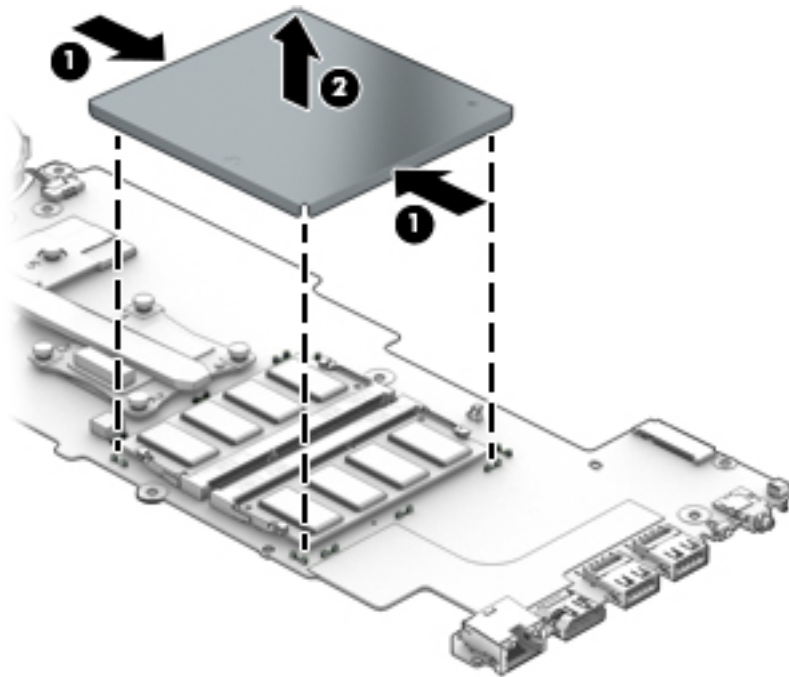
Description	Spare part number
8-GB (DDR3L-1600)	693374-005
4-GB (DDR3L-1600)	691740-005

Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Remove the system board (see [System board on page 39](#)).


To remove a memory module:

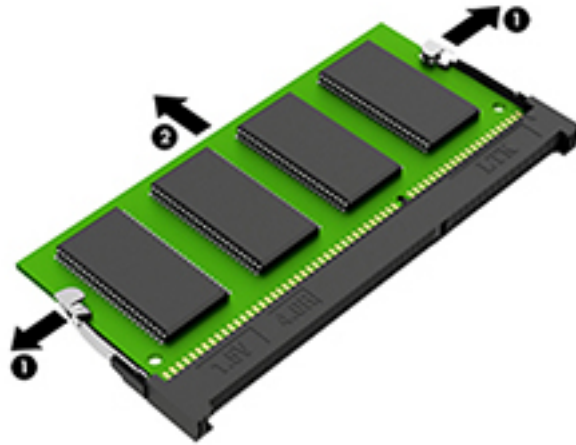
1. Position the system board upside-down.
2. Press in on either side of the memory cover close to the edge of the system board **(1)**.
3. Lift the cover off the system board **(2)**.



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

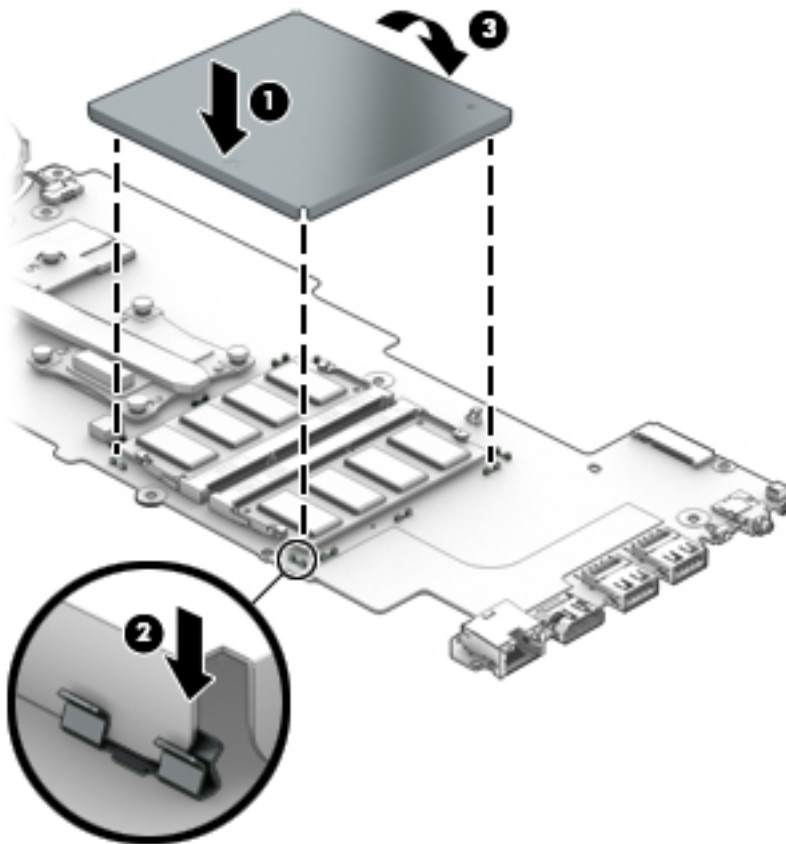
5. Remove the memory module **(2)** by pulling it away from the slot at an angle.

 **NOTE:** Memory modules are notched to prevent incorrect insertion.



Reverse this procedure to install a memory module.

To replace the memory cover, place the cover atop the memory modules **(1)**, insert the edge of the memory cover into the clips on one side of the system board **(2)**, and then rotate the cover downward and insert the opposite side into the clips on the system board **(3)**.



## Heat sink

Description	Spare part number
Heat sink for use in models with 5th generation Intel processors and discrete graphics memory (includes replacement thermal material)	807524-001
Heat sink for use in models with 5th generation Intel processors and UMA graphics memory (includes replacement thermal material)	807523-001
Heat sink for use in models with 6th generation Intel processors and discrete graphics memory (includes replacement thermal material)	828732-001
Heat sink for use in models with 6th generation Intel processors and UMA graphics memory (includes replacement thermal material)	828733-001
Heat sink for use in models with 7th generation Intel processors and discrete graphics memory (includes replacement thermal material)	860899-001
Heat sink for use in models with 7th generation Intel processors and UMA graphics memory (includes replacement thermal material)	860900-001

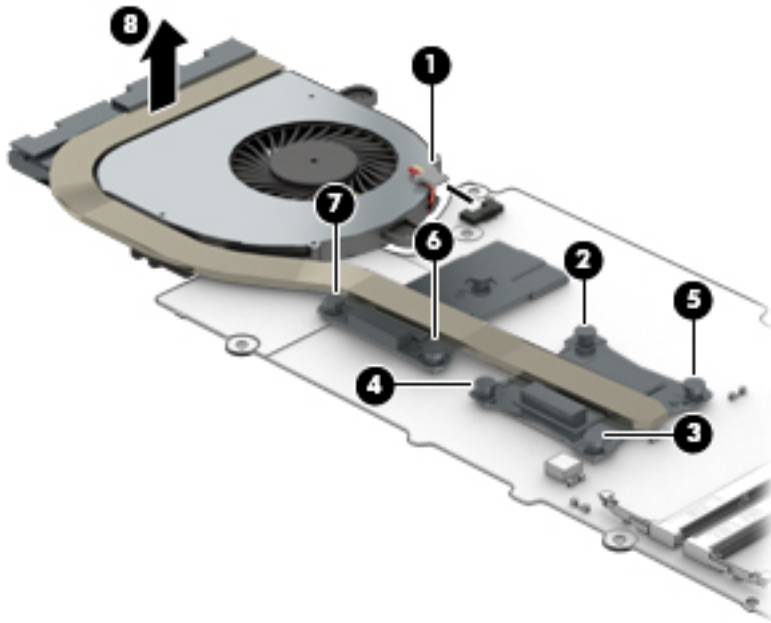
Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Remove the system board (see [System board on page 39](#)).

