



**HP ENVY Notebook (model numbers used:  
14-j000 through 14-j099)**

**Maintenance and Service Guide**

© Copyright 2015 Hewlett-Packard  
Development Company, L.P.

Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel, Celeron, and Core are trademarks of Intel Corporation in the U.S. and other countries. Microsoft and Windows are U.S. registered trademarks of the Microsoft group of companies.

#### **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 10 or Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 10 or Windows 8 functionality. See <http://www.microsoft.com> for details.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Second Edition: September 2015

First Edition: June 2015

Document Part Number: 807023-002

## Important Notice about Customer Self-Repair Parts

---

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

---



## Safety warning notice

---

 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

---



---

# Table of contents

<b>1 Product description .....</b>	<b>1</b>
<b>2 External component identification .....</b>	<b>4</b>
Display .....	4
Buttons, speakers, and fingerprint reader .....	5
Keys .....	7
Lights .....	8
TouchPad .....	9
Front .....	9
Left side .....	10
Right side .....	12
Bottom .....	13
Labels .....	14
<b>3 Illustrated parts catalog .....</b>	<b>16</b>
Computer major components .....	16
Display assembly subcomponents .....	21
Miscellaneous parts .....	22
<b>4 Removal and replacement procedures preliminary requirements .....</b>	<b>23</b>
Tools required .....	23
Service considerations .....	23
Plastic parts .....	23
Cables and connectors .....	24
Drive handling .....	24
Grounding guidelines .....	25
Electrostatic discharge damage .....	25
Packaging and transporting guidelines .....	26
Workstation guidelines .....	26
Equipment guidelines .....	27
<b>5 Removal and replacement procedures for Customer Self-Repair parts .....</b>	<b>28</b>
Component replacement procedures .....	28
Bottom cover .....	28
Hard drive .....	30
WLAN module .....	32

Memory module .....	34
<b>6 Removal and replacement procedures for Authorized Service Provider parts .....</b>	<b>36</b>
Component replacement procedures .....	36
Front speakers .....	36
Battery .....	38
TouchPad board .....	39
RTC battery .....	42
Fingerprint reader board .....	43
Subwoofer .....	46
Fan .....	47
RJ45 cover .....	49
Security cable slot bracket .....	51
System board .....	52
Heat sink .....	56
Left speaker .....	59
Card reader board .....	60
Power connector cable .....	61
Display assembly .....	62
<b>7 Using Setup Utility (BIOS) – Windows 10 .....</b>	<b>71</b>
Starting Setup Utility (BIOS) .....	71
Updating Setup Utility (BIOS) .....	71
Determining the BIOS version .....	72
Downloading a BIOS update .....	72
Synchronizing a tablet and keyboard (select products only) .....	73
<b>8 Using HP PC Hardware Diagnostics (UEFI) – Windows 10 .....</b>	<b>74</b>
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device .....	75
<b>9 Using Setup Utility (BIOS) – Windows 8 .....</b>	<b>76</b>
Starting Setup Utility (BIOS) .....	76
Updating Setup Utility (BIOS) .....	76
Determining the BIOS version .....	76
Downloading a BIOS update .....	77
<b>10 Using HP PC Hardware Diagnostics (UEFI) – Windows 8 .....</b>	<b>78</b>
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device .....	78

<b>11 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) – Windows 7 .....</b>	<b>79</b>
Starting Setup Utility (BIOS) .....	79
Updating the BIOS .....	79
Determining the BIOS version .....	79
Downloading a BIOS update .....	80
Using HP PC Hardware Diagnostics (UEFI) .....	80
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device .....	81
<b>12 Specifications .....</b>	<b>82</b>
Computer specifications .....	82
<b>13 Backing up, restoring, and recovering – Windows 10 .....</b>	<b>83</b>
Creating recovery media and backups .....	83
Creating HP Recovery media (select products only) .....	84
Using Windows Tools .....	85
Restore and recovery .....	85
Recovering using HP Recovery Manager .....	86
What you need to know before you get started .....	86
Using the HP Recovery partition (select products only) .....	87
Using HP Recovery media to recover .....	87
Changing the computer boot order .....	88
Removing the HP Recovery partition (select products only) .....	88
<b>14 Backing up, restoring, and recovering – Windows 8 .....</b>	<b>89</b>
Creating recovery media and backups .....	89
Creating HP Recovery media (select models only) .....	89
Using Windows tools .....	90
Restore and recovery .....	90
Recovering using HP Recovery Manager .....	91
What you need to know before you get started .....	91
Using the HP Recovery partition (select models only) .....	92
Using HP Recovery media to recover .....	92
Changing the computer boot order .....	92
Removing the HP Recovery partition (select models only) .....	93
<b>15 Backing up, restoring, and recovering – Windows 7 .....</b>	<b>94</b>
Creating backups .....	94
Creating recovery media to recover the original system .....	94
What you need to know .....	94
Creating the recovery media .....	95

Creating system restore points .....	95
What you need to know .....	95
Creating a system restore point .....	95
Backing up system and personal information .....	95
Tips for a successful backup .....	96
What you need to know .....	96
Creating a backup using Windows Backup and Restore .....	96
Restore and recovery .....	97
Restoring to a previous system restore point .....	97
Restoring specific files .....	97
Restoring specific files using Windows Backup and Restore .....	97
Recovering the original system using HP Recovery Manager .....	97
What you need to know .....	97
Recovering using HP Recovery partition (select models only) .....	98
Recovering using the recovery media .....	98
Changing the computer boot order .....	98
<b>16 Power cord set requirements .....</b>	<b>100</b>
Requirements for all countries .....	100
Requirements for specific countries and regions .....	101
<b>17 Recycling .....</b>	<b>103</b>
<b>Index .....</b>	<b>104</b>

# 1 Product description

Category	Description
<b>Product Name</b>	HP ENVY Notebook (model numbers used: 14-j000 through 14-j099)
<b>Processors</b>	<ul style="list-style-type: none"><li>Intel™ Core® i7-6700HQ 2.60-GHz (SC turbo up to 3.50-GHz) quad core processor (6.0-GB L3 cache, 1600-MHz FSB, 45 W [cTDP to 35 W])</li><li>Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) dual core processor (4.0-GB L3 cache, 1600-MHz FSB, 15 W)</li><li>Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W)</li><li>Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W)</li></ul>
<b>Chipset</b>	Intel integrated processor controller hub (PCH)
<b>Graphics</b>	<p><b>Hybrid graphics:</b></p> <p>nVIDIA® N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory</p> <p>nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 4096-MB or 2048-MB of discrete video memory</p> <p><b>Internal graphics:</b> Intel HD Graphics 5500</p> <p>Support for HD decode, DX11, and HDMI</p> <p>Support for Optimus</p> <p>Support for GPU performance scaling (GPS)</p>
<b>Panel</b>	<p>14.0-in, full high-definition (FHD), white light emitting diode (WLED), AntiGlare (1920×1080), slim (3.0-mm), UVWA/interplane switching (IPS) eDP 1.2 display panel, typical brightness: 250 nits</p> <p>14.0-in, full high-definition FHD, WLED, AntiGlare (1920×1080), slim (3.0-mm), SVA eDP 1.2 display panel, typical brightness: 220 nits</p> <p>14.0-in, high-definition (HD), WLED, AntiGlare (1366×768), flat (3.6-mm), SVA eDP 1.2 display panel, typical brightness: 220 nits</p> <p>16:9 ultra wide aspect ratio</p> <p>Support for low voltage differential signalling (LVDS) on the HD display panel</p>
<b>Memory</b>	<p>Support for one SODIMM customer-accessible/upgradable memory module slot and one on-board 4096-MB system memory</p> <p>Support for DDR3L-1600 dual channel</p> <p>Support for DDR3L-1600 single channel 4096-MB system memory</p> <p>Supports up to 12288 MB in the following dual channel configurations:</p> <ul style="list-style-type: none"><li>12288 MB (8192 MB×1 + 4096-MB on-board system memory)</li><li>8192 MB (4096 MB×1 + 4096-MB on-board system memory)</li></ul>
<b>Hard drive</b>	<p>Supports all 7.0-/9.5-mm, <b>6.35-cm</b> (2.5-in) hard drives (all hard drives use the same bracket)</p> <p>Support for Accelerometer / HDD protection / Cool Sense</p> <p>Support for the following hard drives:</p>

Category	Description
<b>Hard drive</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>• 2-TB, 5400-rpm, 9.5-mm</li> <li>• 1-TB, 5400-rpm, 7.0-mm</li> <li>• 750-GB, 5400-rpm, 7.0-mm</li> <li>• 500-GB, 5400-rpm, 7.0-mm</li> </ul>
<b>Optical drive</b>	External USB DVD±RW Double-Layer SuperMulti Drive 9.5 mm tray load, fixed, serial ATA
<b>Audio and video</b>	<p>Bang and Olufsen quad speakers</p> <p>HP Triple Bass Reflex Subwoofer</p> <p>HP Truevision HD webcam (fixed (no tilt) with activity light; 1280×720 by 30 frames per second</p> <p>Dual digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software</p>
<b>Ethernet</b>	Integrated 10/100/1000 network interface card (NIC)
<b>Wireless</b>	<p>Integrated wireless local area network (WLAN) options with dual antennas (M.2/PCIe)</p> <p>Compatible with Miracast-certified devices</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> <li>• Broadcom BCM943142 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 M.2 Combo Adapter</li> <li>• Intel 3165NGWG ac 1×1 + Bluetooth 4.0 LE PCIe+USB NGFF 2230 Combo Adapter</li> <li>• Intel Dual Band Wireless-AC 7265 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter</li> <li>• Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter</li> </ul>
<b>External media cards</b>	Supports next generation SD (Secure Digital). Backward compatible with SDHC, SDXC.
<b>Ports</b>	<p>AC Smart Pin adapter plug (4.5-mm barrel)</p> <p>Combination audio-out (stereo headphone)/audio-in (mono microphone)</p> <p>RJ-45 (Ethernet)</p> <p>HDMI version 1.4 output supporting 1920×1080 @ 60 Hz</p> <p>USB 3.0 ports (3)</p>
<b>Keyboard/ pointing devices</b>	<p>Full-size, backlit, island-style keyboard</p> <p>HP Control Zone TrackPad</p> <p>Clickpad with image sensor</p> <p>Multitouch gestures enabled</p> <p>Support for Microsoft® Windows® 8 Modern Trackpad Gestures</p> <p>Taps enabled as default</p>
<b>Power requirements</b>	<p><b>Support for the following battery:</b> 3-cell, 55-WHr, 4.56-AHr, Li-ion</p> <p><b>Support for the following AC adapters:</b></p> <ul style="list-style-type: none"> <li>• 120-W AC adapter (PFC, S-3P, 3-wire, 4.5-mm)</li> <li>• 90-W AC adapter (PFC, S-3P, 3-wire, 4.5-mm)</li> <li>• 65-W AC adapter (non-PFC, S-3P, 3-wire, 4.5-mm)</li> <li>• 65-W HP Smart AC adapter (non-PFC, EM, 3-wire, 4.5-mm)</li> </ul>

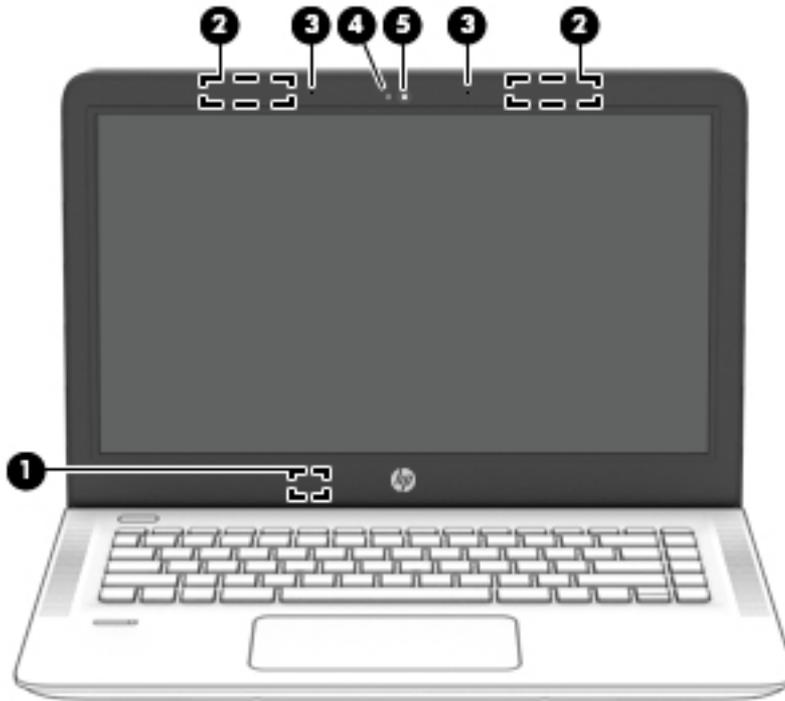
---

<b>Category</b>	<b>Description</b>
<b>Power requirements</b> <i>(operating system)</i>	<ul style="list-style-type: none"><li>• 45-W HP Smart AC adapter (non-PFC, RC, 3-wire, 4.5-mm)</li></ul>
<b>Security</b>	<ul style="list-style-type: none"><li>• Fingerprint reader with software support (HP Simple Pass)</li><li>• Security cable slot</li><li>• Trusted platform module (TPM) 2.0</li></ul>
<b>Operating system</b>	<ul style="list-style-type: none"><li>• Windows 10</li><li>• Windows 8.1 Home Basic (64-bit, for use only in the People's Republic of China)</li><li>• Windows 8.1 Home High End</li><li>• Windows 8.1 (CPPP, for use only in the People's Republic of China)</li><li>• Windows 7 Professional (64-bit)</li></ul>
<b>Serviceability</b>	<b>End-user replaceable parts:</b> <ul style="list-style-type: none"><li>• AC adapter</li><li>• Battery</li><li>• Hard drive</li><li>• Memory module</li><li>• WLAN module</li></ul>

---

## 2 External component identification

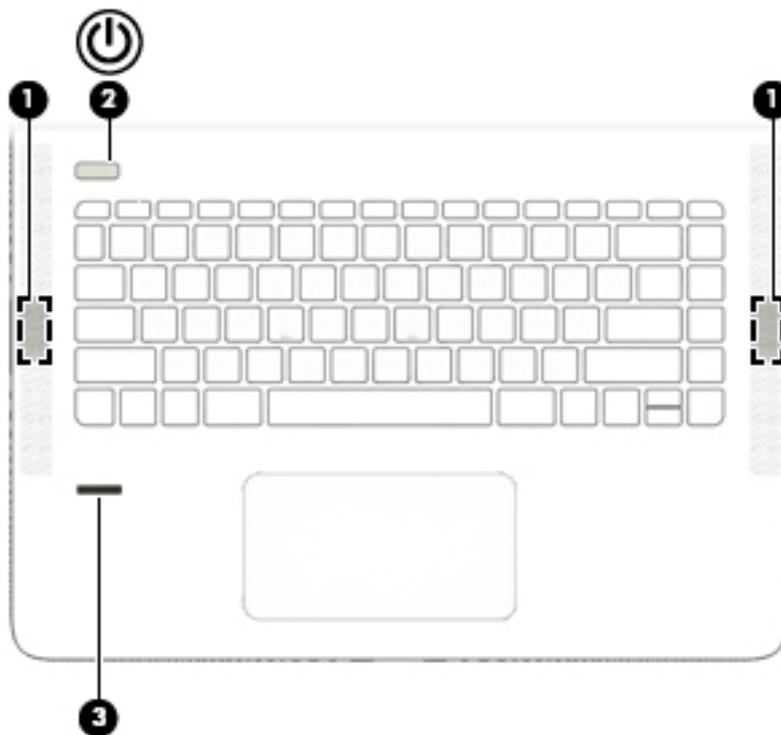
### Display



Item	Component	Description
(1)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. <b>NOTE:</b> The internal display switch is not visible from the outside of the computer.
(2)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(3)	Internal microphones (2)	Record sound.
(4)	Webcam light	On: The webcam is in use.
(5)	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 10</b> – Type <code>camera</code> in the taskbar search box, and then select <b>Camera</b>.</li><li>• <b>Windows 8</b> – Access HP Support Assistant. To access HP Support Assistant on the Start screen, select the <b>HP Support Assistant</b> app.</li></ul>

Item	Component	Description
		<ul style="list-style-type: none"> <li><b>Windows 7</b> – Select <b>Start &gt; All Programs &gt; Communication and Chat &gt; HP WebCam</b>.</li> </ul>
<p><b>NOTE:</b> 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 <i>Regulatory, Safety, and Environmental Notices</i> that applies to your country or region.</p> <p>To access this document:</p> <p><b>Windows 10:</b></p> <p>Select the <b>Start</b> button, select <b>All apps</b>, select <b>HP Help and Support</b>, and then select <b>HP Documentation</b>.</p> <p><b>Windows 8 or Windows 7:</b></p> <p>▲ Select the <b>HP Support Assistant</b> app on the Start screen, select <b>My computer</b>, and then select <b>User guides</b>.</p>		

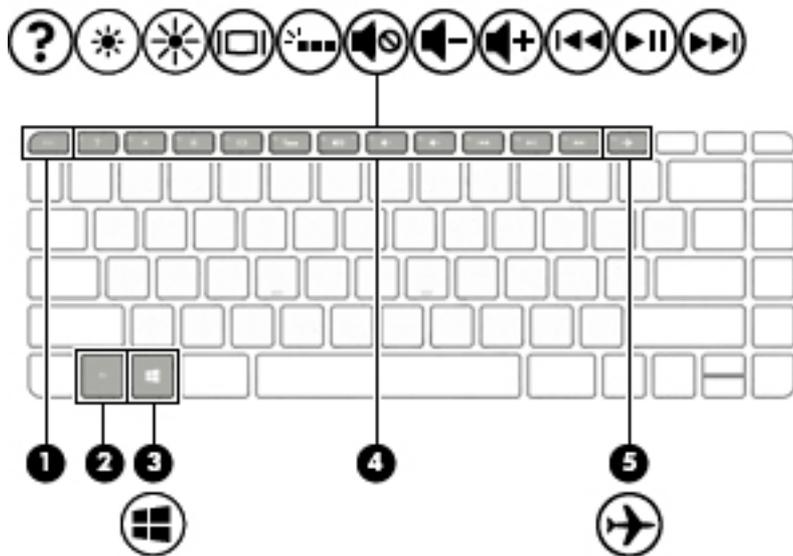
## Buttons, speakers, and fingerprint reader



Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	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>