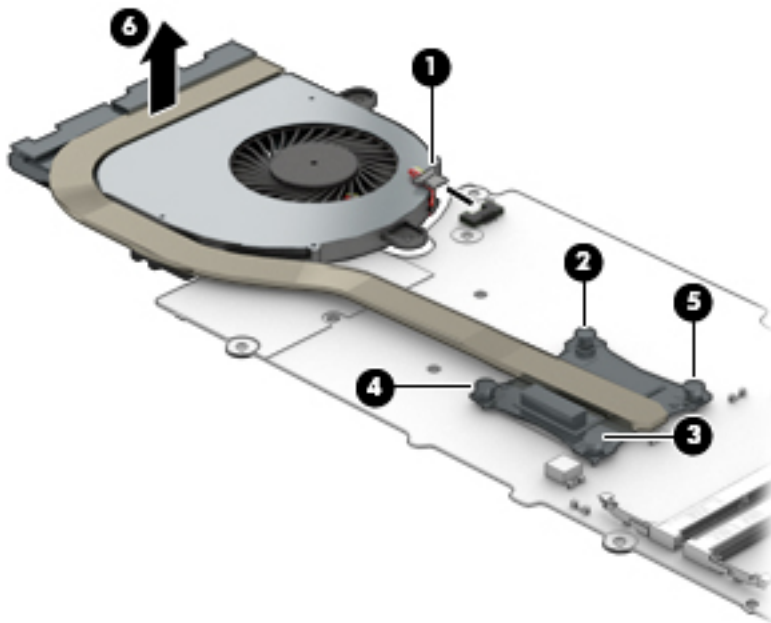
To remove the heat sink assembly:

1. Position the system board upside down.
2. If disassembling a model with discrete graphics, disconnect the fan cable from the system board **(1)**.
3. In the order indicated, loosen the six Phillips screws **(2) – (7)** that secure the heat sink to the system board.

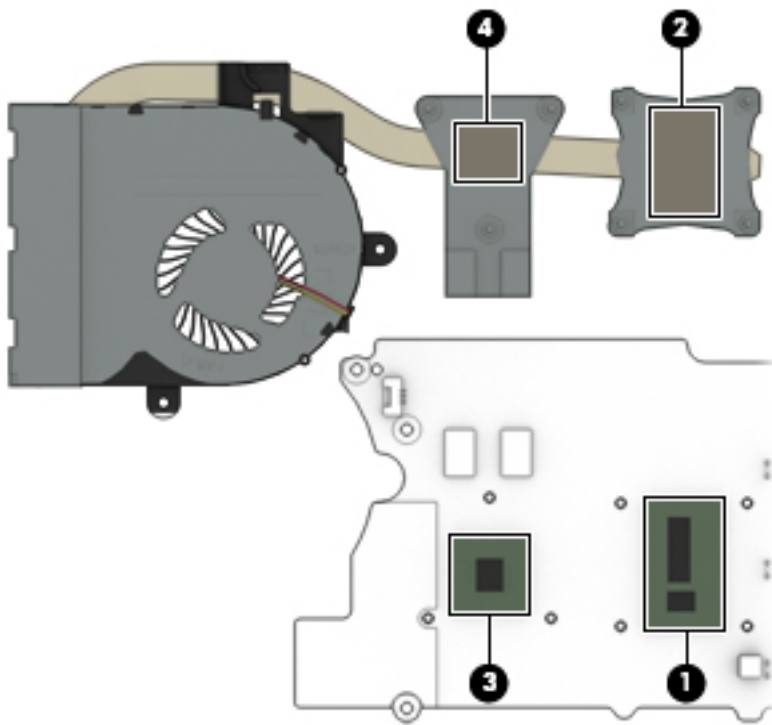
4. Remove the heat sink **(8)** from the system board.



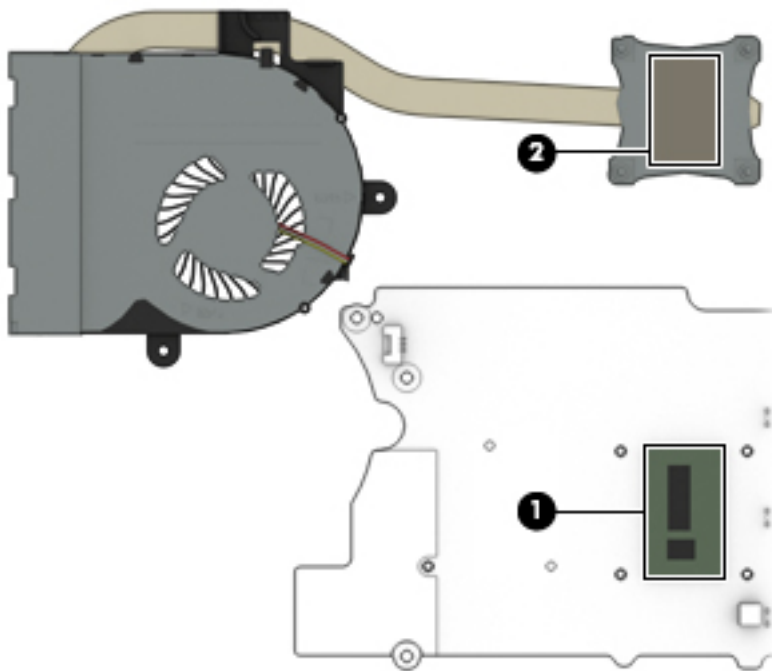
5. If disassembling a model with UMA graphics, disconnect the fan cable from the system board **(1)**.
6. In the order indicated, remove the four Phillips PM2.0×3.0 screws **(2) – (5)** that secure the heat sink to the system board.
7. Remove the heat sink **(6)** from the system board.



- **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 install the heat sink.




## Battery

Description	Spare part number
3-cell, 48-Wh, 4.2-Ah, Li-ion battery	796356-005

Before removing the battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).

Remove the battery:

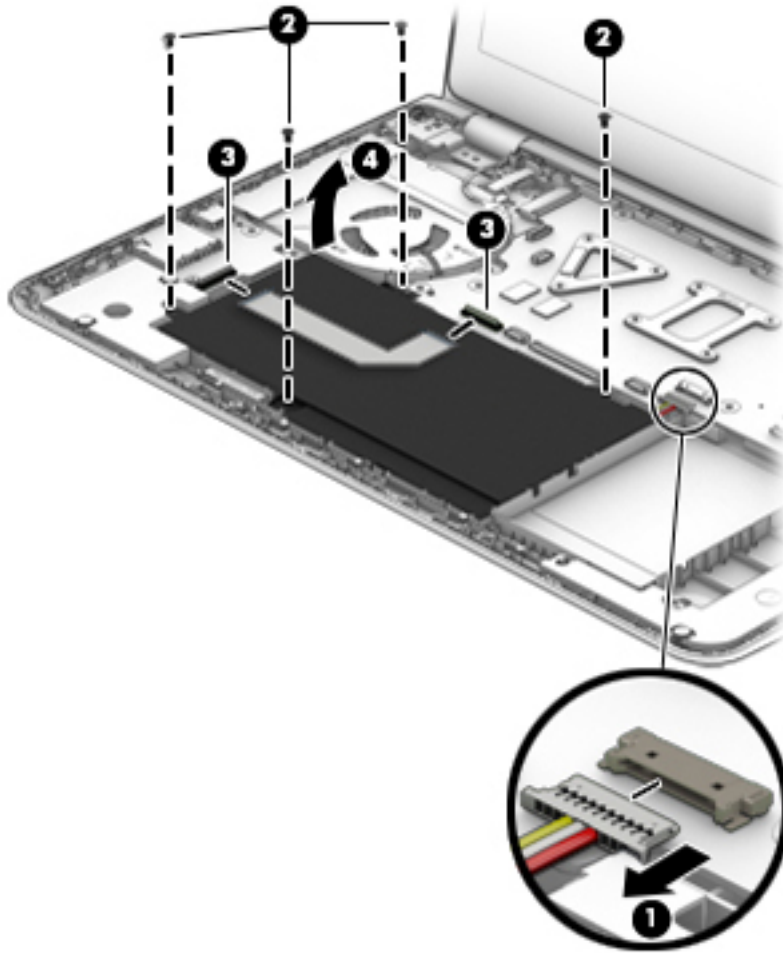
 **WARNING!** To reduce potential safety issues, use only the battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

1. Disconnect the battery cable from the system board **(1)**.
2. Remove the four Phillips PM2.5×4.0 screws **(2)** that secure the battery to the computer.
3. Disconnect the USB/card reader board cable from the system board **(3)** and the USB/card reader board **(3)**, and then (if replacing the battery) remove the cable from atop the battery.



**NOTE:** If replacing the battery, be sure to replace the USB/card reader board cable.

4. Remove the battery (4).



Reverse this procedure to install the battery.

## Display assembly

The display is only spared at the subcomponent level. The full hinge-up is not spared.

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 top cover (see [Top cover on page 27](#)).
5. Remove the system board (see [System board on page 39](#)).

To remove the display assembly:

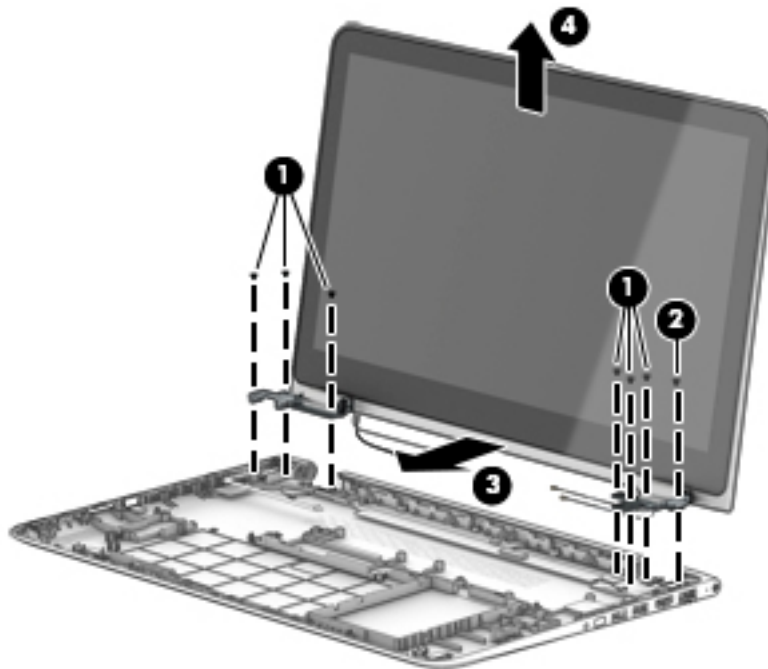
1. Remove the six Phillips PM2.5×4.0 screws **(1)** and the Phillips PM2.0×2.5 screw from the right hinge **(2)** that secures the display assembly to the computer.

---

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

---

2. Pull the display into the computer to remove hinges from computer **(3)**.
3. Separate the display assembly from the computer **(4)**.



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

1. To remove the display enclosure:

---

**NOTE:** The display enclosure is available using spare part number 813023-001.

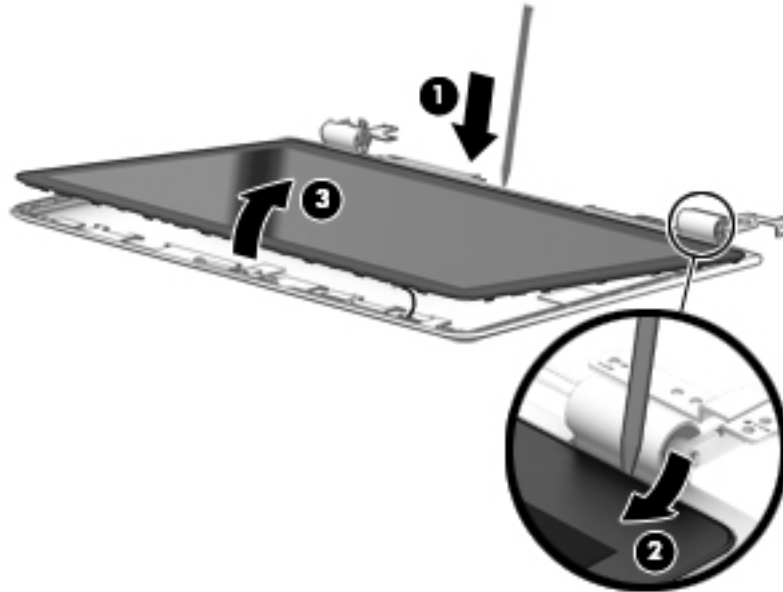
---

- a. Use a thin plastic tool to run along the entire seam of the display to loosen the cover from the display **(1)**.

**⚠ CAUTION:** To avoid damaging the display, be sure to only run the tool in one direction.

- b.** Use a tool at each hinge to pry up on the display to help disengage it **(2)**.
- c.** Separate cover from display **(3)**.

The raw display panel is available using spare part number 807531-001 for HD panels, 807532-001 for FHD panels, and 863978-001 for FHD panels in 15-w200 - 15-w299 models.



- d.** Rotate the display panel upside-down next to the display enclosure **(1)** so you can access the display cable connected to the back of the display panel.


- e. Disconnect the display cable from the back of the display panel by lifting the tape that secures the cable in the connector **(2)**, and then pull the cable out of the connector **(3)**.

The display cable is available using spare part number 809576-001.



2. To remove the webcam module:

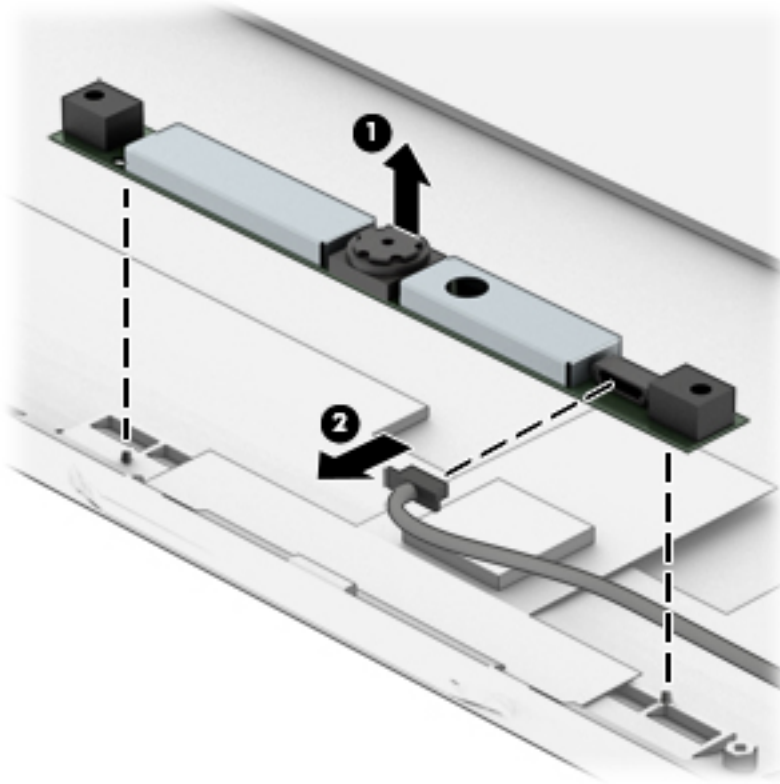
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 **NOTE:** The webcam is available using spare part number 807542-001.