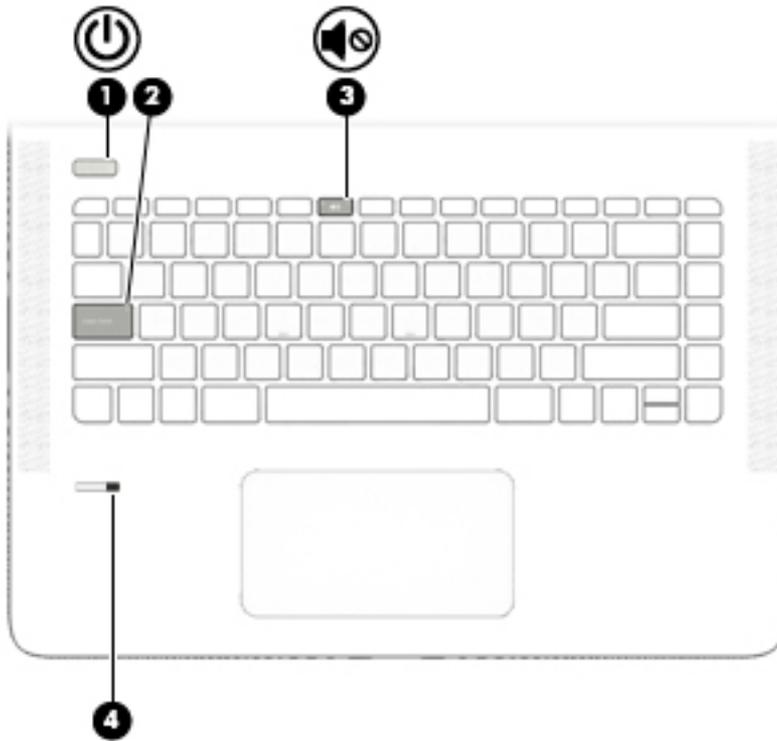
Item	Component	Description
(3)	Fingerprint reader	<p><b>CAUTION:</b> Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings:</p> <p><b>Windows 10:</b> Type <code>power</code> in the taskbar search box, and then select <b>Power and sleep settings</b>.</p> <p>– or –</p> <p>Right-click the <b>Start</b> button, and then select <b>Power Options</b>.</p> <p><b>Windows 8:</b> See your power options. From the Start screen, type <code>power</code>, select <b>Settings</b>, and then select <b>Power Options</b>.</p> <p><b>Windows 7:</b> See your power options. Select <b>Start &gt; Control Panel &gt; System and Settings &gt; Power Options</b>.</p> <p><b>Linux:</b></p> <ol style="list-style-type: none"> <li>1. Select <b>Computer &gt; Control Center</b>.</li> <li>2. In the left pane, click <b>System</b>, and then click <b>Power Management</b> in the right pane.</li> </ol> <p>Allows a fingerprint logon to Windows, instead of a password logon.</p>

# Keys



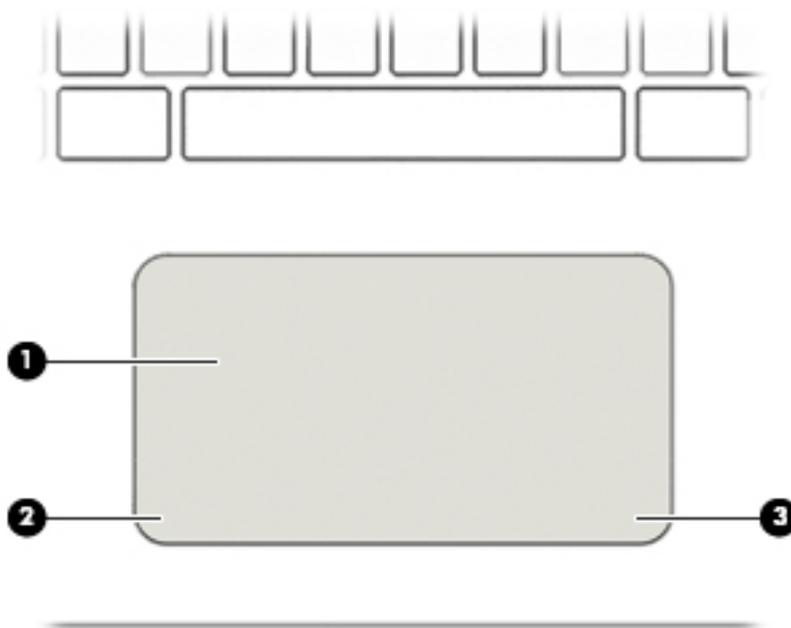
Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the <a href="#">fn</a> key.
(2)	fn key	Displays system information when pressed in combination with the <a href="#">esc</a> key.
(3)	Windows key	Returns you to the Start screen from an open app or the Windows desktop. <b>NOTE:</b> Pressing the Windows key again will return you to the previous screen.
(4)	Action keys	Execute frequently used system functions.
(5)	Airplane mode key (also referred to as the wireless button)	Turns the airplane mode and wireless feature on or off. <b>NOTE:</b> A wireless network must be set up before a wireless connection is possible.

# Lights



Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"><li>• On: The computer is on.</li><li>• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.</li><li>• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.</li></ul>
(2)	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(3)	Mute light	<ul style="list-style-type: none"><li>• Amber: Computer sound is off.</li><li>• Off: Computer sound is on.</li></ul>
(4)	Fingerprint reader light	<ul style="list-style-type: none"><li>• White: The finger swipe was read.</li><li>• Amber: The finger swipe was not read.</li></ul>

## TouchPad



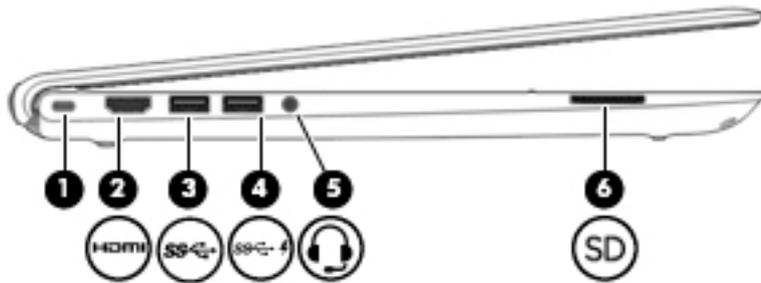
Item	Component	Description
(1)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

## Front



Component	Description
Speakers (2)	Produce sound.

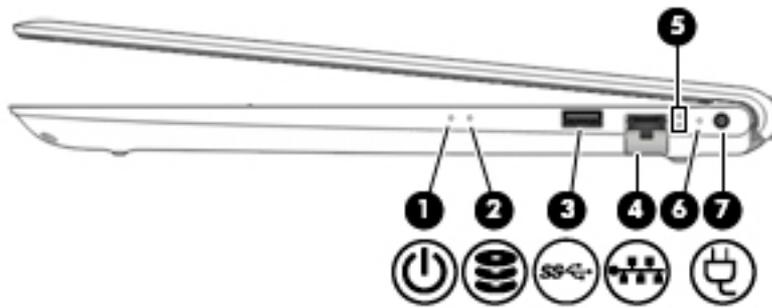
## Left side



Item	Component	Description
(1)	Security cable slot	<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>
(2)	HDMI port	<p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.</p>
(3)	USB 3.0 port	<p>Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
(4)	USB 3.0 charging (powered) port	<p>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.</p> <p><b>NOTE:</b> USB charging ports can also charge select models of cell phones and MP3 players, even when the computer is off.</p>
(5)	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>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> <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 guide:</p> <p><b>Windows 10:</b></p> <p>Select the <b>Start</b> button, select <b>All apps</b>, select <b>HP Help and Support</b>, and then select <b>HP Documentation</b>.</p> <p><b>Windows 8 or Windows 7:</b></p>

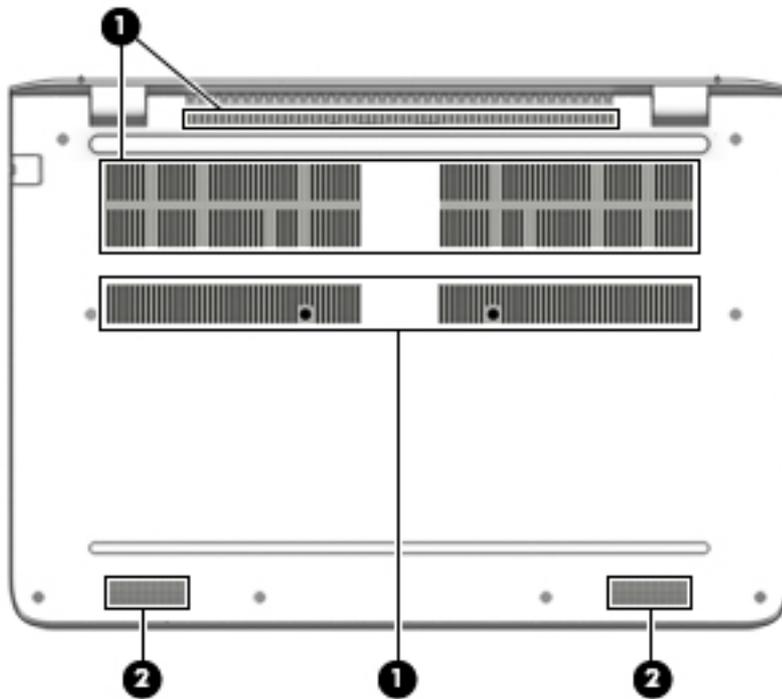
Item	Component	Description
(6)	Memory card reader	<p data-bbox="954 226 1442 300">▲ Select the <b>HP Support Assistant</b> app on the Start screen, select <b>My computer</b>, and then select <b>User guides</b>.</p> <p data-bbox="954 327 1442 380">Reads optional memory cards that enable you to store, manage, share or access information.</p> <p data-bbox="954 407 1098 428">To insert a card:</p> <ol data-bbox="954 447 1442 590" style="list-style-type: none"><li data-bbox="954 447 1442 499">1. Hold the card label-side up, with connectors facing the computer.</li><li data-bbox="954 518 1442 590">2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</li></ol> <p data-bbox="954 617 1114 638">To remove a card:</p> <p data-bbox="954 657 1442 709">▲ Press in on the card, and then remove it from the memory card reader.</p>

## Right side



Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"> <li>On: The computer is on.</li> <li>Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other components.</li> <li>Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.</li> </ul>
(2)	Hard drive light	<ul style="list-style-type: none"> <li>Blinking white: The hard drive is being accessed.</li> <li>Amber: HP 3D DriveGuard (select models only) has temporarily parked the hard drive.</li> </ul>
(3)	USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(4)	RJ-45 (network) jack	Connects a network cable.
(5)	RJ-45 (network) status lights (2)	<ul style="list-style-type: none"> <li>White: The network is connected.</li> <li>Amber: Activity is occurring on the network.</li> </ul>
(6)	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>
(7)	Power connector	Connects an AC adapter.

## Bottom



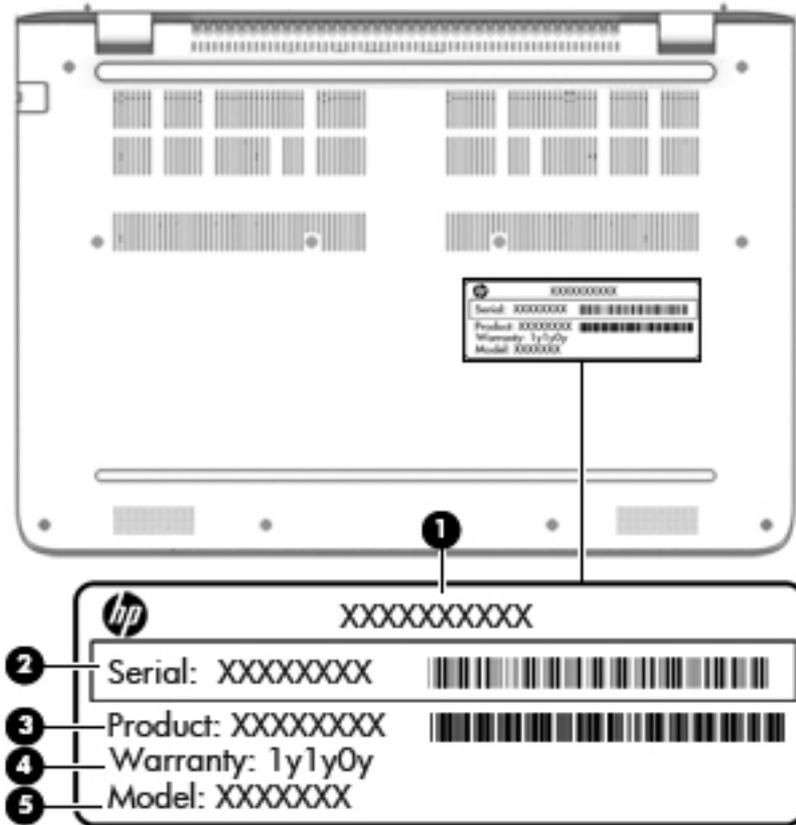
Item	Component	Description
(1)	Vents (5)	Enable airflow to cool internal components. <b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	HP Triple Bass Reflex Subwoofer	Provides superior bass sound.

# Labels

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

 **IMPORTANT:** Check the following locations for the labels described in this section: the bottom of the computer, inside the battery bay, under the service door, or on the back of the display.

- 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.



---

### Component

---

- |     |                |
|-----|----------------|
| (1) | Product name   |
| (2) | Serial number  |
| (3) | Product number |
-

---

**Component**

---

(4) Warranty period

(5) Model number (select models only)

---

- Microsoft® Certificate of Authenticity label (select models only prior to Windows 10 or Windows 8)—Contains the Windows Product Key. You may need the Product Key to update or troubleshoot the operating system. HP platforms with Windows 10 or Windows 8 or Windows 10 or Windows 8.x preinstalled do not have the physical label. Instead a Digital Product Key is electronically installed.



**NOTE:** The Digital Product Key is automatically recognized and activated by Microsoft operating systems when a Windows 10 or Windows 8 or Windows 10 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

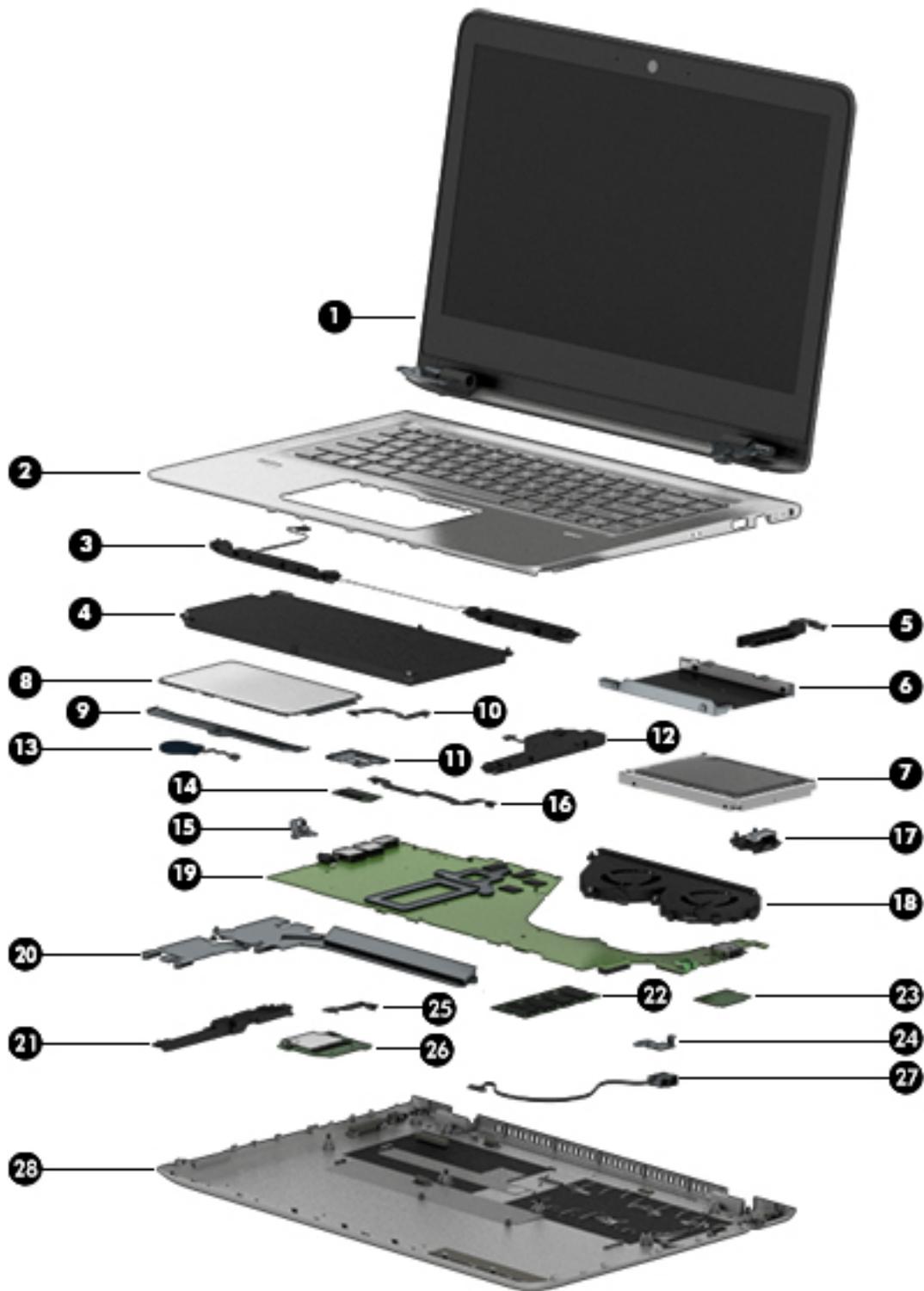
### Computer major components

---

 **NOTE:** Details about the computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of the computer. See [Labels on page 14](#) for more information.