---

- a. Lift the webcam module **(1)** enough to gain access to the cable.

- b.** Disconnect the cable **(2)** from the module.



- 3.** To remove the display hinges:

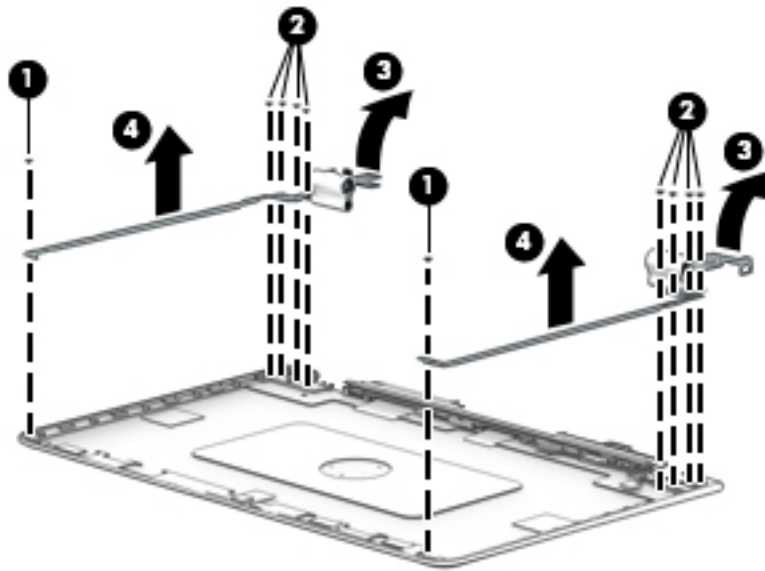
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 **NOTE:** The display hinges are available using spare part number 807525-001.

---

- a.** Position the display enclosure upright.
- b.** Remove the Phillips PM2.0×2.5 screw **(1)** from the top of each hinge and the four broadhead Phillips PM2.5×3.0 screws **(2)** from the bottom of each hinge that secure the hinges to the display.

- c. Rotate the top of the hinges inward so that the hinges are at an angle, **(3)**, and then remove the hinges **(4)**.



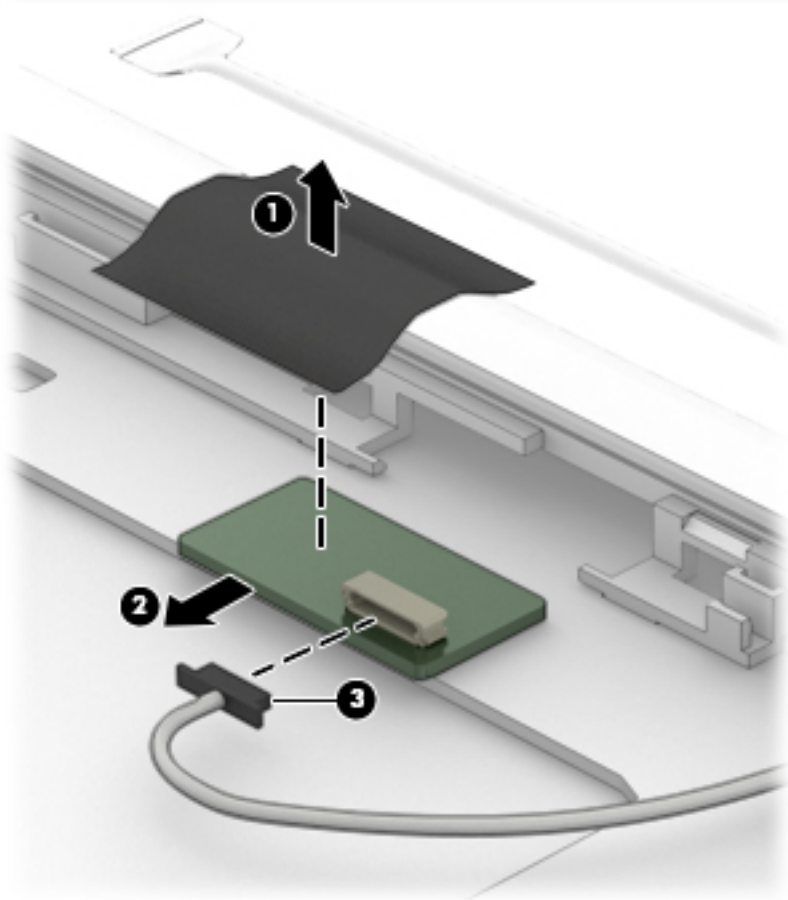
4. To remove the G sensor board:



**NOTE:** The G sensor board is available using spare part number 807530-001.


- a. Pull the tape from atop the G sensor board **(1)**.
- b. Lift the board enough to be able to grasp it **(2)**.

- c. Disconnect the cable from board (3).



5. To remove the display/touch control cable:

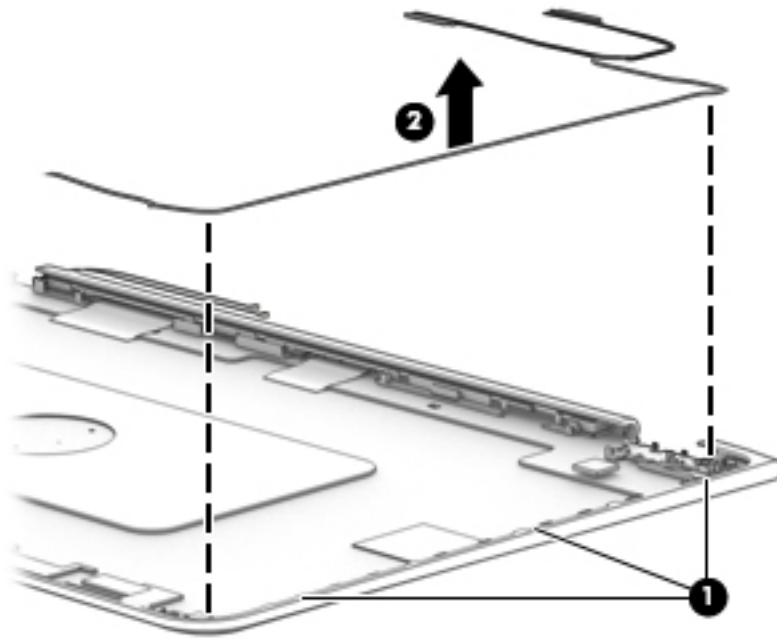
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 **NOTE:** The display/touch control cable is available using spare part number 808240-001 for models with Intel 5th or 6th generation processors and 903810-001 for models with Intel 7th generation processors.

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- ▲ Remove the cable from the clips (1) that secure it to the display enclosure, and then lift the cable from the display enclosure (2).





**6.** To remove the antenna cables:

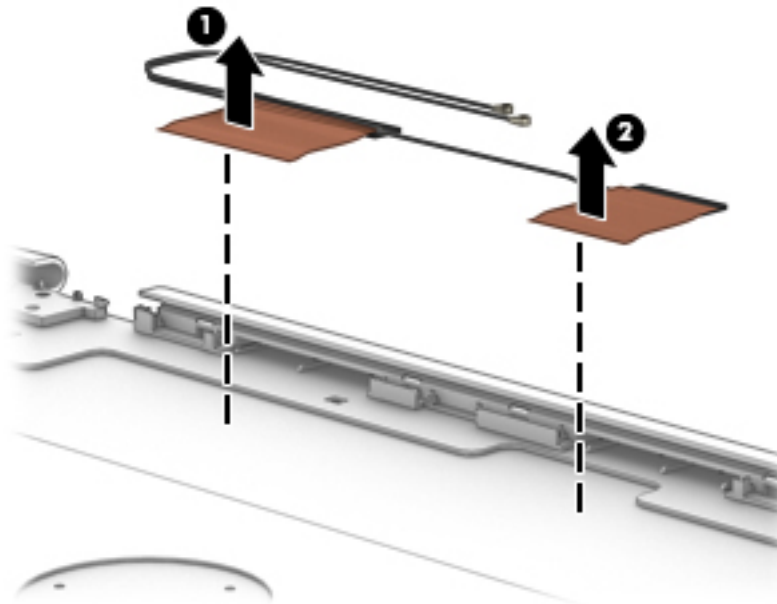


**NOTE:** The left and right antennas are different sizes.


The transceivers are secured to the enclosure with strong adhesive.

The antenna cables are available using spare part number 807519-001.

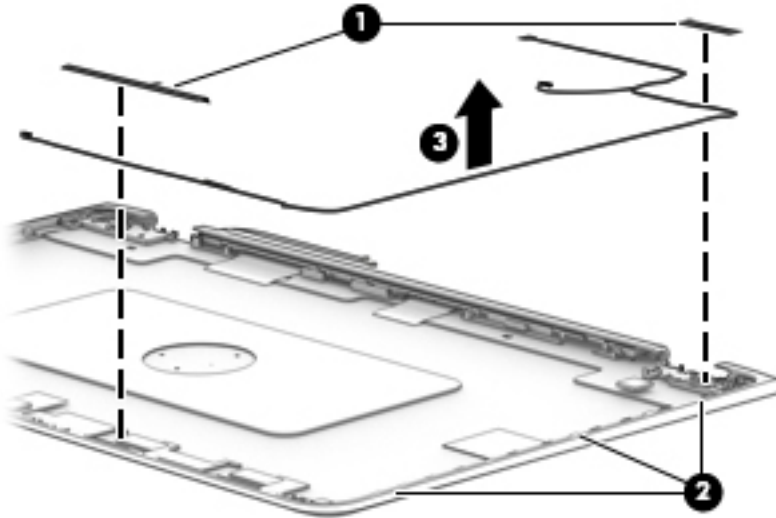
- a. Pull up on the left transceiver to peel it from enclosure **(1)**.
- b. Pull up on the right transceiver to peel it from enclosure **(2)**.



**7.** To remove the webcam/G sensor cable:

 **NOTE:** The webcam/G sensor cable is available using spare part number 807529-001 for models with Intel 5th or 6th generation processors and 903809-001 for models with Intel 7th generation processors.

- a. Pull up the foil where it sits atop the cable **(1)**.
- b. Remove the cable from the clips in the enclosure **(2)**.
- c. Remove the cable from the enclosure **(3)**.



Reverse this procedure to reassemble and install the display assembly.

## Power button board

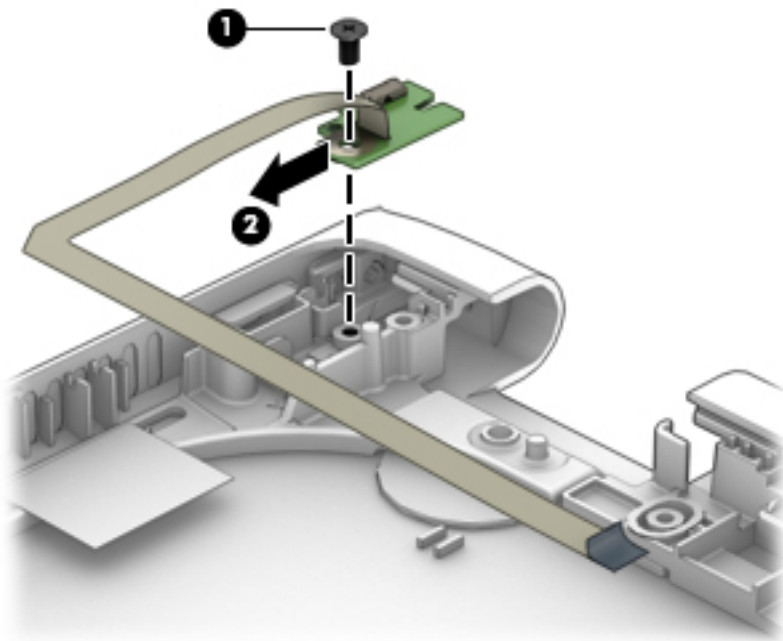
Description	Spare part number
Power button board (includes cable)	807528-001

Before removing the power button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Remove the system board (see [System board on page 39](#)).
6. Remove the display (see [Display assembly subcomponents on page 19](#)).

Remove the power button board:

1. Remove the Phillips PM2.5×3.0 screw **(1)** that secures the power button board to the computer.
2. Remove the power button board and cable **(2)**.



Reverse this procedure to install the power button board.

## Power connector cable

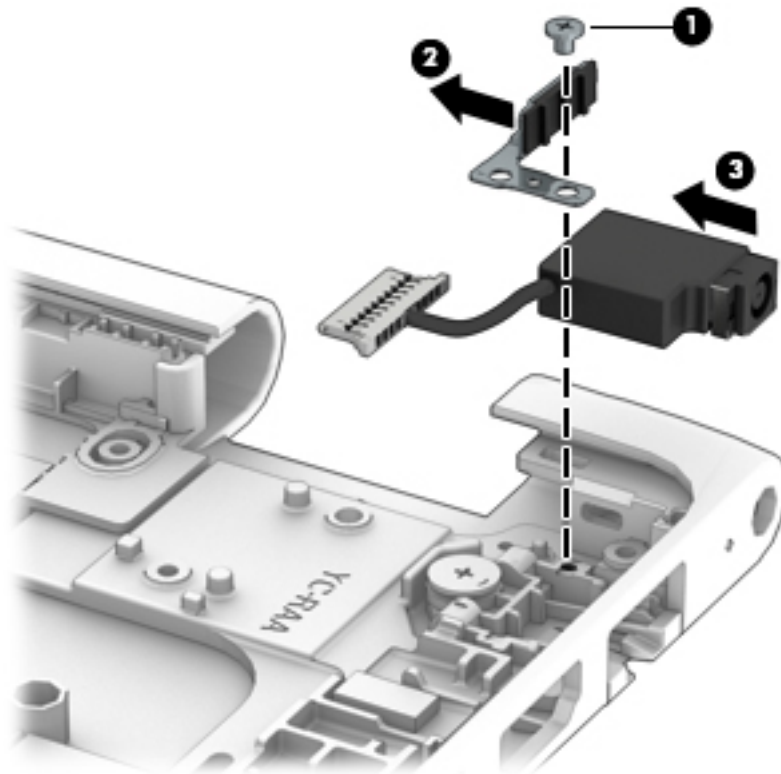
Description	Spare part number
Power connector cable	807522-001

Before removing the power connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 27](#)).
5. Remove the system board (see [System board on page 39](#)).
6. Remove the display (see [Display assembly subcomponents on page 19](#)).

Remove the power connector cable:

1. Remove the Phillips PM2.0×2.0 screw (1) that secures the bracket to the computer.
2. Remove the bracket from the computer (2).
3. Pull the connector out from under the rear corner of the computer (3).