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

---



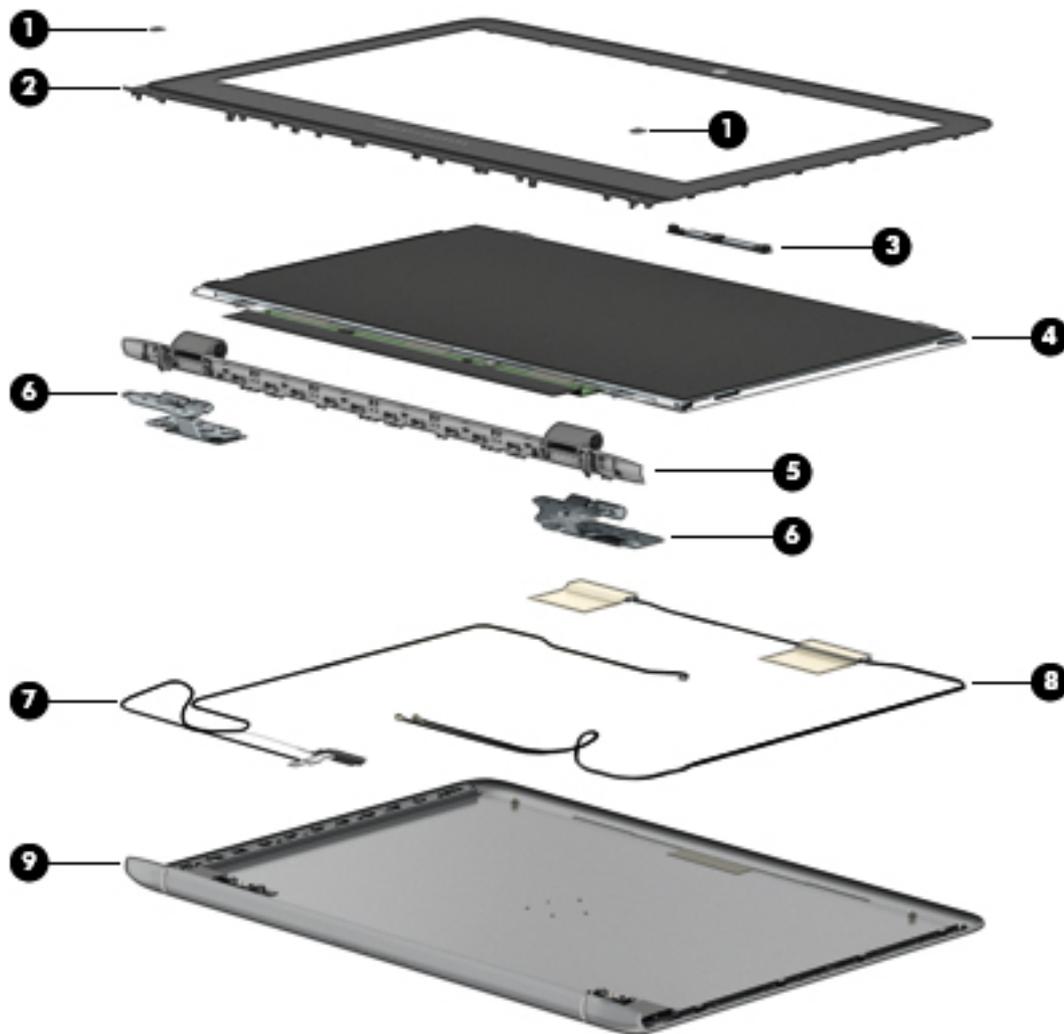
Item	Component	Spare part number
(1)	<b>Display assembly:</b> The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see <a href="#">Display assembly subcomponents on page 21</a> .	
(2)	<b>Keyboard/top cover</b> (includes keyboard cable and keyboard backlight cable):	

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	For use in Canada	818121-DB1
	For use in Latin America	818121-161
	For use in South Korea	818121-AD1
	For use in Taiwan	818121-AB1
	For use in Thailand	818121-281
	For use in United States	818121-001
<b>(3)</b>	<b>Front speakers</b> (include cables and 2 rubber isolators)	818128-001
<b>(4)</b>	<b>Battery</b> (3-cell, 55-WHr, 4.56-AHr, Li-ion)	805094-005
<b>(5)</b>	<b>Hard drive cable</b>	818103-001
<b>(6)</b>	<b>Hard drive bracket</b> (included in the Hard Drive Hardware Kit)	818113-001
<b>(7)</b>	<b>Hard drive</b> (5400-rpm, SATA; does not include hard drive bracket, hard drive cable, or screws):	
	2-TB, 9.5-mm, 2.5-in	801808-005
	1-TB, 7.0-mm, 2.5-in	833907-005
	750-GB, 7.0-mm, 2.5-in	778190-005
	500-GB, 7.0-mm, 2.5-in	778188-005
<b>(8)</b>	<b>TouchPad board</b>	818135-001
<b>(9)</b>	<b>TouchPad board bracket</b>	818118-001
<b>(10)</b>	<b>TouchPad board cable</b> (includes double-sided adhesive)	818105-001
<b>(11)</b>	<b>Fingerprint reader board bracket</b>	818116-001
<b>(12)</b>	<b>Subwoofer</b> (includes cable and 2 rubber isolators)	818130-001
<b>(13)</b>	<b>RTC battery</b> (includes cable and double-sided adhesive)	818125-001
<b>(14)</b>	<b>Fingerprint reader board</b>	818089-001
<b>(15)</b>	<b>Security cable slot bracket</b>	818115-001
<b>(16)</b>	<b>Fingerprint reader board cable</b> (includes double-sided adhesive)	818107-001
<b>(17)</b>	<b>RJ45 cover</b>	818114-001
<b>(18)</b>	<b>Fan</b> (includes cable):	
	For use only on computer models equipped with a graphics subsystem with discrete memory	818110-001
	For use only on computer models equipped with a graphics subsystem with UMA memory	818109-001
<b>(19)</b>	<b>System board</b> (includes processor and replacement thermal material):	
	Equipped with an Intel Core i7-6700HQ 2.60-GHz (SC turbo up to 3.50-GHz) quad core processor (6.0-GB L3 cache, 1600-MHz FSB, 45 W [cTDP to 35 W]), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829092-601
	Equipped with an Intel Core i7-6700HQ 2.60-GHz (SC turbo up to 3.50-GHz) quad core processor (6.0-GB L3 cache, 1600-MHz FSB, 45 W [cTDP to 35 W]), an nVIDIA N16P-GT	829092-001

Item	Component	Spare part number
	(GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	
	Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) dual core processor (4.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818134-601
	Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) dual core processor (4.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	818134-001
	Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829091-601
	Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	829091-001
	Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829090-601
	Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	829090-001
	Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829089-601
	Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and a non-Windows operating system	829089-001
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818133-601
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	818133-001
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818132-601
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	818132-001
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics	818131-601

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	memory subsystem, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and a non-Windows operating system	818131-001
<b>(20)</b>	<b>Heat sink</b> (includes replacement thermal material):	
	For use only on computer models equipped with an Intel i7 processor and a graphics subsystem with discrete memory	830213-001
	For use only on computer models equipped with an Intel i5 processor and a graphics subsystem with discrete memory	818112-001
	For use only on computer models equipped with a graphics subsystem with UMA memory	818111-001
<b>(21)</b>	<b>Left speaker</b> (includes cable)	818129-001
<b>(22)</b>	<b>Memory module</b> (PC3L, 12800, 1600):	
	8-GB memory module	693374-005
	4-GB memory module	691740-005
<b>(23)</b>	<b>WLAN module:</b>	
	Broadcom BCM943142 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 M.2 Combo Adapter	792608-005
	Intel 3165NGWG ac 1×1 + Bluetooth 4.0 LE PCIe+USB NGFF 2230 Combo Adapter	806723-005
	Intel Dual Band Wireless-AC 7265 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter	793840-005
	Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784644-005
<b>(24)</b>	<b>Power connector cable bracket</b>	818117-001
<b>(25)</b>	<b>Card reader board cable</b>	818106-001
<b>(26)</b>	<b>Card reader board</b>	818122-001
<b>(27)</b>	<b>Power connector cable</b>	818108-001
<b>(28)</b>	<b>Bottom cover</b> (includes shielding and speaker grilles):	
	For use only on computer models equipped with a graphics subsystem with discrete memory	818100-001
	For use only on computer models equipped with a graphics subsystem with UMA memory	818099-001

## Display assembly subcomponents



Item	Component	Spare part number
(1)	<b>Display bezel screw covers:</b> included in the Bezel Trim Kit, spare part number 818102-001.	
(2)	<b>Display bezel</b> (includes double-sided adhesive)	818101-001
(3)	<b>Webcam/microphone module</b> (includes double-sided adhesive)	812714-001
(4)	<b>Display panel:</b>	
	14.0-in, FHD, WLED, AntiGlare (1920×1080), slim (3.0-mm), UWVA eDP 1.2	833717-001
	14.0-in, FHD, WLED, AntiGlare (1920×1080), slim (3.0-mm), SVA eDP 1.2	818124-001
	14.0-in, HD, WLED, AntiGlare (1366×768), flat (3.6-mm), SVA eDP 1.2	818123-001
(5)	<b>Display hingecover</b>	818120-001
(6)	<b>Display Hinge Kit</b> (includes left and right hinges)	818119-001
(7)	<b>Display panel cable</b> (includes webcam/microphone module cable)	818104-001

Item	Component	Spare part number
(8)	<b>Antenna Kit</b> (includes wireless antenna cable and transceiver and double-sided adhesive)	818097-001
(9)	<b>Display back cover</b>	818098-001

## Miscellaneous parts

Component	Spare part number
<b>AC adapter:</b>	
120-W AC adapter (PFC, S-3P, 3-wire, 4.5-mm)	710415-001
90-W AC adapter (PFC, S-3P, 3-wire, 4.5-mm)	710413-001
65-W AC adapter (non-PFC, S-3P, 3-wire, 4.5-mm)	710412-001
65-W HP Smart AC adapter (non-PFC, EM, 3-wire, 4.5-mm)	714657-001
45-W HP Smart AC adapter (non-PFC, RC, 3-wire, 4.5-mm)	741727-001
<b>HP external DVD+/-RW DL SuperMulti Drive</b>	747080-001
<b>Power cord</b> (3-pin, black, 1.00-m):	
For use in Argentina	755530-D01
For use in Australia	755530-011
For use in Europe	755530-021
For use in India	755530-D61
For use in Italy	755530-061
For use in North America	755530-001
For use in the People's Republic of China	755530-AA1
For use in South Korea	755530-AD1
For use in Taiwan	755530-AB1
For use in Thailand	755530-201
For use in the United Kingdom and Singapore	755530-031
<b>Rubber Kit</b> (includes front and rear rubber foot strips)	818126-001
<b>Screw Kit</b>	818127-001

---

## 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
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

### Service considerations

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

---

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

---

### Plastic parts

---

 **CAUTION:** Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic.

---

## 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.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

---

# Grounding guidelines

## Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

## Workstation guidelines

Follow these grounding workstation guidelines:

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

## Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

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

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

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

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

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are included on the service tag on the bottom of your computer. See [Labels on page 14](#) for details.

There may be as many as 21 screws that must be removed, replaced, and/or loosened when servicing Customer Self-Repair parts. Make special note of each screw size and location during removal and replacement.

#### Bottom cover

 **NOTE:** The bottom cover spare kit includes shielding and speaker grilles.

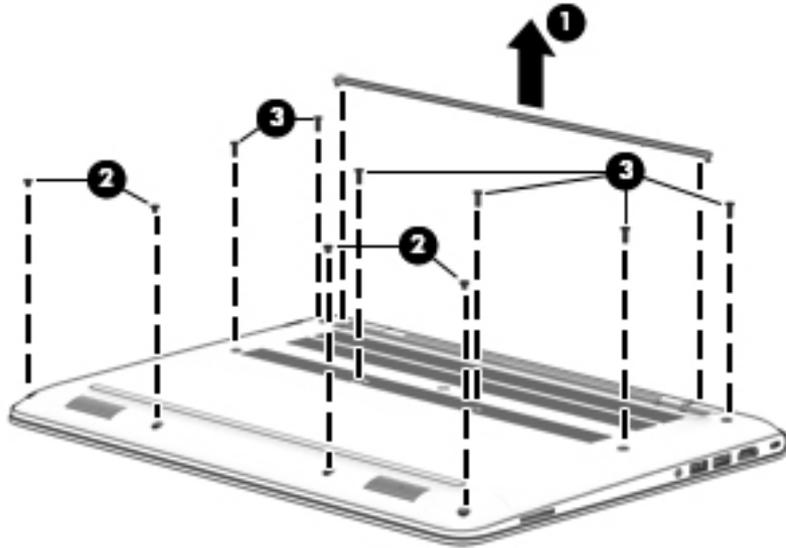
Description	Spare part number
For use only on computer models equipped with a graphics subsystem with discrete memory	818100-001
For use only on computer models equipped with a graphics subsystem with UMA memory	818099-001

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.

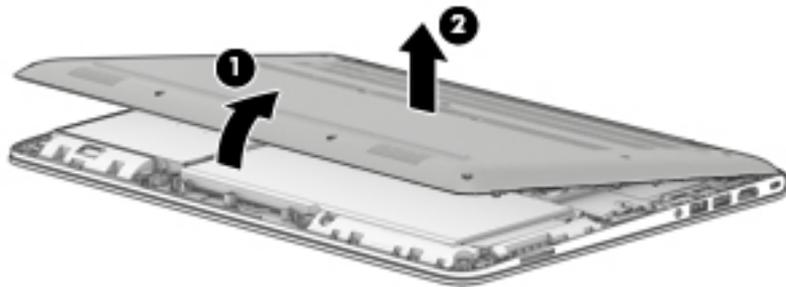
Remove the bottom cover:

1. Remove the rear rubber foot strip **(1)**.  
The rear rubber foot strip is included in the Rubber Kit, spare part number 818126-001.
2. Remove the four Phillips PM2.5×5.7 screws **(2)** that secure the bottom cover to the computer.

3. Remove the eight Phillips PM2.5×8.8 screws (3) that secure the bottom cover to the computer.



4. Lift the front edge of the bottom cover (1) up and back until it rests at an angle.
5. Remove the bottom cover (2).



Reverse this procedure to install the bottom cover.

## Hard drive



**NOTE:** The hard drive spare part kit does not include the hard drive bracket, hard drive cable, or screws.

Description	Spare part number
2-TB, 5400-rpm, SATA, 9.5-mm, 2.5-in	801808-005
1-TB, 5400-rpm, SATA, 7.0-mm, 2.5-in	833907-005
750-GB, 5400-rpm, SATA, 7.0-mm, 2.5-in	778190-005
500-GB, 5400-rpm, SATA, 7.0-mm, 2.5-in	778188-005

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 bottom cover (see [Bottom cover on page 28](#)).

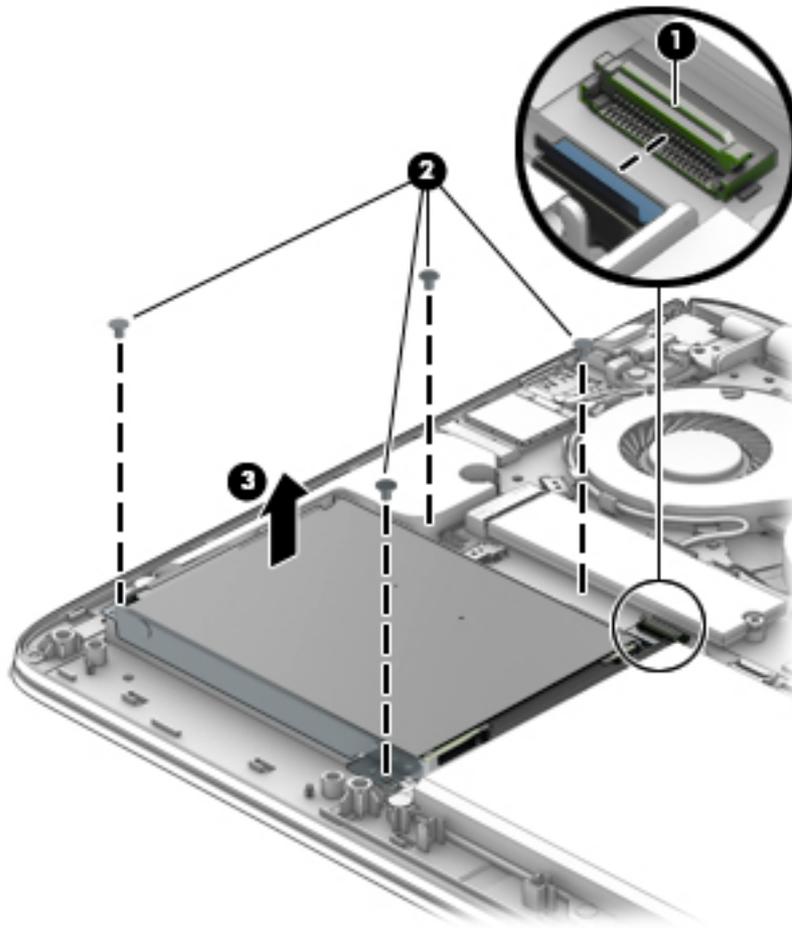
Remove the hard drive:

1. Disconnect the battery cable from the system board.



2. Release the zero insertion force (ZIF) connector (**1**) to which the hard drive cable is connected, and then disconnect the hard drive cable from the system board.
3. Remove the four Phillips PM2.0×3.3 screws (**2**) that secure the hard drive to the computer.

4. Remove the hard drive **(3)**.

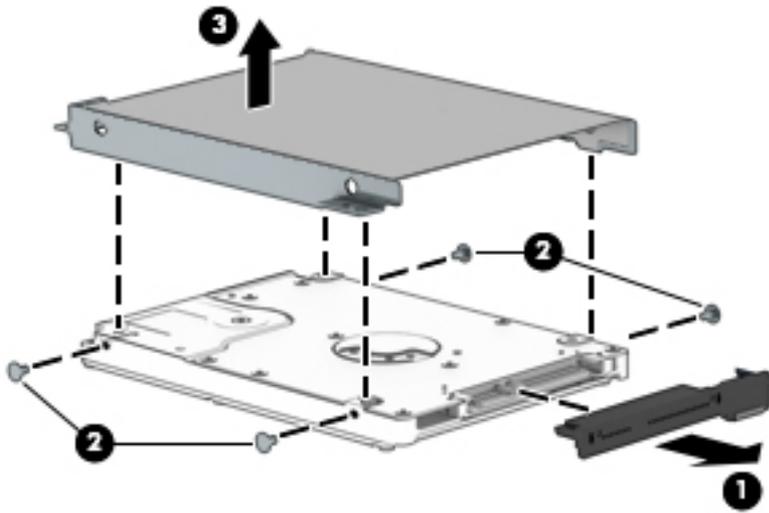


If it is necessary to disassemble the hard drive:

1. Disconnect the hard drive cable **(1)** from the hard drive.  
The hard drive cable is available using spare part number 818103-001.
2. Remove the four Phillips PM2.5×3.7 screws **(2)** that secure the hard drive bracket to the hard drive.

3. Remove the hard drive bracket (3) from the hard drive.

The hard drive bracket and screws are available in the Hard Drive Hardware Kit, spare part number 818113-001.



Reverse this procedure to reassemble and install the hard drive.

## WLAN module

Description	Spare part number
Broadcom BCM943142 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 M.2 Combo Adapter	792608-005
Intel 3165NGWG ac 1×1 + Bluetooth 4.0 LE PCIe+USB NGFF 2230 Combo Adapter	806723-005
Intel Dual Band Wireless-AC 7265 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter	793840-005
Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784644-005

**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 bottom cover (see [Bottom cover on page 28](#)).

Remove the WLAN module:

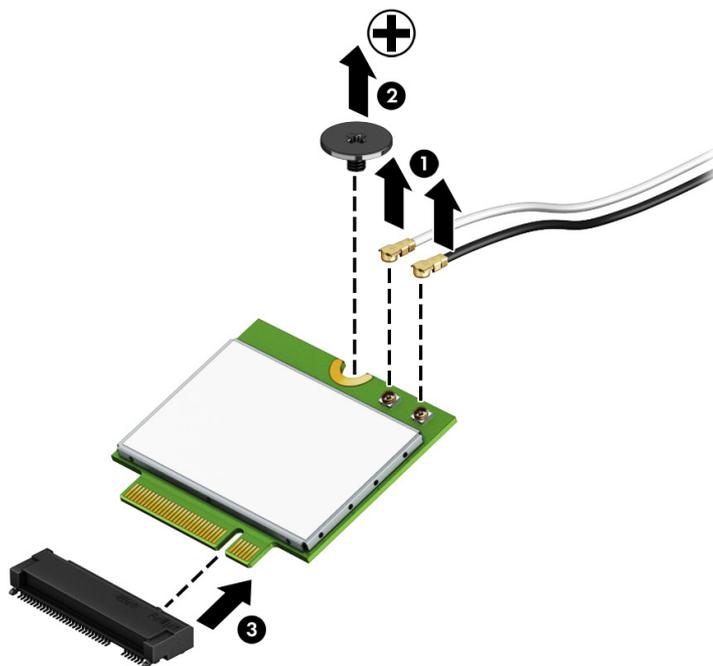
1. Disconnect the battery cable from the system board.