4. Remove the power connector cable.


Reverse this procedure to install the power connector cable.

---

## 6 Using Setup Utility (BIOS) in Windows 8.1

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.


---


 **NOTE:** To start the Setup utility, your computer must be in notebook mode and you must use the keyboard attached to your notebook. The on-screen keyboard which displays in tablet mode cannot access the Setup Utility.

---

### Starting Setup Utility (BIOS)

---

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

 **NOTE:** If your tablet has a keyboard base, connect the tablet to the keyboard base before beginning the steps in this chapter.

---

- Computers or tablets with keyboards:
  - ▲ Turn on or restart the computer, quickly press **esc**, and then press **f10**.
- Tablets without keyboards:
  1. Turn on or restart the tablet, and then quickly hold down the volume down button.  
- or -  
Turn on or restart the tablet, and then quickly hold down the Windows button.
  2. Tap **f10**.

### 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 the one currently installed on the computer, you need to know the version of the system BIOS that is installed.


BIOS version information (also known as *ROM date* and *System BIOS*) can be revealed from the Start screen by typing `support`, selecting the **HP Support Assistant** app, selecting **My computer**, and then selecting **System Information**, or by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 59](#)).
2. Select **Main**, and then make note of your BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

## 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.

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

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.  
– or –  
From the Windows desktop, click the question mark icon in the taskbar area of the Windows desktop.
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.

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

1. From the Start screen, type `file`, and then select **File Explorer**.  
– or –  
From the Windows desktop, right-click the **Start** button, 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.

---

## Synchronizing a tablet and keyboard (select models only)

When you attach a tablet to the keyboard and restart the computer, the BIOS checks to see if the Embedded Controller firmware on the keyboard needs to be synchronized. If so, BIOS will start the synchronization. If the synchronization is interrupted, a notification screen displays for 10 seconds before the tablet restarts and attempts to synchronize again.




**NOTE:** The Embedded Controller firmware will synchronize **ONLY** if the tablet or keyboard battery is more than 50% charged, or if your tablet is connected to AC power.


---


# 7 Using Setup Utility (BIOS) in Windows 10

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.

 **NOTE:** To start Setup Utility on convertible computers, your computer must be in notebook mode and you must use the keyboard attached to your notebook. The on-screen keyboard, which displays in tablet mode, cannot access Setup Utility.

## Starting Setup Utility (BIOS)

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

 **NOTE:** To start Setup Utility on convertible computers, your computer must be in notebook mode and you must use the keyboard attached to your notebook. The on-screen keyboard, which displays in tablet mode, cannot access Setup Utility.

- Computers or tablets with keyboards:
  - ▲ Turn on or restart the computer, quickly press **esc**, and then press **f10**.
- Tablets without keyboards:
  1. Turn on or restart the tablet, and then quickly hold down the volume down button.  
- or -  
Turn on or restart the tablet, and then quickly hold down the Windows button.
  2. Tap **f10**.

## Updating Setup Utility (BIOS)

Updated versions of Setup Utility (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 decide whether you need to update Setup Utility (BIOS), first determine the BIOS version on your computer.

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*):

1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

- or -



- Click the question mark icon in the taskbar.
2. Select **My PC**, and then select **Specifications**.

– or –


- ▲ Use Setup Utility (BIOS).

To use Setup Utility (BIOS):


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 62](#)).
2. Select **Main**, select System Information, and then make note of the BIOS version.
3. Select **Exit**, select **No**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 63](#).

## 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.

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

1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

– or –

Click the question mark icon in the taskbar.

2. Click **Updates**, and then click **Check for updates and messages**.
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 version, 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.

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

1. Type `file` in the taskbar search box, 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 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.

---

## Synchronizing a tablet and keyboard (select products only)

For a tablet with a detachable keyboard, when you attach the tablet to the keyboard and restart the computer, Setup Utility (BIOS) checks to see if the Embedded Controller firmware on the keyboard needs to be synchronized. If so, synchronization begins. If the synchronization is interrupted, a notification screen displays for 10 seconds before the tablet restarts and attempts to synchronize again.



---


**NOTE:** The Embedded Controller firmware will synchronize **ONLY** if the tablet or keyboard battery is more than 50% charged, or if your tablet is connected to AC power.

---

# 8 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.

---

 **NOTE:** To start BIOS on a convertible computer, your computer must be in notebook mode and you must use the keyboard attached to your tablet. The on-screen keyboard, which displays in tablet mode, cannot access BIOS.

---

To start HP PC Hardware Diagnostics UEFI:

1. Start BIOS:
  - Computers or tablets with keyboards:
    - ▲ Turn on or restart the computer, quickly press **esc**.
  - Tablets without keyboards:
    - ▲ Turn on or restart the tablet, and then quickly hold down the volume down button.
    - or -
    - Turn on or restart the tablet, and then quickly hold down the Windows button.

2. Press or tap **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 66](#).

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- b. Hard drive
- c. BIOS

3. When the diagnostic tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions. On a tablet, press the volume down button to stop a diagnostic test.

---

 **NOTE:** If you need to stop a diagnostic test on computers or tablets with a keyboard, press **esc**.

---

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

There are two options to download HP PC Hardware Diagnostics to a USB device:

## Download the latest UEFI version:

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. In the HP PC Hardware Diagnostics section, click the **Download** link, and then select **Run**.

## Download any version of UEFI for a specific product:

1. Go to <http://www.hp.com/support>, and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.
3. In the text box, enter the product name, and then click **Go**.

– or –

Click **Find Now** to let HP automatically detect your product.

4. Select your computer, and then select your operating system.
5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

---

# 9 Backing up, restoring, and recovering in Windows 8.1

This chapter provides information about the following processes. The information in the chapter is standard procedure for most models.

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

For additional information, refer to Help and Support.

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

## Creating recovery media and backups

The following methods of creating recovery media and backups are available on select models only. Choose the available method according to your computer model.


- Use HP Recovery Manager after you successfully set up the computer to 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. For information on creating recovery media, see [Creating HP Recovery media \(select models only\) on page 67](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 69](#).
- Use Windows tools to create system restore points and create backups of personal information. For more information, see [Using Windows tools on page 68](#).

---

 **NOTE:** If storage is 32 GB or less, Microsoft System Restore is disabled by default.

---

## Creating HP Recovery media (select models only)

 **IMPORTANT:** If your computer does not list a Create recovery media option, 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.

---

HP Recovery Manager is a software program that allows you 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 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 media 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 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 with a detachable keyboard, connect the keyboard 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 **Create recovery media**, and then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 69](#).

## Using Windows tools

You can create system restore points and create backups of personal information using Windows tools.

---

 **NOTE:** If storage is 32 GB or less, Microsoft System Restore is disabled by default. For more information and steps, see Help and Support.

---

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

## Restore and recovery

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

---

 **IMPORTANT:** Not all methods are available on all models.

---

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

- On select models, if you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition or HP Recovery media. Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in the image continue to be available for installation through the Reinstall drivers and/or applications option in HP Recovery Manager.

For more information, see [Recovering using HP Recovery Manager on page 69](#).

- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 69](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 67](#).
- On select models, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 69](#).
- On select models, if you want 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 \(select models only\) on page 71](#).

## 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 either created or that you obtained from support, or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 67](#).

### What you need to know before you get started

- 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.



**IMPORTANT:** 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 \(select models only\) on page 67](#).
- To use the Factory Reset option (select models only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 67](#).
- If your computer does not allow the creation of HP Recovery media or 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.



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

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



**NOTE:** Only the options available for your computer display when you start the recovery process.

- 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 (select models only).

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

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

To start HP Recovery Manager from the HP Recovery partition:

---

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

---

1. From the Start screen, type `recovery`, select **Recovery Manager**, and then select **HP Recovery Environment**.

- or -

Press **f11** while the computer boots, or press and hold **f11** as you press the power button.

2. Select **Troubleshoot** from the boot options menu.
3. Select **Recovery Manager**, and 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, 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 70](#).

---


3. Follow the on-screen instructions.

## Changing the computer boot order

If your 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:

---

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

---



1. Insert the HP Recovery media.
2. Start Computer Setup:

For computers or tablets with keyboards attached:

- ▲ Turn on or restart the computer or tablet, quickly press **esc**, and then press **f9** for boot options.

For computers or tablets without keyboards attached:

- ▲ Turn on or restart the computer, quickly press the volume down button, and then tap **f9** for boot options.

- or -

Turn on or restart the computer, quickly press the Windows button, and then tap **f9** for boot options.

3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

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

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 or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select models only\) on page 67](#).

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 10

This chapter provides information about the following processes. The information in the chapter is standard procedure for most products.

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

For additional information, refer to the HP support assistant app.

▲ Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

– or –

Click the question mark icon in the taskbar.



**IMPORTANT:** If you will be performing recovery procedures on a tablet, the tablet battery must be at least 70% charged before you start the recovery process.

**IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning any recovery process.

---

## Creating recovery media and backups

The following methods of creating recovery media and backups are available on select products only. Choose the available method according to your computer model.

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. 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. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 72](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 73](#).

- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Recovering using HP Recovery Manager on page 74](#).



**NOTE:** If storage is 32 GB or less, Microsoft System Restore is disabled by default.

---

## Creating HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. From the **Start** menu, select **File Explorer**, and then select **This PC**.


- If your computer does not list the Windows partition and the Recovery partition, 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 on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 73](#).

- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager 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 software programs that were 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 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 media 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. 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. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
  - Be sure that the computer is connected to AC power before you begin creating the recovery media.
  - The creation process can take 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.

To create HP Recovery media:

---

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning these steps.

---

1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Create recovery media**, and then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 74](#).

## Using Windows tools

You can create recovery media, system restore points, and backups of personal information using Windows tools.

---

 **NOTE:** If storage is 32 GB or less, Microsoft System Restore is disabled by default.

---

For more information and steps, see the Get started app.

- ▲ Select the **Start** button, and then select the **Get started** app.

## Restore and recovery

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



---

**IMPORTANT:** Not all methods are available on all products.

---

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
  - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
  - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 74](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 72](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 74](#).
- On select products, if you want 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 \(select products only\) on page 76](#).

## 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 either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 72](#).

### What you need to know before you get started

- 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.



---


**IMPORTANT:** 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 \(select products only\) on page 72](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 72](#).
- If your computer does not allow the creation of HP Recovery media or 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.

---

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

---

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

---

 **NOTE:** Only the options available for your computer display when you start the recovery process.

---

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- 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 products only) allows System Recovery only.

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

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

To start HP Recovery Manager from the HP Recovery partition:

---

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning these steps (select products only).

---

1. Type `recovery` in the taskbar search box, select **Recovery Manager**, and then select **HP Recovery Environment**.

- or -

For computers or tablets with keyboards attached, press **f11** while the computer boots, or press and hold **f11** as you press the power button.

For tablets without keyboards:

Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f11**.

- or -

Turn on or restart the tablet, and then quickly hold down the Windows button; then select **f11**.

2. Select **Troubleshoot** from the boot options menu.
3. 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, 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 76](#).

---


3. Follow the on-screen instructions.

## Changing the computer boot order

If your 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 to an optical drive or a USB flash drive.

To change the boot order:

---

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning these steps.

---

1. Insert the HP Recovery media.
2. Access BIOS:

For computers or tablets with keyboards attached:

- ▲ Turn on or restart the computer or tablet, quickly press **esc**, and then press **f9** for boot options.

For tablets without keyboards:

- ▲ Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f9**.

- or -


Turn on or restart the tablet, and then quickly hold down the Windows button; then select **f9**.

3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.


## Removing the HP Recovery partition (select products only)

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 will not be able to perform System Recovery or create HP recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select products only\) on page 72](#).

---

 **NOTE:** The Remove Recovery Partition option is only available on products that support this function.

---

Follow these steps to remove the HP Recovery partition:

1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.

# 11 Specifications

## Computer specifications

	Metric	U.S.
<b>Dimensions: tablet</b>		
Width	<b>382 mm</b>	15.04 in
Depth	<b>250 mm</b>	9.84 in
Height	<b>23.9 mm</b>	0.94 in
Weight (with hard drive)	<b>2339 g</b>	5.16 lb
Weight (with solid-state drive)	<b>2249 g</b>	4.96 lb
<b>Input power</b>		
Operating voltage and current	19.5 V dc @ 2.31 A - 45 W	
	19.5 V dc @ 3.33 A - 65 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

	Metric	U.S.
<b>Dimensions</b>		
Height	359.5 mm	14.15 in
Vertical	207.7 mm	8.18 in
Depth	3.2 mm	0.13 in
Diagonal	39.6-cm	15.6-in
Weight	320 g	0.71 lbs
<b>Color depth</b>	6 bit, 262,144 colors	
<b>Luminance, white</b>	250 cd/m	
<b>Brightness</b>	220 nits (typical)	
<b>Pixel resolution</b>		
Pitch	0.17925 mm × 0.17925 mm	
Format	1920 × 1080	
Configuration	RGB strip	
<b>Backlight</b>	LED	
<b>Surface treatment</b>	Anti glare	
<b>Total power consumption</b>	6.0 W (Typ); Logic 1.5 W, B/L 4.5 W	
<b>Viewing angle</b>	80°	



## Hard drive specifications

	1-TB, 5400-rpm*	500-GB, 5400-rpm*	750-GB, 5400-rpm*
<b>Dimensions</b>			
Height	7.0 mm	7.0 mm	7.0 mm
Length	100.4 mm	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm	69.9 mm
Weight	110 g	110 g	110 g
<b>Interface type</b>	SATA	SATA	SATA
<b>Transfer rate</b> (synchronous, maximum)	1.2 GB/sec	1.1 GB/sec	1.1 GB/sec
<b>Security</b>	ATA security	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)			
Single track	3 ms	1.5 ms	2 ms
Average (read/write)	13 ms	11/13 ms	14 ms
Maximum	24 ms	22 ms	26 ms
<b>Logical blocks</b>	1,953,525,168	976,773,168	1,465,822,484
<b>Disk rotational speed</b>	5400 rpm	5400 rpm	5400 rpm
<b>Operating temperature</b>	0°C to 60°C (32°F to 140°F)	0°C to 60°C (32°F to 140°F)	0°C to 60°C (32°F to 140°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.			
<b>NOTE:</b> Certain restrictions and exclusions apply. Contact technical support for details.			

## Hard drive specifications, hybrid drives

500-GB*, 8 GB NAND hybrid SSD	
<b>Dimensions</b>	
Height	5 mm
Length	100.2 mm
Width	69.9 mm
Weight	70.0 g
<b>Form Factor</b>	2.5 inch
<b>NAND flash memory</b>	8 GB
<b>Average seek time</b>	12 ms
<b>Formatted capacity</b>	500,107 MB
<b>User sectors per drive</b>	976,773,168
<b>Disk rotational speed</b>	5400 rpm
<b>Operating temperature</b>	<b>0°C to 60°C</b> (32°F to 140°F)
*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.	