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

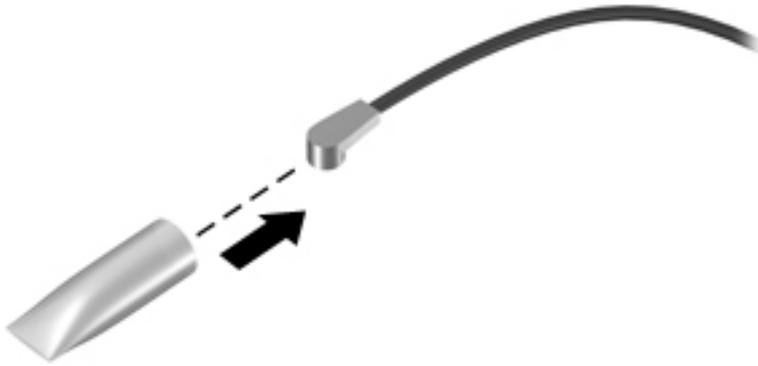
 **NOTE:** The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

3. Remove the Phillips PM2.0×3.7 broad head screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
4. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.





**NOTE:** If the WLAN antenna is not connected to the terminal on the WLAN module, a protective sleeve should be installed on the antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

## Memory module

Description	Spare part number
8-GB memory module (PC3, 12800, 1600)	693374-001
4-GB memory module (PC3, 12800, 1600)	691740-001



**NOTE:** Before adding a memory module, make sure the computer has the most recent BIOS version, and update the BIOS if needed.

Before removing a memory module, follow these steps:

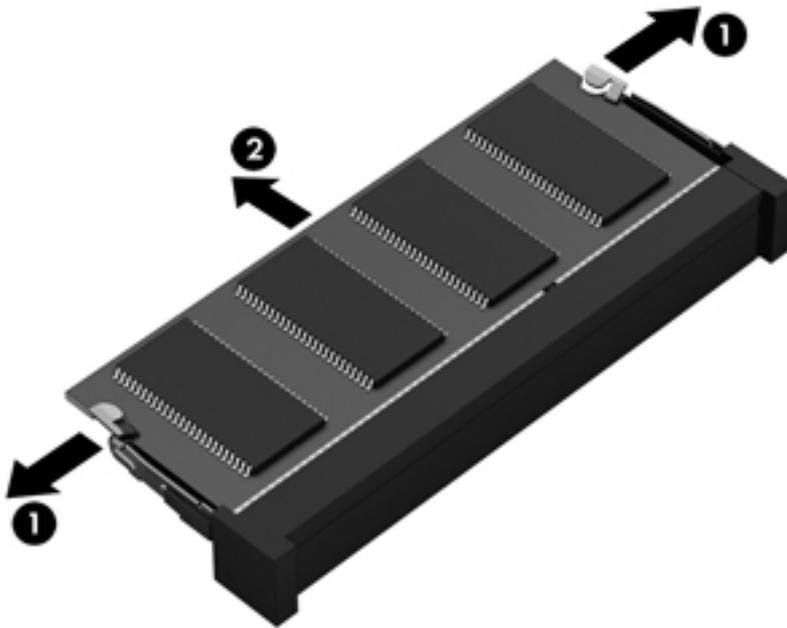
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).

Remove the memory module:

1. Disconnect the battery cable from the system board.



2. Spread the two retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)
3. Remove the memory module **(2)** by pulling it away from the slot at an angle.



Reverse this procedure to install the memory module.

# 6 Removal and replacement procedures for Authorized Service Provider parts

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

 **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

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 14](#) for details.

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

There may be as many as 63 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

### Front speakers

Description	Spare part number
Front speakers (includes cables and 2 rubber isolators)	818128-001

Before removing the front speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).

Remove the front speakers:

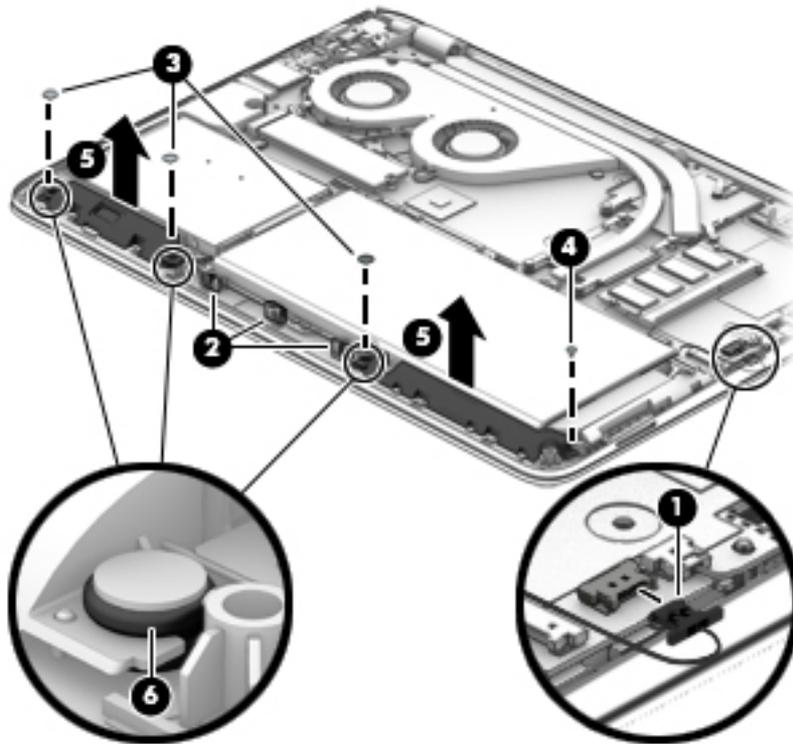
1. Disconnect the battery cable from the system board.



2. Disconnect the front speakers cable **(1)** from the system board.
3. Release the front speakers cable from the retention clips **(2)** built into the top cover.
4. Remove the three Phillips PM2.0×2.2 broad head screws **(3)** that secure the front speakers to the top cover.
5. Remove the three Phillips PM2.0×3.3 screw **(4)** that secures the front speakers to the top cover.

6. Remove the front speakers (5).

 **NOTE:** When removing the front speakers, make note of the location of the rubber isolators (6). Failure to properly install or damage to these isolators can result in degraded speaker performance.



Reverse this procedure to install the front speakers.

## Battery

Description	Spare part number
3-cell, 55-WHr, 4.56-AHr, Li-ion battery	805094-005

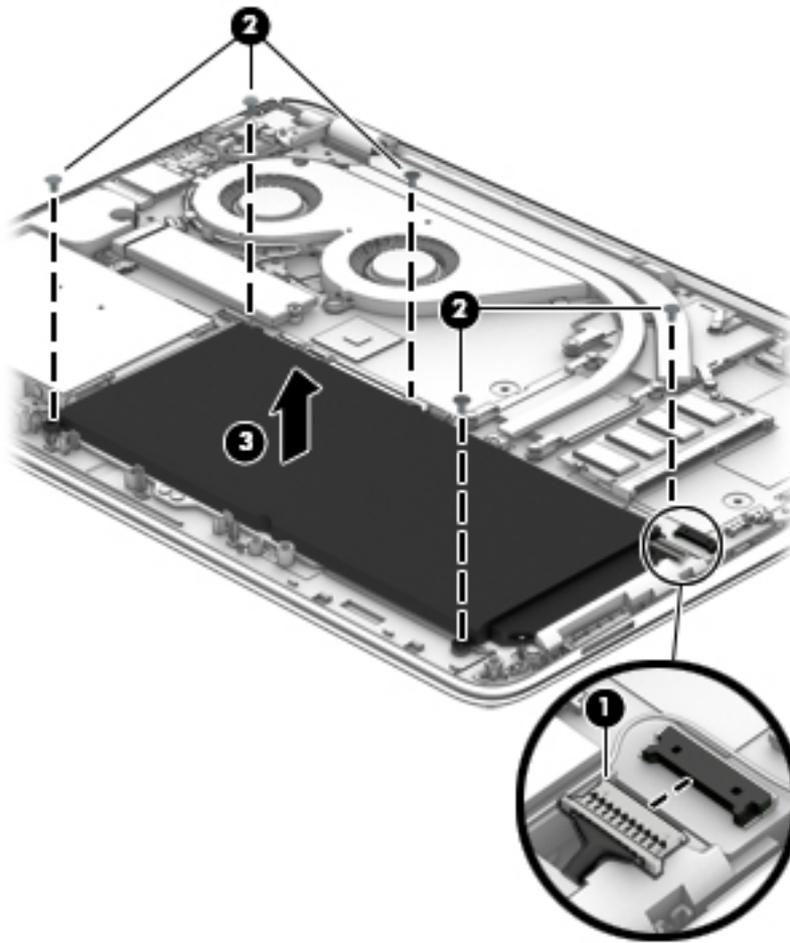
Before disassembling the computer, follow these steps:

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 bottom cover (see [Bottom cover on page 28](#)).
5. Remove the front speakers (see [Front speakers on page 36](#)).

Remove the battery:

1. Disconnect the battery cable (1) from the system board.
2. Remove the five Phillips PM2.5×4.2 screws (2) that secure the battery to the computer.

3. Remove the battery (3).



Reverse this procedure to install the battery.

## TouchPad board

Description	Spare part number
TouchPad board	818135-001

**NOTE:** The TouchPad board spare part kit does not include the TouchPad board bracket or TouchPad board cable. The TouchPad board bracket is available using spare part number 818118-001. The TouchPad board cable is available using spare part number 818105-001.

Before removing the TouchPad 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 bottom cover (see [Bottom cover on page 28](#)).

5. Remove the front speakers (see [Front speakers on page 36](#)).
6. Remove the battery (see [Battery on page 38](#)).

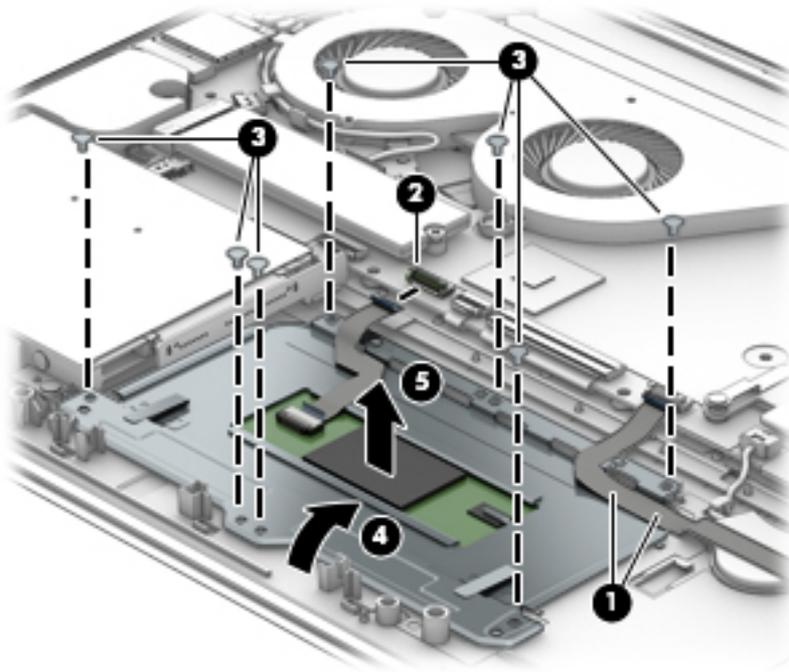
Remove the TouchPad board:

1. Disconnect the battery cable from the system board.

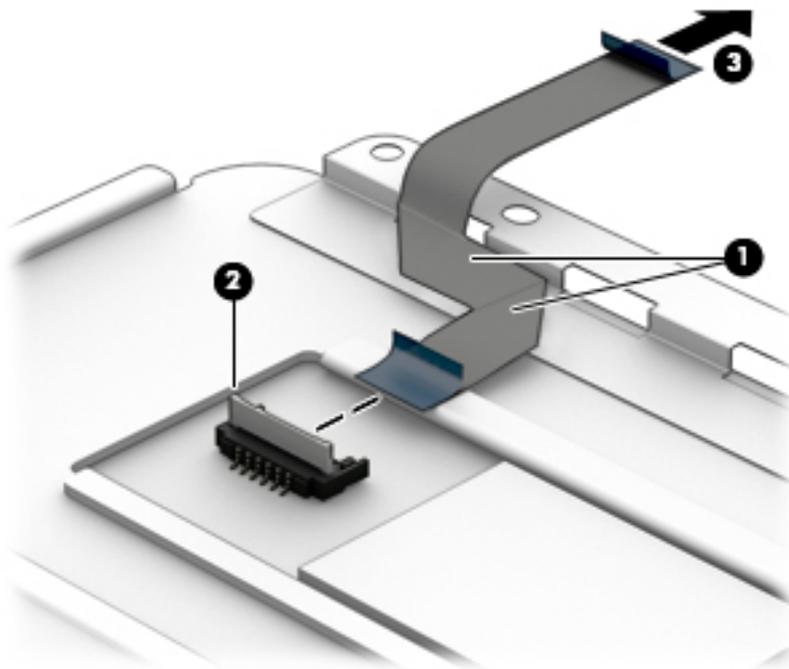


2. Release the fingerprint reader board cable **(1)** from the TouchPad board. (The fingerprint reader board cable is secured to the TouchPad board with double-sided adhesive.)
3. Release the ZIF connector **(2)** to which the TouchPad board cable is attached, and then disconnect the TouchPad board cable from the system board.
4. Remove the seven Phillips PM2.0×3.3 screws **(3)** that secure the TouchPad board to the top cover.
5. Remove the TouchPad board bracket **(4)**.

6. Remove the TouchPad board (5).



7. If it is necessary to replace the TouchPad board cable, release the TouchPad board cable (1) from the TouchPad board. (The TouchPad board cable is secured to the TouchPad board with double-sided adhesive.)
8. Release the ZIF connector (2) to which the TouchPad board cable is attached, and then disconnect the TouchPad board cable (3) from the TouchPad board.



Reverse this procedure to install the TouchPad board.

## RTC battery

Description	Spare part number
RTC battery	697917-001

Before removing the RTC battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the front speakers (see [Front speakers on page 36](#)).
6. Remove the battery (see [Battery on page 38](#)).

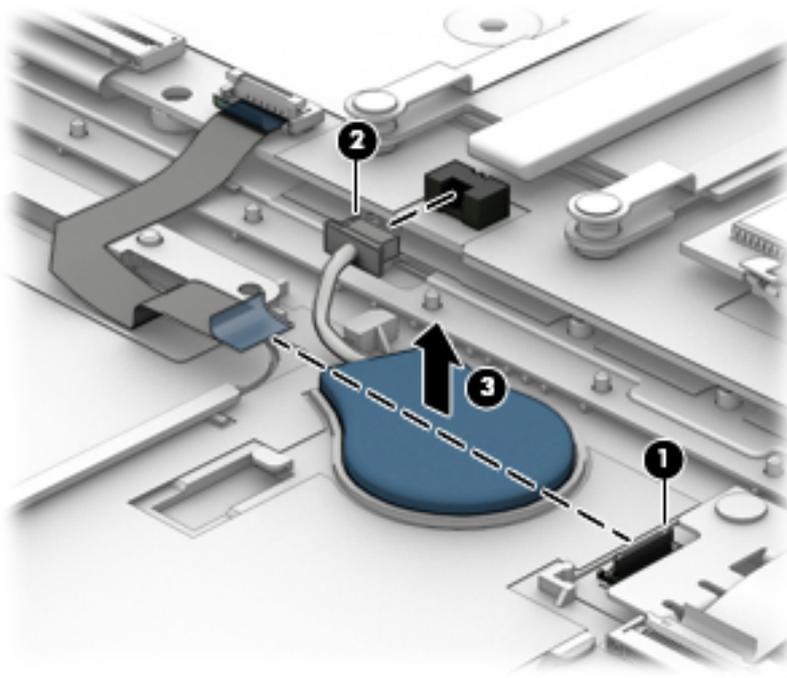
Remove the RTC battery:

1. Disconnect the battery cable from the system board.



2. Release the ZIF connector **(1)** to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable from the fingerprint reader board.
3. Disconnect the RTC battery cable **(2)** from the system board.

4. Detach and remove the RTC battery (3) from the system board. (The RTC battery is secured to the system board with double-sided adhesive.)



Reverse this procedure to install the RTC battery.

## Fingerprint reader board

Description	Spare part number
Fingerprint reader board	818089-001

**NOTE:** The fingerprint reader board spare part kit does not include the fingerprint reader board bracket or fingerprint reader board cable. The fingerprint reader board bracket is available using spare part number 818116-001. The fingerprint reader board cable is available using spare part number 818107-001.

Before removing the fingerprint reader board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the front speakers (see [Front speakers on page 36](#)).
6. Remove the battery (see [Battery on page 38](#)).

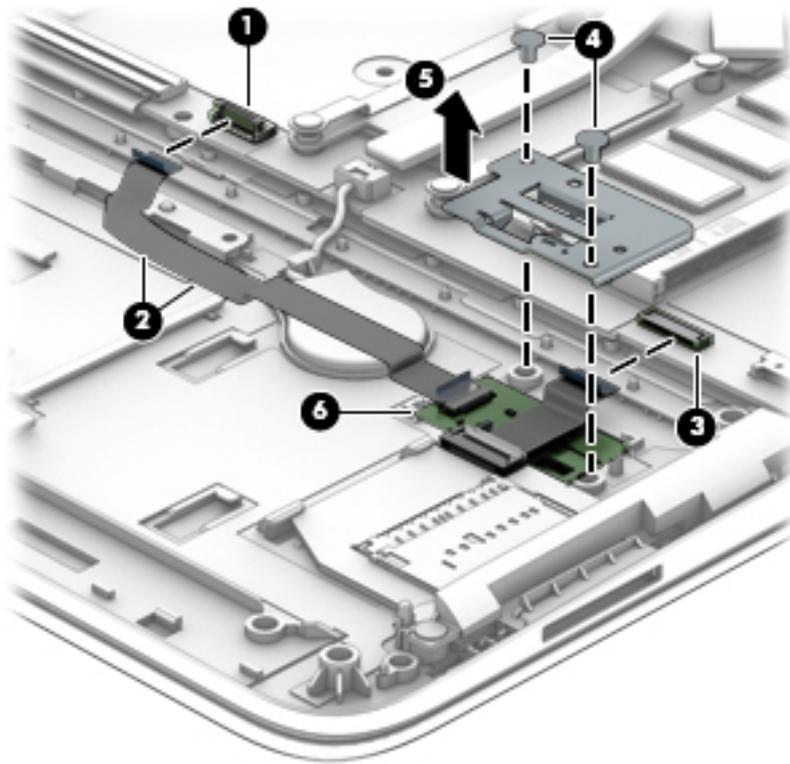
Remove the fingerprint reader board:

1. Disconnect the battery cable from the system board.

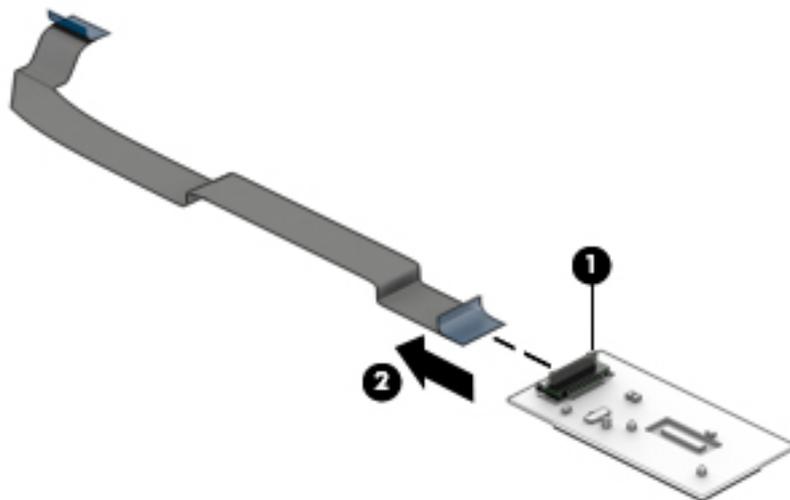


2. Release the ZIF connector **(1)** to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable from the system board.
3. Release the fingerprint reader board cable **(2)** from the TouchPad board. (The fingerprint reader board cable is secured to the TouchPad board with double-sided adhesive.)
4. Release the ZIF connector **(3)** to which the card reader board cable is attached, and then disconnect the card reader board cable from the system board.
5. Remove the two Phillips PM2.0×3.3 screws **(4)** that secure the fingerprint reader board to the top cover.
6. Remove the fingerprint reader board bracket **(5)**.

7. Remove the fingerprint reader board (6).



8. If it is necessary to replace the fingerprint reader board cable, release the ZIF connector (1) to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable (2) from the fingerprint reader board.



Reverse this procedure to install the fingerprint reader board.

## Subwoofer

Description	Spare part number
Subwoofer (includes cable and 2 rubber isolators)	818130-001

Before removing the subwoofer, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).

Remove the subwoofer:

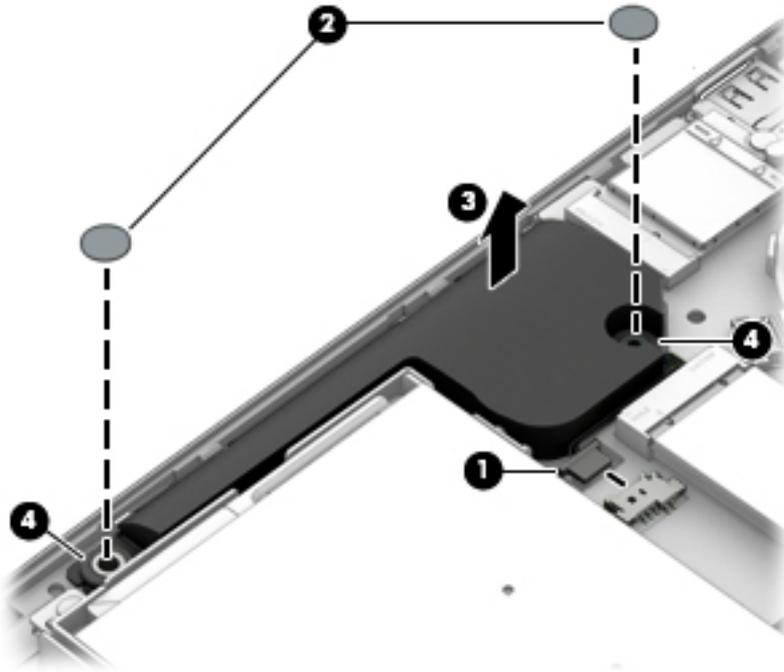
1. Disconnect the battery cable from the system board.



2. Disconnect the subwoofer cable **(1)** from the system board.
3. Remove the two Phillips PM2.0×2.2 broad head screws **(2)** that secure the subwoofer to the top cover.

4. Remove the subwoofer (3).

 **NOTE:** When removing the subwoofer, make note of the location of the rubber isolators (4). Failure to properly install or damage to these isolators can result in degraded subwoofer performance.



Reverse this procedure to install the subwoofer.

## Fan

Description	Spare part number
For use only on computer models equipped with a graphics subsystem with discrete memory	818110-001
For use only on computer models equipped with a graphics subsystem with UMA memory	818109-001

 **NOTE:** To properly ventilate the computer, allow at least 7.6 cm (3 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the fan, follow these steps:

1. 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 bottom cover (see [Bottom cover on page 28](#)).

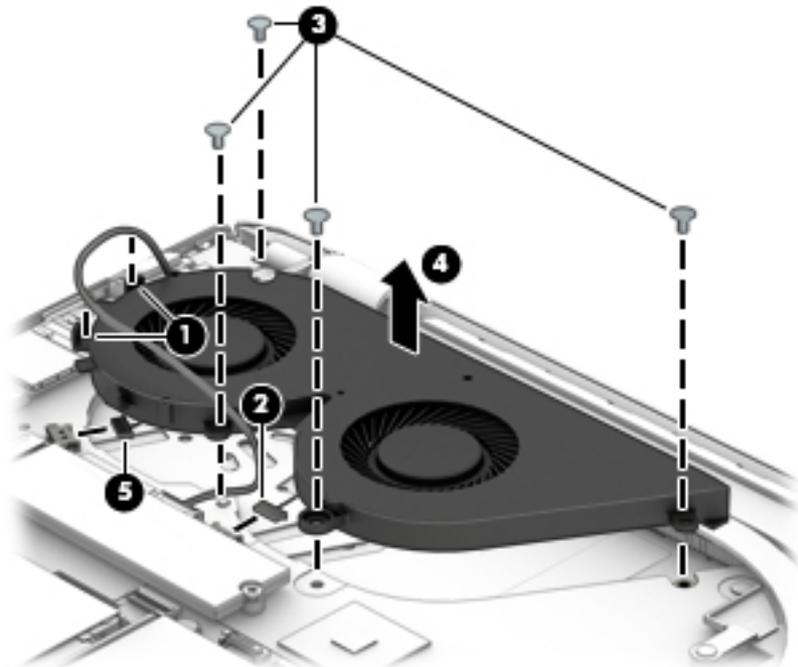
Remove the fan:

1. Disconnect the battery cable from the system board.



 **NOTE:** Steps 2 through 7 apply to computer models equipped with a graphics subsystem with discrete memory. See steps 8 through 10 for fan removal steps for computer models equipped with a graphics subsystem with UMA memory.

2. Release the power connector cable from the retention clips **(1)** built into the fan housing.
3. Disconnect the right fan cable **(2)** from the system board.
4. Remove the four Phillips PM2.5×4.4 screws **(3)** that secure the fan to the top cover.
5. Lift the fan **(4)** until the left fan cable is accessible.
6. Disconnect the left fan cable **(5)** from the system board.



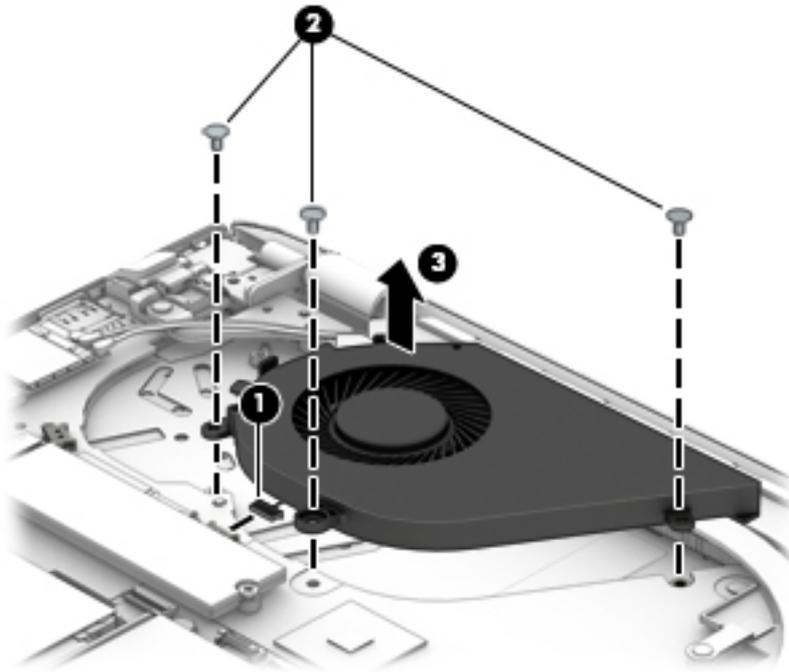
7. Remove the fan.

 **NOTE:** Steps 8 through 10 apply to computer models equipped with a graphics subsystem with UMA memory. See steps 2 through 7 for fan removal steps for computer models equipped with a graphics subsystem with discrete memory.

8. Disconnect the fan cable (1) from the system board.

9. Remove the three Phillips PM2.5×4.4 screws (2) that secure the fan to the top cover.

10. Remove the fan (3).



Reverse this procedure to install the fan.

## RJ45 cover

Description	Spare part number
RJ45 cover	818114-001

Before removing the RJ45 cover, follow these steps:

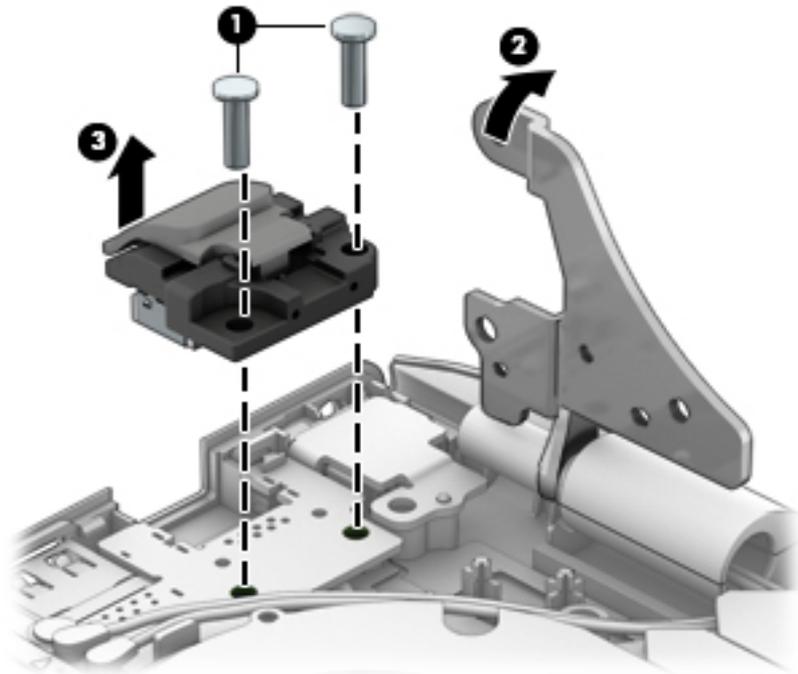
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).

Remove the RJ45 cover:

1. Disconnect the battery cable from the system board.



2. Remove the two Phillips PM2.5×8.8 screws **(1)** that secure the RJ45 cover and the right display hinge to the top cover.
3. Release the right display hinge **(2)** by swinging it up and back.
4. Remove the RJ45 cover **(3)**.



Reverse this procedure to install the RJ45 cover.

## Security cable slot bracket

Description	Spare part number
Security cable slot bracket	818115-001

Before removing the security cable slot bracket, 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 bottom cover (see [Bottom cover on page 28](#)).

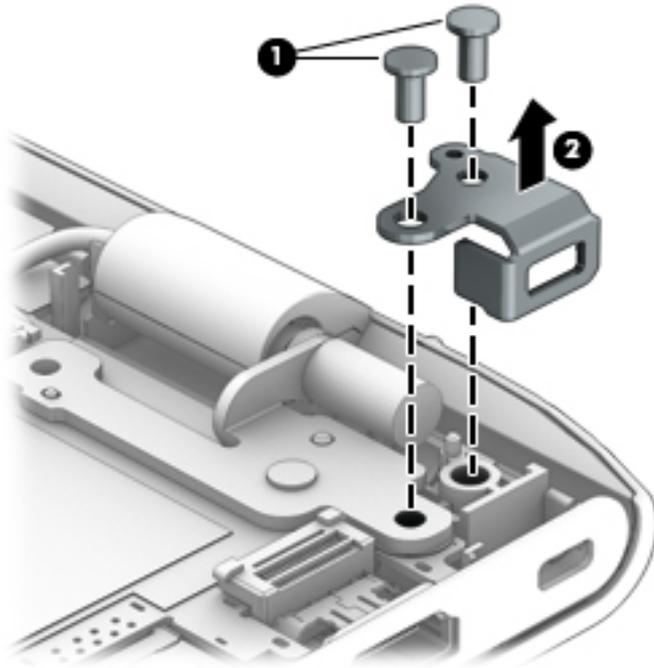
Remove the RJ45 cover:

1. Disconnect the battery cable from the system board.



2. Remove the two Phillips PM2.5×8.8 screws **(1)** that secure the security cable slot bracket to the top cover.

3. Remove the security cable slot bracket (2).



Reverse this procedure to install the security cable slot bracket.

## System board



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

Description	Spare part number
Equipped with an Intel Core i7-6700HQ 2.60-GHz (SC turbo up to 3.50-GHz) quad core processor (6.0-GB L3 cache, 1600-MHz FSB, 45 W [cTDP to 35 W]), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829092-601
Equipped with an Intel Core i7-6700HQ 2.60-GHz (SC turbo up to 3.50-GHz) quad core processor (6.0-GB L3 cache, 1600-MHz FSB, 45 W [cTDP to 35 W]), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	829092-001
Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) dual core processor (4.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818134-601
Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) dual core processor (4.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	818134-001
Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829091-601
Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	829091-001

Description	Spare part number
Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829090-601
Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	829090-001
Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	829089-601
Equipped with an Intel Core i5-6200U 2.30-GHz (SC turbo up to 2.80-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and a non-Windows operating system	829089-001
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818133-601
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16P-GT (GeForce GTX 950M) graphics subsystem with 4096-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	818133-001
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818132-601
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an nVIDIA N16S-GT-B (GeForce 940M) graphics subsystem with 2048-MB of discrete video memory, 4.0-GB of system memory, and a non-Windows operating system	818132-001
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and the Windows 10 or Windows 8 operating system	818131-601
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) dual core processor (3.0-GB L3 cache, 1600-MHz FSB, 15 W), an Intel HD Graphics 5500 UMA graphics memory subsystem, 4.0-GB of system memory, and a non-Windows operating system	818131-001

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)), and then remove the following components:
  - a. Battery (see [Battery on page 38](#))
  - b. Fan (see [Fan on page 47](#))
  - c. RJ45 cover (see [RJ45 cover on page 49](#))
  - d. Security cable slot bracket (see [Security cable slot bracket on page 51](#))

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

- WLAN module (see [WLAN module on page 32](#))
- Heat sink (see [Heat sink on page 56](#))
- Memory module (see [Memory module on page 34](#))

Remove the system board:

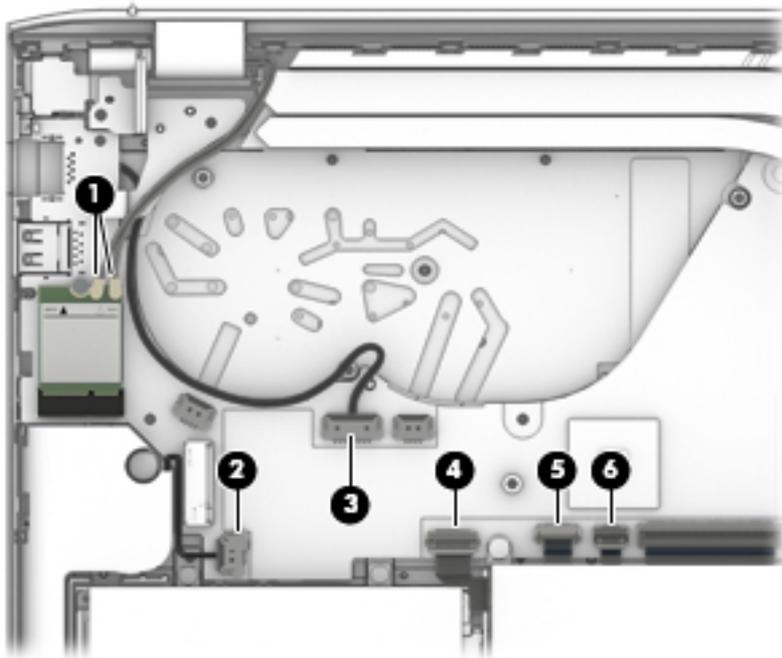
**1.** Disconnect the following cables from the system board:

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



**NOTE:** The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal.  
The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

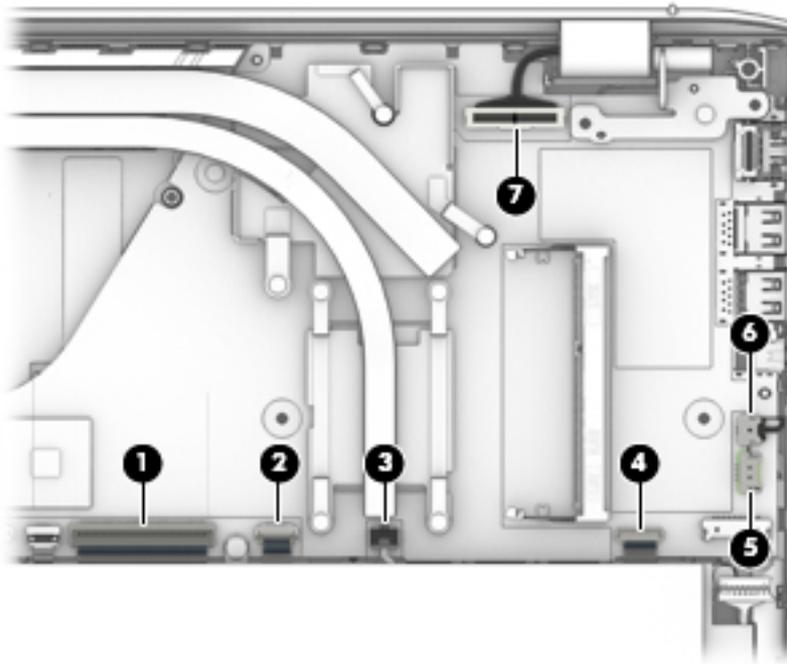
- **(2)** Subwoofer cable
- **(3)** Power connector cable
- **(4)** Hard drive ZIF connector cable
- **(5)** TouchPad board ZIF connector cable
- **(6)** Keyboard backlight ZIF connector cable