# 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 **1.0 m** (3.3 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 A and a nominal voltage rating of 125 or 250 V ac, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

## Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Argentina	IRAM	1
Australia	SAA	1
Austria	OVE	1
Belgium	CEBEC	1
Brazil	ABNT	1
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	ISI	1
Israel	SII	1
Italy	IMQ	1

Country/region	Accredited agency	Applicable note number
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, 0.75-mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm<sup>2</sup> or 1.25-mm<sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F 3X0.75-mm<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.
6. The flexible cord must be Type HVCTF 3×1.25-mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3×0.75-/1.00-mm<sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.

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## 13 Recycling

When a non-rechargeable or rechargeable battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

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

# Index

## A

- AC adapter 5
- action keys
  - identifying 11
- antenna cable
  - removing 55
- antennas
  - illustrated 19
- audio, product description 2
- audio-out (headphone)/audio-in (microphone) jack, identifying 4

## B

- backups 67, 72
- battery
  - illustrated 17
  - lights 5
  - removal 47
  - spare part number 47

## BIOS

- determining version 59, 62
- downloading an update 60, 63
- starting the Setup Utility 59, 62
- updating 59, 62

Bluetooth label 13

boot order

- changing 70, 76

bottom 13

bottom cover

- illustrated 17

buttons

- left TouchPad 9
- power 5
- right TouchPad 9

## C

- cables, service considerations 22
- caps lock light, identifying 10
- chipset, product description 1
- components
  - bottom 11
  - display 7
  - left side 5
  - right side 4
  - top 9

computer major components,

illustrated 14

computer specifications 77

connector, power 5

connectors, service considerations 22

## D

diskette drive

precautions 23

display

specifications 78

display assembly

illustrated 15

removing 49

spare part numbers 15

display assembly subcomponents

illustrated 19

removing 49

display bezel

removing 49

display cable

illustrated 19

removing 54

display enclosure

illustrated 19

display hinge

removing 52

display panel

illustrated 19

product description 1

drives

preventing damage 23

## E

electrostatic discharge 23

esc key, identifying 10

Ethernet, product description 2

external media cards 3

## F

fn key, identifying 11

## G

G sensor board

illustrated 19

removing 53

graphics, product description 1

grounding equipment and methods 25

## H

hard drive

illustrated 16, 21

precautions 23

product description 2

removal 30

spare part numbers 30

specifications 79, 80

hard drive bracket

removal 31

hard drive connector cable

removal 31

Hard Drive Hardware Kit

contents 30

spare part number 30

Hard drive hardware kit

illustrated 21

hard drive light 6

HDMI port

identifying 5

heat sink

removal 44

spare part number 44

heat sink assembly

illustrated 16

removing 16

hinge

removing 52

hinges

illustrated 19

HP PC Hardware Diagnostics (UEFI)

using 65

HP Recovery Manager

correcting boot problems 70, 76

starting 70, 75

- HP Recovery media
  - creating 67, 72
  - recovery 70, 75
- HP Recovery partition
  - recovery 70, 75
  - removing 71, 76
- I**
- integrated numeric keypad, identifying 11
- internal card expansion 3
- internal display switch, identifying 7
- internal microphones, identifying 7
- J**
- jacks
  - audio-out (headphone)/audio-in (microphone) 4
  - network 5
  - RJ-45 (network) 5
- K**
- keyboard
  - illustrated 15
  - product description 3
- keys
  - action 11
  - esc 10
  - fn 11
  - Windows 11
- L**
- labels
  - Bluetooth 13
  - Microsoft Certificate of Authenticity 12
  - regulatory 13
  - serial number 12
  - service 12
  - wireless certification 13
  - WLAN 13
- lights
  - AC adapter 5
  - battery 5
  - caps lock 10
  - hard drive 6
  - mute 10
  - RJ-45 (network) status 5
- M**
- mass storage devices
  - illustrated 21
- memory card reader, identifying 6
- memory card, identifying 6
- memory module
  - illustrated 16
  - product description 2
  - removing 42
- microphone
  - product description 2
- minimized image recovery 70, 75
- minimized image, creating 69, 74
- model name 1
- mute light, identifying 10
- N**
- network jack, identifying 5
- num lock key, identifying 11
- O**
- operating system 3
- optical drive
  - illustrated 16, 21
  - precautions 23
  - product description 2
- original system recovery 69, 74
- P**
- packing guidelines 24
- plastic parts 22
- pointing device 3
- ports
  - HDMI 5
  - product description 3
  - USB 2.0 6
  - USB 3.0 4
  - USB 3.0 charging 5
- power button board
  - illustrated 16
  - removal 57
  - spare part number 57
- power button, identifying 5
- power connector cable
  - illustrated 17
  - removal 58
  - spare part number 58
- power connector, identifying 5
- power cord
  - set requirements 81
- power requirements 3
- processor
  - product description 1
- product description
  - audio 2
  - chipset 1
  - display panel 1
  - Ethernet 2
  - external media cards 3
  - graphics 1
  - hard drive 2
  - internal card expansion 3
  - keyboard 3
  - memory module 2
  - microphone 2
  - operating system 3
  - optical drive 2
  - pointing device 3
  - ports 3
  - power requirements 3
  - processor 1
  - product name 1
  - security 3
  - sensors 2
  - serviceability 3
  - video 2
  - wireless 2
- product name 1
- product name and number, computer 12
- R**
- recover
  - options 68, 74
- recovery
  - discs 68, 70, 73, 75
  - HP Recovery Manager 69, 74
  - media 70, 75
  - starting 70, 75
  - supported discs 68, 73
  - system 69, 74
  - USB flash drive 70, 75
  - using HP Recovery media 68, 73
- recovery media
  - creating 67, 72
  - creating using HP Recovery Manager 68, 73
- recovery partition
  - removing 71, 76

- regulatory information
  - regulatory label 13
  - wireless certification labels 13
- removal/replacement
  - procedures 26
- RJ-45 (network) jack, identifying 5
- RJ-45 (network) status lights, identifying 5
- RTC battery
  - spare part number 17
- Rubber Kit
  - illustrated 20
- S**
- screw covers
  - illustrated 20
- security cable slot, identifying 6
- security, product description 3
- sensors, product description 2
- serial number 12
- serial number, computer 12
- service considerations 22
- service labels, locating 12
- serviceability, product description 3
- slots
  - memory card reader 6
  - security cable 6
- solid-state drive
  - removal 32
  - spare part numbers 32
- Speaker Kit, spare part number 35
- speakers
  - identifying 11
  - illustrated 17
  - removal 35
  - spare part number 35
- specifications
  - computer 77
  - display 78
  - hard drive 79, 80
- SSD
  - illustrated 21
- static-shielding materials 25
- supported discs, recovery 68, 73
- system board
  - removal 39
  - spare part number 15
  - spare part numbers 39
- system recovery 69, 74
- system restore point
  - creating 68, 73
- system restore point, creating 67, 72
- T**
- tools required 22
- top cover
  - illustrated 15
  - removal 27
  - spare part number 27
- TouchPad
  - buttons 9
- TouchPad zone, identifying 9
- transporting guidelines 24
- traveling with the computer 13
- U**
- USB 2.0 port, identifying 6
- USB 3.0 ports, identifying 4, 5
- USB board
  - removing 37
  - spare part number 16, 37
- V**
- vent, identifying 6
- vents, identifying 11
- video, product description 2
- volume button, identifying 6
- W**
- webcam
  - identifying 7
- webcam light, identifying 7
- webcam/microphone module
  - illustrated 19
  - removing 51
- Windows
  - system restore point 67, 68, 72, 73
- Windows key, identifying 11
- Windows tools
  - using 68, 73
- wireless antennas
  - illustrated 19
- wireless certification label 13
- wireless, product description 2
- WLAN antennas, identifying 7
- WLAN device 13
- WLAN label 13
- WLAN module
  - illustrated 16
  - removal 34
  - spare part numbers 34
  - workstation guidelines 24