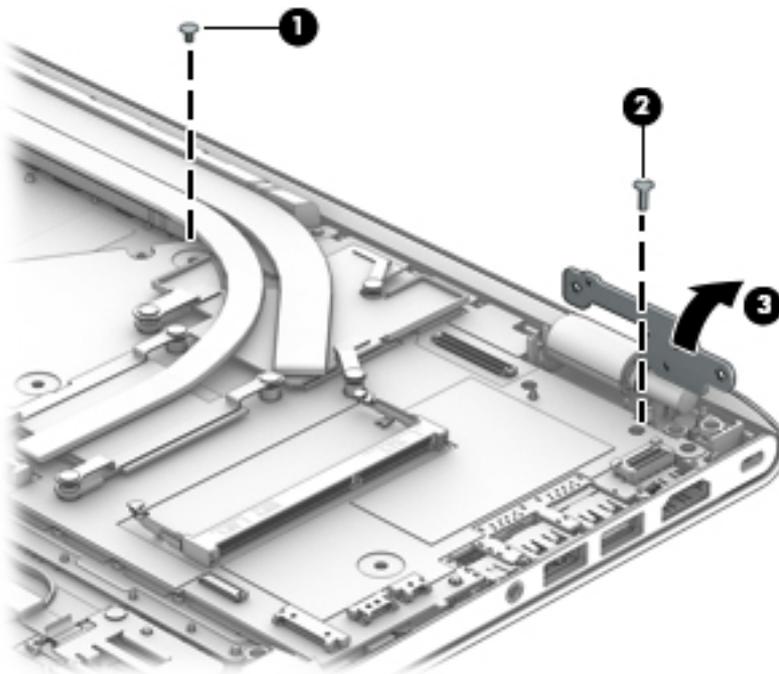
**2.** Disconnect the following cables from the system board:

- **(1)** Keyboard ZIF connector cable
- **(2)** Fingerprint reader board ZIF connector cable
- **(3)** RTC battery cable
- **(4)** Card reader board ZIF connector cable
- **(5)** Front speakers cable

- **(6)** Left speaker cable
- **(7)** Display panel cable

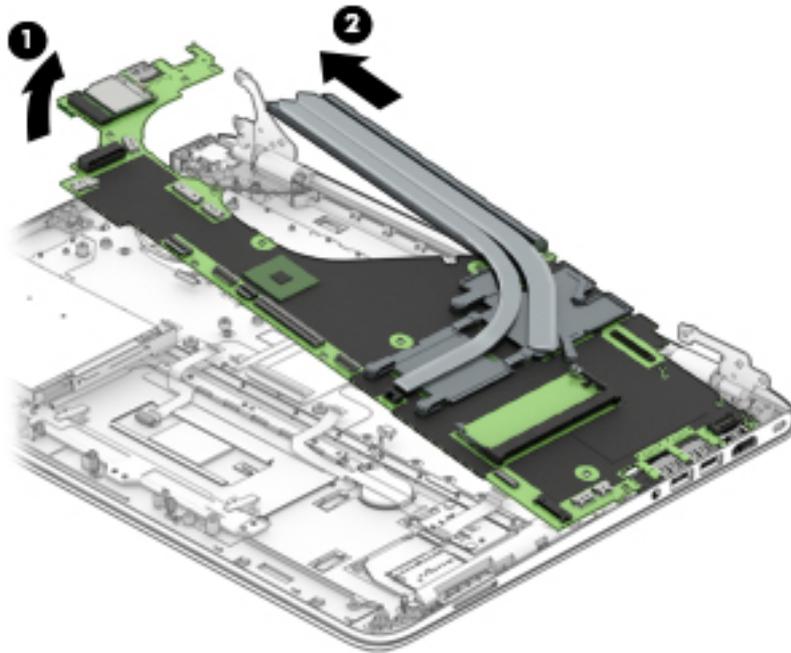


- 3.** Remove the Phillips PM2.0×3.3 screw **(1)** that secures the system board to the top cover.
- 4.** Remove the Phillips PM2.5×8.8 screw **(2)** that secures the left display hinge and the system board to the top cover.
- 5.** Release the left display hinge **(3)** by swinging it up and back.



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

7. Remove the system board (2) by sliding it up and to the left at an angle.



Reverse this procedure to install the system board.

## Heat sink



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

Description	Spare part number
For use only on computer models equipped with an Intel i7 processor and a graphics subsystem with discrete memory	830213-001
For use only on computer models equipped with an Intel i5 processor and a graphics subsystem with discrete memory	818112-001
For use only on computer models equipped with a graphics subsystem with UMA memory	818111-001

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 bottom cover (see [Bottom cover on page 28](#)), and then remove the following components:
  - a. Battery (see [Battery on page 38](#))
  - b. Fan (see [Fan on page 47](#))
  - c. RJ45 cover (see [RJ45 cover on page 49](#))

- d. Security cable slot bracket (see [Security cable slot bracket on page 51](#))
- e. System board (see [System board on page 52](#))

Remove the heat sink:

---

 **NOTE:** Steps 1 and 2 apply to computer models equipped with a graphics subsystem with discrete memory. See steps 3 and 4 for heat sink removal steps for computer models equipped with a graphics subsystem with UMA memory.

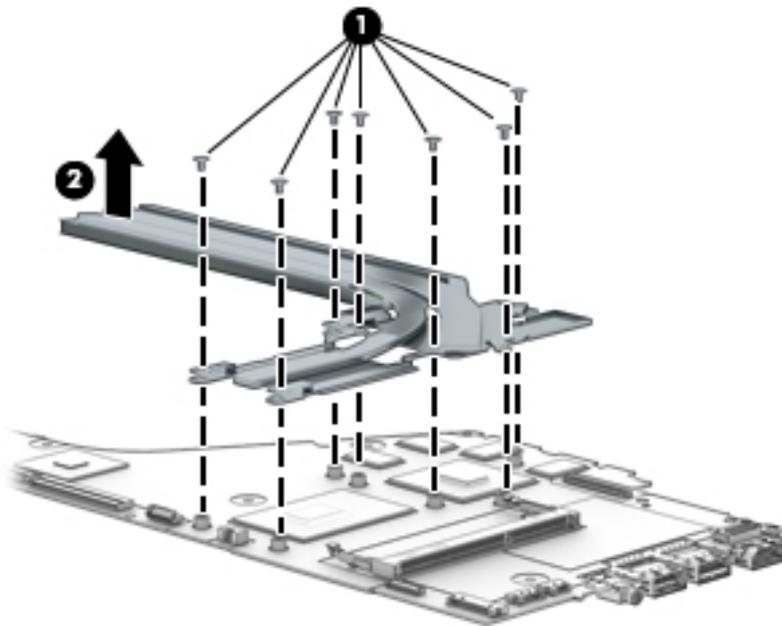
---

1. Following the 1, 2, 3, 4, 5, 6, 7 sequence stamped into the heat sink, remove the seven Phillips PM2.0×3.3 screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.

---

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

---



---

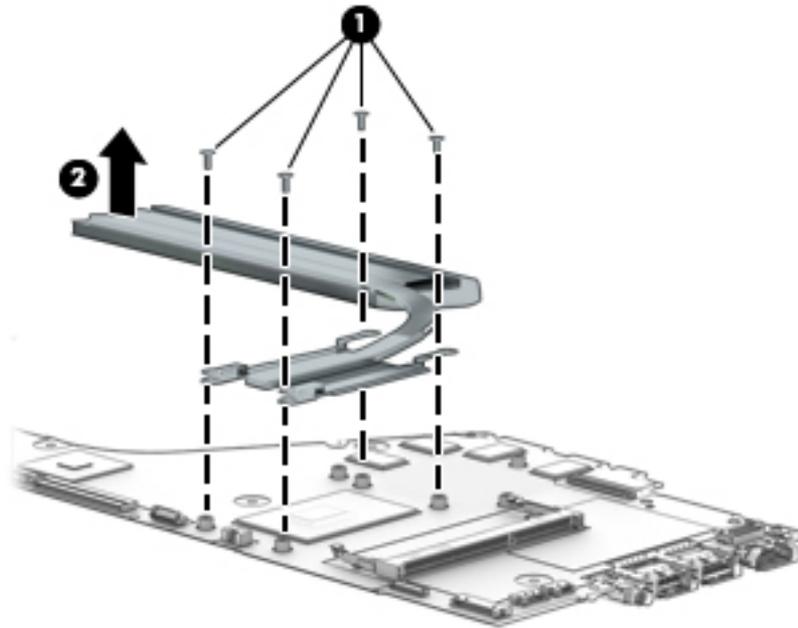
 **NOTE:** Steps 3 and 4 apply to computer models equipped with a graphics subsystem with UMA memory. See steps 1 and 2 for heat sink removal steps for computer models equipped with a graphics subsystem with discrete memory.

---

3. Following the 1, 2, 3, 4 sequence stamped into the heat sink, remove the four Phillips PM2.0×3.3 screws **(1)** that secure the heat sink to the system board.

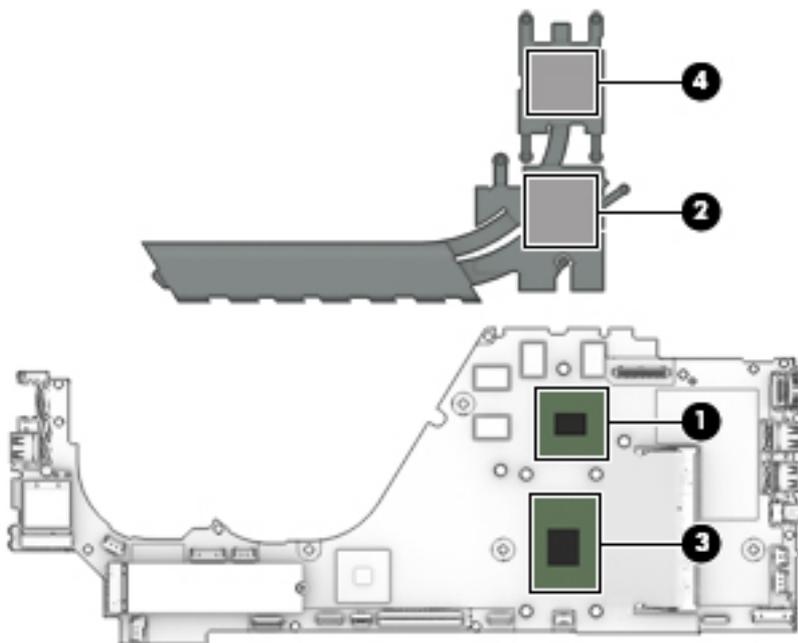
4. Remove the heat sink (2).

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

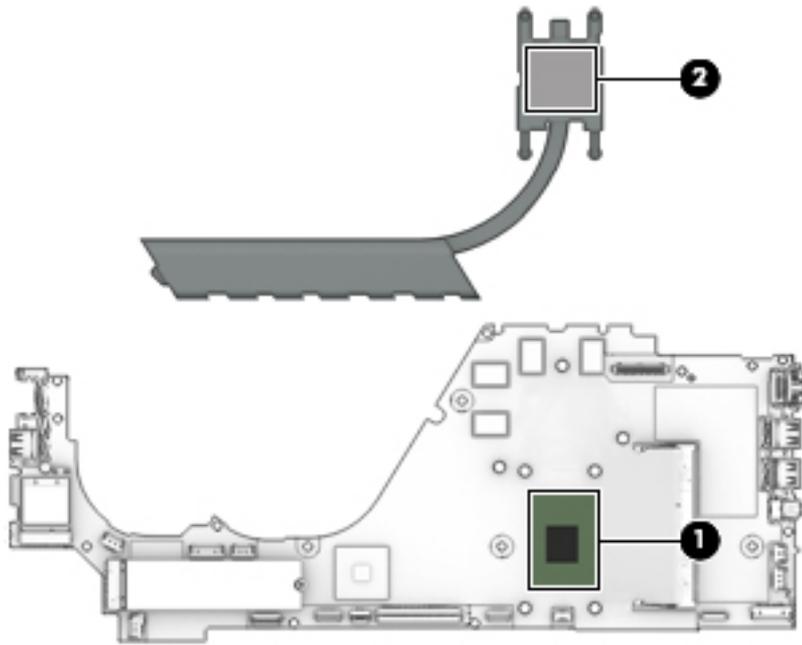


5. The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.

Thermal paste is used on the processor (1) and the heat sink section (2) that services it, and on the graphics subsystem component (3) and the heat sink section (4) that services it.



Thermal paste is used on the processor (1) and the heat sink section (2).



Reverse this procedure to install the heat sink.

## Left speaker

Description	Spare part number
Left speaker (includes cable)	818129-001

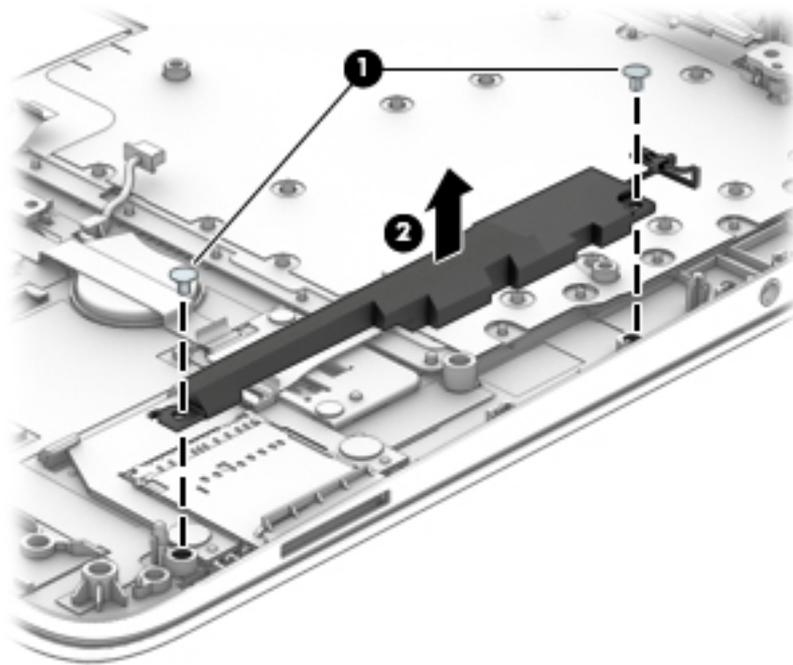
Before removing the left speaker, follow these steps:

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 bottom cover (see [Bottom cover on page 28](#)), and then remove the following components:
  - a. Battery (see [Battery on page 38](#))
  - b. Fan (see [Fan on page 47](#))
  - c. RJ45 cover (see [RJ45 cover on page 49](#))
  - d. Security cable slot bracket (see [Security cable slot bracket on page 51](#))
  - e. System board (see [System board on page 52](#))

Remove the left speaker:

1. Remove the two Phillips PM2.0×3.3 screws **(1)** that secure the left speaker to the top cover.

2. Remove the left speaker (2).



Reverse this procedure to install the left speaker.

## Card reader board

Description	Spare part number
Card reader board	818122-001

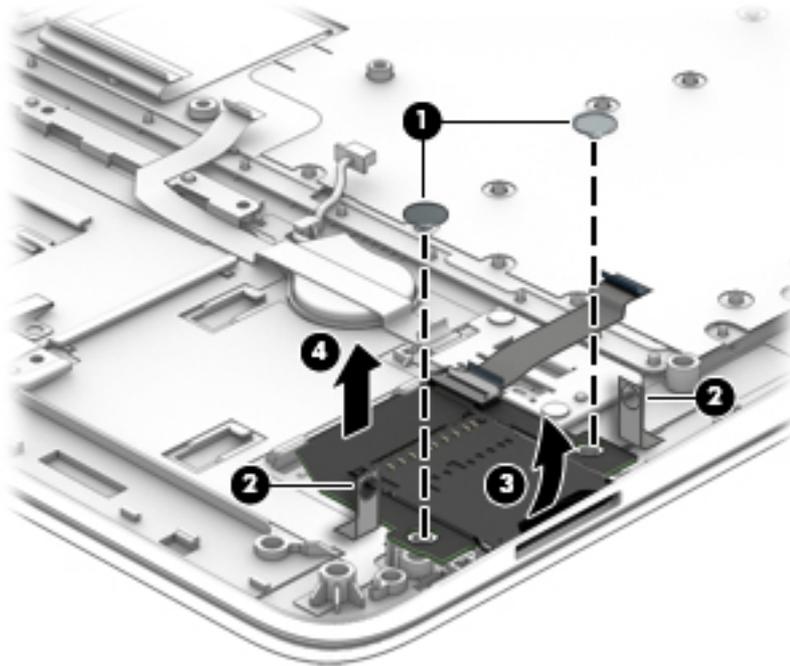
**NOTE:** The card reader board spare part kit does not include the card reader board cable. The card reader board cable is available using spare part number 818106-001.

Before removing the card reader board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)), and then remove the following components:
  - a. Battery (see [Battery on page 38](#))
  - b. Fan (see [Fan on page 47](#))
  - c. RJ45 cover (see [RJ45 cover on page 49](#))
  - d. Security cable slot bracket (see [Security cable slot bracket on page 51](#))
  - e. System board (see [System board on page 52](#))
  - f. Left speaker (see [Left speaker on page 59](#))

Remove the card reader board:

1. Remove the two Phillips PM2.0×2.2 broad head screws (1) that secure the card reader board to the top cover.
2. Release the two pieces of grounding tape (2) that secure the card reader board to the top cover.
3. Release the card reader board (3) from the opening in the top cover by lifting it up and away from the top cover.
4. Remove the card reader board (4).



Reverse this procedure to install the card reader board.

## Power connector cable

Description	Spare part number
Power connector cable	818108-001

**NOTE:** The power connector cable spare part kit does not include the power connector cable bracket. The power connector cable bracket is available using spare part number 818117-001.

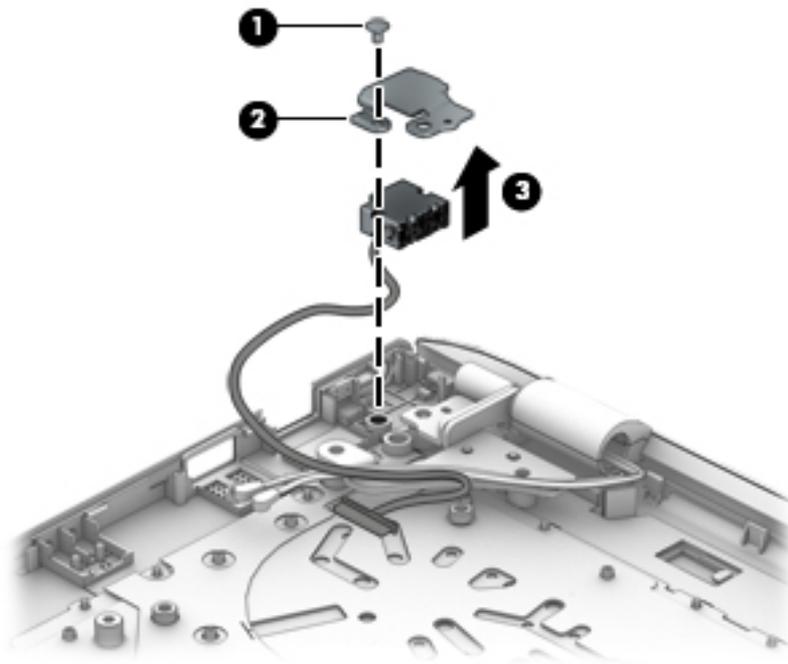
Before removing the power connector cable, follow these steps:

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 bottom cover (see [Bottom cover on page 28](#)), and then remove the following components:
  - a. Battery (see [Battery on page 38](#))
  - b. Fan (see [Fan on page 47](#))

- c. RJ45 cover (see [RJ45 cover on page 49](#))
- d. Security cable slot bracket (see [Security cable slot bracket on page 51](#))
- e. System board (see [System board on page 52](#))

Remove the power connector cable:

1. Remove the Phillips PM2.0×3.3 screw **(1)** that secures the power connector cable and bracket to the top cover.
2. Remove the power connector cable bracket **(2)**.  
The power connector cable bracket is available using spare part number 818117-001.
3. Remove the power connector cable **(3)**.



Reverse this procedure to install the power connector cable.

## Display assembly

Before removing the display assembly, 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 bottom cover (see [Bottom cover on page 28](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 38](#)).
6. Remove the RJ45 cover (see [RJ45 cover on page 49](#)).
7. Remove the security cable slot bracket (see [Security cable slot bracket on page 51](#)).

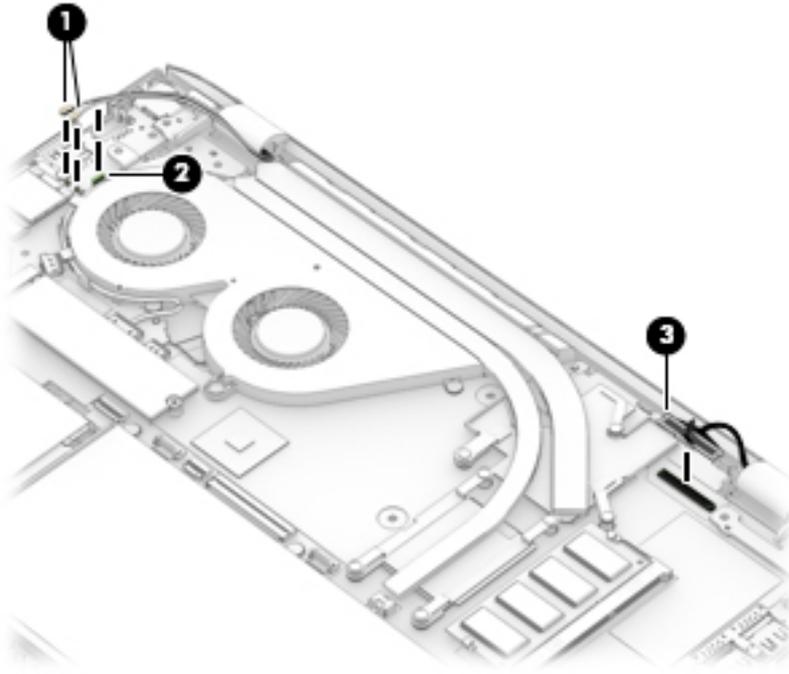
Remove the display assembly:

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

 **NOTE:** The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

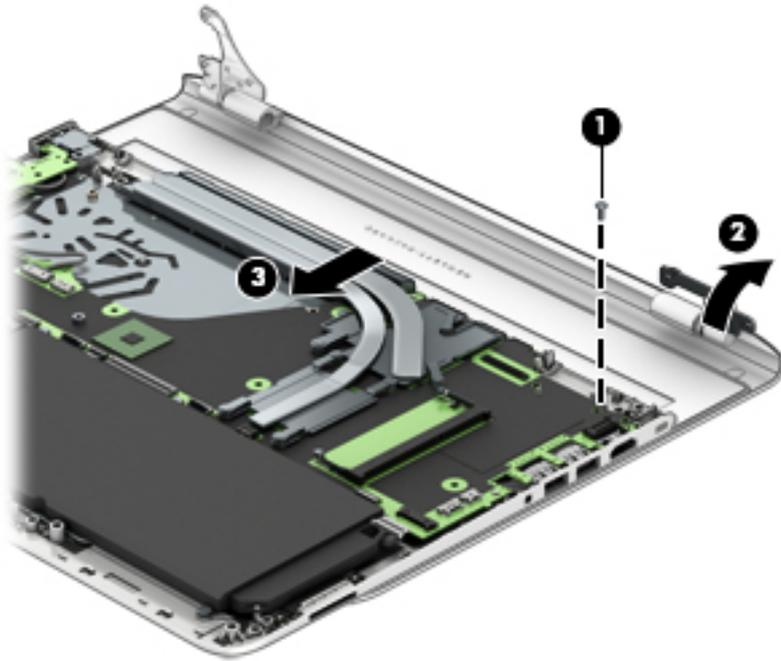
 **NOTE:** Step 2 applies only to computer models equipped with a graphics subsystem with discrete memory.

2. Release the wireless antenna cables from the retention clip **(2)** built into the fan.
3. Disconnect the display panel cable **(3)** from the system board.

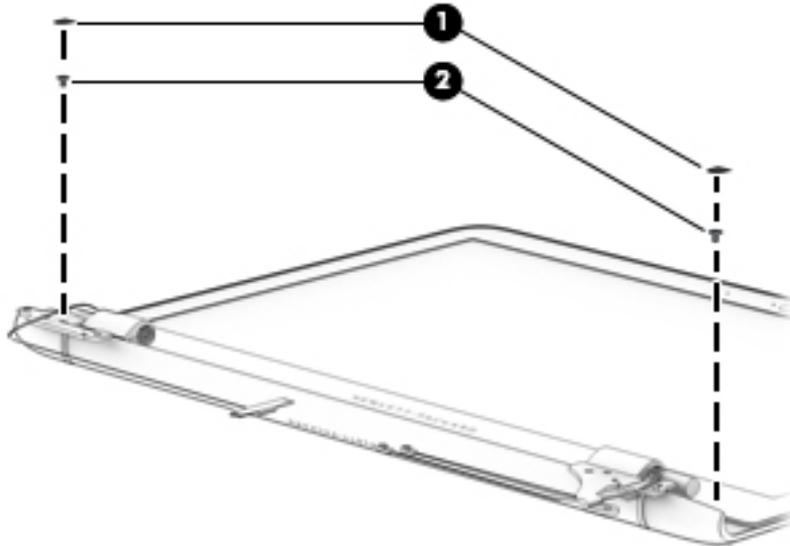


4. Remove the Phillips PM2.5×8.8 screw **(1)** that secures the left display hinge to the top cover.
5. Release the left display hinge **(2)** by swinging it up and back.

6. Slide the top cover **(3)** forward and remove the display assembly.



7. If it is necessary to replace the display bezel:
  - a. Remove the two display bezel screw covers **(1)**.  
The display bezel screw covers are available in the Bezel Trim Kit, spare part number 818102-001.
  - b. Remove the two Phillips PM2.0×3.3 screws **(2)** that secure the display bezel to the display back cover.

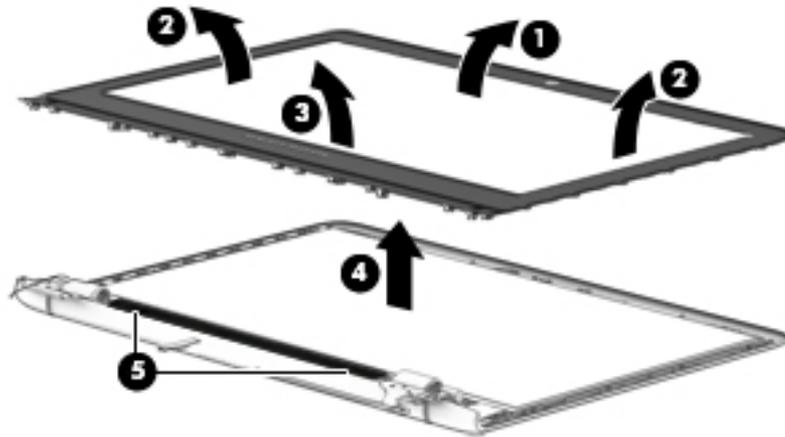


- c. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display back cover.

- d. Remove the display bezel (4).

 **NOTE:** When removing the display bezel, make note of the location of the double-sided adhesive strip (5) on the display back cover.

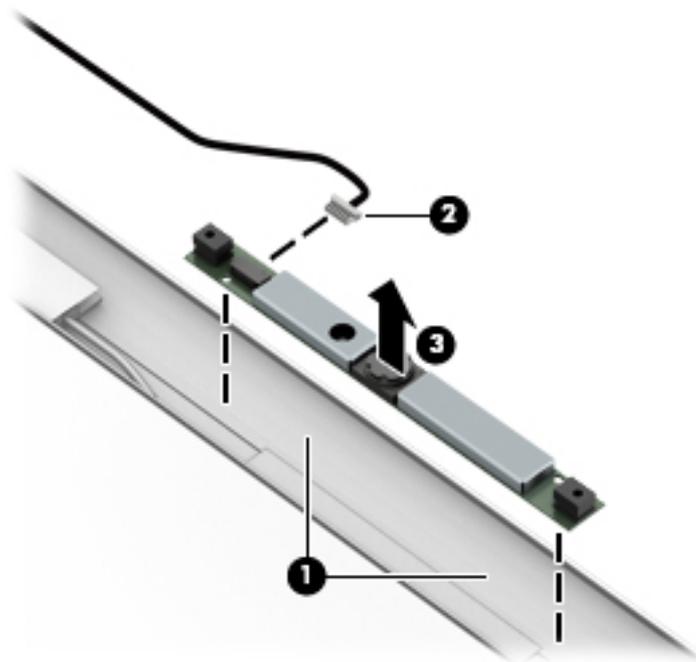
The display bezel is available using spare part number 818101-001.



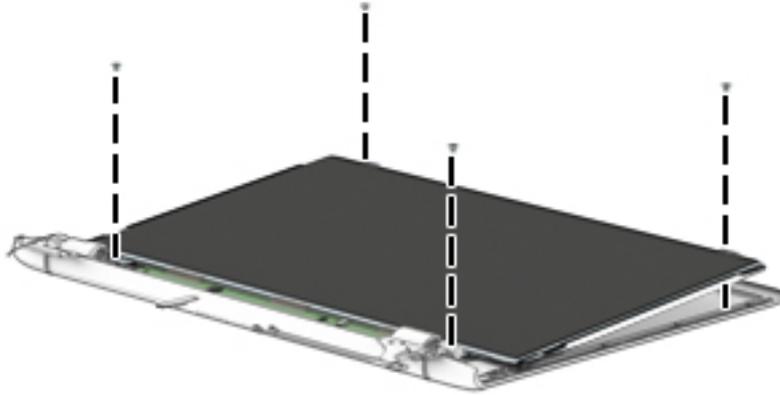
8. If it is necessary to replace the webcam/microphone module:

- a. Remove the display bezel.
- b. Detach the webcam/microphone module (1) from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)
- c. Disconnect the webcam/microphone module cable (2) from the webcam/microphone module. (The webcam/microphone module cable is part of the display panel cable.)
- d. Remove the webcam/microphone module (3).

The webcam/microphone module is available using spare part number 812714-001.



9. If it is necessary to replace the display panel:
  - a. Remove the display bezel.
  - b. Remove the four Phillips PM2.0×3.3 screws that secure the display panel to the display back cover.



---

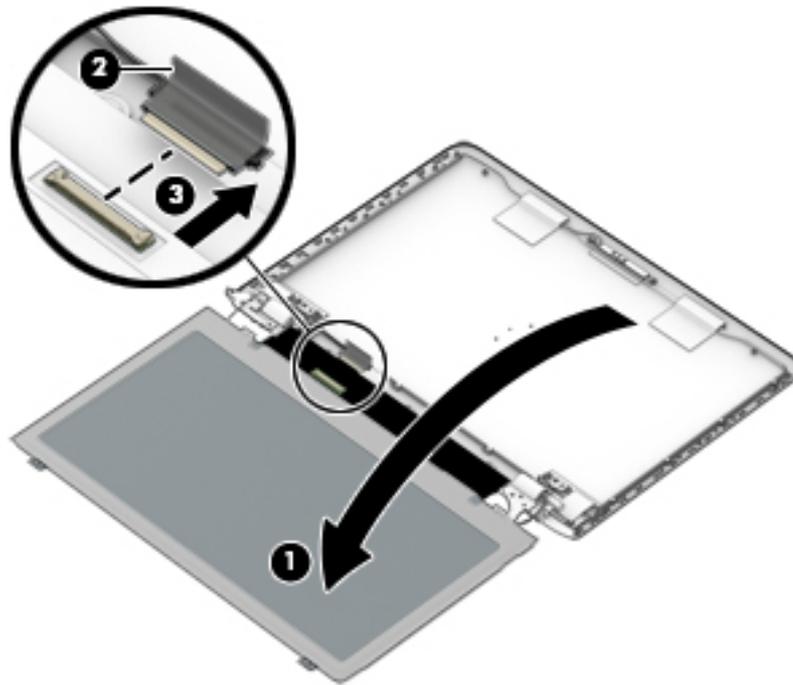
**CAUTION:** Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

---

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

The display bezel is available using the following spare part numbers:

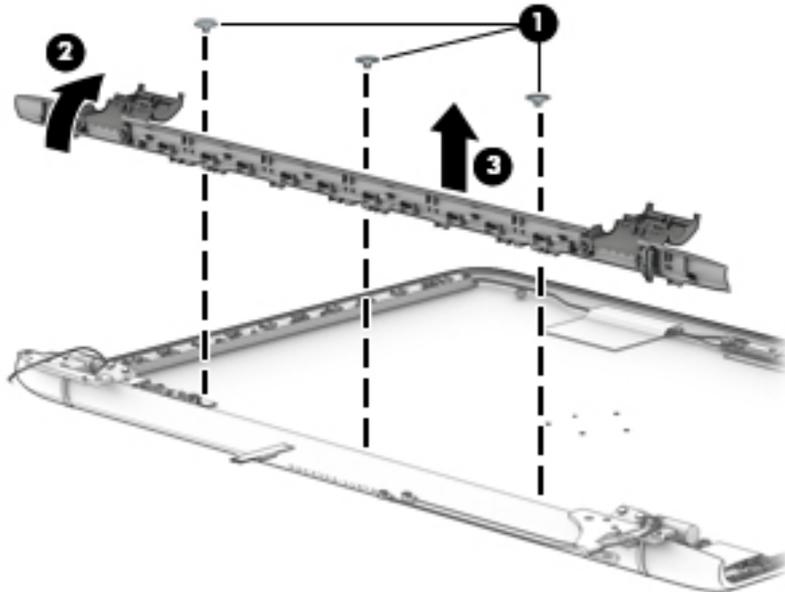
- 833717-001 – 14.0-in, FHD, WLED, AntiGlare (1920×1080), slim (3.0-mm), UWVA eDP 1.2
- 818124-001 – 14.0-in, FHD, WLED, AntiGlare (1920×1080), slim (3.0-mm), SVA eDP 1.2
- 818123-001 – 14.0-in, HD, WLED, AntiGlare (1366×768), flat (3.6-mm), SVA eDP 1.2



- 10.** If it is necessary to replace the display hinges:
- a.** Remove the display bezel.
  - b.** Remove the display panel.
  - c.** Remove the three Phillips PM2.5×2.3 broad head screws **(1)** that secure the display hinge cover to the display back cover.
  - d.** Release the display hinge cover by twisting the top edge **(2)** of the display hinge cover up and forward.

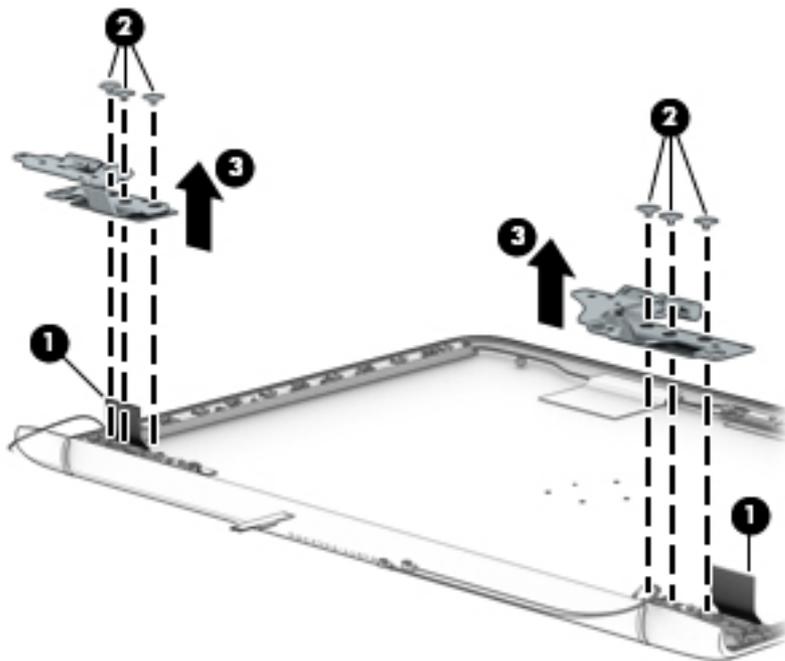
- e. Remove the display hinge cover (3).

The display hinge cover is available using spare part number 818120-001.



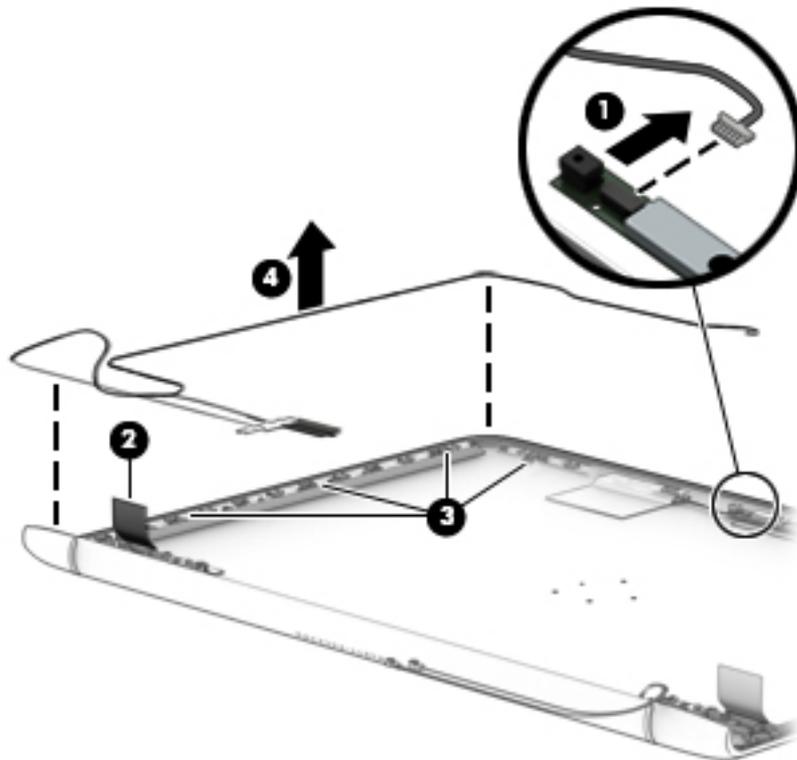
- f. Release the ground tape (1) that secures the display hinges to the display back cover.
- g. Remove the six Phillips PM2.5×2.2 broad head screws (2) that secure the display hinges to the display back cover.
- h. Remove the display hinges (3).

The display hinges are available using spare part number 818119-001.



11. If it is necessary to replace the display panel cable:
  - a. Remove the display bezel.
  - b. Remove the display panel.
  - c. Remove the display hingecover.
  - d. Disconnect the webcam/microphone module cable **(1)** from the webcam/microphone module. (The webcam/microphone module cable is part of the display panel cable.)
  - e. Release the ground tape **(2)** that secures the display panel cable to the display back cover.
  - f. Release the display panel cable from the clips **(3)** and routing channel built into the display back cover.
  - g. Remove the display panel cable **(4)**.

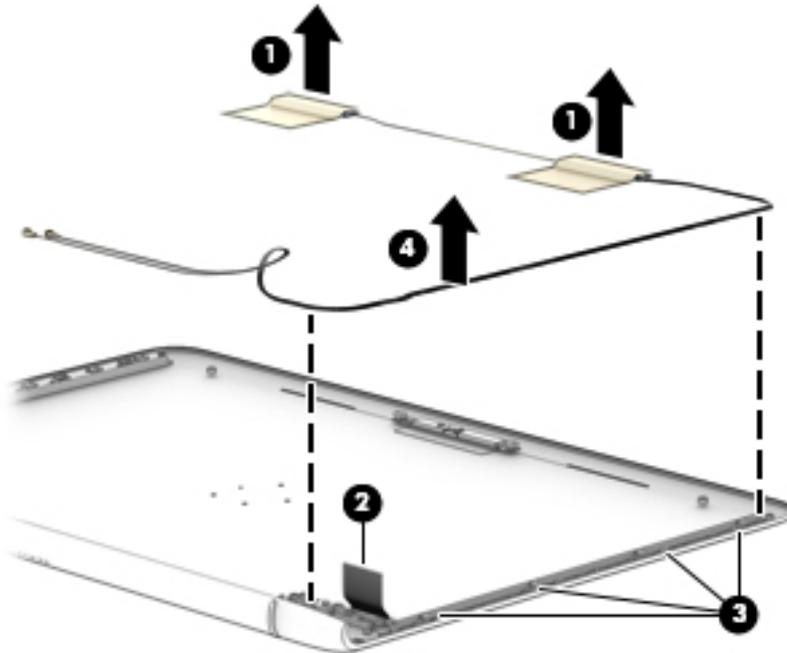
The display panel cable is available using spare part number 818104-001.



12. If it is necessary to replace the wireless antenna cables and transceivers:
  - a. Remove the display bezel.
  - b. Remove the display panel.
  - c. Remove the display hingecover.
  - d. Release the wireless antenna transceivers **(1)** from the display back cover. (The wireless antenna transceivers are attached to the display back cover with double-sided adhesive.)
  - e. Release the ground tape **(2)** that secures the display panel cable to the display back cover.
  - f. Release the wireless antenna cable from the clips **(3)** built into the display back cover.

- g.** Remove the wireless antenna cable and transceivers **(4)**.

The wireless antenna is available using spare part number 818097-001.



Reverse this procedure to install the display assembly subcomponents.

---

# 7 Using Setup Utility (BIOS) – 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.

Updated versions of Setup Utility (BIOS) may be available on the HP website.

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 71](#)).
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 72](#).

## 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) – Windows 10

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 75](#).

---

**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 Using Setup Utility (BIOS) – Windows 8

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

### Starting Setup Utility (BIOS)

---

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

---

- ▲ Turn on or restart the computer, quickly press `esc`, and then press `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.

BIOS version information (also known as *ROM date* and *System BIOS*) can be accessed 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).

To use Setup Utility (BIOS):

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 76](#)).
2. Select **Main**, and then make note of the BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 77](#).

## 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.
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 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. 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 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.

---

# 10 Using HP PC Hardware Diagnostics (UEFI) – Windows 8

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

To start HP PC Hardware Diagnostics (UEFI):

1. To start Setup Utility, turn on or restart the computer, quickly press **esc**.
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 81](#).

- b. Hard drive

- c. Setup Utility (BIOS)

3. When the diagnostic tool opens, use the keyboard arrow keys to select the type of diagnostic test you want to run, and then follow the on-screen instructions.



**NOTE:** If you need to stop a diagnostic test, press or tap **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 model, 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.

---

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

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

## Starting Setup Utility (BIOS)

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

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

---

## Updating the BIOS

Updated versions of 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.

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

To use Setup Utility (BIOS):

1. Start Setup Utility (BIOS).
2. Use the arrow keys to select **Main**, and then make note of your current BIOS version.
3. To exit Setup Utility (BIOS) without saving your changes, use the tab key and the arrow keys to select **Exit > Exit Discarding Changes**, and then press [enter](#).

To check for later BIOS versions, see [Downloading a BIOS update on page 80](#).

## Downloading a BIOS update

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

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

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

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

1. Select **Start**, type `hp support assistant`, and then select the **HP Support Assistant** program.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
  - a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. 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.

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

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

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

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

## Using HP PC Hardware Diagnostics (UEFI)

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

To start HP PC Hardware Diagnostics UEFI:

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

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

- a. Connected USB drive



**NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 78](#).

- b. Hard drive
- c. Setup Utility (BIOS)

2. When the diagnostic tool opens, use the keyboard arrow keys to select the type of diagnostic test you want to run, and then follow the on-screen instructions.



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

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

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 model, 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.

# 12 Specifications

## Computer specifications

	Metric	U.S.
<b>Dimensions:</b>		
Width	<b>34.50 cm</b>	13.58 in
Depth	<b>24.60 cm</b>	9.69 in
Height	<b>2.27 cm</b>	0.89 in
<b>Weight:</b>	<b>1.99 kg</b>	4.41 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	
	19.5 V dc @ 4.62 A – 90 W	
	19.5 V dc @ 6.15 A – 120 W	
<b>Temperature</b>		
Operating (writing to optical disc)	<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>		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude (unpressurized)</b>		
Operating (14.7 to 10.1 psia)	<b>-15 m to 3,048 m</b>	-50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	<b>-15 m to 12,192 m</b>	-50 ft to 40,000 ft
<b>Shock</b>		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
<b>Random vibration</b>		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate	
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

---

# 13 Backing up, restoring, and recovering – 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 84](#). For information on the recovery options that are available using the recovery media, see [Using Windows Tools on page 85](#).
- 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 86](#).

---

 **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 61*.

- 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 86](#).

## 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 86](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 84](#).
- 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 86](#).
- 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 [Removing the HP Recovery partition \(select products only\) on page 88](#).

## 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 84](#).

### 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.

---

- 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 84](#).
- 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 88](#).

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 84](#).

---

 **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.

---

# 14 Backing up, restoring, and recovering – Windows 8

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 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 \(select models only\) on page 89](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 91](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Using Windows tools on page 90](#).

---

 **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 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.

---

HP Recovery Manager is a software program that allows you to create recovery media (using either a flash drive or a set of DVDs) 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:

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 91](#).

## Using Windows tools

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



**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 **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 91](#).

- 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 91](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 89](#).
- 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 91](#).
- 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 93](#).

## 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 models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 89](#).

### 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 89](#).
  - 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 89](#).
  - 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, on select models, Minimized Image Recovery.

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

The HP Recovery partition allows you to perform a system recovery or, on select models, minimized image 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:

1. From the Start screen, type `recovery`, select **HP 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 98](#).

---

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:

1. Insert the HP Recovery media.
2. Turn on or restart the computer, quickly press **esc**, and then press **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 89](#).

---

Follow these steps to remove the HP Recovery partition:

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

---

# 15 Backing up, restoring, and recovering – Windows 7

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

## Creating backups

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

## Creating recovery media to recover the original system

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

### What you need to know

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

## Creating the recovery media

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

To recover, see [Recovering the original system using HP Recovery Manager on page 97](#).

## Creating system restore points

A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A restore point contains information such as registry settings that Windows uses. Restoring to a previous restore point allows you to reverse changes that have been made to the system since the restore point was created.

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

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

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

## What you need to know

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

## Creating a system restore point

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

To restore, see [Restoring to a previous system restore point on page 97](#).

## Backing up system and personal information

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

## Tips for a successful backup

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

To create a screen shot:

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

## What you need to know

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

## Creating a backup using Windows Backup and Restore

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

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



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

To restore, see [Restoring specific files using Windows Backup and Restore on page 97](#).

# Restore and recovery

## Restoring to a previous system restore point

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

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

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

## Restoring specific files

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

## Restoring specific files using Windows Backup and Restore

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

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



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

## Recovering the original system using HP Recovery Manager

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

### What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the disc provided by the manufacturer.
- A system recovery should be used as a final attempt to correct computer issues. If you have not already tried restore points (see [Restoring to a previous system restore point on page 97](#)) and partial restores (see [Restoring specific files on page 97](#)), try them before using HP Recovery Manager to recover your system.
- A system recovery must be performed if the computer hard drive fails or if all attempts to correct any functional computer issues fail.

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

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

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

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

---

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

---

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

## Recovering using the recovery media

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

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

---

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 92](#).

---

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

## Changing the computer boot order

To change the boot order for recovery discs:

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

To change the boot order for a recovery flash drive:

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

---

# 16 Power cord set requirements

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

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

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

## Requirements for all countries

The following requirements are applicable to all countries and regions:

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

## Requirements for specific countries and regions

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

1. The flexible cord must be Type HO5VV-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.

Country/region	Accredited agency	Applicable note number
		<ol style="list-style-type: none"> <li data-bbox="245 222 1441 296">2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.</li> <li data-bbox="245 323 1441 396">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.</li> <li data-bbox="245 424 1441 470">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.</li> <li data-bbox="245 497 1441 543">5. The flexible cord must be Type H05VV-F 3-conductor, 0.75 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.</li> <li data-bbox="245 571 1441 617">6. The flexible cord must be Type HVCTF 3-conductor, 1.25 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.</li> <li data-bbox="245 644 1441 709">7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm<sup>2</sup> or 1.00 mm<sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.</li> </ol>

---

## 17 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
    - spare part numbers 22
    - support 2, 3
  - AC adapter/battery light 12
  - action keys 7
  - airplane mode key 7
  - antenna
    - location 4
    - removal 69
    - spare part number 22, 70
  - Antenna Kit, spare part number 22, 70
  - audio, product description 2
  - audio-in (microphone) jack 10
  - audio-out (headphone) jack 10
- B**
  - backups 89, 94
  - battery
    - removal 38
    - spare part number 18, 38
  - BIOS
    - determining version 76, 79
    - downloading an update 77, 80
    - starting the Setup Utility 76
    - updating 76, 79
  - Bluetooth label 15
  - boot order 92
    - changing 98
  - bottom 15
  - bottom components 13
  - bottom cover
    - removal 28
    - spare part numbers 20, 28
  - button components 5
  - buttons
    - power 5
    - TouchPad 9
- C**
  - caps lock light 8
  - card reader board
    - removal 60
    - spare part number 20, 60
  - card reader board cable, spare part number 20, 60
  - chipset, product description 1
  - components
    - bottom 13
    - buttons 5
    - display 4
    - fingerprint reader 5
    - front 9
    - keys 7
    - left side 10
    - lights 8
    - right side 12
    - speakers 5
    - TouchPad 9
  - computer major components 16
  - computer specifications 82
- D**
  - deleted files
    - restoring 97
  - display assembly
    - removal 62
    - subcomponents 21, 62
  - display back cover, spare part number 22
  - display bezel
    - removal 64
    - spare part number 21, 65
  - display bezel screw cover
    - removal 64
    - spare part number 21, 64
  - display components 4
  - display hinge
    - removal 67
    - spare part number 68
  - display hinge cover
    - removal 68
    - spare part number 68
  - Display Hinge Kit, spare part number 21, 68
  - display panel
    - product description 1
    - removal 66
    - spare part numbers 21, 66
  - display panel cable
    - removal 69
    - spare part number 21, 69
  - display switch 4
- E**
  - esc key 7
  - Ethernet, product description 2
- F**
  - fan
    - removal 47
    - spare part numbers 18, 47
  - fingerprint reader 6
  - fingerprint reader board
    - removal 43
    - spare part number 18, 43
  - fingerprint reader board bracket
    - removal 44
    - spare part number 18, 43
  - fingerprint reader board cable
    - removal 45
    - spare part number 18, 43
  - fingerprint reader components 5
  - fingerprint reader light 8
  - fn key 7
  - front components 9
  - front speakers
    - removal 36
    - spare part number 18, 36
- G**
  - graphics, product description 1
- H**
  - hard drive
    - product description 1, 2
    - removal 30
    - spare part number 30
    - spare part numbers 18
  - hard drive bracket
    - removal 31
    - spare part number 18, 32

- hard drive cable
  - removal 31
  - spare part number 18, 31
- Hard Drive Hardware Kit, spare part number 18
- hard drive light 12
- HDMI port 10
- heat sink
  - removal 56
  - spare part numbers 20, 56
- hinge
  - removal 67
  - spare part number 21, 68
- hinge cover
  - removal 68
  - spare part number 68
- hingecover
  - spare part number 21
- HP PC Hardware Diagnostics (UEFI) 78
  - downloading 81
  - using 80
- HP Recovery Manager 97
  - correcting boot problems 92
  - starting 92
- HP Recovery media
  - creating 89
  - recovery 92
- HP Recovery partition
  - recovery 92
  - removing 93

**J**

- jacks
  - audio-in (microphone) 10
  - audio-out (headphone) 10
  - network 12
  - RJ-45 12

**K**

- key components 7
- keyboard, product description 2
- keyboard/top cover, spare part numbers 17
- keys
  - action 7
  - airplane mode 7
  - esc 7
  - fn 7
  - Windows 7

**L**

- labels
  - Bluetooth 15
  - Microsoft Certificate of Authenticity 15
  - regulatory 15
  - serial number 14
  - service 14
  - wireless certification 15
  - WLAN 15
- left speaker
  - removal 59
  - spare part number 20, 59
- left-side components 10
- light components 8
- lights
  - AC adapter/battery 12
  - caps lock 8
  - fingerprint reader 8
  - hard drive 12
  - mute 8
  - network 12
  - power 8, 12
  - RJ-45 12
  - webcam 4

**M**

- memory card reader 11
- memory module
  - product description 1
  - removal 34
  - spare part numbers 20, 34
- microphone
  - location 4
  - product description 2
- minimized image recovery 92
- minimized image, creating 91
- model name 1
- mute light 8

**N**

- network jack 12
- network lights 12

**O**

- operating system, product description 3
- optical drive
  - product description 2
  - spare part number 22
- original system recovery 91, 97

**P**

- pointing device, product description 2
- ports
  - HDMI 10
  - product description 2
  - USB 3.0 10, 12
- power button 5
- power connector 12
- power connector cable
  - removal 61
  - spare part number 20, 61
- power connector cable bracket
  - removal 62
  - spare part number 20, 61
- power cord
  - requirements for all countries 100
  - requirements for specific countries and regions 101
  - set requirements 100
  - spare part numbers 22
- power light 8, 12
- power requirements, product description 2, 3
- processor, product description 1
- product description
  - audio 2
  - chipset 1
  - display panel 1
  - Ethernet 2
  - external media cards 2
  - graphics 1
  - hard drive 1, 2
  - keyboard 2
  - memory module 1
  - microphone 2
  - operating system 3
  - optical drive 2
  - pointing device 2
  - ports 2
  - power requirements 2, 3
  - processors 1
  - product name 1
  - security 3
  - serviceability 3
  - video 2
  - wireless 2
- product name 1, 14
- product number 14

- R**
- rear rubber foot strip
  - removal 28
  - spare part number 28
- recovering from the recovery discs 98
- recovering the original system 97
- recovery 97
  - discs 90, 92
  - HP Recovery Manager 91, 97
  - media 92
  - options 90
  - starting 92
  - supported discs 90
  - system 91
  - USB flash drive 92
  - using HP Recovery media 90
- recovery discs 94
- recovery media 94
  - creating 89
  - creating using HP Recovery Manager 90
- recovery partition, removing 93
- recovery, system 97
- regulatory information
  - regulatory label 15
  - wireless certification labels 15
- removal/replacement
  - procedures 28, 36
- restore points 95
- restoring the original system
  - creating recovery media 94
- right-side components 12
- RJ-45 jack 12
- RJ-45 jack lights 12
- RJ45 cover
  - removal 49
  - spare part number 18, 49
- RTC battery
  - removal 42
  - spare part number 18, 42
- Rubber Kit, spare part number 22
  
- S**
- Screw Kit, spare part number 22
- security cable slot 10
- security cable slot bracket
  - removal 51
  - spare part number 18, 51
- security, product description 3
  
- serial number 14
- service labels 14
- serviceability, product description 3
- speaker components 5
- speakers
  - location 5, 9
  - removal 36, 46, 59
  - spare part numbers 18, 20, 36, 46, 59
- specifications 82
- subwoofer
  - location 13
  - removal 46
  - spare part number 18, 46
- supported discs 94
- supported discs, recovery 90
- system board
  - removal 52
  - spare part numbers 18, 52
- system recovery 91, 97
- system restore point 89, 90
- system restore points 95
  - creating 95
  
- T**
- TouchPad board
  - removal 39
  - spare part number 18, 39
- TouchPad board bracket
  - removal 40
  - spare part number 18, 39
- TouchPad board cable
  - removal 41
  - spare part number 18, 39
- TouchPad button 9
- TouchPad components 9
- TouchPad zone 9
- traveling with the computer 15
  
- U**
- USB 3.0 port 10, 12
  
- V**
- vents 13
- video, product description 2
  
- W**
- webcam 4
- webcam light 4
- webcam/microphone module
  - removal 65
  - spare part number 21, 65
- Windows Backup and Restore
  - restoring files 97
- Windows key 7
- Windows system restore point 89, 90
- Windows tools 90
- wireless antenna
  - location 4
  - removal 69
  - spare part number 22, 70
- wireless certification label 15
- wireless, product description 2
- WLAN device 15
- WLAN label 15
- WLAN module
  - removal 32
  - spare part numbers 20, 32